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Issues: 1-4
PATENT: 5,606,744-5,615,412

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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

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March 4, 1997



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 4, 1997 Volume 1196 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on March 01, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,289,590 through 5,291,615

Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 27, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,903,345 through 4,905,319
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 25, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,571,741 through 4,573,215
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 25, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,369	06/785,304	03/10/87
(4,490,721)	(06/565,516)	(12/25/84)
Re. 32,833	07/004,172	01/17/89
(4,490,358)	(06/353,257)	(12/25/84)
Re. 33,920	07/390,713	05/12/92
(4,792,797)	(07/022,099)	(12/20/88)
Re. 34,267	07/630,2740	6/01/93
(4,792,133)	(06/939,540)	(12/20/88)
Re. 34,410	07/771,905	10/19/93
(4,792,813)	(06/896,533)	(12/20/88)
4,489,445	06/565,594	12/25/84
4,489,449	06/232,120	12/25/84
4,489,452	06/424,749	12/25/84
4,489,457	06/555,914	12/25/84
4,489,461	06/435,265	12/25/84
4,489,468	06/392,857	12/25/84
4,489,478	06/425,644	12/25/84
4,489,480	06/480,445	12/25/84
4,489,483	06/503,815	12/25/84
4,489,486	06/491,459	12/25/84
4,489,489	06/465,512	12/25/84
4,489,496	06/463,108	12/25/84
4,489,498	06/490,723	12/25/84
4,489,499	06/497,969	12/25/84
4,489,500	06/515,814	12/25/84
4,489,501	06/423,153	12/25/84
4,489,507	06/409,347	12/25/84
4,489,509	06/536,696	12/25/84
4,489,518	06/575,892	12/25/84
4,489,524	06/382,689	12/25/84
4,489,525	06/522,010	12/25/84
4,489,529	06/458,339	12/25/84
4,489,530	06/333,795	12/25/84
4,489,540	06/458,702	12/25/84
4,489,552	06/538,786	12/25/84
4,489,554	06/396,606	12/25/84
4,489,555	06/538,639	12/25/84
4,489,562	06/439,969	12/25/84
4,489,565	06/505,092	12/25/84
4,489,566	06/488,144	12/25/84
4,489,567	06/532,773	12/25/84
4,489,575	06/573,949	12/25/84
4,489,578	06/561,815	12/25/84
4,489,582	06/473,456	12/25/84
4,489,585	06/447,189	12/25/84
4,489,594	06/482,132	12/25/84
4,489,601	06/514,743	12/25/84
4,489,612	06/492,834	12/25/84
4,489,614	06/444,976	12/25/84
4,489,615	06/455,791	12/25/84
4,489,616	06/494,899	12/25/84
4,489,617	06/398,021	12/25/84
4,489,631	06/448,218	12/25/84
4,489,644	06/402,854	12/25/84
4,489,646	06/514,191	12/25/84
4,489,652	06/434,241	12/25/84
4,489,654	06/462,857	12/25/84
4,489,658	06/401,987	12/25/84
4,489,659	06/310,234	12/25/84

Patent Number	Serial Number	Issue Date
4,489,660	06/378,626	12/25/84
4,489,662	06/419,605	12/25/84
4,489,663	06/403,052	12/25/84
4,489,668	06/439,072	12/25/84
4,489,669	06/535,123	12/25/84
4,489,677	06/457,588	12/25/84
4,489,679	06/560,463	12/25/84
4,489,687	06/533,039	12/25/84
4,489,690	06/434,297	12/25/84
4,489,694	06/384,489	12/25/84
4,489,697	06/468,652	12/25/84
4,489,704	06/489,694	12/25/84
4,489,707	06/538,899	12/25/84
4,489,710	06/434,782	12/25/84
4,489,723	06/593,363	12/25/84
4,489,724	06/483,128	12/25/84
4,489,729	06/415,043	12/25/84
4,489,730	06/511,285	12/25/84
4,489,731	06/463,815	12/25/84
4,489,735	06/447,163	12/25/84
4,489,739	06/381,123	12/25/84
4,489,740	06/453,370	12/25/84
4,489,749	06/500,325	12/25/84
4,489,752	06/425,559	12/25/84
4,489,755	06/442,245	12/25/84
4,489,762	06/483,547	12/25/84
4,489,763	06/444,893	12/25/84
4,489,764	06/429,323	12/25/84
4,489,769	06/381,706	12/25/84
4,489,773	06/332,787	12/25/84
4,489,778	06/471,288	12/25/84
4,489,803	06/426,258	12/25/84
4,489,815	06/502,759	12/25/84
4,489,828	06/365,583	12/25/84
4,489,837	06/387,794	12/25/84
4,489,849	06/596,245	12/25/84
4,489,850	06/498,838	12/25/84
4,489,853	06/432,668	12/25/84
4,489,856	06/380,965	12/25/84
4,489,857	06/360,403	12/25/84
4,489,863	06/347,843	12/25/84
4,489,867	06/412,769	12/25/84
4,489,873	06/489,125	12/25/84
4,489,882	06/472,419	12/25/84
4,489,886	06/423,308	12/25/84
4,489,891	06/394,641	12/25/84
4,489,894	06/352,452	12/25/84
4,489,895	06/475,297	12/25/84
4,489,896	06/480,277	12/25/84
4,489,900	06/518,962	12/25/84
4,489,901	06/495,369	12/25/84
4,489,908	06/420,019	12/25/84
4,489,913	06/591,306	12/25/84
4,489,916	06/366,367	12/25/84
4,489,918	06/467,889	12/25/84
4,489,919	06/477,347	12/25/84
4,489,920	06/496,636	12/25/84
4,489,921	06/437,696	12/25/84
4,489,924	06/504,224	12/25/84
4,489,931	06/313,303	12/25/84
4,489,933	06/548,213	12/25/84
4,489,936	06/455,853	12/25/84
4,489,963	06/583,176	12/25/84
4,489,964	06/335,913	12/25/84
4,489,967	06/539,301	12/25/84
4,489,978	06/422,410	12/25/84
4,489,983	06/454,449	12/25/84
4,489,988	06/383,827	12/25/84
4,489,989	06/394,371	12/25/84
4,489,991	06/413,535	12/25/84
4,490,005	06/390,367	12/25/84
4,490,008	06/436,688	12/25/84
4,490,011	06/437,387	12/25/84
4,490,014	06/233,423	12/25/84
4,490,015	06/381,909	12/25/84
4,490,016	06/395,431	12/25/84
4,490,022	06/336,920	12/25/84
4,490,027	06/458,500	12/25/84
4,490,028	06/457,075	12/25/84
4,490,033	06/489,620	12/25/84
4,490,036	06/409,256	12/25/84
4,490,037	06/409,257	12/25/84
4,490,038	06/336,555	12/25/84
4,490,043	06/353,418	12/25/84
4,490,048	06/457,185	12/25/84
4,490,050	06/489,859	12/25/84
4,490,055	06/393,928	12/25/84
4,490,058	06/519,450	12/25/84
4,490,073	06/326,329	12/25/84
4,490,077	06/395,969	12/25/84
4,490,085	06/310,987	12/25/84
4,490,093	06/282,965	12/25/84
4,490,107	06/535,701	12/25/84
4,490,110	06/496,588	12/25/84
4,490,111	06/556,893	12/25/84
4,490,115	06/485,894	12/25/84
4,490,118	06/530,504	12/25/84
4,490,126	06/379,474	12/25/84
4,490,131	06/383,710	12/25/84
4,490,134	06/423,378	12/25/84
4,490,135	06/423,380	12/25/84
4,490,149	06/530,652	12/25/84
4,490,153	06/546,871	12/25/84
4,490,158	06/513,960	12/25/84
4,490,159	06/476,217	12/25/84
4,490,164	06/553,939	12/25/84
4,490,175	06/547,616	12/25/84
4,490,177	06/544,056	12/25/84
4,490,178	06/474,835	12/25/84
4,490,179	06/478,767	12/25/84
4,490,185	06/556,746	12/25/84
4,490,190	06/355,880	12/25/84
4,490,193	06/537,128	12/25/84
4,490,194	06/515,872	12/25/84
4,490,195	06/540,854	12/25/84
4,490,196	06/597,311	12/25/84
4,490,207	06/460,625	12/25/84
4,490,208	06/394,074	12/25/84
4,490,221	06/489,536	12/25/84
4,490,222	06/485,896	12/25/84
4,490,223	06/534,441	12/25/84
4,490,224	06/600,888	12/25/84
4,490,225	06/415,094	12/25/84
4,490,226	06/413,180	12/25/84
4,490,234	06/350,696	12/25/84
4,490,235	06/396,090	12/25/84
4,490,238	06/600,433	12/25/84
4,490,239	06/477,683	12/25/84
4,490,245	06/598,100	12/25/84
4,490,264	06/365,710	12/25/84
4,490,273	06/552,568	12/25/84
4,490,275	06/540,217	12/25/84
4,490,280	06/414,445	12/25/84
4,490,281	06/444,657	12/25/84
4,490,283	06/332,000	12/25/84
4,490,288	06/280,874	12/25/84
4,490,292	06/540,000	12/25/84
4,490,293	06/454,940	12/25/84
4,490,296	06/462,684	12/25/84
4,490,297	06/451,908	12/25/84
4,490,298	06/462,862	12/25/84
4,490,304	06/454,211	12/25/84
4,490,306	06/458,636	12/25/84
4,490,320	06/454,174	12/25/84
4,490,331	06/348,338	12/25/84
4,490,333	06/437,512	12/25/84
4,490,337	06/247,917	12/25/84
4,490,339	06/577,103	12/25/84
4,490,348	06/462,970	12/25/84
4,490,353	06/513,474	12/25/84
4,490,357	06/335,699	12/25/84
4,490,360	06/399,265	12/25/84
4,490,366	06/419,014	12/25/84
4,490,378	06/503,791	12/25/84
4,490,380	06/462,485	12/25/84
4,490,385	06/539,306	12/25/84

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4,490,387	06/458,610	12/25/84
4,490,391	06/521,149	12/25/84
4,490,396	06/538,792	12/25/84
4,490,400	06/454,147	12/25/84
4,490,410	06/496,626	12/25/84
4,490,411	06/475,383	12/25/84
4,490,413	06/580,531	12/25/84
4,490,420	06/422,943	12/25/84
4,490,424	06/491,637	12/25/84
4,490,427	06/434,473	12/25/84
4,490,430	06/479,613	12/25/84
4,490,437	06/420,073	12/25/84
4,490,440	06/523,683	12/25/84
4,490,443	06/544,604	12/25/84
4,490,445	06/381,253	12/25/84
4,490,449	06/533,684	12/25/84
4,490,452	06/560,063	12/25/84
4,490,458	06/543,656	12/25/84
4,490,464	06/451,155	12/25/84
4,490,466	06/480,430	12/25/84
4,490,472	06/389,381	12/25/84
4,490,479	06/495,967	12/25/84
4,490,483	06/495,966	12/25/84
4,490,486	06/417,132	12/25/84
4,490,489	06/585,703	12/25/84
4,490,492	06/424,677	12/25/84
4,490,500	06/238,302	12/25/84
4,490,501	06/583,976	12/25/84
4,490,503	06/552,364	12/25/84
4,490,504	06/522,983	12/25/84
4,490,514	06/524,012	12/25/84
4,490,515	06/473,971	12/25/84
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5,172,513	07/848,142	12/22/92
5,172,514	07/615,609	12/22/92
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5,172,607	07/800,983	12/22/92
5,172,610	07/605,306	12/22/92
5,172,612	07/677,418	12/22/92
5,172,623	07/724,702	12/22/92
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5,172,706	07/822,695	12/22/92
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5,172,715	07/840,797	12/22/92
5,172,718	07/875,296	12/22/92
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5,172,867	07/756,553	12/22/92
5,172,871	07/649,734	12/22/92
5,172,883	07/807,112	12/22/92
5,172,886	07/686,040	12/22/92
5,172,889	07/821,700	12/22/92
5,172,891	07/826,436	12/22/92
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5,172,917	07/692,727	12/22/92
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5,172,988	07/665,395	12/22/92
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5,173,008	07/730,881	12/22/92
5,173,011	07/782,495	12/22/92
5,173,023	07/743,926	12/22/92
5,173,031	07/601,741	12/22/92
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5,173,092	07/636,615	12/22/92
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5,173,097	07/634,862	12/22/92
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5,173,403	07/467,745	12/22/92
5,173,404	07/422,358	12/22/92
5,173,406	07/339,824	12/22/92
5,173,407	07/643,695	12/22/92
5,173,413	07/663,328	12/22/92
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5,173,430	07/643,106	12/22/92
5,173,464	07/793,921	12/22/92
5,173,466	07/770,201	12/22/92
5,173,467	07/806,030	12/22/92
5,173,485	07/714,995	12/22/92
5,173,496	07/863,333	12/22/92
5,173,516	07/499,116	12/22/92
5,173,518	07/817,189	12/22/92
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5,173,818	07/724,172	12/22/92
5,173,830	07/622,787	12/22/92
5,173,834	07/531,108	12/22/92
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5,173,887	07/913,994	12/22/92
5,173,889	07/692,394	12/22/92
5,173,892	07/647,370	12/22/92
5,173,894	07/547,972	12/22/92
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5,173,913	07/719,036	12/22/92
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,673,609, Re. S.N. 08/775,560, Dec. 31, 1996, Cl. 428/187, UNDIRECTIONAL PANEL, George R. Hill, Owner of Record: *Contra Vision Limited, Stockport, England,* Attorney or Agent: Jack S. Barufka, Ex. Gp.: 2200

4,921,843, Re. S.N. 08/369,309, Jan. 6, 1995, Cl. 514/170, CONTRACEPTION SYSTEM AND METHOD, Samuel A. Pasquale, Owner of Record: *Gynex Pharmaceuticals, Inc., Vernon Hills, Ill.,* Attorney or Agent: John P. White, Ex. Gp.: 1205

5,218,471, Re. S.N. 08/471,863, July 7, 1995, Cl. 359/565, HIGH-EFFICIENCY, MULTILEVEL, DIFFRACTIVE OPTICAL ELEMENTS, Gary J. Swanson et. al., Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.,* Attorney or Agent: Stanley P. Fisher, Ex. Gp.: 2507

5,237,471, Re. S.N. 08/515,963, Aug. 16, 1995, Cl. 360/97, INTEGRATED DRIVING SYSTEM FOR SIGNAL PROCESSING DEVICES, Heinrich Cap et. al., Owner of Record: *Papst Licensing Gmbh, Spaichingen, Federal Republic of Germany,* Attorney or Agent: John P. Christensen, Ex. Gp.: 2303

5,297,463, Re. S.N. 08/619,394, March 21, 1996, Cl. 83/468.3, ADJUSTABLE FENCE FOR COMPOUND MITER SAW, Michael L. O'Banion et. al., Owner of Record: *Black & Decker Inc., Newark, Del.,* Attorney or Agent: Michael J. Schmidt, Ex. Gp.: 3204

5,319,681, Re. S.N. 08/664,229, June 7, 1996, Cl. 375/119, METHOD AND A DEVICE FOR SYNCHRONIZING A SIGNAL, Jacques Meyer, Owner of Record: *SGS-Thomson Microelectronics SA., Gentilly, France,* Attorney or Agent: Bryan A. Santarelli, Ex. Gp.: 2614

5,323,150, Re. S.N. 08/667,415, June 15, 1996, Cl. 340/825.54, METHOD FOR REDUCING CONDUCTIVE AND CONVECTIVE HEAT LOSS FROM THE BATTERY IN AN RFID-OR OTHER BATTERY-POWERED DEVICES, John R. Tuttle, Owner of Record: *Micron Communications, Inc., Boise, Idaho,* Attorney or Agent: James R. Duzan, Ex. Gp.: 2211

5,363,279, Re. S.N. 08/748,460, Nov. 8, 1996, Cl. 361/767, SEMICONDUCTOR PACKAGE FOR A SEMICONDUCTOR CHIP HAVING CENTRALLY LOCATED BOTTOM BOND PADS, Gi B. Cha, Owner of Record: *Goldstar Electron Co. Ltd., Choongchungbook-Do, Korea,* Attorney or Agent: Alan R. Loudermilk, Ex. Gp.: 2103

5,394,145, Re. S.N. 08/712,485, Sept. 11, 1996, Cl. 341/73, PERFORMANCE MONITORING FOR LOOPS, Dev V. Gupta et. al., Owner of Record: *Integrated Network Corp., Bridgewater, N.J.,* Attorney or Agent: Timothy J. Meagher, Ex. Gp.: 2104

5,401,223, Re. S.N. 08/728,273, Oct. 8, 1996, Cl. 477/108, METHOD AND DEVICE FOR CONTROLLING CRITICAL SWITCH FAILURE AND NEUTRAL CONDITIONS AT HIGH AND LOW VEHICLE SPEEDS, Gregory R. White et. al., Owner of Record: *Cummins Electronics Co. Inc., Columbu, Indiana,* Attorney or Agent: Jeffrey A. Michael, Ex. Gp.: 3502

5,473,329, Re. S.N. 08/712,487, Sept. 11, 1996, Cl. 341/73, PERFORMANCE MONITORING FOR LOOPS, Dev V. Gupta et. al., Owner of Record: *Integrated Network Corp., Bridgewater, N.J.,* Attorney or Agent: Timothy J. Meagher, Ex. Gp.: 2104

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 365,291, Reexam. No. 90/004,522, Jan. 17, 1997, Cl. D10/075, SPECTROPHOTOMETER, Nigel B. Chitty, Owner of Record: *Inventor,* Attorney or Agent: Banner & Whitcoff Ltd., Chicago, Ill., Ex. Gp.: 2903, Requester: Oblon Spivak McClelland Maier & Neustadt, Arlington, Va.

4,690,862, Reexam. No. 90/004,523, Jan. 21, 1997, Cl. 428/318.6, INTEGRAL COMPOSITE PROFILE OF CELLULAR AND NON-CELLULAR RESINS AND A DUAL EXTRUSION METHOD FOR ITS MANUFACTURE, Daniel J. Hoffmann, Owner of Record: *Gossen Corp., Milwaukee, Wis.,* Attorney or Agent: Leydig Voit & Mayer, Chicago, Ill., Ex. Gp.: 1314, Requester: Owner

4,774,680, Reexam. No. 90/004,524, Jan. 22, 1997, Cl. 364/550, METHOD AND APPARATUS FOR NET OIL MEASUREMENT, Joram Agar, Owner of Record: *Agar Corp., Inc., Houston, Tex.,* Attorney or Agent: Spivak Oblon McClelland Maier & Neustadt, Arlington, Va., Ex. Gp.: 2414, Requester: Thomas S. Birney, Dorr, Carson, Sloan & Birney, Denver, Colo.

4,940,503, Reexam. No. 90/004,530, Jan. 24, 1997, Cl. 156/279, PROCESS FOR THE PRODUCTION OF AN ABRASION RESISTANT DECORATIVE THERMOSETTING LAMINATE, Kent O. Lindgren, et. al., Owner of Record: *Perstorp AB, Perstorp, Sweden,* Attorney or Agent: Watson Cole Stevens & Davis, Washington, D.C., Ex. Gp.: 1304, Requester: Fred E. Hook, Wilsonart International Inc., Temple, Tex.

5,101,367, Reexam. No. 90/004,525, Jan. 22, 1997, Cl. 365/551.01, APPARATUS FOR DETERMINING THE PERCENTAGE OF A FLUID IN A MIXTURE OF FLUIDS, Joram Agar, Owner of Record: *Agar Corp., Inc., Houston, Tex.,* Attorney or Agent: Oblon Spivak McClelland Maier & Neustadt, Arlington, Va., Ex. Gp.: 2414, Requester: Thomas S. Birney, Dorr, Carson, Sloan & Birney, Denver, Colo.

5,263,363, Reexam. No. 90/004,526, Jan. 22, 1997, Cl. 073/61.44, APPARATUS AND METHOD FOR DETERMINING THE PERCENTAGE OF A FLUID IN A MIXTURE OF FLUIDS, Joram Agar, Owner of Record: *Agar Corp., Inc., Houston, Tex.,* Attorney or Agent: Oblon Spivak McClelland Maier & Neustadt, Arlington, Va., Ex. Gp.: 2212, Requester: Thomas S. Birney, Dorr, Carson, Sloan & Birney, Denver, Colo.

5,327,375, Reexam. No. 90/004,531, Jan. 28, 1997, Cl. 365/149, DRAM CELL UTILIZING NOVEL CAPACITOR, Eliyahou Harari, Owner of Record: *Inventor,* Attorney or Agent: Steven F. Caserza, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 2511, Requester: Owner

5,405,371, Reexam. No. 90/004,529, Jan. 23, 1997, Cl. 607/107, THERMAL BLANKET, Scott D. Augustine, et. al., Owner of Record: *Augustine Medical, Inc., Eden Prarie, Minn.,* Attorney or Agent: Terrance A. Meador, Baker, Maxham, Jester & Meador, San Diego, Calif., Ex. Gp.: 3311, Requester: Owner

5,465,206, Reexam. No. 90/004,516, Jan. 13, 1997, Cl. 395/240, ELECTRONIC BILL PAY SYSTEM, James J. Hilt, et. al., Owner of Record: *Visa International, Foster City, Calif.,* Attorney or Agent: Hecker & Harriman, Los Angeles, Calif., Ex. Gp.: 2411, Requester: Owner

5,503,004, Reexam. No. 90/004,527, Jan. 22, 1997, Cl. 073/61.44, APPARATUS AND METHOD FOR DETERMINING THE PERCENTAGE OF A FLUID IN A MIXTURE OF FLUIDS, Joram Agar, Owner of Record: *Agar Corp., Inc., Houston, Tex.,* Attorney or Agent: Oblon Spivak McClelland Maier & Neustadt, Arlington, Va., Ex. Gp.: 2212, Requester: Thomas S. Birney, Dorr, Carson, Sloan & Birney, Denver, Colo.

5,586,589, Reexam. No. 90/004,528, Jan. 22, 1997, Cl. 141/349, REFILLABLE CLOSED CONTAINER SYSTEM, Scott C. Voelker, Owner of Record: *Monsanto Co., St. Louis, Mo.,* Attorney or Agent: Michael E. Godar, Senniger, Powers, Leavitt & Rodel, St. Louis, Mo., Ex. Gp.: 3105, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable-application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 25, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
108,634	71/079,319	02/22/1916
108,647	71/088,858	02/22/1916
108,734	71/089,746	02/22/1916
332,475	71/370,570	02/18/1936
332,506	71/370,871	02/18/1936
332,518	71/370,401	02/18/1936
332,526	71/369,886	02/18/1936
332,549	71/369,260	02/18/1936
332,550	71/369,262	02/18/1936
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1,034,146	72/459,117	02/17/1976
1,034,148	72/465,420	02/17/1976
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1,034,153	73/037,949	02/17/1976
1,034,155	73/057,047	02/17/1976
1,034,164	72/431,971	02/17/1976

Errata

Notice Re: United States Patent No. 5,392,788

On November 4, 1996, the United States Bankruptcy Court for the Central District of California (Northern Division - Santa Barbara) entered a consent judgment and order in Case No. ND-95-14561-RR (Chapter 7) declaring William J. Hudspeth's purported dedication of United States Patent No. 5,392,788 (the "Patent") to the public domain to be null and void *ab initio*, as of the date of the dedication in October 1995, and approving the sale of the Patent by the Chapter 7 Trustee to Dr. Samuel J. Leven. The sale by the Chapter 7 Trustee to Dr. Leven was consummated on January 21, 1997, and the assignment of the Patent to Dr. Leven was recorded in the Patent and Trademark Office on January 24, 1997. Copies of all documents concerning this matter can be obtained from the files of the United States Bankruptcy Court for the Central District of California (Northern Division - Santa Barbara) for a fee to be paid to the Clerk of the Court.

Certificate of Correction for Week of March 4, 1997

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Re. 35,248
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Summary of Final Decisions Issued by the Trademark Trial and Appeal Board January 6-10, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-7	CANC	22,858	Harley-Davidson, Inc. v. Mason	2(d)	Petition to Cancel Granted	"HARLEY-DAVIDSON MOTOR CYCLES" (and shield design) [a variety of products, including mugs and insulated drinking steins]; shield and bar design [a variety of motorcycle parts and accessories]; et. al.	shield and ribbon design [commemorative, decorative and specialty ceramic wars, particularly, plates, steins, cups, pitchers, containers for food and drink]		No
1-7	EX	74/507,980	Suffolk Machine Corp.	2(d)	Affirmed		"IMPACTOR" [band saw blades]	"IMPACTER" [hammer for use in the production of drop forgings]	No
1-7	EX	74/447,927	Int'l. Home Furnishings Marketing Ass'n.	2(d)	Refusal Reversed		"INTERNATIONAL HOME FURNISHINGS MARKET" [arranging and conducting exhibitions in the field of furniture]	"INTERNATIONAL HOME FURNISHINGS CENTER" (providing showroom and related facilities to manufacturers in the field of furniture and home furnishings)	No
1-10	EX	74/553,323	Organik Technologies, Inc.	2(a) [deceptive]	Refusal Affirmed		"ORGANIK" [textiles made of cotton for use in the manufacturing of clothing; men's, women's and children's clothing, all made of cotton]		Yes
1-10	EX	74/255,620	Dobbs Temporary Services, Inc.	2(e)(1) [on examination of statement of use]	Refusal Affirmed		"9 TO 3" [employment agency services]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-10	EX	74/451,788	Klinger and Bergstrom dba KB Products	2(e)(1)	Refusal Affirmed		"MOUSEKLIP" (in stylized lettering) [a clip which attaches to a computer mouse cable to hold the portion of the cable extending from the clip to the computer in place]		No
1-10	EX	74/505,392	Capture, Inc.	2(d)	Refusal Affirmed		"CAPTURE" (in stylized lettering) [cologne]	"CAPTURE" [skin creams and eye creams]	No
1-10	EX	74/141,891	Supreme Oil Co.	2(d)	Refusal Affirmed		"PREMIER" [shortenings, margarine, processed cherries, processed olives, processed beans, processed vegetables, soup mixes, sold to the institutional trade; mayonnaise, salad dressings, vinegar, mustard and rice sold to the institutional trade]	"SALAD PREMIER" [salad dressings, mayonnaise and meatless sandwich spreads]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SD) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/21/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/08/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/17/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/15/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/01/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	03/23/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/08/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/07/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/16/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/14/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/20/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/22/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/17/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/29/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/28/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/05/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/20/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	12/13/96	—0—
Renewals (All Classes)	11/14/96	—0—
Section 12(c) Publications (All Classes)	07/26/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

MARCH 4, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,230,504 (3146th)
METHOD OF MAKING IMPLANT PROGRAMMABLE N-CHANNEL ROM
Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Inc., Dallas, Tex.
Reexamination Request No. 90/004,249, May 28, 1996.
Reexamination Certificate for Patent 4,230,504, issued Oct. 28, 1980, Ser. No. 900,549, Apr. 27, 1978.
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—48

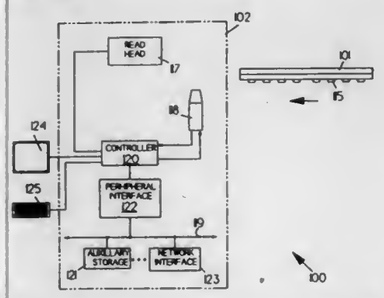


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A method of making a read-only-memory array, while at the same time forming N-channel silicon gate transistors peripheral to the array, comprising the steps of: forming a plurality of N-channel silicon gate memory transistors in a face of a semiconductor body, and at the same time forming a plurality of said peripheral transistors spaced from the array, each of the transistors having a source, a drain and a silicon gate, the memory transistors being in a regular pattern to provide an array of memory cells; programming the array of memory cells by masked ion implant penetrating through the silicon gates of selected ones of the field effect transistors while shielding the peripheral transistors; and therafter applying patterned metal contacts and interconnections on said face.

B1 5,235,586 (3147th)
COMPUTER SYSTEM UTILIZING COMPACT INTELLIGENT DISKS
Scott Feamster, Atherton, and Keith Klemba, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Reexamination Request No. 90/003,625, Nov. 7, 1994.
Reexamination Certificate for Patent 5,235,586, issued Aug. 10, 1993, Ser. No. 802,207, Dec. 4, 1991.
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—100



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6, 9–11, 14** and **15** are cancelled.

Claims **7** and **12** are determined to be patentable as amended.

Claims **8** and **13**, dependent on an amended claim, are determined to be patentable.

12. [The disk player of claim **11**] *A disk player for actuating a removable disk cartridge comprising a platter having storage and processing regions, said storage region comprising an optically readable medium having digital information stored therein and said processing region comprising region comprising electronic circuitry for processing said stored information, said electronic circuitry comprising means for receiving signals from, and transmitting signals to, circuitry which is not said disk cartridge, said disk player comprising:*

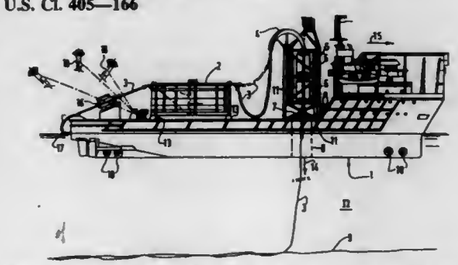
means for coupling power to said removable disk cartridge;

means for sending signals to said removable disk cartridge;

means for receiving signals from said removable disk cartridge; and

means for illuminating a selected region on said storage region to enable the reading of information stored in said optically readable medium, wherein said illuminating means comprises means for causing said removable cartridge to rotate on a spindle under a light source, wherein said means for sending signals comprises an optically transparent region in said spindle.

B1 5,348,423 (3148th)
DEVICE AND PROCESS FOR UNROLLING FLEXIBLE TUBULAR CONDUITS ESSENTIALLY VERTICALLY
René Maloberti, Champigny; Alain Coutarel, Paris, both of France, and Philippe F. Espinasse, Rio de Janerio, Brazil, assignors to Coflexip, Boulogne-Billancourt, France
Reexamination Request No. 90/003,930, Aug. 29, 1995.
Reexamination Certificate for Patent 5,348,423, issued Sep. 20, 1994, Ser. No. 776,394, Jan. 29, 1992.
PCT No. PCT/FR91/00264, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/15699, PCT Pub. Date Oct. 17, 1991
Claims priority, application France, Mar. 30, 1990, 90 04105
Int. Cl.[6] F16L *1/18*
U.S. Cl. 405—166



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9–13** and **14** is confirmed.

Claims **1–7** and **8** are cancelled.

9. Process for laying flexible conduits from a floating support, wherein it comprises stages consisting in:

unrolling a section of flexible tubular conduits grasped by its outer surface by main tensioning means (**6**) of linear winch type, the axis of the linear winch being approximately verti-

cal, said linear winch absorbing the traction exerted by flexible conduit (3) and constituting the last guiding element of the flexible conduit aboard floating support (1);

absorbing the traction exerted by flexible conduit (3) by auxiliary holding means working in cooperation with a rigid accessory (21) mounted on the flexible conduit and outer dimensions greater than the outer diameter of the flexible conduit, this accessory being mounted on the flexible conduit;

releasing main tensioning means (6) and separating them laterally to allow a free passage in the axis of the tensioning means of greater dimension than the outer bulkiness of the accessory mounted on the flexible conduit;

performing the clearing of main tensioning means (6) by the section of flexible conduit on which is mounted the accessory, the tension exerted by flexible conduit (3) being supported by auxiliary holding means (20) while flexible conduit (3) is lowered through the free space between the main tensioning means;

grasping by main tensioning means (6) the outer surface of the new section of flexible conduit (3) located upstream from the accessory so that the tension exerted by the flexible conduit can again be assumed by main tensioning means (6);

releasing the auxiliary holding means;

taking up the unrolling of the new section of tubular conduit (3).

B1 5,355,808 (3149th)

BATTENLESS RAILCAR HATCH COVER ASSEMBLY

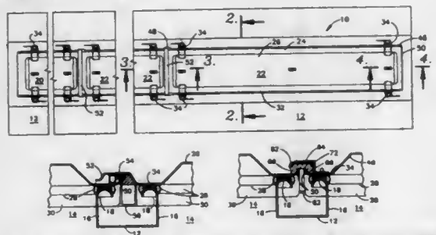
Stephen R. Early, Olathe, Kans., assignor to Aero Transportation Products, Independence, Mo.

Reexamination Request No. 90/003,906, Jul. 18, 1995.

Reexamination Certificate for Patent 5,355,808, issued Oct. 18, 1994, Ser. No. 948,116, Sep. 21, 1992.

Int. Cl.[6] **B61D** *39/00*

U.S. Cl. 105—377.01



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

New claim **16** is added and determined to be patentable.

1. A batch assembly for rail cars having at least one opening therein extending in a longitudinal direction, such opening having first and second ends, comprising:

a plurality of covers, each having lateral sides and longitudinal ends, said covers being arranged in a longitudinal series along the longitudinal direction with adjacent ones of said covers each having an associated one of said longitudinal ends in proximity to each other in a closed position to therefore define at lest one set of adjacent longitudinal ends, a first of said longitudinal ends of each said set having a compression lip extending longitudinally outwardly therefrom, and thus extending longitudinally inward of, and spaced above, a second of said longitudinal ends of each said set, when in said closed position, a second of said longitudinal ends of each said set having a sealing lip extending upward therefrom;

a compression seal fixed to a bottom face of each of said compression lips and adapted to abut against said second of said longitudinal ends of said set when in said closed position, each said compression seal each including a first portion adapted to abut against said sealing lip and a second portion adapted to abut against an edge portion of said associated adjacent cover, said second portion extending downward a grater distance than said first portion;

means selectively permitting pivoting of each of said covers from a closed position in overlying relation to said opening to an open position providing access to said opening, said pivoting being about and axis substantially parallel to said longitudinal direction; and

means for selectively locking each of said covers in said closed position, said means including a first portion mounted upon said cover and a second portion mounted upon said rail car, said portions interacting to selectively lock together, said means providing an entire force to secure each said cover in the closed position, with there being no batten bars extending laterally across any of said covers.

B1 5,439,067 (3150th)

ROCK BIT WITH ENHANCED FLUID RETURN AREA

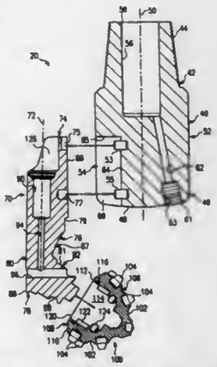
Alan D. Huffstutler, Grand Prairie, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Reexamination Request No. 90/004,217, Apr. 8, 1996.

Reexamination Certificate for Patent 5,439,067, issued Aug. 8, 1995, Ser. No. 287,457, Aug. 8, 1994.

Int. Cl.[6] **E21B** *10/18;10/20*

U.S. Cl. 175—339



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **12** is cancelled.

Claims **1–3**, **10**, **11**, and **14–16** are determined to be patentable as amended.

Claims **4–9**, **13** and **17–20**, dependent on an amended claim, are determined to be patentable.

1. A rotary cone drill bit for forming a borehole, comprising:

a one-piece bit body having an upper portion *formed as an integral part thereof and* adapted for connection to a drill string for rotation of said drill bit;

a number of support arms attached to said bit body and extending opposite from said upper portion, each of said support arms having an inside surface with a spindle connected thereto, each spindle projecting generally downwardly and inwardly with respect to its associated support arm;

a number of cutter cone assemblies equal to said number of support arms and mounted respectively on one of said spindles; **[**and**]**

said bit body having a lower portion with a generally convex exterior surface formed thereon to provide enhanced fluid flow between said cutter cone assemblies and said lower portion of said bit body*;*

each support arm having a longitudinal axis extending therethrough with an upper end, an exterior surface with a shirttail surface formed as a part thereof and a bottom edge with said inside surface and said shirttail surface contiguous at said bottom edge;

each of said support arms having a first side and a second side extending from said inside surface;

the dimensions of said upper end and the adjacent portions of said inside surface and said first side and said second side selected to allow securing a portion of each of said support arms within a respective pocket formed in said bit body;

a spindle attached to said inside surface near said bottom edge and angled downwardly and inwardly with respect to each of said support arms;

each of said cutter cone assemblies having an opening with a chamber extending therefrom for mounting said respective cutter cone assembly on one of said spindles; and

means provided on said inside surface of each of said support arms for alignment and positioning of said respective support arm within one of said pockets during fabrication of said drill bit.

B1 366,378 (3145th)

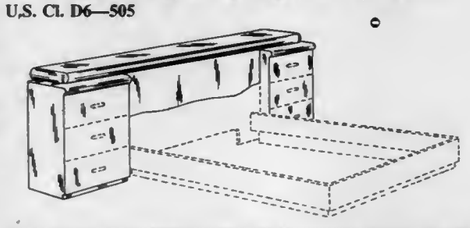
BED HEADBOARD

Carlo Bargagli-Stoffi, Union, N.J., assignor to Sangiacomo N.A. Ltd., Union, N.J.

Reexamination Request No. 90/004,297, Jul. 3, 1996.

Reexamination Certificate for Patent Des. 366,378, issued Jan. 23, 1996, Ser. No. 29,604, Oct. 11, 1994.

U.S. Cl. D6—505



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of the one claim is confirmed.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED MARCH 4, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1635

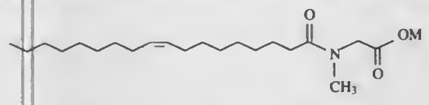
DETERGENT COMPOSITIONS WITH OLEOYL SARCOSINATE AND AMINE OXIDE

James M. Vander Meer, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 1, 1994, Ser. No. 251,981
Int. Cl.[6] C11D *1/38*
U.S. Cl. 510—220 **17 Claims**

1. A detergent composition comprising

(a) at least about 0.1% of an oleoyl sarcosinate of the formula:



wherein M is hydrogen or a cationic moiety; and

(b) from about 0.1% to about 20 % of an amine oxide.

H1636

FLAVOR ENHANCEMENT OF REDUCED FAT NUT BUTTERS THROUGH THE ADDITION OF CITRIC ACID

Michael R. Sevenants, and John M. Hart, both of The Procter & Gamble Company, Winton Hill Technical Center, 6071 Center Hill Ave., Cincinnati, Ohio 45224-1703

Continuation of Ser. No. 361,339, Dec. 21, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 561,221
Int. Cl.[6] A23L *1/38*
U.S. Cl. 426—633 **13 Claims**

1. A reduced fat nut butter having an enhanced roasted flavor and an enhanced saltiness impression comprising:

a) from about 40% to about 70% by weight nut solids;

b) from about 33% to about 60% by weight nut oils;

c) from about 15% to about 50% by weight non-fat containing solids;

d) from about 0.01% to about 0.02% by weight citric acid;

e) from about 0% to about 40% by weight bulking agent;

f) from about 0% to about 5% by weight stabilizer;

g) from about 0% to about 3% by weight emulsifier;

h) from about 0% to about 8% by weight flavorant.

H1637

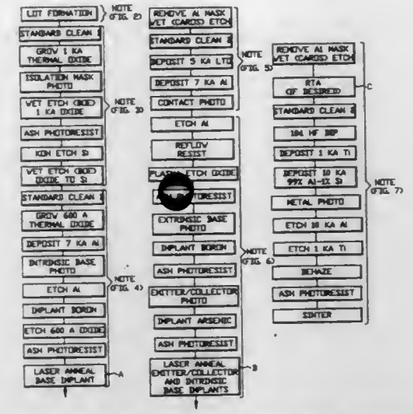
LASER-ASSISTED FABRICATION OF BIPOLAR TRANSISTORS IN SILICON-ON-SAPPHIRE (SOS)

Bruce W. Offord, 4520 North Ave. #1, San Diego, Calif. 92116; Stephen D. Russell, 4561 Osprey St., San Diego, Calif. 92107, and Kurt H. Weiner, 2 Heritage Village La., Campbell, Calif. 95008

Filed Sep. 18, 1991, Ser. No. 762,538
Int. Cl.[6] H01L *21/268*
U.S. Cl. 437—173 **30 Claims**

23. A method for laser-assisted dopant incorporation, dopant activation and rapid dopant redistribution to create a bipolar junction transistor while inhibiting the creation of undesirable diffusion in the creation of said bipolar junction transistor on a silicon-on-sapphire wafer while inhibiting the creation of undesirable diffusion in the creation of said bipolar junction transistor comprising:

placing said silicon-on-sapphire wafer in an appropriate doping ambient; and



generating an appropriately shaped and spatially homogenized laser beam having a pulse energy and pulse duration preset to above the melt threshold and below the ablation threshold of said silicon of said silicon-on-sapphire wafer to obtain a predetermined optimal fluence in order to achieve a desired melt duration and corresponding junction depth; and

directing said appropriately shaped and homogenized laser beam of at least one pulse onto said silicon-on-sapphire wafer in a predetermined processing location thereon to ensure said dopant incorporation, said dopant activation and said rapid dopant redistribution while said inhibiting the creation of undesirable diffusion in the creation of said bipolar junction transistor on said silicon-on-sapphire wafer.

H1638

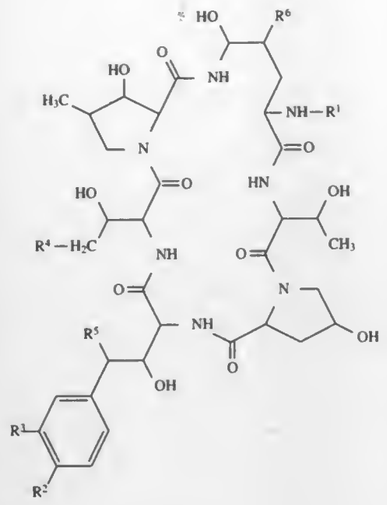
USE OF THE POLYPEPTIDE COMPOUND

Takahisa Furuta, 2-1-5-815, Omoriminami, Ota-ku, Tokyo 143; Toshiro Iwamoto, 16-4-308, Azuma 4-chome, Tsukuba-shi, Ibaraki 305; Akihiko Fujie, 41-1, Sakuragaokacho, Tsuchiura-shi, Ibaraki 300; Kumiko Nitta, 1160-4, Nagakuni, Tsuchiura-shi, Ibaraki 300; Yasuhisa Tsurumi, 21-1-510-601, Takezono, 3-chome; Nobuharu Shigematsu, 5-4-601, Umezono 2-chome, both of Tsukuba-shi, Ibaraki 305; Chiyoshi Kasahara, 2-2-13, Midorigaoka, Ikeda-shi, Osaka 563; Motohiro Hino, 13-3-1003, Touzaki-cho, Tsuchiura-shi, Ibaraki 300, and Masakuni Okuhara, 14-10, Umezono 2-chome, Tsukuba-shi, Ibaraki 305, all of Japan

Continuation of Ser. No. 791,926, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 614,125, Nov. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 610,759, Nov. 8, 1990, abandoned. This application Sep. 26, 1994, Ser. No. 311,434

Claims priority, application United Kingdom, Dec. 14, 1990, 9027152; Jan. 24, 1991, 9101552; Apr. 2, 1991, 9106822
Int. Cl.[6] A61K *38/00*
U.S. Cl. 514—11 **1 Claim**

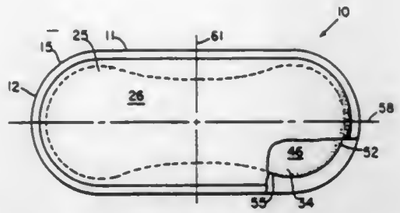
1. A method for the prevention or the treatment of *Pneumocystis carinii* pneumonia, which comprises administering an effective amount of a polypeptide compound of the formula (SEQ ID NO: 1):



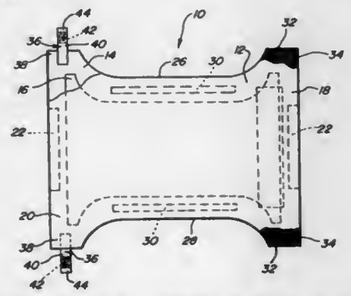
wherein
R^1 is hydrogen or an acyl group,
R^2 is hydroxy or acyloxy group,
R^3 is hydroxy or hydroxysulfonyloxy,
R^4 is hydrogen or carbamoyl, and
R^5 and R^6 are each hydrogen or hydroxy, with the proviso that R^5 is hydrogen when R^6 is hydrogen,
or a pharmaceutically acceptable salt thereof to a human being or an animal in need thereof.

H1639
CATAMENIAL DEVICE
Sorin Crainic, Sulzbacher Strasse 40-50, 65824 Schwalbach am Taunus, Germany
PCT No. PCT/US93/04525, § 371 Date May 11, 1993, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO93/22998, PCT Pub. Date Nov. 25, 1993
PCT Filed Mar. 16, 1995, Ser. No. 335,746
Claims priority, application European Pat. Off., May 15, 1992, 92201394
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—368 **1 Claim**

1. A catamenial device comprising a liquid permeable layer having a first body-facing surface and a second opposed surface, an absorbent body disposed adjacent the opposed surface, said absorbent body comprising a water insoluble particulate hydrogel material at a weight concentration of at least 5 g/m^2 of the plan area of the absorbent body, said particulate hydrogel material being disposed between two layers of nonwoven fabric, a liquid impermeable barrier layer disposed on the surface of said absorbent body remote from said liquid permeable layer, and adhesive attachment means for securing said device to a garment, said attachment means being disposed on the surface of said device opposed to said first body facing surface of said liquid permeable layer, wherein the water insoluble particulate hydrogel material exerts a pressure of at least 0.38 kPa after 5 minutes and not less than 0.38 kPa after 30 minutes exposure to 56 times its weight of synthetic urine solution, and in that said device incorporating 0.8 g water insoluble particulate hydrogel material retains at least 40 g of sheeps blood after said body-facing surface is exposed to a supply of said sheeps blood for 20 minutes, a pressure of 17 g/cm^2 being applied to said surface for 2 minutes following said exposure.



H1640
REINFORCED LANDING SURFACE FOR MECHANICAL FASTENERS ON DISPOSABLE PRODUCTS
John J. Litchholt, Harrison; Dennis A. Thomas, Cincinnati, and Keith W. Hammond, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 120,714, Sep. 13, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,482
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—389 **1 Claim**



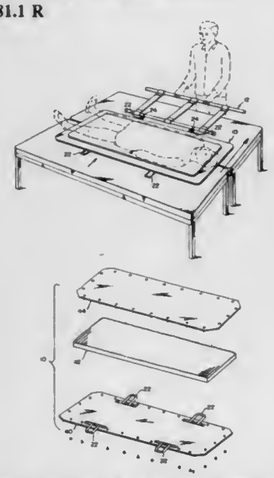
1. A composite reinforced landing surface for receiving the hooks of a hook-type fastener, said composite reinforced landing surface comprising:
a layer of a scrim-like web material having a plurality of apertures; and
a layer of a non-woven fibrous material having a plurality of fibrous strands;
whereby upon connecting the fastener to said reinforced landing surface, the hooks extend at least partially through said apertures and become intertwined and entangled with said fibrous strands.

REISSUES

MARCH 4, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

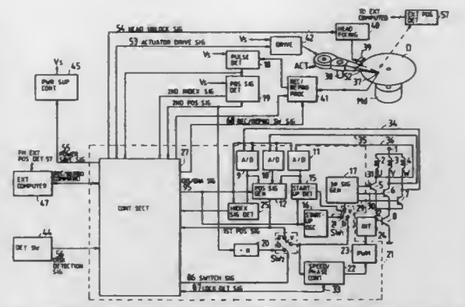
Re. 35,468
PATIENT TRANSFER DEVICE
William C. Newman, 403 Whitaker Dr., Missoula, Mont. 59803
Original No. 5,271,110, dated Dec. 21, 1993, Ser. No. 63,645, May 20, 1993. Application for reissue Jun. 22, 1995, Ser. No. 492,254
Int. Cl.[6] A61G *7/10;7/05*
U.S. Cl. 5—81.1 R **15 Claims**



12. A transfer device for a human body comprising sled means and detachable handle means wherein:
said sled means comprising a transfer board adapted to receive a human body, said transfer board having two sides and two transverse ends;
and said handle means comprising an elongated grip bar, and a plurality of strap means connecting said grip bar and said sled means whereby the relative distance between said grip bar and said sled means may be adjusted, and fastener means for joining said handle means to said sled means.

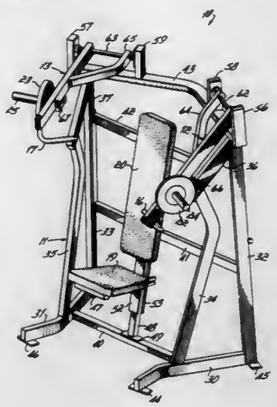
Re. 35,469
DISC RECORD/REPRODUCE APPARATUS WITH BRUSHLESS MOTOR HAVING ROTATIONAL SPEED CONTROLLED BY A DISC
Yasuhiro Ueki, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Original No. 5,095,254, dated Mar. 10, 1992, Ser. No. 650,570, Feb. 5, 1991. Application for reissue Mar. 10, 1994, Ser. No. 208,629
Claims priority, application Japan, Jul. 19, 1990, 2-190973; Feb. 6, 1992, 2-26933
Int. Cl.[6] H02P *6/02*
U.S. Cl. 318—138 **21 Claims**

13. A method for controlling rotational speed of a rotational disc drive to drive a recording disc at a predetermined speed, the disc drive including: a brushless dc motor for rotating the disc, the brushless dc motor having a plurality of windings; a recording/reproducing head for recording/reproducing data on/from a sector of a recording disc having a plurality of sectors; an electrical circuit connected to the recording/reproducing head, and switching means for switchably selecting a control mode for controlling a rotational speed of the brushless dc motor; comprising the steps of:
a) feeding a start signal to the plurality of windings for rotating the brushless dc motor;



b) detecting a start of rotation of the brushless dc motor by detecting a back electromotive force generated in the windings;
c) switchably selecting a first control mode for controlling rotational speed of the brushless dc motor responsively to said back electromotive force;
d) detecting whether or not said rotational speed of the brushless dc motor has reached a predetermined value;
e) upon detecting that said rotational speed has reached said predetermined value, switchably selecting a second control mode for controlling said rotational speed of the brushless dc motor responsively to signals recorded on the disc;
f) detecting presence and absence of a record/reproduce command from an external computer to the disc drive;
g) upon detecting absence of said record/reproduce command, fixing the record/reproduce head to a predetermined head position, switchably selecting said first control mode, and cutting off power supply to the electrical circuit connected to the recording/reproducing head.

Re. 35,470
INCLINE PRESS EXERCISE MACHINE
Gary A. Jones, Falmouth, Ky., assignor to Hammer Strength Corporation, Cincinnati, Ohio
Original No. 5,181,896, dated Jan. 26, 1993, Ser. No. 720,411, Jun. 25, 1991. Application for reissue Aug. 19, 1994, Ser. No. 293,884
Int. Cl.[6] A63B *21/08*
U.S. Cl. 482—97 **21 Claims**



19. An incline press exercise machine comprising:
a frame adapted to locate an exerciser in an exercise position straddling a vertical midplane;
a lever having an upper rearward end connected to the frame for pivotal movement about an axis located above the exercise position and along an outer vertical plane that converges toward said vertical midplane, the lever also having a lower forward end adapted to hold a removable weight; and
a handle connected to the lower end of the lever and adapted to be grasped and upwardly extended and adducted in an incline press motion by an exerciser located in the exercise position, thereby to pivot the lever through the outer vertical plane.

PLANT PATENTS

GRANTED MARCH 4, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,814

IXORA PLANT—'DIORA'

Diana Zaandam, 340 Catalonia Ave., Coral Gables, Fla. 33134

Filed Nov. 1, 1995, Ser. No. 551,487
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct variety of Ixora plant, as illustrated and described, particularly distinguished by its precocity, large, crowded corymbs of large diameter and high flower count, which contrast with its dark green, uniform leaves.

9,815

CAMPANULA PLANT NAMED CHETTLE CHARM

Janet E. Bourke, and John P. C. Bourke, both of Dorset, England, assignors to Blooms of Bressingham Ltd., Norfolk, England

Filed Oct. 18, 1995, Ser. No. 544,696
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar Campanula plant named Chettle Charm, as shown and described.

9,816

CHRYSANTHEMUM PLANT NAMED 'FIDELIO'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 15, 1996, Ser. No. 616,653
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named Fidelio, as described and illustrated.

9,817

CHRYSANTHEMUM PLANT NAMED 'JANICE'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1996, Ser. No. 609,491
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Janice, as described and illustrated.

9,818

CHRYSANTHEMUM PLANT NAMED 'LAURIE'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1996, Ser. No. 609,492
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Laurie, as described and illustrated.

9,819

POINSETTA PLANT NAMED 'MARBLE SAILS'

William Leighfield, Brownsville, Canada, assignor to Fernlea Flowers, Ltd., Canada

Filed Sep. 26, 1995, Ser. No. 534,202
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.1 **1 Claim**

1. A new and distinct variety of poinsettia plant as herein shown and described, particularly characterized by its marbled carmine/cream bracts against a background of dark green foliage, its strong, fixed stems, its long lasting keeping qualities in the home, its excellent resistance to fade, vigorous growth habits and its branch and bract production.

9,820

GUZMANIA PLANT NAMED 'RED PEARL'

Henri De Meyer, Laarne, Belgium, assignor to H. De Meyer - De Rouck b.v.b.a., Laarne, Belgium

Filed Oct. 18, 1995, Ser. No. 544,823
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct cultivar of Guzmania plant named 'Red Pearl', as illustrated and described.

PATENTS

GRANTED March 4, 1997

ERRATA

For CLASS	See PATENT NO.
002–406	5,606,748
042–069	5,606,828
473–479	5,607,150
473–499	5,607,150
124–078	5,607,151
473–451	5,607,152
473–150	5,607,153
473–562	5,607,154
273–110	5,607,155
101–126	5,607,243
510–302	5,607,618
435–172	5,607,672
427–585	5,607,733
442–006	5,607,756
442–301	5,607,757
442–067	5,607,758
442–417	5,607,759
442–375	5,607,760
442–375	5,607,760
435–287	5,607,860
436–176	5,607,870
436–176	5,607,870
505–211	5,608,282
396–207	5,608,475
396–155	5,608,476
396–006	5,608,477
396–503	5,608,478
396–390	5,608,479
396–390	5,608,479
396–006	5,608,480
396–440	5,608,481
396–006	5,608,482
396–373	5,608,483
396–463	5,608,483
396–514	5,608,485
396–006	5,608,486
396–564	5,608,487
396–125	5,608,488
396–051	5,608,489
396–300	5,608,490
396–243	5,608,491

ERRATA–CONTINUED

For CLASS	See PATENT NO.
355–068	5,608,492
399–083	5,608,493
399–366	5,608,494
399–072	5,608,495
399–081	5,608,496
399–153	5,608,497
399–130	5,608,498
399–099	5,608,499
399–176	5,608,500
399–119	5,608,501
399–276	5,608,502
399–302	5,608,503
399–181	5,608,504
399–314	5,608,505
399–315	5,608,506
399–307	5,608,507
399–339	5,608,508
399–351	5,608,509
399–350	5,608,510
399–398	5,608,511
399–323	5,608,512
386–001	5,608,531
386–007	5,608,532
386–091	5,608,533
386–083	5,608,534
386–123	5,608,535
386–046	5,608,536
349–057	5,608,550
349–057	5,608,550
349–095	5,608,551
349–005	5,608,552
349–061	5,608,553
349–070	5,608,554
349–156	5,608,555
349–143	5,608,556
349–042	5,608,557
349–192	5,608,558
349–149	5,608,559
395–201	5,608,620
395–210	5,608,621
395–753	5,608,622
395–754	5,608,623
395–794	5,608,624
395–793	5,608,625
385–116	5,608,848

PATENTS

GRANTED MARCH 4, 1997

GENERAL AND MECHANICAL

5,606,744

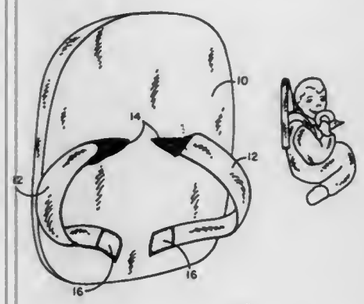
BABY HEAD GUARD

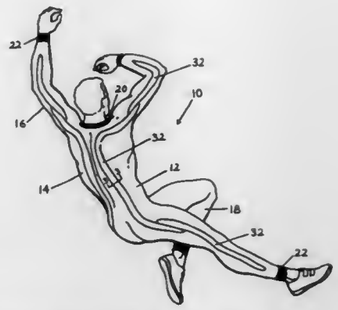
Elaine Lindy, 36 Dexter Rd., Newton, Mass. 02160

Continuation-in-part of Ser. No. 198,965, Feb. 18, 1994, abandoned. This application Jul. 27, 1995, Ser. No. 508,060

Int. Cl.[6] **A41D** *11/00;13/00*

U.S. Cl. 2—467 **8 Claims**





1. A baby head guard adapted to be worn by a mobile baby of predetermined size that softens the impact of backward falls against said baby's head, neck, shoulders, and upper back areas, comprising:

(a) a cushion having a predetermined thickness, said cushion having two opposing ends, two opposing sides, and two flat opposing major faces, said cushion existing substantially within a single plane, said cushion having substantially no protruberances that extend toward said baby, said cushion having a predetermined length so that it extends from the mid-back area of said baby to above said baby's head when placed adjacent to said baby's back, and

(b) a pair of straps attached to said cushion, each of said straps having an upper end and a lower end, said upper end of said strap being attached to one major face of said cushion at an approximate midpoint of said major face between said two opposing ends and between said two opposing sides, the position of said attachment being such that when said head guard is worn by said baby, said upper end of said strap extends substantially from behind said baby's neck, said lower end of each strap being attached to one major face of said cushion adjacent to one opposing end thereof, each of said straps being long enough to form a loop which can extend over one of said baby's shoulders and underneath said baby's arms.

5,606,745

RESISTANCE EXERCISE SUIT WITH SEMI-RIGID RESISTANT RIBS

James C. Gray, 2405 Alcoa Hwy., Knoxville, Tenn. 37920

Filed Jan. 22, 1996, Ser. No. 589,803

Int. Cl.[6] **A41D** *1/08*

U.S. Cl. 2—69 **14 Claims**

1. A resistance exercise suit comprising:

a body suit defining a trunk portion from which two sleeves and two legs extend for receiving the body of a wearer,

at least one resilient rib being secured to said body suit, said resilient rib being semi-rigid and defining a degree of resistance, said resilient rib being configured to bias a body portion of the wearer in a preselected position.

5,606,746

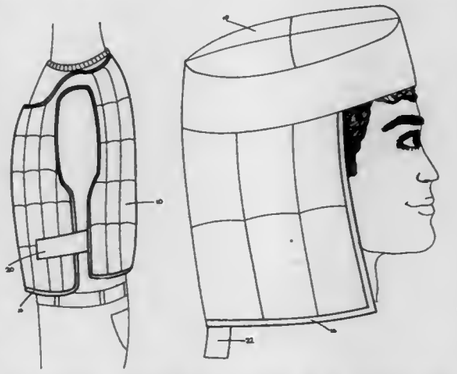
COOL-LIFE VEST WITH DETACHABLE HOOD

Terri Shelton, and Steven Barger, both of 2521 W. Augusta Ave., Phoenix, Ariz. 85051

Filed Dec. 21, 1994, Ser. No. 360,566

Int. Cl.[6] **A41D** *1/04;13/00*

U.S. Cl. 2—102 **5 Claims**



1. A one-piece, cooling vest for wearing over any casual clothing or work uniform, comprising:

a vest portion comprising a double-layer of material said material being a cotton-polyester mix sized and configured to be worn around a wearer's upper body from waist to shoulder, said double-layer of material comprising one layer of light-weight fabric material secured by sewing to another layer of light-weight fabric material, and a filler permanently disposed between the sewn layers of material throughout the entire cooling vest, said filler comprising a water permeable non-toxic, synthetic, polyacrylamide co-polymer in crystal form;

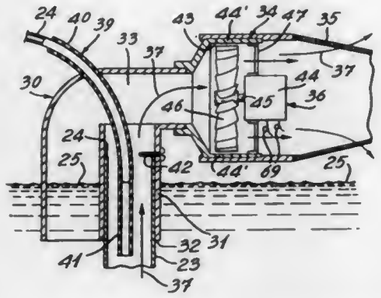
a detachable cooling hood connected to an upper back region of said vest portion by hook and loop fasteners, said detachable cooling hood comprising a double-layer of material, said double-layer of material comprising one layer of light-weight fabric material secured by sewing to another layer of light-weight fabric material, and a filler permanently disposed between the sewn layers of material throughout the entire cooling hood, said filler comprising a water permeable non-toxic, synthetic, polyacrylamide co-polymer in crystal form.

5,606,747

TOILET BOWL ASPIRATING SYSTEM

André Dupont, 960 Marie-Victorin, Boucherville, Quebec, Canada

Filed Jun. 14, 1995, Ser. No. 490,421
Int. Cl.[6] E03D 9/04
U.S. Cl. 4—213 11 Claims



1. A toilet bowl aspirating system for use in a toilet tank having an overflow tube in which a filler tube is disposed to supply water to a channel having a plurality of ports provided in a rim of a toilet bowl and through which water flows about an inner side wall of said bowl during an evacuation cycle, said aspirating system comprising a blower support member having a tubular adapter for seating engagement over a top end of said overflow tube and extending below a top water level of said toilet tank to provide a closed chamber above said top end of said overflow tube, said blower support member having an exhaust end positioned above said top water level, a blower secured in said exhaust end for drawing air from said top end of said overflow tube and said plurality of ports within said toilet bowl and which are in communication with said overflow tube, conduit means in said support member to communicate said filler tube in said top end of said overflow tube, power supply means to power said blower, timwer means responsive to sw3itch means to apply power to said blower for a predetermined period of time, and filter means associated with said exhaust end to filter odors emitted therefrom by operating said blower, said tubular adapter being a pipe section having an abutment element projecting inwardly therein for seating abutment on a top edge of said overflow tube to position said exhaust end above said top water level, said conduit means being a tubular member extending within said pipe section beyond a lower end of said pipe section to position same in a top end of said overflow tube, said tubular member having an inner diameter adapted to receive a free end of said filler tube in close fit therein.

5,606,748

FEMININE UNDERGARMENT WITH CALENDER

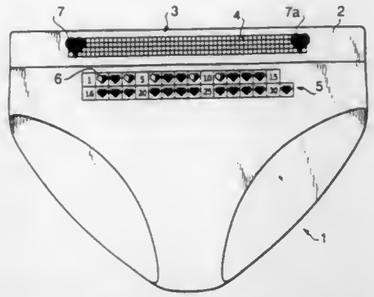
Shiomi Fujiwara, 11-12, Noke 1-chome, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 387,339, Feb. 13, 1995, abandoned. This application Jan. 29, 1996, Ser. No. 593,412
Int. Cl.[6] A41B 9/00; A41D 27/08
U.S. Cl. 2—406 7 Claims

1. A feminine undergarment including a waistband and a front side with a calendar comprising:

a date portion located below the waistband on the front side of the undergarment and having upper and lower date lines, wherein the upper date line indicates the first to the 15th day of a month and the lower date line indicates the 16th to the 31st days of a month and each date is identified by a numeral or a mark;

a clip holding band located above the date portion and on the waistband of the undergarment, the band having at least a resilient thread stitched to more than 19 points on the waistband to provide 18 clipping positions, wherein both ends of the clipping positions extend beyond the ends of the date portion;



a first clip having a first front panel with a first back portion and at least a first vertical pointing hook provided on the first back portion of the first front panel, the first hook having a first edge protruding below the first front panel; and

a second clip having a second front panel with a second back portion, and at least a second pointing hook provided on the second back portion of the second front panel, the second hook protruding below the second front panel which has a different color or configuration from the first front panel;

wherein:

the first clip constitutes a pointing mark for the dates of the first to 15th day of the month on the upper date line, and the second clip constitutes a pointing mark of the dates of the 16th to 31st day of the month on the lower date line;

either of the clips may be set to show the date of the onset of the period of the wearer; and

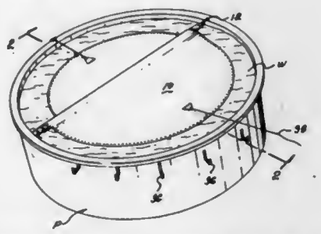
the wearer can easily predict the next date of the period based on the date indicated by the clip and her periodic cycle.

5,606,749

SWIMMING POOL COVER AND ROLL-UP DEVICE

Jean Lavallière, Châteauguay, and Michel Dallaire, Montreal, both of Canada, assignors to 2679965 Canada, Inc., Vogue Pool Products, Lasalle, Canada

Continuation of Ser. No. 873,945, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 520,268, May 3, 1990, Pat. No. 5,107,552. This application May 19, 1995, Ser. No. 445,190
Int. Cl.[6] E04H 4/00
U.S. Cl. 4—502 9 Claims



1. A combined swimming pool cover and roll-up device comprising:

a flexible floatable sheet material cover for substantially covering the water surface of water in a swimming pool,

an elongated flexible shaft including a plurality of rigid members, each member connected to the next member by a torque transmitting flexible coupling, the shaft extending laterally of the sheet material cover, said flexible shaft being attached, at least at intermittent locations along its length, to the sheet material cover such that a combination of the flexible shaft and sheet material cover floats on the water surface and said flexible shaft transmits torque to the cover through the entire length of the shaft, and

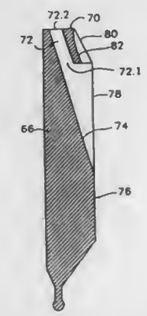
winding means for applying torque to one end of the flexible shaft in order to roll the sheet material cover directly around the shaft; wherein the flexible shaft is attached to the sheet material cover about midway between one edge and an opposite edge of said sheet material cover so that winding of the shaft brings the edges toward each other.

5,606,750

WEIRS

Richard V. Vos, Randburg, South Africa, assignor to Prelude Pool Products C C, Randburg, South Africa

Division of Ser. No. 131,688, Oct. 6, 1993, Pat. No. 5,392,471. This application Feb. 23, 1995, Ser. No. 393,421
Claims priority, application South Africa, Oct. 7, 1992, 92/7703; Mar. 10, 1993, 93/1695
Int. Cl.[6] E04H 4/16
U.S. Cl. 4—512 9 Claims



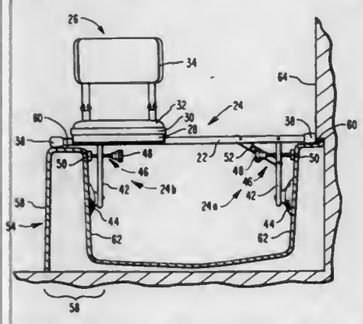
1. A weir flap having front and rear surfaces, a lower portion and an upper edge, means for pivotably mounting the weir flap provided at said lower portion and a slot is provided having an inlet in said front face extending parallel to said upper edge, and an outlet provided in said upper edge.

5,606,751

SHOWER CHAIR AND BATHTUB TRANSFER ASSEMBLY

Robert E. Baker, 4164 County Rd. 123, Bedford, Wyo. 83112

Filed Jan. 26, 1996, Ser. No. 591,999
Int. Cl.[6] A47K 3/02
U.S. Cl. 4—560.1 18 Claims



1. A portable shower chair and bathtub transfer assembly for fitting into a standard bathtub having inner walls and outer walls and the bathtub mounted against a bathroom wall, the portable shower chair and bathtub transfer assembly comprising:

a transfer assembly frame comprising at least one track surface extending along a substantially horizontal plane position parallel to an upper surface of said outer walls and an abutment portion, the abutment portion adapted to rest against the bathroom wall, and the transfer assembly frame adapted to rest on top of the bathtub walls;

at least one appendage attached to the transfer assembly frame, the appendage adapted to extend downwardly along the bathtub inner wall opposite the bathroom wall; and

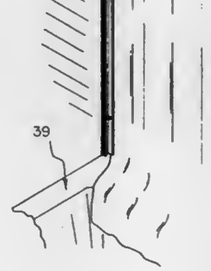
a chair assembly comprising a base section, the base section slidably engaged along the at least one track surface to allow substantially horizontally lateral movement of the chair assembly along the transfer assembly frame, and a top section, the top section having a seat that is rotationally engaged with the base section to allow rotational movement of the seat with respect to the transfer assembly frame.

5,606,752

SPLASH GUARD APPARATUS FOR SHOWER CURTAINS

John M. Shenton, Jr., 910 North Point Rd., Baltimore, Md. 21224, and John M. Shenton, III, 2306 Cloverdale Dr., Fallston, Md. 21047

Filed Feb. 9, 1996, Ser. No. 599,168
Int. Cl.[6] A47K 3/22
U.S. Cl. 4—609 12 Claims



1. A splash guard apparatus for a shower curtain, comprising:

a base member,

a clamping wall member connected to said base member,

a movable connection assembly connected to said base member, and

a clamp assembly connected to said movable connection assembly, said clamp assembly adapted to engage at least a portion of said shower curtain inserted between said clamp assembly and said base member, wherein said clamp assembly includes a connection portion connected to said movable connection assembly and a clamping portion connected to said connection portion at a juncture portion,

wherein said movable connection assembly includes:

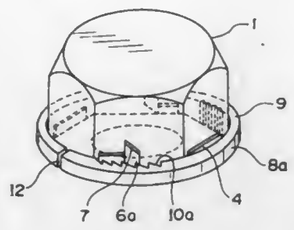
a threaded bolt connected to said base member, and

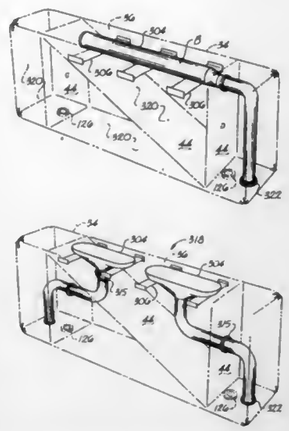
a helical spring mounted on said threaded bolt,

wherein a portion of said threaded bolt passes a receiving channel in said connection portion of said clamp assembly, and

wherein said helical spring is retained on said threaded bolt between said connection portion and said base member.

5,606,753
FIXING DEVICE WITH A LOCKING MECHANISM
Toyoji Hashimoto, Saitama, Japan, assignor to Hashimoto Shinwa Setsubi, Limited, Saitama, Japan
Filed Jun. 6, 1995, Ser. No. 471,520
Claims priority, application Japan, Jun. 20, 1994, 6-159692
Int. Cl.[6] F16B *7/82*
U.S. Cl. 411—7 **4 Claims**





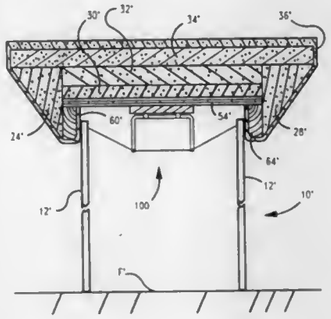
1. A fixing device with a locking mechanism, comprising:
a bolt having a hexagonal head,
a seat attached to the bottom face of the bolt head,
a washer to be fit onto a threaded shaft of said bolt,
said seat having a generally planar central base portion and an engagement portion which is raised from an outer edge of said central base portion and fixedly located thereon so as to maintain a generally constant position along a peripheral side face of the bolt head to restrain the free rotation of said bolt with respect to said seat,
an elastic engagement pawl extending outwardly from a lateral end of said engagement portion,
said washer being provided with an annular rim which is raised from the peripheral edge of said washer to form a rimmed shape and a plurality of axially extending engagement grooves which are formed in an inner surface of the annular rim for engagement with said engagement pawl,
said washer having an antislipping means on the side which contacts a surface of a member to be fastened, and
said engagement pawl outwardly extending from said engagement portion elastically engaging with one of said engagement grooves formed in the inner surface of the annular rim of said washer when said bolt is fastened, thereby preventing said bolt from turning in a loosening direction.

5,606,754
VIBRATORY PATIENT SUPPORT SYSTEM
Barry D. Hand, Mount Pleasant; Robert C. Novack, Charleston; Donald E. Williamson, N. Charleston; James R. Stolpmann, and Kenith W. Chambers, both of Charleston, all of S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.
Continuation of Ser. No. 350,715, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 201,042, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 898,970, Jun. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 555,319, Jul. 19, 1990, Pat. No. 5,121,513, which is a division of Ser. No. 355,755, May 22, 1989, Pat. No. 4,949,414, which is a continuation-in-part of Ser. No. 321,255, Mar. 9, 1989, abandoned. This application Jul. 17, 1995, Ser. No. 501,274
Int. Cl.[6] A47C *27/10;* **A61G** *7/057*
U.S. Cl. 5—713 **31 Claims**

1. A vibratory patient support system, comprising:
a rigid support frame;
a plurality of inflatable sacs supported upon said support frame, each said sac having an upper surface whereby said plurality of sacs forms a patient support surface;
means for pressurizing and maintaining said sacs at a predetermined pressure;
vibrating means separate from said pressurizing and maintaining means and operably configured generally adjacent at least a portion of said patient support surface for vibrating said portion of said patient support surface at a predetermined frequency within a predetermined frequency range, so that while said plurality of sacs are maintained at said predetermined pressure, said portion of said patient support surface is simultaneously vibrated at said predetermined frequency.

26. A vibratory therapy device, comprising:
an inflatable patient support surface;
means for maintaining said inflatable patient support surface at a predetermined pressure profile, said maintaining means controlling the internal relative pressure of said inflatable patient support surface; and
means independent of said maintaining means and operably configured generally adjacent at least a portion of the upper surface of said patient support surface for simultaneously imparting vibrational forces to at least said portion of said patient support surface while at least the remainder of said patient support surface is separately maintained at said predetermined pressure profile.

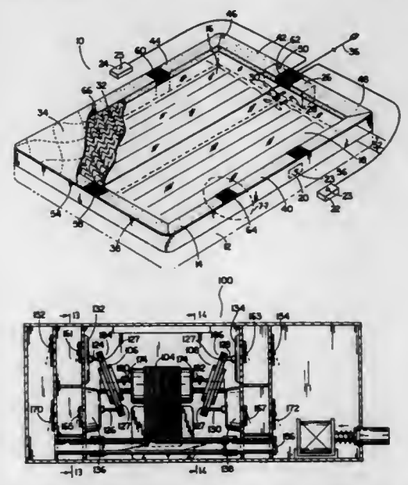
5,606,755
LIGHT-WEIGHT MASSAGE TABLE
Daniel C. Romein, 3140 Roy Messer Hwy., White Pine, Tenn. 37890
Filed Apr. 5, 1995, Ser. No. 417,518
Int. Cl.[6] A47B *7/00*
U.S. Cl. 5—620 **16 Claims**



16. A massage table, comprising:

a plurality of legs and a table top supported by the legs, said table top comprising:
a frame comprising a support member having an upper surface and a lower surface, and a plurality of edge members adjacent to a peripheral edge of the lower surface of the support member, each of said edge members having a lower longitudinal edge and a length axis;
a plurality of wedge-shaped padding members, each of said wedge members being positioned adjacent to one of the edge members, said wedge-shaped members each having a length axis aligned with the length axis of the adjacent edge member, a lower longitudinal edge adjacent to and aligned with the lower longitudinal edge of the adjacent edge member, and an upper surface positioned parallel to and above the upper surface of the support member;
first padding means having a lower surface positioned adjacent to and overlying the upper surface of the support member and an upper surface spaced apart from the lower surface thereof and substantially aligned with and parallel to the upper surface of each of the wedge-shaped padding members;
second padding means having a lower surface positioned adjacent to and overlying the upper surface of the first padding means and the upper surface of each of the wedge-shaped padding members; and
a covering positioned in overlying contact against substantially all of said second padding means, at least a portion of each of said wedge shaped members, and at least a portion of each of said edge members; and
tensioning means for tensioning the frame to increase the rigidity of the frame; said tensioning means comprising:
a slide member having an inner planar surface slidably mountable adjacent the lower surface of the support member and an oppositely facing outer surface;
a stop for limiting movement of the slide member relative to the frame in a desired direction;
a first elongate tensioning member having an end;
first mounting means for rotatably mounting the first tensioning member to the slide member so that said end of the first tensioning member is positionable through a first arc defined between a first point adjacent the upper surface of the slide member and a second point which is spaced apart from the first point in a direction which is generally away from the outer planar surface of the slide member;
a second elongate tensioning member having an end;
second mounting means for rotatably mounting the second tensioning member to the slide member at a location spaced apart from the first tensioning member so that said end of the second tensioning member is positionable through a second arc defined between a third point adjacent the outer surface of the slide member and a fourth point which is generally away the outer planar surface of the slide member;
a first tensioning cable having a first end secured to the frame at a first securement location and a second end secured to the frame at a second securement location;
a first cable receptacle defined adjacent the end of the first tensioning member for slidably receiving a first portion of the first cable;
a second cable receptacle defined adjacent the end of the second tensioning member for slidably receiving a second portion of the first cable;
limiting means operatively associated with the first and second cable receptacles and the first cable for limiting sliding of the first cable relative to the first and second cable receptacles,
wherein when the end of the first tensioning member is rotated in the first arc in a direction toward the second point of the first arc and the end of the second tensioning member is rotated in the second arc in a direction toward the fourth point of the second arc, the slide member is urged against the stop and the first cable is tensioned such that pressure is supplied from the first cable through the slide member to the upper support to tension the frame and render the supper support more resistant to deflection, and
wherein when the end of the first tensioning member is rotated in the first arc in a direction toward the first point of the first arc and the second tensioning member is rotated in the second arc in a direction toward the third point of the second arc, the slide member is urged away from the stop tension is relieved from the first cable.

5,606,756
AIR BEDDING SYSTEM WITH DIAPHRAGM PUMP
Gerald H. Price, Burlington, Canada, assignor to Price Manufacturing, Inc., Burlington, Canada
Division of Ser. No. 275,125, Jul. 14, 1994. This application Apr. 2, 1996, Ser. No. 626,474
Int. Cl.[6] F04B *1/28;39/10*
U.S. Cl. 5—713 **1 Claim**



1. An air bedding system comprising an air mattress, an air bladder confined within said mattress, an air blower confined within said mattress having an intake to atmospheric air and having an exhaust to atmospheric air and having a pressurized air outlet, an air line connected to the pressurized air outlet and connected to the air bladder, an air valve for selectively opening and closing air flow therethrough, means for actuating the air valve for opening air flow through the air line and for energizing the air blower, and means for actuating the air valve for opening air flow through the air line and allowing said air to exhaust to atmosphere, wherein wherein said air blower is comprised of a diaphragm pump comprised of a shaft, means for rotating said shaft at a speed of less than 3,300 revolutions per minute, a first flange assembly connected to said shaft such that the axis of rotation of said shaft forms an angle other than 90 degrees with the axis of rotation of said first flange assembly, a second flange assembly connected to said shaft such that the axis of rotation of said shaft forms an angle other than 90 degrees with the axis of rotation of said second flange assembly, a first connecting rod connected to a first diaphragm, a second connecting rod connected to a second diaphragm, a third connecting rod connected to a third diaphragm, a fourth connecting rod connected to a fourth diaphragm, and means for converting rotary motion of said flange assemblies into reciprocating linear motion of both said first connecting rod, said second connecting rod, said third connecting rod, and said fourth connecting rod, and wherein:
(a) as said first connecting rod is moved in a first direction at a first rate of travel, said second connecting rod is simultaneously moved in a second linear direction at a second rate of

travel, wherein said second rate of travel is equal to said first rate of travel, and said second linear direction is the opposite of said first linear direction;

(b) as said third connecting rod is moved in a third direction at a third rate of travel, said fourth connecting rod is simultaneously moved in a fourth linear direction at a fourth rate of travel, wherein said fourth rate of travel is equal to said third rate of travel, and said fourth linear direction is the opposite of said third linear direction;

(c) said first flange assembly is connected to each of said first connecting rod and said second connecting rod by means of a ball and socket assembly;

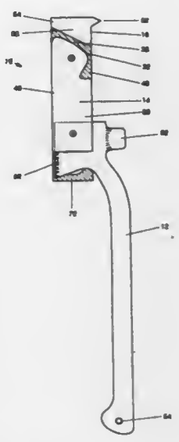
(d) said second flange assembly is connected to each of said third connecting rod and said fourth connecting rod by means of a ball and socket assembly;

(e) said first flange assembly is comprised of a first inner flange disposed within a first outer flange and separated from said first outer flange by first bearings;

(f) said second flange assembly is comprised of a second inner flange disposed within a second outer flange and separated from said second outer flange by second bearings; and

(g) Said first diaphragm communicates with a first inlet and outlet valve pair, said second diaphragm communicates with a second inlet and outlet valve pair, said third diaphragm communicates with a third inlet and outlet valve pair, and said fourth diaphragm communicates with a fourth inlet and outlet valve pair.

5,606,757
MULTIPURPOSE FENCE TOOL
Barney Byington, Jr., P.O. Box 675, Greenville, Fla. 32331
Filed May 3, 1995, Ser. No. 433,140
Int. Cl.[6] B25F *1/00*
U.S. Cl. 7—117 **12 Claims**



1. A fencing tool comprising:

a first attachment and a second attachment;

said first attachment has an upper end and a lower end and said second attachment has an upper area and a lower area;

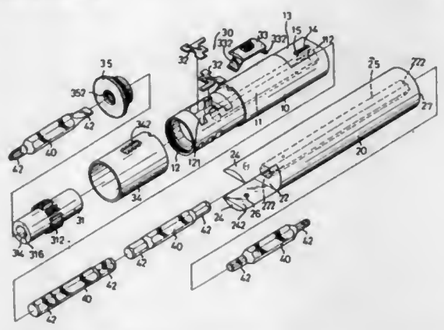
said upper end of said first attachment includes a curved edge and said second attachment is centrally and pivotally attached to said upper end of said first attachment;

a protruding portion extends upwardly from said upper area of said second attachment such that side walls of said protruding portion are planar to said first attachment;

a first gap is located between said protruding portion and said curved edge and said first gap is adapted to engage and receive wiring by providing said first gap to decrease in size at a forward end of said protruding portion and to increase in size at a rearward end of said protruding portion as said second attachment is pivoted forward; and

said second attachment includes a front and a back and said front includes a pointed tip that extends forward from said upper area and a pointed tail extends downwardly from said lower area at said back area of said second attachment.

5,606,758
MULTI-PURPOSE TOOL
Yi-ming Tung, No. 23, Tzuchiang 2nd St., Wuchi Chen, Taichung Hsien, Taiwan
Filed Oct. 16, 1995, Ser. No. 543,737
Int. Cl.[6] B25B *13/00*
U.S. Cl. 7—138 **12 Claims**



1. A multi-purpose tool comprising:

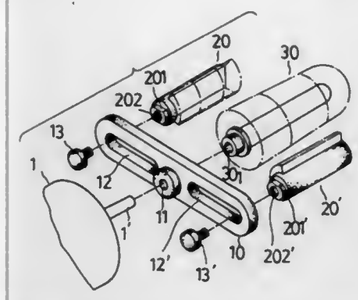
a head portion having a tubular first end, a central hexagon hole defined therein extending from a second end thereof to the tubular first end and a ratchet mechanism coupled the tubular first end thereof, the ratchet mechanism comprising a central shaft having a central hexagon aperture in alignment with the central hexagon hole of the head portion;

a handle portion having a first end coupled to the second end of the head portion, a central hexagon opening defined therein extending from a second end thereof to the first end thereof and in alignment with the hexagon hole of the head portion, the handle portion being capable of pivoting about the head portion with a first axial movement of the handle portion relative to the head portion in a first direction; and

a plurality of hexagon rods received in the hexagon opening, hexagon hole and the hexagon aperture of the handle portion, the head portion and the shaft of the ratchet mechanism respectively and arranged such that a portion of one of the plurality of hexagon rods extending out from the ratchet mechanism and a portion of another hexagon rod extending out from the second end of the handle portion, each of the plurality of the hexagon rods having two contracted, in diameter, ends formed into various functional shapes for performing different functions.

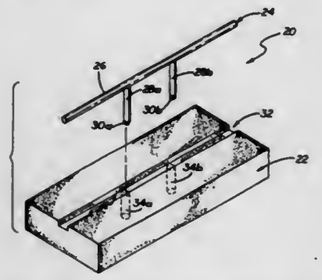
5,606,759
BRUSH ASSEMBLY OF A CUP WASHING MACHINE
Jack Yang, No. 7, 39th Str., Lane 399, Sec. 3, Chungshan Rd., Tan Tzu Hsiang, Taichung Hsien, Taiwan
Filed Nov. 16, 1995, Ser. No. 559,066
Int. Cl.[6] B08B *9/087*; **A47L** *15/37*
U.S. Cl. 15—75 **2 Claims**

1. A brush assembly in a cup washing machine, comprising a motor having an output shaft, a brush holder fastened to the output shaft of said motor, a master cylinder brush coupled to the output shaft of said motor and turned by same for cleaning the inside of a cup, and two auxiliary cylinder brushes bilaterally and perpendicularly mounted on said brush holder for cleaning the outside of said



cup, wherein said brush holder has an axle hole which receives said output shaft and which is located in a central portion of said brush holder intermediate first and second ends thereof, and two elongated slots longitudinally aligned on opposite sides of said axle hole and located adjacent the first and second respective ends of said brush holder for mounting said auxiliary cylinder brushes, said master cylinder brush has a coupling hole aligned with said axle hole at one end coupled to the output shaft of said motor, each of said auxiliary cylinder brushes has a coupling portion at one end thereof which is slidably inserted into a respective one of said elongated slots of said brush holder and fixed in place by a screw, and a screw hole on each said coupling portion for fastening the respective screw.

5,606,760
SELF-WRINGING MOP AND WRINGER ASSEMBLY, CLEANING ELEMENT ASSEMBLY AND CLEANING ELEMENT FOR USE WITH SAME
Joselito De Guzman, Redondo Beach, Calif., assignor to Micronova Manufacturing, Inc., Torrance, Calif.
Filed Jun. 7, 1995, Ser. No. 486,914
Int. Cl.[6] A47L *13/12*
U.S. Cl. 15—119.2 **18 Claims**



1. A reversible cleaning element for use with a mop, comprising:

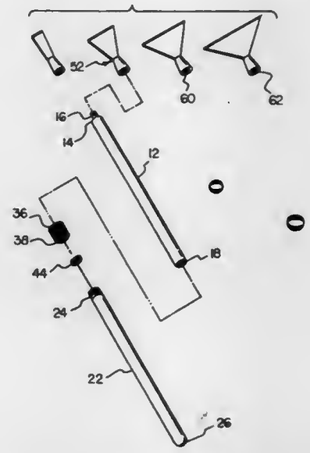
a liquid absorbent main body defining a length, an overall width, a thickness, a top surface, a bottom surface and a pair of side surfaces;

a first channel associated with the top surface of the main body, the first channel defining a length, a width and a depth, the depth of the first channel being substantially less than one half of the overall thickness of the main body;

a second channel associated with the bottom surface of the main body, the second channel defining a length, a width and a depth, the depth of the second channel being substantially less than one half of the overall thickness of the main body; and

at least one aperture associated with the main body and channels and passing completely through the main body from the top surface to the bottom surface, the at least one aperture defining a width substantially equal to the width of the channels.

5,606,761
TELESCOPIC SCRAPER TOOL
William D. Lynch, 415 Marlborough Rd., Brooklyn, N.Y. 11226-5617
Filed Oct. 23, 1995, Ser. No. 546,817
Int. Cl.[6] A47L *13/022*
U.S. Cl. 15—144.4 **1 Claim**



1. A new and improved telescopic scraper tool for increasing the reaching ability of the user comprising in combination;

a first cylindrical handle having a first upper end with a threaded projection and a first lower end, the threaded projection having a diameter of ⅝ inch, the first handle having a diameter of 1 inch and a length of about 24½ inches including the threaded projection, the threaded projection being cylindrical in shape and having a length about 6.5 percent of the length of the handle;

a second cylindrical handle having a second upper end being threaded and a rounded second end being closed, the second upper end having an aperture therein, the aperture extends to the second rounded end, the second handle having a diameter of about 1¼ inch for slidable receipt of the first handle therein, the second handle having a length of about 23¼ inches, the second cylindrical handle capable of receiving 95 percent of the length of the first handle to form a telescopic handle, the telescopic handle capable of having an increasing and decreasing the length of about between 2 to 4 feet;

a cylindrical coupling nut having a top end and a bottom end with an exterior surface area therebetween, the top end having an over hang for allowing a ring to be captured within the coupling nut, the surface area having a plurality of rectangular raised portions covering a circumference of the surface area, the raised portions being capable of increasing the gripping friction between fingers and the nut, the nut being capable of slidable receipt of the first handle therethrough, the nut being capable of threadable coupling with the second upper end of the second handle when the first handle being positioned within the second handle, and the second upper end resting upon the ring within the nut, the nut being capable of locking the telescopic handle in position;

a scrapper component residing along an axis defined by the handles and having a cylindrical support handle with a triangular portion having a blade edge, the scrapper component having a length of about 8 inches with the triangular portion being 60 percent of the length, the triangular portion having a blade width being between 2 to 5 inches, the blade edge being ridge for scrapping a surface above the arm reach of a user, the blade edge for scrapping a surface below the arm reach of the user; and

the support handle having a decreasing exterior diameter decreasing from a back end to the triangular portion, and an

internal threaded portion, the support handle having a length of about 2 inches with the internal threaded portion capable of threadable coupling with the threaded projection of the first upper end of the first handle, the support handle being coupled to the first handle when the first handle being secured within the second handle by the coupling nut.

5,606,762

ROLLER BRUSH FOR A SWEEPING MACHINE AND METHOD OF MAKING SAME

Walter Droeser, and Hans Ekholm, both of Västerås, Sweden, assignors to Filippa 1 Västerås HB, Västerås, Sweden

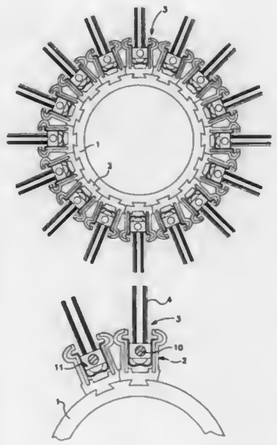
PCT No. PCT/SE93/00010, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO93/14672, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 11, 1993, Ser. No. 256,461

Claims priority, application Sweden, Jan. 22, 1992, 9200208

Int. Cl.[6] A46B *7/10;3/16*

U.S. Cl. 15—183 **12 Claims**



1. A roller brush for a sweeping machine for the cleaning of streets and roads, said roller brush comprising: a plurality of cassettes mounted in brackets around a periphery of an elongated roller and extending in a longitudinal direction of the roller, each cassette receiving spring members therein having ends which are adapted to be brought in contact with a ground surface with rotation of the roller, wherein each cassette includes an elongated bar positioned in facing grooves in said brackets extending along the roller, wherein each spring member is double bent around a locking means extending in the longitudinal direction of the bar, and wherein the bar is substantially U-shaped in transverse cross section with two facing long sides and a bottom connecting said sides, wherein the two facing long sides of the bar are mutually and firmly connected together by a plurality of connecting means extending across a transverse cross section of the bar spaced at a distance from each other along the bar, the bar is divided into cells by said spaced connecting means thereby providing the bar with increased rigidity, and wherein each connecting means includes holes therein receiving said locking means, said locking means comprising a locking wire longitudinally extending in the bar through said holes.

5,606,763

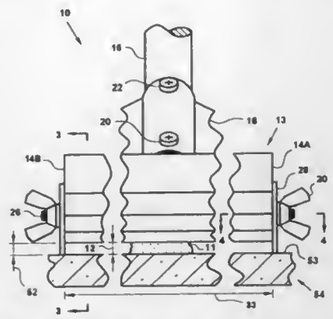
APPLICATOR FOR LIQUID FLOOR LEVELERS

Robert E. South, and Steven J. Petty, both of Warsaw, Ind., assignors to Midwest Rake Co., Winona Lake, Ind.

Filed Jan. 19, 1996, Ser. No. 589,174

Int. Cl.[6] B05C *17/00*

U.S. Cl. 15—245.1 **25 Claims**



1. Apparatus (**10**) for applying floor coatings (**11**) in selectively predetermined thicknesses (**12**), which apparatus comprises:
an elongated handle (**16**);
an elongated spreader blade (**13**) having first (**14A**) and second (**14B**) ends;
means (**18**) for attaching said handle to said spreader blade with said spreader blade disposed transversely to said handle;
means, comprising a pair of cams (**28** or **56**) each being operatively attached proximal to one (**14A** or **14B**) of said ends of said spreader blade, for suspending said spreader blade above a surface (**53**) of a floor (**54**) by a cam-determined distance (**52**); and
means, comprising means (**36**, and **44** or **60**) for rotationally positioning said cams, for selectively changing said cam-determined distance.

5,606,764

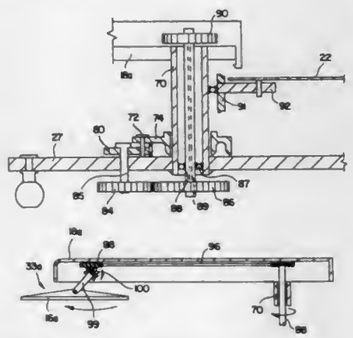
WINDSHIELD WIPER SYSTEM HAVING A WIPER BLADE CAPABLE OF RETRACTION FOR HIDDEN PARK

Peter S. Zhou, Dayton; Harry C. Buchanan, Jr., Spring Valley, and Michael J. McClain, Dayton, all of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed May 17, 1995, Ser. No. 443,367

Int. Cl.[6] B60S *1/36;1/32*

U.S. Cl. 15—250.16 **9 Claims**



1. A windshield wiper system comprising:
a tubular wiper post;

a wiper arm having a first end mounted to said wiper post for oscillatory movement;
a wiper blade assembly;
a link pivotally attached to said wiper blade assembly and to said wiper arm for:
(a) pivotal movement relative to said wiper arm in a first direction, and
(b) pivotal movement relative to said wiper arm in a second direction opposite to the first pivotal movement direction;
drive means for imparting oscillatory movement to said wiper arm, said drive means including:
(a) a wiper motor, and
(b) a drive arm driven by said wiper motor and connected to an end of said wiper post remote from said wiper arm; and
means connecting said link and said drive means comprising:
(a) a fixed pin; and
(b) a cam element, pivotally mounted to said drive arm and having a recess which engages said pin and causes said cam element to pivot upon movement of said drive arm,
for:
imparting relative pivotal movement between said link and said wiper arm in the first pivotal movement direction as said wiper arm passes through a predetermined position in oscillatory movement of said wiper arm in a first oscillatory movement direction, and
imparting relative pivotal movement between said link and said wiper arm in the second pivotal movement direction opposite to the first pivotal movement direction as said wiper arm passes through said predetermined position in oscillatory movement of said wiper arm in a second oscillatory movement direction opposite to said first oscillatory movement direction.

5,606,765

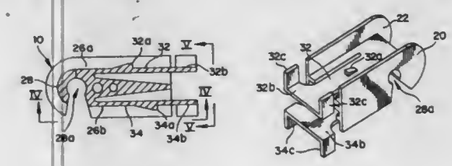
WINDSHIELD WIPER CONNECTOR FOR ACCOMMODATING DIFFERENT HOOK-TYPE WIPER ARMS

You Ding, Miami, Fla., assignor to Rally Accessories, Inc., Miami, Fla.

Continuation of Ser. No. 305,667, Sep. 14, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,166

Int. Cl.[6] B60S *1/40*

U.S. Cl. 15—250.32 **6 Claims**



1. A windshield wiper frame connector for connecting a wiper blade unit to a wiper arm, said connector comprising:
an elongate body member having a front end and rear end extending in a longitudinal direction, and having a pair of spaced opposing sidewalls, each of said side walls defining an inner and outer surface, said inner surfaces facing one another and said outer surfaces defining a transverse width, and a cross-member, formed between and connecting said pair of sidewalls, said cross member extending in a transverse direction and defining an upper surface and a lower surface opposite said upper surface;
a slot disposed in a lower portion of said front end of said elongated body for rotatably receiving a transverse pin of a wiper blade unit, said slot extending downward perpendicular to said longitudinal direction;
an upper cantilevered arm,
a lower cantilevered arm,
said upper cantilevered arm disposed between said spaced opposing sidewalls, extending rearward from said front portion of said elongated body, for securing said connector to a first hook arm, said upper cantilevered arm having;
an upper rear portion extending beyond said elongate body flaring outward to a first flared width substantially equal to the transverse width of the elongated body; and
a first projection extending upward adapted to be received in a first aperture formed on said first hook arm;
said lower cantilevered arm, disposed between said spaced opposing sidewalls, extending rearward from said front portion of said elongate body, for alternatively securing said connector to a second hook arm, said lower cantilevered arm having;
a lower rear portion extending beyond said elongate body flaring outward to a second flared width substantially equal to the transverse width of said elongated body; and
a second projection extending downward adapted to be received in a second aperture formed on said second hook arm,
wherein said upper cantilevered arm and said lower cantilevered arm extend rearward substantially the same distance from said front portion such that said upper cantilevered arm and said upper rear portion substantially mirror said lower cantilevered arm and said lower rear portion with respect to a longitudinally extending plane disposed between said upper cantilevered arm and said lower cantilevered arm.

5,606,766

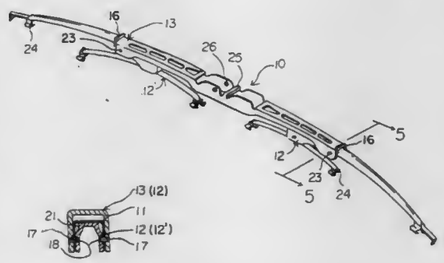
JOINT BUSHING DEVICE FOR A WINDSHIELD WIPER FRAME

Albert Lee, 232 Margate Rd., Timonium, Md. 21093

Filed Oct. 2, 1995, Ser. No. 537,365

Int. Cl.[6] B60S *1/38;1/04*

U.S. Cl. 15—250.46 **8 Claims**



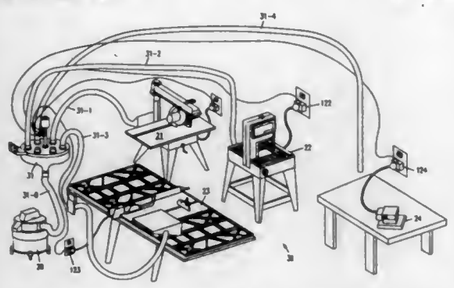
1. A windshield wiper frame assembly of a motor vehicle, comprising:
a bridge member including an arm shaft extended therefrom and an arm aperture for attaching to a wiper arm attached to a body of said motor vehicle, said bridge member further including a pair of depending bridge walls formed on opposing ends thereof and a pair of outer apertures formed in said bridge walls;
a joint bushing member including a pair of bushing side walls, a top opening, outer and inner pins extending from each wall of said pair of bushing walls, and a stopper formed at one end of said joint bushing member; and
at least one yoke member including a pair of yoke walls disposed on the middle portion thereof, a pair of grooves formed in outer side walls of the yoke member, and a pair of inner apertures formed within the side walls of the yoke member, the pair of grooves terminating above the pair of inner apertures whereby when the yoke member is pivotally assembled with the bridge member by inserting the joint bushing member between the yoke and bridge members, the pair of inner pins of the joint bushing member slidably follow the pair of grooves and are snap-fit into the outer apertures by inner pins of the joint bushing member.

5,606,767

VACUUM OPERATED DUST AND DEBRIS REMOVAL AND COLLECTION SYSTEM

Jack Crienjak, P.O. Box 236, Ferndale, Calif. 95536, and Steven F. Caserza, 5057 Forest Glen Dr., San Jose, Calif. 95129

Filed May 19, 1995, Ser. No. 446,016
Int. Cl.[6] F23J *1/00;* **A47L** *5/38*
U.S. Cl. 15—301 **16 Claims**



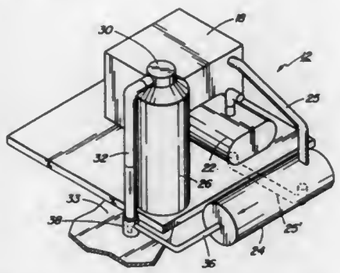
1. A vacuum operated dust and debris removal and collection system comprising:
a vacuum source;
a plurality of dust and debris inlet ports, each for admitting dust and debris from an associated work area;
a vacuum distribution valve comprising:
an outlet port;
a plurality of inlet ports; and
a valve mechanism for coupling said outlet port to one of said inlet ports;
a vacuum conduit for coupling said vacuum source to said outlet port of said vacuum distribution valve; and
a plurality of vacuum conduits, each coupling one of said inlet ports of said vacuum distribution valve to the associated one of said dust and debris inlet ports,
wherein said vacuum distribution valve is controlled in response to an electrical signal associated with one of said work areas to which vacuum is to be directed.

5,606,768

EMISSIONS COLLECTION AND VENTING SYSTEM FOR VAN-MOUNTED CLEANING APPARATUS

Lorne Sundberg, Saskatoon, Canada, assignor to Esteam Manufacturing Ltd., Calgary, Canada

Filed Aug. 18, 1995, Ser. No. 516,951
Claims priority, application Canada, Jun. 19, 1995, 2152127
Int. Cl.[6] A47L *11/34;* **G05D** *23/00*
U.S. Cl. 15—313 **11 Claims**



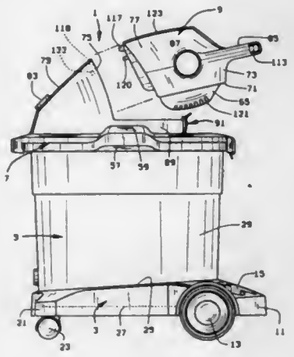
1. A van-mounted cleaning system including a van having a body, a water beater having a burner therein to heat the water and a flue outlet to release combustion gases therefrom, and a motor driven vacuum blower having an air input port and an output port for blower exhaust, both the water heater and the vacuum blower being mounted in an interior portion of the van body, a flue gas duct connected to said flue outlet and extending downwardly toward lower extremities of the van and then leading outwardly of the van body, and an exhaust conduit entering into said flue gas duct in such manner as to create a Venturi effect therewith tending to draw combustion gases away from said burner along said downwardly extending flue gas duct and thence outwardly of a lower portion of the van body.

5,606,769

WET/DRY UTILITY VACUUM CLEANER WITH DETACHABLE BLOWER

Mark J. Tomasiak, O'Fallon; Jeffrey L. Young, St. Peters, and Stuart V. Holsten, O'Fallon, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 31, 1994, Ser. No. 332,591
Int. Cl.[6] A47L *5/36;7/04*
U.S. Cl. 15—327.6 **12 Claims**



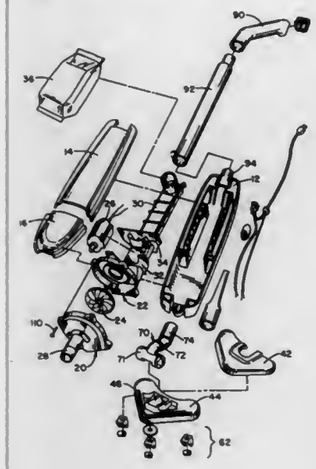
1. A wet/dry utility vacuum cleaner including:
a vacuum cleaner drum having a bottom wall, a sidewall and an enlarged rim surrounding an open upper end;
a lid detachably mounted to the enlarged rim and extending across the open upper end of the vacuum cleaner drum;
a depression within said lid and an opening in said depression that communicates with said drum;
a filter element mounted below said depression within said drum and surrounding the opening in the depression;
a motor powered blower at least partially received within said depression and detachably mounted to said lid for independent operation separate from said drum, said blower including an intake port for drawing air through said filter element and an exhaust port spaced from said intake port for exhausting air from said drum;
said lid including a releasable lid latch and a releasable blower latch; and
both said releasable lid latch and said releasable blower latch being constructed for convenient one-handed engagement or disengagement of said releasable lid latch relative to said drum and said releasable blower latch relative to said lid.

5,606,770

COMPACT AIR PATH CONSTRUCTION FOR VACUUM CLEANER

John F. Sovis, Twinsburg; Paul D. Stephens, Cleveland Heights; Michael F. Wright, Cuyahoga Falls, and Mark E. Cipolla, Chardon, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio

Division of Ser. No. 1,443, Jan. 7, 1993, Pat. No. 5,446,943.
This application May 5, 1995, Ser. No. 435,732
Int. Cl.[6] A47L *5/28*
U.S. Cl. 15—350 **6 Claims**



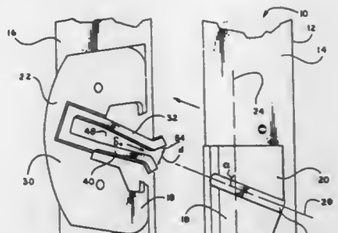
1. A vacuum cleaner comprising:
a housing for vacuum components, said housing including first and second ends;
said vacuum components comprising:
a first fan shell section having a first end, at which is located a suction stud, and a second end,
a second fan shell section having a first end, and a second end at which is located an outlet opening,
an air outlet tube located at said outlet opening and of one piece with said second fan shell section,
a means for securing said first fan shell second end to said second fan shell first end in order to define a chamber between said first and second fan shell sections,
a motor supported by one of said first and second fan shall sections and a motor driven fan positioned in said chamber for effecting a suction of air through said suction stub, and
a filter means positioned in said housing and connected to a free end of said air outlet tube for receiving air from said vacuum nozzle opening, said filter being arranged to remove and collect dirt from the air; and,
a first handle means mounted on said second end of said housing.

5,606,771

FLEXIBLE GUIDE FOR A SLIDING DOOR OF A VEHICLE

Colin J. Young, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 31, 1995, Ser. No. 414,160
Int. Cl.[6] A47H *15/00*
U.S. Cl. 16—90 **7 Claims**



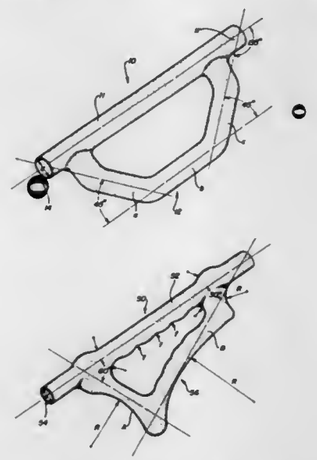
1. A guide mechanism for a sliding door of a vehicle, said vehicle having a header, said door having an edge portion positioned adjacent said header when said door is in a closed position, said guide mechanism comprising:
a wedge having a blade protruding therefrom;
means for fastening said wedge to said edge portion of said door;
a guide body;
means for fastening said guide body to said header;
first and second flexible wings connected to said guide body thereby defining a slot between said first and second wings; and
first and second flanges respectively connected to said first and second wings and extending away from one another forming a lead-in channel for guiding said blade to engage said slot when said door is in a closed position so that when said blade moves toward said first wing in response to relative movement between said door and header said first wing responds by flexing to shift center of pressure downward toward said guide body effectively stiffening said first wing.

5,606,772

ERGONOMIC HANDLE GRIP FOR TOOLS

Dragan Ilic, 104 Main St., Bloomingdale, N.J. 07403

Filed Feb. 2, 1995, Ser. No. 382,694
Int. Cl.[6] A46B *5/02;* **B25G** *1/10;3/04;* **A01B** *1/00*
U.S. Cl. 16—114 R **8 Claims**



1. A hand grip device disposed at an end portion of a tool or utensil for gripping the tool or utensil by a hand that imparts driving motion to said tool or utensil, comprising a shaft portion disposed over an end portion of said tool or utensil, and an ergonomic, solid grip portion adjacent said shaft portion, said solid grip portion having a surface containing multiple-angle grip sections for gripping the tool or utensil at different angles of attack with respect to a work surface, whereby the hand can assume a substantially straight-angled position (180° angle) with respect to

an axis of the wrist of said hand, while imparting a driving force to the tool or utensil, and additionally whereby a fatigue condition in said wrist, such as carpal tunnel syndrome, can be avoided because the wrist can avoid assuming a substantially bent position when the hand grips said solid grip portion at an angle of 180° with respect to said axis of said wrist, said surface of said solid grip portion forming a substantially semi-circular, closed loop with said shaft portion, and including in sequence a 45-degree, angled portion with respect to said shaft portion, followed by a substantially straight portion that is Substantially parallel to said shaft portion followed still by a 135-degree, angled portion with respect to said shaft portion for completing said substantially semi-circular, closed loop.

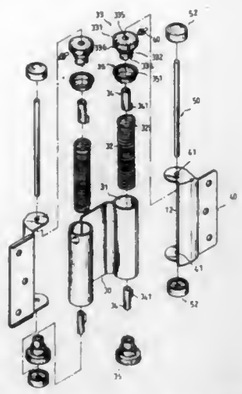
5,606,773
REVERSIBLE HINGE ASSEMBLY
Robert A. Shappell, Hackettstown, N.J., assignor to Pike Machine Products, Inc., Elizabeth, N.J.
Filed Nov. 14, 1995, Ser. No. 557,611
Int. Cl.[6] E05F *1/08*
U.S. Cl. 16—298 **29 Claims**



1. A hinge assembly for a swingable door, said hinge assembly comprising: a torsion spring; a ratchet assembly including an elongate ratchet pin connected to said torsion spring; first and second ratchet anchors mounted at a predetermined distance from each other on said elongate ratchet pin, each of said first and second ratchet anchors including at least one end having a plurality of teeth; a fixed ratchet having a first end and a second end and being secured to said ratchet pin between said first and second ratchet anchors, said first and second ends of said fixed ratchet having a plurality of teeth arranged in abutment with said teeth at respective ends of said first and second ratchet anchors; and securing means for selectively securing one of said first and second ratchet anchors to an associated swingable door while the other one of said first and second ratchet anchors remains unsecured with respect to the door whereby said secured one of said first and second ratchet anchors will rotate relative to said fixed ratchet upon preloading of said torsion spring.

5,606,774
STRUCTURE OF DOOR HINGE
Chien-Cheng Wu, 7F-2, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan
Filed Dec. 8, 1995, Ser. No. 590,631
Int. Cl.[6] F05D *3/06*
U.S. Cl. 16—366 **10 Claims**

1. A hinge for automatically closing a door comprising:



a rectangular base integral with a pair of [illegible] on two lateral sides respectively;

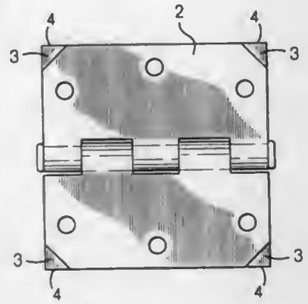
each of said tubes having a torsion spring [illegible]ed therein, an annular sleeve having a flange fit to an upper rim thereof, a first twisting member including a splitting small tube therein for clamping a distal portion of said spring, said first twisting member being inserted into an upper end of said tube and a circular body thereof abutting against said annular sleeve, a second twisting member including a splitting small tube therein for clamping another distal portion of said spring, said second twisting member being inserted into a lower end of said tube with a circular body thereof abutting against a rim of said lower end;

a pair of lug members each having a pair of recessed ears aligned with two ends of said respective tubes and abutting an outer surface of said first and second twisting members;

a pair of axle rods axially inserted through said respective tubes with their two ends exposed to outside said ears and secured by means of cap members;

a pair of dowel pins for fixing said first twisting member against the ears of said lug members and urging said torsion springs are inserted into a peripheral recess of said respective first twisting members.

5,606,775
TWO IN ONE HINGE
Robert A. Dame, 23 Bluemer Rd., Southampton, Mass. 01073
Filed Dec. 12, 1994, Ser. No. 353,719
Int. Cl.[6] E05D *5/02*
U.S. Cl. 16—387 **1 Claim**



1. A hinge, comprising:

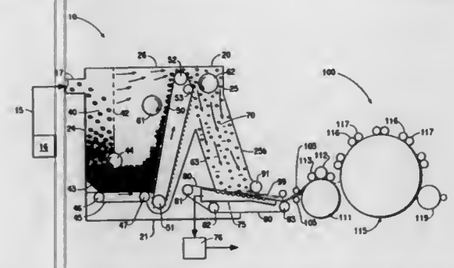
a hinge pin;

a first half having one or more holes therethrough for mounting to a door or a door jamb and a first plurality of receptacles for receiving said hinge pin;

a second half having one or more holes therethrough for mounting to said door or the door jamb and a second plurality of receptacles for receiving said hinge pin;

said first and second halves each having substantially square corners, said corners having a front side and a back side, said back side of each corner being scored so as to reduce the thickness thereof, said score being substantially triangular for allowing each of said corners for mounting to said door or the door jamb.

5,606,776
CHUTE FEEDER FOR TEXTILE PROCESSING EQUIPMENT
Kenneth S. Freund, Hendersonville; Andrew J. Giles, Joelton, both of Tenn., and James S. Bailey, Arlington, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 407,147, Mar. 20, 1995, abandoned. This application Nov. 7, 1995, Ser. No. 550,551
Int. Cl.[6] D01G *15/40*
U.S. Cl. 19—105 **12 Claims**



1. A system for assembling a continuous stream of loose, highly lofted tufts of randomly oriented staple length textile fibers into a generally continuous fiber batt comprised of substantially elongated shingles suited for high speed delivery to textile processing equipment such as a carding machine or the like, wherein the system comprises:

a substantially perforate conveyor belt having an upper surface for receiving the tufts thereon thus forming the batt on said upper surface;

means for moving said perforate conveyor belt along a predetermined path defining a machine direction;

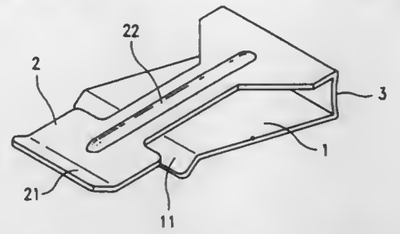
a generally vertically oriented chute arranged generally over top of said conveyor belt having generally open top and bottom portions, generally closed side and front and back walls, wherein said front and back walls are arranged to span said perforate conveyor belt and said side walls extend along the machine direction generally adjacent opposite edges of said perforate conveyor belt, and particularly wherein said chute defines a substantially open free fall path for the tufts to descend from the top portion to said perforate conveyor belt;

means for delivering the tufts to said generally open top portion of said chute comprising a bin portion for receiving the fiber from a feed source, an inclined conveyor for lifting fiber continuously from the bin portion and depositing the fiber into said vertically oriented chute;

means for drawing air generally from above said upper surface of said substantially perforate conveyor belt down through said substantially perforate conveyor belt such that air transmission through the belt is substantially uniform along the machine direction taking into consideration that there will be more fiber nearer to said front wall of said chute as compared to said back wall of said chute;

whereby the batt is formed of continuous overlapping shingles which are suited for being controllably administered to a carding machine with reduced likelihood of permitting an entire tuft to be taken into the carding machine at once.

5,606,777
CLIP
Chaio-Lan Lu, No. 7-7, 4 Lin, Chang-An, Hukou Hsiang, Hsin-Chu, Taiwan
Filed Sep. 7, 1995, Ser. No. 524,793
Int. Cl.[6] B42F *1/00*; A44B *21/00*
U.S. Cl. 24—67.9 **5 Claims**



1. A clip for fastening a stack of paper sheets together, the clip being stamp formed from a springy plate material and comprising:

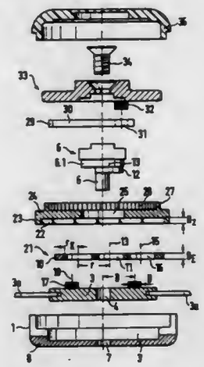
a) a top wall having a pair of sides, a front portion terminating in an upwardly extending paper guide and a rear end;

b) a bottom wall having a front end terminating in a downwardly extending paper guide and a rear end;

c) a rear wall connecting the rear ends of the top and bottom walls and defining a substantially triangular configuration therewith, wherein the front portion and paper guide of the top wall both extend forwardly of the paper guide of the bottom wall; and

d) at least one side of the top wall having an opening formed therein for access by a user to urge the bottom wall away from the top wall after the front portion and paper guide of the top wall are disposed in engagement with the paper stack, thereby permitting the paper stack to be received between the top and bottom walls of the clip and fastened together thereby.

5,606,778
SHOE CLOSURE
Roland Jungkind, Garmisch-Partenkirchen, Germany, assignor to PUMA AG Rudolf Dassler Sport, Germany
PCT No. PCT/DE93/01140, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/13165, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 28, 1993, Ser. No. 446,732
Claims priority, application Germany, Apr. 12, 1992, 42 40 916.0
Int. Cl.[6] A43C *11/00*
U.S. Cl. 24—68 SK **11 Claims**



1. Shoe closure comprising a grooved roller rotatably mounted on a bearing element for winding and unwinding at least one

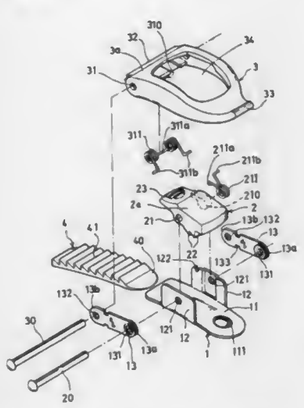
rope-like tightening element to open and close a shoe, a rotating element for actuating the grooved roller and a reducing gear between the rotating element and the grooved roller in the form of an eccentric drive having an eccentric drive gear which is coupled with the grooved roller, which is driven by the rotating element, which is supported on an eccentric drive pin, and which has a peripheral toothing which interacts with a countertoothing of a wall of a housing part surrounding the eccentric drive gear; wherein the grooved roller is an independent unit co-axially disposed with respect to a central axis of the rotating element; wherein the eccentric drive gear is supported to slide in a plane that is parallel to the grooved roller about the eccentric drive pin; and wherein the eccentric drive gear has at least one circular opening with a center point which lies on a circle which is concentric with respect to an axis of rotation of the eccentric drive gear; wherein the grooved roller has at least one coupling pin projecting therefrom into a respective circular opening of the eccentric drive gear; and wherein twice the radius of the circle on which the circular opening lies is at least approximately equal to the sum of a diameter of the coupling pin in the circular hole and a diameter of a circular path of the eccentric drive pin.

5,606,779

MICROSCOPICALLY ADJUSTABLE BUCKLE FOR SHOES

Jinny Lu, Taichung, Taiwan, assignor to Monotype Supply Co., Ltd., Taichung, Taiwan

Filed May 28, 1996, Ser. No. 654,096
Int. Cl.[6] A43C *11/14*
U.S. Cl. 24—68 SK **6 Claims**



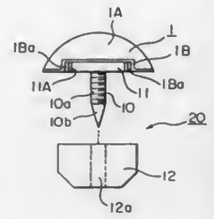
1. A buckle means for use on a shoe comprising:
a base member secured on a first upper portion of a shoe;
a strap having a plurality of ratchet teeth formed thereon and secured on a second upper portion of the shoe;
a detent means pivotally resiliently mounted on said base member for locking the strap when inserted in between the base member and the detent means for fastening the strap therebetween; and
an adjusting means pivotally secured on said base member, and normally separable from said strap, and operatively engageable with said strap for forwardly driving said strap in between said detent means and said base member for adjusting a tightness of said strap on said base member as locked by said detent means.

5,606,780

BUTTON FOR ADJUSTING ARTICLE SIZE

Yukio Kusano, 10-5, Sanjo-machi, Aoba-ku, Sendai-shi, Miyagi-ken, Japan

Continuation of Ser. No. 113,834, Aug. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 114,328, Aug. 30, 1993, Pat. No. 5,426,828. This application Mar. 28, 1996, Ser. No. 623,516
Claims priority, application Japan, Oct. 22, 1992, 4-284545
Int. Cl.[6] A44B *1/30*
U.S. Cl. 24—105 **6 Claims**



1. A cloth article or the like having overlapping portions sizably adjustable with respect to each other by a button assembly detachably secured therethrough, a first of said overlapping portions having means defining at least one slit therethrough, and a second of said overlapping portions having means defining a plurality of aligned and spaced apart slits therethrough, said button assembly being detachably secured through one of said slits of said first overlapping portion and through any selected one of said aligned slits of said second overlapping portion, said cloth article being adjustable in size without distortion thereof by detaching said button assembly from said selected one of said aligned slits of said second overlapping portion and detachably securing said button assembly through any other selected one of said aligned slits of said second overlapping portion, and said button assembly comprising a button carrier element having an upperside surface, an underside surface, and a circular screw thread extending perpendicular to its said upperside and underside surfaces; a button head secured to said upperside surface of said button carrier element; a flange element having an upperside surface, an underside surface and a circular screw thread extending perpendicularly to its said upperside and underside surfaces and threadedly connected to said screw thread on said button carrier element; at least one pin secured to and projecting perpendicularly from said underside surface of the flange element and extending through said one slit of the first overlapping portion and through said one selected slit of the second overlapping portion; and a nut separably mounted on each said pin at a location therealong, whereby said overlapping portions of said cloth article are detachably secured to each other by said button assembly.

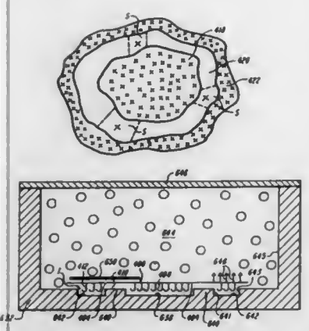
5,606,781

SEPARABLE FASTENER HAVING A BALD PERIMETER RIB BOUNDED BY FASTENING ELEMENTS

George A. Provost, Litchfield, N.H.; Brian J. Routhier, Leesburg, Va., and Martin I. Jacobs, Bedford, N.H., assignors to Velcro Industries, B.V., Curaco, Netherlands Antilles

Filed Feb. 17, 1995, Ser. No. 391,695
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—452 **14 Claims**

1. A separable fastener component for use with a complementary separable fastener component, said separable fastener component comprising:
a. a base member, having a nominal fastening face and a non-fastening face; and
b. carried on said fastening face, a pattern of fastening elements, said fastening elements selected from the group consisting of hook-type and loop-type elements, said pattern comprising:
i. a main region carrying fastening elements;



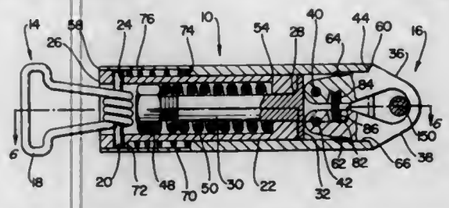
ii. substantially surrounding said main region, a bald region that is substantially free of fastening elements; and
iii. substantially surrounding said bald region, a perimeter region that carries fastening elements.

5,606,782

FASTENER THAT SELF RELEASES AT A VARIABLE SET LOAD

Gregory S. Patterson, Raleigh, N.C., and Mark G. Welsh, West Palm Beach, Fla., assignors to Turtle Snaps, Inc., West Palm Beach, Fla.

Continuation-in-part of Ser. No. 69,116, May 28, 1993, Pat. No. 5,430,914. This application Apr. 17, 1995, Ser. No. 424,715
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—598.5 **22 Claims**



1. A fastener that has a strap end and a securing end where said securing end secures an existing object and releases said object when a first force of a certain magnitude is applied to said strap end, comprising:
an outer cylindrical housing;
an inner cylindrical housing concentric with and inside of said outer cylindrical housing;
a thumbrest extending radially from said inner cylindrical housing and beyond said outer cylindrical housing;
first spring means positioned inside of said inner cylindrical housing, so that said first spring means absorbs said first force when applied to said strap end and so that said thumbrest engages said outer cylindrical housing to open said securing end and free said object.

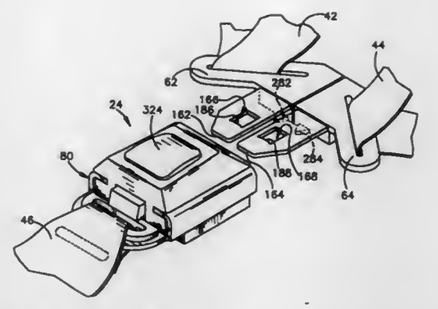
5,606,783

BUCKLE FOR VEHICLE SEAT BELT SYSTEM

Kevin M. Gillis, St. Clair, and Gregory D. Heyboer, Rochester Hills, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Sep. 12, 1995, Ser. No. 527,030
Int. Cl.[6] A44B *11/26*
U.S. Cl. 24—632 **19 Claims**

1. An apparatus for use in a seat belt system, said apparatus comprising:



first and second tongues;
a base having a longitudinal axis and at least partially defining a cavity for receiving said first and second tongues, said first and second tongues being movable into the cavity along respective first and second paths of movement;
latch means supported by said base and being movable between a first position connecting said tongues with said base when said tongues move a fully inserted distance into the cavity and a second position at which said tongues may be disconnected from said base; and
blocking means having a portion located in a path of movement of one of said tongues and operable for blocking insertion of said tongues into the cavity the fully inserted distance until both tongues move a predetermined distance into the cavity, said blocking means comprising:
a member supported by said base for movement relative to said base;
a pivotable arm carried by said member and having opposite end portions, each of said end portions being engageable with a respective one of said tongues, said arm pivoting relative to said member upon one of said tongues being moved the predetermined distance into the cavity without the other of said tongues being moved the predetermined distance into the cavity; and
stops supported by said base for engaging one of said end portions of said arm to limit pivoting movement of said arm relative to said member and block the movement of said member relative to said base and thereby to prevent movement of only one tongue the fully inserted distance into said cavity.

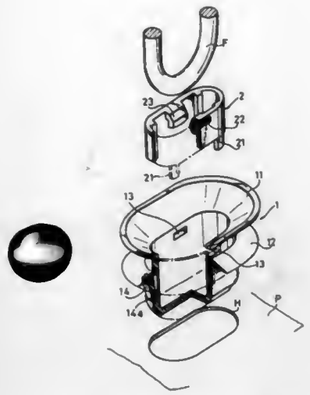
5,606,784

ARTICLE RETAINER

Yoshiaki Hamamoto, Hiroshima, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jun. 7, 1995, Ser. No. 472,112
Claims priority, application Japan, Jul. 28, 1994, 6-194628
Int. Cl.[6] F16B *21/07*
U.S. Cl. 24—662 **5 Claims**

1. An article retainer for retaining an article with respect to a panel by clamping a hook provided on the article, the article retainer comprising:
an outer casing and an insert,
the outer casing being formed as a hollow body having an engagement flange destined to cover a periphery of a mounting hole formed in a panel for insertion of the outer casing, a pair of engagement claws formed at diametrically opposite wall portions below the engagement flange to extend upward while maintaining flexing spaces between their inner surfaces and the wall portions and a pair of engagement portions formed in diametrically opposite wall portions offset from the wall portions formed with the engagement claws by 90 degrees, and
the insert being formed as a hollow body of a size snugly fittable into the outer casing and having a pair of engagement projections formed at diametrically opposite outer wall portions for



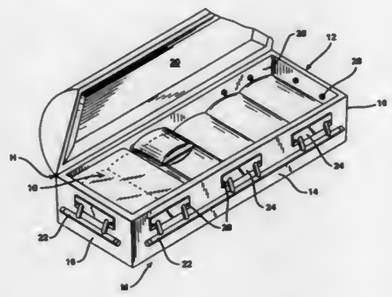
engagement with the engagement portions and a pair of downward facing elastic engaging members formed at diametrically opposite inner wall portions for clamping the hook.

5,606,785

AIR BLADDER POSITIONER FOR CADAVERS

Robert A. Shelberg, Haledon, and Joseph Petrone, Ringwood, both of N.J., assignors to Position-Aire, Inc., Bergenfield, N.J.

Filed May 19, 1994, Ser. No. 246,321
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—19 **12 Claims**



1. A reusable air bladder positioning system for positioning a cadaver in a casket comprising:

a partially pneumatic pillow including at least one inflatable air bladder and a cushioning material disposed over the at least one inflatable air bladder, the cushioning material coacting with the at least one inflatable air bladder for supporting a head of a cadaver and for adapting to the contour of a head of a cadaver;

an inflatable air mattress including a plurality of air bladders, each air bladder having an inflation tube and a valve assembly for independent inflation to support a cadaver in a casket; and

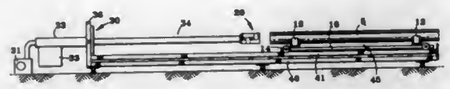
a canting air bladder having an inflation tube and a valve assembly for independent inflation, the canting air bladder adapted for disposition above or below the inflatable air mattress and substantially along one side of a cadaver for canting a cadaver in a casket.

5,606,786

APPARATUS AND METHOD FOR PRODUCING PIPE AND PIPE PRODUCED THEREBY

David W. Presby, P.O. Box 617, Sugar Hill, N.H. 03585

Filed Sep. 29, 1995, Ser. No. 536,804
Int. Cl.[6] B23C *3/00*
U.S. Cl. 29—33 T **17 Claims**



1. An apparatus for perforating corrugated pipe comprising:

a support system having a first end;

perforating means attached to said first end of said support system wherein said perforating means has at least one cutter and at least one motor, said cutter being coupled to said motor whereby said motor imparts rotational power to said cutter;

said perforating means having a housing, said housing being attached to said first end of said support system and having an outer surface, at least one guide member having ends, each guide member end berg attached to said housing outer surface, said at least one guide member having an outside surface and an inside surface, said at least one motor being connected to said guide member inside surface; and

said cutter being mounted with a radial extension beyond said guide member outside surface, at least one spring, wherein one of said guide member or said at least one motor is attached to said housing by said at least one spring

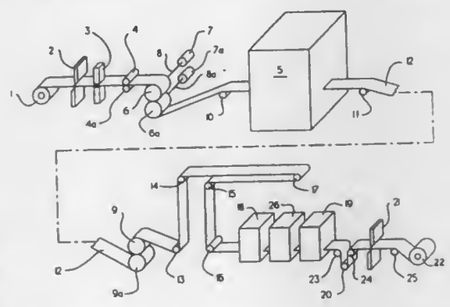
advancing means for advancing said pipe over said perforating means whereby perforations are created in said pipe.

5,606,787

CONTINUOUS METHOD FOR PRODUCING FINAL GAUGE STAINLESS STEEL PRODUCT

Michael F. McGuire, Pittsburgh, Pa., assignor to J & L Specialty Steel, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 180,094, Jan. 11, 1994, abandoned. This application Sep. 14, 1995, Ser. No. 527,881
Int. Cl.[6] B22D *11/128*; B21C *43/04*; B23P *25/00*
U.S. Cl. 29—81.03 **25 Claims**



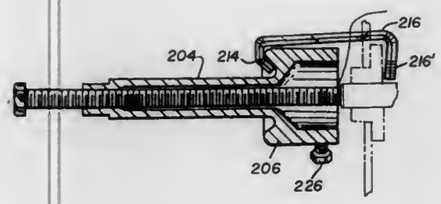
1. A process line for converting unrecrystallized hot band stainless steel strip to a final gauge product without an annealing section positioned before a rolling mill, said process line comprising the following stations positioned in the sequential order of a rolling mill to reduce the thickness of said unrecrystallized hot band stainless steel to a final gauge thickness and to crack the scale on the surface of said hot band stainless steel strip, an annealing section positioned after said rolling mill to anneal said final gauge thickness strip from said rolling mill, and a pickling section to pickle said annealed strip from said annealing section and remove the scale from said surface of said final gauge thickness strip.

5,606,788

PULLING TOOL

Michael Rubino, 7419 W. Ardmore, Chicago, Ill. 60631, and Michael Berg, 335 Oak St., Elgin, Ill. 60133

Division of Ser. No. 219,444, Mar. 29, 1994, Pat. No. 5,479,688, which is a continuation-in-part of Ser. No. 61,362, May 12, 1993, Pat. No. 5,390,404, which is a continuation-in-part of Ser. No. 900,348, Jun. 18, 1992, Pat. No. 5,211,211, which is a continuation-in-part of Ser. No. 737,046, Jul. 29, 1991, Pat. No. 5,163,211. This application May 31, 1995, Ser. No. 454,638
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—259 **11 Claims**



1. In a pulling tool for pulling off a rotor of a motor or a fan from a shaft, said pulling tool comprising an elongated screw having a first end and a second end, a housing with which said screw is threadingly received, said housing comprising a first open end through which threadingly passes said screw, and a second open end through which protrudes said second end of said screw, said housing comprising at least first securing means for releasably holding a fan, or a rotor of a motor, said first securing means comprising a plurality of hooked securing arm-members, each said arm-member having a first end and a second hooked end, said second end of each said arm-member being capable of being hung so as to protrude beyond said second open end of said housing, wherein the improvement comprises:

said housing comprising a first, relatively-narrower section having a first end constituting said first open end, and a second end; and a second, relatively-larger section having a first end connected to said second end of said first section, and a second end constituting said second open end of said housing; said first end of said second section comprising an annular surface portion; said annular surface portion having groove means formed therein for receiving said second end of said arm-members, whereby said arm-members may be suspended thereby.

5,606,789

FIXTURE FOR SUB-MINIATURE AEROSOLIZER

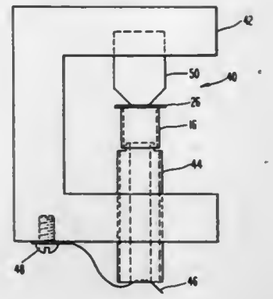
Theodore J. Century, 702 W. Carpenter La., Philadelphia, Pa. 19119

Division of Ser. No. 274,234, Jul. 13, 1994, Pat. No. 5,579,758. This application Aug. 28, 1995, Ser. No. 519,801
Int. Cl.[6] B25B *27/14*
U.S. Cl. 29—281.5 **7 Claims**

1. An apparatus for use in a method for making a liquid sprayer aerosolizer, said aerosolizer including a generally elongate body member having a cavity extending therein provided in a first end thereof and terminating adjacent a second end thereof by an end wall, said end wall including a first side adjacent said body member and a second side, said method including the step of coupling said end wall to said body member, said apparatus comprising:

a frame comprising a first wall connected to and at spaced separation from a second wall, said first wall including an aperture extending therethrough;

a first contact member generally elongated and having an opening extending longitudinally therethrough, said first contact member being slidably disposed in said aperture in the first wall, said first contact member including proximate and distal ends, with said opening extending through each of said proximate and distal ends and said proximate end being adapted to engage said first end of said body member;



a biasing member connected to said frame for engaging said distal end of said first contact member, said biasing member being adapted for urging said body member through engagement thereof with said first contact member in a direction of said second wall;

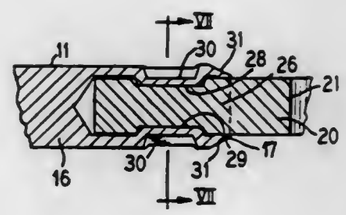
a second contact member extending from said second wall and substantially coaxial with said first contact member, said second contact member having its terminating end adapted for engaging said second side of said end wall as said biasing member operates to urge said body member in a direction of said second wall adapted for engaging said first side of said end wall, whereby said end wall is held in contact with said body member for coupling thereof.

5,606,790

METHOD OF MAKING A TWO PIECE PEDAL ROD

Charles E. Laue, 1041 Pawnee Rd., Wilmette, Ill. 60091, assignor to Charles E. Laue, Arlington Heights, Ill.

Division of Ser. No. 177,952, Jan. 6, 1994, Pat. No. 5,425,286, which is a continuation-in-part of Ser. No. 45,654, Apr. 9, 1993, Pat. No. 5,429,014. This application Feb. 22, 1995, Ser. No. 392,238
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—517 **4 Claims**



4. The method of making a pedal rod which includes the steps of:

(a) shaping a metal rod work piece of generally cylindrical configuration to form an elongated body having a ball at one end and having successively a first cylindrical portion and a second larger cylindrical portion and an intermediate tapered portion there between and terminating in a radial end wall at the opposite end,

(b) forming a non-threaded cylindrical recess in said radial end wall of said work piece,

(c) shaping a metal head part to form a body having an end wall and a projecting non-threaded boss extending from said end wall and being sized and shaped for insertion into said recess in said radial end wall of said work piece,

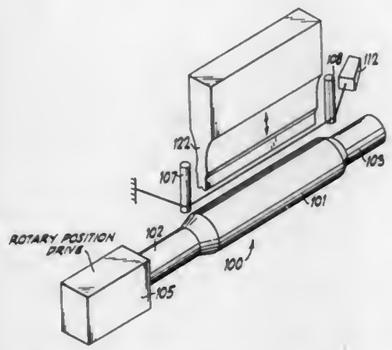
(d) inserting said boss of said head part into said recess thereby to form a subassembly whereby said work piece is a first outer part and said head part is a second inner part, and
(e) crimping the inner and outer parts to form a crimped joint bonding the inner and outer parts into a unitary integrated unit pedal rod.

5,606,791

METHOD OF MAKING A SLOTLESS ELECTRIC MOTOR OR TRANSDUCER

Richard J. Fougere, 151 Highland Cir., Blacksburg, Va. 24060; Mohammad Khandan-Barani, 104 Mountain View La., Radford, Va. 24141, and Raymond S. Keogh, 45 Laurel St., Farmingdale, N.Y. 11735

Filed Sep. 17, 1993, Ser. No. 123,428
Int. Cl.[6] H02K *15/06*
U.S. Cl. 29—596 **34 Claims**



1. A method for the manufacture of a slotless stator for an electro-mechanical transducer including a magnetic structure and a performed, a least partially rigid, self-supporting, winding structure having an active portion comprising active wire segments and end-turn portions having end turn wire segments, said method comprising the steps of:
depositing insulated wire on a support surface;
adhesively affixing at least some of the active segments of said insulated wire to said support surface or previously deposited active wire segments, prior to depositing subsequent active wire segments as said winding structure is formed with at least active wire segments of said winding structure attached in predetermined, substantially fixed positions with respect to other active segments of said winding structure to form a self-supporting winding structure;
securely attaching said self-supporting winding structure to said magnetic structure of the slotless stator after said winding structure is formed; and
combining the completed stator with one or more permanent magnets mounted for movement relative to said stator.

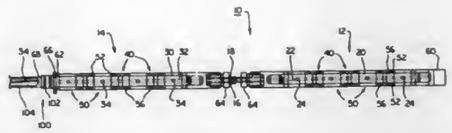
5,606,792

HYDRAULIC EXPANDER ASSEMBLY AND CONTROL SYSTEM FOR SLEEVING HEAT EXCHANGER TUBES

Bruce W. Schafer, Lynchburg, Va., assignor to B & W Nuclear Technologies, Lynchburg, Va.

Filed Sep. 13, 1994, Ser. No. 305,251
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—727 **12 Claims**

1. A hydraulic expander for installing a tube repair sleeve in a tube, said expander comprising:
(a) a first stud having a first fluid conduit formed therein;



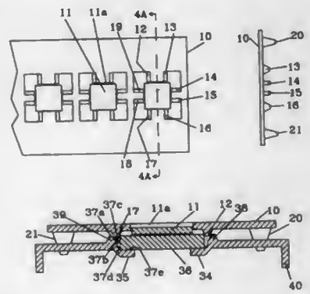
(b) a plurality of first expandable bladders mounted on said first stud for radial expansion, each of said first bladders in fluid communication with said first conduit;
(c) a second stud having a second fluid conduit formed therein;
(d) a plurality of second expandable bladders mounted on said second stud for radial expansion, each of said second bladders in fluid communication with said second stud; and
(e) a connector tube detachably connected between said first and second studs and providing fluid communication between said first and second conduits.

5,606,793

MULTIPLE COMPONENT ASSEMBLY ALIGNMENT TOOL

Steven K. Gross, Midland, and Wesley S. Hailes, Gardendale, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 375,075, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 66,810, May 24, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 629,915
Int. Cl.[6] B23P *19/04;* **H05K** *13/04*
U.S. Cl. 29—760 **10 Claims**



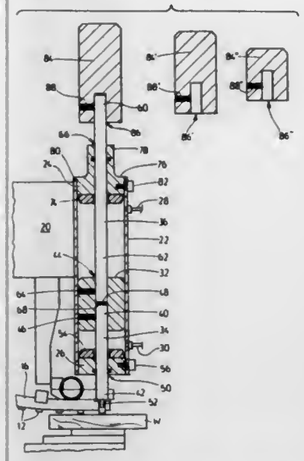
1. An alignment system operable to facilitate the assembly of components having multiple parts, comprising:
a boat having at least one recess that is disposed to receive a first component for assembly, said recess being at least partially defined within said boat by an upstanding leg having a flange surface that is inclined along a plane which extends across at least a portion of said recess; and
a cover positionable so as to at least partially overlie said boat, said cover being provided with a least one aperture disposed to receive a second component for assembly, said cover having a leg engageable with said boat leg and including a first surface that is inclined along a plane which is generally parallel to said boat flange surface plane and which extends across at least a portion of said recess, said cover leg including a second surface engageable with the first component for assembly so as to position the cover opening over a prescribed portion of the first component for assembly upon engagement of the respective boat and cover legs.

5,606,794

VARIABLE IMPACT TEE-NUT INSERTION MACHINE

Volkmar W. Leistner, Toronto, Canada, assignor to Sigma Tool & Machine, Scarborough, Canada

Filed Jul. 6, 1995, Ser. No. 498,877
Int. Cl.[6] B23P *19/00*
U.S. Cl. 29—798 **20 Claims**



1. A machine for inserting a Tee-nut into a workpiece of the type having means for supporting said workpiece, means for supplying Tee-nuts to the machine, and means for driving said Tee-nut into said workpiece, said driving means comprising:
cylinder means having a first end member and a second end member;
openings means provided on said cylinder means for admitting and venting compressed air from a compressed air supply source;
piston means moveable within said cylinder means by said compressed air;
piston rod means being secured to said piston means, one end of said piston rod means extending through said first end member of said cylinder and being adapted to engage and drive said Tee-nut into said workpiece, and the other end of said piston rod means extending through said second end member of said cylinder means; and
weight means removeably mounted to said other end of said piston rod means, thereby providing predetermined mass on said piston means at a downward stroke for driving said Tee-nut into said workpiece by the use of low air pressure and high mass energy.

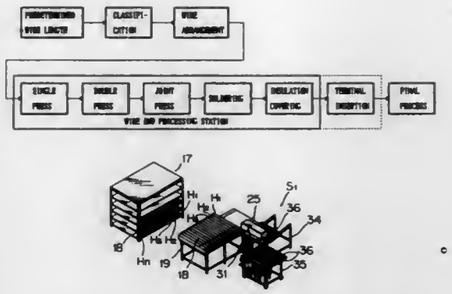
5,606,795

METHOD FOR MANUFACTURING A WIRING HARNESS USING A SET OF ELECTRIC WIRES THEREFOR

Osamu Ohba; Yoshikazu Yamamoto; Koichiro Matsunaga; Takayuki Tsuchiya, and Toshihiro Nakahama, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 160,292
Claims priority, application Japan, Dec. 4, 1992, 4-325240; Jul. 21, 1993, 5-180201
Int. Cl.[6] H01R *43/04;* **B23P** *19/00*
U.S. Cl. 29—863 **25 Claims**

1. A method of manufacturing a wiring harness using a set of wires therefor, comprising the steps of:
making plural kinds of electric wires each having a predetermined length for each said kind of wire in lots, each said lot having a plurality of wires, the plural kinds of wires forming a wiring harness and including both terminal-equipped wires having either one or both ends connected with a terminal, and terminal-free wires;
temporarily holding groups of said wires in predetermined wire holders; and
a wire-arrangement step, comprising the steps of forming a set of wires for the wiring harness with the groups of wires constituting the wiring harness laid out on one or more wire clamps in such a manner that one of the wires is taken out from one of the wire holders to secure one or both of its ends to predetermined one or two wire clips of the wire clamp provided with plural wire clips, and subsequently taking out, one-by-one, the wires from each of the wire holders to secure one or both ends of each said wire to one or two wire clips separately provided.



9. A method of manufacturing a wiring harness using a set of wires therefor, comprising the steps of:
making plural kinds of electric wires each having a predetermined length for each said kind of wire in lots, each said lot having a plurality of wires, the plural kinds of wires forming a wiring harness and including both terminal-equipped wires having either one or both ends crimped with a terminal, and terminal-free wires;
holding groups of said wires in predetermined wire holders;
wire arrangement comprising the steps of forming a set of wires for the wiring harness with the groups of wires constituting a wiring harness hung on one or more wire clamps in such a manner that one of the wires is taken out from the one of the wire holders and bent in a U-shape, wherein both ends of said wire are secured to predetermined two wire clips of a wire clamp provided with a chain of plural wire clips, and subsequently, the wires are taken out in order one-by-one from each of the wire holders to secure both ends of said wire to two wire clips separately provided;
wire-end processing consisting of shifting said set of wires formed by said wire arrangement process to a predetermined end processing station, and comprising at least one of the following steps:
terminal crimping, comprising the steps of successively taking out a wire with one of both ends having no terminal from said set of wires or said wire clamping pole and crimping predetermined terminals to said wire and thereafter returning to original wire clipping positions so as to be secured there;
terminal double crimping comprising the steps of successively taking out, from said of wires, two wires with no terminal doubly secured to the wiring clip and doubly pressing the two wires to predetermined terminals and thereafter returning to original wire clipping positions so as to be secured there;
joint crimping, comprising the steps of successively taking out, from the wiring harness set, a group of wires with one end of some of said wires having no terminal and some of said wires having both ends with terminals and connecting, in a branching manner, each of the wires with one end having no terminal to the middle or end portion of the wire with both ends equipped with terminals and thereafter returning the end portion other than said joint-connected portion so as to be secured there;

soldering comprising the steps of successively taking out, from said wires, the joint-connected wires and soldering each of the joint-connected portions and thereafter returning the wire end portion other than said soldered portion to the original wire clipping position so as to be secured there; and

tape binding consisting of insulation-protecting the soldered group of wires without taking them out from said set of wires by successively binding each of the soldered portions with an insulating tape;

terminal insertion, comprising the steps of successively detaching the wire ends from one end to the other end of said set of wires subjected to the wire end processing to successively insert the crimped terminals into terminal chambers of a predetermined connector housing and inserting them in the subsequent connector housing, and repeating such an operation; and

wiring harness making comprising the steps of detaching all the wires from said set of wires, two-dimensionally arranging the wires so as to accord with the arrangement format of a wiring harness and performing a final process operation such as bundling, branching and tape binding of wires for maintaining the arrangement format.

5,606,796

TURBINE BLADE REPAIR

Michael J. Fraser, Badgeworth, United Kingdom, assignor to Turbine Blading Limited, Shipston On Stour, United Kingdom

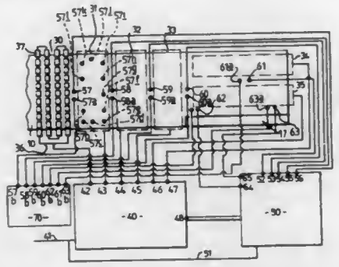
PCT No. PCT/GB93/00967, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO93/23198, PCT Pub. Date Nov. 25, 1993

PCT Filed May 11, 1993, Ser. No. 335,794

Claims priority, application United Kingdom, May 12, 1992, 9210191

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—889.1 **20 Claims**



1. A method of repairing a turbine blade comprising performing a heating operation on the blade in which the blade is heated to achieve a predetermined temperature distribution, sensing the temperature of the blade at least at one position by temperature sensing means and controlling the application of heat in accordance with the temperature determined by said at least one sensing means and monitoring the temperature of the blade at a location adjacent said at least one position with a monitoring means, and repairing said turbine blade.

5,606,797

PROCESS TO RESTORE AND REFURBISH TURBOCHARGER HOUSING

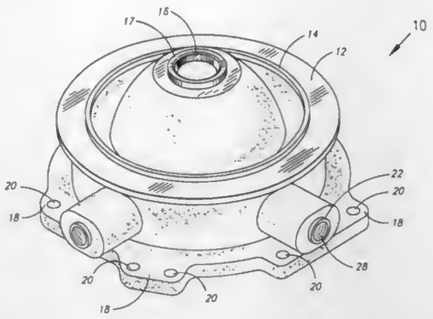
Russell B. Reynolds, 10611 E. 30th St., Tulsa, Okla. 74129

Filed Jun. 26, 1995, Ser. No. 494,368

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—889.1 **11 Claims**

1. A process to restore and refurbish a turbocharger housing, which process comprises:



machining off selected surfaces of said turbocharger housing;

building up said selected surfaces of said housing in excess of finished dimensions by welding; and

machining said selected surfaces of said housing to their finished dimensions.

5,606,798

HAIR CUTTING APPARATUS

Elliot Kelman, 44 Western Avenue, London, England

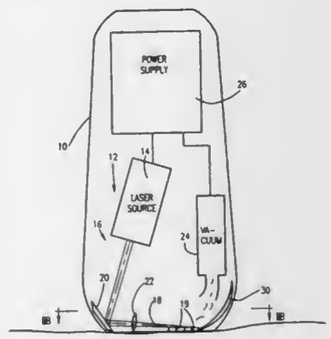
PCT No. PCT/GB92/00426, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/16338, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 10, 1992, Ser. No. 946,380

Claims priority, application Israel, Mar. 12, 1991, 97531

Int. Cl.[6] B26B *19/44*

U.S. Cl. 30—41.5 **1 Claim**



1. Hair cutting apparatus comprising:

a housing having an opening for hair, which is attached to the skin of a person, to be cut;

a source of laser radiation producing a laser beam substantially parallel to the surface of the skin to which the hair is attached, the laser beam being arranged to impinge on the hair and to cut the hair at a point of impingement only, leaving a portion of the hair in a detached unburnt condition and a further portion of the hair in an attached unburnt condition at the surface of the skin; and

a vacuum hair collection device for collecting hair in a detached unburnt condition.

5,606,799

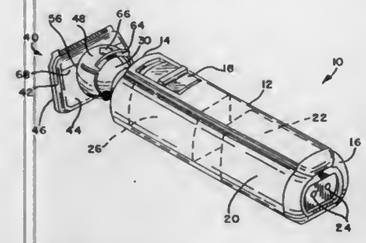
DETACHABLE PIVOTING CLIPPER BLADES

Scott Melton, Erie, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Oct. 21, 1994, Ser. No. 327,436

Int. Cl.[6] B26B *19/06*

U.S. Cl. 30—216 **22 Claims**



1. A hair clipper, comprising:

a handle portion having a drive end with a first coupler formation;

a blade assembly including a housing at least partially enclosing a reciprocating blade and a fixed blade, and having a second coupler formation for engaging said first coupler formation, said first and second coupler formations forming a ball-and-socket connection; and

at least one of said first and second coupler formations being provided with at least one notch for defining said formation into multiple loaded tabs such that said at least one said first and second coupler formations exerts a biasing force upon the other of said first and second coupler formations.

5,606,800

Patent Not Issued For This Number

5,606,801

DRIVE SPROCKET DEVICE WITH FLANGES

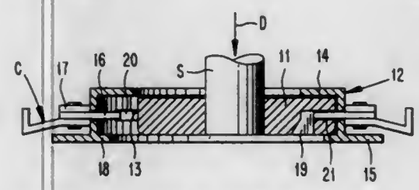
Erik Sundström, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jun. 9, 1995, Ser. No. 488,911

Claims priority, application Sweden, Jun. 9, 1994, 9401994

Int. Cl.[6] B27B *17/00*

U.S. Cl. 30—384 **7 Claims**



1. A drive mechanism for a saw chain, comprising:

a rotatably driven drive shaft,

a drive sprocket operably connected to said drive shaft to be rotated by said drive shaft, said drive sprocket including an outer cylindrical surface having an annular row of circumferentially spaced recesses; and

a drive ring having an inner cylindrical surface of larger diameter than said outer cylindrical surface of said drive sprocket and loosely mounted thereon, said drive ring including an annular row of circumferentially spaced orifices through which drive links of the saw chain extend to enter and be driven by said recesses, said drive ring including an axial inner end and an axial outer end, a radially inwardly projecting flange disposed at said axial inner end, and a radially outwardly projecting flange disposed at said axial outer end.

5,606,802

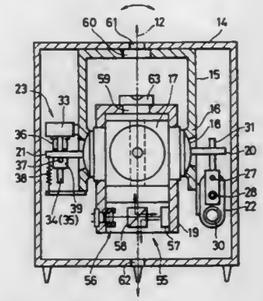
LASER GRADIENT SETTING DEVICE

Yohei Ogawa, Tokyo-to, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo-to, Japan

Filed Feb. 22, 1995, Ser. No. 392,048

Int. Cl.[6] G01B *11/26*; **G01C** *5/00*

U.S. Cl. 33—276 **6 Claims**



1. A laser gradient setting device, comprising a reference laser beam emitter for emitting a reference laser beam with a gradient, a supporting means for rotatably supporting the reference laser beam emitter by spherical bearings, and a laser beam irradiating means for emitting a laser beam in a vertical direction.

5,606,803

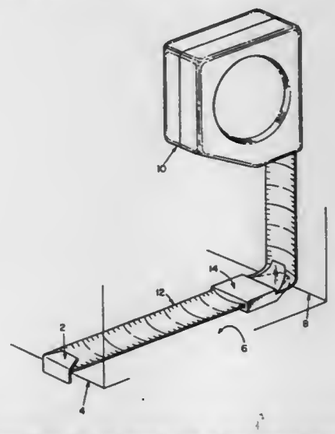
TAPE MEASURE AND FIXTURE

Joseph O'Sullivan, 38 Scituate St., Arlington, Mass. 02174

Filed Aug. 3, 1995, Ser. No. 510,974

Int. Cl.[6] G01B *3/10*

U.S. Cl. 33—770 **8 Claims**



1. A fixture for use in conjunction with a tape measure of the type having ruled calibrations on a tape blade having a free end extending from a housing, the fixture having a longitudinal axis, a width, and a height, comprising:

(a) a base portion containing a slot through which the tape blade can pass parallel to the longitudinal axis of the fixture;

(b) a nose portion affixed to the base portion, the nose portion extending along the longitudinal axis of the fixture, the height

of said nose portion extending to below the location of the slot in the base portion; and the nose portion having an end; and

(c) a flexible indicator portion having a free end and a secured end, said indicator being rigidly affixed at the secured end to the base portion above the slot, the indicator being oriented parallel to the longitudinal axis of the fixture and extending at the free end exactly to the nose portion end, so that when the tape blade is inserted in the slot, the indicator lies parallel to the tape blade,

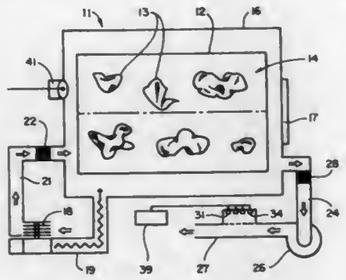
whereby when the free end of the tape blade is aligned with one end of the distance to be measured and the nose portion end of the fixture is aligned with the other end of the distance to be measured, and the tape blade is bent upward and away from the nose portion, the indicator end aligns itself with the calibration on the tape blade corresponding to the distance to be measured.

5,606,804

MICRQWAVE CLOTHES DRYER AND METHOD WITH HAZARD DETECTION

Richard D. Smith, Palo Alto; Ronald R. Lentz, Modesto, and Patrick C. Meachim, Oakdale, all of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 23, 1995, Ser. No. 546,878
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—261 **20 Claims**



17. In a method of drying clothes, the steps of: placing the clothes in a drying chamber, introducing energy into the chamber to evaporate moisture in the clothes, monitoring gases from the chamber with a plurality of solid state gas sensors each adapted to detect the presence of a different predetermined gas associated with thermal breakdown of fabric in the clothes, and delivering an alarm signal in the event that one of the predetermined gases is detected.

5,606,805

PROCESS FOR DRYING A COATED MOVING WEB

Jens-Uwe Meyer, 54 Audubon Dr., Suffield, Conn. 06078

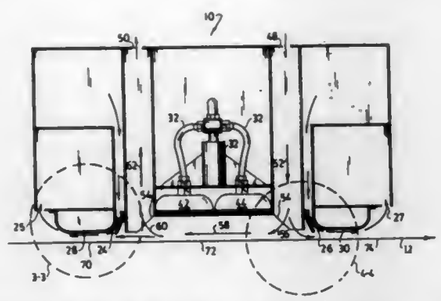
Filed Apr. 1, 1996, Ser. No. 625,286
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—421 **8 Claims**

1. A process for drying a web of material moving at a speed of at least about 150 feet per minute, comprising the steps of:

(a) contacting said web of material with a first mixture of air and flue gas while passing said web under a first air nozzle, wherein said first mixture of air and flue gas is at a temperature of from about 200 to about 850 degrees Fahrenheit, and wherein said air exits said first air nozzle at a velocity of from about 4,000 to about 12,000 feet per minute;

(b) exhausting a portion of said first mixture of air and flue gas through a first exhaust nozzle disposed less than 12 inches away from said first air nozzle;

(c) thereafter passing said moving web under gas fired infrared radiation emitting burners while contacting said moving web



with infrared radiation and flue gas and heating said moving web to a temperature of from about 100 to about 280 degrees Fahrenheit;

(d) contacting said web of material with a second mixture of air and flue gas while passing said web under a second air nozzle, wherein said second mixture of air and flue gas is at a temperature of from about 200 to about 850 degrees Fahrenheit, and wherein said air exits said second air nozzle at a velocity of from about 4,000 to about 12,000 feet per minute; and

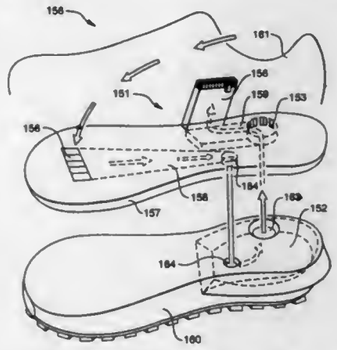
(e) exhausting a portion of said second mixture of air and flue gas through a second exhaust nozzle disposed less than 12 inches away from second air nozzle.

5,606,806

SELF-VENTILATING FOOTWEAR

James M. O'Dwyer, Townsville, Australia, assignor to Breeze Technology Partnership, Australia

Continuation of Ser. No. 48,661, Apr. 16, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,127
Claims priority, application Australia, Oct. 18, 1991, PK 8997
Int. Cl.[6] A43B *7/08*
U.S. Cl. 36—3 B **31 Claims**



15. A resilient insole having a heel region, an arch region, a bridge-of-the-toe region and a toe region comprising:

(a) a removable ducted insole

(b) a resilient sole comprising

a pumping chamber in the heel region, the pumping chamber having a front end and a rear end, a substantially horizontal top inner surface and a substantially horizontal bottom inner surface, and a downwardly slanting surface extending from the front end of the top inner surface to the front end of the bottom inner surface, thus forming a wedge at the front end of the pumping chamber;

(c) a non-return valve press-seal fit into an aperture located above the pumping chamber fluidly connecting the pumping chamber to an air outlet; and

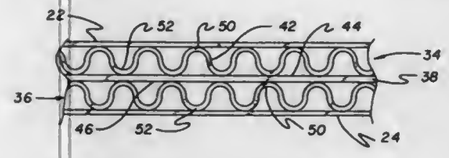
(d) a non-return air inflow valve press-seal fit into an aperture located above the pumping chamber fluidly connecting the pumping chamber to an air inlet in the bridge-of-the-toe region of the ducted insole.

5,606,807

DISPOSABLE SHOWER THONG

Ronald W. Prepodnik, 8 S. Locust Ave., Medford, N.Y. 11763

Filed Dec. 26, 1995, Ser. No. 578,356
Int. Cl.[6] A43B *5/08;1/06;3/12*
U.S. Cl. 36—8.1 **7 Claims**



1. A disposable shower thong comprising:

a sole member being formed of a flat planar paper material having a top surface and a bottom surface, the paper material of the sole member having a top layer and a bottom layer with a common sheeting therebetween, each layer being comprised of a corrugated paper sheet, the corrugated sheet of each layer having an alternating sequence of protruding crests and recessed troughs defining a wave like filler, the sole member having a front foot section, a heel section and an instep section therebetween; and

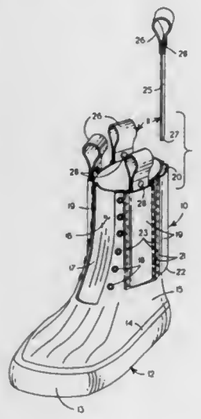
an elongated strap being positionable around the sole member and attached by an adhesive to the bottom surface of the sole, the strap when attached to the bottom surface forms a semi-spherical loop above the top surface of the sole.

5,606,808

ADJUSTABLY STIFFENABLE SNOWBOARD BOOT

James F. Gilliard, and Ryan F. Gilliard, both of HC 02, Box 139 B3, Harrison, Id. 83833-9609

Filed Mar. 28, 1995, Ser. No. 411,952
Int. Cl.[6] A43B *7/20;5/04*
U.S. Cl. 36—89 **1 Claim**



1. An adjustably stiffenable boot for snow sports, comprising in combination:

a boot having a foot portion interconnected by an ankle portion with a flexible upper portion extending above the ankle portion and having an uppermost part, opposed lateral outer surfaces and means for opening and fastening upon a foot of a user;

at least one elongate pocket carried by the flexible upper portion of the boot to extend spacedly downwardly from the uppermost part of the flexible upper portion to define an open top channel to receive a stiffening stay: and

at least one elongate stiffening stay having

less flexibility than the boot flexible upper portion,

substantially uniform rectilinear cross-sectional configuration and a rounded first end portion, and

a second end portion carrying strap means to aid manipulation, insertion and removal from a pocket,

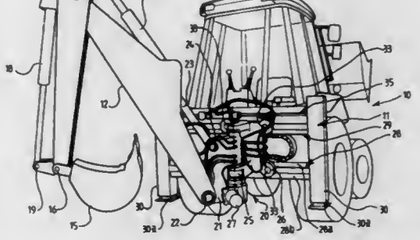
said stiffening stay being slidable in the channel defined by the pocket and maintainable in selected position in the channel by frictional engagement with the surfaces defining the channel.

5,606,809

MECHANICAL EXCAVATORS

Walter R. Allen, Ashbourne, United Kingdom, assignor to J. C. Bamford Excavators Limited, Rocester, United Kingdom

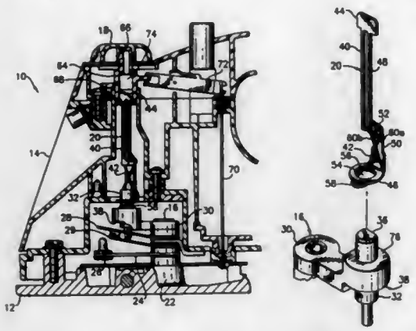
Filed Jul. 14, 1995, Ser. No. 502,528
Claims priority, application United Kingdom, Jul. 16, 1994, 9414414; May 26, 1995, 9510781
Int. Cl.[6] F02F *5/02*
U.S. Cl. 37—443 **11 Claims**



1. A mechanical excavator provided on a vehicle, the mechanical excavator comprising:

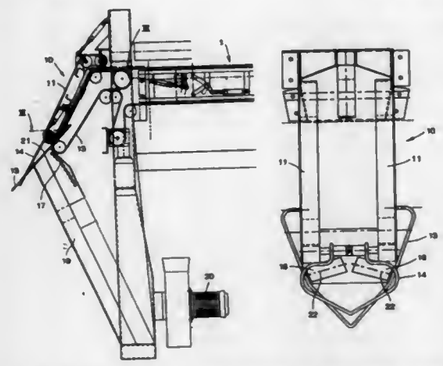
a main boom, said main boom being pivotally connected at its lower end to a king post assembly for movement up and down any vertical plane, a dipper arm pivotally connected to the outer end of the boom for movement in a vertical plane, the king post assembly providing for pivotal slewing movement of the main boom about a vertical axis so that the main boom can be rotated from one side to the other of a center line of the vehicle, the king post assembly being mounted upon a guide means extending transversely of the center line of the vehicle, the king post assembly being moveable along the guide means, fixing means for releasably fixing the king post assembly relative to the guide means, a fluid operated ram means connected between the king post assembly and an anchor means adapted to be fixed relative to the guide means whereby the extension and contraction of the fluid operated ram means causes movement of an actuating part of the ram relative to the guide means and movement of the king post assembly relative to the guide means to the same extent, the actuating part of the ram means being connected to the king post assembly by means which prevent translational relative movement between the actuating part, of the ram means and the king post assembly, the anchor means comprising a slider carried by the guide means and capable of movement along the guide means, and releasable fixing means for fixing the slider at a desired position along the length of the guide means.

5,606,810
WIRE SPACER FOR A SHAFT IN AN ELECTRICAL APPLIANCE
Richard I. Farrington, Seymour, and George M. Drizos, Cheshire, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 16, 1996, Ser. No. 587,318
Int. Cl.[6] D06F *75/26;* **H01H** *3/10*
U.S. Cl. 38—77.7 **18 Claims**



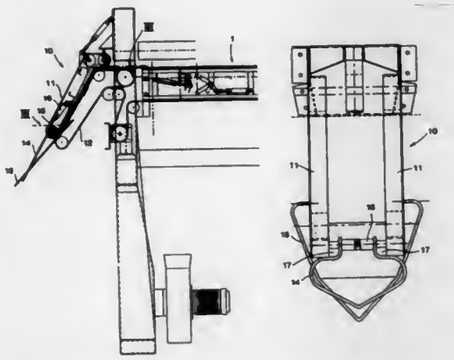
1. In an electric steam iron having a soleplate, a housing, a thermostat, and a temperature control knob connected to a shaft of the thermostat by an adapter, wherein the improvement comprises:
a spring directly mounted to the adapter and having a deflectable portion between the adapter and the thermostat.

5,606,811
DEVICE WITH SPREADER ROLLERS FOR INSERTING LAUNDRY ARTICLES INTO A FEEDER
Jørn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Søn A/S, Rønne, Denmark
Filed Apr. 27, 1995, Ser. No. 432,427
Claims priority, application Denmark, Apr. 28, 1994, 0491/94
Int. Cl.[6] D06F *67/04*
U.S. Cl. 38—143 **10 Claims**



1. A device for inserting substantially rectangular laundry articles into a feeder, comprising a conveyor adapted to grip a stretched portion of a front edge of the laundry article and then convey the laundry article into a feeder with the front edge foremost in the direction of feed, at least two spreader roller members having perforated surfaces positioned generally laterally of each other and in front of the conveyor with respect to the direction of feed, means for generating a negative pressure in the perforated spreader roller members so that a laundry article is sucked into frictional engagement with the rollers and control means for selectively controlling said roller members in such a manner that the laundry article can be moved to the right or to the left with respect to the direction of feed as the article is pulled into the feeder by the conveyor.

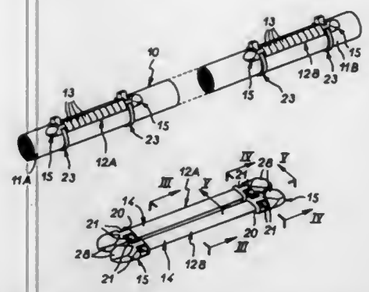
5,606,812
DEVICE FOR INSERTING LAUNDRY ARTICLES INTO A FEEDER
Jørn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Søn A/S, Rønne, Denmark
Filed Apr. 27, 1995, Ser. No. 432,429
Claims priority, application Denmark, Apr. 28, 1994, 0490/94
Int. Cl.[6] D06F *67/04*
U.S. Cl. 38—143 **9 Claims**



1. A device for inserting laundry articles into a feeder, comprising a conveyor adapted to grip a stretched portion of a front edge of the laundry article and then convey the laundry article into a feeder with the front edge foremost in the direction of feed, an underlying horn positioned in front of the conveyor with respect to the direction of feed of the article so that the conveyor pulls the laundry article across the top of the underlying horn and below the conveyor and an overlying horn positioned with respect to the conveyor and the underlying horn such that the laundry article during insertion is pulled by the conveyor below the overlying horn and in engagement therewith, said overlying horn being pivotally mounted with respect to the underlying horn so that the overlying horn is displaceable between a lower position where it engages the laundry article and an upper position in which the overlying horn extends completely above the underlying horn.

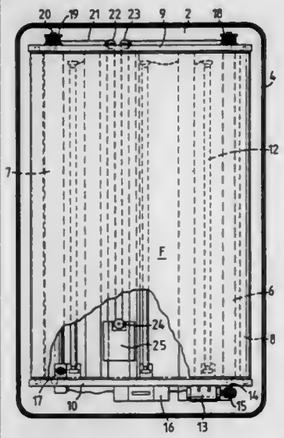
5,606,813
MARKER DEVICES
Hervé Cornu, Rouxmesnil Bouteilles; Loïc Le Bihan, Rouen, and Jean-Pierre Robbes, Sotteville les Rouen, all of France, assignors to Legrand, Limoges, France
Filed Feb. 8, 1994, Ser. No. 194,326
Claims priority, application France, Feb. 19, 1993, 93 01896
Int. Cl.[6] G09F *3/04*
U.S. Cl. 40—316 **19 Claims**

1. Marker carrier device assembly in combination with a series of marker members, said marker carrier device assembly comprising a pair of elongate marker carrier devices detachably connected to each other and positionable in side-by-side relation, each of said marker carrier devices comprising a support having means for carrying at least one of said marker members adapted to define an identifying message, and fixing means in one piece with said support for attaching the marker carrier device to an item to be marked, said marker members being detachably connected to each other and selectively engageable with respective ones of said pair



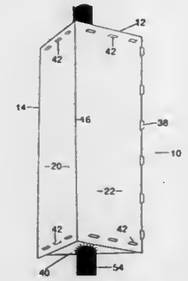
of connected marker carrier devices for loading respective marker members prior to separation of said marker carrier devices.

5,606,814
FILM WINDING MECHANISM AND DISPLAY APPARATUS
Henry Szywalla, London, and James Melville, Hertfordshire, both of Great Britain, assignors to Adverite PLC, Wolverhampton, England
PCT No. PCT/GB94/00366, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/20946, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 24, 1994, Ser. No. 505,197
Claims priority, application United Kingdom, Mar. 1, 1993, 9304099
Int. Cl.[6] G09F *11/29*
U.S. Cl. 40—471 **6 Claims**



1. A film moving mechanism for poster display apparatus, such mechanism comprising:
first and second spools between which a carrier film is wound;
first and second axles, respectively, carrying the spools for rotation at adjustable rotational speeds and the film wound thereon for rotation at respective surface speeds, said first and second axles, respectively, carrying first and second rotational members;
a motor rotationally driving the axle carrying the first spool to rotate the spool;
a flexible elongated element wound around the rotational members and a weight carried by said element intermediate the members, which weight, when the first axle is driven by the motor, rises and falls as the element winds and unwinds around the members to adjust the rotational speeds of the axles, thereby maintaining the surface speeds of the spools substantially equal.

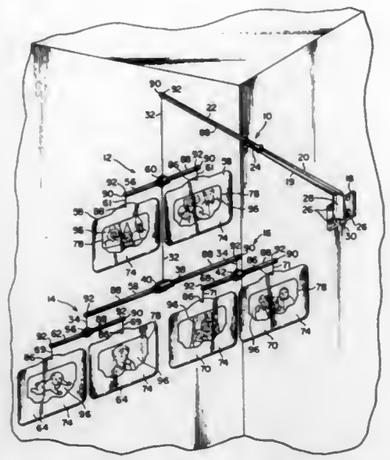
5,606,815
POLE-MOUNTABLE POLYGONAL-SECTION SIGN SUPPORT
Barry C. Feldwhere, Liss, England, assignor to Alpha Signs Ltd., Liss, England
Continuation of Ser. No. 133,185, Oct. 15, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 557,674
Claims priority, application United Kingdom, Apr. 25, 1991, 9108908; Dec. 19, 1991, 9126977
Int. Cl.[6] G09F *15/00*
U.S. Cl. 40—607 **7 Claims**



1. A support for a sign adapted to be mounted to a substantially vertical pole or post without requiring access to an end thereof, the support comprising:
a closed hollow support member having a plurality of generally rectangular sides, one or more of said sides being suitable for supporting a sign, said support member being selected from (a) a generally rectangular sheet of flexible material which is foldable along a plurality of lines extending substantially parallel to one edge of said sheet to form said support member, said one edge being secured to the edge opposite said one edge to hold said support member in its closed state, and (b) at least three similar generally rectangular sheets of a support material each having at least one connecting means in one edge and a co-operating connecting means in the opposite edge whereby the sheets can be joined together to form said support member; and
upper and lower bracing members, each externally shaped to correspond to and fit within the internal sectional shape of said support member in its closed state, secured within the upper and lower ends of the support member;
wherein each bracing member has a central circular aperture having radially-extending slots in its periphery to form radially inwardly projecting fingers and a slot extending from the periphery of said aperture to the periphery of the bracing member, whereby, by opening said slot, each bracing member can be fitted around a substantially vertical pole or post without requiring access to an end and wherein said inwardly projecting fingers of each said central aperture engage and grip said pole or post, whereby the support member can then be assembled around, and secured to, the bracing members.

5,606,816
MOBILE OF MODULAR CONSTRUCTION FOR DISPLAYING PICTURES
Richard Schwartz, Mutton Town, N.Y., assignor to North American Enclosures Inc., Central Islip, N.Y.
Filed May 1, 1995, Ser. No. 431,856
Int. Cl.[6] G09F *7/22*
U.S. Cl. 40—617 **8 Claims**

1. A mobile for displaying artwork, including pictures, the mobile comprising:
a modular support having a support cross section;
a hanger having a passageway therethrough, a portion of the support cross section being received in said passageway, said hanger having an upper segment, a lower segment, and a main segment, the upper segment and the lower segment being



attached to the main segment, a first opening defined by an intersection of the upper segment with the main segment and a second opening defined by the intersection of the lower segment with the main segment, and a passageway disposed in the main segment;

a plurality of display envelopes, each display envelope having a front frame with a front window;

suspension means for suspending one of said display envelopes, said suspension means connecting said one of said display envelopes to the modular support; and

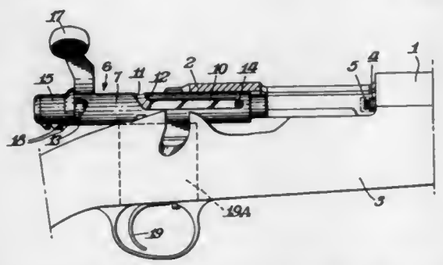
a primary suspension means the primary suspension means being coupled to said hanger.

5,606,817

MUZZLE-LOADING FIREARM

Troi N. Sachse, Elizabethtown, Ky., assignor to Remington Arms Company, Inc.

Filed Oct. 18, 1995, Ser. No. 544,928
Int. Cl.[6] F41C *9/08*
U.S. Cl. 42—51 **8 Claims**



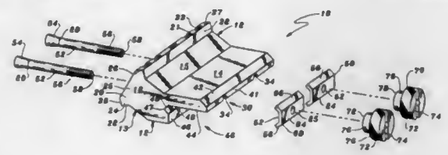
1. A muzzle-loading firearm comprising a barrel having a front end and a closed rear end and attached to a receiver; means at the rear end of the barrel for receiving a percussion cap; a flash hole formed in the rear end of the barrel; a bolt assembly having a front and a rear end and positioned within the receiver behind and substantially aligned with the barrel, the bolt assembly being operatively connected to a trigger assembly and comprising a bolt body, a firing pin within the bolt body, a spring positioned to bias the firing pin forward, a firing pin head at the rear end of the firing pin positioned to connect the firing pin to the trigger assembly, and a bolt plug at the rear end of the bolt to retain the firing pin; a first cam cut formed in the side of the bolt body having a forward longitudinal section and rearwardly extending transverse section; a cam follower in the receiver positioned to engage the first cam cut; a second cam cut in the rear of the bolt body to engage with the firing pin head for cocking the firing pin; and a bolt handle mounted on the bolt body for movement of the bolt assembly longitudinally and rotationally within the receiver and guided by the cam follower interacting with the first cam cut.

5,606,818

MULTI-PURPOSE AMBIDEXTROUS RIFLE SCOPE MOUNT

Timothy G. Hardee, 2262 McGowan Pkwy., Marysville, Calif. 95901

Filed Apr. 21, 1995, Ser. No. 426,267
Int. Cl.[6] F41G *1/38*
U.S. Cl. 42—101 **19 Claims**



1. A multipurpose mount for a rifle having a rigid rifle base affixed thereon for mounting scopes and other objects thereto, the rifle base having an attachment surface to which the scopes and other objects can be connected, the multipurpose mount comprising in combination:

a connector including means to connect to a portion of the attachment surface of the rifle base, and

an auxiliary base, said auxiliary base rigidly connected to said connector and having a coupling surface similar to the attachment surface of the rifle base, such that a scope or other object can be coupled to said coupling surface,

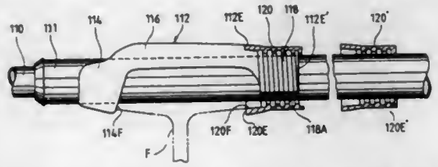
and wherein said auxiliary base is spaced from a vertical plane including the long axis of the attachment surface and the barrel of the rifle.

5,606,819

REEL LEG FIXING DEVICE FOR FISHING ROD

Takafumi Ozeki; Masaru Akiba; Shuichi Kimura; Nobuo Nodera, and Tomoyoshi Tsurufuji, all of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Division of Ser. No. 42,264, Apr. 2, 1993, Pat. No. 5,392,556.
This application Aug. 16, 1994, Ser. No. 291,548
Claims priority, application Japan, Apr. 3, 1992, 4-109164; Feb. 2, 1993, 5-36205; Feb. 2, 1993, 5-36206; Feb. 12, 1993, 5-9586; Feb. 12, 1993, 5-47252; Feb. 16, 1993, 5-10354
The portion of the term of this patent subsequent to Apr. 2, 2013, has been disclaimed.
Int. Cl.[6] A01K *87/06*
U.S. Cl. 43—22 **3 Claims**



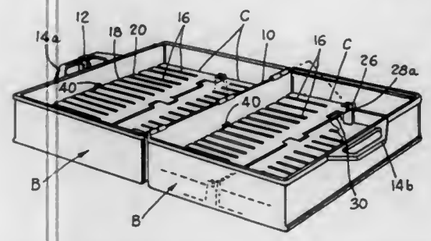
1. A reel leg fixing device, for mounting and fixing a reel leg onto a fishing rod comprising a first threaded annular unbroken elastic member such that the diameter of said annular member can be enlarged to at least the outside diameter of said rod and cooperatively threaded onto a second member; wherein said annular member is disposed about said rod and when said annular member cooperatively threads onto said second member said second member is captured between said annular member and said rod, and said reel leg is captured between and against said rod and said annular member; and said annular member is retained on said rod in a state of elastic compression of said annular member when said reel leg is not fixed to said rod.

5,606,820

TANGLE-FREE FISHING LURE STORAGE CONTAINER

Melvin E. Suddeth, 798 Griffin Mill Rd., Pickens, S.C. 29671

Filed Oct. 3, 1994, Ser. No. 316,847
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.1 **25 Claims**



1. A fishing lure storage container for storing a large number of fishing lures in a tangle-free manner comprising:

a first lure storage compartment;

a second lure storage compartment disposed in side-by-side arrangement connected with said first lure compartment;

a plurality of lure storage panels disposed in said first and second storage compartments, each of said lure storage panels comprising a pivotal edge;

said plurality of lure storage panels comprising at least a first lure storage panel and a second lure storage panel rotatable about at least one pivot, said at least one pivot being disposed proximate a medial portion of said first and second storage compartments, and said at least one pivot disposed between adjacent pivotal edges of said lure storage panels;

said first and second lure storage panels each comprising a plurality of elongated lure retention slots formed along a length of said panels for receiving a shank of said treble books of said fishing lure;

said lure retention slots including slot entrances formed along a free edge of each of said first and second panels opposite said pivotal edge of each of said lure storage panels, and said slot entrances including a closed end opposite said slot entrance; and

said lure storage panels in each compartment having a closed position in said lure compartment by which said fishing lures are prevented from being removed from said lure retention slots through said slot entrances and from being entangled with one another, and said line storage panels having an open position in which said lures may be removed from said retention slots via said slot entrances.

5,606,821

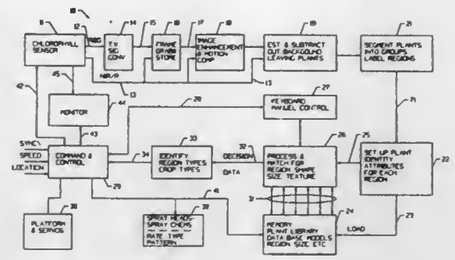
SMART WEED RECOGNITION/CLASSIFICATION SYSTEM

Firooz A. Sadjadi, Minneapolis, and Michael E. Farmer, Eagan, both of Minn., assignors to Loral Corporation, New York, N.Y.

Filed Jul. 25, 1994, Ser. No. 257,257
Int. Cl.[6] A01G *13/00*
U.S. Cl. 47—1.7 **9 Claims**

1. Apparatus for recognizing and controlling weeds growing in a field of desired vegetation, comprising:

sensor means for detecting green vegetation in said field,



first memory means for storing a vegetation memory map of said field to provide a vegetation image representative of different forms of green vegetation in said field,

means for eliminating background information from said vegetation memory map to produce an enhanced vegetation memory map in said memory means,

means for segmenting said enhanced vegetation memory map into identifiable map regions corresponding to unique field regions of said field,

means for establishing data representative of unique attributes for each of said map regions,

second memory means for storing reference data base models of the green vegetation defining each of said regions,

processing means for matching each enhanced vegetation memory map region with said stored reference data base model of the corresponding region,

said processing means being coupled to a dynamic controller means for controlling a plurality of the ejection of weed-controlling fluids through spray nozzles wherein said spray is dispensed into said regions,

wherein said sensor means comprises a chlorophyll sensor for generating TV color compatible signals red, blue and green and an index ration NIR/R,

wherein said processing means further comprises means for identifying the regions of green vegetation by size, shape color, texture and spectral properties, and

wherein said dynamic controller means is constructed to control chemicals that are ejected from a plurality of spray heads which are constructed to spray selected isolated green vegetation with different chemicals.

5,606,822

PLANT-CUTTING SHEARS WITH CHEMICAL APPLICATOR

John Dearhammer, 7812 Forest Ave., Gary, Ind. 46403

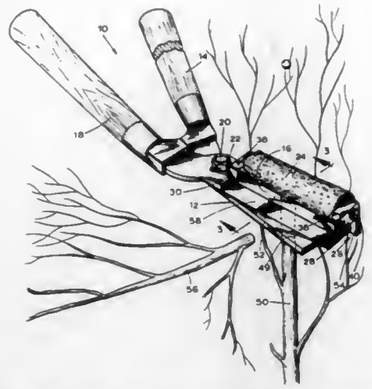
Filed May 7, 1996, Ser. No. 646,051
Int. Cl.[6] A01G *21/00*
U.S. Cl. 47—1.7 **11 Claims**

1. Plant-cutting shears with chemical applicator, comprising:

first and second cutting blades, each with a handle, connected in a scissors arrangement;

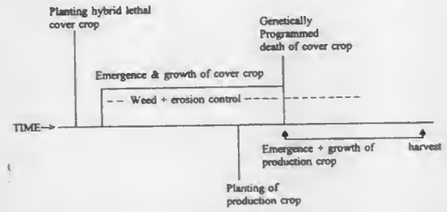
a resilient fluid-absorptive element capable of holding a quantity of a systemic herbicide or other liquid plant-treatment chemical; and

means for mounting said chemical-holding element on the shears such that a surface of said chemical-holding element lies approximately in the cutting plane of said blades, but with said element isolated from fluid contact with overlapping active areas of said blades, whereby in operation, with a single cutting motion of the shears, a user may cut a plant and



cause the resilient chemical-holding element to make direct fluid-applying physical contact with the plant wounds.

5,606,823
COVER CROP SYSTEM
Edward J. Souza, and Charlotte E. Eberlein, both of Ameican Falls, Id., assignors to Idaho Research Foundation, Moscow, Id.
Filed May 16, 1994, Ser. No. 243,847
Int. Cl.[6] A01G *1/00;13/00;* **A01H** *1/00;4/00*
U.S. Cl. 47—58 **20 Claims**



14. A method of reducing weed growth and soil erosion in the production of a crop plant comprising:
providing a seed or seedling of a hybrid lethal plant;
planting the seed or seedling of the hybrid lethal plant in a field;
providing a seed or seedling of a crop plant; and
planting the seed or seedling of the crop plant in the field, and wherein the hybrid lethal plant dies without chemical application at a time which does not substantially interfere with the growth of the crop plant.

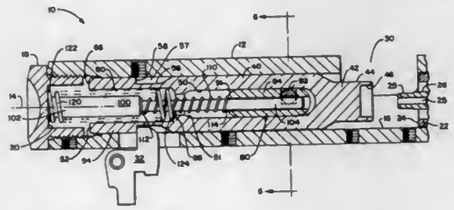
5,606,824
ELEVATED PLANT HOLDER
Michael A. Ruibal, 607 May Rd., Seagoville, Tex. 75159
Division of Ser. No. 100,078, Jul. 30, 1993, Pat. No. 5,450,692.
This application Sep. 18, 1995, Ser. No. 529,421
Int. Cl.[6] A01G *9/12*
U.S. Cl. 47—70 **6 Claims**

1. A device for supporting a plant above a plant pot having a circular bottom, tapered interior surface walls and a rim, which comprises:
an upstanding pole having a lower end near the bottom of the plant pot and an upper end;
a frame having a central orifice therein and having a circular peripheral edge disposed against the interior surface of the plant pot, the pole passing through the central orifice in the frame; and



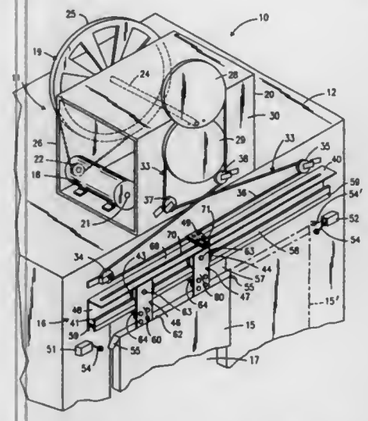
a basket attached to the upper end of the pole for holding the plant;
wherein the frame comprises:
a substantially planar wire grate having a peripheral edge;
a plurality of spaced apart wire legs extending perpendicularly downward from the peripheral edge of the wire grate for securing the frame to the plant pot; and
a plate disposed near the center of the wire grate, the plate having a centrally disposed orifice therein, the pole passing through the orifice in the plate.

5,606,825
COCKING MECHANISM FOR A MUZZLE LOADING FIREARM
Charles A. Olsen, Milford, Conn., assignor to The Marlin Firearms Company, North Haven, Conn.
Filed Jul. 10, 1995, Ser. No. 500,374
Int. Cl.[6] F41A *3/72*
U.S. Cl. 42—69.01 **25 Claims**



1. A firearm comprising:
a receiver having an outer wall defining a central axis and an inner axial bore, said outer wall defining aperture means opening into said bore;
a hammer axially movable within said receiver from a first cocked position to a second fired position, said hammer comprising opposite first and second end portions and a first body portion disposed intermediate said first and second end portions, said first body portion defining slot means comprising opposite first and second ends defining first and second surfaces;
first spring means for biasing said hammer from said cocked position to said fired position; and
cocking means comprising first and second portions, said first portion axially movable within said slot means of said hammer, said second portion extending outwardly through said aperture means of said receiver and being axially movable within said aperture means, said cocking means being axially movable from a first position to a second position;
wherein said first portion of said cocking means engages said first surface of said slot means when said cocking means is moved from said first position to said second position whereby said cocking means moves said hammer to said cocked position, said cocking means returning to said first position after said rifle has been cocked.

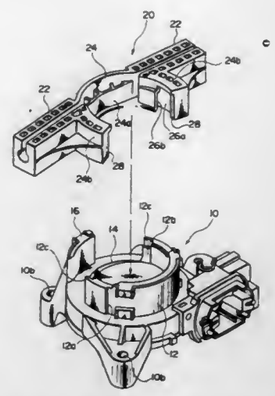
5,606,826
DRIVE AND TRACK APPARATUS FOR VARIABLE SPEED CLOSURE
Burton B. Calhoun, 4226 Forrestar Ave., Orlando, Fla. 32806
Filed Mar. 29, 1995, Ser. No. 413,717
Int. Cl.[6] E05F *15/00*
U.S. Cl. 49—138 **20 Claims**



1. Drive and track apparatus for a variable speed closure, comprising:
a track assembly defining a run with opposite ends;
a closure member movably mounted on said track assembly;
a motor;
a shaft connected for rotation by said motor;
first and second drive pulleys eccentrically mounted in 180° out-of-phase relationships for rotation with said shaft;
first and second tension pulleys respectively located proximate said run ends;
first and second feeder pulleys respectively located between said tension pulleys and said drive pulleys;
a cable having one end wrapped around said first drive pulley, another end wrapped around said second drive pulley, and an intermediate portion wrapped around said tension and feeder pulleys; said feeder pulleys serving to establish fixed positions for feeding said intermediate portion of said cable between said drive pulleys and said tension pulleys; and
means connecting said closure member for travel with said cable intermediate portion.

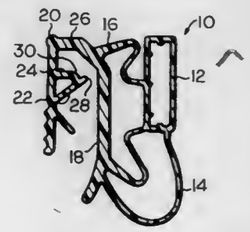
5,606,827
WIRE TYPE WINDOW REGULATOR
Wataru Kanou, and Takahiro Yamada, both of Toyohashi, Japan, assignors to Asmo Co., Ltd., Kosai, Japan
Filed Jun. 1, 1995, Ser. No. 456,921
Claims priority, application Japan, Oct. 19, 1994, 6-281219
Int. Cl.[6] E05F *11/48*
U.S. Cl. 49—352 **18 Claims**

1. A wire type window regulator wherein a window glass supporting member secured to an endless wire is moved by taking up said endless wire with a take-up drum which turns in response to rotation of a motor, comprising:
a drum casing wall which has a substantially cylindrical shape, a cutout portion, and is formed in a motor housing internally containing said take-up drum;



a wire guide having an attachment member which fills said cutout portion in said drum casing wall and contacts an inner surface of said drum casing wall to be attached to said motor housing, and guide portions which extend from said attachment member and guide inward and outward movement of said endless wire;
at least one depressed portion provided in a direction of wall thickness of said drum casing wall at said inner surface which contacts said attachment member of said wire guide; and
at least one projecting portion provided in said attachment member of said wire guide and engaging with said depressed portion.

5,606,828
MAGNETIC DOOR GASKET
Glenn Hall, and Meri E. Brown, both of Fort Smith, Ark., assignors to GenCorp Inc., Fairlawn, Ohio
Filed Mar. 14, 1995, Ser. No. 404,068
Int. Cl.[6] E06B *7/16*
U.S. Cl. 49—490.1 **21 Claims**



1. A gasket for sealing a juncture between a door and a cabinet to which the door is hingedly connected, said gasket being formed from a resilient material and being adapted to be attached to a panel of the door, said gasket having a cross-sectional configuration comprising:
a central web;
a plurality of enclosed chambers extending from a first side of said central web;
a leg spaced from a second side of said central web and extending generally parallel thereto;
a bight joining an end of said leg and an end of said central web and forming a generally U-shaped recess with said leg and said web;
a generally U-shaped projection extending partly from said leg toward said web, said generally U-shaped projection being spaced from said bight and having a closed end positioned adjacent to, but spaced from, said web; and

a nib extending from said closed end of said generally U-shaped projection toward said central web, said nib being adapted to impede disengagement of said gasket from the panel of the door during assembly of said gasket to the door.

5,606,829

MOUNTING DEVICE FOR A DECOMPRESSION PANEL

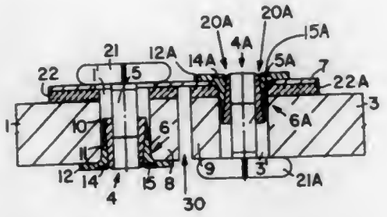
Mohammad Hararat-Tehrani, Bremen, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Feb. 8, 1995, Ser. No. 386,815

Claims priority, application Germany, Feb. 8, 1994, 44 03 896.8

Int. Cl.[6] E04H *9/00*

U.S. Cl. 52—1 **23 Claims**



1. A decompression arrangement for providing decompression venting through a partition structure having a decompression opening therethrough, comprising a decompression panel arranged in said decompression opening, a frame arranged around a perimeter of said panel, and a plurality of mounting elements releasably securing said frame to said panel and to said partition structure, wherein each of said mounting elements comprises an outer sleeve with a space therein and flanged head extending therefrom, an inner sleeve arranged at least partly in said space within said outer sleeve, a frangible member releasably connecting said outer sleeve and said inner sleeve, and a bolt connected to said inner sleeve, wherein said frame overlaps a rim portion of said panel and a rim portion of said partition structure around said opening, a plurality of mounting holes are provided through said frame and said partition structure and through said frame and said panel, each of said bolts includes a bolt head, said mounting elements are arranged to extend through said mounting holes with said frame and said partition structure and with said frame and said panel respectively secured together between said bolt heads and said flanged heads of said mounting elements, said bolt head of a first one of said mounting elements is in supporting contact with said frame, said flanged head of said first mounting element is in supporting contact with said partition structure, said bolt head of a second one of said mounting elements is in supporting contact with said decompression panel, and said flanged head of said second mounting element is in supporting contact with said frame.

5,606,830

COLLAPSIBLE ANTI-BIRD PERCHING DEVICE

Charles E. Townsend, Jr., 11 Ranch Rd., Orinda, Calif. 94563, and Charles E. Townsend, III, 19 Nottingham Ct., Brentwood, Calif. 94513

Filed Mar. 27, 1995, Ser. No. 411,120

Int. Cl.[6] G04H *9/16*

U.S. Cl. 52—101 **5 Claims**

1. An anti-bird perching device for mounting to a horizontal cable or railing to be protected, comprising:

right and left panels formed of an open grid material including equally spaced, vertically disposed, parallel strands extending from top to bottom margins of said grid panels, and further



including equally spaced horizontally disposed strands extending from one side to an opposite side of said panels,

hinge means mounting said grid panels in substantially face-to-face parallel relationship, with the vertical strands of the left panel being horizontally offset from the vertical strands of the right panel,

said hinge means formed by twisting topmost horizontal strands on opposed panels together at horizontally preselect spaced points,

upper portions of the vertical strands of both the left and right panels located above said hinge mounting means defining individual anti-bird perching prongs,

the grid material located below such hinge means defining lower skirt panels hingedly movable toward and away from one another whereby said lower skirt panels can be manually spread apart to permit said skirt panels to be draped over a horizontal cable or railing to cause said prongs of opposite panels located above said hinge means to move in opposite directions and crisscross over one another to form two parallel rows of said prongs.

5,606,831

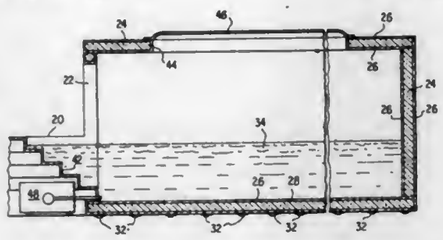
ENCLOSED MONOLITHIC SWIMMING POOL

Joseph R. Tippmann, HRC-33, Box 8419, Rapid City, S. Dak. 57701, and Vincent P. Tippmann, 8605 N. River Rd., New Haven, Ind. 46774

Filed May 25, 1995, Ser. No. 450,800

Int. Cl.[6] E04H *4/00;1/00*

U.S. Cl. 52—169.7 **12 Claims**



1. A swimming pool comprising:

(a) a floor member, an upstanding side wall member positioned on said floor member adjacent a peripheral edge thereof and forming a joint therewith, and a roof member positioned on said side wall member and forming a joint therewith, said floor, side wall and roof members being made of polyurethane material and jointed to form a housing having an interior and exterior surface, a monolithic layer of reinforced resinous material entirely covering said interior surface and said joints and a monolithic layer of reinforced resinous material entirely covering said exterior surface and said joints to thereby form a monolithic swimming pool enclosure for holding a quantity of water, and

(b) an opening in said side wall member to permit access to the interior of said swimming pool.

5,606,832

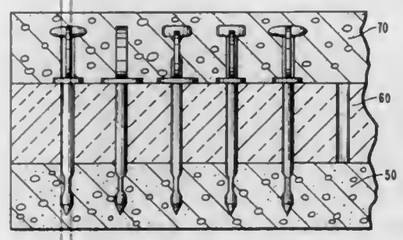
CONNECTORS USED IN MAKING HIGHLY INSULATED COMPOSITE WALL STRUCTURES

David O. Keith, and David M. Hansen, both of American Fork, Utah, assignors to H. K. Composites, Inc., Orem, Utah

Continuation-in-part of Ser. No. 558,734, Nov. 16, 1995, and Ser. No. 225,910, Apr. 8, 1994, Pat. No. 5,519,973. This application May 15, 1996, Ser. No. 645,000

Int. Cl.[6] E04B *1/62;5/00*

U.S. Cl. 52—410 **20 Claims**



1. A connector used in making an insulating composite wall structure including first and second structural layers comprising a hardenable material and an insulating layer disposed between the first and second structural layers, wherein the connector comprises a highly insulating material and includes:

(a) an elongate shaft having a penetrating segment, a gripping segment, and a mesial segment disposed between the penetrating and gripping segments, the elongate shaft having a width;

(b) a penetrating tip at an end of the penetrating segment distal to the mesial segment, the penetrating tip having a width that is less than the width of the elongate shaft;

(c) orienting means for limiting penetration of the elongate shaft through the insulating layer;

(d) first anchoring means within the penetrating segment for anchoring the connector within the first structural layer when substantially hardened; and

(e) second anchoring means within the gripping segment comprising a plurality of acurate wings laterally disposed on the enlongate shaft for anchoring the connector within the second structural layer when substantially hardened.

5,606,833

WALL STRUCTURE

Leif A. Andersson, Eslöv, Sweden, assignor to Isover Saint-Gobain, Paris, France

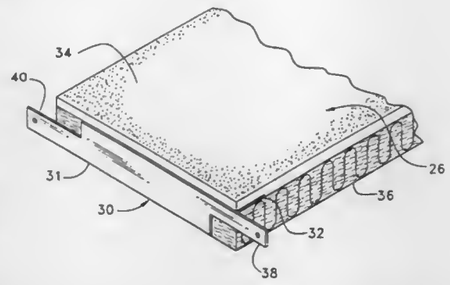
Filed Aug. 25, 1994, Ser. No. 295,939

Claims priority, application Sweden, Aug. 27, 1993, 9302775

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—506.01 **9 Claims**

1. A wall structure for interior sound and thermal insulation of a room, said wall structure comprising at least one prefabricated insulating member and fastening means, said fastening means consisting of metal for affixing said insulating member laterally to a wall, and for affixing said insulating member to a floor and a ceiling, said insulating member including at least two sheets fastened together, said sheets including a soft insulating sheet and a rigid support sheet such that said insulating member has a bending resistance inside of said room that is higher than the bending resistance of said insulating member at said wall, said fastening



means including at least two types, said fastening means types including a L-type and a T-type, said L-type fastening means being used for affixing said insulating member to said floor and said ceiling, and said T-type fastening means being used for affixing said insulating member laterally to said wall, a portion of said L-type fastening means being used for installation to said floor and said ceiling, wherein the portion of the L-type fastening means that is intended for installation to the floor comprises at least one flange projecting past the fastening means and a nipple for affixing to the floor, and another portion of said L-type fastening means being used for installation in an area between said insulating sheet and said support sheet, said support sheet being positioned to face the interior of said room, and two portions of said T-type fastening means being used for positioning in the corresponding areas between said insulating sheet and said support sheet.

5,606,834

METHOD OF, AND PANEL FOR, APPLYING A GRAPHIC IMAGE TO SLAT WALLS

Jeffrey R. Bauer, Cuyahoga Falls, Ohio, assignor to Darko Company, Inc., Twinsburg, Ohio

Division of Ser. No. 275,412, Jul. 15, 1994, which is a continuation-in-part of Ser. No. 70,544, Jun. 2, 1993, Pat. No. 5,423,155. This application Jul. 31, 1995, Ser. No. 509,148

Int. Cl.[6] E04B *1/38*

U.S. Cl. 52—506.01 **8 Claims**



1. A panel for use in applying a graphic image to a longitudinally extending slat board or a slat wall comprising a longitudinally extending, generally planar, transparent face having a lateral extent generally conforming to the lateral extent of the slat board, first hook means positioned generally at one lateral edge of said face to engage one lateral edge of the slat board, and second hook means positioned generally at another lateral edge of said face to engage said another lateral edge of the slat board, said planar face

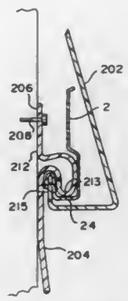
adapted to be spaced from the slat board so that a graphic image may be positioned between said face and the slat board and be visible through said face.

5,606,835

PUSH TAB FOR SIDING

Wendel J. Champagne, Tomball, Tex., assignor to Tommy W. Hollis, Conroe, Tex.

Filed Aug. 3, 1994, Ser. No. 285,320
Int. Cl.[6] E04D 1/34
U.S. Cl. 52—545 **11 Claims**



1. A mounting clip for siding comprising

a continuous metal strip having a first face, a second face, a generally J-shaped portion and a generally inverted U-shaped portion, said generally J-shaped portion having a first end corresponding to an upper end of the J-shape and a second end corresponding to a tail end of the J-shape, the generally inverted U-shaped portion having an apex, a first end, a first leg extending between the apex and the first end, a second end, and a second leg extending between the apex and the second end, each leg having a first face and a second face corresponding to the first face and the second face of the continuous metal strip, the first end of the generally inverted U-shaped portion being connected to the second end of the generally J-shaped portion thus forming a generally S-shaped bend with the second leg of the generally inverted U-shaped portion forming a hood portion which covers the second end of the generally J-shaped portion, wherein the generally J-shaped portion has a long upright leg, a short upright leg, and a generally U-shaped leg connecting the long upright leg with the short upright leg, each such leg having a first face and a second face corresponding to the first face and second face of the strip, and said continuous metal strip further has a first barb means facing outwardly and extending from the second face of the short upright leg, said first barb means pointing toward the apex of the inverted generally U-shaped portion, said hood portion being positioned in covering relationship with the first barb means;

wherein the first barb means comprises a first triangular barb positioned adjacent to a first side edge of the short upright leg and a second triangular barb positioned adjacent to a second side edge of the short upright leg; and

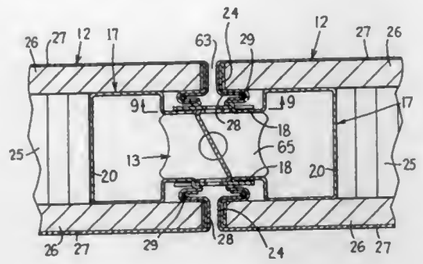
wherein said continuous metal strip further has a second barb means facing inwardly and extending from the first face of the first leg of the inverted U-shaped portion, said second barb means pointing away from the apex of the inverted U-shaped portion.

5,606,836

SEPARABLE POST/PANEL SYSTEM

Robert W. Insalaco, and Richard G. Haworth, both of Holland, Mich., assignors to Haworth, Inc., Holland, Mich.

Division of Ser. No. 891,557, May 29, 1992, Pat. No. 5,377,466. This application Sep. 26, 1994, Ser. No. 312,416
Int. Cl.[6] E04B 2/00
U.S. Cl. 52—582.1 **10 Claims**



1. In an interior upright space-dividing wall system formed from a plurality of portable upright wall panels which are joined horizontally in series, said wall panels having enlarged and generally parallel outer side surfaces which are disposed within generally parallel vertical planes which are horizontally spaced a small distance apart, said wall panel comprising:

a rigid, rectangular, ringlike frame extending generally along peripheral edges of the wall panel and including generally parallel and horizontally elongated top and bottom frame rails which are rigidly joined together adjacent ends thereof by generally parallel and vertically elongated side frame rails;

each said frame rail including a pair of horizontally-spaced side legs which define thereon generally parallel and vertically-oriented outer side walls which extend substantially throughout the elongate direction of the respective frame rail, each said outer side wall being generally parallel with but spaced inwardly a predetermined distance from a respectively adjacent panel side surface;

each said side leg including a boundary flange which is cantilevered outwardly in approximately perpendicular relationship to the respectively adjacent outer side wall, said boundary flange being disposed along an outer peripheral edge of the respective frame rail and terminating in a free edge located approximately at the respective panel side surface, the boundary flanges of said frame rail being substantially coplanar and elongated along opposite sides of the respective frame rail, the boundary flanges of said frame rails cooperating to define generally rectangular ringlike rims which define shallow recesses which are disposed on opposite sides of the frame and open generally outwardly in opposite sideward directions with said rims defining the perimeter of the panel;

a generally rectangular, platelike sheet means fixedly secured to each side of said frame for providing a sound absorbing capability and a tackable surface, said sheet means consisting of a one-piece preformed fiberboard sheet having perforations therein for providing sound absorption and also permitting pins to be inserted therein so that the sheet functions as a tackboard, said fiberboard sheet substantially totally occupying said recess with peripheral edges of said sheet being closely bounded by said rim, said sheet having a thickness which substantially corresponds to the depth of said recess and a rear surface which is adhesively secured to the outer side walls of said frame;

a thin sheet of fiberglass positioned directly over and substantially coextensively covering an outer side surface of said fiberboard sheet; and

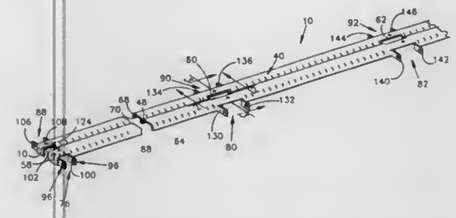
a thin sheet of flexible fabric positioned exteriorly of and extending coextensively over said fiberglass sheet and defining the outer side surface of the panel, said fabric sheet having edge portions which bend around the free edge of the boundary flanges defining said rim and are stationarily secured to said frame within retaining grooves which are located behind said boundary flanges and open peripherally around said frame.

5,606,837

BRACE SYSTEM FOR USE WITH A TRUSS SYSTEM

Mark A. Hollzlander, 9741 Pitch Rd., Carmel, Ind. 46032

Filed Feb. 6, 1995, Ser. No. 383,986
Int. Cl.[6] E04C 3/30
U.S. Cl. 52—693 **17 Claims**



1. A brace for providing lateral support to truss units of a truss system having at least a first, a second and a third truss unit, with each truss unit having at least one beam member, the brace comprising

(1) a generally continuous, elongated central leg having a first surface and a second surface, the second surface being positioned for engaging a first surface of the beam member of the first truss unit, and

(2) an elongated, first side leg disposed adjacent and generally perpendicular to the central leg, the first side leg including

(a) a first ear member disposed in a plane generally perpendicular to the central leg, the first ear member being adapted to be positionable generally flush to a second surface of the beam member of the first truss unit, and

(b) a first opening adjacent to the first ear member for receiving the beam member of the first truss unit and

(c) a second ear member placed adjacent to the first opening in an opposed relation to the first ear member, the second ear member being adapted to be positionable generally flush to a third surface of the beam member of the first truss unit,

each of the first and second ear members being formed as a part of the first side leg, the first ear member comprising a first flap of the first side leg bent in a clockwise direction to be generally perpendicular to the first side leg, the second ear member comprising a second flap of the first side leg bent in a counterclockwise direction to place the first and second ear members in a generally opposed relation in parallel planes separated by the first opening having a distance adapted to be generally slightly greater than the distance between the second and third surfaces of the beam member.

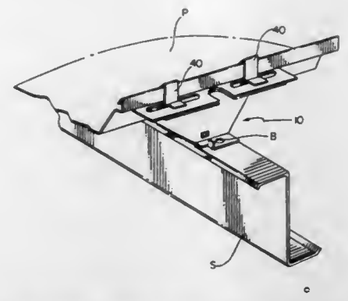
5,606,838

ROOF PANEL ATTACHMENT CLIP WITH CENTERING FEATURE

Robert W. Hughes, Kirkcaldy, and Bryan Balshaw, Kinghorn, both of Scotland, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed May 23, 1995, Ser. No. 448,260
Int. Cl.[6] E04D 1/34
U.S. Cl. 52—713 **6 Claims**

1. A roof panel attachment clip comprising



a body comprising a channel member having an upper flange for supporting a roof panel and a lower flange for attachment to a substructural roof member by means of a fastener applied with a tool,

said upper flange having a longitudinal slot therein,

a sliding member facing one surface of the upper flange,

said sliding member having a slot aligned with the slot in the upper flange,

a roof panel securing tab having an enlarged head below said slots, and a first free end extending upward through said slots and adapted to be rolled into a seam formed between adjacent roof panels,

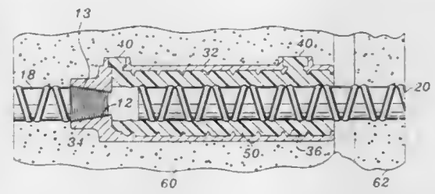
both said upper flange and said sliding member having similarly shaped openings which must be aligned about the tool axis in order to drive the fastener, and which, when aligned, center the tab within the slot in the upper flange through which the tab passes.

5,606,839

ENERGY DISSIPATING CONNECTOR

Hanns U. Baumann, 312 Emerald Bay, Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 231,134, Apr. 22, 1994, Pat. No. 5,459,973, which is a continuation-in-part of Ser. No. 893,259, Jun. 3, 1992, Pat. No. 5,305,573. This application Jan. 25, 1995, Ser. No. 377,643
Int. Cl.[6] E04C 3/26
U.S. Cl. 52—726.1 **12 Claims**



1. An energy dissipating connector for coupling first and second rebar members together, said connector comprising:

a) a housing for receiving ends of the first and second rebar members;

b) a viscoelastic material disposed within said housing and interconnecting at least one of said rebar members with said housing; and

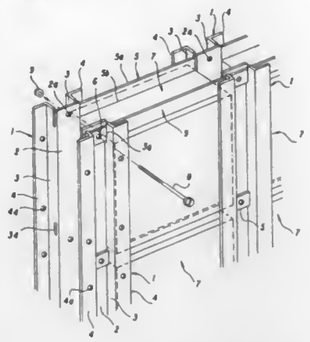
c) wherein said visoelastic material facilitates longitudinal movement of the first and second rebar members relative to one another in response to longitudinal tension and compression forces applied to said first and second rebar members.

5,606,840

PANEL AND PANEL STRUCTURE

Toshizo Hase, Otsu, Japan, assignor to Nihon Koshitsu Garasu Kabushiki Kaisha, Shiga-ken, Japan

Filed Jan. 4, 1996, Ser. No. 582,620
Claims priority, application Japan, Jul. 28, 1995, 7-192815
Int. Cl.[6] E04B *2/60;2/82*
U.S. Cl. 52—780 **4 Claims**



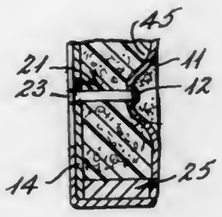
1. A panel comprising a plurality of pairs of first supports, each first support including a top plate portion and a pair of side plate portions, said top plate portion and said side plate portions being formed into a substantially U-shaped configuration, each of said side plate portions being formed at its longitudinal edge with a flange portion extending laterally outwardly therefrom, each of said side plate portions being formed with a plurality of slits spaced apart from one another by a predetermined distance; a plurality of web-like second supports inserted into the slits in said first supports; and a block member having a rectangular cross-section, wherein said block member is supported, at opposite end surfaces and at opposite side surfaces, by said flange portions and said side plate portions of two of said pairs of first supports, and wherein said block member is supported, at opposite upper and lower surfaces, by said second supports inserted into said slits of said first supports.

5,606,841

FILLED INTERIOR WALL PANELS

Morris Carter, Jr., Rte. 2, Box 2125, Starke, Fla. 32091

Filed Apr. 25, 1995, Ser. No. 428,712
Int. Cl.[6] E04C *2/34*
U.S. Cl. 52—802.1 **14 Claims**



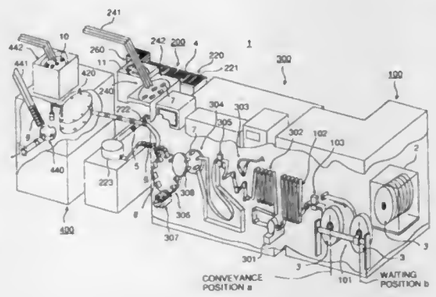
1. An interior wall panel comprising, a substantially continuous rigid backing member having opposite ends and opposite side edges and front and rear surfaces, a frame extending from said front surface of said backing member adjacent each of said opposite ends and side edges, a filling material positioned within said frame and on said front surface of said backing member, a plurality of spaced openings in said backing member extending between said front and rear surfaces thereof, a flexible covering material extending over said filling material and said frame, securing means for securing said covering material relative to said backing member and said securing means including tufting means for creating a three-dimensional relief for said covering material.

5,606,842

MANUFACTURING METHOD FOR PHOTOSENSITIVE FILM MAGAZINES AND MANUFACTURING METHOD FOR PHOTOSENSITIVE FILM MAGAZINES PACKED IN CONTAINERS

Norio Sakamoto; Toshiyuki Ohkawa, and Takashi Misawa, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 117,786, Sep. 7, 1993, abandoned. This application Apr. 3, 1996, Ser. No. 625,676
Claims priority, application Japan, Sep. 10, 1992, 4-269602
Int. Cl.[6] B65B *57/10*
U.S. Cl. 53—54 **11 Claims**



1. A method of manufacturing a photosensitive film magazine in a dark room, comprising the steps of:

feeding a web-shaped photosensitive film to an assembling section through a conveyance passage;

detecting a presence of a defective portion on the film,

identifying a kind of defect of the defective portion;

cutting the defective portion out of the film in a cutting section wherein the length of a cut-out defective portion is changed in accordance with the identified kind of defect;

discharging the cut-out defective portion without feeding the cut-out defective portion to the assembling section; and

assembling the film with magazine parts supplied from a parts section when the presence of a defective portion is not detected so that the photosensitive film magazine is manufactured.

5,606,843

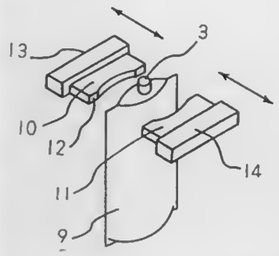
Patent Not Issued For This Number

5,606,844

PROCESS FOR PRODUCING A SELF-SUPPORTING PACKAGE HAVING AN OUTLET STOPPER AND AN APPARATUS FOR PRODUCING SAID PACKAGE

Tadao Takagaki; Yasuo Noguchi, and Mituharu Katayama, all of Tokyo, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 353,431
Claims priority, application Japan, Dec. 27, 1993, 5-348634; May 31, 1994, 6-118708
Int. Cl.[6] B65B *61/00*
U.S. Cl. 53—410 **23 Claims**



1. A process for producing a self-supporting package having an outlet stopper, the process comprising the steps of:

(a) supplying a self-supporting bag which has an opening part for filling contents at a top of the bag, and holding the bag in a vertical position with the opening part at the top;

(b) opening the opening part of the self-supporting bag;

(c) filling the self-supporting bag through the opened opening part, with contents;

(d) supplying an outlet stopper, which outlet stopper includes an outlet with a stopper on a ship-shaped flange, to the opening part, with at least one raised sealing rib on both sides of the ship-shaped flange; and

(e) sealing side sealing faces of the ship-shaped flange of the outlet stopper to inner side sealing faces of the opening part of the self-supporting bag;

wherein said sealing step (e) comprises the steps of:

placing an ultrasonic actuator, which produces mechanical vibration of an ultrasonic frequency, at a position at one side of the outlet stopper opposite said at least one raised sealing rib and on an axis line perpendicular to the side sealing faces of the outlet stopper;

placing another member at a position on an opposite side of the outlet stopper opposite said at least one raised sealing rib and on the axis line perpendicular to the side sealing faces of the outlet stopper such that the ultrasonic actuator on said one side of the outlet stopper faces the another member at the opposite side of the outlet stopper; and

driving the ultrasonic actuator at said one side of the outlet stopper to open or close along the axis line perpendicular to the side sealing faces of the outlet stopper in a synchronized manner, to thereby ultrasonically melt the at least one raised sealing rib on both sides of the side sealing faces of the ship-shaped flange of the outlet stopper and ultrasonically seal the side sealing faces of the ship-shaped flange of the outlet stopper, via the at least one melted sealing rib on both sides of the outlet stopper, to the inner side sealing faces of the opening part of the self-supporting bag; and

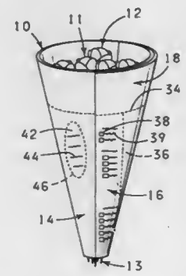
wherein said steps are conducted in the order of steps (a), (b), (c), (d) and (e), consecutively.

5,606,845

METHOD USING SHEETS AND SHEET ROLLS OF WRAPPING MATERIAL HAVING INFORMATION SELECTABLE BY CHOICE BLOCKS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International Inc., Okla. City, Okla.

Continuation of Ser. No. 241,112, May 11, 1994, which is a continuation-in-part of Ser. No. 68,482, May 28, 1993, Pat. No. 5,335,476, which is a continuation-in-part of Ser. No. 979,510, Nov. 19, 1992, abandoned, and a continuation-in-part of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Nov. 7, 1995, Ser. No. 553,208
Int. Cl.[6] B65B *61/02*
U.S. Cl. 53—411 **19 Claims**



1. A method of wrapping a floral grouping, the method comprising the steps of:

providing a sleeve having a detachable label area formed thereon, the label area having a plurality of choice blocks with an information area corresponding to each one of the choice blocks, at least one of the information areas being related to the floral grouping;

disposing the sleeve about the floral grouping such that the choice blocks on the label area are visible; and

selecting the choice block corresponding to the information area related to the floral grouping.

5,606,846

BAG SEALING

James M. Raby, Lewiston, N.Y., and Carry R. Coats, Plano, Tex., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

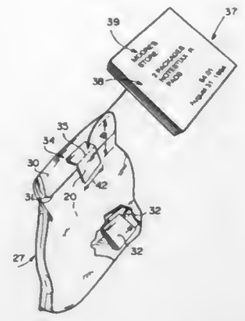
Filed Sep. 12, 1994, Ser. No. 304,226
Int. Cl.[6] B65B *61/00*
U.S. Cl. 53—415 **20 Claims**

1. A method of packaging physical objects in a container having an openable/closeable portion, utilizing a container-sealer incfuding a flexible strip of material comprising a substrate having first and second faces, a permanent pressure sensitive adhesive with removable release liner on the first face, and a repositional adhesive on the second face, comprising the steps of substantially sequentially:

(a) placing one or more desired physical objects in the container through the openable/closeable portion thereof;

(b) removing the release liner from the permanent pressure sensitive adhesive on the first face of the container-sealer substrate;

(c) applying the container-sealer to the container by bringing the permanent pressure sensitive adhesive into contact therewith to hold the openable/closeable portion of the container closed,



with the repositional adhesive on the second face of the container-sealer substrate facing away from the container; and

(d) bringing a flexible sheet having indicia thereon into contact with the repositional adhesive, to be held thereby.

5,606,847

METHOD AND DEVICE FOR FILLING AND CLOSING A PACKAGE

Leif T. Joensson, Rydebäck, and Ake Rosén, Helsingborg, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

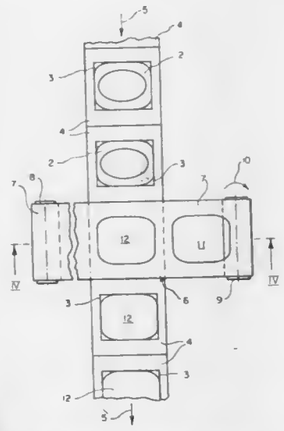
PCT No. PCT/EP94/00100, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/16949, PCT Pub. Date Apr. 8, 1994

PCT Filed Jan. 14, 1994, Ser. No. 481,304

Claims priority, application Switzerland, Jan. 20, 1993, 00166/93

Int. Cl.[6] B67B *3/28*

U.S. Cl. 53—471 **13 Claims**



1. Method for filling and closing a package (1) open on one side having an edge therearound which everywhere carries sealable plastics material thereon, the method comprising the steps:

providing a means for conveying the package (1) intermittently in a first direction (5);

providing a filling point (6) for the package;

conveying the package to the filling point and bringing said package to a standstill;

providing a strip of covering foil material (7) at the filling point above the package (1) said strip having a bole (11) therethrough above the open side of the package and upstream of said hole having covering material of sufficient size to completely cover said open side and edge of said package;

filling the package through said hole;

providing means for moving the Strip (7) in a direction which has a substantial component lateral to the direction of conveyance of the package (1);

moving said strip of covering foil until the open side of the package (1) and the edge (2) therearound are completely covered by said strip of covering foil, and bringing said strip to a standstill;

providing means for punching out a covering piece (12) of foil from the strip thereof and punching out said piece (12);

providing means for sealing said covering piece onto the edge (2) and sealing said piece onto the edge (2); and

moving the sealed package (1) along the first direction.

5,606,848

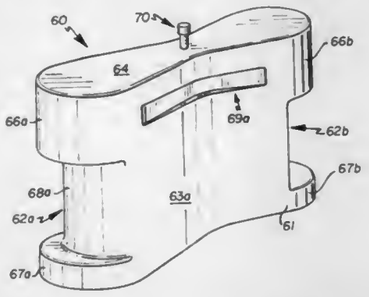
CARTONER CLEAN OUT SYSTEM AND METHOD

Bruce D. Domino, Nisswa, and Richard E. Balder, Brainerd, both of Minn., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed May 4, 1994, Ser. No. 238,167

Int. Cl.[6] B65B *35/54*

U.S. Cl. 53—534 **15 Claims**



1. An article follower for use in controlling the input of articles to a packaging machine of the type having at least one infeed line, having a plurality of input lanes and a conveyor, conveying articles to a selection line having a plurality of fight bars, the follower being in the infeed line, supported on and transported by the conveyor, behind at least one article in an input lane, the article follower comprising a body having a predetermined mass for loading at least one article from the infeed line on to the selection line, said body further having a configuration which enables said body to be conveyed in the input lane and advancing behind all of the articles in such input lane, said body further having a stop member of a predetermined configuration and disposed on an exterior surface of said body for contacting a surface of the packaging machine to stop the advance of the follower at a predetermined point.

5,606,849

APPARATUS FOR WRAPPING A PACKAGE

Roger V. Bettenhausen, 5 Lakewood Dr., Columbus, Nebr. 68601

Continuation of Ser. No. 498,180, Jul. 5, 1995. This application Jun. 20, 1996, Ser. No. 667,277

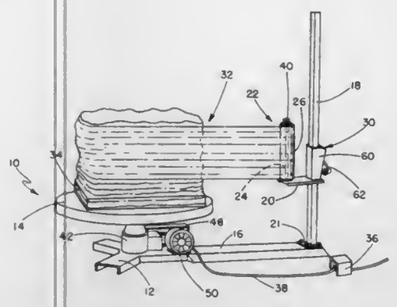
Int. Cl.[6] B65B *11/04*

U.S. Cl. 53—556 **4 Claims**

1. Apparatus for wrapping a package in a thin film, said apparatus comprising:

a base;

a generally flat deck disposed on said base for supporting the package;



a motor and transmission combination mounted to said base and directly coupled to a lower, center portion of said deck for rotationally displacing said deck and a package thereon about a generally vertical axis, wherein said motor and transmission combination includes a threaded input shaft coupled to a toothed sprocket, and wherein said threaded input shaft and said toothed sprocket form a worm gear, said worm gear providing a braking function for bringing said rotating deck to a stop when said motor and transmission combination no longer rotationally displaces said deck;

a wrapping film roll dispenser;

a support column attached to said base;

a moveable carriage coupled to said support column and attached to said film roll dispenser for supporting and allowing for vertical displacement of said film roll dispenser as the film is wrapped around a rotating package disposed on said deck to permit the film to be wrapped around the entire package;

a rack attached to said support column and a spur gear affixed to said carriage and engaging said rack for displacing said carriage in a linear manner along said support column when said spur gear is rotated;

a crank coupled to said spur gear for rotationally displacing said spur gear;

means for locking said crank in a fixed portion to prevent displacement of said carriage and said film dispenser on said support column, said means for locking said crank including a pin attached to said crank and a sprocket fixedly mounted to said carriage, and wherein said crank is moveable between a first position wherein said pin engages said sprocket for preventing displacement of said carriage and a second position wherein said pin is displaced from said sprocket to permit rotation of said crank and displacement of said carriage and film dispenser on said support column;

tensioning means coupled to said dispenser for supporting said dispenser and for varying the stretch of the film as the film is wrapped around the package, said tensioning means including a threaded support shaft inserted through a roll of the film and adapted for tightening for increasing the stretch of the film; and

foot operated control means coupled to said motor and transmission combination for controlling rotation of said deck and a package disposed thereon.

5,606,850

OUTDOOR WORKING AUTOMATING SYSTEM

Tetsuya Nakamura, Tokyo, Japan, assignor to Sakura Rubber Co., Ltd., Tokyo, Japan

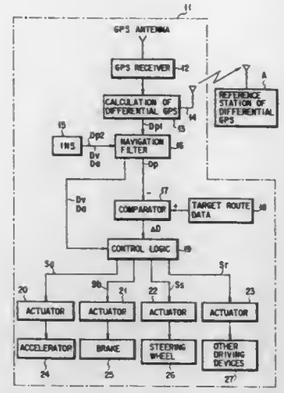
Division of Ser. No. 132,645, Oct. 6, 1993, Pat. No. 5,438,817. This application May 5, 1995, Ser. No. 435,497

Claims priority, application Japan, Oct. 9, 1992, 4-271836

Int. Cl.[6] A01D *34/82*

U.S. Cl. 56—10.2 A **5 Claims**

2. An automated system for the performance of mowing operations, said system comprising detecting means for detecting the positions of trees and storing the positions of the trees during a tree planting operation, an automated unmanned mower means for performing mowing operations, and control means for moving said mower means to positions exclusive of the tree positions for performing mowing operations within a boundary of the tree planting operation.



5,606,851

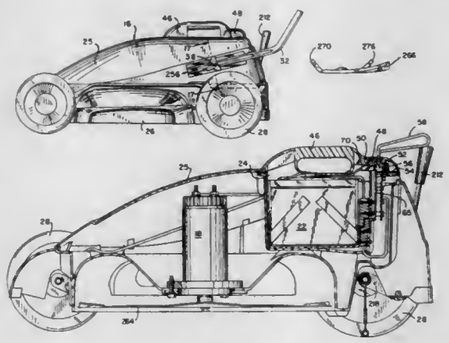
BATTERY-POWERED LAWN CUTTING SYSTEM

Patrick J. Bruener, Hartland; Paul A. Tharman, Pewaukee; John A. Fiorenza, II, Slinger; Joseph L. Pfaff, Brookfield; Richard A. Dykstra, Cedar Grove, and William H. Reitman, Fox Point, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 388,588, Feb. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 125,486, Sep. 22, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 543,054

Int. Cl.[6] A01D *34/67;34/78;34/82*

U.S. Cl. 56—11.9 **38 Claims**



33. A battery-powered lawnmower having a chassis, comprising:

a height adjustment apparatus that adjusts the height of said lawnmower chassis, including:

a first wheel axle having first and second ends;

a first pivot arm, interconnected with said first end of said first axle, and having a first pivot interconnected with said chassis;

a second pivot arm, interconnected with said second end of said first axle, having a second pivot interconnected with said chassis;

a second wheel axle having first and second ends;

a third pivot arm, interconnected with said first end of said second axle, having a third pivot interconnected with said chassis;

a fourth pivot arm, interconnected with said second end of said second axle, having a fourth pivot interconnected with said chassis;

means for pivoting said first pivot arm about its first pivot;

link means for pivoting said third pivot arm about its third pivot in response to the pivoting of said first pivot arm;

whereby the pivoting of said first pivot arm by said pivoting means rotates said first wheel axle to thereby pivot said second pivot arm about said second pivot;

whereby the pivoting of said first pivot arm by said pivoting means causes said link means to pivot said third pivot arm about its third pivot;

whereby the pivoting of said third pivot arm by said link means rotates said second wheel axle to pivot said fourth pivot arm about said fourth pivot, thereby adjusting the height of said lawnmower chassis;

a control system, including:

a lawnmower handle having a first end interconnected with said lawnmower chassis, and having an opposed second handle end disposed away from said chassis;

a deadman control interconnected with said second end of said handle, said deadman control including a movable member that is held by an operator during operation of said lawnmower, and that is released by said operator to stop said lawnmower;

means for stopping said lawnmower upon the occurrence of at least one predetermined condition;

means for restarting said lawnmower after said lawnmower has been stopped by said stopping means, by releasing said movable member and by thereafter moving said movable member;

a safety device, including:

a removable battery;

at least one electrical connector interconnected with said chassis;

a removable key, including

at least one electrically conductive member that engages said electrical connector to allow said lawnmower to operate;

an engagement member that causes said battery and said key to engage each other, whereby the removal of said battery also disengages said electrically conductive member from said electrical conductor;

a handle attachment assembly, including:

at least one channel affixed to said lawnmower chassis, including:

a first sidewall;

a second sidewall that is non-parallel to said first sidewall;

said first end of said lawnmower handle being received in said channel, wherein the shape of an outer surface of said handle first end corresponds to the shape of said channel; and

means for attaching said handle first end to said chassis;

a cutting blade having a longitudinal axis, comprising:

a lead cutting edge disposed near an end of said blade;

a trailing lift edge disposed opposite to at least a portion of said cutting edge;

an outer blade edge at the end of said blade between said cutting edge and said lift edge;

wherein a portion of the outer blade edge between the cutting edge and the blade longitudinal axis forms an included angle with said longitudinal axis taken across said blade that is greater than 90°, and wherein said outer blade edge is non-linear;

apparatus for mounting said removable battery, comprising:

at least one projection extending from a side surface of said battery;

at least one groove formed in said lawnmower chassis and having a longitudinal axis that receives said projection, said groove including

a first tapered section having a first set of sidewalls, at least one of said sidewalls forming a first angle with said longitudinal axis; and

a second tapered section adjacent to said first tapered section having a second set of sidewalls, at least one of said second sidewalls forming a second angle with said longitudinal axis.

5,606,852

WAVED-SHAPED, CURLED STEEL CORD FOR REINFORCING RUBBER ARTICLES AND PNEUMATIC RADIAL TIRE USING THE SAME

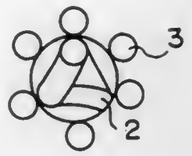
Manabu Yanagisawa, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 225,302, Apr. 8, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 669,820

Claims priority, application Japan, Apr. 9, 1993, 5-083535

Int. Cl.[6] D02G *3/02;3/36*

U.S. Cl. 57—207 **8 Claims**



1. A steel cord for reinforcing rubber articles, which consists of a single core filament made of a steel wave-shaped in a plane and curled about a center axis formed by an imaginary column constructed by curling said single core filament and 5–8 sheath filaments wound around the core in the same direction as a curling direction of the single core filament.

5,606,853

GASEOUS FUEL COMPRESSION AND CONTROL SYSTEM FOR GAS TURBINE ENGINE

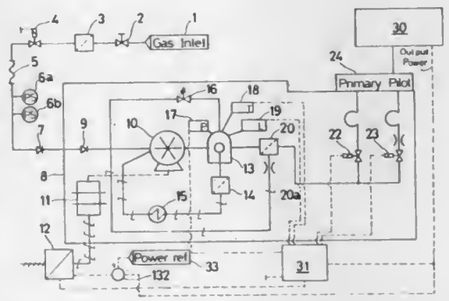
Peter H. Birch, Horsham, and Mark G. Norton, Hove, both of United Kingdom, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 28, 1995, Ser. No. 430,386

Claims priority, application United Kingdom, Apr. 30, 1994, 9408677

Int. Cl.[6] F02C *9/30*

U.S. Cl. 60—39.281 **7 Claims**



1. A gaseous fuel compression and control system for a gas turbine engine comprising:

a screw compressor driven by an electric motor for compressing gaseous fuel for supply to the gas turbine engine;

a power sensor for sensing the output power of the gas turbine engine; and

modulating means for controlling the frequency of electrical power supplied to the electric motor, so as to control the speed of the electric motor, in response to a control signal derived from the power sensor.

5,606,854

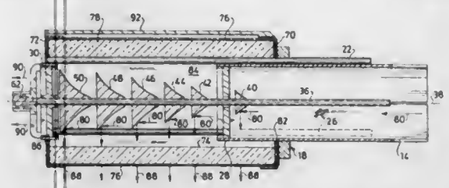
EXHAUST FILTER

David J. Hoffmann, Rochester, N.Y., assignor to Air Filter Plus Inc., Rochester, N.Y.

Filed Apr. 20, 1995, Ser. No. 425,914

Int. Cl.[6] F01N *3/02*

U.S. Cl. 60—274 **43 Claims**



35. A method of filtering pollutants from exhaust emitted by an internal combustion engine without producing substantial back pressure on the engine comprising the steps of:

connecting a filter to an exhaust system of the engine;

directing said exhaust through an inlet into a passageway through the filter;

deflecting a first portion of the exhaust through a filter media contained within an outer wall of the filter;

passing a second portion of the exhaust from the filter through an outlet independently of the filter media; and

passing the first portion of the exhaust from the filter through the outer wall independently of the outlet.

5,606,855

APPARATUS AND METHOD FOR ESTIMATING THE TEMPERATURE OF AN AUTOMOTIVE CATALYTIC CONVERTER

Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

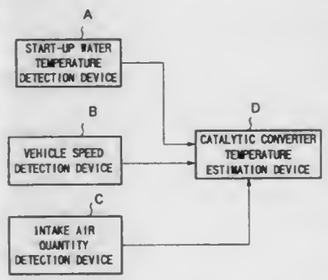
PCT No. PCT/JP94/01827, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/12752, PCT Pub. Date Jun. 11, 1995

PCT Filed Oct. 28, 1994, Ser. No. 448,397

Claims priority, applicatinn Japan, Nov. 2, 1993, 5-274233

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **6 Claims**



1. A catalytic converter temperature estimation apparatus for estimating the temperature of a catalytic converter provided in an exhaust passage of an engine, comprising:

an engine coolant temperature sensor adapted for detecting the temperature of an engine coolant;

a vehicle speed sensor adapted for detecting a traveling speed of a vehicle;

an air flow meter adapted for detecting an intake air quantity of the engine;

a start switch adapted for detecting an engine start-up condition; and

catalytic converter temperature estimation means adapted for estimating the temperature of the catalytic converter based on the engine coolant temperature at start-up, the vehicle traveling speed, and the engine intake air quantity, wherein the catalytic converter temperature estimation means reads the engine coolant temperature detected by the sensor and reads the engine coolant temperature as an ambient temperature when the engine start-up condition is detected by the start switch.

5,606,856

ARRANGEMENT FOR AN AFTER TREATMENT OF EXHAUST GASES FROM AN INTERNAL COMBUSTION ENGINE

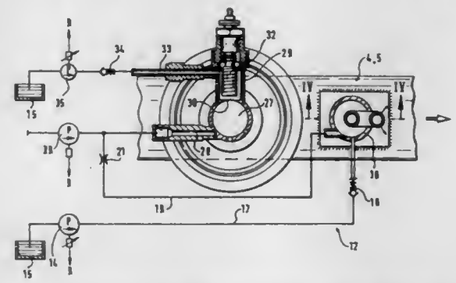
Ernst Linder, Muehlacker, and Hubert Dettling, Waiblingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1995, Ser. No. 560,142

Claims priority, application Germany, Nov. 19, 1994, 44 41 261.4

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—286 **23 Claims**



1. An arrangement for an after-treatment of exhaust gases from a compression-ignition internal combustion engine, in an exhaust-gas collecting system (3) of which a reducing catalytic converter (5) for reducing NO_x components of the exhaust gas from the internal combustion engine is arranged, a metering device (12) controlled by a control device (9) and serving for the metered introduction of a reducing agent into the stream of exhaust gas fed to the catalytic converter as a function of values, stored in a characteristic map, for the NO_x content of the exhaust gas given various operating parameters of the internal combustion engine and of the catalytic converter, and with an air feed pump arranged upstream of the metering device and serving for the finely dispersed preparation of the reducing agent to be introduced, the metering device (12) comprises a continuous-delivery positive displacement pump (14) driven at a variable rotational speeds controlled by the control device (9).

5,606,857

EXHAUST SYSTEM FOR AN ENGINE

Kenichi Harada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 10, 1995, Ser. No. 500,220

Claims priority, application Japan, Jul. 11, 1994, 6-158923

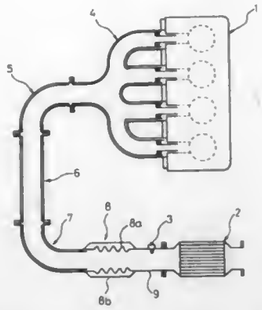
Int. Cl.[6] F01N *7/10*

U.S. Cl. 60—322 **20 Claims**

1. An exhaust system for an engine having a plurality of exhaust ports formed therein, comprising an exhaust manifold having:

an outer casing and an inner casing arranged in and spaced from said outer casing, said inner casing having a collecting portion and a plurality of inner pipes which are branched off said collecting portion and are connected to said corresponding exhaust port;

a downstream end portion of said collecting portion being stationarily supported by said outer casing;



upstream end portions of said inner pipes being axially movably supported by and within said outer casing; and

sealing means provided between said outer casing and each inner pipe for preventing exhaust gas from flowing into a space between said outer casing and each inner pipe;

wherein the upstream end portions of said inner pipes have a bellows shape and are continuously urged onto an outer side wall of the engine around said corresponding exhaust ports, and said sealing means is formed by said bellows-shaped upstream end portions of said inner pipes.

5,606,858

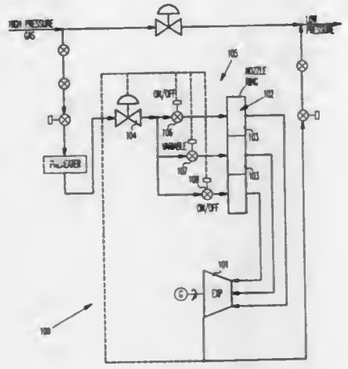
ENERGY RECOVERY, PRESSURE REDUCING SYSTEM AND METHOD FOR USING THE SAME

Nadiv Amir, Rehovot; Meir Rigal, Doar Na Auth, and Yoel Gilon, Jerusalem, all of Israel, assignors to Ormat Industries, Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 94,875, Jul. 22, 1993. This application Feb. 17, 1994, Ser. No. 197,601

Int. Cl.[6] F01K *25/10*

U.S. Cl. 60—648 **9 Claims**



1. An energy recovery, pressure reducing system for reducing high pressure gas in a transmission pipeline to a low pressure gas in a consumer pipeline, said system comprising:

a) a primary pressure regulator connected between the transmission and consumer pipelines for throttling the high pressure gas and producing low pressure gas;

b) a bypass line shunting said primary pressure regulating valve for connecting said pipelines said bypass line including an expander system having at least one expander for expanding said high pressure gas and producing work and low pressure gas that is supplied to said consumer pipeline, and a generator coupled to said expander for converting said work to electricity;

c) a heater for burning fuel to heat high pressure gas before it enters said at least one expander;

d) a fuel source for metering fuel to said heater; and

e) a sensor for sensing the temperature of the high pressure gas before it enters said heater and producing control signals indicative of the temperature of said high pressure gas;

f) said fuel source being responsive to said control signals for controlling the amount of fuel metered to said heater as a function of said temperature.

5,606,859

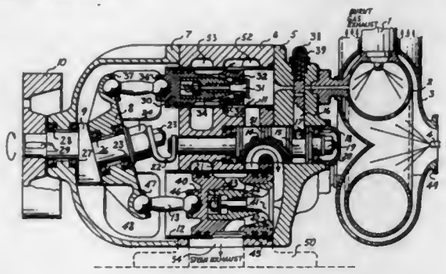
INTEGRATED STEAM MOTOR

Gennady Ploshkin, 1670 56th Street, Suite 311, Delta, British Columbia, Canada

Filed Aug. 9, 1993, Ser. No. 103,546

Int. Cl.[6] F01K *11/00*

U.S. Cl. 60—669 **17 Claims**



1. A process for converting a rectilinear movement to a rotary movement, said process comprising:

a. igniting a first combustible material and a second combustible material in an exothermic reaction to produce heat energy;

b. introducing an expandable material to said heat energy to form a vapor of said expandable material;

c. utilizing said vapor of said expandable material to said first piston to move said first piston in said rectilinear path and to produce a first exhaust vapor;

d. utilizing said first exhaust vapor to move a second piston in a rectilinear path to move a swash plate for rotating a crankshaft;

e. utilizing the pressure of said vapor to control the flow of said first combustible material and said second combustible material; and,

f. utilizing the pressure of said vapor of said expandable material to control the flow of said expandable material.

5,606,860

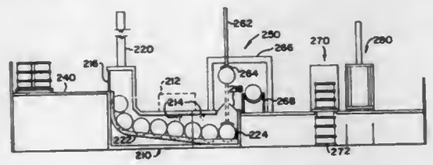
PROCESS AND APPARATUS FOR CRYOGENICALLY CLEANING RESIDUE FROM CONTAINERS AND REDUCING THE BULK VOLUME THEREOF

James L. Popp, and Carolyn Popp, both of 215 W. Nebraska St., Elburn, Ill. 60119

Continuation-in-part of Ser. No. 206,731, Mar. 7, 1994, Pat. No. 5,456,085. This application Apr. 12, 1995, Ser. No. 422,547

Int. Cl.[6] F25D *13/06*

U.S. Cl. 62—63 **20 Claims**



1. A method for semi-continuous sequential cryogenic treatment of cylindrical commodity containers with the commodity expended in an elongated enclosure having a plurality of like sized containers therein for treatment, the method comprising:

(a) positioning an untreated cylindrical commodity container on its side;

(b) placing the container through an entrance port into the enclosure;

(c) rolling by gravity the container down a ramp to the last position;

(d) spraying cryogen into the enclosure;

(e) cooling the containers;

(f) extending a retriever downward through an exit port into the enclosure;

(g) attaching the retriever to the container in the most forward position;

(h) retracting the retriever and removing the most forward container from the enclosure;

(i) releasing the container from the retriever; and

(j) advancing the containers remaining in the enclosure to the next sequential position such that the container behind the most forward position rolls by gravity to the most forward position and the remaining containers likewise roll to the next position leaving a vacancy at the last position, wherein each container is exposed to the cryogen for a sufficient period of time sufficient to cool the container to a predetermined specification.

5,606,861

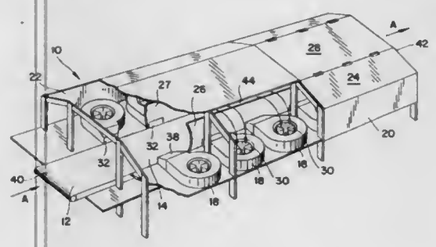
CROSSFLOW CRYOGENIC FREEZER AND METHOD OF USE

Kent A. Renz, McHenry, Ill., assignor to Air Liquide America Corporation, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 483,582

Int. Cl.[6] F25D *13/06;17/02*

U.S. Cl. 62—63 **27 Claims**



22. Method for individually quick freezing individual pieces of product, the method comprising the steps of:

delivering a product to a freezing chamber;

transporting the product through the freezing chamber;

spraying a cryogenic liquid directly on the product from at least one location in the chamber; and

recirculating a cryogenic gas produced from vaporization of the cryogenic liquid through the freezing chamber with a plurality of blowers, said blowers applying a stream of cold gas to the product to further cool and to agitate the product and to transport the product in two dimensions.

5,606,862

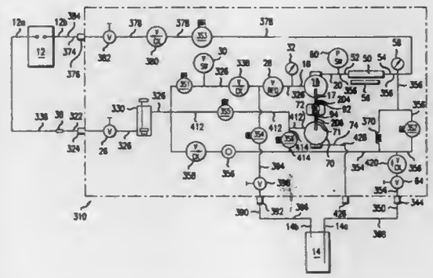
COMBINED REFRIGERANT RECOVERY, EVACUATION AND RECHARGING APPARATUS AND METHOD

Bryan M. Peckjian, Huntingdon Valley; Joseph P. Doyle, Malvern, and John H. Reilly, Jr., Rosemont, all of Pa., assignors to National Refrigeration Products, Bensalem, Pa.

Filed Jan. 18, 1996, Ser. No. 588,588

Int. Cl.[6] F25B *45/00*

U.S. Cl. 62—77 **23 Claims**



1. A combined refrigerant recovery, evacuation and recharging apparatus for transferring refrigerant from a first container to a second container and evacuating the first container, the apparatus comprising:

a compressor having a suction side and a discharge side, the suction side of the compressor being adapted for connection to the first container;

a vacuum pump having a suction side and a discharge side, the suction side of the vacuum pump being adapted for connection to the first container;

a motor drivingly engageable to the compressor and the vacuum pump.

5,606,863

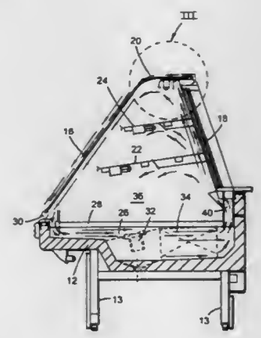
GLASS FRONT, ANTI-CONDENSATION REFRIGERATED DISPLAY

Berry C. Kicklighter, Conyers, and Sohail Najmi, Norcross, both of Ga., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Jul. 17, 1995, Ser. No. 503,305

Int. Cl.[6] A47F *3/04*

U.S. Cl. 62—89 **14 Claims**



1. A refrigerated display case comprising:

a housing having a front display window with an inner surface and an outer surface, said housing having a top, a rear wall having an inner surface, and a base, all defining an enclosed space for display of food products;

said base having a chamber containing a refrigeration coil and air propelling fans for propelling cooled air, an air inlet duct from said enclosed space to said chamber adjacent said front display window, and an outlet duct from said chamber to said enclosed space oriented upwardly inside said chamber at said rear wall for propelling circulated air up said rear wall inner surface to said top, and down across said front display window inner surface to said air inlet duct for recirculation;

said top having a contour outlet from said space to the exterior of said top, out of said case, said contour outlet being oriented toward said front display window for flow of a portion of circulated cool air out of said case and down across said front display window outer surface to cool said front display window outer surface for anti-condensation thereof.

5,606,864

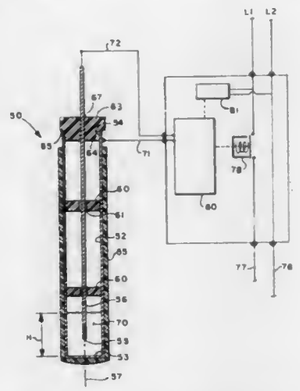
ICE BANK CONTROL FOR A BEVERAGE DISPENSING MACHINE

Brian C. Jones, Collinsville, Conn., assignor to Wilshire Partners, Cleveland, Ohio

Filed Mar. 26, 1996, Ser. No. 622,026

Int. Cl.[6] F25C *1/00*; G01N *25/02*

U.S. Cl. 62—139 **23 Claims**



1. In a beverage chiller for a beverage dispensing system having an ice water tank, at least one beverage coil carrying at least one beverage constituent extending at least partially within said ice water tank, and a mechanical refrigeration unit including a compressor, an evaporator coil within said ice water tank, a probe within said ice water tank for generating electrical signals indicative of the presence of ice in said ice water tank sensed by said probe and a control circuit for cycling said compressor off and on in response to said electrical signals, the improvement comprising:

said probe having a sealed tubular member containing a water well therein;

a first electrode extending into said water well and a second electrode in contact with said water well whereby said probe senses the presence of ice in said ice water tank at a precise point within said tank while being insulated from contact with the contents of said ice water tank.

5,606,865

PORTABLE AIR COOLER

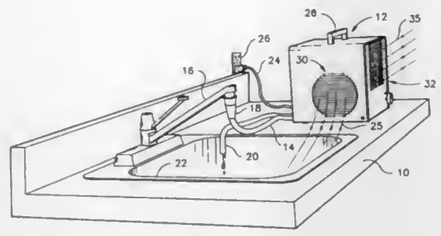
Leofred Caron, 763 rue St-Francois, Edmundston, N. B., Canada

Filed Jul. 13, 1994, Ser. No. 274,257

Int. Cl.[6] F25B *27/00*

U.S. Cl. 62—238.1 **4 Claims**

1. A portable air cooler for installation near a kitchen or similar sink comprising:



a fan having an air intake opening and an air discharge opening,

a cooling coil mounted across said air intake opening,

piping means to connect a cold water faucet of said kitchen or similar sink, to said cooling coil and from said cooling coil back into said sink, said cold water faucet being adapted to permit a flow of cold water through said piping means,

whereby air drawn by said fan is cooled by heat transfer with said cooling coil before entering said fan, and wherein

said air intake opening of said fan faces said sink when said portable air cooler is oriented in an operating position such that a portion of said air drawn toward said fan is cooled by heat transfer with a surface of said sink wetted by a flow of dripping water therein from a return of said piping means.

5,606,866

HEAT EXCHANGE UNIT FOR SELF-COOLING BEVERAGE CONTAINERS

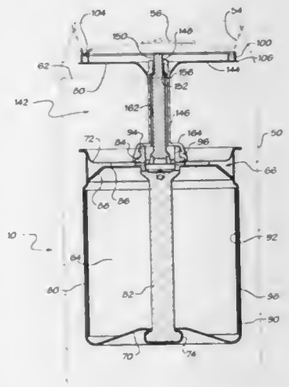
Michael Anthony, Coral Springs, and William D. Joslin, Jr., Boynton Beach, both of Fla., assignors to The Joseph Company, Laguna, Calif.

Filed May 24, 1995, Ser. No. 448,732

Claims priority, application United Kingdom, Nov. 8, 1994, 9422479

Int. Cl.[6] F25D *3/10*; F25B *9/02*

U.S. Cl. 62—294 **34 Claims**



1. A portable heat exchange unit for cooling a medium comprising: a vessel adapted to contain a discrete quantity of a compressed or liquified gas, the vessel including a wall arranged to be placed in contact with the medium to be cooled; a valve for operatively controlling the release of said gas from the vessel; a panel positioned adjacent and inside the wall of the vessel for operatively directing the gas into heat exchange contact with the wall of the vessel and arranged to release gas from the top of the panel; and a means for exhausting the gas from the vessel.

5,606,867

REFRIGERATION SYSTEM FLUID TUBE SEAL

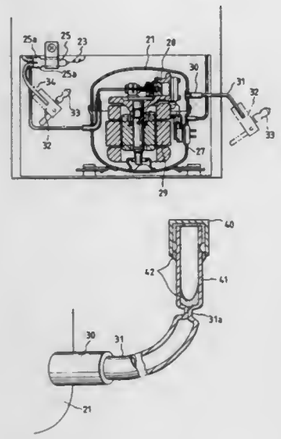
Masao Mangyo, Fujisawa; Takao Kawashima, Kawasaki, and Yuji Mori, Chigasaki, all of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Division of Ser. No. 295,585, Aug. 25, 1994. This application Oct. 6, 1995, Ser. No. 539,511

Claims priority, application Japan, Aug. 26, 1993, 5-211650; Aug. 26, 1993, 5-211651

Int. Cl.[6] F25D *19/00*

U.S. Cl. 62—298 **6 Claims**



1. A refrigeration system comprising:

a series of a refrigerant flow passage including therein a compressor, a condenser, an expansion mechanism and an evaporator;

a refrigerant containing, as a main component, one of hydrocarbon and HFC-152a;

a lubricating oil having solubility with said refrigerant; and

a fluid tube having a base end hermetically connected to said refrigerant flow passage, a distal end and an intermediate portion extending from said base end to said distal end, said intermediate portion having a first portion which is pinched to be closed and a second portion extending from said first portion to said distal end, said second portion receiving therein an adhesive being set so as to reinforce a sealing effect provided by said pinched first portion.

5,606,868

RETICULATED FOAM SLEEVE FOR EVAPORATIVE COOLING UNIT SPRAY CONDUIT

Philip D. Calvert, Center, Tex., assignor to General Shelters of Texas S.B., Inc., Center, Tex.

Filed Mar. 6, 1995, Ser. No. 399,945

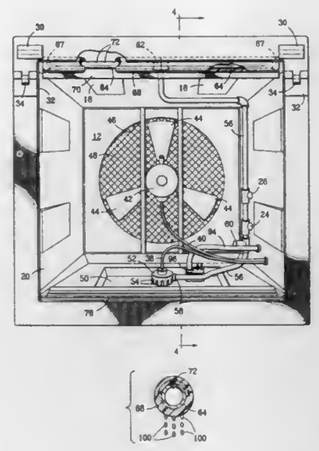
Int. Cl.[6] F28C *1/00*

U.S. Cl. 62—315 **28 Claims**

2. A water delivery device for an evaporative cooling unit, having an air-permeable water absorption media, a fan and a water supply device, the water delivery device comprising:

an elongated spray conduit having end caps and a plurality of spaced holes therein directed upward, said elongated spray conduit having an interior communicating with the water supply device; and

a foam sleeve disposed around said elongated spray conduit, such that water sprayed through said holes in said elongated spray conduit is distributed by said foam sleeve about said conduit, the water delivery device disposed over the water absorption media.



5,606,869

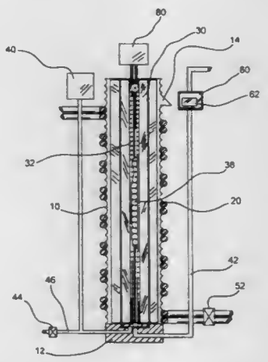
CYLINDRICAL ICE CUBE MAKER

Sung I. Joo, 1729 N. Gilbert St., Fullerton, Calif. 92833

Filed Apr. 8, 1996, Ser. No. 628,077

Int. Cl.[6] F25C *1/18*

U.S. Cl. 62—347 **14 Claims**



1. Ice-making apparatus which comprises threaded evaporator wrapped by a helical tubing section,

elongated drive means located axially within said evaporator,

means for supplying water to the interior surface of said evaporator,

means for supplying refrigerant to said helical tubing section so that evaporation takes place within said helical section causing the freezing of crescent-shaped ice pieces on the interior surface of said evaporator,

means for heating said tubing above the freezing point of water to free said sectional ice helix from its bond to said evaporator following discontinuation of supply of refrigerant thereto, and

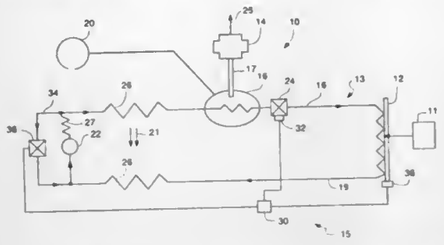
means for causing said drive means to rotate said crescent-shaped ice pieces and dispense the leading end of said ice pieces through a chute near the top of said evaporator.

5,606,870

LOW-TEMPERATURE REFRIGERATION SYSTEM WITH PRECISE TEMPERATURE CONTROL

James M. Lester, Redstone, Colo., assignor to Redstone Engineering, Carbondale, Colo.

Filed Feb. 10, 1995, Ser. No. 386,671
Int. Cl.[6] F25D *17/02*; F25B *19/00*
U.S. Cl. 62—434 23 Claims



1. A cooling apparatus for cooling an instrument which produces a thermal load that varies over time, comprising:

cooling source means for providing a first cooling output;

thermal interface means associated with said instrument for receiving heat from said instrument;

flow means for delivering a refrigerant to said thermal interface means; and

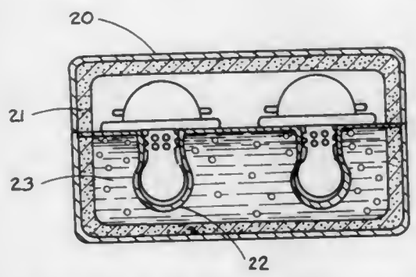
thermal capacitor means, associated with said cooling source means and with said flow means, for receiving said first cooling output from said cooling source means and providing a second cooling output to said flow means, wherein said second output is variable relative to said first output.

5,606,871

PACIFIER SHAPED TEETHER WITH COLD STORAGE CONTAINER

Robin Hansen, 7 Brussels St., San Francisco, Calif. 94134, and Kenneth A. Tablow, Corte Madiera, Calif., assignors to Robin Hansen, and John Leon, both of San Francisco, Calif.

Filed Sep. 13, 1994, Ser. No. 306,384
Int. Cl.[6] F25D *3/08*; A61J *17/00*
U.S. Cl. 62—457.5 5 Claims



1. A cold storage case for storing a plurality of teethers, each teether having a nipple with a predetermined

exterior contour, comprising:

an outer shell;

an inner shell positioned within said outer shell, said inner shell having a plurality of cooling cavities, each cavity having an interior contour configured to substantially complement said exterior contour of said teether for snugly receiving one of said nipple, and being sized and configured; and

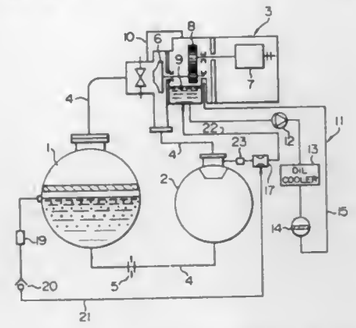
a cooling fluid disposed in a space between said outer shell and said inner shell, so that when said teethers are positioned in said cavity, and said cold storage case is cooled, said teethers are kept cold by said cooling fluid.

5,606,872

COMPRESSION TYPE REFRIGERATOR

Masatosi Terasaki, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 302,214, Sep. 8, 1994, Pat. No. 5,481,887.
This application Oct. 5, 1995, Ser. No. 539,552
Claims priority, application Japan, Sep. 13, 1993, 5-226896
Int. Cl.[6] F25B *43/02*; *1/06*
U.S. Cl. 62—471 4 Claims



1. A compression type refrigerator comprising an evaporator, a condenser, a compressor for compressing a refrigerant gas, an oil tank for storing a lubricating oil, and an oil supply device connected to said oil tank and including an oil pump for supplying the lubricating oil to said compressor,

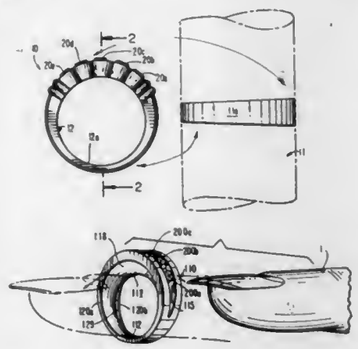
wherein a first pipe line extends between a discharge side of an impeller of said compressor and said condenser to take out said refrigerant gas from said compressor into said condenser and has a branch line portion having a downstream end connected to said oil tank, an ejector is provided in said branch line portion, and a second pipe line is connected at one end to said evaporator to take out therefrom a refrigerant liquid containing the lubricating oil and connected at the other end to a negative pressure generation portion of said ejector.

5,606,873

FINGER RING

Joseph Zeller, North Hills, and Bruce Rubin, East Hills, both of N.Y., assignors to Astoria Jewelry Mfg. Co., Inc., Long Island City, N.Y.

Filed Jun. 7, 1995, Ser. No. 480,368
Int. Cl.[6] A44C *9/00*
U.S. Cl. 63—15 2 Claims



1. A finger ring structure, which has improved placement and removal characteristics, comprising a standard section of a cylinder having an inner surface, and with an ornamental external section thereof, the ornamental section comprising a channel into which stones are inserted and wherein said inner surface is continuous,

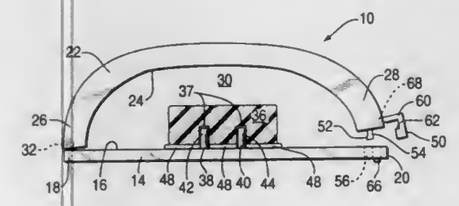
whereby said channel has a closed base formed by the inner surface, said ring having an outer surface, each of the inner surface and outer surface having respective circumferential edges, wherein the circumferential edges of the inner surface are inwardly rounded and wherein the rounded edges of the inner surface, adjacent the ornamental section, are formed into a bombé configuration.

5,606,874

DETACHABLE JEWELRY ORNAMENTATION

Barbara Archetti, Princeton, N.J., and Varin Assamongkorn, Bangkok THX, assignors to Kurt Gutmann Jewelry, Inc., Newtown, Pa.

Filed Mar. 18, 1996, Ser. No. 617,436
Int. Cl.[6] A44C *1/00*
U.S. Cl. 63—21 20 Claims



1. A detachable jewelry ornamentation means, being securable selectively at various locations decoratively with respect to a substrate jewelry member, said detachable jewelry ornamentation means comprising:

A. a base plate member defining a base clamping surface extending therealong and having a first base plate end and a second base plate end spatially disposed from one another;

B. an clamping arm member including a first clamping arm end and a second clamping arm end spatially disposed from one another, said clamping arm member being pivotally attached to said base plate member and further defining an arm clamping surface spatially disposed from and facing said base clamping surface of said base plate member to define a clamping zone means therebetween;

C. a compression member of resiliently flexible material mounted on said base clamping surface within said clamping zone means in order to exert a resilient bias upon a substrate jewelry member positioned within said clamping zone means in order to affix said base plate member and said clamping arm member detachably with respect to the substrate jewelry member as desired; and

D. a positioning means affixed to said base clamping surface of said base plate member and in abutment with said compression member for fixedly positioning thereof adjacent said base clamping surface within said clamping zone means to facilitate retainment of a substrate jewelry member therewithin; and

E. a clasping means for detachably securing said clamping arm member with respect to said base plate member.

5,606,875

YARN LENGTH CONTROL SYSTEM FOR A FLAT KNITTING MACHINE

Hirokazu Nishitani, Arida, and Yoshiyuki Komura, Wakayama, both of Japan, assignors to Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed Jan. 19, 1996, Ser. No. 588,718
Claims priority, application Japan, Jan. 23, 1995, 7-007943
Int. Cl.[6] D04B *15/36*
U.S. Cl. 66—77 6 Claims

1. A yarn length control system for a flat knitting machine,

wherein a plurality of yarns are fed from yarn feeding means to at least one needle bed, said at least one needle bed is provided with a plurality of knitting cam locks, each of the knitting locks has a pair of cams, said pair including an onward stitch cam and a rearward stitch cam, each knitting lock operates the needle bed to form series of stitches from the fed yarns, and respective stitch cam conditions are corrected by stitch cam adjustment data to alter stitch size,

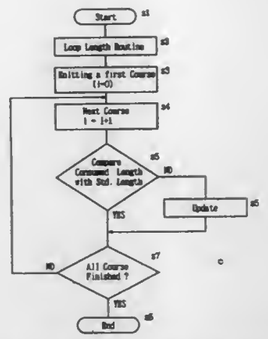
said yarn length control system comprising:

a measuring means for measuring consumption of each yarn;

a comparing means for comparing the measured consumption with standard yarn length; and

an adjusting means which generates correcting data for the stitch cam adjustment data according to the results of comparison by the comparing means and corrects, by using the correcting data, at least one stitch cam of the knitting lock that operated the needle bed for the yarn of which consumption was measured.

wherein said adjusting means corrects, by said correcting data, at least one stitch cam datum of one other knitting lock.

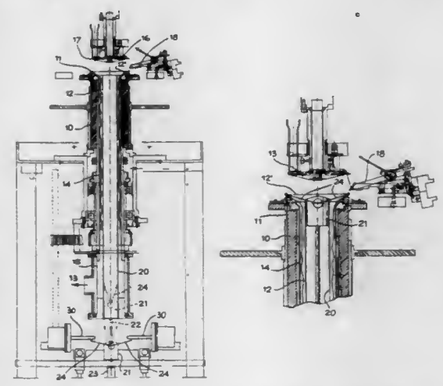


5,606,876

DEVICE FOR HANDLING KNITTED PRODUCTS MANUFACTURED ON CIRCULAR STOCKING KNITTING MACHINES

Fulvio Sangiacomo, Brescia, Italy, assignor to Sangiacomo S.P.A., Brescia, Italy

Filed Apr. 24, 1995, Ser. No. 426,704
Claims priority, application Italy, Apr. 26, 1994, BS94A0042; Sep. 9, 1994, BS94A0100
Int. Cl.[6] D04B *9/40*
U.S. Cl. 66—148 17 Claims



1. A process for transferring a stocking from a stocking knitting machine to a sewing machine, for closing the toe of the stocking, comprising:

manufacturing each stocking starting from a cuff and ending at a toe location of the stocking, the stocking at said toe location remaining open;

mechanically removing the stocking from the knitting machine by picking up the stocking from needles of a needle cylinder of the machine, using two parts of the stocking which are diametrically opposite on the stocking;

supporting the stocking by the two opposite parts;

bringing two opposite parts together; and

transferring the stocking to the sewing machine for closing the toe of the stocking.

5,606,877

WASHING MACHINE HAVING A RINSE MODE

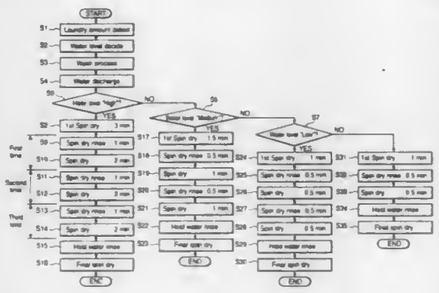
Yoshimi Hashimoto, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 18, 1995, Ser. No. 423,757

Claims priority, application Japan, Apr. 18, 1994, 6-078469

Int. Cl.[6] D06F *33/02*

U.S. Cl. 68—12.04 **4 Claims**



1. A washing machine, comprising:

a tub for receiving laundry to be washed;

means for supplying water into the tub;

means for rotating the tub;

rinse mode control means for controlling 1) water supply into the tub and 2) rotation of the tub so as to carry out a spin dry rinse mode operation, the spin dry rinse mode operation including:

a first operation wherein water is supplied into the tub while the tub is rotated, and

a second operation wherein water is not supplied into the tub and the tub is rotated; laundry amount detecting means for detecting an amount of laundry placed into the tub; and

rinse time change means for changing a time period of the spin dry rinse mode operation by changing a time period of the second operation in accordance with the amount of laundry detected by laundry amount detecting means.

5,606,878

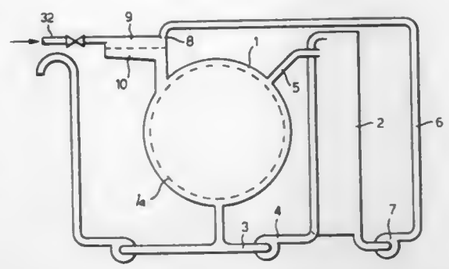
CLOTHES WASHING MACHINE WITH IMPROVED WATER RECOVERY TANK

Luigi Arreghini, Venezia, and Silvano Cimetta, Treviso, both of Italy, assignors to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy

Filed May 26, 1995, Ser. No. 452,097

Int. Cl.[6] D06F *39/02;39/08*

U.S. Cl. 68—17 R **22 Claims**



1. A clothes washing machine comprising: a washing tub with an outlet; a drum which is rotatable within the washing tub and adapted for containing articles to be washed; recirculation means for recovery and recirculation of liquids from the tub, said recirculation means comprising a tank for holding liquids recovered from the tub, and a conduit for delivering liquid from the tank to a nozzle associated with a hydraulic distributor for distributing liquid to containers of substances used in a washing operation, said tank being internal to said clothes washing machine and part of a structure of the clothes washing machine; a transfer conduit connecting the outlet of said tub to an internal volume of said tank, wherein said transfer conduit feeds into said tank from an upper side of the tank; and pumping means including a transfer pump for pumping liquid through the transfer conduit from the outlet of the tub to the tank.

5,606,879

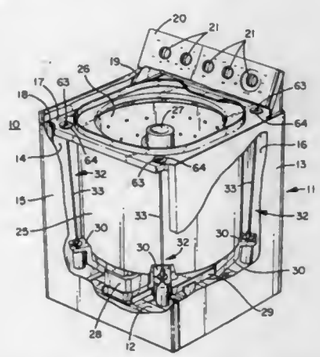
AUTOMATIC WASHING MACHINE SUSPENSION SYSTEM

Stephen B. Froelicher, Louisville, and Frank H. Richterkessing, Jr., Mt. Washington, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 26, 1995, Ser. No. 450,487

Int. Cl.[6] D06F *37/24*

U.S. Cl. 68—23.3 **19 Claims**



1. An automatic fabric washing machine comprising a moving system, a stationary support structure and a plurality of suspension units connecting said moving system to said support structure for dampened movement therebetween, each of said suspension units comprising:

a hollow cylinder engaging one of said moving system and said support structure, said cylinder comprising an elongated generally circular side wall with a transverse base adjacent one end thereof;

an elongated rod with spaced apart ends, one of said rod ends received in said cylinder through said base and the other of said rod ends engaging the other of said moving system and said support structure;

a piston mounted on said rod adjacent said one end and comprising a circumferentially continuous skirt extending generally axially of said cylinder side wall;

a retainer spring mounted on said rod within said piston skirt, said spring comprising a skirt comprising a series of cantilever beam fingers closely spaced apart around the inside of said piston skirt and biasing said piston skirt into engagement with said cylinder side wall; and

a washer mounted on said rod within said retainer spring skirt and engaging said retainer spring so that said retainer spring transfers heat from said piston to said washer.

5,606,880

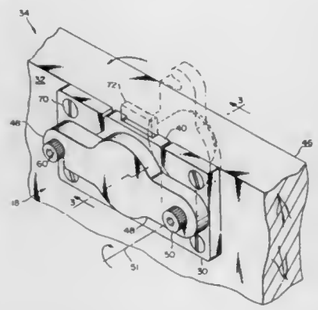
QUICK-RELEASE LOCK RETAINING BRACKET METHOD AND APPARATUS

Mark S. Viggiano, 5225 Ridge Pl. NE., Tacoma, Wash. 98102

Continuation of Ser. No. 116,005, Sep. 2, 1993, Pat. No. 5,487,287. This application Oct. 18, 1995, Ser. No. 544,921

Int. Cl.[6] E05B *9/08;65/46*

U.S. Cl. 70—86 **11 Claims**



11. In a restricted access chamber having an access panel and a lock mountable on the access panel, the lock having a front key face, a rear flange and a cylinder extending from the rear flange to the front key face, the access panel having an interior surface, an exterior surface and a recess extending between the interior and exterior surfaces for closely receiving the lock cylinder, the lock cylinder being insertable into the recess by linear translation from the interior surface toward the exterior surface, the rear flange of the lock having a portion projecting outward beyond the periphery of the cylinder to limit insertion of the lock cylinder into the recess, the improvement comprising a manually operable latch member movable manually relative to the access panel between an open position out of registration with the access panel recess to allow insertion of the lock cylinder into the recess and a closed position registered with and extending across the access panel recess to form an abutment behind the lock rear flange to block retraction thereof away from the interior surface of the access panel, and means for normally maintaining the latch member in its closed position, whereby with the latch member in its open position, the lock cylinder can be inserted into the access panel recess and removed therefrom, and whereby with the lock inserted into the access panel recess and the latch member in its closed position, retraction of the lock from the access panel recess is blocked by the latch member, the latch member being mounted for swinging along the interior surface between the open position out of registration with the access panel recess to the closed position, the latch member being mounted for swinging about an axis offset from the lock along the interior surface between the open position out of registration with the access panel recess to the closed position.

5,606,881

KEY OPERABLE SAFETY SWITCH

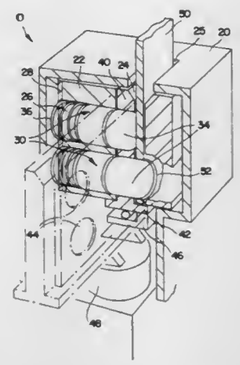
David Drake, Letchworth, England, assignor to K.A. Schmersal GmbH & Co., Wuppertal, Germany

Continuation of Ser. No. 177,587, Jan. 5, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,730

Claims priority, application United Kingdom, Jan. 5, 1993, 9300100; Germany, May 8, 1993, 43 15 376.3

Int. Cl.[6] E05B *35/04*

U.S. Cl. 70—352 **12 Claims**



1. A safety switch comprising:

a housing, said housing having a key entry slot extending linearly into said housing from an exterior thereof to define a direction of insertion for a planar key blade, said housing defining an actuator chamber which is in communication with said key entry slot, said housing further having a plurality of pin chambers arranged in a pattern, said pin chambers communicating with said actuator chamber, said pin chambers having parallel axes, said axes being oriented substantially perpendicularly with respect to said direction of key insertion;

a switch device at least in part disposed within said housing, said switch device including an electrical switch and a movable switch operator, said electrical switch having open and closed states, the state of said electrical switch varying in response to movement of said operator;

actuating means for imparting movement to said switch operator, said actuating means comprising a unitary member, said actuating means being movably disposed within said housing actuator chamber and being longitudinally movable in a direction generally parallel to said direction of key insertion, said actuating means being coupled to said switch operator and being displaceable over a predetermined stroke to impart motion to said switch operator, said actuating means being provided with a plurality of holes, at least some of said holes extending through said actuating means, said actuating means holes being arranged in a pattern commensurate with the pattern of pin chambers in said housing;

at least one codeable pin means for selectively permitting and preventing movement of said actuating means, said pin means being movably disposed within said housing pin chambers, each of said pin means having at least first and second pin members, said first and second pin members being coaxial with one another and with the associated pin chamber, the first pin member of at least one of said pin means being engageable with a through hole in said actuating means for locking said actuating means in a fixed position relative to said housing in the absence of the presence of a properly coded key in said housing slot, said at least one pin means extending through said actuating means into registration with said key entry slot;

spring means for biasing said pin means in the direction of said actuation means, said spring means being disposed in said housing pin chambers and engaging a pin member of said pin means; and

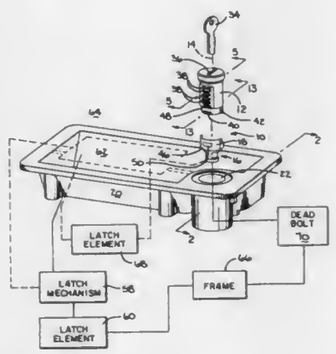
a key insertable into said housing actuator chamber via said key entry slot, said key having a planar blade with a coded pattern of apertures for receiving at least one of said spring means biased pin means pin members including a pin member of said at least one pin means to thereby release said actuator means to permit movement thereof from said fixed position, said key imparting movement to said actuator means upon the release thereof to cause movement of said actuator means over said predetermined stroke.

5,606,882

LOCK ASSEMBLY WITH INTERCHANGEABLE KEY PLUG

Marvin L. Larsen, and Kenneth L. McConnell, both of New Hampton, Iowa, assignors to Tri/Mark Corporation, New Hampton, Iowa

Filed Sep. 21, 1994, Ser. No. 309,801
Int. Cl.[6] F05B *27/00;29/00*
U.S. Cl. 70—369 **27 Claims**



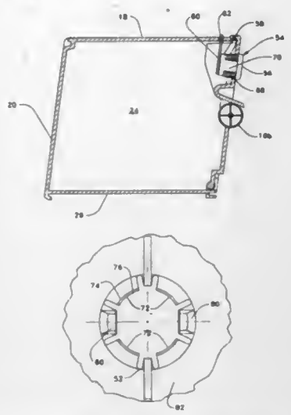
1. A lock assembly comprising:
a key plug having an axis;
a first housing defining a receptacle for the key plug;
said first housing guiding movement of the key plug in the receptacle around the key plug axis;
a latch assembly including a first movable latch element;
means cooperating between the first housing and the latch assembly for supporting the latch assembly in an operative position on the first housing wherein the first latch element is movable between first and second positions relative to the first housing;
a retaining element;
means mounting the retaining element to the key plug for movement relative to the key plug between first and second positions,
said key plug being selectively movable into the key plug receptacle to an operative position and removable from the key plug receptacle with the retaining element in its first position;
means cooperating between the retaining element and the latch assembly for preventing withdrawal of the key plug from the first housing receptacle with the key plug in its operative position and the retaining element in its second position,
the means cooperating between the retaining element and the latch assembly comprising a first surface on the latch assembly that is directly abuttable to the retaining element to prevent outward withdrawal of the key plug; and
means cooperating between the retaining element and the first housing for preventing the key plug from being moved axially out of its operative position and fully separated from the first housing without rotation of the key plug relative to the first housing with the retaining element in its first position.

5,606,883

DISPLAY AND DISPENSING DEVICE WITH LOCK SECURING STRUCTURE

Daniel C. Svec, Des Moines, Iowa, assignor to Schafer Systems Inc., Adair, Iowa

Filed Mar. 23, 1995, Ser. No. 410,141
Int. Cl.[6] E05B *9/08*
U.S. Cl. 70—370 **6 Claims**



1. A hinged access display and dispensing device for lottery-type tickets or the like comprising:
(a) a housing of box-like configuration having a floor, a roof, a pair of sidewalls, a front end and an open rear end;
(b) a door pivotally attached to the rear end of said housing and having an opening;
(c) a lock assembly positioned in said door opening and having a head portion located adjacent the exterior of said door and a body portion extending from said head portion through said opening;
(d) securing means extending into said opening of said door for substantially preventing removal of said lock assembly from said door opening, said securing means being of a sufficiently resilient construction to allow insertion of said lock assembly into said door opening, while substantially preventing removal therefrom; and
(e) wherein the securing means consists of projections provided on a periphery of the door opening, which projections engage projections provided on an exterior of the lock assembly body portion to secure said lock assembly in said opening.

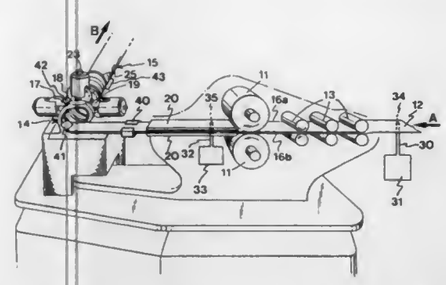
5,606,884

METHOD AND APPARATUS FOR PRODUCING HELICALLY-WOUND LOCK-SEAM TUBING WITH REDUCED LUBRICATION

Conny Pettersson, Laholm, and Donald Niklasson, Båstad, both of Sweden, assignors to Lindab AB, Sweden

Filed Jun. 30, 1995, Ser. No. 497,018
Int. Cl.[6] B21B *45/02;* **B21C** *37/12*
U.S. Cl. 72—41 **9 Claims**

1. A method for producing helically-wound locks-seam tubing having reduced lubrication from a metal strip having longitudinal edge portions, comprising the steps of:
feeding said strip to a forming head;
forming said strip into helical shape in said forming head, whereby said edge portions of said helically-formed strip are brought into engagement with each other;
clinching said engaging edge portions of said strip to form a helically-wound lock seam on a tube formed in said forming head;
feeding said helically-wound lock-seam tube out of said forming head; and



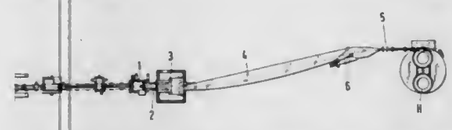
before said forming head, supplying a lubricant locally and exclusively on that side of said strip which forms the outside of said tube, said lubricant being supplied over only a limited portion of the width of said strip, said lubricant supplied to said strip at a point adjacent to one of said edge portions of said strip.

5,606,885

DEVICE FOR THE GUIDING AWAY COLD-ROLLED TUBES BEHIND A COLD PILGER ROLLING MILL

Michael Baensch, Mönchengladbach, and Wilfried Schrey, Viersen, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Dec. 27, 1994, Ser. No. 364,653
Claims priority, application Germany, Dec. 27, 1993, 43 44 942.5
Int. Cl.[6] B21B *39/16*
U.S. Cl. 72—250 **7 Claims**



1. A device for guiding away a cold-rolled tube from a cold pilger rolling mill that at least one of intermittently feeds and rotates the tube, comprising: a constant-speed driver for drawing the tube from the rolling mill, the driver being arranged downstream of the rolling mill so as to form a buffer zone between the driver and the rolling mill; and, means, arranged in the buffer zone, for diverting the tube out of a roll direction by restrictively guiding the tube so that the tube describes a roughly S-shaped path in the buffer zone whereby cyclically non-uniform rolling speed of the rolling mill is compensated for.

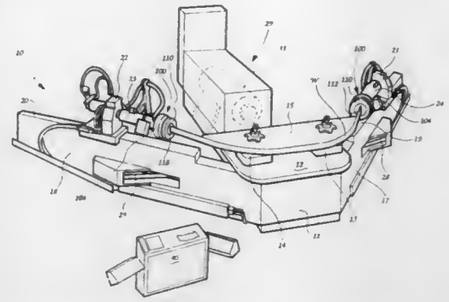
5,606,886

JAW ASSEMBLY FOR STRETCH FORMER

Larry A. Polen, 625 Raintree Dr., Matthews, N.C. 28105

Filed Jan. 18, 1995, Ser. No. 374,138
Int. Cl.[6] B21D *11/02*
U.S. Cl. 72—296 **7 Claims**

1. A jaw assembly for a stretch former, comprising:
(a) a jaw body;
(b) an annular nose piece carried by said jaw body and defining an insert chamber;
(c) a tapered-wall insert sleeve for being locked into the insert chamber of said nose piece, said insert sleeve defining an internal bore having tapered walls;
(d) an insert for being positioned in the bore of said insert sleeve, said insert having a plurality of segments collectively defining therebetween a profile corresponding to the profile of a workpiece to be stretch-formed, said insert having a tapered outer wall for sliding, interference fit, engagement with the tapered walls of the insert sleeve for locking the insert into the jaw and clamping the workpiece into the insert;
(e) piston means connected to said insert, said piston means adapted to move said insert axially within said nose piece among:
(1) a clamping position wherein said insert clamps the workpiece into the jaw during the stretch forming process;
(2) a workpiece remove position retracted from said clamping position for removing the stretch-formed workpiece from the insert and positioning another workpiece into the insert; and
(3) an insert remove position retracted from the workpiece remove position at which the insert sleeve and insert may be removed and replaced;
(f) wherein said piston means comprises:
(i) an insert actuator connected to said insert;
(ii) a piston rod connected to said insert actuator;
(iii) a primary piston carried by said piston rod in a hydraulic cylinder, said primary piston having a stroke defining at a forward extreme thereof the clamping position and at a rearward extreme thereof the insert remove position, and defining a workpiece remove position at a position intermediate the clamping position and the insert remove position; and
(iv) a secondary piston coaxially positioned in said cylinder and hydraulically moveable between first and second positions in said cylinder, said secondary piston defining at said first position the intermediate, workpiece remove position of said primary piston and at said rearward extreme position the insert remove position of said primary piston.



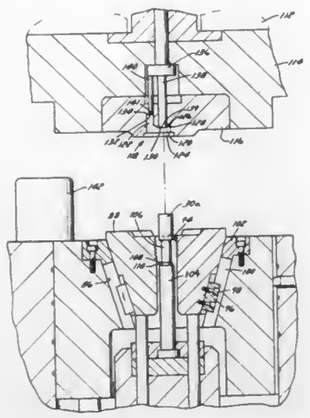
5,606,887

APPARATUS AND METHOD FOR COLD FORMING AN L-SHAPED LEAD ALLOY BATTERY TERMINAL

Bernard N. Spiegelberg, Germantown, and Mark E. Sauter, Shorewood, both of Wis., assignors to Tulip Corporation, Milwaukee, Wis.

Filed Jun. 2, 1995, Ser. No. 461,569
Int. Cl.[6] B21D *22/00*
U.S. Cl. 72—357 **14 Claims**

1. An apparatus for cold forming an L-shaped lead battery terminal from a lead slug, the apparatus comprising:
a first die having a cylindrical inner profile to form a cylindrical head on the L-shaped lead battery terminal;
a second die including an L-shaped inner profile to form a base of the L-shaped lead battery terminal, the base including an L-shaped tower having a leg extending normal to the base and offset from a central longitudinal axis of the head;
a press attached to the dies to move the dies into a closed position to form a cavity therebetween; and

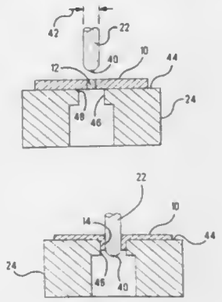


a punch moveable relative to the first die to form a recess within the L-shaped lead battery terminal.

5,606,888
METHOD OF FORMING RELATIVELY HARD MATERIALS

Dimitry Grabbe, Middletown, Pa., assignor to The Whitaker Corp., Wilmington, Del.

Filed Jul. 14, 1995, Ser. No. 502,647
Int. Cl.[6] B21D *22/06*; B21J *7/30*
U.S. Cl. 72—443 9 Claims



1. A method of performing a forming operation on a strip of relatively hard material having a stress relaxation time contant comprising the steps:

(a) providing tooling having a first tool and a second tool matable with said first tool for performing said forming operation;

(b) providing a stamping and forming machine having said first and second tools coupled thereto, said first tool arranged to undergo cyclical movement toward said second tool into mated engagement therewith and away from said second tool out of said mated engagement;

(c) placing a strip of relatively hard material between said first and second tools;

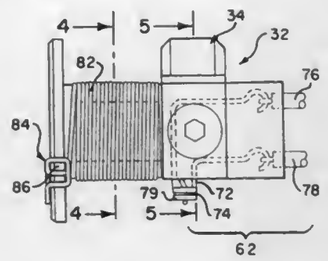
(D) operating said stamping and forming machine thereby effecting said cyclical movement of said first tool toward said second tool to a first position in engagement with said strip of relatively hard material and then further moving said first tool in a second position in mated engagement with said second tool in a defined time period to thereby complete said forming operation,

wherein said time period is defined by moving said first tool from said first position to said second position at a rate sufficiently fast so that said forming operation is completed in less than the stress relaxation time constant of the material and without cracking said strip of relatively hard material.

5,606,889
REUSABLE INITIATOR FOR USE IN TRIGGERING HIGH-LOAD ACTUATORS

Slawomir J. Bielinski; Larry L. McCormick, both of Camarillo, and Roger C. Stephenson, Woodland Hills, all of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed Sep. 19, 1995, Ser. No. 530,064
Int. Cl.[6] G05G *17/00*
U.S. Cl. 74—2 6 Claims



1. Apparatus for initiating motion of an object subjected to a force, comprising:

spool housing means having a bore of sufficient dimensions for the object to be slidingly received therein, and an opening extending between the bore and the exterior;

spool segment means releasably fitting into the housing means opening with parts extending into the bore for obstructingly engaging the object;

a coil of spring wire received about the spool segment means, one end of the wire being secured to the spool housing means; and

cartridge means releasably mounted to the housing by a bolt the cartridge means including an insulative body, a link wire secured to said insulative body with a loop extending outwardly of said body, and an insulative spool with a central opening through which the other end of the coil wire is lockingly engaged and to which the link wire is secured;

on breakage of the link wire the coil assumes a larger helical diameter releasing the segment means and the object.

5,606,890
GEAR DRIVE

Thomas Luckas, Flowery Branch, Ga., assignor tn Siemens Aktiengesellschaft, München, Germany

Filed Aug. 15, 1995, Ser. No. 515,407
Claims priority, application Germany, Sep. 23, 1994, 9415460 U
Int. Cl.[6] F16H *57/00*
U.S. Cl. 74—411 20 Claims

1. A gear drive comprising:

a) a drive-end gear wheel including

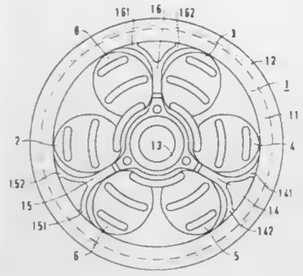
i) an inner hub;

ii) an outer ring gear flange encompassing said inner hub;

iii) reinforcement ribs with substantially tangentially stressing transition curves, said reinforcement ribs widening from said inner hub towards said outer ring gear flange into said transition curves, coupling said inner hub to said outer ring gear flange.

b) an intermediate cushioning means;

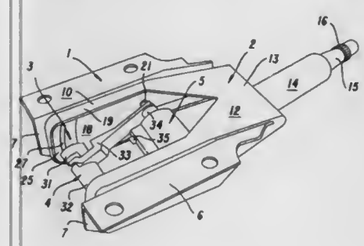
c) a drive disc with slave bars, said drive disc rotationally coupled with said drive-end gear wheel through said intermediate cushioning means as said intermediate cushioning means come into essentially tangential contact against said reinforcement ribs and said slave bars under rotational loading.



5,606,891
SLIDABLE AND TILTABLE STEERING COLUMN SUPPORT

Claes G. E. Y. Tisell, Strángnás, and Kurt Strómberg, Torshälla, both of Sweden, assignors to Fuji Autotech Aktiebolag, Sweden

Filed Mar. 8, 1995, Ser. No. 400,575
Claims priority, application Sweden, Mar. 9, 1994, 9400799
Int. Cl.[6] B62D *1/18*
U.S. Cl. 74—493 6 Claims



1. A steering column support comprising:

a solid holder arranged for stationary mounting in a vehicle, said holder having a cross shaft and a locking shaft extending between opposite sides thereof;

a box-shaped steering column slide having a width narrower than a distance between said sides of said holder such that said steering column slide is insertable between said sides of said holder, said steering column slide including cross slots in opposite sides thereof, and being longitudinally displacable relative to said holder and rotatable about said cross shaft;

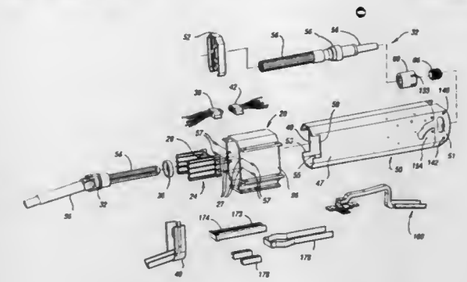
a window lamella comprising a thicker material than a material forming said sides of said steering column slide, one of said cross slots having a size and shape for receiving said window lamella such that said window lamella is transversely displacable in said cross slot; and

locking and releasing means positioned on said locking shaft for moving said window lamella into and out of contact with the adjacent side of said solid holder to respectively lock and release movement of said steering column slide relative to said holder.

5,606,892
MODULAR STEERING COLUMN ASSEMBLY

Gregory T. Hedderly, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 31, 1995, Ser. No. 414,453
Int. Cl.[6] B62D *1/18;1/16*
U.S. Cl. 74—493 15 Claims



1. A steering column assembly for use in a vehicle, comprising:

a receiver adapted to be supported within the vehicle;

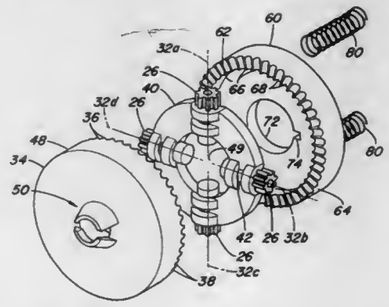
a lower steering column shaft portion oriented and rotatably supported at least partially within said receiver; and

a modular main housing assembly slidably insertable into said receiver, and having an upper steering column shaft portion therewithin, said upper steering column shaft portion being telescopically mateable with said lower shaft portion when said modular main housing assembly is slidably inserted into said receiver.

5,606,893
ROLLING DETENT MECHANISM

Dennis Shifflett, Macomb, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed May 15, 1995, Ser. No. 440,827
Int. Cl.[6] G05G *5/03*
U.S. Cl. 74—527 14 Claims



1. A rotary detent mechanism comprising:

a first wheel mounted for rotation on a first axis and having a plurality of radially outwardly extending lobes uniformly spaced circumferentially thereabout;

a second wheel mounted for rotation about a second axis and having a plurality of ribs located at spaced locations circumferentially thereof in driving engagement with the lobes of the first wheel, the lobes and the ribs being shaped and related such that driving rotation between the first wheel and the second wheel requires relative reciprocating shifting movement of the first wheel and the second wheel toward and away from one another in directions perpendicular to the first axis; and,

spring means for biasing the first and second wheels toward one another in directions perpendicular to the first axis.

5,606,894

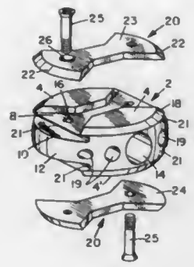
CLIPLESS BICYCLE PEDAL

Richard M. Bryne, 13039 Caminito Del Rocio, Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 235,294, Apr. 29, 1994, abandoned. This application Aug. 7, 1995, Ser. No. 511,726

Int. Cl.[6] G05G *1/14;* **B62M** *3/10*

U.S. Cl. 74—594.6 **25 Claims**



1. A clipless bicycle pedal assembly comprising:

a rounded body formed from a first material and having a top surface, a bottom surface, a circumferential edge, and a bore extending at least partially therethrough from an inside of said circumferential edge toward an outside of said circumferential edge for rotatably retaining a pedal spindle therein, each of said top surface and said bottom surface having a recessed area therein, each said recessed area having two ends and extending diametrically across said body, said circumferential edge having an inset corresponding to each said end of each said recessed area;

two planar inserts formed from a second material and each having two rounded ends and a top surface, a shape and a thickness of each said insert corresponding to each said recessed area whereby each said insert fits within each said recessed area repectively with the top and bottom surfaces of said body and the top surface of each said insert generally flush and each of said two rounded ends extending beyond said inset whereby a lip is formed; and

means for each fastening said insert to said body.

5,606,895

METHOD FOR MANUFACTURE AND REBUILD A ROTARY DRILL BIT

Alan D. Huffstutler, Cults, Scotland, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 8, 1994, Ser. No. 287,390

Int. Cl.[6] B21K *5/04*

U.S. Cl. 76—108.4 **31 Claims**

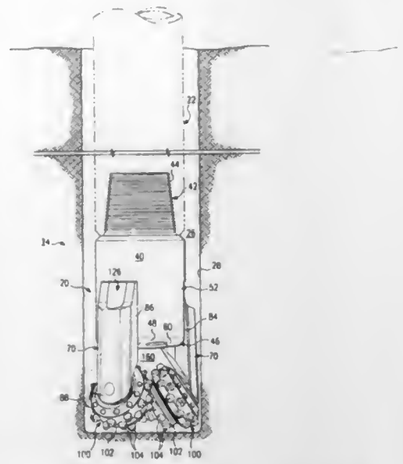
1. A method of fabricating a rotary cone drill bit used to form a borehole having a side wall and bottom comprising:

forming a one-piece bit body having an upper portion, a middle portion, and a lower portion;

forming a threaded connection on said upper portion for connecting said drill bit to a drill string for rotation of said drill bit;

forming a number of pockets in said middle portion of said bit body for attaching a corresponding number of support arms to said bit body;

forming each support arm with an inside surface having a spindle connected thereto and projecting generally downwardly and inwardly with respect to its associated support arm;



forming an upper surface and a back wall as an integral part of each pocket;

forming a top surface and an inside surface on each support arm;

mounting a cutter cone assembly on each of said spindles extending respectively from said support arms;

positioning a portion of each support arm within its associated pocket with said top surface of said support arm contacting said upper surface and said inside surface of said support arm disposed adjacent to said back wall;

providing a forging having a top surface, and exterior surface and a bottom portion with a boss projecting therefrom;

machining said forging to provide said top surface, said inside surface and said exterior surface for said support arm; and

machining said boss to provide said spindle for mounting said associated cutter cone assembly thereon.

5,606,896

ARTICULATED GRIPPING BOX WRENCH FOR TIGHT SPACES

Mohammed Shammout, 3950 Ecochee Ave., San Diego, Calif. 92117

Filed Feb. 6, 1995, Ser. No. 383,916

Int. Cl.[6] B25B *13/10*

U.S. Cl. 81—77 **9 Claims**



1. A gripping box wrench for engaging and torquing a polygonal workpiece without slippage, said gripping box wrench comprising:

an elongate hollow body having first and second ends, said first end including a first polygonally-fluted box structure for engaging a polygonal workpiece;

a rotatably-retained cam disposed within said elongate hollow body between said first and second elongate hollow body ends and having means for engaging a separate cam lever;

a separate cam lever having an end with means for engaging said rotatably-retained cam to apply torque thereto, whereby said cam rotates responsive to torque applied by said separate cam lever;

a first gripping member having a smooth end and a notched end movably disposed within said elongate hollow body with said smooth gripping member end disposed adjacent said rotatably-retained cam and said notched gripping member end disposed to slide in and out of said first polygonally-fluted box structure at said first elongate hollow body end responsive to rotation of said rotatably-retained cam;

a spring assembly disposed within said elongate hollow body coupled to said first gripping member to urge said smooth gripping member end against said rotatably-retained cam during cam rotation;

a second polygonally-fluted box structure at said second elongate hollow body end; and

a second gripping member having a smooth end and a notched end movably disposed within said elongate hollow body with said smooth gripping member end disposed adjacent said rotatably-retained cam and said notched gripping member end disposed to slide in and out of said second polygonally-fluted box structure at said second elongate hollow body end responsive to rotation of said rotatably-retained cam; wherein

said spring assembly is coupled to said first and second gripping members to urge both said smooth gripping member ends against opposite sides of said rotatably-retained cam during cam rotation.

5,606,897

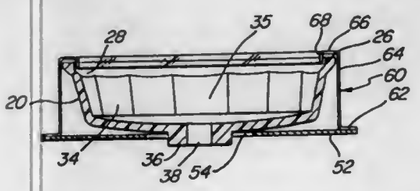
OIL FILTER WRENCH AND PACKAGING THEREFOR

Gregory F. Quinn, Fullerton, Calif., assignor to FloTool International, Inc., Tustin, Calif.

Division of Ser. No. 398,983, Mar. 6, 1995, Pat. No. 5,499,561. This application Dec. 22, 1995, Ser. No. 577,332

Int. Cl.[6] B25B *13/00;* **B65D** *75/02*

U.S. Cl. 81—124.6 **10 Claims**



1. An oil filter wrench for an oil filter and packaging therefore which allows a filter to be inserted into the wrench for sizing purposes without removing the packaging comprising:

a wrench body having an annular wall with a peripheral edge, the annular wall having an inner surface with segmented facets thereon for receiving the top portion of an oil filter; and

packaging comprising a back member and a front sheet affixed to the back member and extending over the peripheral edge of the wrench, whereby the wrench is securely held to the back member while providing unobstructed access to the segmented facets on the inner surface of the annular wall of the wrench by a filter for size comparison.

5,606,898

ANGULARLY ACCESSIBLE HEAD FOR THREADED CONNECTOR AND COOPERATING TOOL

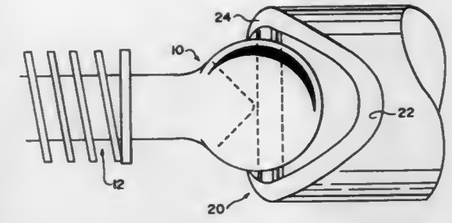
Mark Franciskovich, 2434 Park Ave., North Riverside, Ill. 60546, and Steve A. Masnjak, 41 W. 861 High Point La., Elburn, Ill. 60119

Filed May 23, 1995, Ser. No. 447,616

Int. Cl.[6] B25B *15/00*

U.S. Cl. 81—436 **10 Claims**

1. A tool head portion for manipulating an angularly accessible head for a threaded connector, the head comprising a spherical member having a centered slot therein, the slot extending toward the connector and having a bottom wall in the form of an inverted V, a point of the V being directed toward a center point of the spherical member, and the slot further having substantially planar circular side walls, the tool head portion comprising a hollow cylindrical member having an open end, the open end being defined by opposed plateau areas in one plane and opposed cusp areas in a transverse plane, with a rod extending across the end between the plateau areas.



5,606,899

CLAMPING DEVICE

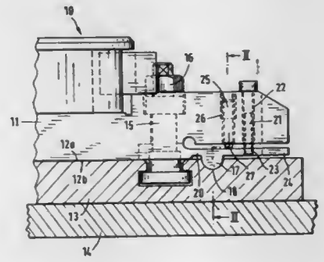
Heinz A. Werner, Edmund-Richen-Str.30, 50765 Köln, Germany

Filed Feb. 17, 1994, Ser. No. 197,954

Claims priority, application European Pat. Off., Feb. 19, 1993, 93102592

Int. Cl.[6] B23B *29/06*

U.S. Cl. 82—158 **7 Claims**



1. A clamping device for a machine tool, said machine tool having a tool block and a clamping plate to which the tool block is adapted to be affixed by means of at least one tightening bolt, said clamping device having first guidance means on the tool block, and second guidance means on the clamping plate which cooperates with said first guidance means, characterized in that

the tool block and the clamping plate each have a clamping surface with an opening for the passage of said at least one tightening bolt, said clamping surfaces being flat overall except at said bolt openings and at said guidance means;

the first guidance means on the tool block or the second guidance means on the clamping plate is connected to the tool block or the clamping plate respectively so as to be moveable perpendicularly to the flat clamping surfaces, but immoveable in a first transverse direction parallel to the flat clamping surfaces wherein the tool block or the clamping plate is adapted to slide in a second transverse direction normal to the first transverse direction;

the first guidance means is a rail and the second guidance means is a groove conforming to the rail;

at least one spring element which resiliently urges the moveable one of said first or second guidance means into engagement with the immoveable one of said guidance means: and

the at least one spring element is a leaf spring which projects from one end to the tool block and on which the rail is mounted.

5,606,900

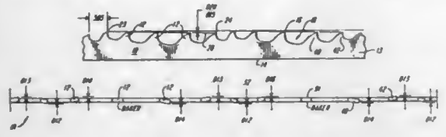
VARIABLE HEIGHT, HIGH PERFORMANCE, BANDSAW BLADE AND METHOD OF MANUFACTURE THEREFOR

Ralph Stoddard, Athol, Mass., assignor to The L.S. Starrett Company, Athol, Mass.

Continuation of Ser. No. 109,325, Aug. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 881,182, May 11, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 286,384

Int. Cl.[6] B23D *61/12*; B27B *33/02*

U.S. Cl. 83—846 11 Claims



1. A bandsaw blade having a tooth pattern having a plurality of set cutting teeth,

each set tooth having a set greater than or equal to a set of a preceding set tooth, said set at the end of the tooth pattern being greater than the set at the beginning of the tooth pattern,

each set tooth having a height with respect to a back edge of said blade greater than a height of a preceding set tooth such that the tips of said set teeth lie in a plane which is inclined with respect to the back edge of said blade, said tooth height at the end of the tooth pattern being between about ten and twenty-five thousandths of an inch greater than the tooth height at the beginning of the tooth pattern,

said tooth pattern being repeated along said blade such that the tooth height at the end of a respective tooth pattern is greater than the tooth height at the beginning of a subsequent tooth pattern.

5,606,901

HYDRAULIC CIRCUIT FOR TURNING PURPOSES

Isao Oki, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

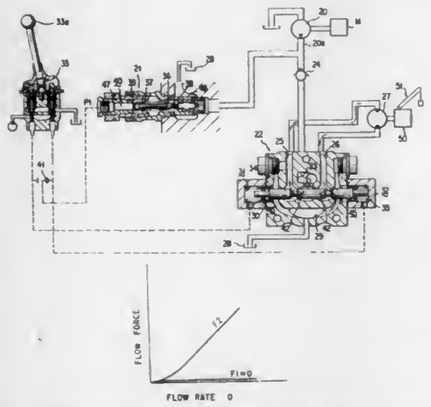
PCT No. PCT/JP93/01781, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO94/13960, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 8, 1993, Ser. No. 436,373

Claims priority, application Japan, Dec. 8, 1992, 4-327831

Int. Cl.[6] F15B *11/04*; B66C *13/20*; E02F *9/22*

U.S. Cl. 91—461 5 Claims



1. A turning-purpose hydraulic circuit in which a discharge passage of a hydraulic pump is connected to a variable relief valve and a pump port of a directional switching valve; a first actuator port and a second actuator port of said directional switching valve are connected to a turning-purpose hydraulic motor; and a pilot pressure of a pilot valve is introduced into pressure chambers for controlling a spool in said directional switching valve and is also introduced into a pressure chamber for controlling a set pressure in said variable relief valve;

characterized in that:

a metering-in section of said spool through which section the pressurized oil directly flows from said pump port into said first or second actuator port is formed with a first portion having such a configuration that substantially no flow force acting on said spool will be produced at said first portion;

whereas a metering-out section of said spool through which section the pressurized oil directly flows from said first or second actuator port into a tank port is formed with a second portion having such a configuration that a substantial flow force acting on said spool will be produced at said second portion.

5,606,902

LINEAR ACTUATOR

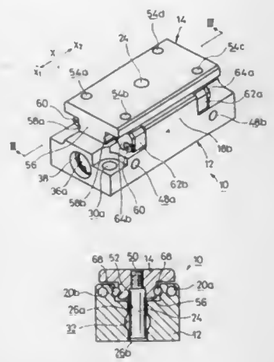
Masayuki Hosono, and Yoshihiro Toshimori, both of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 559,452

Claims priority, application Japan, Nov. 24, 1994, 6-290112

Int. Cl.[6] F15B *15/00*; F01B *29/00*

U.S. Cl. 92—88 8 Claims



1. A linear actuator comprising:

a cylinder body having fluid outlet/inlet ports;

a slide table movably mounted on said cylinder body for movement in an axial direction thereof in response to a fluid under pressure which is introduced into said cylinder body through one of said fluid outlet/inlet ports;

first guide means for guiding said slide table to move in said axial direction, said first guide means being disposed on a lower surface of said slide table and extending in the axial direction of said cylinder body, said first guide means projecting toward said cylinder body;

a pair of second guide means for guiding said slide table to move in said axial direction, said second guide means being disposed on an upper surface of said cylinder body and extending in the axial direction of said cylinder body, said second guide means confronting each other with said first guide means positioned therebetween; and

a pair of slide mechanisms each having a plurality of rolling elements rollingly interposed between said first guide means and said second guide means.

5,606,903

RODLESS PRESSURE CYLINDER

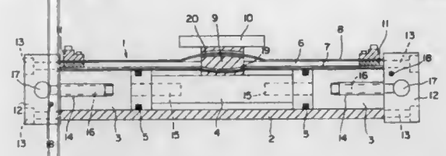
Volker Drittel, Renningen, Germany, assignor to Hygrama AG, Rotkreuz, Switzerland

Filed Nov. 30, 1995, Ser. No. 565,244

Claims priority, application Austria, Nov. 30, 1994, 2219/94

Int. Cl.[6] F01B *29/08*

U.S. Cl. 92—88 7 Claims



1. A rodless pressure cylinder (1) with a cylinder housing (2) having a longitudinal slot (6) over its entire length and which has a cylindrical interior (3), a drive piston (4) positioned in the cylinder and longitudinally moveable therewithin, a lateral attachment (9) extending from the drive piston through the longitudinal slot (6) to the outside for force transfer, cylinder caps (12) enclosing the cylindrical interior (3) of the cylinder housing (2) on its ends, each said cylinder cap including an attachment (17) on its outside for the feed and discharge of the pressure medium which actuates the drive piston (4), clamping elements (11) separated from the cylinder caps (12), an inner sealing strip (7) in the interior of the cylinder housing (2) for sealing the longitudinal slot and which is lifted from the longitudinal slot (6) only in the region of the attachment (9), said inner sealing strip penetrating through a guide channel (19) in the drive piston (4), an outer sealing strip (8) which is fastened onto the outside of the cylinder housing (2) over the longitudinal slot (6) at its ends, the inner sealing strip (7) being anchored at each end thereof with said clamping element (11) in or on the longitudinal slot (6), said two cylinder caps (12) being fastened in various rotated positions across from one another in a plane of the cylinder cap (12), the channels transferring the pressure medium in the two cylinder caps (12) being arranged rotationally symmetric in the transfer region between the cylinder cap and an adjacent component part of the cylinder housing (2).

5,606,904

SYSTEM FOR THE SEMICONTINUOUS PRODUCTION AND FOR THE SALE FOR IMMEDIATE CONSUMPTION OF PRODUCTS SUCH AS PIZZAS, PIES AND THE LIKE

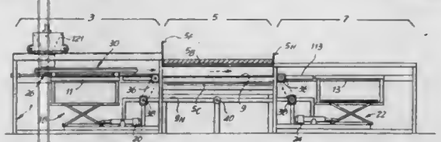
Lorenzo Fabbri, Via del Focardo No. 50/B, 50010 S. Donato in Collina, Rignano Sull'Arno, Firenze, Italy

Filed Oct. 17, 1995, Ser. No. 544,114

Claims priority, application Italy, Oct. 18, 1994, F194A0191

Int. Cl.[6] A23L *3/00*

U.S. Cl. 99—326 15 Claims



1. A system for the semicontinuous production and for the sale for immediate consumption of products made with one of raised doughs, short doughs, pastas and other, comestibles, generally served by the portion, comprising:

a plurality of stations;

a track leading through said stations;

a carriage traveling along said track, said stations including;

a preparation station equipped with means for laying out a layer of dough, said preparation station for completing a preparation stage,;

a cooking station including an oven with an oven space, said oven space being large enough to contain said carriage, said oven including heating means for heating said oven space and including control means for controlling said heating; and

a serving station for serving one of a cooked product, and a portion of a cooked product;

a tray unit carried by said carriage; and

subsequent cycle actuation means for returning said tray unit from said serving station to said preparation station and for actuating a subsequent cycle of passing through said stations.

5,606,905

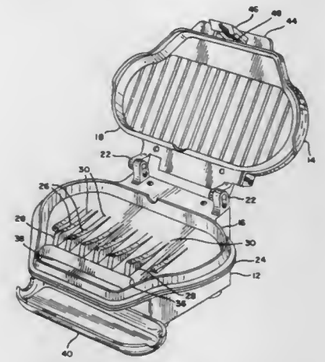
DEVICE FOR COOKING FOODSTUFFS

Michael W. Boehm, Batavia, and Robert W. Johnson, Naperville, both of Ill., assignors to Tsann Kuen USA, Inc., Pasadena, Calif.

Filed Jan. 11, 1995, Ser. No. 371,288

Int. Cl.[6] A47J *37/06*

U.S. Cl. 99—375 13 Claims



1. A device for cooking foodstuffs comprising:

a. a first cooking plate positioned at an angle to the horizontal plane of said device and supporting in heat conducting relation thereon a plurality of grilling members adapted to have a portion thereof contact foodstuffs placed thereon for cooking, said grilling members extending upwardly from the plane of said first cooking plate and having at least their lower marginal end portions upwardly curved and extending upwardly to a greater elevation above said first cooking plate than the elevation of the opposite marginal portions of the grilling members above said first cooking plate, whereby foodstuffs placed on said grilling members are retained by said upwardly curved end portions;

b. a second cooking plate movable relative to said first cooking plate to a closed position to form with said first cooking plate a cooking chamber which substantially restrains the escape of vapor therefrom;

c. at least one heating element operatively coupled to said first cooking plate for supplying heat to said first cooking plate to provide heat to said cooking chamber and said grilling members; and

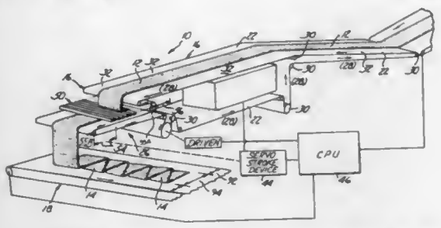
d. said first cooking plate including at least one downwardly extending portion for collecting liquid emitted by said foodstuffs within said cooking chamber during cooking therein.

5,606,906

CONTROLLER FOR DOUGH LAPPER

James W. Finkowski, Andover; Robert F. Meyer, Maple Grove, and James L. Schurz, Plymouth, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 21, 1995, Ser. No. 590,271
Int. Cl.[6] A21C *3/06;9/04;11/00;* **A21D** *6/00*
U.S. Cl. 99—450.2 **13 Claims**



1. A dough web feeding device for forming a dough web into a laminated dough web by lapping the dough web on itself, the device comprising:

a. a first conveying means including a top surface with a first discharge end and a first belt movably mounted on said first conveying means, said first discharge end being non-reciprocating relative to the ground during operation of the dough web feeding device;

b. first drive means operably associated with said first conveying means operable for effecting movement of said first belt of said first conveying means at a first conveying speed in a first direction;

c. reciprocating means, positioned beneath said top surface of said first conveying means, and including a second discharge end, said second discharge end being means being movable relative to said first discharge end to move said first belt in reciprocating motion relative to said first discharge end; and

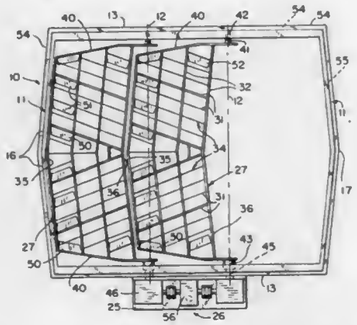
d. second drive means operably associated with said reciprocating means operable for effecting movement of said reciprocating means at a second reciprocating speed in the first direction and in a second opposite direction at a third reciprocating speed.

5,606,907

FOOD PROCESSING VAT

Jeffrey L. Jay, New Glarus, Wis., assignor to Damrow Company, Fond du Lac, Wis.

Continuation-in-part of Ser. No. 444,066, May 18, 1995, Pat. No. 5,513,559. This application May 7, 1996, Ser. No. 646,447
Int. Cl.[6] A01J *25/02;* **B01F** *7/32*
U.S. Cl. 99—455 **5 Claims**



1. In a food processing vat having a pair of interconnected curved wall portions having horizontally disposed axes, the axes of the curved wall portions positioned in parallel horizontally spaced relation, and common upper and lower walls and opposite end walls forming with the curved wall portions an enclosed vat having a generally oval cross section in a plane perpendicular to said axes, the improvement comprising:

an open-framed agitator panel rotatably mounted on the axis of each wall portion to sweep a volume corresponding generally to said wall portion, each of said panels having a radially outer edge portion positioned to move along and closely adjacent a curved wall portion, and a radially inner edge portion generally parallel to said outer edge portion and spaced radially from the axis of panel rotation;

the axes of rotation of the panels being spaced at a distance less than the radius of the volumes swept by the panels to provide an overlap in the volumes swept by the respective panels and to allow the radially outer edge portion of one panel to pass during rotation through the space between the radially inner edge portion of the other panel and the axis of rotation of said other panel; and,

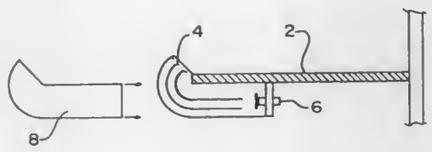
each agitator panel defining a framework of intersecting cutting edges, including outwardly extending edges disposed at angles with respect to the axis of panel rotation greater than about 45° and less than 90° and longitudinally extending edges disposed at angles with respect to said axis less than about 45°.

5,606,908

CUTTING BOARD WITH FAN

Thomas J. Mittnight, 12 A Atlantic Oaks Cir., St. Augustine, Fla. 32084

Filed Oct. 28, 1994, Ser. No. 331,194
Int. Cl.[6] A47J *47/00;* **E04H** *15/02;15/36*
U.S. Cl. 99—467 **2 Claims**



1. An improved cutting board comprising:

a board having a cutting surface and having an underside opposite said cutting surface, and having a means for directing air in connection with said cutting board, and having a support structure in connection with said board, said support structure pivotally connected to said cutting board, said means for directing air in connection with said support surface so that said means for directing air may be angled in relation to said cutting surface.

5,606,909

APPARATUS FOR WINDING TAPE

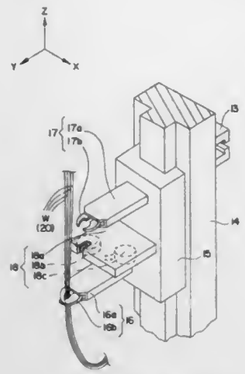
Yoshinobu Ohta, and Kenichi Taniguchi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 20, 1994, Ser. No. 360,221
Claims priority, application Japan, Dec. 28, 1993, 5-350003
Int. Cl.[6] B65B *27/10*
U.S. Cl. 100—8 **10 Claims**

8. An apparatus for winding tape around a plurality of wires, each said wire having opposed first and second ends, said apparatus comprising:

a holding means for gripping said plurality of wires in proximity to the first ends thereof;

straightening means for straightening portions of the plurality of wires in proximity to said holding means; and



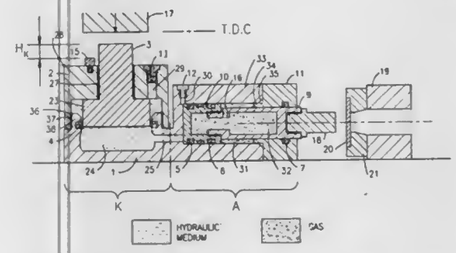
tape winding means for automatically winding the straightened portions of said plurality of wires with tape.

5,606,910

PRESS-DRIVEN TOOL MODULE IN PARTICULAR PRESS-DRIVEN CROSS-PUNCHING OR BENDING UNIT

Wolfgang Katz, Dauchingen, Germany, assignor to Danly Corporation, Coconut Grove, Fla.

PCT No. PCT/DE93/00370, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO94/25260, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 26, 1993, Ser. No. 416,703
Int. Cl.[6] B30B *1/32*
U.S. Cl. 100—208 **15 Claims**



1. Press driven work tool module comprising:

a foundation body including a work cylinder defining a work space;

a work piston slidably mounted in said work space of said work cylinder;

a work ram mounted said work cylinder of said foundation body for sliding movement in non-vertical reciprocal operating and return directions, said work ram adapted for receiving a work tool;

a return spring element disposed for urging said ram in the return direction;

a hydraulic power cylinder having a displacement space containing hydraulic medium;

a plunger displaceable between a top dead center and a bottom dead center, said plunger mounted in said hydraulic power cylinder for acting upon said hydraulic medium;

a press ram disposed for acting upon said plunger;

a hydraulic pressure line communicating between the displacement space of the power cylinder and the work space of the work cylinder,

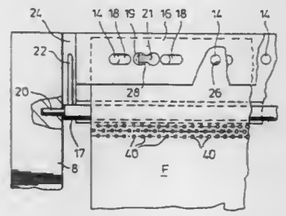
wherein a supply space is provided in the power cylinder for the hydraulic medium, which supply space, when the plunger is at the top dead center, is in communication with the displacement space of the power cylinder, and which supply space is otherwise sealed off from the displacement space by high pressure seal means.

5,606,911

SCREEN PRINTING STENCIL

Paul Cane, 12 Brackendale Ave., Preston, Weymouth, Dorset, Great Britain

PCT No. PCT/GB93/02041, § 371 Date Jul. 3, 1995, § 102(e) Date Jul. 3, 1995, PCT Pub. No. WO94/07697, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 30, 1993, Ser. No. 411,773
Claims priority, application United Kingdom, Oct. 1, 1992, 9220700
Int. Cl.[6] B41N *1/24*
U.S. Cl. 101—127 **6 Claims**



1. A stencil (F) for mounting in tension on a mount (2) therefor, said stencil comprising:

a) a body portion to receive a stencil pattern;

b) at least two peripheral regions defining said body portion and adapted to be held in said mount for the application of tension to said body portion;

c) a region of weakness formed in a defined location of said stencil (F) and located inwardly of one of said peripheral regions, to relieve strain in said stencil in use;

characterised by

d) said stencil (F) comprising a stencil foil comprising a thin metallic sheet adapted itself to be directly mounted on said mount; and

e) said stencil foil (F) being adapted for use in a self-tensioning mount or frame and comprising a row of mounting apertures (**26**) formed in said foil at said two peripheral regions of said stencil and extending lengthwise thereof to co-operate with corresponding mounting pins (**14**) of said mount or frame (**2**), whereby said stencil foil can be stored separately from said mount and then mounted thereon; and

f) said region of weakness being located between said row of mounting apertures (**26**) and the part of said body portion to receive or having said stencil pattern, and said region of weakness extending across the full width of said stencil (F) at said relevant peripheral region thereof in the form of a band to relieve the strain in said stencil foil (F) produced by said mounting pins (**14**) and mounting apertures (**26**) upon self-tensioning of said stencil by said mount or frame; and

g) said band-form region of weakness comprises a pattern of strain-relief zones (**40**) disposed with a plurality of said strain-relief zones provided both across the lateral width of said band-form region of weakness and lengthwise thereof; and

h) the size of said strain-relief zones (**40**) being substantially smaller than said mounting apertures (**26**) therein such that a plurality of said zones (**40**) would fit within one of said mounting apertures (**26**); and

i) the size and relative disposition and spacing of said strain-relief zones (**40**) in said region of weakness being such that a plurality of said strain-relief zones (**40**) are disposed so as to be within or to be crossed by the lengthwise strips of said stencil defined by parallel construction lines drawn at opposite sides of each of said mounting apertures (**26**); and

j) said pattern of strain relief zones (**40**) defining lands between successive zones (**40**) in the lengthwise direction of said band-form region of weakness, said lands serving, in use, to transmit tension across the width of said region of weakness, and the disposition and spacing of said strain-relief zones being such that the lands between successive zones spaced lengthwise of the region of weakness at one side of the width of the region of weakness are interrupted across the width of the region of weakness by a strain-relief zone (**40**) thereby defining a lateral diversion of the direction of tension transmission through the stencil between the mounting apertures (**26**) at said two peripheral regions of the stencil.

5,606,912

SCREEN PRINTING TENSIONING DEVICE

Paul Cane, 12 Brackendale Avenue, Preston, Weymouth, Dorset, Great Britain

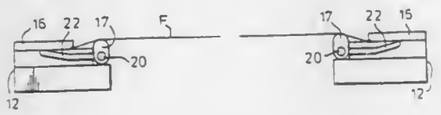
PCT No. PCT/GB93/02040, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO94/07696, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 30, 1993, Ser. No. 411,774

Claims priority, application United Kingdom, Oct. 1, 1992, 9220727

Int. Cl.[6] B05C *17/08*

U.S. Cl. 101—127.1 **5 Claims**



1. A device for mounting under tension a stencil element or foil (F) adapted for stenciling circuitry on boards, the device comprising:

a) a mounting (**2**) for securing the foil in a fixed position to resist said tension in use, the mounting initially supporting the foil on a first plane;

b) tensioning means for the foil comprising a tensioning member (**17**) positioned to engage said foil directly and mounted for angular movement about its lengthwise axis which extends across a major part of at least one dimension of said mounting (**2**) for said foil;

c) said tensioning means being operable such that said tensioning member (**17**), in use, moves said foil (F) to control the tension therein;

characterised by

d) said tensioning means for said foil (F) further comprising actuating lever means (**22**) connected to said tensioning member (**17**);

e) said actuating lever means (**22**) being angularly movable by manual operation to an end position (**24**) of said lever means defining a tensioning position of said tensioning member (**17**);

f) whereby movement of said lever means (**22**) to said end position (**24**) operates to displace said major part of said one dimension of the foil from said first plane to a second plane spaced from said first plane, said displacement of the foil from said first plane to the second plane thereby placing the foil under tension.

5,606,913

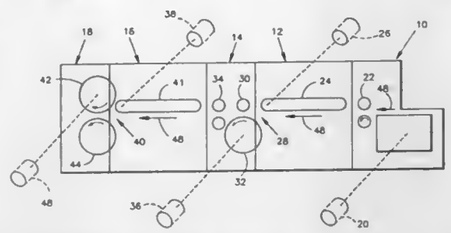
SHEET REGISTRATION CONTROL

James M. Kowalewski, Baltimore, Md., assignor to Ward Holding Company, Wilmington, Del.

Continuation of Ser. No. 308,845, Sep. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 33,097, Mar. 16, 1993, Pat. No. 5,383,392. This application Sep. 15, 1995, Ser. No. 528,796

Int. Cl.[6] B41F *5/02; 1/28*

U.S. Cl. 101—183 **11 Claims**



1. A machine for processing paperboard sheets comprising in combination:

(a) first and second processing sections;

(b) conveyor means positioned entirely between said first and second processing sections for conveying sheets from said first processing section to said second processing section;

(c) means for detecting a displaced sheet out of registry with respect to said second processing section while said sheet is in said conveyor means;

(d) means for changing the speed of said conveyor means from a predetermined line speed to another speed and returning to said line speed to adjust the registry of said sheet relative to said second processing section, and

(e) means for correcting the linear position of said conveyor means relative to said sheets so as to be returned to the linear position in which said conveyor means would have been if the speed of said conveyor means had not been changed from said line speed to adjust the registry of said sheet relative to said second processing section.

5,606,914

PROCESS AND DEVICE FOR PRINTING SHEETING IN ROTARY OFFSET PRESS

Detta Borgardt, Bremervörde, Germany, assignor to Cleanpack GmbH Innovative Verpackungen, Germany

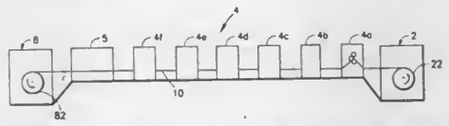
PCT No. PCT/EP94/02524, § 371 Date Jan. 23, 1996, § 102(e) Date Jan. 23, 1996, PCT Pub. No. WO95/03941, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 29, 1994, Ser. No. 592,368

Claims priority, application Germany, Jul. 30, 1993, 43 25 725.9

Int. Cl.[6] B41F *23/04*

U.S. Cl. 101—488 **26 Claims**



1. A method for the printing of foil webs in web offset printing, in which

strongly oxidatively drying inks are used,

the printed foil webs are subjected to a combined heat-air drying;

the printed foil webs, before being wound up, are conducted over at least one cooling roll, and

the tension of the web upon the winding is reduced as the diameter of the roll increases.

5,606,915

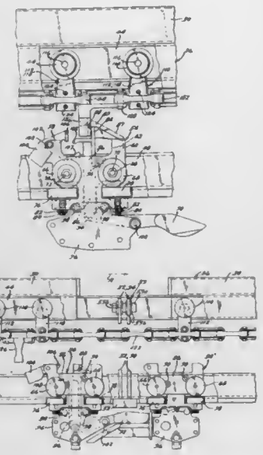
POWER AND FREE CONVEYING SYSTEM

Hugh Harris, Trinidad, Colo., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1995, Ser. No. 418,214

Int. Cl.[6] B61B *10/00*

U.S. Cl. 104—172.4 **11 Claims**



1. A power and free conveying system comprising:

a track assembly including a power track and a free track spaced vertically from said power track;

a power trolley supported on said power track for movement therealong;

a free trolley supported on said free track for movement therealong;

said free trolley including a trolley body with transversely spaced first upstanding projections and second upstanding projections spaced longitudinally from said first upstanding projections at an upper end of said trolley body;

said free trolley including a moveable holdback dog rotatably secured between said first upstanding projections and engageable and disengageable with said power trolley; and

said free trolley including a retractable dog having a first position engageable with said power trolley and a second position disengageable with said power trolley and engageable with said holdback dog to completely disengage said free trolley from said power trolley upon engaging another one of said free trolley.

5,606,916

HOPPER DOOR OPERATING MECHANISM

John R. Murray, Findlay, Ohio, assignor to Difco, Inc., Findlay, Ohio

Filed Apr. 25, 1995, Ser. No. 428,666

Int. Cl.[6] B61D *3/00*

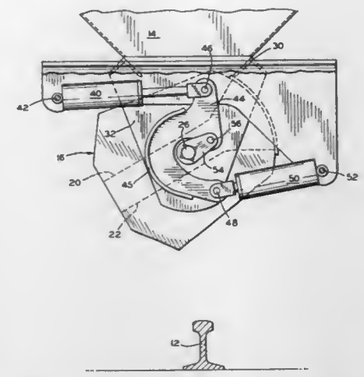
U.S. Cl. 105—286 **11 Claims**

1. A hopper door operating mechanism for rotatably moving a hopper door to selectively open and close a discharge opening of a hopper car, said hopper door operating mechanism comprising:

a) a pair of spaced apart support members mounted on opposite sides of a discharge opening of a hopper car;

b) a hopper door mounted between said support members, said hopper door including a shaft rotatably connected to said support members and extending across the discharge opening, and including a closure plate mounted on the shaft such that the closure plate closes the discharge opening;

c) an operating crank connected to one end of the shaft of the hopper door;



d) a link arm, said link arm including a pivotable connection at an intermediate point on said link arm which connects said operating crank to said link arm;

e) a first motor mounted on a support member and coupled to said link arm between the pivotable connection and a first end of said link arm, and

f) a second motor mounted on the support member and coupled to said link arm between the pivotal connection and a second end of said link arm, whereby said first and second motors and said closure plate are arranged in a manner that when said first motor is operated and said second motor is retained in a closed position, the closure plate is rotatably moved to one side of the discharge opening, and, when said second motor is operated and said first motor is retained in a closed position, the closure plate is rotatably moved to the opposite side of the discharge opening.

5,606,917

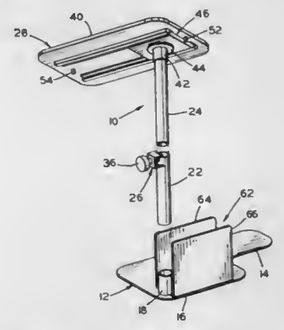
TABLE ASSEMBLY WITH SLIDABLE TABLE

Ford B. Cauffiel, 4126 Nantucket Dr., Toledo, Ohio 43623

Continuation of Ser. No. 153,090, Nov. 17, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,232

Int. Cl.[6] A47B *23/00*

U.S. Cl. 108—42 **12 Claims**



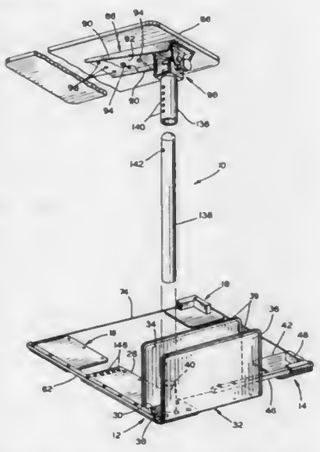
1. A table assembly for use with seating apparatus, said assembly comprising stabilizing means defined by a base plate of sufficient size to be received under and held stationary by supports on at least one side of the seating apparatus for supporting said assembly, said base plate having a flat bottom surface defining a floor-engaging means for contacting a floor under the seating apparatus, an upright post, first means on said base plate to support a lower end of said post on said plate, a table, track means on an upper end of said post and on a lower surface of said table to enable said table to slide linearly in a substantially horizontal plane

relative to said base plate, and a magazine rack affixed to said base plate adjacent said first means, said magazine rack comprising two panels affixed to said base plate and extending upwardly on either side of said first means.

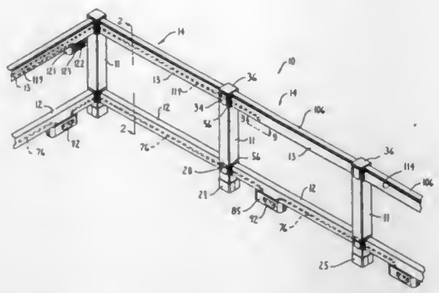
5,606,918
TABLE ASSEMBLY WITH BASE PLATES FOR USE WITH SEATING APPARATUS

Ford B. Cauffiel, 4126 Nantucket Dr., Toledo, Ohio 43623

Continuation-in-part of Ser. No. 102,916, Aug. 6, 1993, Pat. No. 5,479,865. This application Nov. 17, 1995, Ser. No. 559,936
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—42 **22 Claims**



1. A table assembly and seating apparatus having front and rear support portions on a first side thereof, said table assembly comprising stabilizing means defined by a first base plate to be received under and held stationary by said front support portion, said first base plate having a bottom surface for defining a floor engaging means contacting a floor under the front support portion, said first base plate extending under the seating apparatus toward a second side thereof, said first base plate having a projecting portion projecting outwardly beyond the first side of the seating apparatus, an elongate receptacle located on the same side of the seating apparatus as said projecting portion of said first base plate and extending rearwardly therefrom, said receptacle having two side walls and a bottom wall extending therebetween, a lower sleeve extending upwardly from the bottom wall of said elongate receptacle above the projecting portion of said first base plate, and means affixing a forward portion of said elongate receptacle to the projecting portion of said first base plate.



a plurality of horizontally-spaced upright hollow posts each supported on and projecting upwardly from a floor and terminating at an upper free end, each said post having upper and lower openings disposed in vertically spaced relation and extending horizontally therethrough;

a plurality of horizontally elongate lower rails each extending horizontally between and being releasably fixedly joined to a pair of said posts, each said lower rail having an elongate lengthwise extending channel which at opposite ends thereof is in communication with the lower openings of the joined posts, at least two of said lower rails being rigidly releasably joined to an intermediate said post so that the elongate channels thereof communicate with one another through the lower openings defined in the intermediate post;

a plurality of horizontally elongate upper rails each extending horizontally between and being fixedly joined to a pair of said posts and vertically spaced from corresponding said plurality of lower rails, each said upper rail having an elongate lengthwise-extending channel which at opposite ends thereof is in communication with the upper openings of the joined posts, at least two of said upper rails being rigidly releasably joined to said intermediate post so that the elongate channels thereof are in open communication with one another through the upper openings of said intermediate post;

a said lower rail, a corresponding said upper rail, and said pair of said posts define a transversely accessible open region therebetween;

electrical power means extending along selected ones of said elongate lower rails and through lower openings of selected said posts, said electrical power means including elongate flexible electrical power transmitting cabling extending through the lower openings of said intermediate post and into the channels of said pair of lower rails attached to said intermediate post, said electrical power means including a power block connected to said cabling and mounted on one of the lower rails of said pair and defining thereon an electrical receptacle which faces sidewardly of the lower rail and accommodates a conventional electrical plug; and

telecommunication cabling extending through the upper openings of said intermediate post and into and along the channels of the pair of upper rails joined to said intermediate post and connected to a telecommunication connector which is stationarily mounted on one of the upper rails of said pair.

5,606,919
SPACE-DIVIDING FENCE FOR POWER AND/OR COMMUNICATION DISTRIBUTION

Robert A. Fox, Allendale; Wayne B. Miedema, Holland; Robert C. Weener, Holland; Stephen B. Greenman, Holland, and Timothy J. Syfert, Holland, all of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 7, 1995, Ser. No. 486,614
Int. Cl.[6] A47B *35/00*
U.S. Cl. 108—50 **25 Claims**

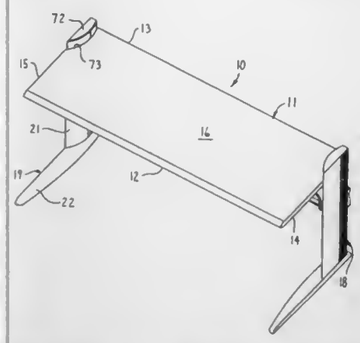
1. An upright space-dividing arrangement for distributing electrical power and telecommunication cables so as to permit access thereto from adjacent workstations, comprising:

5,606,920
LINKABLE MODULAR TABLE

Kevin L. Meyer, Hudsonville; David F. Lyons, Grosse Pointe Farms, both of Mich.; Jorge Q. Davies, Hanworth, England; Stephen Heron, and Roberto G. Fraquelli, both of London, England, assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 8, 1995, Ser. No. 488,491
Int. Cl.[6] A47B *35/00*
U.S. Cl. 108—50 **20 Claims**

1. In a freestanding C-leg table having a horizontally enlarged worksurface defining thereon an enlarged and planar upper surface, said worksurface defining thereon a pair of end edges, and a pair of

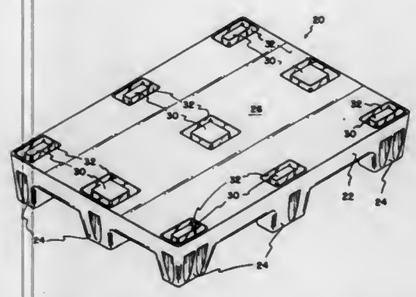


leg assemblies fixed to said worksurface and projecting downwardly therefrom for supportive engagement with a floor, each leg assembly being fixed to the worksurface and projecting downwardly in adjacent relationship to one of the end edges thereof, said leg assembly including a vertically upright leg which is positioned adjacent a rear corner of the worksurface and projects vertically downwardly and at its lower end is fixed to a horizontally elongate foot which projects forwardly and is adapted for supportive engagement with the floor, comprising the improvement wherein said worksurface has a cutout which opens inwardly from each of the respective end edges in the vicinity of the respective rear corner of the worksurface and extends vertically upwardly through the worksurface, said leg having an upper portion which is positioned within and projects vertically through said cutout so that the leg has an upper end which is disposed at or above the upper surface of said worksurface, said leg having a configuration which corresponds generally to the contour of the cutout so as to snugly fit therein, said leg having an outer side surface which defines a flat vertically-extending plane which is substantially vertically coplanar with the respective end edge of the worksurface, and said foot having an outer vertically-flat side surface which is substantially vertically coplanar with the respective end edge of the worksurface.

5,606,921
STACKABLE PALLET

Andrew W. Elder, Carmel, and William J. Skinner, Plainfield, both of Ind., assignors to Stratis Corporation, Indianapolis, Ind.

Filed Feb. 6, 1995, Ser. No. 383,893
Int. Cl.[6] B65D *19/38*
U.S. Cl. 108—53.3 **13 Claims**



1. A pallet, comprising:

a support portion having a substantially planar upper supporting surface including a plurality of channels formed therein extending across the pallet;

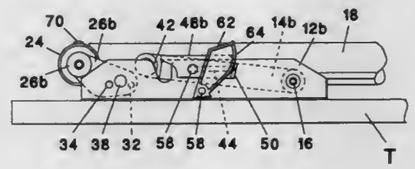
a plurality of support members extending from the support portion;

wherein each of said support members include a rectangular central portion projecting substantially to the planar upper supporting surface and defining a recess around the central portion extending to a depth no greater than the channels, wherein each support member defines a bottom recess aligning with the central portion.

5,606,922
TABLE LEG LATCH MECHANISM

Alan J. Adams, Shelton; Richard M. Lacouture, Ansonia, and Robert J. Ferraro, Monroe, all of Conn., assignors to Johnson Industries, Inc., Trumbull, Conn.

Filed Jun. 9, 1995, Ser. No. 488,810
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—129 **11 Claims**



1. In a folding table of the type having a top with a bottom surface and at least one leg foldable between an erected position supporting said table top and a folded position substantially parallel with said bottom surface, the improvement comprising:

first and second substantially parallel spaced brackets mounted to the bottom surface of said table top;

a first pivot link having a first end pivotally mounted to said first bracket and a second end;

a second pivot link having a first end pivotally mounted to said second bracket and a second end;

a pivot bar mounted to said foldable leg, said pivot bar having a first end rotatably supported by the second end of said first pivot link and a second end rotatably supported by the second end of said second pivot link;

a first latching pin carried by the first end of said pivot bar;

a second latching pin carried by the second end of said pivot bar;

a first latching notch formed in said first bracket to receive said first latching pin when said .leg is in its erected position;

a second latching notch formed in said second bracket to receive said second latching pin when said leg is in its erected position;

a first latching bar slidably mounted adjacent said first latching notch for translational movement between a release position unengaged with said first latching pin and a latching position securing said first latching pin within said first latching notch;

means associated with said first latching bar for resiliently urging said first latching pin into said first latching notch while said first latching bar is in its latching position;

a second latching bar slidably mounted adjacent said second latching notch for translational movement between a release position unengaged with said second latching pin and a latching position securing said second latching pin within said second latching notch;

means associated with said second latching bar for resiliently urging said second latching pin into said second latching notch while said second latching bar is in its latching position; and

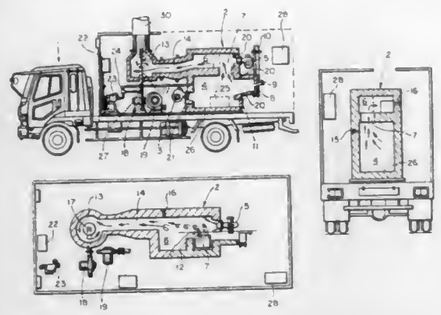
means for moving both of said first and second latching bars into their release positions to permit folding of said leg.

5,606,923

INCINERATOR WITH A RECOMBUSTION CHAMBER

Minoru Fujimori, 706, Daigosinosaka Bldg., 3-12-15, Nishi-nakajima, Yodogawaku, Osaka, Japan

Filed Jan. 12, 1995, Ser. No. 371,818
Int. Cl.[6] F23B *5/00*
U.S. Cl. 110—211 4 Claims



1. In an incinerator which comprises a main combustion chamber including fire-resistant walls in an inner space thereof and having a main burner in a front section of said main combustion chamber; a recombustion chamber including fire-resistant walls and placed above said main combustion chamber, said recombustion chamber being provided in a rear section thereof with a recombustion burner that jets a flame to burn unburnt gas, the main combustion chamber being operatively connected to the recombustion chamber through a port, and the recombustion chamber being provided with a gas guide wall for guiding the unburnt gas; and an exhaust chamber for receiving and exhausting combustion gas from the recombustion chamber to ambient atmosphere, the improvement wherein:

said port is laterally spaced from a center of the flame jetted from said recombustion burner;

said gas guide wall is arranged and disposed in the recombustion chamber relative to the port and the recombustion burner for guiding a flow of the unburnt gas from the main combustion chamber through the port so that the unburnt gas is introduced into the flame jetted from the recombustion burner in a whirl and in crosswise contact with the flame whereby to enable complete oxidation of the unburnt gas; and

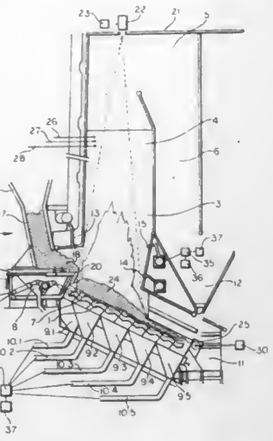
said gas guide wall extends upward substantially from an edge of the port and protrudes in a direction in which the flame of said recombustion burner is jetted.

5,606,924

PROCESS FOR REGULATING INDIVIDUAL FACTORS OR ALL FACTORS INFLUENCING COMBUSTION ON A FURNACE GRATE

Johannes J. E. Martin, Seeshaupt; Franz Rampp, and Joachim Horn, both of Munich, all of Germany, assignors to Martin GmbH fuer Umwelt- und Energietechnik, Munich, Germany

Filed Dec. 28, 1994, Ser. No. 365,466
Claims priority, application Germany, Dec. 29, 1993, 43 44 906.9
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—341 13 Claims



1. A process for regulating individual factors or all factors influencing combustion on a furnace grate, comprising:

detecting a three-dimensional distribution of fuel mass on at least a preferred region of a furnace grate, the detecting of said three-dimensional distribution including scanning a contour of said fuel mass by radar;

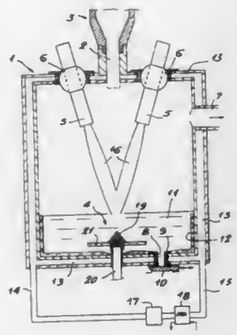
detecting a temperature distribution of said fuel mass, the detecting of said temperature distribution including operating at least one infrared camera directed towards said fuel mass; and in response to the detected three-dimensional distribution and the detected temperature distribution, regulating at least one factor influencing combustion on the furnace grate.

5,606,925

PROCESS FOR THE INCINERATION AND VITRIFICATION OF WASTE IN A CRUCIBLE

Roger Boen, Saint-Alexandre; René Cartier, Le Pontet; Jean-Pierre Tauplac, Beaumont de Lomagne, and Jean-Marie Baronnet, Limoges, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 7, 1994, Ser. No. 319,963
Claims priority, application France, Oct. 8, 1993, 93 12020
Int. Cl.[6] F23G *7/00;5/00;5/10;* G21F *9/00*
U.S. Cl. 110—346 4 Claims



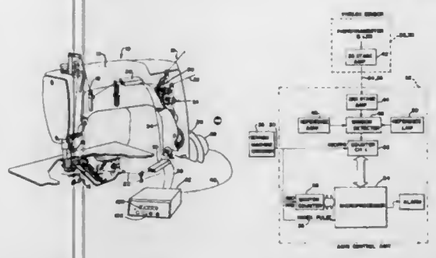
1. Process for incinerating and vitrifying waste in a stationary crucible by means of at least one plasma torch in the stationary crucible, the stationary crucible having a stainless steel wall provided with outflow channels for a cooling liquid and a tapping valve, the plasma being an arc transferred through a molten waste bath and closing an electric current circuit between the torch and an electrode at a bottom part of the crucible, wherein the plasma comprises a mixing of oxygen and a neutral gas, the arc being initiated using said neutral gas only, the oxygen being progressively substituted for at least part of said neutral gas in order to obtain normal operation.

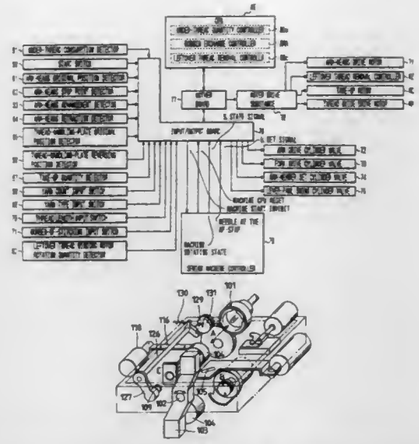
5,606,926

METHOD AND APPARATUS FOR DETECTING AN ABERRATIONAL STITCH IN REAL TIME

Roy E. Schroeder, Jr., Elmhurst, Ill., and Robert T. McGuire, Hobart, Ind., assignors to Quick Technologies, Inc., Elmhurst, Ill.

Filed Sep. 22, 1995, Ser. No. 532,238
Int. Cl.[6] D05B *69/36*
U.S. Cl. 112—273 10 Claims





5. A system for monitoring a sewing apparatus and detecting an aberrational stitch in real time, comprising

a. detecting means for sensing thread movement,

b. signal means responsive to said detecting means for generating a first signal indicative of movement of thread and a second signal indicative of lack of movement of thread,

c. encoder means for creating a representation of revolution of a handwheel of the sewing apparatus, said encoder means including pulse means for generating an equal number of electrical pulses per revolution of the handwheel,

d. accumulator means connected to said signal means to receive said first and second signals and responsive to said encoder means to accumulate said electrical pulses upon receipt of said first signal., said accumulator means including means to inhibit accumulation of said electrical pulses upon receipt of said second signal,

e. processor means connected to said accumulator means for comparing said selected electrical pulses with a predetermined minimum number of electrical pulses received from said encoder means, and

f. means to generate a stop signal for said sewing apparatus responsive to the comparison of the previous step.

5,606,927

UNDER THREAD SUPPLY APPARATUS AND METHOD OF SUPPLYING UNDER THREAD

Masao Nakamura; Sumio Goto; Hiroyuki Tomioka; Takayoshi Mori, and Nozomi Iwasaki, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Division of Ser. No. 279,866, Jul. 26, 1994. This application Jun. 7, 1995, Ser. No. 476,643
Claims priority, application Japan, Aug. 31, 1993, 5-239194; Dec. 28, 1993, 5-353244; Mar. 7, 1994, 6-62066
Int. Cl.[6] D05B *19/00;59/04*
U.S. Cl. 112—470.01 6 Claims

5. A bobbin thread feeding apparatus for a sewing machine, comprising; a bobbin case adapted to hold a bobbin round which a thread is to be wound and to be removably accommodated in a shuttle of said sewing machine; a mounting/demounting member disposed opposite to said shuttle to mount or demount said bobbin case on or from said shuttle; a winder for feeding a fresh thread to wind a predetermined amount of said fresh thread round said bobbin in said bobbin case, from which said thread is removed; and a movable member for holding at least two bobbin cases with a bobbin case demounted from said shuttle and successively or alternately moving said bobbin cases to said mounting/demounting member and said winder, said bobbin thread feeding apparatus further comprising:

a rotary member to be connected to and disconnected from the bobbin case held by the movable member so as to allow only the bobbin accommodated in the bobbin case held by the movable member to turn;

an insert/holder member for inserting the end of a thread supplied from the thread supply source into the bobbin accommodated in the bobbin case held by the movable member, from the outside of the bobbin case, and holding the end of the thread thereby; and

a controller for stopping said rotary member after said rotary member is rotated by a preset number of turns,

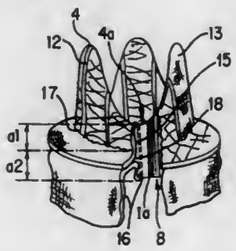
whereby a thread is inserted into the bobbin accommodated in the bobbin case held by the movable member, and a preset amount of the thread is wound around the bobbin.

5,606,928

PROCESS AND APPARATUS FOR THE PRODUCTION OF A HEART VALVE PROSTHESIS

Zbigniew Religa, Warszawa; Bogdan Stolarzewicz, Katowice; Romuald Cichon, Bytom; Marek Krzyskow, Swietochlowice, and Jolanta Stozek, Katowice, all of Poland; assignors to Nika Health Products Limited, Vaduz, Liechtenstein

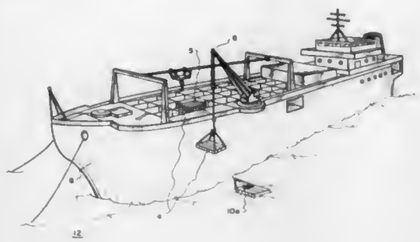
Division of Ser. No. 146,033, Jan. 14, 1994, Pat. No. 5,488,789. This application Jun. 2, 1995, Ser. No. 458,257
Claims priority, application European Pat. Off., May 8, 1991, 91107445
Int. Cl.[6] D05B *97/00;* A61F *2/24*
U.S. Cl. 112—475.08 11 Claims



1. A process for covering an annular support of a heart valve prosthesis of which has, at one axial end, axially projecting support arms distributed over a circumference of said support, ends of said support arms being rounded, said method comprising: pushing a textile covering that is elastic at least in one direction into the annular support; turning two projecting axial ends of said textile

covering over an outer surface of said annular support; and, joining said two axial ends to one another by a seam.

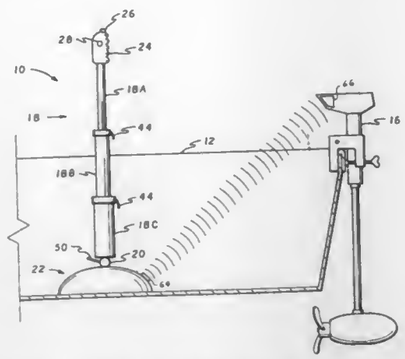
5,606,929
NAVY PONTOON LOCKING SYSTEM
Tsongshih Huang, Westlake Village, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 8, 1996, Ser. No. 687,097
Int. Cl.[6] B63B *3/02*
U.S. Cl. 114—77 R **15 Claims**



1. A pontoon locking system for drawing together, aligning and locking together two or more pontoons in an end to end fashion, comprising:
a) a first pontoon having a deck, a leading end and a trailing end, the trailing end including a locking pin and a receiver bore, said locking pin extending rearwardly from said trailing end;
b) a second pontoon, having a deck, a leading end and a trailing end, the leading end including a locking pin and a receiver bore, the locking pin extending forwardly from said leading end, said locking pins in said first and second pontoons communicating with said receiver bores when said first and said second pontoons are aligned and locked together;
c) an alignment pin extending forwardly from said leading end of said second pontoon;
d) a guide bore extending from said trailing end of said first pontoon to the deck of said first pontoon, said guide bore and said alignment pin communicating when said first and said second pontoons are aligned and drawn together;
e) a bridal line attached on one end to said alignment pin and extending through said guide bore;
f) a barge attached to the leading end of said first pontoon, the barge including means attached to the other end of said bridal line for reeling in said bridal line and drawing together said pontoons;
g) a guillotine communicating with said locking pin and said receiver bore for locking said pontoons together when said pontoons are aligned and drawn together.

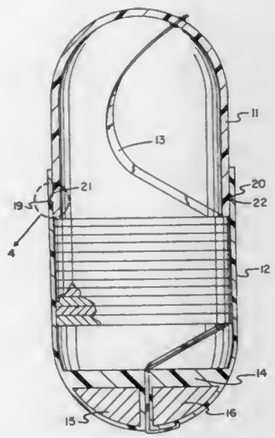
5,606,930
HAND OPERATED TROLLING MOTOR CONTROL STATION
Garry R. LeBlanc, P.O. Box 8713, Lumberton, Tex. 77657, and Brad J. LeBlanc, Star Rte. 2, Box 183, Silsbee, Tex. 77656
Continuation-in-part of Ser. No. 401,806, Mar. 10, 1995, Pat. No. 5,507,242. This application Mar. 26, 1996, Ser. No. 622,200
Int. Cl.[6] B63H *25/00*
U.S. Cl. 114—144 R **13 Claims**

1. A remote hand control station for an electric trolling motor comprising:
a shaft including a first end and a second end;
an electric speed control device located on said shaft;
conversion means for translating angular motion of said shaft to a steering control signal;



transmission means for transmitting said steering control signal to a steering system of the trolling motor; and
a base including a foot controlled electric speed control device, said base containing said conversion and said transmission means.

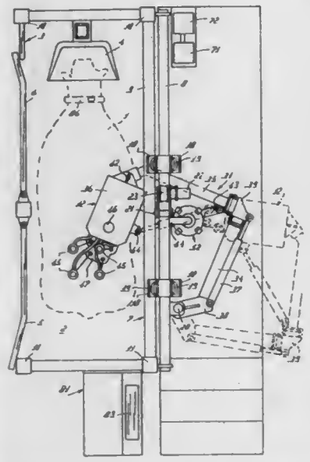
5,606,931
SPOT IDENTIFYING MARKER
Richard G. Rogers, RR 1 Box 188, Owensville, Ind. 47665
Filed Aug. 19, 1994, Ser. No. 292,218
Int. Cl.[6] E01F *9/017;9/019;* **G09F** *17/00*
U.S. Cl. 116—209 **10 Claims**



1. A spot location device comprising:
a hollow container having a first segment removably coupled to a second segment;
means releasably holding the segments together responsive to an impact for releasing the segments;
means for weighting the second segment positioned in a bottom portion of the second segment;
a straight length of spring wire wound into a helical configuration within the hollow container, the spring wire having a first end coupled to the first segment of the hollow container and a second end coupled to the second segment of the hollow container, first coupling means for coupling the first end of the spring wire to the first segment of the hollow container, and second coupling means for coupling the second end of the spring wire to the second segment wherein upon releasing of the segments in response to an impact, the spring wire will

expand from the helical configuration to extend straight and linearly between the segments to support the first segment in a spaced orientation relative to the second segment.

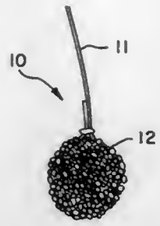
5,606,932
IMPLEMENT FOR AUTOMATICALLY MILKING ANIMALS, SUCH AS COWS
Cornelis van der Lely, 7 Brüschenrain, CH-6300, Zug, CH, Netherlands
Filed Jun. 25, 1993, Ser. No. 84,705
Claims priority, application Netherlands, Jun. 25, 1992, 9201127; Jun. 25, 1992, 9201128
Int. Cl.[6] A01J *5/007*
U.S. Cl. 119—14.14 **26 Claims**



1. An implement for automatically milking an animal, such as a cow, which comprises:
a milking robot, said milking robot comprising milking means that include a plurality of cups for receiving the animal's teats positioning means for automatically attaching and removing said cups to and from the animal's teats, and pulsation means for pulsating said cups and conduit means for withdrawing milk from the animal's teats when said cups are receiving milk therefrom;
a computer, including a display screen, a plurality of exchangeable parts comprising said milking means and said cups in said milking means, signalling means for each said exchangeable part for signalling when such corresponding exchangeable part is malfunctioning, said computer receiving a signal transmitted from each said signalling means when the corresponding part is malfunctioning, said display screen manifesting which said part of said exchangeable parts is malfunctioning.

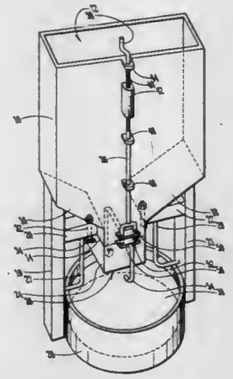
5,606,933
AGAR-PLASTIC FOAM BIRD FEEDER AND PROCESS
Judd R. Wilkins, 281 Littletown Quarter, Williamsburg, Va. 23185
Filed Feb. 24, 1995, Ser. No. 394,245
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—51.03 **18 Claims**

1. A bird feeder adapted to be suspended from an overhead object comprising:
a porous foam plastic disk having an exterior surface including a front, a back and a side surface area;



an agar gel material saturating at least part of said porous foam plastic core and providing an exterior agar gel surface over at least a portion of said exterior surface thereof;
said agar gel material having a quantity of bird seed retained therein over said at least a portion of said exterior surface of said porous foam plastic core; and
a hanging tab having one end embedded within said porous plastic core and another end extending from said porous foam plastic core to permit suspension of said porous plastic core and agar gel containing bird seed from an overhead object.

5,606,934
ANIMAL FEEDING APPARATUS
Ian Brisby, Musley Bank House, Malton, North Yorkshire, United Kingdom
PCT No. PCT/GB93/01062, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO93/23991, PCT Pub. Date Dec. 9, 1993
PCT Filed May 24, 1993, Ser. No. 331,667
Claims priority, application United Kingdom, May 23, 1992, 9211076; Jan. 27, 1993, 9301607
Int. Cl.[6] A01K *7/06*
U.S. Cl. 119—53.5 **13 Claims**



1. An improved animal feeding apparatus comprising:
(a) an upright passage having a lower end and an outlet at the lower end from which foodstuff can fall;
(b) a feed tray for the feeding of animals having a center located under the outlet to catch foodstuff falling from the outlet, said feed tray being stationarily positioned beneath the outlet;
(c) a dispensing mechanism operable by the feeding animals for the dispensing of foodstuff from the outlet into the tray; and
(d) a frame which supports the passage and locates the tray under the outlet so that animals can feed from the tray at opposite sides thereof;
the improvement comprising that the outlet is located sufficiently above the tray with unobstructed clearance between the outlet and the center of the tray to enable animals feeding at one side of the tray to reach across and to the center of the

tray to feed from directly under the outlet in competition with the animals feeding at the opposite side of the tray.

5,606,935

HOLDING TANK SYSTEM

Michael G. Hanrahan, Runaway Bay, Australia, assignor to Austmarine Pty. Ltd., Queensland, Australia

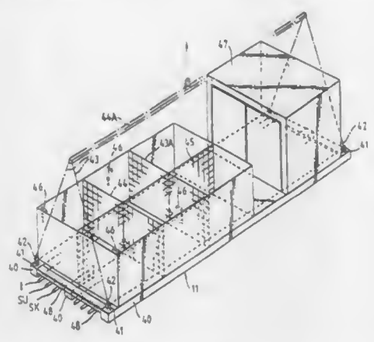
PCT No. PCT/AU93/00185, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/21760, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 29, 1993, Ser. No. 331,471

Claims priority, application Australia, Apr. 29, 1992, PL2127

Int. Cl.[6] A01K *63/02*

U.S. Cl. 119—203 **21 Claims**



1. A holding tank system for storage of live seafood comprising:
(i) a holding tank assembly;
(ii) a transportable support base for said holding tank assembly, said support base having a plurality of longitudinal frame members and a plurality of transverse frame members interconnecting said longitudinal frame members; and
(iii) a plurality of conduits located beneath said support base for liquid communication with said holding tank assembly.

5,606,936

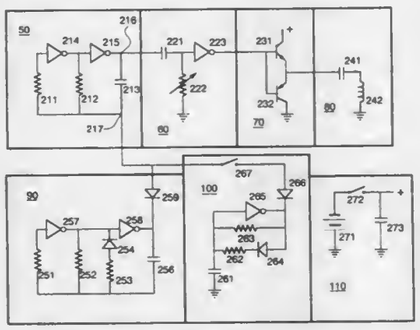
ANIMAL RESTRAINING SYSTEM

James E. Davis, 26 Austin Rd., Wilmington, Del. 19810

Filed Apr. 25, 1995, Ser. No. 428,050

Int. Cl.[6] A01K *3/00*

U.S. Cl. 119—721 **6 Claims**



1. A low average power animal restraining system comprising:
a carrier generator for generating a square wave signal at a radio frequency,
a pulse width controller coupled to the output of the carrier generator to reduce the duty cycle of the square wave signal,
an audio generator for generating an audio square wave signal, at an audio frequency "a" having a reduced duty cycle,
means for coupling the audio generator to modulate the carrier generator with the audio square wave signal,
a cycle generator for generating a square wave signal of a frequency less than "a", having a reduced duty cycle,
means coupling the cycle generator to disable the carrier generator square wave during each cycle generator square wave,
an antenna having a resonant circuit coupled to the output of the pulse width controller, for radiating the modulated carrier frequency signal, and
a receiver adapted to receive the radiated signal.

5,606,937

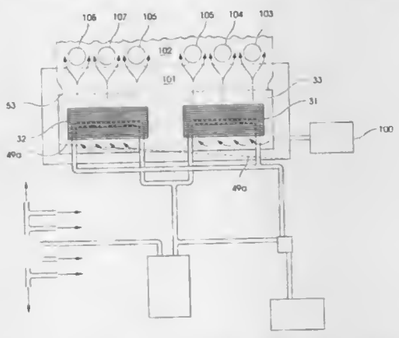
IN-BLOCK COOLING ARRANGEMENT

Keith A. Calhoun, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 17, 1996, Ser. No. 587,544

Int. Cl.[6] F01M *5/00*; **F02B** *75/18*

U.S. Cl. 123—41.28 **15 Claims**



1. A dual oil cooler arrangement for positioning in a coolant flow cavity of a diesel engine block, the block having a front portion and opposite thereto a rear portion, said dual oil cooler arrangement comprising:
an elongated front oil cooler positioned toward the front portion of said engine block, said front oil cooler having an oil inlet adjacent a forward end of said front oil cooler and an oil outlet adjacent a rearward end of said front oil cooler;
an elongated rear oil cooler positioned toward the rear portion of said engine block, said rear oil cooler having an oil inlet adjacent a rearward end of said rear oil cooler and an oil outlet adjacent a forward end of said rear oil cooler;
a flow conduit network connecting said oil inlets in a parallel flow pattern with a supply source of oil and connecting said oil outlets with an oil filter; and
said engine block having an approximate midpoint between said front portion and said rear portion, said oil outlets being positioned adjacent said block midpoint.

5,606,938

TRI-LOBED CAM ENGINE

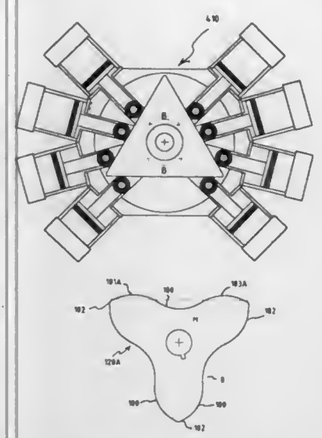
John A. Rowe, Whitby, Canada, assignor to Tritec Power Systems Ltd., Toronto, Canada

Continuation-in-part of Ser. No. 265,357, Jun. 24, 1994, Pat. No. 5,529,029. This application Dec. 26, 1995, Ser. No. 578,297

Int. Cl.[6] F02B *75/22*

U.S. Cl. 123—54.3 **16 Claims**

1. An engine comprising a housing;



shaft means mounted from said housing for rotation relative thereto;
a tri-lobe cam secured to said shaft means within said housing;
piston means mounted on said housing in radial relation to said shaft means;
each said piston means comprising a cylinder, a piston mounted for independent reciprocal movement within said cylinder relative to any other piston and a cam follower connected to said piston;
the improvement wherein N banks of said piston means are provided where N is an integer less than 3, wherein each said bank comprises four piston means wherein the angular interval between the first and last piston means of said bank is 90°.

5,606,939

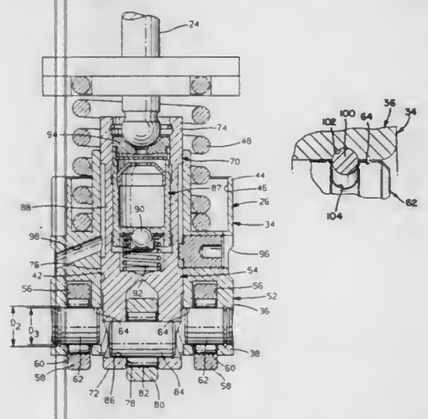
VALVE ACTUATION ASSEMBLY

Mark J. Spath, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1995, Ser. No. 550,512

Int. Cl.[6] F01L *1/14*

U.S. Cl. 123—90.5 **5 Claims**



1. A valve actuation assembly comprising a cam follower including a follower body configured to receive a roller assembly therein, said roller assembly comprising a roller, rotatably mounted on a shaft, said shaft having an end engageable in a shaft opening in said cam follower for support therein, said shaft including an annular shaft groove configured to receive a wire, c-shaped ring, said shaft groove having a total depth accommodating the diameter of said wire, and said shaft opening having an annular groove configured to receive a portion of said wire, c-shaped ring when said shaft is located in said shaft opening and said shaft groove is in registry with said shaft opening groove, such that an interference is established between said wire, c-shaped ring, said shaft opening groove and said shaft groove to thereby retain said roller shaft within said shaft opening in said follower body.

5,606,940

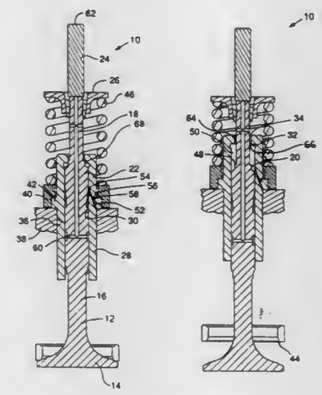
ENGINE VALVE SEATING VELOCITY HYDRAULIC SNUBBER

Scott F. Shafer, Morton; Thomas S. Carroll, Peoria; Steven F. Meister, Chillicothe; David R. Orr, Pekin, and J. Roger Weber, Chillicothe, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 107,775, Dec. 31, 1991, abandoned. This application Dec. 21, 1995, Ser. No. 576,277

Int. Cl.[6] F01L *1/16*

U.S. Cl. 123—90.12 **5 Claims**



1. An apparatus (**10**) for controllably altering the speed of an engine poppet valve (**12**) during movement of the valve (**12**) between first and second locations, comprising:
a guide body (**28**) having walls (**30**);
said valve (**12**) being positioned within said guide body (**28**) and being moveable between said first and second locations, said valve (**12**) having first and second ends;
elements (**30**,**32**,**12**) defining a space (**50**), said space being disposed between said first and second ends of said valve, said space (**50**) having a volume which varies with the position of said valve (**12**), the volume of said space (**50**) being greatest when said valve (**12**) is at said first location and decreasing as said valve (**12**) is moved in the direction from said first location towards said second location;
a first fluid exit opening (**66**) in communication with said space (**50**) when said valve (**12**) is at said first location;
a second fluid exit opening (**68**) in communication with said space (**50**) when said valve (**12**) is at said second location; and
a port (**52**) having a first end (**54**) in communication with said space (**50**) at least when said valve (**12**) is at a location between said first and second locations and is spaced from said second location and a second end (**56**) in communication with a hydraulic fluid supply (**58**), said valve (**12**), when positioned at said second location, obstructing communication between said port (**52**) and said space (**50**).

5,606,941

VARIABLE TIMING CAMSHAFT DRIVE SYSTEM

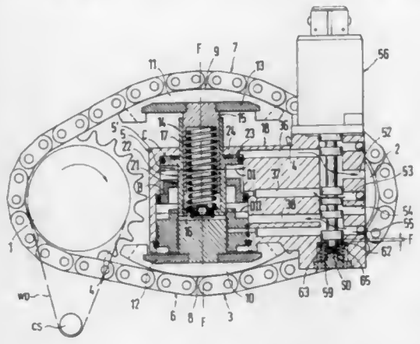
Alfred Trzmiel, Grafenberg; Wolfgang Stephan, Zizishausen; Thomas Alber, Leinfelden-Echterdingen; Andreas Jaksch, Esslingen, and Olaf Fiedler, Remchingen, all of Germany, assignors to Dr.Ing. h.c.F. Porsche AG, Weissach, Germany

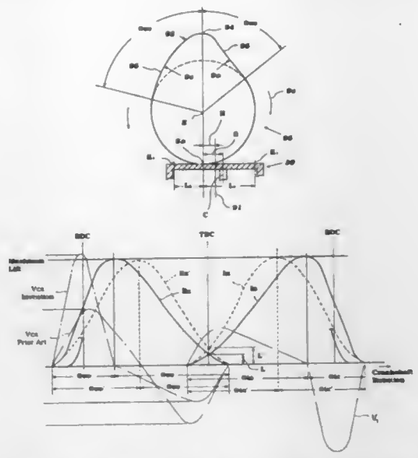
Filed Aug. 17, 1995, Ser. No. 516,457

Claims priority, application Germany, Aug. 17, 1994, 44 29 071.3

Int. Cl.[6] F01L *1/34;* F16H *53/04*

U.S. Cl. 123—90.15 16 Claims





15. Variable valve timing system for an internal combustion engine having first and second cam shafts drivingly connected by an endless drive chain, comprising:

a housing,

first and second opposed hydraulic pistons displaceably disposed in the housing and operable to adjust the drive chain by lengthening and shortening respective load and loose ends of the drive chain,

and an adjuster engageable with one of said first and second pistons to adjust the position of said one of said first and second pistons with respect to said housing,

wherein said adjuster includes a third hydraulic piston engageable with said one of said first and second pistons and operable to move the same in response no hydraulic pressure on the third hydraulic piston.

5,606,942

VALVE OPERATING SYSTEM FOR MULTI-VALVE ENGINE

Hiroyuki Tsuzuku; Tetsushi Saito, and Naoki Tsuchida, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 7, 1995, Ser. No. 474,260

Claims priority, application Japan, Jun. 17, 1994, 6-136032

Int. Cl.[6] F01L *13/00;1/12*

U.S. Cl. 123—90.16 13 Claims

1. An internal combustion engine comprised of a cylinder block having a cylinder bore with a piston reciprocating therein, a cylinder head closing said cylinder bore and having a surface which defines a combustion chamber with said cylinder bore and a head of said piston, said cylinder head surface defining a plurality of intake valve seats generally on one side of said combustion chamber and a plurality of exhaust valve seats generally on the other side of said combustion chamber, the valve seats of one of said plurality defining a substantially greater effective flow area than the valve seats of the other plurality, a plurality of poppet-type intake valves slidably supported by said cylinder head and controlling the flow through said intake valve seats, a plurality of poppet-type exhaust valves slidably supported by said cylinder head and cooperating with said exhaust valve seats for controlling the flow therethrough, actuating means for actuating said valves between their open and their closed positions, said actuating means being effective to cause non-symmetrical opening and closing of at least one of said valves so that it opens at a different rate than it closes, said actuating means comprising a camshaft rotatable about an axis and operating said valve through a thimble tappet, said different rate of opening and closing being achieved through profiles of a cam on said camshaft, said axis of rotation of said camshaft being offset from an axis of reciprocation of said tappet actuated thereby in a direction so that the side of said cam that effects the more rapid movement will contact the side of said tappet opposite to the direction of offset, said axis of reciprocation of said tappet being offset from the center of said cam so that said cam will effect rotation of said tappet in addition to reciprocation thereof.

5,606,943

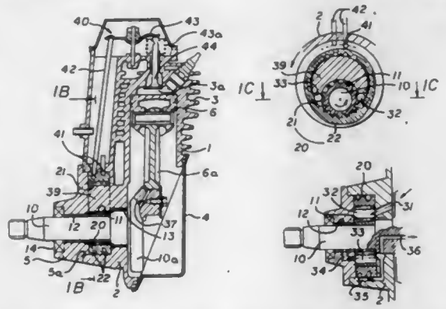
FOUR-CYCLE ENGINE

Shinichi Tamba, Kobe, and Yoshiro Yamane, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 336,805, Nov. 9, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 689,886

Int. Cl.[6] F01M *1/02;9/10*

U.S. Cl. 123—90.23 8 Claims



1. A four-cycle engine characterized in that a gear on a crankshaft is made to engage with an internal gear having twice the number of teeth of the former gear, cams are formed on the exterior surface of the internal gear, the cams are connected with valve actuating mechanisms for actuating an exhaust valve and an intake valve to open or close, the crankshaft is supported by a crankcase cover of the engine via a first bearing and by a crankcase of the engine via a second bearing, the internal gear is sealed within and directly supported by the crankcase cover and the crankcase, and the first bearing and second bearing are positioned to directly face opposite sides of the gear such that the first bearing and second bearing support the gear and maintain a desired engagement condition between the gear and the internal gear.

5,606,944

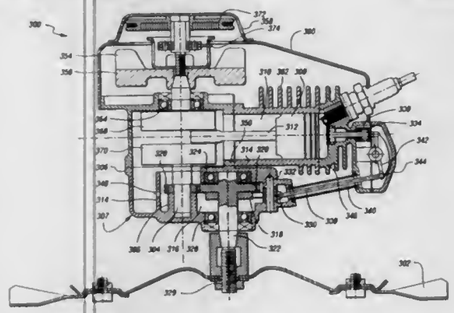
INTERNAL COMBUSTION ENGINE

Katumi Kurihara, Nagoya, Japan, assignor to Ryobi Limited, Hiroshima-Ken, Japan

Division of Ser. No. 52,381, Apr. 23, 1993, abandoned. This application Mar. 19, 1996, Ser. No. 618,316

Int. Cl.[6] F02B *75/32;* A01D *34/02*

U.S. Cl. 123—90.31 7 Claims



1. A vegetation cutting device comprising:

a four cycle engine including:

a piston reciprocable in a block,

a crankshaft rotatable by the piston, and

a camshaft journaled to the block and rotatable by the crankshaft at one half the rate of rotation of the crankshaft, the camshaft having an outer portion extending externally of the block; and

cutting means driven by the outer portion of the camshaft for cutting vegetation.

5,606,945

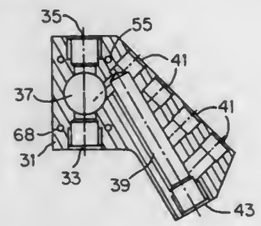
FUEL SHUT-OFF VALVE

John W. Sealock, 1800 Belle View Blvd., Alexandria, Va. 22307

Filed Dec. 23, 1994, Ser. No. 363,048

Int. Cl.[6] F02B *77/00*

U.S. Cl. 123—198 DB 14 Claims



1. A fuel shut-off valve comprising:

a) a valve body having:

i) a first inlet and a first outlet, said first inlet and said first outlet in communication via a valve chamber;

ii) a plurality second inlets;

iii) an outlet passageway, said plurality of second inlet in communication with said outlet passageway, said outlet passageway providing communication between said valve chamber and a second outlet and between said at least one plurality of second inlet and said second outlet; and

b) a valve arranged in said valve chamber and configured to provide communication between either said first inlet and said first outlet or said first inlet and said outlet passageway.

5,606,946

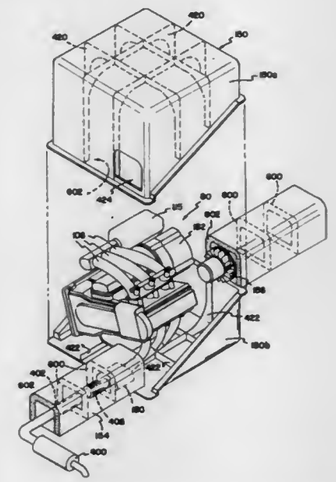
AUXILIARY POWER UNIT FOR A HYBRID ELECTRIC VEHICLE

Stanley E. Data, Ramsey; Robert P. Koziara, Lake Elmo; Mark S. Lent, Brooklyn Park; Patrick A. O'Gorman, Brooklyn Center; Thomas K. Rose, Plymouth; Eugene G. Shanks, Blaine, and Daniel A. Norrick, Anoka, all of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Division of Ser. No. 376,043, Jan. 20, 1995, Pat. No. 5,469,820, which is a continuation of Ser. No. 93,536, Jul. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,368

Int. Cl.[6] F02B *77/00*

U.S. Cl. 123—198 E 7 Claims



1. A noise, vibration, and harshness control system for a hybrid electric vehicle having an auxiliary power unit, comprising:

an auxiliary power unit enclosure containing the auxiliary power unit for reducing a noise level of the auxiliary power unit;

an induction silencer for separating noise and vibration of the auxiliary power unit to the enclosure so that sound quality of the hybrid electric vehicle is increased, the induction silencer being mounted onto an induction manifold of the auxiliary power unit;

auxiliary power unit exhaust means for reducing noise and vibration from an exhaust manifold of the auxiliary power unit, the auxiliary power unit exhaust means being connected to the exhaust manifold and being mounted onto the enclosure;

means for ventilating air in the enclosure, the ventilating means being at least partially contained in the enclosure; and

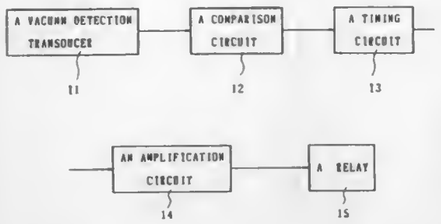
wherein the auxiliary power unit enclosure includes a top cover having a plurality of cross ribs inside the top cover, and a bottom container having a plurality of cross ribs inside the bottom container.

5,606,947

AUTOMOTIVE ACCELERATION-HORSEPOWER CONTROL MEANS

Fu C. Hong, 2F, No. 20, Alley 16, Lane 22, Wen Der Road, Ney Hwu Area, Taipei, Taiwan

Filed Mar. 29, 1995, Ser. No. 412,584
Int. Cl.[6] F02D *41/10;* **B60H** *1/32;* **F02P** *5/04*
U.S. Cl. 123—339.17 **2 Claims**



1. An automotive acceleration-horsepower control, comprising:

a single chip vacuum detection transducer having an input coupled in fluid communication with an intake manifold of an automobile for detecting variations in vacuum therein, said vacuum detection transducer converting said detected variations in vacuum to a voltage signal coupled to an output thereof;

a comparison circuit having a first input coupled to a node between a fixed resistance and a variable resistance for establishing a reference potential and a second input coupled to said output of said vacuum detection transducer for coupling said voltage signal thereto, said comparison circuit generating an actuation signal on an output thereof responsive to a magnitude of said voltage signal exceeding a magnitude of said reference voltage;

timing means having an input coupled to said comparison circuit for generating a delay voltage signal, said timing means including a timing integrated circuit, a resistance and a capacitance, said timing means providing said delay voltage signal to an output thereof for a predetermined time period responsive to receipt of said actuation signal from said comparison circuit;

an amplification circuit having an input coupled to said output of said timing means for providing an amplified delay voltage on an output thereof; and,

a relay having normally closed contacts connected between an air-conditioning compressor and a the automobile's power supply and an input coupled to said output of said an amplification circuit to open said normally closed contacts and thereby disconnect the air-conditioning compressor from the power supply for said predetermined time period responsive to receipt of said amplified delay voltage.

5,606,948

SPEED GOVERNING METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

John B. Gonnering, West Bend, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Feb. 27, 1996, Ser. No. 607,825
Int. Cl.[6] F02D *31/00*
U.S. Cl. 123—352 **20 Claims**

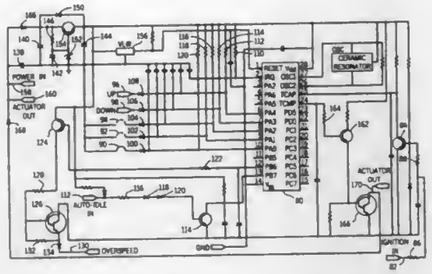
1. A speed governor that controls the opening and the closing of an engine throttle to change the engine speed, comprising:

an actuator that is interconnected with said throttle;

means for determining the speed of said engine, and for storing an engine speed value representative of said engine speed;

means for storing a reference speed value functionally related to a reference speed;

means for storing an actual position value functionally related to the actual position of said throttle;



means for comparing said engine speed value with said reference value, and for generating an error value if said engine speed value differs from said reference speed value by more than a preset value;

means for generating a new position value that is a function of said actual position value and said error value, said new position value corresponding to a new position of said throttle, said new position having a percentage of throttle opening associated therewith;

means for storing a change value corresponding to a predetermined throttle position, said predetermined throttle position having a percentage of throttle opening associated therewith; and

means for generating a pulsed control signal to said actuator having a pulse width that is a function of said new position value, said control signal generating means generating said control signal at a first frequency if the percentage of throttle opening associated with said new position is less than the percentage of throttle opening associated with said predetermined throttle position, and generating said control signal at a second frequency if the percentage of throttle opening associated with said new position is greater than the percentage of throttle opening associated with said predetermined throttle position.

5,606,949

THROTTLE VALVE DEVICE OF V-TYPE ENGINE

Toshiki Ohara, Fujisawa, and Isaya Matsuo, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 20, 1994, Ser. No. 309,447
Claims priority, application Japan, Sep. 29, 1993, 5-242318
Int. Cl.[6] F02D *9/02;* **B60K** *28/16*
U.S. Cl. 123—396 **14 Claims**

1. A throttle valve device of a V-type internal combustion engine of a type wherein an intake manifold is disposed between two banks of the engine, comprising:

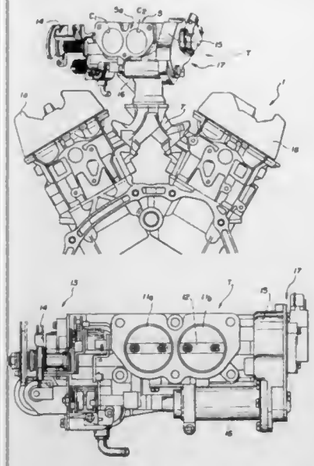
a throttle chamber through which intake air is introduced into engine cylinders of the engine, said throttle chamber having an axis generally parallel with rows of the engine cylinders and being located between the two banks of the engine in plan, said throttle chamber being connected through said intake manifold to the engine cylinders;

a throttle valve rotatably disposed in said throttle chamber;

a throttle shaft on which said throttle valve is mounted;

a first throttle valve operating mechanism connected to a first end section of said throttle shaft for rotating said throttle shaft in response to an acceleration operation; and

a second throttle valve operating mechanism for rotating said throttle shaft independently of said first throttle valve operating mechanism, said second throttle valve operating mechanism including an electric motor having a rotatable drive shaft, said drive shaft being separate and drivingly connected with a second end section of said throttle shaft, said drive shaft extending parallel with and generally opposite to said



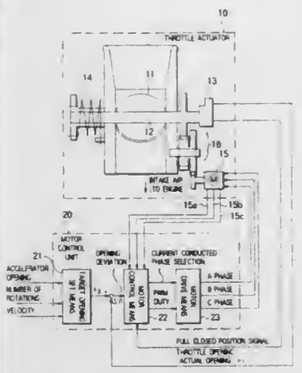
throttle shaft, said electric motor being located below said throttle chamber and between the two banks of the engine in plan.

5,606,950

DEVICE FOR CONTROLLING THE QUANTITY OF INTAKE AIR TO BE SUPPLIED TO AN ENGINE

Toru Fujiwara, and Tadashi Tubakiji, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1995, Ser. No. 546,077
Claims priority, application Japan, Oct. 27, 1994, 6-264022
Int. Cl.[6] F02D *11/10;9/02;41/22*
U.S. Cl. 123—399 **19 Claims**



1. A device for controlling the quantity of intake air to be supplied to an engine, comprising:

a throttle valve provided in an air intake passageway of the engine and supported by a rotational shaft;

a brushless motor having stator windings and a rotor coupled through a speed reducer to said rotational shaft;

a throttle opening sensor for detecting an angle of rotation of said rotational shaft to detect an actual degree of opening of said throttle valve;

a target opening set means for setting a target throttle opening based on vehicular information;

a motor control means for calculating a phase current value to be supplied to each of said stator windings based on an opening deviation between said actual opening obtained by said throttle opening sensor and said target opening set by said target opening set means, and for outputting a PWM duty corresponding to the calculated phase current value;

motor drive means for supplying a current to said brushless motor based on instructions from said motor control means; and

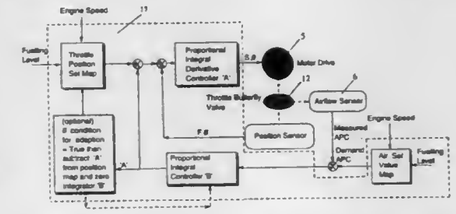
correction means for correcting said PWM duty in accordance with a hysteresis torque produced as said throttle valve is driven.

5,606,951

ENGINE AIR SUPPLY SYSTEMS

Michael P. Southern, Wembley; Keith Melbourne, Subiaco, and Ian R. Thompson, Duncraig, all of Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia

PCT No. PCT/AU94/00360, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/01502, PCT Pub. Date Jan. 12, 1995
PCT Filed Jun. 29, 1994, Ser. No. 549,766
Claims priority, application Australia, Jun. 30, 1993, 9714
Int. Cl.[6] F02D *9/10;11/10;41/18*
U.S. Cl. 123—399 **24 Claims**



1. A method of controlling the air supply to an internal combustion engine having a means to throttle the air flow to the engine comprising:

determining the air demand in response to a driver initiated signal;

determining an initial position of said throttle means in response to the driver initiated signal;

determining the actual rate of air supply to the engine and comparing said actual rate of air supply with said determined air demand;

moving the throttle means to said initial position; and

adjusting the position of the throttle means to bring the actual rate of air supply within acceptable operating limits of said determined air demand.

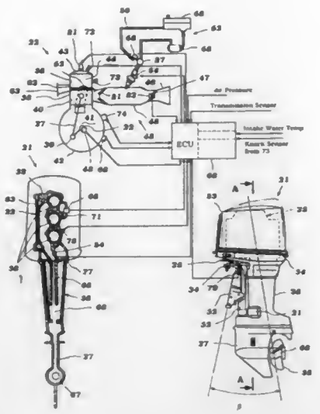
5,606,952

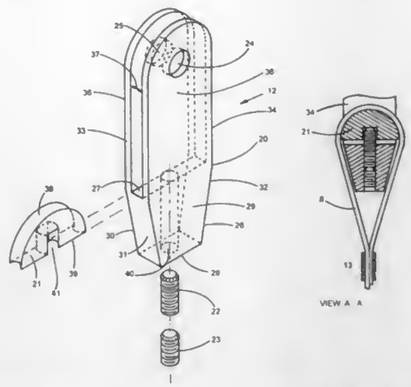
ENGINE CONTROL SYSTEM

Isao Kanno, and Masahiko Kato, both of Shizuoka-ken, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 6, 1995, Ser. No. 553,891
Claims priority, application Japan, Nov. 7, 1994, 6-272127; Nov. 9, 1994, 6-275122
Int. Cl.[6] F02P *5/00*
U.S. Cl. 123—413 **29 Claims**

1. An internal combustion engine and control system comprising elements defining at least one combustion chamber the volume of which varies cyclically during engine operation, an induction and charge forming system for delivering a fuel air charge to said combustion chamber for combustion therein, said induction and charge forming system including a throttle valve for controlling the air flow to said engine, a speed control element movable between an idle position through a pick up position to a full throttle position for operator control of the speed of said engine, a throttle control





for providing an operative connection between said speed control element and said throttle valve for operator control of said throttle valve, stop means for retaining said throttle valve in a partially opened idle position wherein the effective flow area past said throttle valve is substantially greater than required for idle operation, said throttle control permitting movement of said speed control element from its idle position to its pick up position prior to opening movement of said throttle valve and for effecting opening of said throttle valve from its partially opened throttle position to a wide open throttle position upon movement of said speed control element from its pick up position to its full throttle position, an ignition system for firing the fuel air charge in said combustion chamber, an exhaust system for discharging exhaust gases from said combustion chamber to the engine, and means for controlling the speed of the engine during movement of the speed control element from its idle position to its pick-up position primarily by retarding the spark timing beyond the normal spark timing required for a given engine running condition.

5,606,953

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Eugen Drummer; Maximilian Kronberger, both of Steyr; Helmut Sattmann, Eferding; Herbert Strahberger, Gallneukirchen, and Gerhard Weisz, Neuhofen/Krems, all of Austria, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00693, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO95/02123, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 18, 1994, Ser. No. 392,885

Claims priority, application Germany, Jul. 7, 1993, 43 22 546.2

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—506 **22 Claims**

1. A fuel injection device for internal combustion engines, with a pump plunger (**8**) which in a cylinder bore (**11**) delimits a pump working space (**12**) and is driven in reciprocation, and with a delivery line (**15**) which connects the pump working space (**13**) to an injection valve (**16**), an injection valve member which is opened counter to a closing force (**18**) under an injection pressure of the fuel pumped out of the pump working space (**13**) via the delivery line (**15**), and with fuel passage (**22**, **26**, **32**, **33**) leading from the pump working space (**13**) via an electrically controlled valve (**31**) to a fuel reservoir space at a lower pressure than the injection pressure, a portion of the fuel passage (**22**) on a part of its circumferential wall is connected to an interspace (**62**) formed between this part of the cylinder bore (**11**) and the lateral surface of the pump plunger (**8**), said interspace is permanently connected to the pump working space and the entry into that part of the fuel passage (**22**) which is connected to the pump cylinder is controlled by the valve member (**30**) of the electrically controlled valve (**31**).

5,606,954

EVAPORATIVE FUEL PROCESSING DEVICE

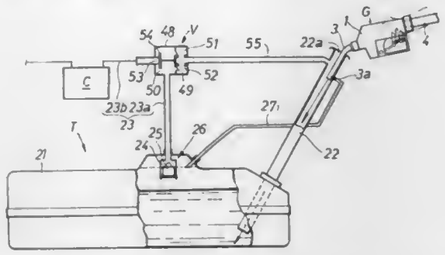
Kazumi Yamazaki; Takeaki Nakajima; Koichi Hidano; Teruo Wakashiro; Takeshi Hara; Masaaki Horiuchi, all of Wako, and Tomoyuki Kawakami, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,267

Claims priority, application Japan, Dec. 22, 1993, 5-324395; Jul. 8, 1994, 6-157105

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **9 Claims**



1. An evaporative fuel processing device, comprising:

a fuel tank having a refueling line extending upwardly therefrom, said refueling line being configured to have a refueling nozzle inserted therein;

a canister communicatively connected to said fuel tank for adsorbing evaporative fuel from said fuel tank; and

an on-off valve which is opened during a refueling operation to permit the communication between said fuel tank and said canister;

said evaporative fuel processing device further comprising an evaporative fuel passage communicating at one end thereof with an upper portion of an interior of said fuel tank and connected at another end to said refueling line,

wherein said refueling nozzle includes a nozzle portion and is configured such that refueling is automatically stopped in response to a fuel liquid level reaching a negative pressure inducing hole provided in a lower portion of a tip end of said nozzle in a state where said nozzle portion is inserted into the refueling line, and wherein said another end of said evaporative fuel passage is connected to the refueling line at a location which corresponds to the negative pressure introducing hole of the refueling nozzle during the refueling operation.

5,606,955

APPARATUS FOR DISPOSING OF FUEL VAPOR

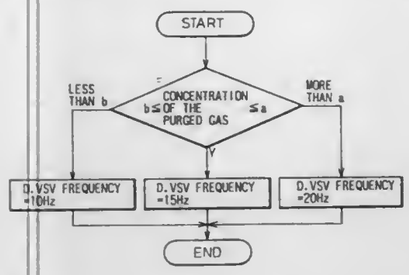
Shuji Yuda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Aug. 17, 1995, Ser. No. 516,053

Claims priority, application Japan, Sep. 1, 1994, 6-208859

Int. Cl.[6] F02M *25/08*; **F02D** *41/14*

U.S. Cl. 123—520 **7 Claims**



1. An apparatus for disposing of fuel vapor with a duty control valve arranged in a passage for purged gas, said duty-control valve being connected between a canister which temporarily traps fuel vapor and an air-intake passage of an engine, and being controlled to open and close at predetermined intervals in order to supply said fuel vapor trapped in said canister to said air-intake passage such that the flow rate of said purged gas becomes a flow rate corresponding to the intake-air flow rate, said apparatus being characterized in that it comprises an interval changing means for changing an open/close interval of said duty control valve to be shorter than a normal setting, the normal setting corresponding to the open/close interval of said duty control valve when a vehicle is running in an engine operating condition uninfluenced by an inflow of the purged gas.

5,606,956

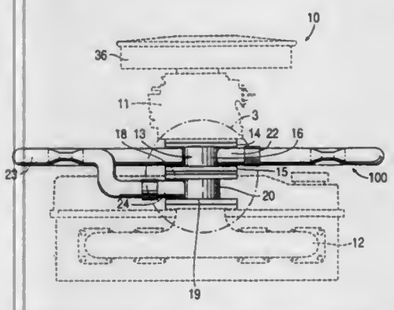
ELONGATED FUEL-AIR BYPASS FOR INTERNAL COMBUSTION ENGINE

William K. Wallace, and Florence W. Wallace, both of 131042 Kahukai St. Leilani Estates, Pahoa, Hi. 96778

Filed Oct. 11, 1995, Ser. No. 541,097

Int. Cl.[6] F02M *15/00*

U.S. Cl. 123—545 **41 Claims**



1. An apparatus for use in an internal combustion engine including a fuel-air mixing device with an inlet port and an outlet port, an intake manifold with an inlet port operably communicated with the outlet port of the fuel-air mixing device and at least one outlet port, and at least one cylinder communicated with the at least one outlet port of the intake manifold, said apparatus comprising:

an elongated bypass conduit operably coupled between the outlet port of the fuel-air mixing device and the inlet port of the intake manifold for passing a fuel-air mixture from the fuel-air mixing device to the intake manifold;

turbulence creating means for creating turbulence in the fuel-air mixture flowing through said elongated bypass conduit;

wherein said elongated bypass conduit is formed of a thermally conductive material;

wherein said elongated bypass conduit has a length, an exterior surface area and a thermal conductivity sufficiently great so as to constitute a means for causing liquid fuel introduced through the fuel-air mixing device to change from a liquid state to a gaseous state prior to entry into the at least one cylinder;

wherein said turbulence creating means comprises a plurality of venturis provided in said elongated bypass conduit successively along the length thereof.

5,606,957

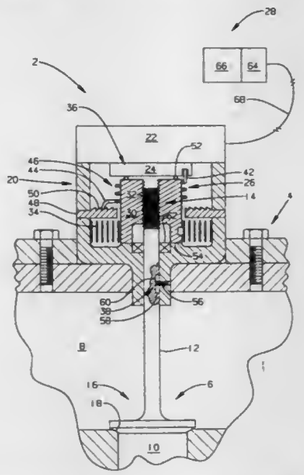
CONTROL SYSTEM FOR EXHAUST GAS RECIRCULATION

Dennis D. Feucht, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 6, 1995, Ser. No. 568,217

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—571 **6 Claims**



1. In an exhaust gas recirculation system having a valve having a valve stem, said valve being moveable between a first position blocking communication of an engine intake air passageway with an engine exhaust gas passageway and a second position at which said passageways are in communication, a frame mechanism, a stepper motor for moving the valve between the first and second positions, a driving element connected to the stepper motor, a one way clutch system connected to the driving element, and control means for rotating the stepper motor in preselected first and second directions and controllably stopping the stepper motor at preselected positions of the valve, the improvement comprising:

said valve stem having a threaded first end portion;

a spool having an axis and internal threads mated with the threads of the valve stem and being connected to the drive element of the stepper motor through the one way clutch;

a clockwork spring connected to the spool and being adapted to store energy in response to rotation of the spool in a first direction and controllably release energy and rotate the spool in a second direction;

a thrust mechanism operative to maintain the spool against axial movement; and

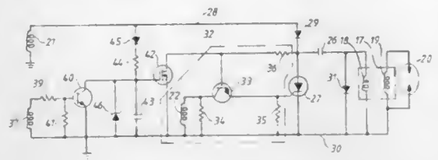
an anti-rotation device operative to maintain the valve against rotation relative to the spool.

5,606,958

IGNITION SYSTEM FOR AN INTERNAL-COMBUSTION ENGINE, PARTICULARLY FOR USE IN A CHAIN SAW OR THE LIKE

Per-Anders Chrintz-Gath, Västervik, and Per J. Udden, Ankarsrum, both of Sweden, assignors to FHP Elmotor Aktiebolag, Ankarsrum, Sweden

PCT No. PCT/SE94/01153, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO95/15438, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1994, Ser. No. 495,526
Claims priority, application Sweden, Dec. 1, 1993, 9303999
Int. Cl.[6] F02P *3/08;5/145*
U.S. Cl. 123—601 5 Claims



1. Ignition system for an internal-combustion engine, comprising a magnetically conducting core (**10**) supporting a charging winding (**21**) and a triggering winding (**22**), a flywheel (**14**) having at least one magnetic field generating member (**15**) and adapted to cooperate with the magnetically conducting core (**10**) to cause, when passing, voltages to be induced in the windings (**21**, **22**), and an electronic switch means (**27**) adapted to trigger, in response to a trigger pulse generated by the triggering winding (**22**), discharge of a charging capacitor (**26**), which has been charged by a voltage generated in the charging winding (**21**), via a primary (**18**) of an ignition coil (**17**), the secondary (**19**) of said ignition coil including a spark plug (**20**), wherein an additional winding (**37**) is provided and disposed so that during normal rotational movement of the flywheel, said flywheel (**14**) first passes said additional winding (**37**) before turning in over the legs (**11**, **12**, **13**) of the magnetically conducting core (**10**), the voltage induced in the additional winding (**37**) being used to prevent trigger pulses from reaching the switch means (**27**) if a direction of rotation of the engine is opposite to the normal direction, said switch means being a thyristor (**27**) having a trigger circuit (**32**) comprising a first transistor (**33**), the additional winding (**37**) being connected to the first transistor (**33**) such that the first transistor forms a blockage between the triggering winding (**22**) and the control electrode of the thyristor (**27**) when there is no induced voltage in said additional winding (**37**), said additional winding (**37**) being connected to the first transistor (**33**) via a circuit such that the voltage induced in the additional winding (**37**) activates an electronic switch (**42**) to assume a state in which the blocking effect of the first transistor (**33**) is discontinued for a period of time which is independent of the presence of induced voltage in the additional winding (**37**).

5,606,959

FUEL METERING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

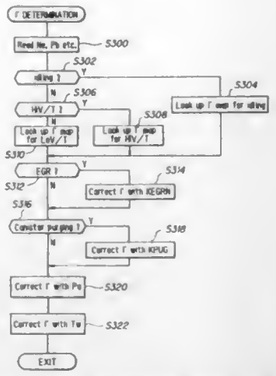
Hidetaka Maki; Shusuke Akazaki; Yusuke Hasegawa, and Yoichi Nishimura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 580,480
Claims priority, application Japan, Dec. 30, 1994, 6-340025
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—673 46 Claims

1. A system for controlling fuel metering for a multicylinder internal combustion engine, comprising:

an air/fuel ratio sensor installed at an exhaust system of the engine;

engine operating condition detecting means for detecting engine operating conditions at least including engine speed and engine load;



fuel injection quantity determining means for determining a quantity of fuel injection for individual cylinders at least based on the detected engine operating conditions;

a fuel injector for injecting fuel in the individual cylinders of the engine in response to a corrected quantity of the fuel injection; and

a feedback loop having an adaptive controller and an adaptation mechanism that estimates controller parameters at a convergence speed determined by a gain matrix, said adaptive controller correcting the quantity of fuel injection to bring a controlled variable at least obtained based on an output of said air/fuel ratio sensor to a desired value,

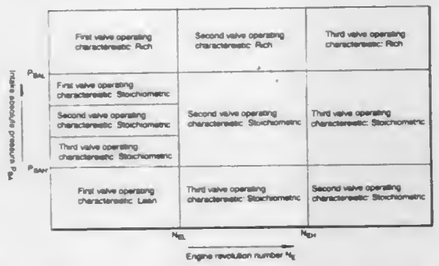
wherein the gain matrix is determined in response to at least one of the engine operating conditions detected by the engine operating condition detecting means.

5,606,960

METHOD FOR CONTROLLING VALVE OPERATING CHARACTERISTIC AND AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Nobu Takahashi, and Shinya Fukushima, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 480,268
Claims priority, application Japan, Sep. 28, 1994, 6-233135
Int. Cl.[6] F02D *43/04;13/02*
U.S. Cl. 123—684 1 Claim



1. A method for controlling a valve operating characteristic and an air-fuel ratio in an internal combustion engine in which the valve operating characteristic for an intake valve can be switched over between a plurality of operating condition-suited valve operating characteristics suited to an engine operating condition represented by at least one of an engine revolution number and an engine load, and the air-fuel ratio can be switched over between a relatively lean level and a relatively rich level, said method comprising the steps of:

switching over the air-fuel ratio in accordance with a change in the engine operating condition; and

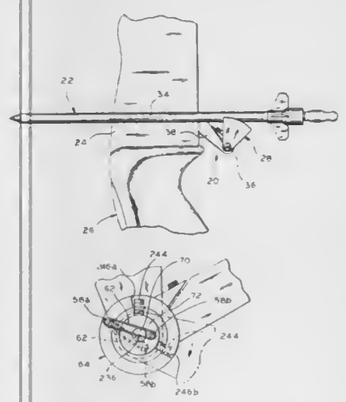
switching over the valve operating characteristic for said intake valve substantially synchronously with the switching over of the air-fuel ratio, from one operating condition-suited valve operating characteristic suited to one engine operating condition before the switching over of the air-fuel ratio to another operating condition-suited valve operating characteristic suited to another engine operating condition after the switching over of the air-fuel ratio, via an operating condition-unsuited valve operating characteristic which is not suited to said another engine operating condition after the switching over of the air-fuel ratio, so as to provide an engine output which is of an intermediate level between the engine outputs before and after the switching over of the air-fuel ratio.

5,606,961

ARROW REST ASSEMBLY

Ronald Basik, 5885 N. Elston Ave., Chicago, Ill. 60646, and Richard Colvin, 1948 Connors Rd., Baldwinsville, N.Y. 13027

Filed Oct. 20, 1994, Ser. No. 326,537
Int. Cl.[6] F41B *5/22*
U.S. Cl. 124—44.5 27 Claims



1. An arrow rest assembly for use on a bow which comprises a handle riser portion, upper and lower limbs, and a bow string, which generally define a bow plane in which an arrow is released, said handle riser portion including a portion offset laterally from said bow plane to provide clearance for arrow release, said arrow rest assembly comprising:

means for supporting an arrow having fletching laterally spaced from said offset portion of said handle riser portion of said bow, said arrow supporting means including a body member disposed in said bow plane, said body member having a surface for supporting and serving as a rest for a shaft of said arrow in said bow plane;

means for mounting said body member to said handle riser portion of said bow so as to be in laterally spaced relation thereto, said body member having a pivot point spaced from said shaft supporting surface and said pivot point being in said bow plane, said mounting means being associated with said body member generally at said pivot point;

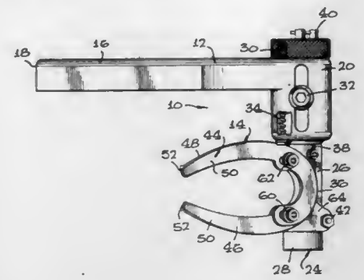
said mounting means accommodating pivotal movement of said body member within said bow plane, said pivotal movement of said body member being about said pivot point in spaced relation to and unrestricted by said bow from an arrow supporting and rest position to an arrow passage position, both said body member in said arrow passage position and said bow being entirely out of the path of travel of said arrow including said fletching.

5,606,962

ARCHERY ARROW REST

Vincent Troncoso, Montrose, Colo., assignor to Golden Key Futura, Inc., Montrose, Colo.

Filed Dec. 8, 1995, Ser. No. 569,930
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—44.5 10 Claims



1. An improved archery arrow rest, said rest comprising, in combination:

a) an arrow rest support assembly comprising (1) a support block having a front end and an opposite rear end and including means for releasably connecting the front end of said block to a riser of an archery bow and (2) a transverse bar connected to said rear end of said support block and adapted to extend behind an archery bow riser to a position rearwardly of an arrow window in said riser; and,

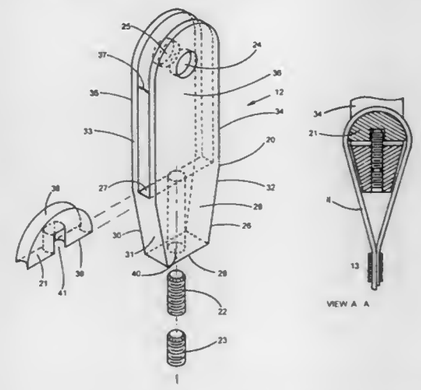
b) an arrow shaft holder connected to said transverse bar and extending upwardly and forwardly thereof into said window when said rest is connected to an archery bow, said arrow shaft holder comprising a pair of arcuate arms having front and rear ends, the rear ends of which overlap and the front ends of which are releasably spaced an adjustable distance apart to support an arrow shaft therebetween in said window.

5,606,963

ATTACHMENT DEVICE TO SECURE CABLE ENDS OF A COMPOUND ARCHERY BOW

Paul J. Wenzel, S-2120 Paddock La., Finksburg, Md. 21048, and Ronald E. Casey, 519 Hawthorne Rd., Linthicum, Md. 21090

Filed Dec. 6, 1994, Ser. No. 350,417
Int. Cl.[6] F41B *5/14*
U.S. Cl. 124—86 12 Claims



1. A device for securing a cable end to a limb tip in a compound archery bow comprising:

a base element having a top surface, a bottom surface, a front surface, a rear surface, a left surface and a right surface;

two parallel walls attached to the top surface of the base element, one wall having an outer surface contiguous with the rear surface of the base element, the other wall having an outer surface contiguous with the front surface of the base element,

the parallel walls extending upward from the top surface of the base element and defining a slot therebetween,

near their upper ends, each wall has an aligned aperture adapted to receive an axle at a compound bow-limb tip;

a cable support element received within said slot and slidable therewithin, said cable support element adapted to receive an end of a cable of said compound bow;

means to fixedly adjust the location of the cable support element within the slot, thus adjusting the distance between the end of said cable and said axle.

5,606,964

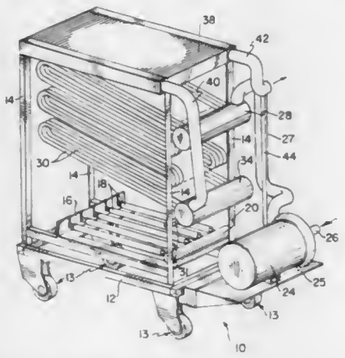
PORTABLE POOL HEATER

Hans T. Bussman, 816 Park Ave., Hoboken, N.J. 07030

Filed Sep. 8, 1995, Ser. No. 525,961

Int. Cl.[6] F24H *1/00*

U.S. Cl. 126—350 R **12 Claims**



1. A heater for liquids comprising:

a burner for producing heat output;

a primary heating coil having an inlet for receiving the liquid to be heated and an outlet, said primary heating coil located above said burner to receive burner heat output;

a secondary heating coil having an inlet and an outlet positioned above said burner to receive burner heat output, said secondary heating coil inlet receiving heated liquid from said primary coil outlet for further heating by the heat from the burner to produce the heated liquid at the second heating coil outlet; and

a conduit for re-circulating heated liquid from said secondary heating coil to mix with the liquid applied to the inlet of said primary heating coil.

5,606,965

SUBMERGED COMBUSTION SYSTEM

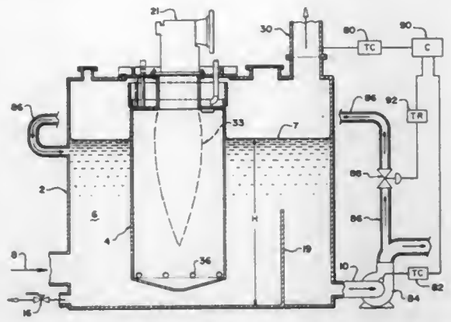
Eric Panz, 4715 Willow Creek, West Vancouver, Canada, and Steven E. Panz, 3364 Fairmount Drive, North Vancouver, Canada

Filed Mar. 22, 1994, Ser. No. 215,600

Int. Cl.[6] F24H *1/20*

U.S. Cl. 126—360 A **28 Claims**

1. A method of regulating hydrostatic pressure in a liquid through which hot gas is being passed, and the liquid is heated by heat exchange with the hot gas, comprising:



(a) a first device for sensing temperature of the hot gas after the hot gas is passed through the liquid;

(b) a second device for sensing temperature of the liquid after the liquid has been heated by the hot gas;

(c) computer means communicating with said first device and said second device and programmed for comparing the temperature of the hot gas and the temperature of the liquid after the liquid is heated;

(d) means for adjusting distance the hot gas travels through the liquid, said distance adjustment means being regulated by said computer means.

5,606,966

TRACHEOSTOMY TUBE ASSEMBLY

Rory J. M. Smith, Skipton, Great Britain, assignor to Kapitex Healthcare Ltd., United Kingdom

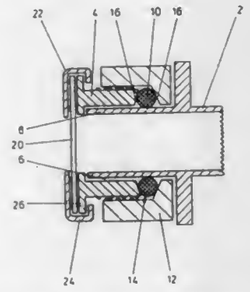
PCT No. PCT/GB93/01429, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/01158, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 8, 1993, Ser. No. 373,232

Claims priority, application United Kingdom, Jul. 10, 1992, 9214716

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—200.26 **10 Claims**



1. A tracheostomy tube assembly comprising:

(a) a tracheostomy tube having an exposed end and an outer surface;

(b) a fitting removably mounted on the exposed end of the tracheostomy tube, the fitting having a bore with an inner surface in which the end of the tracheostomy tube can be received;

(c) a sealing member located between the outer surface of the tracheostomy tube and the inner surface of the bore in the fitting; and

(d) means for urging the sealing member against the outer surface of the tracheostomy tube to form a seal between the fitting and the tracheostomy tube, the means for urging being mounted on the tracheostomy tube by way of the exposed end of the tracheostomy tube; and

(e) the fitting and the urging means being removable from the tracheostomy tube by way of the exposed end of the tracheostomy tube while the tracheostomy tube is in a patient's tracheostoma.

5,606,967

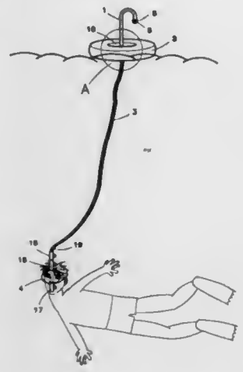
MASK AND SNORKEL ASSEMBLY

Daniel Wang, 10F, No. 15, Sec. 2, Chilung Road, Taipei, Taiwan

Filed Dec. 1, 1995, Ser. No. 566,087

Int. Cl.[6] A22B *7/00*

U.S. Cl. 128—201.11 **2 Claims**



1. A mask and snorkel assembly, comprising:

a float, said float comprising a circular center recess, an inside annular groove around said circular center recess, a center through hole at the center of said circular center recess;

a snorkel having a top end turned down and terminating in a top opening, a bottom end inserted through the center through hole of said float and terminating in a bottom opening, an air passage connected between said top opening and said bottom opening, a wire gauze filter covered on said top opening, a ball valve mounted in said top opening and supported on said wire gauze filter for letting air pass through said air passage, and locating block inserted into the circular center recess and forced into engagement with said inside annular groove to retain said snorkel to said float, said ball valve being moved upwards by water to close said air passage when said top opening is pulled under water;

a mask for covering over the eyes and the nose, said mask having an air tube at a top side;

an air hose having a first end connected to the bottom opening of said snorkel, and a second end connected to the air tube of said mask;

wherein the air tube of said mask is coupled with a control valve, the second end of said air hose is coupled with a control valve detachably connected to the control valve of the air tube of said mask by a screw joint; and

wherein each control valve comprises a cylindrical casing having a flexible circular chamber at one side and a flexible flank at an opposite side and defining an air passage through its length, and a spherical valve means mounted on the inside to control the air passage through said cylindrical casing, said spherical valve means being forced into said circular chamber to open the air passage of said cylindrical casing when said flank is squeezed, said spherical valve means being forced out of said circular chamber to close the air passage of said cylindrical casing when said circular chamber is squeezed.

5,606,968

TRACHEAL OR TRACHEOSTOMY TUBE AND SYSTEMS FOR MECHANICAL VENTILATION EQUIPPED THEREWITH

Harald Mang, Haferweg 24a, D-91096 Mohrendorf, Germany

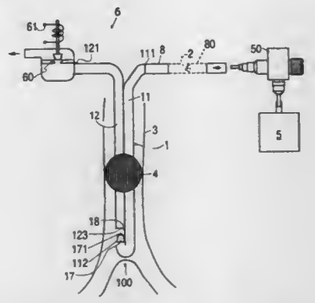
PCT No. PCT/EP93/01700, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/01157, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 1, 1993, Ser. No. 362,551

Claims priority, application Germany, Jul. 3, 1992, 42 21 931.0

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.14 **36 Claims**



1. A tube for introduction into a respiratory tract of a patient, especially an orotracheal or nasotracheal tube or tracheostomy tube for controllable ventilation of a patient, said tube comprising a distal end that can be introduced into a respiratory tract and a proximal end provided with connections, and two passages extending essentially from the proximal end to the distal end of the tube, with one of the two passages serving as a ventilation passage during ventilation or breathing and the other of the two passages serving as a inspiration tube for additional or sole administration of fresh gas, each of the two passages having a distal outlet opening at the distal end of the tube and the distal end of the inspiration passage being bent in the vicinity of the distal end of the tube by approximately 180° and being directed toward the ventilation passage in a direction of the proximal end of the tube, thereby deflecting a flow of gas in the inspiration passage in the direction of the ventilation passage, the distal end of the inspiration passage is narrowed thereby forming a nozzle and is terminated at a nozzle distal outlet opening and said nozzle distal outlet opening is directed toward the open distal outlet end of the ventilation passage, said distal end of said inspiration passage providing means for increasing a flow of gas therethrough.

5,606,969

METHODS FOR MEASURING LUNG FUNCTION USING DIFFUSED LIGHT

James P. Butler, Brookline; George P. Topulos, Dedham, and John L. Lehr, Newton, all of Mass., assignors to Brigham & Women'Hospital, Boston, and The President and Fellows of Harvard College, Cambridge, both of Mass.

Filed Mar. 31, 1995, Ser. No. 414,416

Int. Cl.[6] A61B *5/00*

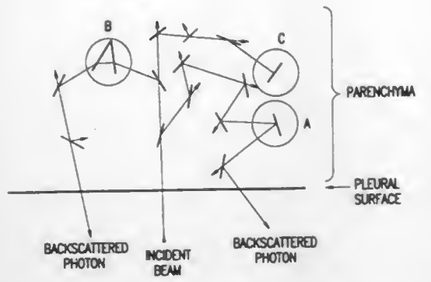
U.S. Cl. 128—653.1 **21 Claims**

1. A method for measuring lung function in a living animal subject comprising:

(a) causing light of at least one wavelength, to contact a region of the lung within the subject; wherein the at least one wavelength includes an isobestic wavelength;

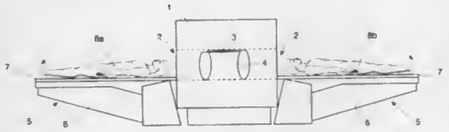
(b) detecting a diffuse scattering pattern of light of each wavelength subsequent to its contact with the lung region;

(c) measuring the diffuse scattering pattern detected in step (b) to provide scattering data and;



(d) determining lung function information from the scattering data.

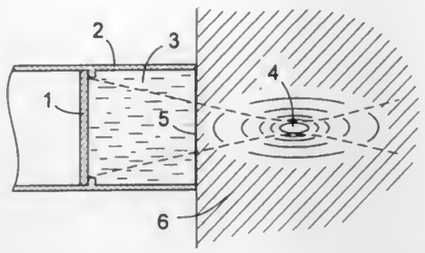
5,606,970
MULTIPLE PATIENT SCANNING ON A MAGNETIC RESONANCE IMAGING APPARATUS
Raymond V. Damadian, Woodbury, N.Y., assignor to Fonar Corporation, Melville, N.Y.
Filed Sep. 28, 1992, Ser. No. 952,327
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 **55 Claims**



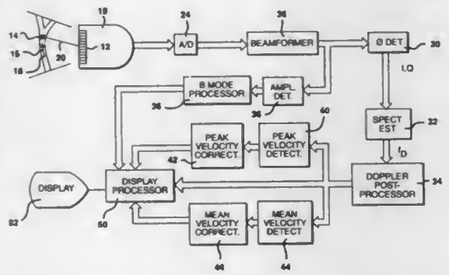
I. A medical magnet resonance imaging system comprising:
(a) a magnet having a non-electromagnetically partitioned, common imaging volume for receiving anatomical regions of interest of multiple patients therein and having multiple apertures therethrough, each said aperture providing patient access to the common imaging volume;
(b) multiple patient handling systems, each of said patient handling systems accessing said imaging volume through a respective one of said multiple apertures of said magnet, and each of said patient handling systems providing a means for positioning a respective one of said anatomical regions of interest of one of said multiple patients within said imaging volume of said magnet; and
(c) a radio frequency antenna system for transmitting radio frequency energy into said imaging volume, and detecting magnetic resonance imaging data from each of said anatomical regions of interest for each of said patients within said imaging volume of said magnet.

5,606,971
METHOD AND DEVICE FOR SHEAR WAVE ELASTICITY IMAGING
Armen P. Sarvazyan, East Brunswick, N.J., assignor to Artann Corporation, a NJ Corp., East Brunswick, N.J.
Filed Nov. 13, 1995, Ser. No. 555,851
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.02 **20 Claims**

1. A method for determining the elasticity of tissue, comprising the steps of:
(a) remotely generating shear waves in the tissue using a focused ultrasonic wave transmitted to a focal region of a focused ultrasonic source;
(b) detecting shear waves generated in the tissue;
(c) determining at least one propagation parameter of the shear waves in the tissue selected from the group of parameters consisting of shear wave velocity, shear wave attenuation coefficient, amplitude and velocity of shear displacement of tissue particles in the propagating shear wave, spatial and temporal dependencies of these amplitude and velocity of shear displacement of tissue particles; and
(d) calculating, based on the results of step (c), at least one mechanical parameter of tissue selected from the group of parameters consisting of shear elasticity modulus, Young's modulus, dynamic shear viscosity, and mechanical impedance of the tissue.



5,606,972
ULTRASONIC DOPPLER MEASUREMENT OF BLOOD FLOW VELOCITIES BY ARRAY TRANSDUCERS
Helen F. Routh, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.
Filed Aug. 10, 1995, Ser. No. 513,465
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **27 Claims**

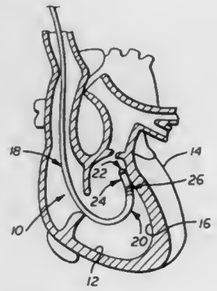


1. In an ultrasonic diagnostic imaging system including Doppler apparatus for making ultrasonic measurements of flow conditions at a sample volume within the body comprising:
an array transducer having multiple elements comprising an active aperture of a given dimension;
a receiver coupled to said array transducer for receiving echo signals from elements of the transducer aperture;
a Doppler processor coupled to said receiver for Doppler processing of echo signals received from said sample volume to develop estimates of flow velocity at said sample volume;
a peak velocity detector coupled to said Doppler processor for identifying a peak flow velocity from a number of said flow velocity estimates, including means for identifying said peak flow velocity as a function of said dimension of said active aperture of said transducer array and the location of said sample volume with respect to said active aperture; and
a display for displaying said identified peak flow velocity.

5,606,973
LIQUID CORE MICRODROPLETS FOR ULTRASOUND IMAGING
Karel J. Lambert, San Diego, and Edward G. Jablonski, Escondido, both of Calif., assignors to Molecular biosystems, Inc., San Diego, Calif.
Filed Jun. 7, 1995, Ser. No. 483,127
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.02 **19 Claims**

1. A composition for use as an ultrasonic imaging agent comprising a suspension of negatively buoyant aspherical microdroplets, said microdroplets comprising:
(a) an inner core of at least one biocompatible liquid, said core encapsulated by
(b) a shell made from an amphiphilic biocompatible material.

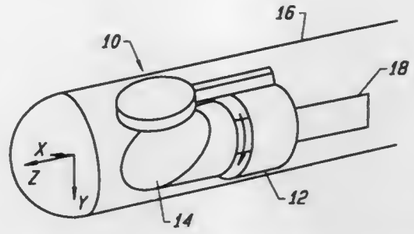
5,606,974
CATHETER HAVING ULTRASONIC DEVICE
Thomas M. Castellano, Temecula; Robert C. Hayzelden, Canyon Lake, and Tracy D. Maahs, San Jose, all of Calif., assignors to Heart Rhythm Technologies, Inc., Temecula, Calif.
Filed May 2, 1995, Ser. No. 434,004
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **24 Claims**



1. A catheter comprising:
an elongated catheter tube having proximal and distal ends and an inner lumen extending the length of the tube;
an ultrasonic transducer mounted at the distal end of the catheter tube, the transducer having a wall with inner and outer surfaces, the transducer having a plurality of sensor holes formed completely through the wall of the transducer;
a temperature sensing device disposed within each sensor hole in the wall of the transducer; and
an adhesive disposed over each sensor hole on the outer surface of the transducer to seal the hole and the respective temperature sensing device thereby sealing the temperature sensing device from contact with fluids exterior to the transducer.

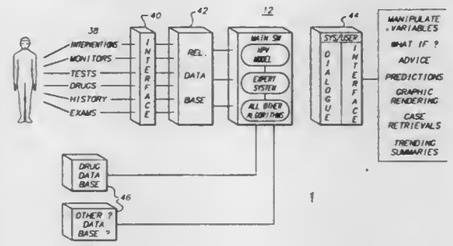
5,606,975
FORWARD VIEWING ULTRASONIC IMAGING CATHETER
David H. Llang, and Bob S. Hu, both of Menlo Park, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Sep. 19, 1994, Ser. No. 309,540
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **24 Claims**

1. An ultrasound imaging catheter comprising
a catheter having a first end extending along a longitudinal axis, bearing structure mounted near said first end for supporting a transducer and mirror, said bearing structure permitting rotation about an axis extending in a generally forward direction relative to said first end,



an ultrasound transducer and an ultrasound mirror supported by said bearing structure to direct ultrasound waves in said generally forward direction relative to said first end, said transducer being offset from said longitudinal axis, and
drive means for imparting relative rotational motion to said transducer and said mirror whereby an ultrasound beam is translated generally in a pattern extending in said forward direction.

5,606,976
METHOD AND APPARATUS FOR UNIFYING THE VENTILATION/PERFUSION AND PRESSURE/FLOW MODELS
Bryan E. Marshall; Carol Marshall, both of Wynnewood; C. William Hanson, Radnor; Fred Frasch, Glenside, all of Pa., and Carl Medsker, Mt. Laurel, N.J., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Jul. 26, 1994, Ser. No. 280,294
Int. Cl.[6] A61B *5/0205*
U.S. Cl. 128—671 **11 Claims**



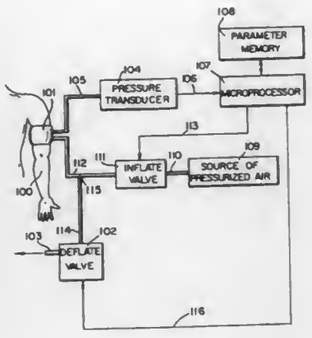
1. A method for combining the ventilation/perfusion ratio and pulmonary pressure/flow relationship of a patient comprising the following steps:
determining an initial health condition of a patient so as to define a pulmonary pressure/flow curve for each of a plurality of individual lung compartments of said patient and for the total lung;
applying a stimulus of hypoxic pulmonary vasoconstriction to the pressure flow curve for each individual compartment to obtain a pressure flow curve for each of said plurality of compartments; and
deriving a pulmonary artery pressure value corresponding to a ventilation/perfusion ratio that satisfies both the individual compartment and total lung pressure flow requirements for each of said pulmonary pressure/flow curves.

5,606,977

OSCILLOMETRIC BLOOD PRESSURE MONITOR WHICH AUTOMATICALLY DETERMINES WHEN TO TAKE BLOOD PRESSURE MEASUREMENTS

Maynard Ramsey, III, and Richard Medero, both of Tampa, Fla., assignors to Critikon, Inc., Tampa, Fla.

Filed Jan. 4, 1995, Ser. No. 368,425
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—680 17 Claims



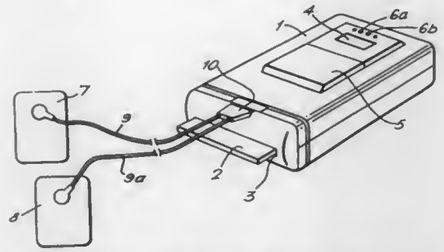
1. An automated sphygmomanometer apparatus for determining a blood pressure of a patient, comprising:
an inflatable and deflatable pressure cuff;
inflating means operatively coupled to said cuff for selectively applying a medium under pressure to said cuff for inflating and pressurizing said cuff;
cuff pressure sensing means coupled to said cuff for sensing cuff pressure including any blood pressure oscillations therein;
deflating means operatively coupled to said cuff for selectively relieving pressure from said cuff;
memory means for storing first parameters representative of at least a predetermined point of an oscillometric envelope defined by blood pressure oscillations sensed during a blood pressure determination of said patient; and
control means responsive to a cuff pressure determination of said cuff pressure sensing means for controlling said inflating means to inflate said cuff and said deflating means to deflate said cuff during respective blood pressure determinations of said patient at predetermined intervals and for storing in said memory means said first parameters during each blood pressure determination of said patient, said control means comprising means for initiating at least one check inflate cycle between respective blood pressure determinations by controlling said inflating means to inflate said cuff to a check pressure, means for acquiring blood pressure oscillations from said cuff pressure sensing means at said check pressure, means for computing second parameters from said blood pressure oscillations which are representative of a current blood pressure of said patient at said check pressure, and means for determining if said second parameters differ a predetermined amount from said first parameters and initiating a next blood pressure determination prior to the expiration of any of said predetermined intervals if said second parameters differ at least said predetermined amount from said first parameters.

5,606,978

HEART MONITORING APPARATUS

David R. Armstrong, Welwyn, United Kingdom, and Hendrick J. R. Van Eck, Maasdam, Netherlands, assignors to Hertford Medical Limited, Welwyn Garden City, United Kingdom

PCT No. PCT/GB93/01463, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/01040, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 13, 1993, Ser. No. 367,307
Claims priority, application United Kingdom, Jul. 13, 1992, 9214818
Int. Cl.[6] A61B 5/0402
U.S. Cl. 128—711 22 Claims



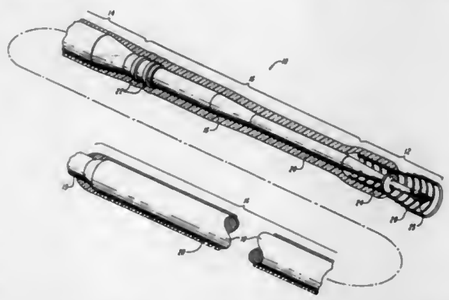
1. An ambulatory heart monitoring apparatus comprising:
sensor means for detecting an electrocardiographic signal;
interface means for receiving an IC card and for transferring data thereto;
user input means for inputting user commands;
determining means for detecting operational parameters of the apparatus and producing operation data in dependence thereon; and
control means responsive to operation of said user input means to cause a block of ECG data, derived from signals detected by said sensor means during a predetermined period, and said operation data to be sent to the interface means for storage in an IC card.

5,606,979

GUIDE WIRE

William S. Hodgson, Cohasset, Mass., assignor to The MicroSpring Company Inc., Norwell, Mass.

Filed May 28, 1993, Ser. No. 69,050
Int. Cl.[6] A61B 6/00
U.S. Cl. 128—772 15 Claims



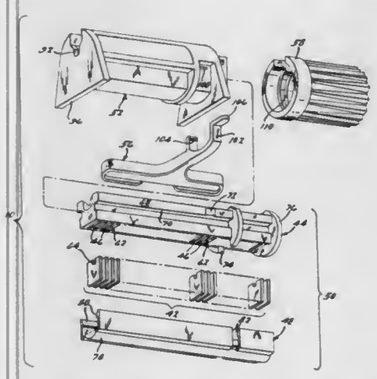
1. A guide wire including a core wire surrounded by a polymeric plastic sleeve and having a proximal portion, a distal portion, and a tip portion on the side of said distal portion most distant from said proximal portion,
said core wire comprising a proximal portion of substantially constant diameter within the proximal portion of said guide wire, and a distal portion of varying diameters less than the diameter of said proximal portion thereof within the distal portion of said guide wire,
a helical spring extending from adjacent the distal end of said tip portion of said guide wire to a point within, and adjacent the distal end of, said distal portion of said guide wire,
said sleeve surrounding and being attached by heat shrinking to (a) the portion of the exterior surface of said spring within said distal portion of said guide wire and, (b) the exterior annular surface of said core wire in an area axially spaced therefrom and adjacent the proximal end of said distal portion of said guide wire, (c) the distal portion of said core wire therebetween, and
variations in the overall diameter of said sleeve in said distal portion of said guide wire being less than said variations in the diameter of the portion of said guide wire surrounded by said sleeve.

5,606,980

MAGNETIC DEVICE FOR USE WITH MEDICAL CATHETERS AND METHOD

Michael W. Calhoun, Fort Lauderdale, and Fernando M. Viera, Hialeah, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 189,453, Jan. 31, 1994, Pat. No. 5,464,023. This application Nov. 14, 1994, Ser. No. 339,376
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—772 18 Claims



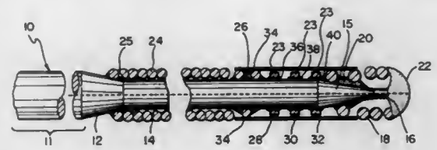
1. A medical catheter system having a magnetic retainer for use with a medical catheter to impose a magnetic force on a guidewire, comprising:
a plurality of magnetic elements each generating a magnetic field;
a carrier member holding said magnetic elements in a longitudinal array and having a similar array of substantially non-magnetic spacers being interspersed between said magnetic elements;
wherein the respective polarities of said magnetic elements are arranged such that each magnetic element tends to repel the next successive magnetic element; and
wherein said magnetic elements are each adapted to attract a proximate one of a plurality of nodes formed on a guidewire, said magnetic retainer allowing longitudinal motion of a medical catheter while imposing a magnetic force tending to inhibit longitudinal motion of said guidewire with respect to said magnetic retainer.

5,606,981

CATHETER GUIDEWIRE WITH RADIOPAQUE MARKERS

Richelle Tartacower, Atkinson; Lex Jansen, Londonderry, both of N.H.; Joanne Gilbert, Amesbury, Mass., and Rebecca C. Testa, Nashua, N.H., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 212,558, Mar. 11, 1994, abandoned. This application Feb. 3, 1995, Ser. No. 383,322
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—772 11 Claims



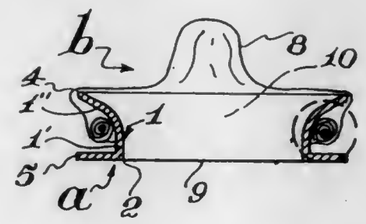
1. A guidewire comprising:
an elongate flexible shaft;
a distal radiopaque coil supported about and attached to a distal portion of the shaft;
a proximal radiopaque coil supported about and attached to an intermediate portion of the shaft, the proximal coil being longitudinally spaced from the distal coil; and
a polymer sleeve encasing the shaft between the proximal and distal coils and at least a portion of the proximal and distal coils.

5,606,982

DEVICE FOR PUTTING ON CONDOMS AND THE COMPOSING SET WITH THE INCORPORATED CONDOM

Luis H. Piotti, San Martín 686-piso 7°of. 72, Buenos Aires, Argentina

Filed Sep. 19, 1994, Ser. No. 308,384
Claims priority, application Argentina, Sep. 29, 1993, 326169
Int. Cl.[6] A61F 6/02
U.S. Cl. 128—842 11 Claims



1. A device for applying an elongated tubular condom to a male sex organ, wherein the condom is formed of an impermeable, elastic material and has a closed end, an open end and a central sheath between the open and closed ends, said condom being extendible between a rolled position with at least a first portion of the central sheath rolled in a cordon at said open end and an unrolled position with the cordon unrolled so that the at least one portion of the central sheath covers at least a part of the male sex organ, the device comprising: a) an annular body having a bore of sufficient size to permit the male sex organ to pass therethrough, said annular body having lateral walls comprising an annular inlet portion defining an inlet mouth, an annular outlet portion defining an outlet mouth and an adjacent portion between said inlet and outlet portions, said adjacent portion including a tapered section and an untapered section adjacent thereto, said outlet and adjacent portions having respective diameters sufficient to permit said condom to be mounted on said body in a mounted position with a portion of

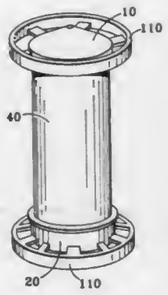
the central sheath stretched over the outlet mouth and with the rolled cordon contacting the adjacent portion, the body being configured with the tapered section tapering from said outlet portion to said untapered section such that, when the condom is in the mounted position and the closed end of the condom is extended in a direction away from the body, the body maintains the condom in the mounted position over said untapered portion while permitting the cordon to unroll and said tapered section preventing said cordon from separating; and b) means for facilitating handling of the device.

5,606,983

HAIR CARE APPLIANCE WITH THERMOCHROMIC HAIR CURLERS AND METHOD OF MANUFACTURING SAME

Lawrence P. Monty, and Patrick T. Monty, both of 193 Cooper Rd., Milton, Vt. 05468

Filed Dec. 2, 1994, Ser. No. 348,735
Int. Cl.[6] A45D *1/04;2/36;4/00*
U.S. Cl. 132—229 **29 Claims**



1. A hair curler comprising:
a) a hollow cylindrical core having first and second ends,
b) a hollow, substantially cylindrical plastic form enclosing said core except for at least one of said first and second ends, said form including a mandrel portion for winding of hair to be curled, said mandrel portion having an outer surface, and
c) a reversibly thermochromic layer covering at least said mandrel portion of said plastic form, said reversibly thermochromic layer having a first color indicative of a temperature within a range suitable for curling hair and a second color indicative of a temperature outside of said range.

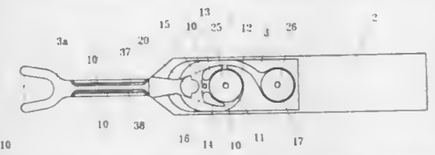
5,606,984

AUTOMATIC DENTAL FLOSSING DEVICE

Yong Gao, 981 Gulf Place, Apt. 714, Ottawa, Ontario, Canada

PCT No. PCT/CA92/00415, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO94/00075, PCT Pub. Date Jan. 6, 1994
PCT Filed Sep. 30, 1992, Ser. No. 351,345
Claims priority, application Canada, Jun. 26, 1992, 2072555
Int. Cl.[6] A61C *15/00*
U.S. Cl. 132—325 **8 Claims**

1. A power-driven fully automatic dental flossing device,



wherein a dental floss is automatically reciprocated or continually run in one direction, and said device comprising:

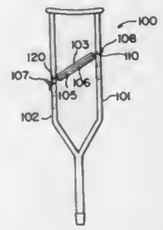
(a) housing means containing an apparatus for automatically manipulating the dental floss, and formed with a frame comprising an openable and replaceable upper casing, a bottom casing, and a rear casing, and two tines attached to a forked arm extending from the upper casing;
(b) guide means formed on said upper casing for guiding the dental floss through a proper path to accomplish desired functions;
(c) reel means mounted in said upper casing of said housing means for supplying fresh dental floss and taking up used floss, for winding the dental floss in one direction at a time, and for reciprocating the floss back and forth;
(d) transmission means installed in the bottom casing for transmitting power and driving said reel means to accomplish automatic manipulation of the dental floss;
(e) operating switch means for switching on and off said device to reciprocate the dental floss, and for holding said dental floss;
(f) winding switch means for switching on and off said device to continually wind the dental floss in one direction at a time back and forth;
(g) power means installed in said rear casing to provide power for automatically manipulating the dental floss; and
(h) slotted tube conducting means on said tines of said forked arm for conducting the dental floss across said tines and integrating tips of said tines against cracking and wearing.

5,606,985

CRUTCH WITH ADJUSTABLE INCLINED HAND GRIP

Joseph Battiston, and David Battiston, both of Chester, Va., assignors to Tubular Fabricators Industry, Inc., Petersburg, Va.

Continuation of Ser. No. 46,621, Apr. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 976,546, Nov. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,485
Int. Cl.[6] A61H *3/02*
U.S. Cl. 135—72 **4 Claims**



1. A combination of crutch and adjustable hand grip, with the crutch having two parallel, spaced apart sections which are terminally connected to each other to provide an enclosed area, the spaced apart sections having apertures for positioning and connecting the adjustable hand grip; wherein the hand grip is positioned at an incline with its longitudinal axis contained within the plane containing the parallel sections.

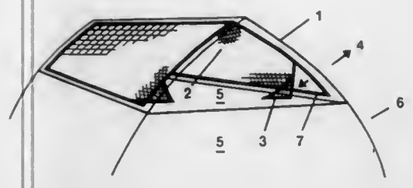
5,606,986

CLEAR TOP INSIDE VEIL TENT

Eric M. Muise, 410 Center St., Pembroke, Mass. 02359

Filed Jan. 23, 1995, Ser. No. 377,100
Int. Cl.[6] A45F *1/16*
U.S. Cl. 135—87 **8 Claims**

1. A tent:
a) said tent having an inner portion, an outer portion, and sidewalls, said inner portion defining an inner space, said sidewalls having a transparent upper portion defining a ceiling, said transparent upper portion having an inner and outer surface defined by a peripheral edge; and
b) a veil removably attached to said inner surface of said transparent upper portion at said peripheral edge.

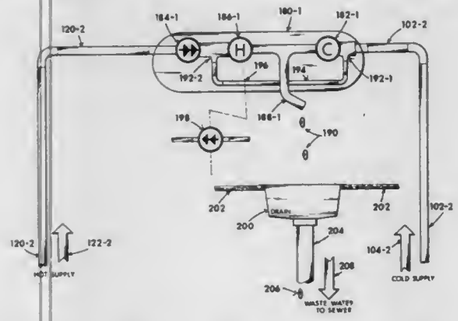


5,606,987

ENERGY CONSERVING HOT WATER FAUCET DRIBBLE BYPASS METHOD AND APPARATUS

Harold J. Weber, Holliston, Mass., assignor to Cognidea Patent Trust, Holliston, Mass.

Filed Mar. 30, 1995, Ser. No. 413,480
Int. Cl.[6] F16K *11/10*
U.S. Cl. 137—1 **20 Claims**



1. Method for sacrificing a trickle flow of unheated water for a trickle flow of heated water wasting through a turned-OFF leaky hot water valve, comprising steps of:
inhibiting an available flow of heated water between a hot water source supplied through a hot water pipe run and the turned-OFF leaky hot water valve;
substituting a flow of unheated water to effectively supplant the inhibited flow of heated water;
injecting the substitute flow of unheated water immediately into juncture between the hot water pipe run and supply inlet of the leaky hot water valve; and,
wasting the substituted flow of unheated water through the turned-OFF leaky hot water valve.

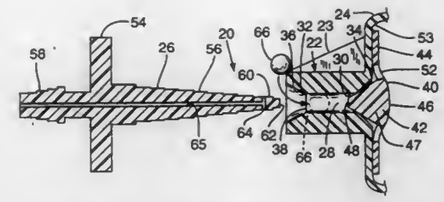
5,606,988

CONNECTOR ASSEMBLY FOR INK CARTRIDGE

Norman E. Pawlowski, Jr., Corvallis, Oreg., assignor to Hewlett -Packard Company, Palo Alto, Calif.

Filed Feb. 4, 1994, Ser. No. 192,083
Int. Cl.[6] F16L *29/00*
U.S. Cl. 137—68.14 **19 Claims**

1. A connector assembly comprising:
a valve assembly including a fitment and a valve attached thereto, the fitment having a passageway formed therethrough, the valve being movable between a closed position for occluding the passageway and an open position for opening the passageway, the fitment including a septum for occluding the passageway; and
a coupler insertable into the passageway for piercing the septum and moving the valve from the closed to the open position to permit liquid flow through the passageway, the coupler having an aperture formed therethrough and configured to be in fluid communication with the passageway when the coupler is inserted into the passageway.

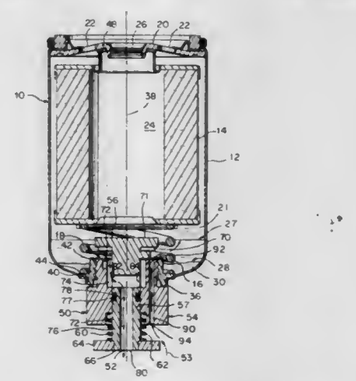


5,606,989

SELF-VENTING VALVE ARRANGEMENT

Mark A. Roll; Willie L. Stamey, and Christopher L. Loafman, all of Gastonia, N.C., assignors to Dana Corporation, Toledo, Ohio

Filed Jun. 1, 1995, Ser. No. 455,678
Int. Cl.[6] F16K *24/00*
U.S. Cl. 137—203 **10 Claims**



1. In a self-venting valve useful for draining contaminants including water from a fuel filter housing, wherein the valve includes a plunger member having first and second ends, and a valve body member having a first end for positioning within the housing and a second end for positioning outside of the housing, the improvement comprising:
a plunger member receiving bore extending through valve body, the plunger member being mounted in the plunger member receiving bore and defining a recess with said plunger member receiving bore at the first end of the valve body;
a sealing surface on the first end of the plunger member, the sealing surface being positioned for sealing engagement with the first end of the valve body member to close said recess when the plunger member is in a first position and for unsealing with the first end of the valve body when the plunger member is in a second position;
an axially extending bore in the plunger member for drawing water therethrough from the housing, the axially extending bore having a first end opening through the second end of the plunger outside of the valve body and a second opening to said recess within the valve body;
a spring engaging the second end of plunger member for urging the plunger member to the first position;
a retainer arrangement for selectively holding the plunger member in the second position upon rotating the plunger member; and

a vent passage separate from said plunger member receiving bore disposed in the valve body, the vent passage having a first end opening through the first end of the valve body for opening within the housing to let air into the housing and a second end opening through the second end of the valve body for opening to the atmosphere, the first end of the vent being closed by the sealing surface of the plunger member when the plunger member is in the first position.

5,606,990

POTABLE RAINWATER COLLECTING APPARATUS

Kenneth G. Clark, 17 Fountain Road., Buderim, Queensland, 4556, Australia

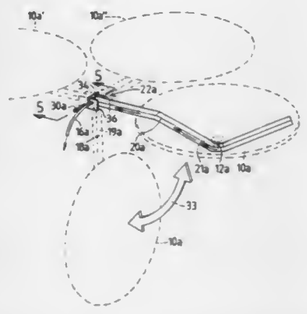
PCT No. PCT/AU94/00224, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/25691, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 29, 1994, Ser. No. 537,891

Claims priority, application Australia, Apr. 29, 1993, PL8525

Int. Cl.[6] E03B *3/03*

U.S. Cl. 137—259 **12 Claims**



11. Apparatus for use in collecting potable rainwater including:

a plurality of trough members of elongate rectangular dish-like form having opposed water-retaining rims or surfaces, the trough members being arranged parallel to and adjacent one another;

a discharge outlet in said trough member in that part thereof which is lowermost or near lowermost when the trough member is operatively disposed;

delivery tube means connected to said discharge outlet for conveying received rainwater for passage to storage or distribution means;

mounting frame means hereby said trough member may be mounted in a rain-receiving location, and

a plurality of tilt means operatively connecting said trough members to said mounting frame means respectively, each said tilt means comprising mounting means about which the corresponding trough member may be pivoted between operative disposition and substantially inverted inoperative disposition about a horizontal pivot axis extending longitudinally through said trough member between said opposed water retaining rims or surfaces,

the parts being so made and arranged that said tilt means will enable said trough member to be moved betweens said operative disposition in which rainwater is received and then delivered via said discharge outlet and said delivery tube means and an inoperative disposition in which it has been tilted from said operative disposition to one of such inverted, semi-inverted or inclined nature that said dished trough surface will not support liquid or solid materials,

the apparatus further including means whereby said through members may be pivoted in unison from operative to inoperative dispositions and vice versa.

5,606,991

PRESSURE CONTROL VALVE

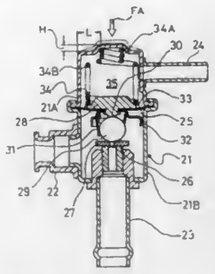
Seiji Kuribayashi, Sashima-gun, Japan, assignor to Kyosan Denki Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,303

Claims priority, application Japan, Dec. 29, 1993, 5-353313

Int. Cl.[6] F16K *31/12*

U.S. Cl. 137—510 **19 Claims**



1. A pressure control valve, comprising:

a valve shell comprising an upper casing and a lower casing, said upper casing being formed with a deformable top piece having a diameter;

a fuel inlet passage and a fuel outlet passage formed in said valve shell lower casing and an intake negative pressure introduction passage formed in said valve shell upper casing;

a diaphragm clamped and held between said upper and lower casings;

a holding member provided on said diaphragm, said holding member being formed of an integrated member that extends through said diaphragm and including a seat portion for receiving a control spring above said diaphragm, a contact portion which a ball contacts, at least one claw member formed of a plastically deformable member for rotatably holding said ball to said holding member, and at least one engaging member which is spaced from a side wall of said lower casing;

a valve body fixed to said ball which is held by said holding member;

a valve seat which is provided at an end of said fuel outlet passage and is closable by said valve body; and

said control spring which is provided inside said upper casing so as to extend between said top piece of said upper casing and said holding member for pressing said holding member so as to close said valve seat by said valve body, said control spring comprising a two-stage spring composed of a lower control spring section disposed against said holding member and having a first diameter and an upper control spring section disposed against said valve shell upper casing top piece and having a second diameter less than said first diameter, said second diameter being less than said diameter of said upper casing top piece.

5,606,992

PULSE WIDTH MODULATED SOLENOID

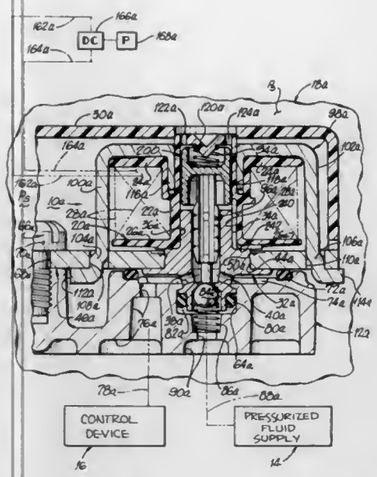
Bradley C. Erickson, Farmington Hills, and Garrett R. Holmes, Ortonville, both of Mich., assignors to Coltec Industries Inc., New York, N.Y.

Filed May 18, 1994, Ser. No. 244,000

Int. Cl.[6] F15B *13/044*; **F16K** *31/06*

U.S. Cl. 137—596.17 **6 Claims**

6. A solenoid assembly comprising electrically energized and de-energized field coil means, pole piece means providing a magnetic flux path whenever said field coil means is energized, valve means movable to and from cooperating valve seat means for at times to be open permitting the flow past the valve means of a relatively high pressure fluid supplied by an associated source, wherein said valve means when moved to engagement with said



valve seat means is effective for preventing the flow of said relatively high pressure fluid past said valve means, cylindrical armature means movable toward said pole piece means upon energization of said field coil means and movable to a relatively remote position wherein said armature means is spaced most from said pole piece means upon de-energization of said field coil means, motion transmitting means effective for causing said valve means to become open, wherein said motion transmitting means is operatively situated between said armature means and said valve means whereby sufficient axial movement of said armature means toward said pole piece means results in said motion transmitting means opening said valve means, wherein when said field coil means is electrically energized and said armature means responds by moving toward said pole piece means said relatively high pressure fluid tends to resist the movement of said armature means toward said pole piece, and chamber means formed in said armature means as to have a first axial end continually closed to the flow of said fluid therethrough and as to have a second axial end continually open to the flow of said fluid into and out of said chamber means, said chamber means being effective for delaying the time at which the full magnitude of said relatively high pressure fluid is fully applied to said armature means thereby enabling said armature means to move toward said pole piece means an initial distance during which said full magnitude of said relatively high pressure fluid is not fully applied to said armature means.

5,606,993

MULTIWAY VALVE

Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany

Filed Jan. 9, 1995, Ser. No. 370,501

Claims priority, application Germany, Jan. 13, 1994, 44 00 760.4

Int. Cl.[6] F15B *13/042*

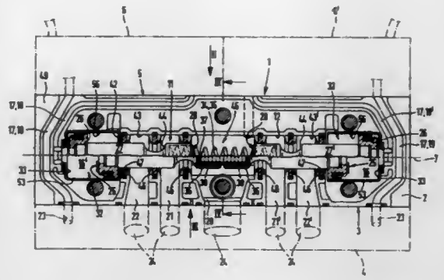
U.S. Cl. 137—596.18 **18 Claims**

1. A multiway valve comprising:

a valve housing having a valve spool space therein, the housing being longitudinally divided into at least two parts along a parting plane forming a joint portion adjacent to the spool space;

a valve spool arrangement, the spool space being adapted to receive the valve spool arrangement, the valve spool arrangement including two valve spools arranged coaxially in tandem and which are independently axially slideable within the spool space, each valve spool having a piston disposed on a terminal part thereof, each piston being axially slidable within a piston space, each piston space being disposed at a terminal end of the valve spool space, the piston providing for axially shifting of its associated valve spool upon engagement with a control pressure thereby affecting a supply of an actuating fluid; and

a pair of guide sleeves, each sleeve lining one of the piston spaces and being radially disposed therein.



5,606,994

THREE WAY SWITCHING CONTROLLER

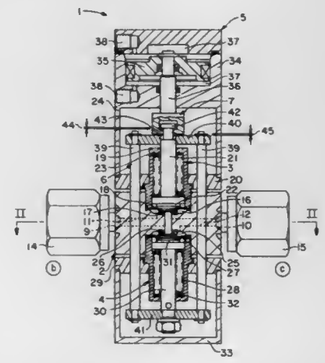
Tsuyoshi Tanikawa, and Kenji Yamamoto, both of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Aug. 14, 1995, Ser. No. 515,001

Claims priority, application Japan, Aug. 30, 1994, 6-204828

Int. Cl.[6] F16K *7/17*

U.S. Cl. 137—627.5 **9 Claims**



1. A three way switching controller comprising:

a body defining a first opening, a second opening, a third opening, a first passage communicating between said first opening and said second opening, and a second passage communicating between said first opening and said third opening;

a first valve and a second valve mounted on said body for respectively opening and closing said first passage and said second passage, said first and second valves each being held in a closed state when said first and second valves are in a free state, with no external driving force being applied thereto;

a cylinder provided on said body; and

a linking mechanism provided between said cylinder and said first valve and said second valve for alternately opening and closing said first and second valves by operation of said cylinder;

wherein said linking mechanism includes a disengagement means for preventing the driving force of the cylinder from being immediately applied to said first and second valves immediately after initiation of operation of the cylinder so as to allow both said first and second valves to be in said free

state whereby both said first and second valves are in a closed state for a short time; and,

wherein said first valve on said body has a first diaphragm which is caused to seat against a first valve seat by a first stem being driven thereagainst by a first spring and said second valve has a second diaphragm which is caused to seat against a second valve seat by a second stem being driven thereagainst by a second spring.

5,606,995

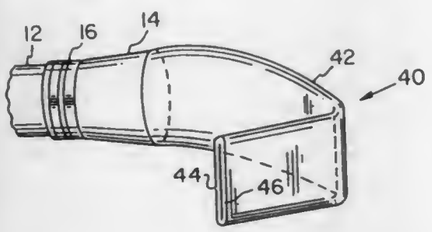
INVERSION-RESISTANT, READILY OPENABLE TIDE GATE VALVE

Spiros G. Raftis, Pittsburgh, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.

Filed Oct. 26, 1994, Ser. No. 329,510

Int. Cl.[6] F16K *15/16*

U.S. Cl. 137—846 **11 Claims**



1. In an inversion-resistant tide gate valve comprising:

(a) a sleeve bounding a longitudinally-extending flow-through passage for fluids:

(b) said sleeve having an upstream fluid inlet end region mountable on a discharge end of a conduit which is elongated along an axis of symmetry;

(c) said sleeve having a downstream fluid outlet end region which is further comprised of a first lip and a second lip opposed to each other and symmetrically arranged relative to said axis, said lips being movable from a closed position in which the lips sealingly engage each other, to an open position in which the lips are located apart from each other in response to a pressure head within said passage and exerted in a direction downstream of said passage;

(d) said sleeve having an intermediate region symmetrically arranged relative to said axis, said intermediate region merging and being jointly movable with said first and second lips, the improvement comprising:

said lips extending a defined length along said axis, a ratio of a diameter of said conduit to said defined length being within a range of about 1:1.5 to 1:9;

the length, weight and flexibility of said lips being such as to cause sagging of said lips when in said closed position, thereby precluding inversion of said lips.

5,606,996

BLADDER AND ACCUMULATOR USING THE SAME

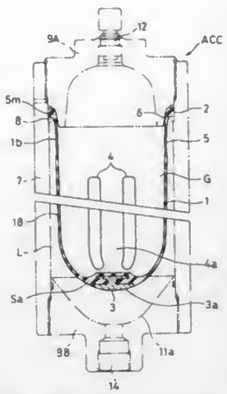
Nobuyuki Sugimura, 3-27 Mabasekita, Shimizu-shi, Shizuoka-ken, Japan

Continuation of Ser. No. 248,603, May 25, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,687

Claims priority, application Japan, Jun. 28, 1993, 5-181977

Int. Cl.[6] F16L *55/04*

U.S. Cl. 138—30 **18 Claims**



1. A bladder for an accumulator, said bladder being adapted for mounting to an accumulator body and comprising:

an elastic bag portion substantially defined by a wall having a first thickness, said bag portion having an opening at an end;

an integral stress concentration preventing wall section about said bag portion adjacent said opening, said wall section being substantially cylindrical about an axis and having an axial length with a substantially uniform second thickness less than said first thickness; and

a mounting flange around the opening and integrally connected to the wall section by a base portion having a third thickness greater than said second thickness;

wherein expansion of said bladder first expands said stress concentration preventing wall section in a circumferential direction into close contact with an inner surface of said accumulator body.

5,606,997

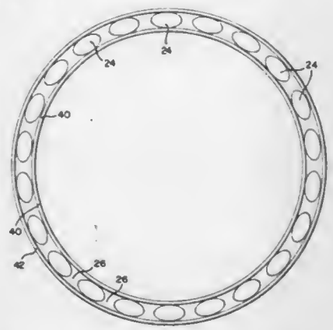
METHOD FOR REHABILITATING PIPE LINE AND RESIN IMPREGNATED LINING HAVING AN INTEGRAL HEATING ELEMENT

Richard D. Blackmore, Northbrook, Ill., and Mark T. Sloan, Rahleigh, N.C., assignors to Advance Trenchless Rehabilitation Systems, Arlington Heights, Ill.

Filed Apr. 28, 1995, Ser. No. 430,330

Int. Cl.[6] B29C *63/28;63/34*

U.S. Cl. 138—98 **9 Claims**



6. A method of rehabilitating a pipe comprising the steps of:

providing a tubular composite lining having a first end and a second end and impregnated with a heat activated curable resin, said lining including a first strip of conductive graphite fabric extending longitudinally from said first end to said second end of said lining, and a second strip of conductive graphite fabric extending from said first end to said second end of said lining spaced circumferentially from said first strip of graphite fabric by non-conductive fiberglass;

stitching said first strip of graphite fabric to said second strip of graphite fabric at said second end of said lining;

positioning said lining inside a pipe to be rehabilitated;

inflating said lining to compress said lining against an inner wall of said pipe; and

providing a source of electrical power having a first electrically conductive lead and a second electrically conductive lead;

connecting said first electrically conductive lead to said first strip of graphite fabric in said lining at said first end of said lining; and

connecting said second electrically conductive lead to said second strip of graphite fabric in said lining at said first end of said lining

causing an electric current to flow through said first strip of graphite fabric from said first end to said second end of said lining and through said second strip of graphite fabric from said second end to said first end of said lining to electrically resistively heat said lining to cure said impregnated resin.

5,606,998

WEFT DETECTING AND STRETCHING APPARATUS IN A JET WEAVING LOOM

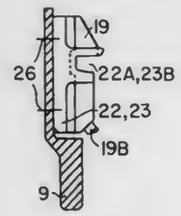
Adnan Wahhoud, Lindau-Bodolz; Hans-Dieter Scorl, Lindau; Valentin Krumm, Hergensweiler, and Ulrich Loehr, Weissenberg, all of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed Dec. 5, 1995, Ser. No. 567,694

Claims priority, application Germany, Dec. 6, 1994, 44 43 371.9

Int. Cl.[6] D03D *47/30;51/34*

U.S. Cl. 139—194 **20 Claims**



1. An apparatus for detecting a weft thread travelling through a weft guide channel (**6**) in a reed of a jet weaving loom, comprising a weft guide channel extension member forming an extension channel (**11**) for said weft guide channel (**6**), wherein said channel extension member comprises extension elements for varying the channel length for weft threads having different stretching characteristics, a mounting bracket (**9**) for mounting said channel extension member so that said extension channel (**11**) is axially aligned with said weft guide channel (**6**), at least one weft stop motion device (**19**) for sensing a weft thread extending out of said extension channel (**11**), and connector elements (**24**, **25**, **26**) for securing said weft stop motion device (**19**) to said mounting bracket (**9**) in different positions in accordance with a varied length of said extension channel (**11**).

5,606,999

SHUTTLE SPOOL WITH YARN TRAPPING DEVICE

Hans Johansson, Örtvägen, Sweden, assignor to Texo AB, Almhult, Sweden

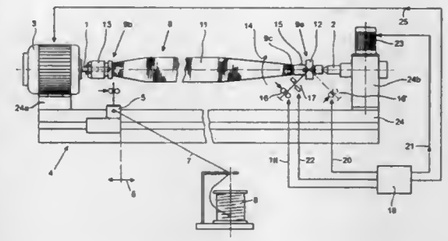
Filed Jan. 26, 1995, Ser. No. 378,751

Claims priority, application Sweden, Jan. 26, 1994, 9400223

Int. Cl.[6] D03D *45/00;* **B65H** *69/04*

U.S. Cl. 139—257 **12 Claims**

1. A method for producing a spool for a shuttle in a weaving machine wherein a yarn (thread) is wound onto a pirn which is rotated by rotational means during the winding, said method comprising the steps of:



a) providing a yarn-trapping device at one end of the pirn;

b) positioning the pirn with the yarn-trapping device in the rotational means;

c) winding the yarn on the pirn to form the spool; and

d) after the winding-on of the yarn has been completed, bringing an emerging yarn part into cooperation with the yarn-trapping device for fixing said emerging yarn part, said bringing including positioning said emerging yarn part crosswise in at least a first and a second groove provided on the yarn-trapping device, and bringing the yarn in each groove in a fastening cooperation with walls of said groove forming an upwardly and outwardly widening gap.

5,607,000

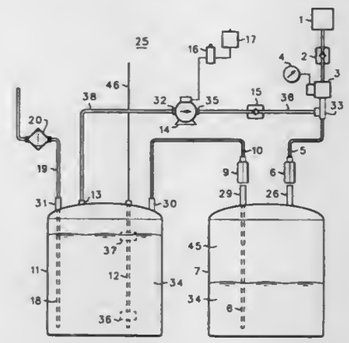
HAZARDOUS MATERIAL LIQUID DISPENSING SYSTEM AND METHOD

Jerry D. Cripe, Tempe; Michael P. Menchio, Mesa, and Kevin Rak, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 332,228

Int. Cl.[6] B67C *3/00*

U.S. Cl. 141—21 **10 Claims**



1. A hazardous material liquid dispensing system dispensing a hazardous material liquid, the system comprising:

a first vessel having a first vessel gas input and a first vessel liquid output;

a second vessel having a second vessel liquid input coupled to the first vessel liquid output, the second vessel further including a liquid output;

a gas source for supplying gas to the system;

a vessel coupling line coupling the second vessel to the first vessel,

wherein suction is applied to the second vessel via the vessel coupling line, thereby drawing the hazardous material liquid into the second vessel through the second vessel liquid input;

a regulator having a regulator input and a regulator output, the regulator output coupled to the vessel coupling line; and

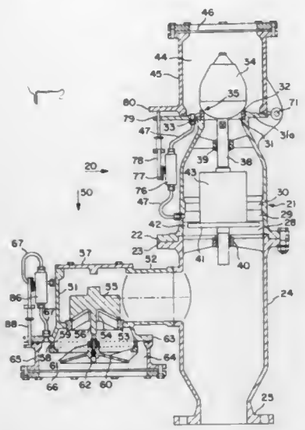
said gas source coupled to the regulator input.

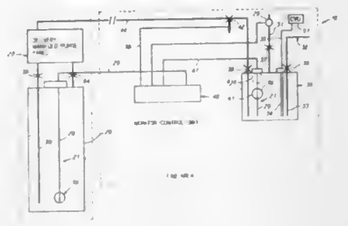
5,607,001

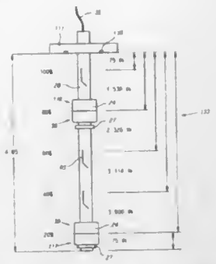
SAFETY EQUIPMENT FOR A TANK HAVING A SYSTEM FOR COLLECTING THE GAS EXPELLED FROM THE TANK DURING LOADING

Anders I. D. Petersen, Lynge, Denmark, assignor to Emil Aarestrup Sørensen, London, United Kingdom

Filed Jul. 11, 1995, Ser. No. 500,684
Claims priority, application Denmark, Aug. 4, 1994, 0912/94
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—59 **6 Claims**







1. Safety equipment for a tank having a system for collecting the gas expelled from the tank during loading, comprising a pressure relief valve which is adapted to be connected in parallel to the gas collecting system of the tank and is constructed with a front chamber communicating with the a blow off outlet of the pressure relief valve, the front chamber of the pressure relief valve being closed by means of a rupture disc and being connected to an interior of the pressure relief valve through a by-pass.

5,607,002

CHEMICAL REFILL SYSTEM FOR HIGH PURITY CHEMICALS

Stephen H. Siegele, Campbell; Craig M. Noah, Mountain View, both of Calif., and John N. Gregg, Marble Falls, Tex., assignors to Advanced Delivery & Chemical Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 184,226, Jan. 19, 1994, which is a continuation-in-part of Ser. No. 54,597, Apr. 28, 1993, Pat. No. 5,465,766. This application Nov. 28, 1994, Ser. No. 345,244
Int. Cl.[6] F17C *13/00*
U.S. Cl. 141—198 **5 Claims**

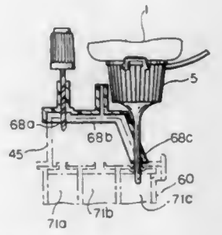
1. An ampule for delivering high purity chemical comprising:
a an ampule lid having an opening therethrough;
b. a digital level sensor assembly extending through the opening in said lid and into the interior of said ampule, said digital level sensor assembly comprising:
i. at least one digital metallic float level sensor having at least one trigger point, said at least one digital metallic float level sensor comprising two digital metallic float sensors, an upper digital metallic sensor having two trigger points and a lower digital metallic sensor having three trigger points; and
ii. an electrical cable having multiple conductors connected to said at least one digital float level sensor, said cable comprising at least six conductors;
c. a flange permanently attached to said digital level sensor assembly and removably securing said digital level sensor assembly to a mating surface surrounding said opening in said lid; and
d. an O-ring disposed between the mating surfaces of said flange and lid.

5,607,003

THERMOPLASTIC CLOSURE FOR A FLUID CONTAINER AND SYSTEM FOR REFILLING A FLUID RESEVOIR

Stephen M. Gray, Staten Island, N.Y., assignor to Renewable Resources Company, Staten Island, N.Y.

Division of Ser. No. 175,074, Dec. 29, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,304
Int. Cl.[6] B65B *1/04;3/04;* B67C *3/00*
U.S. Cl. 141—285 **4 Claims**



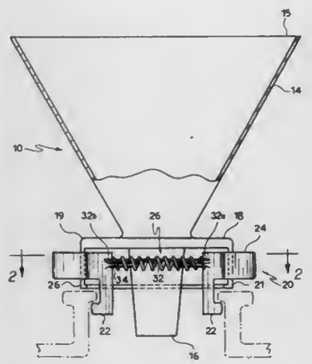
1. A system for refilling a fluid reservoir comprising:
a) a flexible fluid container having a closed bottom and an open neck which defines an annular opening;
b) a thermoplastic closure attached to the container comprising;
a base having engagement means for engaging the closure to the container and sealing means for creating a seal between the closure and the container when engaged;
a flexible, needle-like dispensing extension continuous with and extending from the base and ending at a tip, said extension having an internal cylindrical cavity of substantially constant diameter with an interior aperture positioned within the base and an exterior aperture positioned at the tip; and
a tip cover removably attached to the tip;
c) means for cutting an opening in the reservoir so that the dispensing extension may be inserted into the reservoir;
d) a refilling station for securing the reservoir as it is being refilled; and
e) a replacement plug for sealing the opening after the reservoir is refilled.

5,607,004

SELF-SUPPORTING FUNNEL ASSEMBLY AND DRIP CATCHER

Eddie W. Cope, 6372 Sulphur Ridge Rd., Bloomington Springs, Tenn. 38545-5673

Filed Jul. 12, 1995, Ser. No. 501,558
Int. Cl.[6] B67C *11/00*
U.S. Cl. 141—340 **7 Claims**



1. A self-supporting funnel assembly comprising:
a generally conical body having a wide mouth at an upper end and a narrow spout at a lower end;
a base member attached to said narrow spout;
two opposed clamping members supported by said base member; and
at least one spring disposed between said clamping member for biasing said clamping members apart.

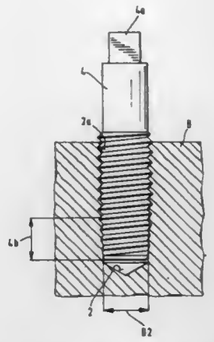
5,607,005

METHOD OF FASTENING AN ATTACHMENT MEMBER IN A WOODEN COMPONENT

Erich Leibhard, Munich, Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Jun. 12, 1995, Ser. No. 489,417
Claims priority, application Germany, Jun. 10, 1994, 44 20 267.9
Int. Cl.[6] B27F *7/00*
U.S. Cl. 144—353 **5 Claims**

1. Method of fastening an axially extending attachment member (**1**) having an axially extending first profiled surface (**1***a*) in a prefabricated axially extending borehole (**2**) having an inside surface in a wooden component, using a hardenable mass (**3**) for fastening the attachment member, and introducing the hardenable mass into the borehole (**2**) before inserting the attachment member (**1**), providing the attachment member (**1**) with a maximum outside diameter (**D1**) smaller than a minimum diameter (**D2**) of the borehole, wherein the improvement comprises before introducing the hardenable mass, forming an axially extending second profiled surface (**2***a*) in the inside surface of the borehole (**2**) using a profiling tool and compacting the inside surface of the borehole by means of the profiling tool.

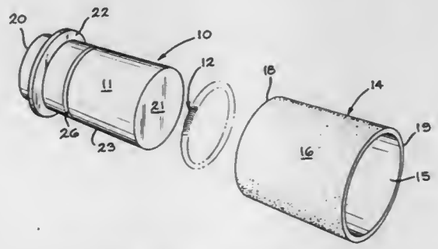


5,607,006

CASTING METHOD AND APPARATUS FOR USE THEREIN

Byron W. Koch, Toledo, Ohio, assignor to Doehler-Jarvis Technologies, Inc., Toledo, Ohio

Filed Nov. 14, 1994, Ser. No. 339,356
Int. Cl.[6] B22D *19/08*
U.S. Cl. 164—112 **15 Claims**



1. A method for casting an engine block having at least one cylindrical bore formed therein, said bore having a separately formed liner retained therein, comprising the steps of:
(a) providing
(i) a mandrel extending along an axis from a first end to a second end, said mandrel including a wall having a cylindrical exterior surface extending from said first end toward said second end, said wall having an outwardly facing annular groove positioned such that portions of said cylindrical exterior surface are located between said first end and said annular groove and between said second end and said annular groove, said annular groove extending inwardly from said cylindrical exterior surface toward said axis to a bottom,
(ii) a canted coil spring positioned in said outwardly facing annular groove, said spring including a series of coils, each said coils having an inner contact point in contact with said bottom and an outer contact point extending radially outwardly beyond said cylindrical exterior surface, and
(iii) a liner having a cylindrical interior surface sized to permit said liner to be slidingly positioned on said mandrel in close engagement with said cylindrical exterior surface;
(b) moving said liner onto said mandrel first end in sliding engagement with said exterior surface, engaging said spring and continuing movement of said liner on said mandrel toward said second end to compress said spring and deflect said outer contact points inwardly toward said axis, said

spring imparting an outwardly directed force around an annular portion of said liner interior surface providing frictional resistance between said spring, including said outer contact points, and said liner interior surface to retain said liner on said mandrel;

(c) casting molten metal around said mandrel supported liner to form a cast part while retaining said liner On said mandrel; and

(d) withdrawing said mandrel and said spring from said liner while leaving said liner retained in said cast part.

12. A die casting apparatus for use in casting metal parts comprising:

(a) a mandrel located within a mold cavity in said casing apparatus and extending along an axis from a first end to a second end, said mandrel including a wall having a cylindrical exterior surface extending from said first end toward said second end, said wall having an outwardly facing annular groove positioned such that portions of said cylindrical exterior surface are located between said first end and said annular groove and between said second end and said annular groove, said annular groove extending inwardly from said exterior surface toward said axis to a bottom,

(b) a canted coil spring positioned in said outwardly facing annular groove, said spring being resiliently compressible and including a series of coils having inner contact points in contact with said bottom and a series of outer contact points which extend radially outwardly beyond said cylindrical exterior surface when said spring is not compressed; and

(c) a liner having a cylindrical interior surface sized to permit said liner to be slidingly positioned on said mandrel in close engagement with said cylindrical exterior surface, said liner positioned on said mandrel in a position engaging and compressing said spring such that said outer contact points engage said liner interior surface, said spring imparting an outwardly directed force to said liner interior surface to provide frictional resistance between said spring including said outer contact points and said liner interior surface to retain said liner on said mandrel.

5,607,007

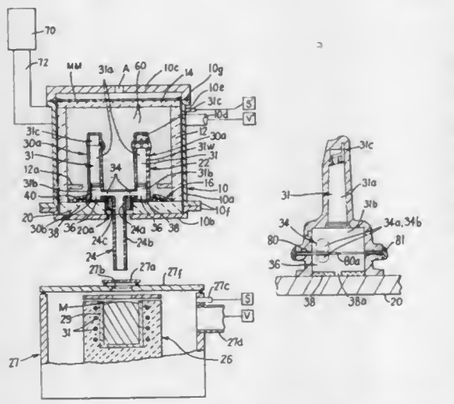
DIRECTIONAL SOLIDIFICATION APPARATUS AND METHOD

George D. Chandley, Amherst, N.H., assignor to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Oct. 19, 1994, Ser. No. 325,898

Int. Cl.[6] **B22D** *27/04*

U.S. Cl. 164—122.2 **23 Claims**



1. Method of directional solidification of a melt, comprising preheating refractory particulates above a melt casting temperature apart from a casting mold, thru placing the preheated refractory particulates about at least one article molding cavity region of a casting mold, heating the article molding cavity region of the casting mold to said melt casting temperature by heat from the particulates, communicating the article molding cavity region to a heat removal member in a manner to directionally solidify melt introduced therein, and introducing the melt to the article molding cavity region in communication with the heat removal member.

9. Apparatus for directional solidification of a melt, comprising a casting mold having an article molding cavity region heated to an elevated temperature less than a melt casting temperature and in which the melt is directionally solidified, a heat removal member with which the article molding cavity is communicated by a grain nucleation and growth cavity of said mold for removing heat from the melt therein in a manner to directionally solidify the melt, a radiation transparent crystal selector member disposed in said grain nucleation and growth cavity and including a passage effective to select a single crystal for propagation in said article molding cavity, and particulates disposed about said region and heated to a temperature above the melting temperature of material to be cast to heat said region to an adequate temperature for directional solidification.

5,607,008

METHOD OF MONITORING THE CONDITION OF SOILING AND /OR CALCIFICATION OF HEAT EXCHANGERS IN HEATING AND COOLING INSTALLATIONS

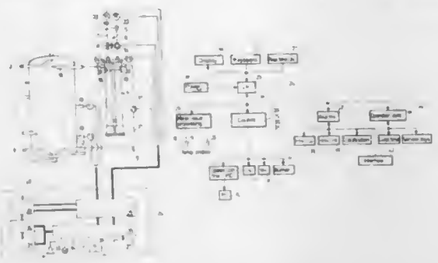
Armin Niederer, Rotengasse 361, FL-9391 Ruggell, Liechtenstein

Filed Mar. 18, 1994, Ser. No. 210,661

Claims priority, application Germany, Mar. 23, 1993, 43 09 313.2

Int. Cl.[6] **F34H** *9/20;* **F24D** *19/10;* **F28G** *13/00*

U.S. Cl. 165—11.1 **14 Claims**



1. A method of monitoring the condition of soiling or calcification of heat exchangers (**4**) in heating installations comprising a boiler (**1**), a primary circuit (**5**) containing a heating medium, a secondary circuit (**6**) containing a medium to be heated, a primary pump (**10**) in the primary circuit (5) and a secondary pump (**17**) in the secondary circuit (**6**), the heating-up process of the medium to be heated being controlled on the basis of operational data, namely of temperatures T1 to T6 of the heating medium and of the medium to be heated as well as of triggering data n_S, n_P for pumps (**10**, **17**) for conveying the heating medium and the medium to be heated through the heat exchanger by means of a heating-up control device (**24**),

wherein in an initial condition, operational data T1 to T6, n_P occurring during the heating-up process are collected and stored as initial operational data T1 to T6, n_P in a storage device (**30**),

wherein during the operation of the heating installation, the said operational data are collected in turns by the heating-up control device (**24**) as subsequent operational data T1' to T6', n_P' and compared with the stored initial operational data T1 to T6, n_P,

wherein a condition of malfunction due to calcification or soiling of the heat exchanger (**4**) is signalled by a defined deviation (Δn_P, $\Delta T4$) of the collected subsequent operational data T1' to T6', n_P' from the collected initial operational data T1 to T6, n_P being exceeded, and

wherein said initial operational data T1 to T6, n_P, n_P' and n_S and said subsequent operational data T1' to T6' and n_P' are defined as T1 and T1': initial and subsequent temperatures in the boiler (**1**) at an upper location,

T2 and T2': initial and subsequent temperatures in said boiler (**1**) at a lower location,

T3 and T3': initial and subsequent temperatures at an inlet (**13**) of the secondary circuit (**6**) of the heat exchanger (**4**),

T4 and T4': initial and secondary temperatures at an outlet (**15**) of the secondary circuit (**6**) of the heat exchanger (**4**),

T5 and T5': initial and subsequent temperatures on a flow side of the primary circuit (**5**),

T6 and T6': initial and subsequent temperatures on a return side of the primary circuit (**5**),

n_S: speed of the secondary pump (**17**) and

n_P and n_P': initial and subsequent speeds of the primary pump (**10**).

5,607,009

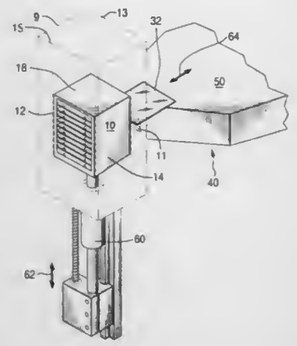
METHOD OF HEATING AND COOLING LARGE AREA SUBSTRATES AND APPARATUS THEREFOR

Norman L. Turner, Mountain View; John M. White, and David Berkstresser, both of Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 28, 1993, Ser. No. 10,683

Int. Cl.[6] **F25B** *29/00;* **C23C** *14/58*

U.S. Cl. 165—48.1 **12 Claims**



1. A vacuum system including at least one vacuum chamber selected from the group consisting of a heating chamber and a cooling chamber for glass substrates to be processed, said chamber including

a) means to provide a vacuum to said chamber,

b) a heating or cooling means incorporated into the interior sidewalls of a cassette in said chamber for changing the temperature of the interior sidewalls of said cassette in said chamber,

c) a plurality of thermally conductive shelves contacting said sidewalls so that heat is conducted to and from said conductive shelves from said sidewalls,

d) dielectric supports for said glass substrates mounted on said conductive shelves so as to provide a gap between said substrates and said shelves, thereby avoiding direct contact of the glass substrates to said shelves, to preclude direct heat transfer from said shelves to said substrates, said means of heating and cooling able to heat the glass substrates to a temperature of about 350°–400° C. and to cool the glass substrate to ambient temperatures from a temperature of about 300°–400° C. at a rate so as to avoid thermal stress in said glass substrates.

5,607,010

PROCESS FOR COOLING DIESEL ENGINE EXHAUST GASES

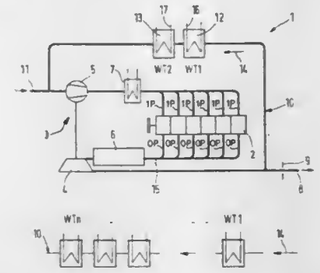
Dieter Schönfeld, Markdorf, and Ralph-Michael Schmidt, Lanenargen, both of Germany, assignors to MTU Motoren-Und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Apr. 18, 1995, Ser. No. 423,986

Claims priority, application Germany, Apr. 26, 1994, 44 14 429.6

Int. Cl.[6] **F01P** *5/00*

U.S. Cl. 165—51 **7 Claims**



1. Process for cooling diesel-engine exhaust gases in an exhaust gas recirculation system, a hot exhaust gas flow coming from engine cylinders first being cooled before being admixed on an intake side of an engine to an incoming fresh air flow,

wherein cooling of the hot exhaust gas flow is carried out in at least two successive steps, the hot exhaust gas flow being cooled in each cooling step to a different predetermined temperature, and

wherein the exhaust gas flow is cooled to a temperature of at least below 250° C. before being subjected to a last of said at least two successive cooling steps.

5,607,011

REVERSE HEAT EXCHANGING SYSTEM FOR BOILER FLUE GAS CONDENSING AND COMBUSTION AIR PREHEATING

Fawzy T. Abdelmalek, 12807 Willowyck Dr., St. Louis, Mo. 63146

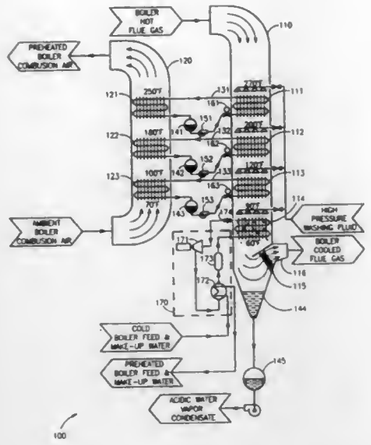
Continuation-in-part of Ser. No. 645,804, Jan. 25, 1991, Pat. No. 5,146,755, and a continuation-in-part of Ser. No. 754,035, Sep. 3, 1991, Pat. No. 5,133,190, and a continuation-in-part of Ser. No. 977,138, Nov. 16, 1992, Pat. No. 5,321,946, and a continuation-in-part of Ser. No. 11,870, Feb. 1, 1993, Pat. No. 5,403,569. This application May 31, 1994, Ser. No. 251,322

Int. Cl.[6] **F28D** *15/00;* **F01K** *25/14*

U.S. Cl. 165—104.14 **4 Claims**

1. The combination of a reverse heat exchanging system and a heat pump system employing evaporative heat transfer fluids that continuously circulate in closed heat exchanging circuits to cool and condense acidic water vapors contained in a relatively hot flue gas stream flowing from a fossil fueled boiler and to recover heat energy usually emitted into the atmosphere to preheat the boiler combustion air stream and feed water stream, the combination which comprises:

a. a flue gas cooling and condensing heat exchanger enclosure containing a first high temperature flue gas cooling evaporative heat exchanger, a second medium temperature flue gas cooling evaporative heat exchanger, a third (above ambient) low temperature flue gas cooling evaporative heat exchanger, and a fourth (below ambient) low temperature flue gas cooling evaporative heat exchanger, a top inlet to receive said boiler hot flue gas stream, a bottom outlet to release cooled flue gas, a mist eliminator and a bottom outlet to drain acidic water vapor condensate;



b. a combustion air preheater heat exchanger enclosure containing a first low temperature combustion air heating condensing heat exchanger, a second medium temperature combustion air heating condensing heat exchanger and a third high temperature combustion air heating condenser heat exchanger, a bottom inlet to receive a relatively cold combustion air stream from the atmosphere, and a top outlet to release preheated combustion air to said boiler;

c. said first flue gas high temperature cooling evaporator heat exchanger co-operates with said first high temperature combustion air heating condenser heat exchanger employing a first evaporative working fluid that circulates in a first closed loop piping system, a first working fluid circulating pump, and a temperature control system to respond to changes in the mass flow and temperature of the flue gas and combustion air streams passing though said high temperature heat exchangers and to adjust the mass flow rate of said first working fluid to maintain a preset pressure and temperature range of said first working fluid;

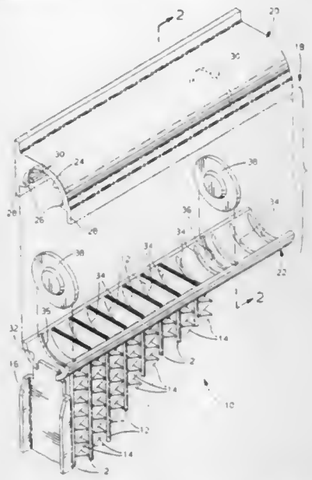
d. said second flue gas medium temperature flue gas cooling evaporator heat exchanger co-operates with said second medium temperature combustion air heating condenser heat exchanger employing a second evaporative working fluid that circulates in a second closed loop piping system, a second working fluid circulating pump and a temperature control system to respond to changes in the mass flow and temperature of the flue gas and combustion air streams passing through said medium temperature heat exchangers and to adjust the mass flow rate of said second working fluid to maintain a preset pressure and temperature range of said second working fluid;

e. said third flue gas (above ambient) low temperature cooling evaporator heat exchanger co-operates with said third low temperature combustion air heating condenser heat exchanger employing a third evaporative working fluid that circulates in a third closed loop piping system, a third working fluid circulating pump, and a temperature control system to respond to changes in the mass flow and temperature of the flue gas and combustion air streams passing through said low temperature heat exchangers and to adjust the mass flow rate of said working fluid to maintain a preset pressure and temperature range of said third working fluid;

f. said fourth (below ambient) low temperature flue gas cooling evaporative heat exchanger employs a forth evaporative working fluid that circulates in a fourth piping system connected to a refrigeration gas compressor, a direct expansion valve and co-operates with a heat pump condenser heat exchanger utilized to preheat the boiler feed and make-up water streams.

g. an intermittent heat exchanger coil washing system utilizing high pressure water or steam spray nozzles.

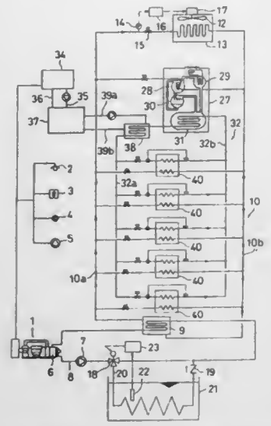
5,607,012
HEAT EXCHANGER
William J. Buchanan, Olcott; Siegfried A. Wasse, Grand Island, and Thomas A. Bowler, Lockport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 12, 1995, Ser. No. 489,508
Int. Cl.[6] F28F *9/02*
U.S. Cl. 165—173 **2 Claims**



1. A heat exchanger (**10**) of the type having a manifold assembly (**18**) comprised of a semi cylindrical tank (**20**) and interfitting semi cylindrical flow tube header (**22**), characterized in that the inner surfaces (**24**, **32**) of said tank (**20**) and tube header (**22**) lie substantially on a common circle, said header (**22**) having longitudinal edges with a thickness substantially equal to the thickness of said header (**22**), said tank (**20**) having a pair of longitudinal flanges (**28**) offset from its inner surface (**24**) along inwardly projecting shelves (**26**) by substantially the thickness of said header (**22**), said flanges (**28**) being bent partially around the outer surface of said header (**22**) to abut the longitudinal edges of said header (**22**) with said shelves and with each of said inner surfaces (**24**, **32**) having a matching groove (**30**, **36**) formed therein lying on a common circle and extending only partially into said respective inner surfaces (**24**, **32**), and with each of said pairs of matching grooves (**30**, **36**) providing a complete and continuous pocket containing a circular separator (**38**) having flat edges that divides said manifold assembly (**18**) into discrete flow pass sections, whereby each of said manifold assemblies (**18**) provides a cylindrical pressure vessel with each of said separators (**38**) being capable of installation in any pair of grooves (**30**, **36**), and in any orientation, while leaving said tank (**20**) and header (**22**) uninterrupted.

5,607,013
COGENERATION SYSTEM
Yoshinori Inoue, Takarazuka; Nozomu Kusumoto, Osaka; Yuji Yoshitake, Nishinomiya, and Tokuyuki Akashi, Ashiya, all of Japan, assignors to Takenaka Corporation, Osaka, Japan
Filed Jun. 2, 1994, Ser. No. 252,785
Claims priority, application Japan, Jan. 27, 1994, 6-026046; Feb. 7, 1994, 6-035504
Int. Cl.[6] F25B *29/00*; **F25D** *7/02*; **F24F** *5/00*
U.S. Cl. 165—207 **18 Claims**

1. A cogeneration system comprising:
private power generating equipment for generating power to be supplied to private electricity consuming equipment;
a source-side first heat exchanger connected to said private power generating equipment to act as a heat source;



an absorption refrigerator disposed above said first source-side heat exchanger, said absorption refrigerator being connected to said source-side first heat exchanger through a first natural circulation piping having, in natural circulation therethrough, a first heat medium subjected to gas-liquid phase changes;

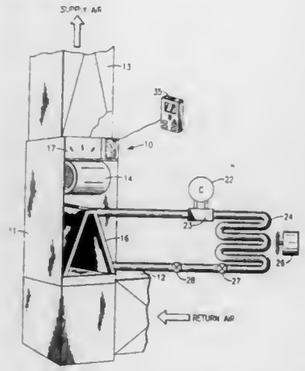
room cooling heat exchangers arranged below said absorption refrigerator to act as user equipment, said room cooling heat exchangers being connected to an evaporator of said absorption refrigerator through a room cooling second natural circulation piping having, in natural circulation therethrough, a second heat medium subjected to gas-liquid phase changes;

a radiator connected to said first natural circulation piping;

surplus heat detecting means for detecting presence of surplus heat and outputting a radiation signal; and

radiation control means operable in response to said radiation signal to switch said radiator to a radiating state.

5,607,014
MULTI-STAGING OF SUPPLEMENTAL HEAT IN CLIMATE CONTROL APPARATUS
William F. Van Ostrand, and Rajendra K. Shah, both of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 25, 1994, Ser. No. 328,807
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—240 **18 Claims**



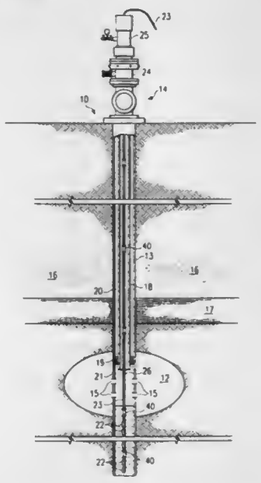
1. An improved heat pump system of the type having a thermostat for generating at least three stages of demand signals, outdoor and indoor heat exchange coils, at least one fan, a compressor, an expansion device, means for reversing the flow of refrigerant for purposes of selecting between heating and cooling modes of operation and a supplemental heater having a plurality of supplemental heating units for further heating an air stream passing over the indoor coil through an air supply plenum to supply air to a comfort space, wherein the improvement comprises:

each of said plurality of supplemental heating units having a different heating capacity;

selecting means for selecting a combination of said supplemental heating units responsive to a demand for heat from the thermostat; and

control means for turning on said supplemental heating units selected by said selecting means whereby a level of heat demanded by the thermostat is provided.

5,607,015
METHOD AND APPARATUS FOR INSTALLING ACOUSTIC SENSORS IN A WELLBORE
Frank E. Bergren, Anchorage; Curtis G. Blount, Wasilla, both of Ak.; Robert J. Withers, Plano, Tex., and Andrew J. Bond, Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Jul. 20, 1995, Ser. No. 504,875
Int. Cl.[6] E21B *47/01*; *19/02*
U.S. Cl. 166—250.01 **9 Claims**



1. A method for installing an array of sensors in a wellbore which includes a wellhead structure, said method comprising:

assembling an array of sensors into a transmission cable;

running said transmission cable into the wellbore;

running a load-bearing cable into said well simultaneously with said transmission cable;

connecting said transmission cable and said load-bearing cable together at spaced intervals along their lengths whereby a substantial portion of the tensile forces in said transmission cable is transferred to said load-bearing cable;

extending the upper end of said transmission cable through said wellhead structure;

securing the upper end of said load-bearing cable to a cable hanger; and

releasably securing said cable hanger in said wellhead structure.

5,607,016

PROCESS AND APPARATUS FOR THE RECOVERY OF HYDROCARBONS FROM A RESERVOIR OF HYDROCARBONS

Roger M. Butler, 7 Bayview Drive S.W., Calgary, Alberta, Canada

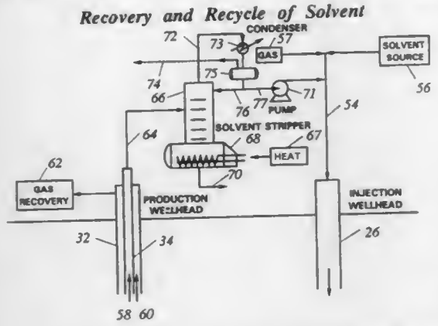
Continuation-in-part of Ser. No. 149,237, Nov. 9, 1993, Pat. No. 5,407,009. This application Apr. 14, 1995, Ser. No. 422,165

Claims priority, application Canada, Oct. 15, 1993, 2108349

Int. Cl.[6] E21B *43/22;43/40*

U.S. Cl. 166—263 **24 Claims**

Recovery and Recycle of Solvent



1. A method for the recovery of hydrocarbons from an underground reservoir of hydrocarbons, the underground reservoir of hydrocarbons being penetrated by an injection well and a production well spaced from the injection well, the method comprising the steps of:

initially injecting a displacement gas into the injection well until a communication path is established between the injection well and the production well;

subsequently injecting the displacement gas along with a liquid vaporizable hydrocarbon solvent into the injection well to mobilize hydrocarbons in the underground reservoir; and

producing mobilized hydrocarbons together with displacement gas and hydrocarbon solvent from the production well.

5,607,017

DISSOLVABLE WELL PLUG

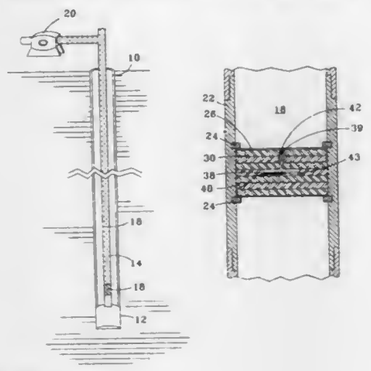
Steve Owens, Katy; Brett Bouldin, Pearland, and Napoleon Arizmendi, Magnolia, all of Tex., assignors to PES, Inc., The Woodlands, Tex.

Filed Jul. 3, 1995, Ser. No. 497,782

Int. Cl.[6] E21B *33/13;36/04*

U.S. Cl. 166—288 **6 Claims**

1. An apparatus for selectively controlling fluid flow in a well, comprising:



a core material that is dissolvable when contacted by the fluid;

a sheath impervious to the fluid for preventing contact between the fluid and said core material, wherein said sheath and core material cooperate to restrict the flow of the fluid through the well; and

a control mechanism including a thermal sensitive material that can be weakened by heat and a heating element for selectively heating said thermal sensitive material so that the fluid breaches said thermal sensitive material and contacts said core material, thereby causing the dissolution of said core material to permit fluid flow through the well.

6. A method for selectively controlling fluid flow in a well, comprising the steps of:

positioning a dissolvable core material in the well to restrict fluid flow through the well, wherein a fluid impermeable sheath prevents the fluid from contacting said core material; and

heating a heat sensitive material so that the fluid pressure breaches said sheath; and

contacting the fluid and said core material to dissolve said core material and to permit fluid flow through the well.

5,607,018

VISCID OIL WELL COMPLETION

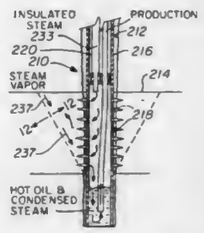
Frank J. Schuh, 5808 Wavertree, Plann, Tex. 75093

Continuation of Ser. No. 985,903, Dec. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 678,725, Apr. 1, 1991, Pat. No. 5,289,881. This application Sep. 29, 1994, Ser. No. 315,181

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[6] E21B *43/24*

U.S. Cl. 166—303 **12 Claims**



1. A system of completion for simultaneous and continuous steam injection and production of heavy oil from a single well comprising:

a well casing disposed in a well bore, the well bore and well casing having a substantially horizontal portion disposed in an earth formation containing heavy oil, and the well casing having perforations in the horizontal portion,

a well head at the top end of the well casing,

a packer sealing the casing between the perforations and the well head,

a production tubing string extending from the well head, sealing with and communicating through the packer,

an injection tubing string extending from the well head, sealing with and extending through the packer and extending through at least a portion of the perforations, the interior of the casing below the packer being void of any barriers such that a continuous annulus is formed between the injection tubing string and the casing throughout the entire length of the portion of the injection tubing string below the packer,

means for injecting steam into the injection string, and

means for controlling the pressure of the steam and therefore the temperature of steam in the formation, comprising a jet pump in the production string, and a power fluid string extending from the well head and operably connected to the jet pump to power the jet pump, and means for controlling the injection rate of steam into the injection string.

5,607,019

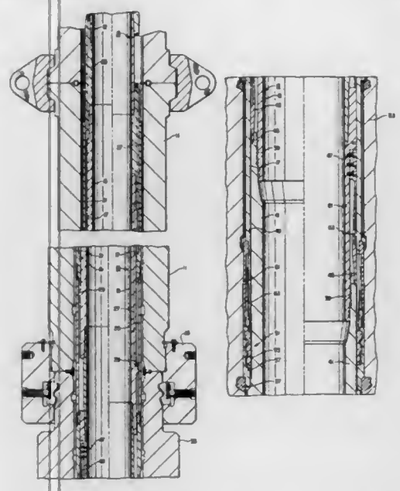
ADJUSTABLE MANDREL HANGER FOR A JACKUP DRILLING RIG

Peter M. Kent, Warthill, Scotland, assignor to Abb Vetco Gray Inc., Houston, Tex.

Continuation-in-part of Ser. No. 419,347, Apr. 10, 1995. This application Sep. 11, 1995, Ser. No. 526,727

Int. Cl.[6] E21B *33/043*

U.S. Cl. 166—344 **24 Claims**



1. In an offshore well having a subsea wellhead assembly which has a mudline profile, a lower casing string extending into the well and having a casing hanger on its upper end which lands in the mudline profile, a lower running tool connected to the casing hanger and lowered on an upper casing string from a drilling rig, a wash port at the casing hanger which is shifted from a closed position to an open position by rotation of the lower running tool to clean an annulus surrounding the upper casing string after cementing the lower casing string, a surface wellhead assembly on the drilling rig having an internal shoulder for supporting the upper casing string in tension, the improvement comprising:

an upper running tool;

a mandrel secured by threads to the upper running tool and connected into the upper casing string;

a locking member carried on the mandrel which lands on the internal shoulder as the upper string is lowered by the upper running tool through the surface wellhead assembly, the locking member having a cocked position which allows further downward movement of the mandrel relative to the locking member after the locking member has landed to land the casing hanger in the profile;

an actuating member carried by the upper running tool which holds the locking member in the cocked position;

a plurality of torque slots formed on an exterior portion of the mandrel;

a plurality of torque fingers mounted to the upper running tool for engaging the torque slots to transmit rotation of the upper running tool to the upper casing string to shift the wash port to the open position;

the actuating member being upwardly movable relative to the mandrel to release the locking member to move to the weight supporting position to support the upper casing string on the internal shoulder after the wash port has been shifted back to the closed position and tension has been applied to the upper casing string; and

the torque fingers being movable from the torque slots in response to the upward movement of the actuating member to allow the upper running tool to be unscrewed from the mandrel after the upper casing string is supported in tension by the locking member.

5,607,020

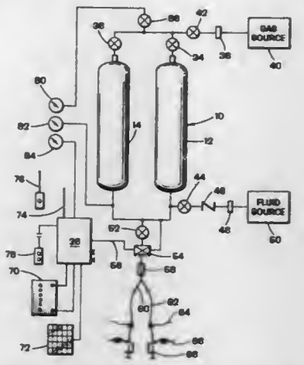
REMOTE CONTROLLED, PORTABLE DELUGE SYSTEMS AND METHOD

Godfred L. Gebhardt, P.O. Box 2465, Spring, Tex. 77389

Filed Jan. 24, 1994, Ser. No. 186,330

Int. Cl.[6] A62C *13/00*

U.S. Cl. 169—48 **15 Claims**



1. A remotely controlled, portable deluge system for providing a protective fog screen between a person and a personnel hazard, the deluge system comprising:

a. an accumulator for storing a fluid and a gas under pressure;

b. a fluid discharge line;

c. a remotely controlled valve coupling the discharge line to the accumulator to deliver fluid from the deluge system;

d. a pressure reducing spool coupled to the fluid discharge line;

e. a plurality of discharge hoses coupled to the spool; and

f. a fixed fog nozzle on each of the plurality of discharge boses.

5,607,021

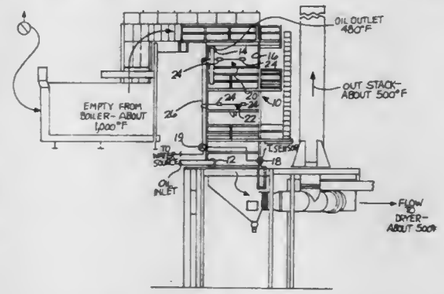
FIRE SUPPRESSION SYSTEM

Ron J. Steele, Spanaway, and John W. Lambdin, Issaquah, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 8, 1995, Ser. No. 488,772

Int. Cl.[6] A62C *3/00*

U.S. Cl. 169—54 **1 Claim**



1. An apparatus comprising:

a heat exchanger having a plurality of thermal heater tubes mounted in a conduit, wherein a flammable liquid flows through the heater tubes, and a hot combustion gas, having an oxygen content that supports combustion and a temperature above the ignition temperature of the flammable liquid, flows through the conduit in a flow path; and

a fire suppression system comprising:

means to detect the presence of a fire in proximity to the heater tubes;

a plurality of cooling liquid spray nozzles mounted within said conduit and directed into the hot gas flow path and generally towards the heater tubes;

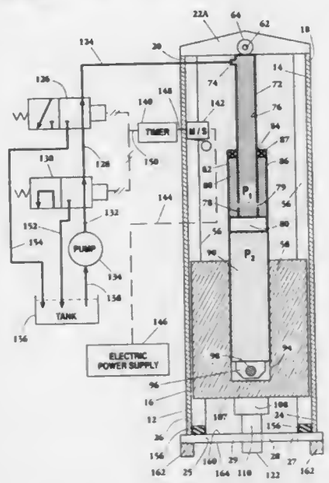
means for activating the liquid spray nozzles upon the detection of a fire and for generating a steam flow rate within the conduit sufficient to thereby suppress the fire and cool the heat exchanger in the vicinity of the thermal heater tubes.

5,607,022

CONCRETE DROP HAMMER ATTACHMENT DEVICE

Leon R. Walker, Rte. 4, Box 231-A, Claremore, Okla. 74017, and Thomas P. Clark, 7407 S. 70th East Ave., Tulsa, Okla. 74133

Filed Mar. 10, 1995, Ser. No. 401,957
Int. Cl.[6] B25D *9/00*
U.S. Cl. 173—10 **8 Claims**



1. A device for attachment to a skid steer to be used for breaking up a surface comprising:

attachment means provided on the device for removably attaching the device to a skid steer,

a weight being movably provided on said device, hydraulic means being attached to said weight, said weight being moved upward to a lifted position when hydraulic fluid is supplied to said hydraulic means and said weight falling downward to a lowered position when hydraulic fluid is removed from said hydraulic means,

a dump valve being hydraulically connected to said hydraulic means such that hydraulic fluid is supplied to said hydraulic means when said dump valve is open and hydraulic fluid is removed from said hydraulic means when said dump valve is closed,

a directional valve being connected to said dump valve such that hydraulic fluid flows to said dump valve only when said directional valve is open,

a switch provided on said device such that said switch is tripped when said weight reaches its lifted position,

a timer being connected to and activated by said switch when said switch is tripped, said timer being connected to said dump valve and to said directional valve so that when the timer is activated the timer causes both the dump valve and the directional valve to momentarily close before the timer resets itself and allows the valves to reopen; and

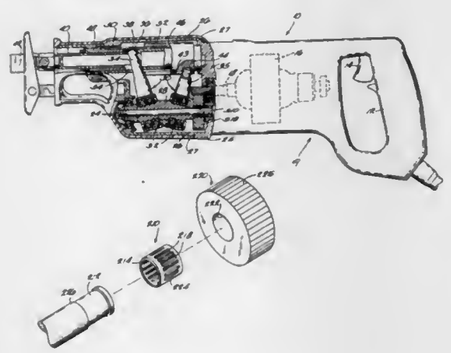
said hydraulic means further comprising a hollow rod being suspended on said device by a first end of said rod, a hollow cylinder movably capturing a second end of said hollow rod, said cylinder being provided with an upper cylinder chamber above said second end, a nipple being provided on said first end in order to provide fluid communication between said dump valve and a rod chamber provided within said hollow rod, and said second end of said hollow rod being provided with at least one perforation in order to provide fluid communication between said rod chamber and said upper cylinder chamber.

5,607,023

IMPACT ABSORPTION MECHANISM FOR POWER TOOLS

Bernhard Palm, Brookfield, Wis., assignor to Milwaukee Electric Tool Corp., Brookfield, Wis.

Continuation-in-part of Ser. No. 354,518, Dec. 13, 1994, abandoned, and Ser. No. 354,560, Dec. 13, 1994, abandoned. This application May 18, 1995, Ser. No. 443,784
Int. Cl.[6] B23Q *5/56;* **F16D** *7/02*
U.S. Cl. 173—178 **7 Claims**



5. A handheld portable tool comprising:

a housing;

a shaft rotatably mounted in the housing;

a motor having a stall torque; and

a clutch drivingly connecting said motor to said shaft, said clutch providing slippage between said motor and said shaft at a torque that is equal to or greater than the stall torque of said motor.

5,607,024

STABILITY ENHANCED DRILL BIT AND CUTTING STRUCTURE HAVING ZONES OF VARYING WEAR RESISTANCE

Carl W. Keith, Spring, and Graham Mensa-Wilmot, Houston, both of Tex., assignors to Smith International, Inc., Houston, Tex.

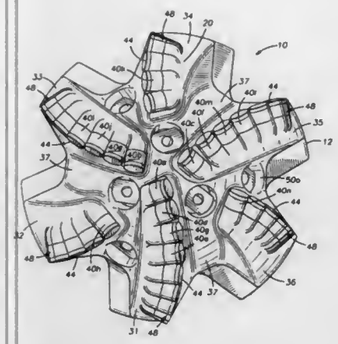
Filed Mar. 7, 1995, Ser. No. 400,147
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—431 **36 Claims**

1. A cutting structure for a drill bit comprising:

a bit face;

a first cutter element on said bit face having a first cutting face for cutting a kerf in formation material;

a second cutter element on said bit face having a second cutting face for cutting a kerf in formation material; and



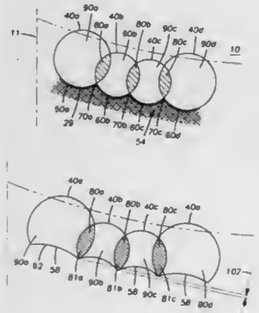
wherein said first cutting face has an abrasion resistance that is greater than the abrasion resistance of said second cutting face.

5,607,025

DRILL BIT AND CUTTING STRUCTURE HAVING ENHANCED PLACEMENT AND SIZING OF CUTTERS FOR IMPROVED BIT STABILIZATION

Graham Mensa-Wilmot, Houston, and Carl W. Keith, Spring, both of Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Jun. 5, 1995, Ser. No. 465,061
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—431 **24 Claims**



1. A drill bit for drilling through formation material when said bit is rotated about its axis, said drill bit comprising:

a bit body including a bit face having a plurality of radially disposed blades angularly spaced from one another;

cutter elements disposed in rows on said blades and having cutting faces oriented so as to cut kerfs in the formation material when the bit is rotated about its axis, said cutter elements including a first plurality with cutting faces having a curved cutting edge of a first curvature, a second plurality with cutting faces having a curved cutting edge of a second curvature that is greater than said first curvature, and a third plurality with cutting faces having a curved cutting edge of a third curvature that is less than said second curvature, at least one of said blades having a row of cutter elements that includes cutter elements from at least two of said first, second and third pluralities;

wherein said cutter elements are arranged in sets of cutter elements on said bit face, each of said cutter elements of said sets having a cutting profile that, in rotated profile, partially overlaps with the cutting profile of at least one other cutter element of said same set;

wherein a first set includes a first cutter element of said first plurality mounted on a first blade at a first radial position relative to the bit axis, a second cutter element of said second plurality mounted on a second blade at a second radial position relative to the bit axis such that the cutting profile of said second cutter element partially overlaps in rotated profile with the cutting profile of said first cutter element, and a third cutter element of said third plurality mounted at a third radial position relative to the bit axis;

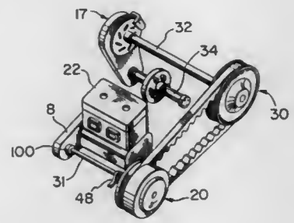
wherein said second radial position is between said first and said third radial positions.

5,607,026

SNOWMOBILE TRANSMISSION JACKSHAFT

Roger Rioux; Gilles Pesant, both of Magog, Canada; Willy Bostelmann, Gunskirchen, Austria; Jean-Guy Talbot, Valcourt, Canada; Berthold Fecteau; Raymond Cote, both of Richmond, Canada, and Yvon Gagne, Valcourt, Canada, assignors to Bombardier Inc., Canada

Filed Apr. 21, 1995, Ser. No. 426,918
Int. Cl.[6] B62M *27/02*
U.S. Cl. 180—190 **11 Claims**



1. A snowmobile comprising:

a frame having a forward end supported on steerable ski means and a rearward end supported on an endless drive track;

a drive train;

an engine mounted in said frame and connected to said drive track via said drive train for delivering propulsion power to said drive track, said engine being connected to said frame through vibration absorbing mountings for reducing the transmission of engine vibration effects to said frame,

said drive train including a transversely arranged jackshaft operatively connected at one end to said engine and coupled at the opposite end to a variable ratio belt drive transmission comprising a drive belt looped around a driving pulley and a driven pulley, and a speed responsive mechanism operatively connected to said driving pulley and adapted to effect a progressive variation in the drive ratio of said transmission as the speed of rotation of the driving pulley and the output torque of the driven pulley are altered; and

a bearing carried by said frame for rotatably supporting said jackshaft, said driving pulley being fixed to rotate with said jackshaft.

5,607,027

HYDRAULIC DRIVE SYSTEM FOR A VEHICLE

Edwin E. Puett, Jr., Stuart, Fla., assignor to Anser, Inc., Stuart, Fla.

Filed Apr. 28, 1995, Ser. No. 430,243
Int. Cl.[6] B60K *17/356*
U.S. Cl. 180—242 **31 Claims**

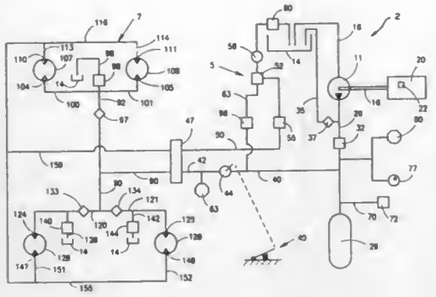
1. A fluid drive system in a vehicle comprising:

a prime mover including a rotatable driveshaft;

an adjustable vehicle accelerator control member;

reservoir means for maintaining a supply of working fluid;

a working circuit including:



a plurality of fluid motors, each of said motors being mechanically coupled to a predetermined wheel of the vehicle and including first and second fluid ports;

first working conduit means for fluidly interconnecting the first fluid port of each of said motors, said first working conduit means including a main working pressure line and at least first and second branch lines stemming from said main pressure line with each of said at least first and second branch lines fluidly interconnecting said main working pressure line with at least one of said plurality of motors;

a plurality of motor control valves, each of said motor control valves being arranged in a respective one of said at least first and second branch lines, interposed between a respective one of said motors and said main working pressure line, and being shiftable between a working position establishing fluid communication between the first fluid port of a respective one of said motors and said main working pressure line and a isolating position wherein fluid communication between the first fluid port of said respective one of said motors and said main working pressure line is interrupted;

second working conduit means for fluidly interconnecting the second fluid port of each of said motors, said second working conduit means terminating, within said working circuit, in a common, auxiliary working pressure line;

a pressurizing circuit including:

a fixed displacement pump drivingly coupled to the driveshaft of said prime mover, said fixed displacement pump including an inlet in fluid communication with said reservoir means and an outlet;

an accumulator in fluid communication with the outlet of said fixed displacement pump;

a main pressure supply line in fluid communication with said accumulator, said main pressure supply line including a terminal portion located downstream of said accumulator;

an adjustable flow control valve located in said main pressure supply line between said accumulator and the terminal portion of said main pressure supply line;

means for controlling the position of said flow control valve based on the position of said vehicle accelerator control member;

directional flow control valve means interconnected between said main pressure supply line, said main working pressure line, said auxiliary working pressure line and said reservoir means for controlling the flow of working fluid between said working and pressurizing circuits;

means for shifting each of said plurality of motor control valves between said working and isolating positions in order to control the number of driven vehicle wheels; and

means for regulating an operating speed of said power source based on a sensed pressure in said pressurizing circuit.

5,607,028

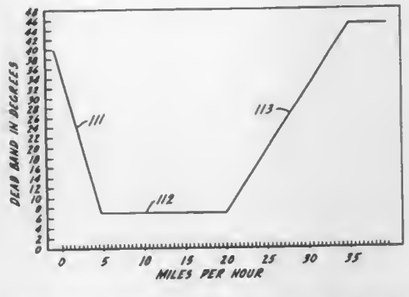
ALL-WHEEL STEERING SYSTEM

Eric E. Braun, 1152 Nuthatch La., Neenah, Wis. 54956; Duane R. Pillar, 1733 Iowa St., Oshkosh, Wis. 54901, and Curtis Halgrimson, 912 9th Ave. SE., Valley City, N. Dak. 58072

Continuation-in-part of Ser. No. 351,962, Dec. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 159,025, Nov. 29, 1993, Pat. No. 5,417,299. This application May 19, 1995, Ser. No. 445,117

Int. Cl.[6] B62D *1/00*

U.S. Cl. 180—408 **34 Claims**



1. An all wheel steering system for a vehicle having front wheels with a front wheel angle, rear wheels with a rear wheel angle, and a steering wheel, the front wheel angle being determined by an operator positioning the steering wheel, the rear wheel angle being determined by the system, the system comprising:

means for sensing a front wheel angle of at least one front wheel,

means for communicating the front wheel angle to a controller means, the controller means including a memory containing at least one desired rear wheel angle for each front wheel angle, the desired rear wheel angle being dependant upon the front wheel angle, the desired rear wheel angle having an absolute value greater than 0° when the front wheel angle exceeds a dead band value, the dead band value being a variable ranging from 0° for slow speeds not exceeding 10 mph to 30° for high speeds exceeding 35 mph, the desired rear wheel angle is 0° when the front wheel angle does not exceed the dead band value, the controller means retrieving a desired rear wheel angle based on the front wheel angle from the memory of the controller means,

means for sensing an actual rear wheel angle of at least one rear wheel,

means for communicating the actual rear wheel angle to the controller means,

the controller means comparing the actual rear wheel angle with the desired rear wheel angle, the controller means sending a signal to alter the actual rear wheel angle to a means for controlling the actual rear wheel angle if the actual rear wheel angle differs from the desired rear wheel angle by an amount that is greater than a desired amount.

5,607,029

SAFETY DEVICE

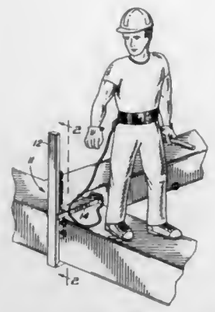
Doyle K. Beckham, 301 E. Fort Lowell Rd., Tucson, Ariz. 85705

Filed Dec. 26, 1995, Ser. No. 528,806

Int. Cl.[6] A62B *35/00*

U.S. Cl. 182—3 **2 Claims**

1. A device for anchoring a workman safety line to a beam in a construction project, said device comprising an upright, elongated post member, said post member having a plurality of pin receiving openings spaced equidistant along its length, a first jaw secured to a lower region of said post member, a second jaw positioned above said first jaw and adapted to be adjustably moved up and down the post member, said second jaw having an inverted, U-shape configuration with two depending legs, one of the legs of the second jaw having a pair of openings therein spaced one above the other the same distance as the spacing between the openings in said post member, first and second pins adapted to be inserted into the openings in the leg of said jaw and through two openings in said post members for stationarily positioning the second jaw on said post member, the construction being such that with a pin removed from the lower opening in said jaw leg said second jaw can be tilted upwardly about the pin in the upper opening in the jaw leg to facilitate installation of the device on a beam, and means for attaching a safety line to the device.



5,607,030

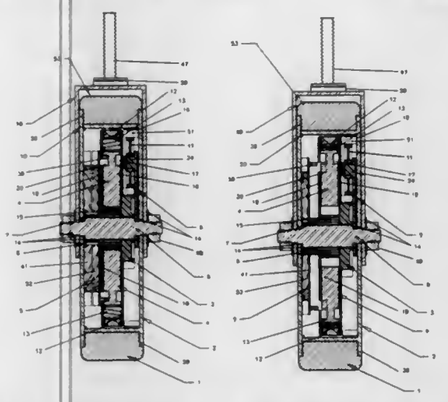
CENTRIFUGAL SHOPPING CART BRAKE

Daniel P. Swift, 1918 Curtis, Laramie, Wyo. 82070; Thomas R. LaCroix, 725 Rood Ave., Grand Jct., Colo. 81501, and William E. Bullock, P.O. Box 1328, Glenwood Springs, Colo. 81602

Filed Dec. 15, 1995, Ser. No. 573,191

Int. Cl.[6] B60B *33/00*

U.S. Cl. 188—1.12 **3 Claims**



3. An automatic wheel brake assembly for a shopping cart comprising;

a. a wheel assembly composed of at least two parts and containing a brake assembly in a space formed therebetween; said wheel assembly being rotatably mounted upon a fixed axle;

b. an interlocking component rotatably fixed to said axle;

c. a friction means surrounding said axle and surrounded by and rotationally fixed to said interlocking component to frictionally connect said interlocking component to said axle;

d. a weighted assembly fixed to the inside surface of one of said parts of said wheel assembly and comprising a movable weight which moves between a free or unlocked position to a locked position upon excessive rotation of said wheel assembly; said weighted assembly further comprising a brake actuation means, said actuation means engaging said interlocking component when said movable weight moves to said locked position thereby causing said friction means to frictionally engage said axle and brake said wheel assembly.

5,607,031

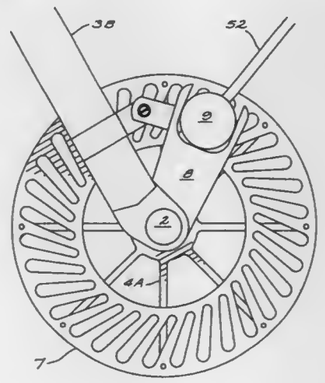
BICYCLE BRAKE WITH DETACHABLE SLAVE CYLINDER

Anthony S. Hollars, 2700 E. Bilby Rd., Tucson, Ariz. 85706

Filed Dec. 15, 1994, Ser. No. 356,144

Int. Cl.[6] B62L *1/00;* **F16D** *65/12*

U.S. Cl. 188—26 **22 Claims**



1. An improved bicycle comprising:

a) a frame member;

b) a fork assembly attached to said frame member;

c) a rear wheel assembly rotatably attached to said frame member;

d) a means for driving said rear wheel assembly using operator-supplied energy; and,

e) a braking system including,

1) a wheel hub rotatably attached to an axle extending between said fork assembly, said wheel hub having a center section substantially circular in shape with a first set of spokes extending therefrom, said spokes spaced equidistant from each other,

2) a second set of spokes extending from said first set of spokes, said second set of spokes supporting a tire rim for the mounting of a tire,

3) a rotor being ring-shaped and fixably attached to a first side of said wheel hub proximal to said second set of spokes and along a peripheral portion of said rotor,

4) a caliper mounted to said fork and said axle, said caliper having moveable pads for controllably contacting the portion of said rotor closest to said rotor's axis of rotation,

5) a circular ring fixably attached to a second side of said wheel hub,

6) a hand-operated lever hydraulically connected to said caliper and wherein said pads of said caliper are activated by operator-supplied hydraulic pressure, and,

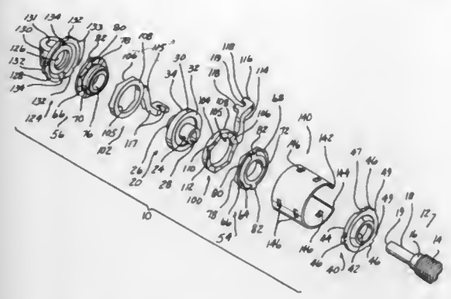
7) a slave cylinder connected to said hand-operated lever and being responsive to operator pressure for causing contact between said caliper and said rotor, and wherein said caliper includes means for detaching said slave cylinder therefrom while maintaining a connection between said hand-operated lever and said slave cylinder.

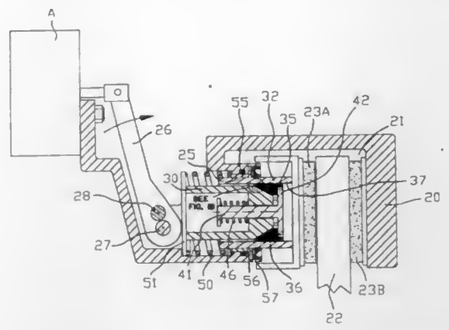
5,607,032

ROTATABLE SHAFT LOCK APPARATUS

Richard W. A. Rees, Auburn Hills, Mich., assignor to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 483,738
Int. Cl.[6] B65H *59/10*
U.S. Cl. 188—67 **12 Claims**





1. A rotatable shaft lock apparatus comprising:
a rotatable shaft;
lock means, mounted on the shaft, for locking and unlocking the shaft for rotation, the lock means including:
a lock member fixedly mounted on the shaft and having first and second lock surfaces;
first and second movable members, each having a lock surface engagable with one of the first and second lock surfaces on the lock member;
first and second means for moving the first and second movable members into and out of engagement with the first and second lock surfaces on the lock member, the first and second moving means each having an outer member with an outer race having a thrust face and an inner member with an inner race having a thrust face, the inner member axially movable relative to the outer member, bearings interposed between the inner race of the inner member and the outer race of the outer member;
first and second means, engaged with the first and second moving means, for stationarily fixing the outer members of the first and second moving means against rotation; and
means for mounting one of the first and second stationary fixing means to a support.

5,607,033

DISC BRAKE CALIPER HAVING A LINEAR SLACK ADJUSTER ASSEMBLY

Mark H. Naedler, San Antonio, and Victor E. Teinert, Friendswood, both of Tex., assignors to Mark + Technologies, Inc., Montgomery, Tex.

Filed Nov. 2, 1995, Ser. No. 552,005
Int. Cl.[6] F16D *55/02*
U.S. Cl. 188—71.8 **20 Claims**

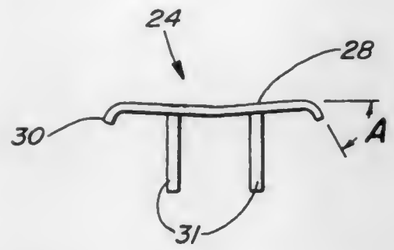
1. A disc brake caliper assembly, comprising
a caliper housing,
a disc mounted within the housing,
an outer pad between a wall of the housing and one side of the disc,
an inner pad on the other side of the disc, and
a non-rotating, linearly expandable and contractible linkage, including
inner and outer members mounted for coaxial longitudinal reciprocation without rotation with respect to one another,
a first of the members having surfaces which extend at an acute angle with respect to an axis and opposite surfaces of the second member which extends parallel to such axis,
circumferentially spaced wedge means disposed in the space between the angled and parallel surfaces on the members,
means acting between the first member and wedge means to yieldably urge the wedge means in a first longitudinal direction toward the angled surfaces and thus into a wedging relation between the members to restrict motion of the second member in the first direction relatively to the first member, and
means operable during a brake cycle for moving the second member longitudinally in a second longitudinal direction opposite to the first longitudinal direction and thus relatively to the first member, whereby the linkage is caused to expand in order to adjust for pad wear.

5,607,034

CAM BRAKE SHOE WITH FORMED EDGES

David J. Edwards, Shelby; Donn C. Knight, Troy, and Jonathan L. Wemple, Rochester Hills, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1995, Ser. No. 399,051
Int. Cl.[6] F16D *69/00*
U.S. Cl. 188—250 A **18 Claims**



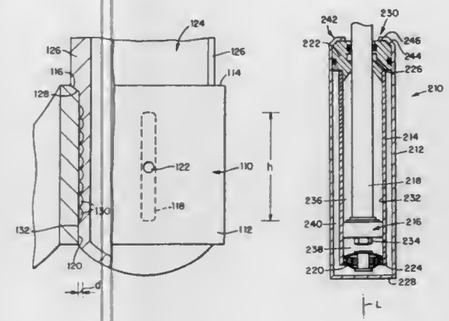
1. A brake mechanism comprising:
a brake shoe comprising two webs extending radially inwardly, and a brake table extending laterally and circumferentially to connect said two webs, said brake table extending along an axis of rotation of a wheel that is to be stopped for a distance described as a lateral distance, said brake table having lateral edges thereon wherein the outermost lateral edges of said brake table are bent relative to a central portion of said brake table at a bend angle measured relative to the central portion of the brake table from an innermost end of said edge adjacent said central portion to a laterally outermost end of said edge, said bend angle being less than 90 degrees and greater than 45 degrees;
an actuation structure for actuating said brake shoe; and
linings mounted on said brake table, said actuation structure moving said brake shoe to bring said linings into contact with the wheel to be stopped.

5,607,035

HYDRAULIC DAMPER

Gary C. Fulks, Spring Valley, Ohio; Nicholas Jones, La Morlaye, France; Manuel T. Barbosa, Cadiz, Spain; Francisco J. S. Jimenez, Cadiz, Spain; Antonio P. De La Lastra Arjona, Cadiz, Spain; Miguel C. Garcia, Cadiz, Spain, and Jose I. M. Gorostidi, Cadiz, Spain, assignors to Delphi France Automotive Systems, Gennevilliers, France, and Delphi Automotive Systems Espana S.A., Cadiz, Spain

Filed Oct. 17, 1994, Ser. No. 324,467
Int. Cl.[6] F16F *9/00*
U.S. Cl. 188—322.19 **2 Claims**



1. A hydraulic damper for a motor vehicle comprising a longitudinally extending tube and a separately formed steering knuckle secured to the tube, wherein the tube is formed from extruded aluminum or aluminum alloy, and the steering knuckle is formed from aluminum or aluminum alloy wherein the mounting means comprises a tubular portion which overlies and is secured to a portion of the extruded tube wherein the tubular portion is secured to the extruded tube through at least a first groove formed in the tubular portion of the mounting means and at least a second groove formed in the portion of the extruded tube that the tubular portion overlies wherein said at least a first groove registers with said at least a second groove.
wherein:
the tubular portion of the mounting means includes a hole cut through the tubular portion and opening into said at least a first groove to allow adhesive under pressure to be injected into said hole such that the adhesive substantially fills both said at least a first groove and said at least a second groove to secure the tube to the tubular portion of the mounting means.

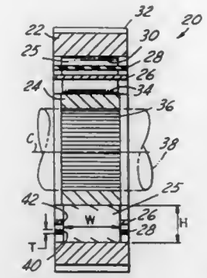
5,607,036

ONE-WAY CLUTCH WITH STRETCHABLE SPRING MEMBER

Daniel P. Costin, Naperville, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights., Mich.

Filed Mar. 3, 1995, Ser. No. 398,283
Int. Cl.[6] F16D *41/07*
U.S. Cl. 192—45.1 **37 Claims**

1. A one-way clutch assembly comprising:
a driving member and a driven member relatively rotatable in driving and overrunning direction with respect to each other;
said driving member and said driven member disposed concentrically about an axis in spaced relation to each other defining an annular space therebetween;
an annular rigid cage member positioned in said annular space and having a first plurality of spaced windows;
an annular spring member positioned in said annular space and having a second plurality of spaced windows;
said annular spring member being made from a thin stretchable elastomeric member; and
a plurality of sprag members, each of said sprag members tiltably disposed in one of said first plurality of spaced windows and also in a respective one of said second plurality of spaced windows;
said sprag members being hour-glass in shape and having a narrow waist portion, two larger engaging end portions, and angled surfaces joining said end portions and waist portion;
said windows in said spring member each having a rectangular cross-sectional shape and each having a circumferential width dimension greater than the corresponding circumferential width of said sprag waist portion and less than the corresponding circumferential width of said sprag end portions;
wherein said sprag members are held in position in the axial, circumferential and radial directions by said spring member and are fully phased in said annular space.

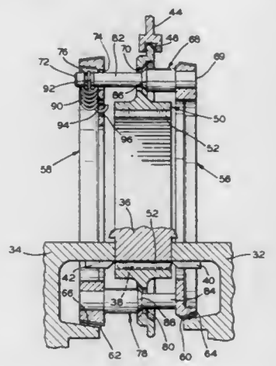


5,607,037

SPRINGS FOR VEHICLE TRANSMISSION SYNCHRONIZER

James A. Yarnell, Temperance, Mich.; William R. Lefevre, Perrysburg, and Brian L. Rang, Swanton, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Nov. 30, 1995, Ser. No. 565,254
Int. Cl.[6] F16D *23/06*
U.S. Cl. 192—53.331 **20 Claims**



1. A transmission gear synchronizer apparatus comprising:
first and second friction races mounted for movement coaxially with each other in a spaced apart relationship, the friction races being mounted for coaxial movement into and out of engagement with friction surfaces;
an annular shiftable clutch collar positioned between the two friction races, the clutch collar being mounted for coaxial movement with respect to the friction races to enable engagement of the clutch collar with transmission gears, the clutch collar having at least one orifice through which a pin can be extended;

a first pin extending through the clutch collar orifice, and secured at one end to the first friction race, with the other, distal end of the first pin extending toward the second friction race, where alignment of the first pin within the clutch collar orifice is required to enable the clutch collar to move axially with respect to the friction races; and

a spring biasing the first pin out of alignmment with the clutch collar orifice so that alignment of the first pin within the clutch collar orifice requires force to overcome the bias of the spring, where one end of the spring is connected to the distal end of the pin and the other end of the spring is connected to the second friction race.

5,607,038

HYDRAULIC CONTROL VALVE ASSEMBLY

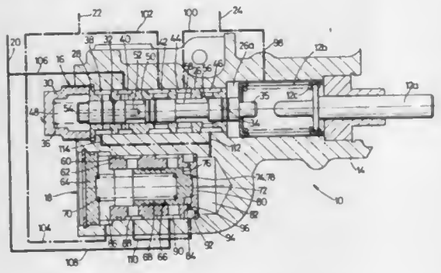
Patrick Lorriette, Jaux, France, assignor to Massey Ferguson S.A., Beauvais, France

Filed Mar. 21, 1995, Ser. No. 407,863

Claims priority, application United Kingdom, Mar. 29, 1994, 9406193

Int. Cl.[6] F16D *25/12*

U.S. Cl. 192—85 R **9 Claims**



1. A hydraulic control valve assembly comprising a cut-off valve, a control valve and means for connecting said assembly to at least a pressurised fluid supply line, a hydraulic apparatus line and a pressure fluid return line, said valve assembly being constructed and arranged such that:

(i) said cut-off valve is bistable between a primed and a closed position and said cut-off valve is arranged to permit flow of pressurised fluid from said supply line to said hydraulic apparatus line when said cut-off valve is in said primed position and said cut-off valve is arranged to cut-off said flow when it is in said closed position; and

(ii) said control valve is arranged to control in a continuously variable manner the pressure of fluid supplied from said valve assembly to said hydraulic apparatus line,

and wherein means are provided to:

(a) initiate priming of said cut-off valve;

(b) complete priming of said cut-off valve provided fluid in said supply line is at a pressure above a first predetermined pressure, and

(c) maintain priming of said cut-off valve provided fluid in said supply line remains at a pressure above a second predetermined pressure.

5,607,039

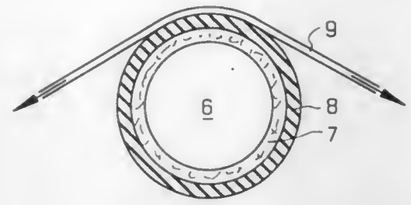
VARIABLE COMPRESSIBILITY ROLLER

Joseph L. Byers, Inman, and Roger D. Meadows, Moore, both of S.C., assignors to Reeves International, Spartanburg, S.C.

Filed Jan. 16, 1996, Ser. No. 587,077

Int. Cl.[6] B65G *13/00*

U.S. Cl. 193—37 **20 Claims**



1. A web conveying article comprising:

a first layer, having an inner and an outer surface, with the outer surface being substantially smooth so that the article has a substantially constant outer diameter;

a second layer, having an outer and an inner surface, the outer surface being an inverse of the inner surface of the first layer, with one of the layers being a compressible layer of a thermoplastic or elastomeric material which contains voids therein, which layer is thicker at the ends of the web conveying article than in the center; and

a rotatable support, wherein each of the layers is in concentric relation about the rotatable support.

5,607,040

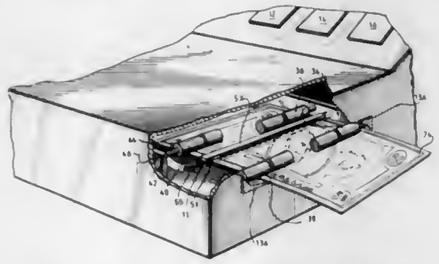
CURRENCY COUNTER-FEIT DETECTION DEVICE

Trevor S. Ives Mathurin, Sr., 865 Planders Ave., Uniondale, N.Y. 11553

Continuation of Ser. No. 218,247, Mar. 28, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,073

Int. Cl.[6] G07D *7/00*

U.S. Cl. 194—207 **13 Claims**



1. A counterfeit currency detection system, comprising:

a) a housing;

b) at least one currency inlet slot;

c) at least one currency exiting slot;

d) a plurality of rollers directly connected to a mechanical driving means to turn said rollers functioning to draw said currency through said counterfeit currency detection system;

e) a supporting surface within said housing for supporting the currency during a scanning procedure;

f) a plurality of optical scanning devices having at least one optical scanning device located on the bottom functioning to scan the bottom plate number which is located on the bottom of currency and at least one optical scanning device located on the top functioning to scan serial number in upper right hand corner, front plate number, left quadrant number, serial number in lower, and left hand corner located on the top of currency, said optical scanning device including an optical filter and a barrier for obstructing light from a line of sight through said optical scanning device, said optical filter and said barrier being positioned so that light travelling to said supporting surface for said currency to be examined is substantially parallel to a line of scanning through said optical scanning device in order to reduce an opportunity for shadows produced by microscopic projections above a surface of the currency being examined;

g) at least primary one numeric keypad with corresponding alphabets printed thereon numeric key pads;

h) at least one secondary keypad having functional keys such as numeric, cancel, keypad, clear, enter and similar commands;

i) at least one indicator light functioning to visually alert a person scanning said currency if said currency is valid or counterfeit;

j) means comparing the numbers scanned on the currency with numbers in a data bank containing current information about counterfeit currency to determine if the currency being scanned is counterfeit; and

k) said housing including indicator lights having at least one yellow indicator light which illuminates while scanning is taking place, at least one green indicator light which illuminates if currency is valid, and at least one red indicator light which illuminates if currency is counterfeit.

5,607,041

Patent Not Issued For This Number

5,607,042

INTEROPERATIONAL STORE

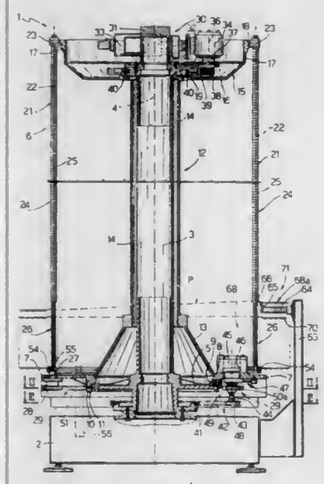
Mario Spatafora, Bologna, Italy, assignor to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Dec. 15, 1994, Ser. No. 356,874

Claims priority, application Italy, Dec. 17, 1993, BO93A0509

Int. Cl.[6] B65G *37/00*

U.S. Cl. 198—347.3 **14 Claims**



1. An interoperational store (1) comprising:

supporting means for supporting products, the supporting means comprising a helical strip (**70**) having a variable number of turns (**69**) about a central axis (**4**);

guide means (**67**) connected to the helical strip (**70**) for guiding the turns (**69**) of the helical strip (**70**) along helical paths (P) with spacings (S) between successive ones of the turns;

drive means (**30**) for rotating the helical strip (**70**) about the central axis (**4**) to vary the number of the turns (**69**) along the helical paths (P); and

adjusting means (**48**) associated with the guide means (**67**) for adjusting the spacings (S) over a given range.

5,607,043

DEVICE FOR ALIGNING ROD MEMBERS

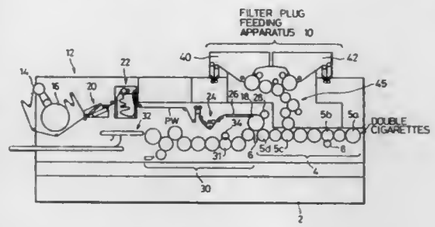
Takayuki Irikura, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,446

Claims priority, application Japan, Mar. 31, 1994, 6-063710

Int. Cl.[6] B65G *47/26*

U.S. Cl. 198—438 **7 Claims**



3. A device for aligning rod members, comprising:

a drum rotating in one direction, said drum being provided with feeding grooves, which are arranged at equal intervals on an outer peripheral surface of said drum, each of the feeding grooves receiving at least a pair of rod members so that the rod members in the feeding groove are fed as said drum rotates and the rod members of a pair being located adjacently on a same axis in the feeding groove;

moving means for pneumatically moving the rod members in the feeding groove, the moving means comprising,

cover means for covering part of the outer peripheral surface of said drum, the cover means having a seal member extending along the outer peripheral surface of said drum and forming the feeding groove into a tunnel-shaped passage during the time when the feeding groove passes through the seal member as said drum rotates, and

suction means for sucking the air in the tunnel-shaped passage toward opposite ends of the feeding groove, whereby the rod members in the feeding groove are moved with the aid of the air current so that the paired rod members therein are moved in the feeding groove toward opposite ends of the feeding groove; and

stopper means for stopping the movement of the rod members at a predetermined position in the feeding groove, said stopper means having a stopper in each of the feeding grooves, the stopper means includes first and second stoppers for the pair of the rod members, the first and second stoppers having a stopper surface located on a same circumference of said drum, respectively,

the cover means further includes separating means for separating the paired rod members in the feeding groove before the paired rod members are moved with aid of the air current.

5,607,044

INDEXING AND FEEDING SYSTEMS FOR APPARATUS FOR GELATIN COATING TABLETS

Norbert I. Berta, Devon, Pa., assignor to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 387,973, Feb. 10, 1995, Pat. No. 5,538,125, which is a continuation of Ser. No. 3,334, Jan. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 609,482, Nov. 5, 1990, Pat. No. 5,228,916. This application May 30, 1995, Ser. No. 453,846

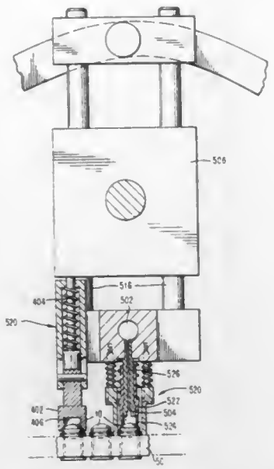
Int. Cl.[6] B65G *47/34*

U.S. Cl. 198—468.4 **8 Claims**

1. A feeder device for inserting a plurality of a product into a holding fixture during processing comprising:

(a) hopper means for containing a plurality of said products;

(b) feeder tube guide means connected to said hopper means for retaining and orienting said product for transfer to said holding fixture;



(c) transfer means for capturing said product from said feeder tube guide means and disposing said product in said holding fixture, said transfer means comprising:

(i) vacuum source means;

(ii) one or more vacuum pick-up heads connected to said vacuum source means; and

(iii) actuator means for positioning said one or more vacuum pick-up means to capture and remove one or more products from said feeder tube guide means and for releasing and disposing said captured products into said holding fixture; and

(d) product setting means for properly seating said product disposed in individual product holders in said holding fixture.

5,607,045

TRANSPORT STAR UNIT FOR CONTAINERS

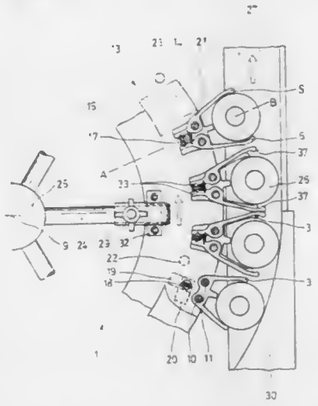
E. H. Hermann Kronseder, Regensburger Strabe 42, D-93086, Worth/Donau, Germany

Filed Jan. 23, 1996, Ser. No. 590,453

Claims priority, application Germany, Feb. 7, 1995, 295 01 897.6; Sep. 5, 1995, 295 14 099.2; Sep. 30, 1995, 195 36 692.1

Int. Cl.[6] B65G *47/86*

U.S. Cl. 198—476.4 **20 Claims**



1. Transport star for containers comprising a rotatable basic body and several gripping tongs mounted on the circumference of said basic body, formed in each case by two pivoting clamps, whereby said clamps are designed as double-levers with radially outward-facing gripping arms and radially inward-facing counterarms engaged by a control device with a snap body, mounted adjustably on said basic body, forcing apart said counterarms in the closed position, said control device (**16**) having at least one lifter (**17**, **44**, **45**) mounted in said basic body (**13**), so that it can be rotated, said lifter sitting between said counterarms of associated said clamps (**5**, **6**; **7**, **8**; **46**, **47**) and forcing apart said two adjacent counterarms in at least one angular or closed position and allowing said counterarms to approach one another in at least one other angular or open position.

5,607,046

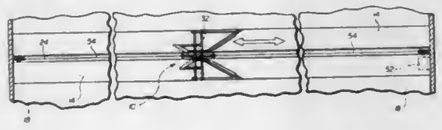
MANURE REMOVAL SYSTEM AND METHOD

Michael E. Krehl, Corunna, and Larry Dowty, Milford, both of Ind., assignors to CTB, Inc., Milford, Ind.

Continuation-in-part of Ser. No. 202,358, Feb. 28, 1994, Pat. No. 5,450,815. This application Apr. 3, 1995, Ser. No. 415,546

Int. Cl.[6] B65G *25/04*

U.S. Cl. 198—741 **8 Claims**



1. A method of automatically scraping and clearing a collection board having an extended length for accumulating deposits and debris comprising the steps of:

a. advancing a scraper assembly along the length of said collection board for a first predetermined time interval during which deposits and debris are scraped and removed;

b. momentarily interrupting the advancement of said scraper assembly along the collection board;

c. reversing the direction of said scraper assembly along the collection board for a shorter, second predetermined time interval during which the scraper assembly is cleaned of any deposits and debris that has adhered thereto, and;

d. repeating said sequence of steps to define a reciprocating progressive movement of the scraper assembly along the extended collection board.

5,607,047

CIRCUIT BREAKER HOUSING

Edward Leet, Boksburg; Manuel F. V. Ribeiro, Germiston, and Carlos A. Ferreira, Boksburg, all of South Africa, assignors to Circuit Breaker Industries Limited, South Africa

Continuation of Ser. No. 235,385, Apr. 28, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 590,000

Claims priority, application South Africa, Apr. 28, 1993, 93/2988

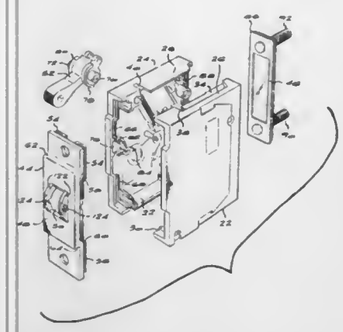
Int. Cl.[6] H01H *23/04*

U.S. Cl. 200—303 **28 Claims**

1. A modular housing for a circuit breaker, the housing having opposed side surfaces, opposed top and bottom surfaces, and opposed front and rear surfaces, and comprising:

first and second opposed side panels adapted to engage one another at respective opposed upper and lower edges and to define an enclosure for a circuit breaker mechanism with openings at the front and rear thereof, so that the side panels define the opposed side surfaces of the housing and the engaged upper and lower edges define the top and bottom surfaces;

a modular front panel selected from a plurality of different front panels and securable in the opening at the front of the enclosure to define at least a major portion of the front surface of the housing; and



a modular rear panel selected from a plurality of different rear panels and securable in the opening at the rear of the enclosure to define at least a major portion of the rear surface of the housing.

5,607,048

LIGHT ILLUMINATION MEMBRANE SWITCH WITH REDUCED SIZE AND IMPROVED LIGHT ILLUMINATION

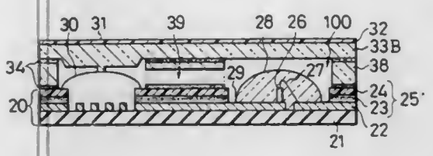
Masahiro Kaizu, and Atsuhiro Horii, both of Chiba-ken, Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 995,896, Dec. 23, 1992, Pat. No. 5,471,023. This application Dec. 5, 1994, Ser. No. 353,274

Claims priority, application Japan, Jan. 22, 1992, P4-9508; Jan. 24, 1992, P4-11353; Feb. 10, 1992, P4-24150; Jun. 11, 1992, P4-152492

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—314 **12 Claims**



1. A light illumination membrane switch, comprising:

a printed circuit board having an electrode circuit member;

a key section having a key top portion, the key section being provided over the electrode circuit member to form a switch unit by making an electrical contact with the electrode circuit member in response to a depression of the key top portion;

a light source section provided on the printed circuit board in a vicinity of the section, including an LED bare chip element for emitting light to illuminate the key section, and a translucent diffuser resin means covering over the LED bare chip element for diffusing and transmitting the light emitted from the LED bare chip element; and

translucent diffuser means provided around the key section and the light source section for diffusing and transmitting the light emitted from the light source section, the translucent diffuser means having a cavity region for enabling the light emitted from the light source section to directly contact the key section without passing through a portion of the translucent diffuser means.

5,607,049

ROCKING SWITCH

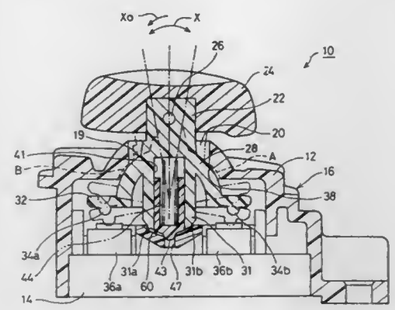
Kazuya Shioda, Niwa-gun, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Nov. 15, 1995, Ser. No. 559,422

Claims priority, application Japan, Nov. 18, 1994, 6-309815

Int. Cl.[6] H01H *21/24*

U.S. Cl. 200—557 **15 Claims**



1. A rocking switch for rocking forward from a neutral position thereof to a first rocking position and back from said neutral position to a second rocking position and outputting first and second switching signals at said first and said second rocking positions, respectively, said rocking switch comprising;

a main body rocked forward from said neutral position to said first rocking position and back from said neutral position to said second rocking position;

a switch casing for accommodating said main body to allow rocking movements of said main body, said switch casing having an opening on one end thereof;

a first switching element, formed in said switch casing, for outputting said first switching signal, said first switching element being pressed when said main body is rocked to said first rocking position;

a second switching element, formed in said switch casing, for outputting said second switching signal, said second switching element being pressed when said main body is rocked to said second rocking position; and

a control knob fixed to said main body and projected through said opening of said switch casing, said control knob causing the rocking movements of said main body from said neutral position to said first rocking position and to said second rocking position in response to a rocking-forward and -back operation of said control knob; and wherein

said main body comprising:

a first hemispherical member formed on a first side of said main body close to said control knob;

a second hemispherical member formed on a second side of said main body away from said control knob and arranged concentrically with said first hemispherical member;

a first pressure element for pressing said first switching element when said main body is rocked to said first rocking position; and

a second pressure element for pressing said second switching element when said main body is rocked to said second rocking position; and

said switch casing comprising:

a first hemispherical recess formed to define said opening of said switch casing for guiding said first hemispherical member of said main body along the hemispherical surface thereof; and

a second hemispherical recess arranged concentrically with said first hemispherical recess to accommodate said second hemispherical member of said main body;

said second hemispherical member comprising a pair of first projections protruded against the hemispherical inner surface of said second hemispherical recess, said pair of first projections being arranged symmetrically and opposite to each other across said neutral position in a first rocking plane defined by

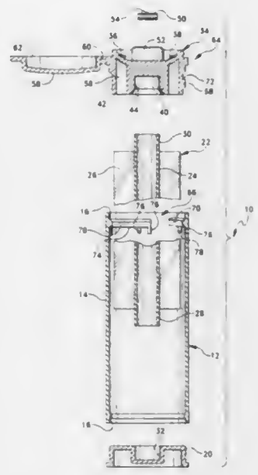
said neutral position, said first rocking position, and said second rocking position.

5,607,050

VIAL FLOSS DISPENSER

John W. Dolan, Boothwyn, Pa.; John W. Spencer, Jr., Rising Sun; Rickey I. Hill, Elkton, both of Md., and David D. McClanahan, Harleysville, Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 1, 1995, Ser. No. 551,503
Int. Cl.[6] B65H *1/00*; A61C *15/00*
U.S. Cl. 206—63.5 10 Claims



1. In a floss dispenser comprising:

an essentially cylindrical case, the case including a cylindrical wall with an inner surface and two opposite ends, said case having an opening formed in at least one end;

a spool having floss wrapped around a hub, the spool being inserted into the case through said opening in its end with the hub of the spool mounted parallel to the length of the case; and

a cap received by the opening in the end of the case, said cap having an outer circumferential wall portion, means for receiving and centering the hub of the spool when the cap is sealing the opening of the case, and at least one opening therein through which floss is threaded out of the end of the case;

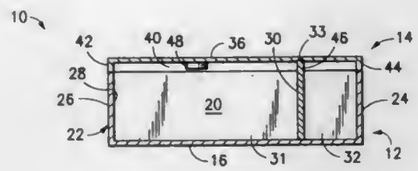
wherein the improvement comprises means for securely attaching the cap to the case, said cap securing means having a first interlocking engagement member associated with the cap and a mating second interlocking engagement member associated with the case, said first engagement member being defined by at least one radially outwardly extending, circumferential protrusion formed on the wall portion of the cap, and said second engagement member being defined by at least one radially inwardly extending, circumferential protrusion formed on the inner surface of the cylindrical wall of the case, wherein said second engagement member of the case includes a stop post formed on the inner wall of the case, said stop post extending radially inwardly and in a direction generally transverse to the direction of the second circumferential protrusion of the cylindrical wall of the case, said stop post engaging the first circumferential protrusion of the cap when rotating the cap to its attached position and defining a limit for rotating the cap, the arrangement being such that upon insertion of the cap into the open end of the case and rotating the cap, said first engagement member of the cap engages the second engagement member of the case.

5,607,051

CIGAR HUMIDOR

Jorge L. Espinosa, 90 B River Vale Ct., Scotch Plains, N.J. 07076

Filed Mar. 25, 1996, Ser. No. 618,064
Int. Cl.[6] A24F *25/02*
U.S. Cl. 206—213.1 14 Claims



1. A cigar humidor comprising a base having a bottom wall and a plurality of upstanding side walls connected to and extending from said bottom wall for defining an open-topped enclosure, a substantially moisture impervious partition extending between and connecting a pair of said side walls of the said base for dividing said open-topped enclosure into a first compartment and a second compartment, at least one lid for selectively opening and closing said first and second compartments and for isolating said first and second compartments from ambient environmental conditions, a humidifier being disposed in said first compartment for imparting controlled humidity to cigars stored therein, said partition and said at least one lid isolating said second compartment from said humidifier in said first compartment, whereby said first compartment is employed for long-term storage of cigars, and wherein said second compartment enables controlled dehumidification of cigars intended for short term smoking.

12. A cigar humidor having first and second accessible compartments isolated from ambient environmental conditions, a humidifier in the first compartment for imparting controlled humidity to cigars stored therein, said second compartment including walls for isolating said second compartment from said humidifier in said first compartment, said second compartment comprising a drawer isolated from said first compartment for selectively storing cigars therein, whereby said first compartment is employed for a long-term storage of cigars, and wherein said second compartment enables controlled dehumidification of cigars intended for short term smoking.

13. A method for storing cigars prior to smoking, said method comprising the steps of:

providing an enclosure with first and second compartments, at least said second compartment being lined with an unfinished wood;

placing said first compartment in communication with a source of humidity such that said second compartment is substantially isolated from said source of humidity;

placing a plurality of cigars in said first compartment and in communication with said source of humidity for long term storage; and

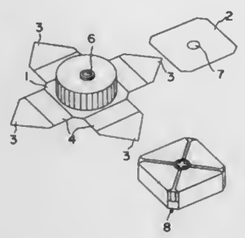
periodically moving at least one cigar from said first compartment to said second compartment such that moisture in said cigar in said second compartment permeates into the unfinished wood lining the second compartment.

5,607,052

MULTIPACK FOR MAGNETIC TAPES WOUND ONTO HUBS

August Liepold; Hartmut Thiele; Jose Toral, all of München; Gottfried Lutz, Seefeld, and Hermann Brandstetter, München, all of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

PCT No. PCT/EP93/01555, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/00844, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 18, 1993, Ser. No. 360,654
Claims priority, application Germany, Jun. 26, 1992, 9208555 U
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—307 4 Claims



1. A packing container for magnetic recording media wound on annular hubs, said hubs having a central opening, said packing container comprising,

a bottom part having four sides and a side portion hingeably connected to each of the sides; each of the side portions having a first portion having a first hingeable connection to one side of the bottom part and a second portion having a second hingeable connection to the first portion;

a cylindrical sleeve having a first end and an opposite end, the sleeve having at least two annular slits adjacent the opposite end, and at least two of said second portions have means for removably engaging said annular slits;

means for connecting the first end of the sleeve to the bottom portion;

a top part having a central opening and a top surface, said central opening defining a space through which the opposite end of the cylindrical sleeve extends when the container is assembled;

wherein, when the container is assembled, the annular hubs are stacked onto the cylindrical sleeve and said cylindrical sleeve penetrates the central opening of said annular hubs; the top part is placed above said annular hubs such that the opposite end of the sleeve extends through said central opening in the top part; said first portions and said second portions are folded along said first and second hingeable connections such that the second portion of each of the side portions contacts the top surface of the top part; and at least two of the second portions are removably engaged with the slits of the sleeve.

4. A packing container for magnetic recording media wound up onto annular hubs said hubs having a central opening, said packing container comprising:

a bottom with four sides having a side portion hingeably connected to each of the sides; each of the side portions having a first portion hingeably connected to one side of the bottom part, said first portion having side edges perpendicular to the side where the first portion is connected to the side of the bottom, and opposite edges parallel to the side where the first portion is connected to the side of the bottom,

a second portion hingeably connected to the opposite edge of each of said first portions, said second portion having opposite edges parallel to the side where the second portion is hingeably connected to said first portion;

each of said side portions further having a match arranged on a parallel side of the bottom part, further defining a first matching side portion pair and a second matching side portion pair;

said first matching side portion pair having side flaps connected to the side edges of the first portion of each of said first matching side portion pair;

a cylindrical sleeve having a first end and an opposite end, said sleeve having at least two annular slits adjacent the opposite end;

means on the opposite edges of the second portion of said second matching side portion pair for engaging said annular slits in said cylindrical sleeve;

means for connecting the first end of the sleeve to the bottom portion;

a top part having a central opening and a top surface;

wherein when the container is assembled, the sleeve is connected to the bottom portion, the annular hubs are stacked onto the cylindrical sleeve, and said cylindrical sleeve penetrates the central opening of said annular hubs, the top part is placed above said annular hubs such that the opposite end of the sleeve extends through said central opening in the top part; the side portions of the bottom part are folded such that the first portions form an inner and outer surface, said inner surface facing the stacked annular hubs;

said side flaps of of said first matching side portion pair are folded such that the second portions of said first matching side portion pair are in contact with the top surface of the top part; and,

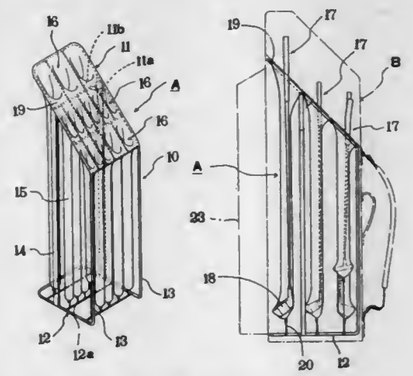
the second portions of said second matching side portion pair are folded such that the second portions of said second matching side portion pair cover the second portions of the first matching side portion pair and the top surface of the top part, and the opposite edges of said second portion of said second matching side portion are removably engaged within the slits of the sleeve.

5,607,053

GOLF CLUB STORING DEVICE

Yoshiyasu Sumiyoshi, 19-25, Imagawa 1-chome, Chuo-ku, Fukuoka-shi, Fukuoka, Japan

Filed Sep. 23, 1994, Ser. No. 311,225
Claims priority, application Japan, May 30, 1994, 6-117272; Jun. 6, 1994, 6-124084
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.2 11 Claims



1. A device for storing golf clubs comprising:

a support frame including an upper frame, a lower frame, and longitudinally elongated connecting frame means for connecting the upper frame and the lower frame;

elongated tubular bags for storing the golf clubs, each of which is made of an elastic material;

said upper frame defining an inner space thereof and having upper partition members partitioning said inner space into upper frame apertures, for accepting one golf club in each of said upper frame apertures;

said lower frame defining an inner space thereof and having lower partition members within said inner space and aligned with said upper frame apertures;

said elongated tubular bags each having a top opening, for accepting said golf clubs head first, with a perimeter edge thereof being one of formed integrally with or fastened to said upper partition members about a perimeter of one of said upper frame apertures to maintain said top openings in an open state;

said elongated tubular bags each having a closed bottom connected to one of said lower partition members to maintain said elongated tubular bags apart from each other and elongated; and

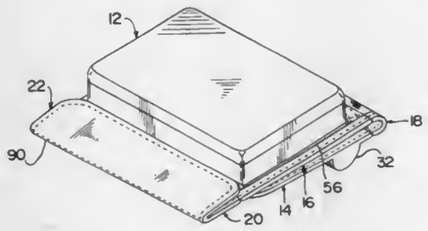
said top openings each having a sufficient size for accepting a vertical projection area of a club head of a golf club to be inserted therein.

5,607,054

FOLIO CARRYING CASE FOR A NOTEBOOK COMPUTER

W. Dale Hollingsworth, Wilton, Conn., assignor to Port, Inc., Norwalk, Conn.

Filed Mar. 14, 1995, Ser. No. 404,628
Int. Cl.[6] B65D *85/38*
U.S. Cl. 206—320 **16 Claims**



1. A carrying case for a notebook computer comprising

front and back panels configured to cover opposite sides of the notebook computer;

a top panel flexibly connecting top edges of said front and back panels;

a bottom panel flexibly connected to a bottom edge of said back panel;

a closure flap flexibly connected to a bottom edge of said bottom panel, said closure flap overlapping a bottom edge of said front panel when said carrying case is in a closed position folded around the notebook computer; and

a pair of rigid tabs depending from opposed lateral edges of said front panel toward said back panel when said carrying case is in the closed position;

wherein said front panel can be rotated underneath said back panel such that said tabs extend away from said back panel to form legs for tilting the notebook computer.

5,607,055

VACUUM PACKAGE FOR FLEXIBLE PRODUCTS

George E. Bettinger, Lake Jackson, Tex., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Mar. 14, 1995, Ser. No. 403,996
Int. Cl.[6] B65D *83/10;81/20*
U.S. Cl. 206—364 **1 Claim**

1. The combination of a package and a medical catheter, wherein said package comprises:

an elongated tray having side walls and a bottom and having a first end and a second end, said tray including a relatively flat portion located near said first end of said tray, a hub retaining portion located near said second end of said tray, and a pair of ridges extending along a portion of the length of said tray between said hub retaining portion and said flat portion;

a cover sheet sealed to said tray; and means for providing longitudinal stability to said package;

wherein said catheter comprises:

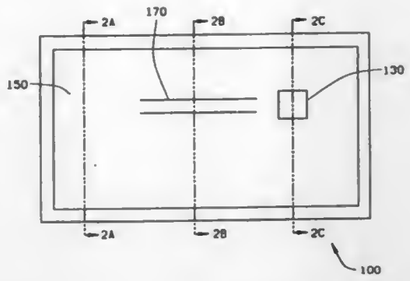
a distal end;

a hub end; and

an elongated main body extended between said distal end and said hub end;

wherein said distal end of said catheter is located on said flat portion of said tray, said hub end of said catheter is located within said hub retaining portion of said tray, and said elongated main body of said catheter is located between said pair of ridges of said tray; and

wherein said cover sheet is sealed to said tray to form said package and said package has a vacuum applied thereto and wherein said means for providing longitudinal stability are formed when said vacuum is applied.

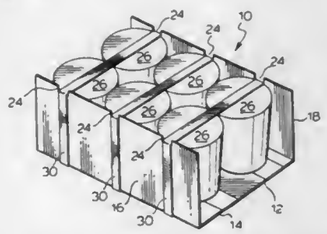


5,607,056

TRANSIT PACKAGING HAVING REDUCED CONTENT

G. Michael Whiteside, Barrie, Canada, assignor to Macro-Systems Packaging Ltd., Barrie, Canada

Filed May 2, 1995, Ser. No. 433,848
Int. Cl.[6] B65D *65/00;75/00;* **B65B** *21/00*
U.S. Cl. 206—427 **16 Claims**

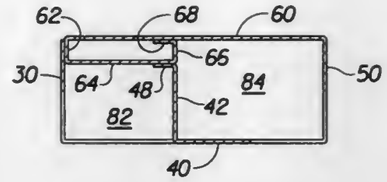


1. A transit packaging in combination with like containers having uniform height, shape and size, said like containers each having tapered sides, a top and a bottom, said transit packaging comprising

a blank of a corrugated cardboard having flutes in a longitudinal direction and having scores defining foldable opposed end panels wherein said opposed panels are foldable to extend substantially perpendicular to said blank, said end panels each has a height when folded greater than said height of said like containers, said end panels have a plurality of longitudinally aligned pairs of notches at opposite end edges of said blank, each of said notches has a base spaced from a nearest one of said scores a distance substantially equal to said height of said like containers,

retainer means for retaining said like containers onto said blank in a rectangular pattern of rows and columns in a side by side relation, each of said columns extending longitudinally and each of said pairs of notches in alignment with one of said columns, and

a plurality of straps each positioned in one of said pairs of notches and wrapped about said blank and on top of said like containers urging columns of said like containers together and retaining said end panels in said perpendicular condition, forming a structural package.

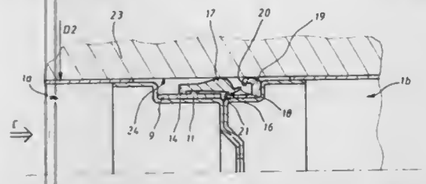


5,607,057

DEVICE FOR JOINING PROPELLANT CHARGE CONTAINERS AND CONTAINER HAVING SUCH A DEVICE

Nicolas Eches, Bourges, and Yves Cappy, Saint Denis de Palin, both of France, assignors to Giat Industries, Versailles, France

Filed Jun. 9, 1995, Ser. No. 489,131
Claims priority, application France, Jun. 16, 1994, 94 07352
Int. Cl.[6] F42B *5/00*
U.S. Cl. 206—509 **20 Claims**



1. A device for joining a first container to a second container to be inserted into the chamber of a weapon, said chamber having a chamber diameter D1 and said first container and said second container having container diameters that are less than said chamber diameter D1, a first face of said first container being alignable with a second face of said second container along a longitudinal axis, said device comprising:

a first neck disposed adjacent said first face of said first container;

a second neck disposed adjacent said second face of said second container, said second neck having a circular cusp; and

a deformable ring disposed around said first neck and having an annular lip, said deformable ring being shaped to slide substantially parallel to said longitudinal axis toward said second container to engage said cusp, said deformable ring having a ring diameter D3 greater than said chamber diameter D1, wherein said ring diameter D3 is configured to decrease under deformation to said chamber diameter D1 when said first container is inserted into said chamber, thereby disengaging said deformable ring from said cusp and allowing said first container to separate from said second container.

5,607,058

TWO-CELL WINDOWED CARTON

Joseph A. Huesman, Hamilton Township, and Gene M. Altonen, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 14, 1994, Ser. No. 355,784
Int. Cl.[6] B65D *5/486*
U.S. Cl. 206—581 **14 Claims**

1. A display carton for displaying a pair of disparate articles in side by side relation formed from a one piece blank of cartonboard, said display carton comprising:

(a) opposing front and back walls, opposing top and bottom walls, and opposing first and second side walls, said walls connected forming a box wherein only said opposing top and bottom walls have a double thickness of cartonboard;

(b) said front wall having a compartment dividing wall foldably connected thereto and extending inwardly from said front wall to a compartment wall support, said compartment wall support and said compartment dividing wall being provided with glue flaps, all of said glue flaps having substantially the same width, said compartment dividing wall being of a single thickness of cartonboard separating a first article cell from a second article cell, said first article cell having an opening in the front wall and having a back intermediate wall, said back intermediate wall being spaced inwardly from and parallel to said back wall by said compartment wall support, said back intermediate wall extending between said first side wall and said compartment dividing wall, said second article cell being provided with an aperture having a transparent plastic film covering said aperture forming an article display window, said article display window enabling a consumer to view an article contained within said second article cell.

5. A display carton for displaying a pair of disparate articles in side by side relation formed from a one piece blank of cartonboard, said display carton comprising:

(a) opposing front and back walls, opposing top and bottom walls, and opposing first and second side walls, said walls connected forming a box;

(b) said front wall having a compartment dividing wall foldably connected thereto and extending inwardly from said front wall to a compartment wall support, said compartment wall support and said compartment dividing wall being provided with glue flaps, all of said glue flaps having substantially the same width, said compartment dividing wall being of a single thickness of cartonboard separating a first article cell from a second article cell, said first article cell having an opening in the front wall and having a back intermediate wall, said back intermediate wall being spaced inwardly from and parallel to said back wall by said compartment wall support, said back intermediate wall extending between said first side wall and said compartment dividing wall, said second article cell being provided with an aperture having a transparent plastic film covering said aperture forming an article display window, said article display window enabling a consumer to view an article contained within said second article cell.

8. A display carton formed from a one piece blank of cartonboard containing two disparate articles in side by side relation, said display carton comprising:

(a) opposing front and back, walls, opposing top and bottom walls, and opposing first and second side walls, said walls connected forming a box wherein said opposing front and back walls and said opposing first and second side walls have a single thickness of cartonboard;

(b) a first article cell having a circumference defined by said first side wall, said front wall, a compartment dividing wall being of a single thickness of cartonboard, and a back intermediate wall, said front wall having said compartment dividing wall foldably connected thereto and extending inwardly from said front wall to said back intermediate wall, said back intermediate wall being spaced inwardly from and parallel to said back wall by a compartment wall support, said back wall having an axial boundary defined by a traverse score line, said transverse score line connecting said back wall to a glue flap, said glue flap being the glue flap of a manufactures joint, said back intermediate wall extending from and being foldably connected to said glue flap of said manufactures joint, said first article cell having a height, a width, a depth, an opening

in said front wall, and a first article contained therein having substantially equivalent height, width and depth;

(c) a second article cell for containing a second article, said second article cell having a circumference defined by said second side wall, said back wall, said compartment wall support, said compartment dividing wall, and said front wall, said second article cell being provided with an aperture having a transparent plastic film covering said aperture forming an article display window, said article display window enabling a consumer to view said second article contained within said second article cell, said second article being resiliently compressible and being maintained in a compressed state by said second article cell.

5,607,059

SURFACE PACKAGE TYPE SEMICONDUCTOR PACKAGE AND METHOD OF PRODUCING SEMICONDUCTOR MEMORY

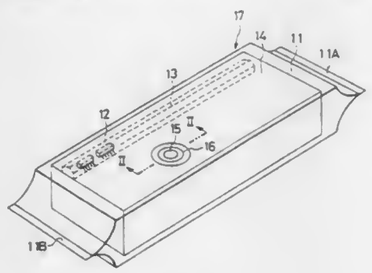
Wahei Kitamura, Kodaira; Gen Murakami, Machida, and Kunihiko Nishi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 791,539, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 392,029, Aug. 10, 1989, Pat. No. 5,095,626, which is a division of Ser. No. 124,925, Nov. 23, 1987, Pat. No. 5,408,934. This application Jun. 23, 1994, Ser. No. 264,745

Claims priority, application Japan, Nov. 25, 1986, 61-278610; Aug. 21, 1988, 63-206290

Int. Cl.[6] B65D *73/02*

U.S. Cl. 206—720 87 Claims



1. A packaged device comprising:

a moisture-proofing bag member which is made of a laminate; and

at least one surface-mount resin molded semiconductor device and a desiccant sealed in said moisture-proofing bag member, such that the desiccant absorbs moisture within the moisture-proofing bag member when the resin molded semiconductor device is sealed in the bag member, said at least one surface-mount resin molded semiconductor device being at least one semiconductor device having structure such that the at least one semiconductor device will be surface-mounted on a printed circuit board and not yet having been surface-mounted on the printed circuit board, whereby during surface mounting heat will be applied from a side of the printed circuit board having the surface-mount resin molded semiconductor device thereon, said at least one surface-mount resin molded semiconductor device including a resin molding through which moisture in air can enter the at least one resin molded semiconductor device during a time period from forming the resin molding to performing surface mounting;

wherein said laminate forming the moisture-proofing bag member is made of (a) a barrier layer for sufficiently preventing intrusion of moisture into the moisture-proofing bag member when the at least one surface-mount resin molded semiconductor device is sealed therein, during said time period, so as to avoid damage of the at least one surface-mount resin molded semiconductor device during surface mounting, (b) an inner charge-preventing layer formed inside of said barrier layer and (c) an outer charge-preventing layer formed outside of said barrier layer.

5,607,060

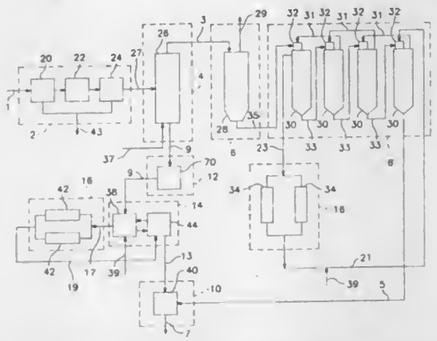
METHOD AND APPARATUS FOR REMOVING METAL CONTAMINATION FROM SOIL

William E. Fristad; Jeffrey L. Narum; Phillip L. Mattison; Michael J. Virnig, all of Santa Rosa, Calif., and John Fast, Littleton, Colo., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 104,979, Aug. 11, 1993, Pat. No. 5,466,426. This application Jun. 6, 1995, Ser. No. 469,607

Int. Cl.[6] B03B *7/00*; C22B *11/00*

U.S. Cl. 209—12.2 15 Claims



1. An apparatus for removing metal contamination from soil which comprises:

(a) a soil preparation and feed controlling means in communication with a size separation means to prepare and introduce contaminated soil to the process;

(b) size separation means to receive the contaminated soil and separate the contaminated soil into a coarse fraction and a fine fraction containing water;

(c) a liquid-solid separation means in communication with the size separation means to receive the fine fraction containing water and separate water from the fine fraction to provide a dewatered fine fraction and recovered water;

(d) a first leaching means, in communication with the liquid-solid separation means to receive the dewatered fine fraction of the contaminated soil and to remove metal contamination from the fine fraction, by contact with a lean leach solution, to form a rich leach solution and a fine fraction with reduced metal contamination;

(e) a metal recovery means in communication with the first leaching means to receive the rich leach solution, recover metal and provide a lean leach solution; and

(f) means to recycle at least a portion of the lean leach solution to the first leaching means.

5,607,061

MATERIAL SEPARATOR SYSTEM UTILIZING AIR FLOW

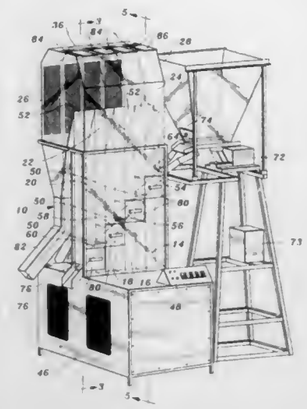
Richard W. Felden, P.O. Box 980243, West Sacramento, Calif. 95798

Filed Mar. 16, 1995, Ser. No. 405,802

Int. Cl.[6] B07B *4/00*

U.S. Cl. 209—139.1 16 Claims

1. Apparatus for sorting a plurality of discrete objects and separating said discrete objects into separate groups based on one or more physical characteristics of said discrete objects, said apparatus comprising, in combination:



chamber defining means including chamber walls defining a plurality of separate vertically oriented chambers, said chamber walls having passageways between adjacent chambers of said plurality of chambers and exit openings spaced upwardly from said passageways communicating with said chambers;

gaseous flow inducing means operatively associated with said chamber defining means for creating upwardly directed gaseous flows in said plurality of chambers to entrain discrete objects located therein, cause upward movement of said discrete objects upwardly toward said exit openings, and exit of discrete objects from said chambers through said exit openings;

control means for separately and independently controlling the velocity of the upwardly directed gaseous flow in each chamber of said plurality of chambers; and

conveying means for conveying discrete objects not exiting from a chamber through an exit opening due to entrainment by the gaseous flow therein through one of said passageways to an adjacent chamber and into the gaseous flow in said adjacent chambers; said gaseous flow inducing means comprising a plurality of motors and a plurality of fans, each of said fans being connected to a separate motor and rotatable thereby to create an upwardly directed gaseous flow in a single chamber of said plurality of chambers.

5,607,062

SCREEN MODULE FOR PREPARING COSMETICS NESTED SCREENS OF DIFFERENT MESH SIZES

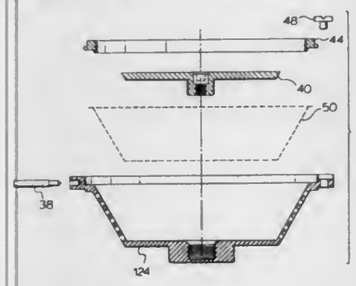
Kimberly J. Poser, and Benjamin K. Murugesu, both of Kitchener, Canada, assignors to Quadro Engineering Inc., Waterloo, Canada

Filed Aug. 18, 1995, Ser. No. 516,661

Int. Cl.[6] B07B *1/06*

U.S. Cl. 209—283 6 Claims

1. A screen module for use in a size reduction machine, said



module comprising

a rigid screen having a tapered apertured wall formed in a frusto-conical shape, said rigid screen having an open wide end and a flat end, said wide end mountable within a channel of said size reduction machine at a predetermined distance from a complementarily shaped impeller,

a fine screen nested within said rigid screen and against said tapered apertured wall, said fine screen having a wide end and a narrow end,

an adaptor disc releasably secured within said rigid screen at said flat end, said adaptor having a tapered outer perimeter for seating against said tapered apertured wall when said adaptor disc is secured within said rigid screen, clamping said narrow end of said fine screen therebetween, and

a clamp ring releasably secured at said open wide end of said rigid screen, said clamp ring having a tapered inner perimeter for seating against said tapered apertured wall when said clamp ring is secured against said open wide end, clamping said wide end of said fine screen therebetween.

5,607,063

PAPER OBJECT SORTING APPARATUS HAVING MEANS FOR ERASING BAR CODES PRINTED ON PAPER OBJECT AND PAPER SORTING METHOD USING SAID APPARATUS

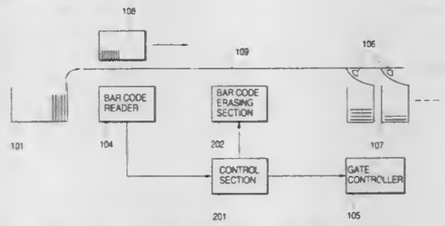
Yasuo Nishijima; Kunio Hiromori, and Toshiharu Kubota, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 300,998

Claims priority, application Japan, Sep. 6, 1993, 5-220760

Int. Cl.[6] G06K *9/00*

U.S. Cl. 209—584 22 Claims



1. A paper object sorting apparatus comprising:

a paper object supply section for supplying, one by one, a plurality of paper objects on each of which a code corresponding to information added to the paper objects to be used for sorting the paper objects is applied;

a code reader for reading the code applied on the respective paper objects supplied from the paper object supply section;

a sorting section for sorting the paper objects based on the information corresponding to the code read by the code reader;

a code erasing section for erasing the code applied on the respective paper objects before the sorted paper objects are stacked for delivery; and

stackers for stacking the paper objects whose codes have been erased by the code erasing section and which were sorted by the sorting section.

5,607,064

CYCLE FIXING DEVICE FOR USE ON A CYCLE RACK AND CYCLE RACK INCORPORATING THIS DEVICE

Pascal Fourel, 102 Avenue Pasteur, 35400 Saint Malo, France

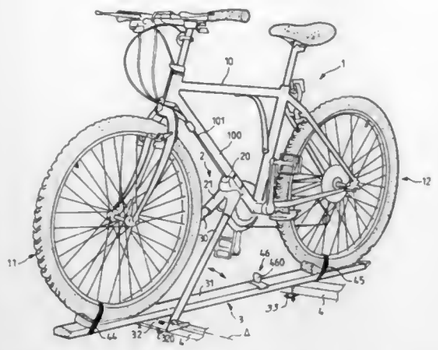
Filed Feb. 17, 1995, Ser. No. 390,536

Claims priority, application France, Feb. 24, 1994, 94 02110

Int. Cl.[6] E05B *73/00*

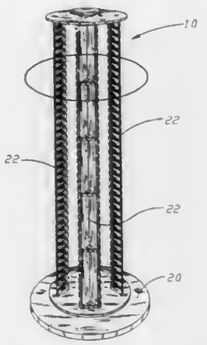
U.S. Cl. 211—5 10 Claims

1. Fixing device for a cycle rack for a cycle having a tubular frame, said fixing device including a support structure adapted to



support the frame of said cycle in an upright position, first fixing means fastened to said frame and including at least one hook and second fixing means fastened to said cycle rack and including a spring catch cooperating with said hook for temporarily locking said first and second fixing means when said hook is engaged in said second fixing means, said first fixing means being adjustable in position so that they can be attached in a given area of said frame of said cycle, and said hook being fixed to a support plate and said support plate includes removable clamping means for attaching it to said frame of said cycle.

5,607,065
SHELVING STORAGE UNIT
Michael L. Todd, 16360 Evans Ave., South Holland, Ill. 60473
Filed Jan. 4, 1995, Ser. No. 368,621
Int. Cl.[6] A47G *29/00*
U.S. Cl. 211—40 **34 Claims**



1. A shelving storage unit for supporting at least one of recorded-media and boxes containing recorded-media having a width of greater dimension than the thickness of the opposing side edges and opposing ends having an axis extending through opposing side edges, comprising:

a base;

a frame member supported by and extending upwardly from said base in which a first support assembly is secured to said frame member adapted for supporting a first box and a second support assembly is secured to said frame member adapted for supporting a second box, in which said first and second support assemblies are positioned at substantially the same elevation above said base, for aligning opposing side edges of said first box in substantial parallel relationship to opposing side edges of said second box and for aligning at least a portion of an end of the first box with an end of the second box; and

a member supported by said base and interposed and spaced apart from said first and second support assemblies in which said first and second support assemblies are adapted for supporting a portion of said first and second boxes and for permitting another portion of said first and second boxes to extend beyond said first and second support assemblies in a direction toward said member and in which said member is positioned for abutting said ends of said first and second boxes and for maintaining said ends of said first and second boxes in a spaced apart relationship.

5,607,066
PANTS RACK ASSEMBLY
Charles M. Hebberd, 2918 Sandover Ct., Bonita, Calif. 91902
Filed Apr. 3, 1995, Ser. No. 415,307
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—45 **6 Claims**



1. A pants rack assembly comprising:

a block shaped body member having a top surface, a bottom surface, a rear surface, a front surface, a left side surface and a right side surface, a predetermined height H1 and a predetermined width W1;

an elongated right side gripping arm extending forwardly from the front surface of said block shaped body member adjacent said right side surface;

an elongated left side gripping arm extending forwardly from the front surface of said block shaped body member adjacent said left side surface;

an elongated middle spring support arm extending forwardly from the front surface of said block shaped member; said middle spring support arm being positioned intermediate said left and right side gripping arms; said middle spring support arm having a pair of longitudinally spaced transversely extending apertures;

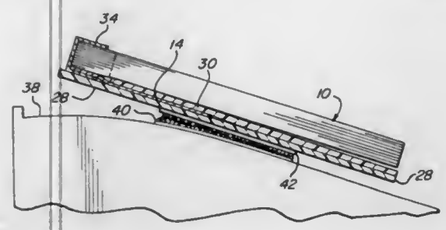
said left side gripping arm, said right side gripping arm, and said middle spring support arm being connected to with-said block shaped body member;

an elongated right side floating gripping arm positioned between said middle spring support arm and said right side gripping arm; said right side floating gripping arm having a right side and a left side and a pair of longitudinally spaced recesses are formed in said left side and they are respectively aligned with the longitudinally spaced apertures in said middle spring support arm;

an elongated left side floating gripping arm positioned between said middle spring support arm and said left side gripping arm; said left side floating gripping arm having a right side and a left side and a pair of longitudinally spaced recesses are formed in said right side and they are respectively aligned with the longitudinally spaced apertures in said middle spring support arm; and

two coiled springs and they each have a first end and a second end and they extend through the respective apertures in said middle spring support arm and have their respective first and second ends seated in the respective recesses in said left side floating gripping arm and said right side floating gripping arm.

5,607,067
DETACHABLE NOTEPAD HOLDER AND NOTEPAD SYSTEM
Thomas J. Morrissey, Greenwich, Conn., assignor to Jot-That-Thought, Inc., Greenwich, Conn.
Filed Mar. 9, 1995, Ser. No. 401,923
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—50 **12 Claims**



1. A note pad system for releasable attachment to a surface, said system comprising:

a notepad comprising a rectangular backing, said backing supporting a plurality of rectangular sheets of writing paper, said backing and said sheets having substantially identical width, said sheets being bound to the backing along an edge of the backing, the paper sheets being in face-to-face relation with the backing and defining a slot between an innermost sheet of paper and the backing;

a notepad holder comprising a first support sheet and a second support sheet, at least one of the support sheets having a high degree of rigidity, said first and second support sheets being located in face-to-face relation and secured along one edge thereof to define a slot between said support sheets;

said backing of said notepad being releasably inserted into said slot between said support sheets, said backing being retained in said slot by friction between the backing and at least one of the support sheets to releasably adhere the notepad to the notepad holder; and

said notepad system being adapted to be releasably secured to a surface, said first support sheet having a surface having mounted thereon a material selected from a loop material or a hook material, and wherein the notepad system is provided with a second piece of hook or loop material that releasably engages the first piece, said second piece of material including an adhesive on one side covered by a removable release sheet, said release sheet being removable to expose adhesive for adhering said second piece to said surface.

5,607,068
GRAVITY FLOW SHELVING SYSTEM
Joseph Coretti, Jr., and Edward I. Knorring, Jr., both of Wheaton, Ill., assignors to B-O-F Corporation, Aurora, Ill.
Filed Feb. 1, 1995, Ser. No. 382,084
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—59.2 **10 Claims**

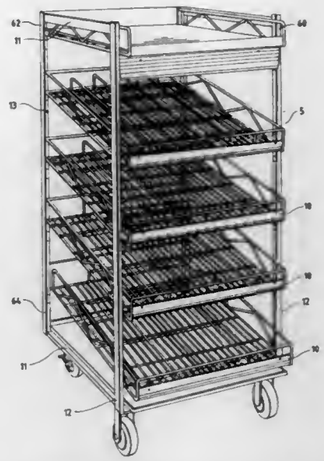
1. A shelf for storing and displaying containers, said shelf comprising:

a wire frame having a plurality of cross bars within the frame, a plurality of substantially planar longitudinal track bars mounted above the cross bars, and a pair of front legs and a pair of back legs protruding above the plane of said longitudinal tracks, wherein each front leg includes a backsplash gripper attached thereto;

a front retaining bar and a label support holder each extending between said pair of front legs, said label support holder being adapted for slidable engagement of labels therewith;

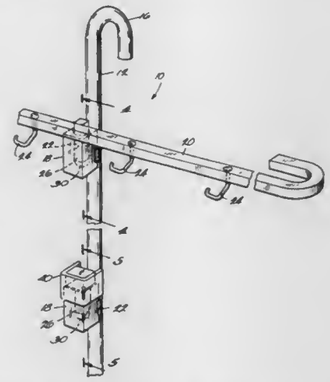
a rear retaining bar extending between said pair of back legs;

a pair of side retaining bars, each side retaining bar extending between a front leg and a back leg; and



a flexibly mountable backsplash positioned between said backsplash grippers and said label support holder, said backsplash extending substantially across said width of said shelf.

5,607,069
PAINTING FIXTURE WITH MODULAR CROSSBARS
Steven P. Stroobants; Marvin J. Stroobants, and Douglas J. Schulz, all of Chilton, Wis., assignors to Thermal Clean, Inc., Chilton, Wis.
Filed Sep. 29, 1995, Ser. No. 536,095
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—113 **23 Claims**



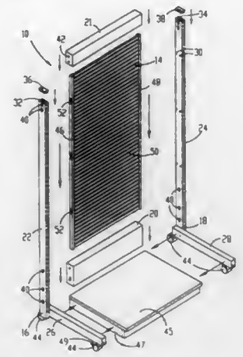
1. A hanger assembly for use in supporting articles to be processed and painted, the hanger assembly including:

an elongated stem having a longitudinal axis and adapted to be supported vertically during a painting operation, the elongated stem including at least one socket supported on the stem, the socket including an upwardly opening bore, the bore having a noncircular cross-section,

a crossbar adapted to be supported by the stem, the crossbar including opposite ends and a key for supporting the crossbar, the key being fixed to the crossbar intermediate the opposite ends of the crossbar, and at least a portion of the key having a noncircular cross-section adapted to be housed in the bore in the socket such that the key is supported by the socket, and

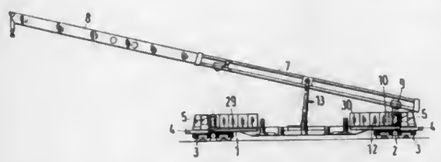
a plurality of hooks supported by the crossbar and spaced along the length of the crossbar whereby the hooks can support articles to be painted.

5,607,070
MODULAR DISPLAY FIXTURE SYSTEM
Daniel P. Hellyer, Lawrence, Kans., assignor to E & E Specialties, Inc., Lawrence, Kans.
Filed Jun. 20, 1994, Ser. No. 262,537
Int. Cl.[6] A47B *43/00*
U.S. Cl. 211—189 **6 Claims**



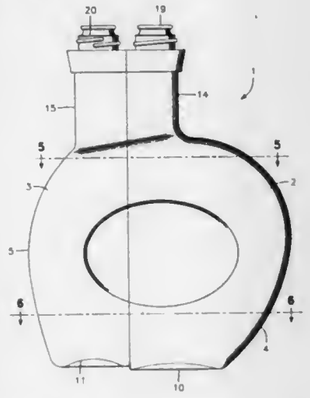
1. A modular display fixture comprising:
a support frame including a pair of parallel, spaced-apart tubular support posts connected by a cross member, said support posts presenting upper ends, said upper ends including structure defining a rectangular-shaped opening therein;
a planar display panel removably mounted between said spaced-apart support posts; and
an extension assembly including a pair of parallel, spaced apart tubular extension posts adapted for connecting with said support frame support posts to increase the height of said display apparatus, said extension posts presenting lower ends including downwardly extending tabs for insertion in said support post rectangular-shaped openings, said tabs being oriented to fit diagonally in said rectangular-shaped openings.

5,607,071
CRANE, ESPECIALLY A TRACK-BOUND MOBILE CRANE
Joachim Kröll, Jüchen, and Peter Richter, Bergheim, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
Filed Jan. 31, 1995, Ser. No. 381,194
Claims priority, application Germany, Jan. 31, 1994, 44 03 287.6
Int. Cl.[6] B66C *23/04*
U.S. Cl. 212—231 **14 Claims**



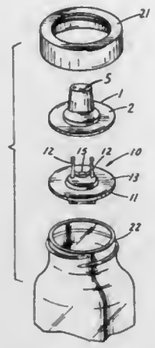
1. A crane, comprising: a vehicle frame having ends; at least one swivel bearing located on each end of the vehicle frame; a luffing jib mounted on the swivel bearing at one of the ends of the vehicle frame so as to be luffable upward and downward around a horizontal axis and rotatable around a vertical axis; and lifting drive means arranged between the vehicle frame ends for lifting the luffing jib, the at least one swivel bearing at each end of the frame being adapted and configured to be selectively detachable from and connectable to the luffing jib so that the luffing jib can selectively operate at either end of the vehicle frame, the at least one swivel bearing at each end of the vehicle frame including a piston-cylinder unit connectable in a hinged manner to the luffing jib.

5,607,072
BEVERAGE CONTAINERS
Patrick Rigney, Dublin, Ireland, and Colin Purdy, Bishop's Stortford, England, assignors to Gilbeys of Ireland (Manufacturing) Limited, Dublin, Ireland
Continuation of Ser. No. 97,042, Jul. 27, 1993, abandoned.
This application Nov. 15, 1994, Ser. No. 341,041
Claims priority, application Ireland, Mar. 5, 1993, 93 0167
Int. Cl.[6] B65D *21/024;23/08*
U.S. Cl. 215—10 **6 Claims**



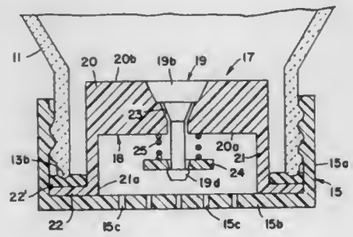
1. A container for liquid beverages comprising
a first glass bottle for one beverage;
a second glass bottle for another beverage;
the bottles being of different capacities and comprising a smaller capacity bottle and a larger capacity bottle, the capacities of the respective bottles being selected to provide an indicator means that required amounts of liquid beverage have been dispensed from the bottles, said indicator means comprising the level of liquid beverage remaining in each bottle;
the bottles each comprising
a base portion;
a body portion; and
a neck portion for receiving a closure, said neck portion being upstanding from said body portion;
the body portions providing substantially all of the different capacities between the bottles;
the body portions and neck portions having substantially flat axially extending mating surfaces; and
an adhesive bonding the mating surfaces together to form a joint between the bottles,
said base portion of said smaller capacity bottle being spaced upwardly from said base portion of said larger capacity bottle so that a load of the container is supported by said base portion of said larger capacity bottle to stabilize the container and prevent any rocking that might occur if the bottles were of the same height and insufficiently accurately bonded together.

5,607,073
VALVE
Scott M. Forrer, 1238 Lizbeth La., Cedarburg, Wis. 53012
Filed Feb. 20, 1996, Ser. No. 603,157
Int. Cl.[6] A61J *9/00*
U.S. Cl. 215—11.4 **2 Claims**



1. A closure lid assembly for bottles or other containers which comprises
a first lid member, said first lid member being functionally adapted to be introduced in a tightenable manner within a bottle or container opening, said first lid member comprising a generally planar disk having a top surface and a bottom surface, said bottom surface facing inwardly of the container and said top surface having a pair of flexible posts extending upwardly therefrom, said first lid member further having an aperture defined in it,
a second lid member, said second lid member being generally rigid and functionally adapted to overlay said first lid member, said second lid member having an apertured spout defined in it and including a spout cavity into which the flexible posts of the first lid member extend, and
a valve means defined between the aperture of said first lid member and the apertured spout of said second lid member, said valve means including a flexible bridge extending between the flexible posts of the first lid member and including means for bringing said flexible bridge into sealingly engagement with said first lid member aperture and for closing the aperture defined within said first lid member when the posts of the first lid member are received within the spout cavity of the second lid member and flexed toward each other.

5,607,074
BABY BOTTLE WITH PRESSURE RELIEF VALVE
Sergio K. De Gennaro, 59 Hyacinth Rd., Levittown, N.Y. 11756
Filed Oct. 12, 1995, Ser. No. 542,181
Int. Cl.[6] A61J *9/04*
U.S. Cl. 215—11.5 **4 Claims**



1. A baby bottle comprising:
a bottle body having first and second open ends;
a nipple located over said first end of said body of said bottle, and a first end cap releasably attached to said first end of said body and securing said nipple to said first end of said body; and
a pressure relief valve assembly located within said body adjacent said second end of the latter, and a second end cap releasably attached to said second end of said body and securing said pressure relief valve assembly to said second end of said body, said second end cap having a transverse web which is continuous over the full width of said second end cap and is provided with a plurality of discrete small openings in a mid-region of said transverse web establishing communication between the surrounding atmosphere and the interior of said second end cap;
said pressure relief valve assembly including
(a) an inverted cup-shaped valve seat member having (i) a base provided with inner and outer faces, (ii) a peripheral skirt portion surrounding said inner face of said base and extending therefrom in a direction away from said outer face to an open extremity, (iii) a laterally outwardly directed circumferential flange extending from said open extremity of said skirt portion at a small distance from and in overlying relation to a circumferential boundary edge of said second open end of said body of said bottle and bearing a sealing ring in surrounding relation to said skirt portion between said flange and said boundary edge of said second open end of said body, and (iv) an axial through bore which extends from said inner face to said outer face of said base and has a main section open at said inner face of said base and an enlarged end section open at said outer face of said base, said enlarged end section being configured to define a valve seat;
(b) a reciprocally axially movable valve stem received within said bore, said valve stem having (i) a first end region thereof projecting from said main section of said bore at said inner face of said base and terminating within the confines of said skirt portion in a small lateral enlargement, and (ii) a second end region of an enlarged configuration corresponding to that of said enlarged end section of said bore so as to constitute a valve head sealingly engageable with said valve seat;
(c) a stiff but flexibly deformable annular disc mounted axially on said first end region of said valve stem and retained thereon by said small enlargement of said valve stem so as to constitute an abutment member, said annular disc having a central hole therein which is slightly smaller than said small enlargement of said valve stem so as to enable said annular disc to be snap-fitted over said small enlargement onto said valve stem; and
(d) a compression spring interposed between and bearing at opposite ends thereof against said inner face of said base and said annular disc, respectively, said spring being arranged in surrounding relation to said first end region of said valve stem and biasing the latter in a direction tending to dispose said valve head in a closed sealing position against said valve seat;
whereby when said second end cap is secured to said second end of said body of said bottle, said transverse web of said second end cap at a peripheral region thereof engages said flange of said valve seat member and forces said sealing ring against said second end of said body to sealingly secure said valve assembly to said body, and said transverse web serves to permit ambient air pressure to displace said valve head against the biasing force of said compression spring and away from said valve seat to an open position as a baby sucks on said nipple and reduces the air pressure within said bottle, and said transverse web serves also to prevent small, easily swallowable parts of said valve assembly from inadvertently falling out of said bottle and coming into the reach of the baby.

5,607,075

LARGE-CAPACITY LIDDED DRUM

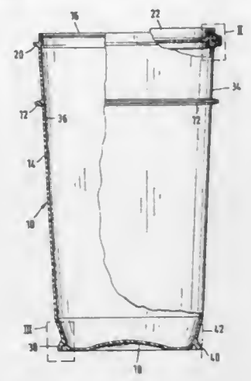
Märten Burgdorf, Heimerzheim, and Dietmar Przytulla, Kerpen, both of Germany, assignors to Mauser-Werke GmbH, Brühl, Germany

Continuation of Ser. No. 133,041, Oct. 13, 1993, abandoned. This application Apr. 26, 1995, Ser. No. 429,015

Claims priority, application Germany, May 25, 1991, 9106443 U

Int. Cl.[6] B65D *45/32*

U.S. Cl. 220—319 **24 Claims**



1. A large-capacity blow-moulded lidded drum of thermoplastic material for storing and transporting hazardous liquid or solid contents, comprising:

a drum body (**10**) having a drum wall (**14**) that tapers downwardly and exhibits an upper charging opening; and

a drum base,

said drum wall being provided on its outer wall surface in vicinity of the upper charging opening (**16**) with a first circumferential, substantially radially projecting surface flange (**20**) for a gas- and liquid-proof fastening of a drum lid (**22**) by means of an overlapping tension ring (**30**) which engages the drum lid (**22**) and the first surface flange (**20**),

said drum wall further including a stacking rim in the form of a second, substantially radially projecting surface flange (**12**) extending around the entire circumference of the outer wall surface below said first surface flange to allow nesting of a plurality of such drum bodies,

wherein the drum wall extends linearly in a straight line from the first surface flange (**20**) to the second surface flange (**12**) and from the second surface flange (**12**) down to the vicinity of the drum base (**18**) over its entire outer periphery in the drum longitudinal direction, and has an inner wall surface (**36**) which is rectilinearly smooth in the region of the first surface flange and of the second surface flange and extends in a linearly straight line from the first surface flange (**20**) down to the vicinity of the drum base,

wherein the second surface flange (**12**) is continuous and is offset slightly upwards in segments at, at least two, diametrically opposed points, and engagement recesses (**46**) for engagement by hand are provided in each of the upwardly offset segments.

5,607,076

SPILL AND SCALD RESISTANT BEVERAGE APPARATUS

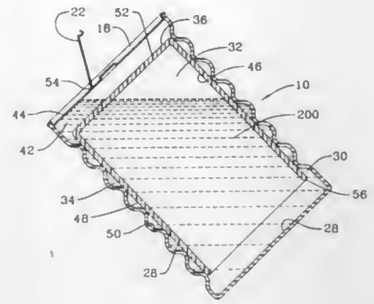
Michael M. Anthony, 11899 NW. 31st Court, Coral Springs, Fla. 33065

Filed Dec. 13, 1994, Ser. No. 356,444

Int. Cl.[6] B65D *77/04*

U.S. Cl. 220—501 **14 Claims**

1. A spill and scald resistant beverage device comprising:



a conventional cup defined by a continuous first curved side wall having an inner surface and an outer surface bordered by an upper perimeter rim spaced apart from a lower perimeter edge, said lower perimeter edge sealingly connected to a bottom wall having a top surface and a bottom surface with said inner surface of said side wall and said top surface of said bottom wall defining a first interior chamber;

an annular housing means sized to encompass said conventional cup and defined by a cup shaped sleeve having a continuous second curved side wall of nominal thickness with an inner surface and an outer surface bordered by an upper perimeter edge spaced apart from a lower perimeter rim, said upper edge sealingly connected to a top wall, said inner surface of said second side wall and an inner surface of said top wall defining a second interior chamber;

means for fluidly communicating said first interior chamber to said second interior chamber;

whereby said beverage device is formed upon placement of a beverage in said first interior chamber of said conventional cup and positioning said annular housing means over said beverage filled cup positioning said bottom wall of said beverage filled cup within said perimeter rim of said annular housing forming a free air space between said bottom wall of said filled beverage cup and said lower perimeter rim, wherein beverage is consumed by inverting the beverage device allowing beverage to flow to said free air space by said means for fluidly communicating said first and second chambers when the device is tilted.

5,607,077

FOOD BEVERAGE AND ACCESSORIES PLATE

Torkel E. Torkelson, 1961 River Reach Dr. Suite 207, Naples, Fla. 33942

Continuation of Ser. No. 234,589, Apr. 21, 1994, abandoned, which is a continuation of Ser. No. 1,097, Jan. 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 698,901, May 13, 1991, abandoned. This application May 14, 1996, Ser. No. 645,913

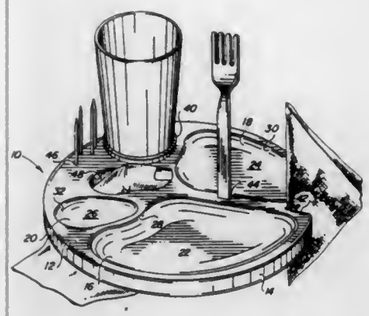
Int. Cl.[6] A47G *19/00*

U.S. Cl. 220—575 **18 Claims**

1. A three dimensional plate designed to hold items of food and beverage and to be held in one hand of an adult person,

said plate having (1) a flat planar upper surface which surface is broken by at least one food depression in the plate for holding items of food and one cylindrical flat bottomed container depression sized to firmly hold a container of liquid refreshment, and (2) a thumb hole located closely adjacent to the container depression,

said thumb hole sized and oriented to receive from below the plate the thumb of the hand of an adult person so that the largest knuckle of the person's index finger rests against the



underside of the flat bottom of the plate's container depression thus providing firm support for the heaviest weight on the plate.

5,607,078

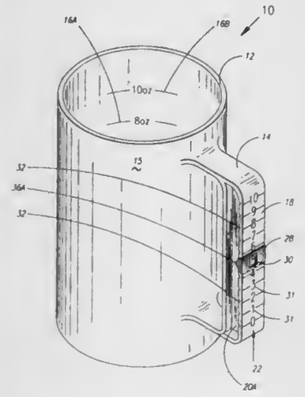
DEVICE FOR COUNTING AND MEASURING LIQUID CONSUMPTION

Brian E. Nordberg, and Maria D. Nordberg, both of 11221 S. 51st St., Apartment 1013, Phoenix, Ariz. 85044

Filed Jul. 21, 1995, Ser. No. 505,106

Int. Cl.[6] G09F *9/37*

U.S. Cl. 220—756 **8 Claims**



1. A drinking mug comprising:

a container portion having at least one fill line,

a handle being attached to said container portion,

a scale of refill indicating numerals being provided on said handle,

a first scale of volume indicating increments being provided on said handle so that each refill indicating numeral on the scale of refill indicating numerals is associated with a volume indicating increment on the first scale of volume indicating increments, each volume indicating increment on the first scale being numerically equal to a volume of liquid needed to refill the container portion to a first at least one fill line a number of times equal to its associated refill indicating numeral,

a clip movably provided on said handle, said clip being provided with a means for indicating a given refill indicating numeral on said scale of refill indicating numerals and a first means for indicating a given volume indicating increment on the first scale of volume indicating increments.

5,607,079

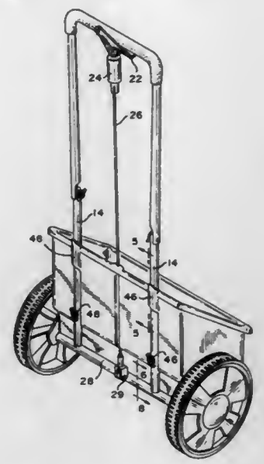
COLLAPSIBLE DROP SPREADER

Aaron D. DeLaby, Carlsbad, and Paul M. Havlovitz, Escondido, both of Calif., assignors to Republic Tool & Mfg. Corp., Carlsbad, Calif.

Filed Jul. 20, 1995, Ser. No. 504,473

Int. Cl.[6] B67D *5/22*

U.S. Cl. 222—45 **11 Claims**



8. A drop spreader comprising,

a frame having spaced-apart leg members,

a hopper connected to said leg members of said frame and having a materials-dispensing aperture means disposed at the bottom thereof,

wheel means supporting said hopper,

a shutoff bar disposed externally of said hopper adjacent said aperture means, said shutoff bar having journal support means for rotatably supporting said shutoff bar to move across said aperture means for opening and shutting said aperture means, and

said shutoff bar having a longitudinal curved face portion complementing the curve at the bottom of said hopper in the vicinity of said aperture means, and

said curved face portion having a longitudinally extending rib member acting as a wiper blade across the curved bottom of said hopper.

5,607,080

CHEMICAL MEASURING SYSTEM

Michael D. O'Dougherty, Maplewood; Steven W. Claussen, and Robert L. Claussen, both of Benson, all of Minn., assignors to C.A.P. Inc., Benson, Minn.

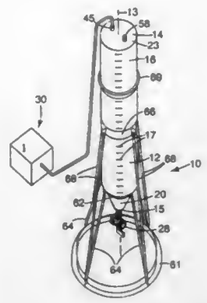
Filed Dec. 30, 1994, Ser. No. 389,961

Int. Cl.[6] B67D *5/08*

U.S. Cl. 222—67 **11 Claims**

1. A chemical measuring system comprising:

a tank having unitary walls of a polymeric material made by spin molding techniques, said tank having a central axis, upper and lower axially spaced cads, an upper portion adjacent said upper end having graduations indicating the amount or liquid required to fill the tank to each of said graduations when said tank is disposed with said axis vertical and said upper end uppermost, said walls being sufficiently light transmissive to afford visual observation of the level of the liquid in the upper portion of the tank, said tank having a generally funnel shaped portion adjacent said lower end decreasing in area from said upper portion to said lower end, liquid passage opening at said lower end, a transverse wall at said upper end, and an air passage opening adjacent said upper end;

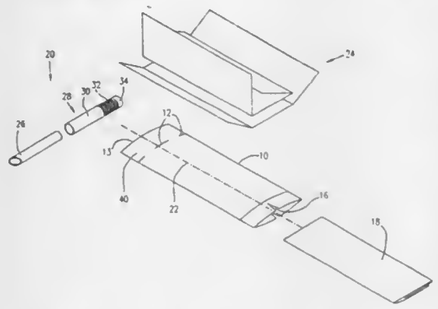


means for supporting said tank with said axis vertical and said upper end uppermost

liquid valve means attached to said tank across said liquid passage opening adapted for opening or closing said liquid passage opening; and

tank air pressure control means coupled to the air passage opening of said tank, said air pressure control means comprising air pump means having an air inlet line and an air outlet line for causing a vacuum in said air inlet line to drew air into said pump means and causing air pressure above atmospheric pressure in said air outlet line, and air valve means manually operable by a single handle for alternately 1) connecting said air inlet line to the air passage opening of said tank to cause a partial vacuum in said tank to afford drawing liquid into said tank through said liquid valve means, 2) connecting said air outlet line to the air passage opening of said tank to cause a pressure above atmospheric pressure in said tank to bias liquid to afford movement of liquid out of said tank through said liquid valve means, and 3) blocking the air passage opening or said tank from said air inlet and from said air outlet line.

5,607,081
CLEANING ASSEMBLY
David Levy, 17 Daphna Street, Yavne 81510, Israel
Filed Sep. 21, 1994, Ser. No. 310,145
Claims priority, application Israel, Sep. 21, 1993, 107060
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—83.5 **14 Claims**



14. A dispensing liquid container comprising:

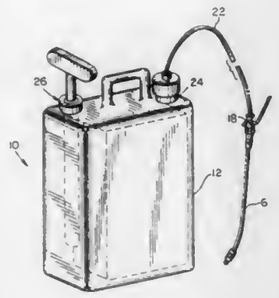
a liquid-impermeable container;

a self-piercing nozzle assembly disposed within the liquid-impermeable container and including:

a nozzle element integrally formed with a spring; and

a hollow piercing element disposed within said nozzle element and arranged such that liquid contained in said container passes through said hollow piercing element; and wherein said liquid-impermeable packet contains a wet web material element and also a cleansing liquid which is not fully absorbed into the wet material element.

5,607,082
REUSABLE COMPRESSION SPRAYER UTILIZING A DISPOSABLE COLLAPSIBLE BAG
Raymond Cracauer, Plymouth, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.
Filed Jun. 1, 1995, Ser. No. 457,762
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—95 **5 Claims**



1. A compression sprayer comprising a tank having an exterior, an interior, a top and an outlet at the top and a manually activated piston pump assembly mounted in the interior of the tank for pressurizing the tank interior, the pump assembly coupled to the top and having a manually reciprocal piston handle extending exterior of the top, discharge tubing exterior of the tank and coupled with the outlet and having a discharge nozzle coupled therewith and a valve for controlling the discharge from the nozzle, and a bag having an outlet and coupled with the tank outlet and adapted to contain a liquid solution to be sprayed and adapted to collapse under the pressure generated by the pump assembly within the tank interior as the liquid solution is discharged from the bag into the tubing and out through the nozzle in a predetermined spray pattern.

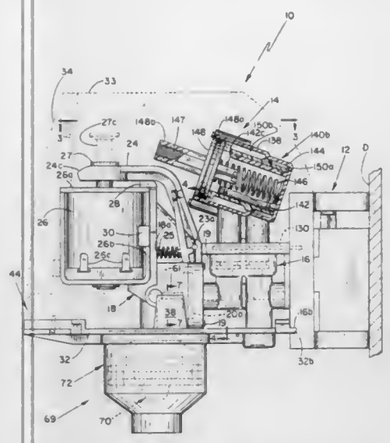
5,607,083
BEVERAGE DISPENSING VALVE
James D. Vogel; Paul J. Henry, both of Anoka, and William G. Mertes, Ramsey, all of Minn., assignors to IMI Cornelius Inc., Anoka, Minn.
PCT No. PCT/US93/04957, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO93/24406, PCT Pub. Date Dec. 9, 1993
PCT Filed May 21, 1993, Ser. No. 122,602
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 **30 Claims**

1. A post-mix beverage dispensing valve, comprising:

a main valve body having a rear end for releasable connecting to sources of liquid beverage components, and a front end opposite therefrom, the main body having a plurality of beverage channels extending there through from the rear end to a nozzle adjacent the front end, and the main body having a banjo valve in each channel, and the main body having means for snap fitting securing of a solenoid thereto, the solenoid for operating the banjo valves so that the beverage components can flow from the sources thereof to the nozzle for dispensing therefrom into a suitable container;

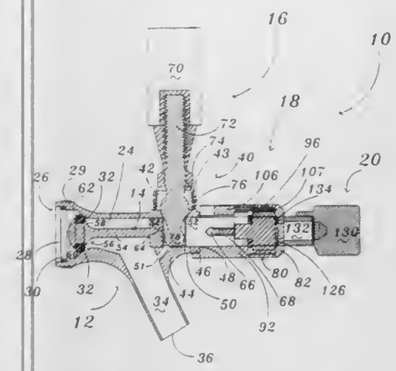
a base plate for snap fitting securing to a bottom surface of the main body;

a housing cover for slideable engaging with the base plate;



an access cover for snap fitting engaging with the base plate and the housing cover for forming an interlocking cover around the main body.

5,607,084
LOCKING SYSTEM FOR BEVERAGE TAPS
David L. George, 300 S. 24th St., San Jose, Calif. 95116
Filed Oct. 28, 1994, Ser. No. 330,578
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.03 **17 Claims**

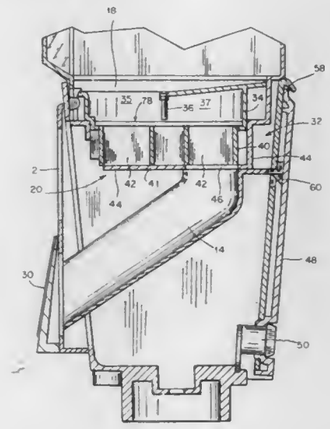


1. A locking system for beverage taps, comprising:

faucet means for dispensing fluids, said faucet means including an axial bore therethrough for receiving a valve stem therein such that axial movement of the valve stem within the axial bore, intermediate an open position and a closed position controls dispensation of fluids through said faucet means, the valve stem protruding axially from said faucet means and including a stem cylinder portion at one end thereof, the stem cylinder portion being that portion which protrudes from the axial bore, the stem cylinder portion being provided with a threaded axial bore in the protruding end thereof; and

lock subassembly means for engaging the valve stem and providing securable axial force thereto, the amount of axial force provided by said lock subassembly means at least being sufficient to securely hold the valve stem in the closed position when fully engaged, said lock subassembly including unlocking means for adjusting the amount of the axial force and for removing the lock subassembly means from the valve stem and a threaded pin in the interior thereof to engage the threaded axial bore, such that rotation of the threaded pin axially moves the valve stem with respect to said lock subassembly and provides the axial force thereon.

5,607,085
TAMPER PROOF VENDING MAHCINE WITH INTERCHANGEABLE PRODUCT COMPARTMENTS
Douglas Cooper, Brentwood, N.Y., assignor to Vendstar, Inc., Bay Shore, N.Y.
Continuation of Ser. No. 134,094, Oct. 8, 1993, abandoned.
This application Feb. 16, 1996, Ser. No. 602,915
Int. Cl.[6] G01F *11/10*
U.S. Cl. 222—153.03 **4 Claims**



1. A product vending machine comprising

a generally rectangular dispenser housing defining at least one top opening and at least one front opening;

a rotatable handle having a generally horizontal axis of rotation mounted to the front of said housing adjacent to each front opening;

a product chute mounted inside said housing communicating between each of said at least one top openings and each of said front openings;

a product compartment removably engaged over each of said top openings, said product compartment defining an opening in the bottom thereof which compartment bottom opening communicates with said chute when said compartment is engaged over said top housing opening;

a proportionator joined to said product compartment and positioned between said compartment bottom opening and said chute, for discharging a discrete quantity of said product from said compartment into said chute, said proportionator being operably engaged with said handle and which proportionator acts as a cap over the product compartment bottom opening during transport;

means for preventing crushing of or damage to said product when discharged;

security means which, when installed on said machine, interlocks the compartments, chute and housing such that none of these components may be removed from the vending machine without removal of the security means;

wherein the security means comprises a security cover having integrally formed thereon a plurality of pins which engage the back of the housing as well as the bottom of the compartment, through openings provided in the housing and the compartment, respectively;

integrally formed on the cover is a plurality of flaps which engage the chute when the cover is placed on the vending machine; and

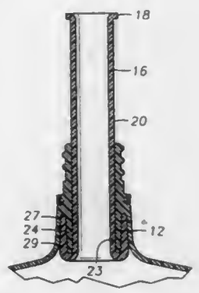
whereby as a result of this arrangement, the compartments and chutes employed cannot be removed from the vending machine without first removing the cover thereby improving the tamper resistance of the vending machine while still allowing for the easy interchange and/or replacement of compartments.

5,607,086

CONTAINER ASSEMBLY WITH MOVABLE SPOUT

Joel S. Gooch, 264 E. Summit Ave., San Antonio, Tex. 78212

Filed May 23, 1995, Ser. No. 447,912
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—525 **19 Claims**



1. A container and spout assembly comprising:

a container;

a neck member extending from the container, said neck member having an in-turned cuff which turns back upon a circumferential wall of the neck member; and

a spout member movably housed within said neck member, said spout member having an out-turned cuff which turns back upon a circumferential wall of the spout member for coupling with the in-turned cuff.

5,607,087

PRESSURIZED FLUID DISPENSING DEVICE

Shawn D. Wery, Main Post Office 100 S 1st, Minneapolis, Minn. 55001, and John F. Luca, 52 E. Burdick, Oxford, Mich. 48371

Filed Sep. 19, 1994, Ser. No. 308,572
Int. Cl.[6] A01C *15/04*
U.S. Cl. 222—610 **20 Claims**

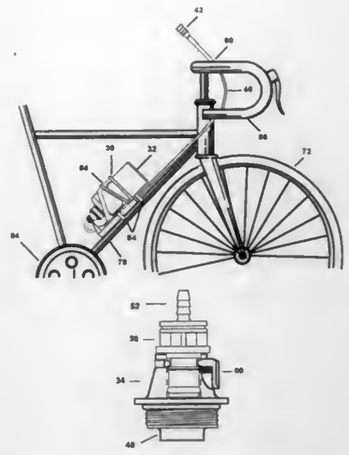
1. A fluid dispensing device comprising:

a vessel having a sealable opening, said vessel being pressurizable for storing and dispensing a fluid therein under pressure;

a first coupling member operable to substantially seal said opening and having a first check valve operable to releasably maintain a pressurized condition within said vessel;

a second coupling member operable to sealingly engage said first coupling member while opening said first check valve for dispensing fluid from within said vessel;

a tubing member attached to said second coupling member and having an actuatable valve disposed in communication therewith for dispensing fluid from said vessel through said tubing member;



a pressure adapter operable to sealingly engage said first coupling member to communicate a pressurized condition into said vessel; and

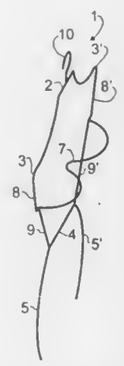
a second check valve disposed in communication with said vessel, said second check valve operable for limiting pressure within said vessel.

5,607,088

HANGER WIRE FORMS

Abraham Carranza, 2629 Tweedy Blvd., South Gate, Calif. 90280

Filed Oct. 6, 1995, Ser. No. 540,253
Int. Cl.[6] D06C *15/00*; **A47G** *25/14*
U.S. Cl. 223—66 **9 Claims**



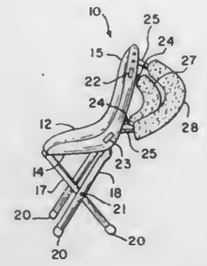
1. A stackable wire form for garments having a torso and hips comprising a first wire formed into a symmetrical outline of a neck, shoulders, arms pits, chest, waist and hips; a second wire connecting the first wire at the waist; a third wire welded to the first wire at the armpits, the third wire extending outwardly from a plane of the first wire and inwardly at the center of the third wire to simulate a human's bust, whereby a garment displayed on the wire form appears as if it were worn on a human body; and means for supporting the wire form.

5,607,089

SPORTSMAN BACK PACK

Alton R. Strum, P.O. Box 1261, Gloucester Point, Va. 23602

Filed Jan. 17, 1995, Ser. No. 373,063
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—155 **4 Claims**



1. A combination back pack and support seat comprising in combination:

a chair having a seat portion and an integral backrest portion;

a pair of foldable chair legs pivotally fixed to said chair seat portion;

said pair of foldable legs being in folded position when it is desired to transport said chair and adapted to be unfolded when it is desired to employ said chair as an occupant support surface;

each member of said pair of foldable legs comprising a first and a second substantially inverted U-shaped structure;

each of said first and said second substantially inverted U-shaped structures including an elongated horizontal portion and a pair of depending segments integrally extending from each end of said elongated horizontal portion;

each of said depending segments of said first and said second substantially inverted U-shaped structure terminating in a ground engaging free end;

each said depending segment of said first substantially inverted U-shaped structure being pivotally connected at a point substantially intermediate to said horizontal portion and said ground engaging free end thereof to a depending segment extending from said second substantially inverted U-shaped structure;

a pair of shoulder straps secured to said backrest portion of said chair;

said pair of shoulder straps being constructed of flexible cord material and provided with a protective cushion cover to engage the shoulders of a person transporting said chair;

means providing pivotal connection of said first substantially inverted U-shaped structure to said seat portion of said chair; and

means for releasably receiving said horizontal portion of said second substantially inverted U-shaped structure to support said chair in a normal sitting position for an occupant.

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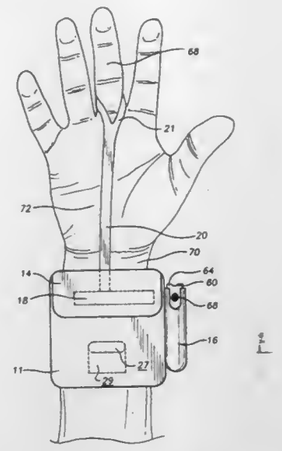
SAFETY DEVICE

Roland J. Brown, 2722 Dublin St., New Orleans, La. 70118

Filed Dec. 28, 1994, Ser. No. 365,040
Int. Cl.[6] A45F *3/00*
U.S. Cl. 224—217 **3 Claims**

1. A safety device for holding a canister of the type containing a supply of liquid repellant and having a nozzle including an orifice through which the liquid repellant is discharged in a predetermined direction with respect to the nozzle orifice, said safety device comprising:

a canister receiving member having a cavity having a longitudinal axis and of a size sufficient to receive therein a bottom portion of said canister;



a strap mechanism, attachable about the wrist of a user, and in functional connection with said canister receiving member in a manner such that when said strap mechanism is attached about the wrist of a user said longitudinal axis of said cavity is oriented along an exterior portion of the forearm said user; and

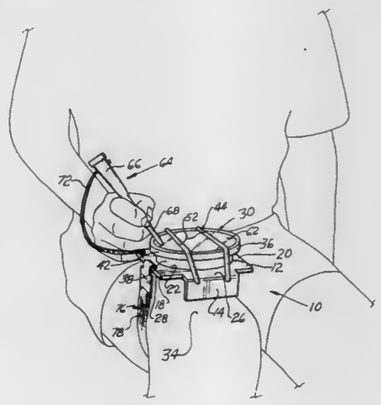
a single elongated support strap having a first end in functional connection at a single point with said canister receiving member and ending at a second end; said second end formed with a loop for attaching said second end to a hand of said user in a manner such that said support strap acts to prevent said canister receiving member from sliding toward the elbow of a user when said strap mechanism is attached about the wrist of a user.

5,607,091

UNIVERSAL GAME CALL ADAPTER AND HOLDER

John Musacchia, 110 Beasley Rd., Cartersville, Ga. 30120

Filed Jul. 5, 1995, Ser. No. 498,434
Int. Cl.[6] A45C *13/30*; **A45F** *3/14*
U.S. Cl. 224—222 **11 Claims**



1. A game call holder comprising:

a platform having top and bottom surfaces and provided with an aperture therethrough;

legs depending from said platform;

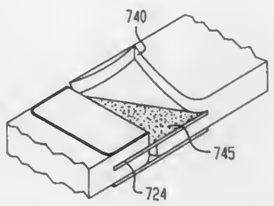
a striker and a flexible tether, said tether having opposing portions respectively attached to said striker and said platform;
a retainer element including a resilient member having a stretch bridging said platform aperture; whereby
said retainer element stretch may be deflected under tension to captively retain a game call having a lower sound emanating surface disposed over said platform aperture; and
a body attachment assembly carried by said platform and encirclable about a limb of a user's body to secure said platform legs against the body limb; whereby
the game call lower sound emanating surface is retained substantially spaced from the body limb.

5,607,092

JOINTED NEOPRENE SEGMENTS CARRYING STRAP

Thomas J. Alexander, Kokonoe Bld. No. 602, Koenji-Minami 4-28-13 Suginami-Ku, Tokyo, Japan, assignor to Thomas J. Alexander, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,825
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—258 **20 Claims**



1. A carrying strap for carrying a load comprising:
a first end,
a second end located opposite said first end, said first and second ends being attachable to said load, and
an intermediate portion located between said first and second ends, said intermediate portion comprising:
segments made from a stretchable material, each segment being separated from an adjacent segment by a gap,
a cushioning pad underlaying at least one of said segments,
a sleeve covering said segments and said pad, and
at least one joint connecting adjacent segments, and being disposed in each gap between said adjacent segments, said joint being made from a material which is less stretchable than the material of said segments,
wherein each of said segments has a length which is shorter than a length of said intermediate portion, said segments being connected so that a combined length of said connected segments is approximately equal to the length of said intermediate portion, wherein said connected segments are configured so that the length of said intermediate portion expands under said load.

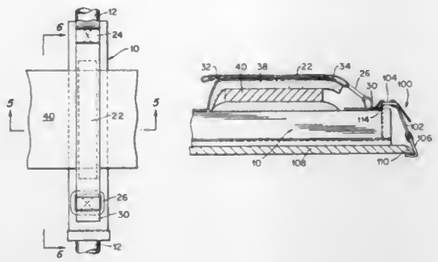
5,607,093

ELONGATED CARRIER SUPPORT APPARATUS FOR SECURING ITEMS TO THE ROOF OR LUGGAGE RACK OF A VEHICLE

William F. Geier, P.O. Box 1308, Rte. #1, White Stone, Va. 22578

Continuation-in-part of Ser. No. 417,192, Apr. 5, 1995, abandoned. This application Jun. 14, 1995, Ser. No. 490,172
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—318 **25 Claims**

1. A carrier apparatus for supporting an elongated object on the roof of a vehicle, said device comprising:



a support fabric,
said support fabric having a width and length, and an upper surface and a lower surface,
a plurality of barbs covering at least a portion of at least a half of the width and length of said width and length of said lower surface of said fabric,
a soft material covering at least a portion of another half of said lower surface of said width and length of said fabric,
a plurality of loops covering at least a portion of at least one half of the width and length of said upper surface of said fabric,
at least one strap secured by a first securing means to another half portion of said upper surface of said fabric between one edge and a center line with said at least one strap extending along a length of said fabric and having a free end and at least one linear portion having an upper surface and a lower surface,
a second strap securing means secured to said upper surface of said fabric and spaced from said first securing means a distance equal to approximately one-half the length of said linear portion and directed in a direction of said at least one linear portion having a free end, said at least one linear portion of said at least one strap includes barbs on the upper surface thereof which extend from juxtaposed said first securing means along a portion of about one half of a length of said at least one linear portion,
said at least one linear portion of said at least one strap includes loops on the lower surface thereof beginning at about said free end and extending along said lower surface of said at least one linear portion to about one half the length thereof, and
whereby said at least one linear portion can be secured to said second securing means and folded back upon itself so that the barbs and loops secure said at least one portion of said strap in place above the upper surface of said fabric.

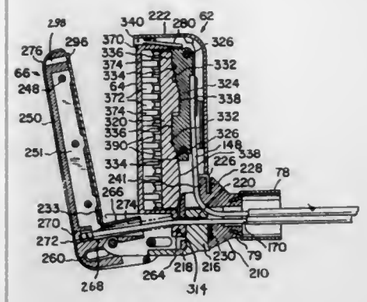
5,607,094

SURGICAL STAPLING INSTRUMENT WITH ARTICULATED STAPLING HEAD ASSEMBLY ON ROTATABLE AND FLEXIBLE SUPPORT SHAFT

George A. Clark, East Windsor; Malcolm C. Burwell, Princeton; John A. Gola, Bordentown; Christopher Robinson, Lawrenceville, and Fred E. Snyder, Princeton Junction, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 162,737, Dec. 6, 1993, Pat. No. 5,465,894. This application May 4, 1995, Ser. No. 434,817
Int. Cl.[6] A61B *17/072*
U.S. Cl. 227—175.1 **3 Claims**

1. A surgical stapling instrument for applying one or more surgical staples to tissue, comprising:
a stapling head assembly including a fixed jaw which supports a staple holder for receiving one or more surgical staples, a movable jaw which supports an anvil for clamping the tissue against said staple holder when said jaws are closed, and a staple driver for driving the staples from said staple holder into the tissue and against said anvil;
an actuator handle assembly including a jaw closure lever for closing said jaws to move said anvil into a tissue clamping position and a staple firing trigger for actuating said staple driver;



a shaft assembly for mounting said stapling head assembly on said actuator handle assembly;
a closure cable connecting said movable jaw to said jaw closure lever and extending through said shaft assembly for pulling said movable jaw toward said fixed jaw when said jaw closure lever is actuated;
a firing cable connecting said staple driver to said staple firing trigger and extending through said shaft assembly for actuating said staple driver when said staple firing trigger is actuated; and
jaw coupling means for slidably and pivotally coupling said movable jaw to said fixed jaw, said jaw coupling means including a slidable roller pin slidably and rotatably mounted in guide slots formed in each of said jaws;
wherein:
said stapling head assembly includes a tissue retaining pin mounted inside said fixed jaw, said tissue retaining pin being movable from a retracted position within said fixed jaw when said jaws are open to an extended position engaging said movable jaw when said jaws are closed;
a pin placement mechanism is mounted on said fixed jaw for moving said tissue retaining pin between the retracted position and the extended position;
said tissue retaining pin is mounted on a cantilever spring arm inside said fixed law which supports said retaining pin for movement between the retracted and extended positions; and
a pin placement arm pivotally mounted inside said fixed jaw for engaging said cantilever spring arm and moving said retaining pin between the retracted and extended positions.

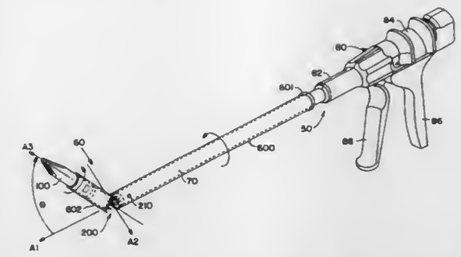
5,607,095

ENDOSCOPIC SURGICAL INSTRUMENT WITH PIVOTABLE AND ROTATABLE STAPLE CARTRIDGE

Jack E. Smith, Dayton; James J. Bedi, Cincinnati; Thomas J. Sierocuk, Blue Ash, and Thomas H. Graves, Jr., Milford, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 80,462, Jun. 21, 1993, Pat. No. 5,431,323, which is a continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application Mar. 29, 1995, Ser. No. 412,437
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—177.1 **10 Claims**

1. An endoscopic surgical stapling instrument for applying one or more surgical staples to tissue, comprising:
a handle including a staple actuator mechanism;
a tubular support shaft having a longitudinal axis and extending from said handle;
a staple cartridge mounted on said support shaft and connected to said staple actuator mechanism for applying one or more staples to the tissue;
said staple cartridge being mounted for rotation relative to said support shaft to permit the rotational orientation of said staple cartridge to be adjusted;
pivot means for articulating said staple cartridge relative to said support shaft;



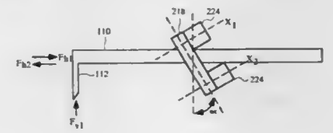
means for retaining said staple cartridge in different rotational orientations as said staple cartridge is rotated;
means for retaining said staple cartridge in different articulated orientations as said staple cartridge is articulated;
first control means proximate said handle for rotating said staple cartridge relative to said support shaft;
second control means proximate said handle for articulating said staple cartridge relative to said support shaft;
a first external sleeve rotatably positioned on said tubular support shaft; and
a second external sleeve engaging said staple cartridge, said first external sleeve means having a distal end terminating proximate said pivot means, said second external sleeve means having a proximal end terminating proximate said pivot means, said distal and proximal sleeve ends engaging one another for transferring rotational movement from said first external sleeve to said second external sleeve and to said staple cartridge.

5,607,096

APPARATUS AND METHOD FOR ULTRASONIC BONDING LEAD FRAMES AND BONDING WIRES IN SEMICONDUCTOR PACKAGING APPLICATIONS

Chainarong Asanasavest, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 11, 1996, Ser. No. 613,023
Int. Cl.[6] B23K *20/10;* **H01L** *21/607*
U.S. Cl. 228—1.1 **22 Claims**





1. A lead frame ultrasonic bonding apparatus suitable for coupling lead frame leads to associated traces on a substrate, the ultrasonic bonding apparatus comprising:
a base;
an ultrasonic transducer supported by the base, the transducer having a longitudinal axis, a bonding tool end, a mounting end that is secured to the base and a support section that is positioned between the bonding tool end and the mounting end;
a bonding tool sized suitably for engaging a lead frame lead to facilitate connecting the lead frame lead to an associated trace on a substrate, the bonding tool being secured to the bonding tool end of the transducer such that actuation of the transducer will cause movement of the bonding tool;

a pair of force sensors for detecting the forces applied to the bonding tool, the force sensors being positioned on opposite sides of the transducer's longitudinal axis, each force sensor having a sensor axis that is arranged at an acute angle relative to the longitudinal axis of the transducer, the force sensors each being arranged to detect forces applied along its sensor axis and outputting a force signal indicative of the detected forces; and

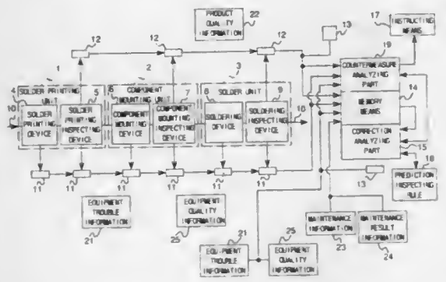
a controller for receiving the force signals and for outputting a drive signal to the transducer to facilitate mechanically bonding the selected lead frame lead to its associated trace, wherein the outputted drive signal is controlled at least in part on the basis of the received force signals.

5,607,097

COMPONENT-MOUNTED CIRCUIT BOARD PRODUCTION SYSTEM

Kenichi Sato, Ikoma; Koichi Kanematsu, Hirakata; Hiroaki Fujiwara, Takatsuki, and Yasuhiro Okada, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jun. 16, 1994, Ser. No. 261,101
Claims priority, application Japan, Jun. 17, 1993, 5-146448
Int. Cl.[6] B23K *3/00*
U.S. Cl. 228—8 **12 Claims**



1. A production system for mounting components on circuit boards, comprising:

a solder printing unit having a solder printing device for printing solder onto lands of a circuit board and a solder printing inspecting device for inspecting a print state of the solder printed by said solder printing device and generating an output indicative of said print state;

a component mounting unit having a component mounting device for mounting a component at a predetermined position of the solder printed on the circuit board and a component mounting inspecting device for inspecting a mounting state of the component mounted by said component mounting device and generating an output indicative of said mounting state;

a soldering unit having a soldering device for melting and then hardening the solder printed on the circuit board and a soldering inspecting device for inspecting a solder state of the solder melted and then hardened by the soldering device and generating an output indicative of said solder state;

a data memory;

a first information data input means for inputting into the data memory first data indicative of functional characteristics of each of the devices of the solder printing unit, component mounting unit, and soldering unit;

a second information data input means for inputting into the data memory second data indicative of inspection results based on at least said outputs of the respective inspecting devices;

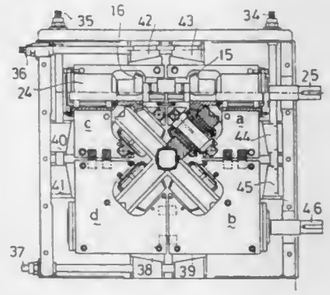
a correlation analyzing part for combining maintenance works and corresponding items of the first and second data stored in the data memory and analyzing a frequency of each item, and for then generating a plurality of rules denoting a result from a cause, a cause from a result, and a result from a maintenance work among the first data, second data, and maintenance works.

5,607,098

TUBULAR SHAPE FINISHING APPARATUS FOR AN ELECTRO-RESISTANCE-WELDED PIPE

Ryoji Kusakabe, and Tatsuaki Urata, both of Kobe, Japan, assignors to Kusakabe Electric & Machinery Co., Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 210,897, Mar. 17, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,631
Claims priority, application Japan, Oct. 20, 1993, 5-262694
Int. Cl.[6] B23K *31/02;101/06*
U.S. Cl. 228—17 **7 Claims**



1. A tubular shape finishing apparatus in a steel pipe manufacturing system for forming an electro-resistance-welded steel pipe from band steel, comprising:

a plurality of forming roll stands which receive and transfer said band steel, said forming roll stands forcing said band steel to form a steel pipe while transferring said band steel thereon;

a seam welding unit for welding edges of said band steel formed into said steel pipe by said forming roll stands so as to form a seam on said steel pipe;

a cutter for removing padding from a portion of said steel pipe welded by said seam welding unit; and

a finishing unit for finishing said steel pipe into a desired size, said finishing unit comprising a forcible drive type stand having four rollers driven by an external force generated by a drive motor such that said rollers forcibly transfer and finish said steel pipe at the same time, said forcible drive type stand including a pair of input shafts which are connected to said drive motor, each of said input shafts being provided with bevel gears which couple with two of said four rollers.

5,607,099

SOLDER BUMP TRANSFER DEVICE FOR FLIP CHIP INTEGRATED CIRCUIT DEVICES

Shing Yeh, Buffalo Grove, Ill.; William D. Higdon, Greentown, and Ralph E. Cornell, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 24, 1995, Ser. No. 426,861
Int. Cl.[6] H01L *21/44*
U.S. Cl. 228—180.22 **6 Claims**

1. A method for transferring solder bumps to solder bump locations on a surface of a flip chip integrated circuit device, the method comprising the steps of:

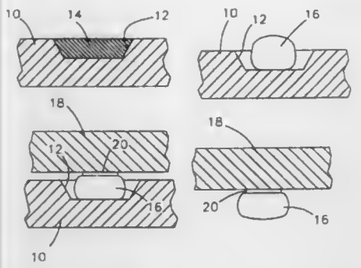
providing a carrier device having cavities located on a surface thereof so as to correspond to the solder bump locations on the flip chip integrated circuit device when the carrier device is registered with the flip chip integrated circuit device, each cavity being defined by walls and a bottom that is substantially parallel with the surface of the carrier device, the walls of each cavity being continuously tapered between the surface of the carrier device and the bottom of the cavity such that the cavity has a greater width at the surface of the carrier device than at the bottom of the cavity;

depositing a solder paste in the cavities;

melting the solder paste so as to form spherical solder balls, the walls of the cavities causing the solder balls to be centered within the cavities while the solder balls are molten such that the surfaces of the solder balls are spaced apart from the walls;

aligning the carrier device with the flip chip integrated circuit device and heating the carrier device so as to liquefy the solder balls in the cavities; and

contacting the carrier device with the flip chip integrated circuit device such that the solder balls wet and transfer to solder pads present on the flip chip integrated circuit device.

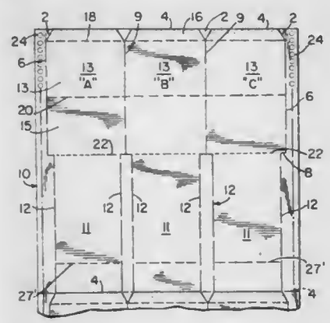


5,607,100

DIRECT MAIL PACKET WITH PLURALITY OF DETACHABLY JOINED ENVELOPES AND METHOD OF MANUFACTURE

John W. Stenner, Orange, Conn., assignor to Kurt H. Volk, Inc., Milford, Conn.

Filed Aug. 12, 1994, Ser. No. 289,800
Int. Cl.[6] B65D *27/10*
U.S. Cl. 229—69 **11 Claims**



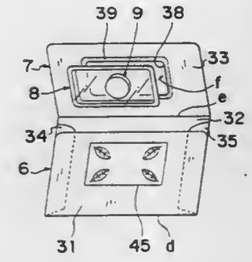
1. A direct mail article comprising a packet of at least three integral finished envelopes, each envelope having an opening sealable by a flap and parallel lateral edges extending downwardly from the opposite ends of the opening, each envelope formed with a folded flap, the lateral edges of the envelopes sealed with adhesive to form pockets, each of the finished envelopes containing at least one separate enclosure device, the envelopes being detachably joined one to the other at their lateral edges along parting lines, and the envelopes being folded at the parting lines inwardly upon each other to superposed the envelopes and form the mailing packet, one side of said packet forming an open edge between the lateral edges of the superposed envelopes, and a wafer seal applied to join the envelopes at the open edge.

5,607,101

POSTAL MATTER

Toshiki Saito, c/o Toshiki Saito Design Room 1-13-25, Nishishinsaibashi, Chuo-ku, Osaka-shi, Osaka 542, Japan

Filed Mar. 17, 1995, Ser. No. 406,282
Claims priority, application Japan, Mar. 23, 1994, 6-002539 U; Sep. 7, 1994, 6-011145 U; Nov. 16, 1994, 6-282182
Int. Cl.[6] B65D *27/04*
U.S. Cl. 229—71 **18 Claims**



1. Postal matter for use in a form of a sealed letter comprising:

a blank parceled out into three portions, a first portion being located at one side of a first pair of opposite sides of a second portion, a third portion being located at the other side of said first pair of opposite sides of said second portion;

fins provided respectively along another pair of opposite sides of said second portion and folded so as to allow said fins to ride along an inwardly presented face of said second portion;

an envelope formed by folding said first portion so as to allow said first portion to ride along said inwardly presented face of said second portion and by fastening said first portion to said fins;

an opening provided in said third portion which constitutes a flap adapted to close an opening of said envelope;

a housing portion provided with a cup section and a flange, said cup section having a cavity and projecting outwardly of said opening, said flange being secured to said third portion; and

a small article accommodated in said housing portion;

said second portion having an outwardly presented face provided with a portion allotted either for affixing a postage stamp thereto or for affixing a postmark indicating that said sealed letter is mailed on terms of separate payment of postage instead of an affixed postage stamp and another portion allotted for indicating an address.

5,607,102

TAMPER-RESISTANT CASH BOX

Michael J. Walsh, 5724 Aluffo Rd., Paso Robles, Calif. 93446, and Gerald R. Gerent, 1255 Grandview Rd., Vista, Calif. 92084

Filed Dec. 11, 1995, Ser. No. 570,354
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—1 D **30 Claims**

1. A tamper-resistant cash box combination comprising:

a) a cash box support structure defining a storage cavity accessible through a front opening;

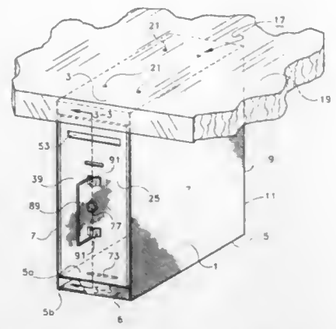
b) a closed cash box sized to fit snugly into said structure and including:

i) a front panel for fitting flush with said structure front opening;

ii) said front panel forming a first slot therethrough for passing currency and the like into said box;

c) a bolt inside said cash box in slidable engagement with said front panel, said bolt defined by a top end and a bottom end; and,

d) a lock on said cash box front panel for moving said bolt upward to cover said first slot and downward through a



second slot formed in the bottom of said cash box into a third slot formed in the bottom of said structure to lock said cash box in said structure;

e) where actuation of said lock in one direction locks said cash box in said structure and simultaneously opens said currency-passing first slot for access to the interior of said cash box and actuation of said lock in the other direction unlocks said cash box from said structure for removal therefrom and simultaneously closes said currency-passage first slot to prevent further access to the interior of said cash box.

5,607,103

MAILBOX WITH DUAL ACCESS MECHANISM

Wideman E. Boling, Jr., 12 Sylvatus Ct., Greenville, S.C. 29611

Filed Sep. 12, 1995, Ser. No. 526,870

Int. Cl.[6] B65D *91/00*

U.S. Cl. 232—17 **20 Claims**



1. A mailbox comprising:

an elongated housing having a bottom and a top covering and including a first side and a second side, said elongated housing defining a first opening at a first end and a second opening at a second and opposite end;

a first door pivotally mounted to said elongated housing at said first end, said first door being moveable between an open position and a closed position;

a second door pivotally mounted to said elongated housing at said second end, said second door being moveable between an open position and a closed position; and

a flexible elongate member for interconnecting said first door to said second door, said elongate member forming a loop between said first door and said second door and including a first segment extending along and adjacent to said first side of said elongated housing and a second segment extending along and adjacent to said second side of said elongated housing, said elongate member having a length such that, when one of said first and second doors is opened, said elongate member causes the other of said first and second doors to close.

5,607,104

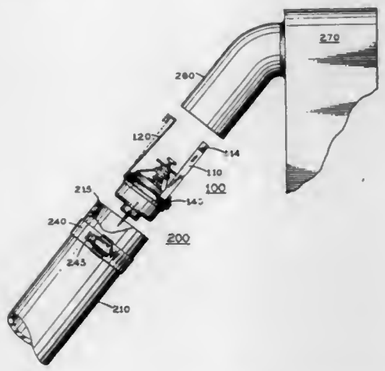
AUTOMOTIVE THERMOSTAT VALVE SUPPORT ASSEMBLY

Fred Naclerio; Josephine Naclerio, both of 1863 Adventure Pl., North Lauderdale, Fla. 33068; John Comito, and Irene Comito, both of 10647 NW. 51st St., Coral Springs, Fla. 33076

Continuation-in-part of Ser. No. 384,370, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 184,453, Jan. 21, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,496

Int. Cl.[6] F01P *7/16*

U.S. Cl. 236—34.5 **2 Claims**



2. A thermostat valve assembly adapted to be inserted into the end of a hose, and having arms overlapping a portion of a neck of a radiator on which said hose fits, said thermostat valve assembly comprising:

a cylindrical body for supporting a thermostat valve, and having an axis;

thin, flat, ribbon-like arms affixed to said body and extending from said body parallel to said axis;

said body being adapted to being inserted into said end of said hose with said arms extending between said hose and said neck and projecting out of said end of said hose;

said projecting arms including hook ends for wrapping around said end of said hose to retain said arms and said body in place;

a separate adapter ring encircling said body, with said adapter ring being adapted to support said thermostat valve in said hose near said end of said hose; and

adjustable means for adjusting a temperature setting of said thermostat valve assembly, said adjustable means including a screw entering said body;

a washer encircling said screw having numbers for temperature settings thereon; and

a pointer on said screw for selecting a desired one of said temperature numbers.

5,607,105

VEHICULAR AIR-CONDITIONER

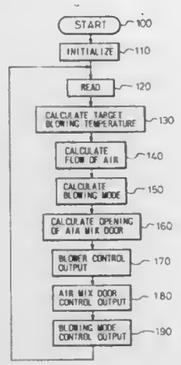
Katsuhiko Samukawa, Oobu, and Yuji Honda, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 28, 1995, Ser. No. 508,548

Claims priority, application Japan, Jul. 29, 1994, 6-178248; Jul. 29, 1994, 6-178249

Int. Cl.[6] F24F *7/00*

U.S. Cl. 236—49.3 **10 Claims**



1. A vehicular air-conditioner comprising:

means for calculating a first target blowing temperature from a first temperature setting and heat load in a compartment;

means for calculating a second target blowing temperature from a second temperature setting and heat load in the compartment;

means for selecting an air flow signal corresponding to a flow of conditioned air sent into the compartment by a predetermined pattern based on said first target blowing temperature and said second target blowing temperature, said predetermined pattern including fluctuating regions where said air flow signal is changed in accordance with changes in said first and second target blowing temperatures and a constant region where said air flow signal is kept constant regardless of changes in said first and second target blowing temperatures, said air flow signal corresponding to a flow of air of at least the mean value of the flow of air at said first target blowing temperature and the flow of air at said second target-blowing temperature when either said first target blowing temperature or said second target blowing temperature is in the constant region; and

means for exercising control to give a flow of air corresponding to the air flow signal.

5,607,106

LOW INERTIA, WEAR-RESISTANT VALVE FOR ENGINE FUEL INJECTION SYSTEMS

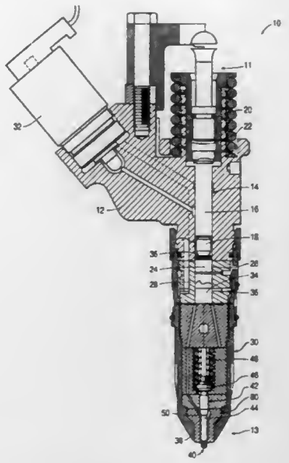
Joseph C. Bentz; John T. Carroll, III; Lester L. Peters; Thomas M. Yonusbonis, all of Columbus, and Jeffrey L. Campbell, Hope, all of Ind., assignors to Cummins Engine Company, Columbus, Ind., and Toshiba Corporation, Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,047

Int. Cl.[6] F02M *47/02*

U.S. Cl. 239—88 **12 Claims**

1. A closed nozzle unit fuel injector for an internal combustion engine having improved fuel injection dynamic characteristics, wherein said injector includes a fuel discharge end with a fuel discharge nozzle tip which is blocked to prevent fuel flow therethrough and is opened to allow fuel flow therethrough when an injection event is initiated by the actuation of a needle valve assembly within an axial fuel channel in said nozzle tip during engine operation, wherein said needle valve assembly comprises:



(a) a longitudinal needle element configured and sized to reciprocate within the axial fuel channel between a fully seated position blocking fuel flow through the fuel discharge nozzle tip and an unseated position allowing fuel to flow through the fuel discharge nozzle tip, wherein said needle element includes a tip end complimentarily configured to fit said fuel discharge nozzle tip and a planar contact end oriented perpendicularly to the longitudinal axis of the needle element;

(b) a spring retainer element positioned axially away from said needle element tip end and adjacent to said planar contact end, wherein said spring retainer element includes a needle element contact portion positioned toward the needle element contact end, a smaller diameter spring retaining portion positioned axially away from the needle element, and an annular shoulder between said needle element contact portion and said spring retaining portion;

(c) a helical spring element in biasing contact with said annular shoulder and in retaining contact with said spring retaining portion, wherein said spring element biases said needle element in said fully seated position;

(d) a nib element having a smaller diameter than said needle element interposed axially between said needle element contact end and said retainer element contact portion, wherein said nib element is permanently secured to the contact end of the needle element or to the needle element contact portion of the retainer element; and

(e) a valve seat surrounding the axial fuel flow channel in the fuel discharge nozzle tip, wherein said valve seat comprises a metal portion extending axially away from said fuel discharge nozzle tip toward said spring retainer element and a ceramic portion located adjacent to and axially inwardly of said metal portion, and said valve seat is configured to seat said needle element in said fully seated position.

5,607,107

RETRACTABLE HOSE

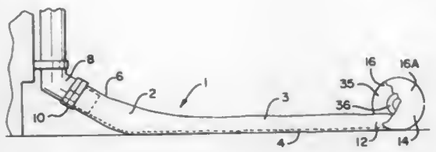
James A. Grieve, 248C Broadway Avenue, Toronto, Ontario, Canada, and John M. Todd, 211 Queen's Quay West, Suite 1201, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 924,834, Aug. 4, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,247

Int. Cl.[6] B05B *15/10;* B65H *75/00*

U.S. Cl. 239—195 **19 Claims**

1. A retractable conduit which comprises a spirally coiled, memory-set, elongated sheet selected from the group consisting of crystalline and semi-crystalline thermoplastic polymer sheets, said sheet having two ends, one of which is attachable to the exterior of



a spout, said sheet being sheathed in a flexible tubular film such that there is a first elongated portion of flexible tubular film on one side of the memory-set sheet and a second elongated portion of flexible tubular film on the opposing side of the memory-set sheet, said second portion being perforated at intervals along its length, there also being a flexible elongated film interposed between said memory-set sheet and the second portion, such that the memory-set sheet and the flexible elongated film may be attached to the spout with the spout between the memory-set sheet and the flexible elongated film.

5,607,108

NOZZLE AND AIRCAP FOR SPRAY GUNS

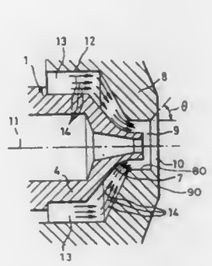
Paul L. Garlick, Poole, and Neville T. Pettit, Lymington, both of United Kingdom, assignors to ITW Limited, Windsor, United Kingdom

Filed Sep. 14, 1995, Ser. No. 528,281

Claims priority, application United Kingdom, Oct. 10, 1994, 9420375

Int. Cl.[6] B05B *7/06*

U.S. Cl. 239—424 **16 Claims**



1. A nozzle and aircap assembly for spray guns, comprising:

a longitudinal nozzle for spraying a fluid to be sprayed, and having a longitudinal axis and a discharge outlet annularly surrounding said longitudinal axis; and

an aircap encircling said nozzle and having a discharge outlet annularly surrounding said fluid discharge outlet of said nozzle;

said discharge outlet of said aircap comprising a substantially planar leading face disposed substantially perpendicular to said longitudinal axis of said nozzle; an annular wall having an axial extent disposed parallel to said longitudinal axis of said nozzle and defining a central aperture within said aircap and within which said discharge outlet of said nozzle is disposed such that said discharge outlet of said nozzle is spaced rearwardly from said leading face of said aircap; and said annular wall of said aircap defining said central aperture within said aircap comprises a chamfered portion integrally interconnecting said axial extent thereof and said leading face of said aircap so as to optimize fluid and air flow out from said discharge outlet of said aircap without obstructing said fluid and air flow discharged from said discharge outlet of said aircap.

5,607,109

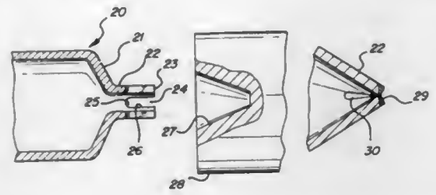
FUEL INJECTION NOZZLE AND METHOD OF MAKING

Richard M. Von Berg, 4403 Alvin St., Saginaw, Mich. 48603

Filed Dec. 15, 1994, Ser. No. 356,565

Int. Cl.[6] B05B *1/14*

U.S. Cl. 239—568 **14 Claims**



1. A nozzle comprising a tubular body open at one end for communication with a source of fluid and terminating at its opposite end in a conical extension having a wall tapering substantially uniformly to a closed end; and a plurality of circumferentially spaced tear drop shaped outlet openings in said wall, each of said outlet openings tapering in a direction toward said closed end.

5,607,110

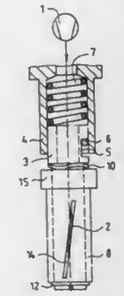
DEVICE FOR DISCHARGING BLOWING AIR

Manfred Schmitt, Eschelbronn, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 14, 1994, Ser. No. 355,962

Int. Cl.[6] B05B *1/00*

U.S. Cl. 239—598 **4 Claims**



1. A device for discharging blowing air, comprising:

a first pipe section defining a longitudinal axis, said first pipe section having an open end communicating with a blowing air source and a closed end opposite said open end, said first pipe section being non-rotatably fixed and having a longitudinal slit formed therein with a given length for allowing a passage of blowing air therethrough;

a second pipe section adjustably fit over said first pipe section and encasing said first pipe section substantially without play, said second pipe section extending over a substantial portion of the length of said longitudinal slit, said second pipe section having at least one oblique slit formed therein inclined relative to said longitudinal slit formed in said first pipe section, said longitudinal slit and said at least one oblique slit together defining an air discharge opening at a location where they overlap one another;

means for arresting said second pipe section relative to said first pipe section in a position in which it is substantially stationary in a direction parallel to said longitudinal axis, and allowing a rotation thereof relative to said first pipe section about said longitudinal axis for movably adjusting the air discharge opening along a longitudinal direction of said first and second pipe section; and

means engaging said first and second pipe sections for preventing an unwanted rotation of said second pipe section.

5,607,111

METHOD AND APPARATUS FOR CRUSHING MATERIAL OF DIFFERENT GRAIN SIZE

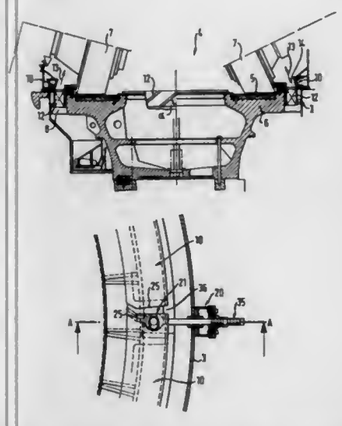
Horst Brundiek, Kaarst, Germany, assignor to Loesche GmbH, Düsseldorf, Germany

Filed Apr. 6, 1995, Ser. No. 418,106

Claims priority, application Germany, Apr. 8, 1994, 44 12 197.0

Int. Cl.[6] B02C *15/06*

U.S. Cl. 241—18 **22 Claims**



1. A method for supplying material to a rotary, horizontal grinding surface of a grinding classifying chamber and for crushing to grinding material particles, comprising:

supplying grinding material particles to a classifying process with the aid of a fluid feed flow,

discharging fine material particles; and

returning at least part of oversize material occurring as coarse material particles to the grinding surface,

supplying the fluid feed flow in an annular space with a blade ring between the grinding surface and a casing wall having adjustable reinforcing cladding segments,

wherein the process further comprises:

exposing the grinding material particles thrown off over an edge of the grinding surface to a helical pattern of the feed flow,

forming a helical fluid feed flow envelope from the thrown off grinding material particles in a helical upward movement in which the grinding material particles are moved in a helical pattern and the spatial arrangement of the flow envelope is adjusted by regulating the fluid feed flow.

5,607,112

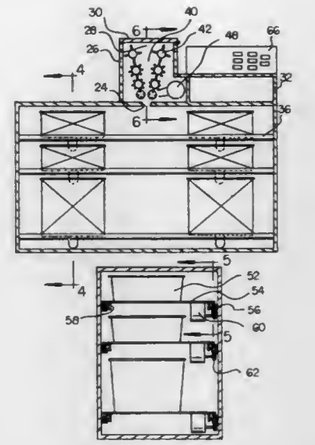
HOME RECYCLING CENTER

Russell G. Wilson, 184 Roses Grove Rd., Water Mill, N.Y. 11976

Filed Aug. 21, 1995, Ser. No. 517,738

Int. Cl.[6] B02C *19/14;23/10*

U.S. Cl. 241—33 **9 Claims**



1. A home recycling center for crushing glass, flattening metals and plastic to be automatically deposited into storage containers comprising, in combination:

a hollow rectangular compartment having a top wall, a bottom wall, a front wall, a rear wall, and two side walls, the top wall having an opening formed therethrough in a central portion thereof, a vertical compartment secured to the top wall about the opening formed therethrough, the vertical compartment having an open top with a lid hingedly secured thereto, a horizontal compartment secured to the top wall adjacent to the vertical compartment, the front wall having an opening formed therethrough with an access door hingedly secured thereto, the rectangular compartment having a plurality of longitudinal tracks secured therein, each of the tracks secured to the front wall with a corresponding track secured to the rear wall, the tracks secured to the front wall having a plurality of teeth formed on a lower edge thereof;

a crushing mechanism secured within the vertical compartment of the hollow rectangular compartment, the crushing mechanism comprising a plurality of rotating gears arranged in a vertical fashion, the plurality of gears having a wide upper end adjacent to the open top of the vertical compartment and tapering downwardly towards a narrow lower end immediately above the opening formed through the top wall of the hollow rectangular compartment, the crushing mechanism further comprising a drive pulley coupled with the plurality of rotating gears whereby activation of the drive pulley will rotate the plurality of gears;

a plurality of storage containers, each of the storage containers having a shelf secured to a lower portion thereof, each of the shelves having wheels secured to downwardly extending brackets on opposing sides thereof, the wheels adapted for slidable coupling with the plurality of longitudinal tracks of the hollow rectangular compartment, each of the shelves having a motor secured to an underside thereof, each motor having a drive gear extending outwardly therefrom to engage the plurality of teeth on the lower edge of the plurality of longitudinal tracks on the front wall of the hollow rectangular compartment whereby activation of each motor will slide the plurality of storage containers back and forth along the plurality of longitudinal tracks;

a control mechanism secured to an upper portion of the horizontal compartment of the hollow rectangular compartment, the control mechanism having means to control the activation and deactivation of the crushing mechanism and the slidability of the plurality of storage containers;

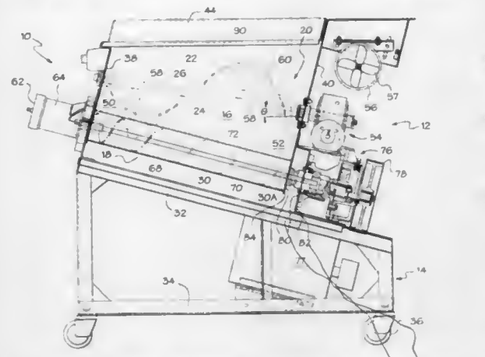
a twine dispenser secured to the upper portion of the horizontal compartment of the hollow rectangular compartment adjacent to the control mechanism, the twine dispenser having twine removably secured therein.

5,607,113

MIXER-GRINDER HAVING AN UPWARDLY ANGLED TROUGH

Gerald R. McGuffin, Sr., Coral Springs, Fla.; Aaron C. Gord, Dayton, Ohio; Raymond E. Guenther, Dayton, Ohio; Chris W. Snyder, Greenville, Ohio, and Robert A. Arlt, Sr., Troy, Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Nov. 3, 1995, Ser. No. 552,791
Int. Cl.[6] B02C *17/16*
U.S. Cl. 241—82.1 **20 Claims**



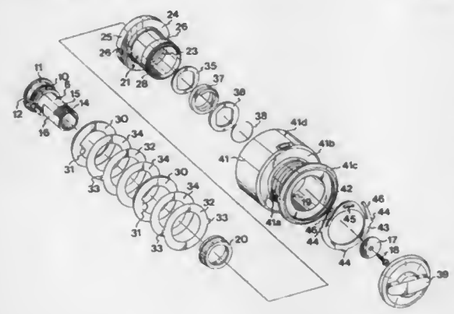
1. A mixing-grinding apparatus for grinding and mixing a food product comprising:
a base;
a hopper mounted on the base, the hopper being formed by a front wall, a rear wall and a curved bottom wall connecting the front wall and the rear wall, and being open at the top;
a trough formed in the bottom wall of the hopper;
a discharge opening in the front wall of the hopper in alignment with and at one end of the trough;
a worm rotatably mounted in the trough; and
at least one paddle for mixing food in the hopper, the at least one paddle being mounted on a rotatable shaft extending from the rear wall to the front wall of the hopper; and
a grinding head mounted on the front wall of the hopper at the discharge opening;
wherein, the trough is upwardly inclined.

5,607,114

LINE SPOOL ASSEMBLY CONSISTING OF TWO SLEEVE MEMBERS AND INTENDED FOR AN OPEN-FACE FISHING REEL

Bengt-Åke Henriksson, Svängsta, Sweden, assignor to ABU AB, Svängsta, Sweden

Filed Jul. 27, 1995, Ser. No. 508,078
Int. Cl.[6] A01K *89/02*
U.S. Cl. 242—244 **2 Claims**



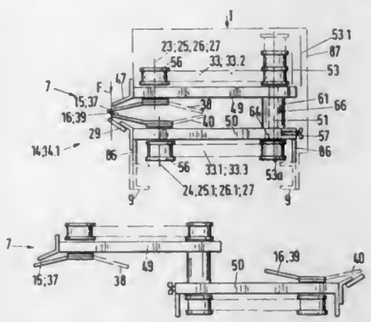
1. A line spool assembly for mounting on a spindle in an open-face fishing reel of the fixed-spool type, comprising:
a hollow shaft adapted to be mounted non-rotatably on said spindle;
a line spool rotatably mounted on said shaft; and
a line spool drag for adjustable braking of the rotation of said line spool around said shaft;
a releasable locking element;
said line spool having an inner sleeve member rotatably mounted on said shaft, and an outer sleeve member for receiving a fishing line wound thereon, said outer sleeve member being non-rotatably mounted on said inner sleeve member and, by means of said releasable locking element, axially fixed thereto;
said line spool drag acting between said shaft and said inner sleeve member for braking the rotation thereof around said shaft; and
said outer sleeve member, when said locking element is released, being axially removable from said inner sleeve member so as to be separated from the rest of said line spool assembly; wherein
said shaft has a radially projecting first rear flange, said inner sleeve member has a radially projecting second rear flange positioned in front of the first rear flange of said shaft, and said line spool drag has at least two drag washers provided between said first rear flange and said second rear flange, one of said drag washers being non-rotatably connected to said shaft and the other being non-rotatably connected to said inner sleeve member, said drag washers being in rotation-impeding frictional engagement with each other.

5,607,115

BOBBIN WINDING MACHINE ADAPTED TO RECEIVE DIFFERENT TRAVERSING DEVICES AND WING TRAVERSING DEVICE HAVING MULTIPLE WING UNITS

Peter Frech, Wallisellen, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Apr. 29, 1994, Ser. No. 235,528
Claims priority, application Switzerland, Apr. 29, 1993, 01300/93
Int. Cl.[6] B65H *54/28;57/28*
U.S. Cl. 242—43 A **30 Claims**



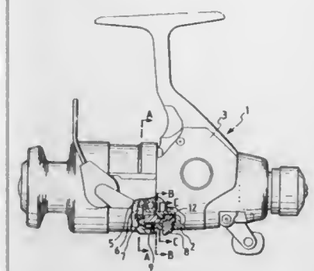
12. A bobbin winding machine for winding up at least one textile yarn, comprising at least one chuck for receiving the yarn and a contact roller for the transfer of the yarn guided by a traversing device to the chuck, the traversing device being a wing traversing device with two base plates connected together and arranged mutually opposed and at least one wing arranged in a drivable and rotatable manner on each base plate, the at least one wing of one of the base plates being arranged in opposing relation to the at least one wing of the other base plate, and a joint drive provided for driving the wings, the one base plate being displaceable to an idle position remote from the other base plate while the one base plate and the other base plate are connected together.

5,607,116

FISHING REEL REVERSAL PREVENTIVE DEVICE

Nobuyuki Yamaguchi, and Tomohiro Murayama, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jul. 11, 1994, Ser. No. 272,430
Claims priority, application Japan, Jul. 14, 1993, 5-43261 U
Int. Cl.[6] A01K *89/027*
U.S. Cl. 242—247 **13 Claims**



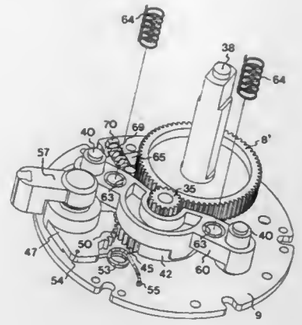
1. A fishing reel including a reversal preventive device to prevent rotation of a rotor shaft, said rotor shaft being capable of rotating in a forward and reverse direction to drive a rotor, said reel comprising:
a reel casing;
a first means to prevent said rotor shaft from reverse rotation;
a switching operation shaft rotatably mounted onto said reel casing to switch said means to prevent said rotor shaft from reverse rotation from a free state in which said rotor shaft is free to rotate to a reverse rotation preventive state in which said rotor shaft is prevented from rotating in said reverse direction;
said switching operation shaft including first and second portions located away from each other in an axial direction of said switching operation shaft and a third portion located between said first and second portions, said third portion being smaller in size in a radial direction than said first and second portions;
said reel casing including:
a reel main body; and
a cover to be fixed to said reel main body;
a first support portion formed on said reel main body;
a second support portion formed on said cover mating with said first support portion when said cover is fixed to said reel main body, wherein said first and second support portions cooperatively support said third portion of said switching operation shaft.

5,607,117

FISHING REEL OF THE MULTIPLIER TYPE

Patrik Svensson, Karlshamn, Sweden, assignor to Abu AB, Svängsta, Sweden

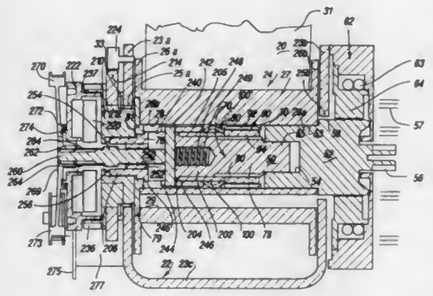
Filed May 12, 1995, Ser. No. 439,896
Int. Cl.[6] A01K *89/00*
U.S. Cl. 242—261 **5 Claims**



1. A fishing reel of the multiplier type, comprising
a frame;
two outer side plates mounted on said frame;
a line spool shaft mounted in said frame;
a rotatable line spool mounted on said shaft;
a mounting plate arranged in the frame inwardly of one side plate thereof and having a spindle parallel to the line spool shaft and extending through said one side plate, a center hole through which the line spool shaft extends, two first mounting pins substantially diametrically opposed with respect to said center hole, and a second mounting pin, said first and second mounting pins being parallel to the line spool shaft and projecting towards said one side plate;
a handle mounted on said spindle outwardly of said one side plate;
a driving gear mounted on said spindle and adapted to be rotated by said handle;
a first toothed segment having a sleeve portion which is turnably mounted in the center hole of said mounting plate, and a radial flange extending along at least part of the circumference of the sleeve portion and positioned on the side of the mounting plate facing said one side plate and having a first ramp surface formed thereon and a first external toothed segment formed thereon, said first toothed segment being turnable between a first position and a second position;
a clutch means for engaging and disengaging the line spool mounted on said line spool shaft in the sleeve portion of said first toothed segment which includes a gear portion meshing with the driving gear to be rotated thereby, and which is displaceable along the line spool shaft between an engaging position, in which the clutch means is connected to said line spool for rotation thereof, and a disengaging position, in which the clutch means is disconnected from said line spool;
a yoke having a center portion, in which said clutch means is rotatably mounted, and being displaceably mounted on said two first mounting pins for shifting said clutch means between said engaging position and said disengaging position;
a first resilient means for pressing said yoke in such a direction that said clutch means is urged towards its engaging position;
said yoke including a second ramp surface which is adapted to cooperate with the first ramp surface on said first toothed segment so as to, on turning thereof from the first to the second position, displace said yoke in such a direction that said clutch means is moved to its disengaging position;
a second toothed segment which is turnably mounted on said second mounting pin and has a second external toothed segment engaging the first external toothed segment of said first toothed segment;
a trigger which is non-rotatably connected to said second toothed segment for turning thereof between a first position and a second position and, by the engagement of said first and second toothed segments with each other, for turning said first toothed segment between its first and its second position;
a second resilient means which is adapted to resiliently retain said second toothed segment in its first and its second position; and
a link arm having a projection at one end and being hingedly connected at its other end to said second toothed segment, said link arm being displaceable between a neutral position and an engaged position,
and return means, mounted on the spindle, for returning said link arm such that, when said second toothed segment is in its first position, the link arm takes its neutral position and, when said second toothed segment is in its second position, the link arm takes its engaged position, in which said return means, on rotation of said handle, engages with said projection so as to move said link arm to a position, in which said second toothed

segment is in such an intermediate position that said second resilient means moves said second toothed segment to its first position.

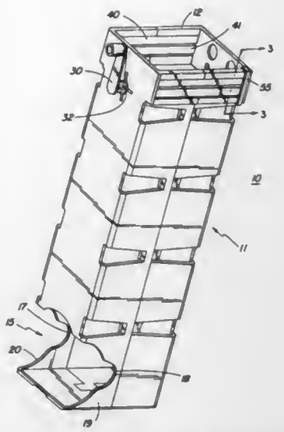
5,607,118
RETRACTOR WITH ADJUSTABLE LOAD LIMITING LEVELS
Niels Dybro, Utica, and Harold J. Miller, III, Troy, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Aug. 11, 1995, Ser. No. 514,288
Int. Cl.[6] B60R *22/28*
U.S. Cl. 242—379.1 **10 Claims**



1. A seat belt retractor (**20**) for protecting an occupant during a vehicle impact comprising:
a rotating spool or real (**24**),
seat belt webbing (**31**) wound about the spool and adapted to extend about the occupant;
first locking means (**210, 237, 230, 2201**) operatively connected to the spool for initially preventing the rotation of the spool,
first means (**90, 100**) associated with the spool and operable after the spool has been locked, for enabling the spool to rotate so that the webbing can be removed therefrom, after a predetermined load, in excess of a first level, has been applied to the belt webbing, and for generating a determinable reaction force level on the belt opposing occupant motion;
second means (**270, 273, 275, 250**) for actively varying the reactive force level.

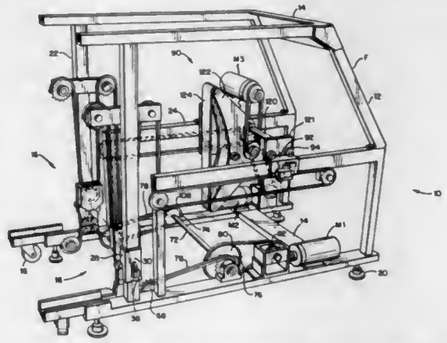
5,607,119
DISPENSER
Arnold G. Olmstead, R.R. No. 4, Lakefield, Ontario, Canada
Filed Oct. 16, 1995, Ser. No. 543,796
Int. Cl.[6] B65H *18/04;23/26;19/30*
U.S. Cl. 242—532.6 **10 Claims**

1. A dispenser, comprising in combination:
a longitudinally extended shell having a receiving end and an open discharge end;
a slot disposed in a side wall of the shell adjacent the receiving end;
a shaft rotatably journalled in opposing side walls of the shell adjacent the receiving end and in substantial registry with the slot; and



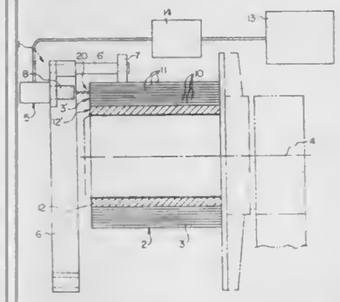
a guide member operable interactively with the slot and the shaft for guiding a strip of flexible material through the slot into predetermined engagement with the shaft.

5,607,120
PAPER ROLL HOIST AND UNWIND ASSEMBLY
James C. Folsom, Sanford, Me., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jun. 7, 1995, Ser. No. 477,666
Int. Cl.[6] B65H *19/10*
U.S. Cl. 242—559.4 **8 Claims**



1. A roll feed assembly for feeding a web product from a roll having a support shaft, comprising:
a frame having a pair of generally vertically extending guides and a pair of generally horizontally extending guides;
a pair of hoist assemblies mounted for generally vertical movement along said pair of vertical guides, respectively, each hoist assembly including a support for supporting an end of the roll support shaft and a first sprocket rotatable relative to said hoist assembly;
a drive for each said hoist assembly including (i) a chain substantially fixed at opposite ends to said frame with intermediate portions thereof engaging said hoist assembly, one intermediate portion of said chain being disposed about said first sprocket, (ii) a drive sprocket rotatably carried by said frame and coupled to said chain, and (iii) a first motor coupled to said drive sprocket for driving said drive sprocket and displacing said hoist assemblies along said vertical guides whereby the roll carried thereby is vertically displaced;
a web tension and drive assembly carried by said frame for movement along said horizontal guides toward and away from the roll carried by said hoist assemblies and including an element engageable with the roll for rotating the roll;
a second motor coupled to said web tension and drive assembly for moving said web tension and drive assembly along said frame; and
a third motor coupled to said element for driving said element and thereby rotating the roll to feed web product therefrom.

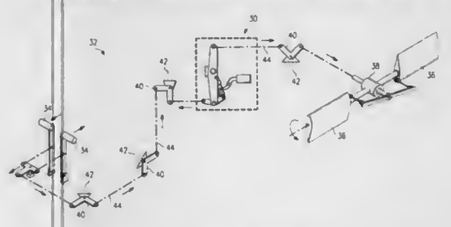
5,607,121
ROLL DEPLETION MONITORING DEVICE FOR USE IN PARTICULAR WITH WRAPPING MACHINES
Silvano Boriani, and Alessandro Minarelli, both of Bologna, Italy, assignors to G.D S.p.A., Bologna, Italy
Filed Nov. 27, 1995, Ser. No. 562,996
Claims priority, application Italy, Nov. 25, 1994, BO94A0525
Int. Cl.[6] B64H *26/08*
U.S. Cl. 242—563.2 **5 Claims**



1. A device for monitoring depletion in rolls of strip material, suitable in particular for application to wrapping machines, comprising sensing means associated with the single roll of material wound onto a respective core and rotatable about its own axis, means mounting the sensing means for movement in a substantially radial direction relative to the roll as the material decoils, said sensing means includes light-sensitive optoelectronic transducers such as will sense the value of a chromatic characteristic presented by a predetermined area of the roll and means for generating a signal when this same value of the chromatic characteristic is equal to a previously selected reference value.

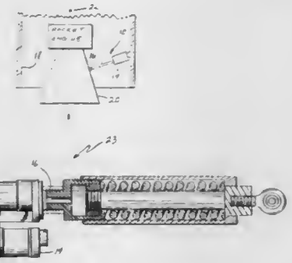
5,607,122
TAIL ROTOR AUTHORITY CONTROL FOR A HELICOPTER
Duane L. Hicks, Keller; William L. McKeown, Euless, and Tommie L. Wood, Arlington, all of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.
Filed Dec. 22, 1994, Ser. No. 362,245
Int. Cl.[6] B64C *27/00*
U.S. Cl. 244—17.19 **15 Claims**

1. An apparatus for interconnection in a helicopter tail rotor



control linkage for changing the maximum pitch of the tail rotor blades in response to inputs, said apparatus comprising:
(a) a linkage member having a variable geometry:
said linkage member connected between a first portion of said tail rotor control linkage and a second portion of said tail rotor control linkage;
said variable geometry having a range of configurations corresponding to predetermined variations in the maximum pitch of the tail rotor blades;
(b) an actuator connected to said linkage member;
said actuator changing said configuration of said variable geometry in response to an actuator movement signal;
(c) a control unit;
said control unit providing said actuator movement signal to said actuator in response to sensor inputs to said control unit; and
(d) sensors to detect ambient air conditions and which provide said sensor inputs to said control unit.

5,607,123
ACTUATION SYSTEM WITH PASSIVE COMPENSATION FOR TRANSIENT LOADS
Richard K. Larsen, Lahambra, Calif., assignor to AlliedSignal Inc., Morris Township, N.J.
Filed Jun. 30, 1994, Ser. No. 269,813
Int. Cl.[6] B64C *15/02*
U.S. Cl. 244—52 **4 Claims**



4. Apparatus for positioning a rocket nozzle, comprising in combination:
an electric motor including an output shaft connected to the nozzle; and
means, connected to the motor and nozzle and responsive to a transient force in excess of a predetermined threshold, for complying with the transient force to permit movement of the output shaft in a direction of decreased resistance to the force.

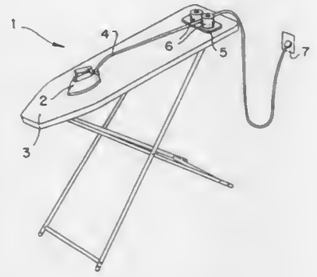
5,607,124
DOWN SPOUT SPACER AND ANCHORING ARRANGEMENT
John A. Earley, 26 Dolloff Ave., Beverly, Mass. 01915
Filed Jun. 1, 1995, Ser. No. 456,538
Int. Cl.[6] E04D *13/072*
U.S. Cl. 248—48.2 **15 Claims**

1. An anchoring and spacer pad standoff member for securing a pipe to a wall, comprising:
a cylindrically shaped member of plastic material having a first end for contact with said pipe and a spaced apart second end for contact with said wall defining the respective front and back ends of said anchor member;
a bore arranged longitudinally through said cylindrically shaped member from said first end to said spaced apart second end for receiving a securement member therethrough, for securing said cylindrically shaped member to a wall; and
a channel arranged across said second end of said cylindrically shaped member for receipt of a securement strap therethrough, so as to enable a pipe to be secured to said first end



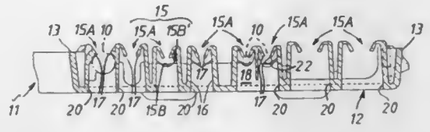
of said anchor member, thereby encirclement of said strap around said pipe and along said channel of said cylindrically shaped member.

5,607,125
CORD HOLDER FOR IRONING BOARD
Jerry L. Spencer, 214 Tyler St., Fredericksburg, Va. 22401
Filed Aug. 23, 1995, Ser. No. 518,297
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—51 **5 Claims**



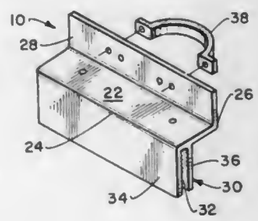
1. An ironing board cord holder comprising:
a base,
at least a pair of first rotatable means rotatably attached to said base,
second rotatable means having a first diameter and being non-rotatably attached to each of said first rotatable means,
third rotatable means having a second diameter greater than the first diameter and being non-rotatably attached to each of said first rotatable means,
first resilient means having one end attached to said base and another end attached to one of said first rotatable means for rotating said first and third rotatable means in one direction, and
a second resilient means having one end attached to said base and another end attached to another of said first rotatable means for rotating another of said first and third rotatable means in a direction opposite to said one direction,
each of said third rotatable means is a hollow cylindrical element, and each of said third rotatable means surrounds a respective one of said first and second rotatable means.

5,607,126
SUPPORT AND PROTECTION HOUSING ELEMENT FOR A TUBE, PIPE, ELECTRIC CABLE OR OTHER LONG ARTICLE, PARTICULARLY FOR A MOTOR VEHICLE
Jean-Pierre Cordola, Garches, and Rachid Idjakiren, Beauchamp, both of France, assignors to ITW De France, Beauchamp, France
Filed Jul. 31, 1995, Ser. No. 509,635
Claims priority, application France, Sep. 12, 1994, 94 10865
Int. Cl.[6] F16L *3/22*
U.S. Cl. 248—68.1 **31 Claims**



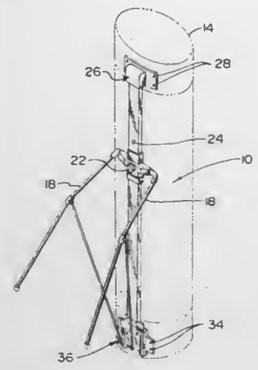
1. A support for an elongate article, selected from the group comprising a tube, a pipe, an electrical cable, and a conduit, comprising: a base member having a substantially longitudinal extent; a first support means fixedly mounted upon said base member, disposed at a first longitudinal position along said longitudinal extent of said base member, and disposed at a first elevational level above said base member so as to engage a first side portion of an elongate article; and a second support means fixedly mounted upon said base member, disposed at a second longitudinal position along said longitudinal extent of said base member, and disposed at a second elevational level, different from said first elevational level, above said base member so as to engage a second opposite side portion of an elongate article; whereby an elongate article is able to be securely supported upon said base member as a result of the cooperation of said first and second support means engaging opposite side portions of an elongate article at said first and second longitudinally spaced positions.

5,607,127
SHOWER PIPE SUPPORT
Joe J. Ballonez, 2228 Patton St., Delano, Calif. 93215
Filed Jul. 17, 1995, Ser. No. 503,157
Int. Cl.[6] F16L *3/24*
U.S. Cl. 248—72 **15 Claims**



1. A pipe support for interconnecting an upstanding pipe to a preformed shower wall having an upper edge which is spaced-apart a distance from the pipe comprising:
a pipe support body having a forward corner portion and an opposing rearward corner portion defining a width which is proximate the distance between said upper edge and said pipe;
a clamp flange extending upwardly from said rearward corner portion adjacent to said supply pipe; and,
a wall flange extending downwardly from said forward corner position, said wall flange having a bifurcated structure comprising an inner arm spaced-apart from an outer arm defining an open channel for engagement with said upper edge.

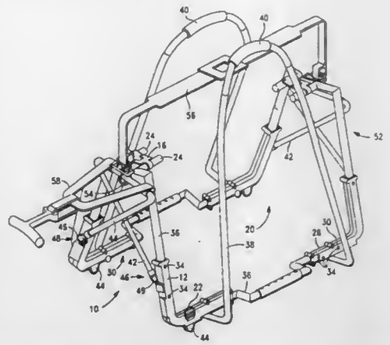
5,607,128
DETACHABLE GOLF BAG LEG STAND
Young J. Suk, 34 Garvies Point Rd., Glen Cove, N.Y. 11542
Filed Jun. 5, 1995, Ser. No. 462,192
Int. Cl.[6] A63B *55/00*
U.S. Cl. 248—96 **1 Claim**



1. Improvements for a removable leg mechanism for a golf bag of a type having a slide track adapted to be mounted lengthwise of said golf bag and a slide of said leg mechanism having legs operatively mounted thereon for articulating movement between an open bag-supporting position and a closed storage position and which in said slide and said slide track are cooperating interfitting respective male and female connecting means related to said leg open and closed positions unavoidably effective in joining said slide to said slide track, said improvements comprising a cooperating spaced pair of slide track-engaging members mounted adjacent opposite ends of said golf bag for projecting thereinto said opposite ends of said slide track incident to mounting said slide track with said slide disposed in sliding relation therealong on said golf bag, and a compression spring disposed in a selected one said slide track-engaging member effective to hold said mounted slide track under spring urgency in spanning relation between said slide track-engaging members, whereby in said joined condition of said slide to said slide track resulting from said interconnection of one said male and female connecting means said slide serves as a convenient handgrip for urging said one end of said slide track in movement compressing said compression spring and correspondingly unmounting said opposite end of said slide track from said slide track-engaging member to thereby facilitate removal of said leg mechanism from said golf bag.

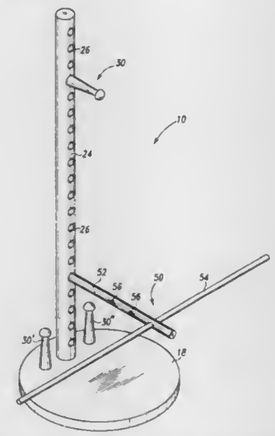
5,607,129
GARMENT BAG LUGGAGE CART
Young S. Kim, Cupertino, Calif., assignor to Inno Design, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 890,717, May 29, 1992, Pat. No. 5,330,141, and a continuation-in-part of Ser. No. 41,769, Apr. 2, 1993, abandoned. This application Mar. 11, 1994, Ser. No. 212,002
Int. Cl.[6] A63B *55/08*
U.S. Cl. 248—98 **3 Claims**

1. A luggage cart comprising:
a first frame member and a second frame member, the frame members being pivotally joined to pivot between an open configuration and a collapsed configuration, each frame member having a bottom;
a crossed cable attached between the frame members;
a shoulder strap attached to the crossed cable to selectively pivot the frame members from the open configuration to the collapsed configuration;
handle rods extending from each frame member, the handle rods have ends which attach to the frame member bottoms; and



a handle attached to each handle rod for selectively pivoting the frame members from the collapsed configuration to the open configuration,
whereby, the handle pivots the frame members from the collapsed configuration to the open configuration.

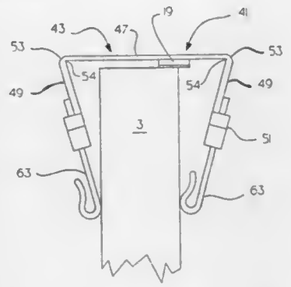
5,607,130
SUPPORT APPARATUS FOR ARTS AND CRAFTS PROJECT
Sharon A. Smay, 1227 E. Tulip Dr., and Douglas R. Yobler, 1441 Lick Creek Pkwy. S. Dr., both of Indianapolis, Ind. 46227
Filed Jun. 7, 1995, Ser. No. 486,598
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—125.3 **18 Claims**



1. An arts and crafts project support apparatus for use with a support surface, the support apparatus comprising:
a base positionable on the support surface;
an upstanding component extending from said base;
a hanging module projecting from said upstanding component and upon which an arts and crafts project is hangable;
means for adjusting a height of said hanging module above said base to adapt for different size arts and crafts projects, said adjusting means comprising a plurality of downwardly angled bores in said upstanding component in which said hanging module is removably mountable, said bores being in a vertically spaced apart relationship and in a vertical alignment whereby each bore is directly above the bore beneath it; and
stabilizing means, mounted to at least one of said upstanding component and said base, for limiting twisting motion of the

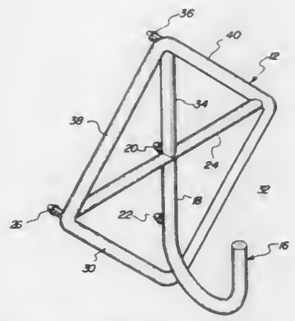
arts and crafts project hangable on said hanging module, said stabilizing means independent of said hanging module whereby said hanging module is movable to a different position above said base without moving said stabilizing means.

5,607,131
DOOR HOOK
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Continuation-in-part of Ser. No. 429,231, Apr. 21, 1995, Pat. No. 5,535,971, which is a division of Ser. No. 182,738, Jan. 14, 1994, Pat. No. 5,413,297. This application Jun. 22, 1995, Ser. No. 493,647
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—215 **18 Claims**



1. An improved mounting bracket to be extended over a door top to both sides of a door, comprising:
a) a U-shaped bracket having
i) a top which has a bottom surface,
ii) a front side which is attached to one edge of the top at an acute angle relative to the bottom surface of the top, and
iii) a back side which is attached to an edge of the top opposite to the front side;
b) an adhesive layer applied to the back side on a surface facing the front side; and
c) a hook attached to the front side.

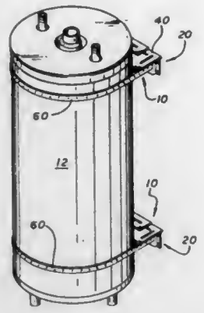
5,607,132
PEGBOARD HANGER
Henry E. Baldwin, 77190 Lauppe La., Citrus Heights, La. 95621
Filed Jun. 12, 1995, Ser. No. 489,669
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—220.42 **1 Claim**



1. A pegboard hanger comprising:
a mounting means for securing to at least one aperture of a pegboard, the mounting means comprises a depending center member having an upper end spaced from a lower end, a center securing peg secured to the upper end of the depending center member and adapted for removable positioning through an aperture of the pegboard, a lower securing peg secured to the lower end of the depending center member and adapted for removable positioning through an aperture of the pegboard, the mounting means further comprises a transverse member fixedly secured to the upper end of the depending center member and oreinted so as to extend substantially orthogonally in oppostie directions therefrom, a first lateral securing peg secured to a first end of the transverse member and adapted for removable positioning through an aperture in the pegboard, a second lateral securing peg secured to a second end of the transverse member and adapted for removable positioning through an aperture in the pegboard, the mounting means further comprises a depending brace comprising a first lower angled brace projecting from the first end of the transverse member and oriented at an oblique angle relative thereto, a second lower angled brace projecting from the second end of the transverse member and oriented so as to extend in an oblique angle relative thereto, the lower angled braces projecting towards one another and being relative thereto, the lower angled braces projecting towards one another and being secured together at a point susbtantially aligned with a longituinal axis of the depending center member, the mounting means further comprises a center stanchion projecting upwardly from the transverse member in a direction opposite that of the depending center member, an upper securing peg secured to an upper end of the center stanchion and adapted for positioning through an aperture in the pegboard, the mounting means further comprises an upper brace extending between the transverse member and the upper end of the center stanchion, the upper brace comprising a first uper angled brace projecting from the first end of the transverse member and being secured to the upper end of the center stanchion, a second upper angled brace projecting from the second end of the transverse member at an oblique angle relative theteto and being coupled to the upper end of the center stanchion, with the transverse member and the angled braces all residing within a common plane, each of the securing pegs comprises a bifurcated projection extending substantially orthogoanlly from the mounting means, the bifurcated projection defining spaced furcations which can be resiliently biased together, each of the furcations terminating in semi-conical head, the semi-conical heads being positioned in a facing relationship so as to define a split cone which can be resiliently biased together during insertion of the peg through a hole in pegboard;
an engaging means for supporting an object coupled to the mounting means and projecting outwardly therefrom, the engaging means projecting from the lower end of the depending center member outwardly away from said common plane.

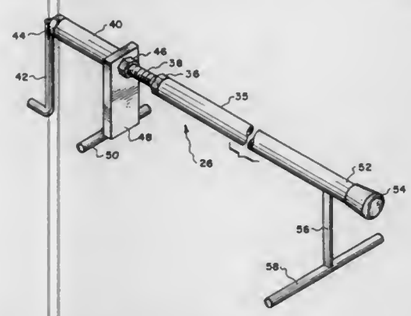
5,607,133
APPARATUS AND METHOD FOR SUPPORTING A CYLINDRICAL TANK
Howard L. Markham, and Perry D. Markham, both of Rosemead, Calif., assignors to E-Z Metal Products, Inc., Ontario, Calif.
Filed Feb. 4, 1994, Ser. No. 191,870
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—313 **3 Claims**

1. An apparatus for securing a cylindrical tank to a wall comprising:
a flexible securing strap, said securing strap having length adjusting means for adjusting its length;
a pair of wall mounting brackets, each of said wall mounting brackets having a first portion for pivotal attachment to a section of said securing strap proximate to an end of said securing strap and a second portion for attachment to a wall,



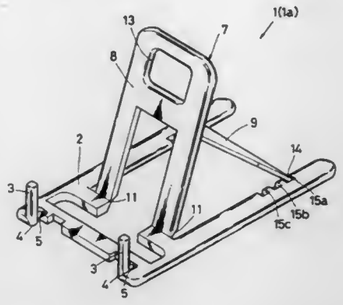
said securing strap being pivotally attached to said mounting brackets, whereby said securing strap is pivotable in a vertical direction; and
a rear longitudinal stabilizer member attachable at each of its two ends to one of said wall mounting brackets, whereby said rear stabilizer member is positionable between the cylindrical tank and the wall, said rear stabilizer means comprises an adjustable stabilizer bracket having a first member and a second member slideably engaging each other, each of said first and second members having an angled end portion and a straight center portion, said angled end portion having a surface adapted to abut the cylindrical tank being secured by said apparatus.

5,607,134
LOCK FOR SLIDEOUT BOX
Vern Corning, Caldwell, Id., and Dan Pocapalia, Rancho Palos Verdes, Calif., assignors to Kit Manufacturing Company, Long Beach, Calif.
Filed Apr. 18, 1994, Ser. No. 228,771
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—354.3 **2 Claims**



1. An extensible brace member comprising:
a tube having internal thread means;
a lead screw threaded therein;
a bearing on said lead screw;
a nut secured to said lead screw intermediate said tube and said bearing;
a crank on said lead screw;
a nut secured to said lead screw adjacent said crank;
said nuts constituting a thrust bearing for said lead screw in said bearing;
a flange secured to said bearing transverse of said lead screw;
a standard transversely secured to said tube remotely of said flange; and
said tube internal thread means comprising a nut secured to said tube and threaded by engaging said lead screw.

5,607,135
TABLET STAND
Hiroshi Yamada, 2-1-9, Kowakae, Higashi-Osaka, Japan
Filed Feb. 21, 1995, Ser. No. 391,893
Claims priority, application Japan, Dec. 2, 1994, 6-016061 U
Int. Cl.[6] A47G *1/24*
U.S. Cl. 248—456 **4 Claims**



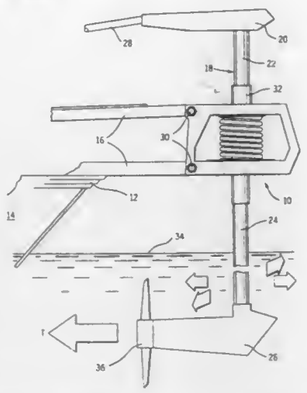
1. A foldable tablet stand comprising:
a grounding section comprising a substantially flat frame having an end portion and a pair of parallely disposed legs extending therefrom;
fastening means comprising post means and first claw means and attached by first hinge means to said end portion of said frame of said grounding section, whereby in a raised position, said post means of said fastening means is in a direction generally perpendicular to said flat frame of said grounding section and said first claw means holds said post means in said generally perpendicular direction by resting against said frame of said grounding section, and whereby in a rest position said post means of said fastening means is in a direction generally planar with said flat frame of said grounding section with said first claw means fitted in first grooves located in said end portion of said frame of said grounding section;
a substantially flat back rest means comprising an end portion and a pair of legs extending therefrom, said pair of legs being attached to said frame of said grounding section by second hinge means and being movable so that in a raised position, said back rest means is at an angle to said flat frame of said grounding section so as to hold a tablet with an end of the tablet resting against said end portion of said frame of said grounding section and held by said post means of said fastening means and having a surface of said tablet being held at said angle by said back rest means, and so that in a rest position, said back rest means is substantially planar with said flat frame of said grounding section; and
supporting means comprising a flat portion attached movably to said back rest means and at least one leg extending therefrom and comprising second claw means, whereby said second claw means is held in second grooves located in said pair of legs of said frame of said grounding section to hold said back rest means at said angle in said raised position, said flat portion of said supporting means being movably held by third hinge means to said end portion of said back rest means so that in a rest position said second claw means are moved out of said second grooves and positioned to be within the same plane as said grounding section; whereby
said tablet stand is made of a unitary structure of molded resin so that in the rest position, a substantially flat structure is provided, and in a raised position, a tablet stand is provided by said fastening means, said end portion of said frame of said grounding section, and said back rest means with said supporting means holding said back rest means at said angle.

5,607,136

OMNI-DIRECTIONAL BREAKAWAY MOUNTING DEVICE FOR TROLLING MOTOR

Darrel Bernloehr, Mankato, Minn., assignor to Johnson Fishing, Inc., Mankato, Minn.

Filed Jun. 3, 1994, Ser. No. 253,767
Int. Cl.[6] F16M *3/00*
U.S. Cl. 248—640 **18 Claims**



1. A breakaway mounting device for a trolling motor, the motor being of the type including a support tube and s submergible drive unit coupled to the support tube, the device comprising:

a support frame;

an omni-directional swivel joint coupled to the support frame for receiving the support tube and for positioning the drive unit underwater;

a biasing assembly coupled to the frame and cooperating with the swivel joint to urge the support tube into a normal operating position and to permit angular displacement of the support tube with respect to the normal operating position: and

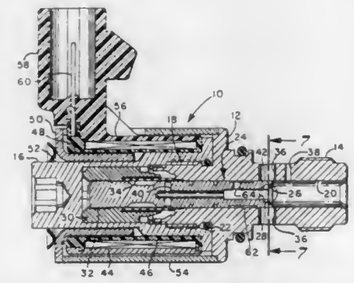
a cylindrical sleeve for receiving the support tube, the sleeve extending intermediate the swivel joint and the biasing assembly.

5,607,137

ELECTRICALLY OPERATED FLOW CONTROL VALVE

Robert J. Kanda, Lake Orion, and Michael A. LaMothe, Commerce, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 8, 1995, Ser. No. 525,258
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.07 **9 Claims**



1. An electrically operated flow control valve comprising:

(a) body means defining a blind valving passage open to an inlet with a plurality of outlet ports therein;

(b) valve spool means disposed for movement in said valving passage with an end exposed to said inlet and an opposite end blind in said passage and including armature means having a relatively high magnetic permeability;

(c) a pressure equalizing passage formed in said spool means and communicating said end exposed to said inlet with said blind end;

(d) said spool means including an annular valving land formed about the end exposed to said inlet, said land operable upon said movement of said spool means to progressively close and open said outlet ports;

(e) a bleed passage operable upon a predetermined amount of said movement of said land to communicate said pressure equalizing passage with said outlet ports; and,

(f) coil means disposed on said body means and operable upon electrical energization to electromagnetically effect said movement of said armature means and spool means.

5,607,138

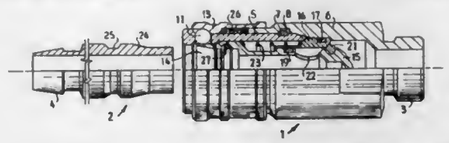
Patent Not Issued For This Number

5,607,139

COUPLING FOR COUPLING TOGETHER HOSES OR PIPES FOR A PRESSURE MEDIUM

Kenneth Kjellberg, Skövde, Sweden, assignor to Nyberg, Bo Erik, Oberageri, Switzerland

PCT No. PCT/SE93/01024, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/12826, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 26, 1993, Ser. No. 446,643
Claims priority, application Japan, Nov. 27, 1992, 4-318559
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 **8 Claims**



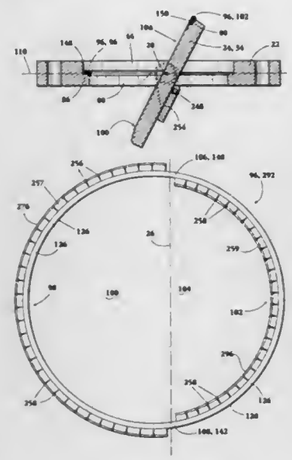
1. Coupling for coupling together a conduit with another conduit for a pressure medium, said coupling comprising a coupling sleeve and a nipple insertable therein to an engagement position, said coupling sleeve and the nipple being provided with individual connection means for a conduit, said coupling sleeve having a valve device which is disposed to open for pressure medium flow when the nipple is inserted to the engagement position, said coupling sleeve having a sleeve-shaped front part having an external annular groove formed thereon and a sleeve-shaped rear part joined thereto, said rear part having an internal annular groove formed therein and being provided with a plurality of releasable ball locks for blocking the nipple in the engagement position, on which rear part the connecting means is engaged, the front part is inserted into the rear part and is rotatable but axially essentially immobile when joined in the rear part by means of a resilient annular lock ring disposed in the internal annular groove in the inside of the rear part and which, upon axial insertion of the front part into the rear part is moved into the external annular groove in the outside of the front part, and that the valve device has an axially movable valve body in the form of a sleeve which is closed at one end and which is provided with at least one flow-through opening, a valve seat for cooperation with the valve body for closing off the pressure medium through-flow, and a blocking sleeve cooperating with the nipple to engage and disengage the plurality of releasable ball locks upon insertion and withdrawal thereof, and also upon insertion thereof for transmitting axial movements of the nipple to the valve body to release the valve body from the valve seat.

5,607,140

ROTATABLE VALVE ASSEMBLY

Edward H. Short, III, Tulsa; John A. Tomasko, Claremore, and Stephen P. Farwell, Owasso, all of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Aug. 25, 1995, Ser. No. 519,653
Int. Cl.[6] F16K *1/226*
U.S. Cl. 251—305 **41 Claims**



1. Rotatable valve assembly comprising:

a housing having an inlet and an outlet defining a fluid passageway through the housing and a seating surface having an inner peripheral edge extending around the passageway;

a valve, located in the passageway and having a seating surface with an outer peripheral edge extending around the valve, the valve being rotatable between a closed position in which the housing and valve seating surfaces are about coplanar and define a gap between the inner peripheral edge of the housing seating surface and the outer peripheral edge of the valve seating surface, and an open position in which the housing and valve seating surfaces are not coplanar;

mounting means for rotatably mounting the valve about a rotational axis in the housing; and

a seal for sealing the gap between the seating surfaces and preventing flow through the passageway in the closed position of the valve, the seal having a first portion secured to the housing seating surface on a first side of the rotational axis and extending across the gap toward the valve seating surface, a second portion secured to the valve seating surface on a second side of the rotational axis and extending across the gap toward the housing seating surface, a first transitional portion coinciding with the rotational axis, and a second transitional portion coinciding with the rotational axis, the seal being unsecured in the transitional portions so that the seal may flex in the transitional portions as the valve rotates between the closed position and the open position; and

power means for rotating the valve between the closed position and the open position.

5,607,141

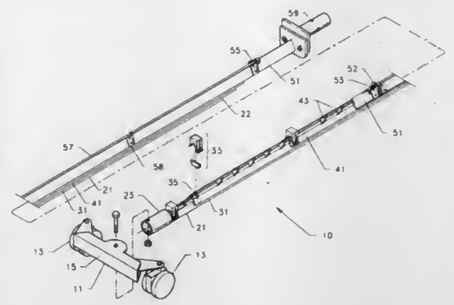
EXTENDABLE SUPPORT ARM FOR A CARPET STRETCHER

James F. Clark, Rte. 2, Box 19, Amity, Ark. 71921

Filed Dec. 21, 1994, Ser. No. 360,303
Int. Cl.[6] B66D *1/00*
U.S. Cl. 254—200 **12 Claims**

1. An extendable support for a carpet stretcher comprising:

means for supporting an extendable arm;



an extendable arm, attached to said means for supporting, having a plurality of telescoping sections each having an L-shaped cross-section and each having the same cross-sectional size each of the telescoping sections having means for interlocking with other telescoping section and preventing separation of the telescoping sections from each other in a direction transverse to their length;

means for locking said telescoping sections in various extended positions; and

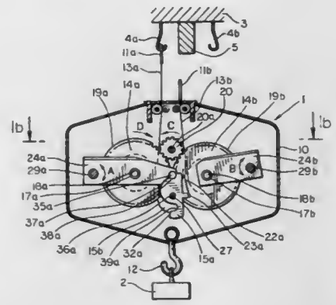
means for attaching a carpet stretcher head to said extendable arm.

5,607,142

LIFTING APPARATUS

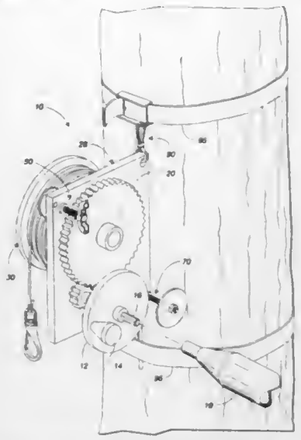
Per Nilsson, Östra Rönneholmsvägen 26, S-211 47 Malmö, Sweden

PCT No. PCT/SE94/00086, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO94/22759, PCT Pub. Date Oct. 13, 1994
PCT Filed Feb. 4, 1994, Ser. No. 341,531
Claims priority, application Sweden, Mar. 26, 1993, 9301016
Int. Cl.[6] B66D *1/60*
U.S. Cl. 254—298 **12 Claims**



1. A lifting apparatus comprising a frame, a carrier supported by said frame for carrying a load, first and second separate suspension devices each including a respective flexible line and first and second drums rotatably supported by said frame, said first and second lines being respectively connected to said first and second drums for being respectively wound thereon or paid out therefrom depending on the direction of rotation of the respective drums, a drive means, and first and second switching means respectively for said drums and each disposed, in a first position, to interconnect the respective drum with said drive means for rotation of said respective drum in one direction of rotation in which the flexible line is wound onto or unwound from the drum.

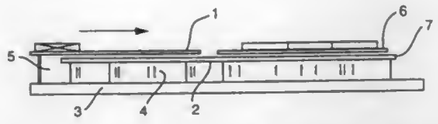
5,607,143
TREE STAND WINCH APPARATUS AND METHOD
Everet B. Regal, 313 Culvert St., Phoenix, N.Y. 13135
Filed Jan. 4, 1995, Ser. No. 368,557
Int. Cl.[6] B66D *1/00*
U.S. Cl. 254—342 **16 Claims**



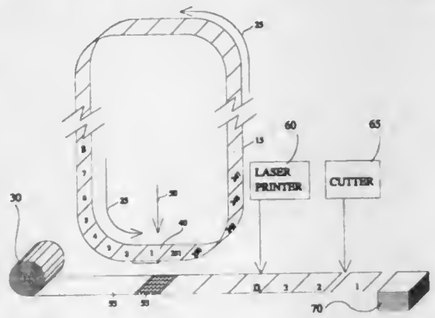
1. A tree stand winch for mounting in a tree and for lifting and lowering a hunter's gear, comprising:
crank means for actuating said winch;
a gear assembly actuated by said crank means;
a support plate having an edge for mounting parallel to the length of the tree and having first and second opposed surfaces, said gear assembly mounted to said support plate adjacent said first surface;
a line spool mounted to said support plate, said line spool actuated by said gear assembly;
braking means attached to said support plate for braking said line spool;
attachment means for suspending said support plate from the user as the user climbs the tree, and for suspending said support plate from the tree when hoisting items; and
stabilizer means attached to said support plate for simultaneously engaging the tree and securing said support plate to the tree, with the support plate extending generally upright and with its edge in engagement with the tree, said stabilizer means comprising cleat means displaced from opposite sides of said support plate for removable engagement with the tree in a straddling relationship being shaped for resisting movement of said winch about the tree, and a stabilizer bar downwardly extending from said support plate adjacent the surface of the tree, and strap means for securing said stabilizer bar to the tree.

5,607,144
FURNACE FOR REHEATING, HOLDING AND STORING OF METALLURGICAL PRODUCTS
Didier Brun, Le Chesnay; François Pahmer, Paris, and Jean-Claude Audebert, Evry, all of France, assignors to Stein Heurtey, Ris Orangis, France
Filed Sep. 8, 1995, Ser. No. 524,675
Claims priority, application France, Sep. 27, 1994, 94 11527
Int. Cl.[6] C21B *3/00*
U.S. Cl. 266—249 **2 Claims**

1. A furnace for storing, reheating and holding ferrometallurgical products, in which the products travel along a displacement path on members placed so as to connect, in the transverse direction, a charging zone and a discharging zone, the furnace comprising: product supporting members; and transporting members placed at a predetermined distance from the supporting members for performing a rising movement and a horizontal displacement relative to the supporting members, making the product advance step by step, wherein at least one set of supporting members moves, independently of a furnace hearth, with a horizontal alternating translational movement which is performed during a return phase of the transporting members and, upon a complete rectangular cycle of the transporting members, the products having progressed forwards by a distance equal to the sum of the steps of the displacements of the supporting members and the transporting members.



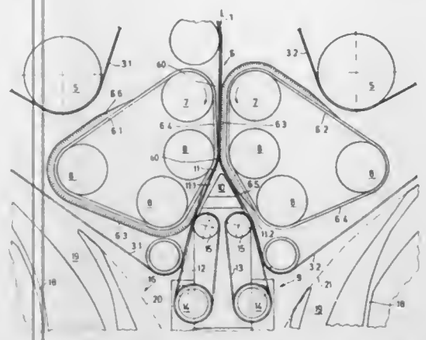
5,607,145
METHOD FOR PRINTING BOOKS OF BINGO PAPER
John G. Lovell, 127 H of Aker, Sevier, Tenn. 37764
Filed Nov. 29, 1994, Ser. No. 346,527
Int. Cl.[6] B41F *13/54*
U.S. Cl. 270—1.01 **5 Claims**



1. A method for preparing books of bingo paper containing common-colored sheets, each said book having more than four pages, said method comprising, the steps:
printing like-colored sheets of bingo paper with a selected number of discrete printing plates and a discrete jogging plate, wherein said jogging plate is an additional discrete printing plate, wherein said selected number of discrete printing plates and said discrete jogging printing plate are on a single printing web defining a single paper path;
printing at least one page number on each like-colored printed sheet, with a programmable printer for printing sequential page numbers, said programmable printer being in said single paper path, whereby successive sheets are printed; and
padding said successive page-numbered sheets into books, said books having more than four pages, such that said sheets are removably secured in said books.

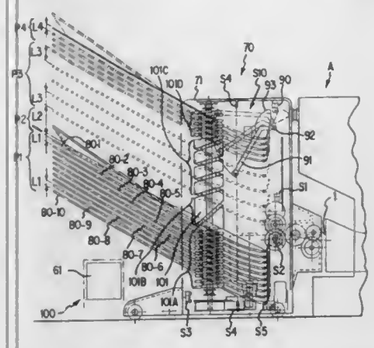
5,607,146
MECHANISM FOR DIVERTING OF PRODUCTS IN A FOLDING APPARATUS
Michael A. Novick, New Durham, and Roger R. Belanger, Dover, both of N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.H.
Filed Feb. 16, 1996, Ser. No. 602,670
Int. Cl.[6] B41L *43/08*
U.S. Cl. 270—42 **21 Claims**

1. A device for diverting a signature, comprising:



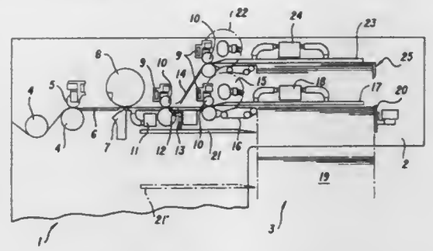
a first high-speed tape having an inner surface and an outer surface and a second high-speed tape having an inner surface and an outer surface, the outer surface of the first high speed tape engaging the outer surface of the second high speed tape at a diverting nip;
a first diverting belt having raised surface portions and non-raised surface portions;
a second diverting belt having raised surface portions and non-raised surface portions, the inner surface of the first high-speed tape engaging the first diverting belt at the diverting nip and the inner surface of the second high-speed tape engaging the second diverting belt at the diverting nip; and
a drive for rotating the first and second high speed tapes and the first and second diverting belts, the raised and the non-raised surface portions of the first and second diverting belts periodically altering a conveying path of a signature conveyed between the first and second high speed tapes.

5,607,147
SORTER WITH DIFFERENT BIN POSITIONS
Misao Kobayashi, Yamanashi, Japan, assignor to Nisca Corporation, Yamanashi-ken, Japan
Filed Apr. 12, 1994, Ser. No. 226,626
Claims priority, application Japan, May 27, 1993, 5-148667; Nov. 24, 1993, 5-319149
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—293 **19 Claims**



1. A sorter for receiving sheets supplied from a sheet supply machine, comprising:
a sheet distributing section for distributing sheets supplied from the sheet supply machine,
a plurality of bins situated near the sheet distributing section for receiving the sheets from the sheet distributing section, said bins being arranged adjacent to each other and being movable relative to the sheet distributing section,
means for positioning the bins to a home position, a sheet receiving position, a sheet taking position and an upper gathering position,
sheet presence detecting means for detecting whether a sheet is placed on a bin at a position above the sheet receiving position, and
a control device, said control device, when confirmed by the sheet presence detecting means that the sheet is taken out from the bin located at a position above the sheet receiving position, actuating the positioning means to move another bin with a sheet to the sheet taking position,
said home position being located at one side relative to the sheet distributing section, wherein the bins are stacked adjacent to each other with a distance (**L1**), and all the bins can be located in the home position,
said sheet receiving position facing the sheet distributing section to receive one of the sheets onto one of the bins, wherein a sheet receiving bin except a top bin is situated away from a bin located above the sheet receiving bin with a distance (**L2**),
said sheet taking position being located at the other side opposite to the home position relative to the sheet receiving position, wherein a plurality of said bins is stacked adjacent to each other with a distance (**L3**) greater than the distance (**L1**) and less than the distance (**L2**), at least one bin being located in the sheet taking position when the sheets are supplied to at least two bins so that the sheets can be easily removed from the at left two bins,
said upper gathering position being located above the sheet taking position, the distance between the bins at the upper gathering position being less than the distance (**L3**), said bins being located in the upper gathering portion after the sheets are removed from the bins at the sheet taking position for further removing the sheets from the bins transferred to the sheet taking position so that a size of the sorter is reduced in a vertical direction.

5,607,148
DEVICE FOR REMOVING COPIES DIVERTED FROM A CONVEYED STREAM THEREOF
Richard B. Mack, Sophie-Scholl-Str. 14, D-68782 Brühl; Rainer Klenk, Franziskus-Str. 6, D-68789 St. Leon-Rot, both of Germany, and Thomas Mc Krell, 428 Washington Rd., Rye, N.H. 03870
Continuation of Ser. No. 243,853, May 17, 1994, abandoned.
This application Jan. 10, 1996, Ser. No. 584,153
Claims priority, application Germany, May 17, 1993, 43 16 400.5
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—303 **14 Claims**



1. A device for diverting and removing copies from a conveyed stream thereof in a rotary cross cutter or delivery in a sheet-fed rotary printing press, comprising:
means for defining a copy-transport plane on which the copies are transported in a given transport direction;
a device for decelerating the copies which are transported at an incoming conveying speed, the decelerating device being disposed so as to act upon both sides of the copies which are to be decelerated;

a diverter and a copy guide cooperating with said diverter disposed downstream of the decelerating device as seen in the transport direction and above said copy-transport plane; and

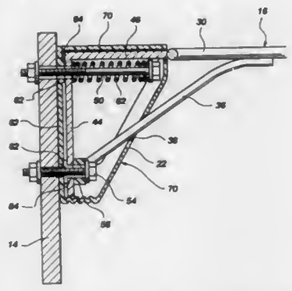
respective means defining two conveying planes disposed downstream of said copy guide as seen in the transport direction, at least one of said conveying plane-defining means including a slidably mounted and pneumatically acted-upon conveying device.

5,607,149

APPARATUS FOR COVERING THE MOUNTING MECHANISM OF A BASKETBALL GOAL

Edward G. van Nimwegen, North Ogden, and Jared G. Sahleen, Pleasant View, both of Utah, assignors to Lifetime Products, Inc., Clearfield, Utah

Filed Jul. 14, 1995, Ser. No. 502,822
Int. Cl.[6] A63B *63/08*
U.S. Cl. 473—479 **25 Claims**



1. A cover for use on a basketball goal system, the goal system including a basketball goal mounted to a basketball backboard by a goal mounting mechanism, the basketball goal including a rim mounting plate, a rim and rim braces, comprising:

a face plate configured with a channel for receiving the tip of a force-applying implement and further configured to extend generally over the goal mounting mechanism such that the face place provides a protective shield over the goal mounting mechanism when mounted to a goal, wherein the face plate includes a fore edge and wherein the channel is configured in the fore edge of the face plate such that the rim and the channel act in combination to form a pocket for receiving the tip of the force-applying implement;

a back plate flexibly connected to the face plate and to a top plate; and

attachment means for securing the cover to the basketball goal system such that the face plate covers the front of the goal mounting mechanism when the cover is mounted to the goal, said attachment means comprising a plurality of holes configured in the back plate, the holes configured to receive bolts used in mounting the basketball goal to the basketball backboard.

5,607,150

PORTABLE BATTER'S BOX

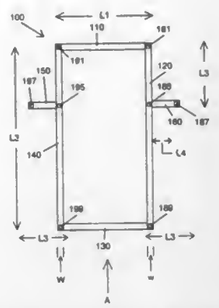
George Schnorr, III, 4920 Paretc Cir., Jacksonville, Fla. 32218

Filed Dec. 1, 1995, Ser. No. 565,983
Int. Cl.[6] A63B *71/02*
U.S. Cl. 473—499 **15 Claims**

1. A ground engageable portable batters box comprising:

a first longitudinal member having a first end and a second end, an upper surface and a lower surface;

a second longitudinal member having a first and a second end, an upper surface and a lower surface, the second end of the first member perpendicular to and connected to the first end of the second member;



a third longitudinal member having a first and a second end, an upper surface and a lower surface, the second end of the second member perpendicular to and connected to the first end of the third member;

a fourth longitudinal member having a first end and a second end, an upper surface and a lower surface, the second end of the third member perpendicular to and connected to the first end of the fourth member, wherein the first member, the second member, the third member and the fourth member lie in the same plane and form a rectangular batters box, and wherein the lower surfaces of each of the first member, the second member, the third member and the fourth member abut and are substantially flush to a ground surface;

a plastic storage pouch for housing the first longitudinal member, the second longitudinal member, the third longitudinal member, and the fourth longitudinal member; and

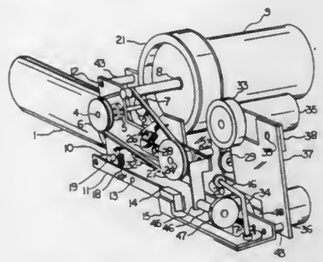
a strap fixably attached to the storage pouch for attaching and detaching the pouch to a duffel bat bag.

5,607,151

TABLE TENNIS BALL PROJECTOR

Westphal Daley, 68 Simpson St., Hartford, Conn. 06112

Filed Apr. 1, 1996, Ser. No. 636,902
Int. Cl.[6] F41B *15/00*
U.S. Cl. 124—78 **2 Claims**



1. A single entrance and single exit table tennis ball projecting apparatus capable of reversing the direction of spin it imparts to successively ejected balls in less than one second, comprising:

(a) a variable speed electric motor attached to a primary mounting plate in a manner that allows a thrust wheel rigidly attached to the shaft of said motor to be concentrically adjacent to an arc clutch plate which is itself attached to said primary plate so that its entire concentric length is a distance slightly less than a ball's diameter away from the periphery of the thrust wheel;

(b) a secondary plate mounted with a side parallel to one side of the primary plate, thereby forming a channel the size of the ball between the periphery of the thrust wheel, the arc clutch plate, the primary and the secondary plates;

(c) a rotatable rubber-rimmed wheel rigidly attached to one end of a shaft running perpendicularly through a bushing in said secondary plate;

(d) a first lever, pivoted near its center by a shaft which is affixed perpendicularly into the secondary plate; said first lever having a non-rotating rubber-rimmed wheel attached to one end so that the peripheries of the rotating and non-rotating rubber-rimmed wheels form a gap through which the ball can be carried if engaged by the rotating rubber-rimmed wheel; said first lever having a magnet attached to its other end;

(e) a soft iron lever rigidly attached at one end to a cylindrical third lever which is rotatable in a bore of a ninety degree angled section of the secondary plate, so that the axis of the third lever is in a plane parallel to the side of the primary plate; said soft iron lever and third lever being rotatable together; said third lever being bent at ninety degrees near its unattached end;

(f) a fourth lever pivoted near its center about a shaft affixed perpendicularly onto the secondary plate; said fourth lever being pulled to a stopper at one end by a spring, its other end having a rotatable shaft fitted into it; said shaft having a rubber-rimmed cylinder rigidly attached to one end; said cylinder being in a position to stop any ball thrown by the thrust wheel; said fourth lever also having a rotatable wheel attached to one end;

(g) two similar springy metal strips, one attached at one end to the primary plate the other attached at one end to the secondary plate; said metal strips being bent at their unattached ends so that a rotatable wheel attached to each unattached end has its axis oriented forty-five degrees to the primary plate; said wheels being positioned a distance slightly less than a ball's diameter from each other at their peripheries;

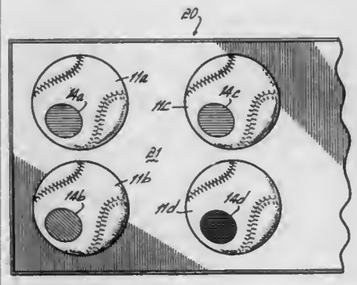
(h) two smaller motors with a rubber-rimmed wheel rigidly attached to each shaft; said smaller motors being attached to the primary plate in a way that allows said wheels on smaller motors to have their peripheries spaced a distance slightly less than a ball's diameter from each other; said wheels on smaller motors being part of a detent for the ball, the rest of the detent being the wheels on the springy metal strips mentioned in (g) of this claim.

5,607,152

PLURALITY OF BASEBALLS EACH HAVING DIFFERENT COLORED INDICIA FOR TRAINING BASEBALL BATTERS AND A METHOD FOR USE

John Strassburger, 10952 Big Bone Rd., Union, Ky. 41091

Filed Oct. 30, 1995, Ser. No. 550,456
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—451 **3 Claims**



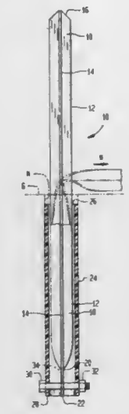
1. A method of training a baseball batter, the method comprising pitching a series of baseballs one at a time to said batter, each of said baseballs having an outside surface having a different colored indicia, and wherein said batter calls out the color of said indicia to indicate that the batter is keeping his eye focused on the baseball.

5,607,153

DISTANCE MARKER WITHIN A GOLF COURSE FAIRWAY

John M. Bailey, 1249 Golfside Dr., Sebring, Fla. 33870

Filed Dec. 15, 1995, Ser. No. 573,484
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—150 **3 Claims**



1. A visual distance marker for a golf course which is implanted in an elongated fairway of the golf course and is materially unaffected by the operation of a reel-type lawn mower passing there over, said marker comprising:

a generally straight, resilient upstanding marker member having an upper portion and a lower portion and a generally uniform x- or cross-shaped cross section along substantially its entire length;

an elongated, straight, rigid tubular anchor member being completely embedded in upright orientation into a grassy area of the golf course fairway, said anchor member having a length generally in the range of that of said lower portion, said anchor member having an inside diameter slightly greater than a maximum width of said marker member;

said marker member slidably engagable into said anchor member whereby their lower ends are generally aligned one to another;

means for releasibly securing said marker member within said anchor member;

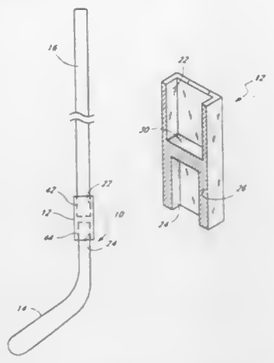
said marker member extending above ground a distance such that said marker member may be initially depressed by a leading edge bar of the lawn mower and said marker member will be subsequently depressed by the mower and rolling bar of the mower so that said marker member will not be severed when the grassy area of said fairway is being mowed in any direction across said fairway, said marker member being sufficiently resilient to return to its original straight and upstanding orientation thereafter;

said upper portion extending above the ground having indicia thereon for viewably communicating to a golfer positioned in any direction from said marker member the distance of said marker member from a tee or a green associated with said fairway.

5,607,154
BLADE REPLACEMENT SYSTEM FOR HOCKEY STICKS

Richard E. Meumann, 25392 Helena Cir., Mission Viejo, Calif. 92691, and Richard C. Meumann, 31805 Oak Glen Rd., Valley Center, Calif. 92082

Filed Aug. 9, 1995, Ser. No. 513,096
Int. Cl.[6] A63B *59/12*
U.S. Cl. 473—562 15 Claims



1. A high durability, high performance hockey stick blade replacement system suitable for use with a hockey stick shaft, said system comprising:

a hockey stick blade having a textured surface on at least a portion thereof, said blade shaped substantially like conventional replacement hockey stick blades and having a hozel portion at one end; and

a coupler portion having first and second connections at opposing ends wherein said first connection is adapted to receive one end of the replacement blade and said second connection is adapted to receive one end of a hockey stick shaft;

whereby said replacement system permits repair of damaged hockey sticks that would otherwise be discarded and thereby lengthens the useful life of a hockey stick shaft, said system also enhancing puck control and manufacturable reproducibility.

5,607,155
PIVOTED PLAYER-TILTABLE GAMES TABLE

Neil D. Campbell, 4 Heybridge Lane, Christchurch, New Zealand

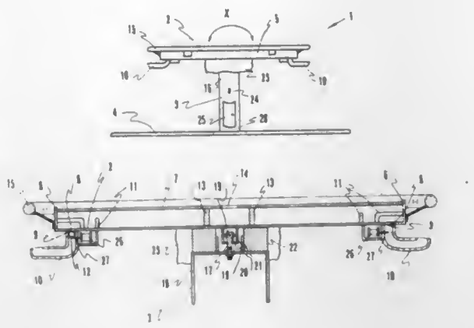
PCT No. PCT/NZ93/00114, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/11072, PCT Pub. Date May 26, 1994
PCT Filed Nov. 17, 1993, Ser. No. 436,221
Claims priority, application New Zealand, Nov. 17, 1992, 245156
Int. Cl.[6] A63F *7/38*
U.S. Cl. 273—110 20 Claims

1. A games apparatus on which a game involving strength, skill and agility is playable by two or more opposing players or teams who, in playing the game, must struggle against one another as they attempt to score points by directing a playing piece on a playing field into a designated scoring zone or zones, the apparatus comprising:

a said playing field, on which a said playing piece is movable, incorporating one or more said scoring zones per player or team;

together with one or more handles per player or team extending outwardly of the playing field manipulable to cause the playing field to be tilted from the horizontal;

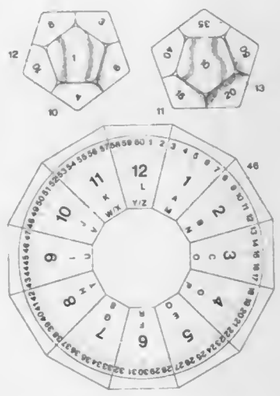
characterized in that the playing field is tiltably mounted on a pedestal, which pedestal is adapted to be fixedly mounted to a base at least during use of the games apparatus, the base being configured and arranged to, in play, support substantially the entire weight of the players or teams and to enable all the players to each exert up to their full strength in attempting to achieve tilting of the playing field without there being substantial risk of altering the relative orientation of the pedestal and the base.



5,607,156
APPARATUS FOR PLAYING GAMES

Amaradivakara-Sam Samarasinghe, RSGC View, D2-0-7, Kuala Lumpur 55100, Malaysia

PCT No. PCT/GB93/00106, § 371 Date Oct. 18, 1994, § 102(e) Date Oct. 18, 1994, PCT Pub. No. WO93/13839, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 18, 1993, Ser. No. 256,536
Claims priority, application United Kingdom, Jan. 16, 1992, 9200862; Sep. 21, 1992, 9219947
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—146 21 Claims

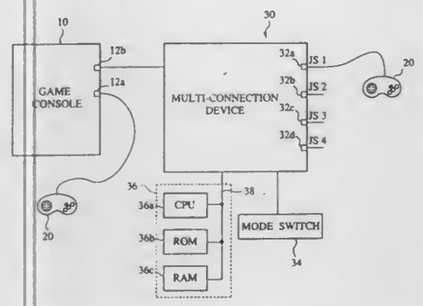


1. An apparatus for playing games comprising at least one die and a planar object with markings thereon, each of said dice consisting essentially of twelve facets, each facet having markings to indicate numerals and/or letters of the alphabet and/or other characters, and the planar object comprising at least twelve parts capable of being assembled into a composite planar sheet, each part having markings of numerals and/or letters and/or characters corresponding to the facets on the die.

5,607,157
MULTI-CONNECTION DEVICE FOR USE IN GAME APPARATUS

Takeshi Nagashima, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan

PCT No. PCT/JP94/00607, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/23811, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 11, 1994, Ser. No. 351,244
Claims priority, application Japan, Apr. 9, 1993, 5-107731; Apr. 9, 1993, 5-107732; Apr. 9, 1993, 5-107733
Int. Cl.[6] A63F *9/24*
U.S. Cl. 273—148 B 3 Claims



1. A multi-connection device connectable as a peripheral unit to a game apparatus, said multi-connection device comprising:

a plurality of input connections respectively connected to input means;

an output connection connected to a body of the game apparatus for outputting data to the game apparatus body;

a control unit for sequentially reading data from the input means connected to the plural input connections, and outputting the read data to the game apparatus body at the output connection;

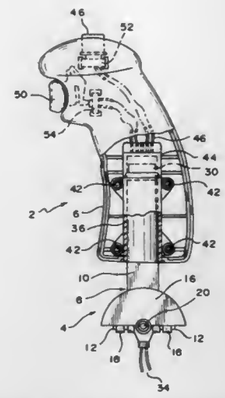
the control unit including a storing unit for storing the data of the plural input means sequentially read from the plural input means, the control unit outputting at the output connection the data of the plural input means stored by the storing unit, the control unit receiving a read instruction from the game apparatus through the output connection at predetermined intervals, and supplying, in response to the read instruction from the game apparatus, the data of the plural input means stored by the storing unit to the game apparatus through the output connection.

5,607,158
DETACHABLE JOYSTICK HANDLE

Wah L. Chan, Flat L, 12/F, Phase 4, Kwun Tong Industrial Centre, 436-446 Kwun Tong Road, Kowloon, Hong Kong

Filed Nov. 9, 1995, Ser. No. 555,544
Claims priority, application United Kingdom, Nov. 28, 1994, 9423971
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—148 B 14 Claims

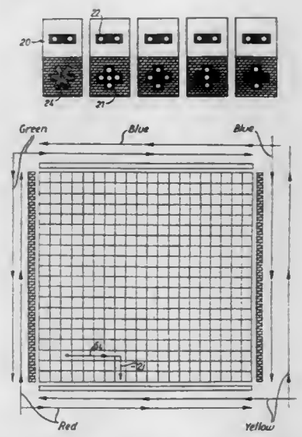
1. A joystick, comprising a handle having mounted thereon at least one actuator means for generating electrical signals in response to manipulation of the actuator means; and a base, said handle being detachably mounted on said base and having electrical connection means detachably engageable with electrical connection means provided in said base, said electrical connection means on said handle and said electrical connection means in said base being for transmitting said electrical signals when said handle is mounted on said base.



5,607,159
BOARD GAME HAVING A RANDOM INDICATOR FOR DETERMINING DIRECTION, AMOUNT AND AXIS OF REFERENCE OF MOVEMENT OF TOKENS

Paul H. Bryson, 41 Stalybridge Road, Mottram, Hyde, Cheshire, SK14 6NF, United Kingdom

PCT No. PCT/GB93/00001, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO93/12848, PCT Pub. Date Jul. 8, 1993
PCT Filed Jan. 4, 1993, Ser. No. 256,240
Claims priority, application United Kingdom, Jan. 2, 1992, 9200109; Jul. 22, 1992, 9215536
Int. Cl.[6] A63F *3/00;9/20;9/04*
U.S. Cl. 273—243 30 Claims



1. A game comprising: a playing surface defining a plurality of regions; at least one token capable of moving across the surface from a first region to a second region; and means for indicating at least two mutually unassociated criteria of movement including a first base vector (i) and second base vector (j), which base vectors determine the direction of movement of the token, and for indicating separate scalar values (A and B), the scalar values determining the magnitudes of first and second vectors (Ai and Bj) such that a resultant vector, indicating overall movement of the token, is determined by the sum of the two vectors Ai and Bj, said means

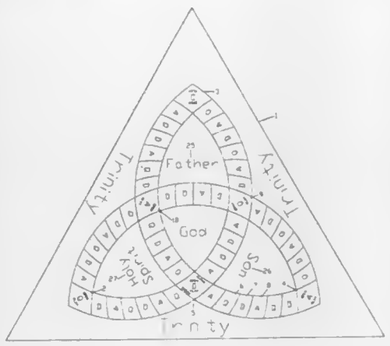
embodying one piece for simultaneously obtaining the first and second base vectors and the separate scalar values.

5,607,160

THREE TALENT BOARDGAME

Arthur J. Stevens, and Linda T. Stevens, both of 8783 Donnybrook Dr., Boise, Id. 83709

Filed Jan. 11, 1996, Ser. No. 585,115
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—249 **16 Claims**



1. A board game apparatus comprising:

(A) A plurality of distinguishable playing pieces representing teams;

(B) A timer for indicating the time a team has to respond;

(C) A plurality of playing cards, each said card having a plurality of questions with the answers and reference to the location of the answers in the Bible, a plurality of specific words for acting and a plurality of specific words for drawing;

(D) A continuous path atop a gameboard, comprising three intersecting arcs, when followed in a counterclockwise direction returns to the beginning of said path including;

(a) A plurality of question spaces, whereon a distinctive identifying indica is printed, corresponding to the category of Question, and indicating the category to be selected from the playing cards;

(b) A plurality of draw spaces, whereon a distinctive identifying indica is printed, corresponding to the category of Draw, and indicating the category to be selected from the playing cards;

(c) A plurality of act spaces, whereon a distinctive identifying indica is printed, corresponding to the category of Act, and indicating the category to be selected from the playing cards;

(d) A plurality of open-play spaces, whereon a distinctive identifying indica is printed, wherein answering said category of play is open to all teams;

(e) A single Alpha/Omega space, whereon a distinctive identifying indica is printed, indicating the start and finish of the path and game;

(E) A means for randomly selecting a number for:

(a) Corresponding movement of a team's playing piece along the path;

(b) Corresponding selection of the plurality of choices within the category of play upon a playing card;

(F) A writing surface to draw upon for the category of draw;

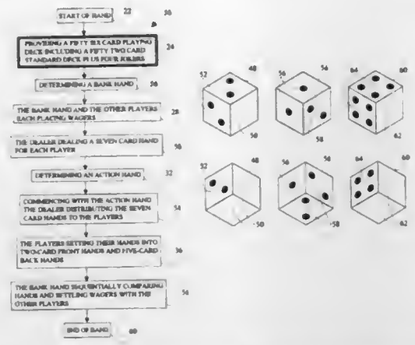
(G) A writing utensil to draw with for the category of draw.

5,607,161

METHOD OF PLAYING AN IMPROVED VERSION OF THE GAME OF PAI GOW POKER

John Skratulia, 11402 Howard St., Whittier, Calif. 90601

Filed Jul. 10, 1995, Ser. No. 500,337
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **18 Claims**



1. An improved method of playing the existing game of Pai Gow Poker, the existing game of Pai Gow Poker including the steps of:

determining a bank hand;

the bank hand and each of the other players placing wagers;

a dealer dealing a seven card hand for each player;

determining an action hand;

the dealer distributing the seven card hands to the players;

the players setting their hands into two-card front hands and five-card back hands; and,

the bank hand sequentially comparing hands and settling wagers with the other players, the improvement comprising:

providing a fifty six card playing deck including a fifty two card standard deck plus four jokers, thereby permitting as many as eight players to participate in the game;

providing a set of three special dice to be utilized in the step of determining an action hand, said set of three special dice further including a first die having three blank sides and three sides marked with a representation of the number two, a second die having three sides marked with a representation of the number one and three sides marked with a representation of the number two, and a third die having three blank sides and three sides marked with a representation of the number four; and,

in the step of determining an action hand, each player having a numbered playing position ranging from one to eight, one of the players rolling said set of three dice, the total numeric value of said three dice ranging from one to eight, the action hand being the hand whose numbered playing position equals said total numeric value of said three dice.

5,607,162

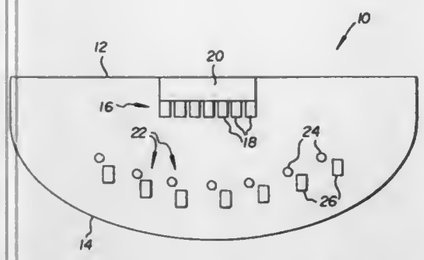
METHOD OF PLAYING A MATCHING CARD GAME

Eugene B. Boylan, Minden; Robert F. Koerner, Gardnerville; Russell R. Hebert, Carson City, all of Nev., and Robert Megli, South Lake Tahoe, Calif., assignors to Bet Technology, Inc., Carson City, Nev.

Filed Mar. 20, 1996, Ser. No. 618,557
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **13 Claims**

1. A method of playing a matching wagering game between a respective player or a group of respective players and a dealer whose outcome is determined by randomly generated playing cards having various ranks and suits, said method comprising the steps of:

wagering an ante bet by each respective player against the dealer;



dealing of a first number of the cards by the dealer to each respective player to constitute a hand for each respective player, and dealing of a second number of the cards by the dealer to the dealer to constitute a hand of the dealer where the second number of cards is greater than the first number of cards;

conducting of a round of play including the steps of

(a) playing of a card from the hand of the dealer to present the rank and suit of the played card to each respective player;

(b) playing of a card from the respective hand by each respective player which is one of

(i) a card which has the same suit as that of the card played by the dealer, or

(ii) a card which has the same rank as that of the card played by the dealer,

whereby each respective player reduces the number of cards in the respective hand thereof where a card is played during the round;

repeating of the conducting step until each card in the hand of the dealer has been played so that there are no cards left in the hand of the dealer;

paying off of the ante bet of each respective player to

(a) each respective player if each respective player has no card remaining in the respective hand thereof, or

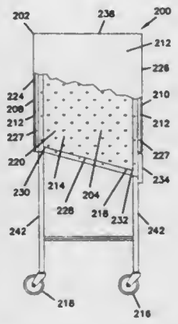
(b) the dealer if each respective player has one or more cards remaining in the respective hand thereof.

5,607,163

GRANULATE BACKSTOP ASSEMBLY

Leslie F. Nesler, St. Paul, Minn., assignor to Caswell International Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 207,855, Mar. 8, 1994, Pat. No. 5,435,571, which is a continuation-in-part of Ser. No. 965,749, Oct. 23, 1992, Pat. No. 5,340,117, and a continuation of Ser. No. 643,539, Jan. 18, 1991, Pat. No. 5,171,020. This application May 25, 1995, Ser. No. 450,821
Int. Cl.[6] F41J *1/12*
U.S. Cl. 273—410 **16 Claims**



1. A backstop assembly for capturing projectiles and projectile fragments comprising:

a container having a plurality of sides, wherein at least two of the sides define target openings for allowing the projectiles to enter the container;

a plurality of self-healing sheets covering the target openings, whereby the projectiles penetrate the self-healing sheets in order to enter the container;

a particulate material contained within the container for slowing down and capturing the projectiles within the container; and

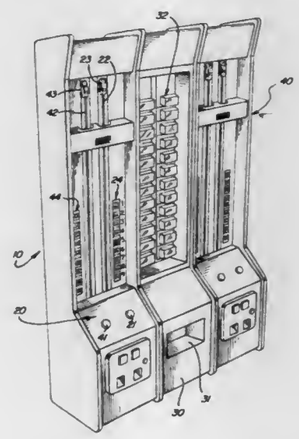
means for facilitating movement of the container.

5,607,164

VEHICLE POSITIONING GAME

Andrew Rifkin, Palos Verdes, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Feb. 9, 1996, Ser. No. 599,215
Int. Cl.[6] A63F *9/24*
U.S. Cl. 273—446 **1 Claim**



1. A toy vehicle positioning game comprising:

a housing defining a vertical slot having upper and lower ends;

a toy vehicle;

drive means for moving said toy vehicle from said upper end toward said lower end;

a stop zone adjacent said lower end having means for indicating a target stop position within said stop zone;

switch means for operating said drive means; and

position means for detecting the position of said toy vehicle within said stop zone.

5,607,165

SEALING SYSTEM FOR A VALVE HAVING BIASSED SEALANT UNDER PRESSURE

Lindsey D. Bredemeyer, Missouri City, Tex., assignor to Cooper Cameron Corporation, Houston, Tex.

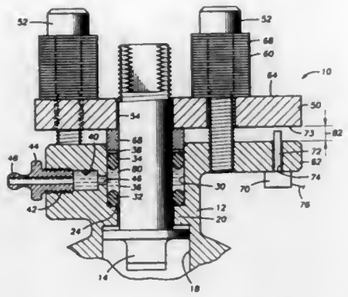
Filed Jun. 7, 1995, Ser. No. 486,358
Int. Cl.[6] F16J *15/20*
U.S. Cl. 277—2 **6 Claims**

1. An apparatus for sealing a moving element in a valve body having a fluid under pressure flowing through a cavity in the valve body comprising:

an internal seal between the valve body and moving element proximate the fluid under pressure;

an external seal between the valve body and moving element proximate the free end of the moving element;

a space around the moving element for sealant between said internal and external seals;



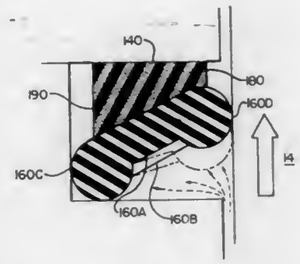
a biasing member for biasing one of said internal and external seals towards the other of said internal and external seals to pressurize the sealant to a pressure greater than the fluid pressure and ambient pressure causing the sealant to tend to flow towards the valve body cavity and towards the ambient.

5,607,166

LOW FRICTION FLUID SEAL DEVICE WITH HINGE AND ROLL STRUCTURE

G. W. Gorman, Midlothian, Tex., assignor to Gorman Company, Inc., Cedar Hill, Tex.

Filed Dec. 15, 1995, Ser. No. 573,193
Int. Cl.[6] F16J *15/32;15/48*
U.S. Cl. 277—27 **13 Claims**



1. A fluid seal device suitable for use in sealing an annular space between an internal surface of a cylinder and a member therein having an outer cylindrical surface, comprising:

(a) an annular body having an inner side and an outer side, a closed end face, and an at least partly open end face defining a first radial sealing area protruding outwardly from said outer side and a second radial sealing area protruding inwardly from said inner side of said annular body; and

(b) said at least partly open end face comprising said first radial sealing area and said second radial sealing area being formed of a less rigid elastomeric material than the remaining portion of said annular body;

whereby said first radial sealing area or said second radial sealing area will tend to hinge and roll towards said closed end of said annular body and present a substantially constant surface contact area with a cylindrical surface when hydraulic oil pressure is applied to said at least partly open end face of said fluid seal device during use thereof and said cylindrical surface moves against said first or second radial sealing area.

5,607,167

SEALING MEMBER HAVING CONCENTRIC O-RING RETAINER FILLED WITH GEL SEALANT

Joris I. Franckx, Bonhelden, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium

PCT No. PCT/GB93/01809, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/05935, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 25, 1993, Ser. No. 397,161
Claims priority, application Belgium, Sep. 4, 1992, 9218755.8; Apr. 1, 1993, 9306855.9
Int. Cl.[6] F16J *15/10;* **G02B** *6/44;6/38*
U.S. Cl. 277—72 FM **16 Claims**



1. A sealing member comprising:

(a) a sealing material having a cone penetration of between 80 and 400 (10^{-1} mm) and an ultimate elongation of at least 100%, and

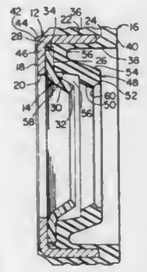
(b) an elastomeric retaining member for the sealing material, which retaining member comprises two substantially concentric O-rings which are joined to one another, an annular space between the O-rings containing the sealing material.

5,607,168

SEAL INCORPORATING A RESILIENT SEALING ELEMENT

Hans H. Dahll, Williams Bay, Wis., assignor to Albert Trostel Packings, Ltd., Lake Geneva, Wis.

Filed Dec. 9, 1994, Ser. No. 353,200
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—152 **3 Claims**



1. A seal for a shaft, comprising:

a case defining an axial portion and a radial portion;

a resilient sealing member having an outer portion positioned inwardly of the axial portion of the case and against the radial portion of the case, and an inner portion extending at an angle to the outer portion inwardly of the radial portion of the case, the resilient sealing member inner portion terminating in an inner end engageable with the shaft and being deflectable upon contact with the shaft; and

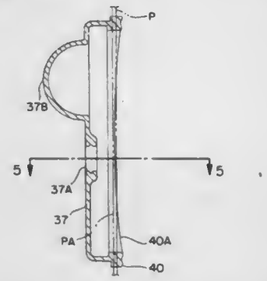
an elastomeric material surrounding the axial portion of the case and engaging at least a part of the radial portion of the case and the outer portion of the sealing member for holding the case and sealing member together and to form a unitary seal construction, wherein the elastomeric material is formed so as to define an excluder lip seal engageable with the shaft and extending from the inner edge of the case radial portion, and wherein the elastomeric material defines an outer ring encasing the case axial portion, and includes connecting structure extending between the outer ring and the excluder lip seal, wherein the connecting structure at least partially overlies the case radial portion, wherein the connecting structure comprises a plurality of spaced, radially extending connectors extending between the excluder lip seal and the outer ring.

5,607,169

SEALING ASSEMBLY FOR CONNECTOR HAVING DEFORMATION COMPENSATING SHAPE

Toshikazu Sakurai, and Atsushi Sakatani, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 16, 1995, Ser. No. 516,013
Claims priority, application Japan, Sep. 27, 1994, 6-258919
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—168 **12 Claims**



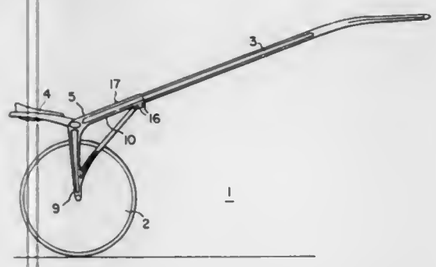
1. A waterproof sealing assembly comprising a first surface and a second surface with a seal therebetween, said first surface being pressed against said second surface in a coupling direction by a coupling device, thereby causing deformation of at least one of said first surface and said second surface, said deformation causing curvature thereof, said seal shaped to compensate for said curvature, said first surface is on a first element and said second surface is on said second element, said first element being a synthetic resin male portion of a waterproof connector and said second element being a synthetic resin female portion of said waterproof connector, said male portion and said female portion adapted to be sealingly coupled to each other.

5,607,170

SULKY

Jan Capjon, Fagerstrand, and Atle Nygaardsvik, Fjellstrand, both of Norway, assignors to Volotech AS, Stavanger, Norway

PCT No. PCT/NO93/00005, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/24354, PCT Pub. Date Dec. 9, 1994
PCT Filed May 27, 1993, Ser. No. 343,469
Claims priority, application Norway, May 29, 1992, 922156
Int. Cl.[6] B62C *1/08*
U.S. Cl. 280—63 **19 Claims**



1. A sulky comprising:

two wheels having a substantially flat configuration;

a driver seat having a substantially flat configuration connected to a chassis;

said chassis including a plurality of substantially flat elements detachably assembled together so as to be easily removable from each other by hand tools, the plurality of substantially flat elements including a crossbar, a pair of shafts, and a pair of end frames, said end frames each having a substantially triangular shape with three corners and having mounting structures detachably connecting the shafts and crossbar to the end frames with the crossbar extending between the end frames and one of the shafts extending away from each respective end frame, said end frames further being detachably mounted to, respectively, the two wheels such that the connections between one of said end frames and one of said shafts and an end of the crossbar are disposed, at longitudinally spaced locations, in a substantially common vertical plane extending substantially longitudinally to the sulky and through substantially the center of the wheel;

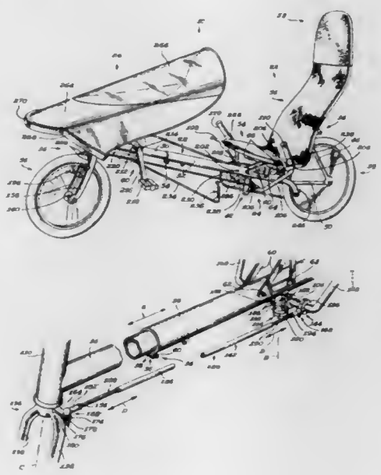
whereby a user may assemble and disassemble the sulky in a simple manner using ordinary hand tools.

5,607,171

RECUMBENT BICYCLE

Gérard Labranche, 75 Grande Côte, Rosemère, Québec, Canada

Filed Jun. 12, 1995, Ser. No. 489,371
Int. Cl.[6] B62K *17/00*
U.S. Cl. 280—288.1 **19 Claims**



1. A recumbent bicycle comprising:

a substantially elongated frame defining a frame longitudinal axis, a frame front end and a frame rear end, said frame including a main tube, said main tube having a main tube front section and a main tube rear section, said main tube front section and said main tube rear section being movable relatively to one another along said frame longitudinal axis so as to vary the length of said frame;

a forked yoke pivotally fixed to said main tube front section for pivoting about a yoke pivoting axis;

a front wheel rotatably mounted on said yoke for rotating about a front wheel rotating axis;

a rear wheel rotatably fixed to said frame adjacent said frame rear end for rotating about a rear wheel rotating axis;

a driving mecnanism for driving said rear wheel, said driving mechanism including a pedal assembly, said pedal assembly being mounted on said main tube front section adjacent said frame front end;

a seat mounted on said main tube rear section adjacent said frame rear end;

a handle assembly pivotally mounted on said main tube rear section adjacent said seat;

a linkage means for transmitting the rotation of said handle assembly to said yoke, said linkage means being operatively attached to both said handle assembly and said yoke;

a brake means mounted on said frame for braking said bicycle.

5,607,172

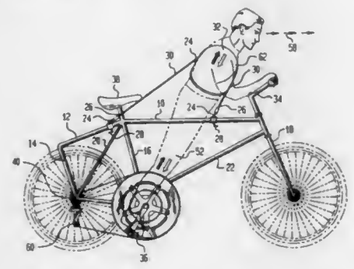
EXTENDED BICYCLE FRAME IN COMBINATION WITH A HARNESS APPARATUS

John J. Turi, 247 Elm Rd., Princeton, N.J. 08540

Filed Nov. 22, 1995, Ser. No. 561,698

Int. Cl.[6] B62J *39/00*

U.S. Cl. 280—290 **4 Claims**



4. A single-piece extended bicycle frame in combination with a harness apparatus comprising:

said single-piece bicycle frame including a forward top tube, a forward down tube, a seat post connected to said forward top tube and forward down tube, a middle fork connected to the seat post, a rear axle connected to the middle fork, a rear top tube connected to said seat post, and a rear fork connected between said rear top tube and said rear axle,

a forward cycle harness connector attached to said forward top tube so as to allow translating forward and rearward movement and including a lockset,

a rear cycle harness connector attached to said rear top tube so as to allow translating forward and rearward movement and including said lockset, and

a harness apparatus removably connected to said forward cycle harness connector and said rear cycle harness connector.

5,607,173

ADJUSTABLE PARKING FRAME OF BICYCLE

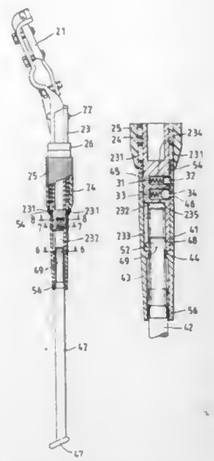
Yung-Hsin Lai, No. 302-1, Chang Yuan Road, Chang Sha Village, Hwatan Hsiang, Changhua, Taiwan

Filed Jul. 25, 1995, Ser. No. 507,020

Int. Cl.[6] B62H *1/06*

U.S. Cl. 280—293 **3 Claims**

1. An adjustable bicycle parking frame comprising a fastening plate which is provided at a bottom thereof with an inner rod having thereon at a midpoint thereof two protuberances, a support rod, and an adjustment rod; wherein said inner rod is provided at a bottom thereof with a receiving space which is provided axially with a sliding slot and is further provided on a top thereof with a first round hole dimensioned to receive therein a spring and a retaining block; wherein said support rod is provided at a bottom thereof with a support block and at a top thereof with an outer threaded portion having on a top thereof a round hole in which a pin is received; wherein said adjustment rod is provided axially with a fitting hole having therein at a midpoint thereof an inner threaded portion engageable with said outer threaded portion of said support rod, said fitting hole of said adjustment rod further having on an inner wall of a top end thereof a retaining groove engageable with said retaining block of said inner rod when said fitting hole of said adjustment rod is fitted over a bottom end of said inner rod; and wherein said support rod can be adjusted in length by a relative displacement of said inner threaded portion of said adjustment rod and said outer threaded portion of said support rod, with said relative displacement being brought about by said adjustment rod which is turned.



5,607,174

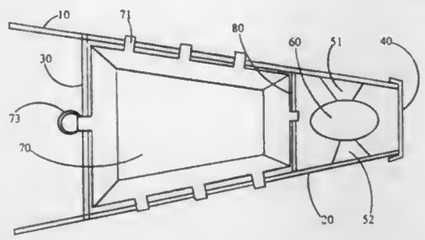
FOLDING WHEELBARROW

Patrick Ambrogio, 323 Kramer Ave., Staten Island, N.Y. 10309

Filed May 17, 1995, Ser. No. 442,681

Int. Cl.[6] B62B *1/18*

U.S. Cl. 280—653 **3 Claims**



1. A wheelbarrow comprising a frame, a bucket, a bucket insert a first posterior resting brace, a second posterior resting brace, at least one cross brace, a steering wheel, and a wheel support means;

said frame comprising:

a first elongate member, said elongate member having a first end and a second end;

a second elongate member, said elongate member having a first end and a second end, wherein said first and second elongate members are rigid one piece members and lie in the same plane and the distance between said first ends of said elongate members is less than the distance between said second ends of said elongate members;

an anterior resting brace having a first end and a second end, one end of said anterior resting brace being connected to the first end of said first elongate member, and the other end of said anterior resting brace being connected to the first end of said second elongate member;

said anterior resting brace being a platform upon which to rest the wheelbarrow as it stands on end for storage;

said anterior resting brace being a support upon which to pivot the wheelbarrow when dumping a load; at most one anterior bucket support brace having a first end and a second end, one said end of said anterior bucket support brace being connected to said first elongate member, and the other end of said anterior bucket support brace being connected to said second elongate member;

a posterior bucket support brace having a first end and a second end, one end of said posterior bucket support brace being connected to said first elongate member, and the other end of said posterior bucket support brace being connected to said second elongate member;

said frame constructed to permit the top of said frame to rest flat against a wall for storage;

said bucket being

made of panels of flexible material, said panels comprising a bottom panel, two side panels, a rear panel and at most one front panel;

removably attached by bucket support means to at least two parts of said frame, said parts of said frame being chosen from the group consisting of a first elongate member, a second elongate member, an anterior bucket support brace and a posterior bucket support brace, and

disposed between said first and second elongate members, posterior to said anterior bucket support brace, and anterior to said posterior bucket support brace;

said bucket insert being

made of a rigid material selected from the group consisting of wood, plastic and metal, and contoured to the shape of part of said bucket.

said first posterior resting brace comprising

a first leg, said first leg being hingedly connected to said first elongate member, and

a first folding support arm foldable at a lockable hinge, said first folding support arm having a first end and a second end, said first folding support arm being hingedly connected at said first end to said first elongate member, and said first folding support arm being hingedly connected at said second end to said first leg.

said second posterior resting brace comprising

a second leg, said second leg being hingedly connected to said second elongate member, and a second folding support arm foldable at a lockable hinge, said second folding support arm having a first end and a second end, said second folding support arm being hingedly connected at said first end to said second elongate member, and said second folding support arm being hingedly connected at said second end to said second leg.

said cross brace having two ends wherein one end is attached to said first leg and the other end is attached to said second leg.

said steering wheel being rotatably attached to the axle of a wheel support means and said steering wheel being disposed between said first and second elongate members, posterior to said anterior resting brace, and anterior to said anterior bucket support brace;

said wheel support means comprising

an axle which is below the plane defined by the elongate members, said axle having a first end extending from one side of said wheel and a second end extending from the other side of said wheel,

a first wheel support member extending between and being attached to the first end of said axle and said first elongate member, and

a second wheel support member extending between and being attached to the second end of said axle and said second elongate member.

5,607,175

BOTTOM STRUCTURE OF A BAG

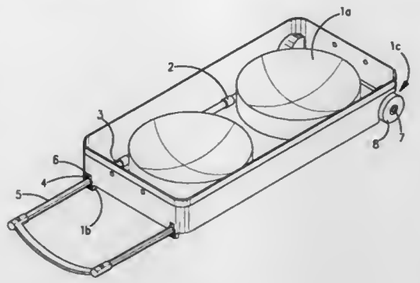
Sung H. Bae, 887-50 Kumdan-Dong Buk-Gu, Taegu, Rep. of Korea

Filed Mar. 9, 1995, Ser. No. 401,357

Claims priority, application Rep. of Korea, Jul. 13, 1994, 94-17524

Int. Cl.[6] B62B *1/12*

U.S. Cl. 280—655 **4 Claims**



1. A bottom structure of a bag comprising:

a bag having a plurality of support rings longitudinally arranged on a bottom of the bottom structure;

a pair of sleeve pipes fixedly fitted in the support rings wherein the sleeve pipes longitudinally extend in parallel on the bottom of the bottom structure;

a pair of bushings having internal rings and fitted into a front wall of the bottom structure constructed and arranged so that the bushings are aligned with said sleeve pipes and communicate with the sleeve pipes respectively;

a pair of handle pipes movably received in the bushings as well as in said sleeve pipes wherein the handle pipes appear out of and disappear in the bushings as well as in said sleeve pipes, the rear ends of said handle pipes having stoppers, said stoppers being stopped by the internal rings of the bushings and preventing separation of the handle pipes from the bushings when fully extending the handle pipes out of said sleeve pipes; and

a plurality of rollers mounted to a rear end of the bottom structure.

5,607,176

COLLAPSIBLE TRAILER

Donald Leib, 25052 Silver Leaf La., Laguna Hills, Calif. 92653, and Kenneth Thurm, 2348 N. Rockridge Cir., Orange, Calif. 92667

Continuation of Ser. No. 922,106, Jul. 29, 1992, Pat. No. 5,340,145. This application May 25, 1994, Ser. No. 249,118

Int. Cl.[6] B62B *1/04*

U.S. Cl. 280—656 **14 Claims**

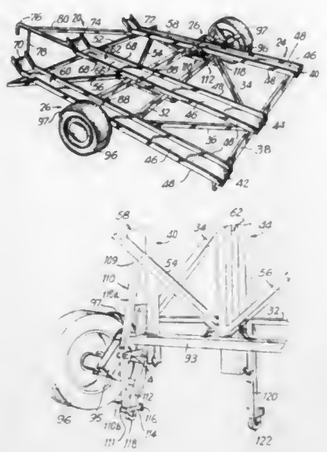
1. A collapsible trailer comprising:

a front platform;

a rear platform connected to said front platform so that the platforms are pivotable between an open position wherein they extend horizontally in the same general plane, and a closed position wherein the platforms are in folded relation;

a pair of wheels mounted on and extending laterally from one of the platforms for supporting the trailer in its open position; and

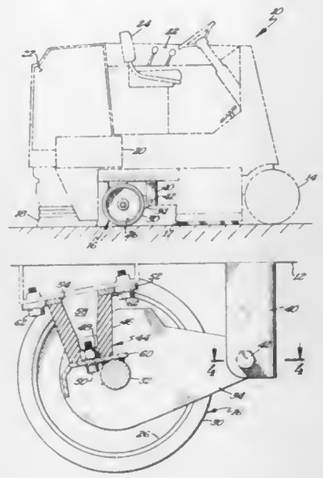
a pair of spaced casters mounted to said one platform, one or more casters mounted on the other one of said platforms, each caster being fixed with respect to the platform to which it is mounted, said casters being positioned so that when the platforms are in said open position, the casters mounted to the front platform extend rearwardly beneath the rear platform and the casters on the rear platform extend forwardly beneath



5,607,178
REAR WHEEL ISOLATION SUSPENSION FOR FLOOR SCRUBBERS

Donald J. Legatt, and Jerome A. Gunn, both of St. Michael, Minn., assignors to Advance Machine Company, Plymouth, Minn.

Filed Mar. 15, 1995, Ser. No. 403,373
Int. Cl.[6] B60G *9/02;11/22;* A47L *11/28;11/30*
U.S. Cl. 280—716 9 Claims

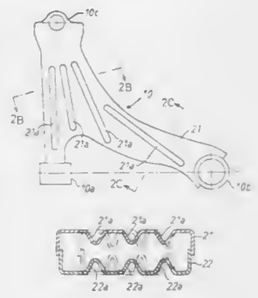


the front platform, and the casters being spaced above the surface on which the wheels rest when supporting the trailer, said casters further being positioned so that when the platforms are in the closed position and then rotated about the wheels to a storage position, wherein the platforms extend generally vertically, the support of the trailer is shifted from the wheels to the casters to facilitate moving the trailer in said storage position.

5,607,177
DEFORMABLE SUSPENSION ARM FOR AUTOMOTIVE VEHICLE

Yoshihisa Kato, Aichi-ken, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Jun. 21, 1995, Ser. No. 493,283
Claims priority, application Japan, Jun. 24, 1994, 6-143606; May 1, 1995, 7-107614
Int. Cl.[6] B60G *7/00;3/00*
U.S. Cl. 280—673 15 Claims



1. A suspension arm adapted for use in a suspension system of an automotive vehicle, the suspension arm having a pair of spaced mounting portions mounted on a vehicle body structure at two positions spaced in a fore-and-aft direction of the vehicle and a support portion for supporting a road wheel mounted thereon, wherein the suspension arm is provided with deformable means located between the mounting portions for providing enhanced transverse stiffness of the suspension arm perpendicular to the fore-and-aft direction and for buckling when applied with an impact force in the fore-and-aft direction of the vehicle.

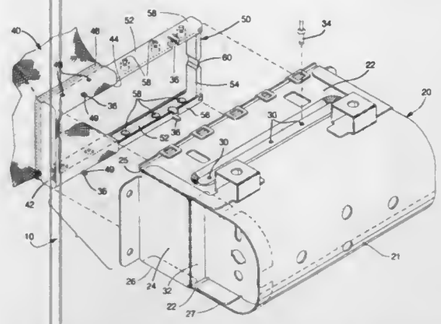
1. Machine for cleaning floors comprising, in combination: a frame; means attached to the frame for cleaning floors; an axle in the form of a rod and having first and second ends; first and second relatively rigid wheels each having an axial opening, with the axial openings of the first and second wheels being directly rotatably mounted on the axle adjacent the first and second ends; at least a first arm rigidly and directly attached to and extending from the axle, with the first arm including a free end; means for pivotably mounting the free end of the arm to the frame about a pivot axis parallel to but spaced from the axle and for isolating any transmitted vibrations from the wheels and the axle to the frame through the pivot axis; means for resiliently attaching the axle to the frame for restricting the pivotal movement of the arm relative to the frame and for isolating any transmitted vibration from the wheels and the axle to the frame through the resiliently attaching means; and a drive wheel attached to the frame spaced from the axle.

5,607,179
DEFORMABLE AIR BAG RETAINER

Robert A. Lenart, Kettering; Jeffrey A. Shepherd, Troy, and James L. Webber, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1995, Ser. No. 539,178
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 20 Claims

1. An air bag module in a vehicle comprising:
an air bag;
a housing for housing the air bag; and
a retainer coupled to the air bag and adapted for attachment to the housing, the retainer including at least one deformable portion having an undeformed condition prior to attachment of the retainer to the housing and having a deformed condition upon attachment of the retainer to the housing such that a size of the retainer is adjustable upon attachment of the retainer to the housing.

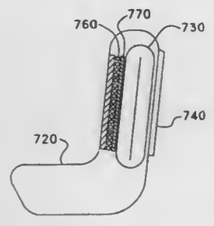


1. In an inflator comprising:
(a) an initiator;
(b) a fuel chamber containing a liquid fuel;
(c) a housing containing a combustion chamber;
(d) an oxidant in said combustion chamber; and
(e) at least one discharge port;
arranged so that activation of said initiator initiates the burning of said liquid fuel and oxidant in said combustion chamber producing gases which exit the inflator through said discharge port;
the improvement comprising:
said liquid fuel stored in a porous solid structure within said fuel chamber.

5,607,180
AIRBAG INFLATION DEVICES AND METHODS

Murray Kornhauser, 620 Argyle Rd., Wynnewood, Pa. 19096

Continuation-in-part of Ser. No. 200,392, Feb. 23, 1994. This application Aug. 8, 1994, Ser. No. 287,335
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—736 16 Claims

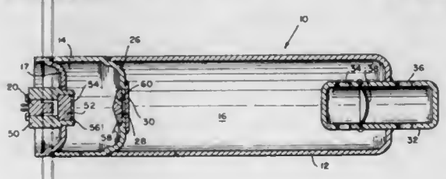


1. An airbag system for protecting a passenger during collision, comprising:
an airbag which is inflatable with ambient air;
a bladder interfaced with the airbag for storing the ambient air before the collision;
a first means for storing energy which will be used to compress the bladder and thereby inflate the airbag; and
a plate interfaced to the first means which will be hurled against the bladder during a collision.

5,607,181
LIQUID-FUELED INFLATOR WITH A POROUS CONTAINMENT DEVICE

William B. Richardson, Kaysville; Karl K. Rink, and Linda M. Rink, both of Liberty, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

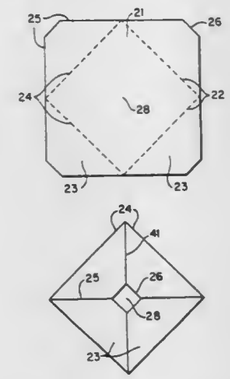
Filed Nov. 30, 1995, Ser. No. 565,333
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 28 Claims



5,607,182
STRUCTURALLY EFFICIENT INFLATABLE PROTECTIVE DEVICE

James M. Nelsen, Tijeras; Larry D. Whinery, Albuquerque; Kenneth W. Gwinn, Cedar Crest; Donald D. McBride, Albuquerque; Daniel A. Luna, Los Lunas, all of N.M.; Joseph P. Holder, and Richard J. Bliton, both of Greensboro, N.C., assignors to Sandia Corporation, Del., and Precision Fabrics Group, Inc., N.C.

Continuation of Ser. No. 355,241, Dec. 9, 1994, Pat. No. 5,533,755, which is a continuation of Ser. No. 82,471, Jun. 28, 1993, Pat. No. 5,482,317. This application Feb. 21, 1996, Ser. No. 604,422
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.1 6 Claims



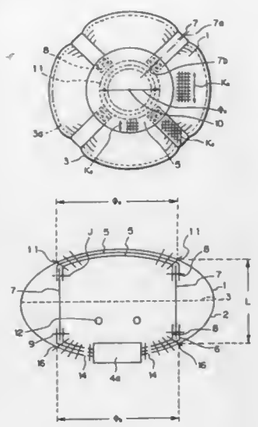
1. An inflatable protective cushion comprising an uncoated sheet of material made from yarn of less than about 300 denier, said sheet being defined by four or fewer fold lines and a plurality of flap portions, each flap portion having a base edge corresponding to a fold line and at least two side edges each extending outwardly from the base edge, the flap portions being folded at the fold lines and being joined at corresponding side edges to define an inflatable chamber.

5,607,183

AIR BAG PROVIDED WITH REINFORCING BELTS

Kunio Nishimura, Ibaraki; Hideo Nakagawa, Takatsuki, and Shiro Kumakawa, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 240,724, May 12, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,867
Claims priority, application Japan, Sep. 14, 1992, 4-269149
Int. Cl.[6] B60R 21/20
U.S. Cl. 280—743.2 31 Claims



1. An air bag provided with reinforcing belts, comprising:
a substantially circular top cloth formed from a woven fabric;
a substantially circular bottom cloth formed from a woven fabric, superimposed on and seam-joined to the circular top cloth at the circular circumferential edge portions thereof, and having a circular hole formed in the center portion of the bottom cloth, through which hole an inflator can be joined to the air bag;
a top reinforcing cloth located in an seam-joined to the center portion of the circular top cloth and comprising at least one woven fabric piece;
a bottom reinforcing cloth located on and seam-joined to a portion around the inflator-joining circular hole of the circular bottom cloth, and comprising at least one woven fabric piece; and
a plurality of reinforcing belts arranged on the inside face of the circular top cloth and on the inside face of the circular bottom cloth and each comprising at least one woven fabric piece,
wherein an end portion of each of the reinforcing belts is connected to one of the top reinforcing cloth and a top belt catcher seam-joined to the top cloth and comprising at least one woven fabric piece, and an opposite end portion of each of the reinforcing belts is connected to one of the bottom reinforcing cloth and a bottom belt catcher seam-joined to said bottom cloth and comprising at least one woven fabric piece;
the top and bottom reinforcing cloths or the top and bottom reinforcing cloths and the top and bottom belt catchers are respectively seam-joined to portions around the centers of the top and bottom cloths by a plurality of concentrically closed seam lines; and
in an outermost circumferential closed seam line of at least one of the top reinforcing cloth and bottom reinforcing cloth and each of the reinforcing belts, a shortest straight line distance ϕ between two points at which a straight line drawn through a center of at least one of the circular top and bottom cloths having the closed outermost circumferential seam line, intersects the closed outermost circumferential seam line, is in the range of from 130 to 550 mm, and a straight line distance L between an intersecting point of a longitudinal center line of the reinforcing belt with the closed outermost circumferential seam line of the top reinforcing cloth and an intersecting point of the longitudinal center line of the reinforcing belt with the closed outermost circumferential seam line of the bottom reinforcing cloth, measured along the longitudinal center line, is in the range of from 160 to 360 mm, and the shortest straight line distance ϕ and the straight line distance L satisfy the relationship (1):

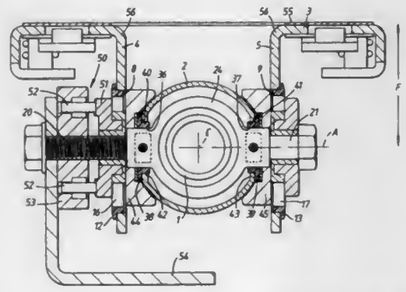
$$1.20 \leq \phi/L \leq 2.95. \quad (1)$$

5,607,184

ADJUSTABLE STEERING COLUMN

Laurence G. H. Barton, Leamington, England, assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 15, 1995, Ser. No. 558,101
Claims priority, application United Kingdom, Nov. 24, 1994, 9423766
Int. Cl.[6] B62D 1/18
U.S. Cl. 280—775 4 Claims



1. An adjustable steering column in which a steering shaft is mounted within an outer column tube, comprising:
a bracket for securing the outer column tube to a vehicle;
bracket members extending from the bracket on opposite sides of the column tube, relative adjustment between the bracket and column tube being provided by means of longitudinal slots; and
clamping means extending between the bracket members to clamp the tube to the bracket, the clamping means has a central clamping axis which intersects a longitudinal axis of the steering shaft, the clamping means being formed with a central portion which surrounds at least part of the steering shaft, wherein said opposite sides of the column tube are flattened sides with longitudinal apertures which receive anti-friction elements which in turn receive extensions from said central portion.

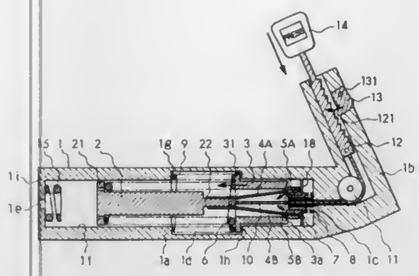
5,607,185

BELT TIGHTENER FOR SEAT BELT

Kazuyoshi Isaji; Shinichi Iwai, both of Kariya, and Yutaka Ohashi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 22, 1994, Ser. No. 345,816
Claims priority, application Japan, Nov. 26, 1993, 5-321195; Nov. 26, 1993, 5-321196; Nov. 26, 1993, 5-321197; Jan. 6, 1994, 6-011388; Jan. 7, 1994, 6-012109; Jan. 7, 1994, 6-012110
Int. Cl.[6] B60R 22/36
U.S. Cl. 280—806 10 Claims

1. A belt tightener for a seat belt, wherein said belt tightener pulls in a seat belt when deceleration of a moving vehicle exceeds a predetermined value, comprising:
a casing extending in the longitudinal direction of the vehicle;
a compression spring having a first end and a second end and disposed in said casing;



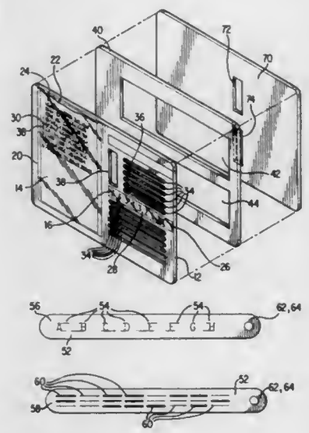
a connecting member having a first end and a second end, with a buckle of the seat belt connected to said first end of said connecting member;
a supporting member supporting said first end of said compression spring;
a pull-in member contacting said second end of said compression spring, connected to said second end of said connecting member and adapted to move in an expansion direction of said compression spring following expansion of said compression spring;
wherein said pull-in member includes a locking part engageable with and disengageable from said supporting member to maintain said compression spring in a compressed state by causing said locking part to be engaged with said supporting member; and
a restricting member contacting said locking part for restricting movement thereof in the direction in which the engagement of said locking part is released;
wherein said seat belt is tightened by the expansion of said spring caused by the release of contact between said locking part and said restricting member and disengagement of said locking part from at least a portion of said supporting member when deceleration of the vehicle exceeds the predetermined value.

5,607,186

SURVEY APPARATUS

Michael J. Schroeder, and Paul N. Stavropoulos, both of 8959 W. Cermak Rd., Riverside, Ill. 60546

Filed Apr. 24, 1995, Ser. No. 427,266
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—65 21 Claims



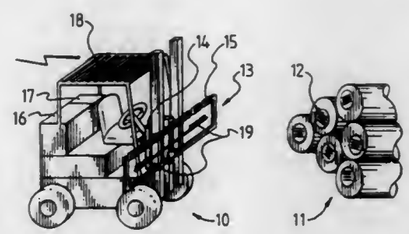
1. A survey card apparatus, comprising:
a) a front planar member having a plurality of elongated apertures disposed therein, with a response aperture disposed perpendicular to at least a portion of the plurality of elongated apertures;
b) a middle planar member secured to the front planar member, the middle planar member having at least one aperture therethrough;
c) a plurality of slide members each having a front side and a back side, the plurality of slide members slidably received within an aperture in the middle planar member and aligned with the plurality of elongated apertures in the front planar member, each selected one of the plurality of slide members having indicia responsive to a selected question on the front side, and bar code indicia on the back side in alignment with the indicia responsive to a selected question on the front side;
d) a rear planar member secured to the middle planar member, the rear planar member having at least one aperture parallel to the response aperture in the front planar member, wherein
a selected one of the plurality of slide members is slidably positioned through a selected elongated aperture to align selected bar code indicia within the aperture in the rear planar member, and a plurality of user responses may be subsequently scanned with one read stroke of a remote bar code reader by passing the bar code reader along the bar code aperture disposed on the rear planar member.

5,607,187

METHOD OF IDENTIFYING A PLURALITY OF LABELS HAVING DATA FIELDS WITHIN A MACHINE READABLE BORDER

Harold T. Salive; Kevin G. Slade, and Rachel K. Salive, all of Auckland, New Zealand, assignors to Kiwisoft Programs Limited, Auckland, New Zealand

PCT No. PCT/US92/08548, § 371 Date Mar. 3, 1994, § 102(e) Date Mar. 3, 1994, PCT Pub. No. WO93/07006, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 8, 1992, Ser. No. 199,316
Claims priority, application New Zealand, Oct. 9, 1991, 240172
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—67 2 Claims



1. A method of identifying each of a plurality of items at a site, comprising the steps of:
labelling each of said items with a unique machine-readable label, each of said labels being different from each other of said labels, said label carrying a data matrix data field readable by machine vision reading equipment, said data matrix data field containing information-carrying indicia, the data field of each label being disposed in a machine-readable border, and an area of the field of view able to be read by said machine vision reading equipment containing a plurality of said labels,
recording at least one image of the area of the field of view able to be read by said machine vision reading equipment, converting the image into a computer-compatible form, applying machine vision algorithms to detect the presence and position of each distinct data field within the image, and

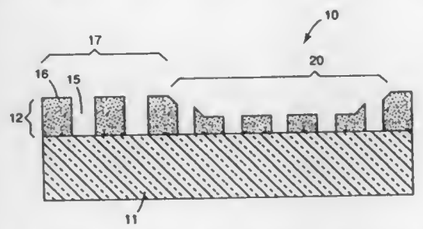
decoding only the information-carrying indicia in each data field located within said machine-readable borders to identify each item.

5,607,188

MARKING OF OPTICAL DISC FOR CUSTOMIZED IDENTIFICATION

Ted L. Bahns, Colfax, and Bruce T. Peacock, Eau Claire, both of Wis., assignors to Imation Corp., St. Paul, Minn.

Filed Jun. 24, 1994, Ser. No. 265,234
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—113 **13 Claims**



1. An optical data disc which includes a data structure of optically readable data feature patterns which represent data stored on the disc, wherein the data feature patterns comprise data features and land areas which correspond to a reference plane and which are in between said data features, said data features and land areas being characterized by a sufficient difference in height with respect to the reference plane to allow the data feature patterns to be optically readable; and

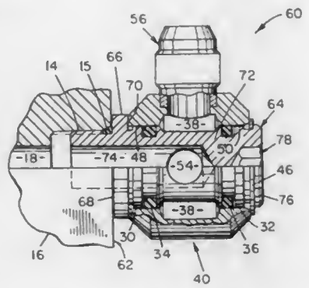
wherein the optical data disc comprises an optically viewable identification image formed within said data structure and interspersed with the data features therein, wherein the optically viewable identification image includes an alteration in said height difference between the data features and the land areas with respect to the reference plane in the area of the data structure corresponding to the optically viewable identification image sufficient to provide an altered diffraction pattern such that the optically viewable identification image is viewable to form an authentication watermark for the disc.

5,607,189

ROTARY JOINT FOR PRESSURIZED FLUIDS

D. Franklin Howeth, 2935 St. Louis Ave., Fort Worth, Tex. 76110

Filed Oct. 3, 1994, Ser. No. 317,122
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—39 **23 Claims**



1. A pressurized fluid conducting rotary joint, comprising:

an elongated stem having a connection end threaded for connection to a source of pressurized fluid, an outer end portion extending oppositely from the connection end to an outer end and a laterally extending collar separating the threaded portion of the connecting end from the outer end portion of the stem;

said collar having a lower surface which serves as an abutment when the connection end is threaded to a source of pressurized fluid and an upper surface which comprises a barrel seat;

a removable barrel which fits over the outer end portion of the stem, the barrel having a lower end which is supported on the barrel seat and an upper end proximate the outer end of the stem which is held by a retaining ring mounted at the outer end of the stem;

the outer end portion of the stem having a pair of support bearings comprising a lower support bearing proximate the barrel seat, an upper support bearing proximate the outer end of the stem and a pair of seals spaced apart by a seal distance, comprising a lower seal next to the lower support bearing and an upper seal next to the upper support bearing wherein said support bearings together with said seals forms a fluid transfer chamber between said seals within the upper portion of the stem and the barrel;

the barrel having an upper and a lower support surface corresponding to the upper and lower bearing surfaces of the stem, each of said support surfaces of the barrel being of sufficient length to sealingly engage one of the seals of the stem;

the barrel having an external connection in fluid communication with the fluid transfer chamber:

a pressurized fluid passage in the stem which communicates with the fluid transfer chamber and delivers pressurized fluid at rated flow volume to the external connection on the barrel; and

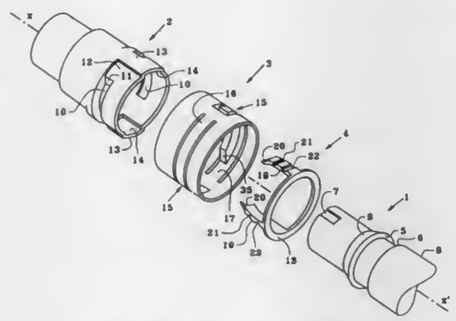
the outer end of the stem having a blind socket opening within the upper support bearing for receiving a wrench suitable for rotating the stem to secure or remove the threaded connection end from the source of pressurized fluid without creating a path for contaminants to enter through the outer end of the stem.

5,607,190

QUICK AND LEAKTIGHT JOINING DEVICE FOR TUBULAR PIPES

Philippe Exandier, Chalette, and Denis Godeau, Vieilles Maisons/Joudry, both of France, assignors to Hutchinson, Paris, France

Filed Mar. 3, 1995, Ser. No. 398,378
Claims priority, application France, Mar. 4, 1994, 94 02505
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—93 **9 Claims**



1. A device for sealed joining of a first tubular element with a second tubular element for a fluid circuit, comprising means for locking the first and second tubular elements in a joined condition and a telltale including a ring which is visible before joining, and

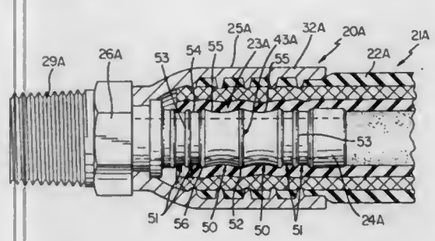
wherein the device includes a component concealing the ring of the telltale after the first and second tubular elements have been joined together, wherein the first tubular element is a male joining piece comprising a retaining element including a ramp forming an angle with the longitudinal axis of the male joining piece, and wherein the second tubular element has, at an end adjacent the first tubular element when joined therewith, an inside diameter slightly greater than the outside diameter of the male joining piece and includes at least one slot, wherein the device further includes a locking ring surrounding the second tubular element comprising at least one elastic lug which, at least when the first and second tubular elements are joined, passes through the slot of the second tubular element, wherein, upon joining, the at least one lug is pushed back by the ramp and then is locked by the retaining element, and wherein the telltale includes the ring which is visible when the first and second tubular elements are unjoined, and an element which is pushed back, upon joining, by the male joining piece so that the ring of the telltale becomes housed in the locking ring which conceals its presence.

5,607,191

HOSE ASSEMBLY, HOSE COUPLING AND A PART THEREFOR AND METHODS OF MAKING THE SAME

Samuel L. Wilson, Greenfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 337,596, Nov. 10, 1994, Pat. No. 5,487,570, which is a division of Ser. No. 180,597, Jan. 13, 1994, Pat. No. 5,382,059. This application Dec. 8, 1995, Ser. No. 569,997
Int. Cl.[6] F16L *33/207*
U.S. Cl. 285—256 **13 Claims**



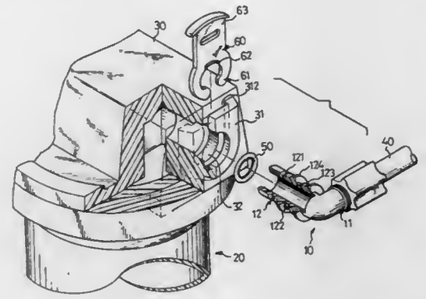
1. In a hose assembly comprising a hose coupling having an annular recess, and a hose having an end thereof clamped in said annular recess of said coupling, said coupling having a longitudinal axis and comprising a tubular insert portion inserted into said one end of said hose and having an external peripheral surface means that it is generally parallel to said longitudinal axis, and a tubular ferrule portion disposed in generally concentric and spaced relation about said insert portion to define said annular recess therebetween and having been radially inwardly deformed toward said longitudinal axis to clamp said end of said hose between said ferrule portion and said insert portion after said end of said hose has been received in said annular recess, said external peripheral surface means having a plurality of spaced apart annular groove means therein that are separated from each other by said annular ridge means so that said insert portion has medial groove means intermediate opposite end groove means thereof, the improvement wherein said end groove means are at least two times narrower than said medial groove means.

5,607,192

TUBING CONNECTION CONSTRUCTION FOR A WATER PURIFICATION SYSTEM

Shih-ping Lee, No. 1-4, Fute Lane, Taiping Rd., Taiping Hsiang, Taichung Hsien, Taiwan

Filed Mar. 23, 1995, Ser. No. 409,677
Int. Cl.[6] F16L *37/00*
U.S. Cl. 285—305 **3 Claims**



1. A tubing connection construction for an apparatus which includes a lug portion (**31**) laterally formed thereon and protruding outwardly therefrom, a passage (**32**) transversely defined in said apparatus and extending through said lug portion (**31**), a slot (**312**) vertically defined between said apparatus and said lug portion (**31**) and communicating with said passage (**32**), said tubing connection construction comprising:

a fitting member (**10**) including a first end portion (**12**) received in said passage (**32**) and a second end portion (**11**), a flange portion (**124**) formed on a periphery of the first end portion (**12**) of said fitting member (**10**) and protruding radially and outwardly therefrom to be retained in said passage (**32**) in said apparatus, an annular recess (**122**) defined in the periphery of the first end portion (**12**) of said fitting member (**10**) adjacent to said flange portion (**124**) and communicating with said slot (**312**); and

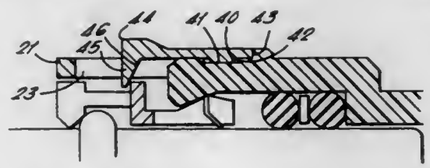
a C-shaped positioning member (**60**) received in said slot (**312**) and including a leg portion (**61**) formed on a lower end thereof and fitted in said annular recess (**122**) of said fitting member (**10**) such that said flange portion (**124**) of said fitting member (**10**) is stopped by means of said leg portion (**61**) of said positioning member (**60**), thereby fixing said fitting member (**10**) to said apparatus, said leg portion (**61**) having a snapping end (**62**) laterally formed of an upper portion thereof and abutting on an inner wall of said lug portion (**31**) defining said passage (**32**).

5,607,193

TUBE COUPLINGS

John D. Guest, 'Iona ', Cannon Hill Way, Bray,, Maidenhead, Berkshire SL6 2EX, United Kingdom

Filed Jan. 13, 1995, Ser. No. 372,591
Claims priority, application United Kingdom, Jan. 13, 1994, 9400585
Int. Cl.[6] F16L *37/092*
U.S. Cl. 285—308 **22 Claims**



1. A tube coupling comprising:

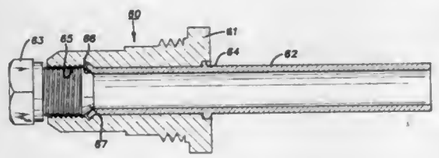
a coupling body having a first throughway open at one end to receive a tube,

a housing projecting from said one end of the coupling body and having a second throughway extending from a first end of the housing located proximal to the coupling body to a second end of the housing located distal from the coupling body, wherein said second throughway is axially aligned with said first throughway such that the tube can extend through the second throughway of the housing and into the first throughway of the coupling body,

a collet located for axial movement in said throughways, said collet having a substantially annular part located in the second throughway and formed with retention means which extend into said first throughway and which engage with a portion of the coupling body disposed in said first throughway for limiting axial movement of the collet in an axial direction away from the coupling body, the annular part of the collet being further provided with a plurality of resilient legs projecting toward the second end of said housing and terminating in inwardly extending projections which engage a formation on the tube to hold the tube in the collet, and

wherein the housing has an end region proximal to the second end of the housing for engaging the collet legs at a limit of the collet movement in an axial direction away from the coupling body such that the collet legs are constrained against radial outward movement in order to prevent release of the tube from the collet, and wherein the housing has a recess means disposed in an intermediate region between said end region and the coupling body such that said recess means overlie the collet legs at a limit of collet movement in an axial direction towards the coupling body for allowing the collet legs to expand radially outward to release said formation on the tube and thereby allow the tube to be extracted from the coupling body.

5,607,194
MEMBER AND TUBE ASSEMBLY
Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises, Inc., Mansfield, Ohio
Filed Apr. 20, 1995, Ser. No. 426,496
Int. Cl.[6] F16L *25/00*
U.S. Cl. 285—334.5 **10 Claims**



1. A tube and fitting assembly comprising a fitting having first and second ends and an internal bore extending through the fitting from end-to-end;

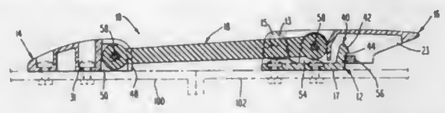
a shoulder in said fitting bore;

a tube closely engaging the bore and extending at least partially through the bore and being longitudinally compressed to be radially expanded into tight engagement with the bore of the fitting and with said shoulder;

an internal thread in one of said tube and fitting; and

a second member threaded into said threads and sealed against said tube.

5,607,195
FLEXIBLE DRAW LATCH
Jeffrey L. Antonucci, King of Prussia, Pa., assignor to Southco, Inc., Concordville, Pa.
Filed Aug. 21, 1995, Ser. No. 517,576
Int. Cl.[6] E05C *5/00*
U.S. Cl. 292—247 **28 Claims**



1. A latch adapted for use in securing together a first closure member and a second closure member, the latch comprising:

a keeper adapted for being affixed o the first closure member; and

a latch assembly, the latch assembly comprising:

a base adapted for being affixed to the second closure member;

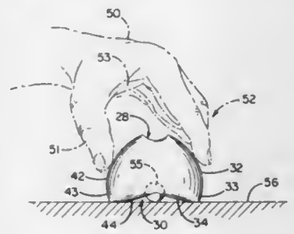
a substantially elastic latch body pivotally connected to the base;

the latch body including two opposing surfaces at spaced separation defining a width of the latch body;

a lever pivotally connected to the latch body adapted for engaging the keeper, the lever being adapted to pivot from an open to a closed position when engaging the keeper for latching together the first and second closure members;

a pair of generally elongated attachment members for pivotally connecting the base and the lever with the substantially elastic latch body, the latch body further including a pair of apertures extending the width thereof for receiving said pair of generally elongated attachment members, wherein at least one of the pair of generally elongated attachment members comprises a one-piece pin member, wherein said pin member is generally elongated an amount greater than the width of the latch body and includes first and second areas of specified diameters proximate opposing ends thereof and a third area between and of a diameter less than that of the first and second areas, wherein at least one of said apertures through the latch body into which the pin member is received comprises a pin member aperture, wherein said pin member aperture is of a diameter less than that of the diameters of the first and second areas of the pin member, with the third area of the pin member being positioned within the pin member aperture through the latch body and the first and second areas being positioned outside of the pin member aperture and adjacent the two opposing surfaces thereof.

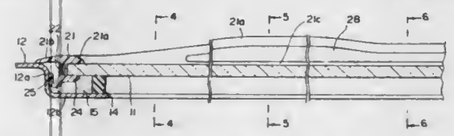
5,607,196
HAND-HELD GRIPPING DEVICE
Kenneth J. Weger, 28595 W. Hillcrest Ave., Cary, Ill. 60013
Filed Apr. 29, 1996, Ser. No. 639,700
Int. Cl.[6] B25B *9/02*
U.S. Cl. 294—99.2 **20 Claims**



16. A gripping device for operation by a user's hand for capturing small objects, comprising:

a hollow shell of resilient material formed from a segment of a sphere deformed to have two pointed corners opposite each other at an open end of the shell and two generally symmetrical side surfaces each having an edge portion terminated at a curved edge at the open end, the two curved edges being joined at the two pointed corners, the shell being sized for fitting into a user's hand, the side surfaces being responsive to compressional forces exerted by fingers of a user's hand to curl towards each other about an axis defined by the two pointed corners to cause the two curved edges to approach each other and close the open end.

5,607,197
AUTOMOBILE WINDSHIELD MOLDING AND THE METHOD OF PRODUCING THE SAME
Yukihiko Yada, Nagoya, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan
Division of Ser. No. 291,088, Aug. 18, 1994, Pat. No. 5,474,729, which is a division of Ser. No. 192,623, Feb. 7, 1994, Pat. No. 5,374,096, which is a continuation of Ser. No. 781,371, Oct. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,087
Claims priority, application Japan, Oct. 23, 1990, 2-283344
Int. Cl.[6] B60J *1/02*
U.S. Cl. 296—93 **13 Claims**



7. An automobile windshield molding for decorating along a side periphery of a front windshield located in an opening of a vehicle body panel, said automobile windshield molding having an exterior wing extending, when installed, along said side periphery of the windshield, said exterior wing comprising;

an inward wing portion which covers a peripheral edge of the windshield and has a uniform exterior contour appearance throughout its entire length;

a sub-inward wing portion beginning at a point on the automobile windshield molding other than a lower end of a side molding part of the automobile windshield molding and extending in a direction toward the lower end of the side molding part; and

a water drain channel defined in a distance between said inward wing portion and said sub-inward wing portion which begins at said point and extends toward the lower end of the side molding part;

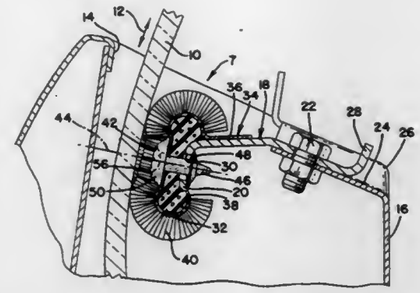
wherein said distance between said inward wing portion and said sub-inward wing portion gradually reduces toward the lower end of the side molding part such that said water drain channel gradually reduces in size of width at an opening thereof.

5,607,198
AUTOMOTIVE WINDOW GLASS STABILIZER
Timothy A. Wirsing, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 24, 1995, Ser. No. 409,247
Int. Cl.[6] B60J *1/17*
U.S. Cl. 296—146.16 **11 Claims**

1. An automotive vehicle extendable window glass stabilizer for laterally stabilizing a window glass with a body of an automotive vehicle comprising:

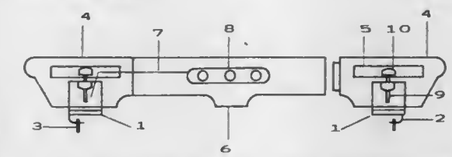
a support generally extending from the automotive body laterally toward the window glass;

a fabric mat mounted on the support extending toward the window glass; and



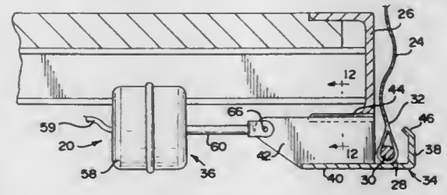
a plastic button, having an undercut, surrounded by the fabric mat, the button having a head providing a bottoming-out contact surface for the window glass when the glass more fully compresses the fabric mat.

5,607,199
REMOVABLE VEHICLE SPOILER
Michael J. Gill, Manhattanville Station 365 W. 125 St., New York City, N.Y. 10027
Filed Sep. 7, 1995, Ser. No. 524,893
Int. Cl.[6] B62D *35/00*
U.S. Cl. 296—180.1 **1 Claim**



1. A removable vehicle spoiler for a vehicle including a trunk lid having a width and a lip, said spoiler comprising a wing, two pedestals rotatably and slidably mounted on said wing to fit the trunk lid width, a bracket on each said pedestal for removably attaching each said pedestal under the lip of the vehicle trunk lid, and a set screw on each said bracket to tighten and secure each said pedestal firmly in place under the lip.

5,607,200
CURTAIN SECURING MECHANISM
Francis S. Smidler, Lafayette, Ind., assignor to Wabash National Corporation, Lafayette, Ind.
Filed Apr. 21, 1995, Ser. No. 426,241
Int. Cl.[6] B60P *7/04*
U.S. Cl. 296—181 **18 Claims**



1. A mechanism in a trailer having a body and a hanging side curtain on said body having a lower end extending substantially to a lower side rail of said body, said mechanism being mounted beneath said lower rail for securing said lower end of said curtain, said mechanism including an upwardly-facing hook-shaped member having an outer-end portion, means supporting said hook-

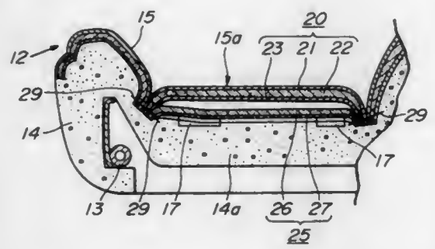
shaped member for movement between a retracted position and an extended position in which said upwardly-facing hook-shaped member outer-end portion is substantially in vertical alignment with said side curtain and laterally outwardly of said body for receiving said lower-end of said curtain, and means connected with said hook-shaped member for selectively retracting and extending said hook-shaped member to move said outer-end portion from said extended position to said retracted position substantially beneath said body for securing and tensioning said lower-end of the curtain and conversely.

5,607,201

VEHICLE SEAT HAVING AN OVERLAYER UNBOUND TO AN UNDERLAYER THAT IS BOUND TO A SEAT PAD

Hideki Irie, and Kazuo Hatakeyama, both of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Nov. 4, 1994, Ser. No. 334,485
Claims priority, application Japan, Nov. 8, 1993, 5-300769
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.62 **7 Claims**



1. A vehicle seat, comprising:
a seat pad formed of a synthetic resin foam, a main surface portion of the seat pad having at least one integral fastener;
a seat cover disposed over the seat pad, the seat cover including:
an underlayer disposed directly over the main surface portion of the seat pad, a lower side of the underlayer being attached to the fastener, the underlayer comprising at least a layer of backing material; and
an overlayer disposed freely atop the underlayer, the overlayer being of three ply construction including an outer skin surface, a central wadding layer, and a lower layer of backing material,
wherein the underlayer and the overlayer are attached to one another only at edge portions thereof defining a main surface of the seat cover, the surface areas of the underlayer and overlayer being freely displaceable in relation to each other.

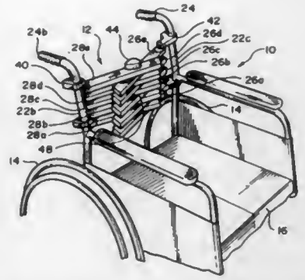
5,607,202

COLLAPSIBLE BACK SUPPORT

Victor Toso, 771 NE. Harding St., Minneapolis, Minn. 55413, and Jack K. Hockenberry, 1442 Martin Rd., Albert Lea, Minn. 56007

Filed Jun. 8, 1995, Ser. No. 488,732
Int. Cl.[6] A47C *4/00*
U.S. Cl. 297—44 **20 Claims**

1. A collapsible body support moveable between a first collapsed position and a second fully expanded position, including a seat member, a first support member and a second support member extending from said seat member, and a back support releasably secured between said first support member and said second support member, said back support comprising:
at least one first rib extending from said first support member, said at least one first rib having a first end, a second end, and a central portion between said first end and said second end,



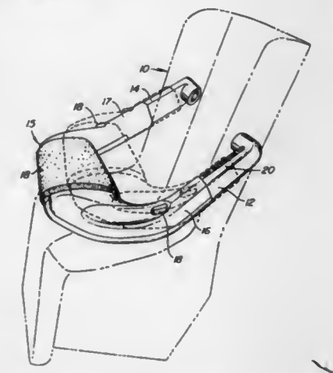
wherein said first end of said at least one first rib is pivotally connected to said first support member;
at least one second rib extending from said second support member, said at least one second rib having a first end, a second end, and a central portion between said first end and said second end, wherein said first end of said at least one second rib is pivotally connected to said second support member; and
wherein said central portion of said at least one first rib is pivotally connected to said central portion of said at least one second rib to form a V-shaped support surface, created by said second end of said at least one first rib and said second end of said at least one second rib when said body support is in its second fully expanded position, upon which an individual can rest their back.

5,607,203

CHILD'S CAR SEAT WITH IMPROVED OVERHEAD SHIELD

Mark A. Sedlack, Cuyahoga Falls, Ohio, assignor to Century Products Company, Macedonia, Ohio

Filed Nov. 10, 1995, Ser. No. 556,680
Int. Cl.[6] A47D *1/10*
U.S. Cl. 297—256.15 **6 Claims**



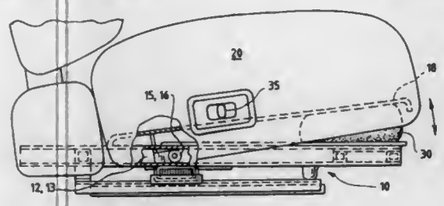
1. An adjustable overhead shield for a child's car seat, said shield comprising:
first and second arm members each having an attachment end and a distal end and a rack member secured thereto and having a plurality of notches arranged therealong; and
a central U-shaped member having first and second side sections each slidably engagable with said first and second arm members, respectively, at the distal end thereof, each of said side sections having a pawl latch pivotally mounted therein, said pawl latch having a nose portion engagable in locking relation with said notches and an operating end having a manually engagable surface, and a bias member for urging said nose portion of said pawl latch into engagement with said notch.

5,607,204

ADJUSTABLE VEHICLE SEAT

Dennis Gryp, East Moline, Ill., assignor to Sears Manufacturing Company, Davenport, Iowa

Filed Jun. 7, 1995, Ser. No. 482,615
Int. Cl.[6] A47C *3/025*
U.S. Cl. 297—284.11 **8 Claims**



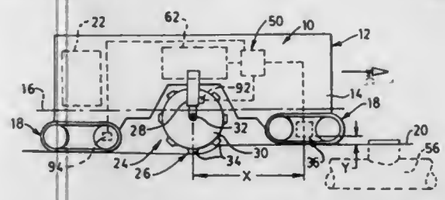
1. An adjustable seat comprising:
a frame having a pair of tracks;
a backrest mounted to the frame;
a seat having a front and rear and mounted on a seat support plate, said support plate including a pair of depending rollers movably restrained within said tracks to permit fore and aft movement of said seat relative to said backrest;
an inflatable bag positioned below and engageable with said support plate for rotating said support plate relative to said frame and wherein said rollers act as the pivot point for said support plate to thereby adjust the vertical height of the front of said seat; and
a pressurized air supply and a conduit forming a pressurized air path between said air supply and said inflatable bag and having a manually actuatable valve to allow air into said bag and to vent air from said bag to modulate the height of the front of said seat.

5,607,205

OBJECT RESPONSIVE IMPLEMENT CONTROL SYSTEM

Jon S. Burdick, Pekin; Robert A. Herold, Peoria; Paul T. Corcoran, Washington; John F. Szentes, Peoria, and Adam J. Gudat, Edelstein, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 6, 1995, Ser. No. 469,556
Int. Cl.[6] E01C *23/088;23/07*
U.S. Cl. 299—1.5 **17 Claims**



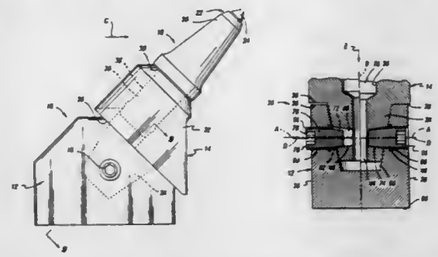
1. An automatic object responsive control system for controlling a work implement of a work machine having a frame, a longitudinal axis, a plurality of rotatable members connected to and supporting the frame on a geographic surface, a prime mover mounted on the work machine and drivingly connected to said plurality of rotatable members, said prime mover propelling the work machine over the geographic surface, comprising:
a work implement having a cutting portion and being elevationally movably connected to the frame, said cutting portion extending in a direction transverse the longitudinal axis of the machine;
ground penetrating means for delivering electromagnetic radiation, receiving a reflection of said delivered electromagnetic radiation, and delivering a responsive first signal, said electromagnetic radiation penetrating an underlying geographic surface, said ground penetrating means being mounted at a preselected location on said frame, spaced from the geographic surface underlying said ground penetrating means, and spaced a preselected distance from the cutting portion of the work implement in a longitudinal direction relative to the longitudinal axis;
object detecting means for receiving said first signal, determining the presence of an undesirable object located elevationally between the ground penetrating means on said frame and the cutting portion of said work implement and delivering a responsive raise signal;
implement control means for receiving said raise signal and lifting said work implement relative to said frame.

5,607,206

CUTTING TOOL HOLDER RETENTION SYSTEM

David R. Siddle, Greensburg, and Ted R. Massa, Latrobe, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Aug. 2, 1995, Ser. No. 510,451
Int. Cl.[6] E21C *35/193*
U.S. Cl. 299—102 **26 Claims**



20. An excavation cutting tool holder for use with a support block having a tool holder bore into which the cutting tool holder is inserted and a pin having a pin engagement surface, the pin being movably mounted to the support block, the cutting tool holder comprising:
an outer wear region and a shank portion, the shank portion having a holder engagement surface which engages the pin engagement surface, the holder engagement surface defining an inclined surface such that when the pin engagement surface is moved to engage the holder engagement surface the shank portion will be drawn into the tool holder bore of the support block, and wherein the outer wear region defines a holder shoulder that abuts the support block when the shank portion is drawn into the tool holder bore of the support block.

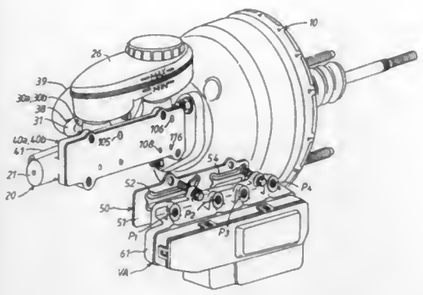
5,607,207

HYDRAULIC BRAKING PRESSURE CONTROL APPARATUS FOR AUTOMOTIVE VEHICLE

Takashi Nagashima, Nukata-gun, and Michiharu Nishii, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jun. 22, 1995, Ser. No. 493,742
Claims priority, application Japan, Jun. 30, 1994, 6-149647
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—113.1 **6 Claims**

1. A hydraulic braking pressure control apparatus for an automotive vehicle, comprising:
a master cylinder having a cylinder body with a pressure chamber, said master cylinder being provided thereon with a fluid reservoir;
a hydraulic braking pressure control circuit connecting a plurality of wheel brake cylinders to the pressure chamber and fluid reservoir of said master cylinder, said hydraulic braking pressure control circuit being operatively connected to an electric



controller so as to be activated thereby for controlling hydraulic braking pressure applied to the wheel brake cylinders from said master cylinder in braking operation; and

an anti-lock actuator integrally provided with said master cylinder, said anti-lock actuator including a plurality of solenoid valves integrally connected with said hydraulic braking pressure control circuit, all of said plurality of solenoid valves being formed within a single valve body separate from said cylinder body of said master cylinder, and a housing structure for housing a remainder of operative components of said anti-lock actuator, wherein

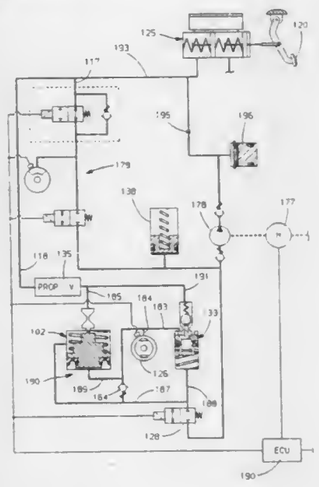
said single valve body having all solenoid valves of said anti-lock actuator is fixedly positioned on one side face of said cylinder body, and said housing structure is integrally formed with the cylinder body of said master cylinder at an opposite side face of said cylinder body.

5,607,208

BRAKE SYSTEM WITH HYDRAULIC ABS MODULATOR

David F. Reuter, Beavercreek; Dewey F. Mort, and John A. Guernsey, both of Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1994, Ser. No. 362,228
Int. Cl.[6] B60T *8/34*
U.S. Cl. 303—113.5 **6 Claims**



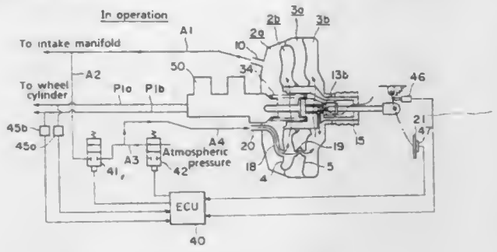
1. A brake system comprising:
a first wheel brake;
a second wheel brake;
a pressurized fluid source;
a first apply conductor communicating between the pressurized fluid source and the first wheel brake;
a first solenoid valve having an internal check positioned along the first apply conductor;
a first release conductor communicating between the pressurized fluid source and the first wheel brake;
a second solenoid valve positioned along the first release conductor;
a second apply conductor communicating between the pressurized fluid source and the second wheel brake including first and second parallel flow paths;
an apply orifice positioned in the second parallel flow path;
a base brake isolation valve having a first flow port in fluid communication with the second wheel brake a second port in fluid communication with the first parallel flow path and a third flow port in fluid communication with the second parallel flow path;
a second release conductor communicating between the second wheel brake and the pressurized fluid source and communicating through the base brake isolation valve; and
a third solenoid valve positioned along the second release conductor.

5,607,209

BRAKING APPARATUS AND BRAKING METHOD FOR VEHICLE

Tomohiro Narita, Okazaki, Japan; Hiroki Tsuge, Frankfurt am Main, Germany; Susumu Nishikawa; Kazumi Ishida, both of Okazaki, Japan, and Takeshi Yamazaki, Anjo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 465,056
Claims priority, application Japan, Jun. 6, 1994, 6-123515; May 1, 1995, 7-107285
Int. Cl.[6] B60T *13/52;13/68*
U.S. Cl. 303—122.11 **28 Claims**



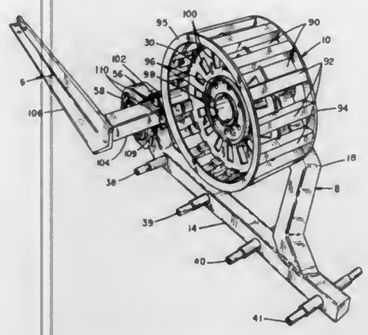
1. A braking apparatus for a vehicle comprising:
an operation member operated by a driver of the vehicle;
a booster for exerting a braking force, according to an operation force of said operation member, on wheels of the vehicle;
braking force increasing means for increasing a braking force output of said booster irrespective of the operation force of said operation member;
braking condition determination means for determining whether a braking operation by said operation member is that of a normal braking condition or an emergency braking condition; and
control means for, when the braking operation is determined by the braking condition determination means to be a normal braking condition, controlling the booster to exert a braking force according to the operation force of said operation member on the wheels, and for, when the braking operation is determined to be emergency braking condition, controlling is said braking force increasing means to increase a braking force output of the booster irrespective of the operation force of said operation member, to thereby exert a braking force larger than the braking force normally exerted on the vehicle wheels.

5,607,210

WHEEL MOUNT TRACK CONVERSION ASSEMBLY

Glen Brazier, 1436 Main Ave. N., Thief River Falls, Minn. 56701

Filed Dec. 21, 1994, Ser. No. 361,040
Int. Cl.[6] B62D *55/14*
U.S. Cl. 305—131 **17 Claims**



1. An all-terrain track assembly comprising:
a) a track framework including a plurality of idler wheels and a drive drum;
b) a drive track trained about said idler wheels and said drive drum and having a first plurality of raised lugs which mesh with apertures at said drive drum and second and third pluralities of raised lugs laterally displaced from the first lugs to define first and second channels which align with said idler wheels;
c) tensioner means for adjusting the tension of said drive track at said framework; and
d) anti-torque means adapted to be attached to a vehicle for biasing said framework to an equilibrium position between first and second limits and comprising a frame member which mounts to said vehicle and a collar having a bore which includes means having a plurality of resilient surfaces that mate to said frame member to resist rotation of said frame member within said bore.

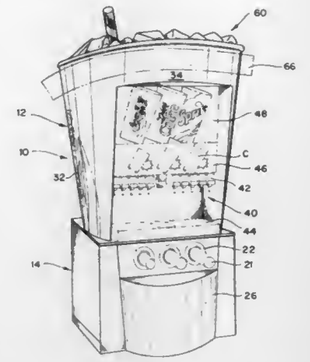
5,607,211

FOUNTAIN BEVERAGE CENTER

David B. Henninger, Marrietta, Ga.; Jeffrey A. Rutchik, North Easton, Mass.; Robert A. Crosby, Jr., Scituate, Mass.; Michael E. Goodell, North Easton, Mass., and Charles W. Pasewark, Framingham, Mass., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 24, 1995, Ser. No. 410,278
Int. Cl.[6] A47B *97/00*
U.S. Cl. 312—204 **16 Claims**

1. A cabinet for a beverage dispenser which simulates the appearance of a serving cup for the beverage comprising:
a base unit including upstanding front, side, and rear walls connected to a horizontal countertop, and a bowed panel on the front wall having a frusto-conical shaped outline for simulating the shape of a portion of the serving cup, the bowed panel being spaced from top and side edges of the front wall of the base unit to provide generally planar surfaces adjacent the bowed panel; and
a top unit supportable on the countertop of the base unit, said top unit including a pair of side panels having frusto-conical shaped outlines and bowed exterior surfaces which simulate the appearance of other portions of the serving cup, said side panels being spaced laterally on the countertop in the provision of a chamber for accommodating a beverage dispenser assembly therein;



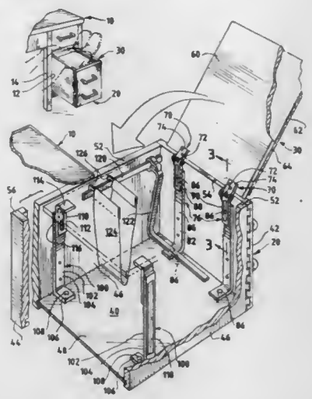
whereby the base and the top units together simulate the overall appearance of the serving cup for a beverage to be dispensed.

5,607,212

ARTICLE OF FURNITURE WITH FOOTREST MOUNTED PIVOTALLY TO DRAWER

Ted D. Kilpatrick, 101 Sea Hammock Way, Ponte Vedra Beach, Fla. 32082

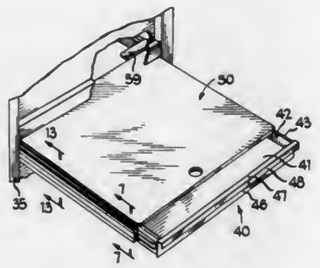
Filed Oct. 12, 1995, Ser. No. 542,410
Int. Cl.[6] A47B *83/00*
U.S. Cl. 312—237 **9 Claims**



1. A combination comprising a desk, credenza, or similar article of furniture and a footrest having an expansive, foot-supportive panel, the article having a drawer-receiving receptacle having a margin, the article having a drawer movable horizontally within the drawer-receiving receptacle, into and from a closed position and through a range of opened positions, the drawer having an interior space and having walls including an outer wall and two side walls, the side walls having coplanar upper edges defining an upper plane, the footrest being mounted to a wall selected from the outer and side walls, near the upper edge of the selected wall, so as to be pivotally movable through at least about 90° of pivotal motion, when the drawer is moved sufficiently into the range of opened positions for the footrest to clear the margin of the drawer-receiving receptacle, from and into a lowered position wherein the footrest extends horizontally with the expansive, foot-supportive panel covering at least a substantial part of the interior space, and wherein substantially all of the footrest lies beneath the upper plane defined by the upper edges of the side walls so as to permit the drawer to be horizontally moved into and from the closed position without interference from the footrest and through a range

of raised positions wherein the footrest allows access to the same part of the interior space, the combination further comprising means for biasing the footrest toward the lowered position but permitting the footrest to be pivotally moved into and from the lowered position and through the range of raised positions.

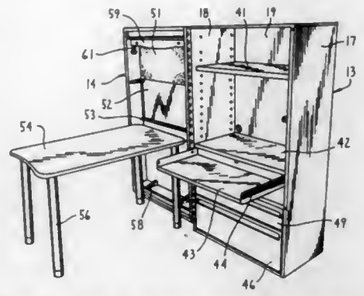
5,607,213
SLIDING DRAWER TRAY
George R. Slivon, Kenosha, Wis., and Nick J. Theobald, Algona, Iowa, assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Apr. 3, 1995, Ser. No. 415,636
Int. Cl.[6] A47B *88/16*
U.S. Cl. 312—301 10 Claims



1. A sliding work platform for a drawer of the type including upstanding front, rear and side walls and supported on drawer slides, the platform comprising:
a substantially rectangular panel defining a work surface and having front and rear edges and substantially flat side margins, said flat side margins being disposed for respective sliding engagement with upper edges of the upstanding side walls of the drawer to facilitate sliding movement of said platform in forward and rearward directions relative to the drawer;
support members integral with said panel only adjacent to the rear edge thereof for respective sliding engagement with upper edges of the drawer slides to support portions of said platform extending rearwardly of the drawer; and
depending flanges integral with said side margins only adjacent to the front edge of said panel for engagement with the drawer walls inside the drawer to limit movement of said panel relative to the drawer.

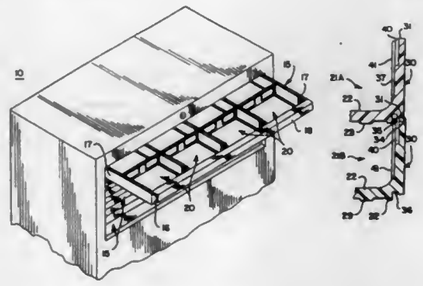
5,607,214
TRANSPORTABLE WORKSTATION
Paul M. Pierce, Grand Haven, and Richard D. Elushik, Holland, both of Mich., assignors to Haworth, Inc., Holland, Mich.
Filed Jun. 5, 1995, Ser. No. 462,068
Int. Cl.[6] A47B *46/00;83/04;43/00;* B60B *33/04*
U.S. Cl. 312—310 17 Claims

1. A portable and transportable workstation, comprising:
an upright multi-sided hollow enclosure defined by a cabinet having top and bottom walls joined by opposed side walls all joined to an upright rear wall, the cabinet defining an interior compartment accessible through an open upright front side of said cabinet, and a door connected by hinge means along one front edge of one side wall of said cabinet for horizontal swinging movement of the door between open and closed positions, said door when in said closed position overlying the open front side of said cabinet, said door being swingable into said open position wherein the door is positioned sidewardly adjacent the cabinet;



said door including a vertically enlarged front panel and a peripheral edge thereof which projects rearwardly a small distance to define a shallow compartment which is horizontally accessible when the door is in the open position and which communicates with said interior compartment when the door is in the closed position;
a table top disposed within said communicating compartments when the door is closed and being movable into a use position wherein the top projects horizontally outwardly when the door is in the open position; and
a height-adjustable roller assembly mounted on said door adjacent a lower free corner thereof and having a roller adapted for load-bearing engagement with a floor, said roller assembly including height-adjusting means for permitting the elevation of said roller relative to said door to be readily adjusted, said height-adjusting means including a vertically projecting threaded adjustment shaft rotatably and threadably supported within a nut member which is fixed to said door, said threaded shaft having said roller mounted on a lower end thereof, and an adjustment wheel secured to said threaded shaft above a lower edge wall of the door and projecting inwardly of the door so as to be readily manually accessible to permit the height of the roller assembly to be manually adjusted.

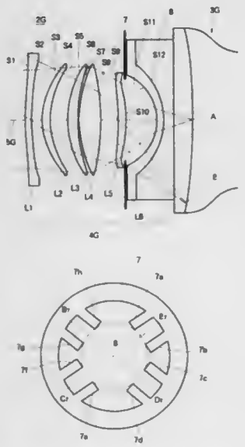
5,607,215
STACKABLE DIVIDED DRAWER PARTITION
Larry D. Pacetti, and Charles H. Heiligenthal, both of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Feb. 17, 1994, Ser. No. 195,157
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—348.3 5 Claims



1. A stackable drawer insert adapted to be received within a drawer, said insert comprising: an open-ended tray including a rectangular base wall and opposed upstanding side walls with each of said side walls terminating at an upper edge and a lower edge, each of said side walls having a length and an elongated groove formed in the lower edge of said side wall and extending the length of said side wall and defining a bearing surface generally parallel

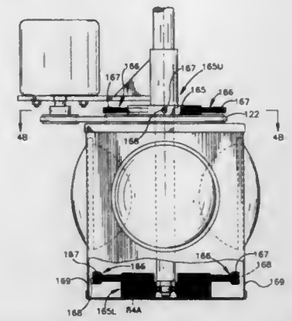
to said base wall and a retaining surface generally perpendicular to said bearing surface and depending therebelow, said grooves being shaped and dimensioned so that in use two of said trays may be stacked within a drawer with said bearing surfaces of the upper tray being in sliding supported engagement respectively with the upper edges of the lower tray side walls, and with said retaining surfaces on the upper tray respectively depending alongside said side walls of the lower tray, thereby to accommodate guided sliding of the trays longitudinally relative to each other.

5,607,216
PROJECTION DISPLAY APPARATUS
Toshihide Kaneko, and Eiichi Tolde, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1995, Ser. No. 465,057
Claims priority, application Japan, Jun. 24, 1994, 6-143410; Jul. 26, 1994, 6-174467; Feb. 7, 1995, 7-019231
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—97 26 Claims



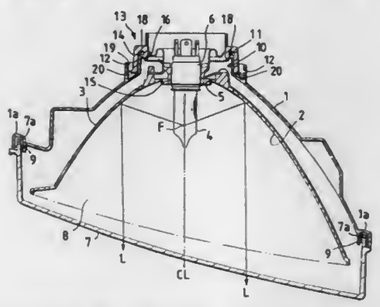
1. A projection display apparatus comprising:
an image source having a rectangular image-displaying surface, on which an image is formed;
a projecting lens assembly, which includes a plurality of lens elements, for magnifying said image formed by said image source and projecting said image onto a screen; and
light-obstructing means disposed in the vicinity of the nearest lens element of said projecting lens assembly to said image source;
wherein said light-obstructing means is disposed in such a position that $0.1 \leqq R_1/R_2 \leqq 0.8$ where R_1 is a radius of optical-axis light which is emitted toward said screen from a center on said image-displaying surface through which the optical axis of said projecting lens assembly passes, and R_2 is a radius of effective aperture; and
wherein said light-obstructing means is provided with protrusions which are disposed at positions at a same distance from a first or a second reference line on said light-obstructing means so as to obstruct several pairs of flare beams, which are included in peripheral light emitted from the vicinity of four corners of said image-displaying surface and are traveling towards positions at a same distance from said first or said second reference line, said first and said second reference lines corresponding to two diagonals on said screen respectively.

5,607,217
ILLUMINATION SYSTEM
James C. Hobbs, II, 4384 Ingraham Hwy., Miami, Fla. 33133
Continuation-in-part of Ser. No. 143,172, Oct. 26, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,705
Int. Cl.[6] F21V *21/30*
U.S. Cl. 362—35 18 Claims



1. An apparatus for illuminating an object in a defined area, said apparatus comprising:
a light source for projecting a beam of light in a defined area;
a mounting for supporting said light source for rotation about an axis to intermittently illuminate the object in the defined area with the beam of light at substantially equal time intervals;
a control to establish the frequency at which the beam of light intermittently illuminates the object in the defined area at a frequency of at least 12 times per second; and
a balance connected to said mounting to provide adjustable balance of rotating parts of said mounting, said balance including a first mass adjustably locatable in a radial direction relative to the axis of rotation.

5,607,218
VEHICULAR LAMP HAVING IMPROVED SOCKET COVER
Masataka Choji, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 20, 1995, Ser. No. 492,540
Claims priority, application Japan, Jun. 30, 1994, 6-173627
Int. Cl.[6] F21M *7/00*
U.S. Cl. 362—61 8 Claims



1. A vehicular lamp comprising: a lamp body having a front opening and a rear opening; a front lens covering the front opening of said lamp body and defining a lamp body cavity with said lamp body; a tiltable reflector mounted in said lamp body; a bulb socket removably fixed to an opening formed in a rear part of said reflector; a bulb mounted in said bulb socket; a cylindrical skirt formed around a rear opening edge of said lamp body; a sleeve formed around at least one of said bulb socket and a base of said

bulb and projecting to the rear of said reflector; a thin member integrally joining said skirt and said sleeve; an engagement edge coaxially formed along an inside of said skirt so as to stand upright; a first stopper flange formed along an opening end of said rear opening edge of the lamp body; and a second stopper flange formed along a leading end of said engagement edge and meshing with said first stopper flange, a plurality of circumferential grooves extending parallel to each other being formed along an inner surface of said skirt and said sleeve, and a gap being circumferentially formed between an end of said rear opening edge of said lamp body and an inner surface of the skirt.

5,607,219

HEADLIGHT FOR MOTOR VEHICLE

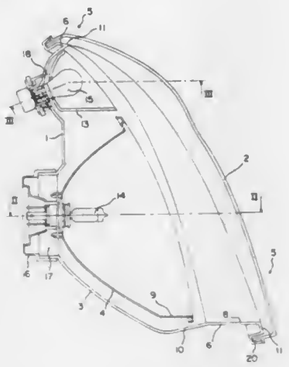
Reinhold Brummel, Anroechte; Berthold Doering, Werl, and Thomas Niedenzu, Oelde, all of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Germany

Filed Jul. 26, 1995, Ser. No. 507,195

Claims priority, application United Kingdom, Aug. 11, 1994, 44 28 438.1

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 362—61 **8 Claims**



1. A headlight for a vehicle comprising: a one piece pot-shaped housing, said pot-shaped housing having a sidewall extending from a rear-side lamp receiving opening to a light-transmissive shield mounted at a receiving seat formed on a front edge of the sidewall of the housing; and a reflector mounted in the pot-shaped housing; wherein all opaque screen for blocking at least a partial area between the light-transmissive shield and the reflector is formed of a drawn-in portion of the sidewall of the housing which is displaced inwardly, relative to an adjacent portion of the sidewall nearer said lamp receiving opening, toward an interior of the headlight; and wherein said receiving seat is formed on a drawn-out portion of the sidewall, positioned between the drawn-in portion and the front edge of the sidewall of the housing, displaced outwardly from the drawn in portion of the sidewall, away from the interior of the headlight.

5,607,220

HEADLIGHT FOR A VEHICLE

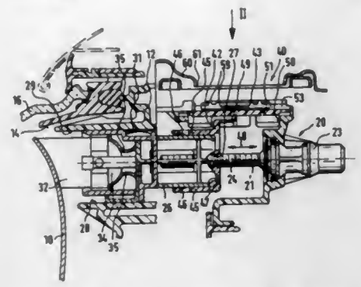
Gerhard Weihing, Gomaringen; Georg Ebinger, Kusterdingen; Ulrike Hartick, Boblingen; Horst Runtschke, Nagold, and Eberhard Baur, Rottenburg, all of Germany, assignors to Robert Bosch GmbH, and Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 4, 1994, Ser. No. 317,387

Claims priority, application Germany, Oct. 4, 1993, 43 33 769.4

Int. Cl.[6] B60Q *1/06*

U.S. Cl. 362—66 **14 Claims**



1. A headlight for a vehicle, comprising a reflector; a holder adjustably supporting said reflector; an adjusting device which adjusts said reflector relative to said holder; an indicating device for indicating a deviation of a setting of said reflector from a predetermined nominal setting, said indicating device having a movable indicating part which follows an adjusting movement of said reflector and another indicating part which is substantially stationary relative to said holder, said substantially stationary indicating part being movable along a movement direction of said movable indicating part to a base setting and is fixable relative to said holder in a set position; and a guide for guiding said substantially stationary indicating part, said substantially stationary indicating part and said guide being formed so that said indicating part is difficult to displace on said guide, said substantially stationary indicating part being displaceable on said guides under the action of an applied force, and for its displacement and its final position after the displacement, it is not necessary to release and then to apply any clamping means.

5,607,221

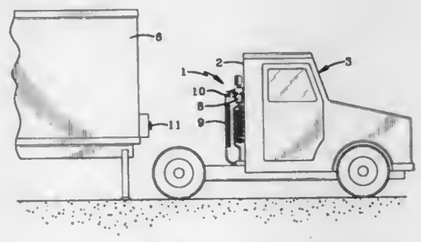
HOOK-UP LIGHT FOR A TRUCK TRACTOR

Jeff E. Justus, 5700 Goodell Rd., Mantua, Ohio 44255

Filed Sep. 29, 1994, Ser. No. 314,868

Int. Cl.[6] B60Q *1/02*

U.S. Cl. 362—83.3 **19 Claims**



1. A device for mounting on a truck tractor illuminating a working area behind the tractor and for retaining an air line and a plug end of an electrical power cable in a fixed position when the power cable is disconnected from a trailer, said device including:

a housing configured to be mounted in a fixed position on the tractor;

an electrical receptacle mounted in said housing and containing a plurality of male prungs, said male prongs being complementary to electrical sockets formed in the plug end of the power cable said receptacle removably receiving and retaining said plug end when the power cable is disconnected from the trailer;

a lamp configured to be mounted on the housing for illuminating the working area behind the tractor;

an electrical connection electrically connecting the lamp to at least one of the male prongs of the receptacle;

an electrical supply line electrically connecting and extending between said at least one male prong and a control switch configured to be mounted within the tractor for electrically connecting the lamp to an electrical supply of the tractor;

brackets means mounted on the housing and removably retaining at least one air line thereon when the air line is disconnected from the trailer; and

fastener means for mounting the housing on the tractor.

5,607,222

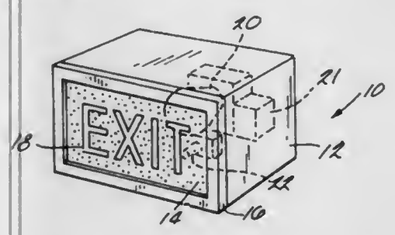
LOW POWER ILLUMINATION DEVICE

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Filed Aug. 21, 1995, Ser. No. 517,332

Int. Cl.[6] F21V *9/16*

U.S. Cl. 362—84 **5 Claims**



1. A low power consumption illumination device comprising a housing,

a display forming at least one surface of said housing, said display bearing at least one inscription formed of a non-radioactive phosphor-containing coating, and

an activation device for said phosphor-containing coating, said activation device including one of a battery and storage capacitor powered source of a beam of light,

a means for causing said activation device to emit a flash of light on selected intervals for periodic reactivation of said phosphors, whereby said display emits light over a prolonged period of time, and wherein said light is controlled by a programmable control mechanism whereby said light can be programmed to periodically emit light only during periods of darkness.

5,607,223

ILLUMINATED CLIPBOARD WITH MOVABLE WRITING SURFACE

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 463,764, Jun. 5, 1995, Pat. No. 5,502,623. This application Feb. 16, 1996, Ser. No. 602,292

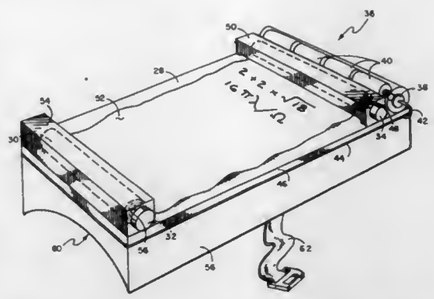
Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—99 **1 Claim**

1. An improved illuminated clipboard for use on a leg of the user, comprising:

a leg-engaging portion disposed beneath said clipboard;

a transparent planar body positioned above said leg-engaging portion, said transparent planar body having an upper planar surface forming an active writing surface;



illumination means disposed under said active writing surface of said transparent planar body, said illumination means comprising an illuminated sheet of material;

a spool of translucent material;

a first roller and a second roller, each disposed above said transparent planar body, said first roller adapted to receive said spool of translucent material, said second roller adapted to receive said translucent material as said translucent material passes from said first roller over said upper planar surface of said transparent planar body to said second roller for take-up thereon;

means to roll said translucent material from said first roller to its storage position on said second roller;

a first roller housing disposed over said first roller for storage of unused translucent material; and

a second roller housing disposed over said second roller for storage of used translucent material.

5,607,224

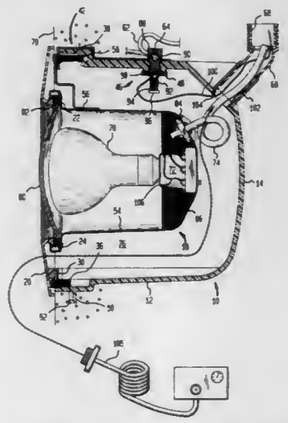
PLASTIC NICHE AND GROUNDING ASSEMBLY THEREFOR

Samuel Tobias, Sheboygan, Wis.; Donald R. Davidson, Chatham, and Robert H. Hanes, Rochelle Park, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 30,661, Mar. 12, 1993, Pat. No. 5,432,688. This application Mar. 31, 1995, Ser. No. 414,521

Int. Cl.[6] F21V *25/00; 31/00*

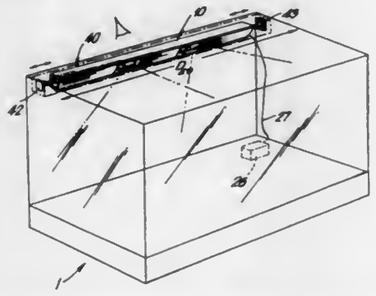
U.S. Cl. 362—101 **23 Claims**



1. In a wet underwater lighting niche for housing an electric-powered lighting fixture with a cup-like metal shell in a wall of a swimming pool, spa or the like, the improvement wherein said niche is made from an electric insulating material and wherein said

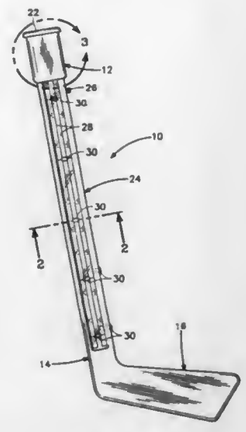
niche includes a plurality of alternative conductive pathways for conditionally grounding said lighting fixture in the event of a short, a first said alternative conductive pathway including said shell and a first ground wire attached to said shell and passing through said niche to ground, a second said alternative conductive pathway including a first conductor element attached to said shell, a second conductor element connected proximate a first end thereof to said first conductor element, a lug extending through a wall of said niche and attached to said second conductor element proximate a second end thereof and a second ground wire attached to said lug, said second ground wire attached to said lug externally of said niche, and a third said alternative conductive pathway including said first and second conductor elements, said lug and a third ground wire, said third ground wire attached to said lug internally to said niche and running through said niche to ground, said first conductor element providing a junction for connecting said first, second and third grounding pathways to compensate for discontinuities arising in one of said pathways by-conducting current to ground via another of said pathways.

5,607,225
DISPLAY LIGHTING FIXTURE AND METHOD OF USING SAME
George Halvatzis, 316 Princeton Ave., Jersey City, N.J. 07305
Continuation of Ser. No. 118,927, Sep. 9, 1993, Pat. No. 5,437,504. This application Jul. 28, 1995, Ser. No. 509,503
Int. Cl.[6] A47F *11/10*
U.S. Cl. 362—125 **4 Claims**



1. A display case lighting fixture supportable between the inner opposing wall surfaces of a display case, said display and lighting fixture comprising:
a housing having a longitudinal extent and first and second housing end portions;
light producing means disposed in said housing for producing light;
lighting focusing means disposed in said housing, for focusing said produced light to form a lighting pattern definable with respect to said housing;
first and second adjustable housing support elements extending substantially along said longitudinal extent from said first and second housing end portions, respectively, said first and second adjustable housing support elements having first and second wall engaging portions, respectively, each said wall engaging portion being adapted to engage one said inner opposing wall surface of said display case, and said first and second adjustable housing support elements being rotatably adjustable over a range of selectable positions along said longitudinal extent so that the distance between said first and second wall engaging portions can be adjusted to be substantially equal to the distance between said inner opposing wall surfaces, permitting each said wall engaging portion to engage one said inner opposing wall surface;
axial force producing means in cooperation with at least one of said first and second adjustable housing support elements, for producing axially directed forces along said longitudinal extent of said housing so that each said wall engaging portion frictionally engages against one said inner opposing wall surface of said display case so as to frictionally support said display case lighting fixture between said inner opposing wall surfaces of said display case.
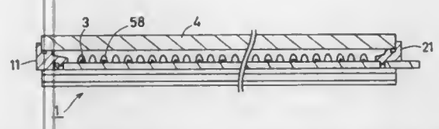
5,607,226
ILLUMINATED HOCKEY STICK
Christine Toth, Ventura, and Terrance L. Bryson, Colton, both of Calif., assignors to Z Tech, Ventura, Calif.
Filed Jun. 7, 1996, Ser. No. 659,875
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—251 **14 Claims**



1. An illuminated hockey stick comprising:
a hockey stick having a shaft, a blade end and an end distal from said blade end defining a handle end;
a pair of longitudinal recesses generally extending from said handle end along said shaft to a neck of said blade end, said recesses located on opposite sides of said shaft;
a removable power supply located at said handle end;
a removable watertight end cap disposed about said power supply;
at least one conductive lead disposed longitudinally within each of said recesses;
a plurality of light emitting devices connected along said conductive lead;
a switch coupling said power supply to said conductive lead such that a conductive circuit may be made and broken by said switch; said switch capable of permitting a circuit with a first and second plurality of light emitting devices but only one plurality at a time; said first plurality of light emitting devices having a first illumination color and said second plurality of light emitting devices having a second illumination color which is different than said first color.

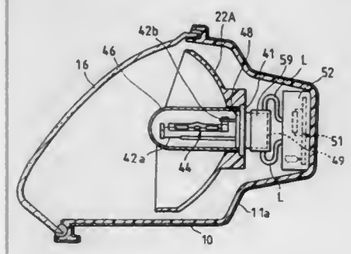
5,607,227
LINEAR LIGHT SOURCE
Masami Yasumoto, Tottori-ken, and Tatsuya Motoike, Tottori, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, and Tottori Sanyo Electric Co., Tottori, both of Japan
Filed Aug. 24, 1994, Ser. No. 295,168
Claims priority, application Japan, Aug. 27, 1993, 5-212812; Aug. 30, 1993, 5-214093; Aug. 31, 1993, 5-216442
Int. Cl.[6] F21V *29/00*
U.S. Cl. 362—249 **4 Claims**

1. A linear light source comprising:



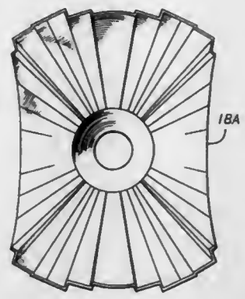
a long frame member formed by integrating a lens and reflecting frames through extrusion molding of a resin so that a lower part of the frame member is open along an entire length thereof to release heat, said lens comprising a bar lens refracting and converging light and being located at an upper part of the frame member, said reflecting frames being located at both sides of the frame member, said reflecting frames each including a groove on an inner surface thereof inserting and receiving a long base plate therein, each groove being formed at a same height as each other and in parallel to the lens, said inner surface of said each reflecting frame facing an inner surface of another reflecting frame;
said long base plate held in the frame member by being substantially in close contact with the grooves; and
a plurality of light emitting diodes arranged on an upper surface of the base plate along the length thereof so as to face the lens.

5,607,228
ELECTROMAGNETICALLY SHIELDED DISCHARGE-TYPE HEADLAMP
Akiyosi Ozaki; Toichiro Shiozawa, and Kazuyoshi Suzuki, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1994, Ser. No. 364,272
Claims priority, application Japan, Dec. 27, 1993, 5-331339
Int. Cl.[6] F21V *7/22*
U.S. Cl. 362—263 **5 Claims**



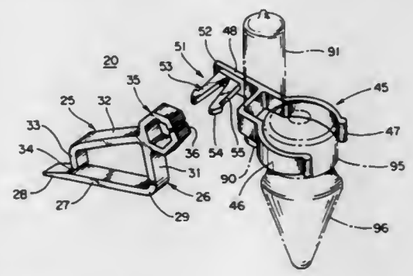
1. In a headlamp for automobile use having a discharge bulb as a light source and a lamp body which is coated with a conductive layer for preventing electromagnetic waves from escaping from the headlamp, the improvement wherein the conductive layer comprises a metal plating layer, wherein said lamp body is made of a thermoplastic resin and wherein said thermoplastic resin is a resin material selected from the group consisting of a polycarbonate/acrylonitrile butadiene styrene alloy mixed with glass fiber, denatured maleimide mixed with glass fiber, and nylon mixed with glass fiber such that said thermoplastic resin has a coefficient of linear expansion close to that of said metal plating layer.

5,607,229
ILLUMINATION SYSTEM INCLUDING AN ASYMMETRICAL PROJECTION REFLECTOR
Ronald F. Rykowski, Woodinville, Wash., and Steven S. Wilson, San Juan Capistrano, Calif., assignors to Radiant Imaging Inc., San Juan Capistrano, Calif.
Filed Apr. 3, 1995, Ser. No. 415,424
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—346 **9 Claims**



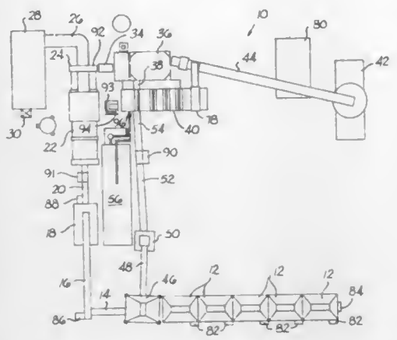
1. An illumination system including a non-circular aperture, a light source, and a projector reflector, all displaced from one another along an optical axis, said reflector being constructed to match the cross-section of the output luminous flux from the reflector with the non-circular aperture, said reflector having a reflective surface formed of a plurality of reflective segments individually tilted and rotated with respect to a reference surface by respective predetermined amounts to shift light from said source away from the optical axis and into selected regions of said aperture to cause the entire area circumscribed by said aperture to be uniformly illuminated.

5,607,230
UNIVERSAL BULB HOLDER
William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.
Continuation-in-part of Ser. No. 387,133, Feb. 9, 1995. This application Oct. 19, 1995, Ser. No. 545,525
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—396 **19 Claims**



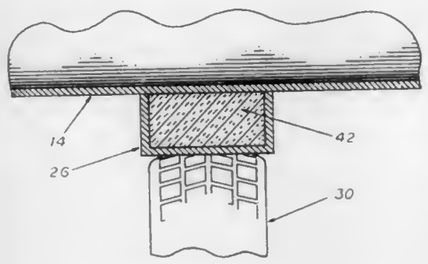
1. A universal bulb holder comprising: a base member having at one end thereof opposed first trapping members having sufficient flexibility to grip Christmas bulbs of various diameters and mounting mechanism at another end thereof, and opposed second trapping members intermediate said first trapping members and said mounting mechanism to trap and hold a mini-bulb socket therebetween, thereby to provide a bulb holder for Christmas bulbs of various diameters wherein said mounting mechanism is a pair of spaced prongs adapted to be inserted into a ring-like member.

5,607,231
METHOD FOR OPERATING AN ASPHALT PLANT FOR BOTH CONTINUOUS AND BATCH OPERATION
Leonard A. Loesch, Prospect, Ky., assignor to GenTec Equipment Company, Louisville, Ky.
Division of Ser. No. 334,528, Nov. 4, 1994, Pat. No. 5,556,197. This application Mar. 6, 1995, Ser. No. 398,974
Int. Cl.[6] B28C *7/04*
U.S. Cl. 366—7 7 Claims



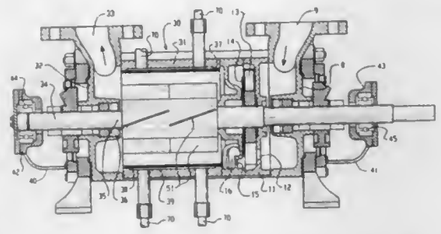
5. A method for operating a combined continuous/batch asphalt production plant, to produce asphalt with components in certain ratios according to a specification, including a cold feed bin for virgin aggregate material, a bucket elevator, a batch tower, a liquid asphalt feed, a continuous drier drum including a burner, and a continuous mixer, comprising the steps of:
automatically and continuously controlling and measuring the flow of aggregate material from the cold feed bin, to the drier, then along the bucket elevator, and then to the mixer;
automatically and continuously controlling and measuring the flow of material from the liquid asphalt feed to the mixer;
automatically and continuously measuring and controlling the temperature of the material leaving the drier;
temporarily stopping the plant with aggregate on the bucket elevator and in the drier and with aggregate and liquid asphalt in the mixer;
then starting the plant again, while maintaining the proper ratios of materials in the mixer before, during, and after the temporary stop.

5,607,232
ASPHALT PLANT DRUM DRIVE
Joel M. Dahl, 220 F St., West Fargo, N. Dak. 58078
Filed Dec. 13, 1995, Ser. No. 571,428
Int. Cl.[6] B28C *5/20*
U.S. Cl. 366—63 9 Claims



1. An asphalt plant drum and drive system comprising:
A cylindrical mixing drum;
One or more heat insulating rings about the outside of said drum;
A steel shell covering each of said insulating rings;
A plurality of multi-ply rubber wheels to support said drum; and
A means of driving at least one of said rubber wheels.

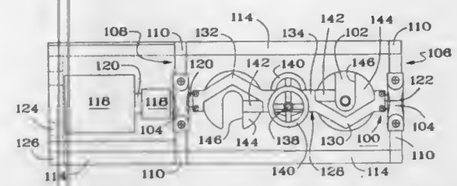
5,607,233
CONTINUOUS DYNAMIC MIXING SYSTEM
Robert E. Yant, Medina, and Mark E. Piechuta, Alliance, both of Ohio, assignors to Quantum Technologies, Inc., Twinsburg, Ohio
Filed Jan. 30, 1995, Ser. No. 382,213
Int. Cl.[6] B01F *13/02*
U.S. Cl. 366—102 18 Claims



1. A continuous dynamic mixing chamber assembly for efficiently treating a fluid material at substantially reduced energy requirements, comprising:
(a) a mixing chamber having a cylindrical inner wall which is generally symmetrical about a central axis, including elongated opposed baffles coaxially extending along the major portion of the length of said inner wall, said baffles having a uniform cross-sectional shape corresponding generally to a small geometric segment of a circle, said opposed baffles defining opposed, parallel, flat baffle surfaces;
(b) porous inserts for introducing gas into said mixing chamber wherein said porous inserts are attached to said inwardly facing flat side of said baffle surfaces;
(c) a plurality of inlet means for introducing gaseous materials into cavities defined in said baffles, said cavities defined between said inserts and said inner wall; and
(d) a multibladed agitator having generally rectangular shaped blades, each of said blades being rigidly mounted at equally spaced positions on a common hub member which is concentrically rotatable within said mixing chamber by a suitable drive shaft engaging therewith, the dimensions of said blades being suitable to effect axial and radial mixing within said mixing chamber while reducing shear stresses within said fluid material.

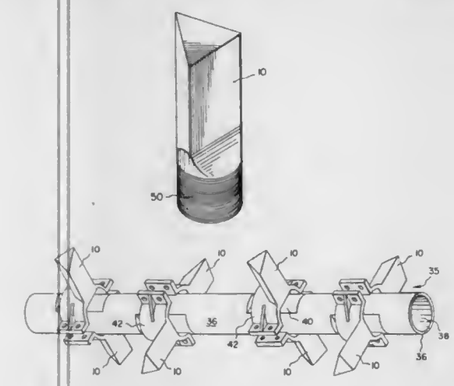
5,607,234
UNIVERSAL ZERO-HEADSPACE EXTRACTOR VESSEL AND ROTATOR
Carl Ray, and J. Scott Coulter, both of Elko, Nev., assignors to Xcel Industrial Group, Inc., Rifle, Colo.
Division of Ser. No. 875,242, Apr. 28, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 56,994
Int. Cl.[6] B01F *9/02*
U.S. Cl. 366—214 17 Claims

1. A rotary agitation apparatus for rotating a bottle end-over-end about an axis of rotation extending transversely of said bottle which rotary agitation apparatus includes a plurality of bottle-holding devices wherein each bottle-holding device has a pair of gripping members movable radially of said axis of rotation, for engaging and holding a bottle and a coupling mechanism coupling said gripping members of each pair one to another and being operative to position said gripping members symmetrically with



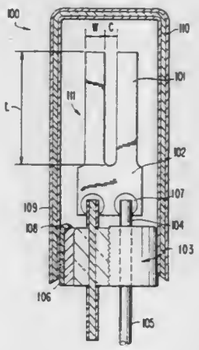
respect to said axis during their movement whereby different-sized bottles are approximately centered on said axis and said rotary agitation apparatus is approximately balanced during bottle rotation.

5,607,235
HIGH SPEED COMBINED MIXING AND TRANSPORT TOOL
Craig C. Campbell, P.O. Box 12698 Research Triangle Park, Durham, N.C. 27709
Continuation of Ser. No. 936,628, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 552,066, Jul. 13, 1990, abandoned. This application Mar. 3, 1995, Ser. No. 398,421
Int. Cl.[6] B01F *7/04; 15/06*
U.S. Cl. 366—325.2 10 Claims



1. In combination, an elongated blender mixing shaft and at least one high speed mixing and transport tool secured thereto, comprising:
said elongated blender mixing shaft having an essentially circular sidewall, a hollow interior, and at least one flat area formed on the exterior surface of said sidewall;
a transverse opening extending through said sidewall and said at least one flat area;
a linear elongated mixing tool having a substantially uniform cross sectional area and provided with a substantially hollow interior for the circulation of a fluid medium therein;
said linear elongated mixing tool having a mixing shaft attachment end and a plow shaped terminating end;
said linear elongated mixing tool further including a substantially triangular shaped section of a substantially uniform triangular cross section disposed between said mixing shaft attachment end and said plow shaped terminating end;
said substantially triangular shaped section having a center axis and an apex formed by the intersection of two sides extending from a base side forming said substantially triangular shaped section;
said center axis of said substantially triangular shaped section being substantially in the center of said mixing shaft attachment end to align said mixing and transport tool essentially perpendicular to the center axis of said elongated mixing shaft; and means for alignment of said base relative to said center axis of said mixing shaft and providing a fluid tight seal between said mixing shaft and said interior of said linear elongated mixing and transport tool.

5,607,236
QUARTZ OSCILLATOR TEMPERATURE SENSOR
Michiaki Takagi, and Mitsuru Nagai, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Division of Ser. No. 113,558, Aug. 27, 1993, Pat. No. 5,325,574, which is a continuation-in-part of Ser. No. 782,771, Oct. 17, 1991, Pat. No. 5,265,316, which is a continuation of Ser. No. 563,879, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 265,865, Oct. 6, 1988, abandoned. This application Jun. 30, 1994, Ser. No. 268,406
Claims priority, application Japan, Feb. 27, 1987, 62-28640; Sep. 8, 1987, 62-224428; Nov. 20, 1987, 62-29560; Nov. 20, 1987, 62-293562; WIPO, Feb. 19, 1988, PCT/JP88/00170; Japan, Aug. 28, 1992, 4-230203
Int. Cl.[6] G01K *11/22*
U.S. Cl. 374—117 9 Claims



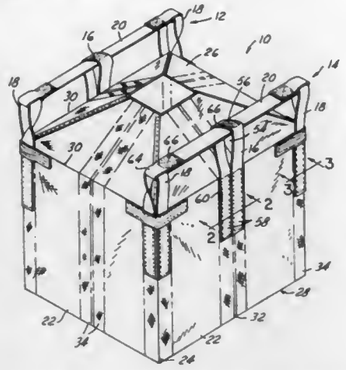
1. A quartz oscillator temperature sensor, comprising:
a tuning fork shaped piece of quartz cut from a quartz wafer cut from a plane of a quartz single crystal having a thickness of about 80 to 150 μm,
the quartz single crystal having a principal XY plane defined by an electrical (+X) axis and a mechanical (+Y) axis,
the wafer having been cut from an XY' plane through the quartz single crystal, said XY' plane obtained by rotating the XY plane about the electrical (+X) axis in a clockwise direction by an angle of about 15° to 25° from the mechanical (+Y) axis to a Y' axis which is perpendicular to the electrical (+X) axis and forms the angle of about 15° to 25° with the mechanical (+Y) axis,
the tuning fork shaped piece of quartz formed from the wafer to yield a planar piece defined by the +X axis and the Y' axis,
the tuning fork shaped piece of quartz having a base and a pair of substantially parallel arms extending from the base, with the arms of the tuning fork shaped piece of quartz substantially parallel to the Y' axis, and
the tuning fork shaped piece of quartz providing an indication of temperature.

5,607,237

BULK BAG WITH LIFT STRAPS

Lee LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed Apr. 9, 1996, Ser. No. 629,552
Int. Cl.[6] B65D *33/14;33/02*
U.S. Cl. 383—22 **13 Claims**



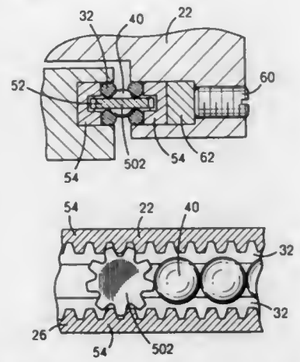
1. A collapsible bag comprising; a blank of reinforced flexible woven material arranged to provide generally rectilinear sides of a bag with reinforced strips adjacent side edges of the bag and adjacent the middle of two generally opposed sides, lift straps adjacent each upper corner and adjacent the middle of each of the two generally opposed sides, each of said straps having a loop with a bight and two runs, each run of each strap attached to a reinforced strip of the material of the sides of the bag, a pair of substantially inextensible linking members each connected to a pair of lift straps adjacent a pair of corners of the bag and in engagement with a middle lift strap disposed between said pair of lift straps connected to said linking member.

5,607,238

REDUCED FRICTION LINEAR SLIDE WITH ROLLING ELEMENTS

Victor Sherman, Astoria, N.Y., assignor to Deltron Precision, Inc.

Continuation of Ser. No. 192,780, Feb. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 42,686, Apr. 5, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,131
Int. Cl.[6] F16C *29/04*
U.S. Cl. 384—49 **19 Claims**



1. In a linear slide of the type having a carriage member and a base member arranged for relative axial back and forth movement within an opening defined in said carriage member, a plurality of rolling elements, comprising balls, disposed between rails disposed in said carriage member and said base member, the improvement comprising:

(a) providing said rolling elements loosely disposed in at least one linear group between said carriage member and said base member, without retainers, wherein the length of said at least one linear group can be greater than the product of the diameter of said rolling elements times the number thereof; and

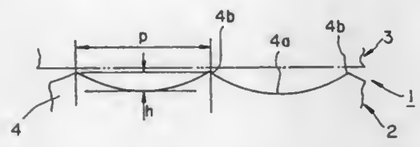
(b) providing said rails as generally round rods with flats formed in a surface of each, said flats being formed along lines of contact with said balls.

5,607,239

BEARING UNIT

Yoshio Kumada; Katsuyuki Hashizume, and Soji Kamiya, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

PCT No. PCT/JP95/00468, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO95/25905, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 17, 1995, Ser. No. 553,585
Claims priority, application Japan, Mar. 18, 1994, 6-073963
Int. Cl.[6] F16C *23/04;33/24*
U.S. Cl. 384—192 **8 Claims**



1. A bearing unit including a sliding bearing having a bearing alloy layer having a plurality of axially spaced, circumferentially extending annular grooves formed around its inner peripheral surface to define circumferentially extending peaks between pairs of axially adjacent annular grooves, and a rotating shaft which is rotatably journalled by the sliding bearing;

characterized in that when a total error caused by manufacturing tolerances and an assembly error of and between the rotating shaft and the sliding bearing by W, a height of the peak by h, and an axial pitch of the peaks by p, these parameters W, h and p are chosen to satisfy the following requirements:

$$2 \leqq h \leqq 10 \quad (1)$$

$$1 \leqq W \leqq 8 \quad (2)$$

$$h \leqq 4W/3+14/3 \quad (3)$$

$$50 \leqq p \leqq 600 \quad (4)$$

$$p \leqq -250h/3+3250/3 \quad (5)$$

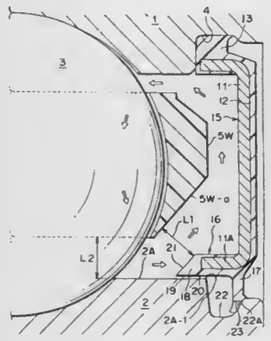
where h, p and W are measured in unit of μm.

5,607,240

BEARING SEALING DEVICE AND BEARING SEALING MECHANISM CAPABLE OF PREVENTING THE LEAKAGE OF GREASE

Kazuhisa Kajihara, Yao; Masatosi Taniyama, Kashihara; Kunio Yanai, Kitakatsuragi-gun, and Hiroshi Ueno, Tondabayashi, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Feb. 1, 1996, Ser. No. 595,248
Claims priority, application Japan, Feb. 3, 1995, 7-016816; Aug. 2, 1995, 7-197384
Int. Cl.[6] F16C *33/72;33/80*
U.S. Cl. 384—480 **7 Claims**



1. A bearing sealing device which is provided between an outer ring and an inner ring of a bearing in which the outer ring rotates, seals a space between the outer ring and the inner ring, and is securely fixed to the outer ring so as to rotate together with the outer ring, comprising:

a fixed portion fixed to the outer ring;

a cover portion which extends in a radially inward direction of the outer ring from the fixed portion and covers the space between the outer ring and the inner ring; and

an axial extension which is made of an elastic material and extends in an axially inward direction of the outer ring from the cover portion, wherein

the axial extension includes a taper end portion having an opposite surface which is opposed to an outer peripheral surface of the inner ring and forms between the opposite surface and the outer peripheral surface of the inner ring a narrow passage having a specified narrowness such that air is allowed to pass comparatively easily and oil is allowed to pass comparatively hardly, and a rake face forming a specified rake angle with the opposite surface; and the fixed portion, the cover portion and the axial extension respectively include part of a core metal, said core metal extending axially inwardly from the cover portion up to a position on a radially outer side of the outer peripheral surface of the inner ring, where a foremost end of the core metal is positioned in the vicinity of the taper end portion.

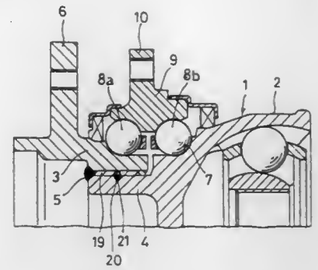
5,607,241

WHEEL BEARING ASEMBLY

Yoshikazu Fukumura, Iwata, Japan, assignor to NTN Corporation, Osaka, Japan

Filed May 31, 1995, Ser. No. 455,554
Claims priority, application Japan, May 31, 1994, 6-118775
Int. Cl.[6] F16C *25/08*
U.S. Cl. 384—537 **4 Claims**

1. A vehicle wheel bearing assembly comprising an outer ring of a homokinetic joint, a hub coupled to a driven wheel and connected to one end of said outer ring to form a rotary member, and a bearing outer ring supported on said rotary member through balls arranged in a plurality of rows, said balls being pre-loaded when said outer ring and said hub are moved axially relative to each other, said outer ring and said hub being press-fitted together with interference, and said outer ring and said hub being welded together at one end of their joint area.

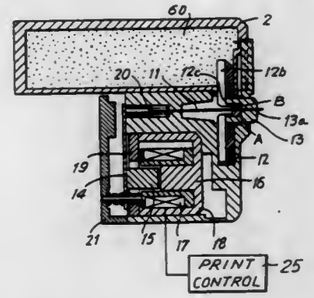


5,607,242

INK-SUPPLY TANK FOR A PRINTER

Takashi Suzuki; Masanao Matsuzawa, and Yoshinori Miyazawa, all of Shiojiri, Japan, assignors to Seiko Epson Corporation, Nagano, Japan

Continuation of Ser. No. 150,676, Nov. 10, 1993, Pat. No. 5,421,658, which is a continuation of Ser. No. 962,959, Oct. 16, 1992, Pat. No. 5,328,279, which is a continuation of Ser. No. 612,010, Nov. 9, 1990, Pat. No. 5,165,471, which is a continuation of Ser. No. 401,539, Aug. 31, 1989, Pat. No. 4,969,759, which is a continuation of Ser. No. 161,216, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 35,251, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 873,871, Jun. 12, 1986, abandoned, which is a continuation of Ser. No. 659,816, Oct. 11, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 462,921
Claims priority, application Japan, May 22, 1984, 59-102841; May 22, 1984, 59-102842; May 22, 1984, 59-102843
Int. Cl.[6] B41J *2/305;2/175*
U.S. Cl. 400—124.1 **44 Claims**



1. A printer comprising:

a printing apparatus;

an ink supply system mounted in said printing apparatus; and

an ink supply tank mounted in said printing apparatus, said ink supply tank operatively engaging with said printing apparatus through said ink supply system, said ink supply tank dimensioned to accommodate ink therein to be delivered to said ink supply system, said ink supply tank comprising:

a tank housing having an interior space;

an ink supply delivery port formed in said tank housing, said port including an opening in a wall of said tank housing for the passage of ink from said interior space to the exterior of said tank housing; and

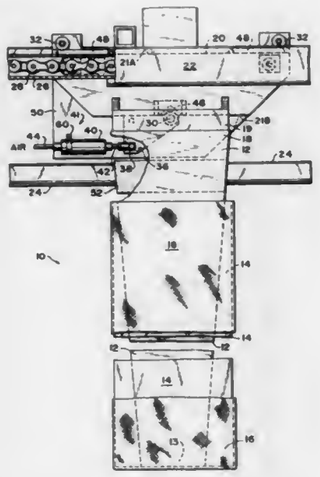
an ink absorbing member having a region facing said ink supply delivery port, said ink absorbing member being dimensioned to have a height before insertion in said ink tank housing which is substantially higher than the height, as viewed in the direction faced by the interior wall of said tank housing having said opening, of said interior space of said tank housing.

5,607,243

REAR SECTION LOCATED AND STABILIZED PALLET SUPPORT PLATE AND METHOD FOR ACCURATE POSITIONING OF SAID PLATE

Sandor Szarka, Franklin Lakes, N.J., assignor to Svecia USA, Inc., Oakland, N.J.

Filed Mar. 6, 1996, Ser. No. 611,620
Int. Cl.[6] B41F *15/10*
U.S. Cl. 101—126 **13 Claims**



1. A pallet support plate assembly for use in a multicolor screen printing machine, a pallet support plate of said assembly being moved into and out of registry with a print head of said printing machine in a timed sequence, said pallet support plate assembly comprising:

(a) said pallet support plate;

(b) means for coupling and decoupling a pallet to said pallet support plate, said pallet having means for securing an object to be screen printed by said print head during said print cycle;

(c) said pallet support plate having a rear section and a front section, said rear section having a rear edge;

(d) locating means for locating and engaging directly upon said rear section prior to said print cycle;

(e) said rear section of said pallet support plate having means for accepting said means for locating and engaging said rear section; and

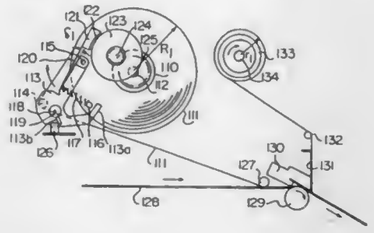
(f) means for stabilizing said rear section of said pallet support plate including said locating means biasing said pallet support plate in a direction towards said rear edge of said rear section so that said rear edge of said rear section makes contact with a further portion of said stabilizing means, said locating means cooperating with said stabilizing means so that said pallet support plate is accurately positioned in a predetermined spacial relationship to said print head prior to said print cycle, said locating means having means for disengaging said rear section after said print cycle so that said pallet support plate can be moved to a second print head, and so on in said timed sequence.

5,607,244

THERMAL PRINTER WITH PAPER AND RIBBON SEPARATOR

Mitsuyoshi Satoh, and Genji Oshino, both of Shibata-machi, Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi, Japan

Continuation-in-part of Ser. No. 864,203, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 661,857, Feb. 27, 1991, abandoned, which is a division of Ser. No. 436,553, Nov. 13, 1989, Pat. No. 5,051,011. This application Mar. 22, 1995, Ser. No. 409,887
Claims priority, application Japan, Dec. 29, 1988, 63-171242 U; Dec. 29, 1988, 63-334837; Dec. 29, 1988, 63-334838
Int. Cl.[6] B41J *33/32*
U.S. Cl. 400—247 **1 Claim**



1. A printer in which paper is fed and discharged after printing by flexibility of the paper and no elements of the printer engage or touch the paper after a thermal transfer ribbon is separated from said paper after printing, said printer comprising:

a supply core;

a thermal transfer ribbon which is wound up onto the supply core;

a paper which is put together with the thermal transfer ribbon supplied from the supply core;

a thermal head which is mounted facing a platen and which is pushed against said platen and prints on the paper at a printing position by using the thermal transfer ribbon when the paper put together with said thermal transfer ribbon passes between the thermal head and the platen at said printing position;

a take-up core which, after printing by the printing head, pulls the thermal transfer ribbon and takes up the thermal transfer ribbon;

a tension member which is in contact with the thermal transfer ribbon between the supply core and the take-up core and biases the thermal transfer ribbon in a direction to give tension and is rotated in a retracted direction by a ribbon feed force against a biasing force by the tension member when the thermal transfer ribbon wound on the supply core is fed;

a plate spring which is supported by the tension member and gives a rotational load to the supply core by pushing an end against a supply core and which reduces the rotational load by making the amount of deflection small with the rotation of the tension member in the retracted direction; and

a release plate member provided separately from said thermal head and only said release plate member is in contact with the thermal transfer ribbon on the platen side of a tangent line of the platen at the printing position and provides a release position on the platen side and separately from the thermal head to pull said thermal transfer ribbon off said paper;

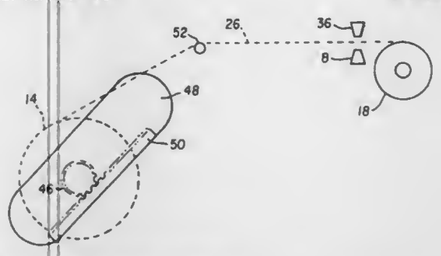
whereby when paper after printing is fed and discharged by the flexibility of the paper, a pushup force caused by a flexibility of the paper is supported by said release plate member so that said pushup force is not applied to said thermal head and lowering of print quality is prevented.

5,607,245

WEB SUPPLY WITH NON-MOTORIZED AUTOMATIC REWIND FOR REMOVING SLACK IN THE WEB

Michael J. Siwinski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1996, Ser. No. 588,672
Int. Cl.[6] B41J *15/16*
U.S. Cl. 400—614 **8 Claims**



8. A thermal printer comprising:

a print station having a resistive element thermal printhead;

a web advance mechanism adapted to move a dye donor web having repeating series of different color dye frames in opposed forward and reverse directions past the print station;

means for identifying the start of each series at a predetermined location relative to the printhead;

a core upon which a web supply roll is spiral wound, an end of the web extending from the roll to the print station;

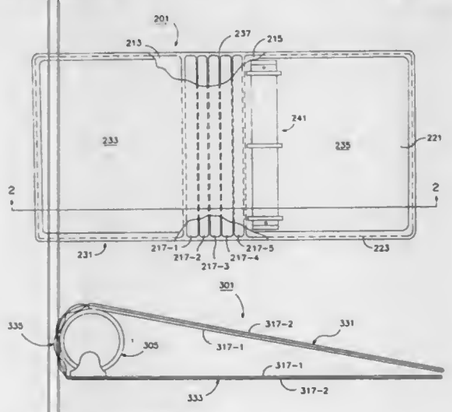
a support defining a high friction inclined surface upon which the core rests, said inclined surface being oriented such that (i) advancement of the web past the print station in the forward direction tensions the web resulting in rotation of the core such that it climbs up the inclined surface and (ii) advancement of the web past the print station in the reverse direction causes the tension in the web to relax, resulting in rotation of the core by gravity such that it rolls down the inclined surface, whereby slack in the web is taken up by the roll.

5,607,246

RING BINDER

Edward Podosek, Wilbraham, Mass., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Aug. 26, 1994, Ser. No. 296,816
Int. Cl.[6] B42F *13/00*
U.S. Cl. 402—73 **16 Claims**



1. A ring binder comprising:

(a) a stiffener assembly, said stiffener assembly having an interior surface and an exterior surface and comprising

(i) a front cover stiffener panel,

(ii) a rear cover stiffener panel, and

(iii) a flexible backing, said front cover stiffener panel and said rear cover stiffener panel being spaced apart from one another and being interconnected by said flexible backing, said stiffener assembly being devoid of any stiffeners disposed between said front cover stiffener panel and said rear cover stiffener panel;

(b) an interior surface sheet secured to the interior surface of said stiffener assembly;

(c) an exterior surface sheet secured to and extending over the entirety of the exterior surface of said stiffener assembly; and

(d) a ring assembly secured to one of said front cover stiffener panel and said rear cover stiffener panel;

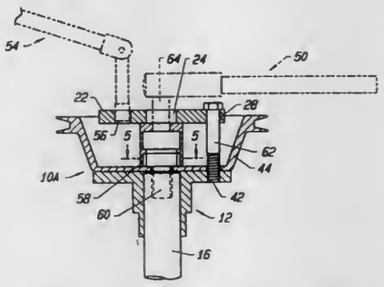
(e) whereby said surface sheets and said stiffener assembly cooperatively define a binder cover having front and rear covers interconnected by a flexible spine, said flexible spine being conformable about said ring assembly.

5,607,247

TOOL FOR MANIPULATING MULTIPLE ROTATABLE BALANCED BODIES

Giuseppe Lauritano, 3555 Hoover St., Redwood City, Calif. 94063

Filed Feb. 17, 1995, Ser. No. 390,098
Int. Cl.[6] B25G *3/00*; F16B *9/00*; F16D *1/00*; E21B *19/16*
U.S. Cl. 403—16 **5 Claims**



1. A device for steadying a first balanced rotatable member relative to a second balanced rotatable member with a steadying tool during precision torquing of the second balanced rotatable member with a torquing tool, comprising:

a. an element having a surface capable of lying adjacent to the first balanced rotatable member, said element including a faceted aperture capable of locking interaction with the steadying tool, and an access aperture to permit torquing of the second balanced rotatable member with the torquing tool, said element being configured for balance compatibjlity with the first and second balanced members;

b. means for fixing said element to the first balanced rotatable member; and

c. a socket for engaging to the second balanced member, said socket for interposing said element and the second balanced body, said access aperture permitting engagements of said socket and the torquing tool.

5,607,248

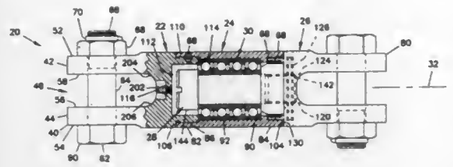
SWIVEL APPARATUS

Gregory L. Hasse, Mankato, Minn., assignor to Condux International, Inc., Mankato, Minn.

Filed Dec. 30, 1994, Ser. No. 380,606
Int. Cl.[6] F16D *1/12*
U.S. Cl. 403—78 **10 Claims**

1. A swivel comprising:

a first head at one end of the swivel;



a second head at an opposite end of the swivel;

a bearing arrangement between the first head and the second head permitting rotational movement of the first head relative to the second head, the bearing arrangement including at least two angular contact bearings arranged to receive a tension loading applied to the first and second heads in a pulling direction, and one angular contact bearing arranged in an opposite direction to receive a compression loading applied to the first and second heads in a pushing direction opposite to the pulling direction; and

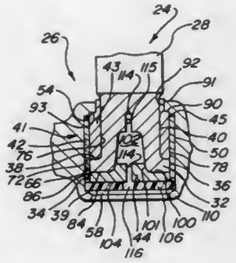
a separate center pin mounted to the second head, and the second head including a threaded aperture for securing the center pin to the second head, the center pin including threads engaged with the threaded aperture, the center pin including an unthreaded portion, the second head including a counterbore for receiving the unthreaded portion of the center pin.

5,607,249

NON-OSCILLATING SOCKET JOINT

Garth Maughan, Delta, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 20, 1994, Ser. No. 277,711
Int. Cl.[6] F16C *11/04;* **B62D** *7/16*
U.S. Cl. 403—165 **23 Claims**



1. A non-oscillating socket joint comprising:

a housing with an annular inner surface, a floor at one longitudinal end of said housing with an aperture centered in said floor, and an opening at a second longitudinal end of said housing;

a semi-rigid annular sleeve disposed within said housing, said sleeve having at least one cavity defined by a skirt, said sleeve including a radially inner surface, and a radially outer surface adapted to conform to said inner surface of said housing, a diameter of said sleeve being slightly greater than a diameter of said housing to create an interference fit between said sleeve and said housing;

a stud with a first portion received in said housing and a second portion extending through said aperture of said floor of said housing, a radially outer bearing surface of said stud adjacent said radially inner surface of said sleeve, said first portion of said stud having a longitudinally outer bearing surface;

a semi-rigid annular bearing disposed within said sleeve, said bearing having a longitudinally inner bearing surface contacting said longitudinally outer bearing surface of said stud, a radially outer surface of said bearing having a diameter slightly greater than a diameter of said radially inner surface of said sleeve to create an interference fit between said bearing and said sleeve, creating a pre-load between said sleeve and said housing and between said bearing and said sleeve to provide self-adjustment; and

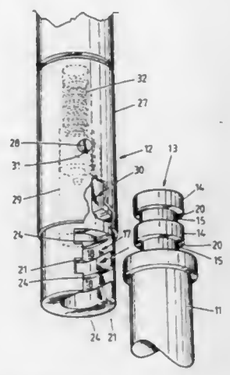
a closure to retain said sleeve, said bearing, and said first portion of said stud within said housing, which imparts a longitudinally compressive load on at least said bearing.

5,607,250

QUICK CONNECT COUPLING

Vincent P. Tatterson, Marleston, and Mark Hilder, Hawker, both of Australia, assignors to Expertest Pty. Ltd., Australia

Filed Mar. 21, 1995, Ser. No. 407,640
Claims priority, application Australia, Jul. 13, 1994, PM6811
Int. Cl.[6] F16D *1/00;* **E21B** *17/046*
U.S. Cl. 403—325 **15 Claims**



1. A coupling comprising:

a male and female half that are coupled together in axial alignment,

a keying portion at one end of said male half having at least one keying element with a bearing surface, and an end portion,

an opening in the side of said female half having a recess therein shaped for location of said keying element, said opening allowing said keying portion to engage said opening in a direction transverse to said aligned axis for connecting said coupling, said recess having abutment surfaces against which said bearing surface locates when engaged, said bearing and abutment surfaces preventing separation of said coupling when placed under tension along said aligned axis,

a locking member within said female half engageable with the end portion of said keying portion to prevent said keying portion disengaging from said recess, said locking member journaled for movement along the longitudinal axis of said female half, and

a cover slidably secured to said female half, said cover engageable with said locking member to move said locking member along the longitudinal axis of said female half.

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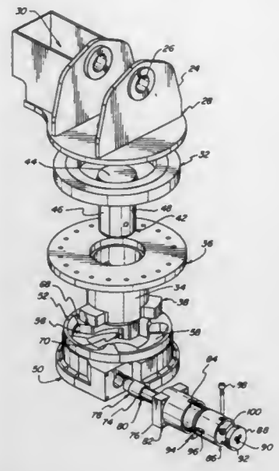
QUICK COUPLER ASSEMBLY FOR HANGING ATTACHMENT

Mark D. Rafn, Two Harbors, Minn., assignor to The Stanley Works, New Britain, Conn.

Filed Apr. 3, 1996, Ser. No. 626,827
Int. Cl.[6] F16B *7/00*
U.S. Cl. 403—348 **19 Claims**

1. A coupling for releasably attaching a tool to a boom of a material handler, comprising:

(a) a receiver having



(i) attachment means on one end adapted for mounting on one of said tool and the boom of said material handler,

(ii) a generally circular cavity in the other end thereof,

(iii) a plurality of circumferentially spaced ribs of arcuate configuration extending radially inwardly of said cavity intermediate the axial length thereof and defining an axially extending circular passage centrally thereof and axially extending channels between the spaced ribs thereof, a surface of said ribs facing said other end providing a guide surface and an opposite surface providing a retention surface,

(iv) first stops on one circumferential end of said ribs extending axially toward said other end of said receiver,

(v) second stops on the other circumferential end of said ribs extending axially toward said one end of said receiver, the circumferential spacing between said ends of said ribs and said first and second stops defining said axially extending channels;

(b) a connector having

(i) one end portion of generally circular cross section seated in said circular passage of said receiver,

(ii) a plurality of circumferentially spaced, radially extending lugs adjacent the end of said one end portion extending under said retention surface of said ribs and abutting said second stops, said lugs being cooperatively dimensioned and configured with respect to said axially extending channels to permit passage of said lugs therethrough,

(iii) attachment means on its other end adapted for mounting on the other one of the tool and boom; and,

(c) a locking member movably seated in a passage in said receiver, said locking member having

(i) an inner end portion abutting one of said lugs to preclude rotation of said connector in said circular passage of said receiver; and

(ii) means for effecting the movement of said inner end portion in said circular passage to free said one lug and thereby said connector for rotation,

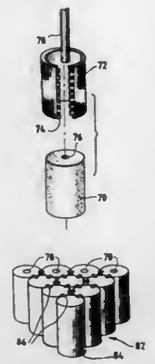
whereby said connector may be coupled to said receiver by moving said connector axially into said passage in said one end of said receiver until said lugs abut said guide surface of said ribs, effecting relative rotation of said connector toward said axially extending channels until said lugs abut said first stops and are in axial alignment with said channels, axially moving said connector further into said circular passage of said receiver and said lugs axially in said channels, and effecting relative rotation until said lugs abut said second stops.

5,607,252

HIGHWAY COLLISION CONTAINMENT SYSTEM

Duain E. Tischer, 418 Village Rd., Hinsdale, Ill. 60521

Filed Jun. 16, 1995, Ser. No. 491,080
Int. Cl.[6] E01F *15/00*
U.S. Cl. 404—6 **11 Claims**



1. A cushioning device for absorbing the collision energy of an automotive vehicle accidentally proceeding toward a hazard, comprising

at least one first base member positionable adjacent the hazard and constructed of plastic foam having near-perfect total recoil memory recovery after compression and having a first side facing toward anticipated oncoming vehicular traffic,

a fabric sheath capable of withstanding a substantial vehicle collision shock covering the first side of the first base member, and

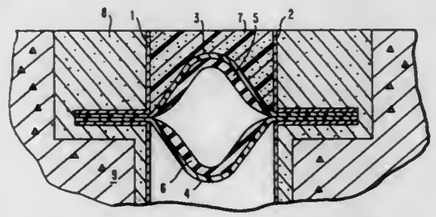
a resilient support member disposed adjacent a second side of the first base member to receive transmitted impact energy from the sheath and first base member when the sheath and first base member are struck by the vehicle.

5,607,253

DILATATION JOINT ELEMENT

Olof Almström, Täby, Sweden, assignor to Intermerc KB, Täby, Sweden

PCT No. PCT/SE93/00948, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/11579, PCT Pub. Date May 26, 1994
PCT Filed Nov. 9, 1993, Ser. No. 433,431
Claims priority, application Sweden, Nov. 10, 1992, 9203355
Int. Cl.[6] E01C *11/10;* **E01D** *19/06*
U.S. Cl. 404—47 **10 Claims**



1. A dilatation joint element for joining structural members, comprising:

a jointing compound section connected between mounting elements (1, 2) and carried by a reinforcement band supported by a yielding means, wherein said reinforcement band and said yielding means together form a curved shape acting against said jointing compound section, said yielding means comprising an upper upwardly oriented part (5) of curved shape and a

lower downwardly oriented part (6) of curved shape together forming a closed shape with an open center, said reinforcement band comprising an upper reinforcement band and a lower reinforcement band (3, 4) which surround said closed shape and are provided between said mounting elements (1, 2).

5,607,254

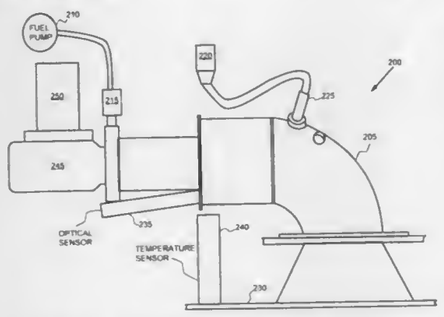
METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING THE TEMPERATURE OF AN ASPHALT PAVER SCREED

Conrad G. Grembowicz, Peoria; Lee E. Huffman, Princeville, and Wade D. Samson, Sycamore, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 19, 1995, Ser. No. 445,126

Int. Cl.[6] E01C *23/14*

U.S. Cl. 404—79 **7 Claims**



7. A method for automatically controlling the temperature of a screed associated with an asphalt paving machine, the asphalt paving machine including a burner assembly having a combustion chamber, the method comprising the steps of:

sensing the screed temperature and producing a signal having a magnitude indicative of the screed temperature;

receiving the temperature signal and comparing the temperature signal magnitude to a lower set point;

causing fuel to dispense and subsequently ignite in the combustion chamber in response to the temperature signal magnitude being less than the lower set point;

sensing when ignition occurs and producing a signal indicative of the ignition;

receiving the ignition signal and forcing air across the combustion chamber to increase the intensity of combustion;

comparing the temperature signal magnitude to an upper set point;

stopping the combustion in response to the temperature signal magnitude being greater than the upper set point; and

continuing forcing air across the combustion chamber for a predetermined period of time after combustion ceases to purge gases from the combustion chamber.

5,607,255

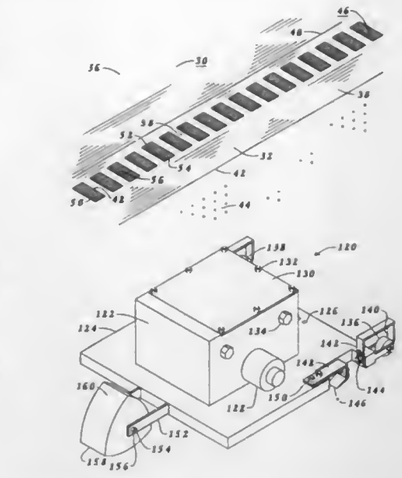
METHOD OF MILLING TO FORM HIGHWAY DEPRESSIONS

Glen E. Thomas, and Amona D. Thomas, both of P.O. Box 1083, Moore Haven, Fla. 33471

Continuation-in-part of Ser. No. 391,708, Feb. 21, 1995, which is a continuation-in-part of Ser. No. 118,961, Sep. 10, 1993, Pat. No. 5,391,017. This application Aug. 10, 1995, Ser. No. 513,355

Int. Cl.[6] E01C *23/09*

U.S. Cl. 404—90 **17 Claims**



12. A machine to form a series of depressions in a surface of an a road during continuous longitudinal advance of the machine, the depressions longitudinally aligned in the series along a desired path, each depression having a curved base, the curved base having an extended diameter measurement, the machine comprising:

a) a rotary cutting head, the rotary cutting head capable of milling the surface of the road, the rotary cutting head having a cutting diameter measurement, the cutting diameter measurement being less than the extended diameter measurement of the curved base of the depression;

b) regulation means, the regulation means to transfer to the rotary cutting head an elevational movement, the elevational movement imparting a lowering action and a raising action to the rotary cutting head, the rotary cutting head coming into contact with the surface of the road during the lowering action, the rotary cutting head penetrating the surface of the road during the lowering action, the rotary cutting head coming out of contact with the surface of the road during the raising action, the rotary cutting head advancing longitudinally while in contact with the surface of the road during both the lowering action and the raising action, the regulation means causing a repetitive transference of the elevational movement to the rotary cutting head to form the series of depressions;

whereby the regulation means transfers a repetitive transference of elevational movements to the rotary cutting head to cause the lowering action and the raising action to form a depression while the rotary cutting head is in contact with the surface of the road, the rotary cutting head longitudinally advancing while the rotary cutting head is in contact with the surface of the road during forming of each depression within the series of depressions.

5,607,256

ADJUSTABLE FLOOR TILE MORTAR AND GROUT SPREADER

Michael D. McCleary, Delray Beach, Fla., assignor to McCleary Concepts & Creations, Inc., Delray Beach, Fla.

Filed Feb. 10, 1995, Ser. No. 386,737

Int. Cl.[6] B28B *19/00*; E01C *19/48*

U.S. Cl. 404—105 **10 Claims**

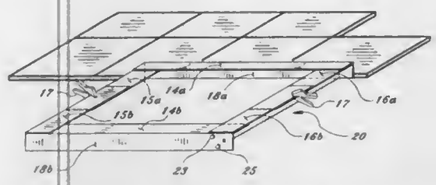
1. A combination floor tile mortar and grout spreading device for spreading an even layer of floor tile mortar bonding material over an underlying floor comprising:

a frame having a leading end, a trailing end, and opposing downwardly extending sides defining a width;

a downwardly extending, telescopically adjustable blade pivotally connected proximate said frame trailing end and extending between said opposing frame sides, such that pivoting said blade raises and lowers a blade edge for spreading bonding material at a user selected thickness;

means for telescopically adjusting said frame width;

said opposing frame sides for containing a quantity of bonding material placed on the floor therebetween, whereby sliding said frame across said floor causes said downwardly extending blade to spread the bonding material in a layer corresponding to said frame width.



5,607,257

DRILLING APPARATUS

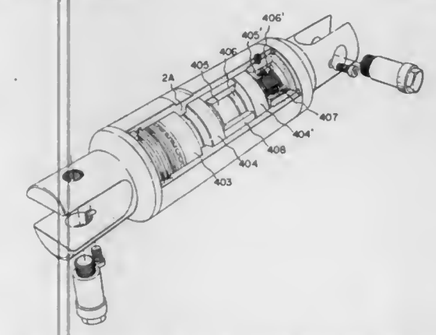
Roderick C. Brewis, Handlemaker Road, Marston Trading Estate, Frome, Somerset. BA114RW, Great Britain

Filed Jan. 10, 1995, Ser. No. 370,321

Claims priority, application United Kingdom, Jan. 11, 1994, 9400362

Int. Cl.[6] F16L *1/00;27/00;27/06*

U.S. Cl. 405—184 **13 Claims**



1. A swivel device for use in drilling apparatus, said device comprising a tubular body portion; a swivel shaft which extends into the tubular body portion; a bearing assembly interposed between the shaft and the body portion to facilitate relative rotation; and a seal assembly for resisting ingress of mud into the space between the shaft and the body portion; said seal assembly comprising an O-ring surrounding the shaft, and means for supplying grease to both axial sides of the O-ring, said grease supplying means comprising a grease supply path leading to a first axial (upstream) side of the O-ring; a downstream grease chamber at the second axial (downstream) side of the O-ring, and a duct for communicating grease from the upstream side of the O-ring to the downstream grease chamber.

5,607,258

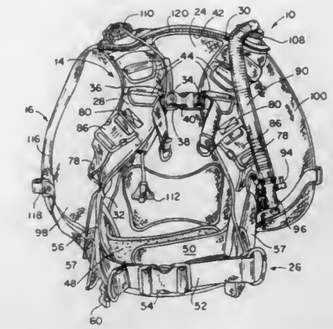
SCUBA DIVING HARNESS FOR USE WITH A BUOYANCY CONTROL DEVICE

William C. Eungard, Waterford, Wis., assignor to Johnson Worldwide Associates, Sturtevant, Wis.

Filed Aug. 29, 1995, Ser. No. 520,727

Int. Cl.[6] B63C *11/02*

U.S. Cl. 405—186 **23 Claims**



1. A scuba diving harness designed to support various scuba equipment used by a diver, comprising:

a harness assembly including a back panel configured for placement along the back of the diver;

a waist strap assembly connected to the back panel and configured to extend generally about to waist of the diver, the waist strap including an adjustable fastener;

a back pack for supporting a scuba tank;

a pair of shoulder straps extending generally between the back pack at a lower region thereof and the harness assembly, each shoulder strap being designed to extend over the shoulder and chest area of the diver; and

a chest strap configured for coupling between the shoulder straps.

5,607,259

PROCESS FOR ASSEMBLING LONG SECTIONS OF BOOMS OF SUPPORT LEGS OF AN OIL PLATFORM

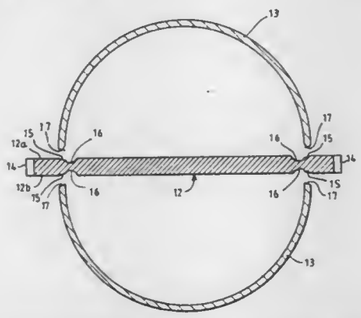
Pierre-Armand Thomas, Puteaux, and Jean-Claude Naudin, Paris, both of France, assignors to Technip Geoproduction, Paris La Defense, France

Filed Jul. 18, 1995, Ser. No. 503,724

Claims priority, application France, Jul. 19, 1994, 94 08922

Int. Cl.[6] E02B *17/00*

U.S. Cl. 405—198 **11 Claims**



1. Process for assembling long sections of booms of support legs of an oil platform, each section comprising in combination when assembled: a rectangular plate provided on each of lateral edges thereof with teeth constituting a rack, and at least one stiffener substantially in the form of a semi-shell fixed on each main face of said rectangular plate, said process comprising the following steps:

machining on the whole of the length of each main face of said rectangular plate and on each side of a longitudinal axis of said rectangular plate a flat surface inclined in a direction toward said longitudinal axis, each flat surface being spaced from said longitudinal axis a distance substantially corresponding to the radius of curvature of said stiffener,

machining a groove on the whole of the length of said rectangular plate and behind said flat surface relative to said longitudinal axis of said rectangular plate.

machining on longitudinal edges of each stiffener a chamfer which is inclined in a direction toward a longitudinal axis of said stiffener, the angle of inclination of said chamfer being substantially equal to the angle of inclination of a respective one of said flat surfaces,

placing said stiffener on each main face of said rectangular plate in such manner that said chamfer of said longitudinal edges of said stiffener bears against the respective flat surface of said rectangular plate,

welding each stiffener, under a vacuum and from the exterior by means of an electron beam, to said rectangular plate in the region of said chamfers and flat surfaces so as to form a boom section,

and heat treating said section.

5,607,260

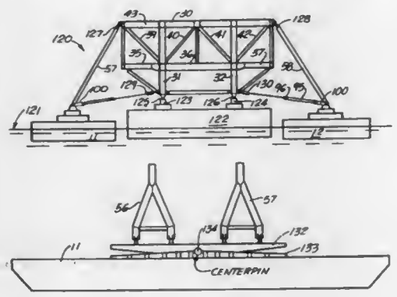
METHOD AND APPARATUS FOR THE OFFSHORE INSTALLATION OF MULTI-TON PREFABRICATED DECK PACKAGES ON PARTIALLY SUBMERGED OFFSHORE JACKET FOUNDATIONS

Jon E. Khachaturian, 5827 Rhodes Ave., New Orleans, La. 70131

Continuation-in-part of Ser. No. 404,421, Mar. 15, 1995. This application Jul. 12, 1995, Ser. No. 501,717

Int. Cl.[6] E02B *17/00*

U.S. Cl. 405—204 **17 Claims**



1. A lifting apparatus for placing a multi-ton deck package on an offshore jacket foundation, comprising:

a) a pair of barges, each barge having a base that can support a large multi-ton load;

b) the base comprising upper and lower base members and an articulation joint that joins the base members so that one base member can articulate relative to the other when an undersireable seastate exists;

c) truss means supported by the base about the periphery of the deck package for forming a load transfer between the barges and the deck package to be placed, said truss means including a plurality of diagonally extending lift booms, each lift boom having a lower end attached to the upper base member and an upper free end;

d) upper and lower connection means for forming attachments of the truss means to the deck package at upper and lower respective elevational positions;

e) said upper and lower connection means including corresponding connecting portions that enable the barges and package to quick disconnect, one of said corresponding quick connecting portions including the upper free end portion of the lifting boom, said other quick connecting portion being positioned at said upper elevational position; and

f) means for lowering the combination of the truss means and the supported deck package with respect to the jacket foundation during placement of the deck package on the jacket foundation.

5,607,261

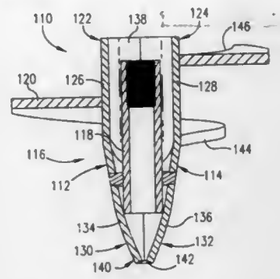
CLAMSHELL POWER INSTALLED SCREW ANCHOR

James T. Odom; Robert M. Hoyt, and Daniel V. Hamilton, all of Centralia, Mo., assignors to Hubbell Incorporated, Orange, Conn.

Filed Nov. 29, 1995, Ser. No. 564,730

Int. Cl.[6] E02D *5/80*

U.S. Cl. 405—244 **16 Claims**



1. A screw anchor comprising:

an anchor shell having a hub presenting an open, upper end and a hollow, polygonal cross-sectional shape, and a lead point, the shell being formed from relatively flat material, the material including a pair of elongated body segments, each segment including first and second ends and a pair of longitudinally extending side edges, the first ends being shaped to define hub elements presenting generally C-shaped cross-sections, the second ends being shaped to define lead point elements;

means for securing the body segments together along the side edges to present the anchor shell;

a core formed from an elongated bar and having a first end with a threaded bore formed therein;

means for securing the core to the anchor shell; and

a helical load bearing element formed from relatively flat material, the load bearing element being secured to the body segments and presenting a leading edge and a trailing edge.

5,607,262

RETAINING WALL BLOCK FOR USE WITH GEOGRIDS

Christopher Martin, Kent, United Kingdom, assignor to Fountain Holding Ltd., St. Helier, Jersey, Channel Islands

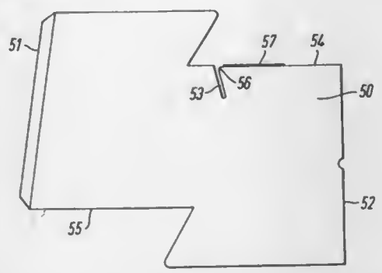
PCT No. PCT/GB93/02549, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995, PCT Pub. No. WO94/13890, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 15, 1993, Ser. No. 454,344

Claims priority, application United Kingdom, Dec. 15, 1992, 9226143

Int. Cl.[6] F02D *29/02*

U.S. Cl. 405—284 **4 Claims**



1. A retaining wall block (**10**, **30**, **50**) comprising geogrid receiving means to receive and retain a geogrid reinforcing material (**91**),

the receiving means comprising a plurality of projections (**13**,**33**,**57**) provided on a first face of the block and one of an aperture and a recess (**14**,**34**) provided on an opposite face of the block, wherein dimensions of each projection and a spacing between adjacent projections correspond to respective apertures (**97**) in the geogrid material (**91**) such that in use, the geogrid material (**91**) is located over the projections with each projection (**13**,**33**,**57**) mating with a corresponding aperture (**97**) of the geogrid material; the projections being provided in the form of a discrete element (**41**) having an element body and one or more of said projections (**13**,**33**,**57**) extending therefrom, the element body being mountable in a corresponding recess provided in the first face of the block,

wherein the geogrid receiving means further comprises a transverse groove (**53**) formed in an upper surface of the block, and

wherein said transverse groove (**53**) slopes rearwardly.

5,607,263

CUTTING TOOL

Horst Nespeta, Kempten; Alfred Pötzl, Durach; Manfred Simon, Marktoberdorf, and Franz Pfob, Probstried, all of Germany, assignors to Zettl GmbH CNC Prazisions-und Sonderwerkzuege, Reicholzried, Germany

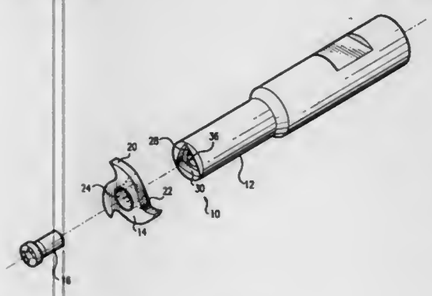
PCT No. PCT/EP94/01104, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO94/23874, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 9, 1994, Ser. No. 513,910

Claims priority, application Germany, Apr. 14, 1993, 43 12 216.7; Sep. 11, 1993, 43 30 826.0

Int. Cl.[6] B23C *5/00;5/26*

U.S. Cl. 407—61 **10 Claims**



1. A cutting tool comprising:

a cutting plate having a circumference, a front face and a coupling face opposite the front face;

at least one cutting tooth sintered to the circumference of the cutting plate;

a projection, integrally formed on the coupling face as a seamless homogenous structure, the projection having a first coupling surface forming an outer circumferential surface of the projection, the first coupling surface of the projection having the shape of a rounded multicorner polygon contour, and a second coupling surface formed perpendicular to the first coupling surface;

a central hole through said cutting plate and the projection, the central hole having a first radius adjacent the front face of the cutting plate of greater length than a length of a second radius within the projection;

a holder, having a second front face defining a recess having an inner circumferential surface with a shape approximately complimentary to the first coupling surface of the projection;

a radial face formed in the recess perpendicular to the inner circumferential surface, the radial face delimiting a depth of the recess, the depth of the recess being less than a height of the projection;

an axial bore defined within the holder extending inward from the radial face of the recess, a third radius of the bore being smaller than the second radius of the central hole; and

a head screw, screwed into said bore through said central hole of said cutting plate, fastening the cutting plate to the holder such that the second coupling surface of the projection is in contact with the radial face of the recess.

5,607,264

TOOL WITH DIAMOND CUTTING EDGE HAVING VAPOR DEPOSITED METAL OXIDE LAYER AND A METHOD OF MAKING AND USING SUCH TOOL

Udo König, Essen, and Ralf Tabersky, Bottrop, both of Germany, assignors to Widia GmbH, Essen, Germany

Continuation of Ser. No. 175,410, Dec. 30, 1993, abandoned. This application Jan. 26, 1996, Ser. No. 592,022

Claims priority, application Germany, Aug. 14, 1991, 41 26 852.0

Int. Cl.[6] B23B *27/20;* **C23C** *16/26;16/40;28/04*

U.S. Cl. 407—118 **12 Claims**

1. A method of machining a body of a carbon-affinity material, comprising the steps of:

(a) forming a cutting tool by providing a support forming a substrate, affixing a diamond structure to said support and forming a cutting edge thereon, and vapor depositing at least one dense crack-free fine-crystalline layer of at least one metal oxide onto said diamond structure at least at said cutting edge to a thickness in excess of 1 μm from a gas phase at a substrate temperature below 800° C., said diamond structure being a continuous diamond layer of a thickness of 0.5 μm to 2 mm and said dense crack-free fine-crystalline layer of at least one metal oxide having a thickness up to 3 μm; and

(b) effecting chip removal from said body by urging said cutting tool thereagainst.

5,607,265

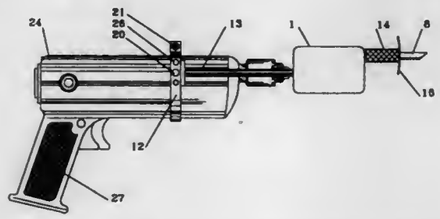
RECIPROCATING ATTACHMENT FOR HAND DRILLS

Michael S. Lane, 8382 Atlanta St. #C, Huntington Beach, Calif. 92646

Continuation-in-part of Ser. No. 159,313, Nov. 29, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 385,155

Int. Cl.[6] B23B *45/00*

U.S. Cl. 408—20 **34 Claims**



1. An apparatus for attachment to hand drills for driving reciprocating tools comprising:

a housing having a cylindrical chamber, a drill shaft aperture and a slot defined therein;

a grooved shaft axially and rotatably mounted in the cylindrical chamber by a bearing means with a drill shaft extending axially from a drill end center through the housing at the drill shaft aperture;

the grooved shaft having a groove defined therein with the groove eccentrically extending around the circumference of the grooved shaft;

a saw blade holder slidably mounted in the slot with a means to retain a saw blade; and

a saw bearing cooperatively mounted between the saw blade holder in a holder slot defined therein and in the groove of the grooved shaft;

a drill retainer having a plurality of retainer bars attached to the housing in housing slots defined therein;

the drill retainer has a drill retainer clamp and a plurality of retainer bar brackets having a retainer bar slot defined therein; and

the drill retainer having a plurality of slot holes defined therein through which a retainer bar pin may be inserted to retain the retainer bar.

5,607,266

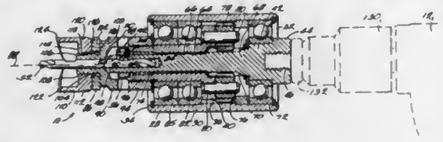
SPEED REDUCER ASSEMBLY

James R. Anderson, Menominee, Mich., assignor to Evergreel Tool Co., Inc., Menominee, Mich.

Filed May 11, 1995, Ser. No. 439,386

Int. Cl.[6] B23B *47/14;* **F16H** *37/06*

U.S. Cl. 408—124 **26 Claims**



1. A speed reducer assembly for use with a power drill having a driven hub rotating, when said drill is energized, about an axis of rotation, said assembly comprising:

a speed reducer connected to the hub, said speed reducer having a generally cylindrical housing and a gear arrangement including first and second rotating output members, said first and second rotating output members being co-axial, said gear arrangement being connected between the hub and said housing of said speed reducer so that when the drill is energized and said speed reducer is held stationary, said first and second rotating output members are rotated at different speeds; and

a clamp including a sleeve surrounding said housing of said speed reducer, biased toward a first circumferential expanded position, and being contractible circumferentially from said expanded position to a contracted position, said clamp also including a clamping member attached to said sleeve for applying a force to said sleeve to contract said sleeve circumferentially so that said sleeve securely engages said housing of said speed reducer and prevents said housing from rotating relative to the drill, said clamping member also selectively releases said force so as to expand said sleeve to said expanded position.

5,607,267

METHOD AND APPARATUS FOR ALIGNING AND CUTTING SINGLE-SIDED AND DOUBLE-SIDED KEYS

George L. Heredia, 7040 E. Palo Verde La., Paradise Valley, Ariz. 85253; Robert E. Almblad, 441 Banbury Rd., Mundelein, Ill. 60060, and Mike A. Mueller, 2206 Lakeshore Dr., Lindenhurst, Ill. 60046

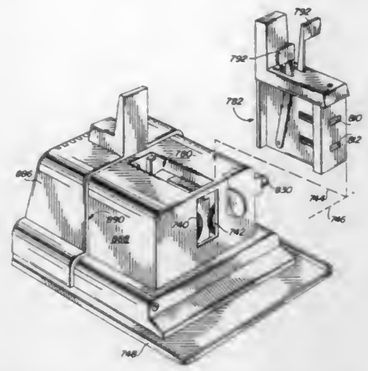
Continuation of Ser. No. 207,837, Mar. 8, 1994, Pat. No. 5,443,339, which is a continuation of Ser. No. 769,921, Sep. 30, 1991, Pat. No. 5,314,274, which is a continuation-in-part of Ser. No. 425,731, Oct. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,815, Oct. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 478,013

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[6] B23C *3/35*

U.S. Cl. 409—81 **15 Claims**

1. A key cutting machine having a longitudinal axis and a horizontally oriented lateral axis for duplicating a two-sided master



key onto a two-sided key blank, the master key and key blank each including a length, a centerline, an upper surface, a lower surface, a tip, a shoulder, a first bitted surface and an opposing second bitted surface, each bitted surface of the master key including cuts extending laterally between a first lateral position located in proximity to the key centerline and a second lateral position further displaced from the key centerline, the key cutting machine comprising:

a. a base;

b. a laterally displaceable first cutter head having a first key follower positioned at a first elevation and including a vertical key following edge surface, a spaced apart first cutting wheel positioned at a second elevation and including a cutting edge longitudinally aligned with the vertical edge surface of the first key follower and a first motor coupled to rotate the first cutting wheel in a first direction;

c. a laterally displaceable second cutter head having a second key follower positioned at the first elevation and including a vertical key following edge surface, a spaced apart second cutting wheel positioned at the second elevation and including a cutting edge longitudinally aligned with the vertical edge surface of the second key follower and a second motor coupled to rotate the second cutting wheel in a second direction;

d. a first linear displacement element for enabling the first key follower to be laterally displaced toward and away from the first bitted surface of the master key relative to a first horizontal plane and the first cutting wheel to be laterally displaced toward and away from the first bitted surface of the key blank relative to a second horizontal plane and for enabling the second key follower to be laterally displaced toward and away from the second bitted surface of the master key relative to the first horizontal plane and the second cutting wheel to be laterally displaced toward and away from the second bitted surface of the key blank relative to the second horizontal plane to enable the first cutter head to laterally follow and duplicate the first bitted surface of the master key onto the first bitted surface of the key blank and to enable the second cutter head to laterally follow and duplicate the second bitted surface of the master key onto the second bitted surface of the key blank without increasing or decreasing the elevation of the first or second cutter heads;

e. a key positioning fixture including

i. a first key positioning fixture for horizontally orienting the upper surface of the master key and for vertically aligning the master key such that the first and second bitted surfaces engage the vertical edge surfaces of the first and second key followers and for maintaining unobstructed access to the first and second bitted surfaces of the master key as the key positioning fixture and the first and second key followers are longitudinally translated relative to each other;

ii. a second key positioning fixture for horizontally orienting the upper surface of the key blank and for vertically aligning the key blank such that the first and second bitted surfaces engage the cutting edges of the first and second

cutting wheels and for maintaining unobstructed access to the first and second bitted surfaces of the key blank as the key positioning fixture and the first and second cutting wheels are longitudinally translated relative to each other; and

f. a second linear displacement element for longitudinally displacing the master key and the first and second key followers relative to each other along the longitudinal axis at the first elevation and for simultaneously longitudinally displacing the first and second bitted surfaces of the key blank and the first and second cutting wheels relative to each other along the longitudinal axis at the second elevation to reproduce the first and second bitted surfaces of the master key on the first and second bitted surfaces of the key blank.

5,607,268

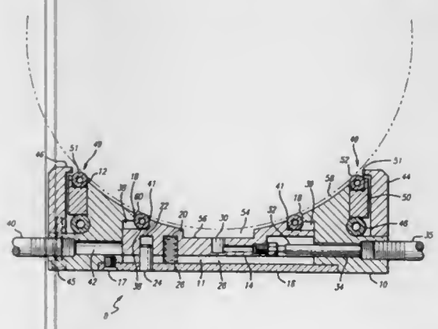
VACUUM VICE FOR BOWLING BALLS AND METHOD

David Ellis, San Bernardino, and Bert Poort, Covina, both of Calif., assignors to Jerry Liem, Canyon Lake, Calif.

Continuation of Ser. No. 213,884, Mar. 16, 1994, abandoned. This application Nov. 22, 1994, Ser. No. 343,731

Int. Cl.[6] B23C *3/00;* **B23B** *35/00;* **B25B** *11/00*

U.S. Cl. 409—131 **20 Claims**



11. A method of holding bowling balls for drilling or engraving, comprising the steps of:

supporting the bowling ball on a contoured hard rim surface;

forming an inner vacuum chamber between a buoyant cup and the bowling ball;

applying forces to the buoyant cup to seat the bowling ball against the hard rim surface.

5,607,269

BONE MILLING APPARATUS

Michael Dowd, Eastampton; Nelson Scarborough, Wayside, and Mark Daugherty, Allenwood, all of N.J., assignors to Osteotech, Inc., Eatontown, N.J.

Filed Nov. 21, 1995, Ser. No. 560,213

Int. Cl.[6] B23Q *11/08*

U.S. Cl. 409—134 **16 Claims**

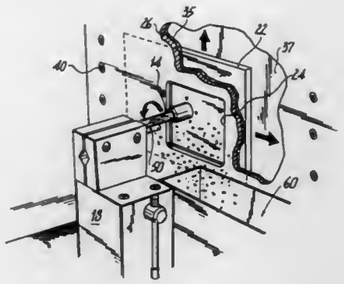
1. Milling apparatus comprising:

a) a milling machine and a milling cutter;

b) a support fixture disposed within an enclosed work area for supporting a work piece;

c) means for moving the milling cutter relative to the work piece;

d) an upstanding wall having a portal, the milling cutter extending through and being movable throughout the planar region defining the portal; and



e) sealing means operatively associated with the portal for sealingly isolating the milling cutter from the milling machine;

wherein the sealing means comprises a sealing plate slidably mounted adjacent the portal and having an aperture extending therethrough for receiving a chuck which supports the milling cutter, the sealing plate being mounted to a flange provided on the chuck.

5,607,270

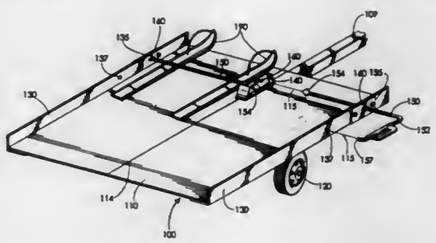
RETENTION SYSTEM FOR TRANSPORTING SKI-TYPE VEHICLES

Karl M. Zimmerman, 16464 Crosstown Blvd., Andover, Minn. 55304

Filed Apr. 28, 1994, Ser. No. 234,179

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—3 **16 Claims**



8. A trailer for transporting at least one snowmobile, comprising:

a platform sized and configured to support the at least one snowmobile;

a first bracket secured to the platform, the first bracket providing a keyhole;

a locking bar having a handle end and a distal end, wherein the locking bar is adapted to overlie at least a portion of the at least one snowmobile, and the distal end is configured to pass through the keyhole when in a first orientation relative thereto, and to resist passage through the keyhole when in a second orientation relative thereto;

a second bracket secured to the platform, the second bracket cooperating with the handle end of the locking bar to limit movement of the handle end toward the first bracket when the distal end is disposed on an opposite side of the keyhole; and

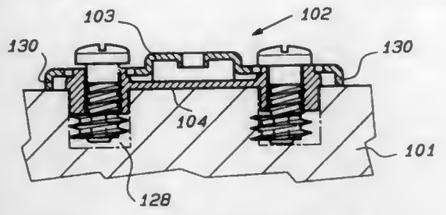
a locking means for locking the locking bar in the second orientation relative to the keyhole.

5,607,271

FASTENING DEVICE FOR A METAL FITTING PART PREFERABLY FOR A HINGE PART, PROVIDED WITH A FASTENING BOREHOLE

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed May 9, 1995, Ser. No. 437,061
Claims priority, application Germany, Jul. 8, 1994, 44 24 151.8; Oct. 6, 1994, 44 38 285.5; Dec. 14, 1994, 9420033 U
Int. Cl.[6] F16B *21/00*
U.S. Cl. 411—349 61 Claims



1. Fastening device for a fitting part provided with a fastening borehole comprising:

a bushing which can be inserted in the fastening borehole and which possesses a continuous hole in its axial direction,

a pin pivoted in the continuous hole and provided with a head and penetrating the fastening borehole, the continuous hole being positioned eccentrically in the bushing and the pin being provided with an eccentric shaft part which extends beyond the continuous hole, and

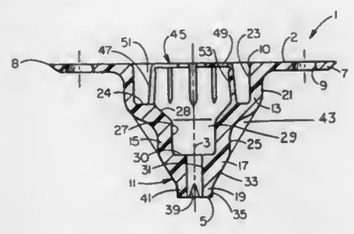
a clamping part fastened on said eccentric shaft part.

5,607,272

ATTACHMENT PLATE FOR INSULATION PANELS

Gilbert Olvera, Chicago, and Michael C. Dill, Elk Grove Village, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jan. 6, 1995, Ser. No. 369,354
Int. Cl.[6] F16B *43/00*; E04B *5/00*
U.S. Cl. 411—533 16 Claims



1. An attachment plate for attaching an insulation panel to a substrate, comprising:

a washer defining a central opening having a predetermined diametrical extent, and a longitudinal axis;

a tubular member joined to said washer, extending concentrically along said longitudinal axis, and comprising a first section adjacent to said washer that includes an inner peripheral wall which defines a first inner diametrical extent which is of the same size as said diametrical extent of said washer central opening, said inner peripheral wall of said first section terminating in a first transverse surface; a second section adjacent to said first section and including an inner peripheral wall defining a second inner diametrical extent which is less than said first inner diametrical extent of said first section, said inner peripheral wall of said second section terminating in a second transverse surface that cooperates with said inner peripheral wall of said second section so as to define a recess for accommodating a head of a fastener which is adapted to be inserted into a substrate so as to secure an insulation panel to said substrate; and an end section adjacent to said second section and defining a passage therethrough for accommodating said fastener for securing said insulation panel to said substrate; and

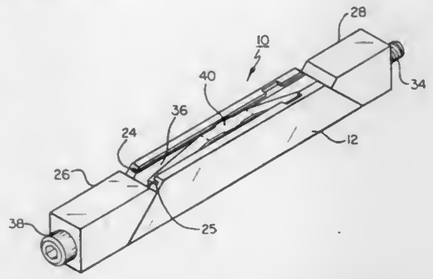
finger means, spaced radially inwardly from said inner peripheral wall of said first section and mounted upon said first transverse surface of said first section, for forming an annular chamber with said inner peripheral wall of said first section so as to accommodate a fastener setting tool for inserting said fastener through said insulation panel and into said substrate and for closing a central bore section of said tubular member of said attachment plate so that said head of said fastener is substantially covered.

5,607,273

PRINTED CIRCUIT BOARD WEDGE SECTION RETAINER

Robert P. Kecmer, Fair Lawn, and James B. Barnes, Mendham, both of N.J., assignors to VSI Corporation, Chantilly, Va.

Filed Nov. 6, 1995, Ser. No. 554,055
Int. Cl.[6] F16B *13/04*
U.S. Cl. 411—79 5 Claims



1. A wedge apparatus for locking a printed circuit board within an elongated slot in a rack comprising:

an elongated center wedge having first and second elongated wall sections and first and second end sections, said end sections having sloped surfaces, a channel being formed in said center wedge, said center wedge being secured to an edge of said printed circuit board and having grooves formed in said wall sections extending along a substantial portion of the length thereof, recesses interrupting a portion of the grooves formed in said first and second wall sections;

first and second end wedges located at opposite ends of the center wedge and having surfaces that engage the sloped surfaces of the center wedge;

a screw interconnecting the first and second end wedges, rotation of the screw in a first direction drawing the two end wedges toward each other such that the end wedges and interconnecting screw are deflected transversely by the sloped surfaces of the center wedge, to lock a printed circuit board within an elongated slot in a rack; and

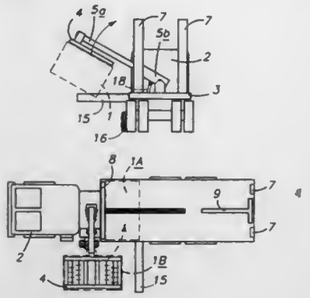
means for biasing said first and second end wedges into longitudinal alignment with said center wedge.

5,607,274

BALE HANDLING APPARATUS AND PROCESS

Ivan J. Cook, Rt. 1, Box 1961, Hermiston, Oreg. 97838, assignor to Ivan J. Cook, Hermiston, Oreg.

Filed Dec. 15, 1994, Ser. No. 356,875
Int. Cl.[6] B65G *57/32*
U.S. Cl. 414—111 9 Claims



1. A bale pickup and transport apparatus comprising:

a. a vehicle with a flat bed;

b. a boom mounted to the vehicle such that it rotates about a vertical axis and rotates about a horizontal axis;

c. a bale attachment mechanism, which is attachable and detachable to a bale, and which is operatively attached to the boom such that it can move parallel to the longitudinal axis of the boom;

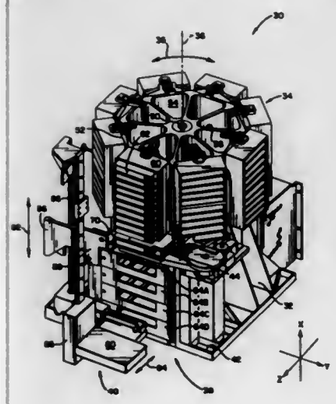
such that the rotation of the boom about the horizontal axis is capable of moving the bale attachment mechanism from a position alongside the flatbed to a position above the flatbed wherein the boom is substantially vertical, and movement of the bale attachment mechanism parallel to the longitudinal axis of the boom is capable of moving the bale attachment mechanism from the position above the flatbed to a position closely adjacent to the flatbed.

5,607,275

CARTRIDGE LIBRARY AND METHOD OF OPERATION

Daniel J. Woodruff, Lyons; Daniel W. Hoekstra, Louisville; Christopher L. Scott, Englewood; Thomas W. Volckhausen, Boulder; Thomas J. Studebaker, Boulder, and Bruce L. Younglove, Boulder, all of Colo., assignors to Exabyte Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 112,259, Aug. 23, 1993, Pat. No. 5,498,116. This application Nov. 10, 1994, Ser. No. 337,621
Int. Cl.[6] G11B *15/68*
U.S. Cl. 414—331 13 Claims



1. An automated library for handling a plurality of data storage units stored therein, the library comprising:

a frame;

a cabinet which substantially encloses the frame and has an entry/exit port formed therein through which a data storage unit can be passed;

a drum-like member mounted on the frame for rotational motion about a drum axis, the drum-like member having a plurality of faces on an exterior periphery thereof with at least one of the faces having a rack mounted thereon, the rack accommodating a plurality of data storage units;

a plurality of I/O drives for performing input/output operations with respect to a data storage unit inserted therein, the drives being vertically mounted on the frame;

a motor mounted on the frame for rotationally driving the drum-like member;

a unit engagement device mounted to the frame for engaging and transporting, in a direction parallel to the drum axis, data storage units whereby data storage units are selectively insertable into one of the drive and an active one of the racks;

an entry/exit transport device which selectively transports a storage unit between the entry/exit port and an entry/exit home position within the cabinet;

wherein the following lie essentially flush in a vertical plane:

exposed faces of storage units in the active one of the racks;

front surfaces of the plurality of I/O drives; and

a face of a storage unit engaged by the entry/exit transport device and held in the entry/exit home position; and

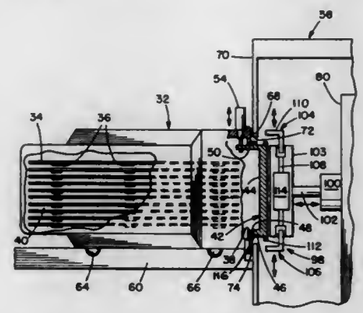
wherein the entry/exit home position is situated between the active one of the racks and the plurality of I/O drives.

5,607,276

BATCHLOADER FOR SUBSTRATE CARRIER ON LOAD LOCK

Richard S. Muka, Topsfield; Michael W. Pippins, Hamilton, both of Mass., and Mitchell A. Drew, Portsmouth, N.H., assignors to Brooks Automation, Inc., Chelmsford, Mass.

Filed Jul. 6, 1995, Ser. No. 498,859
Int. Cl.[6] B65G *49/07*
U.S. Cl. 414—331 12 Claims



1. A system for batch loading semiconductor wafers comprising:

a portable carrier for supporting and transporting in a substantially particle free environment a plurality of the wafers in substantially spaced relationship, said carrier having a carrier port for providing access to the interior thereof;

a carrier door on said carrier movable between a closed position overlying said carrier port for sealing the interior of said carrier from the surrounding environment and an open position spaced from said carrier port;

a load lock defining a chamber therein having a substantially particle free environment and including a load lock port opening into the load lock chamber;

a load lock door on said load lock movable between a closed position overlying said load lock port and an open position spaced therefrom;

a load lock arm within the load lock chamber movable between an inactive position distant from the carrier and an active position proximate the carrier; and

a multilevel end effector on said load lock arm including a plurality of spaced end effector sets, each said end effector set adapted to support a wafer thereon, each of said plurality of spaced end effector sets being aligned with an associated wafer supported in the carrier when said load lock arm is in the active position, said multilevel end effector being movable, when said load lock arm is in the active position and when said load lock door is in the open position, from a retracted position distant from the wafers to an advanced position within the carrier and extending through said load port and through said carrier port for engaging and simultaneously retrieving the wafers as a grouping, then again to the retracted position for holding the grouping of wafers in the load lock chamber.

5,607,277

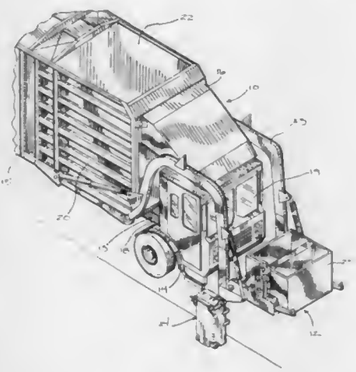
AUTOMATED INTERMEDIATE CONTAINER AND METHOD OF USE

William D. Zopf, Chattanooga, Tenn., assignor to The Heil Co., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 189,406, Jan. 31, 1994, Pat. No. 5,484,245, which is a continuation of Ser. No. 877,488, May 1, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,224

Int. Cl.[6] B65F *3/04*

U.S. Cl. 414—408 **5 Claims**



1. A remote controlled intermediate container in combination with a refuse vehicle, wherein said refuse vehicle includes a forwardly extending lift mechanism suitable for lifting a front loader refuse container, said remote controlled intermediate container comprising:

an intermediate container removably carried by said lift mechanism;

said intermediate container having support means for supporting said intermediate container on said forwardly extending lift mechanism;

a motor powered assembly including an extendible arm to the curb side of the vehicle, coupled to said intermediate container, and having a terminal end, a dump assembly coupled to said extendible arm proximate said terminal end, and an engagement assembly coupled to said dump assembly, said extendible arm further including:

a track carried by said intermediate container;

an extendible element slidably carried by said track and reciprocally movable between a retracted position and an extended position; and

a motor, actuated by said remote control assembly, coupled between said track and said extendible element for selectively moving said extendible element between said retracted position and said extended position; and

a remote control assembly for controlling said motor powered assembly from said refuse vehicle.

5,607,278

AUTOMATIC TRAY LOADING, UNLOADING AND STORAGE SYSTEM

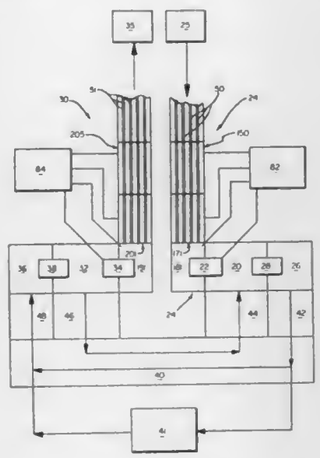
Wallace W. Mnjden; Andrew Mojden, both of Hinsdale, and Robert E. Darr, Chicago, all of Ill., assignors to Fleetwood Systems, Inc., Romeoville, Ill.

Continuation of Ser. No. 28,969, Mar. 10, 1993, Pat. No. 5,435,687, which is a division of Ser. No. 940,534, Sep. 4, 1992, Pat. No. 5,203,666, which is a division of Ser. No. 866,113, Apr. 7, 1992, Pat. No. 5,158,424, which is a continuation of Ser. No. 544,683, Jun. 27, 1990, abandoned, which is a division of Ser. No. 449,304, Dec. 5, 1989, Pat. No. 4,979,870, which is a continuation of Ser. No. 195,220, May 18, 1988, abandoned. This application Feb. 9, 1995, Ser. No. 386,293

The portion of the term of this patent subsequent to Dec. 5, 2009, has been disclaimed.

Int. Cl.[6] B65G *57/24*

U.S. Cl. 414—416 **12 Claims**



1. An article loading and unloading system for loading groups of articles, supplied from a first location into trays, and for unloading said groups of articles from said trays for transport to a second location, said system comprising:

a loading station;

a loading apparatus for loading said groups of articles supplied from said first location into trays at said loading station;

an infeed apparatus for feeding articles to said loading apparatus;

a stacking station;

a stacking apparatus for stacking article-filled trays to form a supply thereof at said stacking station;

an outfeed apparatus for delivering said groups of articles on demand to said second location;

an unloading station;

an unloading apparatus for unloading said groups of articles at said unloading station from said article-filled trays to said outfeed apparatus, such that article-filled trays are stacked by said stacking apparatus and then selectively delivered to said unloading station;

said infeed apparatus and said outfeed apparatus each comprises at least one elongate lane for receiving and transporting said groups of articles;

said infeed and outfeed apparatus being respectively arranged for accommodating said groups of articles in a substantially coaxial arrangement;

said loading and unloading apparatus each including a plurality of generally identical elongated pick-and-place devices arrayed in parallel arrangement;

each of said pick-and-place devices including a mechanical gripping device for simultaneously gripping substantially all of the members of each of said groups of articles along side edges of said members of said groups of articles to thereby retain said group of articles within said pick-and-place device;

each of said trays being configured for accommodating, generally in parallel, a plurality of said groups of articles corresponding in number to said plurality of parallel pick-and-place devices; and

said infeed and outfeed apparatus each comprising a plurality of parallel lanes for receiving and transporting said articles, and wherein each of said pick-and-place devices is movable relative to the respective infeed and outfeed lanes for individually retrieving a group of articles from and delivering a group of articles to, respectively, any one of said plurality of said infeed and outfeed lanes, respectively, in accordance with which ones thereof are filled and empty, respectively, at any given time.

5,607,279

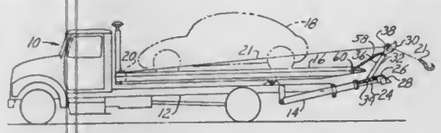
TOWING LIFT ACCESSORY

Richard W. Hill, and Mary A. Hill, both of 54562 Benecia Trial, Yucca Valley, Calif. 92284

Filed Jul. 27, 1995, Ser. No. 507,826

Int. Cl.[6] B60P *3/12*

U.S. Cl. 414—478 **20 Claims**



1. A boom accessory for a flatbed tow truck having a tiltable, extendable bed for receiving a first disabled vehicle, a winch mounted to a forward portion of the bed and having a cable for drawing the first vehicle onto the bed, and an underlift mounted beneath a rear extremity of the bed when the bed is in a transporting position thereof, the underlift having a rearwardly projecting ram for extending and retracting a T-bar or wheel lift, the ram axially projecting forwardly from a head portion thereof into a supporting leg member of the underlift, the leg member being pivotally liftable for raising and lowering the ram, the accessory comprising:

(a) a base for engaging the ram for support thereby;

(b) a boom member rigidly projecting upwardly and rearwardly from the base and having means for rotatably mounting a sheave thereon to movably support the cable; and

(c) means for holding the base in engagement with the ram when the ram is retracted against the base.

5,607,280

APPARATUS FOR LOADING PIPE ONTO A MACHINE

Peter C. Rozendaal, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Dec. 6, 1995, Ser. No. 567,926

Int. Cl.[6] B65G *57/18*

U.S. Cl. 414—745.7 **16 Claims**

1. An apparatus for loading pipe onto a machine having a pipe receiving location, said apparatus comprising:

a source of a plurality of pipes disposed in a plurality of columns each terminating at a lower end with a pipe within each of said columns dischargeable through said lower end of a respective column, said plurality of columns including a first column disposed in close proximity to said pipe receiving location and an end column disposed on a side of said source away from said pipe receiving location;

a selection member for receiving a pipe from said lower ends and transporting said pipe along a path of travel at least toward said pipe receiving location;

said selection member including a plurality of pipe receiving pockets positioned to align with individual ones of said lower ends for said pipes to be discharged from said lower ends into respective ones of said pockets when said selection member is in any one of at least a first and a second position;

said plurality of pockets including a first pocket positioned to be aligned with said lower end of said first column when said selection member is in said first position and located adjacent said pipe receiving location when said selection member is in said second position;

a pick-and-place device for picking a pipe from said first pocket when said selection member is in said second position and placing said picked pipe into said pipe receiving location.

5,607,281

TRANSFER DEVICE IN A PRESS

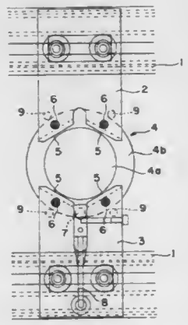
Theo Egolf, Bösingen, and Urs Flühmann, Wabern, both of Switzerland, assignors to Styner & Bienz AG, Niederwangen, Switzerland

Filed Jul. 26, 1995, Ser. No. 507,736

Claims priority, application Switzerland, Jul. 29, 1994, 02405/94

Int. Cl.[6] B65G *25/04*

U.S. Cl. 414—751 **12 Claims**



1. Transfer device in a press, for the stepwise transport of workpieces through processing stations of a tool, comprising transport bars which are disposed laterally with respect to the tool and which are provided with grippers for workpieces and capable of being reciprocated in the longitudinal and the transversal directions in a cyclic movement, wherein at least a part of the grippers are provided with lifting magnets in order to lift the workpiece in a

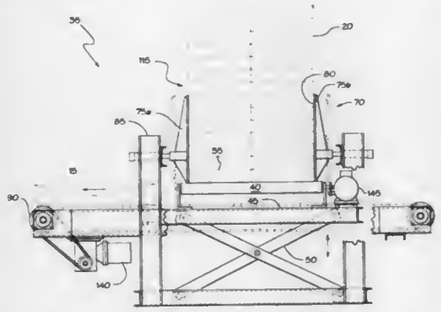
vertical movement during its transport from one processing station to the following one by magnetic attraction.

5,607,282

DEPALLETIZING AND DISPENSING APPARATUS AND METHOD

John B. Brannen, Cheraw, S.C., and Salahuddin F. Khan, Cincinnati, Ohio, assignors to AIDCO Manufacturing, Inc.

Filed Nov. 15, 1994, Ser. No. 339,758
Int. Cl.[6] B65G *59/06*
U.S. Cl. 414—796.3 **27 Claims**



1. A combination depalletizer and dispenser for loads of items stacked on a pallet, comprising:

a frame;

a vertically reciprocable lift mounted at least partially within said frame, said lift having at least a pallet infeed position, a case dispensing position, and a pallet discharge position, each of said positions having a different predetermined height setting;

a lift conveyor located at least partially on said lift;

means for securing said stacked items independent of said pallet, said securing means engaging at least the lowermost layer of stacked items on said pallet when said lift is at its pallet infeed position; and

a pallet transport conveyor located adjacent said lift and arranged to receive and remove the pallet when said lift is in the pallet discharge position.

5,607,283

WESTCO-TYPE FUEL PUMP HAVING IMPROVED IMPELLER

Takahiko Kato, Kariya, and Motoya Ito, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 208,513, Mar. 10, 1994. This application Sep. 8, 1995, Ser. No. 525,116
Claims priority, application Japan, Mar. 30, 1993, 5-071752
Int. Cl.[6] F04D *5/00*
U.S. Cl. 415—55.1 **21 Claims**

1. A Westco-type pump for pressurizing a fluid comprising:

a casing having a partial annular pumping chamber connecting an intake port and a discharge port, said casing provided at opposite inner wall surfaces thereof with seal surfaces located radially inward of said pumping chamber;

an impeller rotatably disposed within said casing and having a plurality of vanes facing said pumping chamber and end surfaces separated from said seal surface of said casing by spaces; and

grooves provided in portions of said end surfaces of said impeller facing said seal surface of said casing, and said grooves are constructed and arranged to concentrate fluid between said end surfaces of said impeller and said seal surfaces of said casing at edge portions of said grooves so that fluid flows towards said seal surfaces, said grooves being predetermined such that said fluid forms a substantially uniform fluid pressure distribution with respect to a radial center circle of said seal surface; each of said grooves having at least a portion having a first end and a second end, said second end being circumferentially displaced from said first end in the direction of rotation of said impeller, certain of said grooves having said first end displaced radially further from a center of said impeller than said second end, other of said grooves having said second end displaced radially further from said center of said impeller than said first end,

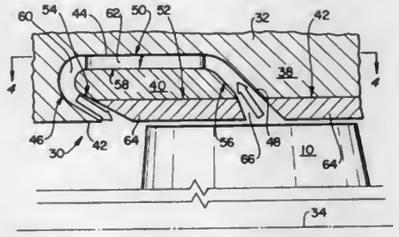
each of said grooves communicating exclusively with one of said spaces between one of said seal surfaces of said casing and one of said end surfaces of said impeller, respectively.

5,607,284

BAFFLED PASSAGE CASING TREATMENT FOR COMPRESSOR BLADES

William P. Byrne, Jupiter, and Nick A. Nolcheff, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1994, Ser. No. 365,873
Int. Cl.[6] F01D *1/12*
U.S. Cl. 415—58.5 **3 Claims**



1. A tip shroud assembly for an axial flow gas turbine engine, said tip shroud assembly comprising

an annular shroud extending circumferentially about a reference axis, said shroud including a plurality of arcuate segments, each segment having a length, the sum of said lengths defining the circumference of said annular shroud, each segment comprising

a first arcuate member having a first radially inner surface and a circumferentially extending channel extending radially outward therefrom the length of the segment, said channel including a first wall, a second wall and a radially outer channel wall connecting said first wall to said second wall, said first wall opposite said second wall,

a second arcuate member, said second arcuate member having a second radially inner surface and a third wall and a fourth wall extending radially outward therefrom and a radially outer member wall connecting said third wall to said fourth wall, said second arcuate member received within the channel in spaced relation to the first arcuate member thereby defining a circumferentially extending passage therebetween, said third wall opposite said first wall and said fourth wall opposite said second wall, and

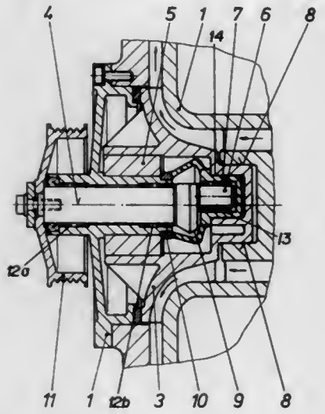
a plurality of baffles located in the passage, each baffle extending from the radially outer member wall radially outward relative to said axis to said radially outer channel wall, each baffle fixed to the first and second arcuate members thereby preventing relative movement therebetween, each baffle terminating short of said first and second walls.

5,607,285

PUMP DRIVE APPARATUS

Hans-Gerd Eckel, Laudenbach, Germany, assignor to Carl Freudenberg, Weinheim/Bergstrasse, Germany

Filed May 26, 1995, Ser. No. 451,403
Claims priority, application Germany, Jun. 8, 1994, 44 20 010.2
Int. Cl.[6] F04D *13/02;29/04*
U.S. Cl. 416—170 R **6 Claims**



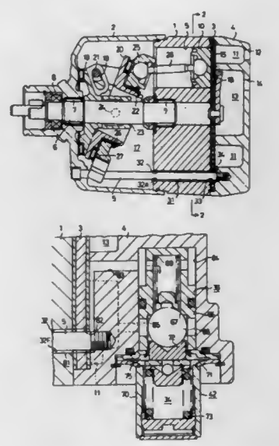
1. In drive apparatus for a pump which comprises a pump housing, a drive shaft and a pump impeller, said shaft and impeller being arranged concentrically within the housing to rotate about a common axis, the improvement wherein the impeller rotates with respect to the housing on at least one bearing, wherein an eccentric journal is disposed on an end of the shaft inside the impeller, wherein the journal rotates in an orbital journal bearing, wherein the orbital journal bearing moves in a circle in an eccentric bearing on the impeller, wherein the orbital journal bearing tightly encloses the journal and wherein a flexible component prevents the orbital journal bearing from rotating with respect to, and seals it off from, the housing.

5,607,286

STRUCTURE OF PRESSURE PASSAGES BETWEEN CHAMBERS OF A RECIPROCATING TYPE COMPRESSOR

Kenji Takenaka; Elji Tokunaga, and Manabu Sugiura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Sep. 8, 1995, Ser. No. 525,981
Claims priority, application Japan, Sep. 9, 1994, 6-216381
Int. Cl.[6] F04B *1/26*
U.S. Cl. 417—222.2 **18 Claims**



1. A compressor including a cylinder block which has a cylinder bore and a plurality of bolt holes respectively receiving bolts to fix a front housing and a rear housing to the cylinder block and define a crank chamber, a suction chamber and a discharge chamber, said crank chamber accommodating a drive plate mounted on a drive shaft, wherein said drive plate converts a rotation of the drive shaft into a reciprocating movement of a piston in the cylinder bore to compress gas supplied to the cylinder bore from the suction chamber and discharge the compressed gas to the discharge chamber, said compressor comprising:

a first pressure passage connecting the suction chamber to the crank chamber, said first pressure passage being arranged to release excessive pressure in the crank chamber to the suction chamber so as to regulate the pressure in the crank chamber, said excessive amount being based on the gas compressed by the piston in the cylinder bore and leaked therefrom to the crank chamber;

said first pressure passage being partially defined by one of said bolt holes;

said drive plate being tiltable with respect to an axis of said drive shaft according to the pressure in the crank chamber with the tilting angle of the drive plate controlling the discharge volume of the compressor; and

a second pressure passage connecting the crank chamber to the discharge chamber to transfer pressure in the discharge chamber to the crank chamber so as to adjust the pressure in the crank chamber;

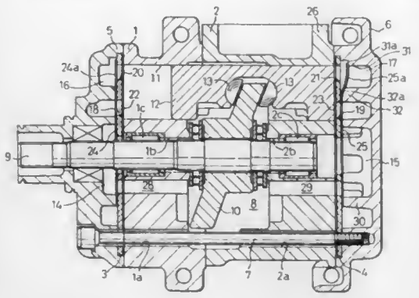
said second pressure passage being partially defined by one of the bolt holes other than said one bolt hole that partially defines said first pressure passage.

5,607,287

RECIPROCATING PISTON TYPE COMPRESSOR WITH AN IMPROVED DISCHARGE VALVE MECHANISM

Hayato Ikeda; Hisato Kawamura; Hiromi Michiyuki, and Masanobu Yokoi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 11, 1995, Ser. No. 570,541
Claims priority, application Japan, Dec. 16, 1994, 6-313620
Int. Cl.[6] F04B *1/16*
U.S. Cl. 417—269 7 Claims



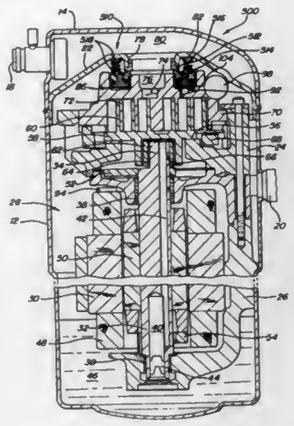
1. A reciprocating piston type compressor comprising:
a cylinder block having therein a shaft bore and a plurality of cylinder bores arranged around said shaft bore;
an end wall means covering the ends of said cylinder bores of said cylinder block;
a drive shaft rotatably supported in said shaft bore via anti-friction bearings, and supporting thereon a swash plate element;
a plurality of pistons operatively engaged with said swash plate element and reciprocating in said plurality of cylinder bores for implementing suction, compression, and discharge of a refrigerant gas in response to rotation of said drive shaft;
at least a housing, arranged with said end wall means, to close an end of said cylinder block, said housing having an inner face, a suction chamber, a discharge chamber and a first wall extending from said inner face of said housing between said suction chamber and said discharge chamber said discharge chamber receiving compressed refrigerant gas discharged from each of said plurality of cylinder bores through each of a plurality of discharge ports bored in said end wall means;
a suction valve element arranged between said suction chamber and said respective cylinder bores, said suction valve element operative to close and open each of a plurality of suction ports bored in said end wall means;
a discharge valve element arranged between said housing and said end wall means, including a plurality of movable discharge reed-valves, in communication with said discharge chamber, operative to close and open said discharge ports, each of said movable discharge reed-valves having a free end; and,
valve stop means integrally formed in said inner face of said housing at positions exposed to said discharge chamber and facing said free end of each of said movable discharge reed-valves, said valve stop means being arranged to engage said free end of each of said plurality of discharge reed-valves, to thereby determine an open position of each of said discharge reed-valves when each movable discharge reed-valve is moved from a closed position thereof to said open position thereof;
wherein said housing is provided with a plurality of supporting portions formed on said inner surface thereof at positions facing a base portion of each of said movable discharge reed-valves, to provide for a gradual bending of said movable discharge reed-valves when said plurality of movable discharge reed-valves are moved from said closed positions to said open positions thereof.

5,607,288

SCROLL MACHINE WITH REVERSE ROTATION PROTECTION

Frank S. Wallis, Sidney; Jean-Luc Caillat, Dayton; Francis M. Simpson; Gary J. Anderson, both of Sidney; Donald W. Rode, St. Paris, and Norman G. Beck, Sidney, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 158,754, Nov. 29, 1993. This application May 4, 1994, Ser. No. 237,756
Int. Cl.[6] F04B *49/00*; F01C *1/04*
U.S. Cl. 417—310 18 Claims



1. A scroll machine comprising:
a first scroll member having a first spiral wrap projecting outwardly from an end plate;
a second scroll member having a second spiral wrap projecting outwardly from an end plate, said second spiral wrap intermeshed with said first spiral wrap;
a drive member for causing said scroll members to orbit relative to one another whereby said spiral wraps will create pockets of progressively changing volume between a suction pressure zone and a discharge pressure zone, said scroll machine including a leakage path disposed between two components of said scroll machine, said leakage path extending between said discharge pressure zone and said suction pressure zone, said leakage path being closed due to the influence of a pressurized fluid biasing said two components together;
a valve member for releasing said pressurized fluid to said suction pressure zone of said scroll machine whereby said leakage path between said discharge pressure zone and said suction zone is opened; and
biasing means for opening said leakage path due to the influence of said biasing means, said biasing means comprising a plurality of coil springs.

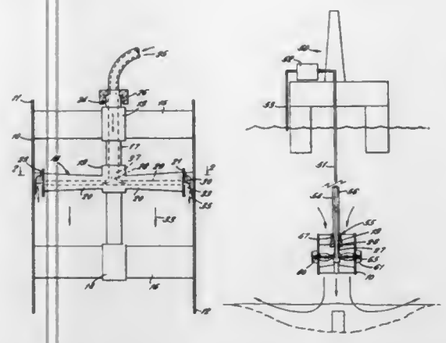
5,607,289

UNDERWATER EXCAVATION APPARATUS

Nicholas V. Sills, Klocardine, United Kingdom, assignor to Underwater Excavation Ltd., Aberdeen, United Kingdom

Continuation of Ser. No. 133,095, Oct. 13, 1993, Pat. No. 5,480,291. This application Dec. 7, 1995, Ser. No. 568,526
Int. Cl.[6] F04B *35/02*
U.S. Cl. 417—375 14 Claims

1. Underwater excavation apparatus comprising a hollow body having an inlet to receive water, an outlet for discharging water, a propeller having a plurality of blades mounted for rotation at a location in the hollow body to draw water through the inlet and deliver a stream of water through the outlet, water jet means on the propeller blades and means to supply water under pressure to the jet means to cause the propeller to rotate and thereby deliver a flow



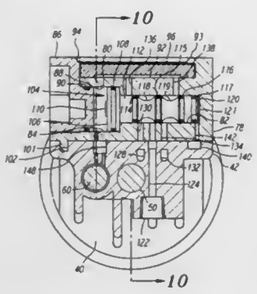
of water through the outlet for displacing material on the seabed; wherein the improvement comprises providing the hollow body with an encircling slit around the location of the propeller, an annular sleeve on the outer side of the hollow body with fixed vanes, means mounting the annular sleeve on the hollow body to extend on either side of said slit to define an annular chamber around the hollow body and locating said water jet means at the tip or tips of the propeller blades to project through the annular slit into said annular chamber and to face around the chamber to react on the water contained within the chamber.

5,607,290

AIR DRIVEN DIAPHRAGM PUMP

Gregory S. Duncan, Corona, Calif., assignor to Wilden Pump & Engineering Co., Grand Terrace, Calif.

Filed Nov. 7, 1995, Ser. No. 554,726
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—393 21 Claims



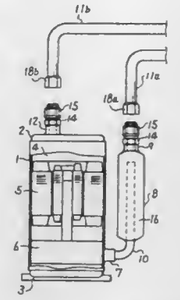
1. An air driven diaphragm pump comprising
an actuator having a housing including opposed air chambers and air chamber passages, an air valve, the air chamber passages extending from each air chamber, respectively, to the air valve, and an exhaust passage extending from the air valve to atmosphere, the exhaust passage being at least as restrictive to air flow as each of the air chamber passages and as the air valve;
pump diaphragms extending across each air chamber, respectively, forming enclosed cavities.

5,607,291

CLOSED COMPRESSOR

Keisuke Morita, Otsu; Hiroshi Matsunaga; Shigeru Muramatsu, both of Kusatsu, and Shinji Fujiwara, Otsu, all of Japan, assignors to Matsusbita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Dec. 20, 1994, Ser. No. 359,637
Claims priority, application Japan, Dec. 21, 1993, 5-321649
Int. Cl.[6] F04B *15/08*
U.S. Cl. 417—410.1 4 Claims



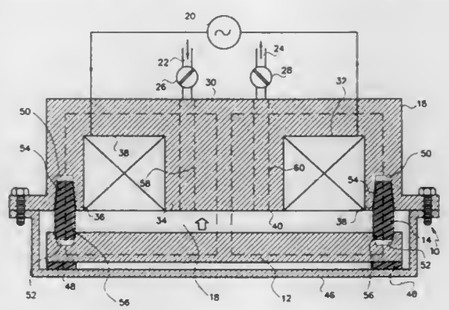
1. An automotive air conditioner arrangement comprising a closed compressor, and an aluminum pipe for use in connecting said closed compressor to a heat exchanger, said closed compressor comprising:
a closed vessel made of steel;
an electric motor accommodated in said closed vessel;
a compression element assembly accommodated in said closed vessel and driven by said electric motor; and
a vapor-liquid separator disposed outside said closed vessel and having a generally cylindrical suction steel pipe and an outlet copper pipe both joined thereto, said suction steel pipe having a threaded portion for connection with said aluminum pipe, said outlet copper pipe being connected to said closed vessel, and a hexagonal portion being provided on said suction steel pipe.

5,607,292

ELECTROMAGNETIC DISK PUMP

Dantam K. Rao, 2212 Lynnwood Dr., Schenectady, N.Y. 12309

Filed Jul. 19, 1995, Ser. No. 504,394
Int. Cl.[6] F04B *17/04*
U.S. Cl. 417—417 11 Claims



1. An electromagnetic pump comprising:
an electromagnet having a first surface;
a ferromagnetic disk in registry with said first surface of said electromagnet;
an elastomeric spring in the form of a cylindrical tube extending between said first surface of said electromagnet and said

ferromagnetic disk, said first surface of said electromagnet, said ferromagnetic disk, and said elastomeric spring defining an enclosed space;

inlet means for introducing fluid into said enclosed space, said inlet means in fluid communication with said enclosed space; and

outlet means for ejecting fluid from said enclosed space, said outlet means in fluid communication with said enclosed space, whereby when said electromagnet is energized, said ferromagnetic disk is pulled toward said first surface of said electromagnet and fluid contained within said enclosed space is ejected through said outlet means.

5,607,293

APPARATUS FOR SUPPLYING FUEL TO A FUEL TANK OF AN INTERNAL COMBUSTION ENGINE

Ulrich Luedtke, Karlsruhe, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

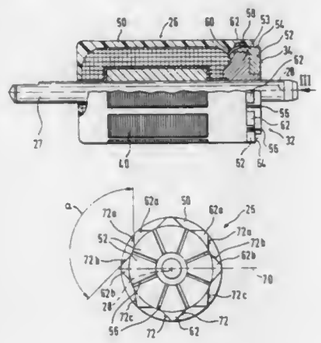
PCT No. PCT/DE95/00326, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO95/25885, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 9, 1995, Ser. No. 549,840

Claims priority, application Germany, Mar. 18, 1994, 9404601 U

Int. Cl.[6] F02M *37/08*

U.S. Cl. 417—423.7 **6 Claims**



1. Unit for feeding fuel from a supply tank to an internal combustion engine having an electric motor (**18**) with a rotor (**26**) which has an armature (**40**) and a plan commutator (**32**) which are at least partially enclosed by a casing (**50**, **62**) made of plastic, the plan commutator (**32**) having a plurality of segments (**52**) which are separated from one another by slots (**56**) extending along the longitudinal axis (**28**) of the rotor (**26**) and which are connected with the armature (**40**), the casing (**50**) extending in the direction of the longitudinal axis (**28**) of the rotor (**26**) only so far as not to cover the slots (**56**), characterized in that connection wires (**60**) for connecting with the armature (**40**) are arranged at the outer surfaces (**54**) of the segments (**52**), in that the casing (**50**) has portions (**62**) which extend in the direction of the longitudinal axis (**28**) of the rotor (**26**) over the base of the slots (**56**) until the connection wires (**60**) are covered by the portions (**62**), and in that the portions (**62**) are so constructed that they have no undercuts away from a longitudinal center plane (**70**) containing the longitudinal axis (**28**) of the rotor (**26**) in directions normal to the longitudinal center plane (**70**).

5,607,294

DEVICE FOR AUTOMATICALLY CONTROLLING THE OPERATION OF A BURNER IN GENERAL

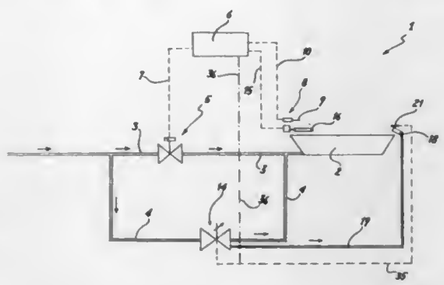
Turrin Gianpiero, Padua, and Sgarbossa Carlo, Mogliano Veneto, both of Italy, assignors to Sit la Precisa S.r.l., Padua, Italy

Filed Dec. 14, 1995, Ser. No. 572,072

Claims priority, application Italy, Aug. 3, 1995, PD95A0156

Int. Cl.[6] F23Q *9/08*

U.S. Cl. 431—46 **8 Claims**



1. A device for automatically controlling the operation of a burner, characterized in that it comprises:

an electric control unit for controlling the ignition and the flame of the burner,

first normally-closed valve means disposed in a first fuel-supply line of the burner and openable by the control unit,

means, controlled by the control unit for automatically igniting the flame of the burner,

first flame-detection means associated with the burner and connected to the control unit,

second manually-operable regulation and safety valve means disposed in a second fuel-supply line of the burner and operatively associated with the control unit,

a pilot burner for the burner, supplied by means of the second valve means,

second flame-detection means associated with the pilot burner and sending a predetermined signal to the second valve means in the presence of a flame of the pilot burner, the second valve means being openable manually and being kept open by the predetermined signal when the control unit is de-activated, and being closable by the control unit against the action of the predetermined signal when the control unit is activated.

5,607,295

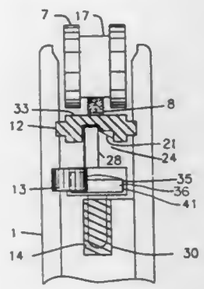
SAFETY LOCK CIGARETTE LIGHTER

Decha Khemarangsan, Samutsakorn THX, assignor to Thai Merry Co., Ltd., Samutsakorn, Thailand

Filed Sep. 6, 1995, Ser. No. 524,328

Int. Cl.[6] F23D *11/36*

U.S. Cl. 431—153 **13 Claims**



1. A flame producing lighter which comprises:

a housing comprising a reservoir containing a combustible medium under pressure;

valve means comprising an operating member, having a slot in a lower surface thereof, the operating member being arranged for actuation between a normally closed position which prevents exit of the combustible medium from the reservoir, and an open position which permits exit of the combustible medium from the reservoir through the valve means, the valve means being biased in the normally closed position;

means for producing a spark at a location proximate to a combustible medium exit opening of the valve means to cause ignition of the combustible medium;

an axially moveable and rotatable lock means, rotatable about an axis of rotation to a first position to inhibit movement of the operating member and to a second position to permit movement of the operating member, the lock means having a first projection, which engages the slot in the operating member, the first projection being arranged on an upper surface of the lock means at a point between the axis of rotation and an edge and a second projection arranged on a surface opposite to the upper surface on the axis of rotation, the lock means having an operating means for aid in rotation of the lock means from the first position to the second position;

a lock portion for engaging the lock means when the lock means is in the second position;

a spring means for applying an axially upward bias and a rotational bias to the lock means whereby the axially upward bias causes the lock means to engage the lock portion when the lock means is in the second position, and the rotational bias biases the lock means in the first position when the lock means is not engaged with the lock portion.

5,607,296

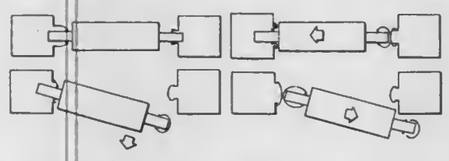
METHOD FOR REPAIRING AN INTERCHANGEABLE SINTERING FURNACE

Donald C. Wadekamper, Pleasanton, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed May 4, 1995, Ser. No. 434,680

Int. Cl.[6] F27D *1/16*

U.S. Cl. 432—3 **5 Claims**



1. A method of repairing a furnace of mixed oxide fuel pellets comprising the steps of:

locating a refractory section of a sintering furnace having a sintering channel therethrough between first and second glove boxes with first and second extensions of the channel at opposite ends of the refractory section extending within the respective glove boxes, thereby isolating the sintering channel through the furnace and the extensions from the surrounding environment;

disposing a first flexible sealing material between the first glove box and a first end of the refractory section and about the first channel extension;

disposing a second flexible sealing material between the second glove box and a second end of the refractory section and about the second channel extension;

displacing the refractory section away from said first glove box to withdraw said first extension from said first glove box while maintaining said channel and extensions thereof isolated from the surrounding environment;

closing said first flexible sealing material onto itself beyond an end of the withdrawn first extension;

sealing the closed material;

severing the sealed material to disconnect the refractory section from the first glove box while maintaining the sintering channel and first glove box isolated from the surrounding environment;

displacing the refractory section away from said second glove box to withdraw said second extension from said second glove box while maintaining said channel and extensions isolated from the surrounding environment;

closing said second flexible material onto itself beyond an end of the withdrawn second extension;

sealing the second closed material;

severing the second sealed material to disconnect the refractory section from the second glove box while maintaining the sintering channel and second glove box isolated from the surrounding environment; and

removing the refractory section from between the glove boxes.

5,607,297

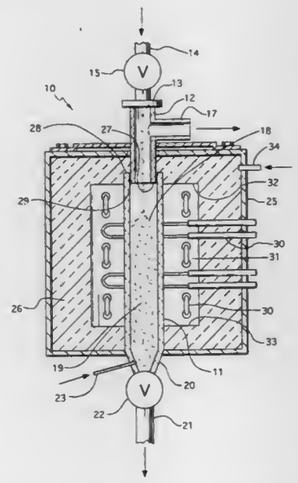
MOVING BED PROCESS FOR CARBOTHERMALLY SYNTHESIZING NONOXIDE CERAMIC POWDERS

John P. Henley; Gene A. Cochran; David A. Dunn; Glenn A. Eisman, and Alan W. Weimer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 1,990, Jan. 8, 1993, Pat. No. 5,370,854, which is a continuation-in-part of Ser. No. 673,624, Mar. 22, 1991, abandoned. This application Aug. 24, 1994, Ser. No. 296,051

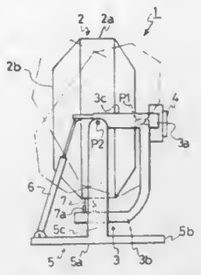
Int. Cl.[6] F27D *1/08*

U.S. Cl. 432—99 **5 Claims**



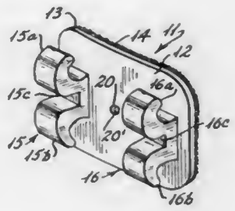
1. An improved vertical, gravity flow, moving bed carbothermal reactor having a first end, a second end and, disposed between and operatively connected to said first and second ends, a heatable elongated reaction zone, the improvement comprising adding a means for removing volatile materials from the reaction zone, said removing means being a hollow tube extending into the heatable reaction zone, and being spaced apart from internal reactor surfaces that define the heatable reaction zone, the hollow tube having a first end and a second end, the first end extending into the reactor to a point that is a) below a level within the reactor that is at a temperature where condensation of volatile materials can occur, but b) above a level within the reactor where solid reactants would be drawn into the tube, the second end of the hollow tube being in contact with the first end of the reactor.

5,607,298
CONVEYABLE HEATING APPARATUS
Shigehiro Tanaka, Kyoto, Japan, assignor to Tanaka Giken Co., Ltd., Kyoto, Japan
Filed Apr. 6, 1995, Ser. No. 418,117
Int. Cl.[6] F27B *7/14*
U.S. Cl. 432—118 **2 Claims**



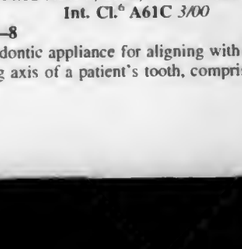
1. A conveyable heating apparatus comprising:
a combustion chamber having an open top,
a holding frame comprising a rear frame disposed on a side thereof opposite said open top, in such a manner as to traverse near the center of the back surface of the combustion chamber and a pair of lateral frame members formed integrally with the rear frame and extending respectively toward both lateral sides of said combustion chamber,
said at least one of said lateral frame members having a middle portion and a lever extending upward from said middle portion of said at least one of said lateral frame members,
a shaft extending from the bottom of the combustion chamber for revolving the combustion chamber, the shaft being adapted to be rotated by a driving device,
a stand pivotally connected to said middle portion of said lever, and
a fluid pressure cylinder disposed between a distal end portion of said lever and a base portion of said stand.

5,607,299
ORTHODONTIC BRACKETS
James A. Nicholson, 120 S. 28th Ave., Hattiesburg, Miss. 39401
Continuation of Ser. No. 172,236, Dec. 23, 1993, abandoned. This application May 5, 1995, Ser. No. 435,272
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—3 **11 Claims**



1. An orthodontic bracket can be moved into a desired position on the front surface of a tooth using a bracket positioning means having a tip, said bracket comprising, a base including a front face and a rear surface, a contained recess formed with a surrounding wall in said front face, said contained recess being of a size and shape to cooperatively receive the tip of the bracket positioning means therein such that the tip is engageable with said surrounding wall, whereby the tip of the bracket positioning means can be received within said contained recess for moving said bracket vertically into the desired position on the front surface of the tooth, a pair of spaced tie wings extending from said front face of said base on either side of said contained recess, said tie wings defining at least one archwire slot, a groove formed in said front face and extending between said tie wings, said groove having opposing side walls which are spaced to cooperatively receive the tip of the positioning means therebetween so that the tip can be received with said groove for moving said bracket vertically into the desired position on the front surface of a tooth.

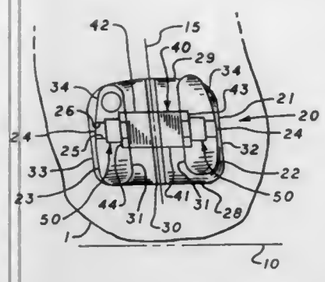
5,607,300
REMOVABLE RESILIENT ORTHODONTIC RETAINER
Harry W. Tepper, 535 Ocean Ave. #2B, Santa Monica, Calif. 90402
Filed Nov. 14, 1995, Ser. No. 557,603
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—6 **19 Claims**



1. An improved removable resilient orthodontic retainer for upper and lower dental arches comprising:
an upper labial arch filament registrable about labial surfaces of upper anterior teeth to define a limit position, the upper labial arch filament being of a thermoplastic material,
a pair of upper clasps removably engagable to upper midregion teeth on opposite sides and secured to the upper labial arch filament at each end thereof,
upper lingual resilient thermoplastic bridge means joined to the upper clasps having a combined U-shaped posterior bridge adapted to extend from lingual surfaces of patient's mucosal tissue and teeth up to and including second molars, when present, and an integral posterior palatal bridge adapted to span a patient's palatal arch region, the bridge means defining an open area adapted to circumvent a patient's palatal rugae region, the upper retainer portion adapted to maintain the patient's tooth location and attitude by combined rigid clasps and resilient thermoplastic memory characteristics,
a lower labial arch filament registrable about lower labial anterior teeth surfaces to define a limit position, the lower labial arch filament being of a thermoplastic material,
a pair of lower clasps removably engagable to lower midregion teeth on opposite sides and secured to the lower labial arch filament at each end thereof, and
a lower lingual resilient thermoplastic bridge joined to the lower clasps defining a horseshoe shaped posterior bridge adapted to extend from lingual surfaces of patient's mucosal tissue and teeth up to and including second molars, when present, maintaining patient's tooth location and attitude by combined rigid clasps and resilient thermoplastic memory characteristics.

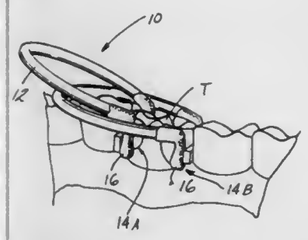
5,607,301
ORTHODONTIC BRACKET AND METHOD OF MOUNTING
Patrick Roman, Escondido, Calif., assignor to Lancer Orthodontics, San Marcos, Calif.
Filed Nov. 1, 1994, Ser. No. 332,897
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—8 **31 Claims**

1. An orthodontic appliance for aligning with the occlusal plane and tooth long axis of a patient's tooth, comprising:



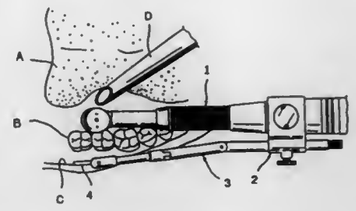
an orthodontic bracket having a mesial tie wing and a distal tie wing attached to a base pad;
an archwire slot disposed in said mesial tie wing and said distal tie wing such that said archwire slot is parallel to the occlusal plane of the patient's tooth when said orthodontic bracket is mounted on the tooth; and
an archwire slot recess positioned in and passing partially through each of said mesial tie wing and said distal tie wing without passing through the outer edge of either tie wing, said archwire slot recess having at least an occlusal edge parallel to said archwire slot, wherein said archwire slot and said occlusal edge of said archwire slot recess facilitate alignment with the occlusal plane of the patient's tooth when said orthodontic bracket is mounted on the tooth.

5,607,302
MATRIX RETAINER APPARATUS FOR DENTAL RESTORATIONS
John E. Garrison, 18999 Sioux Dr.; Edgar L. Garrison, 17865 Oakwood Dr., and Robert Anderson, 113 Parkhurst Dr., all of Spring Lake, Mich. 49456
Continuation-in-part of Ser. No. 323,874, Oct. 17, 1994, abandoned. This application Aug. 24, 1995, Ser. No. 518,801
Int. Cl.[6] A61C *5/04;3/00*
U.S. Cl. 433—39 **23 Claims**



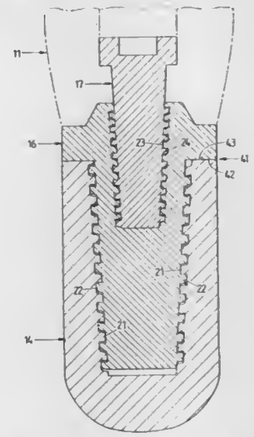
1. A matrix retainer for dental restoration comprising:
a resilient, substantially planar main body having a pair of spaced apart ends;
a pair of tines, each time having a proximal end, a distal end, and a body intermediate the proximal and distal ends, the proximal ends being provided on the ends of the main body and the body and distal ends depending from the proximal ends so that the body and distal ends do not lie along the plane defined by the main body; and
retention members provided on the distal ends of the tines, the retention members extending toward one another so that the spacing between the two retention members is less than the spacing between the proximal ends and bodies of the two tines, wherein the resilient body and retention members are adapted to frictionally and mechanically retain and support a tooth reconstruction element in a fixed position relative to a tooth.

5,607,303
ACCESSORY APPARATUS OF DENTISTRY DRILLS FOR PUTTING ORAL CAVITY ORGANS OUT OF WAY
Shoukou Nakamura, 61-2 Tsurukouji-machi,, Maebashi-sbi, Gunma, Japan
Filed Aug. 3, 1994, Ser. No. 285,646
Int. Cl.[6] A61C *5/00*
U.S. Cl. 433—140 **6 Claims**



5. Displacement equipment for use with a dentistry drilling machine, said displacement equipment comprising an installation member having an installation hole into which a base of a dentistry drilling machine is inserted, an arm installed in the installation member, said arm having a tip and a displacement plate installed on the tip of the arm, a supporting arm member installed in the installation member, a medium arm member, a horizontal rotating mechanism for installing said medium arm member on the supporting arm member, a tip arm member, a vertical rotating mechanism for installing said tip arm member on the medium arm member and stoppers installed in said installation hole to prevent the base of dentistry drilling machine from falling out in an axial direction of the installation hole.

5,607,304
IMPLANT CONNECTOR
A. Gregory Bailey, Alabaster, and A. C. Folsom, Jr., Pelham, both of Ala., assignors to Crystal Medical Technology, a division of Folsom Metal Products, Inc., Birmingham, Ala.
Filed Apr. 17, 1995, Ser. No. 422,797
Int. Cl.[6] A01C *8/00*
U.S. Cl. 433—174 **6 Claims**



1. An implant assembly for use in a medical implant, including an implant provided with an abutment for attachment to a prosthesis by a threaded fastener, said abutment and said implant having a cooperative male and female thread and a thrust connection between connected parts, wherein said male and female threads have cooperative oppositely disposed major and minor diameter

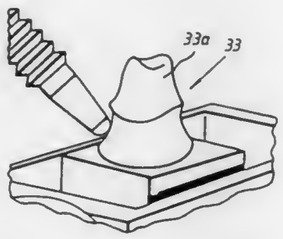
portions forming their respective root and crests, and wherein the improvement comprises: a major diameter portion of one of said male and female threads sized such that it creates interference with the cooperative oppositely disposed minor diameter portion of said other thread when the connection is made up.

5,607,305

PROCESS AND DEVICE FOR PRODUCTION OF THREE-DIMENSIONAL DENTAL BODIES

Matts Andersson, Hammarströms Täppa 2, S-443 39 Lerum, and Anders Törnquist, Molndalsvägen 7, S-142 63 Göteborg, both of Sweden

Filed Jul. 7, 1994, Ser. No. 271,444
Claims priority, application Sweden, Jul. 12, 1993, 9302400
Int. Cl.[6] G01B *11/24*
U.S. Cl. 433—223 **14 Claims**



1. A method for scanning, in connection with the production of a three-dimensional dental body, an outer contour of a rotating model with a scanning device which operates at a scanning angle relative to the rotational axis of the model, said method comprising the steps of:

mounting the model in or on a rotatable holder;

supporting the model in the holder such that the contour to be scanned on the model above a preparation line is exposed to the angled scanning device;

applying the scanning device to contact a surface situated on the model below the preparation line;

activating the holder for rotation and the scanning device for contour scanning, and

activating during said contour scanning at least one of the scanning device and the holder for movement in the vertical direction of the model.

5,607,306

METHOD AND APPARATUS FOR TRAINING

Robert L. Bothwell, Fort Worth, Tex., assignor to Lockheed Fort Worth Company, Fort Worth, Tex.

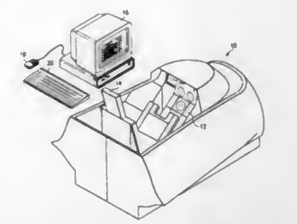
Filed Oct. 20, 1994, Ser. No. 326,709
Int. Cl.[6] G09B *9/02;19/16*
U.S. Cl. 434—29 **17 Claims**

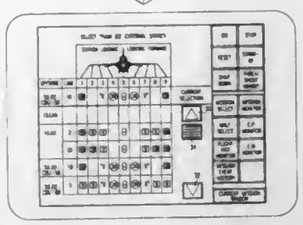
1. A vehicle training system for training a trainee to operate a vehicle, comprising:

a trainee interface operable to interface the vehicle training system with a trainee;

a processor coupled to the trainee interface and operable to execute a training program to control the vehicle training system to simulate vehicle operation based on input by the trainee; and

a display coupled to the processor, the display operable to display a graphical representation of vehicle weapons loads with different locations on the graphical representation corresponding to different weapons loads of the vehicle the trainee is training to operate, such that the vehicle weapons loads are displayed on the display in a format similar to that contained in a written weapons load technical order for the vehicle,





where the weapons loads technical order has been used in training of the trainee,

wherein the processor controls the vehicle training system to simulate vehicle operation according to weapons loads corresponding to the locations on the display selected by the trainee.

7. A training system, comprising:

a trainee interface operable to interface the training system with a trainee;

a processor coupled to the trainee interface and operable to execute a training program to control the training system and further operable to receive input from the trainee and manipulate the input from the trainee without further trainee interface such that the processor controls the training system to correspond to the operating conditions associated with a selected location based on the input from the trainee to simulate system operation based on the operating conditions input by the trainee; and

a display coupled the processor, the display operable to display a representation of operating conditions based upon the input by the trainee, in a form substantially corresponding to a representation in a technical order for the system, with different locations on the representation of operating conditions corresponding to different operating conditions; and

wherein the displayed representation of operating conditions comprises weapons load conditions displayed in a format similar to that contained in the technical order on weapons loads for the system.

13. A method of training, comprising:

interfacing a training system with a trainee;

displaying a graphical representation of weapons loads, with different locations on the graphical representation corresponding to different weapons loads, in a format similar to that contained in a written weapons load technical order for the system the trainee is training to operate;

inputting data corresponding to a selected location on the graphical representation; and

controlling the training system to correspond to the weapons load conditions associated with the selected location based on the input data to simulate system operation based on the selected weapons load conditions.

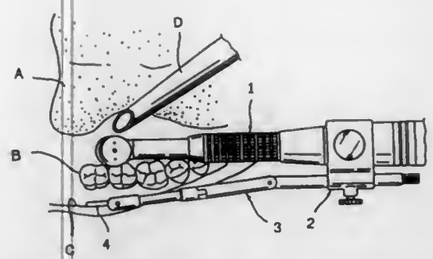
5,607,307

INSTRUCTIONAL APPARATUS FOR SIMULATING THE OPERATION OF AN AIRCRAFT

Thomas E. Shefchunas, 112 Edwin Clr., Franklin, Pa. 16323

Filed Jun. 27, 1995, Ser. No. 495,354
Int. Cl.[6] G09B *9/16;9/20*
U.S. Cl. 434—30 **9 Claims**

1. An instructional model, comprising:



an indicator member having a means thereon that represents the instantaneous flight path of an aircraft, said indicator member further having attack angle means thereon for representing a range of attack angles at which said aircraft can fly relative to said instantaneous flight path, said indicator member having center of pressure means for representing the center of pressure acting on said aircraft when flying at said attack angles; and

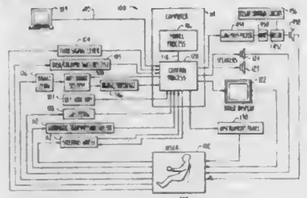
a second member representing said aircraft, said second member being pivotally attached to said indicator member such that said second member can be selectively pivoted relative to said indicator member to an attack angle within said range of said attack angles such that said center of pressure means identifies a point on said second member which represents a corresponding point on said aircraft at which the center of pressure forces are applied thereto when flying at said selected attack angle.

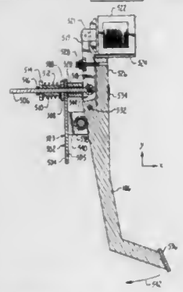
5,607,308

VEHICLE SIMULATOR WITH REALISTIC OPERATING FEEDBACK

Norman S. Copperman, Palo Alto, and Wade O. Winblad, Hayward, both of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Division of Ser. No. 18,950, Feb. 17, 1993, Pat. No. 5,368,484, which is a continuation-in-part of Ser. No. 888,375, May 22, 1992, Pat. No. 5,366,376. This application Nov. 4, 1994, Ser. No. 334,534
Int. Cl.[6] G09B *9/04;19/16*
U.S. Cl. 434—62 **22 Claims**





1. A system for simulating the physical sensation of a brake pedal during operation of an antilock braking system for a vehicle simulator, comprising:

means for detecting when the brake pedal of a vehicle simulator is depressed;

means, responsive to the detecting means, for determining the activation of a simulating action of an antilock braking system; and

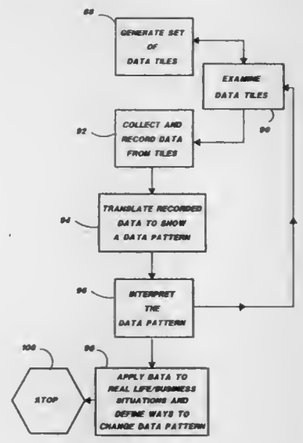
means, responsive to the determining means, for providing feedback indicative of an antilock braking system to the brake pedal, wherein said means for providing feedback induces motion of the brake pedal for simulating the physical movement of an actual brake pedal during antilock braking, so as to communicate through said brake pedal to a user in contact therewith a sensation representative of the sensation the user would experience during operation of an actual antilock braking system in an actual vehicle.

5,607,309

INSTRUCTIONAL METHOD AND APPARATUS FOR TEACHING DATA COLLECTION AND ANALYSIS

Lynda M. Finn, Madison, Wis., assignor to Joiner Associates, Inc., Madison, Wis.

Filed Apr. 18, 1994, Ser. No. 229,235
Int. Cl.[6] G09B *25/00*
U.S. Cl. 434—107 **27 Claims**



1. An instructional apparatus for teaching data collection and data analysis comprising:

a. at least one set of planar tile members each comprising a defined shape and having a first upper planar surface and a second lower planar surface, wherein at least one of said planar tile members further comprises at least one indicia etched in at least one of said first and second surfaces of said planar tile member, the indicia representing data relating to characteristics of a problem; and

b. means for collecting data related to said indicia from said at least one set of planar tile members; and

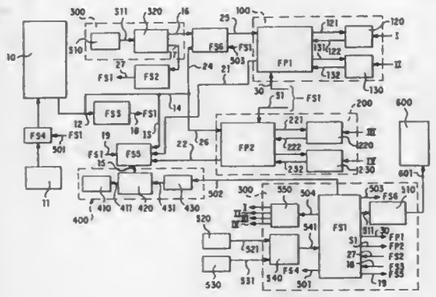
c. means for analyzing the collected data, whereby the data may be collected and analyzed to facilitate the formation of solutions to the problem.

5,607,310

PORTABLE DEVICE INTENDED FOR THE LEARNING OF A LANGUAGE

Sylvain Cholley, 1 rue du Belvédère, 92400 Ville d'Avray, France

Filed May 2, 1994, Ser. No. 236,045
Claims priority, application France, May 6, 1993, 93 05425
Int. Cl.[6] G09B *19/06*
U.S. Cl. 434—157 **15 Claims**



1. A portable device for learning of a language by a user based on types of linguistic expressions recorded on a medium, wherein the linguistic expressions are organized on the medium in sequences comprising a reference linguistic expression in the language to be learned and at least one other linguistic expression of a different type, these linguistic expressions being preceded by identifying markers, wherein the portable device comprises:

a central unit, programmable by the user to execute a defined program comprising an iteration;

means for intermittently reading the medium, controlled by the central unit at commencement of execution of the program in order to read one of the sequences recorded on the medium;

a memory divided into specific zones;

means for storing, during reading of the medium, at least one linguistic expression of a given type in one of the specific zones of the memory designated by the central unit following identification of an identifying marker preceding the linguistic expression of a given type;

recording means for storing, during execution of a record instruction of the program, in a specific zone of the memory a signal supplied by a microphone and corresponding to a linguistic expression spoken by the user;

means for retrieving and feeding to monitoring means during execution of a monitoring instruction of the program, the linguistic expression of a given type, stored in one of the specific zones of the memory selected by the central unit;

control means allowing the user to exit from a current iteration and to initiate a new execution of the program for a next sequence;

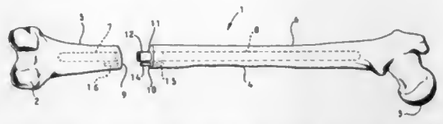
means whereby the user may program the central unit to enable the unit to define for each sequence the type of linguistic expressions to which the user wishes to listen and instructions contained in the iteration.

5,607,311

ORTHOPAEDIC HUMAN SKELETAL DEMONSTRATION AIDS

Oliver Browne-Wilkinson, 1A Highlands Avenue, Acton, London. W3 6ES, England

Filed Oct. 20, 1995, Ser. No. 546,267
Claims priority, application United Kingdom, Oct. 24, 1994, 9421362
Int. Cl.[6] G09B *23/38*
U.S. Cl. 434—274 **8 Claims**



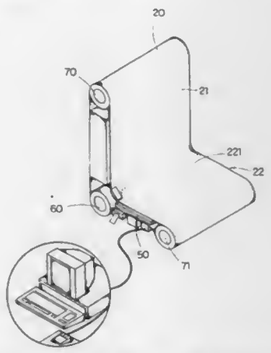
1. An orthopaedic human skeletal demonstration aid for demonstrating surgical orthopaedic techniques, the aid comprising a facsimile human skeletal bone having two joint portions at opposite ends thereof and an elongate hollow shaft interconnecting the joint portions and having a canal extending therealong, wherein the facsimile human skeletal bone comprises two separable component parts which correspond to parts which are integral with one another in the human skeletal bone mimicked, each of the component parts consisting of a respective one of the joint portions and a respective portion of the shaft, said shaft portion of one of the component parts being provided with a projection and said shaft portion of the other component part being provided with a recess for receiving said projection, whereby the component parts are detachably connectible together by the projection on said one component part engaging within the receiving recess in said other component part in such a manner as to provide intercommunication between the canal portions within the two component parts.

5,607,312

WRITING BOARD WITH AN AUTOMATIC ERASE DEVICE

Jie-Zhang Zhou, 2451 W. Main St. #501, Alhambra, Calif. 91801

Filed Jan. 13, 1995, Ser. No. 372,504
Claims priority, application China, Jan. 19, 1994, 94 201554.1
Int. Cl.[6] B43L *1/00*
U.S. Cl. 434—411 **12 Claims**



1. A writing board with an automatic erase device, comprising

a frame having a supporting board;

a flexible and endless writing sheet;

a driving roller and a supporting roller mounted on said frame in parallel manner, in which said endless writing sheet is trained around said driving roller and said supporting roller to form a front exposed writing surface and a back surface, and that said supporting board is interposed between said front exposed writing surface and said back surface to provide a fixed rigid supporting to said front exposed writing surface of said endless writing sheet for enabling writing thereon, wherein said endless writing sheet is able to be rotated around said driving roller and said supporting roller by turning said driving roller;

an erase device, mounted behind said back surface of said endless writing sheet, comprising a cover board secured on said frame behind said back surface of said endless writing sheet, and at least an elongated eraser which has a length at least equal to a width of said endless writing sheet and is mounted on said cover board horizontally, said eraser extending along said width of said writing sheet and being disposed in touching with said back surface of said endless writing sheet, said erase device further comprising a plurality of springs which are disposed between said cover board and said eraser in order to provide an extensive pressure to enable said eraser to keep engaging with said back surface of said endless writing sheet, whereby a writing content on said front exposed writing surface is erased automatically by said eraser as said endless writing sheet is rotated; and

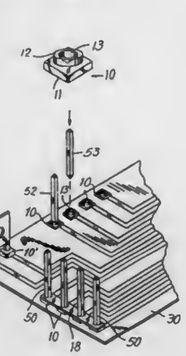
a dust container formed between said cover board and said back surface of said endless writing sheet for collecting dust formed while erasing said endless writing sheet.

5,607,313

SURFACE MOUNTED HOLES FOR PRINTED CIRCUIT BOARDS

Bengt E. Nyman, San Diego, Calif., assignor to Autosplice Systems, Inc., San Diego, Calif.

Filed Feb. 27, 1995, Ser. No. 394,831
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—83 **17 Claims**



1. A substrate having spaced solder pads, one or more electrically-conductive holed components each soldered directly to and making electrical contact with a solder pad, said holed components each comprising a body having a blind or through-hole and having a relatively low aspect ratio of about 0.5 or less for receiving and electrically connecting to a separate male projection of an electrical component.

5,607,314

ELECTRIC ADAPTER

Johnson Chuang, 2F, No. 85, Lane 59, Chung-Chen Rd, Lou-chow Hsiang, Taipei Hsien, Taiwan

Filed Jun. 16, 1995, Ser. No. 491,598
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—83 **5 Claims**

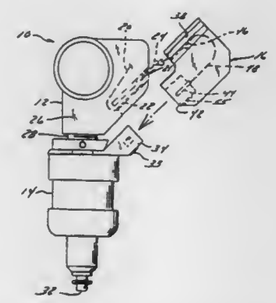
1. An electric adapter comprising; a substantially planar conductive member having electrical contacts on opposite sides; a substantially cylindrical electric connector mounted on each of said opposite sides of said conductive member, each electric connector having a plurality of pin holes located in a substantially circular array, insulators mounted between said conductive member and each of said electric connectors; and a plurality of metal contacts mounted in the pin holes of each electric connector, each metal contact having a bottom end, a lead portion extending radially and outwardly of the electric connector from the bottom end and closely attached to one insulator, a tip connected to an electrical contact on said conductive member, and a bent portion connecting said lead portion and said tip and closely attached to a periphery of one of the insulators.

5,607,315

CONNECTOR FOR INJECTOR RETENTION AND ELECTRICAL CONNECTION TO A FUEL RAIL

Harrie W. Bonnah, II, Rochester, N.Y., and John Smith, Rancho Santa Fe, Calif., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Mar. 2, 1995, Ser. No. 398,196
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—130 **15 Claims**



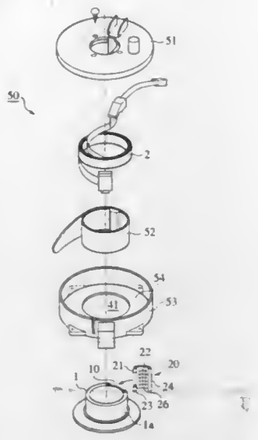
1. A coupling element for electrically and mechanically coupling a fuel rail to a fuel injector, the fuel injector including an injector interface having a first electrical contact and the fuel rail including a fuel rail interface having a second electrical contact, the coupling element comprising:

a coupling interface having a first conductor disposed to contact the second electrical contact of the fuel rail interface when said coupling interface mechanically engages the fuel rail interface;

an injector connector disposed to contact the first electrical contact of the fuel injector when said injector connector mechanically engages the injector interface; and

a second conductor coupled to the first conductor and said injector connector, wherein the coupling element simultaneously mechanically and electrically couples the fuel rail to the fuel injector when said coupling interface mechanically engages the fuel rail interface and said injector connector mechanically engages the injector interface.

5,607,316
STRUCTURE FOR FIXING A FLAT CABLE TO A CYLINDRICAL ROTATOR
Satoshi Ishikawa, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jan. 2, 1996, Ser. No. 581,835
Claims priority, application Japan, Jan. 5, 1995, 7-000344
Int. Cl.[6] H01R *39/02*
U.S. Cl. 439—164 **8 Claims**

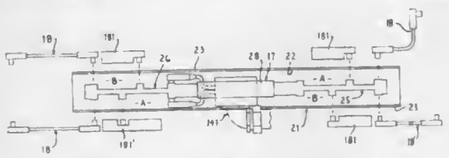


1. Structure for fixing a flat cable to a cylindrical rotator, around which said cable is wound, an inner end portion of said cable being folded at a right angle and extending outward axially of said rotator, without extending radially through a wall of said rotator, said structure comprising:

a space for housing the cable fold, said space being formed axially in the outer periphery of said rotator, said space having side walls, which extend axially of said rotator, and each of which has first engaging means; and

a cover for covering said space, said cover having a substantially cylindrical, outer surface of substantially the same curvature as said outer periphery of the rotator, said cover having second engaging means for engagement with said first engaging means of the side walls, said cover having a recess through which said cable can extend.

5,607,317
ELECTRICAL POWERWAY FOR FURNITURE PANEL
Steven J. King, Park Township, Ottawa County; David E. Emery, Laketon Township, Muskegon County, and Richard D. Benscoter, Holland, all of Mich., assignors to Haworth, Inc., Holland, Mich.
Filed Dec. 23, 1994, Ser. No. 363,750
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—215 **24 Claims**

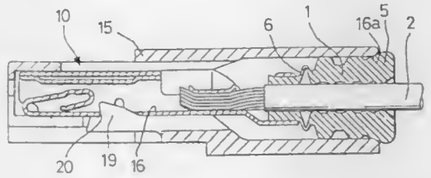


1. In an interior space-dividing wall system including at least first, second and third upright panels respectively having first, second and third upright end edges disposed in close proximity to one another, and first, second and third electrical power blocks mounted respectively on said first, second and third panels, a first electrical connector joined between said first and second power blocks for transmitting electrical energy therebetween, and a second electrical connector joined between said first and third power blocks for transmitting electrical energy therebetween, each said electrical connector having connector portions adjacent opposite ends thereof which create a releasible plug-type engagement with connector ports on the respective power blocks, said first electrical connector having the connector portion at one end thereof engaged with a first said connector portion on said first power block, the connector port at the other end of said first electrical connector being engaged with a said connector port on said second power block, said second electrical connector having a connector portion at one end thereof engaged with a second said connector port on said first power block, and a connector portion on the other end of said second electrical connector being engaged with a said connector port on said third power block, comprising the improvement wherein:

said first power block includes a plurality of electrical conductors therein for defining a plurality of electrical circuits, said first connector port associated with said first power block accessing only a first subset of said plurality of circuits, said second connector port associated with said first power block accessing only a second subset of said plurality of circuits, each of said first and second subsets including a number of circuits which is at least two but less than said plurality, and each said subset including at least one circuit which is distinct from all of the circuits of the other subset;

said first and second electrical connectors each containing thereon a plurality of electrical conductors which define a predetermined number of circuits equal to the respective subset, said first electrical connector connecting only said first subset of said plurality of circuits to said second power block, said second electrical connector connecting only said second subset of said plurality of circuits to said third power block.

5,607,318
WATERPROOF CONNECTOR
Shigekazu Wakata, and Sho Miyazaki, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Oct. 27, 1994, Ser. No. 329,846
Claims priority, application Japan, Nov. 5, 1993, 5-064287 U; Nov. 19, 1993, 5-314571
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—274 **7 Claims**



1. A waterproof connector, comprising:

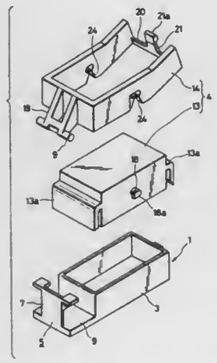
a rubber plug having a fixing portion for sealingly receiving and fixing a wire therein, a slidable portion slidable against said fixing portion in an axial direction of said rubber plug, an end terminal plug provided on said slidable portion and receiving the wire therein, and an expansion/contraction portion allowing for said slidable portion to slide in the axial direction of said rubber plug;

a metal terminal stackingly fixing a core wire of the wire and said fixing portion, said metal terminal having a engaging hole;

a connector housing having a lance engagable with said engaging hole of said metal terminal, and a terminal storage chamber having a rear opening for receiving said metal terminal, the rear opening of said terminal storage chamber being sealed by said end terminal plug;

wherein said end terminal plug is formed in an umbrella shape with an outer peripheral surface that provides a tapered surface gradually reduced in diameter in a forward direction from a diameter greater than the diameter of said rear opening of said connector housing.

5,607,319
METHOD AND APPARATUS FOR ENGAGING HINGED TERMINAL HOUSINGS
Shigekazu Wakata; Takatoshi Katsuma; Hideki Matsunaga, and Eiji Saljo, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Nov. 9, 1994, Ser. No. 338,733
Claims priority, application Japan, Nov. 19, 1993, 5-314570
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—341 **17 Claims**



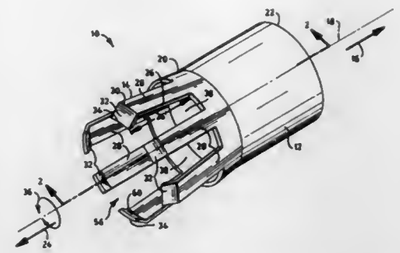
1. An engagement type electrical connector assembly comprising a male connector and a female connector that are engageable with each other, a first of the male and female connectors having a supporting shaft at an end portion of the first connector, a second of the male and female connectors having a recess in which the supporting shaft is engaged so that the first connector is swingable about the supporting shaft to engage the second connector, wherein the first connector comprises an outer frame on which the supporting shaft is mounted, and a housing that is swingably supported on the outer frame by a rotating shaft that is substantially parallel with the supporting shaft, and wherein the rotating shaft is mounted on the housing of the first connector, and the outer frame includes a coupling groove into which the rotating shaft is inserted, and further wherein the coupling groove is widened at an open end thereof.

5,607,320
CABLE CLAMP APPARATUS
John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed Sep. 28, 1995, Ser. No. 535,421
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—394 **15 Claims**

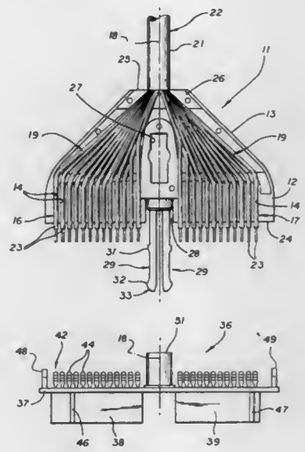
1. A coaxial cable assembly, comprising:

a coaxial cable having an outer insulative jacket, a center conductor and a ground wire braid therebetween, said outer insulative jacket and said ground wire braid terminating at an end of said coaxial cable, and said center conductor including a length which extends beyond said end;

a conductive cable clamp having a bore extending therethrough, said coaxial cable having an end region which extends into said bore, said cable clamp comprising a first component which extends in a direction of a longitudinal axis of said cable clamp from a first end to an opposite second end, and a second component which extends from said first end in a direction of said longitudinal axis, said second component comprising a portion which penetrates said outer insulative jacket and engages said ground wire braid, and a connector shell attached to said end region, said connector shell being formed for longitudinally slidable, torque-free engagement with said penetrating portion, said penetrating portion being in contact with and sandwiched between said ground wire braid and said connector shell.



5,607,321
CABLE PLUG CONNECTOR
Manfred Schock, Dreieich; Juergen Frommer, Fellbach; Manfred Illg, Weinstadt, and Werner Pfitzenreiter, Lorch, all of Germany, assignors to ITT Corporation, New York, N.Y.
PCT No. PCT/EP95/00375, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/24064, PCT Pub. Date Sep. 8, 1995
PCT Filed Feb. 2, 1995, Ser. No. 545,748
Claims priority, application Germany, Mar. 1, 1994, 44 06 643.0
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—460 **5 Claims**



1. A cable connector (**10**) comprising:

a cable (**22**) having a plurality of individual wires (**19**) with stripped ends (**23**);

a wire holder (**11**) having channels (**14**) for receiving said individual wires (**19**) of the cable (**22**), said channels constructed so the wires can be laid to project forwardly beyond a forward end of the holder;

a contact carrier (**36**) and a plurality of contacts (**42**) that each have a connection element (**42**), said contacts being mounted on the carrier, and said carrier being connected to the wire holder (**11**) so that the connection elements (**44**) of the contacts (**42**) and the stripped ends (**23**) of the single wires (**19**) are arranged immediately alongside each other;

a cover plate (**56**) which covers the wire holder (**11**) and the connection region between connection elements (**44**) of the contacts (**42**) and the stripped ends (**23**) of the individual wires (**19**).

5,607,322

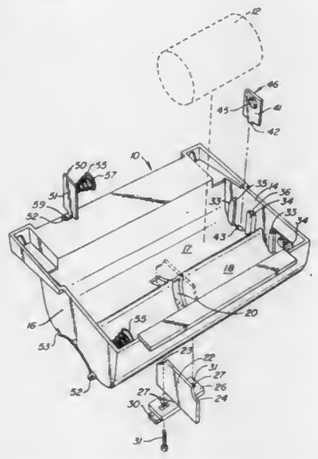
ONE-WAY BATTERY RECEPTACLE

Bernhard Schaub, University Heights, Ohio, assignor to Century Products Company, Macedonia, Ohio

Filed Nov. 13, 1995, Ser. No. 555,937

Int. Cl.[6] H01R *3/00*

U.S. Cl. 439—500 **8 Claims**



1. A battery receptacle for preventing incorrect electrical connection between a pair of dry cell batteries each having a positive contact element and a negative contact element, said receptacle comprising:

a housing having a pair of facing end wall surfaces and a battery receiving region therebetween, each one of said pair of end wall surfaces having an electrical contact mounting means with an electrically non-conductive exposed surface;

a first electrically conductive contact secured to one of said electrical contact mounting means and engagable with only one of the electrical contact elements of one of the pair of batteries;

a second electrically conductive contact secured to the other one of said electrical contact mounting means and engagable with only the other one of the electrical contact elements of the other one of the pair of batteries; and

an electrically non-conductive partition extending laterally of said battery receiving region, and mounted for limited movement in said battery receiving region to accommodate batteries of different length.

5,607,323

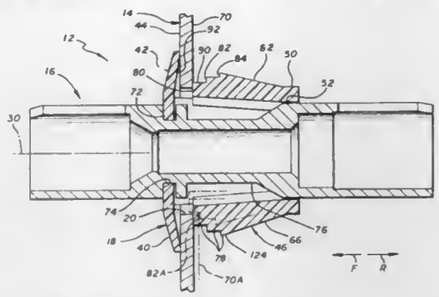
SNAP ADAPTER

Nigel S. Foster, Southampton, and David P. Murray, Winchester, both of England, assignors to ITT Corporation, New York, N.Y.

Filed Dec. 19, 1994, Ser. No. 358,497

Int. Cl.[6] H01R *13/73*

U.S. Cl. 439—557 **5 Claims**



1. An adapter for mounting in a hole of a panel that has front and rear faces, comprising:

a passthrough which has an axis and which is elongated in an axial direction;

a clip which is centered on said axis and mounted on said passthrough, said clip having a front end with a radially outwardly projecting flange which forms a washer to substantially abut said front face of said panel, and said clip having a sleeve extending rearwardly from said washer and forming at least one latch with a front end lying slightly rearward of said washer for abutting said rear face;

said passthrough has an annular groove extending about said axis, and said front end of said clip has a radially inwardly projecting flange which projects into said groove of said passthrough to mount said clip on said passthrough.

5,607,324

ELECTRIC CONNECTION FOR A COMPONENT ARRANGED IN A LIQUID-CARRYING HOUSING

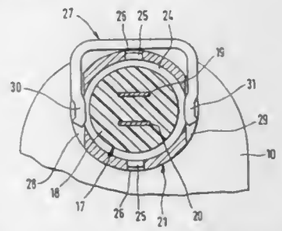
Roland Saur, Stuttgart, and Barbu Frunzetti, Kornwestheim, both of Germany, assignors to Behr Thomson-Dehnstoffregler GmbH & Co., Kornwestheim, Germany

Filed Jun. 7, 1995, Ser. No. 479,438

Claims priority, application Germany, Jun. 22, 1994, 9410113 U

Int. Cl.[6] H02R *13/73*

U.S. Cl. 439—565 **8 Claims**



1. An electric connection comprising an element arranged in a liquid-carrying component and from which at least one electric line leads to an outside contact of a plug housing which is contained in a frame of the component, further comprising:

a bow-shaped spring, the plug housing of a connector plug is held in said frame with said bow-shaped spring, said bow-shaped spring being fitted laterally from the outside onto said frame; and

wherein said frame is provided with recesses into which legs of said bow-shaped spring project and, in each case, reach over one stop respectively of the plug housing.

5,607,325

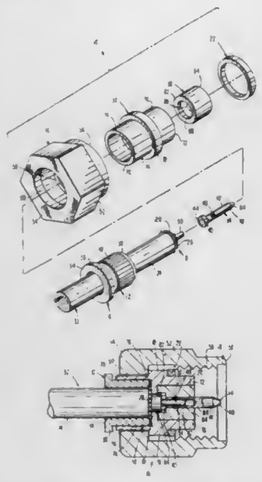
CONNECTOR FOR COAXIAL CABLE

Stephen J. Toma, Basking Ridge, N.J., assignor to Astrolab, Inc., Warren, N.J.

Filed Jun. 15, 1995, Ser. No. 490,623

Int. Cl.[6] H01R *11/08*

U.S. Cl. 439—578 **19 Claims**



1. An electrical connector for terminating flexible coaxial cable, said flexible coaxial cable including an inner conductor, an intermediate dielectric, an outer flexible braided conductor, and an outer insulator, comprising:

a bored interface body having a first end with a first bore of relatively large inner diameter, a second end with a second bore of relatively smaller inner diameter than said first bore, and a third bore located therebetween of relatively smaller inner diameter than said second bore;

a coupling member proximate said interface body; and

an annular locking member having an inner diameter sized to receive said coaxial cable therein, an outer diameter sized to fit tightly within said first bore of said interface body, a first end and a second end, said second end having a plurality of ribs disposed proximate thereto, so that upon insertion of said second end of said locking member within said first bore of said interface body, said ribs frictionally engage the inner wall of said first bore to lock said locking member to said interface body.

5,607,326

SHIELDED ELECTRICAL CONNECTOR

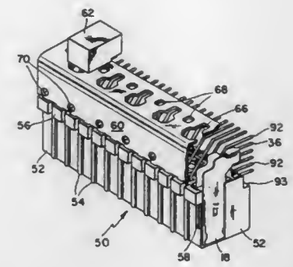
David M. McNamara, Lyndeborough; Daniel B. Provencher, Weare, both of N.H.; Philip T. Stokoe, Attleboro, Mass.; William E. Howard, New Boston, N.H., and Mark W. Gailus, Somerville, Mass., assignors to Teradyne, Inc., Boston, Mass.

Continuation of Ser. No. 459,138, Jun. 2, 1995, abandoned, which is a division of Ser. No. 399,393, Mar. 6, 1995, Pat. No. 5,484,310,. This application Jun. 17, 1996, Ser. No. 663,424

Int. Cl.[6] H01R *13/658*

U.S. Cl. 439—608 **22 Claims**

1. An electrical connector element of the type having a plurality of conductive signal contacts disposed in columns, the signal contacts being elongated with an elongated axis and being adapted to mate with conductive contacts in a mating connector element, the electrical connector comprising at least one conductive shield disposed between adjacent columns of signal contacts, the shield having means for engaging one of said conductive contacts in said mating connector element and at least one elongated opening separate from the means for engaging running parallel to the elongated axis of said conductive signal contacts, wherein the shield comprises a conductive plate substantially in one plane and the means for engaging one of said conductive contacts in said mating connector element comprises a contact portion attached to the plate out of said plane, the contact portion being adapted to mete with a conductive contact in a mating connector element.



5,607,327

DOUBLE LOCKING CONNECTOR

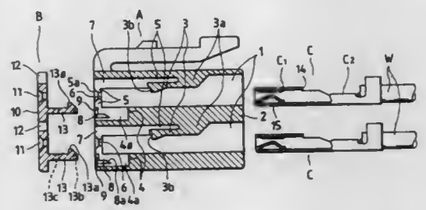
Masanori Tsuji, and Keishi Jinno, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 353,976

Claims priority, application Japan, Dec. 6, 1993, 5-065036 U

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **14 Claims**



1. A double-locking connector, comprising:

a connector housing having terminal accommodating chambers for receiving metal terminals, said housing including stoppers provided in said chambers against which metal terminals abut when said terminals are inserted into said terminal accommodating chambers from a rearward end, and flexible locking pieces extending into said chambers for retaining said metal terminals in said terminal accommodating chambers, respectively; and

a front holder engageable with a forward end of said connector housing by moving said front holder in a longitudinal direction of said connector housing, said front holder having double-locking flexible locking pieces which are engageable with said metal terminals, respectively,

each of said double-locking flexible locking pieces having temporary locking protrusions and final locking protrusions which are engageable with locking portions formed in the forward end of the respective terminal accommodating chambers by moving said front holder in said longitudinal direction from a temporarily locked position to a completely locked position, wherein

when said front holder is in said temporarily locked position, said double-locking flexible locking pieces are located at non-engagement positions where said double-locking flexible locking pieces are not engaged with said metal terminals,

when said front holder is in said completely locked position, said double-locking flexible locking pieces are located at engagement positions where said double-locking flexible locking pieces are engaged with said metal terminals, and

when said front holder thus completely locked is moved in a direction perpendicular to the longitudinal direction, said final locking protrusions are moved to positions where said final locking protrusions are not engaged with said metal terminals.

5,607,328

ONE-PIECE RECEPTACLE TERMINAL

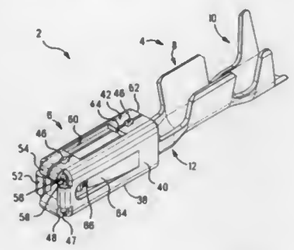
Jean C. Joly, Osny, France, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 29, 1996, Ser. No. 593,218

Claims priority, application France, Feb. 17, 1995, 95 01846

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—852 **16 Claims**



1. A single-piece electrical receptacle terminal for mating with a complementary tab or pin terminal, stamped and formed from sheet metal and comprising a connection section and a contact section comprising an inner contact body having contact arms forming an inner cavity area for receiving the mating terminal therein, the inner contact body having a base wall and side walls extending axially from a connection end proximate the connection section to a mating terminal receiving end, characterized in that the terminal comprises an outer body extending integrally from the mating terminal receiving end of the base wall of the inner contact body via a reversely bent bridging portion and surrounding the inner contact body substantially along its whole length from the mating terminal receiving end to the connection end, the outer body comprising a base wall, side walls and a top wall forming a box-shape.

5,607,329

INTEGRATED MOTOR/MARINE PROPULSOR WITH PERMANENT MAGNET BLADES

Chahee P. Cho, Portsmouth, R.I.; Ralph A. Bedingfield, Nashville, Tenn.; William P. Krol, Jr., and James S. Uhlman, Jr., both of Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1995, Ser. No. 591,187

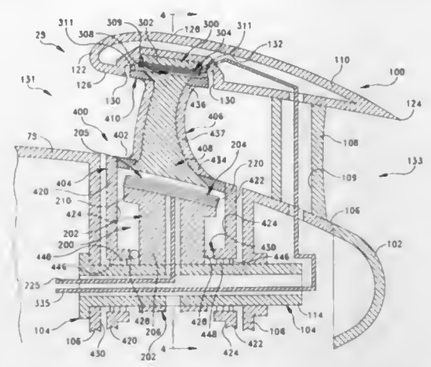
Int. Cl.[6] F04D *25/06*

U.S. Cl. 440—6 **17 Claims**

1. A marine propulsor comprising:

electric motor means for converting electrical energy into hydropropulsive energy wherein said electric motor means comprise:

an annular shroud comprising a water inlet end, a water outlet end, and an inner surface having an annular recess disposed adjacent to said water inlet end;



a first annular stator assembly disposed within said annular recess of said annular shroud, said first stator assembly comprising a first plurality of windings and a first annular stator core;

a second annular stator assembly disposed in spaced-away coaxial confronting relation to said first annular stator assembly, said second annular stator assembly comprising a second plurality of windings and a second annular stator core;

said stators being disposed in magnetomotive relation to a rotor, said rotor having a plurality of rotor blades wherein a portion of at least one of said rotor blades comprises a permanent magnet;

said plurality of rotor blades projecting radially outward from a central annular hub to an annular rotor band, said rotor being disposed in coaxial relation with said shroud between said first annular stator assembly and said second annular stator assembly so that said annular rotor band is sealingly circumscribed by said first annular stator assembly and said central annular hub is disposed in surrounding sealed relation to said second annular stator assembly with said rotor being free to rotate relative to said first and second stator assemblies;

means for connecting said electric motor means to a source of electrical power; and

means for structurally supporting said electric motor means on a marine vehicle.

5,607,330

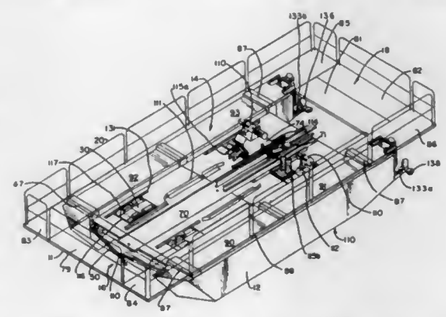
COLLAPSIBLE BOAT POWERED BY A LAND VEHICLE

George J. Hanz, 254 Thrasher St., Bloomingdale, Ill. 60108

Filed Feb. 16, 1995, Ser. No. 389,587

Int. Cl.[6] B63H *21/175*

U.S. Cl. 440—11 **19 Claims**



1. A boat which comprises at least one floatable hull and a deck, said deck carrying a pair of power drive rollers for substantially lateral engagement with a pair of drive wheels carried on a powered axle of a vehicle carried on said boat, said power drive roller being operatively connected to a hydraulic drive system, said hydraulic drive system being operatively connected to a boat propeller, whereby power from the vehicle drive wheels can be transferred to said boat propeller, and a support, other than said power drive roller, for carrying a portion but less than all of the weight of the vehicle which normally passes through said drive wheel, in which said support comprises a cradle for supporting the vehicle powered axle, said cradle being pivotable between an operative position and a flattened position to permit said axle to pass horizontally over it.

5,607,331

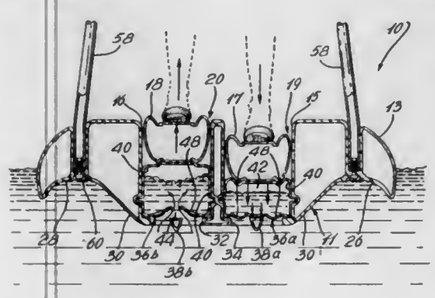
WATER WALKING APPARATUS

David Lekhtman, Quebec, Canada, assignor to Damar Leisure Products Inc., Montreal, Canada

Continuation-in-part of Ser. No. 206,890, Mar. 7, 1994, abandoned. This application Feb. 1, 1995, Ser. No. 382,124

Int. Cl.[6] B63H *16/08*

U.S. Cl. 440—23 **7 Claims**



1. Water walking apparatus for moving a user across water, comprising:

a float member having top and bottom surfaces with a front and rear end and defining a longitudinal axis;

a pair of left and right elongated chambers extending between the top and bottom surfaces and defining top and bottom openings respectively, wherein each chamber has a major axis parallel to the longitudinal axis of the float;

each chamber communicating with an exhaust opening at the bottom of the float that is directed towards the rear end;

valve means at the bottom opening of each left and right chamber extending along the major axis of each chamber for permitting water to enter through said bottom openings;

a flexible bladder membrane extending across each chamber to define a sub-chamber with said valve at the bottom opening within each left and right chamber; and

a foot engageable piston in each left and right chamber supported on said bladder membrane whereby, when pressure is applied by a person's foot to said piston, water is displaced from the sub-chamber through the exhaust opening to create a jet action for moving said float across the water.

5,607,332

CONTROL FOR JET POWERED WATERCRAFT

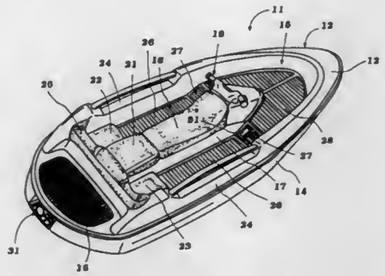
Noboru Kobayashi, and Tomoyoshi Koyanagi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 261,761, Jun. 17, 1994, Pat. No. 5,494,464, which is a continuation of Ser. No. 977,127, Nov. 16, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 363,364

Claims priority, application Japan, May 29, 1991, 3-125817; Dec. 27, 1993, 5-333428

Int. Cl.[6] B63H *11/11*

U.S. Cl. 440—41 **20 Claims**



1. A watercraft propulsion control for a watercraft having a hull defining an operator's area in which an operator is seated and a floor area on which the operator may place at least one of his feet, said watercraft hull mounting a propulsion unit for propelling said hull and having at least one control element, said floor area being formed with a recessed portion disposed below a surrounding surface area, a pedal pivotally supported within said recessed portion, and an operative connection between said pedal and said control element for foot operation of said control element.

5,607,333

COOLING WATER INLET AND METHOD OF FABRICATING A COOLING WATER INLET MEMBER

Rolf Kvamsdal, Trondheim, Norway, assignor to Kvaerner A.S., Oslo, Norway

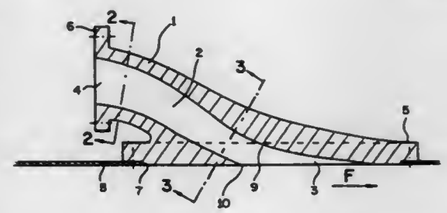
PCT No. PCT/NO94/00040, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/19237, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 18, 1994, Ser. No. 507,340

Claims priority, application Norway, Feb. 25, 1993, 930678

Int. Cl.[6] B63H *21/10*

U.S. Cl. 440—88 **5 Claims**



1. A cooling water intake for use aboard a boat, comprising:

a first opening to sea in a boat hull;

a duct for water from the first opening, wherein interior confines of said duct, in a longitudinal section perpendicular to a boat side/bottom, are substantially and gradually rounded off from the first opening and inward into the duct, such that the cooling water intake is flush with an exterior side of the boat hull;

a second opening at a mouth of the duct, the second opening being adapted for connection to a cooling system of a motor of the boat, said duct being curved inward and toward a stern of the boat from said first opening; and

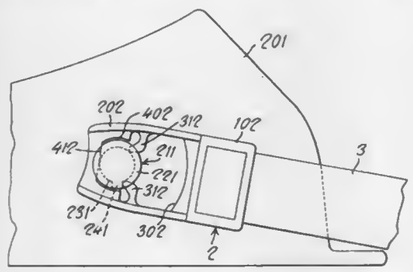
wherein a cross-section of the duct proximate the first opening has a flattened, oval configuration and toward the second opening progresses into a circular cross-section.

5,607,334

SWIM FIN EQUIPED WITH BUCKLE FOR THE FASTENING OF THE HEEL STRAP

Giovanni Garofalo, Rappallo, Italy, assignor to HTM Sport S.p.A., Italy

Filed Jan. 11, 1996, Ser. No. 584,394
Claims priority, application Italy, Jan. 11, 1995, GE95A0003
Int. Cl.[6] A63B *31/08*
U.S. Cl. 441—64 **3 Claims**



1. In a swim fin comprising: means defining a hollow foot receiving portion having a heel opening whereby a user may insert a foot into said hollow foot receiving portion, and an opposed toe portion; a blade extending forwardly of and integral with said toe portion; a flexible strap adapted to bear against the heel of a user when the user has his foot received into said hollow foot receiving portion; said strap being secured at its ends to a buckle provided with an opening; and said foot receiving portion being provided at its sides adjacent said heel opening with a pin projecting outwardly; said openings of said buckles being able to be coupled to said pins; the improvement according to which the said pins are provided with a stem having an enlarged head, and with a tooth radially projecting outwardly from said stem, and in which the the said opening of said buckles are provided with inwardly projecting abutment means cooperating with the said radial tooth so as to prevent the downward rotation past a certain degree of the said buckle with respect to said pin.

5,607,335

FABRICATION OF ELECTRON-EMITTING STRUCTURES USING CHARGED-PARTICLE TRACKS AND REMOVAL OF EMITTER MATERIAL

Christopher J. Spindt, Menlo Park, and John M. Macaulay, Palo Alto, both of Calif., assignors to Silicon Video Corporation, San Jose, Calif.

Filed Jun. 29, 1994, Ser. No. 269,311
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—50 **24 Claims**

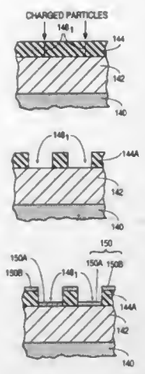
1. A method comprising the steps of:

causing charged particles to pass through a track layer situated over an electrically non-insulating emitter layer to create a multiplicity of charged-particle tracks through the track layer;

etching the track layer along the tracks to form corresponding apertures through the track layer;

using the apertures to define corresponding cap regions over the emitter layer;

removing the track layer; and



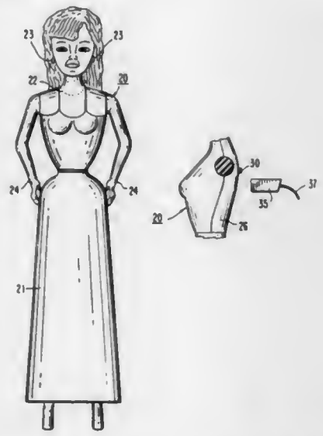
removing (a) selected material of the emitter layer using the cap regions as masks to control the removal of the selected material such that corresponding electron-emissive elements are defined in the remainder of the emitter layer at locations respectively centered on the cap regions and (b) the cap regions.

5,607,336

SUBJECT SPECIFIC, WORD/PHRASE SELECTABLE MESSAGE DELIVERING DOLL OR ACTION FIGURE

Steven Lebensfeld, 805 Pond La., Woodsburgh, N.Y. 11598; Harvey Goldberg, 8 Northbank Court, Thornhill, Ontario, Canada; David K. K. Chu, Block A & B 3/F., CDW Bldg., 382-392 Castle Peak Road, and Ma H. Wai, both of Tsuen Wan, N.T., Hong Kong, assignors to Steven Lebensfeld, Woodsburgh, N.Y.; Harvey Goldberg, Thornhill, Canada, and David K. K. Chu, Tsuen Wan, Hong Kong

Continuation of Ser. No. 986,796, Dec. 8, 1992, abandoned.
This application Jul. 18, 1995, Ser. No. 503,896
Int. Cl.[6] A63H *3/28*
U.S. Cl. 446—297 **1 Claim**



1. A visually and verbally coordinated toy doll or action figure capable of producing user-controlled, subject specific, audible messages, comprising

a body forming the doll or action figure;

audio generating means contained within the body for producing audible messages when activated;

switch means controllably connected to the audio generating means for activation thereof;

a plurality of outfits of wearing apparel each constructed for being worn on the body of the doll or action figure, and configured for suggesting at least one of a specific activity and profession; and

a plurality of message containing components, each comprising a plurality of messages each of which is both specific to and consistent with the specific activity or profession suggested by a selected one of said outfits of wearing apparel, and indicia carried by each of said message containing components which associates a message containing component with an outfit of wearing apparel; and

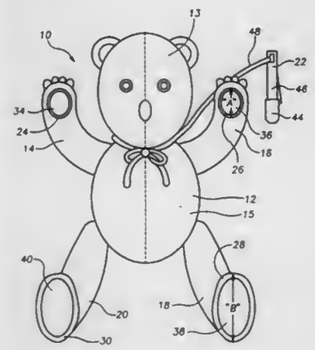
means for removably interconnecting each of said message containing components and said audio generating means so that said audio generating means can produce said audible messages from messages contained in an interconnected message containing component.

5,607,337

INFANT MEMORABILIA SYSTEM

Glenda C. Callahan, 413 Jean St., Houma, La. 70360

Filed Mar. 10, 1995, Ser. No. 402,096
Int. Cl.[6] A63H *3/02*
U.S. Cl. 446—369 **3 Claims**



1. A system for memorializing the birth of an infant comprising:

marking medium means suitable for application to an infant's hands and feet, said marking medium being a quantity of non-toxic ink soaked into an absorbent pad;

a marking medium container enclosing said absorbent pad, said marking medium container being a plastic film tube which has been sealed at both ends;

a cleaning agent container containing a cleaning towelette enclosed therein; and

a soft sculpture having four separate elliptically shaped areas of substrate on an outer surface thereof suitable for receiving thereon markings created by said marking medium means and each having a clear, elliptically shaped, flexible plastic cover for covering said area of substrate, said protective means including a clear cover including a sheet of flexible plastic, a first edge portion of said protective cover being affixed to said area of substrate, a second edge portion of said protective cover not containing said first edge portion having an adhesive deposited thereon that is covered by a removable non-stick tape member.

5,607,338

TOY WITH UNRAVELABLE CORD MATERIAL FOR SIMULATING HAIR OR FUR

Frank Landi, New Rochelle, N.Y., assignor to Toymax Inc., Westbury, N.Y.

Filed Jul. 25, 1995, Ser. No. 506,845
Int. Cl.[6] A63H *3/44*
U.S. Cl. 446—394 **14 Claims**



1. A toy figure having simulated hair comprising as the simulated hair at least one length of an unravelable cord material having a corded state and an unraveled state, said at least one length of unravelable cord material having a longitudinal axis and comprising a plurality of first strands and a second strand which in said corded state of said cord material extends along said at least one length of cord material so as to hold said first strands in said corded state and when pulled along a generally non-rotating direction with respect to said longitudinal axis, said second strand unravels said at least one length of cord material into said unraveled state, said second strand continuing to unravel said cord length as long as said second strand is pulled.

5,607,339

BATH TOY AND A METHOD OF USE OF THE SAME

Colleen A. Kramer, 4204 - 52 Avenue, Beaumont, Alberta, Canada

Filed Jul. 21, 1994, Ser. No. 278,333
Int. Cl.[6] A63H *33/00;23/00;3/08*
U.S. Cl. 446—491 **2 Claims**



1. In combination:

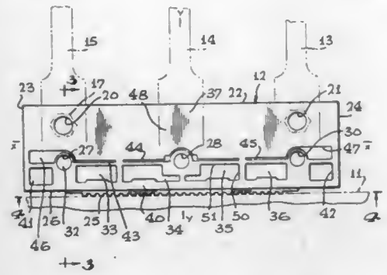
a water retaining enclosure having sidewalls;

water in the water retaining enclosure; and

a bath toy, comprising:

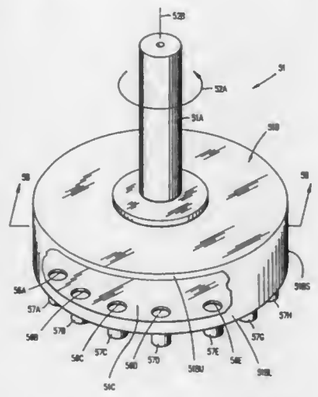
a small distinctive play shape suitable for play by children formed from a flexible sheet of polymer plastic material between 2 mm and 6 mm in thickness and a modulus of elasticity of less than 750 pounds per square inch, the weight of the play shape being less than the supporting effect of a thin layer of water spread evenly over its surface area, such that the bathtoy adheres to the sidewalls of the water retaining enclosure.

5,607,340
ROW TOOL
Stanley A. Lackey, and Gordon Grosslight, both of 5144 Commerce Ave. #A, Moorpark, Calif. 93021
Filed Jun. 6, 1995, Ser. No. 467,074
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **10 Claims**



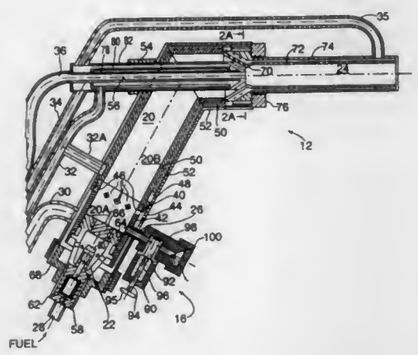
1. An adjustable row tool for minimizing deflection and distortion of a row of magnetic heads intended to made level via a lapping procedure comprising:
an elongated member having opposite ends connecting a top section, a middle section and a lower section to provide a unitary construction;
a plurality of stress relief openings provided in said member middle section and said lower section in spaced-apart relationship across said member between said opposite ends;
a pair of mounting holes in said member in alignment with each other across said member top section between said opposite ends; and
at least three bend openings in said member arranged in a linear spaced-apart alignment and overlapping said middle and said lower sections for directly applying load forces to said member to correct deflection and distortion for bow in said member.

5,607,341
METHOD AND STRUCTURE FOR POLISHING A WAFER DURING MANUFACTURE OF INTEGRATED CIRCUITS
Michael A. Leach, 345 Sheridan #204, Palo Alto, Calif. 94306
Filed Aug. 8, 1994, Ser. No. 287,639
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—41 **16 Claims**



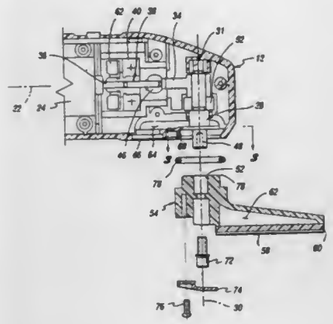
1. An apparatus for removing a portion of a wafer, said apparatus comprising:
a plurality of blocks reciprocally mounted such that an eroding surface of each block of said plurality of blocks is parallel to a surface of said wafer in contact with said plurality of blocks;
means for forcing each of said blocks against said wafer, wherein said means for forcing exerts a first force on a first block of said plurality of blocks and said means for forcing exerts a second force on a second block of said plurality of blocks such that said first force and said second force are independent of each other; and
means for causing relative motion between said plurality of blocks and said wafer, said apparatus removing a portion of said wafer during said relative motion;
wherein the eroding surface of each of said blocks has an area sufficient for said block to be supported by three regions on said wafer, each region having the slowest rate of material removal in said wafer.

5,607,342
HIGH VELOCITY FLAME JET APPARATUS FOR THERMOABRASIVE CUTTING OR CLEANING OR FOR THE APPLICATION OF PROTECTIVE COATINGS
Yuri Evdokimenko, Kiev, Ukraine; Ernest Kadyrov, Madison, Wis.; Valery Kadyrov, Kiev, Ukraine; Gennady Frolov, Kiev, Ukraine, and Vladislav Kisel, Kiev, Ukraine, assignors to Demeton USA, Inc., Garden City Park, N.Y.
Filed Mar. 27, 1995, Ser. No. 410,787
Int. Cl.[6] B24C *5/02*
U.S. Cl. 451—75 **19 Claims**



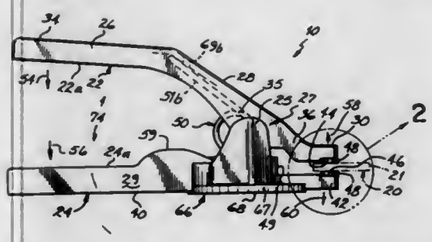
1. A high velocity flame jet apparatus for particle spraying comprising:
a) a combustion chamber having a first upstream part and a second downstream part;
b) a fuel mixing chamber coupled to said first upstream part of said combustion chamber;
c) a fuel igniter coupled to said combustion chamber downstream of said fuel mixing chamber;
d) an output nozzle coupled to said second downstream part of said combustion chamber;
e) a powder sprayer coupled to said output nozzle for delivering particles to said output nozzle for spraying;
f) an air cooling chamber surrounding said first upstream part of said combustion chamber; and
g) a first water cooling chamber surrounding said second downstream part of said combustion chamber, wherein
fuel from said fuel mixing chamber is ignited by said igniter and accelerated in said combustion chamber, and particles from said powder sprayer are mixed with products of combustion from said combustion chamber in said output nozzle.

5,607,343
SANDER VIBRATION ISOLATOR
James A. Keith, Jr., Pickens, and William S. Ballew, Greer, both of S.C., assignors to Ryobi North America, Easley, S.C.
Filed Aug. 22, 1994, Ser. No. 294,107
Int. Cl.[6] B24B *23/00*
U.S. Cl. 451—344 **11 Claims**



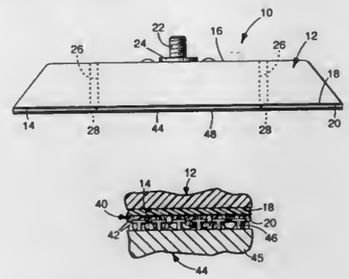
1. A power tool having a pivotal oscillating driveshaft, said power tool comprising:
an elongate body defining an internal cavity aligned along a longitudinal axis;
a driveshaft supported upon the elongate body and pivotally rotatable about a pivot axis, the driveshaft having a free end;
a drive motor oriented within the body internal cavity and operatively engaging the driveshaft to cause the driveshaft to pivotally oscillate within a limited angular range when the drive motor is energized;
a tool head affixed to the driveshaft free end;
an elastic ring extending about the driveshaft and interposed between the tool head and the elongate body, said elastic ring being loaded in compression axially biasing the tool head and the attached driveshaft in a direction away from the elongate body thereby minimizing vibration and noise generated when the drive motor is energized; and
wherein the elastic ring is radially compressed between the elongate body and the tool head in two diametrically opposed local regions which are alternatively loaded as the tool head pivotally oscillates in use.

5,607,344
APPARATUS FOR GRIPPING AND HOLDING GLASS DURING A GLASS GRINDING PROCESS
Nicholas Endres, 2500 Meyerhill Dr., Cincinnati, Ohio 45211
Filed May 10, 1995, Ser. No. 438,450
Int. Cl.[6] B24B *41/06*
U.S. Cl. 451—386 **19 Claims**



1. An apparatus for gripping and holding glass during a glass grinding process on a grinder having a table with a flat surface lying in a generally flat plane and a grinder wheel extending outwardly from said table surface, said apparatus comprising:
a) an elongated top shank having a first glass gripping jaw on one end and a first handle on another end;
b) an elongated bottom shank having a second glass gripping jaw on one end and a second handle on another end;
c) said shanks being pivotally interconnected together on a pivot axis with said first and second jaws being on one side of said pivot and said first and second handles being on another side of said pivot such that when said first and second handles are squeezed toward each other, said first and second jaws move away from each other;
d) a spring operatively connected between said shanks biasing said first and second handles away from each other and said first and second jaws toward each other;
e) said spring biasing said jaws toward each other with sufficient force to hold a piece of glass therebetween during grinding of an edge thereof; and
f) a stop disposed between said jaws and including a substantially vertical stop surface for engaging an edge of a piece of glass gripped between said jaws.

5,607,345
ABRADING APPARATUS
John L. Barry, North St. Paul; Donald R. Bell, White Bear Township, Ramsey County, both of Minn.; Jason A. Chesley, Hudson, Wis.; Harold E. Rude, Roseville, Minn.; William F. Sheffield, Oakdale, Minn.; David F. Slama, Vadnais Heights, Minn., and Alan N. Stephens, Warwickshire, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 13, 1994, Ser. No. 181,195
Int. Cl.[6] B24D *11/02*
U.S. Cl. 451—539 **52 Claims**



1. An abrading apparatus, comprising:
(a) a back-up pad, including a support member including a major surface, and an engaging surface adjoining said major surface, said engaging surface comprising a loop material having projecting loops, wherein each said loops has a breaking strength of at least 60 grams; and
(b) an abrasive article, including a substrate having first and second major surfaces, said first major surface including means for abrading a work surface, and said second major surface including hooking stems for releasably engaged with said projecting loops of said back-up pad.

5,607,346

POLISHING TOOL COMPONENT

Stuart M. Wilson, Tangmere, 192 Hurricane Way, Woodley, Berkshire; John S. Sexton, Bobcat, West Street, Odiham, Hampshire, and Derek N. Wright, 5 Eagle Close, Heathlake, Crowthorne, Bershire, all of England

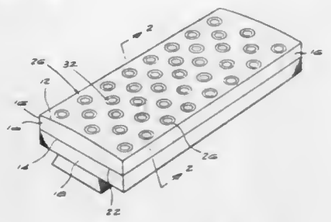
PCT No. PCT/GB94/01034, § 371 Date Jan. 11, 1995, § 102(e) Date Jan. 11, 1995, PCT Pub. No. WO94/26470, PCT Pub. Date Nov. 24, 1994

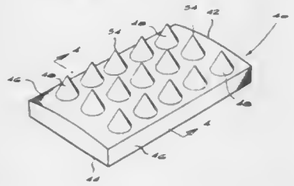
PCT Filed May 13, 1994, Ser. No. 367,301

Claims priority, application United Kingdom, May 14, 1993, 9309972

Int. Cl.[6] B23F *21/03*

U.S. Cl. 451—540 15 Claims





1. A polishing tool component comprising a carrier and a plurality of spaced discrete abrasive elements located in the carrier, each abrasive element being discrete from the carrier and comprising a cylindrical or cone-shaped body, one end of which is located in a surface of the carrier and the other end of which presents an abrasive working surface which projects beyond the surface of the carrier, wherein the abrasive working surfaces of the abrasive elements together define a working surface for the polishing tool component, and each abrasive element comprises a mass of abrasive particles uniformly dispersed in a bonding matrix, wherein the abrasive particles have a size of up to 500 microns, and are present in the working surface in an amount of up to 30 percent by volume.

5,607,347

ICE SKATE BLADE SHARPENER

Steven J. Schoen, Maple Grove; Paul E. Schoen, Clear Lake, and Todd M. Luoma, Coleraine, all of Minn., assignors to AroSport Marketing, Inc., Monticello, Minn.

Continuation of Ser. No. 445,298, May 19, 1995, abandoned. This application Apr. 5, 1996, Ser. No. 628,892

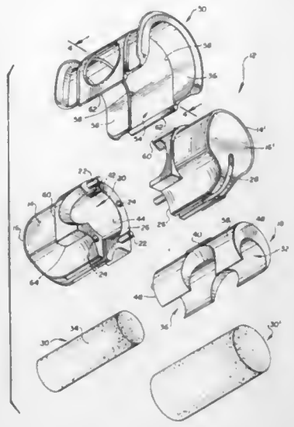
Int. Cl.[6] B24B *9/04*

U.S. Cl. 451—558 18 Claims

1. Apparatus for sharpening a blade of an ice skate, comprising:

a plurality of abrasive element holders, each having an external profile substantially the same as that of the other holders, each holder having a cavity formed therein to receive an abrasive element with an arcuate surface having a radius of curvature different from that of abrasive elements receivable in other holders, and to expose the arcuate surface of the abrasive element on a side of the holder;

a housing having a chamber formed therewithin, said chamber shaped and sized to receive, alternately, each of said plurality of abrasive element holders therein, said housing having an elongated slot communicating with said chamber formed therein and sized to permit a blade of an ice skate to pass therethrough; and



means for orienting an abrasive element holder received in said chamber with the exposed arcuate surface of an abrasive element received in the cavity in the holder addressing said slot.

5,607,348

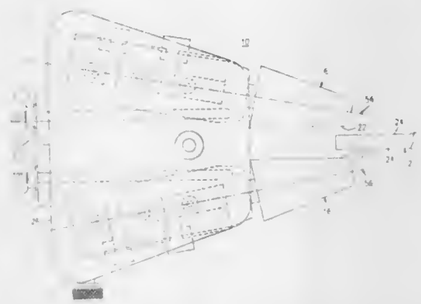
DISC BRAKE GRINDING APPARATUS AND METHOD

Francisco R. Lopez, 1165 E. 13th St., Upland, Calif. 91786

Filed Jun. 7, 1995, Ser. No. 482,947

Int. Cl.[6] B24B *23/00*

U.S. Cl. 451—194 14 Claims



1. An apparatus for grinding a disc brake disc having opposite faces, the apparatus comprising:

(a) a freestanding support;

(b) a pair of rotors, at least one of which is a grinding rotor, the rotors attached to the support to extend in spaced relation at opposite sides of a disc for grinding at least one face of the disc, wherein both rotors are pivotally attached to the support and can be moved toward and away from the disc independent of each other;

(c) adjustment means attached to the support to allow adjustment of the angle of at least one rotor in relation to a face of the disc; and

(d) drive means to rotate at least one of the rotors.

5,607,349

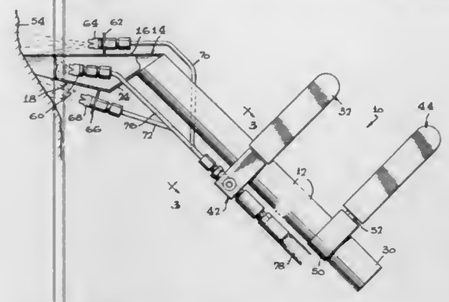
CARCASS CLEANING SYSTEM

Ralph K. Karubian, Los Angeles, Calif., and John A. Leamen, Omaha, Nebr., assignors to Kentmaster Mfg. Co., Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 234,684, Apr. 28, 1994, abandoned, and a continuation-in-part of Ser. No. 378,534, Jan. 25, 1995, Pat. No. 5,503,594. This application Apr. 3, 1995, Ser. No. 416,036

Int. Cl.[6] A22C *17/08*

U.S. Cl. 452—173 20 Claims



1. A carcass cleaning system comprising:

a carcass cleaning wand which can be manually maneuvered to the surface of a carcass to be cleaned of contaminants;

a hood on said wand, said hood being defined by walls, said walls defining a mouth on said hood, means for connecting said hood to a source of vacuum so that vacuum may be drawn in said hood, at least one of said walls being uneven at said mouth so that said hood does not lock onto a surface by vacuum so that vacuum in said hood draws material between said walls of said hood toward said source of vacuum;

a hot water spray nozzle within said hood, said water spray nozzle being positioned and directed so that it delivers a spray of hot water to said mouth of said hood and through said mouth for direction onto such carcass surface; and

a steam nozzle attached to the exterior of said wand, said steam nozzle being positioned and directed so as to direct a stream of steam onto such carcass surface adjacent said mouth of said wand.

5,607,350

GLOBAL COIN PAYOUT METHOD AND CONTROL APPARATUS

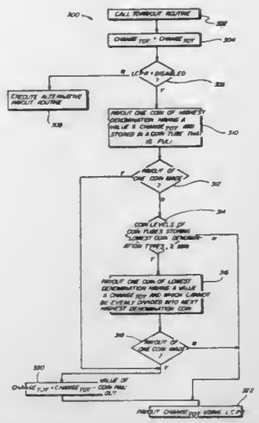
Joseph L. Levasseur, 1605 Timberlake Minor Pkwy., Chesterfield, Mo. 63017, and Ronald A. Hoormann, 4 Misty Hollow Ct., St. Charles, Mo. 63303

Filed Mar. 21, 1995, Ser. No. 408,061

Int. Cl.[6] G07D *1/06*

U.S. Cl. 453—17 45 Claims

37. A device for controlling on a preferred basis the payout of a first coin from a vending system having at least three coin tubes, which coin tubes have an ordered set of coin denominations associated therewith, each of which coin tubes has a particular coin denomination associated therewith, and coin payout means, said device comprising a processor for processing signals from the vending system so as to monitor the status of coins in at least certain of said coin tubes and for controlling vend operations and change payout, said processor operable, for each change payout operation of the vending system, to determine the amount of change desired to be returned to a customer, to identify, if possible for a given change payout operation, at least one coin tube which is both full and stores a coin denomination type having a value less than or equal to the amount of change desired to be returned, wherein a coin may still be paid out from a coin tube which is not full, and, if at least one coin tube is identified, to produce one or more signals which first effect payout of a first coin from a preferred coin tube, said preferred coin tube being defined, primarily, as a coin tube which was identified as being both full and storing a coin denomination type having a value less than or equal to the amount of change desired to be returned.



5,607,351

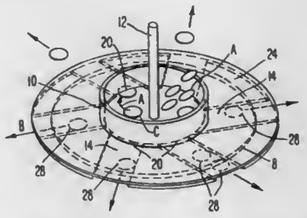
COIN COUNTING MACHINE

Andrew J. Schwartz, Chester Springs, Pa., assignor to Automated Currency Instruments, Inc., Chester Springs, Pa.

Filed Nov. 10, 1994, Ser. No. 337,666

Int. Cl.[6] G07D *9/04*

U.S. Cl. 453—32 23 Claims



1. A means for receiving, counting and calculating the monetary value of a collection of mixed denominations of coins comprising:

a) a rotating disk assembly;

b) at least one electronic sensor operatively attached thereto that rotates with said disk;

c) a microprocessor logic control for receiving information from said sensor, and

d) a collection bin for the temporary storage of said counted coins.

5,607,352

COIN DISPENSING APPARATUS

Kiyoshi Tani, Saitama, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

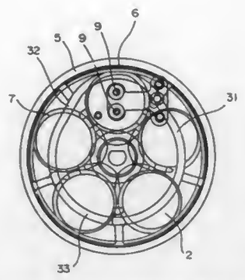
Continuation of Ser. No. 488,956, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 144,350, Nov. 1, 1993, abandoned. This application Apr. 16, 1996, Ser. No. 633,001 Claims priority, application Japan, Nov. 2, 1992, 4-336538

Int. Cl.[6] G07D *1/00*

U.S. Cl. 453—57 13 Claims

1. An apparatus for dispensing coins comprising:

a substrate having a surface;

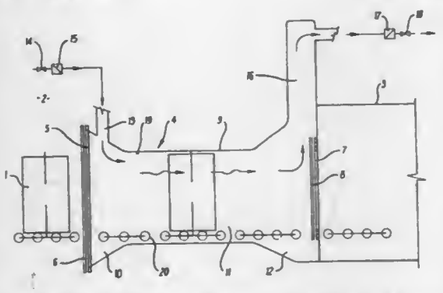


a rotary disc rotatable with respect to said substrate;
an enclosure surrounding said rotary disc;
an outlet slot provided in said enclosure;
guide apertures formed in said rotary disc for guiding said coins on the surface of said substrate;
a pushing member positioned between said substrate and said rotary disc for pushing said coins towards said outlet slot as said rotary disc is rotated; and
a guiding track disposed on at least one of said substrate and rotary disc for guiding said pushing member between at least a first position and a second position, said second position being proximate said outlet slot;
wherein said guiding track comprises a pushing path, a return path operatively connecting to said pushing path and an inner circumferential path operatively connecting to said return path, said pushing path extends from a first pre-determined position on said substrate to said outlet slot, said return path extends from said outlet slot to a pre-determined second position on said substrate, and said inner circumferential path extends from said second position to said first position and is provided concentrically to said rotary disc having the center of said rotary disc as its axis.

5,607,353
AIRLOCK SYSTEM

Adrian C. Hutchings, Cheshire; John Grimes, Greater Manchester, and Kevin Shaw, Cheshire, all of United Kingdom, assignors to British Nuclear Fuels plc, Cheshire, United Kingdom

Filed Aug. 19, 1994, Ser. No. 292,191
Claims priority, application United Kingdom, Aug. 23, 1993, 9317513
Int. Cl.[6] F24F *9/00*
U.S. Cl. 454—187 **10 Claims**

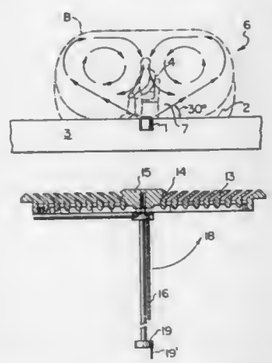


1. An airlock system for the transfer of items from a delivery area into a containment area, the system comprising:
a passage having an inlet opening at an inlet end of said passage from said delivery area and an outlet opening at an outlet end of said passage leading to the containment area,
an outlet door movable between open and closed positions at said outlet opening, wherein the passage has an intermediate region between the inlet and outlet ends, the intermediate region having a cross-sectional area which is less than the cross-sectional areas of the passage at its inlet and outlet ends, and
means for producing an airstream which flows along the passage towards said containment area, said airstream having a velocity in said intermediate region greater than a velocity at one of said inlet and outlet ends.

5,607,354
AIR DISTRIBUTION SYSTEM

Peter Mill, Ottawa, and Richard Tice, Halifax, both of Canada, assignors to Scots Pine Enterprises, Ottawa, Canada

PCT No. PCT/CA92/00485, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO93/09387, PCT Pub. Date May 13, 1993
PCT Filed Nov. 9, 1992, Ser. No. 256,100
Claims priority, application Canada, Nov. 8, 1991, 2055162
Int. Cl.[6] F24F *9/00;13/062*
U.S. Cl. 454—189 **10 Claims**



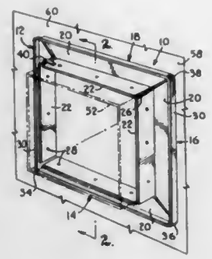
1. An air distribution unit for mounting in the wall or floor of a room having a plenum space behind said wall or floor, comprising a housing having an air inlet for communication with the plenum space and an air outlet; blower means between said air inlet and air outlet for drawing air from the plenum space and exhausting it through the air outlet into the room; and a grille assembly mounted over said air outlet, said grille assembly having circumferentially disposed, aerodynamically profiled air distribution channels extending between the upper and lower surfaces thereof, and said air distribution channels opening out onto the upper surface of the grille assembly at a shallow angle in a radially outward direction so that air flowing out of said channels is directed outwardly at an angle of between about 15° and 45° to the plane of the grille assembly.

5,607,355
MOUNTING BRACKET FOR DAMPER

Robert M. Van Becelaere, Lake Lotawana, Mo., assignor to Tomkins Industries, Inc., Dayton, Ohio

Filed Dec. 5, 1995, Ser. No. 567,307
Int. Cl.[6] F24F *11/053*
U.S. Cl. 454—369 **8 Claims**

1. A mounting bracket for securing a damper in an opening formed in a wall, the damper having a generally rectangular-shaped sleeve extending through the opening, the bracket comprising:
four generally L-shaped segments surrounding the damper sleeve, each segment having a generally planar wall-engaging plate and a generally planar sleeve-engaging plate, said wall-engaging plate and said sleeve-engaging plate forming the

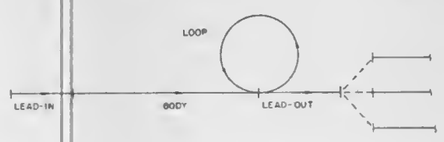


L-shape of the segment, each segment also having a land extending generally perpendicular to said wall-engaging plate, wherein two of said segments are end segments and the other two of said segments are intermediate segments, said land of each end segment connected to said land of its adjacent intermediate segment and said lands of said intermediate segments connected together, and wherein said segments can be removed from and replaced around the sleeve by bending of the land connections between the segments.

5,607,356
INTERACTIVE GAME FILM

David M. Schwartz, San Carlos, Calif., assignor to Atari Corporation, Sunnyvale, Calif.

Filed May 10, 1995, Ser. No. 438,281
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—31 **10 Claims**

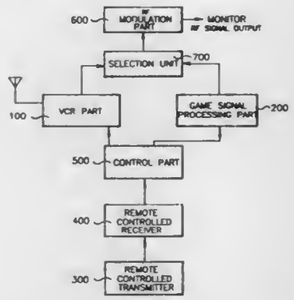


1. An interactive video game film comprising a data storage medium containing:
data arranged in compatible segments representing video film clips, each segment comprising a body containing a non-repeating video sequence beginning with a lead-in, and a loop containing a repeatable video sequence, to provide a player time to make a game decision while the loop repeats, each loop being contiguous with the lead-ins of at least two different ones of said bodies;
a driver, useful with various different games, for transferring data from the storage disk to a video display, and
a game control program, unique to a particular game, for providing an interface between the player and the driver, said game control program comprising means for advising the player of his options at approaching decision points during the game, and means responsive to instructions from the player, for selecting between said at least two different bodies while the respective loop is repeating, thereby controlling the order in which film segments are displayed on the screen during the game.

5,607,357
VIDEO APPARATUS HAVING A GAME FUNCTION

Jong W. Kim; Jeong W. Lee, and Bok H. Baik, all of Kyungki-do, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 17, 1994, Ser. No. 343,894
Claims priority, application Rep. of Korea, Nov. 17, 1993, 24511/1993
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—40 **17 Claims**



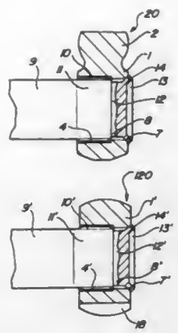
1. A video apparatus having a game function comprising:
a VCR part for recording or reproducing a video signal from an external input terminal or an antenna;
a game signal processing part for executing a game program to process a video signal for a game and then output the processed video signal for the game;
a remote-controlled transmitter for transmitting a remote control signal for VCR mode or game mode from a remote place;
a remote-controlled receiver for receiving the remote control signal from the remote-controlled transmitter;
a control part for controlling the VCR part or the game signal processing part in accordance with the remote control signal from the remote-controlled receiver; and
a RF modulator for modulating a reproduced video signal from the VCR part or a video signal for the game from the game signal processing part.

5,607,358
CONNECTION BETWEEN INNER JOINT PART AND DRIVESHAFT

Eugen Stall, Neunkirchen, and Dieter Sattler, Mühlheim, both of Germany, assignors to GKN Automotive AG, Lohmar, and Löhr & Bromkamp GmbH, Offenbach am Main, both of Germany

Continuation of Ser. No. 157,724, Nov. 24, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 624,846
Claims priority, application Germany, Nov. 28, 1992, 42 40 131.3
Int. Cl.[6] F16D *3/205;3/224*
U.S. Cl. 464—111 **3 Claims**

1. A non-rotating and axially secured connection between an inner joint part of a constant velocity universal joint and a driveshaft comprising:
an inner joint part having an outer circumference and a central bore with inner teeth;
a driveshaft inserted into said bore and including corresponding outer teeth for engaging said inner teeth;
at an end of the inner joint part facing a driveshaft end, said bore with its inner teeth changes into a through-hole with a smaller diameter, and at the end of the driveshaft, before the outer teeth, a cylindrical portion is provided carrying axial securing means for securing said inner joint part to said driveshaft said



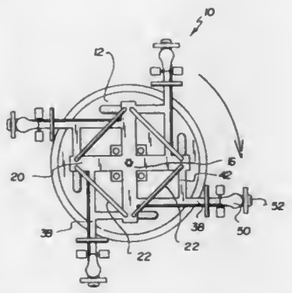
securing means is formed by a beaded collar which rests against a contact face of the inner joint part adjacent the end of the driveshaft.

5,607,359

USER PROPELLED MERRY-GO-ROUND

Charles E. Farmer, Sr., 1317 Jackson St., Owensboro, Ky. 42303

Filed Feb. 2, 1996, Ser. No. 595,650
Int. Cl.[6] A63G *1/12;1/22*
U.S. Cl. 472—21 **7 Claims**



1. A new and improved user propelled merry-go-round comprising, in combination:

a base comprising a planar circular platform with a post centrally coupled to a top surface thereof and extending vertically upwards therefrom, the base adapted to rest on a level surface;

a generally X-shaped support pivotally coupled at a central extent thereof to a top end of the post, the support having four support members extending radially from the central extent thereof whereby the support members define four equally partitioned quadrants;

four struts each coupled between ends of each support member;

four wheel forks each situated on one of the support members, each fork comprising a first leg coupled to a lower surface of the support member at a central extent thereof and extended vertically downward therefrom, a second leg coupled to a lower surface of the support member at an end thereof and also extended vertically downward therefrom, and an axially aligned bore formed in each of the legs;

four bicycle frames each situated in one of the quadrants, each frame comprising an upper beam coupled at an inboard end thereof to a central extent of a first adjacent support member and further extended orthogonally therefrom with a brace coupled between the upper beam and a second adjacent support member, each bicycle frame further including a lower beam coupled at an inboard end thereof to a lower portion of the first leg of the fork and further coupled at an outboard end thereof to the outboard end of the upper beam whereby the lower beam comprises a horizontal inboard portion and a skewed outboard portion;

four seats each positioned on an upper side of one of the upper beams with an associated back rest coupled to the outboard end of the upper beam and extended vertically upwards therefrom;

four handle bars each with a generally T-shaped configuration, each handle bar coupled to one of the upper beams adjacent to the associated seat;

four wheels each with an associated sprocket axially coupled to one of the forks via the bore thereof; and

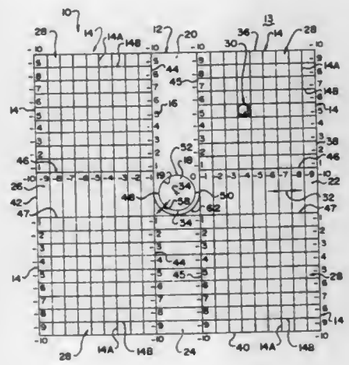
four pedal units axially coupled to the skewed portion of the one of the lower beams whereby the sprocket of the pedal unit and the sprocket of the wheel reside in a similar plane with a chain operatively coupled therebetween for allowing a user to precess about the post upon the rotation of the pedal unit whereby the user faces the center of rotation.

5,607,360

GOLF PUTTING GAME APPARATUS

Jack Shiffman, 213 Copland Crescent, Saskatoon, Saskatchewan, Canada

Filed Aug. 14, 1995, Ser. No. 515,037
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—180 **6 Claims**



1. A golf putting game apparatus for putting on a putting surface with a ball having a predetermined diameter, said apparatus comprising:

a scoring template to be placed on the putting surface, said template having opposite front and rear edges and including:

hole marking means for marking on the putting surface a circular zone having a diameter greater than the predetermined diameter of the ball, said circular zone representing a hole on a golf green;

holed-out zone marking means for marking on the putting surface an elongate holed-out zone extending from the circular zone to the rear edge of the template, the holed-out zone being spaced from opposite sides of the circular zone a distance less than one half the predetermined diameter of the ball;

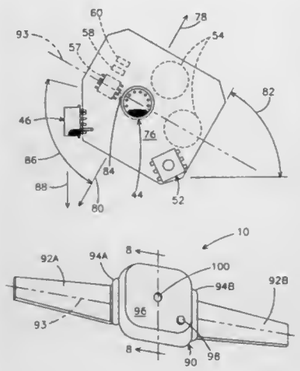
scoring zone marking means for marking on the putting surface a pattern of spaced apart lines, said scoring zone marking means being spaced from and extending outwards from the circular zone to the edges of the template.

5,607,361

ELECTRONIC DEVICE FOR SIGNALING WRIST POSITION DURING A GOLFER'S SWING

William J. Mastandrea, Palm Beach County, Fla., and Donald R. Curtis, Pulaski County, Ky., assignors to Back Swing Management, Inc., Boca Raton, Fla.

Filed Nov. 18, 1994, Ser. No. 341,766
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—207 **16 Claims**



1. A device adapted to be attached to and used on the back of a golfer's hand for use by a golfer to signal a selected angular wrist roll and wrist bend during the swing of a golf club, said device comprising:

a housing having a top surface and a bottom surface and defining in internal cavity;

a strap connected to said housing adapted for fastening said housing on a back of a hand of the golfer proximate a wrist whereby when worn by the golfer said housing moves according to movement of the wrist, said strap having a longitudinal axis adapted for extending around the golfer's hand;

a first disk mercury switch mounted within said cavity at a center of said cavity and in a plane parallel to said bottom surface of said housing, said first disk mercury switch responsive to angular movement of the wrist;

a second disk mercury switch mounted within said cavity in a plane perpendicular to said bottom surface of said housing, said second mercury switch so as to be responsive to angular movement of said housing in a direction perpendicular to movement for actuating said first disk mercury switch whereby wrist roll and wrist bend during the swing provides movement of said first and second disk mercury switches;

each said first and second disk mercury switch having a disk cavity with a circular perimeter, a plurality of equally-spaced internal peripheral electrical contacts extending into said disk cavity, and a mercury pool within said disk cavity movable around said circular perimeter for contacting at least two adjacent of said electrical contacts during a rotation of said disk mercury switches around a center of said disk mercury switches;

an electrical power source within said cavity connectable to said first and second disk mercury switches;

a selector switch within said housing for selectively connecting and disconnecting said electrical power source to at least one of said first and second disk mercury switches, said selector switch operable by the golfer from exterior said housing; and

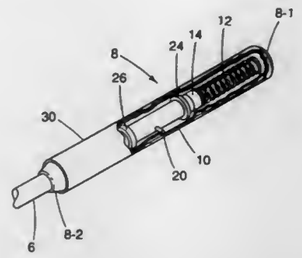
an audible signal producing means within said cavity connected in series with said electrical power source and at least one of said disk mercury switches whereby, when said at least one disk mercury switch is closed, said audible signal producing means is actuated to provide an audible signal to the golfer that the selected wrist orientation is achieved during the swing of the golf club.

5,607,362

SHOCK ABSORBING GOLF CLUB

Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore; Clark B. Foster, Laguna Niguel, and Jenny Y. Jechart, San Juan Capistrano, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.

Filed Oct. 3, 1995, Ser. No. 538,715
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—231 **17 Claims**



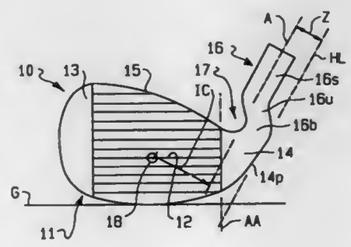
1. A shock absorbing golf club comprising an elongated tubular shaft, a club head located at one end of the shaft and a hollow grip having a longitudinal axis located at the opposite end of the shaft, the shaft sliding inwardly and axially through the grip along the longitudinal axis thereof in response to an impact force that is generated by the club head striking the ground or another hard surface and transmitted to the shaft, and a compression spring positioned to receive thereagainst the impact force transmitted to the shaft, said compression spring undergoing a compression and thereby dissipating said force when the shaft slides inwardly through the grip.

5,607,363

GOLF CLUB HEAD WITH LOCATED HOSEL

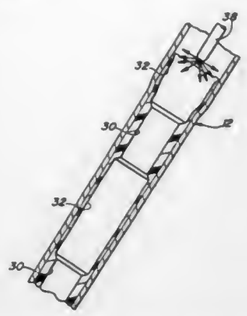
Arthur C. P. Chou, Oceanside, Calif., assignor to Acushnet Company, Fairhaven, Mass.

Filed May 19, 1995, Ser. No. 445,232
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—287 **19 Claims**



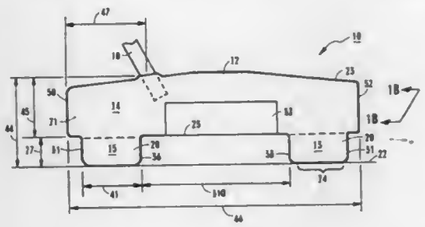
1. An iron golf club set, each club having club head center of gravity and a shaft, the shaft having a shaft axis, comprising: a plurality of clubs with varying lofts and insets, in which the inset of each club is equal to or less than the inset for the next club in the set with less club loft and there are at least three different insets within the set, wherein each club has an IC value, which is the perpendicular distance from the shaft axis to the club head center of gravity, and wherein the IC value of each club is inversely related to the inset of each club.

5,607,364
POLYMER DAMPED TUBULAR SHAFTS
Michael W. Hedrick, and Douglas C. Winfield, both of Memphis, Tenn., assignors to Black & Decker Inc., Newark, Del.
Filed Dec. 21, 1994, Ser. No. 361,141
Int. Cl.[6] A63B *53/12*
U.S. Cl. 473—318 17 Claims



1. A golf club shaft, which is attached along one end to a club head and along a second end accommodates a grip, said shaft being susceptible to multiple frequency modes of vibration upon said club head contacting a golf ball, said golf club shaft comprising:
a hollow elongated sleeve having an inner surface and an outer surface; and
an elastomeric damping layer formed from a coating material applied directly to said inner surface of said sleeve along a selected length thereof;
whereby said damping layer effects a reduction in any extentional vibration wave transmitted along the shaft.

5,607,365
GOLF CLUB PUTTER
Richmond A. Wolf, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Mar. 12, 1996, Ser. No. 615,493
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—328 16 Claims

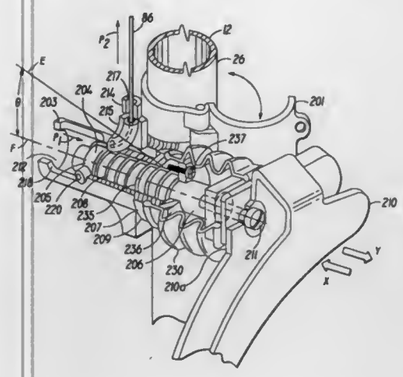


13. A putter-type golf club adapted to strike a gold ball at its equator comprising:
a handle element;
a club head comprising:
a top surface having an attachment element for the handle element,
a ball-striking surface including blade surface adapted to strike the golf ball,
a rear surface disposed opposite said ball-striking surface, said top surface extending between said ball striking surface and said rear surface,
a first side surface extending between said ball-striking surface and said rear surface on a first side of the club head,
a second side surface extending between said ball-striking surface and said rear surface on a second side of the club head,
a bottom surface, formed opposite said top surface, and bordered by said ball-striking surface, said rear surface and said first and second side surfaces, said bottom surface being non flat, and comprising
a first runner extending from the bottom of said ball-striking surface adjacent said first side, having a height and having side surfaces and a bottom surface, said runner having a front portion which faces the golf ball, a rear portion which faces away from the golf ball, and said bottom surface extending between said front portion and said rear portion, said bottom surface including a ground engaging surface which has a shaped area which is shaped such that only a part of an area defined by a perimeter of said front portion, rear portion and side portions will touch the ground when said club is pressed against the ground, said first runner occupying less than half of a surface area of said bottom surface, and having a height which is equal to or less than an equator of the golf ball, and
a second runner extending from the bottom of said ball-striking surface adjacent said second side, having a height and having side surfaces and a bottom surface, and said bottom surface extending between said front portion and said rear portion, said bottom surface including a ground engaging surface which has a shaped area which is shaped such that only a part of an area defined by a perimeter of said front portion, rear portion and side portions will touch the ground when said club is pressed against the ground, said second runner occupying less than half of a surface area of said bottom surface, and having substantially the same height as the height of the first runner, said first and second runners collectively having a surface area which is less than a total area of said bottom surface of said club head, said first and second runners being spaced apart by a distance greater than a diameter of the golf ball, and operating so that when said golf club is moved toward the golf ball with said runners slightly above the ground, said blade surface strikes the golf ball near the equator of the golf ball to impart an upward blow and a spin roll on the golf ball,
wherein said first and second runners each comprise a front portion which faces the golf ball at address, a rear portion which faces away from the golf ball at address, and a surface extending between said front portion and said rear portion, said surface including a ground engaging surface which has a substantially curved area, a tangent portion of the curve abutting against the ground, and a straight segment disposed above said curved area.

5,607,366
TWO-PIECE GOLF BALL
Masatoshi Yokota, Mino; Kuniyasu Horiuchi, Kobe; Hidenori Hiraoka, Kobe, and Mikio Yamada, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Apr. 21, 1995, Ser. No. 426,911
Claims priority, application Japan, Apr. 22, 1994, 6-084410
Int. Cl.[6] A63B *37/06;37/12*
U.S. Cl. 473—372 13 Claims

1. A two-piece golf ball comprising a core and a cover covering said core, wherein said core has a surface hardness of 55 to 75 and a sectional hardness of 65 to 88 at the part other than the surface layer, which are measured by means of a JIS-C type hardness tester, and said cover has a stiffness of 1,000 to 3,000 kg/cm^2; said golf ball exhibiting a contact area between itself and a clubface of 4.3 to 5.0 cm^2 when hit with a driver at a head speed of 40 m/second.

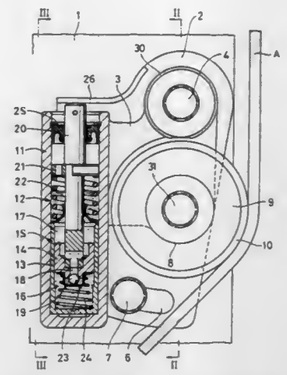
5,607,367
LINEAR DERAILLEUR
Sam Patterson, Chicago, Ill., assignor to SRAM Corporation, Chicago, Ill.
Filed Aug. 21, 1995, Ser. No. 517,231
Int. Cl.[6] F16H *9/06*
U.S. Cl. 474—80 15 Claims



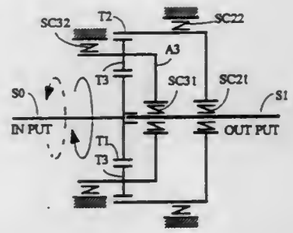
1. A bicycle derailleur for positioning a drive chain in response to displacement of a control cable, comprising:
a mounting member affixed to a bicycle frame;
a linear actuator supported relative to said mounting member to be moveable in a substantially linear direction, said actuator being operatively connected to one end of said control cable, said control cable being positioned to provide an actuation force directly to said linear actuator along a plane substantially parallel to the line of motion of said linear actuator, said linear actuator having a substantially uniform actuation ratio over the range of motion of said actuator; and
a chain guide operatively connected to said linear actuator, said chain guide being adapted to cooperate with said drive chain, whereby when said control cable is displaced said linear actuator and said chain guide move in a substantially linear direction to position said drive chain to a desired shift position.

5,607,368
AUTOTENSIONER
Yoshikazu Hida; Tomoyoshi Izutsu, and Hisashi Hayakawa, all of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan
Filed Jun. 20, 1995, Ser. No. 492,573
Claims priority, application Japan, Jun. 20, 1994, 6-137360
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—110 3 Claims

1. An autotensioner comprising a fixed member, an arm pivotally mounted on said fixed member, a pulley support shaft mounted on said arm, a pulley rotatably mounted on said pulley support shaft, a cylinder having a damper mounted therein and mounted on said arm, said arm being pivotable about an axis and both said pulley support shaft and said cylinder being mounted on said arm at positions offset from said axis, said damper having a rod mounted in said cylinder so as to be pushed out of and into said cylinder, and a stopper fixed to said fixed member, said rod being kept in contact with said stopper.



5,607,369
DIFFERENTIAL MOTION GEAR SYSTEM TO CONTROL THE SPEED RATIO BY MEANS OF THE CHANGE OF INPUT DIRECTION
Tai-Her Yang, No.32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Division of Ser. No. 193,353, Feb. 7, 1994. This application Feb. 14, 1996, Ser. No. 601,443
Int. Cl.[6] F16H *3/54;3/60;35/02*
U.S. Cl. 475—12 4 Claims

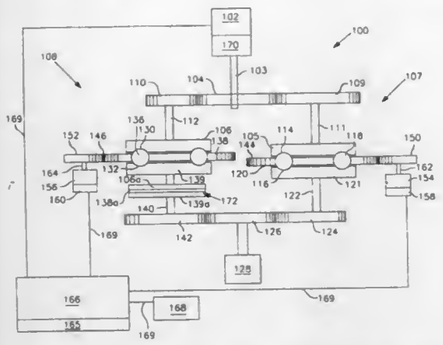


1. A differential motion gear system to control an output speed by changing the input direction comprising:
a) an input shaft rotatable in opposite directions;
b) an output shaft;
c) a stationary case;
d) a sun gear connected to the input shaft so as to rotate in either direction therewith;
e) a differential motion gear set engaged with the sun gear, the differential motion gear set connected to the output shaft by a first one-way drive mechanism and connected to the stationary case by a second one-way drive mechanism; and
f) a ring gear engaged with the differential motion gear set, the ring gear connected to the output shaft by a third one-way drive mechanism and to the stationary case by a fourth one-way drive mechanism whereby, when the input shaft is rotated in a first direction, the fourth one-way drive mechanism prevents rotation of the ring gear such that rotation of the differential motion gear set causes rotation of the output shaft in a first direction at a first speed and, when the input shaft is rotated in a second direction, the second one-way drive mechanism prevents rotation of the differential motion gear set such that the rotation of the ring gear causes rotation of the output shaft in the first direction at a second speed different than the first speed.

5,607,370
VARIABLE OUTPUT SPEED CONVERTER

James E. Maslow, Lexington, and Frank A. Folino, Weston, both of Mass., assignors to Synkinetics, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 670,263, Mar. 14, 1991, Pat. No. 5,312,306, and Ser. No. 76,010, Jun. 11, 1993, abandoned. This applicatioo Jun. 13, 1994, Ser. No. 259,228
Int. Cl.[6] F16H *13/08*
U.S. Cl. 475—196 20 Claims



1. Apparatus for converting rotary input to a driven rotary output, the apparatus comprising

a drive member for coupling to a rotary input and a driven member for driving a driven output,

transmission means for transmitting angular velocity and rotary motive force of said drive member to angular velocity and rotary motive force of said driven member, and

modulation means for variably and controlledly controlling said transmission means for varying said angular velocity and rotary motive force of said driven member,

the drive member and driven member comprising a conjugate pair of devices lying coaxially along a common drive axis which extends in an axial direction, and said modulation means being concentric to a modulation means axis also extending in said axial direction,

wherein at least one of said transmission means and said modulation means comprises a control member rotatable about said common axis, said control member coupled to said drive and driven members via at least one interacting element, at least one of said members having at least one slot for receipt of said at least one interacting element, all of said members interacting via said at least one interacting element.

5,607,371
FLUID PASSAGE ARRANGEMENT FOR CONTINUOUSLY VARIABLE TRANSMISSION

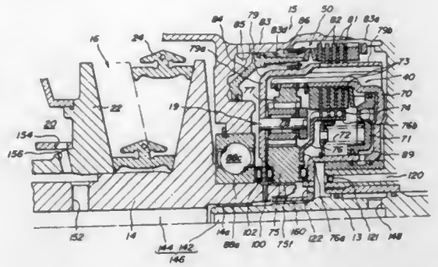
Toshio Yamaguchi, Hadano, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 17, 1995, Ser. No. 406,303
Claims priority, application Japan, Mar. 17, 1994, 6-47461
Int. Cl.[6] F16H *63/00*
U.S. Cl. 475—210 4 Claims

1. A continuously variable transmission for an automotive vehicle comprising:

a V-belt type continuously variable transmission mechanism having a drive pulley, a driven pulley, and an endless V-belt, each width of V-grooves of which pulleys being changeable for continuously varying a rotational speed ratio between the pulleys by supplying pressurized hydraulic fluid to actuate a piston in a hydraulic fluid chamber of at least the drive pulley, and between which drive and driven pulleys the V-belt being passed for transmitting power between said pulleys;

a forward-reverse changeover device having a planetary gearing, a forward clutch, a reverse brake, and an input shaft, which



planetary gearing receiving rotational power through the input shaft and providing the rotational power to the drive pulley of said transmission mechanism through a drive shaft connected to and carrying the drive pulley, and which planetary gearing changing over a rotational direction of the drive shaft between the same and a counter direction relative to a rotational direction of the input shaft by selectively actuating the forward clutch or the reverse brake;

a start assist device transmitting rotational power between a power unit and the input shaft of said forward reverse changeover device, allowing rotation of an output shaft of the power unit despite of stop rotating condition of the input shaft;

a casing containing said transmission mechanism, said start assist device, and said forward-reverse changeover device so that the input shaft of said forward-reverse changeover device and the drive shaft of said drive pulley are aligned along a common longitudinal central axis; and

a fluid passage arrangement having hydraulic fluid passages for the drive pulley, and lubricating fluid passages for rotational components of said continuously variable transmission mechanism and said forward-reverse changeover device, which rotational components including bearings,

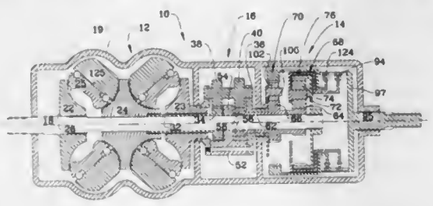
wherein said hydraulic fluid passages for the drive pulley are arranged so that a first axial hole as a fluid passage is formed in the input shaft of the forward-reverse changeover device and connected to a pressurized hydraulic fluid supply, a second axial hole as another fluid passage is formed in the drive shaft of the drive pulley and connected to the first axial hole formed in the input shaft, and another fluid passage is provided to extend between the second axial hole formed in the drive shaft and the hydraulic fluid chamber of the drive pulley, and

wherein said lubricating fluid passages for the rotational components are arranged so that the lubricating fluid passages are provided adjacent to and on radially outer side of the input shaft and extend axially along the input shaft.

5,607,372
CO-AXIAL DRIVE FOR A TOROIDAL DRIVE TYPE TRANSMISSION

Charles B. Lohr, Kettering, Ohio, assignor to The Torax Company, Inc., Dayton, Ohio

Filed Jan. 13, 1995, Ser. No. 372,771
Int. Cl.[6] F16H *37/12*
U.S. Cl. 475—216 20 Claims



1. A transmission having a power input and output which are co-axial along the same axis of rotation, said transmission comprising:

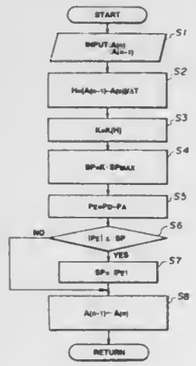
a dual cavity toroidal drive having two rollers and two pairs of traction disks, a pair of outboard traction disks and a pair of inboard traction disks, with at least one reaction path between the disks in at least one of said pairs of traction disks which does not pass through said rollers; and

at least one co-axial drive having a planetary carrier rotating around the axis of rotation and disposed within said at least one reaction path.

5,607,373
CVT RATIO RATE CONTROL AS A FUNCTION OF THROTTLE RELEASE RATE

Tatsuo Ochiai, Fujisawa, and Hirofumi Okahara, Isebara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 28, 1995, Ser. No. 430,724
Claims priority, application Japan, Apr. 28, 1994, 6-092018
Int. Cl.[6] F16H *9/00;59/24;59/36;61/18*
U.S. Cl. 477—46 2 Claims



1. A control system for a vehicle drive-train with an engine operable with a gas pedal and a continuously variable transmission (CVT) comprising:

a controller means for determining a rate of change per unit time of the positions of the gas pedal, and

a ratio control element positionable to various command positions in response to the rate of change per unit time determined by the controller means to establish various CVT ratios,

wherein the controller means decreases the rate of change per unit time of the CVT ratio as the rate of change per unit time of the positions of the gas pedal toward a released position thereof increases.

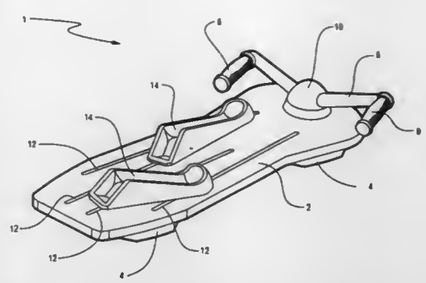
5,607,374
EXERCISE MACHINE

Stanley Y. Hesse, 45-135 Namoku St., Kaheohe, Hi. 96744

Filed Dec. 8, 1995, Ser. No. 569,756
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 8 Claims

1. An improved exercise device that simulates a crawling motion for the user comprising:

a flat, horizontal base having an upper end and a lower surface, said base further forming and containing a pair of non-parallel guide track sets, each said guide track forming an acute forward angle with the axial center of said base;



a plurality of gripping feet mounted on the lower surface of said base for supporting said base upon and above a floor or similar flat surface;

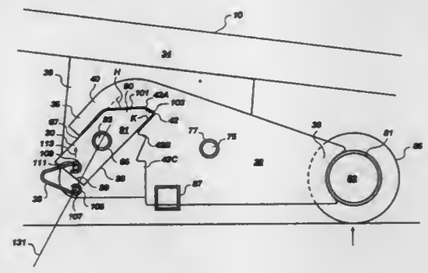
a handlebar mounted at said upper end of said base, said handlebar having a pair of spaced, padded handgrips; and

a pair of fully supported shin and knee pads, each said shin and knee pad designed to distribute the user's weight away from one small pressure point at the knee to the whole length of the user's lower leg, thereby decreasing both the pressure upon and discomfort to the knee, and each said shin and knee pad being slidably contained by a said set of non-parallel guide tracks each said had having a front end aligned with a first track groove and a rear end aligned with a second track groove, whereby a user's legs abduct and adduct during exercise motion.

5,607,375
INCLINATION MECHANISM FOR A TREADMILL

William T. Dalebout, 1770 E. 1730 North, North Logan, Utah 84321, and Greg W. Law, 578 Maple Dr., Smithfield, Utah 84335

Continuation-in-part of Ser. No. 363,194, Dec. 24, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 539,249
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 18 Claims



1. An exercise apparatus in combination with an incline adjustment mechanism, said combination comprising:

an exercise apparatus;

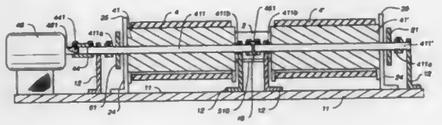
a support frame mechanically associated with said exercise apparatus;

an elongate support, said elongate support being rotatably mounted to said support frame, said elongate support defining at least one notch therein;

a pawl rotatably mounted to said support frame about a first pivot axis, said pawl being associated with said elongate support, said pawl being configured to intercooperate with one or more of said notches of said elongate support to form a detachable union of said pawl with said elongate support to retain said elongate support in a fixed orientation; and

a structure mechanically associated with said pawl to bias said pawl against said support.

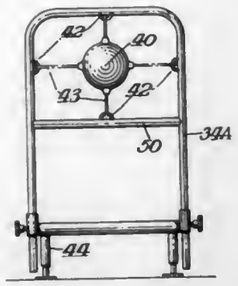
5,607,376
CONVERTIBLE TREADMILL APPARATUS WITH LEFT AND RIGHT FOOT BELTS
Sidney H. Magid, 1100 Gough St., No. 10A, San Francisco, Calif. 94109
Continuation-in-part of Ser. No. 276,996, Jul. 19, 1994, Pat. No. 5,538,489, which is a continuation-in-part of Ser. No. 236,585, May 2, 1994, abandoned, and Ser. No. 169,143, Dec. 17, 1993, Pat. No. 5,411,279. This application Oct. 10, 1995, Ser. No. 541,599
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **9 Claims**



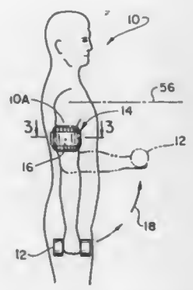
1. Treadmill apparatus including:
a mounting base attachable to a functional supporting frame, said mounting base having first and second mounting base ends;
first and second rollers transversely mounted coaxially one on each side of said first mounting base end with each said first and second roller fixedly mounted on separate first and second shafts, which said first and second shafts turn in first and second bracket pairs, respectively, one said bracket pair for each said first and second shaft, said first and second bracket pairs being mounted on said first mounting base end;
third and fourth rollers mounted rotatably on at least one third transverse shaft extending from side to side on said second mounting base end with said third shaft mounted in at least one third pair of brackets at said second mounting base end, all said roller shafts being mounted with their axes parallel to the axes of the others;
endless first and second foot belts, said first foot belt engaging said first and third rollers, said second foot belt engaging said second and fourth rollers;
support means for said foot belts comprising a flat-topped substrate base with arcuate ends, said substrate base disposed longitudinally between said rollers between said mounting base ends, said substrate base being secured to said mounting base by means of side substrate base brackets, said substrate base with said arcuate ends having a slippery top surface, and means associated with said foot belts to provide slippery contact with said slippery substrate-base top surface,
whereby movements of said first and second foot belts will coincide with the turning of said first and third rollers and said second and fourth rollers, respectively.

5,607,377
REBOUNDER AND PUNCHING BAG-BOXING FITNESS DEVICE
William T. Wilkinson, P.O. Box 572, Crownsville, Md. 21032-0572
Filed May 9, 1994, Ser. No. 239,599
Int. Cl.[6] A63B *71/02*
U.S. Cl. 482—83 **12 Claims**

1. An exercise device comprising a rebounding device and a punching bag wherein said punching bag is interfaced with said rebounding device wherein said rebounding device comprises:
a frame or a base,
a rebounding surface attached to said frame or said base,
a sleeve that is attached to said frame or said base,
a reflex arm or an additional frame is attached to said sleeve and at least two cords having one of each and attached to said reflex arm or said additional frame and the opposite end of each cord being attached to said punching bag at least two cords having one end each attached to said reflex arm or additional frame and the opposite ends of each of said cords being attached to said punching bag at spaced locations and wherein said punching bag extends above the rebounding device such that when a user jumps on said rebounding device, the user can hit said punching bag with the user's hands.

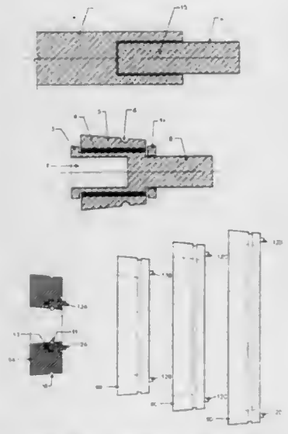


5,607,378
METHOD OF EXERCISING A SELFCTED MUSCLE
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753
Continuation of Ser. No. 343,088, Nov. 21, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,277
Int. Cl.[6] A63B *21/02;21/065*
U.S. Cl. 482—105 **1 Claim**



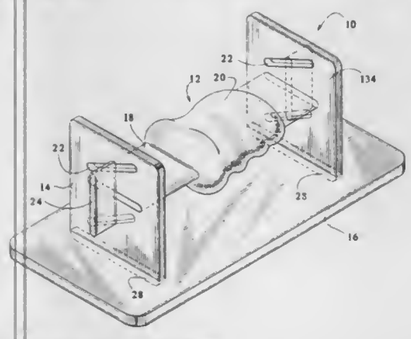
1. An exercising method using a limb-attached exercising device consisting of an elongated rectangular-shaped body having adjacent one end, plural exercising weights in inserted relation within cooperating gussets and having in lateral extending relation therefrom for a remainder of the length of said body, a panel of a selected length of stretchable neoprene construction material, said exercising method comprising the steps of selecting as a limb for exercising an upper arm or leg on the basis of a contemplated curl exercise movement thereof causing said limb to expand in circular girth incident to said curl exercise movement, positioning said selected length of said neoprene panel with said plural exercising weights in outwardly facing relation therefrom in partial encircling relation about an upper portion of said selected limb, stretching said panel of stretchable neoprene from said selected length to a lengthwise increased length preparatory to the attachment of said exercising device in encircling relation about said upper portion of said limb, winding in overlapped relation said panel of stretchable neoprene while in said stretched condition to an extent forming at lease two closed loops thereof about said limb, releasing said neoprene panel simultaneously while attaching an end of said band in overlapping relation to said two closed loops to cause a reduction in length to said selected length of said panel, and urging said limb in a curl exercise movement, whereby a contraction of said panel of stretchable neoprene diminishes the diameter size of said closed loops to contribute to applying external pressure resisting said curl exercise movement expansion in circular girth of muscles of said limb encircled by said exercising device.

5,607,379
WEIGHT RING EXERCISE SYSTEM
Michael L. Scott, 100 Caroline St., Rockingham, N.C. 28379
Filed Jul. 24, 1995, Ser. No. 506,074
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—107 **14 Claims**



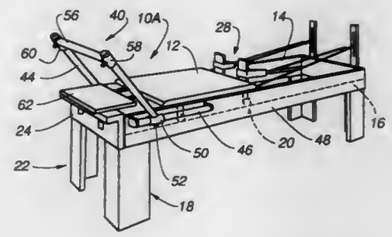
1. An exercise weight ring system comprising:
a collar;
means for attaching the collar to a weightlifting bar;
a plurality of progressively larger weight rings; the larger configured to circumscribe the smaller, the smallest configured to circumscribe the collar; and
means for securing the larger weight ring(s) to the smaller and for securing the smallest weight ring to the collar.

5,607,380
PUSH-UP DEVICE
John E. Duty, 8900 Bay Dr., Surfside, Fla. 33154, assignor to John E. Duty, Surfside, Fla.
Filed Apr. 25, 1995, Ser. No. 428,898
Int. Cl.[6] A63B *23/02;1/00;21/04*
U.S. Cl. 482—141 **18 Claims**



1. A push-up device comprising:
a horizontal support means; and
a grip bar inserted in at least two side plates vertically positioned on the support means, wherein each side plate has at least three grip slots arranged at different angles for insertion of the grip bar at different angles therein.

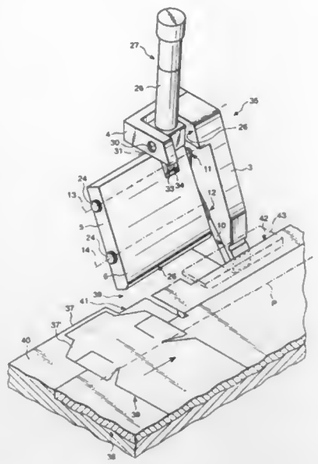
5,607,381
EXERCISE APPARATUS
Ken Endelman, 7500-14th Ave. #23, Sacramento, Calif. 95820-3539
Division of Ser. No. 225,502, Apr. 11, 1994, which is a continuation of Ser. No. 940,495, Sep. 4, 1992, abandoned. This application Jul. 8, 1996, Ser. No. 676,936
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—142 **6 Claims**



1. An exercise apparatus comprising:
a frame having a pair of spaced parallel track members;
a movable platform adapted to ride on said parallel track members for supporting at least a portion of a user's body; and
at least one stretchable resistance member connected between said platform and said frame, said platform being movable along said track members by a user exerting a force, between said platform and said frame;
wherein said frame further comprises a head end portion and a foot end portion, said foot end portion extending from one end of each of said parallel track members, said foot end portion having a pair of upwardly open spaced sockets and a removable, generally U shaped, foot support member in said sockets, said foot support member having a transverse bar portion and a pair of spaced parallel legs extending from said transverse bar portion, each of said legs having a free end adapted to removably fit into one of said sockets, each of said legs having an identical bend therein between said free end and said transverse bar portion separating each leg into spaced parallel straight portions, whereby the horizontal position of said transverse bar portion above said track members is changeable between a first horizontal position and a second horizontal position by reversing the free ends of said legs in said sockets.

5,607,382
FOLDER DEVICE
Silvano Boriani, and Alessandro Minarelli, both of Bologna, Italy, assignors to G.D S.p.A., Bologna, Italy
Filed May 31, 1994, Ser. No. 251,320
Claims priority, application Italy, Jun. 1, 1993, BO93A0255
Int. Cl.[6] B65H *45/18*
U.S. Cl. 493—182 **6 Claims**

1. A device for folding an elongated piece of sheet material through 180°, comprising:
a flipper;
operating means by which a first point on the flipper is displaced along a first rectilinear trajectory on a first path;
reaction means by which the flipper is caused to rotate about a first axis passing through the first point in response to a displacement of the first point along the first trajectory and by which a second point of the flipper is displaced along a



second rectilinear trajectory, the second trajectory being on a second path intersecting the first path at an angle other than zero;

said operating means and reaction means including a first track extending along the first trajectory, first coupling means by which the first point on the flipper is caused to traverse slidably along the first track and to rotate about the first axis, and an actuator by which the first point on the flipper is displaced along the first track.

5,607,383

MODULAR CUSHIONING CONVERSION MACHINE

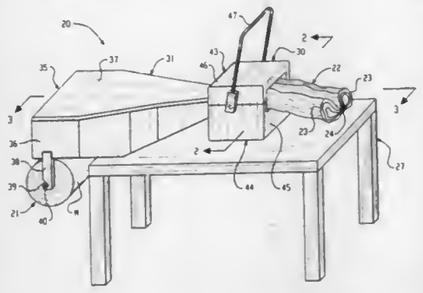
Steven E. Armington, Gates Mills; Richard O. Ratzel, Westlake, and Michael J. Lencoski, Claridon Township, all of Ohio, assignors to Ranpak Corp., Concord Township, Ohio

Continuation-in-part of Ser. No. 326,782, Oct. 20, 1994, which is a continuation-in-part of Ser. No. 279,150, Jul. 22, 1994.

This application Nov. 10, 1994, Ser. No. 337,929

Int. Cl.[6] B31F *5/02; 1/00;* **B31D** *5/02;* **B31B** *7/02*

U.S. Cl. 493—464 **42 Claims**



1. A cushioning conversion machine for converting sheet-like material into a relatively low density cushioning dunnage product, comprising first and second units having separate housings, said first unit including in the housing thereof a shaping member over which the sheet-like stock material is drawn to form the stock material into a three-dimensional shape, and said second unit including in the housing thereof a feed mechanism for drawing the stock material over the shaping member of said first unit, and wherein said housings of said first and second units respectively have an outlet opening and an inlet opening, and said units are relatively positionable with respect to one another to provide a pathway for transfer of the sheet-like material from the outlet opening of said first unit to the inlet opening of said second unit.

5,607,384

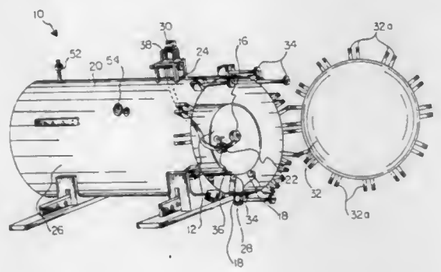
APPARATUS AND PROCESS FOR SAFELY CONTAINING AND DELIVERING HAZARDOUS FLUID SUBSTANCES FROM SUPPLY CYLINDERS

Rudolph Caparros, 3641 Turnberry Clr., Santa Rosa, Calif. 95430

Filed Jul. 12, 1995, Ser. No. 501,606

Int. Cl.[6] B65D *25/00*

U.S. Cl. 588—259 **9 Claims**



1. An apparatus for safely delivering a hazardous fluid substance to a receiving structure, comprising:

a supply cylinder containing said fluid substance and having a supply cylinder release port;

a high pressure containment vessel having a vessel wall, for receiving and safely enclosing said supply cylinder;

a high pressure first tubing means extending from, and in fluid communication with, said supply cylinder release port to a vessel port in said vessel wall;

and a vessel valve in fluid communication with said first tubing means for controlling delivery of said fluid substance from said supply cylinder and from said vessel.

5. A process of delivering a hazardous fluid substance from a supply cylinder having a supply cylinder release valve using an apparatus comprising a supply cylinder containing said fluid substance and having a supply cylinder release port; a high pressure containment vessel having a vessel wall, for receiving and safely enclosing said supply cylinder; a high pressure first tubing means extending from, and in fluid communication with, said supply cylinder release port to a vessel port in said vessel wall; and a vessel valve in fluid communication with said first tubing means for controlling delivery of said fluid substance from said supply cylinder and from said vessel, comprising the steps of:

placing said supply cylinder into said containment vessel;

connecting said supply cylinder release valve to said tubing means extending within said containment vessel;

opening said cylinder release valve and said vessel valve to deliver said fluid substance from said supply cylinder and from said containment vessel.

5,607,385

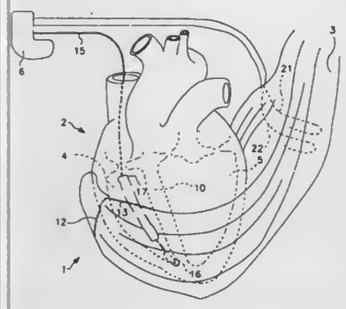
DEVICE AND ALGORITHM FOR A COMBINED CARDIOMYOSTIMULATOR AND A CARDIAC PACER-CARIOVERTER-DEFIBRILLATOR

David Francischelli, Anoka; Kendra K. Gealow, Plymouth, both of Minn.; Pierre A. Grandjean, Warsage, Belgium; John Hammargren, Medina, Minn.; Johann J. Neisz, Coon Rapids, Minn., and David K. Peterson, Moundsview, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 17, 1995, Ser. No. 516,081

Int. Cl.[6] A61N *1/368*

U.S. Cl. 600—17 **8 Claims**



1. An apparatus for stimulating a skeletal muscle grafted about a heart, detecting cardiac events and delivering therapeutic stimulation to the heart comprising:

means for delivering stimulation to a skeletal muscle grafted about a heart;

means for sensing depolarizations of a patient's heart;

means for measuring the intervals separating successive depolarizations of the patient's heart;

means for defining first and second interval ranges;

means for determining the number of the measured intervals falling within the first and second interval ranges;

means for inhibiting the means for delivering stimulation to a skeletal muscle grafted about a heart upon the sensing of a depolarization within the first or second interval range;

first means for detecting the occurrence of a first type of arrhythmia when the number of the measured intervals falling within the first interval range equals a first predetermined value;

second means for detecting the occurrence of a second type of an arrhythmia when the number of the intervals falling within the second interval range equals a second predetermined value;

means for delivering to the patient's heart a first type of arrhythmia therapy in response to the detection of the first arrhythmia by the first detecting means; and

means for delivering to the patient's heart and to the skeletal muscle grafted about the heart a second type of arrhythmia therapy in response to the detection of the second arrhythmia by the second detecting means, the second type of arrhythmia therapy having a cardiac stimulation component and a skeletal muscle component.

5,607,386

MALLEABLE FIBEROPTIC INTUBATING STYLET AND METHOD

Gary H. Flam, 2244 Robinhood, Houston, Tex. 77005

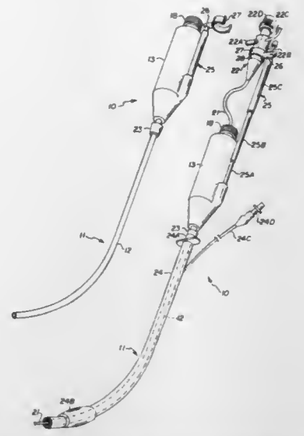
Continuation-in-part of Ser. No. 124,016, Sep. 21, 1993, Pat. No. 5,431,152. This application Mar. 13, 1995, Ser. No. 402,367

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—120 **21 Claims**

1. A fiberoptic intubating stylet instrument for oral fiberoptic endotracheal intubation comprising in combination:

a generally cylindrical handle configured to fit into the hand of an operator and having a forward end, a rearward end, and a central longitudinal bore;



a fiberoptic bundle positioning means at the rearward end of said handle;

a tubular telescoping fiberoptic scope support arm on said handle having releasable mounting means at an outer end for releasably mounting a fiberoptic scope thereon;

an elongate curvilinear hollow tubular stylet having a rearward end secured to said handle, a forward tip end, and a longitudinal channel extending therethrough coextensive with said handle central bore;

a fiberoptic scope releasably mounted on said support arm mounting means and having viewing means connected at a rearward end and an elongate thin flexible fiberoptic bundle which transmits light and visual images extending forwardly therefrom and terminating in a tip end and having a midsection therebetween, said fiberoptic bundle passing slidably through said fiberoptic bundle positioning means, said handle central bore and said stylet longitudinal channel;

endotracheal tube attachment and positioning means movably mounted on said stylet configured to removably engage the rearward end of an endotracheal tube and releasably maintain the endotracheal tube in a surrounding condition on said stylet;

a flexible endotracheal tube having a rearward end removably engaged on said endotracheal tube attachment and positioning means, an interior diameter surrounding said stylet when engaged thereon, and a forward tip end;

said endotracheal tube attachment and positioning means being selectively movable on said stylet for adjustably positioning and maintaining said forward tip end of said endotracheal tube relative to said forward tip end of said stylet; and

said fiberoptic bundle positioning means being engaged with said fiberoptic bundle to allow said fiberoptic bundle to slide relative thereto when sufficient axial force is applied to said fiberoptic bundle for adjustably positioning and maintaining said tip end of said fiberoptic bundle relative to said forward tip ends of said stylet and said endotracheal tube.

5,607,387

ORTHOPEDIC SPLINT

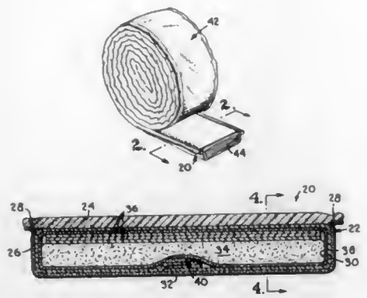
James C. Martin, Baldwin; Randall S. Kilburn, Lawrence, both of Kans.; Robert L. Hamilton, Kansas City, Mo.; Mary J. Schmalz, Lawrence, and Brian E. Palmer, Olathe, both of Kans., assignors to M-Pact Worldwide Management Corporation, Eudora, Kans.

Filed Feb. 15, 1995, Ser. No. 389,220

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—6 **11 Claims**

1. A splint product for forming a hard structure about a body portion comprising a unitary assembly of:



a substrate impregnated with a resin that hardens when exposed to water;

a protective moisture-impervious envelope surrounding said substrate and shielding said substrate from exposure to moisture in the atmosphere;

an outer cushioning wrap surrounding said protective envelope and for engaging the body portion, and wherein, prior to wetting of the splint product, said protective envelope is removed from its shielding position about the substrate so that the substrate remains inside the outer wrap, said outer wrap with said substrate therein being exposed to water and applied to an appropriate body portion about which it hardens.

5,607,388

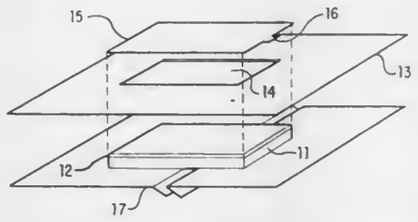
MULTI-PURPOSE WOUND DRESSING

Ralph Ewall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 16, 1994, Ser. No. 261,360

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—58 **22 Claims**



1. A liquid and pathogen impermeable island wound dressing comprising:

(a) a liquid and gas permeable exudate absorbing pad including a wound facing inner surface and an opposing outer surface;

(b) a plurality of liquid and microorganism impermeable, gas and moisture vapor permeable cover sheets disposed adjacent to and covering the opposing outer surface of said pad;

(c) means for adhesively bonding said pad and said plurality of cover sheets to skin surrounding a wound;

(d) said plurality of cover sheets being constructed and arranged to be sequentially removable; and

(e) said plurality of cover sheets providing an oxygen permeability of at least 10,000 cc/m^2/day/atm.

5,607,389

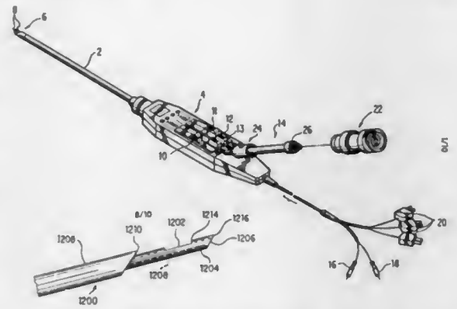
MEDICAL PROBE WITH BIOPSY STYLET

Stuart D. Edwards, Los Altos; Ronald G. Lax, Grassvalley; Hugh R. Sharkey, Redwood City, and Ingemar H. Lundquist, Pebble Beach, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation of Ser. No. 155,975, Nov. 19, 1993, Pat. No. 5,470,308, which is a continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, which is a continuation-in-part of Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805. This application Nov. 27, 1995, Ser. No. 563,787

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **9 Claims**



1. A medical probe apparatus comprising a catheter having a stylet port toward the distal end thereof, a flexible stylet disposed within the catheter and having a sharp distal end for puncturing tissue, means for advancing the stylet through the stylet port and through intervening tissue to target tissue, means near the distal end of the stylet for cutting and collecting a sample of the target tissue, and means at the distal end of the stylet for emitting electromagnetic energy.

5,607,390

DIALYSIS PROBE

Philip N. Patsalos, London, and Mark L. O'Connell, St. Neots, both of England, assignors to Institute of Neurology, London, Great Britain

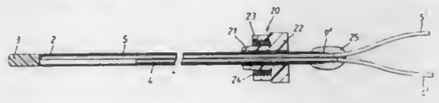
PCT No. PCT/GB93/02526, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/13195, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 10, 1993, Ser. No. 446,866

Claims priority, application United Kingdom, Dec. 15, 1992, 9226147

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—29 **19 Claims**



1. A dialysis probe for insertion into a human or animal body, the probe comprising:

a tubular dialysis membrane closed at a distal end;

an inlet tube for supplying perfusion fluid into a body of the dialysis membrane;

an outlet tube for the exit of perfusion fluid from the body of the dialysis membrane; the inlet and outlet tubes

being provided at a proximal end, of the tubular dialysis membrane and making a sealed connection with an interior of the dialysis membrane;

an anchoring member is provided at the proximal end of the dialysis membrane;

each of the dialysis membrane, the inlet tube and the outlet tube is bonded to the anchoring member; and

the anchoring member includes attachment means for securing it to an outside of the human or animal body.

5,607,391

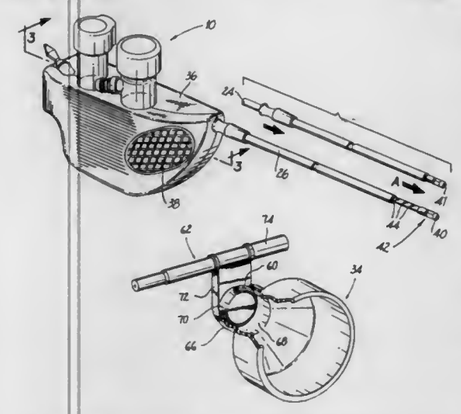
ENDOSCOPIC SURGICAL INSTRUMENT FOR ASPIRATION AND IRRIGATION

John F. Klinger, Danbury; Paul A. Matula, Brookfield; H. Jonathan Tovey, Milford, and Ernie Aranyi, Easton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 781,062, Oct. 18, 1991, abandoned. This application Sep. 14, 1994, Ser. No. 306,277

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—33 **32 Claims**



1. A surgical instrument for communication of a pressure source to a surgical site, comprising:

at least one pressure source connection member;

at least one passageway extending from the connection member;

a cannula extending from the passageway to the surgical site, the cannula having a proximal and a distal end; and

at least one valve mechanism including a valve body disposed at least partially within the at least one passageway, the valve mechanism further including:

an actuator;

a valve stem movable in response to the actuator between a first position in which the at least one passageway is blocked from communication with the surgical site and a second position in which the passageway is opened to allow communication of the pressure source with the surgical site, the valve stem including a valve having an aperture which is positioned in the at least one passageway when the stem is in the second position, and the valve having a membrane adjacent the aperture, the membrane being bounded by a first frustroconical wall and being positioned in the at least one passageway when the stem is in the first position.

5,607,392

FIXED NEEDLE CONNECTOR FOR IV ASSEMBLY AND METHOD OF ASSEMBLING

Rowland W. Kanner, Guntersville, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Jan. 13, 1995, Ser. No. 372,291

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—86 **31 Claims**

1. A needle connector assembly for use in administering intravenous fluids to a patient comprising: a needle hub; a housing; one of said needle hub or said housing having a plurality of equi-spaced splines thereon; the other of said needle hub or said housing having a plurality of equi-spaced slots thereon; said splines interengaging with said slots when said needle hub is inserted into said housing; barb means on said interengaged splines and slots for precluding withdrawal of the needle hub from the housing when the needle hub is inserted into said housing.

5,607,393

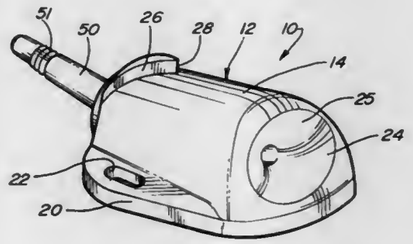
IMPLANTABLE ACCESS DEVICES

William D. Ensminger, and Robert F. Gavin, both of Ann Arbor, Mich., assignors to Michigan TransTech Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 442,722, May 15, 1995, Pat. No. 5,554,117, which is a continuation-in-part of Ser. No. 259,053, Jun. 13, 1994, Pat. No. 5,417,656, which is a continuation of Ser. No. 148,394, Nov. 8, 1993, Pat. No. 5,350,360, which is a division of Ser. No. 940,619, Sep. 4, 1992, Pat. No. 5,281,199, which is a continuation-in-part of Ser. No. 818,626, Jan. 10, 1992, Pat. No. 5,226,879, which is a continuation-in-part of Ser. No. 654,661, Feb. 15, 1991, Pat. No. 5,180,365, which is a continuation-in-part of Ser. No. 539,793, Jun. 18, 1990, Pat. No. 5,053,013, which is a continuation-in-part of Ser. No. 487,541, Mar. 1, 1990, Pat. No. 5,057,084. This application Jun. 6, 1995, Ser. No. 490,605

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—93 **18 Claims**



1. An implantable access device which permits the introduction of an external filament such as a catheter, guide wire or optical fiber into a patient for communication with an internal catheter located within the body of the patient, said device comprising:

a housing having portions defining an inlet opening, an outlet opening, a passageway communicating between said inlet and outlet openings, said passageway including an inlet portion and an outlet portion, said inlet opening being generally funnel shaped and guiding an external filament inserted percutaneously into said inlet portion of said passageway, said outlet portion of said passageway terminating in said outlet opening and said outlet opening being defined in a nipple adapted for having the internal catheter attached thereto;

first sealing means for providing resistance to the flow of fluid through said passageway when said external filament is not present within said device yet allowing the transfer of fluids through said passageway when said filament is present within said passageway; and

second sealing means for engaging and sealing about the exterior perimeter of an external filament when inserted into said device.

5,607,394

DILATATION CATHETER HAVING A FIELD STYLET

Erik Andersen, Jyllinge, and Ib Jorgensen, Ringsted, both of Denmark, assignors to Boston Scientific Corp., Natick, Mass.

Continuation of Ser. No. 133,528, Oct. 7, 1993, abandoned. This application Aug. 25, 1995, Ser. No. 519,626

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—102 **18 Claims**



1. A PTCA dilatation balloon catheter comprising:

a catheter shaft having proximal and distal ends and having a length selected to access a coronary artery of a patient, said catheter shaft being sized and constructed to enter the body of a patient via a puncture, to pass through the arterial system, and to enter the coronary artery, wherein said catheter shaft has a generally tubular outer wall and defines a single-lumen proximal section that extends over the majority of the length of said catheter shaft, a multi-lumen intermediate section having multiple lumens defined by polymeric material, and a single-lumen distal section, the multi-lumen intermediate section having a guidewire exit port in the shaft wall, the exit port being located a substantial distance from the proximal end of the catheter shaft to facilitate rapid catheter exchange;

a dilatation balloon having proximal and distal ends mounted between the intermediate section and the distal section of said catheter shaft, said balloon being coupled to the proximal end of said catheter shaft through a first of the lumens of the multi-lumen intermediate section and through the single-lumen proximal section of the catheter shaft to enable inflation and deflation of said balloon;

wherein a second of the lumens of the multi-lumen intermediate section of the catheter shaft forms, together with the lumen of the distal section, a guidewire passage that extends from the distal end of said catheter shaft, through said intermediate section, to the guidewire exit port; and

a fixed stylet having proximal and distal ends, said stylet extending from the vicinity of the proximal end of said catheter shaft, distally beyond said exit port through a lumen in the intermediate catheter section, and terminating at the proximal end of said balloon, the distal end of said stylet being fixedly secured to the polymeric material defining the lumen in the intermediate section of said catheter shaft in which the stylet resides, there being a stress-transferring relationship between the exterior of said stylet and the substance of the lumen of the intermediate section of said shaft in which the stylet resides, said stylet with said stress-transferring relationship contributing to the columnar strength of said shaft and increasing the pushability of said catheter.

5,607,395

DEVICE FOR REMOTE INJECTION OF ANIMALS

Ronald Ragsdale, HC 86 P.O. Box 31, Elm Springs, S. Dak. 57736, and Daniel Gerbec, 7395 Pinon Jay Cir., Rapid City, S. Dak. 57702

Filed Feb. 2, 1995, Ser. No. 382,646

Int. Cl.[6] A61M *5/20*

U.S. Cl. 604—130 **6 Claims**

1. An apparatus for remotely injecting a fluid into an animal comprising:

a. a missile having a forward end and a rearward end;

b. a fluid dispensing means at the forward end of the missile comprising:

(1) a hollow body having a forward end and a rearward end;

(2) a hollow needle extending through and fixed within the forward end of the hollow body;

(3) a piston having front and rear faces slidably constrained within the hollow body, wherein a primary chamber suitable for containing a fluid is formed by the hollow body and the front face of the piston, wherein a secondary chamber is formed by the hollow body and the rear face of the piston;

(4) a piston resilient means in operative contact with the piston for urging the piston toward the primary chamber;

(5) an impact valve means in operational contact with the needle and with the primary chamber, wherein when the primary chamber is charged with a fluid and when the needle enters an animal the impact valve means opens and the resilient means causes the piston to force the fluid through the needle into the animal;

c. a tag having front and rear faces fixed by the rear face to the forwardmost surface of the hollow body, wherein the front face of the tag is coated with adhesive means for attaching the missile to an animal; and

d. means for remotely retrieving the apparatus.

5,607,396

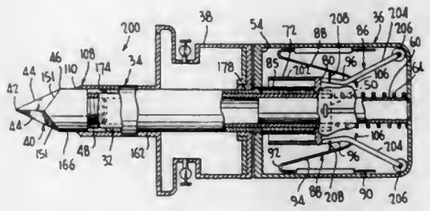
RETRACTABLE SAFETY PENETRATING INSTRUMENT FOR PORTAL SLEEVE INTRODUCTION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 254,007, Jun. 3, 1994, Pat. No. 5,478,317, which is a continuation of Ser. No. 800,507, Nov. 27, 1991, abandoned. This application May 10, 1995, Ser. No. 438,578

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—165 **1 Claim**



1. A retractable safety penetrating instrument for forming a portal communicating with a cavity in the body to allow passage of instruments for performing least invasive medical procedures comprising

a hollow portal sleeve for providing a passage through a cavity wall and having a distal end for positioning in the body cavity, a proximal end for positioning externally of the body cavity and a lumen extending between said distal and proximal ends;

a penetrating member disposed in said lumen of said sleeve and having a proximal end and a distal end portion having a distal end for penetrating the cavity wall;

a hub mounting said proximal end of said penetrating member;

a middle member disposed between said penetrating member and said portal sleeve and having a proximal end secured in said hub and a distal end disposed within said portal sleeve;

means for biasing said penetrating member distally to an extended position where said distal end of said penetrating member is disposed distally of said sleeve distal end and for permitting movement of said penetrating member proximally from said extended position against said distal bias in response to a proximal force from tissue contact at said distal end of said penetrating member during penetrating of the cavity wall;

a neck on said distal end portion of said penetrating member for engaging said distal end of said middle member when said penetrating member moves proximally against said distal bias for providing a positive stop limiting proximal movement of said penetrating member during penetration of the cavity wall;

retracting means for moving said penetrating member proximally relative to said sleeve to a retracted position to prevent contact of said penetrating member distal end with tissue, said retracting means including means for biasing said penetrating member in a proximal direction; and

trigger means for automatically actuating said retracting means to move said penetrating member to said retracted position in response to movement of said penetrating member distally by said distal bias upon removal of the proximal force from tissue contact upon entry into the anatomical cavity whereby said distal end of said penetrating member is protected from inadvertent contact with tissue in the body cavity.

5,607,397

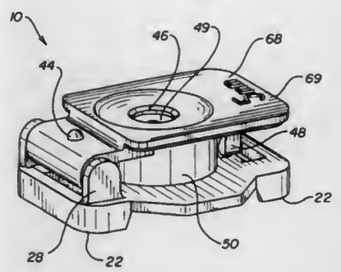
ADAPTOR CAP AND TROCAR ASSEMBLY

Randy R. Stephens, Fairfield; Renato Roxas, Mason, and Gregory C. Groenke, Loveland, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 284,453, Mar. 9, 1993, Pat. No. 5,338,307. This application Jul. 25, 1994, Ser. No. 279,780

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—167 **14 Claims**



1. A trocar, containing a cannula handle, and a cannula extending therefrom, said cannula having a internal cylindrical opening and said cannula handle having an opening at a proximal end; and an adaptor cap assembly comprising:

a base having a cylindrical opening; and

an outer gasket assembly attached to said base and able to be rotated with respect thereto, said outer gasket assembly having a cylindrical opening generally smaller than the cylindrical opening of said base; and

said outer gasket assembly capable of being matedly seated within the cylindrical opening of said base;

wherein said outer gasket assembly contains an underside which protrudes through said base.

5,607,398

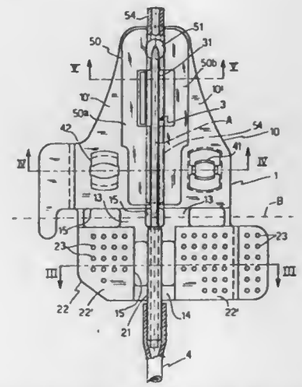
HOLDING DEVICE FOR A NEEDLE PENETRATABLE INTO THE BODY

Corrado S. Parmigiani, Correggio, Italy, assignor to C.G.M. S.p.A., Via Modena, Italy

Filed Jun. 6, 1995, Ser. No. 467,806

Int. Cl.[6] A61M *25/06*

U.S. Cl. 604—177 **15 Claims**



1. A holding device for a needle, said needle including a front portion and a rear portion, said front portion having a tip with an opening therein, said bolding device comprising:

a front element positioned adjacent to the front portion of the needle, said front element including a pair of fins and being foldable on itself about a first folding axis substantially parallel to the front portion of the needle;

means for attaching the rear portion of the needle to the front element so that the needle can rotate with respect to the front element about a second folding axis substantially perpendicular to the needle, the device being able to assume a first configuration in which the front element is folded on itself by rotation about said first folding axis, with the front portion of the needle enclosed between the pair of fins of the front element, the tip of the needle not projecting from the front element; and

an elastic layer located on an inner surface of the front element adjacent to the front portion of the needle, said elastic layer being arranged, when the front element is folded on itself into the first configuration, to press against the front portion of the needle to thereby surround the front portion of the needle and close the opening in the tip of the needle.

5,607,399

BACKSTOP DEVICE FOR A FLANGELESS SYRINGE

Jean P. Grimard, Vif, and Eric Olive, Lyons, both of France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 22, 1995, Ser. No. 532,444

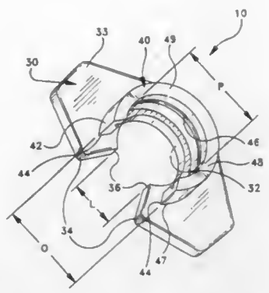
Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—220 **9 Claims**

1. A device for preventing inadvertent removal of a stopper from a flangeless syringe, said flangeless syringe having a barrel adapted to retain a plunger rod having a minimum width, said barrel having an outside circumference, and outside diameter, an inside diameter, and an open proximal end, comprising;

a backstop attachable adjacent the open proximal end of said flangeless syringe, said backstop including a retaining wall having proximal and distal ends and defining an opening having a width not greater than the outside diameter of said syringe barrel; and

a finger plate affixed to the proximal end of the retaining wall, said finger plate defining an aperture therethrough in commu-



nication with the open proximal end of the flangeless syringe, said aperture having a width not greater than the inside diameter of the syringe barrel, and a lead opening communicating with said aperture, said lead opening having a width at least equal to the minimum diameter of the plunger; and

a ridge defined about a portion of said aperture, said ridge adapted to engage a portion of said flangeless syringe adjacent the syringe barrel to prevent withdrawal of the stopper from the flangeless syringe.

5,607,400

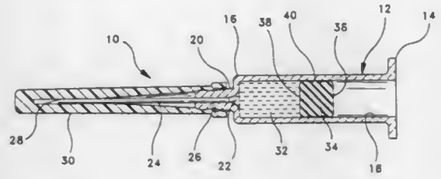
PRE-FILLABLE SYRINGE AND STOPPER ASSEMBLY THEREFOR

Jean-Claude Thibault, Saint-Egreve; Jean-Pierre Grimard, Vif, and Catherine F. Faure, Grenoble, all of France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 19, 1995, Ser. No. 445,130

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—230 **25 Claims**



1. A pre-fillable hypodermic syringe, comprising:

a syringe barrel having opposed proximal and distal ends and a drug-receiving chamber therebetween, said distal end of said syringe barrel defining a passage communicating with said drug-receiving chamber; and

a stopper assembly in said drug receiving chamber substantially adjacent a quantity of drug held in said chamber, said stopper assembly comprising a distal stopper formed from an elastomeric material having a low-friction material thereon, said low friction material substantially free of silicone-based lubricants adverse to long-term storage of the drug held in the chamber, said stopper assembly further comprising a proximal stopper formed from an elastomeric material configured and dimensioned for defining a biologically sealed interface with said syringe barrel, a lubricant being disposed at said interface for facilitating sliding movement of said proximal stopper in said syringe barrel, whereby said distal stopper isolates said drug from said proximal stopper, and whereby said proximal stopper defines a biological barrier for preventing contamination of said drug.

5,607,401

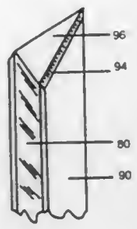
AUGMENTED POLYMERIC HYPODERMIC DEVICES

Bruce H. Humphrey, P.O. Box 07513, Milwaukee, Wis. 53207

Continuation of Ser. No. 120,657, Sep. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 754,457, Sep. 3, 1991, abandoned. This application Mar. 10, 1995, Ser. No. 402,974

Int. Cl.[6] A61M *5/00;5/31*

U.S. Cl. 604—239 **18 Claims**



1. A hypodermic device for performing a piercing process comprising:

a non-slidable, integral combination including;

a polymeric component and

an augmenting means that extends longitudinally a substantial length of said polymeric component which stiffens said polymeric component;

wherein said integral combination forms an augmented polymeric hypodermic device having at least one lumen, and a piercing tip with a frangible seal which is non-removable.

5,607,402

PRE-ASSEMBLED SAFETY NEEDLE HOLDER

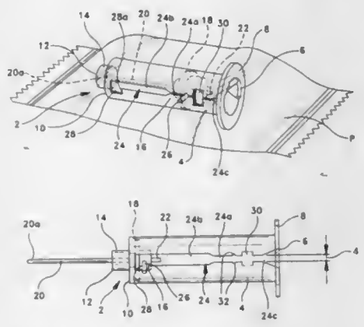
Christopher Dufresne, Jarrie, and Patrice Mousset, Varces, both of France, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 19, 1994, Ser. No. 308,231

Claims priority, application European Pat. Off., Aug. 18, 1994, 94112893

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—263 **10 Claims**



1. A safety needle holder including:

a housing;

a needle member slidably mounted within said housing for movement between three predetermined different positions in said housing including:

an extended distal position, wherein said needle member projects from said housing;

a retracted proximal position, wherein said needle member is safely located and locked within said housing; and

an initial pre-assembled position located between said extended distal position and said retracted proximal position, wherein said needle member is securely held within said housing prior to use;

retention means in said housing for securely holding said needle member in said initial pre-assembled position; and

at least one actuation element on said needle member for selectively pushing said needle member from said initial pre-assembled position to said extended distal position and then back to said retracted proximal position.

5,607,403

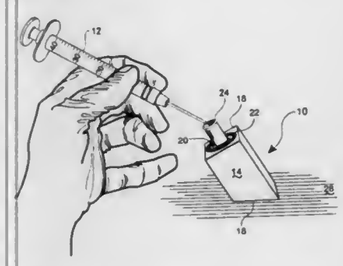
DISPOSABLE NEEDLECAP HOLDER

James L. Kretzschmar, and Deborah A. Kretzschmar, both of Alamogordo, N.M., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 427,463, Apr. 21, 1995, abandoned. This application Apr. 5, 1996, Ser. No. 640,581

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—263 **4 Claims**



1. A needlecap holder, comprising:

(a) a solid having an axis;

(b) coaxial first and second plane faces on the solid, wherein the second plane face is at a spaced relationship from and at an acute angle to the first plane face;

(c) a bore in the first plane face extending along the axis from the first plane face partially through the solid toward the second plane face, wherein the bore is dimensioned to hold a needlecap for a hypodermic syringe;

(d) an adhesive surface on the second plane face for attaching the face to a surface; and,

(e) a bullseye ring on the first plane face surrounding the opening to the bore, wherein the bullseye ring is a contrasting color from the rest of the first plane face.

5,607,404

LOW FRICTION INNER LUMEN

Kourosh Khairkhahan, Palo Alto, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 11, 1994, Ser. No. 226,205

Int. Cl.[6] A61M *25/00*

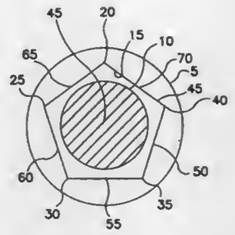
U.S. Cl. 604—264 **19 Claims**

1. A medical catheter comprising:

an elongated catheter body having a single centrally located lumen extending longitudinally along the catheter body;

a removable guidewire extending through the lumen, the guidewire having a first radius of curvature, as measured in cross section through said catheter body, the guidewire being sized to slidingly fit within the centrally located lumen; and

wherein said lumen has an odd number of longitudinally extending, generally straight, inner wall surfaces, the inner walls being joined to one another by longitudinally extending corner surfaces, the inner walls and the corner surfaces being formed by alternating thicknesses to an outer diameter, the corner surfaces' thickness to the outer diameter being less than the inner walls' thickness to the outer diameter.



5,607,405

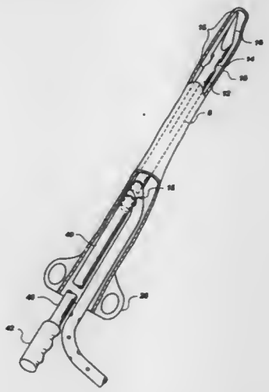
SURGICAL INSERTION DEVICE AND METHOD

Rand A. Decker, 3609 E. Crestmount Cir., Salt Lake City, Utah 84121, and Ludwig F. Kroner, 2143 Carson St., Rock Springs, Wyo. 82901

Continuation of Ser. No. 885,459, May 19, 1992, abandoned. This application May 9, 1994, Ser. No. 241,042

Int. Cl.[6] A61M *5/00;25/00*

U.S. Cl. 604—264 **8 Claims**



2. A surgical insertion kit for emplacing a drain tube into an interior region of a patient's body part during a surgical procedure, comprising:

a trocar having a distal portion terminating in a sharp point, a proximal portion adapted for removably attaching a drain tube, and a shank connecting said proximal and distal portions;

handle means removably attached to said proximal portion for gripping by a user, said handle means having cross-sectional dimensions greater than said trocar;

wherein said trocar is structured to be passed through said body part absent said handle means;

a pierceable sheath configured to enclose said sharp point, made of a material pierceable by said sharp point, and having an open end portion of length sufficient to extend beyond said proximal portion of said trocar; and

a safety cap configured for mounting on said distal end of said trocar to encase said sharp point, and wherein said trocar further has mounting means formed on said shank adjacent said sharp point for mechanically affixing said safety cap thereto.

5,607,406

RAPID EXCHANGE SEGMENTED CATHETER

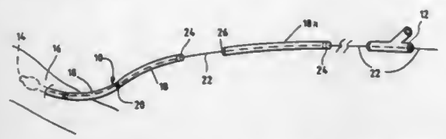
Ernesto Hernandez, Miami; Francisco O. Castillo, Miami Lakes, and Israel Pagan, Miami, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 243,283, May 17, 1994, Pat. No. 5,507,731. This application Jan. 22, 1995, Ser. No. 589,502

The portion of the term of this patent subsequent to May 17, 2014, has been disclaimed.

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **14 Claims**



1. A method for exchanging a catheter in the vascular system of a patient, which comprises the steps of:

introducing a guidewire into said vascular system;

introducing a catheter into said vascular system over said guidewire, said catheter having at least a distal section and a connected proximal section;

withdrawing said catheter from said vascular system by first removing only said proximal section while restraining said guidewire;

thereafter removing said distal section while restraining said guidewire.

5,607,407

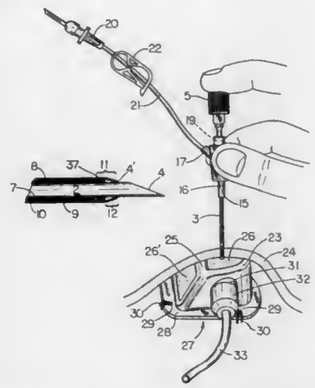
CATHETER ASSEMBLY

Marc J. Tolkoff, 39 Jordan Rd., Brookline, Mass. 02146, and Fernando A. de Toledo, 229 Fairhaven Hill, Concord, Mass. 01742

Continuation-in-part of Ser. No. 239,713, May 9, 1994, abandoned. This application Aug. 14, 1995, Ser. No. 514,945

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—282 **12 Claims**



1. A subcutaneous access port catheter assembly comprising:

a flexible catheter, said catheter having distal and proximal ends and having an inner wall portion defined by a pretensioned, continuous helical coil and an outer sheathing formed from a tube of smooth, inert flexible plastic material, wherein said sheath is in intimate contact with the outer spiral of said coil; and

an elongated puncture needle having a sharp point at the distal end and a knob member at the proximal end, said puncture needle being inserted coaxially down the length of said catheter such that the sharp point at the distal end of the elongated puncture needle extends beyond the distal end of said catheter, wherein the resistive force necessary to deflect the tip of a 1.4 inch length of catheter increases by at least about 5% as the compressive force on the catheter is increased from 0 lb. to 3 lb.

5,607,408

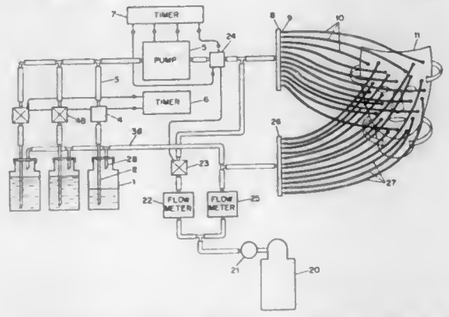
APPLICATION OF ACTIVE SKIN TREATMENTS UNDER NEUTRAL ATMOSPHERE

Yvonne Boucly, 24, Rue Du Mont Valérien, 92210-Saint Cloud, France

Filed Dec. 9, 1994, Ser. No. 353,065

Int. Cl.[6] A61M *35/00*

U.S. Cl. 604—289 **20 Claims**



1. Apparatus for applying skin treatment solutions in the presence of a neutral gas, comprising:

masking means including a plurality of openings and configured for placement over an area of skin;

a first fluid supply circuit arranged to provide at least one treatment solution to said area of skin via a first opening arrangement comprising a plurality of said openings in the masking means; and

a second fluid supply circuit arranged to provide to said masking means a neutral gas via a second opening arrangement comprising at least one of said openings in the masking means.

5,607,409

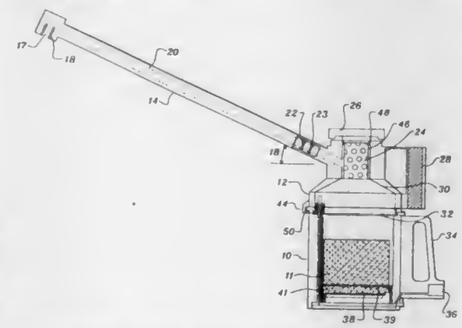
STEAMING DEVICE FOR SKIN TREATMENT

Michael John, 8091 Hamptonwood Dr., Boca Raton, Fla. 33433

Filed Oct. 16, 1995, Ser. No. 543,810

Int. Cl.[6] A61M *35/00*; A61F *7/00*

U.S. Cl. 604—289 **9 Claims**



1. A steaming device for skin treatment, comprising:

(a) a base, including an upper and lower surface thereof, said base including a reservoir for water and a non-corrodible conductance means, said means comprising two electrodes substantially vertically positioned, each extending a part of the entire height of said reservoir in said base, in which said electrodes intermittently pass an electrical current through water within said reservoir;

(b) a top portion including an upper and a lower area, and a fluid permeable container for therapeutic substances to be mingled with steam produced by the effect of said electrodes on said water; and

(c) an arm having a proximal and a distal end, and a hollow interior, in which said arm communicates with said top portion at said proximal end of said arm and in which said arm includes an expulsory aperture enabling the steam which has been mingled with said therapeutic substances to escape at said distal end of said arm.

5,607,410

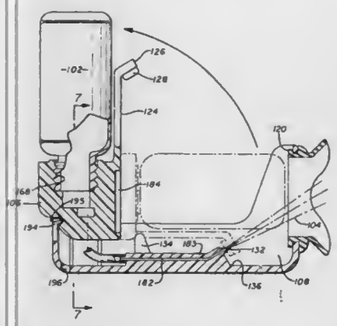
VISION DIRECTED EYE WASH

John D. Branch, 6055 Windemere, Riverside, Calif. 92506

Continuation of Ser. No. 197,116, Feb. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 18,377, Feb. 16, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,418

Int. Cl.[6] A61H *33/04*; A61M *35/00*

U.S. Cl. 604—302 **12 Claims**



6. A vision directed eye wash system comprising:

a friction ring eye support for positioning an eye member to be flushed thereon, said eye member having an eye vision axis;

a fluid reservoir formed of a container containing a supply of fluid therein, said reservoir being mounted in a housing;

a trough adapted to have the eye member positioned at one end thereof and having said reservoir at another end thereof, said trough being formed of side walls interconnected by a bottom wall;

fluid path means for interconnecting said reservoir to a fluid path outlet, said fluid path means including a fluid path portion formed within said trough, mounted directly to and along said bottom wall;

a mirror mounted on said housing in a plane parallel to the plane of said eye support; and

said outlet being positioned adjacent the end of said trough where the eye member is positioned for directing fluid toward said eye support at an angle to an axis perpendicular to the plane of said mirror and said eye support and adapted to enable retention of a user's head in a position where the eye vision axis is generally horizontal.

10. A vision directed eye wash system comprising:

an eye support for positioning an eye member to be flushed thereon;

a fluid reservoir formed of a container containing a supply of fluid therein, said reservoir being mounted in a housing;

a trough adapted to have the eye member positioned at one end thereof and having said reservoir at the other end thereof, said trough having a fluid path formed therein for interconnecting said reservoir to an outlet adjacent said eye support;

a mirror mounted on said housing in a plane parallel to the plane of said eye support;

said outlet being positioned for directing fluid toward said eye support at an angle to an axis perpendicular to the plane of said mirror and said eye support; and

said housing and said reservoir being joined together to rotate into said trough when not in use, said housing containing a means for covering said outlet when said housing and reservoir are rotated into said trough for shutting off the flow of fluid from said outlet.

11. A vision directed eye wash system comprising:

an eye support for positioning an eye member to be flushed thereon;

a housing;

a fluid reservoir positioned in said housing and formed of a container having an axis and having a supply of fluid therein;

a tube coupled at one end to said reservoir and another end thereof positioned for dispensing fluid in said reservoir into the eye member;

a rotatable sleeve formed in said housing enabling said housing to rotate; and

means for coupling said one end of said tube to said reservoir, said means comprising a fluid channel extending axially through said rotatable sleeve.

5,607,411

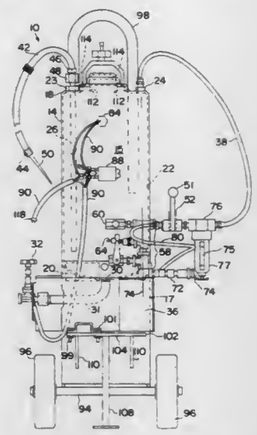
CONTAINMENT AND TREATMENT ASPIRATOR SYSTEM AND METHOD

Scott N. Heironimus, 16222 Totber Rd., Leo, Ind. 46765; Peter G. El-Sabaaly, Waukesha, and John B. Pludeman, Brookfield, both of Wis., assignors to Scott N. Heironimus, Fort Wayne, Ind.

Filed Feb. 10, 1992, Ser. No. 833,144

Int. Cl.[6] A61M *1/00*; A01N *1/00*; B67C *3/16*

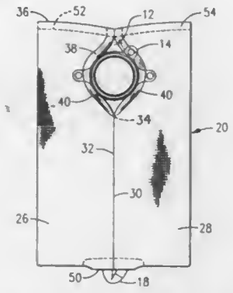
U.S. Cl. 604—319 **25 Claims**



1. A reusable apparatus for collection, treatment, containment and safe discharge of potentially hazardous flowable materials comprising a hollow vessel with a top and a bottom, said vessel having an inlet port and an outlet port therein, a first conduit being secured to said inlet port, said first conduit terminating adjacent said bottom, thereby providing a means by which fluids in said vessel can be discharged therefrom when pressure is applied within said vessel through said outlet port, said bottom having a drain opening therein, a vacuum/pressure source exterior of said vessel being connected to said outlet port through valving by a second conduit whereby air can be selectively exhausted from said vessel to said source to provide said vessel with varied degrees of vacuum

as desired for collecting fluids therein and whereby said vessel can be selectively pressurized for discharging fluids therefrom, said first conduit having a distal end exterior of vessel whereby flowable liquids can be sucked into said vessel via said first conduit thereby collecting and containing potentially hazardous flowable materials in said hollow vessel and safely discharging said materials from said vessel.

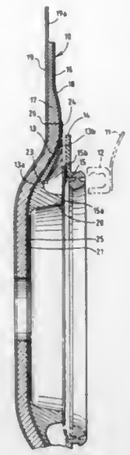
5,607,412
OSTOMY BAG COVER
E. Belle Brown, 21 S. St., Camillus, N.Y. 13031
Filed Jun. 6, 1995, Ser. No. 471,011
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—332 **8 Claims**



1. A cover for an ostomy bag of the type which has a proximal side facing an ostomy patient and a distal side facing away from the patient, with a fitting on an upper portion of the proximal side that engages a stoma that has been surgically attached to the patent's abdomen and with a releasably closed drain tube at a lower end of the ostomy bag; the cover being formed of a single piece of a flexible, knit material and comprising a distal panel and left and right proximal panels unitary with said distal panel forming seamless left and right edges, and with said proximal panels meeting at a vertical midline; said distal panel and proximal panels being sewn together at the top and bottom edges thereof to form a top seam and a bottom seam, respectively, of said cover; said proximal panels forming a vertical slit along said midline from said top to a predetermined point on said proximal midline, said vertical slit being openable to permit insertion and removal of the ostomy bag through the slit, and conforming around the fitting of the ostomy bag such that said fitting projects proximally through said slit; said left and right proximal panels being joined below said predetermined point to form a vertical seam; and a slit below said predetermined point for access to said drain tube.

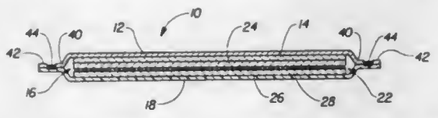
5,607,413
CONVEX OSTOMY FACEPLATE WITH FLOATING FLANGE AND FINGER RECESS
Steen Holmberg, Helsingor, and Joergen F. Larsen, Skaevinge, both of Denmark, assignors to Dansac A/S, Fredensborg, Denmark
Filed Mar. 12, 1996, Ser. No. 615,038
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—342 **8 Claims**

1. An adhesive faceplate for detachable connection to an ostomy pouch, comprising a thermoplastic pressure ring having a convex bodyside surface and a pouchside surface with an annular mounting rib extending axially therefrom; a coupling ring having a diameter larger than said rib and coaxial therewith; a thin annular web having an inner edge joined to said rib and an outer edge secured to said coupling ring; said pouchside surface of said pressure ring having an annular recess disposed outwardly of said rib and aligned directly with said coupling ring for receiving a



user's fingers between said coupling and pressure rings; and a flexible adhesive wafer affixed to said bodyside surface of said pressure ring for adhesive attachment of said faceplate to peristomal skin surfaces.

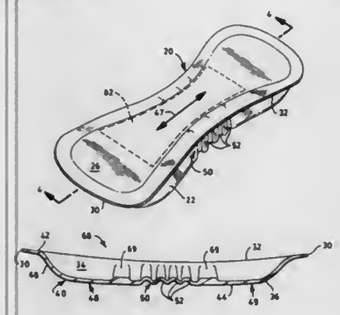
5,607,414
CATAMENIAL ABSORBENT STRUCTURES HAVING THERMALLY BONDED LAYERS FOR IMPROVED HANDLING OF MENSTRUAL FLUIDS, AND THEIR USE IN CATAMENIAL PADS HAVING IMPROVED FIT AND COMFORT
Mark R. Richards, Middletown; John R. Noel, Cincinnati; Larry N. Mackey; Yann-Per Lee, both of Fairfield; Anna R. Haney, Cincinnati; John L. Hammons, Hamilton; Susan N. W. Lloyd, Cincinnati, all of Ohio, and Sheri D. Keeler, West Harrison, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 141,156, Oct. 21, 1993, abandoned.
This application Jul. 3, 1995, Ser. No. 479,096
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—378 **67 Claims**



1. A catamenial pad capable of acquiring, distributing and storing aqueous body fluids, which comprises:
(A) a fluid pervious topsheet selected from the group consisting of apertured formed film topsheets and high loft nonwoven topsheets;
(B) an absorbent core in fluid communication with said topsheet and having:
(1) a primary fluid distribution layer comprising a mixture of hydrophilic cellulosic fibers and thermoplastic material bonding said fibers together into a thermally bonded matrix;
(2) a fluid storage layer in fluid communication with said primary layer, and comprising from about 15 to 100% by weight of said storage layer of absorbent gelling material and from 0 to about 85% by weight of said storage layer of a carrier for said absorbent gelling material;
(D) a fluid impervious backsheet;
(E) wherein the pad has:
(1) a compressive force value in the dry state of about 300 g or less;

(2) an absolute recovery from compression value in the wet state of at least about 48 mm; and
(3) a relative recovery from compression value in the wet state of at least about 65% of the initial pad width.

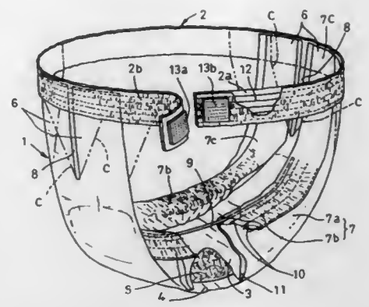
5,607,415
FLEXIBLE ABSORBENT ARTICLE
Paul J. Datta, Appleton; Joseph D. Coenen, Menasha; Glenn A. Mintern, Appleton, and David W. Powell, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Aug. 18, 1994, Ser. No. 292,561
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **17 Claims**



1. An absorbent article, comprising:
a moisture barrier formed of a formable, liquid impermeable material adapted to retain a three-dimensional shape, the moisture barrier defining a basin with an integral, generally flat rim surrounding the basin, the basin having a width dimension, a length dimension greater than the width dimension, and a volume, the basin comprising a floor having first and second longitudinally spaced end regions and an extendable region between the end regions, the extendable region comprising corrugations formed in the floor parallel to the width dimension, the corrugations adapted to terminate inward of the rim such that the rim remains generally flat, the floor comprising rib means which extend parallel to the width dimension for providing enhanced resistance to transverse compression of the moisture barrier;
an absorbent assembly disposed within the basin; and
a liner formed of a liquid permeable material bonded to the moisture barrier and sandwiching the absorbent assembly therebetween.

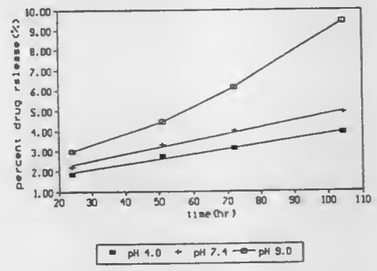
5,607,416
DISPOSABLE ABSORBENT PAD
Masamitsu Yamamoto; Rumi Yamaki, both of Kawanoe, and Hideaki Kitaoka, Funabashi, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan
Filed Oct. 12, 1994, Ser. No. 321,953
Claims priority, application Japan, Oct. 15, 1993, 5-258719; Dec. 8, 1993, 5-307753
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—397 **3 Claims**

1. A disposable absorbent pad comprising:
a pad member for being placed at least in the wearer's crotch, said pad member comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core sandwiched between said topsheet and said backsheet;
said topsheet and said backsheet extending outwardly beyond longitudinally opposite ends of said core to form end flaps, said end flaps being formed with slits bisecting and extending to the longitudinally opposite ends thereof;



said topsheet and said backsheet extending outwardly beyond transversely opposite side edges of said core to form side flaps, said side flaps are provided with longitudinally stretchable elastic members attached in their stretched states to said side flaps, a portion of each said side flaps is partially folded inwards with said elastic members being held in their stretched states and bonded together at longitudinally opposite ends of these folded portions; said folded portions being further partially folded outwards; and
a support member for being placed at least around the wearer's waist and connected to the longitudinally opposite ends of said end flaps, the support member being elastically stretchable, the end flaps being disposed immediately adjacent one another when the support member is in the unstretched state and being spread apart from one another to form a "V" when the support member is in the stretched shape.

5,607,417
COMPOSITIONS AND DEVICES FOR CONTROLLED RELEASE OF ACTIVE INGREDIENTS
Christopher D. Batich; Marc S. Cohen, both of Gainesville, Fla., and Kirk Foster, Baltimore, Md., assignors to CApHCO, Inc., Gainesville, Fla.
Continuation-in-part of Ser. No. 189,854, Feb. 1, 1994, Pat. No. 5,554,147. This application Feb. 1, 1995, Ser. No. 382,315
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—890.1 **10 Claims**



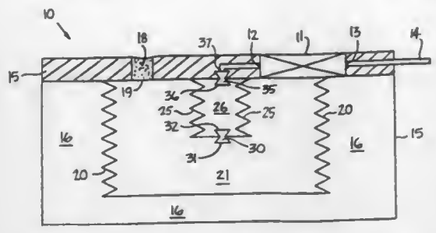
1. An indwelling medical device which controls, which indicates, or which both controls and indicates a bacterial infection which causes a change in the pH of the environment of said indwelling medical device, wherein said indwelling medical device comprises a pH-sensitive polymer matrix coating in which a biologically active agent is trapped and integrally incorporated, said agent being released from said polymer matrix coating at an increased rate or only upon said change of pH, wherein said change in pH causes said pH-sensitive polymer matrix to swell to release said biologically active agent trapped within said pH-sensitive polymer matrix.

5,607,418

IMPLANTABLE DRUG DELIVERY APPARATUS

Robert C. Arzbaecher, Chicago, Ill., assignor to Illinois Institute of Technology, Chicago, Ill.

Filed Aug. 22, 1995, Ser. No. 518,032
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—891.1 **25 Claims**



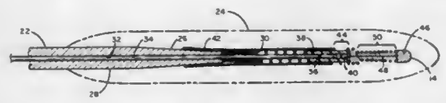
1. An implantable drug delivery apparatus comprising:
a housing having a housing chamber, an outer deformable body having a reserve chamber, said outer deformable body mounted within said housing chamber, an inner deformable body having a dispensing chamber, said inner deformable body mounted within said reserve chamber;
a dispensing valve, a catheter in communication with a valve discharge of said dispensing valve;
flow means for discharging a fluidic drug from said dispensing chamber at a dispensing mass flowrate which exceeds a refilling mass flowrate of said fluidic drug passing from said reserve chamber to said dispensing chamber when said dispensing valve is in an open position, and for preventing said fluidic drug from discharging from said dispensing chamber and allowing said fluidic drug to flow from said reserve chamber to said dispensing chamber until said dispensing chamber is at least partially filled when said dispensing valve is in a closed position; and
force means for normally urging said outer deform able body in a manner that tends to reduce a volume of said reserve chamber.

5,607,419

METHOD AND APPARATUS FOR TREATING VESSEL WALL WITH UV RADIATION FOLLOWING ANGIOPLASTY

Curtis A. Amplatz, St. Paul, and James S. Sharrow, Bloomington, both of Minn., assignors to AngioMedics II Inc., Plymouth, Minn.

Filed Apr. 24, 1995, Ser. No. 426,855
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—7 **11 Claims**



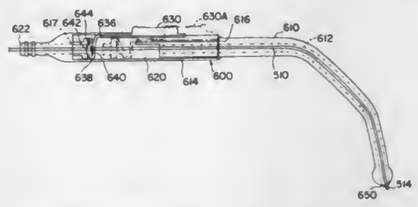
1. A light diffusing optical waveguide assembly adapted to be inserted into a guidewire lumen of an intravascular catheter comprising:
(a) an elongated, flexible, tubular metal shaft member having a proximal end, a distal end and a lumen extending therebetween, the tubular metal shaft member having an outer diameter small enough to fit through a working lumen of an intravascular catheter;
(b) an optical fiber having a proximal end, a distal end and a longitudinal axis, said optical fiber having an outer diameter allowing it to fit through said lumen of said tubular metal shaft member and a light deflector affixed to the optical fiber in spaced relation to said distal end of said optical fiber said distal end of said optical fiber for deflecting light waves transmitted down said optical fiber at a predetermined angle to said longitudinal axis;
(c) a helically wound metal wire affixed to said shaft member at the distal end thereof, said helical wound metal wire having a closed convolutions section extending beyond said distal end of said shaft member and an open convolutions section intermediate said closed section and adjacent said deflector so that light waves deflected from said deflector at the predetermined angle is able to pass between the open convolutions of the helical wound wire in the intermediate open convolutions section.

5,607,420

SURGICAL TOOL FOR USE WITH A CONTACT LASER

Daniel Schuman, Boca Raton, Fla., assignor to Surgical Laser Technologies, Inc., Oaks, Pa.

Continuation-in-part of Ser. No. 841,053, Feb. 5, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 88,247
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—15 **6 Claims**



1. In combination with a thermal surgical laser that is powered through a small diameter combination laser power fiber optic and coolant carrying tube, a surgical tool coupled to a source of suction comprising:
a conduit, having a distal open end, establishing a suction line from a surgical site adjacent to said open end to said source of suction for removal of debris and fluids including irrigation fluid;
an elongated handle, defining a portion of said conduit, and a contiguous bendable, rigid tube defining a distal end portion of said conduit, said handle including a longitudinally actuated operator suction control valve, and
a forward biased, rearwardly depressible heat generating surgical laser tip attached to a distal end of said laser power fiber optic, the surgical laser tip protruding from said distal open end of said conduit and adapted to palpate and contact said surgical site and to heat irrigation fluid for selectively searing or blanching of tissue and other obstructions,
said laser power fiber optic and coolant carrying tube being movably affixed to said longitudinally actuated operator suction control valve such that upon actuation of said valve said surgical laser tip extends or retracts with respect to said distal open end of said bendable, rigid tube.

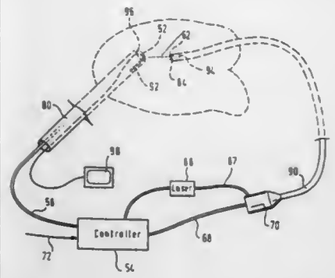
5,607,421

MYOCARDIAL REVASCULARIZATION THROUGH THE ENDOCARDIAL SURFACE USING A LASER

Valluvan Jeevanandam, New Milford, N.J., and Craig R. Smith, Bronxville, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 71,378, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 694,102, May 1, 1991, abandoned. This application May 25, 1994, Ser. No. 249,091
Int. Cl.[6] A61N *5/02*
U.S. Cl. 606—15 **10 Claims**

1. In a patient, a method for myocardial revascularization of the heart, comprising:



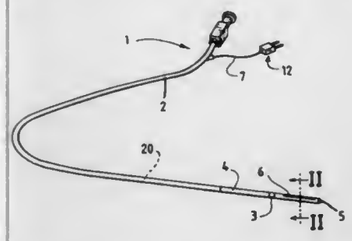
positioning a channel forming energy emitter and an aiming beam emitter for producing an aiming beam which is substantially parallel to emitted energy from the channel forming energy emitter, which is offset by a predetermined distance from said emitted energy, and which identifies a location of emitted energy from the channel forming energy emitter inside the ventricle of the heart;
locating an aiming beam energy detector outside the heart at a position adjacent a desired channel forming site;
detecting the aiming beam energy with the aiming beam energy detector to thereby indicate that the channel forming energy emitter is directed to the desired channel forming site; and
directing energy from the channel forming energy emitter toward the ventricular wall in an amount sufficient to form at least one channel in the ventricular wall into the myocardium to thereby increase blood flow from the endocardium to the myocardium after the channel forming energy emitter is directed to the desired channel forming site.

5,607,422

CATHETER WITH ELONGATED SIDE ELECTRODE

Joseph L. R. M. Smeets, Gronsveld, and Wilhelmus P. M. M. Van Erp, Leek, both of Netherlands, assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Jun. 30, 1994, Ser. No. 269,000
Claims priority, application Netherlands, May 7, 1993, 9301182
Int. Cl.[6] A61B *17/39;* **A61N** *1/05*
U.S. Cl. 606—41 **8 Claims**



1. A catheter and power source comprising a tubular body extending in a longitudinal direction and having a distal end and a proximal end, the distal end having a flexible, tubular end section having a wall, said wall carrying an elongated, flexible electric heating element extending in the longitudinal direction of the catheter and on one side only of the catheter, said heating element being substantially exposed to the exterior of said catheter to permit transfer of electric current from the heating element to surrounding tissue, said heating element being electrically connected to a power source for heating by high frequency electromagnetic oscillations, and a conductor connected to the heating element extending from the element through the tubular body to said power source adjacent the proximal end.

5,607,423

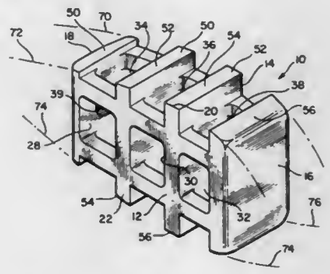
Patent Not Issued For This Number

5,607,424

DOMED CAGE

Patrick Tropiano, 550, rue Paradis, Batiment C1, 13 008 Marseille, France

Filed Apr. 10, 1995, Ser. No. 420,722
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **2 Claims**



1. In a spinal column where adjacent vertebrae have first and second opposed faces defining a space from which a disc has been removed, a device for replacing said disc comprising:
a pair of inert cages each cage comprised of;
first and second side walls respectively having first and second upper surfaces and first and second lower surfaces,
a bottom surface extending between said first and second lower surfaces,
a top surface extending between said first and second upper surfaces,
an anterior plate at one end of said cage, and
a posterior plate at the other end of said cage;
said anterior and posterior plates being substantially solid except for a threaded opening in said posterior plate;
a series of strut plates extending between said first and second side walls each of which have top and bottom edges and wherein said top edges form a portion of said top surface and wherein said bottom edges form a portion of said bottom surface;
said bottom surface and bottom edges from forming an arcuate dome; and,
said top surface and top edges forming a second arcuate dome.

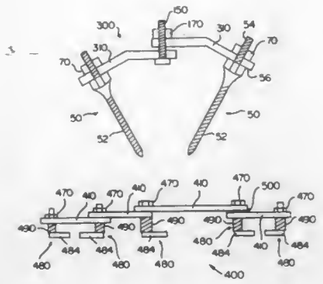
5,607,425

APPARATUS, METHOD AND SYSTEM FOR THE TREATMENT OF SPINAL CONDITIONS

Chaim Rogozinski, 3223 Front Rd., Jacksonville, Fla. 32256

Continuation of Ser. No. 131,947, Oct. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,834
Int. Cl.[6] A61B *17/56;17/58*
U.S. Cl. 606—61 **28 Claims**

1. A method for treating spinal conditions by spatially fixing at least a first vertebra relative to a second vertebra while leaving exposed at least a lateral marginal area of the lamina of one of said vertebrae, the method including steps of:
fixing a first attachment member to the first vertebra at a selected position;
fixing a second attachment member to the second vertebra at a selected position;
providing at least one one-piece spinal implant link member in the form of a substantially flat plate having an apertured first end, an apertured second end, and an offset middle portion, the first and second ends of the link member defining an open



space therebetween which space is disposed adjacent the middle portion and extends away from the middle portion;

attaching said first end of said at least one link member to said first attachment member which is fixed to the first vertebra by placing the aperture in said first end around the first attachment member; and

attaching said second end of said at least one link member to said second attachment member which is fixed to the second vertebra by placing the aperture in said second end around the second attachment member, so that a force is exerted on the first vertebra by said at least one link member;

whereby a lateral marginal area of the lamina of one of said vertebrae is exposed by said space of said link member and provides an area for performing a bone graft.

5,607,426

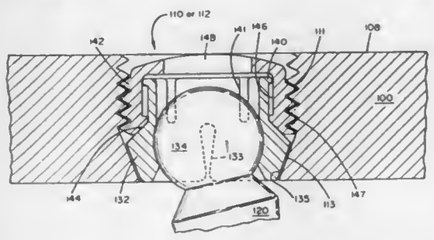
THREADED POLYAXIAL LOCKING SCREW PLATE ASSEMBLY

James D. Ralph, Oakland, and Steve Tatar, Montville, both of N.J., assignors to Fastenletix, L.L.C., Summit, N.J.

Continuation-in-part of Ser. No. 421,087, Apr. 13, 1995, Pat. No. 5,520,690. This application Feb. 23, 1996, Ser. No. 606,221

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **7 Claims**



1. A polyaxial locking screw plate assembly for the immobilization of vertebral bones, via fixation to surfaces thereof, comprising:

a plate having an upper portion and a lower portion, said upper and lower portions each having at least one through hole, each of said through holes having an upper threaded portion and a lower tapered portion;

a plurality of bone screws, each of said bone screws having a semi-spherical head portion and a shaft; and

a plurality of coupling elements, each comprising

a socket portion having a semi-spherical interior volume, upper and lower sections, and vertical slots formed on corresponding ones of said upper and lower sections, at least one of said slots rendering said interior volume expandable and contractable, said lower section having a tapered exterior surface for seating against the lower tapered portion of said corresponding through hole such that forceable advancement of socket portion into the tapered portion of the through hole causes the at least one of said slots to narrow whereby the semi-spherical interior volume contracts, and

a cap portion having an opening in a bottom thereof and an interior chamber extending upwardly therefrom for joining with, and slideably retaining therein, the upper section of said socket portion, and exterior threading which is mateable with the threading of the corresponding hole,

wherein said semi-spherical head portion is rotationally freely mounted within the semi-spherical interior volume of the socket portion of the coupling element prior to insertion, and

whereby the insertion of the shaft of the bone screw and the coupling element into the corresponding through hole, and the insertion of said shaft of the bone screw into the vertebral bone at a selected angle within a predetermined range of angles including non-perpendicular angles to the plate, causes the tapered exterior surface of the socket portion to seat and to be forceably advanced against the tapered portion of the through hole such that the semi-spherical head of the screw is locked within the contracted semi-spherical interior volume, and

whereby threaded advancement of the cap portion into said through hole provides additional forceable advancement of the socket portion against the tapered portion of the through hole.

5,607,427

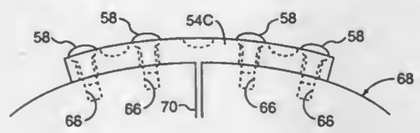
SURGICAL SYSTEM

Alexander Tschakaloff, Hamburg, Germany, assignor to Medicon eG, Tuttlingen, Germany

Division of Ser. No. 898,453, Jun. 15, 1992, Pat. No. 5,290,281. This application Aug. 12, 1993, Ser. No. 105,794

Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—69 **3 Claims**



1. In a bodily tissue fixation plate formed of thermoplastic, body absorbable material and having a plurality of through-bores for receiving fasteners for attaching said plate to bodily tissue, the improvement comprising at least one truncated, substantially concave spherical formation situated between a pair of said through-bores and adapted to substantially matingly cooperate with a heating tip of a heating apparatus wand.

5,607,428

ORTHOPEDIC FIXATION DEVICE HAVING A DOUBLE-THREADED SCREW

Kwan C. Lin, 45 Duncan St., Staten Island, N.Y. 10304

Filed May 1, 1995, Ser. No. 431,758

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—69 **3 Claims**

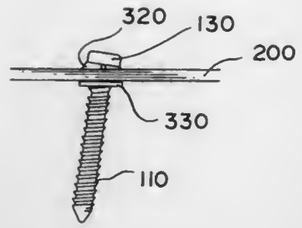
1. An orthopedic fixation device comprising:

a fixation plate having at least one round through holes;

a direction adjusting ring having an inner threaded hole, a plurality of arresting edges located at an upper side thereof, a stopping edge located at a lower side thereof, and a slit formed between any two arresting edges of said a plurality of arresting edges; and

a double-threaded bone screw provided at a lower end thereof with a first threaded portion for fastening onto a bone or vertebra, said double-threaded bone screw further provided at an upper end thereof with a head for urging and spreading said a plurality of arresting edges so as to cause said direction adjusting ring to be retained securely in said round through hole of said fixation plate, said double-threaded bone screw still further provided with a second threaded portion located between said first threaded portion and said head and engageable with said inner threaded hole of said direction adjusting ring;

wherein said inner threaded hole of said direction adjusting ring has an axis which forms with an axis of an outer ring body of said direction adjusting ring an angle ranging between 3 and 15 degrees.



5,607,429

WIRE FASTENING TOOL

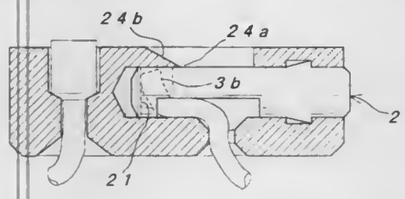
Kijuro Hayano, 3959-1, Tamagawa, Chino-shi, Nagano-ken, and Haruo Ajiro, Koshigaya, both of Japan, assignors to Kijuro Hayano, Japan

Filed Aug. 8, 1994, Ser. No. 287,671

Claims priority, application Japan, Aug. 9, 1993, 5-216952; Sep. 21, 1993, 5-257716

Int. Cl.[6] A61B *17/82*

U.S. Cl. 606—74 **5 Claims**



1. A wire fastening device for securing body parts by means of a wire adaptable to a living body, said wire fastening device comprising:

a first member having a bore and first and second openings facing each other, said bore being located between said first and second openings, each of said openings having an area through which said wire can be inserted, said first opening being extended along said bore; and

a second member disposed movably within said bore, said second member having a through-hole extended across the direction of movement of said second member and a recess formed on an outer portion of said second member to be extended along said bore, said through-hole and said recess communicating to pass said wire therethrough, and said through-hole and said recess being opposed to, respectively, said first opening and said second opening of said first member,

said second member being movable within said bore and acting on said wire when said wire is passed through said openings and said through-hole, such that said wire is extended between a bottom surface of said recess and an inner surface of said first member defining said bore and is bent in a crank-like configuration and fastened thereby,

said first member having a cutting blade for cutting said wire which faces one of said first and second openings, and an edge of said cutting blade is opposed to the direction of movement of said second member.

5,607,430

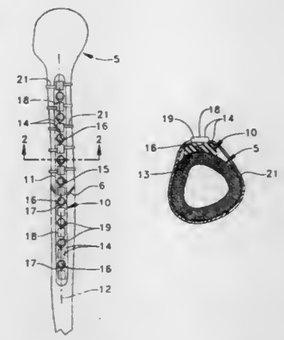
BONE STABILIZATION IMPLANT HAVING A BONE PLATE PORTION WITH INTEGRAL CABLE CLAMPING MEANS

Kirk J. Bailey, Andover, N.J., assignor to Biomet, Inc., Warsaw, Ind.

Filed Aug. 25, 1995, Ser. No. 519,852

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—74 **26 Claims**



1. A bone stabilization implant comprising:

a bone plate portion having a plurality of openings extending through an outer surface and a bone contact surface and being positioned at locations along a length of said bone plate portion, and said openings being sized to receive a bone screw;

a plurality of bosses positioned at locations along said length, each of said bosses having crimping surfaces and a pair of holes therethrough that are sized to receive cable;

each of said bosses being deformable to clamp cable received in said pair of holes when said crimping surfaces are crimped; and

said bone plate portion and said bosses being integral portions of a single piece of material.

5,607,431

PROSTHETIC HIP IMPLANTATION METHOD AND APPARATUS

Michael W. Dudasik, Nutley; Matthew P. Poggie, Union City, and Michael J. Schulzki, Boonton, all of N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Feb. 9, 1995, Ser. No. 386,046

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—80 **23 Claims**

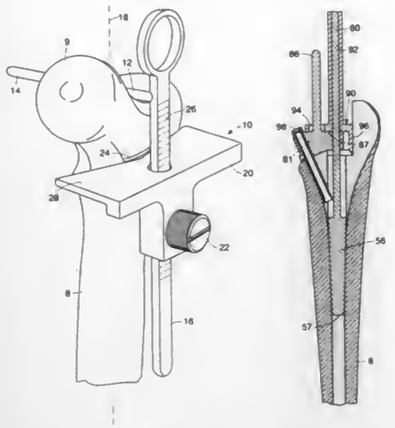
1. A method for preparing the medullary canal of a femur to receive a prosthetic fernoral implant having proximal and distal stem portions, comprising the steps:

providing a template, a gauge, a reamer, a metaphyseal template, a chise and a broach;

placing the template generally corresponding to the prosthetic hip implant on an x-ray of the femur to determine the level of an osteotomy cut with respect to the sulcus of the femur;

marking said determined position on the femur using the gauge locating off the sulcus;

performing the osteotomy by resecting the femur;



reaming the distal medullary canal to a predetermined depth with the reamer having an elongated shaft and a shape mimicking the shape of the distal stem portion of the prosthetic femoral implant;

placing the metaphyseal template on said elongated shaft to determine a proper anteversion/retroversion orientation thereof;

locking said metaphyseal template in place upon determining said proper anteversion/retroversion orientation;

placing the chisel having a shape generally corresponding to a lateral portion of the femoral implant at a proper alignment on said metaphyseal template and removing bone at the osteotomy level to form the proper lateral opening in said canal;

removing said template and said chisel: and

placing the proximal broach over said elongated shaft of said reamer and shaping the proximal portion of said cavity with a broach having a shape generally conforming to the proximal portion of said implant.

5,607,432

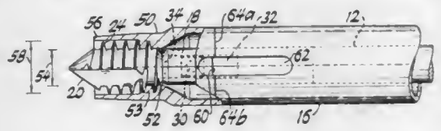
THREADED SUTURE ANCHOR RETRIEVER

Joseph Fucci, Palm Harbor, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Jan. 23, 1995, Ser. No. 343,749

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—104 **10 Claims**



1. A threaded anchor retriever for endoscopically retrieving a threaded anchor from a site of implantation into which the threaded anchor has been turned, the threaded anchor having a threaded body for being embedded at the site when turned in a first direction and a drive means for turning the threaded body, comprising:

an elongated shaft having a proximal end and a distal end;

a primary anchor engaging means disposed at said distal end of said elongated shaft for engaging said drive means to thereby turn said anchor in a direction opposite said first direction in a direction to remove it from said site of implantation;

a predetermined fixed diameter secondary anchor engaging means disposed adjacent said primary anchor engaging means for automatically engaging the threaded body of said anchor as said anchor is turned in said opposite direction and moves relative to said secondary anchor engaging means;

means for moving said primary and secondary anchor engaging means in opposite directions relative to each other in order to remove said anchor from said site of implantation by said primary anchor engaging means while urging said anchor into engagement with said secondary anchor engaging means.

5,607,433

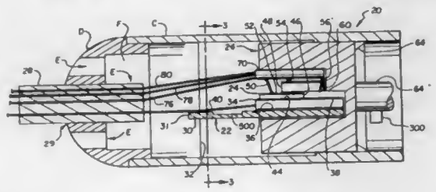
FOLDABLE LENS DELIVERY SYSTEM

Dennis L. Polla, Plymouth, Minn.; John A. Costin, Lorian, Ohio; Arthur G. Erdman, and David J. Peichel, both of Plymouth, Minn., assignors to Micro Medical Devices, Plymouth, Minn.

Continuation-in-part of Ser. No. 275,835, Jul. 15, 1994. This application Oct. 21, 1994, Ser. No. 326,907

Int. Cl.[6] A61F *9/00;* **H01L** *41/08*

U.S. Cl. 606—107 **13 Claims**



1. An automated lens delivery device comprising:

a first wafer element having a first wafer surface of a first material;

a second wafer element of a second material, having a second wafer surface, said second wafer element abutting against but slidable relative to said first material;

a natural oxide thin film electrically insulating layer formed on said first wafer surface between said first and second wafer surfaces and said first and second wafer elements;

a controlling device which produces a first voltage between said first and second wafer elements to selectively electrostatically clamp said first wafer elements relative to said second wafer element, and which produces a second voltage across said first wafer element which expands and contracts said first wafer element to move it relative to said second wafer element;

a pushing element, operatively attached to said first wafer element, and including a surface which is shaped to push a folded intra-ocular lens;

means for holding an intra-ocular lens in a path of said surface of said pushing element; and

an insulated element, coupled between said wafer elements, and said pushing element, for electrically insulating said pushing element from said wafer elements.

5,607,434

DEVICE FOR AND METHOD OF REMOVING TICKS

Joseph J. Alvino, P.O. Box 158, Newfield, N.J. 08344

Filed Aug. 8, 1995, Ser. No. 512,480

Int. Cl.[6] A61B *17/50*

U.S. Cl. 606—131 **11 Claims**

1. A tick removing device to lift off ticks that have penetrated an animal's skin, the device comprising an integral elongate body comprising:

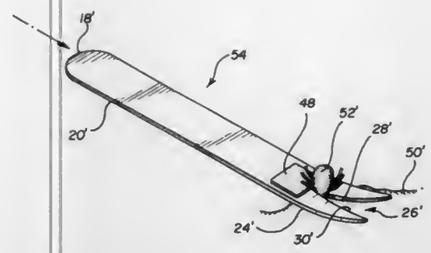
(a) a top, bottom, a front end, and a rear end,

(b) a rear end section shaped to be grasped in a hand of a person,

(c) a front end section comprising:

(i) a "V" shaped notch cut into the front end with a point of the notch extending towards the rear end and a wide portion of the notch opening through the front end,

(ii) an upper surface rearwardly of the point of the notch,



(iii) a bottom face of a bottom wall angled frontwardly and upwardly from a location at or rearwardly of the point of the notch, and

(iv) side edges of the notch proximate the point of the notch being sufficiently thin to allow the edges to be moved between the body of the tick and the animal's skin, and

(d) holding means to hold the tick on the device comprising a high sliding friction section of contact adhesive located on said upper surface, the level of friction being sufficient to prevent the tick from sliding off the device.

5,607,435

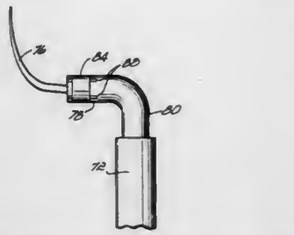
INSTRUMENT FOR ENDOSCOPIC-TYPE PROCEDURES

Rohit C. L. Sachdeva, Plano, Tex., and Petrus A. Besselink, AT Enschede, Netherlands, assignors to Memory Medical Systems, Inc., Plano, Tex.

Filed May 23, 1994, Ser. No. 247,779

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—139 **30 Claims**



1. A medical/dental instrument for performing at least one procedure inside a patient's body comprising:

a first tubular section having a bore formed by a wall made of a material exhibiting superelastic characteristics and having a leading end for mounting a tool;

a first delivery tube having a wall forming a bore for receiving said first tubular section therethrough; and

an actuating mechanism for moving said first tubular section in and out of and through the bore of said first delivery tube,

said first tubular section being substantially straight when its wall is within the bore of said first delivery tube and said first tubular section having a bent or curved shape for performing at least one procedure inside of a patient's body when its wall is disposed outside of said first delivery tube,

said leading end of said tubular section including a variable locking element made of a shape memory material having a transformation temperature range, said element permitting the mounting and removal of a tool from said leading end at temperatures below said range, and to lock said tool in place when mounted on said leading end at temperatures above said range, said variable locking element being a ring having an inside diameter, and said leading end of said tubular section having an outside diameter for receiving said ring, said inside diameter being larger than said outside diameter at temperatures below said range, and when unconstrained, said inside diameter being smaller than said outside diameter at temperatures above said range.

5,607,436

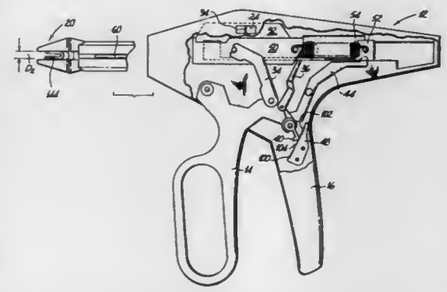
APPARATUS FOR APPLYING SURGICAL CLIPS

James R. Pratt, Wolcott; Gary S. Kappel, Stamford; Douglas J. Cuny, Bethel; H. Jonathan Tovey, Milford; Paul J. Phillips, Middlebury; Mark S. Peyser, Monroe, and Ernie Aranyi, Easton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 8, 1993, Ser. No. 134,347

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—143 **74 Claims**



1. An apparatus for applying surgical clips comprising:

a handle portion;

a body portion extending from said handle portion;

a jaw mechanism extending from said body portion at an end opposite said handle portion and movable between an open position for receiving a clip and a closed position for forming a clip in response to movement of said handle portion, such movement from the open to the closed position defining a closing stroke of the jaw mechanism;

a clip supply disposed within said body portion;

means for advancing a clip from said clip supply to said jaw mechanism; and

means for ensuring completion of the closing stroke of said handle portion and said jaw mechanism, said means for ensuring completion of the closing stroke including means for permitting a partial opening stroke of said jaw mechanism after at least a partial closing stroke is effected to permit release of a partially formed clip from said jaw mechanism.

5,607,437

INSTRUMENTS FOR USE IN PERFORMING GEL INJECTION ADJUSTABLE KERATOPLASTY

Gabriel Simon, Barcelona, Spain; William G. Lee, Miami Beach, and Jean-Marie A. Parel, Miami Shores, both of Fla., assignors to University of Miami, Miami, Fla.

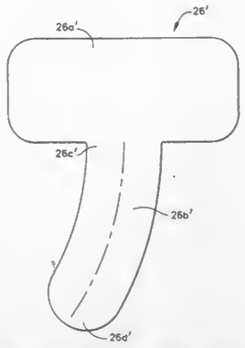
Continuation-in-part of Ser. No. 836,711, Feb. 19, 1992, Pat. No. 5,372,580, which is a continuation-in-part of Ser. No. 551,807, Jul. 12, 1990, Pat. No. 5,090,955. This application Sep. 1, 1994, Ser. No. 299,423

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—166 **15 Claims**

1. A guiding device for facilitating the insertion of a delaminating device into an incision in the cornea for separating the lamellae of the cornea during a procedure for altering the radius of curvature of the cornea of an eye, said device comprising:

a first section consisting of a flat planar surface of uniform thickness for insertion into an incision in a cornea for guiding the end of a delaminating device between the lamellae of the cornea at a selected depth, and



a second section, coupled to said guide section, for contacting the surface of the cornea to limit the depth of travel of said first section into the incision, wherein said first and second sections are coplanar, and wherein said first section extends curvillinearly from said second section.

5,607,438

Patent Not Issued For This Number

5,607,439

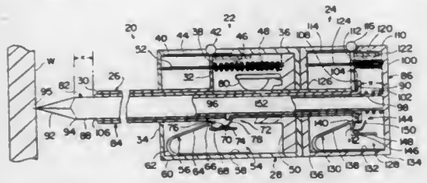
SAFETY PENETRATING INSTRUMENT WITH PENETRATING MEMBER MOVING DURING PENETRATION AND TRIGGERED SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, and Ser. No. 115,152, Sep. 2, 1993. This application Sep. 30, 1994, Ser. No. 315,506

Int. Cl.[6] A61M *5/00*

U.S. Cl. 606—185 **10 Claims**



1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity wall comprising

a housing;.

an elongate cannula mounted by said housing and having a distal end for positioning in the anatomical cavity and a proximal end for positioning externally of the anatomical cavity;

a penetrating member disposed in said cannula and having a distal end for penetrating the anatomical cavity wall;

cannula extending means for moving said cannula distally relative to said housing from a cannula retracted position where said cannula distal end is disposed proximally of said penetrating member distal end to a cannula extended position where said cannula distal end protrudes distally from said penetrating member distal end;

means for manually moving said cannula from said cannula extended position to said cannula retracted position;

cannula locking means for locking said cannula in said cannula retracted position to prevent distal movement of said cannula beyond said cannula retracted position;

bias means for biasing said penetrating member distally relative to said housing toward a rest position while permitting proximal movement of said penetrating member away from said rest position during penetration of the anatomical cavity wall;

a safety member disposed in said cannula and having a distal end, said safety member being movable relative to said housing between a safety member extended position wherein said safety member distal end protrudes distally from said penetrating member distal end and a safety member retracted position where said safety member distal end is disposed proximally of said penetrating member distal end to expose said penetrating member distal end;

safety member extending means for moving said safety member distally relative to said housing from said safety member retracted position to said safety member extended position;

means for manually moving said safety member proximally relative to said housing from said safety member extended position to said safety member retracted position;

safety member locking means for locking said safety member in said safety member retracted position during penetration of the anatomical cavity wall; and

releasing means responsive to distally-biased movement of said penetrating member upon entering the anatomical cavity for triggering release of said cannula and safety member locking means to permit said cannula and safety member extending means to move said cannula and safety member distally relative to said housing from their respective retracted positions to their respective extended positions.

5,607,440

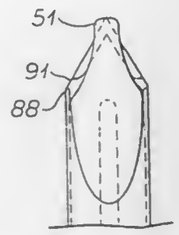
TROCAR WITH LOCKABLE SHIELD

John K. Danks, Boca Raton, Fla.; Richard V. Mazzola, Bloomfield, N.J., and Thomas R. Johnson, Milford, N.H., assignors to Endoscopic Concepts, Inc., Delray Beach, Fla.

Division of Ser. No. 238,959, May 6, 1994, Pat. No. 5,545,150. This application Jun. 2, 1995, Ser. No. 459,331

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—185 **20 Claims**



1. A shielded obturator comprising:

(a) an obturator sheath having a distal end and a proximate end;

(b) a handle mounted to the proximate end of said obturator sheath;

(c) a pointed blade on the distal end of the obturator sheath said pointed blade having a sharpened point at a distal end and sharpened lateral portions;

(d) a shield slidably mounted to the obturator sheath and movable relative to the pointed blade between an extended protective position, a partially retracted semi-protective position covering the sharpened point of the pointed blade while leaving at least a portion of the sharpened lateral portions exposed for cutting tissue, and a retracted unprotected position; and

(e) a biasing means tending to bias the shield into the extended protective position.

5,607,441

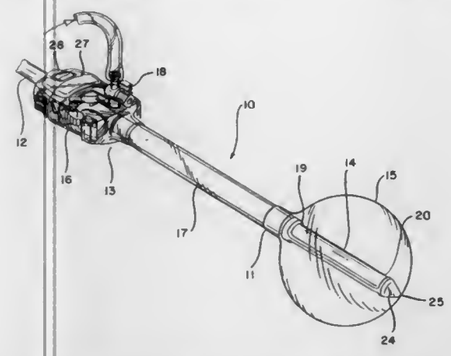
SURGICAL DISSECTOR

Thomas J. Sierocuk, West Chester; William A. Garrison, Cincinnati, and Allan R. Michetti, Loveland, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Mar. 24, 1995, Ser. No. 410,438

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—190 **5 Claims**



1. A surgical instrument for dissecting internal bodily tissue, said instrument comprising:

a trocar cannula having a cannula housing and an elongate tubular sleeve extending distally therefrom for slidably receiving an endoscope therethrough, said tubular sleeve having a longitudinal axis and a distal end; and

an extension assembly connected to said sleeve distal end and extending distally therefrom, said assembly having a proximal end affixed to said sleeve distal end and a distal end having a restricting member positioned remote from said sleeve distal end, and a plurality of spaced apart extender arms connecting said assembly proximal end to said assembly distal end, said extender arms extending in a direction generally parallel to said sleeve longitudinal axis, wherein said extension assembly provides a passageway therethrough from said sleeve distal end between said extender arms to said assembly distal end for receiving and supporting an endoscope inserted through said assembly for positioning adjacent said restricting member, said restricting member blocking distal movement of said endoscope beyond said restricting member.

5,607,442

STENT WITH IMPROVED RADIOPACITY AND APPEARANCE CHARACTERISTICS

Robert E. Fischell, Dayton, Md., and David R. Fischell, Fair Haven, N.J., assignors to IsoStent, Inc., San Carlos, Calif.

Filed Nov. 13, 1995, Ser. No. 557,355

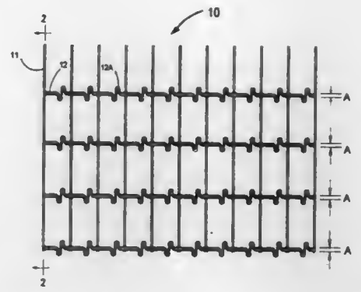
Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—191 **17 Claims**

1. A stent for deployment within a vessel of a human body comprising:

a generally tubular, thin-walled, metal structure having a longitudinal axis, the stent including a multiplicity of longitudinal structures each lying generally parallel to the longitudinal axis of the stent and having a surface plating of a high density metal, the high density metal being at least 5 microns in thickness on at least some portion of the surface of each longitudinal structure; and,

the stent also having generally circumferential metal wires connected to the longitudinal structures, said wires being plated with said dense metal to a lesser thickness as compared to a greater thickness of dense metal thickness on the longitudinal structures.



5,607,443

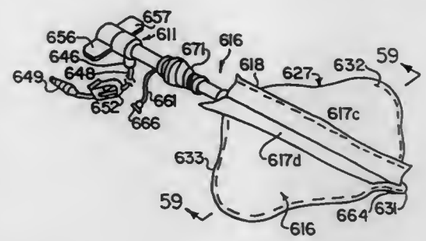
EXPANSIBLE TUNNELING APPARATUS FOR CREATING AN ANATOMIC WORKING SPACE WITH LAPAROSCOPIC OBSERVATION

Maciej J. Kieturakis, San Carlos; Kenneth H. Mollenauer, Santa Clara; Jan M. Echeverry, San Jose; George D. Hermann, Los Gatos; Thomas A. Howell, Palo Alto; Michelle Y. Monfort, Los Gatos; Shigeru Tanaka, Palo Alto, and James E. Jervis, Atherton, all of Calif., assignors to General Surgical Innovations, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 124,283, Sep. 20, 1993, which is a continuation-in-part of Ser. No. 893,988, Jun. 2, 1992. This application Jun. 29, 1994, Ser. No. 267,488

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—192 **26 Claims**



14. An expansible tunneling apparatus for creating an anatomic working space comprising:

a substantially rigid tunneling member having an internal bore sized to receive a laparoscope and a blunt distal end, said tunneling member being formed of a substantially transparent material to facilitate observation with the laparoscope during blunt tunneling;

a balloon having an interior space mounted on said distal end of said tunneling member, said balloon being disposed in a generally cylindrical roll about said tunneling member when in a deflated condition to form, in cooperation with said tunneling member, a blunt tipped obturator for tunneling through tissue;

an integral balloon cover comprising two portions extending longitudinally along said balloon, said portions surrounding said balloon to retain said balloon into said cylindrical roll and;

means for connecting to an inflation source to inflate said balloon after a desired location within a body has been reached to cause said balloon to expand and dissect tissue to create the anatomic working space.

5,607,444

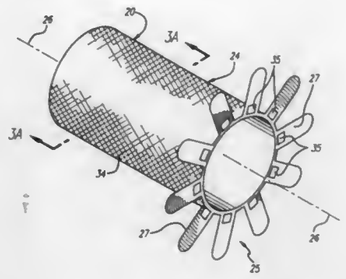
OSTIAL STENT FOR BIFURCATIONS

Sharon Lam, San Jose, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 162,579, Dec. 2, 1993, abandoned. This application Jul. 9, 1996, Ser. No. 677,248

Int. Cl.[6] A61M 29/00

U.S. Cl. 606—194 13 Claims



1. An expandable stent comprising a tubular body having a pair of ends, and a flaring portion attached to one of said ends of said tubular body, said flaring portion being capable of flaring to an angle exceeding 90° relative a longitudinal axis extending through said stent, said stent having an undeployed configuration wherein said tubular body and said flaring portion are unexpanded and said flaring portion is parallel to said longitudinal axis and a deployed configuration, wherein said tubular body and said flaring portion are expanded and said flaring portion is flared relative to said longitudinal axis.

5,607,445

STENT FOR SUPPORTING A BLOOD VESSEL

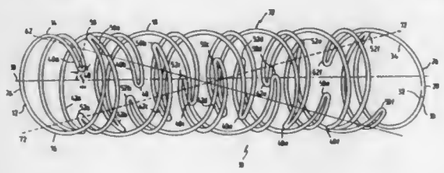
David P. Summers, Montgomery, Tex., assignor to American BioMed, Inc., The Woodlands, Tex.

PCT No. PCT/US93/05823, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/00179, PCT Pub. Date Jan. 6, 1994

Continuation-in-part of Ser. No. 900,896, Jun. 18, 1992, Pat. No. 5,342,387. This PCT application Jun. 16, 1993, Ser. No. 367,239

Int. Cl.[6] A61M 29/02

U.S. Cl. 606—198 10 Claims



1. A stent for supporting a blood vessel, comprising:

a single length of material comprising only a single closed loop;

said material being bent to form a coil about a longitudinal axis, said coil defining a helix around said longitudinal axis; and

said coil being such that said material does not cross itself at any point.

5,607,446

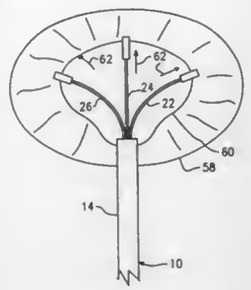
PUPIL DILATOR

Cecil C. Beehler, 5546 Shaddelee Dr., Fort Myers, Fla. 33907, and Cecil C. Beehler, II, 4610 NW. 35th Rd., Gainesville, Fla. 32606

Filed Jan. 31, 1995, Ser. No. 381,333

Int. Cl.[6] A61B 17/00

U.S. Cl. 606—198 12 Claims



1. An instrument for dilating the pupil of an eye comprising:

a handle;

switch means mounted on said handle for alternating between first and second states;

a retractable dilator mechanism including a plurality of elongate arms attached to said switch means and being extendible from said handle, said dilator mechanism selectively alternating between a retracted condition when said switch means are in said first state and an expanded condition when said switch means are in said second state; and

engagement means carried by said dilator mechanism, and including hook elements that are respectively secured to a distal end of each said arm, for engaging a plurality of points along an inside edge of the pupil and urging said pupil into a dilated condition when said dilator mechanism is expanded.

5,607,447

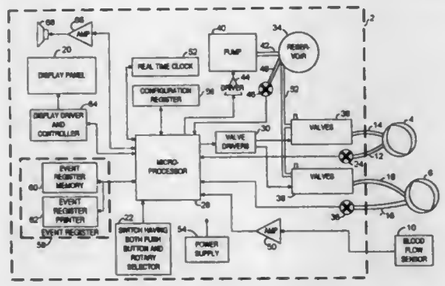
PHYSIOLOGIC TOURNIQUET

James A. McEwen, 10551 Bamberton Drive, Richmond, B.C., Canada, and Michael Jameson, 2365 Badger Road, North Vancouver, B.C., Canada

Continuation-in-part of Ser. No. 128,478, Sep. 28, 1993, Pat. No. 5,439,477. This application Aug. 26, 1994, Ser. No. 297,255

Int. Cl.[6] A61B 5/00

U.S. Cl. 606—201 12 Claims



1. A physiologic tourniquet system, comprising:

a pressurizing cuff for encircling and applying pressure to a limb;

selector means for producing a reference pressure signal indicative of a reference pressure level to be applied to the limb by the cuff to stop blood flow into the limb distal to the cuff, wherein the selector means retrieves a recorded pressure level from an electrically powered configuration register and permits an operator to select either the retrieved pressure level or another pressure level as the reference pressure level;

configure mode means for enabling the operator to produce a configure mode signal that indicates a selected one of a plurality of operating modes;

electrically powered register means responsive to the configure mode signal and the reference pressure signal and operable for selectively recording the pressure level corresponding to the level of the reference pressure signal when the configure mode signal is at the selected mode, and further operable for retaining the recorded pressure level when electrical power is not supplied to the electrically powered configuration register; and

regulator means responsive to the reference pressure signal for regulating the pressure in the cuff near the reference pressure level.

5,607,448

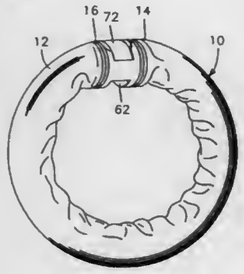
ROLLING TOURNIQUET

Daniel A. Stahl, 7081 Tyler St., Hollywood, Fla. 33024; Walter W. Johnson, Hollywood, and Oscar Galvis, Hialeah, both of Fla., assignors to Daniel A. Stahl, Hollywood, Fla.

Filed May 10, 1995, Ser. No. 438,925

Int. Cl.[6] A61B 17/100

U.S. Cl. 606—203 14 Claims



1. A limb encircling rolling tourniquet including an elongated, flexible outer elastic tube having first and second ends, an elongated, flexible and circumferentially corrugated substantially cylindrical inner tubular member, said tubular member being highly resistant to radial compression and at least somewhat longitudinally elastic, said tubular member including first and second ends and being telescoped within said tube with said tube first and second ends corresponding to said first and second ends of said tubular member, first and second end connecting members to which said first and second ends, respectively, of said tube and tubular member are anchored, said first and second connecting members including first and second connector structure, respectively, releasably engageable with each other releasably joining said connecting members together with said first and second ends of said tube and tubular member in substantially axially aligned relation, said tourniquet, when disposed about a body limb in a stretched condition with said connecting members releasably engaged with each other, being gradually rollable along said limb toward the free end thereof.

5,607,449

TUBULAR-SHAFT SURGICAL INSTRUMENT

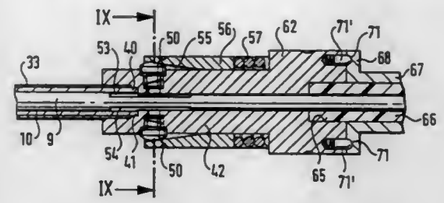
Thomas Tontarra, Wurmlingen, Germany, assignor to Tontarra Medizintechnik GmbH, Wurmlingen, Germany

Filed May 31, 1995, Ser. No. 455,540

Claims priority, application Germany, Nov. 15, 1994, 9418094 U

Int. Cl.[6] A61B 17/28

U.S. Cl. 606—205 10 Claims



1. A tubular-shaped surgical instrument, comprising: an actuating rod; a guide tube, said actuating rod being guided axially movably in said guide tube; a forceps/scissors-like tool, mounted at a free end of said guide tube, connected to said guide rod, said guide tube having a tube section with a slot cutout, said tool being mounted in said cutout, said tool having at least one tool part pivotable around an axis extending at right angles to an axis of said guide tube, said guide tube having a bayonet catch receiving portion; a bayonet catch associated with said tube section and said tool for detachably mounting said tube section and tool to said guide tube; an actuating lever connected to said actuating rod for actuating said tool; detachable connection means for connecting said actuating rod to said lever; a holder provided with a hand grip, said actuating lever being pivotably mounted on said holder, said holder including a guide sleeve coaxial with said guide tube, said guide sleeve including non-rotation means for preventing said actuating rod from rotating in relation to said guide tube, said detachable connection means including a rod coupling for connecting said actuation rod to said actuating lever, said actuating rod passing through said guide sleeve in one piece, said guide tube being rigidly and non rotatably connected to said guide sleeve.

5,607,450

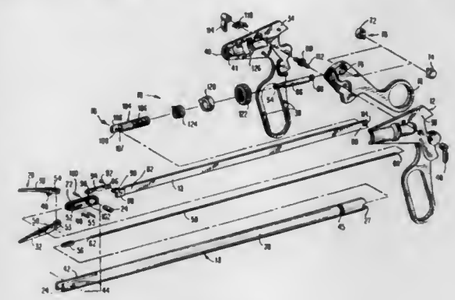
ARTICULATING ENDOSCOPIC SURGICAL APPARATUS

Boris Zvenyatsky, Bronx, N.Y.; Ernest Aranyi, Easton, and H. Jonathan Tovey, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 834,687, Feb. 12, 1992, Pat. No. 5,383,888. This application Dec. 20, 1994, Ser. No. 359,625

Int. Cl.[6] A61B 10/00

U.S. Cl. 606—206 12 Claims

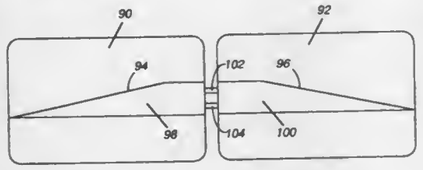


1. A surgical apparatus comprising:

a) a handle assembly including a first actuator and a second actuator;

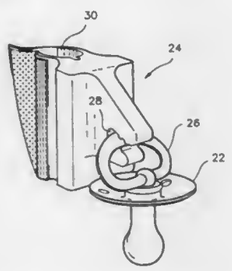
b) an elongated body portion extending distally from the handle assembly;
c) a tool assembly including a tool housing pivotably associated with a distal end portion of the body portion, and at least two cooperating tool members pivotably mounted within the tool housing;
d) a linkage assembly including at least one reciprocating link extending from the handle assembly, through the body portion to the tool housing, and configured to effect pivotable movement of the tool housing in response to actuation of the first actuator; and
e) an actuation member extending from the handle assembly, through the body portion, to the cooperating tool members to effect pivotable movement of the tool members in response to actuation of the second actuator.

5,607,451
FLAT TWEEZERS
Serafin G. Menocal, Jr., Fair haven, N.J., assignor to Mind Mechanics, Inc., Red Bank, N.J.
Filed Sep. 30, 1992, Ser. No. 954,661
Int. Cl.[6] A61B *17/30*
U.S. Cl. 606—210 **14 Claims**



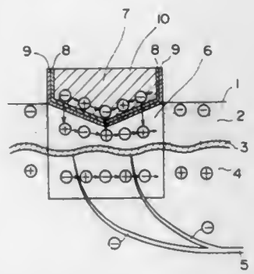
5. A blank for making tweezer, said blank comprising:
a card made of a flat plastic material, said card having at least one score line arranged to form a tweezer when broken.

5,607,452
PACIFIER HOLDER
Barbara Michaud, 17 - 4th Avenue, P.O. Box 11, Clair, N.B., Canada
Filed Dec. 2, 1994, Ser. No. 348,480
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—234 **16 Claims**



5. A pacifier holder for retaining a pacifier in a baby crib, comprising:
mounting means for retentively clamping a vertical bar of said baby crib, said mounting means defining a mounting axis mountable along a longitudinal axis of said vertical bar;
finger means being integrally formed with a portion of said mounting means, and extending away from said mounting means in a direction generally perpendicular to said mounting axis;
said finger means comprising a first finger and a second finger of which at least one is made of a resilient material, said first and second fingers being spaced apart a distance defining a holding slot for retaining therein a handle ring of said pacifier;
said first finger having a hump protruding towards said second finger, and said second finger having two swellings protruding towards said first finger, said two swellings being positioned astride said hump;
whereby a clearance between said hump and said swellings is less than a gap of said slot, for retaining said handle ring of said pacifier in a restrictive manner.

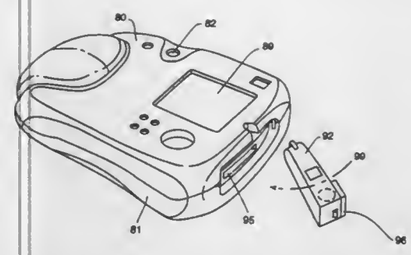
5,607,453
COMPOSITE MEDICAL TREATING DEVICE COMPOSED FERRODIELECTRIC SUBSTANCE AND SEMICONDUCTOR
Saburo Ishiguro, Tokyo; Tatsuo Inoue, Hiratsuka; Yoshitsugu Fujita, Koganei, and Tetsuhiro Iwata, Iwaki, all of Japan, assignors to Furukawa Co., Ltd., Japan
Filed Apr. 27, 1995, Ser. No. 429,887
Claims priority, application Japan, Apr. 28, 1994, 6-092021
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—2 **8 Claims**



1. A composite medical treating device formed of a ferrodielectric substance and a semiconductor, the device comprising:
one of a ferrodielectric substance and a material containing a ferrodielectric substance; and
laminations of an n-type semiconductor film and a p-type semiconductor film coated in this order on the one of the ferrodielectric substance and the material containing the ferrodielectric substance, so that
said n-type semiconductor film is in contact with said one of the ferrodielectric substance and the material containing the ferrodielectric substance, and
said p-type semiconductor film is in contact with said n-type semiconductor film, and
the p-type semiconductor film is affixable to a surface of human skin at a position having a pain, wherein the n-type and p-type semiconductor films provide a stabilization effect to the surface of the human skin at said position.

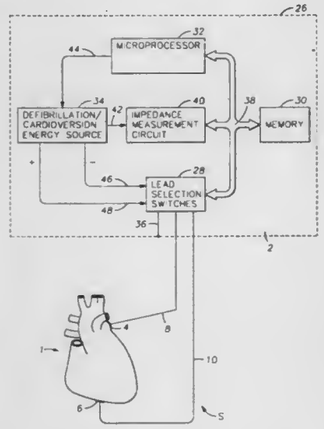
5,607,454
ELECTROTHERAPY METHOD AND APPARATUS
David Cameron, Seattle; Thomas D. Lyster, Bothell; Daniel J. Powers, Bainbridge Island; Bradford E. Gliner, Bellevue; Clinton S. Cole, Seattle, and Carlton B. Morgan, Bainbridge Island, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 103,837, Aug. 6, 1993. This application Apr. 14, 1994, Ser. No. 227,553
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **59 Claims**

36. An external defibrillator comprising:
an energy source;



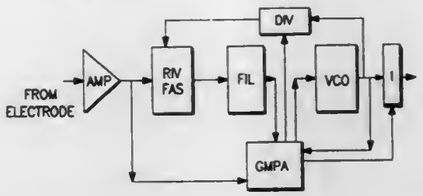
two electrodes adapted to make electrical contact with the exterior of a patient;
a connecting mechanism forming an electrical circuit with the energy source and the electrodes when the electrodes are attached to a patient;
a controller operating the connecting mechanism to deliver electrical energy from the energy source to the electrodes;
the defibrillator having a weight less than four pounds.

5,607,455
METHOD AND APPARATUS FOR AUTOMATIC SHOCK ELECTRODE ENABLING
Randolph K. Armstrong, Missouri City, Tex., assignor to Iotermedics, Inc., Houston, Tex.
Filed May 25, 1995, Ser. No. 450,105
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—8 **27 Claims**



1. A method of maximizing likelihood of successful defibrillation or cardioversion of a heart using an automatic implantable cardioverter/defibrillator system, comprising:
measuring the shock electrode impedance of said system between at least two electrodes;
comparing said impedance to a high impedance threshold;
where said impedance is approximately above said high impedance threshold, connecting at least one additional electrode to said system; and,
creating at least one shocking current vector which passes through a mass of cardiac tissue sufficient to cardiovert/defibrillate said heart.

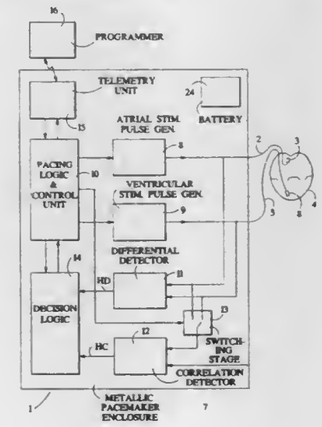
5,607,456
ARTIFICAL CARDIAC PACEMAKER WHICH EMITS STIMULI LOCKED TO THE ELECTRIC IMPULSION OF THE NATURAL CARDIAC PACEMAKER
Luigi Tellini, 160, Frz. Rigutino, I-52040 Arezzo, Italy
Filed Oct. 5, 1994, Ser. No. 318,111
Claims priority, application Italy, Dec. 14, 1993, AR93A0032
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—9 **15 Claims**



1. An artificial cardiac pacemaker which emits artificial stimuli to maintain regular and constant cardiac contractions, comprising:
electrode means, implanted in at least one of an atrial and ventricular cavity, for detecting a reference natural stimuli;
programmable control means for regulating a functioning of said pacemaker;
artificial stimuli generating means, connected to and controlled by said programmable control means, for generating said artificial stimuli;
phase detecting means, connected to said programmable control means, for detecting a phase difference between said detected reference natural stimuli and said generated artificial stimuli, an escape interval of said artificial stimuli generating means being phase-locked to the reference natural stimuli and proportional to a selected ratio between the period of the reference natural stimuli and said escape interval;
switch means, connected to said artificial stimuli generating means, for inhibiting said artificial stimuli when said natural stimuli reaches a condition considered to be normal.

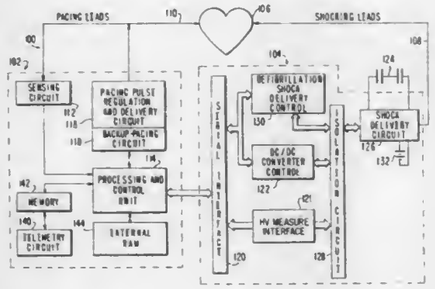
5,607,457
PACEMAKER WITH EVOKED RESPONSE DETECTION BY USING DIFFERENTIAL SENSING BETWEEN TWO UNIPOLAR ELECTRODES
Hans Schüller, S-224 67 Lund, Jullovsvägen 25, Sweden
Filed Sep. 29, 1995, Ser. No. 536,453
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—9 **26 Claims**

1. A heart stimulator comprising:



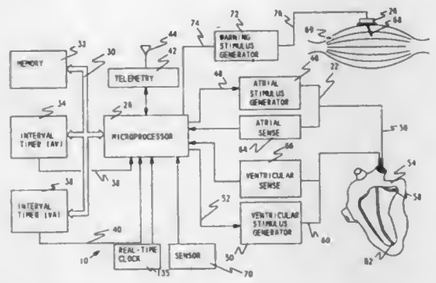
a housing implantable in a subject;
pulse generator means contained in said housing for emitting stimulation pulses;
a first unipolar electrical lead electrically connected to said pulse generator means for receiving said stimulation pulses therefrom, and terminating in an atrial placeable electrode placeable in the atrium of a heart of said subject;
a second unipolar electrical lead electrically connected to said pulse generator means for receiving said stimulation pulses therefrom, and terminating in a ventricular electrode placeable in the ventricle of said heart;
control means for controlling said pulse generator means for causing said stimulation pulses to be delivered to at least one of the atrium and the ventricle;
means in said housing connected to said first and second electrical leads for differentially detecting cardiac activity between said atrial electrode and said ventricular electrode and generating an electrical cardiac activity signal corresponding to said cardiac activity;
means in said housing, connected between said housing and one of said atrial or ventricular electrodes, for generating a correlation signal identifying whether said cardiac activity detected by said means for differentially detecting cardiac activity arose in the atrium or in the ventricle; and
logic means, supplied with said cardiac activity signal and said correlation signal, for determining from said cardiac activity signal and said correlation signal whether a stimulation pulse emitted by said pulse generator means resulted in an evoked response in said heart.

5,607,458
SAFETY OPTIMIZATION IN MICROPROCESSOR CONTROLLED IMPLANTABLE DEVICES
James D. Causey, III, Simi Valley, and Min-Yaug Yang, Monterey Park, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Filed Jul. 13, 1995, Ser. No. 501,838
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—27 **22 Claims**



1. An implantable cardiac stimulating device comprising:
a microprocessor;
a memory device coupled to the microprocessor;
a pulse delivery circuit, coupled to the microprocessor, for delivering an electrical stimulation pulse to a patient's heart;
a backup pacing circuit for delivering backup pacing to the patient's heart;
at least one error detection circuit for detecting errors in the implantable cardiac stimulating device; and
switching circuitry, coupled to each of the microprocessor, the at least one error detection circuit, and the backup pacing circuit, for switching the implantable cardiac stimulating device from a normal mode to an intermediate mode in response to a first error detected by the at least one error detection circuit, and for switching the implantable cardiac stimulating device from the intermediate mode to a backup pacing mode in response to a second error detected by the at least one error detection circuit; wherein:
while the implantable cardiac stimulating device is in the normal mode, the pulse delivery circuit is controlled by the microprocessor, and the microprocessor is able to store data in and retrieve data from the memory device;
while the implantable cardiac stimulating device is in the intermediate mode, the pulse delivery circuit is controlled by the microprocessor, the microprocessor is able to store data in the memory device, and the microprocessor is able to retrieve data that have been stored in the memory device after the implantable cardiac stimulating device entered the intermediate mode; and
while the implantable cardiac stimulating device is in the backup pacing mode, the backup pacing circuit is activated.

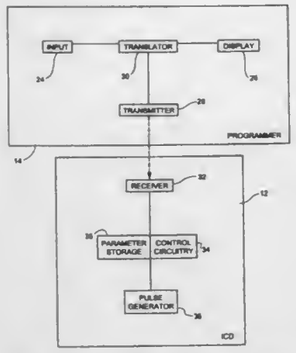
5,607,459
IMPLANTABLE CARDIAC STIMULATION DEVICE WITH TIME-OF-DAY SELECTABLE WARNING SYSTEM
Patrick J. Paul, and David Prutchi, both of Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.
Continuation-in-part of Ser. No. 549,050, Oct. 27, 1995. This application Mar. 8, 1996, Ser. No. 613,127
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—29 **28 Claims**



1. An implantable cardiac stimulator system comprising a cardiac stimulator comprising
means for producing a cardiac therapy,
means for detecting a predetermined condition,
means for producing a physiologic stimulation signal to warn said patient of said detected condition, and
means for delaying delivery of said physiologic stimulation signal to a selected time of day, and
at least one lead, said lead comprising
at least one electrode adapted to be implanted adjacent a patient's heart for delivering said cardiac therapy to the heart, and
a conductor for electrically connecting said therapy producing means to said electrode.

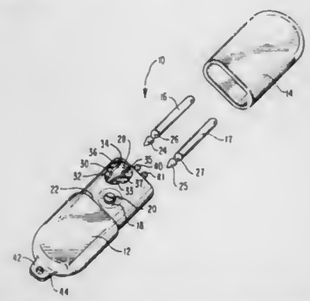
5,607,460
PHYSICIAN INTERFACE EXPERT SYSTEM FOR PROGRAMMING IMPLANTABLE ARRYTHMIA TREATMENT DEVICES
Mark W. Kroll, Minnetonka; James E. Brewer, Maplewood, and Scott T. Armitage, Minnetonka, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Filed Mar. 15, 1996, Ser. No. 616,256
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—30 **11 Claims**

1. A programmer for programming an implantable cardioverter defibrillator (ICD) comprising:



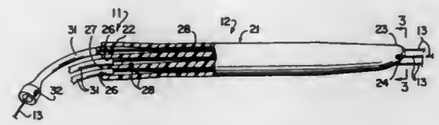
an input device that receives a first set of values including historical and observed patient profile information for a particular patient into whom the ICD is to be implanted;
a translator that translates the first set of values that are not formatted in accordance with a range of programmable parameter settings of the ICD to be implanted into a second set of values that are formatted in accordance with the range of programmable parameter settings of the ICD to be implanted; and
a transmitter that transmits the second set of values to the ICD to be implanted.

5,607,461
APPARATUS AND METHOD FOR DELIVERING ELECTRICAL STIMULUS TO TISSUE
Peter H. Lathrop, San Diego, Calif., assignor to NexMed, Inc., Los Angeles, Calif.
Filed Oct. 20, 1995, Ser. No. 545,945
Int. Cl.[6] A61N *1/20*
U.S. Cl. 607—75 **15 Claims**



1. An apparatus for applying an electrical stimulus comprising:
a housing;
a pair of electrodes extending from said housing, said pair of electrodes including a first electrode and a second electrode, each of said first electrode and said second electrode having an elongated body having a first end and a second end, said first end being configured with a smooth profile for contacting tissue, said second end including detent means for releasably engaging said elongated body to said housing;
a battery means in said housing for supplying electrical current to said electrodes; and
switch means on said housing for controlling said electrical current to said electrodes;
wherein said housing includes a closure and an undercut section adjacent to said electrodes and to said switch means, said undercut section receiving said closure to enclose said electrodes and said switch means.

5,607,462
CATHETER ASSEMBLY, CATHETER AND MULTI-CATHETER INTRODUCER FOR USE THEREWITH
Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.
Continuation-in-part of Ser. No. 126,314, Sep. 24, 1993, Pat. No. 5,342,295. This application Jul. 7, 1994, Ser. No. 271,867
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—122 **21 Claims**



1. An assembly for use in performing a medical procedure within a region of the heart of a patient having a vessel therein leading thereto comprising a multi-catheter introducer adapted to be inserted into the vessel of a patient from a single site, the multi-catheter introducer including an elongate flexible tubular body having proximal and distal extremities and having at least one lumen extending from the proximal extremity to the distal extremity, the elongate flexible tubular body having a length so that it can extend from the exterior of the body to said region of the heart, a plurality of mapping catheters in excess of two having proximal and distal extremities, at least certain of said mapping catheters having a plurality of spaced-apart electrodes on their distal extremities, said introducer and exiting from the distal extremity of the introducer in the same general location and means secured to the proximal extremities of the plurality of mapping catheters for advancing individually the distal extremities of the plurality of mapping catheters through the vessel and into the region so that the distal extremities are free and so that multiple functions can be performed by the catheters within the region from the single site and hemostasis valve means carried by the proximal extremity of the elongate flexible body for forming seals with respect to the plurality of catheters.

5,607,463
INTRAVASCULAR MEDICAL DEVICE
Robert S. Schwartz, Rochester; Ronald G. Tuch, Plymouth, and Rodney G. Wolff, Minnetonka, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Mar. 30, 1993, Ser. No. 40,045
Int. Cl.[6] A61F *2/06;2/04*
U.S. Cl. 623—1 **13 Claims**



1. An indwelling intravascular device for implantation in a blood vessel of a patient over an extended period of time, said intravascular device having at least one tissue-contacting surface, the tissue-contacting surface subject to contact with a wall of the blood vessel, the tissue-contacting surface comprising a base material and a thin layer of a metal from Group VB of the Periodic Table adherent to the base material.

5,607,464

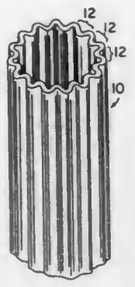
PROSTHETIC VASCULAR GRAFT WITH A PLEATED STRUCTURE

Paul V. Trescony, Robbinsdale; Michael Wolf, Brooklyn Park; Richard Molacek, Maple Grove, and Elaine Lindell, Blaine, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 914,648, Jul. 15, 1992, Pat. No. 5,282,847, which is a continuation of Ser. No. 662,667, Feb. 28, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 113,542

Int. Cl.[6] A61F *2/06;2/04*

U.S. Cl. 623—1 **14 Claims**



1. A method for treating an arterial blood vessel having a diseased portion comprising the steps of:
(a) creating a first opening in a first portion of the blood vessel upstream of the diseased portion;
(b) creating a second opening in a second portion of the blood vessel downstream of the diseased portion;
(c) proving a vascular graft having a first end and a second end and a flexible, tubular wall structure with longitudinally extending pleats therebetween; and
(d) compliantly securing the first and second ends of the vascular graft to the first and second openings, whereby blood flow through the vessel is provided by the pleated vascular graft.

5,607,465

PERCUTANEOUS IMPLANTABLE VALVE FOR THE USE IN BLOOD VESSELS

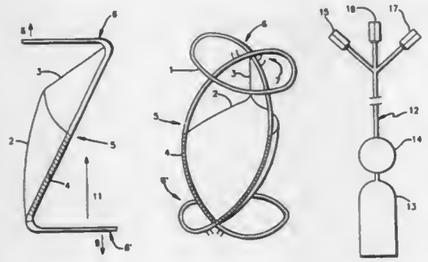
Sante Camilli, Via Casale D'Elsa, 15, 00139-Roma, Italy

Filed Sep. 2, 1994, Ser. No. 300,133

Claims priority, application European Pat. Off., Dec. 14, 1993, 93830500

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **7 Claims**



1. A valve for use in a blood vessel, internal to the blood vessel itself, in contact with a blood stream, comprising:
a bent flexible wire having elasticity and plasticity so as to be resilient, self-expanding and implantable remotely at a desired site;
wherein said wire is bent into at least three turns, to confine a tubular space, said at least three turns including a central turn and two end turns, said central turn being at an angle relative to said end turns; and
a monocusp valving element mounted on the central turn.

5,607,466

CATHETER WITH A STENT

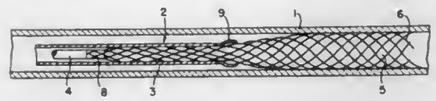
Christian Imbert, Versoix; Eugen Hofmann, Zurich, and Marc Gianottl, Wiesendangen, all of Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

Continuation of Ser. No. 10,102, Jan. 28, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 433,281

Claims priority, application European Pat. Off., Feb. 3, 1992, 92200294

Int. Cl.[6] A61F *2/06;* **A61M** *29/00;5/178*

U.S. Cl. 623—1 **12 Claims**



1. A catheter comprising:
(a) a tubular outer catheter having a distal end and an elastic safety cap attached to the distal end;
(b) an inner catheter having a proximal portion and a distal portion, the inner catheter disposed at least in part within the outer catheter and axially movable relative to the outer catheter; and
(c) a permeable mesh self-expanding stent having a proximal portion and a distal portion, the proximal portion of the stent overlapping and attached to the distal portion of the inner catheter in an overlapping portion, the overlapping portion having an outer diameter defined by the diameter of the proximal portion of the stent, wherein said elastic safety cap is adapted to close upon withdrawal of the stent.

5,607,467

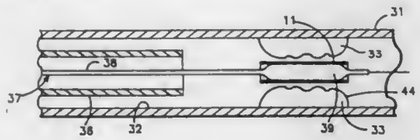
EXPANDABLE POLYMERIC STENT WITH MEMORY AND DELIVERY APPARATUS AND METHOD

Michael Froix, 3433 Woodstock La., Mountain View, Calif. 94040

Continuation of Ser. No. 874,181, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 582,531, Sep. 14, 1990, Pat. No. 5,163,952. This application Jun. 23, 1993, Ser. No. 516,091

Int. Cl.[6] A61F *2/06;* **A61M** *29/00*

U.S. Cl. 623—1 **10 Claims**



1. A self-restrained stent for use in the lumen defined by a wall of a vessel having a lumen therein of a patient, comprising a hollow substantially cylindrical member formed of a polymeric composition having an initial predetermined size which is less than the inside diameter of the lumen of the vessel so that the substantially cylindrical member can be inserted into the lumen of the vessel, said polymer composition forming said substantially cylindrical member having a transition characteristic therein whereby when the transition characteristic is activated the substantially cylindrical member will change its dimensions in all directions and assume a greater diameter than the initial predetermined diameter and come into engagement with the wall of the vessel to form a flow passage in the lumen of the vessel.

5,607,468

METHOD OF MANUFACTURING AN INTRALUMINAL STENTING GRAFT

Russell L. Rogers, Munith, and Rodney E. Turk, W. Bloomfield, both of Mich., assignors to Aeroquip Corporation, Maumee, Ohio

Division of Ser. No. 334,524, Nov. 4, 1994, Pat. No. 5,534,024. This application Aug. 18, 1995, Ser. No. 516,883

Int. Cl.[6] A61F *2/06;2/04*

U.S. Cl. 623—1 **7 Claims**



1. A method for manufacturing an intraluminal stenting graft comprising a collapsible tube member including an outer layer, an inner layer and a valve positioned in one end of the tube member, said method comprising the steps of:
(a) placing a first layer of material on a substantially flat surface;
(b) placing a second layer of material on a shaped surface;
(c) maintaining said second layer on said shaped surface by use of reverse pressure;
(d) moving said second layer to said first layer;
(e) joining said second layer to said first layer to form a plurality of longitudinally extending cylinders; and
(f) shaping said first and second layers to form a tube member.

5,607,469

BI-LEAFLET PROSTHETIC HEART VALVE

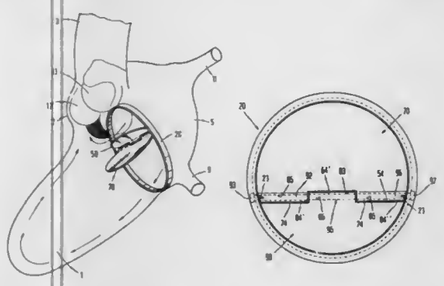
Rainer H. Frey, Starnberg, Germany, assignor to Inocor GmbH, Starnberg, Germany

Filed Oct. 26, 1994, Ser. No. 329,165

Claims priority, application Germany, Oct. 28, 1993, 43 36 899.9

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **26 Claims**



1. A bi-leaflet prosthetic heart valve, comprising:
a substantially circular valve ring having an inner circumference defining a flow channel for blood flow;
an axle secured to said valve ring, said axle being parallel to but not co-linear with a diameter of said valve ring;
two substantially half-moon shaped leaflets hingedly connected to said axle and pivoting independently of each other, said leaflets having different cross-sectional areas, said leaflets moving between a closed position wherein the leaflets both are substantially in a plane of said valve ring and substantially occlude a flow of blood through said flow channel, and an open position wherein each of said leaflets are pivoted about said axle with respect to said closed position thereby permitting blood to flow through said flow channel.

5,607,470

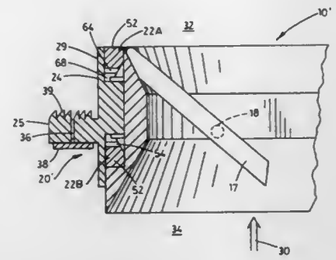
SUTURE RINGS FOR PROSTHETIC HEART VALVES

Simcha Milo, 6a Noga Street, Haifa, 34407, Israel

Filed May 1, 1995, Ser. No. 431,767

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **20 Claims**



1. A suture ring assembly for a heart valve, said suture ring assembly comprises:
a suture ring having an interior surface proportioned to surround an exterior surface of a generally annular valve body and rotate relative to said valve body, said suture ring further adapted to axially engage with said valve body; and
an annular retaining ring dimensioned to fit in a space between said interior surface of said suture ring and said exterior surface of said valve body, said annular retaining ring being adapted for maintaining engagement between said valve body and said suture ring and to prevent disengagement thereof.

5,607,471

PROSTHETIC RING FOR HEART SURGERY

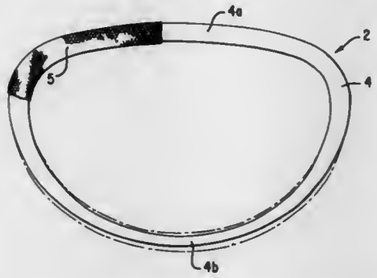
Jacques Seguin, Hôtel de Manse, 4 rue Embouque d'Or, 34000 Montpellier, and Robert Rogier, Montpellier, both of France, assignors to Jacques Seguin, Montpellier, France

Continuation of Ser. No. 139,751, Oct. 22, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 507,127

Claims priority, application France, Aug. 8, 1993, 93 09768

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **16 Claims**



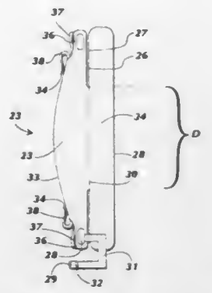
1. A prosthetic ring for at least one of mitral, tricuspid and aortic annuloplasty, comprising a core enclosed in a textile sheath, wherein:
the sheath comprises a suturing means;
the core is formed from a single material, the core comprises at least one relatively rigid portion and at least one flexible portion that is flexible relative to the rigid portion; and
a cross-sectional area of the core varies along a circumference of the ring, the area decreasing from the rigid portion toward the flexible portion, allowing deformation of the ring in all planes passing through the ring.

5,607,472

INTRAOCULAR LENS FOR RESTORING ACCOMMODATION AND ALLOWS ADJUSTMENT OF OPTICAL POWER

Keith P. Thompson, Atlanta, Ga., assignor to Emory University, Atlanta, Ga.

Filed May 9, 1995, Ser. No. 437,792
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 43 Claims



1. A lens implant for the eye, wherein the eye has a substantially intact capsulary bag having anterior and posterior walls and a capsulorexis opening with edges in said anterior wall, said implant comprising:

a first lens portion of a deformable material, said lens portion having a periphery and anterior and posterior surfaces;

affixing means on said lens portion adjacent said periphery for affixing said first said lens portion to the anterior wall of the capsular bag whereby forces on the anterior wall are transmitted to said lens portion;

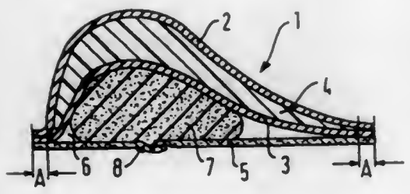
said affixing means comprising a shelf on said lens portion adjacent the periphery thereof, said shelf being coated with a pigmented polymer gel having a fight absorption characteristic, said shelf being adapted to receive and underlie the inner surface of the anterior wall of the capsulary bag adjacent the opening therein.

5,607,473

BREAST PROSTHESIS

Georg Weber-Unger, Kufstein, Austria, and Stephan Volk, Miesbach, Germany, assignors to Dr. Helbig GmbH & Co. Orthopädische Produkte KG, Brannenburg, Germany

Continuation of Ser. No. 299,755, Sep. 1, 1994, abandoned.
This application May 8, 1996, Ser. No. 646,722
Claims priority, application Germany, Jun. 20, 1994, 44 21 516.9
Int. Cl.[6] A61F 2/12
U.S. Cl. 623—8 13 Claims



1. A breast prosthesis to be worn on the body of a person who has had a mastectomy, comprising:

a prosthetic body made of soft plastic material and including a front plastic sheet and a rear plastic sheet connected to each other along a common peripheral edge to form an inner cavity therebetween which is completely filled by a plastic mass, said prosthetic body having a front side resembling the configuration of a natural breast and a rear side which faces a wearer's body; and

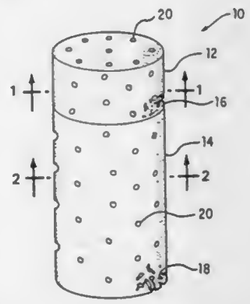
a fabric member bridging the rear side of said prosthetic body to allow formation of a space between said rear plastic sheet and said fabric member for effecting a ventilation, said fabric member being attached to said plastic sheets only about the common peripheral edge of the plastic sheets and exhibiting an edge terminating flush with the common peripheral edge of said plastic sheets.

5,607,474

MULTI-PHASE BIOERODIBLE IMPLANT/CARRIER AND METHOD OF MANUFACTURING AND USING SAME

Kyriacos A. Athanasiou, Helotes, and Barbara D. Boyan, San Antonio, both of Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Continuation of Ser. No. 837,401, Feb. 14, 1992, abandoned.
This application Sep. 20, 1993, Ser. No. 123,812
Int. Cl.[6] A61F 2/24;2/28
U.S. Cl. 623—11 20 Claims



1. A molded biodegradable polymeric implant comprising:

a first porous layer comprising a first biodegradable polymeric material, the first layer having a predetermined porosity for receiving growth of a first type of tissue during use;

a second porous layer comprising a second biodegradable polymeric material located on top of the first layer and the second layer having a predetermined porosity for receiving growth of a second type of tissue dissimilar from the first type of tissue during use; and

wherein the first and second polymeric materials each have stiffness and compressibility properties corresponding to the first and second types of tissue respectively.

5,607,475

BIOCOMPATIBLE MEDICAL ARTICLE AND METHOD

Linda L. Cahalan; Patrick T. Cahalan, both of Geleen; Michel Verhoeven, Maastricht; Marc Hendriks, Hoensbroek, and Benedicte Fouache, Maastricht, all of Netherlands, assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 22, 1995, Ser. No. 518,129
Int. Cl.[6] A61F 2/02;2/06
U.S. Cl. 623—11 12 Claims

1. An endoprosthesis having a metal surface contacting body fluids, the metal surface having a coating thereon comprising:

(a) a silane which includes a vinyl functionality, the silane adherent to the metal surface such that the vinyl functionality is pendant from the surface;

(b) a graft polymer, the graft polymer covalently bonded with the pendant vinyl functionality of the adherent silane, the graft polymer simultaneously formed and bonded to the pendant vinyl functionality by free radical reaction initiated by an oxidizing metal with at least one ethylenically unsaturated monomer selected from the group consisting of acrylamide and acrylic acid;

(c) a polyamine spacer covalently attached to the graft polymer; and

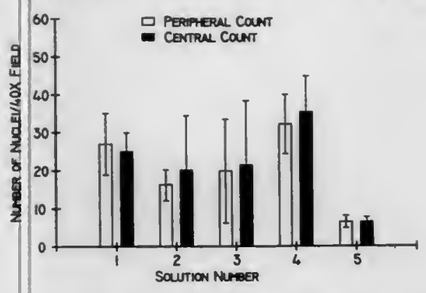
(d) a biomolecule covalently attached to the spacer.

5,607,476

PROCESSING OF FIBROUS CONNECTIVE TISSUE

Annamarie B. Prewett, Little Silver, and Robert K. O'Leary, Spring Lake, both of N.J., assignors to Osteotech, Inc., Eatontown, N.J.

Division of Ser. No. 995,940, Dec. 21, 1992, Pat. No. 5,507,810, which is a continuation of Ser. No. 773,023, Oct. 7, 1991, abandoned. This application Feb. 9, 1996, Ser. No. 598,962
Int. Cl.[6] A61F 2/64; A61K 35/22
U.S. Cl. 623—11 28 Claims



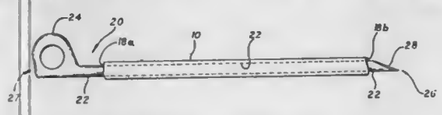
1. A process for removing a material selected from the group consisting of antigens, antigen generating material, tendon cells, ligament cells, cellular debris and inflammatory agents from fibrous tissue comprising contacting the fibrous tissue with at least one extraction agent for a sufficient time to remove said material from the fibrous tissue, wherein the at least one extraction agent includes at least one monohydric alcohol having at least three carbon atoms.

5,607,477

SOFT TISSUE AUGMENTATION APPARATUS

Robert Schindler, San Francisco, and Corey Maas, Sausalito, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 90,518, Jul. 12, 1993, abandoned.
This application Jan. 27, 1995, Ser. No. 379,007
Int. Cl.[6] A61F 2/02; A61B 17/34
U.S. Cl. 623—12 11 Claims



1. A soft tissue augmentation kit comprising:

an implant, the implant consisting essentially of a non-degradable, biocompatible material and having exterior and interior surfaces, the interior surface defining a cavity longitudinally extending from at least one cavity end, at least a portion of the implant between the exterior and interior surfaces being permeable to fibrous tissue growth, the implant adapted to have textural compatibility with soft tissue when implanted while maintaining sufficient of the cavity for tissue ingrowth into the cavity adjacent to the at least one end; and,

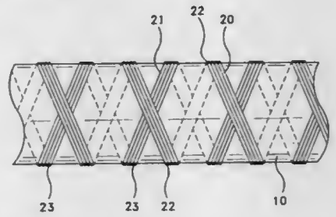
an insertion tool for the implant, the insertion tool including a shaft and terminating with a tool sharp tip, the tool being of a construction sufficient to carry the implant with the sharp tip extending beyond the implant through an incision made at least in part by the sharp tip and into a selected implant position in soft tissue.

5,607,478

YARN WRAPPED PTFE TUBULAR PROSTHESIS

David J. Lentz, Randolph; Nick Popadiuk, Hillsborough, both of N.J.; Peter Schmitt, Garnerville, N.Y.; Edward J. Dormier, Rockaway, and Richard J. Zdrahala, Montville, both of N.J., assignors to Meadox Medicals Inc., Oakland, N.J.

Filed Mar. 14, 1996, Ser. No. 616,047
Int. Cl.[6] A61F 2/04;2/06
U.S. Cl. 623—12 12 Claims



1. An implantable tubular prosthesis comprising an expanded polytetrafluoroethylene (ePTFE) tube having a microporous structure defined by nodes interconnected by fibrils, said tube having a length; and

at least one winding of a non-porous, non-elastic multifilament yarn helically wrapped externally about at least a portion of said tube along the length thereof, said yarn consisting essentially of polytetrafluoroethylene (PTFE).

5,607,479

HAIR LOSS REPLACEMENT METHOD AND SYSTEM

Dennis R. Jones, and Patricia A. Jones, both of 1001 Fairway Ct., Chesapeake, Va. 23320

Filed Feb. 21, 1995, Ser. No. 391,693
Int. Cl.[6] A61F 2/10
U.S. Cl. 623—15 2 Claims

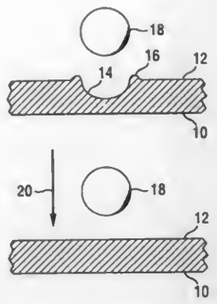


1. A process for replacing a person's hair loss, comprising the steps of:

surgically transplanting hair follicles from one area of the person's head to the frontal area of the person's head to form a front natural hair line, said step of surgically transplanting hair follicles comprises creating a gradation between minigrafts of 3 to 7 hair follicles and micrografts of 1 to 2 hair follicles,

providing a non-surgical hair piece having a front edge portion.

customizing said front edge portion by shaping it to fit precisely behind and contiguous to the rear edge of said front natural hair line and to blend into the surgically transplanted hair, and attaching said non-surgical hair piece to the person's scalp.



5,607,480

SURGICALLY IMPLANTABLE PROSTHETIC DEVICES

Keith D. Beaty, West Palm Beach, Fla., assignor to Implant Innovations, Inc., West Palm Beach, Fla.

Filed Nov. 10, 1993, Ser. No. 149,905

Int. Cl.[6] A61F *2/28*

U.S. Cl. 623—16 **57 Claims**

1. A prosthetic device surgically implantable in living bone, saiddevice having a surface of a biocompatible material for confronting said bone, said surface being formed by impaction with a grit made of a harder alloy of said biocompatible material to a pattern of overlapping irregularities selected from among depressions, scratches and dents of prescribed sizes and configurations.

5,607,481

FIBER-REACTIVE ANTHRAQUINONE DYES

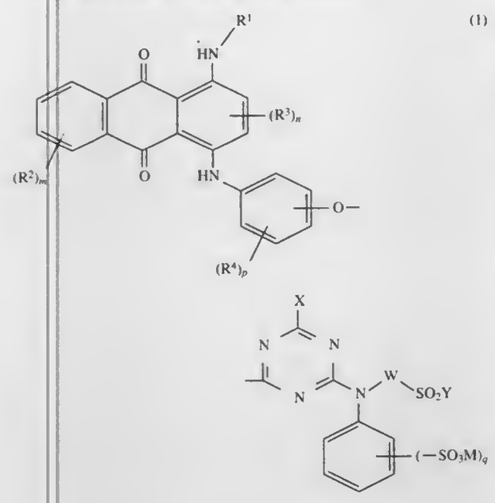
Werner H. Russ, Flörsheim, and Christian Schumacher, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Feb. 13, 1996, Ser. No. 600,828

Int. Cl.[6] D06P *5/15;1/382;1/384;* **C07D** *251/40*

U.S. Cl. 8—463 **15 Claims**

1. An anthraquinone compound of the formula (1).



in which

R^1 is hydrogen, C_1–C_6-alkylcarbonyl, C_6-arylcarbonyl, C_1–C_6-alkyl, C_3–C_6-cycloalkyl or phenyl where C_1–C_6 -alkyl, C_6 arylcarbonyl C_3–C_6-cycloalkyl and phenyl can be substituted by one or more radicals selected from the group consisting of hydroxyl, sulfo, carboxyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, cyano, amino and nitro,

R^2 is sulfo or carboxyl,

m is 0 to 2,

R^3 is sulfo, carboxyl or halogen,

n is 0 or 1,

R^4 is sulfo, carboxyl, C_1–C_4-alkyl or C_1–C_4-alkoxy,

p is 0 to 2,

W is a C_1–C_6-alkylene group,

Y is vinyl or $—CH_2CH_2$-L where L is a group which can be eliminated under alkaline conditions,

M is hydrogen or an alkali metal or a stoichiometric equivalent of an alkaline earth metal,

q is 0 or 1, and

X is halogen, hydroxyl, C_1–C_4-alkyloxy, C_6-aryloxy, cyanamino, amino, carboxy-(C_1–C_4)-alkylamino, C_1–C_4 -alkylamino, di-(C_1–C_4-alkyl)amino or C_6-arylamino where the alkyl and aryl radicals of the alkylamino and arylamino groups mentioned are unsubstituted or contain 1 to 5 substituents selected from the group consisting of hydroxyl, C_1–C_4-alkoxy, carboxyl, sulfo, sulfato, C_1–C_4-alkylsulfonyl, C_6-arylsulfonyl, halogen, cyano and nitro; or is the radical of a heterocyclic or aliphatic amine which may contain 1 or 2 further hetero atoms selected from the group consisting of N, O and S and can be substituted by a carboxyl radical or an aminocarbonyl radical; or is the group $—NR^9R^{10}R^{11}$ in which R^9, R^{10} and R^{11}, independently of one another, are hydrogen or C_1–C_4-alkyl.

5,607,482

CROSSLINKING AGENTS FOR TEXTILE PRINTING FIXING AGENTS

Helmut Reiff; Herbert Wigger, both of Leverkusen; Matthias Gehling, Leichlingen, and Karl-Heinz Passon, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 8, 1995, Ser. No. 525,109

Claims priority, application Germany, Sep. 20, 1994, 44 33 437.0

Int. Cl.[6] D06P *1/54*

U.S. Cl. 8—495 **9 Claims**

1. A method for textile printing with an organic fixing agent comprising applying to a textile substrate an aqueous dispersion comprising

(1) an organic fixing agent comprising a polymer having isocyanate-reactive groups;

(2) 1 to 25 parts by weight per 100 parts of the organic fixing agent of a crosslinking agent consisting essentially of a blocked polyisocyanate having (i) an average molecular weight of 800 to 25,000, (ii) a content of blocked isocyanate groups, calculated as free NCO and based on non-blocked polyisocyanate, corresponding to an NCO content of 5 to 20% by weight, (iii) an ionic group content of 1 to 75 milliequivalents per 100 g of blocked polyisocyanate, and (iv) a content of polyalkylene oxide units of 1 to 20% by weight, based on blocked polyisocyanate, said blocked polyisocyanate being obtained by the reaction of

(a) an organic polyisocyanate,

(b) an isocyanate-reactive compound containing ionic groups or potential ionic groups,

(c) a polyalkylene ether alcohol,

(d) an NCO blocking agent, and

(e) optionally, an isocyanate-reactive compound different from components (b), (c), and (d);

(3) a pigment;

(4) optionally, an auxiliary processing agent; and

(5) water.

5,607,483

DYED MATERIALS

Stephen M. Burkinshaw, and Philip J. Brown, both of Leeds, Great Britain, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Great Britain & Northern Ireland, United Kingdom

Filed Apr. 4, 1995, Ser. No. 417,048

Claims priority, application United Kingdom, Jul. 29, 1994, 9415302; Mar. 31, 1995, 9506691

Int. Cl.[6] D06P *1/22;3/24;3/40;3/52*

U.S. Cl. 8—650 **21 Claims**

1. A method of vat-dyeing a non-cellulosic organic material such that the resulting dyed material has a washfastness by British Standard Test BS1006 CO6C2 (1981) of 5 or more, said method consisting essentially of the following steps:

(a) selecting a vat dye,

(b) dyeing in a dyebath or printing said material with a dyeing composition consisting essentially of said dye, reducing agent and an alkali, said alkali being at a concentration of greater than 0.2M,

(c) oxidizing the treated material produced in step (b), and

(d) soaping the material produced in step (c).

5,607,484

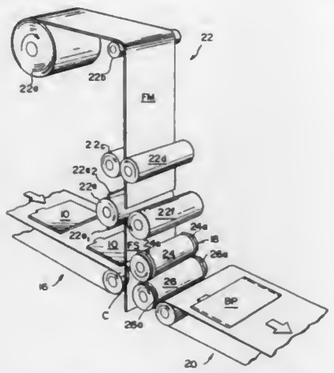
METHOD OF FORMING BATTERY PLATE ASSEMBLIES FOR WET STORAGE CELL BATTERIES

Galen Redden, Gypsum, Kans., and Rex E. Luzader, Wyomissing, Pa., assignors to Exide Corporation, Reading, Pa.

Division of Ser. No. 502,866, Jul. 14, 1995. This application Dec. 6, 1995, Ser. No. 567,908

Int. Cl.[6] H01M *2/14*

U.S. Cl. 29—623.1 **11 Claims**



1. A method of forming a battery plate assembly for a wet storage cell battery comprising:

(i) advancing a battery plate toward a sheet of porous plastics film and

folding the sheet of porous plastics film over the battery plate to form a pocket in which the battery plate is disposed and such that lateral edges of the folded porous film overlap one another; and then

(ii) joining the overlapped lateral edges of the folded porous plastics film by forming an extended series of discontinuous nonwelded but mechanically joined regions with adjacent ones of the joined regions being separated by respective unjoined regions to thereby establish lateral channels through which fluid in the wet storage cell battery may pass, wherein

(iii) said joining step includes the steps of (1) forming a nip between opposed pairs of intermeshed joining rings having a peripheral series of opposed teeth regions separated by a series of smooth land regions, said opposed teeth of said teeth regions being configured and positioned to establish non-uniform clearance therebetween so as to exert a non-uniform compressive force on the overlapped edges of the porous plastics film when passed through said nip, and then (2) passing the overlapped lateral edges of the folded porous plastics film through said nip between said joining rings to thereby form said discontinuous joined and unjoined regions.

5,607,485

METHOD OF MAKING POLYMERIC ELECTROLYTIC CELL SEPARATOR MEMBRANE

Antoni S. Gozdz, Tinton Falls; Caroline N. Schmutz, Eatontown; Jean-Marie Tarascon, Martinsville, and Paul C. Warren, Far Hills, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

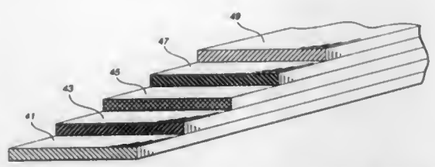
Division of Ser. No. 110,262, Aug. 23, 1993, Pat. No. 5,418,091, which is a continuation-in-part of Ser. No. 26,904, Mar. 5, 1993, Pat. No. 5,296,318. This application May 19, 1995, Ser. No. 445,446

Int. Cl.[6] H01M *10/38*

U.S. Cl. 29—623.5 **2 Claims**

1. A method of making an electrolytic cell which comprises arranging, in sequence, a positive electrode element, a separator element, and a negative electrode element characterized in that

a) said separator element is prepared by:



1) mixing at least one copolymer of vinylidene fluoride and hexafluoropropylene with 20 to 70% by weight of a plasticizer compatible with said copolymer; and

2) forming the resulting mixture into a self-supporting film,

c) at least a portion of said plasticizer is extracted from said self-supporting film with an extracting solvent which is substantially a non-solvent for said copolymer,

d) said extracting solvent is removed from said film, and

e) a conductivity-effective amount of an electrolyte salt is homogeneously distributed throughout said film by replacing the extracted plasticizer with a solution of said salt.

5,607,486

ENGINE FUELS

Joe S. Wilkins, Jr., 7700 Seawall Blvd. #403, Galveston, Tex. 77551

Continuation-in-part of Ser. No. 238,266, May 4, 1994, Pat. No. 5,501,713. This application Jun. 7, 1995, Ser. No. 472,142

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—307 **25 Claims**

1. A method for igniting an engine comprising the steps of (a) adding a fuel to an engine, said fuel comprising from about 5 w/w % to about 25 w/w % of a terpene and from about 80 w/w % to about 90 w/w % of at least one alcohol having from about one to about six carbon atoms; and (b) igniting said engine.

5,607,487

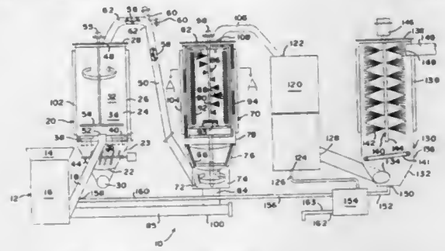
BOTTOM FEED - UPDRAFT GASIFICATION SYSTEM

Leland T. Taylor, 701 Madison Ave. NE., Albuquerque, N.M. 87110

Continuation-in-part of Ser. No. 292,922, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 32,642, Mar. 17, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,189

Int. Cl.[6] C10J *3/48*

U.S. Cl. 48—111 **54 Claims**



1. A gasification system comprising:

a. a generally cylindrical thermal reactor having a vertical central axis and a vertical sidewall and having an upper section, a central section, and a lower section, said upper section having closure means at an upper end thereof;

b. means for feeding solid carbonaceous material to said thermal reactor;

c. means for preheating and feeding oxidizing gas such as air located so as to divide said central section from said lower section, said means for preheating and feeding oxidizing gas comprising an annular gas preheat manifold integral with and

extending along the lower portion of said vertical sidewall of said central section of said thermal reactor and having an inlet nozzle communicating with said preheat manifold, said means for preheating and feeding oxidizing gas further comprising a plurality of radially extending oxidizing gas feed nozzles converging toward said central axis, spaced along and in fluid communication with said gas preheat manifold and having means thereon defining a plurality of oxidizing gas outlets;

d. said solid material feeding means comprising a solid material feed conduit having an inlet, an outlet, and a rotating auger located therein, said inlet being connected to a source of solid material exterior to said thermal reactor, said outlet being spaced above said oxidizing gas feed nozzles and so disposed and orientated as to direct introduction of solid material into said thermal reactor within said central section substantially along said central axis in an upward direction;

e. means for discharging spent solids located in said lower section;

f. said solid material feed conduit being in heat transfer contact with spent solids as they descend toward said spent solids discharge means,

g. means for comminuting fused material located in said lower section,

h. means defining a particle laden gaseous effluent exit port located in said closure means;

i. means for cleaning and cooling said particle laden gaseous effluent operatively connected with said gaseous effluent exit port of said thermal reactor; and

j. means for separating particulate material from said particle laden gaseous effluent,

whereby, said solid material is introduced into said thermal reactor by said feeding means and is thermolytically decomposed forming a particle laden gaseous effluent and a solid residue, and whereby said particle laden gaseous effluent is directed to said cleaning means wherein said particles are separated from said gaseous effluent, and whereby said gaseous effluent is directed to said cooling means wherein said gaseous effluent is separated into condensate and product gas.

5,607,488

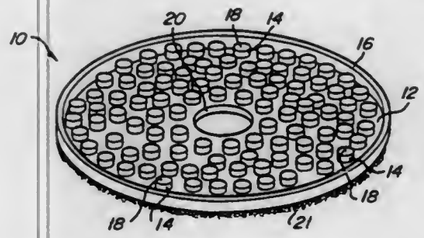
MOLDED ABRASIVE ARTICLE AND PROCESS

Ronald C. Wiand, 1494 Heatherwood Dr., Troy, Mich. 48098

Continuation-in-part of Ser. No. 821,953, Jan. 16, 1992, Pat. No. 5,449,388, which is a continuation-in-part of Ser. No. 732,503, Jul. 18, 1991, Pat. No. 5,209,760, which is a continuation-in-part of Ser. No. 526,055, May 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,875

Int. Cl.[6] B24B *1/00*

U.S. Cl. 51—295 **13 Claims**



1. An abrasive article comprising:

a molded abrading body produced from a blow molded polymer material with an abrasive material and a secondary filler material interdispersed homogeneously therethrough, said abrading body comprising from about 1% to about 20% by volume of an abrasive grit, from about 5% to about 80% by volume of secondary fillers and from about 5% to about 90% by volume of a thermoformable polymer, wherein said thermoformable polymer is selected from the group consisting of thermoplastic polymers having a softening point temperature greater than about 100° C. and less than about 400° C. and thermoset polymers.

5,607,489

VITREOUS GRINDING TOOL CONTAINING METAL COATED ABRASIVE

Rounan Li, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jun. 28, 1996, Ser. No. 670,857

Int. Cl.[6] B24D *3/34*

U.S. Cl. 51—309 **9 Claims**

1. A vitreous bonded abrasive tool having at least 10% porosity and comprising 12 to 50% bond, 5 to 50 % metal coated superabrasive, and 2 to 20% solid lubricant.

5,607,490

FILTER HAVING CHEMICAL RESISTANCE, ANTISTATIC PROPERTY AND WATER VAPOR RESISTANCE, AND PROCESS FOR PRODUCING THE SAME

Seihou Taniguchi; Takeshi Hazeyama, and Hitoshi Otaka, all of Tokyo, Japan, assignors to Nittetsu Mining Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,107

Claims priority, application Japan, Mar. 31, 1994, 6-083604

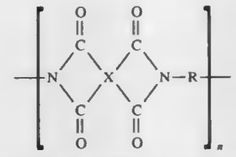
Int. Cl.[6] B01D *29/01;39/16*

U.S. Cl. 55—524 **14 Claims**

1. A water vapor resistant filter comprising a permeable molded material, nonwoven fabric or felt and a solid-coating thereon,

wherein the permeable molded material, nonwoven fabric or felt comprises polyimide fiber having a repeating unit represented by the following formula (I), and

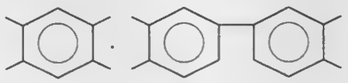
the permeable molded material, nonwoven fabric or felt is covered with a condensed polycyclic polynucleus aromatic resin:



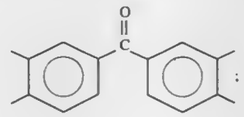
(I)

wherein n represents an integer of more than 1;

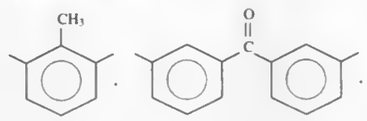
X represents a tetravalent aromatic group selected from the group consisting of

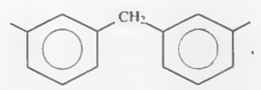


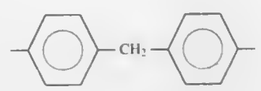
and



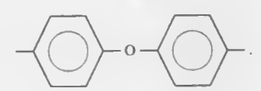
R represents at least one divalent aromatic group selected from the group consisting of







and



5,607,491

AIR FILTRATION MEDIA

Fred L. Jackson, 7259 W. Laurel Pl., Littleton, Colo. 80123; Kevin P. McHugh, 2596 S. Clarkson, Denver, Colo. 80210, and John S. Robertson, 8676 W. Progress Pl., Littleton, Colo. 80123

Continuation-in-part of Ser. No. 334,706, Nov. 4, 1994, Pat. No. 5,480,466, which is a continuation-in-part of Ser. No. 237,812, May 4, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 423,064

Int. Cl.[6] B01D *29/31*

U.S. Cl. 55—528 **26 Claims**

1. A non-woven, fibrous blanket of air filtration media comprising:

finite length, synthetic polymeric resin microfibers; said microfibers, taken as a whole, having an average fiber diameter between 0.5 and 5 microns; said microfibers having a softening point; and said microfibers comprising between 50% and 90% by weight of the air filtration media;

finite length, synthetic polymeric resin staple fibers; said staple fibers, taken as a whole, having an average fiber diameter between 10 and 30 microns; said staple fibers having a softening point; and said staple fibers comprising between 5% and 45% by weight of the air filtration media;

finite length, synthetic polymeric resin bonding fibers; said bonding fibers, taken as a whole, having an average fiber diameter between 0.9 and 15 denier; said bonding fibers having thermoplastic surfaces with a lower temperature softening point than the softening points of said microfibers and said staple fibers; and said bonding fibers comprising between 5% and 25% by weight of the air filtration media; and

said microfibers, said staple fibers, and said bonding fibers being randomly oriented and randomly intermingled in a blanket; and said bonding fibers bonding said microfibers, said staple fibers and said bonding fibers together to form said blanket.

5,607,492

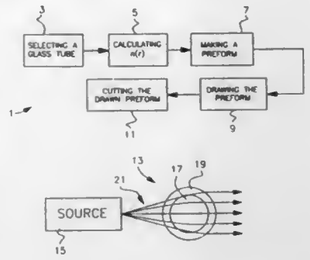
METHOD FOR FORMING A NONFULL APERTURE LUNEBERG LENS WITH A GRADED INDEX CORE AND A HOMOGENOUS CLADDING

Sead Doric, Ancienne-Lorette, Canada, assignor to Institut National D'Optique, Sainte-Foy, Canada

Filed Nov. 4, 1994, Ser. No. 334,548

Int. Cl.[6] C03B *8/04*

U.S. Cl. 65—174 **3 Claims**



1. A method for forming a nonfull aperture Luneburg lens with a graded index core and a homogeneous cladding for correcting an adjacent light source, the lens having a normalized external radius, a core radius a, an object distance s_1 and an image distance s_2, the method comprising the steps of:

a) selecting the cladding, the cladding having a refractive index N, an internal radius and an external radius;

b) calculating a refractive index profile n(r), where r is the distance from the center of the core, the refractive index profile being calculated using the equation:

$$n = \frac{P_a}{a}\exp\{\Omega(\rho,s_1,P_a) + \Omega(\rho,s_2,P_a) - 2\Omega(\rho,1,P_a) + 2\Omega(\rho,P_1,P_a)\}$$

wherein:

$P = P(r) = N*r$, *where* $a \leqq r \geqq 1$;

$\rho = \rho(r) = n(r)*r$, *where* $0 \leqq r \geqq a$;

$P_a = N*a$;

$P_1 = N$;

$$\Omega(\rho,s_1,P_a) = \frac{1}{\pi}\int_{\rho}^{P_a} \frac{\arcsin\left(\frac{x}{s_1}\right)}{\sqrt{(x^2-\rho^2)}}\,dx;$$

$$\Omega(\rho,P_1,P_a) = \frac{1}{\pi}\int_{\rho}^{P_a} \frac{\arcsin\left(\frac{x}{P_1}\right)}{\sqrt{(x^2-\rho^2)}}\,dx;$$

$$\Omega(\rho,s_2,P_a) = \frac{1}{\pi}\int_{\rho}^{P_a} \frac{\arcsin\left(\frac{x}{s_2}\right)}{\sqrt{(x^2-\rho^2)}}\,dx;$$

$$\Omega(\rho,1,P_a) = \frac{1}{\pi}\int_{\rho}^{P_a} \frac{\arcsin(x)}{\sqrt{(x^2-\rho^2)}}\,dx;$$

c) making a preform by introducing an optical material inside of said cladding selected in step (a) for obtaining the refractive index profile calculated in said step (b) and by collapsing said cladding and said introduced optical material; and

d) after said step (c), drawing the preform into a nonfull aperture Luneburg lens having a normalized external radius.

5,607,493

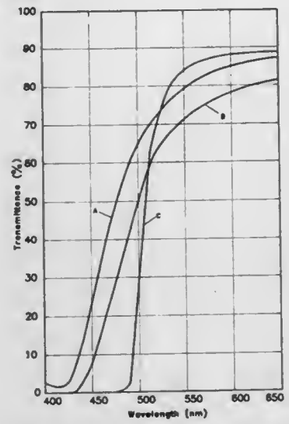
METHOD OF MAKING NON-PHOTOCHROMIC OPTICAL FILTER GLASSES

David J. Kerko, and Brent M. Wedding, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 376,797, Jan. 23, 1995, Pat. No. 5,491,117. This application Nov. 6, 1995, Ser. No. 554,064

Int. Cl.[6] C03C *15/00*

U.S. Cl. 65—30.1 **4 Claims**



1. A method for making a non-photochromic silver halide-containing glass article that is adapted to use in the field of optometry, that is essentially free from silver halide crystals, that exhibits a bright yellow coloration that reduces to less than 20% the transmission of ultraviolet radiation and radiation having wavelengths up to about 450 nm, but is transparent to radiation having wavelengths longer than the region of attenuated transmission, said method comprising exposing said article to a hydrogen-containing atmosphere in a heat treating chamber operating at a temperature between about 450°–500° C. for at least about 0.5 hour to produce an integral reduced surface layer on said article having a depth effective to reduce to below 20% the transmission of ultraviolet radiation and radiation having wavelengths up to about 450 nm.

5,607,494

ARTIFICIAL SOIL COMPOSITION AND A METHOD OF GROWING VEGETATION ON A SLOPED SURFACE

Young K. Kim, 481-5 Galhyun-dong, Eunpyung-gu, Seoul, Rep. of Korea

Filed Jul. 28, 1993, Ser. No. 97,888

Int. Cl.[6] C05F *11/02;11/08*

U.S. Cl. 71—6 **8 Claims**



1. An artificial soil composition for supporting vegetative growth which is suitable for application to a sloped surface comprising:

(a) peat in a concentration range of between about 10% to 30% by weight;

(b) granular soil in a concentration range of between about 10% to 30% by weight;

(c) a sewage sediment in a concentration range of between about 40% to 60% by weight;

(d) a pulp sludge in a concentration range of about 25% to 45% by weight; wherein the pulp sludge has a chemical composition comprising about 12% to 49% by weight organic matter; about 0.1% to 0.7% by weight total nitrogen; about 0.05% to 3% by weight phosphorous; about 0.1% to 0.4% by weight potassium; about 2.1% to 2.4% by weight calcium; about 3% to 5% by weight cellulose; and about 15% to 20% by weight lignin.

5,607,495

OXYGEN SMELTING OF COPPER OR NICKEL SULFIDES

Noel A. Warner, Birmingham, Great Britain, assignor to The University of Birmingham, England

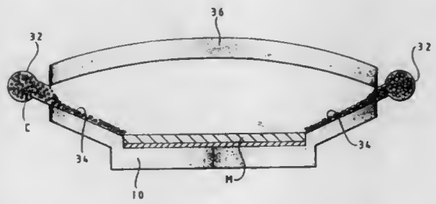
PCT No. PCT/GB93/01053, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO93/24666, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 338,638

Claims priority, application Japan, May 23, 1992, 4-11053

Int. Cl.[6] C21B *11/00;* **C22B** *15/00;23/00*

U.S. Cl. 75—502 **13 Claims**



1. A method of oxygen smelting of a sulfide ore concentrate of high intrinsic energy value selected from the group consisting of a copper sulfide ore concentrate of high intrinsic energy value, a nickel sulfide ore concentrate of high intrinsic energy value and a copper and nickel sulfide ore concentrate of high intrinsic energy value, comprising the steps of:

(a) forcibly circulating a molten sulfide carrier composition through a closed loop extraction circuit from which at least one product selected from copper, nickel and sulfides thereof can be continuously extracted at an elevated temperature;

(b) introducing said sulfide ore concentrate of high intrinsic energy value into said molten carrier composition at an ore receiving station so that said sulfide ore concentrate of high intrinsic energy value is dissolved in or melted by said molten carrier composition;

(c) contacting said molten carrier composition containing said sulfide ore concentrate of high intrinsic energy value with an oxidizing gas containing at least 30 volume % oxygen at an oxidation station so as to oxidize at least part of said molten carrier composition containing said sulfide ore concentrate of high intrinsic energy value; and

(d) utilizing heat generated during the oxidation step as a result of oxidation of said sulfide ore concentrate of high intrinsic energy value by smelting said sulfide ore concentrate of high intrinsic energy value with another mineral sulfide concentrate of low or negative intrinsic energy value selected from the group consisting of high-grade zinc sulfide concentrate, high-grade lead sulfide concentrate and a bulk flotation sulfide concentrate containing both lead and zinc.

5,607,496

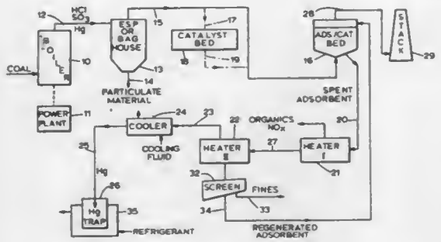
REMOVAL OF MERCURY FROM A COMBUSTION GAS STREAM AND APPARATUS

Richard J. Brooks, Seattle, Wash., assignor to Brooks Rand, Ltd., Seattle, Wash.

Continuation-in-part of Ser. No. 252,188, Jun. 1, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 496,304

Int. Cl.[6] B01D *50/00;53/64;* **C22B** *43/00*

U.S. Cl. 75—670 **64 Claims**



1. A method for removing, from a stream of combustion gas flowing into the stack of a combustion system, elemental mercury and mercury compounds contained in said gas, said method comprising the steps of:

flowing a stream of combustion gas containing elemental mercury and mercury compounds downstream toward a combustion system stack;

oxidizing the elemental mercury contained in said combustion gas, upstream of said stack, either with or without supplemental oxidizing, to produce therefrom at least one compound of mercury;

providing a mass of adsorbent particles each having a surface substantially the totality of which is relatively adsorbent to said previously-recited mercury compounds and relatively non-adsorbent to said elemental mercury;

directing said stream into said mass;

adsorbing, on said surfaces of said mass of adsorbent particles, said previously-recited mercury compounds;

and then releasing the combustion gas stream into the atmosphere outside said combustion system, after the performance of said adsorbing step;

said adsorbent particles (i) having a catalytic activity for the oxidation of mercury, at least substantially comparable to that of activated alumina particles and (ii) being sufficiently heat-resistant to accommodate a regeneration process for removing the adsorbed mercury compounds therefrom by heating above the decomposition temperature of said mercury compounds and above the vaporization temperature of mercury to drive off the mercury-containing materials adsorbed on said mass of adsorbent particles.

5,607,497

PASSIVE DUST SAMPLER AND METHOD OF DUST ESTIMATION

Richard C. Brown, Sheffield, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB93/01694, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/04905, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 10, 1993, Ser. No. 373,281

Claims priority, application United Kingdom, Aug. 14, 1992, 9217347

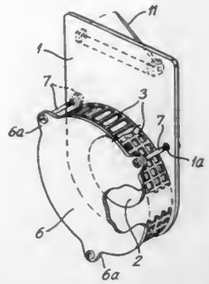
Int. Cl.[5] B03C *3/36*

U.S. Cl. 95—3 **24 Claims**

1. A dust sampler, comprising:

a non-insulating base;

an insulator in the form of a collector sheet having a known electrical charge when in use mounted on said non-insulating base;



a conductor in the form of a continuous sheet surmounting and parallel to said non-insulating base and electrically connected thereto;

upstanding apertured spacer means around the collector sheet for supporting said conductor, said conductor and said insulator being spaced apart by said spacer means to define a space therebetween, such that dust-laden air can flow through said space.

21. A method of dust estimation, comprising the steps of: exposing to dust a dust sampler comprising a non-insulating base, an insulator in the form of a collector sheet having a known electrical charge when in use mounted on said non-insulating base, a conductor in the form of a continuous sheet surmounting and parallel to said non-insulating base and electrically connected thereto, upstanding apertured spacer means around the collector sheet for supporting said conductor, said conductor and said insulator being spaced apart by said spacer means to define a space therebetween, such that dust-laden air can flow through said space; and determining the dust captured by the collector sheet.

5,607,498

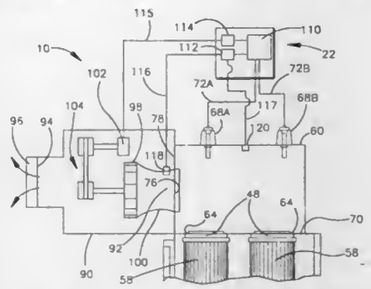
SYSTEM AND METHOD FOR CONTROLLING AIR FLOW THROUGH A POWDER COATING BOOTH

Michael A. Reighard, Avon Lake; Peter G. Lambert, Chagrin Falls, and Robert G. Loosli, S. Amherst, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 319,674, Oct. 7, 1994, Pat. No. 5,505,763. This application Nov. 2, 1995, Ser. No. 552,294

Int. Cl.[6] B01D *46/00*

U.S. Cl. 95—19 **23 Claims**



1. A method for controlling air flow through the interior of a powder spray booth, comprising the steps of:

drawing air-entrained oversprayed powder from said interior of said powder spray booth into a powder collection system, said step of drawing including the steps of:

drawing said air-entrained oversprayed powder into one or more inlet openings of a powder separating device having an exhaust port;

drawing air from which powder has been substantially removed by said powder separating device from said exhaust port of said powder separating device and into a

fan inlet of a fan plenum chamber with a motor driven fan mounted within said fan plenum chamber;

exhausting cleaned air through one or more final filters mounted in a fan exhaust outlet of said fan plenum chamber; and

adjusting the speed of said motor driven fan in response to pressure changes in said powder separating device upstream of said exhaust port, and also in response to pressure changes in said fan plenum chamber.

5,607,499

PRESSURE SWING ADSORPTION PLANTS

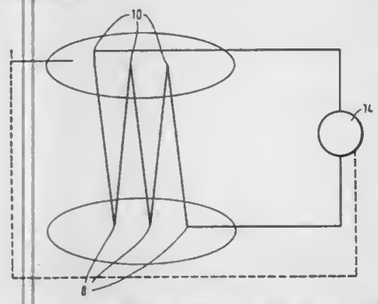
Michael E. Garrett, Surrey, England, assignor to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 168,336, Dec. 17, 1993, abandoned, which is a continuation of Ser. No. 4,480, Jan. 12, 1993, abandoned, which is a continuation of Ser. No. 850,758, Mar. 13, 1992, abandoned. This application Feb. 26, 1996, Ser. No. 607,019

Claims priority, application United Kingdom, Mar. 16, 1991, 9105619

Int. Cl.[6] B01D *53/047*

U.S. Cl. 96—108 **2 Claims**



1. An apparatus for the separation of at least one constituent of a feed gas mixture by pressure swing adsorption comprising a pressure vessel containing a molecular sieve adsorbent, an inlet for said feed gas, an outlet for product gas and a thermocouple circuit having a plurality of thermocouples located within the molecular sieve adsorbent such that one junction of each thermocouple is positioned at or adjacent the inlet while a second junction of each thermocouple is positioned at or adjacent the outlet of the pressure vessel and a source of electrical energy for passing a current of electricity through the thermocouple circuit to cause the junction at or adjacent the inlet to heat up and the junction at or adjacent the outlet to cool down, thereby simultaneously heating the bed in the vicinity of the first junction of each thermocouple and cooling the bed in the vicinity of the second junction of each thermocouple during a pressure swing adsorption cycle conducted in said pressure vessel.

5,607,500

DESICCANT AIR DRYER WITH COMBINED ATTACHMENT AND AIR FLOW MANAGEMENT COMPONENT

Dennis R. Shamine, and Paul G. Reisinger, both of Lorain, Ohio, assignors to AlliedSignal Truck Brake Systems Co., Elyria, Ohio

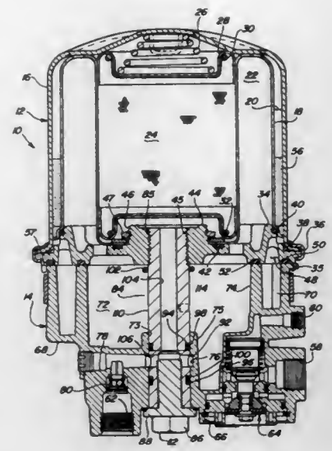
Filed Jul. 5, 1995, Ser. No. 498,164

Int. Cl.[6] B01D *35/00*

U.S. Cl. 96—144 **11 Claims**

1. An air dryer assembly for a motor vehicle air supply system, comprising:

a cartridge having a cup shaped outer shell, said outer shell affixed to a load plate having air flow passages therethrough,



said load plate having a first threaded means, said cartridge having a desiccant material therein for removing water from air passing through said air supply system,

a body assembly having a supply port and a discharge port for connection with said air supply system and a mounting surface enabling said cartridge load plate to be mated to said body assembly whereby said cartridge and said body assembly cooperate to form air flow passageways for said air passing through said air dryer assembly, said body assembly having a central bore passing through said body assembly and opening in said body assembly mounting surface, said central bore being aligned with said cartridge load plate first threaded means when said cartridge and said body assembly are mated together, and

a retention bolt positioned through said body assembly central bore and having second threaded means engaging said cartridge load plate first threaded means thereby fastening said cartridge and said load plate assembly, said retention bolt having a driving head accessible for rotating said retention bolt, said retention bolt having a hollow interior passage communicating with said cartridge desiccant material and to said discharge port of said air dryer, said hollow interior passage conducting air to said discharge port after passing through said desiccant material.

5,607,501

HOT MELT INK UTILIZABLE FOR INK JET PRINTER

Masaya Fujioka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 25, 1995, Ser. No. 507,009

Claims priority, application Japan, Jul. 26, 1994, 6-174333

Int. Cl.[6] C09D *11/12*

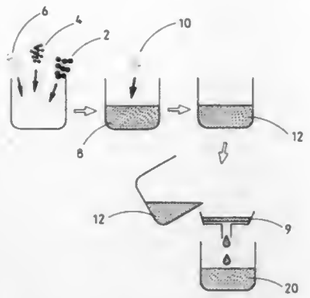
U.S. Cl. 106—22 A **18 Claims**

1. A hot melt ink utilizable for an ink jet printer, the hot melt ink existing in solid state at a room temperature and being used in liquid state after melted, the hot melt ink comprising:

a xanthene dye;

a dye dissolving color coupler in molecules of which carboxylic group or amide group is included; and

an antioxidant;



wherein the antioxidant comprises phenolic antioxidant and the dye dissolving color coupler including carboxylic group comprises at least one of: fatty acid selected from the group consisting of behenic acid, lauric acid, myristic acid, palmitic acid, stearic acid, iso-stearic acid, 1,2-hydroxy stearic acid; and maleic acid copolymer selected from the group consisting of α-olefin maleic anhydride copolymer.

5,607,502

DYESTUFFS FOR PRINTING INKS

Karin Hassenrück, Düsseldorf; Peter Wild, Odenthal, and Martin Michna, Pulheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

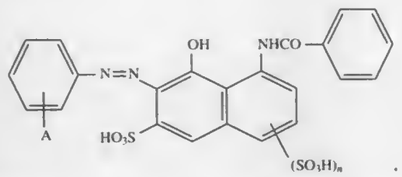
Filed Oct. 19, 1995, Ser. No. 547,697

Claims priority, application Germany, Oct. 26, 1994, 44 38 177.8

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 K **10 Claims**

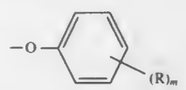
1. An inkjet recording process for printing paper wherein a dyestuff which, in the form of the free acid, corresponds to the formula (1)



(1)

wherein

A denotes a radical, in the ortho-, meta- or para-position relative to the azo group of the formula



wherein

R independently of one another represents C_1-C_5-alkyl which is unsubstituted or substituted by hydroxyl, amino, carboxyl or sulpho groups, or C_5-C_8-cycloalkyl,

n represents 0 or 1 and

m denotes 0 to 5

is ejected onto said paper in a controlled manner from an inkjet printer to form written symbols or graphic patterns.

5,607,503

SILICA-BASED BINDER

Harley W. Burr, Corona Del Mar, Calif., assignor to Refract-A-Gard Pty Limited, Sydney, Australia

Filed Sep. 3, 1993, Ser. No. 116,398

Int. Cl.[6] C01B *33/32;21/06;* **C01C** *1/00*

U.S. Cl. 106—287.11 **24 Claims**

1. A silica-based water-insoluble film forming binder which is produced by a reaction of an ammonium, amine or amide compound with a silicate.

5,607,504

MULTIPLY COATED METALLIC LUSTER PIGMENTS

Raimund Schmid, Neustadt, and Norbert Mronga, Dossenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 28, 1994, Ser. No. 348,245

Claims priority, application Germany, Oct. 21, 1994, 44 37 753.3

Int. Cl.[6] C09C *1/62*

U.S. Cl. 106—403 **9 Claims**

1. Luster pigments based on multiply coated platelet-shaped metallic substrates with at least one layer packet comprising

A) a first colorless coating having a refractive index n≦1.8, and

B) a second selectively absorbing coating having a refractive index n≧2.0, applied upon said first coating,

and optionally

C) a third, outer, colorless or selectively absorbing coating different from said second coating and applied upon said second coating, and wherein coating (B) consists essentially of selectively absorbing oxides selected from the group consisting of iron (III) oxide, chromium (III) oxide, vanadium (V) oxide, titanium (III) oxide or mixtures thereof, or of colorless oxides selected from the group consisting of titanium dioxide, zirconium oxide or mixtures thereof, which have been colored with the aid of selectively absorbing colorants.

5,607,505

WASTE TREATMENT PROCESS

Dirk Osing, Hohegrabenweg 109, 4005 Meerbusch 1; Günter Ritter, Gotbestr. 29, 5040 Brühl; Günter Treutlein, Diepenbeekallee 2, 5000 Köln 40, and Manfred Erken, Lothringer Ring 27, 5010 Bergheim, all of Germany

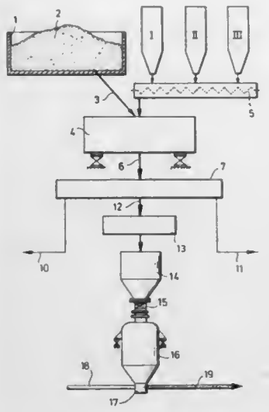
Division of Ser. No. 370,522, Jan. 3, 1995, which is a continuation of Ser. No. 825,392, Jan. 24, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 586,168

Claims priority, application Germany, Jan. 24, 1991, 41 02 032.4

Int. Cl.[6] C04B *7/38*

U.S. Cl. 106—745 **11 Claims**

1. A process for manufacturing a cement in a cement kiln, the process including injecting into the kiln a source of metal in the form of dry bonded agglomerates of up to about 4 mm grain size, the agglomerates comprising the product of force mixing a homogenized metal-containing mixture of liquid and solids with a dry fine



grained additive selected from the group of fly ash, coke and blast furnace flue gas dust.

5,607,506

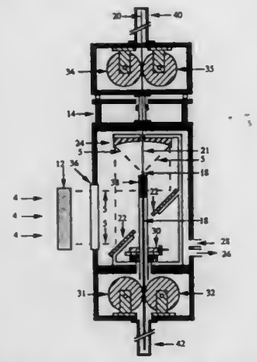
GROWING CRYSTALLINE SAPPHIRE FIBERS BY LASER HEATED PEDESTAL TECHIQUES

Vongvilay Phomsakha, St. Petersburg; Robert S. F. Chang, and Nicholas I. Djeu, both of Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Filed Oct. 21, 1994, Ser. No. 327,454

Int. Cl.[6] C30B *13/22*

U.S. Cl. 117—33 **25 Claims**



4. A method for producing crystal sapphire fibers comprising:

creating a laser beam having a substantially constant intensity profile through its cross sectional area,

providing a fiber growth chamber having a helium atmosphere,

directing said laser beam at a solid feed material in said chamber thereby forming molten sapphire feed material within the fiber growth chamber,

supporting a seed fiber within the fiber growth chamber at a predetermined height above the molten feed material, the seed fiber having a sufficient length and sufficient resiliency such that surface tension in the molten sapphire feed material can move the seed fiber to the center of the molten sapphire feed material irrespective of where the seed fiber makes initial contact with the molten sapphire feed material;

moving the seed fiber towards and then away from the molten sapphire feed material so that the seed fiber can make contact with the molten sapphire feed material, be moved to the center of the molten sapphire feed material, fuse to the molten sapphire feed material, and then be withdrawn away from the molten sapphire feed material whereby the molten sapphire feed material is drawn off in the form of a crystal fiber.

5,607,507

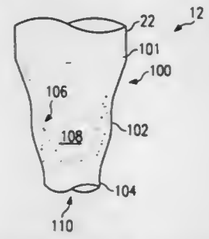
SYSTEM FOR OXYGEN PRECIPITATION CONTROL IN SILICON CRYSTALS

Weldon J. Bell, Frisco, and H. Michael Grimes, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 238,999, May 6, 1994, Pat. No. 5,474,020. This application Aug. 21, 1995, Ser. No. 517,331

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—201 **6 Claims**



1. A system for forming a silicon crystal, comprising:

a crucible for holding molten silicon;

a seed device for beginning the formation of said silicon crystal;

a susceptor for controlling the temperature of the molten silicon in the crucible;

a process controller for controlling the formation of said silicon crystal to form a cylindrical portion of the silicon crystal from said molten silicon according to the Czochralski silicon crystal growing technique;

for terminating the Czochralski silicon crystal growing technique by forming a first tapered portion in the silicon crystal at a rate;

for forming a second tapered portion of the silicon crystal after forming the first tapered portion, the second tapered portion having a cascaded middle portion connecting to the first tapered portion, said cascaded middle portion concentrating oxygen precipitation within said cascaded middle portion and away from said cylindrical portion of said silicon crystal; and

for forming at least a third portion for separating said silicon crystal from said molten silicon.

5,607,508

APPARATUS FOR SELECTIVELY COATING CORRUGATED SHEET MATERIAL

Scott K. Westphal, 67 Blackburn Rd., Basking Ridge, N.J. 07920

Filed Jun. 7, 1995, Ser. No. 486,558

Int. Cl.[6] B05C *17/04*

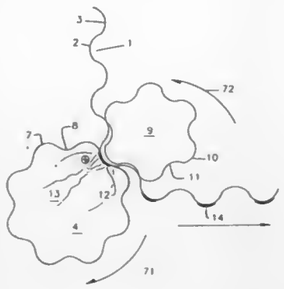
U.S. Cl. 118—213 **1 Claim**

1. An apparatus for selectively applying a coating material to sheet material, comprising:

a. a first roller provided with a plurality of circumferentially undulating flutes disposed about its peripheral surface defining crests and troughs, said first roller provided with a longitudinal bore and a longitudinal aperture communicating with said longitudinal bore;

b. a second roller provided with a plurality of circumferentially undulating flutes disposed about its peripheral surface defining crests and troughs; said first roller and said second roller disposed for synchronized rotation with each other so that the crests of one roller rest in the troughs of the other roller; and

c. spray means disposed within said first roller, said spray means synchronized with said first roller aperture to discharge a

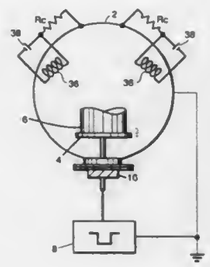


coating material through said aperture when said spray means and said aperture are in alignment.

5,607,509
HIGH IMPEDANCE PLASMA ION IMPLANTATION APPARATUS

Robert W. Schumacher, Woodland Hills; Jesse N. Matossian, Canoga Park, and Dan M. Goebel, Tarzana, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 237,509, May 3, 1994, abandoned, which is a division of Ser. No. 971,433, Nov. 4, 1992, Pat. No. 5,330,800. This application Apr. 22, 1996, Ser. No. 635,527
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 FE **13 Claims**

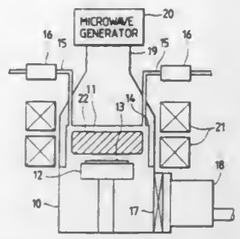


1. A plasma ion implantation system, comprising:
a plasma chamber having a chamber wall forming an enclosure,
means for introducing an ionizable gas into the plasma chamber,
a target support structure within the plasma chamber,
a voltage source arranged to apply a negative voltage signal to the target support structure, and thereby to a target supported by said structure,
an auxiliary electrode positioned above said support structure within said plasma chamber, and
means arranged to energize said auxiliary electrode to emit seed electrons but not positive particles, that are incapable of initiating, a plasma by themselves but which assist in initiating a plasma within said plasma chamber in response to the application of said negative voltage signal to said target support structure and to a target supported by said structure,
said target support structure being positioned within said plasma chamber to support said target with the target's upper surface spaced at least twice as far from the portion of the plasma chamber wall immediately above said target as said support structure is spaced above the portion of the plasma chamber wall immediately below said support structure.

5,607,510
VACUUM PROCESSING APPARATUS

Akitaka Makino; Naoyuki Tamura, both of Kudamatsu, and Tetsunori Kaji, Tokuyama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,952
Int. Cl.[6] C23C *16/02*
U.S. Cl. 118—723 MA **7 Claims**

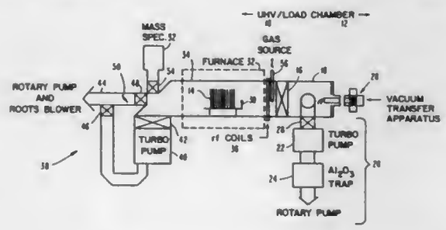


1. A vacuum processing apparatus comprising:
a vacuum processing chamber having a processing space and an additional space and having a gas inlet and a gas outlet for processing a sample on a sample table located in said processing space by using a processing gas introduced through said gas inlet; and
an exhaust pump having a suction port coupled to sad gas outlet provided at a bottom plate forming said additional space of said vacuum processing chamber for exhausting said processing gas introduced into said vacuum processing chamber, a cross-section area of said suction port of said exhaust pump being not larger than a cross-section area of said gas outlet of said vacuum processing chamber.

5,607,511
METHOD AND APPARATUS FOR LOW TEMPERATURE, LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF EPITAXIAL SILICON LAYERS

Bernard S. Meyerson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 841,192, Feb. 21, 1992, Pat. No. 5,298,452. This application Jan. 24, 1994, Ser. No. 186,195
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—725 **7 Claims**

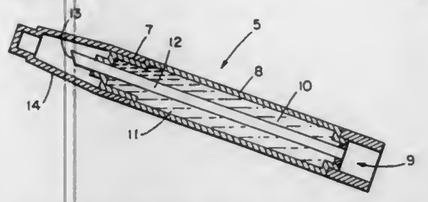


1. A flow system apparatus for epitaxial deposition of a silicon layer on a substrate, including in combination:
an ultra high vacuum deposition chamber in which said substrate is located for epitaxial deposition thereon of said silicon layer, said deposition chamber being a hot wall chamber,
furnace means for thermally heating the walls of said deposition chamber to produce a desired deposition temperature in said chamber, said deposition temperature being less than about 800° C.,
input means for injecting a gas containing silicon into said chamber, and
pump means for evacuating said deposition chamber to a total base pressure less than about 10^{-8} Torr.

5,607,512
ELECTRICAL CONTACT CLEANER AND METHOD

Kenneth M. Grout, Littleton, N.H., assignor to Tender Corporation, Littleton, N.H.

Division of Ser. No. 924,680, Aug. 3, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 204,464
Int. Cl.[6] B08B *7/00*
U.S. Cl. 134—6 **7 Claims**

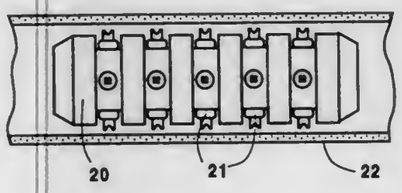


1. A method for cleaning and coating electrical contact surfaces of members selected from the group consisting of batteries and battery mating contacts, comprising the steps of:
contacting said electrical contact surfaces with an applicator, said applicator comprising a housing defining a wicking reservoir holding a liquid cleaning composition therein, said composition comprising a volatile cleaning agent and an oxidation-occluding agent; a porous, abrasive material in the form of a wick, said wick having a first portion in direct contact with said composition within said wicking reservoir for wicking said composition to a second portion of said wick protruding from an opening in said housing; and a cap which interfits with said housing, said method including rubbing said second portion against said electrical contact surfaces to abrade said electrical contact surfaces and apply said composition to clean and coat said electrical contact surfaces, thereby enhancing electrical contact and connection between said contact surfaces.

5,607,513
ALTERNATING TIP RUN PROCESS FOR PIPE CLEANING

Peggy L. Sims, Seabrook, Tex., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 13, 1995, Ser. No. 571,481
Int. Cl.[6] B08B *9/04*
U.S. Cl. 134—8 **9 Claims**

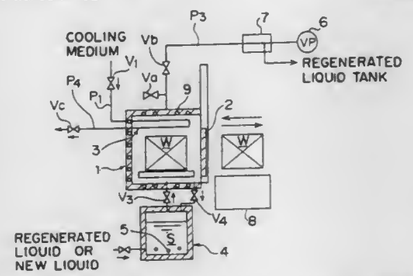


1. A process for pipe cleaning comprising:
a) providing a cleaning module to which at least two different removable cleaning tips are attachable, the cleaning module being propellable through a pipe by a hydraulic fluid;
b) successively applying at least two cleaning tips to an inner surface of the pipe, said at least two tips being attached to the cleaning module, the cleaning tips including a first tip and a second tip that is less abrasive than the first tip, in an alternating sequence that cycles each tip through the pipe about 2 to about 25 times before switching to the other tip;
c) periodically inspecting the hydraulic fluid for deposits and metal filings as it exits the pipe to determine whether further abrasive cleaning is required and repeating step b) until no further abrasive cleaning is required; and
d) applying a third tip, that is less abrasive than the first and second tips, to the surface of the pipe for about 10 to about 60 cycles after determining that no further abrasive cleaning is required.

5,607,514
CLEANING APPARATUS

Yutaka Takeda, Kawanishi, and Mamoru Kamitani, Nara, both of Japan, assignors to Chugai Ro Company, Ltd., Osaka-fu, Japan

Filed Apr. 27, 1995, Ser. No. 429,563
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—12 **9 Claims**

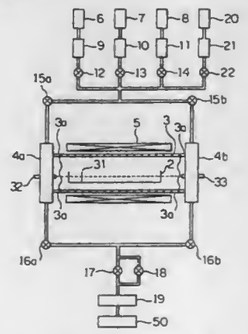


1. A cleaning apparatus comprising a cleaning chamber of vacuum-tight structure in which a work to be cleaned is contained, an organic solvent vapor generating tank communicated with the cleaning chamber via piping, and a vacuum pump for evacuating the cleaning chamber, wherein a heat exchange member to which a cooling medium supply piping is connected is provided in an upper portion of the cleaning chamber, and wherein a heating medium supply piping is provided so as to be branched from said cooling medium supply piping outside the cleaning chamber, whereby said heat exchange member can be supplied with either cooling medium or heating medium selectively.

5,607,515
METHOD OF CLEANING CVD APPARATUS

Hironari Takahashi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 356,502, Dec. 15, 1994, Pat. No. 5,517,943. This application Oct. 25, 1995, Ser. No. 547,924
Claims priority, application Japan, Dec. 16, 1993, 5-316567
Int. Cl.[6] B08B *7/04*
U.S. Cl. 134—18 **1 Claim**



1. A method of cleaning contaminants that react with fluorine from walls of a vacuum CVD apparatus comprising:
providing a reaction chamber that may accommodate a plurality of semiconductor wafers;

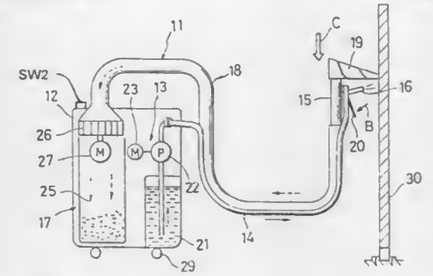
placing in the reaction chamber a monitor wafer that transmits a laser light beam and that is covered by a contaminant also disposed on walls of the CVD apparatus, the contaminant not transmitting the laser light beam;
heating the reaction chamber and maintaining a vacuum in the reaction chamber;
shining a laser light beam on the monitor wafer and detecting a laser light beam transmitted through the monitor wafer and the contaminant on the monitor wafer;
introducing into and discharging from the reaction chamber a flow of a fluorine-containing compound gas and a carrier gas while switching the paths of the gases in a flip-flop manner from end to end of the reaction chamber, thereby removing the contaminant from walls of the reaction chamber and from the monitor wafer;
monitoring the laser light beam transmitted through the monitor wafer and contaminant on the monitor wafer; and
terminating the flow of the fluorine containing compound gas when the laser light beam transmitted exceeds a threshold.

5,607,516

METHOD FOR EFFECTING CLEANING

Seiichi Asai, Tokyo, Japan, assignor to OA Care System Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 925,802, Aug. 4, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,184
Claims priority, application Japan, Nov. 28, 1991, 3-337962
Int. Cl.[6] B08B *5/04*
U.S. Cl. 134—21 **9 Claims**



1. A method for effecting a cleaning, comprising the steps of:
applying a pretreatment agent to a soiled or stained part of a cloth which is affixed over a vertical surface of an erected body made of a rigid material, said pretreatment agent including a surface active agent and an organic solvent or mixture thereof and acting to destroy a film of an oil or fat formed on said soiled or stained part of said cloth, so as to pretreat said soiled or stained part;
then, applying a water-soluble cleaning detergent to the thus-pretreated part of said cloth, so as to decompose a soil or dirt therein, said water-soluble cleaning detergent including a surface active agent; and
sucking and removing all of said pretreatment agent, said water-soluble cleaning detergent and said soil or dirt from said cloth.

5,607,517

PROCESS FOR WASHING REFILLABLE PLASTIC BOTTLES

Patrice Robichon, Seine, France, assignor to Pernod Ricard, Paris, France

Filed Mar. 28, 1994, Ser. No. 218,354
Claims priority, application France, Nov. 22, 1993, 93 13927
Int. Cl.[6] B08B *9/00*
U.S. Cl. 134—22.19 **18 Claims**

1. A process for washing a used container containing organic contaminating agents, said container intended to be reused and having a body, a bottom on which the container rests and a base portion extending from the body to the bottom, wherein the reusable container is made of a homopolymer or a copolymer or a mixture of a homopolymer and a copolymer, wherein said homopolymer or said copolymer or said mixture of a homopolymer and a copolymer is selected from the groups consisting of aromatic polyesters, further wherein said container is transparent and has an average degree of crystallinity higher than 40%, the thickness of the container being greater than:
0.35 mm with regard to the body,
1.00 mm as the base portion,
1.00 mm at the bottom, said process comprising
washing for re-use said container with an aqueous solution containing a base at a temperature higher than 70° C.

5,607,518

METHODS OF DEBLOCKING, EXTRACTING AND CLEANING POLYMERIC ARTICLES WITH SUPERCRITICAL FLUIDS

Roger J. Hoffman, Cumming, and Wilson L. Terry, Jr., Alpharetta, both of Ga., assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 22, 1995, Ser. No. 393,107
Int. Cl.[6] B29C *71/00;* **B29D** *11/00*
U.S. Cl. 134—31 **18 Claims**

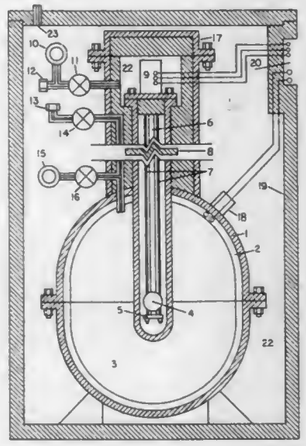
1. A method of deblocking polymeric articles from molds, comprising the steps of:
(1) providing a stream of supercritical fluid at a predetermined temperature and a predetermined pressure;
(2) contacting a hydrophilic polymeric article with the supercritical fluid for a predetermined period of time in a manner such that the polymeric article is detached from a mold, wherein the contacting step is conducted without an extraneous agitation or with a mechanical agitation; and
(3) removing the supercritical fluid from the polymeric article.

5,607,519

PHOTON AND/OR ELECTRON GENERATING POWER CELL

John C. Krepak, 1024 Prospect St., Shreveport, La. 71104

Filed Jul. 7, 1995, Ser. No. 499,470
Int. Cl.[6] G21H *1/06*
U.S. Cl. 136—253 **7 Claims**



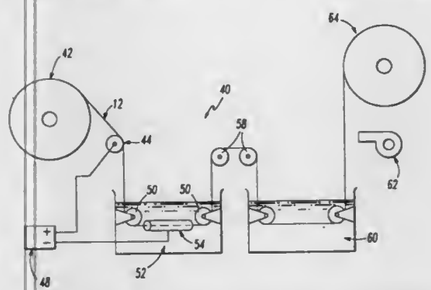
1. A photon and/or electron generating power cell comprising:
(a) a stainless steel and chrome, high pressure container;
(b) a lining of photo-voltaic elements on the inside of said container;
(c) an ionizable material in said container;
(d) at least one ionizing radiation energy source in said container and a lead vault surrounding the high pressure container.

5,607,520

REEL-TO-REEL PASSIVATION OF STAINLESS STEEL WIRE

David G. Tipton, Serverna Park, Md., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 18, 1995, Ser. No. 516,858
Int. Cl.[6] C25F *1/00*
U.S. Cl. 148—241 **12 Claims**



1. A method of passivation a stainless steel wire, comprising the steps of:
(a) immersing the stainless steel wire in an acid bath;
(b) applying a continuously constant DC current from a constant current DC power supply to the stainless steel wire, immersed in said step (a); and
(c) advancing the stainless steel wire to repeat said steps (a) and (b) so that the stainless steel wire is continuously passivated.

5,607,521

METHOD FOR POST-TREATMENT OF AN ARTICLE WITH A METALLIC SURFACE AS WELL AS A TREATMENT SOLUTION TO BE USED IN THE METHOD

Gregers Bech-Nielsen, Birkerød, and Peter T. Tang, Copenhagen, both of Denmark, assignors to IPU Instituttet for Produktudvikling, Lyngby, Denmark

PCT No. PCT/DK92/00328, § 371 Date May 13, 1994, § 102(e) Date May 13, 1994, PCT Pub. No. WO93/10278, PCT Pub. Date May 27, 1993
PCT Filed Nov. 10, 1992, Ser. No. 244,137
Claims priority, application Denmark, Nov. 15, 1991, 1873/91
Int. Cl.[6] C23C *22/42*
U.S. Cl. 148—261 **11 Claims**

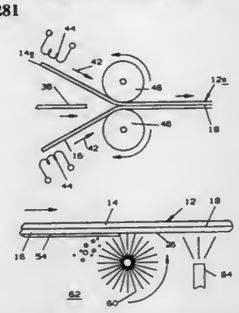
1. A method for the posttreatment of an article having a metallic surface comprising contacting said metallic surface in an aqueous solution, said aqueous solution containing (a) a molybdenum compound selected from the group consisting of molybdic acid and a salt of molybdic acid, and (b) phosphoric acid, with the proviso that said molybdenum compound is present in a concentration of between 2.9 and 9.8 g/l solution, calculated as molybdenum, and that the phosphoric acid is present in an amount resulting in a molar ratio Mo/P of 0.3–0.4 or 0.6–0.7 thereby forming a heteropolymolydate compound at a pH of between 1 and 5 said metallic surface comprised of a metal having a standard oxidation potential within the range of −2.5 to +0.5 V, said metal further selected from those wherefrom a potential of −800 mV/nhe to −1000 mV/nhe is obtained by said contacting with said aqueous solution.

5,607,522

METHOD OF MAKING ELECTRICAL CONTACT MATERIAL

Donald G. McDonnell, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 66,600, May 24, 1993, which is a continuation of Ser. No. 810,641, Dec. 19, 1991, abandoned. This application May 11, 1995, Ser. No. 439,259
Int. Cl.[6] C23C *8/10*
U.S. Cl. 148—281 **7 Claims**



1. A method for making electrical contact materials comprising the steps of:
providing a composite metal member having a first electrically conductive metal layer with a first external surface portion as part of said member and a second different easily-brazeable electrically-conductive metal layer metallurgically bonded to the first layer with a second external surface portion as part of said member, the first metal layer selected to be internally oxidizable to form metal oxide particles dispersed in the first metal layer when subjected to selected oxidizing conditions, the second metal layer selected to form a barrier to internal oxidizing at the second surface portion when subjected to said selected oxidizing conditions, said selected oxidizing conditions being the required time and temperature in an oxygen atmosphere to internally oxidize the metal in the first layer into metal oxide particles dispersed in the metal layer;
subjecting the composite member to said selected oxidizing conditions, thereby internally oxidizing substantially the entire first metal layer through the first external surface portion while forming the barrier to internal oxidizing in the second metal layer on the second external surface portion, said internal oxidizing of the first layer occurring substantially only through said first external surface portion and not also the second external surface portion so as to not provide any centrally located depletion zone in the first layer; and removing the barrier from the second external surface portion of the metal member to provide contact materials with an easily-weldable mounting surface.

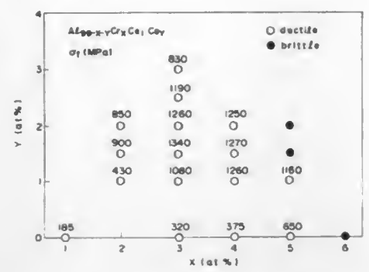
5,607,523

HIGH-STRENGTH ALUMINUM-BASED ALLOY

Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku Sendai-shi, Miyagi; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku Sendai-shi, Miyagi; Junichi Nagahora, Sendai; Toshisuke Shibata, Sendai, and Kazuhiko Kita, Sendai, all of Japan, assignors to Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi, and YKK Corporation, Tokyo, all of Japan

Filed Jan. 9, 1995, Ser. No. 369,818
Claims priority, application Japan, Feb. 25, 1994, 6-027881
Int. Cl.[6] C22C *21/00*
U.S. Cl. 148—415 **12 Claims**

1. A high-strength aluminum-based alloy consisting essentially of a composition represented by the general formula: $Al_{bal.}Q_aM_bX_c$, wherein Q is at least one element selected from the group consisting of Mn and Cr; M is at least one element selected from the group consisting of Co, Ni, and Cu; X is at least one of rare earth



elements including Y, or Misch metal (Mm); and a, b and c are, in atomic percentages, a is greater than or equal to 1, but less than or equal to 7, b is greater than or equal to 0.5, but less than or equal to 5, and c is greater than 0, but less than or equal to 5, said aluminum-based alloy containing quasicrystals in the structure thereof.

5,607,524

DRIVE SHAFTS FOR VEHICLES AND OTHER APPLICATIONS AND METHOD FOR PRODUCTION

Thomas J. Klemp, Massena, N.Y.; John A. Dickson, Jr., Wayne, Pa., and Darwin O. Collins, Lafayette, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 190,414, Feb. 2, 1994. This application Aug. 19, 1994, Ser. No. 293,534

The portion of the term of this patent subsequent to Mar. 18, 2013, has been disclaimed.

Int. Cl.[6] C22F *1/05*

U.S. Cl. 148—521 **35 Claims**

13. A method of producing a drive shaft comprising:

(a) providing an alloy consisting essentially of about 0.7 to 1.2% magnesium, about 0.4 to 1.2% silicon, about 0.6 to 1.2% copper, about 0.1 to 1% manganese, balance substantially aluminum and incidental elements and impurities;

(b) extruding said alloy within about 500° to 800° F. into hollow elongate tubing;

(c) drawing said tubing to a reduction of at least 15% in metal cross-sectional area;

(d) solution heat treating said tubing at at least about 990° F. and then quenching;

(e) reducing the outer diameter of the tube and increasing the tube wall thickness to provide a relatively short tube length of reduced diameter and thicker wall thickness at one or both ends of a drive shaft suitable length of said tube, said reducing being performed within a time after said quenching equivalent to not more than 30 hours at room temperature;

(f) artificially aging said tube; and

(g) welding said tube to an end member at one or both ends thereof including using a weld filler alloy containing over 3% silicon.

5,607,525

METHOD OF MAKING AN AC GENERATOR ROTOR SEGMENT

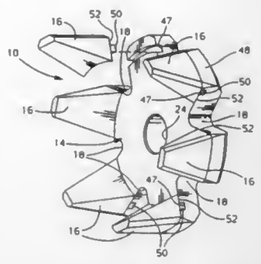
David E. Gay, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 19, 1994, Ser. No. 308,789

Int. Cl.[6] B32B *31/26*

U.S. Cl. 156—62.8 **11 Claims**

1. A method of making an end pole segment for a rotor of an alternating current generator said end segment being formed from a ferromagnetic material and comprising a base portion and a plurality of circumferentially spaced teeth axially extending from said base portion comprising the steps of:



compacting a first mixture of ferromagnetic particles and a fugitive binder at a first temperature and pressure to form a first compact having a first density and conforming substantially to said base;

compacting a second mixture of ferromagnetic particles and a fugitive binder at a second temperature and pressure to form a plurality of second compacts having a second density and conforming substantially to said teeth;

bonding said second compacts to said first compact;

removing said binder; and

sintering said compacts to bond said particles together into a cohesive mass and form said segment with said teeth having a flux-carrying capability at least equal to that of said base.

5,607,526

LABEL-APPLYING METHOD AND APPARATUS

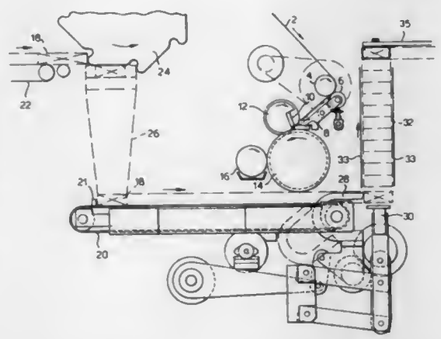
William M. Buckley, Saunderton, Great Britain, assignor to Molins PLC, Milton Keynes, United Kingdom

Filed Jan. 26, 1995, Ser. No. 378,573

Claims priority, application United Kingdom, Jan. 26, 1994, 9401441

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **26 Claims**



1. A method of applying labels to articles, including the process steps of feeding adhesive-carrying labels at a first position, conveying labels from said first position through an intermediate region in which successive labels are applied to successive articles, and delivering articles with applied labels to a stabilizing region downstream of said intermediate region, wherein, following a signal to interrupt the process steps, at least one article carrying an applied label is automatically moved from said intermediate region to said stabilizing region while further feed of labels at said first position is inhibited, so that after a predetermined period following said signal no labels with adhesive applied to them remain in said intermediate region.

5,607,527

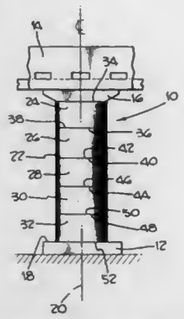
METHOD OF MAKING FABRIC REINFORCED CONCRETE COLUMNS TO PROVIDE EARTHQUAKE PROTECTION

Frederick P. Isley, Jr., Tracy, Calif., assignor to Hexcel Corporation, Dublin, Calif.

Continuation of Ser. No. 35,732, Mar. 23, 1993, abandoned, which is a division of Ser. No. 842,006, Feb. 25, 1992, Pat. No. 5,218,810. This application Sep. 14, 1994, Ser. No. 305,735

Int. Cl.[6] E04H *9/02;9/00*

U.S. Cl. 156—71 **11 Claims**



1. A method for reinforcing a concrete column which supports a bridge or other structure to increase the ability of the column to withstand asymmetric loading during an earthquake wherein said column has a top attached to said bridge or other structure, a bottom, a vertical axis, and a circumferential outer surface extending axially between said column top and bottom, said method comprising the steps of:

providing a fabric layer having first and second selvedges extending parallel to each other, said fabric layer comprising a plurality of interwoven fibers;

impregnating said fabric layer with a curable resin to form a wet resin impregnated fabric layer in a wet state;

the method further comprising the steps in the order named:

applying said wet resin impregnated fabric layer in said wet state directly to the circumferential outer surface of said column to provide a wet composite reinforcement layer which is in direct contact with said circumferential outer surfaces wherein the selvedges of said fabric extend around said outer surface substantially perpendicular to the axis of said column; and

allowing said wet resin in said wet composite reinforcement layer to cure to thereby provide a cured composite reinforcement layer which increases the ability of such column to withstand asymmetric loading during an earthquake and thereby continue to provide support for said bridge or other structure.

5,607,528

ULTRASONICALLY WELDED PLASTIC RIBBON AND APPARATUS AND PROCESS FOR FORMING SAME

Hrishikesh Choudhury, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 156,530, Nov. 19, 1993, Pat. No. 5,439,720, which is a continuation of Ser. No. 783,307, Oct. 28, 1991, abandoned. This application May 10, 1995, Ser. No. 438,675

Int. Cl.[6] B32B *31/16*

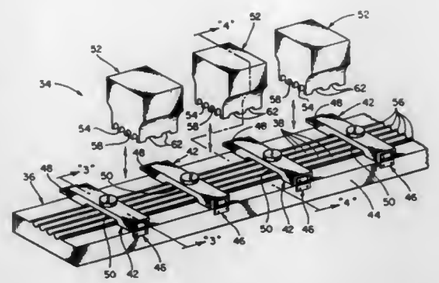
U.S. Cl. 156—73.2 **5 Claims**

1. A process for forming a unitary ribbon of plastic tubing in the form of a plurality of lengths of tubing disposed in side-by-side relationship wherein said tubing has an inside surface at a preselected inner diameter, an outside surface at a preselected outer diameter, and a preselected wall thickness between the inner and outer diameters, said process comprising,

positioning a plurality of lengths of tubing in non-contacting side-by-side relationship in side-by-side grooves formed in the top surface of a base member wherein said side by-side grooves in the top surface of the base member are separated by flat surfaces of preselected width,

positioning a sonic welding blade in engagement with the outside surface of each of two adjacent lengths of tubing, wherein the sonic welding blade has a width greater than the minimum distance between outside surfaces of adjacent lengths of tubing and less than the minimum distance between the inside surfaces of adjacent lengths of tubing, and then

ultrasonically welding said non-contacting side-by-side lengths of tubing to one another at spaced intervals along the length thereof to form a unitary ribbon of plastic tubing having non-welded portions spaced along the length thereof.



5,607,529

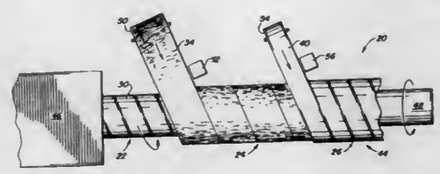
INSULATED FLEXIBLE AIR DUCT AND THE PROCESS FOR MANUFACTURING THE SAME

Eric J. Adamczyk, 11407 W. Roxbury Ave., Littleton, Colo. 80127, and Don A. Forte, 29840 Denali La., Evergreen, Colo. 80439

Filed Feb. 15, 1995, Ser. No. 389,835

Int. Cl.[6] B29C *53/64;53/78;* B65H *81/00*

U.S. Cl. 156—143 **6 Claims**



1. A method of manufacturing an insulated, flexible air duct, comprising:

forming a cylindrical wire helix having spaced successive convolutions and a longitudinal axis; rotating said cylindrical wire helix about said longitudinal axis while wrapping a first strip of plastic core film helically about said wire helix with lateral portions of successive convolutions of said first plastic core film overlapping; bonding said overlapping lateral portions of said successive convolutions of said first strip of core film together; and bonding said helically wrapped strip of core film to said wire helix to form a rotating cylindrical flexible duct core;

feeding said cylindrical flexible duct core, as said cylindrical flexible duct core is formed, in an axial direction while continuing to rotate said cylindrical flexible duct core about the longitudinal axis and forming a layer of fibrous insulation about said cylindrical flexible duct core by helically wrapping a strip of fibrous insulation blanket about said cylindrical flexible duct core to form an insulated cylindrical flexible duct core with lateral portions of successive convolutions of said strip of fibrous insulation blanket overlapping to the extent that the insulated, flexible air duct being formed can be bent without forming a radially extending gap, extending com-

pletely through said layer of fibrous insulation, between successive convolutions of said strip of fibrous insulation blanket; and

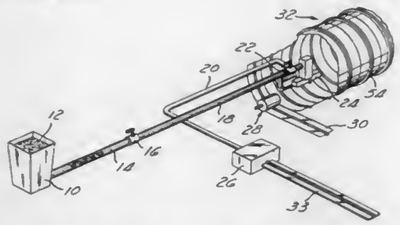
feeding said insulated cylindrical flexible duct core in an axial direction while continuing to rotate said insulated cylindrical flexible duct core about the longitudinal axis and forming a vapor barrier jacket about said layer of fibrous insulation by helically wrapping a strip of plastic jacket film about said layer of fibrous insulation with lateral portions of successive convolutions of said strip of plastic jacket film overlapping; and bonding said overlapping lateral portions of said successive convolutions of said strip of plastic jacket film together to form an insulated flexible air duct with a vapor barrier jacket.

5,607,530

POLYMER DIVERTER SYSTEM FOR METAL PIPE HAVING AN INTEGRALLY FORMED POLYMER LINER

Robert E. Hall; James R. Andre, and J. K. Leason, all of Newport Beach, Calif., assignors to W.E. Hall Company, Newport Beach, Calif.

Filed Aug. 9, 1995, Ser. No. 512,989
Int. Cl.[6] B29C *47/10;47/74*
U.S. Cl. 156—143 **7 Claims**



1. A method for applying polymer to metal, said method comprising the steps of:

a) pumping heated polymer to an applicator;

b) applying the heated polymer to the metal via the applicator;

c) upon encountering a lack of metal to which the polymer is to be applied, diverting the pumped, heated polymer from the applicator; and

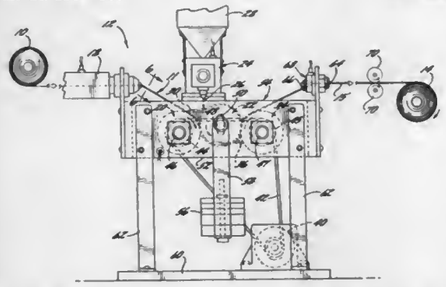
d) utilizing the diverted polymer to form a splice for attaching two pieces of metal together.

5,607,531

FILAMENT COATING PROCESS

Donald G. Needham, Ramona; William Kinzie, Cleveland, and James H. Harris, Bartlesville, all of Okla., assignors to Polyplus, Inc., Bartlesville, Okla.

Filed Jun. 5, 1995, Ser. No. 475,319
Int. Cl.[6] B05D *1/28;* **D04H** *3/08*
U.S. Cl. 156—166 **20 Claims**



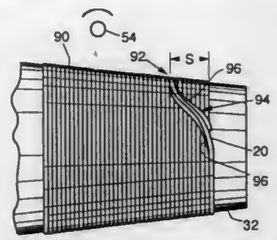
1. A filament coating process comprising applying a mass of molten coating material to a nip formed by a first coating roll and a second coating roll comprising a relief area of a selected depth, passing a bundle of filaments into said nip, and as said filaments pass through said nip in an area defined by said relief area, transversely spreading said bundle of filaments by force exerted upon said filaments and applying said coating material to said filaments.

5,607,532

USE OF ULTRAVIOLET-CURABLE ADHESIVE IN PREPARATION OF OPTICAL FIBER DISPENSERS

Gregory LoStracco, 1926 N. Tucker Dr., Tucson, Ariz. 85716

Filed Jun. 7, 1995, Ser. No. 478,304
Int. Cl.[6] G02B *6/04*
U.S. Cl. 156—169 **18 Claims**



1. A method for preparing an optical fiber dispenser, comprising the steps of

providing a bobbin; and

forming an optical fiber pack having layers of optical fiber on the bobbin, the step of forming including the steps of

depositing an adhesive layer of an adhesive curable by ultraviolet radiation,

winding a length of the optical fiber over the layer of ultraviolet-curable adhesive to form an overlying optical fiber layer, and

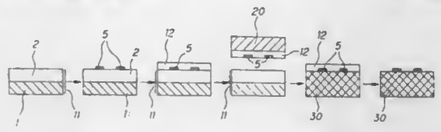
directing ultraviolet radiation at the adhesive layer through the overlying optical fiber layer, to cure the adhesive.

5,607,533

METHOD FOR PREPARATION OF PRINTING PLATE BY ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS FOR USE THEREIN

Eiichi Kato, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 1, 1995, Ser. No. 457,461
Claims priority, application Japan, Jun. 3, 1994, 6-144084
Int. Cl.[6] B44C *1/165*
U.S. Cl. 156—230 **26 Claims**



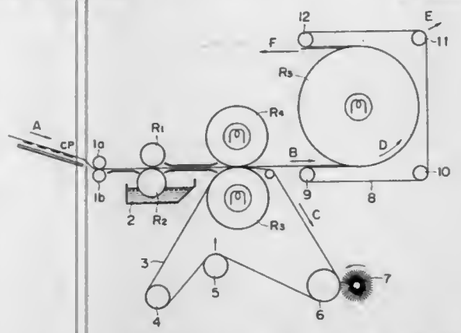
1. A method for preparation of a printing plate by an electrophotographic process comprising forming a toner image on an electrophotographic light-sensitive element by an electrophotographic process, providing a peelable transfer layer mainly containing a resin (A) capable of being removed upon a chemical reaction treatment on the toner image, transferring the toner image together with the transfer layer onto a primary receptor, transferring the toner image together with the transfer layer from the primary receptor onto a receiving material having a surface capable of providing a hydrophilic surface suitable for lithographic printing at the time of printing, and removing the transfer layer on the receiving material by the chemical reaction treatment.

5,607,534

METHOD OF RECYCLING SUPPORT MATERIAL FOR IMAGE-BEARING MEMBER

Toshiyuki Kawanishi; Masato Igarashi; Eiichi Kawamura, all of Numazu; Tadashi Saitoh; Kiyoshi Tanikawa, both of Yokohama, and Kakuji Murakami, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1994, Ser. No. 293,323
Claims priority, application Japan, Aug. 20, 1993, 5-228187; Sep. 30, 1993, 5-244633; Sep. 30, 1993, 5-244634; Oct. 1, 1993, 5-247051; Oct. 14, 1993, 5-256905; Oct. 14, 1993, 5-280524; Oct. 26, 1993, 5-267472; Feb. 28, 1994, 6-054534
Int. Cl.[6] B41M *7/00*
U.S. Cl. 156—234 **16 Claims**



1. A method of recycling a support material for supporting images thereon, at least part of said support material comprising a paper layer which comprises cellulose fibers and bears thereon hydrophobic images comprising a coloring agent and a heat softening or thermofusible material, said method comprising the steps of:

causing said support material to hold an image peeling liquid comprising water thereon;

bringing an image peeling member into contact with said hydrophobic images while said image peeling liquid is held on said support material; and

peeling said hydrophobic images off said paper layer;

wherein said image peeling liquid is held in an amount of 1.0 g or more per 210 mm×297 mm surface area of said paper layer, the rate of penetration of said image peeling liquid into said paper layer of said support material is 12 ml/m^2 or more per a contact time of 0.4 seconds in which said image peeling liquid is in contact with said paper layer, the contact angle of said image peeling liquid with respect to the surface of said hydrophobic image is 100° or less, and wherein said image peeling liquid has a surface tension of 70 dyn/cm or less.

5,607,535

METHOD OF MANUFACTURING A LAMINATED PIEZOELECTRIC ACTUATOR

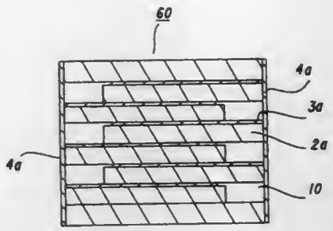
Mineharu Tsukada, and Koji Omote, both of Kawasaki, Japan, assignors to Fujitsu, Ltd., Japan

Filed Feb. 25, 1994, Ser. No. 201,987
Claims priority, application Japan, May 20, 1993, 5-117475
Int. Cl.[6] B32B *31/18*
U.S. Cl. 156—252 **11 Claims**

1. A method of manufacturing a laminated piezoelectric actuator comprising at least an actuator element comprising a plurality of piezoelectric ceramic layers alternating with a plurality of internal electrode layers, and external electrodes connecting alternate internal electrode layers into two groups, said method comprising the steps of:

(a) providing a piezoelectric ceramic green sheet;

(b) disposing said ceramic green sheet in a plane of an orthogonal X-Y coordinate system with a lengthwise side of said sheet perpendicular to the X axis of said coordinate system;



(c) boring a plurality of spaced apart, elongated holes through said green sheet such that the holes are arranged parallel to each other in at least one line parallel to an X axis, wherein holes in two adjacent lines are staggered by half the length of a hole;

(d) providing a conductor layer on the green sheet formed in step (c), for use as internal electrodes, wherein the conductor layer has a plurality of voids so disposed that each void overlaps a corresponding hole sufficient to provide a margin between an internal edge of said void and an internal edge of said hole, to form a composite sheet;

(e) superposing a plurality of said composite sheets formed in step (d) such that the holes of alternate composite sheets are aligned with each other with the conductor layers of intervening composite sheets sandwiched in between to produce a parent actuator;

(f) cutting the parent actuator perpendicularly to the plane of the X-Y coordinates along a first straight line crossing the centers of the holes along a Y axis of the X-Y coordinates and along a second straight line crossing the holes along the X axis, to produce the actuator element having first sides and second sides which are sections developed by cutting the parent actuator along the first and second straight lines, respectively; and

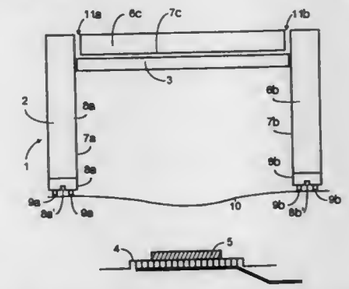
(g) forming external electrodes by conductively connecting exposed portions of the internal electrodes appearing alternately on each of the first sides of the actuator element.

5,607,536

METHOD AND APPARATUS FOR COATING OBJECTS WITH A PLASTIC FILM

Raimo Tikka, Pori, Finland, assignor to Tikka-System Oy, Pori, Finland

Continuation-in-part of Ser. No. 15,654, Feb. 9, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 366,989
Claims priority, application Finland, Oct. 30, 1992, 924936
Int. Cl.[6] B29C *65/02;65/18;* **B32B** *31/16*
U.S. Cl. 156—285 **16 Claims**



1. A method for coating a rigid object made of wood or a wood-fiber material with a plastic film having a surface that is damaged at temperatures above 140° C., the method comprising

a) applying a solid, heat-activatable adhesive to a surface of the rigid object so that the solid adhesive forms a rough surface

on the object; said adhesive being activatable by heat at a heat activation temperature below 140° C.;

b) uniformly heating the surface of the plastic film to a heating temperature above the heat activation temperature but not above 140° C.;

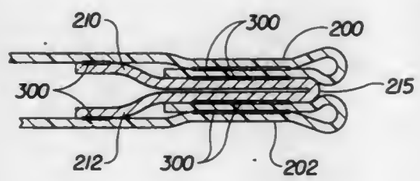
c) placing the heated plastic film over the rough surface so that there is an air space between the rough surface and the heated plastic film and creating a low pressure area below the object to cause suction at least around a periphery of the object, said low-pressure area being of sufficient size such that the suction at least around the periphery is sufficient to remove substantially all air from between the rough surface and the heated plastic film, said heated plastic film causing the adhesive to melt and said suction causing the plastic film to conform to the surface of the object whereby the film adheres to and forms a surface of the object.

5,607,537

METHOD FOR MAKING A FLANGELESS SEAM FOR USE IN DISPOSABLE ARTICLES

Larry K. Johnson, and Stephen J. Lange, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 10, 1995, Ser. No. 541,997
Int. Cl.[6] B32B *31/00;31/20;* **A61F** *13/15*
U.S. Cl. 156—289 **19 Claims**



1. A method of making a flangeless seam by joining two members of a disposable article, the method comprising the steps of:

providing a first member of the disposable article;

providing a second member of the disposable article; providing a barrier member having a first portion and a second portion separated by a fold, the first portion of the barrier member being juxtaposed with at least a portion of the first member and the second portion of the barrier member being juxtaposed at least a portion of the second member forming a laminate; and

applying a joining means across at least a portion of the laminate, at least a part of the first portion of the barrier member being joined with at least a part of the first member and at least a part of the second portion of the barrier member being joined with at least a part of the second member, wherein the first portion of the barrier member and the second portion of the barrier member are not joined together by the joining means.

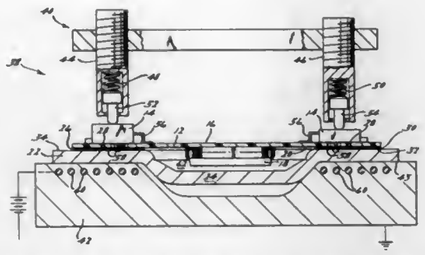
5,607,538

METHOD OF MANUFACTURING A CIRCUIT ASSEMBLY

William E. Cooke, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 7, 1995, Ser. No. 524,498
Int. Cl.[6] H05K *7/20*
U.S. Cl. 156—291 **16 Claims**

1. A method of manufacturing a circuit assembly including a circuit board having first and second sides with at least one electronic component mounted on each of said sides, and a heat sink attached to said circuit board, said heat sink having first and second sides, said first side having a recessed portion, said second



side of said circuit board and said first side of said heat sink each having corresponding mating surfaces, comprising the steps of:

dispensing a thermally conductive, heat curable adhesive onto at least one of said mating surfaces;

aligning said mating surfaces such that said at least one component on said second side of said circuit board fits within said recessed portion of said heat sink; and

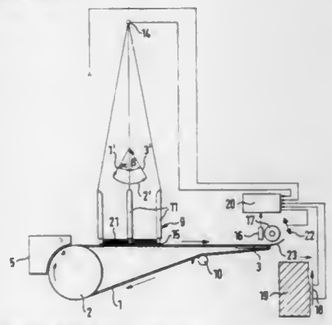
urging said mating surfaces towards one another and applying heat through said heat sink to cure said adhesive, such that said components are exposed to a lesser amount of heat than said adhesive.

5,607,539

LABELLING APPARATUS

Gerd Küppersbusch, Siemensstr. 34a, D-42551 Velbert, Germany

Continuation of Ser. No. 146,048, Nov. 2, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,059
Claims priority, application Germany, Dec. 3, 1992, 42 07 940.3
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—364 **5 Claims**



1. A labelling apparatus comprising:

a labelling station,

a conveyor belt to transfer labels to said labelling station,

means for positioning an object to be labelled at said labelling station,

a delivery edge provided at said labelling station,

a drive cylinder for driving said conveyor belt,

a label magazine,

a pasting station provided ahead of said label magazine in transport direction to apply adhesive to said conveyor belt, and

means to pivot the label magazine so that in a first cycle, the label magazine bottom is raised from the conveyor belt and inclined from a vertical direction by an angle α, of from about 5° to about 10°, to touch a front edge of the magazine to the conveyor belt,

in a second cycle, the label magazine travels with the conveyor belt and the label magazine pivots with the entire bottom of the label magazine touching the surface of the conveyor belt, and

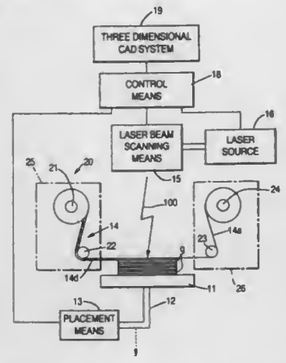
in a third cycle, the label magazine further pivots at an angle α, of from about 5° to about 10°, to lift the rear edge of the label magazine off the conveyor belt and then to retract the label magazine from the conveyor belt.

5,607,540

PHOTOFORMING METHOD AND APPARATUS

Hisatomo Onishi, Tokyo, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Continuation of Ser. No. 18,196, Feb. 16, 1993, abandoned. This application May 25, 1994, Ser. No. 249,073
Claims priority, application Japan, Feb. 20, 1992, 4-32470
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—379.8 **3 Claims**



1. An apparatus for irradiating and photoforming a semi-hardened layer into a hardened layer to be laminated on a previously hardened layer for producing a three-dimensional object, comprising:

(1) a work table movable in a first direction to be placed at its stepped positions;

(2) placement means for moving said work table in said first direction to be placed at its stepped positions;

(3) a sheet body including a base film and a semi-hardened layer of a photohardenable resin separably supported on said base film;

(4) a sheet feeding unit including,

(a) a sheet feeding carriage movable in a second direction perpendicular to said first direction with respect to said work table between first and second operation positions spaced apart in said second direction from each other across and above said work table,

(b) a sheet body feeding roller for unwinding and feeding said sheet body onto said work table,

(c) a press roller for imparting a predetermined constant tension to said sheet body unwound from said sheet body feeding roller and for pressurizing the semi-hardened layer onto said previously hardened layer on said work table, said previously hardened layer including a non-hardened part, and said sheet body feeding roller and said press roller being operatively supported on said sheet feeding carriage,

(d) a sheet winding carriage movable in said second direction with respect to said work table between first and second operation positions spaced apart in said second direction from each other across and above said work table, said first and second operation positions of said sheet winding carriage being in closest relationship with said first and second operation positions, respectively, of said sheet feeding carriage,

(e) a separation roller for separating said base film from said hardened layer laminated on said previously hardened layer, including said non-hardened part, and

(f) a base film winding roller for winding said base film at a predetermined constant tension, said separation roller and said base film winding roller being operatively supported on said sheet winding carriage;

(5) driving means for driving and rotating said sheet body feeding roller and said press roller on said sheet feeding carriage and said separation roller and said base film winding roller on said sheet winding carriage;

(6) transfer means for transferring said sheet feeding carriage with respect to said work table between said first and second operation positions and for transferring said sheet winding carriage with respect to said work table between said first and second operation positions; and

(7) irradiation means provided above said work table for selectively irradiating said semi-hardened layer through said base film and photoforming said semi-hardened layer into said hardened layer to be laminated on said previously hardened layer, including said non-hardened part, when said sheet feeding carriage assumes said first operation position and said sheet winding carriage assumes said second operation position to have said semi-hardened layer placed on said previously hardened layer,

(8) said base film being imparted a predetermined constant tension by said sheet body feeding roller and said base film winding roller through said press roller and said separation roller to have said semi-hardened layer pressurized by said press roller on said previously hardened layer when said sheet feeding carriage is moved toward said first operation position from said second operation position while said sheet winding carriage is held stationary to assume said second operation position in such a manner that said base film is deflected by said press roller and separation roller to have said semi-hardened layer supported in parallel with the surface of said work table between said press roller and said separation roller.

5,607,541

ELECTROSTATIC CHUCK

Yoshihiro Kubota, and Makoto Kawai, both of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,848
Claims priority, application Japan, Mar. 29, 1991, 3-091233
Int. Cl.[6] B32B *18/00*
U.S. Cl. 156—538 **2 Claims**

1. An electrostatic chuck which comprises: two dielectric layers each made from porous electrically insulating ceramic material; and an internal electrode layer integrally interposed between the dielectric layers, the pores in the ceramic material being filled with an oxide of an inorganic element formed in situ.

5,607,542

INDUCTIVELY ENHANCED REACTIVE ION ETCHING

Robert Wu, Pleasanton, and Gerald Z. Yin, Cupertino, both of Calif., assignors to Applied Materials Inc., Santa Clara, Calif.

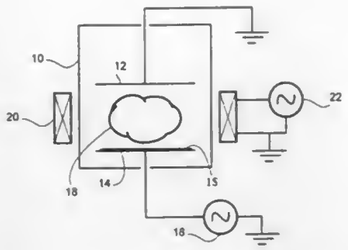
Filed Nov. 1, 1994, Ser. No. 333,004
Int. Cl.[6] C23F *4/00*
U.S. Cl. 156—643.1 **20 Claims**

1. A medium density plasma generation method, comprising the steps of:

introducing process gases into a vacuum chamber;

applying radio-frequency power to electrodes in the chamber and thereby establishing a plasma in the chamber by capacitive coupling; and

applying radio-frequency power to an inductive coil surrounding the plasma, to enhance plasma density without a pure magnetic field enhancement induced non-uniform charge distribution that can damage workpieces being processed;



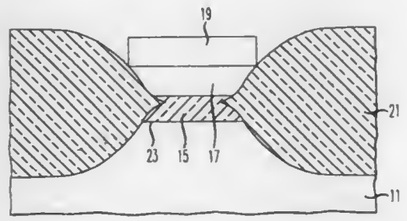
wherein the power applied to the inductive coil to enhance the plasma density is smaller than the power applied to the electrodes to establish and maintain the plasma.

5,607,543

INTEGRATED CIRCUIT ETCHING

Juli H. Eisenberg, Allentown, Pa., and Susan C. Vitkavage, Orlando, Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 28, 1995, Ser. No. 431,341
Int. Cl.[6] H01L *21/30*
U.S. Cl. 156—662.1 **7 Claims**



1. A method of semiconductor integrated circuit fabrication comprising:

forming a layer of polysilicon overlying a substrate;

forming a layer of silicon nitride overlying said layer of polysilicon;

subjecting said substrate having said layer of polysilicon and said layer of silicon nitride to a first bath comprised of phosphoric acid which does not contain nitric acid, and then to a second bath comprising phosphoric and nitric acid, thereby removing said layer of polysilicon and said layer of silicon nitride.

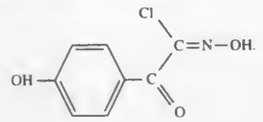
5,607,544

PROCESS AND AGENT FOR THE OXIDATIVE BLEACHING OF WOOD PULP AND FOR DEINKING WASTE PAPER

Wolfram Salzburger, Bensheim; Silke Eifler, Dudenhofen, and Margarete Scholl, Mannheim, all of Germany, assignors to BK Ladenburg GmbH für Chemische Erzeugnisse, Ladenburg, Germany

Filed Mar. 27, 1995, Ser. No. 411,148
Claims priority, application Germany, Mar. 26, 1994, 44 10 663.7
Int. Cl.[6] D21H *11/00;21/32*
U.S. Cl. 162—5 **13 Claims**

9. A process for deinking waste paper comprising contacting said waste paper with an aqueous composition comprising hydrogen peroxide and a stabilising agent, said stabilising agent being 2-oxo-2-(4-hydroxyphenyl)-acethydroximic acid chloride (N,4-dihydroxyoxyphenylethanimidoyl chloride) of the formula

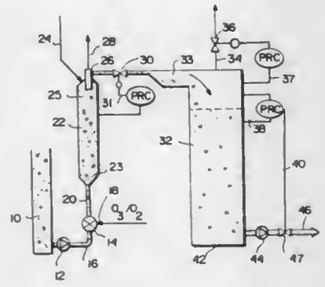


5,607,545

OZONE BLEACHING PROCESS UTILIZING A FLUIDIZING MIXER AND SUPER-ATMOSPHERIC PRESSURE

Kaj Henricson, Kotka, Finland, and Brian Greenwood, Queensbury, N.Y., assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Continuation of Ser. No. 721,958, Jun. 27, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 935,334
Int. Cl.[6] D21C *9/14;9/153;9/16*
U.S. Cl. 162—19 **19 Claims**



1. A method of bleaching medium consistency cellulose pulp with ozone as bleaching agent, utilizing a fluidizing mixer, and first and second reaction vessels, the second vessel larger than the first, comprising the steps of continuously:

(a) feeding medium consistency pulp and ozone gas in substantially non-consumable carrier gas under super-atmospheric pressure into the fluidizing mixer;

(b) intimately mixing the pulp and ozone in the fluidizing mixer to produce a uniform and intimate mixture of pulp and ozone;

(c) while maintaining the mixture under super-atmospheric pressure, feeding the mixture to the first reaction vessel;

(d) retaining the mixture in the first reaction vessel while it moves in a first direction until bleaching with the ozone in the mixture has been substantially completed;

(e) after substantial completion of the ozone bleaching reaction, while super-atmospheric pressure is maintained, introducing a second bleaching chemical, different from ozone, into the pulp in the first reaction vessel;

(f) fluidizing the pulp, with second bleaching chemical, in the first reaction vessel; and

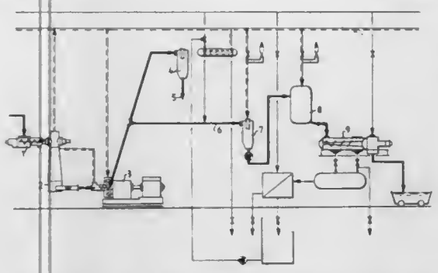
(g) discharging the fluidized pulp in a second direction different than the first direction into the second reaction vessel, gas, including ozone carrier gas, separating from the pulp in the second reaction vessel.

5,607,546

CTMP-PROCESS

Hans Höglund, Matfors; Roland Bäck, Njurunda; Ove Danielsson, Stockholm, and Bo Falk, Järfälla, all of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

Continuation of Ser. No. 910,307, Jul. 22, 1992, abandoned. This application Nov. 7, 1994, Ser. No. 337,420
Claims priority, application Sweden, Feb. 13, 1990, 9000515-8
Int. Cl.[6] D21B *1/02*
U.S. Cl. 162—25 **15 Claims**



1. In a method for producing an absorbent chemithermomechanical pulp from lignocellulosic material consisting of wood chips at a wood yield above 88%, comprising

a) steaming the wood chips;

b) impregnating the chips with a solution selected from the group consisting of sodium sulphite, sodium dithionate and alkaline peroxide, with an addition of a complex builder;

c) preheating the chips;

d) defibering the chips to pulp at substantially the same pressure and temperature as those employed in the preheating process; and

e) washing and dewatering the pulp; the improvement comprising

f) carrying out steps b) and c) in one and the same vessel over a combined time period of at most 2 minutes by impregnating the chips with said impregnating solution;

g) using a warm impregnating solution having a temperature of at least 130° C.; and

h) preheating the chips at a temperature of 150°– 175° C., wherein the pulp obtained has such a brightness that it can be bleached with peroxide to a brightness of at least 65% ISO, wherein when fractioning according to Bauer McNett, the long-fibre content is above 75% of fibres retained on a wire gauze of size 28 mesh and the short fibre content is below 8% of fibres which pass through a wire gauze of size 200 mesh; and wherein the shive content is lower than 3% measured according to Somerville.

5,607,547

METHOD FOR REDUCED SULFUR DIOXIDE FORMATION IN REFINER BLEACHING

Jeffrey Nye, Huntersville, N.C., and Martin G. Fairbank, Milton, Canada, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 55,121, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 990,348, Dec. 14, 1992, abandoned. This application May 19, 1995, Ser. No. 445,318
Int. Cl.[6] D21B *1/16;* D21C *9/12*
U.S. Cl. 162—26 **8 Claims**

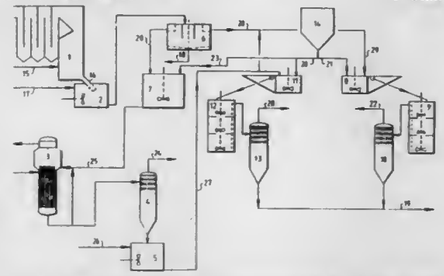
1. A process for bleaching wood pulp with reduced formation of sulfur dioxide in a refiner whose contents comprise wood pulp, water and sodium hydrosulfite, wherein said process comprises the addition of at least one carbonate selected from the group consisting of lithium carbonate, sodium carbonate, potassium carbonate, magnesium carbonate and calcium carbonate and mixtures of two or more of the foregoing in an amount of at least from twenty to fifty percent by weight based on the sodium hydrosulfite, whereby the formation of sulfur dioxide is substantially reduced in comparison to use of sodium hydroxide, and wherein the sodium hydrosulfite and carbonates are present in the refiner simultaneously.

5,607,548

PROCESS FOR DIVIDING THE SULPHIDE CONTENT OF THE GREEN LIQUOR FOR THE PRODUCTION OF WHITE LIQUORS HAVING HIGH AND LOW SULPHIDITY

Bertil Pettersson, Gävle, Sweden, assignor to Kvaerner Pulping Technologies, Karlstad, Sweden

PCT No. PCT/SE93/00782, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/09204, PCT Pub. Date Apr. 28, 1994
PCT Filed Sep. 29, 1993, Ser. No. 397,253
Claims priority, application Sweden, Oct. 12, 1992, 9203005
Int. Cl.[6] D21C *11/04*
U.S. Cl. 162—30.11 **3 Claims**



1. In a process for recovering chemicals from the waste liquor in a sulphate pulping process, wherein the waste liquor from the pulping is concentrated by evaporation and the concentrated waste liquor is burned in a combustor to produce a smelt mainly containing sodium carbonate and sodium sulfide, the melt is dissolved in an aqueous solution to produce green liquor and the green liquor is causticized to produce a white liquor containing sodium hydroxide, sodium sulphide, and sodium carbonate, the improvement which comprises:

(a) adding quick lime or hydrated lime to the green liquor in a combined slaking causticizing vessel to form the white liquor containing 1.3–1.8 kmol/m^3 of hydroxide ion concentration;

(b) evaporating the white liquor in an evaporator to crystallize the sodium carbonate in the cooking liquor;

(c) separating off the sodium carbonate crystals in a first filter to obtain a sulphide-rich white liquor and sodium carbonate crystals;

(d) dissolving the sodium carbonate crystals to form an alkaline solution of low sulphide content;

(e) adding quicklime to the alkaline solution of low sulphide content in a second causticizing vessel to obtain a slurry containing sulphide-low white liquor and lime sludge, and

(f) separating off the lime sludge from the slurry in a second filter to obtain a sulphide-low white liquor.

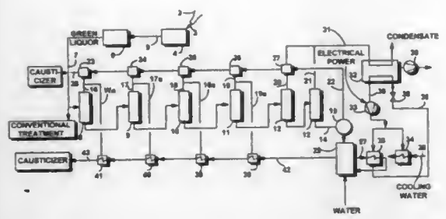
5,607,549

METHOD FOR THE MANUFACTURE OF COOKING LIQUORS OF DIFFERENT SULPHIDITY BY GREEN LIQUOR CRYSTALLIZATION

Juha Koskiniemi, Kyminlinna, Finland, assignor to Ahlstrom Machinery Corporation, Noormarkku, Finland

Filed Jun. 15, 1995, Ser. No. 490,734
Claims priority, application Finland, Jun. 17, 1994, 942902
Int. Cl.[6] D21C *11/04*
U.S. Cl. 162—30.11 **19 Claims**

1. A method of manufacturing cooking liquors of different sulphidity for digesting comminuted cellulosic material to produce



chemical cellulose pulp, black liquor being produced during the production of chemical cellulose pulp, said method comprising the steps of:

(a) treating black liquor to recover chemicals therefrom;

(b) dissolving the chemicals from step (a) to produce green liquor;

(c) decreasing the temperature of the green liquor from step (b) to effect crystallization of sodium carbonate in the green liquor by expanding the green liquor in at least two stages, vapor being produced during expansion;

(d) separating the sodium carbonate crystals produced during the practice of step (c) to produce a green liquor with high sulphidity;

(e) heating the high sulphidity green liquor from step (d) with at least part the expansion vapor produced during step (c) by bringing the expansion vapor and high sulphidity green liquor into heat exchange relationship; and

(f) dissolving the sodium carbonate crystals separated in step (d) to produce a low sulphide content alkaline solution.

5,607,550

ABSORBENT NONWOVEN FABRIC AND ITS PRODUCTION

Paul J. Akers, Coventry, United Kingdom, assignor to Courtaulds Fibres (Holdings) Limited, United Kingdom

PCT No. PCT/GB93/01708, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/04751, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 381,834

Claims priority, application United Kingdom, Aug. 13, 1992, 9217222

Int. Cl.[6] D21H *13/12*

U.S. Cl. 162—102 **12 Claims**

1. A wet-laid nonwoven fabric comprising a blend of 1 to 50% by weight of fibres of weight 2 to 30 decitex per filament and length 3 to 100 mm of a water-swellable water-insoluble superabsorbent polymer, which is a crosslinked copolymer of 50 to 95% by weight ethylenically unsaturated carboxylic monomer and 5 to 50% by weight copolymerisable ethylenically unsaturated monomer, and 99 to 50% by weight of less absorbent fibres having an absorbency of less than 10 g/g measured by retention to centrifuging of a 0.9% by weight saline solution.

5,607,551

SOFT TISSUE

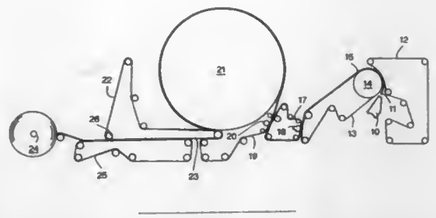
Theodore E. Farrington, Jr.; Julia S. Bahlman; Mark A. Burazin; Fung-jou Chen; Kristin A. Goerg, all of Appleton; Michael A. Hermans; Robert J. Makolin, both of Neenah, and Michael J. Rekoske, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 24, 1993, Ser. No. 82,684

Int. Cl.[6] D21H *11/00*

U.S. Cl. 162—109 **39 Claims**

1. A soft tissue product comprising one or more uncreped throughdried tissue plies and having a MD Max Slope of about 10 or less.



5,607,552

AQUEOUS SUSPENSIONS OF COLLOIDAL PARTICLES, PREPARATION AND USE OF THE SUSPENSIONS

Kjell Andersson, Göteborg; Hans Johansson, Kungälv; Erik Lindgren, Bohus, and Marek Tokarz, Kungälv, all of Sweden, assignors to Eka Nobel, AB, Bohus, Sweden

PCT No. PCT/SE93/00664, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/05595, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 11, 1993, Ser. No. 381,898

Claims priority, application Sweden, Aug. 31, 1992, 9202501

Int. Cl.[6] D21H *23/02;17/13;17/63*

U.S. Cl. 162—181.6 **18 Claims**

1. An aqueous stable suspension of colloidal particles which comprises silica based anionic particles and hydrated particles of clays of smectite type which are expandable in water whereby the weight ratio of silica based particles to clay particles is within the range of from 20:1 to 1:10 and the dry content of the suspension is within the range of from 5 to 40 percent by weight.

5,607,553

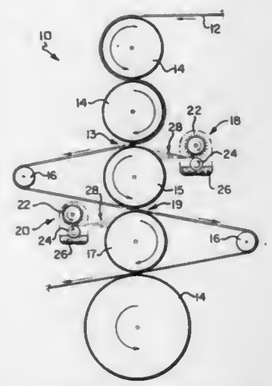
METHOD AND APPARATUS FOR FINISHING PAPER

D. Deepak Chadha, Columbia, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 29, 1995, Ser. No. 520,411

Int. Cl.[6] D21F *11/00;* **D21G** *1/00;* **B30B** *15/34*

U.S. Cl. 162—205 **2 Claims**



1. A method of finishing a web of paper to achieve enhanced stiffness and a highly densified and smooth surface layer with a minimal loss of bulk comprising the steps of:

(a) directing a paper web to a machine calender device comprising a plurality of hard steel rolls in nipped relation, at least one of which is a transfer roll to form a transfer nip;

(b) providing at least one brush spray device, which operates independently of the calender device for generating a mist of liquid moisture in the form of droplets at a rate that is independent of the speed of the machine calender device at a location adjacent and in close proximity to the transfer roll of the machine calender device;

(c) depositing a substantially uniform mist of liquid moisture from step (b) onto the transfer roll in a substantially uniform manner and in a minimal amount;

(d) transferring from about 2–10 lbs/ream (ream size 3000 ft^2) of liquid moisture from the transfer roll to one surface of the paper web in the transfer nip so that only the surface of the paper web is moistened; and,

(e) calendering the web treated according to step (d) in one or more nips of the machine calender device including the transfer nip, to produce a thin densified layer at the treated surface of the web while substantially retaining the original bulk of the web.

5,607,554

LOADING BOX FOR A FORMER OF A PAPER OR BOARD MACHINE

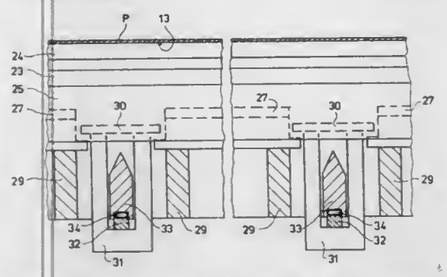
Antti Poikolainen, Jyväskylä , Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed May 3, 1995, Ser. No. 433,609

Claims priority, application Finland, May 3, 1994, 942028

Int. Cl.[6] D21F *1/00;1/52;1/54*

U.S. Cl. 162—210 **19 Claims**



14. A method for loading a set of loading ribs in a loading box for a web former of a paper or board machine, said loading ribs extending in a first direction across substantially the entire width of the web, comprising the steps of:

loading said loading ribs to produce compression, and

applying a local force simultaneously to at least two adjacent ones of said loading ribs at a plurality of discrete locations in the first direction to profile the compression force applied by said at least two loading ribs,

arranging a plurality of longitudinal support beams extending in a direction transverse to the first direction between said at least two loading ribs, one at each of said discrete locations,

mounting an elongate loading hose to each of said support beams such that said loading hose is operative against said support beam, and

selectively pressurizing said loading hoses to locally adjust the compression profile of said loading ribs.

5,607,555

PAPER MACHINE FORMING SECTION FOR PRODUCING A MULTILAYER PAPER WEB

Udo Grossmann; Dieter Egelhof, and Albrecht Meinecke, all of Heidenheim, Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Germany

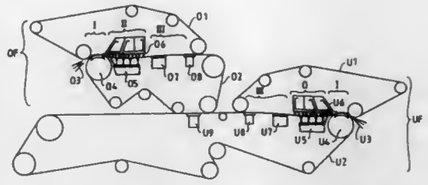
Filed Jan. 27, 1995, Ser. No. 379,267

Claims priority, application Germany, Jan. 27, 1994, 44 02 273.5

Int. Cl.[6] D21F *11/04*

U.S. Cl. 162—304 **7 Claims**

1. In a paper machine for the manufacture of a multilayer web of paper, a twin gap forming unit comprising a first and a second twin-wire web former, each web former forming a respective layer of the web,



each of the first and second web formers comprising respectively:

a first web forming wire, first wire guide elements in engagement with the first wire for guiding the first wire on a respective first path;

a second web forming wire, second wire guide elements in engagement with the second wire for guiding the second wire on a respective second path;

the first and second guide elements being so placed as to guide the first and second wires on a common, horizontally extending, wire path which is less than the entire length of the first and second paths, and on the respective common wire path, the first and second wires form a sandwich for the web;

first drive means for driving the first wire and second drive means for driving the second wire to move lengthwise for carrying pulp suspension at least through the common wire path;

a headbox having an outlet for dispensing pulp suspension between the first and second wires in the common wire path;

following the headbox in the common wire path, a first drainage section comprising a first drainage element at the second wire for draining from the web through the second wire;

along the common wire path following the first drainage section, a second drainage section including opposing drainage ledges on opposite sides of the first and second wires in the common wire path, and including first drainage ledges on the side of the common wire path toward which the outwardly facing side of the web layer is formed and second drainage ledges on the side of the common wire path on which the inwardly facing side of the web layer is formed;

along the common wire path, after the second section thereof, a third drainage section including a suction applying wire separating element at one side of the common wire path for causing the wires to separate and the web to stay with the second wire, whereby the second wire has the side of the web that will face outwardly in the eventually formed multilayer web now facing toward the second wire while the side of the web that will face inwardly toward the other layer of the web now faces outwardly from the second wire;

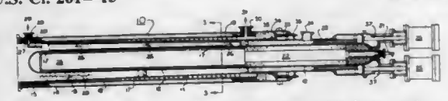
the drainage element in the first drainage section and the drainage ledges in the second drainage section being respectively so shaped and placed that the inner and outer sides of each of the layers of the multilayer web are subject to the same respective type of drainage element ledges in each of the first and second wire formers;

the second wire of the second web former being so guided by the respective second guide elements of the second web former and the second wire of the first web former being so guided by the respective second guide elements of the first web former as to define a second joint run path between the second wires of the two web formers at a location along both second wires that is past the separation from each of the second wires of the respective first wire, for forming the multilayer web in the joint run path of both second wires;

the second guide elements of the second wire of the first web former guiding the second wire of the first web former off the second wire of the second web former such that the multilayer web thereafter travels on the second wire of the second web former;

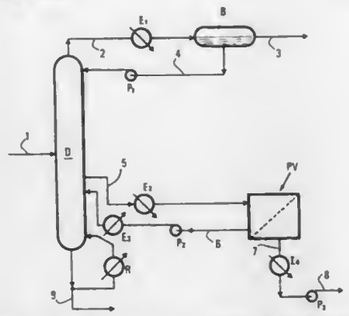
the first and second drainage ledges at the common wire path are arranged staggered with respect to each other in the direction of travel of the wires in the common wire path;
the first drainage ledges are stationary ledges while the second drainage ledges are resiliently pressable and are opposed by the first drainage ledges; and
the first drainage element comprises a suction breast roll.

5,607,556
METHOD FOR COKING COAL
Albert Calderon, P.O. Box 126, Bowling Green, Ohio 43402
Filed Nov. 9, 1994, Ser. No. 336,399
Int. Cl.[6] C10B *47/00*
U.S. Cl. 201—15 **10 Claims**



1. A method for continuously producing coke from coal comprising:
providing at least one elongated coking chamber having an annulus formed by an outer wall of a small tube and an inner wall of a large tube;
force feeding coal in a charging end of said coking chamber and compacting the coal against the outer wall of the small tube and the inner wall of the large tube; and
continuously carbonizing said coal into coke in the absence of oxygen by heating a forced stream of coal in the annulus of said elongated coking chamber, said coal is bi-directionally heated in said annulus by conductive heat as said coal passes through said elongated coking chamber, wherein said carbonization occurs from each of said walls in order to form a cleavage essentially in a middle portion of said annulus.

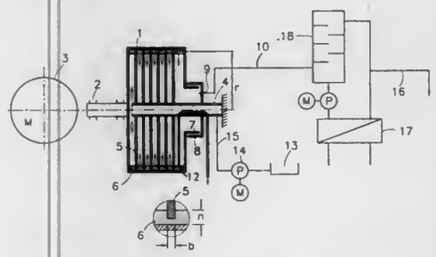
5,607,557
ETHYL TERTIO-BUTYL ETHER PURIFICATION PROCESS COMBINING A MEMBRANE METHOD AND DISTILLATION
Christian Streicher, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Mar. 28, 1995, Ser. No. 411,519
Claims priority, application France, Mar. 28, 1994, 94 03606
Int. Cl.[6] B01D *3/00;* **C07C** *41/42*
U.S. Cl. 203—39 **17 Claims**



1. A process for the separation of a mixture of ethyl tertio-butyl ether and ethanol wherein said mixture contains C_4 hydrocarbons said process comprising the following steps:
a) introducing the mixture to be separated into a distillation zone termed a debutanizing zone, from which substantially all of the C_4 hydrocarbons are recovered as overhead effluent and purified ethyl tertio-butyl ether is recovered as bottom effluent;
b) removing at least one phase selected from the group consisting of a liquid phase, a vapor phase and a mixed liquid-vapor phase as a side stream from said distillation zone and sending it to a permeation zone from which a retentate is recycled to the distillation zone and a permeate comprising ethanol is produced, wherein the phase to be sent to the permeation zone is removed from a tray in said distillation zone which substantially corresponds to the maximum concentration of the ethanol, and said permeation zone being provided with a separation membrane comprising at least one selective layer constituted by a dense film of at least one polymer selected from the group consisting of homopolymers of dimethylaminoethyl methacrylate, copolymers of dimethylaminoethyl methacrylate and N-vinylcaprolactam, copolymers of dimethylaminoethyl methacrylate and N-vinyl pyrrolidone and terpolymers of dimethylaminoethyl methacrylate, N-vinyl caprolactam and N-vinyl pyrrolidone.

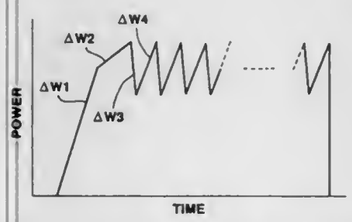
13. A process for the synthesis of ethyl tertio-butyl ether from ethanol and from isobutene contained in a C_4 cut and its separation which comprises the following steps:
1) mixing a C_4 cut, ethanol, a water-ethanol azeotrope from a washing section for a raffinate from a distillation zone D or catalytic or reactive distillation zone D' and a condensed permeate from a permeation zone, and introducing the mixture formed into a reaction section R, which operates under conditions for etherification of isobutene and ethanol;
2) supplying the zone D or D' with effluent from reaction zone R which comprises the ethyl tertio-butyl ether product, non reactive or unreacted C_4 hydrocarbons, excess ethanol and impurities comprising tertiary butyl alcohol, water, C_3 and C_5 hydrocarbons, diethyl ether and ethyl 2-butyl ether; recovering from the bottom of zone D or D' as bottom effluent, purified ethyl tertio-butyl ether which contains traces of diethyl ether and ethyl 2-butyl ether, and recovering an overhead effluent containing hydrocarbons, water and a fraction of the ethanols, and extracting a phase from zone D or D' as a side stream from a tray in said distillation zone D or D' which corresponds substantially to the maximum concentration of the ethanol and sending it to a permeation zone PV; said permeation zone PV being provided with a separation membrane comprising at least one selective layer constituted by a dense film of at least one polymer selected from the group consisting of homopolymers of dimethylaminoethyl methacrylate, copolymers of dimethylaminoethyl methacrylate and N-vinylcaprolactam, copolymers of dimethylaminoethyl methacrylate and N-vinyl pyrrolidone and terpolymers of dimethylaminoethyl methacrylate, N-vinyl caprolactam and N-vinyl pyrrolidone;
3) carrying out permeation on said phase, producing a retentate which is depleted in ethanol and tertiary butyl-alcohol which is recycled to the zone D or D', and a permeate comprising ethanol and tertiary butyl alcohol which is recycled to the reaction zone R or to said catalytic or reactive distillation zone D';
4) sending the overhead effluent vapor from the zone D or D', following condensation to a water washing section LD, which produces an effluent constituted by hydrocarbons which are substantially free of ethanol and a water-ethanol mixture which is separated by distillation into a water bottom product which is recycled to the washing section and an overhead azeotropic water-ethanol mixture containing about 5% by weight of water, which is recycled to the reaction section R or to said catalytic or reactive distillation zone D'.

5,607,558
METHOD FOR SELECTIVE AND/OR UNSELECTIVE VAPORIZATION AND/OR DECOMPOSITION OF, PARTICULARLY, HYDROCARBON COMPOUNDS AND APPARATUS FOR CARRYING OUT SUCH A METHOD
Olav Ellingsen, Kleiva 20, N-6900 Florø, Norway
PCT No. PCT/NO93/00148, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/08680, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 4, 1993, Ser. No. 406,918
Claims priority, application Norway, Oct. 9, 1992, 923927
Int. Cl.[6] B01D *3/00*
U.S. Cl. 203—89 **13 Claims**



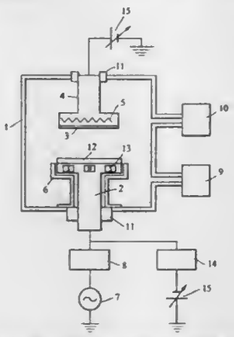
1. A method for separating components contained in a liquid material, the steps which comprise:
placing said liquid material in a rotatable vessel having an axis of rotation,
rotating said vessel containing said liquid material to expose said liquid material to an artificial gravitational field, and
contacting said liquid material with a frictional non-rotating member while said liquid material is exposed to said artificial gravitational field, said frictional non-rotating member being non-rotatable with respect to said axis of rotation of said vessel,
placing said liquid material in motion relative to said frictional non-rotating member, thereby creating thermomechanical frictional heating of said liquid such that,
at least a portion of said liquid material is separated from said liquid material.

5,607,559
METHOD OF FORMING THIN FILM ON SUBSTRATE BY REACTIVE DC SPUTTERING
Masayuki Yamada; Akira Ishikawa; Tadahiko Saito, all of Tokyo; Kiyoshi Nakase, Taki-gun; Katsuyuki Hatanaka, Tsu, and Hiroshi Inaba, Matsusaka, all of Japan, assignors to Central Glass Company Limited, Ube, Japan
Continuation of Ser. No. 51,957, Apr. 26, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,305
Claims priority, application Japan, Apr. 27, 1992, 4-107934; Nov. 27, 1992, 4-318906
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.13 **6 Claims**



1. A method of forming a metal oxide film on a substrate by a reactive DC sputtering device in the presence of a reaction gas and an inert gas, comprising the steps of:
(a) increasing a power input to the sputtering device to a first predetermined value such that a discharge voltage increases to a maximum value and then decreases from the maximum value;
(b) decreasing the power input continuously from the first predetermined value to a second predetermined value immediately after the discharge voltage starts to decrease from the maximum value so as to suppress a metal formation on the substrate; and
(c) increasing the power input continuously immediately after the power input reaches the second predetermined value until the discharge voltage starts to decrease from the maximum value, the steps (b) and (c) being alternately repeated continuously for a certain period for completing formation of the metal oxide film on the substrate;
wherein deviation of the discharge voltage during the steps (b) and (c) is set to be not greater than 6% of the average maximum discharge voltage.

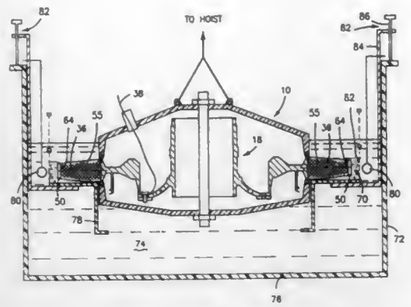
5,607,560
DIAMOND CRYSTAL FORMING METHOD
Keiji Hirabayashi, Tokyo, and Atsushi Yamagami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 212,795, Mar. 15, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,592
Claims priority, application Japan, Mar. 25, 1993, 5-066992
Int. Cl.[6] C23C *14/34;* **C01B** *31/06;* **C30B** *29/04*
U.S. Cl. 204—192.15 **7 Claims**



1. A diamond crystal forming method comprising the steps of:
positioning a substrate and a target in a reaction vessel;
supplying a sputtering gas to the reaction vessel; and
forming a diamond crystal on the substrate by applying high-frequency energy in the frequency range of 40 MHz to 250 MHz to the target for performing a plasma discharge while applying a DC bias voltage to the substrate, wherein the DC bias voltage satisfies the following formula:
$-20\ V \leqq$ plasma potential–bias voltage applied to the substrate $\leqq 10\ V$.

5,607,561
APPARATUS FOR ABRASIVE TIPPING OF INTEGRALLY BLADED ROTORS
Gary A. Gruver, 78 Dogwood La., South Windsor, Conn. 06074; Joseph J. Parkos, Jr., 60 Fieldstones Rd., East Haddam, Conn. 06423, and Robert G. Adinolfi, 91 Ralph Rd., Manchester, Conn. 06040
Division of Ser. No. 427,196, Apr. 24, 1995, which is a continuation of Ser. No. 138,530, Oct. 15, 1993, Pat. No. 5,486,281. This application Sep. 15, 1995, Ser. No. 528,680
Int. Cl.[6] C25D *5/02;17/06*
U.S. Cl. 204—224 R **11 Claims**

1. An apparatus for facilitating the formation of abrasive surfaces on the tips of a plurality of workpieces by deposition from a



plating solution containing a matrix material and be abrasive grit material, said apparatus comprising:

a mechanical masking device for masking portions of an array containment said workpieces, each of said workpieces being elongated and having a first portion which includes a tip portion to be plated and a second portion to be masked:

said mechanical masking device having a lower portion and an upper portion joined to said lower portion, said upper and lower portions being separable and together defining an internal space for receiving said second portions of said workpieces to be masked;

said mechanical masking device having a plurality of openings defined by said upper and lower portions through which said first portions of said workpieces which include said tip portions to be plated extend;

said mechanical masking device having means for preventing the ingress of said plating solution into said internal space;

barrier means spaced from said openings in said mechanical masking device and adapted to be placed about said tip portions of said workpieces for preventing grit material from entering voids between said workpieces; and

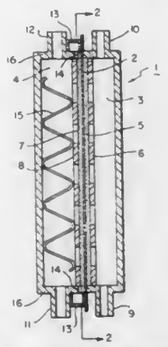
a containment screen placed in a plating tank, said barrier means mating with said containment screen to form a channel for receiving said grit material.

5,607,562

ELECTROLYTIC OZONE GENERATOR

Takayuki Shimamune, Tokyo, and Isao Sawamoto, Kanagawa, both of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Oct. 12, 1994, Ser. No. 321,983
Claims priority, application Japan, Oct. 12, 1993, 5-277339
Int. Cl.[6] C25B *9/00*
U.S. Cl. 204—265 **6 Claims**



1. An electrolytic ozone generator comprising an anode chamber and a cathode chamber separated by a perfluorocarbon cation exchange membrane as a solid electrolyte with a surface of said membrane facing said anode chamber and a surface of said membrane facing said cathode chamber, a porous anode substance in intimate contact with the surface of the membrane facing the anode chamber, and a porous cathode substance in intimate contact with the surface of the membrane facing the cathode chamber, further including:

(i) means for supplying deionized water to the anode chamber;

(ii) means for supplying catholyte to the cathode chamber;

(iii) means to feed air or oxygen-rich air to the cathode chamber; and

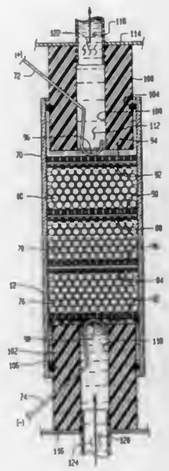
(iv) a peripheral wall of the cathode chamber wherein said peripheral wall contains a plurality of radial holes through which said air or oxygen-rich air is fed and said holes correspond to the position of the interface between said solid electrolyte and said cathode substance.

5,607,563

SYSTEM FOR ELECTROLYSIS

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234, and Dennis Cravens, 382 Highway 244, Cloudcroft, N.M. 88317

Filed Dec. 4, 1995, Ser. No. 566,547
Int. Cl.[6] C25B *9/00;11/02;11/04*
U.S. Cl. 204—269 **16 Claims**



1. A system for electrolysis and heating of a liquid electrolyte comprising:

an electrolytic cell including a non-conductive housing and an inlet and an outlet;

a first conductive foraminous grid positioned within said housing adjacent to said inlet;

a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet;

a plurality of beds of closely packed conductive microspheres positioned within said housing and extending between said first and second conductive grids in a spaced apart end-to-end arrangement;

each bed of conductive microspheres separated one from another by a foraminous non-conductive mesh disposed across one end thereof and another conductive foraminous grid disposed across another end of each said bed of conductive microspheres;

each of the microspheres of substantially uniform size and density and including:

a conductive metal flash coating of uniform thickness formed by chemical combination with a cation exchange surface of a spherical cross-linked polymer microbead from a metal cation which will chemically reduce with hydrazine;

a metallic hydride forming layer of uniform thickness formed atop said flash coating, said metallic hydride forming layer combining with hydrogen or an isotope of hydrogen during operation to form a metallic hydride;

a metallic support layer of uniform thickness formed atop said metallic hydride forming layer, said support layer having a relatively high hydrogen diffusion rate and a relatively low hydride formation ratio;

means for pumping said liquid electrolyte into said electrolytic cell through said inlet, said electrolyte having a conductive salt in solution with water, said electrolyte exiting from said electrolytic cell through said outlet;

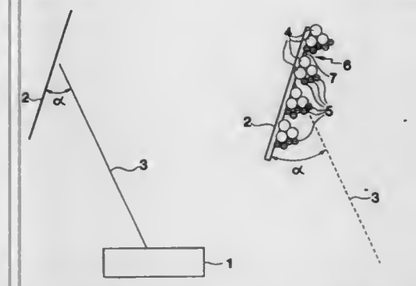
an electric power source having terminals operably connected to said first and second grids.

5,607,564

METHOD OF PRODUCING A MICROPOROUS, GAS PERMEABLE ELECTRODE STRUCTURE AND A MICROPOROUS, GAS PERMEABLE ELECTRODE STRUCTURE

Lars Stormbom, Vantaa, Finland, assignor to Vaisala OY, Helsinki, Finland

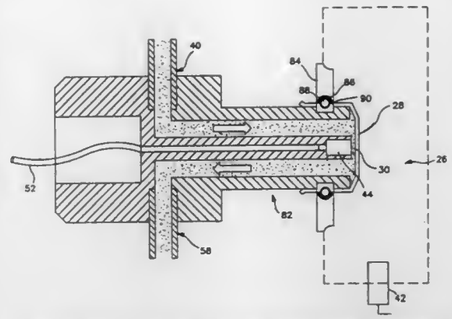
Filed Jan. 11, 1995, Ser. No. 371,128
Claims priority, application Finland, Jan. 18, 1994, 940240
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—284 **16 Claims**



10. A microporous gas permeable electrode, comprising:

a substrate having formed thereon a first microporous gas permeable electrode layer, and

formed on said first microporous gas permeable electrode layer a second microporous gas permeable layer made of a precious metal.



thereof which comprises a second predetermined substance, in said second chamber; and

said second chamber means having an inlet and an outlet for supplying and removing from said second chamber a third substance capable of carrying in suspension at least one of said first predetermined substance and said second predetermined substance, while being retained in said second chamber by said membrane, and for flushing said second chamber means, whereby one of said first and second substances is the measurable substance and said inlet and outlet means allowing flushing of said second chamber after measurement of said measurable substance has been conducted.

5,607,565

APPARATUS FOR MEASURING ANALYTES IN A FLUID SAMPLE

Roobik Azarnia, South Miami; Susan M. Fuentes, Princeton, and Thomas R. Russell, Miami, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Filed Mar. 27, 1995, Ser. No. 410,997
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—403 **14 Claims**

1. An apparatus for measuring the amount of a measurable substance in a sample, comprising:

first chamber means having an inlet and an outlet for having a sample introduced thereinto and removed therefrom, said first chamber means having three chambers interconnected by a flow path, two of said three chambers each have an electrode disposed therein, each chamber being of a size sufficient only for wetting their respective electrodes by an amount sufficient to conduct electrochemical detection of substances;

membrane means partially defining second chamber means located relative to said first chamber means for allowing a first predetermined substance in said sample to pass therethrough;

detecting means disposed in said second chamber for detecting one of said first predetermined substance and a product

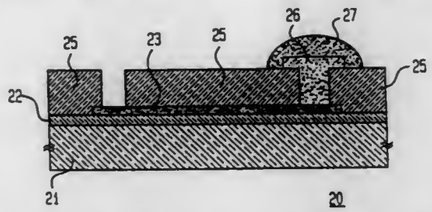
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5,607,566

BATCH DEPOSITION OF POLYMERIC ION SENSOR MEMBRANES

Richard B. Brown, Ann Arbor, Mich.; Guen-Sig Cha, Seoul, Rep. of Korea, and Howard D. Goldberg, Ann Arbor, Mich., assignors to The Board of Regents of the University of Michigan, Ann Arbor, Mich.

PCT No. PCT/US92/07037, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994
Continuation-in-part of Ser. No. 748,742, Aug. 20, 1991, abandoned, which is a contiouation-in-part of Ser. No. 370,897, Jun. 23, 1989, abandoned, Ser. No. 517,636, May 2, 1990, Pat. No. 5,102,526, and Ser. No. 517,651, May 2, 1990, abandoned. This PCT application Aug. 20, 1992, Ser. No. 196,105
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—418 **14 Claims**



1. A method of batch fabricating ion-selective sensors, the method comprising the steps of:

installing a mask on a semiconductor substrate, the mask having at least one aperture therethrough having a set configuration which corresponds to a chosen membrane configuration;

applying a polymeric membrane paste to the mask, the polymeric membrane being in the form of a mixture of a polyurethane polymer, hydroxylated poly(vinyl chloride) copolymer, ionophore, and a plasticizer, as polymeric membrane components dissolved completely in a second solvent after a first solvent has been removed from the polymeric membrane paste;

drawing a squeegee across said mask wherein the polymeric membrane paste is urged into the aperture of the mask and into communication with the semiconductor substrate; and

curing the deposited polymeric membrane paste to form a polymeric membrane having a set ion-selective characteristic.

5,607,567

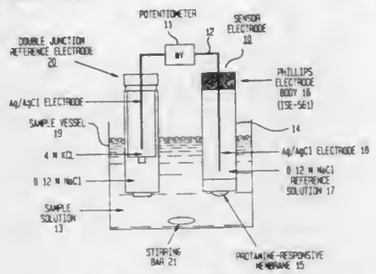
PROTAMINE-RESPONSIVE POLYMERIC MEMBRANE ELECTRODE

Jong H. Yun, Taegu, Rep. of Korea; Mark E. Meyerhoff, and Victor C. Yang, both of Ann Arbor, Mich., assignors to The Board of Regents Acting for and on behalf of University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 107,321, Aug. 16, 1993, Pat. No. 5,453,171, which is a continuation-in-part of Ser. No. 849,218, Mar. 10, 1992, Pat. No. 5,236,570. This application Jun. 7, 1995, Ser. No. 477,605

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—418 **30 Claims**



1. An ion-responsive electrode membrane comprising, in admixture, a polymeric matrix material, lipophilic cation-exchange material, and, optionally, a plasticizer, the electrode membrane admixture formulation being selectively responsive to cationic hydrophobic macromolecules.

5,607,568

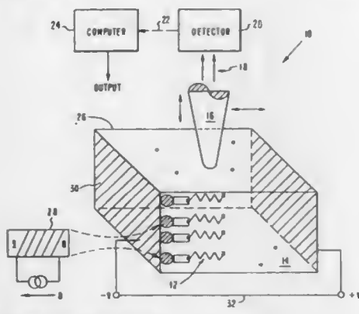
ASSEMBLY SUITABLE FOR IDENTIFYING A CODE SEQUENCE OF A BIOMOLECULE IN A FREE-SOLUTION EMBODIMENT

Frederic Zenharusern, Mohegan Lake, and Hemantha K. Wickramasinghe, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,068

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—600 **13 Claims**



1. An assembly comprising:

1) first means for migrating and separating a portion of a biomolecule in free-solution electrophoresis;

2) second means comprising:

(i) at least one apertureless near-field scanning probe for generating a super resolution chemical analysis of the portion of the biomolecule in conjunction with the first means; wherein the or each probe comprises means for measuring a scattered electromagnetic field interacting with the portion of the biomolecule; and

(ii) an interformetric detector for measuring a variation in the scattered electromagnetic field for generating the super resolution chemical analysis of the portion of the biomolecule; and

3) third means for correlating the super resolution chemical analysis of the portion of the biomolecule with a broad spectral content of a referent biomolecule, for generating a code sequence of the portion of the biomolecule.

5,607,569

METHOD OF FABRICATING CERAMIC PACKAGE BODY FOR HOLDING SEMICONDUCTOR DEVICES

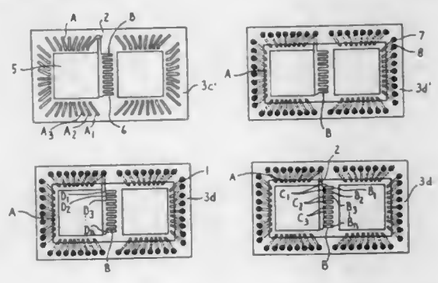
Sumio Nakano; Kazumi Hirashita, and Reiko Sumida, all of Yamaguchi, Japan, assignors to Kabushiki Kaisha Sumitomo Kinzoku Ceramics, Yamaguchi, Japan

Division of Ser. No. 143,572, Oct. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,618

Claims priority, application Japan, Oct. 26, 1992, 4-311411; Sep. 16, 1993, 5-254835

Int. Cl.[6] C25D *5/02;5/54;* **H01L** *21/18;21/60*

U.S. Cl. 205—118 **4 Claims**



1. A method of fabricating a ceramic package body for holding semiconductor devices which includes external terminals arranged on an outer surface of the ceramic package body, a first conductive pattern having first conductors connected respectively to the external terminals, and a second conductive pattern having second conductors not connected to any of said external terminals, said method comprising the steps of:

forming the first and second conductive patterns on a green sheet to form a part of the ceramic package body;

forming on said green sheet a short-circuiting conductive pattern having one end connected to at least one of the external terminals and further connected to the second conductive pattern to connect the second conductive pattern to the at least one of the external terminals;

forming a laminate body by laminating plural green sheets;

firing the laminate body;

plating the external terminals, and the exposed portions of the first conductive pattern and the second conductive pattern by an electrolytic plating process with the external terminals connected to a plating electrode; and

removing without weakening of the structural integrity of the fired laminate body a portion of the short-circuiting pattern connected to the second conductive pattern by cutting to disconnect the second conductive pattern from the short-circuiting pattern to make the second conductors of the second conductive pattern become floating conductors.

5,607,570

ELECTROPLATING SOLUTION

Elias Rohbani, 23721 Canzonet St., Woodland Hills, Calif. 91367

Filed Oct. 31, 1994, Ser. No. 331,443

Int. Cl.[6] C25D *3/38*

U.S. Cl. 205—297 **10 Claims**

1. An improved, aqueous electroplating solution containing no cyanide, said solution consisting of:

a) copper salt;

b) water;

c) either potassium, sodium, or lithium hydroxide or sodium carbonate; and,

d) the reaction product of epichlorohydrin and Compound A, which Compound A is a nitrogen-containing compound selected from the group consisting of 1) straight chain amine, 2) unsubstituted heterocyclic nitrogen compound having at least two reactive nitrogen sites, and 3) substituted heterocyclic nitrogen compound having at least two reactive nitrogen sites and at least one and not more than two substitution groups selected from methyl, ethyl and amino groups, said solution preventing the build-up of iron contamination during electroplating.

5,607,571

ELECTROCHEMICAL PROCESS FOR PREPARING LOW-CHLORIDE AQUEOUS TITANYL NITRATE SOLUTIONS

Klaus-Dieter Franz, Kelkheim; Manfred Parusel, Munster; Mathias Schraml-Marth, Zwingenberg; Klaus-Michael Juttner, Altenstadt, and Sabine Schafer, Frankfurt am Main, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Mar. 24, 1995, Ser. No. 409,724

Claims priority, application Germany, Mar. 26, 1994, 44 10 581.9

Int. Cl.[6] C25B *1/00*

U.S. Cl. 205—493 **15 Claims**

1. A process comprising subjecting titanium tetrachloride, titanyl chloride or a mixture thereof to electrolysis in nitric acid, wherein a titanyl nitrate solution having a residual chloride content of less than 200 ppm is formed.

5,607,572

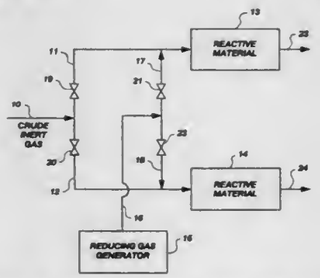
REMOVAL OF OXYGEN FROM INERT GASES

Ashok V. Joshi, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 112,767, Aug. 26, 1993, Pat. No. 5,399,246. This application Mar. 21, 1995, Ser. No. 407,813

Int. Cl.[6] B01J *20/20;* **B01D** *53/04*

U.S. Cl. 205—763 **15 Claims**



1. A method of removing O_2 from a crude inert gas comprising: contacting said O_2 containing inert gas with a material consisting essentially of an inorganic oxidizable material under oxidizing conditions to react said O_2 with said oxidizable material to produce an O_2-free inert gas and an oxidized material, said crude inert gas having O_2 concentration up to about 5%;

recovering said O_2-free inert gas; and

contacting said oxidized material with a reducing gas under reducing conditions at temperatures in excess of about 300° C. to convert said oxidized material to said oxidizable material.

5,607,573

METHOD FOR DETECTING FUGITIVE EMISSIONS

Leroy J. Miller, West Hills; Camille I. van Ast, and Frederick G. Yamagishi, both of Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 29,805, Mar. 10, 1993, Pat. No. 5,417,100. This application Feb. 23, 1995, Ser. No. 392,585

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—782.5 **18 Claims**

1. A method for detecting fugitive emission solvent vapor, comprising:

(a) providing a fugitive emissions sensor comprising:

(1) a dielectric substrate having a major surface,

(2) a pair of interdigitated, electrically conductive electrodes disposed on said major surface of said substrate, and

(3) a composite coating covering the interdigitated electrodes and comprising (i) a conductive polymer, and (ii) a dielectric polymer with an affinity for said solvent vapors to be detected, said solvent vapor selected from the group consisting of substantially non-polar hydrocarbon solvent vapor and polar solvent vapor;

(b) placing said fugitive emissions sensor near a potential source of leak of said solvent vapor; and

(c) providing means to measure a detectable signal from said sensor in the event of leak of said solvent vapor.

5,607,574

METHOD OF BREAKING REVERSE EMULSIONS IN A CRUDE OIL DESALTING SYSTEM

Paul R. Hart, The Woodlands, Tex., assignor to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 116,185, Sep. 2, 1993, abandoned. This application May 9, 1995, Ser. No. 437,338

Int. Cl.[6] C10G *33/00*

U.S. Cl. 208—188 **4 Claims**

1. A method of resolving an oil in water emulsion in a crude oil desalting system operating at a temperature of from about 65° to about 150° C. wherein the matrix is predominently oil comprising adding to a crude oil desalting system was water feed a treatment solution comprising aluminum chlorohydrate and poly(diallyldimethylammonium chloride) having a molecular weight of about 100,000.

5,607,575

PROCESS FOR REMOVING IRON IMPURITIES FROM PETROLEUM OIL DISTILLATION RESIDUES

Kozo Kamiya; Toru Morita; Yuichiro Fujiyama, and Masaru Ushio, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 300,257

Claims priority, application Japan, Sep. 3, 1993, 5-243775

Int. Cl.[6] C10G *29/04*

U.S. Cl. 208—251 R **7 Claims**

1. A process for removing iron impurities from petroleum oil distillation residues which comprises contacting the distillation residues with a ferromagnetic filler energized by a magnetic field having a strength of from 500–25,000 gauss, the ferromagnetic filler being formed from an iron-chrome alloy consisting predomi-

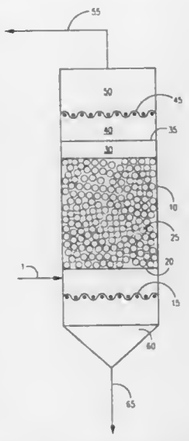
nantly of iron, 5–25 percent by weight of chrome, 0.5–2 percent by weight of silicon, and less than 2 percent by weight of carbon, into a strip, wherein the strip has a varied thickness distribution and two different surface areas, the larger area of which being equal to an area of a true circle of a diameter (R) in the range of 0.1–4 mm, and the ratio of said diameter (R) to the maximum thickness (d) of said strip being in the range of 2–20.

5,607,576

TWO PHASE TREATMENT OF GAS TO REMOVE HALOGENS

Tsoung Y. Yan, Wayne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1994, Ser. No. 367,500
Int. Cl.[6] C10G *19/00;25/00;* **B01D** *53/02;59/26*
U.S. Cl. 208—308 **17 Claims**



1. A process for removing acidic halogens from a dry gas stream comprising:
a. charging a gas containing less than about 2000 ppmv H_2O and from 1 to 4000 wt ppm acidic halogen to a reactor;
b. neutralizing said acid halogens in said dry gas by contact and neutralization with a dry bed of solid caustic comprising particles of solid caustic containing at least a majority by weight solid caustic, said dry bed having an interstitial volume of at least 10 volume % to produce salt;
c. depositing at least a majority of said produced salt on said particles of solid caustic as dry salt crystals; and
d. removing from said reactor a dry gas having a reduced acidic halogen content as a product of the process.

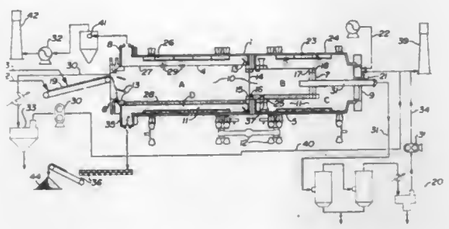
5,607,577

PREVENTION OF SULFUR GAS EMISSIONS FROM A ROTARY PROCESSOR USING LIME ADDITION

Roman Koszarycz; William Taciuk, and Adrian Begley, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Jun. 21, 1994, Ser. No. 264,094
Claims priority, application Canada, Oct. 25, 1993, 2109176
Int. Cl.[6] C10G *1/00*
U.S. Cl. 208—391 **11 Claims**

1. In a continuous process comprising treating oil sand comprising sand associated with water and bitumen hydrocarbons containing sulfur in a rotating kiln-type processor to recover hydrocarbons, said oil sand being subjected to sequential preheating, vaporization and combustion steps therein, whereby flue gases are produced in the combustion step, the improvement comprising:



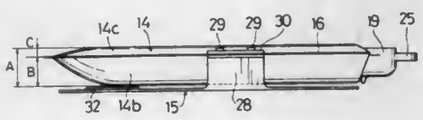
continuously adding calcium oxide to the oil sand feed prior to or during the preheating step, said calcium oxide being added in an amount corresponding to a molar ratio of calcium to sulfur in the feed greater than 1:1, so that production of sulfur dioxide in the flue gases is reduced.

5,607,578

FILTER SYSTEM FOR AN IN-TANK FUEL PUMP

Kousaku Ohkouchi; Shigeru Yoshida; Kenji Hayashi, and Shigeru Arakawa, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Continuation of Ser. No. 238,866, May 6, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 549,907
Claims priority, application Japan, May 6, 1993, 5-105477; May 12, 1993, 5-110588
Int. Cl.[6] B01D *35/027*
U.S. Cl. 210—172 **6 Claims**



1. A filter system for an in-tank type fuel pump which has a suction port and a discharge port for fuel, the filter system comprising:
a bag type filtering screen extending in a longitudinal direction from a suction port end to a far end with a centrally located attachment portion located centrally between the ends,
a rectangular frame extending in the longitudinal direction, the frame being inserted into the filtering screen so as to keep the filtering screen in an expanded state,
a rectangular shaped, thin plate extending in said longitudinal direction and including a major upper surface portion separated from the frame by a lower surface of the filtering screen to protect said lower surface of the filtering screen from abrasion, and means for fastening the thin plate to said centrally located attachment portion of the filtering screen such that the lower surface of the filtering screen is spaced apart from the major upper surface portion of the thin plate; and
said thin plate being formed with a plurality of openings therein, which openings permit fuel flow to improve the filtering performance in comparison with the thin plate without openings.

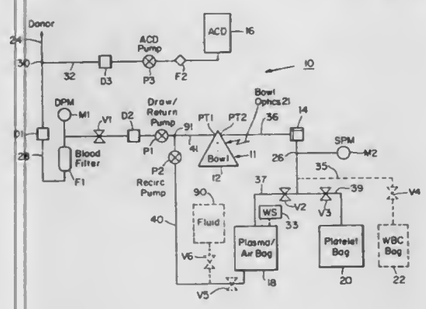
2. The filter system of claim 1, further comprising said fuel pump and a fuel tank having a bottom face, wherein said fuel pump is connected to the filter system forming a unit which is inserted into a fuel tank, the filter system being attached to the suction port of the fuel pump, the frame and the bottom face of the fuel tank are biased toward each other by an elastic force generated therebetween, the filtering screen and said thin plate become sandwiched between the frame and the bottom face of the fuel tank, said thin plate protecting the screen from abrasion.

5,607,579

APHERESIS APPARATUS FOR SEPARATING AN INTERMEDIATE DENSITY COMPONENT FROM WHOLE BLOOD

Allen Latham, Jr., Jamaica Plain; Glen E. Jorgensen, Marlborough; Theodoor H. S. Sibinga, Boston; Joseph R. Plante, Millis, and Tracey E. Knapp, Hanover, all of Mass., assignors to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 53,734, Apr. 27, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 536,499
Int. Cl.[6] B01D *21/26;21/32;* **A61M** *1/38;* **B04B** *11/02*
U.S. Cl. 210—195.1 **36 Claims**



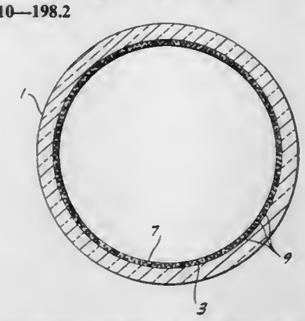
1. Apparatus for separating an intermediate density component from whole blood, the intermediate density component consisting primarily of at least one of a platelet constituent and a white blood cell constituent, the apparatus comprising:
a centrifuge having a fractionation volume, for separating whole blood into blood components, each of which has a density, so that each of the blood components occupies a region having a radial position in the fractionation volume according to the density of the blood component, the blood components including a lower density component and higher density components including the intermediate density component;
an inlet port, through which whole blood enters the centrifuge, and an outlet port, through which fluid exits the centrifuge, mounted on said centrifuge, the ports being in fluid communication with said fractionation volume;
a first container in selective fluid communication with said ports for collecting the lower density component exiting said outlet port;
a first pump, coupled to the first container and the inlet port, for delivering lower density component front the first container to the inlet port;
means for operating the first pump to recirculate lower density component front the first container through the inlet port into the fractionation volume
(a) at a first, substantially constant, rate so as to widen the region occupied by the intermediate density component without causing said intermediate density component to exit the fractionation volume, and subsequently
(b) at a second rate, so as to displace intermediate density component from the fractionation volume out the outlet port.

5,607,580

NUCLEOPHILIC BODIES BONDED TO SILOXANE AND USE THEREOF FOR SEPARATIONS FROM SAMPLE MATRICES

William R. Betz, Bellefonte, and James L. Desorcie, State College, both of Pa., assignors to Supelco, Inc., Bellefonte, Pa.

Division of Ser. No. 283,210, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 276,048, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 201,752, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,644, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,239
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **20 Claims**



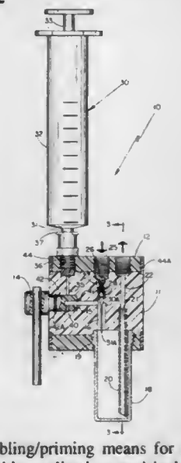
1. A composition comprising a substrate having a siloxane polymer having bodies of carbonaceous material bonded thereto, said carbonaceous bodies comprising elemental carbon or a polymer comprising a hydrocarbon moiety, said bodies being bonded to said siloxane polymer by direct carbon to silicon bonds between carbon atoms of said bodies and silicon atoms of said siloxane polymer.

5,607,581

DEBUBBLING AND PRIMING SYSTEM FOR CHROMOTOGRAPHY

Yuri Gerner, Mendota Heights, and Carl W. Sims, St. Paul, both of Minn., assignors to Systec, Inc., Minneapolis, Minn.

Filed Oct. 31, 1995, Ser. No. 551,104
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **9 Claims**



1. Solvent debubbling/priming means for use in high pressure liquid chromatographic applications and including valving means adapted for releasable and sealed attachment to a bubble collecting HPLC solvent reservoir, the valving means comprising a valve

body with bores formed therein for controlled access and communication between said bubble collecting/solvent reservoir and the exterior of said valve, said debubbling priming means being characterized in that:

(a) said valve body consists essentially of an inner core and an outer sleeve arranged concentrically with said core;

(b) said inner core and outer sleeve combination having a plurality of bores formed therein providing communication between said bubble collecting/solvent reservoir and the exterior of said valve and including a plurality of means disposed in cooperative relationship with said bores for controlling flow of fluids to and from said reservoir;

(c) first of said fluid flow control means including a length of flexible tubing disposed within a first of said plurality of bores and with said tubing being in communication with said reservoir and with the outer diameter of said length of tubing being less than the inner diameter of said first bore, said tubing being further characterized in that:

(1) said tubing consists of polytetrafluoroethylene having a diameter of between about 0.062 inches and 0.125 inches and with a wall thickness of between about 1 mils and 3 mils, and having the distal end thereof formed flat by pressure and/or heat to provide a check valve permitting fluid flow in one direction therethrough to a zone of substantially equal or lower pressures.

5,607,582

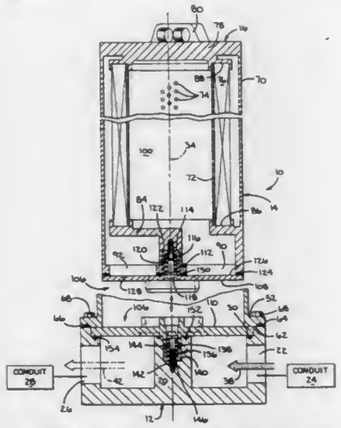
FILTER SYSTEM FOR LIQUIDS

Kazuhiko Yamazaki, Yokohama, and Mitsuhiro Goto, Kawasaki, both of Japan, assignors to Yamashin Filter Mfg. Corp., Yokohama, Japan

Filed Nov. 28, 1994, Ser. No. 345,925

Int. Cl.[6] B01D *27/10;35/153*

U.S. Cl. 210—234 **12 Claims**



1. A filter system for liquid, said falter system comprising:

a base having an inlet for incoming unfiltered liquid and an outer for outgoing filtered liquid;

a filter subassembly comprising a filter unit with a filtering medium and inlet port means for communicating unfiltered liquid to the filtering medium and outlet port means for communicating liquid filtered by the filtering medium away from the filter unit,

said base comprising first port means for communicating unfiltered liquid from the base inlet to the inlet port means on the filter unit to the filtering medium and second port means for communicating liquid filtered by the filtering medium and directed through the outlet port means on the filter unit to the base outlet,

a first blocking element comprising a plate having first and second openings;

means cooperating between the first blocking element and filter unit for mounting the first blocking element to the filter unit for movement relative to the filter unit selectively between a first position wherein liquid can flow through the inlet port means on the filter unit to the filter medium and from the filter medium through the outlet port means on the filter unit and a second position wherein the first block element blocks the inlet and outlet port means on the filter unit;

a second blocking element comprising a plate having third and fourth openings;

means cooperating between the second blocking element and base for mounting the second blocking element to the base for movement relative to the base between a first position wherein liquid can flow from the base inlet through the first port means on the base and through the second port means on the base to the base outlet and a second position wherein the second blocking clement blocks the first; and second port means on the base;

means cooperating between the base and filter unit for removably maintaining the filter unit in an operative position on the base,

said filter unit being repositionable relative to the base between a separated position and the operative position; and

means cooperating between the base, the filter unit, and first and second blocking elements for a) moving the first blocking element into its first position and the second blocking element into its first position so that liquid can communicate from the base inlet through the first port means on the base and the inlet port means on the filter unit to the filter medium and from the filter medium through the outlet port means on the filter unit and the second port means on the base to the base outlet as an incident of the filter unit moving from the separated position into the operative position and b) moving the first blocking element into its second position and the second blocking element into its second position so that communication of liquid from the base inlet through the first port means on the base and to the second port means on the base to the base outlet is blocked by the second blocking element and communication of liquid through the inlet port means on the filter unit to the filtering medium and from the filtering medium through the outlet port means on the filter unit is blocked by the first blocking element as an incident of the filter unit being moved from its operative position towards the separated position.

5,607,583

FILTER DEVICE FOR EXTRUDERS AND INJECTION-MOLDING MACHINES

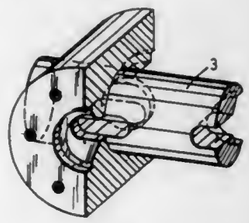
Jan-Udo Kreyenborg, Munster, Germany, assignor to Kreyenborg, Inc., Norcross, Ga.

Filed Mar. 21, 1996, Ser. No. 620,138

Claims priority, application Germany, Jul. 3, 1995, 195 24 140.1

Int. Cl.[6] B29C *45/58;47/68*

U.S. Cl. 210—236 **3 Claims**



1. A filter device for extruders and injection-molding machines for the continuous processing of thermoplastic, comprising a screen plunger perpendicularly displaceable with respect to a direction of transport of the plastic, arranged in a suctiontight manner in a housing bore and having a plurality of screen packs arranged in successive screen chambers, each defined by a throughflow bore in the screen plunger, each throughflow bore having a round cross-section in a region of an inlet side and of the screen chamber and narrowing to form an oval cross-section on a rear side of the screen pack, the oval cross-section having a long axis extending along a displacement direction of the screen plunger.

5,607,584

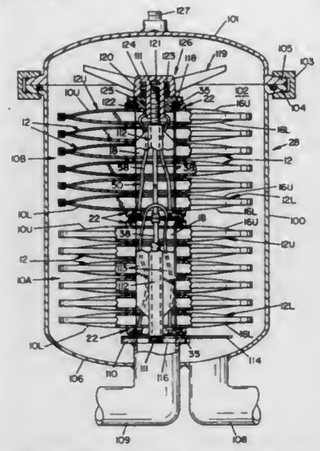
FILTER CELLS PROVIDING LIFTING MEANS AND RELATED METHODS

Frank Swiatek, Stafford Springs; Richard Leavitt, deceased, late of New Britain; Donald Chanski, Willimantic; Ronald V. Repetti, Guilford, and Drew Willoughby, Rocky Hill, all of Conn., assignors to Cuno Incorporated, Meriden, Conn.

Continuation-in-part of Ser. No. 317,911, Oct. 4, 1994, Pat. No. 5,482,624. This application Oct. 3, 1995, Ser. No. 538,729

Int. Cl.[6] B01D *35/00*

U.S. Cl. 210—238 **11 Claims**



1. Removable filter cartridge assemblies for housings having a removable member to provide access to the interior of the housing and an inlet and an outlet to and from the interior thereof comprising:

a plurality of filter cells through which fluids are passed for filtration, each said cell having a central aperture therethrough for the passage of fluid, separate from the fluid within the housing; opposed disks of filtration media, spaced apart and defining upper and lower surfaces of each said cell emanating radially from said central aperture; and, an outer peripheral edge circumscribing each said cell; said central apertures of said cells being contiguously juxtaposed to define an open central core of said cartridge assembly having opposed first and second ends;

first and second retainer ring means carried by said filter cartridge assembly, open to and concentric with said opposed ends of said central core, said first retainer ring means being contiguous with the outlet of the housing; and

lifting means communicable with one of said retainer ring means for movement of said filter cartridge assembly into and out of the filter housing.

5,607,585

APPARATUS FOR FILTERING PLASTIC MELTS

Knut Hobrecht, Solingen, and Jorg Alexander, Remscheid, both of Germany, assignors to Barmag AG, Remscheid, Germany

Filed Jul. 17, 1995, Ser. No. 503,108

Claims priority, application Germany, Jul. 15, 1994, 44 25 108.4; Feb. 4, 1995, 195 03 697.2

Int. Cl.[6] B01D *29/60*

U.S. Cl. 210—316 **11 Claims**

1. A filtering apparatus adapted for the filtration of a plastic melt and comprising

a filter housing (**1**) which includes at least one cylindrical filter receiving chamber (**8**) therein, with said one filter receiving chamber defining an inner end wall and an opposite end wall (**23**), said filter housing further including an inlet opening (**3,15**) communicating with said inner end wall and an outlet opening (**4,30**) communicating with said opposite end wall,

a tubular filter cartridge (**2**) which includes a central passage (**13**), a closed inner end, an open opposite end, and with said tubular filter cartridge being disposed in said one filter receiving chamber so as to define an annular space (**9**) between said filter cartridge and said one chamber and so that said inlet opening communicates with said annular space and said central passage communicates with said outlet opening,

adapter means mounting said open opposite end of said filter cartridge to said opposite end wall of said one chamber, said adapter means including a radially impermeable annular adapter (**7**) which is mounted to said open opposite end of said filter cartridge,

said filter housing further including an additional melt flow outlet channel (**12**) communicating with said annular space at a location adjacent said opposite end wall of said one chamber, said additional melt flow outlet channel being positioned between said adapter and said opposite end wall of said one chamber, and

an additional annular filter (**11**) positioned between said annular adapter and said opposite end wall and such that the plastic melt is adapted to flow from said annular space through said additional annular filter and to said additional melt flow outlet channel.

5,607,586

MULTICHANNEL INORGANIC ELEMENT FOR FILTERING A FLUID

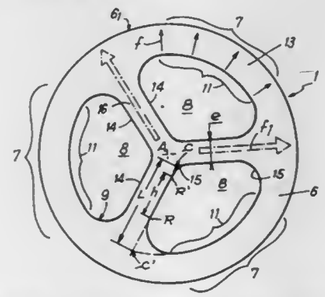
André Grangeon, and Philippe Lescoche, both of Nyons, France, assignors to T.A.M.I. Industries, France

Filed Jun. 8, 1995, Ser. No. 488,785

Claims priority, application France, Jun. 8, 1994, 94 07206

Int. Cl.[6] B01D *63/06*

U.S. Cl. 210—321.78 **9 Claims**



1. An inorganic element for filtering a fluid medium, for the purpose of recovering a filtrate, the element being of the type comprising:

a rigid inorganic porous support of cylindrical shape having a longitudinal central axis; and

channels formed in the support, parallel to its central axis, and having centers situated on a circle that is coaxial about the central axis, each channel presenting:

a surface that is covered in at least one separating layer designed to come into contact with the fluid medium; and

firstly at least one peripheral wall facing the outside surface of the support and co-operating therewith to define a passage of constant thickness through which the filtrate passes, and secondly, at least one radial wall co-operating with the facing radial wall of an adjacent channel to define a partition, the walls of the channel being connected to one another via connection fillets;

wherein:

each radial partition is of constant thickness over its entire height, with a ratio of the height of a partition divided by its thickness being not less than 8; and

the connection fillets have a radius lying in the range 0.3 mm to 1.5 mm.

5,607,587

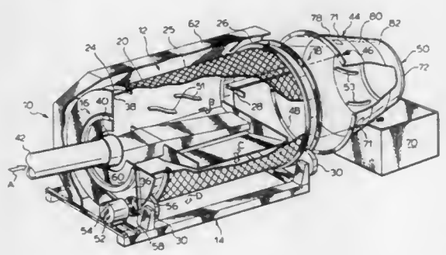
SCREENING APPARATUS FOR WOOD PULP

Herbert G. J. Langner, 1175 Appleby Line, #C-3, Burlington, Ontario, Canada

Filed Aug. 11, 1995, Ser. No. 514,517

Int. Cl.[6] B01D *33/06*

U.S. Cl. 210—380.3 **19 Claims**



1. A rotary screening apparatus for increasing the solid content of influent, said apparatus comprising,

a hollow cylinder for at least partially drying a portion of influent which is retained therein, said cylinder having a central axis oriented at approximately 0° to 40° inclination from horizontal, the cylinder journalled for rotation about the central axis and including an inlet end, an outlet end and a generally cylindrical wall comprising substantially in its entirety a screening surface for separating a filtrate portion of said influent from said retained portion,

inlet end covering means for covering said inlet end, said inlet end covering means extending from the cylindrical wall radially inwardly towards the axis and defining an inlet opening spaced towards said axis,

outlet end covering means for covering said outlet end, the outlet end covering means extending from the cylindrical wall, radially inwardly towards the axis and defining an outlet opening spaced towards said axis,

conveying means for delivering said influent into the interior of said cylinder via said inlet opening wherein said retained portion is at least partially dried by the movement of said filtrate portion outwardly from said cylinder through said screening surface,

rotation means for rotating said cylinder about the axis, and

wherein said outlet end cover means comprises a frustoconical member disposed over said outlet end, said frustoconical member having a substantially solid sidewall construction and extending radially inwardly from the outlet end to said outlet opening in a direction away from said inlet end.

5,607,588

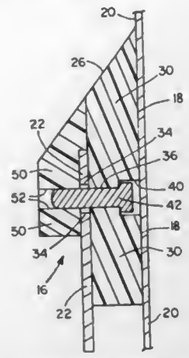
SCRAPER FOR SCRAPING FILTER CAKE FROM MOVING FILTER MEDIUM

John G. Peterson, #4 Chelsea La., Vicksburg, Miss. 39180

Filed Feb. 28, 1995, Ser. No. 396,118

Int. Cl.[6] B01D *33/46*

U.S. Cl. 210—396 **16 Claims**



1. An elongate scraper for scraping filter cake from a moving filter medium of a filter apparatus, said scraper comprising

an elongate bar having a length sufficient to substantially span the face of the filter medium upon which filter cake is deposited, said bar further having a broad, continuous, smooth, front face, said front face a width greater than the thickness of said bar, said bar being substantially rigid in a direction parallel to the front face of the bar and being substantially flexible in a direction substantially perpendicular to the plane through a top side edge and bottom side edge of said front face of the bar; and

means for supporting the opposite ends of the bar from the filter apparatus so that the bar extends across the face of the filter medium with the front face of said bar allowing broad, substantially uniform contact with said filter medium over the entire surface of said front face of said bar, said means for supporting the opposite ends of the bar further defining means for (1) allowing the bar to pivot at each of its opposite ends about a pivot axis, the pivot axis being substantially perpendicular to a longitudinal direction of said bar, and (2) allowing at least one of the ends of said bar to move back and forth in the longitudinal direction of said bar by a distance of no more than about 3 inches, whereby said bar is flexible in a direction outwardly from said filter medium.

5,607,589

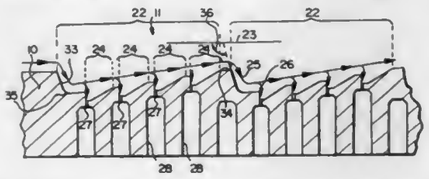
MULTIPLE CONTOUR SCREENING

Frey A. Frejborg, Queensbury, N.Y., assignor to CAE Screen-Plates Inc., Glens Falls, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,867

Int. Cl.[6] B01D *29/35;* **B07B** *1/20*

U.S. Cl. 210—415 **29 Claims**



1. A screen cylinder or plate having a screening surface and an accepts surface on opposite faces thereof, for screening pulp flowing in a flow direction, to separate accepts from rejects, and comprising:

a plurality of substantially parallel macro grooves formed in said screening surface generally transverse to said flow direction;

a plurality of substantially parallel micro grooves formed in at least a portion of said screening surface within each macro groove and generally transverse to said flow direction; and

each of said micro grooves comprising contoured surface manifestations which induce micro-turbulence to fluidize pulp at the immediate area of screening, and at least one opening extending between said screening surface and said accepts surface for allowing passage of accepts therethrough.

5,607,590

MATERIAL FOR MEDICAL USE AND PROCESS FOR PREPARING SAME

Yasuhiko Shimizu, 39-676, Ogurayama, Kohata, Uji-shi, Kyoto-fu, Japan

Continuation-in-part of Ser. No. 178,792, Jan. 7, 1994, abandoned. This application Aug. 5, 1994, Ser. No. 286,559

Claims priority, application Japan, Aug. 6, 1993, 5-195755; Sep. 1, 1993, 5-217628

Int. Cl.[6] B01D *71/06*

U.S. Cl. 210—490 **23 Claims**

1. A material for medical use comprising two sheets of membrane of a purified collagen derived from a living body adhered to each other with an adhesive and having interposed therebetween a mesh-like intermediary material, wherein the mean pore size of the mesh-like intermediary material, is between 100 and 2000 μm.

5,607,591

BIS-CROWN CALIX [4]ARENES, THEIR PREPARATION PROCESS AND THEIR USE FOR THE SELECTIVE EXTRACTION OF CESIUM AND ACTINIDES

Jean-François Dozol, Penevers; Zouhair Asfari, Strasbourg; Clément Hill, Obernai, and Jacques Vicens, Strasbourg, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

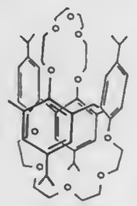
PCT No. PCT/FR93/01161, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/12502, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 25, 1993, Ser. No. 436,287

Claims priority, application France, Nov. 26, 1992, 92 14245

Int. Cl.[6] B01D *61/38*

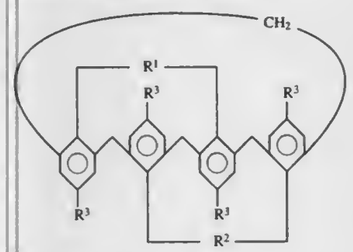
U.S. Cl. 210—638 **11 Claims**



1,3-BIS- CROWN-5- p-ISOPROPYL CALIX [4] ARENE

1. Bis-crown calix[4]arene of formula:

(I)



in which

R^1 represents $X(C_2H_4X)_m$ with X representing O, NH and/or N (CH_3) and m being equal to 3, 4, 5 or 6,

R^2 represents $X(C_2H_4X)_n$ with X representing O, NH and/or $N(CH_3)$ and n being equal to 3, 4, 5 or 6, or

R^1 and R^2 represent $X(C_2H_4X)_{p/2}YX(C_2H_4X)_{p/2}$ with X representing O, NH and/or $N(CH_3)$, p being equal to 2 or 4 and Y representing a cyclohexylene, phenylene, naphthylene, pyridylene or thiophenylene group and

R^3 represents a hydrogen atom or a C_1 to C_3 alkyl group.

11. Process for separating actinides and trivalent americium present in an aqueous solution, characterized in that it consists of contacting said aqueous solution with an immiscible liquid phase comprising a bis-crown calix[4]arene according to claim 1 and then recovering the extracted actinides in the immiscible liquid phase.

5,607,592

PROCESS AND DEVICE FOR THE SEPARATION OF SUBSTANCES DISSOLVED IN THE WASHING WATER USED IN PROCESSING BATH OF A PHOTOGRAPHIC FILM

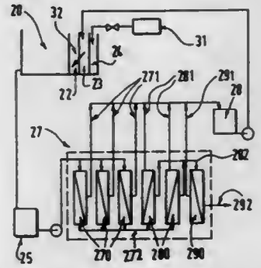
Patrick E. Y. Bernard, Chagny, and Guy A. J. Manas, Saint-Remy, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1995, Ser. No. 490,284

Claims priority, application France, Jun. 17, 1994, 94 07687

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—641 **9 Claims**



1. A process for the separation of substances dissolved in washing water used in a processing bath for a photographic film, said photographic film being made to pass through a series of at least two washing tanks, said series having a last washing tank at which the film leaves the processing bath, the process comprising the steps of circulating waste water coming from the washing tanks through a nanofiltration membrane device, the permeate from said nanofiltration membrane device being recirculated in the washing tank or tanks other than the last washing tank, the last washing tank is being fed with clean water from an auxiliary source, said nanofiltration device comprising a plurality of nanofiltration modules disposed in series, each of the modules having one or more nanofiltration membranes disposed in parallel.

5,607,593

INSTALLATION FOR MAKING WATER POTABLE WITH SUBMERGED FILTERING MEMBRANES

Pierre Cote, Maisons-Laffitte; Michel Faivre, Acheres; Catherine Moulin, Paris, and Gilbert Desbos, Maisons-Laffitte, all of France, assignors to OTV Omnium De Trajtements et de Valorisation S.A., Courbevoie, France

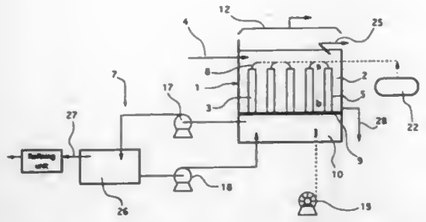
Filed Nov. 30, 1994, Ser. No. 346,858

Claims priority, application France, Nov. 30, 1993, 93 14570

Int. Cl.[6] B01D *61/00*

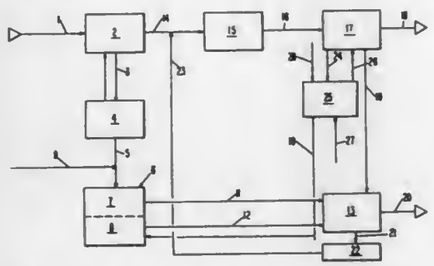
U.S. Cl. 210—650 **34 Claims**

28. A method for treating water, notably with a view to making the water potable, said method comprising the steps of:



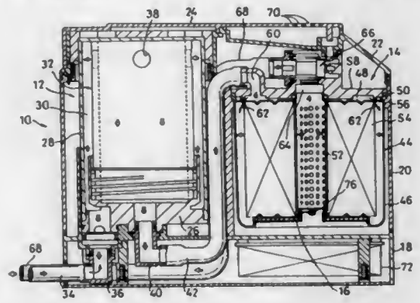
filtering the water through a plurality of membranes submerged in the water to be treated in a reactor;
preparing a filtration zone around each of the membranes;
carrying along a current of water in the filtration zone in a preferred direction by the use of carrying and circulating means that include ozone-injection means; and
recovering permeate at an outlet from said membranes.

5,607,594
PROCESS FOR PURIFYING AN AQUEOUS METHYLDIETHANOLAMINE SOLUTION
Werner Pohl, Essen, and Johannes Menzel, Oberhausen, both of Germany, assignors to Krupp Koppers GmbH, Essen, Germany
Continuation-in-part of Ser. No. 231,018, Apr. 21, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,479
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—662 **6 Claims**



1. A method of purifying an aqueous methyldiethanolamine solution, said method comprising the steps of:
a) measuring a formate content of a main stream of an aqueous methyldiethanolamine solution, said aqueous methyldiethanolamine solution being circulated between an absorbing means for absorbing hydrogen sulfide into the main stream from a hydrogen sulfide-containing gas and desorbing means for desorbing said hydrogen sulfide from said main stream, said hydrogen sulfide-containing gas being generated by gasification of a carbonaceous material;
b) continuously withdrawing a partial stream of said methyldiethanolamine solution from said main stream;
c) conducting the partial stream withdrawn from the main stream in step b) at a linear velocity of up to 1 m/h over ion exchange means for combining with formate present in said partial stream to form a partially purified partial stream to load the ion exchange resin up to a capacity of 30 g formate per liter of said ion exchange resin;
d) returning the partially purified partial stream formed in step c) to said main stream;
e) controlling the withdrawing of the partial stream in step b) so that the formate content of the main stream is maintained between about 14 and about 30 g/l;
f) rinsing said ion exchange means with demineralized water to form a rinse water solution and subsequently feeding the rinse water solution into said main stream; and
g) regenerating said ion exchange means with a hydroxide-containing solution to form a formate-containing solution and conducting the formate-containing solution into an ammonia separator column.

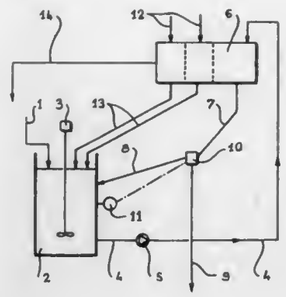
5,607,595
PROCESS FOR PURIFYING WATER
Masami Hiasa; Nobuyuki Ashle; Susumu Saito, and Takayuki Ohtani, all of Kita-kyushu, Japan, assignors to Toto Ltd., Japan
PCT No. PCT/JP94/00518, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO95/00442, PCT Pub. Date Jan. 5, 1995
PCT Filed Mar. 30, 1994, Ser. No. 338,493
Claims priority, application Japan, Mar. 31, 1993, 5-098866
Int. Cl.[6] C02F *1/28*
U.S. Cl. 210—669 **16 Claims**



1. A process for purifying tap water comprising:
contacting the tap water with activated carbon fibers having a modal micropore diameter, measured by a steam adsorption method, of about 1.8–3.0 nm to cause said fibers to adsorb, from the tap water, a harmful first substance having a boiling point lower than the boiling point of water and a smelly second substance having a boiling point higher than the boiling point of water, so that said first and second substances present in the tap water prior to said contacting are removed therefrom; and,
heating said activated carbon fibers having the thus adsorbed said substances at a temperature higher than the boiling point of said first substance and lower than the boiling point of said second substance thereby causing said fibers to desorb said first substance whereby said activated carbon fibers are regenerated to selectively restore the adsorption capability thereof with respect to said first substance while retaining adsorbed therein the second substance.

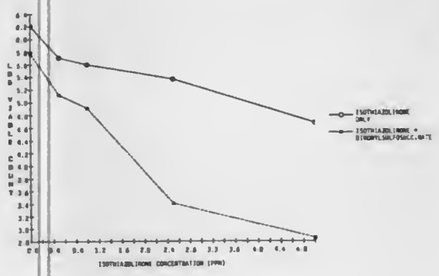
5,607,596
PROCESSES FOR THE TREATMENT OF COMBUSTION RESIDUES AND FOR THE PURIFICATION OF COMBUSTION FUMES
Jean-Francois Vicard, Lyons, France, assignor to Lab S.A., Lyons, France
PCT No. PCT/FR93/01010, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/08699, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 13, 1993, Ser. No. 403,925
Claims priority, application France, Oct. 15, 1992, 92 12622
Int. Cl.[6] B01D *37/00;53/34*
U.S. Cl. 210—739 **10 Claims**

1. A process for the treatment of combustion residues and for the purification of exhaust gases resulting from combustion comprising,
separating combustion residues from the exhaust gases;



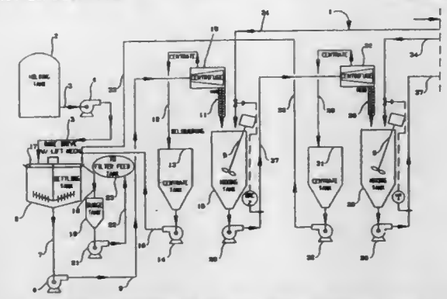
washing the separated combustion residues with an aqueous liquid containing metals and dissolved salts in an agitated washing tank to form a suspension,
initially dehydrating the suspension in a dehydration apparatus to obtain dehydrated residues and a filtrate containing metals and dissolved salts,
discharging the filtrate containing dissolved metal salts from the initial dehydration to a control device wherein a first quantity of the filtrate containing metals and dissolved salts is directed into the washing tank,
rinsing the dehydrated residues obtained from the initial dehydration using a rinsing liquid to remove soluble elements that remain on the dehydrated residues and thereafter conveying the rinsing liquid to the washing tank, and
controlling the control device so that the amount of filtrate containing metals and dissolved salts being directed to the washing tank maintains a generally constant volume of aqueous liquid in the washing tank.

5,607,597
METHOD FOR ENHANCING BIOCIDAL ACTIVITY
J. Barry Wright, and Daniel L. Michalopoulos, both of Jacksonville, Fla., assignors to BetzDearborn Inc., Trevose, Pa.
Filed Apr. 28, 1995, Ser. No. 431,338
Int. Cl.[6] C02F *1/50*
U.S. Cl. 210—755 **9 Claims**



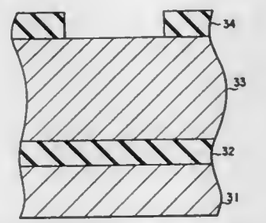
1. A method for enhancing a treatment containing a biocidal compound in an effective amount to control the growth of microbes in an aqueous system which comprises adding to said system an effective amount of a dinonylsulfosuccinate surfactant, wherein the firowth of microbes in said system is controlled while said amount of biocidal compound in said system is decreased, wherein said biocidal compound is selected from the group consisting of an isothiazolinone compound and a bromonitropropanediol compound.

5,607,598
TREATMENT AND DISPOSAL OF RED MUD GENERATED IN THE BAYER PROCESS
Gerald M. Williams, Baton Rouge, La., assignor to Ormet Corporation, Wheeling, W. Va.
Filed Jul. 14, 1995, Ser. No. 502,683
Int. Cl.[6] B01D *24/46;21/26*
U.S. Cl. 210—772 **16 Claims**



1. A method for treating a red mud bauxite residue comprising:
providing a plurality of centrifuges, including a first centrifuge and a last centrifuge, and a plurality of repulp tanks;
treating the red mud successively in the centrifuges, from the first centrifuge to the last centrifuge, to produce a dewatered mud cake and a centrate liquor in each centrifuge;
washing the mud cake from each centrifuge successively in the repulp tanks using a centrate liquor from a downstream centrifuge to reslurry the red mud prior to each centrifuge treating step, whereby, the red mud becomes lower in caustic and alumina concentrations as said red mud is successively treated in a downstream direction and said centrate liquor becomes more concentrated in caustic and alumina concentrations as said centrate liquor is successively used in the washing of the red mud cake in an upstream direction; and
recovering an alumina value and reusing the caustic contained in the centrate liquor produced in the first centrifuge.

5,607,599
METHOD OF PROCESSING A MAGNETIC THIN FILM
Katsutaro Ichihara, Yokohama; Michiko Okubo, Kawasaki, and Keiji Horioka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 16, 1995, Ser. No. 558,507
Claims priority, application Japan, Nov. 17, 1994, 6-283068; Mar. 31, 1995, 7-074319
Int. Cl.[6] G11C *11/14;* **C23F** *1/12*
U.S. Cl. 216—22 **18 Claims**



1. A method of processing a magnetic thin film, comprising the steps of:
disposing a mask having a predetermined pattern on a magnetic thin film consisting of a magnetic material containing at least one element selected from the group consisting of Fe, Co and Ni;
supplying a reactive gas containing activated BCl_3 and activated Cl_2, Cl_2 being present in an amount of 90 vol % or less based on the total volume of BCl_3 and Cl_2, to an exposed portion of

said magnetic thin film and allowing said reactive gas to react with said magnetic material, the temperature of said magnetic material ranging from 100° C. to 300° C.; and

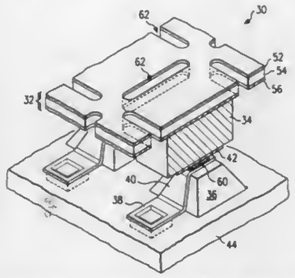
removing the magnetic thin film of the exposed portion to perform a desired patterning.

5,607,600

OPTICAL COAT RETICULATION POST HYBRIDIZATION

James F. Belcher, Plano, and Craig Osborn, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1995, Ser. No. 381,677
Int. Cl.[6] B44C *1/22*; C03C *15/00*
U.S. Cl. 216—24 **23 Claims**



1. A method for fabricating a hybrid thermal detector structure, comprising the steps of:

forming an infrared sensing array comprising at least three thermally sensitive pixels, backside contacts abutting a first side of said pixels, and an optical coating in contact with a second side of said pixels, wherein said optical coating is comprised of an electrically-conducting coat;

forming a sensing integrated circuit structure comprised of integrated circuitry, a thermal isolation structure mounted on said integrated circuitry, and contact metal electrically connecting said integrated circuitry to a top region of said thermal isolation structure;

coupling said backside contacts of said infrared sensing array to said contact metal of said sensing integrated circuit structure; and

etching said optical coating of said infrared sensing array to form thermal isolation slots in said optical coating, wherein said etching step is performed after said coupling step.

5,607,601

METHOD FOR PATTERNING AND ETCHING FILM LAYERS OF SEMICONDUCTOR DEVICES

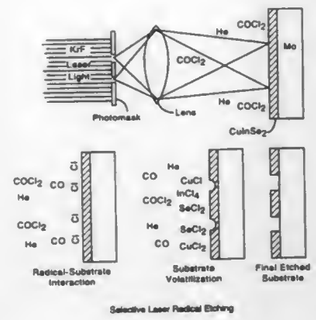
Gary L. Loper, Huntington Beach, Calif., and Martin D. Tabat, Nashua, N.H., assignors to The Aerospace Corporation, El Segundo, Calif.

Filed Feb. 2, 1995, Ser. No. 382,563
Int. Cl.[6] C03C *15/00;25/06;* C23F *1/00;* B44C *1/22*
U.S. Cl. 216—63 **17 Claims**

1. A dry etching process for the removal of surface layer material on a substrate of a semiconductor device, said process comprising the steps of

exposing the semiconductor device to a carbonyl dichloride radical precursor gas including an inert buffer gas, and

illuminating with a krypton fluoride excimer laser the precursor gas in proximity to said surface layer, said krypton fluoride laser having a wavelength within an absorption band of said carbonyl dichloride to decompose said carbonyl dichloride into inert carbon monoxide and atomic chlorine the latter of which bonds to atoms of said surface layer material where illuminated by said krypton fluoride laser to desorb said atoms from said semiconductor device.

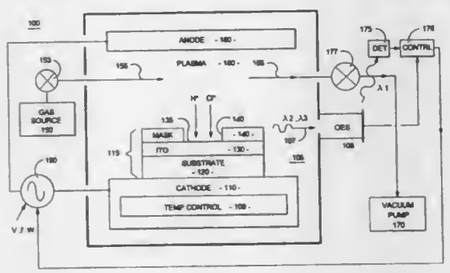


5,607,602

HIGH-RATE DRY-ETCH OF INDIUM AND TIN OXIDES BY HYDROGEN AND HALOGEN RADICALS SUCH AS DERIVED FROM HCL GAS

Yuh-Jia Su, Cupertino; Yuen-Kui Wong, Fremont; Kam S. Law, Union City, and Haruhiro Goto, Saratoga, all of Calif., assignors to Applied Komatsu Technology, Inc., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 475,709
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—76 **28 Claims**



1. An etch-through method comprising the steps of:

(a) providing a material layer consisting essentially of a group member selected from the group consisting of an indium oxide (InO), a tin oxide (SnO), a mixture of indium and tin oxides, a compound of indium and of tin and of oxygen having the general formulation $In_xSn_yO_z$ where z is substantially greater than zero but less than 100% and where the sum x+y fills the remainder of the 100%, and a mixture of the preceding ones of said group members;

(b) supplying a reactive gas including hydrogen chloride (HCl) to a vicinity of the material layer at a pressure of no more than 30 milliTorr;

(c) applying an electric field to react the supplied reactive gas with the material layer so as to form volatile byproducts of the reactive gas and the material layer; and

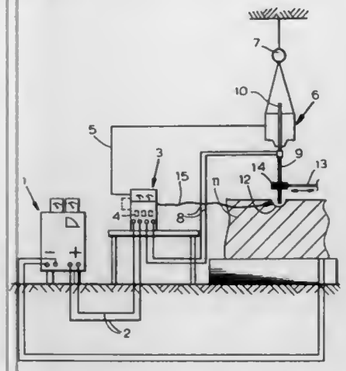
continuing said steps (b) and (c) until the material layer is etched through.

5,607,603

PROCESS AND APPARATUS FOR ELIMINATING CASTING DEFECTS ON THE SURFACE OF A CAST IRON BODY

Manfred Sappok, St. Tönis; Wolfgang Kleinkröger, Krefeld, and Mohammad Sapahpour, Duisburg, all of Germany, assignors to Siempelkamp Giesserei GmbH & Co., Krefeld, Germany

Filed Aug. 29, 1995, Ser. No. 520,693
Claims priority, application Germany, Mar. 28, 1995, 195 11 302.0; Jun. 2, 1995, 195 20 323.2
Int. Cl.[6] B23K *9/04*
U.S. Cl. 219—76.14 **7 Claims**



1. A process for correcting a casting defect on an outer surface of a cast iron body, comprising the steps of:

(a) recessing said body in a region of said casting defect so as to form a chamber open at said surface;

(b) preheating said body at least in said region to a preheating temperature of 400° to 700° C.;

(c) positioning the preheated body with said region below a cast-iron arc-welding electrode and suspending said electrode in a holder raisable and lowerable on a crane above the preheated body;

(d) axially automatically raising and lowering at least a portion of said electrode by an electric drive so that an end of said electrode reaches into said chamber;

(e) depositing weldment from said electrode in said chamber by an arc struck between said electrode and said body and automatically feeding said electrode with said drive in response to changes in length of said arc, thereby forming a melt bath of said weldment in said chamber with a composition substantially the same as that of said body;

(f) during deposition of the weldment in said chamber swinging said electrode back and forth under manual control by an actuating member acting upon said electrode; and

(g) cooling and solidifying said bath to integrate said weldment with said body.

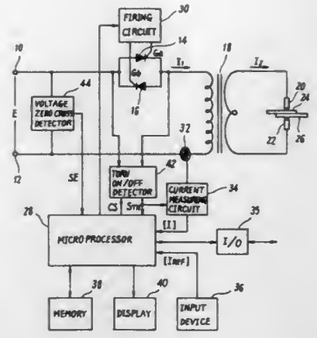
5,607,604

APPARATUS FOR DETECTING VOLTAGE ACROSS THYRISTOR IN ALTERNATING-CURRENT RESISTANCE WELDING MACHINE

Sakae Ishikawa, Chiba-ken, Japan, assignor to Miyachi Technos Corporation, Chiba-ken, Japan

Filed May 23, 1995, Ser. No. 445,205
Claims priority, application Japan, May 30, 1994, 6-139416
Int. Cl.[6] B23K *11/25*
U.S. Cl. 219—110 **3 Claims**

3. A resistance welding control apparatus for controlling the magnitude of a current flowing in an alternating-current resistance welding machine, the current being a primary current or a welding current, comprising:



thyristor voltage detecting means for detecting a voltage across a thyristor provided in said welding machine to provide a timing signal indicative of a start timing and a stop timing of a conducting interval of said current;

current measuring means responsive to said timing signal from said thyristor voltage detecting means for measuring said current to provide a measured value of said current on a cycle-by-cycle basis;

thyristor firing angle determining means for computing an error between said measured current value and a preselected current value to determine a thyristor firing angle of the next cycle on the cycle-by-cycle basis;

thyristor firing control means for firing said thyristor at the angle determined by said thyristor firing angle determining means on a cycle-by-cycle basis; and

welding control means responsive to an external welding command signal for controlling a welding operation, said welding control means providing a switching control signal to control the operation of said thyristor voltage detecting means,

said thyristor voltage detecting means comprising:

(a) waveform converter means connected in parallel with said thyristor for converting said voltage across said thyristor so as to provide said timing signal;

(b) a resistor serially connected between said thyristor and said waveform converter means; and

(c) switching means serially connected between said thyristor and said waveform converter means and controlled by said switching control signal from said welding control means to be in an ON state during a welding operation and to be in an OFF state during a period of no operation of the resistance welding.

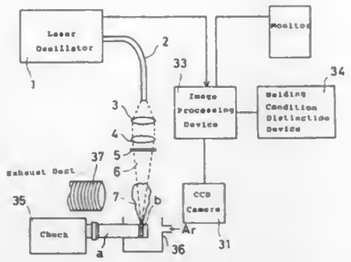
5,607,605

LASER WELDING DEVICE, A METHOD OF CHECKING WELDING CONDITION AND A METHOD OF MAKING A CENTER ELECTRODE FOR A SPARK PLUG

Mamoru Musasa, and Wataru Matsutani, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 7, 1995, Ser. No. 499,217
Claims priority, application Japan, Jul. 8, 1994, 6-180711
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.64 **4 Claims**

3. A method of checking laser welding condition comprising the



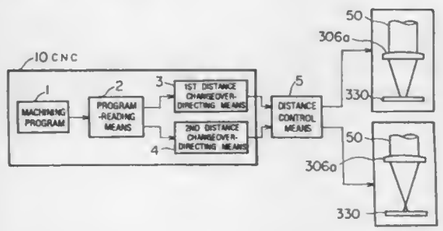
steps of photographing plasma caused by exposing laser beams to an object, and measuring at least one of an area and height of a plasma image so as to determine the quality of the laser welding condition.

5,607,606

LASER BEAM MACHINE FOR PERFORMING PIERCING AND CUTTING VIA FOCUS CHANGE

Atsushi Mori, and Yoshinori Nakata, both of Yamanashi, Japan, assignors to Fanuc Ltd., Japan

Continuation of Ser. No. 382,640, Feb. 2, 1995, abandoned. This application Feb. 16, 1996, Ser. No. 603,955
Claims priority, application Japan, Feb. 10, 1994, 6-016746
Int. Cl.[6] B23K *26/02*
U.S. Cl. 219—121.67 **4 Claims**



1. A laser beam machine for machining a workpiece by a laser beam according to a machining program, comprising:

program-reading means for reading said machining program;

focusing means for focusing said laser beam to a converging point;

first distance setting means for setting a workpiece-to-converging point distance between a surface of said workpiece and said converging point of said laser beam to a first value which produces a minimum machining time value for performing a piercing operation on said workpiece, based on said program-reading means reading a piercing program in said machining program;

second distance setting means for setting said workpiece-to-converging point distance to a second value different from said first value which produces a maximum machining accuracy value for performing a cutting operation on said workpiece, based on said program-reading means reading a cutting program in said machining program; and

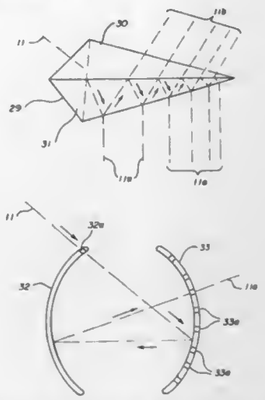
distance control means for controlling said workpiece-to-converging point distance in response to said first distance setting means and said second distance setting means.

5,607,607

SYSTEM AND ASSEMBLAGE FOR PRODUCING MICROTEXTURIZED SUBSTRATESAND IMPLANTS

Charles S. Naiman, 160 Lancaster Ter., Brookline, Mass. 02146, and Arthur Lamson, 16 Middle St., Westnewbury, Mass. 01895

Continuation of Ser. No. 146,718, Nov. 1, 1993. This application Mar. 29, 1996, Ser. No. 624,141
Int. Cl.[6] B23K *26/06*
U.S. Cl. 219—121.68 **5 Claims**



5. An assemblage for producing pre-determined, microgeometric, texturized designs on the surface of implants and substrates comprising:

(a) an excimer laser for producing an optical laser beam;

(b) at least a first optical mirror positioned to direct said optical laser beam to an attenuator capable of controlling the excitation voltage of said excimer laser and an homogenizer capable of maximizing the usable fraction of said optical laser beam and forming said optical laser beam to have a pre-determined, geometric cross section configuration;

(c) at least a second optical mirror positioned to direct said optical laser beam from said attenuator to a design image selection means which is a member selected from

(i) an optical prism having at least one refractive surface and at least one reflective surface; or,

(ii) a pair of opposed, concave optical mirrors arranged with their concave surfaces facing each other, one of said mirrors having a port formed therein to receive said optical laser beam and the other of said mirrors having a plurality of ports formed therein to permit the refracted and reflected optical laser beam to pass therethrough,

such that said design image selection means defines pre-selected line and space combinations;

(d) at least a third optical mirror positioned to direct said optical laser beam from said design image selection means to a surface of said implant or substrate; and,

(f) an aperture and aperture illuminator which, in combination, are capable of projecting a pre-selected segment of an image of said optical laser beam exiting from said design image selection means onto the surface of said implant or substrate.

5,607,608

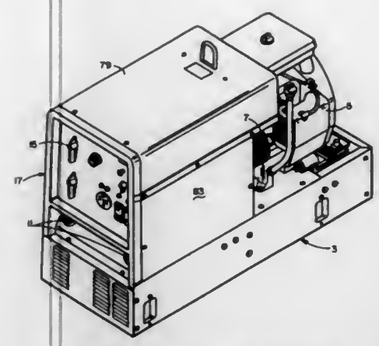
END CAP CONSTRUCTION FOR ENGINE DRIVEN WELDER

Joseph E. Feldhausen, and Jeffery P. Schroeder, both of Appleton, Wis., assignors to Miller Group Ltd., Appleton, Wis.

Filed Feb. 3, 1995, Ser. No. 383,104
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—133 **21 Claims**

1. A self-contained welding machine comprising:

a. a prime mover;



b. electrical means rotated by the prime mover for producing welding power;

c. frame means for supporting the electrical means;

d. an end cap assembled to the frame means comprising:

i. a bezel having a top leg, side legs assembled to the frame means, and a cross bar joined to the side legs, the bezel defining spaced apart front and back planes, the bezel top and side legs and cross bar having respective U-shaped cross sections each having a middle wall and inside and outside walls, the middle walls of the top and side legs and of the cross bar defining the bezel front plane, the inside and outside walls of the top and side legs and of the cross bar terminating in respective flat surfaces that are coplanar and that define the bezel back plane, and the outside walls of the bezel top and side legs being formed with respective flanges thereon that extend past the bezel back plane,

ii. a panel having a front surface assembled to the bezel back plane and a back surface, the panel defining a plurality of holes therethrough;

e. control means mounted to the panel back surface for controlling the electrical means;

f. knob means lying between the bezel front and back planes for connecting to the control means through the boles in the panel to adjustably operate the control means; and

g. cover means assembled to the bezel, panel, and frame means for cooperating therewith to provide an enclosure for the control means and a predetermined portion of the electrical means,

so that the knob means are recessed from the bezel front panel to protect them against damage.

5,607,609

PROCESS AND APPARATUS FOR SOLDERING ELECTRONIC COMPONENTS TO PRINTED CIRCUIT BOARD, AND ASSEMBLY OF ELECTRONIC COMPONENTS AND PRINTED CIRCUIT BOARD OBTAINED BY WAY OF SOLDERING

Seiki Sakuyama; Hiroki Uchida, and Isao Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Oct. 24, 1994, Ser. No. 327,907
Claims priority, application Japan, Oct. 25, 1993, 5-265281; Oct. 26, 1993, 5-266690; Mar. 16, 1994, 6-045798; Jun. 17, 1994, 6-135926
Int. Cl.[6] F27B *9/06*; **F27D** *11/02*; **H05B** *3/20*
U.S. Cl. 219—388 **53 Claims**

1. A soldering process comprising the steps of:

a) providing in a furnace first and second heaters each adapted to emit infrared energy,

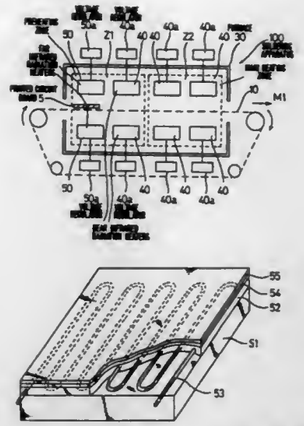
the first heater comprising a first emitter most efficiently emitting in wavelengths greater than or equal to 2.5 μm, a heat conduction plate, a heating element disposed below the heat conduction plate for heating the heat conduction plate, a buffer layer formed on an upper surface of the heat conduction plate by flame-spraying, and an infrared radiation layer formed on an upper surface of the buffer layer by flame-spraying for receiving heat from the heat conduction plate through the buffer layer and emitting infrared radiation,

the second heater including a second emitter most efficiently emitting in wavelengths less than 2.5 μm;

b) setting a printed board, which has a solder paste and an electronic component thereon, in the furnace;

c) heating the printed circuit board with the first heater; and

d) heating the electronic component with the second heater, individually controlling temperatures of the printed circuit board and electronic component.

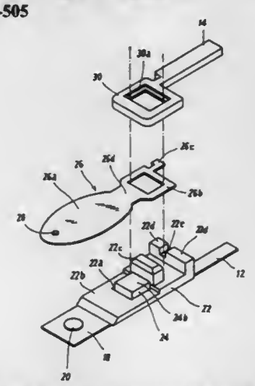


5,607,610

COMPACT PROTECTOR

Hideharu Furukawa, Gotemba, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 5, 1995, Ser. No. 417,344
Claims priority, application Japan, Apr. 5, 1994, 6-090559
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—505 **8 Claims**



1. A compact protector device for a load with a self bold feature comprising a housing, a fixed and a movable electrode means contained within said housing with one of said electrode means for connection to said load and the other for connection to a source of electric power, said movable electrode means including a heat responsive bimetal member having a movable contact attached thereto and positioned to engage and disengage upon action of said bimetal member with a fixed contact attached to said fixed electrode means, a positive temperature coefficient (PTC) element positioned spaced apart of said contacts in direct heat transfer relationship with said bimetal member between said fixed and said

movable electrode means and electrically connected in parallel with a current path between said fixed and movable electrode means through said fixed and movable contacts so as to carry significant current between the electrodes when said fixed and movable contacts are disengaged thereby supplying generally constant heating to said bimetal member, and an electrically insulating holding means compressively holding said movable electrode means in electrical contact with said PTC element having a flat bottom portion fixed to said electrode means with an aperture therein for receiving said PTC element to provide heating to said movable electrode means, said PTC element having a bottom surface extending through the aperture in said flat bottom portion electrically contacting said fixed electrode, and a post portion extending vertically upward from said flat bottom portion of said insulating holding means on the opposite side of said PTC element from said contacts, said post portion being received in an aperture in said movable electrode means and having a deformed top portion at the distal end for compressively holding said movable electrode means against a top contact surface of said PTC element, thereby forming a fulcrum point for action of said bimetal member.

5,607,611

OPERATING SWITCH OF MICROWAVE OVEN AND CONTROL CIRCUIT THEREOF

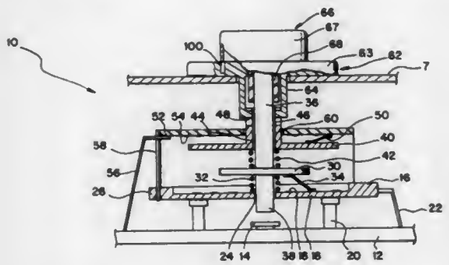
Sung-Ho Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,467

Claims priority, application Rep. of Korea, Dec. 31, 1993, U.M. 93-31719; Dec. 6, 1994, 94-32956

Int. Cl.[6] H05B *6/64*

U.S. Cl. 219—702 **4 Claims**



1. A microwave oven, comprising:

a housing forming a cooking chamber;

a magnetron for generating cooking pulses for cooking food in said cooking chamber; and

a control mechanism connected to said magnetron for operating said magnetron, comprising:

a first switch mounted on said housing for setting a first cooking function, said first switch including: a first shaft rotatable about an axis and axially movable inwardly along said axis against a spring bias, a manually rotatable first knob affixed to an outer end of said first shaft and exposed on an outer surface of said housing, a rotatable electrical contact structure rotatable with said first shaft, and a stationary electrical contact structure affixed to said housing and engageable with said rotatable contact structure, one of said rotatable and stationary contact structures being flexible to permit electric contact to be maintained while said shaft is being inwardly moved along said axis;

a second switch mounted on said housing for setting a second cooking function; said switch including a second shaft rotatable about said axis and telescopingly arranged around said first shaft to permit said first shaft to be moved axially relative thereto, and a manually rotatable second knob affixed to said second shaft and exposed on an outer surface of said housing; and

a third switch mounted inside of said housing and including an element arranged to be depressed along said axis by said first shaft when said first shaft is inwardly moved along said axis;

said first knob being of smaller cross section than said second knob and normally extending outwardly past said second knob along said axis, said first knob being depressible inwardly along said axis to move said first shaft axially inwardly, said first knob being telescopingly insertable into said second knob when inwardly depressed.

5,607,612

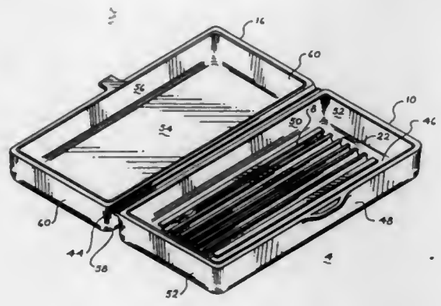
CONTAINER FOR MICROWAVE TREATMENT OF SURGICAL INSTRUMENT WITH ARCING PREVENTION

Jeffery S. Held, Chicago, Ill., and Robert F. Schiffmann, New York, N.Y., assignors to Quiclave, L.L.C., Chicago, Ill.

Filed Oct. 7, 1994, Ser. No. 319,944

Int. Cl.[6] H05B *6/80;* **A61L** *2/12*

U.S. Cl. 219—759 **43 Claims**



1. A container for preventing arcing of a metal object placed therein and subjected to microwave radiation, said container comprising:

a first surface having an exterior surface and a support surface;

a second surface having an exterior surface and an inner surface facing said first surface, said second surface attached to said first surface wherein said support surface and said inner surface defining a volume of space into which said metal object is placed;

said inner surface comprises a microwave-to-heat transducer that comprises a first susceptor material and a microwave absorbing material positioned between said first susceptor material and said volume of space, wherein said microwave-to-heat transducer absorbs microwave radiation impinging on said exterior surface of said second surface and converts said absorbed microwave radiation to radiant energy, said microwave-to-heat transducer also prevents substantially all of said microwave radiation impinging on said exterior surface of said second surface from entering said volume of space.

5,607,613

ELECTROHEATING OF FOOD PRODUCTS USING LOW FREQUENCY CURRENT

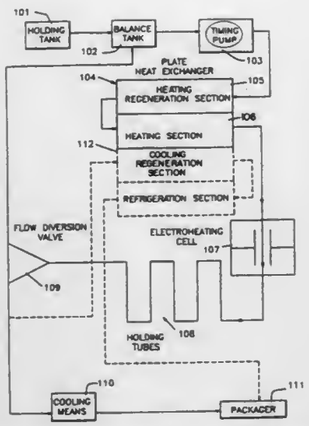
David Reznik, 2151 Barbara Dr., Palo Alto, Calif. 94303

Division of Ser. No. 125,933, Sep. 23, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 465,858

Int. Cl.[6] H05B *6/60*

U.S. Cl. 219—771 **39 Claims**

1. An apparatus for continuously electroheating a food product, said apparatus comprising:



an electrohetating cell including a housing, at least a pair of spaced electrode assemblies disposed in said housing, each of said electrode assemblies comprising an electrode, a porous barrier having a high degree of mechanical and thermal stability to withstand pressure differentials and long term elevated temperatures, and an electrolyte, wherein said electrolyte is located in a gap between said electrode and said barrier, and wherein said food product is in direct contact with said barrier and in electrical contact with said electrolyte through pores of said porous barrier, said electrode being in physical contact with said electrolyte but not with said food product;

a heating zone defined between said electrode assemblies for heating said food product as said food product continuously passes in a direction between said assemblies; and

a source of substantially continuous alternating electrical energy having a frequency in the range of between about 50 Hz and about 99 kHz electrically connected across said electrodes so that said electrical energy has an electrical current density between said electrode assemblies which is substantially in a direction other than the direction of food flow for electroheating said food product within said heating zone sufficient to at least pasteurize said food product without significant electrolysis in said food product.

5,607,614

PIEZOELECTRIC CERAMIC COMPOSITIONS

Koichi Kawano, Shiga-ken, and Mitsuru Sube, Yokaichi, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 19, 1996, Ser. No. 588,859

Claims priority, application Japan, Jan. 20, 1995, 7-026321

Int. Cl.[6] C04B *35/46*

U.S. Cl. 252—62.9 PZ **4 Claims**

1. A piezoelectric ceramic composition expressed by a general formula:

$$aPb(Mn_xSb_{(2-4x)}W_{(3x-1)})O_3\text{-}bPbTiO_3\text{-}cPbZrO_3$$

where a, b, and c represent mol % and are in ranges $2 \leqq a \leqq 10$, $40 \leqq b \leqq 52$, and $38 \leqq c \leqq 58$, and $0.35 \leqq x \leqq 0.48$, respectively, and $a+b+c=100$).

5,607,615

HEXAGONAL BA-FERRITE SINTERED MAGNET, ITS MAKING METHOD, AND POLAR ANISOTROPY RING MAGNET

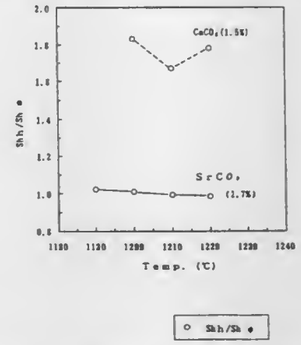
Hitoshi Taguchi, Chiba; Fumihiko Hirata, Shizuoka; Taku Takeishi, and Teruo Mori, both of Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,551

Claims priority, application Japan, May 13, 1994, 6-124186

Int. Cl.[6] H01F *1/04*

U.S. Cl. 252—62.63 **18 Claims**



1. A hexagonal barium ferrite sintered magnet comprising barium ferrite as a primary phase and containing strontium and silicon as grain boundary components, wherein said sintered magnet has an iHc of at least 2.5 kOe and Br of at least 4.1 kG.

5,607,616

AZEOTROPE(LIKE) COMPOSITIONS WITH FLUOROMETHYL TRIFLUOROMETHYL ETHER AND DIMETHYL ETHER

Barbara H. Minor, Elkton, Md.; Tuneen E. C. Chisolm, Newark, and Glenn S. Shealy, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 242,511, May 13, 1994, Pat. No. 5,484,546, which is a continuation-in-part of Ser. No. 64,183, May 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,261

Int. Cl.[6] C09K *5/04;* **C11D** *7/50;7/26;7/28*

U.S. Cl. 252—67 **7 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of about 1–99 weight percent fluoromethyl trifluoromethyl ether and about 1–99 weight percent dimethyl ether wherein at a vapor pressure of about 74.6–85.8 psia and when the temperature has been adjusted to about 25° C., the vapor pressure of the composition does not change by more than 10 percent after 50 percent of the initial composition has evaporated.

5,607,617

ELECTROVISCOUS FLUIDS

Akio Inoue, and Yoshio Suzuki, both of Fuji, Japan, assignors to Asahi Chemical Industry Co., Ltd., Japan

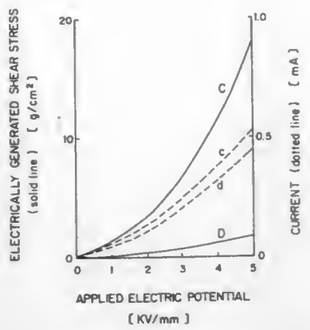
Filed Jun. 22, 1988, Ser. No. 209,807

Claims priority, application Japan, Jun. 29, 1987, 62-159809; Nov. 27, 1987, 62-297333; Dec. 22, 1987, 62-322737; Dec. 28, 1987, 62-329947; Apr. 12, 1988, 63-88044

Int. Cl.[6] C09K *3/00;* **C10M** *171/00;169/04*

U.S. Cl. 252—73 **49 Claims**

1. An electroviscous fluid which consists essentially of a non-



conductive liquid and, dispersed therein, anhydrous spherical multilayered particles comprising particles at least whose surfaces are conductive and, formed thereon, a non-conductive layer having a thickness of about 0.1 to about 1 μm.

5,607,618

USE OF A WATER-SOLUBLE COPOLYMERS BASED ON ACRYLAMIDOALKYLENESULFONIC ACID AS A DETERGENT ADDITIVE

Werner Antwerpen, Schwalbach/Ts; Martin Hille, Liederbach, and Gerd Reinhardt, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Aug. 19, 1993, Ser. No. 109,229

Claims priority, application Germany, Aug. 22, 1992, 42 27 912.7

Int. Cl.[6] C11D *1/18*

U.S. Cl. 510—302 **17 Claims**

1. A detergent composition containing a wash-active surfactant and an additive for preventing the readsorbation of dyestuffs and dyestuff degradation products consisting essentially of a water-soluble copolymer consisting of 5–90% by weight of structural units of the formula



(I)

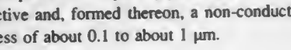
in which

R^1 is hydrogen or methyl,

R^2 is C_2–C_{10}-alkylene, and

Me is ammonium or an alkali metal ion,

5–95% by weight of structural units of the formula



(II)

in which R^3 and R^4 independently of one another are hydrogen, methyl or ethyl, or R^3 and R^4 together are a propylene group which, including a radical

form a pyrrolidone radical,

0–90% by weight of structural units of the formula

(III)

in which

X is a halogen,

R^5 and R^6 independently of one another are C_1–C_6-alkyl, and

0–90% by weight of structural units of the formula



(IV)

in which

R^7 is hydrogen or methyl and

R^8 is $CONH_2$, $CON(CH_3)_2$, cyano, SO_3H, SO_3Me, $C_6H_4SO_3H$, $C_6H_4SO_3Me$, CH_2SO_3H or CH_2SO_3Me.

5,607,619

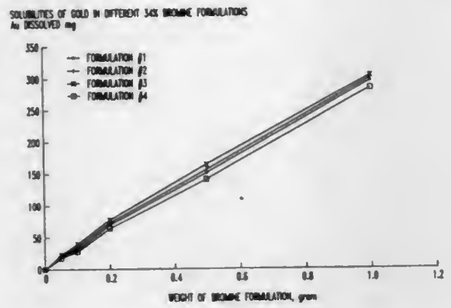
INORGANIC PERBROMIDE COMPOSITIONS AND METHODS OF USE THEREOF

Ahmad Dadgar; Jonathan N. Howarth; Rodney H. Sergent; Nicolai A. Favstritsky; Julie A. McKeown; Dennis W. Borden; Brent M. Sanders, and Jane Likens, all of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation of Ser. No. 922,035, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 577,677, Sep. 4, 1990, abandoned, and Ser. No. 732,819, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 684,658, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 401,036, Aug. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 164,510, Mar. 7, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 479,837

Int. Cl.[6] C22B *11/00;15/00*

U.S. Cl. 252—187.2 **43 Claims**



1. A process for producing an aqueous leachate containing a precious metal selected from the group consisting of gold, silver, platinum, palladium or mixtures thereof from a source thereof comprising contacting said source with an aqueous bromine leaching solution, said leaching solution containing between about 0.01% and about 20% by weight equivalent molecular bromine, between about 0.005% and about 20% by weight bromide ion, and between about 0.005% and about 30% by weight total halide ion, thereby producing said aqueous leachate containing the precious metal.

5,607,620

LIQUID CRYSTAL POLYMERS

Mark A. Verrall, and David Coates, both of Poole, United Kingdom, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Defence Research Agency, United Kingdom

PCT No. PCT/GB93/01018, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO93/25634, PCT Pub. Date Dec. 23, 1993

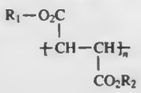
PCT Filed May 19, 1993, Ser. No. 347,371

Claims priority, application United Kingdom, Jun. 5, 1992, 9212012

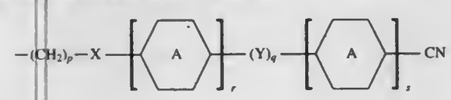
Int. Cl.[6] C09K *19/34;19/20;* **C08F** *22/10*

U.S. Cl. 252—299.67 **3 Claims**

1. A liquid crystal polymer having the formula I:



where n is the number of repeat units and R_1, and R_2 which may be the same or different, have the structure:



where

A is independently selected from phenyl, fluorophenyl or cyclohexyl;

p is 2 to 14,

q is 0 or 1,

r is 1 or 2,

s is 1 or 2,

X is O, CO_2 or O_2C or CH_2, and

Y is C_2H_4, O, CO_2 or O_2C.

5,607,621

PHOSPHORESCENT SYNTHETIC RESIN MATERIAL METHOD FOR PRODUCTION THEREOF, AND FORMED ARTICLE

Kiyomitsu Ishihara, Uozu; Takayuki Yonetani, Amagasaki; Yoshiharu Yamaguchi, Namerikawa, and Toru Koma, Sanda, all of Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,523

Claims priority, application Japan, Dec. 28, 1994, 6-337584

Int. Cl.[6] C09K *11/02*

U.S. Cl. 252—301.36 **9 Claims**

1. A phosphorescent synthetic resin material comprising:

a synthetic resin;

from about 5 to about 20% by weight of an $SrAl_2O_4$ phosphorescent pigment; and

from about 0.05 to about 0.5% by weight of an activator, based upon the total weight of said phosphorescent synthetic resin material, said activator comprising a surfactant containing liquid paraffin at a concentration of not less than about 70% by weight, based upon the weight of said activator.

5,607,622

OIL-IN-WATER CREAM BASE

Seishi Ueda, Ise; Knoru Maeyama, Tsu; Nobuhide Tsuji; Masahiro Tsujide, both of Ise, and Kazuyuki Kitagawa, Taki-gun, all of Japan, assignors to Mikimoto Pharmaceutical Co., Ltd., Mie-ken, Japan

Filed Feb. 24, 1993, Ser. No. 21,758

Claims priority, application Japan, Jun. 29, 1992, 4-192685

Int. Cl.[6] B01J *13/00;* **A61K** *9/107*

U.S. Cl. 252—312 **12 Claims**

1. An oil-in-water type cream base comprising an oil phase and a water phase, said water phase comprising water, a colloidal hydrous silicate, and a polyethylene glycol, wherein said oil component is selected from the group consisting of squalane, solid oils, triglycerides, wax esters, and synthetic monoesters, said base being free of surfactant and being prepared by microfluidizer emulsification at a treatment pressure of at least 700 kg/cm^2.

5,607,623

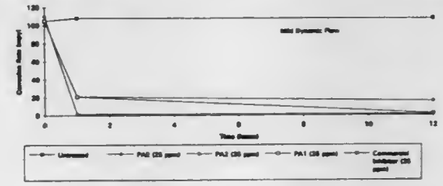
INHIBITION OF CARBON DIOXIDE CORROSION OF METALS

William J. Benton, Magnolia, Tex., and Larry P. Koskan, Orland Park, Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Filed Mar. 8, 1995, Ser. No. 400,369

Int. Cl.[6] C23F *11/14;11/173*

U.S. Cl. 252—392 **7 Claims**



1. A method of inhibiting carbon dioxide corrosion of ferrous metals in the presence of an aqueous saline environment containing dissolved carbon dioxide and having a substantially acidic pH which comprises adding to the saline environment a corrosion inhibiting amount of polyaspartic acid having a weight average molecular weight in the range of about 1,000 to about 10,000 and wherein more than 50% of the polyaspartic acid is in β-form.

5,607,624

PROCESS FOR THE PREPARATION OF 3-ARYLBENZOFURANONES

Peter Nesvadba; Samuel Evans, both of Marly, Switzerland, and Ralf Schmitt, Bensheim, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

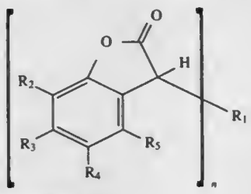
Filed Sep. 12, 1994, Ser. No. 304,455

Claims priority, application Switzerland, Sep. 17, 1993, 2812/93

Int. Cl.[6] F21V *9/04;* **C07D** *305/12*

U.S. Cl. 252—589 **21 Claims**

1. A process for the preparation of a compound of formula I

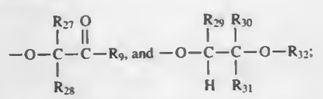


(I)

wherein, when n is 1,

R_1 is phenyl, naphthyl, phenanthryl, anthryl, 5,6,7,8-tetrahydro-2-naphthyl, thienyl, benzo[b]thienyl, naphtho[2,3-b]thienyl, thiathrenyl, furyl, benzofuryl, isobenzofuryl, dibenzofuryl, chromenyl, xanthenyl, phenoxathiinyl, pyrrolyl, imidazolyl, pyrazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolizinyl, isoindolyl, indolyl, indazolyl, purinyl, quinolizinyl, isoquinolyl, quinolyl, phthalazinyl, naphthyridinyl, quinoxalinyl, quinazolinyl, cinnolinyl, pteridinyl, carbazolyl, β-carbolinyl, phenanthridinyl, acridinyl, perimidinyl, phenanthrolinyl, phenazinyl, isothiazolyl, phenothiazinyl, isoxazolyl, furazanyl, biphenyl, tetralinyl, fluorenyl or phenoxazinyl,

which is optionally substituted by one or more substituents selected, independently of the other, from the group consisting of halogen, hydroxy, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_8; C_1–C_{25}alkoxy, C_2–C_{25}alkoxy which is interrupted by oxygen, sulfur or >N—R_8; C_1–C_{25}alkylthio, C_3–C_{25}alkenyl, C_3–C_{25}alkenyloxy, C_3–C_{25}alkynyl, C_3–C_{25}alkynyloxy, C_7–C_9-phenylalkyl, C_7–C_9phenylalkoxy, unsubstituted or C_1–C_4alkyl-substituted phenyl; unsubstituted or C_1–C_4alkyl-substituted phenoxy; unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkoxy; C_1–C_4alkylamino, di(C_1–C_4alkyl)amino, C_1–C_{25}alkanoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—R_8; C_1–C_{25}alkanoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_8; C_1–C_{25}alkanoylamino, C_3–C_{25}alkenoyl, C_3–C_{25}alkenoyl which is interrupted by oxygen, sulfur or >N—R_8; C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_8; C_6–C_9cycloalkylcarbonyl, C_6–C_9cycloalkylcarbonyloxy, benzoyl or C_1–C_{12}alkyl-substituted benzoyl; benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy;



or where a pair of substituents, together with the linking carbon atoms, forms a benzene ring,

where R_8 and R_9 are as defined below,

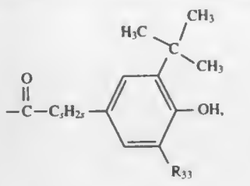
R_{27} and R_{28} are each independently of the other hydrogen, C_1–C_4alkyl or phenyl,

R_{29} is hydrogen or C_1–C_4alkyl,

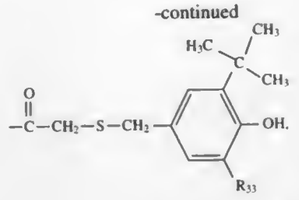
R_{30} is hydrogen, unsubstituted or C_1–C_4alkyl-substituted phenyl; C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_8; C_7–C_9phenylalkyl which is unsubstituted or substituted at the phenyl moiety by 1 to 3 C_1–C_4alkyl groups; C_7–C_{25}phenylalkyl which is interrupted by oxygen, sulfur or >N—R_8 or is unsubstituted or substituted in the phenyl moiety by 1 to 3 C_1–C_4alkyl groups; or R_{29} and R_{30}, together with the linking carbon atoms, form a C_5–C_{12}cycloalkylene ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl groups,

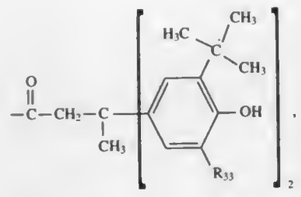
R_{31} is hydrogen or C_1–C_4alkyl,

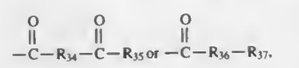
R_{32} is hydrogen, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—R_8; C_2–C_{25}alkanoyl which is substituted by a di(C_1–C_6alkyl)phosphonate group; C_6–C_9cycloalkylcarbonyl, thenoyl, furoyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl;



-continued

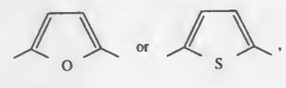






R_{33} is hydrogen or C_1–C_8alkyl,

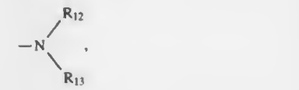
R_{34} is a direct bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or >N—R_8; C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_8bicycloalkylene, unsubstituted or C_1–C_4alkyl-substituted phenylene,



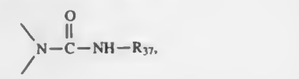
R_{35} is hydroxy,



C_1–C_{18}alkoxy or



R_{36} is oxygen, —NH— or



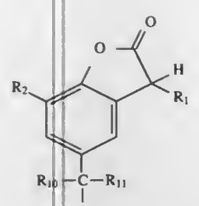
R_{37} is C_1–C_{18}alkyl or phenyl, and

s is 0, 1 or 2,

when n is 2,

R_1 is unsubstituted or C_1–C_4alkyl- or hydroxy-substituted phenylene or naphthylene; or is —R_6— X—R_7—,

R_2, R_3, R_4 and R_5 are each independently of one another hydrogen, chloro, hydroxy, C_1–C_{25}alkyl, C_7–C_9-phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, C_1–C_{18}alkylthio, C_1–C_4alkylamino, di-(C_1–C_4alkyl)amino, C_1–C_{25}alkanoyloxy, C_1–C_{25}alkanoylamino, C_3–C_{25} alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_8; C_6–C_9 cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy; or each pair of substituents R_2 and R_3 or R_3 and R_4 or R_4 and R_5, together with the linking carbon atoms, forms a benzene ring; R_4 is additionally —$(CH_2)_p$—COR_9 or —$(CH_2)_q$OH, or, if R_3 and R_5 are hydrogen, R_4 is additionally a radical of formula II



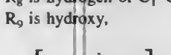
(II)

wherein R_1 is as defined above when n=1,

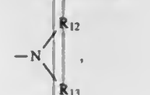
R_6 and R_7 are each independently of the other unsubstituted or C_1–C_4alkyl-substituted phenylene or naphthylene,

R_8 is hydrogen or C_1–C_8alkyl,

R_9 is hydroxy,



C_1–C_{18}alkoxy or



R_{10} and R_{11} are each independently of the other hydrogen, CF_3, C_1–C_{12}alkyl or phenyl, or R_{10} and

R_{11}, together with the linking carbon atom, form a C_5–C_8cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl groups,

R_{12} and R_{13} are each independently of the other hydrogen or C_1–C_{18}alkyl,

R_{14} is hydrogen or C_1–C_{18}alkyl,

M is a metal cation of valency r,

X is a direct bond, oxygen, sulfur or —NR_{14}—,

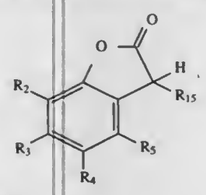
n is 1 or 2,

p is 0, 1 or 2,

q is 1, 2, 3, 4, 5 or 6, and

r is 1, 2or 3,

which process comprises reacting a compound of formula III

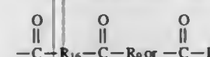


(III)

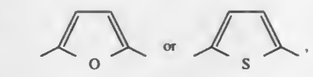
wherein

R_{15} is halogen or —OR'_{15},

R'_{15} is hydrogen, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—R_8; C_6–C_9cycloalkylcarbonyl, thenoyl, furoyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl; naphthoyl or C_1–C_{12}alkyl-substituted naphthoyl; C_1–C_{25}alkanesulfonyl, fluoro-substituted C_1–C_{25}alkanesulfonyl; phenylsulfonyl or C_1–C_{12}alkyl-substituted phenylsulfonyl;

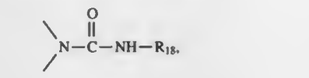


R_{16} is a directe bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or >N—R_8; C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_8bicycloalkylene, unsubstituted or C_1–C_4alkyl-substituted phenylene,



or

R_{17} is oxygen, —NH— or



and

R_{18} is C_1–C_{18}alkyl or phenyl,

with a compound of formula IV

$[H]_r$—R_1 (IV).

5,607,625

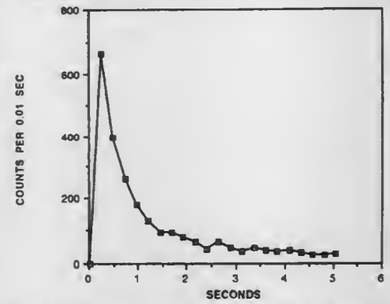
CHEMILUMINESCENT ELECTRON-RICH ARYL-SUBSTITUTED 1,2-DIOXETANES

Nai-Yi Wang, Mundelein, and Roger C. Hu, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 968,911, Oct. 30, 1992. This application May 9, 1995, Ser. No. 437,728

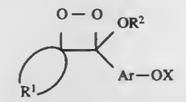
Int. Cl.[6] C09K *3/00*; G01N *21/76*

U.S. Cl. 252—700 **15 Claims**



5. A test kit for determining the presence of an analyte which may be present in a test sample comprising:

a container containing a chemiluminescent compound of the formula (I):

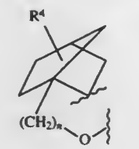


(I)

wherein Ar is an aryl group substituted with one to four groups independently selected from the group consisting of C_1–C_{10}-alkyl, C_1–C_{10}alkoxy, C_1–C_{10}-alkylthio, halo-C_1–C_{10}-alkyl, C_1–C_{10}-alkylamino, di-(C_1–C_{10}-alkyl)amino, aryl-C_1–C_{10}-alkyl, and halogen;

OX is a chemically labile group wherein the removal of X by an activating agent results in the formation of an aryl oxide intermediate;

R^1 when taken with OR^2 is a compound of formula:



wherein R^4 is from zero to nine groups independently selected from the group consisting of hydrogen, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, halo-C_1–C_{10}-alkyl, and halogen, and n is from one to three.

5,607,626

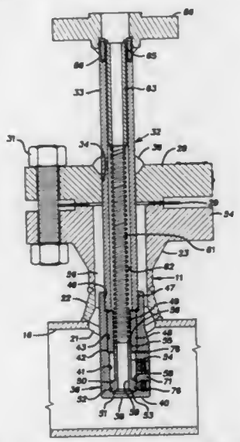
SPRING ASSISTED MULTI-NOZZLE DESUPERHEATER

Timothy E. Kunkle, McKean; Allan K. Shea, and Richard F. Kuntz, both of Erie, all of Pa., assignors to Copes-Vulcan, Inc., Lake City, Pa.

Filed Aug. 18, 1995, Ser. No. 516,567

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—27 **10 Claims**



6. A steam desuperheater for a steam line having a side wall and a fitting on said side wall, comprising a body extending axially through said fitting into the interior of said steam line, said body having an outer portion at said fitting and an inner portion adjacent the center of said steam line, said body having a first bore in said outer portion and a second bore in said inner portion, said second bore being larger in diameter than and coaxial with said first bore, a piston slidably mounted in both of said bores with a head portion making sealing engagement with said second bore and a shank portion making sealing engagement with said first bore, said piston having a head end face and a shank end face, said piston having a small bore extending axially from said shank end face to said head end face to allow water to flow from said fitting to said second bore, wall means closing said second bore, spring means biasing said piston toward said wall means, a plurality of spray openings spaced axially on said body on said inner end and connected to said second bore, and means to supply water under variable pressure to said fitting and said first bore so that increasing said pressure above a predetermined level forces said piston to move away from said wall means to uncover an increasing number of said spray openings.

5,607,627

SPIN DISK HUMIDIFIER

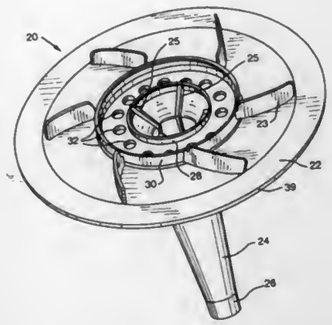
James E. Berkeley, 28 Summer Place Clr., Hattiesburg, Miss. 39402, and John A. McMillan, 2654 Woodacres Rd., Atlanta, Ga. 30345

Filed Oct. 31, 1995, Ser. No. 551,028

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—91 **20 Claims**

1. A humidifier comprising a bucket housing, fan means for producing a flow of air between an inlet port and an outlet port defined by the humidifier, a motor having a shaft disposed within the humidifier, and an impeller assembly coupled to the shaft of the



motor, the impeller assembly comprising a hollow stem extending into the bucket housing, at least one longitudinal rib disposed within the stem, and a disk disposed on an upper end of the stem, the disk defining an inner annular shoulder, an outer annular shoulder, a circumferential edge and a plurality of circumferentially spaced apertures disposed between the inner and outer annular shoulders.

5,607,628

PROCESS FOR THE DUPLICATION OR CONSTRUCTION OF A COPY OF A DENTURE

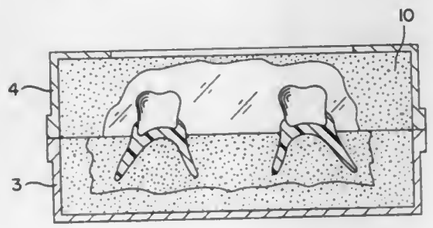
Santo Palazzolo, 52 Via Alcide De Gasperi, I-95197 Catania, Italy, assignor to Santo Palazzolo, and Gregorio Palazzolo, both of Catania, Italy

Filed Nov. 10, 1993, Ser. No. 149,937

Claims priority, application Italy, Dec. 10, 1992, RM92A0876

Int. Cl.[6] A61C *13/10*

U.S. Cl. 264—18 **11 Claims**



1. A process for duplication or production of a copy of an original denture formed of a gum portion and a tooth portion, said process comprising:

embedding said gum portion in a dental molding material to form a mold for said gum portion containing an impression thereof;

embedding said tooth portion in a first polymerizable resin material in a releasable contiguous relationship with said mold for said gum portion;

polymerizing said first resin material to form a mold for said tooth portion containing an impression thereof;

separating said mold for said tooth portion and said mold for said gum portion and removing said original denture therefrom;

filling said mold for said tooth portion with a second polymerizable resin material suitable for construction of artificial teeth and polymerizing said second resin material to obtain a duplicate dental arch of said original denture, said duplicate dental arch including plural teeth;

separating and cleaning each said tooth of said duplicate dental arch;

placing the thus separated and cleaned teeth in their respective positions in said mold for said tooth portion, to thereby reform said duplicate dental arch;

filling a remaining space in said mold for said tooth portion with a third polymerizable resin suitable to form a gum base of a denture;

filling said mold for said gum portion with said third polymerizable resin suitable to form said gum base of a denture; and

placing said mold for said tooth portion and said mold for said gum portion in contiguous matching relationship and polymerizing said third polymerizable resin to obtain a duplicate of said original denture.

5,607,629

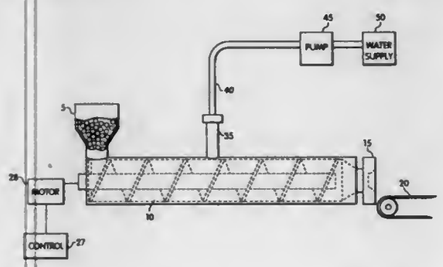
PROCESS FOR EXTRUDING LOW DENSITY FOAM USING WATER AS A BLOWING AGENT

Alan J. DeMello, Newmarket; Douglas W. Hartford, Sandown, both of N.H.; Peter E. Mertinooke, Amesbury, Mass.; Dan C. Muessel, Danvers, Mass., and Louis Halberstadt, Andover, Mass., assignors to Amesbury Group Inc., Amesbury, Mass.

Continuation of Ser. No. 11,076, Jan. 29, 1993, which is a continuation of Ser. No. 689,635, Apr. 23, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,118

Int. Cl.[6] B29C *44/20*

U.S. Cl. 264—45.9 **6 Claims**



1. A method for extruding a thermoplastic elastomer seal comprising the steps of:

selecting a foamable thermoplastic elastomer composition comprising a blend of between 25 to 75 percent by weight of a thermoplastic polypropylene resin and, correspondingly, 75 to 25 percent by weight of fully cured monoolefin copolymer rubber;

compressing and heating the thermoplastic elastomer composition in a mixing vessel to a temperature above the melting point of the thermoplastic resin;

introducing into the heated thermoplastic elastomer composition while under pressure within the mixing vessel a blowing agent consisting of water in an amount sufficient to produce closed cell foaming of the thermoplastic elastomer composition;

mixing and heating the thermoplastic elastomer composition including melted thermoplastic resin and the water in the mixing vessel; and

forcing the heated composition and water through a die opening shaped like a cross-section of a seal to form an extruded seal of substantially closed-cell foam thermoplastic elastomer substantially impervious to the passage of fluid therethrough.

5,607,630

PROCESS FOR THE PRODUCTION OF FINE-GRAINED CERAMIC BODIES MOLDED CONTAINING AL_2O_3

Nils Claussen, Auf den Schwarzen Bergen 15, D-21224 Rosengarten, Germany

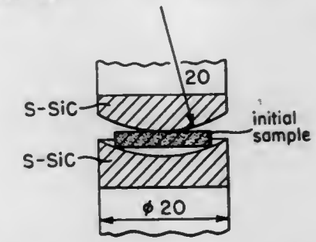
PCT No. PCT/EP94/00272, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO94/18140, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 31, 1994, Ser. No. 307,842

Claims priority, application Germany, Feb. 1, 1993, 43 02 721.0

Int. Cl.[6] C22C *32/00;* **C04B** *35/58;35/03*

U.S. Cl. 264—60 **22 Claims**



1. A process for the production of a fine-grained ceramic molded body containing a least 10 vol. % Al_2O_3, comprising:

(a) milling aluminum metal in powder form alone or together with Al_2O_3 and/or suitable inorganic substances for ceramic formation in a non-aqueous liquid in the presence of oxygen until 10 to 80 vol. % of the metallic aluminum powder has reacted to form one or several aluminum oxidation precursors selected from the group consisting of amorphous Al_2O_3, γ-Al_2O_3 and aluminum-organic compounds and the powder exhibits a maximum oxidation rate between 510° and 610° C. according to differential thermoanalytical measurement;

(b) molding the milled powder of (a) into a green body;

(c) slowly heating the molded green body in an atmosphere containing oxygen to a temperature which is below the melting temperature of aluminum until at least 50 vol.-% of the metallic aluminum powder remaining after the milling has reacted to Al_2O_3; and, subsequently

(d) sintering the molded green body at a sintering temperature of 1100° to 1650° C.

5,607,631

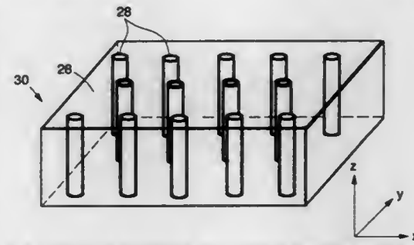
ENHANCED TUNABILITY FOR LOW-DIELECTRIC-CONSTANT FERROELECTRIC MATERIALS

Ronald I. Wolfson, Los Angeles; Mir A. Ali, Lomita, and William W. Milroy, Playa del Rey, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 1, 1993, Ser. No. 45,333

Int. Cl.[6] C04B *35/26;37/00*

U.S. Cl. 264—61 **9 Claims**



1. A method of of altering properties in a ferroelectric material having a dielectric constant ϵ_r, a loss tangent tan δ, and a tunability at a given frequency f, comprising reducing said dielectric constant and said loss tangent while preserving a substantial frac-

tion of said tunability by providing structures of said ferroelectric material, said structures oriented such that at least one dimension of said structures is parallel to a direction of applied dc bias field, said structures also having a critical dimension d in a direction orthogonal to said direction of applied dc bias field and parallel to the direction of propagation of an RF field at a frequency f that is given by the equation

$$d \leqq \frac{c}{100f\sqrt{\epsilon_r}}$$

where c is the velocity of light, taken equal to 299,793 kilometers/second;

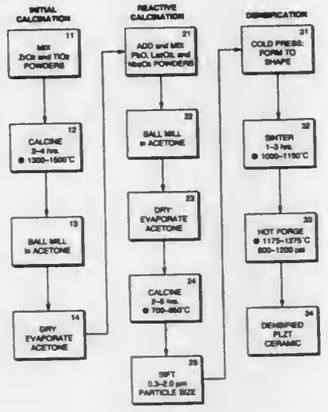
wherein said method comprises embedding a plurality of columns of ferroelectric material in a matrix of an inert dielectric material, said columns having a cross-sectional dimension equal to or less than said critical maximum dimension.

5,607,632

METHOD OF FABRICATING PLZT PIEZOELECTRIC CERAMICS

Ratnakar R. Neurgaonkar, Thousand Oaks; John R. Oliver, Newbury Park, and Jeffrey G. Nelson, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed May 30, 1995, Ser. No. 452,927
Int. Cl.[6] C04B *35/49*
U.S. Cl. 264—61 **19 Claims**



1. A method of fabricating a PLZT piezoelectric material, comprising the steps of:

initially calcining a mixture of ZrO_2 and TiO_2 powders;

milling said calcined mixture of ZrO_2 and TiO_2 powders;

mixing PbO and La_2O_3 powders with said milled ZrO_2 and TiO_2 powders to form a PLZT powder;

adding Nb_2O_5 powder to said PLZT powder to provide Nb as a dopant;

milling, calcining, and sifting said doped PLZT powder to obtain a particle size of approximately 0.3–2.0 μm;

cold pressing said sifted PLZT powder into a desired shape; and

sintering and densifying said cold pressed PLZT powder to form said PLZT ceramic material having a density of at least 97% of the material's theoretical maximum density.

5,607,633

CO-ADHESIVE SYSTEM FOR BONDING WOOD, FIBERS, OR AGRICULTURE BASED COMPOSITE MATERIALS

Ronald T. Sleeter, Decatur, Ill., and Kenneth D. Roos, St. Peter, Minn., assignors to Archer Daniels Midland Company, Decatur, Ill.

Filed Jul. 13, 1995, Ser. No. 502,167
Int. Cl.[6] B29C *67/00*
U.S. Cl. 264—115 **20 Claims**

1. A co-adhesive bonding process for fibrous material, said process comprising:

blending an adhesive of a fast acting bonding material in combination with a conjugated triglyceride oil;

combining said blend with fibrous materials;

said conjugated triglyceride oil soaking into and penetrating said fibers; and

subjecting said combined fibrous material and said blend to heat and pressure for polymerizing said fast acting bonding material and bonding said fibrous material into a composite panel.

5,607,634

HIGH SPEED PROCESS FOR PRODUCING POLYESTER FILAMENTS

Shoji Makino, Takatsuki, and Katsutoshi Taniguchi, Matsuyama, both of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 371,170, Jan. 11, 1995, Pat. No. 5,507,989, which is a continuation-in-part of Ser. No. 150,137, Nov. 29, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,250
Claims priority, application Japan, Apr. 1, 1992, 4-79771
Int. Cl.[6] D06M *13/224;15/53*
U.S. Cl. 264—130 **4 Claims**

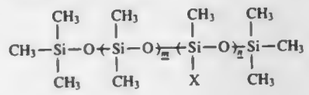
1. A high speed process for producing polyester filaments comprising melt spinning polyester filaments at a taking-up speed of at least 3,000 m/minute while an aqueous emulsion of an oiling agent is applied to the polyester filaments, wherein the oiling agent consists essentially of:

(A) at least 50% by weight of a principal component consisting of at least one member selected from monobasic acid esters of aliphatic monocarboxylic acids with 10 to 18 carbon atoms with aliphatic monohydric alcohols with 4 to 18 carbon atoms and having an average molecular weight of 300 to 500; and

(B) an additional component comprising:

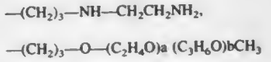
(a) 1 to 15% by weight of at least one ethylene oxide-propylene oxide copolymer with an average molecular weigh of 9,000 to 30,000 and

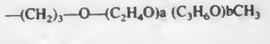
(b) 0.1 to 3% by weight of at least one organic siloxane compound of the formula:



wherein X represents a member selected from the groups of the formulae:







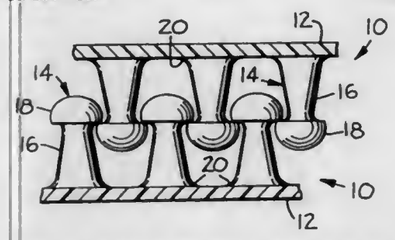
n represents an integer of 1 to 30, m represents zero or an integer of 1 to 10, and the ratio of m to n is in the range of from 1:1 to 1:0, a represents an integer of 1 to 40, b represents zero or an integer of 1 to 40, and R represents an alkyl group having 9 to 17 carbon atoms.

5,607,635

MUSHROOM-TYPE HOOK STRIP FOR A MECHANICAL FASTENER

William L. Melbye, Maplewood; Susan K. Nestegard; Leigh E. Wood, both of Woodbury; Marvin D. Lindseth, Prescott, and Dale A. Bychinski, Fairmont, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 585,990, Sep. 21, 1990, Pat. No. 5,077,870. This application Nov. 8, 1991, Ser. No. 789,594
Int. Cl.[6] D01D *5/20*
U.S. Cl. 264—169 **3 Claims**



1. A method of making a mushroom-type hook strip that can be used in a book-and-loop mechanical fastener, which method uses a mold that is cylindrical and has cavities that are the negatives of an array of only upstanding stems, said method comprising the steps of

a) rotating the mold on its axis,

b) continuously evacuating air from the cavities,

c) continuously injecting a molten, molecularly orientable thermoplastic resin into the evacuated cavities in excess of the amount that would fill the cavities, which excess forms a layer of resin overlying the cavities,

d) continuously cooling the mold at the walls of the evacuated cavities to cause the molten resin to become molecularly oriented while it is filling the cavities as evidenced by a birefringence value of at least 0.001 in the solidified resin after it is removed from the cavities,

e) allowing the injected resin to solidify,

f) continuously stripping from the mold the solidified resin layer as a backing and integral array of upstanding stems having tips at their ends opposite the backing, and

g) deforming the tips of the stems by applying heat to the tips of the stems to produce mushroom heads at the ends of the stems opposite the backing.

5,607,636

PROCESS OF MAKING PLEXIFILAMENTARY FIBER

Kohzoh Ito; Ikuo Ueno; Yoshiaki Nakayama, and Katsuzi Hikasa, all of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 968,463, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 814,046, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 211,234, Jun. 9, 1988, abandoned. This application Apr. 28, 1994, Ser. No. 233,947
Claims priority, application Japan, Oct. 13, 1986, 61-241450; Apr. 20, 1987, 62-95231; Jul. 9, 1987, 62-169682; Jul. 11, 1987, 62-172073; Jul. 13, 1987, 62-172960; Jul. 22, 1987, 62-181189; Aug. 27, 1987, 62-211422
Int. Cl.[6] D01D *5/11*
U.S. Cl. 264—205 **14 Claims**

1. A method for continuously manufacturing a three-dimensional plexifilamentary fiber of a high-density polyethylene group by a flash spinning method, wherein said method comprises continuously supplying a polymer melted by means of a heated screw extruder to a dissolving area for the polymer in the extruder, introducing a solvent into the melted polymer in the extruder in a space in the extruder having a larger volume than the space in a hopper side portion of the extruder, such that an entrance of the dissolving area is sealed by the continuously supplied melted polymer, mixing and dissolving the polymer and the solvent under high pressure to make a polymer solution, and continuously extruding the polymer solution from a nozzle arranged on the dissolving area to a low pressure area.

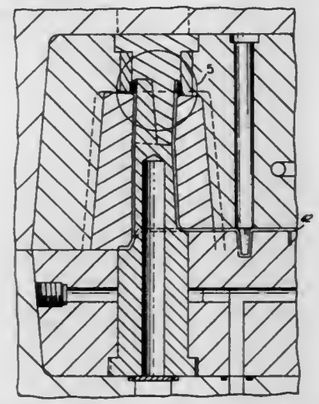
11. A method for manufacturing a three-dimensional plexifilamentary fiber of a high-density polyethylene, wherein a high pressure uniform solution composed of a high-density polyethylene group and a trichlorofluoromethane is extruded through a spinning apparatus comprising a pressure let-down orifice, a pressure let-down chamber and a spinning nozzle into a low pressure region, and a large pressure difference of at least 80 kg/cm^2.G or more is created between an upstream portion and down stream portion of the pressure let-down chamber to activate a liquid.

5,607,637

METHOD OF MANUFACTURING A TRANSMISSION FLUID FILTER

Markus Beer, Morsbach, Germany, and Kenneth V. Nelson, Barrington, Ill., assignors to IBS Filtran GmbH, Lichtenberg, Germany, and Filtran, Des Plaines, Ill.

Filed Jun. 6, 1995, Ser. No. 467,579
Int. Cl.[6] B29C *45/00*
U.S. Cl. 264—271.1 **2 Claims**



1. In the manufacture of a plastic component having a body including a tubular extension having a free end portion with an annular external lip seal on an exterior circumferential surface of the free end portion of the tubular extension, the method comprising

providing an annular external lip seal having an inner annular surface and an outer annular surface and a pair of opposite radial end surfaces,

providing a first mold cavity having a portion for defining the body of the component and a second cavity communicating with the first cavity for defining the tubular extension,

positioning said annular lip seal in the cavity defining the tubular extension such that said inner annular surface of said annular seal and a portion of each of said radial end surfaces of said annular seal are exposed to said first mold cavity defining said tubular extension, and

injecting molten plastic resin in said first cavity and said second cavity to define the plastic component with the lip seal positioned on the free end portion of said tubular extension,

wherein said plastic resin is molded on the inner annular surface of said annular lip seal and the exposed portions of said radial end surfaces,

providing annular recesses adjacent the exposed portions of said radial end surfaces of said seal in said second cavity and said step of positioning said lip seal comprising positioning said lip seal such that when the molten plastic resin is injected, annular flanges are formed in the respective said recesses of said second cavity on the respective exposed portions of said

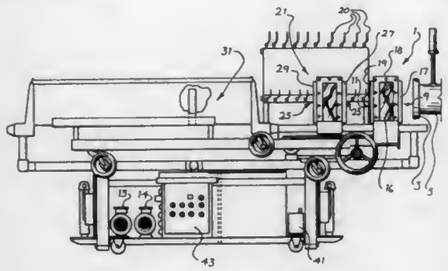
radial end surfaces of said annular lip seal, said flanges engaging the respective said radial end surfaces of said annular seal.

5,607,638

VACUUM SIZING APPARATUS AND METHOD OF USING SAME

Charles E. Cadwell, 159 Paramount Dr., Wood Dale, Ill. 60191

Filed Jun. 6, 1995, Ser. No. 465,914
Int. Cl.[6] B29C *47/90*
U.S. Cl. 264—560 **17 Claims**



1. An apparatus for cooling and sizing molten plastic extrudate after it exits an extrusion die, comprising:

a first water chamber containing water under vacuum pressure, wherein said first water chamber is disposed to receive the extrudate after said extrudate exits said extrusion die and wbere said first water chamber is no more than twelve inches in length;

an entry passage for the molten plastic extrudate into said first water chamber wherein said entry passage to said first water chamber comprises an entry sizing plate manifold having a thickness of no more than two inches, and wherein said entry sizing plate manifold is subject to a vacuum pressure;

an exit passage from said first water chamber for the plastic extrudate for passage of the extrudate into an ambient air environment as the extrudate exits said first water chamber, wherein said exit passage comprises an exit sizing plate manifold having a thickness of no more than two inches, wherein said exit sizing plate manifold is subjected to a vacuum pressure;

and wherein there are no sizing or calibration plates positioned between said entry and exit sizing plate manifolds.

11. A method of cooling and sizing molten plastic extrudate after said extrudate exits an extrusion die, comprising the steps of:

passing said molten plastic extrudate into a first water chamber containing water under vacuum pressure; said first water chamber disposed to receive the extrudate after said extrudate exits said extrusion die and said first water chamber having a length of no more than twelve inches; said first water chamber further including an entry passage for the extrudate into said first water chamber and an exit passage for the extrudate out of said first water chamber, where said entry and exit passages of said first water chamber each comprise a sizing plate manifold subject to vacuum pressure, and where each of said entry and exit sizing plate manifolds have a thickness of no more than two inches; and wherein there are no sizing or calibration plates positioned between said entry and exit sizing plate manifolds;

passing said extrudate out of said first water chamber into an ambient air environment;

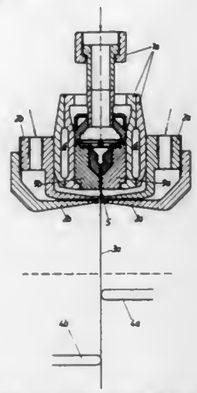
passing said extrudate from said ambient air environment into a second water chamber having an entry passage for said extrudate.

5,607,639

PROCESS FOR THE PREPARATION OF CELLULOSE SHEET

Stefan Zikeli, Regau; Friedrich Ecker, Timelkam; Ernst Rauch, Schörfling; Klaus Renner, Lenzing, and Anton Schönberg, Regau, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Filed Mar. 31, 1994, Ser. No. 221,174
Claims priority, application Austria, Sep. 13, 1993, 1845/93
Int. Cl.[6] B29C *47/88*
U.S. Cl. 264—561 **10 Claims**



1. Process for the preparation of cellulose sheet comprising the steps of:

providing a heated solution of cellulose in tertiary amine oxide,

extruding the solution through an extrusion die having an extrusion orifice,

cooling the extruded solution by exposing the solution to a gas stream applied at essentially a right angle to the extruded solution immediately after extrusion and prior to introducing the extruded solution into a precipitation bath, and

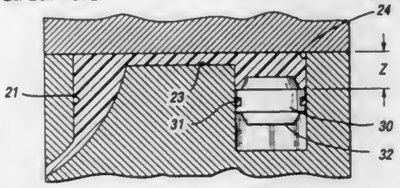
conveying the extruded solution to a precipitation bath.

5,607,640

METHOD FOR INJECTION MOLDING OF PLASTIC ARTICLE

James W. Hendry, Brooksville, Fla., assignor to Melea Limited, Gibraltar Heights, Gibraltar

Filed Jun. 21, 1995, Ser. No. 492,589
Int. Cl.[6] B29C *45/00*
U.S. Cl. 264—572 **6 Claims**



1. In a method for injection molding a hollow plastic article comprising the steps of:

injecting a quantity of fluid plastic into a mold cavity having a shape defining at least a portion of the article;

displacing a portion of the plastic from the mold cavity into a spill cavity having a volume flow coupled to the mold cavity by introduction of a charge of pressurized gas into the mold cavity;

permitting the injected plastic to solidify;

venting the gas from the mold cavity; and

removing the plastic article from the mold, the improvement comprising:

allowing the volume of the spill cavity to increase in a controlled fashion to a final volume based on the amount of plastic injected into the mold cavity, the volume of the spill cavity increasing during the step of displacing to produce a substantially strain-free hollow plastic article.

5,607,641

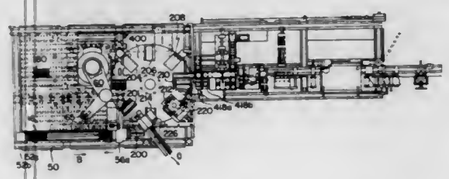
Patent Not Issued For This Number

5,607,642

INTERACTIVE CONTROL SYSTEM FOR PACKAGING CONTROL OF CONTACT LENSES

John M. Lepper; Russell J. Edwards, and Daniel T. Wang, all of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Jun. 10, 1994, Ser. No. 257,793
Int. Cl.[6] A45C *11/04;* **B29D** *11/00*
U.S. Cl. 422—62 **34 Claims**



1. An interactive control system constructed and arranged for controlling the automatic packaging of contact lens products in a product fabrication facility, said interactive control system comprising:

(a) testing means for determining whether the products are defective;

(b) a first robot device arranged for periodically transferring an individual array of a first predetermined amount of discrete products from a first station to an intermediate conveyor where said individual array is conveyed to a second station; wherein said first robot device removes products from said array that have been determined to be defective by said testing means prior to transfer to said intermediate conveyor and wherein said intermediate conveyor includes a means for consolidating the amount of products of said individual array transferred to said intermediate conveyor, said robot device enabling said consolidating means to consolidate said individual array of products and to ensure that a second predetermined amount of products is available for transfer to said second station; and

(c) a controller for initiating a time stamp for said individual array transferred from said first station and determining elapsed time data for said individual array and for generating position status data indicating a good array or a bad array of defective products for said individual array as it is conveyed to said second station, said controller shifting said elapsed time data and position status data for said individual array as it is conveyed on said intermediate conveyor for transfer to said second station.

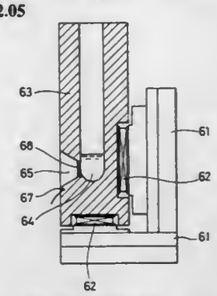
14. An interactive control system for controlling the automatic packaging of contact lenses as claimed in claim 1, wherein contact lenses are contained in a deionized water solution in said packages, said first station including a deionized water removal device for removing said deionized water from each package of said individual array prior to their transference from said first station.

5,607,643

METHOD OF AND APPARATUS FOR ANALYZING IMMUITY BY RAMAN SPECTROMETRY

Dou Xiaoming, and Toshio Takama, both of Kyoto, Japan, assignors to Kyoto Dai-ichi Kagaku Co., Ltd., Japan

Filed Nov. 14, 1994, Ser. No. 339,710
Claims priority, application Japan, Nov. 19, 1993, 5-314587
Int. Cl.[6] G01N *21/03;21/01*
U.S. Cl. 422—82.05 **3 Claims**



1. An immunity analyzer comprising:

a sample cell storing a sample being prepared by adsorbing an immunity test material on surfaces of particles forming a noble metal colloid;

a light source part for irradiating said sample being stored in said sample cell with excitation light; and

a spectral detection part of spectroscopically detecting Raman scattering light from said sample being stored in said sample cell,

said sample cell providing an electronic cooling/heating element, a temperature sensor, and a temperature controller for controlling energization of said electronic cooling/heating element by an output of said temperature sensor thereby maintaining said cell at a constant temperature

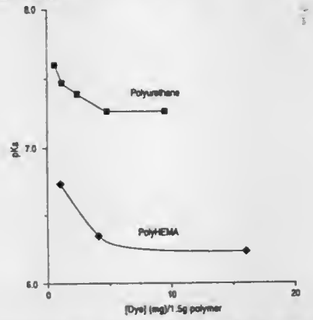
wherein said sample cell is formed by a heat conductive metal block having a hole provided in its upper end toward its interior for storing said sample, said hole being provided with a mirror-polished inner surface being subjected to gold plating, and a bottom portion having a window for receiving said excitation light and emitting said Raman scattering light with a quartz glass window plate being fitted, therein.

5,607,644

OPTICAL SENSOR FOR THE MEASUREMENT OF PH IN A FLUID, AND RELATED SENSING COMPOSITIONS AND METHODS

Alan Olstein, Mendota Heights; William Fowler, Minneapolis, and Jo Pritchard, Mound, all of Minn., assignors to Optical Sensors Incorporated, Eden Prairie, Minn.

Filed Jun. 10, 1993, Ser. No. 74,749
Int. Cl.[6] G01N *21/64*
U.S. Cl. 422—82.07 **40 Claims**



1. A membrane useful in an optical sensor for the measurement of pH in a fluid sample, comprising a fluorescent polymeric matrix

of a copolymer of (a) a water-dispersable urethane olefin precursor containing recurring ether linkages, and (b) a copolymerizable monomeric fluorescent indicator species, wherein the ratio of fluorescent indicator species to urethane olefin precursor in the copolymer, in equivalents, is selected to provide the copolymer with an apparent pKa of at least about 6.6 to about 8.0.

5,607,645

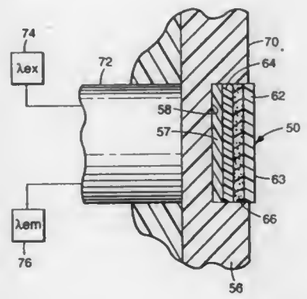
SENSOR WITH IMPROVED DRIFT STABILITY

James G. Bentsen, North St. Paul, and Kenneth B. Wood, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 160,687, Nov. 30, 1993, Pat. No. 5,403,746. This application Jan. 20, 1995, Ser. No. 375,304

Int. Cl.[6] G01N *33/50;31/00*

U.S. Cl. 422—82.07 **24 Claims**



1. A sensor for measuring the concentration of an analyte in a medium comprising:

a sensing element comprising a sensing composition having an aqueous first phase comprising a pH sensitive indicator component in a buffer solution, wherein said buffer solution comprises less than 100 mM of a bicarbonate ion, wherein the concentration of said pH sensitive indicator component in said sensing composition is effective to provide a signal in response to the concentration of carbon dioxide in a medium to which said sensing composition is exposed, said carbon dioxide being effective to alter the pH of said aqueous phase, and a hydrophobic second phase which is permeable to said analyte and impermeable to ionized hydrogen, wherein said aqueous phase is dispersed within said hydrophobic phase, and wherein said sensing composition is substantially free of partitioning species, other than the analyte of interest, which migrate between said phases in response to a change in pH in said aqueous phase or between the sensing composition and the medium and which migration substantially affects said concentration dependent signal;

an excitation assembly positioned and adapted to provide an excitation signal to said sensing element;

a detector assembly positioned and adapted to detect an emitted signal from said sensing element, said sensing element being capable of providing said emitted signal in response to being exposed to said excitation signal; and

a processor assembly positioned and adapted to analyze said emitted signal in determining the concentration of said analyte in said medium.

5,607,646

DEVICE FOR SEPARATING POLYNUCLEOTIDES HAVING A PLURALITY OF ELECTRODE-CONTAINING CELLS AND MOVABLE COLLECTING CAPILLARY

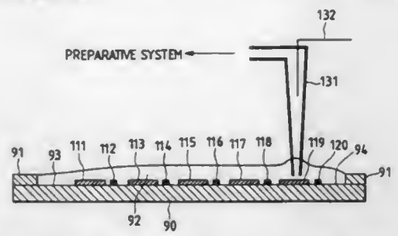
Kazunori Okano, Shiki, and Hideki Kambara, Hachioujl, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 21,667, Feb. 24, 1993, Pat. No. 5,434,049. This application Mar. 21, 1995, Ser. No. 410,544

Claims priority, application Japan, Feb. 28, 1992, 4-042829

Int. Cl.[6] B01L *11/00;* **C12Q** *1/68*

U.S. Cl. 422—101 **5 Claims**



1. A polynucleotide separating device for capturing, eluting and collecting a plurality of target polynucleotides in a sample solution comprising;

a plurality of cells for immobilizing individually different probes complementary to a plurality of target polynucleotides, each cell being formed at a different region on a single polynucleotide capturing support, wherein said target polynucleotides hybridize with said probes, and wherein a surface of each cell has an electrode for supplying an electric field to each cell separately to elute the hybridized target polynucleotides from said cell individually and

a single capillary for collecting the eluted target polynucleotides from each of said cells, wherein said capillary has another electrode and is movable into a position above each of said cells.

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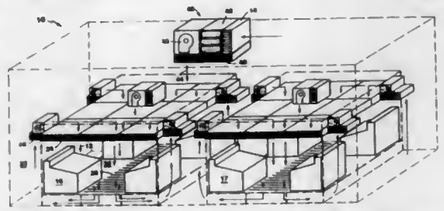
AIR FILTERING WITHIN CLEAN ENVIRONMENTS

Devon A. Kinkead, Cumberland, R.I., assignor to Extraction Systems, Inc., Woonsocket, R.I.

Continuation-in-part of Ser. No. 161,931, Dec. 2, 1993. This application Oct. 4, 1994, Ser. No. 317,315

Int. Cl.[6] A61L *9/00;* **B01D** *53/34;46/00;* **B01L** *1/04*

U.S. Cl. 422—122 **35 Claims**



1. An air filtering system for filtering an air stream for use in a clean environment to effectively remove a process-limiting molecular contaminant therefrom comprising sequentially arranged upstream and downstream air filtering beds,

said upstream air filtering bed being constructed and arranged for filtering air for use in a clean environment, being positioned to receive an air stream from the clean environment and comprising activated carbon particles in the size range of 20×140 mesh impregnated with an upstream chemically active reagent of sulfuric acid in a quantity selected to reduce the concentration of a process-limiting molecular contaminant in the air stream to a level below that which is detrimental to a process associated with the clean environment as said air stream passes through the upstream air filtering bed, said upstream chemically active reagent releasing a characteristic volatile component into said air stream at a concentration level that is detrimental to the associated clean environment process, and

said downstream air filtering bed being constructed and arranged to filter air for use in a clean environment, being positioned to receive the air stream that has passed through said upstream air filtering bed and comprising activated carbon particles in the size range of 20×140 mesh impregnated with a downstream reagent selected to reduce the concentration of the characteristic volatile component released by said upstream reagent of sulfuric acid to a level below that which is detrimental to the associated clean environment process.

5,607,648

ROTARY KILNS

Robert Carter, and John T. Semeraz, both of Preston, United Kingdom, assignors to British Nuclear Fuels plc, Warrington, United Kingdom

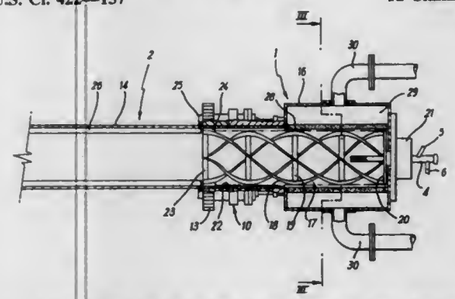
PCT No. PCT/GB94/00953, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/26405, PCT Pub. Date Nov. 24, 1994

PCT Filed May 4, 1994, Ser. No. 367,303

Claims priority, application United Kingdom, May 8, 1993, 9309505

Int. Cl.[6] B01J *4/00*

U.S. Cl. 422—137 **12 Claims**



1. A rotary kiln for producing a solid material from gaseous reactants comprises:

an inlet arrangement,

an outlet arrangement,

a rotatable barrel extending between the inlet and outlet arrangements,

means for introducing gaseous reactants into said inlet arrangement, said reactants reacting together to form a solid product, wherein the inlet arrangement includes:

a rotatable scroll feed device for feeding the solid product into the barrel, and

a filter for separating particles from gases produced in the kiln, the filter arranged so as to at least partially encircle the scroll feed device and located adjacent thereto, rotation of said scroll feed device effecting a cleaning action on said filter.

5,607,649

METHOD AND APPARATUS FOR PROCESSING A PARTICULATE MATERIAL IN A FLUIDIZED BED CHAMBER

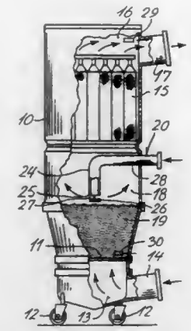
Ove Hansen, Ravnsholtvej, Denmark, assignor to Niro Holding A/S, Soeborg, Denmark

Continuation of Ser. No. 894,747, Jun. 5, 1992, abandoned. This application Sep. 19, 1995, Ser. No. 538,963

Int. Cl.[6] F27B *15/08;* **F26B** *3/00*

U.S. Cl. 422—147 **20 Claims**

1. A method of processing a particulate material containing an inflammable component presenting an explosion risk in a fluidized bed chamber, said method comprising



supplying particulate material to a fluidized bed chamber defined by side walls and having a bed plate defining perforations therein,

passing fluidizing oxygen-containing air upwardly through the perforations of the bed plate for fluidizing the particulate material so as to form a fluidized bed on the bed plate and so as to carry off an inflammable component from the particulate material,

introducing dilution gas into the fluidized bed chamber above the fluidized bed, and

mixing the dilution gas with the upwardly passing fluidizing air and with the inflammable component entrained thereby above the fluidized bed, the dilution gas being introduced into the fluidized bed chamber at least at one position spaced from said chamber side walls in a direction outwardly into the chamber and substantially transverse to the upwardly passing fluidizing air from said at least one position toward said side walls, in a circumferential pattern, so as to form a gas mixture which is substantially uniform over a horizontal cross section of the fluidized bed chamber, the amount of dilution gas introduced being sufficient to substantially reduce the explosion risk of the gas mixture containing oxygen and inflammable component, and

discharging the gas mixture from an upper part of the fluidized bed chamber.

5,607,650

APPARATUS FOR REMOVING CONTAMINANTS FROM GASEOUS STREAM

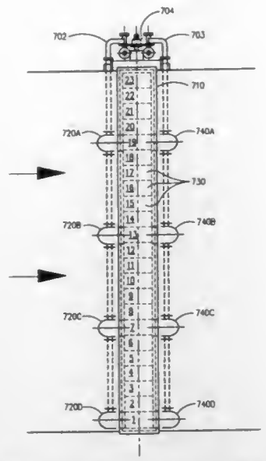
Lawrence Debbage, Cerritos; Eugene Kelley, Whitter; Eugene D. Guth, Torrence, all of Calif.; Larry E. Campbell, Louisville, Tenn.; Robert N. Danziger, Los Angeles, Calif., and Sally Padron, Knoxville, Tenn., assignors to Goal Line Environmental Technologies, Los Angeles, Calif.

Continuation-in-part of Ser. No. 192,003, Feb. 4, 1994, Pat. No. 5,451,558. This application Sep. 18, 1995, Ser. No. 529,519

Int. Cl.[6] B01D *53/34*

U.S. Cl. 422—178 **4 Claims**

1. An apparatus for contacting a catalyst absorber with combustion exhaust gases comprising means for removing spent catalyst absorber from contact with exhaust gases at the same time moving an equivalent amount of new or regenerated catalyst absorber into contact with the exhaust gases to maintain a specified outlet pollution concentration limit, at least two beds of catalyst absorber which alternately are used for absorption of pollutants from the exhaust gases, said beds being disposed horizontally along a vertical axis, said means comprising at least one first hood being positioned movably along said axis adjacent to and upstream of a first of said beds to prevent the exhaust gases from contacting said first bed, said first hood being connected to a source of regenerating gas for introducing the regeneration gas to said first bed, and at



least one second hood cooperatively aligned with said first hood, adjacent to and downstream of said first bed for recovering spent regenerating gas while preventing said regeneration gas from exiting with said exhaust gases.

5,607,651

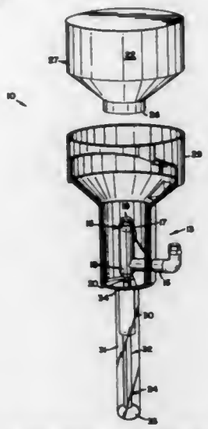
MULTIPLE PRODUCT DISPENSING SYSTEM INCLUDING DISPENSER FOR FORMING USE SOLUTION FROM SOLID CHEMICAL COMPOSITIONS

John E. Thomas, River Falls, Wis.; John E. McCall, W. St. Paul; Daniel K. Boche, Eagan; John J. Rolando, Woodbury, and Terry J. Klos, Victoria, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Division of Ser. No. 349,917, Dec. 6, 1994, Pat. No. 5,494,644. This application Nov. 29, 1995, Ser. No. 564,444

Int. Cl.[6] B01D *11/02*

U.S. Cl. 422—266 **23 Claims**



1. A dispenser for dispensing a use solution comprising a solid chemical composition and a diluent, the dispenser comprising:

(a) a manifold having an inlet port and first and second outlet ports, the inlet port for receiving a flow of diluent;

(b) mixing means, in fluid communication with the first outlet port of the manifold, for mixing the diluent with a solid chemical composition to form a liquid concentrate, the mixing means including a first flow restrictor for restricting the flow of diluent through the first outlet port, and a first outlet tube for dispensing the liquid concentrate;

(c) diluting means, in fluid communication with the second outlet port of the manifold, for diluting the liquid concentrate with diluent to form a use solution, the diluting means including a second flow restrictor for restricting the flow of diluent through the second outlet port, and a second outlet tube in fluid communication with the second outlet port and disposed within the first outlet tube; whereby the concentration of the use solution is related to the respective flow rates through the first and second outlet ports; and

(d) foam reducing means, coupled to the second outlet tube, for decreasing the kinetic energy of the diluent from the second outlet port prior to diluting the liquid concentrate.

5,607,652

BIOLOGICAL AND CHEMICAL DECONTAMINATION CHAMBER

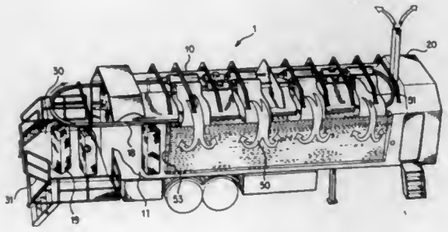
Paul Hellmuth, Niederfell; Norbert Klein, Fassberg, and Michael Theis, Emmelshausen, all of Germany, assignors to Dornier GmbH, Germany

Filed Oct. 17, 1994, Ser. No. 323,685

Claims priority, application Germany, Oct. 15, 1993, 43 35 233.5

Int. Cl.[6] A61L *2/06;* **B08B** *3/00*

U.S. Cl. 422—300 **11 Claims**



1. A biological and chemical decontamination chamber comprising:

an elongated, tunnel reaction section which is enclosed along a periphery thereof;

at least one path disposed within said reaction section, which path comprises longitudinal segments that are laterally adjacent to one another and sequentially connected to one another;

a conveyor having a guide rail arranged along said at least one path in said reaction section;

a plurality of gas permeable baskets coupled to and movable along said guide rail for transporting contaminated articles through said reaction section;

an entrance door at a beginning of said reaction section, for entry of baskets into said reaction section along said guide rail;

an exit door at an end of said reaction section for discharging baskets from said reaction section;

at least one gas feed for supplying a mixture of decontaminant gases to said reaction section, said gas feed being situated at a first end of said reaction section;

at least one exhaust blower coupled to said reaction section at a second end thereof, said second end being situated relative to said first end in a direction which is opposite a direction of movement of said baskets in a final segment of said reaction section, and the same as a direction of movement of said baskets in an initial segment thereof;

a plurality of transverse flow blowers situated along a longitudinal axis of said reaction section; and

a plurality of gas guiding elements coupled to said transverse flow blowers, for directing flow of said mixture of decontaminant gases in a direction transverse to said longitudinal axis.

5,607,653

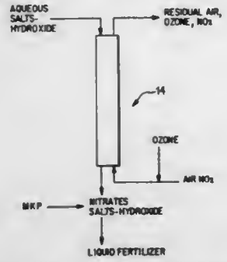
PROCESS AND APPARATUS FOR OXIDIZING AND NEUTRALIZING CAUSTIC WASTE TO LIQUID FERTILIZER

Dwight D. Back, Rockledge; Lawrence R. Grzyll, Merritt Island; Charlie Ramos, Satellite Beach, and Nidal A. Samad, Palm Bay, all of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Mar. 17, 1995, Ser. No. 405,247

Int. Cl.[6] C01B *21/00*

U.S. Cl. 423—235 **12 Claims**



1. A process for treating a basic aqueous solution comprising a hydroxide and at least one of a nitrite salt or sulfite salt, said process comprising the step of reacting ozone with the waste solution to oxide the anions of the salt.

5,607,654

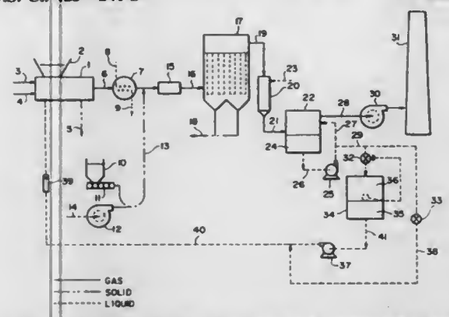
METHOD FOR MINIMIZING ENVIRONMENTAL RELEASE OF TOXIC COMPOUNDS IN THE INCINERATION OF WASTES

Bernard J. Lerner, Pittsburgh, Pa., assignor to Beco Engineering Company, Oakmont, Pa.

Continuation of Ser. No. 319,087, Oct. 6, 1994, abandoned, which is a continuation of Ser. No. 75,234, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 712,475, Jun. 10, 1991, Pat. No. 5,238,665. This application Oct. 24, 1995, Ser. No. 547,317

Int. Cl.[6] B01D *53/64;53/68;53/70;* **F23G** *5/00*

U.S. Cl. 423—240 S **5 Claims**



1. A method for reducing the discharge of contaminated liquid streams in the treatment of hot waste incinerator exhaust gases containing hydrochloric acid gas, particulate fly ash, toxic metal oxides and toxic organic compounds, comprising the steps of:

contacting the exhaust gases from a waste incinerator with an alkaline material in an alkaline gas treatment stage;

reacting a major portion of the hydrochloric acid gas content of the exhaust gases with said alkaline material to form reacted spent alkaline material;

removing substantially all the reacted spent alkaline material, fly ash and toxic metal oxides from the gas in a solids separation stage;

treating the substantially particulate-free exhaust gases from the solids separation stage in at least two wet scrubber contact stages operating in series, each of said wet scrubber contact stages having liquid recycle therein in a liquid recycle loop;

absorbing in the scrubbing liquid of the wet scrubber stages substantially all of the residual hydrochloric acid and a portion of the toxic organic compounds from the substantially particulate-free exhaust gases;

operating each of said wet scrubber stages with separate aqueous acid scrubbing solutions without alkaline neutralization of said aqueous acid scrubbing solutions;

scrubbing the gas in successive wet scrubber contact stages with acid solutions of diminishing acid concentration;

evaporating water in a first wet scrubber contact stage to saturate and cool the hot gases from said solids separator stage;

taking off a portion of contaminated acid liquid from the first wet scrubber stage liquid recycle loop scrubbing solution as a blowdown stream in order to regulate the acid concentration in the liquid recycle circulating around said first wet scrubbing stage;

adding makeup water to the final downstream wet scrubber at a rate equal to that lost by evaporation plus blowdown from the first wet scrubber stage;

feeding liquid from a downstream contact stage to the next upstream contact stage to compensate for liquid depletion in said next upstream contact stage caused by blowdown and evaporation from the first wet scrubber stage;

collecting and conveying contaminated acid liquid blowdown stream taken off the first wet scrubbing liquid recycle loop to the waste incinerator;

incinerating the acid liquid blowdown stream in the waste incinerator for destruction of the toxic organic compounds and generating a recycle acid gas stream;

removing a major portion of the acid gas content of the recycle acid gas stream in said alkaline gas treatment stage; and

thereafter recovering a purified gaseous stream from said wet scrubbing stages.

5,607,655

OLEFIN POLYMERIZATION CATALYST AND PRECURSOR THEREFOR

Joel L. Martin, Bartlesville, and Gil R. Hawley, Dewey, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 899,394, Jun. 16, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 400,295

Int. Cl.[6] C01F *5/30;* **C08F** *4/654*

U.S. Cl. 423—498 **5 Claims**

1. A process for producing magnesium-containing dipyramidal-shaped crystals useful as supports for olefin polymerization catalysts, said crystals having a length which is no more than about four times the width of the largest dimension transverse to the axis of the length of the particle, said process comprising combining magnesium dichloride and an alcohol selected from n-butanol and n-hexanol in a solvent consisting essentially of an aromatic solvent selected from toluene and xylenes, heating the mixture to a temperature of at least 100° C. to obtain a solution of magnesium dichloride, and then gradually cooling the solution to a temperature in the range of 15° C. to 25° C. to cause said crystals to form, further characterized by the fact that if the alcohol is n-hexanol, the molar ratio of the n-hexanol to magnesium dichloride is about 3 and if the alcohol is n-butanol, the molar ratio of the n-butanol to magnesium dichloride is about 2.

5,607,656

PROCESS FOR PREPARING POTASSIUM PEROXOMONOSULFATE TRIPLE SALT

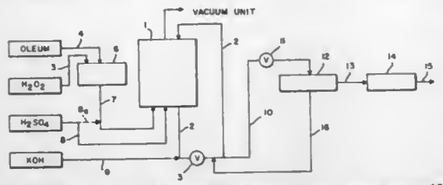
Hartwig Soicke, Overath, and Georg Mannebach, Huerth, both of Germany, assignors to Degussa Aktiengesellschaft, Hanau, Germany

Filed Feb. 6, 1996, Ser. No. 597,201

Claims priority, application Germany, Feb. 7, 1995, 195 03 900.9

Int. Cl.[6] C01D *5/00*

U.S. Cl. 423—513 13 Claims



1. A process for preparing potassium peroxomonopersulfate triple salt $2\,KHSO_5 \cdot KHSO_5 \cdot K_2SO_4$, said process comprising feeding (a) caustic potash solution, additional sulfuric acid and sulfuric acid-Caro's acid or (b) caustic potash solution and a mixture of sulfuric acid-Caro's acid and additional sulfuric acid into a working solution containing $KHSO_5$, $KHSO_4$ and K_2SO_4 to form a mixture and simultaneously evaporating water under reduced pressure at a maximum temperature of 40° C., and isolating said triple salt wherein crystallization of said triple salt occurs without cooling to 15° C. or below, wherein said sulfuric acid-Caro's acid has a concentration of 55 to 70 wt. % of H_2SO_5 and 15 to 30 wt. % of H_2SO_4 and said working solution has a concentration of 28 to 38 wt. % of $KHSO_5$, 18 to 28 wt. % of $KHSO_4$ and more than 0 up to 3 wt. % of K_2SO_4.

5,607,657

REMOVAL OF SULFUR COMPOUNDS IN CLAUS TYPE RESIDUAL GASES WITH SULFUR RECOVERY

André Philippe, Orthez; Jean Nougayrede, Pau, and Georges Kvasnikoff, Monein, all of France, assignors to Elf Aquitaine Production, Paris La Defense, France

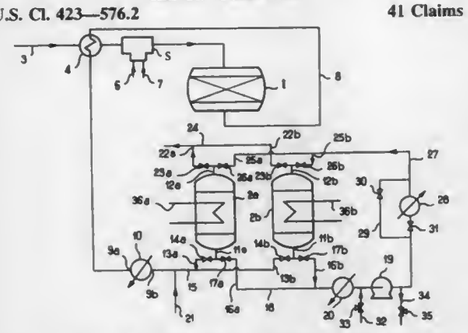
PCT No. PCT/FR94/00284, § 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO94/21359, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 341,605

Claims priority, application France, Mar. 16, 1993, 93 02995

Int. Cl.[6] C01B *17/02*

U.S. Cl. 423—576.2 41 Claims



1. A process for the removal of sulphur compounds from a residual gas with recovery of said compounds in the form of sulphur, which process comprises subjecting the residual gas to a combined hydrogenation and hydrolysis to convert the sulphur compounds which it contains to H_2S, recovering a gaseous effluent containing H_2S as the sole sulphur compound and water vapor, cooling the gaseous effluent to a temperature between the dew point θ of the water in said gaseous effluent and 180° C., wherein the water vapor is not condensed, mixing the gaseous effluent with a gas containing free oxygen to provide an O_2:H_2S molar ratio between 0.5 and 3.0, contacting the cooled gaseous effluent and the gas containing free oxygen with a catalyst for selective oxidation of H_2S to sulphur at a temperature between θ and 180° C., depositing virtually all of the sulphur formed on the catalyst and obtaining a purified gas stream substantially free of H_2S.

5,607,658

METHOD OF MANUFACTURING METALLIC OXIDE AND METALLIC OXIDE MANUFACTURED BY THE SAME

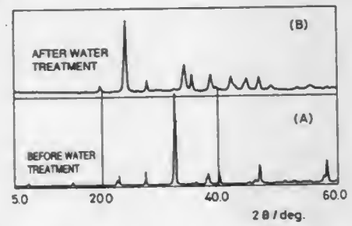
Norio Kaneko, Atsugi, and Tamaki Kobayashi, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,503, Sep. 28, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 523,752

Claims priority, application Japan, Sep. 29, 1992, 4-282305

Int. Cl.[6] C04B *35/00*

U.S. Cl. 423—593 12 Claims



1. A method of manufacturing a metal oxide, said method comprising the steps of:

a) preparing the metal oxide expressed by a following general formula:

$$A_x\,B_y\,C_z\,D_n$$

where A represents at least one element selected from a group consisting of a rare earth element, yttrium and an element obtained either by substituting part of rare earth elements with alkali metals or alkaline earth metals, or by substituting part yttrium with alkali metals or alkaline earth metals, B represents an alkaline earth metal, C represents copper or an element obtained by substituting part of copper with transition metals, and D represents oxygen, where X=1, Y=2 to 4, Z=2.7 to 6 and n=6 to 13;

b) reducing the metal oxide expressed by said general formula wherein said reducing is sufficiently controlled to maintain a basic crystalline structure; and said reducing process is performed under normal atmospheric pressure and in an inactive atmosphere;

c) halogenating the reduced metal oxide, wherein part of oxygen (D) of the metal oxide expressed by said general formula is substituted with the halogen elements using a halogenating reagent which is solid at room temperature; and

d) wherein said halogenation step is performed in an oxidizing atmosphere which contains not less than 10% of oxygen.

5,607,659

DIRECTED BIODISTRIBUTION OF RADIOLABELLED BIOTIN USING CARBOHYDRATE POLYMERS

Linda M. Gustavson, Seattle, and Alan R. Fritzberg, Edmonds, both of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 12,533, Feb. 2, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,788

Int. Cl.[6] A61K *51/04*

U.S. Cl. 424—1.73 6 Claims

1. A method of providing for enhanced renal excretion of radionuclides via the renal pathway, which radionuclides are used in a

diagnostic or therapeutic protocol for the treatment or diagnosis of a mammalian subject, which method comprises administering a conjugate comprising:

(i) a directed biodistribution molecule which is specifically excreted via a renal pathway selected from the group consisting of dextran and inulin,

(ii) biotin conjugated or complexed to said directed biodistribution molecule; and

(iii) a radionuclide, and wherein said conjugate does not comprise an antibody or an antibody fragment.

5,607,660

COMPOSITIONS OF IODOPHENOXY ALKANES AND IODOPHENYL ETHERS IN COMBINATION WITH CELLULOSE DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Robert W. Lee, Gilbertsville; Carl R. Illig, Phoenixville, and Thomas J. Caulfield, Audubon, all of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation-in-part of Ser. No. 12,189, Feb. 2, 1993, Pat. No. 5,316,755. This application May 20, 1994, Ser. No. 246,888

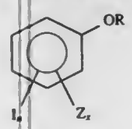
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.4 24 Claims

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:

(a) from about 0.01 to 200 mg of iodine per ml of the composition of an x-ray contrast producing agent having the formula, or pharmaceutically acceptable salt thereof



wherein

Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;

R is methyl, ethyl, propyl, C_9–C_{25} alkyl, cycloalkyl, or halo-lower-alkyl, optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy, $(CR_1R_2)_p$—$(CR_3{=}CR_4)_m$Q, or $(CR_1R_2)_p$—C≡C—Q;

R_1, R_2, R_3 and R_4 are independently lower-alkyl, optionally substituted with halo;

x is 1–4;

n is 1–5;

m is 1–15;

p is 1–10; and

Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl;

(b) from 0.05 to 10% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;

(c) from 0 to 55% w/v of an oily vehicle;

(d) from 0 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;

(e) from 0 to 15% w/v of a viscosity modifying excipient; and

(f) water to make 100% by volume.

5,607,661

AGGREGATES OF X-RAY MICROPARTICLES FOR ULTRASOUND IMAGING

Arne Berg, Sandvika; Jo Klaveness; Per Strande, both of Oslo, all of Norway, and Lars Stubberud, Södertälje, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP92/01477, § 371 Date Feb. 9, 1994, § 102(e) Date Feb. 9, 1994, PCT Pub. No. WO93/00930, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 3, 1992, Ser. No. 170,197

Claims priority, application United Kingdom, Jul. 5, 1991, 9114565; Jan. 9, 1992, 9200386

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.52 40 Claims

1. An ultrasound contrast agent comprising aggregates of microparticles of a non-ionic X-ray contrast agent said aggregates forming microbubbles of biocompatible gas when suspended in a liquid carrier medium.

5,607,662

PHARMACEUTICAL INHALATION COMPOSITIONS

Lewis J. Baskeyfield; Graham F. Jay, both of Cheshire, and Paul Wright, Nottinghamshire, all of England, assignors to Fisons, PLC, Great Britain

PCT No. PCT/GB93/00503, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/17663, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 10, 1993, Ser. No. 295,853

Claims priority, application United Kingdom, Mar. 10, 1992, 9205183; Mar. 17, 1992, 9205738; Mar. 17, 1992, 9205739

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—46 10 Claims

1. A non-pressurised pharmaceutical inhalation composition comprising a therapeutically effective amount of a particulate inhalation medicament having a mass median diameter in the range 0.01 to 15 μm and a particulate polysaccharide entrapped flavouring agent having a mass median diameter in the range 10 to 200 μm.

5,607,663

HYDROCARBYL CONTAINING COATINGS, COMPOSITIONS AND METHODS OF USE

Sharon M. Rozzi, West Lakeland Township; Sumita B. Mitra, West St. Paul; Brant L. Kedrowski, Minneapolis, and Charles E. Shelburne, Brooklyn Park, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1994, Ser. No. 348,048

Int. Cl.[6] A61K *7/16*

U.S. Cl. 424—49 33 Claims

1. A coating on hard tissue surfaces or surfaces of the oral environment, which coating comprises a polymer that is less than 0.1 percent soluble in water comprising repeating units

A) 1–80% by weight of a polar or polarizable group

B) 0–98% by weight of a modulating group

C) 1–40% by weight of a hydrophobic hydrocarbon moiety having a molecular weight greater than about 160, wherein said coating has a Wilhelmy Balance Test Advancing Contact Angle greater than 55°.

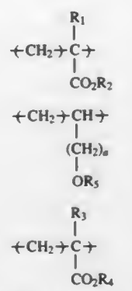
5,607,664

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING UV-A AND/OR UV-B SUNSCREENS AND POLYMERS COMPATIBLE THEREWITH

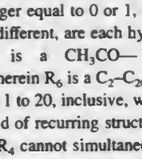
Jean-Marc Ascione, Paris; Delphine Allard, Colombes, and Isabelle Hansenne, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 5, 1995, Ser. No. 463,221
Claims priority, application France, Jun. 3, 1994, 94 06836
Int. Cl.[6] A61K *7/42;7/40;31/74*
U.S. Cl. 424—59 24 Claims

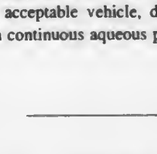
1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising (i) a photoprotecting effective amount of at least one organic or inorganic UV screen, or mixture thereof, and (ii) at least one polymer compatible therewith, said at least one polymer comprising recurring structural units of the following formula (I) and recurring structural units of the following formulae (II) and/or (III):



(I)



(II)



(III)

in which a is an integer equal to 0 or 1, R_1, R_2, R_3 and R_4, which may be identical or different, are each hydrogen atoms or a C_1–C_4 alkyl radical, R_5 is a CH_3CO— radical or a radical R_6—$(OC_2H_5)_b$—, wherein R_6 is a C_2–C_{20} alkyl radical, and b is an integer ranging from 1 to 20, inclusive, with the proviso that, when the polymer is devoid of recurring structural units of formula (II), the radicals R_2 and R_4 cannot simultaneously be hydrogen atoms, in a cosmetically acceptable vehicle, diluent or carrier therefor which comprises a continuous aqueous phase.

5,607,665

NAIL ENAMEL COMPOSITIONS CONTAINING SILICONE GLYCOL COPOLYMERS

Joseph F. Calello, Unioni; Robert W. Sandewicz, Spotswood, and Anjali A. Patil, Westfield, all of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Filed Dec. 16, 1994, Ser. No. 356,994
Int. Cl.[6] A61K *7/043*
U.S. Cl. 424—61 15 Claims

1. An aqueous based nail enamel composition comprising, by weight of the total composition:

16–60% of a polymer selected from the group consisting of polyacrylate-methacrylate copolymers, an acrylic acid homopolymer, a methacrylic acid homopolymer, an acrylate-styrene copolymer, and mixtures thereof,

0.1–10% polyurethane,

10–85% water, and

0.005–5% silicone glycol copolymer.

5,607,666

COSMETIC OR DERMATOLOGICAL POWDER, ITS PREPARATION PROCESS AND ITS USES

Gerard Masson, Cully, Switzerland; Didier Candau, Bievres, and Carine Khayat, La Varenne, both of France, assignors to L'Oreal, Paris, France

Filed Dec. 22, 1994, Ser. No. 361,373
Claims priority, application European Pat. Off., Dec. 22, 1993, 93121169
Int. Cl.[6] A61K *7/00;31/74*
U.S. Cl. 424—69 8 Claims

1. A cosmetic or dermatological powder obtained from an oil-in-water emulsion which is homogenized and dehydrated, said emulsion comprising: (a) a hydrocolloidal agent and a biopolymer as structural and emulsifying agents, (b) at least one fatty substance, (c) at least one substance which is cosmetically or dermatologically active, and (d) an aqueous phase, said powder having a residual water content between 2 and 4% by weight, based on the total weight of said powder, said powder further being capable of being reconstituted by the step consisting essentially of rehydration to obtain an oil-in-water emulsion,

wherein the hydrocolloidal agent is selected from the group consisting of xantham gum, carboxy methyl cellulose, and corn starch, and the biopolymer is selected from the group consisting of sodium caseinate, casein, soy protein, and hydrolyzed soy protein.

5,607,667

BODY CARE COMPOSITIONS, METHOD OF USING SAME, AND METHOD OF GENERATING A RELATIVELY STABLE AQUEOUS SUSPENSION OF COLLOIDAL SILICA FOR USE THEREIN

Robert R. Holcomb, Hackleburg, Ala., assignor to NovaTech, Inc., Nashville, Tenn.

Filed Jun. 11, 1993, Ser. No. 76,349
Int. Cl.[6] A61K *9/14;33/00*
U.S. Cl. 424—70.1 21 Claims

1. A body care composition for application to a body part for hydrating the body part, comprising one or more body care components; and an aqueous suspension of colloidal silica particles, wherein the aqueous suspension is generated by lowering the pH of an alkaline silica solution during circulation of the solution through a magnetic field greater than the earth's magnetic field to form charged colloidal silica particles in the solution.

5,607,668

EMBALMING COMPOSITION AND METHOD

James W. Campbell, and John L. Margrave, both of Houston, Tex., assignors to EFH, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 161,893, Dec. 3, 1993, Pat. No. 5,405,606. This application Sep. 15, 1994, Ser. No. 306,645
Int. Cl.[6] A01N *1/00*
U.S. Cl. 424—75 24 Claims

1. An embalming fluid comprising

glutaraldehyde in an amount of about 0.5% to about 3.5% by volume of the fluid;

phenoxyethanol in an amount of about 1% to about 3% by volume of the fluid;

at least one alcohol in an amount of about 27% to about 37% by volume of the fluid; and

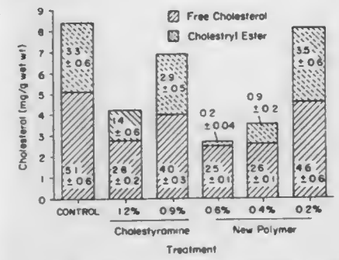
at least one humectant in an amount of about 1% to about 9% by volume of the fluid.

5,607,669

AMINE POLYMER SEQUESTRANT AND METHOD OF CHOLESTEROL DEPLETION

W. Harry Mandeville, III, Lynnfield, and Stephen R. Holmes-Farley, Arlington, both of Mass., assignors to GelTex Pharmaceuticals, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 258,431, Jun. 10, 1994, and Ser. No. 332,096, Oct. 31, 1994. This application Jun. 6, 1995, Ser. No. 471,769
Int. Cl.[6] A61K *31/785*
U.S. Cl. 424—78.12 25 Claims



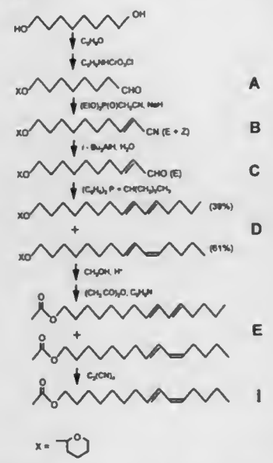
1. A method for binding bile salts in a mammal, comprising the step of orally administering to the mammal a therapeutic amount of an amine polymer having a first substituent, bound to a first amine of the amine polymer, that includes a hydrophobic aliphatic moiety, and a second substituent, bound to a second amine of the amine polymer, that includes an aliphatic quaternary amine-containing moiety.

5,607,670

SEX ATTRACTANT FOR THE CRANBERRY FRUITWORM

Leslie M. McDonough; Harry G. Davis, and Constance L. Smithhisler, all of Yakima, Wash., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 1, 1995, Ser. No. 432,923
Int. Cl.[6] A01N *25/00;* C07C *67/02*
U.S. Cl. 424—84 11 Claims



1. An attractant composition for male cranberry fruitworm moths, which comprises a mixture of pure or substantially pure (E,Z)-8,10-pentadecadien-1-ol acetate (I) and pure or substantially pure (E)-9-pentadecen-1-ol acetate (II) in a weight ratio range of about 100:1 to 100:16 (I:II).

5,607,671

MEDICAL USE, A MEDICAL METHOD AND A PHARMACEUTICAL PREPARATION

Pekka U. Heino, Lahnaruohontie 4 D 45, 00200 Helsinki, Finland

PCT No. PCT/FI93/00016, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/13795, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 18, 1993, Ser. No. 256,508
Claims priority, application Finland, Jan. 17, 1992, 920206
Int. Cl.[6] A61K *38/43;38/46;38/47;38/48*
U.S. Cl. 424—94.1 21 Claims

1. An oral pharmaceutical preparation with a programmed delivery pattern comprising a substantially pure β-lactam antibiotic-degrading compound.

5,607,672

REPLACEMENT THERAPY FOR DENTAL CARIES

Jeffrey D. Hillman, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

Filed Jun. 7, 1995, Ser. No. 486,037
Int. Cl.[6] C12N *1/21;15/53;* A01N *63/00;* A61K *7/16*
U.S. Cl. 435—172.3 36 Claims

1. A recombinant *Streptococcus mutans* strain characterized by a) a deficiency in lactic acid production and b) production of a recombinant alcohol dehydrogenase.

5,607,673

PURIFIED EXTRACT OF UVARIA BREVISTIPITATA AND A PROCESS FOR OBTAINING THE PURIFIED EXTRACT THEREFOR

Constantin M. Bashengezi, Bukavih, Zaire, assignor to C.S.S.A.H.A., Inc., Chicago, Ill.

Filed Apr. 20, 1995, Ser. No. 425,747
Int. Cl.[6] A61K *35/78*
U.S. Cl. 424—195.1 14 Claims

1. The substantially purified extract of a plant root from the family Annonaceae and the genus Uvaria wherein the species is *brevistipitata.*

5,607,674

USE OF TARCHONANTHUS CAMPHORATUS FOR REPELLING INSECTS AND ALLEVIATING EDEMA, CONGESTION AND IRRITATION OF THE SKIN

Guido Rovesti, Milan; Gabriele Segalla, Peschiera Del Garda; Pietro La Fratta, Milan, and Michele G. Di Schiena, Cisliano, all of Italy, assignors to Gisquare Technologies B.V., Amsterdam, Netherlands

PCT No. PCT/EP93/02997, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO94/09631, PCT Pub. Date May 11, 1994
PCT Filed Oct. 28, 1993, Ser. No. 428,175
Claims priority, application United Kingdom, Nov. 3, 1992, 9222985
Int. Cl.[6] A61K *35/78*
U.S. Cl. 424—195.1 2 Claims

1. A method for repelling insects, and alleviating edema, congestion and skin irritation symptoms which comprises applying to the cutis of an individual a pharmaceutical composition comprising as the principal active ingredient from 0.01–10% of the extract of *Tarchonathus camphoratus* together with a pharmaceutically acceptable carrier.

5,607,675

TREATMENT OF AUTOIMMUNE DISEASES WITH IL-2 RECEPTOR-SPECIFIC CYTOTOXIN

Terry B. Strom, Brookline, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation of Ser. No. 275,010, Jul. 8, 1994, Pat. No. 5,510,105, which is a division of Ser. No. 842,463, Feb. 27, 1992, Pat. No. 5,336,489, which is a continuation of Ser. No. 692,830, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 492,616, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 772,893, Sep. 5, 1985, Pat. No. 5,011,684. This application Jun. 6, 1995, Ser. No. 469,538

Int. Cl.[6] A61K *38/20;39/395;45/00*

U.S. Cl. 424—195.11 **10 Claims**

1. A method of treating a mammal suffering from an autoimmune disease state-producing immune response characterized by a proliferative burst of IL-2 receptor-bearing lymphocytes, said method comprising administering to said mammal during said proliferative burst, a cytotoxin linked to an IL-2 receptor-specific substance such that the cytotoxin is internalized by said T-lymphocytes, resulting in the death of said lymphocytes.

5,607,676

IMMUNOGENIC COMPOSITIONS AGAINST GASTRIN PEPTIDES

Philip C. Gevas, Honolulu, Hi.; Stephen L. Karr; Stephen Grimes, both of Davis, Calif., and Richard L. Littenberg, Kai Lua, Hi., assignors to Aphton Corporation, Woodland, Calif.

PCT No. PCT/US90/00520, § 371 Date Jul. 22, 1991, § 102(e) Date Jul. 22, 1991, PCT Pub. No. WO90/08774, PCT Pub. Date Aug. 9, 1990

Continuation-in-part of Ser. No. 351,193, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 301,353, Jan. 24, 1989, Pat. No. 5,023,077. This PCT application Jan. 23, 1990, Ser. No. 721,638

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[6] C07K *5/00;* **A61K** *39/00;39/385;38/00*

U.S. Cl. 424—197.11 **13 Claims**

1. An immunogen which induces a sufficient level of antibodies in an immunized animal to neutralize the physiological effect of the peptide hormone G_{17} in the immunized animal, comprising an immunogenic carrier conjugated by a spacer peptide sequence to the carboxy terminus of a peptide containing a single antigenic epitope cross-reactive with an epitope on the amino terminus of G_{17}, which immunogen induces antibodies in the immunized animal which react with an epitope on G_{17} which is present on the first six amino acid residues beginning from the amino terminus of G_{17} and do not cross-react with any other epitope on G_{17} or the peptide hormone G_{34} and prevent the binding of the G_{17} to its physiological receptors in the immunized animal.

5,607,677

GLUCAN DRUG DELIVERY SYSTEM AND ADJUVANT

Spiros Jamas, Boston; Gary R. Ostroff, Worcester, and D. Davidson Easson, Jr., Shrewsbury, all of Mass., assignors to Alpha-Beta Technology, Inc., Wocester, Mass.

PCT No. PCT/US90/03440, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991

Continuation-in-part of Ser. No. 366,490, Jun. 15, 1989, Pat. No. 5,032,401. This PCT application Jun. 14, 1990, Ser. No. 778,177

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[6] A61K *47/36;31/715;* **C07H** *1/00*

U.S. Cl. 424—278.1 **1 Claim**

1. A two-phase drug composition for use to stimulate an immune response in a mammal, comprising:

a. a first phase comprising bioerodible whole β-particles which are hollow spheres comprised of a semi-permeable glucan matrix; and

b. a second phase comprising an immune stimulating drug which is capable of being incorporated within each of the whole glucan particles by natural diffusion;

to form a two-phase drug composition the drug being contained within or dispersed in said whole β-glucan particles, and the composition being capable, when placed in a physiological environment, of releasing the drug over time into the physiological environment, the whole β-glucan particles being bioerodible in response to the physiological environment which whole β-glucan particles stimulate an immune response in the mammal.

5,607,678

MILD SHOWER GEL COMPOSITION COMPRISING UNIQUE THICKENER SYSTEM WHICH IMPARTS IMPROVED LATHERING PROPERTIES AND MODIFIED RINSE FEEL

Christine J. Moore; Everett J. Inman, both of Cincinnati; Timothy J. Welch, West Chester, and Charles K. Schell, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 24, 1994, Ser. No. 295,124

Int. Cl.[6] A61K *7/98;7/00*

U.S. Cl. 424—401 **2 Claims**

1. A mild liquid personal cleansing composition comprising:

	Parts, by weight
Cocamidopropyl Betaine	4–6
Sodium Laureth Sulfate	5–7
Sodium Lauroyl Sarcosinate	0.3–0.7
Polyquaternium 10	0.05–0.2
C12/14 Fatty Alcohol	0.25–0.75
Zinc Stearate	1–2
Glycol Distearate	0.2–0.4
Sodium Lauryl Sulfate	0.4–0.6
Cocamidopropyl Betaine	0.1–0.3
Lauramide DEA	0.3–0.6
Sodium Sulfate	0.05–1
Citric Acid	0.05–0.2
Fragrance	0.2–1.0
Water	Q.S.
Viscosity (cps)	5,000–11,000

5,607,679

LECTINS FOR TREATMENT OF SKIN DISEASES

Jonathan M. Rhodes, West Kirby, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB93/01919, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06462, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 10, 1993, Ser. No. 403,700

Claims priority, application United Kingdom, Sep. 19, 1992, 9219905

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **5 Claims**

1. A method of treatment of a skin disease caused by or associated with hyperproliferation of keratinocytes, or hyperkeratosis, the method comprising administering to a patient suffering from a said disease an effective amount of a lectin which is capable of binding a sialylated TF antigen.

5,607,680

MAKEUP REMOVER/SKIN CLEANSER COMPOSITIONS COMPRISING QUATERNARY PHOSPHATES AND PEG DIESTERS

Jean P. Brissonnet, Vouneuil sur Vienne, and Véronique Burnier, Chatellerault, both of France, assignors to La Roche Posay Laboratoire Pharmaceutique, La Roche Posay, France

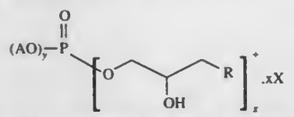
Filed Apr. 27, 1995, Ser. No. 429,637

Claims priority, application France, Apr. 27, 1994, 94 05087

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **21 Claims**

1. A makeup remover/skin cleanser cosmetic composition including a cosmetically acceptable vehicle comprising a fatty phase and an aqueous phase, and further comprising from 1% to 5% by weight of (a) a polyethylene glycol diester selected from the group consisting of polyethylene glycol distearate, polyethylene glycol dipalmitate, polyethylene glycol dioleate and polyethylene glycol dibehenate and from 0.5% to 5% by weight of (b) a quaternary phosphate of formula (I):



(I)

in which R is a cyclic, acyclic, aliphatic, or aromatic tertiary amine having at least 6 carbon atoms, X is an anion, A is an alkali metal, and x and y are two integers such that (x+y)=3, with the proviso that x cannot be zero.

5,607,681

ANTI-MICROBIAL COMPOSITIONS

Edward Galley; Dene C. Godfrey; Walter G. Guthrie; Darren M. Hodgkinson, and Helen L. Linnington, all of Nottinghamshire, England, assignors to The Boots Company PLC, Notts, England

PCT No. PCT/EP91/00208, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/11105, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 30, 1991, Ser. No. 916,137

Claims priority, application United Kingdom, Feb. 3, 1990, 9002422; Nov. 10, 1990, 9024496

Int. Cl.[6] A01N *25/00*

U.S. Cl. 424—405 **52 Claims**

1. A composition which comprises iodide anions and thiocyanate anions in a weight:weight ratio within the range 0.1:1 to 50:1 and having a combined anion weight concentration of at least 5 mg/kg, D-glucose in a weight concentration of at least 0.2 g/kg, and either:

a) at least 150 U/kg glucose oxidase; or

b) at least 25 U/kg glucose oxidase and at least one antioxidant.

5,607,682

COCKROACH BAIT FEEDING STIMULI

James Wolfe, Pleasanton, Calif.; Don Leslewicz, Edison; Yashpal Mehra, Oldbridge, both of N.J., and Joseph Mares, Valdosta, Ga., assignors to The Clorox Company, Del.

Continuation of Ser. No. 55,410, Apr. 29, 1993, abandoned, which is a continuation of Ser. No. 765,337, Sep. 25, 1991, abandoned. This application Sep. 12, 1994, Ser. No. 304,627

Int. Cl.[6] A01N *25/08*

U.S. Cl. 424—405 **5 Claims**

1. A method of combatting cockroaches comprising application in the vicinity of their habitat a cockroach bait composition comprising an insecticidally effective amount of a substituted amidino hydrazone or fatty acid salt thereof and an insect bait feeding stimulant composition comprising on a weight basis:

from about 5% to about 50% of at least one animal protein;

from about 5% to about 50% of a vegetable protein;

from about 15% to about 65% of a grain food;

from about 0% to about 30% of a carbohydrate;

from about 0% to about 40% of a lipid; and

from about 0% to about 2.0% of an antimicrobial agent, an antioxidant or mixtures thereof.

5,607,683

ANTIMICROBIAL COMPOSITIONS USEFUL FOR MEDICAL APPLICATIONS

Christopher C. Capelli, 4500 7th St., Kenosha, Wis. 53142

Continuation of Ser. No. 268,616, Jul. 1, 1994, which is a continuation-in-part of Ser. No. 82,168, Jun. 28, 1993, Pat. No. 5,326,567, which is a continuation of Ser. No. 683,436, Apr. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 483,815

Int. Cl.[6] A01N *25/00;59/08;* **A61L** *15/16;* **A61K** *33/14*

U.S. Cl. 424—405 **16 Claims**

1. An antimicrobial composition consisting essentially of

(a) a stabilizing acyclic polyether polymer;

(b) silver ion; and

(c) a stabilizing anion, selected from the group consisting of chloride, bromide, iodide and thiocyanate, wherein the ratio of equivalents of said anion to equivalents of said silver ion is greater than 4 to 1, when said anion is chloride; is greater than 2.1 to 1, when said anion is bromide; and is greater than 1.1 to 1, when said anion is iodide; is greater than 3.5 to 1 when said anion is thiocyanate; and

wherein said acyclic polyether polymer is selected from the group consisting of polyethylene glycol block copolymers and polyethyleneglycol mono (nonylphenyl) ether; and

wherein said antimicrobial composition has long-term photostability of greater than 72 hours in direct sunlight.

5,607,684

MANUFACTURE OF BAIT WITH HOT MELT BINDER

Chel W. Lew, San Antonio, Tex., and Kelly S. Johns, Hahira, Ga., assignors to Micro Flo Company, Mulberry, Fla.

Continuation-in-part of Ser. No. 784,506, Oct. 31, 1991, Pat. No. 5,484,587, Ser. No. 189,355, Jan. 31, 1994, Pat. No. 5,571,522, and Ser. No. 194,358, Feb. 8, 1994. This application Jun. 5, 1995, Ser. No. 468,237

Int. Cl.[6] A01N *25/00*

U.S. Cl. 424—405 **18 Claims**

1. A method for making baits useful for controlling insect populations, said method comprising the steps of:

forming droplets of a homogeneous, substantially water-free mixture comprising:

(a) 0.01–99 wt % of a feeding stimulant in the form of a finely divided particulate or liquid;

(b) 0.01–99 wt % of an insecticide; and (c) a molten, polymeric binder composition that is solid at 25° C. and exhibits a melting point within the range from about 35° C. to about 65° C. by passing said mixture through holes to form a desired particle size; and

making solid bait particles from said droplets by cooling said droplets to a temperature below the melting point of said mixture.

5,607,685

PROTRACTED-RELEASE ADMINSTRATION FORMS CONTAINING CLINDAMYCIN PALMITATE

Monika Cimbollek, Mannheim, and Berthold Nies, Fränkisch-Crumbach, both of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Feb. 8, 1995, Ser. No. 385,428

Claims priority, application Germany, Feb. 9, 1994, 44 04 018.0

Int. Cl.[6] A61K *31/40*

U.S. Cl. 424—422 9 Claims

1. A pharmaceutical preparation having a protracted release of the antibiotic active compound clindamycin in blood or serum in the form of a shaped implant, comprising an active compound carrier impregnated with clindamycin palmitate.

5,607,686

POLYMERIC COMPOSITION

Nagabhushanam Totakura, North Haven, Conn., and Shalaby W. Shalaby, Anderson, S.C., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 22, 1994, Ser. No. 343,389

Int. Cl.[6] A61L *25/00;* A61K *47/36;47/34*

U.S. Cl. 424—426 21 Claims

1. A liquid polymeric composition comprising a hydrophobic bioabsorbable polymer admixed with a hydrophilic liquid polymer wherein the polymeric composition undergoes macroscopic phase separation on contact with an aqueous environment.

5,607,687

POLYMER BLENDS CONTAINING ABSORBABLE POLYOXAESTERS

Rao S. Bezwada, Whitehouse Station, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 554,011, Nov. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 399,308, Mar. 6, 1995, Pat. No. 5,464,929. This application Mar. 5, 1996, Ser. No. 611,119

Int. Cl.[6] A61F *2/00*

U.S. Cl. 424—426 22 Claims

1. A polymer blend comprising an aliphatic polyoxaesters having a first divalent repeating unit of formula I:

$$[O—C(O)—C(R_1)(R_2)—O—(R_3)—O—C(R_1)(R_2)—C(O)—] \quad I$$

and a second repeating unit selected from the group of formulas consisting of:

$$[—O—R_4—]A, \quad II$$

$$[—O—R_5—C(O)—]_B, \text{ and} \quad III$$

$$([—O—R_5C(O)]_F—O—)_LG \quad XI$$

and combinations thereof, wherein R_1 and R_2 are independently hydrogen or an alkyl group containing 1 to 8 carbon atoms; R_3 is an alkylene unit containing from 2 to 12 carbon atoms or is an oxyalkylene group of the following formula:

$$—[(CH_2)_C—O—]_D—(CH_2)_E— \quad IV$$

wherein C is an integer in the range of from 2 to about 5, D is an integer in the range of from about 0 to about 2,000, and E is an integer in the range of from about 2 to about 5, except when D is zero, in which case E will be an integer from 2 to 12; R_4 is an alkylene unit containing from 2 to 8 carbon atoms; A is an integer in the range of from 1 to 2,000; R_5 is selected from the group consisting of —C(R_6)—, —(R_7)—, —$(CH_2)_3$—O—, —CH_2—CH_2—O—CH_2—, —CR_8H—CH_2—, —$(CH_2)_5$—, —$(CH_2)_F$—O—C(O)— and —$(CH_2)_F$C(O)—CH_2—; R_6 and R_7 are independently hydrogen or an alkyl containing from 1 to 8 carbon atoms; R_8 is hydrogen or methyl; F is an integer in the range of from 2 to 6; B is an integer in the range of from 1 to n such that the number average molecular weight of formula III is less than about 200,000; P is an integer in the range of from 1 to m such that the number average molecular weight of formula XI is less than about 1,000,000; G represents the residue minus from 1 to L hydrogen atoms from the hydroxyl groups of an alcohol previously containing from 1 to about 200 hydroxyl groups; and L is an integer from about 1 to about 200; and

a second polymer selected from the group consisting of homopolymer and copolymer of lactone type polymers with the repeating units described by formulas III and XI, aliphatic polyurethanes, polyether polyurethanes, polyester polyurethanes, polyethylene copolymers, polyamides, polyvinyl alcohols, poly(ethylene oxide), polypropylene oxide, polyethylene glycol, polypropylene glycol, polytetramethylene oxide, polyvinyl pyrrolidone, polyacrylamide, poly(hydroxy ethyl acrylate), poly(hydroxyethyl methacrylate) and combinations thereof.

5,607,688

CONTACT LENS OF HYDROPHILIC GELS WITH INHIBITOR AND SWELLING AGENT

Jitka Cejkova, 102 11 Praha 10, V Novem Hostivati 21, and Jiri Vacik, 140 00 Praha 4, Mechanicka 18/2560, both of Czechoslovakia

Continuation of Ser. No. 34,177, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 588,360, Sep. 26, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,473

Claims priority, application Czech Rep., Sep. 26, 1989, 5464-89

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—429 1 Claim

1. A contact lens consisting essentially of:

a hydrophilic gel selected from the group consisting of cross-linked polymers of 2-hydroxyethyl methacrylate and cross-linked copolymers of 2-hydroxyethyl methacrylate, the cross-linked copolymers of 2-hydroxyethyl methacrylate being selected from the group consisting of cross-linked copolymers of 2 -hydroxyethyl methacrylate with vinylpyrrolidone and methacrylic acid, cross-linked copolymers of 2-hydroxyethyl methacrylate with methyl methacrylate, cross-linked copolymers of 2-hydroxyethyl methacrylate with methacrylic acid, and cross-linked co-polymers of 2-hydroxyethyl methacrylate with N-vinylpyrrolidone;

about 20 to 95 percent by weight of a swelling agent in said gel, when said gel is in an equilibrium swollen state, said agent being a buffer having a pH of 6.5 to 7.5;

0.1 to 20 mg of an inhibitor of endoproteases and exoproteases selected from the group consisting of elastatinal, aprotinin, and soyabean inhibitor of trypsin, per milliliter of said swelling agent;

about 0.2 to 1 percent by weight of an antibiotic in said gel, the antibiotic sensitive to microbes and selected from the group consisting of chloroamphenicol, meomycin, bacitracin, and tetracycline; and

at least one of an active ingredient selected from the group consisting of a steroidal antiphlogistic in an amount of about 0.05 to 1.5 percent by weight in said gel and a non-steroidal antiphlogistic in an amount of about 0.05 to 5 percent by weight in said gel.

5,607,689

LATEX ELEMENT DESIGNED TO ACHIEVE GUIDED TISSUE REGENERATION IN PERIODONTAL DENTAL THERAPY

Luigi Checchi, Bologna, Italy, assignor to I Sugheri s.r.l., Bologna, Italy

Continuation of Ser. No. 199,820, Feb. 22, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 582,014

Claims priority, application Italy, Feb. 22, 1993, BO93A0059

Int. Cl.[6] A61C *5/00;5/14*

U.S. Cl. 424—435 10 Claims

1. A method for achieving tissue regeneration in periodontal dental therapy, comprising the steps of:

inserting a membrane made only from a non-resorbable, biologically acceptable, non-porous elastomer latex material having at least one hole with a diameter smaller than that of a tooth, over said tooth such that the tooth extends through said hole and said membrane entirely surrounds the tooth by 360°;

inserting ends of said membrane under the gingiva so as to form an insurmountable barrier to the passage of microorganisms present in the oral cavity; and

leaving said membrane under the gingiva and around the tooth for a time sufficient for healing to occur.

5,607,690

EXTERNAL ANTI-INFLAMMATORY AND ANALGESIC PLASTER PREPARATION

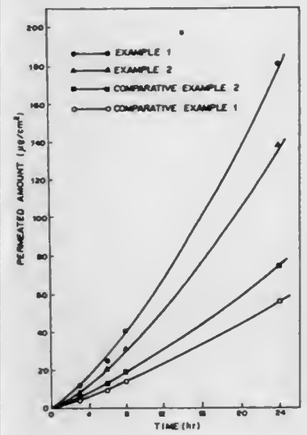
Mitsuji Akazawa, Kagawa, Japan, assignor to Teikoku Seiyaku Co., Ltd., Kagawa, Japan, and Altergon S.A., Lugano, Switzerland

Continuation of Ser. No. 226,875, Apr. 13, 1994, abandoned. This application Dec. 27, 1995, Ser. No. 579,469

Claims priority, application Japan, Apr. 23, 1993, 5-119246

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—443 4 Claims



1. An external anti-inflammatory and analgesic plaster preparation comprising a salt of diclofenac, 2[(2,6-dichlorophenyl)amino]benzene-acetic acid and a cyclic organic base as an active ingredient, said cyclic organic base comprising hydroxyethylpyrrolidine or hydroxyethylpiperidine, a pH adjuster and optionally, pharmaceutically acceptable thickening agents, humectants, fillers, preservatives and cross-linking agents, wherein a pH value of said preparation is adjusted to a range of 7.3 to 9.0.

5,607,691

COMPOSITIONS AND METHODS FOR ENHANCED DRUG DELIVERY

Ron L. Hale, Woodside; Amy Lu, Los Altos; Dennis Solas, San Francisco; Harold E. Selick, Belmont; Kevin R. Oldenburg, Fremont, and Alejandro C. Zaffaroni, Atherton, all of Calif., assignors to Affymax Technologies N.V., Middlesex, England

Continuation of Ser. No. 164,293, Dec. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 77,296, Jun. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 898,219, Jun. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 9,463, Jan. 27, 1993, abandoned. This application May 24, 1995, Ser. No. 449,188

Int. Cl.[6] A61K *9/70;31/00*

U.S. Cl. 424—449 5 Claims

1. An iontophoretic drug delivery system for administering a pharmaceutical agent to a patient comprising:

(a) a pharmaceutical agent-chemical modifier complex comprising:

a pharmaceutical agent, suitable for transdermal transport at therapeutically effective doses of less than 50 milligrams per day, having a derivatizable chemical functionality; and

a charged, naturally-occurring chemical modifier, conjugated to the agent's derivatizable chemical functionality by a covalent, physiologically cleavable bond, wherein said chemical modifier is selected from the group consisting of taurine, betaine, L carnitine, choline, norcholine, lysine, N-methylated amino acids, trigonelline, stachydrine, betonicine, cytochrome c, squalamine, chonemorphine, and conessine;

where said pharmaceutical agent-chemical modifier complex has a charge-to-mass ratio of at least one charge per 1000 daltons, and

wherein upon iontophoretic delivery of said composition and cleavage of said covalent bond, said chemical modifier is present at a non-toxic level and said pharmaceutical agent is delivered to said subject at said therapeutically effective dose; and

(b) a means for iontophoretically delivering said composition at a selected skin site whereby said chemical modifier is cleaved from the complex by a physiological process and said pharmaceutical agent is released within the patient.

5,607,692

DEPIGMENTING COMPOSITION FOR THE SIMULTANEOUS TREATMENT OF THE SURFACE LAYERS AND DEEP LAYERS OF THE SKIN, AND USE THEREOF

Alain Ribier; Jean-Thierry Simonnet; Chantal Fanchon, all of Paris; Laurence Arnaud-Sebillotte, Cretell, and Evelyne Segot, Nogent Sur Marne, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 30, 1994, Ser. No. 366,739

Claims priority, application France, Dec. 30, 1993, 93 15870

Int. Cl.[6] A61K *9/127;7/00*

U.S. Cl. 424—450 15 Claims

1. A depigmenting or anti-pigmenting composition for simultaneous treatment of the layers of the stratum corneum and deep layers of the skin, comprising a dispersion mixture of:

i) a first dispersion of lipid vesicles which are capable of penetrating into said deep layers of the skin and which contain at least one active agent selected from the group consisting of anti-pigmenting agents and depigmenting, agents, for treating said deep layers; and

ii) a second dispersion of lipid vesicles which are capable of penetrating into said layers of the stratum corneum of the skin and which contain at least one active agent selected from the group consisting of keratolytic agents, moisturizing agents and protective agents, for treating said layers of the stratum corneum,

and wherein said vesicles of said first dispersion ensure a distribution of N-(1-oxyl-2,2,6,6-tetramethyl-4-piperidyl)-N-

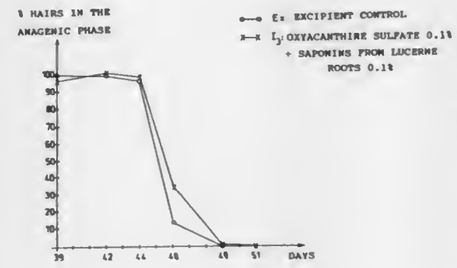
dimethyl-N-hydroxyethylammonium iodide (ASL) in the stratum corneum $>1\times10^{-7}$ cm^2/s and in that said vesicles of said second dispersion ensure a distribution of ASL in the stratum corneum $<1\times10^{-7}$ cm^2/s.

5,607,693

COSMETIC OR PHARMACEUTICAL COMPOSITION, ESPECIALLY DERMATOLOGICAL COMPOSITION, CONTAINING OXYACANTHINE, INTENDED IN PARTICULAR FOR STIMULATING HAIR GROWTH OR RETARDING HAIR LOSS

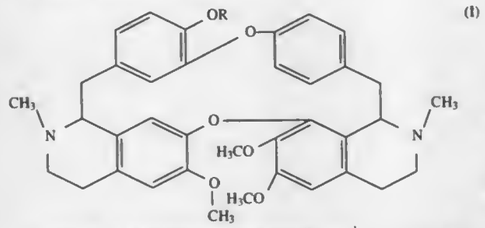
Frédéric Bonte, and Alain Meybeck, both of Courbevoie, France, assignors to LVMH Recherche, Colombex Cedex, France

Continuation of Ser. No. 119,051, Sep. 13, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,303
Claims priority, application France, Mar. 14, 1991, 91 03120
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 52 Claims



1. A method of promoting hair growth, for delaying hair loss, and for combating pruritus associated with an area of the body selected from the group consisting of hair and scalp, said method comprising the topical application to said hair and scalp in an amount effective for achieving said desired effect, of an active ingredient consisting essentially of at least one oxyacanthine component selected from the group consisting of:

a) an oxyacanthine of formula (I) below:



(I)

wherein R is hydrogen (oxyacanthine), a C_1–C_{12} HYDROCARBON chain, or a C_2–C_{12} acyl radical, said hydrocarbon chain being selected from the group consisting of a saturated radical, an unsaturated radical, a linear radical, a branched radical, and a cyclic radical, said acyl radical being selected from the group consisting of a saturated radical, an unsaturated radical, a linear radical, a branched radical, and a cyclic radical, and

b) an acid addition salt of said oxyacanthine of formula (I) defined under a),

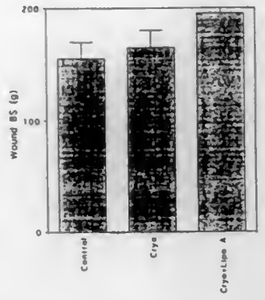
said oxyacanthine being present in a concentration of at least 0.001% by weight with respect to the total weight of said composition.

5,607,694

BIOLOGIC BIOADHESIVE COMPOSITIONS CONTAINING FIBRIN GLUE AND LIPOSOMES, METHODS OF PREPARATION AND USE

Gerard Marx, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 198,158, Feb. 17, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,345
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 43 Claims



1. A method for producing a liposome-containing fibrin glue bioadhesive sealant, comprising:

a) preparing:

i) virus inactivated fibrinogen;

ii) virus inactivated thrombin; and

iii) liposomes containing one or more medicaments entrapped therein and deliverable within a wound site or surgical or nonsurgical opening;

b) mixing said fibrinogen with said thrombin and said liposomes of step a) with calcium to form a mixture, wherein said fibrinogen is present in said mixture at a concentration of about 10 to 90 mg/mL; said thrombin is present in said mixture at a concentration of about 1 to 200 U/mL; and said liposomes are present in said mixture at a concentration of about 1% to 20%, by volume; and said calcium is present in said mixture at a concentration of about 1 to 30 mM, and further wherein said thrombin catalyzes formation of a fibrin glue clot in which said liposomes are entrapped, said entrapped liposomes releasing their biologically active contents within the site of application of said fibrin glue clot.

5,607,695

PROCESS FOR THE MANUFACTURE OF POROUS CELLULOSE MATRICES

Bo R. Ek, Stockholm; Kjell G. Eriksson, Spånga; Per Gustaf H. Nyqvist, Tullinge, and Gert A. Ragnarsson, Bro, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

PCT No. PCT/SE91/00396, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/18590, PCT Pub. Date Dec. 12, 1991
Continuation of Ser. No. 952,831, Nov. 30, 1992, abandoned. This PCT application Jun. 5, 1991, Ser. No. 364,080
Claims priority, application Sweden, Jun. 6, 1990, 9002017
Int. Cl.[6] A61K *9/10;9/16;9/22;47/38*
U.S. Cl. 424—468 30 Claims

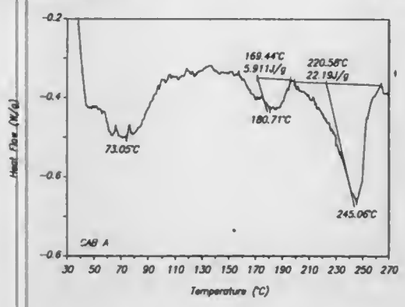
1. Process for the manufacture of porous cellulose matrices characterized by that hydrolyzed cellulose that has been degraded by hydrolysis to a level that gives a sedimentation volume of 150–500 ml/10 g is mechanically treated by spheronization in a wet stage into spherical particles having a capacity of sorbing 1.5–9 times of their own weight of water and a tap bulk density of 0.1–0.7 g/ml in the dry state.

5,607,696

OSMOTIC MEMBRANE AND DELIVERY DEVICE

David L. Rivera, San Jose; Sonya Merrill, Redwood City; James B. Eckenhoff; Jeremy C. Wright, both of Los Altos, and James L. Osborne, Mountain View, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 387,967, Feb. 10, 1995. This application May 16, 1995, Ser. No. 441,888
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—473 16 Claims



1. An improved osmotic delivery device, wherein the device comprises a semipermeable wall comprising cellulose acetate butyrate and surrounding an internal compartment containing a beneficial agent or medicament formulation and a fluid-activated expandable driving member, and exit means in the semipermeable wall; and wherein the improvement comprises selecting and using as the cellulose acetate butyrate component of the semipermeable wall cellulose acetate butyrate having an acceptable differential scanning calorimetry ("DSC") profile, which, if analyzed on a Du Pont Thermal Analyzer 2100 set to equilibrate the sample at a temperature of 30° C., and heat the sample to 270° C. at 20° C. per minute, would exhibit a DSC profile wherein the profile has a primary minimum temperature peak above 228° C. and an area under the secondary minimum temperature peak which is equal to or less than about 30% of the total combined areas of the primary and secondary DSC peaks wherein the use of such selected cellulose acetate butyrate produces a device exhibiting minimum delay to reach a steady-state pumping rate.

5,607,697

TASTE MASKING MICROPARTICLES FOR ORAL DOSAGE FORMS

Todd G. Alkire, Crystal; Ronald A. Sanftleben, and Steven S. Schuehle, both of Maple Grove, all of Minn., assignors to Cima Labs, Incorporated, Eden Prairie, Minn.

Filed Jun. 7, 1995, Ser. No. 478,419
Int. Cl.[6] A61K *9/18;9/20;9/46*
U.S. Cl. 424—495 17 Claims

1. A solid pharmaceutical dosage form adapted for direct oral administration, in solid form, to a mammal comprising:

a plurality of microparticles, each said microparticle having a core including at least one pharmaceutical ingredient and a compound which is sweet in taste and which has a negative heat of solution, said compound which is sweet in taste and which has a negative heat of solution being selected from the group consisting of mannitol, sorbitol, a mixture of an artificial sweetener and menthol, a mixture of a sugar and menthol, and methyl salicylate, said compound being present in said microparticles in an amount of between greater than 0 and about 80% by weight of the resulting microparticle, said core being coated with a coating material, which will retard dissolution of said pharmaceutical ingredient in the mouth, as well as the objectionable taste of said pharmaceutical ingredient, surrounding at least a portion of said core; said solid dosage form being sized and shaped and having a composition and hardness which are adapted for direct oral administration, said dosage form being disintegratable in the mouth so as to release said microparticles.

5,607,698

METHOD OF PRESERVING OPHTHALMIC SOLUTION AND COMPOSITIONS THEREFOR

Stephen M. Martin, Roswell, and Fu-Pao Tsao, Lawrenceville, both of Ga., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 99,986, Jul. 29, 1993, abandoned, which is a continuation of Ser. No. 968,224, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 733,485, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 376,083, Jul. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,163, Aug. 4, 1988, abandoned. This application Nov. 14, 1994, Ser. No. 339,447
Int. Cl.[6] A61K *33/40*
U.S. Cl. 424—613 28 Claims

1. A method of preserving an eye wetting solution, an eye lubrication solution or an ophthalmic drug formulation comprising an ophthalmic active agent which is compatible with hydrogen peroxide, said method comprising the addition to said ophthalmic solution of

(a) a source of hydrogen peroxide in sufficient amount to provide hydrogen peroxide in a trace amount from about 0.001% to about 0.01% by weight; and of

(b) one or more ocularly compatible hydrogen peroxide stabilizers in a sufficient amount to stabilize the resultant hydrogen peroxide;

said resulting peroxide preserved eye wetting solution, eye lubrication solution or ophthalmic drug formulation to be directly instilled in the eye of a mammal, and having an ocularly compatible pH of between bout 5.5 and about 8.0.

5,607,699

NON-AQUEOUS EMIOLLIENT IODOPHOR FORMULATIONS

Minh Q. Hoang, Taylorsville, and Mohammad A. Khan, Sandy, both of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed May 12, 1995, Ser. No. 440,288
Int. Cl.[6] A61K *33/36;31/355*
U.S. Cl. 424—672 3 Claims

1. An emollient, non-aqueous iodophor formulation comprising:

(a) a non-ionic pluronic surfactant containing 50–70% ethylene oxide in amount from about 10 to 20 weight percent of the total composition;

(b) a nonylphenoxypolyethyleneoxy ethanol in an amount from about 10 to about 20 weight percent of the total composition;

(c) a coconut oil diethanolamine condensate in an amount from about 0.5 to about 2.0 weight percent of the total composition;

(d) a polyoxyethylene 4 lauryl ether in an amount from about 5 to about 15 weight percent of the total composition;

(e) an ethoxylated lanolin in an amount from about 1 to about 5 weight percent of the total composition;

(f) an alkylaryl sulfonate in an amount from about 1 to about 5 weight percent of the total composition;

(g) a mineral oil in an amount from about 1 to about 5 weight percent of the total composition;

(h) iodine crystals in an amount from about 0.5 to about 2.5 weight percent of the total composition;

(i) sodium iodide in an amount from about 0.5 to about 2.0 weight percent of the total composition;

(j) aloe vera in an amount from about 0.1 to about 2.0 weight percent of the total composition; and

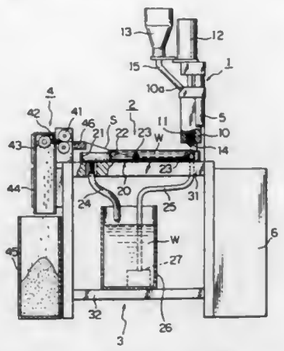
(k) propylene glycol in an amount from about 18.0 to about 70.0 weight percent of the total composition.

5,607,700

SYNTHETIC RESIN PELLETIZING MACHINE

Akiyoshi Kando; Hiroshi Yoshida, and Kazuki Kuse, all of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Apr. 15, 1994, Ser. No. 228,263
Claims priority, application Japan, Apr. 15, 1993, 5-088754
Int. Cl.[6] B29C *47/10;47/38;47/78*
U.S. Cl. 425—71 **10 Claims**



1. In a synthetic resin pelletizing machine having a molding portion in which a raw material including a synthetic resin, a pigment and various additives is melted and kneaded and then shaped by extrusion into a strand, and means for cooling the extruded strand, the improvements comprising:

an extrusion cylinder containing an extrusion screw and having a die bead at a lower end, said cylinder, screw and die head being on a longitudinal axis and being mounted relative to a horizontal plane, with the longitudinal axis of the cylinder, screw and die head forming an installation angle θ which is in the range of 0°<θ<90° to the horizontal plane;

a raw material feed passage extending upwardly from said extrusion cylinder with an axis of the passage at an angle in a range of 0° to 45° relative to the longitudinal axis of said extrusion cylinder, said passage transferring a flow of material therethrough to said cylinder; and

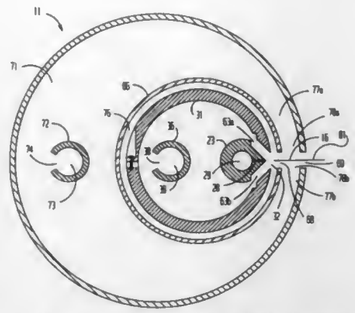
said means for cooling being disposed below said die head for cooling the strand, said means for cooling having a double bath construction composed of a first cooling bath of water and a second cooling bath of water being disposed in said first cooling bath, the second cooling bath of water having a container with a base and four side walls and discharging water from the second cooling bath over edges of the side walls into the first cooling bath, said second cooling bath receiving the strand directly from the die head and having rollers for guiding the strand passing therein, and means including a pump for circulating water discharged from the first cooling bath back to the second cooling bath.

5,607,701

TUBULAR MELTBLOWING DIE

Martin A. Allen, and John T. Fetcko, both of Dawsonville, Ga., assignors to J&M Laboratories, Inc., Dawsonville, Ga.

Filed Feb. 16, 1995, Ser. No. 389,902
Int. Cl.[6] B29C *47/12*
U.S. Cl. 425—72.2 **8 Claims**



1. A meltblowing die, comprising:

a) an outer tube having an elongate slot formed therein, said slot defined by elongate converging wall sections;

b) an inner tube mounted in the outer tube and having a triangular nosepiece defined by converging wall sections which terminate in an apex, and a plurality of orifices arranged in a row along the apex and being in registry with the slot, the wall sections of the nosepiece in combination with the wall sections of the slot defining converging flow passages, one passage on each side of the orifice row;

c) means for delivering pressurized molten polymer into the inner tube whereby the polymer is extruded through the orifices and discharged therefrom as filaments; and

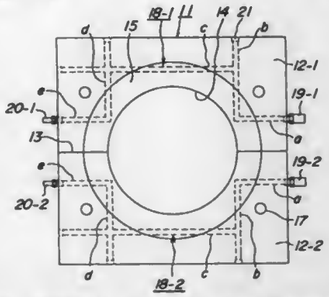
d) means for delivering pressurized and heated air to the outer tube whereby air flows into the converging air passages and is discharged as converging air streams onto opposite sides of the extruded filaments, the contact angle of the streams on the filaments being such to impart a drag force on the filaments to draw down the filaments and to form a filament and air stream which discharges through the slot.

5,607,702

SEGMENT WITH HEATING AND COOLING DEVICE AND MOLD USING THE SEGMENTS

Kojl Hayakawa, Handa; Isao Nakajima, and Yusuke Utsumi, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jun. 6, 1995, Ser. No. 472,689
Claims priority, application Japan, Dec. 28, 1994, 6-327679
Int. Cl.[6] B29C *45/73*
U.S. Cl. 425—121 **9 Claims**



1. A mold segment for molding a composite insulator having a core and a housing formed around the core, the housing having a trunk portion and a plurality of shed portions, said mold segment comprising:

generally planar first and second half-mold segments each comprising (i) an upper surface, at least a portion of which defines a lower plane of a shed portion of the composite insulator, (ii) a lower surface, at least a portion of which defines an upper plane of the shed portion of the composite insulator, and (iii) an inside surface having first and second linear end portions defining a partition plane between said first and second half-mold segments, and a semicircular portion between the linear end portions defining a through-hole for accommodating the core and trunk portion of the composite insulator; and

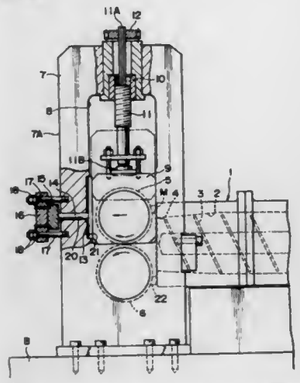
heat transfer means arranged in each half-mold segment and extending from a first outer end of said mold segment adjacent said first linear end portion to a second outer end of said mold segment adjacent said second linear end portion, with a substantial portion of said heat transfer means being positioned between the lower and upper plane forming surfaces of said upper and lower surfaces.

5,607,703

ROLLER HEAD EXTRUDER UNIT

Kenji Sakai; Yoshihiro Hamada; Katsunobu Hagiwara, all of Kobe; Toshio Ujihara, Takasago; Toshio Yanagihara, Takasago, and Hiromi Nakano, Takasago, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 6, 1994, Ser. No. 354,127
Claims priority, application Japan, Dec. 6, 1993, 5-305332
Int. Cl.[6] B29C *47/92*
U.S. Cl. 425—145 **7 Claims**



1. A roller head extruder for forming sheets of extruded material comprising:

an extruder unit having an exit opening at one end through which material is extruded;

a support frame mounted securely with respect to said extruder unit;

a pair of upper and lower rollers positioned forward of said exit opening with respect to an extrusion direction, to receive extruded material therebetween, and supported for rotation by said support frame, wherein at least one of said upper and lower rollers is supported for rotation in a first roller housing, said first roller housing being supported by said support frame for limited movement in a direction perpendicular to an axis of said upper and lower rollers;

a pair of sideguides mounted on either side of a space between said exit opening and said upper and lower rollers to thereby define together with said upper and lower rollers and said exit opening a bank into which said material is extruded; and

detection means for detecting a force by which said first roller housing supported for limited movement in a direction perpendicular to the axis of said upper and lower rollers is pushed in a direction away from said extruder unit as a result of an accumulation of material extruded from said extruder unit in said bank;

wherein said detection means is located on said support frame forward of said upper and lower rollers with respect to the extrusion direction and comprises a load cell and a pressure plate operatively connected to said load cell, said pressure plate pressing against a first side face of the first roller housing which is opposite to a second side face of the first roller housing which faces the extruder unit.

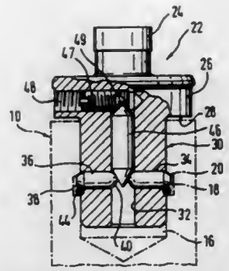
5,607,704

PRESS RAM FOR A PELLETING MACHINE

Rüdiger Schlierenkämper, and Jürgen Schikowski, both of Schwarzenbek, Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Germany

Filed May 26, 1995, Ser. No. 451,558
Claims priority, application Germany, Jun. 3, 1994, 9409108 U
Int. Cl.[6] B30B *11/00*
U.S. Cl. 425—183 **9 Claims**

1. A press ram for use in a pelleting machine for making tablets including a rod-shaped ram holder having at one end a head for engagement with cams and at its other end a facing end having an axial bore, a ram insert having at one end a pressing portion shaped in conformity with the profile of a tablet and at another end a cylindrical shaft which is substantially matingly received in the bore of the ram holder, with a radial shoulder of the ram insert engaging the facing end of the ram holder, and means for releasably holding the ram insert within the ram holder, the improvement of which comprises the wall of the bore of the ram holder including a groove, the ram insert including an axial bore for receiving an actuating pin at an end remote from said pressing portion, which actuating pin cooperates with at least one clamping element within a radial bore so as to urge the at least one clamping element into the groove of the ram holder when the actuating pin is moved in a direction towards the at least one clamping element.

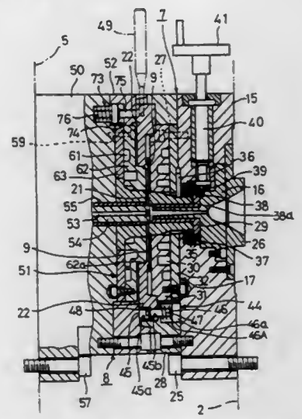


5,607,705

MOLD FOR MOLDING DISC SUBSTRATA

Ikuo Asai, Nagoya, Japan, assignor to Meiki Co., Ltd., Obbu, Japan

Filed May 11, 1995, Ser. No. 439,417
Claims priority, application Japan, May 25, 1994, 6-135046
Int. Cl.[6] B29C *45/00*
U.S. Cl. 425—190 **3 Claims**



1. A mold for molding disc substrata, comprising:

a stamper mounted on a stationary mirror block, the stationary mirror block being inserted within an inner periphery of a stationary mirror block locating ring mounted on a stationary half-mold;

an inner stamper retainer having a supporting device, the supporting device being inserted in a central portion of the stationary mirror block, the inner stamper retainer including means for holding an inner peripheral portion of the stamper;

a unitary outer peripheral stamper retainer, the outer peripheral stamper retainer including a plurality of arcuate slots, each of the slots including a wide width portion and a narrow width portion respectively, the plurality of arcuate slots including

first arcuate slots to be connected to the stationary mirror block locating ring of the stationary half-mold and second arcuate slots to be connected to a movable mirror block locating ring of a movable half-mold;

a plurality of movable holder devices coupled with the stationary half-mold, each of the holder devices including a rod with a head, the head having a rear portion inserted movably in a fluid actuating cylinder in the stationary mirror block locating ring, a front end portion of the rod having a washer, and a coil spring for pulling the rod to connect the outer peripheral stamper retainer to the stationary half-mold;

a movable mirror block of the movable half-mold having a convex portion, the convex portion being inserted in an inner periphery of the outer peripheral stamper retainer;

a movable stopper device of the movable mirror block locating ring of the movable half-mold, the movable stopper device including a stopper pin advanced by resilient force of a coil spring and retracted by actuating of fluid cylinder to prevent sudden turning of the outer peripheral stamper retainer held in the movable half-mold;

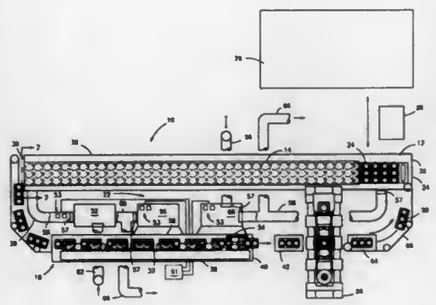
a plurality of fixed holder devices of the movable half-mold, each of the fixed holder devices including a holder bushing, the holder bushing including a head portion having a large diameter and a stem portion having a small diameter, each of the fixed holder devices being fixed to the movable mirror block locating ring to connect the outer peripheral stamper retainer to the movable half-mold.

5,607,706

PRECONDITIONING PREFORMS ON A REHEAT BLOW MOLDING SYSTEM

Ronald W. Ingram, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Canada

Filed Apr. 5, 1995, Ser. No. 416,954
Int. Cl.[6] B29C *49/64*
U.S. Cl. 425—526 **17 Claims**



1. A system for preconditioning preforms, said preforms for subsequent blow molding, comprising:

an area for receiving finished preforms;

conveying means for moving said preforms from said area and to a blow molding operation; and

means for heating said preforms for preconditioning the preforms downstream of said area and separate means for reheating said preforms to blow molding condition prior to blow molding and downstream of said preconditioning means;

wherein said means for heating is operative to precondition the temperature of said preforms prior to reheating said preforms for said subsequent blow molding and is operative to substantially equalize the temperature of said preforms, and wherein said preconditioning is defined by the heat energy contained by each preform being substantially the same and said heat energy being substantially uniformly distributed throughout each preform.

5,607,707

COMPOSITIONS

Michael A. Ford, Coleford, England; Clive Mellor, Monmouth, Wales, and Jayne L. Wakefield, Cinderford, England, assignors to SmithKline Beecham p.l.c., Brentford, England

PCT No. PCT/GB93/01937, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO94/06310, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 13, 1993, Ser. No. 403,738
Claims priority, application United Kingdom, Sep. 15, 1992, 9219524
Int. Cl.[6] A23L *1/275;2/42;* A23D *7/06;* A23B *4/14*
U.S. Cl. 426—2 **9 Claims**

1. A process for preparing a stable aqueous composition for the preparation of optically clear products for use in human or animal healthcare, said process comprising:

a) dispersing 0.1–1.0% (w/w based on the product of step e) of an antioxidant in 2–20% (w/w based on the product of step e) of an emulsifier or mixture of emulsifiers having an HLB (hydrophilic/lipophilic balance) value of between 10– 18 while heating to a temperature of approximately 40° C.;

b) dispersing 0.1 to 5.0% (w/w based on the product of step e) of one or more oil-soluble ingredients or 0.1–2.0% (w/w based on the product of step e) of one or more oil-soluble ingredients as a 20–30% (w/w based on the dispersion) dispersion in a suitable oil in the mixture in a) above while heating to between about 80°–200° C. so as to yield a transparent mixture,

c) adding optionally a further oil-soluble ingredient;

d) raising the temperature of the mixture as appropriate whilst maintaining stirring to maintain a transparent mixture, and

e) combining the mixture with water having a minimum temperature of 95° C. while continuously stirring to provide a transparent composition.

5,607,708

ENCAPSULATED VOLATILE FLAVORING MATERIALS

Mark S. Fraser, Fullerton; Kenneth C. Goodnight, Seal Beach, both of Calif., and Chel W. Lew, San Antonio, Tex., assignors to Hunt-Wesson, Inc., Fullerton, Calif.

Continuation of Ser. No. 992,267, Dec. 14, 1992, abandoned. This application Jan. 24, 1995, Ser. No. 378,874
Int. Cl.[6] A23D *7/00;* A23L *1/221;1/025*
U.S. Cl. 426—96 **24 Claims**

1. An encapsulated flavoring material comprising a single oil-insoluble, water-soluble shell surrounding; a single water-insoluble core that is liquid at a temperature of about 45° C.; and

from about 0.5 to about 15% of a volatile flavoring material dissolved or dispersed in the core, by weight, based on the total weight of the encapsulated flavoring material.

5,607,709

DISPOSABLE MICROWAVABLE FOOD CONTAINER

Jill A. Fritz, Fairport, and Darryl P. Hansen, Shortsville, both of N.Y., assignors to Tenneco Plastics Company, Evanston, Ill.

Filed Nov. 27, 1991, Ser. No. 800,159
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—106 **20 Claims**

1. A container for food or the like comprising:

a relatively thin plastic base having a horizontal flange extending around the periphery thereof;

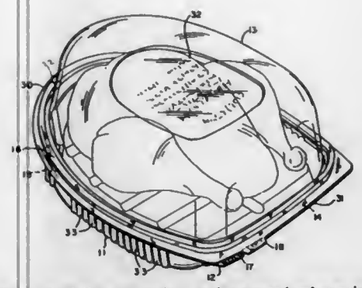
a relatively thin clear plastic lid having a horizontal flange extending around the periphery thereof and adapted for engagement with the horizontal flange of said base when said container is in a closed condition, said lid being coated with an anti-fog agent to maintain visibility therethrough even when hot food is contained within the container;

a male locking member extending around the periphery of one of said flanges, said male locking member comprising, in cross section, a horizontal linear top surface, a first substantially vertical linear member, and a second substantially vertical linear member, said first and second linear members extending upwardly to intersect said top surface and extending outwardly with respect to each other;

a mating female locking member extending around the periphery of the other flange, said female locking member comprising, in cross section, a horizontal linear top member, a first substantially vertical surface, and a second substantially vertical linear surface, said first and second linear surfaces extending upwardly to intersect said top member and extending outwardly with respect to each other;

a first stiff tab extending from the periphery of said base; and

a second stiff tab extending from the flange of said lid, said tabs being in proximity to one another and slightly displaced from one another whereby said second substantially vertical linear surface of said female locking member will be separated from said second substantially vertical linear member of said male locking member when said first and second tabs are relatively displaced.

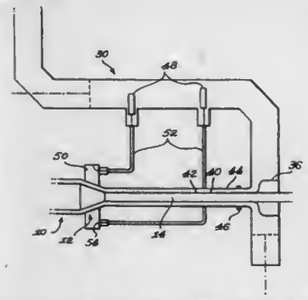


5,607,710

PROCESS AND APPARATUS FOR MAKING MEAT ANALOGS

Peter W. De Ruyter, 6865 Chemin Norwalk, Suite 806, Cote St. Luc, Quebec, Canada; Noel Almey, 1576 Avenue Ducharme, Montreal, Quebec, Canada; Josef Slanik, 40 Caribou Crescent, Kirkland, Quebec, Canada, and Wesley W. Teich, 111 Pettey La., Westport, Mass. 02790-1408

Division of Ser. No. 178,203, Jan. 6, 1994, Pat. No. 5,534,278. This application Feb. 21, 1996, Ser. No. 604,667
Int. Cl.[6] H05B *3/00;6/00;* A23J *3/00*
U.S. Cl. 426—237 **8 Claims**



3. A method of producing a food product having fibers formed therein, the method comprising the steps of

a) forming a protein containing doughmass,

b) passing said doughmass through a conduit having a decreasing cross-sectional area in the direction of doughmass flow,

c) subjecting said doughmass to microwave energy having a standing wave pattern such that more power is applied to the central part of the doughmass inside said conduit with said decreasing cross-sectional area compared to the doughmass adjacent the conduit walls,

d) thereafter passing said heated doughmass through an exit conduit having a substantially constant cross-sectional area.

5,607,711

METHOD OF CONTROLLING INSECTS AND MITES WITH PULSED ULTRAVIOLET LIGHT

Manuel C. Lagunas-Solar, Davis, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Nov. 1, 1995, Ser. No. 551,548
Int. Cl.[6] A23L *3/00*
U.S. Cl. 426—248 **9 Claims**

4. A method of controlling undesired organisms on the surface of food objects, comprising the step of irradiating an undesired organism with a plurality of ultraviolet light pulses at a wavelength wherein said ultraviolet light is absorbed by coloring chemicals on the surface of said organism and wherein said absorption of said ultraviolet light causes lethal damage to said organism by conversion of said ultraviolet light into thermal energy without alteration of the surface properties of adjacent food objects.

5,607,712

PROCESSING OF VEGETABLES WHICH ARE FROZEN BEFORE CANNING AND STERILIZING

Malcolm C. Bourne, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 262,353, Jun. 20, 1994, which is a continuation of Ser. No. 135,575, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 22,433, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 540,399, Jun. 19, 1990, abandoned, which is a continuation of Ser. No. 279,907, Dec. 5, 1988, abandoned. This application Sep. 9, 1994, Ser. No. 303,938
Int. Cl.[6] A23B *7/06;7/005;7/10*
U.S. Cl. 426—321 **26 Claims**

1. A process for improving the firmness of canned vegetables which are frozen before canning, said process comprising the steps of:

(a) blanching a vegetable in a blanching step under conditions to activate pectin methyl esterase in said vegetable, thereby to firm said vegetable, which consists essentially of blanching said vegetable at a temperature in the range of 125° to 155° F. for two to 60 minutes and then holding the vegetable without the application of heating for about zero minutes to 120 minutes,

(b) blanching said vegetable in a succeeding blanching step under conditions to inactivate all enzymes therein thereby to prevent the development of off flavors during step (d), which consists essentially of blanching the vegetable which has been processed in step (a) at a temperature ranging from about 190° to 210° F. for two to 10 minutes,

(c) treating vegetable that has been previously processed in accordance with steps (a) and (b), to produce frozen vegetable,

(d) storing the frozen vegetable,

(e) removing the frozen vegetable from storage and optionally thawing it,

(f) canning the vegetable obtained in step (e),

(g) heat sterilizing the canned vegetable.

5,607,713

PROCESS FOR TREATING FRESH MEAT WITH SACCHAROSE

Harald M. Berge, Bjerkeellen 33a, 1322 Hovih, Oslo, Norway

Continuation of Ser. No. 243,049, May 16, 1994, abandoned, which is a continuation of Ser. No. 9,917, Jan. 27, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,555
Claims priority, application Czechoslovakia, Feb. 4, 1992, PV-30392
Int. Cl.[6] A23B *4/20;* A23L *1/31;1/313*
U.S. Cl. 426—332 **12 Claims**

1. A process for treating fresh meat in order to decrease the content of polychlorinated biphenyls and remove water from the meat and thereby enhance the durability of the meat consisting essentially of contacting the meat with powdery saccharose such

that the saccharose penetrates the meat and combines with water in the meat to form an extract, and then draining the extract from the meat under conditions such that the meat so treated has a decreased content of polychlorinated biphenyls and enhanced durability upon storage.

5,607,714

METHODS FOR STABILIZING PROTEINS IN AN ACID PH ENVIRONMENT AND RELATED COMPOSITIONS

Philip Connolly, 469 E. Julliard Dr., Claremont, Calif. 91711, assignor to Philip Connolly, Lake Arrowhead, and Vitex Foods, Inc., Los Angeles, both of Calif.

Continuation of Ser. No. 902,234, Jun. 23, 1992, Pat. No. 5,409,725. This application Jan. 23, 1995, Ser. No. 384,585

The portion of the term of this patent subsequent to Jun. 23, 2012, has been disclaimed.

Int. Cl.[6] A23L *2/02*

U.S. Cl. 426—599 **22 Claims**

1. A stabile, acidic, proteinaceous composition comprising an acidifying agent and glycoprotein, wherein said glycoprotein consists essentially of galactomannan and protein, and wherein said glycoprotein is characterized as acid stabile by the absence of curd formation for at least about 7 days when stored at a pH of about 2 to about 6, in a sterile environment, and at ambient temperature.

5,607,715

FLAVORED COOKING OIL HAVING REDUCED ROOM AROMA

Christopher R. Beharry, Cincinnati, and David A. Volker, North Bend, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 20, 1995, Ser. No. 406,608

Int. Cl.[6] A23D *7/005;7/00*

U.S. Cl. 426—604 **22 Claims**

1. A flavored oil having reduced aroma when heated consisting essentially of:

a) from about 98.5% to about 99.94% of an edible fat;

b) from about 0.01% to about 1% of a flavorant having an aroma; and

c) from about 0.05 to about 0.5% of a polyoxyethylene sorbitan monoester, wherein the aroma of the flavored oil is reduced when heated.

5,607,716

USE OF HYDROCOLLOIDS FOR FORMULATING AND PROCESSING OF LOW FAT LOW WATER ACTIVITY CONFECTIONERY PRODUCTS AND PROCESS

Cheryl A. Doherty, Hummelstown, and Philip C. Ward, Palmyra, both of Pa., assignors to Hershey Foods Corporation, Hershey, Pa.

Continuation-in-part of Ser. No. 694,099, May 1, 1991, abandoned. This application Mar. 21, 1995, Ser. No. 408,693

Int. Cl.[6] A23G *3/00*

U.S. Cl. 426—660 **44 Claims**

1. A water and sugar based high solids confectionery having good flavor and texture comprising (a) at least 80% to 90% total solids, by weight wherein the carbohydrate content is at least 70% by weight of the total solids, (b) a cation containing edible material selected from the group consisting of dairy products, cocoa, fruit juice, fruit solids, edible salts of organic and inorganic acids and mixtures thereof, (c) a cationic and thermosensitive hydrocolloid being present in sufficient quantities to form a thermoreversible gel with said cation edible matter and (d) up to 7% fat by weight, said confectionery having a water activity below 0.65 and a pH from 3.0 to 8.5.

5,607,717

APPLICATOR FOR SEED TREATMENT PRODUCTS

Gary Grossweiler, and Timothy McArdle, both of Pekin, Ill., assignors to Trace Chemicals Incorporated, Pekin, Ill.

Division of Ser. No. 220,239, Mar. 30, 1994, Pat. No. 5,512,099. This application Nov. 30, 1995, Ser. No. 564,944

Int. Cl.[6] A01G *5/06;* **B65B** *39/00;* **A01C** *1/06*

U.S. Cl. 427—4 **3 Claims**



1. A method of applying seed treatment products to seeds in a pile while minimizing user exposure to the products, comprising the steps of:

inserting one end of an elongated tube beneath the surface of the pile with the other end of the tube extending above the pile;

opening a seed treatment product canister to expose an open end of the canister;

inserting said opened canister into said other end of the tube such that the seed treatment products flow from the open end of the canister into and through the tube; and

stirring the seed pile with the tube to distribute the seed treatment product throughout the pile.

5,607,718

POLISHING METHOD AND POLISHING APPARATUS

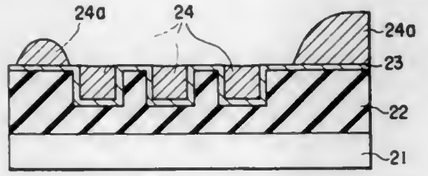
Yasutaka Sasaki; Mie Matsuo, both of Yokohama; Rempei Nakata, Kawasaki; Junichi Wada, Yokohama; Nobuo Hayasaka, Yokosuka, all of Japan; Hiroyuki Yano, Wappingers Falls, N.Y., and Haruo Okano, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 217,642, Mar. 25, 1994, abandoned. This application Sep. 2, 1994, Ser. No. 300,127

Claims priority, application Japan, Mar. 26, 1993, 5-068906; Sep. 17, 1993, 5-231283; Sep. 17, 1993, 5-231284; Nov. 16, 1993, 5-286988; Mar. 15, 1994, 6-044160; Mar. 15, 1994, 6-044316

Int. Cl.[6] B05D *5/12;* **C03C** *15/00;* **H01L** *21/465*

U.S. Cl. 427—97 **29 Claims**



1. A polishing method comprising the steps of:

forming a metal film to be polished on a substrate having a recessed portion in a surface thereof so as to fill at least said recessed portion; and

selectively embedding said metal film to be polished in said recessed portion by subjecting said metal film to chemical mechanical polishing using a polishing pad and a polishing agent;

wherein said polishing agent contains a solution for etching said metal film to be polished, a corrosion inhibitor of said metal film to be polished, and polishing particles; and said chemical mechanical polishing is performed while discouraging dissolution of that portion of the metal film which is not affected by mechanical action of said polishing pad, with said corrosion inhibitor,

wherein said solution has a pH of not less than 7.0, and

a polishing velocity of said metal film is greater than a polishing velocity of said substrate during said chemical mechanical polishing.

5,607,719

PROCESS FOR THE PREPARATION OF HEAT-RESISTANT COATINGS ON WIRES OR FIBRES AND A SUITABLE DEVICE FOR PERFORMING THE SAME

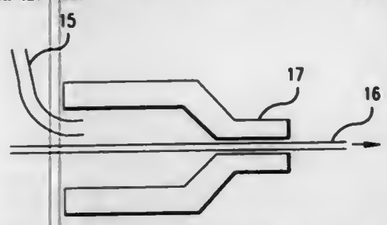
Diethard Winkler, Wuppertal; Sabine Sohnius, Düsseldorf; Guido Höveler, Monheim; Wolfgang Schülke, Breckerfeld, and Rainer Krause, Wuppertal, all of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Continuation of Ser. No. 6,955, Jan. 21, 1993, abandoned. This application Aug. 26, 1994, Ser. No. 296,987

Claims priority, application Germany, Jan. 20, 1992, 42 01 376.3

Int. Cl.[6] B05D *5/12;1/28;* **B05B** *5/14*

U.S. Cl. 427—117 **8 Claims**



1. A process for the preparation of coatings on wires or fibers by coating with liquid mixtures of polymers and polyisocyanates and then hardening, comprising forming a multi-component coating agent by mixing:

A) one or more polymers having at least two groups independently selected from carboxyl groups and amide groups, a hydroxyl number of less than 130 and a number average molecular weight of 200 to 5000, in the liquid state, and

B) one or more polyisocyanates having at least two free isocyanate groups in the molecule and a number average molecular weight of 200 to 3000, in the liquid state, continuously and immediately before application to the wire or fiber in a ratio such that 0.5 to 5.0 isocyanate groups are allotted to each carboxyl group or that 0.02 to 2.0 isocyanate groups are allotted to each amide group, wherein at least one of the components A, B may contain one or more catalysts, and

transporting said multi-component coating agent continuously to each separate wire or fiber which is in continuous motion in an amount needed for coating each said separate wire or fiber, and applying said agent onto said wires or fibers to produce a coating.

5,607,720

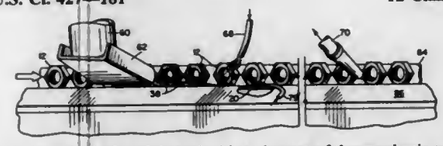
SELF LOCKING INTERNALLY THREADED FASTENER AND APPARATUS AND PROCESS FOR MAKING THE SAME

John S. Wallace, Bloomfield Village, Mich., and Mahmoud Arslanouk, Haledon, N.J., assignors to ND Industries, Inc., Troy, Mich.

Filed Aug. 3, 1994, Ser. No. 285,547

Int. Cl.[6] B05D *7/22;3/12*

U.S. Cl. 427—181 **12 Claims**



1. A method of applying a locking element of thermoplastic type material to each of a succession of internally threaded articles, each of said articles having two open ends, a threaded portion between said ends extending along a central axis and an outer surface, comprising the steps of:

conveying said threaded articles on a support in a path for treatment with the central axis of said threaded portion of each of said articles in a substantially horizontal position and their ends substantially uncovered;

directing a continuous uninterrupted stream of thermoplastic material onto and around a limited circumferential area of said threaded portions of each of said articles in an amount in excess of the amount needed to form said locking element;

removing the amount of thermoplastic material in excess of the amount required to form said locking element from the area around each threaded portion and from said threaded portion of each of said articles; and

thereafter heating said threaded portion of each of said threaded articles to a temperature above the softening point of the thermoplastic material to form a locking element that extends along less than the entire circumference of said threaded portion of each said articles.

5,607,721

HOT-MELT SILICONE PRESSURE SENSITIVE ADHESIVE WITH SILOXYLATED POLYETHER WAXES AS ADDITIVES

Katherine L. Ulman, Sanford; Randall P. Sweet, and Loren D. Durfee, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 181,508, Jan. 14, 1994, Pat. No. 5,482,988. This application May 15, 1995, Ser. No. 441,509

Int. Cl.[6] C08K *5/06;* **C08L** *83/04;* **B05D** *3/02;5/10*

U.S. Cl. 427—208.4 **3 Claims**

1. A method of coating a hot-melt silicone pressure sensitive adhesive composition onto a substrate, comprising:

(a) preparing a hot-melt silicone pressure sensitive adhesive by mixing together

(I) a silicone pressure sensitive adhesive selected from the group consisting of

a mixture of (i) a hydroxyl-functional organopolysiloxane resin comprising $R_3SiO_{1/4}$ siloxane units and $SiO_{4/2}$, wherein R is selected from a monovalent radical selected from the group consisting of hydrocarbon and halogenated hydrocarbon radicals having 1 to 20 carbon atoms and (ii) a hydroxyl-terminated diorganopolysiloxane polymer containing repeat units of $R_2SiO_{2/2}$ siloxy units wherein R is independently selected from a monovalent radical selected from the group consisting of hydrocarbon and halogenated hydrocarbon radicals having 1 to 20 carbon atoms; and

a condensed product of (i) and (ii); and

(II) from about 1 to 20 weight percent, based on the total weight of (I) of a siloxylated polyether wax

(b) heating the hot-melt silicone pressure sensitive adhesive to a coatable temperature of between about 85° C. and 200° C.;

(c) coating the hot-melt silicone pressure sensitive adhesive onto a substrate; and

(d) cooling the hot-melt silicone pressure sensitive adhesive until it is in a non-flowing state.

5,607,722

PROCESS FOR TITANIUM NITRIDE DEPOSITION USING FIVE-AND SIX-COORDINATE TITANIUM COMPLEXES

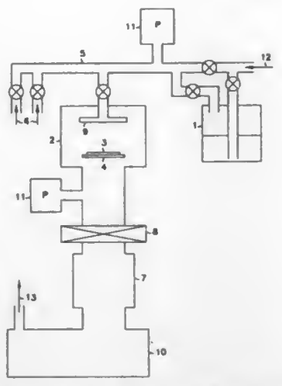
Brian A. Vaartstra, Nampa, and Wing-Cheong G. Lai, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 9, 1996, Ser. No. 600,780

Int. Cl.[6] C23C *16/34*

U.S. Cl. 427—248.1 **13 Claims**

1. A method for applying a titanium nitride film on the surface of a substrate comprising employing the techniques of chemical vapor deposition to decompose a vapor comprising a compound of the formula



$Ti[N(R^1)(R^2)]_x[(R^3)N—C(R^4)(R^5)—C(R^6)(R^7)—N(R^8)(R^9)]_y$

wherein

(a) each of R^1, R^2, R^3, R^8 and R^9 are (C_1–C_4) alkyl;

(b) each of R^4, R^5, R^6, and R^7 are each H or (C_1–C_4) alkyl; and

(c) each of x and y are 1–3;

so as to deposit a film comprising titanium nitride on said surface.

5,607,723

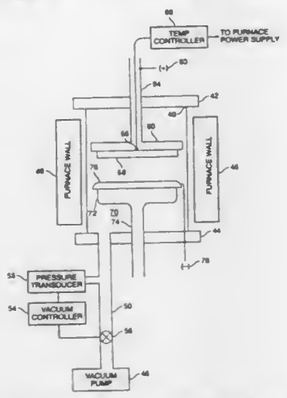
METHOD FOR MAKING CONTINUOUS THIN DIAMOND FILM

Linda S. Plano, Redwood City; Michael G. Peters, Santa Clara; Kramadhati V. Ravi, Atherton, and John M. Pinneo, Redwood City, all of Calif., assignors to Crystallume, Santa Clara, Calif.

Continuation of Ser. No. 59,711, May 10, 1993, abandoned, which is a continuation of Ser. No. 698,352, May 1, 1991, abandoned, which is a continuation of Ser. No. 260,887, Oct. 21, 1988, abandoned. This application May 5, 1994, Ser. No. 238,989

Int. Cl.[6] C23C *16/26;* **H05H** *1/24*

U.S. Cl. 427—249 **1 Claim**



1. A process for making a continuous thin diamond film, comprising the steps of:

placing a substrate in a CVD reactor,

creating a vacuum in the CVD reactor,

raising the temperature of the CVD reactor to between about 300°–275° C.,

introducing hydrogen into the CVD reactor,

during a first phase introducing about 2–5% by volume of a carbonaceous gas into the CVD reactor, to ensure formation of diamond nucleation, and

during a second phase following said first phase reducing the concentration of the carbonaceous gas to about 0.2% by volume to achieve the desired end thickness of the continuous thin diamond film.

5,607,724

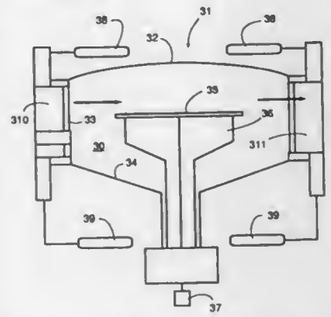
LOW TEMPERATURE HIGH PRESSURE SILICON DEPOSITION METHOD

Israel Beinglass, Sunnyvale, and David K. Carlson, Santa Clara, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 166,655, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 1,216, Jan. 6, 1993, abandoned, which is a continuation of Ser. No. 742,954, Aug. 9, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,582

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—255.1 **6 Claims**



1. A thermal CVD method of depositing a layer comprising doped or undoped polycrystalline silicon on a substrate comprising:

a) loading a substrate into a single substrate chemical vapor deposition vacuum chamber fitted with a means of temperature control;

b) controlling the temperature of the substrate to between about 600 and 750° C.; and

c) adding a silane selected from the group consisting of monosilane (SiH_4), disilane (Si_2H_6), and monosilane (SiH_4) mixed with a dopant gas, and disilane (Si_2H_6) mixed with a dopant gas to the chamber and maintaining the pressure of the chamber between about 10 and 350 Torr until the silicon layer is deposited on the substrate.

5,607,725

CVD METHOD FOR COATING A GLASS SUBSTRATE

Ronald D. Goodman, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation of Ser. No. 48,797, Apr. 16, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,868

Int. Cl.[6] C23C *16/00;* **C03C** *17/00*

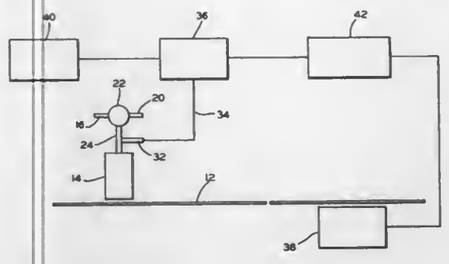
U.S. Cl. 427—255.5 **17 Claims**

1. A method of applying a coating to a surface of a moving ribbon of hot glass comprising:

(a) providing a coating gas distributor having a length extending across the width of the ribbon to be coated;

(b) supplying a gaseous coating mixture comprising at least one gaseous reactant from a supply beader to said distributor at two or more supply locations spaced along the length of the distributor;

(c) directing the gaseous coating mixture from the distributor over the surface of the moving ribbon of hot glass to form a coating on the hot glass surface;



(d) measuring at least one optical property of the coated product at spaced locations across the coated width, said optical property being one which varies with a variation of the thickness of said coating; and

(e) selectively varying the concentration of said at least one gaseous reactant in the gaseous coating mixture supplied at one or more of said spaced supply locations relative to the concentration of said at least one gaseous reactant supplied at one or more of the other of said spaced supply locations in response to a detected lack of uniformity of the coating as determined by said measured optical property to improve said uniformity of thickness of said coating.

5,607,726

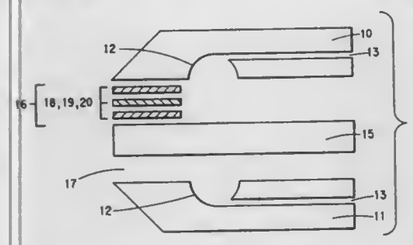
PROCESS FOR THE PREPARATION OF COMPOSITE COATINGS WITH VARIABLE THICKNESS

David K. Flattery, Athens, Pa.; Thomas R. Phillips, Vienna, W. Va., and George Z. Wu, Sayre, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 17, 1994, Ser. No. 323,990

Int. Cl.[6] B05D *1/36;5/00*

U.S. Cl. 427—261 **8 Claims**



1. A process for preparing a composite coating having variable thickness and a gradient coloration in a cross-web direction comprising depositing onto a carrier film,

(a) a layer of non-pigmented polymeric binder resin solution having uniform thickness and a layer of a colored polymeric binder resin solution of variable thickness, said colored layer having an asymmetric thickness gradient and a gradient coloration in the cross-web direction when measured from the center the carrier film and a dummy band of uniform thickness positioned at an edge of the carrier film; and

(b) drying the layers to provide a dry composite coating.

5,607,727

COMPOSITION AND METHOD FOR CONTROLLING BROWN STAIN IN WOOD

Michael Freeman, Memphis, Tenn.; Terry Highley, Madison, Wis.; Elmer Schmidt, St. Paul, Minn., and Thomas Woods, Germantown, Tenn., assignors to ISK Biosciences Corporation, Mentor, Ohio

Filed Mar. 14, 1995, Ser. No. 403,427

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—393 **7 Claims**

1. A method for controlling non-microbial brown stain in light-colored conifers comprising the steps of:

treating light-colored conifers with an aqueous dispersion of chlorothalonil and methylene bis-thiocyanate; and

drying said light-colored conifers, thereby controlling the formation of brown stain in said light-colored conifers.

5,607,728

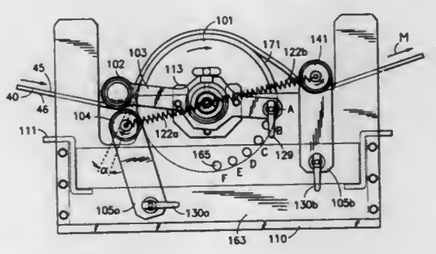
ROLLER COATING SYSTEM FOR IMPREGNATION OF MULTI-FILAMENT WEB WITH RESIN, AND METHOD OF MAKING A FIBER/RESIN COMPOSITE MATERIAL

Jonathan W. Bremmer, Rocky Hill; Martin C. Cosgrove, Harwinton, and Bernard M. Malofsky, Bloomfield, all of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Aug. 11, 1995, Ser. No. 514,043

Int. Cl.[6] B05D *1/28*

U.S. Cl. 427—428 **11 Claims**



1. An apparatus for coating a web having first and second main web surfaces, along a path of travel of the web from an upstream supply position to a downstream position, comprising:

a reservoir for containing a coating material:

a transfer roll having a circumscribing outer surface, and mounted for rotation with a lower portion of the outer surface positioned for immersion in the reservoir to contact coating material therein to transfer coating material to the immersed outer surface so that upon rotation of the transfer roll a coating material-bearing outer surface portion of said transfer roll is rotated into coating material-transferring contact with the web on the first main surface thereof, when the web contacts the upper portion of the outer surface of the transfer roll along said path; and

a stepped squeegee roll assembly comprising (i) a stepped squeegee roll mounted downstream of said transfer roll, so that the web in passage away from the transfer roll on said path is contacted by the stepped squeegee roll on the second main surface of the web, and (ii) tensional biasing means coupled with the stepped squeegee roll so that the stepped squeegee roll is tensionally biased toward, but in spaced relationship to, the transfer roll, whereby the stepped squeegee roll functions to maintain alignment of the web on the transfer roll, and to limit the coating material thickness on the web.

5,607,729

METHOD FOR MAKING CURABLE COATINGS

George F. Medford, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 281,315, Jul. 27, 1994, abandoned, which is a continuation of Ser. No. 66,802, May 25, 1993, abandoned. This application Feb. 26, 1996, Ser. No. 607,020
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—495 6 Claims

1. A method for curing a gel-free silica acrylate curable coating composition comprising the steps of:

(i) preparing a gel-free silica acrylate curable coating composition comprising an acid silica; a silyl acrylate of the formula:

$$(R^1O)_{4-a-b}Si(C(R^2)_2CHR^3OC(=O)C(R^2)=C(R^2)_2)_b;$$

an acrylate of the formula:

$$((R^2)_2C=CR^2-C(=O)-O)_nR^4$$

where each R is independently a one to thirteen carbon atom monovalent hydrocarbon radical, each R^1 is independently a one to eight carbon atom alkyl radical, R_2 is selected from the group consisting of hydrogen and R, each R^3 is independently a one to eight carbon atom alkylene radical each R^4 is independently a mono- or polyvalent organic radical a is a whole number from 0 to 2 inclusive b is an integer from 1 to 3 wherein the sum of a+b is from 1 to 3 and n is an integer from 1 to 6 inclusive; and a gel preventing compound selected from the group consisting of soluble salts, soaps, amines, nonionic and anionic surfactants, acids, bases and mixtures thereof;

(ii) applying said curable composition to a substrate; and

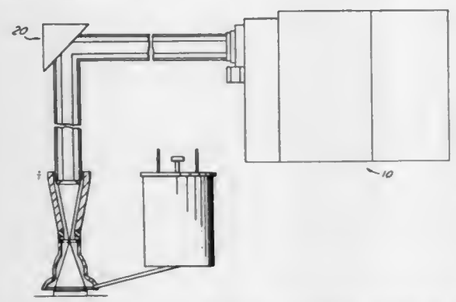
(iii) exposing said substrate to an electron beam or UV light source sufficient to effect cure of said curable coating composition whereby said curable coating composition forms a hardcoat on said substrate upon curing.

5,607,730

METHOD AND APPARATUS FOR LASER COATING

Ronald J. Ranalli, Caledonia, Mich., assignor to Clover Industries, Inc., St. Clair Shores, Mich.

Continuation of Ser. No. 526,651, Sep. 11, 1995, abandoned. This application Jun. 13, 1996, Ser. No. 662,570
Int. Cl.[6] C08J 7/04
U.S. Cl. 427—512 52 Claims



1. A method of applying particles to a substrate comprising the steps of:

positioning an applicator over the top surface of a substrate to be coated,

mixing particles with at least one inert gas in said applicator,

energizing said particles with laser energy, and

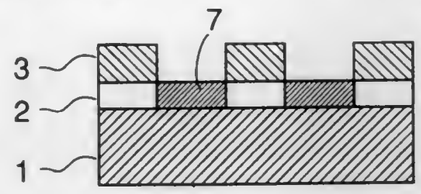
causing said particles to adhere to the top surface of the substrate.

5,607,731

METHOD OF FORMING ELECTRICAL PATHWAYS IN INDIUM-TIN-OXIDE COATINGS

Tony E. Haynes, Knoxville, Tenn., assignor to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 450,180, May 25, 1995. This application Apr. 10, 1996, Ser. No. 631,727
Int. Cl.[6] B05D 5/12; C23C 14/08
U.S. Cl. 427—529 5 Claims



1. A method of fabricating an electrical pathway in ITO comprising the steps of:

a. providing a substrate having a conductive ITO coating on at least one surface thereof;

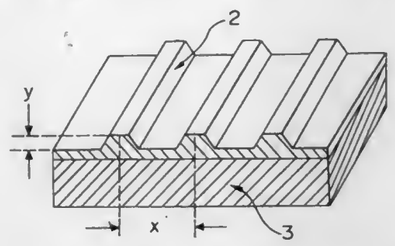
b. rendering a preselected portion of said coating of conductive ITO insulative, leaving a remaining portion of said coating of conductive ITO as at least one electrical pathway.

5,607,732

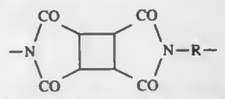
TREATING METHOD FOR ALIGNING LIQUID CRYSTAL MOLECULES AND LIQUID CRYSTAL DISPLAY DEVICE

Yoshio Miyamoto; Hideyuki Endo, both of Funabashi, and Toyohiko Abe, Tokyo, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Sep. 18, 1995, Ser. No. 529,456
Claims priority, application Japan, Sep. 30, 1994, 6-236812
Int. Cl.[6] G02F 1/3337
U.S. Cl. 428—1 6 Claims



1. A treating method for aligning liquid crystal molecules, which comprises forming on a substrate a polyimide film represented by a repeating unit of the formula (I):



(I)

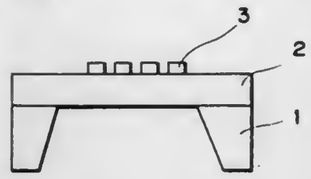
wherein R is a bivalent organic group, irradiating the film with ultraviolet rays having a spatial distribution of irradiation intensity through a mask, immersing it in a developing liquid and then in a rinsing liquid to form periodical concaves and convexes on the surface of the polyimide film, and aligning liquid crystal molecules on the concave-convex surface.

5,607,733

PROCESS FOR PREPARING AN X-RAY MASK STRUCTURE

Yasuaki Fukuda, Hadano, and Shigeyuki Matsumoto, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 329,787, Oct. 27, 1994, which is a continuation of Ser. No. 122,649, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 727,961, Jul. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,464
Claims priority, application Japan, Jul. 12, 1990, 2-186795; Jul. 27, 1990, 2-199746
Int. Cl.[6] C23C 8/00
U.S. Cl. 427—585 10 Claims



1. A process for preparing an X-ray mask structure comprising the following steps:

providing an X-ray transmissive film,

providing an X-ray absorptive member patterned on said X-ray transmissive film

providing a supporting frame for supporting said X-ray transmissive film,

wherein the steps for patterning of said X-ray absorptive member comprise:

a) forming an exposed pattern of a subbing layer by patterning a side wall material on the surface of said subbing layer, and

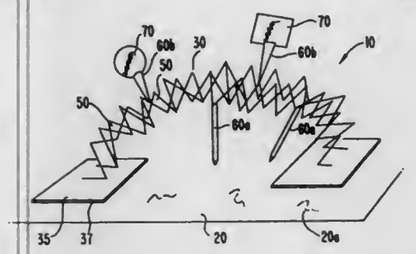
b) depositing said X-ray absorptive member selectively only on the exposed portion of said subbing layer according to a gas phase growth method.

5,607,734

EXPANSIBLE ORNAMENT ASSEMBLY

Maureen Gonzalez, 133-46 122nd Pl., Ozone Park, N.Y. 11420

Filed Apr. 4, 1995, Ser. No. 416,479
Int. Cl.[6] D04D 9/00
U.S. Cl. 428—7 13 Claims



1. An expansible decorative ornament assembly comprising:

a first decorative member comprising an expansible form having an open position and a closed position and constructed of a first material with cavities formed therein, said form being provided with two ends, each of said two ends being attached to at least one base at a point of attachment, each base having an outside face which is opposite to said point of attachment; and

means for attaching each said base at its respective outside face to a flat planar surface; and

secondary decorative members constructed of a second material, said second material being of a heavier construction than said first material, said secondary decorative members being attached to said expansible form within said cavities so that when said expansible form is in its open position, said secondary decorative members project outwardly from said expansible form;

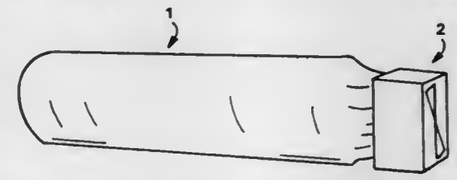
whereby said expansible ornament in said open position is adapted to display at least one three dimensional object.

5,607,735

HIGH EFFICIENCY DUST SOCK

James P. Brown, Smyrna, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1995, Ser. No. 577,368
Int. Cl.[6] B01D 29/11;46/04; B32B 5/26;31/26
U.S. Cl. 428—36.1 15 Claims



1. A dust sock filter medium laminate comprising at least two nonwoven webs of microfibers which have an average diameter (using a sample size of at least 10) between about 10 and 25 microns and which webs have been joined by a method comprising the steps of:

(a) directing the component layers to a separation zone,

(b) applying water in the amount of from about 5% to 25% based on the weight of the combined layers,

(c) combining the component layers,

(d) passing the combination through a sonic bonder operating within the range of up to about 40,000 cps against a patterned anvil to produce a corresponding pattern of thermal bond areas over about 3% to 25% of the surface area of the combination, and;

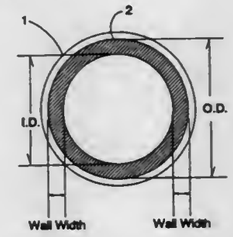
(e) drying said sonically bonded combination.

5,607,736

ELASTIC BINDING DEVICE WITH RUBBER TUBING CORE

David D. Williams, 1496 Trumansburg Rd., Ithaca, N.Y. 14850

Filed Jun. 6, 1995, Ser. No. 466,477
Int. Cl.[6] B29D 22/00
U.S. Cl. 428—36.3 5 Claims

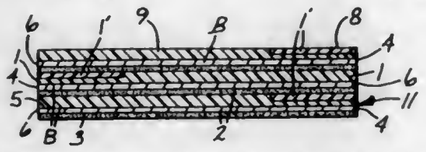


1. An elastic binding device, comprising:

a) a core of at least one rubber tube, natural or synthetic; and

b) a woven jacket comprising left and right strands of nylon, cotton, polypropylene or other materials that are braided at the proper angle so that said woven jacket covers said core member.

5,607,737
SHEET STACK
Elmer Blackwell, Woodbury; John J. Emmel, Blaine, both of Minn., and Harry A. Loder, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 141,421, Oct. 20, 1993, Pat. No. 5,401,547, which is a continuation of Ser. No. 33,116, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 788,230, Nov. 5, 1991, abandoned, which is a division of Ser. No. 625,311, Dec. 10, 1990, Pat. No. 5,086,946. This application Jan. 31, 1995, Ser. No. 381,644
Int. Cl.[6] B32B 7/06
U.S. Cl. 428—40.1 4 Claims



1. A stack of successive sheets disposed one on top of another, said stack ultimately including at least a first, uppermost sheet, a second sheet beneath and adjacent the uppermost sheet and a third sheet beneath and adjacent the second sheet, each of said sheets comprising:

a backing having first and second opposite major side surfaces and first and second opposite ends with the first end of each sheet in alignment with the second end of an adjacent sheet in said stack, and an adhesive generally permanently adhered adjacent to the first major side surface of said sheet backing with at least some adhesive generally adjacent the first and second ends of each of said sheets, the adhesive of each sheet releasably adhering said sheet along the second major side surface of the adjacent sheet in said stack; at least two of said sheets each comprising:

a premium release low adhesion backsize (LAB) adjacent said second major side surface and generally adjacent said first end of a sheet for providing a first adhesion level between the adhesive of an adjacent upper sheet in the stack and the sheet with the premium release low adhesion backsize (LAB),

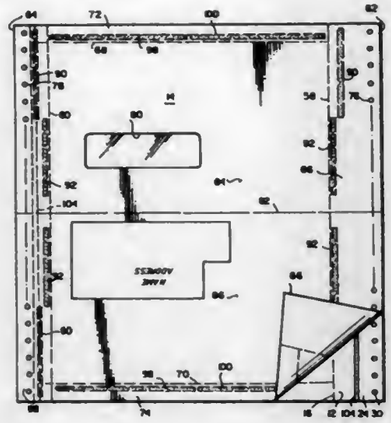
a medium release low adhesion backsize (LAB) adjacent said second major side surface and generally adjacent said second end of the sheet for providing a second adhesion level between the adhesive of an adjacent upper sheet in the stack and the sheet with the medium release low adhesion backsize (LAB);

said first adhesion level providing a sufficiently low release force between the adhesive of the second sheet and the second major side surface of the third sheet to afford sliding movement between portions of the first and second sheets relative to the third sheet,

said second adhesion level providing a release force that is greater than said low release force to firmly adhere a portion of the first sheet to the second sheet during the sliding movement of the portions of the first and second sheets relative to the third sheet, and

wherein said second adhesion level affords peeling away of said first sheet from said second sheet.

5,607,738
MULTIPLE-PART CARBONLESS PRESSURE SEAL BUSINESS FORM ASSEMBLY
Gary Bishop, Clive, Iowa, assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Aug. 29, 1995, Ser. No. 521,028
Int. Cl.[6] B65D 27/10;27/34
U.S. Cl. 428—43 17 Claims



1. A business form assembly comprising:

a multi-ply business form including first and second plies, said first ply having longitudinally extending lines of perforation inset from opposite side edges of said first ply defining longitudinally extending tear strips along opposite sides of said first ply and transversely extending lines of perforations inset from opposite end edges of said first ply defining transverse tear strips extending between said longitudinally extending tear strips;

said second ply having longitudinally extending lines of perforations inset from opposite side edges of said second ply defining longitudinally extending tear strips along opposite sides of said second ply and transversely extending lines of perforations inset from opposite end edges of said second ply defining transverse tear strips extending between the longitudinally extending tear strips of the second ply;

said first and second plies being superposed one over another with said longitudinally and transversely extending perforations of said first and second plies, respectively, lying in registry with one another and said longitudinally and transversely extending tear strips, respectively, lying in registry with one another;

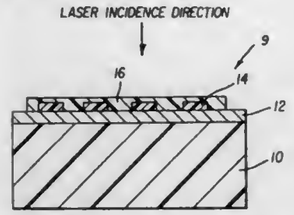
tractor feed holes in said longitudinally extending tear strips with the feed holes of the longitudinally extending tear strips of said first ply lying in registry with the feed holes of the longitudinally extending tear strips of said second ply;

lines of adhesive between said registering longitudinally extending tear strips of said first and second plies at a location between said registering longitudinally extending lines of perforations and said side edges on each side of the form for securing said plies to one another;

said second ply having pressure seal adhesive along the longitudinally extending tear strips thereof on a face thereof remote from said first ply at locations between said longitudinally extending lines of perforations and said opposite side edges of said second ply, and along said transversely extending tear strips thereof on a face thereof remote from said first ply at locations between said transversely extending lines of perforations and said end edges of said second ply;

a scoreline extending transversely along each said first and second plies intermediate the opposite end edges thereof and in registry with one another to enable a first part of said first and second plies to be folded about said fold lines into registration with a second part of said first and second plies with the pressure seal adhesive along the longitudinal tear strips of said first and second parts in registry with one another and the pressure seal adhesive along the transversely extending tear strips in registry with one another whereby, upon application of pressure along said registering longitudinal and transversely extending tear strips, said first and second parts of said second ply are sealed to one another forming a mailer closed along end and side edges.

5,607,739
TEMPERATURE SENSOR AND METHOD FOR OPTICAL DISK
Brian J. Bartholomeusz, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 7, 1995, Ser. No. 400,165
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—64.1 4 Claims



1. In an optical recording system for writing on an optical disk including means for providing an optical write beam at a selected intensity and frequency, the improvement comprising:

(a) the disk including:

(i) a substrate;

(ii) a reflector layer disposed on the substrate;

(iii) at least one temperature sensitive recording layer disposed on the reflector layer, the temperature sensitive recording layer being selected such that its reflectivity reversibly changes as a function of the disk temperature; and

(iv) a transparent overcoat over the substrate or reflector layer; and

(b) the system including:

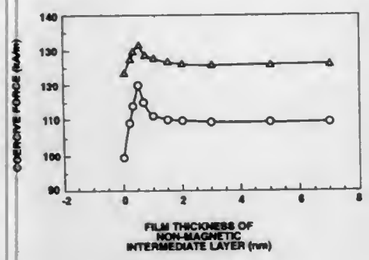
(i) means for projecting a beam of light to be incident upon the temperature sensitive recording layer;

(ii) means for receiving temperature dependent reflected light from the temperature sensitive recording layer and providing an electrical signal which is a function of the reflectivity of the light beam;

(iii) temperature correction means, responsive to the electrical signal, for generating a temperature correction signal; and

(iv) means for changing the intensity of the write beam in response to the temperature correction signal.

5,607,740
MAGNETIC DISC
Makoto Noda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 14, 1994, Ser. No. 322,985
Claims priority, application Japan, Oct. 20, 1993, 5-262088
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—65.3 11 Claims



1. A magnetic disc comprising:

a non-magnetic substrate having a surface;

an underlying layer disposed on said surface;

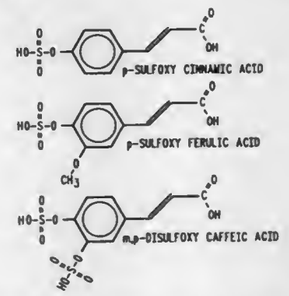
a first magnetic layer disposed on said underlying layer;

a non-magnetic intermediate layer disposed on said first magnetic layer; and

a second magnetic layer disposed on said non-magnetic intermediate layer,

said non-magnetic intermediate layer comprising a sputtered film layer having a film thickness calculated by a product of film formation rate and film formation time and being from about 0.2 nm to about 1.0 nm, and said underlying layer and said non-magnetic intermediate layer having a body centered cubic crystal structure.

5,607,741
PHENOLIC ACID SULFATE ESTERS FOR PREVENTION OF MARINE BIOFOULING
Richard C. Zimmerman, Pacific Grove, Calif.; Randall S. Alberte, Arlington, Va.; James S. Todd, Walla Walla, Wash., and Phillip Crews, Santa Cruz, Calif., assignors to ARCH Development Corporation, Chicago, Ill., and The Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 989,274, Dec. 11, 1992, Pat. No. 5,384,176. This application Dec. 8, 1994, Ser. No. 351,624
Int. Cl.[6] B32B 9/04
U.S. Cl. 428—68 10 Claims

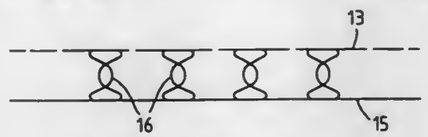


7. An article of manufacture resistant to marine biofouling, comprising:

(a) an artificial surface; and

(b) an antifouling composition contacting said surface, said composition comprising a sulfooxyphenylcarboxylic acid.

5,607,742
GROUND ENVIRONMENT MATS
Dan N. Ing, Windover, Farm Lane, East Horsley, Surrey, KT24 5AB, and Anthony E. Harris, 15 Sunningdale Walk, Bedford, MK41 8BA, both of Great Britain
Filed Oct. 6, 1993, Ser. No. 132,255
Claims priority, application United Kingdom, Oct. 6, 1992, 9220930
Int. Cl.[6] B32B 5/00
U.S. Cl. 428—98 17 Claims



1. A ground environment mat comprising:

a single porous layer means for permitting vertical entry of and controlling ground jet flows in all horizontal radial directions within said single porous layer means, said single porous layer means having a height and comprising:

an upper surface, said upper surface being sufficiently porous to permit vertical jet flow entry into said single porous layer

means while subsequently preventing substantially a ground jet flow escape therefrom,

a lower surface, and

a plurality of discrete drag elements, each of said plurality of discrete drag elements spanning said height of said single porous layer means, said plurality of discrete drag elements comprising a plurality of spaced apart, twisted flat strips extending in a generally vertical direction from said upper surface to said lower surface of said single porous layer means.

5,607,743

METALLIZED THREE-DIMENSIONALLY DEFORMED, DIMENSIONALLY STABLE GAUZE COMPRISING TEXTILE MATERIAL

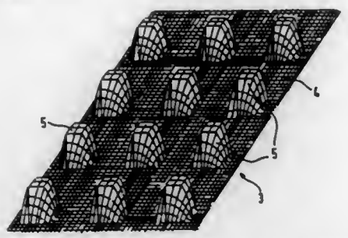
Dieter Disselbeck, Bad Soden am Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 526,174, May 21, 1990, abandoned. This application Jan. 31, 1994, Ser. No. 189,427

Claims priority, application Germany, May 23, 1989, 39 16 713.5

Int. Cl.[6] B32B *3/24*

U.S. Cl. 428—131 **13 Claims**



1. A metallized, three-dimensionally deformed, dimensionally stable gauze, comprising: a three-dimensionally deformed resin-coated textile material, which is deformed from an initially flat material that has meshes and is capable of being deep drawn, at least the three-dimensional deformations of said three-dimensionally deformed resin-coated textile material having enlarged mesh openings relative to the mesh openings in the initial flat material and a filigree-type network structure, said gauze having been metallized by means of a solution which contains metal-containing ions, said metal-containing ions having been reduced to the corresponding metal and deposited on essentially the entire exposed surface of said textile material to form a continuous metal coating, the continuous metal coating having a thickness in the range of about 2 μm to about 300 μm.

5,607,744

COATED FILLER AND USE THEREOF

Carl E. Diener, Binghamton; Ashit A. Mehta, Vestal; Ralph S. Paonessa, Endwell; Eugene R. Skarvinko, Binghamton, and David W. Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 998,132, Dec. 29, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,658

Int. Cl.[6] B32B *3/10;15/08;27/30*

U.S. Cl. 428—131 **12 Claims**

1. A circuitized substrate containing:

1. a substrate which contains:

a. fluorinated polymeric material;

b. a filler being selected from the group consisting of silica, quartz, and mixtures thereof; and wherein said filler is coated with a fluorosilane having groups that are reactive with groups on said filler;

wherein said filler bas a mean particle size of no greater than about 7 μm; and

wherein the amount of fluorinated polymeric material is about 50 to about 90 weight percent, and the amount of filler is about 50 to about 10 weight percent; based upon the total of fluorinated polymeric material and filler; and

c. a polyimide in an amount effective for enhancing laser drillability of said substrate; and

II. A metallic layer disposed on at least a portion of at least one major surfaces of said substrate.

5,607,745

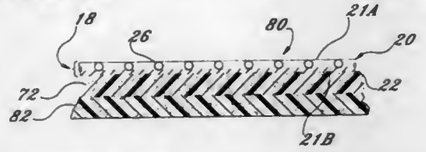
SLIP-RESISTANT, MOISTURE ABSORBENT SHEET MATERIAL

John M. Ogden, Cincinnati, Ohio, assignor to Ogden, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 828,690, Jan. 31, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,238

Int. Cl.[6] A43B *13/38;* **B32B** *3/10*

U.S. Cl. 428—138 **48 Claims**



1. A sheet material comprising:

a first layer formed of a slip-resistant, non-absorbent and thermally non-conductive thermoplastic material, said first layer being formed with a plurality of apertures having wall sections therebetween, said first layer having an outer, exposed surface and an inner surface;

a second layer formed of a first portion and a second portion, said first portion being affixed to said inner surface of said first layer and overlying said second portion, said first portion of said second layer including a mixture of moisture-wicking fibers and moisture-absorbent fibers which are intertwined with one another in all directions throughout the thickness of said first portion, said second portion having fibers which are non-adsorbent and non-absorbent, said second layer having sufficient tear strength to substantially prevent movement of said wall sections of said first layer relative to one another under the application of a shear force to said first layer.

5,607,746

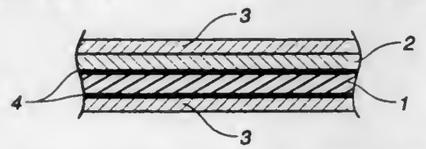
CLOTH FOR WATERPROOF SUITS

Hyun Byungnam, 174-125, Jungkok-Dong, Seongdong-ku, Seoul, Rep. of Korea

Filed Aug. 14, 1995, Ser. No. 514,527

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—138 **2 Claims**



1. Cloth for waterproof suits, comprising a rubber waterproof layer in which circular or rectangular holes with a maximum diameter of 0.1 to 10 mm are formed at a population of 10 to 500 per ten square centimeters, said rubber waterproof layer having a first surface on one side and a second surface on an opposite side, a moisture-permeable waterproof polyurethane coating layer with a thickness of 1 to 100 μm and two flexible cloth layers, wherein said moisture-permeable waterproof polyurethane coating layer is made in a wet process or a dry process, one of the surfaces of said rubber waterproof layer is bonded to said polyurethane coating layer with an adhesive material and the other surface of the rubber waterproof layer is bonded to one of said flexible cloth layers with said adhesive material, the other flexible cloth layer being formed on said polyurethane coating layer.

5,607,747

MAGNETIC RECORDING MEDIA HAVING A BACKSIDE COATING WHICH INCLUDES MULTICOMPONENT, NONMAGNETIC PARTICLES

Kam W. Law, Woodbury; James A. Greczyna, Vadnais Heights; Leslie M. Wolff, St. Paul; Milind B. Sabade, Maplewood, and Kevin R. Katzenmaier, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 15, 1994, Ser. No. 228,221

Int. Cl.[6] G11B *5/66;5/70*

U.S. Cl. 428—141 **25 Claims**

1. A magnetic recording medium comprising a support having two major surfaces, a magnetic layer provided on one major surface of said support, and a backside coating provided on the other major surface of said support wherein:

said backside coating comprises nonmagnetic, multicomponent particles dispersed in a polymeric binder, said particles being comprised of a first component having a Mohs hardness equal to or less than 7 and a second component having a Mohs hardness greater than 7.

5,607,748

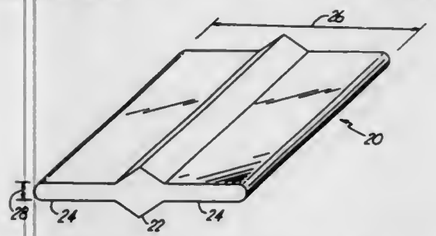
WIRELESS POLYMERIC TWIST TIE

Michael P. Feltman, Worthington, Minn., assignor to Bedford Industries, Inc., Worthington, Minn.

Filed Aug. 15, 1994, Ser. No. 290,338

Int. Cl.[6] B32B *3/00;* **B65D** *77/10*

U.S. Cl. 428—156 **18 Claims**



1. A wireless polymeric twist tie comprising a wing portion and at least one rib portion, the polymeric twist tie being formed from a non-metallic polymeric composition, the polymeric twist tie having a tensile strength of greater than 11,098 psi and a yield strength of greater then 15,115 psi when analyzed according to the ASTM D-638 standard.

5,607,749

ERGONOMIC KINETIC ACUPRESSURE MASSAGING SYSTEM

Mathew A. Strumor, 158 Key Heights Dr., Tavernier, Fla. 33070

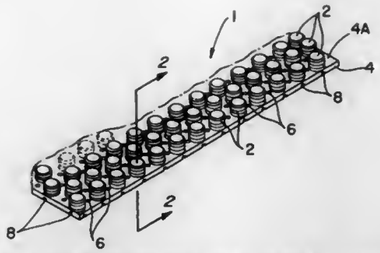
Continuation-in-part of Ser. No. 364,134, Dec. 27, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 635,407

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—156 **9 Claims**

1. An acupressure massaging system, comprising:

a platform having an upper surface and a lower surface, said lower surface defining a plurality of intersecting air-flow channels and said upper surface defining a plurality of air-flow holes through said upper surface in air-flow communication with said air-flow channels and with space external of said system;



an array of spaced, independently flexible nipples extending from the upper surface of the platform, each said nipple having an upper distal end and a flexible, collapsible, accordion-pleated side wall defining an internal air-flow chamber, the air-flow chamber being in fluid communication with said air-flow channels and with said air-flow holes to enable air flow into and out of said air-flow chambers and said air-flow holes, and wherein said side wall of each said nipple is comprised of a material having an elastic memory, whereby compression and movement of the nipples is made possible by the collapsible, memory-containing side walls in cooperation with movement of air into and out of the air-flow chambers.

5,607,750

AUTOMOBILE MAT

Yaw-Tyng Liou, P. O. Box 82-144, Taipei City, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,708

Int. Cl.[6] B32B *3/00;* **B62D** *25/20*

U.S. Cl. 428—172 **1 Claim**



1. An automobile mat comprising:

an upper layer formed with a plurality of arrow-shaped recesses and diamond-shaped recesses arranged alternately and extending obliquely and downwardly through said upper layer to form a larger open top; and

a lower layer attached to a bottom of said upper layer.

5,607,751

RECORDING MEDIUM, METHOD OF FORMIMG IMAGE USING THE SAME, AND METHOD OF PRODUCING PRINT USING THE SAME

Teigo Sakakibara; Naoto Fujimura, both of Yokohama; Kiyoshi Sakai, Hachioji; Hiroshi Aoto, Kawasaki, and Shunichiro Nishida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 323,861

Claims priority, application Japan, Oct. 20, 1993, 5-262522; Oct. 3, 1994, 6-238883

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **9 Claims**

1. A recording medium comprising a base material and an ink-receiving layer provided on the base material, wherein the

ink-receiving layer comprises a water-absorptive material obtained by grafting, on a water-absorptive polymer an ultrafine particle of, an inorganic oxide formed from an inorganic alkoxide represented by the formula

$$(R_2)_n—M—(OR_1)_{m-n}$$

wherein M denotes an element selected from the group consisting of Si, Al, Ti, Zr, Ca, Fe, V, Sn, Be, B and P, m is a valence of M, n is an integer of 1 or 2, R_1 denotes an alkyl group having 1 to 4 carbon atoms, and R_2 denotes an alkyl group having 1 to 4 carbon atoms or a phenyl group.

5,607,752

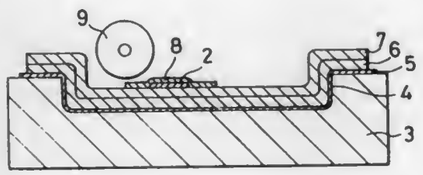
FIBER REINFORCED PLASTIC AND AN INDICATION METHOD THEREOF

Kuniyuki Harada, Ohta; Kazutaka Sawada, Isesaki; Yoshiteru Hosoya, Gunma Pref., and Tetsuo Shibusawa, Ohta, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 193,547, Feb. 8, 1994, Pat. No. 5,464,671. This application May 31, 1995, Ser. No. 455,409

Int. Cl.[6] B32B *3/00;7/14*

U.S. Cl. 428—203 **9 Claims**



1. A vehicle component comprising:
a fiber reinforced plastic product comprising a fiber mat alternatively overlaid on a resin-impregnated fiber mat;
a printed material laid on said fiber reinforced plastic product while said fiber mat is not completely hardened in a mold; and
a transparent surface mat impregnated with a resin and overlaid on said printed material such that information written on said printed material is visible.

5,607,753

PLURALITY OF SEPARATED GLASS SHEETS

Rickey D. Parks, Wagoner, Okla., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 2, 1995, Ser. No. 460,813

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—210 **6 Claims**



1. A plurality of glass sheets in a stack carrying a coating of a powdered separating agent in substantially parallel strips with uncoated portions therebetween on one broad surface of each sheet, the sheets being arranged in the stack so that the coating is carried on only one of the two broad surfaces proximate one another in the stack.

5,607,754

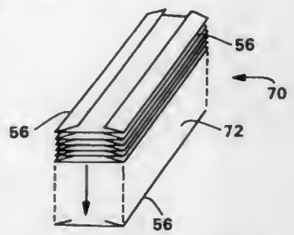
PAPER WEB PRODUCT AND METHOD FOR MANUFACTURING SAME

Frank H. Glies, West Chester, Pa.; Claire King, Atco, and Ho-Ward J. Yoh, Medford, both of N.J., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 151,437, Nov. 12, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 458,018

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—211 **23 Claims**



1. A stack of paper web products comprising:
(a) a plurality of paper web sheets stacked one on top of another, each of said sheets having a fold configuration that creates a substantially rectangular footprint having four edges wherein at least one of said edges is a folded edge;
(b) a plurality of microcapsules containing a volatile chemical located substantially only along said folded edges, said microcapsules having been applied to said folded edges after said plurality of paper web sheets have been formed into said stack.

5,607,755

IMITATION LEATHER WHICH CAN BE MOLDED ON THE BACK

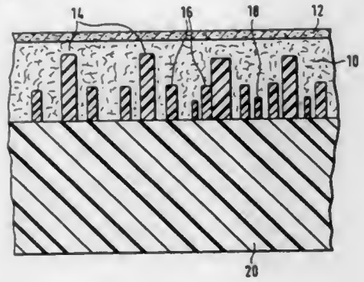
Michael Vollbrecht, Nienburg; Gustav Hildebrandt, Auetal; Hans-Hlorich Kruse, Hulsede, and Axel Bruder, Burgwedel, all of Germany, assignors to Benecke-Kaliko AG, Hanover, Germany

Continuation of Ser. No. 55,367, May 3, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 460,839

Claims priority, application Germany, May 4, 1992, 42 14 588.0

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—217 **7 Claims**



1. Imitation leather comprising:
a web layer having front and back sides, and
a decorative layer on said web layer front side which provides said imitation layer with a decorative front, and
an open plastic framework disposed substantially within said web layer and substantially flush with said back side and extending toward said decorative layer,
said open plastic framework comprising at least two layers penetrating partially into said web layer at different penetration depths,

said imitation leather capable of being injection molded from said back side, wherein the hardness of said layers of plastic framework increases with decreasing penetration depth into said web layer.

5,607,756

METHOD OF CORRECTION OF THE FOOT, SPLINT FOR USE IN PRACTICING THE METHOD, AND FOOTWEAR WITH THE SPLINT

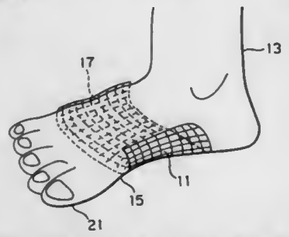
Kiyoshi Yamauchi; Hiroyuki Yoshida, and Atsushi Kita, all of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan

Filed Apr. 27, 1995, Ser. No. 430,757

Claims priority, application Japan, Apr. 28, 1994, 6-090991

Int. Cl.[6] D03D *3/00*

U.S. Cl. 442—6 **24 Claims**



1. A splint for reinforcement or correction of the foot in order to prevent and cure a deformity of the foot such as a flatfoot and hallux valgus, said splint comprising a lamina or a thin plate at least partially containing shape memory alloy wires and being formed into a desired shape in conformity with a configuration of a part of said foot to which said splint to which said splint is attached, wherein said lamina or said thin plate comprises a mesh comprising warp and weft, at least one of said warp and said weft comprising said shape memory alloy wires.

5,607,757

PAPER MACHINE FABRIC

James S. N. Dalton, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 459,933, Jun. 2, 1995, abandoned. This application Nov. 30, 1995, Ser. No. 552,658

Int. Cl.[6] D03D *3/00*

U.S. Cl. 442—301 **15 Claims**

1. An article of paper machine fabric used in a papermaking machine which is essentially a fibrous structure comprising monofilament yarns wherein said monofilament yarns comprise a polyester comprising from about 85 to 100 mole % of 2,6 -naphthalenedicarboxylic acid and about 85 to 100 mole % of ethylene glycol or 1,4-cyclohexanedimethanol, based on the total mole percentage for the glycol portion and for the acid portion of said polyester each equalling 100 mole %.

5,607,758

SMOKE CONTAINMENT CURTAIN

William C. Schwartz, Greensboro, N.C., assignor to BGF Industries, Inc., Greensboro, N.C.

Filed Jun. 21, 1995, Ser. No. 493,145

Int. Cl.[6] B32B *7/00*

U.S. Cl. 442—67 **22 Claims**

1. A flexible, smoke impermeable fabric comprised of a woven fiberglass fabric substrate having a smoke impervious coating on at least one side thereof, said coating comprising a halide-free resin binder and a halide-free fire retardant incorporated therein, said fabric having a flexural rigidity of less than 0.030 in-lbs. in the warp direction and less than 0.015 in-lbs. in the fill direction when tested in accordance with ASTM D 1388.

5,607,759

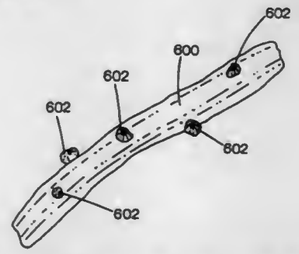
PARTICLE BINDING TO FIBERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Continuation-in-part of Ser. No. 931,059, Aug. 17, 1992, Ser. No. 931,277, Aug. 17, 1992, Ser. No. 931,213, Aug. 17, 1992, Pat. No. 5,300,192, Ser. No. 931,278, Aug. 17, 1992, Pat. No. 5,352,480, Ser. No. 931,284, Aug. 17, 1992, Pat. No. 5,308,896, and Ser. No. 931,279, Aug. 17, 1992. This application Aug. 17, 1993, Ser. No. 108,219

Int. Cl.[6] B32B *5/16*

U.S. Cl. 442—417 **29 Claims**



1. A fibrous product made by the method comprising the steps:
providing fibrous material comprising individualized fibers having a hydrogen bonding functionality;
providing particles having a hydrogen bonding functionality or a coordinate covalent bond forming functionality;
selecting a binder from the group consisting of glycerin, a glycerin monoester, a glycerin diester, a polyglycerin oligomer, non-polymeric urea, and combinations thereof, the binder comprising binder molecules, the binder molecules having at least one functional group capable of forming a hydrogen bond or a coordinate covalent bond with the particles, and at least one functional group capable of forming a hydrogen bond with the fibrous material;
exposing at least a portion of the particles to sufficient amounts of the binder to at least partially coat at least a portion of the particles with the binder; and
binding at least a portion of the partially coated particles in discrete particulate form to the fibrous material.

5,607,760

DISPOSABLE ABSORBENT ARTICLE HAVING A LOTIONED TOPSHEET CONTAINING AN EMOLLIENT AND A POLYOL POLYESTER IMMOBILIZING AGENT

Donald C. Roe, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 3, 1995, Ser. No. 510,930

Int. Cl.[6] A61L *15/50;* **B32B** *33/00*

U.S. Cl. 442—375 **16 Claims**

1. A disposable absorbent article comprising:
a) a liquid impervious backsheet;
b) a liquid pervious topsheet joined to said backsheet, said topsheet having an inner surface oriented toward the interior of said absorbent article and an outer surface oriented toward the skin of the wearer when said diaper is being worn, wherein at least a portion of said topsheet outer surface comprises an effective amount of a lotion coating which is solid or semi-solid at 20° C. and which is partially transferable to the wearer's skin, said lotion coating comprising:
(i) from about 5 to about 95% of a substantially water free emollient having a plastic or fluid consistency at 20° C. and

comprising a member selected from the group consisting of petroleum based emollients, fatty acid ester emollients, alkyl ethoxylate emollients, polysiloxane emollients, silicone wax emollients, and mixtures thereof;

(ii) from about 5% to about 95% of an agent capable of immobilizing said emollient on said outer surface of the topsheet, said immobilizing agent having a melting point of at least 35° C. and comprising a solid polyol polyester comprising a polyhydric alcohol containing at least 4 hydroxyl groups esterified with fatty acid or other organic radicals having at least 2 carbon atoms and up to 30 carbon atoms; and,

c) an absorbent core positioned intermediate said topsheet and said backsheet.

5,607,761

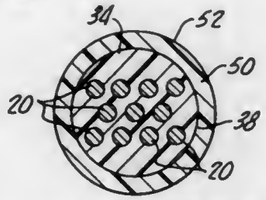
HIGH MODULUS REINFORCEMENT AND DIP-COAT PRODUCTION METHOD FOR SAME

Don C. Christensen, Bartlesville, Okla., and Milton F. Custer, Byron, Calif., assignors to Hexcel Corporation, Pleasanton, Calif.

Continuation-in-part of Ser. No. 289,897, Aug. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 6,504, Jan. 21, 1993, Pat. No. 5,380,576. This application Apr. 7, 1995, Ser. No. 418,199

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—366 **5 Claims**



1. A fiber protective coated towpreg having improved high modulus fiber storage and handling characteristics comprising:

a plurality of elongated and collimated high modulus fibers selected from the group consisting of sapphire fibers, boron fibers, yttrium fibers, and yttrium aluminum garnet (YAG) fibers, comprising a coated fiber bundle, each of said fibers being coated with a polymer resin selected from the group consisting of acrylic, polyester, polystyrene, and silicone resins along its length and bonded to other of said fibers comprising said bundle,

said coated fiber bundle being formed into a cylindrically configured fiber protective coated towpreg.

5,607,762

INK-RIBBONS COMPRISING IR-ABSORBING COMPOUNDS

Bernhard Albert, Maxdorf; Juergen Kipper, Karlsruhe; Friedrich Closs, Frankenthal, and Helmut Bellaire, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00661, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/21471, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 5, 1994, Ser. No. 513,864

Claims priority, application Germany, Mar. 18, 1993, 43 08 635.7

Int. Cl.[6] B41M *5/025*

U.S. Cl. 428—321.3 **8 Claims**

1. Ink-ribbons comprising a ribbon substrate having incorporated therein one or more compounds of the class of the metal-free phthalocyanines, the phthalocyanines which have two times lithium, magnesium, tin, zinc, copper, manganese, nickel, VO, TiO, AlCl or InCl as central atom, the metal-free naphthalocyanines, the naphthalocyanines which have two times lithium, magnesium, tin, zinc, copper, manganese, nickel, VO, TiO, AlCl or InCl as central atom, the nickel-dithiolene complexes, the methine dyes or the azulenesquaric acid dyes which each have their absorption maximum within the range from 700 to 1200 nm.

5,607,763

DECORATIVE FILM WITH PSA FOR EASY APPLICATION

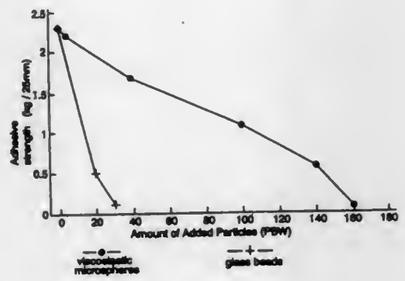
Hiroshi Matsuda, Yamagato Prefecture, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 211,192, Mar. 23, 1994, abandoned. This application May 24, 1995, Ser. No. 449,055

Claims priority, application Japan, Apr. 7, 1993, 5-080579

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **5 Claims**



1. A pressure sensitive adhesive decorative film comprising a pressure sensitive adhesive is applied onto a surface of a decorative film backing wherein the hardness of said decorative film backing is within the range between H and 3B and said pressure sensitive adhesive contains elastic microspheres with an elastic modulus ranging from 1×10^4 to 1×10^6 dyne/cm^2 and the pressure sensitive adhesive containing elastic microspheres is coated onto the decorative film backing in a coating weight ranging from 25 to 100 g/m^2.

5,607,764

OPTICAL DIFFUSER

Takeshi Konno, and Takeji Ochiai, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1995, Ser. No. 549,528

Claims priority, application Japan, Oct. 27, 1994, 6-287423

Int. Cl.[6] G02F *1/13*

U.S. Cl. 428—327 **4 Claims**

1. An optical diffuser comprising a transparent support and an optical diffusing layer which is coated on one surface of the support and which comprises an organic polymer binder and organic polymer particles, wherein a difference of refractive index between the polymer binder and polymer particles is not more than 0.05, the polymer particles have a weight average particle size of 10 to 21 μm, a weight ratio of the polymer particles to the polymer binder in the diffusing layer is within 1.9 to 2.6, a total weight of the coated polymer binder and particles per unit surface is within 10 to 17 g/m^2, and a distribution of the sizes of the polymer particles is not more than 3.5 μm in terms of standard deviation.

5,607,765

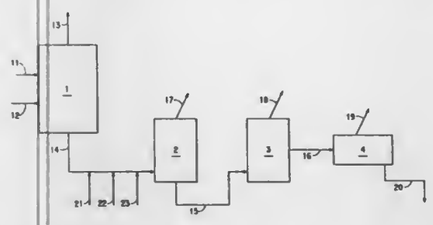
SULFONATE-CONTAINING POLYESTERS DYEABLE WITH BASIC DYES

Steven M. Hansen, Wilmington; James M. Howell, Greenville, and Cecil E. Reese, Kinston, all of N.C., assignors to E. I. Du Pont de Nemours and Comany, Wilmington, Del.

Continuation-in-part of Ser. No. 443,744, May 18, 1995, Pat. No. 5,559,205. This application Aug. 9, 1996, Ser. No. 695,269

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **9 Claims**



1. Oriented filaments of basic-dyeable ethylene terephthalate copolyester that contains 0.5 to 5 mole percent of lithium salt of a glycollate of 5-sulfo-isophthalic acid and of fine titre not more than about 2 dtex per filament.

5,607,766

POLYETHYLENE TEREPHTHALATE SHEATH/ THERMOPLASTIC POLYMER CORE BICOMPONENT FIBERS, METHOD OF MAKING SAME AND PRODUCTS FORMED THEREFROM

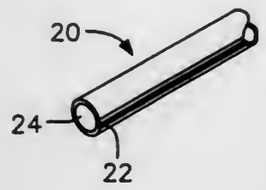
Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmood, Va.

Filed Jun. 6, 1995, Ser. No. 470,594

Claims priority, application Germany, Mar. 30, 1993, 43 10 289.1

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—373 **60 Claims**



1. A substantially self-sustaining, three-dimensional, porous element formed of a web of flexible thermoplastic fibrous material comprising an interconnecting network of highly dispersed randomly oriented continuous fibers bonded to each other at points of contact, wherein at least a major part of said continuous fibers are bicomponent fibers comprising a crystalline core of a thermoplastic polymer material substantially totally surrounded by a sheath of a polymer material selected from the group consisting of polyethylene terephthalate and copolymers thereof, wherein the sheath component has a higher melting temperature than the core component.

5,607,767

Patent Not Issued For This Number

5,607,768

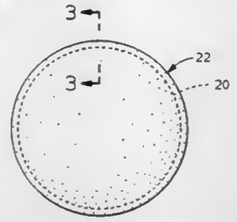
LUBRICOUS POLYMER-ENCAPSULATED FERROMAGNETIC PARTICLES AND METHOD OF MAKING

Howard H.-D. Lee, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 15, 1995, Ser. No. 440,577

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **20 Claims**



1. A mass of moldable particles for compression molding into a magnetizable product which comprises a plurality of ferromagnetic particles having a first particle size dispersed uniformly throughout a polymer matrix, said moldable particles each comprising a ferromagnetic particle having a shell of said polymer thereabout encapsulating said ferromagnetic particle, said shell having (i) an outer surface layer anchoring a root portion of each of a plurality of organic lubricant particles adhering to said surface, said lubricant particles having a second particle size less than said first particle size, and (ii) an inner layer which is substantially free of said lubricant particles and separating said surface layer from said ferromagnetic particle, said lubricant particles each having a denuded prominent portion extending from said root portion and standing in relief from said surface unimpaired by said polymer.

5,607,769

COMPOSITE MATERIAL

Martin T. Choate, Winona, Minn., assignor to Fiberite, Inc., Tempe, Ariz.

Filed Aug. 4, 1994, Ser. No. 286,058

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—408 **4 Claims**

1. A prepreg comprising

(a) a carbon paper substrate impregnated with

(b) a methacrylate butadiene styrene modified thermoset resin, wherein the paper comprises 50% by weight of 0.5 inch length and 50% by weight of 1 inch length carbon fibers.

5,607,770

CARBON-CARBON COMPOSITES CONTAINING POORLY GRAPHITIZING PITCH AS A BINDER AND/OR IMPREGNANT HAVING A REDUCED COEFFICIENT OF THERMAL EXPANSION AND IMPROVED FLEXURAL STRENGTH

Irwin C. Lewis, Strongsville, and Ronald A. Howard, Brook Park, both of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Division of Ser. No. 790,236, Oct. 22, 1985, Pat. No. 5,413,738. This application May 26, 1995, Ser. No. 451,537

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—408 **19 Claims**

1. A unitary composite structure comprising a heterogeneous combination of a carbonaceous reinforcing material interbonded with a matrix material, said matrix material being a carbonaceous pitch containing polymerized and cross-linked aromatic components thereof which have been cross-linked to the extent that the pitch is poorly graphitizing provided that if the poorly graphitizing pitch is obtained by polymerizing and cross-linking the aromatic

components of a tar or a pitch with a cross-linking agent, and the cross-linking agent is at least one Lewis acid, then said Lewis acid is selected from the group consisting of $FeCl_3$, $SnCl_2$, $FeBr_3$, I_2, $ZnCl_2$, $SbCl_3$, $SbCl_5$, $COCl_2$, BF_3 and combinations thereof; and provided furthermore that if $ZnCl_2$ is used as the Lewis acid then $ZnCl_2$ is admixed with the pitch or tar and heated at a temperature of from 100° C. to 300° C. for a period of about 1 to 6 hours, said structure having a lower coefficient of thermal expansion and a higher flexural strength than the same structure prepared with the same pitch whose aromatic components have not been cross-linked to the extent that such pitch is poorly graphitizing.

5,607,771

THERMAL TRANSFER RECORDING MEDIUM

Takashi Matsuse; Hideki Yanagi; Hiroyuki Mitobe; Masafumi Miyamoto, and Masayoshi Nawa, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,858

Claims priority, application Japan, Jun. 10, 1994, 6-129349; Dec. 8, 1994, 6-305163

Int. Cl.[6] B41M *5/26*

U.S. Cl. 428—423.1 **10 Claims**

1. A thermal transfer recording medium comprising a substrate provided thereon at least an ink layer which is to be transferred by heat application, characterized in that the loss tangent (tan δ) of said ink layer in viscoelasticity measurement at a temperature of from 60° to 100° C. ranges from 0.4 to 2.5, wherein

said ink layer comprises a binder resin and a colorant, and

said binder resin comprises an isocyanate adduct of a higher fatty acid polyhydric alcohol ester having a melt viscosity of 2500 to 50000 cSt at 100° C.

5,607,772

MAGNETIC RECORDING MEDIUM HAVING A SPECIFIED BINDER SYSTEM

Masahiro Yamakawa; Kenji Akimoto, both of Kawasaki; Katsuya Nakamura, Tokyo; Fumio Takano, Kawasaki, and Takahiro Takasaki, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,705

Claims priority, application Japan, Mar. 11, 1994, 6-067923; Mar. 17, 1994, 6-072468; Sep. 29, 1994, 6-259265; Sep. 30, 1994, 6-262047

Int. Cl.[6] G11B *5/702*

U.S. Cl. 428—425.9 **12 Claims**

1. A recording medium comprising a non-magnetic substrate and a magnetic layer thereover, which magnetic layer comprises magnetic powder dispersed therein, a crosslinked binder produced by crosslinking a binder composition which comprises (A) a polyurethane resin binder containing 2.2 to 7.0 terminal epoxy groups per molecule and (b) a sulfonic acid salt group, a carboxylic acid salt group, or a quaternary salt group in the molecule and having a number average molecular weight of 2,000 to 10,000, (B) a polymer selected from the group consisting of a vinyl chloride polymer having an average degree of polymerization of 100 to 500, a styrene polymer having a number average molecular weight of 5,000 to 50,000 and a (meth)acrylate polymer having a number average molecular weight of 5,000 to 50,000 as another binder, (C) an alicyclic acid anhydride in such an amount that the ratio by mol of the alicyclic anhydride to the total epoxy group is from 0.30 to 1.0, as a crosslinking agent, and (E) a tertiary amine in such an amount that the ratio by mol of the tertiary amine to the alicyclic acid anhydride is from 0.10 to 0.28, as a catalyst; and at least one of the binders is crosslinked between the epoxy groups therein by a reaction which includes components (C) and (E) as reactants.

5,607,773

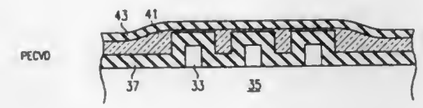
METHOD OF FORMING A MULTILEVEL DIELECTRIC

Byron T. Ahlburn, Plano, and Thomas R. Seha, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1994, Ser. No. 359,784

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—427 **21 Claims**



1. A method of forming a planar dielectric layer over an interconnect pattern comprising the steps of:

(a) providing a substrate having an electrical interconnect pattern thereon;

(b) forming a first layer of dielectric over said interconnect pattern;

(c) forming a second layer of silicon-containing dielectric different from said first layer over said first dielectric layer from an inorganic silicon-containing composition; and

(d) forming a third layer of dielectric different from said second layer over said second dielectric layer.

5,607,774

RADIATION CURED RADIOGRAPHIC INTENSIFYING SCREEN

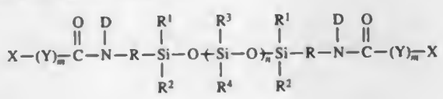
John C. Dahlquist, Maplewood, and Mieczyslaw H. Mazurek, Roseville, both of Minn., assignors to Imation Corp., Oakdale, Minn.

Division of Ser. No. 319,807, Oct. 7, 1994, Pat. No. 5,520,965. This application May 15, 1995, Ser. No. 441,189

Int. Cl.[6] B32B *27/20*

U.S. Cl. 428—447 **10 Claims**

1. A phosphor screen comprising particulate phosphors, which absorb x-rays, in a binder on a substrate wherein the phosphor to binder ratio is greater than 6:1 and wherein said binder is a radiation cured product of a radiation curable binder composition comprising at least one organopolysiloxane polymer having the following general formula:



wherein:

X is an ethylenically unsaturated hydrocarbon group;

Y and R independently are a divalent linking groups;

m is an integer of 0 to 1;

D is selected from the group consisting of hydrogen, an alkyl group of 1 to about 10 carbon atoms, and an aryl group of 1 to 20 carbon atoms;

R^1 are monovalent substituents which can be the same or different and are selected from an alkyl group and an aryl group;

R^2 are monovalent substituents which can be the same or different and are selected from an alkyl group and an aryl group;

R^3 is a monovalent substituent which can be the same or different and is selected from an alkyl group and an aryl group;

R^4 is a monovalent substituent which can be the same or different and is selected from an alkyl group and an aryl group; and

n is an integer of from 35 to 1000.

5,607,775

ARTICLE FOR USE UNDER HIGH VACUUM AT HIGH TEMPERATURE

Noboru Kimura; Ryouji Iwai, and Kazuhito Hirata, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,799

Claims priority, application Japan, Nov. 15, 1994, 6-280266

Int. Cl.[6] G04B *35/58*

U.S. Cl. 428—461 **5 Claims**

1. An article for use at a high temperature under a high vacuum which is an article made from PBN having been subjected to a degassing treatment at a temperature of 600° C. or higher for at least 1 hour in a vacuum atmosphere having a pressure of 1 Torr or lower and wrapped in an atmosphere of an inert gas having a relative humidity not exceeding 10% at room temperature with a wrapping film having a low moisture permeability not exceeding 10 g/m^2·24 hours.

5,607,776

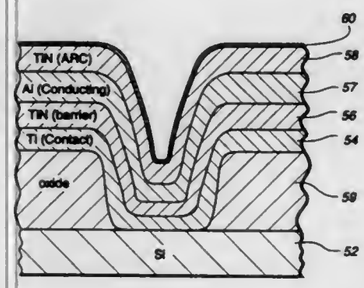
ARTICLE FORMED BY IN-SITU CLEANING A TI TARGET IN A TI+TIN COATING PROCESS

Mark A. Mueller, San Jose; Xin Guo, Mountain View, and John C. Egermeier, Santa Clara, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 119,769, Sep. 9, 1993, Pat. No. 5,427,666. This application Mar. 13, 1995, Ser. No. 403,169

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—472 **10 Claims**



1. A multilayer conductive structure formed on a semiconductor substrate comprising:

a) one or more conductive layers in electrical contact with said semiconductor substrate, the uppermost of said one or more layers comprising a layer of aluminum;

b) an anti-reflective coating of titanium nitride over said aluminum layer formed by sputtering titanium from a titanium target in the presence of nitrogen gas; and

c) a titanium layer containing titanium nitride formed over said titanium nitride layer by sputtering titanium from said titanium target, wherein said titanium layer is sufficiently thin to retain the anti-reflective properties of said underlying anti-reflective layer of titanium nitride such that the reflectivity of the underlying titanium nitride layer surface is kept below 40%, yet thick enough to accomplish removal of titanium nitride from said titanium target deposited thereon during said sputter formation of said titanium nitride anti-reflective layer.

5,607,777

COATING COMPOSITION FOR A SUBBING LAYER ON A POLYESTER FILM FOR LIGHT SENSITIVE MATERIAL

James J. Krejci, Medina, Ohio; John M. Heberger, Greer, S.C.; Cathy R. Moore, Anderson, S.C., and Robin M. Donald, Greer, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 170,109, Dec. 20, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,239

Int. Cl.[6] B32B *27/06;* **G03C** *1/76;* **C09K** *3/00*

U.S. Cl. 428—480 **19 Claims**

1. A subbing coating consisting essentially of components I and III or components II and III, wherein I, II and III are as follows:

I a polymer A having attached to its backbone carboxyl groups and/or groups which form carboxyl groups upon hydrolysis, and

a polymer B having attached to its backbone —SO_3X and/or —PO_3XY groups, wherein X and Y are identical or different and denote an alkali metal, ammonium, organic quaternary ammonium or hydrogen;

II a polymer A' having attached to its backbone carboxyl groups and/or groups which form carboxyl groups upon hydrolysis, and —SO_3X and/or —PO_3XY groups, wherein X and Y are identical or different and denote an alkali metal, ammonium, organic quaternary ammonium or hydrogen;

III an organic compound C having at least two free hydroxy groups,

wherein the subbing does not comprise addition polymerizable compounds.

5,607,778

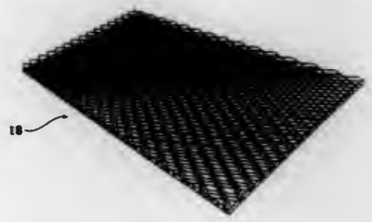
METHOD OF MANUFACTURING A POROUS METAL MAT

James B. Padden, Kernersville, N.C., assignor to Puroiator Products Company, Tulsa, Okla.

Filed Jul. 20, 1995, Ser. No. 504,613

Int. Cl.[6] B32B *3/24;* **B23K** *101/22*

U.S. Cl. 428—613 **18 Claims**



1. A method of manufacture a porous metal mat comprising the steps of:

forming in overlapping relationship a stack of multiple layers of expanded

electrically conductive metal foil to provide an assembly in which some of the layers are as expanded and some of the layers are flattened after expansion; and

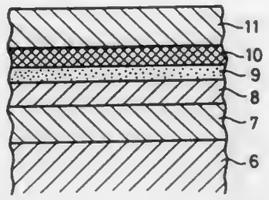
bonding the assembly of stacked layers to form a mat.

5,607,779

HARD CARBON COATING-CLAD BASE MATERIAL

Koichi Naoi, Kawagoe, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 171,659
Claims priority, application Japan, Dec. 22, 1992, 4-092187 U; Nov. 16, 1993, 5-061587 U
Int. Cl.[6] C23C *16/26;* B32B *15/04*
U.S. Cl. 428—634 5 Claims



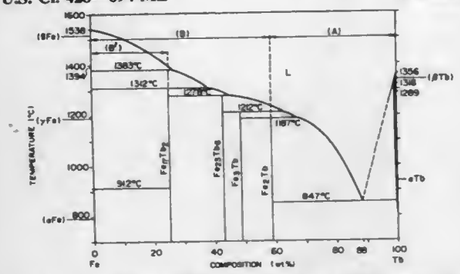
1. A hard carbon coating-clad material comprising:
a base material of steel
a substratal metal coating deposited by a wet plating process, said substratal metal coating comprising a nickel or nickel alloy coating on the steel base material and a chromium coating on said nickel or nickel alloy coating;
an intermediate metal coating formed on the substratal metal coating, said intermediate coating comprising a titanium coating formed on the substratal coating by a dry plating process and including a silicon coating formed on said titanium coating; and
a hard carbon coating formed on the silicon coating by a dry plating process.

5,607,780

TARGET FOR MAGNETO-OPTICAL RECORDING MEDIUM AND PROCESS FOR PRODUCTION THEREOF

Kaoru Masuda, Yasugi, and Takashi Meguro, Yonago, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,825
Claims priority, application Japan, Jul. 30, 1993, 5-208507; Mar. 1, 1994, 6-055248
Int. Cl.[6] G11B *5/66;* B22F *9/00*
U.S. Cl. 428—694 ML 22 Claims



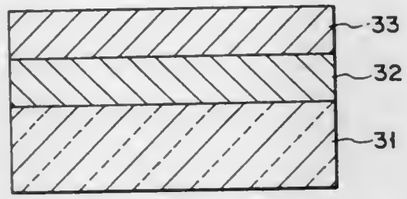
1. A target material for magneto-optical recording medium comprising an RE-TM phase and a TM-RE phase bonded to each other, wherein said RE-TM phase (A) having a composition with an RE content higher than that of the composition of an intermetallic compound represented by the chemical formula TM_2RE, and said TM-RE phase (B) having a composition with an RE content equal to or lower than that of the composition of an intermetallic compound represented by the chemical formula TM_2RE, wherein RE denotes at least one rare earth element selected from the group of elements consisting of Nd, Gd, Tb, Dy, Ho and Er, and TM denotes at least one element selected from the group consisting of Fe, Co and Ni.

5,607,781

OXIDE FILM WITH PREFERRED CRYSTAL ORIENTATION, METHOD OF MANUFACTURING THE SAME, AND MAGNETO-OPTICAL RECORDING MEDIUM

Shiho Okuno, Kawasaki; Susumu Hashimoto, Tokyo, and Koichiro Inomata, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 551,899, Jul. 12, 1990, abandoned. This application May 26, 1994, Ser. No. 329,514
Claims priority, application Japan, Jul. 27, 1989, 1-192513; Sep. 8, 1989, 1-231446; Apr. 27, 1990, 2-113201
Int. Cl.[6] G11B *5/66;* C23C *14/00;* B05D *5/12*
U.S. Cl. 428—694 ML 10 Claims



1. An oxide film with a preferred crystal orientation, said oxide film is formed directly on an amorphous substrate and has a spinel crystal structure, wherein <110> direction of the oxide film is the preferred crystal orientation.

5,607,782

MAGNETIC RECORDING MEDIUM

Toshio Ishida; Masaki Satake, and Tsutomu Okita, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1993, Ser. No. 105,614
Claims priority, application Japan, Aug. 21, 1992, 4-222323
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—694 T 19 Claims

1. A magnetic recording medium, comprising a magnetic layer having a ferromagnetic metallic thin film at least on one side of a non-magnetic support, whereby a layer is formed on the magnetic layer, said layer containing at least one fluorine compound, which is a compound having a formula selected from the group consisting of:

Formula (3)

$$R_f-Y-R^1-(CH_2)_k-X,$$
$$R_f-Y-R^1-(CH_2)_k-X$$

and

Formula (4)

$$R_f-Y-R^1-(CH_2)_k-X$$
$$R_f-Y-R^2$$

where R_f represents a perfluoroalkyl group having either formula (1) or (2), Y represents a bivalent connecting group, X represents —OH, $-SO_3M$, $-OSO_3Na$, —COOH, or $-PO_3M_2$, where M represents a hydrogen atom, an alkali metal or ammonium, b is an integer of 0 to 4, R^1 represents CH, CH_2C, or $(CH_3)C$, R^2 represents CH_2, CH_2CH_2, $CH_2CH_2CH_2$, or $CH(CH_3)$, k is an integer of 0 to 2, and R_f, X, Y, R^1, R^2 and k in the same molecule may not be the same, and

Formula (1)

$$CF_3CF_2(CF_2)_n(CH_2)_m-$$

Formula (2)

$$(CF_3)_2CF(CF_2)_n(CH_2)_m-$$

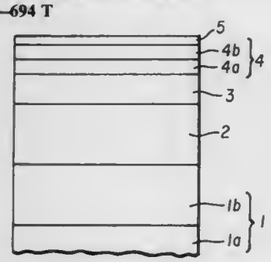
where n is a number of 0 to 10, m is a number of 1 to 18, and n+m are an integer of 8 to 18.

5,607,783

MAGNETIC RECORDING MEDIUM AND METHOD FOR FABRICATING THE SAME

Katsumi Onodera, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Japan

Filed Jun. 8, 1994, Ser. No. 255,879
Claims priority, application Japan, Jun. 8, 1993, 5-136294
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—694 T 5 Claims



1. A magnetic recording medium, comprising:
a non-magnetic base plate;
a magnetic layer disposed on said base plate; and
a carbon protective film containing hydrogen disposed on said magnetic layer for protecting said magnetic layer, said protective film comprising a plurality of layers, including a first layer having a first hydrogen content formed on said magnetic layer, and a second layer having a second hydrogen content formed on said first layer, wherein said second hydrogen content is higher than said first hydrogen content and a hardness of said second layer is lower than a hardness of said first layer.

5,607,784

HYDROGEN/FLUORINE POWER GENERATING SYSTEM

Vinod Jaian, deceased, late of Concord; Mahesh N. Desai, Norwood, and Derek A. Johnson, Jefferson, all of Mass., assignors to ElectroChem, Inc., Woburn, Mass.

Filed Jan. 19, 1995, Ser. No. 375,528
Int. Cl.[6] H01M *8/14*
U.S. Cl. 429—16 14 Claims

1. A power generating system comprising a source of hydrogen, a source of fluorine, an electrode assembly including a fluorine cathode, a hydrogen anode, and an electrolyte layer disposed between the cathode and anode, wherein the electrolyte layer comprises KF.xHF and x is at least about 1.

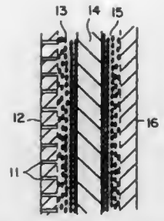
5,607,785

POLYMER ELECTROLYTE ELECTROCHEMICAL CELL AND PROCESS OF PREPARING SAME

Takeshi Tozawa, and Nobuhito Toshima, both of Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K.; M. Watanabe, both of Japan, and Stonehart Associates Inc., Madison, Conn.

Filed Oct. 11, 1995, Ser. No. 540,938
Int. Cl.[6] H07M *8/10*
U.S. Cl. 429—33 10 Claims

1. A polymer electrolyte electrochemical cell comprising, in the following order, a cathode current collector, a cathode catalyst layer, a solid polymer electrolyte membrane, an anode catalyst layer and an anode current collector, the cathode current collector being an electroconductive unwoven fabric and having apertures formed through said fabric so as to allow contact between the catalyst layer and a gas.

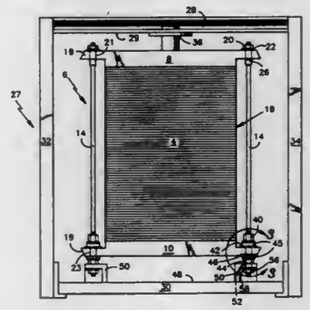


5,607,786

FUEL CELL TRANSPORT FRAME

Robin J. Guthrie, East Hartford, and Thomas J. Corrigan, Vernon, both of Conn., assignors to International Fuel Cells Corporation, So. Windsor, Conn.

Filed May 5, 1995, Ser. No. 435,693
Int. Cl.[6] H01M *12/08*
U.S. Cl. 429—34 3 Claims



1. A fuel cell stack mounting apparatus comprising a fuel cell stack assembly having a plurality of fuel cells each having an anode and a cathode electrode positioned on opposite sides of an electrolyte and gas flow fields to direct a fuel and an oxidant to the anode and cathode respectively; comprising
a stack holder for fixing the fuel cells in position under compression within the stack assembly said stack holder having a top end plate positioned at the top of the fuel cell stack and parallel to the fuel cell stack electrodes and a bottom end plate positioned at the opposite end of the fuel cell stack assembly and also parallel to the fuel cell electrodes, the top end plate and the bottom end plate each having four corners and each corner having an opening therethrough, and a tie rod, positioned through each of said holes in said top plate and passing through a hole in said bottom end plate such that tie rods are substantially parallel to said fuel cell stack assembly; and
wherein said tie rod end is fixed in place at said top plate has an electrically insulated sleeve positioned about the tie rod end in contact with the top plate and an electrically insulating washer positioned between the tie rod end and a fixing means securing the tie rod end in place at the top end plate; and
wherein the opposite tie rod end is threaded and passes through the bottom end plate and is fixed in place thereto by two fixing means, one fixing means positioned on one side of the bottom end plate and a second fixing means positioned on the opposite side of the bottom end plate, a dielectric sleeve slidably disposed about the tie rod portion in contact with the bottom end plate and a second dielectric washer positioned between the end plate and the second fixing means; and

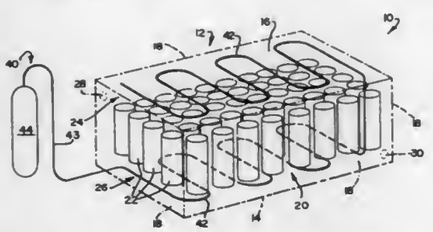
wherein the said apparatus is mounted in a frame having a top beam and a bottom beam and wherein the two or more tie rods are affixed to the bottom beam of the frame and support the fuel cell stack assembly while electrically insulating the fuel cell stack assembly from the rigid frame.

5,607,787

HIGH TEMPERATURE STORAGE BATTERY

Roger J. Wedlake, Mulbarton, South Africa; Roger J. Bones, and David L. Segal, both of Abington, England, assignors to Programme 3 Patent Holdings, Luxembourg

Filed May 3, 1994, Ser. No. 238,164
Int. Cl.[6] H01M *10/50*
U.S. Cl. 429—62 **16 Claims**



1. A high temperature storage battery, which comprises
a housing having a floor panel, a top panel and a plurality of side panels arranged peripherally between the floor and top panel, with each panel being of double walled construction and with the housing defining a cell storage cavity;
heat insulating material between the panel walls;
a plurality of non-aqueous high temperature electrochemical cells within the cell storage cavity, with spaces being provided between adjacent cells or groups of cells and the cells being operable at an elevated operating temperature;
an upper space between the cells and the top panel;
a lower space between the cells and the floor panel;
a cooling fluid feeder comprising a cooling fluid inlet leading into the upper space;
a cooling fluid withdrawer comprising a cooling fluid outlet leading from the lower space, with the spaces between the cells or groups of cells interconnecting the upper and lower spaces and permitting cooling fluid movement from the upper to the lower space; and
a holder for holding a dispersable protective substance, the holder located in at least one of the spaces so that it spans the space, and being of a material capable of softening sufficiently at a temperature above the operating temperature of the cells so as to rupture, thereby to discharge protective substance into the cell storage cavity.

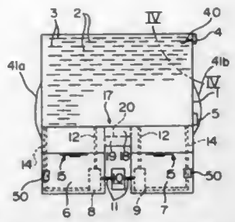
5,607,788

ZINC-BROMINE BATTERY WITH CIRCULATING ELECTROLYTES

Gerd Tomazic, Murzzuschlag, Austria, assignor to Elin Energieanwendung GmbH, Vienna, Austria

PCT No. PCT/AT93/00134, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/06167, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 30, 1993, Ser. No. 392,901
Claims priority, application Austria, Sep. 1, 1992, 1741/92
Int. Cl.[6] H01M *2/40*
U.S. Cl. 429—72 **11 Claims**

1. A zinc-bromine battery comprising:
first and second gas- and fluid-proof reservoirs;
a first and second motor driven pump;
an electrolyte to be circulated by said first and second motor driven pumps;



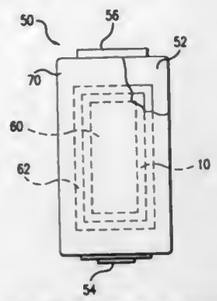
each of said first and second gas- and fluid-proof reservoirs including a pump chamber coupled to a respective one of said first and second motor driven pumps;
means for equalizing pressure between said first and second gas- and fluid-proof reservoirs;
an electrode chamber including a plurality of bipolar electrodes and a plurality of plastic separators, said separators disposed between said bipolar electrodes, each of said bipolar electrodes and said separators comprising an outer frame and an inner portion, said outer frame having a thickness greater than the thickness of the inner portion;
a plurality of electrolyte supply lines coupling said first and second motor driven pumps to said electrode chamber;
a plurality of electrolyte return lines coupling said electrode chamber to said first and second motor driven pumps;
said first gas- and fluid-proof reservoir comprising a first electrolyte supply line and a first electrolyte return line and said second gas- and fluid-proof reservoir comprising a second electrolyte supply line and a second electrolyte return line; and
said pressure equalization means comprising a rubber elastic diaphragm, said diaphragm separating said electrolyte in said first gas- and fluid-proof reservoir from said electrolyte in said second gas- and fluid-proof reservoir,
wherein each of said first gas- and fluid-proof reservoir and said second gas- and fluid-proof reservoir further comprise a heat exchanger for removing heat from said electrolyte.

5,607,789

LIGHT TRANSPARENT MULTILAYER MOISTURE BARRIER FOR ELECTROCHEMICAL CELL TESTER AND CELL EMPLOYING SAME

Jack Treger, Quincy; Bryan C. Lagos, Needham, both of Mass.; John B. Fenn, Suffield, Conn.; H. Frank Gibbard, Wellesley, and Guang Wei, Somerville, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jan. 23, 1995, Ser. No. 376,274
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—90 **18 Claims**



1. An electrochemical cell having a moisture sensitive cell condition tester and a light transparent moisture barrier, wherein said moisture barrier comprises a composite on a polymeric substrate, said composite comprising at least three alternating layers of a water insoluble inorganic material selected from the group consisting of at least one inorganic compound, silicon and mixture thereof and a water insoluble organic material wherein the thickness of said inorganic compound layers and said organic compound layers ranges between about 100 to 10,000 angstroms and between about 100 angstroms to 5 microns, respectively.

5,607,790

ELECTROCHEMICAL CELL LABEL WITH INTEGRATED TESTER

John Hughen, Cucamonga, Calif.; Scott Ferguson, Danbury, and Michael Garris, Litchfield, both of Conn., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 315,317, Sep. 29, 1994. This application Jun. 1, 1995, Ser. No. 456,428
Int. Cl.[6] H01M *10/48*
U.S. Cl. 429—93 **33 Claims**



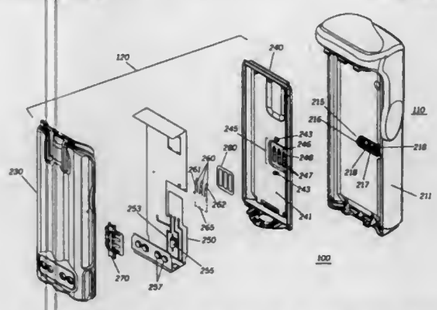
1. In combination, an electrochemical cell and a label/tester composite;said cell comprising positive and negative terminals and a metal housing; said label/tester composite being attached to the cell housing, a portion of said housing forming one of said terminals; said composite including a film having a thermochromic material disposed thereon, an electrically conductive material in thermal contact with the thermochromic material, means for thermally insulating said conductive material from the cell housing, wherein a portion of said conductive material is capable of generating sufficient heat when electrically connected to the terminals of said cell when undischarged to cause a change in appearance in the thermochromic material in thermal contact therewith and wherein said means comprises an opening in a surface of a substantially electrically nonconductive material so that the perimeter of said opening is defined by said nonconductive material, wherein said opening is of sufficient size to equal at least 40% of the surface area of one side of said heat generating portion of said conductive material.

5,607,791

BATTERY INTERFACE STRUCTURE FOR AN ELECTRICAL DEVICE

Jorge L. Garcia, Plantation; Faris Habbaba, Boca Raton, both of Fla.; Mark C. Tarabolous, Chamblee, and William C. Phelps, III, Lawrenceville, both of Ga., assignors to Motorola, Inc, Schaumburg, Ill.

Filed Jul. 8, 1996, Ser. No. 679,414
Int. Cl.[6] H01M *2/10;2/30*
U.S. Cl. 429—96 **14 Claims**



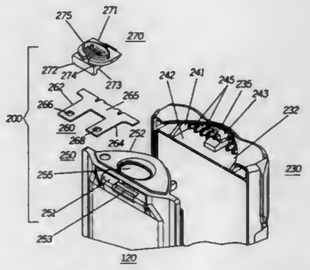
1. An electrical interface structure for a removable battery, comprising:
a battery housing member having an interior surface and an exterior surface, and an electrical interface area defined by a recess on the interior surface and a corresponding projection on the exterior surface, the electrical interface area having a plurality of slots extending therethrough; and
a plurality of cantilever contacts corresponding to the plurality of slots, each cantilever contact having an anchored portion being fixedly located with respect to the electrical interface area, and having a deflectable cantilever portion seated within the recess and biased against the interior surface of the battery housing member, and externally accessible via a corresponding slot from the exterior surface of the battery housing member, wherein the plurality of cantilever contacts are completely recessed below the exterior surface of the battery housing member.

5,607,792

BATTERY LATCH

Jorge L. Garcia, Plantation; Craig F. Siddoway, Davie, and Faris S. Habbaba, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1996, Ser. No. 595,444
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—97 **17 Claims**



1. A removable battery package having a latch assembly for attaching to an electronic device, the electronic device having a latch coupler, the removable battery package comprising:
a battery housing having a socket that mates with the latch coupler;
a latch member secured within the socket, the latch member being resilient and deflectable, and being biased in a first position, the latch member having a latch portion for engaging the latch coupler; and
a button mounted on the latch member, the button being depressible to deflect the latch member to a second position.

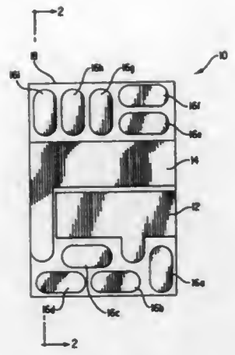
5,607,793

FLEXIBLE WELDING BOARD FOR BATTERY PACK

Richard B. Alexandres, 5193 Lakeview Dr., Clear Lake, Iowa 50428, and Elmer Hughett, Rte. 1, Box 151EC, Huntsville, Tenn. 37756

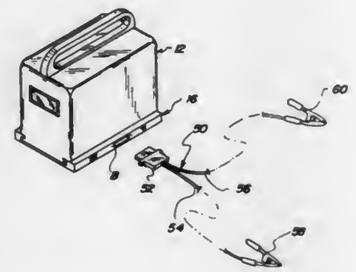
Continuation-in-part of Ser. No. 886,869, May 22, 1992, which is a continuation-in-part of Ser. No. 618,454, Nov. 27, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,517
Int. Cl.[6] H01M *2/24*
U.S. Cl. 429—100 **12 Claims**

1. A flexible welding board for attachment of at least one battery cell having opposing terminal ends, said flexible welding board comprising:
a. a bendable polymer substrate having at least two openings, the openings positioned in the substrate so that a pair of the at least two openings are capable of alignment over opposing terminal ends of the at least one battery cell when the flexible welding board is bent; and,
b. at least two weldable metal straps laminated to the polymer substrate, wherein each strap covers a portion of a corre-



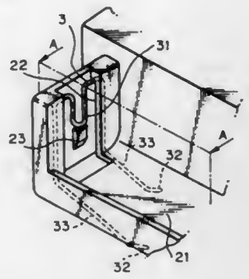
sponding opening in the substrate to permit weldable attachment of the metal straps to the terminal ends of the at least one battery cell through the corresponding openings.

5,607,794
PORTABLE BATTERY CASE
Neil R. Koenig, 9392 Oasis Ave., Westminster, Calif. 92683
Filed Aug. 16, 1995, Ser. No. 515,653
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—100 **5 Claims**



1. A transportable battery case comprising:
a battery housing having a twelve-volt battery contained therein, the battery housing comprises a substantially parallelpiped enclosure within which the battery is positioned; and a handle extending across an upper end of the enclosure;
a base member removably coupled to a lower surface of the battery housing, the base member including an electical connection positioned in electrical communication with the battery, the base member comprises a substantially planar base panel having spaced longitudinal lateral edges from which a pair of substantially spaced and parallel lateral projections extend, the lateral projections extending substantially orthogonally upward from the base panel; retaining flanges secured to the lateral projections, the retaining flanges projecting from the lateral projections towards one another so as to reside in a substantially spaced and parallel orientation relative to the base panel, the enclosure of the battery housing being shaped so as to define a pair of securing flanges projecting from laterally opposed longitudinal edges thereof which are cooperatively received between the retaining flanges and the base panel so as to slidably couple the battery housing to the base member.

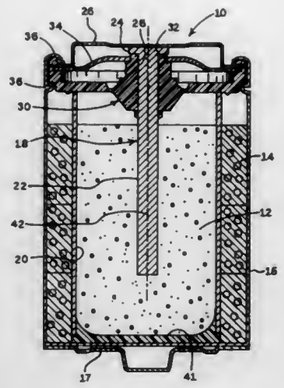
5,607,795
BATTERY TERMINALS OF MINIATURE ELECTRONIC APPARATUS AND STRUCTURE FOR RETAINING THE SAME
Yoshihide Saida, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 26, 1996, Ser. No. 592,231
Claims priority, application Japan, Jan. 26, 1995, 7-010499
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—100 **5 Claims**



1. A battery holding section of a miniature electronic apparatus having a printed circuit board loaded with electronic parts and an upper and a lower case accommodating the printed circuit board comprising:
a battery holding chamber formed in said upper case for receiving a battery;
a first terminal including a resilient deformable portion, said first terminal being retained by one end of said battery holding chamber, wherein said resilient deformable portion has a portion protruding below said battery holding chamber and contacting a first electrode located at a first position on the printed circuit board;
a second terminal including a resilient deformable portion, said second terminal being retained by the other end of said battery holding chamber opposite to said one end, wherein said resilient deformable portion of said second terminal has a portion protruding below said battery holding chamber and contacting a second electrode located at a second position on the printed circuit board;
a first recess formed in said one end of said battery holding chamber for receiving and retaining said first terminal;
a projection formed in said one end of said battery holding chamber for preventing said first terminal received in said first recess from slipping out; and
a second recess formed in said other end of said battery holding chamber for receiving and retaining said second terminal.

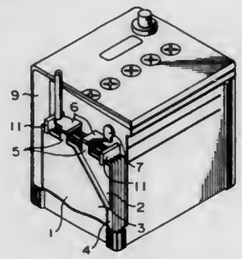
5,607,796
RECHARGEABLE ALKALINE ELECTROCHEMICAL CELL
Robert J. Jacus, and Janna L. Rose, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.
Filed Jun. 24, 1996, Ser. No. 669,144
Int. Cl.[6] H01M *4/66*
U.S. Cl. 429—165 **20 Claims**

1. A rechargeable alkaline electrochemical cell, comprising:
(a) a cathode;
(b) a cathode current collector in electrical contact with the cathode;
(c) a zinc anode, said zinc anode including a chemically reactive anode mix comprising zinc, and thereby engendering a chemically reactive anode environment;
(d) a functionally operable anode current collector in electrical contact with said anode mix, said anode current collector comprising copper, and about 0.5% by weight to about 11% by weight silicon;



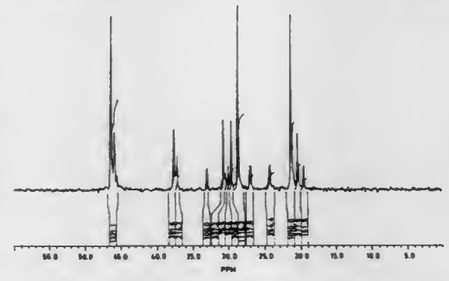
(e) an alkaline electrolyte; and
(f) a separator separating said zinc anode and said cathode.

5,607,797
LEAD ACID STORAGE BATTERY AND METHOD FOR MANUFACTURE THEREOF
Toshirou Hasegawa, Toyohashi; Kazuhiko Shimoda, Kosai; Kunio Makino, Kosai, and Mitsuo Tomioka, Kosai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 15, 1995, Ser. No. 441,129
Claims priority, application Japan, May 24, 1994, 6-109628; May 24, 1994, 6-109665; Aug. 2, 1994, 6-181257; Apr. 14, 1995, 7-089290
Int. Cl.[6] H01M *10/16*
U.S. Cl. 429—208 **9 Claims**



1. A lead acid storage battery, comprising:
a monoblock case made of a thermoplastic synthetic resin and comprising a plurality of cell chambers formed by partitioning the case with a plurality of inner partition walls;
a plate group contained within each of the cell chambers, the plate group having lower and upper ends and comprising a plurality of positive plates, negative plates, and microporous envelope separators made of a polyolefin, the positive plates and the negative plates being alternately arranged and the envelope separators enveloping each of the positive plates or each of the negative plates, and each of the plates having lower and upper ends and being provided with a lug at nearly the center of the upper end of the plate and the respective plates of the same polarity being connected at the lugs by a connecting strap;
at least one beam-shaped plate fixing member having a central portion and opposing ends, the plate fixing member being made of a polyolefin and being integrally fixed to at least one area on the upper end of the plate group by thermal fusion bonding to the envelope separators, and at least one end of the plate fixing member being integrally fixed to the cell chamber by thermal fusion bonding to the inner wall of the case or one of the inner partition walls; and
a cover which covers the case and is made of a thermoplastic synthetic resin.

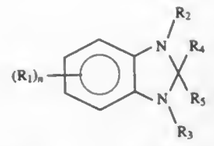
5,607,798
SOFT AND STRONG THERMOPLASTIC POLYMER AND NONWOVEN FABRIC LAMINATES
Peter M. Kobylivker, Marietta; Simon K. Ofosu, Lilburn; Susan E. Shawver, Roswell, and Roger L. Lance, Buford, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Division of Ser. No. 295,576, Aug. 25, 1994, Pat. No. 5,460,884. This application May 17, 1995, Ser. No. 442,618
Int. Cl.[6] B32B *27/00*
U.S. Cl. 442—381 **6 Claims**



1. A laminate comprising:
a first layer of nonwoven spunbond fabric comprising a web of bondable thermoplastic polymer fibers comprised of a biconstituent blend of from about 95 to 50 weight percent polypropylene having an isotacticity of at least 98 percent, and from about 5 to 50 weight percent of a random block copolymer of propylene and ethylene having a melting point of below 160° C. and having about 3 percent random ethylene molecules and about 9 percent block ethylene molecules;
a second layer of a spunbond polypropylene;
wherein said first and second layers have between them at least one layer of a material selected from the group consisting of film and meltblown nonwoven fabric, and;
wherein said layers are bonded together to form a laminate by a method selected from the group consisting of thermal bonding, ultrasonic bonding, hydroentanglement, needlepunch bonding and adhesive bonding.

5,607,799
OPTICAL PHOTOREFRACTIVE ARTICLE
William E. Moerner, San Jose, Calif.; Scott M. Silence, Rochester, N.Y., and Robert J. Twieg, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 21, 1994, Ser. No. 230,987
Int. Cl.[6] G03H *1/04*
U.S. Cl. 430—1 **16 Claims**

1. A three-component photorefractive article for the transmission of electromagnetic radiation consisting essentially of (i) about 2 weight % of a sensitizer, (ii) about 38 weight % of a compound having the structure:



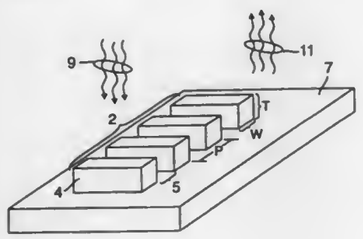
wherein R_1 is $—NO_2$, —CN, $—CHC(CN)_2$, —COR, $—CO_2R$ or $—SO_2R$; n is 1 or 2; R, R_2 and R_3 are independently phenyl or alkyl, and R_4 and R_5 are independently alkyl or together R_4 and R_5 are cycloalkyl, which functions as a non linear optical chromophore and a charge transfer agent, and (iii) 60 weight % nonphotoconductive polymer.

5,607,800

METHOD AND ARRANGEMENT FOR CHARACTERIZING MICRO-SIZE PATTERNS

David H. Ziger, Altamonte Springs, Fla., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 15, 1995, Ser. No. 388,934
Int. Cl.[6] G01N *21/55*; G01B *11/02*
U.S. Cl. 430—8 **19 Claims**



1. A method for characterizing an arrangement having a patterned layer of photoresist disposed on an underlying layer, the patterned layer of photoresist having a micro-size first feature, comprising the steps of:

(a) subjecting the arrangement to radiation having a range of wavelengths such that the patterned layer of photoresist absorbs more radiation than the underlying layer, and the underlying layer reflects more radiation than the patterned layer of photoresist, and further characterized by a range of wavelengths suitable for measuring the first feature of the patterned layer of photoresist;

(b) measuring the zeroth order reflected radiation from the arrangement;

(c) expressing the amount of zeroth order reflected radiation as a reflectance measurement; and

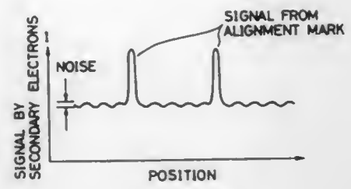
(d) comparing the reflectance measurement for the arrangement to reflectance measurements obtained for a plurality of reference arrangements each having a patterned layer of photoresist disposed on an underlying layer, the plurality of reference arrangements collectively comprising a multiplicity of features, which features differ from each other and first feature by the size of the feature.

5,607,801

DIRECT PATTERNING METHOD OF RESIST FILM USING ELECTRON BEAM

Hiroshi Nozue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 354,807
Claims priority, application Japan, Dec. 14, 1993, 5-312401
Int. Cl.[6] G03F *9/00*; G03C *5/00*
U.S. Cl. 430—22 **9 Claims**



1. A direct patterning method using an electron beam, said method comprising the steps of:

(A) forming an electron resist film on or over a surface of a semiconductor substrate, said substrate having an alignment mark;

(B) irradiating a first beam of incident electrons accelerated at a first voltage to said resist film and scanning said first beam to cross said alignment mark,

said first voltage being set so that said incident electrons of said first beam are reflected by said mark to be back-scattered electrons that can reach the surface of said resist film,

secondary electrons being generated at the surface of said resist film due to said back-scattered electrons and being detected by an electron in order to recognize said alignment mark; and

(C) irradiating a second beam of incident electrons accelerated at a second voltage lower than said first voltage to said resist film and scanning said second beam over said substrate by reference to said alignment mark in order to write a given pattern in said resist film.

5,607,802

MULTILAYERED PHOTORECEPTOR WITH DUAL UNDERLAYERS FOR IMPROVED ADHESION AND REDUCED MICRO-DEFECTS

Satchidanand Mishra, Wester; Kathleen M. Carmichael, Williamson, and Donald P. Sullivan, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1996, Ser. No. 638,513
Int. Cl.[6] G03G *5/047*; *5/10*; *5/14*
U.S. Cl. 430—58 **21 Claims**

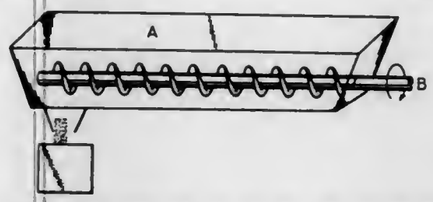
1. An electrophotographic imaging member comprising a support substrate having an electrically conductive ground plane layer comprising a layer comprising zirconium over a layer comprising titanium, a hole blocking layer, an adhesive layer comprising a polyarylate film forming resin, an intermediate layer in contact with said adhesive layer, said intermediate layer comprising a film forming carbazole polymer, a charge generation layer comprising a perylene or a phthalocyanine, and a hole transport layer, said hole transport layer being substantially non-absorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

5,607,803

DECOLORIZABLE TONER AND A DECOLORIZABLE TONER PRODUCTION PROCESS

Katsumi Murofushi; Yoshikazu Hosoda; Toshiya Kawasaki, all of Kawasaki; Yuki Abe, Kobe; Kiyotaka Yamaguchi, Kobe, and Takayuki Yoshida, Kobe, all of Japan, assignors to Showa Denko K.K., Tokyo, and Bando Chemical Industries, Ltd., Hyogo, both of Japan

Filed Dec. 9, 1994, Ser. No. 355,257
Claims priority, application Japan, Dec. 10, 1993, 5-310653; Dec. 10, 1993, 5-310679
Int. Cl.[6] G03G *9/09*
U.S. Cl. 430—106 **9 Claims**



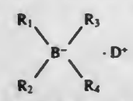
1. A method for producing a decolorizable toner, wherein said decolorizable toner comprises:

(A) a binder resin;

(B) a mixture of at least two cationic dyes consisting of dyes represented by formulas (I) and (II), wherein formulas (I) and (II) are as follows:

$$A^- \cdot D^+ \quad \text{(I)}$$

wherein A^- is an anion and D^+ is a cation having absorbance in the visible region or the near infrared region;


(II)

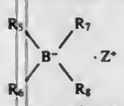
wherein each of R^1, R^2, R^3 and R^4 is an alkyl, aryl-substituted alkyl, allyl-substituted alkyl, alkoxy-substituted alkyl, amino-substituted alkyl, aryl, alkyl-substituted aryl, allyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, silyl or heterocyclic group, or at least two of R^1, R^2, R^3 and R^4 together may form a ring structure and D^+ is a cation having absorbance in the visible region or the near infrared region;

with the proviso that said cationic dye mixture is a mixture of the following (i) and (ii):

(i) at least one cationic dye represented by formula (I) or (II), wherein D^+ in formula (I) is a cation having absorbance in the visible region, and D^+ in formula (II) is a cation having absorbance in the visible region; and

(ii) at least one cationic dye represented by formula (I) or (II), wherein D^+ in formula (I) is a cation having absorbance in the near infrared region and D^+ in formula (II) is a cation having absorbance in the near infrared region;

(C) a decolorizing agent represented by formula (III):


(III)

wherein R^5, R^6, R^7 and R^8 represents an alkyl, aryl-substituted alkyl, allyl-substituted alkyl, alkoxy-substituted alkyl, amino-substituted alkyl, aryl, alkyl-substituted aryl, allyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, silyl or heterocyclic group, or at least two or more of R^5, R^6, R^7 and R^8 together may form a ring structure and Z^+ represents a quaternary ammonium cation, quaternary pyridinium cation, quaternary quinolinium cation, phosphonium cation, iodinium cation or sulfonium cation; and

(D) an anti-discoloration agent;

and wherein said method comprises:

(i) dissolving said cationic dye mixture, said decolorizing agent represented by formula (III), said binder resin and said anti-discoloration agent in an organic solvent to form a mixed solution;

(ii) removing said solvent from the mixed solution;

(iii) drying said solution; and

(iv) pulverizing said mixture to produce a toner.

5,607,804

COMBINATION, SET, OR GAMUT TONERS

Jacques C. Bertrand, Ontario; Roger N. Ciccarelli, Rochester; Thomas R. Pickering, Webster, and Denise R. Bayley, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1995, Ser. No. 542,879
Int. Cl.[6] G03G *9/09*
U.S. Cl. 430—106 **28 Claims**

1. A combination of four color toners for the development of electrostatic latent images enabling the formation of a full color gamut image, and wherein the four toners are comprised of a cyan toner, a magenta toner, a yellow toner, and a black toner, each of said toners being comprised of resin and pigment, and wherein the pigment for the cyan toner is a β copper phthalocyanine, the pigment for the magenta toner is a monoazo lithol rubine, the pigment for the yellow toner is an isoindoline, and the pigment for the black toner is carbon black, and wherein each of said magenta, yellow and cyan pigment is of a particle diameter size of from about 0.01 micron to about 0.3 micron, and said black pigment is of a particle diameter size of from about 0.001 micron to about 0.1 micron, and wherein each of said cyan, magenta and yellow pigment is dispersed in said toner resin by flushing said cyan, magenta and yellow pigments into said toner resin wherein a cyan, magenta and yellow pigment water wet cake is mixed with said toner resin.

5,607,805

TONER FOR ELECTROPHOTOGRAPHY AND DEVELOPER COMPOSITION CONTAINING THE SAME

Tetsuhiro Semura, and Eiji Morimoto, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,343
Claims priority, application Japan, Jul. 18, 1994, 6-188882
Int. Cl.[6] G03G *9/083*
U.S. Cl. 430—106.6 **10 Claims**

1. A toner for electrophotography comprising at least a binder resin and a colorant, the binder resin containing 90–100% by weight of a linear polyester and having a pulverization index of from 14 to 40, wherein said pulverization index is obtained by the following steps:

(a) pulverizing and classifying the binder resin to obtain a 16-mesh pass and 20-mesh on resin powder;

(b) accurately weighing classified binder resin powder obtained in step (a) in an amount of 10.00 g;

(c) pulverizing weighed binder resin powder obtained in step (b) with a mill for 10 seconds;

(d) classifying pulverized binder resin powder obtained in step (c) with a 30-mesh opening sieve;

(e) accurately weighing a weight of 30-mesh on resin powder (A) expressed in grams;

(f) calculating a residual ratio by the following equation from the value of A:

$$\text{Residual Ratio (\%)} = \frac{(A)\ g}{\text{Weight of Resin before Mill Pulverization}} \times 100$$

(g) repeating steps (a) to (f) three times and taking an average value of the obtained residual ratios; and

(h) defining the average value as the pulverization index.

5,607,806

TONER WITH ORGANICALLY TREATED ALUMINA FOR DEVELOPING ELECTROSTATIC IMAGE

Makoto Kanbayashi, Kawasaki, and Wakashi Iida, Higashikurume, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,729

Claims priority, application Japan, Dec. 28, 1994, 6-337706; Dec. 12, 1995, 7-346462

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **36 Claims**

1. A toner for developing electrostatic images, comprising: toner particles and organically treated alumina powder;

wherein the organically treated alumina powder has an X-ray diffraction characteristic showing a maximum X-ray intensity level $I_{a\text{-}max}$ and a minimum X-ray intensity level $I_{a\text{-}min}$ in a 2θ range of 2θ to 70 degrees providing a ratio $I_{a\text{-}max}/I_{a\text{-}min}$ of below 6.

5,607,807

SUPERCRITICAL PROCESSES AND LIQUID DEVELOPERS

Peter G. Odell, Mississauga, Canada; George A. Gibson; James R. Larson, both of Fairport, N.Y., and Frank J. Bonsignore, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1995, Ser. No. 501,529

Int. Cl.[6] G03G *9/125*

U.S. Cl. 430—137 **12 Claims**

1. A process for the preparation of a liquid developer which comprises contacting said developer with supercritical carbon dioxide, and wherein there is accomplished the hot melt mixing, for about 1 to about 6 hours, of thermoplastic resin, pigment, charge control agent, hydrocarbon fluid, and optional charge director in an attritor equipped with carbon steel grinding media; cooling the attritor and its contents to below about 40° C. while stirring and further grinding at said temperature for about 2 to 24 hours; transferring the resulting developer and grinding media mixture to a pressure vessel, and washing the developer from the grinding media with high pressure carbon dioxide fluid; removing metal impurities by passing the developer suspended in carbon dioxide through a magnetic filter; and recovering the high solids developer by releasing the carbon dioxide pressure.

5,607,808

LIQUID TONER, INK COMPOSITION, AND METHODS OF PRODUCING THE SAME

Masumi Nishizawa; Masayuki Iijima, and Takashi Miyama, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 413,116, Mar. 29, 1995, Pat. No. 5,547,804. This application Jun. 5, 1996, Ser. No. 659,244

Claims priority, application Japan, Mar. 29, 1994, 6-058547; Mar. 31, 1994, 6-063062

Int. Cl.[6] G03G *9/087;* **C09D** *11/10*

U.S. Cl. 430—137 **4 Claims**

1. A method of producing a liquid toner, said method comprising the steps of:

dissolving a copolymer resin which is composed of at least two different monomer components in a solvent to prepare a solution;

mixing said solution with an electrically insulating dispersion medium to carry out granulation for forming copolymer resin particles in such a relationship that a difference $\Delta\delta^1$ between a solubility parameter value δp^1 of a homopolymer composed only of at least one monomer component in said copolymer resin and a solubility parameter value δs^1 of said dispersion medium is not smaller than 1.0, and that a difference $\Delta\delta^2$ between a solubility parameter value δp^2 of a homopolymer composed only of at least one other monomer component and the solubility parameter value δs^1 of said dispersion medium is not larger than 1.0, and further that a difference Δ between $\Delta\delta^1$ and $\Delta\delta^2$ ($\Delta\delta^1$–$\Delta\delta^2$) is at least 0.5; and

removing said solvent, thereby forming copolymer resin particles each comprising a nuclear portion which is insoluble in said dispersion medium, and an outer skin portion which wraps said nuclear portion, and which is soluble or swellable in said dispersion medium.

5,607,809

IMAGE RECEIVING SHEET AND IMAGE FORMING METHOD

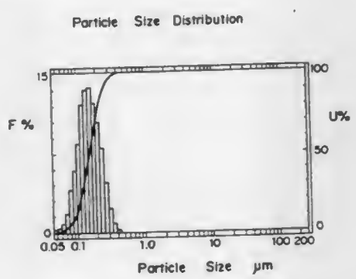
Hideyuki Nakamura; Akihiko Takeda, and Tomizo Namiki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 11, 1995, Ser. No. 514,084

Claims priority, application Japan, Aug. 22, 1994, 6-196525; Oct. 28, 1994, 6-265181; Nov. 21, 1994, 6-286364; May 18, 1995, 7-119874

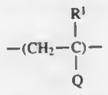
Int. Cl.[6] G03C *8/56;11/12;* **G03F** *7/42*

U.S. Cl. 430—201 **12 Claims**



1. An image receiving sheet comprising a support sheet, a first image receiving layer thereon and a second image receiving layer provided on the first image receiving layer;

wherein said first image receiving layer has a thickness of 5 to 30 μm and Young's modulus of 10 to 10,000 kg·f/cm^2 and the second image receiving layer has a thickness of 0.5 to 5 μm and comprises butyral resin and polymer having at least one of recurring units represented by the following Formula (I):


(I)

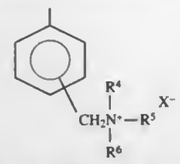
wherein

R^1 represents a hydrogen atom or a methyl group; and

Q represents:

—$CONR^2R^3$, in which each of R^2 and R^3 independently represents a hydrogen atom, an alkyl group of 1 to 18 carbon atoms, an alkyl group of 1 to 18 carbon atoms which is substituted with at least one group or atom selected from the group consisting of hydroxyl, alkoxy of 1 to 6 carbon atoms, acetamide, halogen and cyano, an aryl group of 6 to 20 carbon atoms, an aryl group of 6 to 20 carbon atoms which is substituted with at least one group or atom selected from the group consisting of hydroxyl, alkoxy of 1 to 6 carbon atoms, halogen and cyano, an acyl group of 2 to 6 carbon atoms, a phenylsulfonyl group, a phenylsulfonyl group which is substituted with alkyl of 1 to 6 carbon atoms; or R^2 and R^3 is combined together with the nitrogen atom to form a 5–7 membered heterocyclic group; a nitrogen-containing heterocyclic group; or

a group having the Formula (II):


(II)

in which each of R^4, R^5 and R^6 independently represents an alkyl group of 1 to 25 carbon atoms, an alkyl group of 1 to 25 carbon atoms which is substituted with at least one group or atom selected from the group consisting of hydroxyl, alkoxy of 1 to 6 carbon atoms, halogen and cyano, an aralkyl group of 7 to 25 carbon atoms, an aralkyl group of 7 to 25 carbon atoms which is substituted with at least one group or atom selected from the group consisting of hydroxyl, alkoxy of 1 to 6 carbon atoms, halogen and cyano, an aryl group of 6 to 25 carbon atoms, or an aryl group of 6 to 25 carbon atoms which is substituted with at least one group or atom selected from the group consisting of hydroxyl, alkoxy of 1 to 6 carbon atoms, halogen and cyano; and X^- represents Cl^-, Br^- or I^-;

said polymer having at least one of recurring units represented by the Formula (I) being contained in the second image receiving layer in an amount of 5 to 50 weight % based on the total amount of polymers of the second image receiving layer.

5,607,810

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE REQUIRING NO WET PROCESSING

Yves Verburgh, Puurs, and Joan Vermeersch, Deinze, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 12, 1995, Ser. No. 570,958

Claims priority, application European Pat. Off., Jan. 30, 1995, 95200221

Int. Cl.[6] G03C *8/10;* **G03F** *7/34*

U.S. Cl. 430—201 **10 Claims**

1. A method for obtaining a lithographic printing plate requiring no wet processing comprising the steps of

image-wise exposing using a laser beam a heat mode recording material comprising on a support a recording composition comprising a hydrophobic polymer and a substance capable of converting the laser beam radiation into heat while said heat mode recording composition is in contact with the acceptor layer of an acceptor element comprising a flexible support, said acceptor layer comprising a hardened non-proteinic hydrophilic polymer obtained by reacting a non-proteinic hydrophilic polymer containing a hydroxyl group or an amino or amido group having a free hydrogen with a hardener capable of reacting with said groups and

separating said heat mode recording material from said acceptor material,

characterized in that said recording composition comprises a hydrophobic thermal transferable dye in a concentration range of 30 to 50% by weight versus the dry weight of the heat mode recording composition which is transferred at the exposed areas from the recording material to the surface of the acceptor element.

5,607,811

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE USING ASCORBIC ACID DEVELOPER

Jos Vaes, Betekom, and Luc Wabbes, Mortsel, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 8, 1995, Ser. No. 569,424

Claims priority, application European Pat. Off., Dec. 28, 1994, 94203778

Int. Cl.[6] G03C *8/36;5/305;5/30;* **G03F** *7/07*

U.S. Cl. 430—204 **9 Claims**

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the steps of:

image-wise exposing an imaging element comprising on a support in the order given a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei in water permeable relationship with said emulsion layer,

developing said imaging element by means of an alkaline developing solution comprising at least 0.1 mole/l of ascorbic acid as the main developer and at least 0.015 mole/l of an auxiliary developer of the class of the 1-phenyl-3-pyrazolidones in the presence of silver halide solvent(s) wherein said developing solution comprises at least 0.003 mole/l of thiosulfate and is free of polyhydroxybenzenes.

5,607,812

COLOR DIFFUSION TRANSFER FILM UNIT

Hideki Naito, and Hiroki Sasaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 27, 1995, Ser. No. 394,495

Claims priority, application Japan, Feb. 28, 1994, 6-052528; Nov. 7, 1994, 6-295954

Int. Cl.[6] G03C *8/10;8/52;8/56;8/36*

U.S. Cl. 430—214 **10 Claims**

1. A color diffusion transfer film unit comprising an alkali processing element and a light sensitive silver halide element comprising dye image-forming substances and dye image receiving elements or layers as elements constituting said film unit, wherein said alkali processing element contains a tertiary amine polymer and at least one oligomer or polymer having surface activity.

5,607,813

PHOTOPOLYMERIZABLE COMPOSITION OF HIGH SENSITIVITY AND METHOD FOR OBTAINING IMAGES THEREWITH

Herman J. Uytterhoeven, Bonheiden, Belgium; Michael Müller, Bergisch Gladbach; Wolfgang Podszun, Köln, both of Germany; Marc I. Van Damme, Heverlee, Belgium, and Hans-Josef Laas, Köln, Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

PCT No. PCT/EP93/03634, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/17452, PCT Pub. Date Aug. 4, 1994

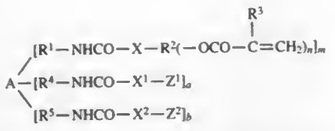
PCT Filed Dec. 15, 1993, Ser. No. 446,715

Claims priority, application European Pat. Off., Jan. 20, 1993, 93200140

Int. Cl.[6] G03F *7/027;7/30;7/34*

U.S. Cl. 430—252 **9 Claims**

1. An imaging element comprising on a support a photosensitive layer containing a photopoly-merizable composition containing a monomer mixture according to formula (I):



wherein

A represents an organic group of the following nature being 2 to 6 valent:

a) a hydrocarbon residue containing 5 to 25 carbon atoms that optionally is interrupted by one or more ether, ester or amide functions;

b) a di- or tri-valent condensed urea residue;

X, X^1, X^2 each independently represents —O— or —NR— wherein

R represents an alkyl group of 1 to 12 carbon atoms,

R^1, R^4, R^5 each independently represent a divalent hydrocarbon residue having 1 to 25 carbon atoms,

R^2 represents a 2 to 6 valent linear or branched hydrocarbon residue containing 2 to 18 carbon atoms,

R^3 represents hydrogen or methyl,

n represents an integer of 1 to 5,

Z^1 represents a non-ionic or ionic hydrophilic group containing at least a polyalkyleneoxy functionality,

Z^2 represents a hydrophobic group having one of the following meanings:

an alkyl, cycloalkyl, arylalkyl, alkylaryl or aryl group having at least 4 carbon atoms,

an alkoxy group having at least 4 carbon atoms,

fluoro alkyl group or perfluoro alkyl group having at least 4 carbon atoms,

a silicone group,

m, a and b are fractional indexes respectively representing the relative amount in said monomer mixture of the group indexed by said indexes m, a and b of formula (I) and whereby the amount of (meth)acrylate groups in 100 g of said monomer mixture is between 0.1 and 0.8 mol and at least a is different from 0 and m also differs from 0.

7. A method for obtaining an image comprising the steps of image-wise exposing to actinic radiation an imaging element as defined in claim **1** and developing a thus obtained image-wise exposed imaging element by means of heat.

8. A method for obtaining an image according to claim **7** wherein during said development by means, of heat non-exposed or insufficient exposed parts of said photosensitive layer which are hydrophobic are transferred to an image-receiving material being in face-to-face contact with said imaging element.

5,607,814

PROCESS AND ELEMENT FOR MAKING A RELIEF IMAGE USING AN IR SENSITIVE LAYER

Roxy N. Fan, East Brunswick, N.J., and Reid E. Kellogg, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 7, 1992, Ser. No. 926,887

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—258 **15 Claims**

1. A process for preparing a relief image which comprises:

(1) preparing an element having the following layers: (a) a support; (b) a photosensitive layer comprising an initiator having sensitivity to non-infrared actinic radiation and at least one component that is capable of reacting with the initiator after the initiator has been activated by exposure to non-infrared actinic radiation; (c) at least one infrared radiation sensitive layer which is substantially opaque to non-infrared actinic radiation; and (d) a coversheet;

(2) exposing imagewise the element through layer (d) with infrared laser radiation;

(3) removing the layer (d) having adhered thereto a part of layer (c), wherein the remaining element consists of layers (a), (b) and a mask consisting of the part of layer (c) not adhered to layer (d);

(4) exposing overall the remaining element of step (3) with non-infrared actinic radiation through the mask to produce a change in solubility of the exposed photosensitive layer (b) thereby producing a solvent developable product; and

(5) developing the product of step (4) by treatment with a developer solvent to remove (i) the areas of the photosensitive layer which are more soluble and (ii) the part of layer (c) adhering to the photosensitive layer (b).

5,607,815

ULTRAHIGH CONTRAST BRIGHT LIGHT FILMS WITH RAPID PROCESSING

Julie C. Bishop, Old Bridge, and John R. Shock, Princeton Junction, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1995, Ser. No. 390,015

Int. Cl.[6] G03C *1/09*

U.S. Cl. 430—264 **19 Claims**

1. A photosensitive element, comprising:

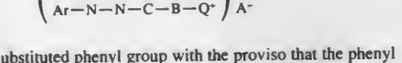
a) a support; and

b) at least one silver halide emulsion on the support, the emulsion comprising:

1) a Group VIII compound;

2) at least 85 mole % silver chloride grains; and

3) an arylhydrazine of a formula



(I)

wherein

Ar is a substituted phenyl group with the proviso that the phenyl group is not substituted with thiourido or thiocarbomoyl;

B is a bridge containing one to three methylene groups, each of which is unsubstituted or substituted with a methyl group, and ethyl group, an oxygen atom, a —CO—NH— group or a —NH— group;

Q^+ is an imidazolium, an imidazolium substituted on a non-quaternary nitrogen with an alkyl or alkenyl group of 1 to 5 carbon atoms; an imidazolium substituted on a non-quaternary nitrogen with an alkyl or alkenyl group of 1 to 5 carbon atoms and on a carbon atoms with a methyl group; or an aminopyridinium group; and

A^- is an anion, and wherein the photosensitive element has a white light tolerance value of at least 15 minutes.

5,607,816

ON-PRESS DEVELOPABLE LITHOGRAPHIC PRINTING PLATES WITH HIGH PLASTICIZER CONTENT PHOTORESISTS

Maurice J. Fitzgerald, Canton; John M. Hardin, Jamaica Plain; Frederick R. Kearney, Walpole, and Rong-Chang Liang, Newton, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 147,044, Nov. 1, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,853

Int. Cl.[6] G03F *7/30*

U.S. Cl. 430—271.1 **17 Claims**

1. A lithographic printing plate developable on a lithographic printing press equipped with means for delivering lithographic ink and aqueous fountain solutions to the printing plate, the lithographic printing plate having in order

(a) a hydrophilic, oleophobic printing plate substrate; and

(b) a hydrophobic, oleophilic, organic solvent-deposited photoresist photohardenable upon imagewise exposure to actinic radiation, the photoresist comprising

(i) a water-insoluble macromolecular organic binder;

(ii) a photopolymerizable ethylenically unsaturated monomer having at least one terminal ethylenic group capable of forming a high polymer by chain-propagated polymerization,

(iii) a polymerization initiator activatable by actinic radiation, and

(iv) a plasticizing-permeation enhancing additive in a concentration sufficient to enhance penetration or diffusion of lithographic ink and aqueous fountain solutions into non-photohardened areas of the photoresist when the photoresist is imagewise exposed and said solutions are delivered to the printing plate by said means in said lithographic printing press, the plasticizing-permeation enhancing additive having a solubility or dispersibility in said acidic aqueous fountain solution such that the additive is also capable of being contemporaneously leached out of photohardened areas of the photoresist by said solutions delivered to the printing plate by said means in said lithographic printing press, the plasticizing-permeation enhancing additive having a Hildebrand Solubility value between approximately 10 $[cal/cm^3]^{1/2}$ and approximately 23 $[cal/cm^3]^{1/2}$; and

(v) a lithium salt.

9. A method of lithographically printing images on a receiving medium, the method utilizing a printing press equipped with means for delivering lithographic ink and aqueous fountain solutions to a printing plate mounted therein, the method comprising in order the steps of:

(a) incorporating a plasticizing-permeation enhancing additive into an organic solvent-based photoresist composition, wherein

(i) the organic solvent-based photoresist composition comprises a water-insoluble macromolecular organic binder; a photopolymerizable ethylenically unsaturated monomer having at least one terminal ethylenic group capable of forming a high polymer by chain-propagated polymerization, and a polymerization initiator activatable by actinic radiation, and

(ii) the plasticizing-permeation enhancing additive is incorporated in a concentration sufficient to enhance penetration or diffusion of lithographic ink and aqueous acidic fountain solutions into non-photohardened areas of a resulting photoresist when said solutions are delivered to the printing plate by said means in said lithographic printing press, the plasticizing-permeation enhancing additive having a solubility or dispersibility in said acidic aqueous fountain solution such that the additive is also capable of being contemporaneously leached out of photohardened areas of the photoresist by said solutions delivered to the printing plate by said means in said lithographic printing press, the plasticizing-permeation enhancing additive having a Hildebrand Solubility value between approximately 10 $[cal/cm^3]^{1/2}$ and approximately 23 $[cal/cm^3]^{1/2}$.

(b) depositing the photoresist composition onto a hydrophilic, oleophobic lithographic printing plate substrate, to provide thereon a hydrophobic, oleophilic photoresist capable of being photohardened upon imagewise exposure to actinic radiation;

(c) imagewise exposing the photoresist to actinic radiation to cause the photopolymerizable monomer in exposed areas to polymerize and thereby cause exposed areas of the photoresist to imagewise photoharden, unexposed areas being removable by press fountain and ink solutions; then

(d) treating the photoresist with lithographic ink and aqueous fountain solutions in said printing press, wherein the ink and fountain solutions penetrate or diffuse into the photoresist to thereby effect removal of non-photohardened areas of the photoresist correspondingly baring the underlying substrate, and wherein the ink and fountain solutions leach out the plasticizing-permeation enhancing additive in photohardened areas contemporaneously with said removal of said non-photohardened areas, and whereby ink becomes imagewise localized in either unremoved photoresist or bared substrate to form an imagewise distribution of said ink, said ink being transferable to a receiving medium.

5,607,817

PHOTOPOLYMERIZABLE COMPOSITION

Hideki Nagasaka, Yamato; Masaaki Tsuchiyama, Machida, and Toshiyuki Urano, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 962,104, Oct. 16, 1992, abandoned. This application Aug. 18, 1994, Ser. No. 292,755

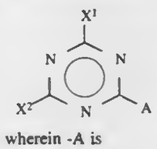
Claims priority, application Japan, Oct. 18, 1991, 3-271363

Int. Cl.[6] G03C *1/73;* **G03F** *7/028*

U.S. Cl. 430—281.1 **12 Claims**

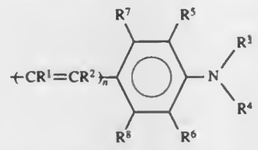
1. A photopolymerizable composition comprising an addition polymerizable compound having at least one ethylenically unsaturated double bond and a photopolymerization initiator system, wherein the photopolymerization initiator system comprises:

(a) a sensitizer of the formula (I)



(I)

wherein -A is



wherein each of R^1 and R^2 is a hydrogen atom, an alkyl group, an aryl group or a halogen atom, each of R^3 and R^4 is an alkyl group which may have substituents, each of R^5 to R^8 is a hydrogen atom, an alkyl group or an alkoxy group, or R^3 and R^4, R^3 and R^5 and/or R^4 and R^6 bond to each other to form a ring structure, and n is 1 or 2; and each of X^1 and X^2 is -A as defined above, an alkyl group, an aralkyl group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, a carboalkoxy group, an amino group or an unsubstituted vinyl group; and

(b) at least one active agent capable of generating active radicals when irradiated in the co-existence of the sensitizer.

5,607,818

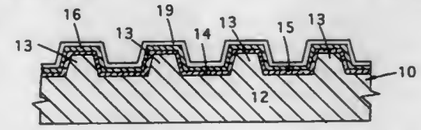
METHOD FOR MAKING INTERCONNECTS AND SEMICONDUCTOR STRUCTURES USING ELECTROPHORETIC PHOTORESIST DEPOSITION

Salman Akram, Boise; Warren Farnworth, Nampa, and David R. Hembree, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 387,687, Feb. 13, 1995, which is a continuation of Ser. No. 137,675, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned, Ser. No. 788,065, Nov. 5, 1991, Pat. No. 5,440,240, and Ser. No. 981,956, Nov. 24, 1992, Pat. No. 5,539,324. This application May 30, 1995, Ser. No. 452,798

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—311 **42 Claims**



1. A method for fabricating an interconnect for a semiconductor die, said method comprising:

providing a silicon substrate;

forming a raised projection on the substrate comprising sidewalls and a tip portion;

depositing an electrically conductive layer on the substrate and on the sidewall and tip portion of the raised projection;
electrophoretically depositing a layer of photoresist on the conductive layer;
exposing and developing the layer of photoresist to form a mask; and
patterning the conductive layer using the mask.

5,607,819

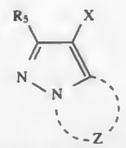
COLOR DEVELOPER AND PROCESSING METHOD USING THE SAME

Takatoshi Ishikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 73,476, Jun. 9, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 321,863
Claims priority, application Japan, Jun. 10, 1992, 4-175038
Int. Cl.[6] G03C *7/30*
U.S. Cl. 430—386 **23 Claims**

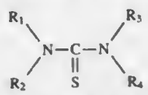
1. A method for processing a silver halide color photographic material, which comprises processing said silver halide color photographic material containing at least one pyrazoloazole magenta coupler represented by formula (M) with a color developer comprising at least one thiourea compound represented by formula (I) and at least one p-phenylenediamine derivative as a color developing agent:

Formula (M)



wherein R_5 represents a hydrogen atom or a substituent, Z represents a group of non-metallic atoms required to form a 5-membered azole ring containing 2 to 4 nitrogen atoms, which azole ring may contain a substituent, and X represents a group capable of being released upon coupling reaction with the oxidized product of a developing agent,

Formula (I)



wherein R_1, R_2, R_3, and R_4 each represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted cycloalkylene group, provided that two or more of R_1, R_2, R_3, and R_4 each do not represent a hydrogen atom at the same time; at least one pair of R_1 and R_3, and R_2 and R_4, together may bond to form a nitrogen-containing heterocyclic ring; or at least one pair of R_1 and R_2, and R_3 and R_4, together may bond to form a ring.

5,607,820

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Koichi Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 143,380, Oct. 29, 1993, abandoned, which is a continuation of Ser. No. 983,286, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 610,917, Nov. 9, 1990, abandoned. This application Apr. 26, 1995, Ser. No. 427,834
Claims priority, application Japan, Nov. 13, 1989, 1-294343
Int. Cl.[6] G03C *7/42*
U.S. Cl. 430—393 **15 Claims**

1. A method for desilvering an imagewise exposed and color development processed silver halide color light-sensitive material comprising the step of continuously processing the imagewise exposed and color developed silver halide color light-sensitive material with a processing solution having a pH of 8 to 11 and having a bleaching ability which contains as a bleaching agent at least one of hydrogen peroxide and a compound capable of releasing hydrogen peroxide, wherein said color development comprises processing in a color developer containing a color developing agent, said silver halide color light-sensitive material has an emulsion layer comprising a light-sensitive silver halide containing at least 90 mol % silver chloride and less than 1 mol % silver iodide, said processing solution having a bleaching ability contains at least one water-soluble chloride in an amount of from 0.01 to 0.1 mol/l, and said color developed silver halide color light-sensitive material contains 0.6 mmol/m^2 or less of said color developing agent when introduced into the processing solution having a bleaching ability; wherein said processing solution having a bleaching ability further contains in an amount of 10 mg to 50 g/l of at least one organic phosphonic acid or an alkali metal salt thereof represented by the following formula (I) or (II):

$$R_1N(CH_2PO_3M_2)_2 \quad (I)$$

wherein M represents a hydrogen atom or a cation imparting water solubility; and R_1 represents an alkyl group having from 1 to 4 carbon atoms, an aryl group, an aralkyl group, an alicyclic group, or a heterocyclic group, each of which may be substituted with a hydroxyl group, an alkoxy group, a halogen atom, $—PO_3M_2$, $—CH_2PO_3M_2$, or $—N(CH_2PO_3M_2)_2$, wherein M is as defined above,

$$R_2R_3C(PO_3M_2)_2 \quad (II)$$

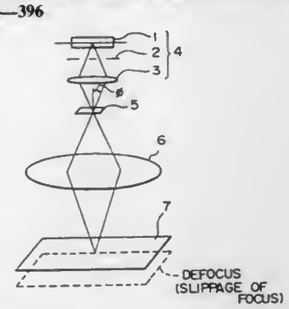
wherein M is as defined above; R_2 represents a hydrogen atom, an alkyl group, an aralkyl group, an alicyclic group, a heterocyclic group, $—CHR_4—PO_3M_2$, wherein M is as defined above; and R_4 represents a hydrogen atom, a hydroxyl group or an alkyl group, or $—PO_3M_2$ wherein M is as defined above; and R_3 represents a hydrogen atom, hydroxyl group, an alkyl group, or a substituted alkyl group or $—PO_3M_2$ wherein M is as defined above.

5,607,821

OPTICAL EXPOSURE METHOD

Tamae Haruki; Kenji Nakagawa; Masao Taguchi; Hiroyuki Tanaka; Satoru Asai, and Isamu Hanyu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 69,853, Jun. 1, 1993, Pat. No. 5,465,220. This application Aug. 1, 1995, Ser. No. 510,128
Claims priority, application Japan, Jun. 9, 1902, 4-141548; Jun. 2, 1992, 4-141755; Jun. 18, 1992, 4-182913; Oct. 6, 1992, 4-267415; Mar. 19, 1993, 5-60593
Int. Cl.[6] G03C *5/04;* **G03B** *27/32;27/72;27/68*
U.S. Cl. 430—396 **15 Claims**



1. An optical exposure method by which a pattern on a photomask is projected and exposed on a register on a base plate with an optical exposure device including a deformation illumination device composed of a laser light source, a diaphragm, a condenser lens said photomask and a projection lens, wherein said optical exposure method comprises the steps of:

forming a ray of linear light by a linear through hole formed in the diaphragm, said linear through hole being disposed in parallel with the photomask pattern and disposed in a position separate from the optical axis of said optical exposure device; and
using said ray of linear light far illumination of said register wherein said photomask pattern is a line and space pattern.

5,607,822

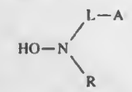
PHOTOGRAPHIC COLOR-DEVELOPING CHEMICALS IN THE FORM OF GRANULES

Takashi Deguchi, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 432,509, May 1, 1995. This application May 3, 1996, Ser. No. 642,799
Claims priority, application Japan, May 9, 1994, 6-095159; Jun. 28, 1994, 6-146682
Int. Cl.[6] G03C *7/413*
U.S. Cl. 430—465 **9 Claims**

1. A color developing composition in the form of granules for a silver halide color photographic material mainly containing a p-phenylenediamine compound, wherein said color developing composition contains a compound represented by the following formula (A) in an amount of 0.01 to 3.0 moles per mole of said p-phenylenediamine compound, said color developing composition exhibiting a pH of 5.0 or less when dissolved in water, and further containing a saccharide or water-soluble polymer in an amount of 1.0 to 15% by weight,

formula (A)



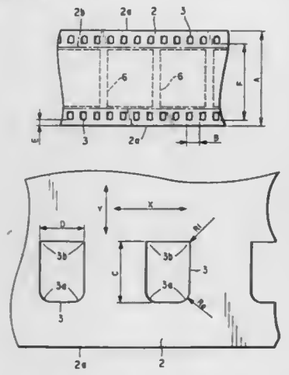
wherein L represents an alkylene group; A represents a carboxy group, sulfo group, phosphono group, phosphinic acid residue, hydroxy group, amino group, ammonio group, carbamoyl group, cyano group or sulfamoyl group; R represents a hydrogen atom or an alkyl group.

5,607,823

PHOTOGRAPHIC FILM

Shinzi Nishizawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1995, Ser. No. 542,952
Claims priority, application Japan, Oct. 17, 1994, 6-250984
Int. Cl.[6] G03C *1/765*
U.S. Cl. 430—496 **9 Claims**



1. A photo film, including first and second edges extended in a length direction, and perforations formed between at least said first edge and an effective frame region and arranged in said length direction at a regular pitch, wherein said perforations respectively include first to fourth corners, said first and second corners being located close to said effective frame region, and said third and fourth corners being located close to said first edge, said first corner being defined between two sides of said perforation that intersect perpendicularly.

5,607,824

ANTIREFLECTIVE COATING FOR MICROLITHOGRAPHY

James T. Fahey; Brian W. Herbst, both of Dutchess County; Leo L. Linehan, Orange County; Wayne M. Moreau; Gary T. Spinillo, both of Dutches County, all of N.Y.; Kevin M. Welsh, Hennepin County, Minn., and Robert L. Wood, Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1994, Ser. No. 281,398
Int. Cl.[6] G03C *1/825*
U.S. Cl. 430—510 **2 Claims**

1. An antireflective coating composition, in admixture:
up to 25 weight percent of a co-polymer comprised of bisphenol A monomers, benzophenone monomers, and anthracene containing monomers; and
at least 75 weight percent of a carrier fluid or solvent for said co-polymer.

5,607,825

GELATIN COMPATIBLE ANTISTATIC COATING COMPOSITION

Robert L. Carlson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Jun. 8, 1995, Ser. No. 486,443
Int. Cl.[6] G03C *1/89*
U.S. Cl. 430—529 **19 Claims**

1. An antistatic film construction comprising a polymeric substrate having on at least one surface thereof an antistatic layer comprising the grafted product of gelatin and polymer having acid groups and particles of vanadium oxide wherein said polymer having acid groups comprises a polymer formed from ethylenically unsaturated monomers.

5,607,826

POLYETHYLENE TEREPHTHALATE PHOTOGRAPHIC FILM BASE

Andy H. Tsou; Jebuda Greener; Gary D. Smith, all of Rochester, and Gary M. Mosehauer, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 98,488, Jul. 27, 1993, Pat. No. 5,385,704. This application Sep. 13, 1994, Ser. No. 305,007
Int. Cl.[6] G03C *1/795;1/76*
U.S. Cl. 430—533 **2 Claims**

1. A silver halide light sensitive photographic element having at least one light sensitive silver halide containing emulsion layer on a polyethylene terephthalate film support having a planar birefringence of from 0.12 to 0.149.

5,607,827

SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING PYRIDINIUM CARBAMOYL HARDENERS

Mark P. Kirk, Bishop's Stortford, United Kingdom; Stefano Parodi, Savona, and Paolo Vacca, Vado Ligure, both of Italy, assignors to Minnesota Mining & Manufacturing, St. Paul, Minn.

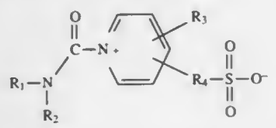
Filed Sep. 21, 1995, Ser. No. 531,714

Claims priority, application European Pat. Off., Oct. 31, 1994, 94117150

Int. Cl.[6] G03C *1/035;1/30*

U.S. Cl. 430—567 7 Claims

1. A silver halide photographic material comprising a support and at least one silver halide emulsion layer coated thereon, wherein said silver halide photographic material comprises tabular silver halide grains having an average aspect ratio higher than 3:1 dispersed in highly deionized gelatin, and a pyridinium carbamoyl hardener wherein said pyridinium carbamoyl hardener is represented by the following formula:



wherein:

R_1 and R_2 each independently represents an alkyl group having from 1 to 10 carbon atoms, an aryl group having from 6 to 15 carbon atoms, an aralkyl group having from 7 to 15 carbon atoms, or R_1 and R_2 together form the atoms required to complete a heterocyclic ring

R_3 represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 10 carbon atoms, an alkoxy group having from 1 to 10 carbon atoms, a carbamoyl group, a ureido group, and

R_4 represents an alkylene group having from 1 to 4 carbon atoms or a single chemical bond.

5,607,828

HIGH CHLORIDE {100} TABULAR GRAIN EMULSIONS IMPROVED BY PEPTIZER MODIFICATION

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1996, Ser. No. 663,820

Int. Cl.[6] G03C *1/035;1/015*

U.S. Cl. 430—567 19 Claims

1. A radiation-sensitive emulsion comprised of

silver halide grains including tabular grains

(a) having {100} major faces,

(b) containing greater than 50 mole percent chloride, based on silver,

(c) accounting for greater than 30 percent of total grain projected area,

(d) exhibiting an average thickness of less than 0.3 μm, and

(e) exhibiting an average aspect ratio of greater than 5, and

a dispersing medium including a peptizer adsorbed to the silver halide grains,

wherein the peptizer is a water dispersible oxidized cationic starch.

5,607,829

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toyohisa Oya; Yoshio Inagaki, and Takahiro Goto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

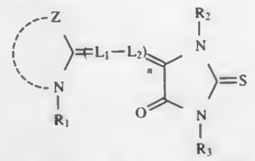
Filed Dec. 27, 1995, Ser. No. 579,408

Claims priority, application Japan, Dec. 28, 1994, 6-327026

Int. Cl.[6] G03C *1/22*

U.S. Cl. 430—578 2 Claims

1. A silver halide photographic material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer, said at least one light-sensitive silver halide emulsion layer containing at least one compound represented by the following formula (I):



(I)

wherein Z represents an atomic group necessary for forming a 5- or 6-membered nitrogen-containing heterocyclic ring, R_1 represents an alkyl group, R_2 represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group, R_3 represents a substituted or unsubstituted 3-pyrazolyl group, L_1 and L_2 each represents a methine group and n represents 0 or an integer of 1 to 3.

5,607,830

METHOD FOR THE CONTINUOUS CONDITIONING OF A CELL SUSPENSION

Wolfgang Biesel, Ottweiler; Bernd Mathieu, and Wolfram Weber, both of Spiesen-Elversberg, all of Germany, assignors to Fresenius AG, Bad Homburg

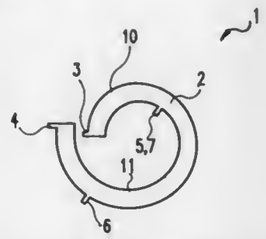
Division of Ser. No. 93,491, Jul. 16, 1993, Pat. No. 5,445,593.

This application Feb. 9, 1995, Ser. No. 385,830

Claims priority, application Germany, Aug. 14, 1992, 42 26 974.1

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—2 16 Claims



1. A method for continuously conditioning a cell suspension, comprising the following steps which occur simultaneously within a single container having a plurality of zones:

introducing said cell suspension into first zone of said zones in said container;

centrifuging the cell suspension in said first zone thereby separating a plurality of different components and at least one cellular component from said cell suspension and concentrating said cellular component;

mixing the concentrated cellular component with a washing solution to form a washed cell suspension in a second zone of said zones in said container; and

centrifuging said washed cell suspension in a third zones of said zones thereby separating said washing solution from a washed cellular component and concentrating said washed cellular component.

5,607,831

IN VITRO METHODS FOR ASSESSING THE SUSCEPTIBILITY OF HIV-1-INFECTED INDIVIDUALS TO CYSTEINE PROTEASE-MEDIATED ACTIVATION-INDUCED PROGRAMMED CELL DEATH

Pierre Henkart, Annapolis; Apurva Sarin; Mario Clerici, both of Rockville, and Gene M. Shearer, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 25, 1993, Ser. No. 37,578

Int. Cl.[6] C12Q *1/70;* G01N *33/53;33/555;33/567*

U.S. Cl. 435—5 5 Claims

1. An in vitro method for assessing whether individuals infected with human immunodeficiency virus type 1 (HIV-1) are susceptible to cysteine protease-mediated, activation-induced programmed cell death (AI-PCD), comprising the following steps:

(i) obtaining and preparing peripheral blood mononuclear lymphocytes (PBMCs) from HIV-1$^+$ donors;

(ii) polyclonally activating said PBMCs with antigen and/or mitogen to stimulate AI-PCD;

(iii) measuring the percentage of inhibition of AI-PCD in the presence or absence of a cysteine protease inhibitor in said HIV-1$^+$ donors; wherein said inhibition of AI-PCD is indicative of said individuals being susceptible to cysteine protease-mediated AI-PCD.

5,607,832

USE OF MULTIVALENT INORGANIC CATIONS IN THE ELECTROCHEMICAL TREATMENT OF NUCLETIC ACID CONTAINING SOLUTIONS

Christopher J. Stanley, St. Ives, and Patricia L. Archer, Cambridge, both of England, assignors to Scientific Generics Limited, Cambridge, England

PCT No. PCT/GB93/00147, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/15224, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 22, 1993, Ser. No. 256,784

Claims priority, application United Kingdom, Jan. 23, 1992, 9201481

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* G01N *33/48*

U.S. Cl. 435—6 30 Claims

1. A process for denaturing double-stranded nucleic acid comprising the steps of: applying a voltage to a solution containing said nucleic acid with an electrode; and converting at least a proportion of said nucleic acid to a wholly or partially single-stranded form, wherein the solution contains an effective concentration of a multivalent inorganic cation acting as a promotor which assists said denaturation.

5,607,833

CELL-FREE ASSAY FOR COMPOUNDS WHICH ACTIVATE OR BLOCK INACTIVATION OF CELL PROLIFERATION

Michael Z. Gilman, Huntington, and Henry B. Sadowski, East Northport, both of N.Y., assignors to Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Continuation of Ser. No. 960,889, Oct. 14, 1992, abandoned.

This application Apr. 11, 1995, Ser. No. 420,339

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 5 Claims

1. A method of assessing the ability of a compound to inhibit activation of a cellular signal transduction pathway, comprising the steps of:

a) combining:

1) a compound to be assessed;

2) a partially soluble membrane fraction from A431 cells which have cell surface growth factor receptors with intrinsic tyrosine kinase activities;

3) a cytoplasmic fraction from cells, wherein the cytoplasmic fraction contains c-sis inducible factor whose binding to its binding partner is activated by activation of the tyrosine kinase activities of the cell surface growth factor receptors in the membrane fraction of (a)(2);

4) c-sis inducible element;

5) adenosine triphosphate;

6) magnesium;

7) manganese; and

8) an agent which activates the tyrosine kinase activities of the cell surface growth factor receptors;

b) maintaining the combination produced in (a) under conditions appropriate for activation of the tyrosine kinase activities of the cell surface growth factor receptors and binding of the c-sis inducible factor of (a)(3) with the c-sis inducible element of (a)(4);

c) determining the extent to which binding of the c-sis inducible factor to c-sis inducible element occurs in the presence of the compound to be assessed; and

d) comparing the extent of binding in (c) with the extent to which binding occurs in the absence of the compound,

wherein binding to a lesser extent in the presence of the compound than in its absence is indicative of the ability of the compound to inhibit activation of a cellular signal transduction pathway.

5,607,834

FLUORESCENT IMPERFECT HAIRPIN NUCLEIC ACID PROBES

C. Bruce Bagwell, Topsham, Me., assignor to Maine Medical Center Research Institute, Portland, Me.

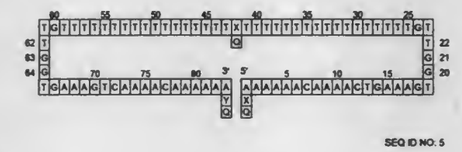
Continuation of Ser. No. 990,298, Dec. 10, 1992, abandoned.

This application Apr. 10, 1995, Ser. No. 420,443

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 14 Claims





1. A fluorescent probe for binding to a polynucleotide target, which probe comprises:

an oligonucleotide having a segment complementary to the polynucleotide target, said oligonucleotide forming two imperfect hairpins both of which together include said segment except for one nucleotide; and

one donor fluorophore and one acceptor fluorophore covalently attached to said oligonucleotide so that only when said imperfect hairpins are formed, said donor fluorophore and said acceptor fluorophore are in close proximity to allow resonance energy transfer therebetween.

5,607,835

SPECIES-SPECIFIC DNA PROBES FOR VIBRIO CHOLERAE AND METHODS

Robert H. Reeves; Brenda W. Bennison, both of Tallahassee, Fla., and Paul A. LaRock, Baton Rouge, La., assignors to Florida State University, Tallahassee, Fla.

Division of Ser. No. 891,987, May 28, 1992, Pat. No. 5,426,025. This application Jun. 7, 1995, Ser. No. 473,589
Int. Cl.[6] C12Q *1/68;* C07H *21/04*
U.S. Cl. 435—6 8 Claims

1. An oligonucleotide probe specific for hybridizing with ribosomal RNA of a *Vibrio cholerae* cell under appropriate hybridizing conditions, said probe being selected from the group consisting of:

GATTCCTAGGTTGAGCCCA (SEQ ID NO: 12);

GATTCCTAGGTTGACCCCAG (SEQ ID NO: 13); and complementary sequences thereto.

5,607,836

METHODS OF DETECTING COMPOUNDS WHICH BIND TO THE P_{2U} RECEPTOR

Richard C. Boucher, Chapel Hill, N.C.; Gary A. Weisman, Columbia; John T. Turner, Ashland, both of Mo.; Thomas K. Harden; Claude E. Parr, both of Chapel Hill, N.C.; Daniel M. Sullivan; Laura J. Erb, both of Columbia, Mo., and Kevin D. Lustig, Cambridge, Mass., assignors to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 138,137, Oct. 15, 1993, abandoned. This application May 19, 1995, Ser. No. 444,581
Int. Cl.[6] C12Q *1/00*
U.S. Cl. 435—7.2 6 Claims

1. A method of detecting compounds which bind to the P_{2U} receptor, comprising:

(a) providing a cell which contains and expresses heterogenous DNA encoding a heterogenous P_{2U} receptor, which cell secretes endogenous ATP in response to stimulation of said P_{2U} receptor, said heterogenous DNA selected from the group consisting of:

(i) isolated DNA having SEQ ID NO:1; and

(ii) isolated DNA encoding a functional human P_{2U} receptor having the amino acid sequence of SEQ ID NO:2;

(b) removing essentially all endogenous ATP secreted by said cell from said cell;

(c) contacting a compound to said cell; and then

(d) detecting the binding of said compound to said P_{2U} receptor.

5,607,837

METHOD FOR THE DETERMINATION OF THE PLASMINOGEN ACTIVATOR ACTIVITY IN SAMPLES CONTAINING ALPHA-2-ANTIPLASMIN

Thomas Stief, Sevilla, Spain, and Norbert Heimburger, Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 454,470, Dec. 21, 1989, abandoned. This application Jul. 26, 1993, Ser. No. 96,843
Claims priority, application Germany, Dec. 23, 1988, 38 43 422.9
Int. Cl.[6] C12Q *1/56*
U.S. Cl. 435—13 8 Claims

1. A method for the in vitro assay of the plasminogen activator (PA) activity in a biological fluid which contains alpha-2-antiplasmin comprising:

digesting plasminogen with a protease coupled to a carrier, wherein the protease is selected from the group consisting of elastase, plasmin, and trypsin;

separating the digested plasminogen from the said protease to provide a proteolytically-digested plasminogen source (P-DPS);

adding said P-DPS to the biological :fluid to be sampled for PA activity and allowing said P-DPS to be converted by the PA activity of the biological fluid into a resulting plasmin;

adding a chromogenic substrate specific for plasmin; and

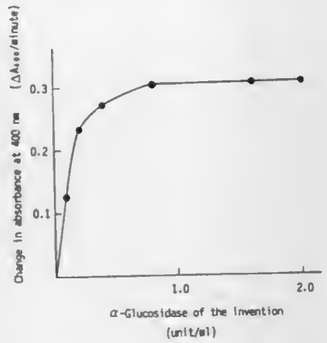
measuring any increase in optical density resulting from liberation of a chromophore produced as a result of the action of the resulting plasmin on the chromogenic substrate.

5,607,838

METHOD FOR DETERMINATION OF α-AMYLASE ACTIVITY

Shizuo Hattori; Yoshihiro Yamamoto; Yukihiro Sogabe, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 972,026, Nov. 6, 1992, abandoned. This application May 25, 1994, Ser. No. 249,074
Claims priority, application Japan, Nov. 6, 1991, 3-319993
Int. Cl.[6] C12Q *1/40;1/54;* C12N *1/00;* G01N *33/20*
U.S. Cl. 435—22 11 Claims



1. A method for determining α-amylase activity which comprises:

bringing a sample into contact with an α-glucosidase in the presence of an α-amylase substrate, and

optically determining a liberated label;

said substrate being a maltooligosaccharide composed of at least 3 glucose units, whose reducing terminal glucose is bonded to an optically measurable label at the 1-position by α-glucoside linkage or β-glucoside linkage, and whose non-reducing terminal glucose is modified by a substituent other than glucose, and

said α-glucosidase being capable of acting on glucose to which said label is bonded at the 1-position by α-glucoside linkage and on all maltooligosaccharides composed of 2 to 7 glucose units.

5,607,839

BACTERIA BELONGING TO NEW GENUS PROCESS FOR PRODUCTION OF CAROTENOIDS USING SAME

Akira Tsubokura, Kawasaki; Hisashi Yoneda, Yokohama; Mikihiro Takaki, Kawasaki, and Takashi Kiyota, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jul. 19, 1994, Ser. No. 276,943
Claims priority, application Japan, Jul. 22, 1993, 5-181615
Int. Cl.[6] C12P *23/00*
U.S. Cl. 435—67 1 Claim

1. A process for production of a carotenoid pigment selected from the group consisting of astaxanthin, adonixanthin, β-carotene, echinenone, canthaxanthin, zeaxanthin and mixtures thereof, comprising the steps of:

culturing bacterium strain E-396, FERM BP-4283,or A-581-1, FERM BP-4671, in an aqueous nutrient medium comprising sources of carbon, nitrogen, and inoganic substances and

recovering an individual carotenoid pigment or a mixture of the carotenoid pigments.

5,607,840

PROTEIN HYDROLYSATE DERIVED FROM MUCOSA TISSUE

Cornelius L. Van Gorp, Lebanon, Ohio; Frederick Vosburgh, Fort Wayne, Ind., and Robert L. Schubert, II, Monroe, Ohio, assignors to Celsus, Inc., Cincinnati, Ohio, and Consolidated Nutrition, L.C., Omaha, Nebr.

Continuation of Ser. No. 983,810, Nov. 30, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,427
Int. Cl.[6] C12P *21/06;* A23L *1/305;* A23J *3/30;* A61K *38/01*
U.S. Cl. 435—68.1 7 Claims

1. A method for the preparation of protein hydrolysate for use in providing nutrition from mammalian mucosa tissue, comprising the steps of:

providing an aqueous mixture comprising said mammalian mucosa tissue, said mammalian mucosa tissue being essentially the only tissue present in the aqueous mixture, said mucosa tissue being at least one of intestines, intestinal mucosa, intestinal skin, trachea tissue, lung tissue and liver tissue, and being derived from at least one of pigs, cattle and sheep;

hydrolyzing the mucosa tissue in said aqueous mixture with a proteolytic enzyme at a salt concentration of less than 0.1 molar, said salt being an alkali metal salt, an alkali earth metal salt, an ammonium salt of an acid, or a mixture thereof, said hydrolysis being performed at a pH of about 8.5 and at a temperature between about 45° C. and about 65° C., thereby forming a digest solution comprising said protein hydrolysate and polyanions, said polyanions comprising heparin, said salt concentration being conducive for separation of said polyanions comprising heparin from said protein hydrolysate by adsorption of said polyanions comprising heparin with an anion exchange resin;

adding a sufficient amount of said anion exchange resin to said digest solution to adsorb said polyanions comprising heparin from said digest solution onto said anion exchange resin;

recovering said anion exchange resin and said adsorbed polyanions comprising heparin from said digest solution, a sufficient amount of said polyanions comprising heparin being adsorbed onto said resin and removed from said digest solution such that said digest solution has a residual heparin activity of less than about 2.9 u/ml; and

recovering the protein hydrolysate from the digest solution by at least one of screening and dehydration, said protein hydrolysate having the following properties on a dried basis: (a) less than 15% ash (b) between 9.5 and 11.5% total Kieldhal nitrogen, and (c) between 5.0 and 7.0% alpha amino nitrogen.

5,607,841

PREPARATION AND PROTEOLYTIC DEGRADATION OF A MACROMOLECULAR PROTEIN COMPLEX FROM FIBRINOGEN

Boguslaw Lipinski, 97 Beaumont Ave., Newtonville, Mass. 02160

Filed Jun. 20, 1994, Ser. No. 262,607
Int. Cl.[6] C12P *21/06;* C07K *1/12;14/745*
U.S. Cl. 435—68.1 4 Claims

1. A method for isolating a macromolecular protein complex from fibrinogen present in human plasma comprising the steps of:

(a) precipitating protein from human plasma by adding one volume of saturated aqueous ammonium sulfate to two volumes of plasma;

(b) washing the precipitate with aqueous ammonium sulfate;

(c) dissolving the precipitate in a buffer and dialyzing it against distilled water;

(d) chromatographing the dissolved dialyzed precipitate obtained in step (c) by gel filtration to separate said macromolecular protein complex.

5,607,842

USE OF TRNA GENES TO STABILIZE THE INHERITANCE OF UNSTABLE PLASMIDS IN POPULATIONS OF GROWING CELLS

Stanley N. Cohen, Portola Valley, Calif., and Martin Vögtli, Lenzburg, Switzerland, assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 955,982, Oct. 2, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 230,427
Int. Cl.[6] C12P *21/02;* C12N *1/21;15/70;15/74*
U.S. Cl. 435—69.1 14 Claims

1. An expression system for producing an exogenous protein in a prokaryotic host, the system comprising:

a secretory prokaryotic host having a negative background for an essential tRNA specific for an amino acid, and

a plasmid having an origin of replication, a functional gene for a tRNA specific for said amino acid, and a structural gene of interest which when present in said host is expressed.

5,607,843

NUCLEIC ACID SEQUENCE ENCODING APAMIN BINDING PROTEIN

Patricia T. Sokol, Bedminster, and Mohammad R. Ziai, Montvale, both of N.J., assignors to The American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 923,095, Jul. 30, 1992, Pat. No. 5,401,652. This application Sep. 29, 1994, Ser. No. 314,979
Int. Cl.[6] C12N *5/10;15/12*
U.S. Cl. 435—69.1 2 Claims

1. A method of expressing in a host cell a porcine apamin binding protein that is isolatable from porcine tissue, the method comprising transforming or transfecting the host cell with an oligonucleotide comprising a nucleic acid encoding porcine apamin binding protein, wherein the nucleic acid hybridizes under medium stringency conditions with a nucleic acid encoding the amino acid sequence of SEQ ID NO:2.

5,607,844

MAMMALIAN AUGMENTER OF LIVER REGENERATION AND VARIANTS THEREOF

Antonio T. Francavilla, Pittsburgh, Pa.; Michio Hagiya, Shiga, Japan, and Thomas E. Starzl, Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 197,496, Feb. 16, 1994, Pat. No. 5,480,797, and Ser. No. 275,370, Jul. 15, 1994, Pat. No. 5,550,037. This application Jan. 3, 1995, Ser. No. 367,968
Int. Cl.[6] C12N *1/21;15/12;15/63;* C12P *21/00*
U.S. Cl. 435—69.1 13 Claims

1. An isolated DNA encoding human augmenter of liver regeneration having an amino acid sequence selected from the group consisting of SEQ ID NO:29, SEQ ID NO:31, and SEQ ID NO:33.

5,607,845

METHOD FOR OBTAINING AN INCREASED PRODUCTION OF A PRODUCING CELL LINE BY USING A FUSION PROTOCOL

Jack Spira, Solna, and Lars Adamsson, Lidingö, both of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

PCT No. PCT/SE94/00123, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/19459, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 15, 1994, Ser. No. 505,189
Claims priority, application Sweden, Feb. 16, 1993, 9300509
Int. Cl.[6] C12P *21/00;* C12N *15/02;15/06;15/67*
U.S. Cl. 435—69.1 21 Claims

1. A method of obtaining a higher product expression in a producing cell line comprising fusing cells of the same origin with a fusion agent to form fused cells which produce a product.

5,607,846

VACCINE FOR MORAXELLA CATARRHALIS

Timothy F. Murphy, East Amherst, N.Y., and Reva Bhushan, North Potomac, Md., assignors to Research Foundation of State University of New York, Amherst, N.Y.

Filed May 17, 1994, Ser. No. 245,758
Int. Cl.[6] C12P *21/02;* C07H *21/04;* C12N *1/21;15/63*
U.S. Cl. 435—69.3 8 Claims

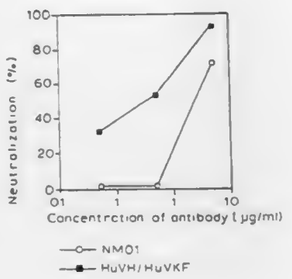
1. A recombinant vector comprising a DNA sequence encoding one or more antigenic determinants or epitopes of E, wherein E is an outer membrane protein of *Moraxella catarrhalis* of an apparent molecular mass of from about 35,000 to about 50,000 daltons by SDS-PAGE and having an amino acid sequence comprising SEQ ID NO:11 from amino acid residue 26 to 460.

5,607,847

RECOMBINANT HUMAN ANTI-HUMAN IMMUNODEFICIENCY VIRUS ANTIBODY

William J. Harris, Carnoustie; Francis J. Carr, Balmedie, and Kathryn L. Armour, Aberdeen, all of Great Britain, assignors to Nissin Shokuhin Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1994, Ser. No. 275,053
Claims priority, application WIPO, Aug. 24, 1993, PCT/GB93/01798
Int. Cl.[6] C12P *21/08;* C07K *16/10;* A01K *39/42;* C12N *15/13*
U.S. Cl. 435—69.6 6 Claims



1. A humanized antibody produced by cell line HuVH/HuVKF C4 (E.C.A.C.C. Accession No. 93082019) having the same binding specificity as murine monoclonal NM-01 antibody produced by NM-01 hybridoma cell line (A.T.C.C. Accession No. HB 10726).

5,607,848

PROCESS FOR PRODUCING OPTICALLY ACTIVE 4-HYDROXY-2-KETOGLUTARIC ACID USING MICROORGANISMS

Ryoichi Katsumata; Shinichi Hashimoto, both of Machida, and Keiko Ochiai, Ebina, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

Filed Feb. 28, 1995, Ser. No. 395,707
Claims priority, application Japan, Mar. 1, 1994, 6-31335; Apr. 21, 1994, 6-83065
Int. Cl.[6] C12P *7/50*
U.S. Cl. 435—143 2 Claims

1. A process for specifically producing either the R or S form of an optically active (R) or (S) 4-hydroxy-2-ketoglutaric acid which comprises:

(a) adding pyruvic acid and glyoxylic acid to a medium containing a biocatalyst selected from the group consisting of cells, a culture, and processed cells of a microorganism selected from the group consisting of *Pseudomonas putida, Pseudomonas saccharophila, Pseudomonas boreopolis, Pseudomonas taetrolens, Pseudomonas oleovorans, Paracoccus denitrificans, Providencia rustigianii, Rhizobium meliloti,* and *Morganella morganii,* to form an optically active 4-hydroxy-2-ketoglutaric acid; and

(b) recovering said optically active 4-hydroxy-2-ketoglutaric acid.

5,607,849

GENE ENCODING TRANSGLUTAMINASE DERIVED FROM FISH

Hisashi Yasueda; Kazuo Nakanishi; Masao Motoki; Kazuo Nagase, and Hiroshi Matsui, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 164,839, Dec. 9, 1993, Pat. No. 5,514,573, which is a continuation of Ser. No. 4,729, Jan. 14, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,799
Claims priority, application Japan, Jan. 14, 1992, 4-005166; Jul. 27, 1992, 4-199803; Dec. 8, 1992, 4-328010
Int. Cl.[6] C12N *9/10;5/10;15/54;15/63*
U.S. Cl. 435—193 14 Claims

1. A DNA fragment having a sequence derived from fish, said sequence encoding a polypeptide which possesses transglutaminase activity, said polypeptide having an amino acid sequence selected from the group of sequences consisting of SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:31, and SEQ ID NO:70.

5,607,850

ENZYME FROM MICROBIAL SOURCE: PHTHALYL AMIDASE

Barbara S. Briggs, Indianapolis, and Milton J. Zmijewski, Jr., Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 275,488, Jul. 15, 1994, Pat. No. 5,445,959. This application May 22, 1995, Ser. No. 445,801
Int. Cl.[6] C12N *9/80;9/78*
U.S. Cl. 435—228 3 Claims

1. A process of producing phthalyl amidase, said method comprising

a) aerobically cultivating *Xanthobacter agilis* NRRL B-21115, or phthalyl amidase-producing mutants thereof, in an aqueous nutrient medium containing a source for carbon and nitrogen and mineral salts at an initial pH between 6 and 8 at 25° to 30° C.;

b) digesting the cells; and

c) purifying the phthalyl amidase.

5,607,851

PROCESS FOR PURIFYING HEPATITIS A VIRUS (HAV), AND VACCINE COMPOSITIONS CONTAINING HEPATITIS A VIRUS

Vittoria Pellegrini; Nicoletta Fineschi, both of Siena, Italy, and Arie J. Zuckerman, London, United Kingdom, assignors to Biocine S.p.A., Italy

Continuation of Ser. No. 126,105, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 894,928, Jun. 8, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,780
Claims priority, application Italy, Jun. 18, 1991, M191A1662
Int. Cl.[6] C12N *7/04;7/01;* A23J *1/00;* A61K *39/00*
U.S. Cl. 435—236 12 Claims

1. A process for purifying hepatitis A virus (HAV) from cell culture consisting of the following steps:

a) lysing cells infected with HAV in the presence of a first concentration of detergent;

b) removing cell fragments to produce a supernatant;

c) performing gel filtration of the supernatant in the presence of a second concentration of detergent;

d) submitting the eluate obtained in step c) to ion exchange chromatography; and

e) eluting the virus adsorbed in step d) using a detergent-free elution buffer.

5,607,852

PROCESS FOR ATTENUATED VARICELLA ZOSTER VIRUS VACCINE PRODUCTION

Philip J. Provost; David L. Krah, both of Lansdale, and Paul A. Friedman, Rosemont, all of Pa., assignors to Merch & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/04986, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/24616, PCT Pub. Date Dec. 9, 1993
PCT Filed May 26, 1993, Ser. No. 347,345
Int. Cl.[6] C12N *9/84;7/00;5/00;* A61K *39/245*
U.S. Cl. 435—404 1 Claim

1. A composition useful for growing cells in monolayer culture, the composition consisting essentially of SFRE-2 medium supplemented with between 0.2 mg/mL and 0.4 mg/mL soybean lipid, and the cells being selected from MRC-5 cells, WI-38 cells and Vero cells.

5,607,853

Patent Not Issued For This Number

5,607,854

COMPOSITION FOR INDUCING MALOLACTIC FERMENTATION USING *LEUCONOSTOC OENOS* STRAINS ACCESSION NUMBERS DSM 7008-DSM 7015

Claus Prahl, Graested, and Jan C. Nielsen, Hundested, both of Denmark, assignors to Chr. Hansen A/S, Horsholm, Denmark

PCT No. PCT/DK93/00116, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO93/20180, PCT Pub. Date Oct. 14, 1993
Continuation-in-part of Ser. No. 864,823, Apr. 1, 1992, abandoned. This PCT application Mar. 30, 1993, Ser. No. 39,317
Int. Cl.[6] C12G *1/00;* C12N *1/00;1/20*
U.S. Cl. 435—252.1 5 Claims

1. A biologically pure malolactically active *Leuconostoc oenos* strain which is selected from the group consisting of DSM 7008, DSM 7009, DSM 7010, DSM 7011, DSM 7012, DSM 7013, DSM 7014 and DSM 7015.

5,607,855

FUNGI FOR PITCH REDUCTION AND THEIR PREPARATION

Wendy C. Zimmerman, Watertown, and Roberta L. Farrell, Groton, both of Mass., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 138,174, Oct. 15, 1993, abandoned, which is a continuation of Ser. No. 899,796, Jun. 17, 1992, abandoned. This application Jun. 28, 1994, Ser. No. 267,684
Int. Cl.[6] C12N *1/00;* D21C *3/00*
U.S. Cl. 435—254.1 12 Claims

1. A composition comprising an inoculum of a biologically pure fungal culture of the species *Ophiostoma piliferum* which grows white or colorless on sterile Southern Yellow Pine wood chips and which has all of the characteristics for pitch degradation and growth virulence on sterile Southern Yellow Pine wood chips that are possessed by the fungus *Ophiostoma pifflerum* of NRRL Accession No. 18917.

5,607,856

SOIL TREATMENT FOR AGRICULTURE

Darin J. Moon, Burley, Id., and Anne J. Anderson, Providence, Utah, assignors to High Desert Research Group, Inc., Burley, Id.

Filed Dec. 1, 1993, Ser. No. 160,503
Int. Cl.[6] C12N *1/06;1/04*
U.S. Cl. 435—259 47 Claims

1. A method for sterilizing soil by generating oxygenated radicals said method comprising contacting soil with an aqueous solution of an activated oxygen species, a divalent cation, a cation redox reducing agent and a water soluble phenolic complex which is extracted from a material selected from the group consisting of humic material, plant material, animal material and manure, wherein the amount of solution contacting with soil is effective to reduce soil microorganisms and nematodes by at least 40%.

5,607,857

RHODOCOCCUS SPECIES FOR REMOVING SULFUR FROM ORGANIC CARBONACEOUS FUEL SUBSTRATES-(LAW295)

Matthew J. Grossman, Flemington; Mary K. Lee, Somerville, both of N.J.; James D. Senius, Easton, Pa.; Robert L. Burghoff, West Ford, Mass., and David L. Elmendorf, Edmond, Okla., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 284,773, Aug. 2, 1994, abandoned, which is a continuation of Ser. No. 106,480, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 898,647, Jun. 15, 1992, abandoned. This application Jun. 13, 1995, Ser. No. 489,859
Int. Cl.[6] C10G *32/00*
U.S. Cl. 435—282 6 Claims

1. A biologically pure culture of a microorganism having all the identifying characteristics of Rhodococcus species ATCC 55309 or Rhodococcus species ATCC 55310.

5,607,858

PEPTIDE AMIDES, PROCESSES FOR THE PREPARATION THEREOF AND AGENTS CONTAINING THESE AS FIBRIN/THROMBIN CLOTTING INHIBITORS

Werner Stüber, Lahntal, and Karl Fickenscher, Marburg, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Division of Ser. No. 22,381, Feb. 24, 1993, Pat. No. 5,478,810, which is a continuation of Ser. No. 696,085, May 6, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,827

Claims priority, application Germany, May 8, 1990, 40 14 655.3

Int. Cl.[6] G01N *33/86*

U.S. Cl. 436—69 **4 Claims**

1. A method of monitoring blood coagulation comprising contacting a blood medium to be tested with an effective amount of a peptide amide of the formula I

$$GPRP—X—NR_1—R_2 \qquad I$$

where G is the amino acid glycine, P is the amino acid proline, R is the amino acid arginine, X is the amino acid selected from the group consisting of Ala, Asp, Glu, Gly, Ile, Ser, and Val (SEQ ID NOS: 3, 12, 13, 14, 11, 15 and 10, respectively); N is nitrogen and R_1 and R_2 are identical or different and are hydrogen or a lower alkyl chain having up to 4 carbon atoms and measuring the clotting time of the blood medium.

5,607,859

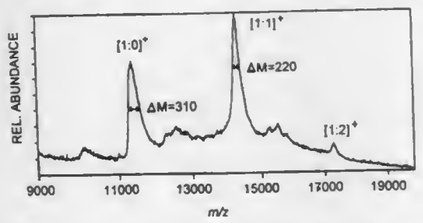
METHODS AND PRODUCTS FOR MASS SPECTROMETRIC MOLECULAR WEIGHT DETERMINATION OF POLYIONIC ANALYTES EMPLOYING POLYIONIC REAGENTS

Klaus Biemann, Alton Bay, N.H., and Peter Juhasz, Everett, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 28, 1994, Ser. No. 218,608

Int. Cl.[6] G01N *24/00*

U.S. Cl. 436—173 **6 Claims**



1. In a method of providing a measurement of a molecular weight, M_A, of a highly polyionic analyte moiety having a net ionic charge, subjecting the analyte to soft ionization mass spectrometry and calculating the molecular weight, the improvement comprising:

choosing at least one highly polyionic reagent moiety having a known molecular weight, M_B, and a net ionic charge opposite to said net ionic charge of said analyte;

mixing a solution including said analyte and said reagent;

allowing said solution to form at least one variety of a non-covalent complex of a number, m, of said reagent moieties and a number, n, of said analyte moieties, said complex having a molecular weight, m, of mM_B plus nM_A plus zH, a net ionic charge of z when subjected to ionization in a mass spectrometer, and a mass-to-charge ratio of m/z;

analyzing said sample by soft ionization mass spectrometry to generate a plot over a range of values of relative abundance versus a range of values of mass-to-charge ratio, said plot including a peak at a mass-to-charge ratio, X, corresponding to said mass-to-charge ratio of said complex; and

calculating M_A from said mass-to-charge ratio, X.

5,607,860

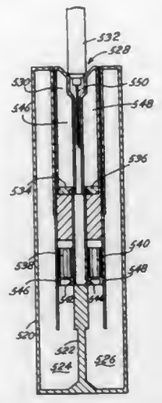
DUAL CHAMBER BLOOD CULTURE BOTTLE

Peter P. Gombrich, Chicago; Richard A. Domanik, Libertyville, and William J. Mayer, South Barrington, all of Ill., assignors to Accumed, Inc., Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 477,657

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—287.3 **26 Claims**



2. A multi-chamber blood culture apparatus integrally comprising, in combination:

means for separately holding at least two different growth media;

means for receiving a blood specimen into at least two separate sample containers; and

means for releasing said blood specimen from said two separate sample containers to respectively combine with said two different growth media.

5,607,861

METHOD FOR SPOTTING LIQUID SAMPLES ONTO FRAMELESS DRY-TYPE CHEMICAL ANALYSIS FILM PIECES

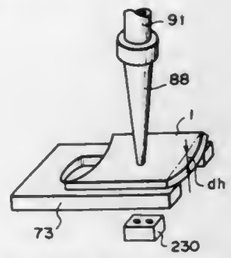
Akihiro Komatsu; Nobuaki Tokiwa, both of Kanagawa-ken, and Yoshio Saito, Saitama-ken, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 395,692, Feb. 28, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,799

Claims priority, application Japan, Apr. 15, 1994, 6-077149

Int. Cl.[6] G01N *35/10*

U.S. Cl. 436—50 **2 Claims**



1. A method for spotting liquid samples onto dry frameless chemical analysis film pieces, the dry frameless chemical analysis film pieces tending to bend varying amounts from film piece to film piece such that a position of a film surface of each film piece in turn tends to vary for different film pieces, comprising the steps of:

i) sucking a predetermined amount of a liquid sample into a sample spotting tip which includes a bottom end and which is fitted to a bottom end of a suction nozzle for sucking the liquid sample,

ii) moving the sample spotting tip down, the bottom end of the sample spotting tip being thereby brought into contact with a dry frameless chemical analysis film piece, said contact of the bottom end of the sample spotting tip with the dry frameless chemical analysis film piece being detected by detecting an amount of the bend of the dry frameless chemical analysis film piece,

iii) moving the sample spotting tip up, and

iv) increasing a pressure inside the sample spotting tip, while the sample spotting tip is thus being moved up, whereby the liquid sample is discharged from the sample spotting tip onto the dry frameless chemical analysis film piece,

wherein after the predetermined amount of the liquid sample has been sucked into the sample spotting tip, but before the bottom end of the sample spotting tip is brought into contact with the dry frameless chemical analysis film piece, the pressure inside the sample spotting tip is further reduced to a negative pressure, and air is thereby sucked into the bottom end portion in the sample spotting tip.

5,607,862

ASSAY FOR N-TERMINAL TYPE I COLLAGEN TELOPEPTIDE THAT SURVIVES BONE RESORPTION IN VIVO

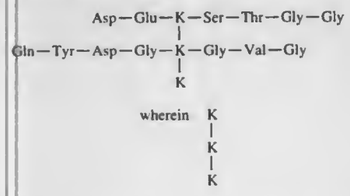
David R. Eyre, Mercer Island, Wash., assignor to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 195,323, Feb. 10, 1994, abandoned, which is a continuation of Ser. No. 840,574, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 592,511, Oct. 3, 1990, abandoned, which is a division of Ser. No. 118,234, Nov. 6, 1987, Pat. No. 4,973,666. This application Jun. 21, 1995, Ser. No. 497,731

Int. Cl.[6] G01N *33/53*

U.S. Cl. 436—501 **2 Claims**

1. In a method of analyzing a body fluid sample for the presence of an analyte indicative of a physiological condition, comprising the steps of contacting the body fluid sample with an immunological binding partner which binds to the analyte, detecting binding of the immunological binding partner to the analyte, and correlating any detected binding to the physiological condition, the improvement comprising contacting the body fluid sample with an immunological binding partner which binds to



is hydroxylysyl pyridinoline or lysyl pyridinoline, and Gln is glutamine or wholly cyclized pyrrolidine carboxylic acid, and correlating any detected binding to degradation of type I collagen in vivo.

5,607,863

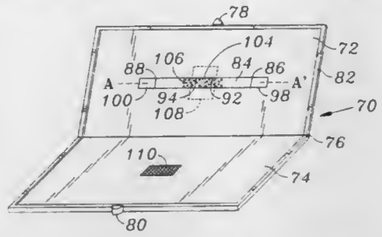
BARRIER-CONTROLLED ASSAY DEVICE

Howard M. Chandler, Yarmouth, Me., assignor to SmithKline Diagnostics, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 40,430, Mar. 31, 1993, which is a continuation-in-part of Ser. No. 888,831, May 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 706,639, May 29, 1991. This application Dec. 7, 1993, Ser. No. 163,860

Int. Cl.[6] G01N *33/543;33/558*

U.S. Cl. 436—518 **85 Claims**



1. A chromatographic assay device for detection and/or determination of an analyte in a test sample comprising:

(a) a first opposable component including:

(i) a chromatographic medium having a first end, a second end, and first and second surfaces, and having a specific binding partner for the analyte immobilized thereon in a detection zone between the first and second ends of the chromatographic medium;

(ii) at least one absorber in operable contact with at least one of the first and second ends of the chromatographic medium; and

(iii) a substantially fluid-impermeable barrier layered on top of the first surface of the chromatographic medium and having an aperture for application of liquid to the chromatographic medium, the barrier at least partially blocking application of liquid to the chromatographic medium; and

(b) a second opposable component containing at least one reactant for applying the at least one reactant directly or indirectly to the chromatographic medium through the aperture; wherein the first and second opposable components are configured so that bringing the first and second opposable components into opposition results in the second opposable component applying the at least one reactant directly or indirectly to the chromatographic medium through the aperture.

5,607,864

FLUORESCENT LATICES HAVING VERY LOW DETECTION THRESHOLDS FOR FLUORESCENT EMISSION

Frederic Ricchiero, Montpellier; Joel Richard, Chantilly, and Sophie Vaslin, Bry/Sur/Marne, all of France, assignors to Societe Prolabo, Paris Cedex, France

Continuation-in-part of Ser. No. 43,748, Apr. 7, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 319,782

Claims priority, application France, Apr. 7, 1992, 92 04217

Int. Cl.[6] G01N *33/533*

U.S. Cl. 436—533 **23 Claims**

1. Fluorescent latex particulates, comprising:

polymer particles having at least one hydrophobic fluorochrome encapsulated therein, wherein said hydrophobic fluorochrome comprises at least five conjugated aromatic ring members wherein at least three of the aromatic rings are condensed, a tetraphenylporphine or an organometailic complex thereof; wherein the external face surfaces of said polymer particles are essentially devoid of said hydrophobic fluorochrome;

wherein said particulates have a detection threshold for fluorescence which is less than or equal to 10^{-12} mol of particles per liter of latex; and

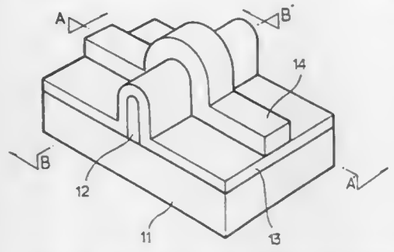
the concentration of said hydrophobic fluorochrome ranges from 0.1% to 2% on the basis of dry weight of latex.

5,607,865

STRUCTURE AND FABRICATION METHOD FOR A THIN FILM TRANSISTOR

Jong M. Choi, Seoul, and Jong K. Kim, Chungcheongbuk-do, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 381,425
Int. Cl.[6] H01L *29/06;21/265*
U.S. Cl. 437—21 **8 Claims**



1. A method for fabricating a thin film transistor comprising the steps of:

forming a semiconductor layer having a shape of a wall on an insulating substrate, including the steps of:

depositing an insulation film having a thickness equal to a desired height of the wall on the insulating substrate;

removing portions of the insulation film so as to leave the insulation film on one side of the substrate and centered on a part which will be an active region of a transistor;

forming a semiconductor layer in the shape of a wall at the side wall of the insulation film by anisotropic etching of the semiconductor layer; and

removing the insulation film;

forming a gate insulation film on the surface of the insulating substrate and the semiconductor layer formed thereon;

forming a gate electrode on the gate insulation film over a center part of the semiconductor layer; and,

forming impurity regions in the semiconductor layer on both sides of the gate electrode.

5,607,866

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING SILICIDE LAYERS FOR ELECTRODES

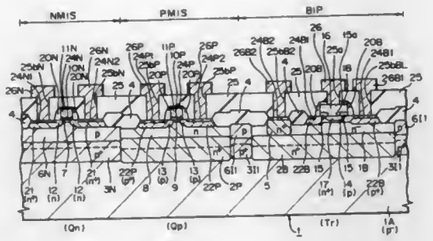
Kazushige Sato, Ome; Atsuo Watanabe, Hitachiota; Kenichi Kikushima; Nobuo Owada, both of Ome, and Masaya Iida, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,112
Claims priority, application Japan, Jun. 10, 1994, 6-128923
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **15 Claims**

1. A method of fabricating a semiconductor device having a MISFET and a bipolar transistor, comprising the steps of:

selectively doping a silicon semiconductor substrate with impurities for different conductivity types to form a first semiconductor region in a first surface portion of said semiconductor substrate and a second semiconductor region in a second surface portion of said semiconductor substrate, said first and second surface portions of said silicon semiconductor substrate being provided for said MISFET and said bipolar transistor, respectively;

forming an epitaxial layer on said first and second surface portions of said semiconductor substrate;



forming a gate electrode over a portion of said epitaxial layer on said first surface portion of said semiconductor substrate, said gate electrode being insulated from said first surface portion of said semiconductor substrate;

introducing an impurity into said epitaxial layer on said second surface portion of said semiconductor substrate to form therein a base region;

forming a first insulating film on a whole surface of the resulting substrate including upper and side surfaces of said gate electrode and said base region;

opening a hole in a part of said first insulating film on said base region to expose a part of said base region;

forming a doped polysilicon film on said first insulating film and on the exposed part of said base region;

forming a second insulating film on said doped polysilicon film;

patterning said second insulating film and said doped polysilicon film so that a remaining second insulating film and a remaining doped polysilicon film remain on said exposed part of said base region and on a peripheral portion of said first insulating film defining said hole therein, said remaining doped polysilicon film covered with said remaining second insulating film serving as an emitter electrode;

forming insulating spacers on side surfaces of said gate electrode and side surfaces of said emitter electrode;

removing said first insulating film except for said peripheral portion of said first insulating film defining said hole;

introducing an impurity into said epitaxial layer in said first surface portion of said substrate and an impurity into said base region on said second surface portion of said substrate, in a self-aligned fashion with said gate electrode and said emitter electrode covered with said remaining second insulating film, in which said emitter electrode is protected from said impurity introduction by the remaining second insulating film;

heat treating the resulting substrate to cause said impurity introduced into said epitaxial layer to diffuse to form source/drain regions in said epitaxial layer, to cause said impurity introduced into said base region to diffuse to form an intrinsic base region under said emitter electrode and an extrinsic base region surrounding said intrinsic base region in said epitaxial layer on said second surface portion of said semiconductor substrate, and to cause diffusion of said impurity from said remaining doped polysilicon film of said emitter electrode into said base region through said hole to form an emitter region in said intrinsic base region;

forming a refractory metal film on a whole surface of the resulting substrate including upper surfaces of said gate electrode and of said emitter electrode and surfaces of said insulating spacers of said gate electrode and emitter electrode, in which said emitter electrode is protected from formation thereon of said refractory metal film by the remaining second insulating film; and

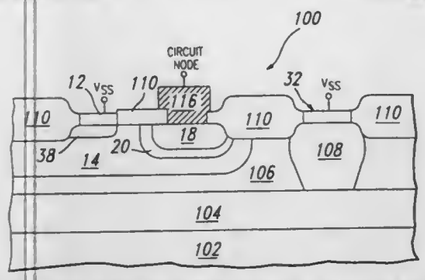
heat treating the resulting substrate to form silicide layers on said source/drain regions in said epitaxial layer, on said gate electrode, and on said extrinsic base region.

5,607,867

METHOD OF FORMING A CONTROLLED LOW COLLECTOR BREAKDOWN VOLTAGE TRANSISTOR FOR ESD PROTECTION CIRCUITS

Ajith Amerasekera, and Amitava Chatterjee, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 275,926, Jul. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 475,268
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **21 Claims**



1. A method of forming an ESD protection device, comprising the steps of:

a. forming an emitter region of a first conductivity type in a semiconductor substrate;

b. implanting a base region of a second conductivity type in said emitter region; and

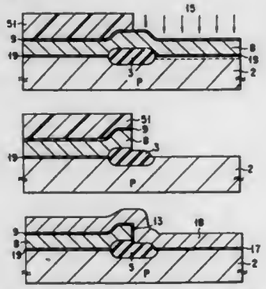
c. implanting a shallow collector region in said base region such that said collector region is shallower than said base region, wherein said shallow collector region has a depth and an implant dose concentration level such that a breakdown voltage between said shallow collector region and said base region is less than 8 volts.

5,607,868

METHOD OF FABRICATING SEMICONDUCTOR DEVICE WITH CHANNEL ION IMPLANTATION THROUGH A CONDUCTIVE LAYER

Nobuyoshi Chida, Kitakami, and Masayuki Yoshida, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 13, 1995, Ser. No. 487,248
Claims priority, application Japan, Jun. 15, 1994, 6-156586
Int. Cl.[6] H01L *21/8238;21/8247*
U.S. Cl. 437—34 **13 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

forming a field oxide film on a semiconductor substrate and providing element formation regions and an element isolation region on a major surface of said semiconductor substrate;

forming a first gate oxide film on an entire surface of said element formation regions on the major surface of said semiconductor substrate;

forming a first conductive layer on the entire major surface of said semiconductor substrate so as to cover said first gate oxide film;

performing, in a second region of said element formation regions on the major surface of said semiconductor substrate, channel ion implantation for controlling a threshold voltage of a MOS transistor to be formed in said second region, by using said first conductive layer as a buffer film;

removing said first conductive layer and said first gate oxide film from said element formation regions, excluding a first region and including said second region, on the major surface of said semiconductor substrate, thereby using said first conductive layer in said first region as a first gate electrode of a MOS transistor to be formed in said first region;

forming a second gate oxide film in said second region;

forming a second conductive layer on the entire major surface of said semiconductor substrate so as to cover said second gate oxide film; and

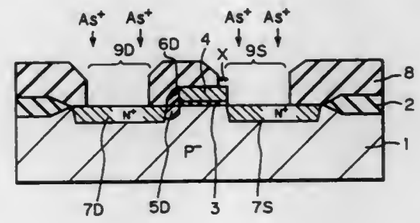
using said second conductive layer in said second region as a second gate electrode of said MOS transistor to be formed in said second region.

5,607,869

METHOD FOR MANUFACTURING ASYMMETRICAL LDD TYPE MIS DEVICE

Yasushi Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 362,011, Dec. 22, 1994, Pat. No. 5,547,888. This application Feb. 1, 1996, Ser. No. 595,369
Claims priority, application Japan, Dec. 30, 1993, 5-352441
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 **9 Claims**



1. A method for manufacturing an asymmetrical LDD type semiconductor device, comprising the steps of:

forming a gate insulating layer on a semiconductor substrate of a first conductivity type;

forming a gate electrode on said gate insulating layer;

introducing impurities of a second conductivity type opposite to the first conductivity type into said semiconductor substrate with a mask of said gate electrode, to form first impurity diffusion regions within said semiconductor substrate;

forming sidewall insulating layers on both sides of said gate electrode;

introducing impurities of the second conductivity type into said semiconductor substrate with a mask of said sidewall insulating layers and said gate electrode, to form second impurity diffusion regions within said semiconductor substrate;

forming an insulating layer on the entire surface including said second impurity diffusion regions;

forming contact holes in said insulating layer, one of said contact hole leading to one of said second impurity diffusion regions, another of said contact holes leading to another of said second impurity diffusion region and a part of said gate electrode; and

introducing impurities of the second conductivity type into said semiconductor substrate with a mask of said insulating layer having said contact holes formed therein.

5,607,870
PARASITOLOGICAL PRESERVATIVE FOR FECAL SAMPLES

Stewart Lipton, 708 Clearview Dr., Glenview, Ill. 60025

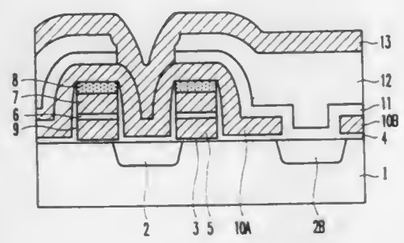
Continuation of Ser. No. 414,616, Mar. 31, 1995, Pat. No. 5,504,012, which is a division of Ser. No. 165,042, Dec. 10, 1993, Pat. No. 5,453,381. This application Sep. 29, 1995, Ser. No. 536,524
Int. Cl.[6] G01N *1/28*
U.S. Cl. 436—176 9 Claims

1. A parasitological preservative composition for fecal samples, said composition comprising: from about 3 to about 5 weight percent glyceraldehyde; from about 1 to about 2 weight percent of a salt of an organic acid selected from the group consisting of sodium acetate and potassium acetate; organic solvent and water, wherein the organic solvent comprises from about 50 to about 55 volume percent of an alcohol selected from the group consistingof ethanol, methanol and butanol, from about 4.5 to about 5.0 volume percent of an alcohol selected from the group consisting of methanol, ethanol and butanol, and from about 0.4 to about 0.5, volume percent methyl isobutyl ketone.

5,607,871
METHOD OF MANUFACTURING A FLASH EEPROM CELL USING THE SELECT GATES AS A MASK

Sung O. Han, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronic Industries Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 5, 1996, Ser. No. 596,743
Claims priority, application Rep. of Korea, Feb. 28, 1995, 95-4002
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 4 Claims

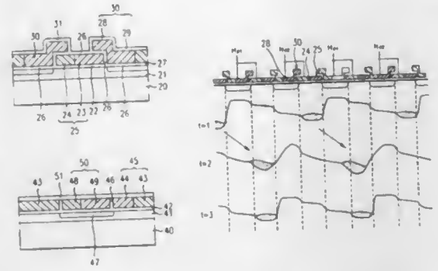


1. A method of manufacturing a flash EEPROM cell, comprising the steps of:
sequentially forming a tunnel oxide layer, a floating gate, a dielectric layer, a program gate and an insulating layer on a silicon substrate, thereby forming a gate electrode;
forming a drain region in said silicon substrate of a side of said gate electrode;
forming a side wall insulating layer on the side wall of said gate electrode;
forming a select gate oxide layer on an exposed portion of said silicon substrate;
forming a polysilicon layer on the resulting structure after forming said select gate oxide layer;
patterning said polysilicon layer so that a portion of said select gate oxide layer is exposed, thereby forming a select gate;
forming a source region in a selected portion of said silicon substrate;
sequentially depositing an oxide layer and a BPSG layer after forming said source region;
exposing a portion of said select gate, thereby forming a contact hole; and
forming a word line on the resulting structure after forming said contact hole.

5,607,872
METHOD OF FABRICATING CHARGE COUPLED DEVICE

Jae H. Jeong, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 250,757, May 26, 1994, Pat. No. 5,442,207. This application Jun. 6, 1995, Ser. No. 477,299
Claims priority, application Rep. of Korea, Aug. 18, 1993, 16030/1993
Int. Cl.[6] H01L *21/265;21/70;27/00*
U.S. Cl. 437—50 26 Claims



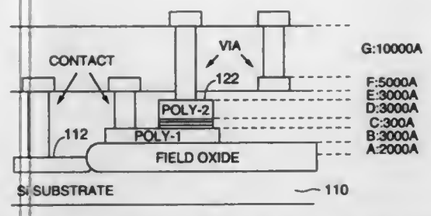
14. A method of fabricating a charge coupled device on a substrate of a first conductivity type, the method comprising the steps of:
forming a charge coupled region of a second conductivity type on the substrate;
forming a first insulating film on the charge coupled region;
forming a first conductive layer on the first insulating film;
forming a first low resistance region in a portion of the first conductive layer, the first low resistance region having a lower resistance than a remaining portion of the first conductive layer;
patterning the first conductive layer to form a first electrode;
forming a second insulating film on the first electrode and the charge coupled region;
forming an impurity region in the surface of the charge coupled region;
forming a second conductive layer on the second insulating film;
forming a second low resistance region in a portion of the second conductive layer adjacent to the first low resistance region of the first electrode, the second low resistance region having a lower resistance than a remaining portion of the second conductive layer; and
patterning the second conductive layer to form second and third electrodes adjacent to the first electrode.

5,607,873
METHOD FOR FORMING CONTACT OPENINGS IN A MULTI-LAYER STRUCTURE THAT REDUCES OVERETCHING OF THE TOP CONDUCTIVE STRUCTURE

Hung-Sheng Chen, San Jose; Tim Nguyen, Milpitas; Larry Moberly, Santa Clara, and Chih S. Teng, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 24, 1996, Ser. No. 637,072
Int. Cl.[6] H01L *21/768*
U.S. Cl. 437—51 19 Claims

1. A method for forming contact openings in a multi-layer structure that includes a semiconductor structure formed on a semiconductor substrate, and a first layer of insulation material formed on the semiconductor structure, the semiconductor substrate having a conductive region, the semiconductor structure having a plurality of conductive structures that includes a top conductive structure and an intermediate conductive structure, the method comprising the steps of:

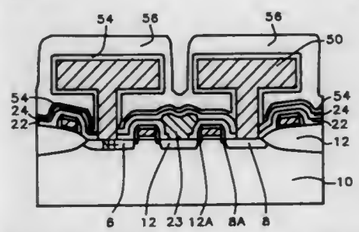


planarizing the top surface of the first layer of insulation material until the top surface of the first layer of insulation material is substantially planarized;
forming a plurality of contact openings in the first layer of insulation material after the top surface of the first layer of insulation material has been substantially planarized so that a first contact opening exposes a portion of the intermediate conductive structure, and so that a second contact opening exposes a portion of the conductive region;
forming a plurality of metal-1 lines over the first layer of insulation material so that a first metal-1 line fills the first contact opening and electrically contacts the intermediate conductive structure, and so that a second metal-1 line fills the second contact opening and electrically contacts the conductive region;
forming a second layer of insulation material over the first layer of insulation material and the metal-1 lines so that the second layer of insulation material has a substantially planar top surface;
forming a plurality of via openings in the second layer of insulation material so that a first via opening exposes the first metal-1 line, and a second via opening exposes the second metal-1 line, and forming a via opening in the second layer of insulation material and any underlying first layer of insulation material so that a third via opening exposes a portion of the top conductive structure; and
forming a plurality of metal-2 lines over the second layer of insulation material so that a first metal-2 line fills the first via opening and electrically contacts the first metal-1 line, a second metal-2 line fills the second via opening and electrically contacts the second metal-1 line, and so that a third metal-2 line fills the third via opening and electrically contacts the top conductive structure.

5,607,874
METHOD FOR FABRICATING A DRAM CELL WITH A T SHAPED STORAGE CAPACITOR

Chen-Jong Wang, and Mong-Song Liang, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Feb. 2, 1996, Ser. No. 590,029
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 8 Claims

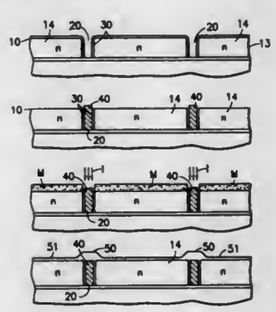


1. A method of fabricating a capacitor having a T shaped storage electrode for a memory device on a substrate; said substrate having a device area with a source region formed therein, comprising the steps of:
a) forming an etch barrier layer over at least said device area and elsewhere over said substrate;
b) forming a first insulating layer over said barrier layer;
c) patterning the first insulating layer forming a contact hole to at least partially expose said source region;
d) forming a trench in said first insulating layer centered around said contact hole; said trench having vertical sidewalls and a horizontal bottom;
e) forming a first conductive layer composed of polysilicon over the first insulating layer, at least completely filling said trench and filling said contact hole thereby forming an electrical contact with said source;
f) chemical-mechanical polishing said first polysilicon layer to a depth that at least exposes said first insulation layer thereby forming a T shaped storage electrode; removing said first insulating layer; and
h) sequentially forming a capacitor dielectric layer and a top electrode over said at least said T shaped storage electrode thereby forming a T shaped capacitor.

5,607,875
METHOD OF SEPARATING A SEMICONDUCTOR WAFER WITH DIELECTRICS

Masato Nishizawa; Shinichi Hashimoto, and Yoshiyuki Sugahara, all of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 31, 1995, Ser. No. 454,918
Claims priority, application Japan, May 31, 1994, 6-117295
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—63 13 Claims



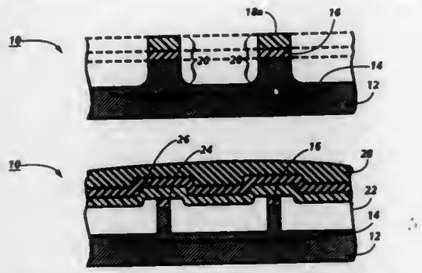
13. A method of separating a semiconductor wafer with dielectrics, said wafer including a first semiconductor substrate joined through an insulation film with a second semiconductor substrate, the method comprising the steps of:
dry etching trenches, for separating said first semiconductor substrate with dielectrics, from a surface of said first semiconductor substrate down to said insulation film;
covering said surface, including said trenches, with a dielectrics film;
removing said dielectrics film from the surface of said wafer, excluding said trenches; and
growing poly-crystalline silicon selectively on said dielectrics film formed on faces of said trenches, thereby filling said trenches with said poly-crystalline silicon;
doping impurity selectively in surfaces of said poly-crystalline silicon grown on said trench faces;
annealing said surfaces of said poly-crystalline silicon; and
forming separation films above said trenches by thermal oxidation.

5,607,876

FABRICATION OF QUANTUM CONFINEMENT SEMICONDUCTOR LIGHT-EMITTING DEVICES

David K. Biegelsen, Portola Valley; Nicholas K. Sheridon, Los Altos, and Noble M. Johnson, Menlo Park, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 276,743, Jul. 18, 1994, abandoned, which is a continuation of Ser. No. 783,945, Oct. 28, 1991, abandoned. This application Dec. 29, 1995, Ser. No. 581,287
Int. Cl.[6] H01L 21/20
U.S. Cl. 437—129 24 Claims



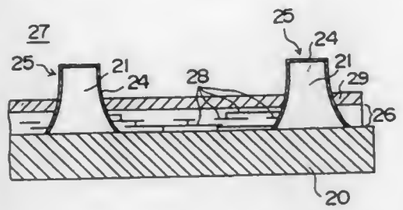
1. A method for fabricating a quantum nanowire, comprising the steps of:
providing a substrate of an indirect bandgap semiconducting material;
forming a p-n junction on a surface of the substrate, the p-n junction having a first region of a first conductivity type adjacent and below a second region of a second conductivity type wherein the first region is formed in the substrate;
etching the first region and the second region to form a column of indirect bandgap semiconducting material;
oxidizing the column while retaining unoxidized a vertical core of the column, said oxidizing step enabling quantum carrier confinement in two dimensions; and
connecting the first region and the second region with electrical contacts so that the vertical core may be electrically biased.

5,607,877

PROJECTION-ELECTRODE FABRICATION METHOD

Tatsuharu Matsuda, and Masaharu Minamizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 6, 1994, Ser. No. 321,013
Claims priority, application Japan, Dec. 28, 1993, 5-337221
Int. Cl.[6] H01L 21/283
U.S. Cl. 437—180 3 Claims



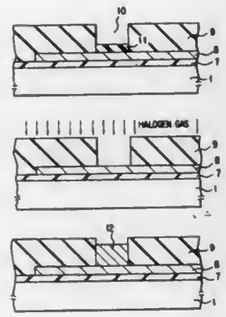
1. A projection-electrode fabrication method, comprising the steps of:
(a) fabricating at least one projection electrode directly on a substrate; and
(b) forming a semiconductor circuit layer adjacent to said projection electrode on the substrate so as to contact at least one projection electrode after said step of fabricating the projection electrode,
wherein said projection electrode is projected higher as compared to said semiconductor circuit layer.

5,607,878

CONTACT PLUG FORMING METHOD

Mari Otsuka, Kawasaki; Tomonori Kitakura, Yokohama; Kenichi Otsuka, and Kazuya Mori, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 322,289, Oct. 13, 1994, abandoned.
This application Sep. 12, 1995, Ser. No. 526,543
Claims priority, application Japan, Oct. 14, 1993, 5-280619
Int. Cl.[6] H01L 21/28
U.S. Cl. 437—187 19 Claims



1. A semiconductor device manufacturing method comprising the steps of:
forming a first conductive layer;
forming an insulation film on said first conductive layer to cover said first conductive layer with said insulation film, the insulation film having an exposed surface opposite from said first conductive layer;
selectively etching said insulation film on said first conductive layer to form a contact hole through the exposed surface and expose part of said first conductive layer in said contact hole;
removing a natural oxide film from the part of said first conductive layer exposed within said contact hole by plasma etching using a halogen gas;
exposing the resultant structure to a gas atmosphere containing halogen, separately from said natural oxide removing step, to purify the exposed surface of said insulation film and thereby inhibit deposition of contact plug material thereon, at temperatures in a range between room temperature and 400° C.;
after the step of exposing the resultant structure, depositing and forming a contact plug on part of said first conductive layer exposed in said contact hole by selective chemical vapor deposition to fill in said contact hole; and
forming a second conductive layer on the exposed surface of said insulation film to electrically connect said first and second conductive layers to each other via said contact plug.

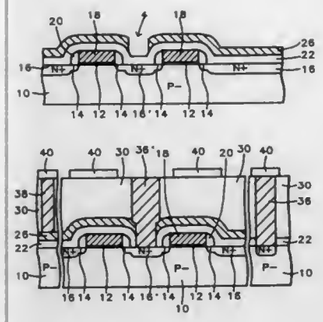
5,607,879

METHOD FOR FORMING BURIED PLUG CONTACTS ON SEMICONDUCTOR INTEGRATED CIRCUITS

Shou-Gwo Wuu, . Chu-Tong; Chen-Jong Wang, Hsin-Chu; Mong-Song Liang, Hsin-Chu, and Chung-Hui Su, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,019
Int. Cl.[6] H01L 21/28
U.S. Cl. 437—193 21 Claims

1. A method for fabricating buried metal plug structures on a semiconductor substrate for making electrical interconnections, comprising the steps of:



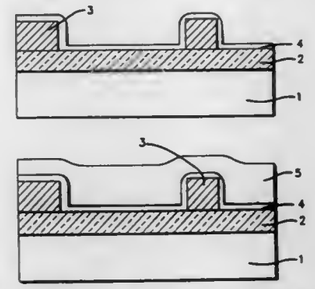
providing a semiconductor substrate having device areas and field oxide areas and further having semiconductor devices formed in part by a patterned first polysilicon layer and device contact areas formed in and on said device areas;
depositing a blanket first insulating layer on said semiconductor devices and elsewhere on said substrate;
depositing a second polysilicon layer on said first insulating layer;
patterning said second polysilicon layer forming openings in said second polysilicon layer aligned over said device contact areas, and said patterned second polysilicon layer forming electrically conducting portions elsewhere on said first insulating layer;
depositing a blanket second insulating layer on said patterned second polysilicon layer, and elsewhere on said first insulating layer;
annealing said second insulating layer and thereby forming an essentially planar surface;
anisotropically and selectively etching relative to said second polysilicon layer, contact openings in said second insulating layer through openings in a photo-resist mask, some of said contact openings aligned over and larger in width than said openings in said second polysilicon layer; and continuing said selective etching,
anisotropic and selective etching said first insulating layer exposed in said second polysilicon layer openings, and thereby forming said contact openings to said device contact areas, said contact openings being self-aligned to the edge of said second polysilicon layer openings; and
simultaneously etching, other contact openings in said second insulating layer to the surfaces of said patterned second polysilicon layer and also etching contact openings in areas free of said patterned second polysilicon layer in said second and first insulating layers to the surface of said substrate, said second polysilicon layer providing an etch stop layer for said selective etching;
removing said photoresist mask;
depositing a conformal plug metal layer on said second insulating layer and within said contact openings, and thereby filling said contact openings; and
blanket etching back said plug metal layer to said second insulating layer and thereby forming metal plugs in said contact openings, the surface of said metal plugs planar with the surface of said second insulating layer;
depositing a first metal layer on said second insulating layer; and
patterning said first metal layer and thereby forming electrical interconnections to said substrate and said patterned second polysilicon layer by contacting said metal plugs while simultaneously providing self-aligned metal plug interconnections between said patterned second polysilicon layer and said device contact areas, and thereby completing said buried metal plug structure.

5,607,880

METHOD OF FABRICATING MULTILEVEL INTERCONNECTIONS IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Mieko Suzuki, and Tetsuya Homma, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,369
Claims priority, application Japan, Apr. 28, 1992, 4-109383
Int. Cl.[6] H01L 21/44;21/48
U.S. Cl. 437—195 37 Claims



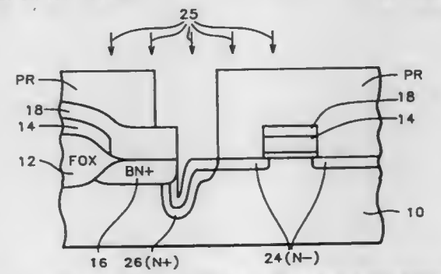
1. A method for fabricating a multilevel interconnection for a semiconductor integrated circuit device, said method comprising the steps of:
1) forming a first silicon oxide film on a silicon substrate;
2) forming first metal wiring lines on said first silicon oxide film;
3) growing a second silicon oxide film on both said metal wiring lines and said first silicon oxide film by chemical vapor deposition;
4) adhering fluorine ions onto the entire surface of said second silicon oxide film by subjecting said entire surface of said second silicon oxide film to dry etching using a fluorine compound by which said entire surface of said second silicon oxide film is etched by approximately 0.1 micrometers;
5) growing a third silicon oxide film on said fluorine-adhered second silicon oxide film by chemical vapor deposition using an organic silicon compound;
6) forming through holes in said second and third silicon oxide films directly over said first metal wiring lines; and
7) forming second metal wiring lines on said third silicon oxide film directly over said first metal wiring fines, said first and second metal wiring lines being connected through said through holes.

5,607,881

METHOD OF REDUCING BURIED CONTACT RESISTANCE IN SRAM

Jenn M. Huang, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Sep. 25, 1995, Ser. No. 503,173
Int. Cl.[6] H01L 21/44;21/48
U.S. Cl. 437—195 30 Claims



1. A method of forming a buried contact in a semiconductor substrate in the fabrication of an integrated circuit comprising:

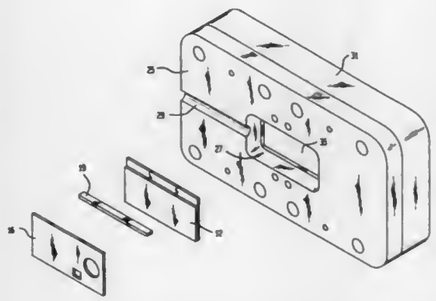
providing a layer of gate silicon oxide over the surface of said semiconductor substrate;
depositing a first polysilicon layer overlying said gate silicon oxide layer;
etching away said first polysilicon and said gate silicon oxide layers where they are not covered by a buried contact mask to provide an opening to said semiconductor substrate;
depositing a second layer of polysilicon over said first polysilicon layer and over said semiconductor substrate within said opening;
doping said second polysilicon layer with dopant;
driving in said dopant to form a buried contact junction within said semiconductor substrate under said opening;
patterning said second polysilicon layer to form a polysilicon contact overlying said buried contact junction wherein a portion of said buried contact junction within said semiconductor substrate is exposed;
overetching said second polysilicon layer whereby a trench is etched into said exposed buried contact junction;
covering said substrate with a second mask wherein said second mask is sized up from said buried contact mask enough to compensate for misalignment;
implanting an extra implant into said semiconductor substrate not covered by said second mask around said trench; and
forming source and drain regions wherein said buried contact junction connects to one of said source and drain regions through said extra implant around said trench completing the formation of said buried contact in the fabrication of an integrated circuit.

5,607,882

MULTI-COMPONENT ELECTRONIC DEVICES AND METHODS FOR MAKING THEM

William R. Lambert, Chester, and John D. Weld, Succasunna, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 20, 1994, Ser. No. 359,973
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **20 Claims**



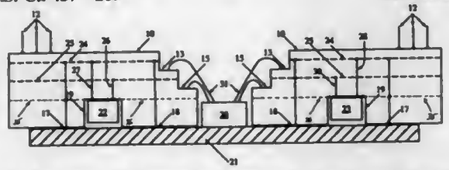
1. A method of manufacturing an electronic device comprising:
providing a stacked assembly of a first electronic component, a second electronic component and an electrical connector therebetween to provide electrical contact between the first and second electronic components;
positioning the stacked assembly into a mold cavity between two
approximating the mold surfaces in a manner to compress the stacked assembly; and
introducing a resin into the mold cavity to at least partially encase the stacked assembly and to maintain the electrical connector in a compressed state.

5,607,883

HIGH PERFORMANCE AND HIGH CAPACITANCE PACKAGE WITH IMPROVED THERMAL DISSIPATION

Bidyut K. Bhattacharyya, Phoenix, Ariz., and Shigeo Tanahashi, Kagoshima, Japan, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 465,060, Jun. 5, 1995, abandoned, which is a division of Ser. No. 367,442, Dec. 28, 1994. This application Apr. 16, 1996, Ser. No. 633,354
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **10 Claims**



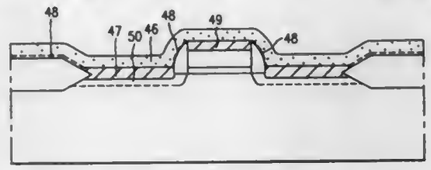
1. A method of housing an integrated circuit, said method comprising:
providing a recessed region in a surface of a package substrate;
placing a discrete capacitor within said recessed region such that said capacitor is disposed below said surface of said substrate;
placing a metal plate over said surface of said substrate such that said metal plate covers said recessed region; and
exposing said substrate, said discrete capacitor, and said metal plate to an elevated temperature such that said discrete capacitor and said metal plate are fused to said substrate.

5,607,884

METHOD FOR FABRICATING MOS TRANSISTOR HAVING SOURCE/DRAIN REGION OF SHALLOW JUNCTION AND SILICIDE FILM

Jeong S. Byun, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Feb. 2, 1994, Ser. No. 190,664
Claims priority, application Rep. of Korea, Dec. 16, 1993, 28018/1993
Int. Cl.[6] H01L *21/225;21/335*
U.S. Cl. 437—41 **8 Claims**



1. A method for fabricating an MOS transistor having source and drain regions of shallow depth and a silicide film, including the steps of:
performing a field oxidation process to form a device separative field oxide film on a silicon substrate;
forming an insulating film on the silicon substrate and a polysilicon film on the insulating film; patterning the insulating film and the polysilicon film to form a gate insulating film and a gate;
forming oxide sidewall spacers on sidewalls of the gate; depositing a Ti-excessed titanium nitride film on the silicon substrate, the gate, the sidewall spacers and the field oxide film;
performing a rapid thermal annealing process to form a titanium silicide film at an interface between the silicon substrate and the titanium nitride film and to form a titanium oxygen nitride film at an interface between the field oxide film and the titanium nitride film and at interfaces between the sidewall spacers and the titanium nitride film;
implanting dopant ions in the titanium nitride film and the titanium silicide film;

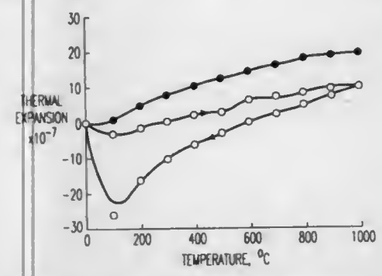
applying a thermal annealing process to the titanium nitride film and the titanium silicide film to diffuse the dopant ions into the silicon substrate, thereby forming the source and drain regions of shallow depth; and
removing the titanium nitride film and the titanium oxygen nitride film.

5,607,885

LOW THERMAL EXPANSION CORDIERITE AGGREGATE AND ITS BONDED BODY

Tomoko Ichii; Keiichiro Suzuki, and Masataro Okumiya, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

Division of Ser. No. 289,280, Aug. 11, 1994, Pat. No. 5,552,349. This application Apr. 24, 1996, Ser. No. 636,970
Claims priority, application Japan, Aug. 11, 1993, 5-219033
Int. Cl.[6] C04B *35/04*
U.S. Cl. 501—9 **2 Claims**



1. A method for producing a low thermal expansion cordierite aggregate having a mean thermal expansion coefficient within a temperature range of from room temperature to 1000° C. of at most 10×10^{-7}/°C., which comprises rapidly cooling a melt haning an approximare cordierite composition to form glass particles having a small number of defects, and crystallizing the glass particles having particle sizes of at least about 1 mm at from 1100° to 1420° C. into cordierite crystals having a mean crystal diameter of at least 50 μm.

5,607,886

OPTICAL GLASS FOR MOLD PRESSING HAVING SOFTENING CAPABILITY AT LOW TEMPERATURE

Masahiro Onozawa, Sagamihara, Japan, assignor to Kabushiki Kaisya Ohara, Japan

Continuation-in-part of Ser. No. 432,083, May 1, 1995, abandoned. This application Oct. 6, 1995, Ser. No. 540,204
Claims priority, application Japan, May 20, 1994, 6-131381
Int. Cl.[6] C03C *3/062*
U.S. Cl. 501—73 **2 Claims**

1. Optical glass for mold pressing having softening capability at a low temperature, consisting in weight percent of:

	SiO_2	0.5–15%
	B_2O_3	0–10%
	Al_2O_3	7–20%
	P_2O_5	56–80%
	TiO_2	0–1%
	ZnO	0–5%
	MgO	0–10%
	$Li_2O + Na_2O + K_2O$	8–25%
in which	Li_2O	0–3%
	Na_2O	0–5%
	K_2O	8–25%
	Sb_2O_3	0–1%

wherein the ratio in weight percent of P_2O_5 to Al_2O_3 is between 3 and 10; and having a transformation temperature (T_g) of 550° C. or lower.

5,607,887

METHOD FOR PREPARING CERAMIC MIXED-OXIDE MATERIALS, PARTICULARLY INTENDED TO BE USED AS MATRIX MATERIAL IN COMPOSITE CERAMIC PRODUCTS

Lars Pejryd; Robert Lundberg, both of Trollhättan, and Jesper Brandt, Göteborg, all of Sweden, assignors to Volvo Aero Aktiebolag, Trollhattan, Sweden

PCT No. PCT/SE93/00618, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/02431, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 7, 1993, Ser. No. 367,265
Claims priority, application Sweden, Jul. 15, 1992, 9202174
Int. Cl.[6] C04B *35/01*
U.S. Cl. 501—94 **18 Claims**

1. A method for preparing a ceramic mixed-oxide of at least two metals, said method comprising the steps of:
mixing an alloy including a metal selected from the group consisting of aluminum, calcium, lithium, magnesium, titanium, and yttrium, said alloy also including an element that is to be present in said ceramic mixed-oxide, said element being different from said metal and is selected from the group consisting of aluminum, silicon, and titanium, with a ceramic oxide that includes a metal that is to be present in said ceramic mixed oxide;
co-milling said alloy and ceramic oxide; and
reaction-sintering said mixed and co-milled alloy and ceramic oxide, thereby oxidizing said metal and element of said alloy to produce said ceramic mixed-oxide.

5,607,888

REGIOSELECTIVE METHYLATION OF TOLUENE TO PARA-XYLENE

Clarence D. Chang, Princeton, and Paul G. Rodewald, Rocky Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 223,383, Apr. 5, 1994, Pat. No. 5,498,814, which is a continuation of Ser. No. 24,972, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,105, Mar. 12, 1992, abandoned. This application May 30, 1995, Ser. No. 452,939
Int. Cl.[6] B01J *29/06*
U.S. Cl. 502—64 **7 Claims**

1. A catalyst for shape selective hydrocarbon conversions comprising:
a catalytic intermediate pore molecular sieve having a Constraint Index of about 1–30 which has been trim selectivated by contact with a mixture of a high-efficiency, para-xylene selectivating agent, said agent selected from the group consisting of polysiloxanes, siloxanes, silanes, disilanes and alkoxysilanes, said mixture comprising said agent and hydrogen and toluene, at reaction conditions for converting toluene to xylene, said catalyst yielding at least about 90% para-xylene based on C_8 products and concurrently therewith a toluene conversion of at least about 15% in toluene disproportionation.

5,607,889

PROCESS FOR PRODUCING AN ACTIVE COMPOSITE AND ACTIVE COMPOSITE PRODUCED BY THIS PROCESS

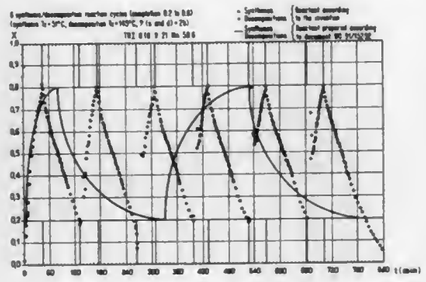
Jacques Prosdocimi, Canohes, and Bernard Spinner, Corneilla Del Vercol, both of France, assignors to Elf Aquitaine, France

Filed Jan. 19, 1995, Ser. No. 374,868

Claims priority, application France, Jan. 19, 1994, 94 00513

Int. Cl.[6] B01J *20/20;8/02;* **F25B** *37/00*

U.S. Cl. 502—80 **7 Claims**



1. Process for producing an active composite for use as a reagent material in thermochemical systems, said composite consisting of a support and an active agent, comprising the steps of:

mixing expanded graphite and an exfoliated lamellar compound to form a mixture of these materials,

compressing the mixture in order to form a support which has a graphite density between 0.02 and 0.5 kg/dm^3, and

impregnating the support with active agent whereby the active agent is preferentially bound onto the exfoliated lamellar compound.

5,607,890

SUPPORTED LEWIS ACID CATALYSTS DERIVED FROM SUPERACIDS USEFUL FOR HYDROCARBON CONVERSION REACTIONS

Frank J. Chen, Edison, N.J.; Alain Guyot, Lyons; Thierry Hamaide, Vienne, both of France, and Christophe Le Deore, Edison, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 220,769, Mar. 31, 1994, abandoned. This application Jul. 15, 1996, Ser. No. 680,073

Int. Cl.[6] B01J *21/02;21/08;21/12;21/14*

U.S. Cl. 502—202 **6 Claims**

1. A supported Lewis acid catalyst system effective for catalyzing hydrocarbon conversion processes comprising an inorganic oxide substrate having immobilized thereon a catalytically effective amount of at least one strong Lewis acid comprising at least one metal salt of a strong Bronsted acid wherein said metal is selected from the group consisting of aluminum, boron, gallium, antimony, tantalum, niobium, yttrium, cobalt, nickel, iron, tin, zinc, magnesium, barium, strontium, calcium, tungsten, molybdenum and the metals of the lanthanide series, and wherein said strong Bronsted acid is selected from the group consisting of mineral and organic acids having a Hammett acidity value of minus 13 or lower.

5,607,891

PROCESS FOR REDUCING THE BENZINE CONTENT OF PETROLS

Christine Travers, Rueil Malmaison; Philippe Courty, Houilles, and Patrick Sarrazin, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, France

Continuation of Ser. No. 365,930, Dec. 29, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,313

Claims priority, application France, Dec. 29, 1993, 93 15.953

Int. Cl.[6] B01J *27/06;27/128;27/13*

U.S. Cl. 502—229 **20 Claims**

1. A catalyst consisting essentially of, by weight, based on the finished catalyst 4% to 15% of chlorine and a catalytically effective amount of at least one group VIII metal on a support, said support consisting essentially of eta alumina and gamma alumina, the eta alumina content being between 85% and 95% by weight with respect to the support, the complement to 100% of the support being gamma alumina.

5,607,892

ZIRCONIUM/CERIUM MIXED OXIDE CATALYST/ CATALYST SUPPORT COMPOSITIONS HAVING HIGH/ STABLE SPECIFIC SURFACES

Thierry Chopin, Saint Denis, France, and Gabriel Vilmin, Princeton, N.J., assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Feb. 10, 1994, Ser. No. 194,529

Claims priority, application France, Feb. 10, 1993, 93 01450

Int. Cl.[6] B01J *21/06;23/10;* **C01F** *17/00*

U.S. Cl. 502—304 **49 Claims**

1. A zirconium/cerium mixed oxide having a specific surface area of greater than 10 m^2/g.

5,607,893

METHOD FOR UNIFORM LOADING OF CATALYST TUBES

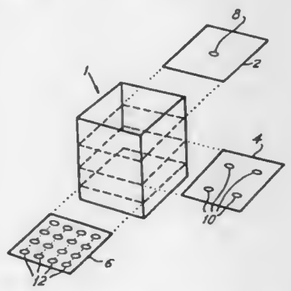
Ebbe J. Diekmann, Ballerup, Denmark, assignor to Haldor Topsøe A/S, Denmark

Filed Dec. 2, 1994, Ser. No. 349,181

Claims priority, application Denmark, Dec. 2, 1993, 1344/93

Int. Cl.[6] B01J *8/08*

U.S. Cl. 502—439 **6 Claims**



1. A method for the uniform loading of catalyst tubes with catalyst particles, which tubes are mounted at the tube inlet side of a tube sheet, comprising the steps of:

dividing a feed stream of catalyst particles into at least two first substreams,

dividing each first substream into at least two second substreams, and

introducing at least two streams of catalyst particles after the formation of said second substreams at an equal particle flow and velocity onto the tube sheet for the uniform loading of the catalyst tubes.

5,607,894

HEAT-SENSITIVE RECORDING MATERIAL

Mitsuo Akutsu; Nobuhide Tominaga; Keiji Oya; Athuo Tomita, and Kouichi Shigeno, all of Saitama-ken, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

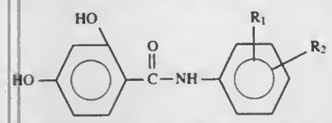
Filed Jun. 7, 1995, Ser. No. 487,847

Claims priority, application Japan, Jun. 13, 1994, 6-129977

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—209 **7 Claims**

1. A heat-sensitive recording material comprising a heat-sensitive recording layer and a support, said heat-sensitive recording layer containing at least one resorcylic anilide derivative and a colorless or light-colored coupling dye, said resorcylic anilide derivative being represented by the following general formula:



(I)

wherein R_1 represents an alkyl or alkoxy group having 1 to 4 carbon atoms and R_2 represents a hydrogen atom or an alkyl or alkoxy group having 1 to 4 carbon atoms.

5,607,895

THERMAL TRANSFER SHEET

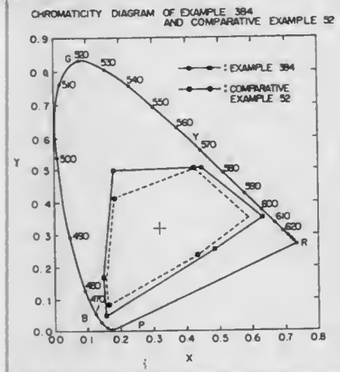
Hiroshi Eguchi; Komei Kafuku, and Ryohei Takiguchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 974,723, Nov. 13, 1992, Pat. No. 5,369,078. This application Aug. 3, 1994, Ser. No. 285,393

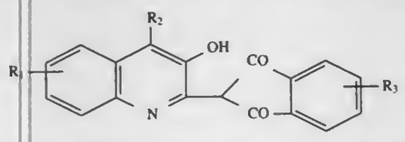
Claims priority, application Japan, Nov. 14, 1991, 3-325058; Nov. 14, 1991, 3-325060; Jan. 21, 1992, 4-29042; Jan. 21, 1992, 4-29043; Jun. 25, 1992, 4-190257; Sep. 22, 1992, 4-276811

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **3 Claims**

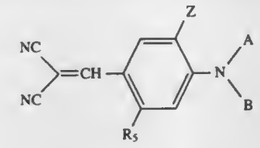


1. A thermal transfer sheet comprising a base sheet and a dye-containing layer formed on one surface of said base sheet wherein a yellow dye included in said dye-containing layer is a mixture of at least one dye represented by the following formula:



wherein R_1 represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, or a cycloalkyl group; R_2 represents a hydrogen atom, a halogen atom, an alkoxy group, an alkylthio group, or an arylthio group which may be substituted; and R_3 represents a branched alkyl group having from 3 to 5 carbon atoms, an o-substituted oxycarbonyl group, N-substituted aminocarbonyl group in which the N-substituent may form a ring, or a substituted or unsubstituted heterocyclic ring having at least two atoms selected from the group consisting of a nitrogen atom, an oxygen atom, a sulfur atom and combinations thereof, provided that when R_1 is hydrogen, R_3 is a branched alkyl group having from 3 to 5 carbon atoms, or a substituted heterocyclic ring having at least two atoms selected from the group consisting of an oxygen atom, a sulfur atom and combinations thereof;

with at least one dye represented by the following formula:



wherein

A and B each represents an alkyl group, a hydroxyalkyl group, an alkoxyalkyl group, an alkoxycarbonylalkyl group, an aralkyl group, an alkylcarboxyalkyl group, an alkylaminocarboxyalkyl group, a cycloalkylaminocarboxyalkyl group, a cyanoalkyl group, a cycloalkoxyaralkyl group, an alkoxycaroxyalkyl group, an aryloxycarboxyalkyl group, an alkoxycarbonylalkoxycarbonylalkyl group, a cycloalkylaryloxyalkyl group, a hetarylalkyl group, an aryl group, an alkoxyalkoxyalkyl group, or an alkylcarboxyalkoxyalkyl group;

Z represents a hydrogen atom, a halogen atom, an alkyl group, or an alkoxy group;

R5 represents a hydrogen atom, an alkyl group, an alkylcarbonylamino group, a hydroxy group, a hydroxyalkoxyalkylamino group, an alkoxyalkoxycarbonylamino group, an alkylsulfonylamino group, or an alkoxycarbonyl group.

5,607,896

THERMAL TRANSFER PRINTING DYESHEET

Kenneth W. Hutt, Essex, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 932,481, Aug. 20, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 418,163

Claims priority, application United Kingdom, Aug. 20, 1991, 9117986

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **21 Claims**

17. In a process of light-induced thermal transfer printing which comprises pressing a dyesheet into intimate contact with a receiver and subjecting the contacting dyesheet and receiver to light-induced thermal transfer printing wherein inducing light is absorbed to provide the thermal energy required for effecting transfer of dye from the dyesheet to a receiver, the dyesheet comprises a substrate having on one side a dyecoat comprising a polymeric binder containing at least one thermal transfer dye dissolved or dispersed therein, and between the dyecoat and the substrate an absorber coat comprising a polymeric binder containing an infra-red absorber for the inducing light to convert it into the required thermal energy, the absorber coat having a composition different from that of the dyecoat binder and through which the dye molecules diffuse less readily under printing conditions than they do through the dyecoat binder.

5,607,897

POLYESTER FILM FOR SUBLIMATION-TYPE THERMOSENSITIVE TRANSFER RECORDING MEDIUM

Narihiro Masuda, Nagahama, Japan, assignor to Diafoil Hoechst Company, Limited, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,705
Claims priority, application Japan, Oct. 5, 1994, 6-241365
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **20 Claims**

1. A sublimation thermosensitive transfer recording medium comprising

a polyester film having a degree of planar orientation of 0.145 to 0.169, and

a coating layer formed on at least one side of the polyester film by applying a water solution or a water despersion comprising at least one water-soluble or water-dispersible resin selected from the group consisting of urethane-based resins, polyester-based resins, and acrylic-based resins, before oriented crystallization of said film is completed, and subjecting the obtained polyester film to drying treatment, stretching treatment, and heat-setting treatment,

a sublimable ink layer disposed on the surface of the coating layer, and

a heat resistant layer disposed on the side of the polyester film opposite from the ink layer side.

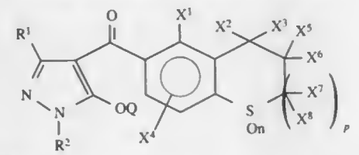
5,607,898

PYRAZOLE DERIVATIVES

Kazufumi Nakamura; Kazuyoshi Koike; Masashi Sakamoto, and Ichiro Nasuno, all of Sodegaura, Japan, assignors to Idemitsu Kosan Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1996, Ser. No. 595,359
Claims priority, application Japan, Aug. 2, 1993, 5-191428; Apr. 11, 1994, 6-71788; Feb. 13, 1995, 7-24102
Int. Cl.[6] A01N *43/56;* **C07D** *409/06*
U.S. Cl. 504—282 **33 Claims**

1. A pyrazole derivative of the general formula (I).



(I)

wherein:

R^1 is one member selected from the group consisting of hydrogen atom, a C_1–C_4 alkyl group, a C_1–C_4 haloalkyl group and a C_2–C_4 alkoxyalkyl group;

R^2 is one member selected from the group consisting of a alkyl group, a C_2–C_4 alkenyl group and a C_2–C_4 haloalkenyl group;

X^1 is one member selected from hydrogen atom, halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 haloalkyl group, a C_2–C_4 alkoxyalkyl group, a C_1–C_4 alkoxy group and a C_1–C_4 haloalkoxy group;

each of X^2 and X^3 is independently one member selected from the group consisting of hydrogen atom, a C_1–C_4 alkyl group and a C_1–C_4 haloalkyl group;

X^4 is one member selected from the group consisting of hydrogen atom, halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 haloalkyl group and C_1–C_4 alkoxy group;

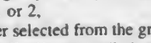
each of X^5, X^6, X^7 and X^8 is independently hydrogen atom or a C_1–C_4 alkyl group;

further, a combination of X^2 and X^5 or a combination of X^5 and X^7 may be an unsaturated bond;

n is an integer of 0, 1 or 2;

p is an integer of 0 or 1; and

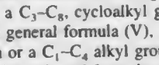
Q is hydrogen or any one of the following groups (a) to (h).



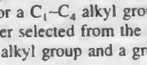
(a)

-continued

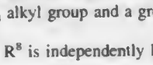
(b)



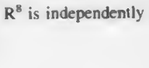
(c)



(d)

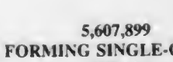


(e)



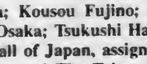
(f)

(g)



(h)

in which R^3 is one member selected from the group consisting of a C_1–C_8 alkyl group, a C_3–C_8 cycloalky group and a group of the general formula (V).



(V)

in which Y is halogen atom, nitro group, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group or a C_1–C_4 haloalkyl group, and m is an integer of 0, 1 or 2,

R^4 is one member selected from the group consisting of a C_1–C_8 alkyl group, a C_3–C_8, cycloalkyl group, pyridyl group and a group of the general formula (V),

R^5 is hydrogen or a C_1–C_4 alkyl group,

R^6 is one member selected from the group consisting of hydrogen, a C_1–C_4 alkyl group and a group of the general formula (V), and

each of R^7 and R^8 is independently hydrogen or a C_1–C_4 alkyl group, and

a salt thereof.

5,607,899

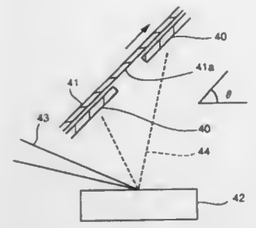
METHOD OF FORMING SINGLE-CRYSTALLINE THIN FILM

Noriyuki Yoshida; Kousou Fujino; Noriki Hayashi; Shigeru Okuda, all of Osaka; Tsukushi Hara, and Hideo Ishii, both of Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., and The Tokyo Electric Power Company Incorporated, both of Japan

Filed Feb. 24, 1995, Ser. No. 393,747
Claims priority, application Japan, Feb. 25, 1994, 6-028022; Nov. 1, 1994, 6-268776
Int. Cl.[6] C30B *23/08;25/06*
U.S. Cl. 505—474 **16 Claims**

1. A method of forming a single-crystalline thin film, comprising the steps of:

preparing film forming conditions capable of forming a film orienting a first specific crystal axis substantially perpendicularly to a base material surface in substantially parallel



arrangement of a target surface being irradiated with a laser beam and said base material surface in accordance with laser ablation of irradiating a target with said laser beam thereby depositing a substance being scattered from said target on said base material surface;

inclining said base material surface with respect to said target surface; and

depositing a film on said inclined base material surface under said film forming conditions,

said base material surface consisting essentially of a polycrystalline or amorphous material,

said base material surface being so inclined as to form a single-crystalline film on said base material surface through tendencies of orienting said first specific crystal axis in a direction substantially perpendicular to said target surface and orienting a second specific crystal axis in a direction substantially perpendicular to said base material surface in said film as being deposited.

5,607,900

PROCESS FOR CLEANING A SURFACE OF THIN FILM OF OXIDE SUPERCONDUCTOR

Hiroshi Inada; Takao Nakamura; Michitomo Iiyama, and So Tanaka, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 261,205, Jun. 15, 1994, abandoned, which is a continuation of Ser. No. 858,151, Mar. 27, 1992, abandoned. This application Nov. 1, 1995, Ser. No. 551,702
Claims priority, application Japan, Mar. 28, 1991, 3-089618; Mar. 28, 1991, 3-089619; Jul. 1, 1991, 3-186927
Int. Cl.[6] B05D *5/12;* **B08B** *5/04*
U.S. Cl. 505—500 **17 Claims**

1. A process for removing contaminants from a surface of a film of oxide superconductor deposited on a substrate, characterized in that said film of oxide superconductor is heat-treated in ultra-high vacuum at a temperature which is within a range of −100° C. to +100° C. of the temperature at which oxygen enters into said oxide superconductor, and wherein said heat treatment is effected under a pressure of lower than 1×10^{-9} Torr.

5,607,901

ENVIRONMENTALLY SAFE ANNULAR FLUID

John A. Toups, Jr., Sugar Land; David B. Young, Kingwood; Majeed H. Yousif, Woodlands; B. C. Smolen, and Jonathan Holt, both of Houston, all of Tex., assignors to BP Exploration & Oil, Inc., Cleveland, Ohio

Filed Feb. 17, 1995, Ser. No. 393,152
Int. Cl.[6] C09K *7/02;* **E21B** *43/25*
U.S. Cl. 507—103 **19 Claims**

1. A thermally insulating fluid comprised of:

a) a liquid selected from the group consisting of esters, polyalpha olefins, ethers, food grade paraffins and linear alpha-olefins;

b) a hydrophilic clay; and,

c) a polar-organic solvent.

5,607,902

METHOD OF TREATING SHALE AND CLAY IN HYDROCARBON FORMATION DRILLING

Kevin W. Smith, McMurray, and Todd R. Thomas, Coraopolis, both of Pa., assignors to ClearWater, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 154,535, Nov. 19, 1993, abandoned. This application Mar. 4, 1996, Ser. No. 610,739
Int. Cl.[6] C09K *7/02*
U.S. Cl. 507—120 **15 Claims**

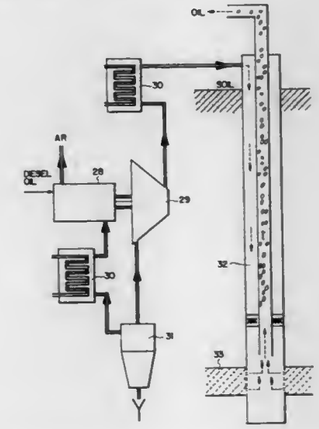
1. Method of reducing permeability damage in a subterranean formation from contact of a treatment fluid with said subterranean formation comprising contacting the subterranean formation with an aqueous solution of said treatment fluid containing a formation control additive consisting essentially of (A) a foaming agent, and (B) a linear copolymer comprising (1) about 50% to about 95% by weight of a cationic monomer selected from (a) diallyl ammonium monomers of the formula $CH_2{=}CH{-}CH_2)_2N^+(CH_3)_2Cl^-$ (b) acryloyloxy monomers of the formula $CH_2{=}CR{-}COR^1N^+(CH_3)_3A^-$ where A^- is an anion selected from chloride and methosulfate and (c) acrylamido monomers of the formula $CH_2{=}CR{-}CONR^1N^+(CH_3)_3\ A^-$ where A^- is an anion selected from chloride and methosulfate and (2) about 5% to about 50% of an anionic monomer of the formula $CH_2{=}CRCOR_2$ where R is hydrogen or CH_3, R^1 is a connecting linear or branched saturated hydrocarbyl group having from one to about five carbon atoms, and R^2 is OH or $-NHR^1SO_3^-$.

5,607,903

PROCESS FOR INERT GAS GENERATION

Bráulio L. C. X. Bastos, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A.-Petrobras, Rio de Janeiro, Brazil

Division of Ser. No. 40,603, Mar. 31, 1993, Pat. No. 5,435,975. This application Apr. 25, 1995, Ser. No. 428,352
Claims priority, application Brazil, Apr. 1, 1992, 9201152
Int. Cl.[6] C09K *7/00*
U.S. Cl. 507—202 **5 Claims**



1. The process for the generation of inert gas for backsurging and artificial lift for oil wells comprising:

admitting atmospheric air into a diesel engine through an air filter and turbocompressor;

discharging flue gas from a turbine of said turbocompressor to a first cooler for cooling said flue gas;

directing said flue gas from the first cooler to a first cyclone for separating water and solid particles;

supplying said flue gas from said first cyclone to a first stage of a first compressor and from said first stage of said first compressor into a second cooler for further cooling said flue gas;

discharging said flue gas from said second cooler into a second stage of said first compressor and thereafter discharging said flue gas from said second stage of said first compressor into a third cooler;

supplying said flue gas from said third cooler to a second cyclone downstream thereof for further separating water and solid particles from said flue gas after cooling within said third cooler;

discharging said flue gas from said second cyclone to a first stage of a second compressor and supplying said flue gas from said first stage of said second compressor to a fourth cooler;

discharging said flue gas from said fourth cooler into a second state of said second compressor and from said second state of said second compressor into a fifth cooler; and

discharging said flue gas from said fifth cooler whereupon said flue gas is highly inert and at a high pressure from compression within said first and second compressors.

5,607,904

NONIONIC ALKANOLAMIDES AS SHALE STABILIZING SURFACTANTS FOR AQUEOUS WELL FLUIDS

Michael Jarrett, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 13, 1995, Ser. No. 421,224

Int. Cl.[6] C09K *7/06;3/00;* **B01F** *17/42*

U.S. Cl. 507—131 **20 Claims**

1. A method for minimizing hydration and preventing erosion loss of water-sensitive shale substrates by aqueous-base drilling fluids comprising the step of treating an aqueous-base drilling fluid with an effective amount of a nonionic alkanolamide.

5,607,905

WELL DRILLING AND SERVICING FLUIDS WHICH DEPOSIT AN EASILY REMOVABLE FILTER CAKE

James W. Dobson, Jr., Houston, and Thomas C. Mondshine, Sugarland, both of Tex., assignors to Texas United Chemical Company, LLC., Houston, Tex.

Filed Mar. 15, 1994, Ser. No. 212,814

Int. Cl.[6] C09K *7/02;* **E21B** *37/00*

U.S. Cl. 507—211 **17 Claims**

1. A process for enhancing the removal of a filter cake from the sides of the borehole in a subterranean formation, the filter cake being deposited during well drilling or servicing operations from an alkaline water base fluid containing one or more polysaccharide polymers therein, which comprises depositing within the filter cake as an integral component thereof a peroxide selected from the group consisting of alkaline earth metal peroxides, zinc peroxides, and mixtures thereof, and thereafter contacting the filter cake with an acidic solution to activate the peroxide for a period of time such that the polymer within the filter cake is decomposed.

5,607,906

GREASE COMPOSITION FOR CONSTANT VELOCITY JOINTS

Takashi Okaniwa, and Hisayuki Osawa, both of Fujisawa, Japan, assignors to Kyodo Yushi Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 635,673

Claims priority, application Japan, Nov. 13, 1995, 7-294251; Nov. 29, 1995, 7-310531

Int. Cl.[6] C10M *115/08;125/22*

U.S. Cl. 508—168 **12 Claims**

1. A grease composition for constant velocity joints consisting essentially of:

(a) a base oil;

(b) an urea thickener;

(c) molybdenum disulfide; and

(d) a metal salt or an overbasic metal salt selected from the group consisting of metal salts of oxidized waxes, metal salts of petroleum sulfonates, metal salts of alkyl aryl sulfonates, metal salts of salicylate, metal salts of phenates, overbasic metal salts of oxidized waxes, overbasic metal salts of petroleum sulfonates, overbasic metal salts of alkyl aryl sulfonates, overbasic metal salts of salicylate, and overbasic metal salts of phenates.

5,607,907

MULTIPURPOSE FUNCTIONAL FLUID FOR AGRICULTURAL MACHINERY OR CONSTRUCTION MACHINERY

Hiroshi Watanabe, Matsudo; Michio Shiga, Hiratsuka, and Satoshi Ohta, Ogasa-gun, all of Japan, assignors to Oronite Japan Limited, Japan

Filed Oct. 12, 1994, Ser. No. 321,495

Int. Cl.[6] C10M *129/74;137/14*

U.S. Cl. 508—371 **2 Claims**

1. A multipurpose functional fluid for agricultural machinery or construction machinery, said functional fluid comprising a base oil, 0.05% to 10% by weight of a detergent-dispersant and 0.1% to 3% by weight of zinc dialkyldithiophosphate, wherein the base oil consists of a fatty acid triester of trimethylolpropane obtained from a fatty acid selected from the group consisting of:

(a) a fatty acid comprising:

(1) from 40% to 70% by weight of caprylic acid, and

(2) from 20% to 50% by weight of capric acid; and

(b) a fatty acid derived from a coconut oil which has been adjusted to have a stearic acid content of from 10% to 20% by weight.

5,607,908

COMPOSITION FOR CLEANING CONTACT LENSES

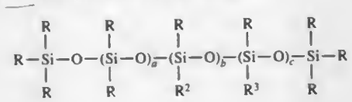
Chimpiramma Potini, Methuen, and Stanley J. Wrobel, Andover, both of Mass., assignors to Wilmington Partners L.P.

Division of Ser. No. 80,424, Jun. 18, 1993, Pat. No. 5,422,029. This application Mar. 16, 1995, Ser. No. 407,519

Int. Cl.[6] C11D *1/82;3/48*

U.S. Cl. 510—115 **11 Claims**

1. A method of cleaning a contact lens comprising exposing a contact lens to an aqueous composition comprising a silicone surface active agent having cleaning activity for contact lens deposits and represented by the formula:



wherein:

each R is independently selected from the group consisting of C_1–C_{11} alkyl and phenyl;

each R^2 is independently a radical having the formula

$$—R^4—O—(EO)_x—(PO)_y—(EO)_z—H;$$

each R^3 is independently a radical having the formula

$$—R^4—O—(EO)_x—(PO)_y—(EO)_z—Z;$$

each R^4 is independently an alkylene radical having 1 to 6 carbon atoms;

each EO is an ethyleneoxide radical;

each PO is a propyleneoxide radical;

each Z is independently a radical ionizable in aqueous solution;

a is 0 or an integer of at least 1;

b is 0 or an integer of at least 1;

c is an integer of at least 1; and

each of x, y and z is independently 0 or an integer of at least 1.

5,607,909

PERSONAL CLEANSING FREEZER BAR WITH TAILORED FATTY ACID SOAP

Philip J. Kefauver, Loveland; Fernando R. Tolléns, and Scott W. Syfert, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1995, Ser. No. 381,373

Int. Cl.[6] C11D *9/00;9/22*

U.S. Cl. 510—152 **10 Claims**

1. A mild, lathering personal cleansing freezer bar composition by weight of the bar comprising: frown 30 to 85 parts tailored fatty acid soap, from 3 parts to 30 parts synthetic surfactant, and from 15 to 35 parts of water; wherein said tailored fatty acid soap by weight of total soap comprises:

I. from 50% to 85% of total soap is saturated fatty acid soap selected from the group consisting of: myristic, palmitic, and stearic acid soaps and mixtures thereof; and

II. from 15% to 50% by weight of total soap is: oleic ($C_{18:1}$) and lauric acid (C_{12}) soaps and minor fatty acid soaps selected from the group consisting of: C_8, C_{10}, $C_{18:2}$; and mixtures thereof; and

wherein said lauric and oleic soaps have a ratio of 0.1:1 to 3:1 and wherein said tailored fatty acid soap mixture is about 65% to about 95% sodium soap and from about 5% to about 35% magnesium soap, and wherein said freezer bar composition is essentially free of potassium soap.

5,607,910

DETERGENT GELS CONTAINING ETHOXYLATED ALKYL SULFATES AND SECONDARY SULFONATES

Alan E. Sherry, and John D. Curry, both of 5299 Spring Grove Ave., Cincinnati, Ohio 45217

Continuation-in-part of Ser. No. 85,433, Jun. 30, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,765

Int. Cl.[6] C11D *17/00;1/29;3/32*

U.S. Cl. 510—235 **15 Claims**

1. A detergent composition comprising a gel wholly or predominantly in hexagonal liquid crystal phase, said gel comprising:

(a) from about 15% to about 50% ethoxylated alkyl sulfate surfactant by weight of the gel, wherein the alkyl group of the ethoxylated alkyl sulfate surfactant has an average from about 8 to about 20 carbon atoms, and wherein the ethoxylated alkyl sulfate surfactant has an average degree of ethoxylation from about 0.5 to about 15;

(b) from about 1% to about 20%, by weight of the gel, secondary sulfonate surfactant selected from the group consisting of alkylbenzene sulfonates, alkyltoluene sulfonates, paraffin sulfonates, olefin sulfonates, alpha-sulfonated fatty acid alkyl esters, and mixtures thereof;

(c) optionally from 0% to about 15%, by weight of the gel, surfactants selected from the group consisting of cationic surfactants, zwitterionic surfactants, ampholytic surfactants, amphoteric surfactants, nonionic surfactants that are not ethoxylated alkyl sulfate surfactants, artionic surfactants that are not secondary sulfonate surfactants, and mixtures thereof;

(d) from about 40% to about 80% water by weight of the gel; and

(e) from about 0.2% to about 3% magnesium ions by weight of the gel;

wherein the gel has a weight ratio of surfactant (a) to surfactant (b) between about 3:2 and about 10:1, a total amount of surfactants (a)+(b)+(c) of from about 25% to about 60% by weight of the gel, and a viscosity of from about 500,000 cp to about 6,000,000 cp; the composition being free of hydrotropes, hydrotropes being water-soluble non-micelle-forming or weakly micelle-forming materials, which contain a large polar group and a small hydrophobic group containing not more than 6 aliphatic carbon atoms, selected from the group consisting of aryl or lower alkylaryl sulfonates, lower alkyl or alkylbenzyl ammonium salts, and lower amides.

5,607,911

AQUEOUS COMPOSITIONS WITH DETERGENT FOR RUST AND STAIN REMOVAL

Scott Levin; Eric Levin, and Joseph Levin, all of 8533 Williams Ave., Philadelphia, Pa. 19150

Continuation-in-part of Ser. No. 373,055, Jan. 17, 1995, Pat. No. 5,525,252. This application Apr. 22, 1996, Ser. No. 635,630

Int. Cl.[6] C02F *5/00*

U.S. Cl. 510—253 **3 Claims**

1. A foaming acidic composition of an aqueous solution of the following compounds, ranging within the stated amounts in terms of percent by weight, for the removal of calcium and mineral deposits from a variety of surfaces, said composition consisting of:

Hydrochloric Acid	1% to 15%
Phosphoric Acid	1% to 12%
Tetrasodium Ethylenediaminetetraacetic acid	0.25% to 5%
Anionic Surfactant	1% to 10%
Perfume Oil	0.53% to 3%
Dye	less than 5%
Water	Balance.

5,607,912

HYDROCHLOROFLUOROCARBON AZEOTROPIC OR AZEOTROPIC-LIKE MIXTURE

Shunichi Samejima, Tokyo; Kenroh Kitamura, Fujisawa; Naohiro Watanabe, Chiba; Teruo Asano, Yokohama; Toru Kamimura, Ichihara, and Yoko Usami, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 573,120, Sep. 13, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,328

Claims priority, application Japan, Feb. 1, 1989, 1-20883; Feb. 1, 1989, 1-20887; Feb. 1, 1989, 1-20888; Feb. 2, 1989, 1-22532; Feb. 2, 1989, 1-22539; Feb. 2, 1989, 1-22549; Feb. 6, 1989, 1-25642; Feb. 6, 1989, 1-25643; Feb. 6, 1989, 1-25686; Feb. 6, 1989, 1-25687; Feb. 6, 1989, 1-25688; Feb. 14, 1989, 1-32834; Apr. 26, 1989, 1-104650; Apr. 26, 1989, 1-104651; May 30, 1989, 1-134606; May 30, 1989, 1-134607; May 26, 1989, 1-131531; Jun. 30, 1989, 1-167107; Aug. 14, 1989, 1-207842; Aug. 14, 1989, 1-207843; Aug. 15, 1989, 1-209684; Sep. 12, 1989, 1-234602; Sep. 12, 1989, 1-234603; Sep. 12, 1989, 1-234604; Sep. 12, 1989, 1-234605; Oct. 6, 1989, 1-260164; Oct. 6, 1989, 1-260165

Int. Cl.[6] C11D *7/50;* **C23G** *5/028;* **C07C** *19/08*

U.S. Cl. 510—411 **4 Claims**

1. A hydrochlorofluorocarbon azeotropic like mixture consisting essentially of

from 75 to 99 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from 1 to 25 weight percent methanol which boils at about 46° C. at atmospheric pressure; or

from 75 to 99.5 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from 0.5 to 25 weight percent ethanol which boils at about 50° C. at atmospheric pressure; or

from 74 to 99 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from 1 to 26 weight percent methanol which boils at about 47.2° C. at atmospheric pressure; or

from 74 to 99.5 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from 0.5 to 26 weight percent ethanol which boils at about 53.8° C. at atmospheric pressure; or

from 77 to 99 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from 1 to 23 weight percent isopropanol which boils at about 54.9° C. at atmospheric pressure;

wherein the components of each azeotropic like composition consists of either 1,1-dichloro-2,2,3,3,3-pentafluoropropane or 1,3-dichloro-1,1,2,2,3-pentafluoropropane and either methanol, ethanol or isopropanol.

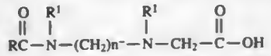
5,607,913

ACIDIC LIQUID DETERGENT COMPOSITIONS FOR BATHROOMS

Ricky A. Woo, Hamilton, and James E. Gray, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 96,533, Jul. 22, 1993. This application Nov. 21, 1994, Ser. No. 342,557
Int. Cl.[6] C11D *1/72;1/722;1/94*
U.S. Cl. 510—413 18 Claims

1. An acidic aqueous hard surface detergent composition comprising: (a) a detergent surfactant system which comprises either: (1) a mixture of from about 0.01% to about 8% of (i) amphoteric, non-zwitterionic, detergent surfactant having the generic formula



wherein



is a C_{8-14} hydrophobic fatty acyl moiety containing from about 8 to about 14 carbon atoms which, in combination with the nitrogen atom, forms an amido group, each n is from 1 to 3, and each R^1 is hydrogen or a C_{1-2} alkyl or hydroxy alkyl group, with (ii) from about 0.01% to about 6% of nonionic detergent surfactant which contains a C_{7-22} alkyl group and from about 2.5 to about 2.5 to about 12 ethylene oxide groups to give an HLB of from about 8 to about 16; or (2) from 0.1% to about 15% of a sudsing, nonionic detergent surfactant that is a $C_{7-10}EO_{3-12}$ nonionic detergent surfactant (b) at least a suds reducing amount and less than about 5% of a suds controlling alkoxylated material of the formula: $C_n(PO)_x$-$(EO)_y(PO)_z$ in which EO stands for ethylene oxide, PO stands for propylene oxide, C_n is a hydrocarbon group containing n carbon atoms, n is a number from about 6 to about 12, x is a number from about 1 to about 6, y is a number from about 4 to about 15, and z is a number from about 4 to about 25, (c) optionally, from about 1% to about 15% of hydrophobic solvent that provides a primary cleaning function; and (d) from about 2% to about 14% of polycarboxylate detergent builder, and said composition having a pH of from about 1 to about 5.5.

5,607,914

SYNTHETIC ANTIMICROBIAL PEPTIDES

A. Gururaj Rao, Urbandale, and Lingxiu Zhong, Johnston, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Johnston, Iowa

Continuation-in-part of Ser. No. 79,512, Jun. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 3,884, Jan. 13, 1993, abandoned. This application Jan. 7, 1994, Ser. No. 179,632
Int. Cl.[6] A61K *38/04;38/16;* C07K *7/00;14/00*
U.S. Cl. 514—12 7 Claims

1. A method for killing and inhibiting pathogenic microorganisms selected from the group consisting of SEQUENCE I.D. NO. 1, SEQUENCE I.D. NO. 2, SEQUENCE I.D. NO. 3, SEQUENCE I.D. NO. 4, SEQUENCE I.D. NO. 5, SEQUENCE I.D. NO. 6, SEQUENCE I.D. NO. 7, SEQUENCE I.D. NO. 9, SEQUENCE I.D. NO. 10, SEQUENCE I.D. NO. 12, SEQUENCE I.D. NO. 16, SEQUENCE I.D. NO. 17, SEQUENCE I.D. NO. 18, SEQUENCE I.D. NO. 19, SEQUENCE I.D. NO. 20, SEQUENCE I.D. NO. 21, and SEQUENCE I.D. NO. 22, the method comprising introducing an antimicrobial amount of the polypeptide into the environment of the pathogenic microorganisms.

5,607,915

PULMONARY DELIVERY OF ACTIVE FRAGMENTS OF PARATHYROID HORMONE

John S. Patton, San Carlos, Calif., assignor to Inhale Therapeutic Systems, Palo Alto, Calif.

Continuation of Ser. No. 953,397, Sep. 29, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,849
Int. Cl.[6] A61K *38/29*
U.S. Cl. 514—12 12 Claims

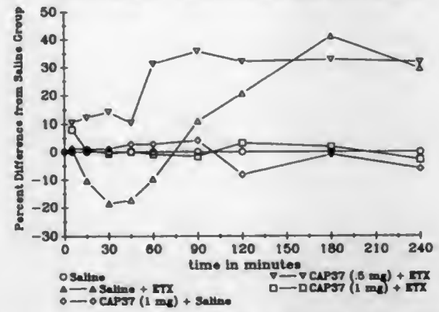
1. A method for pulsatile systemic delivery of an N-terminal peptide fragment of parathyroid hormone (PTH) to a mammalian subject, wherein said peptide fragment consists of the first 34 amino acids of SEQ ID NO. 1, and wherein said method comprises inhalation of a dispersion of said peptide fragment through the mouth of said subject resulting in administration of the peptide fragment to the alveolar region of the lungs and a subsequent rapid rise followed by a rapid fall in the serum concentration of said peptide fragment.

5,607,916

METHOD AND COMPOSITION FOR THE TREATMENT OF SEPTIC SHOCK

Heloise A. Pereira, Oklahoma City; Daniel J. Brackett, Seminole, and Megan R. Lerner, Shawnee, all of Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation-in-part of Ser. No. 969,931, Oct. 30, 1992, Pat. No. 5,458,874, which is a continuation of Ser. No. 855,417, Mar. 19, 1992, Pat. No. 5,484,885, which is a continuation-in-part of Ser. No. 543,151, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,739, Jul. 5, 1989, abandoned. This application Apr. 29, 1994, Ser. No. 235,399
Int. Cl.[6] A61K *38/10;38/16;* C07K *7/00;14/00*
U.S. Cl. 514—12 6 Claims



1. A method for treating septic shock, comprising administering a therapeutic composition comprising a pharmacologically effective amount of a bacterial lipopolysaccharide binding peptide having the amino acid sequence as defined in the Sequence Listing by SEQ ID NO:2.

5,607,917

METHODS FOR REDUCING BLOOD LOSS

Bruce L. A. Carter, Mercer Island, and Martin W. Edwards, Woodinville, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 291,315, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 815,443, Dec. 31, 1991, abandoned. This application May 31, 1995, Ser. No. 456,018
Int. Cl.[6] A61K *38/00;38/16;* C07K *2/00;4/00*
U.S. Cl. 514—12 12 Claims

1. A method of reducing perioperative blood loss in a patient undergoing surgery comprising administering to said patient an effective amount of factor XIII in a biologically compatible vehicle, wherein said factor XIII is substantially free of other blood coagulation factors and wherein said factor XIII is administered to said patient prior to or during said surgery, whereby perioperative blood loss by said patient is reduced.

5,607,918

VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND DNA CODING THEREFOR

Ulf Eriksson, Bålsta; Birgitta Olofsson, Sundbyberg, both of Sweden; Kari Alitalo, and Katri Pajusola, both of Helsinki, Finland, assignors to Ludwig Institute for Cancer Research, New York, N.Y., and Helsinki University Licensing Ltd. Oy, University of Helsinki, Finland

Continuation-in-part of Ser. No. 397,651, Mar. 1, 1995. This application Jun. 6, 1995, Ser. No. 469,427
Int. Cl.[6] A61K *38/18;* C07K *14/475*
U.S. Cl. 514—12 13 Claims

1. An isolated protein having the property of promoting proliferation of endothelial cells or mesodermal cells, said isolated protein comprising a sequence of amino acids selected from the group consisting of the amino acid sequence of FIG. 1 (SEQ ID NO:2), the amino acid sequence of FIG. 2 (SEQ ID NO:3), the amino acid sequence of FIG. 4 (SEQ ID NO:5), the amino acid sequence of FIG. 6 (SEQ ID NO:7), the amino acid sequence of FIG. 8 (SEQ ID NO:9), and the amino acid sequence of FIG. 11 (SEQ ID NO:11).

5,607,919

ANTI-MICROBIAL PROTEINS

Kirsten Bojsen, Allerød; Karsten M. Kragh, Frederiksberg; Jørn D. Mikkelsen, Hvidovre; Klaus K. Nielsen, Frederiksberg, and John E. Nielsen, Copenhagen, all of Denmark, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 209,923, Feb. 22, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 543,238
Claims priority, application United Kingdom, Feb. 24, 1993, 9303725
Int. Cl.[6] C07K *14/00*
U.S. Cl. 514—12 17 Claims

1. A pure protein capable of exerting an anti-microbial effect against a fungus selected from the group consisting of *Bioplaris maydis, Cercospora beticola, Cercospora zeae maydis, Colletotrichum graminicola, Diplodia maydis, Exserohilum turcicum race* 1 and 2, *Fusariurn graminearum, Monilinia fructigena, Cochliobolus sativus, Pseudocercosporella herpotrichoides, Pyricularia aryzae, Rhizoctonia solani, Fusarium culmorum, Leptosphaeria nodorum* and *Botrytis cinerea,* wherein the protein comprises a sequence selected from those depicted in SEQ ID Nos. 2, 5 and 8.

17. A method for combatting fungi or bacteria which comprises contacting said fungi or bacteria with a fungicidally or bactericidally effective amount of a protein as claimed in claim 1.

5,607,920

CONCANAVALIN A BINDING PROTEINS AND A 76KD CHONDROCYTE MEMBRANE PROTEIN (CMP) FROM CHONDROCYTES AND METHODS FOR OBTAINING SAME

Yukio Kato, Hiroshima; Haiou Pan, Tokorozawa, and Kazuyuki Doi, Tokyo, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,617
Claims priority, application Japan, Jul. 23, 1993, 5-182338
Int. Cl.[6] A61K *38/00;* C07K *1/00;* C12N *9/00*
U.S. Cl. 514—13 8 Claims

1. A chrondrocyte membrane protein (CMP) with a molecular weight of about 76 kD or of about 67 kD after treatment with endoglycosidase as analyzed by sodium dodecyl sulfate-polyacrylamide gel electrophoresis SDS-PAGE.

5,607,921

STABILIZED COSMETIC OR DERMATOLOGICAL COMPOSITION CONTAINING SEVERAL PRECURSORS OF THE SAME ACTIVE AGENT IN ORDER TO MAXIMIZE ITS RELEASE, AND USE THEREOF

Dominique Bernard, Paris, and Quang Lan Nguyen, Antony, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 31, 1995, Ser. No. 380,977
Claims priority, application France, Jan. 31, 1994, 94 01031
Int. Cl.[6] A61K *31/70;31/59*
U.S. Cl. 514—23 28 Claims

1. A stabilized composition capable of releasing an skin active agent in contact with the skin, comprising:

a first precursor for a skin active agent and a second precursor for said active agent, wherein said first and second precursors simultaneously release said active agent by the action of a first specific enzymatic reaction on said first precursor and by a second specific enzymatic reaction different from said first specific enzymatic reaction on said second precursor, wherein said first precursor comprises a monosaccharide derivative of said skin active agent or an amide derivative of said skin active agent, and wherein the action of said first and second specific enzymatic reactions releases said active agent at a faster rate than the sum of the individual rates of the first enzymatic reaction and the second enzymatic reaction.

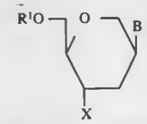
5,607,922

1,5-ANHYDROHEXITOL NUCLEOSIDE ANALOGUES

Erik D. A. De Clercq, Lovenjoel; Piet A. M. Herdewijn, Rotselaar, and Arthur A. E. Van Aerschot, Heist o/d Berg, all of Belgium, assignors to Stichting Rega VZW, Belgium

Filed Dec. 17, 1993, Ser. No. 170,117
Claims priority, application European Pat. Off., Jun. 18, 1992, 92201803.1
Int. Cl.[6] A61K *31/70;* C07H *19/06;19/16*
U.S. Cl. 514—43 14 Claims

1. 1,5-Anhydrohexitol nucleoside analogues represented by the general formula I:



(I)

wherein the hexitol has the D-configuration and the carbon atom on which the base moiety and the X substituent stand both have the (S)-configuration and further wherein:

B is a heterocyclic ring selected from the group consisting of pyrimidine and purine bases, and

X represents hydrogen, azido, F, Cl, Br, I, amino, $—NHR^2$, $—N(R^2)_2$, $—OR^2$, $—SR^2$ or CN;

wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, substituted or unsubstituted C_1–C_{20} alkyl, substituted or unsubstituted C_1–C_{20} alkenyl, aroyl, C_1–C_{20} alkanoyl, and phosphoryl and pharmaceutical salts thereof.

5,607,923

OLIGONUCLEOTIDES FOR MODULATING CYTOMEGALOVIRUS HAVING PHOSPHOROTHIOATE LINKAGES OF HIGH CHIRAL PURITY

Phillip D. Cook, San Marcos, Calif., and Glenn Hoke, Mt. Alry, Md., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 297,703, Aug. 29, 1994, Pat. No. 5,506,212, and Ser. No. 58,023, May 5, 1993, Pat. No. 5,521,302, which is a division of Ser. No. 777,670, Oct. 15, 1991, Pat. No. 5,212,295, which is a continuation-in-part of Ser. No. 777,007, Oct. 16, 1991, abandoned, said Ser. No. 297,703is a continuation of Ser. No. 777,007. This application Jun. 6, 1995, Ser. No. 467,597

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—44 **6 Claims**

1. An oligonucleotide represented by SEQ ID NO:7 wherein at least 75% of the nucleoside units are joined together by Sp phosphorothioate 3' to 5' linkages.

5,607,924

DNA PHOTOCLEAVAGE USING TEXAPHYRINS

Darren Magda, Cupertino, Calif.; Jonathan L. Sessler, Austin, Tex.; Brent L. Iverson, Austin, Tex.; Petra I. Sansom, Austin, Tex., and Meredith Wright, San Jose, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif., and Board of Trustees, Univ. of TX Sys., Austin, Tex.

Continuation-in-part of Ser. No. 310,501, Sep. 21, 1994, which is a continuation-in-part of Ser. No. 112,872, Aug. 25, 1993, Pat. No. 5,451,576, which is a division of Ser. No. 822,964, Jan. 21, 1992, Pat. No. 5,242,429, which is a continuation-in-part of Ser. No. 227,370, Apr. 14, 1994, which is a continuation-in-part of Ser. No. 75,123, Jun. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 822,964, Jan. 21, 1992, Pat. No. 5,252,720. This application Jun. 6, 1995, Ser. No. 469,177

Int. Cl.[6] A61K *31/40;31/555*

U.S. Cl. 514—44 **20 Claims**

1. A method of light-induced cleavage of a polymer of deoxyribonucleic acid, the method comprising:

contacting the polymer with a photosensitive texaphyrin; and

exposing the photosensitive texaphyrin to light for a time sufficient to cleave the polymer.

5,607,925

TREATMENT OF CARCINOMA BY ADMINISTRATION OF 2'-HALOMETHYLIDENYL-2'-DEOXYNUCLEOSIDES

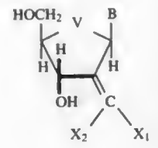
Donald P. Matthews, Indianapolis, Ind.; Alan J. Bitonti, Maineville; Michael L. Edwards, Cincinnati, both of Ohio, and James R. McCarthy, Solona Beach, Calif., assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 113,505, Aug. 27, 1993, Pat. No. 5,378,693, which is a continuation-in-part of Ser. No. 99,888, Jul. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 563,470, Aug. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 271,479, Nov. 15, 1988, abandoned. This application Nov. 1, 1994, Ser. No. 333,017

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—45 **6 Claims**

1. A method of treating a carcinoma in a patient in need thereof comprising administering to said patient a therapeutically effective amount of a compound of the formula

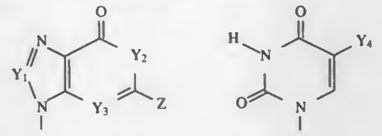


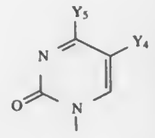
wherein

V is oxy,

X_1 and X_2 are each independently hydrogen of halogen, with the proviso that at least one of X_1 and X_2 is halogen,

B is a radical of the formula

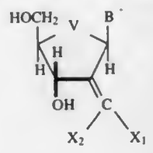




wherein Y_1 is a CH group; Y_2 is an NH group; Y_3 is a nitrogen; Y_4 is hydrogen; Y_5 is amino; and Z is NH_2;

or a pharmaceutically acceptable salt thereof.

2. A method of controlling the growth of a carcinoma in a patient in need thereof comprising administering to said patient a therapeutically effective amount of a compound of the formula

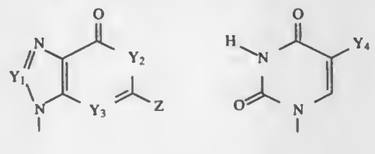


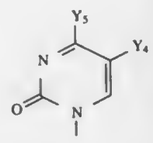
wherein

V is oxy,

X_1 and X_2 are each independently hydrogen or halogen, with the proviso that at least one of X_1 and X_2 is halogen,

B is a radical of the formula

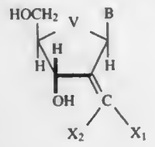




wherein Y_1 is a CH group; Y_2 is an NH group; Y_3 is a nitrogen; Y_4 is hydrogen; Y_5 is amino; and Z is NH_2;

or a pharmaceutically acceptable salt thereof.

3. A method of providing regression of a carcinoma in a patient in need thereof comprising exposing said carcinoma to an effective tumor regressing amount of a compound of the formula

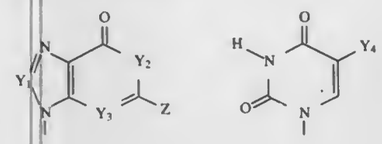


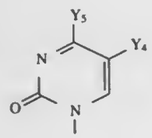
wherein

V is oxy,

X_1 and X_2 are each independently hydrogen or halogen, with the proviso that at least one of X_1 and X_2 is halogen,

B is a radical of the formula





wherein Y_1 is a CH group; Y_2 is an NH group; Y_3 is a nitrogen; Y_4 is hydrogen; Y_5 is amino; and Z is NH_2;

or a pharmaceutically acceptable salt thereof.

5,607,926

CEPHALOSPORIN ANTIBIOTICS

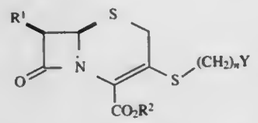
Scott J. Hecker, Los Gatos; In-Seop Cho, Mountain View, both of Calif.; Burton G. Christensen, Lebanon, N.J., and Tomasz W. Glinka, Sunnyvale, Calif., assignors to Microcide Pharmaceuticals, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 369,798, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 222,262, Apr. 1, 1994, abandoned. This application Mar. 29, 1995, Ser. No. 413,714

Int. Cl.[6] C07D *501/60;* **A61K** *31/545*

U.S. Cl. 514—205 **15 Claims**

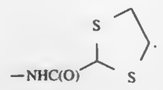
1. A compound active against methicillin resistant bacterial infections, as demonstrated by a lower minimum inhibitory concentration against methicillin resistant strains than cefotaxime, having the formula:



and its pharmaceutically acceptable salts, wherein

R^1 is —NHC(O) ZR^3 or —NR^4R^5, where Z is —$CH_2(X)_m$—, —$C(NOR^6)$—, —$CH(OR^7)$—, —$C(CHCO_2R^9)$— or —$CH(NR^9R^{10})$—, wherein X is O or S and m is 0 or 1; R^3 is selected from the group consisting of cyano, alkyl, aryl, heterocycle and heteroaralkyl; R^{4-7} are selected independently from the group consisting of hydrogen, alkyl, aryl and acyl; R^8 is selected from the group consisting of hydrogen, alkyl and aryl; and, R^9 and R^{10} are selected independently from the group consisting of hydrogen, alkyl, acyl, and heterocyclecarbonyl;

or R^1 is



R^2 is hydrogen, alkyl, alkenyl, aryl, heterocycle, aralkyl, heteroaralkyl, or trialkylsilyl;

n is 0 or 1; and

Y is heterotricycle.

5,607,927

CEPHALOSPORIN DERIVATIVE

Masaki Tsushima; Katsuyoshi Iwamatsu; Atsushi Tamura, and Seiji Shibahara, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 30,866, Mar. 12, 1993. This application Feb. 7, 1995, Ser. No. 385,363

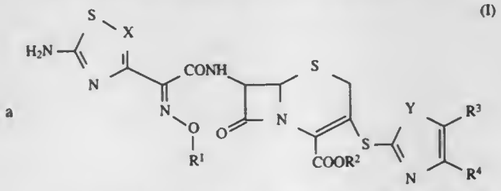
Claims priority, application Japan, Mar. 12, 1992, 4-053885

Int. Cl.[6] C07D *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **2 Claims**

1. A cephalosporin derivative represented by the following formula (I) or a pharmaceutically acceptable salt thereof:

(I)



wherein when X is a carbon atom, Y is an oxygen atom, R^1 is a hydrogen atom or a lower alkyl, R^2 is a hydrogen atom and R^3 and R^4, together, form a benezene ring, or

wherein when X is a nitrogen atom, Y is a sulfur atom or an oxygen atom, R^1 is a hydrogen atom or a lower alkyl, R^2 is a hydrogen atom and R^3 and R^4, together, form a benezene ring or a 6-membered heterocyclic ring having 1 nitrogen atom.

5,607,928

CARBAPENEM DERIVATIVES CONTAINING A BICYCLIC KETONE SUBSTITUENT AND THEIR USE AS ANTI-INFECTIVES

Jean-Claude Arnould, Cormontreuil, France, assignor to Zeneca Limited, London, England, and Zeneca Pharma SA, Cergy Cedex, France

Filed Jul. 28, 1995, Ser. No. 508,698

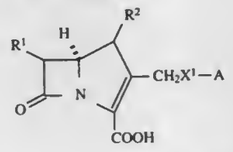
Claims priority, application European Pat. Off., Aug. 5, 1994, 944018142

Int. Cl.[6] C07D *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **16 Claims**

1. A compound of the formula (I)

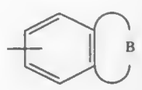
(I)



wherein

R^1 is hydroxymethyl, 1-hydroxyethyl or 1-fluoroethyl;

R^2 is hydrogen or C_{1-4}alkyl;
X^1 is oxygen or sulphur; and
A is of the formula



wherein
B is of the formula $—CH_2—C(=O)—(CH_2)_n—$, $—C(=O)—(CH_2)_{n1}—$, $—C(=O)—CH=CH—X^2—$, $—C(=O)CH_2CH_2X^2—$, $—(CH_2)_nC(=O)NH—$ or $—CH=CHC(=O)NH—$ wherein n is 1 or 2, n^1 is 2 or 3 and X^2 is NH, O or S; and wherein A optionally is substituted on one or more ring carbon atoms with one or more substituents selected from groups a) and b) consisting of:
a) C_{1-4}alkanoyl; hydroxy C_{1-2}alkyl; cyano; carbamoyl; C_{1-4}alkycarbamoyl; di-C_{1-4}alkycarbamoyl; C_{1-4}alkyls(O)$_p$-where p is 1 or 2; aminosulphonyl; C_{1-4}alkylaminosulphonyl; di-C_{1-4}alkylaminosulphonyl; aminoC_{1-2}alkyl; C_{1-4}alkylaminoC_{1-2}alkyl; di-C_{1-4}alkylaminoC_{1-2}alkyl; hydroxyiminomethyl; C_{1-4}alkoxyiminomethyl; C_{1-4}alkanesulphonamido; (N-C_{1-4}alkyl)-C_{1-4}alkanesuphonamido; C_{1-2}alkyl substituted by N-imidazole, optionally substituted on a ring carbon by amino, and wherein the imidazole ring is linked via a ring nitrogen; C_{1-4}alkylamino; di-C_{1-4}alkylamino; C_{1-4}alkanoylamino; and thienylC_{1-2}alkylene; and
b) C_{1-4}alkylthio; C_{1-4}alkyl; amino; benzoyl; benzoylC_{1-2}alkyl; 2-oxoC_{3-4}alkyl; phenylaminoC_{1-2}alkyl; morpholino; pyridylC_{1-2}alkylene; halo; nitro; hydroxy; C_{1-4}alkoxy; C_{1-4}alkoxycarbonyl; carboxy; sulphonic acid; and trifluoromethyl;
or a pharmaceutically acceptable salt or an in vivo hydrolysable ester thereof.

5,607,929

ANTIVIRAL DIBENZOTHIAZEPINONE DERIVATIVES

Robin H. Nicol, London; Martin J. Slater, and Simon T. Hodgson, both of Beckenham, all of England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/GB92/00805, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/19277, PCT Pub. Date Nov. 12, 1992

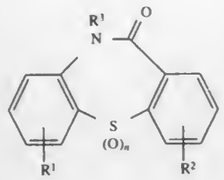
PCT Filed May 1, 1992, Ser. No. 140,120

Claims priority, application United Kingdom, May 2, 1991, 9109557

Int. Cl.[6] A01N *43/00;* **A61K** *31/55;* **C07D** *281/16*

U.S. Cl. 514—211 **6 Claims**

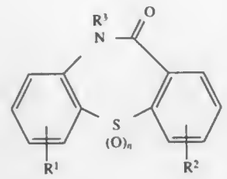
1. A method for treating a viral infection comprising administering to a subject in need of same an antiviral effective amount of a compound of formula (I)



(I)

wherein:
n is 0, 1 or 2; and
R^1 and R^2, which may be the same or different, each represent one or more ring substituent(s) selected from:
halogen; nitro; C_{1-6}alkyl; haloC_{1-6}alkyl; C_{1-6}alkoxy;
$—NR^4R^5$ where R^4 and R^5, which may be the same or different, each represent hydrogen or C_{1-6}alkyl;
$—SO_3H$;
phenyl; phenylC_{1-3}alkoxy; and
$—CO_2H$;
R^3 represents hydrogen or C_{1-4}alkyl; or an ester, salt or salt of such an ester thereof.

4. A compound of formula (I)



wherein:
R^3 is C_{1-4}alkyl; and
R^1 and R^2, which may be the same or different, each represent one or more ring substituent(s) selected from:
halogen; nitro; C_{1-6}alkyl; haloC_{1-6}alkyl; C_{1-6}alkoxy;
$—NR^4R^5$ where R^4 and R^5, which may be the same or different, each represent hydrogen or C_{1-6}alkyl;
$—SO_3H$;
phenyl; phenylC_{1-3}alkoxy; and
$—CO_2H$;
or an ester, salt or salt of such an ester thereof.

5,607,930

1,4-DISUBSTITUTED PIPERAZINES USEFUL IN THE THERAPY OF THE ASTHMA AND OF THE INFLAMMATION OF THE RESPIRATORY TRACT

Giorgio Long; Silvano Spinelli; Antonella Rozzi; Simonetta D'Alo', and Licia Gallico, all of Milano, Italy, assignors to Boehringer Mannheim Italia, S.p.A., Italy

PCT No. PCT/EP93/02264, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/07856, PCT Pub. Date Apr. 14, 1994

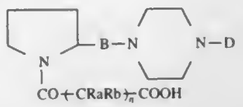
PCT Filed Aug. 24, 1993, Ser. No. 406,900

Claims priority, application Italy, Sep. 30, 1992, MI92A2263

Int. Cl.[6] A61K *31/495;31/40;* **C07D** *403/00;403/02*

U.S. Cl. 514—235.8 **12 Claims**

1. Compounds of general formula (I)



(I)

the single enantiomeric and diastereomeric forms thereof, the mixtures thereof and the pharmaceutically acceptable salts thereof with pharmaceutically acceptable acids and bases, wherein:
B is a —CO—, $—CH_2OCO—$, $—CH_2OCS—$, $—CH_2NHCO—$, $—CH_2NHCS—$ group;

D is a 5–6 membered heterocycle having 3–5 carbon atoms and 1–3 nitrogen atoms in the ring, the heterocycle being unsubstituted or substituted with 1 or 2 amino, mono-C_1–C_6alkylamino, mono-C_3–C_7-alkenyl- or mono-C_3–C_7alkynylamino, di-C_1–C_6-alkylamino, (C_1–C_6)alkyl(C_3C_7)alkenylamino, piperidin-1-yl, morpholin-4-yl or pyrrolidin-1-yl groups;
Ra and Rb are independently hydrogen or C_1–C_3 alkyl or, taken together with the carbon atom to which they are linked, form a C_3–C_6-cycloalkyl group; and
n is an integer from 1 to 4.

5,607,931

1,2-DISUBSTITUTED ETHLY AMIDES AS INHIBITORS OF ACAT

Sundeep Dugar, Bridgewater, N.J., assignor to Schering Corporation, Kenilworth, N.J.

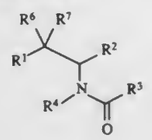
PCT No. PCT/US93/08705, § 371 Date Mar. 20, 1995, § 102(e) Date Mar. 20, 1995, PCT Pub. No. WO94/06784, PCT Pub. Date Mar. 31, 1994

Continuation of Ser. No. 950,379, Sep. 23, 1992, Pat. No. 5,321,031. This PCT application Sep. 21, 1993, Ser. No. 381,958

Int. Cl.[6] A61K *31/535;31/495;* **C07D** *295/12*

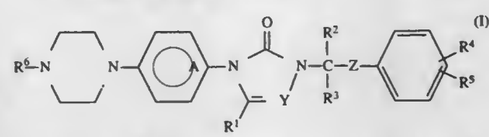
U.S. Cl. 514—237 **6 Claims**

1. A compound of the formula



wherein:
R^1 is B and R^2 is A;
A is phenyl or Q-substituted phenyl, wherein Q is 1 to 3 substituents independently selected from the group consisting of hydroxy, C_1–C_6 lower alkyl, C_1–C_6 lower alkoxy, halogeno, —COOH, $—CONH_2$, $R^8O—C(O)—$, $R^8NH—C(O)—$, $(R^8)_2N—C(O)—$, $R^8NH—$, $(R^8)_2N—$ and $R^8—C(O)—NH—$, wherein R^8 is C_1–C_6 lower alkyl;
B is C_3–C_6 cycloalkyl, Y-substituted cycloalkyl, heterocycloalkyl, or Y-substituted heterocycloalkyl, wherein heterocycloalkyl is pyrrolidinyl, morpbolino, piperazinyl or piperidonyl and wherein: Y is 1 to 3 substituents independently selected from the group consisting of C_1–C_6 alkyl, hydroxy, —COOH, $—CONH_2$, $R^8O—C(O)—$, $R^8NH—C(O)—$, $(R^8)_2N—C(O)—$, O═, HO—N═, $CF_3C(O)NH—$, $CH_3C(O)CH_2C(O)O—$, $CH_3C(O)O—$, $R^5O—$, $—S(O)_m—R^5$, $—NH_2$, $R^5NH—$, $(R^5)_2N—$ and $R^5—C(O)—NH—$, wherein m is 0, 1 or 2, R^5 is C_1–C_6 lower alkyl, phenyl or Q-substituted phenyl, and R^8 is as defined above; or Y is a bivalent group of the formula $—O—(CH_2)_2—O—$, or $—(CH_2)_4—$, wherein both termini of the bivalent group are attached to the same carbon atom, thereby constituting a spiro-fused substituent;
R^3 is an alkyl chain of 10 to 25 carbon atoms, branched or straight, wherein the straight portion of the alkyl chain contains at least 10 carbon atoms; an alkenyl chain of 10 to 25 carbon atoms; a phenoxy-substituted C_{10}–C_{25} alkyl chain; diphenylmethyl or diphenylethyl;
R^4 is hydrogen;
R^6 and R^7 are both H;
or a pharmaceutically acceptable salt thereof.

2. A compound having the formula

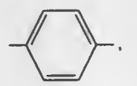


(I)

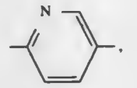
pharmaceutically acceptable addition salt or a stereochemically isomeric form thereof,
wherein
Y is CH or N;
R^1, R^2 and R^3 each independently are hydrogen or C_{1-4}alkyl;
R^4 and R^5 each independently are hydrogen, halo, C_{14}alkyl, C_{1-4}alkyloxy, hydroxy, trifluoromethyl, trifluoromethyloxy or difluoromethyloxy;
R^6 is pyridinyl optionally substituted with up to two C_{1-4}alkyl groups; di(C_{1-4} alkyl) hydroxypyridinyl; di(C_{1-4}alkyl)-C_{1-4}alkyloxypyridinyl; pyridazinyl optionally substituted with C_{14}alkyloxy; pyrimidinyl optionally substituted with hydroxy or C_{14}alkyloxy;
thiazolyl optionally substituted with C_{14}alkyl; thiadiazolyl optionally substituted with C_{1-4}alkyl; benzoxazolyl or benzothiazolyl; or
R^6 is pyrazinyl or pyridazinyl substituted with C_{14}alkyl;
Z is C═O or CHOH; and



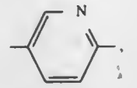
is a radical of formula



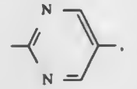
(a-1)



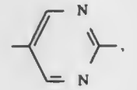
(a-2)



(a-3)

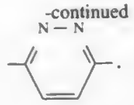


(a-4)

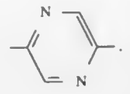


(a-5)

-continued



or



5,607,933

3-ARYLCARBONYL-1(C-ATTACHED-N-HETERYL)-1H-INDOLES

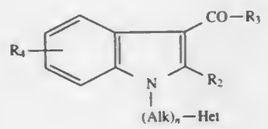
Thomas E. D'Ambra, North Greenbush; Edward R. Bacon, East Greenbush; Malcolm R. Bell, East Greenbush, and Susan J. Ward, East Greenbush, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 807,032, Sep. 26, 1991, Pat. No. 5,324,737, which is a division of Ser. No. 484,759, Feb. 26, 1990, Pat. No. 5,068,234. This application Mar. 16, 1994, Ser. No. 213,777

Int. Cl.[6] C07D *403/06;* **A61K** *31/495*

U.S. Cl. 514—253 **19 Claims**

1. A member of the group consisting of (A) compounds having the formula:



where:

R_2 is hydrogen or lower alkyl;

R_3 is phenyl (or phenyl substituted by from one to two substituents selected from halogen, lower-alkoxy, hydroxy, lower alkyl, nitro, amino, lower-alkylamino, di-lower-alkylamino, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl and methylenedioxy), 2- or 4-biphenyl or 1- or 2-naphthyl (or 1- or 2 -naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy, halogen, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl and trifluoromethyl);

R_4 is hydrogen or from one to two substituents selected from lower-alkyl, hydroxy, lower alkoxy and halogen at the 4-, 5-, 6- or 7-positions;

Alk is lower-alkylene containing from one to four carbon atoms which may contain a lower-alkyl group;

Het is 2-piperazinyl, where said 2-piperazinyl may be either unsubstituted on the nitrogen atom (or atoms) thereof or substituted thereon by a lower-alkyl, benzyl, lower-alkoxybenzyl or benzhydryl group; and

n is 0 or 1, except that n is not 0 when the Alk moiety is attached to a ring carbon atom adjacent to a ring N atom of said 2-piperazinyl; and

(a-6) (B) pharmaceutically-acceptable acid-addition and lower-alkyl quaternary ammonium salts thereof, wherein lower alkyl has from one to four carbon atoms.

5,607,934

PIPERAZINE DERIVATIVES AND SALTS THEREOF

(a-7) **Hitoshi Tone, Itano; Masatoshi Morisue, Naruto; Katsumi Tamura, Itano; Toshiki Miyazaki, Tokushima, and Yoshimasa Nakano, Itano, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan**

PCT No. PCT/JP94/01071, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO95/02593, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 1, 1994, Ser. No. 397,043

Claims priority, application Japan, Jul. 13, 1993, 5-172780

Int. Cl.[6] A61K *31/495;* **C07D** *241/02;403/02;241/04*

U.S. Cl. 514—253 **30 Claims**

1. A piperazine compound having the general formula (1):

(1)

wherein

R^1 is a lower alkyl group;

R^2 is a phenyl-lower alkyl group which may have, on the phenyl ring, 1 to 3 substituents selected from the group consisting of a hydroxyl group, a phenyl-lower alkoxy group, a lower alkyl group, a lower alkoxy group and a halogen atom, an imidazolyl-substituted lower alkyl group which may have one or more phenyl-lower alkyl groups as substituents on the imidazolyl ring, or a group of the formula:

(wherein R^5 and R^6 are the same or different, and are each a hydrogen atom, a benzothiazolyl group, or a phenyl-lower alkyl group which may have, on the phenyl ring, 1 to 3 substituents selected from the group consisting of a lower alkoxy group, a phenyl-lower alkoxy group, a lower alkyl group and a hydroxyl group, further, said $R^5$and R^6 and the adjacent nitrogen atom being bonded thereto, together with or without another nitrogen atom or an oxygen atom, may form a 5- to 6-membered saturated heterocyclic group; said heterocyclic group may have, as substituents, one or more phenyl groups which may have one or more lower alkoxy groups as substituents on the phenyl ring);

R^3 is a hydrogen atom, a lower alkyl group or a phenyl-lower alkyl group; and

R^4 is a hydroxyl group, a phenyl-lower alkoxy group or a tetrahydropyranyloxy group;

and pharmaceutically acceptable salts thereof.

5,607,935

2-HETEROCYCLICETHYLAMINE DERIVATIVES AND THEIR USE AS PHARMACEUTICALS

Ronald C. Griffith; Richard J. Schmiesing, both of Pittsford, and Robert J. Griffith, Brighton, all of N.Y., assignors to Fisons Corporation, Rochester, N.Y.

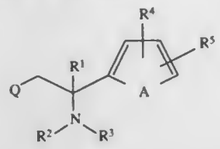
PCT No. PCT/GB92/01971, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO93/09095, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 785,590, Oct. 30, 1991, abandoned. This PCT application Oct. 28, 1992, Ser. No. 232,029

Int. Cl.[6] A61K *31/495;* **C07D** *241/02*

U.S. Cl. 514—255 **7 Claims**

1. A compound of the formula I,



I

wherein

A represents CH=CH;

Q represents pyrazine having substituents R^6 and R^7;

R^1 represents H or C_{1-6} alkyl;

R^2 represents H, C_{1-6} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-6} cycloalkyl or NH_2CH_2CO—;

R^3 represents H, C_{1-6} alkyl, C_{3-6} alkenyl or C_{3-6} alkynyl;

R^4 and R^5 independently represent H, OH, C_{1-6} alkoxy, C_{1-6} alkyl, halogen, trifluoromethyl or NR^8R^9;

R^6 and R^7 independently represent H, OH, C_{1-6} alkoxy, C_{1-6} alkyl, halogen, trifluoromethyl, C_{1-6} hydroxyalkyl, amidino, $CONH_2$ or NR^8R^9;

in addition, R^6 and R^7 may independently represent O when substituted on N;

R^8 and R^9 independently represent H or C_{1-6} alkyl;

and pharmaceutically acceptable salts thereof.

5,607,936

SUBSTITUTED ARYL PIPERAZINES AS NEUROKININ ANTAGONISTS

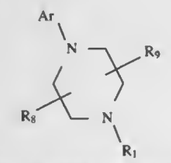
Yuan-Ching P. Chiang, Scotch Plains; Paul E. Finke, Milltown; Malcolm Maccoss, Freehold; Laura C. Meurer, Scotch Plains; Daniel J. Miller, Edison; Sander G. Mills, Woodbridge; Albert J. Robichaud, Stirling, and Shrenik K. Shah, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1994, Ser. No. 316,013

Int. Cl.[6] C07D *403/10;* **A61K** *31/495*

U.S. Cl. 514—255 **12 Claims**

1. A compound of Formula I



I

or a pharmaceutically acceptable salt thereof, wherein the nitrogen attached to R_1 shown above is optionally quaternized with C_{1-4}alkyl or phenylC_{1-4}alkyl or is optionally present as the N-oxide (N^+O^-), and wherein:

R_1 is selected from a group consisting of:

linear or branched C_{1-8} alkyl, linear or branched C_{2-8} alkenyl, wherein the C_{1-8} alkyl or C_{2-8} alkenyl is optionally mono, di, tri or tetra substituted, the substituents independently selected from:

(a) hydroxy,

(b) oxo,

(c) cyano,

(d) halogen which is defined to include Br, Cl, I, and F,

(e) trifluoromethyl,

(f) phenyl or mono, di or tri-substituted phenyl, the substituents independently selected from

(1) phenyl,

(2) hydroxy,

(3) C_{1-3}alkyl,

(4) cyano,

(5) halogen,

(6) trifluoromethyl,

(7) —NR_6COR_7,

(8) —$NR_6CO_2R_7$,

(9) —NR_6CONHR_7,

(10) —$NR_6S(O)_jR_7$, wherein j is 1 or 2,

(11) —$CONR_6R_7$,

(12) —COR_6,

(13) —CO_2R_6,

(14) —OR_6,

(15) —$S(O)_kR_6$ wherein k is 0, 1 or 2,

(g) —NR_6R_7,

(h) —NR_6COR_7,

(i) —$NR_6CO_2R_7$,

(j) —NR_6CONHR_7,

(k) —$NR_6S(O)_jR_7$,

(l) —$CONR_6R_7$,

(m) —COR_6,

(n) —CO_2R_6,

(o) —OR_6,

(p) —$S(O)_kR_6$,

(q) heteroaryl, wherein heteroaryl is selected from the group consisting of:

(1) benzimidazolyl,

(2) benzofuranyl,

(3) benzoxazolyl,

(4) furanyl,

(5) imidazolyl,

(6) indolyl,

(7) isooxazolyl,

(8) isothiazolyl,

(9) oxadiazolyl,

(10) oxazolyl,

(11) pyrazinyl,

(12) pyrazolyl,

(13) pyridyl,

(14) pyrimidyl,

(15) pyrrolyl,

(16) quinolyl,

(17) tetrazolyl,

(18) thiadiazolyl,

(19) thiazolyl,

(20) thienyl,

(21) triazolyl,

wherein the heteroaryl is unsubstituted or mono di or tri-substituted, the substituents independently selected from:

(a) phenyl,

(b) hydroxy,

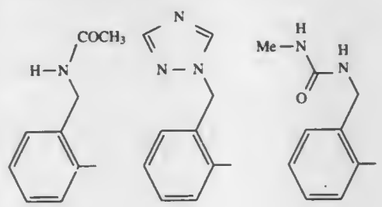
(c) oxo,

(d) cyano,

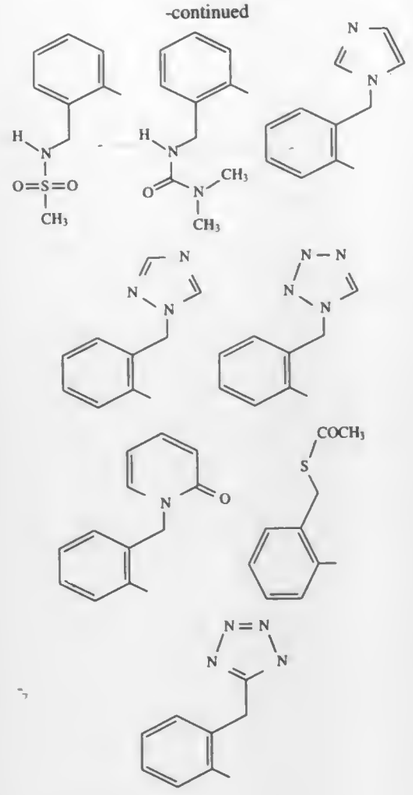
(e) halogen,

(f) trifluoromethyl;

Ar is selected from the group consisting of



-continued



R_6 is
(1) hydrogen,
(2) C_{1-6} alkyl, or mono or di-substituted C_{1-6} alkyl, the substituents independently selected from:
(a) phenyl,
(b) hydroxy,
(c) oxo,
(d) cyano,
(e) halogen,
(f) trifluoromethyl,
(3) phenyl or mono di or tri-substituted phenyl, the substituents independently selected from:
(a) hydroxy,
(b) C_{1-3}alkyl,
(c) cyano,
(d) halogen,
(e) trifluoromethyl,
(4) naphthyl or mono di or tri-substituted naphthyl, the substituents independently selected from:
(a) hydroxy,
(b) C_{1-3}alkyl,
(c) cyano,
(d) halogen,
(e) trifluoromethyl,
(5) C_{1-3}alkyloxy,
or

R_7 is
(1) hydrogen,
(2) C_{1-6} alkyl, or mono or di-substituted C_{1-6} alkyl, the substituents independently selected from:
(a) phenyl unsubstituted or substituted with
(1) hydroxy,
(2) C_{1-3}alkyl,
(3) cyano,
(4) halogen,
(5) trifluoromethyl,
(6) C_{1-3}alkyloxy,
(b) hydroxy,
(c) oxo,
(d) cyano,
(e) halogen,
(f) trifluoromethyl,
(3) phenyl or mono di or tri-substituted phenyl, the substituents independently selected from:
(a) hydroxy,
(b) C_{1-3}alkyl,
(c) cyano,
(d) halogen,
(e) trifluoromethyl,
(4) naphthyl or mono di or tri-substituted naphthyl, the substituents independently selected from:
(a) hydroxy,
(b) C_{1-3}alkyl,
(c) cyano,
(d) halogen,
(e) trifluoromethyl,
(5) C_{1-3}alkyloxy,
or

R_6 and R_7 are joined together to form a 5-, 6-, or 7-membered monocyclic saturated ring containing 1 or 2 heteroatoms independently selected from nitrogen, oxygen, and sulfur, and in which the ring is unsubstituted or mono or di-substituted, the substituents independently selected from:
(1) hydroxy,
(2) oxo,
(3) cyano,
(4) halogen,
(5) trifluoromethyl,

R_8 and R_9 are each independently hydrogen or substituted C_{1-4}alkyl wherein the substitutent is selected from the group consisting of
(1) hydroxy,
(2) hydrogen,
(3) cyano,
(4) halogen,
(5) trifluoromethyl,
(6) C_{1-3}alkyloxy.

5,607,937

PIPERAZIDES OF SUBSTITUTED PHENYLALANINE DERIVATIVES AS THROMBIN INHIBITORS

Joerg Stuerzebecher, Erfurt-Rhoda; Helmut Vieweg, Rheinfelden, both of Germany; Peter Wikstroem, Oberwil, and Christoph Adler, Reinach, both of Switzerland, assignors to Pentapharm AG, Basel, Switzerland

PCT No. PCT/CH94/00026, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/18185, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 9, 1994, Ser. No. 318,649

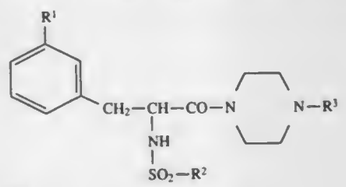
Claims priority, application Switzeriand, Feb. 10, 1993, 405/93; Sep. 20, 1993, 2827/93

Int. Cl.[6] C07D *295/192;401/04;403/04;* **A61K** *31/495*

U.S. Cl. 514—255 **19 Claims**

1. D,L-, L- or D-phenylalanine piperazides of formula

I



wherein

R^1 represents a basic group of formula

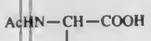
(a) $HN{=}C(NH_2)-$ amidino or (b) $-CH_2-NH_2$ aminomethyl

R^2 represents an (un)substituted aryl or heteroaryl residue, and

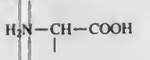
R^3 represents an acyl residue of formula —COX, wherein X=H, unbranched or branched, possibly substituted alkyl, or (un)substituted aryl or cycloalkyl,
an aralkyl residue in which the aromatic residue may be substituted,
a carboxamide residue of formula —CONR'R", a thiocarboxamide residue of formula —CSNR'R" or an ethylamide residue of formula —CH_2—CONR'R" in which R'=R"=H; R'=R"=alkyl; R'=H, R"=alkyl; R'=H, R"=aryl, or R' and R" may form a cycloaliphatic or heterocycloaliphatic ring with the nitrogen atom,
an SO_2—Y residue in which Y means (un)substituted alkyl, (un)substituted aryl or heteroaryl or —NR'R", in which R' and R"=H may be equal or not to low alkyl C_{1-C3},
a cycloaliphatic ring with 5 to 8 C atoms which may be substituted with a hydroxyl or oxo group,
an (un)substituted heteroaryl residue or a heterocycloaliphatic residue, respectively,
a functionalized alkyl residue of formula $—(CH_2)_n—X$ wherein the alkyl chain may be unbranched or branched, n=1 to 8 and the functional residue X represents
a hydroxyl group the H atom of which can be substituted,
a halogen atom,
a tertiary amino group of formula $—N(Alk)_2$ wherein the alkyl groups have 1 to 3 C atoms, and the alkyl groups are same, and the nitrogen atom may belong to a cycloaliphatic ring with 5 to 7 ring parts to which one or two further rings may be added,
an acylaminomalonate group of formula



an



group or a



group,
and the salts thereof with mineral or organic acids.

5,607,938

MEDICAMENT FOR TREATING OR PREVENTING CEREBROVASCULAR INFARCTION

Kiyotaka Katsuta; Hiroyuki Takamatsu; Yoshiko Ueda; Hajime Nakanishi, and Keizo Yoshida, all of Osaka, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/00249, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/20102, PCT Pub. Date Sep. 15, 1994

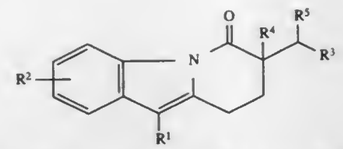
PCT Filed Feb. 16, 1994, Ser. No. 513,805

Claims priority, application United Kingdom, Mar. 8, 1993, 9304701; Oct. 11, 1993, 9320882

Int. Cl.[6] A61K *31/505;31/44;31/40*

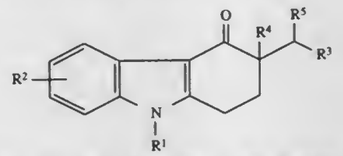
U.S. Cl. 514—267 **4 Claims**

1. A method of treating or preventing cerebrovascular infarction, comprising administering to a mammal in need thereof an effective amount of a compound of the formula:



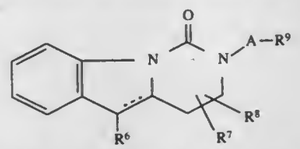
(I)

wherein: R^1 is hydrogen, lower alkyl, lower alkenyl or N,N-di(lower)alkylaminomethyl,
R^2 is hydrogen, lower alkyl or halogen,
R^3 is imidazolyl or pyridyl, each of which may have suitable substituent(s), and
R^4 is hydrogen, lower alkyl, lower alkenyl or hydroxy(lower-)alkyl and
R^5 is hydrogen, hydroxy or acyloxy, or
R^4 and R^5 are linked together to form an additional bond, or a pharmaceutically acceptable salt thereof;



(II)

wherein: R^1, R^2, R^3, R^4 and R^5 are each as defined above, or a pharmaceutically acceptable salt thereof; or



(III)

wherein: R^6, R^7 and R^8 are each hydrogen, lower alkyl, lower alkenyl, aryl or ar(lower)alkyl,
R^9 is imidazolyl which may have suitable substituent(s) or pyridyl,
A is lower alkylene, and
- - - - is single bond or double bond, or a pharmaceutically acceptable salt thereof.

5,607,939

CONDENSED HETEROCYCLIC COMPOUNDS, THEIR PRODUCTION AND USE

Kaneyoshi Kato, Hyogo; Yoshihiro Sugiura, Nara; Koichi Kato, Ibaraki, and Yasuo Nagai, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

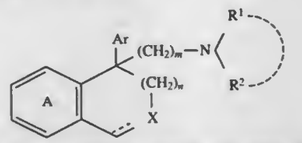
Filed Apr. 25, 1995, Ser. No. 428,499

Claims priority, application Japan, Apr. 28, 1994, 6-092769; Apr. 28, 1994, 6-114054

Int. Cl.[6] A61K *31/44;* **C07D** *401/06*

U.S. Cl. 514—278 **23 Claims**

1. A compound of the formula



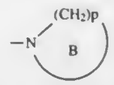
(I)

wherein ring A represents a benzene ring which may be substituted with 1 to 3 substituents selected from the group consisting of halogen atom, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxycarbonyl, C_{1-7} acylamino and methylenedioxy;

Ar represents (i) a C_{6-14} aryl or (ii) a 5- or 6-membered heteroaromatic group having 1 to 3 hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur, each of which groups (i) and (ii) may be substituted with 1 to 3 substituents selected from the group consisting of halogen atom, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl, C_{1-7} acylamino and methylenedioxy;

R^1 and R^2 independently represent (i) hydrogen atom, (ii) a group of the formula: —CO—R, —CONH—R, —SO_2—R or —CO—OR wherein R represents a C_{1-6}alkyl, C_{2-6} alkenyl, C2-6 alkynyl, C_{3-6} cycloalkyl, C_{6-14} aryl or C_{7-16} aralkyl group which may be substituted with 1 to 3 substituents selected from the group consisting of halogen, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6}) alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl, C_{1-7} [acylamnio] acylamino, methylenedioxy, oxo, thioxo, phenyl, phenylamino, phenyloxy and methylenedioxyphenyloxy, or (iii) a C_{1-6} alkyl, C_{2-6} alkenyl, C2-6 alkynyl, C_{3-6} cycloalkyl, C_{6-14} aryl or C_{7-16} aralkyl group which may be substituted with 1 to 3 substituents selected from the group consisting of halogen, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl and C_{1-7} acylamino, methylenedioxy, oxo, thioxo, phenyl, phenylamino, phenyloxy and methylenedioxyphenyloxy;

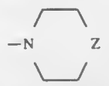
or R^1 and R^2 taken together with the adjacent nitrogen atoms represent (i) a 5- or 6-membered nitrogen-containing heteroaromatic group having 1 to 3 hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur, which hetero-aromatic group may be substituted with 1 to 3 substituents selected from the group consisting of halogen, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6}alkoxy-carbonyl and C_{1-7} acylamino,



(ii)

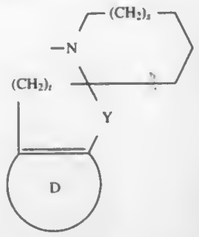
wherein ring B may be substituted with 1 or 2 oxo groups and may be fused to one benzene ring which may be substituted with 1 to 3 substituents selected from the group consisting of halogen atoms, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl and C_{1-7} acylamino,

p represents an integer of 4 to 7;



(iii)

wherein Z represents —O—, >CH—W or >N—W in which W represents (a) hydrogen atom, (b) a C_{6-14} aryl or C_{7-16} aralkyl group, which aryl or aralkyl group may be substituted with 1 to 3 substituents selected from the group consisting of halogen atom, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl and C_{1-7} acylamino or (c) a 5- to 11-membered aromatic or non-aromatic heterocyclic group containing 1 to 3 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms in addition to carbon atoms, which may be substituted with 1 to 3 substituents selected from the group consisting of halogen, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl and C_{1-7} acylamino, methylenedioxy, oxo, thioxo, phenyl, phenylamino, phenyloxy and methylenedioxyphenyloxy,

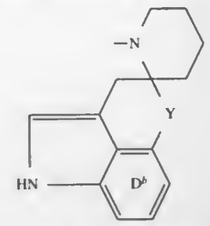


(iv)

wherein ring D represents (a) a benzene ring or (b) a 5- or 6-membered heteroaromatic ring having 1 to 3 hetero-atoms selected from nitrogen, oxygen and sulfur, each of which rings (a) and (b) may be substituted with 1 to 3 substituents selected from the group consisting of halogen atoms, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxy-carbonyl and C_{1-7} acylamino,

Y represents —CH_2—, —CO— or —CH(OH)—,

s and t individually represent an integer of 1 to 3, or



(v)

wherein ring D^b represents a benzene ring which may be substituted with 1 to 3 substituents selected from the group consisting of halogen atom, C_{1-6} alkyl which may be halogenated, C_{1-6} alkoxy which may be halogenated, C_{1-6} alkylthio which may be halogenated, nitro, cyano, sulfo, hydroxy, amino, mono(C_{1-6})alkylamino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkoxycarbonyl and C_{1-7} acylamino, Y is —CH_2—, —CO— or —CH(OH)—;

m represents an integer of 1 to 6;

n represents 1;

----- represents a single bond;

X represents —O—;

or a pharmaceutically acceptable salt thereof.

5,607,940

MORPHINE FORMULATIONS FOR USE BY ELECTROMOTIVE ADMINISTRATION

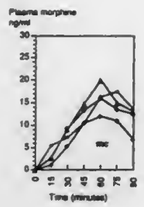
Robert L. Stephen, 2501 Kensington Ave., Salt Lake City, Utah 84108; Cesare Bonezzi, Via Porta Salara, 10-27100 Padova, Italy; Cino Rossi, Via Settala, 32-00123 Roma, Italy, and Silvio Eruzzi, Via A. Mori, 23-46100 Mantova, Italy

Filed Jul. 18, 1994, Ser. No. 276,613

Int. Cl.[6] A61K *31/44;* **C07D** *471/00;489/00;* **A61N** *1/30*

U.S. Cl. 514—282 **6 Claims**

5. Electromotive administration of a therapeutic dose of an improved morphine formulation comprising at least a morphine-cation-citrate salt selected from the group of the formula:



$M_n[Ct_{(3-n)p}(C_6H_5O_7)_p]$,

wherein M is protonated morphine, Ct is a physiologically acceptable cation, n is any integer or fractional number greater than zero and less than three ($0<n<3$), and p is an integer from 1 to 3, said administration being performed by applying an electric current through a substantially inert anode attached to a receptacle containing said formulation and placed against the skin of the patient in need of the treatment.

5,607,941

USEFUL FOR TREATING NEURODEGENERATIVE DISEASES

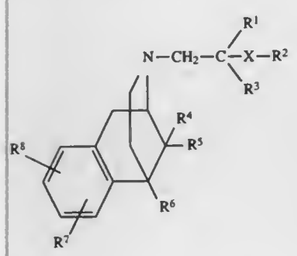
Herbert Merz, Ingelheim am Rhein; Enzio Mueller, Bingen/Rh.; Werner Stransky, Gau-Algesheim, and Ilse Streller, Stromberg, all of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Continuation of Ser. No. 217,540, Mar. 24, 1994, abandoned, which is a continuation of Ser. No. 904,738, Jun. 26, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,798

Int. Cl.[6] A61K *31/445;31/44;* **C07D** *221/22*

U.S. Cl. 514—289 **5 Claims**

1. A method for treating neurodegenerative disease caused by glutamate receptor activity in a warm-blooded animal in need of said treatment which comprises administering to said animal a therapeutically effective amount of the benzomorphan derivative of formula



(I)

wherein

X is oxygen or sulphur;

R^1 is C_{1-8}-alkyl, C_{3-6}-alkenyl, or C_{2-8}-alkynyl, or aryl;

R^2 is hydrogen, C_{1-8}-alkyl, or C_{3-6}-alkenyl, C_{3-6}-alkynyl, aryl or aralkyl;

$R^3$is hydrogen or C_{1-6}-alkyl;

R^4 is C_{1-8}-alkyl;

R^5 is C_{1-8}-alkyl;

R^6 is C_{1-8}-alkyl or aryl; and

R^7 and R^8 independently of each other are hydrogen, halogen, C_{1-8}-alkyl, —C_{1-8}-alkoxy, —O-acyl, —CN, —NO_2, —NH_2, —NH(C_{1-8}-alkyl), —NH-acyl, —N(C_{1-8}-alkyl)-acyl—, or —N(C_{1-8}-alkyl)$_2$ wherein the alkyl groups may be identical or different,

all racemic, enantiomeric and diastereomeric forms thereof or mixtures thereof, or pharmaceutically acceptable acid addition salts thereof;

with the proviso that

if

X is oxygen

R^1 is C_{1-3}-alkyl, C_3-alkenyl or C_3-alkynyl;

R^2 is hydrogen, C_{1-4}-alkyl, C_3-alkenyl or C_4-alkenyl,

R^3 is hydrogen or C_{1-3}-alkyl

R^4 is methyl

R^5 is methyl

R^6 is C_{1-4}-alkyl or phenyl

and one of the substituents R^7 or R^8 is hydrogen, the other of the substituents R^7 or R^8 is the 2'-position is not hydrogen, hydroxy, C_{1-3}-alkoxy or O-acyl.

5,607,942

7-(1-PYRROLIDINYL)-3-QUINOLONE- AND -NAPHTHYRIDONE-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS AND FEED ADDITIVES

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch-Gladbach; Andreas Krebs, Odenthal-Holz; Klaus Grohe; Michael Schriewer, both of Odenthal; Ingo Haller, Wuppertal; Karl G. Metzger, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

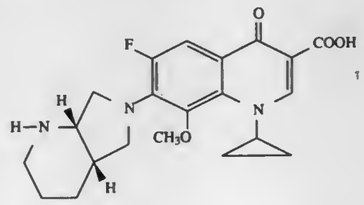
Division of Ser. No. 737,631, Jul. 30, 1991, Pat. No. 5,416,096, which is a division of Ser. No. 580,906, Sep. 10, 1990, Pat. No. 5,059,597, which is a division of Ser. No. 375,434, Jun. 30, 1989, Pat. No. 4,990,517. This application Mar. 20, 1995, Ser. No. 406,448

Claims priority, application Germany, Jul. 15, 1988, 38 24 072.6; Mar. 1, 1989, 39 06 365.8

Int. Cl.[6] A61K *31/47;* **C07D** *471/04*

U.S. Cl. 546—200 **8 Claims**

1. The compound 1-cyclopropyl-7-([S,S]-2,8-diazabicyclo-[4.3.0]non-8-yl)-6-fluoro-1,4-dihydro-8-methoxy-4-oxo-3-quinolinecarboxylic acid having the formula:



or an alkali metal, alkaline earth metal, silver or guanidinium salt thereof or a pharmaceutically utilizable hydrate or acid addition salt thereof, said compound substantially free of other enantiomers and stereoisomers.

5,607,943

ANNELATED DIHYDROPYRIDINES AND THE USE THEREOF FOR PREPARING PHARMACEUTICAL PREPARATIONS

Walter Lösel, Gau-Algesheim; Otto Roos, Schwabenheim, and Dietrich Arndts, Appenheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

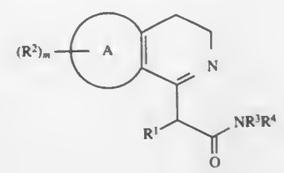
Filed Dec. 21, 1994, Ser. No. 360,524

Claims priority, application Germany, Dec. 21, 1993, 43 43 684.6; Dec. 21, 1993, 43 43 641.2

Int. Cl.[6] C07D *401/06;471/04;* **A61K** *31/44;31/47*

U.S. Cl. 514—301 **3 Claims**

1. A compound of formula I



wherein:

A represents thieno;

m represents 0;

R^1 represents thienyl;

R^3 and R^4 independently represent:

(a) hydrogen, or

(b) branched or unbranched C_{3-6} alkenyl, or

(c) branched or unbranched C_{3-6} alkynyl, or

(d) branched or unbranched C_{1-12} alkyl which may be optionally mono- or di-substituted by:

hydroxy, or

(C_{1-4}) alkoxy, or

$di(C_{1-4})$alkylamino, or

furyl, or

pyridyl, or

pyrrolidinyl or N-methylpyrrolidinyl, or

morpholinyl, or

indolyl, or

nitrilo, or

thienyl, or

adamantyl, or

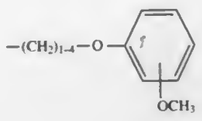
cyclohexyl, or

naphthyloxy, or

phenoxy or phenyl wherein the phenyl group may be optionally toorio-, di- or trisubstituted by hydroxy, (C_{1-4})alkyl, (C_{1-4})alkoxy, benzyloxy, F, Cl, Br, I, CF_3, N_3, adamantyl, $—SO_2NH_2$, $NHCOCH_3$, or by the bridge $—O—CH_2—O—$; or

R^3 represents hydrogen and R^4 represents phenyl, fluorophenyl, cyclohexyl, pyridyl or N-benzylpiperidyl; or

R^3 and R^4 together with the nitrogen atom to which they are bound represent pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl or piperazinyl, whilst the piperazinyl ring may optionally be N-substituted by methyl, unsubstituted phenyl, mono- or di (C_{1-4})alkoxyphenyl, cyano-substituted phenyl, pyrimidinyl, phenyl (C_{1-4})alkyl, (C_{1-4})alkylphenyl or



or the salts thereof with physiologically acceptable acids or complex-forming agents.

5,607,944

BICYCLIC HETEROCYCLIC COMPOUNDS, PHARMACEUTICAL PREPARATIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR THEIR PREPARATIONS

Günter Linz; Frank Himmelsbach, both of Mittelbiberach; Helmut Pieper; Volkhard Austel, both of Biberach; Thomas Müller, Edewecht; Johannes Weisenberger, Biberach, and Brian Guth, Warthausen, all of Germany, assignors to Karl Thomae GmbH, Biberach an Riss, Germany

Continuation of Ser. No. 278,435, Jul. 21, 1994, abandoned.

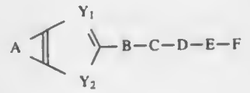
This application Jul. 31, 1995, Ser. No. 509,248

Claims priority, application Germany, Jul. 22, 1993, 43 245 803.3

Int. Cl.[6] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—301 **7 Claims**

1. A bicyclic heterocyclic compound of the formula I



(I)

wherein

Y_1 denotes a nitrogen atom;

Y_2 denotes a nitrogen atom substituted by a group R_1, wherein R_1 is a hydrogen atom or a C_{1-3}alkyl group, or Y_2 denotes a sulphur atom;

A denotes a $—CH=CH—N=CH—$, $—CH=N—CH=CH—$, $—(CH_2)_2—NR_2—CH_2—$ or $—(CH_2)_2—NR_2—(CH_2)_2—$ bridge, wherein

R_2 denotes a hydrogen atom, a C_{1-3}-alkyl, allyloxycarbonyl or trifluoromethylcarbonyl group or an alkoxycarbonyl group having a total of 2 to 5 carbon atoms;

B denotes a phenylene group optionally substituted by a fluorine, chlorine or bromine atom or by a methyl or ethyl group, wherein additionally a methine group may be substituted by a nitrogen atom, or B denotes a 1,4-cyclohexylene, 1-3-piperidinylene, 1,4-piperidinylene or 1,4-piperazinylene group;

C denotes a $—CH_2—$, $—CH_2CH_2—$ or $—CO—$ group, a $—CH_2—CO—$or $—NR_4—CO—$ group, wherein the carbonyl group in each case is bound to group D and

R_4 denotes a hydrogen atom or a C_{1-3}-alkyl group,

or C denotes a $—CH_2—NR_4—$, $—NR_4—CH_2—$, $—O—CH_2—$ or $—CH_2—O—$ group, wherein the nitrogen or oxygen atom cannot be bound directly or via a single carbon atom to a nitrogen atom of groups B or D and R_4 is as hereinbefore defined;

D denotes a 1,4-cyclohexylene group or a 1,4-piperidinylene group which is bound via the nitrogen atom in the 1-position to the group C, or D denotes an $—NR_5$-1,4-cyclohexylene group, wherein

R_5 denotes a hydrogen atom or a methyl, ethyl or benzyl group;

E denotes a C_{1-3}-alkylene group or a bond; and

F denotes a carbonyl group substituted by an $R_9O—$ group, or F denotes an $R_9CO—O—CHR_6—O—CO—$ group wherein

R_6 denotes a hydrogen atom or a methyl group,

R_8 denotes a hydrogen atom or a C_{1-5}-alkyl group and

R_9 denotes a C_{1-5}-alkyl group or a methoxy or ethoxy group;

or a tautomer or pharmaceutically acceptable salt thereof.

5,607,945

N-[(4-(HETEROARYL)-1-PIPERIDINYL)ALKYL]-1,2,3,4-TETRAHYDROISOQUINOLINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

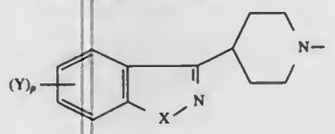
Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station; Joseph T. Strupczewski, Flemington, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

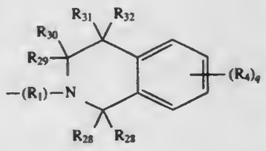
Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,821

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/04;403/04;417/04;419/04;221/04;275/04;239/02*

U.S. Cl. 514—307 **24 Claims**

1. A compound of the formula:





wherein, X is —O—, —S—, —NH—, or $—N(R_2)—$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10})cycloalkyl, aroyl, (C_2-C_{18})alkanoyl, (C_1-C_{18})alkoxycarbonyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ where n is 0, 1, 2, or 3; or

$—CHR_{24}—CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CHR_{24}—$,

$—CHR_{24}—CH=CH—CR_{23}R_{24}—CHR_{24}—$,

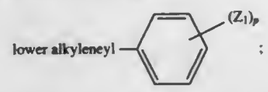
$—CHR_{24}—CR_{23}R_{24}—CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C\equiv C—CHR_{24}—$,

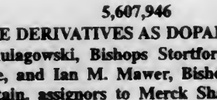
the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1-C_{18})linear alkyl, phenyl, hydroxy, (C_1-C_{18})alkoxy, aryloxy, $aryl(C_1-C_{18})$alkyloxy, (C_1-C_{18})alkanoyloxy, $hydroxy(C_1-C_6)$alkyl, (C_1-C_{18})alkoxy(C_1-C_6)alkyl, $phenyl(C_1-C_6)$alkoxy, $aryl(C_1-C_{18})$alkyloxy(C_1-C_6)alkyl, (C_1-C_{18})alkanoyloxy(C_1-C_6)alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1-C_{18})linear alkyl, phenyl, $hydroxy(C_1-C_6)$alkyl, (C_1-C_{18})alkoxy(C_1-C_6)alkyl, $phenyl(C_1-C_6)$alkyloxy, $aryl(C_1-C_{18})$alkyloxy(C_1-C_6)alkyl, (C_1-C_{18})alkanoyloxy(C_1-C_6)alkyl, or

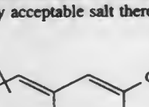


where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, $tri(C_1-C_6)$alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1-C_{18})acyl amino, (C_1-C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—(=O)—$(C_1-C_{18}$straight or branched chain-)alkyl or —C(=O)—aryl;

aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

q is 1, 2, 3, or 4;

R_{28} is hydrogen, (C_1-C_6)alkyl, $aryl(C_1-C_6)$alkyl, phenyl, or substituted phenyl; and aryl is as defined above;

R_{29} and R_{30} are hydrogen, (C_1-C_6)alkyl, $aryl(C_1-C_6)$alkyl, phenyl, or substituted phenyl; and aryl is as defined above;

R_{31} and R_{32} are hydrogen, hydroxy, (C_1-C_6)alkyl, $aryl(C_1-C_6)$alkyl, phenyl, substituted phenyl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is (C_1-C_{18})alkanoyl; and aryl is as defined above; or

either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached form a C=O or C=S group;

all geometric, optical, and stereoisomers thereof;

or a pharmaceutically acceptable acid addition salt thereof.

5,607,946

QUINOLONE DERIVATIVES AS DOPAMINE D_4 LIGANDS

Janusz J. Kulagowski, Bishops Stortford; Paul D. Leeson, Cambridge, and Ian M. Mawer, Bishops Stortford, all of Great Britain, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB94/00383, § 371 Date Aug. 30, 1995, § 102(e) Date Aug. 30, 1995, PCT Pub. No. WO94/20471, PCT Pub. Date Sep. 15, 1994

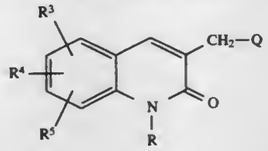
PCT Filed Feb. 25, 1994, Ser. No. 549,759

Claims priority, application United Kingdom, Mar. 5, 1993, 9304525; Aug. 5, 1993, 9316261

Int. Cl.[6] A61K *31/47;* **C07D** *215/227;215/12*

U.S. Cl. 514—312 **18 Claims**

1. A method for the treatment of schizophrenia which comprises administering to a patient in need thereof a compound of formula I, or a pharmaceutically acceptable salt thereof or a prodrug thereof:

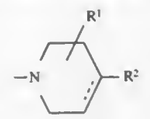


(I)

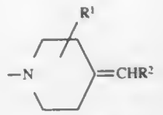
wherein

R represents hydrogen or C_{1-6} alkyl;

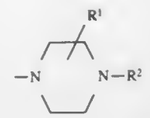
Q represents a moiety of formula Qa, Qb, Qc or Qd:



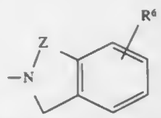
(Qa)



(Qb)



(Qc)



(Qd)

in which the broken line represents an optional chemical bond;

R^1 represents hydrogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, or aryl(C_{2-6})alkynyl;

R^2 represents an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, or aryl(C_{2-6})alkynyl;

R^3, R^4 and R^5 independently represent hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, nitro, $—OR^a$, $—SR^a$, $—SOR^a$, $—SO_2R^a$, $—SO_2NR^aR^b$, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—COR^a$, $—CO_2R^a$ or $—CONR^aR^b$;

z represents $—CH_2—$ or $—CH_2CH_2—$;

R^6 represents hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, aryl, aryl(C_{1-6})alkyl or halogen; and

R^a and R^b independently represent hydrogen, or hydrocarbon.

5,607,947

PYRROLIDINYL TACHYKININ RECEPTOR ANTAGONISTS

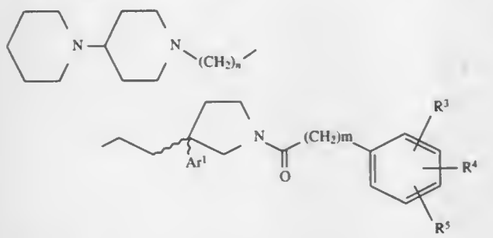
Philip A. Hipskind, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 21, 1995, Ser. No. 391,814

Int. Cl.[6] A61K *31/445;* **C07D** *401/14*

U.S. Cl. 514—316 **14 Claims**

1. A compound of the formula



wherein:

n is 0–6;

m is 0–6;

Ar^1 is phenyl substituted with one or two moieties independently selected from the group consisting of hydrogen, halo, trifluoromethyl, trichloromethyl, C_1–C_6 alkyl, and C_1–C_6 alkoxy; or Ar^1 is naphthyl; and

R^3, R^4, and R^5 are independently selected from the group consisting of hydrogen, halo, trifluoromethyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, cyano, hydroxy, amino, $—NHCONH_2$, nitro, $—CONH_2$, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkenyl, C_3–C_8 cycloalkoxy, C_1–C_{10} alkylthio, C_1–C_{10} alkylamino, C_2–C_6 alkanoyl, and C_2–C_6 alkanoyloxy;

or a salt or solvate thereof.

5,607,948

DIPIPERIDINE DERIVATIVES

Yoshiharu Ikeda; Yasuyuki Ueki, both of Hyogo-ken; Toshio Nishihara, Osaka, and Yumiko Kamikawa, Toyonaka, all of Japan, assignors to Sumitomo Pharmaceuticals Co., Ltd., Osaka-fu, Japan

PCT No. PCT/JP94/00908, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO95/01336, PCT Pub. Date Jan. 12, 1995

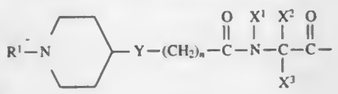
PCT Filed Jun. 6, 1994, Ser. No. 578,697

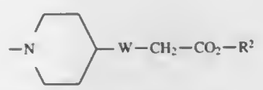
Claims priority, application Japan, Jun. 30, 1993, 5-189120

Int. Cl.[6] A61K *31/445;* **C07D** *211/16*

U.S. Cl. 514—316 **11 Claims**

1. A compound represented by formula





wherein R^1 represents a hydrogen atom or a lower alkyl group; Y represents a single bond or an oxygen atom; n represents 1, 2 or 3; W represents a methylene group or an oxygen atom; R^2 represents a hydrogen atom or a carboxyl modifying group which can be eliminated in vivo; X^1 and X^3 are the same or different and each represents a hydrogen atom or a lower alkyl group;

X^2 represents a hydrogen atom, a lower alkyl group, an aryl group, $—CHX^4OX^5$ (wherein X^4 represents a hydrogen atom or a methyl group; X^5 represents a hydrogen atom or a hydroxyl modifying group), $—CH_2CH_2OX^5$ (wherein X^5 represents the same meaning as above), $—CX^4{}_2SX^6$ (wherein X^4 represents the same meaning as above; X^6 represents a hydrogen atom or a thiol modifying group), $—CH_2CH_2S(O)_mCH_3$(wherein m represents 0, 1 or 2), $—(CH_2)_pCOOX^7$ (wherein p represents 1 or 2; X^7 represents a hydrogen atom or a carboxyl modifying group), $—(CH_2)_pCONHX^8$ (wherein p represents the same meaning as above; X^8 represents a hydrogen atom or an amide modifying group) $—(CH_2)_qNHX^9$ (wherein q represents 3 or 4; X^9 represents a hydrogen atom or an amino modifying group), $—(CH_2)_qNHC(=NH)NHX^{10}$ (wherein q represents the same meaning as above; X^{10} represents a hydrogen atom or a guanidino modifying group), or $—(CH_2)_rX^{11}$ (wherein X^{11} represents a halogen atom, a cycloalkyl group, an aryl group, a substituted aryl group, a heterocyclic group or a substituted heterocyclic group; r represents 1 or 2); provided that X^1 and X^2 may be combined together to form a trimethylene or tetramethylene group, or X^2 and X^3 may be combined together to form a pentamethylene group; or a pharmaceutically acceptable salt thereof.

5,607,949

[(BENZODIOXAN, BENZOFURAN OR BENZOPYRAN) ALKYLAMINO] ALKYL SUBSTITUTED GUANIDINES

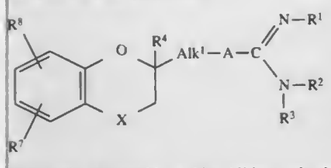
Guy R. E. Van Lommen, Berlaar; Marcel F. L. De Bruyn, Hoogstraten, and Walter J. J. Janssens, Beerse, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 256,995, Jul. 29, 1994, Pat. No. 5,541,180. This application Apr. 15, 1996, Ser. No. 632,227

Int. Cl.[6] A61K *31/445;* **C07D** *405/06*

U.S. Cl. 514—319 **15 Claims**

1. A compound having the formula:



(I)

a pharmaceutically acceptable acid addition salt thereof, or a stereochemically isomeric form thereof, wherein:

X is O, CH_2 or a direct bond;

R^1 is hydrogen or C_{1-6}alkyl;

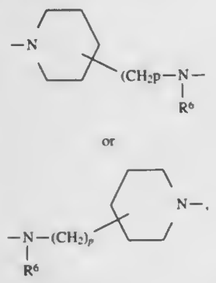
R^2 is hydrogen, C_{1-6}alkyl, C_{3-6}alkenyl or C_{3-6}alkynyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen or C_{1-6}alkyl;

Alk^1 is a bivalent C_{1-3}alkanediyl radical;

A is a bivalent radical of the formula:



(b)

or

(c)

wherein:

R^5 and R^6 individually are hydrogen or C_{1-4}alkyl and p is 0, 1 or 2; and

R^7 and R^8 each independently are hydrogen, halo, C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-6}alkynyl, hydroxy, C_{1-6}alkyloxy, cyano, aminoC_{1-6}alkyl, carboxyl, C_{1-6}alkyloxycarbonyl, nitro, amino, aminocarbonyl, C_{1-6}alkylcarbonylamino, or mono- or di(C_{1-6}alkyl)amino.

5,607,950

MUSCARINIC RECEPTOR ANTAGONISTS

David Alker, Birchington; Peter E. Cross, Canterbury, and Alexander R. Mackenzie, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

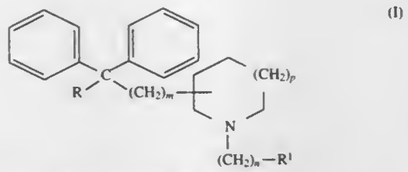
Continuation of Ser. No. 890,596, Jul. 2, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 195,888

Claims priority, application United Kingdom, Jan. 6, 1990, 9000304

Int. Cl.[6] A61K *31/445;31/40;* **C07D** *405/06;207/08*

U.S. Cl. 514—320 **5 Claims**

1. A method for treating irritable bowel syndrome in a patient in need of such treatment, characterized by administering to said patient an effective amount of a compound of the formula



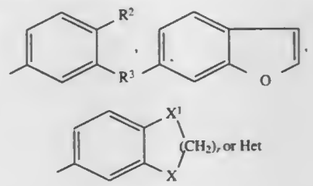
(I)

or a pharmaceutically acceptable salt thereof,

wherein

R is —CN or $—CONH_2$; and

R^1 is a group of the formula:



where

R^2 and R^3 are each independently H, C_1–C_4 alkyl, C_1–C_4 alkoxy, $—(CH_2)_qOH$, halo, trifluoromethyl, $—(CH_2)_qNR^4R^5$, $—SO_2NH_2$, or $—(CH_2)_qCONR^4R^5$;

R^4 and R^5 are each independently H or C_1–C_4 alkyl;

q is 0, 1 or 2;

r is 1, 2 or 3;

X and X^1 are each independently O or CH_2;

m is 1, 2 or 3;

n is 1, 2 or 3, with the proviso that when the group $—(CH_2)_m—$ is attached to the 3-position of the piperidine or pyrrolidine ring, n is 2 or 3;

p is 0 or 1; and

"Het" is pyridyl, pyrazinyl or thienyl, and a pharmaceutically acceptable diluent or carrier.

5,607,951

INDOLE DERIVATIVES

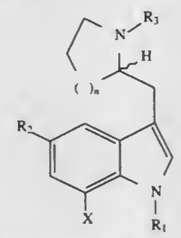
John E. Macor, and Martin J. Wythes, both of New York, N.Y., assignors to Pfizer Inc, New York, N.Y.

Continuation-in-part of Ser. No. 401,647, Mar. 10, 1995, abandoned, which is a continuation of Ser. No. 53,930, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 39,244, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 597,928, Oct. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,392

Int. Cl.[6] A61K *31/40;* **C07D** *401/06;403/06*

U.S. Cl. 514—323 **18 Claims**

1. A compound of the formula



I

wherein n is 0, 1, or 2; X is hydrogen, chlorine, bromine, or iodine;

R_1 is hydrogen; R_2 is $—(CH_2)_m—SO_2NR_5R_6$ R_3 is C_1 to C_6 linear or branched alkyl; R_5 is selected from hydrogen, C_1 to C_6 alkyl, aryl, and C_1 to C_3 alkyl-aryl, R_6 is selected from C_1 to C_6 alkyl, aryl, and C_1 to C_3 alkyl-aryl, or R_5 and R_6 taken together to form a 4, 5, or 6 membered ring; y is 0, 1, or 2; x is 1 or 2; m is 0, 1, 2, or 3; and the above aryl groups and the aryl moieties of the above alkylaryl groups are independently selected from phenyl and substituted phenyl, wherein said substituted phenyl may be substituted with one to three groups selected from C_1 to C_4 alkyl, halogen, hydroxy, cyano, carboxamido, nitro, and C_1 to C_4 alkoxy, and the pharmaceutically acceptable salts thereof.

5,607,952

SUBSTITUTED 4-PHENYLTHIAZOLE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Alain Badorc, Roquettes; Marie-Françoise Bordes, Labarthe sur Leze; Paul de Cointet, Toulouse; Jean-Marc Herbert, Tournefeuille, and Jean-Pierre Maffrand, Portet/Garonne, all of France, assignors to Sanofi, Paris, France

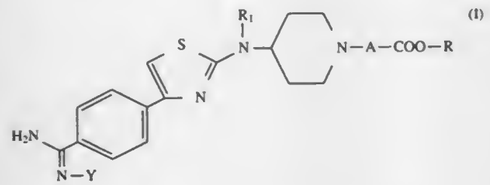
Filed Dec. 22, 1995, Ser. No. 577,097

Claims priority, application France, Dec. 28, 1994, 94 15805

Int. Cl.[6] A61K *31/445;* **C07D** *211/60*

U.S. Cl. 514—326 **16 Claims**

1. A compound of formula:



(I)

in which

R_1 is selected from the group consisting of hydrogen, C_1–C_5 alkyl, C_3–C_8 cycloalkyl, aralkyl whose alkyl part has from 1 to 5 carbon atoms, alkoxycarbonylalkyl in which the alkoxy and alkyl parts have from 1 to 3 carbon atoms. (alkoxycarbonylaryl)-alkyl in which the alkoxy and alkyl parts have from 1 to 3 carbon atoms; carboxy -(C_1–C_3)alkyl and (carboxyaryl)alkyl in which the alkyl part has from 1 to 3 carbon atoms;

A is selected from the group consisting of (i) methylene monosubstituted methylene, disubstituted methylene and (ii) ethylene;

R is selected from the group consisting of hydrogen, C_1–C_5 alkyl, aryl, aralkyl whose alkyl part has from 1 to 5 carbon atoms, substituted aryl and substituted aralkyl (in which the substituent, which is linked to the aromatic ring, is selected from the group consisting of hydroxyl, C_1–C_3 alkoxy, C_1–C_3 alkanoyloxy, halogen, trifluoromethyl and C_1–C_5 alkyl);

Y is selected from the group consisting of hydrogen; a $—COOR_2$ group in which R_2 is selected from the group consisting of C_1–C_5 alkyl, aryl, aralkyl whose alkyl part has from 1 to 5 carbon atoms, substituted aryl and substituted aralkyl whose alkyl part has from 1 to 5 carbon atoms (in which the substituent, which is linked to the aromatic ring, is C_1–C_5 alkyl); and a $—COR_3$ group in which R_3 represents C_1–C_5 alkyl;

or one of its salts.

5,607,953

BUTENOIC OR PROPENOIC ACID DERIVATIVE

Norio Minami; Fumihiro Ozaki; Keiji Ishibashi; Yasuhiro Kabasawa; Megumi Ikemori; Toshiaki Ogawa, and Takanori Kawamura, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

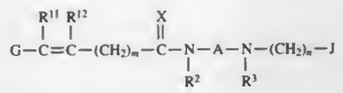
Division of Ser. No. 959,654, Oct. 13, 1992, Pat. No. 5,382,595, which is a division of Ser. No. 557,713, Jul. 25, 1990, Pat. No. 5,177,089, which is a division of Ser. No. 354,306, May 19, 1989, Pat. No. 5,047,417. This application Nov. 23, 1994, Ser. No. 347,099

Claims priority, application Japan, Jun. 1, 1988, 63-134892

Int. Cl.[6] A61K *31/335;31/34;31/38;* **A64K** *31/40;* **C07D** *403/06;233/66;213/63;319/14*

U.S. Cl. 514—327 **16 Claims**

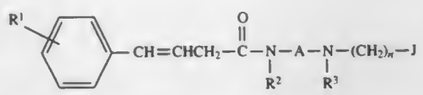
1. A butenoic or propenoic acid derivative having the formula (II) or a pharmacologically acceptable salt thereof:



(II)

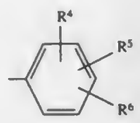
which is defined by each of the following definitions A, B and C:

A in which in the formula (II) G is R1-phenyl, R^{11} and R^{12} each are hydrogen, m is one and X is oxygen,



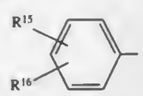
(I)

wherein R1 is a pyrrolyl, pyrazoyl, indolyl, indazolyl, isoquinolyl, quinoxalinyl, quinazolinyl or imidazopyridyl group, R^2 and R^3 each are hydrogen, a lower alkyl, a cycloalkyl or an allyl group, or R^2 and R^3 form a 5- to 7-membered saturated heterocyclic ring together with the nitrogen atom to which they are bonded, A is an alkylene group having 1 to 6 carbon atoms, which alkylene have a lower alkyl, a lower alkoxy or hydroxy substituted thereon, J is pyridyl or a phenyl having substituents R^4, R^5 and R^6:



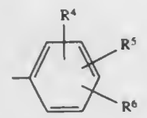
which R^4, R^5 and R^6 each are hydrogen, a halogen atom, a lower alkyl, a lower alkoxy, hydroxy, nitro, cyano, trifluoromethyl, an alkylsulfonyloxy, $—NR^7R^8$, R^7 and R^8 being hydrogen or a lower alkyl, or an alkanoylamino, or two of R^4, R^5 and R^6 form an alkylenedioxy together with two adjacent carbon atoms on the phenyl, or R^4, R^5 and R^6 form a 5- to 7-membered ring together with the $—(CH_2)_n—$, wherein n is an integer of from 1 to 6;

B in which in formula II: G is naphthyl or a phenyl having substituents R^{15} and R^{16}:



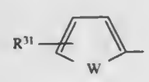
R^{15} and R^{16} are hydrogen, a lower alkyl, a lower alkoxy, a

halogen, $—NR^7R^8$, wherein R^7 and R^8 are hydrogen or lower alkyl, cyano, trifluoromethyl, an alkanoylamino, trifluoroalkoxy, an alkylsulfonyl, nitro, hydroxyl, an alkylthio, an alkylsulfonylamino, an alkylcarbonylamino or a carbamoyl, or R^{15} and R^{16} forms a cyclic ring together with oxygen between two adjacent carbon atoms, R^{11} and R^{12} each are cyano, a lower alkyl, or a halogen or R^{11} and R^{12} form a cyclic ring together with oxygen and the carbon on the phenyl, m is zero or 1, X is oxygen or sulfur, R^2 and R^3 each are hydrogen, a lower alkyl, a lower alkoxy, a cycloalkyl, a trifluoroalkyl or a lower alkenyl, or R^2 and R^3 form a 5- to 7-membered saturated heterocyclic ring together with the nitrogen atom to which they are bonded, or R^2 forms a ring together with R^{12}, or R^3 forms a ring having a nitrogen atom together with the $—(CH2)_n—$, or R^2 forms a 5- to 7-membered saturated heterocyclic ring together with A, or R^3 forms a 5- to 7-membered saturated heterocyclic ring together with A, A is an alkylene group having 1 to 6 carbon atoms, which alkylene may have a lower alkyl group, n is an integer of 1 to 6, J is pyridyl or a phenyl having substituents R^4, R^5 and R^6:

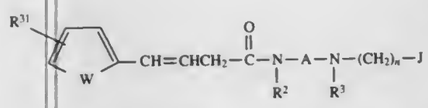


which R^4, R^5 and R^6 each are hydrogen, a halogen atom, a lower alkyl, a lower alkoxy, hydroxy, nitro, trifluoromethyl, an alkylsulfonyloxy, $—NH^7R^8$, wherein R^7 and R^8 are hydrogen or lower alkyl, or an alkanoylamyl, or two of R^4, R^5 and R^6 may form an alkylenedioxy together with two adjacent carbon atoms on the phenyl, or J may form a cyclic ring having a nitrogen together with the group $—(CH2)_n—$; and

C in which in the formula (II) G is



R^{11} and R^{12} are hydrogen, X is oxygen,



(III)

wherein R^{31} is a hetero-aryl group, R^2 and R^3 each are hydrogen, a lower alkyl, a cycloalkyl or allyl, or R^3 forms a 5- to 7-membered saturated heterocyclic ring together with the nitrogen and the $—(CH2)_n—$, or R^3 forms a 5- to 7-membered cyclic heteroring having nitrogen or nitrogen and oxygen together with A and the nitrogen, A is an alkylene having 1 to 3 carbon atoms which may have a lower alkyl, hydroxy or a lower alkoxy group substituted thereon, W is oxygen or sulfur, J is pyridyl or a phenyl having substituents R^4, R^5 and R^6, which is hydrogen, a halogen, a lower alkyl, a lower alkoxy, hydroxy, nitro, cyano, trifluoromethyl, an alkylsulfonyloxy, $—NR^7R^8$, wherein R^7 and R^8 are hydrogen or lower alkyl group, or an alkanoylamino, or two of R^4, R^5 and R^6 form an alkylenedioxy together with two adjacent carbon atoms on the phenyl, one of R^4, R^5 and R^6 forms a 5- to 7-membered cyclic ring together with the group $—(CH2)_n—$, n is an integer of 1 to 6, or $—(CH2)_n—$ may have a lower alkyl substituted thereon.

5,607,954

SULFONAMIDO- AND SULFONAMIDOCARBONYLPYRIDINE-2-CARBOXAMIDES AND THEIR PYRIDINE-N-OXIDES, PROCESS FOR THEIR PREPARATION AND THEIR USE AS PHARMACEUTICALS

Klaus Weidmann, Kronberg/Taunus; Martin Bickel, Bad Homburg, and Volkmar Günzler-Pukall, Marburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

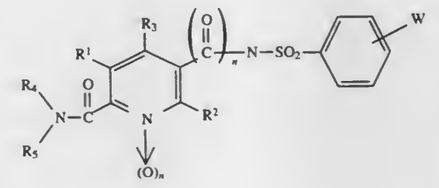
Continuation of Ser. No. 28,438, Mar. 9, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 355,419

Claims priority, application Germany, Mar. 24, 1992, 42 09 424.0; Nov. 14, 1992, 42 38 506.7

Int. Cl.[6] C07D *213/30;* **A61K** *31/44*

U.S. Cl. 514—355 **8 Claims**

1. A compound of the formula



wherein

R_1, R_2, R_3 and R_4 are independently hydrogen or (C_1–C_4)alkyl;

R_5 is an unbranched (C_1–C_4)alkyl radical which is substituted by hydroxyl, carboxyl, (C_1–C_4)alkoxy, phenoxy, benzyloxy, (C_1–C_9)alkoxycarbonyl, phenoxycarbonyl, (C_7–C_{11})phenylalkyloxycarbonyl, (C_3–C_8)cycloalkoxycarbonyl, (C_1–C_{12})alkylcarbonyloxy, (C_3–C_8)cycloalkylcarbonyloxy, benzoyloxy, phenoxycarbonyloxy, (C_7–C_{11})phenylalkoxycarbonyloxy, (C_3–C_8)cycloalkoxycarbonyloxy, carbamoyl, N-(C_1–C_6)alkylcarbomoyl, N,N-di(C_1–C_6)alkylcarbamoyl, N-(C_3–C_8)cycloalkylcarbamoyl, N-phenylcarbamoyl, N-(C_7–C_{11})phenylalkylcarbamoyl, hydroxy(C_1–C_4)alkylcarbamoyl, acyloxy(C_1–C_4)alkylcarbamoyl, (C_1–C_6)alkoxy(C_1–C_6)alkylcarbamoyl, carbamoyloxy, N-(C_1–C_6)alkylcarbamoyloxy, N,N-di(C_1–C_6)alkylcarbamoyloxy or (C_3–C_8)cycloalkylcarbamoyloxy;

R_6 is hydrogen or a 1 or 2 valent physiologically utilizable cation or ammonium ion;

R_7 is hydrogen, fluorine, chlorine, (C_1–C_6)cycloalkyl, (C_6–C_{12})aryl, (C_3–C_{12})alkenyl, phenyl, (C_1–C_6)alkoxy, phenoxy, $—(cb_2)_xC_yH_{2y+1-g}F_g$, carbamoyl, N-($C_1$–$C_{10}$)alkylcarbamoyl, N,N-di($C_1$–$C_8$)alkylcarbamoyl, N-($C_3$–$C_8$)cycloalkylcarbamoyl, N-phenylcarbamoyl, N-(C_7–C_{11})phenylalkylcarbamoyl, N-(C_1–C_8)alkyl-N-phenylcarbamoyl, N-(C_1–C_8)alkyl-N-(C_7–C_{11})phenylalkylcarbamoyl, N-((C_1–C_{10})alkoxy(C_1–C_8)alkyl)carbamoyl, N-phenoxy(C_1–C_8)alkylcarbamoyl, N-((C_7–C_{16})phenylalkyloxy(C_1–C_8)alkyl)carbamoyl, N-(C_1–C_8)alkyl-N-((C_1–C_6)alkoxy(C_1–C_8)alkyl)carbamoyl, N-(C_1–C_8)alkyl-N-(phenoxy(C_1–C_8)alkyl)carbamoyl, N-(C_1–C_8)alkyl-N-((C_7–C_{16})phenylalkyloxy(C_1–C_8)alkyl)carbamoyl, (C_1–C_8)alkanoylamino, (C_3–C_8)cycloalkanoylamino, phenylamino, (C_7–C_{11})phenylalkanoylamino, (C_1–C_8)alkanoyl-N-(C_1–C_{10})alkylamino, (C_3–C_8)cycloalkanoyl-N-(C_1–C_6)alkylamino, benzoyl-N-(C_1–C_{10})alkylamino, (C_7–C_{11})phenylalkanoyl-N-(C_1–C_8)alkylamino, (C_1–C_{10})alkanoylamino(C_1–C_8)alkyl, (C_3–C_8)cyclolalkanoylamino(C_1–C_8)alkyl,

phenylamino(C_1–C_8)alkyl or (C_7–C_{11})phenylalkanoylamino(C_1–C_8)alkyl;
wherein the phenyl of W group is optionally substituted with one to three substituents independently selected from the group of fluorine, chlorine, trifluoromethyl, hydroxyl, carboxyl, (C_1–C_4)alkoxy, phenoxy, benzyloxy, (C_1–C_9)alkoxycarbonyl, phenoxycarbonyl, (C_7–C_{11})phenylalkoxycarbonyl, (C_3–C_8)cycloalkoxycarbonyl, (C_1–C_{12})alkoxycarbonyloxy, (C_3–C_8)cycloalkylcarbonyloxy, benzoyloxy, (C_7–C_{11})phenalkylcarbonyloxy, (C_1–C_8)alkoxycarbonyloxy, phenoxycarbonyloxy, (C_7–C_{11})phenalkyloxycarbonyloxy, (C_3–C_8)cycloalkoxycarbonyloxy, carbamoyl, N-(C_1–C_6)alkylcarbamoyl, N,N-di(C_1–C_6)alkylcarbamoyl, N-(C_3–C_8)cycloalkylcarbamoyl, N-phenylcarbamoyl, N-(C_7–C_{11})phenalkylcarbamoyl, hydroxy(C_1–C_4)alkylcarbamoyl, acyloxy(C_1–C_4)alkylcarbamoyl, carbamoyloxy, N-(C_1–C_8)alkylcarbamoyloxy, N,N-di(C_1–C_8)alkylcarbamoyloxy or N-(C_3–C_8)cycloalkylcarbamoyl;
n is 0 or 1;
f is 1 to 5;
g is 0,1 to (2f+1).

5,607,955

TRICYCLIC COMPOUNDS ON ANGIOTENSIN II RECEPTOR ANTAGONISTS

Etsuo Ohshima; Fumihiko Kanai; Hideyuki Sato; Hiroyuki Obase; Toshiaki Kumazawa, all of Shizuoka-ken; Shiho Takahara, Kanagawa-ken; Tetsuji Ohno, Shizuoka-ken; Tomoko Ishikawa, Shizuoka-ken, and Koji Yamada, Shizuoka-ken, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 294,978, Aug. 24, 1994, Pat. No. 5,478,840, which is a division of Ser. No. 65,916, May 25, 1993, Pat. No. 5,378,701, which is a continuation-in-part of Ser. No. 996,694, Dec. 24, 1992, abandoned. This application May 1, 1995, Ser. No. 431,425

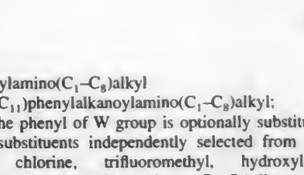
Claims priority, application Japan, Dec. 27, 1991, 3-347294

Int. Cl.[6] A61K *31/41;31/415;* **C07D** *233/54;235/04;257/04*

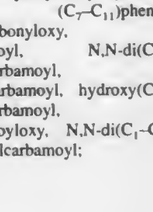
U.S. Cl. 514—359 **9 Claims**

1. A tricylic compound represented by the following formula (I):

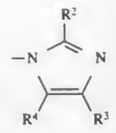
(I)



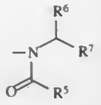
wherein R^1 represents hydrogen, halogen or lower alkyl; A represents cyano, carboxyl, tetrazolyl, cyano-substituted phenyl, carboxyl-substituted phenyl or tetrazolyl-substituted phenyl; V represents $-(CH_2)_m-$ (wherein m is an integer of 0 to 2); W represents



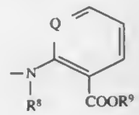
(wherein R^2, R^3 and R^4 independently represent hydrogen, halogen, lower alkyl, cycloalkyl, halogenated lower alkyl, hydroxy, lower alkoxy, amino, lower alkylamino, carboxyl or lower alkoxycarbonyl; and Q^1—Q^2—Q^3—Q^4 represents N=CH—CH=CH, CH=CH—CH=CH or CH_2—CH_2—CH_2—CH_2),



(wherein R^2, R^3 and R^4 have the same meanings as defined above),



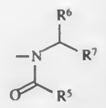
(wherein R^5 and R^6 independently represent hydrogen, lower alkyl or cycloalkyl; and R^7 represents carboxyl, lower alkoxycarbonyl, carbamoyl or hydroxymethyl) or



(wherein R^8 and R^9 independently represent hydrogen or lower alkyl; and Q represents N or CH); X^1—X^2—X^3 represents CH=CH—CH=CH, S—CH=CH or CH=CH—S; Y represents a single bond, CH_2, O, S, CH_2O, OCH_2, CH_2S, SCH_2, CH_2CH_2 or CH=CH; and Z^1—Z^2 represents C=CH, CH—CH_2, CH—CH(COOH)— or N—$(CH_2)_n$— (wherein n is an integer of 1 to 3) or a pharmaceutically acceptable salt thereof, with the proviso that

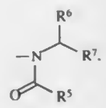
(i) when Z^1—Z^2 is N—$(CH_2)_n$—, Y is not CH_2O, OCH_2, CH_2S, SCH_2 or CH_2CH_2;

(ii) when Z^1—Z^2 is not N—$(CH_2)_n$—, Y is O, S, CH_2O, OCH_2, CH_2S or SCH_2, and W is



(wherein R^5, R^6 and R^7 have the same meaning as defined above) or Q is CH, A is not tetrazole;

(iii) when Z^1—Z^2 is not N—$(CH_2)_n$—, Y is a single bond, CH_2CH_2 or CH=CH, W is



and X^1—X^2—X^3 is S—CH=CH or CH=CH—S, A is not tetrazole; and

(iv) when Z^1—Z^2 is not N—$(CH_2)_n$—, Q^1—Q^2—Q^3—Q^4 is not N=CH—CH=CH.

5,607,956

1-HETEROAZOLYL-1-HETEROCYCLYL ALKANE DERIVATIVES AND THEIR USE AND THEIR USE AS NEUROPROTECTIVE AGENTS

Robin B. Boar, Herts; Alan J. Cross, Surrey; Duncan A. Gray, Powys, and Richard A. Green, Oxon, all of Great Britain, assignors to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 379,506, Jan. 30, 1995. This application Jun. 2, 1995, Ser. No. 459,847

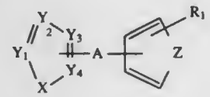
Claims priority, application Sweden, Jul. 6, 1993, 9302332

Int. Cl.[6] A61K *31/41;31/42;31/425*

U.S. Cl. 514—365 **1 Claim**

1. A method for the treatment of acute and chronic neuropsychiatric disorders characterised by progressive processes that lead to neuronal cell death and dysfunction by administering to a host in need of such treatment a sufficient amount of a compound having the general formula (1)

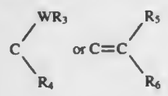
(I)



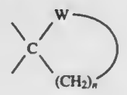
wherein;
X is O, S, Se, or NR_2;
Y_1, Y_2, Y_3, Y_4 independently are N or CR_2;
Z is O, S, Se, NR_2 or C=N;
R_1 is at least one group selected from the group consisting of H, lower alkyl, lower acyl, halogen, lower alkoxy and CF_3, or R_1 and the ring



together represent a fused benzo ring unsubtituted or further substituted;
R_2 is H, lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, lower acyloxy-lower alkyl, aryl-lower alkyl or CF_3 and when more than one R_2 groups are present these may be selected independently; and A is



wherein
W is O, S, NH or N-lower alkyl,
R_3 is H, lower alkyl or lower acyl,
R_4 is lower alkyl, aryl-lower alkyl, cyclopropyl or lower perfluoroalkyl,
or R_3 and R_4 together form a ring



wherein
n is 2, 3 or 4,
R_5 and R_6 independently are H, lower alkyl, or aryl-lower alkyl;
with the proviso that at least one of X, Y_1, Y_2, Y_3 or Y_4 is nitrogen and that the ring



is not 1-methyl-2-imidazolyl;

geometric and optical isomers and racemates thereof where such isomers exist, as well as pharmaceutically acceptable acid addition salts thereof and solvates thereof.

5,607,957

IMIDAZOLE, TRIAZOLE AND TETRAZOLE DERIVATIVES

Jose L. Castro Pineiro, Harlow, and Victor G. Matassa, Furneux Pelham, both of United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB93/00652, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/20066, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 29, 1993, Ser. No. 313,058

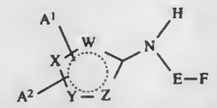
Claims priority, application United Kingdom, Apr. 3, 1992, 9207396

Int. Cl.[6] C07D *403/12;401/14;* **A61K** *31/41;31/415*

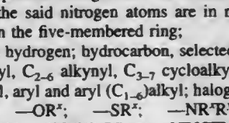
U.S. Cl. 514—381 **6 Claims**

1. A compound of Formula I, or a pharmaceutically acceptable salt thereof:

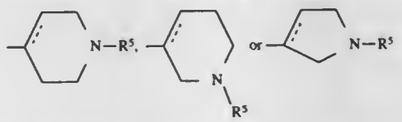
(I)



wherein the circle represents two non-adjacent double bonds in any position in the five-membered ring;
two, three or four of W, X, Y and Z represent nitrogen and the remainder represent carbon provided that, when two of W, X, Y and Z represent nitrogen and the remainder represent carbon, then the said nitrogen atoms are in non-adjacent positions within the five-membered ring;
A^1 represents hydrogen; hydrocarbon, selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl (C_{1-6}) alkyl, aryl and aryl (C_{1-6})alkyl; halogen; cyano; trifluoromethyl; —OR^x; —SR^x; —NR^xR^y; —NR^xCOR^y; —$NR^xCO_2R^y$; —$NR^xSO_2R^y$; or —$NR^xCTNR^xR^y$;
A^2 represents a non-bonded electron pair when all four of W, X, Y and Z represent nitrogen; or, when two or three of W, X, Y and Z represent nitrogen and the remainder represent carbon, A^2 represents hydrogen, hydrocarbon, as defined above, halogen, cyano, trifluoromethyl, —OR^x, —SR^x, —NR^xR^y, —NR^xCOR^y, —$NR^xCO_2R^y$, —$NR^xSO_2R^y$, or —$NR^xCTNR^xR^y$;
E represents a bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;
F represents a group of formula



U represents nitrogen or C—R^2;
B represents oxygen, sulphur or N—R^3;
R^1 represents —CH_2—CHR^4—NR^6R^7 or a group of formula



in which the broken line represents an optional chemical bond;
R^2, R^3, R^4, R^5, R^6 and R^7 independently represent hydrogen or C_{1-6} alkyl;
R^x and R^y independently represent hydrogen, hydrocarbon as defined above, or R^x and R^y taken together represent a C_{2-6} alkylene group;

R^z represents hydrogen, or hydrocarbon as defined above;
T represents oxygen, sulphur or a group of formula=N—G; and
G represents hydrocarbon, as defined above, cyano, nitro, —COR^x, —CO_2R^x or —SO_2R^x, in which R^x is as defined above.

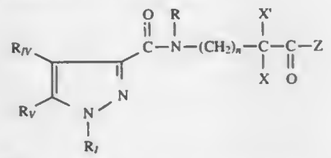
5,607,958

3-AMIDOPYRAZOLE DERIVATIVES, PROCESS FOR PREPARING THESE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Robert Bolgegrain, Assas; Danielle Gully, Saubens; Francis Jeanjean, Valflaunes, and Jean-Charles Molimard, Saint-Gely-du-Fesc, all of France, assignors to Sanofi, Paris, France

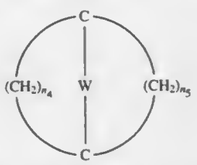
Division of Ser. No. 119,830, Sep. 13, 1993, Pat. No. 5,420,141, which is a continuation of Ser. No. 747,359, Aug. 20, 1991, abandoned. This application Feb. 27, 1995, Ser. No. 394,757
Claims priority, application France, Aug. 20, 1990, 90 10486
Int. Cl.^{6} A61K *31/415;* **C07D** *231/10;231/12*
U.S. Cl. 514—406 **18 Claims**

1. A 3-amidopyrazole of formula (I):



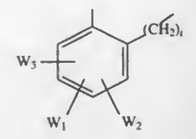
(I)

in which:
X and X', together with the carbon atom to which they are linked, form a cycle of formula b:



b

in which W is a carbon atom, n_4 is 3, and n_5 is 3; the cycle of formula b is attached to >N—R and to C(C)—Z through one carbon atom of one or other of the two rings; and the cycle b is optionally substituted on one and/or the other of the rings with one or two C_1–C_4 alkyl groups;
R_1 represents:
a phenyl group substituted by R_a, R'_a and R''_a, wherein R_a, R'_a and R''_a each independently represent a hydrogen atom, a halogen atom, a hydroxyl group, a linear or branched C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a trifluoromethyl group, a trifluoromethoxy group, a nitro group, a carboxyl group or an amino group;
a tetrahydronaphthyl group; or
a naphthyl group substituted with R_a, R'_a and R''_a as defined above;
R represents hydrogen or linear or branched C_1–C_4 alkyl group;
n represents 0, 1, 2 or 3;
Z represents
a hydroxyl group;
a C_1–C_6 alkoxy group;
an oxygen atom substituted with a carboxylic acid-protecting group, wherein the carboxylic acid-protecting group is selected from the group consisting of tert-butyl, benzyl, benzyl substituted with a halogen atom, C_1–C_6 alkyl, trifluoromethyl, trifluoromethoxy or carboxyl group;
an amino group; or
a nitrogen atom substituted with a carboxyalkyl group in which the alkyl group is a linear or branched C_1–C_6 group;
R_{IV} represents a hydrogen atom, a halogen atom or a C_1–C_6 alkyl group;
R_V represents:
a phenyl group substituted by R_5, R'_5 and R''_5, where R_5, R'_5 and R''_5 each independently represent a hydrogen atom, a halogen atom, a linear or branched C_1–C_4 alkyl group, a hydroxyl group, a C_1–C_4 alkoxy group, a nitro group, a trifluoromethyl group, a trifluoromethoxy group, a cyano group, an amino group, a carboxyl group, a C_1–C_4 carboxyalkyl group or a phenyl group;
a naphthyl group unsubstituted or substituted with a C_1–C_4 alkyl;
a styryl group unsubstituted or substituted with a C_1–C_4 alkyl group;
or alternatively R_{IV} and R_V considered together represent:
a group



in which the phenyl group substitutes the pyrazole at position 5 and the group —$(CH_2)_i$— in which i=1 to 3 substitutes the pyrazole at position 4; W_1, W_2 and W_3 substitute the benzene ring and independently represent hydrogen, a halogen atom or a hydroxyl group;
or one of its pharmaceutically acceptable, crystallization or separation salts with organic or inorganic acids or with inorganic or organic bases.

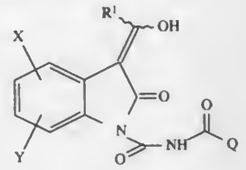
5,607,959

OXINDOLE 1-[N-(ALKOXYCARBONYL)] CARBOXAMIDES AND 1-(N-CARBOXAMIDO) CARBOXAMIDES AS ANTIINFLAMMATORY AGENTS

Ralph P. Robinson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/11792, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/18194, PCT Pub. Date Aug. 18, 1994
Continuation of Ser. No. 15,144, Feb. 9, 1993, abandoned. This PCT application Dec. 10, 1993, Ser. No. 495,509
Int. Cl.^{6} C07D *409/06;* **A61K** *31/40*
U.S. Cl. 514—414 **15 Claims**

1. A compound of the formula:



I

wherein,
X is hydrogen, chlorine or fluorine;
Y is hydrogen, chlorine or fluorine;
R^1 is substituted or unsubstituted thienyl, furyl or phenyl;
Q is OR^2 or NR^3R^4; wherein
R^2 is C_1–C_{10} alkyl, C_4–C_{10} cycloalkyl, phenyl, substituted phenyl, C_5–C_{10} cycloalkenyl, C_5–C_{10} alkenyl, $(CH_2)_mCH(R^5)CO_2R^6$, $(CH_2)_mCH(R^5)CONR^6R^7$, $(CH_2)_nCH(R^8)NR^5R^9$, farnesyl, geranyl, 6-indanyl, CH_2(2,2-dimethyl-1,3-dioxolan-4-yl), $(CH_2)_n$-2-thienyl, $(CH_2)_n$-3- thienyl, $(CH_2)_n$-3-furyl, $(CH_2)_n$-2-furyl, $(CH_2)_n$-2-pyridyl, $(CH_2)_n$-3-pyridyl, $(CH_2)_n$-4-pyridyl, $(CH_2)_n$-phenyl or $(CH_2)_n$-substituted phenyl;
R^3 is hydrogen, OR^5, C_1–C_{10} alkyl, C_4–C_{10} cycloalkyl, phenyl, substituted phenyl, C_5–C_{10} alkenyl, C_5–C_{10} cycloalkenyl, $(CH_2)_mCH(R^{10})CO_2R^5$, $(CH_2)yNR^5R^9$, $(CH_2)_n$-phenyl, $(CH_2)_n$-substituted phenyl, $(CH_2)_n$-3-thienyl, $(CH_2)_n$-2-thienyl, $(CH_2)_n$-2-furyl, $(CH_2)_n$-3-furyl, $(CH_2)_n$-2-pyridyl, $(CH_2)_n$-3-pyridyl, $(CH_2)_n$-4-pyridyl, $(CH_2)_n$-3-pyridyl, or $(CH_2)_n$-4-pyridyl;
R^4 is hydrogen, C_1–C_{10} alkyl, C_4–C_{10} cycloalkyl, phenyl, substituted phenyl, C_3–C_{10} alkenyl, C_5–C_{10} cycloalkenyl, $(CH_2)_nNR^5R^9$, $(CH_2)_n$-phenyl, $(CH_2)_n$-substituted phenyl, $(CH_2)_n$-2-thienyl, $(CH_2)_n$-3-thienyl, $(CH_2)_n$-2-furyl, $(CH_2)_n$-3-furyl, $(CH_2)_n$-2-pyridyl, $(CH_2)_n$-3-pyridyl, or $(CH_2)_n$-4-pyridyl;
R^5, R^6 and R^7 are independently hydrogen, C_1–C_6 alkyl, benzyl, phenyl, allyl, C_4C_8 cycloalkyl;
R^8 is hydrogen, R^5, CO_2R^5 or $CONR^5R^6$;
R^9 is R^5, C_1–C_6 alkyl carbonyl, benzoyl, substituted benzoyl, benzyloxycarbonyl, or C_1–C_6 alkoxycarbonyl;
R^{10} is C_1–C_6 alkyl, $(CH_2)_nNR^5R^9$, $CH(CH_3)OR^5$, CH_2OR^5, CH_2-3-indolyl, CH_2SR^5, CH_2-p-$C_6H_4OR^5$, $(CH_2)_nSR^6$ or $(CH_2)_n$-3-imidazolyl;
m is 0–6; n is 1–6; and y is 2–6; or a pharmaceutically acceptable salt thereof.

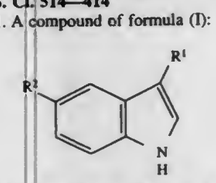
5,607,960

INDOLE DERIVATIVES AS 5-HT1-LIKE AGONISTS FOR USE IN MIGRAINE

Martin J. Wythes, Sandwich, United Kingdom, assignor to Pfizer Inc., New York, N.Y.

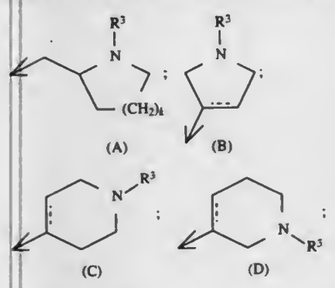
PCT No. PCT/EP94/01121, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/24127, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 11, 1994, Ser. No. 532,573
Claims priority, application United Kingdom, Apr. 22, 1993, 9308360; Nov. 27, 1993, 9324433
Int. Cl.^{6} A61K *31/405;* **C07D** *401/04;401/06*
U.S. Cl. 514—414 **9 Claims**

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt thereof, or a pharmaceutically acceptable solvate of either entity, wherein R^1 is



(A) (B) (C) (D)

or $CH_2CH_2NR^3R^4$ (E);
R^2 is $R^5R^6C(OH)A$ or R^7COA; R^3 is H; C_1–C_6 alkyl; (R^8CO) C_1–C_3 alkylene; (R^9O_2C) C_1–C_3 alkylene; $(R^{10}R^{11}NOC)$ C_1–C_6 alkylene; $(R^{10}R^{11}NO_2S)$ C_1–C_3 alkylene; $[R^8S(O)_m]C_1$–C_3 alkylene; $(R^{12}O)$ C_2–C_4 alkylene; $(R^{13}NH)$ C_2–C_4 alkylene; (C_3–C_7 cycloalkyl) C_1–C_3 alkylene; (aryl) C_1–C_3 alkylene; (heteroaryl) C_1–C_3 alkylene; C_3–C_7 cycloalkyl optionally substituted with HO; C_3–C_6 alkenyl optionally substituted with aryl; C_5–C_7 cycloalkenyl; or C_3–C_6 alkynyl;
R^4 is H or C_1–C_6 alkyl;
R^5 and R^6 are each independently selected from H; C_1–C_6 alkyl; C_1–C_4 perfluoroalkyl; and C_3–C_7 cycloalkyl; or, together with the carbon atom to which they are attached, form a 3- to 7-membered carbocyclic ring which optionally incorporates a double bond or a heteroatom linkage selected from O, $S(O)_m$, NH, N(C_1–C_4 alkyl), and N(C_1–C_5 alkanoyl);
R^7 and R^8 are each independently selected from C_1–C_6 alkyl; (C_3–C_7 cycloalkyl) C_1–C_3 alkylene; (aryl) C_1–C_3 alkylene; C_3–C_7 cycloalkyl; and aryl;
R^9 is C_1–C_6 alkyl; (C_3–C_7 cycloalkyl) C_1–C_3 alkylene; (aryl) C_1–C_3 alkylene; or C_3–C_7 cycloalkyl;
R^{10} and R^{11} are each independently selected from H; C_1–C_6 alkyl; ($R^{14}R^{15}NOC$) C_1–C_3 alkylene; ($R^{16}O$) C_2–C_4 alkylene; (C_3–C_7 cycloalkyl) C_1–C_3 alkylene; (aryl) C_1–C_3 alkylene; and C_3–C_7 cycloalkyl; or, together with the nitrogen atom to which they are attached, form a 4- to 7-membered heterocyclic ring which optionally incorporates a further heteroatom linkage selected from O, $S(O)_m$, NH, N(C_1–C_4 alkyl), and N(C_1–C_5 alkanoyl);
R^{12} is H; C_1–C_6 alkyl; (C_3–C_7 cycloalkyl) C_1–C_3 alkylene; (aryl) C_1–C_3 alkylene; C_3–C_7 cycloalkyl; or aryl;
R^{13} is H; C_1–C_5 alkanoyl; (C_1–C_4 alkyl)SO_2; or H_2NSO_2;
R^{14} and R^{15} are each independently selected from H or C_1–C_4 alkyl;
R^{16} is H; C_1–C_4 alkyl; or benzyl;
A is a direct link; C_1–C_6 alkylene optionally branched with C_1–C_4 alkyl; or C_2–C_6 alkenylene optionally branched with C_1–C_4 alkyl;
k and m are each independently selected from 0, 1 and 2;
and the broken line indicates an optional carbon-carbon single bond;
with the proviso that, for a compound of formula (IE) wherein R^2 is R^7COA and A is a direct link, R^7 is not
(a) methyl, ethyl, phenyl or 4-chlorophenyl when both R^3 and R^4 are H;
(b) methyl when both R^3 and R^4 are methyl; or
(c) phenyl when both R^3 and R^4 are ethyl, or when either of R^3 and R^4 is ethyl or butyl and the other is H.

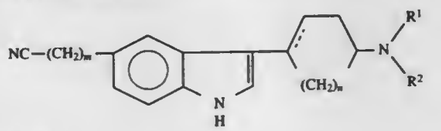
5,607,961

ANTIDEPRESSANT 3-(AMINOCYCLOALKENYL)-INDOLE-5-NITRILE DERIVATIVES

Joseph A. Cipollina, Middletown; Ronald J. Mattson, Meriden, and Charles P. Sloan, Wallingford, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

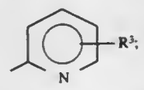
Division of Ser. No. 178,073, Jan. 6, 1994, Pat. No. 5,468,767. This application Aug. 22, 1995, Ser. No. 517,999
Int. Cl.^{6} A61K *31/405*
U.S. Cl. 514—415 **7 Claims**

1. A compound of Formula I or a pharmaceutically acceptable acid addition salt thereof



I

wherein
R^1 is hydrogen or C_{1-4} alkyl;
R^2 is —$(CH_2)_p$—Ar;
m is zero or 1;
n is an integer from 1 to 3;
p is zero or an integer from 1 to 4;
Ar is



R^3 is hydrogen, halogen or C_{1-4} alkoxy; and
the solid plus dotted line represents a single or double covalent bond.

5,607,962

SUBSTITUTED INDOLE DERIVATIVES

Matthias Müller-Gliemann, Solingen; Ulrich Müller, Wuppertal, both of Germany; Martin Beuck, Milford, Conn.; Siegfried Zaiss, Wuppertal, Germany; Christoph Gerdes, Leverkusen, Germany; Anke Domdey-Bette, Hückeswagen, Germany; Rudi Grützmann, Solingen, Germany; Stefan Lohmer, Milan, Italy; Stefan Wohlfeil, Hilden, Germany; Özkan Yalkinoglu, Wuppertal, Germany; James Elting, Madison, Conn., and Dirk Denzer, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

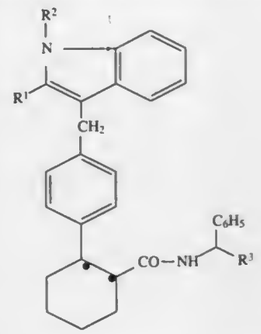
Filed Jan. 25, 1996, Ser. No. 591,329

Claims priority, application Germany, Feb. 1, 1995, 195 03 159.8; Apr. 11, 1995, 195 13 176.7

Int. Cl.[6] A61K *31/40;* C07D *209/24*

U.S. Cl. 514—415 7 Claims

1. Substituted indole derivatives of the general formula (I)



(I)

in which

R^1 represents phenyl, cycloalkyl having 3 to 6 carbon atoms or straight-chain or branched alkyl having up to 5 carbon atoms,

R^2 represents straight-chain or branched alkyl having up to 8 carbon atoms, or hydrogen,

R^3 represents a radical of the formula —CO—NH_2 or —CH_2—OH,

and their salts.

5,607,963

MALEIMIDE PESTICIDES AND COMPOSITIONS THEREOF

Kazunori Tsushima, Sanda; Takashi Furukawa; Tomonori Iwasaki, both of Takarazuka; Takao Ishiwatari, and Mikako Nakamachi, both of Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

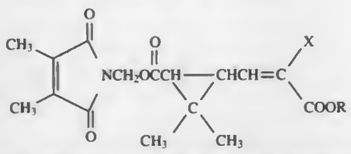
Filed Jun. 1, 1995, Ser. No. 456,309

Claims priority, application Japan, Jun. 17, 1994, 6-136051; May 9, 1995, 7-110415

Int. Cl.[6] C07D *207/452;* A01N *43/36*

U.S. Cl. 514—425 10 Claims

1. A maleimide represented by the formula (I),



(I)

wherein X represents a halogen atom or a hydrogen atom, and R represents an alkyl, cycloalkyl or haloalkyl group.

5,607,964

CLINICAL MARKER AND THERAPEUTIC AGENT IN KIDNEY STONE DISEASE AND METHODS OF USE

William C. Thomas, Jr.; Christopher D. Batich, and Daniel L. Purich, all of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 261,581, Jun. 17, 1994. This application Jun. 2, 1995, Ser. No. 458,368

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—452 8 Claims

1. A method for inhibiting calcification, said method comprising the application or administration of dicitrate cyclic diester, or salt thereof.

5,607,965

LIPOPROTEIN (A) LOWERING AGENT, CHOLESTEROL LOWERING AGENT AND MEDICAMENTS COMPRISING THESE AGENTS RESPECTIVELY

Kazuo Kondo; Hiroshige Itakura, both of Tokyo; Hirofumi Koda, Osaka; Hiroshi Tanahashi, Shiga-ken, and Kazuaki Hosoda, Tokyo, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Nov. 27, 1995, Ser. No. 562,994

Claims priority, application Japan, Nov. 28, 1994, 6-316044

Int. Cl.[6] A61K *31/35;35/78*

U.S. Cl. 514—456 8 Claims

1. A method for lowering of the blood level of lipoprotein (a) in an organism, which comprises administering a proanthocyanidin to the organism.

5,607,966

ESTERS AND AMIDES OF NON-STEROIDAL ANTI-INFLAMMATORY CARBOXYLIC ACIDS WHICH MAY BE USED AS ANTI-OXIDANTS, 5-LIPOXYGENASE INHIBITORS AND NON-STEROIDAL ANTI-INFLAMMATORY PRODRUGS

Mark R. Hellberg, Arlington, and Gustav Graff, Cleburne, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 23, 1994, Ser. No. 362,718

Int. Cl.[6] C07D *311/04;* A01K *31/35*

U.S. Cl. 514—458 33 Claims

1. A compound of formula:

A—X—$(CH_2)_n$—Y—$(CH_2)_m$—Z

wherein:

A is a non-steroidal anti-inflammatory agent originally having a carboxylic acid moiety selected from the group consisting of: loxoprofen; tolfenamic acid; indoprofen; pirprofen; clidanac; fenoprofen; naproxen; fenclorac; meclofenamate; benoxaprofen; carprofen; isofezolac; aceclofenac; fenbufen; etodolic acid; fleclozic acid; amfenac; efenamic acid; bromfenac; ketoprofen; fenclofenac; alcofenac; orpanoxin; zomopirac; diflunisal; flufenamic acid; niflumic acid; mefenamic acid; pranoprofen; zaltoprofen; indomethacin; sulindac; tolmetin; suprofen; ketorolac; flurbiprofen; ibuprofen; and diclofenac;

X is O or NR;

A—X is an ester or amide linkage derived from the carboxylic acid moiety of the non-steroidal anti-inflammagtory, agent and the X;

R is H, C_1–C_6 alkyl or C_3–C_6 cycloalkyl;

Y, if present, is O, NR, $C(R)_2$, CH(OH) or $S(O)_{n'}$;

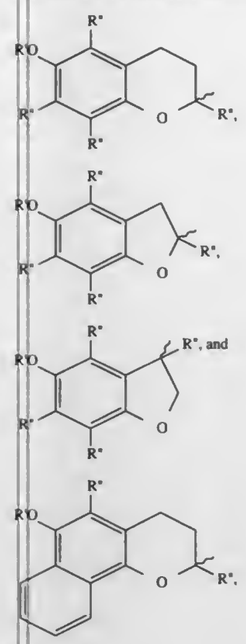
n is 2 to 4 and m is 1 to 4 when Y is O, NR, or $S(O)_{n'}$;

n is 0 to 4 and m is 0 to 4 when Y is $C(R)_2$ or is not present;

n is 1 to 4 and m is 0 to 4 when Y is CH(OH);

n' is 0 to 2; and

Z is selected frown the group consisting of:



wherein:

R' is H, C(O)R, $C(O)N(R)_2$, PO_3^- or SO_3^-;

R" is H or C_1–C_6 alkyl;

or a pharmaceutically acceptable salt thereof.

5,607,967

TREATMENT OF ALZHEIMER'S DISEASE WITH 5-(TETRADECYLOXY)-2-FURAN CARBOXYLIC ACID

Eitan Friedman, Wynnewood; M. Katharine Holloway, Lansdale; Gideon A. Rodan; Azriel Schmidt, both of Bryn Mawr, and Robert L. Vogel, Richboro, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 27, 1994, Ser. No. 330,518

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—461 5 Claims

1. A method for the treatment of Alzheimer's disease comprising the administration of a pharmacologically effective amount of 5-(tetradecyloxy)-2-furan carboxylic acid or a pharmaceutically acceptable salt or ester thereof to a patient in need of such treatment.

5,607,968

TOPICAL ALKYL-2-O-L-ASCORBYL-PHOSPHATES

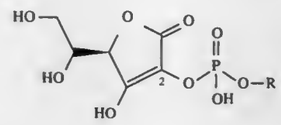
Dmitri Ptchelintsev, Mahwah, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,957

Int. Cl.[6] A01N *43/08;* A61K *31/34*

U.S. Cl. 514—474 10 Claims

1. A method for stimulating collagen production in human skin fibroblasts which comprises applying to said human skin a suitable topical vehicle contining from about 0.to about 20% of a compound having the following structure or a salt thereof:



where R is a straight chain C_2–C_{18} alkyl group.

5,607,969

L-DOPA ETHYL ESTER TO TREAT PARKINSON'S DISEASE

Isaac Milman, Maale Adumim; Alexander Veinberg, Rehovot; Daphne Atlas, Neve Granot, and Eldad Melamed, Mevasseret Zion, all of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, and Teva Pharmaceutical Industries Ltd., Both of Jerusalem, Israel

Continuation-in-part of Ser. No. 276,196, Jul. 18, 1994, Pat. No. 5,525,631, which is a continuation of Ser. No. 995,847, Dec. 24, 1992, Pat. No. 5,354,885. This application May 17, 1995, Ser. No. 442,888

Int. Cl.[6] A61K *31/24*

U.S. Cl. 514—538 22 Claims

1. A method of treating a patient suffering from Parkinson's disease which comprises administering to the patient a therapeutically effective amount of a composition which comprises:

L-DOPA ethyl ester derived from pharmaceutically acceptable, crystalline, non-hygroscopic L-DOPA ethyl ester of at least ninety-seven percent purity and containing less than one percent by weight L-DOPA, characterized in that the amount of L-DOPA ethyl ester decreases by less than four percent after one month at forty degrees Celsius; and

a pharmaceutically acceptable carrier.

5,607,970

ACAT INHIBITORY AGENT

Kazuoki Ishihara, Kamakura, and Ryouiti Shin, Sagamihara, both of Japan, assignors to Kabushiki Kaisya Advance, Tokyo, Japan

PCT No. PCT/JP92/00857, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO93/02185, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 6, 1992, Ser. No. 969,818

Claims priority, application Japan, Jul. 19, 1991, 3-203530

Int. Cl.[6] A61K *31/22;31/20*

U.S. Cl. 514—546 3 Claims

1. An ACAT inhibitory composition containing as an active ingredient from 0.5 to 3% by weight, based on the total weight of the composition, of a monoacylglycerol selected from the group consisting of 1-stearoylglycerol, 1-palmitoylglycerol and a mixture thereof and an acceptable carrier therefor.

5,607,971

ESTERIFIED VASOACTIVE LIPIDS FOR INCREASING PERFUSION PRESSURE OF THE CARUNCULAR ARTERIAL BED IN MAMMALS

Mohsen Al-Mahmoud, Irbid, Jordan; Stephen P. Ford, Huxley, Iowa; Robert E. Short, Miles City, Mont.; Donna B. Farley, North Liberty, Iowa; Lane Christenson, Urbandale, Iowa, and John P. N. Rossaza, Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa; Iowa State University Research Foundation, Inc., Ames, Iowa, and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 19, 1995, Ser. No. 413,797

Int. Cl.[6] A61K *31/23*

U.S. Cl. 514—552 **11 Claims**

1. A method of increasing the perfusion pressure of caruncular arterial beds in mammals, comprising: administering a small, but perfusion pressure-increasing, amount of a substantially pure esterified fatty acid, wherein the fatty acid is selected from the group consisting of lauric, myristic and palmitic acid.

5,607,972

GELLING COMPOSITIONS COMPRISING OPTICALLY ENRICHED GELLANTS

Curtis B. Motley, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

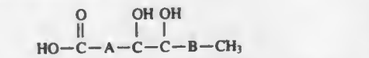
Filed Aug. 8, 1994, Ser. No. 286,997

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—558 **13 Claims**

1. A low-aqueous gel cosmetic composition comprising:

a) from about 0.1% to about 25% of an optically enriched gellant having the structure:



wherein A and B independently represent linear, branched or cyclic, saturated or unsaturated, substituted or unsubstituted alkyl groups wherein the substituents are selected from the group consisting of halogen, hydroxyl, amino, nitro, carboxy, thio aryl, alkyl, alkoxy, aryloxy groups and mixtures thereof, such that the gellant is an asymmetric, di-chiral, di-hydroxy fatty acid that is about 90% or more in the R, R or S, S form and has from about 6 to about 30 carbon atoms; and

b) from about 10% to about 90% of a liquid base material liquid at ambient conditions including materials selected from the group consisting of volatile and non-polar oils, non-volatile and relatively polar co-solvents and mixtures thereof.

5,607,973

METHOD OF TREATING TRAUMATIC CNS TISSUE INJURY WITH A METABOTROPIC GLUTAMATE RECEPTOR AGONIST

Elizabeth Theriault, Playfair Neuroscience Unit, The Toronto Western Hospital, 399 Bathurst Street, Toronto, Canada

Filed Jun. 28, 1995, Ser. No. 496,065

Int. Cl.[6] A61K *31/195;31/19*

U.S. Cl. 514—561 **6 Claims**

1. An in vivo method of reducing the deleterious effect of traumatic CNS tissue injury by applying to said tissue a therapeutically effective amount of a metabotropic glutamate receptor agonist.

5,607,974

TREATMENT OF DISEASES ASSOCIATED WITH CYSTEINE DEFICIENCY

Wulf Dröge, Heidelberg, Germany; Leonard A. Herzenberg, and Leonore A. Herzenberg, both of Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif., and Deutsches Krebsforschungszentrum, Germany

Continuation of Ser. No. 913,752, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 302,396, Jan. 26, 1989, abandoned. This application Jan. 10, 1994, Ser. No. 180,778

Int. Cl.[6] A61K *31/195;31/70*

U.S. Cl. 514—562 **3 Claims**

1. A method for ameliorating the symptoms of a human patient suffering from lymphadenopathy syndrome, AIDS related complex, AIDS, or being seropositive for antibodies for HIV, said method consisting essentially of:

administering to said human HIV seropositive or infected patient N-acetyl cysteine or a pharmacologically acceptable salt thereof, in a physiologically effective amount of at least about 200 mg.

5,607,975

METHOD OF TREATING CATABOLIC, GUT-ASSOCIATED PATHOLOGICAL PROCESSES AND IMPAIRED HOST DEFENSES

Robert J. Smith, and Douglas Wilmore, both of Brookline, Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Division of Ser. No. 402,827, Mar. 13, 1995, which is a division of Ser. No. 51,941, Apr. 26, 1993, Pat. No. 5,397,803, which is a continuation-in-part of Ser. No. 845,819, Mar. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 360,839, Jun. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 906,530, Sep. 12, 1986, Pat. No. 4,857,555, which is a continuation-in-part of Ser. No. 775,214, Sep. 12, 1985, abandoned. This application May 7, 1996, Ser. No. 643,939

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—563 **5 Claims**

1. A method of promoting the recovery of an animal being treated by bone marrow transplantation comprising administering to said animal a therapeutically effective amount of GLN in an amount greater than that present in the normal diet of said animal wherein said animal has an increased sensitivity to infection due to said bone marrow transplantation.

5,607,976

SUBSTITUTED BENZENESULFONYL-THIOUREAS AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Heinrich Englert, Hofheim; Uwe Gerlach, Hattersheim; Peter Crause, Offenbach; Dieter Mania, Königstein; Heinz Gögelein, and Joachim Kaiser, both of Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

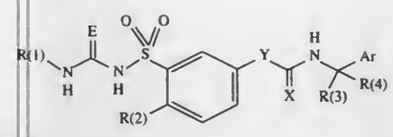
Filed Feb. 8, 1996, Ser. No. 598,319

Claims priority, application Germany, Feb. 10, 1995, 195 04 379.0

Int. Cl.[6] A61K *31/18;* **C07C** *311/58*

U.S. Cl. 514—584 **8 Claims**

1. A benzenesulfonylurea or benzenesulfonylthiourea of the formula I



I

in which:

R(1) is hydrogen, alkyl having 1, 2, 3, 4, 5 or 6 carbon atoms or cycloalkyl having 3, 4, 5 or 6 carbon atoms;

R(2) is alkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, alkoxy having 1, 2, 3, 4, 5 or 6 carbon atoms, mercaptoalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, cycloalkyl having 3, 4, 5 or 6 carbon atoms or (C_1–C_8) chains in which one to three carbon atoms can be replaced by O, NH or S;

R(3) and R(4) are identical or different and are hydrogen, alkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, or together form a $(CH_2)_{2-5}$ chain;

E is sulfur;

X is oxygen or sulfur;

is a hydrocarbon chain of the formula $[CR(5)_2]_m$; wherein R(5) is hydrogen or alkyl having 1 or 2 carbon atoms;

m is 1 or 2;

Ar is phenyl, thienyl, furyl, pyrrolyl, thiazolyl, naphthyl, or pyridyl,

which in each case is unsubstituted or substituted by one to 3 substituents selected from the group consisting of alkyl having 1 or 2 carbon atoms, alkoxy having 1 or 2 carbon atoms, Cl, Br and F.

5,607,977

BENZOYLUREAS

Heinz-Manfred Becher, Bingen am Rhein; Christo Drandarevski, Ingelheim am Rhein; Rudolf Mengel, Gau-Algesheim, and Walter Ost, Bingen am Rhein, all of Germany, assignors to Shell Agrar GmbH & Co. KG, Ingelheim am Rhein, Germany

Continuation of Ser. No. 597,272, Oct. 16, 1990, abandoned, which is a continuation of Ser. No. 430,917, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 260,458, Oct. 20, 1988, abandoned, which is a continuation of Ser. No. 76,266, Jul. 22, 1987, abandoned, which is a continuation of Ser. No. 900,430, Aug. 26, 1986, abandoned, which is a continuation of Ser. No. 780,045, Sep. 25, 1985, abandoned. This application Oct. 22, 1991, Ser. No. 780,457

Claims priority, application Germany, Sep. 29, 1984, 34 35 895.1; Mar. 14, 1985, 35 09 075.8; Jul. 18, 1985, 35 25 625.7

Int. Cl.[6] A01N *47/30;* **C07C** *275/30*

U.S. Cl. 514—594 **2 Claims**

1. N-(3,4,5-trichlorophenyl)-N'-(2,6-difluorobenzoyl)-urea.

5,607,978

NON-ACIDIC CYCLOPENTANE HEPTANOIC ACID, 2-CYCLOALKYL OR ARYLALKYL DERIVATIVES AS THERAPEUTIC AGENTS

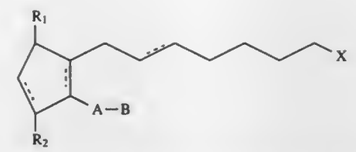
David F. Woodward, El Toro; Steven W. Andrews; Robert M. Burk, both of Irvine, and Michael E. Garst, Newport Beach, all of Calif., assignors to Allergan, Waco, Tex.

Continuation of Ser. No. 154,244, Nov. 18, 1993, abandoned, which is a division of Ser. No. 948,056, Sep. 21, 1992, Pat. No. 5,352,708. This application Jan. 11, 1995, Ser. No. 371,339

Int. Cl.[6] A61K *31/135;31/44;31/38;31/34*

U.S. Cl. 514—646 **8 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula I



wherein the dashed bonds represent a single or double bond which can be in the cis or trans configuration, A is an alkylene or alkenylene radical having from two to six carbon atoms, which radical may substituted with one or more hydroxy, oxo, alkyloxy or akylcarboxy groups, B is a cycloalkyl radical having from three to seven carbon atoms, or an aryl radical, selected from the group consisting of phenyl, thienyl, furanyl and pyridyl;

X is a radical selected from the group consisting of amino, radicals; one of R_1 and R_2 is =O,—OH or a —O(CO)R_6 group, and the other one is —OH or —O(CO)R_6, or R_1 is =O and R_2 is H, wherein R_6 is a saturated or unsaturated acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or —(CH_2)m R_7 wherein m is 0–10, and R_7 is cycloalkyl radical, having from three to seven carbon atoms, or an aryl radical, as defined above, or a pharmaceutically-acceptable salt thereof.

5,607,979

TOPICAL SKIN PROTECTANTS

Michael J. McCreery, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 30, 1995, Ser. No. 453,715

Int. Cl.[6] A61K *31/02;31/08*

U.S. Cl. 514—759 **11 Claims**

1. A topical skin protectant composition which comprises a dispersion of from at least 35% to about 50% by weight of finely divided polytetrafluoroethylene having a surface area below about 6 M^2/g in a liquid perfluorinated polyether having a viscosity between about 20 cSt and about 350 cSt.

5,607,980

TOPICAL COMPOSITIONS HAVING IMPROVED SKIN FEEL

David M. McAtee, Fairfield; Lourdes D. Albacarys, West Chester; Erik J. Hasenoehrl, Cincinnati, and Joseph A. Listro, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

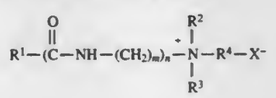
Filed Jul. 24, 1995, Ser. No. 505,988

Int. Cl.[6] A01N *47/10*

U.S. Cl. 514—476 **21 Claims**

1. A topical personal care composition comprising:

(a) from about 0.1% to about 20% by weight of an amphoteric surfactant having the following structure



wherein R^1 is unsubstituted, saturated or unsaturated, straight or

branched chain alkyl having from about 9 to about 22 carbon atoms; m is an integer from 1 to about 3; n is 0 or 1; R^2 and R^3 are independently selected from alkyl having from 1 to about 3 carbon atoms and monohydroxyalkyl having from 1 to about 3 carbon atoms; R^4 is selected from saturated or unsaturated alkyl having from 1 to about 5 carbon atoms and saturated or unsaturated monohydroxyalkyl having from 1 to about 5 carbon atoms; X is selected from the group consisting of CO_2, SO_3, and SO_4; and pharmaceutically acceptable salts of the foregoing compounds;

(b) from about 0.1% to about 20% by weight of an anionic surfactant selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkoyl isethionate, and mixtures thereof,

(c) from about 0.1% to about 15% by weight of a cationic surfactant, and

(d) from about 45% to about 99.7% by weight water.

5,607,981

METHOD OF MANUFACTURE OF PAINT AND ADHESIVE RUBBER FROM VULCANIZED RUBBER

Luiz C. Oliveira da Cunha Lima, Rio de Janeiro, Brazil, assignor to Relastomer S/A, Rio de Janeiro, Brazil

Continuation of Ser. No. 842,386, May 26, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 193,648

Claims priority, application Brazil, Jul. 26, 1990, 9003626

Int. Cl.[6] C08J *11/04;* **C08K** *3/08*

U.S. Cl. 521—41 **14 Claims**

1. A method of manufacturing a coating from scrap or waste vulcanized rubber comprising the steps of:

mixing said vulcanized rubber with an organic solvent;

grinding said vulcanized rubber mixture in a ball mill composed of an iron and manganese composition, to produce fine particles of a reclaimed rubber from said vulcanized rubber wherein said grinding also homogenizes said mixture to produce said coating which is both smooth and homogeneous.

5,607,982

FLEXIBLE OPEN-CELL POLYURETHANE FOAM

Duane A. Heyman, Monroe; Theodore M. Smiecinski, Woodhaven, and Donald C. Mente, Grosse Ile, all of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 272,475, Jul. 11, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,545

Int. Cl.[6] C08J *9/28*

U.S. Cl. 521—67 **20 Claims**

1. A method of preparing a flexible open-cell polyurethane foam comprising the steps of

(a) mixing

(1) a polyisocyanate component comprising monomeric or polymeric MDI, and

(2) a polyol component having at least 50% of its OH functional groups as secondary OH groups to form a polyurethane reaction mixture and filling a dispensing trough having an overflow weir with said polyurethane reaction mixture,

(b) causing the polyurethane mixture to flow across the overflow weir, thereby applying the polyurethane reaction mixture onto a moving substrate to form a polyurethane bun, and

(c) removing the polyurethane bun from the substrate.

5,607,983

FOAMABLE PLANT FIBER COMPOSITION AND THE FOAMED MATERIAL AND ARTICLE THEREOF

Hong Chi; Bai Lin, both of Faculty's Residence No. 9-12, Wuhan University of Hydraulic and Electric Engineering, Wuhan City, Hubei, 430072, China, and To lai Chung, Unit 300, 3/F., Block B, Seaview Estate, 2-8 Watson Road, North Point, Hong Kong

PCT No. PCT/CN95/00038, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO95/30710, PCT Pub. Date Nov. 16, 1995

PCT Filed May 10, 1995, Ser. No. 569,244

Claims priority, application China, May 10, 1994, 94105304.0

Int. Cl.[6] C08J *9/08*

U.S. Cl. 521—84.1 **11 Claims**

1. A foamable plant fiber composition used for preparation of a biodegradable foamed material and shaped article, characterized in that it is made from the following components by the following process:

a) from 6.8 to 12.4 percent by weight of short plant fiber,

b) from 6.2 to 17.0 percent by weight of plant fiber powder,

c) from 8.5 to 12.0 percent by weight of gelling material,

d) from 60.0 to 72.0 percent by weight of water,

e) from 0.4 to 0.7 percent by weight of foaming agent, and, if necessary

f) from 0.8 to 1.3 percent by weight of aids;

said process comprises adding the gelling material to water, heating the resultant mixture while stirring, adjusting the pH value to neutral after a semi-transparent colloid is formed, and adding the short plant fiber, the plant fiber powder, foaming agent, and if necessary the aids, then stirring and kneading thoroughly until the mixture is homogeneous.

5,607,984

FLEXIBLE POLYURETHANE FOAMS WITH REDUCED FOGGING EFFECT AND POLYESTERS SUITABLE FOR THEIR PREPARATION

Luis Duocastella-Codina, Santa Coloma de Cervello; Jose M. Monso-Capelliades, and Jose Soler-Llado, both of Barcelona, all of Spain, assignors to Hoocker, S.A., Barcelona, Spain

Filed Jun. 13, 1994, Ser. No. 259,757

Claims priority, application Spain, Jun. 11, 1993, P9301288

Int. Cl.[6] C08G *18/14*

U.S. Cl. 521—172 **4 Claims**

1. Polyester polyol containing less than 0.4% by weight of 8,13-dioxo-1,4,7-trioxacyclotridecane and made by reacting adipic acid with at least one polyalcohol, wherein said at least one polyalcohol includes diethylene glycol.

5,607,985

PHOTOPOLYMERIZATION INITIATOR FOR VISIBLE LIGHT-POLYMERIZING ADHESIVE

Elichi Masuhara, Bunkyo-ku; Shigeo Komiya, Urawa; Takeyuki Sawamoto, Suginami-ku, and Yumiko Satou, Hino, all of Japan, assignors to Adell Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01669, § 371 Date Oct. 4, 1994, § 102(e) Date Oct. 4, 1994, PCT Pub. No. WO94/14913, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 21, 1992, Ser. No. 290,867

Int. Cl.[6] C09J *4/00;* **C08F** *2/50*

U.S. Cl. 522—28 **7 Claims**

1. In a visible light-polymerizing adhesive for bonding glass, metal and/or ceramics which is colorless, transparent and can be cured under visible light, having an excellent ultraviolet light resistance when being cured, and including:

(a) a photopolymerization initiator,

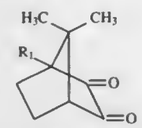
(b) 0.1 to 20 weight % of an aliphatic tertiary amine,

(c) 5 weight % or more of hydroxyethyl(meth)acrylate,

(d) a monofunctional (meth)acrylate having one (meth)acrylate group, and

(e) 10 weight % or more of a polyfunctional(meth)acrylate having more than one (meth)acrylate group, the improvement which comprises said photopolymerization initiator comprising

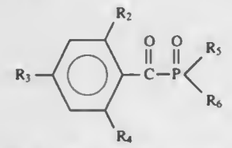
0.01 to 5 weight % of Compound (1) represented by the following formula (1)



(1)

wherein R_1 represents a substituent selected from $—CH_3$, —COOH, $—COOCH_2CH_2Br$, —COCl and $—COOCH_3$, and

0.01 to 5 weight % of Compound (2) represented by the following formula (2)



(2)

wherein R_2, R_3, and R_4 are each independently hydrogen or methyl, and R_5 and R_6 are each independently phenyl, methoxy or ethoxy, wherein the ratio of the amount of Compound (1) to the amount of Compound (2) is in the range of 1:5 to 5:1.

5,607,986

HEAT CURED FOUNDRY MIXES AND THEIR USE

Young D. Kim, deceased, late of Dublin, and A. Leonard Haugse, Dublin, both of Ohio, assignors to Ashland Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 180,264, Jan. 12, 1994, abandoned. This application Apr. 17, 1995, Ser. No. 423,599

Int. Cl.[6] B22C *1/22*

U.S. Cl. 523—141 **12 Claims**

1. A nitrogen free heat foundry mix essentially free of free formaldehyde comprising:

A. a major amount of foundry aggregate;

B. a foundry binder comprising:

(1) from about 50 to about 90 parts by weight of a nitrogen free modified furan resin;

(2) from about 1 to about 10 parts by weight of furfuryl alcohol;

(3) from about 3 to about 20 parts by weight of polyvinyl acetate; and

(4) from about 3 to about 20 parts by weight of a tar selected from the group consisting of resorcinol pitch, bisphenol A tar, and mixtures thereof;

wherein said parts by weight of the binder components are based upon 100 parts the weight of the binder, and

C. from 1 part by weight to about 45 parts by weight percent of a latent acid curing catalyst where said parts by weight of said latent curing catalyst are based upon the total weight of the binder, and the weight ratio of foundry aggregate to binder is from 100:1 to 100:10.

5,607,987

2-(2-HYDROXY-3-α CUMYL-5-TERT NONYL OR DODECYL PHENYL)-2H- BENZOTRIAZOLE UV ABSORBERS

Roland A. E. Winter, Armonk; Ramanathan Ravichandran, Nanuet; Mark S. Holt, West Nyack; Volker H. von Ahn, Mahopac; Joseph E. Babiarz, Amawalk, all of N.Y., and David G. Leppard, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 466,851, Jun. 6, 1995, which is a division of Ser. No. 424,843, Apr. 19, 1995. This application Apr. 5, 1996, Ser. No. 628,433

Int. Cl.[6] C08K *5/3475*

U.S. Cl. 524—91 **1 Claim**

1. A composition stabilized against the deleterious effects of actinic light which comprises

(a) an organic material subject to the deleterious effects of actinic light, and

(b) an effective stabilizing mount of a soluble benzotriazole UV absorber which is 2-(2-hydroxy-3-α-cumyl-5-nonylphenyl)-2H-benzotriazole or 2-(2-hydroxy-3-α-cumyl 5-dodecylphenyl)- 2H-benzotriazole.

5,607,988

STABILIZED POLYMERIC MATERIAL COMPOSITION

Kazuo Maekawa; Yutaka Nakahara, and Kouzaburo Shinpo, all of Saitama-ken, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 154,000, Nov. 18, 1993, Pat. No. 5,455,347. This application Jun. 7, 1995, Ser. No. 477,318

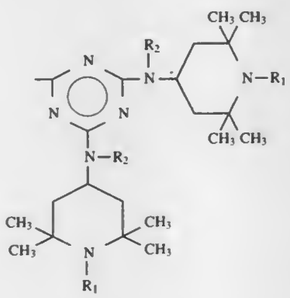
Int. Cl.[6] C08K *5/34;* **C07D** *403/14*

U.S. Cl. 524—100 **8 Claims**

1. A stabilized polymeric material composition obtained by adding 0.001 to 5 parts by weight of at least one piperidine compound represented by the following general formula (I):

$$A[(O—X)_n NH—Y]_m \quad (I)$$

(wherein A represents a residue formed by eliminating m hydroxyl groups from a polyhydric (tri- to hexa-hydric) alcohol; X represents an alkylene group having 2 to 4 carbon atoms; n is an integer of from 1 to 15; m is an integer of from 3 to 6; and Y represents a group:



wherein R_1 represents a hydrogen atom, an alkyl, alkoxy or acyl

group having 1 to 18 carbon atoms or an oxygen free radical; and R_2 represents a hydrogen atom or an alkyl group having 1 to 18 carbon atoms), to 100 parts by weight of a polymeric material selected from the group consisting of polyolefin, polyvinyl chloride, ABS resin and thermoplastic polyurethane resin.

5,607,989

PIPERIDINYL PHOSPHITE COMPOSITIONS AND POLYOLEFIN COMPOSITIONS CONTAINING THEM

Clyde E. Bishop, Hockessin; Vu A. Dang, Bear, and Joseph Metrick, Wilmington, all of Del., assignors to Montell North America Inc., Wilmington, Del.

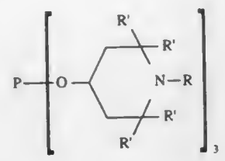
Continuation of Ser. No. 145,288, Oct. 29, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 374,394

Int. Cl.[6] C08K *5/524*

U.S. Cl. 524—102 **5 Claims**

1. A process for preparing a piperidinyl phosphite composition comprising:

(1) mixing a solution of (a) a piperidinyl phosphite compound of the formula:



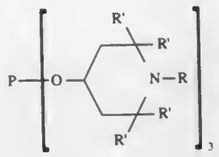
wherein R is a C_{1-4} alkyl, a C_{1-4} alkoxy or a C_{1-8} alkanoyl group, and R' is a C_{1-4} alkyl group, in a solvent, with a solution of a sorbitol compound having a melting point greater than 155° C. selected from the group consisting of dibenzylidene sorbitol, bis(p-methylbenzylidene) sorbitol, bis(3,5-dimethylbenzylidene) sorbitol and bis(p-ethylbenzylidene) sorbitol, in a solvent, wherein both solvents are polar solvents that do not react with the piperdinyl phosphite compound or with the sorbitol compound and the ratio of (a) to (b) is from 1:1 to 1:10 or 2:1,

(2) evaporating the solvent to obtain a mixture of the piperidinyl phosphite compound and the sorbitol compound,

(3) drying the mixture, and

(4) pulverizing.

3. A polyolefin composition comprising (A) 100 parts of a propylene polymer material and (B) from 0.02 to 0.6 parts of a piperidinyl phosphite composition consisting essentially of a mixture of (a) a piperidinyl phosphite compound of the formula:



wherein R is a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a C_{1-8} alkanoyl group, and R' is a C_{1-4} alkyl group; and (b) a sorbitol compound having a melting point greater than 155° C. selected from the group consisting of dibenzylidene sorbitol, bis(p-methylbenzylidene) sorbitol, bis(3,5-dimethylbenzylidene) sorbitol and bis(p-ethylbenzylidene) sorbitol, wherein the ratio of (a) to (b) is from 1:1 to 1:10 or 2:1 and the mixture is prepared by the process of claim 1.

5,607,990

METHOD FOR MAKING PHENOL-FORMALDEHYDE RESINS FLAME-RESISTANT

Karlheinz Dorn, Budenheim; Klaus Frankenfeld, Hünfelden; Hans-Dieter Nägerl, Dudenhofen, and Klaus Sommer, Bad Dürkheim, all of Germany, assignors to Chemische Fabrik Budenheim Rudolf A. Oetker, Budenheim, Germany

PCT No. PCT/EP92/02320, § 371 Date Jul. 11, 1994, § 102(e) Date Jul. 11, 1994, PCT Pub. No. WO93/07192, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 8, 1992, Ser. No. 211,432

Claims priority, application Germany, Oct. 11, 1991, 41 33 753.0

Int. Cl.[6] C08K *5/49;* **C08G** *8/28*

U.S. Cl. 524—115 **16 Claims**

1. A method of making phenol-formaldehyde resins and products containing said resins flame-resistant, which comprises incorporating one or more halogen-free phosphorus compounds being bonded to the resin structure through covalent bonds or being occluded in the resin structure or both, as such or in the form of aggregates or condensates, upon further processing of the resins, said halogen-free phosphorus compounds being selected from the group consisting of:

a) esters of oxygen-containing acids of phosphorus with hydroxyl-group containing carbon compounds, which esters have at least one free hydroxyl group bonded to phosphorus;

b) heteropoly acids of phosphorus and salts thereof; and

c) salts of heteropoly acids of phosphorus with trivalent cations and tin salts of said acids.

5,607,991

METAL ORGANIC COMPOUNDS AND THEIR USE

Philip E. R. Tate, Stockport; John W. Prince, Rochdale, and John M. Hilton, Bolton, all of United Kingdom, assignors to Rhone-Poulenc Chemicals Limited, Hertfordshire, United Kingdom

Filed Jun. 16, 1995, Ser. No. 491,199

Claims priority, application United Kingdom, Jun. 20, 1994, 9412363

Int. Cl.[6] C08K *5/55*

U.S. Cl. 524—184 **2 Claims**

1. A rubber skim stock comprising rubber, conventional rubber compounding ingredients and, as adhesion promoter, at least one metal organic compound of average formula:

$$B(OCoA)_m\ (ONiA)_{3-m}$$

where the A radicals are the same or different and each is a residue of an aliphatic monocarboxylic acid of 7 to 24 carbon atoms, a resin acid, a naphthenic acid, or an aromatic carboxylic acid of 7 to 11 carbon atoms, not more than two thirds of the A radicals being a said aromatic carboxylic acid residue, and m is 0.5 to 2.5.

5,607,992

SILICONE RUBBER COMPOSITION FOR INJECTION MOLDING

Shuji Chiba, and Takeshi Matsumoto, both of Tokyo, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 297,037, Aug. 29, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 605,807

Claims priority, application Japan, Aug. 27, 1993, 5-212449

Int. Cl.[6] C08K *5/23*

U.S. Cl. 524—190 **12 Claims**

1. A silicone rubber composition for injection molding, which comprises

(A) 100 parts by weight of a polyorganosiloxane having at least 2 monovalent aliphatic unsaturated hydrocarbon groups bonded to a silicon atom in the molecule;

(B) a polyorganohydrogensiloxane having at least 3 hydrogen atoms bonded to the silicon atom in the molecule in an amount such that the number of the hydrogen atoms bonded to the silicon atom becomes from 0.5 to 5 per one monovalent aliphatic unsaturated hydrocarbon group in the component (A);

(C) a platinum type catalyst in an amount of from 1 to 100 ppm by weight converted as a platinum atom based on the weight of the component (A);

(D) from 20 to 200 parts by weight of a silica fine powder;

(E) from 0.01 to 1.0 part by weight of azodicarbon amide;

(F) from 0.5 to 15 parts by weight of carbon black; and

(G) from 0.1 to 2.0 parts by weight of at least one kind of cerium hydroxide and cerium oxide.

5,607,993

LOW-DENSITY BOUNCING PUTTY

Michael Christy, Pleasanton, Calif., assignor to North Coast Medical, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 18,142, Feb. 16, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 202,517

Int. Cl.[6] C08K *5/29;* **C08F** *283/12;* **C08L** *85/04*

U.S. Cl. 524—237 **23 Claims**

Additive ->	Density	Working Life	Resistance to Flow	Stickiness
Reinforcing Fillers	↑	↑	↑	↓
Microspheres	↓	↓	↑	↓
Moisture Scavenger	↑	↑	↑	↓
Thinning Oil	↑	↓	↓	↑
Lubricating Oil	↑	↑	–	↓
Glycerine	↑	↑	↑	↓

1. A bouncing putty comprising a borosilicone rubber base and a density-reducing filler wherein said density-reducing filler comprises rubber-base-compatible particles,

said particles having an average particle size less than about 200 μm, and

each of said particles having a contained volume which comprises a substantial percentage of gas and has a final density of approximately 0.33 to 0.95 g/cc.

5,607,994

PROCESSIBILITY AND LACING RESISTANCE WHEN SILANIZED PIGMENTS ARE INCORPORATED IN POLYMERS

Patricia A. Tooley, Wilmington; Dwight A. Holtzen, Newark, and Joseph A. Musiano, New Castle, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1994, Ser. No. 203,108

Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—265 **9 Claims**

1. A polyethylene matrix consisting essentially of polyethylene and about 50 to about 87% by weight silanized TiO_2 pigment, based on the weight of the polyethylene matrix, exhibiting enhanced processibility, wherein the TiO_2 pigment has a coating of about 0.1 to about 5% by weight, based on the weight of the silanized TiO_2, of at least one organosilicon compound having the formula:

$$R_xSi(R')_{4-x}$$

wherein

R is a nonhydrolyzable aliphatic, cycloaliphatic or aromatic group having 8–20 carbon atoms;

R' is a hydrolyzable group selected from alkoxy, halogen, acetoxy or hydroxy or mixtures thereof; and

x=1 to 3.

2. A polyethylene matrix consisting essentially of polyethylene and about 50 to about 87% by weight silanized TiO_2 pigment, based on the weight of the polyethylene matrix, wherein the TiO_2 pigment has a coating of about 0.1 to about 5% by weight, based on the weight of the silanized TiO_2, of an organosilicon compound comprising a mixture of (a) and (b) wherein

(a) is at least one silane having the formula:

$$R_xSi(R')_{4-x}$$

wherein

R is a nonhydrolyzable aliphatic, cycloaliphatic or aromatic group having 1–20 carbon atoms;

R' is a hydrolyzable group selected from alkoxy, halogen, acetoxy or hydroxy or mixtures thereof; and

x=1 to 3; and

(b) is at least one polysiloxane having the formula:

$$(R_nSiO_{\frac{4-n}{2}})_m$$

wherein

R is an organic or inorganic group;

n=0–3; and

m≧2.

5,607,995

LOW GLOSS COMPOSITIONS FOR HIGH REFLECTANCE FILMS IN THE INFRA RED RANGE

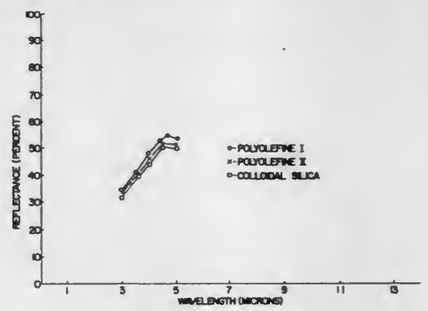
Shulamit Wassermann, Haifa, Israel, assignor to State of Israel- Ministry of Defence, Haifa, Israel

Continuation-in-part of Ser. No. 201,647, Feb. 25, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 583,218

Claims priority, application Israel, Mar. 25, 1993, 105167

Int. Cl.[6] C08K *3/20;7/00*

U.S. Cl. 524—431 **8 Claims**



1. A paint composition capable of providing a low-gloss film or coating with a light reflectance in thermal infra-red wavelengths in the range of 3–5 and 8–12 micrometers, comprising:

(a) a binder which is not a cationic resin possessing amino group(s), said binder being chemically inert with respect to polyethylene or polypropylene, said binder being selected from the group consisting of an alkyd, acrylic, polyvinyl acetate, a polyurethane, an epoxy resin and mixtures thereof, to impart film forming properties, and

(b) 0.1% to 10% by weight of the composition of filler particles having a particle size below 110 micrometers being characterized that said filler comprises a polyolefin selected from the group consisting of polyethylene, polypropylene, copolymers of ethylene and propylene and mixtures thereof, said paint compositions having less than 5% gloss measured at 60 degrees, said paint composition having an index of refraction of the polyolefin-air of 4% different than that of the binder-air, said filler imparting to the composition a matte property at the visible light.

5,607,996

ELECTRORHEOLOGICAL ELASTOMERS USEFUL AS VARIABLE STIFFNESS ARTICLES

Mark E. Nichols, Saline; John M. Ginder, Plymouth; Larry D. Elie, Ypsilanti, and Robert A. Pett, Franklin, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1994, Ser. No. 318,395

Int. Cl.[6] C08F *3/08;3/22;* H01B *1/02*

U.S. Cl. 524—439 8 Claims

1. An electrorheological elastomer composition comprising natural rubber and polarizable particles dispersed therein in a weight ratio of 1:0.5–3.5 of natural rubber:particles, said elastomer (a) having a Youngs modulus of at least about 2 MPa and (b) undergoing changes in said modulus when subjected to a changing electric field, wherein the ratio of the electrical conductivity of said particles to the electrical conductivity of said natural rubber is between about 10^4 and 10^{10}, said particles consisting of inorganic semiconductor materials selected from the group consisting of aluminosilicate, silicon, germanium, gallium arsenide, group II–IV compound semiconductor materials and metal oxide compounds.

5,607,997

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITION

Tsuneo Kimura, and Yoshio Inoue, both of Matsuida-machi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,883

Claims priority, application Japan, Oct. 13, 1994, 6-274553; Oct. 21, 1994, 6-282780

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—493 9 Claims

1. A room temperature curable organopolysiloxane composition comprising:

(A) a diorganopolisiloxane terminated with a hydroxyl group at both ends of its molecular chain having a viscosity of 25 to 1,000,000 cSt at 25° C., represented by the following general formula (1):

$$HO(RR'SiO)_pH \quad (1)$$

wherein R and R', which may be the same or different, are each a unsubstituted or substituted monovalent hydrocarbon group, and P is an integer of 10 or more;

(B) at least one compound selected from the group consisting of an organosilane or straight chain organosiloxane represented by the following general formula (2):

$$HO(R^1R^2SiO)_LH \quad (2)$$

wherein R^1 and R^2, which may be the same or different, are each a unsubstituted or substituted monovalent hydrocarbon group, and L is an integer of 1 to 5, and a straight chain organosiloxane represented by the following general formula (3):

$$(R^3)_3SiO(R^1R^2SiO)_M[R^1Si(OH)O]_NSi(R^3)_3 \quad (3)$$

wherein R^1 and R^2 are as defined above, R^3 is a unsubstituted or substituted monovalent hydrocarbon group, N is an integer of 2 to 5, and M is 0 or a positive integer provided that M+N equals to 2 to 5;

(C) a hydrolyzable silane represented by the following general formula (4):

$$(R^4)_ASiX_{(4-A)} \quad (4)$$

wherein R^4 is a unsubstituted or substituted monovalent hydrocarbon group, X is a hydrolyzable group, and A is 0 or 1; and

(D) a silica filler having a specific surface area of 50 m^2/g or more.

5,607,998

PROCESS FOR THE REPAIR OF PLASTIC PARTS USING NON-SAGGING, SANDABLE POLYURETHANE COMPOSITIONS

Peter H. Markusch, McMurray; Jack W. Hausser, Bethel Park, and Rick V. Starcher, Monaca, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 338,989, Nov. 14, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,918

Int. Cl.[6] B31B *1/60;* B32B *31/00;* C09J *4/00;101/00*

U.S. Cl. 524—494 7 Claims

1. A process of repairing a plastic part comprising:

1) mixing

A) a liquid polyisocyanate having an isocyanate content of from about 10 to 50% by weight,

B) a liquid isocyanate-reactive mixture comprising:

i) from 40 to 98% by weight, based on 100% by weight of component B), of one or more hydroxyl group containing compounds having from 2 to 8 hydroxyl groups and molecular weight of from about 500 to 6000,

ii) from 2 to 30% by weight, based on 100% by weight of component B), of one or more organic compounds containing at least one amine group and being selected from the group consisting of diamines, polyamines, amine terminated polyethers and mixtures thereof, wherein at least one of said compounds contains at least one aromatic amine group, and

iii) from 0 to 30% by weight, based on 100% by weight of component B), of one or more low molecular weight diols or triols having hydroxy equivalent weights of about 200 or less; and

C) from 20 to 40% by weight, based on 100% by weight of components A), B) and C), of an inorganic filler mixture consisting of:

i) from 20 to 70% by weight, based on 100% by weight of total filler, of glass flakes, and

ii) from 30 to 80% by weight, based on 100% by weight of total filler, of talc;

to form a non-sagging reaction mixture wherein component C) is dispersed in components A) and/or B) to form a phase-stable dispersion prior to mixing components A) and B), and components A) and B) are present in quantities such that the isocyanate index of the resultant polyurethane composition is from 90 to 120;

2) applying said non-sagging reaction mixture to said plastic part, and

3) allowing said non-sagging reaction mixture to cure, thereby forming a sandable polyurethane composition.

5,607,999

WATER-BASED RECORDING INK

Junko Shimizu; Michinari Tsukahara, and Nobuyuki Yanase, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

PCT No. PCT/JP92/00652, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/20749, PCT Pub. Date Nov. 26, 1992

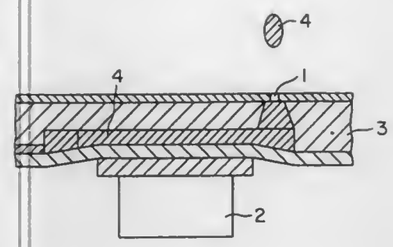
PCT Filed May 21, 1992, Ser. No. 969,808

Claims priority, application Japan, May 22, 1991, 3-117512; Jun. 3, 1991, 3-130867; Jul. 9, 1991, 3-167973; Jul. 22, 1991, 3-180987; Aug. 2, 1991, 3-194059; Mar. 18, 1992, 4-062399; Mar. 18, 1992, 4-062400; Apr. 15, 1992, 4-095519

Int. Cl.[6] C08L *29/04*

U.S. Cl. 524—503 28 Claims

1. An ink composition for use in ink jet recording, said composition comprising water, a water-soluble homopolymer, a water-soluble copolymer having both a hydrophobic portion and a hydrophilic portion, and a pigment dispersible in said composition, said water-soluble homopolymer and water-soluble copolymer being present in said composition in respective amounts sufficient to improve dispersion stability of said pigment in said composition,



with said water-soluble copolymer being present in the composition in an amount of between 0.1 to 1.5 weight percent.

5,608,000

AQUEOUS POLYURETHANE DISPERSION ADHESIVE COMPOSITIONS WITH IMPROVED HEAT RESISTANCE

Youlu Duan, Minneapolis, and Sonja Stammler, Marine On the St. Croix, both of Minn., assignors to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 126,508, Sep. 24, 1993, abandoned. This application Sep. 9, 1994, Ser. No. 304,653

Int. Cl.[6] C08L *75/06;* C08G *18/46;* C09D *175/06;* C09J *175/06*

U.S. Cl. 524—591 28 Claims

1. An aqueous dispersion of an anionic polyurethane, the polyurethane comprising the reaction product of an isocyanate terminated polyurethane prepolymer, and an amine functional chain extender, the polyurethane prepolymer comprising the reaction product of a polyol component and a diisocyanate component, the polyol component comprising:

a sulfonated polyester polyol,

a hydroxy carboxylic acid of the formula:

$$(HO)_xR(COOH)_y$$

wherein (R) represents a straight or branched, hydrocarbon radical containing 1 to 12 carbon atoms, and x and y represent values from 1 to 3, and

a low molecular weight aliphatic diol having a number average molecular weight of from 60 to 400.

5,608,001

PREPARATION OF POLYMERS OF CARBON MONOXIDE AND AN ALIPHATIC ALPHA-OLEFIN

Simona Bronco, Zurich; Giambattista Consiglio, Schwerzenbach; Silvia Di Benedetto, Zurich, all of Switzerland; Eit Drent, Amsterdam, Netherlands; Hero J. Heeres, Amsterdam, Netherlands; Johannes A. M. Van Broekhoven, Amsterdam, Netherlands, and Marinus J. Reynhout, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 31, 1995, Ser. No. 457,965

Claims priority, application United Kingdom, May 31, 1994, 9410884

Int. Cl.[6] C08K *5/49*

U.S. Cl. 524—709 3 Claims

1. A process for the preparation of copolymers of carbon monoxide with an aliphatic -olefin having at least 3 and at most 10 carbon atoms which copolymers are made up of linear chains in which the units originating in the aliphatic -olefin alternate with units originating in carbon monoxide, which process comprises contacting a mixture of the monomers with a catalyst composition comprising

a) a palladium compound,

b) an anion, and

an asymmetric phosphorus bidentate ligand of the general formula $R^5R^6P—Q—CHR^9—PR^7—R^8—$, wherein Q is a 1,2-ferrocenyl bridging group, R^5, R^6, R^7 and R^8 are identical or different optionally polar substituted hydrocarbyl groups and R^9 is hydrogen or an optionally polar substituted hydrocarbyl group.

5,608,002

WATER- AND OIL-REPELLING AGENT COMPOSITION AND PROCESS FOR PREPARING THE SAME

Motonobu Kubo, and Kazunori Hayashi, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/01778, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO95/11949, PCT Pub. Date May 4, 1995

PCT Filed Oct. 21, 1994, Ser. No. 464,711

Claims priority, application Japan, Oct. 28, 1993, 5-266103

Int. Cl.[6] C08K *5/02;* C08F *16/24;14/18;12/20*

U.S. Cl. 524—795 18 Claims

1. A process for preparing a water- and oil-repelling agent composition, which comprises solution-polymerizing a polymerizable monomer component which contains at least a monomer having a polyfluoroalkyl group in a polymerizing solvent which contains at least one compound (A) selected from the group consisting of

1,1-dichloro-1-fluoroethane,
1,1-dichloro-2,2,3,3,3-pentafluoropropane,
1,3-dichloro-1,1,2,2,3-pentafluoropropane,
1,1,1,2,2-pentafluorobutane,
1,1,1,2,3,3,4-heptafluorobutane,
1,1,1,2,3,4,4-heptafluorobutane,
1,1,2,2,3,4,4-heptafluorobutane,
1,2,3,3,4,4-hexafluorocyclobutane,
2-trifluoromethyl-1,1,1,2,4,4-hexafluoropentane,
1,1,1,2,2,5,5,5-octafluoropentane,
2-trifluoromethyl-1,1,1,2,3,3,4,4-octafluoropentane,
2-trifluoromethyl-1,1,1,4,4,5,5,5-octafluorohexane,
2-trifluoromethyl-1,1,1,2,3,4,5,5,5,-nonafluorohexane and
2-trifluoromethyl-1,1,1,3,3,4,4,5,5,5-decafluorohexane,

said solvent containing the compound (A) in an amount of at least 5% by weight.

5,608,003

AQUEOUS FLUOROCHEMICAL COMPOSITIONS AND ABRASION-RESISTANT COATINGS THEREFROM

Dong-Wei Zhu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 23, 1995, Ser. No. 494,157

Int. Cl.[6] C08L *39/00*

U.S. Cl. 524—516 **23 Claims**

1. A water-based composition comprising an aqueous solution, emulsion, or dispersion of (a) a water-soluble or water-dispersible polymer or oligomer having at least one anionic moiety which is capable of reacting with an oxazoline or oxazine moiety; (b) a water-soluble or water-dispersible polymer or oligomer having at least one oxazoline or oxazine moiety; and (c) colloidal silica; at least one of said components (a) and (b) further comprising at least one fluoroaliphatic moiety and at least one silyl moiety.

5,608,004

WATER BASE COATING COMPOSITION

Tsunehiko Toyoda, Yokohama; Harufumi Tsuchiya, Nara-ken; Hiroaki Omoto, Nishinomiya; Mitsuru Kohno, Sanda, and Maki Ii, Osaka, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Apr. 5, 1995, Ser. No. 416,983

Claims priority, application Japan, Apr. 6, 1994, 6-068258

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *51/00;67/00*

U.S. Cl. 524—539 **11 Claims**

1. A water base coating composition having a solid content of from 50 to 80 wt % and having a curable binder component dissolved or dispersed in a solvent mixture comprising water and a hydrophilic organic solvent, said curable binder component comprising from 30 to 95 wt % of a crosslinkable polyester resin obtained from an aromatic polybasic carboxylic acid or its acid anhydride and a polyhydric alcohol and having a hydroxyl value of from 100 to 280 and an acid value of from 0 to 15, and as a crosslinking agent from 70 to 5 wt % of a melamine resin and/or a benzoguanamine resin.

5,608,005

PROCESS FOR VISCOSIFYING WATER WITH CARBOXYLIC ACID MONOMERS POLYMERIZED IN SILICONE SOLVENTS

Milan F. Sojka, Algonquin, Ill., assignor to AMCOL International Corporation, Arlington Heights, Ill.

Division of Ser. No. 327,580, Oct. 24, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,999

Int. Cl.[6] C08L *31/00;* **C08F** *2/00*

U.S. Cl. 524—556 **23 Claims**

1. A process for increasing the viscosity of water, comprising:

copolymerizing a carboxylic acid monomer selected from the group consisting of acrylic acid, neutralized acrylic acid, and mixtures thereof, and a polyfunctional cross-linker monomer in a mole ratio of about 1:0.03 to 1:0.10, respectively, in a silicone solvent, under an inert atmosphere, in the presence of an effective amount of an initiator to form a polymer; and

adding an effective amount of said polymer to said water.

5,608,006

ENTRAPPED NON-ENZYMATIC MACROMOLECULES FOR CHEMICAL SENSING

Joel Myerson, Berkely, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 273,384, Jul. 11, 1994, Pat. No. 5,501,836. This application Dec. 12, 1995, Ser. No. 571,057

Int. Cl.[6] C08G *63/48;63/91*

U.S. Cl. 525—54.1 **7 Claims**

1. A method of making a sensor element useful in making optical measurements, said sensor element comprising a porous matrix and an immobilized structural component entangled within the porous matrix, wherein the immobilized structural component includes an indicator material, the sensor element being made by the steps of:

a) selecting a precursor composition capable of forming a sol-gel glass;

b) selecting at least one type of non-enzymatic macromolecule which has attached to it indicator molecules;

c) making a sol;

d) adding the macromolecule (from step b) to the sol;

e) making a sol-gel from the product of step d;

f) making a sol-gel glass from the product of step c.

5,608,007

Patent Not Issued For This Number

5,608,008

POLYPROPYLENE RESIN COMPOSITION AND MOLDED PRODUCT

Hiroshi Miyata; Masayuki Yamaguchi, and Kenichi Suzuki, all of Yokkaichi, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Feb. 1, 1996, Ser. No. 595,865

Claims priority, application Japan, Feb. 3, 1995, 7-017208; Feb. 3, 1995, 7-017209

Int. Cl.[6] C08L *23/10;23/18;53/00*

U.S. Cl. 525—240 **7 Claims**

1. A polypropylene resin composition comprising from 5 to 99.9 wt % of a polypropylene resin (A) and from 95 to 0.1 wt % of an ethylene/α-olefin copolymer elastomer (B) satisfying the following conditions (a) to (d):

(a) the α-olefin has a carbon number of from 4 to 20,

(b) the α-olefin content is larger than 65 wt % and at most 95 wt %,

(c) the density at 23° C. is less than 0.88 g/cm^3, and

(d) no peak of crystal fusion is observed by a DSC method.

5,608,009

OLEFIN COPOLYMER AND PROCESS FOR PREPARING SAME

Shuji Machida; Haruo Shikuma; Toshinori Tazaki; Tomio Tatsumi, and Shinichi Kurokawa, all of Kamiizumi Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01556, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/10216, PCT Pub. Date May 11, 1994

PCT Filed Oct. 28, 1993, Ser. No. 424,384

Claims priority, application Japan, Oct. 28, 1992, 4-290386; May 28, 1993, 5-127154

Int. Cl.[6] C08F *255/02;255/08;279/02*

U.S. Cl. 525—247 **9 Claims**

1. An olefin graft copolymer prepared by the graft polymerization of an olefin copolymer and an olefin, wherein said olefin copolymer comprises a unit (1) which is at least one member selected from the group consisting of ethylene, α-olefins having 3 to 20 carbon atoms and cyclic olefins and a unit (2) which is a diolefin and in which a weight-average molecular weight is in the range of 200 to 800,000, the content of the diolefin unit is in the range of 0.002 to 30 mol%, and a relation between the content of the diolefin unit (DOU mol%) and the total content of unsaturated groups observed in a molecular chain (TUS mol%) meets the formula

$$0.001<TUS/DOU<200.$$

5,608,010

POLYMERS OF ACRYLIC ACID ESTER DERIVATIVES HAVING A TRIPHENYL AMINE SKELETON

Hiroshi Tamura, Susono; Toshio Fukagai; Naoshi Mishima, both of Numazu, and Masaomi Sasaki, Susono, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

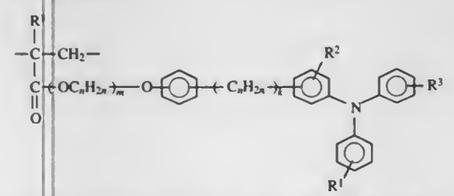
Division of Ser. No. 215,606, Mar. 22, 1994, Pat. No. 5,488,137, which is a division of Ser. No. 912,200, Jul. 13, 1992, Pat. No. 5,322,753. This application Aug. 7, 1995, Ser. No. 511,898

Claims priority, application Japan, Jul. 12, 1991, 3-198898

Int. Cl.[6] C08F *8/30;20/36*

U.S. Cl. 525—328.2 **5 Claims**

1. A polymer comprising an acrylic acid ester moiety of formula (I) as repeat unit:



(I)

wherein R^1 represents hydrogen or a methyl group; R^2, R^3, and R^4 each represent hydrogen, an alkyl group having 1 to 4 carbon atoms, a benzyl group, a phenyl group, a phenoxyl group, chlorine or bromine; n is an integer of 1 to 4; m is 0 or 1; and k is 0 or 1.

5,608,011

CROSSLINKABLE POLYMER POWDER COMPOSITIONS

Herbert Eck, Burghausen; Peter Ball; Hermann Lutz, both of Emmerting, and Heinrich Hopf, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Sep. 11, 1995, Ser. No. 526,537

Claims priority, application Germany, Sep. 15, 1994, 44 32 899.0

Int. Cl.[6] C08C *19/20;* **C08F** *8/34;* **C08K** *5/41;3/30*

U.S. Cl. 525—344 **12 Claims**

1. A water-dispersible or water-soluble polymer powder composition which can be crosslinked or condensed by acid and comprises

I) at least one pulverulent water-dispersible or water-soluble copolymer which can be crosslinked or condensed by acid,

II) at least one pulverulent water-dispersible or water-soluble compound selected from the group consisting of alkali metal or ammonium peroxo acid salts, and

III) at least one pulverulent water-dispersible or water soluble reducing agent.

5,608,012

COPOLYMERS, THEIR PREPARATION, AND THEIR USE IN HIGH-SOLIDS COATING COMPOSITIONS

Ulrich Epple; Uwe Kubillus, and Holger Schmidt, all of Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 278,065, Jul. 20, 1994, abandoned. This application May 8, 1995, Ser. No. 436,719

Claims priority, application Germany, Aug. 9, 1993, 43 26 656.8

Int. Cl.[6] C08F *8/30;220/32;220/02;220/10;* **B32B** *27/28*

U.S. Cl. 525—374 **20 Claims**

1. A copolymer having a low solution viscosity of less than 2000 mPa•s in 50% strength solution which is prepared by a bulk copolymerization process wherein a first component (A) is charged initially, and at least two olefinically unsaturated copolymerizable monomers (B) are added and polymerized, at least one of which contains at least one functional group which remains after the polymerization, and at least one of which is sterically hindered, wherein the compound (A) contains a functional group that reacts with the functional group in (B) to form a chemical bond,

and wherein the copolymer is modified by reaction with one or more isocyanate compounds that contain from 0.8 to 1.5 free NCO groups per molecule.

5,608,013

POLYIMIDES AND THERMOSETTING RESIN COMPOSITIONS CONTAINING THE SAME

Hidekazu Matsuura, Oyama, and Yasuo Miyadera, Tsukuba, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

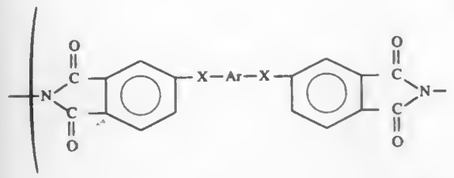
Continuation of Ser. No. 697,021, May 8, 1991, abandoned. This application Mar. 7, 1995, Ser. No. 399,515

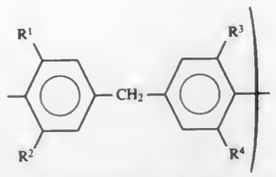
Claims priority, application Japan, May 10, 1990, 2-120981; May 10, 1990, 2-120982

Int. Cl.[6] C08G *73/10;18/30;* **C08L** *79/08*

U.S. Cl. 525—422 **7 Claims**

1. A polyimide comprising 10 to 90 mole % of repeating units of the formula:



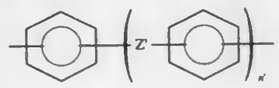


wherein Ar is a divalent group represented by the following formula (a) or (b):

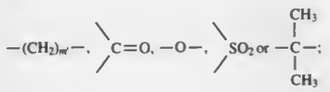
(a):



wherein hydrogen atoms in each benzene ring is unsubstituted or is substituted with one or more alkyl groups having 1 to 3 carbon atoms or alkoxy groups having 1 to 2 carbon atoms, two or more of these substituents being the same or different, or (b):

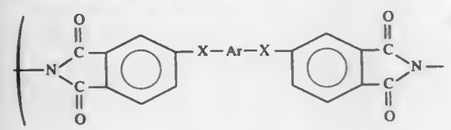


wherein Z' is



n' and m' are each an integer of 1 or greater; and hydrogen atoms in each benzene ring is unsubstituted or is substituted with one or more alkyl groups having 1 to 3 carbon atoms or alkoxy groups having 1 to 2 carbon atoms, two or more of these substituents being the same or different; X is

and R^1, R^2, R^3 and R^4 represent independently an alkyl or alkoxy group having 1 to 4 carbon atoms, and 90 to 10 mole % of repeating units of the formula;

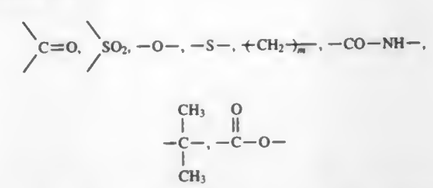


(II)



wherein Z is

(I)



or a direct linkage, and a plurality of linkages represented by Z may be the same or different; m is an integer of 2 or more; n is an integer of 1 to 4; and hydrogens in each benzene ring is unsubstituted or is substituted with one or more alkyl groups, alkoxy groups or halogen atoms; said polyimide having a softening point of 275° C. or lower and being soluble when subjected to a solubility test using at least one organic solvent selected from the group consisting of diethylene glycol dimetyl ether, ethylene glycol dimethyl ether and toluene in a concentration of polyimide of 5% by weight based on the total weight of the solvent and polyimide at room temperature.

5,608,014

BLENDS OF POLYETHERSULFONES WITH AROMATIC POLYMIDES, POLYAMIDES OR POLYAMIDE-IMIDES USEFUL FOR MAKING GAS SEPARATION MEMBRANES

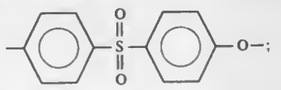
Okan M. Ekiner, Wilmington, Del., assignor to L'Air Liquide, S.A., Paris, France

Continuation-in-part of Ser. No. 139,441, Oct. 19, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 423,337

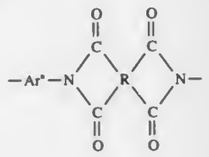
Int. Cl.[6] C08L *79/08*

U.S. Cl. 525—432 **1 Claim**

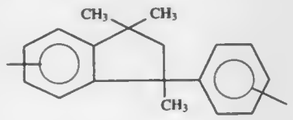
1. A miscible blend comprising (a) an aromatic polyethersulfone, (b) an aromatic polyimide I, and (c) an aromatic polyimide II; wherein the aromatic polyethersulfone component (a) contains at least one of the following units



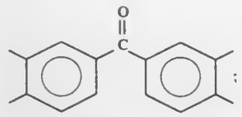
the aromatic polyimide I of component (b) contains at least one of the following units



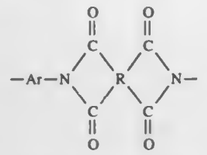
where Ar" is



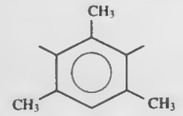
and where R is



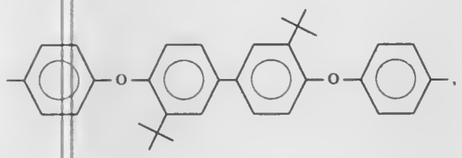
and the aromatic polyimide II of component (c) contains at least one of the following units



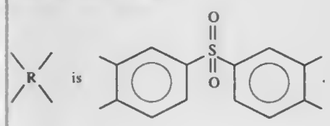
wherein—An—is a moiety having the formula



or



or mixtures thereof; and wherein



5,608,015

PROCESSES FOR PRODUCING CYCLODEXTRIN DERIVATIVES AND POLYMERS CONTAINING IMMOBILIZED CYCLODEXTRIN THEREIN

Masanobu Yoshinaga, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 842,156, Mar. 23, 1992, abandoned. This application May 4, 1994, Ser. No. 237,725

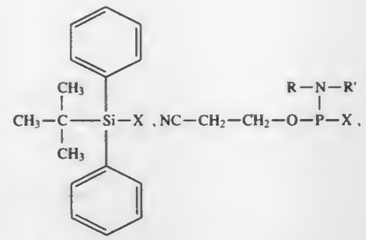
Claims priority, application Japan, Nov. 30, 1990, 2-335531; Nov. 30, 1990, 2-335532

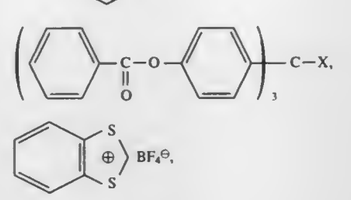
Int. Cl.[6] C08B *37/16*

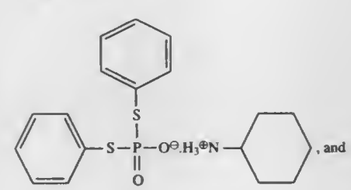
U.S. Cl. 526—75 **9 Claims**

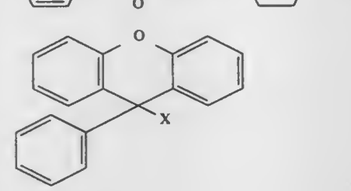
1. A process for producing a cyclodextrin-immobilized polymer, comprising

(i) reacting cyclodextrin (CD) with a protecting agent having a protective group, said protecting agent being a member selected from the group consisting of a carboxylic acid halide, an acid anhydride, and a compound conforming to one of the formulae listed below:







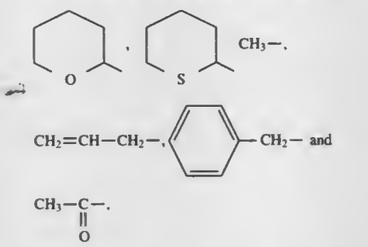


wherein

X is Cl, Br or I; and

R and R' each represents an isopropyl group, a phenyl group or a benzyl group, thereby producing a protected cyclodextrin derivative having a single protected primary hydroxyl group;

(ii) contacting said protected cyclodextrin derivative with a blocking agent having a blocking group, said blocking group being selected from the group consisting of



thereby producing a blocked and protected cyclodextrin derivative having a single protected primary hydroxyl group and having all of its remaining primary hydroxyl groups and all of its secondary hydroxyl groups blocked by said blocking group;

(iii) removing said protective group from said blocked and protected cyclodextrin derivative to produce a blocked cyclodextrin derivative having a single, unprotected primary hydroxyl group and having all of its remaining primary

hydroxyl groups and all of its secondary hydroxyl groups blocked by said blocking group;

(iv) reacting the single, unprotected primary hydroxyl group of said blocked cyclodextrin derivative with a polymerizable monomer selected from the group consisting of an acid halide monomer of an α,β-unsaturated acid, a derivative thereof, an α,β-unsaturated acid monomer having a terminal isocyanate group, and a derivative thereof, to produce a cyclodextrin monomer having all of its remaining primary hydroxyl groups and all of its secondary hydroxyl groups blocked by said blocking group;

(v) copolymerizing said cyclodextrin monomer with a second polymerizable monomer, thereby producing a cyclodextrin-immobilized polymer.

5,608,016

SALTS OF PYROMELLITIC ACID, AND THEIR USE AS EPOXY RESIN CURING AGENTS

Rainer Gras, Bochum, and Elmar Wolf, Recklinghausen, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Division of Ser. No. 365,422, Dec. 28, 1994, Pat. No. 5,556,937. This application Apr. 3, 1996, Ser. No. 626,967

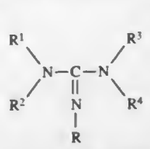
Claims priority, application Germany, Jan. 14, 1994, 44 00 931.3

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—438 **5 Claims**

3. A matt hybrid powder coating comprising an epoxy resin comprising

(i) 0.5–12% by weight of a salt of pyromellitic acid comprising 1 mol of pyromellitic acid and 0.5–2 mol of a guanidine of the formula:



(I)

wherein R, R^1, R^2, R^3 and R^4, identical or different, are each a radical selected from the group consisting of hydrogen, C_{1-8} alkyl, C_{3-8} cycloalkyl and C_{6-8} aromatic hydrocarbon residues, or R^1 and R^2 and R^3 and R^4 may jointly form a ring which may contain an oxygen atom;

(ii) a COOH-containing polyester; and

(iii) optionally, an isophorone diisocyanate adduct blocked with ε-caprolactam.

5,608,017

SUSPENSION POLYMERIZATION METHOD

Masafumi Kamiyama; Masahiro Maeda; Hiroki Totsuka, and Akihiro Sano, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Japan

Division of Ser. No. 184,772, Jan. 21, 1994, which is a continuation of Ser. No. 9,681, Jan. 27, 1993, abandoned. This application May 24, 1995, Ser. No. 449,250

Claims priority, application Japan, Jan. 29, 1992, 4-036936

Int. Cl.[6] C08F *2/18*

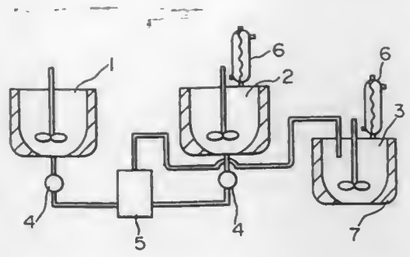
U.S. Cl. 526—88 **20 Claims**

1. A suspension polymerization method for producing a polymerized particle comprising the steps of:

preparing a continuous phase component comprising an aqueous medium;

preparing a dispersed phase component comprising (a) a monomer composition and (b) a liquid noncompatible with the monomer composition wherein the liquid noncompatible with the monomer composition is suspended in the monomer composition;

preparing suspension-polymerization means including: a continuous phase vessel for holding a continuous phase component; a dispersed phase vessel for holding a dispersed phase component; shearing means for providing a shear force; and a polymerization vessel for polymerization reaction;



subsequently placing the continuous phase component in the continuous phase vessel and the dispersed phase component in the dispersed phase vessel;

subsequently supplying continuously and simultaneously each of the dispersed phase component and the continuous phase component separately to the shearing means for providing a shear force;

subsequently exerting a sheer force on the dispersed phase component and the continuous component in the shearing means to form a suspension material including polymerizable liquid-drops of a desired size;

subsequently leading the suspension material to the polymerization vessel;

subsequently subjecting the suspension material in the polymerization vessel to a polymerization reaction to form a polymerized material; and

subsequently drying the polymerized material to obtain the polymerized particle, said polymerized particle characterized as having cavities in the particle.

5,608,018

α-OLEFIN POLYMERIZATION CATALYST SYSTEM AND PROCESS FOR PRODUCING α-OLEFIN CATALYST

Takeshi Ebara; Teruyosi Kiyota, and Akio Imai, all of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 30, 1994, Ser. No. 350,158

Claims priority, application Japan, Dec. 8, 1993, 5-308029

Int. Cl.[6] C08F *4/651;4/654;10/00*

U.S. Cl. 526—119 **23 Claims**

1. An α-olefin polymerization catalyst system consisting essentially of:

(A) a trivalent titanium compound-containing solid catalyst component prepared by reducing a titanium compound, represented by the general formula $Ti(OR^1)_aX_{4-a}$ in which R^1 represents a hydrocarbon group having 1 to 20 carbon atoms; X represents a halogen atom; and a represents a numeral satisfying $0<a\leqq4$, after forming a mixture of the titanium compound, Si—O bond-containing organosilicon compound and an ester compound (a), with an organomagnesium compound to obtain a solid product, treating the solid product with an ester compound (b) to obtain an ester-treated solid product, and treating the ester-treated solid product with a mixture of an ether compound and titanium tetrachloride or a mixture of an ether compound, titanium tetrachloride and an ester compound (c), wherein the ester compounds (a), (b), and (c) may be the same or different from one another,

(B) an organoaluminum compound and

(C) an electron donative compound.

5,608,019

TEMPERATURE CONTROL OF MW IN OLEFIN POLYMERIZATION USING SUPPORTED METALLOCENE CATALYST

Subrahmanyam Cheruvu, Robbinsville, and Frederick Y. Lo, Edison, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 997,421, Dec. 28, 1992, Pat. No. 5,332,706, and Ser. No. 36,796, Mar. 25, 1993, Pat. No. 5,420,220. This application Nov. 8, 1993, Ser. No. 148,309

Int. Cl.[6] C08F *4/642;2/34*

U.S. Cl. 526—129 **30 Claims**

1. A process for the polymerization of ethylene or the copolymerization of ethylene with an alpha olefin of 3 to 10 carbon atoms, at temperatures ranging from 50 to 115 degrees C., in a fluid bed gas phase process conducted at less than 1000 psi, produces resin having a MI (g/10 min.) value in the range of 0.0001 to 500, (wherein MI is measured according to ASTM D-1238 Condition E), wherein the process comprises

(a) fluidizing a particulate, activated supported metallocene catalyst, in a fluid bed gas phase reactor, wherein the catalyst comprises a support which is silica, alumina or silica/alumina wherein the catalyst comprises said support, a transition metal and aluminum, wherein the amount of transition metal (elemental basis) ranges from 0.001 to 10 weight percent and the amount aluminum (elemental basis) ranges from 1 to 40 weight percent wherein the Al:(transition metal) ratio (elemental basis) ranges from 25 to 10000;

(b) contacting said catalyst with a feed selected from the group consisting of (1) ethylene, (2) ethylene admixed with hydrogen, (3) ethylene admixed with an alpha olefin of 3 to 10 carbon atoms, and (4) ethylene admixed with hydrogen and an alpha olefin of 3 to 10 carbon atoms;

(c) maintaining a polymerization pressure of less than 1000 psi, at a temperature which is in a range of from 55 degrees C. as a lower limit and a maximum limit of 115 degrees C.;

(d) maintaining a polymerization temperature which is effective to control the molecular weight, expressed as MI, wherein MI decreases as the polymerization temperature is increased from said lower limit to said upper limit, and wherein MI increases as the polymerization temperature is decreased from said upper limit to said lower limit,

(e) recovering polymerization product having a settled bulk density in the range of 22 to about 36 lb/ft3 and a specific density of less than about 0.94 g/cc.

5,608,020

PROCESS FOR PREPARING TETRAFLUOROETHYLENE COPOLYMERS WITH OTHER PERFLUORINATED MONOMERS

Pasqua Colaianna, Milan; Julio A. Abusleme, Saronno, and Natalino D. Fanti, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 323,350, Oct. 14, 1994. This application Jun. 7, 1995, Ser. No. 475,983

Claims priority, application Italy, Oct. 15, 1993, MI93A2197

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—206 **10 Claims**

1. A process for obtaining tetrafluoroethylene copolymers with one or more perfluorinated monomers having ethylenic unsaturation, said copolymers being free from unstable end groups and having stable end groups —$CONH_2$, by polymerization in aqueous emulsion in the presence of dispersing agents, characterized in that the polymerization is carried out in the presence of:

(1) CHF_2—CH_3, in an amount from 0.55 to 30% by moles with respect to the mixture of tetrafluoroethylene with the other perfluorinated monomer or monomers, as a chain transfer agent;

(2) an inorganic peroxidic compound;

(3) a base or a basic salt in such an amount as to maintain the pH at values comprised between 7 and 9 during the polymerization;

(4) an aqueous ammonia solution such that the amount of ammonia is in excess compared to the stoichiometric amount necessary to change all the end groups COO^- coming from the chain transfer and from the initiator into —$CONH_2$ groups.

5,608,021

CATIONIC POLYMER THICKENER AND PROCESS FOR PREPARING THE SAME

Yujiro Uchiyama, Osaka; Junichi Matsumoto, Kashiwara, and Yoshihiro Okuda, Higashiosaka, all of Japan, assignors to Osaka Yuki Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

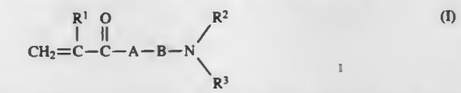
Continuation-in-part of Ser. No. 255,729, Jun. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 158,284, Nov. 29, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 420,668

Int. Cl.[6] A61K *7/075;* **C08F** *2/06*

U.S. Cl. 526—210 **8 Claims**

1. A cationic thickener having a viscosity of 3,000 to 90,000 cP at 25° C., which forms a gel when dissolved in water, prepared in a nonaqueous solvent system in the absence of water and a surface active agent by polymerizing a monomer composition containing

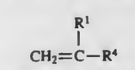
(A) 15 to 85% by weight of at least one of an acrylic monomer having an amino group and a methacrylic monomer having an amino group, represented by the general formula (I):



(I)

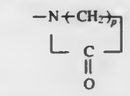
wherein R^1 is a hydrogen atom or methyl group, each of R^2 and R^3 is independently a hydrogen atom, methyl group, ethyl group or t-butyl group, A is oxygen atom or —NH— group, and B is a linear or branched alkylene group having 1 to 4 carbon atoms,

(B) 20 to 80% by weight of a vinyl monomer represented by the general formula (II):

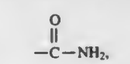


(II)

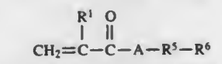
wherein R^1 is as defined above and R^4 is a group represented by the general formula:



wherein p is 3 or 4, or a group represented by the general formula:

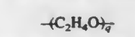


(C) 2 to 20% by weight of at least one of a monomer having acryloyl group and a monomer having methacryloyl group represented by the general formula (III):



(III)

wherein R^1 and A are as defined above, R^5 is a linear or branched alkylene group having 1 to 17 carbon atoms, a group represented by the general formula (IV):



(IV)

wherein q is an integer of 1 to 25 or a group represented by the general formula (V):

(V)

wherein r is an integer of 1 to 25, and R^6 is hydrogen atom or methyl group, and

(D) 0.1 to 20% by weight of a crosslinkable vinyl monomer having at least two carbon-carbon unsaturated bonds.

5,608,022

PERFLUOROCARBON COPOLYMER CONTAINING FUNCTIONAL GROUPS AND A METHOD FOR PRODUCING IT

Yoshimichi Nakayama, Kawasaki, and Masaaki Yonezawa, Nobeoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/01682, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO95/10541, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 7, 1994, Ser. No. 392,889

Claims priority, application Japan, Oct. 12, 1993, 5-277381; Oct. 22, 1993, 5-286268

Int. Cl.[6] C08F *12/30*

U.S. Cl. 526—212 **12 Claims**

1. A method for producing a perfluorocarbon copolymer containing functional groups, which comprises:

emulsifying a perfluorocarbon monomer containing a functional group represented by the following general formula (1) into fine dispersions having an average diameter of 2 μm or less in water:

$$CF_2=CF-O-(CF_2CF(CF_3)-O)n-(CF_2)m-Z \quad (1)$$

wherein m is an integer of 2 to 4; Z is CO_2R (where R represents an alkyl group having 1 to 3 carbon atoms) or SO_2F; n is 1 or 2 when Z is CO_2R and n is an integer of 0 to 2 when Z is SO_2F,

adding at least one water-soluble organic chain transfer agent selected from the group consisting of aliphatic alcohols having 1 to 6 carbon atoms and ethers having 2 to 6 carbon atoms and

polymerizing the perfluorocarbon monomer (1) containing a functional group with tetrafluoroethylene represented by the following formula (2):

$$CF_2=CF_2 \quad (2).$$

5,608,023

RATE ENHANCED POLYMERIZATION PROCESSES

Peter G. Odell; Richard P. N. Veregin; Gordon K. Hamer, all of Mississauga, and Michael K. Georges, Guelph, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1995, Ser. No. 413,663

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—225 **29 Claims**

1. A polymerization process for the preparation of thermoplastic resin or resins comprising:

heating a mixture comprised of a free radical initiator, a stable free radical agent, at least one polymerizable monomer compound, and a sulfonic acid ammonium salt polymerization rate enhancing compound of the formula $R—SO_3M$ where R is covalently bonded to the sulfur atom and is independently selected from the group consisting of alkyl and alkenyl with from 1 to 25 carbon atoms, and an aryl and heteroaryl with from 6 to 25 carbon atoms with substituents independently selected from the group consisting of hydrogen, halogen, alkyl and alkenyl with from 1 to 25 carbon atoms, and where M is a quaternary ammonium ion independently selected from the group consisting of pyridyl and substituted pyridyl with from 5 to 25 carbon atoms, wherein the pyridyl substituents are independently selected from the group consisting of aryl and heteroaryl with from 6 to 25 carbon atoms, hydrogen, alkyl and alkenyl with from 1 to 25 carbon atoms, and halogen, to form a thermoplastic resin or resins with a high monomer to polymer conversion of from about 10 to about 90 percent and a narrow polydispersity of from about 1.0 to about 2.0.

5,608,024

PROCESS FOR MAKING POLYMERS OF VINYL LACTAM AND A POLYMERIZABLE CARBOXYLIC ACID, OPTIONALLY WITH, A HYDROPHOBIC MONOMER, AS A STABLE COMPOSITION IN AN ALCOHOL-WATER SOLVENT SYSTEM, HAVING A RESIDUAL VINYL LACTAM CONTENT OF LESS THAN 500 PPM

Jenn S. Shih, Paramus, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Jul. 18, 1995, Ser. No. 503,564

Int. Cl.[6] C08F *26/08*

U.S. Cl. 526—264 **9 Claims**

1. A process of making a polymer comprising a vinyl lactam and at least 15 weight percent of a polymerizable carboxylic acid, optionally including a hydrophobic monomer, containing carboxylic acid groups on the polymer as a stable composition in an alcohol-water solvent, having a residual vinyl lactam content of less than 500 ppm, which comprises:

(a) solution polymerizing the monomer components of the polymer in alcohol solution to form a polymer reaction product,

(b) adding water to the reaction product in a predetermined amount to form a polymer solution including an alcohol-water solvent having an alcohol-to-water weight ratio of 1:1 to 1:10, and

(c) acid hydrolyzing the residual vinyl lactam monomer in said polymer solution with the carboxylic acid groups on the polymer at about 50° to about 160° C. to reduce the residual vinyl lactam content to less than 500 ppm.

5,608,025

METHACRYLIC COPOLYMERS AND DISPERSANTS FOR PIGMENTS USED IN NON-AQUEOUS PAINTS AND VARNISHES COMPRISING THE COPOLYMERS

Wataru Kawanishi, Nara, Japan, assignor to Kyoeisha Chemical Co., Ltd., Japan

Filed Mar. 11, 1996, Ser. No. 613,695

Claims priority, application Japan, Mar. 16, 1995, 7-057010

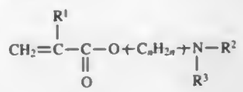
Int. Cl.[6] C08F *226/00;220/10*

U.S. Cl. 526—312 **4 Claims**

1. A methacrylic copolymer comprising repeating units derived from the following monomers:

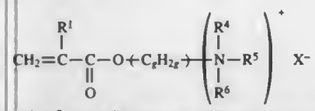
A) at least one (meth)acryl monomer selected from the group consisting of alkyl (meth)acrylates each carrying an alkyl group having 1 to 18 carbon atoms; alkenyl (meth)acrylates each carrying an alkenyl group having 1 to 18 carbon atoms; hydroxyalkyl (meth)acrylates each carrying an alkyl group having 2 to 4 carbon atoms; alkyl monoalkylene glycol (meth) acrylates and alkyl polyalkylene glycol (meth)acrylates each carrying an alkyl group having 1 to 18 carbon atoms; alkenyl monoalkylene glycol (meth)acrylates and alkenyl polyalkylene glycol (meth)acrylates each carrying an alkenyl group having 1 to 18 carbon atoms; and alkylalkenyl monoalkylene glycol (meth)acrylates and alkylalkenyl polyalkylene glycol (meth)acrylates each carrying an alkylalkenyl group having 1 to 18 carbon atoms;

(B) an aminoalkyl (meth)acrylate monomer represented by the following Formula (I):



(I)

(wherein R^1 represents a hydrogen atom or a methyl group, R^2 and R^3 each represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms and n is an integer ranging from 2 to 8), and/or a quaternary ammonium (meth)acrylate monomer represented by the following Formula (II):



(II)

(wherein R^4, R^5 and R^6 which are different from one another and each represents an alkyl group having 1 to 6 carbon atoms, a hydroxyalkyl group having 2 to 6 carbon atoms, an alkoxyalkyl group having 1 to 4 carbon atoms, a cycloalkyl group, an aralkyl group, a phenyl group or a phenyl group substituted with other atoms; X^- represents a halide ion or an anionic residue of an acid; and g is an integer ranging from 2 to 8) and

(C) at least one monomer selected from the group consisting of polyalkyl (meth)acrylate macromonomers, polyalkenyl (meth) acrylate macromonomers, polyester macromonomers and polystyrene macromonomers, each carrying a terminal (meth) acryloyl group;

the copolymer having a content of the moieties derived from the monomer (A) ranging from 10 to 85 parts by weight, a content of the moieties derived from the monomer (B) ranging from 10 to 60 parts by weight and a content of the moieties derived from the monomer (C) ranging from 5 to 30 parts by weight and a number-average molecular weight ranging from 4000 to 1000000.

5,608,026

TERPOLYMER HAVING ALIPHATIC POLYESTER, POLYSILOXANE AND POLYCARBONATE

James F. Hoover, and Luca P. Fontana, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

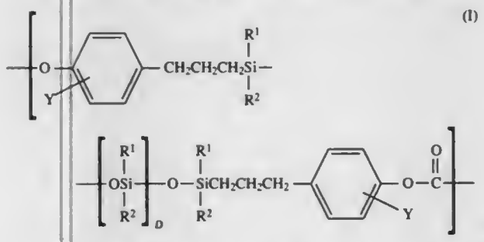
Continuation of Ser. No. 724,018, Jul. 1, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,699

Int. Cl.[6] C08G *77/445;77/448*

U.S. Cl. 528—26 **9 Claims**

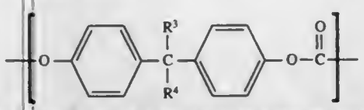
1. A thermoplastic block terpolymer, which comprises:

(a) about 1 to about 30% by weight of the terpolymer of a siloxane from recurring polysiloxane blocks of the formula:



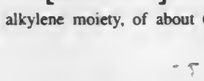
(I)

where R_1 and R_2 are each independently selected from hydrogen, hydrocarbyl, or halogen-substituted hydrocarbyl; D is an integer of from about 10 to about 120; and Y is hydrogen, alkyl or alkoxy; and (b) about 70 to about 99% by weight of the terpolymer of a polycarbonate-aliphatic polyester condensation copolymer block consisting essentially of from about 80 to about 99% by weight, relative to the total weight of recurring units in (b), of polycarbonate units of the formula:



(II)

where R_3 and R_4 are each selected from hydrogen, hydrocarbyl or halogen-substituted hydrocarbyl; and from 1 to 20% by weight, relative to the total weight of the recurring units in (b), of aliphatic diester units of the formula:



(III)

where A is an alkylene moiety, of about 6 to about 18 carbon atoms.

5,608,027

COMPLEX STABILIZER COMPOSITION TO IMPROVE THE MELT STABILITY AND COLOR STABILITY OF POLYCARBONATES

Richard Crosby, West Coxsackle, N.Y.; James L. DeRudder, Mt. Vernon, Ind.; Larry L Flowers; Ye-Gang Lin, both of Evansville, Ind., and Roy R. Odle, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 245,921, May 19, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 562,278

Int. Cl.[6] C08G *18/08;* **C09K** *15/32*

U.S. Cl. 528—51 **35 Claims**

1. A composition for treating a thermoplastic polymer comprising:

(1) a phosphorus containing acid of the formula

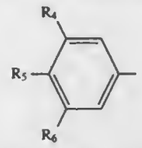
$$H_mP_tO_n$$

where m and n are each 2 or greater and t is 1 or greater and

(2) an ester of a phosphorus containing acid of the formula

$$(R_1O)(R_2O)(R_3O_w)H_yP_tO_{z-3}$$

where w is 0 or 1, where x is zero or a positive integer, z is 3 or greater, y is 1 or greater, and R_1, R_2 and R_3 are the same or different organic radicals selected from the group of substituted aryl substituents having the formula:



where R_4, R_5, and R_6 may be the same or different and wherein R_4, R_5, and R_6 are selected from the group consisting of alkyl radicals having from one to nine carbon atoms and hydrogen, subject to the limitation that at least one of R4, R_5, and R_6 is not hydrogen.

5,608,028

POLYBUTADIENE URETHANE POTTING MATERIAL

Henry M. Sanftleben, Carmel, Ind., and Ralph D. Hermansen, North Ridge, Calif., assignors to Delco Electronics Corp., Kokomo, Ind., and Hughes Aircraft, Los Angeles, Calif.

Filed Feb. 2, 1994, Ser. No. 189,984

Int. Cl.[6] C08G *4/00;59/00*

U.S. Cl. 528—60 **20 Claims**

1. A polymeric material comprising:

about 85 to about 100 parts by weight of a polyol, said polyol comprising at least about 70 weight percent polybutadiene polyol;

a flexibilized polyol/polyepoxide epoxy novolac in an amount of greater than zero and up to about 15 parts by weight; and

a multifunctional isocyanate in an amount sufficient to achieve a stoichiometrically correct ratio;

wherein said adhesive material has a hardness of about 15 to about 90 durometer Shore A.

5,608,029

MANNICH BASE POLYMERS

Warren A. Thaler, Flemington; Stephen Zushma, Clinton, and Antonio Gutierrez, Mercerville, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 10, 1995, Ser. No. 402,067
Int. Cl.[6] C08G *14/02*
U.S. Cl. 528—129 15 Claims

1. A process of forming an oil soluble hydroxyaromatic polymer comprising heating (i) a 1,2-alkylenediamine; a hydroxyaromatic compound having two open ortho positions; and more than an equivalent of aldehyde functional group from an aldehyde-providing compound, per equivalent of primary amine in the 1,2-alkylenediamine or (ii) their cyclized Mannich Base; and forming an oil soluble hydroxyaromatic polymer.

5,608,030

PROCESS FOR THE PREPARATION OF POLYACETALS

Michael Hoffmockel, Niedernhausen; Karl-Friedrich Mück, Wiesbaden; Helmut Schlaf, Kelkheim, and Karlheinz Burg, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Aug. 15, 1994, Ser. No. 290,377
Claims priority, application Germany, Aug. 13, 1993, 43 27 245.2
Int. Cl.[6] C08G *63/78*
U.S. Cl. 528—232 14 Claims

1. A process for the continuous preparation of polyoxymethylenes, comprising the steps of

polymerizing cyclic formaldehyde oligomer units in a polymerization zone in an tubular reactor with static mixing elements in the presence of protonic acid initiators, wherein said initiators are present in amounts of 0.005 to 500 ppm, and said formaldehyde oligomers having a residence time in the polymerization zone of from 0.1 to 10 minutes, and

deactivating the initiator immediately after polymerization by adding a deactivator in a deactivization zone, thereby deactivating the initiator, and stabilizing the chain ends of residual oligomers.

5,608,031

POLYESTERS MODIFIED WITH 1,4-CYCLOHEXANED IMETHANOL HAVING HIGH CLARITY PREPARED UTILIZING AN ANTIMONY CONTAINING CATALYST/ STABILIZER SYSTEM

Cheuk C. Yau, Kingsport, and Leslie S. Moody, Johnson City, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 30, 1995, Ser. No. 565,484
Int. Cl.[6] C08G *63/82;* C08K *3/32*
U.S. Cl. 528—281 60 Claims

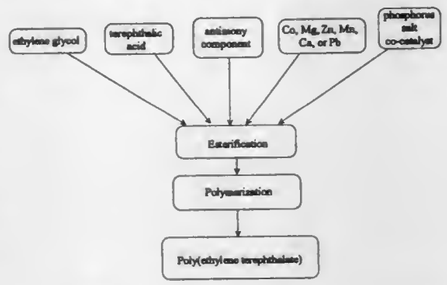
1. A polyester resin prepared by adding one or more dicarboxylic acid components to one or more glycol components, wherein said one or more dicarboxylic acid components is selected from the group consisting of aliphatic dicarboxylic acids having a total of from 3 to 16 carbon atoms, alicyclic dicarboxylic acids having 7 to 12 carbon atoms, aromatic dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof, and wherein said 0.5 mole % or more of said one or more glycol components is 1,4-cyclohexanedimethanol and wherein the remaining 99.5 mole % or less of said one or more glycol components is selected from the group consisting of glycols other than 1,4-cyclohexanedimethanol having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof, the total mole percentages of said one or more glycol components equalling 100 mole %, said polyester resin having been prepared in the presence of a catalyst/stabilizer system consisting essentially of one or more antimony compounds and one or more phosphorous compounds and one or more compounds selected from the group consisting essentially of zinc compounds, gallium compounds, and silicon compounds.

5,608,032

CATALYTIC COMPOSITIONS FOR THE PROPARATION OF POLY(ETHYLENE TEREPHTHALATE) WITH ATTENUATED YELLOW COLOR

Wu-Bin Yuo, Hsinchu; Jong-Wu Chen, Do-Lio, and Yu-Shan Chao, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 28, 1995, Ser. No. 413,027
Int. Cl.[6] C08G *63/00;63/02;63/78;63/82*
U.S. Cl. 528—286 18 Claims



1. A process for the preparation of poly(ethylene terephthalate) from terephthalic acid and ethylene glycol comprising the steps of:

(a) preparing a catalyst composition containing:

(i) an antimony salt catalyst present in a range from about 10 to about 1,000 ppm;

(ii) a metal salt catalyst selected from the group consisting of cobalt, magnesium, zinc, manganese, calcium, and lead salts, present in a range from about 10 to about 500 ppm; and

(iii) a phosphorus salt co-catalyst selected from the group consisting of alkali metal phosphates, alkali metal phosphites, alkali metal hypophosphites and alkali metal polyphosphates, present in a range from about 10 to about 500 ppm; wherein all the ppm values are based on the theoretical yield of said poly(ethylene terephthalate), by weight, to be made from said terephthalic acid and ethylene glycol;

(b) placing said catalyst composition, said terephthalic acid and said ethylene glycol in a reaction vessel, wherein said ethylene glycol and said terephthalic acid are provided in a ratio of about 1.2:1;

(c) raising reaction temperature to about 200°~280° C. to start an esterification reaction between said terephthalic acid and said ethylene glycol;

(d) raising reaction temperature to about 250°~300° C. and applying vacuum in said reaction vessel to start a polymerization reaction; and

(e) removing unreacted ethylene glycol to obtain said poly(ethylene terephthalate).

5,608,033

LIQUID CRYSTAL ALIGNMENT FILM

Takayasu Nihira; Yoshio Miyamoto; Hideyuki Endo, and Toyohiko Abe, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed May 5, 1995, Ser. No. 435,663
Claims priority, application Japan, May 9, 1994, 6-094887; May 9, 1994, 6-094888
Int. Cl.[6] C08G *73/10*
U.S. Cl. 528—353 5 Claims

1. A liquid crystal alignment film made of a polyimide which has, on its side chain, a benzene or biphenyl ring substituted by a monovalent substituent having a positive value as the σp value under Hammett's rule.

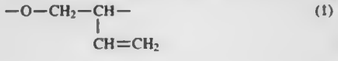
5,608,034

POLYETHER POLYMERS DERIVED FROM 3,4-EPOXY-1-BUTENE

Stephen N. Falling, Kingsport, Tenn.; Stephen A. Godleski, Fairport, N.Y.; Patricia Lopez-Maldonado; Peter B. MacKenzie, both of Kingsport, Tenn.; Laughlin G. McCullough, Longview, Tex., and James C. Matayabas, Jr., Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

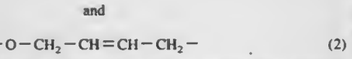
Continuation of Ser. No. 181,733, Jan. 18, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,044
Int. Cl.[6] C08G *65/14;65/28*
U.S. Cl. 528—409 4 Claims

1. A polyether polymer with terminal primary hydroxyl groups prepared by contacting 3,4-epoxy-1-butene with an organic monohydroxy or polyhydroxy initiator in the presence of a catalyst system comprising an onium iodide compound and an organotin iodide compound and comprising n units of residue (1) and m units of residue (2), wherein (i) the total value of n+m is 7 to 50, m/(n+m) is greater than 0.75 up to 0.98, (ii) the polymer contains about 5 to 20 weight percent of residues having the formula —R^4 or —O—R^5— wherein R^4 is the residue of a mono-hydroxy alcohol initiator compound and R^5 is the residue of a polyhydroxy initiator compound, (iii) residues (1) and (2) have the structures:



(1)

and



(2)

at least 95 percent of the terminal hydroxyl groups are primary hydroxyl groups and the polymer has a polydispersity value of less than 3.

5,608,035

PEPTIDES AND COMPOUNDS THAT BIND TO THE IL-1 RECEPTOR

Stephen D. Yanofsky, San Mateo; Ronald W. Barrett, Sunnyvale; David N. Baldwin, Palo Alto, and Jeff W. Jacobs, San Mateo, all of Calif., assignors to Affymax Technologies N.V., Middlesex, England

Filed Feb. 2, 1994, Ser. No. 190,788
Int. Cl.[6] A61K *38/00;38/02;* C07K *5/00;7/00*
U.S. Cl. 530—324 5 Claims

1. A peptide of nine to 25 amino acids in length that binds to interleukin-1 type I receptor and comprises a sequence of amino acids $Z_{11}Z_7Z_8QZ_5YZ_6Z_9Z_{10}$, where Z_5 is P or Aze where Aze is azetidine; Z_6 is S or A; Z_7 is Y, W, or F; Z_8 is Y, W or F; Z_9 is V, L, I, or E; Z_{10} is O or P and Z_{11} is V, L, I, E, P, G, Y, M, T, or, D.

5,608,036

ENHANCED SECRETION OF POLYPEPTIDES

Shi-Yuan Meng, Agoura Hills; Charles F. Morris, Newbury Park, and Larry B. Tsai, Agoura, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Division of Ser. No. 215,138, Mar. 18, 1994, Pat. No. 5,470,719. This application Mar. 20, 1995, Ser. No. 407,344
Int. Cl.[6] C07K *14/00;14/475;14/48*
U.S. Cl. 530—324 4 Claims

1. The peptide MKKRARAIAIAVALAGFATVAHA (SEQ ID NO:1) linked at its carboxyl terminus to the polypeptide BDNF.

5,608,037

RECOMBINANT DNA-PRODUCED T11 AND FRAGMENTS THEREOF

Ellis Reinherz, Lincoln; Peter Sayre; Hsiu-Ching Chang, both of Cambridge, and Neil Richardson, Needham Heights, all of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Division of Ser. No. 361,014, Dec. 21, 1994, which is a continuation of Ser. No. 902,436, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 714,323, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 932,871, Nov. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 913,988, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 906,413, Sep. 11, 1986, abandoned. This application May 18, 1995, Ser. No. 443,847
Int. Cl.[6] C12N *15/00;* C07K *14/00*
U.S. Cl. 530—350 4 Claims

1. An isolated polypeptide having the external domain of human T11 protein.

5,608,038

HIGHLY CONCENTRATED IMMUNOGLOBULIN PREPARATION AND METHOD FOR ITS PRODUCTION

Johann Eibl; Yendra Linnau, and Wolfgang Teschner, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Dec. 20, 1994, Ser. No. 359,901
Claims priority, application Germany, Dec. 28, 1993, 43 44 824.0
Int. Cl.[6] C07K *16/00;* A61K *39/395*
U.S. Cl. 530—387.1 19 Claims

1. A stable, highly concentrated, intravenously tolerable immunoglobulin preparation, wherein the preparation has an immunoglobulin content from 13.5% to 17.5% (w/v), A stabilizer, a pH of 4–8, and osmolarity from 250 to 600 mOs/l and a viscosity of no more than 9 cP.

5,608,039

SINGLE CHAIN B3 ANTIBODY FUSION PROTEINS AND THEIR USES

Ira Pastan, Potomac, Md.; Mark Willingham, Summerville, S.C.; David Fitzgerald, Rockville, Md.; Ulrich Brinkmann, Kensington, Md., and Lee Pai, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 767,331, Sep. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 596,289, Oct. 12, 1990, Pat. No. 5,242,813. This application Oct. 28, 1994, Ser. No. 331,398
Int. Cl.[6] C12N *15/62;* A61K *39/00;51/10;* C07K *16/28*
U.S. Cl. 530—387.3 18 Claims

1. A recombinant DNA molecule that encodes a single chain fusion protein, said recombinant DNA molecule comprising:

a) a DNA sequence that encodes the Fv region of both the light and the heavy chains of an antibody; and

b) a DNA sequence that encodes an effector molecule selected from the group consisting of a truncated Pseudomonas exotoxin, and a detectable label, wherein said fusion protein specifically binds an epitope bound by monoclonal antibody B3 (ATCC Accession Number HB10569).

5,608,040

PROCESS FOR THE PRODUCTION OF LIGNIN-CONTAINING POLYMERS

Aloys Hüttermann, Henry-Dunant-Str.20, Gottingen, Germany, and Oleg Milstein, Gottingen, Germany, assignors to Aloys Hüttermann, Guttingen, Germany

PCT No. PCT/EP94/03142, § 371 Date Jul. 6, 1995, § 102(e) Date Jul. 6, 1995, PCT Pub. No. WO95/08588, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 20, 1994, Ser. No. 436,367

Claims priority, application Germany, Sep. 20, 1993, 43 31 878.9

Int. Cl.[6] C08H *5/02;* **C08F** *289/00;* **C12P** *7/22*

U.S. Cl. 530—500 **11 Claims**

1. A process for producing a polymer containing lignin which comprises polymerizing lignin with an organic compound, said organic compound containing at least three carbon atoms and at least one oxygen atom, nitrogen atom, or multiple bonds, said organic compound being free from phenolic groups, the polymerization being carried out in the presence of a radical oxidizing enzyme and an oxygen product forming a substrate for the enzyme.

5,608,041

AZO DYESTUFFS CONTAINING A DIAZO COMPONENT FROM THE ANILINE SERIES AND COUPLING COMPONENT FROM THE TRIAZOLOPYRIDINE SERIES

Ernst Schefczik, Ludwigshafen; Volker Bach; Helmut Reichelt, both of Neustadt, and Clemens Grund, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02756, § 371 Date Feb. 14, 1996, § 102(e) Date Feb. 14, 1996, PCT Pub. No. WO95/06687, PCT Pub. Date Mar. 9, 1995

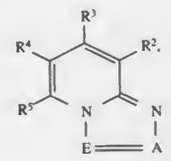
PCT Filed Aug. 19, 1994, Ser. No. 591,565

Claims priority, application Germany, Aug. 31, 1993, 43 29 296.8

Int. Cl.[6] C09B *29/36;* **D06P** *3/52*

U.S. Cl. 534—752 **7 Claims**

1. A triazolopyridine azo dyestuff of the formula I



(I)

where

A is nitrogen,

E is a radical of the formula C—R^1, where R^1 is C_1–C_{20}-alkyl, which is unsubstituted or substituted and can be interrupted by 1 to 4 ether oxygen atoms, or is unsubstituted or substituted phenyl, mercapto or unsubstituted or substituted C_1–C_{20}-alkylthio,

one of the two radicals R^2 and R^4 is cyano, carbamoyl, carboxyl or C_1–C_4-alkoxycarbonyl and the other is a radical of the formula D—N=N—, where D is a radical of a diazo component from the aniline series,

R^3 is C_1–C_4-alkyl which may also be interrupted by an ether oxygen atom, or phenyl and

R^5 is hydroxyl, mercapto, the radical —NY^1Y^2, where Y^1 and Y^2 are identical or different and independently of one another in each case are hydrogen or C_1–C_4-alkyl or, together with the nitrogen atom bonding them, are a 5- or 6-membered saturated heterocyclic radical, or the radical of a CH-acidic compound,

with the proviso that if R^4 is the radical of the formula D—N=N—, the two radicals A and E can also be exchanged for one another.

5,608,042

BENZOTHIAZOLEMONOAZO DYES

Kiyoshi Himeno; Toshio Hihara, and Ryouichi Sekioka, all of Kitakyushu, Japan, assignors to Dystar Japan Ltd., Osaka, Japan

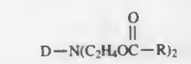
Division of Ser. No. 399,660, Mar. 7, 1995, Pat. No. 5,527,888. This application Jan. 31, 1996, Ser. No. 594,487

Claims priority, application Japan, Mar. 8, 1994, 6-64656; Apr. 12, 1994, 6-98043; Apr. 21, 1994, 6-105896; Apr. 26, 1994, 6-110448

Int. Cl.[6] C09B *29/045;29/09;* **D06P** *3/54*

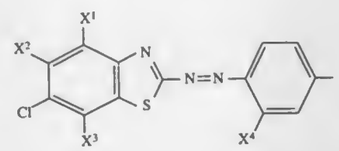
U.S. Cl. 534—788 **9 Claims**

1. A monoazo dye of the following formula (I):



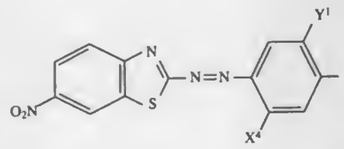
(I)

wherein R is phenyl, phenoxy or benzyl, and D is a group of the formula (D1) or (D2):



(D1)

wherein each of X^1, X^2 and X^3, which are independent of one another, is hydrogen or chlorine, X^4 is hydrogen , chlorine, methyl or —$NHCOR^1$, wherein R^1 is C_{1-4} alkyl or phenyl;



(D2)

wherein X^4 is as defined above, Y^1 is hydrogen, chlorine or C_{1-4} alkoxy.

5,608,043

PROCESS FOR THE PREPARATION OF 2-DEOXY-2,2-DIFLUORO-β-D-RIBO-PENTOPYRANOSE COMPOUNDS

David D. Wirth, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 383,165, Feb. 3, 1995, Pat. No. 5,559,222. This application May 16, 1996, Ser. No. 649,934

Int. Cl.[6] C07H *1/00;3/08*

U.S. Cl. 536—4.1 **8 Claims**

1. A process for the preparation of 2-deoxy-2,2-difluoro-5-O-triphenylmethyl-D-ribo-pentofuranose (II) which comprises:

(a) reacting in a reaction mixture 2-deoxy-2,2-difluoro-D-ribopentopyranose (I) with triphenylmethyl chloride and an amine base at a temperature between about 20° C. and 100° C. to produce (II); and

(b) separating (II) from the reaction mixture.

7. 2-Deoxy-2,2-difluoro-5-O-triphenyl methyl-D-ribopentofuranose.

5,608,044

PRADIMIC ACIDS, AMIDES, AND PRADIMICIN DERIVATIVES

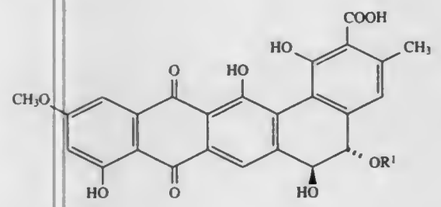
Satsuki Okuyama, Hachioji; Takaaki Okita, Tokyo, and Hajime Kamachi, Urayasu, all of Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 285,327, Aug. 3, 1994, Pat. No. 5,414,073, which is a continuation of Ser. No. 214,909, Mar. 17, 1994, abandoned, which is a division of Ser. No. 914,908, Jul. 16, 1992, Pat. No. 5,326,867. This application Feb. 7, 1995, Ser. No. 385,021

Int. Cl.[6] C07H *15/24*

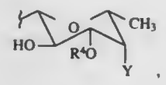
U.S. Cl. 536—6.4 **8 Claims**

1. A compound of the formula



wherein

R^1 is a group of the formula



Y is OH or NR_2R_3;

R^2 is hydrogen or methyl;

R^3 is hydrogen, C1–5 alkyl, or an amino protecting group;

R^4 is hydrogen, β-D-xylosyl, or a hydroxy protecting group; or an acid addition salt thereof.

5,608,045

PREPARATION OF PHOSPHORAMIDON

Guillaume de Nanteuil, Suresnes; Georges Remond, Versailles, and Tony Verbeuren, Vernouillet, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 267,971, Jun. 29, 1994, Pat. No. 5,481,030. This application Jul. 3, 1995, Ser. No. 497,812

Claims priority, application France, Jun. 30, 1993, 93 07927

Int. Cl.[6] C07G *3/00;* **C07F** *9/06;9/22*

U.S. Cl. 536—18.6 **4 Claims**

1. A process for preparing phosphoramidon disodium salt (N-[α-(S)-(rhamnopyranosyloxy)hydroxyphosphinyl] -(S)Leu-(S)Trp-OH disodium salt) wherein the starting material is one equivalent of rhamnosetriacetate, which is reacted in a pot reaction with one equivalent of phenyl dichlorophosphate in the presence of two equivalents of triethylamine and with (S)Leu-(S)Trp-OEt in a suitable solvent, whereafter the product is separated and saponified with an ethanolic base in the cold and the ethanol evaporated to leave an oil.

5,608,046

CONJUGATED 4'-DESMETHYL NUCLEOSIDE ANALOG COMPOUNDS

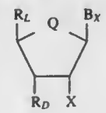
Phillip D. Cook, San Marcos, and Kelly Teng, San Diego, both of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 39,846, Mar. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 903,160, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Sep. 29, 1994, Ser. No. 314,877

Int. Cl.[6] C07H *19/06;19/16;21/00;* **C12Q** *1/68*

U.S. Cl. 536—23.1 **30 Claims**

1. A compound having the structure:



wherein:

R_L is a group of formula:

R_C—[Y]$_e$—Z—

wherein:

Z is O, S or HN;

Y is a bivalent linker;

e is 0 or 1;

R_C is alkyl, alkenyl, alkynyl, a polyamine, a polyether, a polythioether, a steroid molecule, a reporter molecule, an aromatic lipophilic molecule, a non-aromatic lipophilic molecule, a reporter enzyme, a peptide, a protein, a water soluble vitamin, a lipid soluble vitamin, a carbohydrate, a terpene molecule, a phospholipid, an intercalator, a cell receptor binding molecule, a crosslinking agent, or a porphyrin;

B_x is a nucleobase;

X is H, OH, O-alkyl, O-alkoxyalkyl, O-alkylamino, or F;

Q is O, S, CH_2, CHF or CF_2; and

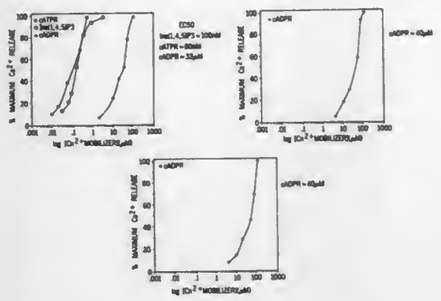
R_D is H, hydroxyl, an activated phosphorous group, a nucleoside, an activated nucleotide, a nucleotide, an oligonucleotide, an oligonucleoside or a protected derivative thereof.

5,608,047

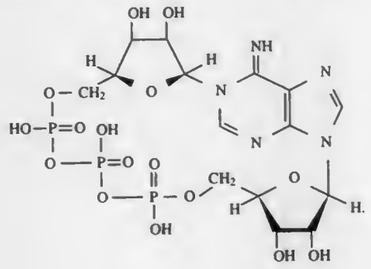
CYCLIC ADP-RIBOSE AND ANALOGS

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 15, 1995, Ser. No. 404,467
Int. Cl.[6] C07H *19/167;19/20*
U.S. Cl. 536—26.26 **3 Claims**



1. A compound having the chemical structure as follows:



5,608,048

D_4T POLYMORPHIC FORM 1 PROCESS

Rajesh B. Gandhi, Liverpool; Joseph B. Bogardus, Manlius; Peter M. Garofalo, Syracuse; Timothy R. Marr, Deruyter; Robert K. Perrone, Liverpool, and Murray A. Kaplan, Syracuse, all of N.Y., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 5, 1995, Ser. No. 465,208
Int. Cl.[6] C07H *19/06*
U.S. Cl. 536—28.2 **5 Claims**

1. A process for preparing d_4T polymorphic Form I from a mixture containing one or more of d_4T polymorphic Forms I, II and III which comprises:

(a) dissolving the mixture under anhydrous conditions in an organic solvent: to form a saturated solution at a temperature of at least about 65° C., wherein said solvent is selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, acetonitrile and ethyl acetate;

(b) continuously stirring while cooling the solution until the precipitation of substantially pure crystalline d_4T polymorphic Form 1 is substantially complete, provided the cooling rate does not exceed about 20° C. per hour until a solution temperature of about 40° C. is reached, and

(c) recovering substantially pure crystalline d_4T polymorphic Form I.

5,608,049

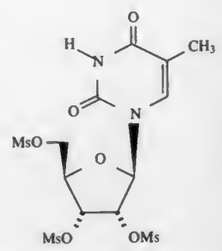
PREPARATION OF D4T FROM 5-METHYLURIDINE

Richard H. Spector, Fayetteville; Bang-Chi Chen, East Syracuse, and Sandra L. Quinlan, Manlius, all of N.Y., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Mar. 10, 1995, Ser. No. 402,283
Int. Cl.[6] C07H *19/073*
U.S. Cl. 536—28.2 **13 Claims**

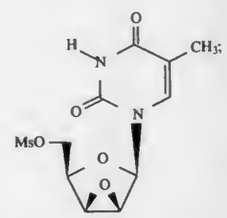
1. A process of producing 2',3'-didehydro-3'-deoxythymidine (d4T) comprising the steps of:

a) treating 2',3',5'-tris(methanesulfonyl)-5-methyluridine (2)



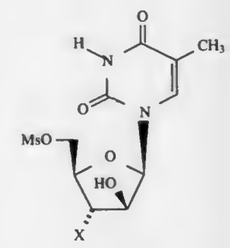
2

with alkali metal hydroxide to afford epoxide 3

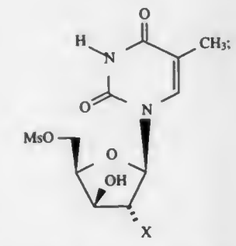


3

b) treating epoxide 3 with hydrogen halide to afford a mixture of compounds 4a and 4b in which X is chloro, bromo or iodo

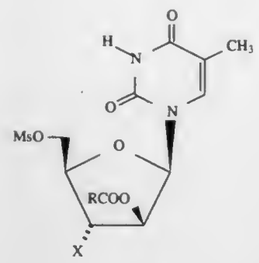


4a

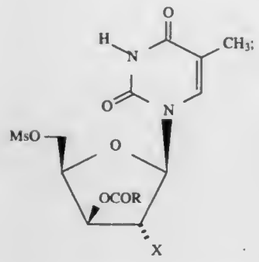


4b

c) treating a mixture of 4a and 4b with acyl halide to afford a mixture of 5a and 5b in which R is C_{1-6} alkyl

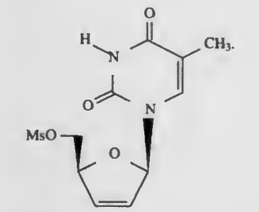


5a



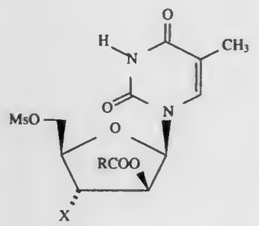
5b

d) treating a mixture of 5a and 5b with reducing metal to afford compound 6

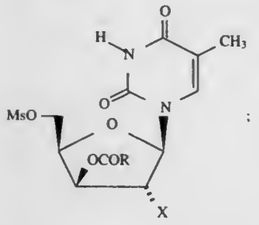


6

6. A process of producing 2',3'-didehydro-3'-deoxythymidine (d4T) comprising, reacting a compound of 5a or 5b, or a mixture thereof with a metal reducing agent

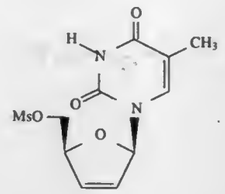


5a



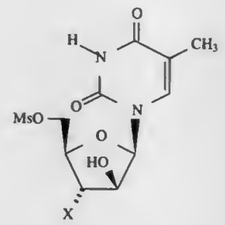
5b

in which X is chloro, bromo or iodo; and R is C_{1-6} alkyl; to afford compound of formula 6

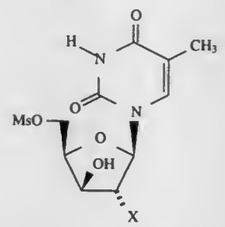


6

8. A compound of formula 4a or 4b, or a mixture thereof



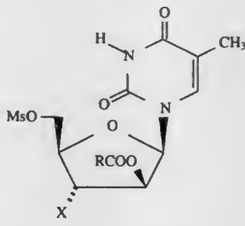
4a



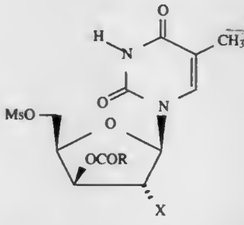
4b

in which X is chloro, bromo or iodo.

10. A compound of formula 5a or 5b, or a mixture thereof



5a



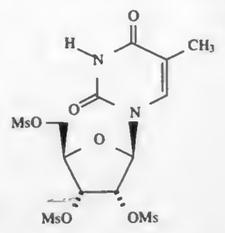
5b

in which X is chloro, bromo or iodo; and R is C_{1-6} alkyl.

12. A process of producing 2',3'-didehydro-3'-deoxythymidine (d4T) comprising the steps of:

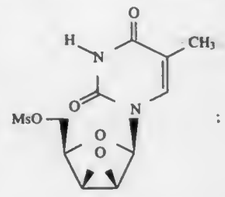
a) treating 2',3',5'-tris(methanesulfonyl)-5-methyluridine (2)

2



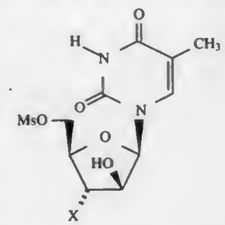
with alkali metal hydroxide to afford epoxide 3

3

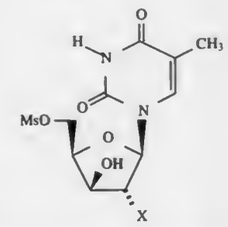


b) treating epoxide 3 with hydrogen halide to afford a mixture of compounds 4a and 4b in which X is chloro, bromo or iodo

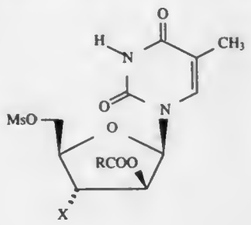
4a



4b

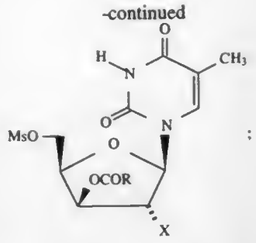


c) treating a mixture of 4a and 4b with acyl halide to afford a mixture of 5a and 5b in which R is C_{1-6} alkyl



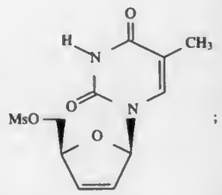
-continued

5b



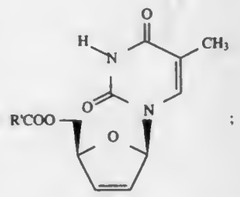
d) treating a mixture of 5a and 5b with reducing metal to afford compound 6

6



(e) reacting compound 6 with R'COOT, in which T is alkali or alkaline earth metal selected from sodium, potassium, lithium, calcium or magnesium; and R' is aryl or C_{1-6} alkyl; to afford a compound of formula 7

7



(f) converting R'COO— radical in a compound of formula 7 to hydroxy by using C_{1-6} alkylamine.

5,608,050

PROCESS FOR THE MANUFACTURE OF CELLULOSE ACETATE

5a **Chung M. Kuo, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.**

Filed Dec. 18, 1995, Ser. No. 573,678

Int. Cl.[6] B08B *3/06; 1/02*

U.S. Cl. 536—69 **18 Claims**

1. A process for the manufacture of cellulose acetate comprising reacting at a temperature suitable for acetylation:

an acetic acid activated and pretreated cellulose raw material containing 100 parts cellulose by weight; and

0.5 to 40 parts of a bisulfate catalyst by dry weight of the cellulose, the bisulfate catalyst being selected from lithium bisulfate, sodium bisulfate, and potassium bisulfate.

5,608,051

ACETYLATION OF LIGNOCELLULOSIC MATERIALS

Helen L. Nelson; David 1. Richards, both of Humberside, United Kingdom, and Rune Simonson, Partille, Sweden, assignors to BP Chemicals Limited, London, England

Filed Oct. 13, 1994, Ser. No. 322,267

Claims priority, application United Kingdom, Oct. 28, 1993, 9322187

Int. Cl.[6] C08B *3/06*

U.S. Cl. 536—76 **3 Claims**

1. A process for the acetylation of lignocellulosic materials (LM) comprising

(a) bringing the LM into intimate contact with an acetylating agent comprising acetic anhydride as the major component in a first reactor at a temperature from 70°–140° C. to form an acetylated LM and maintaining said temperature constant by a vaporization method whereby the vapor leaving the first reactor is at its dew point; and

(b) bringing acetylated LM from step (a) into contact with a superheated chemical vapor comprising acetic acid and/or acetic anhydride in a second reactor at a temperature above 140° C. and reducing the acetic acid or acetic anhydride content of the acetylated LM produced in step (a) to below 10% by weight by stripping.

5,608,052

INCLUSIOIN COMPLEXES OF CLAVULANIC ACID AND OF ALKALI SALTS THEREOF WITH HYDROPHILIC AND HYDROPHOBIC BETA-CYCLODEXTRIN DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

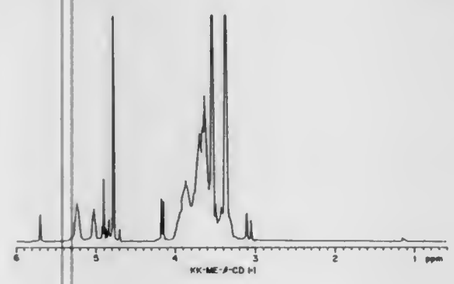
Janko Žmitek; Darja Ferčej-Temeljotov, both of Ljubljana; Katarina Verhnjak, Ptuj; Sonja Kotnik, and Mateja Kovačič , both of Ljubljana, all of Slovenia, assignors to LEK, tovarna farmacevtskih in kemicnih, Ljubljana, Slovenia

Division of Ser. No. 369,301, Jan. 6, 1995, Pat. No. 5,498,788, which is a continuation of Ser. No. 084,951, Jul. 2, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,870

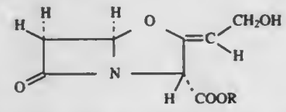
Claims priority, application Slovenia, Jul. 8, 1992, P-92 00 139

Int. Cl.[6] C08B *37/16;* **A61K** *31/715;* **C07D** *487/08*

U.S. Cl. 536—103 **4 Claims**



1. Inclusion complexes of clavulanic acid and of pharmaceutically acceptable alkali salts thereof of the formula



wherein R represents hydrogen or an alkali metal, with hydrophilic and hydrophobic β-cyclodextrin derivatives.

5,608,053

POLY-SUBSTITUTED PHTHALOCYANINES

Dean Thetford, Manchester, and Peter Gregory, Bolton, both of England, assignors to Zeneca Limited, London, England

Division of Ser. No. 344,682, Nov. 17, 1994, Pat. No. 5,486,274, which is a continuation of Ser. No. 777,719, Oct. 21, 1991, abandoned. This application Oct. 25, 1995, Ser. No. 548,175

Claims priority, application United Kingdom, Nov. 2, 1990, 9023894; Nov. 21, 1990, 9025280

Int. Cl.[6] C07D *487/22;* **C09B** *47/24*

U.S. Cl. 540—140 **7 Claims**

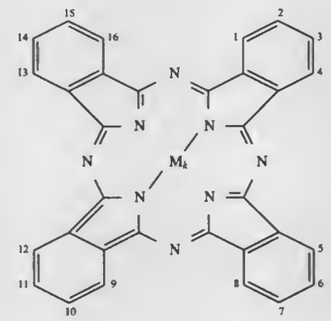
1. A compound of the Formula (2):

$$M_kPc(O—R)_aX_b(SO_3A)_d \qquad \text{Formula (2)}$$

wherein:

M_kPc is a phthalocyanine nucleus as defined in Formula (1);

Formula (1)



wherein:

M is selected form H, metal, halometal, oxymetal and hydroxymetal; and

k is the inverse of ½ of the valency of M;

each R independently is an organic radioal selected from the group consisting of phenyl, naphthyl, pyridyl, thiophenyl, furanyl, quinolnyl, thiazolyl, benzothiazolyl, pyrimidyl, C_{1-10}-alkyl, C_{3-10}-alkenyl and cyclobexyl which is unsubstituted or its substituted by a group selected from the group consisting of C_{1-20}-alkyl, C_{1-20}-alkoxy, C_{2-20}-alkenyl, C_{1-20}alkylthiol, C_{1-20}-alkoxycarbonyl, hydroxyC_{1-4}-alkoxy, phenyl, benzyl, phenylthio, fluoro, chloro, bromo, —CN, $—NO_2$, $— CF_3$, $—COR^2$, $—COOR^2$, $—CONR^2R^3$, $—SO_2R^2$, $—SO_2NR^2R^3$, $—NR^2R^3$ and $—OR^2$ in which R^2 and R^3 are each independently —H, C_{1-4}-alkyl or phenyl and $—SO_3A$ which A is —H, a metal or an ammonium ion and the remaining peripheral carbon atoms are unsubstituted or substituted by a member selected from the group consisting of hydrogen, halogen and $—SO_3A$ wherein A is H, a metal or an ammonium ion;

each X independently is halogen or hydrogen;

A is selected from H, a metal, ammonium or substituted ammonium

a is from 1 to 16;

b is from 0 to 15;

d is an average value from 0.1 to 50;

a+b is from 1 to 16;

except for $CuPc(O—Ph)_4Cl_{12}$ sulpbonic acid containing 9.3% S and the sodium salt thereof.

5,608,054
PORPHYRINS AND METAL COMPLEXES THEREOF HAVING HALOALKYL SIDE CHAINS

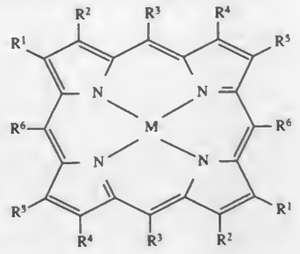
Tilak Wijesekera, Glen Mills; James E. Lyons, Wallingford; Paul E. Ellis, Jr., Downingtown, and Manoj V. Bhinde, Boothwyn, all of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation-in-part of Ser. No. 174,732, Dec. 29, 1993, and a continuation-in-part of Ser. No. 175,057, Dec. 29, 1993. This application Mar. 17, 1995, Ser. No. 405,684

Int. Cl.[6] C07D *487/22*

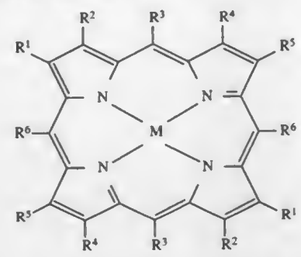
U.S. Cl. 540—145 **8 Claims**

1. A Compound having the following formula:



where M is transition metal with or without halide, hydroxide, azide or nitfide associated therewith, and R^3 is hydrogen or halocarbyl and R^6 is hydrogen or halocarbyl, but R^3 and R^6 are not both hydrogen, R^3 and R^6 are not both the same halocarbyl, and at least one of said R^3 and R^6 is haloalkyl having 2 to 8 carbon atoms, and R^1, R^2, R^4 and R^5 are independently hydrogen, hydrocarbyl, halogen, nitro, cyano or halocarbyl; or polymeric forms thereof.

8. A porphyrin μ-oxo dimer compound wherein the porphyrin moieties have the following formula:



where M is iron, and R^3 is heplafluoropropyl and R^6 is pentafiuorophenyl, and R^1, R^2, R^4 and R^5 are independently hydrogen, hydrocaxbyl, halogen, nitro, cyano or halocarbyl.

5,608,055
BETA LACTAM PRODUCTION

Jose Diago, Barcelona, Spain, and Johannes Ludescher, Breitenbach, Austria, assignors to Biochemie Gesellschaft m.b.H., Austria

Continuation of Ser. No. 368,935, Jan. 5, 1995, abandoned, which is a continuation of Ser. No. 914,244, Jul. 15, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,943

Claims priority, application United Kingdom, Jul. 15, 1991, 9115203

Int. Cl.[6] C07D *501/18;501/57;498/02*

U.S. Cl. 540—222 **17 Claims**

1. In a process for the production of a 7-alpha-aminoacyl-cephem other than a 7-alpha-aminoacyl-desacetoxy-cephalosporin which comprises the steps of:

i) producing a mixed carboxylic acid anhydride by reacting an N-substituted vinyl alpha-amino acid with an acylating agent; and

ii) reacting the mixed carboxylic acid anhydride with a 7-amino-ceph-3-em-4-carboxylic acid or derivative thereof,

the improvement which comprises carrying out step i) in a solvent which does not contain a halogen atom and which is water-immiscible or sparingly soluble in water and is selected from ketones, esters, aromatic hydrocarbons, and mixtures thereof;

and carrying out step ii) with a non-silylated 7-amino-ceph-3-em-4-carboxylic acid or derivative thereof in a solvent which does not contain a halogen atom and is selected from ketones, esters, aromatic hydrocarbons, alkanols, and mixtures thereof.

5,608,056
SUBSTITUTED 3-PYRROLIDINYLTHIO-CARBAPENEMS AS ANTIMICROBIAL AGENTS

Masayoshi Murata, Osaka; Hideo Tsutsumi, Toyonaka; Keiji Matsuda, Takatsuki; Kohji Hattori, Takarazuka, and Takashi Nakajima, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00469, § 371 Date Sep. 21, 1994, § 102(e) Date Sep. 21, 1994, PCT Pub. No. WO93/21186, PCT Pub. Date Oct. 28, 1993

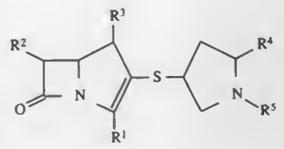
PCT Filed Apr. 9, 1993, Ser. No. 302,780

Claims priority, application United Kingdom, Apr. 13, 1992, 9208133; Oct. 5, 1992, 9220893; Feb. 24, 1993, 9303720

Int. Cl.[6] C07D *487/04*

U.S. Cl. 540—350 **11 Claims**

1. A compound of the formula:



in which R^1 is carboxy,

R^2 is 1-hydroxyethyl,

R^3 is methyl,

R^4 is pyridin-2-(or 3- or 4-)yl (C_1–C_2)alkyl, imidazol-5-ylmethyl, imidazol-2-yl(C_1–C_3) alkyl, pyrazol-4-(or 5-)ylmethyl, 1,2,4-triazol-5-yl (C_1–C_2)alkyl, pyrimidin-2-(or 5-)ylmethyl, or (1,6-dihydropyrimidin-5-yl)methyl,

each of which is unsubstituted or substituted by at least one substituent selected from the group consisting of methyl, ethyl, propyl, carbamoylmethyl, N,N-dimethylcarbamoylmethyl, N-(2-hydroxyethyl)carbamoylmethyl, allyloxycarbonyl, carbamoyl, hydroxymethyl, 2-hydroxyethyl, methoxymethyl, cyano, 3-aminopropyl, 3-(allyloxycarbonylamino)propyl and 2-carbamoylethenyl, and

R^5 is hydrogen, or a pharmaceutically acceptable salt thereof.

5,608,057
N-(ALPHA-ACYLOXYETHYL) COMPOUND AND METHOD FOR THE PREPARATION THEREOF

Yoshihiro Honma, Osaka-fu; Shozo Tanaka, Nara-ken; Mitsuyoshi Oshima, Niigata-ken; Soji Tanioka, Tokyo, and Fumiaki Kawamoto, Osaka-fu, all of Japan, assignors to Shin-Etsu Vinyl Acetate Co., Ltd., Japan

Filed Aug. 23, 1995, Ser. No. 518,303

Claims priority, application Japan, Aug. 31, 1994, 6-206345

Int. Cl.[6] C07C *233/31;* **C07D** *223/10*

U.S. Cl. 540—451 **13 Claims**

1. An N-(α-acyloxyethyl) compound represented by either one of the formulas

and

in which R^1 and R^2 are, each independently from the other, a hydrogen atom or a monovalent hydrocarbon group, R^3 is a monovalent hydrocarbon group, the subscript p is 0 or 1 and the subscript n is a positive integer not exceeding 10.

5,608,058
PROCESSING FOR PURIFYING CROWN COMPOUNDS

Shinri Tanaka, and Yasuhiko Kawashima, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 1, 1994, Ser. No. 189,700

Claims priority, application Japan, Feb. 18, 1993, 5-029313

Int. Cl.[6] C07D *267/22;323/00;321/12*

U.S. Cl. 540—454 **10 Claims**

1. A process of preparing a purified crown compound with the salt comprising the steps of:

(a) dissolving a crown compound and a salt in an organic solvent to form a solution of a complex salt of a crown compound;

(b) filtering the solution to obtain a filtrate;

(c) adding water to the filtrate to produce a precipitate; and

(d) filtering out the produced precipitate.

5,608,059
ION-SENSITIVE COMPOUNDS

Trevor J. Wear, South Harrow; Christopher P. Moore, Rayners Lane; Alistair J. Goulden, Harrow; Paul D. Beer, South Parks, and Nicholas C. Fletcher, South Parks Road, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP94/01191, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO94/24123, PCT Pub. Date Oct. 27, 1994

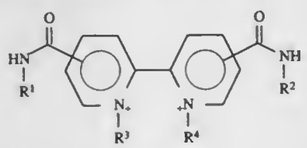
PCT Filed Apr. 18, 1994, Ser. No. 356,187

Claims priority, application United Kingdom, Apr. 21, 1993, 9308213; Mar. 5, 1994, 9404251

Int. Cl.[6] C07D *213/50;213/30;225/00;241/46*

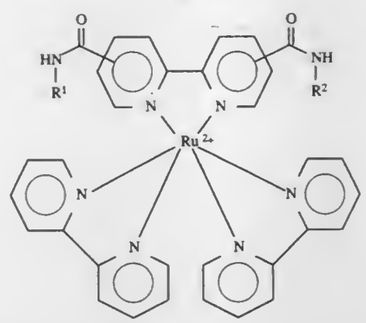
U.S. Cl. 540—465 **5 Claims**

1. An ion-sensitive compound having the formula $A^{2+}B^{2-}$ wherein A represents a cation capable of forming a receptor-substrate complex with an anion, and B represents one or more counter anions, characterised in that the cation is an anion receptor represented by the formula



-continued

or



wherein

R^1 and R^2 are each independently a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or R^1 and R^2 taken together with the atoms separating them represent the atoms necessary to complete a (2)-cryptand; and,

R^3 and R^4 are each independently H or a lower alkyl group having from 1 to 4 carbon atoms, or R^3 and R^4 taken together represent an ethylene bridging group.

5,608,060
BIOTINIDASE-RESISTANT BIOTIN-DOTA CONJUGATES

Donald B. Axworthy, Brier; Louis J. Theodore, Lynnwood; Linda M. Gustavson, Seattle, and John M. Reno, Brier, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

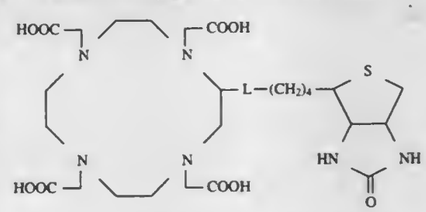
PCT No. PCT/US93/05406, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO93/25240, PCT Pub. Date Dec. 23, 1993

Continuation-in-part of Ser. No. 995,383, Dec. 23, 1992, abandoned, and a continuation-in-part of Ser. No. 995,381, Dec. 23, 1992, abandoned, each which is a continuation-in-part of Ser. No. 895,588, Jun. 9, 1992, Pat. No. 5,283,342. This PCT application Jun. 7, 1993, Ser. No. 351,469

Int. Cl.[6] C07D *257/02;495/04;* **A61K** *31/415;* **C07H** *17/04*

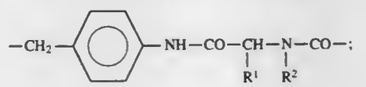
U.S. Cl. 540—474 **9 Claims**

1. A biotin-DOTA conjugate on the following formula:

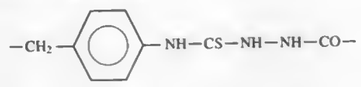


wherein a linker L is selected from the group consisting of:

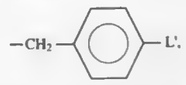
1) a D-amino acid-containing linker of the formula



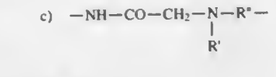
2) a linker of the formula



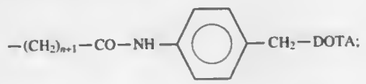
3) a linker of the formula



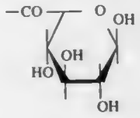
wherein L' is selected from the group consisting of:
a) —NH—CO—$(CH_2)_n$—O—;
b) —NH—;



d) —NH—CS—NH—; and
e) —NH—CO—$(CH_2)_n$—NH—,
wherein R' is hydrogen; C_1–C_5 lower alkyl; lower alkyl substituted with one or more hydrophilic groups; glucuronide-substituted amino acids; or other glucuronide derivatives;
R^2 is hydrogen; lower alkyl; substituted lower alkyl having one or more substituents selected from the group consisting of hydroxy, sulfate, and phosphonate; or a hydrophilic moiety;
R^3 is hydrogen; an amine; a lower alkyl; a hydroxy-, sulfate- or phosphonate-substituted lower alkyl; a glucuronide; or a glucuronide-derivatized amino acid;
R^4 is hydrogen, lower alkyl or



R' is hydrogen; —$(CH_2)_2$—OH or a sulfate or



phosphonate derivative thereof; or
R" is a bond or —$(CH_2)_n$—CO—NH—; and
n ranges from 0–5 and wherein both R^3 and R^4 cannot both be hydrogen.

5,608,061

PROCESS FOR PREPARING 1,4,8,11-TETRAAZACYCLOTETRADECANE

Lech Ciszewski, Morristown, N.J.; John Amedio, Franklin, Mass.; Prasad Kapa, Parsippany, N.J.; Andrew Kucerovy, Flanders, N.J., and George T. Lee, Bloomfield, N.J., assignors to Johnson Matthey PLC, London, England

Filed Aug. 2, 1995, Ser. No. 510,207
Int. Cl.[6] C07D *255/02*
U.S. Cl. 540—474 **20 Claims**

1. A process for preparing 1,4,8,11-tetraazacyclotetradecane comprising the steps of:
1) tetratosylating an acyclic tetraamine in a first step;
2) cyclizing the tetratoluenesulfonamide compound prepared in the first step; and
3) detosylating the tetratosyl cyclam compound prepared in the second step.

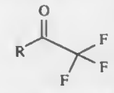
5,608,062

PROCESS FOR PREPARING TRIFLUOROMETHYL KETONES

Uwe Döller, Rodgau; Bernd Scharbert, Frankfurt, and Laurent Weisse, Oberursel, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

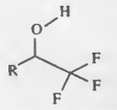
PCT No. PCT/EP93/00094, § 371 Date Sep. 21, 1994, § 102(e) Date Sep. 21, 1994, PCT Pub. No. WO93/14054, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 15, 1993, Ser. No. 256,523
Claims priority, application Germany, Jan. 21, 1992, 42 01 435.2
Int. Cl.[6] C07D *233/22;213/50;239/36;277/34*
U.S. Cl. 544—238 **11 Claims**

1. A process for preparing compounds of the formula I



(I)

where R is an unsubstituted or substituted aliphatic or aromatic hydrocarbon radical or an unsubstituted or substituted aliphatic or aromatic heterocyclic radical, wherein an alcohol of the formula II



(II)

where R has the abovementioned meaning, is reacted in an aprotic solvent in the presence of 0.1–20 mol %, based on the alcohol of the structure II employed, of a phase-transfer catalyst, with a 1–20% strength by weight aqueous solution of compounds of the structure IV or a 1–20% strength by weight aqueous solution of a compound generated in situ of the structure IV

$$YO_nH \qquad (IV)$$

where Y is =Cl, Br or I and n is =1, or of its salts, at temperatures from 0° C. up to the boiling point of the mixture.

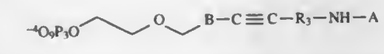
5,608,063

METHOD, SYSTEM AND REAGENTS FOR DNA SEQUENCING

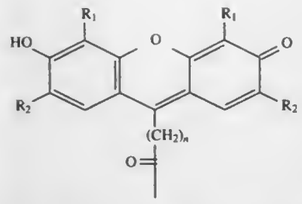
Frank W. Hobbs, Jr., Wilmington, Del., and George L. Trainor, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 181,358, Jan. 13, 1994, abandoned, which is a continuation of Ser. No. 981,148, Nov. 24, 1992, abandoned, which is a division of Ser. No. 780,346, Oct. 22, 1991, Pat. No. 5,242,796, which is a division of Ser. No. 57,566, Jun. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 881,372, Jul. 2, 1986, abandoned. This application Mar. 28, 1995, Ser. No. 412,409
Int. Cl.[6] C07F *9/6512;9/6561*
U.S. Cl. 544—244 **3 Claims**

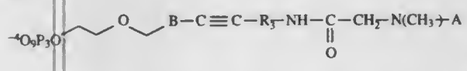
1. A fluorescent-labeled triethylammonium salt having the structure:



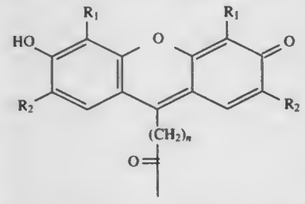
wherein B is uracil, cytosine, 7-deazaadenine, 7-deazaguanine, or 7-deazahypoxanthine; and A is a fluorophore having the structure:



wherein n=2 or 3, and R_1 and R_2 are H, lower alkyl, halo, lower alkoxy, and cyano; and
R_3 is a straight-chained C_1–C_4 alkylene moiety, provided that if B is a pyrimidine, B is N_1-linked to the acyclic sugar moiety and C_5-linked to one end of the triple bond (pyrimidine numbering), and if B is a 7-deazapurine, B is N_9-linked to the acyclic sugar moiety and C_7-linked to one end of the triple bond (purine numbering).
2. A fluorescent-labeled triethylammonium salt having the structure:



wherein B is uracil, cytosine, 7-deazaadenine, 7-deazaguanine, or 7-deazahypoxanthine; and A is a fluorophore having the structure:



wherein n=2 or 3, and R_1 and R_2 are H, lower alkyl, halo, lower alkoxy, and cyano; and
R_3 is a straight-chained C_1–C_4 alkylene moiety
provided that if B is a pyrimidine, B is N_1-linked to the acyclic sugar moiety and C_5-linked to one end of the triple bond (pyrimidine numbering), and if B is a 7-deazapurine, B is N_9-linked to the acyclic sugar moiety and C_7-linked to one end of the triple bond.

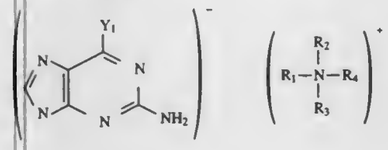
5,608,064

PURINYL SALTS USEFUL FOR PREPARING GUANINE CONTAINING ANTIVIRAL AGENTS

Janak Singh; Gregory S. Bisacchi, both of Lawrenceville; Jollie D. Godfrey, Jr., Trenton; Toomas Mitt, Plainsboro; Richard H. Mueller, Ringoes; Robert Zahler, Pennington, and Thomas P. Kissick, Lawrenceville, all of N.J., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

Division of Ser. No. 7,950, Jan. 25, 1993, which is a continuation-in-part of Ser. No. 912,384, Jul. 13, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,183
Int. Cl.[6] C07D *473/40;473/18*
U.S. Cl. 544—277 **5 Claims**

1. A compound of the formula



wherein:
Y_1 is chloro, bromo, or iodo;
R_1, R_2, R_3, and R_4 are independently selected from the group consisting of straight or branched chain alkyl of 1 to 10 carbons and substituted straight or branched chain alkyl of 1 to 10 carbons;
substituted straight or branched chain alkyl of 1 to 10 carbons refers to such alkyl groups having one, two, or three substituents selected from the group consisting of alkoxy of 1 to 6 carbons and aryl;
aryl refers to phenyl and phenyl having one, two, or three substituents selected from the group consisting of alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, chloro, bromo, iodo, and fluoro.

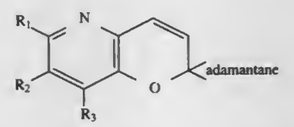
5,608,065

PHOTOCHROMATIC SUBSTANCES

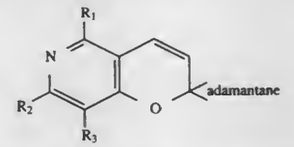
Manfred Melzig, Wessling, Germany, assignor to Optische Werke G. Rodenstock, Munich, Germany

Division of Ser. No. 386,175, Feb. 9, 1995, which is a continuation of Ser. No. 180,507, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 46,926, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 913,980, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 499,304, May 11, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 474,134
Claims priority, application Germany, Oct. 1, 1988, 38 33 436.4
Int. Cl.[6] C07D *221/20;237/26;239/70;241/36*
U.S. Cl. 546—15 **4 Claims**

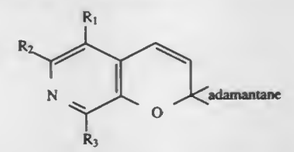
1. A spiro adamantanpyrano heteroaromatic compound selected from the group consisting of a spiro(adamantan-2,2'(2'H) pyrano-2,2'(2'H) pyrano-(3,2-b)pyridine or derivative thereof having the formula:



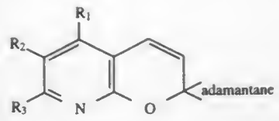
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-c)pyridine) or derivative thereof having the formula:



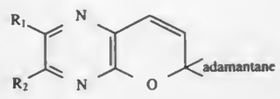
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-c)pyridine) or derivative thereof having the formula:



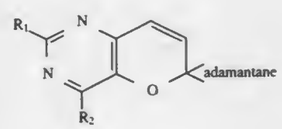
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-b)pyridine) or derivative thereof having the formula:



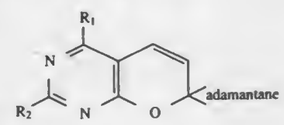
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-c)pyrazine) or derivative thereof having the formula:



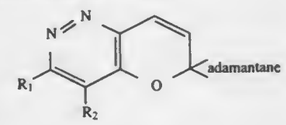
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-e)pyrimidine) or derivative thereof having the formula:



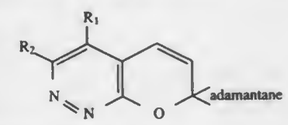
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-e)pyrimidine) or derivative thereof having the formula:



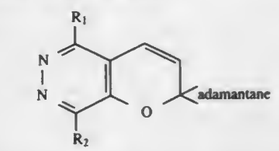
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-e)pyridazine) or derivative thereof having the formula:



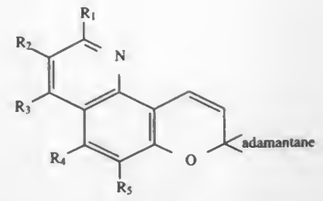
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-d)pyridazine) or derivative thereof having the formula:



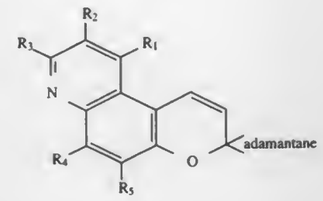
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-c)pyridazine) or derivative thereof having the formula:



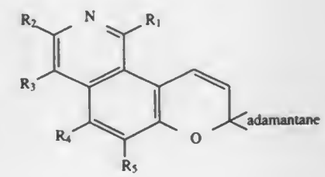
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-h)quinoline) or derivative thereof having the formula:



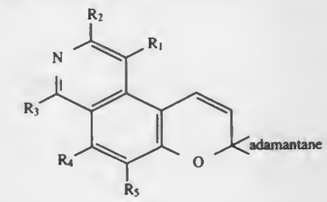
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-f)quinoline) or derivative thereof having the formula:



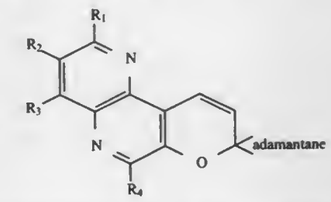
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-h)isoquinoline) or derivative thereof having the formula:



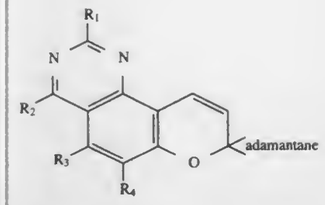
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-f)isoquinoline) or derivative thereof having the formula:



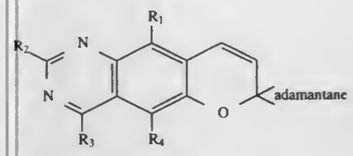
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-c)-1,5-naphthiridine) or derivative thereof having the formula:



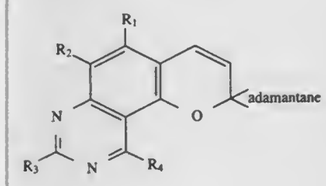
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-h)quinazoline) or derivative thereof having the formula:



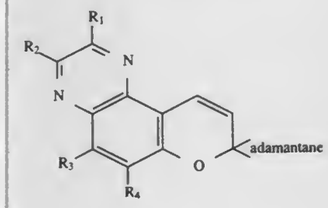
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-g)quinazoline) or derivative thereof having the formula:



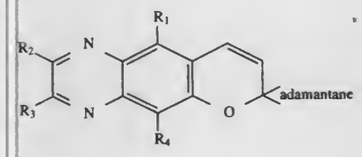
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)quinazoline) or derivative thereof having the formula:



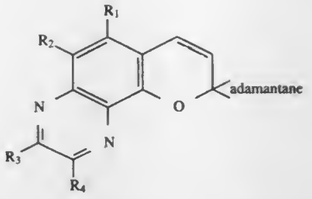
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-f)quinoxaline) or derivative thereof having the formula:



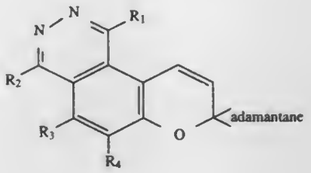
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-g)quinoxaline) or derivative thereof having the formula:



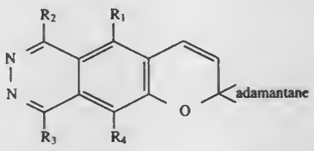
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)quinoxaline) or derivative thereof having the formula:



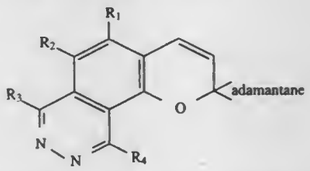
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-f)phthalazine) or derivative thereof having the formula:



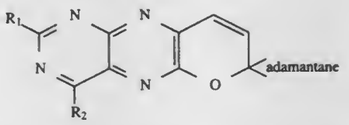
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-g)phthalazine) or derivative thereof having the formula:



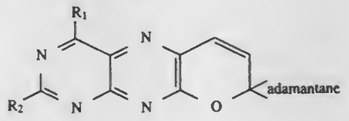
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)phthalazine) or derivative thereof having the formula:



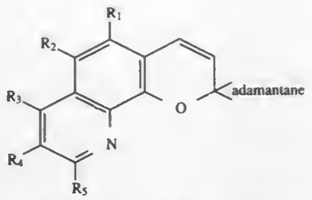
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-g)pteridine) or derivative thereof having the formula:



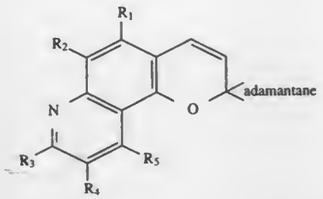
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-g)pteridine) or derivative thereof having the formula:



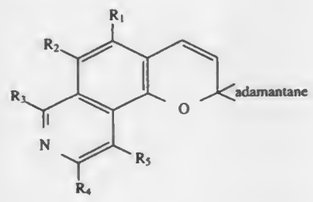
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-h)quinoline) or derivative thereof having the formula:



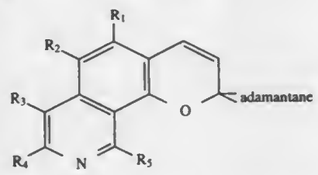
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)quinoline) or derivative thereof having the formula:



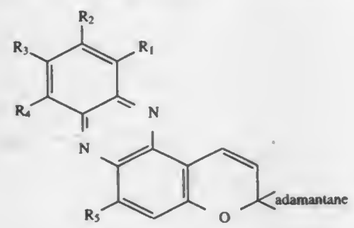
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)isoquinoline) or derivative thereof having the formula:



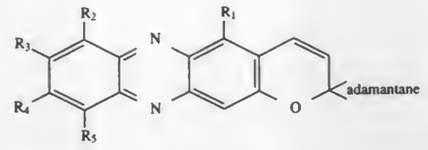
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-h)isoquinoline) or derivative thereof having the formula:



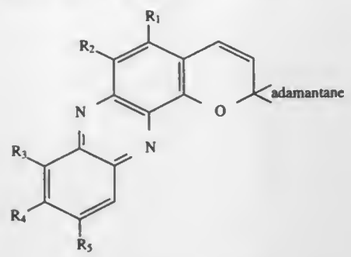
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-a)phenazine) or derivative thereof having the formula:



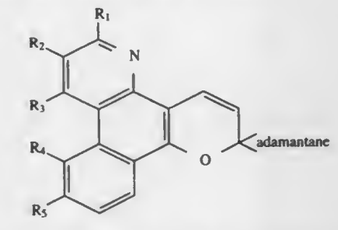
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-h)phenazine) or derivative thereof having the formula:



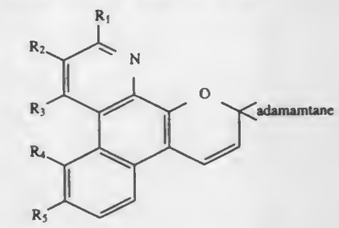
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-a)phenazine) or derivative thereof having the formula:



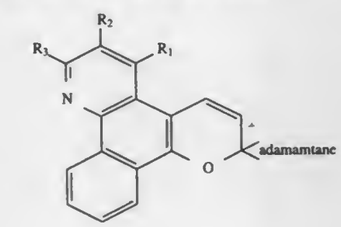
a spiro(adamantan-2,2'(2'H) pyrano-(2,3-h)benzo(f)-quinoline) or derivative thereof having the formula:



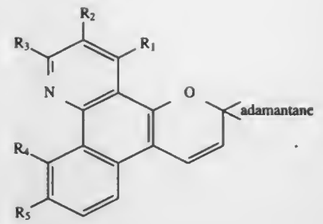
a spiro(adamantan-2,2'(2'H) pyrano-(3,2-h)benzo(f)-quinoline) or derivative thereof having the formula:



a spiro(adamantan-2,2'(2'H) pyrano-(3,2-f)benzo(f)-quinoline) or derivative thereof having the formula:



a spiro(adamantan-2,2'(2'H) pyrano-(2,3-f)benzo(f)-quinoline) or derivative thereof having the formula:



wherein

R_1, R_2, R_3, R_4 and R_5 are each a substituent selected from the group consisting of H, alkyl, aryl, substituted phenyl, naphthyl, heteroaryl, hydroxy, C_1–C_4 alkoxy, halogen, alkylamino, diaalkylamino, cyano and trifluormethyl, or divalent substituents represented by R_1 and R_2, R_3 and R_4 or R_2 and R_3 form a condensed aromatic or heteroaromatic ring or an alkane ring with 4–8 C-atoms.

5,608,066

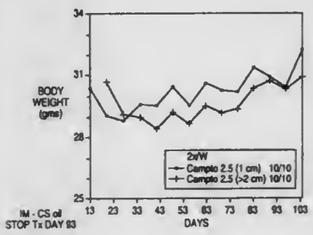
METHODS FOR PURIFYING CAMPTOTHECIN COMPOUNDS

Hellmuth R. Hinz, Kingwood, Tex., assignor to The Stehlin Foundation for Cancer Research, Houston, Tex.

Division of Ser. No. 200,398, Feb. 23, 1994, Pat. No. 5,527,913, which is a continuation-in-part of Ser. No. 22,091, Feb. 25, 1993, Pat. No. 5,352,789. This application Jun. 6, 1995, Ser. No. 471,772

Int. Cl.[6] C07D *491/22*

U.S. Cl. 546—48 **3 Claims**



1. A method of purifying 20(S)-camptothecin comprising the steps of:

(1) heating under reflux a mixture of a starting natural plant material containing 20(S)-camptothecin and an excess amount of acetic acid under a continuous stream of an inert gas to form a mixture, wherein said starting natural plant material containing 20(S)-camptothecin is selected from the group consisting of *Camptotheca acuminata, Mappie foetida* Miers, *ophiorrhiza mungos*, and *Erratama heyneana;*

(2) adding HBr, HCl or a mixture thereof to said mixture in an effective amount to dissolve said starting plant material containing 20(S)-camptothecin and continuing said heating under reflux until the starting plant material containing 20(S)-camptothecin is dissolved to form a solution;

(3) monitoring said heating under reflux by means of thin layer chromatography and continuing said heating until the material immediately following 20(S)-camptothecin on a thin layer chromatography plate has disappeared; and

(4) filtering impurities from the 20(S)-camptothecin.

5,608,067

4-SUBSTITUTED PYRAZOLOQUINOLINE DERIVATIVES

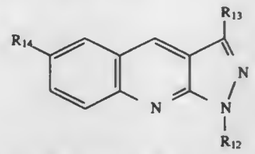
Adriano Afonso, 10 Woodmere Rd., West Caldwell, N.J. 07006; Joseph M. Kelly, 112 Princeton Rd., Parlin, N.J. 08859, and Samuel Chackalamannil, 79 Stratford Rd., East Brunswick, N.J. 08816

Continuation-in-part of Ser. No. 164,179, Dec. 9, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 234,695

Int. Cl.[6] C07D *471/04*

U.S. Cl. 546—82 **4 Claims**

1. A compound of the formula



II

or a pharmaceutically acceptable salt thereof,

wherein R_{12} is —CO—R_{15}, wherein R_{15} is (C_1–C_8)alkyl substituted by NH_2 or —CH_2—NHR_{16} wherein R_{16} is (C_1–C_4) alkyl;

R_{13} is (C_1–C_8)alkyl; and

R_{14} is (C_1–C_8)alkoxy.

5,608,068

PROCESS FOR THE PREPARATION OF IMIDAZOPYRIDINE DERIVATIVES AND INTERMEDIATES

Yoshio Urawa; Ken Furukawa; Toshikazu Shimizu; Yoji Yamagishi, all of Ibaraki; Tomio Tsurugi, Chiba, and Tomio Ichino, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, and Eisai Chemical Co., Ltd., Ibaraki, both of Japan

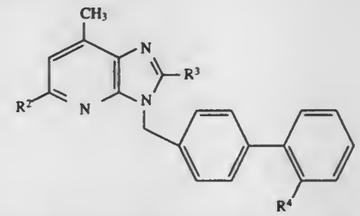
Division of Ser. No. 256,869, Aug. 5, 1994, Pat. No. 5,583,229. This application Jun. 6, 1995, Ser. No. 471,677

Claims priority, application Japan, Dec. 7, 1992, 4-351139; Dec. 16, 1992, 4-353865; Jun. 17, 1993, 5-169805; Jun. 17, 1993, 5-169823; Jun. 17, 1993, 5-169824; Jun. 17, 1993, 5-169825

Int. Cl.[6] C07D *471/04*

U.S. Cl. 546—118 **7 Claims**

1. A process for the preparation of a 2-substituted-3-(biphenyl-4-yl)methyl-3H-imidazo[4,5-b]-pyridine derivative (II) having the formula

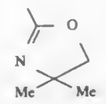


(II)

wherein R^2 represents a hydrogen atom or a methyl, group; R^3 represents a cycloalkyl group, a lower alkyl group or a lower alkoxy group; and R^4 represents a group represented by the following formula:

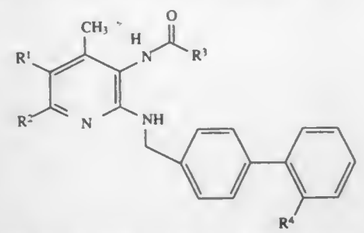


wherein R^5 represents a lower alkyl group, a cycloalkyl group, an alkoxyalkyl group, a thioalkoxyalkyl group, a cycloether group, an aryl group, an aralkyl group, an alkenyl group, an alkynyl group or a trialkylsilyl group, or R^4 represents a group represented by the following formula:



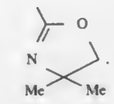
which comprises conducting the cyclization of a 2-[N-(biphenyl-4-yl)methyl]amino-3-acylaminopyridine or 2-[N-(biphenyl-4-yl)methyl]amino-3-alkoxycarbonylaminopyridine derivative (VI) represented by the following formula or the cyclization and dehalogenation thereof under reducing conditions:

(VI)



wherein R^1 represents a hydrogen atom, a bromine atom or a chlorine atom; R^2 represents a hydrogen atom or a methyl group; R^3 represents a cycloalkyl group, a lower alkyl group or a lower alkoxy group; and R^4 represents a group represented by the following formula:

wherein R^5 represents a lower alkyl group, a cycloalkyl group, an alkoxyalkyl group, a thioalkoxyalkyl group, a cycloether group, an aryl group, an aralkyl group, an alkenyl group, an alkynyl group or a trialkylsilyl group, or R^4 represents a group represented by the following formula:



5,608,069

1-SUBSTITUTED, 3-CARBOXYLIC ACID PIPERIDINE DERIVATIVES

Hans Petersen, Vanløse; Knud E. Andersen, Smørum; Per O. Sørensen, Frederiksberg; Jesper Lau, Farum; Henning B. Petersen, Lyngby, and Behrend F. Lundt, Kokkedal, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jun. 22, 1994, Ser. No. 263,635

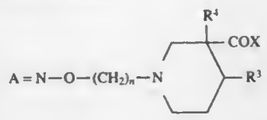
Claims priority, application Denmark, Jun. 23, 1993, 0743/93

Int. Cl.[6] C07D *211/60;211/68;211/80*

U.S. Cl. 546—194 **12 Claims**

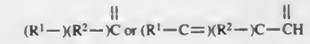
1. A compound of formula I

(I)



wherein

A is



wherein one of R^1 and R^2 is hydrogen; C_{1-4}-alkoxy-$_{1-8}$-alkyl; straight or branched C_{1-8}-alkyl optionally substituted with either one to three halogen(s) or phenyl; C_{3-7}-cycloalkyl or C_{3-7}-cycloalkenyl, each of which is optionally substituted with phenyl; or phenyl; wherein each phenyl is optionally substituted with halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or trifluoromethyl; and the other of R^1 and R^2 is hydrogen; C_{1-4}-alkoxy-C_{1-8}-alkyl; straight or branched C_{1-8}-alkyl optionally substituted with either one to three halogen(s) or phenyl; C_{3-7}-cycloalkyl or C_{3-7}-cycloalkenyl, each of which is optionally substituted with phenyl; wherein each phenyl is optionally substituted with halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or trifluoromethyl;

R^3 and R^4 are hydrogen or together represent a bond;

X is hydroxy or C_{1-4}-alkoxy; and

n is 2, 3, 4 or 5; or

a pharmaceutically acceptable salt thereof.

5,608,070

ENANTIOSELECTIVE PROCESS FOR THE PREPARATION OF CHIRAL TRIARYL DERIVATIVES AND CHIRAL INTERMEDIATES FOR USE THEREIN

Rikki P. Alexander, High Wycombe; Graham J. Warrellow, Northwood; John C. Head, Windsor; Ewan C. Boyd, Tullibody, and John R. Porter, Chinnor, all of United Kingdom, assignors to Celltech Therapeutics Limited, Slough, United Kingdom

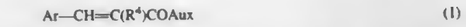
Filed Dec. 21, 1994, Ser. No. 361,439

Claims priority, application United Kingdom, Dec. 22, 1993, 9326173

Int. Cl.[6] C07D *417/00*

U.S. Cl. 546—270 **16 Claims**

1. A compound of formula (I):



(I)

wherein each of Ar and R^4 is independently an optionally substituted monocyclic aryl group or an optionally substituted bicyclic aryl group, said aryl groups optionally containing one or more heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen atoms; and Aux is the residue of a chiral R- or S-auxiliary.

5,608,071

SYNTHESIS OF 3-BROMO-5-CHLORO-2-ALKYL-PYRIDINE DERIVATIVES

George J. Quallich, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

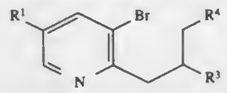
Division of Ser. No. 215,071, Mar. 18, 1994, Pat. No. 5,436,344, which is a continuation-in-part of Ser. No. 619,850, Nov. 29, 1990, abandoned. This application Apr. 26, 1995, Ser. No. 429,408

Int. Cl.[6] C07D *213/87;213/79;213/61*

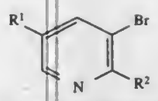
U.S. Cl. 546—345 **3 Claims**

1. A process for preparing a compound of the formula

II

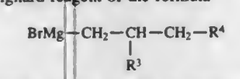


wherein R^1 is hydrogen, fluoro, chloro, bromo, nitro, trifluoromethyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio or C_1 to C_6 alkyl, R^3 is hydrogen or C_1 to C_6 alkyl, R^4 is $—CH_1═CH_2$ or $—CH_2$-YR^5, Y is oxygen or sulfur, and R^5 is an acid labile alcohol protecting group comprising reacting a compound of the formula



III

wherein R^2 is bromo or iodo and R^1 is as defined above with a Grignard reagent of the formula



IV

wherein R^3 and R^4 are as defined above in the presence of a phosphine ligand catalyst and at a sufficiently low temperature such that a regiospecific displacement of only the R^2 substitutent occurs.

5,608,072

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

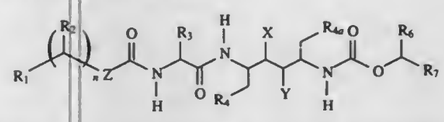
Dale J. Kempf, Libertyville; Daniel W. Norbeck, Crystal Lake; Hing L. Sham, and Chen Zhao, both of Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 158,587, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 998,114, Dec. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,626, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Apr. 4, 1995, Ser. No. 416,259

Int. Cl.[6] C07D *277/30*

U.S. Cl. 548—204 **12 Claims**

1. A compound of the formula:



wherein R_1 is monosubstituted isoxazolyl or monosubstituted isothiazolyl wherein the substituent is selected from (i) C_1-to-C_6-loweralkyl, (ii) C_2-to-C_6-loweralkenyl, (iii) C_3-to-C_7-cycloalkyl, (iv) C_3-to-C_7-cycloalkyl-C_1-to-C_6-alkyl, (v) C_5-to-C_7-cycloalkenyl, (vi) C_5-to-C_7-cycloalkenyl-C_1-to-C_6-alkyl, (vii) C_1-to-C_6-alkoxy-C_1-to-C_6-alkyl or benzyloxy-C_1-to-C_6-alkyl, (viii) C_1-to-C_6-thioalkoxy-C_1-to-C_6-alkyl or benzyl-S-C_1-to-C_6-alkyl, (ix) C_1-to-C_6-alkylamino, (x) di-C_1-to-C_6-alkylamino, (xi) phenyl wherein the phenyl ring is unsubstituted or substituted with a substituent selected from halo, C_1-to-C_6-loweralkyl, hydroxy, C_1-to-C_6-alkoxy, benzyloxy, benzyl-S- and thioalkoxy, (xii)phenyl-C_1-to-C_6-alkyl wherein the phenyl ring is unsubstituted or substituted as defined above, (xiii)di-C_1-to-C_6-alkylamino-C_1-to-C_6-alkyl, (xiv) C_1-to-C_6-alkoxy or benzyloxy and (xv) C_1-to-C_6-thioalkoxy or benzyl-S-;

n is 1, 2 or 3;

R_2 is hydrogen or C_1-to-C_6-loweralkyl;

R_3 is C_1-to-C_6-loweralkyl;

R_4 and R_{4a} are independently selected from phenyl wherein the phenyl ring is unsubstituted or substituted with a substituent selected from (i) halo, (ii) C_1-to-C_6-loweralkyl, (iii) hydroxy, (iv) C_1-to-C_6-alkoxy or benzyloxy and (v) C_1-to-C_6-thioalkoxy or benzyl-S-;

R_6 is hydrogen or C_1-to-C_6-loweralkyl;

R_7 is thiazolyl or oxazolyl wherein the thiazolyl or oxazolyl ring is unsubstituted or substituted with C_1-to-C_6-loweralkyl;

X is hydrogen and Y is —OH; and

Z is absent, —O—, —S—, $—CH_2—$ or $—N(R_8)—$ wherein R_8 is C_1-to-C_6-loweralkyl, C_3-to-C_7-cycloalkyl, —OH or $—NHR_{8a}$ wherein R_{8a} is hydrogen or C_1-to-C_6-loweralkyl; or a pharmaceutical acceptable salt thereof.

5,608,073

BACCATIN DERIVATIVES AND PROCESSES FOR PREPARING THE SAME

Kenji Tsujihara, Urawa; Tomiki Hashiyama, Saitama; Motoaki Ohashi, Koganei, and Noriyuki Nakanishi, Kawaguchi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Division of Ser. No. 558,772, Nov. 15, 1995. This application Jul. 1, 1996, Ser. No. 673,580

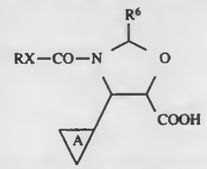
Claims priority, application Japan, Nov. 17, 1994, 5-283780; Sep. 28, 1995, 6-251185

Int. Cl.[6] C07D *263/04*

U.S. Cl. 548—215 **2 Claims**

1. A compound represented by the formula [IX]:

[IX]



wherein ring A represents a substituted or unsubstituted cyclopropane ring; R^6 represents a substituted phenyl group; X represents a single bond or a group represented by —O—, —S— or —NH—; and R represents a substituted or unsubstituted lower alkyl group (wherein said lower alkyl group may have a cycloalkyl moiety), a substituted or unsubstituted aryl group, or a substituted or unsubstituted aromatic heterocyclic group or a reactive derivative thereof.

5,608,074

PROCESS FOR THE SYNTHESIS OF 5-AMINO TETRAZOLE DERIVATIVES

Jonathan Walker, Holland, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

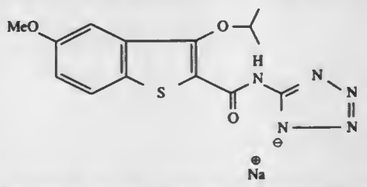
Division of Ser. No. 162,519, Dec. 3, 1993, Pat. No. 5,426,191. This application Dec. 19, 1994, Ser. No. 359,139

Int. Cl.[6] C07D *409/12*

U.S. Cl. 548—251 **8 Claims**

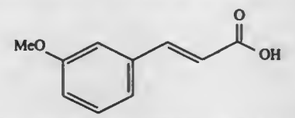
1. A process for the preparation of the compound of Formula I

I



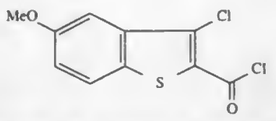
which comprises Step (a) treating the compound of Formula Va

Va



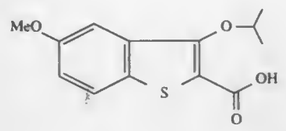
with thionyl chloride in the presence of a 4-N,N'-disubstituted

aminopyridine selected from the group consisting of 4-(4-methyl-1-piperidinyl)pyridine; 4-(4-methyl-1-piperidinyl)pyridine hydrochloride; 4-dimethylaminopyridine; and 4-dimethylaminopyridine hydrochloride and a solvent to afford the compound of Formula IVa;



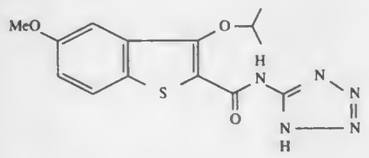
IVa

Step (b) treating the compound of Formula IVa with sodium isopropoxide in a solvent followed by saponification with a base to afford the compound of Formula III;



III

Step (c) treating the compound of Formula III in a solvent with thionyl chloride and pyridine in a solvent and subsequently adding 5-aminotetrazole and triethylamine in a solvent to afford the compound of Formula II;



II

Step (d) treating the compound of Formula II with sodium hydroxide solution in a solvent to afford the compound of Formula I.

5,608,075

POLYMORPHS OF LOSARTAN AND THE PROCESS FOR THE PREPARATION OF FORM II OF LOSARTAN

Gordon C. Campbell, Jr., Wilmington; Anil M. Dwivedi, Newark, both of Del.; Dorothy A. Levorse, South Amboy; James A. McCauley, Bellemeade, both of N.J., and Krishnaswamy S. Raghavan, Wilmington, Del., assignors to Merck & Co., Inc., Rahway, N.J.; E. I. Du Pont de Nemours & Company, and The DuPont Merck Pharmaceutical Company, both of Wilmington, Del.

Continuation of Ser. No. 173,440, Dec. 23, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 371,937

Int. Cl.[6] C07D *257/04*

U.S. Cl. 548—252 **11 Claims**

1. Form I of Losartan characterized by an endothermal maximum of conversion at an extrapolated onset temperature of 229.5° C. and an endothermal maximum of melting at an extrapolated onset temperature of 273.2° C. when heated in an open pan in a differential scanning calorimetric cell at a rate of 10° C./min under a nitrogen atmosphere and an X-ray powder diffraction pattern having X-ray powder diffraction angles: 7.24, 11.02, 14.16, 15.07, 18.46, 18.87, 26.53, 27.30, 29.15.

5,608,076

METHOD OF PREPARING AMIONOAKYLHYDANTOINS AND AMINOALKYL-ALPHA-AMINO ACIDS

Matthias Kottenhahn; Karlheinz Drauz, both of Freigericht, and Andreas Bommarius, Frankfurt, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP93/02753, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/08974, PCT Pub. Date Apr. 28, 1994

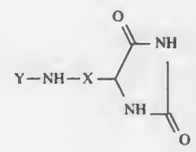
PCT Filed Oct. 8, 1993, Ser. No. 416,855

Claims priority, application Germany, Oct. 16, 1992, 4234867.6

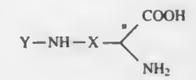
Int. Cl.[6] C07D *233/76;233/72;* **A61K** *31/415*

U.S. Cl. 548—317.1 **5 Claims**

1. A method of preparing 5-(aminoalkyl)-hydantoin of the formula I or the aminoalkyl-α-amino acid of the formula II or their salts obtainable from them



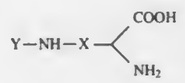
(I)



(II)

in which

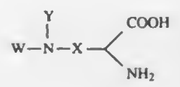
X stands for a C_1–C_6 alkylene group a C_1–C_6 alkylene group interrupted by oxygen or sulfur with preservation of adjacent amino function, and Y stands for hydrogen, (C_1–C_4) alkyl or benzyl and * signifies an optically pure compound on the α-C atom, in which method an α-amino acid with the formula IV or its salt



(IV)

in which

X and Y have the meaning indicated above and either a stereoisomeric mixture or the optical antipode to II is used as α-amino acid or its salt, wherein X and Y are adjacent to the amino function is protected with the amino protective group W splittable off with acid when a compound of the formula III or its salt is obtained



(III)

in which

X and Y have the meaning indicated above and W signifies an amino protective group which is acid labile, characterized in that the amino protective group W is introduced before the formation of the hydantoin (I) and the compound of the formula III resulting therefrom or its salt reacts with a alkali cyanate and cyclized by means of treatment with acid.

5,608,077

DERIVATIVES OF N-PHENYLPYRAZOLES

Leslie R. Hatton; Ian G. Buntain; David W. Hawkins; Edgar W. Parnell; Christopher J. Pearson, and David A. Roberts, all of Essex, England, assignors to Rhone-Poulenc Agriculture Ltd., Ongar, England

Division of Ser. No. 57,669, May 5, 1993, which is a division of Ser. No. 520,290, May 7, 1990, Pat. No. 5,232,940, which is a continuation-in-part of Ser. No. 445,153, Dec. 5, 1989, abandoned, and a continuation of Ser. No. 380,333, Jul. 17, 1989, abandoned, and a continuation of Ser. No. 413,134, Sep. 27, 1989, abandoned, which is a continuation of Ser. No. 205,238, Jun. 10, 1988, abandoned, said Ser. No. 380,333is a continuation of Ser. No. 205,299, Jun. 10, 1988, said Ser. No. 445,153is a continuation of Ser. No. 943,132, Dec. 17, 1986, abandoned.

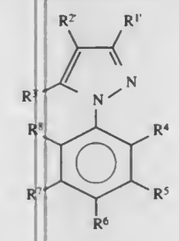
This application May 30, 1995, Ser. No. 454,412

Claims priority, application United Kingdom, Dec. 20, 1985, 85/31485; Jun. 12, 1987, 87/13768; Jun. 12, 1987, 87/13769

Int. Cl.[6] C07D *231/12;231/16;231/18*

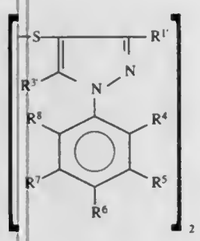
U.S. Cl. 548—365.1 **3 Claims**

1. A compound of the formula:



(XXV)

or



(VIII)

wherein:

$R^{1'}$ is cyano, nitro, halogen, acetyl, formyl, amino, 1-hydroxyethyl, carboxy, carbamoyl, or straight or branched-chain alkoxycarbonyl or alkoxycarbonylamino of 2 to 7 carbon atoms;

$R^{2'}$ is $R'SO_2$, R'SO or R'S in which R' is straight- or branched-chain alkyl, alkenyl or alkynyl of up to 4 carbon atoms which is unsubstituted or substituted by one or more halogen which are the same or different; or $R^{2'}$ is hydrogen, thiocyanato, formyl, cyano, carboxy, or straight- or branched-chain alkoxycarbonyl of 2 to 7 carbon atoms;

$R^{3'}$ is hydrogen or —$NR^{"}R^{"'}$ wherein $R^{"}$ and $R^{"'}$, which are the same or different, each represent hydrogen, straight- or branched-chain alkyl, alkenylalkyl or alkynylalkyl of up to 5 carbon atoms, formyl or straight- or branched-chain alkanoyl of 2 to 5 carbon atoms which is unsubstituted or substituted by one or more halogen atoms, or $R^{"}$ and $R^{"'}$ together with the nitrogen atom to which they are attached form a 5 or 6 membered cyclic imide, or is straight- or branched-chain alkoxymethyleneamino of 2 to 5 carbon atoms which is unsubstituted or substituted on methylene by straight or branched-chain alkyl of 1 to 4 carbon atoms, or $R^{3'}$ is halogen or diphenoxycarbonylamino;

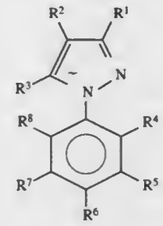
R^4 is fluorine, chlorine, bromine or iodine;

R^6 is straight- or branched-chain alkyl or alkoxy of 1 to 4 carbon atoms, which is unsubstituted or substituted by one or more halogen atoms which are the same or different, or chlorine or bromine;

R^5 and R^7 are hydrogen; and

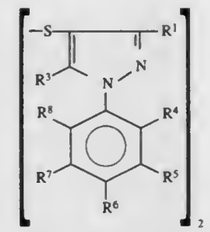
R^8 is hydrogen, fluorine, chlorine, bromine or iodine; excluding:

(1) a compound of the formula:



(I)

or



(VIII)

wherein:

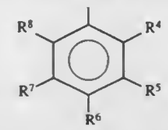
R^1 is cyano, nitro, halogen, acetyl or formyl;

R^2 is $R'SO_2$, R'SO or R'S in which R' is straight- or branched-chain alkyl, alkenyl or alkynyl of up to 4 carbon atoms, which is unsubstituted or substituted by one or more halogen which are the same or different;

R^3 is hydrogen or —$NR^{"}R^{"'}$ wherein $R^{"}$ and $R^{"'}$, which are the same or different, each represent hydrogen, straight- or branched-chain alkyl, alkenylalkyl or alkynylalkyl of up to 5 carbon atoms, formyl or straight- or branched-chain alkanoyl of 2 to 5 carbon atoms which is unsubstituted or substituted by one or more halogen atoms, or $R^{"}$ and $R^{"'}$ together with the nitrogen atom to which they are attached form a 5 or 6 membered cyclic imide, or is straight- or branched-chain alkoxycarbonyl of 2 to 5 carbon atoms which is unsubstituted or substituted by one or more halogen, or R^3 is straight- or branched-chain alkoxymethyleneamino of 2 to 5 carbon atoms which is unsubstituted or substituted on methylene by straight- or branched-chain alkyl of 1 to 4 carbon atoms, or R^3 is halogen; and

R^4, R^5, R^6, R^7 and R^8 are as defined above;

(2) a compound of formula (XXV) above, wherein the group



is 2,6-dichloro-4-trifluoromethylphenyl, $R^{2'}$ is cyano, and:

(a) $R^{1'}$ is cyano and $R^{3'}$ is amino, acetamido, dichloroacetamido, t-butylcarbonylamino, propionamido, pentanamido, bis(ethoxycarbonyl)amino, ethoxycarbonylamino, methylamino or ethylamino;

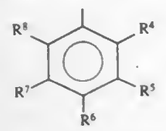
(b) $R^{1'}$ is chlorine and $R^{3'}$ is amino, t-butylcarbonylamino, bis(ethoxycarbonyl)amino or ethoxycarbonylamino;

(c) $R^{1'}$ is bromine, iodine, amino or ethoxycarbonyl and $R^{3'}$ is amino;

(d) $R^{1'}$ is fluorine and $R^{3'}$ is hydrogen or amino; or

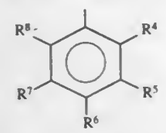
(e) $R^{1'}$ is nitro, amino, t-butoxycarbonylamino or ethoxycarbonyl and $R^{3'}$ is hydrogen;

(3) a compound of formula (XXV) above, wherein the group



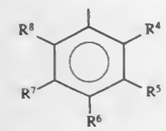
is 2,4,6-trichlorophenyl, 2-chloro-4-trifluoromethylphenyl or 2,6-dichloro-4-trifluoromethoxypbenyl, $R^{2'}$ is cyano, $R^{1'}$ is cyano and $R^{3'}$ is amino;

(4) a compound of formula (XXV) above, wherein the group



is 2,6-dichloro-4-trifluoromethoxyphenyl, $R^{2'}$ is cyano, $R^{1'}$ is chlorine and $R^{3'}$ is amino;

(5) a compound of formula (XXV) above, wherein the group



is 2,6-dichloro-4-trifluoromethylphenyl, $R^{2'}$ is methanesulphonyl, $R^{1'}$ is carboxy, carbamoyl or ethoxycarbonyl, and $R^{3'}$ is amino.

5,608,078

PHOSPHONOMETHYLDIPEPTIDES AND PROCESS FOR PREPARATION THEREOF

Hugues d'Orchymont, and Marc Bigaud, both of Strasbourg, France, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

PCT No. PCT/US94/01716, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/22908, PCT Pub. Date Oct. 13, 1994

PCT Filed Feb. 22, 1994, Ser. No. 501,018

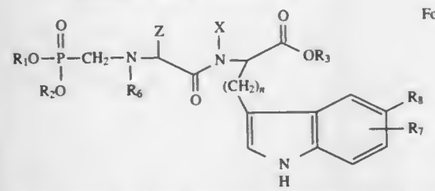
Claims priority, application European Pat. Off., Mar. 30, 1993, 93400824

Int. Cl.[6] C07D *209/14*

U.S. Cl. 548—414 **15 Claims**

1. A compound having the formula of:

Formula I



stereoisomers, hydrates, inner salts or pharmaceutically acceptable salts thereof,

wherein

R_1 or R_2 are each independently a hydrogen, C_{1-6} alkyl, $(CH_2)_m$-aryl, R_4—C(O)O—CH(R_5)— or nothing when the inner salt is formed, provided that when one of R_1 or R_2 is a hydrogen, C_{1-6} alkyl, or $(CH_2)_m$—aryl, then the other is hydrogen or nothing when the inner salt is formed;

R_3 is hydrogen, C_{1-6} alkyl, $(CH_2)_m$-cycloalkyl or $(CH_2)_m$-aryl;

R_4 is C_{1-10} alkyl, $(CH_2)_m$-cycloalkyl or $(CH_2)_m$-aryl;

R_5 is C_{1-6} alkyl, $(CH_2)_m$-cycloalkyl or hydrogen;

R_6 is H, or H_2 when one of R_1 or R_2 is nothing thus forming the inner salt;

R_7 is CH_3 or H;

R_8 is H, Br, CH_3, or OCH_3, provided that one of R_7 or R_8 are H;

Z is $(CH_2)_m$-aryl or C_{1-12} alkyl;

X is hydrogen or C_{1-6} alkyl;

each m is independently 0, 1, 2 or 3; and n is 1, 2 or 3.

5,608,079

CERTAIN FUSED PYRROLECARBOXANILIDES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

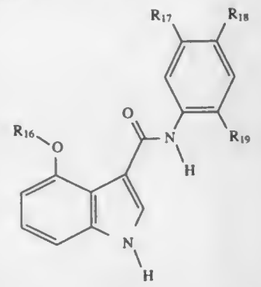
Pamela Albaugh, Clinton, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 144,138, Oct. 27, 1993. This application Jun. 7, 1995, Ser. No. 473,509

Int. Cl.[6] C07D *209/18*

U.S. Cl. 548—492 **3 Claims**

1. A compound of the formula:



or pharmaceutically acceptable non-toxic salts thereof wherein:

R_{16} is hydrogen, benzyl, or straight or branched chain lower alkyl having 1–6 carbon atoms;

R_{17} is hydrogen or straight or branched chain lower alkoxy having 1–6 carbon atoms; and

R_{18} is hydrogen, straight or branched chain lower alkoxy having 1–6 carbon atoms, NR_1COR_2, COR_2, or CO_2R_2 where R_1 and R_2 independently represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_{19} is hydrogen or halogen.

5,608,080

PROCESS FOR PRODUCTION OF 2-SUBSTITUTED BENZO[B]THIOPHENE

Naoto Yazawa; Yoshinori Saito, and Hidetaka Hiyoshi, all of Shizuoka-ken, Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01578, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/09165, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 26, 1994, Ser. No. 424,504

Claims priority, application Japan, Sep. 27, 1993, 5-264150

Int. Cl.[6] C07D *233/56*

U.S. Cl. 549—57 **1 Claim**

1. A process for producing a 2-substituted benzothiophene, which is characterized by reacting a substituted or unsubstituted 2-halogenobenzaldehyde with sulfur and a compound represented by general formula (1)



(1)

(wherein M represents an alkali metal; i represents an integer of 0 or 1; j represents an integer of 1 or more; and k represents an integer of 1–2 with a proviso that i+k=2), or with a compound of general formula (1) wherein j is 2 or more, in the presence of an aprotic polar solvent, and then reacting the reaction mixture with a compound represented by general formula (2)



(2)

(wherein X represents a halogen atom; and R represents an acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted arylcarbonyl group or a cyano group) to give rise to intramolecular ring closure.

5,608,081

HYDROXYMETHYLPOLYTHIOPHENE DERIVATIVES

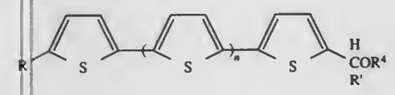
Ching-Te Chang; Chen-Tao Lee, both of Taipei, and Fueng-Lan Lin, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Division of Ser. No. 71,695, Jun. 4, 1993, Pat. No. 5,508,440. This application Jun. 2, 1995, Ser. No. 459,844

Int. Cl.[6] C07D *409/04*

U.S. Cl. 549—59 **13 Claims**

1. A compound of the formula:



in which

n is 0;

R is H, $—CH_2OR^2$, $—CH(R^1).OR^2$, $—CH(O—Z)_2$, or $—COR^3$;

R^1 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{1-6} alkoxy, or C_{1-6} acyloxy;

each R^2 and R^4, independently, is H, C_{1-6} alkyl, C_{2-6} alkenyl, C_{1-4} hydroxyalkyl, C_{2-6} alkoxyalkyl, tetrahydropyranyl, C_{1-6} acyl, or —CO—Y—COOH; and

R^3 is H, C_{1-6} alkyl, C_{2-6} alkenyl, or C_{1-6} alkoxy; wherein Z is C_{1-6} alkyl, C_{2-6} alkenyl, or C_{1-6} acyl; and Y is C_{1-6} alkylidene, C_{2-6} alkenylidene, or phenylene; or a salt or an ester thereof.

5,608,082

COMPOUNDS USEFUL AS ANTIPROLIFERATIVE AGENTS AND GARFT INHIBITORS

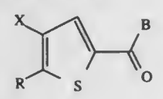
Michael D. Varney, Carlsbad, and William H. Romines, San Diego, both of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Filed Jul. 28, 1994, Ser. No. 281,639

Int. Cl.[6] C07D *333/10;333/22*

U.S. Cl. 549—70 **11 Claims**

1. A compound of the formula II:



(II)

wherein:

R is a halogen;

X is a substituted or unsubstituted C_1–C_6 alkyl group; and

B is glutamic acid or a derivative thereof, linked through the amino portion to form an amide.

5,608,083

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Andrija Fuderer, Wielewaalstrasse 22, 2610 Antwerpen, Belgium

Filed Apr. 6, 1995, Ser. No. 417,798

Claims priority, application Germany, Apr. 13, 1994, 44 12 737.5

Int. Cl.[6] C07D *307/89*

U.S. Cl. 549—249 **18 Claims**

1. A process for making phthalic anhydride by catalytic gas phase oxidation of a reactant selected from the group consisting of o-xylene and naphthalene, said process comprising the steps of:

a) feeding a gas containing oxygen and said reactant to a first reactor;

b) operating said first reactor to oxidize said reactant and obtain an effluent gas including organic compounds selected from the group consisting of said reactant, phthalic anhydride and maleic anhydride;

c) adding said reactant or a gas comprising said reactant to said effluent so that a molar ratio of moles of free oxygen to a sum of moles of said organic compounds in said effluent is less than 7;

d) after the adding of step c), feeding said effluent into a fixed bed reactor following the first reactor; and

e) operating said fixed bed reactor to at least partially convert said reactant in said effluent to phthalic anhydride.

5,608,084

LACTONES WITH ANTIOXIDISING AND HYPOLIPIDAEMIC ACTIVITY USEFUL IN THE THERAPY OF THE ATHEROSCLEROSIS

Goffredo Rosini; Claudia Baldazzi, both of Bologna; Eleonora Romagnoli, Medicina; Stefano Saguatti, and Silvano Piani, both of Bologna, all of Italy, assignors to Alfa Wassermann S.p.A., Alanno Scalo, Italy

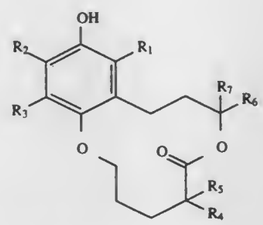
Filed Nov. 13, 1995, Ser. No. 556,648

Claims priority, application Italy, Dec. 21, 1994, BO94A0562

Int. Cl.[6] C07D *321/00;* **C07C** *59/90*

U.S. Cl. 549—267 **20 Claims**

1. A lactone of formula I



I

wherein R_1, R_2, R_3 and R_6 are a C_1–C_3 alkyl group and R_4, R_5 and R_7, independently, are a hydrogen atom or a C_1–C_3 alkyl group and a pharmacologically acceptable salt thereof, useful in the therapy of atherosclerotic and vascular pathologies.

5,608,085

SYNTHESIS OF OPTICALLY ACTIVE CALANOLIDES A AND B AND ENANTIOMERS AND RELATED COMPOUNDS

David C. Baker; Prashant P. Deshtande; Shijia Yan; Frank Tagliaferri, and Samuel F. Victory, all of Knoxville, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tex.

Filed Feb. 27, 1995, Ser. No. 395,035

Int. Cl.[6] C07D *311/78*

U.S. Cl. 549—277 **21 Claims**

1. A method for the synthesis of optically active (+)-calanolide B which comprises the steps of

(a) ring formylation at the C-8 position of coumarin lactone (5), thereby obtaining the C-8 formylated derivative (6),

(b) causing chromene ring formation by reacting and heating in an organic solvent the mixture of the formylated derivative (6) with a propargylic halide, in the presence of a base and Bu_4NI, followed by the addition of a Lewis acid, thereby obtaining the chromene-6-carbaldehyde (7),

(c) forming the enantiomerically pure trans-2,3-dimethyl chroman-4-ol by hydroboration of said aldehyde with (+)-optically active (+)-(E)-crotyldiisopinocampheylborane at a temperature of about −93° to about −78° C.,

(d) oxidizing the boron-carbon bond, thereby obtaining threo-β-methylthomoallylic alcohol (9),

(e) monosilylating said secondary alcohol, thereby obtaining the monosilylated orthoalkenyl phenol (10),

(f) causing Hg-mediated ring closure of (10),

(g) reducing the organomercurial intermediate, thereby obtaining the silyl-protected calanolide B derivative (11),

(h) removing the silyl group, thereby obtaining pure (+)-calanolide B, free by at least 95% of its enantiomer, and

(i) isolating said (+)-calanolide B.

5,608,086

PROCESS FOR THE PREPARATION OF INTERMEDIATES FOR THE SYNTHESIS OF GLUCOSE-6-PHOSPHATASE INHIBITORS, AND NOVEL INTERMEDIATES

Horst Hemmerie, Lorsch. Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 14, 1995, Ser. No. 421,974

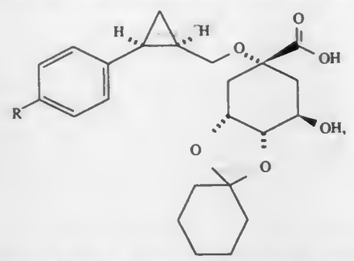
Claims priority, application Germany, Apr. 18, 1994, 44 13 402.9

Int. Cl.[6] C07D *317/72*

U.S. Cl. 549—336 **4 Claims**

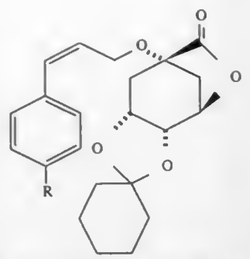
1. A process for the preparation of a compound of the formula I

(I)



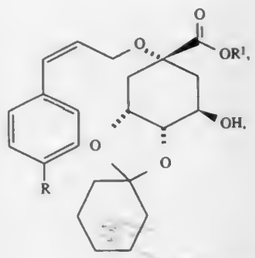
in which R is fluorine, chlorine or methyl, which comprises opening the lactone ring of 1,2-O-cyclohexylidene-3,5-lactonylcyclohexane-1,2-diol of the formula I

(1)



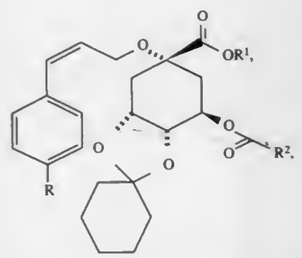
by base catalysis to form an alcohol of the formula 2

(2)



in which R is as defined for formula I and R^1 is a straight-chain or branched C_1–C_{10}-alkyl or benzyl, reacting a resulting alcohol of the formula 2 with an acid chloride in the presence of a base to give an ester of the formula 3

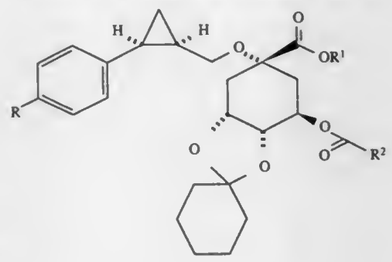
(3)



in which R is as defined for formula 1 and R^1 is as defined for formula 2, and

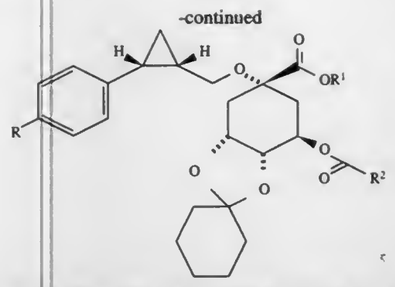
R^2 is a straight-chain or branched C_1–C_{10}-alkyl, phenyl or naphthyl, and reacting the resulting compound of the formula 3 with a carbene to give a diastereomer mixture of the cyclopropyl derivatives of the formulae 4A and 4B

(4A)



-continued

(4B)



in which R, R^1 and R^2 are as defined for the formulae I, 2 and 3, in which 4A is present in a distinct excess, isolating a compound of the formula 4A from the mixture by crystallization and converting it into a compound of the formula I by alkaline hydrolysis followed by acidification.

5,608,087

WATER SOLUBLE TAXOL DERIVATIVES

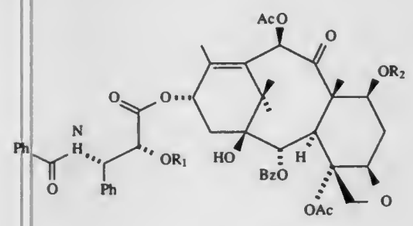
K. C. Nicolaou, La Jolla, Calif.; Claus G. Riemer, Schliengen, Germany, and Michael A. Kerr, Wolfville, Canada, assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 122,722, Sep. 16, 1993, Pat. No. 5,422,364, which is a continuation-in-part of Ser. No. 940,535, Sep. 4, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 395,169

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **5 Claims**

1. A method for converting a protaxol to taxol wherein the protaxol is represented by the following structure:



where:

R_1 is selected from a group consisting of H and an ester radical represented by —CO—$(CH_2)_m$—X—$(CH_2)_n$—COZ, wherein:

m and n are each an integer of 1 to 3;

X is selected from a group consisting of O, S, NH, SO, and SO_2; and

Z is selected from a group consisting of OH, OR^3, SR^3 and NR^4R^5 wherein

R^3 is alkyl containing 1 to 4 carbons and

R^4 and R^5 are each alkyl containing 1 to 4 carbons, or taken together with the nitrogen to which they are attached form a saturated heterocyclic ring having 4 or 5 carbons; and

R_2 is a radical selected from the same group from which R_1 is selected, with the proviso that at least one R_1 and R_2 is not hydrogen;

the method comprising the following step:

contacting the protaxol with physiological conditions for inducing alkaline hydrolysis of at least one ester radical selected from the group consisting of R_1 and R_2 for producing taxol.

5,608,088

PROCESS FOR PRODUCING 3,4-CARANEDIOL

Keisuke Watanabe, Ashiya; Noboru Yamamoto, Mishimagun; Atsushi Kaetsu, Toyonaka, and Yoshimi Yamada, Toyonogun, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 8, 1995, Ser. No. 525,187

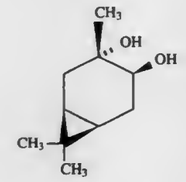
Claims priority, application Japan, Sep. 12, 1994, 6-217662; Sep. 21, 1994, 6-226951; Oct. 12, 1994, 6-245991

Int. Cl.[6] C07D *301/19*

U.S. Cl. 549—529 **11 Claims**

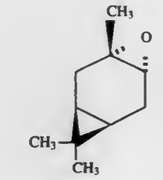
1. A process for producing 3,4-caranediol of the formula [I]:

[I]



which comprises subjecting 3,4-epoxycarane of the formula [II]:

[II]



to a hydration reaction in the presence of a base catalyst in aqueous ethanol under pressure.

5,608,089

PROCESS FOR PRODUCING CIS-EPOXYSUCCINATES

Kelichi Sato, Tokyo; Kenji Murayama, Machida, and Kazutaka Ida, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

PCT No. PCT/JP94/00053, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO94/17049, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 17, 1994, Ser. No. 481,393

Claims priority, application Japan, Jan. 19, 1993, 5-68349; May 18, 1993, 5-116212

Int. Cl.[6] C07D *301/12;303/48*

U.S. Cl. 549—531 **6 Claims**

1. A process for producing a cis-epoxysuccinate comprising epoxidizing a maleate with hydrogen peroxide in the presence of a water-soluble epoxidation catalyst selected from the group consisting of tungstic acid, molybdic acid, heteropolyacids containing tungsten or molybdenum and salts thereof, wherein said epoxidation is carried out in an aqueous solution containing 30–90% by volume of a water-soluble alcohol.

5,608,090
GABA AND L-GLUTAMIC ACID ANALOGS FOR ANTISEIZURE TREATMENT

Richard B. Silverman, Morton Grove, Ill.; Ryszard Andruszkiewicz, Sopot, Poland; Po-Wai Yuen, Ann Arbor, Mich.; Denis M. Sobieray, Holland, Mich.; Lloyd C. Franklin, Hamilton, Mich., and Mark A. Schwindt, Holland, Mich., assignors to Northwestern University, Evanston, Ill., and Warner-Lambert Company, Ann Arbor, Mich.

Division of Ser. No. 64,285, May 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 886,080, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 618,692, Nov. 27, 1990, abandoned. This application Apr. 12, 1995, Ser. No. 420,577

Int. Cl.[6] C07C *247/00*

U.S. Cl. 552—10 4 Claims

4. A compound which is
3-(azidomethyl)-5-methyl-hexanoic acid, phenylmethyl ester,
3-(azidomethyl)-5-methyl-hexanoic acid, 1,1-dimethylethyl ester, or
3-(azidomethyl)-5-methyl-hexanoic acid.

5,608,091
QUINIZARIN COMPOUND, METHOD FOR PRODUCTION THEREOF, AND USE THEREFOR

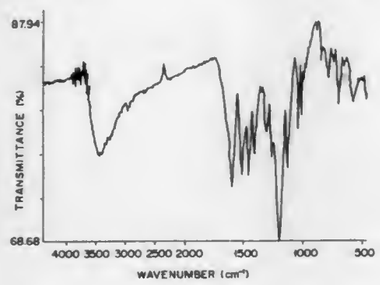
Kiyoshi Masuda; Yukie Tamaura, and Osamu Kaieda, all of Ibaraki, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka-fu, Japan

Filed Sep. 30, 1994, Ser. No. 316,244

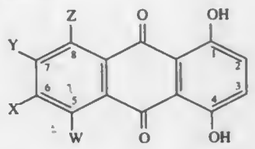
Claims priority, application Japan, Dec. 28, 1993, 5-335959; Jan. 27, 1994, 6-7686; Jan. 28, 1994, 6-8647

Int. Cl.[6] C07D *307/94;307/89*

U.S. Cl. 552—250 6 Claims



1. A quinizarin compound which has a quinizarin structure represented by formula (2)



wherein W, X, Y and Z are selected from the group consisting of secondary amino groups, fluorine, hydrogen, alkoxy, phenoxy, substituted phenoxy, alkylthio, phenylthio, and substituted phenylthio,

at least one of X and Y is substituted with a secondary amino group,

at least one and up to three of W, X, Y and Z is fluorine; and

no more than two of any of W, X, Y and Z is a moiety selected from the group consisting of alkoxy, phenoxy, substituted phenoxy, alkylthio, phenylthio, substituted phenylthio and secondary amino groups.

5,608,092
1,4,4$_a$,5,8,9$_a$-HEXAHYDRO-1α,4α-METHANOANTHRAQUINONE DERIVATIVE(S)

Kimio Hamamura, Chiba Prefecture; Chiaki Seki, Aichi Prefecture, and Masayuki Konishi, Ibaraki Prefecture, all of Japan, assignors to Eisai Chemical Co., Ltd., Ibaraki Prefecture, Japan

Division of Ser. No. 280,550, Jul. 26, 1994, Pat. No. 5,412,124. This application Jan. 5, 1995, Ser. No. 369,147

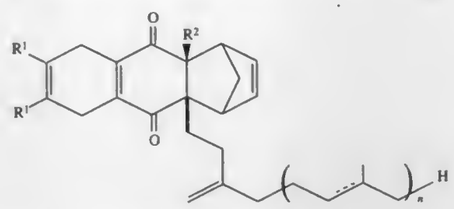
Claims priority, application Japan, Jul. 26, 1993, 5-202551; Dec. 15, 1993, 5-342215

Int. Cl.[6] C07C *50/00*

U.S. Cl. 552—2.99 2 Claims

1. A 1,4,4$_a$,5,8,9$_a$-hexahydro-4$_a$α-alkenyl-,1α,4α-methanoanthraquinone derivative represented by the following formula (I):

(I)



wherein R^1 is a hydrogen atom or methyl group, R^2 is a hydrogen atom or methyl group, n stands for 0 or an integer of 1–9, and a linkage - - - is a single bond or double bond with the proviso that if n is an integer of 2–9, the linkages may be identical with or different optionally from each other.

5,608,093
CORTICOSTEROID 17-ALKYL CARBONATE 21-[0]-CARBOXYLIC AND CARBONIC ESTERS, AND PHARMACEUTICALS CONTAINING THESE COMPOUNDS

Ulrich Stache, Hofheim; Hans-Georg Alpermann, Königstein; Walter Dürckheimer, Hattersheim, and Manfred Bohn, Hofheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 25, 1994, Ser. No. 294,804

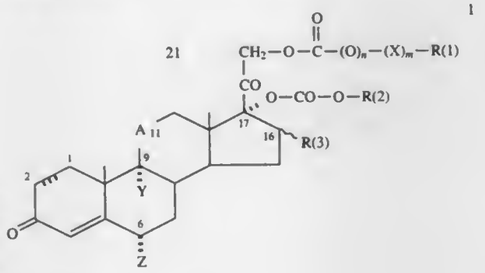
Claims priority, application Germany, Aug. 27, 1993, 43 28 819.7

Int. Cl.[6] C07J *5/00;43/00;* A61K *31/56*

U.S. Cl. 552—601 4 Claims

1. A corticoid 17-alkyl carbonate 21-carboxylic or carbonic ester of the formula I

I



in which:

A is CHOH and CHCl in arbitrary steric arrangement, CH_2, C=0 or 9(11) double bond;

Y is hydrogen, fluorine or chlorine;

Z is hydrogen, fluorine or methyl;

R(1) is optionally substituted aryl, arylalkyl, arylthioalkyl, pyridyl, pyridylalkyl, thienyl, thienylalkyl, furyl, furylalkyl, pyrrolyl, thiazolyl, indolyl, indolylalkyl, quinoxalinyl and isoquinolinyl;

X is (C_1–C_4)-aliphatic hydrocarbon, saturated, unsaturated once or more than once, branched by alkyl groups, or is (C_1–C_4)-hydrocarbon, unsubstituted or inserted or substituted by heteroatoms O, S or N;

n is zero or 1;

m is zero or 1;

R(2) is linear or branched (C_1–C_8)-alkyl or —$(CH_2)_2$—OCH_3; and

R(3) is hydrogen or α- or β-methyl.

5,608,094
BENZOSILACYCLOBUTENES AND METHODS OF MAKING

Chi-Long Lee, Midland, Mich., and Ming-Hsiung Yeh, New Freedom, Pa., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 4, 1995, Ser. No. 539,008

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—406 19 Claims

1. A method of making benzosilacyclobutenes comprising forming a mixture of magnesium, acid washed sand, a solvent, and a reaction initiator; once the magnesium is activated, continuously adding to the mixture a solvent solution of an aromatic halide as a Grignard reagent precursor, a diorganodihalosilane, and a second portion of the reaction initiator; heating the mixture to maintain a temperature of 10°–150° C.; thereafter separating and recovering a benzosilacyclobutene compound from the mixture.

5,608,095
ALKYL-4-SILYL-PHENOLS AND ESTERS THEREOF AS ANTIATHEROSCLEROTIC AGENTS

Roger A. Parker; Michael L. Edwards; Mark J. Vaal; James E. Matt, Jr.; Kim S. Chen, all of Cincinnati, Ohio; Mark T. Yates, Ann Arbor, Mich.; Paul S. Wright, Cincinnati, and Steven J. Busch, West Chester, both of Ohio, assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

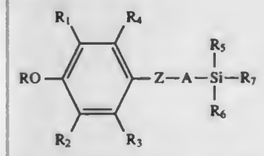
Filed Apr. 30, 1996, Ser. No. 637,968

Int. Cl.[6] C07F *7/08;7/10;7/18*

U.S. Cl. 556—413 43 Claims

1. A compound of the formula

(1)



wherein

R_1 and R_6 are each independently C_1–C_6 alkyl;

R_2, R_3 and R_4 are each independently hydrogen or C_1–C_6 alkyl;

R is hydrogen or —C(O)—$(CH_2)_m$—Q wherein Q is hydrogen or —COOH and m is an integer 1, 2, 3 or 4;

Z is a thio, oxy or methylene group;

A is a C_1–C_4 alkylene group;

R_5 and R_7 are each independently a C_1–C_6 alkyl or —$(CH_2)_n$—(Ar) wherein n is an integer 0, 1, 2 or 3; and Ar is phenyl or naphthyl unsubstituted or substituted with one to three substituents selected from the group consisting of hydroxy, methoxy, ethoxy, halogen, trifluoromethyl, C_1–C_6 alkyl, or —NR_8R_9, wherein R_8 and R_9 are each independently hydrogen or C_1–C_6 alkyl; with the proviso that when R_2 and at least one of R_5 or R_7 is C_1–C_6 alkyl, and Ar is not substituted with trifluoromethyl or —NR_8R_9, then R is —C(O)—$(CH_2)_m$—Q; or a pharmaceutically acceptable salt thereof.

5,608,096
METHOD OF FORMING SILOXANE POLYMERS USING A HETEROPOLY CATALYST HAVING A KEGGIN STRUCTURE

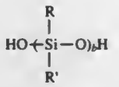
Dimitris E. Katsoulis, and John R. Keryk, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 28, 1995, Ser. No. 580,417

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—462 16 Claims

1. A method of forming siloxane polymers, the method comprising contacting a fluid comprising at least one siloxane polymer precursor selected from the group consisting of cyclic siloxanes (I) having the formula $(RR'SiO)_a$ and linear siloxanes (II) having the formula



where R is a substituted or unsubstituted monovalent hydrocarbon having from 1 to 6 carbon atoms, R' is hydrogen or a substituted or unsubstituted monovalent hydrocarbon having from 1 to 6 carbon atoms, a is at least 3 and b is at least 1; with an effective amount of a heteropoly catalyst having a Keggin structure, selected from the group consisting of heteropoly acids (III) having the formula $H_nXM_{12}O_{40}$, salts thereof and mixed acid-salts thereof, where X is B^{+3}, Si^{+4}, Ge^{+4}, or P^{+5}, M is Mo^{+6} or W^{+6} and n is 3, 4 or 5, as required for the valence of the heteropoly acid to equal 0, at a temperature ranging from about 23° C. to the boiling point of the siloxane polymer precursor, to form siloxane polymers.

5,608,097
PROCESS FOR PREPARATION OF SILANE COMPOUNDS OF WHICH CHLORINE ATOMS OF C-Cl BONDS HAVE BEEN REDUCED

Il N. Jung; Eun J. Cho; Joon S. Han, and Yon S. Cho, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed May 1, 1996, Ser. No. 640,503

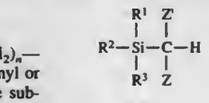
Claims priority, application Rep. of Korea, Oct. 30, 1995, 38120/1995

Int. Cl.[6] C07F *7/08*

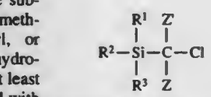
U.S. Cl. 556—466 6 Claims

1. A process for preparation of silane compound represented by general formula (I) of which one or two hydrogens have been substituted, comprising a reaction of silane compound represented by general formula (II) with trichlorosilane in the presence of metal or metal compound as a catalyst.

(I)



(II)



whereby, R^1, R^2 and R^3 respectively represent chlorine or methyl group, and Z and Z' respectively represent hydrogen or chlorine.

5,608,098

BIS(AMINOMETHYL)PHOSPHINIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION OF BIS(AMINOMETHYL)PHOSPHINIC ACID DERIVATIVES

Anuschirwan Peyman, Kelkheim; Jörg Spanig, Berlin, and Karl-Heinz Budt, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP94/00950, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/22879, PCT Pub. Date Oct. 13, 1994

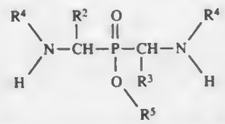
PCT Filed Mar. 24, 1994, Ser. No. 525,787

Claims priority, application Germany, Apr. 2, 1993, 43 10 815.6

Int. Cl.[6] C07F *9/30;9/32;9/38;9/40*

U.S. Cl. 558—145 **8 Claims**

1. A process for the preparation of compounds of the formula VI



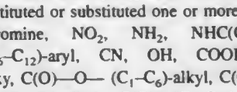
(VI)

in which R^2 and R^3, independently of one another, are hydrogen, (C_1–C_{18})-alkyl, (C_2–C_{18})-alkenyl, (C_2–C_{18})-alkynyl, where alkyl, alkenyl and alkynyl are unsubstituted or substituted one or more times by fluorine, chlorine, bromine, COOH, oxo, NO_2, NH_2, NHC(O)—(C_1–C_6)-alkyl, NHC(O)—(C_6–C_{12})-aryl, CN, OH, CHO, CH-[(C_1–C_6)-alkoxy]$_2$, SO_3H, C(O)—O—(C_1–C_6)-alkyl, C(O)—O— (C_6–C_{12})-aryl, C(O)—(C_1–C_6)-alkyl, C(O)—(C_6–C_{12})-aryl, O—C(O)—(C_1–C_6)-alkyl, O—C(O)—(C_6–C_{12})-aryl, (C_1–C_6)-alkoxy; are (C_6–C_{12})-aryl, (C_7–C_{22})-arylalkyl, where aryl is unsubstituted or substituted one or more times by fluorine, chlorine, bromine, NO_2, NH_2, NHC(O)—(C_1–C_6)-alkyl, NHC(O)—(C_6–C_{12})-aryl, CN, OH, COOH, (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, C(O)—O— (C_1–C_6)-alkyl, C(O)—O—(C_6–C_{12})-aryl, C(O)—(C_1–C_6)-alkyl, C(O)—(C_6–C_{12})-aryl, O—C(O)—(C_1–C_6)-alkyl, O—C(O)—(C_6–C_{12})-aryl; or are P(O)[OH]$_2$, P(O)(OR^{23})$_2$, where R^{23} independently of one another is (C_1–C_6)-alkyl, (C_6–C_{12})-aryl or (C_7–C_{13})-arylalkyl and where aryl is unsubstituted or substituted one or more times by fluorine, chlorine, bromine, NO_2, CN, OH, COOH, (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, C(O)—O—(C_1–C_6)-alkyl, C(O)—O—(C_6–C_{12})-aryl, C(O)—(C_1–C_6)-alkyl, C(O)—(C_6–C_{12})-aryl, O—C(O)—(C_1–C_6)-alkyl or O—C(O)—(C_6–C_{12})-aryl, where R^2 and R^3 are not simultaneously hydrogen;

R^4 is a protective group for the amino function and

R^5 is (C_1–C_{18})-alkyl, (C_2–C_{18})-alkenyl, (C_2–C_{18})-alkynyl, (C_6–C_{12})-aryl, (C_7–C_{20})-arylalkyl, where alkyl, alkenyl, alkynyl and aryl are unsubstituted or substituted one or more times by fluorine, chlorine, bromine, oxo, NO_2, NH_2 or protected form, CN, OH, COOH, (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, C(O)—O— (C_1–C_6)-alkyl, C(O)—O—(C_6–C_{12})-aryl, C(O)—(C_1–C_6)-alkyl, C(O)—(C_6–C_{12})-aryl, O—C(O)—(C_1–C_6)-alkyl, O—C(O)—(C_6–C_{12})-aryl,

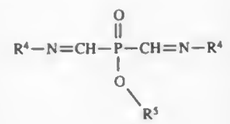
which comprises converting a compound of the formula IV



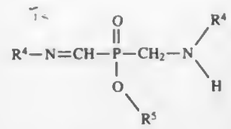
(IV)

in which R^4 and R^5 have the abovementioned meaning and R^6 and R^7 independently of one another are H, Cl or Br, where not both radicals are simultaneously hydrogen

a) by reaction with a base to a compound of the formula Va or Vb



(Va)



(Vb)

where R^4 and R^5 have the abovementioned meanings and for the preparation of the compound VI, a compound of the formula Va or Vb is reacted with carbon nucleophiles; or

b) the compound of the formula VI is prepared by direct reaction of a compound of the formula IV with $R^2{}_2Cu(CN)Li_2$, R^2Li, R^2MgX, R^2ZnX, $R^2{}_2Zn$, $R^2{}_{4-n}TiR^{22}{}_n$ (n<4), P[O—R^{23}]$_3$, where R^2 has the abovementioned meaning; R^{22} is N—[(C_1–C_6)-alkyl]$_2$, O—(C_1–C_6)-alkyl, O—(C_6–C_{12})-aryl, where aryl is unsubstituted or substituted by fluorine, chlorine, bromine, NO_2, NH_2 or protected form, CN, OH, COOH, C(O)—O—(C_1–C_6)-alkyl, (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, or is a tartaric acid derivative; and, R^{23} is (C_1–C_6)-alkyl (C_6–C_{12})-aryl, (C_7–C_{13})-arylalkyl, where aryl is unsubstituted or substituted one or more times by fluorine, chlorine, bromine, NO_2, CN, OH, COOH, (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, C(O)—O—(C_1–C_6)-alkyl, C(O)—(C_1–C_6)-alkyl, O—C(O)—(C_1–C_6)-alkyl, and X is a leaving group.

5,608,099

PROCESS FOR THE RECOVERY OF TRIBUTYL PHOSPHATE FROM SPENT HYDRAULIC OILS

Hans-Günter Fröhlen; Hans-Dieter Block; Wolfgang Ohlendorf; Hans-Heinrich Moretto, and Peter Schmidt, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 1, 1995, Ser. No. 548,795

Claims priority, application Germany, Nov. 8, 1994, 44 39 820.4

Int. Cl.[6] C07F *9/02*

U.S. Cl. 558—150 **2 Claims**

1. A process for the recovery of tributyl phosphate from a spent hydraulic oil, comprising separating off the water present in the spent hydraulic oil, separating off the tributyl phosphate from the remaining constituents of the oil by distillation at a reduced pressure of 100 mbar to produce a first distillate principally comprising tributyl phosphate and at a temperature in the distillation receiver of about ≦230° C., collecting the first distillate by cooling to below about 50° C., adding to this first distillate a solution of sodium butoxide in butanol in a quantity such that the acidic constituents are trapped in the distillate, optionally tempering for about 30 minutes to 90 minutes at a temperature up to about 100° C., subjecting the first distillate to a second distillation at a pressure of about ≦5 mbar and at a temperature of about 160° C., in the second distillation removing butanol and then distilling off purified tributyl phosphate.

5,608,100

OLIGOMERIC PHOSPHORIC ACID ESTERS WHICH CARRY HYDROXYALKOXY GROUPS, THEIR PREPARATION AND THEIR USE

Martin Sicken, Cologne, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

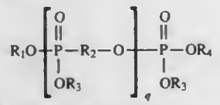
Continuation-in-part of Ser. No. 354,662, Dec. 13, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 571,749

Claims priority, application Germany, Dec. 16, 1993, 43 42 972.6

Int. Cl.[6] C07F *9/09*

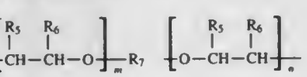
U.S. Cl. 558—164 **5 Claims**

1. A mixture of oligomeric phosphoric acid esters which carry hydroxyalkoxy groups of the formula I



(I)

in which R_1 is a hydroxyl-containing radical of the formula IIa, R_2 is a radical of the formula III



(III)

(IIa: R_7 = H)
(IIb: R_7 = C_1–C_6)

R_3 is a radical of the formula IIb, R_4 is R_1 or R_3, R_5, R_6 and R_7 are an H atom or an alkyl radical having 1 to 6 carbon atoms, m is to 4, n is 1 to 4 and q is 0 to 20 and $\bar{q}$ (the mean) is 0.5 to 10.

5,608,101

SUBSTITUTED BENZOYL (HETERO)CYCLIC DIONES

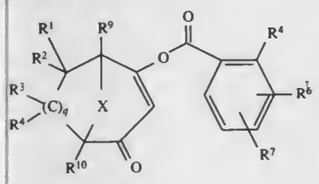
Shy-Fuh Lee, 228 Carbonera Ave., Sunnyvale, Calif. 94304; Takashi Nishizaka, 213, Miyauchi 1350, and Kenichi Komatsubara, 136, Miyauchi 1350, both of Nakahara-ku, Kawasaki City, Kanagawa-ken, 211, Japan

Continuation of Ser. No. 411,086, Sep. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 182,534, Apr. 18, 1988, abandoned. This application May 23, 1995, Ser. No. 447,524

Int. Cl.[6] C07C *69/78*

U.S. Cl. 560—11 **3 Claims**

1. A compound having the formula I



wherein X is C_{1-4}alkylene;

R^1, R^2, R^3, R^4, R^9 and R^{10} are each independently hydrogen, C_{1-8}alkyl or COOR^{16},

R^5 is C_{1-8}alkyl, optionally substituted with one to six halogen atoms; C_{1-8}-alkoxy optionally substituted with one to six halogen atoms; C_{1-8}-alkylcarbonyl; C_{1-8}alkoxycarbony; $NR^{13}R^{14}$; $O_nS(O)_nR^{12}$; $NR^{15}SO_2R^{12}$; halogen; cyano; or nitro;

R^6 and R^7 are each independently hydrogen; C_{1-8}alkyl, optionally substituted with one to six halogen atoms; C_{1-8}-alkoxy; optionally substituted with one to six halogen atoms; C_{1-8}alkylcarbonyl; C_{1-8}alkoxycarbonyl; halogen; cyano; or nitro;

R^{12} is C_{1-8}alkyl optionally substituted with one to six halogen atoms;

R^{13}, R^{14}, R^{15} and R^{16} are independently hydrogen or C_{1-8}alkyl;

n is zero or one;

n' is zero, one or two, and

q is zero, one or two.

5,608,102

PROCESS FOR THE PREPARATION OF β-PHENYLISOSERINE AND ITS ANALOGUES

Jean-Dominique Bourzat, Vincennes, and Alain Commerçon, Vitry-Sur-Seine, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00224, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/17997, PCT Pub. Date Sep. 16, 1993

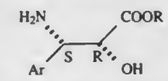
PCT Filed Mar. 8, 1993, Ser. No. 295,677

Claims priority, application France, Mar. 10, 1992, 92 02821

Int. Cl.[6] C07C *229/34;* **C07D** *205/02*

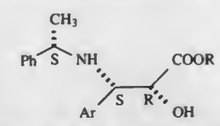
U.S. Cl. 560—39 **10 Claims**

I. Process for the preparation of β-pbenyl-isoserine and its analogues of formula:



(I)

in which Ar represents an aryl radical and R represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, which is optionally substituted by a pbenyl radical, or a phenyl radical, comprising hydrogenolyzing a product of formula:



(II)

in which Ar and R are defined as above and Ph represents a phenyl radical which is optionally substituted by at least one atom or radical selected from halogen and alkoxy radicals containing 1 to 4 carbon atoms, alkylthio radicals containing 1 to 4 carbon atoms, amino radicals, alkylamino radicals containing 1 to 4 carbon atoms, dialkylamino radicals in which each alkyl portion contains 1 to 4 carbon atoms or nitro radicals.

5,608,103

PREPARATION OF ALKANESULPHONIC ACIDS BY PHOTOOXIDATION OF SULPHER-CONTAINING DERIVATIVES

Evelyne Banchereau, Billere; Sylvie Lacombe, Artiguelouve, and Jean Ollivier, Arudy, all of France, assignors to Elf Atochem S.A., France

Filed Nov. 29, 1995, Ser. No. 565,613

Claims priority, application France, Nov. 29, 1994, 94 14279

Int. Cl.[6] C07C *309/04*

U.S. Cl. 562—115 **9 Claims**

1. Process for the preparation of an alkanesulphonic acid R—SO_3H from a corresponding sulphur-containing derivative R—S—X, X representing a hydrogen atom, an alkyl radical R or an alkylthio group —SR, comprising submitting a solution of the sulphur-containing derivative in aqueous or alcoholic acetronitrile, in the presence of oxygen, to an irradiation by light rays of wavelength between 200 and 400 nm, in which the alkyl radical or radicals R of the sulphur-containing derivatives are linear or branched alkyl radicals containing from 1 to 4 carbon atoms.

5,608,104

IMMUNOLOGICAL DETECTION METHOD OF PYRETHROID COMPOUND, HAPTENIC COMPOUND, INTERMEDIATE FOR THE HAPTENIC COMPOUND, IMMUNOGEN AND ANTIBODY

Hideo Ohkawa, Hyogo-ken; Koji Kitajima, Chiba-ken; Kenji Kodaka, Chiba-ken; Yasunori Fumoto, Chiba-ken, and Takako Kumeta, Chiba-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

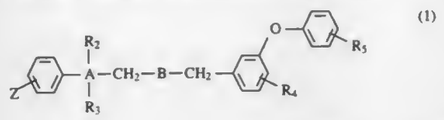
Filed Sep. 27, 1994, Ser. No. 310,772

Claims priority, application Japan, Sep. 28, 1993, 5-241037

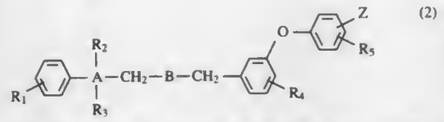
Int. Cl.[6] C07C *65/00*

U.S. Cl. 562—473 **2 Claims**

1. A haptenic compound of the formula (1) or (2) below:



(1)



(2)

wherein R_1 represents a hydrogen atom, halogen atom, C_{1-5} alkyl group, C_{1-5} haloalky group, C_{1-5} alkoxyl group, C_{1-5} haloalkoxyl group, C_{1-5} alkylthio group, C_{1-5} haloalkylthio group, C_{2-5} alkenyl group, C_{2-5} haloalkenylthio group, C_{2-5} alkinyl group, C_{2-5} haloalkinyl group, lower-alkoxy-lower-alkyl group, lower-alkoxyl-lower-alkoxyl group, C_{2-5} haloalkenyloxy group, C_{2-5} alkinyloxy group, C_{1-5} alkoxycarbonyl group, C_{1-5} haloalkoxycarbonyl group, C_{3-6} cycloalkyl group, C_{3-6} cycloalkoxyl group, phenyl group, phenoxy group or cyano group; R_2 represents a C_{1-5} alkyl group or C1–5 haloalkyl group, R_3 represents a hydrogen atom, C_{1-5} alkyl group or C_{1-5} haloalkyl group, and R_2 and R_3 may be coupled together to form a C_{3-6} cycloalkyl group or C_{3-6} cyclohaloalkyl group; R_4 and R_5 individually represent a hydrogen atom, halogen atom, alkyl group or alkoxyl group; A represents a carbon atom or silicon atom; B represents $—CH_2—$, $—NR_6—$, —O— or —S—; R_6 represents a hydrogen atom or lower alkyl group; and Z represents $—Y—(CH_2)m\text{-}COOH$ or $—Y—(CH_2)n\text{-}NH_2$, Y represents $—H_2C—$, $—NR_7—$, —O— or —S—, R_7 represent a hydrogen atom or lower alkyl group, and m and n individually stand for 1–5.

5,608,105

PRODUCTION OF LEVULINIC ACID FROM CARBOHYDRATE-CONTAINING MATERIALS

Stephen W. Fitzpatrick, Framingham, Mass., assignor to Biofine Incorporated, Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 475,630

Int. Cl.[6] C07C *51/00;307/48*

U.S. Cl. 562—515 **17 Claims**

1. A continuous process for producing levulinic acid from a carbohydrate-containing material using a first reactor having an entrance and an exit and a second reactor having an entrance and an exit said process comprising,

continuously supplying a sample containing said carbohydrate-containing material to said first reactor through said entrance to said first reactor,

hydrolyzing said carbohydrate containing material in said first reactor at between 210° C. and 230° C. for between 13 seconds and 25 seconds in the presence of a mineral acid comprising between 1% and 5% by weight of said sample to produce hydroxymethylfurfural and other reaction intermediates,

continuously removing an intermediate sample containing said hydroxymethylfurfural and other reaction intermediates from said first reactor through said exit of said first reactor in such a manner that substantially no axial mixing occurs in said first reactor,

continuously supplying the intermediate sample that has been removed from said first reactor to said second reactor through said entrance to said second reactor,

hydrolyzing said hydroxymethylfurfural and other reaction intermediates in said intermediate sample in said second reactor at between 195° C. and 215° C. for between 15 minutes and 30 minutes in the presence of a mineral acid comprising between 3% and 7.5% by weight of said intermediate sample to produce levulinic acid, and

continuously removing levulinic acid from said second reactor through said exit of said second reactor, wherein the yield of levulinic acid removed from said second reactor comprises at least 60% of the theoretical yield.

5,608,106

PREPARATION OF ALKOXYALKANOIC ACIDS

Herbert E. Fried; David M. Singleton, and Raul A. Pabon, Jr., all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 11, 1995, Ser. No. 439,499

Int. Cl.[6] C07C *51/235*

U.S. Cl. 562—538 **33 Claims**

1. A process for preparing an alkoxyalkanoic acid by reacting the corresponding alkoxyalkanol with a resin-supported stable free radical nitroxide in the presence of a NO_x-generating compound at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the alkoxyalkanoic acid.

5,608,107

PREPARATION OF ALKOXYALKANOIC ACIDS

Herbert E. Fried, and David M. Singleton, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 31, 1995, Ser. No. 455,369

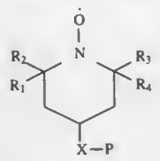
Int. Cl.[6] C07C *51/235*

U.S. Cl. 562—538 **11 Claims**

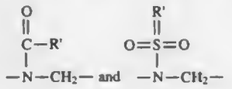
1. A process for the preparation of an alkoxyalkanoic acid of the formula

$$RO(CH_2CHR'O)_nCH_2CO_2H$$

wherein R is a primary alkyl, secondary alkyl, tertiary alkyl, aromatic or an alkyl aromatic group having from 1 to about 1000 carbon atoms, R' is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer of from 1 to about 1000, which comprises reacting the corresponding alkoxyalkanol with a resin-supported stable free radical nitroxide having the formula:



wherein (a) each of R_1, R_2, R_3, and R_4 is an alkyl, aryl or substituted alkyl group having 1 to about 15 carbon atoms, (b) X is selected from the group consisting of



wherein R' alkyl, aryl, or amido, and P is a polystyrene, in the presence of a chlorine-containing oxidant and a solvent at a temperature in the range of from about 0° C. to about 100° C.

5,608,108

POTENT INDUCERS OF TERMINAL DIFFERENTIATION AND METHOD OF USE THEREOF

Paul A. Marks, Bridgewater, Conn.; Richard A. Rifkind, New York, N.Y.; Ronald Breslow, Englewood, N.J., and Branko Jursic, New Orleans, La., assignors to Sloan-Kettering Institute for Cancer Research, and The Trustees of Columbia Univeristy in the City of New York, both of New York, N.Y.

Continuation of Ser. No. 857,935, Jul. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 522,558, May 14, 1990, Pat. No. 5,175,191, which is a continuation-in-part of Ser. No. 374,343, Jun. 30, 1989, Pat. No. 5,055,608, which is a continuation-in-part of Ser. No. 270,963, Nov. 14, 1988, abandoned. This application Apr. 17, 1995, Ser. No. 424,556

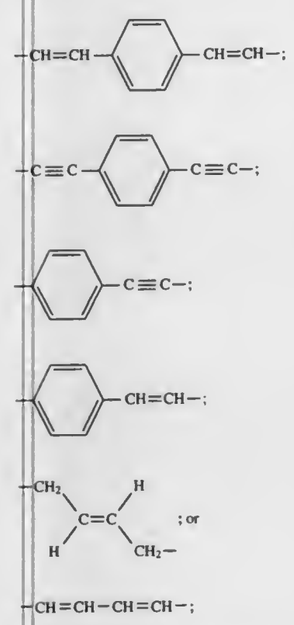
Int. Cl.[6] C07C *259/06;259/10;* **A61K** *31/19*

U.S. Cl. 562—621 **21 Claims**

1. A compound having the structure:



wherein X has the structure:



wherein R_1 and R_2 are the same or different and each is H or lower alkyl group.

5,608,109

INSECTICIDAL HYDRAZINE DERIVATIVES

Kazuhiro Takagi; Tetsuji Ohshima, both of Nishinomiya; Nobuyoshi Hasegawa, Osaka; Chiaki Katoh, Kawachinagano; Atsushi Kanaoka, Hashimoto, and Hideo Kanno, Ibaraki, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

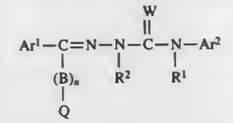
Filed Dec. 7, 1994, Ser. No. 350,462

Claims priority, application Japan, Dec. 8, 1993, 5-340886

Int. Cl.[6] C07C *281/14;309/64;309/71;309/72;* **A01N** *47/34*

U.S. Cl. 564—36 **4 Claims**

1. A hydrazine derivative represented by the formula (I):



wherein,

Ar^1 and Ar^2, which are the same or different, are unsubstituted phenyl groups; substituted phenyl groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkylsulfinyl groups, halo(C_{1-6})alkylsulfinyl groups, (C_{1-6})alkylsulfonyl groups, halo(C_{1-6})alkylsulfonyl groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted phenoxy group, substituted phenoxy groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, unsubstituted pyridyloxy group, substituted pyridyloxy groups having 1 to 4 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, dioxy(C_{1-3})alkylene groups, and dioxyhalo(C_{1-3})alkylene groups; unsubstituted pyridyl groups having 1 to 3 heteroatoms which are the same or different and are selected from the group consisting of nitrogen atom, oxygen atom and sulfur atom; or substituted 5- or 6-membered heteroaryl groups which are the same as the above unsubstituted 5- or 6-membered heteroaryl groups, except for having as the substituent(s) one or more halogen atoms or (C_{1-6})alkyl groups, which are the same or different,

R^1 and R^2, which are the same or different, are hydrogen atoms, (C_{1-6})alkyl groups, (C_{2-6})alkenyl groups or (C_{2-6})-alkynyl groups, B is an unsubstituted and linear or branched (C_{1-6})alkylene group, or the cycloalkylene group having 3 to 7 carbon atoms by bonding of substituents on the same carbon atoms to each other,

n is zero or 1,

Q is

$$—CON(R^5)R^6$$

(wherein

R^5 is a hydrogen atom; a (C_{1-6})alkyl group; a (C_{2-6})alkenyl group; a (C_{2-6})alkynyl group; an unsubstituted phenyl group; or a substituted phenyl group having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkylsulfinyl groups, halo(C_{1-6})alkylsulfinyl groups, (C_{1-6})alkylsulfonyl groups, halo(C_{1-6})alkylsulfonyl groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted phenoxy group, substituted phenoxy groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, unsubstituted pyridyloxy group, substituted pyridyloxy groups having 1 to 4 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl

groups and halo(C_{1-6})alkyl groups, dioxy(C_{1-6})alkylene groups, and dioxyhalo(C_{1-6})alkylene groups, and

R^6 is a hydrogen atom; a (C_{1-6})alkyl group; a halo(C_{1-6})alkyl group; a (C_{2-6})alkenyl group; a (C_{2-6})alkynyl group; a (C_{1-6})alkoxy(C_{1-6})alkyl group; a halo(C_{1-6})alkoxy(C_{1-6})alkyl group; a (C_{1-6})alkylthio(C_{1-6})alkyl group; a halo(C_{1-6})alkylthio(C_{1-6})alkyl group; a (C_{1-6})alkylsulfinyl(C_{1-6})alkyl group; a halo(C_{1-6})alkylsulfinyl(C_{1-6})alkyl group; a (C_{1-6})alkylsulfonyl(C_{1-6})alkyl group; a halo(C_{1-6})alkylsulfonyl(C_{1-6})alkyl group; a cyano(C_{1-6})alkyl group; a hydroxy(C_{1-6})alkyl group; a (C_{3-6})cycloalkyl group; a (C_{3-6})cycloalkyl(C_{1-6})alkyl group; a (C_{1-6})alkoxycarbonyl(C_{1-6})alkyl group; a (C_{1-6})alkylcarbonyl-(C_{1-6})alkyl group; a carbamoyl(C_{1-6})alkyl group; a substituted carbamoyl(C_{1-6})alkyl group having one or two substituents which are the same or different and are selected from (C_{1-6})alkyl groups; an unsubstituted amino(C_{1-6})alkyl group; or a substituted amino(C_{1-6})alkyl group having one or two substituents which are the same or different and are selected from the group consisting of (C_{1-6})alkyl groups and (C_{1-6})alkylcarbonyl groups;

R^5 and R^6 when taken together to represent a (C_{4-6})alkylene group containing between adjacent carbon atoms of the carbon chain, —O—, —S(O)$_m$— (wherein m is as defined above) and said alkylene group having one or more substituents which are the same or different and are selected from the group consisting of (C_{1-6})alkyl groups, (C_{1-6})alkoxycarbonyl groups and phenyl group, or —N(R^7)— wherein

R^7 is hydrogen atoms; formyl groups; cyano groups; (C_{1-6})alkyl groups; (C_{2-6})alkenyl groups; (C_{2-6})alkynyl groups; (C_{1-6})alkylcarbonyl groups; halo(C_{1-6})alkylcarbonyl groups; (C_{1-6})alkoxycarbonyl groups; halo(C_{1-6})alkoxycarbonyl groups; (C_{3-6})cycloalkylcarbonyl group; phenoxycarbonyl groups; (C_{1-6}) alkylsulfonyl groups; unsubstituted carbamoyl groups; substituted carbamoyl groups having as the substituent(s) one or two (C_{1-6})alkyl groups which are the same or different; unsubstituted carbamoyl(C_{1-6})alkyl groups; substituted carbamoyl(C_{1-6})alkyl groups having as the substituent(s); one or two (C_{1-6})alkyl groups which are the same or different; unsubstituted thiocarbamoyl groups; substituted thiocarbamoyl groups having as the substituent(s) one or two (C_{1-6})alkyl groups which are the same or different; unsubstituted sulfamoyl groups; substituted sulfamoyl groups having as the substituent(s) one or two (C_{1-6})alkyl groups which are the same or different; unsubstituted (C_{1-6})alkoxycarboimidoyl groups; substituted (C_{1-6})alkoxycarboimidoyl groups having (C_{1-6})alkyl group as the substituent; unsubstituted (C_{1-6})alkylthiocarboimidoyl groups; substituted (C_{1-6})alkylthiocarboimidoyl groups having (C_{1-6})alkyl group as the substituent; unsubstituted phenyl groups; substituted phenyl groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkylsulfinyl groups, halo(C_{1-6})alkylsulfinyl groups, (C_{1-6})alkylsulfonyl groups, halo(C_{1-6})alkylsulfonyl groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted pbenoxy group, substituted phenoxy groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, unsubstituted pyridyloxy group, substituted pyridyloxy groups having 1 to 4 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, dioxy(C_{1-3})alkylene groups, and dioxyhalo(C_{1-3})alkylene groups; unsubstituted phenyl(C_{1-6})alkyl groups; substituted phenyl(C_{1-6})alkyl groups having on the ring 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkylsulfinyl groups, halo(C_{1-6})alkylsulfinyl groups, (C_{1-6})alkylsulfonyl groups, halo(C_{1-6})alkylsulfonyl groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted phenoxy group, substituted phenoxy groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, unsubstituted pyridyloxy group, substituted pyridyloxy groups having 1 to 4 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, dioxy(C_{1-3})alkylene groups, and dioxyhalo(C_{1-3})alkylene groups; unsubstituted phenylcarbonyl groups; substituted phenylcarbonyl groups having on the ring 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkylsulfinyl groups, halo(C_{1-6})alkylsulfinyl groups, (C_{1-6})alkylsulfonyl groups, halo(C_{1-6})alkylsulfonyl groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted phenoxy group, substituted phenoxy groups having 1 to 5 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, unsubstituted pyridyloxy group, substituted pyridyloxy groups having 1 to 4 substituents which are the same or different and are selected from the group consisting of halogen atoms, (C_{1-6})alkyl groups and halo(C_{1-6})alkyl groups, dioxy (C_{1-3})alkylene groups, and dioxyhalo(C_{1-3})alkylene groups); and

W is an oxygen atom or a sulfur atom.

5,608,110

HETEROATOM-BEARING LIGANDS AND METAL COMPLEXES THEREOF

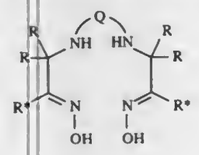
Kondareddiar Ramalingam, Dayton, and Natarajan Raju, Kendall Park, both of N.J., assignors to Bracco International B.V., Amsterdam

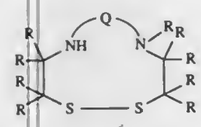
Continuation-in-part of Ser. No. 77,981, Jun. 15, 1993, abandoned. This application May 18, 1994, Ser. No. 242,093

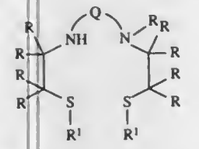
Int. Cl.[6] **C07C** *249/00;* **C07F** *5/00;* **C07D** *233/54;* **A61K** *51/04*

U.S. Cl. 564—253 **6 Claims**

1. A compound of the following formula Ia, Ib or Ic:

Ia 

Ib 

Ic 

where

Q is the group —(C(RR))$_{m1}$—Y^1— (C(RR)$_{m2}$—(Y^2—(C(RR))$_{m3}$)$_n$—, where Y^1 is —NR— and Y^2 is —NR—, —O—, —S—, —SO—, —SO_2—, or —Se—; n is an integer selected from 0 or 1; and m1, m2 and m3 are integers independently selected from 0 to 4, provided that the sum of m1 and m2 is greater than zero; with the proviso that if the R of —NR— of Y^1 is not hydrogen, and n=0, then either m1=0 or m2=0;

all R and R* groups are independently:

(i) R^2;

(ii) halogen;

(iii) —OR^2;

(iv) —C(O)—OR^2;

(v) —C(O)—N(R^2)$_2$;

(vi) —N(R^2)$_2$;

(vii) —alkyl—C(O)—OR^2;

(viii) —alkyl—C(O)—N(R^2)$_2$;

(ix) —alkyl—N(R^2)$_2$;

(x) —aryl—C(O)—OR^2;

(xi) —aryl—C(O)—N(R^2)$_2$;

(xii) —aryl—N(R^2)$_2$;

(xiii) acyl;

(xiv) acyloxy;

(xv) heterocyclo;

(xvi) hydroxyalkyl;

(xvii) —SO_2—R^2;

(xviii) —alkyl—SO_2—R^2;

(xix) —(A)p—R^3, where A is a linking group, p is 0 or a positive integer, and R^3 is a bioactive moiety; or

(xx) two R groups, or an R group and an R* group, taken together with the one or more atoms to which they are bonded, form a saturated or unsaturated, spiro or fused, carbocyelic or heterocyclic ring which may be unsubstituted or substituted by one or more groups selected from the groups (i) to (xix) above;

with the proviso that a carbon atom bearing an R group is not directly bonded more than one heteroatom;

R^1 is hydrogen, a thiol protecting group, or the group —(A)p—R^3 defined above; and

R^2 is independently hydrogen, alkyl, alkenyl, alkynyl, or aryl.

5,608,111

METHOD OF PREPARING 4-AMINODIPHENYLAMINE

Michael K. Stern, University City; James M. Allman; James K. Bashkin, both of St. Louis, all of Mo., and Roger K. Rains, Richfield, Ohio, assignors to Flexsys America L. P., Akron, Ohio

Continuation of Ser. No. 157,120, Dec. 6, 1993, Pat. No. 5,453,541, which is a continuation-in-part of Ser. No. 719,876, Jun. 21, 1991, Pat. No. 5,117,063. This application May 5, 1995, Ser. No. 435,607

Int. Cl.[6] **C07C** *209/02;209/26;209/36;209/38*

U.S. Cl. 564—398 **31 Claims**

1. A method of producing one or more 4-ADPA intermediates comprising:

a) bringing aniline or substituted aniline derivatives and nitrobenzene into reactive contact in a suitable solvent system; and

b) reacting the aniline or substituted aniline derivatives and nitrobenzene in a confined zone at a suitable temperature, and in the presence of a suitable base and a controlled amount of protic material to produce one or more 4-ADPA intermediates wherein a desiccant is present during step (b) to control the amount of protic material present during the reaction of aniline or substituted aniline derivative and nitrobenzene.

5,608,112

PROCESS FOR REDUCING ORGANIC POLLUTANTS

Jeffrey Schwartz, Princeton, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Continuation-in-part of Ser. No. 211,983, Aug. 15, 1994, Pat. No. 5,608,135. This application Jul. 10, 1995, Ser. No. 499,932

Int. Cl.[6] **C07C** *209/30;1/26*

U.S. Cl. 564—415 **11 Claims**

1. In the process of reducing a nitrogen-containing substituent in an aliphatic or aromatic compound in which said substituent is at an oxidative state higher than that of a primary amine, to a nitrogen-containing substituent having a lower oxidative state, the improvement which comprises treating said compound in the presence of a reagent comprising:

(i) at least one complex of a transition metal of group 4 or 5 with a multidentate or unidentate organic or inorganic ligand; and

(ii) a reducing agent.

5,608,113

PROCESS FOR PREPARATION OF DIAMINES BY CATALYTIC AMINATION OF AMINOALCOHOLS

Rainer Becker, Bad Dürkheim; Volkmar Menger, Neustadt; Wolfgang Reif, Frankenthal, and Andreas Henne, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 10, 1995, Ser. No. 513,632

Claims priority, application Germany, Aug. 19, 1994, 44 29 547.2

Int. Cl.[6] **C07C** *209/16*

U.S. Cl. 564—480 **10 Claims**

1. A process for preparing diamines from aminoalcohols and nitrogen compounds selected from the group consisting of ammonia and primary and secondary amines at from 80° to 250° C. and pressures of from 1 to 400 bar using hydrogen in the presence of a zirconium, copper, nickel catalyst, wherein the catalytically active composition comprises from 20 to 85% by weight of oxygen-containing zirconium compounds, calculated as ZrO_2, from 1 to 30% by weight of oxygen-containing compounds of copper, calculated as CuO, from 30 to 70% by weight of oxygen-containing compounds of nickel, calculated as NiO, from 0.1 to 5% by weight

of oxygen-containing compounds of molybdenum, calculated as MoO_3, and from 0 to 10% by weight of oxygen-containing compounds of aluminum and/or manganese, calculated as Al_2O_3 and MnO_2 respectively.

5,608,114

DISPROPORTIONATING METHOD OF TRIMETHYLAMINE

Tadamitsu Kiyoura, Kawasaki, Japan, assignor to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,642

Claims priority, application Japan, Dec. 28, 1993, 5-335501; Mar. 16, 1994, 6-045543

Int. Cl.[6] C07C *209/64*

U.S. Cl. 564—499 **20 Claims**

1. In a method for disproportionating trimethylamine by subjecting the trimethylamine and ammonia or the trimethylamine, ammonia and a methylamine to a disproportionating reaction to reduce the proportion of the trimethylamine, the improvement wherein the disproportionating reaction is conducted in the presenc- of at least one zeolite selected from the group consisting of mordenite, clinoptilolite, heulandite, canncrinite, ferrierite, gmelinite, stilbite, mazzite, offretite and ZSM-5 zeolite, at least 80% of whose ion-exchangeable cations are in the form of hydrogen ions.

5,608,115

POLYTHIOL USEFUL FOR PREPARING SULFUR-CONTAINING URETHANE-BASED RESIN AND PROCESS FOR PRODUCING THE SAME

Koju Okazaki; Yoshinobu Kanemura, and Teruyuki Nagata, all of Fukuoka-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

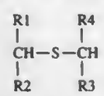
Filed Jan. 17, 1995, Ser. No. 373,083

Claims priority, application Japan, Jan. 26, 1994, 6-006792

Int. Cl.[6] C07C *321/14*

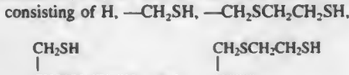
U.S. Cl. 568—61 **15 Claims**

1. A polythiol having four or more functional groups represented by any of the following formula (1):

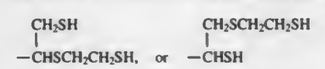


(1)

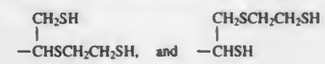
wherein R1, R2, R3 and R4 are each selected from the group consisting of H, —CH_2SH, —$CH_2SCH_2CH_2SH$,



provided that where any one of R1, R2, R3 and R4 is H, at least one of the other three radicals represents



where any two of R1, R2, R3 and R4 are H, two others are independently selected from

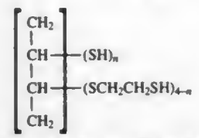


and any three or all of R1, R2, R3 and R4 are not H simultaneously;

formula (2):

(2)

wherein m denotes an integer of 1 to 3; and formula (3):



(3)

wherein n denotes an integer of 0 to 3.

5,608,116

PROCESS FOR THE ALKOXYLATION OF FLUORINATED ALCOHOLS

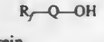
Robert A. Halling, Wilmington, and Hsu-Nan Huang, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 263,091, Jun. 21, 1994. This application Mar. 16, 1995, Ser. No. 405,327

Int. Cl.[6] C07C *41/03*

U.S. Cl. 568—615 **16 Claims**

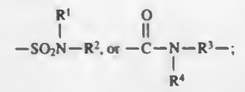
1. A process for the preparation of fluoroalkyl alkoxylates comprising reacting a fluorinated alcohol with an alkylene epoxide having 2 to 10 carbon atoms, or mixture of said alkylene epoxides, at a temperature from 90° C. to 200° C. and a pressure from ambient atmospheric pressure to 100 psig in the presence of an alkali metal borohydride present at a molar ratio of alkali metal borohydride to fluorinated alcohol of at least 0.005, and at least one iodine source selected from the group consisting of an alkali metal iodide, an alkaline earth metal iodide, elemental iodine, and mixtures of the same, at a molar ratio of iodine source to alkali metal borohydride of from 0.1:1.0 to 300:1; said fluorinated alcohol having the general formula:



wherein

R_f is a linear or branched perfluoroalkyl group having from 4 to 20 carbon atoms, or a mixture of these groups;

Q is —$(CH_2)_n$—,



each of R^1 and R^4 is independently hydrogen or an alkyl group containing from 1–6 carbon atoms;

each of R^2 and R^3 is independently a divalent linear or branched alkylene group containing from 1–6 carbon atoms; and

n is an integer of from 1 to 6.

5,608,117

PROCESS FOR PRODUCING SATURATED POLYETHER GLYCOLS AND ALCOHOLS DERIVED FROM 3, 4-EPOXY-1-BUTENE

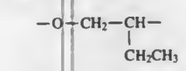
James C. Matayabas, Jr., and Stephen N. Failing, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 327,951, Oct. 24, 1994, Pat. No. 5,466,759, which is a continuation-in-part of Ser. No. 181,734, Jan. 18, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 520,356

Int. Cl.[6] C08G *65/14;65/20*

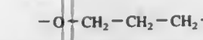
U.S. Cl. 568—616 **3 Claims**

1. Process for the preparation of a saturated polyether polymer which comprises contacting an unsaturated polyether precursor with hydrogen in the presence of a nickel hydrogenation catalyst under hydrogenation conditions of pressure and temperature, wherein (i) the saturated polyether polymer is comprised of n units of residue (1) and m units of residue (2) wherein residues (1) and (2) have the structures:



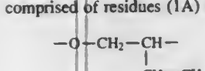
(1)

and



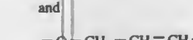
(2)

(ii) the total value of n+m is 2 to 70 and m/(n+m) is in the range of about 0.05 and 0.98; (iii) the saturated polyether polymer comprises at least 0.5 weight percent of the residue of a hydroxyl initiator compound, and (iv) the unsaturated polyether precursor is comprised of residues (1A) and (2A):



(1A)

and



(2A)

5,608,118

ALKOXYLATE OF 2-PROPYL HEPTANOL AND DETERGENT CONTAINING SAME

Lennart Dahlgren, Mjölnarvågen, and Karin Bergström, Kungälv, both of Sweden, assignors to Berol Nobel AB

PCT No. PCT/SE93/00966, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/11330, PCT Pub. Date May 26, 1994

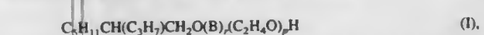
PCT Filed Nov. 12, 1993, Ser. No. 436,268

Claims priority, application Sweden, Nov. 19, 1992, 9203478-B

Int. Cl.[6] C07C *43/11;* C11D *1/72*

U.S. Cl. 568—625 **4 Claims**

1. An alkoxylate of 2-propyl heptanol having from 1 to 6 alkyleneoxy groups (B) adducted to the oxygen of the alcohol and from 1 to 10 ethylene oxide groups adducted to the terminal alkyleneoxy group and having a general formula (I):



(I),

wherein B is the alkyleneoxy group which has 3–4 carbon atoms, p is 1–10 and r is 1–6.

5,608,119

(2S)-3-[(1R, 2S, 5R)-[5-METHYL-2-(1-METHYLETHYL)-CYCLOHEXYL]OXY]-I, 2-PROPANEDIOL, PROCESS FOR PRODUCING THE SAME, AND COMPOSITIONS CONTAINING THE SAME

Akira Amano, and Kazuhiko Tokoro, both of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

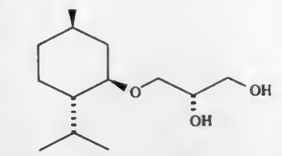
Division of Ser. No. 305,883, Sep. 14, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 463,896

Claims priority, application Japan, Sep. 16, 1993, 5-252184

Int. Cl.[6] C07C *41/00*

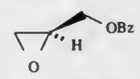
U.S. Cl. 568—676 **1 Claim**

1. A process of producing (2S)-3-{(1R, 2S, 5R)-[5-methyl-2-(1-methylethyl)cyclohexyl]oxy}-1,2-propanediol represented by formula (I)



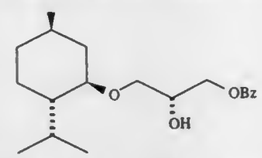
(I)

which comprises adding (1R, 2S, 5R)-5-methyl-2-(1-methylethyl)cyclohexyl alcobol to (R)-(−)-benzyl glycidyl ether represented by formula (II)



(II)

wherein Bz represents a benzyl group to provide (2S)-1-benzyloxy-2-hydroxy-3-{(1R, 2S, 5R)-[5-methyl-2-(1-methylethyl)cyclohexyl]oxy}propane represented by formula (III)



(III)

wherein Bz has the same meaning as described above, and hydrogenolyzing the product of formula (III).

5,608,120

PROCESS FOR THE PREPARATION OF (ARYLETHYL)-HYDROQUINONES AND DIESTERS THEREOF

Phillip M. Hudnall, Kingsport, Tenn., assignor to Granmont, Inc., Tucson, Ariz.

Continuation of Ser. No. 723,708, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 200,490, May 31, 1988, abandoned. This application Feb. 17, 1995, Ser. No. 390,932

Int. Cl.[6] C07C *39/14*

U.S. Cl. 568—744 **12 Claims**

1. Process for the preparation of a mono-(1-arylethyl)-hydroquinone compound which comprises reacting a hydroquinone compound with an arylvinyl compound in the presence of a catalytically effective amount of phosphoric acid in a two-phase, liquid reaction medium comprising water and a water-immiscible hydrocarbon solvent, wherein the aryl moiety is phenyl or phenyl substituted with alkyl of up to 12 carbon atoms, alkoxy of up to 12 carbon atoms or halogen.

5,608,121

PROCESS FOR PRODUCING POLYHYDRIC ALCOHOL

Teruyuki Ninomiya; Toshio Watanabe; Akira Mori; Takaki Ikebe, and Atsushi Iwamoto, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,513

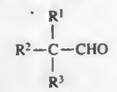
Claims priority, application Japan, Oct. 20, 1994, 6-255352

Int. Cl.[6] C07C *31/18*

U.S. Cl. 568—852 **9 Claims**

1. A process for producing a polyhydric alcohol which com-

prises reacting an aliphatic aldehyde with formaldehyde in the presence of a base compound comprising, as principal components, a hydrogencarbonate and a carbonate which have been formed by the oxidation or hydrolysis of a formic acid salt, said aliphatic aldehyde being represented by the general formula (i)



(i)

wherein R^1, R^2 and R^3 are each a hydrogen atom or a straight-chain or blanched aliphatic hydrocarbon group having 1 to 22 carbon atoms with the proviso that at least one of them is a hydrogen atom.

5,608,122

PROCESS FOR PREPARING WAX ESTERS AND HYDROGENATION OF WAX ESTERS TO FATTY ALCOHOLS

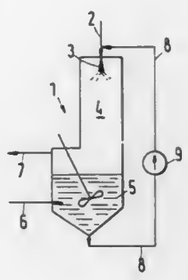
Henning Buchold, Hanau; Fritz-Jürgen Gärtner, Bickenbach; Gert Mallok, Hanau; Eberhard Schlichting, Wehrheim, and Hans-Martin Stönner, Eschborn, all of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Filed Apr. 3, 1996, Ser. No. 627,177

Claims priority, application Germany, Apr. 11, 1995, 195 13 207.6

Int. Cl.[6] C07C *29/147;31/125*

U.S. Cl. 568—885 **12 Claims**



1. A process for producing a fatty alcohol comprising the steps of:

(a) reacting a starting mixture of at least one C_6 to C_{30} fatty acid with at least one C_6 to C_{30} fatty alcohol in a ratio of 1.0 to 1.5 moles of fatty alcohol per mole of fatty acid at a temperature of about 120° to 320° C. at least in part by passing said liquid mixture through at least one stirring zone to produce a wax ester in said liquid mixture;

(b) spraying said liquid mixture produced in step (a) and containing said wax ester into at least one spraying zone to liberate water vapor therefrom and removing at least part of the water vapor liberated from said liquid mixture in said spraying zone, thereby forming an intermediate product containing at least 50% by weight of said wax ester;

(c) hydrogenating said intermediate product to produce a raw product containing at least 75% by weight of fatty alcohol; and

(d) branching a partial stream containing fatty alcohol from said raw product and adding said partial stream to the starting mixture.

5,608,123

PROCESS FOR CATALYTIC HYDRATION OF OLEFINS

Kaoru Inoue; Masao Iwasaki, and Naohiro Ueda, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,189

Claims priority, application Japan, Jul. 5, 1994, 6-153776; Nov. 29, 1994, 6-295086

Int. Cl.[6] C07C *29/04*

U.S. Cl. 568—899 **18 Claims**

1. A process for producing alcohols comprising reacting olefins with water in the presence of a polyorganosiloxane having sulfonic acid groups and coated and/or silylated with at least one silane compound represented by the formula:

$$(R)_nSi(X)_{4-n}$$

wherein R represents at least one hydrocarbon group selected from the group consisting of aliphatic hydrocarbons having from 1 to 4 carbon atoms and aromatic hydrocarbons having from 6 to 15 carbon atoms; X represents an alkoxyl group, a chlorine atom, a bromine atom or an iodine atom; Si represents a silicon atom; and n represents an integer of from 0 to 3.

5,608,124

PROCESS FOR CONTINUOUS LIQUID PHASE REACTION OF HYDROGEN FLUORIDE AND 1,1,1-TRICHLOROETHANE TO PROVIDE 1,1-DICHLORO-1-FLUOROETHANE AND 1-CHLORO-1,1-DIFLUOROETHANE MIXTURES

John A. Wismer, Devon, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 561,212, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 365,345, Jun. 13, 1989, abandoned. This application May 1, 1992, Ser. No. 879,068

Int. Cl.[6] C07C *17/20*

U.S. Cl. 570—164 **6 Claims**

1. A continuous non-catalytic process for the manufacture of a mixture of 1,1-dichloro-1-fluoroethane and 1-chloro-1,1-difluoroethane from 1,1,1-trichloroethane comprising:

(a) continuously feeding hydrogen fluoride and 1,1,1-trichloroethane in a selected molar feed ratio to a reaction zone containing HF to form a liquid phase hydrofluorination reaction mixture in said reaction zone which reaction mixture contains a large molar excess of HF relative to 1,1,1-trichloroethane;

(b) continuously withdrawing from the reaction zone, vapor phase reaction product comprising 1,1-dichloro-1-fluoroethane and 1-chloro-1,1-difluoroethane;

(c) continuously refluxing hydrogen fluoride from the vapor phase reaction product to the reaction mixture to maintain a large molar excess of HF relative to 1,1,1-trichloroethane in the reaction mixture sufficient to prevent substantial precipitation of 1,1,1-trichloroethane from the reaction mixture"has been added after mixture"; and

(d) obtaining a mixture of 1,1-dichloro-1-fluoroethane and 1-chloro-1,1-difluoroethane from the vapor phase reaction product;

wherein said selected hydrogen fluoride/1,1,1-trichloroethane molar feed ratio

(i) is within the range of from about 3.0 to about 5.2; and

(ii) is greater than the value M determined by the equation

$$M=2.7X+4.2Y$$

wherein

X is the desired mole fraction of 1-chloro-1,1-difluoroethane in the resulting 1,1-dichloro-1-fluoroethane/1-chloro-1,1-difluoroethane mixture; and

Y is the desired mole fraction of 1,1-dichloro-1-fluoroethane in the resulting 1,1-dichloro-1-fluoroethane-/1-chloro-1,1-difluoroethane mixture.

5,608,125

PROCESS FOR PREPARING 1,1,1,2-TETRAFLUOROETHANE

Paolo Cuzzato, Treviso, and Antonio Masiero, Padua, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 337,128, Nov. 10, 1994, Pat. No. 5,463,151, which is a continuation of Ser. No. 191,765, Feb. 3, 1994, abandoned, which is a continuation of Ser. No. 928,188, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 811,920, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 550,559, Jul. 10, 1990, abandoned. This application Jul. 25, 1995, Ser. No. 507,644

Claims priority, application Italy, Jul. 12, 1989, 21159/89

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—166 **32 Claims**

1. A process for the preparation of 1,1,1,2-tetrafluoroethane comprising reacting in the gas phase trichloroethylene with 1,1,1-trifluorochloroethane and hydrofluoric acid in a molar ratio of trichloroethylene to 1,1,1-trifluorochloroethane of from 5/95 to 50/50 and in the presence of a catalyst comprising Cr_2O_3 supported on AlF_3 in the gamma and/or beta form.

5,608,126

PROCESS FOR PREPARING 1,1,1,3,3-PENTAFLUOROPROPANE

Shinsuke Morikawa; Hidekazu Okamoto; Kelichi Ohnishi, and Shin Tatematsu, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

Filed Jun. 23, 1995, Ser. No. 494,063

Claims priority, application Japan, Jun. 28, 1994, 6-146466

Int. Cl.[6] C07C *17/08;21/18*

U.S. Cl. 570—167 **15 Claims**

1. A process for preparing 1,1,1,3,3-pentafluoropropane, which comprises reacting 1,1-difluoroethylene with dichlorofluoromethane in the presence of a Lewis acid catalyst to form 1,2,2-trihydrodichlorotrifluoropropane, and fluorinating the 1,2,2-trihydrodichlorotrifluoropropane with hydrogen fluoride at a temperature of from 0° C. to 200° C.

5,608,127

HALOGEN EXCHANGE PROCESS FOR MANUFACTURE OF HYDROCHLOROFLUOROPROPANES

William H. Gumprecht, Wilmington, Del., assignor to E. I. dupont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 477,737, Feb. 9, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 809,152

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[6] C07C *17/20*

U.S. Cl. 570—170 **16 Claims**

1. A process for manufacturing a hydrochlorofluoropropane comprising the steps of:

(a) contacting a hydrochlorofluoropropane precursor with $SbF_{5-y}Cl_y$, where y is less than 1, at a temperature of from about 50° C. to about 100° C. for sufficient time to effect a degree of halogen exchange of p under conditions wherein the number of moles, n, of $SbF_{5-y}Cl_y$ per mole of said hydrochlorofluoropropane precursor is such that (5−y)−(p/n) is at least 3.5, thereby producing a hydrochlorofluoropropane substantially free of perhalogenated or carbon—carbon cleavage products; and

(b) recovering said hydrochlorofluoropropane.

5,608,128

PRODUCTION METHODS OF 1,1,1,4,4,4-HEXSFLUORO-2-BUTENE COMPOUNDS AND 1,1,1,4,4,4,-HEXAFLUOROBUTANE

Tatsuo Nakada; Hirokazu Aoyama, and Seiji Takubo, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/00068, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO94/17020, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 19, 1994, Ser. No. 495,662

Claims priority, application Japan, Jan. 29, 1993, 5-034504

Int. Cl.[6] C07C *17/013;19/08;21/04;21/18*

U.S. Cl. 570—175 **10 Claims**

1. A production method of 1,1,1,4,4,4-hexafluoro-2-butene compounds including 1,1,1,4,4,4-hexafluoro-2,3-dichloro-2-butene, 1,1,1,4,4,4-hexafluoro-2-chloro-2-butene and 1,1,1,4,4,4-hexafluoro-2-butene characterized by reacting at least one of butane, butene and butadiene in the gaseous phase with chlorine and hydrogen fluoride in the presence of a catalyst.

6. A production method of 1,1,1,4,4,4-hexafluorobutane by reducing a mixture of 1,1,1,4,4,4-hexafluoro-2,3-dichloro-2-butene, 1,1,1,4,4,4-hexafluoro-2-chloro-2-butene and 1,1,1,4,4,4-hexafluoro-2-butene obtained through the process of claim 1 in the presence of a noble metal catalyst.

5,608,129

PROCESS FOR THE PURIFICATION OF DIFLUOROMETHANE

Rene Bertocchio, Vourles Par Vernaison, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Sep. 26, 1995, Ser. No. 534,263

Claims priority, application France, Sep. 26, 1994, 94 11449

Int. Cl.[6] C07C *17/38;17/389;* **B01J** *20/34;38/64*

U.S. Cl. 570—179 **7 Claims**

1. Process for the purification of a difluoromethane (F32) containing traces of chlorofluoromethane (F31), comprising passing a gaseous stream of the F32 to be purified over a 13X molecular sieve at a temperature of at least 60° C.

4. Process according to claim 1 wherein, after use, the 13X sieve is regenerated by washing by means of a solution of sodium or potassium carbonate and heating to high temperature under inert atmosphere or in vacuum.

5,608,130

METHODS FOR THE SYNTHESIS OF CHEMICAL COMPOUNDS

Charles J. Rogers, 4191 Miami Trail La., Cincinnati, Ohio 45252, and Alfred Kornel, 3640 Erie Ave., Cincinnati, Ohio 45208

Continuation of Ser. No. 412,788, Mar. 29, 1995, abandoned, which is a division of Ser. No. 191,504, Feb. 4, 1994, Pat. No. 5,478,548. This application Apr. 22, 1996, Ser. No. 635,535

Int. Cl.[6] C07C *17/25*

U.S. Cl. 570—227 **12 Claims**

1. A method for the synthesis of a partially dehalogenated chemical compound by a catalytic transfer hydrogenation, comprising (a) providing a mixture of a starting material comprising a halogenated aliphatic compound, a hydrogen donor material comprising a hydrocarbon, and a catalyst selected from the group consisting of a catalytic form of carbon, a polyethylene glycol phase transfer agent, and mixtures thereof; and (b) heating the mixture at a temperature of from 30° to 400° C. in the presence of at least one alkali or alkaline earth metal compound to cause reduction of the starting material by catalytic transfer hydrogenation and form the partially dehalogenated chemical compound.

5,608,131

PENTACYCLIC HYDROCARBON COMPOUND AND HALOGENATED PENTACYCLIC HYDROCARBON COMPOUND, AND PREPARATION PROCESSES THEREOF

Yoshihisa Watanabe, Joyo; Takeaki Mitsudo, Nishigyo-ku, and Shi-Wei Zhang, Toyonaka, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1995, Ser. No. 375,292
Claims priority, application Japan, Jan. 25, 1994, 6-6133
Int. Cl.[6] C07C *403/00;2/76;13/28*
U.S. Cl. 585—362 **2 Claims**

2. A process for the preparation of a hydrocarbon compound represented by the following formula (1):



(1)

said process comprising dimerizing norbornadiene in the presence of N-methylpiperidine and a combined catalyst of (1,5-cyclooctadiene)(1,3,5-cyclooctatriene)-ruthenium and N,N-dimethylacrylamide.

5,608,132

METHOD OF ALKYLATING THE SIDE CHAIN OF ALKYL-SUBSTITUTED AROMATIC HYDROCARBONS

Takaya Matsumoto; Shinji Nishikawa, and Fumio Kumata, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 417,964
Claims priority, application Japan, Apr. 14, 1994, 6-099115
Int. Cl.[6] C07C *2/72*
U.S. Cl. 585—452 **14 Claims**

1. A method of alkylating a side chain of an alkyl-substituted aromatic hydrocarbon, comprising the steps of:

(A) thermally treating a hydrotalcite carrier represented by the following formula (I):

$$[M^{2+}_{(1-x)}M^{3+}_{x}(OH)_2]^{x+}\cdot[A^{n-}_{x/n}]^{x-}\cdot yH_2O \quad (I)$$

wherein M^{2+} represents a divalent metallic cation, M^{3+} represents a trivalent metallic cation, A^{n-} represents an n-valent anion, n=0.1 to 0.5, x=0.1 to 0.5, and y=0 to 8,

so as to prepare a thermally treated hydrotalcite carrier;

(B) loading an alkali metal on the thermally treated hydrotalcite carrier of step (A) by an impregnation method, wherein the alkali metal is contacted with the thermally treated hydrotalcite carrier while the alkali metal is dissolved in liquid ammonia, so as to prepare an alkali metal loaded hydrotalcite carrier;

(C) thermally treating the alkali metal loaded hydrotalcite carrier of step (B) under vacuum so as to prepare a catalyst; and

(D) reacting an alkyl-substituted aromatic hydrocarbon with an aliphatic monoolefin using the catalyst of step (C) under an atmosphere substantially free of oxygen, water and carbon dioxide gas so as to alkylate a side chain of the alkyl-substituted aromatic hydrocarbon.

5,608,133

CATALYTIC OLIGOMERIZATION

Clarence D. Chang, Princeton; Tracy J. Huang, Lawrenceville, both of N.J.; Jose G. Santiesteban, Yardley, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 23, 1995, Ser. No. 551,873
Int. Cl.[6] C07C *2/02*
U.S. Cl. 585—524 **13 Claims**

1. A process for oligomerizing olefins, said process comprising contacting at least one olefin having less than 6 carbon atoms under sufficient oligomerization reaction conditions with a catalyst comprising an acidic solid comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal, said catalyst prepared by co-precipitating the Group IVB metal oxide along with the oxyanion of the Group VIB metal.

5,608,134

PROCESS FOR PREPARING AN EFFECTIVE CATALYST FOR N-PARAFFINS HYDROISOMERIZATION

Carlo Perego, Carnate; Giuseppe Bellussi, Piacenza, and Vincenzo Calemma, San Donato Milanese, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Division of Ser. No. 124,203, Sep. 2, 1993, Pat. No. 5,444,032. This application Jun. 1, 1995, Ser. No. 456,804
Claims priority, application Italy, Sep. 29, 1992, M192A2242
Int. Cl.[6] C07C *5/13*
U.S. Cl. 585—750 **8 Claims**

1. A process for hydroisomerizing n-paraffins of more than 15 carbon atoms, comprising:

contacting an n-paraffin or n-paraffin mixture with a difunctional catalyst;

wherein said difunctional catalyst comprises:

(a) an X-ray amorphous silica-alumina gel with a molar ratio of SiO_2:Al_2O_3 in the range of from 30:1 to 500:1, with a porosity in the range of 0.3 to 0.6 ml/g, and with a prevailing pore diameter in the range of from 10 to 30 Å, and

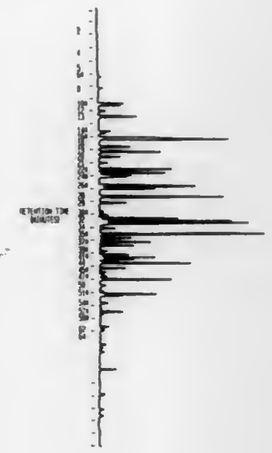
(b) one or more metals from Group VIIIA in an amount of from 0.05 to 5% by wt.

5,608,135

PROCESS FOR DECREASING CHLORINE CONTENT OF CHLORINATED HYDROCARBONS

Jeffrey Schwartz, and Yumin Liu, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

PCT No. PCT/US93/03529, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/21117, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 14, 1993, Ser. No. 211,983
Int. Cl.[6] C07C *25/18;25/00*
U.S. Cl. 588—207 **7 Claims**



1. A method of reducing chlorine content in a polychlorinated aromatic hydrocarbon in the absence of air and moisture which comprises bringing the polychlorinated aromatic hydrocarbon into contact with a dechlorination reagent, said reagent comprising:

(i) at least one complex of a transition metal of Group 4 or 5 with a multidentate or unidentate organic or inorganic ligand or a mixture thereof, and

(ii) a reducing agent operable in the presence of said complex to reductively eliminate chlorine from said polychlorinated aromatic hydrocarbon.

5,608,136

METHOD AND APPARATUS FOR PYROLYTICALLY DECOMPOSING WASTE PLASTIC

Yukishige Maezawa, Tokyo; Terunobu Hayata; Hideki Shimada, both of Kanagawa-ken; Isao Ito, Chiba-ken; Kazuo Suzuki, Tokyo; Masahiro Tadauchi, Tokyo; Fuminobu Tezuka, Tokyo, and Jiro Kano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 992,761, Dec. 18, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,185
Claims priority, application Japan, Dec. 20, 1991, 3-338183; Feb. 21, 1992, 4-033814; Feb. 21, 1992, 4-035334; Oct. 14, 1992, 4-275763; Sep. 13, 1993, 5-227589; Sep. 13, 1993, 5-227596; Sep. 14, 1993, 5-229311; Dec. 28, 1993, 5-336905
Int. Cl.[6] C10B *57/00;* **A62D** *3/00*
U.S. Cl. 588—228 **11 Claims**

1. A method of pyrolytically decomposing plastic, comprising the steps of:

thermally decomposing plastic in a pressurized atmosphere to produce a pyrolysis product in the form of gas;

cooling the pyrolysis product obtained at the thermally decomposing step so that the pyrolysis product is separated into a first fraction containing a first constituent and a second fraction being heavy relative to the first fraction, by condensation of the second fraction;

feeding back the second traction separated at the cooling step to the thermally decomposing step so that the second fraction is further thermally decomposed; and

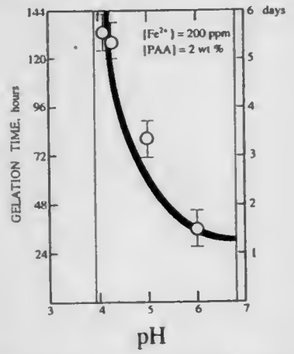
recovering the first constituent by collecting the first fraction.

5,608,137

POLYMER GEL BARRIER CONTAINING MICROORGANISMS FOR CONTAINMENT OF HAZARDOUS WASTE

Ebtisam Wilkins, Albuquerque, N.M., assignor to University of New Mexico, Albuquerque, N.M.

Filed Jan. 27, 1995, Ser. No. 380,673
Int. Cl.[6] A62D *3/00*
U.S. Cl. 588—259 **29 Claims**



1. A method of containing and remediating contamininants within the soil, said method comprising the steps of:

placing a gel barrier into the soil for containing the contaminants, wherein the gel barrier and the soil contained therein form a containment zone, by:

a) preparing an aqueous solution of a gel precursor;

b) adding microorganisms, capable of remediating the contaminants in the soil, to the aqueous solution of the gel precursor;

c) injecting the aqueous solution of the gel preursor together with the microorganisms into the soil at a desired location with a means for injecting;

d) crosslinking in the soil the gel precusor to form the gel barrier, containing the microorganisms, at the desired location.

5,608,138

INBRED MAIZE LINE PHKV1

Michael W. Trimble, Polk County, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 31, 1995, Ser. No. 381,461
Int. Cl.[6] A01H *1/02;4/00;5/00;* **C12N** *5/04*
U.S. Cl. 800—200 **13 Claims**

1. Seed of maize inbred line designated PHKV1 and having ATCC Accession No. 97601.

2. A maize plant produced by the seed of claim 1 and its plant parts.

5,608,139

INBRED MAIZE LINE PHO5F

Joseph K. Gogerty, Algona, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Sep. 1, 1995, Ser. No. 522,789
Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*
U.S. Cl. 800—200 **14 Claims**

1. Seed of maize inbred line designated PH05F and having ATCC Accession No. 97660.

5,608,140

INBRED MAIZE LINE PH38B

Peter D. Coaldrake, Urbana, and Steven W. Tollakson, Mahomet, both of Ill., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Sep. 5, 1995, Ser. No. 524,354
Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*
U.S. Cl. 800—200 **14 Claims**

1. Seed of maize inbred line designated PH38B and having ATCC Accession No. 97659.

5,608,141

SOYBEAN CULTIVAR A3834

E. Hamer Paschal, II, Battleground, Ind., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Dec. 4, 1995, Ser. No. 566,511
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated A3834, deposited as ATCC Accession Number 97719.

5,608,142

INSECTICIDAL COTTON PLANTS

Kenneth A. Barton, Middleton, and Paul F. Umbeck, Madison, both of Wis., assignors to Agracetus, Inc., Middleton, Wis.

Continuation-in-part of Ser. No. 123,054, Nov. 19, 1987, abandoned, and a continuation-in-part of Ser. No. 937,384, Dec. 3, 1986, Pat. No. 5,004,863. This application Jan. 23, 1989, Ser. No. 299,767

Int. Cl.[6] A01H *4/00*

U.S. Cl. 800—205 **7 Claims**

1. A dicot plant comprising in its genome a copy of a gene construction consisting essentially of, in sequence 5' to 3':

a promoter sequence effective to initiate transcription in plant cells;

a translational enhancer sequence from the transcribed but untranslated sequence immediately preceding the coding region of an alfalfa mosaic virus coat protein gene;

a protein coding sequence for a protein of less than about 700 amino acids, the protein being a *Bacillus thuringiensis* delta-endotoxin which is toxic upon ingestion to *Manduca sexta*; and

a polyadenylation sequence, the gene construction effectively expressing in the plant cells a protein toxic to *Manduca sexta*;

wherein the plant is cotton.

5. A cotton plant comprising cells which are lethally toxic upon ingestion to *Heliothis zea*, the cotton cells comprising in their genome an expressed protein coding sequence consisting essentially of a DNA sequence coding for a protein of less than about 700 amino acids which is an amino-terminal portion of a *Bacillus thuringiensis* delta endotoxin which imbues the cells with lethal toxicity to *Heliothis zea*.

5,608,143

EXTERNAL REGULATION OF GENE EXPRESSION

Howard P. Hershey, West Chester, Pa.; Carol D. Katayama, Encinitas; Edward J. Ralston, Pleasant Hill, both of Calif.; Timothy D. Stoner, New Freedom, Pa., and James F. Wong, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 730,853, Jul. 31, 1991, Pat. No. 5,364,780, which is a continuation-in-part of Ser. No. 327,205, Mar. 17, 1989, abandoned. This application Jul. 25, 1994, Ser. No. 280,041

Int. Cl.[6] A01H *4/00*; **C12N** *15/82;15/11*

U.S. Cl. 800—205 **12 Claims**

7. A transgenic plant containing a nucleic acid promoter fragment selected from the group consisting of:

(a) A nucleic acid promoter fragment from the 5' flanking promoter region of a corn gene inducible by compounds of formulae I–IX which when denatured, immobilized on a solid support and hybridized to the promoter region from the gene encoding the cDNA clone 2-1 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67805, and washed at 42° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

(b) a nucleic acid promoter fragment from the 5' flanking promoter region of a corn gene inducible by compounds of formulae I–IX which was denatured, immobilized on a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone 2-2 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67803 and washed at 42° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

(c) a nucleic acid promoter fragment comprising a nucleotide sequence from the 5' flanking promoter region of a petunia gene inducible by compounds of formulae I–IX which when denatured, immobilized on a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone P6.1 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67823 and washed at 42° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

(d) a nucleic acid promoter fragment comprising a nucleotide sequence from the 5' flanking promoter region of a tobacco gene inducible by compounds of formula I–IX which when denatured, immobilized on a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone T2.1 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67822, and washed at 42° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

(e) a nucleic acid promoter fragment nucleotide sequence from the 5' flanking promoter region of a corn gene inducible by compounds of formulae I–IX which when denatured, immobilized on a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone 218 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 68262, and washed at 42° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

(f) a nucleic acid promoter fragment from the 5' flanking promoter region of a plant gene inducible by compounds of formula I–IX which when denatured, immobilized to a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone 5-2 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67804, and washed at 65° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

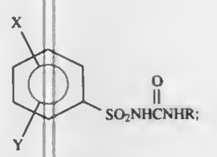
(g) a nucleic acid promoter fragment from the 5' flanking promoter region of a plant gene inducible by compounds of formulae I–IX which was denatured, immobilized to a solid support membrane and hybridized to the promoter region from the gene encoding the cDNA clone T2.1 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession number 67822, and washed at 65° C. with an aqueous solution of 0.1× SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 hours of exposure of the solid support to X-ray film of 24 hours at −80° C.;

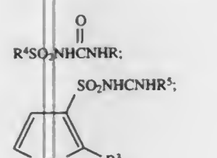
(h) a nucleic acid promoter fragment as is (g) wherein said compound of formulae I–IX is a compound selected from the group consisting of 2-chloro-N-(methylaminocarbonyl)benzenesulfonamide, 1-(n-butyl)-3-methylsulfonylurea, methyl 2-[(aminocarbonyl)aminosulfonyl]benzoate, N-isopropylcarbamoylbenzenesulfonamide, N-(aminocarbonyl)- 2-chlorobenzenesulfonamide and N'-[2-(n-butylaminocarbonyl)]- 6-chloro-N,N-dimethyl-1,2-benzenedisulfonamide;

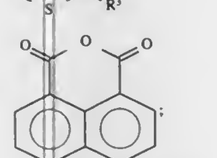
(i) a nucleic acid promoter fragment as in (h) wherein said compound of Formula I–IX is 2-chloro-N-(methylaminocarbonyl)benzenesulfonamide; and

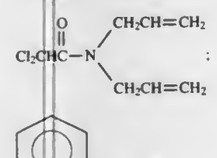
(j) a nucleic acid promoter fragment as in (f) comprising the nucleotide sequence of 889 base pairs running in the 5' to 3' direction from base pair position 1 to base pair position 889 as shown in FIG. 5 from a gene substantially homologous to cDNA clone 5-2;

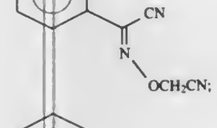
such that exposure of said transgenic plant to a compound of Formula I–IX wherein I–IX are defined as follows:

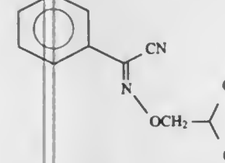


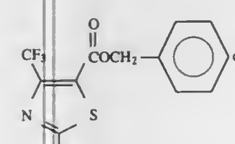


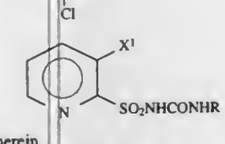












wherein

X is H, F, Cl, Br CF_3, or C_1–C_2 alkyl;

X^1 is H, F, Cl, C_1–C_2 alkyl, $SO_2NR^1R^2$ or CO_2R^1;

Y is H, Cl or $SO_2NR^1R^2$, CO_2R^1, NO_2, $P(O)(OR^1)_2$;

R is H, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, benzyl or C_2–C_4 haloalkyl or C_2–C_4 substituted with C_1–C_2 alkoxy or C_1–C_2 alkylthio;

R^1 is C_1–C_3 alkyl;

R^2 is C_1–C_3 alkyl;

R^3 is CO_2R_2;

R^4 is C_1–C_6 alkyl or C_3–C_6 cycloalkyl;

R^5 is C_1–C_3 alkoxy or NR^6R^7;

R^6 is H, OCH_3, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_1–C_4 alkyl substituted with C_1–C_2 alkoxy or ethoxyethoxy; and

R^7 is H or C_1–C_2 alkyl;

I and agriculturally suitable salts thereof; causes increased expression of a DNA sequence coding for a selected gene product operably linked 3' to said promoter fragment.

5,608,144

II

PLANT GROUP 2 PROMOTERS AND USES THEREOF

Catherine S. Baden, Martinez; Pamela Dunsmuir, Piedmont, and Kathleen Y. Lee, Oakland, all of Calif., assignors to DNA

III

Plant Technology Corp., Oakland, Calif.

Filed Aug. 12, 1994, Ser. No. 289,458

Int. Cl.[6] A01H *5/00*; **C12N** *15/00;15/82*

U.S. Cl. 800—205 **20 Claims**

13. A transgenic Solanaceous plant comprising a plant Gp2

IV promoter operably linked to a heterologous nucleic acid sequence, wherein the Gp2 promoter is capable of initiating constitutive transcription in a Solanaceous plant cell, and the promoter has between about 250 and about 1250 nucleotides and hybridizes to a nucleic acid having a sequence as shown in SEQ. ID. No. 4 under hybridization conditions which include washing at 65° C. in 0.1× SSC, 0.1% SDS.

V

5,608,145

VI

HIGH-AFFINITY POTASSIUM-UPTAKE TRANSPORTER FROM HIGHER PLANTS

Julian I. Schroeder, La Jolla, Calif., and Daniel P. Schachtman, Klemzig, Australia, assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 23, 1994, Ser. No. 294,872

Int. Cl.[6] C12N *15/09;15/29;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **22 Claims**

VII 1. A composition comprising an isolated polynucleotide encoding a high affinity potassium uptake transporter which polynucleotide hybridizes to SEQ. ID. No. 1 in a southern hybridization which includes washing at 65° C. with 0.2×SSC.

11. A plant comprising a heterologous recombinant expression cassette comprising a plant promoter sequence operably linked to the polynucleotide of claim 1.

VIII

5,608,146

IX

DNA SEQUENCES WITH OLIGOSACCHARIDE TRANSPORTER, PLASMIDS, BACTERIA AND PLANTS CONTAINING A TRANSPORTER AS WELL AS A PROCESS FOR THE PREPARATION AND TRANSFORMATION OF YEAST STRAINS FOR IDENTIFICATION OF THE TRANSPORTER

Wolf-Bernd Frommer, and Jorg Riesmeier, both of Berlin, Germany, assignors to Institut Für Genbiologische Forschung Berlin GmbH, Germany

PCT No. PCT/EP93/01604, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/00574, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 356,340

Claims priority, application Germany, Jun. 24, 1992, 42 20 759.2

Int. Cl.[6] A01H *5/00*; **C12N** *5/10;5/04;15/29;15/82*

U.S. Cl. 800—205 **16 Claims**

1. An isolated DNA sequence comprising the coding region of an oligosaccharide transporter gene derived from a potato or spinach plant.

7. A transgenic plant comprising an altered amount of oligosaccharide transporter activity relative to a non-transformed plant, said plant comprising the DNA sequence of claim 1.

5,608,147
TFDA GENE SELECTABLE MARKERS IN PLANTS AND THE USE THEREOF
Bryan J. Kaphammer, 1921 Ravens Crest Dr., Plainsboro, N.J. 08536
Continuation-in-part of Ser. No. 179,667, Jan. 11, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 358,117
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *15/82*
U.S. Cl. 800—205 **33 Claims**

11. A plant cell comprising a tfdA gene expressible in said plant cell wherein said plant cell is free of other foreign selectable marker genes.

15. A plant regenerated from the plant cell according to claim **11**.

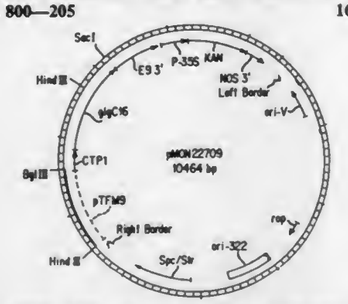
5,608,148
TRANSGENIC COTTON PLANTS PRODUCING HETEROLOGOUS PEROXIDASE
Maliyakal E. John, Middleton, Wis., assignor to Agracetus, Inc., Middleton, Wis.
Continuation-in-part of Ser. No. 130,086, Sep. 30, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 378,588
Int. Cl.[6] A01H *1/04;* **C12N** *5/14;15/00*
U.S. Cl. 800—205 **9 Claims**

1. A cotton plant comprising in its genome a heterologous genetic construct comprising

(a) a seed floss fiber-specific promoter isolated from cotton plants; and

(b) a coding sequence encoding a peroxidase, wherein the promoter is operably linked to the coding sequence, wherein the peroxidase is expressed in the plant seed floss fiber and wherein the coding sequence and promoter are not natively together and wherein the seed floss fiber has an increase in fiber strength as compared to a non-transformed control plant seed floss fiber.

5,608,149
ENHANCED STARCH BIOSYNTHESIS IN TOMATOES
Gerard F. Barry, St. Louis; Ganesh M. Kishore, Chesterfield, and David M. Stark, Fenton, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 90,523, Jul. 12, 1993, Pat. No. 5,498,830, which is a continuation-in-part of Ser. No. 709,663, Jun. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,763, Jun. 18, 1990, abandoned. This application Mar. 3, 1995, Ser. No. 398,627
Int. Cl.[6] A01H *5/00;* **C12N** *15/54;15/62;15/82;5/04*
U.S. Cl. 800—205 **16 Claims**



9. A tomato plant cell comprising a recombinant, double-stranded DNA molecule comprising in sequence:

(a) a promoter selected from the group consisting of green fruit promoters;

(b) a structural DNA sequence that causes the production of an RNA sequence which encodes a fusion polypeptide comprising an amino-terminal plastid transit peptide and a foreign ADPglucose pyrophosphorylase enzyme; and

(c) a 3' non-translated region which functions in plant cells to cause transcriptional termination and the addition of polyadenylated nucleotides to the 3' end of the RNA sequence

in which the DNA molecule is foreign to said plant cell.

13. A tomato plant consisting of plant cells of claim **9**.

5,608,150
FRUIT SPECIFIC PROMOTERS
Timothy W. Conner, Eureka, Mo., assignor to Monsanto Company
PCT No. PCT/US94/07072, § 371 Date Mar. 20, 1995, § 102(e) Date Mar. 20, 1995, PCT Pub. No. WO95/02696, PCT Pub. Date Jan. 26, 1995
PCT Filed Jun. 27, 1994, Ser. No. 406,857
Int. Cl.[6] A01H *1/00;* **C12N** *5/04;15/29;15/82*
U.S. Cl. 800—205 **13 Claims**

6. A plant cell comprising a recombinant, double-stranded DNA molecule comprising in sequence:

(a) a promoter selected from the group consisting of TFM7 and TFM9;

(b) a structural DNA sequence that causes the production of an RNA sequence which encodes a desired protein; and

(c) a 3' non-translated region which functions in plant cells to cause transcriptional termination and the addition of polyadenylated nucleotides to the 3' end of the RNA sequence

wherein said promoter is heterologous with respect to the said structural DNA.

9. The plant cell of claim **6** wherein the cell is from tomato.

10. A tomato plant consisting of plant cells of claim **9**.

5,608,151
ANTI-MICROBIAL PROTEINS
Kirsten Bojsen, Allerød; Karsten M. Kragh, Frederiksberg; Jørn D. Mikkelsen, Hvidovre; Klaus K. Nielsen, Frederiksberg, and John E. Nielsen, Copenhagen S, all of Denmark, assignors to Sandoz Ltd., Basel, Switzerland
Division of Ser. No. 209,923, Feb. 22, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 420,526
Claims priority, application United Kingdom, Feb. 24, 1993, 9303725
Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82*
U.S. Cl. 800—205 **19 Claims**

1. Isolated DNA comprising a sequence encoding a protein selected from the group of those depicted in SEQ ID Nos. 2, 5 and 8.

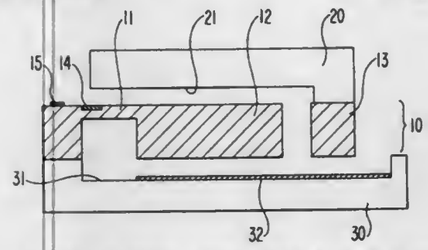
16. Plants transformed with the DNA sequence according to claim **1**.

5,608,152
SEED-SPECIFIC TRANSCRIPTIONAL REGULATION
Jean C. Kridl, and Vic C. Knauf, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.
Division of Ser. No. 742,834, Aug. 8, 1991, Pat. No. 5,420,034, which is a continuation of Ser. No. 550,804, Jul. 9, 1990, which is a continuation-in-part of Ser. No. 147,781, Jan. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 78,538, Jul. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 891,529, Jul. 31, 1986, abandoned. This application May 30, 1995, Ser. No. 453,924
Int. Cl.[6] C12N *15/00;15/82*
U.S. Cl. 800—205 **14 Claims**

1. A Brassica plant comprising:

a DNA construct comprising, in the 5' to 3' direction of transcription, a transcriptional initiation region from a gene that encodes a product preferentially expressed in a plant seed cell as compared to other plant cells, a DNA sequence of interest other than the native coding sequence of said gene, and a transcriptional termination region, wherein said gene is a napin gene, an acyl carrier protein gene or an EA9 gene.

5,608,153
SEMICONDUCTOR ACCELERATION SENSOR AND TESTING METHOD THEREOF
Katsumichi Ueyanagi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, and Fujitsu Ten Limited, Kobe, both of Japan
Division of Ser. No. 252,557, Jun. 1, 1994, Pat. No. 5,526,687. This application May 31, 1995, Ser. No. 456,279
Claims priority, application Japan, Jun. 3, 1993, 5-133408
Int. Cl.[6] G01P *21/00*
U.S. Cl. 73—1 D **9 Claims**



1. A method for testing a semiconductor acceleration sensor, comprising the steps of:

providing a semiconductor acceleration sensor having:

a silicon detecting member integrally processed from a silicon substrate, having:

a weight element;

a supporting portion; and

a beam coupling said weight element with said supporting portion;

at least one semiconductor strain gauge formed on an upper surface of said beam;

an upper glass member provided on an upper portion of said silicon detecting member, and having a concave region located above said weight element in which said weight element is displaceable;

a lower glass member provided on a lower portion of said silicon detecting member, having a concave region located below said weight element in which said weight element is displaceable, and having an opening formed therein; and

a conductive film formed in the concave region of said lower glass member;

wherein said supporting portion of said silicon detecting member is electrostatically joined with said upper glass member and said lower glass member, respectively; and wherein a wiring pattern which is formed on said conductive film passes through the opening of said lower glass member for connection at an external position;

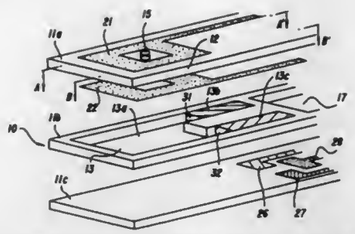
applying a direct current potential to the conductive film of said lower glass member to produce a potential difference between the substrate of said silicon detecting member and the concave region of said lower glass member;

exerting an electrostatic force between a lower surface of the weight element of said silicon detecting member and the conductive film formed on the concave region of said lower glass member to produce an artificial acceleration effect; and

calibrating the semiconductor acceleration sensor by utilizing the artificial acceleration effect.

5,608,154
CARBON MONOXIDE SENSOR
Nobuhide Kato, Ama-gun, and Yasuhiko Hamada, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Mar. 3, 1995, Ser. No. 397,969
Claims priority, application Japan, Mar. 14, 1994, 6-042704
Int. Cl.[6] G01N *27/12;* **G01M** *15/00;* **G08B** *17/10*
U.S. Cl. 73—23.31 **13 Claims**

13. A method for detecting a concentration of carbon monoxide in an unknown gas or gas mixture comprising the steps of:



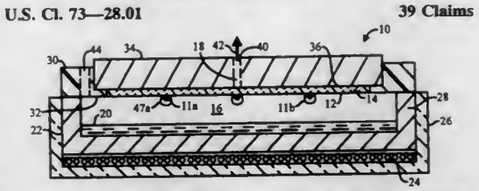
substantially removing an oxygen gas in said gas in a first space by a controlling means for controlling a partial pressure of oxygen in the first space so that carbon monoxide in the gas is adsorbed onto an adsorbent for adsorbing carbon monoxide without any significant chemical interference due to local oxygen gas concentration in said absorbent, said adsorbent being disposed in a second space that is in fluid communication with the first space;

increasing a partial pressure of oxygen in the first space by the controlling means so as to promote an oxidation reaction of the adsorbed carbon monoxide gas into carbon dioxide gas and free hydrogen ions;

measuring a time difference between a response time that depends on said oxidation reaction before the oxygen gas in the first space reaches a first detecting means for detecting a partial pressure of oxygen in said adsorbent and a reference time that the oxygen gas in the first space reaches a second detecting means for detecting a partial pressure of oxygen in a third space that is in fluid communication with the first space and separated from the second space; and

converting said measured time difference into a carbon monoxide concentration in the unknown gas or gas mixture.

5,608,155
METHOD AND APPARATUS FOR DETECTING PARTICLES ON A SUBSTRATE
Yan Ye, Cupertino, and Anand Gupta, San Jose, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Continuation of Ser. No. 56,332, Apr. 30, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 496,946
Int. Cl.[6] G01N *21/88*
U.S. Cl. 73—28.01 **39 Claims**



1. A method for detecting particles on a surface of a substrate comprising the steps of:

(a) exposing the entire surface of the substrate to a vapor by placing the substrate in a condensation zone;

(b) selectively condensing the vapor to form condensate on substantially all the particles on the substrate surface by holding a sufficiently large portion of the substrate in contact with a heat sink using a vacuum port, to maintain substantially the entire surface of the substrate at temperatures up to the dew point of the vapor;

(c) stopping condensation of vapor on the substrate surface before the entire surface of the substrate has condensate thereon by removing the substrate from the condensation zone; and

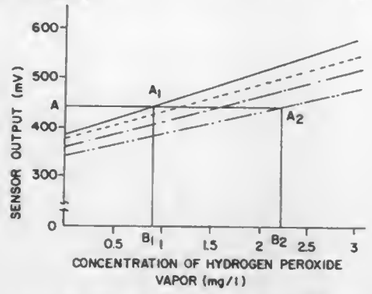
(d) detecting the particles with condensate thereon on the substrate surface.

5,608,156

METHOD FOR DETECTING THE CONCENTRATION OF THE HYDROGEN PEROXIDE VAPOR AND THE APPARATUS THEREFOR

Shinichi Ando, Tokorozawa, and Taizo Ichida, Ibaragi-ken, both of Japan, assignors to Taiyo Toyo Sanso Co., Ltd., Osaka, Japan

Filed Jun. 23, 1995, Ser. No. 481,039
Claims priority, application Japan, May 24, 1995, 7-124715
Int. Cl.[6] G01N *27/12;33/02;* G01D *18/00*
U.S. Cl. 73—31.06 6 Claims



1. A method for detecting a concentration of hydrogen peroxide vapor in a treatment vessel for sterilization treatment of an object with hydrogen peroxide vapor, comprising the steps of:

arranging a semiconductor gas sensor sensitive to hydrogen peroxide inside the treatment vessel with an output proportional to the hydrogen peroxide vapor concentration therein;

arranging a concentration indicator outside the treatment vessel;

supplying hydrogen peroxide vapor to said vessel in a flow regulated amount that is controlled according to the concentration measured by said sensor;

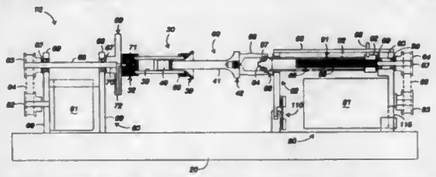
indicating the concentration of hydrogen peroxide vapor with said indicator using an output of said sensor.

5,608,157

METHOD AND APPARATUS FOR MEASURING ENVELOPE DENSITY

Clyde Orr, Dunwoody, and Ronnie W. Camp, Duluth, both of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Filed Oct. 18, 1995, Ser. No. 544,591
Int. Cl.[6] G01N *9/00;* G01F *17/00*
U.S. Cl. 73—32 R 36 Claims



29. An apparatus for measuring the volume of an object, comprising:

a hollow sample cylinder of known interior diameter;

said hollow sample cylinder mounted to a motor horizontally for forward and reverse agitation about its longitudinal axis;

a dry flowing medium placed in said hollow sample cylinder;

a plunger removably positioned within said hollow sample cylinder;

said plunger mounted to a drive motor for horizontal movement within said hollow sample cylinder to compact said dry flowing medium;

a load cell connected to said plunger to measure the force on said plunger as it advances in said hollow sample cylinder; and

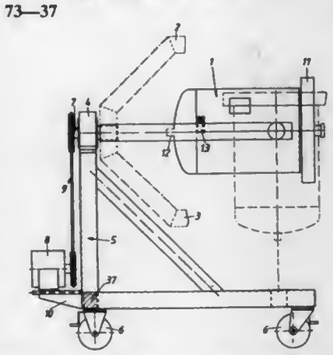
control means to calculate the advance of said plunger both with and without said object positioned in said dry flowing medium until said force thereon reaches a predetermined limit as measured by said load cell.

5,608,158

APPARATUS FOR THE TESTING OF AIR BAGS

Klaus Niederberger, Herbrechtingen, and Peter K. Niederberger, Herbrechtingen-Bolheim, both of Germany, assignors to Althammer GmbH & Co. KG., Heidenheim, Germany

Filed Jan. 20, 1995, Ser. No. 376,031
Claims priority, application Germany, Jan. 25, 1994, 44 01 985.8
Int. Cl.[6] G01M *19/00;13/00*
U.S. Cl. 73—37 18 Claims



1. An apparatus for the testing of air bags, comprising:

a frame member;

a sealed container capable of being pressurized, said container suspended by said frame member, said container being able to swivel and having a lid member; and

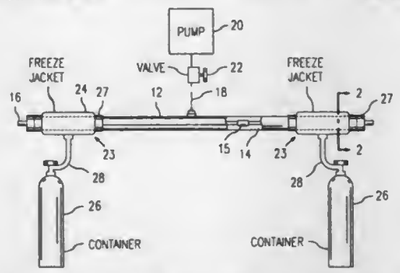
a removable retaining means disposed within said container, said retaining means serving as a receptacle for various air bags or gas producers, said retaining means attached to said lid member.

5,608,159

FREEZE SEAL AND FREEZE CLAMP FOR CABLES, WIRES, OPTICAL FIBERS AND THE LIKE

John M. Carcone, Westwood; Jon W. Engelberth, Denville; James T. LaGrotta, Boonton Township, Morris County, and Joseph V. Newell, East Hanover, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 5, 1995, Ser. No. 417,423
Int. Cl.[6] G01M *19/00;* F16L *3/08;7/02*
U.S. Cl. 73—49.8 36 Claims



1. A freeze device for an elongated element comprising a pressure vessel having an interior and a passage means leading to said interior, said elongated element having one part extending through said passage means and another part disposed in said interior of said pressure vessel, freeze means between said one part of said elongated element and said passage means, said freeze means

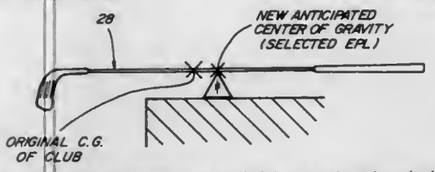
including a frozen material exerting a force inwardly against said one part of said elongated element and outwardly against said passage means by virtue of having been frozen in situ such that said frozen material thereby seals said elongated element in said passage means of said pressure vessel.

5,608,160

BALANCING GOLF CLUBS TO A COMMON PERIOD OF OSCILLATION BY BALANCING SUCH CLUBS TO A COMMON EQUIVALENT PENDULUM LENGTH

Herman A. Chastonay, 6455 Potomac, St. Louis, Mo. 63139

Filed Apr. 2, 1996, Ser. No. 627,740
Int. Cl.[6] A63B *53/00*
U.S. Cl. 73—65.03 13 Claims



13. A method for balancing a golf club to a selected equivalent pendulum length, said method comprising the following steps:

(a) selecting a predetermined equivalent pendulum length value;

(b) determining the shaft or center of percussion length of the club to be balanced;

(c) using the equation

$$EPL = \frac{Q + r}{2}$$

where

EPL=the equivalent pendulum length of the club,

Q=the shaft or center of percussion length of the club, and

r=distance from the center of gravity of the club to the grip end,

calculating the new center of gravity length r for the club to be balanced based upon the corresponding shaft or center of percussion length Q for such club as determined in step (b) above and the predetermined equivalent pendulum length value EPL as selected in step (a) above; and

(d) balancing said club at its new center of gravity location determined in step (c) above.

5,608,161

METHOD FOR DETERMINING THE COMBUSTION RATIO OF A RECIPROCATING-PISTON INTERNAL COMBUSTION ENGINE

Martin Pischinger, Aachen, Germany, assignor to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

PCT No. PCT/EP94/03005, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO95/07449, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 8, 1994, Ser. No. 433,428
Claims priority, application Germany, Sep. 8, 1993, 43 30 324.2
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 8 Claims

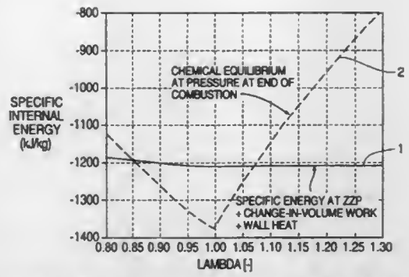
1. A method of determining a combustion air ratio of a reciprocating-piston internal combustion engine, comprising the steps of:

measuring a gradient of a combustion chamber pressure as a function of a position of a piston in a piston cylinder, for at least one operating cycle of the engine;

forming measured signals representing the gradient of the combustion chamber pressure;

digitizing the measured signals;

entering the digitized measured signal into a programmed evaluation unit;



evaluating the digitized measured signals in the programmed evaluation unit on the premise that energy prior to combustion and energy following or toward the end of combustion are at least approximately equal, and based on the equation

$$u_{BrEnd} = \frac{1}{m} \cdot \left(U_{ZZP} - \int_{ZZP}^{BrEnd} p\,dV + \int_{ZZP}^{BrEnd} dQ_{Wand} + \int_{ZZP}^{BrEnd} h \cdot dm_{BlowBy} \right)$$

calculating a value of the combustion air ratio from the evaluated digitized measured signals in an iterative computation process; and

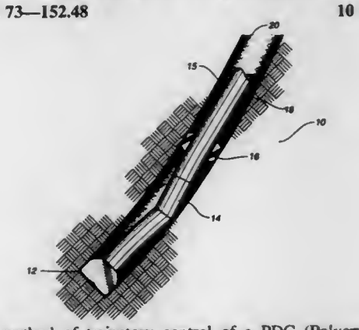
displaying the value.

5,608,162

METHOD AND SYSTEM OF TRAJECTORY PREDICTION AND CONTROL USING PDC BITS

Hwa-Shan Ho, P.O. Box 11170, Spring, Tex. 77391-1170

Division of Ser. No. 151,102, Nov. 12, 1993, Pat. No. 5,546,141. This applicatioo Jul. 13, 1995, Ser. No. 502,117
Int. Cl.[6] B21K *5/02;* E21B *7/04;44/00*
U.S. Cl. 73—152.48 10 Claims



1. A method of trajectory control of a PDC (Polycrystalline Diamond Compact) drill bit attached at the bottom of a drill string used for drilling a borehole through an earth strata formation and thereby achieve a predetermined intended path of PDC bit controlled trajectory comprising the steps of:

determining a drill bit path or trajectory deviation tendency for the PDC drill bit;

determining side forces and bending moments of the PDC drill bit;

estimating response characteristics of the PDC drill bit for a given bit advance in the downward axial direction based upon the determined side forces and bending moments and on the determined bit deviation tendency; and

controlling a simultaneous and/or subsequent lateral movement of the PDC drill bit relative to the estimated response for said PDC drill bit undergoing a given bit advance so as to compensate for drill bit path or trajectory deviation.

5,608,163

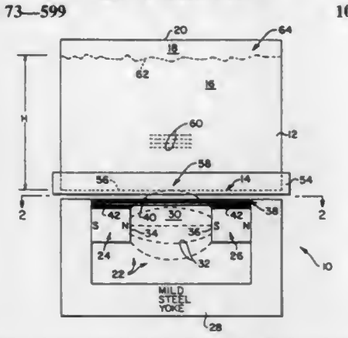
Patent Not Issued For This Number

5,608,164

ELECTROMAGNETIC ACOUSTIC TRANSDUCER (EMAT) FOR ULTRASONIC INSPECTION OF LIQUIDS IN CONTAINERS

Daniel T. MacLauchlan, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 27, 1995, Ser. No. 508,172
Int. Cl.[6] G01N 29/20
U.S. Cl. 73—599 **10 Claims**



1. A method of ultrasonically inspecting liquid contents in a container to determine their condition, the container having a thin metal wall forming at least one wall of the container, comprising the steps of:

providing an electromagnetic acoustic transducer (EMAT) assembly proximate to the thin metal wall to produce and cause a magnetic field to exist therein;

energizing an eddy current coil of the EMAT assembly with an RF toneburst signal of known amplitude and frequency to generate a Lorentz force in the thin metal wall and cause it to vibrate and launch ultrasonic compressional waves into the liquid contents;

allowing the compressional waves to travel through the liquid contents and reflect off an interface, the reflected ultrasonic compressional waves returning to the thin metal wall and causing it to vibrate in the presence of the magnetic field produced by the EMAT transducer assembly, the vibrations of the thin metal wall inducing a voltage in the eddy current coil of the EMAT transducer assembly; and

measuring an amplitude of the induced voltage in the eddy current coil to determine the degree to which the ultrasonic compressional waves were attenuated during their passage through the liquid contents, the degree of attenuation being an indication of the condition of the liquid contents, and comparing the measured attenuation against preestablished values of attenuation representative of known conditions of the liquid contents to determine the condition of the liquid contents.

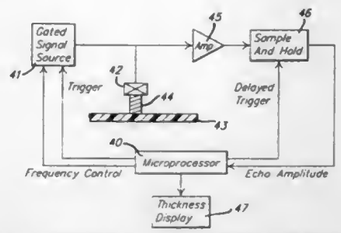
5,608,165

ULTRASONIC THICKNESS GAUGE FOR MULTILAYER PLASTIC FUEL TANKS

George Mozurkewich, Jr., Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 6, 1996, Ser. No. 642,988
Int. Cl.[6] G01N 29/20
U.S. Cl. 73—599 **8 Claims**

7. Ultrasonic apparatus for measuring thickness of a first layer made of a first material having first and second edges, said first edge contacting an adjacent layer made of a different material in a multilayer structure, wherein said first layer has a thickness substantially less than a thickness of said adjacent layer, and wherein



said first layer thickness is measured using ultrasound passing through said adjacent layer, said apparatus comprising:

an ultrasonic transducer for transmitting vibrations to and receiving vibrations from said structure;

a signal source coupled to said ultrasonic transducer and producing a series of electrical transmission pulses causing said ultrasonic transducer to vibrate, each of said electrical transmission pulses having a respective frequency;

a receiver coupled to said ultrasonic transducer for receiving electrical echo signals produced in response to vibrations returning to said ultrasonic transducer from said structure after each respective electrical transmission pulse of said series of pulses, each of said electrical echo signals including a respective interference echo signal from said first layer; and

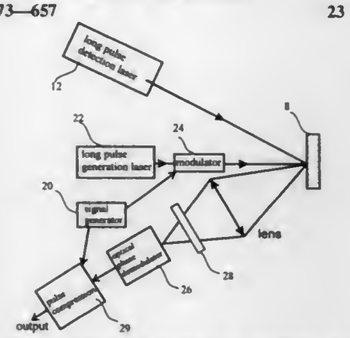
a controller coupled to said signal source and said receiver, said controller controlling said signal source to cause each pulse of said series of pulses to have a pulse duration less than the time for a pulse to traverse through said structure to said first layer and to cause said series of pulses to provide a predetermined frequency progression, said controller selecting said interference echo signal resulting from each electrical transmission pulse from other electrical echo signals also resulting from each electrical transmission pulse, and said controller determining said thickness of said first layer in response to a respective frequency of said electrical transmission pulses that produces an interference echo signal having a minimum magnitude as compared to all other interference echo signals.

5,608,166

GENERATION AND DETECTION OF ULTRASOUND WITH LONG PULSE LASERS

Jean-Pierre Monchalin, and Alain Blouin, both of Montréal, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Oct. 12, 1995, Ser. No. 542,337
Int. Cl.[6] G01N 29/00
U.S. Cl. 73—657 **23 Claims**



1. A method for generating and detecting ultrasound on a workpiece, comprising the steps of:

a) providing a first pulsed laser beam;

b) providing a second pulsed laser beam;

c) modulating the first pulsed laser beam with a modulation signal;

d) directing the first modulated pulsed beam at a workpiece to generate ultrasound the pulse duration of the pulsed beam being longer than an ultrasonic propagation time that is defined to be:

(i) the time of propagation of ultrasound from a generation location to a flaw or discontinuity to be detected within the workpiece and then to a detection location, or,

(ii) the time of propagation of ultrasound directly from the generation location to the detection location;

e) directing the second pulsed laser beam, having a pulse duration longer than the ultrasonic propagation time, at the workpiece;

f) receiving phase modulated light from the second pulsed laser beam either reflected or scattered by the workpiece;

g) demodulating the received phase modulated light to obtain a demodulation signal representative of the ultrasonic motion at the surface of the workpiece; and,

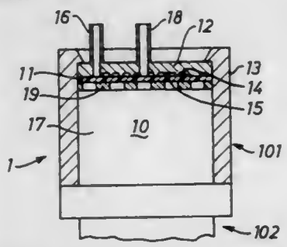
h) electronically processing said demodulation signal.

5,608,167

MEMBRANE-ENCLOSED SENSOR, FLOW CONTROL ELEMENT AND ANALYTIC METHOD

John M. Hale, Meinier, and Eugen Weber, Hinwil, both of Switzerland, assignors to Orbisphere Laboratories Neuchâtel SA, Neuchâtel, Switzerland

Filed Feb. 21, 1995, Ser. No. 390,980
Int. Cl.[6] G01L 7/08
U.S. Cl. 73—715 **19 Claims**



1. A membrane-enclosed sensor having a membrane for exposure to a fluid external phase of analytical interest at an interface between said fluid phase and said membrane; said sensor comprising a coiled channel at said interface, said channel having an inlet end as well as an outlet end for passing said external phase in contact with said membrane through said coiled channel, said coiled channel increasing velocity of said external phase when said external phase is passed therethrough and reducing the thickness of the hydrodynamic and diffusion boundary layers within the external phase at the membrane interface so as to provide for improvement of the efficiency of convective transport of analyte to the membrane.

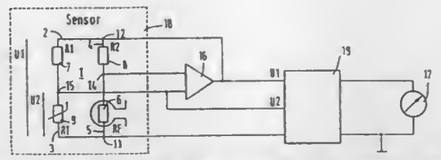
5,608,168

TEMPERATURE COMPENSATION IN A REGULATED HEAT CONDUCTION VACUUM GAUGE

Anno Schoroth, Konigswinter, Germany, assignor to Leybold Aktiengeselischaft, Hanau, Germany

PCT No. PCT/EP94/00533, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/21993, PCT Pub. Date Sep. 29, 1994
PCT Filed Feb. 25, 1994, Ser. No. 522,278
Claims priority, application Germany, Mar. 17, 1993, 43 08 434.6
Int. Cl.[6] G01L 21/12
U.S. Cl. 73—755 **8 Claims**

1. A process for operating a regulated heat conduction vacuum gauge, said heat conduction vacuum gauge having a regulated



supply voltage, U_1, and a Wheatstone Bridge supplied by said regulated supply voltage, said Wheatstone Bridge having a gauge filament (6), a temperature-dependant resistance (9), and a voltage U_2 across said resistance (9), said process comprising the steps of:

subtracting said U_2 voltage from said U_1 voltage, to form a voltage, U_4;

dividing said U_2 voltage by said U_3 voltage to form a voltage signal, U_T, indicative of a temperature of said resistance; and

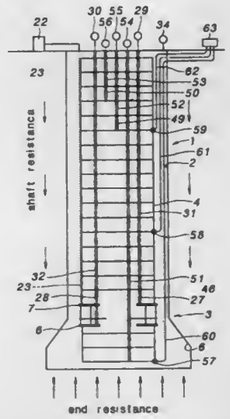
superimposing said U_T voltage on said bridge supply voltage, U_1.

5,608,169

DEVICE AND METHOD FOR TESTING THE BEARING CAPACITY OF PILES

Toyokazu Fujioka, and Kunihiko Arai, both of Kanagawa-ken, Japan, assignors to Chiyoda Corporation, Japan

Filed Jun. 19, 1995, Ser. No. 492,309
Claims priority, application Japan, Jul. 26, 1994, 6-192678; Aug. 25, 1994, 6-222699; Nov. 17, 1994, 6-307094; Dec. 9, 1994, 6-331011
Int. Cl.[6] G01N 3/00
U.S. Cl. 73—803 **17 Claims**



1. A device for testing the bearing capacity of a pile placed in an earthen shaft, comprising:

a hydraulic jack assembly interposed between at least a pair of adjacent upper and lower sections of said pile;

means for supplying hydraulic fluid to said hydraulic jack assembly;

means for measuring displacements of an upper end and a lower end of said hydraulic jack assembly; and

means for measuring an axial force acting on said pile;

said hydraulic jack assembly defining a hollow center allowing material to be transferred between said adjacent sections of said pile.

5,608,170

FLOW MEASUREMENT SYSTEM

David I. H. Atkinson, Clamart, France; Ian C. Walton, Tulsa, Okla.; Bernard J. P. Glotin, S.-Maur-des-Fosses, and Gérard Segeral, Gif-sur-Yvette, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

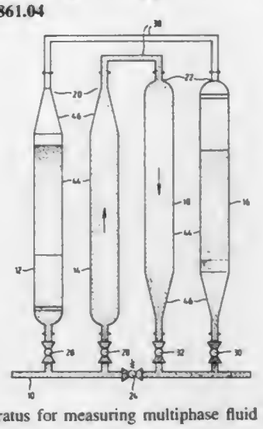
PCT No. PCT/GB93/00369, § 371 Date Nov. 16, 1994, § 102(e) Date Nov. 16, 1994, PCT Pub. No. WO93/17305, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 22, 1993, Ser. No. 290,828

Claims priority, application United Kingdom, Feb. 21, 1992, 9203760

Int. Cl.[6] G01F *1/74*

U.S. Cl. 73—861.04 10 Claims



1. An apparatus for measuring multiphase fluid flows comprising:

first and second sections each having a respective flow passage, said first and second sections having one of a differing area of flow and a differing direction of flow in relation to gravity so as to affect a relationship between a void fraction and a velocity for the phases; and

dynamic pressure measurement means associated with said flow passages for measuring said multiphase fluid flows therethrough.

5,608,171

DISTRIBUTED, UNATTENDED WASTEWATER MONITORING SYSTEM

Robert M. Hunter, and Frank M. Stewart, both of 320 S. Willson Ave., Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 164,146, Dec. 9, 1993, Pat. No. 5,423,226, which is a continuation-in-part of Ser. No. 153,178, Nov. 16, 1993, Pat. No. 5,406,828. This application Dec. 21, 1994, Ser. No. 360,300

Int. Cl.[6] G01F *1/44*

U.S. Cl. 73—861.63 22 Claims

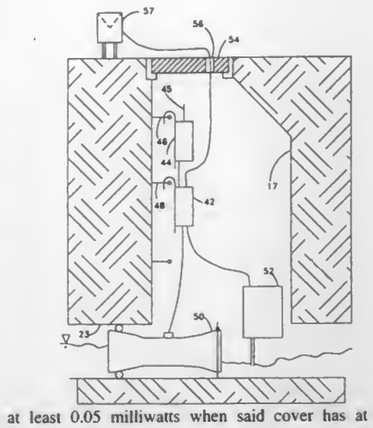
1. A system for monitoring a flowing wastewater comprising:

at least one flowmeter station installed in a sewer manhole, said at least one flowmeter station comprising a secondary element and a first wireless transmitter/receiver, and said sewer manhole having a cover,

said first wireless transmitter/receiver being attached to said secondary element of each said at least one flowmeter station, having a first antenna, and being adapted to transmit and receive radio signals through said manhole cover, said signals being characterized by a first transmission power value, and

a base station comprising a second wireless transmitter/receiver and a computer, said second wireless transmitter/receiver having a second antenna and being adapted to transmit and receive radio signals through said manhole cover, said signals being characterized by a second transmission power value,

wherein said first and second transmission power values are selected from the group consisting of



at least 0.05 milliwatts when said cover has at least one standard hole, and

at least 5 milliwatts when said cover is holeless.

5,608,172

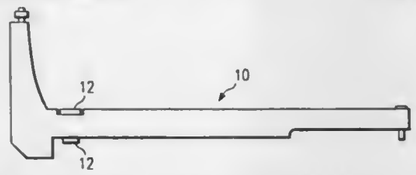
DIE BOND TOUCH DOWN DETECTOR

Ricardo J. S. de Magalhaes Machado, Rio Tinto, and Andre G. M. Cardoso, Vila Nova de Gaia, both of Portugal, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1995, Ser. No. 405,332

Int. Cl.[6] G01L *1/00*

U.S. Cl. 73—862.541 12 Claims



10. The method of detecting deformations in a die bond head, comprising the steps of:

measuring deformations in a plurality of strain gauges in contact with the die bond head;

processing measured deformations in the plurality of strain gauges to determine deformations of the die bond head; and

determining a touch down position of the die bond head in response to the measured deformations.

5,608,173

FORCE MEASURING APPARATUS HAVING ELECTRICALLY-INSULATED LOAD BEARING SURFACES

Albert E. Brendel, Lake Orion, Mich., assignor to Sensor Developments, Inc., Lake Orion, Mich.

Filed Jun. 7, 1995, Ser. No. 475,697

Int. Cl.[6] G01L *1/04*

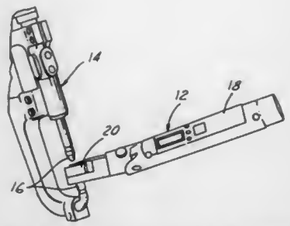
U.S. Cl. 73—862.628 7 Claims

1. An apparatus for measuring force, comprising:

a force sensing body having first and second force application surfaces for determining an externally-supplied force applied therebetween; and,

insulator means disposed on one of said first and second force application surfaces for providing electrical insulation between said first and second surfaces;

wherein said insulator means includes an anodized insert comprising aluminum, said insert having first and second opposing surfaces and a relatively electrically nonconductive oxide layer on said second opposing surface of said insert, said insert being disposed on said one force application surface such that said oxide layer is sandwiched between said one force application surface and said first opposing surface of said insert, said insert providing a mechanical barrier to said externally-applied force to thereby protect said oxide layer.



5,608,174

CHROMIUM-BASED ALLOY

Ralf Eck, Hühnerstelg 1; Günter Kneringer, Kaiser-Lothar-Strasse 40, and Wolfgang Köck, Ehrenbergstrasse 43, A-6600, all of A-6600 Reutte, Austria

Continuation of Ser. No. 57,985, May 4, 1993, abandoned. This application May 15, 1995, Ser. No. 440,693

Claims priority, application Austria, May 14, 1992, 981/92

Int. Cl.[6] C22C *1/04;1/10*

U.S. Cl. 75—235 11 Claims

1. A chromium-based alloy which has a chromium content of more than 65% by weight of said alloy and further comprising:

an oxide component comprising yttrium oxide and lanthanide oxide in the range of 0.005 to 5% by weight of said alloy and dispersed within the chromium alloy by a sintering process;

a first metal component selected from the group consisting of iron, nickel and cobalt in the range of 0.1 to 32% by weight of said alloy;

a second metal component selected from the group consisting of aluminum, titanium, zirconium and hafnium in an amount up to 30% by weight of said alloy;

a third metal component selected from the group consisting of vanadium, niobium, molybdenum, tantalum, tungsten and rhenium in an amount up to 10% by weight of said alloy; and

one or more elements selected from the group consisting of carbon, nitrogen, boron and silicon in an amount up to 1% by weight of said alloy.

5,608,175

KEYBOARD MUSICAL INSTRUMENT HAVING REGULABLE REGULATING BUTTONS LINKED WITH HAMMER STOPPER

Kiyoshi Kawamura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Nov. 22, 1994, Ser. No. 343,370

Claims priority, application Japan, Nov. 30, 1993, 5-068463 U

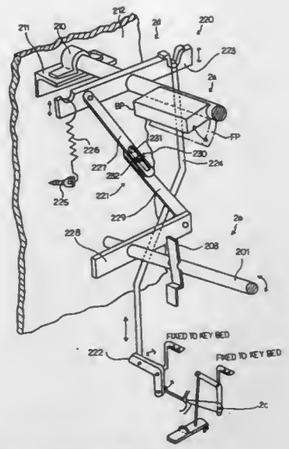
Int. Cl.[6] G10D *15/00*

U.S. Cl. 84—171 7 Claims

1. A keyboard musical instrument having at least an acoustic sound mode for producing acoustic sounds and an electronic sound mode for producing electronic sounds, comprising:

an acoustic piano having:

a keyboard including a plurality of swingable keys for being depressed by a player in both the acoustic sound and electronic sound modes;



a plurality of hammer assemblies;

a plurality of key action mechanisms wherein:

each of said key action mechanisms is connected to a respective one of said plurality of swingable keys and a respective one of said pluralities of hammer assemblies;

each of said key action mechanisms drives the respective connected hammer assembly in response to the connected respective one of said plurality of swingable keys being depressed, thereby producing a piano touch in both the acoustic sound and electronic sound modes; and

each of said key action mechanisms has a home position and an escape position;

a plurality of regulating buttons, wherein each respective one of said regulating buttons is spaced apart from a respective one of said plurality of key action mechanisms when the respective key action mechanism is in said home position and wherein each respective one of said regulating buttons contacts a respective one of said plurality of key action mechanisms when the respective key action mechanism is in said escape position; and

a plurality of string members associated with said hammer assemblies, respectively, wherein said hammer assemblies strike said string members in said acoustic sound mode;

an electronic sound generating system for producing said electronic sounds in response to the keys being depressed in said electronic sound mode; and

a mode controlling system having:

a stopper positioned between said plurality of hammer assemblies and said plurality of string sets, and being positioned in a free position allowing said hammer assemblies to strike the string members in said acoustic sound mode and a blocking position wherein said stopper blocks the hammer assemblies from striking said string members in said electronic sound mode by causing said hammer assemblies to return to the home position from a location between said escape position and the position at which said hammer assemblies strike the respective string members;

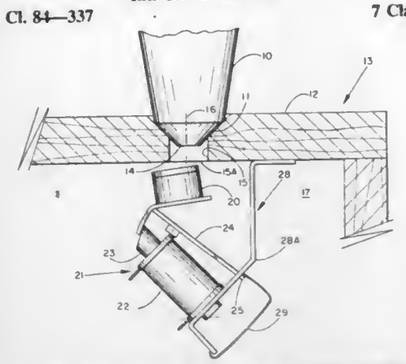
a regulator connected to said plurality of regulating buttons, and changing distances between said plurality of key action mechanisms and said plurality of regulating buttons between said acoustic sound mode and said electronic sound mode for allowing said plurality of key action mechanisms to escape in both acoustic sound and electronic sound modes; and

a link mechanism connected between said stopper and said regulator, for causing said stopper and said regulator to change the position between said free position and said blocking position and said distances between said plurality of key action mechanisms and said plurality of regulating buttons, respectively.

5,608,176
ELECTROMAGNETIC VALVE FOR PIPE ORGAN

Timothy J. Patterson, 6080 Linden Rd., Woodbury, Minn. 55125

Filed Jun. 7, 1995, Ser. No. 479,219
Int. Cl.[6] G10B *3/10*
U.S. Cl. 84—337 7 Claims



1. In a pipe organ wherein the pipes are mounted generally with the toes of the pipes in air communication with corresponding windways for receiving pressurized air from the chamber of the organ wind chest, a valve for selectively opening and closing each windway, comprising:

a) an electromagnet comprising an electrical solenoid mounted to the organ wind chest;

b) a pivotally mounted movable arm in magnetic circuit with said electromagnet;

c) a closure member for the windway mounted on said arm;

d) a spring member attached to said arm normally urging the arm in a direction such that said closure member closes its associated windway;

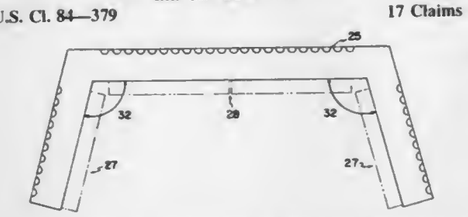
e) said electromagnet when energized moving said arm in a direction to move said closure member away from its associated windway to open said windway;

f) said arm mounted so that it moves said closure member toward and away from its associated windway at an obtuse angle with respect to the longitudinal axis of the associated windway.

5,608,177
MULTIPLE HARMONICA HOLDER

Richard Zadworny, 4500 Excelsior Blvd., Ste. 9, St. Louis Park, Minn. 55416-4965

Filed Dec. 22, 1994, Ser. No. 361,960
Int. Cl.[6] G10D *7/12*
U.S. Cl. 84—379 17 Claims



1. A harmonica support apparatus for supporting a harmonica on a player, comprising:

means for retaining a plurality of harmonicas; and

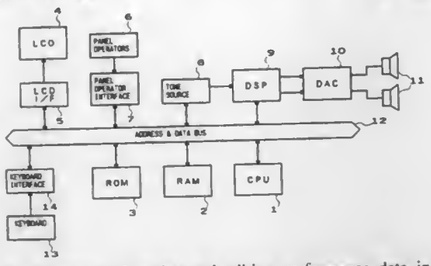
means for supporting the retaining means proximate a player's mouth;

wherein the harmonica retaining means is selectively configured for retaining the harmonicas so that each of the plurality of harmonicas is accessible to the player's mouth for playing at any given time without the use of the player's hands.

5,608,178
METHOD OF STORING AND EDITING PERFORMANCE DATA IN AN AUTOMATIC PERFORMANCE DEVICE

Hiroyuki Iwase, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 28, 1994, Ser. No. 365,156
Claims priority, application Japan, Dec. 29, 1993, 5-354315
Int. Cl.[6] G10H *1/00*
U.S. Cl. 84—609 20 Claims



17. A method of storing and editing performance data in an automatic performance device including a memory for storing the performance data, said method comprising the steps of:

dividing a memory space of said memory into a plurality of blocks each having a predetermined storage capacity, and storing performance data into a memory block chain which is composed of any one or more said blocks connected together in arbitrary order;

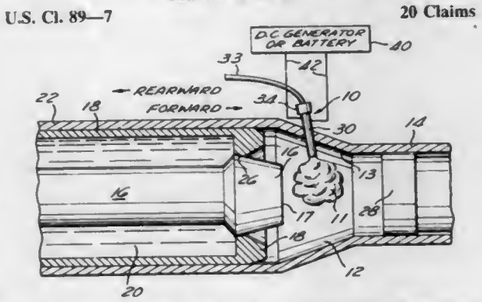
providing a management table for storing management information for, in accordance with order of performance, specifying said one or more blocks composing said memory block chain storing therein the performance data; and

when a part of the performance data stored in said memory block chain is to be deleted, removing the part of the performance data from an address region in any of the blocks where the part of the performance data resides, and writing predetermined non-processing code into said address region in place of the removed part of the performance data, so that said address region storing therein the non-processing code is skipped during reproduction of the performance data.

5,608,179
CATALYTIC IGNITOR FOR REGENERATIVE PROPELLANT GUN

Gerald E. Voecks, La Crescenta, and Ned W. Ferraro, Long Beach, both of Calif., assignors to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 18, 1994, Ser. No. 200,785
Int. Cl.[6] F41F *1/00*
U.S. Cl. 89—7 20 Claims



1. A liquid propellant gun for firing a projectile, the gun comprising:

(a) a barrel;

(b) a combustion chamber formed at one end of said barrel such that combustion of liquid propellant therein effects movement of the projectile through said barrel;

(c) a sprayer for spraying liquid propellant into said combustion chamber;

(d) a stationary wall enclosing a portion of said combustion chamber;

(e) an inner piston;

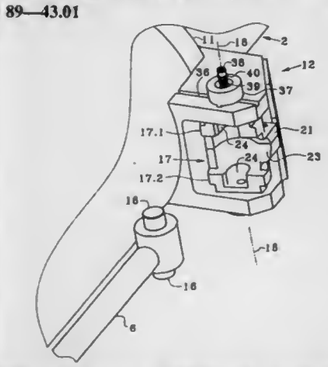
(f) an outer piston substantially surrounding said inner piston; and

(g) an ignitor disposed proximate said combustion chamber for initiating combustion of the liquid propellant, said ignitor comprising a catalyst onto which the liquid propellant is sprayed by said sprayer.

5,608,180
MANEUVERING DEVICE FOR THE RECOILING MASS OF A PIECE OF ARTILLERY

Patrick Balbo; Philippe Grelat, both of Bourges; Guy Malassenet, Pigny, and Fabienne Mandereau, Sainte Thorette, all of France, assignors to Giat Industries, Versailles Cedex, France

Filed May 11, 1995, Ser. No. 439,385
Int. Cl.[6] F41A *25/04;25/26*
U.S. Cl. 89—43.01 18 Claims



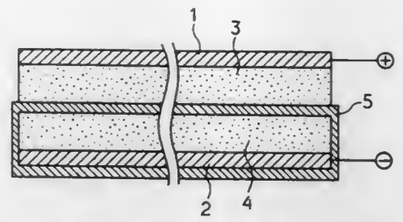
1. A maneuvering device for maneuvering a recoiling mass of a piece of artillery, said recoiling mass being linked to a cradle of said piece of artillery, said device comprising a jack for linking the recoiling mass and the cradle, a first end of the jack comprising first means for fastening the first end of the jack to the cradle, and a second end of the jack comprising second means for fastening the second end of the jack to the recoiling mass, said recoiling mass moving in a compression stroke having an end; said second means including a disconnectable coupling, thereby allowing the second end of the jack to be uncoupled from the recoiling mass at said end of said compression stroke by an action of said piece of artillery during said compression stroke.

5,608,181
ELECTRIC POWER GENERATING ELEMENT

Shigeyuki Yasuda, c/o Tomonokai Research Laboratory 2-227, Kibuki-cho-kita, Kasugai-shi, Aichi-ken, Japan

Division of Ser. No. 981,217, Nov. 25, 1992, Pat. No. 5,487,790. This application May 17, 1995, Ser. No. 443,167
Claims priority, application Japan, Nov. 25, 1991, 3-336326; Mar. 9, 1992, 4-50655; Jul. 28, 1992, 4-201281
Int. Cl.[6] H01L *37/00*
U.S. Cl. 136—200 9 Claims

1. An electric power generating element converting a heat energy to an electric energy, comprising a positive electrode containing graphite, a negative electrode formed from a metal composition which includes copper, and at least one polyethylene glycol, wherein both of said electrodes contacts the at least one polyethylene glycol.



5,608,182
FUEL GAS GENERATOR FOR AIRBREATHING PROPULSION SYSTEMS

Darren M. Thompson, Madison, and William M. Chew, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 22, 1996, Ser. No. 641,138
Int. Cl.[6] C06B *27/00*
U.S. Cl. 149—22 6 Claims

1. A gas generator propellant formulation comprising tetraalkylammonium borohydride in an amount from about 50–100 weight percent and lithium nitrate in an amount from about 0–50 weight percent, said gas generator propellant formulation pressed into pellet form and when ignited, produces effluent comprising an alkane, hydrogen, and nitrogen and forms a klinker in the shape and appearance of said original pellet form, said tetraalkylammonium borohydride selected from the group tetraalkylammonium borohydrides consisting of tetramethylammonium borohydride, tetraethylammonium borohydride, tetrapropylammonium borohydride, and tetrabutylammonium borohydride.

5,608,183
GAS GENERANT COMPOSITIONS CONTAINING AMINE NITRATES PLUS BASIC COPPER (II) NITRATE AND/OR COBALT(III) TRIAMMINE TRINITRATE

Michael W. Barnes, Brigham City, and Robert D. Taylor, Hyrum, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 15, 1996, Ser. No. 616,408
Int. Cl.[6] C06B *31/00*
U.S. Cl. 149—45 5 Claims

1. A gas generant composition comprising between about 30 and about 85 wt. % of A) a fuel, and between about 15 and about 70 wt % of B) oxidizer based on total weight of A) plus B),

at least about 60 wt %, up to 100 wt % of said fuel A) comprising an nitrate salt of a polyamine of the general formulae selected from the group consisting of:

$$ZHN-CO-NHZ, \quad (I)$$

$$\begin{array}{l} Z-N-H \\ \quad\quad \| \\ ZHN-C-NHZ, \end{array} \quad (II)$$

$$ZHN-CO-NH-CO-NHZ, \quad (III)$$

wherein in formulae (I)–(III) the Zs are the same or different and are selected from H and NH_2, balance of A) other fuel,

(IV) C_2–C_3-alkyl diamine, and mixtures thereof,

at least about 60 wt %, up to 100 wt % of said oxidizer B) being selected from the group consisting of $Cu(NO_3)_2.3Cu(OH)_2$, $Co(NH_3)_3.(NO_2)_3$ and mixtures thereof, balance of B) other oxidizer.

5,608,184

ALTERNATIVE USE OF MILITARY PROPELLANTS AS NOVEL BLASTING AGENTS

Oldrich Machacek, Dallas, Tex.; Gary R. Eck, Sarcoxie, and J. Brent Gilion, Joplin, both of Mo., assignors to Universal Tech Corporation, Dallas, Tex.

Filed Feb. 3, 1995, Ser. No. 383,526
Int. Cl.[6] C06B *25/26*
U.S. Cl. 149—98 10 Claims

1. A blasting agent consists essentially of single or triple base propellant grains having a grain size ranging from about 1/16 inch to about 1 inch diameter in combination with a detonator and a booster. said blasting agent being packaged with water or an aqueous salt solution to fill void volume.

5,608,185

METHOD OF REDUCING NITROGEN OXIDE FUMES IN BLASTING

Richard H. Granholm, and Lawrence D. Lawrence, both of Sandy, Utah, assignors to Dyno Nobel Inc., Salt Lake City, Utah

Filed Jan. 31, 1995, Ser. No. 381,500
Int. Cl.[6] C06B *23/02;* F42D *5/00*
U.S. Cl. 149—108.4 6 Claims

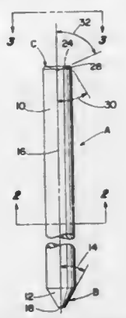
1. A method of reducing the formation of nitrogen oxide in after-blast fumes resulting from the detonation of an emulsion blasting agent, which method comprises using an emulsion blasting agent having (a) an emulsion phase comprising an emulsifier; a continuous organic fuel phase; and a discontinuous oxidizer salt solution phase that comprises ammonium nitrate and water in an amount of from about 9% to about 20% by weight of the emulsion phase, (b) ammonium nitrate prills in an amount of from about 20% to about 50% by weight of the agent, and (c) urea in an amount of from about 5% to about 30% by weight of the agent.

5,608,186

GROUND ROD

Albert L. Collins, Jr., Germantown, Tenn.; Rick A. Boyd, Olive Branch, Miss.; Herbert L. Bradshaw, II, Germantown, Tenn.; Alvin J. Huber, Tulsa, Okla.; Charles T. Wessner, Freehold, N.J., and Dennis B. Ruch, Memphis, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Continuation of Ser. No. 825,971, Jan. 27, 1992, abandoned. This application May 2, 1994, Ser. No. 236,647
Int. Cl.[6] H01R *4/66*
U.S. Cl. 174—7 15 Claims



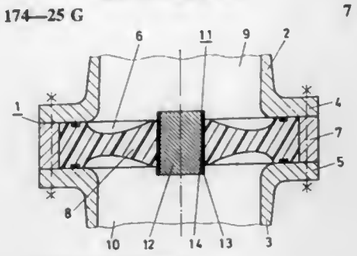
11. An elongated substantially cylindrical electrical ground rod having opposite pointed and blunt end portions. said pointed end portion having a length, and said blunt end portion having a shallow dimple therein of a depth that is substantially less than the length of said pointed end portion.

5,608,187

POST INSULATOR

Leopold Ritzer, Untersiggenthal, Switzerland, assignor to ABB Research Ltd., Zurich, Switzerland

Filed Nov. 29, 1994, Ser. No. 350,996
Claims priority, application Germany, Dec. 23, 1993, 43 44 043.6
Int. Cl.[6] H01B *9/04*
U.S. Cl. 174—25 G 7 Claims



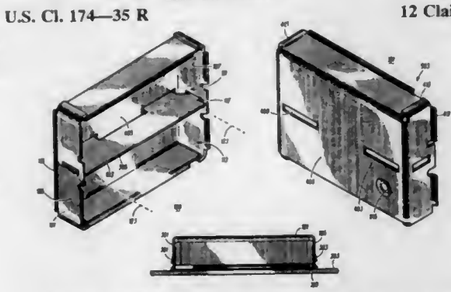
1. A post insulator comprising:
an insulator body formed of cured cast resin;
at least one potted fitting. the potted fitting penetrating the insulator body;
the potted fitting having a metallic support body having a lateral surface; wherein
the lateral surface has an unreinforced bonding layer thereon, the bonding layer adhering better to the lateral surface than the cured cast resin, and
the cured cast resin is cross-linked with the bonding layer.

5,608,188

MULTI COMPARTMENT ELECTROMAGNETIC ENERGY SHIELD

Low P. Choon, Richmond, and Chan Y. Kwong, Surrey, both of Canada, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1994, Ser. No. 300,613
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 R 12 Claims



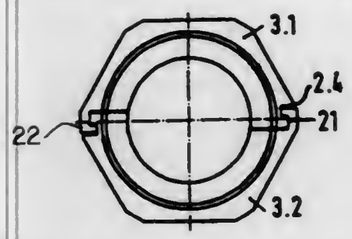
1. A multi compartment electromagnetic energy shield arranged for assembly to a mounting surface of a carrier, the multi compartment electromagnetic energy shield comprising in combination:
an enclosure having electromagnetic shielding properties and further including a first surface and a first and a second side wall each extending from said first surface to the mounting surface of the carrier after surface mount assembly to the mounting surface of the carrier; and
a partition having electromagnetic shielding properties and a mounting edge, said partition arranged and constructed to electromagnetically divide said enclosure into multiple compartments, said partition captivated by said first and said second side wall in a free floating manner such that said mounting edge coincides with said mounting surface after surface mount assembly to the mounting surface of the carrier.

5,608,189

SCREWABLE INTRODUCTION MEANS FOR SLEEVES OR HOUSINGS

Hans Winterhoff, Schwerte, and Andreas Guenther, Menden, both of Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Hagen, Germany

Filed Jun. 7, 1994, Ser. No. 257,096
Claims priority, application Germany, Nov. 29, 1993, 43 40 629.7
Int. Cl.[6] H02G *3/18*
U.S. Cl. 174—65 SS 28 Claims



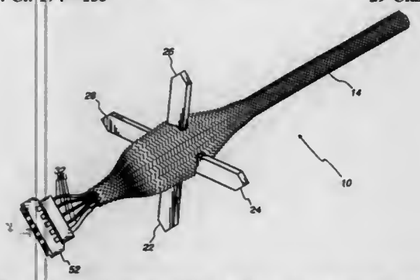
1. A screwable introduction device at an introduction opening of a component having a pressable annular seal comprising:
an introduction sheath having outside threads adapted to be firmly and tightly arranged at the introductioo opening of the component, and having an inside annular stop;
a union nut having an inside thread screwed onto the introduction sheath outside threads;
a press sleeve having an annular end face arranged inside the union nut, an annular channel formed between the press sleeve and the inside thread of the union nut, the introduction sheath entering into said annular channel when the union nut is screwed on;
an annular seal having a front face and an end face and an inside diameter roughly matched to a cable to be introduced into the introduction sheath, said front face abutting said annular stop;
the annular end face of the press sleeve pressed against the end face of the annular seal with the assistance of the union nut; and
wherein the annular seal, introduction sheath, union nut, and the press sleeve are each divided longitudinally forming respective longitudinally extending opposed and separable edges.

5,608,190

STRAIN RELIEF ARRANGEMENT

Richard E. Skowronski, Elk Grove Village, Ill., assignor to GTE Airfone Incorporated, Waltham, Mass.

Filed Aug. 9, 1994, Ser. No. 287,857
Int. Cl.[6] H01B *7/24*
U.S. Cl. 174—135 29 Claims



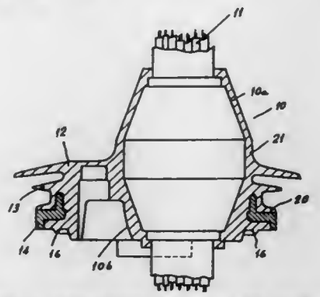
28. A strain relief arrangement for use on a wire having braided material disposed therearound, comprising:
a hub; and
a plurality of spokes extending outwardly from said hub, each of said plurality of spokes including a pointed tip directing said braided material to either side of said pointed tip.

5,608,191

METAL PLATE SLEEVE AND METHOD OF MANUFACTURE

D. Miguel Jorda Teixido, Valls, Spain, assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Apr. 8, 1993, Ser. No. 45,442
Int. Cl.[6] H01B *17/26*
U.S. Cl. 174—151 3 Claims



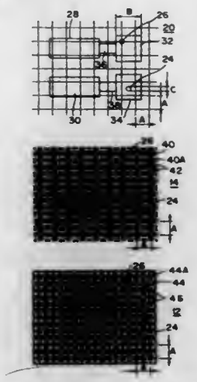
1. A method of manufacturing a leakproof seal about a plurality of longitudinally elongated, bundled cables, comprising the steps of:
compressing the bundled cables longitudinally so as to create a plurality of empty spaces between the bundled cables along a selected limited length of the bundled cables;
enclosing said selected limited length of the bundled cables in a cavity of a mold; and
filling the plurality of empty spaces between the bundled cables with a hot glue whereby a leakproof seal is thereby formed about said selected limited length of the bundled cables.

5,608,192

MULTILAYER THIN-FILM WIRING BOARD

Kiyokazu Morizumi, and Kiyotaka Seyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 26, 1995, Ser. No. 506,918
Claims priority, application Japan, Jul. 28, 1994, 6-176582; Jul. 12, 1995, 7-176453
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—255 15 Claims



1. A multilayer thin-film wiring board comprising:
a dielectric layer;
at least three wiring layers including first, second, and third wiring layers laminated with each other through said dielectric layer;
said first wiring layer including a first pattern having a plurality of first windows arranged with the same pitch both in a lateral direction and in a longitudinal direction of said wiring board,

and a plurality of first island patterns each located at a substantially central portion of each of said first windows;

said second wiring layer including a second pattern having a plurality of second windows arranged with the same pitch both in the lateral direction and in the longitudinal direction, and a plurality of second island patterns each located at a substantially central portion of each of said second windows;

said second windows of said second pattern being shifted from said first windows of said first pattern by half the pitch both in the lateral direction and in the longitudinal direction;

said third wiring layer including first and second via pads formed on a surface of said wiring board;

a first via connecting said first via pad, said first pattern, and at least one of said second island patterns; and

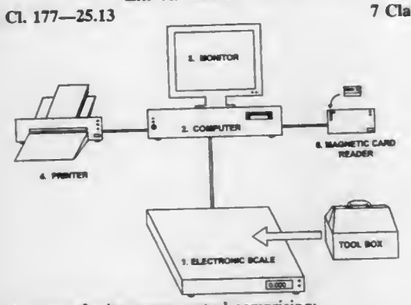
a second via connecting said second via pad, said second pattern, and at least one of said first island patterns.

5,608,193

TOOL INVENTORY CONTROL SYSTEM AND METHOD

Ali H. Almogaibil, 3259 Branard St. Apt. 7, Houston, Tex. 77098

Filed May 30, 1995, Ser. No. 402,644
Int. Cl.[6] G01G *19/22*
U.S. Cl. 177—25.13 **7 Claims**



1. A system for inventory control comprising:

a computing means for analyzing and storing data;

an electronic weighing scale which supplies weight data to said computing means;

an identification reading means for reading a user identification to obtain user data on a current user of said system and which supplies said user data to the computing means;

said computing means further comprising:

a software package which stores in the computing means previous weight data entered into said computing means by a user by placing a container on said scale and placing an identification into said reading means, and compares said previous weight data with current weight data entered by, and which determines which items are unaccounted for in the container by comparing any weight discrepancy between said previous weight data and said current weight data with a standard weight list of known items stored in the computing means.

5,608,194

EXHAUST PIPE STRUCTURE FOR A MOTORCYCLE

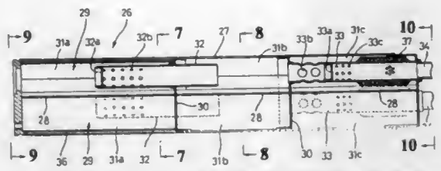
Hiroshi Okazaki; Akihiro Hamada; Hiroo Takemura, and Kazuto Takatori, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,574
Claims priority, application Japan, Jul. 13, 1994, 6-161516
Int. Cl.[6] F01N *7/08*
U.S. Cl. 181—228 **18 Claims**

1. An exhaust pipe structure for a motorcycle comprising:

a muffler;

exhaust pipes adapted to extend from cylinders of a multi-cylinder engine, said exhaust pipes including upstream ends and downstream ends, said muffler being connected to said downstream ends of said exhaust pipes;



said muffler comprising:

a single tubular member having an interior portion forming a chamber;

partition plates for dividing the interior portion of said single tubular member into a plurality of independent expansion paths equal to the number of cylinders of an engine, said plurality of independent expansion paths including upstream ends and downstream ends; and

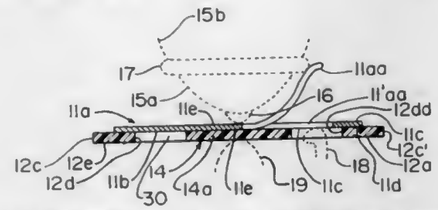
tail pipes individually connected to said downstream ends of said independent expansion paths and a single cover for accommodating said tail pipes therein.

5,608,195

PORTABLE THREE-WAY LIGHT BULB-SOCKET INSERTABLE SWITCH CONVERTER

Frank E. DeMotte, 18 Blue Mill Rd., Morristown, N.J. 07960

Filed May 5, 1995, Ser. No. 435,542
Int. Cl.[6] H01H *9/00;1/00;* **H01R** *25/00*
U.S. Cl. 200—50.28 **12 Claims**



1. A portable three-way bulb-socket insertable switch converter-device comprising in combination: spaced-apart interconnected electrical solid insulation elements spaced-apart along a linear plane and having a predetermined width dimension along said linear plane of which the width dimension is receivable within an electrical socket, each of the spaced-apart electrical solid insulation elements:

(a) having, adjacent inward edges adjacently spaced-apart from one another thereof along said linear plane and

(b) having nonadjacent outward edges distantly spaced-apart from one-another thereof along said linear plane and

(c) having a lower face extending between said adjacent inward edges and said nonadjacent outward edges, and the spaced-apart electrical solid insulation elements each having at least one electrically nonconductive portion extending parallel to said linear plane serially aligned with and in contact with different ones of the nonadjacent outward edges, and at least one electrical conductor member having spaced apart electrically conductive portions electrically interconnected with one another by and including-therebetween at least one substantially intermediate electrically conductive portion in electrically conductive contact with said spaced-apart electrically conductive portions, at least one of the spaced-apart electrically conductive portions:

(a) mounted fixedly on at least one of said adjacent inward edges and

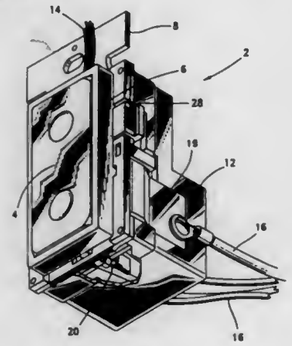
(b) spaced from said outer edges, said substantially intermediate electrically conductive portion including a broad portion extending across a central area located substantially centrally between said spaced-apart interconnected electrical solid insulation elements, said adjacent inward edges and said electrical conductor member jointly defining electrical insulation free space below said electrical conductor member and in juxtaposition to said adjacent inward edges sufficient for an electrical light three-way bulb-socket's radially outwardly-located socket's electricity-carrying contactor to extend upwardly through said free-space sufficiently to contact said electrical conductor member, said broad portion including a conductive broad lower surface spaced-above said lower face and further including electrical insulation space located adjacently below said conductive broad lower surface spaced-from said adjacent inward edges adjacent said free space sufficiently for an electrical light three-way bulb-socket's centrally-located socket's electrical conductor member to be electrically insulated from electrical conductive contact with a said lower surface.

5,608,196

NORMALLY CLOSED DIMMER SWITCH CONTACT ASSEMBLY SEPARATED BY ROCKER ACTUATOR INTERPOSED INSULATION PLATE

Lawrence A. Hall, and Richard P. Hepner, both of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 8, 1995, Ser. No. 526,122
Int. Cl.[6] H01H *27/04*
U.S. Cl. 200—61.19 **15 Claims**



1. In an air gap switch in a dimmer switch to open a circuit between a source and a load controlled by the dimmer switch, the improvement comprising:

the air gap switch comprising opposed first and second contact springs, each contact spring including a contact tab located at a distal end and positioned to engage the contact tab of the opposed contact spring along a mating interface surface, the contact tabs being normally held in contact by opposed spring forces exerted by the first and second contact springs;

each contact spring comprising an intermediate contact section spaced from the mating interface surface, at least one of the contact springs including a convex surface facing toward, but spaced from the mating interface surface;

a mounting contact section on each contact spring for attaching the contact spring to a printed circuit board in said dimmer switch and to traces on the printed circuit board for ultimate connection to the source and load so that the air gap switch forms a part of the circuit between the source and the load; and

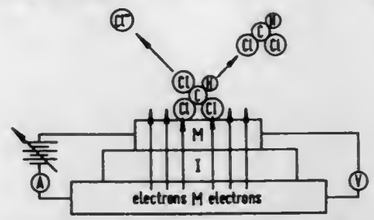
an air gap switch actuator means mounted on said dimmer switch and being shiftable along the mating interface surface to a position separating the contact tabs on the first and second contact springs to open the circuit between the source and load, the convex surface engaging the air gap switch actuator means to disengagably latch the air gap switch actuator means in said position separating the contact tabs on the first and second contact springs.

5,608,197

MOLECULAR PROCESSES AND APPARATUS

Richard E. Palmer, Birmingham, United Kingdom, assignor to The BOC Group plc, Windlesham, United Kingdom

Filed Aug. 11, 1994, Ser. No. 289,151
Claims priority, application United Kingdom, Aug. 15, 1993, 9317256
Int. Cl.[6] C07B *61/00*
U.S. Cl. 204—157.15 **7 Claims**



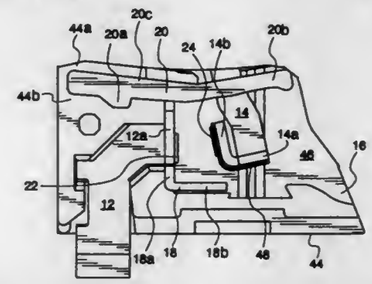
1. A method for effecting the initiation of a molecular process or reaction in a substance having a dissociative electron attachment resonance, said method comprising bringing the substance into contact with a surface of a cold cathode device from which electrons are emitted so that the substance is adsorbed on said surface and applying an electric potential across the cold cathode device to cause said electrons to be emitted from the surface on which the substance is adsorbed with an energy level sufficient to effect the initiation of said molecular process or reaction.

5,608,198

CIRCUIT BREAKER ARRANGEMENT FOR PROTECTION AGAINST ELECTRICAL ARCS

Robert J. Clark; Greg Ghere; Jeffrey M. Kaufman; Terry D. Repstien; Willard J. Rezac, and Steven C. Wilgenbusch, all of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Jun. 26, 1995, Ser. No. 494,754
Int. Cl.[6] H01H *9/32;33/04*
U.S. Cl. 218—147 **2 Claims**



1. An arrangement in an electrical switching device for protection against electrical arcs, comprising:

a stationary contact carrier having a stationary contact mounted thereon;

a movable contact carrier having a movable contact mounted thereon, said movable contact carrier being movable between a closed position and an open position, said movable contact abutting said stationary contact while said movable contact carrier is in said closed position, said movable contact being separated from said stationary contact while said movable contact carrier is in said open position;

a tripping mechanism having a toggle spring coupled to said movable contact carrier, said tripping mechanism causing said movable contact carrier to move from said closed position to said open position in response to an overcurrent condition;

an arc runner positioned such that said arc runner and said toggle spring are generally located on opposite sides of said stationary contact;

an arc extinguishing barrier composed of an outgassing material and located between said stationary contact and said toggle spring; and

an arc-resistant protective shield mounted to said movable contact carrier and surrounding said movable contact, said protective shield being composed of a flexible, self-adhesive material and adhered to said movable contact carrier.

5,608,199

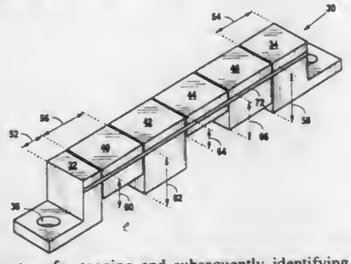
METHOD AND APPARATUS FOR TAGGING OBJECTS IN HARSH ENVIRONMENTS

William R. Clouse, III; Robert X. Perez, both of Corpus Christi, and Gary E. Heath, Odem, all of Tex., assignors to All Tech Inspection, Inc., Corpus Christi, Tex.

Filed Feb. 2, 1995, Ser. No. 382,506

Int. Cl.[6] G06K *7/00*

U.S. Cl. 235—435 **5 Claims**



1. A system for tagging and subsequently identifying components of industrial, architectural, and machine systems located within harsh environments, comprising:

at least one harsh environment tag, said tag comprising a plurality of like structured code elements arranged linearly and adjacent one another, said linear arrangement of code elements providing a generally flat upper surface for said tag, each of said elements having a distinct depth dimension directed perpendicular to said linear arrangement, said depth dimensions being non-corruptible within said harsh environment, said distinct depth dimensions each being associated with previously assigned bits of information which when taken together serve to identify said tagged component, said tag further comprising at least one terminal calibration element positioned in association with, and at one end of, said linear arrangement of code elements, said terminal calibration element providing a means for identifying a terminal point on said tag, establishing an order orientation for said code elements, and having a fixed and known value for said depth dimension, said fixed value providing a reference point from which values for said structural depth variations of said code elements may be determined;

a transducer capable of detecting and quantifying said depth dimensions for each of said code and calibration elements of said harsh environment tag and generating a signal representative of said dimensions, said transducer further capable of detecting an interface zone between each of said code and calibration elements and generating a signal indicative thereof; and

a microprocessor for receiving and interpreting said signals from said transducer for each of said code and calibration elements and each of said interface zones of said tag and associating said information with predefined alphanumeric coding, said alphanumeric coding being representative of information about said components to which said tag is attached.

5,608,200

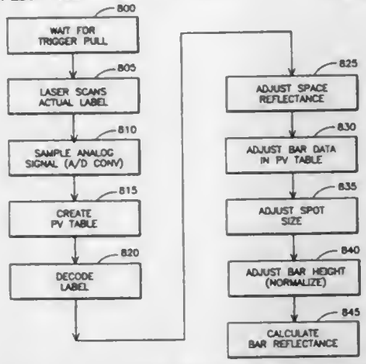
METHOD OF COLLECTING AND ADJUSTING BAR CODE DATA FROM A LASER BAR CODE READER

Stepben H. Le Goff, Brentwood, and Ralph Rosa, Oakdale, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 951,562, Sep. 25, 1992, Pat. No. 5,369,264, which is a continuation-in-part of Ser. No. 592,021, Sep. 28, 1990, Pat. No. 5,218,190. This application Nov. 28, 1994, Ser. No. 345,661

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **8 Claims**



1. A method of processing bar code data obtained from an unknown bar code label including large and small bars, the method comprising the steps of:

establishing standard values of calibration space reflectance (CSR) and calibration space average (CSA) from a standard, ideal bar code label;

scanning a light source across the unknown bar code label;

collecting light which is reflected from the unknown bar code label as the light source scans across the label thus producing collected light, the light thus collected varying in intensity as the light source scans across the label;

generating an electrical signal indicative of the amplitude of the light collected in the collecting step;

sampling the electrical signal at a predetermined data rate to produce a sequence of samples representative of the electrical signal;

storing the sequence of samples in a memory, the samples including label space values (LSA's) and label bar values (LBA's) which include large bar values and small bar values;

decoding the sequence of samples; and

determining a label space reflectance (LSR) value of the unknown bar code label by dividing the product of the calibration space reflectance (CSR) and a label space value (LSA) by the calibration space average (CSA).

5,608,201

METHOD AND APPARATUS FOR DETECTING EDGES IN A SIGNAL OBTAINED FROM A BAR CODE SCANNED IN THE FRESNEL ZONE

Edward P. Coleman, Jr., Fairport, N.Y., assignor to PSC Inc., Webster, N.Y.

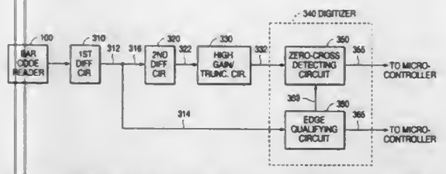
Filed Jan. 4, 1995, Ser. No. 368,787

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **11 Claims**

1. An apparatus for detecting an edge in a scanned signal representing optical indicia read by a scanner, comprising:

a first differentiation circuit connected to receive the scanned signal and to produce a first derivative signal indicative of a derivative of the scanned signal;



a second differentiation circuit connected to receive the first derivative signal to produce a second derivative signal indicative of a derivative of the first derivative signal;

means for delaying said second derivative signal by a sufficient short period of time to ensure that a first reference crossing is detected in said second derivative signal;

an edge qualifying circuit connected to receive the first derivative signal, said edge qualifying circuit outputting a detect enabling signal corresponding to a preset value of the first derivative signal; and

an edge detecting circuit connected to receive the delayed second derivative signal and the detect enabling signal, the edge detecting circuit outputting an edge detection signal when the second derivative signal reaches a predetermined value following receipt of the detect enabling signal.

5,608,202

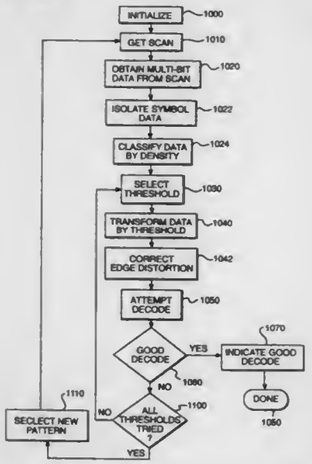
SYMBOL SCANNING SYSTEM AND METHOD HAVING ADAPTIVE PATTERN GENERATION

Raj Bridgelall, East Setauket, and Joseph Katz, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 271,729, Jul. 7, 1994, abandoned, which is a continuation of Ser. No. 981,448, Nov. 25, 1992, Pat. No. 5,478,997, which is a continuation-in-part of Ser. No. 897,835, Jun. 12, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,621

Int. Cl.[6] G06K *7/16*

U.S. Cl. 235—462 **16 Claims**



1. A self-adjusting adaptive scanning system, comprising:

scanning means, responsive to coordinate control signals, for directing a light beam in a pattern at a bar code symbol, detecting a reflected portion of the light beam, and generating feedback signals;

processing means, responsive to the feedback signals, for generating pattern control signals indicating a desirable light beam pattern; and

pattern generator means for generating the coordinate control signals in response to the pattern control signals.

5,608,203

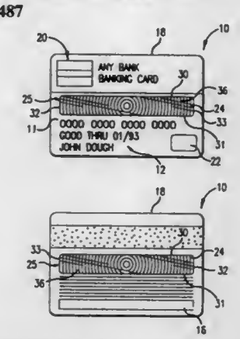
CREDIT CARD WITH MAGNIFYING LENS

Alan Finkelstein, 12644 Mulholland, Beverly Hills, Calif. 90210; Donald A. Dixon, 355 N. Mill St., Aspen, Colo. 81611, and Robert H. Boede, 6375 Dowling Rd., Omro, Wis. 54963

Continuation of Ser. No. 250,801, May 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 197,218, Feb. 16, 1994, Pat. No. 5,434,405, which is a continuation-in-part of Ser. No. 834,490, Feb. 12, 1992, Pat. No. 5,412,199. This application Jan. 3, 1996, Ser. No. 582,601

Int. Cl.[6] G06K *19/00*

U.S. Cl. 235—487 **28 Claims**



1. A financial transaction card adapted for use in reading externally stored information comprising

(a) a rigid base comprised of a plastic material having a transparent area, said transparent area having an upper surface upon which fresnel contours are formed, said transparent area and said fresnel contours jointly forming a magnifying lens,

(b) a strip affixed on said base for carrying machine readable information, and

(c) embossed alpha-numeric indicia,

wherein said card has a length and a width and is substantially non-foldable over its entire length and entire width.

5,608,204

IMAGE CELL FOR AN IMAGE-RECORDER CHIP, FOR PROTECTION OF HIGH INPUT SIGNAL DYNAMICS ONTO REDUCED OUTPUT SIGNAL DYNAMICS

Bernd Höfflinger, Sindelfingen, Germany; Marc Landgraf, Folsom, Calif., and Ulrich Seger, Magstadt, Germany, assignors to Institut für Mikroelektronik Stuttgart, Stuttgart, Germany

PCT No. PCT/DE93/00267, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO93/19489, PCT Pub. Date Sep. 30, 1993

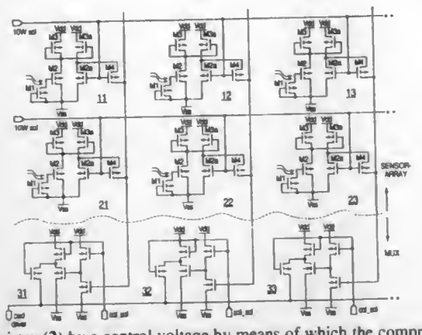
PCT Filed Mar. 23, 1993, Ser. No. 302,826

Claims priority, application Germany, Mar. 24, 1992, 42 09 536.0

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **10 Claims**

1. An image cell having field-effect transistors, providing a light-sensitive element in particular, for an image-recorder chip comprising a multiplicity of such image cells disposed in form of a two-dimensional array and a readout logic, for transference of high input signal dynamics onto reduced output signal dynamics, wherein the light-sensitive element of the image cell (11 . . . 23) being connected between one electrode of a first MOS transistor (M1) and the gate Of a second MOS transistor (M2), a control voltage is applied to the gate of said first MOS transistor (M1) by which a compression of said input signal dynamics is controlled, another electrode of said first MOS transistor (M1) is connected to one polarity side (V_{ss}) of a voltage supply source, and an output signal being tapped at a second electrode of said second MOS



transistor (2) by a control voltage by means of which the compression of said input signal dynamics can be controlled being applied to the gate of said first MOS transistor (M1), by the other electrode of said first MOS transistor (M1) being connected to the one pole (V_{ss}) of a voltage supply source, and by the output signal being tapped at the second electrode of said second MOS transistor (2).

5,608,205

IMAGING DEVICE HAVING REDUCED VERTICAL CROSSTALK

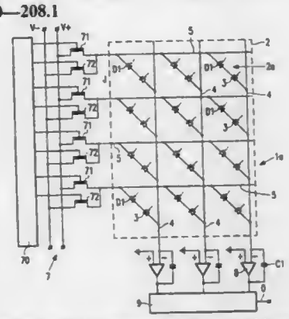
Neil C. Bird, Horley, and Gerard F. Harkin, London, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1995, Ser. No. 398,324

Claims priority, application United Kingdom, Mar. 3, 1994, 9404115

Int. Cl.[6] H04N *1/028;* **H01L** *27/14*

U.S. Cl. 250—208.1 **6 Claims**



1. An imaging device comprising an array of imaging elements each comprising a photosensitive element for sensing light incident on the imaging element and for storing charge representing the incident light and a rectifying element, the imaging elements being arranged in rows and columns with each photosensitive element and the associated rectifying element being coupled in series between an associated first conductor and an associated second conductor for allowing charge stored at a selected imaging element to be read out by stored charge reading means by applying voltages to the second conductors to forward bias the rectifying element of the selected imaging element to cause a current representing the charge stored at the photosensitive element of the selected imaging element to flow though the associated first conductor, wherein each rectifying element comprises a photosensitive rectifying element for also receiving light incident on the imaging element and the relative dimensions of each photosensitive element and the associated rectifying element are such that when an imaging element is receiving light but is not selected any leakage current flows internally within the imaging element and makes substantially no contribution to current flowing through the associated first conductor.

5,608,206

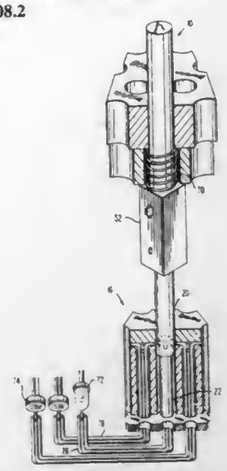
APPARATUS AND METHOD FOR FLEXIBLE GRIPPING OF OBJECTS

Glenn M. Friedman, 25 Polk Dr., Hillsdale, N.Y. 12529

Filed Jul. 31, 1995, Ser. No. 509,239

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.2 **43 Claims**



1. A sensor for the flexible gripping of objects comprising:

a. a plurality of probe subassemblies for contacting and gripping said objects;

b. a bearing plate having a plurality of holes which retain said probe subassemblies in an initially retracted position, when said bearing plate first contacts an object and through which holes said probe subassemblies pass to contact and grip said object after said bearing plate contacts said object;

c. a finger housing adapted to house a portion of the length of each of said probe subassemblies in said initially retracted position and through which each of said probe subassemblies can pass to contact and grip said object;

d. a sensor array adapted to permit a portion of the length of each of said probe subassemblies to pass through said sensor array;

e. a plurality of photodetection circuits adapted to convert displacements of said probe subassemblies to optical signals; and

f. a communications hardware circuit comprising a plurality of said photodetection circuits and receiving means, decoding means, and transmitting means for gathering and storing data from said sensor in the form of digital signals.

5,608,207

SENSOR WITH AUTOMATIC GAIN CONTROL

Barbara A. Allen, Rockford; David A. Klein, and Hongzhi Kong, both of Freeport, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 23, 1995, Ser. No. 449,513

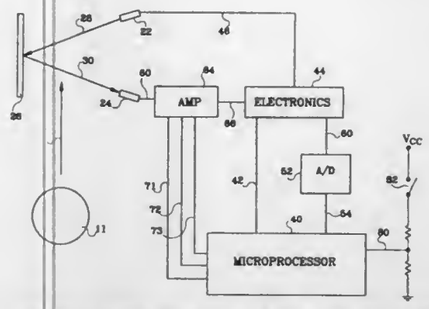
Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 AG **5 Claims**

1. A sensor, comprising:

a radiation source for directing a beam of radiation through a detection zone through which one or more partially transparent objects can pass;

a radiation sensitive device for receiving said beam of radiation after said beam of radiation has passed through said detection zone, the intensity of said beam of radiation received by said radiation sensitive device being attenuated when one of said partially transparent objects moves into said detection zone, said radiation sensitive device providing a first signal representative of said intensity of radiation imposed on said radiation sensitive device, said radiation sensitive device being



disposed to receive said beam of radiation from said radiation source after said beam of radiation has passed through said detection zone;

an amplifier for receiving said first signal as an input signal and providing an output signal, whereby the magnitude of said output signal is related to the magnitude of said input signal by a predetermined gain factor;

first means for comparing said output signal to a first threshold magnitude, said first comparing means comprising a means for determining whether one of said partially transparent objects is attenuating said beam of radiation and a means for selecting a sample of said output signal when said beam of radiation is not attenuated by one of said partially transparent objects; and

means for changing said gain factor as a function of the comparative magnitudes of said output signal and said first threshold magnitude when none of said partially transparent objects is attenuating said beam of radiation.

5,608,208

SINGLE LAYER PLANAR HGCDTE PHOTOVOLTAIC INFRARED DETECTOR WITH HETEROSTRUCTURE PASSIVATION AND P-ON-N HOMOJUNCTION

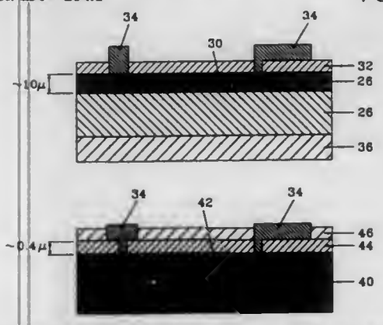
Yael Nemirovsky, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Jan. 25, 1995, Ser. No. 377,603

Claims priority, application Israel, Feb. 8, 1994, 108589

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214.1 **7 Claims**



1. A planar photodiode device responsive to infrared radiation, said device comprising:

an n-type HgCdTe single layer with a predetermined composition and predetermined electrical properties for sensing infrared radiation;

an arsenic-rich layer implanted on a portion of said n-type HgCdTe single layer;

at least one of a CdTe and $Cd_{1-z}Zn_zTe$ ($0<z<1$) passivation layer grown on said n-type HgCdTe single layer and said implanted arsenic-rich layer at an interface having a reduced fixed and fast charge density in order to obtain a surface potential close to the flat band condition, wherein growth of said passivation layer causes at least partial activation of said implanted arsenic-rich layer to form a p-on-n homojunction such that said implanted arsenic-rich layer becomes p-type, and wherein said n-type HgCdTe single layer and said implanted p-type arsenic-rich layer are annealed;

ohmic contacts connected to said implanted p-type arsenic-rich layer, and said n-type HgCdTe single layer; and

an anti-reflection coating on the photodiode.

5,608,209

METHOD AND APPARATUS FOR MEASURING MOTION AMOUNT OF A LABORATORY ANIMAL

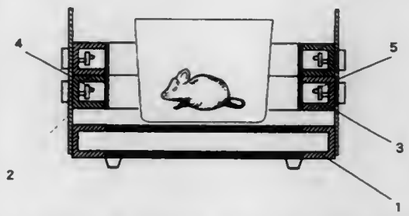
Hideo Matsuda, Funahashi-mura, Japan, assignor to Toyo Sangyo Co., Ltd., Toyama-ken, Japan

Filed Dec. 23, 1994, Ser. No. 363,317

Claims priority, application Japan, Dec. 27, 1993, 5-349770

Int. Cl.[6] G01V *9/04*

U.S. Cl. 250—221 **6 Claims**



1. A motion amount measuring method for laboratory animals comprising: stacking a first frame and a second frame in a vertical direction, attaching to each of said first and second frames an optical sensor light-emitting element and an opposing optical sensor light-receiving element, said light-emitting elements emitting optical beams such that said light-emitting elements do not emit beams simultaneously, said light-receiving elements receiving those emitted optical beams which are not obstructed by the laboratory animal so as to detect the location and movements of the laboratory animal, setting the frames to surround a laboratory animal in a bounded area, counting complete standing actions of the animal by detecting a standing state of the animal using said optical sensor light-emitting elements and said optical sensor light-receiving elements arranged on the first frame and by detecting a return action from the standing state to a normal posture of the animal using said optical sensor light-emitting elements and said optical sensor light-receiving elements arranged on the second frame, and counting incomplete standing actions of the animal using said optical sensor light-emitting elements and said optical sensor light-receiving elements arranged on the second frame.

5,608,210

INFRARED AIDED METHOD AND APPARATUS FOR VENOUS EXAMINATION

Joel Esparza, 4930 National Ave., #7, San Jose, Calif. 95124; Ramendra D. Bahuguna, 825 Figwood Ct., San Jose, Calif. 95120, and Gareth T. Williams, 15736 Izorah Way, Los Gatos, Calif. 95032

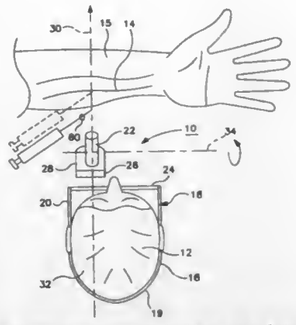
Continuation-in-part of Ser. No. 315,128, Sep. 29, 1994, Pat. No. 5,519,208. This application Mar. 20, 1996, Ser. No. 618,744

Int. Cl.[6] G01J *3/50*

U.S. Cl. 250—226 **7 Claims**

1. An apparatus for aiding a user injecting the tip of a hypodermic needle into a subcutaneous vein in the flesh of a patient, said apparatus comprising:

light source means for providing an infrared light beam such that, when said light beam is directed onto said flesh, one



portion of said light beam is incident on a first area of flesh containing said vein and another portion of said light beam is incident on a second area of flesh that is vein free;

said light beam containing a range of wavelengths selected such that said one portion of said light beam is substantially absorbed by said first area containing said vein and said second portion of said light beam is substantially reflected by said second area that is vein free whereby a view of said subcutaneous vein in said flesh is created;

a first video camera having a response to said wavelengths and a line of sight such that when said line of sight of said first video camera is directed toward said view, a video signal representing said view is developed by said first video camera;

a first monitor means having a first screen and connected to said first video camera for receiving said video signal from said first video camera and presenting on said first screen an image of said view generated from said video signal;

head support means for supporting said light source means, said first video camera and said first monitor means on the head of a user adapted such that said light beam intersects said line of sigbt of said first video camera and said line of sight of said first video camera is coincident with a line of sight of one eye of said user when said one eye of said user is viewing said image on said first screen whereby said user wearing said head support means is enabled to position his/her head such that said first and second areas of flesh are located at a position where said line of sight of said first video camera intersects said light beam and said user is enabled to move said tip of said hypodermic needle into said line of sight of said first video camera and move said tip toward said second area of flesh preparatory to inserting said tip into said vein.

5,608,211

OPTICAL DISPLACEMENT DETECTOR FOR DETERMINING AN OBJECT PROFILE

Atsuyuki Hirono, Kobe; Takayasu Ito, Yao, and Takeshi Hashimoto, Nishinomiya, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 361,374

Claims priority, application Japan, Dec. 22, 1993, 5-325464; Oct. 5, 1994, 6-241599

Int. Cl.[6] H04N *1/22*

U.S. Cl. 250—234 **52 Claims**

1. An optically scanning displacement detector comprising:

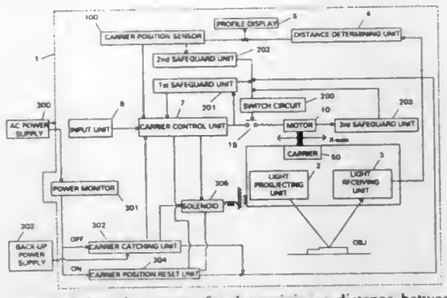
a frame;

a light projecting means for radiating a light beam;

a beam splitter for dividing said light beam to a first light beam directed to an object to make a light spot thereon and a second light beam;

first light receiving means for directly receiving a reflected beam from said light spot to output an object position signal;

a carrier carrying said projecting means, beam splitter, and said first receiving means, said carrier being movably supported on said frame;



a position detecting means for determining a distance between said projecting means and said light spot on said object in accordance with said object position signal;

a scanning means for moving said carrier in a scanning direction to scan said light beam across said object;

a second light receiving means fixed to said frame for receiving said second light beam to generate a carrier position signal; and

means for determining a position of said carrier in said scanning direction in accordance with said carrier position signal.

5,608,212

METHOD FOR CALIBRATING THE ZERO POINT IN A GAS ANALYZER

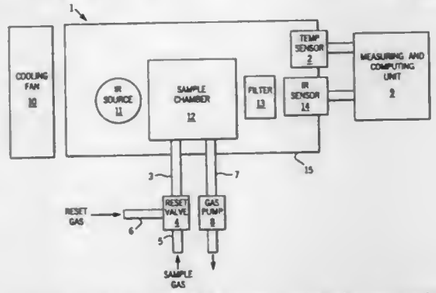
Timo Meriläinen; Börje Rantala, both of Helsinki; Kurt Weckström, Espoo, and Kai Karlsson, Helsinki, all of Finland, assignors to Instrumentarium Corp., Finland

Filed Dec. 20, 1994, Ser. No. 360,258

Claims priority, application Finland, Dec. 22, 1993, 935788

Int. Cl.[6] G01N *21/61*

U.S. Cl. 250—252.1 **22 Claims**



1. A method for calibrating the zero point of a gas analyzer having an infrared sensor, said method comprising the steps of:

sequentially measuring a phenomenon indicative of temperature conditions in the gas analyzer capable of causing alteration of the zero point;

determining whether or not the amount of change of the measured phenomenon exceeds a threshold amount of change value and whether or not the rate of change of the measured phenomenon exceeds a threshold rate of change value; and

carrying out a calibration of the zero point of the gas analyzer when one of the threshold values is exceeded, the time at which the calibration of the zero point is carried out being as follows: at the end of a minimum time period from a predetermined timing point if the threshold value is exceeded in the minimum time period; at the time when the threshold value is exceeded when same occurs after the end of the minimum time period and before a preselected maximum time from a predetermined starting point; or at the preselected maximum time from the predetermined starting point in the event the threshold value has not been exceeded before the maximum time.

5,608,213

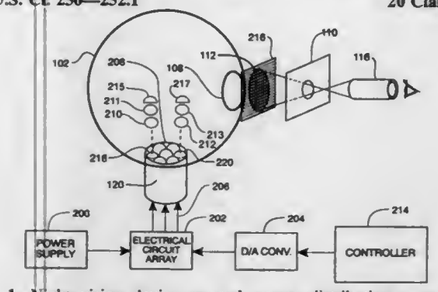
SPECTRAL DISTRIBUTION EMULATION

Alan R. Pinkus, Fairborn, and Harry L. Task, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 3, 1995, Ser. No. 552,402

Int. Cl.[6] H04N *17/00*

U.S. Cl. 250—252.1 **20 Claims**



1. Night vision device spectral energy distribution response evaluation apparatus comprising the combination of:

a plurality of electrical to optical energy transducer devices disposed into a night vision device input port-illuminating first array;

said first array plurality of electrical to optical energy transducer devices including electrical to optical energy transducer devices of selected different optical energy output wavelengths;

a test signal generating, electrical to optical energy transducer device output signal-combining member disposed optically between said first array and an optical input port of said night vision device;

a second array comprised of electrical energy-controlling electronic circuits, each circuit being disposed in electrical energization-determining relationship with one of said electrical to optical energy transducer devices in said first array;

a test signal controlling member connected with each of said electrical energy-controlling electronic circuits for determining an instantaneous electrical current conducting operational status thereof and for selecting successive optical test signals applied to said night vision device input port.

5,608,214

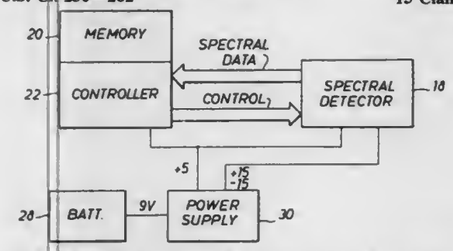
GAMMA RAY SPECTRAL TOOL FOR WELL LOGGING

Emilio A. Baron, Missouri City; David J. Berneking; John W. Chisholm, both of Houston; Marc K. Fisher, Katy; William F. Trainor, Houston, and James R. Foreman, Sugarland, all of Tex., assignors to Protechnics International, Inc., Houston, Tex.

Filed Oct. 30, 1995, Ser. No. 550,287

Int. Cl.[6] G01V *5/12*

U.S. Cl. 250—262 **15 Claims**



1. A well logging instrument for gamma ray spectroscopy, comprising:

a gamma ray spectral detector that provides digital gamma ray spectral data for a plurality of energy spectra;

a controller coupled to the gamma ray spectral detector and receiving the digital gamma ray spectral data, the controller compressing the digital gamma ray spectral data to provide compressed digital gamma ray spectral data; and

a memory system coupled to the controller, the memory system receiving and storing the compressed digital gamma ray spectral data.

4. A well logging instrument for gamma ray spectroscopy, comprising:

a gamma ray spectral detector that provides digital gamma ray spectral data for a plurality of energy spectra, that includes a log/calibration mode in which the gamma ray spectral detector dynamically adjusts a voltage to a photomultiplier tube, and that includes a latched mode in which the gamma ray spectral detector latches the voltage to the photomultiplier tube; and

a controller coupled to the gamma ray spectral detector and receiving the digital gamma ray spectral data, the controller providing an output for activating the latched mode in the gamma ray spectral detector in response to the digital gamma ray spectral data exceeding a predetermined threshold.

5,608,215

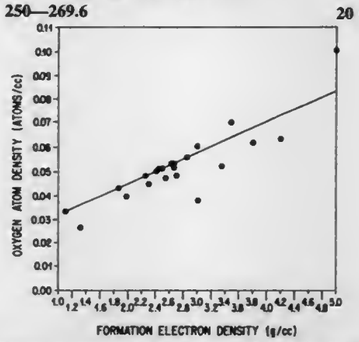
METHOD AND APPARATUS FOR DETERMINING DENSITY OF EARTH FORMATIONS

Michael L. Evans, Missouri City, Tex., assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Continuation-in-part of Ser. No. 307,894, Sep. 16, 1994, Pat. No. 5,539,225. This application Feb. 12, 1996, Ser. No. 599,712

Int. Cl.[6] G01V *5/10*

U.S. Cl. 250—269.6 **20 Claims**



1. A method of determining the density of underground formations surrounding a borehole, comprising:

a) irradiating the formations with high energy neutrons from within the borehole;

b) detecting gamma rays in the borehole resulting from the irradiation with high energy neutrons; and

c) analyzing the detected gamma rays to determine the density of the formations.

5,608,216

FREQUENCY MODULATED SELECTED ION SPECIES ISOLATION IN A QUADRUPOLE ION TRAP

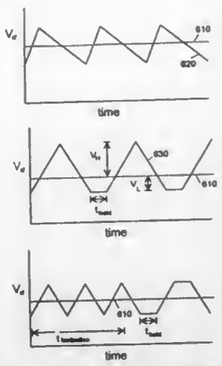
Gregory J. Wells, and Charles K. Huston, both of Fairfield, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 297,680, Aug. 29, 1994, Pat. No. 5,521,380, which is a continuation-in-part of Ser. No. 179,844, Jan. 11, 1994, Pat. No. 5,457,315, which is a continuation-in-part of Ser. No. 890,996, May 29, 1992, Pat. No. 5,302,826. This application Nov. 30, 1995, Ser. No. 568,898

Int. Cl.[6] H01J *49/42*

U.S. Cl. 250—282 **2 Claims**

1. A method of eliminating unwanted ions that are held in an ion trap by a trapping field comprising an AC trapping voltage, com-



prising the steps of applying a supplemental dipole voltage excitation waveform to the ion trap, and modulating the AC trapping voltage between upper and lower peak values to cause multiple ion species to be resonantly ejected from the ion trap, wherein the upper and lower peak values of the AC trapping voltage are varied while the supplemental excitation waveform is applied.

5,608,217

ELECTROSPRAYING METHOD FOR MASS SPECTROMETRIC ANALYSIS

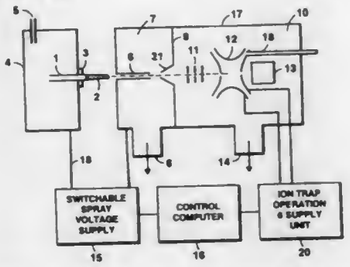
Jochen Franzen, Bremen; Matthias Mann, Leimen, and Matthias Wilm, Heidelberg, all of Germany, assignors to Bruker-Franzen Analytik GmbH, Bremen, Germany

Continuation-in-part of Ser. No. 401,405, Mar. 9, 1995, Pat. No. 5,504,329. This application Mar. 10, 1995, Ser. No. 402,125

Claims priority, application Germany, Mar. 10, 1994, 44 08 032.8; Nov. 25, 1994, 44 44 229.7

Int. Cl.[6] H01J *49/10*

U.S. Cl. 250—288 **19 Claims**



1. A method of analyzing an analyte present in a liquid using a mass spectrometer incorporating an ion trap, the method comprising:

providing a capillary with an outlet adjacent an inlet aperture for the mass spectrometer;

electrospraying the liquid from the capillary outlet by generating an electric field at the outlet to produce a beam of charged spray particles; and

injecting the beam of charged particles into the mass spectrometer through the inlet aperture, wherein the pressure within the capillary is such that flow of the liquid through the capillary outlet occurs only in the presence of said electric field, and wherein flow of charged particles into the mass spectrometer is controlled by varying the said electric field.

5,608,218

SCANNING ELECTRON MICROSCOPE

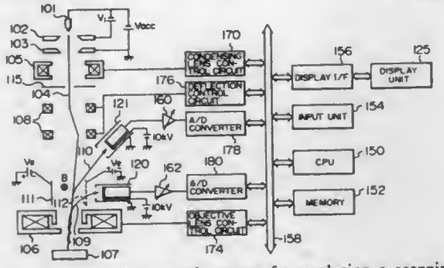
Mitsugu Sato, Katsuta; Yoichi Ose, Mito; Satoru Fukuhara, Katsuta; Hideo Todokoro, Tokyo, and Makoto Ezumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,761

Claims priority, application Japan, Dec. 28, 1993, 5-334894

Int. Cl.[6] H01J *37/244*

U.S. Cl. 250—310 **22 Claims**



1. A scanning electron microscope for producing a scanning image of a specimen by scanning a primary electron beam emitted from an electron source on said specimen by converging with an objective lens, comprising:

electric and magnetic fields separating trajectories of backscattered electrons and secondary electrons generated from said specimen which are established between said electron source and said objective lens;

a backscattered electron detector detecting the backscattered electrons which is disposed on the trajectory of the backscattered electrons to detect backscattered electrons generated from said specimen; and

a secondary electron detector detecting said secondary electrons, wherein the secondary electron detector is disposed on said trajectory of said separated secondary electrons.

5,608,219

DEVICE FOR DETECTING GAS BY INFRARED ABSORPTION

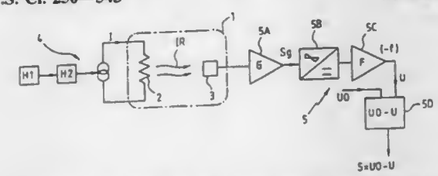
Cécile Aucremanne, Maysel, France, assignor to Saphir, France

Filed Jun. 27, 1995, Ser. No. 464,723

Claims priority, application France, Nov. 12, 1993, 93 13498

Int. Cl.[6] G01N *21/61*

U.S. Cl. 250—343 **21 Claims**



1. A device for detecting at a given gas having an absorption band in the infrared range comprising:

a compact closed chamber for containing a gas sample to be detected for the presence of the given gas, said compact closed chamber having a predetermined width, a length less than ten times that of said predetermined width, and a thickness less than said predetermined width, said compact closed chamber having reflective interior walls;

a detector member located within said compact closed chamber, said detector member having a predetermined surface area, said detector member directly contacting said gas sample;

an infrared radiation source located within said compact closed chamber, said infrared radiation source having a thin surface radiation emitter in direct contact with said gas sample, said thin surface radiation emitter having a surface area greater than said predetermined surface area of said detector member;

means for supplying discontinuous power, said supply means connected to said infrared radiation source; and

a signal processor subsystem connected to said detector member whereby a signal generated by said infrared radiation source is communicated to said detector member through said gas sample such that said signal supplied by said detector member is processed by said signal processor subsystem to determine said presence of said gas in said compact closed chamber.

5,608,220

INFRARED INTRUSION DETECTOR WITH A MULTI-LAYER MIRROR

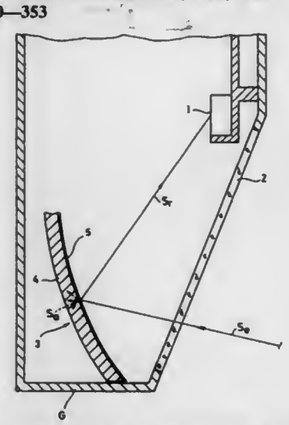
Dieter Wieser, Zürich; Martin Allemann, Wetzikon, and Rene Lange, Hombrechtikon, all of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed Oct. 3, 1995, Ser. No. 538,578

Claims priority, application European Pat. Off., Oct. 10, 1994, 94115948

Int. Cl.[6] G02B *17/00;* **G01J** *5/08*

U.S. Cl. 250—353 **20 Claims**



16. A focusing mirror for an infrared intrusion detector, comprising:

a first layer which is substantially reflective with respect to infrared radiation of interest having a wavelength which is greater than a predetermined wavelength and substantially transparent with respect to electromagnetic radiation having a wavelength which is less than the predetermined wavelength, and

a second layer which is composed of dark material, the second layer supporting the first layer;

wherein the second layer consists essentially of an acrylonitrile-butadiene-styrene polymer.

5,608,221

MULTI-HEAD NUCLEAR MEDICINE CAMERA FOR DUAL SPECT AND PET IMAGING WITH MONUNIFORM ATTENUATION CORRECTION

Hugo Bertelsen; Peter Nellemann, both of Pleasanton; Matthew J. Murphy, Los Altos; Donald R. Wellnitz, Pleasanton, and Horace H. Hines, San Jose, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Filed Jun. 9, 1995, Ser. No. 488,871

Int. Cl.[6] G01T *1/161;1/166*

U.S. Cl. 250—363.03 **36 Claims**

1. A switchable SPECT/PET nuclear camera system comprising:

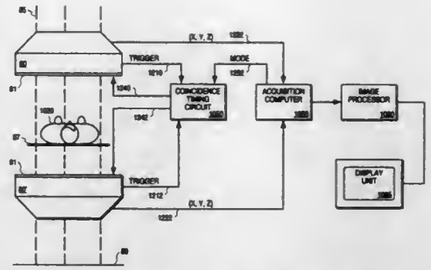
a first detector and a second detector for responding to scintillation events;

circuitry for detecting and recording said events, said circuitry switchable to a first mode of imaging for detection and recordation of PET events and said circuitry switchable to a second mode of imaging for detection and recordation of SPECT events, said circuitry coupled to said first detector and to said second detector, said circuitry including a switchable trigger detection unit that is automatically switchable between coincidence detection when said first mode of imaging is selected and non-coincidence detection when said second mode of imaging is selected, wherein said switchable trigger detection unit is coupled to supply a first valid event trigger signal to said first detector causing said first detector to integrate a scintillation event and coupled to supply a second valid event trigger signal to said second detector causing said second detector to integrate a scintillation event;

transmission radiation sources for scanning across fields of view of said first detector and said second detector with transmission radiation, wherein said circuitry detects and records transmission information while said transmission radiation sources are scanning;

a computer system for generating a PET reconstruction based on said PET events which are corrected by said transmission information; and

wherein said computer system is also for generating a SPECT reconstruction based on said SPECT events which are corrected by said transmission information.



5,608,222

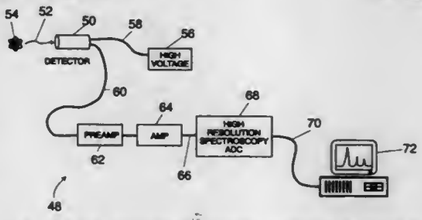
ANALOG TO DIGITAL CONVERSION TECHNIQUE FOR SPECTROSCOPY

William H. Hardy, II, 12633 Red Canyon Rd., Knoxville, Tenn. 37922

Filed Apr. 7, 1995, Ser. No. 418,506

Int. Cl.[6] G01T *1/36*

U.S. Cl. 250—369 **34 Claims**



1. In a nuclear spectroscopy system, a method of spectroscopy comprising the steps of:

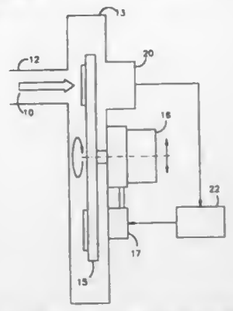
sensing a plurality of gamma rays from a source of radiation;

generating a signal for each gamma ray sensed in which the magnitude of the signal represents a measured value for the energy of the gamma ray;

mapping the generated signals through a transfer function to generate binning signals, the transfer function characterizing the energy dependence of the resolution of the system as a function of gamma ray energy; and

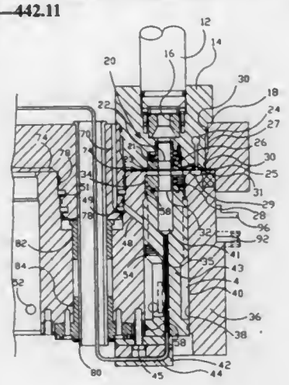
storing histogram data in a plurality of memory channels in accordance with the binning signals.

5,608,223
ION IMPLANTATION DEVICE
Suguru Hirokawa, Saijyou, Japan, and Frank Sinclair, Quincy, Mass., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 2, 1995, Ser. No. 458,354
Claims priority, application Japan, Jun. 10, 1994, 6-129319
Int. Cl.[6] G21K *5/10*; **H01J** *37/317*
U.S. Cl. 250—447.11 **11 Claims**



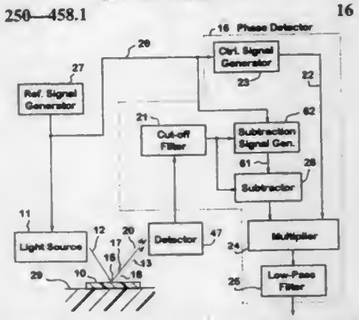
6. An apparatus for use in an ion implantation system, the apparatus comprising:
a) a support disk for supporting a plurality of wafers positioned at spaced distances from one another around a circumference of the support disk, the support disk defining spacings that pass through the support disk between adjacent pairs of the positioned wafers such that the spacing between one adjacent pair of the positioned wafers is wider along the circumference of the support disk than the spacing between another adjacent pair of the positioned wafers;
b) a rotation drive mechanism for rotating the support disk about an axis with respect to the ion beam such that the ion beam scans each positioned wafer and passes the support disk through the spacings between the positioned wafers;
c) a charge detection device for detecting charge of the ion beam as the ion beam passes through the spacings between the positioned wafers while the support disk is rotating;
d) a radial drive mechanism for radially scanning the positioned wafers with the ion beam; and
e) a controller for determining changes in the detected ion beam charge and for controlling the radial scan of the positioned wafers based on the determined changes in ion beam charge.

5,608,224
TARGET CHANGER FOR AN ACCELERATOR
C. William Alvord, 505 W. Meadecrest, Knoxville, Tenn. 37932
Filed Aug. 15, 1995, Ser. No. 515,032
Int. Cl.[6] G21K *5/10*
U.S. Cl. 250—442.11 **11 Claims**



1. A target changer for use with an accelerator for the remote changing of targets on accelerator beamlines, said target changer comprising:
a beam tube for guiding the accelerator beamline;
a ring collimator assembly defining a beam shaper and a vacuum window assembly, a first end of said beam tube being secured to a first end of said ring collimator assembly, said beam shaper for receiving and shaping the accelerator beamline, said vacuum window assembly being aligned with said beam shaper and for receiving the beamline therethrough;
a carousel hub defining a hub tube, said carousel hub retaining a portion of said ring collimator assembly;
a carousel barrel defining a plurality of ports, each of said plurality of ports for receiving a target, said carousel barrel being rotatable about said hub tube such that each of said plurality of ports is alignable with the beamline exiting said vacuum window assembly; and,
a rotation mechanism for controlling the rotation of said carousel barrel.

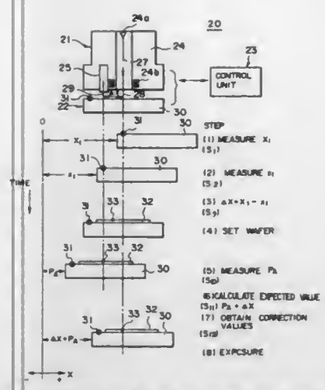
5,608,225
FLUORESCENT DETECTING APPARATUS AND METHOD
Kunio Kamimura, Osaka-fu; Kunitoshi Ohashi, Kobe, and Toshio Oshima, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka-fu, and Maxell Seiki, Ltd., Kyoto-fu, both of Japan
Filed Mar. 8, 1995, Ser. No. 400,768
Claims priority, application Japan, Mar. 8, 1994, 6-065733
Int. Cl.[6] G06K *7/10*
U.S. Cl. 250—458.1 **16 Claims**



1. A method of detecting a fluorescent light emitted from a marking containing at least one fluorescent substance, the method comprising the steps of:
illuminating the marking with an exciting light having an intensity that varies at a predetermined cycle;
converting a change in intensity of light reflected from a position where the exciting light is irradiated, into a varying electric signal; and
phase detecting the converted electric signal to selectively extract only an electric signal component having a frequency matching with, but a phase displaced from, that of a signal component corresponding to light reflected from the marking.

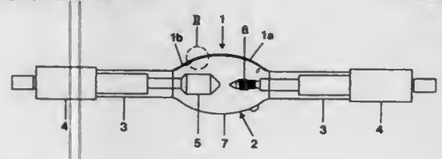
5,608,226
ELECTRON-BEAM EXPOSURE METHOD AND SYSTEM
Akio Yamada, and Hiroshi Yasuda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 15, 1995, Ser. No. 404,718
Claims priority, application Japan, Mar. 18, 1994, 6-049499
Int. Cl.[6] G01J *1/00*; **G01N** *21/00*;*23/00*
U.S. Cl. 250—491.1 **10 Claims**

1. An electron-beam exposure method using an electron-beam exposure system having a movable stage on which a wafer to be



exposed is set, exposure means for exposing the wafer set on said movable stage using an electron-beam, and a plurality of optical detecting units each of which detects a reference mark on one of areas of the wafer, and wherein each of said plurality of optical detecting units has an optical axis which is parallel to an axis of the electron beam, and wherein a fixed distance between said optical axis and said axis of the electron beam has been determined and is stored by a control means, wherein the control means controls said movable stage to move said wafer to a target position for exposure of said wafer by said electron-beam exposure system, said method comprising the steps of:
(a) selecting one of said optical detecting units;
(b) moving said movable stage while using an optical detecting unit selected in step (a) to detect the reference mark;
(c) measuring a position of said movable stage as an origin where said reference mark has been detected by said optical detecting unit;
(d) calculating an expected position of said movable stage using said position of said movable stage at step (c) and adding said fixed distance to said position which has been stored by said control means; and
(e) calculating using said control means, based on the expected position of said reference mark obtained in said step (d), a required distance in which said movable stage is to be moved so that said wafer reaches said target position at which said movable stage is to be located such that said wafer is in said target position during an exposure process carried out by said exposure means, wherein every time an optical detecting unit is selected in step (a), steps (b), (c), (d), and (e) are successively performed.

5,608,227
MERCURY-VAPOR HIGH-PRESSURE SHORT-ARC DISCHARGE LAMP, AND METHOD AND APPARATUS FOR EXPOSURE OF SEMICONDUCTOR WAFERS TO RADIATION EMITTED FROM SAID LAMP
Joern Dierks, and Juergen Maier, both of Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany
Filed Aug. 22, 1995, Ser. No. 517,594
Claims priority, application Germany, Sep. 12, 1994, 44 32 315.8
Int. Cl.[6] H01J *61/86;61/20;61/40*; **C03C** *17/34*
U.S. Cl. 250—492.1 **22 Claims**

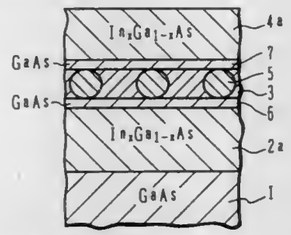


1. Mercury high-pressure short-arc discharge lamp (1) having
a discharge vessel (2) of quartz glass;
two electrodes (5, 6) spaced from each other, located within the discharge vessel;
a fill including xenon and mercury within the discharge vessel,
said electrodes and fill of the discharge vessel being arranged so that, in operation of the lamp, the mercury of the fill will vaporize and provide spectral lines of radiation, including a spectral line having a wavelength of about 365 nm, and further radiation lines below 365 nm,
wherein, in accordance with the invention,
the quartz glass of the discharge vessel comprises
means for preventing and essentially inhibiting emission of radiation from the lamp at spectral lines having wavelengths shorter than 365 nm, while permitting passage of radiation of the spectral line of 365 nm and of longer wavelengths, without essentially attenuating said permitted radiation,
said radiation prevention and inhibiting means being devoid of vanadium or doping of the quartz glass by vanadium.

5,608,228
RUBBER CHEMICAL PREPARATION
René Loix, Leimen; Hans-Joachim Graf, Mannheim, and Harald Kleinknecht, Alzey, all of Germany, assignors to Rhein Chemie Rheinau GmbH, Mannheim, Germany
Filed Nov. 14, 1994, Ser. No. 339,588
Claims priority, application Germany, Nov. 24, 1993, 43 39 984.3
Int. Cl.[6] C09K *3/00*
U.S. Cl. 252—182.13 **12 Claims**

1. Rubber chemical preparation comprising rubber chemicals in finely divided form and a synthetic plasticizer carrier liquid, in which the rubber chemical particles have a mean diameter (weight average d_{50}) from 2 μm to 20 μm and exhibit a very narrow diameter distribution corresponding to $\delta d_{10}-d_{90} \leqq 20$ μm.

5,608,229
QUANTUM BOX SEMICONDUCTOR DEVICE
Kohki Mukai, and Nobuyuki Ohtsuka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 26, 1995, Ser. No. 506,916
Claims priority, application Japan, Sep. 16, 1994, 6-222107
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—14 **18 Claims**



1. A semiconductor device comprising:
an underlie having a semiconductor surface capable of growing thereon single crystal; and
a first semiconductor layer,
said first semiconductor layer including:
a first region of group III–V compound semiconductor epitaxially grown on generally the whole area of said semiconductor surface; and
second regions of group III–V compound semiconductor disposed and scattered in said first region, said second region having a different composition ratio of constituent elements from said first region,

wherein lattice constants of said first and second regions in no strain state differ from a lattice constant of said semiconductor surface, and a difference between the lattice constant of said second region in no strain state and the lattice constant of said semiconductor surface is greater than a difference between the lattice constant of said first region in no strain state and the lattice constant of said semiconductor surface.

5,608,230

STRAINED SUPERLATTICE SEMICONDUCTOR PHOTODETECTOR HAVING A SIDE CONTACT STRUCTURE

Yoshiyuki Hirayama; Kazuaki Nishikata, and Michinori Irikawa, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

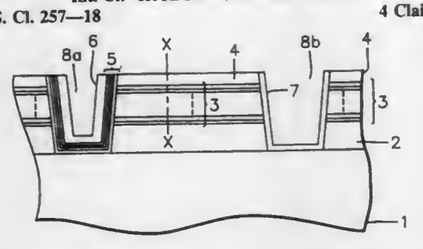
PCT No. PCT/JP93/01848, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO94/15367, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 21, 1993, Ser. No. 290,918

Claims priority, application Japan, Dec. 21, 1992, 4-356786; Apr. 7, 1993, 5-105091

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—18 **4 Claims**



1. A strained supperlattice semiconductor photodetector comprising semiconductor layers including a photodetective layer having an intra-planar compressive strain type strained superlattice layer formed on a semiconductor substrate by epitaxial growth, wherein the epitaxially grown layers are partly removed to produce grooves at lateral sides of the photodetective layer having a strained superlattice layer and electrodes are arranged in said grooves respectively, and wherein one or more of said electrodes are Schottky electrodes arranged on lateral sides of the photodetective layer by way of a multiquantum barrier structure.

5,608,231

FIELD EFFECT TRANSISTOR HAVING CHANNEL WITH PLURAL QUANTUM BOXES ARRANGED IN A COMMON PLANE

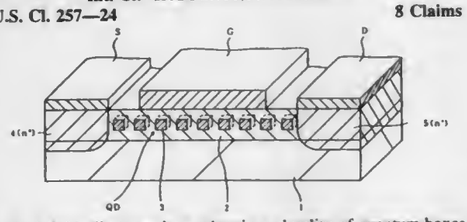
Ryuichi Ugajin, and Toshiyuki Sameshima, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 329,495, Oct. 26, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,137

Claims priority, application Japan, Oct. 28, 1993, 5-292774; Jul. 15, 1994, 6-186260

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—24 **8 Claims**



1. A field effect transistor wherein a plurality of quantum boxes arranged adjacent to each other on a common plane are provided in a channel region, each of said quantum boxes comprising completely isolated volumes of one material completely surrounded at all sides by at least one different material.

5,608,232

SEMICONDUCTOR, SEMICONDUCTOR DEVICE, AND METHOD FOR FABRICATING THE SAME

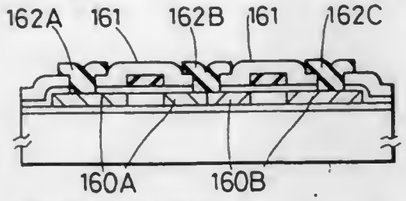
Shunpei Yamazaki, Tokyo; Yasuhiko Takemura, Kanagawa; Hongyong Zhang, Kanagawa; Toru Takayama, Kanagawa, and Hideki Uochi, Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 196,856, Feb. 15, 1994. This application Jun. 5, 1995, Ser. No. 462,770

Claims priority, application Japan, Feb. 15, 1993, 5-48531; Feb. 15, 1993, 5-48533; Feb. 15, 1993, 5-48535

Int. Cl.[6] H01L *29/76;31/036;31/112;29/04*

U.S. Cl. 257—66 **21 Claims**



1. A thin-film transistor comprising:
a silicon film containing at least one material of nickel, iron, cobalt, platinum and palladium;
an insulating film provided on said silicon film; and
a gate electrode provided on said insulating film;
wherein concentration of said material does not exceed 1×10^{19} atom/cm^3.

5,608,233

OPTICAL DEVICE FOR MAGNETO-OPTICAL DISC SYSTEM

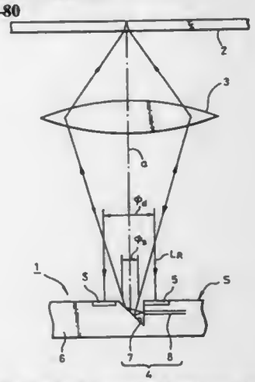
Kenji Sahara; Hironobu Narui; Masato Doi, and Osamu Matsuda, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,828

Claims priority, application Japan, Apr. 28, 1994, 6-092559

Int. Cl.[6] H01L *27/15;31/12;31/153;33/00*

U.S. Cl. 257—80 **16 Claims**



1. An optical device for detecting a magneto-optical signal from a magneto-optical medium, comprising:
an optical element having a common substrate, a light-emitting portion and a light-receiving portion, said light-emitting portion and said light-receiving portion being closely disposed and integrally formed on said common substrate; and

converging means arranged between said substrate and said magneto-optical medium, said converging means having a confocal point located at said light emitting portion, for converging reflected light onto said confocal point; and
said light-receiving portion receiving and detecting near said confocal point reflected-back light obtained from said magneto-optical medium via said converging means after light emitted from said light-emitting portion was reflected on said magneto-optical medium, wherein said light-receiving portion on said optical element receives said reflected-back light from said magneto-optical medium to detect a magneto-optical signal.

5,608,234

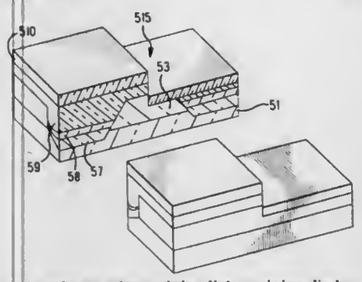
SEMI-INSULATING EDGE EMITTING LIGHT EMITTING DIODE

Ching-Long Jiang, Somerville, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 390,151, Feb. 16, 1995, abandoned, which is a continuation of Ser. No. 339,053, Nov. 14, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,498

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **11 Claims**



1. A semiconductor edge emitting light emitting diode, comprising:
(a.) A substrate having an upper surface, a lower surface and a selected thickness therebetween;
(b.) A layer of semi-insulating material disposed on said upper surface of said substrate, said layer of said semi-insulating material and said substrate being selectively etched to form grooves about an unetched portion of said semi-insulating material;
(c.) A first layer of cladding disposed on said upper surface of said substrate, said first layer of cladding selectively deposited in said grooves;
(d.) A layer of semiconductor material disposed on top of said first cladding layer and in said grooves;
(e.) A second layer of cladding material disposed on top of said semiconductor material and in said grooves; and
(f.) A cap layer disposed on top of said semiconductor material, said cap layer forming an ohmic contact for said diode.

5,608,235

VOLTAGE-CONTROLLED BIDIRECTIONAL SWITCH

Robert Pezzani, Vouvray, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

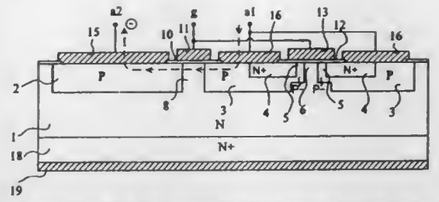
Filed Nov. 7, 1994, Ser. No. 335,442

Claims priority, application France, Nov. 10, 1993, 93 13676

Int. Cl.[6] H01L *29/74*

U.S. Cl. 257—119 **20 Claims**

1. A device including, in a semiconductor substrate of a first conductivity type:
a lateral MOS transistor of a second conductivity type;
a vertical MOS transistor of the first conductivity type including a source well;



the source well of the vertical MOS transistor connected to a source of the lateral MOS transistor;
a first main terminal for receiving a first input voltage coupled to the source of the lateral MOS transistor and the source well of the vertical MOS transistor;
a second main terminal for receiving a second input voltage coupled to a drain of the lateral MOS transistor; and
a control terminal coupled to a gate of the lateral MOS transistor and a gate of the vertical MOS transistor;
wherein current flows from one of the first and second main terminals to the other of the first and second main terminals in response to relative voltage levels at the first and second main terminals and at the control terminal.

5,608,236

SEMICONDUCTOR DEVICE

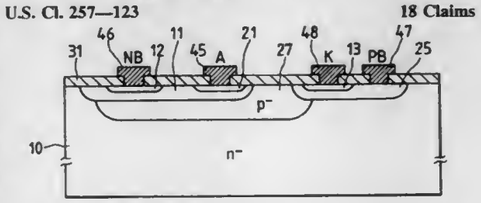
Hidetoshi Arakawa, Kitaibaraki; Yoshitaka Sugawara, and Masamitsu Inaba, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Haramichi Electronics Co., Ltd., Ibaraka, both of Japan

Filed Mar. 15, 1995, Ser. No. 404,465

Claims priority, application Japan, Mar. 18, 1994, 6-048262; Mar. 22, 1994, 6-073780

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—123 **18 Claims**



1. A semiconductor device comprising:
a semiconductor base substance of a first conductivity type having a main surface;
a first semiconductor region of a second conductivity type provided on the main surface of said semiconductor base substance;
a second semiconductor region of the first conductivity type provided on said first semiconductor region, said second semiconductor region forming a base region and having an impurity concentration higher than an impurity concentration of said first semiconductor region;
a third semiconductor region of the second conductivity type provided on said second semiconductor region;
a resistance region for connecting said semiconductor base substance to said second semiconductor region;
a first electrode for ohmicly contacting said first semiconductor region;
a second electrode for ohmicly contacting said second semiconductor region;
a third electrode for ohmicly contacting said third semiconductor region; and
wherein said semiconductor base substance is an element separate from said first, second, and third semiconductor regions, wherein said semiconductor base substance and said second semiconductor region have the same potential.

5,608,237

BIDIRECTIONAL SEMICONDUCTOR SWITCH

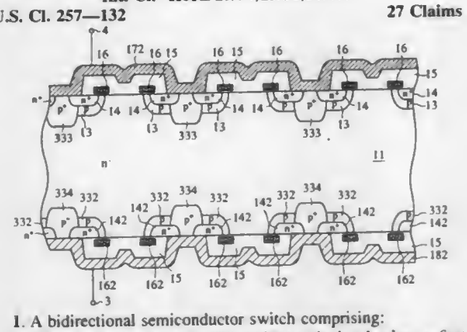
Yoshiaki Aizawa, and Toshimitu Katoh, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 13, 1995, Ser. No. 403,519

Claims priority, application Japan, Mar. 14, 1994, 6-042706; Mar. 2, 1995, 7-042960

Int. Cl.[6] H01L *29/74;23/58;31/111*

U.S. Cl. 257—132 **27 Claims**



1. A bidirectional semiconductor switch comprising:

(a) a first insulated gate semiconductor device having a first main electrode, a second main electrode, a first gate insulating film disposed between the first and second main electrodes, and a first gate electrode formed on the first gate insulating film;

(b) a second insulated gate semiconductor device having a first main electrode connected to the second main electrode of said first insulated gate semiconductor device, a second main electrode connected to the first main electrode of said first insulated gate semiconductor device, a second gate insulating film disposed between the first and second main electrodes of the second insulated gate semiconductor device, and a second gate electrode formed on the second gate insulating film;

(c) a first gate controller connected to the first gate electrode for capacitively controlling the current flowing between the first and second main electrodes of said first insulated gate semiconductor device; and

(d) a second gate controller connected to the second gate electrode for capacitively controlling the current flowing between the first and second main electrodes of said second insulated gate semiconductor device.

5,608,238

SEMICONDUCTOR DEVICE HAVING TWO INSULATED GATES AND CAPABLE OF THYRISTOR FUNCTION AND METHOD FOR OPERATING THE SAME

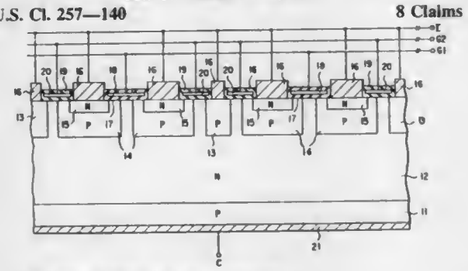
Hideo Matsuda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 210,946, Mar. 21, 1994, abandoned. This application Oct. 18, 1995, Ser. No. 544,918

Claims priority, application Japan, Jun. 14, 1993, 5-141799

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—140 **8 Claims**



1. A semiconductor device comprising:

a first semiconductor region of a first conductivity type having a first surface and a second surface;

a second semiconductor region of a second conductivity type provided on the first surface of said first semiconductor region;

a plurality of third semiconductor regions of the first conductivity type provided on a surface of said second semiconductor region;

a plurality of fourth semiconductor regions of the first conductivity type provided on the surface of said second semiconductor region and adjacent to said plurality of third semiconductor regions;

a plurality of fifth semiconductor regions of the second conductivity type provided on respective surfaces of said plurality of fourth semiconductor regions;

a plurality of first electrodes located on aid plurality of third semiconductor regions and said plurality of fifth semiconductor regions and electrically connected to each other;

a plurality of second electrodes including a first gate insulating film each provided between said plurality of first electrodes, at least above and between adjacent two of said plurality of fourth semiconductor regions, and on the surface of said second semiconductor region, said plurality of second electrodes being electrically connected to each other;

a plurality of third electrodes including a second gate insulating film each provided between said plurality of first electrodes, between one of said plurality of third semiconductor regions and an adjacent one of said plurality of fourth semiconductor regions, on the surface of said second semiconductor region and on said adjacent one of said plurality of fourth semiconductor regions, said plurality of third electrodes being electrically connected to each other and controlled independently of said plurality of second electrodes, at least one of said plurality of third semiconductor regions and at least one of said plurality of fourth semiconductor regions directly contacting each other at a common boundary therebetween in a vicinity of at least one end portion of at least one of said third electrodes; and

a fourth electrode provided on the second surface of said first semiconductor region.

5,608,239

FIELD EFFECT TRANSISTOR

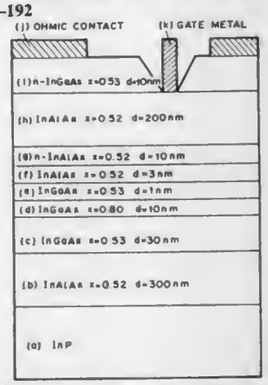
Hironobu Miyamoto, and Tatsuo Nakayama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,216

Claims priority, application Japan, Dec. 16, 1993, 5-316210

Int. Cl.[6] H01L *31/0328;31/0336*

U.S. Cl. 257—192 **11 Claims**



1. A field effect transistor having a semiconductor including In, comprising:

a first semiconductor layer which contains In;

an auxiliary activation layer which contains In whose composition ratio is smaller than that of said first semiconductor layer;

a second semiconductor layer which contains In whose composition ratio is smaller than that of said first semiconductor layer; and

a third semiconductor layer whose electron affinity is smaller than that of said first semiconductor layer,

wherein said auxiliary activation layer, said first semiconductor layer, said second semiconductor layer, and said third semiconductor layer are successively disposed in that order,

wherein the thickness of said second semiconductor layer is equal to or larger than that thickness of two monolayers thereof and less than 4 nm, and

wherein said third semiconductor layer comprises a highly pure semiconductor layer disposed on said second semiconductor layer and an impurity doped layer disposed on said highly pure semiconductor layer.

5,608,240

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING AT LEAST ONE ASYMMETRICAL CMOS TRANSISTOR

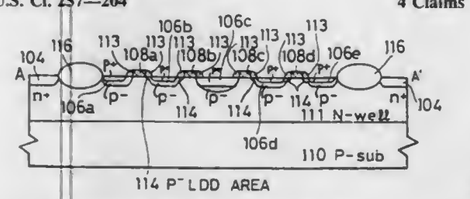
Kouichi Kumagai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 30, 1994, Ser. No. 347,517

Claims priority, application Japan, Dec. 1, 1993, 5-301392

Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—204 **4 Claims**



114 P⁻ LDD AREA

1. A semiconductor integrated circuit comprising:

a substrate; and

a plurality of block cells arranged on said substrate and including a plurality of basic cells, each of said basic cells including a plurality of complementary-metal-oxide-semiconductor transistors,

at least one of said complementary-metal-oxide-semiconductor (CMOS) transistors having an asymmetrical structure in which only a drain diffusion layer has a lightly doped drain structure,

at least one of said complementary-metal-oxide-semiconductor (CMOS) transistors is a first symmetrical complementary-metal-oxide-semiconductor (CMOS) transistor in which both a source diffusion layer and a drain diffusion layer have a lightly doped drain (LDD) structure or a double diffused drain (DDD) structure,

at least one of said complementary-metal-oxide-semiconductor (CMOS) transistors is a second symmetrical complementary-metal-oxide-semiconductor (CMOS) transistor in which both a source diffusion layer and a drain diffusion layer have a single drain structure, and

each of said basic cells includes a larger number of said asymmetrical complementary-metal-oxide-semiconductor (CMOS) transistors than a total number of said first and second symmetrical complementary-metal-oxide-semiconductor (CMOS) transistors.

5,608,241

SEMICONDUCTOR DEVICE HAVING A MEMORY CELL PORTION AND A LOGIC PORTION

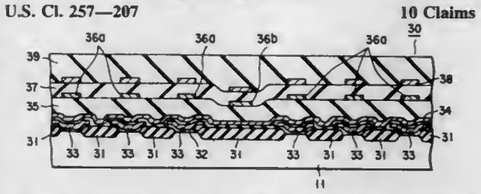
Sachiko Shibuya, Yokohama; Masayuki Yoshida, Kawasaki; Nobuyoshi Chida, Kitakami, and Osamu Matsumoto, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1994, Ser. No. 364,472

Claims priority, application Japan, Dec. 28, 1993, 5-349070

Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—207 **10 Claims**



1. A semiconductor device having a semiconductor substrate, a non-volatile semiconductor memory cell portion having a memory cell matrix of memory cells and a logic portion with multi-layered metal wire layers including a first wire layer and a second wire layer, the memory cell portion and the logic portion being formed on the semiconductor substrate,

wherein the non-volatile semiconductor memory cell portion has multi-layered metal wire layers comprising first-layered metal wires and second-layered metal wires for preventing thinning of the second wire layer of the logic portion during an etching process,

said first-layered metal wires constituting signal lines or power source lines, and

said second-layered metal wires constituting a dummy wiring layer and having a pattern similar to the pattern of the first-layered metal wires and being aligned therewith to preserve light transmittance of the memory cell portion of said device.

5,608,242

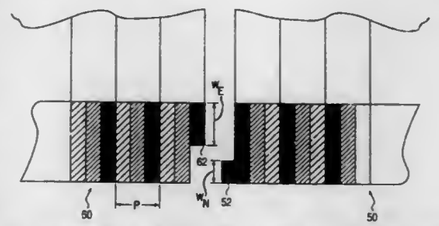
VARIABLE WIDTH CCD REGISTER WITH UNIFORM PITCH AND CHARGE STORAGE CAPACITY

Stacy R. Kamasz, Waterloo, Canada, and Michael G. Farrier, Boyne City, Mich., assignors to Dalsa, Inc., Canada

Filed Oct. 11, 1994, Ser. No. 321,267

Int. Cl.[6] H01L *29/768*

U.S. Cl. 257—216 **17 Claims**



1. A trench region in a CCD shift register, the CCD shift register defining a longitudinal direction, the CCD shift register having a buried layer, a first gate electrode and a second gate electrode disposed longitudinally from the first gate electrode, the buried layer including a semiconductor material characterized as having a first dopant impurity concentration, the first gate electrode being disposed over the buried layer so as to define a first buried layer area, the second gate electrode being disposed over the buried layer so as to define a second buried layer area, the second buried layer area being greater than the first buried layer area, the trench region comprising:

a region formed in the buried layer so as to have a second dopant impurity concentration, the second dopant impurity concentration being greater than the first dopant impurity

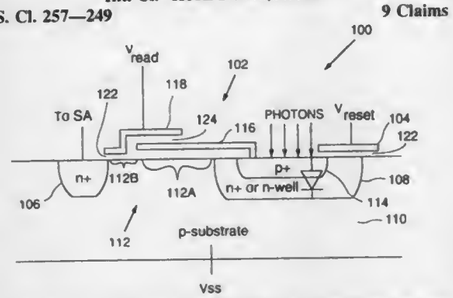
concentration, the first gate electrode being disposed over the trench region so as to define a first trench area, the second gate electrode being disposed over the trench region so as to define a second trench area, the first trench area being greater than the second trench area.

5,608,243

SINGLE SPLIT-GATE MOS TRANSISTOR ACTIVE PIXEL SENSOR CELL WITH AUTOMATIC ANTI-BLOOMING AND WIDE DYNAMIC RANGE

Min-Hwa Chi, and Albert Bergemont, both of Palo Alto, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 19, 1995, Ser. No. 545,040
Int. Cl.[6] H01L *27/148;31/062*
U.S. Cl. 257—249 **9 Claims**



1. An active pixel sensor cell formed in a semiconductor substrate of a first conductivity type, the cell comprising:
a first region of a second conductivity type formed in the substrate;
a second region of the second conductivity type formed in the substrate, the first and second regions defining a channel region therebetween,
an image collection region of the first conductivity type formed in the second region,
a first conductive gate electrically connected to the image collection region, the first conductive gate being formed over a first portion of the channel region and a portion of the second region and separated therefrom by a first layer of dielectric material, and
a second conductive gate formed over a second portion of the channel region and a portion of the first conductive gate, the second conductive gate formed over a second portion of the channel region being separated therefrom by a second layer of dielectric material, the second conductive gate formed over the first conductive gate being separated therefrom by a third layer of dielectric material; and
a reset gate formed over a portion of the second region that adjoins the image collection region and the substrate, the reset gate being separated from the second region by a fourth layer of dielectric material, and electrically isolated from the second conductive gate.

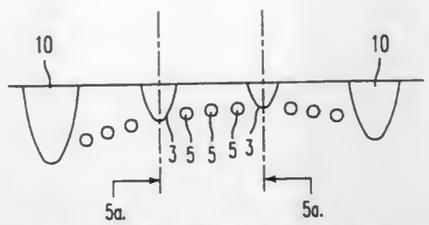
5,608,244

SEMICONDUCTOR DIODE WITH REDUCED RECOVERY CURRENT

Hideki Takahashi, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 49,411, Apr. 20, 1993, Pat. No. 5,389,815. This application Aug. 24, 1994, Ser. No. 294,924
Claims priority, application Japan, Apr. 28, 1992, 4-110057; Nov. 9, 1992, 4-298644; Mar. 31, 1993, 5-073325
Int. Cl.[6] H01L *27/095;29/47;29/812;31/07*
U.S. Cl. 257—267 **13 Claims**

1. A semiconductor device comprising:
a first conductivity type first semiconductor layer;



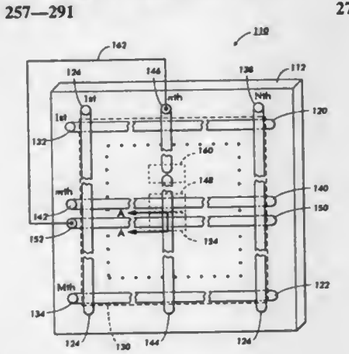
a guard ring selectively formed in the top major surface of said first semiconductor layer;
second conductivity type second semiconductor regions selectively formed in a top major surface of said first semiconductor layer interior to said guard ring;
at least one third semiconductor region of said second conductivity type selectively formed in said first semiconductor layer at a region between neighboring ones of said second semiconductor regions; and
a Schottky barrier junction formed in said top major surface of said first semiconductor layer at a region between neighboring ones of said second semiconductor regions.

5,608,245

ARRAY ON SUBSTRATE WITH REPAIR LINE CROSSING LINES IN THE ARRAY

Russel A. Martin, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1995, Ser. No. 576,183
Int. Cl.[6] H01L *31/062;31/113*
U.S. Cl. 257—291 **27 Claims**



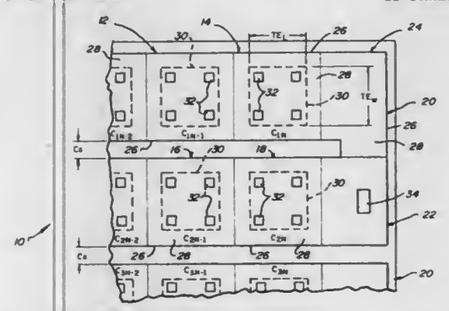
1. An article of manufacture comprising:
a first substrate with a surface at which circuitry can be formed;
first array circuitry formed at the surface of the first substrate, the first array circuitry comprising:
a first set of lines extending across the surface of the first substrate;
a second set of lines extending across the surface of the first substrate so that each of the first set of lines and each of the second set of lines cross in a crossing region within which the crossing lines are insulated from each other; all of the crossing regions being within a first array region of the surface of the first substrate;
for each of the lines in the first and second sets, a signal lead for electrically connecting the line to signal circuitry for the line; each of the lines in the first and second sets being electrically connected to its signal lead; and
a first repair structure; the first repair structure comprising:
a first repair line that is approximately parallel to at least one of the lines in the first set within the first array region and that crosses a subset of the lines in the second set within the first array region; each of the lines in the subset crossing the first repair line in a repair crossing region; the first repair line and each line in its crossing subset being separated in their repair crossing region by an insulating layer in such a way that an electrical connection can be formed between the first repair line and the line in its crossing subset by operating on their repair crossing region; and
a connecting lead for the first repair line; the connecting lead being outside the first array region and electrically connected to the first repair line so that the first repair line can be electrically connected through the connecting lead to the signal circuitry for a line in the first repair line's crossing subset.

5,608,246

INTEGRATION OF HIGH VALUE CAPACITOR WITH FERROELECTRIC MEMORY

Michael W. Yeager, Colorado Springs, and Dennis R. Wilson, Black Forest, both of Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 194,706, Feb. 10, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 525,497
Int. Cl.[6] H01L *29/94*
U.S. Cl. 257—295 **11 Claims**



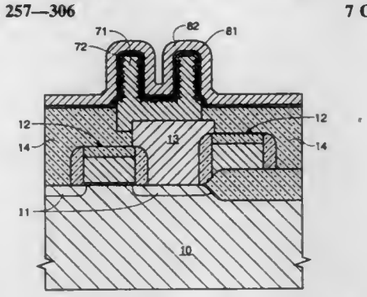
1. A passive RF/ID transponder, comprising:
an antenna for receiving an RF transmission that includes digital data;
a power supply connected to said antenna for generating operating power for said transponder from said received RF transmission;
an integrated circuit structure providing a non-memory cell capacitor having a capacitance value in the range of from about 1 nF to about 10 nF and comprising an integrated circuit substrate, a bottom electrode formed on said substrate, a substantially linearly polarized ferroelectric dielectric substantially coextensive with said bottom electrode and in overlying relation thereto, a plurality of spaced apart top electrodes disposed in an overlying relation to said dielectric, and a parallel capacitance conductor connecting said top electrodes and thereby forming a like plurality of parallel electrical paths, each parallel path extending from said parallel capacitance conductor through one of said top electrodes and through said dielectric to said bottom electrode;
means connecting said non-memory cell capacitor to said power supply as a filtering capacitor;
a memory cell formed on said substrate, said memory cell including an access transistor and a memory cell capacitor;
said memory cell capacitor including said ferroelectric dielectric;
such that said memory cell capacitor and said non-memory cell capacitor have a dielectric of substantially the same thickness;
said memory cell capacitor being capable of being polarized in opposite directions to thereby facilitate the storage of digital data therein; and
means connecting said memory cell to said antenna to facilitate the storage of said digital data therein.

5,608,247

STORAGE CAPACITOR STRUCTURES USING CVD TIN ON HEMISPHERICAL GRAIN SILICON

Kris K. Brown, Garden City, Id., assignor to Micron Technology Inc., Boise, Id.

Division of Ser. No. 259,766, Jun. 14, 1994, Pat. No. 5,418,180. This application May 15, 1995, Ser. No. 440,573
Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*
U.S. Cl. 257—306 **7 Claims**



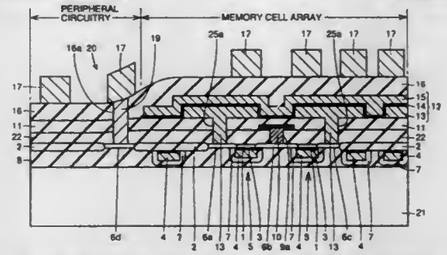
1. A semiconductor device having a storage capacitor, said storage capacitor comprising:
a bottom plate structure having hemispherical grain silicon surface;
a conformal titanium nitride layer adjacent said hemispherical grain silicon surface;
an insulating layer adjacent said titanium nitride layer; and
a top plate structure comprising conductively doped polysilicon over said insulating layer.

5,608,248

SEMICONDUCTOR MEMORY DEVICE WITH PLANARIZATION STRUCTURE

Yoshikazu Ohno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 457,341
Claims priority, application Japan, Aug. 30, 1994, 6-204919
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 257—306 **10 Claims**



1. A semiconductor memory device including a memory cell array provided with a memory cell having a switch MOS transistor and a charge storing capacitor, and a peripheral circuitry provided with a peripheral circuit for controlling operation of said memory cell, said semiconductor memory device comprising:
a substrate having a main surface;
a first interlayer insulating layer formed on the main surface of said substrate and extending from said memory cell array into said peripheral circuitry;
a semiconductor layer formed on said first interlayer insulating layer located in said memory cell array and said peripheral circuitry;

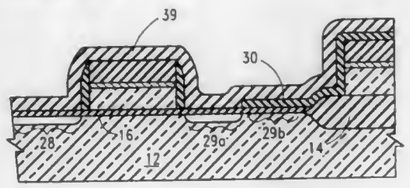
first and second impurity diffusion layers formed at said semiconductor layer located in said memory cell array and spaced from each other to define a channel region of said switch MOS transistor;
a gate electrode of said switch MOS transistor formed under said semiconductor layer and opposed to said channel region;
a capacitor formed on said semiconductor layer and electrically connected to said first impurity diffusion layer;
a bit line formed on said semiconductor layer and electrically connected to said second impurity diffusion layer;
a second interlayer insulating layer covering said capacitor, said bit line and said semiconductor layer, and extending from said memory cell array into said peripheral circuitry; and
an interconnection layer formed on said second interlayer insulating layer.

5,608,249

REDUCED AREA STORAGE NODE JUNCTION

Fernando Gonzalez, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 16, 1995, Ser. No. 558,442
Int. Cl.[6] H01L *27/108;29/76*
U.S. Cl. 257—306 **10 Claims**



1. A semiconductor device having a storage node junction between a conductive polysilicon layer and an active area on a semiconductor substrate, the substrate having been subjected to field isolation steps to create active areas bounded by a region of field oxide, the device comprising:
a. an insulated gate electrode over an active area on the substrate, the substrate having a first conductivity type;
b. a contact region comprising a portion of the active area extending laterally between one side of the gate electrode and the field oxide region, the contact region having a first segment doped to a second conductivity type opposite the first adjacent to the gate electrode and a second segment interposed between the first segment and the field oxide region to physically and electrically isolate the first segment from the field oxide region; and
c. a layer of polysilicon in electrical contact with the first segment of the contact region.

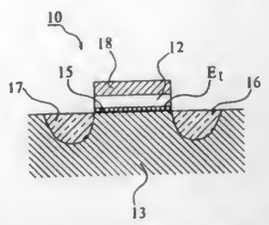
5,608,250

VOLATILE MEMORY CELL WITH INTERFACE CHARGE TRAPS

Alexander Kalnitsky, Grenoble, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Nov. 21, 1994, Ser. No. 343,016
Claims priority, application European Pat. Off., Nov. 29, 1993, 93420474
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—314 **16 Claims**

1. A volatile memory cell comprising an insulated gate field effect transistor with charge traps in an insulating layer, wherein substantially all of said charge traps are located within approximately 1.0 nm of an interface between a semiconductor layer and the insulating layer.

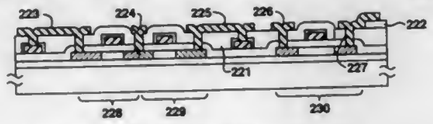


5,608,251

THIN FILM SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF FABRICATING THE SAME

Toshimitsu Konuma; Masaaki Hiroki; Hongyong Zhang; Mutsuo Yamamoto, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 322,165, Oct. 13, 1994, abandoned.
This application Apr. 2, 1996, Ser. No. 626,578
Claims priority, application Japan, Oct. 20, 1993, 5-285990
Int. Cl.[6] H01L *29/76;27/01;27/13*
U.S. Cl. 257—337 **17 Claims**



1. A semiconductor integrated circuit comprising:
a substrate;
an active matrix circuit which is formed on the substrate and includes at least one thin film transistor having first offset region, a first anodic oxide and impurity regions; and
driving means for driving the active matrix circuit which is formed on the substrate and includes at least another two thin film transistors each having second offset regions and a second anodic oxide,
wherein a resistance of the first offset regions is larger than that of the second offset regions, a thickness of the first anodic oxide coincides with that of the second anodic oxide and the first anodic oxide is spaced apart from the impurity regions.

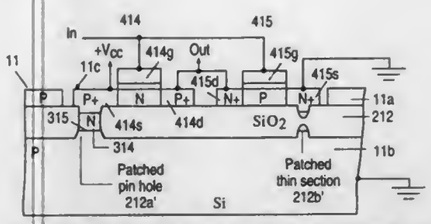
5,608,252

SEMICONDUCTOR WITH IMPLANTED DIELECTRIC LAYER HAVING PATCHED PIN-HOLES

Tatsuo Nakato, Vancouver, Wash., assignor to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 131,647, Oct. 5, 1993, abandoned, which is a division of Ser. No. 28,832, Mar. 10, 1993, Pat. No. 5,278,077. This application Dec. 15, 1994, Ser. No. 357,077
Int. Cl.[6] H01L *27/01*
U.S. Cl. 257—347 **34 Claims**

1. An integrated circuit structure comprising:
(a) a semiconductor substrate;
(b) a buried dielectric layer implanted in the semiconductor substrate at a first range of depths D_1 below a major surface of the substrate, said dielectric layer having an irregularly-shaped pin-hole defect extending therethrough, said pin-hole defect having a position defined randomly during implantation of material forming the buried dielectric layer; and
(c) a reverse-biasable PN junction formed within a second range of depths, D_2, below the surface of the substrate, where the second range of depths, D_2, is substantially the same as or within the first range of depths, D_1, such that said PN junction forms within the pin-hole defect and electrically patches the pin-hole defect when said PN junction is reverse biased.

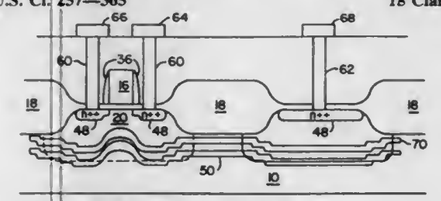


5,608,253

ADVANCED TRANSISTOR STRUCTURES WITH OPTIMUM SHORT CHANNEL CONTROLS FOR HIGH DENSITY/HIGH PERFORMANCE INTEGRATED CIRCUITS

Yowjuang W. Liu, San Jose, and Kuang-Yeh Chaog, Los Gatos, both of Calif., assignors to Advanced Micro Devices Inc., Sunnyvale, Calif.

Filed Mar. 22, 1995, Ser. No. 408,613
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—365 **18 Claims**



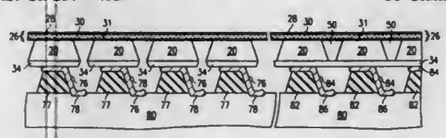
1. A semiconductor device, comprising:
a substrate of a first conductivity-type;
a first active region and a second active region, each coupled to said substrate and having a second conductivity-type, said active regions separated from each other by a channel region;
a well region having said second conductivity-type separated from said active regions; and
a first buried region of said second conductivity-type, underlying said channel region and electrically coupled to said well region, for controlling a conductivity of said channel region.

5,608,254

METHOD FOR FORMING ELECTRICAL CONTACT TO THE OPTICAL COATING OF AN INFRARED DETECTOR USING CONDUCTIVE EPOXY

Steven N. Frank, McKinney; James F. Belcher; Charles E. Stanford, both of Plano; Robert A. Owen, and Robert J. S. Kyle, both of Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 397,706, Mar. 1, 1995, Pat. No. 5,552,326. This application Jun. 7, 1995, Ser. No. 473,838
Int. Cl.[6] H01L *31/0232*
U.S. Cl. 257—432 **18 Claims**



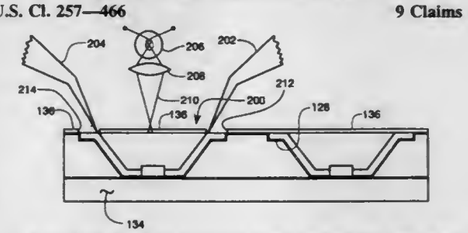
1. An infrared sensing device, said device comprising:
an optical coating;
a common electrode connected to said optical coating;
thermal isolation mesas in a sensing area in said device and below said common electrode;
bias contact areas around a periphery of said sensing area;
a conductive epoxy connected to said common electrode.

5,608,255

FET OPTICAL RECEIVER USING BACKSIDE ILLUMINATION, INDIUM MATERIALS SPECIES

Eric A. Martin, Medford; Kenneth Vaccaro, Acton, both of Mass.; William Waters, Glassborn, N.J.; Joseph P. Lorenzo, Stow, Mass., and Stephen Spaziani, Nashua, N.H., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 274,930, Jul. 14, 1994, Pat. No. 5,532,173. This application May 17, 1995, Ser. No. 443,916
Int. Cl.[6] H01L *23/48;31/0224;29/41*
U.S. Cl. 257—466 **9 Claims**



1. An optical signal to electrical signal transducing field effect transistor, comprising:
an electrically insulating supporting substrate member;
a mesa configured semiconductor layer of indium and being capable of responding to optical energy having a face portion received on said supporting substrate member and having an opposing outward facing optical energy reception surface;
a first electrical conductor member received intermediate said substrate member and said face portion in ohmic contact with said face portion and formed on a field effect transistor buried source region in said mesa configured semiconductor layer;
a second electrical conductor member received intermediate said substrate member and said face portion in ohmic contact with said face portion and formed on a field effect transistor buried drain region in said mesa configured semiconductor layer;
a third electrical conductor member received intermediate said substrate member and said face portion, laterally between said first and second electrical conductor members, and in electrically insulated contact with said face portion and formed on a field effect transistor buried Shottky gate region in said mesa configured semiconductor layer; and
a layer of optical energy reflection diminishing, substantially chemically inert, passivation material received over said outward facing optical energy reception surface of said mesa configured semiconductor layer.

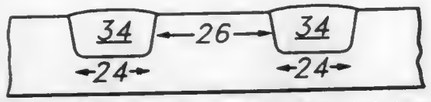
5,608,256

RECESSED SIDEWALL-SEALED AND SANDWICHED POLY-BUFFERED LOCOS ISOLATION REGIONS, VLSI STRUCTURES AND METHODS

Kalipatnam V. Rao, Avezzano, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

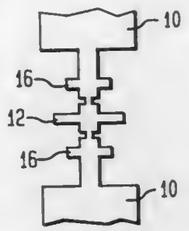
Division of Ser. No. 113,887, Aug. 30, 1993, which is a continuation of Ser. No. 995,535, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 693,511, Apr. 30, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,627
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—510 **20 Claims**

1. A product used in the fabrication of semiconductor devices, comprising:
a semiconductor body;



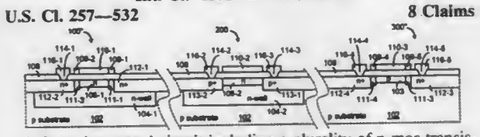
pad oxide layer disposed on said semiconductor body in areas defining active device regions;
first silicon nitride layer disposed on said pad oxide layer;
polysilicon layer disposed on said first nitride layer;
second silicon nitride layer disposed on said polysilicon layer;
a trench disposed at the surface of said semiconductor body adjacent to said active device region, said trench having a bottom surface and two side surfaces; and
isolation regions disposed between said active device regions, wherein said pad oxide layer includes an edge portion extending partially onto said isolation regions.

5,608,257
FUSE ELEMENT FOR EFFECTIVE LASER BLOW IN AN INTEGRATED CIRCUIT DEVICE
Pei-Ing P. Lee, Lagrangeville, and Frank Prein, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1995, Ser. No. 477,060
Int. Cl.[6] H01L *27/10;29/00*
U.S. Cl. 257—529 **20 Claims**



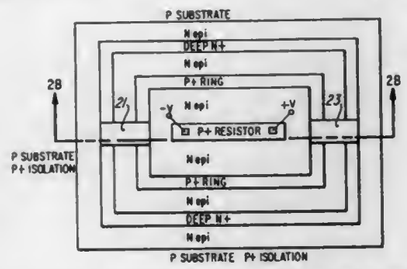
I. In an integrated circuit having a plurality of interconnection lines providing connections between elements integral to the integrated circuit, a fuse structure programmable by a laser beam, comprising:
a melt-away elongated fuse link connecting two segments of one of said interconnection lines; and
at least one fin integral and coplanar to the fuse link and transversely extending from the fuse link, wherein
said fuse link, said at least one fin, and said two segments of one of said interconnection lines are formed of the same layer.

5,608,258
MOS PRECISION CAPACITOR WITH LOW VOLTAGE COEFFICIENT
Kamal Rajkanan, Fremont, and Bruno Kranzen, San Jose, both of Calif., assignors to Zilog, Inc., Campbell, Calif.
Filed Mar. 16, 1995, Ser. No. 407,486
Int. Cl.[6] H01L *27/108;29/00*
U.S. Cl. 257—532 **8 Claims**



1. In an integrated circuit including a plurality of n-mos transistors formed on a p type semiconductor substrate of a semiconductor wafer, an MOS precision capacitor comprising:
an n-well formed in said p type semiconductor substrate, said n-well having a first dopant concentration,
an oxide layer formed over said n-well, said oxide layer formed concurrently with gate oxide layers of said plurality of n-mos transistors,
a first electrode formed over said oxide layer,
a first n-type region formed in said n-well by self aligning to said first electrode, said first n-type region formed concurrently with n-type regions of said plurality of n-mos transistors, wherein said first n-type region has a second dopant concentration greater than said first dopant concentration of said n-well,
a second n-type region formed in said n-well, said second n-type region formed adjacent to said first n-type region and beneath said first electrode, wherein said second n-type region has a third dopant concentration greater than said first dopant concentration of said n-well, and less than said second dopant concentration of said first n-type region, and
a second electrode connected to said first n-type region, thereby forming said MOS precision capacitor.

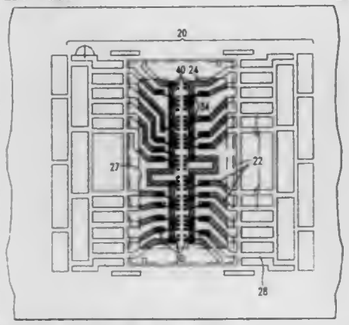
5,608,259
REVERSE CURRENT FLOW PREVENTION IN A DIFFUSED RESISTOR
Thomas R. DeShazo, 215 Kingwood Rd., Frenchtown, N.J. 08825; Raymond L. Giordano, 219 Thatcher Hill Rd., Flemington, N.J. 08822, and Donald R. Preslar, 750 River Rd., Somerville, N.J. 08876
Filed Mar. 2, 1994, Ser. No. 204,718
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—547 **8 Claims**



1. An electrical element within an isolation layer and arranged to prevent current flowing through said isolation layer, from said electrical element, when connected with reverse polarity to a power supply comprising:
an electrical element made of a first semiconductor material of a first polarity;
a second semiconductor material of opposite polarity to said first polarity;
said first semiconductor material is mounted in said second semiconductor material;
said second semiconductor material forming an isolation layer for said first semiconductor material;
a third semiconductor material of said first polarity mounted in said second semiconductor material and forming a ring around said first semiconductor material;
a fourth semiconductor material of said opposite polarity forming a well and said first semiconductor material, said second semiconductor material and third said semiconductor material is mounted in said well;
said third semiconductor material is connected to said fourth semiconductor material;
a substrate of said first semiconductor material;
said first semiconductor material, said second semiconductor material, said third semiconductor material and said fourth semiconductor material are mounted on said substrate;
a first [PN] junction formed by said substrate of said first semiconductor material and said fourth semiconductor material;

said first [PN] junction formed by said substrate of said first semiconductor material is reversed biased by a voltage of a first polarity applied to said first semiconductor material, relative to a voltage of a second polarity applied to said substrate;
and a second [PN] junction formed by said second semiconductor material and said first semiconductor material;
said second [PN] junction is reversed biased by said voltage of said second polarity applied to said first semiconductor material relative to said voltage of said first polarity applied to said substrate material;
whereby current flow is prevented between said electrical element and said substrate when said voltage of said first polarity is applied to said electrical element, and current flow is prevented between said substrate and said electrical element when a voltage of said second polarity relative to said first polarity, is applied to said electrical element.

5,608,260
LEADFRAME HAVING CONTACT PADS DEFINED BY A POLYMER INSULATING FILM
James L. Carper, Colchester; Gary H. Irish, Jericho, both of Vt.; Sheldon C. Rieley, St. Thomas, Virgin Islands (U.S.); Robert M. Smith, Jericho, Vt., and Robert L. Jackson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1994, Ser. No. 366,633
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **14 Claims**

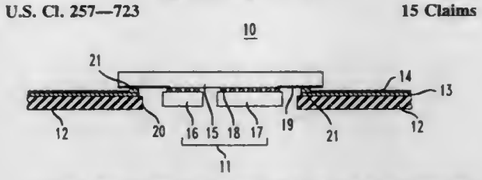


1. A semiconductor package comprising:
a leadframe having a contact finger with a portion for encapsulation within the package;
said portion having a first and a second region, said first region being covered by an insulating film, said second region being uncovered by said insulating film, said second region having a contact metal thereon, wherein said contact metal provides a pad for contacting said leadframe, said first region being substantially free of said contact metal, said insulating film being a polymer.

5,608,261
HIGH PERFORMANCE AND HIGH CAPACITANCE PACKAGE WITH IMPROVED THERMAL DISSIPATION
Bidyut K. Bhattacharyya, Phoenix, Ariz., and Shigeo Tanahashi, Kagoshima, Japan, assignors to Intel Corporation, Santa Clara, Calif.
Filed Dec. 28, 1994, Ser. No. 367,442
Int. Cl.[6] H01L *23/12*
U.S. Cl. 257—700 **9 Claims**

1. A package configured to house an integrated circuit comprising:
a substrate having a surface;
at least one recessed region within said surface of said substrate;
at least one discrete capacitor disposed below said surface of said substrate within said recessed region;
at least one through hole within said substrate, said through hole provided to house said integrated circuit; and
at least one metal plate attached to said surface of said substrate, said metal plate configured to hermetically seal said capacitor within said recessed region and to hermetically seal one side of said through hole.

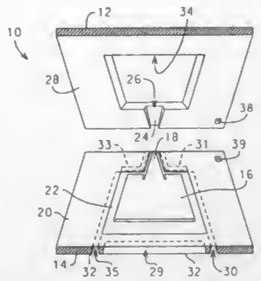
5,608,262
PACKAGING MULTI-CHIP MODULES WITHOUT WIRE-BOND INTERCONNECTION
Yinon Degani, Highland Park; Thomas D. Dudderar, Chatham; Byung J. Han, Scotch Plains; Alan M. Lyons, New Providence, and King L. Tai, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Feb. 24, 1995, Ser. No. 393,628
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—723 **15 Claims**



I. A low profile multi-chip module (MCM) circuit arrangement which comprises an MCM tile and a printed wiring board (PWB), the MCM tile comprising a substrate and at least one silicon chip physically and electrically connected to the substrate,
said PWB having an aperture through the PWB and contact fingers arranged peripherally of the aperture,
the substrate of the MCM tile being larger than the aperture in the PWB, the MCM tile being positioned so that ends of the substrate overlap edges of the PWB adjacent the aperture while said at least one silicon chip is positioned within the aperture, and the substrate having peripheral metalizations which are physically and electrically interconnected to contact fingers on the PWB.

5,608,263
MICROMACHINED SELF PACKAGED CIRCUITS FOR HIGH-FREQUENCY APPLICATIONS
Rhonda F. Drayton, Ann Arbor, and Linda P. B. Katehi, Northville, both of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Sep. 6, 1994, Ser. No. 301,131
Int. Cl.[6] H01L *23/12;* **H01P** *1/00*
U.S. Cl. 257—728 **17 Claims**

1. A micromachined self-packaged circuit for use in high-frequency applications comprising:
a first wafer of semiconductor material having a recess in a proximal face, said proximal face and recess receiving a metallized layer therealong;
a second wafer of semiconductor material having a central region and a metallized region substantially encompassing said central region on a proximal face, and having at least one



elongate groove provided in a distal face wherein said groove and distal face receive a metallized layer therealong to define a metallized groove extending between said metallized distal face and said proximal face metallized region, said metallized groove constructed and arranged to provide top-to-bottom metallized shielding between said first and second wafers when assembled in aligned relation therebetween along said respective proximal faces, such that said central region cooperates with said first wafer cavity to define a shielded circuit cavity therebetween; and

at least one circuit component provided on said second wafer proximal face about said central region;

wherein said first and second wafers are bonded together along respective proximal faces to define such shielded circuit cavity therebetween.

5,608,264

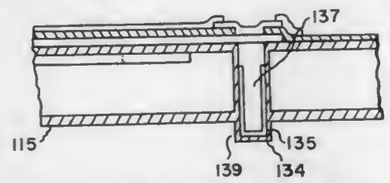
SURFACE MOUNTABLE INTEGRATED CIRCUIT WITH CONDUCTIVE VIAS

Stephen J. Gaul, Melbourne, Fla., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jun. 5, 1995, Ser. No. 461,643

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—734 **18 Claims**



1. A surface mountable integrated circuit comprising:

a wafer of semiconductor material with first and second surfaces and with integrated circuits formed on the first surface of said wafer;

a via comprising a first end on the first surface of the wafer, an elongated passage bounded by a wall of semiconductor material extending from said first end a controlled depth into the wafer and toward said second surface of said wafer and terminating at the second surface of said wafer;

a dielectric layer on said wall of semiconductor material; and

a continuous layer of metal on said dielectric layer, said metal forming an elongated body extending from a first end at the first surface of the wafer to a second end at a controlled distance from the second surface of said wafer and said metal comprising a first layer of a barrier metal selected from the group consisting of titanium nitride, copper, lead, platinum, and nickel and a second layer of an adhesion metal deposited on the barrier metal and selected from the group consisting of titanium nitride, chromium, titanium, and titanium tungsten.

5,608,265

ENCAPSULATED SEMICONDUCTOR DEVICE PACKAGE HAVING HOLES FOR ELECTRICALLY CONDUCTIVE MATERIAL

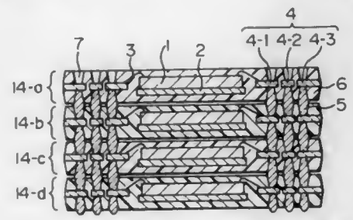
Makoto Kitano, Tsuchiura; Asao Nishimura, Ushiku; Akihiro Yaguchi, Ibaraki-ken; Nae Yoneda, Ibaraki-ken; Ryuji Kohno, Ibaraki-ken; Naotaka Tanaka, Ibaraki-ken, and Tetsuo Kumazawa, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 207,697

Claims priority, application Japan, Mar. 17, 1993, 5-056805

Int. Cl.[6] H01L *23/48;23/02;29/40*

U.S. Cl. 257—738 **54 Claims**



1. A semiconductor device, provided in a plastic encapsulated package, having a semiconductor chip, a plurality of leads and means for electrically connecting said chip and said leads to each other, said semiconductor device comprising:

first holes provided in said package which are extended from one surface of said package to a first of a pair of opposing sides of said leads provided inside of said package, respectively; and

second holes provided in said package which are aligned with said first holes, respectively, in a manner such that each second hole is extended from an opposite surface of said package to a location on the second, opposing side of a corresponding lead which lead location, on the first side thereof, has extended thereto a corresponding first hole of said package,

wherein the first holes and the second holes are provided as a plurality of sets of individual pairs of aligned holes each pair of holes being extended inwardly from the opposing surfaces of the package to the first and second opposing sides, at a same location, of a corresponding lead, and

wherein each lead which has extended thereto a pair of aligned holes in said package acts as a main component of a partition which completely isolates the first and second holes thereof from each other.

5,608,266

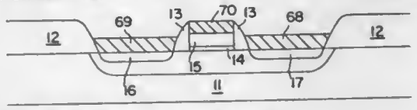
THIN FILM FOR A MULTILAYER SEMICONDUCTOR DEVICE FOR IMPROVING THERMAL STABILITY AND A METHOD THEREOF

Paul D. Agnello, Wappingers Falls; Cyril Cabral, Jr., Ossining; Lawrence A. Clevenger, LaGrangeville; Matthew W. Copel, Yorktown Heights; Francois M. d'Heurie, Ossining, all of N.Y., and Qi-Zong Hong, Plano, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 226,923, Apr. 13, 1994. This application Jun. 2, 1995, Ser. No. 458,977

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—768 **13 Claims**



1. A semiconductor device, comprising:

a substrate;

a layer of a mixture of cobalt and silicon disposed on said substrate; and

an element disposed in said layer of cobalt and silicon, wherein said element is selected from the group consisting of nitrogen and platinum.

5,608,267

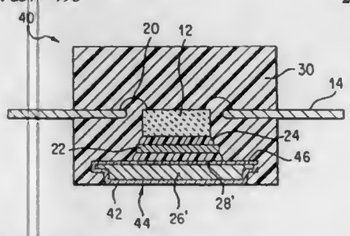
MOLDED PLASTIC SEMICONDUCTOR PACKAGE INCLUDING HEAT SPREADER

Deepak Mahulikar, Madison; Derek E. Tyler, Cheshire, both of Conn.; Jeffrey S. Braden, Livermore, Calif., and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation, Manteca, Calif.

Continuation-in-part of Ser. No. 946,119, Sep. 17, 1992, Pat. No. 5,367,196. This application Jul. 18, 1994, Ser. No. 276,381

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—796 **20 Claims**



1. A semiconductor package, comprising:

at least one semiconductor device bonded to a first side of a thermal dissipator;

said thermal dissipator having a first side and an opposing second side and being selected from the group consisting of aluminum, titanium, zinc, magnesium and alloys thereof with a density less than 5 g/cm^3;

an anodization layer coating said thermal dissipator;

a leadframe providing electrical interconnection between said semiconductor device and the exterior of said semiconductor package wherein the thickness of said thermal dissipator is greater than the thickness of said leadframe; and

a molding resin encapsulating said semiconductor device and at least a portion of said thermal dissipator.

5,608,268

SOLAR CHIMNEY ARRANGEMENT WITH A LIQUID FILLED NON-EVAPORATIVE AREA USED TO PRE-HEAT A LIQUID FILLED EVAPORATIVE AREA

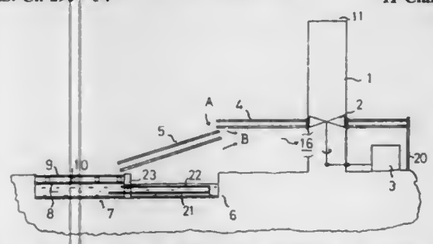
Daya R. Senanayake, 9 Eorin Place, Colombo 8, Sri Lanka

PCT No. PCT/IB94/00038, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO94/20752, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 11, 1994, Ser. No. 338,583

Int. Cl.[6] F03G *6/00*

U.S. Cl. 290—54 **11 Claims**



1. A solar chimney arrangement comprising a chimney to receive fluid originating from a solar heat collector and a turbine to be driven by the fluid, wherein said solar heat collector comprises an evaporative area for containing liquid and a non evaporative area for containing liquid, the non-evaporative area comprising a first cover adapted to inhibit evaporation of a heat-absorbing liquid, the evaporative area comprising a second cover connected to the chimney and adapted to contain vapor evaporating from a liquid in the evaporative area, said second cover being transparent to solar energy and positioned to permit solar energy to pass therethrough and impinge on at least part of the evaporative area, and means to transfer thermal energy from liquid of the non-evaporative area to liquid of the evaporative area.

5,608,269

METHOD FOR ACTIVATING AN OUTPUT STAGE FOR SAFETY SYSTEMS IN A MOTOR VEHICLE

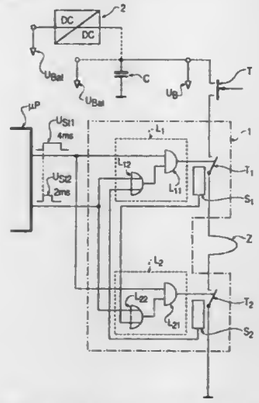
Günter Fendt; Peter Hora, both of Schrobenhausen, and Hans Spies, Pfaffnehofen, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Apr. 19, 1995, Ser. No. 424,616

Claims priority, application Germany, May 26, 1994, 44 18 293.7

Int. Cl.[6] B60R *21/32*

U.S. Cl. 307—9.1 **5 Claims**



4. An output stage of a safety system for vehicle occupants comprising:

at least one electrically operated triggering means;

a first circuit-breaker connecting the trigger means with an operating potential;

a second circuit-breaker connecting the triggering means with a reference potential;

a respective current detector for each said circuit-breaker;

a control unit for simultaneously generating a first and a second control signal each with a specific time length and with the second control signal being of a shorter duration than the first control signal;

a first and a second logic circuit for activating the first and the second circuit-breakers, respectively;

said first and said second logic circuit each have an AND gate and an OR gate, each of which has a first and a second input and an output;

the outputs of the two AND gates represent, in each case, the output of the first and of the second logic circuit, respectively;

means supplying the first control signal to the first inputs of the two AND gates;

means supplying the second control signal to the first inputs of the two OR gates;

means connecting the outputs of the two OR gates to the second input of the respective AND gates of the associated logic circuit;

means supplying the output signal from the current detector for the first circuit-breaker to the second input of the OR gate of the second logic circuit; and

means supplying the output signal from the current detector for the second circuit-breaker to the second input of the OR gate of the first logic circuit.

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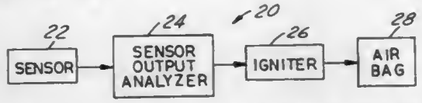
VEHICLE SAFETY RESTRAINT SYSTEM WITH LINEAR OUTPUT IMPACT SENSOR

Jack B. Meister, 68 Chimney Ridge Rd., P.O. Box 216, Convent Station, N.J. 07916

Continuation-in-part of Ser. No. 950,315, Sep. 24, 1992, Pat. No. 5,430,334, which is a continuation-in-part of Ser. No. 615,074, Nov. 19, 1990, Pat. No. 5,177,370. This application Apr. 17, 1995, Ser. No. 423,323

Int. Cl.[6] H01H *35/14*

U.S. Cl. 307—10.1 **11 Claims**



1. In a vehicle restraint system that includes an impact sensor having means for sensing a vehicle impact to provide an impact signal, restraint means for positioning in a vehicle to restrain motion of a vehicle occupant upon operation of said restraint means, and means responsive to said impact signal for operating said restraint means, the improvement:

wherein said impact sensor comprises means having a linear internal cavity with axially opposed ends, a permanent magnet axially slidably disposed in said cavity, means resiliently biasing said magnet to one end of said cavity such that vehicle impact forces on said sensor urge said magnet to slide axially toward the opposing end of said cavity against force applied to said magnet by said biasing means, and magnetic sensing means disposed adjacent to said cavity and being characterized by providing said impact signal as an analog electrical signal that varies in magnitude as a continuous monotonic function of axial position of said magnet within said cavity, and

wherein said means responsive to said impact signal comprises means for analyzing magnitude, slope and duration of said impact signal to operate said restraint means when said magnitude, slope and duration of said impact signal meet predetermined signal conditions.

5,608,271

ELECTRIC CURRENT DISTRIBUTION SYSTEM FOR AUTOMOTIVE VEHICLES

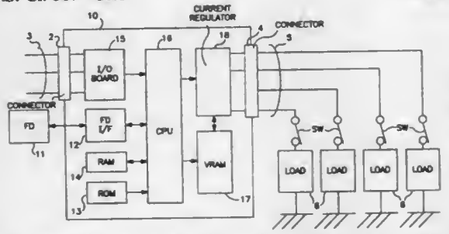
Yuuji Saka, and Takahiro Onizuka, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Aug. 30, 1995, Ser. No. 520,608

Claims priority, application Japan, Sep. 1, 1994, 6-208920

Int. Cl.[6] G06F *17/00*

U.S. Cl. 307—10.1 **7 Claims**



1. An electric current distribution system for a plurality of types of automotive vehicles which is adapted to distribute a current supplied to an input terminal thereof to a plurality of loads (6) via a plurality of corresponding output terminals thereof, comprising:

a box (10) having a specified number of input terminals and a plurality of output terminals and being installable in a vehicle compartment, the number of output terminals being selected to at least equal a maximum number of output terminals necessary for the plurality of types of vehicles,

a reading device (12) provided in the box (10) for reading vehicle specific data stored in a storage means (11) for storing in advance the vehicle specific data for each of the plurality of types of vehicles,

a controller (16) provided in the box (10), which receives the vehicle specific data from the reading device (12) and specifies which output terminals out of the plurality of output terminals are to be used and outputs a corresponding control signal, and

a current regulator (18) provided in the box (10), for regulating currents supplied from the specified output terminals to the respective loads (6) connected with the specified output terminals in accordance with the control signal.

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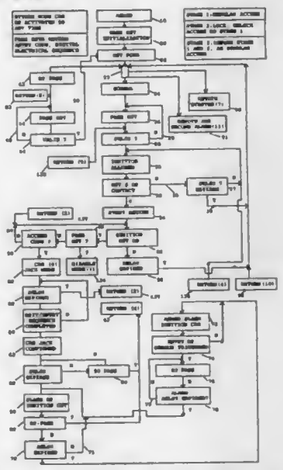
VEHICLE ANTI-THEFT DEVICE

M. Sylvain Tanguay, Terrebonne, Canada, assignor to OtoProtec, Inc., Quebec, Canada

Filed Jul. 7, 1994, Ser. No. 271,832

Int. Cl.[6] B60R *25/10*

U.S. Cl. 307—10.2 **24 Claims**



1. An anti-theft system for use with unattended and attended vehicles comprising: a base microprocessor; a normally opened relay electrically coupled to said microprocessor for use in disabling an electrical circuit in a vehicle; a means for carrying an encrypted code; a reader mounted in said vehicle available for reading said carried code through close proximate contact of said code carrying means with said reader, wherein said reader transfers said code to said microprocessor; and a means for enabling said base microprocessor while said vehicle is attended defined as a sequential depression of a vehicle brake pedal followed by opening of a door within a predetermined time whereby said electrical circuit will be disabled during a car jacking situation.

5,608,273

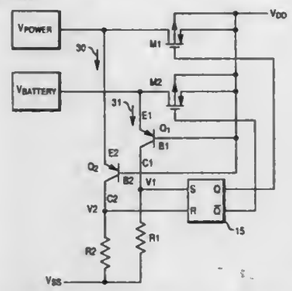
BATTERY BACK-UP FOR ELECTRONIC CIRCUITS

Donald M. Bartlett, Fort Collins, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Nov. 25, 1991, Ser. No. 796,992

Int. Cl.[6] H02J *9/06*

U.S. Cl. 307—64 **6 Claims**



1. A system for connecting a battery to a load when a power supply for the load fails, comprising:

a) a switch leading from a battery to the load;

b) a flip-flop which has an output which controls the switch;

c) means for biasing the flip-flop, during normal operation of the power supply, into a state causing the switch to be OFF; and

d) means for detecting a voltage drop of the power supply and, in response, changing the state of the flip-flop such that the switch turns ON.

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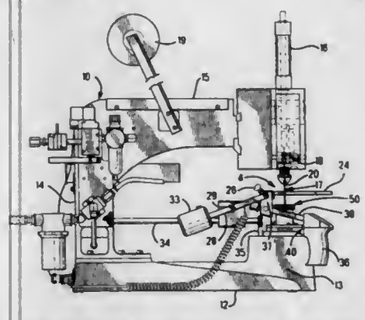
SAFETY SWITCH SYSTEM WITH WORKPIECE POSITIONING MECHANISM

David Cipolla, Harrisburg, and Ronald D. Peffer, York Haven, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 27, 1995, Ser. No. 391,391

Int. Cl.[6] H01H *35/00;* **H02B** *1/24*

U.S. Cl. 307—119 **10 Claims**



1. In a machine having a tooling ram which is movable along a tooling ram path toward and away from a workstation, and means for driving the tooling ram along the tooling ram path, a safety switch system for triggering actuation of the tooling ram, comprising:

trip switch means including a pair of trip switch triggers disposed remote from the workstation, the trip switch means being operable for effecting a first signal upon simultaneous actuation of the trip switch triggers;

anvil switch means including an anvil switch trigger disposed at the workstation, the anvil switch means being operable for effecting a second signal upon actuation of the anvil switch trigger;

a workpiece holder operably mounted for actuating the anvil switch trigger; and

control means for actuating the means for driving so as to move the tooling ram toward the workstation upon sensing the first and second signals.

5,608,275

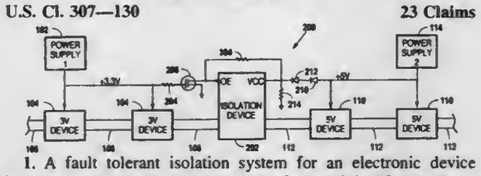
FAULT TOLERANT ISOLATION BETWEEN DEVICES POWERED BY SEPARATE POWER SOURCES

Farzad Khosrowpour, Austin, Tex., assignor to Dell USA L.P., Austin, Tex.

Filed May 19, 1995, Ser. No. 444,651

Int. Cl.[6] H01H *35/00*

U.S. Cl. 307—130 **23 Claims**



1. A fault tolerant isolation system for an electronic device including two separate power sources for providing first and second operating voltages to corresponding first and second components, respectively, comprising:

an isolation device having a first set of signal terminals for coupling to signals of the first components and a second set of signal terminals for coupling to signals of the second components for allowing buffered communication between the first and second components, said isolation device having a power input and an enable input, wherein the first power source provides power to said isolation device through its power input, said isolation device acting as a high impedance open switch when losing power and open circuiting its outputs if its enable input is not asserted; and

a switch circuit controlled by the second operating voltage and for receiving the first operating voltage, said switch circuit coupled to said enable input of said isolation device to enable said isolation device while the second operating voltage is provided and wherein the first operating voltage disables said isolation device when said second operating voltage is not provided.

5,608,276

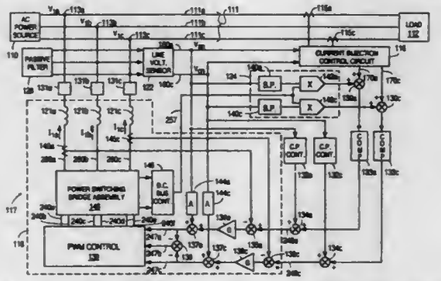
STRUCTURE AND METHOD FOR PERFORMING ACTIVE INJECTION MODE FILTERING ON AN AC POWER SYSTEM

Larry R. Suelzle, Los Altos, Calif., assignor to Helionetics, Inc., Irvine, Calif.

Division of Ser. No. 254,230, Jun. 6, 1994. This application Jun. 7, 1995, Ser. No. 476,990

Int. Cl.[6] H02M *1/12*

U.S. Cl. 307—152 **11 Claims**



6. A current injection device for injecting current onto a power line, wherein said power line is operated at a line voltage which

exhibits a fundamental frequency component and non-fundamental frequency components, said current injection device comprising:

a damping control circuit coupled to said power line, wherein said damping control circuit generates an output signal having a first component and a second component, wherein said first component is proportional to said line voltage and said second component is proportional to the rate of change of said line voltage;

a filter coupled to said damping control circuit, wherein said filter removes the fundamental frequency component of said output signal, resulting in a filtered output signal proportional to the non-fundamental frequency components of said output signal; and

a current generator coupled to said filter and said power line, wherein said current generator generates an electronic load current component in response to said filtered output signal and provides said electronic load current component to said power line, wherein said electronic load current component is proportional to said filtered output signal and opposite in phase to said filtered output signal, thereby loading the non-fundamental frequency components of said line voltage.

5,608,277

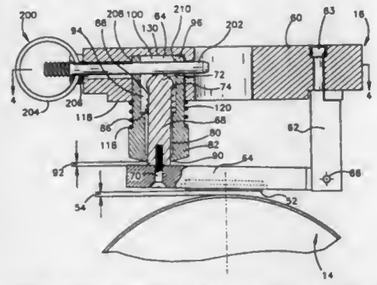
ROTARY PULSE GENERATOR HAVING PRESET SENSOR GAP

John W. Emery, North Royalton, and Robert J. Hetzel, deceased, late of Maple Heights, both of Ohio, assignors to Avtron Manufacturing, Inc., Independence, Ohio

Filed Dec. 22, 1994, Ser. No. 361,966

Int. Cl.[6] H02K *5/04;* **G01P** *3/42*

U.S. Cl. 310—68 B **15 Claims**



1. A rotary pulse generator for attachment to a machine housing having a rotary shaft extending therefrom, said generator comprising:

a rotor and means for securing said rotor to said shaft for rotation therewith, said rotor having a circumferential surface including an annular periodic pulse generating pattern;

a stator housing and means for securing said stator housing to said machine housing so as to encompass said rotor;

a sensor assembly including a sensor carried by said stator housing with said sensor being spaced radially from said rotor circumferential surface by a sensor gap, said sensor serving for providing an output pulsating signal exhibiting a frequency related to the angular velocity of said rotor;

said assembly including a support block, a sensor support mounted to said support block for movement relative thereto between a retracted position located remote from said rotor and a contact position wherein said sensor block contacts said rotor;

first means for driving said sensor block in a first direction from said retracted position toward and engage said rotor in said contact position; and

second means for driving said sensor block in a second direction opposite from said first direction from said contact position toward said retracted position by a predetermined amount so that said sensor gap has a spacing dependent upon said predetermined amount.

5,608,278

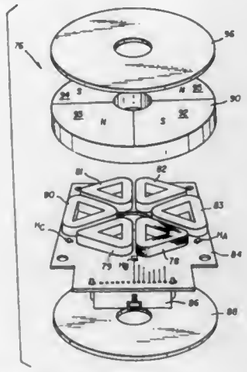
SELF-PUMPED FLUID BEARING WITH ELECTROMAGNETIC LEVITATION SUCH AS FOR A LIGHT BEAM DEFLECTOR

William Mey, Rochester; Bijan Barzideh, Rush, and Thomas M. Stephany, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1995, Ser. No. 372,550

Int. Cl.[6] H02K *5/16*

U.S. Cl. 310—90 **14 Claims**



1. A fluid bearing comprising:

a rotor assembly having a rotor assembly bearing surface;

a stator assembly positioned co-axially with the rotor assembly and having a stator assembly bearing surface opposed to the rotor assembly bearing surface;

a DC motor for rotatably driving the rotator assembly relative to the stator assembly, the DC motor having (1) a multi-phase set of coils on one of said rotor and stator assemblies and (2) a multi-pole magnet on the other of said rotor and stator assemblies opposed to the coils, the number of magnet poles being an even number which is different from the number of phases and said coils and magnet poles being arranged such that, at a predetermined position of the rotor assembly, at least one of the coils is opposed by only one magnet pole; and

commutation means for selectively applying DC current to the at least one coil, and not to a coil opposed by more than one magnet pole, when the rotor assembly is at said predetermined position of a polarity to cause the at least one coil to repel the opposed magnet pole, creating a magnetic force urging the bearing surfaces apart.

5,608,279

DC GENERATOR

David E. Murray, 33 Ashmont St., Dorchester, Mass. 02124

Continuation-in-part of Ser. No. 165,599, Dec. 13, 1993, abandoned. This application Sep. 26, 1994, Ser. No. 312,393

Int. Cl.[6] H02K *11/00*

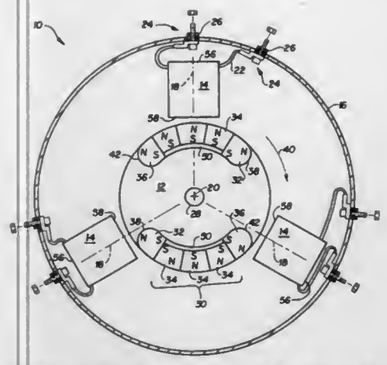
U.S. Cl. 310—156 **15 Claims**

1. A generator for receiving rotary mechanical energy and generating electrical power responsive thereto, comprising:

a housing;

a rotor centrally disposed within said housing, said rotor having a circumference and a shaft rotatably secured to a motor, said rotor comprising a plurality of magnet groups comprising a plurality of individual magnets each having a north pole and a south pole, said magnet groups spaced equidistantly about said circumference, each of said magnet groups comprising a leading magnet having a leading surface, at least one central magnet, and a trailing magnet having a trailing surface; and

at least one stator having a proximal end adjacent to said housing and a distal end adjacent to said rotor, said at least



one stator secured within said housing at a static location with respect to and in close proximity to said rotor, said stator having

an innermost primary winding extending from said stator proximal end to said stator distal end,

a first layer of insulation covering said innermost primary winding,

a second primary winding extending from said stator distal end back to said stator proximal end, said first layer of insulation disposed between said innermost primary winding and said second primary winding,

a second layer of insulation covering said second primary winding, and

a first magnetic core circumferentially surrounding said second layer of insulation;

wherein like poles of each said leading magnet face in the leading direction, like poles of each said trailing magnet face in the trailing direction, and like poles of said at least one central magnet face radially outwardly, whereby a consistent magnetic polar field is imposed upon said stator.

5,608,280

COMMUTATOR TYPE ROTARY ELECTRIC MACHINE

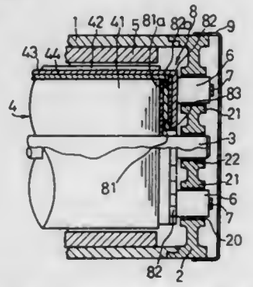
Hiroaki Tamemoto, Kariya; Yasuhiro Nagao, Okazaki, and Masami Nimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 354,100, Dec. 6, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,958

Claims priority, application Japan, Dec. 22, 1993, 5-323869

Int. Cl.[6] H02K *13/00;13/04;5/18*

U.S. Cl. 310—239 **16 Claims**



1. A commutator type rotary electric machine comprising:

a yoke made of a metal;

an end bracket made of a metal to support a rotary shaft on which an armature core made of a metal and a commutator are fixed and fixed in an open end of said yoke;

a brush axially slidably pressed against a surface of said commutator by the force of a brush spring;

a generally cylindrical brush holder movably holding said brush toward said commutator, said cylindrical brush holder being made of a metal and being fixed on said end bracket made of a metal; and

an electrical insulating material covering a surface of an internal periphery of said cylindrical brush holder;

wherein said commutator is a surface type commutator that comprises:

a plurality of external conductors disposed along one axial end face of said armature core to compose a plurality of commutator bars, each having a radial outer end electrically connected to an outer armature conductor and having an axial outer end surface which forms the surface contacted by said brush;

a plurality of internal conductors disposed along said axial end face and between said axial end face of said armature core and said external conductors, each having a radial inner end electrically connected to a respective radial inner end of a said external conductor and having a radial outer end connected to an inner armature conductor; and

said external conductors and said internal conductors being electrically insulated from each other, said internal conductors and said armature core being electrically insulated from each other;

said end bracket, said brush holder, and said yoke being in beat transfer relation from said brush, and said external conductors, said internal conductors and said core being in another heat transfer relation from said brush;

said commutator being constructed and arranged to generate a centrifugal air flow.

5,608,281

INDUCTION MOTOR

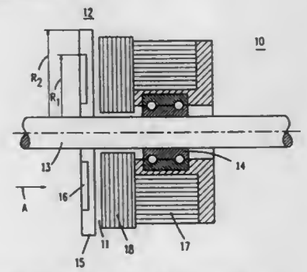
Dieter Gerling, and Peter Lürkens, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1995, Ser. No. 554,123

Claims priority, application Germany, Nov. 7, 1994, 44 39 690.2

Int. Cl.[6] H02K *17/00*

U.S. Cl. 310—268 **8 Claims**



1. An axial flux induction motor comprising:

a stator having at least one magnetic pole;

a rotor constituted by a first disk-shaped part and a second disk-shaped part, the first part being either embedded in or supported on a first surface of the second part, the second part having a second surface opposite the first surface thereof, said second surface facing the stator with an air gap therebetween;

said first part being of a first material and said second part being of a second material, the first material being of higher permeability and higher specific gravity than the second material, the second material being of higher electrical conductivity than the first material;

said first part having a first outer radius R_1 and said second part having a second outer radius R_2, such that $1.2\ R_1 < R_2 < 1.6\ R_1$;

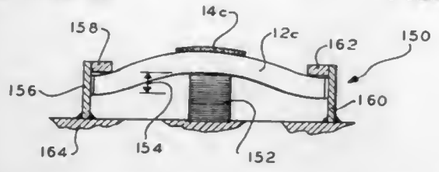
whereby at high rotational speeds of the rotor the lower circumferential speed of the first part thereof results in more nearly equalized centrifugal forces on said first and second parts.

5,608,282

PIEZOELECTRICALLY CONTROLLED SUPERCONDUCTING SWITCH

William D. Wilber, Neptune; Ernest Potenziani, II, Ocean; Steven C. Tidrow, Eatontown; Arthur Tauber, Elberon, and Donald W. Eckart, Wall, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1995, Ser. No. 425,947
Int. Cl.[6] H01L *41/08*
U.S. Cl. 505—211 5 Claims



1. A piezoelectrically controlled superconducting switch comprising:

a substrate;

a superconductor which is bonded to the substrate; and

a piezoelectric subassembly for straining a portion of the superconductor between a normal unstrained condition and an induced strained condition;

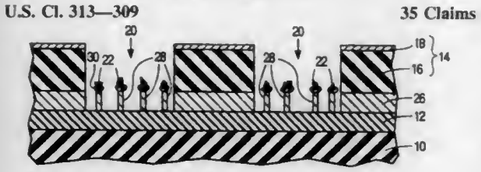
said piezoelectric subassembly having a load-applying means for causing strain in the superconductor portion, wherein the load applying means includes a piezoelectric transducer for applying a bending moment to the superconductor and the substrate, and including a first support arm and a second support arm spaced apart and extending from a base plate for holding the substrate at opposite edges thereof and for positioning the piezoelectric transducer.

5,608,283

ELECTRON-EMITTING DEVICES UTILIZING ELECTRON-EMISSIVE PARTICLES WHICH TYPICALLY CONTAIN CARBON

Jonathan C. Twichell, Acton, Mass.; George R. Brandes, Danbury, Conn.; Michael W. Geis, Acton, Mass.; John M. Macaulay, Palo Alto, Calif.; Robert M. Duboc, Jr., Menlo Park, Calif., and Christopher J. Curtin, Los Altos Hills, Calif., assignors to Candescent Technologies Corporation, San Jose, Calif.

Filed Jun. 29, 1994, Ser. No. 269,283
Int. Cl.[6] H01J *1/30*
U.S. Cl. 313—309 35 Claims



14. An electron-emitting device comprising:

a lower electrically non-insulating region; and

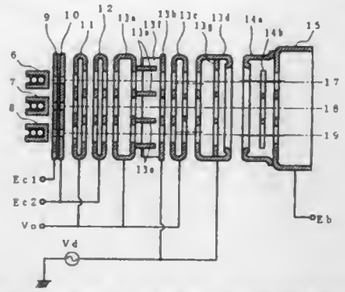
a multiplicity of laterally separated electron-emissive pillars situated over the lower non-insulating region, each pillar comprising (a) an electrically non-insulating pedestal electrically coupled to the lower non-insulating region, the side surface of the pedestal extending generally vertically or sloping inward along at least part of the pedestal's height in going downward, and (b) an electron-emissive particle situated over the pedestal along its upper surface.

5,608,284

COLOR CATHODE RAY TUBE HAVING A LOW DYNAMIC FOCUS VOLTAGE

Tutomu Tojyou, Chousel-gun; Shoji Shirai, and Shinichi Kato, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,139
Claims priority, application Japan, Jul. 19, 1994, 6-167120
Int. Cl.[6] H01J *29/38;29/46*
U.S. Cl. 313—414 9 Claims



1. A color cathode ray tube having an electron gun comprising at least first electrode means for generating a plurality of electron beams from cathodes and directing said plurality of electron beams toward a phosphor screen along initial paths in parallel with each other in a horizontal plane and second electrode means constituting a main lens for focusing said plurality of electron beams on said phosphor screen, wherein a final lens among lenses constituting said main lens has an electrode constitution acting so as to focus said plurality of electron beams strongly horizontally and weakly vertically and weaken a lens action thereof according to an increase in an amount of deflection of said plurality of electron beams, at least one multipole lens acting so as to elongate a cross section of said plurality of electron beams less horizontally with an increasing amount of deflection of said plurality of electron beams is located between said final lens and said first electrode means, at least one correction lens for curvature of an image field for weakening focusing action on said plurality of electron beams horizontally and vertically according to an increase in an amount of deflection of said plurality of electron beams is located between said final lens and said at least one multipole lens, and at least one of said at least one multipole lens and said at least one correction lens for curvature of the image field has an electrode constitution in which trajectories of outer electron beams among said plurality of electron beams are deflected inwardly according to an increase in an amount of deflection of said plurality of electron beams.

5,608,285

BLACK MATRIX SOG AS AN INTERLEVEL DIELECTRIC IN A FIELD EMISSION DEVICE

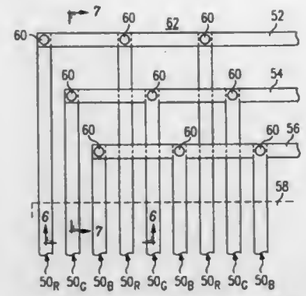
Kenneth G. Vickers, Whitesboro; Chi-Cheong Shen, Richardson; Bruce E. Gnade, and Jules D. Levine, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1995, Ser. No. 450,051
Int. Cl.[6] H01J *1/62;63/04;* G09G *3/22*
U.S. Cl. 313—466 12 Claims

1. An anode plate for use in a field emission device, said anode plate comprising:

a transparent substrate;

electrically conductive stripes which are alternately covered by material luminescing in a first, second, and third primary color, said conductive stripes covered by the same luminescent material being electrically interconnected by a first, second, and third bus respectively to form comb-like structures corresponding to each of said colors; said second bus overlapping said conductive stripes of said first color, and said third bus overlapping said conductive stripes of said first and second colors; and



opaque, electrically insulating material, said insulating material formed on said substrate in the spaces between said conductive stripes, said insulating material also formed between said buses and said conductive stripes, and providing electrical insulation therebetween.

5,608,286

AMBIENT LIGHT ABSORBING FACE PLATE FOR FLAT PANEL DISPLAY

Jules D. Levine, Dallas; Chi-Cheong Shen, Richardson, and Bruce E. Gnade, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1994, Ser. No. 347,011
Int. Cl.[6] H01J *1/62*
U.S. Cl. 313—495 19 Claims

1. An anode plate for a cathodoluminescent image display device, said anode plate comprising:

a substrate having an inner surface and an outer, surface said substrate being transparent at least in an imaging region; said inner surface having a surface contour forming a grating of prisms in said imaging region; and said prisms having apexes;

a conductive material covering a plurality of said apexes; said conductive material covering at least two of said apexes being electrically connected to form an anode electrode comb; and

a cathodoluminescent material deposited in said imaging region on said anode electrode comb.

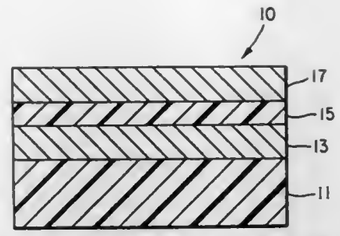
5,608,287

CONDUCTIVE ELECTRON INJECTOR FOR LIGHT-EMITTING DIODES

Liang-Sun Hung, Webster; Ching W. Tang, and S. Tong Lee, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1995, Ser. No. 392,657
Int. Cl.[6] H01J *63/04*
U.S. Cl. 313—503 15 Claims

1. A conductive electrode comprising a material selected from the group consisting of metal silicides and metal borides and having a work function equal or less than 4.0 eV so that the electrode provides good stability against atmospheric corrosion and acts as an electron injector for light-emitting diodes with various configurations.

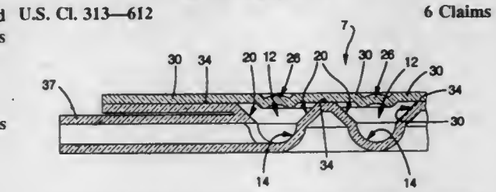


5,608,288

PLANAR COLD CATHODE LAMP WITH REFLECTING SURFACES

Ronald H. Haag, Warren, Mich., assignor to General Motos Corporation, Detroit, Mich.

Filed Apr. 10, 1995, Ser. No. 419,568
Int. Cl.[6] H01J *61/30*
U.S. Cl. 313—612 6 Claims



1. An automotive neon-type discharge lamp assembly comprising:

two spaced-apart electrodes;

an elongated gaseous path having one of the electrodes approximately at each respective end, the path including a first generally semicircular reflector surface body having opposing ends and a center, a pair of second semiparabolic reflector surfaces, each surface having first and second ends, the first ends being joined to the ends of the first reflector surface and the second ends emanating outwardly therefrom;

a transparent, generally concave volumetric concentrator positioned generally opposite the first reflector surface and spaced therefrom, the concentrator having first and second ends; and

a transparent cover having two segments, each segment connecting an end of the concentrator with the second end of a respective second reflector surface.

5,608,289

FLUORESCENT LAMP ADAPTER WITH SHELL FORM BALLAST

James G. O'Carroll, Mill Valley, and Bruce A. Pelton, El Sobrante, both of Calif., assignors to Lumatech Corporation, Emeryville, Calif.

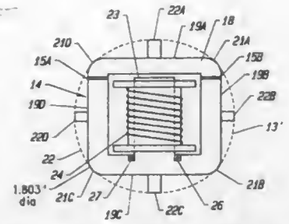
Continuation of Ser. No. 151,578, Nov. 12, 1993, abandoned.
This application Jul. 31, 1995, Ser. No. 509,656
Int. Cl.[6] H01J *7/44*
U.S. Cl. 315—58 18 Claims

1. A device, comprising:

(a) a ballast, comprising:

a center segment;

an electrically conducting coil wound about said center segment capable of conducting an electrical current therethrough;



a perimeter portion substantially surrounding said center segment, said perimeter portion having four side members, each side member having opposing distal ends wherein each of said side members' distal ends meets with one of an adjacent side members' distal ends, said meeting ends together forming a rounded corner with a curved peripheral contour, and wherein said perimeter portion includes at least one air gap having a predetermined thickness, said air gap being capable of enlargement when an electrical current is applied to said electrically conducting coil; and

(b) a lamp adapter assembly which is adapted for use in an incandescent lighting socket, including electrical connection elements which interconnect said electrically conducting coil with said incandescent lighting socket and a lamp positionable within said lamp adapter assembly and wherein said lamp adapter assembly is configured to tightly position said perimeter portion of said ballast device therein in a manner which avoids said enlargement of said air gap to maintain said air gap at said predetermined thickness.

5,608,290

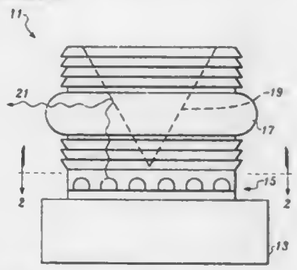
LED FLASHING LANTERN

James T. Hutchisson, Bellevue, and David K. Straub, Puyallup, both of Wash., assignors to Dominion Automotive Group, Inc., Ontario, Canada

Filed Jan. 26, 1995, Ser. No. 379,890

Int. Cl.[6] H05B *37/00;* **F21V** *5/00*

U.S. Cl. 315—200 A **7 Claims**



1. A flashing lantern comprising:

(a) an array of light-emitting diodes mounted in a plane for emitting light in a direction perpendicular to the plane;

(b) a reflector positioned to intersect the light emitted by said array of light-emitting diodes and redirect the light outwardly through a predetermined arc;

(c) a magnifying lens surrounding said reflector; and

(d) a control circuit for controlling the application of power to said array of light-emitting diodes such that said array of light-emitting diodes flashes on and off.

5,608,291

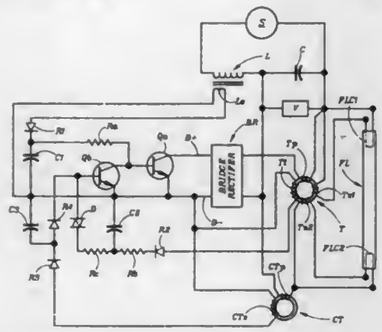
ELECTRONIC BALLAST WITH PULSING OUTPUT VOLTAGE

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 793,280, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 346,321, May 1, 1989, abandoned, which is a continuation of Ser. No. 686,275, Dec. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 678,021, Dec. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 612,058, May 18, 1984, Pat. No. 4,667,131, said Ser. No. 793,280is a continuation-in-part of Ser. No. 513,053, Apr. 26, 1990, Pat. No. 5,015,923, which is a continuation of Ser. No. 907,229, Sep. 15, 1986, abandoned, said Ser. No. 793,280is a continuation-in-part of Ser. No. 377,767, Jul. 10, 1989, Pat. No. 4,928,039, which is a continuation of Ser. No. 678,021, Dec. 4, 1984, abandoned, said Ser. No. 346,321is a continuation-in-part of Ser. No. 145,925, Jan. 20, 1988, abandoned, and Ser. No. 830,739, Feb. 19, 1986, Pat. No. 4,893,059, and Ser. No. 830,270, Feb. 18, 1986, Pat. No. 4,926,096, and Ser. No. 691,171, Jan. 14, 1985, Pat. No. 4,644,228, said Ser. No. 686,275is a continuation-in-part of Ser. No. 612,058, May 18, 1984, Pat. No. 4,667,131, and Ser. No. 495,540, May 17, 1983, Pat. No. 4,554,487, which is a continuation-in-part of Ser. No. 411,263, Aug. 25, 1982, Pat. No. 4,461,980, said Ser. No. 686,275is a continuation-in-part of Ser. No. 677,562, Dec. 3, 1984, Pat. No. 4,698,553, which is a continuation-in-part of Ser. No. 456,276, Feb. 22, 1983, Pat. No. 4,503,363. This application Jun. 11, 1993, Ser. No. 75,092

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—209 R **8 Claims**



1. An arrangement comprising:

lamp output terminals operable to connect with lamp input terminals of a fluorescent lamp; and

an assembly of interconnected component parts; the assembly being characterized by:

(a) including a power-line-operated frequency converter providing: (i) a first high-frequency output voltage at a first pair of high-frequency output terminals; the first high-frequency output voltage having a fundamental period and a fundamental frequency; the fundamental period being substantially shorter than that of the power line voltage on an ordinary electric utility power line; the fundamental frequency being substantially higher than that of the power line voltage on an ordinary electric utility power line; and (ii) a second high-frequency output voltage at a second pair of high-frequency output terminals; the second pair of high-frequency output terminals being connected in circuit with the first pair of high-frequency output terminals;

(b) having its second high-frequency output terminals connected with the lamp output terminals;

(c) whenever the lamp input terminals are connected with the lamp output terminals, supplying a lamp current to the fluorescent lamp; and

(d) whenever the lamp input terminals are not connected with the lamp output terminals, causing the second high-frequency output voltage to exhibit periodic amplitude modulation, while the magnitude of the first high-frequency voltage remains substantially non-modulated; the periodic amplitude modulation having a relatively long period; the relatively long period being longer than that of the power line voltage.

5,608,292

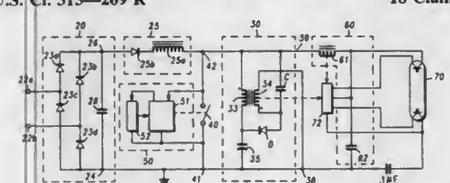
SINGLE TRANSISTOR BALLAST WITH FILAMENT PREHEATING

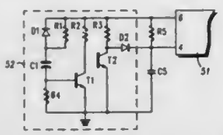
John G. Konopka, Barrington, and Dennis L. Stephens, Niles, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1995, Ser. No. 491,016

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—209 R **18 Claims**





1. A ballast circuit for driving a gas discharge lamp, comprising:

a power source, connected to an alternating current supply, of a pulsating and rectified voltage;

an energy storage capacitor having two ends with one of said ends connected to a circuit common;

an energy storage inductor having a first terminal that is connected to said power source and having a second terminal that is connected to the other end of said energy storage capacitor;

a switch that has one end connected to said first terminal of said energy storage inductor and an opposite end that is connected to said circuit common;

a resonant circuit that is coupled to said energy storage inductor for energizing the gas discharge lamp, said resonant circuit having a predetermined resonant frequency;

a switch control circuit for opening and closing said switch at a rate that is a function of at least a DC current level; and

a current changing circuit comprising a resistor switching circuit for changing said predetermined DC current level for a predetermined time interval after connecting said alternating current supply such that said resonant circuit operates at a frequency that is different than said predetermined resonant frequency for at least said predetermined time interval.

5,608,293

LAMP CIRCUIT ARRANGEMENT FOR CONTROLLING CURRENT FLOW THROUGH SWITCHING ELEMENT

Anton C. Blom, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,248

Claims priority, application European Pat. Off., Oct. 19, 1994, 94203036

Int. Cl.[6] H05B *37/02*

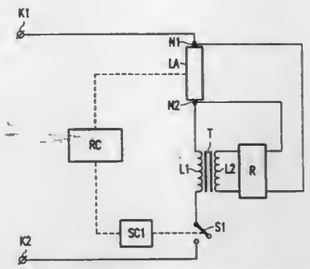
U.S. Cl. 315—219 **35 Claims**

1. A circuit arrangement for operating a discharge lamp, comprising:

supply input terminals for connection to a supply voltage source,

a transformer having a primary winding and a secondary winding L2,

a first branch comprising terminals for holding the lamp and connecting a first end of the secondary winding to a second end of the secondary winding L2,



a second branch interconnecting the supply input terminals and comprising a series circuit of a switching element, the terminals for holding the lamp, and the transformer primary winding, and

a control circuit coupled to a control electrode of the switching element for generating a control signal for rendering the switching element conducting and non-conducting for thereby generating a first current in the primary winding and a second current in the secondary winding.

5,608,294

HIGH PRESSURE LAMP OPERATING CIRCUIT WITH SUPPRESSION OF LAMP FLICKER

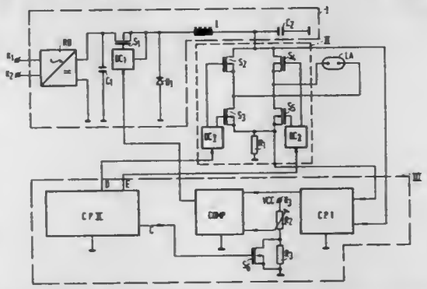
Gunther H. Derra, Aachen; Hanns E. Fischer; Hans G. Ganser, both of Stolberg, all of Germany, and Holger Monch, Vaals, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 471,297

Claims priority, application European Pat. Off., Jun. 22, 1994, 94201784

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—224 **23 Claims**



1. Method for operating a high pressure discharge lamp comprising: supplying an alternating lamp current to the high pressure discharge lamp, generating a current pulse in a predetermined fraction of given half periods of the lamp current, said current pulse having the same polarity as the lamp current and being superimposed on the lamp current only in a latter part of the half period in which it is generated.

5,608,295

COST EFFECTIVE HIGH PERFORMANCE CIRCUIT FOR DRIVING A GAS DISCHARGE LAMP LOAD

Mihail S. Moisin, Lake Forest, Ill., assignor to Valmont Industries, Inc., Valley, Nebr.

Filed Sep. 2, 1994, Ser. No. 299,124

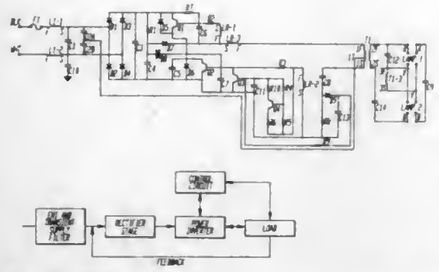
Int. Cl.[6] H05B *37/02;41/29*

U.S. Cl. 315—247 **62 Claims**

1. An electronic circuit with power factor correction comprising:

an input stage for receiving an AC input voltage supply;

a rectifier stage coupled to said input stage;



an energy storage capacitor;

said rectifier stage being coupled to said energy storage capacitor;

a power inverter including at least one switching device and a resonating circuit coupled to said energy storage capacitor;

a load coupled to said power inverter, said load including a transformer;

an inductor having a primary winding and at least one secondary winding, said primary winding being series connected to said transformer, wherein said at least one switching device being controlled by voltages across said secondary winding of said inductor; and

a feedback circuit operatively coupled to said transformer and to a point between said input stage and said rectifier stage to create a path for transferring a feedback voltage over said rectifier stage to said energy storage capacitor allowing said rectifier stage to conduct current over a substantial portion of each cycle of the AC input voltage.

5,608,296

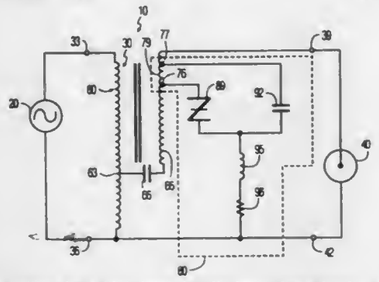
MULTIPLE PULSING THROUGHOUT THE GLOW MODE

Allan E. Brown, Palatine, Ill., assignor to Philips Electronics North America Corp., New York, N.Y.

Continuation of Ser. No. 386,904, Feb. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 283,110, Jul. 29, 1994, Pat. No. 5,453,666, which is a continuation-in-part of Ser. No. 980,831, Nov. 24, 1992, Pat. No. 5,430,354, which is a continuation-in-part of Ser. No. 856,771, Mar. 24, 1992, Pat. No. 5,256,946. This application Apr. 16, 1996, Ser. No. 639,042

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—289 **9 Claims**



1. A ballast for a high intensity discharge lamp having a glow mode, comprising:

output terminals for connection with a high intensity discharge lamp having a glow mode of operation,

an ignitor for producing ignition pulses prior to and substantially throughout the glow mode, said ignitor having a voltage sensor for sensing the voltage across the output terminals and being responsive to the voltage sensor for producing ignition pulses whenever the voltage across the output terminals is above a predetermined value, said predetermined value being less than the voltage across the lamp when the lamp is operating in its glow mode of operation.

5,608,297

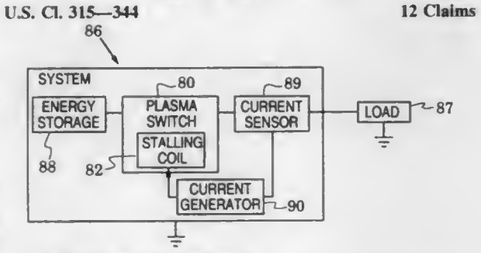
PLASMA SWITCH AND SWITCHING METHOD WITH FAULT CURRENT INTERRUPTION

Dan M. Goebel, Tarzana, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 27, 1994, Ser. No. 364,357

Int. Cl.[6] H01J *17/14*

U.S. Cl. 315—344 **12 Claims**



1. A plasma switch, comprising:

a plasma generator in which a first magnetic field and an electric field are oriented so that a change in said first magnetic field alters the density of a generated plasma;

a first electrode configured to sustain a voltage potential between it and said plasma generator;

a second electrode positioned between said plasma generator and said first electrode, said second electrode configured to respond to a first control signal by initiating a plasma current between said plasma generator and said first electrode and respond to a second control signal by interrupting said plasma current when it is within a predetermined range; and

a magnetic field generator arranged to generate, in response to a fault signal, a second magnetic field that reduces said plasma current to said range by opposing a portion of said first magnetic field to diminish the density of said generated plasma.

5,608,298

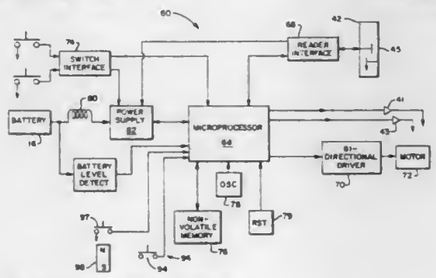
PRIVACY PROTECTION FOR ELECTRONIC LOCK SYSTEM

George Frolov, Farmington, and Gary E. Lavelle, Avon, both of Conn., assignors to Harrow Products, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 275,301, Jul. 14, 1994, Pat. No. 5,473,236. This application Jan. 3, 1995, Ser. No. 368,276

Int. Cl.[6] E05B *47/00*

U.S. Cl. 318—286 **27 Claims**



1. A door lock system comprising:

door means having opposite first and second sides;

latch means for latching said door means comprising a latch and first operating means at said first side for operating said latch;

electronic lock means comprising an input means accessible at said first side for generating a first electrical signal in response to a pre-established input, said electronic lock means generating a lock release signal in response to said first electrical signal;

engagement means engageable with a receiver for preventing operation of said latch;

driving means responsive to said first electrical signal for engaging and disengaging said engagement means with and from said receiver;

coupling means for coupling said driving means and said engagement means; and

privacy means accessible at said second side of said door means for disabling said electronic lock means whereby said privacy means generates a second electrical signal, said second electrical signal preventing said electronic lock means from generating said lock release signal in response to said first electrical signal.

13. Apparatus for selectively blocking the release of an electronic lock, said apparatus comprising microprocessor means and an electrical circuit having first switch means, said first switch means being operable between a first and a second position wherein said electrical circuit generates an electrical signal when said first switch means is in said first position, said microprocessor means blocking release of the electronic lock upon receipt of said electrical signal, said apparatus further comprising second switch means wherein said second switch means is operable to disable said electrical circuit.

5,608,299

ROBOT APPARATUS

Yoshiki Hashimoto, Hadano; Yasuyuki Shimoda, Yamanashi; Tatsuya Obi, Yamanashi; Yasuhiro Matsuo, Yamanashi, and Tomoki Ohya, Yamanashi, all of Japan, assignors to Fanuc Ltd., Japan

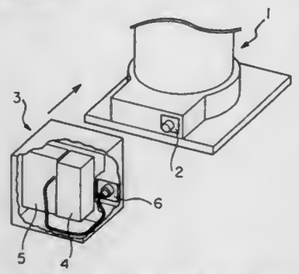
PCT No. PCT/JP94/01677, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO95/11114, PCT Pub. Date Apr. 27, 1994

PCT Filed Oct. 6, 1994, Ser. No. 436,459

Claims priority, application Japan, Oct. 18, 1993, 5-259635

Int. Cl.[6] B25J *19/00*

U.S. Cl. 318—568.11 **4 Claims**



1. A robot apparatus for controlling an operation of a robot mechanical unit by a robot controller electrically connected to the robot mechanical unit, comprising:

a robot mechanical unit including an arm, a drive unit, and a first connector for receiving a control signal and outputting a sensor signal; and

a robot controller including a circuit for controlling said robot mechanical unit, a servo amplifier, and a second connector directly coupled with the first connector of said robot mechanical unit, said robot controller being installed at a location adjacent to said robot mechanical unit and within a dead space of an operating area of said robot mechanical unit, said dead space not being accessible by said robot mechanical unit.

5,608,300

ELECTRICAL ANGLE-DETECTING APPARATUS AND DRIVING SYSTEM OF SYNCHRONOUS MOTOR USING THE SAME

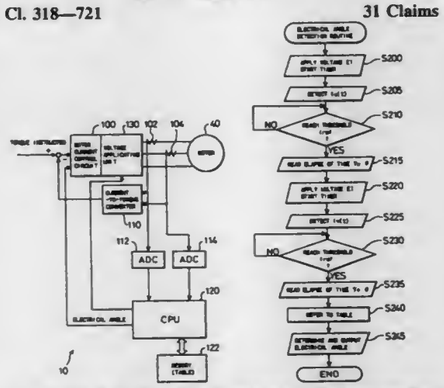
Yasutomo Kawabata, Aichi-ken; Eiji Yamada, Owariasahi; Tetsuya Miura, and Yoshiaki Taga, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 24, 1994, Ser. No. 328,063

Claims priority, application Japan, Oct. 26, 1993, 5-291385; Sep. 5, 1994, 6-238500

Int. Cl.[6] H02P *6/16*

U.S. Cl. 318—721 **31 Claims**



1. An electrical angle-detecting apparatus of a synchronous motor which makes a multi-phase alternating current flow through a winding to rotate a rotor by means of an interaction between a magnetic field formed by said winding and a magnetic field formed by a permanent magnet, said apparatus comprising:

first memory means for previously storing a relationship between electrical angles and values of electric current flowing in response to a predetermined voltage applied to a first interphase combination,

second memory means for previously storing a relationship between electrical angles and values of electric current flowing in response to said predetermined voltage applied to a second interphase combination, which is different from said first interphase combination;

first measurement means for applying said predetermined voltage to said first interphase combination and measuring a value of a first electric current flowing in response to said predetermined voltage;

second measurement means for applying said predetermined voltage to said second interphase combination and measuring a value of a second electric current flowing in response to said predetermined voltage; and

electrical angle calculation means for determining an electrical angle of said synchronous motor in a range of through 2π based on said values of said first and second electric currents measured by said first measurement means and said second measurement means with reference to said relationships stored in said first memory means and said second memory means.

5,608,301

MOTOR CONTROL SYSTEM FOR CENTRIFUGAL MACHINE

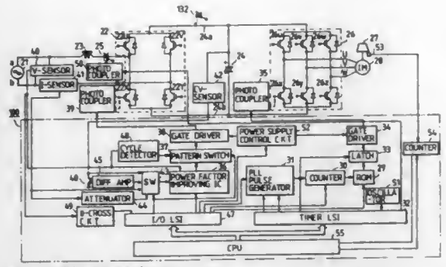
Masahiro Inaniwa; Nobuharu Kido; Takahiro Fujimaki; Shinji Watanabe; Noriyasu Matsufuji, and Yoshinori Tobita, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 495,962

Int. Cl.[6] H02M *7/539*

U.S. Cl. 318—729 **6 Claims**

1. A power control apparatus for controlling power supplied to a motor employed in a centrifuge comprising:



a smoothing capacitor;

a bi-directional supply power-converting unit including rectifying elements connected to form a circular rectifying circuit and switching elements each connected to one of the rectifying elements in parallel, said bi-directional supply power-converting unit being connected at an ac terminal to an AC power supply and at a dc terminal to said smoothing capacitor for charging said smoothing capacitor;

a bi-directional motor power-converting unit including rectifying elements connected to form a circular rectifying circuit and switching elements each connected to one of the rectifying elements in parallel, said bi-directional motor power-converting unit being connected at an ac terminal to the motor and at a dc terminal to said smoothing capacitor;

a reactor disposed between the AC power supply and said bi-directional supply power-converting unit; and

a control unit controlling, in a motor power mode, the switching elements of said bi-directional motor power-converting unit with given operational timing to supply power to the motor and also controlling the switching elements of said bi-directional supply power-converting unit with given operational timing to have said bi-directional supply power-converting unit function as a step-up converter to charge said capacitor, in a motor braking mode wherein said bi-directional motor power-converting unit charges said smoothing capacitor with power of the motor regenerated during a braking operation, said control unit controlling the switching elements of said bi-directional supply power-converting unit with given operational timing to have said bi-directional supply power-converting unit function as a step-down converter to restrict a charged voltage of said capacitor from being increased above a preselected level for returning the power regenerated by the motor back to the AC power supply; and

further comprising an AC phase control element disposed between said reactor and said bi-directional supply power-converting unit to regulate the charged voltage of said capacitor.

5,608,302

APPARATUS FOR DRIVING AN AC MOTOR AT VARIABLE SPEEDS

Hidetoshi Umida, Tokyo, Japan, assignor to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,601

Claims priority, application Japan, Sep. 28, 1993, 5-264182

Int. Cl.[6] H02P *5/34*

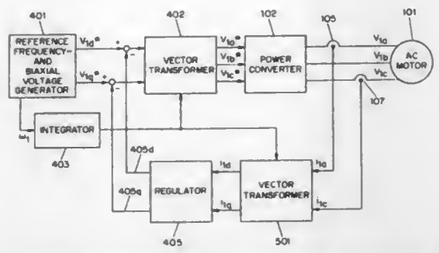
U.S. Cl. 318—802 **19 Claims**

1. An apparatus for driving an AC motor having a primary resistance and a leakage inductance at variable speeds, which comprises:

means for generating reference voltage values having reference frequency and amplitude values;

a power converter electrically coupled to said AC motor for supplying AC voltage of variable amplitude and variable frequency based on said reference voltage values;

a plurality of current detectors electrically coupled to output side of said power converter for detecting at least two phase currents generated by said power converter, said current detector generating a set of output signals representing the detected phase current values;



a first regulator having as its input signals one of said set of output signals generated by said plurality of current detectors and having gain means for applying a selected gain value to inputs of said first regulator, said selected gain value being a function of at least one of said primary resistance and said leakage inductance of said AC motor; and

a subtracting means having its input side electrically coupled to output side of said first regulator and output side of said reference-voltage generating means, said subtracting means subtracting output signals of said first regulator from said reference voltage values and outputting a set of results of said subtraction;

wherein said power converter receives as input one of said set of results of said subtraction.

5,608,303

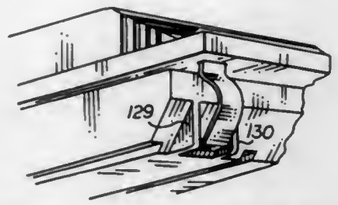
VIDEO GAME POWER PACK

Steven G. Leiserson, 10845 Wheatlands Ave., Santee, Calif. 92071

Continuation of Ser. No. 464,314, Jun. 5, 1995, Pat. No. 5,506,488, which is a continuation of Ser. No. 111,929, Aug. 23, 1993, Pat. No. 5,426,358, which is a continuation of Ser. No. 27,181, Mar. 5, 1993, which is a continuation of Ser. No. 260,636, Nov. 9, 1993, which is a continuation-in-part of Ser. No. 887,479, May 22, 1992, Pat. No. 5,192,904, which is a continuation-in-part of Ser. No. 793,122, Nov. 18, 1991, Pat. No. 5,225,760. This application Apr. 4, 1996, Ser. No. 627,621

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **14 Claims**



8. A rechargeable power supply for use in combination with an electrical device that includes a compartment having a first length, a width and a depth originally and exclusively dimensioned to hold an even number of batteries therein, said batteries being mounted side-by-side in alternating opposite directions and being interconnected to provide a working voltage level to said device, said compartment having a top opening sized to allow one-by-one loading and unloading said batteries into and out of said compartment, said opening having a second length shorter than said first length, and a ledge extending from a lateral wall of said compartment to said opening, terminals protruding from lateral walls of said compartment and wired to carry electrical current from said batteries to electrical circuits in said device, at least two of a first type of said terminals including resiliently compressible first contact members extending from opposite lateral walls of said compartments including one terminal extending under said opening and said first type of terminals being positioned to forcefully contact poles of said batteries, and at least two of a second type of said terminals including second contact members positioned under said ledge to contact opposite poles of said batteries, and a removable cover shaped and dimensioned to close said opening co-planarly with said ledge, said rechargeable power supply comprising:

a housing having a portion shaped and dimensioned to be at least partially introduced into said compartment through said opening;

at least one rechargeable power cell mounted within said housing and having positive and negative poles, and an output voltage, substantially equal to said voltage level;

current conducting means wired for feeding a charging current to said at least one power cell, said current conducting means including a connector mounted on said housing; and

means for connecting said at least one cell to said terminals, including a first resiliently compressible prong protruding laterally from said housing and being sized and positioned on a side wall of said portion to extend under said ledge and come in contact with a second contact member of one of said second type of terminals and a second prong positioned on said side wall to come into contact with one of said first contact members when said portion of said housing is inserted into said compartment.

5,608,304

BATTERY PROTECTION CIRCUIT AND BATTERY PACK AND APPARATUS USING THE BATTERY PACK

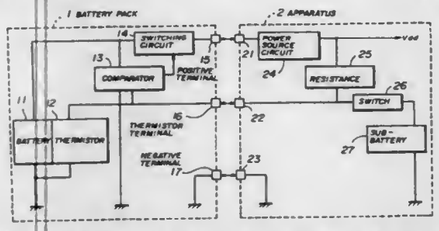
Masafumi Okumura, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 4, 1995, Ser. No. 511,228

Claims priority, application Japan, Sep. 28, 1994, 6-232561

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—5 **12 Claims**



8. An apparatus using a battery pack, said battery pack having:

a battery supplying power to the apparatus

a thermistor sensing a surface temperature of the battery;

positive, negative and thermistor terminals for being connected to the apparatus, the thermistor terminal outputting a detected voltage;

a comparator comparing the detected voltage with a given voltage; and

a switching circuit controlling at least one of connections between a positive terminal of the battery and said positive terminal of the battery pack and between a negative terminal of the battery and said negative terminal of the battery pack based on an output of the comparator;

said apparatus comprising:

a power source circuit for producing a power source voltage from said power of said battery when the battery pack is connected to the apparatus; and

voltage generating means, connected between said power source voltage and said thermistor terminal, for generating the detected voltage output to said thermistor terminal in relation to said power source voltage according to at least one of the surface temperature of the battery, a battery voltage and a detachment state between the battery pack and the apparatus when the battery pack is connected to the apparatus;

wherein:

said detected voltage is generated from said power source voltage produced by said power source circuit, and is compared with said given voltage when the battery pack is connected to the apparatus; and

when the battery pack is connected to the apparatus, if the surface temperature of the battery rises over a given temperature or the power source voltage drops below a given power source voltage, the switching circuit stops charging and discharging the battery; and

when the battery is detached from the apparatus, the switching circuit stops supplying the power of the battery externally.

5,608,305

METHOD AND APPARATUS FOR COMPULSORY DISCHARGING LITHIUM-ION BATTERY TO PREVENT QUALITY DEGRADATION

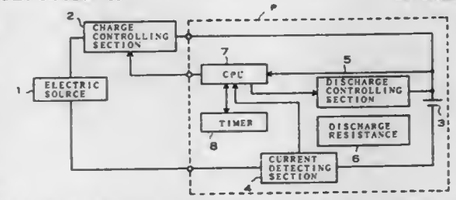
Toshiharu Kokuga, Sumoto, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 20, 1994, Ser. No. 326,373

Claims priority, application Japan, Oct. 29, 1993, 5-272381

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—13 **10 Claims**



4. An apparatus for avoiding a reduction in the quality of a secondary battery, comprising:

(a) a detecting means for detecting a charge capacity of the secondary battery;

(b) a first judging means for judging whether the charge capacity detected by said detecting means is more than a predetermined value;

(c) a second judging means for judging whether a predetermined time period has elapsed during a state in which the charge capacity of the secondary battery is judged by said first judging means to be more than the predetermined value; and

(d) a discharging means for discharging the secondary battery until the charge capacity of the secondary battery is less than the predetermined value when said second judging means judges that the predetermined time period has elapsed.

8. A method for avoiding a reduction in the quality of a secondary battery, comprising the steps of:

initially charging the secondary battery, and then ceasing the initial charging of the battery and starting a timer when a charge capacity of the secondary battery reaches a full charge capacity;

detecting a compulsory discharge condition in which the charge capacity of the secondary battery is more than a predetermined charge capacity for more than a predetermined time interval as measured by the timer, the predetermined charge capacity being less than the full charge capacity; and

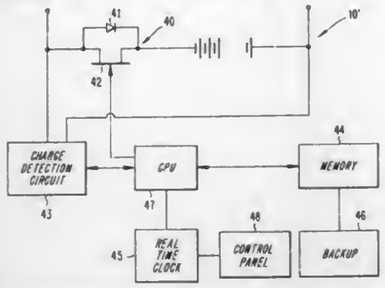
compulsitory discharging the secondary battery to reduce the charge capacity of the secondary battery to less than the predetermined charge capacity when the compulsory discharge condition is detected in said detecting step.

5,608,306

RECHARGEABLE BATTERY PACK WITH IDENTIFICATION CIRCUIT, REAL TIME CLOCK AND AUTHENTICATION CAPABILITY

Nils R. C. Rybeck, Cary, N.C.; Magnus Hansson, Malmö, and Peter Holmqvist, Lund, both of Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Mar. 15, 1994, Ser. No. 213,073
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—15 **42 Claims**



40. An apparatus for controlling an operational state of an application circuit, said apparatus comprising:

means for verifying the authenticity of a battery pack which has been connected to an application circuit, said means for verifying comprising:

means for storing a predetermined mathematical formula provided in said battery pack and in said application circuit;

means for generating a random number;

means for calculating a first result of said mathematical formula in said battery pack using said random number;

means for calculating a second result of said mathematical formula in said application circuit using said random number; and

means for comparing said first result to said second result and outputting a verification signal;

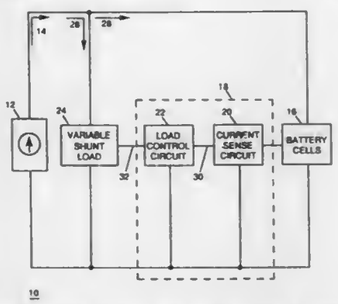
said apparatus further comprising means for placing said application circuit in an non-operational state responsive to said means for verifying when said verification signal indicates that said first result does not equal said second result.

5,608,307

APPARATUS FOR CONTROLLING EXCESS RECHARGE CURRENT APPLIED TO A BATTERY

Scott M. Garrett; Venus D. Desal, both of Lawrenceville; Vernon Meadows, Lilburn, and Jose M. Fernandez, Lawrenceville, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1994, Ser. No. 368,267
Int. Cl.[6] H02J *7/16*
U.S. Cl. 320—39 **20 Claims**



15. A rechargeable battery pack for use with a charger which provides a charge current level in excess of an optimum recharge current level, said battery pack having positive and negative terminals, said battery pack comprising:

at least one battery cell;

a current sense circuit coupled in series with said at least one battery cell for sensing current through said at least one battery cell and producing a current sense signal;

a variable shunt load having a control input, and connected in parallel with said at least one battery cell and said current sense circuit; and

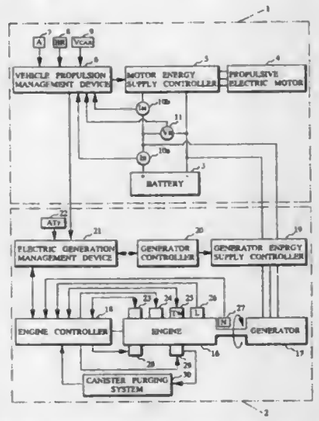
a load control circuit coupled between said current sense circuit and said variable shunt load, for producing a load control signal in response to said current sense signal.

5,608,308

ELECTRIC GENERATION CONTROL SYSTEM FOR HYBRID VEHICLE

Takeo Kiuchi, and Shigeru Ibaraki, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 513,097
Claims priority, application Japan, Aug. 22, 1994, 6-197071
Int. Cl.[6] H02P *9/00;* **F02N** *11/00*
U.S. Cl. 322—11 **12 Claims**



1. An electric generation control system for use on a hybrid vehicle having a vehicle propelling apparatus including a battery and a propulsive electric motor energizable by the battery, and an electric energy generating apparatus including an engine and a generator actuatable by the engine, the generator being operable in a generator mode in which when the vehicle propelling apparatus is in operation, the generator is actuated by the engine to generate electric energy to be supplied to the battery and/or the propulsive electric motor, and when the hybrid vehicle is decelerated, the propulsive electric motor is subjected to regenerative braking and regenerated electric energy produced thereby is supplied to the battery, said electric generation control system comprising:

target generated output setting means for determining a target generated output for the generator based on an operating condition of the hybrid vehicle;

intake air control valve control means for controlling the opening of an intake air control valve of the engine to enable the engine to produce a power output corresponding to said target generated output;

regenerative braking detecting means for detecting regenerative braking of the propulsive electric motor; and

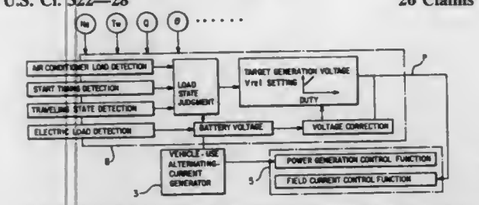
correcting means for correcting the opening of the intake air control valve of the engine depending on the target generated output in a direction to decrease when regenerative braking of the propulsive electric motor is detected by said regenerative braking detecting means.

5,608,309

VEHICLE-USE ALTERNATING CURRENT GENERATOR CONTROL SYSTEM

Sakae Hikita, Katsuta; Yuuji Maeda, Hitachioota; Masakatsu Fujishita, Mito; Masahiro Sato, Katsuta; Seiichi Kawasaki, Tokai, and Takayuki Ebisawa, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 24, 1994, Ser. No. 200,967
Claims priority, application Japan, Feb. 24, 1993, 5-035166
Int. Cl.[6] H02P *9/10*
U.S. Cl. 322—28 **26 Claims**



1. Apparatus for controlling an electric generator for charging a battery of a vehicle, said apparatus comprising:

means for sensing parameters indicative of respective operating states of said vehicle, of said battery, and of an electric load coupled to receive energy from said battery;

means for determining an operating state of said vehicle based on sensed operating parameters of said vehicles;

means for providing a plurality of control command voltage values corresponding to respective operating states of said vehicle;

a microcomputer for selecting one of said control command voltage values based on a determined operating state of said vehicle, and for generating a command voltage having said selected control command voltage value;

means for generating a target voltage for controlling an output voltage of said generator, said target voltage having a desired predetermined relationship to said command voltage;

means for switching an output voltage of said generator in response to said command voltage;

means for comparing said command voltage with an output voltage of said battery, and for generating a difference signal in response thereto; and

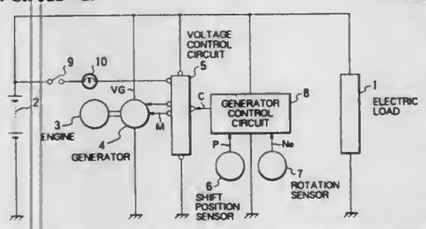
means responsive to said difference signal, for correcting said command voltage to compensate for deviation of an actual relationship between said target voltage and said command voltage, relative to said desired predetermined relationship.

5,608,310

AC GENERATOR CONTROL APPARATUS FOR A MOTOR VEHICLE

Hirofumi Watanabe, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,647
Claims priority, application Japan, Apr. 20, 1994, 6-081818
Int. Cl.[6] H02P *9/00*
U.S. Cl. 322—29 **5 Claims**



1. An AC generator control apparatus for a motor vehicle, comprising:

an electric generator driven by an internal combustion engine of said motor vehicle for generating an output voltage for charging an onboard battery of said motor vehicle;

engine rotation detecting means for detecting rotation of said engine to thereby generate engine rotation information;

shift position detecting means for detecting a currently effective one of shift positions for changing over gear ratios of a transmission; and

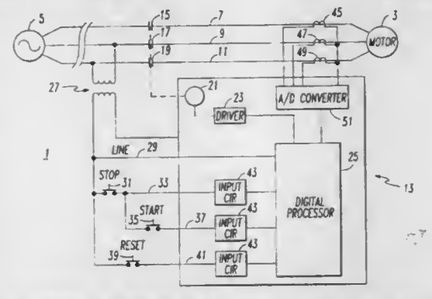
control means responsive to said engine rotation information for changing an output voltage of said electric generator in dependence on said currently effective shift position.

5,608,311

AC INPUT FOR DIGITAL PROCESSOR WITH CAPACITIVELY COUPLED IMMUNITY AND SURGE WITHSTAND

Mark E. Innes, and John H. Blakely, both of Asheville, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 19, 1995, Ser. No. 545,068
Int. Cl.[6] G05F *1/00;1/70;3/00;5/00*
U.S. Cl. 323—218 **6 Claims**



1. Apparatus for inputting an ac voltage signal into an input of a digital processor over an input line subject to stray capacitance, wherein said input and said input line are referenced to a common reference potential, said apparatus comprising:

rectifier means connected in said input line adjacent said input;

a capacitor connected to said input line between said input and said rectifier means and to said common reference potential; and

a first resistor shunting said capacitor, said capacitor and first resistor being selected such that said capacitor charges on half cycles of said ac voltage signal which forward bias said rectifier means and said capacitor discharges through said first resistor on opposite half cycles of said ac voltage signal.

5,608,312

SOURCE AND SINK VOLTAGE REGULATOR FOR TERMINATORS

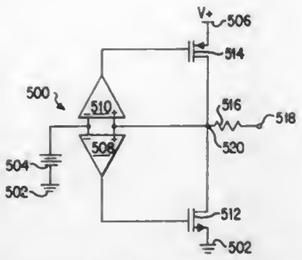
Dean Wallace, Trabuco Canyon, Calif., assignor to Linfinity Microelectronics, Inc., Garden Grove, Calif.

Filed Apr. 17, 1995, Ser. No. 423,748
Int. Cl.[6] H02J *1/02*
U.S. Cl. 323—224 **19 Claims**

1. A voltage regulator, the voltage regulator comprising:

first and second operational amplifiers, each operational amplifier having an output, a noninverting input, and an inverting input, the inverting input of each operational amplifier being coupled to a reference voltage;

a first transistor having a control electrode comprising one of a base and a gate, a second electrode comprising one of an emitter and a source, and a third electrode comprising one of a collector and a drain, wherein the control electrode of the first transistor is coupled to the output of the first operational amplifier, the second electrode of the first transistor is coupled



to a voltage source, and the third electrode of the first transistor is coupled to one of the noninverting input of the first operational amplifier and the noninverting input of the second operational amplifier;

a second transistor having a control electrode comprising one of a base and a gate, a second electrode comprising one of an emitter and a source, and a third electrode comprising one of a collector and a drain, wherein the control electrode of the second transistor is coupled to the output of the second operational amplifier, and the third electrode of the second transistor is coupled to one of the third electrode of the first transistor and the noninverting inputs of the first and second operational amplifier; and

a resistor coupled at a first electrode to one of the noninverting inputs of the first and second operational amplifiers, and the third electrode of the first transistor and the third electrode of the second transistor, the resistor providing an output at a second electrode, wherein

the third electrode of the first transistor is a source for current sunk from the voltage output and the third electrode of the second transistor is a sink for current sourced into the voltage output.

5,608,313

CIRCUIT ARRANGEMENT FOR GENERATING A CONSTANT OUTPUT VOLTAGE

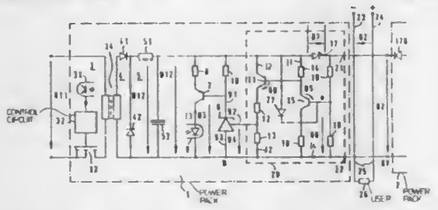
Karl-Heinz Kramer, Wolfratshausen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 14, 1995, Ser. No. 490,248

Claims priority, application Germany, Jun. 24, 1994, 44 22 262.9

Int. Cl.[6] G05F *1/46*

U.S. Cl. 323—269 **7 Claims**



1. A circuit arrangement for generating a dc voltage regulated to a constant value, having two output terminals to which an electrical user or an output of at least one further identical circuit arrangement is connected, comprising:

a first output terminal of the two output terminals lying at a reference potential;

a decoupling diode in a current path leading to a second output terminal of the two output terminals;

an arrangement for actual value formation having a first transistor whose base is connected to a tap of an ohmic voltage divider connected between the first and second output terminals, whose emitter is connected via a first resistor to the decoupling diode, and whose collector is operationally connected to the reference potential;

a regulator having a reference voltage terminal, an actual value voltage input and a control voltage terminal, the regulator at least approximately eliminating deviations of the actual value voltage output by the arrangement for actual value formation from a reference voltage;

the emitter of the first transistor connected to a base of a second transistor whose collector is connected to the decoupling diode;

the first transistor and the second transistor having opposite conductivity types;

a series circuit of a second resistor and the emitter-collector path of the second transistor connected between the actual value voltage input of the regulator and the decoupling diode, and a third resistor connected between the actual value voltage input of the regulator and the first output terminal; and

the control voltage output of the regulator connected via a fourth resistor to the decoupling diode.

5,608,314

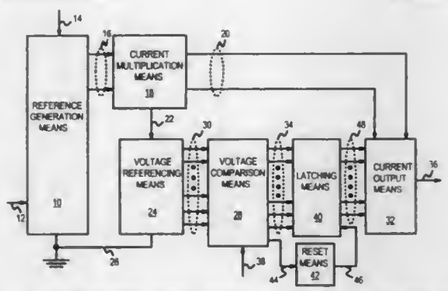
INCREMENTAL OUTPUT CURRENT GENERATION CIRCUIT

Ann Woo, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 11, 1994, Ser. No. 226,163

Int. Cl.[6] G05F *1/16*

U.S. Cl. 323—313 **36 Claims**



32. An incremental current generation circuit for generating an output current comprising:

a) a reference generation means for generating a reference current therethrough and a reference voltage thereacross comprising at least two transistors to mirror a bias current into a reference current and having a bias voltage there across and a bias current therethrough;

b) a current multiplication means electrically connected to the reference generation means for multiplying the reference current therethrough and making the multiplied current available as an output and further comprising a bank of four transistors configured to effectuate a predetermined multiplication of the reference current therethrough;

c) a voltage referencing means electrically connected between the current multiplication means and the reference generation means accepting the output multiplied current of the current multiplication means as an input and comprising a resistive element for establishing at least one voltage reference point there across which is accessible as an output and further comprising a plurality of resistive elements for establishing a plurality of voltage referencing points there across with each point accessible as an output in order to provide finer reference increments for comparison with the level of the input voltage;

d) a comparator means receiving the at least one voltage reference point output for comparing the reference point against a level of an input voltage provided to the comparator means and having outputs directed therefrom and the comparator means comprising at least one voltage comparator connected to the reference output from the voltage referencing means and to the input voltage for comparison therewith;

e) a latching means connected to at least one output from the comparator means for latching on to the output of the comparator means;

f) a reset means connected to at least one output of the comparator means for enabling a reset of the latching means; and

g) a current output means accessing the reference voltage of the reference generation means and receiving the output of the comparator means for producing a current at the output, wherein the output of the comparator means trigger at least one predetermined value of the reference current to be delivered to the output of the current output means, the current output means comprising at least two transistors wherein a first transistor provides current therethrough switchable by a second transistor activated at the input by the output of the comparator means.

5,608,315

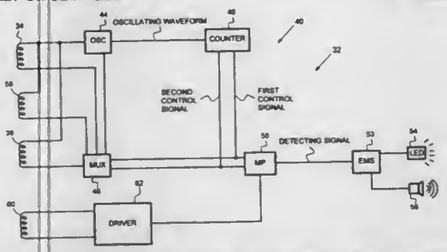
APPARATUS FOR DETECTING PARTICLES IN A FLUID AND A METHOD FOR OPERATING SAME

John W. Crayton, Washington; John J. Krone, Dunlap, and Terry D. Oltman, Chillicothe, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 21, 1995, Ser. No. 517,228

Int. Cl.[6] G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **19 Claims**



1. An apparatus for detecting particles within a fluid, comprising:

a bobbin defining a debris collection chamber;

spaced apart first and second coils wound in a helix about the bobbin, said first coil wound about the debris collection chamber, wherein the induction of the first and second coils are responsive to the particle accumulation within the collection chamber;

an electromagnet wound about the second coil to attract ferrous particles into the proximity of the second coil;

a reference coil wound in a helix about the bobbin and spaced from the first and second coils, said reference coil being wound below the collection chamber, said second coil disposed between said first coil and said reference coil; and

an oscillator selectively coupled to the first, second and reference coils for producing an oscillating waveform, wherein the induction of the reference coil is responsive to the fluid temperature, wherein the frequency of the oscillating waveform is a function of the induction of one of the first, second, and reference coils.

5,608,316

APPARATUS FOR DETECTING PARTICLES IN A FLUID AND A METHOD FOR OPERATING SAME

John W. Crayton, Washington; John J. Krone, Dunlap; Terry D. Oltman, Chillicothe, and Cecilia A. Walacavage, East Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 21, 1995, Ser. No. 518,478

Int. Cl.[6] G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **19 Claims**

1. An apparatus for detecting particles within a fluid, comprising:

a bobbin defining a debris collection chamber;

a first coil wound in a helix about the bobbin, said first coil wound about the debris collection chamber, wherein the induction of the first coil is responsive to the particle accumulation within the collection chamber;

a reference coil wound in a helix about the bobbing, said reference coil being wound below the collection chamber; and

an oscillator coupled to the first and reference coils for selectively energizing the coils with an oscillating waveform at a high frequency and at a low frequency, wherein the induction of the reference coil is responsive to the fluid temperature, wherein the resulting frequency of the high frequency waveform is a function of the accumulation of both ferrous and non-ferrous particles and resulting frequency of the low frequency waveform is a function of the accumulation of only the ferrous particles.

5,608,317

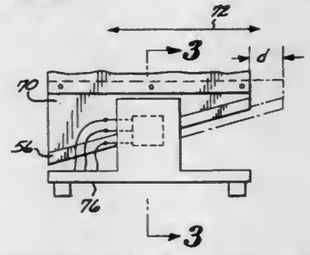
COMPLEMENTARY LINEAR MAGNETIC POSITION SENSOR

Joerg W. Hollmann, Midland, Canada, assignor to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 21, 1994, Ser. No. 263,093

Int. Cl.[6] G01B *7/14*;*5/20*;*7/00*

U.S. Cl. 324—207.2 **17 Claims**



1. A complementary linear magnetic sensor for sensing the position of a structure along an axis of travel, said sensor comprising:

first and second magnetic sensors mounted in a spaced relationship for providing respective first and second sensor outputs signals indicative of the strength of a magnetic field, said first and second magnetic sensors having respective first and second sensor active areas, and said sensors being connected in a complementary fashion so that said first and second signals are oppositely signed;

an elongated magnetic bar secured to said structure, said magnet bar comprising a single magnet extending along the extent of a range of travel over which said sensor is to measure position, said bar mounted at an angle with respect to said axis of travel and arranged to move with said structure, said magnet bar disposed for movement between said first and second sensor active areas, so that as said magnet bar traverses a range of movement, its position relative to said sensor active areas will shift, thereby transforming said magnet bar movement into a magnetic flux change to which said sensor active areas are responsive, and wherein over at least a portion of said range of movement, said sensor output signals change as

a substantially linear function of the position of the magnet bar within the range of movement; and

processor circuitry responsive to said first and second output signals for determining the position of said structure along said axis.

5,608,318

INDUCTIVE SENSOR CIRCUIT WITH COIL RESISTANCE COMPENSATION

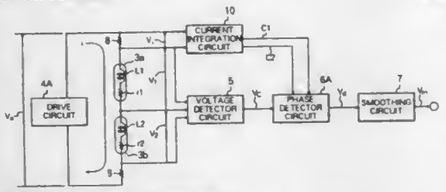
Katsuaki Yasui, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,618

Claims priority, application Japan, Aug. 31, 1995, 7-223689

Int. Cl.[6] G01L *3/10;1/12;* **G01R** *33/18;27/26*

U.S. Cl. 324—233 **4 Claims**



1. A sensor circuit, comprising:

a) coil means having an inductance that changes in response to a change in a physical quantity;

b) a drive circuit (**4A**) for applying an a.c. drive voltage to said coil means;

c) voltage detector circuit (**5**) for sensing a voltage produced at said coil means due to the application of said drive voltage;

d) signal processing means for preventing an erroneous sensor circuit output due to inherent and internal ohmic resistances of said coil means, said preventing means comprising:

1) a current integration circuit (**10**) for integrating current flowing in said coil means due to the application of said drive voltage, starting at the time of a polarity inversion of said drive voltage, and for outputting a control signal until the time the integrated value of said coil current becomes zero; and

2) a phase detector circuit responsive to inputs from said voltage detector circuit and said current integration circuit for generating a detection voltage during the time said current integration circuit outputs said control signal; and

e) a smoothing circuit for performing a smoothing process on said detection voltage to output a mean voltage, whereby said physical quantity is sensed based on said mean voltage in response to a change in the inductance of said coil means.

5,608,319

METHOD AND APPARATUS FOR MEASURING MAGNETIC FIELDS WITH MAGNETIC FIELD POLARITY DISPLAY AND ZERO POINT ADJUSTMENT

Albert Maurer, Zollikerberg, and Urs Meyer, Niederglatt, both of Switzerland, assignors to Maurer Magnetic AG, Switzerland

PCT No. PCT/CH93/00098, § 371 Date Mar. 2, 1994, § 102(e) Date Mar. 2, 1994, PCT Pub. No. WO93/23761, PCT Pub. Date Nov. 25, 1993

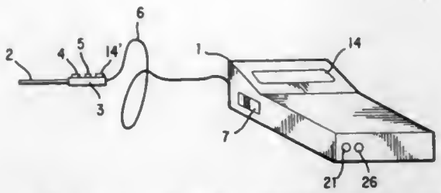
PCT Filed Apr. 16, 1993, Ser. No. 178,308

Claims priority, application Switzerland, May 11, 1992, 1499/92

Int. Cl.[6] G01R *33/02;33/07;13/02;15/08*

U.S. Cl. 324—251 **19 Claims**

8. In a device for measuring magnetic fields having a magnetic field-sensitive probe on a probe body and a measuring device with a measuring device display, the improvement comprising: the probe body comprising a probe body display of magnetic field



polarity which displays one of three conditions, "positive", "negative" and "alternating field"; and

said measuring device comprising an analog control circuit, connected to said probe by a cable, with digital storage of a correction value from said probe, said analog control circuit automatically providing and maintaining a zero point adjustment based upon said correction value.

5,608,320

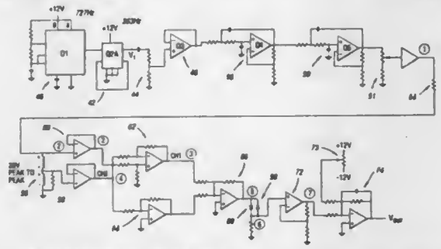
MIRROR IMAGE DIFFERENTIAL INDUCTION AMPLITUDE MAGNETOMETER

Robert C. Dinsmore, Flint, and Kelvin Shih, Brighton, both of Mich., assignors to Dinsmore Instrument Company, Flint, Mich.

Continuation of Ser. No. 918,963, Jul. 24, 1992, Pat. No. 5,432,445. This application Jul. 11, 1995, Ser. No. 500,569

Int. Cl.[6] G01R *33/04*

U.S. Cl. 324—253 **17 Claims**



1. A magnetometer comprising:

a first electrical coil and a second electrical coil each having a windings about a core, said windings having a characteristic sense defined by a plus end and a minus end, said first coil positioned substantially in parallel with said second coil such that the plus end of said first coil is adjacent to the minus end of said second coil, said first coil electrically connected to said second coil with the plus end of said first coil being coupled to the minus end of said second coil;

an oscillator for generating a periodic signal which drives each coil into magnetic saturation during a portion of the period of said periodic signal, said coils having a back emf signal being responsive to said periodic signal and to an ambient magnetic field present in said coils, said back emf signal exhibiting a distortion which varies in amplitude with said ambient magnetic field present in said coils;

a comparator for comparing the back emf signal of said first coil to the back emf signal of said second coil to generate a comparison signal; and

a detector for determining the magnetic field present at said first coil and said second coil in response to said comparison signal and for producing an output signal, X_o defined by:

$$X_o=(X_i-X_{t1})+X_r \text{ for } X_i>X_{t1}$$

$$X_o=(X_i-X_{t2})+X_r \text{ for } X_i<X_{t2}$$

$$X_o=X_r \text{ for } X_{t2}<X_i<X_{t1}$$

where X_i is said comparison signal, X_{t1} is a first threshold signal, X_{t2} is a second threshold signal, X_r is a reference signal.

5,608,321

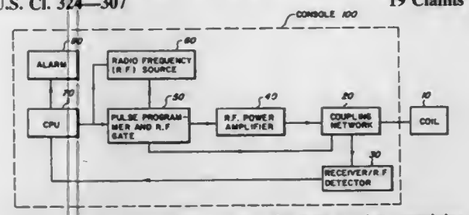
METHOD AND APPARATUS FOR DETECTING TARGET SPECIES HAVING QUADROPOLAR MUCLEI BY STOCHASTIC NUCLEAR QUADRUPOLE RESONANCE

Allen N. Garroway, Fort Washington; Joel B. Miller, Cheverly, both of Md.; David B. Zax, Ithaca, N.Y., and Ming-Yuan Liao, Stoughton, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1995, Ser. No. 583,146

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—307 **19 Claims**



1. A device for detecting a class of target species containing quadrupolar nuclei in a specimen by nuclear quadrupole resonance, comprising:

(a) pulse generating means for generating a random or pseudo-random train of rf pulses;

(b) irradiating means for irradiating said specimen with said train of rf pulses;

(c) detecting means for detecting an NQR signal in response to irradiating said specimen;

(d) coupling means for transmitting said train of rf pulses to said irradiating means;

(e) coupling means for receiving said NQR signal from said detecting means;

(f) cross-correlating means for cross-correlating said received NQR signal with said random or pseudo-random train of rf pulses, thereby generating a free induction decay signal; and

(g) transform means for converting said free induction decay signal into a frequency domain signal.

5,608,322

METHOD OF AND APPARATUS FOR OBTAINING NMR INFORMATION

Andrew R. Lonergan, London, and Peter J. McDonald, Surrey, both of England, assignors to British Technology Group Limited, London, England

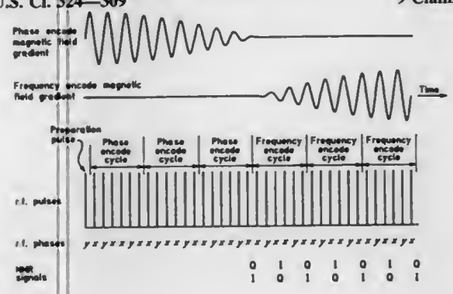
PCT No. PCT/GB93/00051, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO93/14415, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 12, 1993, Ser. No. 244,456

Claims priority, application United Kingdom, Jan. 13, 1992, 9200629

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **9 Claims**



1. A method of obtaining NMR information from a solid sample having short spin-spin relaxation time, said method comprising the steps of:

providing production means for producing a magnetic field in the sample;

energizing the production means to produce a static field component and to produce first and second gradient field components in first and second directions respectively for the encoding of two-dimensional spatial information about the sample;

applying at least one high frequency excitation pulse to the sample to excite selected nuclei therein; and

detecting the spatially encoded NMR signal from the sample resulting from the or each excitation pulse;

said energizing of the production means being such that the energization of the first gradient field component is reduced in amplitude to zero so as to reduce in amplitude the envelope of the rapidly oscillating gradient and such that the energization of the second gradient field component is subsequently increased in amplitude from zero so as to reduce in amplitude the envelope of the rapidly oscillating gradient whereby spurious eddy current fields do not appreciably distort the spatially encoded NMR signal.

5,608,323

ARRANGEMENT OF THE ELECTRODES FOR AN ELECTRICAL LOGGING SYSTEM FOR DETERMINING THE ELECTRICAL RESITIVITY OF A SUBSURFACE FORMATION

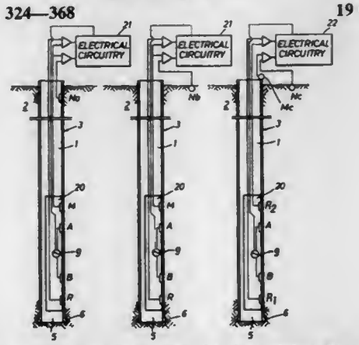
Johannes M. V. A. Koelman, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 7, 1994, Ser. No. 260,157

Claims priority, application European Pat. Off., Jun. 10, 1993, 93201674

Int. Cl.[6] G01V *3/20*

U.S. Cl. 324—368 **19 Claims**



1. An electrical logging system for determining the electrical resistivity of a subsurface formation through a cased borehole, the system comprising:

a voltage and current supply means for supplying voltage and current to provide a casing current;

a voltage and current control means coupled to said voltage and current supply means for controlling said voltage and current supply means;

an electrode support means for supporting a plurality of electrodes;

a pair of current electrodes coupled to said electrode support means, connected with said supply means and said control means, and adapted to be electrically connected to a casing within said cased borehole at different heights in an axial direction of said borehole, said pair of current electrodes, when connected, defining an intermediate casing part, for supplying an electrical current to said casing and providing

said casing current through said casing part between said electrodes, and being positioned nearby a bottom of said cased borehole, whereby the borehole casing has three parts, a casing part above the intermediate casing part, the intermediate casing part and a casing part below the intermediate casing part;

a pair of voltage electrodes, for detecting voltages provided by leakage currents leaking from the casing into the formation, said pair of electrodes being positionable above said pair of current electrodes; and

voltage and current processing means connected with said pair of voltage electrode for processing said leakage currents and voltages thereby determining said electrical resistivity of said subsurface formation through said cased borehole.

5,608,324

APPARATUS FOR DETECTING A REMAINING CAPACITY OF A BATTERY IN A PORTABLE DATA TRANSMISSION/RECEPTION DEVICE

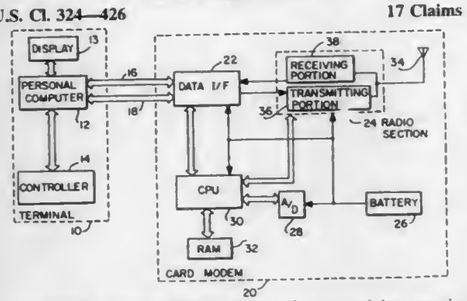
Toshio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 29, 1994, Ser. No. 365,937

Claims priority, application Japan, Dec. 29, 1993, 5-352433

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—426 **17 Claims**



1. A signal processing system for detecting a remaining capacity of a battery, comprising:

measuring means for measuring a battery voltage;

first detecting means for detecting a first time for said battery voltage to reach a predetermined level based on a pre-stored battery characteristic curve;

second detecting means for detecting a second time for said battery voltage to reach a predetermined threshold voltage based on said pre-stored battery characteristic curve;

estimating means for estimating a remaining time of a battery life of said battery based on said first time and said second time.

5,608,325

METHOD OF RECALIBRATING A BATTERY ENERGY MANAGEMENT PROCESSOR

Philippe Chabbert, Rueil Malmaison; Alain Chatenay, Marly le Rot; Christian Menard, Villenes sur Seine, and Dominique Meux, Toulouse, all of France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR94/00933, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO95/04937, PCT Pub. Date Feb. 16, 1995

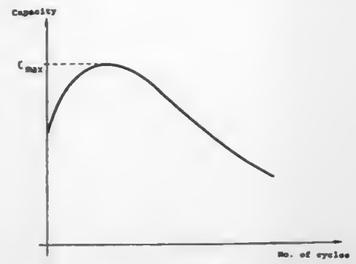
PCT Filed Jul. 26, 1994, Ser. No. 411,696

Claims priority, application France, Aug. 6, 1993, 93 09714

Int. Cl.[6] G01N *27/416;* **H02J** *7/04*

U.S. Cl. 324—426 **20 Claims**

1. A method of recalibrating a previously calibrated energy management processor of a battery of accumulators, comprising the steps of:



at the end of a defined period of time after said previous calibration, initiating a process of determining the quantity of electrical energy contained in the battery,

completely recharging the battery,

detecting the end of the complete recharge of the battery,

performing a partial discharge of the battery,

measuring the quantity of electrical energy extracted during this discharge,

leaving the battery at rest for a defined time,

totally discharging the battery at a low current while measuring the quantity of electrical energy thus extracted from the battery,

adding the said two quantities of electrical energy measured in order to obtain the value of the maximum capacity of the battery at the moment of the recalibration.

5,608,326

PLASTICS IDENTIFICATION

Peter E. R. Mucci, Durley; Graham L. Hearn, Highfield, and Ann M. Eyers, Kent Road, all of United Kingdom, assigoors to Ford Motor Company, Dearborn, Mich.

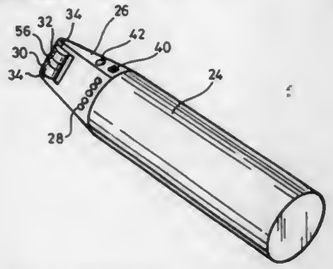
PCT No. PCT/GB94/00101, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/17402, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 19, 1994, Ser. No. 491,970

Claims priority, application United Kingdom, Jan. 21, 1993, 9301128; Jun. 5, 1993, 9311679

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—454 **15 Claims**



1. A method for identifying plastics materials, the method comprising the steps of preparing a clean, substantially charge-free surface on a piece of unidentified plastics material, rubbing the surface with a plurality of reference materials to generate a plurality of electrostatic charges, each reference material being of a known, different position in a triboelectric series, measuring the polarity of the generated electrostatic charges, and comparing the polarity measurements with polarity measurements of known plastics materials in the triboelectric series to identify the previously unidentified plastics material.

5,608,327

METHODS AND APPARATUS FOR IDENTIFYING FAULTED PHASES ON AN ELECTRIC POWER TRANSMISSION LINE

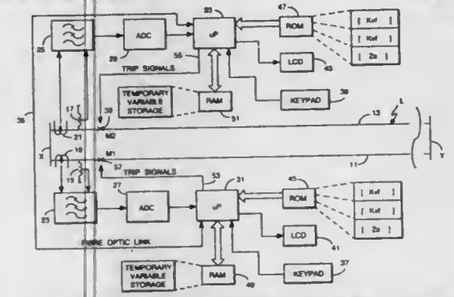
Martin S. Jones, Stafford, and David W. P. Thomas, Nottingham, both of United Kingdom, assignors to Gec Alsthom Limited, United Kingdom

Filed Apr. 6, 1995, Ser. No. 417,912

Claims priority, application United Kingdom, Apr. 25, 1994, 9408138

Int. Cl.[6] G04R *31/08*

U.S. Cl. 324—522 **9 Claims**



1. A method for identifying faulted phases on the occurrence of single phase faults simultaneously on both circuits of a double circuit electric power transmission line comprising the steps of: deriving for at least one circuit first and second signals respectively representative of the voltage and current at one end of said line; utilizing said first and second signals together with parameters of the line to derive a third signal representative of the traveling wave arriving at said one end of said line in consequence of the occurrence of said faults; utilizing said third signal to deduce the values of the two components of said third signal respectively attributable to said faults for each of a plurality of assumptions regarding the identity of the faulted phases on the two circuits; and utilizing the deduced values for the different assumptions to determine which assumption is most likely to be valid.

5,608,328

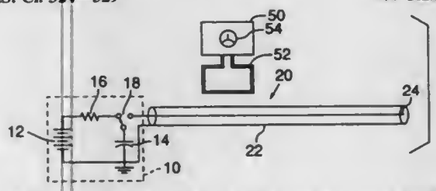
METHOD AND APPARATUS FOR PIN-POINTING FAULTS IN ELECTRIC POWER LINES

John D. Sanderson, Portland, Oreg., assignor to Radar Engineers, Portland, Oreg.

Filed Nov. 18, 1994, Ser. No. 342,173

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—529 **44 Claims**



39. In an apparatus used for locating a fault in a power distribution line by reference to electromagnetic fields emitted therefrom, an improvement comprising discriminator circuitry for discriminating fields due to fault current surges from other fields, and means coupled to said discriminator circuitry for indicating direction to the fault relative to said apparatus.

5,608,329

CIRCUIT TEST DEVICE

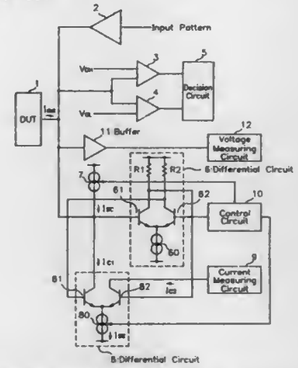
Makoto Imamura, Tokyo, Japan, assignor to Yokogawa Electric Corporation, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,965

Claims priority, application Japan, Mar. 8, 1994, 6-036745

Int. Cl.[6] G01R *31/00;31/26*

U.S. Cl. 324—537 **5 Claims**



1. A circuit test device comprising:

a first differential circuit comprising two input terminals, said first differential circuit receiving a signal from a test object;

a current source for supplying current to said test object;

a second differential circuit comprising two output terminals, said second differential circuit receiving an output signal from said first differential circuit and supplying a current from one of said two output terminals thereof to said test object;

a current measuring circuit for measuring a current flowing through said second differential circuit using the other of said two output terminals of said second differential circuit; and

a control circuit for

controlling said current source, said first differential circuit, and said second differential circuit, and for

providing at an input terminal of said first differential circuit a set voltage for said test object when carrying out a DC test on said test object, and for

setting a current in said current source and said current in said second differential circuit to 0 when carrying out a Function Test on said test object.

5,608,330

METHOD FOR CALIBRATING A NETWORK ANALYZER ACCORDING TO THE SEVEN-TERM PRINCIPLE

Holger Heuermann, Tittmoning, and Burkhard Schiek, Bochum, both of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Munich, Germany

Filed Oct. 4, 1995, Ser. No. 539,087

Claims priority, application Germany, Oct. 5, 1994, 44 35 559.9

Int. Cl.[6] G01R *27/28;35/00*

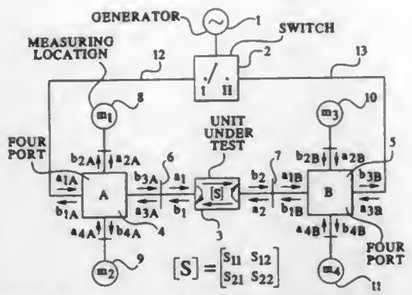
U.S. Cl. 324—601 **10 Claims**

1. A method for calibrating a network analyzer having two test ports and at least four measuring locations, in which measurements of the transmission and reflection parameters at three calibration standards are performed successively, the three calibration standards being successively connected in arbitrary sequence between the two test ports, according to a seven-term principle, comprising the steps of:

providing an electrical line whose characteristic impedance is known and whose electrical propagation constant is unknown and complex;

using in a first calibration measurement said electrical line to provide first measured value;

using in second and third calibration measurements, respectively, at least one two-port connected between the two test



ports, the two-port being formed by concentrated components, to provide second and third measured values, respectively; and

calculating the electrical propagation constant of said electrical line from said first, second and third measured values;

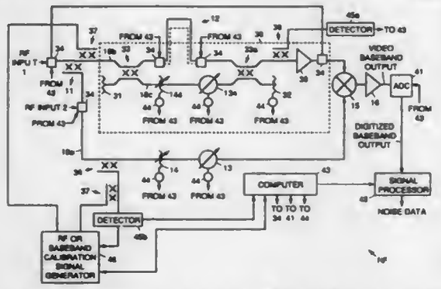
wherein correction values that are taken into consideration in following object measurements are calculated from said first, second and third measured values.

5,608,331

NOISE MEASUREMENT TEST SYSTEM

Irwin L. Newberg, Northridge; Gene A. Wagner, Torrance; Gene Rzyski, Cypress, and Richard A. Stevens, West Hills, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 471,812
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—613 **12 Claims**



1. A noise measurement test system **10'** for making phase noise and amplitude noise measurements of microwave signals derived from an RF source **40**, said system **10'** comprising:

an RF input for receiving an applied RF noise signal from the RF source **40**;

an RF coupler **11** coupled to the RF input for splitting the applied RF noise signal into first, second, and third paths **18***a*, **18***b*, . . . **18***c*;

a mixer **15** that comprises a synchronous phase detector **15** having first and second inputs coupled to receive signals form the first and second paths **18***a*, **18***b*, respectively, and which outputs demodulated phase noise;

and wherein the first path **18***a* comprises a variable attenuator **14** and a variable phase shifter **13** coupled between the coupler **11** and the first input to the mixer **15** for providing a reference signal input to the synchronous detector **15**;

and wherein the second path **18***b* comprises a delay line **12**, a low noise amplifier **35**, wherein an output of the low noise amplifier **35** is coupled to the second input to the mixer **15**, and an adjustable RF carrier nulling circuit **30**, said RF carrier nulling circuit **30** comprising a first carrier nulling hybrid **33** for splitting a portion of the RF input noise signal coupled to the second path **18***b* into the third path **18***c*, coupled between the coupler **11** and the second input of the mixer **15**;

and wherein the third path **18***c* comprises a second variable attenuator **14***a*, a second variable phase shifter **13***a*, and a second carrier nulling hybrid **33***a*; and

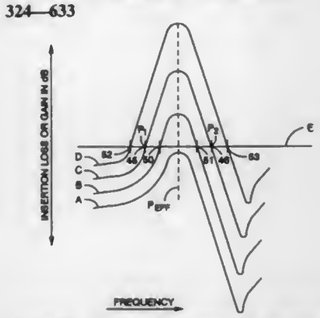
a video amplifier **16** coupled to an output of the mixer **15** for providing a baseband video output signal from the system **10'**.

5,608,332

DYNAMIC GAIN ADJUSTMENT IN ELECTROMAGNETIC WAVE HYDRAULIC CYLINDER PISTON POSITION SENSING

John W. Crayton, Washington; Eric F. Lee, Peoria Heights, both of Ill.; Denny Morgan, San Diego, Calif., and Dennis L. Schumacher, Eureka, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 9, 1995, Ser. No. 437,611
Int. Cl.[6] G01R *27/32;* **F01B** *25/26*
U.S. Cl. 324—633 **19 Claims**



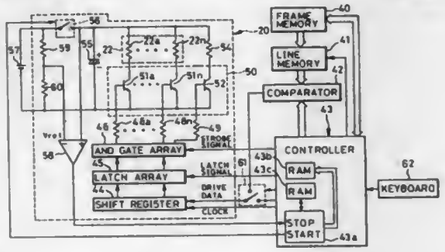
1. In a hydraulic cylinder piston position sensing system of the type wherein resonance frequencies of electromagnetic energy in the hydraulic fluid filled cavity made up of the piston, the cylinder and an enclosed end of the cylinder are correlated with the position of the piston, the improvement comprising: the dynamic adjustment of the equalized gain of the resonance frequency signal processing with piston position change said equalized gain using a selectable stepping attenuator positioned in resonance signal processing circuitry.

5,608,333

METHOD OF DRIVING HEATING ELEMENT TO MATCH ITS RESISTANCE, THERMAL PRINTER, AND RESISTANCE MEASURING DEVICE

Junji Hayashi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1994, Ser. No. 262,333
Claims priority, application Japan, Jun. 18, 1993, 5-147591; Jun. 18, 1993, 5-147592; Jun. 18, 1993, 5-147593; Jun. 18, 1993, 5-147594; Jul. 21, 1993, 5-180161; Jul. 26, 1993, 5-183956; Sep. 3, 1993, 5-220299
Int. Cl.[6] G01R *27/02*
U.S. Cl. 324—711 **23 Claims**



1. A device for measuring resistance values of heating elements of a thermal head, the thermal head having a plurality of heating elements and a drive IC, the drive IC having a plurality of heating control switches for selectively heating the heating elements with an electric energy supplied from a power source, the device comprising:

a standard resistor connected to one of the plurality of heating control switches, said standard resistor having a known resistance value;

a capacitor connected to the power source;

a charge switch for charging said capacitor to a first voltage;

discharge time measuring means for controlling the drive IC to discharge said capacitor via one of the plurality of heating elements or via said standard resistor and for measuring a discharge time required for said capacitor to discharge from the first voltage to a second voltage; and

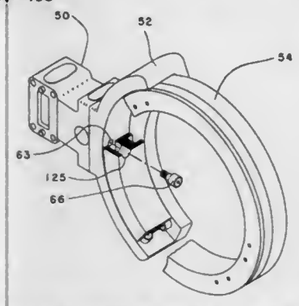
calculation means for calculating the resistance value of said one of the plurality of heating elements in accordance with a measured discharge time via said standard resistor, a measured discharge time via said one of the plurality of heating elements and the known resistor value.

5,608,334

DEVICE TESTING SYSTEM WITH CABLE PIVOT AND METHOD OF INSTALLATION

Alyn R. Holt, Cherry Hill, N.J., assignor to InTest Corporation, Cheery Hill, N.J.

Filed Apr. 20, 1995, Ser. No. 425,921
Int. Cl.[6] G01R *31/02;* **B66F** *9/18*
U.S. Cl. 324—758 **15 Claims**



1. A device testing system, including a test head, for evaluating electronic devices comprising:

a movable positioner;

a cable pivot housing including an inside curved surface and a lip on one side of said housing;

means for attaching said cable pivot housing to said positioner,

a test head adapter ring including a single piece circular member for rotatably positioning said test head adapter ring while abutting said curved surface and said lip of said cable pivot housing, said test head adapter ring including an opening extending between a) an outside surface along the outer circumference of said test head adapter ring and b) an inside surface along the inner circumference of said test head adapter ring;

first attachment means for attaching said test head adapter ring to said cable pivot housing;

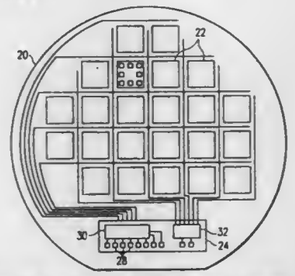
second attachment means for attaching said test head to said test head adapter ring for pivotal movement of said test head.

5,608,335

METHOD FOR THE TESTING OF INTEGRATED CIRCUIT CHIPS AND CORRESPONDING INTEGRATED CIRCUIT DEVICE

François Tailliet, Epinay sur Seine, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Dec. 27, 1993, Ser. No. 173,176
Claims priority, application France, Dec. 31, 1992, 92 15997
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—763 **14 Claims**



1. A method for the testing of integrated circuits on an entire wafer, before the wafer is sliced into individual chips, comprising the steps of:

applying testing tips of a testing apparatus to contact pads located in a test circuit zone which is on said wafer but outside the chips to be tested, said contact pads being connected to control inputs and to test signal inputs of a demultiplexer, also located in the test circuit zone,

said demultiplexer providing groups of outputs which are connected to respective buses going from the demultiplexer to the chips, to enable communication between a group of specified chips and the testing apparatus, as a function of chip selection signals applied by the testing apparatus to the control inputs of the demultiplexer, and

wherein the testing apparatus applies testing signals successively to respective ones of said specified chips, and

wherein certain test sequences are carried out in parallel for multiple ones of said chips simultaneously.

5,608,336

Patent Not Issued For This Number

5,608,337

METHOD AND APPARATUS OF TESTING AN INTEGRATED CIRCUIT DEVICE

Matthew C. Hendricks, Palo Alto, Calif., and Ernest Allen, Hillsboro, Oreg., assignors to Altera Corporation, San Jose, Calif.

Filed Jun. 7, 1995, Ser. No. 481,744
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—765 **33 Claims**

1. A method for testing an integrated circuit chip having a plurality of pins with a tester having a plurality of tester channels in separate testing steps, the method comprising the steps of:

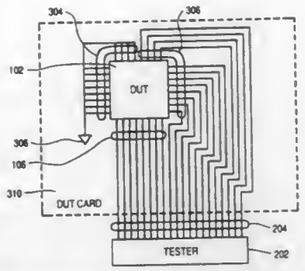
providing a first test card and a second test card;

performing a first test of the integrated circuit chip comprising the steps of:

coupling the plurality of tester channels through said first test card to the integrated circuit chip; and

testing a first portion of the integrated circuit chip;

thereafter, performing a second test of the integrated circuit chip comprising the steps of:



coupling the plurality of tester channels through said second test card to the integrated circuit chip; and

testing a second portion of the integrated circuit chip.

5,608,338

EVALUATING THE LIFETIME AND RELIABILITY OF A TFT IN A STRESS TEST USING GATE VOLTAGE AND TEMPERATURE MEASUREMENTS

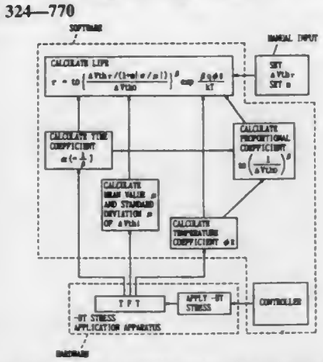
Shigenobu Maeda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,659

Claims priority, application Japan, Apr. 25, 1995, 7-101179

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—770 **8 Claims**



1. In a TFT having a channel layer of a polycrystalline silicon thin film and a gate insulating film of a silicon oxide film manufactured under a prescribed manufacturing condition, a method of evaluating reliability of the TFT in −BT stress state in which the gate is supplied with an arbitrary negative constant voltage V_G and maintained at an arbitrary constant temperature T based on the following expressions:

$$\Delta V_{th} \propto t^{\alpha} \tag{2a}$$

$$\Delta V_{th} \propto \exp \frac{qd|V_G|}{2kTt_{ox}} \tag{3a}$$

$$\Delta V_{th} \propto \exp\left\{ -\frac{q}{kT}\left(\phi_0 - \frac{d|V_G|}{2t_{ox}}\right)\right\} \tag{4a}$$

$$\Delta V_{th} = \Delta V_{th0}\left(\frac{t}{t_0}\right)^{\alpha} \exp\left\{ -\frac{q}{kT}\left(\phi_0 - \frac{d|V_G|}{2t_{ox}}\right)\right\} \tag{5}$$

$$\tau_0 = t_0\left(\frac{\Delta V_{th\tau}}{\Delta V_{th0}}\right)^{\beta} \exp\frac{\beta q\phi_0}{kT} \exp\left(-\frac{\beta qd|V_G|}{2kTt_{ox}}\right) \tag{7}$$

$$\tau = t_0\left\{\frac{\Delta V_{th\tau}/(1-m|\sigma/\mu|)}{\Delta V_{th0}}\right\}^{\beta} \exp\frac{\beta q\phi_0}{kT} \exp\left(-\frac{\beta qd|V_G|}{2kTt_{ox}}\right) \tag{8}$$

where ΔV_{th} represents threshold voltage shift amount of a jumbo TFT including a plurality of TFTs connected parallel to each other and manufactured under said prescribed manufacturing condition, t time, α time coefficient, q elementary electric charge, d voltage coefficient, k Boltzman constant, t_{ox} thickness of the gate oxide film, ϕ_0 temperature coefficient, $\Delta V_{th\tau}$ tolerant threshold voltage shift amount for the TFT, μ and σ mean value and standard deviation, respectively, of threshold voltage shift amounts of the plurality of TFTs manufactured under said prescribed manufacturing condition, m a constant, and $\beta=1/\alpha$, the method comprising the steps of:

determining time coefficient α in expression (2a) based on a relation between threshold voltage shift amount ΔV_{th} obtained from at least one −BT stress test and time t;

determining voltage coefficient d in expression (3a) based on a relation between gate voltage V_G and the threshold voltage shift amount ΔV_{th} obtained from at least two −BT stress tests using different gate voltages V_G;

determining temperature coefficient ϕ_0 in equation (4a) based on a relation between temperature T and the threshold voltage shift amount ΔV_{th} obtained from at least two −BT stress tests at different temperatures T;

determining proportional constant

$$\Delta V_{th0}\left(\frac{t}{t_0}\right)^{\alpha} \equiv C_2$$

in expression (5) obtained from a relation between expressions (2a), (3a) and (4a), by using determined time coefficient α, voltage coefficient d and temperature coefficient ϕ_0; and

calculating life τ of a single TFT manufactured under said prescribed manufacturing condition, by using expression (8) which is obtained by substituting $\Delta V_{th\tau}/(1+m|\sigma/\mu|)$ for $\Delta V_{th\tau}$ in expression (7) for calculating life τ_0 of the jumbo TFT, which expression is obtained by converting expression (5) based on the determined proportional constant c_2 and the tolerant threshold voltage shift amount $\Delta V_{th\tau}$ of the jumbo TFT.

5,608,339

DEVICE FOR DRIVING A LED DISPLAY

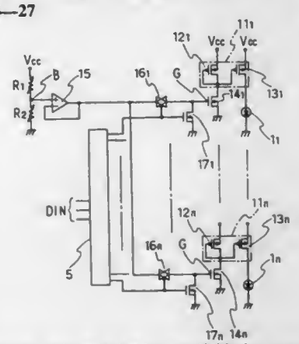
Masayuu Fujiwara, Kyoto, Japan, assignor to Rohm, Co. Ltd., Kyoto, Japan

Filed Aug. 28, 1995, Ser. No. 519,700

Claims priority, application Japan, Aug. 30, 1994, 6-205546

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—27 **6 Claims**



1. A device for driving a load controllable by current comprising:

(a) a power source terminal;

(b) a switching circuit for switching flow of current and nonflow by an input signal; and

(c) a current mirror circuit connected between an output terminal of said switching circuit and said power source terminal,

wherein said current mirror circuit comprises a first current path and a second current path, said first current path, the current of which is smaller than that of said second current path, being connected between said power source terminal and said output terminal, and said second current path being connectable between said power source terminal and said load;

wherein at least two resistors for dividing voltage are provided between said power source terminal and ground for obtaining a divided voltage, said divided voltage being employed as a controlling voltage for said switching circuit.

5,608,340

FOUR-TERMINAL SEMICONDUCTOR DEVICE

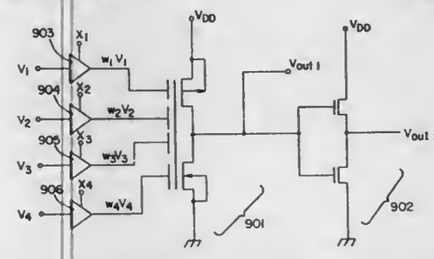
Tadashi Shibata, and Tadahiro Ohmi, both of Sendai, Japan, assignors to Tadashi Shibata, Sendai, Japan

Continuation of Ser. No. 777,352, Jan. 6, 1992, Pat. No. 5,258,657. This application May 11, 1993, Ser. No. 60,362

Claims priority, application Japan, Jun. 2, 1989, 2-141463

Int. Cl.[6] H03K *19/23;19/094*

U.S. Cl. 326—36 **12 Claims**



1. An integrated circuit having at least a first semiconductor device and a second semiconductor device,

said first semiconductor device comprising at least four electrodes, wherein the current flowing in a P-type semiconductor region through a first electrode and a second electrode is controlled by a third electrode and the way of controlling the current is controlled by a fourth electrode in such a manner that a positive increment in the voltage given to said third or said fourth electrode results in an increase in said current flowing in said P-type semiconductor region through said first and said second electrodes,

said second semiconductor device comprising at least four electrodes wherein the current flowing in an N-type semiconductor region through a first electrode and a second electrode is controlled by a third electrode and the way of controlling the current is controlled by the fourth electrode in such a manner that a positive increment in the voltage given to said third or said fourth electrode results in a decrease in said current flowing in said N-type semiconductor region through said first and said second electrodes of said second semiconductor device,

said first electrode of said first semiconductor device being connected to said first electrode of said second semiconductor device.

5,608,341

ELECTRICAL CIRCUIT FOR SETTING INTERNAL CHIP FUNCTIONS WITHOUT DEDICATED CONFIGURATION PINS

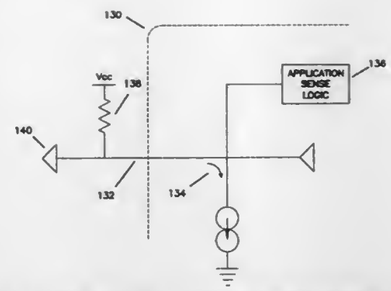
Ralph E. Andersson, Grass Valley, Calif., assignor to Level One Communications, Inc., Sacramento, Calif.

Filed May 9, 1995, Ser. No. 437,621

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—38 **20 Claims**

1. A device for selectively controlling internal functions of an integrated circuit comprising means for sensing an application indication by means of a potential detected at a pin, and circuit means for internally adjusting the potential of the pin in response to the detected potential, the sensing means being operative following a reset to provide a control signal for determining an application associated with the application indication selected by a user.



5,608,342

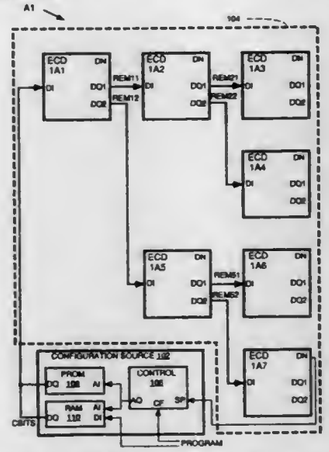
HIERARCHICAL PROGRAMMING OF ELECTRICALLY CONFIGURABLE INTEGRATED CIRCUITS

Stephen M. Trimberger, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Oct. 23, 1995, Ser. No. 546,756

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—38 **10 Claims**



1. An electrically configurable system comprising:

a source of configuration data including at least first, second and third sets of configuration values and a first allocation count corresponding to said second set of configuration values;

a first electrically configurable integrated circuit, said first electrically configurable integrated circuit being coupled to said data source so that said first set of configuration values is stored within said first electrically configurable integrated circuit, said first electrically configurable integrated circuit having first and second outputs;

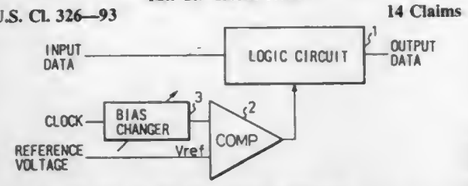
a second electrically configurable integrated circuit, said second electrically configurable circuit being coupled to said first output of said first electrically configurable integrated circuit so that at least a portion of said second set of configuration values is stored in said second electrically configurable integrated circuit; and

a third electrically configurable integrated circuit coupled to said second output of said first electrically configurable integrated circuit so that at least a portion of said third set of configuration values is stored in said third electrically configurable integrated circuit.

5,608,343
CIRCUIT FOR VARYING READ TIMING

Hisayuki Ojima, Kawasaki, and Hiroshi Kuwahara, Oyama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 27, 1995, Ser. No. 429,820
Claims priority, application Japan, Jul. 18, 1994, 6-165318
Int. Cl.[6] H03K *17/28*
U.S. Cl. 326—93 **14 Claims**

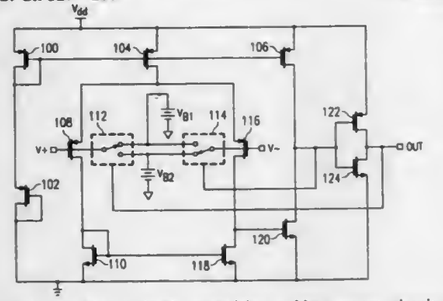


1. A circuit for varying read timing, comprising:
a comparator for comparing an external clock signal with a reference voltage that provides a logic decision level, and generating an internal clock signal;
a logic circuit for fetching input data in synchronization with the internal clock signal; and
a bias changer connected to the comparator, for varying DC bias potential applied to the external clock signal to the comparator, to change the phase of the internal clock signal.

5,608,344
COMPARATOR CIRCUIT WITH HYSTERESIS

C. Allen Marlow, Ann Arbor, Mich., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 19, 1995, Ser. No. 545,382
Int. Cl.[6] H03K *3/037;3/01*
U.S. Cl. 327—206 **17 Claims**



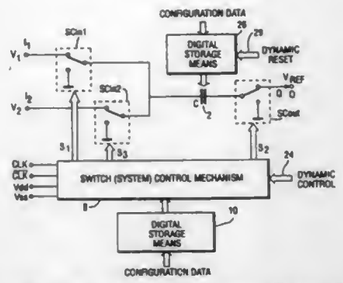
1. A comparator circuit comprising a bias current circuit, a differential input stage, and an output stage wherein the differential input stage comprises:
a transistor having a current path coupled to the bias current circuit, a gate for receiving an input voltage, and having a body; and
an analog switch having a control element coupled to the output stage and having a pole coupled to the body of the transistor.

5,608,345
PROGRAMMABLE SWITCHED CAPACITOR CIRCUIT

Ian C. Macbeth, and Douglas M. Pattullo, both of Holmes Chapel, United Kingdom, assignors to Pilkington Micro-Electronics Limited, United Kingdom

Filed Feb. 10, 1994, Ser. No. 194,528
Claims priority, application United Kingdom, Feb. 12, 1993, 9302881
Int. Cl.[6] H03H *11/12*
U.S. Cl. 327—337 **32 Claims**

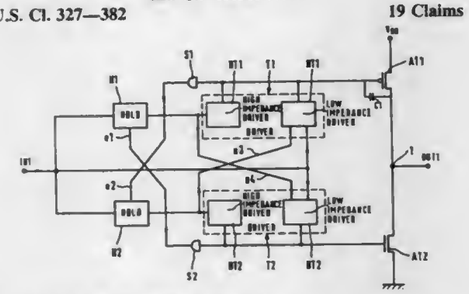
1. A switched capacitor circuit comprising a capacitor connected in circuitry which includes first and second switch circuits on opposite sides of said capacitor and control circuitry operatively connected to at least one of said first and second switch circuits, said control circuitry being operable to provide one of a plurality of alternative control signals for controlling operation of said at least one switch circuit, one of said alternative control signals being a periodically varying signal to alternate the state of the switch circuit between two alternative states and another of said alternative control signals causing the switch circuit to be held in a fixed state, and selection circuitry to select one of said alternative control signals, said selection circuitry being programmable so that the selection between the alternative control signals can be determined by a user.



5,608,346
MOS DRIVER CIRCUIT FOR SUPPRESSING INTERFERENCE BY PREVENTING SHUNT CURRENTS

Burkhard Giebel, Denzlingen, Germany, assignor to Deutsche ITT Industries GmbH, Freiberg, Germany

Filed Jun. 16, 1995, Ser. No. 491,500
Claims priority, application Germany, Jun. 18, 1994, 44 21 419.7
Int. Cl.[6] H03K *17/16*
U.S. Cl. 327—382 **19 Claims**



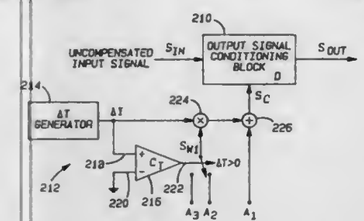
1. A MOS driver circuit comprising:
a first output transistor of a first conductivity type, having a first electrode, a second electrode and a control electrode, said first electrode coupled to a first supply potential;
a second output transistor of a second conductivity type, having a first electrode, a second electrode and a control electrode, said second electrode coupled to a second supply potential;
an output line coupled to said second electrode of said first output transistor and said first electrode of said second output transistor;
input means for receiving an input data signal;
first driving means, for driving said first output transistor into one of a conducting state and a nonconducting state, providing a first enable signal, said first driving means being coupled to said input data signal, said first driving means including a first low-impedance driver element and a first high-impedance driver element, said first high-impedance driver element operable to drive said first output transistor into one of said conducting state and said nonconducting state, and said first low-impedance driver element operable to hold said first output transistor in said nonconducting state to permit said second output transistor to be driven into said conducting state;

second driving means, for driving said second output transistor into one of a conducting state and a nonconducting state, providing a second enable signal, said second driving means being coupled to said input data signal, said second driving means including a second low-impedance driver element and a second high-impedance driver element, said second high-impedance driver element operable to drive said second output transistor into one of said conducting state and said nonconducting, state, and said second low-impedance driver element operable to hold said second output transistor in said nonconducting state to permit said first transistor to be driven into said conducting state;
first hold means for sending said input data signal to said first driving means in response to said second enable signal;
second hold means for sending said input data signal to said second driving means in response to said first enable signal;
wherein said first output transistor and said second output transistor are complementarily driven into said conducting state and said nonconducting state.

5,608,347
APPARATUS AND METHOD FOR DUAL SLOPE CALIBRATION OF A DIGITALLY CALIBRATED TRANSDUCER AMPLIFIER OVER TEMPERATURE

Mark B. Kearney, Kokomo, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Continuation-in-part of Ser. No. 422,341, Apr. 14, 1995. This application Aug. 17, 1995, Ser. No. 516,246
Int. Cl.[6] H01L *35/00*
U.S. Cl. 327—512 **21 Claims**



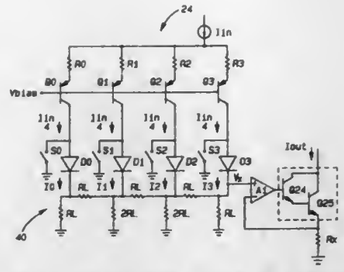
1. A temperature dependent signal compensation circuit for generating a dual sloped compensation signal being responsive to changes in operating temperature of said signal compensation circuit, comprising:
a temperature dependent voltage generator subcircuit for generating an output voltage being substantially proportional to the changes in said operating temperature of said signal compensation circuit from a first operating temperature; and
switching means, coupled to said voltage generator subcircuit, for selectively switching between and coupling a first slope calibration signal and a second slope calibration signal to said output voltage of said voltage generator subcircuit in response to the changes in the operating temperature, whereby said dual sloped compensation signal is generated through the coupling of said first and said second sloped calibration signals with said output voltage.

5,608,348
BINARY PROGRAMMABLE CURRENT MIRROR

Mark B. Kearney, and Douglas B. Osborn, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Continuation of Ser. No. 421,761, Apr. 14, 1995, abandoned. This application May 22, 1996, Ser. No. 651,440
Int. Cl.[6] G05F *3/02*
U.S. Cl. 327—538 **14 Claims**

1. A programmable current mirror circuit comprising:

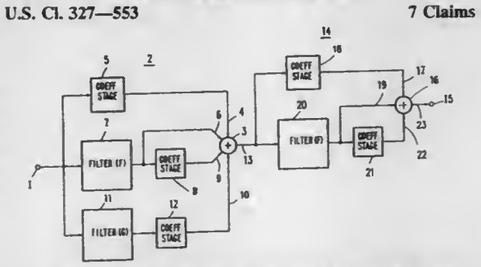


an input terminal configured for receiving an analog input current;
an input current divider circuit configured to receive the input current and divide the input current into a plurality of fractional source currents each being substantially identical;
a binary weighting circuit configured to receive one or more of the fractional source currents and provide an associated weighted voltage;
a plurality of switches each configured to ground out one of the fractional source currents when enabled so as to prevent current flow to said binary weighting circuit from said respective fractional source current;
a plurality of forward current flow circuit means each configured to prevent reverse current flow from said binary weighting circuit to said switches and coupling the fractional source currents to said binary weighting circuit for imparting a binary weighting thereto; and
voltage to current converting means configured to receive the binary weighting voltage, said converting circuit means converting said binary weighted voltage to a weighted output current proportional to the binary weighted voltage.

5,608,349
CIRCUIT ARRANGEMENT WITH ADJUSTABLE AMPLITUDE-FREQUENCY RESPONSE

Burkhard Dick, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 11, 1995, Ser. No. 420,264
Claims priority, application United Kingdom, Apr. 21, 1994, 4413928
Int. Cl.[6] H03K *5/00;* **H03B** *1/00*
U.S. Cl. 327—553 **7 Claims**



1. A circuit arrangement with an adjustable amplitude-frequency response between an input coupled to receive an input signal and an output for taking off an output signal without a change of phase/frequency response, said circuit arrangement comprising:
at least first and second filters and an adjustable coefficient section coupled between said input and said output of the circuit arrangement, said first and second filters having first and second filter transfer functions F and G, respectively, and characterized by a transfer function A between the input signal and the output signal with a component complying with

$$A=(C+(1-C)\cdot F-2\cdot C\cdot G)\cdot(C+(1-C)\cdot F).$$

where F represents the first filter transfer function having one of a second-order high-pass characteristic

$$F=FH=b\cdot s^2/(1+a\cdot s+b\cdot s^2)$$

and a second-order low-pass characteristic

$$F=FN=1/(1+a\cdot s+b\cdot s^2),$$

and G represents the second filter transfer function having a second-order band-pass characteristic

$$G=a\cdot s/(1+a\cdot s+b\cdot s^2)$$

and where a, b are constant real factors,

C is a real factor of said adjustable coefficient section whose magnitude is selectable between 0 and 1 inclusive, and

s is the product of the imaginary unit and the angular frequency (ω).

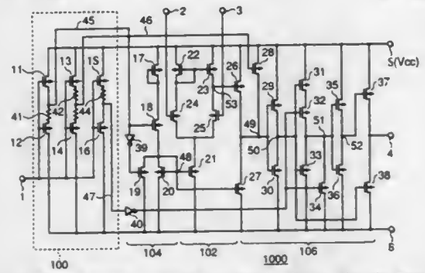
5,608,350

OPERATIONAL AMPLIFIER WITH CONTROL SEQUENCE CIRCUIT

Masahiro Ebukuro, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 19, 1995, Ser. No. 574,728
Claims priority, application Japan, Dec. 21, 1994, 6-318398
Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—51 **6 Claims**



1. An operational amplifier wherein input signals applied between inversion and non-inversion input terminals are differentially amplified and an output signal is outputted at an output terminal when a control signal applied to a control signal input terminal is at a first logical level and said output terminal is made to be in a high impedance state when said control signal is at a second logical level, said operational amplifier comprising:

a first and a second power source terminal;

a differential amplifier circuit having said inversion and non-inversion input terminals, for differentially amplifying said input signals and producing an internal differential signal;

a bias circuit for supplying a current to said differential amplifier;

an output circuit for procuring therein a first and a second internal output signal based on said internal differential signal produced by said differential amplifier circuit, said output circuit including a first output MOS transistor of a first conductivity type having a gate receiving said first internal output signal, a source connected to said first power source terminal and a drain connected to said output terminal, and a second output MOS transistor of a second conductivity type having a gate receiving said second internal output signal, a drain connected to said output terminal and a source connected to said second power source terminal; and

a sequence control circuit including a first and a second inverting means for respectively producing, based on said control signal inputted to said control signal input terminal, a first internal control signal for on/off controlling said first output MOS transistor and a second internal control signal for on/off controlling said second output MOS transistor, said second internal control signal being inverted after said first internal control signal is inverted when said control signal changes from said first logical level to said second logical level, and said first internal control signal being inverted after said second control signal is inverted when said control signal changes from said second logical level to said first logical level.

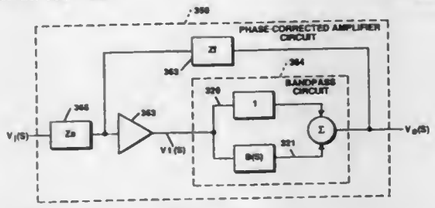
5,608,351

ELECTRONICS FOR CORIOLIS FORCE AND OTHER SENSORS

Paul Ward, Waltham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 219,023, Mar. 28, 1994, Pat. No. 5,481,914. This application May 24, 1995, Ser. No. 449,724
Int. Cl.[6] H03F *1/34*

U.S. Cl. 330—107 **7 Claims**



1. An amplifier circuit comprising:

a bandpass circuit having an input and an output and a transfer function approximating one plus a bandpass characteristic, wherein said output of said bandpass circuit provides an output terminal of said amplifier circuit;

a first operational amplifier having an input coupled to an input terminal of said amplifier circuit and an output coupled to said input of said bandpass circuit; and

a global feedback network coupled around said first operational amplifier and said output terminal.

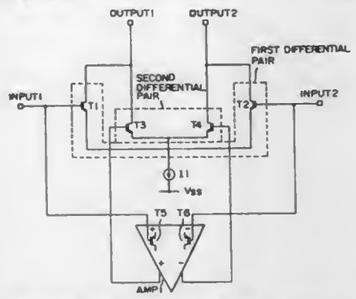
5,608,352

DIFFERENTIAL INPUT CIRCUIT CAPABLE OF BROADENING OPERATION RANGE OF INPUT COMMON MODE POTENTIAL

Tetsuro Itakura, Tokyo-to, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1994, Ser. No. 362,268
Claims priority, application Japan, Dec. 22, 1993, 5-325233
Int. Cl.[6] H03F *3/45;3/68*

U.S. Cl. 330—253 **19 Claims**



1. A differential input circuit, comprising

a first differential pair including first and second transistors having the same conductivity type and formed of a semiconductor of one of a first conductivity type in which a conduction electron density is larger than a hole density and a second conductivity type in which the hole density is larger than the conduction electron density, for receiving a differential input signal, and for transmitting a differential output signal;

a second differential pair including third and fourth transistors constructed from a semiconductor of the same conductivity type as said first and second transistors constituting said first differential pair, and which is commonly connected to an output of said first differential pair;

input means for supplying a differential signal to said first differential pair;

output means for adding differential signals respectively supplied from said first and second differential pairs so as to output an added differential signal; and

a differential amplifier circuit at least comprising a third differential pair including fifth and sixth transistors which are formed by a semiconductor of the second conductivity type different from said first conductivity type forming said first through fourth transistors constituting said first and second differential pair and having a common bias current source; for inputting said differential input signal commonly with the first differential pair; and for generating a differential amplified signal which is supplied to said second differential pair; so that a potential of an output operating point is set to operate said third and fourth transistors of said second differential pair;

wherein, when a common mode input range of said differential input signal is outside a circuit operating range of said differential amplifier circuit, an output potential of said differential amplifier circuit causes said second differential pair to stop operating.

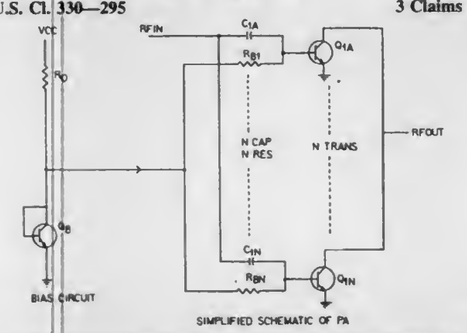
5,608,353

HBT POWER AMPLIFIER

William J. Pratt, Greensboro, N.C., assignor to RF Micro Devices, Inc., Greensboro, N.C.

Filed Mar. 29, 1995, Ser. No. 412,667
Int. Cl.[6] H03F *3/68*

U.S. Cl. 330—295 **3 Claims**



1. An improved heterojunction bipolar transistor power amplifier circuit comprising: a first heterojunction bipolar transistor (HBT) having a base emitter voltage; a power supply; a power supply resistor connected to the power supply causing DC current to flow through the first HBT which develops a resultant voltage equal to the base emitter voltage of the first HBT; at least two manifold base resistors; at least two output HBTs, each of which receive the resultant voltage through its corresponding manifold base resistor; a RF signal input; at least two capacitors formed from a segmented capacitor, each coupled in parallel to receive the RF signal input and to the input of each corresponding output HBT; the capacitors having a common input connected to the RF signal input and having individual outputs that are DC isolated from each other and which are connected to each output HBT; a RF output signal obtained from the parallel connection of the output HBTs; and provided that each HBT is connected to ground.

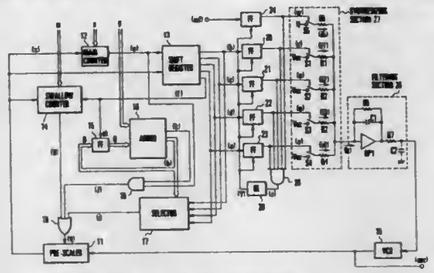
5,608,354

PHASE-LOCKED LOOP CIRCUIT OBTAINING THE PHASE DIFFERENCE BETWEEN TIME SERIES PULSE STRINGS AND A REFERENCE FREQUENCY

Hidetoshi Hori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 20, 1995, Ser. No. 530,838
Claims priority, application Japan, Sep. 26, 1994, 6-229132
Int. Cl.[6] H03L *7/085*

U.S. Cl. 331—1 A **13 Claims**



1. A phase-locked loop circuit comprising:

voltage-controlled oscillation means whose oscillation frequency is controlled on the basis of phase different information;

first frequency division means for frequency-dividing an oscillation frequency output from said voltage-controlled oscillation means by one of frequency division ratios of 1/j (j is a positive integer) and 1/(j+1) which is selected in accordance with an external control signal;

second frequency division means for frequency-dividing a frequency division output from said first frequency dividing means by a frequency division ratio of n (n is a positive integer);

pulse string generating means for generating α (α is an integer equal to or larger than two) time series pulse strings which are synchronized with the output from said first frequency division means and have phases sequentially delayed by one period on the basis of a frequency division output from said second frequency division means; and

phase comparison means for detecting phase differences between the α time series pulse strings from said pulse string generating means and a predetermined reference frequency signal, adding/synthesizing the detected phase differences., and outputting the resultant information as phase difference information to said voltage-controlled oscillation means.

5,608,355

AUTOMATIC ADJUSTMENT CIRCUIT FOR AN OSCILLATOR

Yasunori Noguchi, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 26, 1996, Ser. No. 638,507
Claims priority, application Japan, Apr. 28, 1995, 7-105958
Int. Cl.[6] H03L *7/00*

U.S. Cl. 331—1 A **6 Claims**

1. An automatic adjustment circuit for an oscillator, comprising:

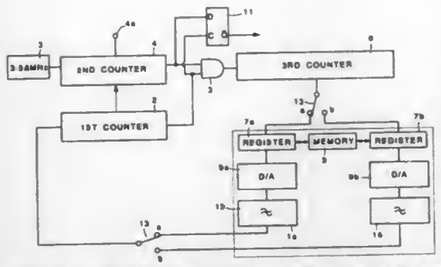
a register;

a D/A converter for converting an output from said register into an analog signal;

an oscillator whose oscillation frequency is controlled by an output from said D/A converter;

a first counter for counting the oscillation frequency of said oscillator, which resets itself and generates a pulse when a count result reaches a predetermined value;

a second counter for counting a reference frequency pulse having a frequency higher than the oscillation frequency of said oscillator, which changes an output voltage level when count-



ing of a given preset value is completed, and which is preset by said first counter when the first counter resets itself;

an AND circuit for performing an AND operation between outputs from said first and second counters; and

a third counter for counting an output from said AND circuit and for providing a count output to the register.

5,608,356

THERMOMETER FOR REMOTE TEMPERATURE MEASUREMENTS

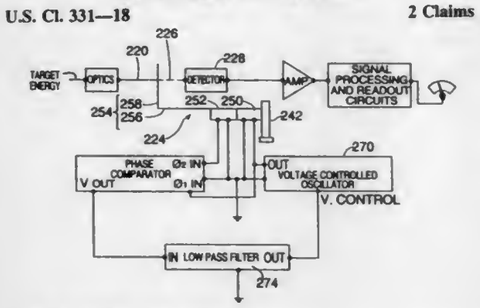
Robert E. Rupert, South Dennis; Norman C. Anderson, Chatham, and Morris Weiss, N. Harwich, all of Mass., assignors to Infratemp, Inc., South Dennis, Mass.

Division of Ser. No. 345,083, Nov. 28, 1994, which is a division of Ser. No. 149,864, Nov. 10, 1993, Pat. No. 5,391,001.

This application Jun. 5, 1995, Ser. No. 461,926

Int. Cl.[6] H03B *5/32*; **H03L** *7/06*

U.S. Cl. 331—18 **2 Claims**



1. A resonant circuit, comprising:

a modulator having a resonant frequency and comprising a primary piezoelectric element adapted to vibrate when subjected to driving signals at a frequency related to the resonant frequency of said modulator, and a secondary piezoelectric element mechanically connected to said primary piezoelectric element, said secondary piezoelectric element being electrically insulated from said primary piezoelectric element and providing reference signals indicative of the phase and frequency of said modulator; and

a phase locked loop oscillator circuit coupled to said primary and secondary piezoelectric elements to operate said modulator at its resonant frequency,

said circuit including a voltage controlled oscillator providing the driving signals to said primary piezoelectric element, a phase comparator receiving signals from said oscillator and reference signals from said secondary piezoelectric element, said phase comparator also providing an input to said oscillator that is a function of the signals from said oscillator and the reference signals from said secondary piezoelectric element.

5,608,357

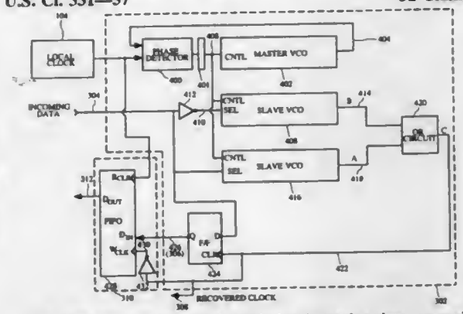
HIGH SPEED PHASE ALIGNER WITH JITTER REMOVAL

Paul Ta, and Michael Cheng, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 12, 1995, Ser. No. 526,956

Int. Cl.[6] H03B *5/24*; **H03L** *7/099*; **H04L** *7/00;25/36*

U.S. Cl. 331—57 **32 Claims**



1. A data retiming system for retiming incoming data, comprising:

a local clock;

a phase aligner for receiving the incoming data and producing a recovered clock from the incoming data, and then producing retimed incoming data by retiming the incoming data with the recovered clock; and

a buffer memory, operatively connected to said local clock and said phase aligner, for removing jitter from the retimed incoming data by storing the retimed incoming data in accordance with the recovered clock and reading the stored data in accordance with the local clock.

29. A freezeable voltage-controlled oscillator for producing a clock signal in accordance with a freeze signal and a frequency control signal, comprising:

a plurality of inverters serially coupled to each other, each of said inverters being associated with a stage;

a pair of current sources for each of said inverters, each of said current sources being controlled by the frequency control signal; and

a first current steering circuit for steering current around the inverter associated with the last stage,

wherein the output of the inverter associated with the last stage is frozen at a first potential when said first current steering circuit is activated by the freeze signal.

5,608,358

NON-LINEAR ELECTROCHEMICAL OSCILLATOR AND SENSOR USING THE SAME

Masahiro Iseki, and Yukihiro Sugiyama, both of Tsukuba, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 27, 1995, Ser. No. 534,568

Claims priority, application Japan, Sep. 30, 1994, 6-235817; Jul. 14, 1995, 7-178423

Int. Cl.[6] H03B *28/00*; **G01N** *27/26;27/333;27/40*

U.S. Cl. 331—65 **12 Claims**

1. A non-linear oscillator comprising:

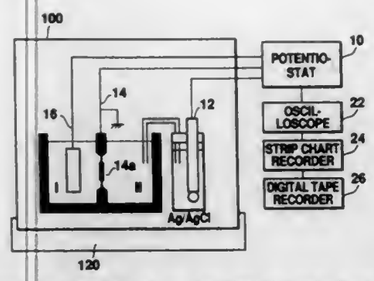
a working electrode provided with a conducting polymer film separating an electrolyte and capable of being electrochemically oxidized and reduced;

a counter electrode provided for and electrically connected with one of the separated portions of the electrolyte;

a reference electrode provided for and electrically connected with the other separated portion of the electrolyte;

voltage control means for holding a constant potential difference between the reference electrode and the working electrode; and

output means for outputting a current flowing between the counter electrode and the working electrode,



wherein the potential on the working electrode is set to an intermediate value between the oxidizing and reducing potentials of the conducting polymer.

5,608,359

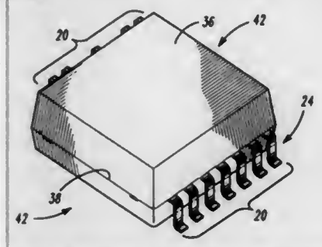
FUNCTION-DIFFERENTIATED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR AND METHOD OF PRODUCING THE SAME

Thomas A. Knecht, Algonquin, and Tandy M. Watkins, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 10, 1995, Ser. No. 540,427

Int. Cl.[6] H01L *23/495*; **H03B** *5/36*; **H05K** *5/02;7/18*

U.S. Cl. 331—68 **5 Claims**



1. A function-differentiated temperature compensated crystal oscillator, comprising:

an integrated circuit, at least one capacitor, a piezoelectric element, a leadframe and a package body having a periphery including a first and a second set of opposing sides;

the leadframe having a first and a second plurality of conductive leads each having inner and outer portions, the conductive leads configured for connection to a user substrate;

the integrated circuit, the at least one capacitor and the piezoelectric element being attached to the leadframe and electrically coupled to the first and second pluralities of conductive leads, whereby at least one different oscillator function is available on the first plurality of conductive leads than is available on the second plurality of conductive leads;

the package body encapsulating the integrated circuit, the at least one capacitor, the piezoelectric element and the inner portions of the first and second pluralities of conductive leads, at least one of the outer portions of the first plurality of conductive leads extending outwardly from the first set of opposing sides and the outer portions of the second plurality of conductive leads extending outwardly from the second set of opposing sides; and

at least one of (i) the first plurality of conductive leads being excised to terminate substantially flush with the first set of opposing sides of the periphery of the package body leaving only the second plurality of conductive leads providing contacts for ground, power, a stable frequency output and output frequency adjust exposed on the second set of opposing sides, whereby external access to the internal functions of the temperature compensated crystal oscillator through the first plurality of conductive leads is substantially minimized, and (ii) the second plurality of conductive leads being excised to terminate substantially flush with the second set of opposing sides of the periphery of the package body leaving only the first plurality of conductive leads providing contacts for ground, power, a stable frequency output and output frequency adjust exposed on the first set of opposing sides, to provide user access to at least one integrated circuit function through the first plurality of leads.

5,608,360

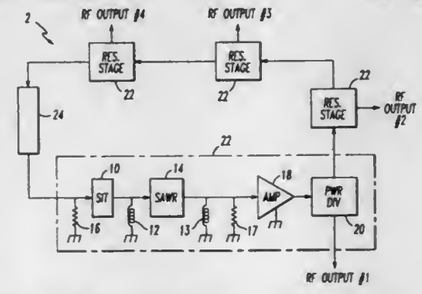
OSCILLATOR FORMED OF HIGH FREQUENCY RESONATORS AND METHOD OF GENERATING HIGH FREQUENCY OSCILLATOR SIGNAL HAVING REDUCED VIBRATION SENSITIVITY AND PHASE NOISE AND IMPROVED LOOP GROUP DELAY

Michael M. Driscoll, Ellicott City, Md., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 3, 1995, Ser. No. 552,897

Int. Cl.[6] H03B *5/00;5/30*

U.S. Cl. 331—107 A **20 Claims**



1. An oscillator, comprising:

at least two high frequency resonator stages connected in series and forming a closed loop signal path; and

each of said high frequency resonator stages including,

at least one high frequency resonator, and

an amplifier connected to an output of said high frequency resonator.

5,608,361

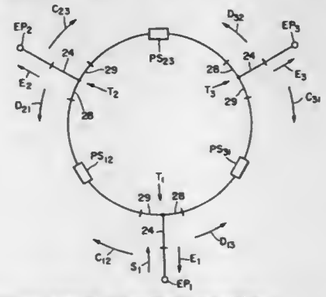
ADVANCED RING-NETWORK CIRCULATOR

Jerald A. Weiss, Wayland, and Gerald F. Dionne, Winchester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 15, 1995, Ser. No. 441,428

Int. Cl.[6] H01P *1/387*

U.S. Cl. 333—1.1 **51 Claims**



1. An electromagnetic circulator comprising:

a plurality of junctions; each junction having an external port for transmitting and receiving electromagnetic signals;

predetermined inductive reactance means and capacitive susceptance means formed in each junction to cause each individual junction to partially reflect incident signals in a predetermined frequency-dependent manner;

a like plurality of non-reciprocal phase shifters electrically interconnecting the junctions; and

average phase shift means and differential phase shift means formed in each phase shifter providing each phase shifter with a frequency-dependent average phase shift and differential phase shift respectively which are correlated with the frequency-dependent characteristics of the reactance and susceptance of the junctions over a band of frequencies such that the interconnected junctions and phase shifters form a circulator which produces circulation of signals of frequencies within the band incident on an external port, the reflected signals at the junctions substantially reinforcing each other at an adjacent external transmitting port and substantially cancelling each other in the remainder of the junctions.

5,608,362

PIEZOELECTRIC FILTER USING $LiTaO_3$ SUBSTRATE

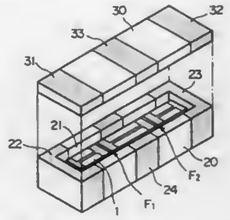
Toshio Nishimura; Jiro Inoue, and Hiroaki Kaida, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 14, 1994, Ser. No. 227,631

Claims priority, application Japan, Apr. 15, 1993, 5-113799; Apr. 15, 1993, 5-113800

Int. Cl.[6] H03H *9/00;9/58*

U.S. Cl. 333—191 **8 Claims**



1. A piezoelectric filter comprising:

a piezoelectric substrate comprising an X-cut of a $LiTaO_3$ single crystal and having a front major surface and rear major surface;

a pair of spaced electrodes located adjacently on said front major surface of said substrate;

a counter electrode located on said rear major surface of said substrate in opposition to said spaced electrodes; wherein

said spaced electrodes and said counter electrode cooperate with a portion of said substrate located therebetween to form an energy trapped type multi-mode filter element vibrating in the thickness shear mode, and

said X-cut of said $LiTaO_3$ single crystal is cut at an angle of −57°±0.5° from the Y-axis.

5,608,363

FOLDED SINGLE MODE DIELECTRIC RESONATOR FILTER WITH CROSS COUPLINGS BETWEEN NON-SEQUENTIAL ADJACENT RESONATORS AND CROSS DIAGONAL COUPLINGS BETWEEN NON-SEQUENTIAL CONTIGUOUS RESONATORS

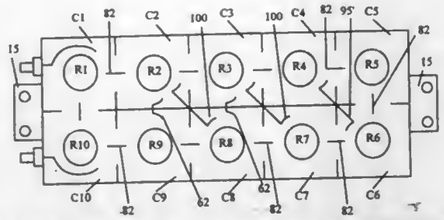
Richard J. Cameron, Bucks, United Kingdom; Wai-Cheung Tang, Mannheim, and Van Dokas, Cambridge, both of Canada, assignors to COM DEV Ltd., Cambridge, Canada

Filed Apr. 1, 1994, Ser. No. 221,947

Int. Cl.[6] H01P *1/201*

U.S. Cl. 333—202 **12 Claims**

1. A single mode microwave filter comprising:



a unitary multi-cavity housing comprised of a plurality of walls defining a plurality of cavities, that are sequentially oriented in first and second side-by-side rows, each row having a plurality of cavities;

a plurality of cylindrically shaped dielectric resonators, a respective dielectric resonator disposed in each of said cavities, the walls between adjacent sequential cavities being provided with coupling means for coupling adjacent sequential resonators;

an input device disposed adjacent to and connected to a first cavity in said first row;

an output device disposed adjacent to and connected to a cavity in said second row;

a first probe disposed in the wall between two adjacent non-sequential cavities, one cavity of said two adjacent non-sequential cavities being in said first row and the other cavity of said two adjacent non-sequential cavities being in said second row thus cross coupling said two adjacent cavities, said first probe having opposite first probe ends, said first probe ends extending into respectively said two adjacent non-sequential cavities to couple radiant energy therebetween;

a second probe disposed in said walls, said second probe having second probe ends that extend into respectively two contiguous non-adjacent non-sequential cavities to couple radiant energy therebetween.

5,608,364

LAYERED STRIPLINE FILTER INCLUDING INDUCTIVE COUPLING ADJUSTMENT STRIP

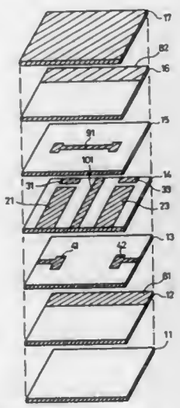
Takami Hirai, Nishikamo-gun, and Masahiko Watanabe, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, and Soshin Electric Co., Ltd., Tokyo, both of Japan

Filed Oct. 31, 1994, Ser. No. 332,390

Claims priority, application Japan, Nov. 2, 1993, 5-274633

Int. Cl.[6] H01P *1/20*

U.S. Cl. 333—204 **2 Claims**



1. A layered stripline filter comprising:

a first ground electrode;

a second ground electrode;

a dielectric layer disposed between said first ground electrode and said second ground electrode;

a first resonant element short-circuited at one side and disposed in said dielectric layer;

a second resonant element short-circuited at one side and disposed adjacent to said first resonant element in said dielectric layer;

a first electrode disposed in said dielectric layer in direct confronting relationship to a portion of said first resonant element and in direct confronting relationship to a portion of said second resonant element; and

a second electrode disposed in said dielectric layer between said first resonant element and said second resonant element, said second electrode being separated from said first electrode with a portion of said dielectric layer interposed between said first electrode and said second electrode, and said second electrode having opposite ends short-circuited to ground.

5,608,365

MULTI-POLE LOW-VOLTAGE POWER SWITCH WITH A SWITCHING SHAFT

Ulrich Marquardt, and Ludvik Godesa, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

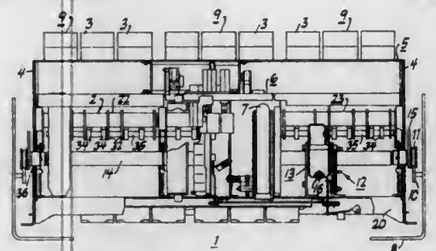
PCT No. PCT/DE93/00241, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/20576, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 12, 1993, Ser. No. 307,857

Claims priority, application Germany, Apr. 1, 1992, 42 11 429.2

Int. Cl.[6] H01H *75/00*

U.S. Cl. 335—8 **5 Claims**



1. A multi-pole low-voltage power switch comprising:

a switching shaft shared by all poles, including pole units each assembled from at least two switching chambers, wherein the switching shaft is divided into shaft sections corresponding to a number of the pole units;

a drive apparatus shared by all the pole units;

a central pin protruding from both ends of a shaft section of a center pole unit of said pole units;

a lever mounted substantially near the pin at each end of the shaft section, the lever including a through hole to receive a coupling bolt;

peripheral shaft sections adjoining the central shaft section which include a central aperture at ends facing the central shaft section provided to receive the central pin; and

a lever with a through hole to receive the coupling bolt close to the central aperture.

5,608,366

ELECTRONMAGNETIC DEVICE

Kazumi Sako, Kyoto, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Mar. 6, 1995, Ser. No. 399,406

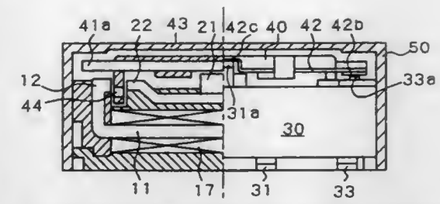
Claims priority, application Japan, Mar. 4, 1994, 6-034911

Int. Cl.[6] H01H *51/22*

U.S. Cl. 335—78 **8 Claims**

1. An electromagnetic device comprising:

a U-shaped section iron core wound with a coil,



a supplementary member supporting a permanent magnet on a center thereof, and defining an air gap between both ends of said member and both ends of said iron core, and

an armature pivotally supported on said permanent magnet having both ends thereof extending to alternately make and break contact with end walls of said iron core, and a magnetic circuit switching member near at least one end of said armature crossing the magnetic flux passing through said air gap, so that said magnetic circuit switching member is brought into or moved out of said air gap by pivoting said armature according to excitation or deexcitation of the coil.

5,608,367

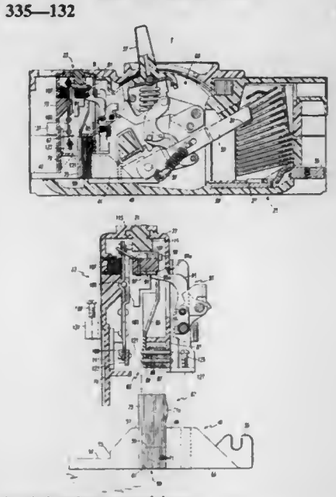
MOLDED CASE CIRCUIT BREAKER WITH INTERCHANGEABLE TRIP UNIT HAVING BIMETAL ASSEMBLY WHICH REGISTERS WITH PERMANENT HEATER TRANSFORMER AIRGAP

Walter M. Zoller; David S. Hunter, Jr., both of Milwaukee; Edward L. Wellner, Colgate; Michael R. Larsen, Milwaukee; Peter J. Theisen, West Bend, and Donald A. Link, Hubertus, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 30, 1995, Ser. No. 565,764

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—132 **10 Claims**



1. A circuit breaker comprising:

a molded casing;

separable contacts mounted in said molded casing;

a bus strap connected to said separable contacts within said molded casing;

an operating mechanism mounted in said molded casing for opening and closing said separable contacts;

an interchangeable trip unit inserted in said molded casing for tripping said operating mechanism to open said separable contacts in response to predetermined current conditions in said bus strap, said trip unit including a bimetal; and

a heater transformer comprising a heater core in said molded casing encircling said bus strap except for a gap in said heater

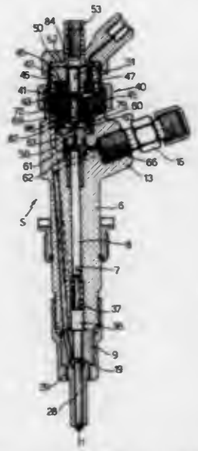
core facing said trip unit, and a heater element comprising a magnetically permeable member and an electrically conductive sleeve extending around said magnetically permeable member, said heater element being mounted in said trip unit and positioned in said gap such that said permeable member extends across a selected portion of said gap with said trip unit inserted in said molded casing, said bimetal being carried by said heater element and heated thereby to trip said operating mechanism to open said separable contacts in response to said predetermined current conditions in said bus strap.

5,608,368

ELECTROMAGNET FOR CONTROLLING THE METERING VALVE OF A FUEL INJECTOR

Mario Ricco, and Giovanni Bruni, both of Bari, Italy, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni, Pomigliano D'Arco, Italy

Filed Dec. 28, 1994, Ser. No. 365,587
Claims priority, application Italy, Dec. 30, 1993, TO93A1020
Int. Cl.[6] H01F *3/00*
U.S. Cl. 335—281 **9 Claims**



1. An electromagnet for controlling the metering valve of a fuel injector, comprising a fixed core (**46**) of magnetizable material; an electric energizing coil (**47**); and an armature (**43**) for activating said valve; characterized in that said core (**46**) is formed by pressing a mixture of powdered ferrous material and an epoxy binder; said core so formed then being sintered.

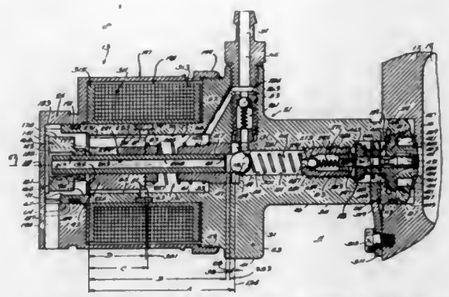
5,608,369

MAGNETIC GAP CONSTRUCTION

Christopher R. Irgens, Elm Grove; Philip D. McDowell, Sullivan; Chinh D. Nguyen, and James Bonifield, both of Milwaukee, all of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 25, 1995, Ser. No. 506,465
Int. Cl.[6] H01F *3/00*
U.S. Cl. 335—281 **9 Claims**

1. A magnetic pole structure comprising
a first end portion fabricated from a material having low reluctance and including
a cylindrical inner surface having an axis and a diameter, and
an end surface extending transversely to said axis and radially outwardly from said first end portion cylindrical inner surface,



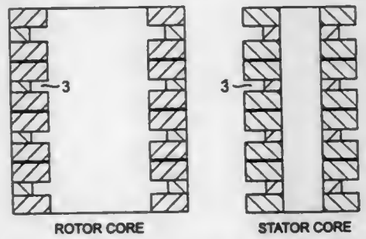
a second end portion fabricated from a material having low reluctance and including
a cylindrical inner surface having an axis and a diameter substantially equal to the diameter of said cylindrical inner surface of said first end portion, and
an end surface extending transversely to said axis and radially outwardly from said second end portion cylindrical inner surface, and
a middle portion fabricated from a material having high reluctance and including
a cylindrical inner surface having an axis and a diameter greater than the diameter of said cylindrical inner surface of said first end portion, and
axially spaced first and second end surfaces extending transversely to said middle portion axis from said middle portion cylindrical inner surface,
said first end surface of said middle portion being fixed to said end surface of said first end portion and said second end surface of said middle portion being fixed to said end surface of said second end portion so that said axes of said first and second end portions and said middle portion are located in coaxial relation to one another, whereby to define a magnetic flux gap located radially inwardly of said middle portion and between said end surfaces of the first and second end portions.

5,608,370

ROTARY TRANSFORMER AND METHOD FOR FABRICATING THE SAME

Woo S. Jang, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed May 3, 1995, Ser. No. 434,413
Claims priority, application Rep. of Korea, May 3, 1994, 9721/1994
Int. Cl.[6] H01F *15/04*
U.S. Cl. 336—120 **10 Claims**



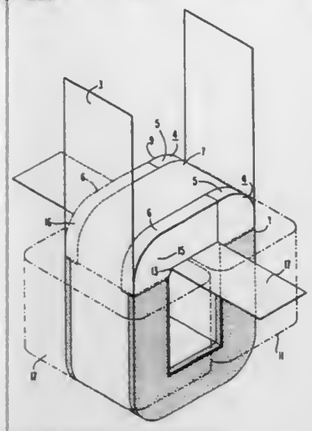
1. A rotary transformer comprising two cores each comprising one or more channel parts, each channel part having a coil groove constructed of two different sized annular magnetic rings which are stacked and bonded together to form each channel part and coil groove.

5,608,371

REPAIRABLE AMORPHOUS METAL TRANSFORMER JOINT

Milan D. Valencic, Athens, Ga., and Ram R. P. Sinha, Hickory, N.C., assignors to ABB Power T&D Company, Inc., Raleigh, N.C.

Continuation of Ser. No. 264,467, Jun. 23, 1994, abandoned, which is a division of Ser. No. 806,114, Dec. 12, 1991, Pat. No. 5,398,402, which is a division of Ser. No. 250,470, Sep. 28, 1988, Pat. No. 5,083,360. This application Jan. 31, 1996, Ser. No. 594,777
Int. Cl.[6] H01F *27/26;27/30*
U.S. Cl. 336—210 **4 Claims**



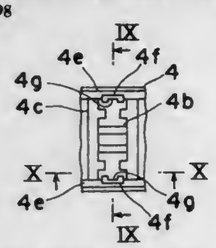
1. A repairable transformer comprising:
(1) an annealed wound amorphous metal core having a core joint in a cut leg,
(2) a coil over each leg that adjoins said cut leg;
(3) porous material adhesively bonded to each leg that adjoins said cut leg and covering said core joint, edges of said cut leg and adjoining radii; where said porous material is not adhesively bonded to said core joint, said edges or to said adjoining radii, said porous material preventing any loose chips of core material from escaping said core joint; and
(4) an outer layer which wraps said core and said porous material.

5,608,372

FUSE LOCKING CONSTRUCTION FOR FUSE BOX

Jun Yamaguchi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 245,644, May 18, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,399
Claims priority, application Japan, Jun. 8, 1993, 5-030729 U
Int. Cl.[6] H01H *85/02;85/52;* **H01R** *13/68;* **H02B** *1/26*
U.S. Cl. 337—198 **4 Claims**



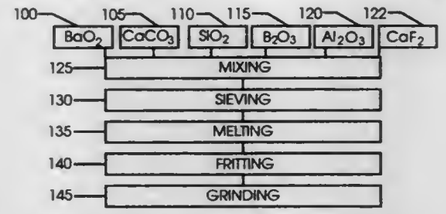
1. A fuse locking construction for a fuse box having a fuse mounting portion, in which a fuse, having a fuse member molded in a base of synthetic resin, and a pair of terminal plates projecting out of the base from the fuse member, is inserted into the fuse mounting portion of the fuse box so as to be locked to the fuse mounting portion, the fuse locking construction comprising:
a pair of resilient locking projections which are, respectively, provided at opposite ends of an insertion mouth of the fuse mounting portion of the fuse box so as to retain opposite upper ends of the base of the fuse at the time of completion of insertion of the fuse into the fuse mounting portion such that the fuse is locked to the fuse mounting portion; and
a guide groove for guiding each of the terminal plates of the fuse in a direction for inserting the fuse into the fuse mounting portion or withdrawing the fuse from the fuse mounting portion, said guide groove being formed as a notch on a face of each of said resilient locking projections.

5,608,373

GLASS FRIT COMPOSITIONS AND ELECTRICAL CONDUCTOR COMPOSITIONS MADE THEREFROM COMPATIBLE WITH REDUCING MATERIALS

Tom O. Martin, Nappanee, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Jun. 1, 1994, Ser. No. 252,027
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—21 **8 Claims**



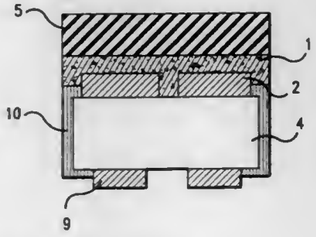
1. An electrically conductive composition comprising:
a glass frit having between thirty and fifty percent calcium fluoride and between ten and forty percent boron oxide, said calcium fluoride and boron oxide melted and then fritted;
copper oxide; and
copper.

5,608,374

HUMIDITY SENSOR AND A METHOD OF PRODUCING THE HUMIDITY SENSOR

Masahisa Ikejiri, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP93/00170, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993, PCT Pub. No. WO93/16377, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 10, 1993, Ser. No. 119,165
Claims priority, application Japan, Feb. 14, 1992, 4-28251; Mar. 6, 1992, 4-49903; May 22, 1992, 4-130290; May 22, 1992, 4-130291; May 22, 1992, 4-130292
Int. Cl.[6] H01C *7/00*
U.S. Cl. 338—35 **22 Claims**



1. A humidity sensor, comprising:

a humidity sensing film on a first surface of a substrate, the humidity sensing film comprised of an alkali metal compound and a metal oxide selected from the group consisting of manganese oxide, lead oxide and mixtures thereof;

at least two electrodes upon the first surface of the substrate and covered by the humidity sensing film;

a fluorine polymer film coating the humidity sensing film; and

terminal parts formed on a second surface of the substrate, wherein one of the terminal parts is electrically coupled to one of the at least two electrodes.

5,608,375

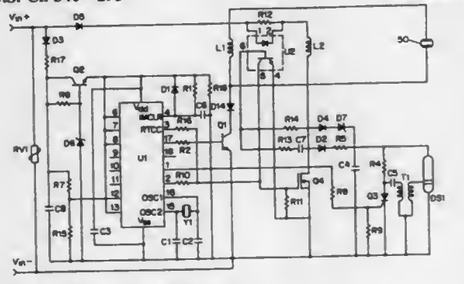
SYNCHRONIZED VISUAL/AUDIBLE ALARM SYSTEM

Joseph Kosich, South Toms River, N.J., assignor to Wheelock Inc., Long Branch, N.J.

Filed Mar. 20, 1995, Ser. No. 407,282

Int. Cl.[6] G08B *25/00*

U.S. Cl. 340—293 **50 Claims**



1. An alarm system comprising:

an alarm control panel having a power source and a means for generating at least one predetermined control signal;

an alarm control circuit having a first input connected to the power source of the alarm control panel via a first two-conductor power distribution line for supplying power to said alarm units, a second input connected to the alarm control panel via a second two-conductor power distribution line for generating control signals, and an output, the alarm control circuit further comprising a means for conducting power from the first input to the output to provide an output power signal, a means for interrupting the output power signal at a regular interval thereby generating a sync pulse, and a means for interrupting the output power signal in a predetermined manner when a first predetermined control signal has been generated by the alarm control panel along the second two-conductor power distribution line;

a third two-conductor power distribution line connected to the output of the alarm control circuit; and

a plurality of alarm units connected to said third power distribution line as the sole source of power for said units, at least one of said units including a means for producing an audio alarm signal and at least one of said units including a means for producing a visual alarm signal, each of said units being responsive to said sync pulse to produce a respective alarm signal in synchronism with the alarm signals produced by the other units, and each of said units which has an audio alarm signal producing means being responsive to said predetermined-pattern interruption in the output power signal to control the operation of the respective audio signal producing means of each said unit in synchronism with the audio alarm signal producing means of the other units.

5,608,376

PAD WEAR AND PAD WEAR INDICATOR PROBE

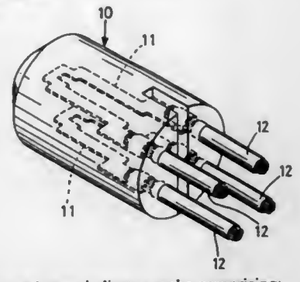
Katsuya Ito, and Hitoshi Takanashi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jun. 24, 1994, Ser. No. 265,112

Claims priority, application Japan, Aug. 6, 1993, 5-215037

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—454 **3 Claims**



1. A brake pad wear indicator probe comprising;

a core element disposed near a tip of the probe, the core element having first and second diameter portions, said first diameter portion being larger than said second diameter portion; and

a plurality of U-shaped electric wire paths having a turn part extending toward said tip of the probe, the turn part of each of said plurality of U-shaped electric wire paths wrapped around one of said first diameter portion and said second diameter portion, said plurality of electric wire paths being different in a length measured between the turn part of each of said plurality of electric wire paths and said tip of the probe;

wherein said plurality of electric wire paths are engaged with a brake pad and wear together with the brake pad.

5,608,377

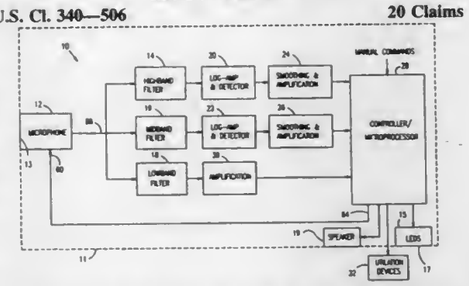
ACOUSTIC ANTI-TAMPERING DETECTOR

Boris Zhevlev, Rishon le Zion, and Mark Moldavsky, Tel Aviv, both of Israel, assignors to Visonic Ltd., Tel Aviv, Israel

Filed Oct. 20, 1995, Ser. No. 546,037

Int. Cl.[6] G08B *29/00*

U.S. Cl. 340—506 **20 Claims**



1. A method of supervising the operation of an intrusion detector having a housing, the intrusion detector being operative to determine the presence of an intrusion outside the housing, the method comprising:

periodically generating in the housing at least one sound wave signal;

sensing an acoustic image formed in the housing of the intrusion detector in response to said at least one sound wave signal;

constructing a sensed signal envelope responsive to said sensed acoustic image;

periodically comparing the sensed signal envelope with a reference signal envelope to determine whether a predetermined criterion of similarity between the sensed signal envelope and the reference signal envelope is met; and

if the similarity criterion is not met, providing a predetermined, sensible, indication.

5,608,378

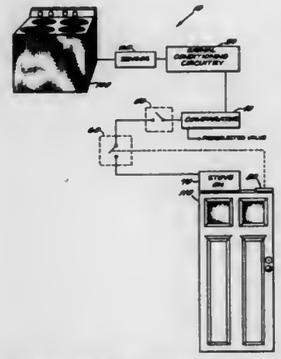
ELECTRIC STOVE WARNING SYSTEM

Kit W. McLean, and Lynda G. McLean, both of 113 Lynch Rd., Drawer H, Coward, S.C. 29530

Filed Dec. 14, 1994, Ser. No. 355,592

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **26 Claims**



1. A system for use with a building having a door in which there is a stove within the building having an on-condition and an off-condition, said system warning that said stove is in said on-condition to a user exiting said building, said system comprising:

a sensor for generating a first electrical signal responsive to said on-condition of said stove;

comparing means in electrical connection with said sensor for comparing said first electrical signal with a preselected value to determine if said first electrical signal is greater than said preselected value, said first electrical signal being greater than said preselected value when said stove is in said on-condition and less than said preselected value when said stove is in said off-condition, said comparing means issuing a second electrical signal when said stove is in said on-condition;

detecting means for detecting when said user is exiting said building and issuing a third electrical signal when said user is exiting said building; and

indicating means responsive to said first and said third electrical signals from said sensing means and said detecting means, said indicating means for indicating to said user when said user is exiting said building that said stove is in said on-condition.

5,608,379

DEACTIVATABLE EAS TAG

Douglas Narlow, Coral Springs, and Hubert A. Patterson, Boca Raton, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed May 20, 1994, Ser. No. 247,100

Int. Cl.[6] G08B *13/24*

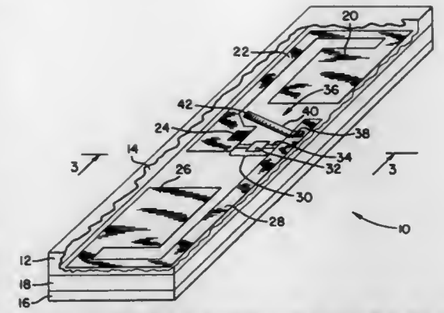
U.S. Cl. 340—572 **28 Claims**

1. A deactivatable EAS tag comprising:

a circuit responsive to an interrogating signal applied to said EAS tag for causing the generation of a detectable signal, said circuit including: a substrate; first and second conductive elements situated on said substrate and having first and second portions, respectively defining a gap therebetween, and a non-linear element connected across said gap and having first and second terminals connected to said first and second portions, respectively, of said first and second conductive elements;

a first magnetic element having a first end connected to said first portion of said first conductive element and a second end situated adjacent to said second portion of said second conductive element; and

a second magnetic element affixed to said second portion of said second conductive element so as to selectively magnetically influence said second end of said first magnetic element, said second magnetic element when in a first magnetic state causing said second end of said first magnetic element to be out of electrical contact with said second portion of said second conductive element and when in a second magnetic state causing said second end of said first magnetic element to be in electrical contact with said second portion of said second conductive element.



5,608,380

DEACTIVATION AND CODING SYSTEM FOR A CONTACTLESS ANTITHEFT OR IDENTIFICATION LABEL

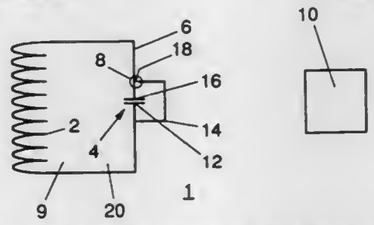
Johannes H. L. Hogen Esch, Aalten, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek NEDAP, De Groenlo, Netherlands

Filed May 18, 1995, Ser. No. 444,377

Claims priority, application Netherlands, May 18, 1994, 9400810

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572 **24 Claims**



1. A contactless label for antitheft or identification purposes, comprising an electric circuit, wherein the label comprises a pyrotechnic mixture which is provided adjacent at least one electroconductive connection of the electric circuit, in such a manner that the pyrotechnic mixture upon being ignited severs the electroconductive connection by combustion, with the electrical properties of the electric circuit altering as a result of the severance of the electroconductive connection.

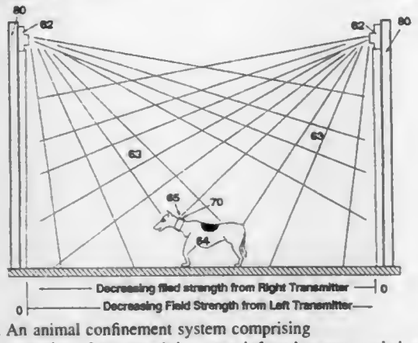
5,608,381
ANIMAL CONTAINMENT SYSTEM

David A. McCarney; Frank A. Calabrese, both of Wayesboro, and Kenneth B. Shockey, Greencastle, all of Pa.. assignors to Industrial Automation Technologies, Inc., Waynesboro, Pa.

Continuation-in-part of Ser. No. 126,321, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 14,810, Feb. 8, 1993, which is a continuation of Ser. No. 867,892, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 94,075, Sep. 4, 1987, Pat. No. 5,113,962, which is a continuation of Ser. No. 820,644, Jan. 21, 1986, abandoned. This application Sep. 23, 1994, Ser. No. 310,873

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—573 **9 Claims**



1. An animal confinement system comprising

a transmitter for transmitting near infrared energy coded with pulses having first and second frequencies and

a receiver to be worn by the animal for receiving the transmitted near infrared energy coded with said pulses having said first and second frequencies, said receiver including

a sounder for producing a warning tone,

transformer means for providing a high voltage low energy shock,

first means for operating said sounder when near infrared energy is received coded with pulses having said first frequency, said operating means having first and second one shots defining a first digital bandpass filter.

second means for operating said transformer means when near infrared energy is received coded with pulses having said second frequency, said second operating means having third and fourth one shots defining a second digital bandpass filter,

said first bandpass filter being selected so that said pulses having said first frequency will be detected while said pulses having said second frequency will not be detected, and

said second bandpass filter being selected so that said pulses having said second frequency will be detected while said pulses having said first frequency will not be detected.

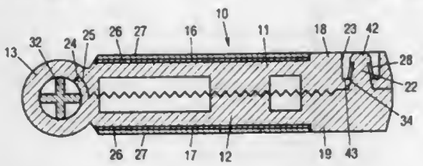
5,608,382
INFANT IDENTIFICATION AND SECURITY APPARATUS

Nicholas J. Webb, 5370 Basel Dr., Box 831, Wrightwood, Calif. 92397, and James E. Ramsey, 23111 Marvilla La., Coto de Caza, Calif. 92679

Filed Aug. 16, 1995, Ser. No. 515,856

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **16 Claims**



1. An umbilical cord clamp, comprising:

first and second elongated arms each having a proximal end and a distal end, said arms being hingeably connected at said proximal ends forming a "V" shape for being positioned around an umbilical cord of an infant, each of said arms having a grip portion arranged at said distal end, each of said arms having an inner side and an outer side;

a first hole extending partially into said grip portion of said first arm from said inner side;

a second hole extending partially into said grip portion of said first arm from said outer side and communicating with said first hole, said second hole being coaxial with said first hole, said second hole having a larger diameter than said first hole, so that an annular shoulder is formed therebetween;

a plurality of outwardly extending spring flaps radially arranged around said shoulder; said spring flaps being recessed within said second hole; and

a projection extending inwardly from said inner side of said grip portion of said second arm, said projection is arranged for being inserted into said first hole and positioned between said spring flaps when said arms are closed, said projection including an enlarged head portion at a distal end thereof, said enlarged portion being positioned outwardly of said spring flaps for preventing said projection from being withdrawn from said second hole when said arms are closed.

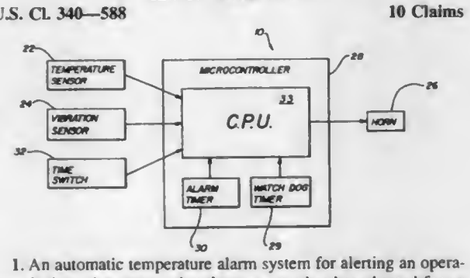
5,608,383
AUTOMATIC TEMPERATURE ALARM SYSTEM

Clifford R. Neil, 39 Ora St., Pittsfield, Mass. 01201

Filed Mar. 29, 1995, Ser. No. 412,998

Int. Cl.[6] G08B *17/00*

U.S. Cl. 340—588 **10 Claims**



1. An automatic temperature alarm system for alerting an operator of a heated apparatus that the apparatus has been heated for an alarm period of time, comprising:

a. a temperature sensor affixed to the heated apparatus that senses temperatures of the heated apparatus;

b. a vibration sensor affixed to the heated apparatus that senses motion of the heated apparatus;

c. a horn to alert the operator; and

d. a system control intelligence means in communication with the temperature sensor, vibration sensor and horn for setting an alarm timer to commence measurement of the alarm period in response to a sensed high temperature, for activating the horn upon expiration of the alarm period, and for re-setting the alarm timer to re-commence measurement of the alarm period upon sensing a motion in the heated apparatus.

5,608,384
METHOD AND APPARATUS FOR MONITORING FOR THE PRESENCE OF A GAS

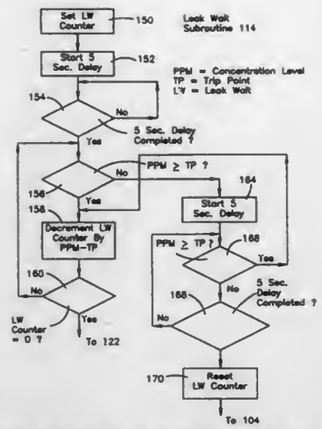
George H. Tikijian, Zionsville, Ind., assignor to SenTech Corporation, Indianapolis, Ind.

Filed Oct. 23, 1992, Ser. No. 965,442

Int. Cl.[6] G08B *17/10*

U.S. Cl. 340—632 **20 Claims**

1. Apparatus for detecting the presence within a gaseous atmosphere of a gas of a concentration above a preset level, said detecting apparatus comprising:



a) a sensor including a heater/anode element and a collector/cathode element disposed to define a space therebetween through which said gaseous atmosphere flows;

b) actuable means coupled to said heater/anode element and to said collector/cathode element for applying power thereto, whereby ionization of said gas causes a current flow through said collector/cathode element of a magnitude proportional to the concentration level of said gas in said gaseous atmosphere;

c) actuable alarm means to provide an indication of the presence of the gas above the preset level; and

d) control means for operating said apparatus in a monitoring mode to detect and compare said current flow with said preset level, if said current flow is equal to or exceeds said preset level, for operating said monitoring apparatus in a leak wait mode to initiate the timing of a period of variable length and, upon termination of said variable period, for operating said monitoring apparatus in an alarm mode to actuate said alarm means and to deactuate said power applying means to reduce power to said sensor and to extinguish said current flow between said heater/anode element and said collector/cathode element, said variable period having a length set inversely proportional to the magnitude of said current, whereby the life of said sensor is extended.

5,608,385
DEVICE FOR DETERMINING STATE OF ELECTRICITY GENERATION OF SOLAR BATTERY

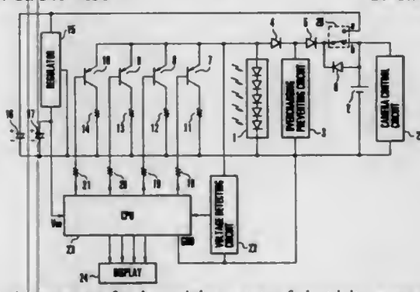
Junya Masaki, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1995, Ser. No. 446,221

Claims priority, application Japan, May 26, 1994, 6-134903

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—636 **26 Claims**



1. An apparatus for determining a state of electricity generation of a solar battery, comprising:

(A) a first device which selectively connects ones of different loads to the solar battery; and

(B) a second device which determines a state of electricity generation of the solar battery in accordance with a state of a load current flowing through a load connected to the solar battery by said first device.

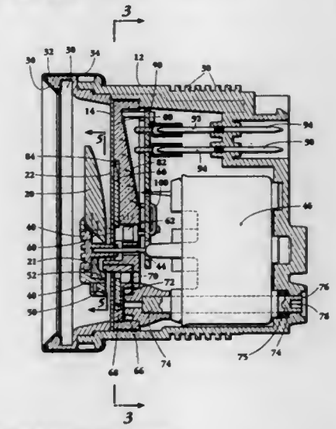
5,608,386
ADJUSTABLE HALL EFFECT SWITCH GAUGE

Frank W. Murphy, III, Tulsa, Okla.; Vincent H. Rose, Walnut Creek, Calif.; Timothy D. Brumley, and James R. Francisco, both of Tulsa, Okla., assignors to Murphy Management, Inc., Tulsa, Okla.

Filed Mar. 21, 1995, Ser. No. 407,501

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—688 **21 Claims**



1. A switch gauge comprising:

a housing supporting a gauge movement responsive to a sensed condition;

a rotatable indicating pointer mounted to a shaft from said gauge movement for indicating said sensed condition, said pointer including a lower extension portion;

a magnet attached to said lower extension portion of said pointer;

a moveable switch set pointer, said set pointer including a lower extended portion;

a non-captivating, magnetically actuated switch element mounted in said lower extended portion of said switch set pointer so as to be within an influence zone of the path of said magnet;

means, outside of said housing, to move said switch set pointer to a desired switch activation set point.

5,608,387
PERSONAL IDENTIFICATION DEVICES AND ACCESS CONTROL SYSTEMS

John H. E. Davies, 4A Cowper Road, Berkhamsted, Hertfordshire, HP4 3DA, England

PCT No. PCT/GB92/02220, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/11511, PCT Pub. Date Jun. 10, 1993

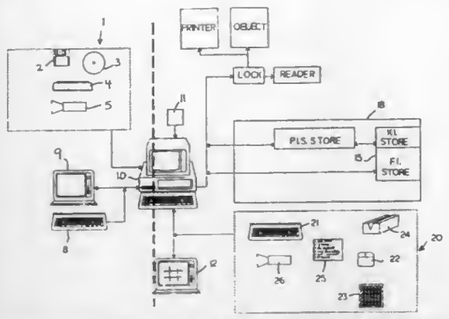
PCT Filed Nov. 30, 1992, Ser. No. 244,346

Claims priority, application United Kingdom, Nov. 30, 1991, 9125540

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.34 **25 Claims**

1. A personal identification device comprising a store of personal identity statements and a store of complex images including key



complex images linked with personal identity statements and false complex images not associated with personal identity statements, a complex image being an image that is recognizable when already known but not readily capable of unique description to a person to whom it is not known so that when a particular complex image is included in a set of similar but not identical complex images, the particular complex image is distinguishable from other complex images in the set, by the human senses of a person familiar with the particular complex image, within a predetermined time interval when the whole set is displayed, but it is not readily possible to describe the particular complex image in terms which are sufficiently precise that another human being unfamiliar with the particular complex image can subsequently identify it among other complex images of the set using normal unaided human senses to discern the particular image, and within a time interval similar to the predetermined time interval, and provided that reference to and comparison with other complex images of the displayed set is not permitted as part of a description.

5,608,388

DATA TRANSFER SYSTEM USING MEMORY WITH FIFO STRUCTURE

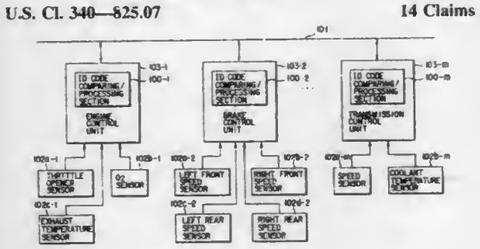
Shigeru Nakajima, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 82,970, Jun. 29, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,769

Claims priority, application Japan, Jun. 30, 1992, 4-173182

Int. Cl.[6] H04Q *9/00*

U.S. Cl. 340—825.07 **14 Claims**



1. A data transmission system comprising:

a network line;

a plurality of control units electronically connected to said network line, each of said plurality of control units including,

multiplex communication control means for receiving identification signals extracted from data frames received from said network line and determining whether said extracted identification signals coincide with preset identification signals;

a memory means for sequentially receiving and storing said extracted identification signals in response to coincidence outputs from said multiplex communication control means and for outputting signals indicating that said extracted identification signals are stored; and

processing means for receiving said signals outputted from said memory means indicating that said identification signals are stored, for detecting that necessary data has been transmitted from said network line, and for processing said transmitted data, said processing means successively processing data corresponding to other identification signals stored in said memory means.

5,608,389

REMOTE CONTROL DEVICES FOR ELECTRONIC APPLIANCES

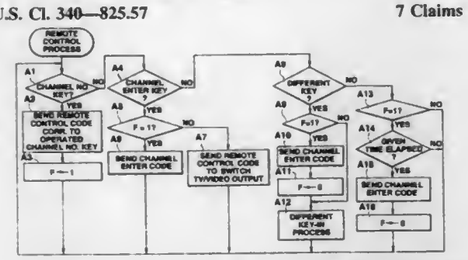
Koulchi Matsuzawa, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,539

Claims priority, application Japan, Dec. 20, 1993, 5-344998; Jun. 29, 1994, 6-171884

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.57 **7 Claims**



1. A remote control device for an electronic appliance, comprising:

a plurality of channel number inputting keys for inputting a channel number to the remote control device;

channel number code sending means for, when any one of said plurality of channel number inputting keys is operated, sending a channel number code corresponding to the operated channel number inputting key;

an end code sending key;

end code sending means for sending an end code which represents that said channel number code sending means has finished sending the channel number code, in response to operation of said end code sending key;

a further key different from said plurality of channel number inputting keys and said end code sending key, said further key corresponding to a function;

determining means for, when said further key is operated, determining whether any one of said plurality of channel number inputting keys was operated to send the corresponding channel number code, directly before said further key has been operated;

control means for controlling said end code sending means to send the end code for channel selection when said determining means determines that one of said plurality of channel number inputting keys was operated directly before said further key has been operated; and

function executing means for executing the function corresponding to said further key after said control means has controlled said end code sending means to send the end code.

5,608,390

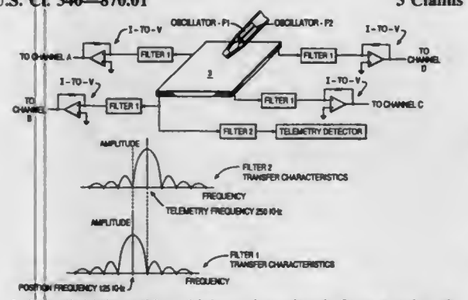
SYNCHRONOUS TELEMETRY CHANNEL

Frank Gasparik, Monument, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Feb. 23, 1994, Ser. No. 200,721

Int. Cl.[6] G08C *19/16*

U.S. Cl. 340—870.01 **3 Claims**



1. In a digitizing tablet which receives signals from a stylus, the improvement comprising:

a first filter having a passband centered at a first frequency f1, and zeroes at other frequencies, which filters a first received signal; and

a second filter having a passband centered at a second frequency f2, which coincides with a zero of the first filter, which filters a second received signal.

5,608,391

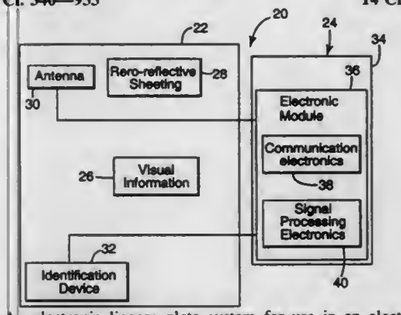
ELECTRONIC LICENSE PLATE ARCHITECTURE

Heinrich Bantli, Stillwater; Edmund J. Ring, Circle Pines, and Wayne M. Thomas, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 11, 1995, Ser. No. 438,951

Int. Cl.[6] G08G *1/01*

U.S. Cl. 340—933 **14 Claims**



1. An electronic license plate system for use in an electronic vehicle communication system in which a plurality of remote traffic management stations communicate with the electronic license plate, comprising:

a license plate portion, including visual identification information and an identification means for storing restricted information, the restricted information including at least one type of vehicle identification information, and wherein the restricted information cannot be altered by the remote stations or by the vehicle;

information means for storing unrestricted information, wherein the unrestricted information can be altered by at least one of the remote stations or by the vehicle;

communication means, operatively connected to the identification means and to the information means, for processing communications with the remote stations;

antenna means for transmitting and receiving the communications with the remote stations;

attachment means fixed to the vehicle for replaceably attaching the license plate portion to the vehicle, such that the license plate portion can be replaced without having to replace the information means.

5,608,392

AIRCRAFT COLLISION-AVOIDANCE DEVICE, NOTABLY GROUND COLLISION, BY CONTROL OF ANGLE OF DESCENT

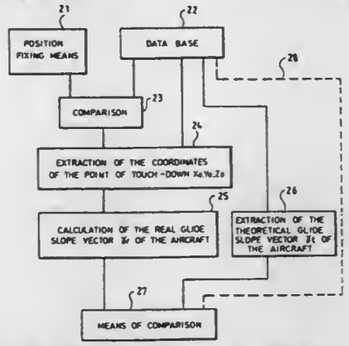
François Faivre, and Xavier Denoize, both of St. Medard en Jalles, France, assignors to Sextant Avionique, Meudon La Foret, France

Filed Mar. 22, 1995, Ser. No. 408,922

Claims priority, application France, Mar. 22, 1994, 94 03343

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—967 **8 Claims**



1. An aircraft collision-avoidance device comprising:

means for producing a first three-dimensional coordinate representative of an aircraft position;

a database configured to hold database information comprising,

a three-dimensional theoretical glide slope vector,

a second three-dimensional coordinate representative of a touchdown point of a landing strip,

a first threshold value,

a second threshold value, and

an airport position;

means for comparing said aircraft position and said database information to determine if said aircraft is near said airport;

means for extracting a second three-dimensional coordinate from said database information when said aircraft position is near said airport;

means for calculating a three-dimensional real glide slope vector based on said first three-dimensional coordinate and said second three-dimensional coordinate; and

means for producing a collision-avoidance signal corresponding to said three-dimensional real glide slope vector and said three-dimensional theoretical glide slope vector, said means for producing further comprising,

means for calculating a horizontal deviation value between said three-dimensional real glide slope vector and said three-dimensional theoretical glide slope vector,

means for calculating a vertical deviation value between said three-dimensional real glide slope vector and said three-dimensional theoretical glide slope vector, and

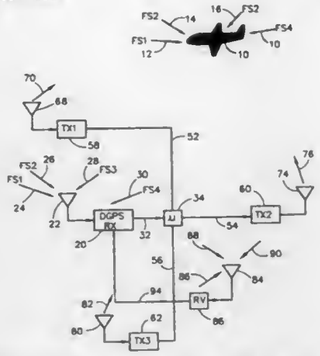
means for outputting said collision-avoidance signal when at least one of said horizontal deviation value is greater than said first threshold value and said vertical deviation value is greater than said second threshold value.

5,608,393

DIFFERENTIAL GROUND STATION REPEATER

Randolph G. Hartman, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 7, 1995, Ser. No. 400,168
Int. Cl.[6] G08G 1/123
U.S. Cl. 340—988 13 Claims



1. A differential global position system for use in determining one or more parameters of an object with respect to earth by use of information transmitted to the object from a plurality of satellites which information may contain errors due to path distortions, comprising:

a ground receiving station fixed to earth at a known location and including a receiver to receive the information from the satellites and a microprocessor to determine the error information due to path distortion;

first transmitter means located at a first position remote from the receiver and connected thereto to receiver the error information and to transmit it to the object in a transmission at a first frequency with a first characteristic; and

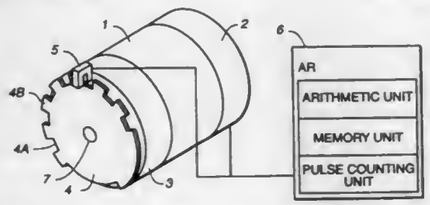
second transmitter means located at a second position remote from the first transmitter means and the receiver and connected to the receiver to receive the error information and to transmit it to the object in a transmission at the first frequency with a second characteristic distinguishable from the first characteristic, so that the transmissions are individually distinguishable.

5,608,394

POSITION DETECTING METHOD AND APPARATUS

Tomokazu Hirabayashi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,267
Claims priority, application Japan, Feb. 8, 1994, 6-014656; Nov. 9, 1994, 6-275385; Jan. 11, 1995, 7-002947
Int. Cl.[6] H03M 1/22
U.S. Cl. 341—11 17 Claims



1. A position detecting apparatus which has a first rotation shaft, an incremental encoder to measure the position of the first rotation shaft, and a moving mechanism that is connected to said first rotation shaft through a reduction gear, so as to detect the position of said moving mechanism based on output pulses from said incremental encoder, said position detecting apparatus comprising:

division point detecting means for detecting a plurality of division points that are set by dividing a motion range of said moving mechanism into a plurality of regions;

reference point detecting means for detecting a reference point set for said incremental encoder;

pulse counting means for counting output pulses of the incremental encoder between the time when said reference point is detected by said reference point detecting means and the time when said division point is detected by said division point detecting means while said first rotation shaft rotates to drive said moving mechanism; and

position calculating means for calculating the position of said moving mechanism by materially comparing values that are measured by the pulse counting means with a set count value that is set for each of said division points, and specifying said division point or said set value;

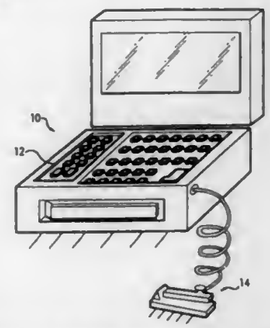
wherein said division points are disposed so that said set values are different from each other at least in a predetermined position range of said moving mechanism.

5,608,395

SIMPLIFIED COMPUTER ACCESS SYSTEM

Isaac Kurtz, Downsview, and Jutta Treviranus, Toronto, both of Canada, assignors to The Hugh MacMillan Rehabilitation Centre, Toronto, Canada

Filed Jun. 22, 1994, Ser. No. 264,139
Int. Cl.[6] H03M 11/00
U.S. Cl. 341—50 18 Claims



1. The method of providing simplified access to a computer program containing a vocabulary of words or terms, said vocabulary having a predetermined arrangement based on two separate parameters, including effecting a progressive reduction in the size of the eligible vocabulary by the steps of hashing the vocabulary with a predetermined reduction hashing code; progressively hashing succeeding letters representative of a desired word with the predetermined hashing code; successively entering the hash-coded letters of the word as inputs into the computer; and selecting the desired word from amongst the words conforming to the entered hashing code, wherein said hashing code is at least a binary code, enabling entry thereof by a single switch/key.

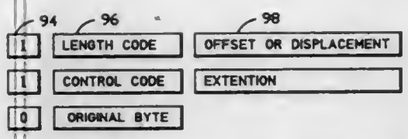
5,608,396

EFFICIENT ZIV-LEMPEL LZI DATA COMPRESSION SYSTEM USING VARIABLE CODE FIELDS

Joe-Ming Cheng, Cupertino, Calif.; David J. Craft, Austin, Tex.; Larry J. Garibay, San Jose, Calif., and Ehud D. Karnin, Koranit, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1995, Ser. No. 395,343
Int. Cl.[6] H03M 7/38
U.S. Cl. 341—50 35 Claims

1. A method for encoding an input string of source symbols to produce an output string of code symbols comprising the steps of:



(a) storing the most recent available number L_H of said source symbols in a history buffer means having capacity for storing a plurality L_B of said source symbols, wherein $1 \leq L_H \leq L_B$ are positive integers;

(b) searching said most recent available source symbols in said history buffer means for a source symbol sub-string of length L_M that matches a most recent plurality L_M of said source symbols, wherein L_M, L_H are positive integers;

(c) if a matching said source symbol sub-string of length L_M is found to be located in said history buffer means at an offset equivalent to a plurality L_O of said source symbols from said most recent source symbol plurality L_M, encoding said most recent source symbol plurality L_M as a first said code symbol representing said length L_M and a second said code symbol representing said offset L_O, wherein the number N_H of bits in said second code symbol is reduced to no fewer than the number required to span said most recent available source symbol plurality L_H in said history buffer means and wherein $L_O \leq L_H$ and N_H are positive integers such that $N_H \leq \lceil \log_2(L_H) \rceil$; otherwise

(d) encoding said most recent source symbol plurality L_M unchanged as code symbols; and

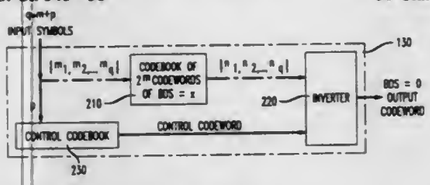
(e) passing said code symbols to said output code symbol string.

5,608,397

METHOD AND APPARATUS FOR GENERATING DC-FREE SEQUENCES

Emina Soljanin, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 15, 1995, Ser. No. 515,445
Int. Cl.[6] H03M 7/00
U.S. Cl. 341—58 50 Claims



12. A method comprising the steps of:

for each set of input symbols in a plurality of sets of input symbols, selecting a respective codeword comprising symbols, and

inverting codeword symbols in particular respective codewords, the particular respective codewords being selected based on a different set of input symbols,

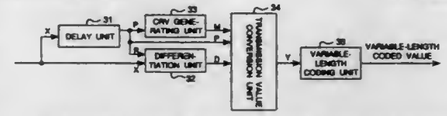
generating a channel codeword based on said codewords, wherein said channel codeword defines a channel sequence comprising channel symbols and wherein the block digital sum of said channel sequence is zero.

5,608,398

DIFFERENTIAL CODING METHOD AND AN APPARATUS THEREFOR

Kinji Hashimoto, Katano; Masakazu Nishino, Kashiwara; Tatsuro Juri, Osaka, and Takumi Hasebe, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1994, Ser. No. 183,654
Claims priority, application Japan, Jan. 20, 1993, 5-007259
Int. Cl.[6] H01M 6/00; H04N 7/32
U.S. Cl. 341—76 18 Claims



1. A differential coding method for coding values in a predetermined range, comprising the steps of:

giving different numbers individually to different values each obtained by calculating a difference value D between each value X to be coded and an adjacent value P adjacent thereto where the difference value D between the value X to be coded and the adjacent value P is calculated according to the equation $D=X-P$ where the value X to be coded exists in the range of $A<X<B$, wherein said different numbers are successively assigned to difference values D in ascending order of the absolute values of said difference values D;

assigning a code word to each difference value in the order that the code word increases in code length in accordance with the increase of the different numbers given to said difference values; and

converting the difference value D into a transmission value Y with reference to a conversion reference value M according to the following equations:

in the case where $P \geq 0$:
$Y = 2D$ when $D \geq 0$,
$Y = -2D - 1$ when $-M \leq D < 0$, and
$Y = -D + M$ in any other case, and
in the case where $P < 0$:
$Y = -2D - 1$ when $D < 0$,
$Y = 2D$ when $0 \leq D \leq M$, and
$Y = D + M$ in any other case;

where M is a conversion reference value defined by the following equations:

$M=B-P$ when $P \geq 0$, and

$M=P-A$ when $P<0$

where A and B are integers and $A<B$.

5,608,399

RESOLUTION ENHANCER CIRCUIT FOR ANALOG TO DIGITAL CONVERTERS

Edward P. Coleman, Jr., Fairport, N.Y., assignor to PSC Inc., Webster, N.Y.

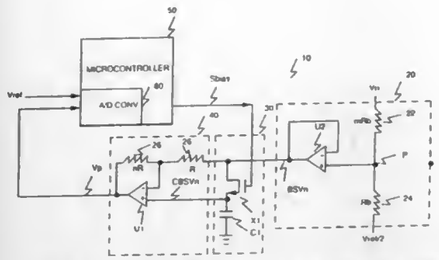
Filed Aug. 1, 1995, Ser. No. 510,093
Int. Cl.[6] H03M 1/18
U.S. Cl. 341—139 18 Claims

1. A resolution enhancer circuit for use with an A/D converter, comprising:

a prescaling circuit configured to receive an analog input signal which is operable over a first range and to output a prescaled analog signal which is operable over a second range;

a sampling circuit configured to receive the prescaled analog signal and a control signal and to sample the prescaled analog signal to provide a sampled signal when said control signal is in an active state;

an amplification and unity gain follower circuit connected to said A/D converter and configured to receive the sampled



signal from said sampling circuit and the prescaled analog signal from said prescaling circuit and to output a difference between the sampled signal and the prescaled analog signal when said control signal is in an inactive state and to output said sampled signal when said control signal is in said active state,

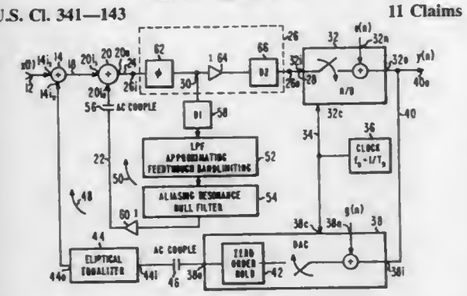
wherein said A/D converter determines a digitized value of said output of said amplification and unity gain follower circuit, and when the digitized value approaches one of a maximum digitized value and a minimum digitized value of said A/D converter, said control signal is placed into the active state by said A/D converter to enable resampling of said prescaled analog signal by said sampling circuit.

5,608,400

SELECTABLE INTERMEDIATE FREQUENCY SIGMA-DELTA ANALOG-TO-DIGITAL CONVERTER

Leopold E. Pellon, Mt. Holly, N.J., assignor to Martin Marietta Corporation, Moorestown, N.J.

Filed Aug. 24, 1995, Ser. No. 519,593
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **11 Claims**



1. A sigma-delta analog-to-digital converter for converting band-limited analog input signals into digital form, said converter comprising:

analog summing means including a first input port coupled to receive said analog input signals which are to be converted, and also including second and third input ports, and an output port at which sum signals are generated which represent the sum of said analog input signals with signals applied to said second and third input ports of said analog summing means;

analog-to-digital conversion means including an input port, an output port, and a sampling clock input port, for converting analog signals applied to its input port into digital signals at its output port, at the frequency of said clock input, said analog-to-digital conversion means being subject to noise, and also being subject to aliasing for frequencies of said analog signals applied to said input port which lie above a Nyquist frequency equal to one-half of the frequency of said clock input;

digital-to-analog conversion means including an input port coupled to said output port of said analog-to-digital conversion means, and also including an output port and a sampling clock input port, for converting digital signals applied to its input port into analog signals at its output port, at the frequency of said clock input, said analog signals at said output port of said digital-to-analog conversion means being subject to unwanted amplitude variations below a cutoff frequency, said cutoff frequency lying between said Nyquist frequency and a selected resonance frequency from a comb of periodic resonance frequencies;

clock means coupled to said clock input port of said analog-to-digital conversion means and to said clock input port of said digital-to-analog conversion means, for clocking said digital-to-analog conversion means and said analog-to-digital conversion means at said clock frequency, whereby said analog-to-digital conversion means and said digital-to-analog conversion means both generate alias components;

first coupling means including an input port coupled to said output port of said summing means, an output port coupled to said input port of said analog-to-digital conversion means, and also including a third port, for coupling signals from said summing means to said analog-to-digital conversion means, and for coupling a sample of said signals traversing said first coupling means to said third port of said first coupling means;

amplitude equalizing means including an input port and an output port, having an equalizing response selected for tending to reduce said unwanted amplitude variations with frequency of said digital-to-analog conversion means, and for preferentially attenuating components at frequencies greater than said cutoff frequency;

DC blocking means coupled to said output port of said digital-to-analog conversion means, to said input and output ports of said amplitude equalization means, and to said second input port of said summing means, for coupling said output port of said digital-to-analog conversion means by a first path to said input port of said amplitude equalization means, and for coupling said output port of said amplitude equalization means by a second path to said second port of said summing means, at least one of said first and second paths providing only AC coupling, thereby closing a main degenerative feedback loop having a main loop gain and phase which generates, at said output port of said analog-to-digital conversion means, a digital representation of said analog input signal, which digital representation may contain unwanted noise;

time-delay means;

DC blocking filtering means including an input port and an output port, said DC blocking filtering means exhibiting an open-loop transmission response substantially equal to that of said main loop gain and phase, except for (a) a null at that one of said resonance frequencies of said comb which lies immediately above said Nyquist frequency and (b) a null at zero frequency;

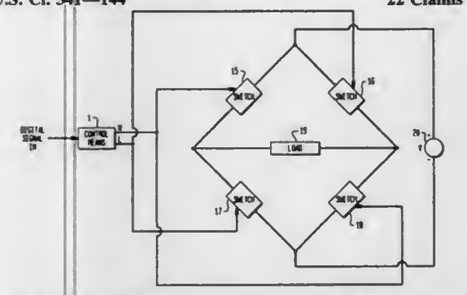
regenerative loop coupling means coupled to said delay means, to said third port of said first coupling means, to said input and output ports of said DC blocking filtering means, and to said third input port of said summing means, for thereby forming a regenerative feedback loop including said delay, said DC blocking filtering means, at least a portion of said summing means, and that portion of said first coupling means lying between said input and third ports of said first coupling means, the open-loop response of said regenerative loop coupling means, when combined with the delay of said delay means, said DC blocking filtering means, and said portion of said first coupling means lying between said input and third ports of said first coupling means, being selected to have nominally unity gain and zero degrees of phase shift at said selected resonance frequency, whereby the delay of said regenerative loop establishes said selected resonance frequency, the open-loop gain of said main loop, with said regenerative loop in said main loop, is maximized at said selected resonance frequency, and the noise of said analog-to-digital conversion means is attenuated at said selected resonance frequency when both said main and regenerative loops are closed.

5,608,401

THREE-LEVEL DIGITAL-TO-ANALOG CONVERTER FOR LOW-POWER CONSUMPTION

Thayamkulangara R. Viswanathan, Albany Township, and Louis A. Williams, III, Allentown, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1994, Ser. No. 365,527
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—144 **22 Claims**



1. A three-level digital-to-analog converter comprising:

three level control means for converting incoming digital signals to control signals having Low, Medium and High levels;

a plurality of switches coupled with and responsive to said three level control means;

load means positioned between and responsive to said plurality of switches for generating analog signals; and

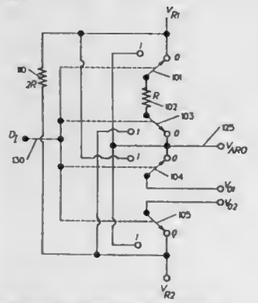
a source of potential coupled to said switches wherein substantially no power is drawn from said source when said control signals are at said Medium level.

5,608,402

EDGE TRIGGERED SAMPLE AND HOLD CIRCUIT AND CIRCUITS CONSTRUCTED FROM SAME

Robert J. Distinti, Fairfield, Conn., assignor to Intellectual Property Development Associates of Connecticut, Inc., Trumbull, Conn.

Division of Ser. No. 883,251, May 13, 1992, Pat. No. 5,402,125, which is a division of Ser. No. 714,246, Jun. 12, 1991, Pat. No. 5,202,687. This application Mar. 24, 1995, Ser. No. 410,227
Int. Cl.[6] H03M *1/44*
U.S. Cl. 341—162 **5 Claims**



1. An analog memory circuit, comprising:

a plurality of serially coupled switched resistor signal converter cells each having a control input and an analog voltage output that is predeterminally related in magnitude to analog voltage outputs of others of said converter cells;

a plurality of comparators each having a first input coupled to an analog voltage signal and a second input coupled to one of said analog voltage outputs of one of said converter cells, each of said plurality of comparators having an output for indicating whether said analog voltage signal coupled to said first input is less than or greater than an analog voltage coupled to said second input; and

a plurality of latches individual ones of which have an input coupled to said output of one of said comparators and an output coupled to said control input of one of said converter cells;

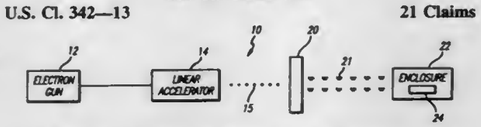
wherein each of said converter cells has a first input node, a second input node, a first output node and a second output node, and comprises a first resistance coupled between the first input node and the second input node; a plurality of switch means; and a second resistance, the second resistance being coupled to said plurality of switch means for being switchably coupled between, in a first state, the first input node and the first output node, and, in a second state, between the second input node and the second output node, and wherein in the first state the second output node is switchably coupled to the second input node and in the second state the first output node is switchably coupled to the first input node.

5,608,403

MODULATED RADIATION PULSE CONCEPT FOR IMPAIRING ELECTRICAL CIRCUITRY

Robert B. Miller, Albuquerque, N.M., assignor to The Titan Corporation, San Diego, Calif.

Filed Jan. 31, 1995, Ser. No. 381,137
Int. Cl.[6] H04K *3/00*
U.S. Cl. 342—13 **21 Claims**



1. A method of impairing an operation of electrical circuitry, including the steps of:

generating pulses of electrons,

bunching the electrons in each pulse,

accelerating the bunched electrons in each pulse,

converting the bunched electrons in each pulse to bunched photons, and

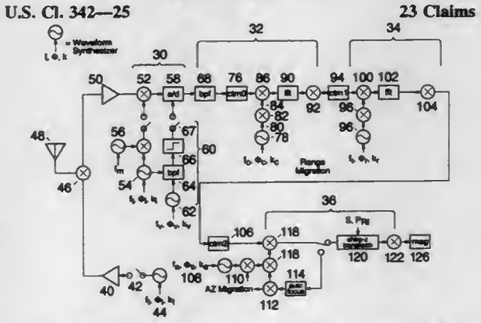
directing the bunched photons in each pulse to the electrical circuitry for impairing the operation of the electrical circuitry.

5,608,404

IMAGING SYNTHETIC APERTURE RADAR

Bryan L. Burns, Tijeras, and J. Thomas Cordaro, Albuquerque, both of N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1993, Ser. No. 81,462
Int. Cl.[6] G01S *13/90*
U.S. Cl. 342—25 **23 Claims**



1. A pulsed synthetic aperture radar having real-time motion compensation, comprising:

(a) means to transmit a signal to a field of view;

(b) means to receive a returned signal scattered from said field of view;

(c) means to process said returned signal to obtain coarse-resolution in azimuth, then to obtain fine-resolution in range, and then to obtain fine-resolution in azimuth, all as functions of actual radar motion to create a real-time radar image of said field of view.

5,608,405

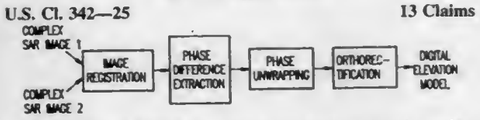
METHOD OF GENERATING VISUAL REPRESENTATION OF TERRAIN HEIGHT FROM SAR DATA EMPLOYING MULTIGRID ANALYSIS

Mark D. Pritt, Walkersville, Md., assignor to Lockheed Martin Corporation, Bethesda, Md.

Filed Oct. 6, 1995, Ser. No. 539,928

Int. Cl.[6] G01S *13/90*

U.S. Cl. 342—25 **13 Claims**



1. A method of generating a digital elevation model of a surface comprising transmitting radar pulses from a synthetic aperture radar system to be reflected from said surface,

receiving radar pulses reflected from said surface at a first angle and a second angle slightly different than said first angle with said synthetic aperture radar system,

performing the following steps with a data processor:

processing said received reflected radar pulses into a first set of data representing the phase of the received reflected pulses at said first angle from each increment of said surface and into a second set of data representing the phase of the reflected radar pulses at said second angle from each increment of said surface,

determining a third set of data representing the difference in the phases between said first set of data and said second set of data for each of said increments, said third set of data representing the relative position of increments of said surface in modulo form, unwrapping said third set of data into a fourth set of digital data representing the relative position of said surface increments in digital form, said unwrapping step comprising determining partial derivatives of said third set of data and representing said partial derivatives as a fifth set of data,

defining a least squares equation representing said fourth set of data in terms of said fifth set of data and the partial derivatives of said fourth set of data,

solving said equation by relaxation in a multigrid algorithm which converges to said fourth set of data.

5,608,406

DEVICE FOR CONTROLLING DISCHARGE OF A CHARGE CAPACITOR IN A TRANSPONDER

Gerhard Eberth, Eching-Weixerau, and Josef H. Schuermann, Oberhummel, both of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 371,726, Jan. 12, 1995, abandoned. This application Jun. 20, 1996, Ser. No. 667,343

Int. Cl.[6] G01S *13/75*

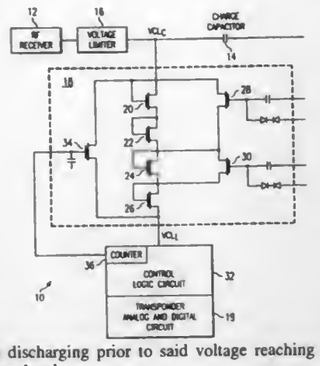
U.S. Cl. 342—51 **17 Claims**

1. A transponder device, comprising:

a charge capacitor operable to store voltage in response to an interrogation signal;

a transponder analog and digital circuit operable to transmit a data telegram in response to a discharge of said voltage stored in said charge capacitor; and

a discharge circuit operable to prevent said charge capacitor from discharging prior to said voltage reaching a threshold voltage level.



5,608,407

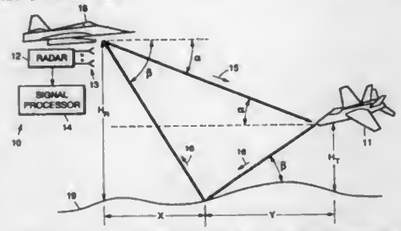
BISTATIC ANGLE-CUED RADAR SYSTEM AND PROCESSING METHOD

Atul Jain, and James K. Crosby, both of Los Angeles, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 17, 1995, Ser. No. 423,076

Int. Cl.[6] G01S *13/46*

U.S. Cl. 342—126 **5 Claims**



1. An angle-cued radar system that generates signals indicative of an estimate of range to a target using angle cueing only, said system comprising:

a radar comprising an electronically scanned antenna array for transmitting radar pulses at the target, and for receiving multipath ground-bounce returns from the target; and

a signal processor coupled to the radar for processing the multipath ground-bounce returns received from the target, for searching a projection of the line-of-sight to the target on the ground to determine an angle corresponding to a peak target reflected ground-bounce return, which peak return corresponds to the multipath angle to the target, and for computing the range to the target using the multipath angle to the target and the position of the radar relative to the target.

5,608,408

METHOD OF SOUNDING A CHANNEL

Julien Caratori, Savigny sur Orge, and Claude Goutelard, Bretigny sur Orge, both of France, assignors to Societe d'Etudes Thematiques et des Idees 'SET ID', Paris, France

PCT No. PCT/FR95/00314, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/27220, PCT Pub. Date Oct. 12, 1995

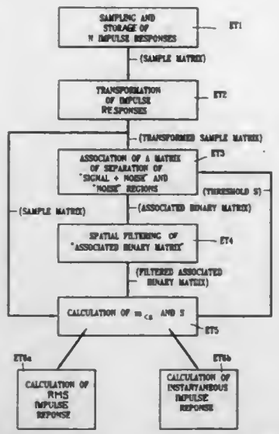
PCT Filed Mar. 15, 1995, Ser. No. 553,502

Claims priority, application France, Mar. 31, 1994, 94 03808

Int. Cl.[6] G01S *7/292;7/295*

U.S. Cl. 342—196 **12 Claims**

1. A method of sounding a channel by emitting signals and processing noise and sounding signals received from said channel in response to said emitted signals, comprising the following cyclic steps:



emitting a short pulse ($I_1 \ldots I_{N-1}$) into said channel separated from a preceding short pulse ($I_0, \ldots I_{N-2}$) by a predetermined time interval ($\tau_1-\tau_0, \ldots, \tau_{n-1}-\tau_{n-2}$),

receiving and acquiring an impulse response ($RI_1, \ldots RI_{N-1}$) during a time interval equal to said predetermined time interval and succeeding said step of emitting said short pulse ($I_0, \ldots I_{N-1}$), and

sampling said impulse response ($RI_0, \ldots RI_{N-1}$) to produce a series of M initial samples (EO_0 to $EO_{M-1}, \ldots E(N-1)_0$ to $E(N-1)_{M-1}$) which are defined by time ranks (0 to (M−1)), and which are stored in an initial sample matrix,

characterized in that it further comprises the steps of:

change-of-space transforming M sample columns each made up of N initial samples (EO_0 to $E(N-1)_0, \ldots EO_{M-1}$ to $E(N-1)_{M-1}$) that have equal respective time ranks in N latest impulse responses that have been successively acquired and sampled to produce a transformed sample matrix,

associating with said transformed sample matrix a binary matrix containing binary elements that are respectively associated with the transformed samples in said transformed sample matrix, and that each take one of two binary states depending on the result of comparing a modulus of said transformed associated sample to a threshold,

spatial filtering of said binary matrix to produce a filtered binary matrix in which each binary element takes a state representative of the presence or the absence of the sounding signal in the associated initial sample, and

calculating a channel impulse response substantially free of noise on the basis only of samples in the transformed sample matrix that are respectively associated with binary elements of the filtered binary matrix having states that are representative of the presence of the sounding signal.

5,608,409

ADAPTIVE ARRAY WITH AUTOMATIC LOOP GAIN CONTROL

Kenneth F. Rilling, 1190 Crestline Dr., Cupertino, Calif. 95014

Filed Mar. 28, 1995, Ser. No. 411,290

Int. Cl.[6] G01S *3/16;3/28*

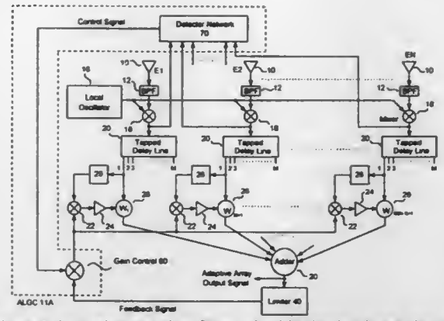
U.S. Cl. 342—380 **48 Claims**

1. A method for automatically controlling the gain of adaptive loops of an adaptive array to reduce the effects of a desired signal with multiple images with different delay times and of interference of input signals of said adaptive array with the performance of said adaptive array degraded by an increased difference between the gain and the optimum gain of any of said adaptive loops due to changes in the input signal level of said adaptive array to improve said performance of said adaptive array, said adaptive array includes a feedback function coupled to receive the adaptive array output signal to generate the feedback signal, said method comprising the steps of:

a. detecting the signal strength of a representation of at least one of said input signals of said adaptive array to generate a control signal representing the relationship between said input signal level of said adaptive array and change of said gain of said adaptive loops;

b. lowpass filtering said control signal of step a. to generate a lowpass filtered control signal; and

c. adjusting said gain of said adaptive loops with said lowpass filtered control signal of step b. to reduce said increased difference between said gain and said optimum gain of each of said adaptive loops.



5,608,410

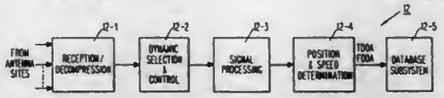
SYSTEM FOR LOCATING A SOURCE OF BURSTY TRANSMISSIONS CROSS REFERENCE TO RELATED APPLICATIONS

Louis A. Stilp, Broomall, Pa.; Curtis A. Knight, Washington, D.C., and John C. Webber, Herndon, Va., assignors to Associated RT, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 59,248, May 7, 1993, Pat. No. 5,327,144. This application Mar. 11, 1994, Ser. No. 212,552

Int. Cl.[6] G01S *1/24;3/02*

U.S. Cl. 342—387 **22 Claims**



1. A process for determining the location of a "standard" mobile transmitter not specifically designed or altered to provide signals facilitating the location of the transmitter, said standard mobile transmitter being operative to receive a message signal and to respond to said message signal by transmitting a bursty responsive transmission indicative of the identity of the standard mobile transmitter, comprising the steps of:

(a) receiving a bursty responsive transmission from said standard mobile transmitter at first, second, and third ground-based antenna sites:

(b) digitalizing the received bursty responsive transmission at each of said first, second, and third antenna sites;

(c) determining first, second, and third time differences of arrival, said first time difference of arrival representing a difference between the time of arrival of said responsive transmission at said first and second antenna sites, said second

time difference of arrival representing a difference between the time of arrival of said responsive transmission at said first and third antenna sites, and said third time difference of arrival representing a difference between the time of arrival of said responsive transmission at said second and third antenna sites; and

(d) estimating the location of said standard mobile transmitter on the basis of at least said first, second, and third time differences of arrival;

wherein the step of estimating the position of the mobile transmitter comprises making a coarse estimate by creating a grid of possible latitude and longitude positions for each antenna site pair; calculating, for pairs of antenna sites, theoretical time difference of arrival values from points on the grid; determining a function of a sum of squares of the measured time differences of arrival minus the computed time differences of arrival; and coarsely estimating the position as the point at which the function of the sum of squares is a minimum.

5,608,411

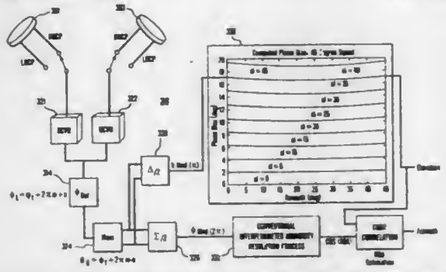
APPARATUS FOR MEASURING A SPATIAL ANGLE TO AN EMITTER USING SQUINTED ANTENNAS

Conrad M. Rose, Dahlgren, Va., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jun. 9, 1995, Ser. No. 480,906

Int. Cl.[6] G01S *5/02;5/04;* **H01Q** *21/06*

U.S. Cl. 342—417 **4 Claims**



1. Apparatus for determining a spatial angular reference to an emitter of RF signals from phase measurements made between at least two antennas comprising:

a. at least a pair of dual polarized antennas having non-parallel, or "squinted", boresights for receiving an incident plane wave RF signal,

b. a switch for selecting like-polarized outputs from each antenna of said pair,

c. means for receiving and measuring the phases between like polarized outputs from said antennas as, respectively, first and second phase signals,

d. a memory for storing respectively, the first and second phase signals,

e. summing means for producing a third signal which is the sum of said first and second signals to thereby remove bias error, said third signal corresponding to the sin (AOA) component of the phase information determined by said means for receiving and measuring,

f. differencing means for producing a fourth signal which corresponds to the difference between said first and second signals removing the sin (AOA) component of the received phase information leaving only bias error induced by antenna squint,

g. processing means for estimating a spatial angle of the emitter from the value of said fourth signal, said spatial angle being referenced to a vector normal to a plane through the boresights of said antennas.

5,608,412

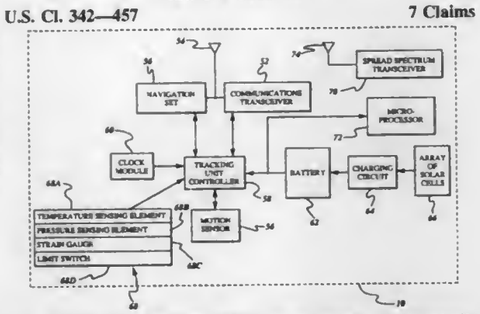
PROTOCOL AND MECHANISM FOR MUTTER MODE COMMUNICATION FOR STATIONARY MASTER TRACKING UNIT

Kenneth B. Welles, II, Scotia; Irfan Ali, Niskayuna, and Daniel D. Harrison, Delanson, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1995, Ser. No. 484,751

Int. Cl.[6] G01S *3/02*

U.S. Cl. 342—457 **7 Claims**



1. A method of tracking mobile assets which are temporarily located in an area having a high density of mobile assets, comprising the steps of:

affixing a mobile tracking unit to each mobile asset to be tracked;

installing a stationary tracking unit in said area having a high density of mobile assets;

establishing a local area network of tracked assets between said stationary tracking unit and a plurality of tracking units affixed to mobile assets in close proximity in said area, each of said tracking units constituting a node of the mobile local area network, said stationary tracking unit being assigned to be a "master" unit and each of said mobile tracking units being a respective "slave" unit; and

approximately locating assets by their respective connections in the local area network where location of the stationary tracking unit is known.

5,608,413

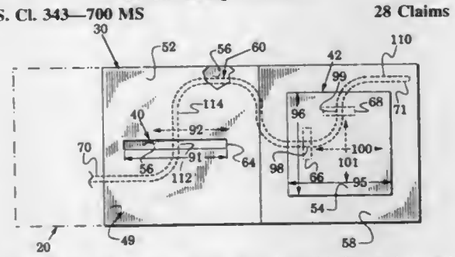
FREQUENCY-SELECTIVE ANTENNA WITH DIFFERENT SIGNAL POLARIZATIONS

Perry A. Macdonald, Culver City, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 483,360

Int. Cl.[6] H01Q *1/38;21/30*

U.S. Cl. 343—700 MS **28 Claims**



1. A dual-frequency antenna for operation with first and second rf signals which respectively have λ_1 and λ_2 wavelengths, comprising:

a slot radiator configured to radiate said first rf signal with linear polarization;

a patch radiator configured to radiate said second rf signal with elliptical radiation; and

a transmission line configured to carry said first and second rf signals and arranged to couple said first rf signal to said slot radiator and to couple said second rf signal to said patch radiator;

wherein;

said slot radiator includes a ground plane configured to define a slot radiative element;

said transmission line is spaced from a first side of said ground plane; and

said slot radiative element is positioned to couple said first rf signal between said transmission line and free space.

5,608,414

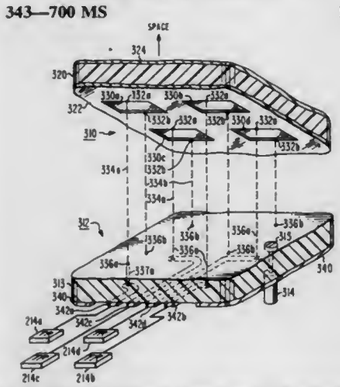
HEAT REJECTING SPACECRAFT ARRAY ANTENNA

Leo J. Amore, Phoenixville, Pa., assignor to Martin Marietta Corp., East Windsor, N.J.

Filed Jun. 30, 1995, Ser. No. 502,740

Int. Cl.[6] H01Q *1/38;13/10*

U.S. Cl. 343—700 MS **11 Claims**



1. An array antenna including a plurality of elemental antennas, for transducing electromagnetic fields, said array comprising;

a substantially planar dielectric substrate which is transparent to visible light and to infrared light, said substrate defining a first surface, and also defining a second surface parallel to said first surface;

an electrically conductive layer of light-reflecting mirror lying on said second surface of said dielectric substrate, said layer of mirror defining a pattern of a plurality of apertures exposing said substrate, which apertures define said elemental antennas, and across which the electric component of said electromagnetic fields may extend in the plane of said mirror;

a support structure mechanically coupled to said second surface of said dielectric substrate, for supporting said dielectric substrate and said mirror;

whereby insolation falling upon said array antenna and passing through said dielectric substrate tends to be reflected by said mirror layer in those regions about said apertures, but insolation falling upon said dielectric substrate at said apertures tends to pass through said apertures, and may be absorbed by said support structure, thereby undesirably tending to raise the temperature of said support structure and substrate; and

a thin layer of semiconductor material covering said second surface of said substrate in the region of said apertures, and in contact with said second surface of said substrate, said layer of semiconductor material tending to reflect visible light components of said insolation, and to radiate infrared energy arising from heating of said support structure.

5,608,415

HIGH-FREQUENCY SIGNAL TRANSMISSION SYSTEM WITH CONICAL CONDUCTORS AND BIAS RESISTOR

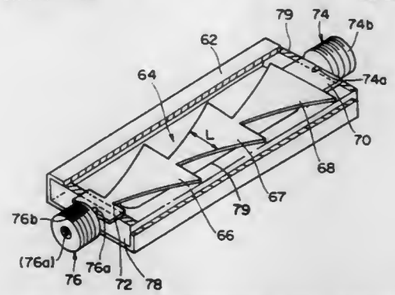
Goro Sugawara, 27-20, Komatsushima 4-chome, Aoba-ku, Sendai-shi, Miyagi-ken, Japan

Division of Ser. No. 201,333, Feb. 24, 1994, Pat. No. 5,508,669. This application May 30, 1995, Ser. No. 453,519

Claims priority, application Japan, Feb. 26, 1993, 5-061471

Int. Cl.[6] H01P *1/30;* **H01Q** *11/02*

U.S. Cl. 343—731 **10 Claims**



1. A high-frequency signal transmission system comprising:

at least one conical inner conductor, having a unitary exponential gradient and having a normalized characteristic impedance at the center represented by two cascaded circuit of a conjugate-matched uniform-impedance line;

a pair of circular lines having identical dimensions and connected respectively to opposite ends of said conical inner conductor for providing a predetermined characteristic impedance; and

a cylindrical outer conductor covering said conical inner conductor and said circular lines with a cavity defined between said conical inner conductor and said cylindrical outer conductor;

further comprising a Vπ bias resistor connected between an end of one of said circular lines which is connected to one of the opposite ends thereof and said cylindrical outer conductor and a feeder connected between the other end of said conical inner conductor and said cylindrical outer conductor said cylindrical outer conductor having a longitudinal slit defined therein where by the high-frequency signal transmission system can operate an RF traveling-wave antenna.

5,608,416

PORTABLE RAPIDLY ERECTABLE DISCONE ANTENNA

James R. Champion, Ellicott City, Md.; Denver N. Tenney, Vienna, Va., and Laurence C. Simms, Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 388,126, Feb. 13, 1995, abandoned, which is a continuation of Ser. No. 49,334, Apr. 21, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,871

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—773 **3 Claims**

1. A central hub for a portable rapidly erectable discone antenna comprising:

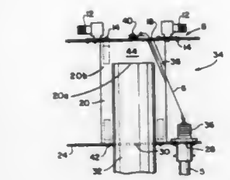
a top plate assembly,

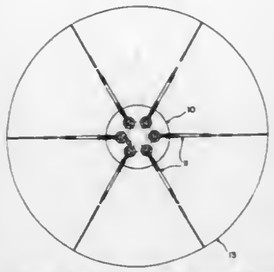
an inverted cup shaped cylindrical spacer provided with a flat closed end and an open end and having a cylindrical interior which terminates in a bottom surface;

a bottom plate;

a plurality of flexible wires; and wherein the top plate assembly is mounted on said flat closed end of said spacer and is provided with means to detachably connect a plurality of telescoping linear elements to the central hub; and

wherein said bottom plate is mounted on said open end of said spacer, and is provided with means for detachably connecting said flexible wires to the periphery of said bottom plate and is





provided with a central opening having a diameter greater than the diameter of the cylindrical interior; and

a supporting mast inserted through the central opening in said bottom plate and extending into the cylindrical interior of said spacer a distance sufficient to come into direct and removeable engagment with the bottom surface of said cylindrical interior of said spacer in abutting supporting relationship.

5,608,417

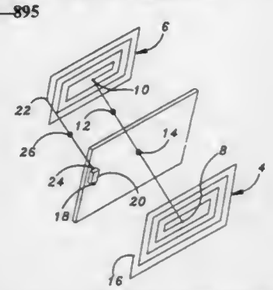
RF TRANSPONDER SYSTEM WITH PARALLEL RESONANT INTERROGATION SERIES RESONANT RESPONSE

Franklin B. de Vall, Boulder, Colo., assignor to Palomar Technologies Corporation, Carlsbad, Calif.

Continuation of Ser. No. 316,694, Sep. 30, 1994, abandoned. This application May 16, 1996, Ser. No. 650,007

Int. Cl.[6] H01Q *1/36*

U.S. Cl. 343—895 **19 Claims**



1. A transponder communications system, comprising:

A) a transponder that includes:

a) means for providing a distributed inductance and capacitance with parallel and series resonance at different respective parallel and series resonant frequencies;

b) an active return signal generator circuit coupled to said inductance and capacitance means, wherein said return signal generator circuit generates and applies to said inductance and capacitance means a return information signal having one of said series resonant frequencies, and

c) a power circuit coupled to said inductance and capacitance means and tuned to respond to an actuation signal received by said inductance and capacitance means, said power circuit having one of said parallel resonant frequencies and supplying an energizing signal to said return signal generator circuit; and

B) an exciter/reader that includes:

a) a transmitter for transmitting said actuation signal to said transponder at one of said parallel resonant frequencies, and

b) a receiver for receiving said information signal transmitted from said transponder at said series resonant frequency.

5,608,418

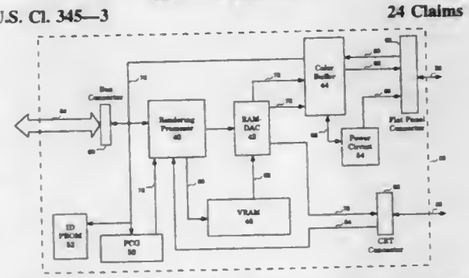
FLAT PANEL DISPLAY INTERFACE FOR A HIGH RESOLUTION COMPUTER GRAPHICS SYSTEM

Sean M. McNally, Mountain View, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 188,521, Jan. 28, 1994, abandoned. This application May 15, 1995, Ser. No. 441,262

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—3 **24 Claims**



1. A graphics circuit for driving one of a cathode ray tube ("CRT") display and a flat panel display, said graphics circuit comprising:

a CRT connector for coupling the CRT display to the graphics circuit;

a flat panel connector for coupling the flat panel display to the graphics circuit;

a frame buffer which contains at least a set of digital pixel data;

a processor coupled to said CRT connector and said frame buffer, said processor senses said CRT connector to determine whether the CRT display is coupled to said CRT connector and transmits at least said set of digital pixel data to said frame buffer;

a ramdac circuit coupled to said processor and said frame buffer, said ramdac circuit includes

circuitry that generates a set of video sync signals for the CRT display,

circuitry that performs a color look-up table function on a pixel data stream provided by said frame buffer to produce a color pixel data stream, if the flat panel display is coupled to the graphics circuit and is color or the CRT display is coupled to the graphics circuit,

circuitry that generates a set of analog video signals based on the color pixel data stream and said set of video sync signals, if the CRT display is coupled to the graphics circuit, and

circuitry that bypasses the color look-up table function on the pixel data stream, if the flat panel display is coupled to the graphics circuit and is monochrome; and

a color buffer circuit coupled to said ramdac circuit, said flat panel connector and said processor, said color buffer circuit includes

circuitry that automatically senses whether (i) the flat panel display is coupled to the graphics circuit and (ii) the flat panel display is color or monochrome,

circuitry that converts the set of video sync signals into a set of color flat panel sync signals, if the flat panel display is coupled to the graphics circuit and is color, and

circuitry that converts the video sync signals into a set of monochrome flat panel sync signals, if the flat panel display is coupled to the graphics circuit and is monochrome.

5,608,419

GAS FLAT DISPLAY TUBE WITH ANODE GATES

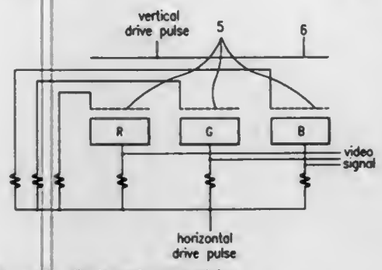
Keum S. Lee, and Byoung J. Rhee, both of Seoul, Rep. of Korea, assignors to Youare Electronics Co., Seoul, Rep. of Korea

Filed Apr. 21, 1995, Ser. No. 426,128

Claims priority, application Rep. of Korea, Apr. 28, 1994, 9165/1994

Int. Cl.[6] G09G *3/10*

U.S. Cl. 345—74 **19 Claims**



1. A gas flat display tube comprising:

a glass container having a discharge gas therein;

a plurality of cathodes extending horizontally and arranged by a predetermined interval in said glass container, for emitting electrons;

a plurality of anodes extending vertically and arranged by a predetermined interval on one side of said glass container, for absorbing the emitted electrons;

a plurality of phosphors arranged in a matrix form on said plurality of anodes and becoming luminous by the electrons absorbed into said anodes; and

a plurality of gates extending vertically and arranged by a predetermined interval on said phosphors, for controlling said emitted electrons to be absorbed into said anodes.

5,608,420

LIQUID CRYSTAL DISPLAY APPARATUS

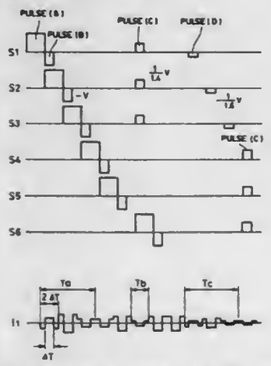
Shinjiro Okada, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 872,179, Apr. 22, 1992, abandoned. This application Mar. 22, 1994, Ser. No. 215,659

Claims priority, application Japan, Apr. 23, 1991, 3-117824

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—89 **6 Claims**



1. A liquid crystal display apparatus for forming a gradation image on a liquid crystal display including a plurality of scanning electrodes disposed on a first substrate, a plurality of signal electrodes disposed on a second substrate opposed to and spaced from the first substrate in a manner perpendicular to the scanning electrodes and a bistable ferroelectric liquid crystal material disposed in a gap between the first and second substrates so that a matrix of pixels is defined by the opposing scanning and signal electrodes, wherein said pixels have respective threshold voltages of respective magnitudes for causing an inversion of a display state thereof, said liquid crystal display apparatus comprising:

(a) means for transmitting a reset pulse for resetting all the pixels on a selected scanning electrode into a first stable state; and

(b) means for transmitting, in succession to the reset pulse, a selection signal to each of the pixels on the selected scanning electrode to cause an area ratio of light transmission Iop (%) of each of the pixels to take a respective desired value such that $0 \leqq Iop \leqq 100$, said selection signal comprising four or more pulses in combination with the reset pulse applied at sufficient predetermined intervals to a subject pixel such that a threshold voltage for causing inversion of the subject pixel during application of each pulse is undistorted by influence of each preceding pulse,

wherein the timing of application of at least one pulse of the selection signal is applied to each of a plurality of scanning electrodes simultaneously.

5,608,421

DRIVE CIRCUIT FOR A DISPLAY APPARATUS

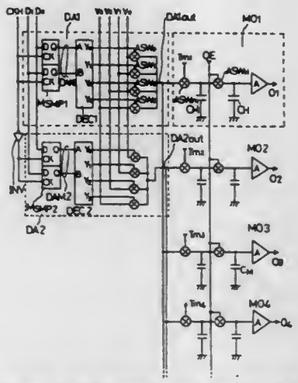
Hisao Okada, Ikoma-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 767,340, Sep. 27, 1991, Pat. No. 5,440,323. This application Jan. 27, 1995, Ser. No. 379,350

Claims priority, application Japan, Sep. 28, 1990, 2-261472

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **2 Claims**



1. A drive circuit for a display apparatus into which a digital video signal is input and in which a plurality of parallel signal electrodes are provided, said circuit comprising:

voltage supplying means for supplying a plurality of signal voltages, the levels of said signal voltages being different;

voltage selecting means, connected to said voltage supplying means, for receiving said digital video signal, for selecting one of said signal voltages in accordance with said digital video signal, and for supplying as an output said selected signal voltage;

signal voltage means, provided for each of said signal electrodes, for receiving said selected signal voltage supplied as said output from said voltage selecting means via a corresponding input switching element and for supplying said selected signal voltage to one of said signal electrodes via a corresponding output switching element; and

selection signal generating means for generating selection signals by which said input switching elements are sequentially conductive, said selection signal generating means being connected to a control terminal of said input switching element in each of said signal voltage means;

wherein said drive circuit comprises a predetermined number of said voltage selecting means, each voltage selecting means having a plurality of switches, said predetermined number being greater than one; and each of said voltage selecting means is connected to a respective one of said signal voltage means corresponding to said signal electrodes at every predetermined number of said voltage selecting means, and said selection signal generating means generates said selection signal by which said input switching elements are conductive for a period which is equal to a multiple number of times of a duration of said digital video signal, said multiple number being equal to said predetermined number, said selected signal voltage and a corresponding one of said selection signals being synchronized with each other.

5,608,422

AUTOMATIC CONTRAST ADJUSTING DEVICE

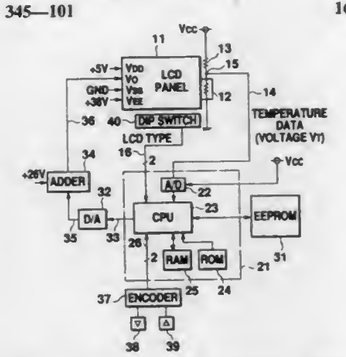
Yoshitaka Ikeda, Ora-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 157,718

Claims priority, application Japan, Nov. 27, 1992, 4-318567

Int. Cl.[6] G09G *3/18*

U.S. Cl. 345—101 **16 Claims**



1. In a liquid crystal display for displaying various items of information at a contrast in response to a given drive voltage, a device for automatically adjusting the contrast during operation of the liquid crystal display comprising:

means for storing a characteristic table in which operating temperatures and drive voltages are related to each other;

an operation switch for setting a drive voltage of said liquid crystal display;

characteristic correction means being responsive to the drive voltage set through said operation which for correcting contents of said characteristic table;

means for measuring temperature of said liquid crystal display; and

liquid crystal drive means being responsive to temperature data provided by said temperature measurement means for reading a drive voltage corresponding thereto from said characteristic table and supplying the drive voltage to said liquid crystal display, wherein said characteristic correction means is responsive to a difference between a value set through said operation switch and a value set preceding the setting for changing a temperature range in which the contents of said characteristic table are to be corrected; and

wherein, when it is assumed that the correction amount of the drive voltage set through said operation switch at temperature t is ΔV_t, that the correction amounts of drive voltage at temperatures t−n−1, t+n+1 and t+n are ΔV_{t-n-1}, ΔV_{t+n+1} and ΔV_{t+n}, respectively, and that α is a constant, said characteristic correction means corrects the characteristic table so as to satisfy an expression of $\Delta V_{t-n-1}=\Delta V_{t+n+1}=\Delta V_{t+n}-\alpha/\Delta V_t$ (n=0, 1, 2, . . .).

5,608,423

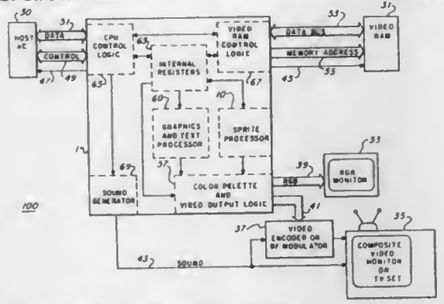
VIDEO DISPLAY PROCESSOR WITH PIXEL BY PIXEL HARDWARE SCROLLING

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 103,498, Aug. 6, 1993, Pat. No. 5,552,804, which is a continuation of Ser. No. 102,873, Aug. 6, 1993, which is a continuation of Ser. No. 803,236, Dec. 5, 1991, Pat. No. 5,379,049, which is a continuation of Ser. No. 455,869, Dec. 18, 1989, Pat. No. 5,089,811, which is a continuation of Ser. No. 262,176, Oct. 20, 1988, abandoned, which is a continuation of Ser. No. 38,476, Apr. 13, 1987, abandoned, which is a continuation of Ser. No. 600,921, Apr. 16, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 488,388

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—123 **15 Claims**



1. A video display processor comprising:

a memory port for reading and writing a plurality of display data consisting of individual display pixels from an external memory;

a horizontal scroll register for storing a horizontal base address;

a horizontal state counter/register connected to said horizontal scroll register, said horizontal state counter/register loaded from said horizontal scroll register at the beginning of each horizontal line of a raster scan display and thereafter counting for each pixel of the horizontal line of the raster scan display;

a vertical scroll register for storing a vertical base address;

a vertical state counter/register connected to said vertical scroll register, said vertical state counter/register loaded from said vertical scroll register at the beginning of each screen of the raster scan display and thereafter counting for each horizontal line of the raster scan display;

an address bus connected to said memory port, said horizontal state counter/register and said vertical state counter/register, said address bus supplying addresses to said memory port corresponding to a current state of said horizontal state counter/register and said vertical state counter/register;

a data bus connected to said memory port for receiving display data consisting of display pixels recalled from the external memory via said memory port; and

a video output logic connected to said data bus for converting display data consisting of display pixels received from said data bus to video display signals.

5,608,424

MOVING PICTURE DISPLAY APPARATUS AND EXTERNAL MEMORY USED THEREFOR

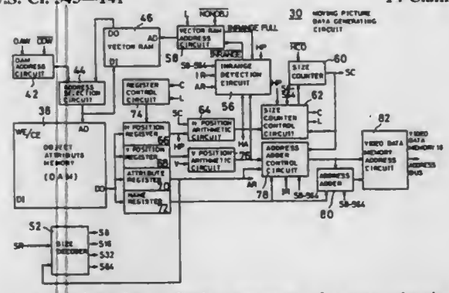
Toyofumi Takahashi; Michitaka Miyoshi, both of Tokyo; Masahiro Otake, and Satoshi Nishiumi, both of Kyoto, all of Japan, assignors to Nintendo Co., Ltd., Kyoto, and Ricoh Co., Ltd, Tokyo, both of Japan

Continuation of Ser. No. 778,997, Nov. 14, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 140,478

Claims priority, application Japan, Feb. 5, 1990, 2-25737; Jul. 31, 1990, 2-205747; Jul. 31, 1990, 2-205748; WIPO, Feb. 4, 1991, PCT/JP91/00130

Int. Cl.[6] G09G *5/22*

U.S. Cl. 345—141 **14 Claims**



1. A moving picture display apparatus of a type wherein a large-sized object can be displayed on a raster-scan type monitor by combining one or more characters each comprising a plurality of dots in horizontal and vertical directions respectively, said moving picture display apparatus comprising:

a first storing device coupled to said monitor for previously storing graphic data of said characters constituting an object in a corresponding address region for each object;

an object designation data element for outputting object designation data used to designate at least one said object to be displayed on said monitor during the next vertical scanning period on said monitor;

a position indicating element for outputting position data used to represent horizontal and vertical positions of said designated object on said monitor on which said designated object is to be displayed;

a size determination data device for outputting size determination data for determining the number of characters constituting an object;

a second storage device for temporarily storing said object designation data and said position data therein;

logic circuitry for logically combining vertical position data read from said second storage device, horizontal position data read from said second storage device, size determination data outputted from said size determination data device and a horizontal line number for determining whether the object is vertically and horizontally in an inrange state and capable of being displayed on said monitor during the next horizontal scanning period; and

read address creating circuitry for creating a read address for said first storage device with respect to an object being determined to be in said inrange state by said logic circuitry, and in response to said object designation data, said position data and said size determination data, thereby applying the so-created read address to said first storage device.

5,608,425

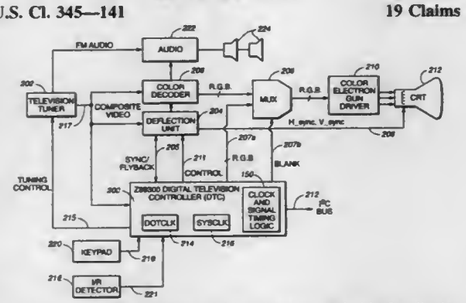
TECHNIQUE FOR GENERATING ON-SCREEN DISPLAY CHARACTERS USING SOFTWARE IMPLEMENTATION

Aleksandr Movshovich, Santa Clara, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 114,657, Aug. 31, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,718

Int. Cl.[6] G09G *5/22*

U.S. Cl. 345—141 **19 Claims**



1. A system for generating a video character suitable for display on a video image display screen, said system including a source for providing a horizontal synchronization (HSYNC) signal and a vertical synchronization (VSYNC) signal to said system, said system comprising:

at least one address bus,

at least one data bus,

a switching device having a first input connected to receive a first clock signal and a second input connected to receive a second clock signal, said switching device being responsive to at least one control signal for providing an output clock signal which is switchable between said first and second clock signals;

a microprocessor having a clock input connected to receive said output clock signal, said microprocessor operating at a clock frequency determined by said output clock signal, wherein said microprocessor is adapted to operate in a normal mode at a first frequency determined by said first clock signal, and is adapted to operate in an on screen display (OSD) mode at a second frequency determined by said second clock signal, said OSD mode enabling the microprocessor to be used to display said character on the display screen, the microprocessor being switchable into either of its operating modes without re-initializing or resetting the microprocessor;

an on screen display logic circuit in communication with said data bus and adapted to operate at said clock frequency determined by said output clock signal for generating at least one video character suitable for display on the video image display screen, said on screen display logic circuit including a plurality of logic circuits having clock inputs connected to receive said output clock signal; and

data transferring means responsive to at least one control signal from the microprocessor and adapted to operate at the microprocessor's clock frequency for transferring video character data retrieved from a character generator ROM to said on screen display logic circuit via said data bus, wherein said at least one microprocessor control signal functions to control said data transferring means.

5,608,426

PALETTE MANAGEMENT FOR APPLICATION SHARING IN COLLABORATIVE SYSTEMS

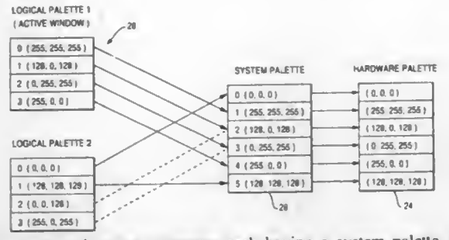
John Hester, Oak Lawn, Ill., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 28, 1993, Ser. No. 128,014

Int. Cl.[6] G09G *5/06;* **G06F** *5/00;13/38;3/153*

U.S. Cl. 345—153 **10 Claims**

1. In a collaborative system comprising one or more host computers connected to one or more remote computers, the host



computer and remote computer each having a system palette, a hardware palette, means for accessing the system palette and hardware palette, and means for updating the hardware palette using the system palette, wherein an image displayed on the host computer is substantially simultaneously displayed on the remote computer, a method of managing palettes used in the image, comprising the steps of:

(a) recognizing when a change is made to the system palette on the host computer;

(b) transmitting the changed system palette from the host computer to the remote computer;

(c) creating a logical palette on the remote computer to reflect the changed system palette received from the host computer; and

(d) selectively updating the system palette on the remote computer to reflect the logical palette created on the remote computer.

5,608,427

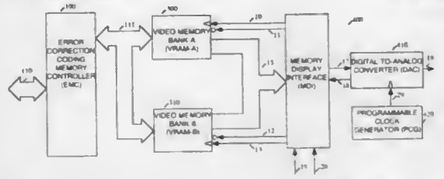
INTERLEAVING PIXEL DATA FOR A MEMORY DISPLAY INTERFACE

Bradley W. Hoffert; Shawn F. Storm, both of Mountain View; Robert M. Stano, Sunnyvale, and Horace A. Olive, Jr., San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 164,319, Dec. 9, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 392,022

Int. Cl.[6] G09G *1/02*

U.S. Cl. 345—201 **19 Claims**



1. A memory display interface for a graphics subsystem, comprising:

pixel processing pipeline capable of processing a set of N pixel data values in parallel synchronized by a pipeline clock wherein N is a number greater than zero;

input stage coupled to receive a set of input pixel data values over a video bus, the input stage coupled to transfer the input pixel data values into the pixel processing pipeline such that N of the input pixel data values are provided to the pixel processing pipeline during each of a plurality of cycles of the pipeline clock;

clock circuit that generates the pipeline clock and that generates a first shift clock to synchronize the input pixel data values on the video bus, the first shift clock and the pipeline clock each having a frequency determined by a frequency of a display device for the graphics subsystem and by a width of each input pixel data value on the video bus and by the number N.

5,608,428

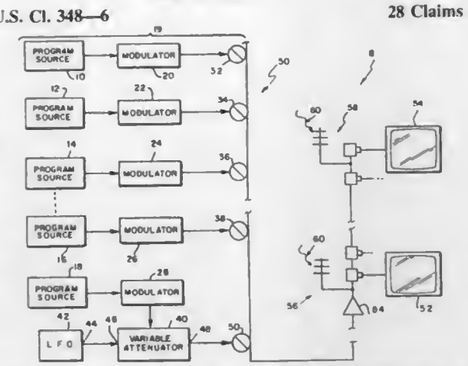
RADIO FREQUENCY LEAKAGE DETECTION SYSTEM FOR CATV SYSTEM

Terry W. Bush, Greenwood, Ind., assignor to Trilithic, Inc., Indianapolis, Ind.

Filed Jun. 9, 1994, Ser. No. 257,198

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—6 **28 Claims**



1. In a communication circuit comprising at least one source of program material, at least one modulator, a carrier frequency signal source for each of the modulators, means for coupling the program material sources to the modulators, means for coupling the program material-modulated carrier frequencies in the circuit, terminal apparatus for demodulating at least one of the program material-modulated carrier frequency signals, the terminal apparatus including automatic gain control (AGC) means having an AGC bandwidth, and means for coupling the terminal apparatus to the circuit, the improvement wherein the means for coupling one of the program material-modulated carrier frequencies in the circuit comprises a variable attenuator having a control input, a program material-modulated carrier frequency input, and a variably attenuated, program material-modulated carrier frequency output, an oscillator for generating at an oscillator output a signal having a frequency within the AGC bandwidth, means for coupling said one of the program material modulated carrier frequencies to the program material-modulated carrier frequency input, means for coupling the oscillator output to the control input, and means for coupling the variably attenuated, program material-modulated carrier frequency output in the circuit.

5,608,429

LASER MARKING METHOD, LASER MARKING COMPOSITION AND ARTICLES HAVING COLOR DEVELOPING LAYER MADE OF SAID COMPOSITION

Shoiti Hayashihara, and Masaki Shinmoto, both of Yono, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, and Kansai Paint Kabushiki Kaisha, Amagasaki, both of Japan

Filed Jul. 27, 1994, Ser. No. 281,363

Claims priority, application Japan, Aug. 2, 1993, 5-208156

Int. Cl.[6] B41J *2/005;* **C09D** *11/00*

U.S. Cl. 346—135.1 **11 Claims**

1. A laser marking composition wherein an inorganic compound has an absorption peak on the infrared absorption spectrum in the region of 900–1,000 cm^{-1}, containing as essential components a color former, a color developer and aluminum hydroxide as said inorganic compound having said absorption peak on said infrared absorption spectrum in the region of 900–1,000 cm^{-1}.

5,608,430

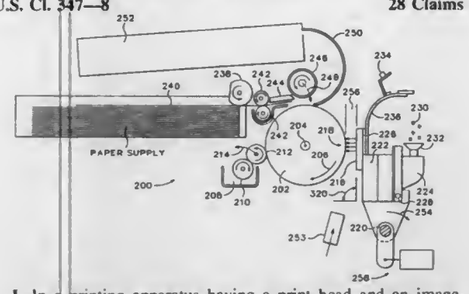
PRINTER PRINT HEAD POSITIONING APPARATUS AND METHOD

Michael E. Jones, Portland, and Randy C. Karambelas, Milwaukie, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 206,998, Mar. 7, 1994, Pat. No. 5,488,396. This application Sep. 2, 1994, Ser. No. 300,020

Int. Cl.[6] B41J *25/308*

U.S. Cl. 347—8 **28 Claims**



1. In a printing apparatus having a print head and an image-receiving medium that move in respective first and second directions and in which the print head is spaced apart a desired distance from the image-receiving medium in a third direction, a print head positioner comprising in combination:

a shaft to which the print head is affixed, the shaft having an axis of rotation oriented in the first direction; and

a print head tilt angle positioner that rotates the shaft about the axis of rotation to position the print head in the third direction at respective printing and maintenance positions relative to the image-receiving medium, the print head distance from the image-receiving medium being established by controllablly limiting rotation of a tilt arm with a coupling space apart from the shaft and slidingly articulated with a slot in an elongated flexure as the tilt arm moves through a range of angular positions to move the print head from shipping position to the printing and maintenance positions, the tilt arm being immovable in the slot in the printing position and the print head distance further being adjustable by movement of a selectively rotatable tilt angle adjuster.

5,608,431

BIDIRECTIONAL INK JET RECORDING HEAD

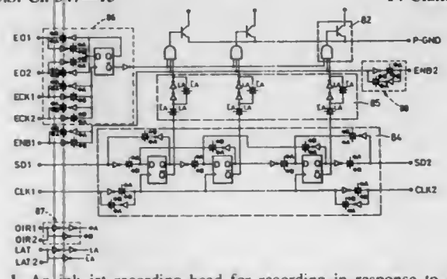
Hideaki Kishida, Yamato, and Akira Katayama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,757, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 513,869, Apr. 24, 1990, abandoned. This application Jul. 18, 1994, Ser. No. 276,490

Claims priority, application Japan, Apr. 24, 1989, 1-103976

Int. Cl.[6] B41S *2/07*

U.S. Cl. 347—13 **14 Claims**



1. An ink jet recording head for recording in response to an inputted driving direction control signal indicating an input direction, said recording head comprising:

a pair of recording units provided on opposite sides of a base plate, each one of said pair of recording units comprising:

a plurality of recording elements for discharging ink onto a recording medium, said recording elements comprising heat generating elements for generating heat energy to emit ink for recording,

ink paths and emission ports, said emission ports communicating with said ink paths for directing emitted ink onto the recording medium,

a driving integrated circuit having a transmission path for inputting serially an input recording data signal, and a shift register for serially inputting the input recording data signal through said transmission path in a sequence and for supplying the recording signal in parallel to said plurality of recording elements, wherein said transmission path is switchable between a first state in which said transmission path transmits the recording data to said shift register in a first direction in an order of an alignment of said recording elements and a second state in which said transmission path transmits the recording data to said shift register in a second direction opposite to the first input direction,

controlling driving of direction control means for controlling driving of said plurality of recording elements, according to the inputted driving direction control signal, bidirectionally in an order along the input direction of the driving direction control signal, and

time divisional driving means for driving sequentially the plural recording elements in predetermined units of plural elements according to the input direction of the driving direction control signal,

wherein ink droplets discharged in a same recording line from two corresponding emission ports of said pair of recording units are deposited onto substantially a same locus.

5,608,432

INK JET APPARATUS AND RECOVERY MECHANISM THEREFOR

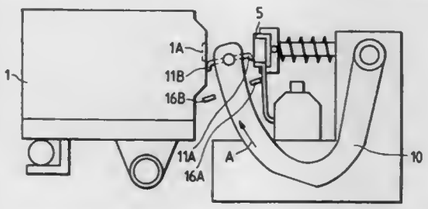
Hideki Yamaguchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,273

Claims priority, application Japan, Jun. 22, 1993, 5-150772; Dec. 14, 1993, 5-342348

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **18 Claims**



1. A recovery mechanism for an ink jet apparatus having a cap for capping a discharge port of an ink jet head, comprising:

cap cleaning means for cleaning a surface of the cap which opposes a surface of the head having the discharge port, said cap cleaning means comprising a blade; and

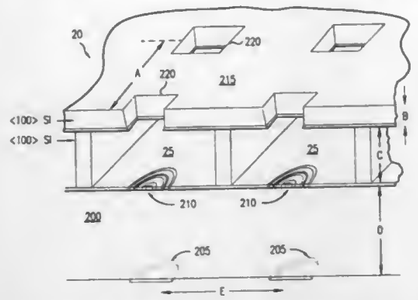
head cleaning means for cleaning the surface of the head having the discharge port, wherein said cap cleaning means and said head cleaning means can be positioned at a location between the head and the cap when said surface of the head is opposed to said surface of the cap so that at said location cleaning of both said surface of the cap and said surface of the head are performed in parallel.

5,608,433

FLUID APPLICATION DEVICE AND METHOD OF OPERATION

Calvin F. Quate, Stanford, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1994, Ser. No. 294,059
Int. Cl.[6] B41J 2/14
U.S. Cl. 347—37 34 Claims



1. A method of transferring fluid to a substrate from a fluid applicator having a plurality of fluid ejectors, the substrate being partitioned into a matrix of cells covering the substrate, the substrate having a predetermined width, and the cells each including a plurality of fluid-receiving sites, the fluid applicator having a width substantially equal to the predetermined width, the method comprising the steps of:

associating each ejector of the fluid applicator with a respective one of the cells of the substrate;

ejecting fluid from each ejector toward a designated fluid-receiving site of the respective cell associated with each ejector as needed to apply a desired pattern of fluid to the substrate;

changing the designated fluid-receiving site within the respective cell associated with each ejector toward which each ejector ejects fluid; and

repeating the ejecting and changing steps until the fluid applicator transfers fluid to all of the fluid-receiving sites of the substrate as needed to apply the desired pattern of fluid to the substrate.

5,608,434

ELECTRICAL INTERCONNECT SYSTEM FOR A FLEXIBLE CIRCUIT

Arthur K. Wilson, San Diego; Patricia S. Brown, Encinitas, and Jason R. Arbeiter, Poway, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 56,692, Apr. 30, 1993, Pat. No. 5,372,512.
This application Oct. 12, 1994, Ser. No. 321,947
Int. Cl.[6] B41J 2/14; H01R 9/09
U.S. Cl. 347—50 2 Claims

1. An inkjet printer comprising:

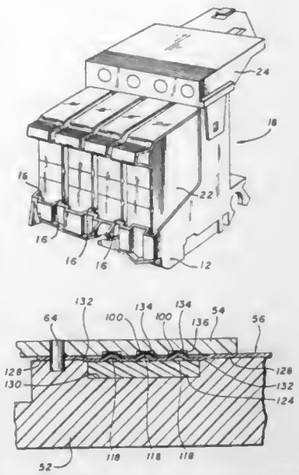
a frame;

a carriage mounted on said frame;

first and second inkjet pens mounted on said carriage and having first and second sets of electrical contacts respectively;

an electrical circuit for selectively driving said inkjet pens, said circuit providing a third set of electrical contacts, wherein said third set of electrical contacts is recessed;

a flexible interconnection circuit for connecting said first and second sets of contacts to said third set of contacts, said flexible interconnection circuit including a plurality of protrusions on which a fourth set of electrical contacts are disposed to engage said third set of contacts; and



spring means for pressing said fourth set of contacts onto said third set of electrical contacts.

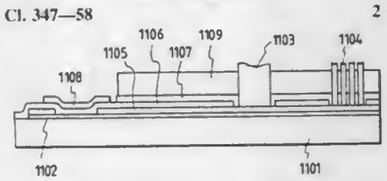
5,608,435

METHOD FOR PRODUCING INK JET HEAD HAVING A PLATED BUMP-SHAPED ELECTRODE

Yutaka Koizumi, Tokyo, and Yasutomo Watanabe, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 831,642, Feb. 7, 1992, Pat. No. 5,243,363, which is a continuation of Ser. No. 690,340, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 383,085, Jul. 21, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 71,002

Claims priority, application Japan, Jul. 22, 1988, 63-182880; Jul. 7, 1989, 1-174049; Jul. 7, 1989, 1-174050; Jul. 7, 1989, 1-174051; Jul. 7, 1989, 1-174052
Int. Cl.[6] B41J 2/05
U.S. Cl. 347—58 2 Claims



1. A process for producing an ink jet recording device, comprising the steps of:

providing a support member having an electro-thermal converting member and a wiring electrically connected to said electro-thermal converting member thereon;

forming a first insulating layer on said support member;

forming on said support member a second insulating layer for increasing a protruded height of a bump-shaped electrode, said second insulating layer having a desired thickness;

removing a part of said first and said second insulating layers to expose a portion of said wiring;

forming a bump-shaped electrode to a height corresponding to the thickness of said second insulating layer on said exposed portion of said wiring by electroplating; and

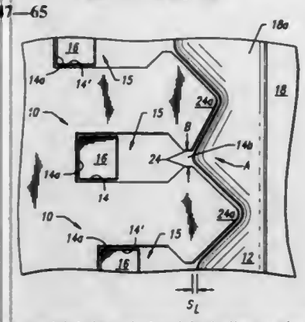
removing said second insulating layer, resulting in said bump-shaped electrode having a desired height.

5,608,436

INKJET PRINTER PRINTHEAD HAVING EQUALIZED SHELF LENGTH

Kit C. Baughman; Jeffrey A. Kahn, both of Corvallis; Paul H. McClelland, Monmouth; Kenneth E. Trueba, and Ellen R. Tappon, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 9,151, Jan. 25, 1993, Pat. No. 5,387,314.
This application Oct. 14, 1994, Ser. No. 323,187
Int. Cl.[6] B41J 2/05
U.S. Cl. 347—65 5 Claims



1. An improved ink-jet printhead including a plurality of ink-propelling elements, each ink-propelling element comprising a resistor element disposed in a separate drop ejection chamber defined by three barrier walls and a fourth side open to a reservoir of ink common to at least some of said elements, and a plurality of nozzles comprising orifices disposed in a cover plate near said elements, each orifice operatively associated with a resistor element for ejecting a quantity of ink normal to the plane defined by each said element and through said orifices toward a print medium in defined patterns to form alphanumeric characters and graphics thereon, wherein ink is supplied to said element from a common ink fill slot by means of an ink feed channel, the distance from said ink fill slot to the entrance of each said ink feed channel defining a shelf length of said printhead, each drop ejection chamber provided with a pair of opposed projections formed in said barrier walls in said ink feed channel and separated by a width to cause a constriction between said ink fill slot and said ink feed channel, and each drop ejection chamber provided with lead-in lobes formed in said barrier layer disposed between said projections and separating one ink feed channel from a neighboring ink feed channel, wherein the improvement comprises:

said ink fill slot and said plurality of drop ejection chambers and associated ink feed channels formed on one substrate, with said ink fill slot having an extended portion which follows the contour of said barrier layer defining said lead-in lobes to provide an equalized shelf length whose length is reduced by said extended portion.

5,608,437

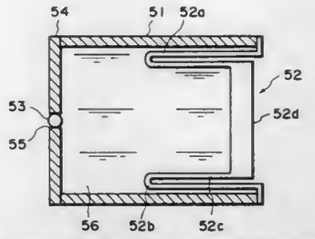
INK CONTAINER AND INK JET RECORDING APPARATUS USING SAME

Kazuo Iwata; Masanori Takenouchi, both of Yokohama; Kenjiro Watanabe, Tokyo; Toshihiko Ujita, Yamato; Torachika Osada; Kazuhiro Nakajima, both of Yokohama; Hidemi Kubota, Komae; Yasuo Kotaki, Yokohama; Keiichiro Tsukuda, Kawasaki; Yohei Sato, and Takashi Saito, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,447
Claims priority, application Japan, Nov. 18, 1991, 3-329546
Int. Cl.[6] B41J 2/175; B65D 35/10
U.S. Cl. 347—86 10 Claims

1. An ink container comprising:

a cylindrical member having a closed end, an opposite open end and an internal surface, said cylindrical member further having an ink supply port for allowing ink to be consumed; and



an elastic member, having cross-section of a size substantially equal to a cross-section of said cylindrical member, and including a side portion extending along the internal surface of said cylindrical member and a bottom portion opposed to the closed end of said cylindrical member, wherein an open end of said elastic member is fixed to said cylindrical member to cover the open end of said cylindrical member to define an ink containing portion;

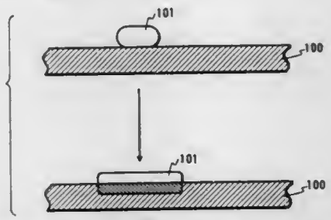
wherein the side portion of said elastic member has a bent-back portion, which, when the ink containing portion is full, is effective to position the bottom portion of said elastic member adjacent the open end of said cylindrical member, and is bent back along the internal surface of said cylindrical member, and the bent-back portion and the bottom portion, which is less easily deformable than the bent-back portion, are movable along the internal surface in response to an internal pressure reduction caused by consumption of ink through said ink supply port, wherein the bent-back portion and the bottom portion maintain a substantially constant negative pressure in said ink containing portion regardless of a position of the bottom portion.

5,608,438

INK JET RECORDING METHOD AND APPARATUS

Takao Koike; Koichi Saito; Shinji Tabata, and Koichi Naitoh, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1994, Ser. No. 286,282
Claims priority, application Japan, Aug. 9, 1993, 5-197282
Int. Cl.[6] B41J 2/005; 2/21
U.S. Cl. 347—100 14 Claims



1. An ink jet recording method using a plurality of recording heads each of which jets droplets of inks including a water-soluble dye of different color to record an image on a recording medium, comprising the steps of:

jetting a first ink from one of said plurality of recording heads to print on said recording medium, said first ink having an absorption coefficient (Ka) of 0.5 $ml/m^2 \cdot ms^{1/2}$ or smaller and a wetting time (Tw) of 50 to 200 msec; and

jetting a second ink from one of said plurality of recording heads to print on said recording medium, said second ink having an absorption coefficient (Ka) of 1.0 $ml/m^2 \cdot ms^{1/2}$ or larger and a wetting time (Tw) of 20 msec or shorter;

wherein said step of jetting said second ink is performed so that said second ink is printed on said recording medium after at least a time Td, given by the following formula, elapses from the printing of said first ink on said recording medium;

$Td=\{(Vd\times N+Vr-Vb)/Ka\}^2\times 10^{-3}$ (sec)

where

Vd (ml): first ink drop volume

N: number of dots per unit area (m^2);

Vr ml/m^2: coarse index of the recording medium;

Vb ml/m^2: value of first ink absorption rectilinear curve inclined at Ka, when T (ink contact time)=0; and

Ka: the absorption coefficient of said first ink.

5,608,439

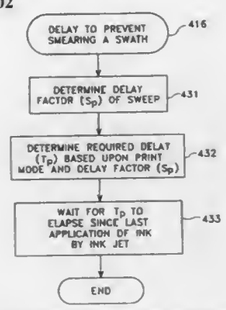
DENSITOMETER FOR ADAPTIVE CONTROL OF INK DRYING TIME FOR INKJET PRINTER

Jason R. Arbeiter, Poway; Aneesa R. Scandalis, Escondido; Brent Richtsmeier, and Brad Nakano, both of San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 56,330, Apr. 30, 1993, abandoned. This application Aug. 4, 1995, Ser. No. 511,321

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—102 **12 Claims**



1. An inkjet printer for printing an image on a sheet of print media, comprising:

a carriage supporting an inkjet print head for applying liquid ink to said sheet under said print head as successive columns of dots contained within each of a plurality of horizontal swaths to thereby print a plurality of respective horizontal portions of said image,

a carriage drive mechanism to move said carriage horizontally relative to said sheet to thereby sweep said print head across a horizontal swath to thereby print a horizontal portion of said image within said horizontal swath,

a sheet feeding mechanism independent of said carriage drive mechanism to move said sheet vertically relative to said carriage to thereby print a first said horizontal portion of said image within a first said horizontal swath and then a second said horizontal portion of said image within a second said horizontal swath vertically displaced from said first horizontal swath, and

a controller for inhibiting said carriage drive mechanism from moving said print head horizontally over said first horizontal swath after said first horizontal portion has been printed until a first delay has elapsed following the printing of said first horizontal portion, wherein said first delay is determined by said controller from how much of said ink is applied a in at least one predetermined area of said first horizontal swath,

whereby any localized dampening of the sheet within said predetermined area will have dissipated to a point where any remaining cockle will not cause the sheet to come into contact with the print head when the print head makes a second pass over said predetermined area.

5,608,440

THERMAL PRINTER FOR SELECTIVELY PRINTING ON ONE OR MORE SHEETS OF PAPER

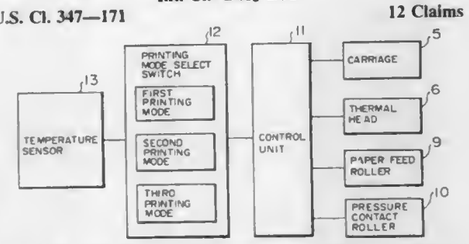
Etsuke Takebe, Iwate-ken, Japan, assignor to Alps Electric Co., Ltd, Tokyo, Japan

Filed Oct. 2, 1995, Ser. No. 537,554

Claims priority, application Japan, Oct. 20, 1994, 6-255384; Mar. 17, 1995, 7-059020

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—171 **12 Claims**



1. A thermal printer for printing on one or more sheets of recording paper, said thermal printer comprising:

a carriage movably mounted adjacent a platen;

a thermal head mounted on the carriage and movable to press the one or more sheets of recording paper against the platen;

a control unit for controlling movement of the carriage and for energizing heating elements of the thermal head such that the thermal head produces thermal energy, the control unit including means for selecting between a first printing mode for printing on a single sheet of heat-sensitive recording paper, a second printing mode for printing on a single sheet of plain recording paper by melting and transferring ink of an ink ribbon and a third printing mode for printing on a plurality of superposed sheets of recording paper for multiple copying.

5,608,441

THERMAL-TRANSFER RECORDING PROCESS

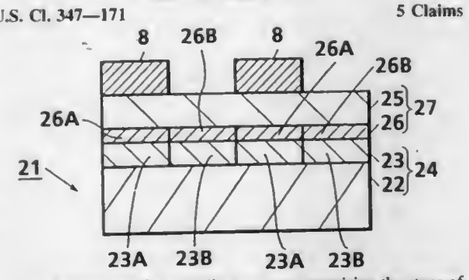
Yonosuke Takahashi, and Fumiaki Shinozaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 134,882, Oct. 13, 1993, Pat. No. 5,534,905. This application Apr. 4, 1996, Ser. No. 628,140

Claims priority, application Japan, Oct. 13, 1992, 4-301807; Nov. 17, 1992, 4-330927

Int. Cl.[6] B41M *5/26*

U.S. Cl. 347—171 **5 Claims**



1. A thermal-transfer recording process comprising the steps of:

(1) placing a transfer material comprising a support film and an image forming layer provided thereon which contains a coloring material and an organic polymer on an image-receiving sheet comprising a substrate and a positive-type photosensitive thermal-adhesive layer in such a manner that the image forming layer and the photosensitive thermal-adhesive layer come into contact with each other, to form a composite;

(2) imagewise heating the surface of the support film side of the composite using a thermal head to increase a bonding strength between the image forming layer and the photosensitive thermal-adhesive layer in the heated portion;

(3) separating the transfer material from the image-receiving sheet leaving the image forming layer in the heated portion on the photosensitive thermal-adhesive layer to form a colored replica image on the image-receiving sheet;

(4) exposing the whole surface of the photosensitive thermal-adhesive layer on the substrate to ultraviolet rays via the colored replica image; and

(5) treating the exposed layer with a developing solution to remove the exposed layer in the area having no colored replica image thereon.

5,608,442

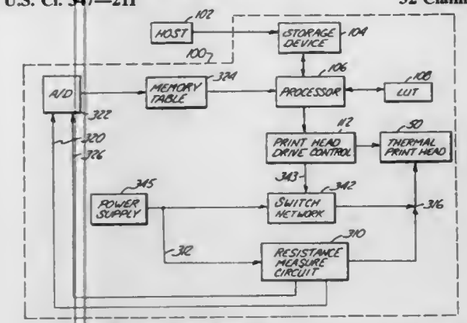
HEATING CONTROL FOR THERMAL PRINTERS

David H. Bennefeld, Ramsey; Jonathan D. Elliot, St. Louis Park; Danny J. Vatland, Chanhassen, and John M. Gilbert, Minneapolis, all of Minn., assignors to Lasermaster Corporation, Eden Prairie, Minn.

Filed Aug. 31, 1994, Ser. No. 299,291

Int. Cl.[6] B41J *2/36*

U.S. Cl. 347—211 **32 Claims**



1. A thermal printer comprising:

a thermal print head having a plurality of heating elements for printing on an adjacent media a plurality of dots each one of said plurality of heating elements having a physical characteristic based on a selected drive energy level of at least one adjacent heating element;

a source of drive pulses for operating respective heating elements, each drive pulse being modulated to provide a first period of the drive pulse to not energize the respective heating element and a second period of the drive pulse to energize the respective heating element, the first and second periods together defining the selected drive energy level; and

a memory for storing binary representations of each drive pulse, the binary representations having a first value representative of a drive energy level insufficient to operate the respective heating element to print on the media and a second value representative of a drive energy level sufficient to operate the respective heating element to print on the media, the binary representations having the first value being stored in the memory to represent the first period of the drive pulse and the binary representations having the second value being stored in the memory to represent the second period of the drive pulse.

5,608,443

DRIVE SYSTEM FOR A THERMAL LABEL PRINTER

Matthew R. Palmer, Cambridgeshire, and Ian Thompson-Bell, Hertfordshire, both of United Kingdom, assignors to Esselte N.V., St. Niklaas, Belgium

Filed Nov. 2, 1994, Ser. No. 333,392

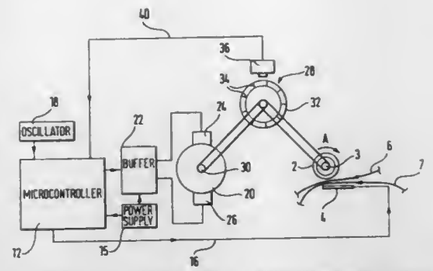
Claims priority, application United Kingdom, Nov. 5, 1993, 9322984

Int. Cl.[6] B41J *11/00;2/32*

U.S. Cl. 347—218 **13 Claims**

1. A label printing apparatus comprising:

a housing having a cassette receiving bay for receiving a cassette holding printing tape on which an image is printed;



a printing mechanism including a thermal printhead having a group of printing elements to which pixel date defining the image to be printed is passed sequentially on a group-by-group basis by a printhead controller connected to data input device; and

a drive system operatively connected to said printing mechanism comprising:

a motor operable to continuously drive said printing tape past the printing mechanism in a printing direction and having a speed of rotation at an approximately constant level;

means for monitoring the speed of rotation of the motor and connected to said printhead controller to cause said groups of pixel data to be sequentially printed adjacent one another in the printing direction of the printing tape in dependence on the speed of rotation of the motor; and

means for controlling the speed of rotation of the motor to maintain the approximately constant level by applying a maximum drive to the motor if the speed detected by the monitoring means falls below a first predetermined value, no drive if the speed exceeds a second predetermined value and a linear drive versus speed characteristic between the first and second pretermined values.

5,608,444

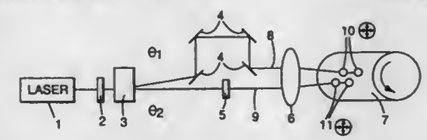
IMAGE SCANNING/RECORDING APPARATUS AND METHOD

Shunsuke Takano, Tokyo, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 10, 1994, Ser. No. 257,717

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—259 **5 Claims**



1. An image recording apparatus comprising:

a laser beam emitting device for generating a first beam and a second beam;

an acoustooptic element oriented to receive the first beam and the second beam from the laser beam emitting device, the acoustooptic element generating at different times a first beam row with the first beam in response to application of a first acoustic wave frequency to the acoustooptic element and a second beam row with the second beam in response to application of a second acoustic wave frequency to the acoustooptic element, the first beam row and second beam row being produced as primary diffracted beams which are diffracted in different directions by the acoustooptic element in response to the first and second acoustic wave frequencies;

a beam shifter oriented to receive the primary diffracted beams produced by the acoustooptic element, the beam shifter adjusting positions of adjacent beam spots of the first beam row and the second beam row relative to one another; and

an optical system for allowing the first and second beam rows to be incident on a moving image recording medium to be exposed so that spot images formed on the image recording medium by the second beam row partially overlap spot

images formed on the image recording medium by the first beam row due to movement of the image recording medium.

5,608,445

METHOD AND DEVICE FOR DATA CAPTURE IN TELEVISION VIEWERS RESEARCH

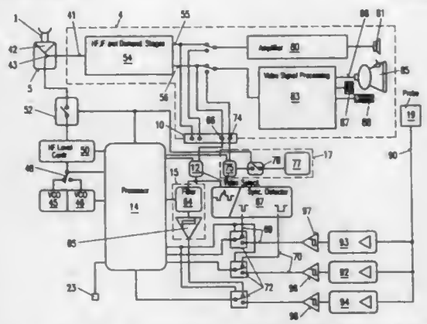
Peter Mischler, Biel, Switzerland, assignor to SRG Schweizerische Radio- und Fernsehgesellschaft, Bern, Switzerland

Filed Jan. 13, 1995, Ser. No. 372,583

Claims priority, application Switzerland, Jan. 17, 1994, 00134/94

Int. Cl.[6] H04N *7/00*

U.S. Cl. 348—4 **15 Claims**



1. A method for determining a channel selection in a video installation comprising at least a television set and/or a video recorder and at least one input connection for a television signal, the method comprising the steps of:

injecting an identification signal into the television signal locally by superimposing the identification signal on a video component of a channel of the television signal in the form of a burst;

receiving and reproducing said channel of the television signal using the video installation;

determining the channel selection of the video installation based upon a presence of the identification signal in an output signal or a stray signal of the channel reproduced by said video installation;

detecting electric and magnetic stray fields emitted by a picture tube of a television set of said video installation using a probe which is disposed in a proximity of the television set;

producing a signal based on the stray fields detected by said probe; and

separating the signal by filters into at least three partial signals, a first partial signal being used for determining a time of picture repetition, a second partial signal being used for determining a line repetition, and a third partial signal containing a burst.

5,608,446

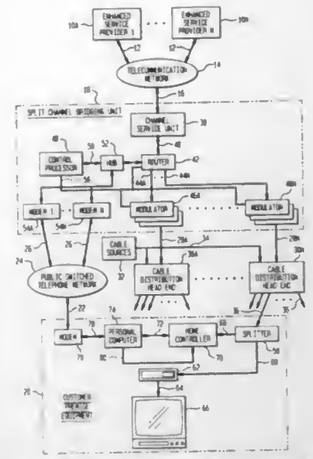
APPARATUS AND METHOD FOR COMBINING HIGH BANDWIDTH AND LOW BANDWIDTH DATA TRANSFER

Daniel J. Carr, St. Charles; Eric L. Edberg; Venkata C. Majeti, both of Naperville, and John L. Shepherd, Aurora, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 221,348, Mar. 31, 1994. This application May 9, 1995, Ser. No. 437,349

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—6 **7 Claims**



1. Interactive apparatus for providing a user access to remote data, the apparatus comprising:

a low bandwidth network;

a high bandwidth network;

a data source for the remote data, the source being accessible via both the low bandwidth network and the high bandwidth network;

user access means for receiving the remote data;

coupling means for coupling the user access means to the data source, the coupling means including

high bandwidth coupling means for coupling the user access means to the data source via the high bandwidth network and

low bandwidth coupling means for coupling the user access means to the data source via the low bandwidth network; and

coupling control means coupled to the user access means via the low bandwidth network and to the coupling means for responding to a first access command by causing the low bandwidth coupling means to bidirectionally couple the user access means to the source via the low bandwidth network and to a second access command by causing the high bandwidth coupling means to unidirectionally couple the user access means to the source via the high bandwidth network.

5,608,447

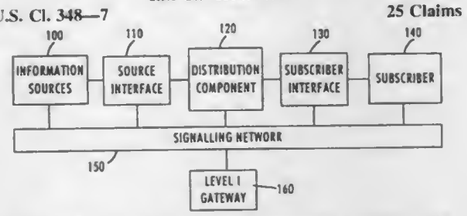
FULL SERVICE NETWORK

George A. Farry, Fairfax, Va.; John A. Bigham, Pottstown, Pa.; Kenneth R. Brooks, Middletown; Amos H. Lucas, Jr., Baltimore, both of Md., and Colton E. O'Donoghue, Jr., Haddonfield, N.J., assignors to Bell Atlantic, Arlington, Va.

Filed May 27, 1994, Ser. No. 250,792

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **25 Claims**



1. A network for the distribution of information, including video information, to subscribers comprising:

one or more sources of video information;

one or more distribution components providing the information to a plurality of subscribers;

a source interface for connecting one or more sources of video information to said distribution component;

a subscriber interface connecting subscribers to said distribution means;

a first gateway authorizing establishment of a connection between a source of video information and a subscriber;

a signalling network selectively connecting a subscriber to said first gateway, and

one or more video bridging devices which provide duplicate copies of output signals from said one or more sources of video information to a plurality of distribution components.

5,608,448

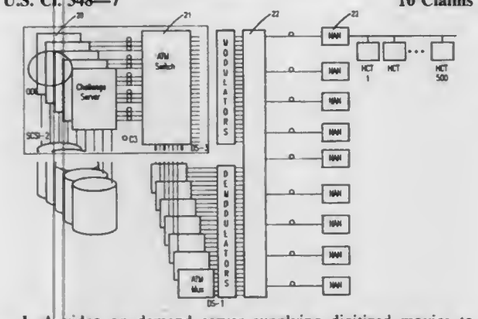
HYBRID ARCHITECTURE FOR VIDEO ON DEMAND SERVER

Vincent J. Smoral, Endwell, N.Y.; Peter M. Kogge, Granger, Ind., and Phillip J. Sementilli, Jr., Tucson, Ariz., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Apr. 10, 1995, Ser. No. 419,474

Int. Cl.[6] H04N *7/10;7/173*

U.S. Cl. 348—7 **10 Claims**



1. A video on demand server supplying digitized movies to subscribers via a distribution network comprising:

a disk array storing a plurality of digitized movies, said movies being stored across a plurality of disks in a data striping pattern in a plurality of partitions;

a multiprocessor switch array composed of a plurality of processing elements, each processing element including a central processing unit and a local memory, said local memory storing switching information for supplying requested movies to requesting subscribers; and

a workstation connected to said multiprocessor switch array and responsive to requesting subscribers for assigning subscribers to one of said plurality of partitions of said disk array and controlling individual switches in the multiprocessor switch array so that requested movies are transmitted to requesting subscribers on demand.

5,608,449

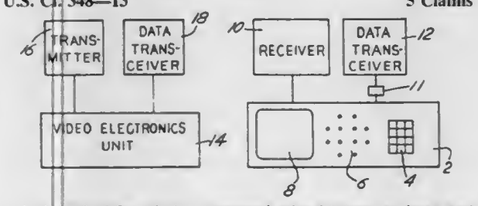
WIRELESS INTERACTIVE CONSUMER VIDEO SYSTEM

John W. Swafford, Jr., Lombard, and William P. Carlson, Aurora, both of Ill., assignors to RTC Industries, Inc., Rolling Meadows, Ill.

Filed Oct. 31, 1994, Ser. No. 332,258

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—13 **5 Claims**



1. A method for wireless communication between an input and display unit located in a retail store location and a video electronics unit physically separated and distantly located from said input and display unit, comprising the steps of:

receiving a user entry at said input and display unit;

generating a data send signal corresponding to said user entry;

wirelessly transmitting said data send signal to said video electronics unit via a transceiver;

generating a video signal responsive to said data send signal;

wirelessly providing said video signal to said input and display unit via a transmitter;

generating operating data of said video electronics unit; and

wirelessly transmitting said operating data to said input and display unit.

5,608,450

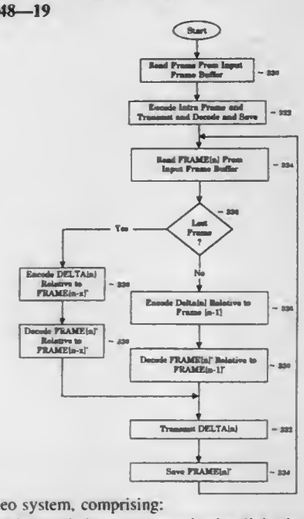
VIDEO CONFERENCING SYSTEM WITH FAST PACKET LOSS RECOVERY

Rohit Agarwal, Beaverton, and Michael J. Gutmann, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 301,849, Sep. 7, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,331

Int. Cl.[6] H04N *7/15*

U.S. Cl. 348—19 **21 Claims**



1. A video system, comprising:

source node coupled to a communication link, the source node generating a series of encoded video frames for a series of digitally sampled video frames by encoding each digitally sampled video frame relative to either a decoded version of an immediately preceding digitally sampled video frame or a decoded version of a previous digitally sampled video frame specified by a lost frame message received over the communication link, the source node transferring the encoded video frames over the communication link;

destination node coupled to the communication link, the destination node receiving the encoded video frames over the communication link and transferring the lost frame message to the source node if one of the encoded video frames is lost or delayed; and

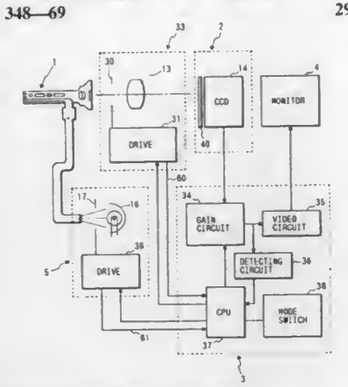
the source node comprising a frame buffer, the frame buffer to store a plurality of previously digitally sampled video frames in decoded form, the plurality of previously digitally sampled video frames comprising the decoded version of the immediately preceding digitally sampled video frame and the decoded version of the previous digitally sampled video frame specified by the lost frame message, the source node using the decoded version of the immediately preceding digitally sampled video frame and the decoded version of the previous digitally sampled video frame specified by the lost frame message to compute an intercoded correction frame for a lost or delayed frame.

5,608,451

ENDOSCOPE APPARATUS

Mitsujiro Konno, Hoya, and Akira Hasegawa, Akishima, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,820
Claims priority, application Japan, Mar. 11, 1994, 6-041395; Nov. 14, 1994, 6-279249
Int. Cl.[6] A61B *1/04; 1/06;* **H04N** *7/18*
U.S. Cl. 348—69 **29 Claims**



1. An endoscope apparatus comprising:
an optical system for forming an image of an object;
a solid-state image sensor for receiving the image formed by said optical system;
illuminating means for irradiating the object with illuminating light;
light control means for changing brightness of the illuminating light;
stop means whose aperture is variable, disposed in said optical system;
detecting means for detecting brightness of the image of the object; and
control means for controlling said stop means and said light control means so that an intensity of a signal output from said solid-state image sensor is kept substantially constant in accordance with brightness information derived from said detecting means.

5,608,452

Patent Not Issued For This Number

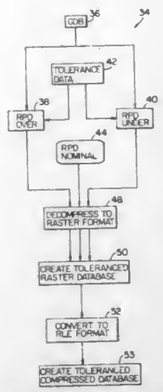
5,608,453

AUTOMATIC OPTICAL INSPECTION SYSTEM HAVING A WEIGHTED TRANSITION DATABASE

H. Joseph Gerber, West Hartford; Ronald J. Straayer, South Windsor; Bruce L. Davidson, East Hartford; Scott P. Snietka, Andover; Peter M. Walsh, South Windsor; Dana W. Seniff, South Glastonbury, and James P. Kohler, Southbury, all of Conn., assignors to Gerber Systems Corporation, South Windsor, Conn.

Continuation of Ser. No. 143,434, Oct. 26, 1993, Pat. No. 5,517,234. This application Nov. 1, 1995, Ser. No. 551,736
Int. Cl.[6] H04N *7/18; 9/47*
U.S. Cl. 348—87 **21 Claims**

1. A method of generating a tolerance database from a nominal database of signals indicative of an image of printed circuit board (PCB) artwork features each having nominal dimensions, said databases comprised of an array of pixels having either a first state (black) or a second state (white), with said black state pixels corresponding to said PCB features, said method comprising the steps of:



generating a database having signals corresponding to at least one set of minimum and maximum tolerance values for at least a selected one of said PCB features;
providing a minimum database from said nominal and said tolerance value databases such that said selected PCB feature nominal dimensions are reduced by said minimum tolerance value;
providing a maximum database from said nominal and said tolerance value databases such that said selected PCB feature nominal dimensions are increased by said maximum tolerance value;
comparing the state of each of the pixels in said minimum database with said nominal pixel state;
comparing the state of each of the pixels in said maximum database with said nominal pixel state;
providing to a tolerance transition database a black state pixel if both of said minimum and maximum pixel states are black;
providing to said tolerance transition database a white state pixel if both of said minimum and maximum pixel states are white;
providing to said tolerance transition database a black transition state pixel if said minimum and nominal pixels are of different pixel states;
providing to said tolerance transition database a white transition state pixel if said maximum and nominal pixels are of different pixel states;
assigning each pixel a numerical weight in accord with its state;
configuring said tolerance transition database into arrays of adjacent pixels;
summing each of said pixel weights in a one of said pixel arrays; and
establishing a value of array pixel summed weight as a defect threshold.

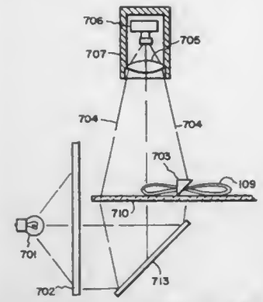
5,608,454

EYEWIRE INSPECTION STATION

Rory L. C. Flemmer, Independence, W. Va., and David L. Byron, Honeoye Falls, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 175,086, Dec. 29, 1993, Pat. No. 5,479,683. This application May 26, 1995, Ser. No. 451,508
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—88 **7 Claims**

1. An inspection station for inspecting eyewires having a base curve and a shape curve comprising:
a stage for receiving an eyewire;
means for generating images of the eyewire along two different axes;
means for measuring radii of curvature at selected points along the two axes;
a controller for storing a predetermined number of values of radii of curvature for the selected points; and



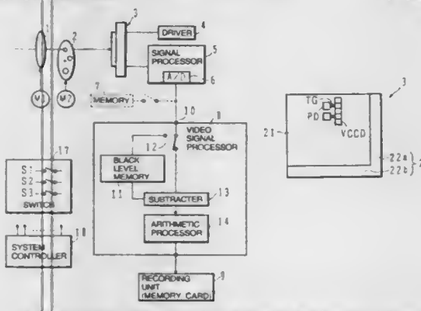
means for comparing the stored values of radii to the measured radii of curvature for the selected points.

5,608,455

INTERLINE TRANSFER CCD IMAGE SENSOR WITH REDUCED DARK CURRENT

Kazuya Oda, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd, Kanagawa, Japan

Continuation of Ser. No. 98,048, Jul. 28, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 392,401
Claims priority, application Japan, Jul. 30, 1992, 4-203959; Aug. 28, 1992, 4-230568
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—245 **9 Claims**



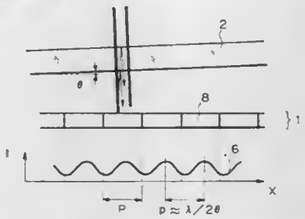
1. A CCD image pickup device including an image pickup chip, said image pickup chip comprising:
a plurality of vertical charge transfer paths for transferring electric charges;
a horizontal charge transfer path for collectively outputting charge signals transferred from said plurality of vertical charge transfer paths;
a plurality of first photodiodes disposed in a central portion of an image pickup area for generating video signals, said first photodiodes being coupled to said plurality of vertical charge transfer paths and being disposed in a matrix of plural columns and rows;
a plurality of second photodiodes disposed at a first optical black area in a bottom portion of said image pickup area, each of said second photodiodes at said first optical black area being disposed between said first photodiodes at said image pickup area and said horizontal charge transfer path, being coupled to a respective one of said plurality of vertical charge transfer paths, being light shielded, and having the same electrostatic characteristics as each of said first photodiodes at said image pickup area; and
processing means for calculating a dark current increment representative of dark current generated in said plurality of vertical charge transfer paths per row of the matrix at said image pickup area in accordance with signals from said second photodiodes at said first optical black area and for estimating dark current components for all of said image pickup area in accordance with said dark current increment.

5,608,456

IMAGE SENSOR USED WITH SUBSTANTIALLY MONOCHROMATIC ILLUMINATING LIGHT OF HIGH COHERENCE FOR PREVENTING OR REDUCING INTERFERENCE FRINGES

Noriaki Tokuda, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,080
Claims priority, application Japan, Sep. 21, 1993, 5-234840
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—340 **2 Claims**



1. An image sensor used with substantially monochromatic illuminating light of high coherence, said image sensor comprising:
an illuminating light receiving element; and
a protective member integrated with said element to cover it, said protective member being substantially transparent to said illuminating light,
wherein a surface of said element and a surface of said protective member are inclined relative to each other by a predetermined angle θ, which is defined with respect to a pixel array direction of said element so as to satisfy the following condition:

$$\theta \geq \lambda/2P$$

where P is the pitch of effective pixels of said element, which are valid for signal processing, and λ is the wavelength of said illuminating light.

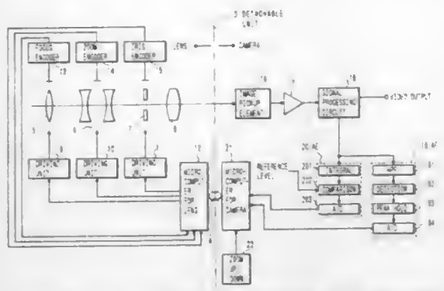
5,608,457

VIDEO CAMERA APPARATUS

Masamichi Tohyama, and Yutaka Kohtani, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 245,835, May 19, 1994, abandoned, which is a continuation of Ser. No. 91,398, Jul. 13, 1993, abandoned, which is a continuation of Ser. No. 783,207, Oct. 28, 1991, abandoned. This application Sep. 28, 1995, Ser. No. 535,375
Claims priority, application Japan, Oct. 31, 1990, 2-295981; Nov. 5, 1990, 2-300663
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—335 **19 Claims**

1. A video camera apparatus, which comprises:
a camera unit;
a lens unit detachable from said camera unit; and communication means for communicating control information between a computer of said camera unit and a computer of said lens unit,
wherein at least one of said camera unit and said lens unit comprises means for storing information indicating a version of the control information by which both of said camera unit and said lens unit can communicate with each other for control, and the information representing the version can be



transmitted by said communication means to the other unit to vary or select the version of the control information.

5,608,458

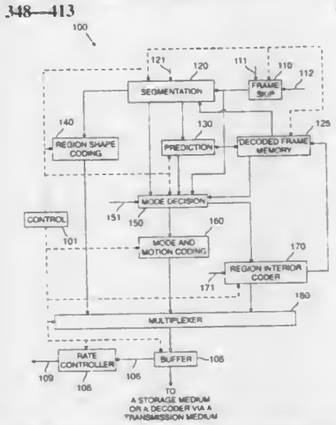
METHOD AND APPARATUS FOR A REGION-BASED APPROACH TO CODING A SEQUENCE OF VIDEO IMAGES

Homer H. Chen, Lincroft, N.J.; Touradj Ebrahimi, Ecublens, Switzerland; Barin G. Haskell, Tinton Falls, N.J., and Caspar Horne, Beaverton, Oreg., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 13, 1994, Ser. No. 322,893

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—413 **49 Claims**



1. An encoder for encoding a sequence of video frames comprising:

a segmentation unit which segments a current frame in said video sequence into a plurality of arbitrarily-shaped regions which may have different dimensions, each of said plurality of arbitrarily-shaped regions being assigned a motion vector;

a decoded frame memory for storing a previously decoded frame in said video sequence;

a prediction unit connected to said segmentation unit and said decoded frame memory for predicting image data of said current frame based upon a previously decoded frame and based upon the motion vector assigned to one of said plurality of arbitrarily-shaped regions;

a region shape coding unit for encoding the shape of each of said arbitrarily-shaped regions;

a mode decision unit which determines in which one of a plurality of modes image data from each of said plurality of arbitrarily-shaped regions is to be encoded, where said plurality of modes comprises an intra-frame mode in which the intensity of each pel in one of said plurality of arbitrarily-shaped regions is encoded;

a mode coding unit which encodes the mode in which each of said plurality of arbitrarily-shaped regions is to be encoded;

a motion coding unit for encoding motion vectors associated with said plurality of arbitrarily-shaped regions;

a region interior coder which encodes the intensity of each pel in one of said plurality of arbitrarily-shaped regions if the region is to be encoded in said intra-frame mode;

a buffer which serves as an interface for transmitting encoded information from said encoder; and

a rate controller which receives signals from said buffer, where said rate controller sends control signals to said segmentation unit, said mode decision unit, and said region interior unit in response to the signals received from said buffer.

5,608,459

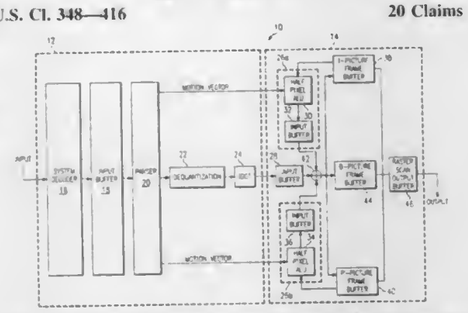
VIDEO DATA DECODER HAVING MOTION COMPENSATION AND IMAGE MEMORY CIRCUITRY ON SINGLE SUBSTRATE

Masashi Hashimoto, Tsukuba, Japan, and Frank L. Laczko, Sr., Allen, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1993, Ser. No. 107,098

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—416 **20 Claims**



1. A video data processing system for processing an encoded data stream, comprising:

a parser circuit operable to parse at least a portion of the data stream and to output parsed image data and motion vector data;

a transformation circuit coupled to receive said parsed image data from said parser circuit, and operable to transform said parsed image data;

an image memory circuit operable to store decoded image data;

a motion compensation circuit coupled to receive said motion vector data from said parser circuit and to receive said stored decoded image data from said image memory circuit, and operable to process said motion vector data and said stored decoded image data and to output motion compensated image data; and

a summation circuit coupled to receive said transformed image data from said transformation circuit and to receive said motion compensated image data from said motion compensation circuit, and operable to output said decoded image data;

wherein said image memory circuit is coupled to receive said decoded image data from said summation circuit, and comprises an I-picture memory operable to store decoded image data representative of a video image of an intra-frame I-picture retrieved from the encoded data stream; a P-picture memory operable to store decoded image data representative of a video image of a predicted P-picture retrieved from the encoded data stream; and a B-picture memory operable to store decoded image data representative of a video image of a bidirectional B-picture retrieved from the encoded data stream; and

wherein at least said summation circuit, motion compensation circuit, and image memory circuit are formed on a single semiconductor substrate.

5,608,460

SYNCHRONIZING SIGNAL SEPARATING CIRCUIT WITH CONTROLLED FLYWHEEL STAGE

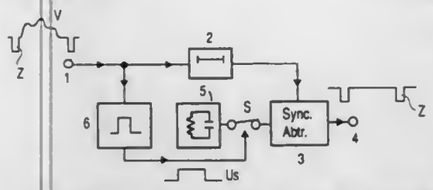
Albrecht Rothermel, and Carlos Correa, both of Villingen-Schwenningen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Oct. 17, 1994, Ser. No. 323,963

Claims priority, application Germany, Oct. 15, 1993, 43 35 197.2

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—525 **14 Claims**



1. A synchronizing signal separating circuit for a television receiver, said separating circuit comprising:

a source of a video signal having a line synchronizing signal component;

a line synchronizing signal component separator having an amplitude selective stage and having a flywheel stage imparting a response time constant to said separator which enhances noise immunity;

a delay circuit for said video signal, coupled between said video signal source and said separator;

a control circuit coupled to said video signal source and evaluating the time positions of line synchronizing pulses of a plurality of successive lines to identify a kind of line phase disturbance in which the line phase of an entire raster is displaced, said control circuit supplying a control signal to said separator indicative of said kind of line phase disturbance; and,

said flywheel stage being temporarily decoupled responsive to said control signal upon identification of said kind of line phase disturbance in which the line phase of an entire raster is displaced.

5,608,461

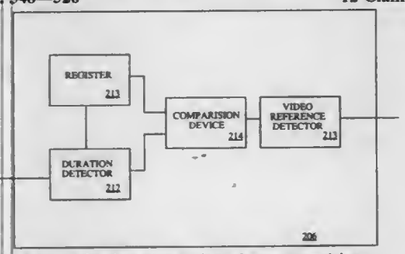
PROGRAMMABLE VIDEO FRAME DETECTOR

Greg Sadowski, Santa Clara, and David L. Dignam, Belmont, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Mar. 29, 1995, Ser. No. 413,393

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—526 **12 Claims**



1. An apparatus for detecting a video frame comprising:

an input for receiving a video signal comprised of a plurality of pulses;

a duration detector coupled to said input for measuring a pulse width corresponding to one of said plurality of pulses of said video signal;

a register coupled to said duration detector for storing a time interval between two pulses of said video signal; and

a comparison device coupled to said duration detector and said register for comparing said pulse width with said time interval and generating bits of information indicating whether the pulse width is greater than, less than or equal to the time interval between the two pulses, wherein the bits of information are used to detect the video frame.

5,608,462

SYNCHRONIZING ARRANGEMENT INCLUDING A GATE CIRCUIT AND A WINDOW CIRCUIT FOR DETERMINING THE OCCURRENCE OF OUTPUT PULSES

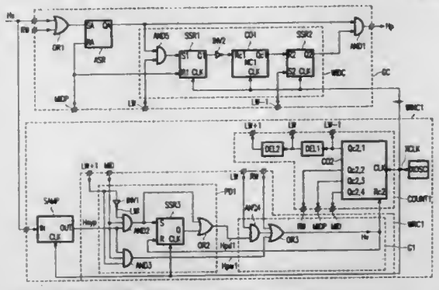
Johannes A. A. G. Maas, and Johannes B. Meertens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 485,895

Claims priority, application European Pat. Off., Jun. 10, 1994, 94201661

Int. Cl.[6] H04N *5/10*

U.S. Cl. 348—531 **23 Claims**



1. A synchronizing arrangement comprising:

a window circuit for generating a repetitive window signal; and

a gate circuit for supplying a repetitive gating pulse related to a presented synchronizing pulse if the presented synchronizing pulse occurs during the window signal, while the gating pulse is related to the window signal if the presented synchronizing pulse does not occur during the window signal, characterized in that the gate circuit comprises means for generating the gating pulse related to a leading edge of the window signal if the presented synchronizing pulse occurs before the start of the window signal, and for generating the gating pulse related to a trailing edge of the window signal if the presented synchronizing pulse occurs after the end of the window signal.

5,608,463

OSCILLATOR CIRCUIT SUITABLE FOR PICTURE-IN-PICTURE SYSTEM

Junichi Ohmori, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,898

Claims priority, application Japan, Aug. 26, 1992, 4-227525

Int. Cl.[6] H04N *5/04*

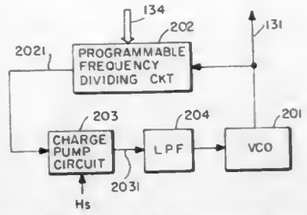
U.S. Cl. 348—540 **4 Claims**

1. An oscillator circuit comprising:

an oscillator oscillating to produce a clock signal having a frequency controlled by a control signal supplied thereto,

a programmable frequency divider frequency-dividing said clock signal produced by said oscillator with a programmable frequency dividing rate and producing a frequency-divided signal,

a charge pump circuit, receiving a horizontal synchronizing signal and said frequency-divided signal, said horizontal synchronizing signal having a level indicative of a horizontal flyback period, said charge pump circuit being activated dur-



ing said level of the horizontal synchronizing signal indicative of the horizontal flyback period, and producing a charging/discharging current in response to a logical level of the frequency-divided signal supplied thereto during an activated period of said charge pump circuit, and

means responsive to said charging/discharging current for producing said control signal,

wherein said means comprises a low-pass filter, and

wherein said charge pump circuit comprises a clocked inverter having a control terminal, an input terminal and an output terminal, the horizontal synchronizing signal and the frequency-divided signal being supplied to said control terminal and said input terminal, respectively, and said output terminal being connected to said low-pass filter.

5,608,464

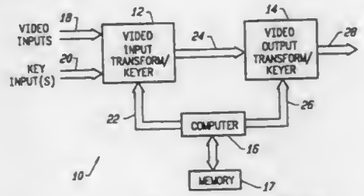
DIGITAL VIDEO EFFECTS GENERATOR

David J. Woodham, Lower Earley Reading, Great Britain, assignor to Scitex Corporation Ltd., Herzlia B., Israel

Continuation of Ser. No. 685,826, Apr. 12, 1991. This application Aug. 9, 1994, Ser. No. 287,698

Int. Cl.[6] H04N *5/262;7/12*

U.S. Cl. 348—578 **12 Claims**



DIGITAL VIDEO EFFECTS GENERATOR

I. A digital video effects generator for interpolating digital video signal data in accordance with video motion data representing relative video data motion between temporally adjacent video signal data sets, said digital video effects generator comprising:

motion coefficient source means for providing video motion interpolation coefficient data corresponding to said relative video data motion between said temporally adjacent video signal data sets among a plurality of video signal data sets;

video coefficient source means for providing video interpolation coefficient data representing both vertical and horizontal interpolation coefficients; and

interpolator means for receiving said digital video signal data including said plurality of video signal data sets, for receiving said video interpolation coefficient data and said video motion interpolation coefficient data, and for adaptively interpolating said received digital video signal data during said relative video data motion in accordance with said received video interpolation coefficient data and said received video motion interpolation coefficient data, wherein said adaptive interpolation continuously uses a selectively variable amount of video signal data from a temporally adjacent video signal data set which is inversely proportional to said relative video data motion.

5,608,465

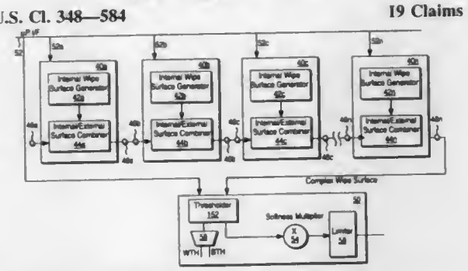
VIDEO MIXER CONTROL SIGNAL GENERATOR MODULAR ELEMENT

David E. Lake, Grass Valley, Calif., assignor to Scitex Im Acquisition Corp., Bedford, Mass.

Filed Jan. 28, 1994, Ser. No. 187,831

Int. Cl.[6] H04N *9/76;5/262*

U.S. Cl. 348—584 **19 Claims**



1. A wipe generator modular element, comprising:

internal wipe surface generation means for internally generating an internally generated wipe surface;

external wipe surface receiving means for receiving an externally generated wipe surface;

internal/external surface combiner means for combining said internally generated wipe surface with said externally generated wipe surface to produce a combined wipe surface; and

output terminal means for providing said combined wipe surface from said wipe generator modular element

whereby a complex wipe surface may be generated by combining a plurality of said modular elements.

5,608,466

COLOR PICTURE SYNTHESIZER PRODUCING AN ACCURATE CHROMA-KEY DESPITE VARIATIONS IN THE INTENSITY LEVEL OF A DESIGNATED COLOR SIGNAL

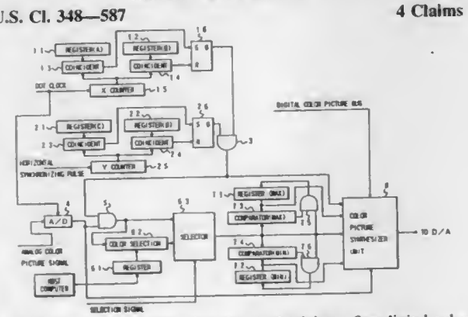
Nobuya Nakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,292

Claims priority, application Japan, Dec. 28, 1993, 5-336607

Int. Cl.[6] H04N *9/75;5/275*

U.S. Cl. 348—587 **4 Claims**



1. A color picture synthesizer for synthesizing a first digital color picture and a second digital color picture comprising:

an effective display area indicator for generating an "on" signal during a time when a predetermined area of said second digital color picture is scanned;

an andgate for transferring said second digital color picture when said "on" signal from said effective display area indicator is delivered;

a color selection circuit for producing an intensity of a designated color for each pixel delivered from said andgate;

a compare and substitute circuit for receiving output of said color selection circuit, comparing the output of said color selection circuit with contents of a maximum value register and a minimum value register, and substituting said contents of said maximum value register by said output of said color selection circuit when said output of said color selection circuit is larger than said contents of said maximum value register, while substituting said contents of said minimum value register by said output of said color selection circuit when said output of said color selection circuit is smaller than said contents of said minimum value register; and

a color picture synthesizer unit which receives said first digital color picture, said second digital color picture, said output of said color selection circuit, said contents of said maximum value register, and said contents of said minimum value register, makes each output of said color selection circuit within a range defined by said contents of said maximum value register and said contents of said minimum value register a chroma-key, and substitutes each pixel in said second digital color picture corresponding to the chroma-key by a corresponding pixel in said first digital color picture.

5,608,467

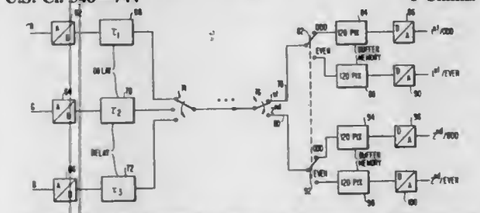
SINGLE PANEL COLOR PROJECTION VIDEO DISPLAY

Peter J. Janssen, Scarborough, N.Y.; Ralph H. Bradley, Kingsport, Tenn.; Joseph P. Bingham, Knoxville, Tenn.; William F. Guerinot, Knoxville, Tenn., and Detlev Otto, Knoxville, Tenn., assignors to Philips Electronics North America Corporation, New York, N.Y.

Division of Ser. No. 386,606, Feb. 10, 1995, Pat. No. 5,532,763, which is a continuation of Ser. No. 218,882, Mar. 25, 1994, abandoned, which is a continuation of Ser. No. 927,782, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 634,366, Dec. 27, 1990, abandoned. This application Jul. 18, 1995, Ser. No. 503,788

Int. Cl.[6] H04N *9/31*

U.S. Cl. 348—744 **6 Claims**



1. An apparatus having a circuitry for addressing a light valve that is to be illuminated by moving bands of first, second and third color in order to provide a full color display, said light valve including row and column drivers, said circuitry comprising:

means for providing separate video signals corresponding to each of the first, second and third colors;

delay means for delaying said separate video signals for varying amounts of time;

serializing means for providing a single serial stream of signals corresponding to said first, second and third colors in sequential order;

means for applying said serialized stream to the column drivers of said light valve; and

means for activating said row drivers, said row drivers being activated in non-sequential order to correspond with the color bands being applied to the row.

5,608,468

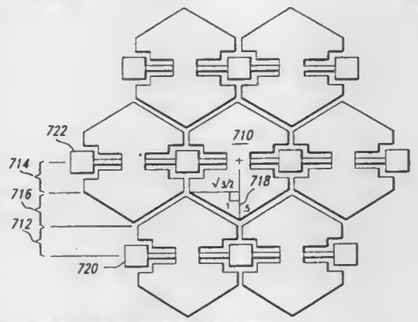
METHOD AND DEVICE FOR MULTI-FORMAT TELEVISION

Robert J. Gove; Jeffrey B. Sampsell, both of Plano, and Vishal Markandey, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 091,852, Jul. 14, 1993. This application Jun. 7, 1995, Ser. No. 482,477

Int. Cl.[6] H04N *5/74*

U.S. Cl. 348—771 **1 Claim**



1. A spatial light modulator comprising:

a. substrate;

b. an array of lines of elements on said substrate, wherein each element comprises:

i. at least two electrodes on said substrate, arranged such that said electrodes are in electrical connection with electrodes of adjacent elements, allowing reset of an entire line of elements;

ii. a hexagonal reflective surface;

iii. at least two support posts holding said reflective surface above said electrodes, over an air gap, said support posts being on opposite sides of said hexagonal reflective surface, thereby causing said elements to form said line of elements; and

iv. flexible hinges connecting said reflective surface to said support posts, such that when one of said electrodes becomes active, said reflective surface can twist about said hinges and allow said reflective surfaces to deflect in response to said active electrode.

5,608,469

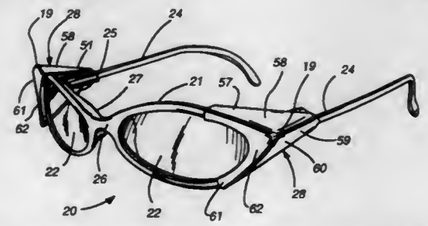
SUNGLASSES WITH REMOVABLE SIDE SHIELDS

Maurice J. G. Bollé, Oyonnax, France, assignor to Etablissements Bollé S.n.c., Oyonnax, France

Filed Jun. 20, 1995, Ser. No. 492,805

Int. Cl.[6] G02C *7/10;5/14*

U.S. Cl. 351—44 **13 Claims**



1. Sunglasses comprising a frame having rounded ends and mounting eyeglass lenses, a pair of temples, hinges mounting said temples on opposite ends of said frame, and a pair of substantially pyramidal shields each mounted on one of said temples adjacent said frame, said shields defining a rounded apex directed away from said hinges a concave edge adjacent to and adapted to receive and cover the frame end, an upper shield panel having an upper

shield surface and a triangular lateral shield panel having a lateral shield surface adapted for covering and shielding portions of said frame and said temple adjacent said hinges when said sunglasses are worn by a user.

5,608,470

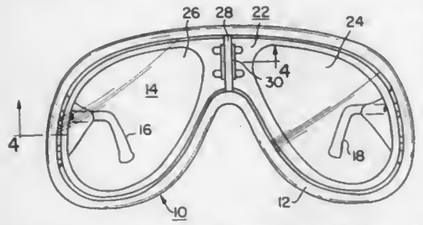
PRESCRIPTION LENS ATTACHABLE TO SAFETY GLASSES

Keith W. Sheffield, Kent, England, assignor to Crews, Inc., Memphis, Tenn.

Continuation of Ser. No. 167,105, Dec. 15, 1993, Pat. No. 5,428,407. This application Jun. 26, 1995, Ser. No. 494,872

Int. Cl.[6] G02C *9/00;7/08*

U.S. Cl. 351—47 **8 Claims**



1. A pair of safety glasses in combination with a separate frame for receiving accessory lenses, said separate frame is adapted to be secured on an inside of said pair of safety glasses in which said safety glasses include a safety glass frame, at least one lens in said safety glass frame, a central vertical cross pin which extends from an upper frame portion to a lower frame portion at a bridge area of said safety glasses, and a pair of pivotable temples secured to said safety glass frame by a pair of pivot pins, said separate frame including a central clip in an area of said bridge area of said safety glasses which clips onto said central vertical cross pin of said safety glasses frame in a direction toward said safety glasses frame vertical cross pin.

5,608,471

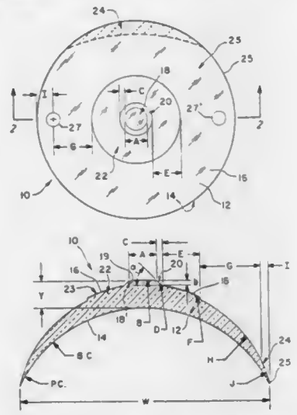
SOFT, BIFOCAL CONTACT LENS

Troy A. Miller, Grand Junction, Colo., assignor to Westcon Contact Lens Co., Inc., Grand Junction, Colo.

Filed Jul. 3, 1995, Ser. No. 497,846

Int. Cl.[6] G02C *7/04*

U.S. Cl. 351—161 **6 Claims**



1. A soft contact lens comprising: an annular main body portion having a virtually continuous, concave, eye-contacting, posterior surface and a non-continuous, generally convex, anterior surface having a near vision-aiding add zone, a transition zone that is concentric with, and annularly surrounds, the near vision-aiding add zone, a far vision-aiding zone that is concentric with and annularly surrounds the transition zone and a slab-off system, and wherein: (a) the near vision-aiding add zone has a diameter of from about 1.5 mm to about 3.5 mm, (b) the transition zone has a base length of from about 0.03 mm to about 0.20 mm and (3) a slope angle of from about 15° to about 40°.

5,608,472

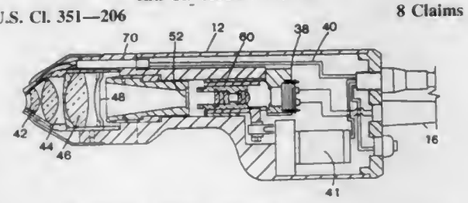
EYE IMAGING SYSTEM

Bernard C. Szirth, Methuen, Mass.; Alan L. Murphree, Los Angeles, Calif.; Steven E. Lusty, Houlka, Miss., and James A. Burris, Collierville, Tenn., assignors to Research Development Foundation, Carson City, Nev.

Continuation-in-part of Ser. No. 972,704, Nov. 6, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 340,976

Int. Cl.[6] A61B *3/14;3/10*

U.S. Cl. 351—206 **8 Claims**



1. An eye imaging system comprising,

a console having an electrical power source, a light source for providing light to the eye, and a viewing monitor for viewing a captured image,

a hand held portable image capture unit having a light passageway for transmitting light to an eye from the light source, imaging and focusing optics including a corneal contact lens, a color aberration preventing means, an iris diaphragm, and a chromatic charged coupled image device for receiving light from the eye through the imaging and focusing optics, said light passageway coupled to a concentric light passage adjacent the corneal contact lens for illuminating the eye through a cornea, and

a connecting cable between the console and the image capture unit having a control line for supplying and receiving information between the console and the capture unit, and an electric cable for supplying power.

5,608,473

AUDIO DATA READOUT DEVICE FOR MOTION PICTURE FILM AND CLOCK GENERATING DEVICE IN MOTION PICTURE FILM CHANGEOVER SYSTEM

Katsuichi Tachi; Kozo Kaminaga, both of Kanagawa, Japan; Jeffrey E. Taylor, Chatsworth, and Howard J. Flemming, Culver City, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Cinema Products Corporation, Culver City, Calif.

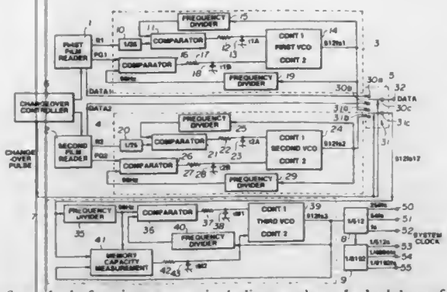
Filed Mar. 7, 1995, Ser. No. 399,436

Claims priority, application Japan, Mar. 7, 1994, 6-036060

Int. Cl.[6] G03B *31/02;31/00*

U.S. Cl. 352—27 **10 Claims**

1. A clock generator in a changeover system for a motion picture film in which audio data is reproduced by changeover between a first film reader for reading out audio data from a digital sound track of a first motion picture film at a first frame frequency and a second film reader for reading out audio data from a digital sound track of a second motion picture film at a second frame frequency substantially equal to said first frame frequency, the audio data being recorded on the digital sound track of each motion picture film at a track pitch, comprising



first clock forming means including a phase locked loop for forming a first clock signal of a frequency equal to a pre-set number times the first frame frequency based upon a frequency signal whose frequency is changed as a function of a film running speed of the first motion picture film, the first clock forming means exhibiting a time constant;

second clock forming means including a phase locked loop for forming a second clock signal of a frequency equal to the pre-set number times the second frame frequency based upon a frequency signal whose frequency is changed as a function of a film running speed of the second motion picture film, the second clock forming means exhibiting a time constant;

changeover means for commuting between the first clock signal from the first clock forming means and the second clock signal from the second clock forming means and outputting the commuted clock signal, and

system clock forming means including a phase locked loop for forming a system clock signal of a frequency equal to a predetermined number times a sampling clock frequency of the audio data recorded on said digital sound track of said first or second motion picture film based upon the commuted clock signal from said changeover means, said system clock forming means having looping characteristics of a pre-set time constant longer than the time constant of said first or second clock forming means.

5,608,474

IMAGE DISPLAYING DEVICE

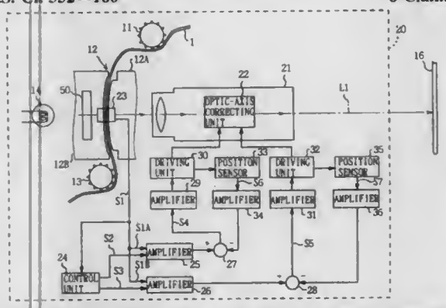
Yoshio Fujiwara, and Etsuro Saito, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 13, 1996, Ser. No. 600,899

Claims priority, application Japan, Feb. 14, 1995, 7-050404; Apr. 14, 1995, 7-113702

Int. Cl.[6] G03B *21/46;1/00*

U.S. Cl. 352—160 **6 Claims**



1. An image displaying device wherein a movie film is intermittently stopped in a maimer synchronized with rotation of a sprocket by means of travel-synchronizing holes which have been formed longitudinally with respect to said movie film, and a light from a light source is projected on a stated region of said movie film at a stopped base position, and the light which has been passed through said movie film is displayed on a green, said image displaying device comprising:

detecting means for detecting the displacement from the base position at the time said movie film has stopped, on the basis of said travel-synchronizing holes;

optical axis correcting means for correcting the optical axis-of said transmitted light, according to the result of said detection; and

driving means for driving said optical axis correcting means.

5,608,475

CAMERA WITH DEVICE FOR IDENTIFYING USED FILM MAGAZINE

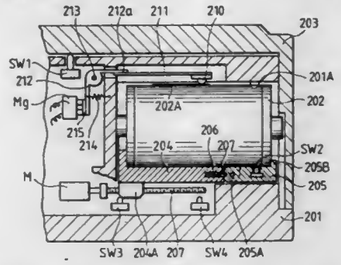
Hideya Inoue, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 351,145, Nov. 30, 1994, abandoned, which is a continuation of Ser. No. 247,392, May 23, 1994, abandoned, which is a continuation of Ser. No. 141,694, Oct. 26, 1993, abandoned, which is a continuation of Ser. No. 961,345, Oct. 15, 1992, abandoned, which is a division of Ser. No. 747,458, Aug. 12, 1991, Pat. No. 5,159,365, which is a continuation of Ser. No. 465,310, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 321,793, Mar. 10, 1989, abandoned. This application May 25, 1995, Ser. No. 451,048

Claims priority, application Japan, Mar. 15, 1988, 63-60916

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—207 **91 Claims**



1. A camera in which can be inserted film unit having a film, a container for accommodating said film and an information recording part capable of recording information therein, comprising:

a film transporting device which performs a first transporting operation by which an unexposed frame of said film in said container is electrically transported outside said container to bring said unexposed frame to an exposure position, and a second transporting operation by which said film transported outside said container by said first transporting operation is electrically transported back into said container;

an information recording portion which records in said information recording part information for discrimination between exposed and unexposed frames; and

an information detecting portion to detect said information in said information recording part,

wherein when said film unit is re-inserted in said camera with unexposed frames remaining, said information detecting portion detects said information and said film transporting device performs said first transporting operation according to said information detected by said information detecting portion to bring an unexposed frame to be next exposed to said exposure position.

5,608,476

FLASH BRACKET WITH GRIP

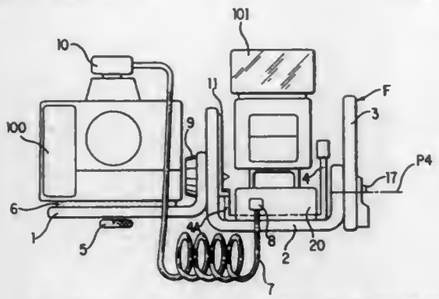
Nobuyoshi Hagiuda, Yokohama, and Hiroshi Sakamoto, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 24, 1994, Ser. No. 293,967

Claims priority, application Japan, Aug. 24, 1993, 5-046079 U

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—155 **17 Claims**



1. A device for reducing shadows during flash photography, comprising:

a camera having a lens and a base, said lens having a center point from which an optical axis extends in a normal direction toward a subject, said camera having a level axis extending parallel to said base and intersecting said optical axis;

a flash assembly having a light source, said light source having an illumination axis projecting toward said subject;

a bracket having a first portion and a second portion, said first portion being attached to said base of said camera, and said second portion having a handle and being attached to said flash assembly; and

connecting means for detachably connecting said first portion and said second portion of said bracket, said connecting means including a lever that is movable between a first position in which said lever engages an assembly to connect said first portion and said second portion and a second position in which said lever disengages said assembly to disconnect said first portion and said second portion, said lever being disposed within reach of a photographer holding said handle of said second portion, wherein a user can position said second portion of said bracket relative to said first portion such that the distance between said illumination axis of said light source and said level axis in a first configuration is minimized.

5,608,477

INSTANT CAMERA

Mitsuru Shimizu; Ko Aosaki, and Michio Cho, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

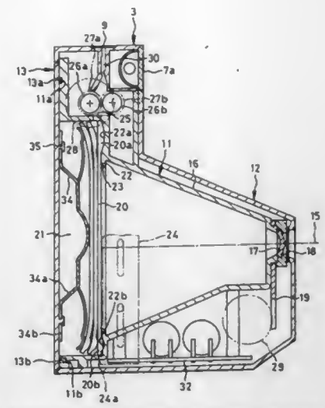
Filed Dec. 2, 1994, Ser. No. 355,247

Claims priority, application Japan, Dec. 3, 1993, 5-304378; Dec. 17, 1993, 5-318123; Dec. 17, 1993, 5-318124; Mar. 22, 1994, 6-050345; Mar. 23, 1994, 6-052266

Int. Cl.[6] G03B *17/50*

U.S. Cl. 396—6 **25 Claims**

1. An instant camera including a taking lens, a shutter mechanism disposed across an optical axis of said taking lens, a light-shielding tunnel with said shutter mechanism mounted, an advancing claw mechanism for advancing an instant film unit exposed behind said light-shielding tunnel vertically to said optical axis, and a pair of spreading rollers for pressing said exposed film unit advanced by said claw mechanism, for spreading processing solution, and for exiting said exposed film unit, said instant camera comprising:



a drive device, disposed beside said light-shielding tunnel, for driving said advancing claw mechanism and said spreading rollers;

a flash device for applying illuminating light to an object to be photographed, said flash device including: a flash emanating section for generating said illuminating light; and a printed circuit board, disposed under said light-shielding tunnel, for driving said flash emanating section; and

a battery holder, disposed opposite to said drive device with reference to said light-shielding tunnel, for containing a battery which supplies said drive device and said flash device with power.

5,608,478

CAMERA WITH LOCK-CONTROLLING LENS BARRIER

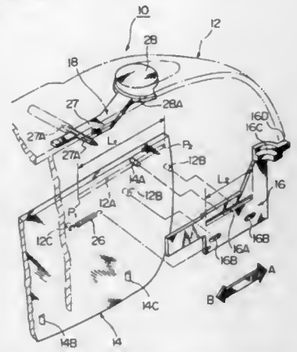
Takashi Kamoda, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Mar. 14, 1995, Ser. No. 403,437

Claims priority, application Japan, Jun. 16, 1994, 6-134225; Jun. 16, 1994, 6-134226; Jun. 16, 1994, 6-134229

Int. Cl.[6] G03B *17/38*

U.S. Cl. 396—503 **7 Claims**



1. A camera including a lens and a shutter release control button, said camera comprising:

a case;

a lens barrier slidably mounted to said case so as to be slid by a user from a first, closed position in which said lens is covered by said lens barrier to a second, open position in which said lens is exposed for taking pictures; and

a slide member slidably supported by said case and having a locking portion and a stopper portion integrally formed therewith, said slide member being linked to said lens barrier so as to slide with said lens barrier;

whereby when said lens barrier is positioned at a position other than said second, open position, said slide member is positioned such that said locking portion prevents said shutter release control button from being depressed, and when said lens barrier is positioned at said second, open position, said slide member is positioned such that said stopper portion allows said shutter release control button to be depressed but limits the amount by which said shutter release control button can be depressed, preventing and limiting of depression of said shutter release control button thereby being effected by a single, unitary member.

5,608,479

AUTOMATIC FILM WINDING/REWINDING DEVICE FOR PREVENTION OF FILM EXPOSURE TO LIGHT AND RELATED CONTROL METHOD

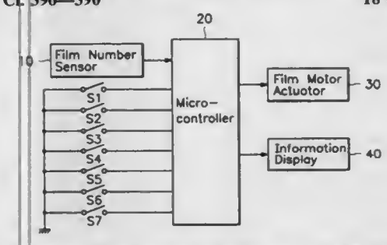
Eun-Gwan Park, Changwon-si, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jan. 16, 1996, Ser. No. 585,729

Claims priority, application Rep. of Korea, Jan. 13, 1995, 95-550

Int. Cl.[6] G03B *1/18;19/02;1/00*

U.S. Cl. 396—390 **18 Claims**



1. An automatic film winding/rewinding device for prevention of film exposure to light in a camera, comprising:

film number sensing means for sensing perforations on the film as the film is wound and for counting the number of perforations;

power switch means for applying power for performing photographing when selected by a user;

control means for determining whether all the film mounted in the camera has been used for photographing and whether the camera power switch has been off for a predetermined time, and producing a film rewinding signal upon a determination that the camera power switch means has been off for a predetermined time or that all the film mounted in the camera has been used in a photographing operation; and

film motor actuating means for performing winding/rewinding operation of the mounted film in response to a signal produced from said control means.

5,608,480

ONE-TIME-USE CAMERA WITH STOP-PROTRUSION FOR ENGAGING OPEN LIGHT LOCK OF CASSETTE TO PREVENT CASSETTE FROM DISLODGING LID CLOSING CHAMBER

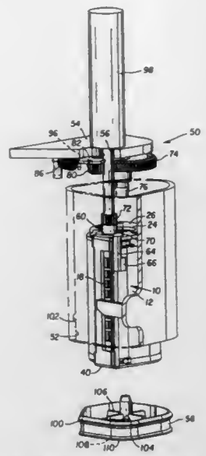
David C. Smart, Rochester, N.Y.; Kauyoshi Sugano, Hachiohji, Japan; Kiyobide Itoh, and Takashi Shirahama, both of Hino, Japan, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1996, Ser. No. 595,339

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—6 **3 Claims**

2. A camera comprising a chamber for a film cassette having a light lock pivoted open to permit film movement into the cassette



interior and closed to prevent ambient light from entering the cassette interior, is characterized in that:

a stop-protrusion is located in said chamber in the way of the light lock, when it is open, to prevent the film cassette from being removed from the chamber and to be clear of the light lock, when it is closed, to permit the film cassette to be removed from the chamber.

5,608,481

SPRING STRUCTURE FOR PRESSURE PLATE OF PHOTOGRAPHIC CAMERA

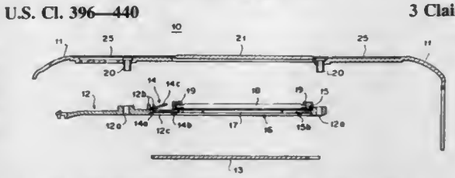
Syunji Nishimura, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Mar. 13, 1995, Ser. No. 402,610

Claims priority, application Japan, Jun. 23, 1994, 6-141342

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—440 **3 Claims**



1. In a photographic camera having a camera back body on which are mounted an electronic circuit assembly including an external display system and a pressure plate which is movable in the direction of the optical axis of a taking lens of the camera and supports the back side of a film loaded in the camera, a spring structure for urging the pressure plate toward the film comprising

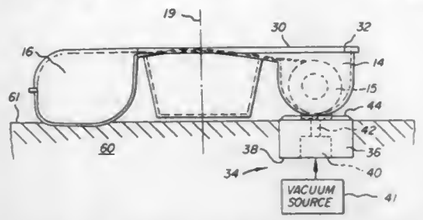
a pair of torsion springs each having a linear shaft portion and a plurality of abutment portions extending substantially perpendicular to the shaft portion disposed between the pressure plate and the camera back body so that the shaft portions of the respective torsion springs extend along opposite side edges of the pressure plate and a part of the abutment portions abuts against the pressure plate with the other abutment portions in abutment against a fixed portion on the camera back body, the shaft portions and the abutment portions of the respective torsion springs being disposed in spaces on opposite sides of the electronic circuit assembly without interference with the electronic circuit assembly.

5,608,482

FILM LOADING METHOD AND RELATED APPARATUS

Joseph A. Watkins, Rochester, and David C. Smart, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1996, Ser. No. 638,963
Int. Cl.[6] G03B 1/00
U.S. Cl. 396—6 7 Claims



1. A method of assembling a prewind camera having a camera body having a film roll chamber with an open portion for containing an unexposed roll of film in which an unexposed film roll is sequentially advanced into a film cartridge contained in an adjacent chamber of said camera, comprising the steps of:

prewinding an unexposed film roll from the film cartridge;

placing the unexposed film roll into the open portion of the film roll chamber;

applying a vacuum to the interior of the film roll chamber to constrain the film roll in a tensioned state; and

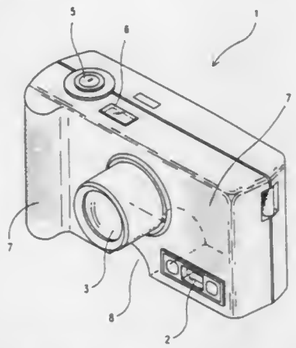
fixing a rear cover to the rear of the film roll chamber to make the camera lighttight.

5,608,483

LOW-POSITION VIEWFINDER CAMERA

Hong L. Tseng, 505 S. Beverly Dr. #1127, Beverly Hills, Calif. 90212

Filed Oct. 5, 1995, Ser. No. 539,582
Int. Cl.[6] G03B 13/02
U.S. Cl. 396—373 8 Claims



1. A camera comprising:

a camera body, said camera body being substantially rectangular;

a lens, provided on said camera body, for capturing an image on film; and

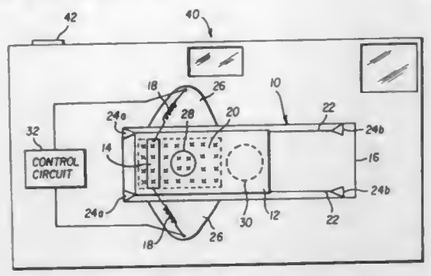
a viewfinder for viewing the image to be captured through said lens on film, said viewfinder being located at a position near a bottom surface of the camera and spaced from a top surface of the camera when the camera is oriented for horizontal format picture taking for viewing through said viewfinder without said camera body pressing against a photographer's nose.

5,608,484

ELECTROMAGNETIC CAMERA SHUTTER

Edward P. Furlani, Lancaster; William Mey, Rochester; Thomas M. Stephany, Churchville, and J. Kelly Lee, Brighton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1996, Ser. No. 628,070
Int. Cl.[6] G03B 9/36
U.S. Cl. 396—463 5 Claims



1. An electromagnetic camera shutter comprising:

an electrically conductive shutter blade;

electrically conductive spring means for urging said shutter blade into a first or a second position from a compressed position between said first and said second position;

permanent magnet means associated with said shutter blade; and

control means for applying a current through said springs and said shutter blade in a first direction to generate an electromagnetic field between said shutter blade and said permanent magnet so as to move said shutter blade from said first position to said second position and for applying a current through said springs and said shutter blade in a second direction so as move said shutter blade from said second position to said first position.

5,608,485

PHOTOGRAPHIC FILM CASSETTE HAVING A SPOOL LOCKING DEVICE AND CAMERA FOR USE WITH THE SAME

Hideaki Kataoka, and Tomoyuki Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

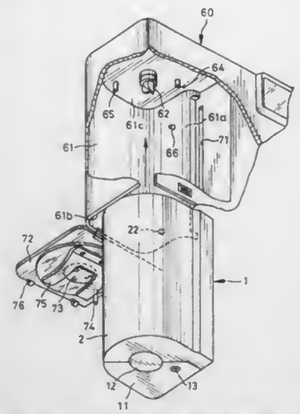
Division of Ser. No. 307,412, Sep. 19, 1994, Pat. No. 5,526,084, which is a continuation of Ser. No. 943,867, Sep. 11, 1992, abandoned. This application Feb. 14, 1996, Ser. No. 601,584
Claims priority, application Japan, Sep. 21, 1991, 3-261123; Oct. 24, 1991, 3-277987; Nov. 25, 1991, 3-309453
Int. Cl.[6] G03B 17/02;17/26
U.S. Cl. 396—514 8 Claims

6. A camera for use with a photographic film cassette in which photographic film is wound on a spool and rotatably contained in a cassette shell, a leader of said photographic film being caused by rotation of said spool to advance to an outside of said cassette shell through a passage mouth, said camera having a cassette receiving chamber formed therein for receiving said cassette comprising:

a driving shaft disposed in said cassette receiving chamber for being engaged with an end of said spool;

at least two positioning projections projected from an upper inside face of said cassette receiving chamber, said positioning projections being fitted in at least two positioning holes formed in said shell end face, when said cassette is inserted in said receiving chamber, so as to position said cassette in a predetermined orientation with respect to said camera and direct said passage mouth in a predetermined direction relative to said camera;

receiving means formed on said upper inside face of said cassette receiving chamber for coming in contact with contact means formed on said cassette so as to position said cassette within said camera relative to an axial direction of said spool;



an unlocking pin which passes through a through hole formed in said cassette shell when said cassette is loaded in said cassette receiving chamber; and

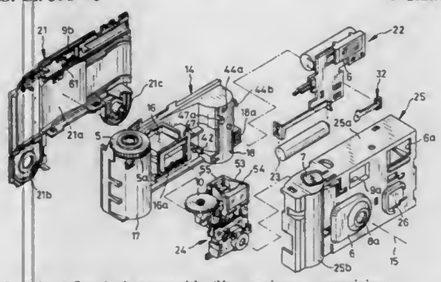
locking means disposed in said cassette shell in opposition to said through hole for locking said spool by stopping said spool from rotating, said unlocking pin displaces said locking means to an unlocked position when said unlocking pin is passed through said through hole.

5,608,486

LENS-FITTED PHOTOGRAPHIC FILM PACKAGE

Junichi Takagi, and Seiji Asano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 28, 1994, Ser. No. 202,496
Claims priority, application Japan, Mar. 3, 1993, 5-042877; Mar. 3, 1993, 5-042878; Mar. 6, 1993, 5-071195
Int. Cl.[6] G03B 17/00;15/03
U.S. Cl. 396—6 8 Claims



1. A lens-fitted photographic film package comprising:

a main body having a film take-up chamber containing a film cassette with a spool, a film supply chamber containing a roll of photographic film with an end of said film secured to said spool of said film cassette, and an exposure aperture disposed between said film take-up and supply chambers;

a rear cover covering said main body from the rear so as to shield said photographic film from external light;

a photograph-taking section disposed in front of said exposure aperture and including a taking lens system and a shutter mechanism;

a front cover covering said main body and said photograph-taking section front;

a lens holder incorporated in said photograph-taking section for receiving said taking lens system therein, said lens holder having a cylindrical peripheral surface surrounding a stop aperture and a plurality of engaging portions formed integrally with said peripheral surface;

a lens cover fitted on said lens holder through snap-in engagement between said engaging portions of said lens holder and resilient engaging portions formed integrally with said lens cover, to hold said taking lens system immovably in said lens holder; and

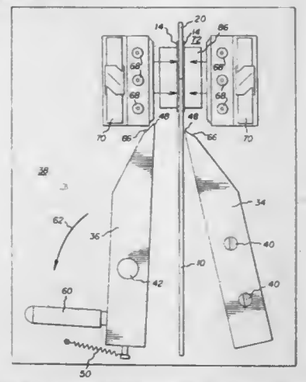
wherein said lens cover further has hooks formed outside said lens cover integrally with said resilient engaging portions, said hooks being adapted to be used for bending said resilient engaging portions outwardly.

5,608,487

METHOD AND APPARATUS FOR SEPARATING A LEADER CARD FROM A FILMSTRIP

Brett A. Pierce, Nunda; Fred C. Penta, and Joseph A. Manico, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 28, 1995, Ser. No. 563,696
Int. Cl.[6] G03B 13/10
U.S. Cl. 396—564 22 Claims



1. An apparatus for separating a leader card from a strip of film that has been adhesively secured to the leader card by a strip of adhesive tape at one end of the leader card, comprising:

a pair of scraper blades, each of said scraper blades having a scraping edge, each of said blades being mounted to said apparatus so that the scraping edges of said blades are in substantial parallel alignment, one of the blades being movably mounted so as to allow separation of the blades and insertion of the leader card therebetween, one of said blades being biased against the other so as to provide a sufficient force such that when the leader card is placed between the blades and pulled past the scraping edges the adhesive tape will be removed from the leader card.

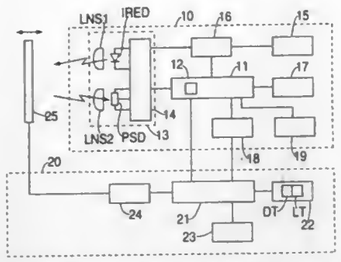
5,608,488

DATA PROCESSING DEVICE FOR A CAMERA

Toshiaki Hirai; Atsushi Takami; Shinichi Endo, and Yoshihisa Kurosawa, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,711
Claims priority, application Japan, Dec. 21, 1993, 5-322320
Int. Cl.[6] G03B 17/00; G06F 11/00
U.S. Cl. 396—125 7 Claims

1. A data processing device for a camera wherein data are predetermined with respect to a measured value input from a distance measuring means which can express an error amount of the measured value by one and other coordinate axes of an orthogonal coordinate axes system and a correct measured value is provided by a correction calculation using the first data comprising:



a first memorizing means for dividing the first data in a plurality of blocks and memorizing the data;

a second memorizing means for memorizing second data which are different from the first data based on the respective blocks of the first memorizing means;

a determining means for determining whether the first data of one of the blocks related to the measured value inputted from the distance memorizing means are valid or invalid and for outputting a result; and

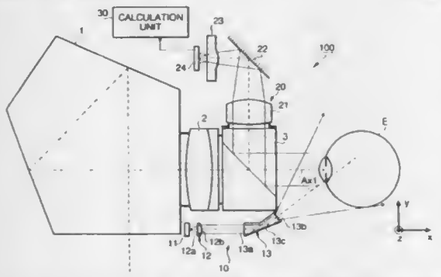
a control means for determining distance data by performing the correction calculation based on the first data related to the measured value in one of the blocks when the first data read from the first memorizing means are determined to be valid, and for determining distance data based on the second data of one of the blocks related to the measured value from the second memorizing means when the first data read from the first memorizing means are determined to be invalid.

5,608,489

EYE DIRECTION DETECTING DEVICE

Hiroyasu Ozaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1996, Ser. No. 653,392
Claims priority, application Japan, May 29, 1995, 7-153868
Int. Cl.[6] G03B *13/02*, A61B *3/10*
U.S. Cl. 396—51 33 Claims



1. An eye direction detection device for an observing optical system, comprising:

a light source;

an anamorphic light projection optical system that anamorphically modifies illumination light from said light source and projects said anamorphically modified illumination light from a position away from an optical axis of the observing optical system;

a light receiving device that receives reflected light from an eye of a user and outputs a signal corresponding to a light distribution of said reflected light; and

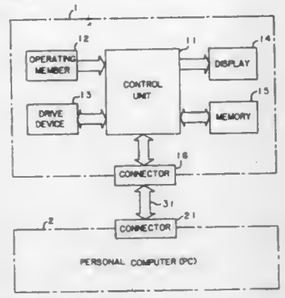
a calculation unit that determines a gazing direction of the eye in response to said signal output by said light receiving device.

5,608,490

APPARATUS FOR AND A METHOD OF COMMUNICATING BETWEEN A CAMERA AND EXTERNAL EQUIPMENT

Hidehiro Ogawa, Funabashi, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 493,233
Claims priority, application Japan, Jun. 20, 1994, 6-136990
Int. Cl.[6] G03B *9/00;17/00*
U.S. Cl. 396—300 14 Claims



1. A camera system, comprising:

a camera including a communication terminal;

an external device connected to the communication terminal of the camera, the camera and the external device performing communication at an initial communication speed via the communication terminal;

a communication speed change command device to transmit a command to the camera to change the initial communication speed; and

a communication speed change device to change the communication speed based on the communication speed change command,

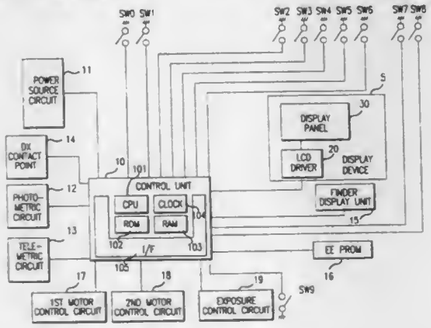
wherein after the communication speed is changed, communication between the camera and the external equipment is performed at the changed communication speed.

5,608,491

CAMERA WITH SIMPLIFIED PARAMETER SELECTION AND DUAL MODE OPERATION AND METHOD OF OPERATION

Nohuaki Sasagaki, and Takashi Saegusa, both of Kanagawaken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 377,825
Claims priority, application Japan, Feb. 4, 1994, 6-013026; Feb. 4, 1994, 6-032949
Int. Cl.[6] G03B *7/00;17/18*
U.S. Cl. 396—243 38 Claims



1. A camera comprising:

a memory storing data including a plurality of parameters corresponding to photographic operation settings;

a display assembly that displays selected parameters from the memory, including a display area that offers a plurality of consecutive alternative display options in the display area;

a selector assembly that selects parameters using the display assembly, including a group of parameter selectors and a change operation selector separate from the group of parameter selectors; and

a controller coupled to the memory, the display assembly, and the selector assembly that controls photographic operation based on a selected parameter, wherein the controller controls the display assembly to change the display options in the display area based on operation of the change operation selector,

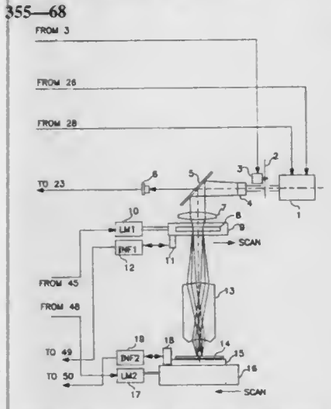
wherein the controller controls the photographic operation based on a preselected default parameter when the change operation selector is continuously operated for a predetermined period of time.

5,608,492

SCANNING TYPE EXPOSURE APPARATUS AND METHOD DEVICE MANUFACTURING METHOD

Mitsuya Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,740
Claims priority, application Japan, Jan. 26, 1994, 6-024779; Jan. 18, 1995, 7-024701
Int. Cl.[6] H01L *21/30*
U.S. Cl. 355—68 22 Claims



1. A scanning type exposure apparatus comprising:

scanning means for scanningly moving a mask and a substrate relative to a plurality of light pulses;

irradiating means for continuously irradiating the substrate with the light pulses transmitted through the mask; and

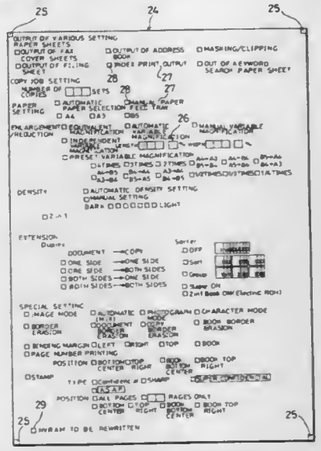
control means for controlling an exposure amount of the substrate, wherein said control means controls an average value of light quantity of a predetermined number of continuous light pulses to be substantially equal to a predetermined target value by controlling the light quantity of a next light pulse in accordance with an integrated light quantity of a previous number of light pulses.

5,608,493

IMAGE FORMING APPARATUS CAPABLE OF SETTING AN OPERATIONAL MODE BY READING IMAGE OF A PREDETERMINED FORMAT

Tomoki Tanaka, Yamatokoriyama; Hiroyuki Ataka, Nara, and Yoichi Iwasaki, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1995, Ser. No. 462,879
Claims priority, application Japan, Jun. 7, 1994, 6-125321
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—83 32 Claims



1. An image forming apparatus comprising:

reading means for reading an image of a document placed on a document platen;

image forming means for forming an image based on the image of the document read by said reading means, said image thus formed being supplied as printed;

image memory means for storing an operation setting image;

operational mode setting means arranged such that when an operation setting paper sheet having an operation setting image printed thereon is placed on said document platen, an operational mode for said image forming means is set according to selection items to which selection marks have been put in said operation setting image read by said reading means from said operation setting paper sheet; and

operation setting paper output control means for controlling said image forming means so as to supply said operation setting image read from said image memory means as printed upon receiving an instruction from an operation panel, said operation setting paper output control means including highlighting processing control means for preparing an operation setting image to be outputted by executing a high-light drawing processing on a specific selection item in said operation setting image read from said image memory means so as to distinguish said specific selection item from other selection items.

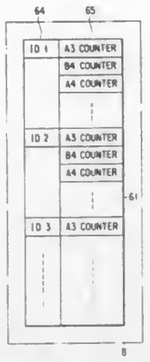
5,608,494

IMAGE FORMING APPARATUS USING ID CARD HAVING COUNTER

Masahiko Ogura, Yokohama, and Masashi Honda, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 34,115, Mar. 22, 1993, abandoned.
This application Dec. 22, 1994, Ser. No. 361,856
Claims priority, application Japan, Sep. 24, 1992, 4-254519
Int. Cl.[6] G03G *21/02*
U.S. Cl. 399—366 5 Claims

1. A system for counting a number of paper sheets which are copied on a copy machine, comprising:



(a) a memory card including:

a memory for storing a plurality of first personal identification data, and

a plurality of counters for counting the number of paper sheets which are copied, wherein each of the plurality of counters corresponds to a different one of the plurality of first personal identification data; and

(b) an image forming apparatus including:

holding means for detachably holding the memory card,

inputting means for inputting second personal identification data by an operator desiring to initiate a copying procedure,

verifying means for comparing the second personal identification data input by said operator with the plurality of first personal identification data stored in the memory of the memory card to determine which, if any, of the plurality of first personal identification data coincide with the second personal identification data,

image forming means for forming an image on a paper sheet,

means for permitting the image forming means to form the image on the paper sheet only when the verifying means verifies the coincidence between the second personal identification data input by said operator and said one of the plurality of first personal identification data stored in the memory of the memory card, and

means for incrementing a counter of the plurality of counters which corresponds to said one of the plurality of first personal identification data stored in the memory of the memory card, when the image forming means forms the image on the paper sheet.

5,608,495

IMAGING DENSITY CONTROL APPARATUS

Hideo Kitakubo, Toyokawa; Suguru Hamamichi, Shinshiro, and Mineo Yamamoto, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1993, Ser. No. 175,543

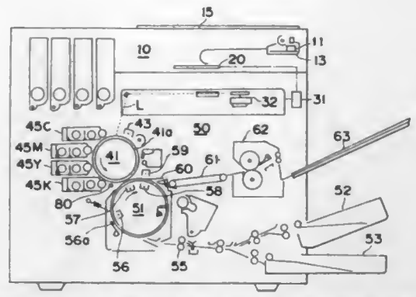
Claims priority, application Japan, Jan. 1, 1993, 5-014416; Nov. 19, 1993, 5-314246

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—72 **6 Claims**

1. A copying apparatus arranged to form a test pattern image and detect density of the formed test pattern image for copying a document after properly correcting image forming conditions according to the detected density of the formed test pattern image, said copying apparatus comprising:

detecting means for detecting a representative density of a document image.



setting means for setting image forming conditions according to the detected density, and

means for preparing a test pattern based on the set image forming conditions.

5,608,496

PRINT IMAGE POSITION INDICATION DEVICE

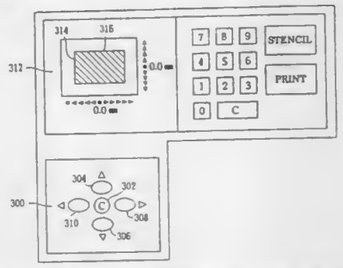
Hiroshi Hanzawa; Yoshikazu Hara, and Masakazu Miyata, all of Minato-ku, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,032

Claims priority, application Japan, Nov. 12, 1993, 5-306034

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—81 **8 Claims**



1. A print image position indication device for indicating the results of adjustment of a print image position in a printer capable of adjusting a transverse position and a longitudinal position of a print image relative to a print sheet, comprising a standard print position indication mark including at least two straight lines perpendicular to one another for indicating respectively a transverse position and a longitudinal position of a printing master positioned at a standard position thereof relative to a print sheet and a biased print position indication mark including at least two straight lines perpendicular to one another for indicating respectively a transverse position and a longitudinal position of the printing master biased in either or both of transverse and longitudinal directions from said standard position, wherein said biased print position indication mark is biased relative to said standard position indication mark in the same direction as and in accordance with a biasing of the print image relative to the print sheet in either or both of the transverse and longitudinal directions and said biased print position indication mark is also biased relative to said standard print position indication mark at a substantially greater rate than a ratio of a biasing amount of the printing master from said standard position thereof to the size of the printing master.

5,608,497

ELECTROPHOTOGRAPHIC COLOR IMAGE FORMING APPARATUS

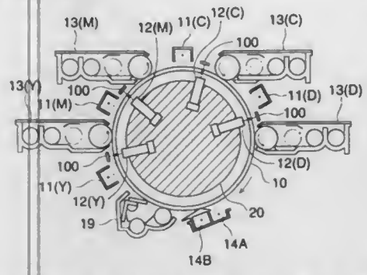
Satoshi Haneda; Masakazu Fukuchi, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 30, 1995, Ser. No. 451,277

Claims priority, application Japan, Jun. 1, 1994, 6-120314; Jun. 3, 1994, 6-122641

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—153 **7 Claims**



1. An apparatus for forming a color toner image in which an image forming process including a charging process, an image exposure process and a development process are repeated so that a yellow, magenta, and cyan toner images are superimposed on a rotatable image forming member, comprising:

the rotatable image forming member made of a transparent material and having an internal hollow space;

a charging device for charging an outer surface of the image forming member to a given electric potential;

image exposure means provided in the internal hollow space so that an image exposure is conducted from an exposing position in the internal hollow space,

developing means provided outside of the image forming member so that a toner image is formed on the outer surface of the image forming member; and

a light absorbing member provided outside of the image forming member opposite to the exposing position so that the light absorbing member absorbs the exposure light passing through the image forming member.

5,608,498

IMAGE FORMING APPARATUS IN WHICH AT LEAST AN IMAGE CARRYING MEMBER AND PLURAL EXPOSURE MEANS ARE CONSTRUCTED IN A SINGLE BODY

Hisayoshi Nagase; Shuta Hamada, and Satoshi Haneda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,564

Claims priority, application Japan, Feb. 3, 1995, 7-016921; Feb. 17, 1995, 7-029473

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—130 **21 Claims**

4. An apparatus for forming a color image by superimposing plural different color component toner images, comprising:

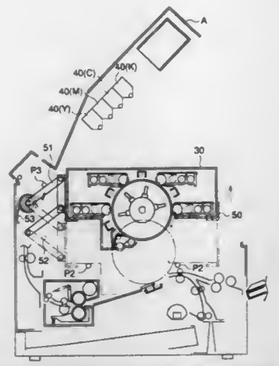
an image carrying member shaped as a cylinder and rotatable around its rotation axis, the image carrying member having a working position at which the color image is formed on the image carrying member;

charging means for charging the image carrying member;

image exposure means for exposing the charged image carrying member so that a latent image is formed on the image carrying member;

developing means for developing the latent image into a toner image;

each of the charging means, the image exposure means and the developing means provided by plural sets corresponding in number to plural different color components and placed in such an arrangement that the plural different color component



toner images are superimposed on the image carrying member during a single rotation of the image carrying member;

a common supporting member by which the plural image exposure means are supported, the common supporting member being a ring-shaped member which is coaxially mounted around the image carrying member; and

all of the plural image exposure means, the common supporting member and the image carrying member constructed in a single body and shiftable together in a direction perpendicular to the rotation axis of the image carrying member from or to the working position of the image carrying member.

5,608,499

APPARATUS AND METHOD FOR CLEANING ROLLERS IN IMAGE FORMERS

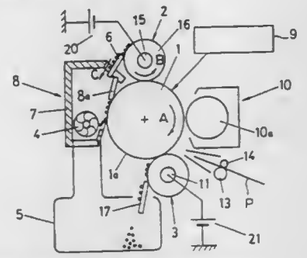
Masaru Tanaka, Kanagawa-ken, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 408,601

Claims priority, application Japan, Mar. 23, 1994, 6-051519

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—99 **48 Claims**



1. An image forming apparatus, comprising:

an image bearing member;

a transferring roller for transferring a toner image formed on the image bearing member to a substrate, or a charging roller, in contact with the image bearing member; and

a cleaning unit comprising:

a cleaning member for cleaning a surface of the roller by removing material therefrom; and

transporting means for conveying the material removed from the surface of the roller away from the roller to a collecting unit positioned about and in proximity to the image bearing member, wherein

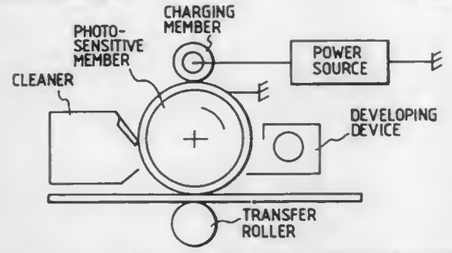
the cleaning member has a width or diameter substantially the same as the width or diameter of the roller, an edge of the cleaning member contacts the roller substantially along the entire width or diameter thereof, and the material removed from the roller by the cleaning member is transferred in a direction substantially perpendicular to an axis of the roller by the cleaning means and collected by the collecting unit.

5,608,500

CONTACT CHARGING MEMBER AND ELECTROPHOTOGRAPHIC APPARATUS USING THE SAME

Eiji Funabashi, Kanagawa-ken, and Shuichi Aita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,372
Claims priority, application Japan, Mar. 29, 1995, 7-071810
Int. Cl.[6] G03G *15/02;15/00*
U.S. Cl. 399—176 **15 Claims**



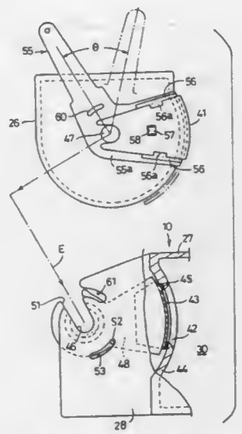
1. A contact charging member used in a charging device for charging an image carrier by contacting said contact charging member to which a voltage is impressed with said image carrier, said contact charging member comprising at least a supporting member and a coating member, said coating member being a seamless tube consisting of a resin blend of a flexible resin and a heat resistant resin.

5,608,501

DEVELOPMENT UNIT AND TONER CARTRIDGE FOR USE IN AN IMAGE FORMATION APPARATUS

Kazumasa Makino, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 29, 1994, Ser. No. 365,773
Claims priority, application Japan, Feb. 16, 1994, 6-019227
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—119 **41 Claims**



1. A developing assembly for an image forming apparatus, comprising:

a developing unit including a case having an outer wall with a toner introduction port defined therein and a toner cartridge support formed thereon, a developing sleeve disposed within the case and exposed at one side of the case opposed to the toner introduction port, and a movable case shutter coupled to the case adjacent to the toner cartridge support and removably sealed over the toner introduction port; and

a toner cartridge removably coupled to the developing unit at the toner cartridge support, including a toner box having an outer surface with a toner exhaust port defined therein and a box shutter with a concave portion facing the toner exhaust port and contacting the toner box, said box shutter being positionable to removably seal the toner exhaust port,

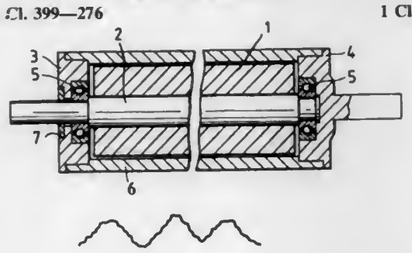
wherein, when the toner cartridge is coupled to the toner cartridge support on the case of the developing unit, the case shutter and the box shutter are simultaneously positionable between open and closed positions to seal and unseal said toner introduction port and said toner exhaust port, respectively.

5,608,502

METHOD FOR TREATING MAGNET ROLL BY BLASTING WITH NONMAGNETIC SPHERICAL PARTICLES

Keitaro Yamashita, and Takeshi Satoh, both of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 77,089, Jun. 16, 1993, abandoned.
This application Jul. 27, 1995, Ser. No. 508,338
Claims priority, application Japan, Jun. 17, 1992, 4-157137
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—276 **1 Claim**



1. A method for treating a magnet roll comprising the steps of:

providing a permanent magnet member having an outer circumferential surface and a plurality of axially extending magnetic poles formed in the outer circumferential surface;

slidably surrounding said member with a stainless steel sleeve of hollow cylindrical shape, said sleeve and said member being rotatable relative to each other; and

blasting a surface of said sleeve with spherical particles of ALUNDUM having a density in a range of from 3 to 4 g/cm^3 and Mohs' hardness in a range of from 11 to 14 to produce a surface roughness (R_z) in a range of from 0.5 to 8 μm.

5,608,503

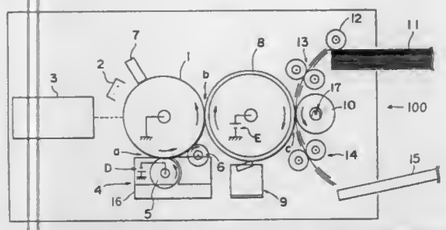
IMAGE FORMING APPARATUS USING AN INTERMEDIATE TRANSFER MEMBER, AN INTERMEDIATE TRANSFER MEMBER AND IMAGE FORMING METHOD

Toshimitsu Fujiwara, Kobe; Shuji Iino, Muko, and Hidetoshi Miyamoto, Takatsuki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 20, 1995, Ser. No. 375,732
Claims priority, application Japan, Jan. 21, 1994, 6-005322
Int. Cl.[6] G03G *15/14;13/14*
U.S. Cl. 399—302 **22 Claims**

18. In an image forming apparatus which forms a liquid developer image and supports the image temporarily on the surface of an intermediate member,

wherein said intermediate member has a water absorption in the range between 0.15 and 10.0 percent by weight and includes a polymer having low water absorbing power and an additive dispersed therein, said additive having high water absorbing power.

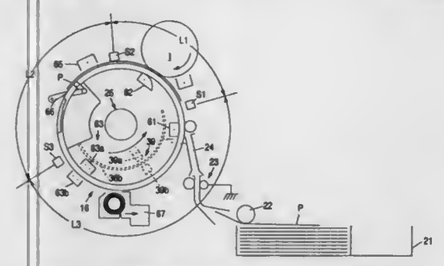


5,608,504

TRANSFER MATERIAL DETECTING DEVICE

Fumio Furusawa; Akira Kamata, and Tomohisa Suzuki, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 543,137
Claims priority, application Japan, Dec. 16, 1994, 6-313798
Int. Cl.[6] G03G *15/16*
U.S. Cl. 399—18 **13 Claims**



8. A transfer material detecting device, comprising:

a transfer-material carrier that detachably carries a transfer material to transport said transfer material to a transfer region where a toner image of an image carrier is transferred to the transfer material;

a signal emitting device located on said transfer material carrier;

at least two transfer material sensors disposed in a moving path of said transfer material carrier at intervals that are shorter than a minimum size of a transfer material to be detected; and

a means for outputting a transfer material detection signal when two or more of said transfer material sensors simultaneously detect an existence of the transfer material.

5,608,505

IMAGE FORMING APPARATUS

Akihiko Takeuchi, Yokohama; Toshihiko Ochiai, Tokyo; Motoi Katoh, Yokohama; Toshiaki Miyashiro, Ichikawa, and Takehiko Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 266,684, Jun. 28, 1994, abandoned.
This application Apr. 30, 1996, Ser. No. 640,000
Claims priority, application Japan, Jun. 29, 1993, 5-159051
Int. Cl.[6] G03G *15/16*
U.S. Cl. 399—314 **19 Claims**

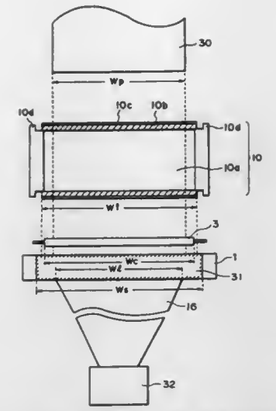
1. An image forming apparatus comprising:

an electrophotographic photosensitive member;

charging means for charging said photosensitive member to form an electrostatic latent image on said photosensitive member;

exposure means for exposing said photosensitive member to image light;

developing means for developing the latent image with toner;



a transfer member contactable to said photosensitive member at a transfer position, said transfer member comprising an electrically conductive base, a high resistance surface layer, and a low resistance or intermediate resistance conductive layer between said conductive base and said surface layer; and

transfer voltage applying means for applying a transfer voltage to said transfer member;

wherein Ws>Wt>Wp>Wl is satisfied,

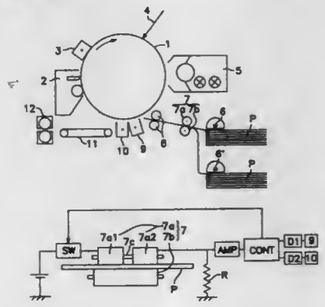
where Ws is a width of a photosensitive layer measured in a direction perpendicular to a movement direction of said photosensitive member, Wl is an image exposure width of said exposure means, Wp is a width of a transfer material usable with said image forming apparatus, and Wt is an overlapping width between a charging width of said charging means and the width of the conductive layer of said transfer member.

5,608,506

IMAGE FORMING APPARATUS EQUIPPED WITH A DEVICE TO MEASURE A RESISTANCE OF A TRANSFER SHEET

Tetsuko Omoto, Hachioji, Japan, assignor to Konica Corporation, Japan

Filed Dec. 12, 1994, Ser. No. 354,507
Claims priority, application Japan, Dec. 20, 1993, 5-320178
Int. Cl.[6] G03G *15/14;21/00*
U.S. Cl. 399—315 **9 Claims**



1. An image forming apparatus, comprising:

processing means for working on a recording member to form an image on the recording member;

wherein the processing means comprises an image carrying member on which a toner image is formed and transferring means for transferring the toner image onto the recording member,

a stacking member on which the recording member is stored;

conveying means for conveying the recording member from the stacking member to the processing means along a conveyance passage,

registering means for making the recording member to temporarily halt before the recording member is conveyed to the processing means so that the image formation on the recording member is in synchronization with the working of the processing means;

measuring means for measuring a value corresponding to an electrical resistance of the recording member.

wherein said measuring means has a pair of rollers in said conveyance passage to convey the recording member when the recording member is nipped therebetween, and is adapted to measure a first value corresponding to the resistance when the pair of rollers nip the recording member therebetween and a second value corresponding to the resistance when the pair of rollers do not nip the recording member therebetween, to obtain the resistance of the recording member on the basis of the first value and the second value;

control means for determining the process conditions to form the image on the recording member on the basis of the resistance of the recording member and for controlling the processing means in accordance with the determined process conditions.

5,608,507

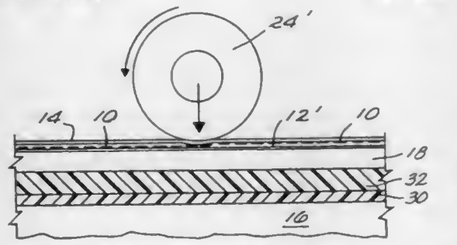
DIRECT TRANSFER OF LIQUID TONER IMAGE FROM PHOTOCONDUCTOR DRUM TO IMAGE RECEIVER

Khe C. Nguyen, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 1, 1995, Ser. No. 522,681

Int. Cl.[6] G03G *15/16;13/16*

U.S. Cl. 399—307 **26 Claims**



1. Apparatus for transferring an image, derived from a liquid toner, from a photoconductor layer to an image receiver, comprising:

(a) said photoconductor layer having a release layer thereon;

(b) a roller spaced from said photoconductor layer;

(c) means for directing said image receiver between said photoconductor layer and said roller such that said image receiver contacts both said release layer and said roller;

(d) at least one conformable layer, supporting said photoconductor layer and said image receiver thereon; and

(e) a source of heat and pressure against said image receiver for transferring said image from said photoconductor layer to said image receiver.

5,608,508

ROTATABLE MEMBER FOR FIXING IN WHICH INORGANIC FILLER IS CONTAINED IN SILICONE RUBBER, AND FIXING DEVICE HAVING THE SAME

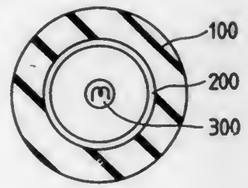
Hiroaki Kumagai, Kawasaki; Takeshi Menjo, Tokyo; Kazuo Kishino, Kawasaki; Masaaki Takahashi, Asaka; Rie Saito, Yokohama; Jiro Ishizuka, Chiba; Hideo Kawamoto, Kawasaki, and Ryuichiro Maeyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 407,382

Claims priority, application Japan, Mar. 25, 1994, 6-055507; Mar. 25, 1994, 6-055508; Mar. 10, 1995, 7-051120; Mar. 10, 1995, 7-051121

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—339 **21 Claims**



1. A fixing rotatable member comprising:

a base member; and

an elastic layer provided on a surface of said fixing rotatable member;

said elastic layer being addition type silicone rubber in which resin-like polyorganosiloxane and 0.1 to 2 percent by weight of inorganic fine powder are mixed.

5,608,509

PROCESS CARTRIDGE WITH BLADE MEMBER HAVING A FLAT-SURFACE SIDE AND AN ANGLED-SURFACE SIDE

Hiroyuki Shirai, Tokyo; Kazumi Sekine, Kawasaki; Tadayuki Tsuda, Kawasaki; Isao Ikemoto, Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago, Tokyo; Takeo Shoji; Shinya Noda, both of Yokohama; Kazunori Kobayashi, Kawasaki, and Hiroyuki Adachi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 45,362, Apr. 13, 1993. This application Jun. 7, 1995, Ser. No. 478,999

Claims priority, application Japan, Apr. 16, 1992, 4-121131; Jun. 30, 1992, 4-194660; Jul. 24, 1992, 4-217423; Jan. 28, 1993, 5-31175; Apr. 12, 1993, 5-84679

Int. Cl.[6] G03G *21/00*

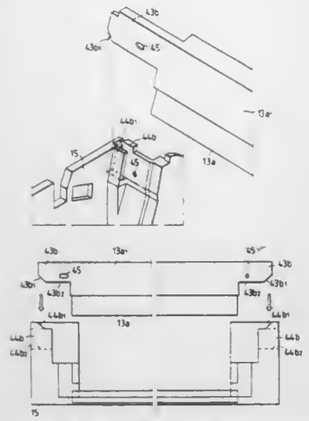
U.S. Cl. 399—351 **37 Claims**

1. A process cartridge mountable within an image forming apparatus, comprising:

(a) a frame;

(b) an electrophotographic photosensitive drum provided in said frame; and

(c) a cleaning blade member for removing residual toner from said electrophotographic photosensitive drum, said cleaning blade member comprising an elastic blade, a support member secured to said frame for supporting said elastic blade and having a supporting portion for supporting said elastic blade, a protruded portion protruding from said supporting portion in a longitudinal direction thereof, and a hole formed in said protruded portion;



wherein a length of said protruded portion in said longitudinal direction is more than 5 mm and less than 20 mm.

5,608,510

Patent Not Issued For This Number

5,608,511

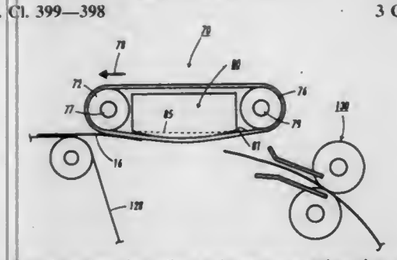
VACUUM TRANSPORT APPARATUS

David M. Attridge, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 583,906

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—398 **3 Claims**



1. A copier/printer including a photoreceptor adapted to receive page images thereon, copy sheets for receiving page images from the photoreceptor with the copy sheets exiting the photoreceptor horizontally and having the lead edge portion of the copy sheets cantilevered as they exit the photoreceptor, a transfer apparatus for transferring the page images from the photoreceptor to the copy sheets and a fuser for fusing the page images on the copy sheets, comprising:

a prefuser vacuum transport apparatus positioned between the photoreceptor and fuser adapted to receive cantilevered copy sheets from the photoreceptor and transport them to the fuser with the copy sheets suspended underneath said prefuser vacuum transport apparatus, said prefuser vacuum transport apparatus including a vacuum plenum; at least one drive roll and at least one idler roll; at least one perforated belt entrained around said at least one drive roll, said at least one idler roll and said vacuum plenum; and wherein said vacuum plenum includes a port surface with said port surface having a smooth, continuous, non-pointed, curved, convex profile to ensure close contact of the copy sheets with said smooth, continuous, non-pointed, curved, convex profile of said vacuum plenum, said contoured profile being adapted to follow the profile of the stiffest copy sheets with the maximum specified curl.

5,608,512

FIXING DEVICE HAVING A PIVOTALLY MOVABLE SEPARATING MEMBER

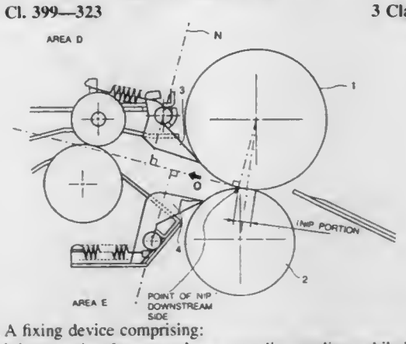
Saijiro Endo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 201,558, Feb. 24, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 567,807

Claims priority, application Japan, Feb. 26, 1993, 5-061250

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—323 **3 Claims**



1. A fixing device comprising:

a fixing member for conveying a recording medium while holding the recording medium thereon, and fixing an image on the recording medium;

a separating member having a pivot shaft and urged against the surface of said fixing member;

a guide member provided downstream of said separating member with respect to the direction of movement of the recording medium for guiding the recording medium;

said separating member being of such a shape that the portion thereof from the leading end of the separating member to an imaginary line substantially perpendicular to the direction of movement of the recording medium and passing through said pivot shaft is substantially parallel to the direction of conveyance of the recording medium, and the portion thereof which is downstream of the imaginary line with respect to the direction of movement of the recording medium gradually becomes far from the movement path of the recording medium.

5,608,513

RANGE FINDING DEVICE

Sachiaki Komatsu, and Akio Izumi, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Aug. 2, 1994, Ser. No. 284,100

Claims priority, application Japan, Aug. 6, 1993, 5-195857

Int. Cl.[6] B32B *31/00*

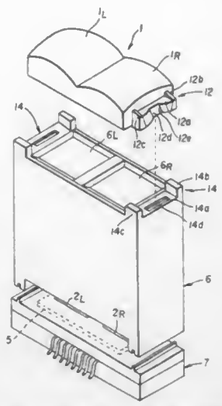
U.S. Cl. 356—3 **1 Claim**

1. A range finding device comprising:

an optical lens block comprising an object lens and a first coupling member, projecting from a side of said object lens, said first coupling member further comprising a recess portion formed thereon; and

an optical waveguide case comprising a second coupling member to which said first coupling member fits, said second coupling member including a fitting surface to which a bottom surface of said first coupling member fits, and a liquid pool formed on said fitting surface at least a part thereof exposed to said recess portion;

wherein said first coupling member further comprises a constriction portion constricted by said recess portion; and



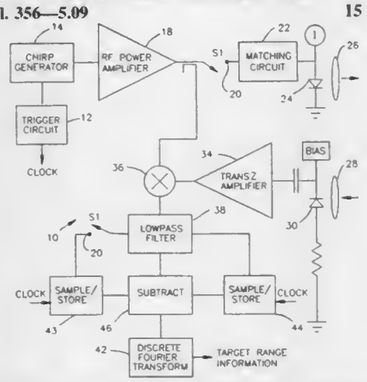
wherein said constriction portion further comprises a side wall slope.

5,608,514

HIGH RANGE RESOLUTION LADAR

Barry L. Stann, Silver Spring; William C. Ruff, Baltimore, and Zoltan G. Sztankay, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1995, Ser. No. 424,949
Int. Cl.[6] G01C *3/08*; **G01S** *13/08*
U.S. Cl. 356—5.09 **15 Claims**



1. A self-clutter cancelling high resolution incoherent ladar comprising:

a source of driving current;

first generating means for generating a light signal having power proportional to said driving current;

second generating means for generating a frequency modulated modulation signal;

modulating means for amplitude modulating said light signal with said modulation signal;

transmitter means for collimating and directing said light signal toward a target;

receiver means for collecting light signals reflected from said target;

conversion means for converting said collected light signals into a reflected current signal proportional to power of the collected light signals;

mixer means for mixing said modulation signal, undelayed by transmission and reflection, with said reflected current signal to provide a mixer output intermediate frequency (IF) signal having a mean frequency proportional to the range of said target;

a first means for sampling-and-storing said mixer output signal;

a second means for sampling-and-storing said mixer output signal;

interruption means for selectively interrupting amplitude modulation of said driving current by said modulation signal to permit only said undelayed modulation signal to be processed by said mixer means and provide a self-clutter signal representing clutter introduced in said mixer;

first directing means for directing said self-clutter signal to said first sampling and storing means when amplitude modulation of said driving current is interrupted;

second directing means for directing said mixer output signal to said second sampling and storing means when amplitude modulation of said driving current is uninterrupted;

subtracting means for subtracting said self-clutter signal stored in said first sampling and storing means from said mixer output signal stored in said second sampling and storing means on a period by period basis to provide a subtracted signal; and

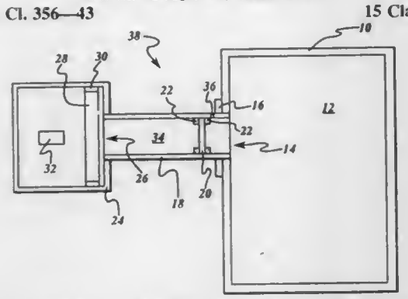
analyzing means for frequency analyzing said subtracted signal to determine distance of said second target from the ladar.

5,608,515

DOUBLE WINDOW FOR PROTECTING OPTICAL SENSORS FROM HAZARDOUS ENVIRONMENTS

Emily Y. Shu; Dale M. Brown, both of Schenectady, and Louis J. Petrucco, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1995, Ser. No. 425,548
Int. Cl.[6] G01J *5/48*; **G01N** *21/00*
U.S. Cl. 356—43 **15 Claims**



1. An apparatus for protecting an optical sensor, the apparatus comprising:

a housing having an open end;

first and second windows situated in the housing between the optical sensor and an outside environment, the first window being situated closer to the open end than the second window, the first window permitting air exchange between the outside environment and the second window, the second window being hermetically sealed to the housing.

5,608,516

GLASS BOTTLE INSPECTION MACHINE

Monti D. Emery, Elmira, N.Y., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

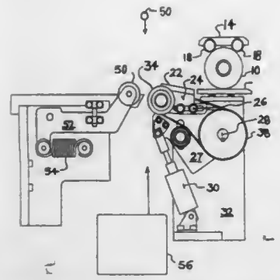
Filed Dec. 13, 1995, Ser. No. 572,267
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—240 **4 Claims**

1. A machine for inspecting a glass bottle comprising

a bottle supporting track,

car means for conveying a bottle along said track to a bottle inspection station, said car means including roller means for rollingly engaging one side of said bottle,

a wall mechanism for engaging the other side of the bottle as it is conveyed to said bottle inspection station, said wall mechanism including



a displaceable support,

means for biasing said displaceable support towards a fully advanced position,

linear bumper means on said support, said linear bumper means extending into the path of a conveyed bottle when said displaceable support is at said fully advanced position so that a bottle will engage said linear bumper means and forcefully displace said displaceable support to a retracted position as the bottle is conveyed to the bottle inspection station,

the length of said linear bumper means being selected so that when a bottle is conveyed to the bottle inspection station, the bottle will be conveyed past said linear bumper means whereby said displaceable support will be displaced back towards said fully advanced position, and

roller means on said displaceable support for forcefully engaging the upstream portion of the other side of a bottle at the bottle inspection station when said displaceable support is displaced towards said fully advanced position,

idler roller means for engaging the downstream portion of the other side of a bottle located at the inspection station,

means for supporting said idler roller means so that further conveying of a bottle from the inspection station will displace said idler roller means out of the way of the bottle,

means for driving said roller means so that a bottle located between said car roller means, said idler roller means and said displaceable support roller means at the inspection station will be rotated, and

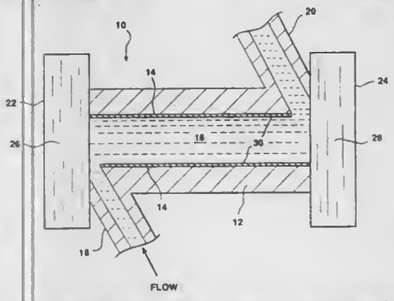
means for inspecting a bottle rotating at said inspection station.

5,608,517

FLOW CELL AND METHOD FOR MAKING SAME

Miner N. Munk, Sonoma, Calif., assignor to Thermo Separation Products Inc., Fremont, Calif.

Filed Feb. 28, 1995, Ser. No. 395,784
Int. Cl.[6] G01N *21/05*
U.S. Cl. 356—246 **25 Claims**



1. A flow cell for light absorption measurement comprising:

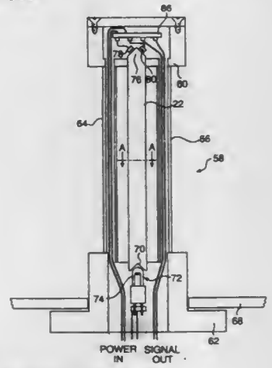
a housing comprising an outer layer of a heat shrinkable polymer and an inner layer of a second polymer, said inner layer of said second polymer forming an interior wall defining a flow passage, said flow passage having an inlet and an outlet through which a liquid phase sample to be analyzed is directed, said housing having a first end and a second end, said first and second ends having transparent windows through which light is directed, and at least a portion of said interior wall having bonded thereto a polymer having an index of refraction lower than that of water.

5,608,518

MULTIPLE INTERNAL REFLECTION ANALYZERS NOT REQUIRING EXTERNAL OPTICS

Paul A. Wilks, Jr., 179 Middlesex Rd., Darien, Conn. 06820

Continuation-in-part of Ser. No. 233,361, Apr. 25, 1994, Pat. No. 5,452,083. This application Sep. 18, 1995, Ser. No. 529,371
Int. Cl.[6] G01N *21/27*
U.S. Cl. 356—300 **20 Claims**



1. An optical analyzer comprising:

A) a light source;

B) an electro-optical transducer, which is a detector of a wavelength of light to be used for optical analysis of a material; and,

C) a cylindrical rod adapted for immersion in the material to be analyzed having a first and a second end, a cylindrical surface therebetween, and a centrally disposed axis of symmetry intersecting said ends, said first end of said rod being hollowed out to form an end surface which forms an angle having a first pair of legs at the intersection thereof with a plane coincident with said axis, said angle being slightly greater than twice the critical angle of incidence at said cylindrical surface of said rod when immersed in the material to be analyzed at said wavelength, said light source being located substantially on a perpendicular bisector of one of said legs, the second end of said rod is substantially a convex wedge shape having two surfaces meeting at an angle, said electro-optical transducer mounted to receive light passing through one of said wedge surfaces.

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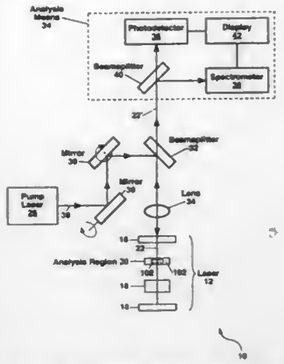
LASER APPARATUS AND METHOD FOR MICROSCOPIC AND SPECTROSCOPIC ANALYSIS AND PROCESSING OF BIOLOGICAL CELLS

Paul L. Gourley, 12508 Loyola, NE., Albuquerque, N.M. 87112, and Mark F. Gourley, 7509 Spring Lake Dr., Apt. B1, Bethesda, Md. 20817

Filed Mar. 20, 1995, Ser. No. 407,345
Int. Cl.[6] G01J *3/30*
U.S. Cl. 356—318 **43 Claims**

1. Apparatus for analyzing biological cells comprising:

(a) a laser having a resonant optical cavity formed by at least two reflecting mirrors, a gain medium within the resonant



optical cavity, and pump means for activating the gain medium; and

(b) an analysis region located within the resonant optical cavity for containing at least one biological cell to be analyzed, the analysis region being disposed along a central portion of the cavity wherein a laser beam is generated by the laser at least partially in response to one of the biological cells present within the analysis region, the lasers beam having information about the biological cell encoded thereupon.

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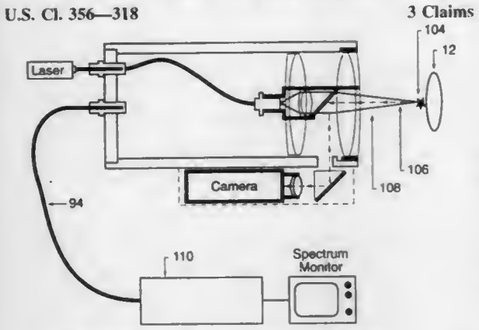
PLASMA EMISSION SPECTROSCOPY METHOD OF TUMOR THERAPY

Kevin J. Fleming, Albuquerque, N.M., assignor to The United States of America as represented by he Department of Energy, Washington, D.C.

Division of Ser. No. 272,461, Jul. 11, 1994, abandoned. This application May 31, 1995, Ser. No. 455,269

Int. Cl.[6] G01J *3/30;* **A61B** *5/00;6/00*

U.S. Cl. 356—318 **3 Claims**



1. A method of tumor therapy comprising the steps of:

providing a fiberoptic photon analysis sensor in operative association with a spectral analysis means, said remote fiberoptic photon analysis sensor comprising a lens having a focal length,

placing said fiberoptic photon analysis sensor in proximity to tissue in a patient so that said tissue in said patient is within said focal length of said lens,

injecting said patient with a substance that is selectively absorbed by cancerous tissue, which substance exhibits a unique spectral emission upon ionization, and which unique spectral emission is different from that of healthy tissue when ionized,

using a laser to cause ionization of said tissue in said patient, and

distinguishing cancerous from noncancerous tissue in said patient by analyzing, using said spectral analysis means, plasma generated as a result of said ionization for presence of said spectral emission which is different from that of healthy tissue when ionized.

5,608,521

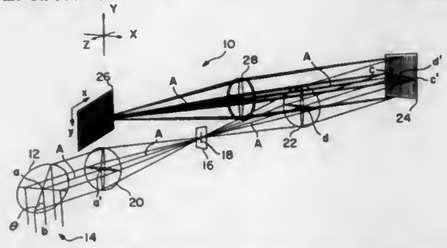
POLARIZATION COMPENSATED IMAGING SPECTROMETER

Raymond K. De Long, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 18, 1995, Ser. No. 530,683

Int. Cl.[6] G01J *3/12*

U.S. Cl. 356—326 **23 Claims**



1. A polarization compensated imaging spectrometer comprising:

a disperser to spectrally disperse incoming electromagnetic radiation, the disperser imparting polarization into the incoming electromagnetic radiation; and

a compensating mirror disposed before or after the disperser and having a surface to reflect and impart polarization into the reflected electromagnetic radiation, the mirror being oriented relative to incident electromagnetic radiation to reflect and polarize incident electromagnetic radiation to compensate for the polarization imparted by the disperser.

5,608,522

LASER VELOCIMETRIC AND CLINOMETRIC PROBE

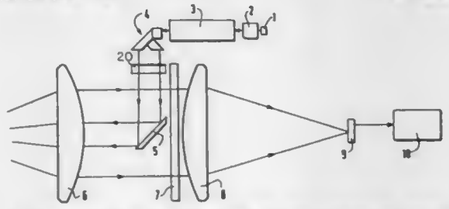
Jean M. Breda, Paris, France, assignor to Sextant Avionique, France

Filed Sep. 27, 1994, Ser. No. 312,807

Claims priority, application France, Sep. 29, 1993, 93 11568

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **6 Claims**



1. Laser velocimetric probe which includes means for simultaneously generating at least two interference fringe systems in a single measurement volume and measurement means for determining at least two components of the velocity of a particle passing through the fringe field from a signal representing the light backscattered by this particle, characterized in that said fringe systems have the same wavelength and that the measurement means are arranged in order to determine said at least two components of the particle velocity by frequency analysis of said signal.

5,608,523

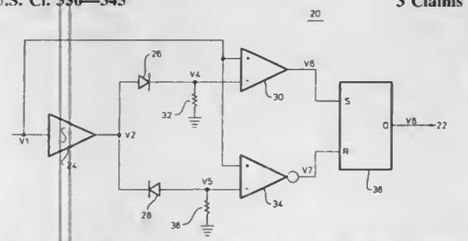
CIRCUIT AND METHOD FOR CONTROLLING GLITCHES IN LOW INTENSITY SIGNALS

Lee Kalem, Santa Clara, and Robert L. Wilson, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 423,236, Apr. 19, 1995, Pat. No. 5,530,542. This application Mar. 26, 1996, Ser. No. 622,650

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **3 Claims**



1. A zero crossing detection method for low intensity signals comprising the steps of:

receiving a measurement signal;

phase shifting the measurement signal to produce a phase-shifted signal;

separating the phase-shifted signal into a first signal containing the positive portion of the phase-shifted signal and a second signal containing the negative portion of the phase-shifted signal;

comparing the first signal and the measurement signal to produce a falling zero signal that corresponds to falling zero crossings in the measurement signal;

comparing the second signal and the measurement signal to produce a rising zero signal that corresponds to rising zero crossings in the measurement signal; and

latching the falling and rising zero crossings to indicate zero crossings in the measurement signal.

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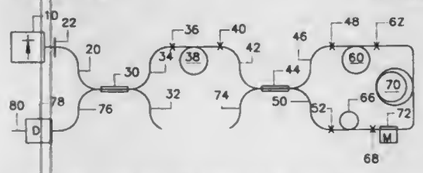
COHERENCE COLLAPSED MULTIMODE SOURCE FOR A FIBER OPTIC GYRO

James N. Blake, College Station, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 14, 1994, Ser. No. 305,533

Int. Cl.[6] G01C *19/64*

U.S. Cl. 356—350 **15 Claims**



1. A fiber optic gyro utilizing a high power laser source having a pigtail and producing light along a light path to a fiber optic coil, the improvement comprising:

a partially reflecting mirror positioned at the remote end of the laser source pigtail in the light path at least several times the coherence length of the source away from the source and operable to reflect a predetermined percentage of the light back to the source, so as to cause collapsing feedback to broaden the line width.

5,608,525

PHASE ADJUSTABLE OPTICAL FIBER GYRO USING BOTH EVEN ORDER HARMONICS AND AN ORTHOGONAL COMPONENT OF AN EVEN-ORDER HARMONIC

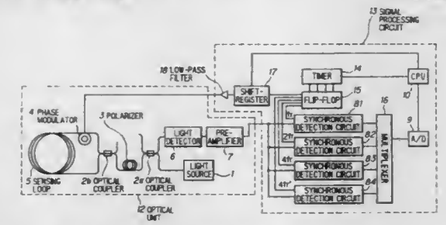
Tatsuya Kumagai; Keiji Abe; Munehiro Akiyama; Hiroshi Kajioka; Hisao Sonobe, and Shigeru Oho, all of Ibaraki, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 404,817

Claims priority, application Japan, Mar. 14, 1994, 6-042243; Mar. 30, 1994, 6-060678

Int. Cl.[6] G01C *19/72*

U.S. Cl. 356—350 **7 Claims**



1. An optical fiber gyro, comprising:

an optical fiber sensing loop for propagating lights in a clockwise direction and a counter clock-wise direction;

a phase modulator for modulating phases of said lights propagated through said optical fiber sensing loop;

an optical coupler for coupling said lights having propagated through said optical fiber sensing loop to provide a coupled light;

a photodetector for generating an electric signal responsive to said coupled light;

a synchronous detection circuit for detecting said electric signal to provide a detected output, said detected output comprising a fundamental wave component of a phase modulation signal supplied to said phase modulator, an even-number order harmonic wave component, and an orthogonal component obtained in accordance with a shift of said even-number order harmonic wave component by a phase of one quarter period; and

means for adjusting a phase relation of said fundamental wave, even-number order harmonic wave, and orthogonal wave components and said phase modulation signal to make a level of said orthogonal wave component zero, and maintaining a mutual phase relation of said fundamental wave, even-number order harmonic wave, and orthogonal wave components to be a predetermined mutual phase relation,

wherein:

said synchronous detection circuit, comprises:

a fundamental wave detection circuit for detecting said fundamental wave component;

a duplicate harmonic wave detection circuit for detecting a duplicate harmonic wave component as a first one of said even-number order harmonic wave component;

a quadruple harmonic wave detection circuit for detecting a quadruple harmonic wave component as a second one of said even-number order harmonic wave component; and

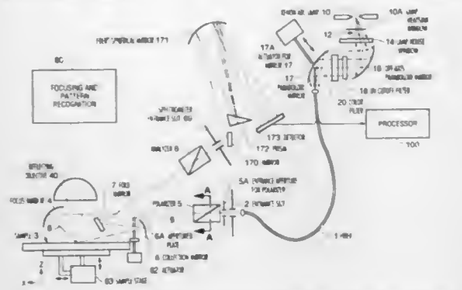
an orthogonal component detection circuit for detecting said orthogonal component.

5,608,526

FOCUSED BEAM SPECTROSCOPIC ELLIPSOMETRY METHOD AND SYSTEM

Timothy R. Piwonka-Corle, Portland, Oreg.; Karen F. Scoffone, Redwood City, Calif.; Xing Chen, San Jose, Calif.; Lloyd J. Lacomb, Jr., Santa Clara, Calif.; Jean-Louis Stehle, Colombes, France; Dorian Zahorski, Vanves, France, and Jean-Pierre Rey, Fontenay Aux Roses, France, assignors to Tencor Instruments, Santa Clara, Calif.

Filed Jan. 19, 1995, Ser. No. 375,353
Int. Cl.[6] G01N *21/21*
U.S. Cl. 356—369 72 Claims



1. A spectroscopic ellipsometer for measuring a sample, including:

a source which emits broadband radiation;

a polarizer for polarizing the broadband radiation, thereby producing a sample beam;

an analyzer positioned for receiving radiation of the sample beam that has reflected from the sample, wherein the analyzer produces an output beam in response to said radiation;

a detector for converting the output beam into a detector output, said detector output having a polarization state; and

all-reflective optics between the polarizer and the analyzer, wherein the sample beam reflects with low incidence angle from each component of the all-reflective optics, and wherein the all-reflective optics reflectively focuses the sample beam to a small spot on the sample, each said low incidence angle being no more than 30 degrees from a normal direction to a component; and

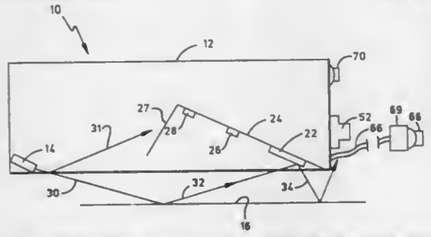
means for processing the detector output to determine amplitude and phase changes of the output beam polarization state caused by reflection by the sample.

5,608,527

APPARATUS AND METHOD FOR DYNAMIC MEASUREMENT OF SURFACE ROUGHNESS

James G. Valliant, Bozeman, Mont., and David G. Goebel, El Cajon, Calif., assignors to Optical Dimensions, LLC, Bozeman, Mont.

Filed Mar. 8, 1995, Ser. No. 400,656
Int. Cl.[6] G01B *11/30*
U.S. Cl. 356—371 32 Claims



1. An apparatus for non-contact measuring of surface roughness, comprising:

a source of light positioned for directing a light beam at a first angle onto a surface to be measured;

first detector means including a multi-element array detector, said array detector having an intermediate element and at least two adjacent elements, one positioned on each side of said intermediate element, said array detector positioned to receive specular light reflected from said surface by said intermediate element and to receive scattered light by said adjacent elements, said intermediate element responsive to generate a signal in response to said specular light, and said adjacent elements each responsive to generate a signal in response to said scattered light;

second detector means including a detector spaced from said first detector means and at an angle from about fifteen to about sixty-five degrees from specular center, said detector responsive to scattered light away from said specular light for generating a signal responsive to said scattered light; and

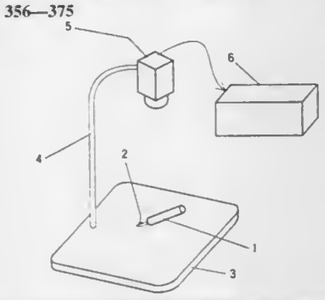
means for receiving and processing said signals and displaying a reading corresponding to surface roughness.

5,608,528

OPTICAL POSITION DETECTING METHOD USING ASYNCHRONOUS MODULATION OF LIGHT SOURCE

Yasuji Ogawa, Otone-machi, Japan, assignor to Kabushikikaisha Wacom, Japan

Filed Mar. 30, 1995, Ser. No. 413,786
Claims priority, application Japan, Apr. 13, 1994, 6-099344
Int. Cl.[6] G01B *11/14*
U.S. Cl. 356—375 4 Claims



1. An optical position detecting method which captures an image of a light source as an object by using an image sensor so as to measure a position of the light source, said method comprising:

a light emitting step for emitting a light beam from said light source, said light beam being intensity-modulated by a given periodic waveform;

an image capturing step for receiving said light beam by the image sensor to capture said light source so as to store a corresponding image data pixel by pixel;

a reading step for accessing the image sensor successively at least four times at a pitch which is less than ¼ of a period of said periodic waveform, so as to sequentially read the image data to form a time-sequential data;

a calculation step for executing a scalar product computation of said time-sequential data with a reference waveform which is asynchronous to said periodic waveform while having a period comparable to the period of said periodic waveform, so as to derive a first scalar data free of noise;

another calculation step for executing a scalar product computation of said time-sequential data with an orthogonal waveform which is out of phase by 90° relative to said reference waveform, so as to derive a second scalar data free of noise; and

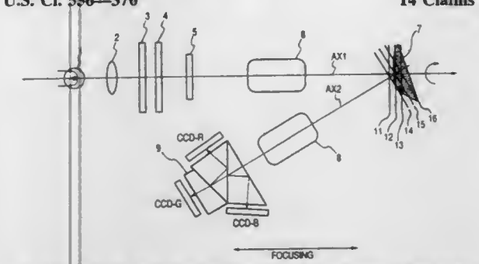
a processing step for executing image processing according to said first and second scalar data derived pixel by pixel, so as to extract the position of said light source.

5,608,529

OPTICAL THREE-DIMENSIONAL SHAPE MEASURING APPARATUS

Kenji Hori, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,018
Claims priority, application Japan, Jan. 31, 1994, 6-027269; Sep. 29, 1994, 6-259057
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 14 Claims



1. An optical three-dimensional shape measuring apparatus, comprising:

an irradiating optical system for projecting a predetermined patterned image on the surface of a specimen;

an observation optical system for observing the patterned image projected on the surface of said specimen;

measuring means for measuring the surface shape of said specimen based on deviations along an image plane between said predetermined patterned image and the observed patterned image;

a common objective optical system provided in said irradiating optical system and said observation optical system; and

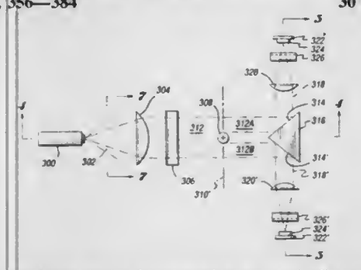
wave front dividing means for the pupil plane of said common objective optical system for defining mutually independent optical paths from said irradiating optical system to the surface of said specimen and from the surface of said specimen to said observation optical system.

5,608,530

INSPECTION DEVICE FOR MEASURING A GEOMETRIC DIMENSION OF A PART

Donald C. Gates, Troy, Mich., assignor to General Inspection, Inc., Davisburg, Mich.

Filed Aug. 8, 1994, Ser. No. 288,083
Int. Cl.[6] G01B *11/08*
U.S. Cl. 356—384 30 Claims



1. An inspection device for measuring geometric dimensions of a part comprising:

a first radiation source generating a first radiation beam having a width converging to a focal line and a length at the focal line which is greater than a dimension of the part to be inspected, so that a part positioned proximate the focal line to partially obstruct said beam, bifurcates said beam into first and second unobstructed portions;

means for positioning said part in said beam in a predetermined position proximate said focal line; and

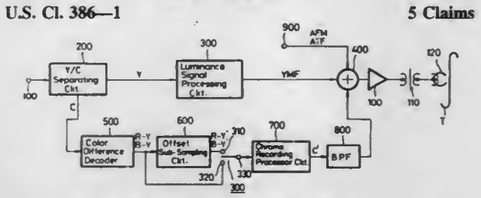
first and second radiation measuring devices positionally disposed to measure radiation magnitudes present in respective first and second unobstructed portions of said beam.

5,608,531

VIDEO SIGNAL RECORDING APPARATUS

Takashi Honda, and Dai Sato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 986,706, Dec. 8, 1992, Pat. No. 5,359,426.
This application Aug. 16, 1994, Ser. No. 291,280
Claims priority, application Japan, Dec. 16, 1991, 3-332118
Int. Cl.[6] H04N *9/79*
U.S. Cl. 386—1 5 Claims



1. A video signal recording apparatus comprising:

sampling means for offset sub-sampling a chroma signal contained in a video signal and for not sub-sampling a burst signal contained in said video signal, and

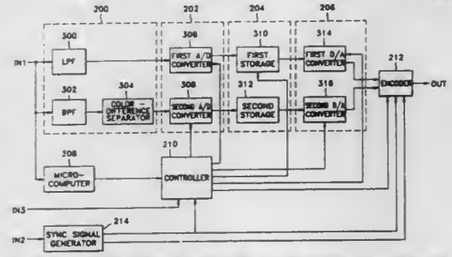
means for recording the offset sub-sampled chroma signal and the burst signal on a predetermined recording medium.

5,608,532

SIGNAL PROCESSING DEVICE AND METHOD FOR A SLOW MODE FUNCTION OF A VTR

Hyun-jeong Park, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jan. 26, 1996, Ser. No. 592,547
Claims priority, application Rep. of Korea, Jan. 28, 1995, 95-1780
Int. Cl.[6] H04N *9/79;5/78*
U.S. Cl. 386—7 7 Claims



1. A signal processing device for a slow mode function of a video tape recorder (VTR) comprising:

signal separating means for receiving a composite video signal scanned from a video tape in a slow mode of said VTR, and separating the received signal into a luminance signal and a chrominance signal;

analog-to-digital converting means for converting the separated analog luminance signal and the separated analog chrominance signal to a digital luminance signal and a digital chrominance signal, respectively;

a microcomputer for generating a slow mode signal when a direct current component of an envelope of the scanned composite video signal exceeds a predetermined value; storing means for storing the digital luminance and digital chrominance signals of each field, if the direct current component of the envelope of said composite video signal exceeds

the predetermined value, and not storing said digital luminance signal and said digital chrominance signal if the direct current component of the envelope of said composite video signal is less than the predetermined value;

digital-to-analog converting means for converting the stored digital luminance and digital chrominance signals to a converted analog luminance signal and a converted analog chrominance signal, respectively, and outputting the converted analog luminance signal and the converted analog chrominance signal;

a sync signal generator for receiving a sub-carrier signal and outputting a composite sync signal and a sub-carrier signal which is frequency-divided;

encoding means for encoding the converted analog luminance signal and the converted analog chrominance signal in response to the composite sync signal, and outputting an encoded composite video signal as a signal constituting a slow mode image; and

controlling means for controlling said storing means in response to said slow mode signal and composite sync signal and controlling said encoding means to encode said converted analog luminance signal and said converted analog chrominance signal if said digital luminance signal and said digital chrominance signal are stored by said storing means, and if said digital luminance signal and said digital chrominance signal are not stored by said storing means, controlling said encoding means to encode a stored digital luminance signal and a stored digital chrominance signal of a previous field.

5,608,533

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS WHERE THE ORDER OF ACCESS TO VIDEO DATA DURING A WRITE MODE IS DIFFERENT THAN THE ORDER OF ACCESS DURING A READ MODE

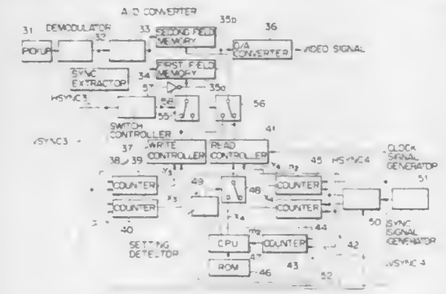
Manabu Okamoto, and Noriyoshi Takeya, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,396

Claims priority, application Japan, Sep. 2, 1992, 4-234877; Jul. 23, 1993, 5-182914

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—91 **2 Claims**



1. A video signal reproducing apparatus comprising:

read means for reading recorded signals carrying video signals from a recording medium;

signal generating means for generating digital video signals in accordance with said read recorded signals;

a first memory having a capacity for storing at least one field of digital video signals;

a second memory having a capacity for storing at least one field of digital video signals; and

write/read control means for writing produced digital video signals into one of said first memory and said second memory, and for reading written digital video signals from one of said first memory and said second memory,

wherein an order of access of said write/read control means to addresses in one of said first memory and said second memory in a write mode and an order of access of said write/read control means to addresses of said one of said first memory and said second memory in a read mode differ from each other in accordance with a predetermined relationship, and wherein said write/read control means comprises:

a write address setting circuit;

a write controller;

a read address setting circuit;

a read controller;

a first switch selectively connected to one of said write controller and said read controller and to said first memory;

a second switch selectively connected to one of said write controller and said read controller and to said second memory; and

a switch controller, connected to said first switch and said second switch, for controlling respective connections of said first switch and said second switch.

5,608,534

APPARATUS AND METHOD FOR PERFORMING RESERVATION-RECORDING OF VIDEO CASSETTE RECORDER

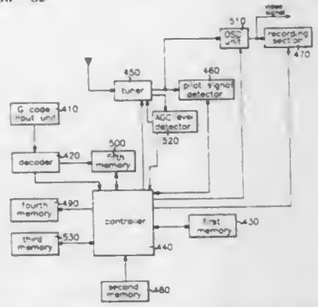
Ho T. Park, Kyungki-do; Keun Y. Jae, Kyunjgki-do; Bok H. Back, and Kyung K. Ryu, both of Kyungki-do, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 20, 1994, Ser. No. 233,613

Claims priority, application Rep. of Korea, Jun. 24, 1993, 11613/1993; Sep. 17, 1993, 18842/1993; Feb. 8, 1994, 2435/1994

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—83 **13 Claims**



1. A channel mapping device in a VCR reservation-recording device comprising:

tuning means for synchronizing to a broadcasting signal out of broadcasting signals;

pilot signal detection means for detecting a pilot signal from the broadcasting signal synchronized in the tuning means;

memory means for storing the name of broadcasting station, central channel number, and local channel numbers of each of the broadcasting signals as well as tuning data for synchronizing the tuning means; and,

control means for applying the tuning data in the memory means to the tuning means, comparing the pilot signal received from the pilot signal detection means with the names of broadcasting stations in the memory means, and for storing local channel numbers in the memory means together with a central channel number in the memory means in one category as a result of the comparison.

5,608,535

VIDEO SIGNAL REPRODUCTION OR RECORD/REPRODUCTION APPARATUS

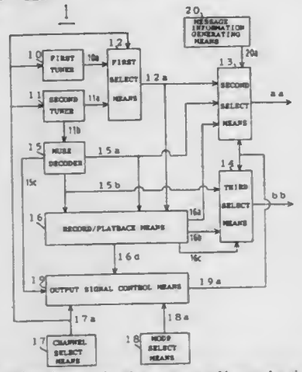
Mitsuhiro Yoshida, Yokohama, and Hiroshi Asai, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 13, 1994, Ser. No. 258,868

Claims priority, application Japan, Jun. 25, 1993, 5-177538

Int. Cl.[6] H04N *5/76; G11B 5/00*

U.S. Cl. 386—123 **5 Claims**



1. A video signal reproduction or record/reproduction apparatus comprising:

first playback means for reproducing a normal video signal from a recording medium and outputting a reproduced normal video signal; second playback means for reproducing a high definition video signal from the recording medium and outputting a reproduced high definition video signal;

first output means associated with said first playback means for selectively transmitting the reproduced normal video signal;

second output means associated with said second playback means for selectively muting the reproduced high definition video signal;

judging means for judging a type of a reproduced video signal;

output signal control means responsive to the type of the reproduced video signal judged by said judging means for controlling said first output means and said second output means in such a manner that, when a judgement result of said judging means indicates that the type of the reproduced video signal is a normal video signal, said output signal control means allows said first output means to transmit the reproduced normal video signal and makes said second output means mute the reproduced high definition video signal,

wherein, in a disabled or transition period during which said judging means cannot judge the type of the reproduced video signal, said output signal control means controls said first output means and said second output means to select an output video signal on the basis of a judgement result of said judging means judged immediately before such a disabled or transition period.

5,608,536

SYSTEM PRINTER

Koji Takahashi, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

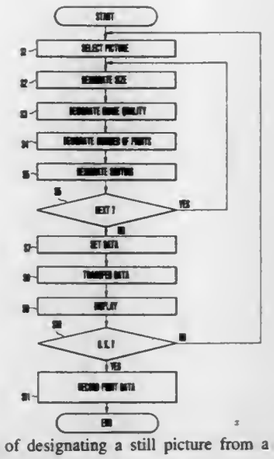
Continuation of Ser. No. 561,561, Nov. 22, 1995, abandoned, which is a continuation of Ser. No. 217,775, Mar. 23, 1994, abandoned, which is a continuation of Ser. No. 94,375, Jul. 19, 1993, abandoned, which is a continuation of Ser. No. 625,498, Dec. 11, 1990, Pat. No. 5,258,880. This application Jul. 1, 1996, Ser. No. 674,219

Claims priority, application Japan, Dec. 15, 1989, 1-325006

Int. Cl.[6] H04N *5/782*

U.S. Cl. 386—46 **10 Claims**

1. A printing method, comprising:



(a) a step of designating a still picture from a moving image signal;

(b) a step of designating an image quality of said still picture;

(c) a step of displaying said still picture along with said image quality of said still picture; and

(d) a step of printing said still picture when the displayed still picture is confirmed by an operator to show the designated still picture and the designated quality or returning to said step (b) when the displayed still picture is not so confirmed by the operator.

5,608,537

IMAGE TREATMENT APPARATUS

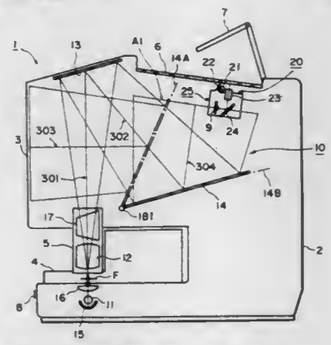
Naoki Manabe, Yokohama; Toshio Iwaya, Shiki, and Yoshitaka Masuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 616,196, Nov. 20, 1990, abandoned. This application Aug. 23, 1993, Ser. No. 110,197

Claims priority, application Japan, Nov. 20, 1989, 1-299867; Oct. 21, 1990, 2-292065

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—401 **18 Claims**



1. An image treatment apparatus, comprising:

a screen;

reading means for reading an image and converting it to an electrical signal;

first optical means for projecting an image of a film disposed at a first illuminating position, said first optical means including a mirror shiftable between a first position to project the image of the film at the first illuminating position onto said screen and a second position to project the image of the film onto said reading means;

second optical means for projecting an image of an original disposed at a second illuminating position different from the first illuminating position; and

shift means for shifting said reading means between a relection light path of said mirror, when said mirror is disposed at the second position, and an optical path formed by said second optical means, to thereby selectively read one of the image of the film disposed at the first illuminating position and the image of the original at the second illuminating position using said reading means.

5,608,538

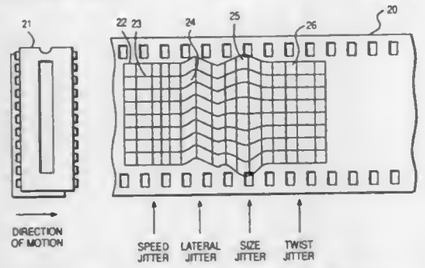
SCAN LINE QUEUING FOR HIGH PERFORMANCE IMAGE CORRECTION

Albert D. Edgar, Austin, and Steven C. Penn, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,318

Int. Cl.[6] H04N *1/04;1/047*

U.S. Cl. 358—406 **24 Claims**



1. A scanner for copying a substrate image comprising:

a photosensor for converting the substrate image to a plurality of pixels positioned in an irregular grid pattern forming a raw image;

means for receiving a chosen grid pattern;

means for scaling the pixels in the raw image into a plurality of pixels positioned according to the chosen grid pattern to form a chosen image; and

means for outputting the chosen image.

5,608,539

IMAGE PROCESSING METHOD AND APPARATUS THEREOF

Masahiro Sakamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 125,196, Sep. 23, 1993. This application Jan. 23, 1995, Ser. No. 376,378

Claims priority, application Japan, Sep. 28, 1992, 4-258693

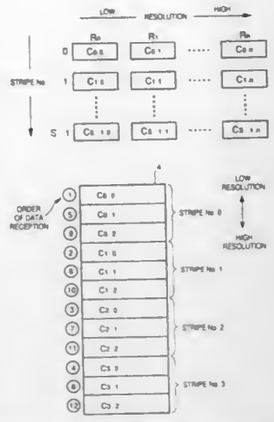
Int. Cl.[6] H04N *1/41*

U.S. Cl. 358—426 **8 Claims**

1. An image processing apparatus for processing encoded image data, the encoded image data consisting of a plurality of data frames obtained by dividing an image into a plurality of stripes, producing a plurality of images having different resolution levels for each of the plurality of stripes and encoding each of the plurality of images having different resolution levels for the plurality of stripes into each of the plurality of data frames, said image processing apparatus comprising:

reception means for receiving the encoded image data, said reception means consecutively receives a plurality of data frames representing images having an identical resolution level for the plurality of stripes;

storage means for storing the encoded image data received by said reception means, so as to store a plurality of data frames representing images having different resolution levels for an identical stripe in consecutive address areas;



read out means for reading out the encoded image data from said storage means, so as to consecutively read out a plurality of data frames representing images having different resolution levels for an identical stripe; and

decoding means for decoding the encoded image data read out from said storage means, said decoding means consecutively decodes the plurality of data frames representing images having different resolution levels for each of the plurality of stripes and consecutively generates image data representing images of the plurality of stripes.

5,608,540

PREFERENTIAL RECORDING SYSTEM FOR A FACSIMILE APPARATUS

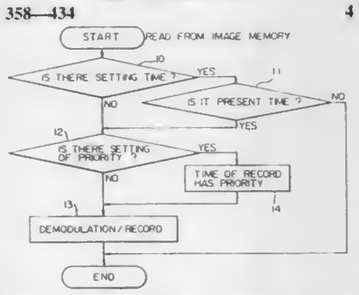
Satoshi Ogawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 838,342, Feb. 20, 1992, abandoned. This application Sep. 9, 1994, Ser. No. 303,876

Claims priority, application Japan, Feb. 20, 1991, 3-047670

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—434 **4 Claims**



1. A preferential recording system provided in a transmission unit and a reception unit of a facsimile apparatus, and a telegram message being transmitted from the transmission unit for a transmission side to the reception unit for a reception side of the facsimile apparatus, comprising:

priority/time setting means provided in the transmission unit for setting priority of recording and desired time of recording at the reception side into the telegram message to be transmitted from the transmission unit of the transmission side to the reception unit of the reception side;

priority/time decision means provided in the reception unit for determining the priority of the recording and the desired time of the recording set into the telegram message after the telegram message is received by the reception unit, said priority/time decision means preferentially controlling the actual time of recording when both priority of the recording and the desired time of recording are simultaneously set into the telegram message;

a priority/time memory also provided in the reception unit for storing the priority of the recording and the actual time of the recording for every telegram message; and

time counting means also provided in the reception unit for indicating a present time for comparison with a setting time of recording by the priority/time decision means.

5,608,541

IMAGE PROCESSING METHOD AND APPARATUS WHICH OUTPUTS DIAGONAL IMAGES

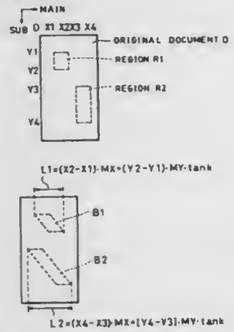
Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 45,361, Apr. 13, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,216

Claims priority, application Japan, Apr. 14, 1992, 4-094098

Int. Cl.[6] H04N *1/40;1/343*

U.S. Cl. 358—448 **40 Claims**



1. An image processing apparatus comprising:

input means for inputting an original image;

setting means for setting a plurality of arbitrary image regions in the original image, the plurality of arbitrary image regions being spaced apart from each other in the original image;

conversion means for converting a plurality of images in the plurality of arbitrary image regions into a plurality of diagonal images, the conversion means converting an image into a diagonal image by progressively increasing a distance between the image and a predetermined axis so that a resulting diagonal image is inclined at an angle with respect to the predetermined axis; and

output means for outputting the plurality of diagonal images on a single recording sheet while shifting at least one of the plurality of diagonal images so as to include all the plurality of diagonal images within the single recording sheet.

5,608,542

FORMATTED DIGITAL INDEX PRINT SYSTEM AND METHOD

Michael D. Krahe, Brockport; Rocco J. Porcellio, Fairport, and David P. D'aurelio, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

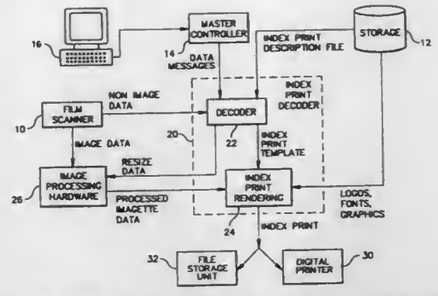
Filed Mar. 31, 1995, Ser. No. 415,104

Int. Cl.[6] H04N *1/387;1/393*

U.S. Cl. 358—449 **7 Claims**

1. An image printing system-for creating customized formatted index prints comprising:

a film scanner for generating digital image data from photographic film images and digital non-image data representative of characteristics of the film images;



storage means for storing a plurality of user-selectable index print description files each of which comprises encoded instruction data descriptive of predetermined index print templates, the instruction including data representative of imagette size in the corresponding index print template, the storage means also storing bit-mapped data corresponding to graphical representations to be incorporated into the formatted index print;

means including a user interface for selecting one of said index print description files and selected ones of said graphical representations;

decoder means responsive to the selected encoded instruction data from said storage means for converting said instruction data into bit-mapped template data and imagette size data;

image processing means responsive to said digital image data and said imagette size data for generating processed imagette data by modifying characteristics of the digital image data and resizing said digital image data to fit an image size required by the template data; and

index print rendering means for merging said processed imagette data and said bit-mapped graphical representation data into said index print template to create said customized, formatted index print.

5,608,543

JOINT-PORTION PROCESSING DEVICE FOR IMAGE DATA FOR USE IN AN IMAGE PROCESSING APPARATUS

Akira Tamagaki, Soraku-gun; Tsutomu Taniguchi; Nobuyuki Ueda, both of Yamatokoriyama; Masami Oka, Osaka; Kenji Matsumoto, Yamatokoriyama, and Fuminori Miyoshi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 153,897, Nov. 17, 1993, Pat. No. 5,452,105. This application May 24, 1995, Ser. No. 449,686

Claims priority, application Japan, Nov. 19, 1992, 4-310328; May 7, 1993, 5-106834; Jun. 16, 1993, 5-145230

Int. Cl.[6] H04N *1/387*

U.S. Cl. 358—450 **15 Claims**

1. A method for joining together a plurality of partial document data in an image processing apparatus, comprising the steps of:

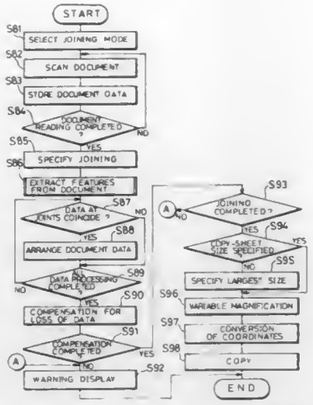
reading a plurality of partial images in succession;

storing each of the read partial images as respective partial document data in a storage device;

obtaining specific image data containing features from the partial document data by retrieving the partial document data stored in the storage device;

selecting a pair of partial document data, an order of selection being determined by an amount of specific image data, such that partial document data containing a relatively largest amount of specific image data are selected first;

comparing the specific image data of each of the pair of selected partial document data;



recognizing joints of the pair of partial document data based upon coincidence of the specific image data; and

positioning the respective partial document data in accordance with the recognized joints.

5,608,544

FRAMED-AREA DEFINING RECTANGLE FORMING DEVICE

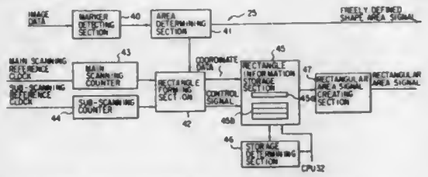
Eiichi Yamanishi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 30, 1995, Ser. No. 453,627

Claims priority, application Japan, Jun. 28, 1994, 6-146651

Int. Cl.[6] H04N *1/387;1/40;* **G06K** *9/20*

U.S. Cl. 358—453 **12 Claims**



1. An image area identifying device comprising:

means for reading an original image to generate image data corresponding to the original image;

means for detecting frame line information indicating a specified area from the image data;

means for determining the size of the specified area corresponding to the frame line information detected by said detecting means;

means for eliminating the frame line information as incorrect information when the size of the specified area determined by said determinating means is smaller than a preset value;

means for identifying that the image data contained in the specified area is specified image data when the size of the specified area determined by said determinating means is not smaller than the preset value; and

wherein said specified area is a rectangle and said determining means includes second determining means for determining dimensions of two adjacent sides of the rectangle, and said eliminating means includes second eliminating means for eliminating the rectangle information as incorrect information when at least one of dimensions of sides of the rectangle is smaller than a preset value.

5,608,545

FACSIMILE DEVICE AND COMMUNICATION CONTROL METHOD THEREOF

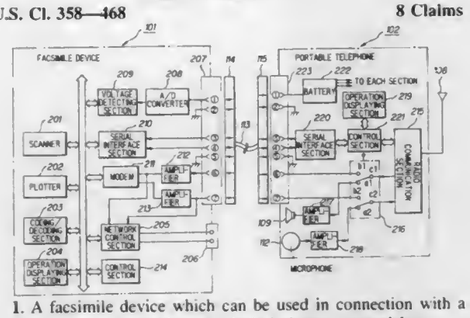
Tetsuya Kagawa, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 181,099, Jan. 13, 1994, abandoned. This application Jan. 17, 1995, Ser. No. 373,456

Claims priority, application Japan, Jan. 18, 1993, 5-023298; Sep. 22, 1993, 5-259479

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—468 **8 Claims**



1. A facsimile device which can be used in connection with a portable telephone working on a built-in battery comprising:

voltage detecting means for detecting voltage of said built-in battery in said portable telephone;

connection verification means for performing a connection check procedure which indicates whether said facsimile device is properly connected to and communicating with the portable telephone; and

control means, connected to the voltage detecting means and the connection verification means, for providing controls to inhibit facsimile communication depending on a voltage detected by said voltage detecting means upon a positive result from the connection check procedure performed by the connection verification means which indicates that the facsimile device is properly connected to and communicating with the portable telephone.

5,608,546

DATA COMMUNICATIONS APPARATUS HAVING A COMPUTER MODEM FUNCTION

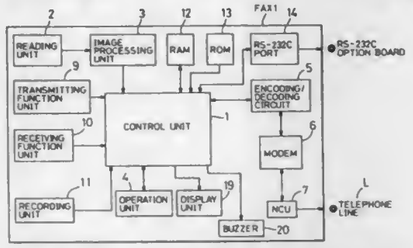
Mitsuhiro Nakamura, and Kohichi Shibata, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 6, 1995, Ser. No. 398,783

Claims priority, application Japan, Mar. 11, 1994, 6-041200; Mar. 11, 1994, 6-041201; Mar. 15, 1994, 6-043456

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—468 **13 Claims**



1. A data communications apparatus connected to an external information processor and to a telephone line to perform communication through the telephone line, said data communications apparatus having a first communications mode not including data transmission and reception with the external information processor and a second information communications mode including data transmission and reception with the external information processor,

wherein controlling means is provided for discriminating a power supply condition of the external information processor, said controlling means changing a communications mode of the data communications apparatus from the second communications mode to the first communications mode when no power is supplied to the external information processor, and wherein said controlling means, upon discriminating that power is supplied to the external information processor, forwards a signal to the external information processor to inform the external information processor that there is an incoming call, and said apparatus further comprising warning means for providing a warning if a response to the signal is not received back from said external information processor.

5,608,547

IMAGE FORMING APPARATUS HAVING ILLUMINATION DIRECTION ALTERED FOR EVERY PLURALITY OF READOUT OPERATIONS WITH RESPECT TO ONE ORIGINAL

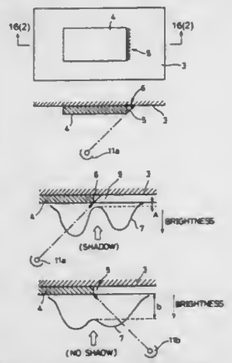
Munehiro Nakatani; Yoshikazu Ikenoue, both of Toyohashi; Atsushi Ishikawa, Okazaki; Akio Nakajima, Toyokawa; Hideo Kumashiro, Toyokawa; Katsuaki Tajima, Toyokawa; Tetsuya Itoh, Okazaki; Keiji Nakatani, and Sou Hirota, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1994, Ser. No. 229,788

Claims priority, application Japan, Apr. 22, 1993, 5-096231

Int. Cl.[6] H04N *1/04;1/48*

U.S. Cl. 358—505 **37 Claims**



1. An image forming apparatus comprising:

a scanning device for sequentially performing a plurality of scanning operations with respect to a single original image, each scanning operation including illuminating the original image and receiving reflected light therefrom to obtain a plurality of sets of image data, wherein an illumination condition is changed for each scanning operation, so that each set of image data is obtained under different illumination conditions; and

a data generator which generates image forming data by an average of the plurality of sets of image data.

16. An image processing apparatus comprising:

a scanner which sequentially performs a plurality of scanning operations with respect to a single original image, each scanning operation including illuminating the original image and receiving reflected light therefrom to obtain a plurality of sets of monochromatic image data, wherein an illumination condition is changed for each scanning operation, so that each set of monochromatic image data is obtained under different illumination conditions; and

a data generator which generates new monochromatic image data based on the plurality of sets of monochromatic image data obtained by said scanning operations.

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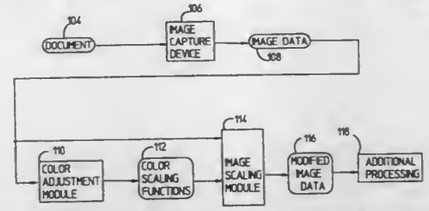
AUTOMATIC COLOR ADJUSTMENT IN A DOCUMENT PROCESSING ENVIRONMENT

Robert E. Sobol, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 23, 1994, Ser. No. 364,163

Int. Cl.[6] G03F *3/00*

U.S. Cl. 358—522 **19 Claims**



1. A method of adjusting image color in a document processing system, comprising the steps of:

(1) generating a digital representation of a printed document, said digital representation comprising a plurality of pixels, each pixel having red, green, and blue values;

(2) calculating a brightness value consisting of a function of said red, green, and blue values for each of said pixels;

(3) generating a "brightest" list comprising a plurality of said pixels having the largest brightness values;

(4) calculating averages of red, green, and blue values of pixels in said "brightest" list to determine an average bright color of pixels in said "brightest" list;

(5) generating red, green, and blue scaling functions each having a white point set equal to said average bright color; and

(6) scaling said digital representation in accordance with said red, green, and blue scaling functions to produce a modified image.

5,608,549

APPARATUS AND METHOD FOR PROCESSING A COLOR IMAGE

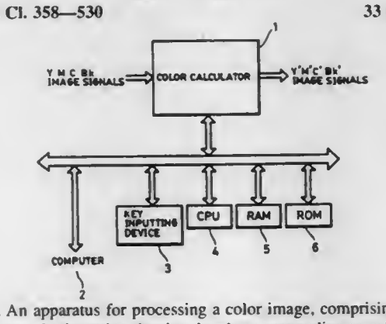
Akihiro Usami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1992, Ser. No. 895,622

Claims priority, application Japan, Jun. 11, 1991, 3-139089; Oct. 24, 1991, 3-277568

Int. Cl.[6] G06T *1/00*

U.S. Cl. 358—530 **33 Claims**



1. An apparatus for processing a color image, comprising:

means for inputting density signals corresponding to colors;

means for color-calculating the density signals in accordance with their characterics; and

means for converting the density signals into luminance component signals or excitation values of a plurality of colors, this conversion being based upon the results of a color calculation performed by said color-calculating means,

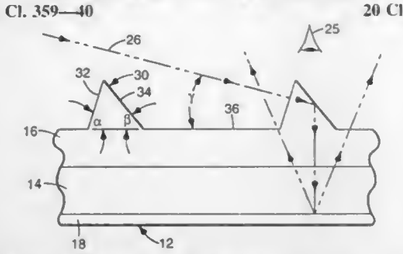
wherein said characteristics are color characteristics of a recording device, by which device the density signals are output after these signals have been input by said inputting means.

5,608,550

FRONT-LIT LIQUID CRYSTAL DISPLAY HAVING BRIGHTNESS ENHANCING FILM WITH MICRORIDGES WHICH DIRECTS LIGHT THROUGH THE DISPLAY TO A REFLECTOR

Kenneth A. Epstein, St. Paul, and Rnbert P. Wenz, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. Nn. 265,230, Jun. 24, 1994, abandoned.
This application Jan. 17, 1996, Ser. No. 578,884
Int. Cl.[6] G02F *1/1335*; G02B *27/10;6/34*
U.S. Cl. 359—40 20 Claims



1. A front-lit display system, comprising:
a display comprised of a plurality of pixels having front and back major surfaces;
a transparent film having two major opposing surfaces, one smooth and the other having a plurality of parallel ridges, wherein the smooth surface is adjacent the front surface of the display, and wherein the ridges have a pitch greater than one ridge per pixel;
a reflector provided adjacent the back surface of the display; and
a light source for directing light rays onto the film, wherein the light rays enter the film via the ridges, are reflected down through the film by total internal reflection, pass through the display, are reflected by the reflector, pass back through the display, and exit the film, whereby the film enhances the brightness of the display.

5,608,551

DISPLAY PANEL ASSEMBLY WITH MICROLENS STRUCTURE

Jonathon R. Biles, Portland, and Arlie R. Conner, Tualatin, both of Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 46,219, Apr. 12, 1993, abandoned.
This application Apr. 3, 1995, Ser. No. 415,753
Int. Cl.[6] G02F *1/1335;1/1347*
U.S. Cl. 359—95 17 Claims

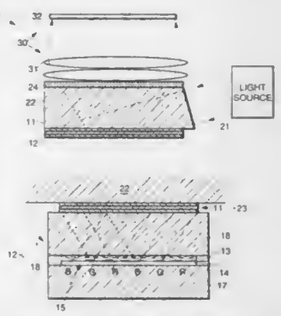
3. A matrix display panel assembly, comprising:
plural successive pairs of matrix display panels that define an array of pixels through which light passes to form a display image, each display panel defining pixel components of the pixels in the array; and
a converging microlens structure positioned between each successive pair of matrix display panels to enhance light transmission through the display panel assembly, each microlens structure including an array of converging microlenses aligned with the array of pixels, receiving the light as it passes through its respective pair of matrix display panels, and having light directing properties to converge the light where it passes through corresponding pixel components of the matrix panels between which the microlens structure is positioned.

5,608,552

LIQUID CRYSTAL DISPLAY HAVING AN OFF-AXIS FULL-COLOR HOLOGRAPHIC FILTER

Ronald T. Smith, Corona Del Mar, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 26, 1995, Ser. No. 578,794
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—5 15 Claims



1. A full-color liquid crystal display comprising:
a liquid crystal spatial light modulator that comprises a mosaic of electrically independent picture elements;
an illumination source for producing nearly collimated predominantly white S polarized illuminating light;
a holographic color filter disposed adjacent the liquid crystal spatial light modulator that comprises three layers of overlapping holographic lenses designed to focus red, green, and blue light, respectively, onto corresponding picture elements of the spatial light modulator;
a prism element disposed adjacent to the holographic color filter for coupling the illuminating light from the illumination source to the holographic color filter;
a polarizer disposed on an output surface of the prism element opposite from the holographic color filter that transmits P polarized light but blocks S polarized light; and
a projection optical system disposed to receive P polarized light transmitted by the polarizer and produce an image for viewing.

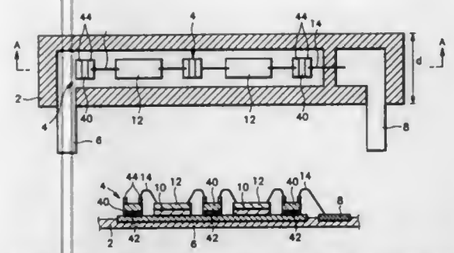
5,608,553

BACK LIGHT FOR A LIQUID CRYSTAL DISPLAY

Kyung-sik Kim, Pusan, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 22, 1996, Ser. No. 635,649
Claims priority, application Rep. of Korea, Jul. 24, 1995, 93-18292
Int. Cl.[6] G02F *1/1335*; H01J *1/62*
U.S. Cl. 349—61 1 Claim

1. A back light for a liquid crystal display (LCD) comprising:
a mold part;



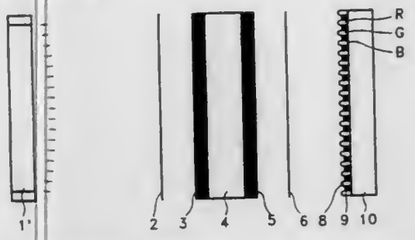
a first lead frame which is installed on the inside of the mold part;
a plurality of light emitting diodes which are uniformly spaced apart from one another in the first lead frame, each light emitting diode including a chip;
a first electrode which is formed on one side of the chip and attached to the first lead frame, and a second electrode which is divided into two parts and formed on the other side of the chip;
a plurality of conducting layers which are respectively disposed between the light emitting diodes, each conducting layer being attached to the first lead frame;
a plurality of connecting members for connecting each second electrode with each adjacent conducting layer; and
a second lead frame which is installed on the inside of the mold part to be adjacent to the first lead frame and connected to the adjacent second electrode by one of the connecting members.

5,608,554

LCD HAVING A PHOSPHOR LAYER AND A BACKLIGHT SOURCE WITH A MAIN EMITTING PEAK IN THE REGION OF 380-420NM

Young-rag Do, Suwon; Young-chul You, Seoul; Joa-young Jeong, Suwon, and Yong-chan You, Seoul, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 8, 1995, Ser. No. 385,514
Claims priority, application Rep. of Korea, Jul. 26, 1994, 94-18087
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—70 9 Claims



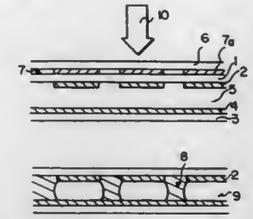
1. A display device comprising:
a backlight source comprising deep blue light having an emission spectrum with a main emitting peak in the region of 380–420 nm;
a polarizer for selecting light having a prescribed direction among the light emitted from said backlight source;
an analyzer for receiving the selected light;
a pair of electrodes provided between said polarizer and said analyzer;
optoelectronic material provided between said pair of electrodes; and
a phosphor layer including phosphors which can be stimulated by exposure to the light from said backlight source.

5,608,555

POLYMER DISPERSED LIQUID CRYSTAL DISPLAY DEVICE, AND A METHOD FOR PRODUCING THE SAME, WHEREIN THE POLYMER FORMS WALLS

Noriaki Onishi, Osaka; Nobuaki Yamada, Higashiosaka; Masahiko Kondo, Kitakatsuragi-gun; Nobukazu Nagae, Tenri; Toshiyuki Hirai, Kashihara, and Shuichi Kohzaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 128,300, Sep. 29, 1993, Pat. No. 5,450,220.
This application Jun. 1, 1995, Ser. No. 457,276
Claims priority, application Japan, Sep. 30, 1992, 4-261365; Sep. 3, 1993, 5-220315
Int. Cl.[6] G02F *1/13*
U.S. Cl. 349—156 13 Claims



1. A method for producing a liquid crystal display device including the steps of:
preparing a mixture of a polymerizable material and a liquid crystal material; and
forming a display medium made of a polymer resin composition and a liquid crystal composition by phase separation through polymerization conducted by irradiating the mixture with light having a distribution of intensities ranging from high to low, the display medium interposed between a pair of substrates; and
forming the polymer resin composition with a refractive index n_p and the liquid crystal composition with an ordinary refractive index n_o and an extraordinary refractive index n_e in such a way so as to satisfy the following relationship:

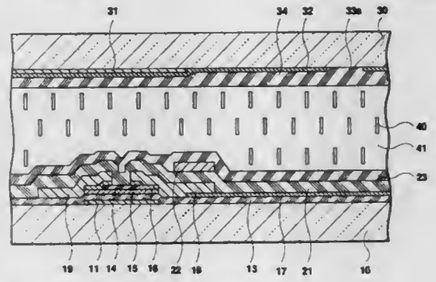
$$n_o - 0.04 \leqq n_p \leqq (n_e + n_o)/2.$$

5,608,556

LIQUID CRYSTAL DISPLAY HAVING ORIENTATION CONTROL ELECTRODES FOR CONTROLLING LIQUID CRYSTAL ORIENTATION

Norio Koma, Motosu-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 21, 1994, Ser. No. 263,871
Claims priority, application Japan, Jun. 24, 1993, 5-153671; Jul. 8, 1993, 5-169087; Nov. 25, 1993, 5-295731; Apr. 28, 1994, 6-092283
Int. Cl.[6] G02F *1/1343;1/135;1/1337*
U.S. Cl. 349—143 22 Claims



1. In a liquid crystal display comprising:
a first substrate;

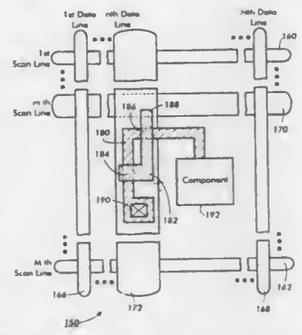
a second substrate;
said first and second substrates being located facing each other with a liquid crystal layer therebetween;
a plurality of display electrodes disposed in a matrix;
switching elements connected to said display electrodes;
said display electrodes and said switching elements being formed on the liquid crystal layer side of said first substrate; and
a common electrode being formed on the liquid crystal layer side of said second substrate,
wherein a predetermined voltage is applied to said display electrodes to directly drive said liquid crystal layer for display,
the improvement comprising:
orientation control electrodes formed on said first substrate and electrically insulated from said display electrodes,
wherein a potential voltage independent from that of a display electrode potential is applied to said orientation control electrodes for controlling orientation of said liquid crystal layer.

5,608,557

CIRCUITRY WITH GATE LINE CROSSING SEMICONDUCTOR LINE AT TWO OR MORE CHANNELS

I-Wei Wu, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 367,984
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—42 **24 Claims**



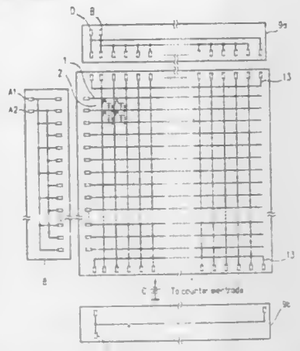
1. A product comprising:
a substrate with a surface at which circuitry can be formed; and
circuitry formed at the surface of the substrate; the circuitry comprising:
a first line extending between first and second connecting points at which the first line is electrically connected to other components; the first line being in a first layer of the circuitry; the first layer comprising semiconductor material;
a second line in a second layer of the circuitry; and
a third line providing a gate signal;
the second line being connected to receive the gate signal from the third line at a first end of the second line; the second line extending with a substantially constant width along a length from the first end to a second end; the second line crossing the first line in channel regions at least twice along its length between the first and second ends; the first line including a channel in each channel region, the channels being in series between the first and second connecting points; the second line conducting the gate signal to all of the channel regions;
the first line including charge carrier sources and destinations positioned so that conductivity of the first line between the first and second connecting points is controlled by the gate signal conducted to the channel regions by the second line.

5,608,558

DEFECT DETECTION METHOD AND APPARATUS FOR ACTIVE MATRIX SUBSTRATE OR ACTIVE MATRIX LIQUID CRYSTAL PANEL AND DEFECT REPAIRING METHOD THEREOF

Irie Katsumi, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1995, Ser. No. 424,727
Claims priority, application Japan, Apr. 26, 1994, 6-088354
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—192 **18 Claims**



1. A defect detection method for at least one of an active matrix substrate and an active matrix liquid crystal panel,
the active matrix substrate comprising, an insulating substrate, a plurality of pixel electrodes arranged in a matrix fashion on the substrate; switching elements for driving the plurality of pixel electrodes; and scanning lines and signal lines which are respectively connected to the switching elements and are formed so as to cross each other,
the active matrix liquid crystal panel comprising: the active matrix substrate; a counter substrate provided with counter electrodes thereon and disposed so as to oppose the active matrix substrate; and a liquid crystal layer interposed between the active matrix substrate and the counter substrate,
the method comprising the steps of:
applying one of a first signal and second signal to the scanning lines; and
applying a third signal to the signal lines, the first signal, the second signal and the third signal having waveforms different from one another, the first signal having a first voltage turning the switching elements on and a second voltage turning the switching elements off, the second signal having at least a third voltage higher than the first voltage, and turning on the switching elements.

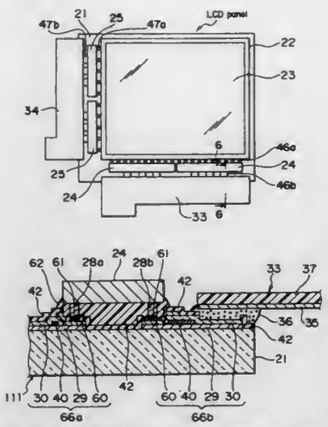
5,608,559

DISPLAY BOARD HAVING WIRING WITH THREE-LAYERED STRUCTURE AND A DISPLAY DEVICE INCLUDING THE DISPLAY BOARD

Kiyoshi Inada, Jyouyou; Motoji Shiota, Kashihara; Hirokazu Yoshida, Osaka, and Yasunobu Tagusa, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 6, 1994, Ser. No. 350,406
Claims priority, application Japan, Dec. 7, 1993, 5-306672; May 31, 1994, 6-118044
Int. Cl.[6] G02F *1/1343*; H05K *1/09*
U.S. Cl. 349—149 **20 Claims**

18. A display board which has wirings on a surface thereof for transmitting a signal received from outside at a peripheral portion of the display board to a display area of the display board, wherein each wiring comprises:
a tantalum film formed on said surface of said display board;
a titanium film which is formed on at least a part of said tantalum film; and



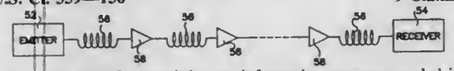
an indium tin oxide film formed on at least said titanium film.

5,608,560

METHOD TRANSMITTING INFORMATION ENCODED IN BINARY FORM BY A TRAIN OF SOLITONS

Izo Abram, St. Cloud; Jean-Baptiste Thomine, Paris, and Valuppilal Chandrakumar, Malakoff, all of France, assignors to France Telecom, France

Filed May 9, 1995, Ser. No. 438,237
Claims priority, application France, May 11, 1994, 94 05831
Int. Cl.[6] H04B *10/04; 10/12*
U.S. Cl. 359—156 **9 Claims**



1. A method of transmitting an information sequence coded in binary form by means of a train of soliton type short optical pulses propagating along at least one optical fiber, in which the phase and the polarization of the pulses are modulated so that:
firstly, the phases of pairs of successive pulses alternate to ensure that the interactions between adjacent pulses are repulsive; and
secondly, the polarization of the pulses corresponds to the binary values of the sequence to be transmitted;
wherein the pulses are modulated in phase and in polarization in such a manner that the absolute value of the angle between the electric fields of two successive soliton pulses is constant over the entire train of soliton pulses.

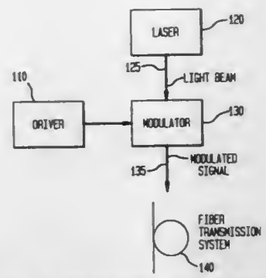
5,608,561

METHOD AND SYSTEM FOR REDUCING CHIRP IN AN OPTICAL CUMMUNICATION SYSTEM

Dietrich Marcuse, Lincroft, and Thomas H. Wood, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 479,036
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—161 **20 Claims**

1. An optical communication system comprising:
laser source means for producing a light beam;
modulator means for modulating said light beam with an information signal to produce a modulated signal for transmission over an optical medium; and
drive means for providing said information signal to said modulator means, said drive means shaping pulses in said information signal into substantially rectangular-shaped pulses to decrease pulse transition times of said information signal,



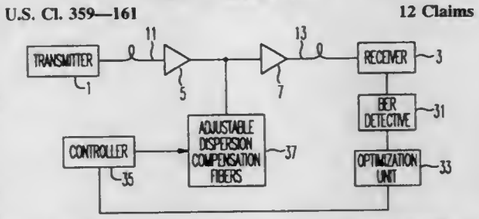
wherein chirp in said modulated signal transmitted over said optical medium is reduced.

5,608,562

OPTICAL COMMUNICATIONS SYSTEM WITH ADJUSTABLE DISPERSION COMPENSATION

Jean-Marc P. Delavaux, Wescosville; Kinichiro Ogawa, Lower Macungie Township, and Paul D. Yeates, Longswamp Township, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 248,773, May 25, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,802
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—161 **12 Claims**



1. An optical communication system comprising a transmitter, a receiver, first and second optical fibers optically connected to said receiver and said transmitter, respectively, at least two adjustable compensating waveguides, said at least two adjustable compensating waveguides introducing a variable amount of compensation and being optically connected to said first and second fibers; apparatus to switch signals to said two adjustable compensating waveguides; and a controller, said controller being connected to at least one adjustable waveguide of said two adjustable compensating waveguides and determining the compensation of at least one of said two adjustable compensating waveguides.

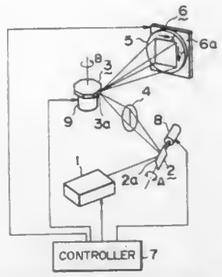
5,608,563

SCANNER

Yukinori Matsumura; Koji Yoshida, both of Hiratsuka, Japan, and Taku Yamazaki, Pittsburgh, Pa., assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP93/00599, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/23781, PCT Pub. Date Nov. 25, 1993
PCT Filed May 7, 1993, Ser. No. 331,653
Claims priority, application Japan, May 8, 1992, 4-116327
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—202 **19 Claims**

6. A scanner which uses a laser beam to scan a predetermined image plane on a liquid crystal mask in a laser marker by executing primary scanning in an X direction and executing secondary scan-



ning in a Y direction perpendicular to the X direction, the predetermined image plane comprising a plurality of Y positions; said scanner comprising:

means for creating in advance an order of secondary scanning of Y positions in said predetermined image plane, wherein said order contains only Y positions to be primary scanned and excludes Y positions which are not to be primary scanned, and

means for executing primary scanning only at each Y position in the thus obtained order of secondary scanning.

5,608,564

SCANNING OBJECTIVE

Anton Schick, Schwindegg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

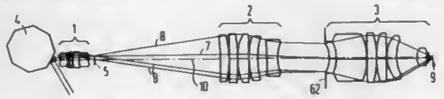
PCT No. PCT/EP92/02521, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24854, PCT Pub. Date Dec. 9, 1993

PCT Filed Nov. 3, 1992, Ser. No. 343,513

Claims priority, application Germany, May 25, 1992, 42 17 298.5

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—205 **4 Claims**



1. A scanning objective for being positioned downstream of a beam deflection unit for guidance of an illumination beam for a scanning system, comprising:

first, second, and third lens groups:

the first lens group being positioned for coupling to said beam deflection unit and having a positive refractive power for generating an intermediate image with a numerical aperture which is smaller in relation to the entire scanning objective and at the same time having a large scan angle;

the third lens group being positioned at an object side and having a numerical aperture which is larger than said numerical aperture of said first lens group;

said second lens group being interposed between the first and third lens groups and having a positive refractive power and a focal length which is greater than a focal length of said first lens group and which images said intermediate image generated by the first lens group at infinity;

an exit pupil formed by the first and second lens groups being positioned ahead of said third lens group;

said first and second lens groups providing a scan angle reduction at a location of an entrance pupil of said third lens group compared to said large scan angle in front of said first lens group so that the third lens group, which is similar to a collimator optical system, can be corrected in a simple manner with respect to geometric imaging defects, except for spherical aberration; and

the scanning objective being an F-θ objective.

5,608,565

BIDIRECTIONAL OPTICAL TRANSMISSION SYSTEM

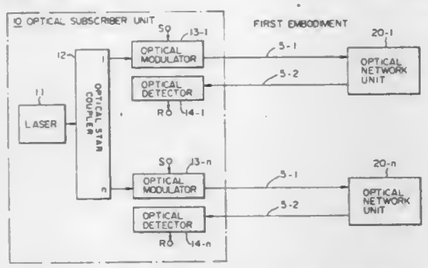
Yasuhiro Suzuki; Kiyomi Kumozaki, and Ryuichi Watanabe, all of Kanagawa, Japan, assignors to Nippon Telegraph And Telephone Corporation, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,675

Claims priority, application Japan, Jun. 14, 1994, 6-132112; Jun. 17, 1994, 6-135772; Aug. 3, 1994, 6-182625

Int. Cl.[6] H04B *10/207*

U.S. Cl. 359—237 **17 Claims**



1. A bidirectional optical transmission system comprising:

an optical subscriber unit in a central office; and

a plurality of optical network units in customer premises each coupled with said subscriber unit through at least one optical transmission line,

said optical subscriber unit including

a laser oscillator which provides one wavelength,

splitting means, coupled with said laser oscillator, for splitting an output beam of said laser oscillator into a plurality of beams,

a plurality of optical modulators each coupled with each beam split by said splitting means, each optical modulator for modulating said beam with a transmission signal for a respective optical network unit, an output of each said optical modulator being coupled with a respective optical network unit through said at least one optical transmission line, and

optical detection means coupled with said respective optical network unit through said at least one optical transmission line, said optical detection means for providing a received signal from said respective optical network unit by converting an optical beam into electrical form; and

each optical network unit including

optical-electrical conversion means, coupled with said optical subscriber unit through said at least one optical transmission line, for providing a received signal by converting said optical beam from a respective optical modulator in said subscriber unit into electrical form, and

electrical-optical conversion means, coupled with said optical subscriber unit through said at least one optical transmission line, for modulating a beam which is sent from said optical subscriber unit with a transmission signal and for sending the modulated beam to said optical subscriber unit.

5,608,566

MULTI-DIRECTIONAL ELECTRO-OPTIC SWITCH

Mitra Dutta, Tinton Falls, and Joel R. Shappirio, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

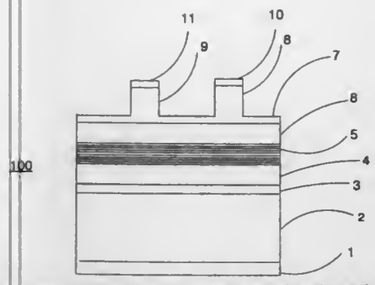
Filed Aug. 11, 1995, Ser. No. 513,701

Int. Cl.[6] G02F *1/03;1/295;* **G02B** *6/10*

U.S. Cl. 359—248 **1 Claim**

1. An multidirectional optical switch comprising:

at least two optical waveguide core layers having a first refractive index;



at least two cladding layers which sandwich the at least two optical waveguide core layers, the cladding layers having a second index of refraction, wherein at least one of the two cladding layers has at least two raised channels;

a multiple quantum well structure having a third refractive index, the multiple quantum well structure being sandwiched between the at least two optical waveguide cores; and

means to apply an electric field to the switch via the two channels wherein a first predetermined applied electric field causes an optical signal to switch from one channel to another channel and wherein a second predetermined applied electric field causes the third refractive index to change so as to permit an optical signal to be switched from one optical waveguide core layer to another optical waveguide core layer.

5,608,567

VARIABLE TRANSPARENCY ELECTRO-OPTICAL DEVICE

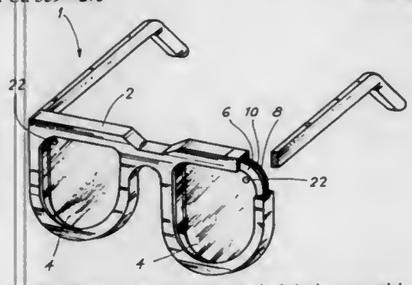
Joachim Grupp, Neuchâtel, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Continuation of Ser. No. 84,223, Jul. 5, 1993, abandoned. This application Jul. 11, 1995, Ser. No. 500,642

Claims priority, application Switzerland, Nov. 5, 1991, 03218/91; France, Dec. 17, 1991, 91 15768

Int. Cl.[6] G02F *1/153;* **G02C** *7/10*

U.S. Cl. 359—275 **13 Claims**



1. A variable transparency electro-optical device comprising:

at least one lens formed by an electro-optical cell comprising a first plate and a second plate each provided with a control electrode and a sealing frame interposed between the two plates to form a sealed volume;

an electro-optical material filling said sealed volume; and,

voltage generating means connected to said electrodes to apply a variable voltage to said material in order to automatically or manually vary the transmission of the cell as a function of the ambient light, wherein the cell comprises at least one element other than said electro-optical material charged with a photochromic substance having an absorption that varies in reversible manner as a function of the intensity of the light impinging on said cell.

5,608,568

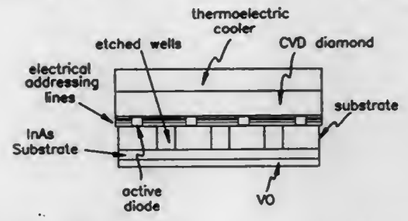
THIN FILM VANADIUM OXIDE SPATIAL LIGHT MODULATORS AND METHODS

David W. Blodgett, Ellicott City, Md.; Charles H. Lange, College Station, Tex.; Philip J. McNally, Woodbine, and Donald D. Duncan, Silver Spring, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 11, 1994, Ser. No. 225,847

Int. Cl.[6] G02F *1/01*

U.S. Cl. 359—288 **47 Claims**



1. A device for modulating light as a function of spatial position comprising:

a substrate;

an array of temperature changing means deposited on the substrate; and

a thin film comprising a vanadium oxide (VO) compound, the VO compound being deposited on the temperature changing means array;

wherein, when an electrical current is applied to a temperature changing means, the temperature changing means changes temperature thereby changing the reflective value of the VO compound deposited on the temperature changing means.

5,608,569

METHOD FOR MANUFACTURING AN ARRAY OF THIN FILM ACTUATED MIRRORS

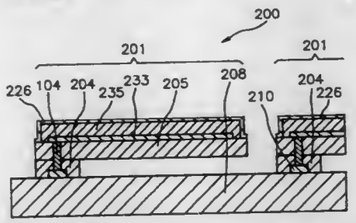
Dong-Kuk Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 20, 1995, Ser. No. 504,874

Claims priority, application Rep. of Korea, Jul. 21, 1994, 94-17571

Int. Cl.[6] G02B *26/00*

U.S. Cl. 359—291 **10 Claims**



1. A method for manufacturing an array of thin film actuated mirrors for use in an optical projection system, the method comprising the steps of:

providing an active matrix having a top surface, the active matrix including an array of M×N connecting terminals on the top surface thereof, a substrate and an array of M×N transistors;

constructing a thin film sacrificial layer on the top surface of the active matrix in such a way that the thin film sacrificial layer completely covers the array of M×N connecting terminals;

removing portions of the thin film sacrificial layer surrounding each of the connecting terminals;

forming a supporting member around each of the connecting terminals by filling the portions with a first insulating material to thereby form a supporting layer having an array of M×N supporting members and the thin film sacrificial layer;

depositing an elastic layer, made of a second insulating material, on top of the supporting layer;

forming a conduit in each of the supporting members, each of the conduits extending from top of the elastic layer, passing through each of the supporting members, to top of each of the connecting terminals;

depositing a second thin film layer made of an electrically conducting material on top of the elastic layer;

patterning the second thin film layer into an array of M ×N second thin film electrodes, wherein each of the second thin film electrodes is electrically connected to each of the conduits;

forming a thin film electrodisplacive layer on top of the array of M×N second thin film electrodes and the elastic layer;

heat treating the thin film electrodisplacive layer to allow a phase transition to take place;

patterning the thin film electrodisplacive layer into an array of M×N thin film electrodisplacive members, each of the thin film electrodisplacive members surrounding each of the second thin film electrodes;

patterning the elastic layer into an array of M×N elastic members;

depositing a first thin film layer on top of the thin film electrodisplacive members, the elastic members and the supporting layer;

patterning the first thin film layer into an array of M ×N first thin film electrodes, wherein each of the first thin film electrodes surrounds each of the thin film electrodisplacive members and covers portions of each of the elastic members; and

removing the thin film sacrificial layer to thereby form the array of M×N thin film actuated mirrors.

5,608,570

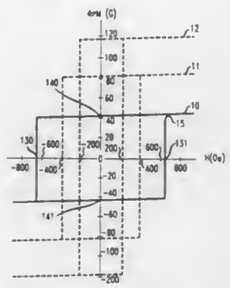
ARTICLE COMPRISING A MAGNETO-OPTIC MATERIAL HAVING LOW MAGNETIC MOMENT

Charles D. Brandle, Jr.; Vincent J. Fratello, both of Basking Ridge, and Steven J. Licht, Bridgewater, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 5, 1995, Ser. No. 498,099

Int. Cl.[6] G02F *1/00*

U.S. Cl. 359—321 **9 Claims**



1. An article comprising a body of magneto-optic garnet material having a major surface and a magnetization $4\pi M$ in a direction normal to said major surface;

CHARACTERIZED IN THAT

the composition of the body is selected such that the body at 20° C. has a substantially rectangular magnetization loop, with $|H_s|>|4\pi M_s|$Oe, in a magnetic field H applied parallel to said direction normal to the major surface, where H_s is the switching magnetic field of the magnetization loop, and $4\pi M_s$ is the saturation magnetization, said saturation magnetization being at most 100 G, whereby said body exhibits improved latching behavior in the absence of an applied magnetic field.

5,608,571

OPTICAL AMPLIFIERS

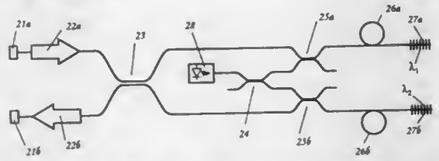
Richard E. Epworth, Sawbridgeworth, United Kingdom; Andrew N. Robinson, Plano, Tex., and Moira J. Stewart, Harlow, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 5, 1995, Ser. No. 539,626

Claims priority, application United Kingdom, Oct. 4, 1994, 9420132

Int. Cl.[6] H01S *3/00*

U.S. Cl. 359—341 **10 Claims**



1. In a wavelength division multiplexed transmission system having a transmission path including a concatenation of optical amplifiers, a method of reducing the disparity in signal power of the multiplexed channels by performing an amplification of at least one of the amplifiers in a manner such that the final portion of the amplification of each channel in that amplifier is performed, after reflection in a channel selective reflector, separately from the final portion of the amplification of each of the other channels.

5,608,572

OPTICAL APPARATUS AND A METHOD USING THE APPARATUS, WHICH UTILIZES THE OCCURRENCE OF A CHANGE IN A BOTH-END VOLTAGE OF AN AMPLIFYING REGION

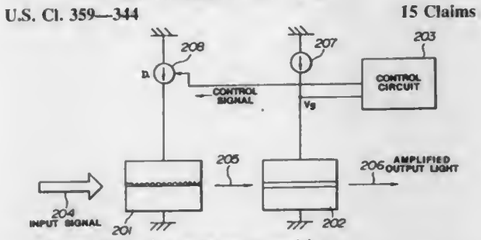
Jun Nitta, Sagamihara, and Kenji Nakamura, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 34,745, Mar. 19, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 514,807

Claims priority, application Japan, Mar. 23, 1992, 4-095785; Apr. 21, 1992, 4-128151

Int. Cl.[6] H01S *3/025;* **G02B** *5/18*

U.S. Cl. 359—344 **15 Claims**



1. A tunable filtering apparatus comprising:

a tunable band pass filter, said band pass filter being capable of changing its transmission wavelength based on an external control;

an optical amplifier device, said optical amplifier device exhibiting a both-end voltage change at an optical amplification time; and

control means for controlling the transmission wavelength of said tunable band pass filter based on the both-end voltage change.

5,608,573

GUIDE DEVICE AND METHOD FOR THE BACKLASH-FREE ALIGNMENT OF MUTUALLY RELATIVELY DISPLACEABLE PARTS OF AN OPTICAL INSTRUMENT

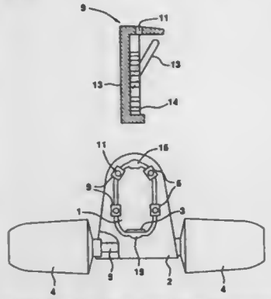
Thomas Mayer, Hohenems, Austria, assignor to Leica AG, Heerbrugg, Switzerland

Filed Dec. 23, 1994, Ser. No. 362,230

Claims priority, application Germany, Dec. 24, 1993, 43 44 605.1

Int. Cl.[6] F16H *55/18;* **G02B** *7/02*

U.S. Cl. 359—392 **19 Claims**



1. A guide device for the backlash-free alignment of first and second mutually relatively displaceable parts, comprising:

a plurality of resiliently constructed sliding elements arranged between the first and second parts to produce a force-closed connection between the first and second parts;

the first part having a plurality of grooves for accommodating the sliding elements;

wherein the grooves are respectively constructed in a stepped fashion and each sliding element includes integrally formed spring lugs and a receptacle for inserting an adhesive; and

wherein the sliding elements become fixed in position on the first part, with the loss of their spring action, after insertion and curing of the adhesive.

5,608,574

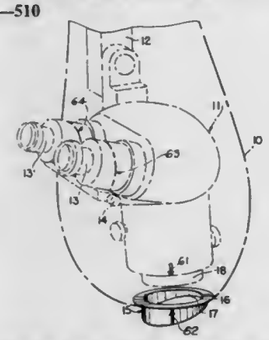
SURGICAL DRAPE FOR AN OPERATION MICROSCOPE

Lutz Heinrich, White Plains, N.Y., assignor to Carl Zeiss, Inc., Thornwood, N.Y.

Continuation-in-part of Ser. No. 302,121, Sep. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 79,341, Jun. 18, 1993, abandoned. This application Dec. 22, 1995, Ser. No. 577,231

Int. Cl.[6] G03B *11/04;* **G02B** *21/22*

U.S. Cl. 359—510 **14 Claims**



4. In combination, a stereoscopic operation microscope having an internal source of projected field illumination on an illumination axis and having viewing oculars on spaced viewing axes that are convergent via a single objective lens having a central axis, wherein one end of a barrel for said lens is externally exposed, said viewing axes establishing a first geometric viewing plane through said objective lens, and said illumination axis and said central axis establishing a second geometric plane through said objective lens wherein said second geometric plane is perpendicular to said first geometric plane and bisects the convergence of said viewing axes; a tubular body detachably securable to said lens barrel and supporting a flat optically transparent element peripherally closing said tubular body, said flat optically transparent element being acutely inclined to said viewing and illumination axes at passage of said axes through said optically transparent element; and a local angular indicium mark on the lens barrel in angular register with a local angular indicium mark on said tubular body when the inclination of said flat optically transparent element precisely symmetrically accommodates the viewing axes to the illumination axis.

5,608,575

IMAGE PROJECTION METHOD AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD USING THE SAME

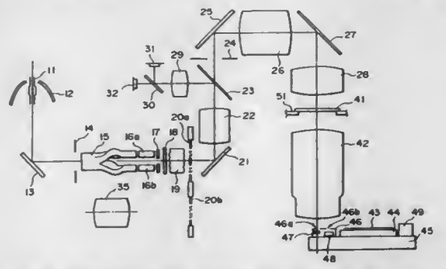
Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 292,174, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 921,331, Jul. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,387

Claims priority, application Japan, Aug. 2, 1991, 3-194132

Int. Cl.[6] G02B *5/18;27/46;* **G03B** *27/42*

U.S. Cl. 359—558 **26 Claims**



1. In an image projection method wherein a fine pattern of an original is illuminated by illumination light and diffraction light caused by the fine pattern is projected to a pupil of a projection optical system, for projection of an image of the fine pattern, the improvement comprising:

providing, as the original, an edge emphasis type phase shift reticle in a path of an illumination light; and

illuminating the original obliquely with the illumination light to direct a zeroth order diffraction light and one of two first order diffraction lights to the pupil of the projection optical system, wherein the illumination light defines, on the pupil, a ring-like effective light source having its center coinciding with the center of the pupil and the ring-like effective light source comprises a ring-like effective light source of substantially rectangular shape.

5,608,576

PROJECTION METHOD AND PROJECTION SYSTEM AND MASK THEREFOR

Woo-sung Han, Suwon; Chang-jin Sohn, Kwangmyeong; Ho-young Kang, Suwon; Cheol-hong Kim, Suwon, and Seong-ooo Choi, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

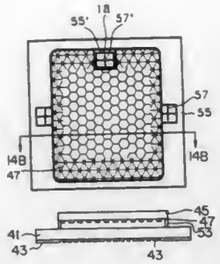
Division of Ser. No. 115,732, Sep. 2, 1993, Pat. No. 5,446,587. This application Jun. 6, 1995, Ser. No. 471,628

Claims priority, application Rep. of Korea, Sep. 3, 1992, 92-16059; Feb. 27, 1993, 93-3019; Jul. 15, 1993, 93-13344

Int. Cl.[6] G03F *9/00*

U.S. Cl. 359—562 **3 Claims**

1. A combination comprising:



a first pellicle, transparent to light, formed from a pellicle manufacturing material so as to have first and second opposed surfaces with at least one diffraction grating region in said first surface thereof;

a mask having first and second opposed surfaces with a respective pattern of opaque material disposed on its said first surface at each of a number of locations respectively corresponding to each diffraction grating region formed on the surface of said first pellicle; and

a pellicle frame formed from a second pellicle with a window cut therein at each position corresponding to a diffraction grating region formed on the surface of said first pellicle, double-side coated with a contact adhesive, and adjoined to said first pellicle and to the second surface of said mask with each window in said pellicle frame aligned with one of said locations on the first surface of said mask and with the corresponding diffraction grating region formed on the surface of said first pellicle, wherein said first pellicle is formed by a method comprising the steps of:

coating a pellicle manufacturing material on the surface of a hard material on which at least one diffraction grating pattern has been previously formed, said pellicle manufacturing material being conformed to each said diffraction grating pattern to form a corresponding said diffraction grating region;

completing the manufacturing of the pellicle from said coating of said pellicle manufacturing material, so each said diffraction grating region is in a portion of the pellicle that is transparent to light; and

separating the pellicle from said surface.

5,608,577

OPTICAL MIRROR AND OPTICAL DEVICE USING THE SAME

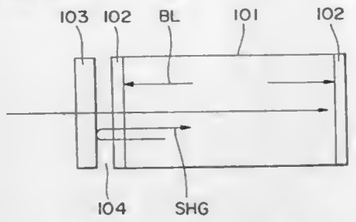
Akira Eda, Sodegaura, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 205,723, Mar. 4, 1994, which is a continuation-in-part of Ser. No. 39,142, Aug. 28, 1992, abandoned. This application Apr. 17, 1996, Ser. No. 633,520

Claims priority, application Japan, Aug. 30, 1991, 3-220587

Int. Cl.[6] G02B *5/28*

U.S. Cl. 359—584 **23 Claims**



1. An optical mirror comprising a plurality of reflection films formed on at least one surface of a transparent substrate each of which films corresponds to each wavelength of a light beam having a plurality of wavelengths to reflect selectively one of said plurality of wavelengths, comprising:

a phase difference adjusting layer formed between two reflection films reflecting light beams having different wavelengths, said adjusting layer adjusting interrelation between a phase of the light beam reflected by one of the reflection films and a phase of the light beam reflected by the other of the reflection films.

5,608,578

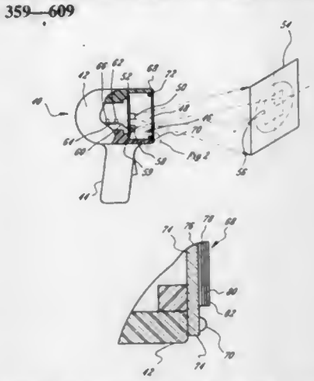
METHOD AND APPARATUS FOR PROVIDING CLEAN APERTURE THROUGH SYMBOLOGY READER WINDOW

Steven M. Bunce, Mill Creek, and Joel T. Aragon, Everett, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Aug. 2, 1994, Ser. No. 284,823

Int. Cl.[6] G02B *27/00*; **B60J** *1/00*; **G06K** *7/00*; **E06B** *3/24*

U.S. Cl. 359—609 **34 Claims**



1. A window for a symbology reader having a reading face with an optical aperture therethrough, comprising:

a base for attachment to the reader at its reader face, the base having an optically transmissive first region;

an optically transmissive first laminar sheet overlaying the first region of the base, the first laminar sheet being removably secured to the base; and

an optically transmissive second laminar sheet overlaying the first region of the base and the first laminar sheet outward of the first laminar sheet, the second laminar sheet being removably secured to the base.

5,608,579

PROJECTION TV SET APPARATUS

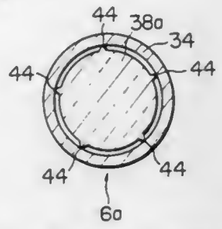
Tsuneharu Nomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 407,098

Claims priority, application Japan, Mar. 30, 1994, 6-061346

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—820 **6 Claims**



1. A projection lens assembly for a projection TV set apparatus arranged in front of a light source of said projection TV set apparatus and comprising a mirror sleeve and at least one glass lens mounted inside said mirror sleeve, wherein

projections contacting a fitting portion of said mirror sleeve are formed at least three locations in the radial direction on an outer circumference of said lens, wherein the height of said projections is in the range of 0.1 to 1 percent of the outer diameter of said lens, and wherein said mirror sleeve is comprised of material having a coefficient of thermal expansion greater than a coefficient of thermal expansion of said lens.

5,608,580

ROTARY-PRISM REFRACTING DEVICE FOR OPTICAL EQUIPMENT, SUCH AS A LIGHT PROJECTOR

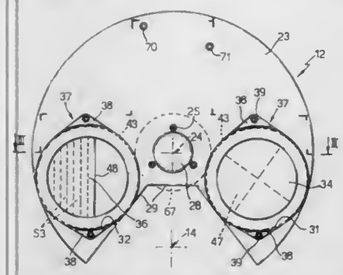
Pasquale Quadri, Albano Sant'Alessandro, Italy, assignor to Clay Paky S.p.A., Pedrengo, Italy

Filed Mar. 23, 1995, Ser. No. 409,175

Claims priority, application Italy, Mar. 25, 1994, T094A0223

Int. Cl.[6] G02B *5/04*

U.S. Cl. 359—831 **12 Claims**



1. A light projector comprising a beam emitting light source (8, 9), a gobos unit (10) for shaping said beam, and a rotary-prism device (12) for refracting the thus shaped beam; said device (12) comprising a movable support (23) supporting at least one prism (36) for moving said prism (36) from an idle position to an active position in a path (14) of said shaped beam, and means (60, 63, 64) for rotating said prism (36) about a predetermined axis (35), said prism (36) having a shape of at least part of a circle with its center lying on said axis (35); wherein said prism (36) comprises a series of faces (53, 53', 53") frontally in the form of parallel portions of said circle; said faces (53, 53', 53") being inclined, in relation to a plane perpendicular to said axis (35), at an angle increasing gradually from a first peripheral face (53') of said series to a second peripheral face (53") of said series to refract said shaped beam into a plurality of identical images (84, 85); and wherein said first peripheral face (53') is substantially diametrical on said circle and lies in a plane perpendicular to said axis (35) to refract said shaped beam into a stationary main image (84), the other of said faces (53, 53") refracting said shaped beam into other images (85) of said plurality, which are shifted radially from said main image and are moved parallel to themselves along paths concentric with said main axis (35) as said prism (36) is rotated around said axis (35).

5,608,581

REAR VIEW APPARATUS

Theodorus G. Potma, Irenelaan 17, 2159 LL Kaag, Netherlands

PCT No. PCT/NL92/00190, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/08041, PCT Pub. Date Apr. 29, 1993

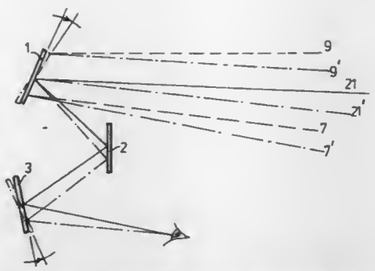
PCT Filed Oct. 23, 1992, Ser. No. 211,970

Claims priority, application Netherlands, Oct. 24, 1991, 9101784

Int. Cl.[6] G02B *5/08;5/10*

U.S. Cl. 359—861 **35 Claims**

1. A rear view apparatus for a vehicle comprising at least a driver's cabin having a roof and a front window, said rear view



apparatus comprising at least three mirror devices each of which is elongated and defining a longitudinal axis, a first mirror device of said apparatus being positioned higher than said roof; a third mirror of said apparatus being positioned in front of a driver in said cabin; and, a second mirror of said apparatus being positioned so as to direct light rays reflected from said first mirror device to said third mirror device, wherein the mirror surface of at least one of said three mirrors is torsioned in a longitudinal direction, said torsion of said mirror surface being opposed from the middle of said mirror surface to each of the sides of said mirror, as viewed in respective opposed longitudinal directions from said middle of said mirror.

5,608,582

AUDIO SIGNAL REPRODUCING APPARATUS AND METHOD FOR USE DURING A SLOW REPRODUCTION OPERATION

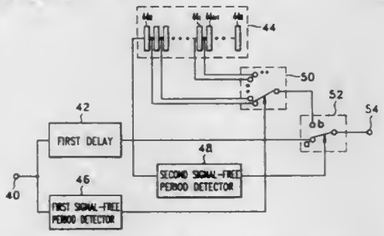
Gyoung-chan Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 30, 1994, Ser. No. 268,326

Claims priority, application Rep. of Korea, Jul. 27, 1993, 1993-14067; Feb. 21, 1994, 1994-3058

Int. Cl.[6] G11B *5/00*

U.S. Cl. 360—8 **7 Claims**



1. An audio signal reproducing apparatus which sequentially reproduces an audio signal recorded in adjacent tracks while compensating the audio signal for discontinuous periods having a time interval T produced during a slow reproduction operation, said apparatus comprising:

a delay for generating a delay audio signal from a received audio signal, wherein a delay amount provided by said delay is at least equal to said time interval T;

signal-free period detector means for detecting the discontinuous periods in which said received audio signal is discontinuous; and

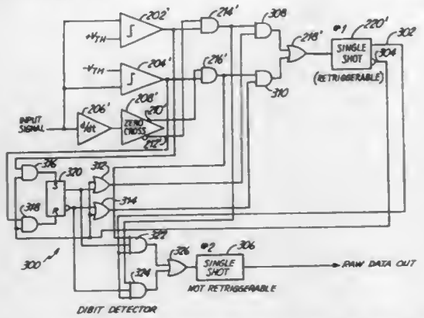
a switch operatively connected to and controlled by said signal-free period detector means for selectively providing one of said received audio signal and said delayed audio signal to thereby generate an output audio signal without the discontinuous periods.

5,608,583

SYSTEM FOR QUALIFYING THE DETECTION OF A SERVO DIBIT

Louis J. Shrinkle, Leucadia, Calif., assignor to Conner Peripherals, Inc., San Jose, Calif.

Filed May 24, 1995, Ser. No. 448,806
Int. Cl.[6] G11B *5/09;5/596*
U.S. Cl. 360—46 **18 Claims**



1. A circuit to detect and qualify a dibit signal, the dibit signal including a first peak amplitude followed by a second peak amplitude, the circuit comprising:

a first qualification circuit comprising a positive peak amplitude detector and a negative peak amplitude detector each receiving the signal, and a first SINGLE SHOT circuit coupled to each of the positive peak and negative peak amplitude detectors, the first SINGLE SHOT circuit being responsive to detection of a peak amplitude by one of the positive peak and negative peak amplitude detectors to assert an enable signal; and

a second qualification circuit coupled to the first qualification circuit comprising a second SINGLE SHOT circuit and a first AND gate and a second AND gate, the enable signal being coupled to a first input of each of the first and second AND gates, and the positive peak and negative peak amplitude detectors each being coupled to a second input of a respective one of the first and second AND gates, each of the AND gates having an output coupled to the second SINGLE SHOT to operate the second SINGLE SHOT circuit to output a signal representative of the dibit signal.

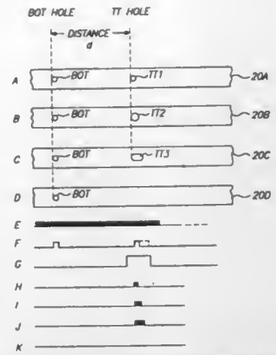
5,608,584

RECOGNITION OF TAPE RECORDING MEDIA TYPE USING PLURAL IN-LINE HOLES

Mitchell R. Steinberg, Upton, and George A. Saliba, Northborough, both of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Filed May 25, 1995, Ser. No. 450,753
Int. Cl.[6] G11B *15/08*
U.S. Cl. 360—69 **14 Claims**

1. A method for detecting one of a plurality of types of magnetic media tape within a magnetic tape cartridge data storage subsystem, wherein the tape cartridge includes a tape feed reel having the one type of magnetic tape spooled thereon, wherein beginning of tape (BOT) and end of tape (EOT) holes are defined by the tape near respective ends thereof, wherein the subsystem receives the cartridge, engages a BOT end of the tape and spools the tape onto an internal take-up reel, measures tape velocity, measures take-up reel velocity and senses at least the BOT hole, the method comprising the steps of:



a. defining a single tape type (TT) hole within the magnetic tape at a predetermined location transversely aligned with, and proximately close to and longitudinally spaced toward the data storage area of the tape from, the BOT hole, wherein the location relative to the BOT hole is used for qualifying the TT hole, and the size of the TT hole is used for determining tape type,

b. sensing the BOT hole,

c. measuring a distance from the BOT hole to the TT hole to qualify the TT hole as valid,

d. sensing and measuring a duration of the TT hole as a function of its size to determine tape type, and

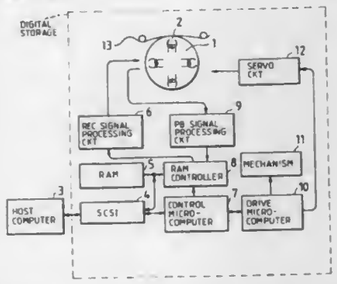
e. formatting the tape with the subsystem in accordance with determined tape type.

5,608,585

MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH REPOSITIONING STOP MODE

Kenmei Masuda; Kenji Ogiro; Hidefumi Goto, all of Yokohama; Sadao Hirose; Satoshi Fujino, both of Shimotsuga-gun; Shinya Fujimori, Yokohama, and Katsuhiko Izumi, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 561,574, Aug. 2, 1990, Pat. No. 5,448,427. This application Jun. 5, 1995, Ser. No. 462,536
Claims priority, application Japan, Aug. 21, 1989, 1-212901
Int. Cl.[6] G11B *15/18;15/48*
U.S. Cl. 360—72.1 **15 Claims**



1. A magnetic recording and reproducing apparatus which records or reproduces data onto or from a magnetic tape using magnetic heads in a recording format that the data are divided into a plurality of groups, each of the groups of data including a gap area having no data, the data being recorded on said magnetic tape one group by one group, said apparatus comprising:

a cylinder device in which said magnetic heads are mounted on a rotary unit, said magnetic tape is wound around the outer peripheral surface of said cylinder device, and by the rotation of said rotary unit, said magnetic heads perform helical scanning along the surface of said magnetic tape; and

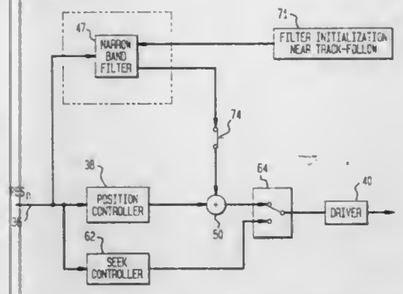
means for controlling the positioning of said magnetic tape with respect to at least one rotating magnetic head, said control means providing a plurality of modes of operation of said apparatus including at least a recording or reproducing mode in which said magnetic tape is permitted to run at a predetermined speed to record or reproduce data, a repositioning stop mode where the running of said magnetic tape is temporarily stopped and repositioned, and a normal stop mode where the running of said magnetic tape is completely stopped, said control means in said repositioning stop mode at least temporarily stopping said magnetic tape at a position relative to at least one of said rotating magnetic head where a portion corresponding to the gap area included in one recorded data group is scanned by said at least one rotating magnetic head to avoid loss of data due to damage of a recorded data portion of said magnetic tape by continuous contact of said at least one rotating magnetic head with the recorded data portion of said magnetic tape and for repositioning said magnetic tape with respect to said at least one rotating magnetic head away from the gap area included in the one recorded data group to enable reproduction of recorded data and/or a recording of a subsequent data group in an unrecorded area of said magnetic tape in the reproducing or recording mode.

5,608,586

ROBUST SERVO FOR DISK-SHIFT COMPENSATION IN ROTATING STORAGE SYSTEM

Muthuthamby Sri-Jayantha, Ossining; Arun Sharma, New Rochelle; Hien Dang, Nanuet, all of N.Y., and Satoshi Yamamoto, Shiga-ken, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1994, Ser. No. 327,168
Int. Cl.[6] G11B *5/596;5/035*
U.S. Cl. 360—77.04 **14 Claims**



1. In a direct storage device including a head positioned for interaction with a data storage medium having tracks and being mounted on a rotating spindle, an actuator for positioning said head, and a servo control loop for controlling said actuator, said servo control loop having a seek mode of operation during which said head is brought to a position close to a desired track of said data storage medium and a track following mode of operation during which said head is caused to follow said desired track, the improvement comprising:

a narrow band digital filter, said filter summing weighted variables to produce a next output value of said filter, said variables including at least one present input value to said filter and at least one previous output value of said filter, said filter having a peak response frequency equal to the rotational frequency of the spindle, said filter having a programmable initial value for said at least one previous output value of said filter;

means for switching the narrow band filter into the servo control loop during selected periods of time that each include at least a portion of time that the servo control loop is in the track following mode of operation and for switching the narrow band filter out of the servo control loop during the entire seek mode of operation of the servo control loop;

means for determining and storing during an idle period of said device, and when said servo control loop is in said track following mode and after transients have died out, an output value of said filter for each one of a multiplicity of predetermined different rotary positions of said data storage medium; and

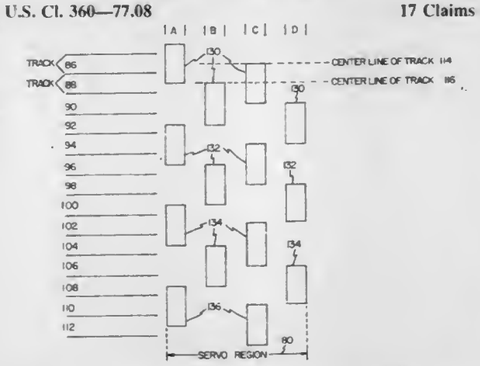
means for programming said filter, when said filter is switched into the servo control loop, with an initial value for said at least one previous output value, said initial value being derived from at least one of said stored output values selected in accordance with the rotary position of said data storage medium when said filter is switched into the servo control loop.

5,608,587

METHOD USING MAGNETIC DISK SERVO PATTERN WITH BURIED IDENTIFICATION PATTERNS

Robert F. Smith, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 103,297, Aug. 6, 1993, abandoned.
This application Mar. 20, 1995, Ser. No. 407,268
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.08 **17 Claims**



6. A method of acquiring information for controlling a read apparatus for reading a surface containing tracks of readable changes of state, the method comprising:

embedding a plurality of areas of the surface with servo control information, the servo control information in each area comprising:

a plurality of columns of blocks of transitions, the columns of blocks aligned along and extending in the direction of the radius of the surface, each block of transitions separated from other blocks in the same column by at least one blank area, the blank area containing no transitions;

moving the read apparatus over a path on the surface which intersects all of the columns of blocks in one area of the surface;

producing a read signal with an amplitude and transitions, the amplitude representing the distance from the path to a center of a block in each column and the transitions representing transitions in the blocks of transitions near the path;

determining position information from the amplitude of the read signal; and

determining additional information from transitions in a first derivative of the read signal.

5,608,588

METHOD FOR CONTROLLING DIGITAL CLOSED SERVO LOOP SYSTEM AND DISK STORAGE APPARATUS USING THE SYSTEM

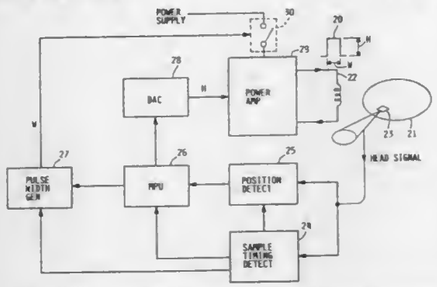
Masashi Kisaka, Yokohama, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 68,818, May 27, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 392,271

Claims priority, application Japan, May 28, 1992, 4-137157

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.04 **4 Claims**



1. A method for controlling a digital closed servo loop system of a disk drive, comprising the steps of:

providing a disk drive head;

providing a voice coil motor for driving the disk drive head;

providing a sample timing detecting circuit;

providing a position detecting circuit for receiving a head signal from the disk drive head and for detecting a head position at a time determined by the sample timing detecting circuit;

providing a microprocessor for calculating and generating a digital compensation value based on a calculated position error between the head position detected by the position detecting circuit and a desired target position;

providing a driving circuit used to generate an amplitude modulated pulse comprising:

a power amplifier;

a digital to analog converter, wherein the digital to analog convertor converts the digital compensation value from the microprocessor to an analog amplitude value for the amplitude modulated pulse as determined by the microprocessor;

a power supply for controlling the width of the amplitude modulated pulse, the power supply being controlled by a pulse width generator, the amplitude modulated pulse having a width of a first value which is independent of the digital compensation value when the disk drive head is performing a seek operation, and the amplitude modulated pulse having a width of a second value which is independent of the digital compensation value that is less than the first value when the disk drive head is performing a track follow operation; and, supplying the amplitude modulated pulse from the driving circuit through the voice coil motor to drive the disk drive head.

5,608,589

TAPE RUNNING SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

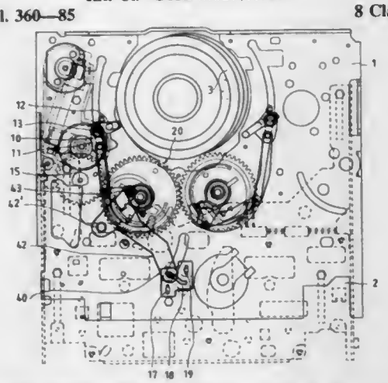
Myung G. Kang, Seoul; Seong S. Kang; Sung H. Choi, both of Kyungki-Do; Mun C. Joung, Seoul; Byoung G. Jang, Kyungki-Do; Kye Y. Ryu, Seoul; Hyo C. Yu, Seoul, and Sang J. Lee, Kyungki-Do, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 75,322, Jun. 11, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,570

Claims priority, application Rep. of Korea, Jun. 17, 1992, 10707/1992; Jun. 17, 1992, 10710/1992; Jun. 17, 1992, 10713/1992

Int. Cl.[6] G11B *5/027;15/61*

U.S. Cl. 360—85 **8 Claims**



1. A tape running system for a magnetic recording and reproducing apparatus comprising:

a stationary base plate mounted on a main body of said apparatus;

a slide base mounted on said stationary base plate such that said slide base is reciprocatable with respect to said stationary base plate within a predetermined range;

a pair of loading gears mounted on a surface of said stationary base plate and engaging with each other, each of said pair of loading gears being directly connected to a pair of respective individual loading levers which are directly connected to a respective pair of slant post assemblies; and

means for transmitting a rotational force of said loading gears to said slide base for driving said slide base, said rotational force transmitting means being connected between one of said pair of loading gears and said slide base and linearly reciprocating said slide base using said rotational force of the loading gears;

whereby said pair of slant post assemblies as well as said slide base are concurrently driven by said rotational force of said loading gears and said slide base reciprocates to receive a tape carrying medium.

5,608,590

GIMBALLING FLEXURE WITH STATIC COMPENSATION AND LOAD PRINT INTREGAL ETCHED FEATURES

David A. Ziegler; Ryan A. Jurgenson, both of Hutchinson; Brent D. Lien, Minneapolis; Thomas K. Christensen, and James R. Mahoney, both of Hutchinson, all of Minn., assignors to Hutchinson Technology Incorporated, Hutchinson, Minn.

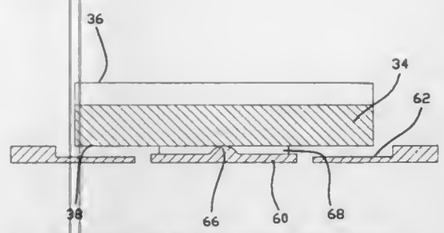
Filed Jun. 20, 1994, Ser. No. 263,605

Int. Cl.[6] G11B *5/48;21/16;15/64;17/32*

U.S. Cl. 360—104 **7 Claims**

1. A head suspension assembly for supporting a head assembly at a predetermined flying attitude with respect to the surface of a rotatable data storage device, the head suspension assembly comprising:

a load beam comprising an elongated spring structure;



a head assembly including a transducer and a slider;

a gimbal located at the distal end of the load beam, the gimbal including a resilient and planar load bearing flexure platform which is able to flex to permit the slider to move in pitch and roll directions during operation over a disk surface, said flexure platform having a slider-engaging first surface and a second opposite surface, and wherein the platform is etched to leave an integral solid static attitude compensation protuberance extending from the first surface with a corresponding flat portion of said second opposite surface; and

a layer of adhesive for bonding the slider to the first surface of the flexure platform, wherein the static attitude compensation protuberance contacts the slider, and the adhesive fills interstitial spaces between the slider and the platform which have been formed by the contact between the static attitude compensation protuberance and the slider to prevent pitch and roll movements about the static attitude protuberance during operation over a disk surface and rigidly hold the slider at a desired static attitude with respect to the first surface of the flexure platform.

5,608,591

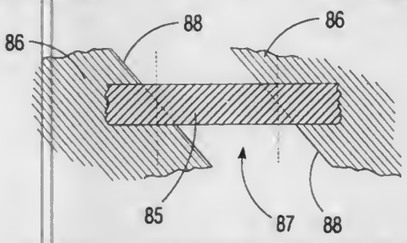
INTEGRATED HEAD-ELECTRONICS INTERCONNECTION SUSPENSION FOR A DATA RECORDING DISK DRIVE

Klaas B. Klaassen, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1995, Ser. No. 489,310

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **20 Claims**



1. A suspension for a data recording disk drive of the type having a disk with a data surface, a transducer for writing data to and reading data from the disk, the transducer being attached to a slider maintained adjacent to the data surface of the disk, an actuator for moving the slider across the disk, and an electronics module electrically connected to the transducer, the suspension being a laminate structure comprising:

an electrically conductive and patterned back plane having an aperture;

an electrically insulating layer formed on the back plane; and

an electrically conductive layer formed on the insulating layer as a plurality of electrically conductive traces interconnecting said transducer and said electronics module, at least one of the traces extending across the aperture with the longitudinal axis of the trace forming an angle other than perpendicular with the periphery of the aperture.

5,608,592

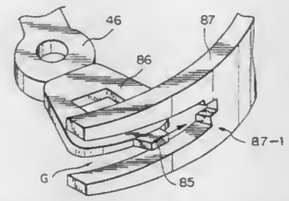
HEAD ACTUATOR

Yoshifumi Mizoshita; Tomoyoshi Yamada; Yasumasa Kuroba; Toru Kouhei; Takao Sugawara; Masaru Matsumoto; Hiroyuki Mase; Masao Tsunekewa; Shinji Koganezawa, and Keiji Aruga, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 406,807, Mar. 20, 1995, which is a continuation of Ser. No. 946,359, Oct. 29, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,751

Int. Cl.[6] G11B *21/22;5/54*

U.S. Cl. 360—105 **17 Claims**



14. A disk drive comprising inside a rectangular housing:

at least one disk that stores information; and

a head assembly that performs read/write operations on said disk, wherein said head assembly has

a head that executes reproducing/recording operations corresponding to read/write operations of said information in a predetermined position on said disk;

a rotary type actuator that forces said head to move to said predetermined position on said disk;

a retraction magnet is provided in an outer fringe part of said actuator; and

a retraction yoke is provided with a first portion above a path of movement of said retraction magnet and a second portion below said path such that the height of a gap between said first and second portions decreases in one direction along said path, wherein the interaction between said retraction magnet and said retraction yoke forces said head to move and retract from an arbitrary position above a data zone of said disk to a parking zone of said disk; and

wherein a region of overlap between said retraction magnet and said retraction yoke includes a first subregion corresponding to the head being position above said data zone and an a second subregion corresponding to the head being positioned above said parking zone, the region having a thickness in a radial direction relative to a rotational axis of said actuator which changes along said path of movement of said retraction magnet so as to retract said head toward a predetermined position.

5,608,593

SHAPED SPIN VALVE TYPE MAGNETORESISTIVE TRANSDUCER AND METHOD FOR FABRICATING THE SAME INCORPORATING DOMAIN STABILIZATION TECHNIQUE

Young K. Kim, and J. Lamar Nix, both of Boulder, Colo., assignors to Quantum Peripherals Colorado, Inc., Louisville, Colo.

Filed Mar. 9, 1995, Ser. No. 401,553

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **51 Claims**

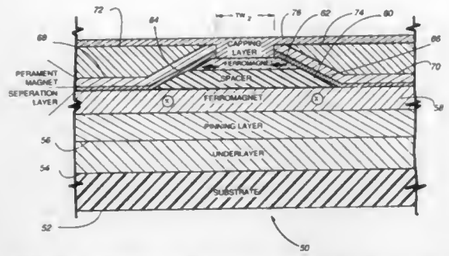
32. A magnetoresistive device comprising:

a substrate;

a pinning layer overlying said substrate;

a first ferromagnetic layer overlying said pinning layer;

a spacer layer overlying a first selected portion of said first ferromagnetic layer, said spacer layer presenting a first mesa structure having tapered opposing first and second sides thereof;



a second ferromagnetic layer overlying said first mesa structure of said spacer layer, said second ferromagnetic layer presenting a second mesa structure having tapered opposing first and second sides thereof;

first and second separation layer portions overlying said first ferromagnetic layer and said first and second mesa structures at said first and second sides thereof, said first and second separation layer portions also overlying a preselected portion of an upper surface of said second ferromagnetic layer adjoining said first and second sides thereof;

first and second permanent magnet layer portions overlying said first and second separation layer portions;

first and second conductor layer portions overlying a selected portion of said first and second permanent magnet layer portions respectively; and

a capping layer overlying said first and second conductor layer portions, said first and second permanent magnet layer portions and said upper surface of said second mesa not overlain by said permanent magnet layer portions.

5,608,594

SEMICONDUCTOR INTEGRATED CIRCUIT WITH SURGE-PROTECTED OUTPUT MISFET'S

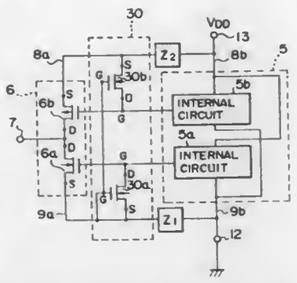
Yasuhiro Fukuda, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 42,402, Apr. 3, 1993. This application Aug. 14, 1995, Ser. No. 505,078

Claims priority, application Japan, Apr. 14, 1992, 4-093970

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—58 **30 Claims**



1. A semiconductor integrated circuit, comprising:

an external output terminal;

an input circuit, said input circuit having an input terminal for receiving an input signal;

an internal circuit for providing an internal signal, said internal circuit being connected to said input circuit;

a first power supply line and a first ground line, connected for activating said internal circuit;

an output MISFET circuit, responsive to the internal signal from said internal circuit, for outputting an output signal to said external output terminal;

a second power supply line and a second ground line, connected for activating said output MISFET circuit;

an impedance circuit, electrically connecting at least said second power supply line to said first power supply line or said second ground line to said first ground line; and

a surge protection circuit, located between a gate circuit of said output MISFET circuit, and at least said second power supply line or said second ground line, and responsive to a breakdown of said output MISFET circuit, for reducing a voltage difference between said gate circuit and either or both of said second power supply line and said second ground line, thereby to protect said output MISFET circuit from damage by a surge of static electricity on said external output terminal.

5,608,595

SEMICONDUCTOR POWER MODULE AND POWER CONVERSION DEVICE

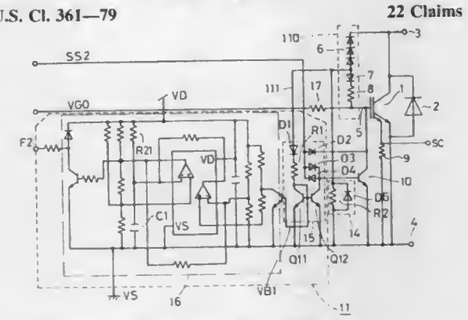
Majumdar Gourab; Takahiro Hiramoto, both of Fukuoka, and Takeshi Tanaka, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 423,981

Claims priority, application Japan, Apr. 28, 1994, 6-092039

Int. Cl.[6] H02H *3/18*

U.S. Cl. 361—79 **22 Claims**



1. A semiconductor power module, comprising:

(a) a switching semiconductor element having first and second main electrodes which are a pair of main electrodes, and a control electrode, for controlling a main current flowing between the pair of main electrodes in response to a control signal applied to the control electrode, and

wherein said first main electrode of said switching semiconductor element has a large electrode through which main part of said main current flows and a small electrode through which a small current in proportion to said main current flows;

(b) control means responsive to an input signal for outputting said control signal;

(c) overcurrent protection means for realizing a conducting state between said first main electrode and said control electrode when said main current exceeds a predetermined reference value to cut off said main current between said pair of main electrodes, and said overcurrent protection means further comprises,

switch means having its one end connected to said control electrode and the other end connected to said large electrode and which becomes conductive in response to an overcurrent detection signal;

(d) clamp means connected between said second main electrode and said control electrode and which becomes conductive when a voltage exceeding a predetermined reference voltage is applied; and

(e) cancelling means for cancelling operation of said overcurrent protection means when said clamp means becomes conductive and for cancelling conduction of said switch means which becomes conductive in response to said overcurrent detection signal, when said clamp means becomes conductive.

5,608,596

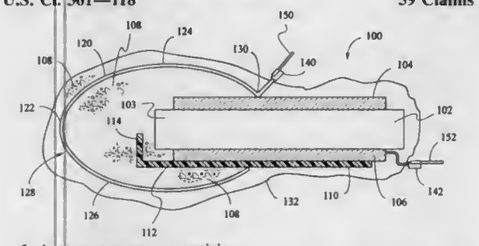
SURGE ARRESTER WITH SPRING CLIP ASSEMBLY

Robert W. Smith, Hinsdale; Michael G. Marvin; Deborah L. Limburg, both of Olean, all of N.Y.; Stanley S. Kershaw, Jr., Waukesha, Wis.; Robert N. Schettler, Olean, N.Y., and Gary L. Goedde, Racine, Wis., assignors to Cooper Power Systems, Inc., Coraopolis, Pa.

Continuation of Ser. No. 906,761, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 598,267, Oct. 16, 1990, Pat. No. 5,220,480. This application Apr. 25, 1995, Ser. No. 428,642

Int. Cl.[6] H02H *1/00*

U.S. Cl. 361—118 **59 Claims**



1. A surge arrester, comprising:

an arrester subassembly including a voltage dependent, nonlinear resistor and an electrode contacting said resistor; and

a spring clip having a pair of spring arms disposed about said subassembly and providing a force to retain said electrode and said resistor in contact with one another, wherein said spring clip is made of an insulative material.

5,608,597

SURGE ARRESTER

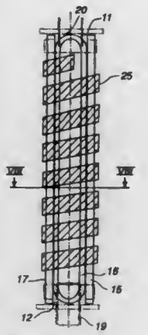
Göran Holmström, Sollentuna; Jan Lundquist, and Håkan Wieck, both of Ludvika, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed May 1, 1995, Ser. No. 432,974

Claims priority, application Sweden, May 13, 1994, 9401655

Int. Cl.[6] H02H *1/00*

U.S. Cl. 361—127 **11 Claims**



1. A surge arrester comprising:

(a) a stack of a plurality of cylindrical varistor blocks of metal oxide, said varistor blocks being arranged end-to-end in their axial direction between two end electrodes;

(b) an elongated, electrically-insulating outer casing of rubber or other polymeric material surrounding said stack;

(c) at least one compression member of insulating material interconnecting said end electrodes for providing contact pressure between said varistor blocks and said end electrodes; and

(d) a bursting-preventive bandage radially surrounding said varistor stack, said bandage consisting of a continuously wound insulating fibre embedded in thermosetting resin and having openings for pressure relief in case of internal short circuit in the surge arrester.

5,608,598

EFFECTOR WITH SELF-COMPENSATED CONTACTS FOR POWER SUPPLY OF A RECEIVER CIRCUIT

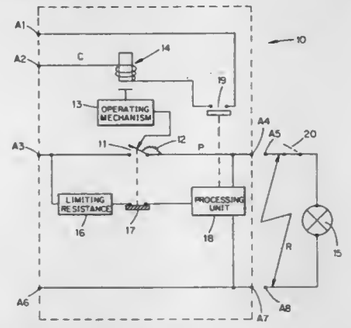
François Dieppedalle, Poisat, and Alain Frolla, Froges, both of France, assignors to Merlin Gerin, France

Filed Apr. 12, 1994, Ser. No. 226,307

Claims priority, application France, Apr. 23, 1993, 93 04926

Int. Cl.[6] H02H *11/00*

U.S. Cl. 361—160 **8 Claims**



1. An electrical effector, comprising:

a power supply circuit for supplying power to a receiver provided in a receiver circuit, said power supply circuit including power contacts;

a control circuit including an operating mechanism and a switch provided in series with the operating mechanism, said operating mechanism including an electromagnet for operating the power contacts;

compensation means for applying a compensating force to the power contacts when in the closed position to oppose striction repulsion forces acting on said power contacts due to a short-circuit in the receiver circuit; and

prevention means for preventing closing of the power contacts from the open position under a short-circuit condition in the receiver circuit, said prevention means comprising (i) measuring means for measuring an impedance of the receiver circuit, said measuring means including a comparator to compare a measured impedance with a threshold impedance, (ii) a relay connected to said comparator and to said switch of the control circuit, said relay being actuated by a measured impedance which is below the threshold impedance to drive the switch and open the control circuit thereby preventing closing of the power contacts.

5,608,599

CAPACITIVE BIOFEEDBACK SENSOR WITH RESILIENT POLYURETHANE DIELECTRIC FOR REHABILITATION

Robert J. Goldman, 3607 Baring St., Philadelphia, Pa. 19104

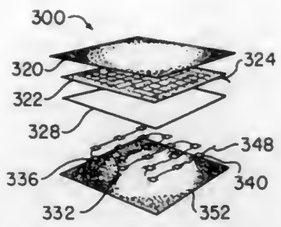
Division of Ser. No. 908,121, Jul. 1, 1992, Pat. No. 5,449,002. This application Jun. 6, 1995, Ser. No. 466,480

Int. Cl.[6] H01G *7/00*; **G01N** *33/00*

U.S. Cl. 361—283.1 **1 Claim**

1. A biofeedback sensor comprising:

(a) dielectric means having a first and second side, the dielectric having a hysteresis and creep that approach zero and having a high resilience, sensitivity and dynamic response, wherein the percent loss of dielectric means thickness change is negligible when subjected to cyclic compression and shear compression tests;



(b) a first conductor and a second conductor, wherein said first conductor is secured to said first side of said dielectric means and said second conductor is secured to said second side of said dielectric means;

(c) electronic means connected to said first conductor and said second conductor, wherein upon compression of said dielectric means, said electronic means detects and measures linear response in the capacitance through the change in separation between said first and second sides of said dielectric means and compares said capacitance with a preset value set within said electronic means; and

(d) feedback means for imparting information to a user according to the relation between said capacitance and said preset value,

said second conductor has a plurality of mesh elements connected with one another.

5,608,600

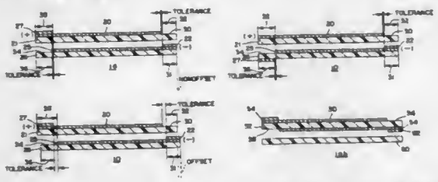
METALLIZED FILM CAPACITOR WITH INCREASED DIELECTRIC BREAKDOWN VOLTAGE

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts Inc., Eatontown, N.J.

Continuation-in-part of Ser. No. 20,344, Feb. 19, 1993, abandoned. This application Sep. 28, 1993, Ser. No. 127,867

Int. Cl.[6] H01G *4/005;4/32;7/00*

U.S. Cl. 361—303 **20 Claims**



1. A metallized wound capacitor having increased dielectric breakdown voltage comprising:

first and second elongated dielectric webs each having a first face, a second face and a width;

a first electrode having first and second portions metallized on the first face of the first web, the first electrode having a width less than the width of the first web;

a second electrode having first and second portions metallized on the first face of the second web, the second electrode having a width less than the width of the second web and said first portions of said first and second electrodes being between 5–300 ohms/square;

the first and second electrodes extend from opposing dielectric web longitudinal edges leaving respective bare margins along opposing edges on the respective webs, the second portion of the first electrode opposes the bare margin on the second web and the second portion of the second electrode opposes the bare margin on the first web, each second portion has a width equal to the opposing bare margin less a predetermined tolerance and is thicker than its respective first portion; and

the dielectric webs being arranged in a capacitor roll with the first and second electrodes in superposed relation to each other.

5,608,601

CAPACITOR ELEMENT FOR SOLID ELECTROLYTIC CAPACITOR

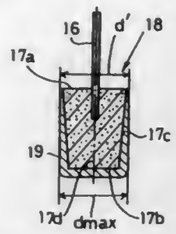
Chojiro Kuriyama, Ukyo-ku, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 224,556, Apr. 7, 1994, Pat. No. 5,461,538. This application Apr. 24, 1995, Ser. No. 427,258

Claims priority, application Japan, Jul. 9, 1993, 5-170632; Nov. 24, 1993, 5-293210

Int. Cl.[6] H01G *9/048*

U.S. Cl. 361—532 **4 Claims**



1. A capacitor element for a solid electrolytic capacitor comprising:

a sintered chip of metal powder, the chip having a first end and a second end opposite to the first end, the chip including a tapered body whose cross-sectional area reduces from the first end to the second end; and

a cathode layer covering the chip excepting at least the first end;

wherein a combined body of the chip and the cathode layer is substantially constant in cross-section from the first end to the second end.

5,608,602

CIRCUIT INCORPORATING A SOLID ELECTROLYTIC CAPACITOR

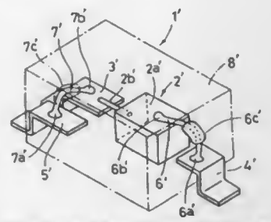
Chojiro Kuriyama, Ukyo-ku, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 335,593, Nov. 8, 1994, Pat. No. 5,502,614, which is a continuation of Ser. No. 164,802, Dec. 10, 1993, abandoned, which is a division of Ser. No. 41,972, Apr. 2, 1993, Pat. No. 5,329,421. This application Mar. 1, 1996, Ser. No. 609,626

Claims priority, application Japan, Apr. 7, 1992, 4-85354

Int. Cl.[6] H01G *2/16*

U.S. Cl. 361—534 **3 Claims**



1. A circuit incorporating a solid electrolytic capacitor between a power source and a load, the capacitor comprising:

a capacitor element including a chip body and an anode wire projecting from the chip body;

an anode lead electrically connected to the anode wire;

a cathode lead paired with the anode lead and electrically connected to the chip body;

an auxiliary lead separate from the anode and cathode leads;

a resin package enclosing the capacitor element, part of the anode lead, part of the cathode lead, and part of the auxiliary lead; and

a fuse wire for electrically connecting the auxiliary lead to the anode lead within the resin package;

wherein each of the anode, cathode and auxiliary leads has an inner end located in the resin package, and an outer end projecting from the resin package; and

wherein the anode lead of the capacitor is electrically connected to a positive pole of the power source.

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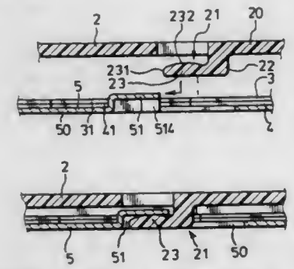
COMPUTER KEYBOARD WITH CIRCUIT BOARD POSITIONING DEVICE INCLUDING POSITIONING PLATES AND L-SHAPED PLUG UNITS

Su Su, Hsin-Tien, Taiwan, assignor to Shin Jiuh Corp., Taipei Hsien, Taiwan

Filed May 9, 1995, Ser. No. 437,686

Int. Cl.[6] H01H *9/00;* **G06F** *1/16*

U.S. Cl. 361—680 **1 Claim**



1. A computer keyboard including a printed circuit board, a rubber plate which is located in the keyboard and over the printed circuit board and which has a plurality of resilient contact units, and a positioning device which includes an electrically insulating upper positioning plate located over the rubber plate, and a lower positioning plate located under the printed circuit board so as to clamp the rubber plate and the printed circuit board between the upper and lower positioning plates, all of said upper positioning plate, said rubber plate, said printed circuit board and said lower positioning plate being horizontal, wherein the improvement comprises:

said printed circuit board having a plurality of holes formed therethrough;

said rubber plate having a plurality of holes which are formed therethrough and which are aligned respectively and vertically with said holes of said printed circuit board;

said lower positioning plate including a plate body and a plurality of socket units projecting upwardly from said plate of said lower plate and through said holes of said printed circuit board and said holes of said rubber plate; and

said upper positioning plate including a plate body, and a plurality of generally L-shaped plug units which project downwardly from said plate body of said upper positioning plate and through said holes of said rubber plate and said holes of said printed circuit board, each of said L-shaped plug units having a vertical section formed integrally with said plate body of said upper positioning plate, and a horizontal section formed integrally with a lower end of said vertical section, said horizontal sections of said L-shaped plug units being inserted respectively into said socket units of said lower positioning plate, wherein each of said socket units of said lower positioning plate has two parallel vertical first walls, a vertical second wall which is perpendicular to and which interconnects said first walls, and a horizontal top wall which interconnects an upper end portion of said second wall and upper end portions of said first walls, thereby defining a plug receiving space under said top wall between said first walls, said horizontal section of each of said L-shaped plug units of said upper positioning plate having an enlarged intermediate portion which presses against a bottom surface of said top wall of a corresponding one of said socket units of said lower positioning plate so as to clamp said rubber plate and said printed circuit board between said upper and lower positioning plates.

5,608,604

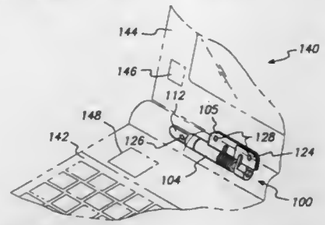
HINGE AS AN ELECTRICAL CONDUCTOR

Richard M. Francis, Campbell, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 22, 1994, Ser. No. 310,607

Int. Cl.[6] H05K *7/16;* **G06F** *1/16*

U.S. Cl. 361—681 **14 Claims**



1. A metallic hinge comprises:

a generally cylindrical shaft having a first shaft end, a second shaft end and a radial shoulder being integrally formed with the shaft and being disposed proximally to the second shaft end, and the second shaft end being configured for receiving a shaft fastening means;

a tubular hinge housing brakingly engaged with and radially slidable over the shaft, said tubular hinge housing including a first housing end substantially flush with the first shaft end, a flange disposed close to the first housing end and configured for receiving a housing fastening means and the hinge housing further including a second housing end sitting on said radial shoulder of the shaft where the radial shoulder has a circumferential surface substantially flush with that of the hinge housing; and

a conductive clip configured for sitting on the flange for making contact with the housing fastening means, said conductive clip including a finger implemented to rest firmly on the shaft whereby providing a low impedance path between the two fastening means.

5,608,605

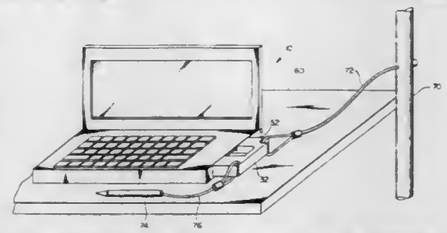
APPARATUS FOR SECURING A DEVICE VIA PC CARD SLOT AND DOOR

Wee M. Siow, and Ting Y. Hoong, both of Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1995, Ser. No. 535,686

Int. Cl.[6] G06F *1/16;* **H05K** *7/12;* **E05B** *73/00*

U.S. Cl. 361—684 **12 Claims**



1. In combination an electronic device and an apparatus for securing the electronic device at a display stand, the electronic device having an electronic card slot and an electronic card slot door, the securing apparatus comprising:

a key structure and a lock structure;

the lock structure comprising a first portion shaped for entry into the electronic slot, a second portion trailing the first portion, a third portion trailing the second portion, and a security barrier adjacent to the second portion and the third portion; wherein the second portion defines a recessed area relative to the first portion and third portion; and wherein the third portion defines an area for receiving the key structure adjacent to the security barrier;

the key structure defining an opening for mating to the security barrier;

wherein the lock structure is locked in place upon insertion into the electronic card slot and released by sliding the key structure along the lock structure to mate the opening and security barrier.

5,608,606

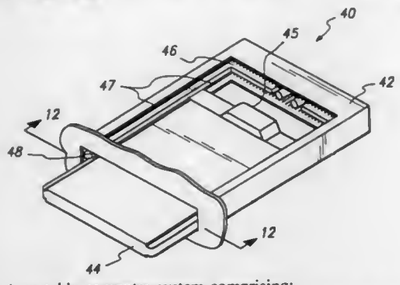
COMPUTER PLUG-IN MODULE AND INTERCONNECTION SYSTEM FOR WIRELESS APPLICATIONS

Timothy J. Blaney, Fremont, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 14, 1994, Ser. No. 259,435

Int. Cl.[6] G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—686 **15 Claims**



1. A portable computer system comprising:

an internal connector which provides a first connector for digital signals, a second connector for digital signals, and a third connector for radio frequency (RF) signals;

a first card having devices which support RF operations;

a card connector attached to a first end of the first card, the card connector coupled to devices on the first card, the card connector providing a fourth connector for digital signals and a fifth connector for radio frequency signals; and

a cage assembly affixing at one end of the cage assembly the first connector and the second connector with the third connector positioned between the first connector and the second connector so that the first connector and the second connector can be used independent of the third connector, the cage assembly defining slotted guides adapted to receive a plurality of cards such that the third connector may be used alternatively with the first card positioned to mate with the first connector or a second card positioned to mate with the second connector.

5,608,607

PCMCIA CARD AND ASSOCIATED SUPPORT AND CIRCUITRY AUGMENTING APPARATUS AND METHODS

Charles H. Dittmer, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

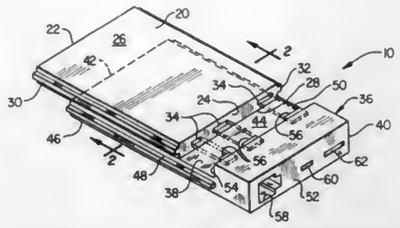
Filed Apr. 24, 1995, Ser. No. 427,575

Int. Cl.[6] G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—686 **18 Claims**

1. Computer card apparatus removably insertable into a computer card slot having first and second pairs of opposed card edge support structures therein, said computer card apparatus comprising:

a computer card having first internal electronic circuitry, a first side surface, an inner end, and an outer end having first connector means thereon, and a pair of opposite side edge portions extending between said inner and outer ends and being removably insertable into the first pair of opposed card edge support structures; and



a circuitry augmenting and support structure having a body portion with a shape similar to that of said computer card, a second side surface, a first end, a second end, a pair of opposite side edge portions extending between said first and second ends and being removable insertable into the second pair of opposed card edge support structures, an attachment section secured to said second end and having a first side portion projecting from said second side surface and facing toward said first end, second internal electronic circuitry disposed within said attachment section, and second connector means carried on said first side portion and being releasably mateable with said first connector means, and cooperative therewith to operatively interconnect said first and second electronic circuitry, when said first side portion is placed in a facing, closely adjacent relationship with said outer end of said computer card,

said circuitry augmenting and support structure being releasably connectable to said computer card in an operating orientation in which said first and second connector means are releasably mated with said computer card and said circuitry augmenting device body portion being in a generally aligned relationship in which said first and second side surfaces face and are adjacent one another and said side edge portions of said computer card may be operatively inserted into the first pair of opposed card edge support structures in a manner causing said side edge portions of said body portion of said circuitry augmenting and support structure to enter the second pair of card edge support structures and cause said body portion to brace said attachment section against movement relative to said computer card.

5,608,608

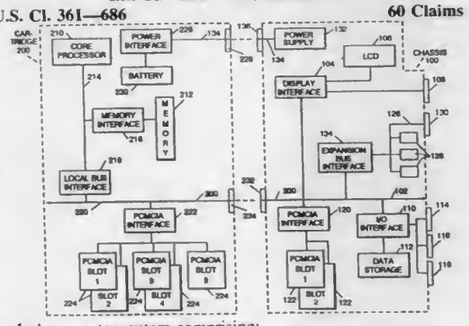
CARTRIDGE-BASED DESIGN FOR PORTABLE AND FIXED COMPUTERS

Ephraim B. Fliot, Garrison; John P. Karidis, Ossining; Gerard McVicker, Wappingers Falls, and William E. Pence, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 368,192, Jan. 4, 1995, abandoned. This application Apr. 17, 1996, Ser. No. 634,056

Int. Cl.[6] G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—686 **60 Claims**



1. A computer system comprising:

a first chassis having at least one user interface module coupled to a first bus;

a second chassis, different than said first chassis, having at least one user interface module coupled to a second bus; and

a cartridge having a core processor and memory coupled to a third bus;

wherein said third bus of said cartridge is detachably connected to said first bus of said first chassis to form a first functional system, or said third bus of said cartridge is detachably connected to said second bus of said second chassis to form a second functional system;

wherein said first, second, and third buses each comprise a plurality of buses; and

wherein said plurality of buses of said first bus connects to said plurality of buses of said third bus through separate first connectors, and said plurality of buses of said second bus connects to said plurality of buses of said third bus through separate second connectors.

5,608,609

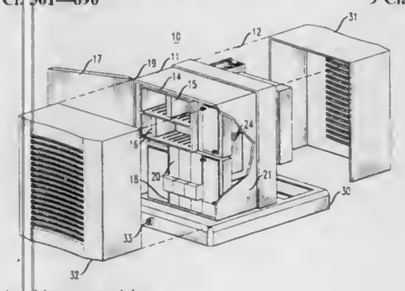
OUTDOOR CABINET FOR ELECTRONIC EQUIPMENT

Edward A. Morrell, Randolph, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 11, 1995, Ser. No. 526,618

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—690 **9 Claims**



1. A cabinet comprising:

a first portion which is sealed from the outside environment and includes a plurality of circuit packs mounted therein;

a second portion adjacent to the first portion and separated therefrom by a wall, the second portion being ventilated and including therein components electrically connected to the circuit packs in the first portion; and

a base member including a hole formed therein in the second portion of sufficient size to permit entrance of a plurality of cables into the second portion.

5,608,610

MECHANICALLY FLOATING MULTI-CHIP SUBSTRATE

Dennis Brzezinski, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 400,315, Mar. 6, 1995, abandoned, which is a continuation of Ser. No. 89,082, Jul. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 957,309, Oct. 6, 1992, Pat. No. 5,323,292. This application Sep. 18, 1995, Ser. No. 529,373

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **7 Claims**

1. A multi-chip module comprising:

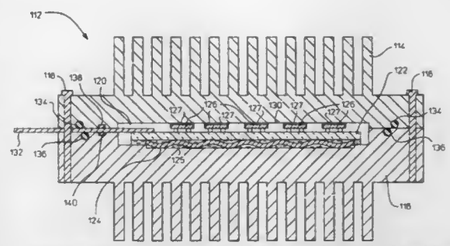
a substrate having a component surface;

a plurality of integrated circuit devices mounted on said component surface of said substrate;

a heat exchanger body having interior walls defining a substrate chamber, said substrate movably housed within said substrate chamber with said integrated circuit devices thermally coupled to a first interior wall of said heat exchanger body;

a serpentine spring for yieldingly holding said substrate within said heat exchanger body such that said substrate is displaceable relative to and towards said first interior wall of said heat exchanger body to accommodate non-uniformities with respect to thermal expansion coefficients and dimensional tolerances of said substrate, said heat exchanger body and said integrated circuit devices, wherein said serpentine spring is disposed to maintain said thermal coupling of said integrated circuit devices with said first interior wall; and

thermal grease enclosing and embedding the spring.



5,608,611

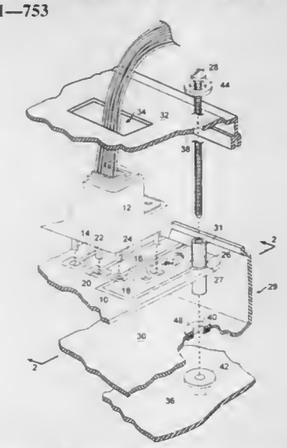
VEHICLE ELECTRONIC MODULE WITH INTEGRAL MOUNTING AND GROUNDING MEANS

Robert G. Szudarek, Warren; Yew T. Yeow, Southfield; Arnold D. Nielsen, Northville, and Roger Cook, Livonia, all of Mich., assignors to United Technologies Automotive, Inc./Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1995, Ser. No. 538,807

Int. Cl.[6] H05K *5/04;5/02;* **H01R** *4/66*

U.S. Cl. 361—753 **5 Claims**



1. Apparatus for grounding an electronic module in a vehicle comprising:

a circuit board comprising,

a plurality of circuit elements mounted thereon;

a plurality of electrically conductive traces printed thereon including a ground trace for providing an electrical path to ground for said circuit elements, said ground trace extending to an opening in said circuit board;

a housing, for enclosing said circuit board, comprising an electrically conductive box positioned beneath said circuit board and an electrically conductive cover for sealing said box, said cover and said box each having a mounting hole formed therein;

an electrically conductive spacer disposed within said opening in said circuit board and contacting said cover at a first end and said box at a second end;

a nut mounted to a metal portion of said vehicle; and

a bolt extending through said mounting hole in said cover, through said spacer, and said mounting hole in said box, and

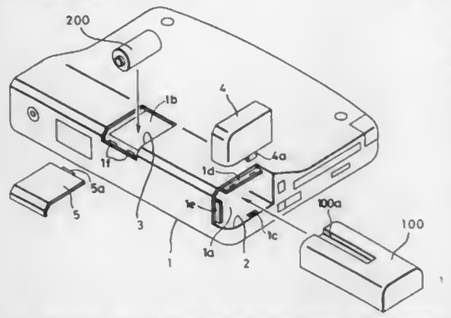
being threaded in said nut, to provide an electrical connection from said ground trace to said metal portion.

5,608,612

ELECTRONIC DEVICE HAVING A FAIL-SAFE SYSTEM FOR MEMORY BACKUP

Shigeyuki Hokao, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,457
Claims priority, application Japan, Sep. 27, 1994, 6-231814
Int. Cl.[6] H01M *2/10*
U.S. Cl. 361—814 **7 Claims**



1. An electronic device using an operation battery and a memory backup battery comprising:

a device body having a first accommodating portion in which said operation battery is accommodated and a second accommodating portion in which said memory backup battery is accommodated; and

preventing means for preventing said memory backup battery accommodated in said second accommodating portion from being removed from said second accommodating portion when said operation battery is not accommodated in said first accommodating portion and enabling the memory backup battery accommodated in said second accommodating portion to be removed from said second accommodating portion under the condition that said operation battery is accommodated in said first accommodating portion, wherein said preventing means includes a closure member which is moved by the insertion of said operation battery into said first accommodating portion, to a position whereat the closure member uncovers said memory backup battery accommodated in said second accommodating portion and resilient means which normally moves the closure member to a position which covers at least a part of the memory backup battery accommodated in said second accommodating portion when said operation battery is removed from the first accommodating portion.

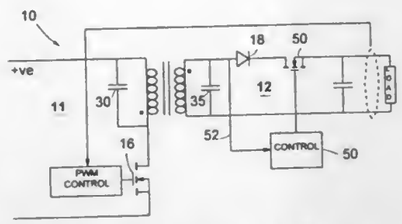
5,608,613

FLYBACK CONVERTER

Arian Jansen, Crolles, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 675,300
Claims priority, application European Pat. Off., Jul. 31, 1995, 95410075
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **13 Claims**

1. A flyback converter comprising an input circuit coupled to an output circuit through an energy storing transformer that has primary and secondary windings each with main and leakage inductances; the input circuit comprising a switching device connected to regulate energisation of said primary winding, and control means for controlling the cyclic turning on and off of the switching



device; and the output circuit comprising a diode connected in series with said secondary winding, and a reservoir capacitor connected in parallel with the series combination of the secondary winding and diode and across which the converter output is produced; characterised in that first and second tuning capacitances are provided that parallel, in ac terms, said primary and secondary windings respectively, these tuning capacitances having values such that:

with the diode in a conducting state a first resonant circuit is formed, with resonant frequency F_R, in which the primary leakage inductance and said first tuning capacitance play significant pans, and

with the diode in a non-conducting state a second resonant circuit is formed, with resonant frequency substantially equal to said frequency F_R, in which the primary leakage inductance and said second tuning capacitance play significant parts but for which there exists a voltage/current phase relationship either side of resonance that is anti-phase to that for said first resonant circuit;

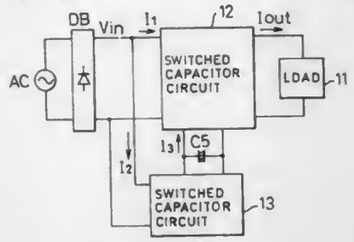
the output circuit including a non-linear device operative to combine the anti-phase components of ringing produced by said first and second resonant circuits following turn off of the switching device, whereby energy stored in the primary leakage inductance is at least partially transferred to the secondary circuit and converted into a dc component of the converter output.

5,608,614

POWER CONVERTER

Masahito Ohnishi; Shozo Kataoka; Takashi Kanda; Takashi Yamasaki, and Kazuo Yoshida, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 26, 1994, Ser. No. 280,552
Claims priority, application Japan, Jul. 27, 1993, 185361
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 **14 Claims**



1. A power converter comprising:

a power source providing an instantaneous voltage having a waveform that fluctuates;

first power converting means including at least a plurality of capacitors and switching elements;

a load circuit connected to an output of said first power converting means;

second power converting means including an accumulating capacitor for accumulating power supplied in a period when the instantaneous voltage provided by said power source is higher than a predetermined voltage and discharging the accumulated power to said load circuit in a period when the instantaneous voltage provided by said power source is lower than the predetermined voltage; and

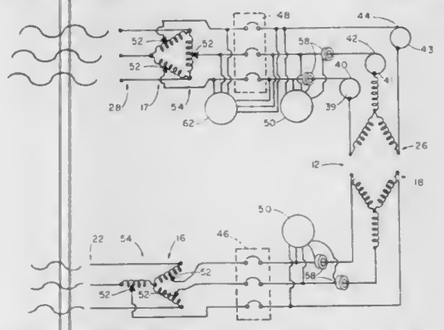
control means for causing a predetermined output voltage to be provided from each of said first and second power converting means to said load circuit and rendering a composite current waveform of respective currents taken up by the first and second power converting means to be substantially similar to the waveform of the instantaneous voltage provided by said power source.

5,608,615

ASYNCHRONOUS INTERGRID TRANSFER APPARATUS

John W. Luce, 1030 S. Sterling Ave., Tampa, Fla. 33629

Filed Mar. 11, 1996, Ser. No. 613,481
Int. Cl.[6] H02M *1/20*
U.S. Cl. 363—102 **24 Claims**



1. Apparatus transferring electric power between two polyphase electric circuits, the apparatus comprising a rotating machine and a torque motor, the rotating machine comprising

a first set of windings having a predetermined number of poles, the first set of windings electrically connected to a first of the circuits and generating a first rotating magnetic field having a predetermined direction of rotation about an axis, and

a second set of windings having the predetermined number of poles, the second set of windings electrically connected to the second circuit and generating a second rotating magnetic field having the predetermined direction of rotation; and

connection means operatively connecting the torque motor intermediate the two sets of windings so as to apply a torque therebetween, the torque applied to the second set of windings having the predetermined rotational direction when electric power is transferred from the first circuit to the second circuit, the torque oppositely directed when electric power is transferred from the second circuit to the first circuit.

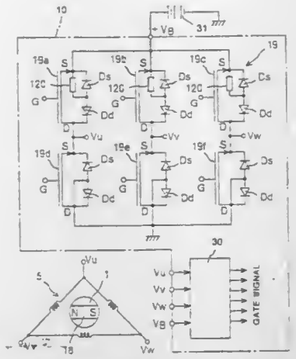
5,608,616

POWER CONVERTER

Atsushi Umeda, Anjo; Norihito Tokura, Okazaki, and Hirohide Sato, Toyokawa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 7, 1994, Ser. No. 351,027
Claims priority, application Japan, Dec. 7, 1993, 5-306782; Dec. 13, 1993, 5-312161
Int. Cl.[6] H01L *29/10*
U.S. Cl. 363—132 **18 Claims**

1. A power converter for an AC generator for motor vehicles for converting a generated voltage of the AC generator driven by an engine into a DC voltage to feed to a battery, comprising at least one of:



1) a first group of high-side MOS power transistors for connecting an output end of an armature coil which generates said generated voltage with a high potential end of said battery; and

2) a second group of low-side MOS power transistors for connecting said output end with a low potential end of said battery, wherein:

said high-side and/or said low-side MOS power transistors each have a source region, a well region, and a drain region; and

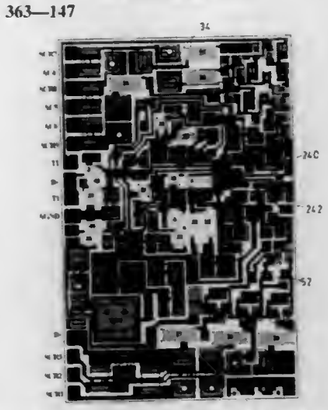
each transistor in at least one of said first group and said second group of MOS power transistors has a high resistance connected in parallel with either a parasitic diode generated between said source region and well region or a parasitic diode generated between said drain region and well region for preventing conductance of current through said parasitic diode.

5,608,617

HIGH POWER MINIATURE DEMAND POWER SUPPLY

James S. Morrison, Arcade; Joseph Niescierenko, Rochester, and Kalman F. Zsamboky, Victor, all of N.Y., assignors to Zecal Incorporated, Churchville, N.Y.

Filed May 3, 1996, Ser. No. 642,463
Int. Cl.[6] H02M *1/08*
U.S. Cl. 363—147 **14 Claims**



1. A miniature power supply and voltage regulator comprised a ceramic substrate comprising a top surface and bottom surface, a first layer of conductive metal bonded to said top surface, and a second layer of conductive metal bonded to said bottom surface, wherein said power supply and voltage regulator is comprised of a first means for converting alternating current to direct current, a second means for converting alternating current to direct current, a

means for determining the current demands of a load, and a means for delivering said current demands to said load, and wherein:

(a) said power supply and voltage regulator has a power handling capability of at least 23 watts per square inch of surface area of said top surface,

(b) a first heterogeneous juncture bond exists between said first layer of conductive metal and said top surface,

(c) a second heterogeneous juncture band exists between said second layer of conductive metal and said bottom surface,

(d) each of said first heterogeneous juncture band and said second heterogeneous juncture band has a metal-wetted surface area that is at least about twice the apparent surface area of the copper overlying the juncture band and consists essentially of ceramic grains unitary with said ceramic substrate and conductive metal unitary with said copper layer and being constituted by finger-like copper protuberances unitary with the copper layer and occupying the space between the ceramic grains of said ceramic,

(e) said ceramic substrate has a thickness of at least about 10 mils,

(f) each of said first layer of conductive metal and said second layer of copper has a thickness of at least about 3.5 mils and is comprised of at least about 98 weight percent of conductive metal, and

(g) the thickness of each of said first layer of conductive metal and said second layer of conductive metal is at least 0.3 times as great as the thickness of said ceramic substrate.

5,608,618

METHOD OF MANUALLY FEEDING COORDINATE SYSTEM AND ROBOT CONTROL DEVICE

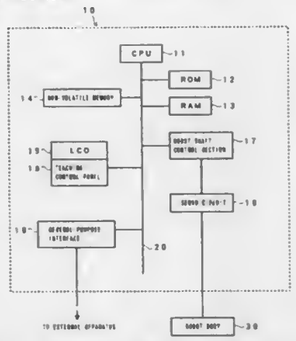
Tetsuya Kosaka, and Seigou Katou, both of Minamitsuru-gun, Japan, assignors to Fanuc Limited, Yamanashi, Japan

Filed Mar. 2, 1995, Ser. No. 397,471

Claims priority, application Japan, Mar. 8, 1994, 6-062131

Int. Cl.[6] G05B *19/18*

U.S. Cl. 364—167.01 **4 Claims**



1. A method of manually feeding, by using a robot control device connected to a robot, a coordinate system set in the robot control device, comprising the steps of:

specifying a target coordinate system for the manual-feed;

selecting a reference coordinate system to manually feed the specified target coordinate system from among the specified target coordinate system itself and other coordinate systems set in the robot control device;

successively inputting the content of the manual-feed according to said reference coordinate system into the robot control device;

successively moving said specified target coordinate system in response to the content of the successive manual-feed; and

successively causing said robot to move equivalently to the successive movement.

5,608,619

ROBOT CONTROL SYSTEM

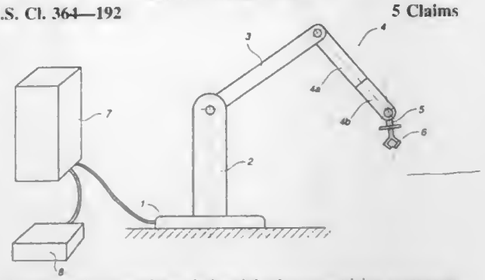
Håkan Brantmark; Peter Eriksson; Sven-Erik Johansson, and Ingemar Reyier, all of Västerås, Sweden, assignors to Asea Brown Boveri AB, Västeras, Sweden

Filed Mar. 13, 1995, Ser. No. 402,502

Claims priority, application Sweden, Mar. 25, 1994, 9401012

Int. Cl.[6] G05B *19/42*

U.S. Cl. 364—192 **5 Claims**



1. A control system for an industrial robot comprising a program executor and a program storage arranged for storing and executing a user program including a series of robot instructions, wherein at least one of the robot instructions is a shell instruction which constitutes a call to a shell routine comprising:

a forward list comprising a first set of robot instructions;

a backward list comprising a second set of robot instructions;

the shell routine being associated with a number of optional attributes which may be activated or deactivated; and

the program executor is adapted for running the user program forward to execute the shell instruction in accordance with the forward list and for running the user program backwards, to execute the shell instruction in accordance with the backward list.

5,608,620

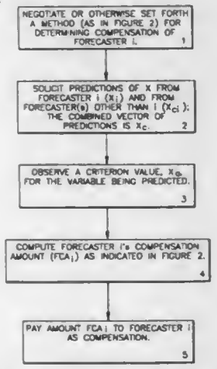
METHOD OF ELICITING UNBIASED FORECASTS BY RELATING A FORECASTER'S PAY TO THE FORECASTER'S CONTRIBUTION TO A COLLECTIVE FORECAST

Carl A. Lundgren, 1212 W. Jefferson, Apt. A, Springfield, Ill. 62702

Continuation of Ser. No. 292,508, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 8,340, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 841,258, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 495,772, Mar. 19, 1990, abandoned. This application Feb. 17, 1995, Ser. No. 390,231

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—201 **21 Claims**



1. A method of soliciting unbiased forecasts of an unknown variable value from an individual forecaster and from one or more secondary forecasters, which for said individual forecaster the method comprises the steps of:

a) soliciting a prediction of said unknown variable value from said individual forecaster;

b) soliciting predictions of said unknown variable value from said secondary forecasters;

c) aggregating the predictions of said individual forecaster and said secondary forecasters using a first aggregator function to obtain a collective prediction;

d) aggregating the predictions of said secondary forecasters using a second aggregator function to obtain a secondary collective prediction;

e) observing a criterion value for said unknown variable value being predicted;

f) computing a collective loss using a loss function having said criterion value and said collective prediction as arguments of said loss function;

g) computing a secondary collective loss using said loss function with said criterion value and said secondary collective prediction as arguments of said loss function;

h) computing said individual forecaster's marginal contribution by subtracting the collective loss from the secondary collective loss;

i) computing said individual forecaster's compensation amount as a monotonic transformation of said forecaster's marginal contribution; and

j) paying said individual forecaster compensation equal to the value of said individual forecaster's compensation amount.

5,608,621

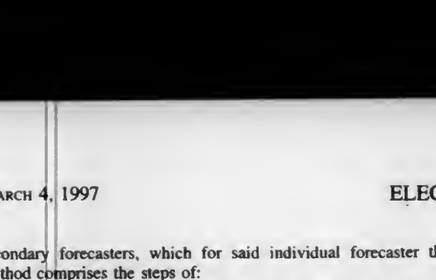
SYSTEM AND METHOD FOR CONTROLLING THE NUMBER OF UNITS OF PARTS IN AN INVENTORY

Jack Caveney, Hinsdale, and James Winger, Tinley Park, both of Ill., assignors to Pandult Corporation, Tinley Park, Ill.

Filed Mar. 24, 1995, Ser. No. 410,342

Int. Cl.[6] G06F *153/00*

U.S. Cl. 395—216 **21 Claims**



1. A computer system for automatically controlling the number of units of each of a plurality of different parts in an inventory having a predetermined inventory investment constraint, the computer system comprising:

means for receiving part data for each part in the inventory, the part data for each part including the number of units of the part in the inventory, the cost of the part, and a historical average ratio of units per order for the part, each order being for at least one unit of the part;

means for storing the part data for each part;

means for inputting a plurality of part service levels for each part, each part service level for each part representing an expected fraction of the orders for the part which can be filled from the inventory;

means for retrieving the part data for each part and for determining a part data table for each part which relates forecast data for the part to the part data for the part and the plurality of part service levels for the part, the forecast data for each part including a forecast unit demand for the part and an average number of units of the part for each of the plurality of part service levels for the part;

means for storing the part data table for each part;

means for retrieving the part data table for each part and for determining a slope table for each part which relates each of the plurality of part service levels for the part to an expected number of fillable-from-stock orders for the part and a slope for the part, each expected number of fillable-from-stock orders for the part being the product of the corresponding part service level and the ratio of the forecast unit demand for the part to the historical average ratio of units per order for the part, each slope for the part being the ratio of the change in the corresponding expected number of fillable-from-stock orders for the part to the change in the ratio of the corresponding average number of units of the part expected to be in the inventory to the historical average ratio of units per order for the part;

means for storing the slope table for each part;

means for retrieving the slope tables for all the parts and for determining a slope which is common to each slope table and for which the sum of expected part investments for each part corresponding to the slope is equal to the inventory investment constraint, each expected part investment being the product of the corresponding average number of units of the part expected to be in the inventory and the cost of the part;

means for determining a minimum unit replenishment quantity and a safety unit quantity for each part capable of effecting the part service level for the part corresponding to the determined common slope;

means for outputting the minimum unit replenishment quantity and the safety unit quantity for each part; and

means for ordering the minimum unit replenishment quantity for at least one of the parts from a supply source when the number of units of the part in the inventory is less than or equal to the safety unit quantity.

5,608,622

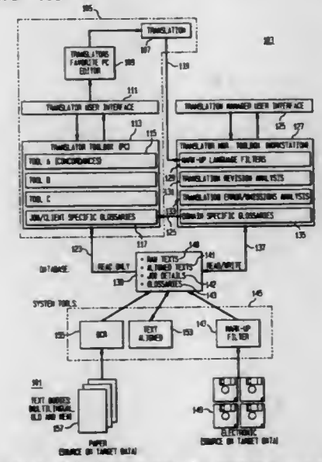
SYSTEM FOR ANALYZING TRANSLATIONS

Kenneth W. Church, Chatham, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 11, 1992, Ser. No. 944,148

Int. Cl.[6] G06F *17/28*

U.S. Cl. 395—753 **22 Claims**



1. Translation analysis apparatus, the apparatus operating on first and second integral unaligned texts where the second text is at least in part a translation of at least a portion of a first text, the apparatus comprising:

means for storing a set of pairs of locations, each pair of locations including a first location in the first integral unaligned text and a second location in the second integral unaligned text that is in the neighborhood of the translation of the first location, the set of pairs of location being markers;

means for responding to a specification of a given location in the first text by employing positioning from the set of pairs of locations to determine a specification of a corresponding location in the second text that is in the neighborhood of the translation of the given location in the first location, by using the positioning from the set of pairs of locations; and

concordance making means for finding a first set of locations of a term in the first text, making a second set of the corresponding locations in the neighborhood of a corresponding term translation in the second text by providing the locations in the first set thereof to the responding means, and making the concordance using the term location in the first set and the corresponding term location in the second set.

5,608,623

SPECIAL COOCCURRENCE PROCESSING METHOD AND APPARATUS

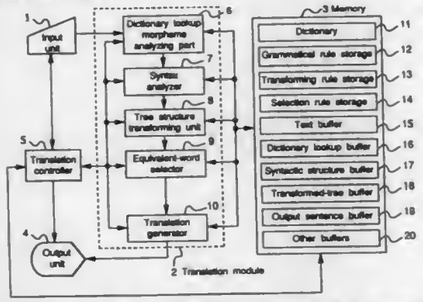
Ichiko Sata, Nara, and Yoji Fukumochi, Kobe, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1994, Ser. No. 242,670

Claims priority, application Japan, May 14, 1993, 5-113412

Int. Cl.[6] G06F *17/27*

U.S. Cl. 395—754 **22 Claims**



1. An apparatus for processing cooccurrence of a plurality of words in a first language, with a dependency relation among the plurality of words, when the first language is converted into a second language, comprising:

language information storage means for storing entry words in the first language, representing respective words in the first language, and equivalent words of the entry words in the second language, in pairs, wherein a first pair of entry and equivalent words is stored separate from another pair of entry and equivalent words which may cooccur with the first pair, the first and another pair being associated by a cooccurrence code imparted to and stored with each of the associated first and another pairs, wherein a word in the first language represented by the entry word of the first pair is a dominant word and a word in the first language represented by the entry word of the associated another pair is a subordinate word syntactically dependent on the dominant word; and

first search means for, upon receipt of the entry word in one of the first and another associated pairs of entry and equivalent words, searching the language information storage means for the other of the first and another associated pairs of entry and equivalent words using the imparted cooccurrence code.

5,608,624

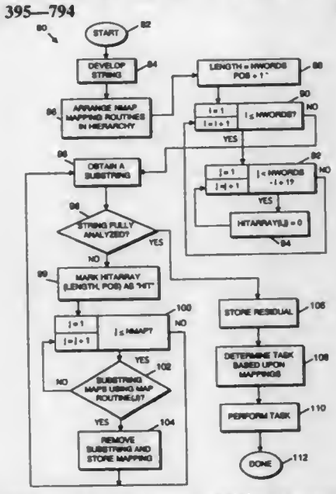
METHOD AND APPARATUS FOR PROCESSING NATURAL LANGUAGE

William W. Luciw, Morgan Hill, Calif., assignor to Apple Computer Inc., Cupertino, Calif.

Continuation of Ser. No. 215,064, Mar. 18, 1994, Pat. No. 5,434,777, which is a continuation-in-part of Ser. No. 889,225, May 27, 1992, Pat. No. 5,390,287, and a continuation-in-part of Ser. No. 99,861, Jul. 30, 1993, Pat. No. 5,477,447. This application May 15, 1995, Ser. No. 441,076

Int. Cl.[6] G06F *15/38;* **G06G** *7/60*

U.S. Cl. 395—794 **28 Claims**



1. A computer-readable medium containing program instructions for deducing meaning from a natural language input, said program instructions performing steps comprising:

(a) receiving an ordered string of separate word objects of a selected language, where each of said word objects includes at least one alphanumeric character and is delimited from an adjacent word object, said ordered string having a length equal to the number of said word objects and having a natural language meaning;

(b) selecting a word window length that is initially at least two and that is no greater than said length of said ordered string;

(c) successively moving said word window along said ordered string, and removing a substring of word objects that fall within said word window from said ordered string when said substring has a recognized meaning, until all substrings of said ordered string that fit within said window have been analyzed; and

(d) adjusting said word window length and repeating step (c) until only an unrecognized residual of word objects of said ordered string remains.

5,608,625

SYSTEM AND METHOD FOR FORMATTING POSITION-SENSITIVE DATA

Wayne P. Bailey, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,333

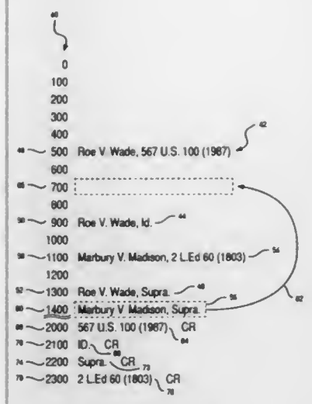
Int. Cl.[6] G06F *17/24;3/14*

U.S. Cl. 395—793 **2 Claims**

1. A computerized method for modifying data in position-sensitive fields of a document, comprising the steps

scanning the document to detect position-sensitive fields;

maintaining a table of data associated with said position-sensitive fields:



entering records each corresponding to one said position-sensitive fields in said table, each of said records having associated therewith in said table

a group;

a group element;

an offset;

a number corresponding to a total number of position-sensitive rules to which said records in a respective group in said table must comply;

a current string pointer; and

a plurality of pointer each associated with a different one of said rules;

detecting a change of relative position of said fields; and

modifying said table in response to said detecting.

5,608,626

DRIVE SHAFT TORQUE CONTROLLING APPARATUS FOR USE IN A VEHICLE HAVING A POWER TRANSMISSION MECHANISM AND METHOD THEREFOR

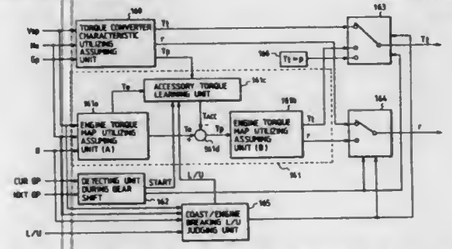
Masahiko Ibamoto, Katsuta; Kazuhiko Sato, Hitachioota; Mitsuyoshi Okada, Katsuta; Hiroshi Kuroiwa, Hitachi; Toshimichi Minowa, Tokai-mura; Kazuhiko Yamaguchi, and Naoyuki Ozaki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Mar. 25, 1994, Ser. No. 217,861

Claims priority, application Japan, Mar. 26, 1993, 5-068846; Apr. 28, 1993, 5-103166

Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—424.08 **28 Claims**



1. In a drive shaft torque controlling apparatus for use in a vehicle comprising an engine, an automatic transmission having a torque converter, and a controlling apparatus installing at least one microcomputer therein and for controlling said automatic transmission, wherein

the drive shaft torque controlling apparatus comprises

a detecting means for detecting input information such as an engine speed, a throttle opening degree and an output shaft speed and a gear position signal of said automatic transmission; and

an executing and assuming means for determining numerical values of an output shaft torque and an input/output rotation velocity ratio between an input shaft side rotation velocity and an output shaft side rotation velocity of said automatic transmission so as to control said engine and said automatic transmission through said input information, an engine characteristic map, a torque converter characteristic, a calculation formulas relating to an input shaft speed of said automatic transmission, a slip ratio of said automatic transmission, an input torque of said torque converter, and an accessory of said engine, and an accessory torque defined by a deviation value between a torque assumed from said engine characteristic map and a torque assumed from said torque converter characteristic.

5,608,627

DEVICE FOR SUPERVISING THE PROPULSION SYSTEM OF AN AIRCRAFT

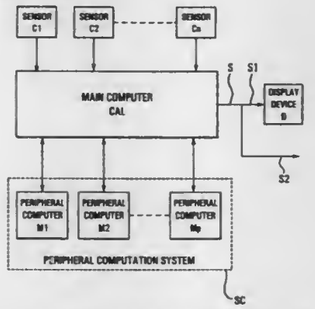
Pierre Lecomte, Aureville, and Laurent Coquin, Toulouse, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, and Aerospatiale Protection Systemes APSYS, Mantes-la-Jolie, both of France

Filed Sep. 19, 1994, Ser. No. 308,427

Claims priority, application France, Sep. 17, 1993, 93 11100

Int. Cl.[6] G06F *11/00*

U.S. Cl. 364—424.012 **2 Claims**



1. A device for supervising the propulsion system of an aircraft, said propulsion system having a plurality of sub-systems and said supervising device comprising:

a plurality of sensors sensing parameter values of said propulsion system;

a plurality of peripheral computers, eacb implementing a mathematical model representing one of said sub-systems; and

a main computer connected to said sensors and to said peripheral computers, said main computer:

(a) coordinating the computation of said peripheral computers;

(b) checking the mutual compatibility of the parameter values sensed by said sensors;

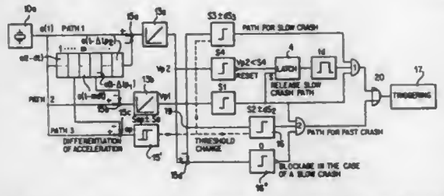
(c) checking the compatibility of said parameter values sensed by said sensors in relation with said mathematical models; and

(d) signalling any detected incompatibility of steps (b) and (c).

5,608,628
PROCESS AND APPARATUS FOR DETECTING VEHICLE IMPACT

Johannes Drexler, Dasing; Alfons Wöhri, Schrobenhausen; Heinz Bader, Karshuld; Andreas Bernitt, Schrobenhausen; Hans Spies, Pfaffenhofen; Günter Fendt, and Peter Hora, both of Schrobenhausen, all of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Germany

Continuation of Ser. No. 891,042, Jun. 1, 1992, abandoned.
This application Aug. 4, 1994, Ser. No. 284,990
Claims priority, application Germany, May 31, 1991, 41 17 811.4
Int. Cl.[6] B60R *21/32;21/08*
U.S. Cl. 364—424.055 **3 Claims**



1. Process for detecting an impact of a motor vehicle equipped with an occupant restraint system having a triggering circuit which activates a primer of said restraint system only after a predetermined impact has been detected, said process comprising the steps of:

measuring positive and negative acceleration of said motor vehicle during a succession of predetermined equal time intervals to determine an acceleration value for each of said time intervals;

storing said acceleration values for each of said predetermined equal time intervals in a computer memory;

determining first and second difference acceleration values for each of said predetermined equal time intervals, said first and second difference acceleration values being equal to a difference between an acceleration value determined for a current time interval and acceleration values determined for respective first and second prior time intervals which precede said current time interval by respective first and second delay periods;

integrating said first and second difference acceleration values to determine first and second difference speed values for each said time interval;

comparing said first difference speed value with a first threshold value to detect a vehicle impact;

comparing said first difference speed value with at least a second threshold value to distinguish between fast and slow impact; and

upon detection of a vehicle impact, activating said triggering circuit based on said first difference speed value, said second difference speed value and a result of said comparing of said first speed difference value with said at least a second threshold value.

5,608,629
VEHICLE CRASH DATA GENERATOR

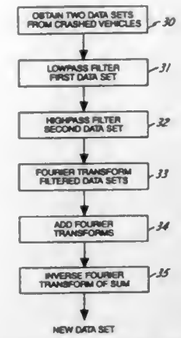
Mark A. Cuddihy, New Boston; J. B. Drummond, Jr., Southfield, and Daniel J. Bourquin, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 365,381
Int. Cl.[6] B60R *21/00;* **G06F** *7/06*
U.S. Cl. 364—423.098 **11 Claims**

1. A method of obtaining crash data from vehicle crashes comprising the steps of:

recording first acceleration signals during a crash of a first vehicle;

recording second acceleration signals during a crash of a second vehicle;



generating a first frequency domain signal by filtering and transforming said first acceleration signals, said first frequency domain signal being substantially limited to frequencies below a predetermined cutoff frequency;

generating a second frequency domain signal by filtering and transforming said second acceleration signals, said second frequency domain signal being substantially limited to frequencies above said predetermined cutoff frequency;

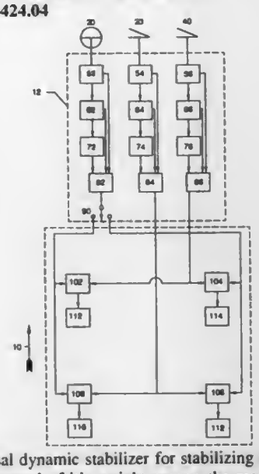
adding said first frequency domain signal and said second frequency domain signal to produce a composite signal; and

inverse transforming said composite signal to generate hybrid crash data having characteristics of both of said crashes of said first vehicle and said second vehicle.

5,608,630
UNIVERSAL DYNAMIC STABILIZER

Avenir P. Poelouev, 33 Chertanovskaya Str., Bldg. 1, Apt. 217, Moscow, Russian Federation

Filed Feb. 17, 1995, Ser. No. 390,766
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—424.04 **14 Claims**



1. A universal dynamic stabilizer for stabilizing means of transport through control of it's weight proper, the means of transport having a direction control mechanism, a braking mechanism and an acceleration mechanism, the universal dynamic stabilizer comprising:

a first channel connected to the direction control mechanism;

a second channel connected to the braking control mechanism;

a third channel connected to the acceleration control mechanism;

a first control position sensor for sensing the position of the direction control mechanism and producing a linear signal proportional to the position of the direction control mechanism;

a second control position sensor for sensing the position of the braking control mechanism and producing a linear signal proportional to the position of the braking control mechanism;

a third control position sensor for sensing the position of the acceleration control mechanism and producing a linear signal proportional to the position of the acceleration control mechanism;

a first first-derivative circuit having as an input the signal produced by the first control position sensor and producing a signal proportional to the first derivative of the signal produced by the first control position sensor;

a second first-derivative circuit having as an input the signal produced by the second control position sensor and producing a signal proportional to the first derivative of the signal produced by the second control position sensor;

a third first-derivative circuit having as an input the signal produced by the first control position sensor and producing a signal proportional to the first derivative of the signal produced by the third control position sensor;

a first second-derivative circuit having as an input the signal produced by the first first-derivative circuit and producing a signal proportional to the second derivative of the signal produced by the first control position sensor;

a second second-derivative circuit having as an input the signal produced by the second first-derivative circuit and producing a signal proportional to the second derivative of the signal produced by the second control position sensor;

a third second-derivative circuit having as an input the signal produced by the third first-derivative circuit and producing a signal proportional to the second derivative of the signal produced by the third control position sensor;

a first summator having as inputs the signals produced by the first control position sensor, the first first-derivative circuit and the first second-derivative circuit and having an output;

a second summator having as inputs the signals produced by the second control position sensor, the second first-derivative circuit and the second second-derivative circuit and having an output;

a third summator having as inputs the signals produced by the third control position sensor, the third first-derivative circuit and the third second-derivative circuit and having an output;

a direction switch having as an input the output of the first summator and having a first output and a second output;

a first summator converter having as inputs the first output of the direction switch and the output of the third summator and producing a first control signal;

a second summator converter having as inputs the first output of the direction switch and the output of the second summator and producing a second control signal;

a third summator converter having as inputs the second output of the direction switch and the output of the third summator and producing a third control signal;

a fourth summator converter having as inputs the second output of the direction switch and the output of the second summator and producing a fourth control signal;

a first suspension mechanism controlled by the first control signal, the first suspension mechanism suspending primarily the left front end of the means of transport, the first control signal for controlling the first suspension mechanism;

a second suspension mechanism controlled by the second control signal, the second suspension mechanism suspending primarily the left rear end of the means of transport, the second control signal for controlling the second suspension mechanism;

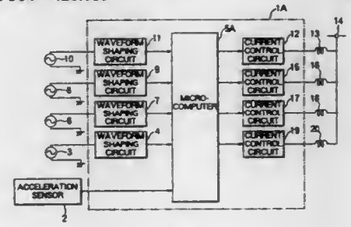
a third suspension mechanism controlled by the third control signal, the third suspension mechanism suspending primarily the right front end of the means of transport, the third control signal for controlling the third suspension mechanism; and

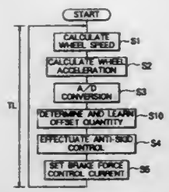
a fourth suspension mechanism controlled by the fourth control signal, the fourth suspension mechanism suspending primarily the right rear end of the means of transport, the fourth control signal for controlling the fourth suspension mechanism, whereby the means of transport is provided with additional dynamic stability especially during operations including turning, braking and accelerating the means of transport by increasing or decreasing normal forces corresponding to the weight proper of the means of transport acting on the first, second, third and fourth suspension mechanisms by shifting the center of gravity of the means of transport appropriately and according to the first, second, third and fourth control signals produced by the first, second, third and fourth summator converters.

5,608,631
APPARATUS AND METHOD FOR DETECTING ACCELERATION OF MOTOR VEHICLE WITH HIGH ACCURACY AND ANTI-SKID CONTROL APPARATUS USING THE SAME

Kazumichi Tsutsumi, and Takahiro Nishimura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1994, Ser. No. 209,875
Claims priority, application Japan, Mar. 16, 1993, 5-055583; Mar. 16, 1993, 5-055584
Int. Cl.[6] B60T *8/72*
U.S. Cl. 364—426.018 **32 Claims**





1. An apparatus for determining acceleration of a motor vehicle, comprising:

an acceleration sensor for generating a signal representing acceleration of said motor vehicle;

wheel speed sensor means for generating wheel speed signals indicating wheel speeds of individual wheels of said motor vehicle;

a first module for determining a mean value of the output signal of said acceleration sensor over a predetermined period in the running state of said motor vehicle during which said motor vehicle is determined, by reference to said wheel speed sensor means, to be making a substantially straight drive at a substantially constant speed on a substantially level ground surface, to thereby output a signal indicating an offset factor of said acceleration sensor; and

a second module for determining acceleration of said motor vehicle during operation periods subsequent to said predetermined period by subtracting said offset factor from the output of said acceleration sensor to generate a signal representing the corrected acceleration.

5,608,632

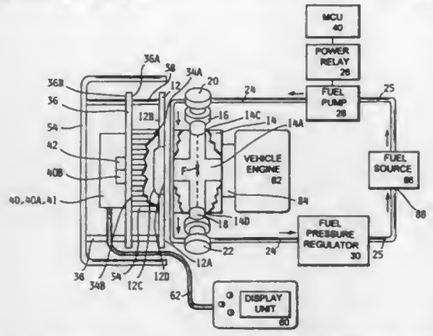
SELF-CONTAINED SEQUENTIAL-THROTTLE-BODY-INJECTION ENGINE CONTROL SYSTEM

Robert M. White, P.O. Box 337, Arroyo Grande, Calif. 93421

Filed Oct. 19, 1993, Ser. No. 139,503

Int. Cl.[6] G06G *7/70*; **F02M** *51/00*

U.S. Cl. 364—431.051 **17 Claims**



1. A self-contained sequential-throttle-body-injection engine control system comprising:

A. a sequential throttle body fuel injection subsystem comprising:

a) a throttle body having an inward side and an outward side, where the inward side is attached to the intake manifold of the engine, and the outward side is attached to an inward side of a backing plate also having an outward side that is attached to an inward side of a cover plate further having an outward side that via a plurality of standoffs, attaches to a cover, said throttle body further comprising:

(1) a throat therethrough,

(2) a first fuel injection port that is angularly displaced inwardly from the periphery of said throttle body into the throttle body into the throat as measured from a frontal horizontal plane, and

(3) a second fuel injection port that is also angularly displaced inwardly from the periphery of said throttle body into the throat as measured from the frontal horizontal plane,

b) a first fuel injector having an output port and an input port where the output port is attached to the first fuel injection port on said throttle body,

c) a second fuel injector having an output port and an input port where the output port is attached to the second fuel injection port on said throttle body, where said first and second fuel injectors when attached, do not intrude into the throttle body air stream and are angularly displaced to allow the fuel stream emitted from each said injector to impinge at a common point (F), located on the extended centerline of the throat of said throttle body,

d) a first fuel cap having a fuel injector attachment port, an input port and an output port, where the fuel injector attachment port is attached to the input port on said first fuel injector,

e) a second fuel cap having a fuel injector attachment port, an input port and an output port, where the fuel injector attachment port is attached to the input port on said second fuel injector,

f) means for connecting the output port of said first fuel cap to the input port of said second fuel cap,

B. at least one fuel pump having an input port, an output port and a power input, where the input port is connected to a fuel source by means of a low pressure hose and the output port is connected by means of a high pressure hose to the input port on said first fuel cap,

C. at least one fuel pressure regulator having an input port connected to the output port of said second fuel cap and an output port connected to a fuel source return sink,

D. a plurality of analog or digital sensors attached by an attachment means at critical locations of said subsystem, where each said sensor produces an output signal corresponding to a system measured parameter,

E. a spark coil attached to the vehicle engine and having a power input, and

F. a master control unit attached to the outward side of said cover plate within the confines of said cover, and having electronic circuit means for receiving the output signals from said plurality of sensors add providing a spark coil signal that is applied to the power input of said spark coil, where said master control unit functions in combination with a microprocessor that operates with a firmware to control the operation of said system.

5,608,633

SYSTEM AND METHOD FOR DETECTING KNOCKING FOR INTERNAL COMBUSTION ENGINE

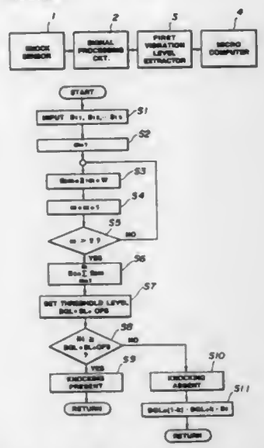
Yoshihiro Okada, Yokohama, and Shuhei Yamashita, Miuragun, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 921,809, Jul. 29, 1992, abandoned. This application Jan. 19, 1995, Ser. No. 384,611

Claims priority, application Japan, Jul. 29, 1991, 3-188782; Jul. 29, 1991, 3-188783

Int. Cl.[6] F02P *5/14*

U.S. Cl. 364—431.08 **38 Claims**



1. A system for detecting and determining an engine knocking for an internal combustion engine comprising:

a) knocking vibration sensing means, installed on the engine, for sensing engine vibrations and outputting an engine vibration detection signal indicative of the engine vibrations, said engine vibration detection signal being output during a predetermined interval of time in each combustion stroke of respective cylinders;

b) first means for extracting first vibration levels for a plurality of frequency components of the engine vibration detection signal and for generating second vibration levels corresponding thereto;

c) second means for deriving a sum of the second vibration levels of the respective frequency components as a third vibration level; and

d) third means for comparing the sum derived by said second means with a preset threshold level and outputting a knock occurrence signal when said sum exceeds the threshold level;

wherein said first means comprises a plurality of bandpass filters connected in parallel to each other and connected to said knocking vibration sensing means;

wherein said threshold level is set using the following: {BGL×SL+OFS}, wherein BGL denotes a weight mean value of a previous value and a present value of the third vibration level S_3, SL denotes a threshold value, and OFS denotes an offset quantity;

wherein said first means includes an engine crankshaft rotation sensor for detecting an engine revolution speed by detecting an engine crankshaft rotation and outputting a crank angle signal indicating the engine revolution speed and wherein said threshold value SL is set larger as the engine revolution speed is increased;

wherein said third means determines that the engine knocking occurs when the third vibration level S_3 equals or is larger than {BGL×SL+OFS}; and

wherein said third means determines that no knocking occurs when S_3<{BGL×SL+OFS}, and thereafter said third means calculates and updates the BGL as follows: $BGL=(1-k)\cdot BGL+k\cdot S_3$, wherein k denotes a weight coefficient of the present value of BGL with respect to the previous value of BGL.

5,608,634

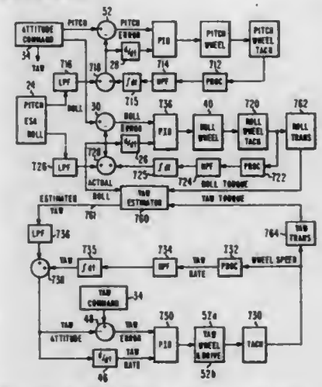
LOW NOISE SPACECRAFT BODY RATE SENSING ARRANGEMENT FOR ATTITUDE CONTROL

Neil E. Goodzeit, East Windsor, and Michael A. Paluszek, Lawrenceville, both of N.J., assignors to Martin Marietta Corp., East Windsor, N.J.

Filed Jun. 12, 1992, Ser. No. 897,489

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—424.013 **18 Claims**



1. A spacecraft attitude control system, comprising:

a wheel mounted to said body, said wheel defining an axis of rotation;

wheel speed sensing means coupled to said wheel, for generating wheel speed signals;

torquing means mounted to said body, for controllably applying torque to said body about said axis in response to torque command signals:

attitude determining means coupled to said body for generating determined attitude signals;

control means coupled to said torquing means, and for receiving coupled attitude position signals and coupled attitude rate signals, for comparing said coupled attitude position signals with commanded attitude position signals to generate attitude error signals, and for combining said attitude error signals with said coupled attitude rate signals for generating said torque command signals;

coupling means coupled to said attitude determining means, to said control means, and to said wheel speed sensing means, for processing said wheel speed signals to produce wheel-derived signals related to one of attitude position and attitude rate, and for combining portions of said wheel-derived signals lying above a particular frequency with portions of said determined attitude signals lying below said particular frequency to generate one of said coupled attitude position and coupled attitude rate signals, and for generating the other one of said coupled attitude position and coupled attitude rate signals from one of said determined attitude signals and said one of said coupled attitude position and said coupled attitude rate signals.

5,608,635

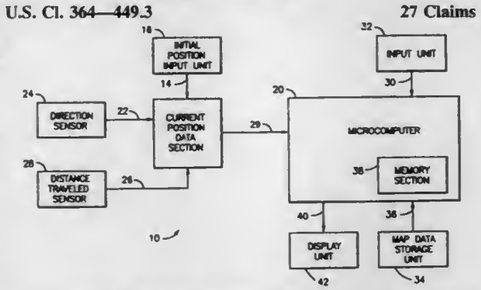
NAVIGATION SYSTEM FOR A VEHICLE WITH ROUTE RECALCULATION BETWEEN MULTIPLE LOCATIONS

Haruhisa Tamai, Sunnyvale, Calif., assignor to Zexel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 213,268, Mar. 15, 1994, abandoned, which is a continuation of Ser. No. 869,142, Apr. 14, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 341,518

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449.3 **27 Claims**



13. A vehicle navigation system that displays continuously a direction of a vehicle's motion, which comprises:

means for determining a current position of said vehicle;

means for storing and retrieving a plurality of map data;

means for partitioning said map data into a plurality of map areas;

means for entering information about at least one categorical destination;

means for selecting from one of a plurality of possible destinations in said storing means as said at least one proposed categorical destination in accordance with said information;

means, responsive to said means for entering, for selecting from said plurality of map data proposed starting points of a route for said vehicle to travel;

means, responsive to said means for selecting, for computing a plurality of proposed routes from said proposed starting points to said at least one categorical destination;

means for comparing said plurality of proposed routes from each of said proposed starting points with each other in each partitioned map area;

said means for computing being effective to choose a single one of said starting points and a single optimal one of said plurality of proposed routes therefrom such that said single starting point and said single optimal route satisfy a preselected criterion of optimality derived from at least one variable other than distance; and

means, responsive to said means for computing, for displaying a plurality of navigational data to guide said vehicle along said single optimal route from said vehicle's current position to said at least one categorical destination.

5,608,636

METHOD FOR CONTROLLING THE COLUMN-BY-COLUMN PRINTING OF A FRANKING IMAGE IN A POSTAGE METER MACHINE

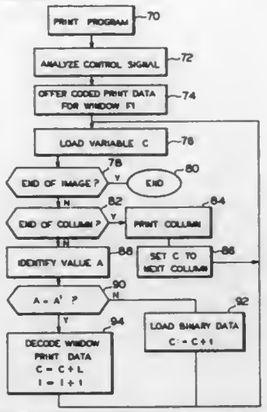
Stephen Guenther, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Jun. 21, 1994, Ser. No. 263,378

Claims priority, application European Pat. Off., Jun. 21, 1993, 93109899

Int. Cl.[6] G07B *17/00*

U.S. Cl. 364—464.18 **18 Claims**



1. A method for controlling column-by-column printing of a franking image in a postage meter machine, said franking image having invariable image contents and variable image contents, said method comprising the steps of:

maintaining said invariable image contents and said variable image contents available in encoded form for incorporation into said franking impression;

converting said invariable image contents into invariable image binary data;

converting said variable image contents into variable image binary data separately from the conversion of said invariable image contents; and

combining said invariable image binary data and said variable image binary data with each in a register only other during printing of said franking impression, and no earlier, to generate binary signals for controlling a column of print elements for printing said franking impression column-by-column with a single printhead, and supplying said binary signals from said register to said single printhead during printing of said franking impression.

5,608,637

METHOD FOR DESIGNING A PROFILE EXTRUSION DIE PLATE

Hsin-Pang Wang, Rexford, N.Y., and Srinivasu Kakulavar, Gotemba, both of Japan, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1995, Ser. No. 489,908

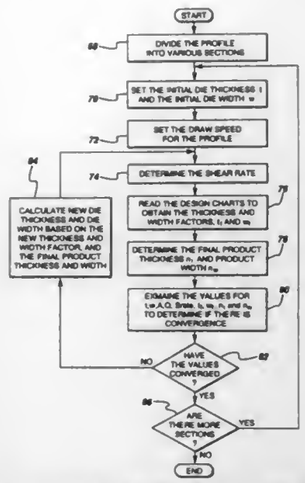
Int. Cl.[6] G06F *19/00;* **G06G** *7/64;7/66*

U.S. Cl. 364—468.03 **17 Claims**

1. A method for designing a profile extrusion die, the method comprising the steps of:

providing a representation of a product made from a polymer resin material and shaped by a die, the representation illustrating a relationship between die swell of the resin, shear rate of the resin through the die, and the ratio of die land length of the die to die opening thickness of the die;

determining from the representation instances where the ratio of die land length of the die to die opening thickness of the die minimizes die swell of the resin;



obtaining experimental data of the product and resin shaped by an experimental die, the experimental data including shear rate, draw speed, and die swell of the resin;

arranging the representation and the experimental data into a die design chart for die opening thickness and die opening width, the design chart for die opening thickness containing representations of shear rate, draw speed, and a thickness factor, the design chart for die opening width containing representations of shear rate, draw speed, and a width factor; and

using the die design chart to determine dimensions for a desired profile extrusion die.

5,608,638

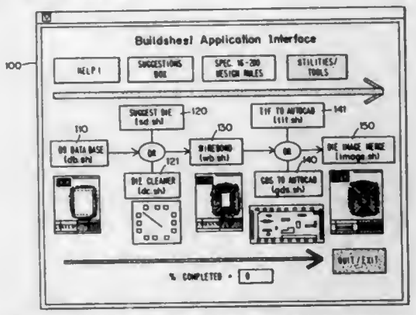
DEVICE AND METHOD FOR AUTOMATION OF A BUILD SHEET TO MANUFACTURE A PACKAGED INTEGRATED CIRCUIT

Alexander C. Tain, Milpitas; Georg Kuhnke, and Kris Shih-Yen Chou, both of San Jose, all of Calif., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Feb. 6, 1995, Ser. No. 384,262

Int. Cl.[6] G06F *19/00;17/50*

U.S. Cl. 364—468.28 **35 Claims**



1. A computer readable medium storing a set of instructions for implementing and executing an automated build sheet operation to manufacture integrated circuit (IC) packages, the set of instructions controlling a system operating in X-Windows having a computer coupled to a plurality of work stations and a database storing images of blank bond masters and die rings so as to instruct said computer to execute a plurality of steps comprising:

a first step of selecting an image file of a blank bond master having an image of a plurality of bond fingers and a die attach area;

a second step of selecting a die ring image having an image of a plurality of die pads of an IC chip; and

a third step of automatically illustrating wire connections between the die pads and bond fingers to form a bonding device diagram.

5,608,639

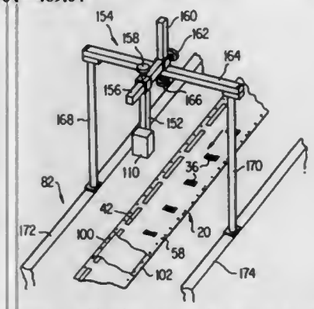
SYSTEM AND METHOD FOR PRINTING, ASSEMBLY AND VERIFYING A MULTIPLE-PART PRINTED PRODUCT

Joseph W. Twardowski, Schaumburg; Raymond J. Graham, Buffalo Grove, and Scott A. Stevens, Downers Grove, all of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jan. 13, 1995, Ser. No. 372,671

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—469.04 **45 Claims**



6. An automatic verification system for use on a collator having a plurality of stations for assembling a multiple-part printed product and a transport system for advancing the parts of said product through said stations, said verification system comprising:

a plurality of indicia sensing devices associated with said stations for sensing indicia on the parts of said product and producing outputs representing said indicia, said indicia sensing devices including first and second indicia sensing devices of different types; and

a control device connected to said plurality of indicia sensing devices, said control device being operable to cause said indicia sensing devices to sense said indicia, to store the outputs from said indicia sensing devices until the indicia for all parts of an assembled product have been sensed, and to compare said indicia to determine whether said product has been properly assembled, said control device producing a first output signal for controlling said first indicia sensing device and a second output signal different from said first output signal for controlling said second indicia sensing device.

5,608,640

NUMERICAL CONTROL METHOD AND APPARATUS THE SAME

Ietoshi Itoh, Tokyo, Japan, assignor to Sony Corporation, Japan

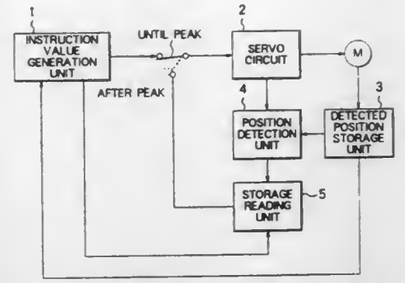
Filed Dec. 23, 1994, Ser. No. 362,908

Claims priority, application Japan, Dec. 28, 1993, 5-335798

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.3 **14 Claims**

1. A numerical control apparatus in which a position instruction signal is transmitted to a servo circuit having a certain characteristic from an instruction value generation unit based on input target position information and position information from a position detection unit detecting a movement position of an actuator and the operation of at least one actuator is controlled by this servo circuit; said numerical control apparatus comprising:



detected position storage unit storing the operation position information of said actuator detected by said position detection unit;

a storage reading unit reading out the operation position information stored in said detection position storage unit by folding back the same at a middle point of the route based on a signal from said instruction value generation unit and transmits the same to said servo circuit:

wherein a transmission signal from said instruction value generation unit is a step signal of a value (β-$\Delta\theta$) obtained by multiplying with the target amount of movement an eigen value (β) obtained so that the amount of movement up to the eigen acceleration and decleration time (Tp) of said servo circuit becomes one-half of the target amount of movement ($\Delta\theta$).

5,608,641

METHOD AND APPARATUS FOR SIMPLIFYING THE TASK OF RETRIEVING AND ACCESSING A SEGMENT OF A NUMERICAL CONTROL (NC) PROGRAM

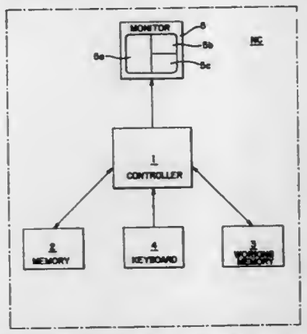
Wieland Guhl, Tacherting, and Christian Rutkowski, Traunstein, both of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Germany

Filed Aug. 29, 1994, Ser. No. 297,506

Claims priority, application Germany, Aug. 30, 1993, 43 29 016.7

Int. Cl.[6] G05B *19/00*

U.S. Cl. 364—474.22 **21 Claims**



1. A programmable, numerically controlled processing device comprising:

a controller for controlling the processing device along a path determined by a NC program having a multitude of program code lines retrieved by the controller;

a display unit having a display screen coupled to the controller;

means for inputting digital programming data to the controller;

means, included in the controller, for displaying on the display screen of the display unit at least a portion of the NC program as a series of program code lines;

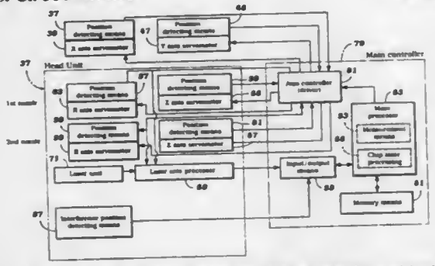
means, included in the controller, for displaying on the display screen of the display unit a plurality of descriptive NC sentences, wherein each descriptive NC sentence is assigned to a starting line of code of a group of code lines combined to form a particular subject, the plurality of NC sentences being arranged in hierarchical order wherein a plurality of groups of program code lines of the same hierarchical order are combined into a larger group of the next hierarchical order and assigning a descriptive NC sentence to a starting line of code of this larger group.

5,608,642

COMPONENT RECOGNITION METHOD AND DEVICE

Hitoshi Onodera, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 23, 1994, Ser. No. 363,692
Claims priority, application Japan, Dec. 29, 1993, 5-352710
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—478.01 **93 Claims**



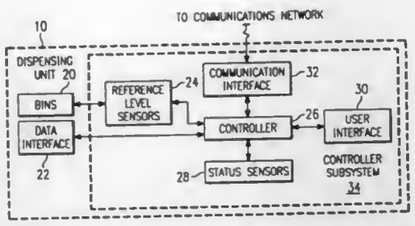
1. A component handling apparatus for accurately positioning components, said apparatus comprising a pick up portion for picking up and positioning a component, a sensing station for recognizing the orientation of said component as picked up by said pick up portion, and means for determining from the recognition both the orientation of the component relative to the pick up portion and if the component as picked up normally so that the component is oriented so that it can be positioned properly, said determination if a component as picked up can be positioned properly being made by taking a measurement of one dimension of the component, applying a correction factor based on a known error of said sensing station from said measurement of said one dimension to determine a calculated dimension and comparing the calculated dimension with a known value of the dimension and determining that the component has been picked up in a manner which is not normal if the comparison is not approximately equal.

5,608,643

SYSTEM FOR MANAGING MULTIPLE DISPENSING UNITS AND METHOD OF OPERATION

Martin A. Wichter, Arlington; Tom R. Pohrte; Jack A. Ross, both of The Colony, and Ray G. Sadler, Plano, all of Tex., assignors to General Programming Holdings, Inc., Dallas, Tex.

Filed Sep. 1, 1994, Ser. No. 300,483
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—479.14 **24 Claims**



1. A system for managing multiple dispensing units by communicating information through a communications network, the system comprising:

a plurality of dispensing units operable to transmit and receive information through the communications network, each dispensing unit comprising;

a plurality of bins each operable to hold a quantity of product;

a plurality of reference level sensors, each reference level sensor coupled to an associated bin, and each reference level sensor operable to determine when the quantity of product in the associated bin drops below a reference level that is higher than an out of stock level of the associated bin; and

a controller subsystem coupled to the plurality of bins, to the plurality of reference level sensors and to the communications network, the controller subsystem operable to monitor conditions of the dispensing unit, to transmit status messages responsive to an occurrence of one of a plurality of defined events, and to receive command messages; and

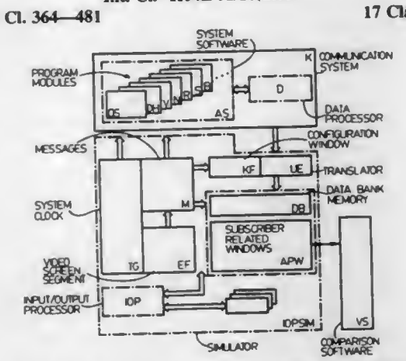
a dispensing unit controller system operable to communicate through the communications network, the dispensing unit controller system operable to receive status messages from each of the plurality of dispensing units, to process the status messages, and to transmit command messages to each of the plurality of dispensing units, wherein one command message comprises an instruction to a dispensing unit to download a software module to update an existing software module in the controller subsystem of the dispensing unit.

5,608,644

METHOD FOR SUPPORTING TEST ROUTINES

Andre Debacker, Aalter, Belgium, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 24, 1994, Ser. No. 265,151
Claims priority, application Germany, Jun. 24, 1993, 43 21 054.6
Int. Cl.[6] H04L *12/26;29/14*
U.S. Cl. 364—481 **17 Claims**



1. A method for supporting testing procedures in a communication system having terminal equipment units connected thereto, at least one of configuration data of the communication system and input data that triggers a test routine and that triggers test program routine data being displayed visibly in a video screen segment of a video screen, comprising the steps of:

acquiring, for testing system software of the communication system, by an input/output simulator unit all of said configuration data of the communication system;

simulating all terminal equipment units, that are connected to the communication system, by the input/output simulator unit;

producing at least one further video screen segment on the video screen; and

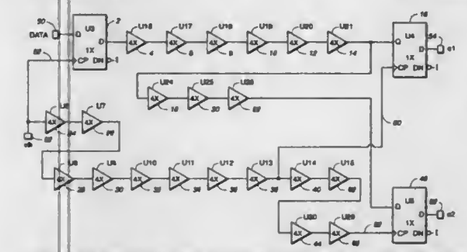
based on a criterion of program procedures, visually displaying in the at least one further video screen at least one of current subscriber line circuit-related data of port components of the communication system allocated to a test mode and current operating statuses or signalings of the communication system.

5,608,645

METHOD OF FINDING A CRITICAL PATH IN A CIRCUIT BY CONSIDERING THE CLOCK SKEW

Athanasius W. Spyrou, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 17, 1994, Ser. No. 214,482
Int. Cl.[6] G06G *7/122*
U.S. Cl. 364—491 **18 Claims**



1. Method for producing a circuit layout having plural signal propagation paths, the method comprising the steps:

attributing a weight to each of said paths, said weight including clock skew information; and

comparing the weight of each of said paths to identify a critical path, said step of attributing a weight further including steps of:

weighting at least one instance using a clock signal path delay and a data path delay; and

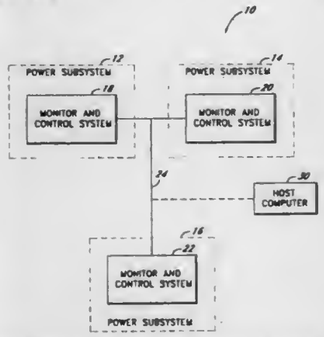
subtracting the clock signal path delay of said at least one instance from said data path delay of said at least one instance to determine said weight of said at least one instance.

5,608,646

POWER DISTRIBUTION SYSTEM CONTROL NETWORK

Lawrence A. Pomatto, Santa Ana, Calif., assignor to Systems Analysis and Integration, Inc., Orange, Calif.

Continuation of Ser. No. 180,921, Jan. 11, 1994, Pat. No. 5,517,423. This application Feb. 20, 1996, Ser. No. 603,609
Int. Cl.[6] G01R *21/00*
U.S. Cl. 364—492 **21 Claims**



1. A control network for a power distribution system which has at least one distribution subsystem, said control network comprising:

a phase monitoring unit which monitors phases of A.C. signals in power equipment within said power distribution system and which generates data indicative of said phases;

a plurality of control units distributed at control locations throughout said power distribution network, at least some of said plurality of control units including processing circuitry which provides direct communication with others of said control units and which provides coordinated control of said power distribution system, said control units configured to receive said data from said phase monitoring unit indicative of said phases of said A.C. signals, said control units generating control signals which cause changes in said phases of said A.C. signals; and

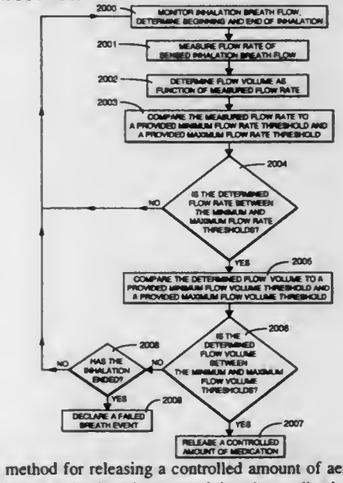
a system controller in communication with said plurality of control units to provide coordinated control of said power distribution system.

5,608,647

METHOD FOR RELEASING CONTROLLED AMOUNT OF AEROSOL MEDICATION

Reid M. Rubsamen, Berkeley, and Eric T. Johansson, Dublin, both of Calif., assignors to Aradigm Corporation, Hayward, Calif.

Division of Ser. No. 10,783, Jan. 29, 1993, Pat. No. 5,450,336, which is a continuation-in-part of Ser. No. 664,758, Mar. 5, 1991, Pat. No. 5,404,871. This application Sep. 8, 1995, Ser. No. 525,838
Int. Cl.[6] A61M *16/00;* **G05B** *21/02;* **G01F** *11/00*
U.S. Cl. 364—509 **17 Claims**



1. A method for releasing a controlled amount of aerosol medication from a valved canister containing the medication for intrapulmonary delivery to a person during inhalation breath flow comprising the steps of:

a) monitoring the inhalation breath flow through a flow path and determining the beginning and the end of the inhalation;

b) measuring the flow rate of the sensed inhalation breath flow;

c) determining the flow volume of the inhalation breath flow as a function of the measured flow rate;

d) providing a flow rate minimum thresbold and a flow rate maximum threshold and providing a minimum flow volume threshold and a maximum flow volume threshold;

e) comparing the measured flow rate to the minimum flow rate threshold and the maximum flow rate thresbold;

f) comparing the determined flow volume to the minimum flow volume threshold and the maximum flow volume threshold, said comparing the determined flow volume being performed when the determined flow rate is between the minimum and maximum flow rate thresbolds;

g)

i) releasing a controlled amount of medication when the determined flow volume is between the minimum and maximum flow volume thresholds.

ii) declaring a failed breath event if the inhalation has ended and the determined flow volume is not between the minimum and maximum flow volume thresholds, or

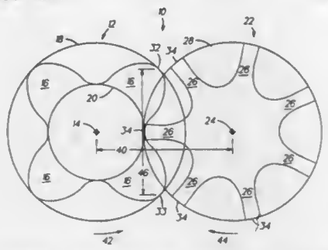
iii) returning to step (a) if the inhalation has not ended and the determined flow volume is not between the minimum and maximum flow volume thresholds.

5,608,648

METHOD AND APPARATUS FOR GENERATING PROFILES OF COOPERATING SCREW ROTORS

Cornelius V. Sundt, 27 Parkwood Dr., Windsor, Conn. 06095-3143

Filed Nov. 18, 1994, Ser. No. 342,231
Int. Cl.[6] G06F *9/455;17/50*
U.S. Cl. 364—512 **18 Claims**



I. An apparatus for generating complete, refined profiles for cooperating screw rotors including a first rotor and a second rotor each having an axial length and a profile indicative of a cross section of a rotor taken perpendicular to the axial length, the first rotor has a preselected number of identically-shaped male lobes each being defined by generally convex surfaces, the second rotor has a preselected number of identically-shaped female lobes each being defined by generally concave surfaces, the apparatus comprising:

means for receiving signals indicative of a plurality of initial parameters for a first rotor and for a second rotor cooperating with the first rotor, the initial parameters including at least the outer diameters of the respective rotors, the number of lobes on the respective rotors, the distance between centers of the first and second rotors, and an offset indicative of an initial relative orientation of the first and second rotors;

means for generating signals indicative of an initial profile for one lobe of the first rotor defined by a first plurality of points positioned along the first rotor initial profile and for generating signals indicative of an initial profile for one lobe of the second rotor defined by a second plurality of points positioned along the second rotor initial profile, the signals indicative of the first and second rotor initial profiles being generated in accordance with the signals indicative of the initial parameters and the second rotor being adjacent to the first rotor;

means for measuring the distances between each of the first plurality of points and each of the second plurality points and for generating signals indicative of the measured distances;

means for comparing the signals indicative of the measured distances for determining the signal indicative of the shortest distance of the measured distances;

means for comparing the signal indicative of the shortest distance with a signal indicative of a predetermined clearance;

means for refining the initial profile for the first rotor lobe and the initial profile for the second rotor lobe by repositioning at least one of the respective points defining the shortest distance toward the other of the respective points to define a new distance less than or equal to the predetermined clearance and greater than zero; and

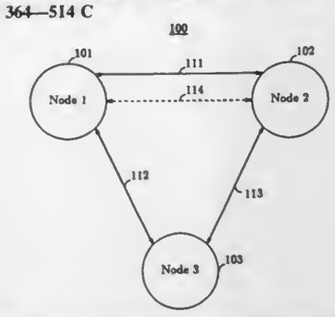
means for generating signals indicative of a complete, refined profile for the first rotor by repeating the refined profile for the first rotor lobe around the first pitch diameter to generate the first number of lobes, and a complete, refined profile for the second rotor by repeating the refined profile for the second rotor lobe around the second pitch diameter to generate the second number of lobes.

5,608,649

DIRECTLY PROGRAMMABLE NETWORKS

Bhaskarpillai Gopinath, 118 Redmont Rd., Watchung, Somerset County, N.J. 07060, and David Kurshan, 1540-1 Ocean Ave., Sea Bright, Monmouth County, N.J. 07760

Filed May 16, 1994, Ser. No. 243,581
Int. Cl.[6] H04Q *3/495*
U.S. Cl. 364—514 C **8 Claims**



1. A method for establishing a scalable spanning tree for an arbitrary subset of nodes and links in a network in which the total resources at each node are independent of the size of the network, and for propagating data over the spanning tree, the method comprising the steps of

selecting a set of states for each node and each link in the network, the states being independent of the topology of the network, of the size of the network, and of the node itself,

selecting a set of messages exchanged between neighboring nodes over the links, the messages being independent of the topology of the network, of the size of the network, and of the node itself,

determining a set of state transition rules for the state of each node and of each link to coordinate the sending and receiving of the messages to the neighboring nodes for setting up the spanning tree, the state transition rules being independent of the topology of the network, of the size of the network, and of the node itself,

determining a completion rule in order that at least one node detects the formation of the spanning tree, this node being designated the root node, the rule being independent of the topology of the network, of the size of the network, and of the node itself,

back-propagating node data from each node in a subset of nodes to the root node over the spanning tree to form composite data, and

forward-propagating at least part of the composite data as said data from the root node to another subset of the nodes.

5,608,650

SYSTEMS AND METHODS FOR TESTING PUMP FLOW RATES

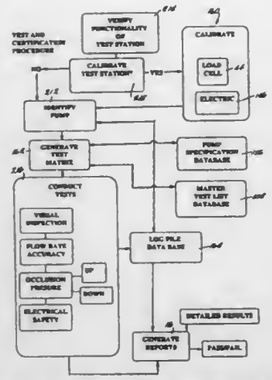
Robert R. McClendon, Peoria; Aleandro DiGianfilippo, Scottsdale, both of Ariz.; Richard Pierce, Lake Zurich, Ill., and Alan A. Figler, Woodinville, Wash., assignors to Spectrel Partners, L.L.C., Phoenix, Ariz.

Filed Aug. 19, 1994, Ser. No. 294,480
Int. Cl.[6] G01F *25/00*
U.S. Cl. 364—510 **5 Claims**

1. A testing device for deriving a filtered average of a data set of multiple samples, comprising

a sampling component to obtain a data sample,

a controller for operating the sampling component to obtain a set of multiple data samples,



a processing element to (i) derive an average of the data samples in the set obtained by the sampling component (SET_{AVE}), (ii) derive a standard deviation for the data samples in the set-(SET_{STD}), (iii) compare each of the data samples to SET_{STD} and either reject the data sample if the absolute difference between the data sample is greater than or equal to k * SET_{STD}, where k is a selected value greater than zero, or retain the data sample if the absolute difference between the data sample is less than k * SET_{STD}, the processing element being conditioned to repeat (i), (ii), and (iii) until the absolute difference between every data sample remaining in the set is less than k * SET_{STD}, and (iv) derive a filtered average for the set $FSET_{AVG}$, where $FSET_{AVE}$ is the SET_{AVG} for the data set in which the absolute difference between every data sample remaining in the set is less than k * SET_{STD}, and

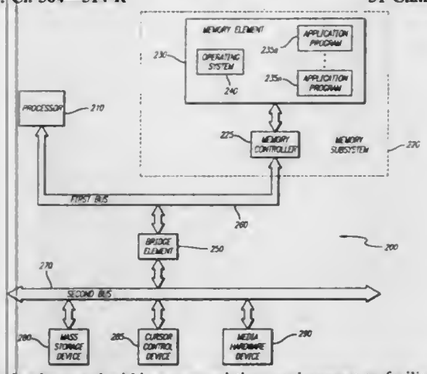
an element to output $FSET_{AVG}$.

5,608,651

METHOD AND APPARATUS FOR SCHEDULING AND MIXING MEDIA IN A MULTI-MEDIA ENVIRONMENT

Mark Leavy; Murali Veeramoney, both of Beaverton; Michael D. Rosenzweig, Hillsboro; Scott D. Boss, Beaverton; Roger Hurwitz, Hillsboro, all of Oreg.; Bob Davies, Milpitas, Calif., and Daniel R. Cox, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 31, 1995, Ser. No. 381,212
Int. Cl.[6] G06F *3/16*
U.S. Cl. 364—514 R **31 Claims**



1. Implemented within a non-real-time environment to facilitate a real-time transfer of at least two media streams between a plurality of application programs and a media hardware device, a real-time media driver comprising:

a wave driver electrically coupled to the plurality of application programs;

a media scheduler coupled to said wave driver, said media scheduler capable of mixing information received from said at least two media streams in order to produce a composite media stream; and

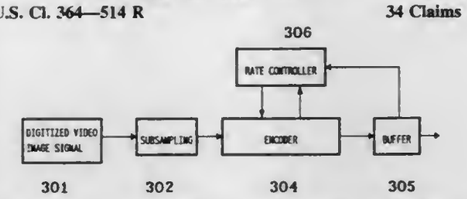
said mini-device driver electrically coupled to said media scheduler and the media hardware device, said mini-device driver controls a transfer of said composite media stream into said media hardware device.

5,608,652

REDUCING BLOCKING EFFECTS IN BLOCK TRANSFER ENCODERS

Brian Astle, Plainsboro, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 12, 1995, Ser. No. 439,757
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **34 Claims**



15. An apparatus for encoding video signals, wherein the encoding is defined by a plurality of encoding parameters, the apparatus comprising:

(a) means for determining an initial quantization level for quantizing a block of signals representative of a block of pixels of a picture, wherein the initial quantization level is an encoding parameter of the plurality of encoding parameters; and

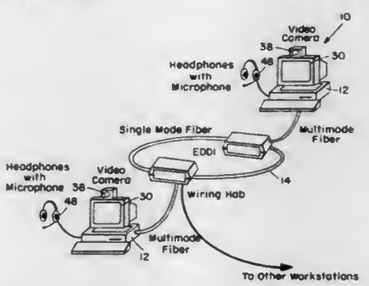
(b) means for modifying at least one encoding parameter of the plurality of encoding parameters before encoding the block of signals to provide a modified plurality of encoding parameters such that block edge artifacts between the block of pixels and at least one adjacent block of pixels that arise after decoding encoded signals are reduced.

5,608,653

VIDEO TELECONFERENCING FOR NETWORKED WORKSTATIONS

Ricky S. Palmer, and Larry G. Palmer, both of Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 343,657, Nov. 22, 1994, Pat. No. 5,546,324, which is a continuation of Ser. No. 893,074, Jun. 3, 1992, Pat. No. 5,375,068. This application Feb. 12, 1996, Ser. No. 599,841
Int. Cl.[6] H04N *5/00*
U.S. Cl. 364—514 C **20 Claims**



1. Video teleconferencing apparatus for a distributed data processing system having a plurality of computer workstations connected by a digital data network, the computer workstations comprising:

a) source means for a local workstation to send audio and video data across the digital data network as digital data packets to a remote workstation; and

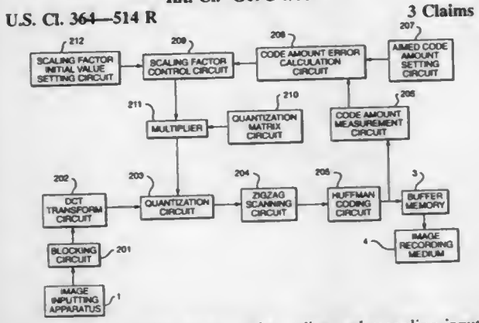
b) receiver means for the local workstation to receive audio and video data from across the digital data network as digital data packets sent from source means of the remote workstation.

5,608,654

IMAGE CODING APPARATUS

Junichi Matsunoshita, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 315,352
Claims priority, application Japan, Oct. 6, 1993, 5-250422
Int. Cl.[6] G09C 1/10
U.S. Cl. 364—514 R **3 Claims**



1. An image coding apparatus for coding and recording input image data onto an image recording medium, comprising:

setting means for setting a coding parameter;

coding means for coding the input image data using the coding parameter set by said setting means;

code amount measurement means for measuring the amount of codes generated by said coding means;

aimed code amount setting means for setting an aimed code amount;

calculation means for calculating a code amount difference between the aimed code amount and the generated code amount; and

coding parameter control means for controlling the coding parameter of said setting means in accordance with the code amount difference such that said setting means first sets an initial value as the coding parameter and then sets, in accordance with the code amount difference calculated from the amount of codes newly generated using the initial value, another value as the coding parameter to be used for next coding for the same image data.

5,608,655

PAGER FOR WIRELESS CONTROL AND METHOD THEREFOR

Claude Moughanni, and Yui K. Ho, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,597
Int. Cl.[6] G06F 3/00
U.S. Cl. 364—514 R **30 Claims**

1. A data processing system, comprising:

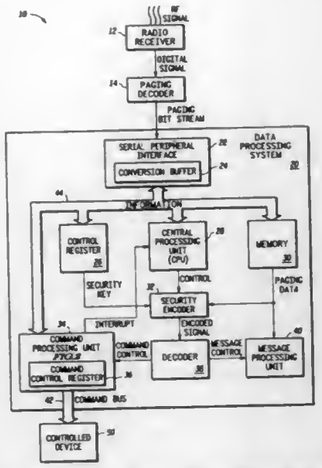
a receiver for receiving a paging input in a first format, the receiver translating the paging input to a second format;

a paging decoder coupled to the receiver for receiving the paging input in the second format, the paging decoder decoding the paging input in the second format to provide a paging bit stream signal; and

a data processor, comprising:

an interface for receiving the paging bit stream signal; and

a command processing unit coupled to the interface for receiving the paging bit stream signal, the command processing unit



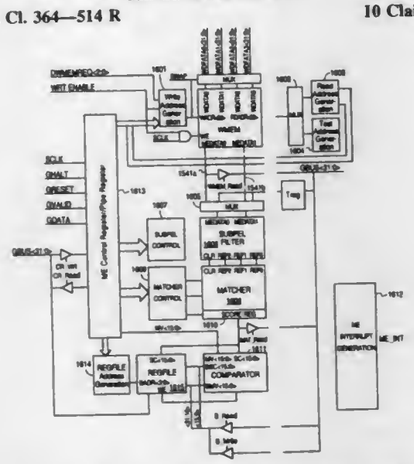
selectively generating a command control signal to provide external control of functionality of an external device, the command control processing unit comprising a command control register for storing a command control value which controls operation of the command processing unit.

5,608,656

MOTION VECTOR ENCODING CIRCUIT AND METHOD THEREOF

Stephen C. Purcell, Mountain View, and Subroto Bose, Santa Clara, both of Calif., assignors to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of Ser. No. 105,253, Aug. 9, 1993. This application Aug. 28, 1995, Ser. No. 520,318
Int. Cl.[6] G06F 17/00
U.S. Cl. 364—514 R **10 Claims**



1. A structure for encoding by motion vectors a current frame of video data using a reference frame of video data, said current frame and said reference frame each being divided into multiple rows and multiple columns of macroblocks, said macroblocks of said current frame being designated "current macroblocks" and said macroblocks of said reference frame being designated "reference macroblocks", each macroblock representing a number of pixels in the corresponding frame, said structure comprising:

a memory circuit for storing (a) a plurality n of adjacent current macroblocks from a row j of current macroblocks in said current frame, beginning at column p of current macroblocks said current frame, said plurality of said adjacent current macroblocks being designated $C_{j,p}$, $C_{j,p+1}$, . . . , $C_{j,p+n-1}$ in the order along one direction of said row of macroblocks; and (b) a plurality of adjacent reference macroblocks from a first column i of reference macroblocks in said reference frame, beginning at row q of reference macroblocks in said reference frame, said plurality of reference macroblocks being designated $R_{q,i}$, $R_{q+1,i}$, . . . , $R_{q+m-1,i}$, said plurality of adjacent reference macroblocks being reference macroblocks within the range of said motion vectors, each of said current macroblocks being substantially equidistance from said $R_{q,i}$ and $R_{q+m-1,i}$ reference macroblocks;

means for providing each current macroblock a set of scores, each score corresponding to one of said motion vectors and measuring a difference in pixel values between said current macroblock and a reference macroblock linked by said motion vector;

means for selecting, using said set of scores, a motion vector corresponding to the least of said differences measured; and

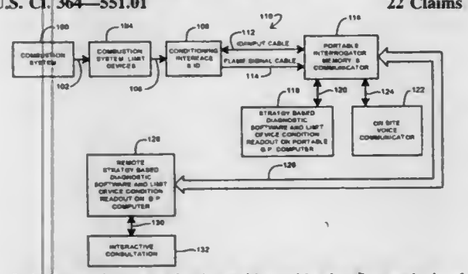
means for replacing in said memory circuit (a) the current macroblock $C_{j,p}$ with a current macroblock $C_{j,p+n}$, said current macroblock $C_{j,p+n}$ being the current macroblock adjacent said macroblock $C_{j,p+n-1}$ in said direction; and (b) said first column of adjacent reference macroblocks $R_{q,i}$, $R_{q+1,i}$, . . . , $R_{q+m-1,i}$ with a second column of adjacent reference macroblocks $R_{q,i+1}$, $R_{q+1,i+1}$, . . . , $R_{q+m-1,i+1}$, said second column being adjacent said first column in said direction.

5,608,657

INTERACTIVE DIAGNOSTIC SYSTEM

Richard B. Conway, Pataskala, and Edward G. Wendell, Columbus, both of Ohio, assignors to Delta H. Systems, Inc., Columbus, Ohio

Filed Jan. 25, 1996, Ser. No. 591,835
Int. Cl.[6] G05B 1/04
U.S. Cl. 364—551.01 **22 Claims**



1. A diagnostic system for the rapid, trouble-shoofing analysis of a production facility, said facility including a source of electric power and operationally identifiable electrical contacts coupled with said source, having a given network configuration, and having a closed circuit condition enabling its operation of said production facility and an open circuit condition disabling such operation, said facility further including a production parameter monitor providing an analog output as a variable electrical parameter, the diagnostic system comprising:

(a) monitoring interface apparatus mountable at said production facility, including:

fast terminals electrically connectable with said electrical contacts,

a detector network electrically coupled with said first terminals and said source, configured in circuit continuity test relationship across each of said electrical contacts, and deriving an interface output condition when a said electrical contact exhibits said open circuit condition,

an identifier component having an adjustable circuit configuration for providing a unique identifier condition corresponding with said production facility,

second terminals electrically connectable with said production parameter monitor to convey said analog output, and

a connector assembly electrically coupled with said detector network, said identifier component and said second terminals;

(b) an interrogator assembly, comprising:

a portable housing,

a coupling assembly having a terminal assembly band connectable with said connector assembly and extending to said housing for conveying said interface output condition, said identifier condition and said analog output,

an address deriving network within said housing electrically coupled with said coupling assembly for deriving an identifier signal corresponding with said unique identifier condition,

a fault detector network within said housing, electrically coupled with said coupling assembly and responsive to said interface output to derive contact condition signals corresponding with said open and closed circuit conditions,

an input signal treatment network including an amplifier stage within said housing, electrically coupled with said coupling assembly and responsive to said analog output for deriving a treated parameter signal,

an amplification network within said housing having an input responsive to a said treated parameter signal, having a gain defining network configurable to derive different amplification gain values, and providing a selectively amplified parameter signal,

a first selector network within said housing controllable in accordance with configuration data corresponding with said network configuration to configure said gain defining network in correspondence with said analog output electrical parameter,

an analog-to-digital converter within said housing responsive to said amplified parameter signal for deriving a digital parameter output corresponding therewith,

a memory within said housing for retaining said configuration data, and data corresponding with said interface output with respect to each said identifier signal,

a display mounted upon said housing and responsive to display signals for deriving a visually perceptible readout in correspondence therewith,

modem means connectable with a communications system, responsive to a control input for effecting data mode conveyance of said memory retained data, said digital parameter output and said contact condition signals to a computer located at a remote site,

manual input means mounted with said housing for entering said configuration data into said memory and providing manual command signals, and

a processor within said housing responsive to said identifier signal for accessing said memory retained configuration data and effecting control of said first selector network, responsive to said digital parameter output and said contact condition signals to provide said display signals and said modem control input.

5,608,658

SYSTEM AND METHOD FOR INSPECTION OF PRODUCTS WITH WARRANTIES

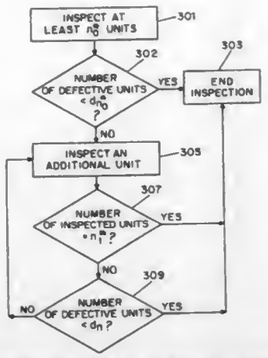
David D. Yao, Yorktown Heights; Jinfa Chen, and Shaohui Zheng, both of New York, all of N.Y., assignors to The Trustees of Columbia University, New York, N.Y.

Continuation of Ser. No. 263,537, Jun. 22, 1994, abandoned. This application Aug. 10, 1995, Ser. No. 513,297
Int. Cl.[6] G06F 17/60
U.S. Cl. 364—552 **8 Claims**

1. Apparatus for inspecting a batch of units of a product to be delivered under a warranty comprising:

a processor for computing a limiting number;

a testing device for testing a selected number of units in said batch, and for determining the number of defective units in said selected number of units, said selected number of units being smaller than said limiting number, said limiting number



being substantially equal to the number of units tested yielding the smallest value of a first cost, including the testing cost of the number of units, the repair cost of the number of units weighted by a predetermined defect ratio and the expected warranty cost of the batch if the testing is terminated after the number of units are tested;

said processor including a counter for increasing the value of said selected number of units by one, and a generator for generating a respective threshold value corresponding to each value of said selected number of units tested, said respective threshold value corresponding to each selected number of units tested being substantially equal to the smallest number of units found to be defective in the selected number of units tested, such that a second cost, including the testing cost of an additional unit, the repair cost of the additional unit weighted by the probability that the additional unit will be found defective and an expected overall testing, repair and warranty cost of the batch that results from testing the additional unit, is less than the expected warranty cost of the batch if testing is terminated after the selected number of units are tested; and

a test controller for terminating testing of said batch if the number of defective units in said selected number of units is smaller than said threshold value corresponding to the value of said selected number of units, said test controller causing said counter to increase the value of said selected number of units by one when the number of defective units is equal to or greater than said threshold value corresponding to the value of said selected number of units, said test controller terminating testing of the batch if the increased value of said selected number of units is equal to or greater than said limiting number, and said test controller causing said test device to test a previously untested unit when the increased value of said selected number of units is smaller than said limiting number.

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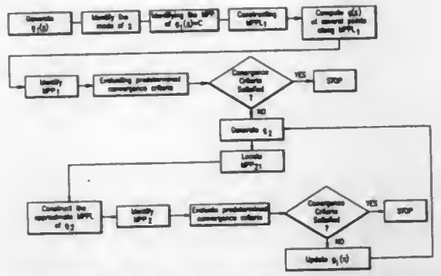
METHOD FOR IDENTIFYING A MOST-PROBABLE-POINT IN ORIGINAL SPACE AND ITS APPLICATION FOR CALCULATING FAILURE PROBABILITIES

Hong-Zong Lin, Cerritos, and Mohammad R. Khalessi, Fountain Valley, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 18, 1994, Ser. No. 228,993
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—554 **2 Claims**

1. A method for identifying a Most-Probable-Point (MPP) in original space obviating the need for a probability transformation, for use in first order/second order reliability analysis, comprising, using a standard computer to perform, the steps of:

a) generating $g_1(x)=g(x_1)+\nabla g^T(x_1)(x-x_1)$, where ∇ is the first-order derivative with respect to basic random variables, the linear approximation of a limit-state-function, g(x) about x_1,x_1 being the median, mean point, or mode of random variables, x of said g(x), g(x) being defined so that $g(x)\leqq 0$ denotes a failure set;



b) constructing $MPPL_1$, being defined as the Most-Probable-Point-Locus (MPPL) of g_1, $MPPL_1$ being constructed by the steps of:

i) identifying said mode of x;

ii) identifying the MPP of $g_1(x)=c$, where c is an arbitrary constant, by solving the following optimization problem:

maximize $f_x(x)$, a joint probability density function,

such that $g_1(x)=0$; and,

iii) constructing said $MPPL_1$ by connecting said mode of x from step i), above, and the MPPs corresponding to different c's from step ii), above;

c) computing g(x) at several points along $MPPL_1$, establishing a functional relationship between g(x) and the corresponding distance from the mode along $MPPL_1$ and examining global g-function behavior,

d) using a quadratic search algorithm with said functional relationship to identify point MPP_1 where MPP_1 is the intersection of $MPPL_1$ and $g(x)=0$ and, evaluating predetermined convergence criteria, in accordance with the following:

1. $g(x) = 0$ and,

2. $$\frac{\nabla f_x(x)}{|\nabla f_x(x)|} = \frac{\nabla g(x)}{|\nabla g(x)|}$$

e) stopping, unless said convergence criteria are not satisfied;

f) generating g_2 where $g_2(x)=g(x_2)+\nabla g^T(x_2)(x-x_2)$, the linear approximation of the limit-state-function, g(x) about $x_2=MPP_1$,

g) locating MPP_{11}, the Most-Probable-Point of $g_2(x)=0$ by solving the following optimization:

Maximize $f_x(x)$

such that $g_2(x)=0$;

h) constructing the approximate MPPL of g_2, $MPPL_2$, by connecting said mode and said MPP_{21};

i) using said quadratic search algorithm to identify point MPP_2, where MPP_3 is the intersection of $MPPL_2$ and $g(x)=0$ and evaluating said convergence criteria;

j) stopping, unless said convergence criteria are not satisfied; and,

k) updating $g_j(x)$, with the results of the previous iteration, where j=2, 3, . . . , m, where m is the total number of steps required for convergence, and repeating steps f–j, above.

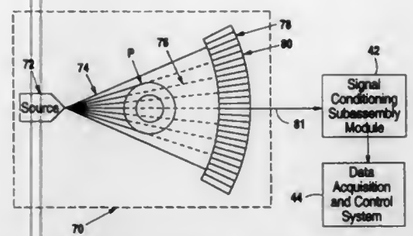
5,608,660

AUTOMATED SYSTEM FOR CONTROLLING THE QUALITY OF GEOMETRICALLY REGULAR-SHAPED PRODUCTS DURING THEIR MANUFACTURE

Ira L. Morgan; Robert H. Rice; Joseph E. Bolger, all of Austin, Tex., and Donald G. Schindler, Pittsburgh, Pa., assignors to Integrated Diagnostic Measurement Corp., Waltham, Mass.

Continuation of Ser. No. 531,454, May 31, 1990, Pat. No. 5,379,237. This application Oct. 14, 1994, Ser. No. 323,455
Int. Cl.[6] G01B *15/04*
U.S. Cl. 364—562 **36 Claims**

1. A method for obtaining dimensional measurements and analyses of regularly-shaped objects during their manufacture, comprising:



a) scanning each of a plurality of cross-sections of an object with a plurality of penetrating radiation sources along a plurality of paths through each cross-section of the object;

b) generating signals representative of the radiation attenuation along each of the plurality of paths for each of the scanned cross-sections;

c) converting the attenuation signals to signals representative of the density/length of the object along each of the plurality of paths for each of the cross-sections;

d) processing the density/length signals to determine, by use of a computer model of the object to be examined, dimensional measurements for each of the cross-sections of the object scanned;

e) monitoring the position of the object as it is being scanned and generating position signals representative of the location of each of the cross-sections of the object for which dimensional measurements are being processed; and

f) associating a location along the object from the generated position signals for each cross-sectional dimensional measurement; and

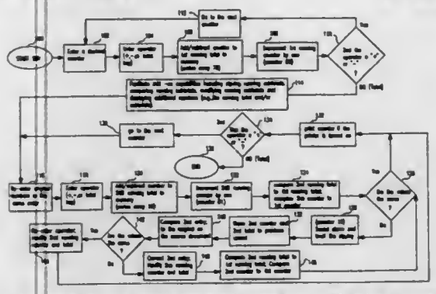
g) creating a three-dimensional representation of the object from the plurality of cross-sectional dimensional measurements and the position signals associated therewith.

5,608,661

METHOD AND APPARATUS FOR SEMI-AUTOMATIC NUMBER VERIFICATION

Phillip J. Hoolehan, 15723 Lake Hills Ct., Orland Park, Ill. 60462; Wayne F. Bulmahn, Lombard, Ill.; Michael B. Jebb, Riverside, Ill.; John A. Stout, Willowbrook, Ill., and Kelth R. Rose, Minneapolis, Minn., assignors to Phillip J. Hoolehan, Orland Park, Ill.

Filed Sep. 1, 1995, Ser. No. 522,652
Int. Cl.[6] G06F *3/00*
U.S. Cl. 364—709.06 **20 Claims**



1. An apparatus for semi-automatic number verification comprising:

a microprocessor;

a RAM module comprising first and second series arrays and first and second counters;

an electronic display; and

a keyboard connected to said microprocessor, RAM module and electronic display for entry of a first series of numbers and associated computational operations in a predetermined order, storing results of computational operations as a first running total in said first series array; and

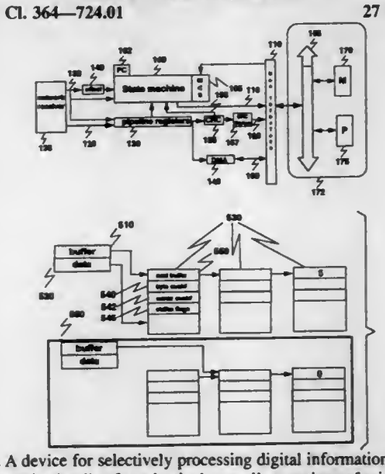
said keyboard comprising means for repeating the keypunch entry of each number of said first series of numbers and said associated computational operations as a second running total, storing said second running total in said second series array as the series of numbers is entered to compare said second running total with said first running total for the identification of any discrepancies between the first and second series arrays and first and second counters of said RAM module.

5,608,662

PACKET FILTER ENGINE

James Large, Wexford; Joseph M. Newcomer, and Robert Thibadeau, both of Pittsburgh, all of Pa., assignors to Television Computer, Inc., Pittsburgh, Pa.

Filed Jan. 12, 1995, Ser. No. 372,013
Int. Cl.[6] G06F *7/22; H04N 7/10*
U.S. Cl. 364—724.01 **27 Claims**



1. A device for selectively processing digital information from a communication line for selectively coupling portions of said digital information for processing by a data processor, the device comprising:

means for receiving the digital information;

a digital filter apparatus coupled to said means for receiving and to said data processor, said filter apparatus for inputting selection criteria and comparing successive portions of said digital information to the selection criteria, and providing to the data processor portions that meet the selection criteria; and,

wherein the digital filter apparatus is variably programmable for defining the selection criteria based upon a comparison of bytes to the selection criteria, and wherein the selection criteria is variable by content of the bytes and by position of the bytes in the successive portions of the digital information.

5,608,663

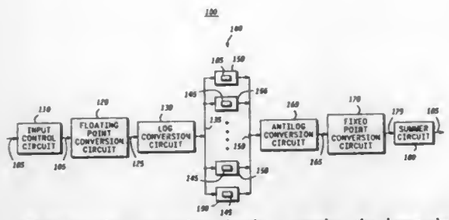
COMPUTATIONAL ARRAY CIRCUIT FOR PROVIDING PARALLEL MULTIPLICATION

Stephen L. Smith, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1995, Ser. No. 398,273
Int. Cl.[6] G06F *17/11*
U.S. Cl. 364—748.5 **18 Claims**

1. A computational array circuit for providing parallel multiplication of an input value, the computational array circuit comprising:

a floating point conversion circuit receiving an input data signal representing the input value with a fixed point data format, the



floating point conversion circuit converting the input data signal to a floating point input data signal representing the input value with a floating point data format;

a logarithmic conversion circuit connected to the floating point conversion circuit via a floating point input data bus and receiving the floating point input data signal from the floating point conversion circuit via the floating point input data bus, the logarithmic conversion circuit converting the floating point input data signal to a logarithmic input data signal representing a logarithm of the input value;

an adder array of array elements connected to the logarithmic conversion circuit via a logarithmic input data bus and receiving the logarithmic input data signal from the logarithmic conversion circuit via the logarithmic input data bus, each of the array elements having an adder circuit adding the logarithmic input data signal to a logarithmic multiplier data signal representing a logarithm of a multiplier value to produce a logarithmic output data signal representing a logarithmic output value, and the adder circuit in at least one of the array elements adding the logarithmic input data signal to the logarithmic multiplier data signal a number of times based on a power data signal representing a power value indicating the number of times the logarithmic input data signal is to be added to the logarithmic multiplier data signal;

an antilogarithmic conversion circuit connected to the adder array via a logarithmic output data bus and receiving the logarithmic output data signal from each of the array elements in the adder array via the logarithmic output data bus, the antilogarithmic conversion circuit converting the logarithmic output data signal from each of the array elements to an antilogarithmic output data signal, the antilogarithmic output data signal for each of the array elements representing an antilogarithm of the logarithmic output value equivalent to the input value multiplied by the multiplier value the number of times indicated by the power data signal; and

a fixed point conversion circuit connected to the antilogarithmic conversion circuit via a antilogarithmic output data bus and receiving the antilogarithmic output data signal from the antilogarithmic conversion circuit via the antilogarithmic output data bus, the fixed point conversion circuit converting the antilogarithmic output data signal to an output data signal representing an output value with a fixed point data format.

5,608,664

METHOD FOR CORRELATING IMAGE DATA OF A RANGE-FINDER

Kenichi Mori, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

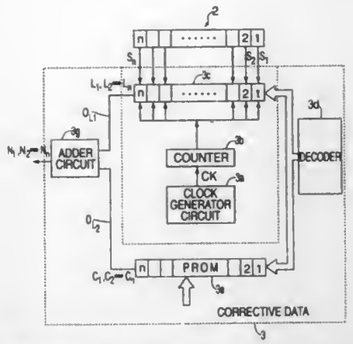
Filed Sep. 27, 1994, Ser. No. 313,733

Claims priority, application Japan, Sep. 28, 1993, 5-240219

Int. Cl.[6] G06E *3/00*

U.S. Cl. 364—822 **8 Claims**

1. A method for calculating a correlation between signals from left and right sensor arrays comprising:



producing quantized left outputs from said left sensor array while imaging a blank scene;

producing quantized right outputs from said right sensor array while imaging a blank scene;

approximating said quantized left outputs to produce a left approximate curve of the form $y_1=a_1x^2+b_1$;

approximating said quantized right outputs to produce a right approximate curve of the form $y_2=a_2x^2+b_2$;

ignoring coefficients b_1 and b_2 and calculating coefficients a_1 and a_2, calculating an average approximation quadratic curve from $(a_1+a_2)x^2/2$;

calculating left differential values between said left quantized values and said average approximation quadratic curve;

calculating right differential values between said right quantized values and said average approximation quadratic curve;

finding a left maximum of said left differential values;

finding a right maximum of said right differential values;

calculating a set of new left differential values by subtracting said left differential values from said left maximum;

calculating a set of new right differential values by subtracting said right differential values from said right maximum;

adding said new left differential values to said quantized left outputs to produce a corrected left sensor array output; and

adding said new right differential values to said quantized right outputs to produce a corrected right sensor array output.

5,608,665

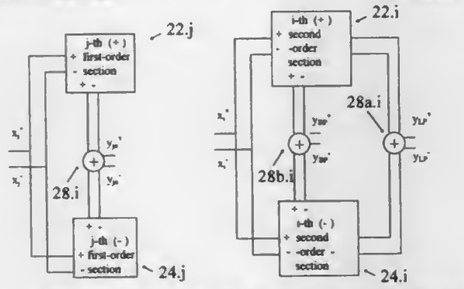
SELF-TUNED, CONTINUOUS-TIME ACTIVE FILTER

Adam S. Wyszynski, 801 Legacy Dr., #918, Plano, Tex. 75023

Filed Oct. 3, 1995, Ser. No. 538,591

Int. Cl.[6] G06G *7/02*; G06F *15/31*

U.S. Cl. 364—825 **19 Claims**



1. A self-tuned, continuous-time filter receiving a differential input signal and generating a differential output signal, the filter comprising:

a plurality of tunable-filter sections;

each filter section having a differential input for receiving a differential reference signal and a differential input for receiving the filter differential input signal, the reference signal and input signal being received simultaneously by said tunable filter sections;

each filter section generating a low-pass output signal and a band-pass output signal;

means for combining said low-pass output signals of said filter sections and for generating a combined low-pass output signal;

means for combining said band-pass output signals of said filter sections and for generating a combined band-pass output signal;

a frequency-tuning circuit for receiving said combined low-pass output signal and for generating a tuning signal applied to said filter sections for frequency tuning said filter sections;

an Q-tuning circuit for receiving said combined band-pass output signal and for generating a tuning signal applied to said filter sections for amplitude tuning said filter sections; and

means for removing the differential reference signal from said low-pass output signals of said filter sections to generate the filter differential output signal.

5,608,666

OPTICAL MEMORY APPARATUS USING FIRST AND SECOND ILLUMINATING LIGHTS FOR WRITING AND READING

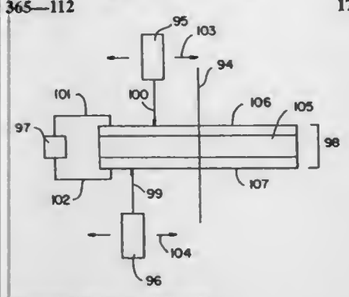
Takashi Inushima; Rimantas Vaitkus, and Satoshi Teramoto, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 216,529, Mar. 23, 1994. This application Jan. 30, 1995, Ser. No. 380,698

Claims priority, application Japan, Mar. 24, 1993, 5-89115; Mar. 30, 1993, 5-96666; Apr. 2, 1993, 5-100412; May 8, 1993, 5-131378; Feb. 22, 1994, 6-047730

Int. Cl.[6] G11C *13/04*

U.S. Cl. 365—112 **17 Claims**



1. An electronic device comprising:

a substance having a photoconductivity, an energy bandgap, and a trap level;

a plurality of device regions which are provided on or in said substance and into which desired information can be written;

means for illuminating said device regions with a first light having a photon energy greater than the energy bandgap of said substance; and

means for illuminating said device regions with a second light having a photon energy smaller than the energy bandgap of said substance;

wherein amount of said first light defined by radiant intensity multiplied by irradiation time is varied in accordance with said desired information.

5,608,667

FERROELECTRIC MEMORY AUTOMATICALLY GENERATING BIASING PULSE FOR PLATE ELECTRODE

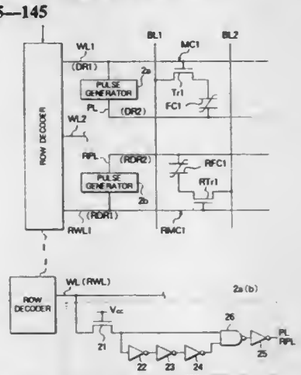
Toshimasa Osawa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Mar. 13, 1996, Ser. No. 614,727

Claims priority, application Japan, Mar. 27, 1995, 7-068339; Nov. 27, 1995, 7-307567

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **7 Claims**



1. A ferroelectric memory which has a plurality of memory cells arranged in rows and columns, each column comprising a bit line connected to said memory cells along the column, each said memory cell comprising a ferroelectric capacitor having first and second electrodes, the polarization of said capacitors indicating to the status of data stored therewithin, the improvement wherein:

said memory further comprises a plurality of word lines and a plurality of plate lines distinct from said bit lines and word lines, each of the memory cells provided along a row being connected to a word line corresponding to the row, each memory cell being also connected to a corresponding plate line, each plate line being connected to plate electrodes in a plurality of said memory cells, each said memory cell further including a respective switching device, said first electrode of said capacitor in said memory cell being connected to its corresponding bit line through said switching device, said switching device being connected to be controlled by said corresponding word line, said second electrode of said capacitor in said cell being connected to said corresponding plate line,

said memory further comprising a plurality of pulse generators, each provided between each word line and each plate line of each row, said each pulse generator controlled by said each word line.

5,608,668

DRAM WTIH OPEN DIGIT LINES AND ARRAY EDGE REFERENCE SENSING

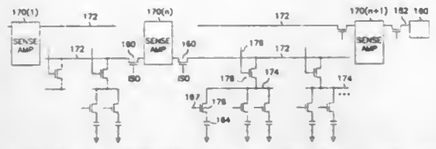
Paul S. Zagar, and Mirmajid Seyyedy, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 22, 1995, Ser. No. 577,767

Int. Cl.[6] G11C *11/24;7/00;7/02*

U.S. Cl. 365—149 **16 Claims**

1. An integrated memory circuit having an open digit line architecture comprising:



a memory cell capacitor having a first plate and a second plate, the first plate being coupled to a reference voltage and the second plate being coupled to a digit line through an access transistor, the access transistor being controlled by a word line voltage, the word line voltage having an active voltage level and an inactive voltage level;

a sense amplifier having a first input selectively coupled to the digit line and having a second input selectively coupled to a reference circuit for modeling electrical characteristics of the digit line.

5,608,669

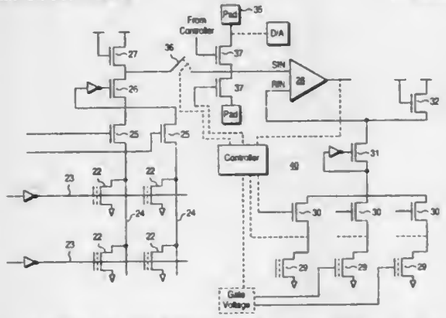
FAST INTERNAL REFERENCE CELL TRIMMING FOR FLASH EEPROM MEMORY

James Q. Mi, Sunnyvale; Johnny Javanifard, Sacramento, and Dennis Dilley, Fair Oaks, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 509,834, Aug. 1, 1995, abandoned, which is a division of Ser. No. 252,693, Jun. 2, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,123

Int. Cl.[6] G11C *7/00;29/00*

U.S. Cl. 365—185.19 **6 Claims**



1. A circuit for programming a non-volatile memory cell such that the non-volatile memory cell stores close to a target amount of charge, comprising:

a voltage switch coupled to a gate of the non-volatile memory cell; and

a controller coupled to the voltage switch for controlling the voltage switch to apply charging pulses to the gate of the non-volatile memory cell until the non-volatile memory cell stores close to the target amount of charge, the controller controlling the voltage switch by

causing the voltage switch to apply a first charging pulse having a first charging voltage to the non-volatile memory cell for a first duration such that the non-volatile memory cell stores a first amount of charge that is less than the target amount of charge;

causing the voltage switch to apply a second set of charging pulses to the non-volatile memory cell such that the non-volatile memory cell stores a second amount of charge that is less than the target amount of charge and greater than the first amount of charge, wherein each charging pulse of the second set of charging pulses is applied for a second duration that is less than the first duration, the controller causing the voltage switch to increase a second charging voltage of each charging pulse over an immediately previous pulse; and

causing the voltage switch to apply a third set of charging pulses to the non-volatile memory cell such that the non-volatile memory cell stores a third amount of charge that is within an allowable variation of the target amount of charge, wherein each charging pulse of the third set of charging pulses is applied for a third duration that is less than the second duration.

5,608,670

FLASH MEMORY WITH IMPROVED ERASABILITY AND ITS CIRCUITRY

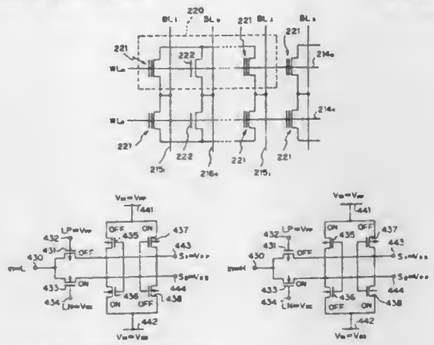
Takao Akaogi; Hiromi Kawashima; Tetsuji Takeguchi; Ryoji Hagiwara; Yasushi Kasa; Kiyoshi Itano, all of Kawasaki; Yasushige Ogawa, Kasugai, and Shoulchi Kawamura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 98,406, Aug. 6, 1993, abandoned. This application May 8, 1995, Ser. No. 436,721

Claims priority, application Japan, Dec. 9, 1991, 3-324701; Dec. 27, 1991, 3-346571; Jan. 14, 1992, 4-4678; Mar. 19, 1992, 4-64143; Jun. 5, 1992, 4-145300; Jun. 15, 1992, 4-154958; Sep. 25, 1992, 4-256594; Nov. 10, 1992, 4-299987

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.23 **8 Claims**



1. A flash memory comprising:

a memory cell array in which a plurality of nonvolatile memory cells, that can be erased electrically, are set in an array;

decoding units that decode a plurality of signals and access said memory cell array; and

drive units each of which includes a first power terminal and a second power terminal, inputs the output of said decoding unit, and selectively outputs a voltage applied to said first power terminal or a voltage approximate to said voltage, and a voltage applied to said second power terminal or a voltage approximate to said voltage;

said drive unit assuming a first operation mode, in which a first voltage is applied to said first power terminal and a second voltage that is lower than said first voltage is applied to said second power terminal, and a second operation mode, in which a third voltage is applied to said first power terminal and a fourth voltage that is higher than said third voltage is applied to said second power terminal; and selecting an output voltage depending on whether said first or second operation mode is specified wherein said drive unit includes:

a first conductive well region (p- or n-type well) enclosed in a second conductive well region (n- or p-type well) formed on a first conductive substrate (p- or n-type substrate);

a first conductive channel transistor formed in said second conductive well region (n- or p-type well); and

a second conductive channel transistor formed in said first conductive well region (p- or n-type well).

5,608,671

NON-VOLATILE SEMICONDUCTOR MEMORY

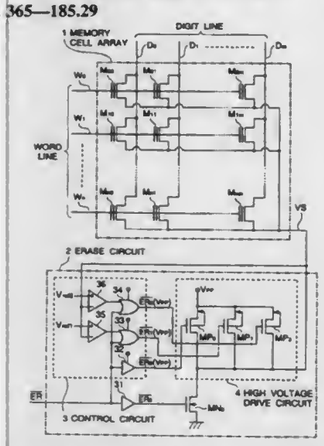
Kazuhisa Ninomiya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 564,812

Claims priority, application Japan, Nov. 29, 1994, 6-294862

Int. Cl.[6] G11C *11/34;7/00*

U.S. Cl. 365—185.29 **4 Claims**



1. A non-volatile semiconductor memory comprising a plurality of memory cells each composed of a floating gate field effect transistor, and an erasing circuit connected to a common source line connected to a source electrode of each of said memory cells, said erasing circuit responding to a given erase signal to apply a high voltage to said common source line so as to erase data stored in said memory cells, said erasing circuit including a plurality of field effect transistors each of which has a source connected to an erasing voltage and a drain connected to said common source line, so that when the field effect transistor is turned on, said erasing voltage is supplied through the turned-on field effect transistor to said common source line, and said erasing circuit also including a control circuit comparing a voltage on said common source line with a reference voltage, for generating a logic signal on the basis of a logic combination of said erase signal and the result of the comparison, said logic signal being applied to a gate of a given one of said field effect transistors so as to selectively controlling an on/off condition of said field effect transistors.

5,608,672

CORRECTION METHOD LEADING TO A UNIFORM THRESHOLD VOLTAGE DISTRIBUTION FOR A FLASH EPROM

Yuan Tang; Jian Chen, both of San Jose, and Chung K. Chang, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 26, 1995, Ser. No. 534,141

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.3 **1 Claim**

1. A method for correcting over-corrected cells in a flash EPROM comprising an array of cells, each cell having a gate, floating gate, source, drain, and substrate, the method comprising:

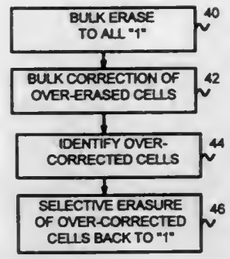
(a) erasing each of the cells in the array of cells by

(a1) providing a negative voltage to the gate of each of the cells in the array of cells,

(a2) providing a positive voltage to the source of each of the cells in the array of cells,

(a3) providing a floating voltage to the drain of each of the cells in the array of cells, and

(a4) grounding the substrate of each of the cells in the array of cells,



wherein the eras/rig of the cells results in a plurality of over-erased cells;

(b) bulk correcting the plurality of over-erased cells by

(b1) providing a positive voltage to the gate of each of the cells in the array of cells,

(b2) grounding the source of each of the cells in the array of cells,

(b3) grounding the drain of each of the cells in the array of cells, and

(b4) grounding the substrate of each of the cells in the array of cells,

wherein the correction of the plurality of over-erased cells results in a plurality of over-corrected cells;

(c) identifying the over-corrected cells by reading each one of the cells and identifying particular ones of the cells that have changed from "1" to "0"; and

(d) selectively erasing the over-corrected cells by

(d1) providing a negative voltage to the gate of each of the over-corrected cells in the array of cells,

(d2) providing a floating voltage to the source of each of the over-corrected cells in the array of cells,

(d3) providing a positive voltage to the drain of each of the over-corrected cells in the array of cells, and

(d4) grounding the substrate of each of the over-connected cells in the array of cells, wherein the selective erasing of the over-corrected cells provides a uniform threshold voltage distribution for the cells in the flash EPROM.

5,608,673

NAND-TYPE FLASH MEMORY INTEGRATED-CIRCUIT CARD

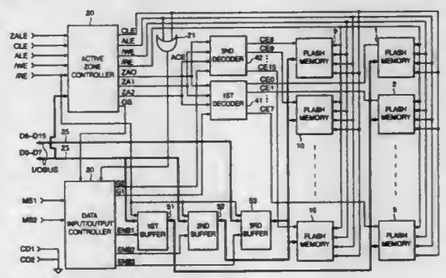
Won-woo Rhee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon-city, Rep. of Korea

Filed Jul. 25, 1995, Ser. No. 507,689

Claims priority, application Rep. of Korea, Jul. 25, 1994, 94-17996

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.33 **13 Claims**



6. A storage medium comprising:

an input and output bus having first lines for commonly receiving zone address data, instruction data, address data and information data from an external source, and outputting the

information data to the external source, and second lines for receiving and outputting the information data from and to the external source;

first and second buffers for buffering the data of the first lines of the input and output bus;

a third buffer for buffering the data of the second lines of the input and output bus;

a plurality of flash memory components which receive data commonly supplied via a corresponding buffer and which discriminate between instruction data, the address data and the information data according to an instruction latch enable signal, an address latch enable signal, a write-in enable signal and a read-out enable signal, all of which are input to each flash memory component, and which store, erase and output the information data according to the instruction data and address data, the plurality of flash memory components having a first group which includes corresponding ones of the flash memory components which exchange data with the input and output bus via the second and third buffers; and

a controller for enabling a corresponding one of the plurality of flash memory components according to the zone address data and the address data which are individually discriminated from the data commonly supplied via the input and output bus according to a mode control signal, a zone address latch enable signal and an address latch enable signal, and for selectively controlling one mode among a word mode for writing and reading the information data which is transmitted in parallel in units of a word having sixteen bits, a half-word mode for writing and reading the information data having only upper eight bits from the most significant bit (MSB) of data which is transmitted in parallel in units of a word, a byte mode for writing and reading the information data which is transmitted in parallel in units of a byte composed of eight bits, and a standby mode for awaiting data input and output with respect to all of the flash memory components.

5,608,674

SEMICONDUCTOR MEMORY DEVICE

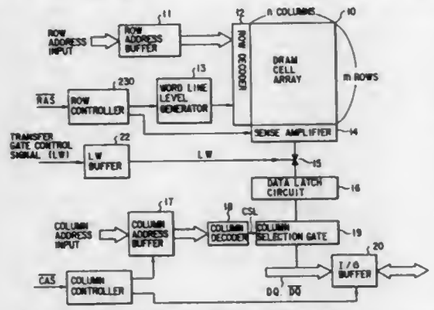
Tomoaki Yabe, Kawasaki, and Kenji Numata, Yamato, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 18, 1995, Ser. No. 423,755

Claims priority, application Japan, Apr. 20, 1994, 6-081455

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **18 Claims**



1. A semiconductor memory device comprising:

a memory cell array including a plurality of dynamic memory cells, each having a data storage capacitor and a MOS transistor for an electrical charge transfer gate, arranged in a form of rows and columns;

a plurality of word lines connected to said memory cells of said memory cell array in a direction of said rows;

a row decoder for decoding a row address signal in synchronization with a /RAS signal for selecting one of said word lines corresponding to an arbitrary one of said rows of said memory cell array;

a plurality of sense amplifiers, provided to have the same number as the number of said columns of said memory cell array, for sensing data read out from said memory cells connected to said one of said word lines selected by said row decoder through a plurality of bit lines, respectively;

a plurality of transfer gates connected to said sense amplifiers, respectively;

a plurality of data latch circuits, provided to have the same number as the number of said columns of said memory cell array and connected to said transfer gates, respectively, to latch said data sensed by said sense amplifiers through said transfer gates;

a plurality of column selection gates connected to said data latch circuits, respectively, for selecting at least one of said data latch circuits;

a column decoder for decoding a column address signal for selecting an arbitrary one of said columns of said memory cell array to switch-control said column selection gates; and

a row controller controlling said row decoder so as to activate said one of said word lines selected by said row decoder and sequentially inactivate the same at a predetermined timing, said predetermined timing falling within the period of time after said sense amplifiers are stabilized in an activated state and before said /RAS signal is inactivated.

5,608,675

CURRENT CONTROL CIRCUIT FOR SENSE AMPLIFIER

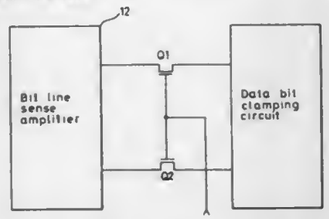
Jong G. Nam, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungki-do, Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 498,572

Claims priority, application Rep. of Korea, Jul. 7, 1994, 94-16282

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.06 **4 Claims**



1. In a dynamic random access memory device having a bit line sense amplifier for sensing and amplifying bit data on a bit line, and a data bit clamping circuit for supplying current to said bit line sense amplifier, a circuit for controlling the current to be supplied from said data bit clamping circuit to said bit line sense amplifier, comprising:

first path switching means for forming a current path from said data bit clamping circuit to said bit line sense amplifier in response to a first current control signal from a global decoder during a refresh operation;

path control means for generating a second current control signal in response to an address signal; and

second path switching means connected between said first path switching means and said at a bit clamping circuit, for opening/closing said current path in response to said second current control signal from said path control means.

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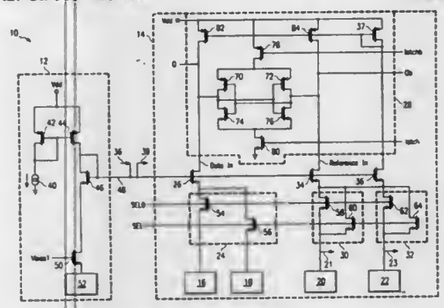
CURRENT LIMITED CURRENT REFERENCE FOR NON-VOLATILE MEMORY SENSING

David L. Medlock, Austin, and Eric J. Swanson, Buda, both of Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Aug. 31, 1993, Ser. No. 114,478

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **5 Claims**



1. A non-volatile memory comprising:

a) a plurality of non-volatile semiconductor memory cells coupled through a first current limiting transistor to a sense amplifier;

b) a current reference circuit comprising a current path including a current source, a first transistor, and an additional nonvolatile semiconductor memory cell programmed to be conductive; and

c) wherein the voltage on a gate of said first transistor is responsive to the current through said current path, a gate of said current limiting transistor being responsive to the voltage on said gate of said first transistor such that the maximum current through said current limiting transistor is limited by the current through said current path.

5,608,677

BOOSTING VOLTAGE CIRCUIT USED IN ACTIVE CYCLE OF A SEMICONDUCTOR MEMORY DEVICE

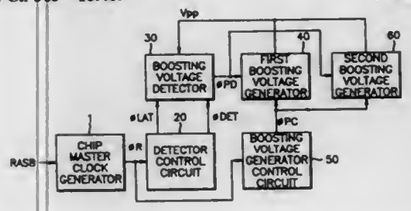
Sei-Seung Yoon; Chan-Jong Park, both of Seoul, and Byung-Chul Kim, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 579,913

Claims priority, application Rep. of Korea, Dec. 29, 1994, 38503/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **3 Claims**



1. A voltage boosting circuit for a semiconductor memory device comprising:

first circuit means for supplying a chip master clock determining an active state and stand-by state in respective response to first and second states thereof, for generating a detector control signal a first delay time after the first state of said chip master clock is generated, and for generating a latch control signal a second delay time after the first state of said chip master clock is generated, said detector control signal having a first pulse width and said latch control signal having a second pulse width;

second circuit means for responding to said detector control signal and said latch control signal and generating a detecting signal indicative of a current state of a boosting voltage potential;

third circuit means for generating a boosting voltage generator control signal activated in response to said chip master clock and timed to occur simultaneously with said detecting signal; and

first and second boosting voltage generating means for generating said boosting voltage potential, respectively operating in said stand-by state and said active state in accordance with said detecting signal and said boosting voltage generator control signal.

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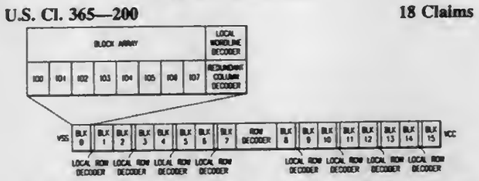
COLUMN REDUNDANCY OF A MULTIPLE BLOCK MEMORY ARCHITECTURE

Mark A. Lysinger, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1995, Ser. No. 509,351

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **18 Claims**



1. A column redundancy structure of an integrated circuit memory device, comprising:

a block of a memory array of the integrated circuit memory device, wherein the block is divided into a plurality of input/output groups with each input/output group of the plurality of input/output groups having a plurality of columns;

a plurality of column select multiplexing circuits, with a column select multiplexing circuit of the plurality of column select multiplexing circuits contained within each input/output group of the plurality of input/output groups and with the column select multiplexing circuit coupled to a write bus true, a write bus complement, a read bus true, and a read bus complement;

a plurality of redundant column input/output select circuits, with a redundant column input/output select circuit of the plurality of redundant column input/output select circuits contained within each input/output group of the plurality of input/output groups and with the redundant column input/output select circuit coupled to the write bus true, the write bus complement, the read bus true, and the read bus complement;

means contained within the column select multiplexing circuit for disabling a bad prime column of the column select multiplexing circuit; and

means contained within the redundant column input/output select circuit for enabling a redundant column of the memory array.

5,608,679

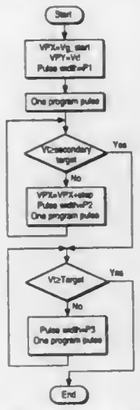
FAST INTERNAL REFERENCE CELL TRIMMING FOR FLASH EEPROM MEMORY

James Q. Mi, Sunnyvale; Johnny Javanifard, Sacramento, and Dennis Dilley, Fair Oaks, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 252,693, Jun. 2, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,415

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **20 Claims**



1. A method for storing a charge on a memory device comprising the steps of:

providing a first charging pulse to terminals of a memory device, the first charging pulse having a first charging voltage and a first duration such that the memory device stores close to a first amount of charge that is less than a target amount of charge; testing the memory device to determine whether the memory device stores more than the first amount of charge;

if the first amount of charge is less than a first level, providing a second set of charging pulses to terminals of the memory device to charge the memory device close to the first level, each charging pulse of the second set of charging pulses having a second duration which is less than the first duration and a second charging voltage having a second amount of charge such that the memory device stores close to the first amount of charge;

testing the memory device to determine whether the memory device stores more than the first amount of charge after each charging pulse of the second set of charging pulses;

once the memory device has been determined as storing more than the first amount of charge, providing a third set of charging pulses to terminals of the memory device until the memory device stores the target amount of charge, each of the charging pulses of the third set of charging pulses having a third duration which is less than the second duration and a third charging voltage such that a third amount of charge furnished by each charging pulse of the third set of charging pulses is approximately equal to an allowable variation from the target amount of charge; and

testing the memory device to determine whether the memory device stores more than the target amount of charge after each charging pulse of the third set of charging pulses.

5,608,680

BIT LINE SENSE AMPLIFIER FOR RESTORING AND SENSING DATA ON A BIT LINE

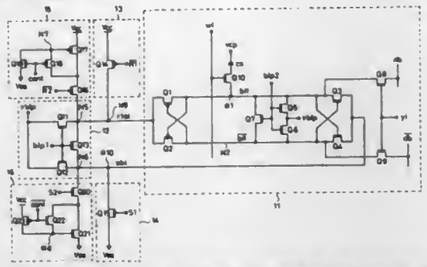
Young N. Oh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jul. 19, 1995, Ser. No. 504,082

Claims priority, application Rep. of Korea, Jul. 20, 1994, 94-17553

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—205 **5 Claims**



1. A bit line sense amplifier circuit for restoring and sensing data on a bit line in a semiconductor device, comprising:

a first restore signal circuit including a first PMOS transistor said first PMOS transistor being operated in response to a first clock signal;

a first sensing signal circuit including a first NMOS transistor, said first NMOS transistor being operated in response to a second clock signal;

a second restore signal circuit being operated in response to a first control signal and a third clock signal; and

a second sensing signal circuit being operated in response to a second control signal and a fourth clock signal;

said first and second restore signal circuits being connected in parallel to each other;

said first and second sensing signal circuits being connected in parallel to each other.

5,608,681

FAST MEMORY SENSE SYSTEM

Gordon W. Priebe, Champlin, and Robin H. Passow, Maple Plain, both of Minn., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 22, 1996, Ser. No. 589,531

Int. Cl.[6] G11C *11/40;8/00*

U.S. Cl. 365—207 **27 Claims**

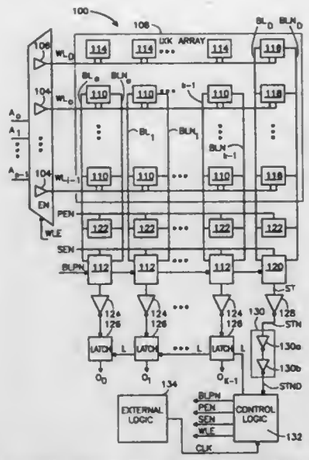
1. A fast sensing system for retrieving a data bit from a memory cell which asserts a voltage differential representing the data bit on complementary bit lines in response to a word line enable signal, said sensing system comprising:

a precharge amplifier for precharging both of the complementary bit lines;

a sense amplifier for coupling to the complementary bit lines to sense the voltage differential when enabled and for asserting a corresponding output signal, said sense amplifier being biased to switch to a default logic state in response to both of the bit lines being precharged, said sense amplifier being configured to have a fast slew rate when switching to an opposite logic state from said default logic state in response to sensing the voltage differential indicating said opposite logic state; and

control logic coupled to said precharge amplifier and said sense amplifier and receiving a dock signal and for asserting the word line enable signal, wherein said control logic enables said precharge amplifier and disables said sense amplifier and deasserts the word line enable signal while said clock signal is deasserted, and wherein in response to said clock signal being asserted, said control logic first disables said precharge amplifier and enables said sense amplifier to begin sensing said precharged bit lines, and then asserts the word line enable signal to enable the memory cell to assert the voltage differential on said bit lines while said sense amplifier is switching to said default logic state;

wherein said sense amplifier remains in said default logic state if the data bit indicates said default logic state and switches to said opposite logic state if the data bit indicates said opposite logic state.



5,608,682

SEMICONDUCTOR MEMORY DEVICE

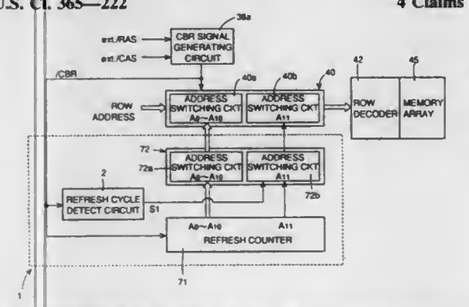
Shinichi Jinbo, and Shigeru Mori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,503

Claims priority, application Japan, Feb. 22, 1995, 7-033644

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **4 Claims**



1. A semiconductor memory device which y requires refresh of data, comprising:

a memory array including a plurality of memory cells arranged in rows and columns;

detecting means receiving a refresh instruct signal instructing refresh of said data for detecting a refresh cycle time using a previous input of the refresh instruct signal;

selecting means for selecting either a first number of memory cell rows or a second number of memory cell rows, greater than the first number, for refresh of data based on said refresh cycle time detected by said detecting means; and

refresh means for carrying out refresh of data of the memory cell row selected by said selecting means.

5,608,683

REFRESH METHOD OF REUSING ELECTRIC CHARGE

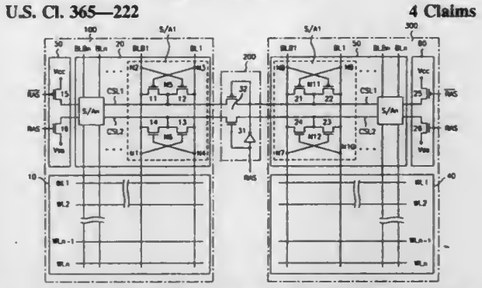
Ji-Bum Kim, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 16, 1996, Ser. No. 586,394

Claims priority, application Rep. of Korea, Oct. 13, 1995, 35383/1995

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **4 Claims**



1. A refresh method for a semiconductor memory device having first and second memory arrays, comprising:

a first step for performing a refresh operation of said first memory array by operating a sense amplifier with data outputted from memory cells on a word line selected by a refresh counter, and charging/discharging a bit line and its complementary bit line of the first memory array with electric charges of a supply voltage level and a ground voltage level;

a second step for transmitting the electric charges charged/discharged to the bit line and its complementary bit line of the first memory array to said second memory array after performing the refresh operation of the first step; and

a third step for using the transmitted electric charges in an initial refresh operation of the second memory array, and performing a refresh operation by charging/discharging a bit line and its complementary bit line of the second memory array with electric charges of the supply voltage level and ground voltage level respectively supplied from a power supply means.

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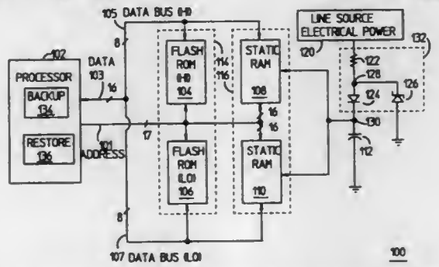
SYSTEM AND METHOD FOR RAM POWER AND DATA BACKUP UTILIZING A CAPACITOR AND ROM

Kelly J. Reasoner, and Eric E. Williams, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 13, 1994, Ser. No. 322,808

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—228 **4 Claims**



1. A random access memory (RAM) backup system, comprising:

a RAM, configured to store binary data, including a supply voltage input adapted to receive a supply voltage thereon;

a capacitor, electrically coupled to said voltage input of said RAM, configured to provide said RAM with a voltage for a period of time, said voltage sufficient for said RAM to maintain said storage of said data;

a read only memory (ROM) having separate locations for concurrently storing multiple copies of said data stored in said RAM; and

processing means, coupled to said RAM and said ROM, for transferring said copies of said data between said RAM and said ROM.

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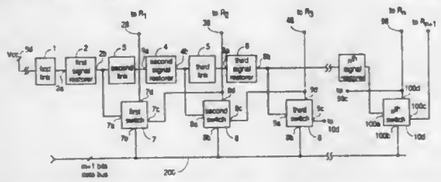
ADJACENT ROW SHIFT REDUNDANCY CIRCUIT HAVING SIGNAL RESTORER COUPLED TO PROGRAMMABLE LINKS AND A METHOD THEREOF

Larry D. Johnson, San Jose, and David J. Pilling, Los Altos Hills, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 2,775, Jan. 8, 1993, Pat. No. 5,508,969. This application May 26, 1995, Ser. No. 451,708

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **6 Claims**



1. A method for eliminating coupled noise in a row redundancy circuit for a semiconductor memory device, said row redundancy circuit comprising first linking means having a first lead and a second lead, and second linking means having a first lead and a second lead, said method comprising the steps of:

providing a signal on the second lead of said first means for linking; and

providing a restored signal corresponding to said signal to the first lead of the second means for linking.

5,608,686

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE WITH LOW POWER CONSUMPTION

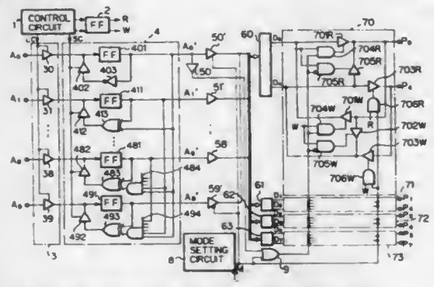
Yasuhiro Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 8, 1995, Ser. No. 512,420

Claims priority, application Japan, Aug. 12, 1994, 6-212082

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233 **13 Claims**



1. A synchronous semiconductor device comprising:

an internal address generating means for generating an m(m=2, 3, . . .)-bit internal address which is successively changed;

a memory section accessed by n(n<m) bits and having 2^{m-n} groups of internal data lines;

2^{m-n} groups of data input/output pins;

M (M=1, 2, . . .)-bit input/output configuration memory device mode setting means for accessing said memory section by n bits of said m-bit internal address having smaller transition frequencies and for selecting one group of said 2^{m-n} groups of internal data lines by (m−n) bits of said m-bit internal address having larger transition frequencies to connect said selected group of internal data lines to one group of said 2^{m-n} groups of data input/output pins; and

M×2^{m-n}-bit input/output configuration memory device mode setting means for accessing said memory section by n bits of said m-bit internal address having larger transition frequencies and for connecting said 2^{m-n} groups of internal data lines to said 2^{m-n} groups of data input/output pins.

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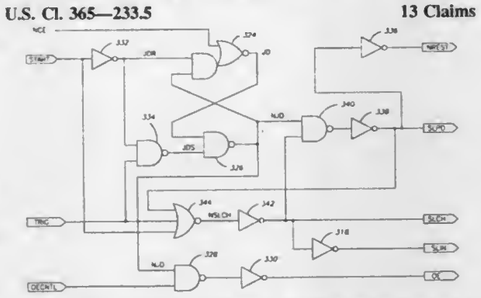
OUTPUT DRIVER CONTROL FOR ROM AND RAM DEVICES

James A. Komarek, Newport Beach; Clarence W. Padgett, Westminster; Scott B. Tanner, Irvine, all of Calif.; Shin-ichi Kojima, Amagasaki, Japan; Jack L. Minney; Motohiro Oishi, both of Irvine, Calif.; Keiji Fukumura, and H. Nakanishi, both of Hyougo, Japan, assignors to Creative Integrated Systems, Inc., Santa Ana, Calif., and Rocoh Company Ltd., Tokyo, Japan

Division of Ser. No. 290,549, Aug. 15, 1994, Pat. No. 5,487,038. This application Nov. 27, 1995, Ser. No. 563,212

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—233.5 **13 Claims**



1. A control circuit for controlling an output driver coupled to the data outputs of a memory having address transition detection circuitry, which memory is operable in a standby and an active memory modes in sequential memory cycles comprising;

an output enable latch circuit to provide internal memory of whether said memory is operating in said standby or active mode during a previous memory cycle;

a data latch circuit for providing internal memory of whether a new read cycle is beginning within said memory, said data latch circuit being reset when an address transition detection has occurred within said memory; and

logic circuit means for combining an output of said data latch circuit indicative of a memory read cycle with an output of said output enable latch circuit indicative of whether said prior memory cycle was standby or active, said logic circuit means for generating an output enable signal, OE, coupled to said output drivers of said memory to control float of said output drivers,

whereby smooth transition from old data to new data is obtained and system data bus contention in transitions from standby to active modes is eliminated.

5,608,688

DRAM HAVING OUTPUT CONTROL CIRCUIT

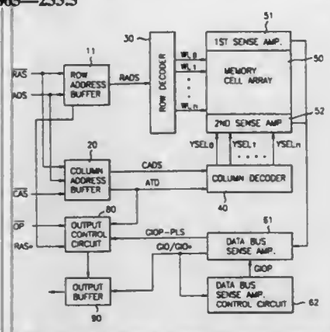
Sung M. Park, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 18, 1996, Ser. No. 588,170

Claims priority, application Rep. of Korea, Oct. 5, 1995, 34094/1995

Int. Cl.[6] G11C *7/06*

U.S. Cl. 365—233.5 **8 Claims**



1. A DRAM having an output control circuit comprises;

a row address buffer for outputting a row address signal and a delay signal in accordance with a row address strobe signal and an address signal;

a column address buffer for outputting a column address signal and an address transition detecting signal in accordance with said address signal, row address strobe and a column address strobe signal;

a row decoder for outputting a word line selection signal by decoding said row address signal;

a column decoder for outputting a column selection signal in accordance with said column address signal and the address transition detecting signal;

a memory cell array for outputting the stored data in accordance with said word line selection signal;

first and second sense amplifiers for amplifying the signal of data outputted from said memory cell array and outputting the signal of the amplified data in accordance with said column selection signal outputted from said column decoder;

a data bus sense amplifier for amplifying the signal of data outputted from said first and second sense amplifiers, and outputting the signals of the amplified data, i.e., first and second global input/output data signals and a global data bus precharge pulse signal, respectively;

a data bus sense amplifier controller for outputting to said data bus sense amplifier the global data bus precharge signal which is maintained in high level when said first and second global input/output data signals outputted from said data bus sense amplifier are in precharge state;

an output control circuit for receiving said delay signal outputted from said row address buffer, address transition detecting signal outputted from said column address buffer, and global data bus precharge pulse signal, and outputting an output control signal to control the undesired data not to be outputted; and

an output buffer for outputting a desired data from the DRAM when the output control signal is enabled.

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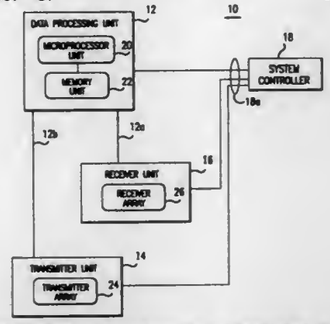
SOUND VELOCITY PROFILE SIGNAL PROCESSING SYSTEM AND METHOD FOR USE IN SONAR SYSTEMS

William J. Capell, Sr., Westwood, Mass., assignor to SeaBeam Instruments Inc., E. Walpole, Mass.

Filed Jun. 2, 1995, Ser. No. 460,797

Int. Cl.[6] G01S *15/89*

U.S. Cl. 367—87 **38 Claims**



1. A method of calculating a velocity of sound in an ocean, gulf, sea, bay, littoral region, lake, or river at a first locale using a sensing system having at least one sensor, said method comprising:

calculating echo time data of a first sounding which is projected in the direction of the first locale at a first angle;

calculating bathymetric data for the first locale using echo time data of the first sounding and a first estimated sound velocity;

calculating echo time data of a second sounding which is projected in the direction of the first locale at a second angle;

calculating bathymetric data for the first locale using echo time data of the second sounding and a second estimated sound velocity; and

calculating sound velocity at the first locale using the bathymetric data and echo time data of the first sounding and bathymetric data and the echo time data of the second sounding.

5,608,690

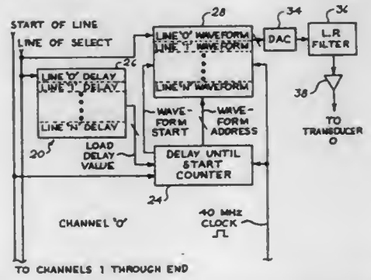
TRANSMIT BEAMFORMER WITH FREQUENCY DEPENDENT FOCUS

John A. Hossack, Palo Alto; Jian-Hua Mo, Sunnyvale, and Christopher R. Cole, Cupertino, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Mar. 2, 1995, Ser. No. 397,833

Int. Cl.[6] H04B *1/02*

U.S. Cl. 367—138 **41 Claims**



1. In a transmit beamformer for an imaging system comprising a plurality of transducers, each transducer responsive to a respective transmit waveform to produce a respective transducer waveform, the improvement comprising:

a transmit waveform generator which generates the transmit waveforms, each of at least a plurality of the transmit waveforms comprising at least first and second frequency components included in a single burst of energy, said first frequency

components timed to cause corresponding first frequency components of the transducer waveforms to focus at a first depth, and said second frequency components timed to cause corresponding second frequency components of the transducer waveforms to focus at a second depth, less than the first depth.

5,608,691

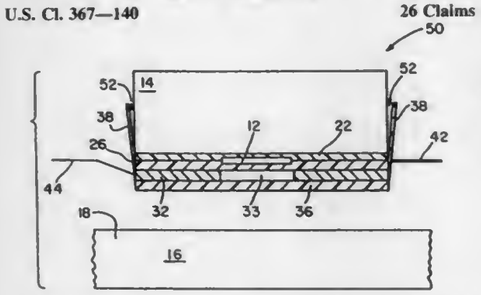
EMAT WITH INTEGRAL ELECTROSTATIC SHIELD

Daniel T. MacLauchlan, Lynchburg Township; Paul J. Latimer, Lynchburg, and Wayne M. Latham, Forest, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 251,542, May 31, 1994, Pat. No. 5,436,873. This application Jul. 18, 1996, Ser. No. 503,777

Int. Cl.[6] H04R *23/00*

U.S. Cl. 367—140 **26 Claims**



1. An integrated shield and coil assembly for an electromagnetic acoustic transducer (EMAT), comprising:

a substrate, having first and second surfaces on which electrical circuits can be etched;

a coil pattern, having conductors etched onto the first surface of the substrate; and

a shield pattern, having a configuration corresponding to and aligned with the coil pattern, to substantially shield the coil pattern from electrostatic noise present on the workpiece and to prevent eddy current generation in the shield caused by the coil pattern, etched onto the second surface of the substrate.

5,608,692

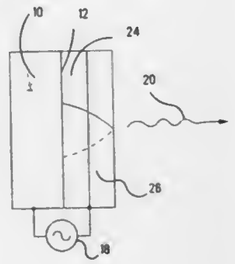
MULTI-LAYER POLYMER ELECTROACOUSTIC TRANSDUCER ASSEMBLY

Minoru Toda, Lawrenceville, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 8, 1994, Ser. No. 193,348

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—157 **11 Claims**



1. A a piezoelectric transducer comprising backing layer having a lower surface and an upper surface;

A first layer of polymer piezoelectric material having a lower surface and an upper surface, said lower surface disposed on said upper surface of said backing layer;

A second layer of polymer piezoelectric material having a lower surface and an upper surface, said lower surface disposed on said upper surface of said first layer of material; and

A source of alternating electric voltage applied between said first layer of material and said backing layer by selectively disposed terminals creating an acoustic wave in said first layer and said second layer of material, said first and second layers of film having a total thickness having a wavelength approximately equal to one quarter of the wavelength of said acoustic wave in said layer of film.

5,608,693

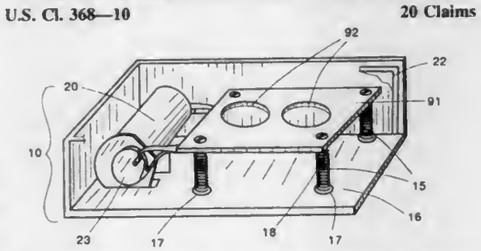
NON-LINEAR VIBRATION DEVICE

Jeffrey Richards, 1801 E. Tropicana, #9, Las Vegas, Nev. 89119

Filed May 7, 1993, Ser. No. 57,885

Int. Cl.[6] G04B *47/00;3/00;* **G04D** *3/00;* **B01F** *11/00*

U.S. Cl. 368—10 **20 Claims**



1. An apparatus for producing accented vibrations to an object comprising:

means for holding said object

means for elastically suspending said holding means;

means for periodically displacing said suspending means; and

means for periodically engaging and disengaging said displacement means from said suspending means, such that said elastically suspending means allows motion having more than one degree of freedom.

5,608,694

MECHANICAL TIMEPIECE PROVIDED WITH A TOURBILLON

Maurice Grimm, and André Beyner, both of St-Blaise, Switzerland, assignors to Omega S.A., Bienoe, Switzerland

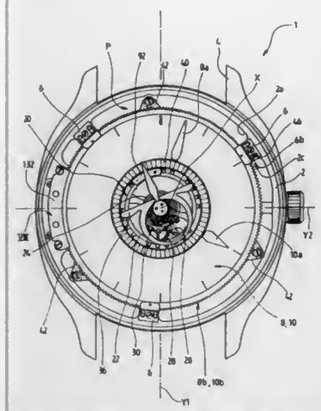
Filed Apr. 25, 1995, Ser. No. 429,238

Claims priority, application Switzerland, May 7, 1994, 01424/94

Int. Cl.[6] G04B *15/00;19/20*

U.S. Cl. 368—127 **10 Claims**

1. A mechanical timepiece comprising a barrel meshing with a tourbillon, wherein said tourbillon having a base and an escape-pinion formed by a satellite pinion which meshes with a fixed toothed wheel located below said base, wherein said tourbillon is rotatably mounted inside said timepiece on a single pivot supporting said tourbillon by its base, said tourbillon being suspended by



its lower part on said single pivot, and being completely free in its upper part.

5,608,695

OPTICAL PICK-UP APPARATUS WITH TRACKING ERROR DETECTION BY DETECTION OF AMOUNT OF LIGHT IN FAN FIELD

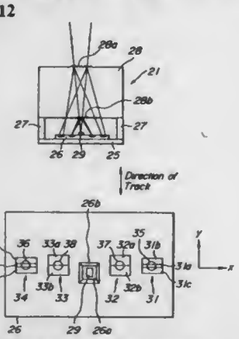
Takeshi Yamazaki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 337,190

Claims priority, application Japan, Nov. 8, 1993, 5-278286

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.12 **4 Claims**



1. An optical pick-up apparatus comprising:

a semiconductor laser for emitting a laser beam;

a converging optical system projecting the laser beam emitted by said semiconductor laser onto an optical record medium as a spot;

a hologram means including a first hologram for diffracting a return laser beam reflected by said optical record medium in a diffracting direction to produce at least one diffracted beam, said hologram means being constructed to give said diffracted beam astigmatism; and

a photodetecting means for receiving said diffracted beam emanating from said hologram means to detect a tracking error signal, said photodetecting means including a plurality of light receiving regions which are divided by a division line substantially parallel with the diffracting direction of said hologram means, said tracking error signal being detected on the basis of a distribution of an amount of light in a far field; wherein said photodetecting means further comprises third and fourth photodetectors, and said hologram means further comprises a second hologram for diffracting the laser beam reflected by the optical record medium to produce ±1-order diffracted beams directed to said third and fourth photodetectors and 0-order beam directed to said first hologram, whereby a focusing error signal is derived by processing output signals from said third and fourth photodetectors.

5,608,696

OPTICAL PICKUP FOR USE IN AN OPTICAL RECORDING/REPRODUCING APPARATUS

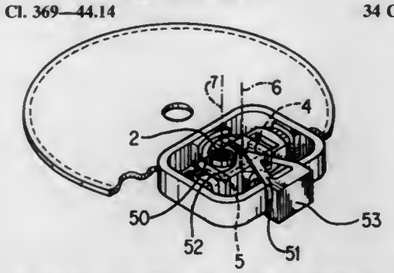
Tomohiro Makigaki, Nagano-ken, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 306,988

Claims priority, application Japan, Jul. 8, 1994, 6-157450

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.14 **34 Claims**



1. An optical pickup used in an optical recording/reproducing apparatus comprising:

a laser unit that emits a light beam;

an objective lens;

a movable unit that includes said laser unit and said objective lens, said movable unit having an inner peripheral surface and a center of gravity located on an axis of rotation; and

two tracking coils disposed on opposite sides of said inner peripheral surface of said movable unit so that said axis of rotation is disposed between said two tracking coils, said two tracking coils driving the movable unit in tracking directions;

wherein said movable unit including said laser unit and said objective lens is rotated such that said objective lens is rotated around said axis of rotation located at a position displaced from a center of said objective lens, said axis of rotation intersecting an optical axis of said light-beam.

5,608,697

RECORD CARRIER CONTAINING AN AUDIO AND/OR VIDEO SIGNAL WHICH HAS BEEN ENCODED AND INCLUDES A DECODER DELAY TIME PARAMETER INDICATING A TIME DELAY FOR ONE OR MORE PORTIONS OF THE SIGNAL

Wiebe De Haan, and Jan Van Der Meer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 299,027, Aug. 31, 1994, which is a continuation of Ser. No. 86,402, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 711,186, Jun. 5, 1991, abandoned. This application Mar. 18, 1996, Ser. No. 616,951

Claims priority, application United Kingdom, Jun. 5, 1990, 9012538

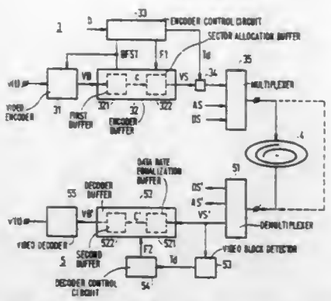
Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—48 **9 Claims**

1. A record carrier for use with a decoding device which decodes an audio and/or video signal which has been encoded as successive code blocks making up an encoded signal, which decoding device includes a decoder buffer for receiving the encoded signal and a decoder for decoding the encoded signal, the record carrier comprising:

the code blocks; and

a delay time parameter which represents a length of time during which a code block of the code blocks is to be stored within the decoder buffer before decoding by the decoder in order to



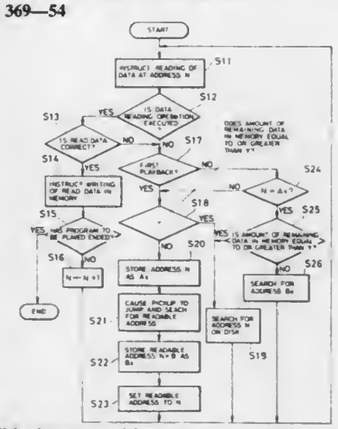
ensure that the decoder buffer will not experience overflow or underflow of the code blocks.

5,608,698

DISK PLAYER WHICH AVOIDS SOUND FAILURE RESULTED FROM RETRY OF DATA READING

Katsuaki Yamanoi; Isamu Miura, and Tomoko Miyagawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 556,051
Claims priority, application Japan, Nov. 11, 1994, 6-277317
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—54 **3 Claims**



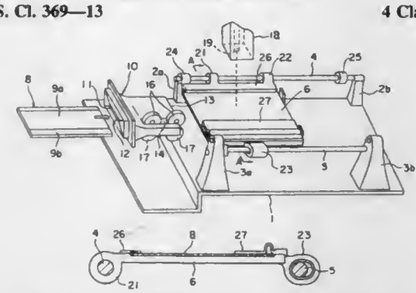
1. A disk player comprising:
reading means for reading data, recorded on a disk, for each predetermined block affixed with address information;
a memory for storing data read by said reading means;
memory control means for writing data into said memory when said data is correctly read, block by block, from said disk by said reading means, and, upon incorrect reading of data, inhibiting writing of said data into said memory and reading data from said memory at a speed slower than a writing speed;
means for detecting an amount of data still remaining in said memory after being written therein;
read control means for controlling said reading means in such a way as to read again data which has not been read correctly when said amount of remaining data is equal to or greater than a first predetermined value, and controlling said reading means in such a way as to read data at a new address when said amount of remaining data becomes smaller than said first predetermined value; and
means for determining if it is a first playback for said disk,
said read control-means including,
means for storing, as an error data address, address information for data which has not been read correctly before said amount of remaining data becomes smaller than said first predetermined value when it is said first playback, and
means for controlling said reading means in such a way as to read again data which has not been read correctly in a different playback from said first playback, when an address whose data has not been read correctly is equal to said error data address stored at a time of said first playback and said amount of remaining data is equal to or greater than a second predetermined value larger than said first predetermined value, and controlling said reading means in such a way as to read data at a new address when said amount of remaining data becomes smaller than said second predetermined value.

5,608,699

INFORMATION RECORDING AND REPRODUCING APPARATUS WHICH PREVENTS WEAR OF A SLIDING CARD CARRIAGE

Hiroshi Hayashi, Sakado; Tadao Ogino, Higashi-Matsuyama, and Minoru Matsuo, Kawagoe, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,740
Claims priority, application Japan, Feb. 26, 1993, 5-038362; Jun. 4, 1993, 5-134612
Int. Cl.[6] G11B *7/00; 11/00*
U.S. Cl. 369—13 **4 Claims**



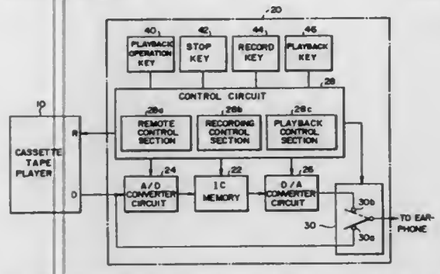
1. Apparatus for recording and reproducing information, comprising:
a chassis;
a main guide rail and an auxiliary guide rail spaced on an upper surface of said chassis, said main guide rail and said auxiliary guide rail respectively having circular cross sections and cylindrical surfaces;
a card carriage capable of retaining an optical memory card, said card carriage being mounted on said main and auxiliary guide rails and linearly movable along said main and auxiliary guide rails;
a main guide beating and an auxiliary plain bearing for supporting said card carriage;
a head carriage movable perpendicularly to the direction of a movement of said card carriage; and
an optical recording and reproducing head, fixedly mounted on said head carriage, for recording and reproducing data into and out of the optical memory card.
wherein the axis of said auxiliary guide rail is positioned in the same plane as the axis of said main guide rail, the axis of said auxiliary guide rail being oblique at a predetermined very small angle to the axis of said main guide rail.
the main guide bearing has a round cylindrical bearing surface fitting the cylindrical surface of the main guide rail, and
the auxiliary plain beating has a beating bore having a slot-shaped cross section, opposite edge surfaces of the bearing bore of the auxiliary beating being in contact with the cylindrical surface of said auxiliary guide rail, the auxiliary guide rail contacting the auxiliary plain beating at a point that varies laterally along the opposite edge surfaces of the bearing bore as the card carriage moves along the guide rails to prevent linear local abrasion.

5,608,700

REMOTE CONTROLLER HAVING INTEGRATED CIRCUIT MEMORY FOR RECORDING AND REPLAYING SIGNALS FROM AUDIO PLAYBACK DEVICES AND/OR EXTERNAL VOICE SIGNALS

Takeshi Ikeda, 2-5-6-213, Sanno, Ohta-ku, Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,397
Int. Cl.[6] G11B *19/00*
U.S. Cl. 369—24 **19 Claims**



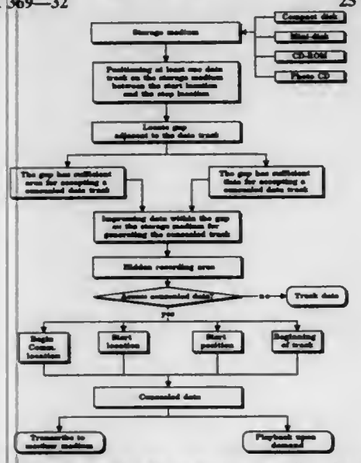
1. A remote controller for connecting to and controlling an audio playback device which produces a playback audio signal from audio data stored in a recording medium, the remote controller comprising:
operating means for producing recording and playback commands which correspond to respective operations directing recording and playback;
memory means for storing an audio signal;
recording means for writing the audio signal into the memory means in response to the recording command; and
playback means for producing a playback output from the audio signal stored in the memory means in response to the playback command.

5,608,701

METHOD OF AND ARTICLE FOR MASKING DATA ON A STORAGE MEDIUM

Randall Jamail, P.O. Box 980369, Houston, Tex. 77098

Continuation of Ser. No. 343,637, Nov. 22, 1994, Pat. No. 5,467,327, which is a continuation-in-part of Ser. No. 301,040, Sep. 6, 1994, Pat. No. 5,471,443, which is a continuation of Ser. No. 172,849, Dec. 22, 1993, abandoned. This application Aug. 2, 1995, Ser. No. 510,201
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **25 Claims**



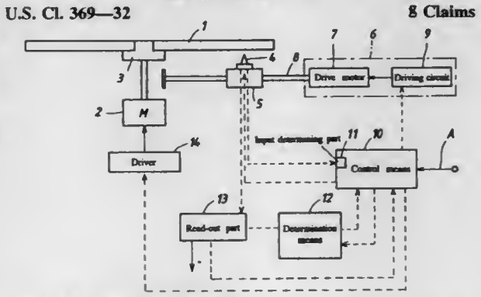
1. A method of masking data on an optical medium for selective playback upon demand or for transcription to another medium,
the optical medium adapted for communication with a player or transcriber such that the optical medium has a start location and a stop location with at least one data track therebetween,
each data track including a data recording area for executing at least one of recording and reproducing the data, and each track including a start position indicative of a beginning location for the data recording area for that track, the start location precedes the first start position for the first track for at least one of location or time, and the stop location follows the last data recording area for the last track for at least one of location or time,
the first start position is indicative of the beginning of the data recording area for a first track and the start position for each subsequent track, if any, is indicative of the beginning of the data recording area for the respective track, the method comprising the steps of:
(a) determining the position of the start location on the optical medium,
(b) determining the position of the stop location on the optical medium,
(c) positioning at least one data track on the optical medium between the start location and the stop location such that the data track has, adjacent thereto, at least one of sufficient location or time for accepting a concealed data track, which sufficient location or time is defined as a gap,
(d) impressing data on the optical medium and within the gap for defining the concealed track having a hidden recording area such that the hidden recording area is located adjacent any data track and contains concealed data which can be accessed upon demand for transcription to another medium or for playback.

5,608,702

DISC PLAYER CAPABLE OF CALCULATING THE TRAVEL TIME OF THE OPTICAL PICK-UP

Hideo Yano, and Norio Tsunoda, both of Tokyo, Japan, assignors to Asahi Corporation, Japan

Filed Feb. 23, 1996, Ser. No. 605,851
Claims priority, application Japan, Feb. 24, 1995, 7-037107
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **8 Claims**



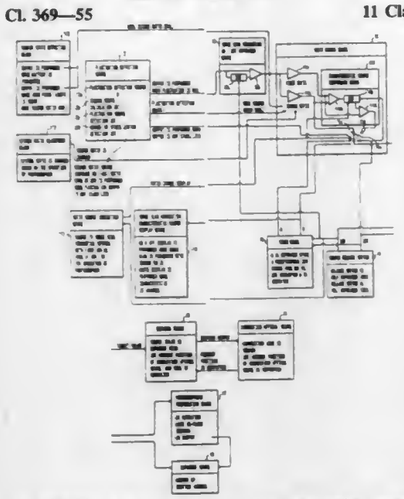
1. A disc player comprising:
a light pickup capable of emitting laser beam toward a disc and receiving laser beam reflected thereby;
a drive means for moving the light pickup in the radial direction of the disc;
a control means adapted to have an initialization signal inputted therein for controlling the light pickup and the drive means so that the light pickup is moved at a constant speed in the radial direction of the disc while emitting laser beam by the input of initialization signal; and
a determination means for having, inputted therein, a signal fed from the light pickup while the light pickup is moving in accordance with the initialization signal, calculating a time required for the light pickup to move until reaching at least a signal-recording inner circular end of the disc on the basis of the inputted signal and outputting the calculated time to the control means.

5,608,703

IMAGE BLUR PREVENTION APPARATUS

Koichi Washisu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,134
Claims priority, application Japan, Dec. 26, 1994, 6-322406
Int. Cl.[6] G03B *5/00*
U.S. Cl. 369—55 **11 Claims**



1. An apparatus adapted to an image blur prevention apparatus, comprising:

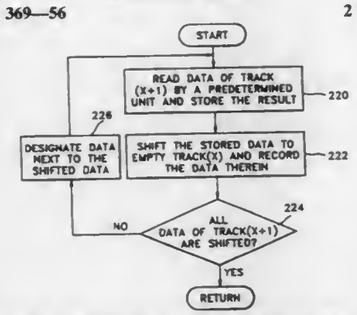
a control unit for performing control to switch operations between a first image blur prevention operation and a second image blur prevention operation with respect to the same image blur state in accordance with a start of a photographing operation, said control unit switching the operations independently of an image blur frequency.

5,608,704

CONTROL METHOD FOR RESTORING UNUSABLE AREA OF DISK

Jong-woon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 498,918
Claims priority, application Rep. of Korea, Jul. 7, 1994, 94-16790
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—56 **2 Claims**



1. A method for restoring an unused area of a disk, the disk having a plurality of tracks sequentially numbered from 1 to N to be used for recording and reproducing, and having a user table of contents for storing information relating to each of the plurality of tracks, the method comprising the steps of:

(a) erasing data of an arbitrary track (X) among said plurality of tracks;

(b) shifting data of a track (X+1) to said track (X);

(c) reforming table of contents information of said tracks (X) and (X+1);

(d) determining whether said track (X+1) is said track N;

(e) incrementing the value of X by one if said track (X+1) is not determined to be said track N in the determining step (d)

(f) repeating steps (b) through (e) until said track (X+1) is determined to be said track N in the determining step (d);

(g) reforming the information of said track N to incorporate an area of said track N from which data has been shifted during any of said steps (b) through (h) and an area of said track N which is unused at the time said step (a) is performed if said track (X+1) is determined to be said track N in the determining step (d); and

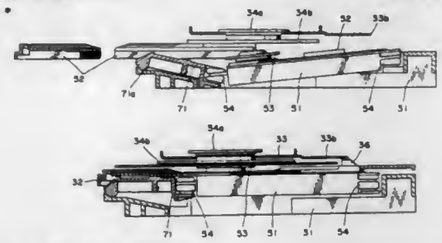
(h) recording the track information reformed through said steps (c) and (g) in the user table of contents of said disk.

5,608,705

DISK LOADING APPARATUS WITH ROTATIONALLY ENGAGING DISK TABLE

Akira Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 33,143, Mar. 16, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 351,713
Claims priority, application Japan, Mar. 19, 1992, 4-093825
Int. Cl.[6] G11B *33/02*
U.S. Cl. 369—77.1 **8 Claims**



1. A disc drive comprising:

a main chassis having a first main connecting member and a second main connecting member;

a turntable having a top surface for carrying a disc;

a motor connected to the turntable for rotationally driving the turntable;

an optical pickup;

a turntable chassis having a first turntable connecting member and a second turntable connecting member, the turntable chassis being connected to the motor and the optical pickup;

a first shock absorber connected to the first turntable connecting member and the first main connecting member so that the turntable chassis rotates towards and away from the main chassis around a first axis of rotation defined by an intersection of a plane of the first turntable connecting member and the first main connecting member;

a pivotal chassis having a first pivotal connecting member and a second pivotal connecting member, the second pivotal connecting member being rotatably connected to the second main connecting member so that the pivotal chassis rotates towards and away from the main chassis around a second axis of rotation defined by the second pivotal connecting member and the second main connecting member;

a second shock absorber continuously connected to the first pivotal connecting member and the second turntable connecting member so that, as the pivotal chassis rotates towards and away from the main chassis, the pivotal chassis forces the turntable chassis to move towards and away from, respectively, the main chassis around a third axis of rotation defined by an intersection of a plane of the second turntable connecting member and the first pivotal connecting member; and

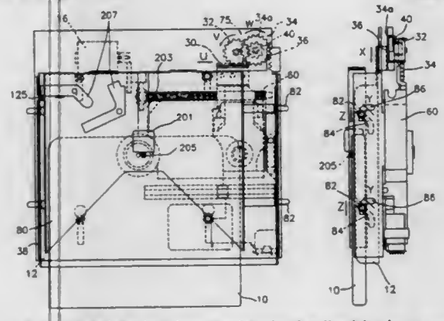
second driving means for moving the pivotal chassis towards and away from the main chassis.

5,608,706

FRONT LOADING DISC PLAYER

KwangLim Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 26, 1994, Ser. No. 295,045
Claims priority, application Rep. of Korea, Aug. 27, 1993, 93-16801
Int. Cl.[6] G11B *17/04;33/02*
U.S. Cl. 369—77.2 **2 Claims**



1. A front loading disc player performing loading/ejecting operations of a disc inserted in a tray, said front loading disc player comprising:

a pickup unit having a rack gear portion on an upper end portion for playing back said disc, said pickup unit being fed by a lead screw;

a moving plate having a rack gear portion formed on an outer side of a rear portion thereof, said moving plate traveling rearwards and frontwards;

a pickup unit driving means including a feeding motor for feeding said pickup unit, a shaft gear fixed to a shaft of said feeding motor, a first double gear having a first wheel gear portion meshed with said shaft gear and a first pinion gear portion formed in one body with said first wheel gear portion and in a smaller diameter compared to said first wheel gear portion, a first wheel gear having a circular center groove and meshed with said first pinion gear portion, and a lead screw meshed with said pickup unit and whose one end is fixed to said center groove of said first wheel gear so as to feed said pickup unit in accordance with a rotation of said first wheel gear; and

a disc loading/unloading means including a second wheel gear meshed with said rack gear portion of said pickup unit and a second double gear having a second wheel gear portion meshed with said rack gear portion of said moving plate and a second pinion gear portion formed in one body with said second wheel gear portion and in a smaller diameter compared to said second wheel gear portion and meshed with said second wheel gear,

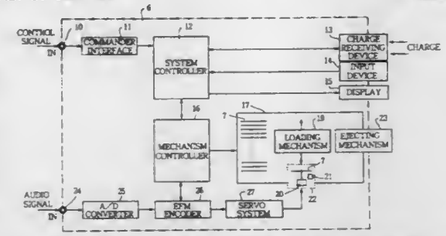
wherein said rack gear portion of said pickup unit is meshed with said second wheel gear only while a disc is loaded and unloaded, and said rack gear portion of said moving plate is normally meshed with said second wheel gear portion of said second double gear.

5,608,707

RECORDING SYSTEM FOR SIGNALONG DISC PLAYER

Masaya Ogawa; Toshiji Daito, and Shinichi Takata, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 132,353, Oct. 6, 1993, abandoned. This application Jan. 31, 1996, Ser. No. 594,510
Claims priority, application Japan, Oct. 14, 1992, 4-275852
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—84 **3 Claims**



1. A recording system for a singalong optical disc player, comprising:

disc outlet means;

a storing means for storing a plurality of recordable optical discs;

selecting means for selecting a plurality of songs from the stored optical disc:

loading means for carrying the optical disc between the storing means, the recording device, and the disc outlet means;

input means for applying an audio signal including an accompaniment reproduced by the singalong optical disc player and a vocal part sang at the accompaniment to the recording device;

discharging means for discharging a recorded disc to the disc outlet means; and

control means for controlling the recording system so as to be operated in accordance with signals fed from the singalong optical disc player, said control means including determining means for determining that the singalong optical disc player is in a disc playing state, said control means also for producing a recording signal,

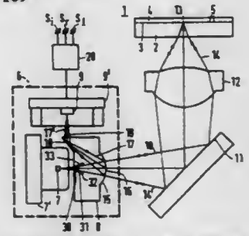
said recording device being responsive to said recording signal, to thereby record information, said control means including finalizing means responsive to an electrical ejection instruction to eject for performing an electrical finalization for completing the recording before ejecting the recorded optical disc.

5,608,708

OPTICAL BEAM-SPLITTING ELEMENT

Willem G. Ophey, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 488,323
Claims priority, application European Pat. Off., Jun. 7, 1994, 94201608
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—109 **16 Claims**



14. An optical scanning device for scanning an information plane, comprising a radiation source unit comprising a diode laser for generating a radiation beam having a first direction; an optical

beam-splitting element having a first surface on which the radiation beam is incident, and being provided with a grating for generating a sub-beam having a second direction different from the first direction; a radiation-sensitive detection system arranged in the path of the sub-beam; and an objective system for focusing the radiation beam supplied by the unit to form a scanning spot on the information plane,

the detection system being arranged in the unit for converting radiation in the sub-beam reflected from the information plane into an electric signal representing information stored in the information plane,

wherein the element comprises a mirror for changing the direction of the sub-beam from the second direction to a third direction different from the first direction, the angle between the first direction and the second direction being smaller than the angle between the first direction and the third direction.

5,608,709

BEAM SPLITTER ARRANGEMENT FOR MAGNETO-OPTICAL RECORDING DEVICE

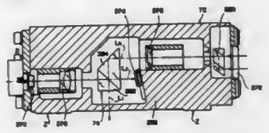
Isao Okuda; Shimpei Shinozaki; Hiroshi Kanazawa, and Suguru Takishima, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

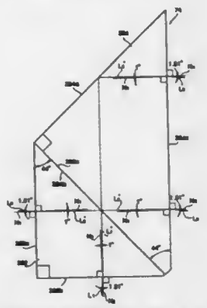
Filed Nov. 4, 1994, Ser. No. 334,071

Claims priority, application Japan, Nov. 6, 1993, 5-300874

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **10 Claims**





1. A beam splitter arrangement for a cemented-prism beam splitter used in a magneto-optical disk drive, comprising:

a first prism;

a second prism; and

a semi-transmissive layer provided between a surface of said first prism and a surface of said second prism, and said beam splitter being formed by cementing said surfaces of said first prism and said second prism, and

wherein refractive surfaces of said beam splitter are inclined from said cemented surfaces by a predetermined amount of inclination, said predetermined amount of inclination based on a predetermined relationship between a predetermined optical index of said prisms and a predetermined angle of incidence of an incident beam into said beam splitter, such that (a) split beams leaving said beam splitter are each parallel to or perpendicular to said incident beam, and (b) portions of said incident beam and of split beams internal to said beam splitter are reflected at refractive surfaces of said beam splitter, and said reflected portions are reflected by said refractive surfaces at angles other than corresponding angles of incidence to said refractive surfaces.

5,608,710

PHASE CHANGING RECORDING MEDIUM WITH AMORPHOUS POINTS EACH FORMED BY A PAIR OF HIGH POWER AND LOW RECORDING PULSES

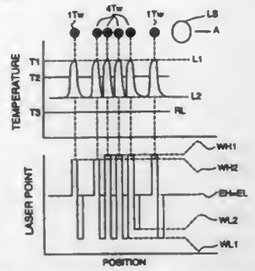
Hiroyuki Minemura, Kodaira, and Tetsuya Fushimi, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1995, Ser. No. 371,152

Claims priority, application Japan, Jan. 31, 1994, 6-009117

Int. Cl.[6] G11B *7/007*

U.S. Cl. 369—116 **44 Claims**



1. An optical information recording apparatus for recording information, comprising:

a phase change optical information recording medium;

an optical system for irradiating the recording medium with a pulse width modulated light beam including a high powered recording light pulse and a lower powered nonrecording light pulse;

a drive system for relatively rotating the recording medium and irradiating the modulated light beam on predetermined tracks at a relative speed of v;

a plurality of record marks on said recording medium, each record mark having a spatial length of N×L and being readable by the light beam to effectively produce a single level reproduced signal, wherein N is a positive integer;

some of said record marks each being a train of N (N>1) spatially independent record amorphous points that are spaced at a minimum distance L and spaced from each other sufficiently that they do not overlap, and each amorphous point having a length less than L;

wherein L is equal to a beam time width Tw×v; and

each record mark consisting of N pairs of the amorphous point on the recording medium caused by the high powered recording light pulse with a time width of t and a space caused by the lower powered recording light pulse with a time length of Tw-t.

5,608,711

METHOD AND MEANS FOR CHANGING PIT DEPTH ON AN OPTICAL RECORDABLE MEDIUM

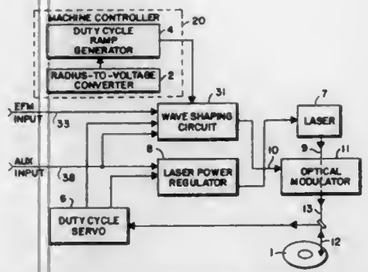
John F. Browne, Laguna Niguel; Richard L. Wilkinson, La Mirada, and William W. Boyle, Covina, all of Calif., assignors to Optical Disc Corporation, Santa Fe Springs, Calif.

Filed Mar. 8, 1995, Ser. No. 400,671

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **7 Claims**

1. A dynamic waveform shaping circuit for use in an optical recording apparatus which includes a writing light beam source and an optical modulator for modulating the intensity of the writing beam of light above and below a threshold level of a moving recording medium in response to a modulator drive signal for recording information on a surface of the medium, the light beam being capable of forming a track of surface discontinuities in the moving recording medium when the writing beam is above the threshold and incapable of forming said track of surface discontinuities in the moving recording medium when the writing beam is below the threshold, said waveform shaping circuit comprising:



a wave shaping circuit, coupled to said modulator, for receiving a substantially rectangular waveform provided as said modulator drive signal to modulate the writing beam;

a duty cycle servo coupled to said wave shaping circuit for maintaining a predetermined duty cycle of surface discontinuities along said track; and

wave shape modifying means, coupled to said wave shaping circuit, for altering the effects of said duty cycle servo to produce a modulator drive signal which forms surface discontinuities having a varying duty cycle along said track of surface discontinuities.

5,608,712

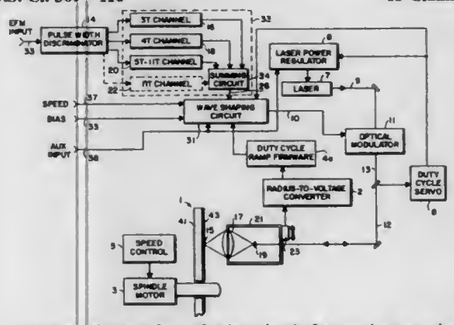
METHOD AND MEANS FOR VARYING PIT DUTY CYCLE AND CHANGING PIT DEPTH ON AN OPTICAL RECORDABLE MEDIUM

John H. Rilum, Tustin; Richard L. Wilkinson, La Mirada; Shigang Li, Norwalk; John F. Browne, Laguna Niguel, and William W. Boyle, Covina, all of Calif., assignors to Optical Disc Corporation, Santa Fe Springs, Calif.

Filed Mar. 8, 1995, Ser. No. 400,672

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **13 Claims**



1. A dynamic waveform shaping circuit for use in an optical recording apparatus which includes a writing light beam source and an optical modulator for modulating the intensity of the writing beam of light above and below a threshold level of a recording medium, moving relative to the light beam, in response to a modulator drive signal for recording information on a surface of the medium, the light beam being capable of forming a track of surface discontinuities in the relatively moving recording medium when the writing beam is above the threshold and incapable of forming said track of surface discontinuities in the relatively moving recording medium when the writing beam is below the threshold, said waveform shaping circuit comprising:

a wave shaping circuit, coupled to said modulator, for receiving a series of pulses of substantially rectangular waveform and of identifiable pulse types provided as said modulator drive signal to modulate the writing beam;

a duty cycle servo coupled to said wave shaping circuit for maintaining a predetermined duty cycle of surface discontinuities along said track; and

wave shape modifying means, coupled to said wave shaping circuit, altering the effects of said duty cycle servo to produce a modulator drive signal which forms surface discontinuities having a varying duty cycle along said track of surface discontinuities, said wave shape modifying means comprising means for altering the dimension of the surface discontinuities in a direction perpendicular to the recording surface along said track of surface discontinuities dependent upon the pulse types corresponding to said individual surface discontinuities.

5,608,713

BIT ALLOCATION OF DIGITAL AUDIO SIGNAL BLOCKS BY NON-LINEAR PROCESSING

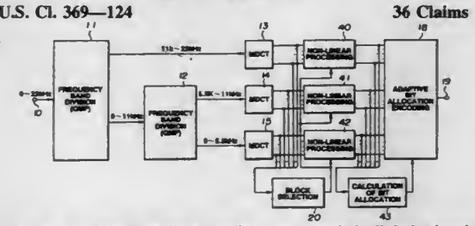
Kenzo Akagiri; Yoshiaki Oikawa, both of Kanagawa, and Hiroshi Suzuki, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,287

Claims priority, application Japan, Feb. 9, 1994, 6-015117

Int. Cl.[6] H03M *7/30*

U.S. Cl. 369—124 **36 Claims**



1. A recording medium having an encoded digital signal recorded thereon, said recording medium being prepared by the steps of:

converting a digital signal into signal components in a plurality of blocks, each block having a finite time width and a finite frequency width;

non-linearly processing signal components of at least some of the blocks; and

quantizing the non-linearly processed signal components for generating recording data, and recording said recording data on the recording medium, wherein said signal components are spectral components and said step of non-linearly processing includes enlarging the spectral components except at least the spectral component which gives the maximum value in each block.

5,608,714

STRUCTURE FOR SUPPORTING DISC STOCKERS IN A DISC CHANGER WITH A MANUALLY OPERABLE RELEASE LEVER

Katsuhiro Shiba; Minoru Goto; Takao Yamada; Norihisa Kato; Jun Takahashi; Kenji Okuda, and Kenji Muratani, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,398

Claims priority, application Japan, Sep. 29, 1993, 5-243394

Int. Cl.[6] G11B *17/22;17/08*

U.S. Cl. 369—178 **2 Claims**

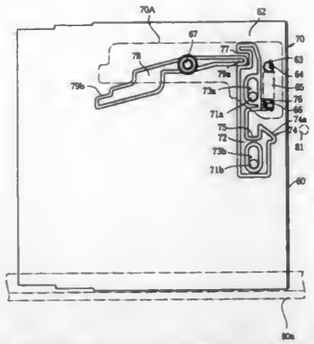
1. A structure for supporting disc stockers in a case of a disk changer, each of the disc stockers has opposite side walls and is capable of storing a plurality of discs, the structure comprising:

a pair of side panels provided in the case;

supporting members provided on each of the side panels for supporting the disc stockers;

a lock device mounted on each of the side walls of the disc stockers;

each of the lock devices comprising a lock lever, with a pair of vertically oblong holes, movably mounted on the side wall and having a locking hook, and a release lever; and



a pair of guide pins provided on each of the side walls of each disc stocker, wherein each pair of guide pins slidably engages a corresponding pair of the vertically oblong holes provided in the lock lever, such that the lock lever is movable between a locking state and a unlocking state, wherein the unlocking state is disposed below the locking state;

a plurality of lock pins provided on the side panels so as to engage with the locking hooks when the disc stockers are inserted in the case such that when the lock lever of a particular disc stocker is in the locking state the corresponding lock pin is capable of being disposed on a recess side of the locking hook so that the particular disc stocker is locked in the case;

the release lever being pivotally mounted on the side wall, and having an elongated form operatively connected to the lock lever at an inner end and a free end disposed opposite the inner end, and being arranged such that the release lever is pivotally movable between a locking state and a unlocking state, wherein when the release lever is in the locking state the lock lever is in the locking state and when the release lever is pivotally moved to the unlocking state through the movement of the free end of the release lever to the unlocking state that is above the free end in the locking state, the inner end of the release lever moves with the lock lever to the unlocking state below the locking state so that the locking hook disengages the lock pin and the disc stocker may be removed from the case.

5,608,715

MULTI-LAYERED RECORDING DISK AND RECORDING/REPRODUCING SYSTEM USING THE SAME

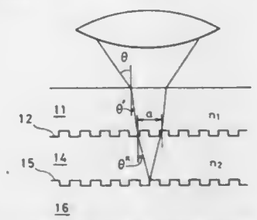
Fumihiko Yokogawa, and Seiichi Ohsawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,793

Claims priority, application Japan, Jul. 26, 1994, 6-174511; Jun. 15, 1995, 7-148907

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.1 **26 Claims**



1. A multi-layered recording disk with a plurality of data recording surfaces laminated therein, wherein data signals are recorded in each of the data recording surfaces in a band where, against a reproduction level obtained when a read light is on-focus to one of said data recording surfaces, a ratio of a reproduction level obtained when said read light is defocusing to a second one of said data recording surfaces is 1/N (N is a real number larger than 1), and a distance t between each of said data recording surfaces, numerical aperture NA of an objective lens guiding said read light to one of the data recording surfaces, wavelength λ of said read light, an equivalent refractive index n between each of said data recording surfaces, and a number i representing the number of said laminated data recording surfaces satisfy the following relation:

$$1.4\ n\lambda/(NA)^2 \leqq t \leqq 7.5\ n^3\lambda/\{(n^2-1)(NA)^4(i-1)\}.$$

5,608,716

OPTICAL RECORDING/REPRODUCING APPARATUS INCLUDING A SEMICONDUCTOR LASER HAVING A PLURALITY OF RADIATIVE PORTIONS HAVING DIFFERENT PHYSICAL CHARACTERISTICS

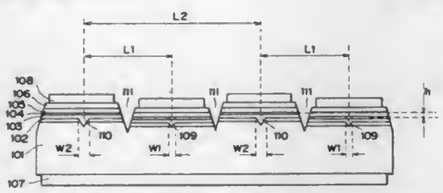
Osamu Koyama, Yokohama, and Takeshi Yamawaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 118,807, Sep. 9, 1993, abandoned. This application Nov. 1, 1995, Ser. No. 551,363

Claims priority, application Japan, Sep. 14, 1992, 4-269094

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.1 **18 Claims**



16. An optical recording/reproducing apparatus comprising:

a semiconductor laser having a radiative portion for recording and a radiative portion for reproduction, said radiative portions for recording and for reproduction being formed at different heights in a direction perpendicular to a junction plane on the same substrate; and

spot forming means for arranging beams from the radiative portions in said semiconductor laser to form a plurality of light spots on an information recording medium for effecting information recording and reproduction.

5,608,717

INFORMATION RECORDING MEDIA AND OPTICAL DISC PRESENTING A CHARACTER OR A GRAPHIC PATTERN FORMED BY SPECIFIED PIT PATTERNS ON DATA TRACKS

Tamotsu Ito, Ayase; Hiroshi Banno, Koshigaya; Ryuichi Koike, Yokohama, and Takashi Takeuchi, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1994, Ser. No. 301,889

Claims priority, application Japan, Sep. 7, 1993, 5-221687; Apr. 1, 1994, 6-65224

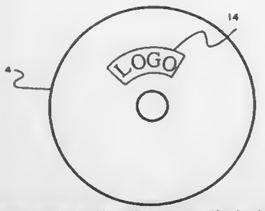
Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.3 **22 Claims**

1. An information recording medium comprising:

a record surface for recording data in term of pit patterns formed on a plurality of tracks of the record surface and corresponding to data to-be-read by a playback system;

a pattern displaying area of the record surface area extending over specified tracks, for presenting either of a character pattern or a graphic pattern having a visible size;



wherein in areas included in said pattern displaying area on said specified tracks, specified pit patterns having substantially a first average optical reflectance are formed, said first average optical reflectance of said specified pit patterns differing, to a visually perceptible extent from a second average reflectance of pit patterns formed in areas, on tracks, adjoining said pattern displaying area, and wherein said specified patterns are pit patterns readable by said playback system as data.

5,608,718

DISK-SHAPED OPTICAL STORAGE MEDIUM EXHIBITING AN IDENTIFICATION MARK, AND METHOD OF MAKING SUCH A STORAGE MEDIUM

Hilmar Schiewe, Gütersloh, Germany, assignor to Sonopress Produktionsgesellschaft für Ton- und Informationsträger mbH, Gütersloh, Germany

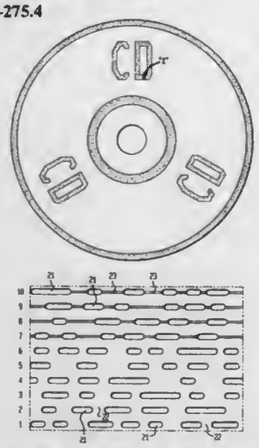
PCT No. PCT/EP94/00944, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO94/24665, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 24, 1994, Ser. No. 335,728

Claims priority, application Germany, Apr. 8, 1993, 43 11 683.3

Int. Cl.[6] G06K *19/06*

U.S. Cl. 369—275.4 **5 Claims**



1. A disk-shaped optical storage medium for binary information, stored serially as a sequence of pits and lands along a spiral track in a smooth optical reference surface, the pit and land lengths, which are independent from each other, representing the stored binary values which are readable by means of a tracked focussed laser beam according to the principle of interference wherein a selected number of the total lands is formed in the optical reference surface as depressions which are shallow in comparison to the depth of the pits and wherein said lands formed sequentially as depressions in the tracking direction and/or neighboring in the radial direction constitute a macroscopic pattern to form an identification.

5,608,719

ATM MULTIPLEX TRANSMISSION SYSTEM HAVING TEST EQUIPMENT

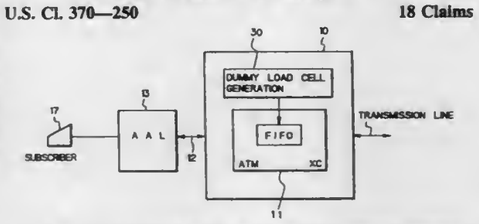
Ryuji Hyodo; Susumu Eda; Katsumi Oomuro; Osamu Sekihata; Kenji Tanaka; Hiroyuki Hatta, and Reiko Norizuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 946,902, Sep. 18, 1992, abandoned. This application May 23, 1995, Ser. No. 447,639

Claims priority, application Japan, Sep. 19, 1991, 3-268229

Int. Cl.[6] H04L *12/56*; H04Q *1/20*

U.S. Cl. 370—250 **18 Claims**



1. An asynchronous transfer mode (ATM) multiplex transmission system, comprising:

an ATM adaptation layer (AAL) processing unit which receives data from terminal equipment, assembles data to be transmitted into ATM cells and multiplexes the ATM cells, and which demultiplexes multiplexed ATM cells sent to the terminal equipment and distributes the data to the terminal equipment;

an ATM cross connection processing unit having a switch which switches multiplexed ATM cells received from the AAL processing unit to outgoing channels, or which switches the multiplexed ATM cells received from the incoming channels to the AAL processing unit, the incoming first-in first-out (FIFO) memories connected between the incoming channels and the AAL processing unit, and the outgoing FIFO memories connected between the outgoing channels and the AAL processing unit; and

dummy load cell generating means for forcibly writing dummy load cells in the incoming FIFO memories or outgoing FIFO memories in the ATM cross connection processing unit for testing at least one route and the dummy load cell generating means connected to at least a selector for selectively inputting either the ATM cells or the dummy load cells to said FIFO memories, wherein each dummy load cell has header information for a virtual channel identifier and a virtual path identifier specifying the routes to be tested.

5,608,720

CONTROL SYSTEM AND OPERATIONS SYSTEM INTERFACE FOR A NETWORK ELEMENT IN AN ACCESS SYSTEM

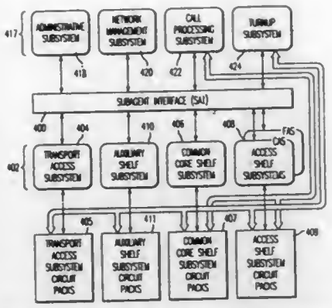
Charles H. Biegel, Sterling; Nicholas J. Carter, Chantilly; Chung Chen, Herndon; Michael Christofferson, Falls Church; Mahesh P. Desai, Annandale; Rita A. Eberhart, Herndon; Steven M. Klonsky, Arlington; Shaun Missett; Theodore F. Rabenko, both of Herndon; John R. Tomassone, Woodbridge, and David S. Turvene, Falls Church, all of Va., assignors to Hubbell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 31,395, Mar. 9, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,411

Int. Cl.[6] G06F *7/00*

U.S. Cl. 370—249 **30 Claims**

1. Network management apparatus for interfacing a network element in an access system with at least two operations systems employed in an open system interconnection or OSI architecture, and a non-OSI architecture, respectively, the network management apparatus comprising:



a first interface for interfacing said network element to said OSI operations system;

a second interface for interfacing said network element to said non-OSI operations system;

a control device coupled to the said first interface and said second interface for receiving OSI and non-OSI operations system commands from said first interface and said second interface, respectively; and

a memory device coupled to said control device for storing a database of managed OSI-based object instances organized into object classes, and at least one table of data comprising an access identifier, at least one of said object classes and an object instance identifier corresponding to a non-OSI command;

wherein said control device being programmable to process said OSI commands using said database and said non-OSI operations system commands using said table to create messages for requesting services on said object instances.

5,608,721

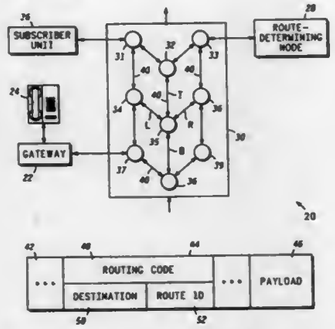
COMMUNICATIONS NETWORK AND METHOD WHICH IMPLEMENT DIVERSIFIED ROUTING

Kadathur S. Natarajan, Mesa, Ariz., and Katta G. Murty, Ann Arbor, Mich., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 415,800

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—238 **18 Claims**



1. A method of sending information through a network having a plurality of switching nodes, said switching nodes including a destination node, an origination node, and any number of intermediate nodes, and said method comprising the steps of:

identifying a plurality of physically distinct, shortest paths through said intermediate nodes between said origination and destination nodes;

appending routing data to said information, said routing data describing one of said paths;

routing said information through said network in response to said appended routing data;

assigning each of said paths a route identification code, said route identification code serving as said routing data

conveying said route identification code using N bits of data, where N is an integer number; and

when less than 2^N shortest paths exist through said intermediate nodes between said origination and destination nodes, assigning multiple ones of said route identification codes to individual ones of said paths.

5,608,722

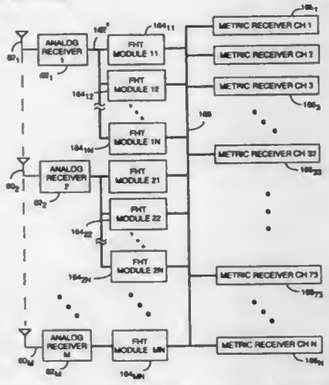
MULTI-USER COMMUNICATION SYSTEM ARCHITECTURE WITH DISTRIBUTED RECEIVERS

David S. Miller, Escondido, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Apr. 3, 1995, Ser. No. 415,958

Int. Cl.[6] H04J *13/04*

U.S. Cl. 370—320 **20 Claims**



1. A method for receiving signals in a spread spectrum communication system in which information is communicated by orthogonally encoded channels within communication signals, comprising the steps of:

receiving communication signals over one or more diversity transfer paths from one or more system subscribers using one or more analog receivers, and converting them to digital communication signals;

applying said digital communication signals to a corresponding set of demodulating modules connected to each analog receiver, the number of modules being equal to the product of a predetermined maximum number of subscribers to be serviced by a receiver and a maximum expected average number of signal paths over which communication signals are to be received from each subscriber;

despreading each of said digital communication signals using preselected pseudorandom noise (PN) type code sequences in one portion of said demodulating modules;

transforming at least a preselected number of despread digital communication signals each into energy metric signals indicative of energy values associated with encoded data in another portion of said demodulating modules; and

transferring resulting energy metric signals corresponding to signals intended for a subscriber as an input to at least one metric receiver pre-assigned to said subscriber from a plurality of metric receivers.

5,608,723

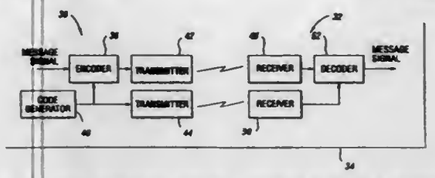
METHODS AND SYSTEMS FOR SECURE WIRELESS COMMUNICATION WITHIN A PREDETERMINED BOUNDARY

Lee Felsenstein, Palo Alto, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Filed Apr. 26, 1995, Ser. No. 429,031

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—335 **39 Claims**



21. A system for secure wireless communication of a message signal within a predetermined boundary, the system comprising:

an encoder which encodes the message signal using a preselected code, the encoder generating an encoded signal;

a first transmitter which transmits a radio frequency signal representative of the encoded signal; and

a second transmitter which transmits a code signal representative of the preselected code, wherein propagation of the code signal is confined within the predetermined boundary.

5,608,724

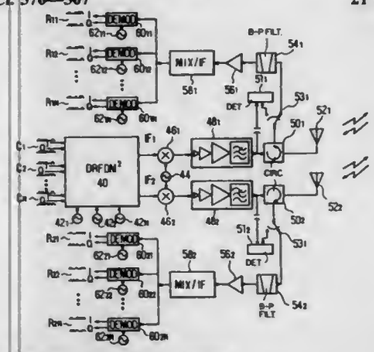
DYNAMICALLY RECONFIGURABLE FREQUENCY DIVISION MULTIPLEXER AND MODULATOR

Donald R. Green, Jr., San Marcos, Calif., assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 27, 1995, Ser. No. 534,291

Int. Cl.[6] H04J *4/00*

U.S. Cl. 370—307 **21 Claims**



1. An electronic circuit comprising:

a plurality of local oscillators each generating a carrier signal;

a plurality of modulators, each connected to an output of a corresponding one of said plurality of local oscillators and modulating said each carrier signal therefrom responsive to an input channel signal applied to an input of said modulator to generate a modulated signal;

a plurality of switching means, each receiving said modulated signal from a respective one of said plurality of modulators, for selectively providing its modulated signal at one of a plurality of outputs of said switching means responsive to a signal at a control input of said switching means; and

a plurality of summing means, each connected to a respective output of each of said plurality of switching means, for summing signals from said respective outputs and for generating an output signal representative thereof.

5,608,725

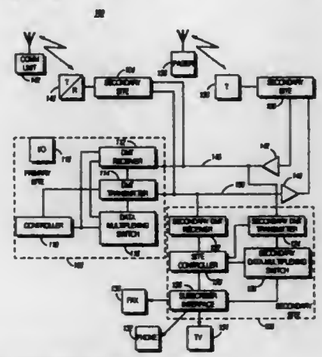
METHOD AND APPARATUS OF A COMMUNICATIONS SYSTEM HAVING A DMT INFRASTRUCTURE

Gary W. Grube, Barrington, Ill.; Timothy W. Markison, Austin, Tex.; Matthew A. Pendleton, Cedar Park, Tex., and Mathew A. Rybicki, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 26, 1995, Ser. No. 378,850

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—338 **34 Claims**



1. A communication system comprising:

a primary site that includes:

a controller,

a data multiplexing switch operably coupled to the controller, and

a Discrete Multi-Tone transmitter operably coupled to the controller and the data multiplexing switch;

a plurality of secondary sites, wherein each of the plurality of secondary sites includes:

a site controller,

a subscriber interface operably coupled to the site controller, and

a secondary Discrete Multi-Tone receiver operably coupled to the site controller and the subscriber interface; and

a single low pass transmission path, coupling the primary site to the plurality of secondary sites, that conveys a Discrete Multi-Tone symbol stream from the Discrete Multi-Tone transmitter of the primary site to the secondary Discrete Multi-Tone receiver of each of the plurality of secondary sites.

5,608,726

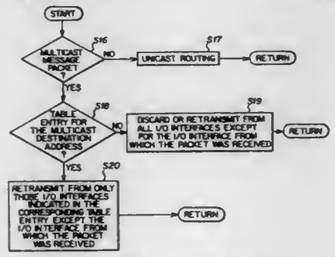
NETWORK BRIDGE WITH MULTICAST FORWARDING TABLE

Kenneth Virgile, Lexington, Mass., assignor to Cabletron Systems, Inc., Rochester, N.H.

Filed Apr. 25, 1995, Ser. No. 428,403

Int. Cl.[6] H04L *12/46*

U.S. Cl. 370—401 **13 Claims**



8. A bridge in a hierarchical communications network comprising:

a plurality of I/O interfaces for transmitting packets to, and for receiving packets from, routers and network segments attached to said bridge, said plurality of I/O interfaces including one I/O interface connected to each of said routers and one I/O interface connected to each of said network segments, and

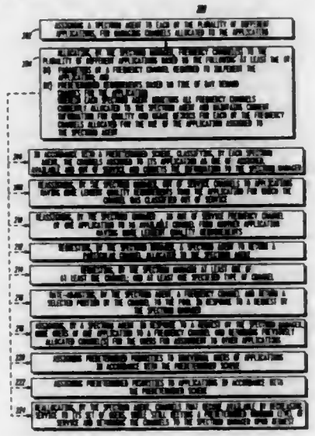
a processor connected to said I/O interfaces, for receiving a multicast control packet transmitted from a host of one of said network segments to one destination router of said routers via a route including said bridge, for updating a multicast forwarding table entry in a multicast forwarding table in said bridge corresponding to a multicast group of said multicast control packet, for causing said I/O interface connected to said destination router of said multicast control packet to retransmit said multicast control packet, and for causing said I/O interfaces to retransmit multicast message packets destined to said multicast group according to said multicast forwarding table.

5,608,727

METHOD AND SYSTEM FOR MANAGEMENT OF FREQUENCY SPECTRUM AMONG MULTIPLE APPLICATIONS ON A SHARED MEDIUM

John A. Perreault, Hopkinton; Abhay Joshi, Norwood, both of Mass.; Albert Chen, Hoffman Estates, and Eva Labowicz, Elk Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1995, Ser. No. 433,878
Int. Cl.[6] H04J *1/10*
U.S. Cl. 370—462 **30 Claims**



1. A method of efficient management of a channel pool that is allocated among a plurality of different applications and has a predetermined number of frequency channels for a plurality of users in a communication system, wherein spectrum frequency of the channel pool is dynamically spread among the plurality of different applications to optimize provision of application requirements for the plurality of different applications in use, comprising the steps of:

A) assigning at least a first spectrum agent to each of the plurality of different applications, for managing channels allocated to the application;

B) allocating, by a spectrum manager, frequency channel/channels to the plurality of different applications based on the following at least one of:

B1) parameters of a frequency channel required to implement an application of the plurality of different applications; and

B2) predetermined requirements based on time of day demand changes for the application,

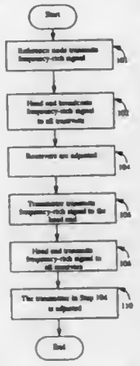
wherein the at least first spectrum agent monitors all frequency channels currently allocated to the at least first spectrum agent and maintains current information for quality and usage metrics for each of the frequency channels allocated for the use of the application assigned to the at least first spectrum agent.

5,608,728

SYSTEM AND METHOD FOR EQUALIZATION OF FORWARD AND REVERSE CHANNELS OF A COMMUNICATION NETWORK SYSTEM

John Ulm, Pepperell; William D. Corley, Foxborough; Cynthia Mazza-Brennan, West Newbury, and Christopher Grobicki, Andover, all of Mass., assignors to LANcity Corp., Andover, Mass.

Filed Apr. 13, 1995, Ser. No. 421,612
Int. Cl.[6] H04L *12/403*
U.S. Cl. 370—488 **19 Claims**



16. A method for equalizing transmissions on forward and reverse channels of a network having at least a central node, a network bus, and a plurality of network nodes, each network node having at least a transmitter, receiver, and a processor, the method comprising steps of:

(a) a transmitter of a predetermined network node transmitting a predetermined receiver equalization signal to the central node;

(b) the central node retransmitting the receiver equalization signal on the network bus;

(c) each receiver receiving the receiver equalization signal from the central node;

(d) each network node processor adjusting its respective receiver based on a comparison of the received receiver equalization signal and the predetermined receiver equalization signal to compensate for distortions in transmissions on the network bus from the central node to the network node;

(e) for each network node, the transmitter transmitting a transmitter equalization signal to the central node;

(f) the central node retransmitting the transmitter equalization signal on the network bus;

(g) for each network node, the receiver associated with each transmitter receiving the transmitter equalization signal retransmitted by the central node; and

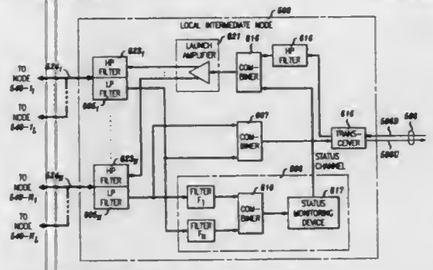
(h) for each network node, the processor adjusting the respective transmitter based on a comparison of the transmitted and received transmitter equalization signals.

5,608,729

METHOD AND APPARATUS FOR PROVIDING TWO-WAY DATA COMMUNICATION COVER A WIDELY DISTRIBUTED NETWORK

Milo Orsic, Lincolnwood, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 20, 1995, Ser. No. 425,557
Int. Cl.[6] H04L *12/413;12/44*
U.S. Cl. 370—445 **10 Claims**



1. An apparatus for communicating comprising:

an upstream node;

a communication path, having an upstream channel and a downstream channel, connected to said upstream node;

a first local node connected to said communication path at a spaced location from said upstream node;

a second local node connected to said communication path at a second spaced location from said upstream node;

an intermediate node connected to said communication path at an intermediate location between said first local node and said upstream node;

a control channel connected to said intermediate node, said first local node and said second local node;

said intermediate node monitors said communication path for a busy condition and if a busy condition is detected, said intermediate node drives said control channel with a busy signal which inhibits any of said first and second nodes that has not presently seized said upstream channel from doing so, and if a busy condition is not detected, said intermediate node provides said control channel with an idle signal which permits any of said first and second nodes to seize the upstream channel and start transmitting to said upstream node;

wherein a change from idle to busy or busy to idle is detected faster and a control signal on said control channel communicates the change of the status of said upstream channel from idle-to-busy or busy-to-idle more quickly because said intermediate location has smaller propagation delays within the channels than would occur if the monitoring were performed at the upstream node.

5,608,730

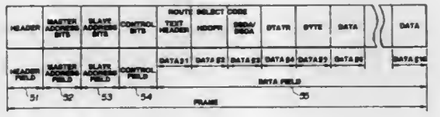
BI-DIRECTIONAL COMMUNICATION SYSTEM

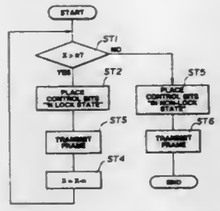
Yoshio Osakabe, Kanagawa; Shigeo Tanaka, Tokyo; Akira Katsuyama; Hiroshi Yamazaki, both of Kanagawa; Yasuo Kusagaya, Tokyo; Noriko Kotabe, Chiba; Kouichi Sugiyama, and Makoto Sato, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 170,077
Claims priority, application Japan, Dec. 21, 1992, 4-340405; Oct. 21, 1993, 5-263651
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—471 **6 Claims**

1. A communication method for enabling a plurality of devices to communicate with each other through a bi-directional bus, communication among said devices being made with a frame being a transmission unit, wherein each frame comprises:

a master address field provided for an address of a master device which sends transmit data having a total quantity x of data;





a slave address field provided for an address of a slave device which receives said transmit data sent from said master device;

a control field provided for a control data to indicate whether said slave device should be locked or unlocked, said slave device accepting communication only from a first master device if said first master device locks said slave device; and

a data field provided for said transmit data, said data field having predetermined capacity n of data,

said communication method comprising the steps of:

transmitting said transmit data having said total quantity x of data in a plurality of frames through said bi-directional bus when said x is greater than said n, the number of said plurality of frames being the minimum number necessary to transmit said total quantity x of data, wherein said control data of the first frame of said plurality of frames is set to indicate that said slave device should be locked and wherein said control data of the last frame of said plurality of frames is set to indicate that said slave device should be unlocked; and

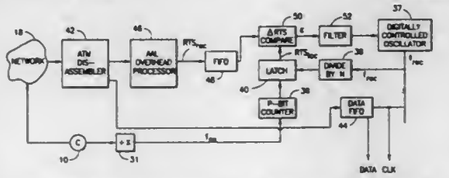
transmitting said transmit data having said total quantity x of data in a single frame through said bi-directional bus when said x is not greater than said n, wherein said control data of said single frame is set to indicate that said slave device should be unlocked.

5,608,731

CLOSED LOOP CLOCK RECOVERY FOR SYNCHRONOUS RESIDUAL TIME STAMP

Daniel C. Upp, Southbury, Conn., and Dan H. Wolaver, West Brookfield, Mass., assignors to TranSwitch Corporation, Shelton, Conn.

Filed Mar. 31, 1995, Ser. No. 414,502
Int. Cl.[6] H04L *7/08*
U.S. Cl. 370—516 **24 Claims**



1. An apparatus for the recovery of a source clock which has been encoded utilizing the source clock and a system reference clock according to a synchronous residual time stamp (SRTS) algorithm, where the encoding generates residual time stamp (RTS) values which are obtained by said apparatus as incoming RTS values, said apparatus comprising:

a) controllable oscillator means for generating a destination node clock;

b) means for generating local residual time stamp related values, said means for generating utilizing said destination node clock and the system reference clock; and

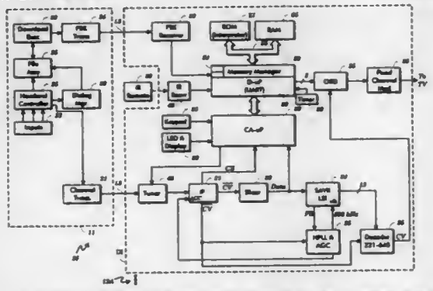
c) control signal generating means coupled in a feedback loop between said means for generating and said controllable oscillator means, said control signal generating means including first comparison means for comparing incoming RTS-related values which are related to the incoming RTS values to the local RTS-related values, said control signal generating means for generating feedback control signals to said controllable oscillator means which are used by said controllable oscillator means to adjust said destination node clock.

5,608,732

TELEVISION DISTRIBUTION SYSTEM HAVING VIRTUAL MEMORY DOWNLOADING

Caitlin B. Bestler, Chicago, and Mack S. Daily, Round Lake Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 1, 1993, Ser. No. 115,288
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—474 **32 Claims**



I. A method of downloading data within a cable system having a headend and a receiver decoder coupled by an out of band communication link comprising the steps of:

A. receiving to-be-downloaded data in digital form;

B. assembling said to-be-downloaded data into groups of common information types;

C. further assembling the data within each group into a set of records, each record within an individual record set being characterized by having an equal number of bits, and an identical type of information;

D. further formatting the records within the set into a plurality of download packets, each packet having a packet start indicator, a sequence number identifying a serial position in which the packet is to be accepted by the receiver decoder, information within at least one said record, a decoder address, and a packet end indicator, and

E. repeatedly broadcasting said plurality of download packets upon said out of band communication link.

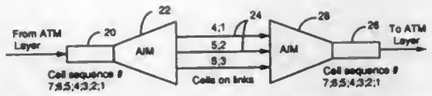
5,608,733

ATM INVERSE MULTIPLEXING

Richard Vallée, 67 rue Castillou, Gatineau, Quebec, Canada, and John G. Ellis, 56 Rosenfeld Crescent, Kanata, Ontario, Canada

Filed Nov. 29, 1994, Ser. No. 350,092
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—394 **12 Claims**

I. A method of inverse multiplexing digital data from a source node to a destination node over a connection consisting of a



plurality of transmission links, said data containing a series of ATM data cells, comprising steps of:

at a connection start-up, the source node sending to the destination node ATM sequence number cells informing the latter of a specific round robin order in which the series of ATM data cells are to be transmitted over the connection;

the destination node sending ATM sequence number cells whose receive ready field is set to indicate that the destination node is ready to receive ATM data cells in said specific round robin order from the plurality of transmission links; and

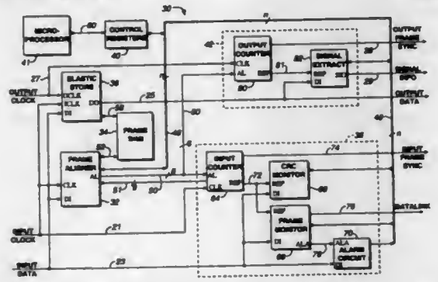
the source node sending each ATM data cell in said series of ATM data cells to the destination node in said specific round robin order.

5,608,734

METHOD AND APPARATUS FOR FRAMING DATA IN A DIGITAL TRANSMISSION LINE

Lorin H. Sandler, Northbrook, and Neal T. Wingen, Crystal Lake, both of Ill., assignors to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 172,458, Dec. 22, 1993, Pat. No. 5,557,614. This application Nov. 20, 1995, Ser. No. 560,738
Int. Cl.[6] H04L *7/08*
U.S. Cl. 370—509 **21 Claims**



I. A circuit for framing data in a digital transmission line comprising:

a buffer coupled to an input signal, said input signal including data and flaming information bits, wherein said buffer is operative to output an output signal derived from said input signal in accordance with an external output clock;

a frame aligner coupled to said input signal, wherein said frame aligner is operative to determine which of said data and framing information bits are flaming information bits and to recognize a flaming format created by said framing information bits, said framing format being one of a plurality of predetermined framing format, and wherein said frame aligner is operative to output a frame aligning signal when a framing format is recognized; and

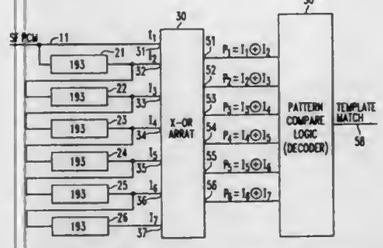
an output counter coupled to said frame aligning signal operative to count said data and framing information bits and output a frame synchronization signal in accordance with said output clock when a framing information bit is counted.

5,608,735

LOGICAL TRANSFORM OPERATOR-BASED METHOD AND APPARATUS FOR EXTRACTING FRAMING PATTERN FROM SERIAL DIGITAL BIT STREAM

Jason F. McCullough, Madison, and Clifford L. Hall, III, Brownsboro, both of Ala., assignors to Adtran, Inc., Huntsville, Ala.

Filed Sep. 20, 1995, Ser. No. 530,891
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—513 **38 Claims**



1. A method of locating the position of a framing pattern comprised of a predetermined plurality of framing bits sequentially distributed throughout a serial bit stream comprising the steps of:

(a) processing a first plurality of bits of said serial bit stream, which are sequentially spaced apart from one another by successive separations corresponding to that of said framing bits as sequentially distributed throughout said serial bit stream, in accordance with a prescribed logic function, so as to transform said first plurality of bits into a transformed bit pattern, the length of which is less than that of said framing pattern;

(b) comparing said transformed bit pattern with cyclically rotated versions of a prescribed multi-bit pattern template that is obtained by processing said framing pattern by said prescribed logic function;

(c) in response to step (b) indicating a match between said transformed bit pattern with any of said cyclically rotated versions of said prescribed multi-bit pattern template, identifying said first plurality of bits of said serial bit stream as bits of said framing pattern; but,

(d) in response to step (b) failing to indicate a match between said transformed bit pattern with any of said cyclically rotated versions of said prescribed multi-bit pattern template, repeating steps (a)–(c) for one or more additional pluralities of bits of said serial bit stream, which are sequentially spaced apart from one another by said successive separations corresponding to that of said framing bits as sequentially distributed throughout said serial bit stream, until step (c) identifies one of said one or more additional pluralities of bits of said serial bit stream as bits of said framing pattern.

5,608,736

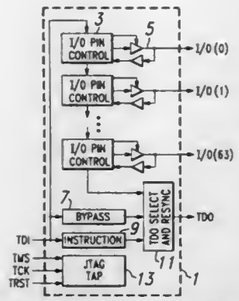
METHOD AND APPARATUS FOR A UNIVERSAL PROGRAMMABLE BOUNDARY SCAN DRIVER/SENSOR CIRCUIT

William F. Bradford, Cedar Park, and Richard J. Glass, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 177,784, Jan. 5, 1994, which is a continuation of Ser. No. 711,490, Jun. 6, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,723
Int. Cl.[6] G01R *31/3185*
U.S. Cl. 371—22.3 **13 Claims**

1. A method for boundary scan testing an integrated circuit having external connection pins, comprising:

providing a boundary scan driver/sensor integrated circuit including a plurality of input-output pins; a plurality of input buffers having inputs respectively coupled to the input-output



pins and outputs; a plurality of output buffers having outputs respectively coupled to the input-output pins; a plurality of control circuits respectively coupled to the input and output buffers associated with each input-output pin; a test data input pin; and a test data output pin; each control circuit including a test data register coupled to the output of the respective input buffer and to the input of the respective output buffer, and a control data register coupled to control enablement of the respective output buffer; the test data and control data registers of each control circuit and of the plurality of control circuits being serially connected in a single serial scan chain between the test data input and test data output pins;

connecting the input/output pins to respective ones of the external connection pins;

shifting test data and control data in a single data stream through the serial scan chain;

enabling selected ones of the output buffers with control data from the shifted data stream, shifted into associated ones of the control registers;

driving the input-output pins associated with the enabled output buffers with test data from the shifted data stream, shifted into corresponding ones of the test data registers;

capturing test data resulting from the driving step, from the input-output pins, through the respective input buffers to the associated test data registers; and

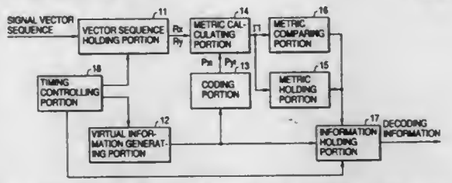
shifting the captured test data in the single data stream, through the serial scan chain, to the test data output pin.

5,608,737

MAXIMUM LIKELIHOOD DECODER AND DECODING METHOD

Tomohiro Kimura, Kawachinagano; Yasuo Harada, Kobe, and Kazuhiro Ohta, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 21, 1995, Ser. No. 391,002
Claims priority, application Japan, Feb. 18, 1994, 6-021036
Int. Cl.[6] H03M *13/12*
U.S. Cl. 371—30 **7 Claims**



3. A maximum likelihood decoder for dynamically maximum-likelihood-decoding a signal vector sequence control-coded for each symbol to acquire information as it existed before the coding on the signal vector sequence by which noises are reduced, comprising:

branch metric calculating means for receiving said signal vector sequence for each symbol and finding a plurality of branch metrics γj (j is an integer of not less than one nor more than k)

with respect to a group of virtual code vectors including a plurality of virtual code vectors; and

viterbi decoding means for receiving said branch metrics γj and performing decoding processing using a viterbi algorithm,

wherein, assuming said signal vector sequence is represented as a complex number (R_x, R_y), and said group of virtual code vectors is represented as a complex number $\{(P_{xj}, P_{yj})\}_{j=1-4}$,

said branch metric calculating means calculating said branch metrics γj in accordance with the following equation:

$$\gamma j=(P_{xj}-2R_x)P_{xj}+(P_{yj}-2R_y)P_{yj}.$$

5,608,738

PACKET TRANSMISSION METHOD AND APPARATUS

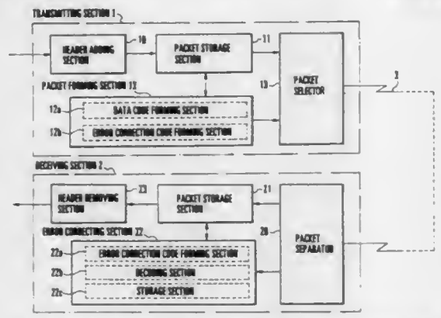
Hideaki Matsushita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,778

Claims priority, application Japan, Nov. 10, 1993, 5-303311

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **9 Claims**



1. A packet transmission error correction method which uses m error correction code packets formed from n (n>m) data packets including headers, said method comprising the steps of:

(a) forming an n-bit data code portion by reading out from each of the data packets bit information at a bit position x and sequentially arranging the bit information;

(b) forming an m-bit error correction code portion by coding the sequentially arranged bit information of the data code portion and forming an error correction frame constituted by the data code portion and the error correction code portion;

(c) assigning each bit information of the error correction code portion as bit information of a corresponding one of the error correction code packets at the bit position x;

(d) repeatedly performing steps (a) to (c) with respect to all bits of the data packets excluding the headers, thereby forming m error correction code packets;

(e) transmitting the formed error correction code packets together with the data packets;

(f) receiving the formed error correction code packets together with the data packets;

(g) reconstructing the data code portions of the error correction frames by performing step (a) with respect to all bits of the received data packet;

(h) reconstructing the error correction code portions of the error correction frames by

(1) reading out from each of the error correction code packets bit information at a bit position y and sequentially arranging the bit information, and

(2) repeatedly performing sub-step (1) with respect to all bits of the error correction code packets excluding header bits;

(i) when there is a data loss or a data error in a data packet, decoding the data code portion of the error correction frame on the basis of bit information contained in the corresponding error correction code portion; and

(j) reproducing the data packet in which the data loss or the data error has occurred on the basis of bit information contained in the decoded data code portion.

5,608,739

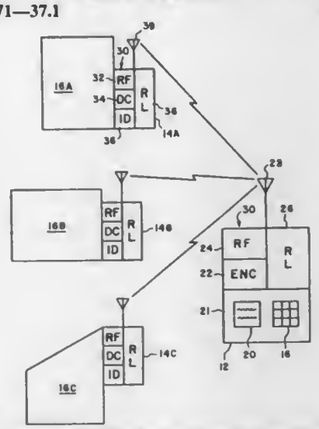
APPARATUS AND METHOD FOR ERROR DETECTION AND CORRECTION IN RADIO FREQUENCY IDENTIFICATION DEVICE

Charles K. Snodgrass, Boise, Id., and Armando Montalvo, Belmont, Calif., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 130,124, Sep. 30, 1993, Pat. No. 5,479,416. This application Sep. 8, 1995, Ser. No. 525,944

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—37.1 **6 Claims**



1. A radio frequency identification system comprising:

a source of an information signal having eight-bit blocks;

(8, 13, 4) block code encoder means responsive to the information signal for providing a linear systematic block coded signal comprising a coded block having eight information bits and five code bits for each of the eight-bit blocks;

transmitter means responsive to the thirteen-bit linear systematic block coded signal for providing a transmitted signal;

receiver means responsive to the transmitted signal for providing a signal comprising received coded blocks;

(8, 13, 4) linear systematic block code decoder means for decoding the received coded blocks to provide a decoded signal comprising one eight-bit decoded block for each of the received coded blocks, the eight-bit decoded blocks being generated each time there are less than two bit errors in a received coded block;

means within the decoder for determining if there are exactly two bit errors in any of the received coded blocks;

means within the decoder for correcting one bit error operable each time only one bit error occurs in any of the received coded blocks; and

identifier means responsive to the eight-bit decoded blocks for providing a return identification signal.

5,608,740

ERROR CORRECTING METHOD

Takashi Watanabe, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

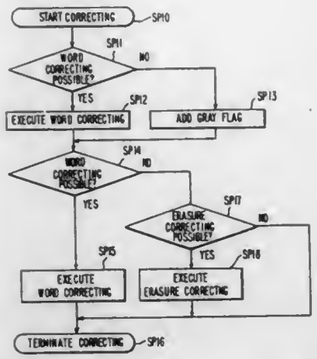
Continuation of Ser. No. 174,391, Dec. 28, 1993, abandoned. This application Aug. 24, 1995, Ser. No. 518,857

Claims priority, application Japan, Dec. 30, 1992, 4-360801

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.4 **4 Claims**

1. An error correcting method comprising the steps of:



dividing input information data into data blocks each of a predetermined number of words;

generating outer and inner parity codes for error correcting said respective data blocks each of said predetermined number of words;

adding said data blocks and said outer and inner parity codes to produce encoded data in the form of product codes of outer and inner data block; and

decoding the encoded data by:

first, word correcting an inner data block, if that is possible, and otherwise adding a gray flag to each word in said inner data block;

in either case, then word correcting an outer data block, if that is possible; and

finally, only if word correcting said outer data block is not possible, erasure correcting said outer data block, if that is possible according to a number of gray flags added to respective words in said outer data block.

5,608,741

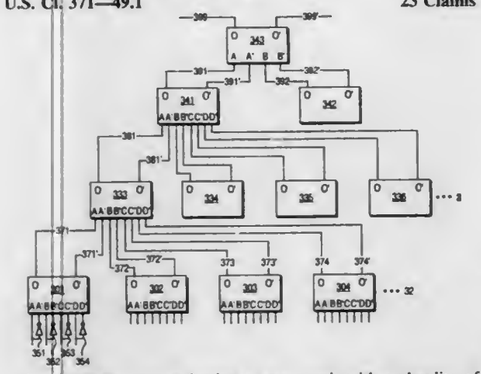
FAST PARITY GENERATOR USING COMPLEMENT PASS-TRANSISTOR LOGIC

Sudarshan Kumar; Shyue L. Kuo, and Chung Y. Yip, all of Aloha, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 23, 1993, Ser. No. 156,427

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—49.1 **23 Claims**



1. A computer system having a source unit with a plurality of input data bits, the source unit including a parity generator for computing a first parity bit and a complement of the first parity bit for the input data bits, the parity generator comprising:

a plurality of 4-bit XOR cells, each of the 4-bit XOR cells providing a plurality of input lines and output lines, each of the 4-bit XOR cells accepting a plurality of data bits and complements of the data bits on the input lines and producing an XOR value of the data bits and complement of the XOR value on the output lines, the plurality of 4-bit XOR cells arranged in three rows, wherein:

a first set of the 4-bit XOR cells are disposed in a first row, each of the first set of 4-bit XOR cells in the first row accepting the input data bits and their complement values on the input lines;

a second set of the 4-bit XOR cells disposed in a second row, input lines of the 4-bit XOR cells in the second row coupled to output lines of the 4-bit XOR cells in the first row; and

a third set of the 4-bit XOR cells disposed in a third row, input lines of each of the 4-bit XOR cells in the third row coupled to output lines of the 4-bit XOR cells in the second row; and

a 2-bit XOR cell providing four input lines and two output lines, the four input lines of the 2-bit XOR cell coupled to the output lines of the 4-bit XOR cells in the third row so as to generate the first parity bit and the complement of the first parity bit for the input data bits on the two output lines of the 2-bit XOR cell.

5,608,742

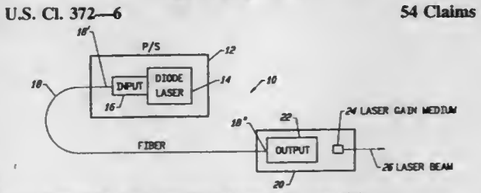
DIODE PUMPED, FIBER COUPLED LASER WITH DEPOLARIZED PUMP BEAM

Alan B. Petersen, Palo Alto, Calif., assignor to Spectra Physics Lasers, Inc., Mountain View, Calif.

Filed Aug. 18, 1995, Ser. No. 516,586

Int. Cl.[6] H01G *3/30*

U.S. Cl. 372—6 **54 Claims**



1. A laser or laser amplifier apparatus, comprising:

a diode pump source producing a polarized pump beam;

an optical fiber coupled to the diode pump source;

a depolarization device configured to receive one of the polarized pump beam or an optical fiber delivered pump beam and produce a depolarized pump beam, wherein the depolarization device reduces a sensitivity of the laser or laser amplifier apparatus to one of a polarization rotation or a partial depolarization effect created by the optical fiber; and

a laser head including a polarization dependent absorption gain medium pumped by the depolarized pump beam and generating an output beam.

5,608,743

SEMICONDUCTOR LIGHT EMITTING DEVICE

Toshiro Hayakawa, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

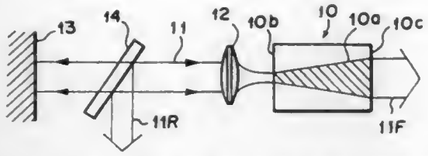
Filed Jul. 14, 1995, Ser. No. 502,637

Claims priority, application Japan, Jul. 15, 1994, 6-163696; Dec. 16, 1994, 6-313157

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **4 Claims**

1. A semiconductor light emitting device comprising a semiconductor light amplifier, a mirror which reflects light emanating from one end face of the semiconductor light amplifier to return the light to said on end face of the semiconductor light amplifier, and a band pass filter which is inserted into the optical path of the light



emanating from said one end face of the semiconductor light amplifier and has a narrow transmission wavelength band.

5,608,744

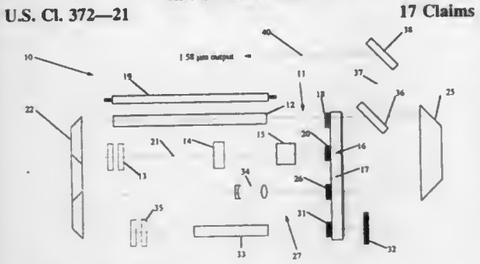
COMPACT LASER APPARATUS AND METHOD

Floyd E. Hovis; Stephen E. Davis, both of Apopka; Bart A. Shepherd, Winter Park; Walter R. Sanders, Apopka, and Ronald R. Selleck, Winter Park, all of Fla., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Mar. 31, 1995, Ser. No. 414,530

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—21 **17 Claims**



1. A laser system comprising:

a primary laser resonator having a lasing medium therein for producing a laser beam of a first wavelength;

a secondary laser resonator optically coupled to said primary resonator with a folding corner cube to allow a portion of the laser energy from said primary laser resonator to pass into said secondary laser resonator;

an optical parametric oscillator located intracavity of said secondary laser resonator, said optical parametric oscillator having a nonlinear crystal for producing a laser beam of a second wavelength therefrom; and

a coherent beam output coupled to said optical parametric oscillator for producing an output beam of predetermined wavelength from said optical parametric oscillator resonator of said second wavelength, and to block the output of said laser beam of a first wavelength, whereby a dual resonator combines a secondary laser cavity and an optical parametric oscillator cavity to produce a predetermined output wavelength.

5,608,745

SLAB WAVEGUIDE LASER

Denis R. Hall, East Lothian; Howard J. Baker; Alan D. Colley, both of Edinburgh, and Krzysztof M. Abramski, West Lothian, all of England, assignors to Lumonics Limited, Rugby, England

PCT No. PCT/GB92/01186, § 371 Date May 3, 1994, § 102(e) Date May 3, 1994, PCT Pub. No. WO93/01635, PCT Pub. Date Jan. 21, 1993

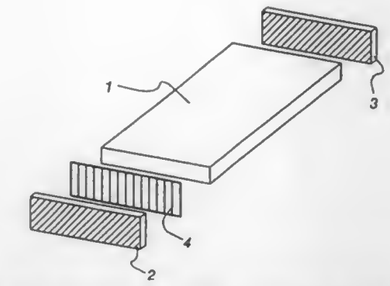
PCT Filed Jul. 1, 1992, Ser. No. 178,262

Claims priority, application United Kingdom, Jul. 1, 1991, 9114148

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—26 **23 Claims**

1. A slab waveguide laser which operates in a predominantly single, high-order mode, comprising:



a slab waveguide (1) including a rectangular slab-shaped gain medium having two orthogonal pairs of parallel side walls reflective at a wavelength of the laser and respectively define a width in a lateral direction and a thickness in a transverse direction of the slab waveguide, two parallel end faces that are orthogonal to the side walls, and a main optical axis running parallel to the side walls;

two laser resonator mirrors (2,3), at least one of which is partially transmitting, positioned adjacent to a respective end face of the slab waveguide orthogonal to the main optical axis to define therebetween a laser resonator; and

a periodic modulation structure (4) positioned within the laser resonator and orthogonal to the main optical axis of the slab waveguide and including a plurality of spaced apertures, with at least one direction of periodic modulation parallel to the lateral direction of the slab waveguide, wherein a length L of the slab is defined by:

$$L = m\frac{n\,d^2}{2\lambda}$$

where m is a positive integer, d is a spacing of the apertures in the periodic modulation structure, λ is the wavelength of the laser and n is a refractive index of the gain medium, and wherein the width of the slab waveguide is an integer multiple of the aperture spacing d.

5,608,746

METHOD FOR AVOIDING EYE DAMAGE WHEN USING HIGH-POWER LASERS

Gunthard Born, Munich, Germany, assignor to Deutsche Aerospace AG, Munich, Germany

Filed Jul. 11, 1994, Ser. No. 272,758

Claims priority, application Germany, Jul. 27, 1993, 43 25 139.0

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—33 **15 Claims**



1. A method for avoiding eye damage in the use of a high-power laser operating in a spectral region transmissible for an eye lens, the method comprising the steps of:

assigning a warning laser to a beam of said high-power laser, said warning laser operating in the visible region; and

increasing the power of a warning laser beam of said warning laser from a zero value to increasingly higher values within a short warning period during which said warning laser beam is imaged on said eye lens to activate a lid closure reflex before said laser beam of the high-power laser reaches said eye lens.

5,608,747

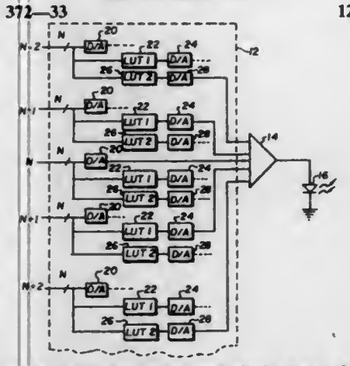
THERMAL CROSS-TALK COMPENSATING CURRENT DRIVER FOR LASER DIODE ARRAY

Seung H. Baek, Pittsford; Thomas A. Mackin, Hamlin, and Nea Y. Woo, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,163

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—33 **12 Claims**



7. Apparatus for controlling a laser diode array of the type having the laser diodes formed on a common substrate, in a laser printer, comprising:

a. a raster image processor for producing digital image data signals;

b. a control signal generator for receiving the digital image data signals and producing a control signal for each laser diode in the array, the control signal generator including means for adjusting the control signals by adding correction signals to the digital image data signals, the correction signals being generated by weighting selected digital image data signals; and

c. a current driver responsive to the control signals to produce drive currents for the diodes in the array.

5,608,748

COOLING DEVICE FOR A PULSED LASER AND PROCESS FOR THE OPERATION OF SUCH A COOLING DEVICE

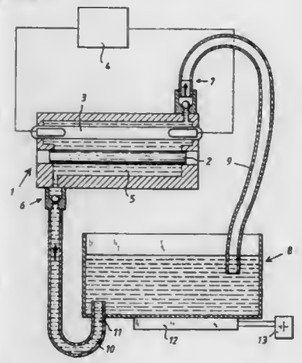
Peter Reimer, Ellwangen; Heinz Abramowsky, Giengen, and Roland Brenner, Wallhausen, all of Germany, assignors to Carl Zeiss Stiftung, Heidenheim, Germany

Filed Oct. 18, 1995, Ser. No. 547,077

Claims priority, application Germany, Oct. 20, 1994, 44 37 489.5

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—35 **13 Claims**



1. A cooling device for a pulsed laser, comprising:

at least one cooling circuit with a cooling medium whose volume increases due to pulsed excitations, and

at least one inlet valve and at least one outlet valve in said cooling circuit,

said inlet valve and said outlet valve having properties in dependence on operating properties of said pulsed laser such that at least a partial circulation of said cooling circuit medium takes place in said cooling circuit due solely to an increase in volume of said cooling medium due to pulsed excitation.

5,608,749

SEMICONDUCTOR LASER DIODE AND SEMICONDUCTOR LASER DIODE ARRAY INCLUDING PLATED HEAT SINK (PHS) ELECTRODE

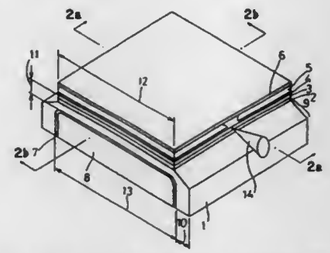
Hirotaka Kizuki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,223

Claims priority, application Japan, Sep. 16, 1992, 4-273585; Jan. 25, 1993, 5-009921

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—36 **4 Claims**



1. A semiconductor laser diode having a selective PHS structure comprising:

a semiconductor substrate having opposite first and second main surfaces, side surfaces transverse to the first and second main surfaces, and front and rear surfaces transverse to the first and second main surfaces and the side surfaces;

a laser diode structure disposed on the first main surface having a resonator and opposed front and rear facets with a length lying along a resonator length direction transverse to the facets; and

a PHS electrode selectively buried in said substrate at the second main surface wherein said laser diode structure is located in an area defined by a first pair of parallel lines running in a direction perpendicular to the resonator length direction and a second pair of parallel lines located at the side surfaces of said semiconductor substrate, the first pair of lines being located internally of the front and rear surfaces of said semiconductor substrate, and said PHS electrode has a length in the resonator length direction no shorter than the resonator length.

5,608,750

SEMICONDUCTOR LASER DEVICE AND A METHOD FOR THE MANUFACTURE THEREOF

Shinichi Nakatsuka, Hino; Kenji Uchida, Hachioji; Misuzu Sagawa, and Satoru Kikuchi, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

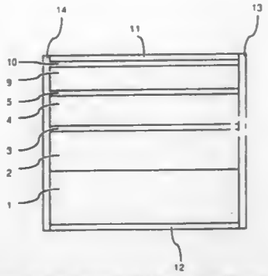
Filed Jul. 29, 1994, Ser. No. 282,312

Claims priority, application Japan, Jul. 29, 1993, 5-187806

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **2 Claims**

1. A semiconductor laser device comprising:



two cladding layers formed of a semiconductor crystal; and

an active layer formed of a semiconductor crystal and sandwiched between the two cladding layers;

wherein a laser light is emitted from an end surface of the active layer when electricity is applied to the semiconductor laser device; and

wherein at the laser light emitting end surface of the active layer is recessed between 50–300 nm inwardly from the end surfaces of the cladding layers;

wherein the bottom surface of the recessed surface is a (111) plane.

5,608,751

LASER DIODE AND PROCESS FOR PRODUCING THE SAME

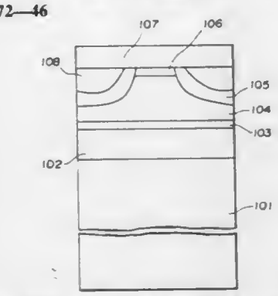
Kenji Shimoyama, Tsuchiura; Toshinari Fujimori, Inashiki-gun; Satoru Nagao, and Hideki Gotoh, both of Tsuchiura, all of Japan, assignors to Mitsubishi Chemical Corporation, Osaka, Japan

Filed Mar. 14, 1994, Ser. No. 209,963

Claims priority, application Japan, Mar. 16, 1993, 5-055692

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **16 Claims**



1. A laser diode comprising a Group III-V compound single-crystal substrate of first conduction type; a first cladding layer of first conduction type composed of $(Al_mGa_{1-m})_nIn_{1-n}P$ ($0.3 \leqq m \leqq 1$ and $0.3 \leqq n \leqq 0.75$) and formed on said single-crystal substrate; an active layer composed of $(Al_xGa_{1-x})_yIn_{1-y}P$ ($0 \leqq x \leqq 0.5$ and $0.3 \leqq y \leqq 0.75$) and formed on said first cladding layer; a second cladding layer of second conduction type composed of $(Al_mGa_{1-m})_nIn_{1-n}P$ ($0.3 \leqq m \leqq 1$ and $0.3 \leqq n \leqq 0.75$) and formed on said active layer and having a ridge; and a current blocking layer composed of $Al_uGa_{1-u}As_vP_{1-v}$, ($0 \leqq u \leqq 1$ and $0 \leqq v \leqq 1$) and so formed as to contact the lateral side of the ridge of said second cladding layer,

(1) each refractive index of the first and second cladding layers being smaller than that of the active layer and (2) the refractive index of the current blocking layer being smaller than that of the second cladding layer.

5,608,752

SEMICONDUCTOR LASER DEVICE AND METHOD OF DESIGNING THE SAME

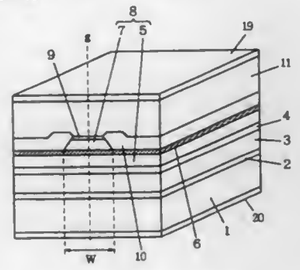
Takenori Goto, Neyagawa; Nobuhiko Hayashi, Osaka; Teruaki Miyake, Tottori; Mitsuaki Matsumoto, Osaka; Kenichi Matsukawa, Sumoto; Daisuke Ide; Koutarou Furusawa, both of Higashiosaka; Akira Ibaraki, Hirakata; Keiichi Yodoshi, Kawachinagano, and Tatsuya Kunisato, Takatsuki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Apr. 28, 1995, Ser. No. 430,497

Claims priority, application Japan, Apr. 28, 1994, 6-092306; Mar. 22, 1995, 7-062265

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **27 Claims**



9. A semiconductor laser device comprising:

an $Al_xGa_{1-x}As$ cladding layer of a first conductivity type;

an active layer formed on said cladding layer of a first conductivity type;

an $Al_xGa_{1-x}As$ first cladding layer of a second conductivity type formed on said active layer;

a saturable light absorbing layer of a second conductivity type formed on said first cladding layer;

an $Al_xGa_{1-x}As$ second cladding layer of a second conductivity type constituting a stripe-shaped ridge portion formed on said saturable light absorbing layer; and

a current blocking layer of a first conductivity type provided on a side surface of said ridge portion and on said saturable light absorbing layer,

the thickness d_a of said active layer, the thickness d_s of said saturable light absorbing layer, and the thickness t_c of said first cladding layer satisfying conditions in a range enclosed by straight lines indicated by equations (9) to (13):

$$t_c = 0.45 \tag{9}$$

$$d_s/d_a = 0.9 \tag{10}$$

$$t_c = -(1/3) \times (d_s/d_a) + 7/10,\ d_s/d_a \leqq 0.6 \tag{11}$$

$$t_c = -(1/10) \times (d_s/d_a) + 2/5,\ 0.6 \leqq d_s/d_a \leqq 0.8 \tag{12}$$

$$t_c = -(1/2) \times (d_s/d_a) + 3/4,\ 0.6 \leqq d_s/d_a \leqq 0.8 \tag{13}$$

the thickness d_a of said active layer being not less than 0.04 μm not more than 0.06 μm, and

the composition ratio X in said cladding layer of a first conductivity type being not less than 0.4 not more than 0.6.

5,608,753

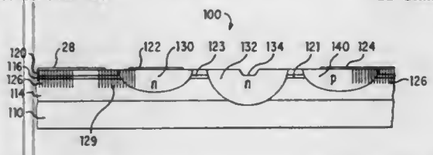
SEMICONDUCTOR DEVICES INCORPORATING P-TYPE AND N-TYPE IMPURITY INDUCED LAYER DISORDERED MATERIAL

Thomas L. Paoli, Los Altos, and John E. Northrup, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1995, Ser. No. 496,752

Int. Cl.[6] H01S *3/18;* **H01L** *31/12*

U.S. Cl. 372—50 **22 Claims**



1. A monolithically integrated transistor and laser device, comprising;

a substrate;

a first cladding layer formed over the substrate and having a first doping type;

an active multilayer stratum formed over the first cladding layer and having said first doping type;

a second cladding layer formed over the active multilayer stratum;

first and second transistor regions formed in the second cladding layer, and extending into the active multilayer stratum and the first cladding layer, the first and second transistor regions having a second doping type different from the first doping type;

a first laser region formed of a material having a bandgap between the bandgaps of the first and second cladding layers and the active multilayer stratum formed in the second cladding layer, and extending into the active multilayer stratum and the first cladding layer, the first laser region having the first doping type;

a first contact layer formed over the first transistor region;

a second contact layer formed over the first laser region; and

a third contact layer formed on one of the substrate and the second cladding layer;

wherein the second transistor region simultaneously forms part of the transistor and part of the laser.

5,608,754

LASER RESONATOR

Takafumi Murakami; Yasuyuki Morita, both of Yamanashi, and Norio Karube, Machida, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Oct. 5, 1995, Ser. No. 539,689

Claims priority, application Japan, Nov. 2, 1994, 6-269856

Int. Cl.[6] H01S *3/081;3/08;3/03*

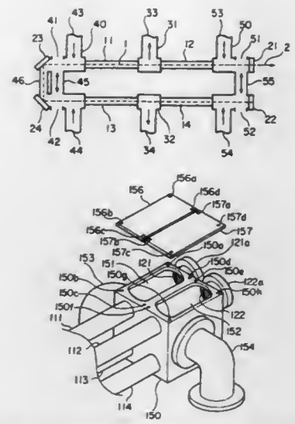
U.S. Cl. 372—93 **5 Claims**

1. A multiple-folded laser resonator for exciting a laser gas to emit a laser beam, comprising:

a discharge tube for containing a laser gas therein;

an internal optical mirror aligned with an axis of said discharge tube; and

a normally closed cleaning window positioned immediately in front of said internal optical mirror and selectively openable for allowing a cleaning instrument to be inserted therethrough for cleaning the internal optical mirror.



5,608,755

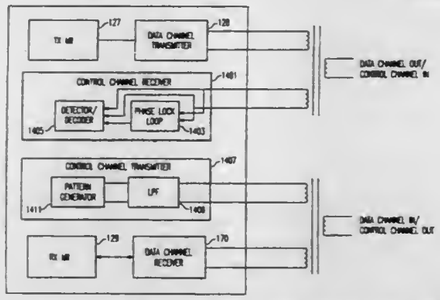
METHOD AND APPARATUS FOR IMPLEMENTING CARRIERLESS AMPLITUDE/PHASE ENCODING IN A NETWORK

Selim Rakib, 5360 Toscana Way, #G107, San Diego, Calif. 92122

Continuation-in-part of Ser. No. 324,171, Oct. 14, 1994. This application Nov. 8, 1994, Ser. No. 336,821

Int. Cl.[6] H04L *5/16;5/12*

U.S. Cl. 375—219 **22 Claims**



1. A transceiver for receiving out-of-band control signals on a receive control channel over a first twisted pair of conductors, and for receiving in-band data on a data channel over a second twisted pair of conductors, including:

a. a first receiver, adapted to be coupled to the first twisted pair of conductors, for receiving said out-of-band control signals on a receive control channel, each out-of-band control signal being indicative of the state of the data channel;

b. a second receiver, adapted to be coupled to the second twisted pair of conductors, for receiving an in-band data signal on the data channel, the second receiver having a detector for canceling control signals transmitted from the transceiver over the second twisted pair of conductors and detecting data signals during transmission of such canceled control signals from the transceiver;

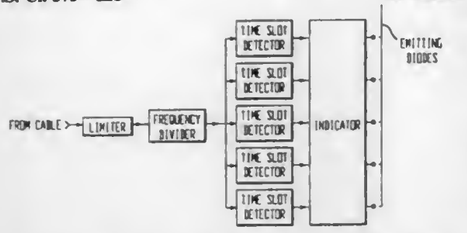
c. a processor, coupled to the first receiver and to the second receiver for determining the status of the data channel based upon the control signal received over the receive control channel.

5,608,756

DEVICE FOR IDENTIFYING TRAFFIC ON A PAIRED CABLE

Alexander Latour-Henner, and Bjorn Isheden, both of Farsta, Sweden, assignors to Televerket, Farsta, Sweden

Continuation of Ser. No. 768,848, Nov. 6, 1991, abandoned.
This application Feb. 28, 1995, Ser. No. 395,660
Int. Cl.[6] G01R *23/16;* H04M *3/22*
U.S. Cl. 375—228 10 Claims



1. A device for connection to a communication cable pair carrying an input signal to identify a type of traffic on the communication cable pair, the device comprising:

an isolating means connected to said communication cable pair for isolating from said input signal an isolated signal having a constant amplitude and a frequency corresponding to a strongest component of said input signal;

time slot detector means for detecting the frequency of the isolated signal, said time slot detector means having plural outputs indicative of the detected frequency; and

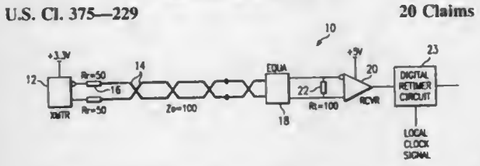
indicator means, connected to plural outputs of the time slot detector means, for indicating the detected frequency of the isolated signal.

5,608,757

HIGH SPEED TRANSPORT SYSTEM

David M. Smith, and Oscar A. Tovar, both of Plano, Tex., assignors to DSC Communications Corporation, Plano, Tex.

Filed Jun. 3, 1994, Ser. No. 253,339
Int. Cl.[6] H03H *7/30*
U.S. Cl. 375—229 20 Claims



1. A high speed transport system, comprising:

a balanced channel for carrying a differential signal; and

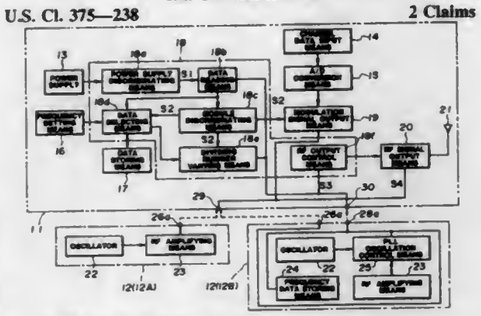
an equalizer coupled to said balanced channel for reducing timing jitter on said differential signal carried by said balanced channel, wherein said differential signal is transmitted by a non-encoding sender and no duty cycle constraints are placed on said differential signal, wherein said equalizer provides sufficient signal to noise ratio on said differential signal without the use of a filter circuit.

5,608,758

RADIO CONTROL DEVICE HAVING CRYSTAL HIGH FREQUENCY MODULE AND HIGH FREQUENCY PHASE LOCKLOOP FOR SELECTIVE USE, MODULES DETACHABLY MOUNTED

Susumu Sakuma; Satoshi Inokoshi; Akira Ancha; Masahiro Arai, and Masashi Tokita, all of Mobara, Japan, assignors to Futaba Denshi Kogyo, K.K., Mobara, Japan

Filed Jul. 15, 1993, Ser. No. 91,267
Claims priority, application Japan, Jul. 15, 1992, 4-049690 U; Jul. 15, 1992, 4-049691 U; Sep. 25, 1992, 4-066946 U
Int. Cl.[6] H03K *7/08*
U.S. Cl. 375—238 2 Claims



1. A radio control device comprising:

a transmitter in which both a crystal type high frequency module operating at a frequency band of a carrier and a high frequency module having a PLL (phase-locked loop) circuit for controlling a frequency of the carrier depending on a phase difference between the carrier and a reference signal of an oscillator are detachably mounted;

said transmitter being provided with a pulse generating unit including a pulse width operating means and a PPM (pulse position modulation) wave output means;

said pulse width operating means determining each of pulse data having a one-shot pulse width for each of channels of a PPM wave and a reset pulse width, based on manually set channel frequency data and for modulating a main carrier of which an oscillation frequency is controlled depending on a phase difference between the reference signal and a dividing signal;

said PPM wave output means changing a duty ratio of the PPM wave to a desired value depending on the pulse data operated by said pulse width operating means and outputting it; and

a receiver employing a frequency synthesizer system in which a PLL circuit for controlling an oscillation frequency depending on a phase difference between the reference signal and the oscillation frequency is used;

said receiver including a frequency selecting means for selecting a required frequency from a plurality of predetermined frequency data and a frequency setting means for setting a receive frequency on the frequency selected by said frequency selecting means when a power supply is turned on;

an output of said receiver being controlled by a wave received from said transmitter.

5,608,759

INFORMATION STORAGE APPARATUS

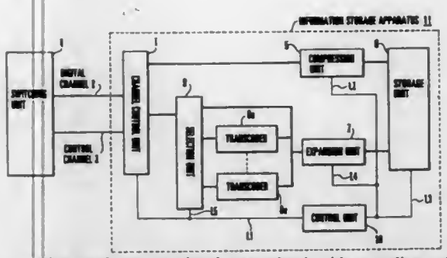
Naoto Fujiwara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1994, Ser. No. 267,388
Claims priority, application Japan, Jul. 2, 1993, 5-188660
Int. Cl.[6] H03M *7/28*
U.S. Cl. 375—242 4 Claims

1. In a digital communication network in which pieces of audio information are encoded using different PCM coding rules,

an information storage apparatus comprising:

a control means for receiving an information storage request signal with a coding rule identifier of a source and an information read request signal transmitted with a coding rule identifier of a read destination;



a storage unit for storing PCM-coded audio information to be transmitted and a coding rule identifier of the PCM-coded audio information in correspondence with each other, when said control means receives the information storage request signal; and

at least one transconverter for respectively converting PCM-coded audio information read from said storage unit into code-converted PCM-coded audio information having a same coding rule as the coding rule of the read destination;

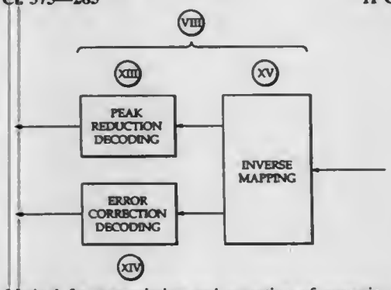
said control means including a comparator which compares the coding rule identifier read from said storage unit with the coding rule identifier of the read destination, when said control means receives the information read request signal transmitted along with the coding rule identifier of the read destination, so that if the coding rule identifier read from said storage unit coincides with the coding rule identifier of the read destination, the PCM-coded audio information read from said storage unit is transmitted without code conversion, and if the coding rule identifier read from said storage unit does not coincide with the coding rule identifier of the read destination, said PCM-coded audio information is transmitted through a selected one of said at least one transconverter to convert said PCM-coded audio information into said code-converted PCM-coded audio information.

5,608,760

METHOD AND CIRCUITS FOR THE TRANSMISSION AND RECEPTION OF NUMERIC SIGNALS, IN WHICH THE PEAK POWER OF THE FILTERED SIGNAL TRANSMITTED IS REDUCED, COMPATIBLE WITH CONVENTIONAL CODING TECHNIQUES

Andrea Sandri, Monza; Arnaldo Spalvieri, and Franco Guglielmi, both of Milan, all of Italy, assignors to Alcatel Italia SpA, Milan, Italy

Filed Jul. 26, 1995, Ser. No. 506,929
Claims priority, application Italy, Jul. 28, 1994, MI94A1626
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—285 11 Claims



1. Method for transmission and reception of numeric signals comprising the steps of:

modulating numeric signals from a numeric source by associating data groups with points of a two-dimension or N-dimension constellation for providing a modulated signal for said transmission of numeric signals through a transmit channel;

filtering the modulated signal for providing a filtered signal;

transmitting the filtered signal through the transmit channel which is a nonlinear channel, where the nonlinearity is due to a nonlinear characteristic of a final amplifier of a transmitter, or to a nonlinear behavior of the transmit channel itself, for providing an outgoing signal;

receiving the outgoing signal from the transmit channel for providing a received signal;

filtering the received signal for providing a filtered received signal;

demodulating the filtered received signal for reconstructing the numeric signals;

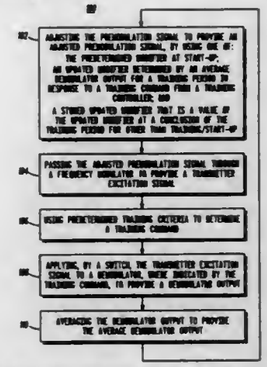
wherein said step of modulating includes, as a baseband numeric coding step, the step of coding said numeric signals and so creating a code governing encoding and decoding of said numeric signals, so as to provide sequences that are favorable in terms of peak power of the filtered signal, and wherein said step of demodulating includes, as a baseband numeric decoding step, using said code for decoding said filtered received signal for reconstructing the numeric signals.

5,608,761

METHOD, DEVICE, AND RADIO FOR COMPENSATING FOR MODULATOR FREQUENCY DRIFT WHILE ALLOWING FOR DATA TRANSMISSION

George F. Opas, Park Ridge, and Robert J. DeGroot, Cary, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1994, Ser. No. 352,996
Int. Cl.[6] H04K *1/02;* H04L *25/03;25/49*
U.S. Cl. 375—296 24 Claims



1. A method for compensating for modulator frequency drift in a half-duplex frequency modulated communication system that uses a premodulation signal, a received signal, predetermined training criteria, and a predetermined modifier, the method comprising the steps of:

A) adjusting the premodulation signal to provide an adjusted premodulation signal, by using one of:

A1) the predetermined modifier at start-up;

A2) an updated modifier determined by an average demodulator output for a training period in response to a training command from a training controller; and

A3) a stored updated modifier that is a value of the updated modifier at a conclusion of the training period for other than training/start-up;

B) passing the adjusted premodulation signal through a frequency modulator to provide a transmitter excitation signal;

C) using predetermined training criteria to determine the training command;

D) applying, by a switch, where indicated by the training command, the transmitter excitation signal to a demodulator to provide a demodulator output; and

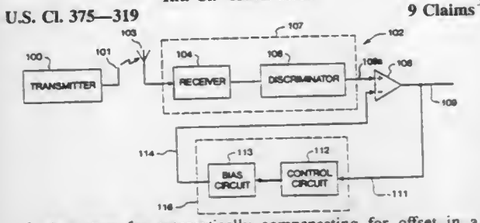
E) averaging the demodulator output to provide the average demodulator output.

5,608,762

APPARATUS AND METHOD FOR AUTOMATIC DISCRIMINATOR COMPENSATION IN A FSK RECEIVER

Steven L. Maddy, Boulder, Colo., assignor to Spectralink Corporation, Boulder, Colo.

Filed Jun. 30, 1993, Ser. No. 85,883
Int. Cl.[6] H04L *25/06*
U.S. Cl. 375—319 **9 Claims**



1. A system for automatically compensating for offset in a Frequency Shift keying (FSK) receiver, the receiver having an output providing a demodulated analog signal having the offset voltage superimposed thereon, the system comprising:

transmitter means for broadcasting a FSK signal, said FSK signal including a central frequency f0 during a predetermined portion;

a comparator having a first imput DC coupled to the receiver output, the comparator also having an output for providing a logic level binary signal corresponding to the demodulated analog signal, and a second input for receiving an analog bias votage;

control means including a counter/timer responsive to the comparator output for identifying the predetermined portion of the FSK signal and generating an enable output signal during the predetermined portion, the control means for generating an error signal on control output, the error signal based on the value of the comparator output during the predetermined portion of the FSK signal; and

bias means responsive to the error signal and having an output coupled to the second input of the comparator or providing the analog bias voltage, the bias means capable of increasing and decreasing the analog bias voltage in response to the error signal from the control means.

5,608,763

METHOD AND APPARATUS FOR DECODING A RADIO FREQUENCY SIGNAL CONTAINING A SEQUENCE OF PHASE VALUES

Gregory M. Chiasson, Barrington, and Kevin L. Baum, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Dec. 30, 1993, Ser. No. 175,892
Int. Cl.[6] H04L *27/22*
U.S. Cl. 375—332 **21 Claims**

11. An apparatus for maximum likelihood decoding a forward error correction encoded amplitude limited radio frequency communicated signal containing a sequence of phase values, such apparatus comprising:

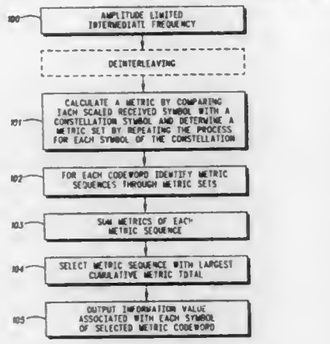
A) a first processor for determining a set of metrics for each phase value by comparing each phase value of the sequence of phase values with a set of encoded phase values and by scaling a function of each phase value of the sequence of phase values by a corresponding estimated signal to noise ratio for each phase value of the sequence of phase values to form a plurality of metric sets;

B) a second processor for identifying a plurality of metric sequences by projecting the metric sets with one metric per metric set;

C) a summer for summing the metrics of each metric sequence;

D) a selector responsive to the summer for selecting the metric sequence with a greatest likelihood; and,

E) an output responsive to the selector for outputting an information value based on the selected metric sequence, the information value associated with each metric of a metric sequence of the plurality of metric sequences with said greatest likelihood.

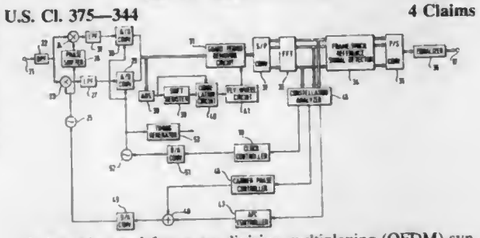


5,608,764

OFDM SYNCHRONIZATION DEMODULATION CIRCUIT

Yasushi Sugita; Tatsuya Ishikawa, and Takashi Seki, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1994, Ser. No. 339,697
Claims priority, application Japan, Nov. 12, 1993, 5-283582
Int. Cl.[6] H04L *27/32;7/02*
U.S. Cl. 375—344 **4 Claims**



1. An orthogonal frequency division multiplexing (OFDM) synchronization demodulation circuit comprising:

receiving means for receiving an OFDM modulation signal;

orthogonal detection means for orthogonally detecting the OFDM modulation signal from the receiving means using a restored carrier;

demodulation means for orthogonally demodulating the detected OFDM modulation signal detected by the orthogonal detection means through a sampling of the OFDM detection signal using a restored clock;

phase comparator means for comparing said demodulated detected OFDM modulation signal with specific reference phase signals to produce phase difference signals of demodulated symbols of predetermined carriers in the demodulated OFDM signal;

carrier frequency deviation detection means for detecting a frequency deviation of the restored carrier based on a rotation of the demodulated symbols determined from phase difference signals produced by said phase comparator means;

carrier restoration means responsive to the frequency deviation detected by the carrier frequency deviation detection means for controlling the restored carrier;

clock frequency deviation detection means for detecting a frequency deviation of the restored clock based on rotations of at least two demodulated symbols with different carrier frequencies detected from a single OFDM power spectrum, said rotations being determined from phase difference signals produced by said phase comparator means; and

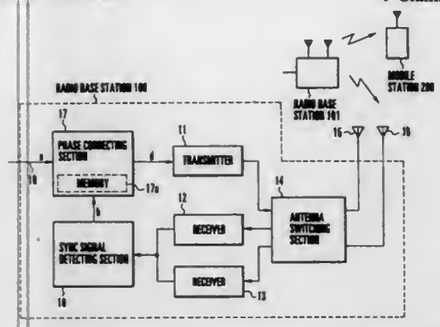
clock restoration means responsive to the frequency deviation detected by the clock frequency deviation detection means for controlling the restored clock.

5,608,765

RADIO FRAME SYNCHRONIZATION SYSTEM

Katsumi Tanoue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,359
Claims priority, application Japan, Jul. 8, 1994, 6-157264
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—365 **9 Claims**



1. A radio frame synchronization system for performing synchronization control of radio frames to be transmitted from a plurality of radio base stations respectively connected to wire lines and being capable of communicating with a mobile station via an over-the-air connection, each of said radio base stations comprising:

reception means for receiving a time-division radio signal including a sync signal to be transmitted from a distant radio base station in operation to said mobile station when a home radio base station is activated;

detection means for detecting the sync signal of the received radio signal from a reception output from said reception means; and

a reference signal generating means for generating a radio frame reference signal, said radio frame reference signal indicating a timing at which a radio frame is transmitted to said mobile station, on a basis of a phase difference between a radio frame synchronization reference signal supplied from the corresponding wire line and the sync signal which is output from said detection means.

5,608,766

CO-DEPOSITION OF PALLADIUM DURING OXIDE FILM GROWTH IN HIGH-TEMPERATURE WATER TO MITIGATE STRESS CORROSION CRACKING

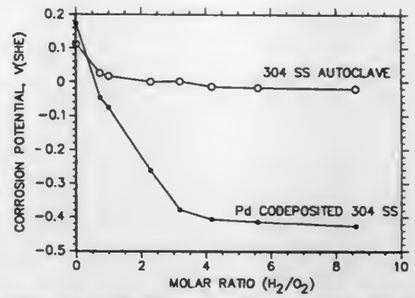
Peter L. Andresen, Schenectady, N.Y.; Samson Hettiarachchi, Menlo Park, Calif.; Young J. Kim, Clifton Park, N.Y., and Thomas P. Diaz, San Martin, Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 265,598, Jun. 24, 1994, and a continuation-in-part of Ser. No. 209,175, Mar. 10, 1994, and a continuation-in-part of Ser. No. 143,513, Oct. 29, 1993, and a continuation-in-part of Ser. No. 143,514, Oct. 29, 1993, Pat. No. 5,448,605. This application Oct. 13, 1994, Ser. No. 322,253
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—305 **18 Claims**

1. A method for inhibiting corrosion of an alloy component in a water-cooled nuclear reactor or associated equipment thereof, comprising the steps of:

removing at least a portion of an oxide film pre-existing on a surface of said alloy component; and

injecting a solution or suspension of a compound containing a metal into the water of said reactor to cause at least some of said injected metal to be incorporated in new oxide film as said new oxide film forms where said pre-existing oxide film was removed,



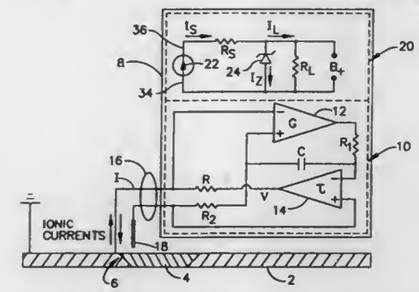
wherein said metal is selected from the group consisting of nobel metals and corrosion-inhibiting metals.

5,608,767

NEUTRON-ACTIVATED DIRECT CURRENT SOURCE

James H. Terhune, San Jose, and Robert L. Cowan, II, Livermore, both of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 384,997, Feb. 7, 1995, which is a continuation-in-part of Ser. No. 239,773, May 9, 1994, Pat. No. 5,444,747. This application Jul. 21, 1995, Ser. No. 505,412
Int. Cl.[6] G21C *19/28*
U.S. Cl. 376—321 **20 Claims**



1. A neutron-activatable battery comprising a mass of stable isotope material, a metallic collector electrically insulated from said stable isotope material by electrically insulating material, and an electrical lead connected to said metallic collector, wherein said stable isotope material has the property of capturing neutrons from a neutron flux and being activated by neutron capture to a radioactive state having a subsequent decay chain during which at least one β-particle is emitted.

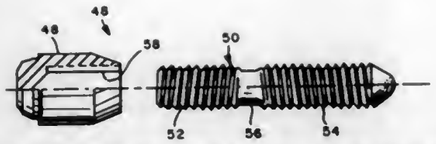
5,608,768

THREADED FUEL ROD END PLUGS AND RELATED METHOD

Bruce Matzner, San Jose, Calif.; Thomas G. Dunlap, Wilmington, N.C., and Richard A. Proebstle, San Jose, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,373
Int. Cl.[6] G21C *3/10*
U.S. Cl. 376—451 **20 Claims**

1. An end plug for a fuel rod of a nuclear reactor fuel bundle assembly including upper and lower tie plates, the end plug comprising:



an upper portion constructed of a first alloy material and including an exterior fuel rod receiving surface and a rapped hole in a lower end thereof; and

a removable lower portion constructed of a second alloy material and including upper and lower threaded sections, said upper threaded section receivable within said tapped hole and said lower threaded section receivable within a correspondingly threaded hole in the lower tie plate.

5,608,769

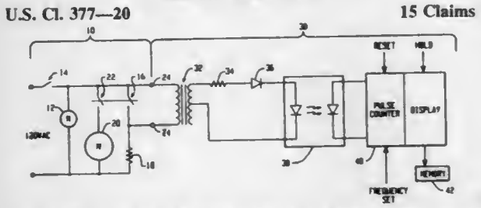
PAUSE TESTING CIRCUIT FOR DISHWASHER CONTROLLER

James A. Patton, Goldsboro, and Allen B. Daughtry, Pikeville, both of N.C., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 21, 1995, Ser. No. 531,516

Int. Cl.[6] G01F *15/00*

U.S. Cl. 377—20 **15 Claims**



1. A test circuit for indicating duration of a state of an electrical element having an alternating voltage of known frequency applied across the element, said test circuit comprising:

a rectifier connected to the element to rectify current from the alternating voltage so as to create current pulses that flow from the rectifier when the element is in the state being tested;

a pulse counter operatively connected to the rectifier to count the pulses; and

an indicator connected to indicate a summation of pulses counted by the pulse counter as the duration of the state of the element.

5,608,770

FREQUENCY CONVERTER OUTPUTTING A CLOCK SIGNAL HAVING A STABLE AND ACCURATE FREQUENCY

Kouichi Noguchi, Machida, and Eiichi Sasaki, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,896

Claims priority, application Japan, Sep. 21, 1993, 5-235067

Int. Cl.[6] H03K *21/00;* **G01F** *23/28*

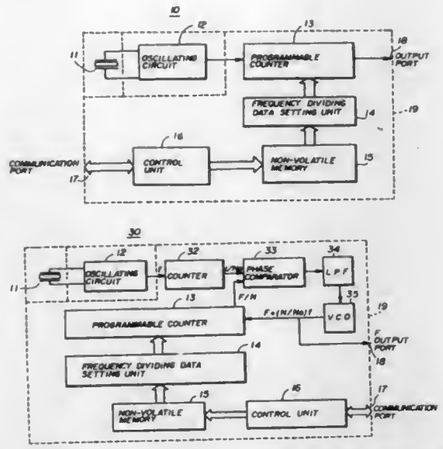
U.S. Cl. 377—47 **10 Claims**

1. A frequency converter comprising:

a programmable counter which outputs a signal having a desired frequency by dividing a frequency of an input signal by a frequency-dividing ratio;

a non-volatile memory, connected to said programmable counter, for storing data for setting the frequency-dividing ratio used by said programmable counter;

a control unit, connected to said non-volatile memory, for controlling a writing operation of data stored into said non-volatile memory;



a package for accommodating said programmable counter, said non-volatile memory and said control unit; and

a frequency-dividing setting unit for setting the data for setting the frequency-dividing ratio stored in said non-volatile memory, and wherein the frequency-dividing ratio is automatically set in said programmable counter each time when a power is turned on.

5,608,771

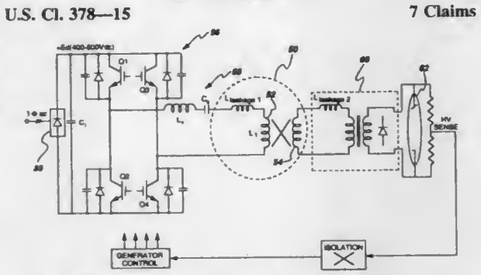
CONTACTLESS POWER TRANSFER SYSTEM FOR A ROTATIONAL LOAD

Robert L. Steigerwald, Burnt Hills; John A. Mallick, Scotia, and John N. Park, Rexford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1995, Ser. No. 547,078

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **7 Claims**



1. A computer tomography system, comprising:

a rotational gantry for mounting an x-ray tube and a detector array thereon;

a resonant inverter for converting an input dc voltage to an ac voltage for driving said x-ray tube, said resonant inverter comprising a resonant output circuit;

a high-voltage tank circuit coupled through a rotary transformer to said resonant inverter, said tank circuit also being mounted on said gantry;

said rotary transformer comprising a rotor having a rotational toroidal-shaped core with at least one winding wound thereon and a stator having a stationary toroidal-shaped core with at least one winding wound thereon, said rotor core and stator core having an air gap therebetween, one of the windings of said rotary transformer being of sufficiently high voltage such that said high-voltage tank circuit does not require a separate respective transformer, said rotor core and said stator core

being arranged in a ring configuration with an inner diameter sufficiently large to receive a patient.

5,608,772

COMPUTERIZED TOMOGRAPHY APPARATUS

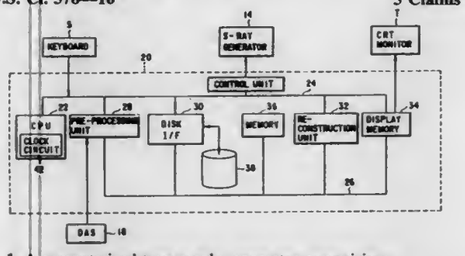
Yasuo Nobuta, Tochigi-ken; Yusuke Toki, Utsunomiya; Manabu Hiraoka, Tochigi-ken; Naoki Sugihara, and Masahiro Ozaki, both of Otawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 347,236, Nov. 23, 1994. This application Oct. 5, 1995, Ser. No. 539,707

Claims priority, application Japan, Nov. 26, 1993, 5-296346; Apr. 5, 1994, 6-067343; Oct. 31, 1994, 6-267280

Int. Cl.[6] G06T *11/00*

U.S. Cl. 378—16 **5 Claims**



1. A computerized tomography apparatus comprising:

acquiring means for acquiring a projection data set;

reconstructing means for reconstructing tomography data of one frame based on the projection data set;

displaying means for visually displaying the tomography data; and

means for selecting one of a real-time mode and a time-sharing mode, wherein, in the real-time mode, said acquiring means repeatedly acquires projection data sets, said reconstructing means repeatedly reconstructs the tomography data in synchronism with acquiring the projection data sets, and said displaying means displaying the tomography data as a moving image in synchronization with acquiring the projection data sets,

and wherein, in the time-sharing mode, said acquiring means acquires the projection data set, said reconstructing means reconstructs the tomography data asynchronously with acquiring the projection data set, and said displaying means displays the tomography data asynchronously with acquiring the projection data set.

5,608,773

MASK HOLDING DEVICE, AND AN EXPOSURE APPARATUS AND A DEVICE MANUFACTURING METHOD USING THE DEVICE

Nobusige Korenaga, Sagamihara; Kouichi Hara, Hadano, and Shinichi Hara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 348,837

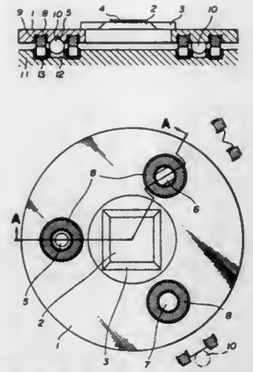
Claims priority, application Japan, Nov. 30, 1993, 5-299917; Nov. 30, 1993, 5-299918

Int. Cl.[6] G03B *11/00*

U.S. Cl. 378—34 **25 Claims**

1. A mask holding device comprising:

a holding surface for supporting a mask at three positions, wherein the mask includes a conical-hole portion, a V-groove portion and flat portion; and



force generation means, provided at positions corresponding to the three positions, for generating a non-mechanical force to pull the mask toward said holding surface.

5,608,774

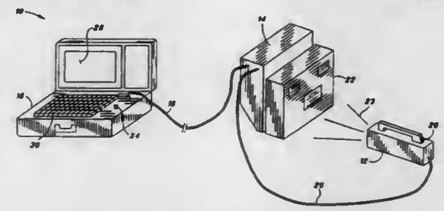
PORTABLE, DIGITAL X-RAY APPARATUS FOR PRODUCING, STORING, AND DISPLAYING ELECTRONIC RADIOSCOPIC IMAGES

Raulf M. Polichar, and Scott T. Smith, both of San Diego, Calif., assignors to Science Applications International Corporation, San Diego, Calif.

Filed Jun. 23, 1995, Ser. No. 494,251

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.8 **24 Claims**



1. Apparatus for producing, storing, and displaying a radioscopic image of an object under investigation comprising:

a low power X-ray source configured to provide a sequence of X-ray radiation pulses directed at the object under investigation;

an X-ray image sensor configured to spatially sense the X-ray radiation pulses that pass through the object under investigation, and generate an image signal indicative thereof, each individual X-ray pulse being of insufficient energy to excite the X-ray image sensor, the X-ray image sensor including means for integrating the effects of the sequence of X-ray radiation pulses until the integrated effects are sufficient to excite the X-ray image sensor so that the image signal may be generated; and

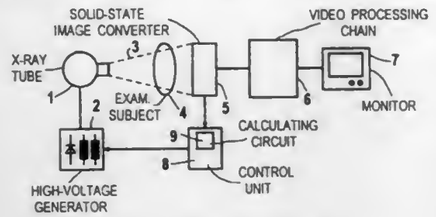
processing and display means for processing the image signal to produce a digital image signal encompassing the full dynamic range and resolution of the X-ray sensor means, and for displaying an image of the digital image signal.

5,608,775

X-RAY DIAGNOSTIC INSTALLATION HAVING A SOLID-STATE IMAGE CONVERTER AND METHOD FOR OPERATING SAME

Dietrich Hassler, Uttenreuth, and Martin Hoheisel, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 29, 1995, Ser. No. 536,437
Claims priority, application Germany, Sep. 30, 1994, 44 35 105.4
Int. Cl.[6] H05G 1/44
U.S. Cl. 378—98.8 15 Claims



1. An x-ray diagnostic installation comprising:

a high-voltage generator;

an x-ray tube supplied by said high-voltage generator for emitting an x-ray beam;

a solid-state image converter disposed in said x-ray beam and having a plurality of light-sensitive elements arranged in a matrix, said solid-state image converter converting an x-ray image produced by said x-ray beam incident on said solid-state image converter into a corresponding optical image;

said x-ray tube and said solid-state image converter being adapted to receive an examination subject therebetween, said examination subject having an x-ray transparency; and

control means connected to said high-voltage generator and to said solid-state image converter for operating said high-voltage generator for causing said x-ray tube to emit a first x-ray pulse for producing an x-ray exposure of said examination subject in said solid-state image converter, said control means including means for reading out said solid-state image converter during said x-ray exposure for obtaining a measured value representative of an x-ray dose rate, said control means including calculating means supplied with said measured value for determining the x-ray transparency of said examination subject and for calculating an optimum x-ray dose dependent on said x-ray transparency, and said control means operating said high-voltage generator for causing said x-ray tube to emit a second x-ray pulse with said optimum x-ray dose for obtaining said optical image of said examination subject, said first x-ray pulse having a duration which is short relative to a duration of said second pulse.

5,608,776

METHODS AND APPARATUS FOR TWIN BEAM COMPUTED TOMOGRAPHY

Jiang Hsieh, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Oct. 10, 1995, Ser. No. 540,502
Int. Cl.[6] G21K 1/00
U.S. Cl. 378—145 17 Claims

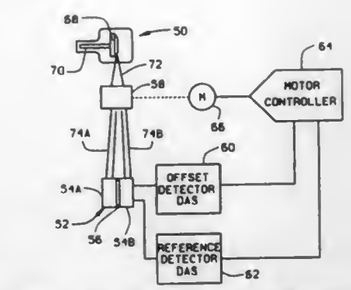
1. A twin beam computed tomography scanner for performing a helical scan, comprising:

an x-ray source for generating an x-ray to be projected generally towards, and at least partially through, an object;

a detector array comprising a plurality of detector cells, said cells arranged to form at least two cell rows;

a beam splitter positioned so that the x-ray projected from said x-ray source is substantially split to form at least two beams prior to being projected at least partially through the object;

a data acquisition system coupled to said detector array; and



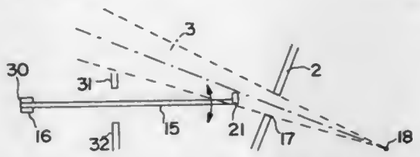
a controller coupled to said data acquisition system and to said beam splitter for controlling said beam splitter so that the x-ray beams from said beam splitter do not substantially impinge on edge regions of said detector cells.

5,608,777

SLIT RADIOGRAPHY APPARATUS

Ronald J. Geluk, PL Nootdorp, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", XE Delft, Netherlands

PCT No. PCT/EP91/00174, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/11143, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 28, 1991, Ser. No. 910,251
Claims priority, application Netherlands, Feb. 1, 1990, 9000250
Int. Cl.[6] G21K 5/10
U.S. Cl. 378—146 5 Claims



1. An absorption assembly for slit radiography apparatus including an X-ray source, a slit diaphragm and an X-ray detector wherein said absorption assembly is disposed between said X-ray source and said X-ray detector, which comprises:

a plurality of piezoelectric tongues each having a fixed end and a free end including an absorption element;

stop means for limiting individually deflection of each of said piezoelectric tongues, said stop means being comprised of a first stop strip and a second stop strip disposed behind said first stop strip, a distance between said second stop strip and a rest position of said piezoelectric tongues being greater than a distance between said first stop strip and a rest position of said piezoelectric tongues.

5,608,778

CELLULAR TELEPHONE AS AN AUTHENTICATED TRANSACTION CONTROLLER

B. Waring Partridge, III, Far Hills, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

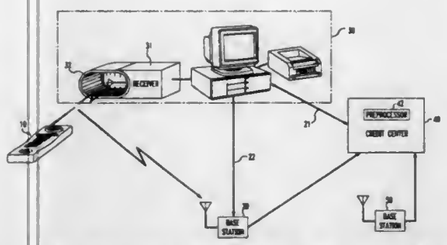
Filed Sep. 22, 1994, Ser. No. 310,441
Int. Cl.[6] H04Q 7/20
U.S. Cl. 379—58 14 Claims

1. A method carried out by a first party, comprising the steps of:

receiving signals emitted by a communication device held by a second party, which signals identify the communication device;

based on said signals, authenticating the identity of the communication device; and

communicating a response signal to a third party to induce said third party to perform an action to benefit said second party, other than an action associated with the establishment of communication between the second party and another party.

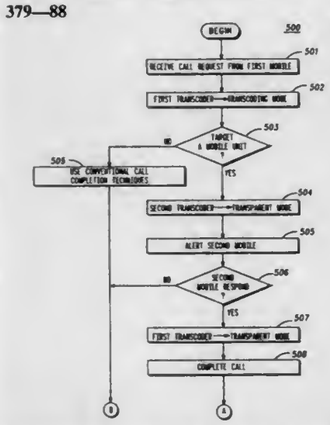


5,608,779

METHOD FOR COMMUNICATIONS BETWEEN MOBILE UNITS USING SINGLE AND MULTIPLE SWITCHING CENTER CONFIGURATIONS

Valy Lev, Buffalo Grove; Kamala Urs, Bartlett, and Hooman Kashef, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1994, Ser. No. 336,347
Int. Cl.[6] H04Q 7/22; 7/38
U.S. Cl. 379—88 26 Claims



1. In a communication system that comprises a switching center and at least one site controller in communication with the switching center via at least two transcoders, a method for the switching center to establish a call, the method comprising the steps of:

a) responsive to a call request from a first mobile unit associated with the at least one site controller, instructing a first transcoder of the at least two transcoders to operate in a transcoding mode;

b) determining that the call request is for a second mobile unit;

c) instructing a second transcoder of the at least two transcoders to operate in a transparent mode;

d) alerting the second mobile unit of the call;

e) when the second mobile unit has responded, instructing the first transcoder to operate in the transparent mode; and

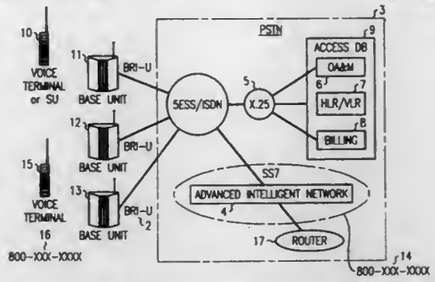
f) completing the call between the first mobile unit and the second mobile unit.

5,608,780

WIRELESS COMMUNICATION SYSTEM HAVING BASE UNITS WHICH EXTRACTS CHANNEL AND SETUP INFORMATION FROM NEARBY BASE UNITS

Irwin Gerszberg, Kendall Park; Eugene T. Kendig, Sea Girt, and Jesse E. Russell, Piscataway, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 158,089, Nov. 24, 1993, abandoned. This application Sep. 1, 1995, Ser. No. 522,795
Int. Cl.[6] H04Q 7/20
U.S. Cl. 379—58 8 Claims



1. A radiotelephone communication system including a plurality of wireless communication base stations;

digital line connections each connecting one of the plurality of wireless communication base stations to a digital integrated service telephone switch and its data included in a landline telephone network, and operative for accessing, through the digital integrated service telephone switch, each others setup and control channel information; and an adjunct advanced intelligent network means connected to the digital integrated service telephone switch;

each wireless communication base station including means for communicating by radio signals with another one of the plurality of wireless communication base stations including scanning its setup channels and utilizing data acquired for initialization of its circuits; and including means to register and control calls from and to mobile telephone terminals, including means to tune frequencies and connect an audio path to a landline telephone network;

means included in the first and second wireless communication base stations for responding to the data acquired and setting a configuration state common to the plurality of wireless communication base stations;

the advanced intelligent network controlling routing of calls to the wireless communication base stations and to the registered mobile telephone terminals;

each wireless communication base station accepting responses of mobile telephone terminals to set up calls and commands to terminate calls with mobile telephone terminals;

means within each wireless communication base station to select mobile telephone terminals to service and to designate others of the plurality of wireless communication base stations as neighbors based on RSSI (Received Signal Strength Indicator) signal strength measurements and to use the RSSI strength measurements to limit service area.

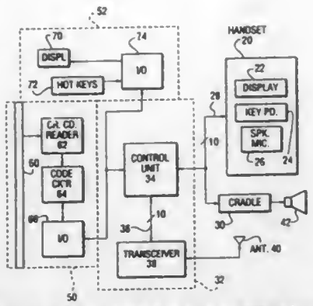
5,608,781

METHOD OF ELIMINATING OR REDUCING CLONING OF ELECTRONIC IDENTIFICATION NUMBERS OF CELLULAR TELEPHONES

Abe Seiderman, 165 Solano Prado, Coral Gables, Fla. 33156

Filed Apr. 12, 1995, Ser. No. 421,835
Int. Cl.[6] H04Q 7/22
U.S. Cl. 379—59 10 Claims

1. Method for preventing unauthorized detection of electronic serial numbers stored in and broadcast from one cellular telephone



of a plurality of cellular telephones to a cellular telecommunications network during a telecommunications link comprising the steps of:

providing a cellular telephone with a controller, a memory with a plurality of memory locations for storing a plurality of electronic serial numbers, an input device for entry of at least telephone numbers and communication commands all electronically connected together and a transceiver electronically connected to said controller;

initially assigning and storing, in one memory location, an assigned electronic serial number unique to said one cellular telephone as compared with other electronic serial numbers assigned to other cellular telephones of said plurality of cellular telephones, said assigned electronic serial number enabling said cellular telecommunications network to locate and call said one cellular telephone during said telecommunications link;

storing said assigned electronic serial number in another memory location;

storing a pseudo electronic serial number at said one memory location thereby overwriting said assigned electronic serial number stored thereat;

determining when at least one condition of the following group of conditions occurs:

entry of a predetermined user code;

entry of an emergency telephone number;

entry of a communications command substantially equivalent to selection of one

of a plurality of predetermined telephone numbers stored in said memory at

respective memory locations;

upon the determination of an occurrence of one of the conditions, copying said assigned electronic serial number into said first memory location and permitting cellular telecommunications links utilizing said assigned electronic serial number;

in the absence of determining an occurrence of one of the conditions, using said pseudo electronic serial number during all cellular telecommunications links between said one cellular telephone and said cellular telecommunications network.

5,608,782

TELEPHONE CALL CONNECTION METHOD WITH AUTOMATED PAGING AND CALL BRIDGING

Ralph Carlsen; Marc P. Kaplan, and John S. Robertson, all of Monmouth County, N.J., assignors to AT&T, Holmdel, N.J.

Division of Ser. No. 843,685, Feb. 28, 1992. This application May 17, 1995, Ser. No. 442,943

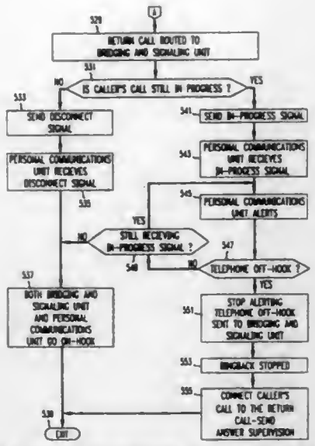
Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—63 **8 Claims**

1. A method for use in completing a telephone call that is initiated from a calling telephone to a called individual comprising the steps of:

receiving a call placed to a telephone number of said called individual from said calling telephone;

sending a signal for actuating a personal communications unit of said called individual without alerting the called individual;



receiving a call to a predetermined number placed automatically by said personal communications unit in response to said signal for actuating;

checking if said telephone call from said calling telephone continues to be in progress;

transmitting a signal indicating the said telephone call from said calling telephone continues to be in progress if the result of said step of checking is affirmative; and

then alerting the called individual for the first time, that the called individual is being called, so long as said telephone call from said calling telephone continues to be in progress.

5,608,783

METHODS AND APPARATUS FOR COORDINATING AND CONTROLLING THE OPERATION OF AMIS ANALOG VOICE MESSAGING SYSTEM NETWORKS IN RESPONSE TO MESSAGE DELIVERY SESSION STATUS SIGNALS

Jeanne Ichnowski, Palo Alto; Chris Yuan, Fremont; Bipin Patel, San Jose, and Mark E. Kaminsky, Sunnyvale, all of Calif., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 400,772, Mar. 6, 1995, abandoned, which is a contiouation of Ser. No. 92,185, Jul. 15, 1993, abandoned. This application May 16, 1996, Ser. No. 650,066

Int. Cl.[6] H04M *3/50*

U.S. Cl. 379—67 **21 Claims**

1. A method for responding to a second coded signal in an internetwork of voice messaging networks, said voice messaging networks having dissimilar internal operating procedures and protocols, said internetwork implementing a common internetwork protocol to enable a plurality of voice messaging functions to be implemented between said networks, said common protocol operating to permit a first of said networks to establish a communications link with a second of said networks for executing at least one of said voice messaging functions on an internetwork basis through an exchange of a first coded signal and said second coded signal selected from a plurality of predefined coded signals, said first coded signal being transmitted by said first network to said second network and said second coded signal being transmitted by said second network to said first network via a sequence of Dual Tone Multi-Frequency (DTMF) tones having a known relationship to each said coded signal, the method comprising the steps of:

(a) defining a subset of said plurality of predefined coded signals such that each coded signal composing said subset is characterized as being associated with a respective plurality of processes to be implemented in said first network participating in said internetwork voice messaging;

EXCHANGE STATUS	RETRY	INFORMATION PROMPT	STATISTIC RECORD	MESSAGE LOG CODE
HUMAN ANSWER	NO	"NUMBER IS NOT A/AIS DESTINATION" PROMPT 270	HUMAN ANSWER	0010
BUSY	YES	"CALL COULD NOT BE COMPLETED" PROMPT 270	DESTINATION BUSY	0020
DISCONNECT	YES	"CALL COULD NOT BE COMPLETED" PROMPT 270	DESTINATION ABORTS	0023
NETWORK DOWN	YES	"DESTINATION NOT ACCEPT MESSAGE" PROMPT 270	DESTINATION DOWN	0030
RESTRICTED ACCESS	NO	"DESTINATION NOT ACCEPT MESSAGE" PROMPT 270	RESTRICTED ACCESS	0040
MAILBOX FULL	NO	"DESTINATION MAILBOX IS FULL" PROMPT 280	DESTINATION MAILBOX	0050
MAILBOX NOT ACCEPTING	NO	"DESTINATION IS NOT ACCEPTING" PROMPT 280	DESTINATION NOT ACCEPTING	0052
FRAME ERROR	YES	"CALL COULD NOT BE COMPLETED" PROMPT 270	ERROR WHILE SENDING	0001
PROTOCOL ERROR	YES	"CALL COULD NOT BE COMPLETED" PROMPT 270	ERROR WHILE SENDING	0002
MESSAGE SENT	N/A	NONE	MESSAGES SENT	0001
MESSAGE RECEIVED	N/A	NONE	MESSAGES RECEIVED	1001
ORIGINATING HANG UP	N/A	NONE	ORIGINATING SYSTEM ABORTS	1020
DAR BOX FULL	N/A	NONE	DAR BOX FULL	1030
DAR MAILBOX FULL	N/A	NONE	DAR MAILBOX FULL	1050
PROTOCOL VIOLATION	N/A	NONE	ERROR WHILE RECEIVING	1007

(b) defining said plurality of processes to be implemented by said first network in response to each of said predefined coded signals composing said subset;

(c) said first network recognizing said second coded signal sent by said second network, said first network logically associating said second coded signal with a set of process control signals for driving said plurality of processes; and

(d) said first network translating said second coded signal into its associated set of process control signals.

5,608,784

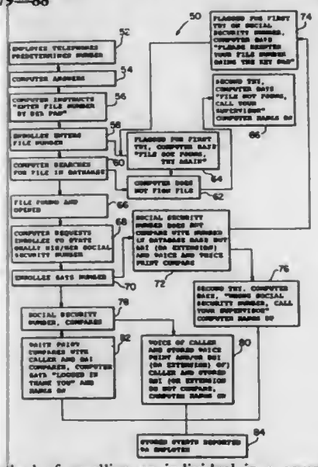
METHOD OF PERSONNEL VERIFICATION USING VOICE RECOGNITION

Joel F. Miller, 65 Oriental Blvd., Manhattan Beach, N.Y. 11235

Filed Jan. 24, 1994, Ser. No. 186,450

Int. Cl.[6] H04M *1/66;1/57*

U.S. Cl. 379—88 **14 Claims**



1. A method of enrolling an individual in a computer based telephone system, wherein the computer uses a voice verification and speech identification device; a computer program; at least one database in which files may be created for storing data including a voice print created by the voice verification and speech identification device; predetermined identification data; and means to communicate with an individual telephoning the computer, and wherein the telephone system provides automatic number identification (ANI) or PBX extension, the steps of enrolling the individual comprising:

providing the enrollee with at least first predetermined data;

answering a telephone communication by the program;

requiring the enrollee to orally respond to at least one request generated by the computer program for the first predetermined data, by answering at least one inquiry;

receiving a response from the enrollee, including the first predetermined data;

deriving from the response the enrollee's voice print by means of the voice recognition and speech identification means;

storing, by the program, the enrollee's voice print in the database;

comparing the received first predetermined data with second predetermined data stored in the database to determine whether predetermined criteria are met;

if said predetermined criteria are met, opening at least one file for the storing of data;

requesting the enrollee to initiate a subsequent telephone communication, and upon receiving the subsequent telephone communication, requesting the enrollee to provide an oral response including data.

5,608,785

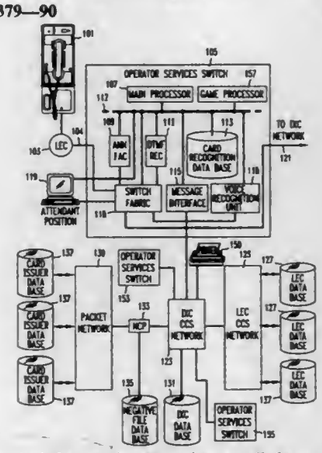
METHOD AND APPARATUS FOR TELEPHONE PRIZE OPPORTUNITIES

Leonard R. Kasday, Moorestown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 23, 1993, Ser. No. 125,973

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—90 **26 Claims**



1. A method for use in processing a call for a caller by a telephone service provider, said call being processed in a telephone network having a plurality of destinations to which said call may be connected, the method comprising the steps of:

said telephone service provider completing said call for said caller through said telephone network to a third party destination of said telephone network;

in response to termination of a portion of said call by said third party in said telephone network, entering said caller in a game of chance having predetermined rules for winning, said destination to which said caller's call was completed being other than a processor for engaging said caller in said game of chance;

determining, using said rules, whether said caller is a winner in said game; and

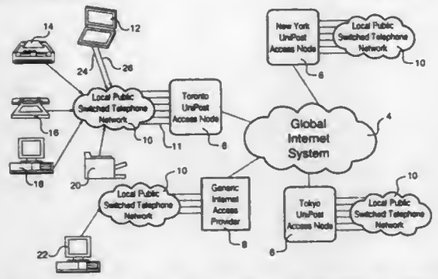
supplying information to said caller to inform him that he is a winner if it is determined in said determining step that said caller is a winner.

5,608,786

UNIFIED MESSAGING SYSTEM AND METHOD

Alastair T. Gordon, Toronto, Canada, assignor to Alphanet Telecom Inc., Toronto, Canada

Filed Feb. 13, 1995, Ser. No. 387,162
Claims priority, application Canada, Dec. 23, 1994, 2139081
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—100 **18 Claims**



1. A communication system comprising a plurality of commercial access providing computers where each commercial access providing computer is associated with INTERNET to allow subscribers to use the services offered by INTERNET, said communication system having many registered subscribers who are collectively unrelated and each subscriber is associated with one of said commercial access providing computers, providing each subscriber with an E-mail address for INTERNET, a fax address telephone address and a voice mail telephone address, where a message addressed to any of the addresses results in said associated commercial access providing computer receiving and storing the addressed message for retrieval by the respective subscriber, said commercial access providing computers allowing each subscriber to access and retrieve messages stored on his behalf or a summary of messages stored on his behalf by using either a telephone set which forms a telephone communication with said associated commercial access providing computer or using a computer and modem which forms a telephone communication with one of said commercial access providing computers, and wherein said plurality of commercial access providing computers use INTERNET to exchange information therebetween, and wherein subscribers of the system can access any of said commercial access providing computers for retrieval of messages stored on behalf of a subscriber, said commercial access providing computers cooperating such that messages stored for a subscriber in said associated computer are transferred using INTERNET from said associated access providing computer to one of the other commercial access providing computers which has been contacted by the subscriber for retrieval of communications stored on his behalf.

5,608,787

Patent Not Issued For This Number

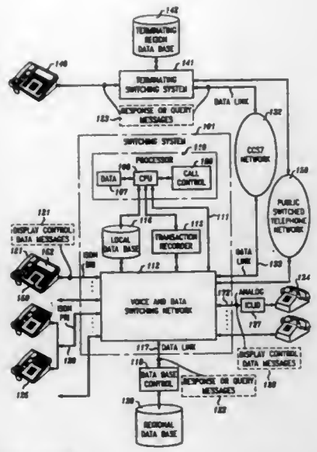
5,608,788

INFORMATION DISPLAY PROVIDED TO CALLING PARTY

William W. Demlow, Woodridge; David L. Hurewitz, and Francis J. Pope, III, both of Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 300,099, Sep. 1, 1994, abandoned, which is a continuation of Ser. No. 953,437, Sep. 29, 1992, abandoned. This application Sep. 8, 1995, Ser. No. 524,968
Int. Cl.[6] H04M *15/00;15/06*
U.S. Cl. 379—142 **32 Claims**

1. A telecommunications network for providing data to a plurality of station sets, comprising:



a switching system;

a plurality of station sets served by the switching system, said switching system being responsive to public telephone numbers sent to said switching system from said station sets;

means for storing routing information for the public telephone numbers and a plurality of associated data messages where each of said associated data messages is associated with the routing information for one of said public telephone numbers;

means, operative in response to a request from said switching system and based on a specific one of said public telephone numbers from one of said plurality of station sets, for selecting routing information and the associated data message for the specific telephone number from said means for storing;

means for sending said associated data message to said one of said plurality of station sets;

means for displaying said associated data message to a party at said one of said plurality of stations sets; and

means for initiating said means for selecting the associated data message before a connection is established between said one of said plurality of station sets and a second station set.

5,608,789

METHOD OF CREATING USER-DEFINED CALL PROCESSING PROCEDURES

Gregory M. Fisher, North Brunswick; Kathleen D. Cebulka, Piscataway; Susan K. Man, Holmdel; Zaber A. Nazif, High Bridge, all of N.J., and Lori J. Vinciguerra, Newtown, Pa., assignors to Bell Communications Research, Inc., Morristown, N.J.

Continuation of Ser. No. 480,716, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 972,501, Nov. 6, 1992, Pat. No. 5,463,682, which is a continuation-in-part of Ser. No. 934,240, Aug. 23, 1992, abandoned. This application Apr. 3, 1996, Ser. No. 624,202
Int. Cl.[6] H04M *3/42;11/00;15/00;7/00*
U.S. Cl. 379—201 **5 Claims**

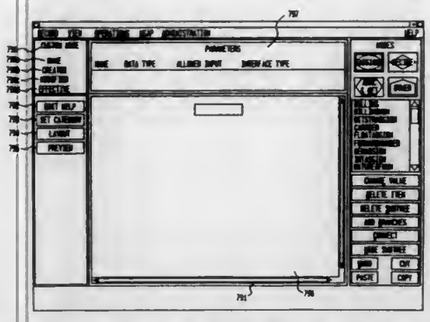
1. A method of creating, in response to inputs from an operator of a telecommunications system, a user-defined call processing node for a call processing record containing logically related nodes and branches, the method comprising the steps, executed by a processor of the system, of:

receiving an instruction from the operator to construct a user-defined call processing node;

presenting to said operator, in response to the instruction, a screen with which to construct the user-defined call processing node;

presenting the operator with a plurality of types of predefined nodes;

receiving from the operator selections of predefined nodes;



arranging said selected predefined nodes into an underlying representation of call processing procedures; and

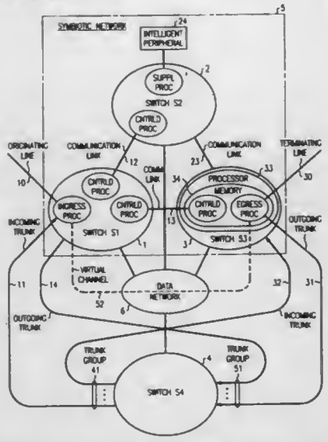
enabling the underlying representation of call processing procedures as a single node for use in creating call processing records without modifying an execution environment.

5,608,790

TRUNK UTILIZATION IN A TELECOMMUNICATIONS NETWORK

Menachem T. Ardon, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 485,927
Int. Cl.[6] H04M *7/00;1/00;3/42;3/00*
U.S. Cl. 379—230 **8 Claims**



1. In a telecommunications network comprising a plurality of stand-alone switches, a method of routing a call within a set of said plurality of stand-alone switches, comprising the steps of:

grouping the set of said plurality of stand-alone switches into a symbiotic network; grouping trunks of a plurality of the switches of the symbiotic network having a common destination into a single trunk group;

responsive to receipt of said call at an ingress port of one of the set of said plurality of switches, selecting a trunk group for routing said call;

prior to routing said call out of the one of the set of said plurality of switches, selecting any available trunk of said trunk group on any of the switches of the network; and

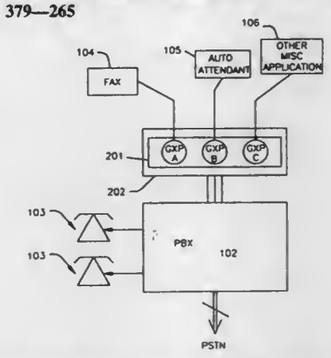
routing said call from said ingress port of said call over said selected trunk.

5,608,791

GROUP EXCHANGE PORT (GXP)

Joseph Grecco, 238 Nedeller Dr., Saddle Brook, N.J. 07662; Charles Manning, 26 Karangi Rd., St. Hellers, Auckland, New Zealand, and Paul Ranford, 19 Wairere Ave., Mt. Albert, Auckland, New Zealand

Filed Feb. 7, 1994, Ser. No. 192,668
Int. Cl.[6] H04M *3/00*
U.S. Cl. 379—265 **24 Claims**



1. In a communication system, a method of passing a telephone call requiring control from a first application, denoted a seller, presently having full access to and control of said telephone call, to a second application, denoted a buyer, through a Group Exchange Protocol (GXP), each of said buyer and seller having one or more hardware and software resources, the method comprising the steps of:

registering at least one buyer with the GXP, thereby informing the GXP that the at least one buyer is available for accepting control of or access to said telephone call to be passed;

passing to said buyer information indicative of hardware and software resources required for control of or access to said call; and

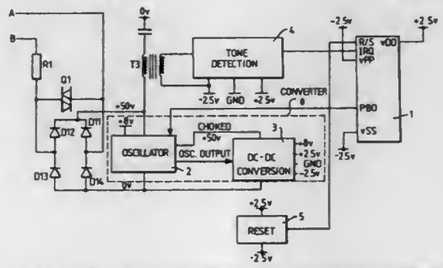
granting said control of or access to said buyer only if said information indicates that said buyer possesses said required hardware and software.

5,608,792

APPARATUS FOR DRAWING AND PROCESSING ELECTRICAL POWER FROM A COMMUNICATIONS LINE

Graham A. Laidler, Ipswich, England, assignor to British Telecommunications public limited company, London, England

Filed May 31, 1994, Ser. No. 251,686
Claims priority, application European Pat. Off., Apr. 13, 1994, 94302621
Int. Cl.[6] H04M *19/00*
U.S. Cl. 379—386 **20 Claims**



1. Apparatus for drawing and processing electrical power from a telephone line, the apparatus comprising:

a pair of terminals for connection to the telephone line,

a signal detector coupled to the terminals;

a DC to DC converter connected to receive power from the terminals and to power the signal detector for detecting the presence of a predetermined activation signal on the telephone line,

the converter comprising an oscillator and a transformer with primary and secondary windings,

the oscillator having an output connected to a primary winding of the transformer and causing DC level switching thereto such that power transfer from the telephone line to a secondary winding of the transformer occurs, and

the signal detector, on detection of the activation signal, causing an increase in oscillator frequency to cause an increase in the power transferred.

5,608,793

SPEECH CONTROL APPARATUS USED IN A FOLDING TELEPHONE

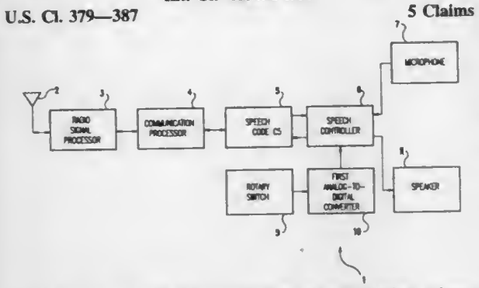
Susumu Uriya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 493,219

Claims priority, application Japan, Jun. 21, 1994, 6-138495

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—387 **5 Claims**



2. A speech control apparatus having an upper casing, a lower casing and a hinge, said control apparatus comprising:

a microphone, disposed in said lower casing, for converting a user's speech into a speech signal;

reception means for receiving a radio signal from a communication partner of said user, and for delivering a reception signal;

control signal generation means for detecting a rotating angle of said hinge, and for producing a control signal indicative of the hinge rotating angle;

echo suppression means for suppressing, in accordance with said control signal and said reception signal, an echo included in said speech signal, and for delivering an echo-cancelled speech signal; and

transmission means for transmitting said echo-cancelled speech signal to said communication partner.

5,608,794

TELEPHONE HEADSET IN-USE INDICATOR

Dana Larson, 5288 SE. El Centro Way, Milwaukie, Oreg. 97267

Filed Aug. 4, 1995, Ser. No. 511,475

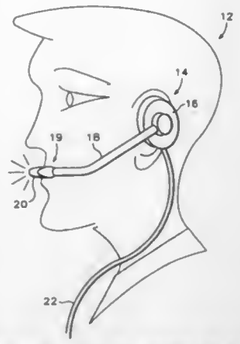
Int. Cl.[6] H04M *1/05*

U.S. Cl. 379—396 **7 Claims**

1. A system for visually indicating call status on a telephone, comprising:

a headset coupled to the telephone for receiving and sending voice communications, the headset held hands-free onto the head of an operator;

a control circuit for switching between a manual activation circuit and an automatic activation circuit, the automatic activation circuit generating an activation signal according to a communication status of the telephone and the manual activation circuit generating the activation signal independently of the communication status of the telephone; and



a visual indicator attached to the headset that activates according to the activation signal from the control circuit.

5,608,795

TELEPHONE LINE INTERFACE CIRCUIT

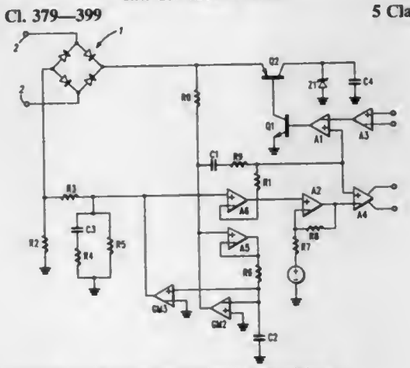
Michael J. Gay, Vaud, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 11, 1995, Ser. No. 419,888

Claims priority, application United Kingdom, Apr. 26, 1994, 9408283

Int. Cl.[6] H04M *19/00*

U.S. Cl. 379—399 **5 Claims**



1. A telephone line interface circuit comprising:

a transmit path for coupling to a telephone line;

a receive path for coupling to the telephone line;

a first network circuit for generating from the telephone line a first signal representing the a.c. and d.c. line voltage;

a second network circuit for generating from the telephone line a second signal representing the a.c. and d.c. line current,

wherein the transmit path comprises a first amplifier having an output for coupling to the telephone line, a first input for receiving a signal to be transmitted and a second input coupled to receive a composite signal, the composite signal comprising a d.c. bias signal combined with first signal and the second signal,

wherein said first and second network circuits are arranged so as to establish negative feedback loops between the output and second input of the first amplifier such that the amplitudes of the a.c. and d.c. signals applied by the telephone line interface circuit to the telephone line and the a.c. impedance and incremental d.c. resistance presented to the telephone line are dependent on said signal to be transmitted, the d.c. bias signal and the first and second network circuits, and

wherein the receive path comprises a second amplifier, a first input for receiving the composite signal and a second input coupled to receive a third signal, the third signal being substantially equal to twice the second signal such that when the telephone line a.c. impedance matches the a.c. impedance presented thereto by the telephone line interface circuit, the line voltage and line current components of a signal received at the inputs of the second amplifier in response to a signal transmitted from the telephone line interface circuit via the transmit path substantially cancel, whereas the line voltage and line current components add when the received signal originates from the telephone line.

5,608,796

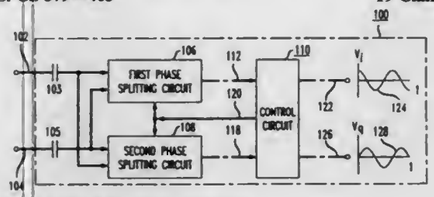
BALANCED PHASE SPLITTING CIRCUIT

Mihai Banu, Murray Hill, and Hongmo Wang, Watchung, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 10, 1995, Ser. No. 386,578

Int. Cl.[6] H03F *3/04*

U.S. Cl. 379—403 **19 Claims**



10. An integrated circuit comprising:

(a) a balanced set of inputs;

(b) a fast phase splitting circuit comprising:

(1) a fast balanced phase shifting network;

(2) a fast input terminal and a second input terminal coupled to the balanced set of inputs; and

(3) a fast set of output terminals for providing a first voltage across a reactive portion of the fast balanced phase shifting network in response to an input voltage at the balanced set of inputs;

(c) a second phase splitting circuit comprising:

(1) a second balanced phase shifting network;

(2) a third input terminal and a fourth input terminal coupled to the balanced set of inputs; and

(3) a second set of output terminals for providing a second voltage across a resistive portion of the second balanced phase shifting network in response to the input voltage at the balanced set of inputs.

5,608,797

ON-LINE INDICATOR FOR MULTIPURPOSE HEADSET AMPLIFIER

Leo Larsen, Kokkedal; Charles Pedersen, Vekso, and Jens Madsen, Jyllinge, all of Denmark, assignors to GN Netcom A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 160,590, Dec. 2, 1993, abandoned. This application Nov. 1, 1994, Ser. No. 332,702

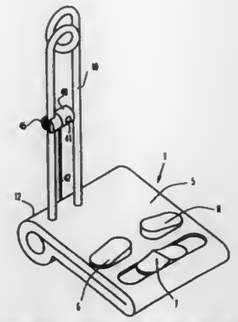
Int. Cl.[6] H04M *1/60;1/22*

U.S. Cl. 379—442 **14 Claims**

1. A multipurpose headset amplifier comprising an amplifier circuit, jacks for connecting the amplifier to a headset and a telephone instrument, and a housing, the amplifier further comprising:

a rod-like member extending from the housing;

an on-line indicator including a holder and optical signaling device having at least one light emitting diode within the holder, the holder including means for attaching the holder to the rod-like member; and



means for electrically connecting the on-line indicator the amplifier circuit.

5,608,798

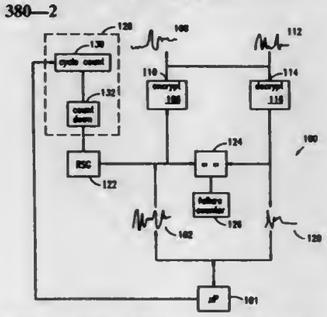
CRYTOGRAPHIC DEVICE WITH SECURE TESTING FUNCTION

Thomas H. Likens, Fort Worth, and Matthew H. Childs, Arlington, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 30, 1995, Ser. No. 520,917

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—2 **8 Claims**



1. A method of securely testing a cryptographic device, comprising:

providing a test cycle total count number; and

for each of a plurality of test cycles, the number of test cycles being determined from the test cycle total count number:

providing an input data signal to the cryptographic device;

encrypting the input data signal to determine an encrypted signal;

decrypting the encrypted signal to determine a decrypted signal; and

comparing the input data signal to the decrypted signal.

5,608,799

METHOD AND APPARATUS FOR SCRAMBLING AND DESCRAMBLING OF VIDEO SIGNAL WITH EDGE FILL

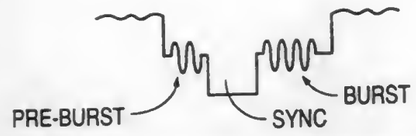
John O. Ryan; Ronald Quan, both of Cupertino; James R. Holzgrafe, Morgan Hill, and Peter J. Wonfor, El Granada, all of Calif., assignors to Macrovision Corporation, Sunnyvale, Calif.

Division of Ser. No. 202,349, Feb. 28, 1994, Pat. No. 5,438,620, which is a continuation of Ser. No. 795,890, Nov. 19, 1991, abandoned. This application Mar. 8, 1995, Ser. No. 401,014

Int. Cl.[6] H04N *7/169*

U.S. Cl. 380—11 **5 Claims**

1. A method for modifying a scrambled standard television signal by use of a shortened horizontal blanking interval for receipt



by a descrambler where the descrambler regenerates the colorburst portion of the signal, comprising the steps of:

extending an active video portion of at least one video line of the television signal into a horizontal blanking interval of the standard television signal;

providing a first portion of the colorburst for that line on a front porch of the horizontal blanking interval; and

providing a second portion of the colorburst for that line on a rear porch of the horizontal blanking interval.

5,608,800

PROCESS FOR DETECTING UNAUTHORIZED INTRODUCTION OF ANY DATA TRANSMITTED BY A TRANSMITTER TO A RECEIVER

Gerhard Hoffmann, Müochen; Klaus Lukas, Ingolstadt; Stephan Lechner, München; Ferdinand Stelner, München; Helmut Baumgärtner, München; Ekkehard Löhmann, Bonn, and Matthias Leclerc, Frankfurt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, and Siemens Nixdorf Informationssysteme AG, Paderborn, both of Germany

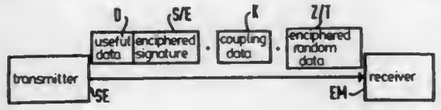
PCT No. PCT/DE93/00246, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO93/21711, PCT Pub. Date Oct. 28, 1993

PCT Filed Mar. 17, 1993, Ser. No. 318,700

Claims priority, application Germany, Apr. 9, 1992, 42 11 989.8

Int. Cl.[6] **H04L** *9/08;9/14;* **H04K** *1/00*

U.S. Cl. 380—25 **11 Claims**



1. A process for detecting unauthorized reintroduction of any data transmitted by a transmitter to a receiver, the process comprising the steps of:

developing a signature from the data in the transmitter,

symmetrically encrypting the signature in the transmitter using a key which is dependent on coupling data designating a transmission between the transmitter and the receiver, including:

generating random data in the transmitter,

establishing the coupling data,

generating a symmetric key by one-way enciphering of a combination of random data and coupling data in the transmitter,

enciphering the signature with an aid of the key in the transmitter,

enciphering the random data with a transfer key in the transmitter,

transmitting a message comprising the useful data, the enciphered signature, the coupling data and the enciphered random data from the transmitter to the receiver,

checking the message to determine if errors are present in the message, and rejecting the useful data if errors are present.

5,608,801

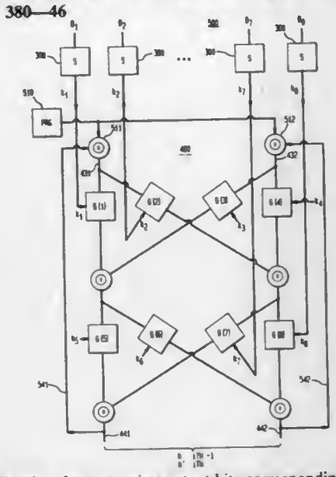
EFFICIENT CRYPTOGRAPHIC HASH FUNCTIONS AND METHODS FOR AMPLIFYING THE SECURITY OF HASH FUNCTIONS AND PSEUDO-RANDOM FUNCTIONS

William A. Aiello, Madison, and Ramarathnam Venkatesan, Morristown, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Nov. 16, 1995, Ser. No. 559,213

Int. Cl.[6] **H04L** *9/00;* **G06F** *1/02;* **H03B** *29/00*

U.S. Cl. 380—46 **13 Claims**



13. Circuitry for generating output bits corresponding to a cryptographic hash function of input bits, the circuitry utilizing eight n-bit pseudo-random function generators G(1), G(2), . . . , G(8), each of the generators having a corresponding input key k_1, k_2, . . . k_8 of length k, the circuitry further utilizing b random bit tables $T_1, T_2, \ldots, T_b$ with each table having 2^m rows and k columns, the circuitry comprising

(a) means, responsive to the input bits, for partitioning the initial 8mb bits of the input bits into eight blocks, designated $\beta_1, \beta_2, \ldots, \beta_8$, with each of the blocks having b m-bit groups $c_i(j)$ as the current input groups such that $\{c_1(1), c_2(1), \ldots, c_b(1)\}$ corresponds to β_1, $\{c_1(2), c_2(2), \ldots, c_b(2)\}$ corresponds to β_1, . . . , and $\{c_1(8), c_2(8), \ldots, c_b(8)\}$ corresponds to β_8, and proceeding to step (c),

(b) means, responsive to the input bits, for partitioning the next 8mb bits of the input bits into eight blocks, designated $\beta_1, \beta_2, \ldots, \beta_8$, with each of the blocks having b m-bit groups $c_i(j)$ as the current input groups wherein $\{c_1(1), c_2(1), \ldots, c_b(1)\}$ corresponds to β_1, $\{c_1(2), c_2(2), \ldots, c_b(2)\}$ corresponds to β_1, . . . , and $\{c_1(8), c_2(8), \ldots, c_b(8)\}$ corresponds to β_8,

(c) means, responsive to each means for partitioning for selecting for each j, j=1,2, . . . ,8, a row from each table T_i in correspondence to each current group $c_i(j)$, i=1, 2, . . . , b, and for evaluating the bitwise exclusive-OR of said b selected rows to generate a corresponding key k_j,

(d) means, responsive to the means for generating and for evaluating, for generating 2n pseudo-random bits partitioned into a first pseudo-random set of n bits and a second pseudo-random set of n bits,

(e) means for inputing the first pseudo-random set and the respective keys k_1 and k_2 to the generators G(1) and G(2),

(f) means for inputing the second pseudo-random set and the respective keys k_3 and k_4 to the generators G(3) and G(4).

(g) means for generating a first intermediate set of n bits as the bitwise exclusive-OR of the outputs of the generators G(1) and G(3),

(h) means for generating a second intermediate set of n bits as the bitwise exclusive-OR of the outputs of the generators G(2) and G(4),

(i) means for inputing the first intermediate set and the respective keys k_5 and k_6 to the generators C(5) and C(6),

(j) means for inputing the second intermediate set and the respective keys k_7 and k_8 to the generators G(7) and G(8),

(k) means for generating the first n bits of the current output bits as the bitwise exclusive-OR of the outputs of the generators G(5) and G(7),

(l) means for generating the second n bits of the current output bits as the bitwise exclusive-OR of the outputs of the generators G(6) and G(8),

(m) means for forming the output bits corresponding to the hash function as the bitwise exclusive-OR of the current output bits generated sequentially by steps (k) and (l), and

(n) means for returning to step (b) if more input bits can be partitioned.

5,608,802

DATA CIPHERING DEVICE

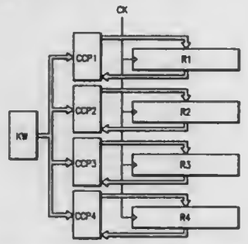
Manuel J. Alvarez Alvarez, Madrid, Spain, assignor to Alcatel Standard Electrica S.A., Madrid, Spain

Filed Dec. 27, 1994, Ser. No. 364,126

Claims priority, application Spain, Dec. 31, 1993, 9302742

Int. Cl.[6] **H04L** *9/00*

U.S. Cl. 380—50 **5 Claims**



1. A data ciphering device comprising a number of shift registers (R1, R2, R3, R4), each having a respective plurality of bistables, each performing a variable number of shifts for each data period and providing respective intermediate feedback signals, the data ciphering device providing an output bit (DC) from a logical combination of some bits of the shift registers (R1, R2, R3, R4), the data ciphering device receiving an associated data clock signal (CKD), the data ciphering device having:

means for performing a loading process where the shift registers (R1, R2, R3, R4) are loaded with a keyword contained in a keyword register (KW),

means for performing a pre-ciphering process, and

means for performing a ciphering process; said output bit (DC) being combined with an actual information bit (D) to be ciphered, wherein

all of the shift registers R1, R2, R3, R4) and the respective plurality of bistables operate with a cadence that is determined by the frequency of the associated data clock signal (CKD).

5,608,803

PROGRAMMABLE DIGITAL HEARING AID

Neeraj Magotra, Albuquerque, N.M.; T. Raj Natarajan, Plano, Tex.; Frank Livingston, and Sarala R. Gopalan, both of Albuquerque, N.M., assignors to The University of New Mexico, Albuquerque, N.M.

Continuation of Ser. No. 102,364, Aug. 5, 1993, abandoned.

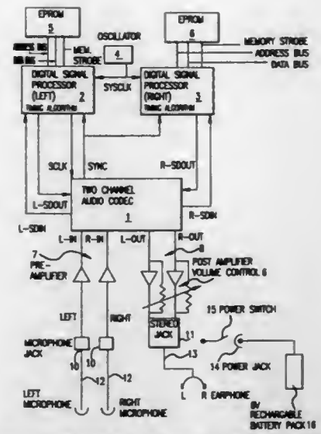
This application May 17, 1995, Ser. No. 442,626

Int. Cl.[6] **H04R** *25/00*

U.S. Cl. 381—68.2 **14 Claims**

1. A binaural programmable digital hearing aid customized for a particular user comprising:

a) input means for sensing input analog audio signals, said input means including a first right microphone directed to the right side of the particular user and a second left microphone directed to the left side of the particular user;



b) audio codec connected to said input means for converting said analog signals into digital words;

c) at least one programmable digital signal processor connected to said audio codec for shaping the speech spectrum of said input analog signals by manipulating said digital words according to a customized filter algorithm programmed into said at least one digital signal processor to create a variable number of finite impulse response filters based upon responses initially elicited from the particular user, said algorithm enabling said at least one digital signal processor to divide a 9 KHz frequency band of said input analog signals into a variable number of discrete frequency bands based upon the hearing loss of the particular user and to set the gain of each of said variable number of discrete frequency bands also based upon the hearing loss of the particular user, as well as to vary the upper and lower cut-offs of each discrete frequency band also based upon the hearing loss of the particular user;

d) at least one programmable read only memory connected to said at least one programmable digital signal processor for inputting said customized filter algorithm to said at least one programmable digital signal processor based upon responses initially elicited from the particular user;

e) digital-to-analog converter provided in said audio codec for converting said manipulated digital words to output analog audio signals; and

f) output means connected to said audio codec for transmitting said output analog signals to the particular user, said output means including a first channel directed to the right ear of the particular user and a second channel directed to the left ear of the particular user.

5,608,804

METHOD OF AND APPARATUS FOR IDENTIFYING A SYSTEM WITH ADAPTIVE FILTER

Akihiro Hirano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,003

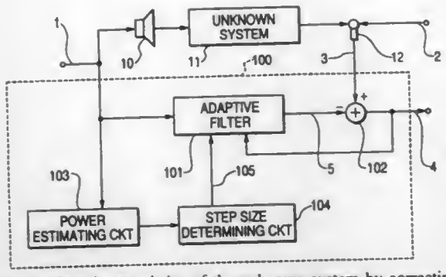
Claims priority, application Japan, Dec. 28, 1993, 5-334106

Int. Cl.[6] **A61F** *11/06;* **H03B** *29/00*

U.S. Cl. 381—71 **50 Claims**

49. A method of identifying a system with an adaptive filter, comprising the steps of:

calculating an error signal by subtracting an output signal produced by processing a reference input signal with an adaptive filter from an observed signal composed of a mixture of an output signal from an unknown system and noise;



estimating characteristics of the unknown system by correcting coefficients of said adaptive filter in order to minimize the error signal using at least said error signal, said reference input signal, and a step size; and

producing a value as said step size by estimating the power of said reference input signal and processing the estimated power of said reference input signal according to a function which has a maximum value when the power of said reference input signal is equal to a first threshold, has a direct proportional relationship with the power of said reference input signal when the power of said reference input signal is smaller than said first threshold, and has an inverse proportional relationship with the power of said reference input signal when the power of said reference input signal is greater than said first threshold.

5,608,805

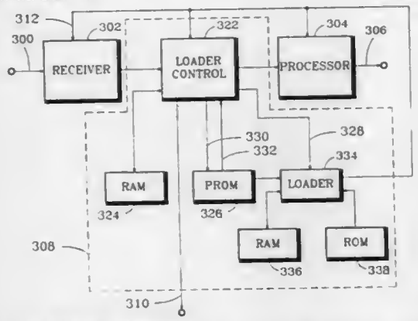
DYNAMIC LOADER

Douglas E. Mandell, San Francisco; Martin J. Richards, Redwood City; Mark L. Atherton, San Bruno; Paul R. Goldberg, Palo Alto, and Mark F. Davis, Pacifica, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation of Ser. No. 891,590, Jun. 1, 1992, Pat. No. 5,390,256, which is a continuation-in-part of Ser. No. 804,976, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,896, Jan. 8, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,553

Int. Cl.[6] H04B *3/00*

U.S. Cl. 381—77 **16 Claims**



1. An apparatus comprising:

receiver means for receiving encoded information including presentation material and operation material, and for extracting said presentation material and said operation material from said encoded information, wherein said presentation material represents sounds in a first representation and represents the same sounds in a second representation,

processor means for generating one or more first output signals reproducing said sounds in response to said presentation material in said first representation, and

adaptor means for adapting operational characteristics of said receiver means, said processor means and/or said adaptor means, wherein at least one of said receiver means, said processor means and said adaptor means is controlled by installed software and said adaptor means adapts said operational characteristics by altering or replacing said installed software using update information obtained from said operation material.

12. An information storage medium carrying information including presentation material and operation material, wherein said presentation material comprises a plurality of representations of a soundtrack for a motion picture and said operation material comprises at least a portion of software programs required by apparatuses to reproduce said soundtrack in response to one or more of said plurality of representations.

5,608,806

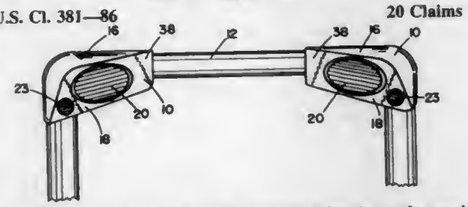
AUDIO SPEAKER MOUNTS FOR OFF-ROAD VEHICLES

Ruben Z. Hinojosa, Huntington Beach, Calif., assignor to Christy A. Cassel, Huntington Beach, Calif.

Filed Aug. 25, 1994, Ser. No. 295,986

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—86 **20 Claims**



1. A speaker mounting assembly having an interior surface and an exterior surface for mounting to a rollbar of a vehicle comprising, in combination:

a substantially elongated first shell and a substantially elongated second shell;

means for securing said first and second substantially elongated shells to and around said rollbar of said vehicle;

at least one speaker mounted to an opening formed in one of said first and second shells;

a plurality of further securing means cooperating with a plurality of aligned openings in said first and second shells to secure said first and second shells together; and

means for locking said first and second substantially elongated shells together to prevent their unauthorized removal from said rollbar.

5,608,807

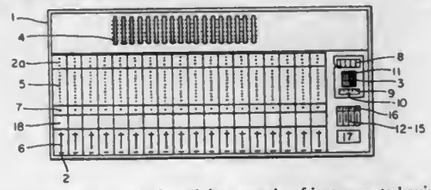
AUDIO MIXER SOUND INSTRUMENT I.D. PANEL

Theodore M. Brunelle, R.D. 1 Box 102M, New Milford, Pa. 18834-9741

Continuation of Ser. No. 408,789, Mar. 23, 1995, abandoned. This application Apr. 23, 1996, Ser. No. 636,817

Int. Cl.[6] H04B *1/00*

U.S. Cl. 381—119 **3 Claims**



1. A mixing console for mixing sounds of instruments having a table layout with a series of dials and controls representing channel modules, each channel module having a routing control switch and a fader slide, said console comprising:

an instrument identification label, said label having a plurality of identification displays, each display providing visual identification of a musical instrument that has been assigned to each channel module;

a control means external to said console for programming and changing each identification display; and,

a memory means within said control means that store a plurality of programmable configurations that form said identification displays.

5,608,808

AUDIO-ADAPTED EYEGLASS RETAINER

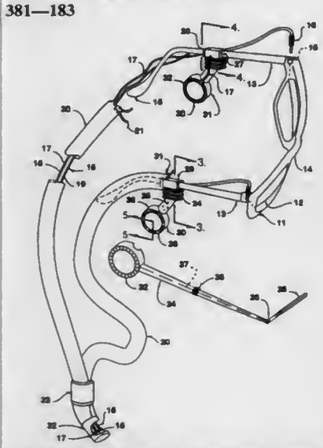
Jean-Pierre M. da Silva, 2093 E. Artesian Way, #31, Salt Lake City, Utah 84121

Continuation-in-part of Ser. No. 835,782, Feb. 14, 1992, Pat. No. 5,367,345. This application Nov. 21, 1994, Ser. No. 342,903

Claims priority, application WIPO, Oct. 24, 1994, PCT/US94/12120

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—183 **5 Claims**



1. An audio headset adapted to be attached to standard eyeglass spectacles having temples and ear-fitting members comprising:

a pair of flexible, hollow sleeve members each having an internal bore sufficiently large to slide over the ear-fitting member of the ends of eyeglass temples and accommodate electrical conductors, and having two pairs of free ends, one pair adapted to slide over the ends of eyeglass temples and another pair of free ends, one free end from each flexible hollow sleeve member adapted to fit into an end patch containing an accessory jack, said end patch joining said free ends together, said flexible hollow sleeve members when formed together being sufficiently long to at least fit behind the head of a wearer of said flexible hollow sleeve members when said one pair of free ends of said flexible hollow sleeve members are attached to eyeglass spectacles;

an earpiece speaker attachment, said earpiece speaker attachment having means to attach to each of said eyeglass temples to adjustably support at least one miniature speaker adjacent the ear of a wearer of said eyeglasses and having means adapted to interact with said flexible hollow sleeve members to accept and hold in position one pair of free ends of said flexible sleeve members; and

an end patch member adapted to contain an electrical jack for electrically interconnected external electronic components to said audio headset and to join one pair of the free ends of said flexible sleeve members together.

5,608,809

LOUDSPEAKER MOUNTING APPARATUS

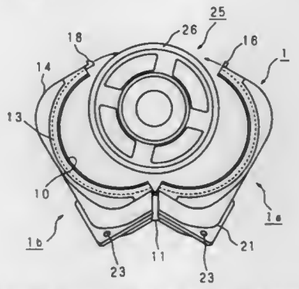
Mitsugu Ueda, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 355,237

Claims priority, application Japan, Feb. 9, 1994, 6-015429

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—188 **12 Claims**



1. A loudspeaker mounting apparatus for mounting a loudspeaker at a position, comprising:

a pair of frame-parts each having a groove at inside thereof for fitting with a flange of said loudspeaker to be mounted, said groove being in the shape of an arc of a circle corresponding to said flange,

wherein said frame-parts are hinged at one end and connectable with each other at the other end.

5,608,810

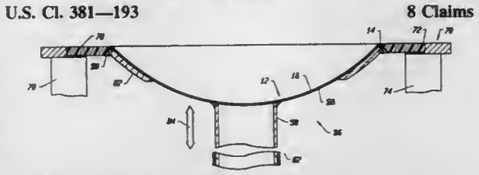
LOUDSPEAKER STRUCTURE

David Hall, San Jose, Calif., assignor to Velodyne Acoustics, Inc., San Jose, Calif.

Continuation of Ser. No. 300,444, Sep. 2, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,928

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—193 **8 Claims**



1. A loudspeaker structure comprising:

a. a curved member having an endless rim and a continuous, curved surface therebetween, said curved member possessing a particular resonant audio frequency, said continuous, curved surface being a concave surface and further including an opposite surface;

b. a surround formed of vibration damping material, said surround being connected to said endless rim of said curved member, said surround possessing a stiffness sufficient to limit movement of and to elevate said particular resonant audio frequency of said curved member greater than one-hundred hertz;

c. a rigid support having a portion attached to said surround;

d. a former connected to said opposite surface of said curved member, said former extending outwardly from said continuous curved surface; and

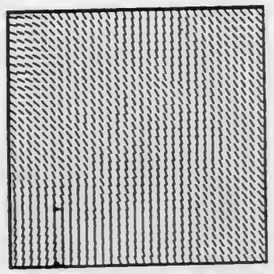
e. an electrical coil located on said former and spaced from said opposite surface of said curved member connected to said former.

5,608,811

METHOD OF SMOOTHING A RIDGE DIRECTION PATTERN AND AN EQUIPMENT USED THEREFOR

Toshio Kamei, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 7, 1993, Ser. No. 1,676
Claims priority, application Japan, Jan. 7, 1992, 4-018589
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—124 **6 Claims**



1. Method of smoothing ridge direction pattern comprising:
a step of dividing a ridge line image picture, which represents a fingerprint, into an array of plural subregions,
a step of determining an initial direction of ridge line image and an initial probability representing the reliability of said initial direction for each subregion,
a step of determining an initial value of a direction variable for each subregion,
a step of calculating, for each subregion, a plurality of respective products of the initial probability of said subregion multiplied by a direction difference which is the difference between the direction variable and the initial direction of said subregion,
a step of determining said plurality of respective products of all the subregions for determining a discrepancy evaluation function,
a step of calculating, for each concerned subregion, a product of a weight of influence from a neighboring subregion multiplied by the direction difference between the direction variables of said concerned and said neighboring subregion,
a step of determining, for each said concerned subregion, said product of weight and the direction difference on all neighboring subregions for determining a component of a dispersion evaluation function of said concerned subregion,
a step of determining said component of dispersion evaluation function on all the subregions for determining a dispersion evaluation function,
a step of calculating an energy function E which is represented as a linear function of said discrepancy evaluation function and said dispersion function, and
a step of renovating direction variables to decrease said energy function.

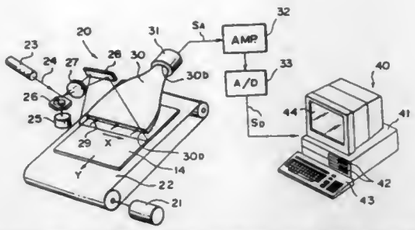
5,608,812

ABNORMAL PATTERN DETECTING APPARATUS, PATTERN FINDING APPARATUS, AND LINEAR PATTERN WIDTH CALCULATING APPARATUS

Kazuo Shimura, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 421,010, Apr. 13, 1995, Pat. No. 5,539,838, which is a continuation of Ser. No. 760,440, Sep. 16, 1991, abandoned. This application Jan. 29, 1996, Ser. No. 593,692
Claims priority, application Japan, Sep. 14, 1990, 2-244195; Sep. 14, 1990, 2-244196; Sep. 14, 1990, 2-244197; Sep. 14, 1990, 2-244198
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—128 **48 Claims**

1. An abnormal pattern detecting apparatus for detecting an abnormal pattern having an approximately circular pattern from a radiation image of an object, said radiation image being constituted by an image signal comprising a series of image signal components,



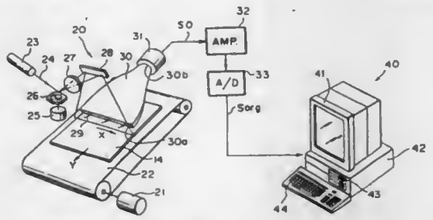
the abnormal pattern detecting apparatus comprising:
i) a first finding means including a first filter for finding a prospective abnormal pattern of an approximately circular pattern, which may appear in said radiation image, by processing said image signal representing said radiation image,
ii) a second finding means including a second filter for finding a linear pattern, which may appear in said radiation image, by processing said image signal representing said radiation image, said second filter comprising means for finding a linear pattern appearing in said radiation image, and
iii) a judgement means for determining whether said prospective abnormal pattern is a true abnormal pattern, said judgment means comprising:
a) means for selecting an enlarged prospective abnormal pattern region in an area in said radiation image, said area including both said prospective abnormal pattern and said linear pattern found by said first and second finding means, respectively, said enlarged prospective abnormal pattern region including said prospective abnormal pattern and extending to parts in the vicinity of said prospective abnormal pattern,
b) means for calculating the area of said linear pattern falling within said enlarged prospective abnormal pattern region and the maximum width of said linear pattern falling within said enlarged prospective abnormal pattern region, and
c) means for judging, from the area and the maximum width of said linear pattern falling within said enlarged prospective abnormal pattern region, whether said prospective abnormal pattern is or is not a true abnormal pattern.

5,608,813

METHOD FOR COMPRESSING DYNAMIC RANGES OF IMAGES USING A MONOTONOUSLY DECREASING FUNCTION

Nobuyoshi Nakajima, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 225,343, Apr. 8, 1994, Pat. No. 5,454,044, which is a continuation of Ser. No. 93,991, Jul. 21, 1993, abandoned, which is a continuation of Ser. No. 646,123, Jan. 28, 1991, abandoned. This application Apr. 6, 1995, Ser. No. 417,963
Claims priority, application Japan, Jan. 29, 1990, 2-18206
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—132 **12 Claims**



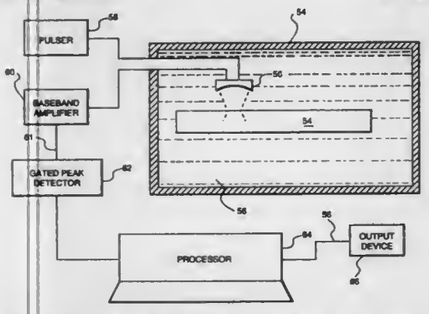
1. A method for compressing a dynamic range of an original image by transforming an original image signal Sorg into a processed image signal Sproc, wherein the original image signal Sorg comprises a plurality of image signal components Sij which correspond to respective picture elements of the original image, said method comprising steps of:
for each picture element in the original image, selecting picture elements within a predetermined region surrounding each picture element;
for each picture element in the original image, determining an average value of image signal components Sij corresponding to the selected picture elements, the average values thus determined defining an unsharp mask signal Sus for the original image;
defining a function f(Sus) the value of which decreases monotonously as the unsharp mask signal Sus increases;
combining the original image signal Sorg with the function f(Sus) to define a processed image signal Sproc corresponding to a processed image having a compressed dynamic range relative to the original image.

5,608,814

METHOD OF DYNAMIC THRESHOLDING FOR FLAW DETECTION IN ULTRASONIC C-SCAN IMAGES

Robert S. Gilmore, Burnt Hills, N.Y., and Patrick J. Howard, Cincinnati, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 118,337, Aug. 26, 1993, abandoned. This application Nov. 17, 1994, Ser. No. 341,470
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—141 **16 Claims**



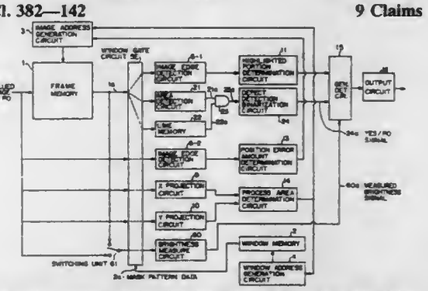
1. A method of producing a binary image of an object, the image showing any regions of flaws in the object and any regions in the object without flaws, the method comprising the steps of:
ultrasonically scanning an object with sound wave energy;
detecting echo signals reflected from the object;
determining data values f(i,j) from said echo signals which define a C-scan image of the object scanned;
dividing the C-scan image into a plurality of subimages (G_k) for k=1,2, . . . ,K, wherein each subimage includes regional data values g(i,j);
calculating an initial region value for each subimage from the regional data values g(i,j) of each subimage, the calculation of the initial regional value includes determining a maximum data value of the regional data value g(i,j) of each subimage, and using the maximum data value as the initial regional value for each subimage, respectively;
using the initial regional values to dynamically determine regional threshold levels y(k) for each of the plurality of subimages, the regional threshold levels for each of the plurality of subimages being dependent on regional threshold levels in adjacent subimages, the regional threshold levels for each of the plurality of subimages determined from the initial region value in each subimage and initial region values in adjacent subimages, determining said regional threshold levels further includes determining said regional threshold levels as a function of at least one adjustment function which is defined based on characteristics of a data acquisition system used for ultrasonic scanning the object and detecting signals therefrom, determining said regional threshold levels for each subimage G_k further includes subtracting a regional threshold level y(k−1) from a first adjusted value derived from an adjustment function, to obtain a second adjusted value, operating on said second adjusted value by another adjustment function to obtain a third adjusted value, and adding said third adjusted value to. the regional threshold level y(k−1) to obtain the regional threshold level y(k);
using said regional threshold levels y(k) to dynamically determine pixel threshold levels t(i,j) for each pixel (i,j) of said C-scan image, the pixel threshold levels being dependent on pixel threshold levels in adjacent subimages;
comparing said pixel threshold levels t(i,j) to said data values f(i,j), respectively;
assigning binary values to said compared data values, the binary values being indicative of flaws and non-flaws; and
generating a binary image of the object, the image showing any regions of flaws in the object and any regions in the object without flaws.

5,608,815

DEVICE FOR TESTING AN IMAGE OF A TEST OBJECT

Koichi Toyama, and Tatsuo Yamamura, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Nov. 15, 1994, Ser. No. 339,957
Claims priority, application Japan, Nov. 16, 1993, 5-285419
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—142 **9 Claims**



1. An image testing device for detecting a defect in a test object by capturing an illuminated inner surface of a test object illuminated by an illuminating means and analyzing a captured image, wherein a predetermined fixed and difference binarization threshold is set for use in detecting a picture element indicating a black spot and a white spot; obtained is a total of picture elements indicating defective points binarized for each image area using the binarization threshold; and it is determined whether or not the test object is defective depending on a comparison between a number of picture elements indicating defective points and an area threshold for detection of a defective object in each image area, said tester comprising:
means for generating a brightness measure area in an image area of the test object for each determination, obtaining an average gray level (hereinafter referred to as the measured brightness) of all or a part of the brightness measure area, and for correcting the binarization threshold in proportion to the measured brightness;
abnormal brightness determination means for determining a preliminary abnormal brightness by detecting that the measured brightness is smaller than a predetermined abnormal brightness threshold, and for determining that an abnormal brightness has arisen if the preliminary abnormal brightness has been detected more than predetermined times (hereinafter referred to as an abnormal brightness repetition threshold); and

means for outputting an abnormal brightness signal based on a determination of abnormal brightness determination means.

5,608,816

APPARATUS FOR INSPECTING A WIRING PATTERN ACCORDING TO A MICRO-INSPECTION AND A MACRO-INSPECTION PERFORMED IN PARALLEL

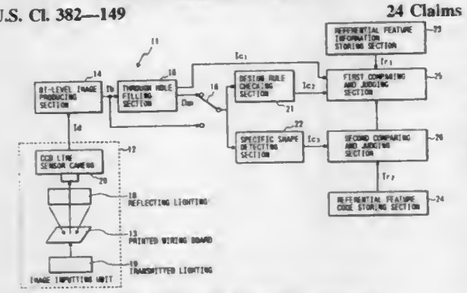
Toyoki Kawahara; Atsuharu Yamamoto, both of Kawasaki; Yuji Maruyama; Hidehiko Kawakami, both of Tokyo, and Hideaki Kawamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 15, 1994, Ser. No. 305,968

Claims priority, application Japan, Dec. 24, 1993, 5-328500

Int. Cl.[6] G06K *9/03;* **H04N** *7/18*

U.S. Cl. 382—149 **24 Claims**



1. A wiring pattern inspection apparatus comprising:

direction code adding means for adding one of eight types direction codes to each of contour pixels placed in edges of a wiring pattern of a printed wiring board drawn in a processed bi-level image, each of the direction codes indicating a direction of an edge of the wiring pattern;

feature code extracting means for extracting a corner code from a pair of different types direction codes added to a pair of contour pixels adjacent to each other by the direction code adding means to indicate a corner of the wiring pattern existing in a feature point and outputting the corner code and positional coordinates of the feature point as a feature code;

referential feature code storing means for storing one or more referential corner codes and referential positional coordinates indicating one or more referential shapes and those referential positions in a non-defective printed wiring board of which a non-defective wiring pattern is formed according to a desired design as one or more referential feature codes;

inspected serial codes registering means for registering a series of feature codes produced by serially connecting a plurality of feature codes output from the feature code extracting means, each of pairs of feature codes adjacent to each other being placed within an allowable distance and being placed nearest to each other;

referential serial codes registering means for serially connecting a plurality of referential feature codes stored in the referential feature code storing means to register a series of referential feature codes, each of pairs of referential feature codes adjacent to each other being placed within the allowable distance and being placed nearest to each other;

a serial codes comparing block for comparing the series of feature codes registered by the inspected serial codes registering means with the series of referential feature codes registered by the refereotial serial codes registering means; and

a judging block for judging whether or not the corner codes and the positional coordinates of the series of feature codes agree with those of the series of referential feature codes according to a compared result obtained by the serial codes comparing block and reporting a piece of defect information in cases where the corner codes and the positional coordinates of the series of feature codes do not agree with those of the series of referential feature codes.

5,608,817

OPTICAL MEASURING METHOD

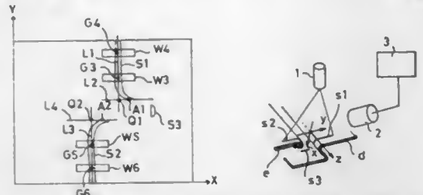
Naoji Yamaoka, and Koji Oda, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,193

Claims priority, application Japan, Nov. 18, 1993, 5-289362; Dec. 14, 1993, 5-312950; Dec. 14, 1993, 5-312960

Int. Cl.[6] G06K *9/00;* **G01B** *11/24*

U.S. Cl. 382—152 **5 Claims**



1. An optical measuring method for measuring a position of an edge portion of a workpiece by using an optical measuring apparatus having a projector for radiating a slit light on the workpiece and an image sensing device for picturing an optical cutting image drawn by the slit light radiated on the workpiece, said measuring being made from a pictured optical cutting image on a screen of the image sensing device, said method comprising the steps of:

obtaining coordinates of an end point on a side of an edge portion of the pictured optical cutting image;

setting windows in predetermined two positions in that portion of the pictured optical cutting image which extends straight, thereby obtaining coordinates of respective centers of gravity of the pictured optical cutting image inside both the windows;

obtaining an equation of a first straight line which passes through both the centers of gravity and an equation of a second straight line which crosses the first straight line at right angles and which passes through the end point; and

obtaining coordinates of a crossing point of both the straight lines.

5,608,818

SYSTEM AND METHOD FOR ENABLING A ROBOTIC ARM TO GRIP AN OBJECT

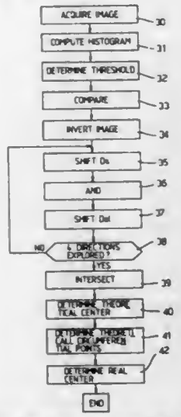
Stefano Chini, San Lazzaro di Savena; Giuseppe Di Stefano, Ferrara, and Armando Neri, Bologna, all of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Jan. 13, 1993, Ser. No. 3,782

Claims priority, application Italy, Jan. 13, 1992, BO92A0008

Int. Cl.[6] G06T *7/60*

U.S. Cl. 382—153 **16 Claims**



15. A method for automatically picking up an object using a robot having an articulated arm fitted with a gripping member, the robot being controlled by a control section, comprising the steps of:

(a) acquiring an image of the object and producing a plurality of pixel values corresponding to a luminance of respective pixels forming the image;

(b) determining a threshold value to discriminate the plurality of pixels;

(c) comparing the plurality of pixels with the threshold value to assign values representing whether each of the plurality of pixels is above or below the threshold value;

(d) creating an inverted image of the acquired image;

(e) shifting the inverted image in a direction with respect to the acquired image by a first predetermined distance;

(f) AND'ing the acquired image and the shifted inverted image to create a summed image representing areas where an overlap of the acquired image and the successively shifted inverted image are canceled;

(g) shifting the summed image by a predetermined amount related to a known radius in the object;

(h) repeating steps (e) through (g) a plurality of times, each shifting being successively performed in a direction that differs from a previous direction to create a plurality of summed images;

(i) AND'ing the plurality of summed images to produce a central square in which coordinates of a center of the central square determine a true center of the object; and

(j) controlling an operation of the robot in accordance with the determined true center of the object so as to enable the robot to locate and grip the object using the articulated arm.

5,608,819

IMAGE PROCESSING SYSTEM UTILIZING NEURAL NETWORK FOR DISCRIMINATION BETWEEN TEXT DATA AND OTHER IMAGE DATA

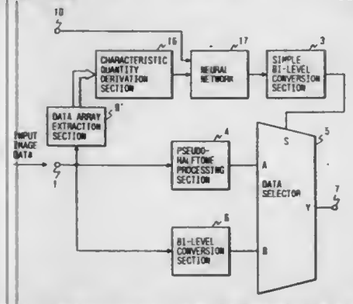
Takenobu Ikeuchi, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1994, Ser. No. 245,264

Claims priority, application Japan, Jul. 19, 1993, 5-177802

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—156 **12 Claims**



1. An image data processing system for operating on a stream of input image data including successive multi-level picture element values supplied in respective sample periods, for selectively processing said input image data in accordance with a plurality of predetermined categories of said input image data, the system comprising:

data array extraction means for extracting from said input image data stream, in each of said sample periods, a set of picture element values including an object picture element value, said set corresponding to an array of successively adjacent picture elements;

characteristic quantity derivation means for operating on said set of picture element values to derive a set of characteristic quantities, said characteristic quantities expressing respectively different parameters of said array of successively adjacent picture elements;

a plurality of image processing means each coupled to receive said image data stream, functioning in each of said sample periods to generate respective processed image data in response to said object picture element value;

neural network means which has been subjected to a predetermined learning procedure, responsive to said set of characteristic quantities for judging said object picture element value as being within a specific one of said categories, and for producing output data indicative of said specific category; and

data selector means controlled by said output data from said neural network means for selecting processed image data produced from one of said plurality of image processing means.

5,608,820

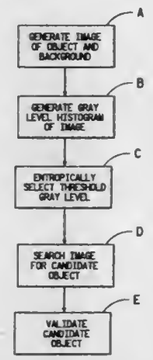
PARALLEL PROCESSING METHOD AND SYSTEM FOR IDENTIFYING VALID OBJECTS IN A BACKGROUND OF AN IMAGE

Akhileswar G. Vaidyanathan, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 767,339, Sep. 27, 1991, Pat. No. 5,371,810. This application Jul. 29, 1994, Ser. No. 283,310

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—169 **11 Claims**



1. A method of identifying at least one valid object having at least one predetermined attribute defined by at least one predetermined attribute value in a background, comprising the steps of:

(a) generating an image of the object and the background;

(b) generating a gray level histogram of the image;

(c) selecting N global entropic threshold gray levels;

(d) subdividing the gray level histogram into N+1 sub-histograms using each of the global entropically selected threshold gray levels;

(e) searching portions of the image corresponding to each sub-histogram using the global entropically selected gray levels of step (c) for at least one candidate object, each candidate object having at least one candidate object attribute value;

(f) validating the candidate objects found in step (e) having the valid object predetermined attribute values to identify the valid object;

(g) subdividing each sub-histogram into an upper sub-histogram and a lower sub-histogram using the entropic threshold gray level as defined in step (c) as an upper delimiter and a lower delimiter;

(h) selecting an entropic threshold gray level for each sub-histogram to maximize the entropy function of each of the upper and lower sub-histograms;

(i) searching portions of the image corresponding to each sub-histogram using the entropically selected gray level of step (h) for at least one candidate object, each candidate object having at least one candidate object attribute value;

(j) validating the candidate objects found in step (i) having the valid object predetermined attribute values to identify the valid object;

(k) recursively repeating steps (g)–(j) for each of the upper and lower sub-histograms, wherein the repetition of (g) uses the

entropic threshold as defined in step (h) and wherein the repetition of step (h) selects a next successive entropic threshold gray level, thereby recursively partitioning each gray level sub-histogram until a predetermined minimum number of new valid objects is identified; and

(l) merging the valid objects identified within each sub-histogram found in step (j).

5,608,821

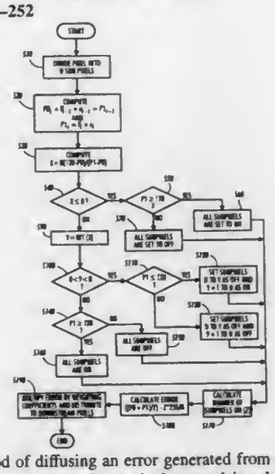
METHOD OF HIGH ADDRESSABILITY ERROR DIFFUSION

David J. Metcalfe, Marion; Jeng-Nan Shiau, Webster, and Leon C. Williams, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1994, Ser. No. 285,326

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—252 **13 Claims**



1. A method of diffusing an error generated from thresholding a grey level value representing a pixel, comprising the steps of:

(a) receiving the grey level value representing the pixel, the grey level value having a first resolution;

(b) converting the grey level value into a predetermined number of subpixels representing a second resolution, the second resolution being higher than the first resolution;

(c) thresholding the subpixels;

(d) generating an error value as a result of a threshold determination in said step (c), the error value having a resolution corresponding to the first resolution; and

(e) diffusing the error value to grey level values representing adjacent pixels.

5,608,822

APPARATUS AND METHOD FOR GENERATING HALF-TONE DOT IN IMAGE REPRODUCTION

Ephraim E. Carlebach, Ra'anana, Israel, assignor to Scitex Corporation Ltd., Herzllya, Israel

Filed Jul. 18, 1994, Ser. No. 276,552

Claims priority, application Israel, Jul. 19, 1993, 106400

Int. Cl.[6] G06K *9/38*

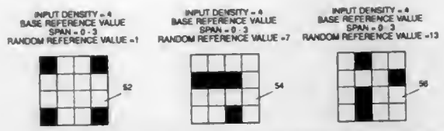
U.S. Cl. 382—270 **12 Claims**

1. Apparatus for generating a screened reproduction of an image, comprising:

a screen matrix defining an arrangement of a plurality of areas within a printing dot, each having an assigned reference value;

screening logic apparatus receiving input density information with respect to said image and including:





means for assigning to each input density a corresponding plurality of ordered values;

means for combining with each of said plurality of ordered values a random value, thereby to define a randomized plurality of values; and

a decision logic for selectively exposing those areas in said screen matrix whose assigned reference values correspond to said randomized plurality of values, thereby generating said screened reproduction of said image.

5,608,823

IMAGE READING APPARATUS FOR CORRECTING DENSITY LEVELS

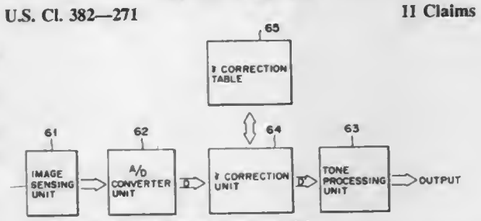
Kazuo Ohtani, Kodaira, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 44,895, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 592,344, Oct. 3, 1990, abandoned. This application Oct. 24, 1994, Ser. No. 327,807

Claims priority, application Japan, Oct. 4, 1989, 1-257845; Nov. 30, 1989, 1-309367; Dec. 14, 1989, 1-322659

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—271 **11 Claims**



1. An image reading apparatus comprising:

reading means for photoelectrically reading an original image, and outputting an image signal;

conversion means for converting the image signal from said reading means into density data representing density levels of a plurality of steps;

detection means for detecting frequencies of appearance in units of density levels of the density data from said conversion means, said detection means detecting the frequencies of appearance of density levels in a specific image area which is not an entire original image but a central portion of the original image; and

correction means for correcting the density levels expressed by the density data from said conversion means on the basis of the frequencies of appearance detected by said detection means,

wherein said correction means detects a minimum density level and a maximum density level among density levels of which frequencies of appearance are higher than a predetermined frequency; and corrects the density levels expressed by the density data on the basis of the detected minimum and maximum density levels.

5,608,824

IMAGE PROCESSING APPARATUS IN WHICH FILTERS HAVING DIFFERENT FILTERING CHARACTERISTICS CAN BE SWITCHED AMONG THEMSELVES

Kazuo Shimizu; Shigeru Kobayashi; Hideyuki Masuyama, all of Hachiouji, and Shinji Aramaki, Kanagawa-ken, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

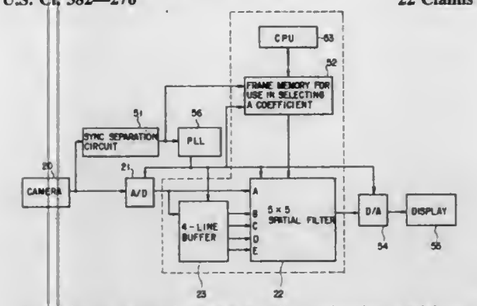
PCT No. PCT/JP94/00055, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO94/17484, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 17, 1994, Ser. No. 307,648

Claims priority, application Japan, Jan. 22, 1993, 5-009244; Feb. 3, 1993, 5-016520; Mar. 15, 1993, 5-054046; May 10, 1993, 5-108274; May 17, 1993, 5-114834

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—276 **22 Claims**



1. An image processing apparatus for performing spatial processing on an input image, the apparatus comprising:

spatial filtering means storing coefficients arranged in i rows and j columns, for receiving pixel data items representing the input image and arranged in i rows and j columns, and multiplying each pixel data item by a corresponding coefficient, thereby to perform spatial filtering, thus extracting a particular frequency component of the input image;

coefficient storing means having a plurality of register groups corresponding to i×j coefficient to be set in said spatial filtering means, each of said register groups having a plurality of coefficient registers each of which stores a numerical value that is one of candidates for a coefficient;

selection data generating means for generating coefficient-selecting data designating the coefficient registers of each register group and changing the coefficient-selecting data in accordance with the pixel data items which is to be input to said spatial filtering means; and

coefficient selecting means for receiving the coefficient-selecting data generated by said selecting data generating means, reading numerical values from the coefficients registers of each register group in accordance with the coefficient-selecting data, and setting the numerical values in said spatial filtering means as the coefficients.

5,608,825

MULTI-WAVELENGTH FILTERING DEVICE USING OPTICAL FIBER BRAGG GRATING

Joseph Ip, Kanata, Canada, assignor to JDS Fitel Inc., Nepean, Canada

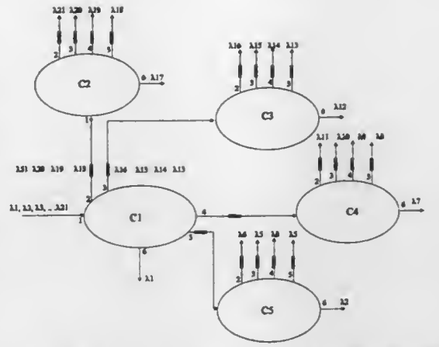
Filed Feb. 1, 1996, Ser. No. 595,561

Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—24 **11 Claims**

1. A multi-wavelength optical filtering device for optical signal transmission, said device comprising:

a first optical circulator having at least four circulator ports including an input port and a plurality of sequential ports for circulating optical signals from the input port to a next sequential port in a circulating direction, the last of said sequential ports being an output port, and



a wavelength selective means coupled to each of said sequential ports except said output port for reflecting a selected portion of said optical signals and transmitting another portion of said optical signals.

5,608,826

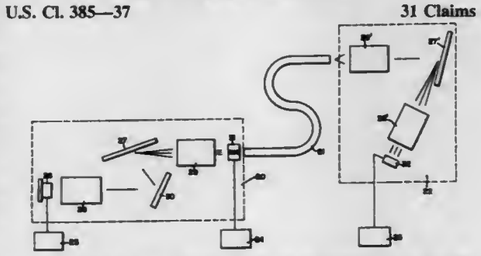
WAVELENGTH DIVISION MULTIPLEXED OPTICAL MODULATOR AND MULTIPLEXING METHOD USING SAME

Warren T. Boord, Brooklyn Park, and Anil K. Jain, North Oaks, both of Minn., assignors to APA Optics, Inc., Blaine, Minn.

Continuation-in-part of Ser. No. 257,083, Jun. 9, 1994, Pat. No. 5,450,510. This application Jun. 7, 1995, Ser. No. 482,642

Int. Cl.[6] G02B *6/34;6/12;6/28*

U.S. Cl. 385—37 **31 Claims**



1. An apparatus for wavelength division multiplexing a plurality of signals over a single optical fiber, comprising:

a) a plurality of lasers for generating a plurality of optical signals of different wavelengths, wherein said plurality of lasers equals n, said different wavelengths equals m, and m is greater than n;

b) external modulator means for modulating the optical signals in accordance with control signals, whereby the optical signals carry information; and

c) wavelength separation means for spatially separating the different wavelength signals and directing the signals from said lasers to said external modulator means.

21. A method of wavelength division multiplexing a plurality of signals over an optical fiber, comprising the steps of:

a) generating a plurality "m" of optical signals of different wavelengths from "n" laser diodes, wherein m is greater than n;

b) spatially separating the different wavelength signals and directing the signals from the laser to an integrated optic modulator; and

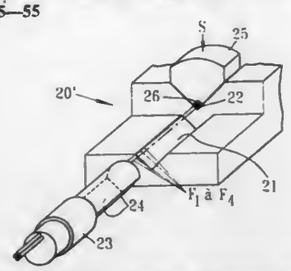
c) modulating the optical signals with the integrated optic modulator in accordance with control signals, whereby the optical signals carry information.

5,608,827

MULTICORE FIBER CONNECTION COMPONENT AND METHOD OF MAKING IT

Daniel Boscher; Jean-Charles Brault, both of Trebeurden, and Jean-Michel Landouar, Locquemeau, all of France, assignors to France Telecom, France

Filed Mar. 23, 1995, Ser. No. 409,193
Claims priority, application France, Mar. 24, 1994, 94 03466
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—55 5 Claims



1. Method for making a connecting component for the connection of n^2 fibers to a multicore fiber comprising n^2 cores, n being an integer, wherein:

a one-piece block having a convex groove in a longitudinal plane of symmetry of said block is machined flat perpendicularly to said longitudinal plane of symmetry and to a transverse plane of symmetry of said block so as to obtain in said transverse plane of symmetry of said block a groove height equal to $\sqrt{2}d$ where d is the diameter of the optical claddings of said fibers to be assembled, said one-piece block having at least one reference surface parallel to its longitudinal plane of symmetry,

said block is sawn apart in said block's transverse plane of symmetry,

the two part-blocks thus obtained are placed together with the two reference part-surfaces in a common plane and with the sawn through ends of the two part-blocks coincident so that grooves of the two-part blocks together define at said sawn ends a square cavity,

said optical fibers are inserted into said square cavity and

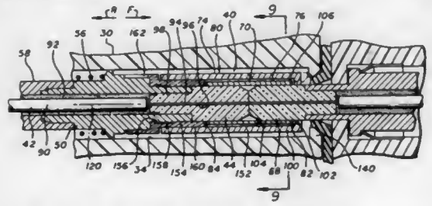
said two part-blocks and said fibers inserted therein are fixed together, the assembled two part-blocks defining a reference support for the assembled fibers.

5,608,828

FIBER OPTIC CONNECTOR APPARATUS

Bruce Coutts, Costa Mesa, and Christopher A. Roe, Tustin, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 12, 1995, Ser. No. 527,267
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—59 17 Claims



1. Fiber optic connector apparatus comprising:

a housing having at least one passage with an axis and with front and rear passage portions;

a socket terminus that includes an alignment assembly lying primarily in said passage;

said alignment assembly including a ferrule-receiving sleeve which has a rear portion for holding a first ferrule and a front portion that is expandable in diameter to receive a mating second ferrule, said alignment assembly including a hood that surrounds said sleeve and that forms front and rear shoulders that limit forward and rearward movement of the sleeve with respect to the hood;

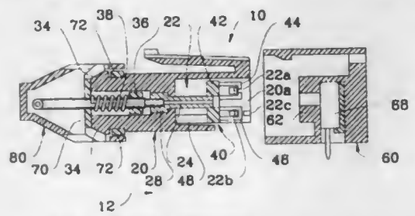
said hood and said sleeve therein being slidable together along said axis, and said socket terminus including a spring that forwardly biases said hood.

5,608,829

OPTICAL CONNECTOR HAVING OPTICAL FIBER PROTECTION MEMBER

Kenzo Oda, Hadano, and Hiroyuki Shoji, Sagamihara, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 11, 1996, Ser. No. 596,904
Claims priority, application Japan, Mar. 10, 1995, 7-51231
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—76 6 Claims



1. An optical connector comprising:

A first housing having a joining cavity with bosses formed on its inside walls extending in a mating direction,

an optical fiber protection member having a base with a through opening through which an optical fiber is inserted, at least one leg extending from the base in the mating direction and being latchable with the bosses of the first housing,

a second housing having a joining protrusion fitting into the joining cavity of the first housing, and thrust protrusions formed on an outside wall;

whereby in an unmated position, the optical fiber protection member is located in the first housing so that the front end of the optical fiber is inside said through opening because the legs and the bosses are engaged, and in a mated position, the legs and the bosses are released from each other due to the fact that when the joining protrusion is inserted in the joining cavity, the thrust protrusions spread the legs.

5,608,830

ADAPTER ASSEMBLY FOR FIBER OPTIC CONNECTORS

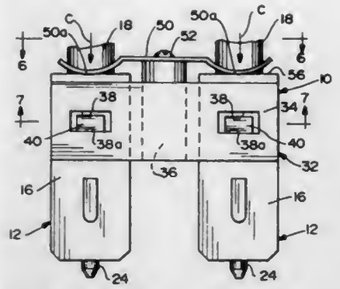
Yuriy Belenkiy, Niles; Igor Grois, Northbrook; Irina Gumin, Skokie; Ilya Makhlin, Wheeling; Mark Margolin, Lincolnwood, and Michael J. Pescetto, Hanover Park, all of Ill., assignors to Molex Corporation, Lisle, Ill.

Division of Ser. No. 373,175, Jan. 17, 1995, Pat. No. 5,553,180.
This application May 1, 1996, Ser. No. 649,958
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—78 4 Claims

1. An adapter assembly for holding two individual fiber optic connectors in generally parallel side-by-side alignment, comprising:

a body having a pair of holding portions adapted for holding said fiber optic connectors in a substantially side-by-side relationship;

lost motion means mounting the fiber optic connectors to said holding portions to provide floating motion between the connectors and the body, said lost motion means including complementary interengaging abutment surfaces between the



connectors and the body generally parallel to said parallel alignment direction; and

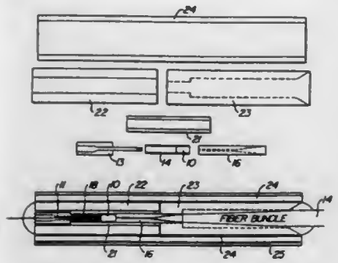
a leaf spring mounted intermediate its ends to the body, with opposite ends of the leaf spring in biasing engagement with the fiber optic connectors to bias the fiber optic connectors to a substantially parallel relationship.

5,608,831

FIBER OPTIC COUPLER AND METHOD OF MAKING SAME

Jing-Jong Pan, San Jose, Calif., assignor to E-Tek Dynamics, Inc., San Jose, Calif.

Division of Ser. No. 294,666, Aug. 23, 1994, Pat. No. 5,551,968, which is a division of Ser. No. 159,882, Nov. 30, 1993, Pat. No. 5,371,816, which is a division of Ser. No. 867,651, Apr. 13, 1992, Pat. No. 5,267,340, which is a division of Ser. No. 640,176, Jan. 11, 1991, Pat. No. 5,117,473, which is a division of Ser. No. 390,795, Aug. 8, 1989, Pat. No. 5,016,963. This application Jun. 7, 1995, Ser. No. 483,024
Int. Cl.[6] G02B 6/32
U.S. Cl. 385—85 5 Claims



1. A method of manufacturing a bundle of optical fibers, each fiber having a cladding and a core, comprising

tapering an end section of each optical fiber so that at least the core at the end of said fiber is exposed,

aligning the tips of said fibers so that the ends of said fibers are perpendicular to the axis of said optical fiber bundle, and

bundling said tapered end sections together with a binding material having an index of refraction less than that of said fiber core, said binding material including epoxy;

wherein said aligning step comprises

cleaving the ends of said fibers in said bundle, the remaining end of each of said fibers still having an exposed core; and

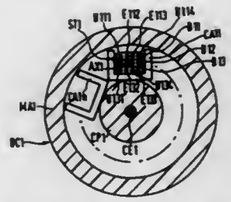
polishing the tips of said fibers perpendicularly to said axis of said fiber bundle.

5,608,832

OPTICAL CABLE HAVING A PLURALITY OF LIGHT WAVEGUIDES ARRANGED IN A PRESCRIBED STRUCTURE AND HAVING DIFFERENT MECHANICAL SENSITIVIES

Walter Pfandl, Ahorn; Reiner Schnelder, Ebersdorf; Waldemar Stoecklein, Coburg; Clemens Unger, Roedental, and Ernst Opel, Schwarzenbach A.D. Saale, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 223,670, Apr. 6, 1994, abandoned.
This application Sep. 18, 1995, Ser. No. 529,910
Claims priority, application Germany, Apr. 14, 1993, 43 12 121.7; Feb. 11, 1994, 44 04 441.0
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—112 35 Claims



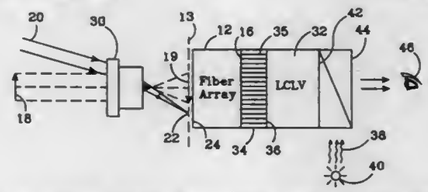
1. In an optical cable having a plurality of light waveguides being arranged in at least one group having a prescribed structure, the individual light waveguides within the prescribed structure being respectively exposed to different mechanical stresses, the improvements comprising light waveguides with different mechanical sensitivities being within the prescribed structure, light waveguides having a lower mechanical sensitivity being arranged in at least one region of the prescribed structure in which elevated mechanical stresses occur, and light waveguides having a higher mechanical sensitivity being arranged in at least one region of the prescribed structure in which lower mechanical stresses occur.

5,608,833

FOCAL-PLANE DETECTOR IMAGING SYSTEM WITH IMPROVED OPTICAL DAMAGE THRESHOLD

Anson Y. G. Au, Los Angeles, and Shin-Tson Wu, Northridge, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jul. 20, 1995, Ser. No. 490,917
Int. Cl.[6] G02B 6/06; G02F 1/13
U.S. Cl. 385—116 12 Claims



1. An imaging system that is resistant to high intensity optical beams, comprising:

an imager positioned to create an image of a scene at an image plane, and to focus an incident collimated optical beam onto a focal plane that is in close proximity to said image plane, said imager having an f-number and said fiber cores having diameters such that, as the power of said beam increases, its optical intensity at the fiber array's input end reaches an optical damage threshold for said array before its optical intensity at the fiber array's output end reaches a damage thresbold for said image detector,

a fiber optic array having an input and output end, said input end positioned at said image plane so that the fiber array captures said image and optical beam and guides them to its output

end, said array comprising a plurality of optical fibers with core diameters that are larger than the diameter of said focused optical beam at said image plane, so that said optical beam is captured by one of said fibers, and

an optical image detector positioned at the output end of said array for detecting said image,

wherein the lengths of said fibers are such that the diameter of said optical beam at the output end of the fiber array is substantially greater than its diameter at the input end of the fiber array.

5,608,834

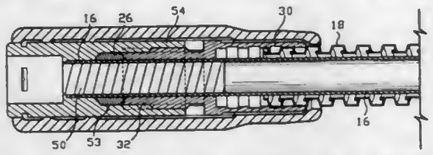
LIQUID LIGHT GUIDE

Timothy O. Van Leeuwen, Brookfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 7, 1994, Ser. No. 319,698

Int. Cl.[6] G02B *6/20*

U.S. Cl. 385—125 **20 Claims**



11. A method for forming a liquid light guide of the type including a flexible tube member having opposed tube end portions, the tube being filled with a light transmissive fluid, including the steps of:

positioning a transparent light transmissive plug at least partially within at least one of the tube end portions; and

compressing a sealing member around at least a portion of the at least one tube end portion between at least two compression members to enhance the sealing engagement between the transmissive plug and the at least one tube end portion.

5,608,835

IMAGE FIBER WITH REDUCED FLARE

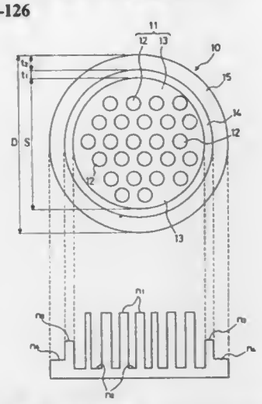
Katsuya Ono, Hino, and Kimihiko Nishioka, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1994, Ser. No. 281,557

Claims priority, application Japan, Oct. 19, 1993, 5-260940

Int. Cl.[6] G02B *6/02*

U.S. Cl. 385—126 **13 Claims**



1. An image fiber comprising:

an image transmitting portion including a plurality of cores and a cladding surrounding said cores;

a jacket layer higher in refractive index than said cladding, covering a periphery of said image transmitting portion; and

a coating layer higher in refractive index than said cladding, covering a periphery of said jacket layer,

said image fiber, satisfying a condition

$$L/S > 200$$

where L is a length of said image fiber and S is a diameter of said image transmitting portion.

5,608,836

METHOD FOR MANUFACTURING A CONNECTOR FOR OPTICAL CONDUCTORS ON A PRINTED CIRCUIT BOARD AS WELL AS PROTECTION COVER AND ALIGNMENT PIECE TO BE USED IN THIS METHOD

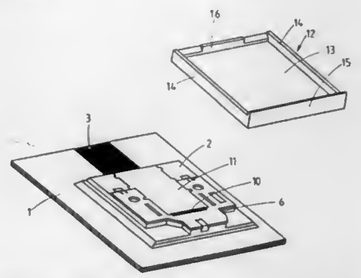
Danny Morlion, St. Amandsberg; Jan P. K. Van Koetsem, Zwijndrecht, and Luc Jonckheere, Dilbeek, all of Belgium, assignors to Framatome Connectors International, Courbevoie, France

Filed Feb. 14, 1996, Ser. No. 601,188

Claims priority, application Netherlands, Feb. 21, 1995, 9500328

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—137 **4 Claims**



1. Method for manufacturing a connector for optical conductors on a printed circuit board, wherein a first printed circuit board part is made and an alignment piece with one or more reference faces and with one or more alignment channels for the conductors is fixed on the first printed circuit board part, wherein the optical conductors are put in the alignment channels and are attached in the alignment piece, whereafter the parts of the optical conductors projecting out of the alignment piece and superfluous attachment material are removed by polishing and optical contact pads are formed in the upper surface of the alignment piece, wherein a protection cover is put on the alignment piece, said protection cover sealing the reference faces and the optical contact pads from the environment, whereafter the printed circuit board is completed and finally the protection cover is removed.

5,608,837

TRANSMISSIVE TYPE DISPLAY AND METHOD CAPABLE OF UTILIZING AMBIENT LIGHT

Ping-Kaung Tai, and Chen-Yu Tai, both of Toledo, Ohio, assignors to Clio Technologies, Inc., Holland, Ohio

Filed May 15, 1995, Ser. No. 441,092

Int. Cl.[6] G02B *6/10;* **G02F** *1/1335*

U.S. Cl. 385—146 **46 Claims**

1. A lighting system capable of utilizing ambient light for illumination, comprising:

a transmissive lighting display including a front panel and a light pipe, said front panel configured to transmit light output and said light pipe configured to receive ambient light, and wherein said light pipe is further configured to substantially transmit received ambient light to said from panel;

an artificial light source for providing light which is directed into said light pipe assembly in a predetermined way so that it is transmitted through said light pipe so that it is transmitted through said front panel; and,

a light collecting film which bends ambient light to a direction normal to said light pipe.

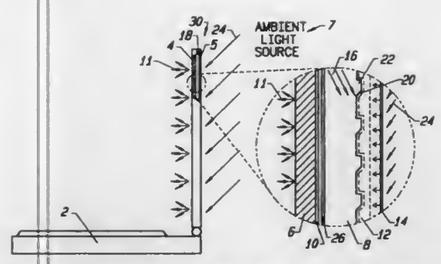
38. A method of providing a lighting system capable of utilizing ambient light for illumination, comprising the steps of:

providing a transmissive lighting display including a front panel and a light pipe, said front panel configured to transmit light output and said light pipe configured to receive ambient light and to substantially transmit received ambient light to said front panel; and

providing an artificial light source for directing light into said light pipe assembly in a predetermined way so that it is transmitted through said front panel;

wherein said output light has a divergent angle, said method further comprising the step of:

providing a bending-expanding film for expanding the divergent angle of said output light.



5,608,838

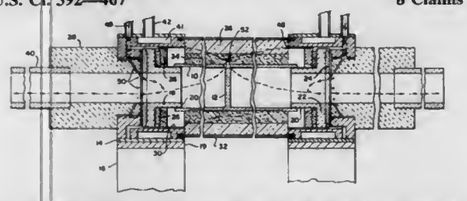
BLACKBODY TYPE HEATING ELEMENT FOR CALIBRATION FURNACE WITH PYROLYTIC GRAPHITE COATING DISPOSED ON END CAP ELECTRODE MEMBERS

Charles E. Brookley, 330 Allegany St., Frostburg, Md. 21532

Filed Dec. 7, 1994, Ser. No. 350,691

Int. Cl.[6] H05B *3/00;* **F27D** *1/00;* **G01K** *15/00*

U.S. Cl. 392—407 **8 Claims**



1. A blackbody type heating element for calibration furnaces producing an apparent emissivity value falling within the range 0.99 to 0.999 and comprising:

an elongated hollow cylinder of graphite open at first and second opposite ends, the cylinder having an integral solid graphite partition centrally disposed in the cylinder and oriented at right angles to an axis of elongation of the cylinder;

first and second end caps disposed adjacent and surrounding corresponding ones of the first and second cylinder ends, each end cap having a first electrically conductive member adapted to be connected as an electrode to a suitable source of electrical energy and a second graphite hollow cylindrical member open at both ends engaging the first member, the second member having a coating of pyrolytic graphite, each second member being connected directly through its coating to the corresponding end of the cylinder to prevent heat loss thereat, the openings in the second member being aligned with the corresponding end.

5,608,839

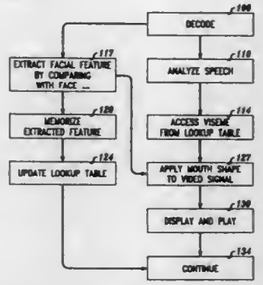
SOUND-SYNCHRONIZED VIDEO SYSTEM

Homer H. Chen, Lincroft, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 210,198, Mar. 18, 1994, abandoned, and a continuation-in-part of Ser. No. 210,819, Mar. 18, 1994. This application Jun. 21, 1994, Ser. No. 263,271

Int. Cl.[6] G10L *5/06;9/00*

U.S. Cl. 395—2.44 **14 Claims**



1. A method of processing a stream of unsynchronized audio and video signals of a speaker, comprising the steps of:

decoding the audio and video signals;

memorizing a plurality of visemes corresponding to phonemes in the decoded audio signal;

fetching visemes corresponding to phonemes in the audio signal; and

imparting a synchronism to the decoded video and audio signals by applying the fetched visemes to the unsynchronized video signal of the stream in synchronism with corresponding phonemes in the audio signal of the stream.

5,608,840

METHOD AND APPARATUS FOR PATTERN RECOGNITION EMPLOYING THE HIDDEN MARKOV MODEL

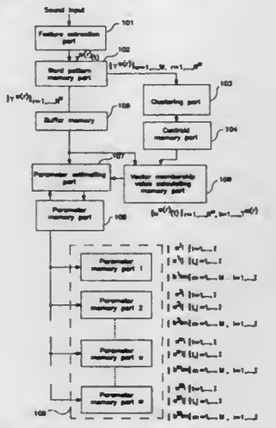
Eiichi Tsuboka, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 71,656, Jun. 3, 1993. This application Jun. 7, 1995, Ser. No. 478,351

Claims priority, application Japan, Jun. 3, 1992, 4-142399

Int. Cl.[6] G10L *5/06;9/00*

U.S. Cl. 395—2.45 **3 Claims**



1. A recognition apparatus comprising:

function value calculating means for mapping each pair C_m and y(t), C_m,y(t) into an element u(y(t),m) $\in$U=[a,b], where m=1, . . . , M, a,b$\in R^1$ for O$\leqq$a$\leqq$b, C={C_1, C_2, . . . , C_M}, y(t)$\in R^n$, y(t) is a vector observed at time t and R^n is n-dimensional Euclidean space,

element occurrence probability memory means for storing the occurrence probability of each element of set C,

weighted sum calculating means for calculating the weighted sum of logarithmic values of occurrence probabilities of elements in the set C or calculating the weighted arithmetic mean of them, where said occurrence probabilities of elements in the set C are memorized in said element occurrence probability memory means and said weighing coefficients for the m-th element is defined by u(y(t),m),

parameter memory means, having the weighted sum weighted arithmetic mean as the occurrence degree of the vector y (t), for storing a parameter of each of a plurality of models estimated so that the occurrence degree of the pattern set to be modeled composed of observation vector series y(t) . . . , y(t), . . . y(T) may be maximum on the basis of said vector occurrence degree,

likelihood calculating means for calculating the likelihood of each model for the observation vector series by disposing the parameter memory means in each of a plurality of recognition units, and

comparing means for comparing the likelihood of each model obtained by the likelihood calculating means, and identifying, from among the plurality of recognition units, the recognition unit corresponding to the model giving the maximum value as the result of recognition.

5,608,841

METHOD AND APPARATUS FOR PATTERN RECOGNITION EMPLOYING THE HIDDEN MARKOV MODEL

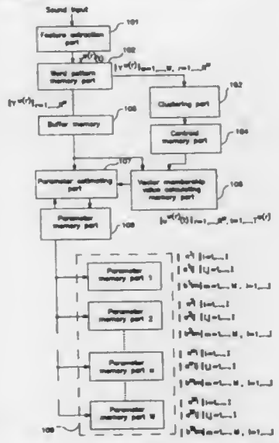
Eiichi Tsuboka, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1993, Ser. No. 71,656

Claims priority, application Japan, Jun. 3, 1992, 4-142399

Int. Cl.[6] G10L *5/06;9/00*

U.S. Cl. 395—2.65 **23 Claims**



1. A computer implemented signal processing apparatus used for a sound recognition apparatus comprising:

means for receiving a signal representing a sound and converting the signal representing the sound to a time series observation vector signal y,

function value calculating means for generating a first calculation signal corresponding to a mapping of each pair C_m and y, (C_m,y) into a signal u(y,m)$\in$U=[a,b], where m=1, . . . , M, a,b$\in R^1$ for 0$\leqq$a$\leqq$b, C={C_1, C_2, . . . , C_M} is a set of signals against which the observation vector signal y is compared, y$\in R^n$ is an element of n-dimensional Euclidean space,

signal occurrence probability memory means for storing the occurrence probability of each signal of a set C, where said occurrence probabilities of signals in the set C are received and stored, and

weighted sum calculating means for

a) generating a second calculation signal representing the weighted sum of logarithmic values of occurrence probabilities of signals in the set C or

b) generating a third calculation signal representing the weighted arithmetic mean of said logarithmic values of occurrence probabilities of signals in the set C under the definition that the weighting coefficient for the m-th signal C_m is u (y,m) obtained by said function value calculating means,

wherein the calculation signal representing the weighted sum or weighted arithmetic mean is a degree of pattern recognition of the observation vector signal y.

5,608,842

METHOD AND DEVICE FOR CONDUCTING A PROCESS IN A CONTROLLED SYSTEM WITH AT LEAST ONE PRECOMPUTED PARAMETER BASED ON A PLURALITY OF RESULTS FROM PARTIAL MATHEMATICAL MODELS COMBINED BY A NEURAL NETWORK

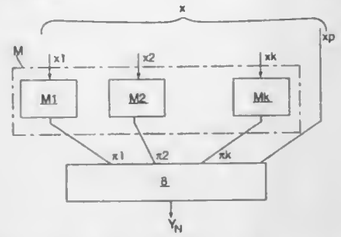
Einar Broese; Otto Gramckow, both of Erlangen; Thomas Martinetz, Munich, and Guenter Soergel, Nuremberg, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Nov. 10, 1994, Ser. No. 336,958

Claims priority, application Germany, Nov. 11, 1993, 43 38 615.6

Int. Cl.[6] G06E *1/00;3/00*

U.S. Cl. 395—21 **19 Claims**



1. A method for conducting a process in a controlled system, the system including a computing means having a mathematical model of the process, the mathematical model including a plurality of partial models, and including a neural network having variable network parameters, the method comprising steps of:

a) supplying input values to the computing means;

b) precomputing, before each process run, at least one selected process parameter, using the mathematical model, based on the input values supplied to the computing means;

c) presetting the system with the at least one process parameter;

d) measuring the input values and the at least one process parameter during the process;

e) supplying the measured input values and the measured at least one process parameter to the computing means; and

f) adaptively improving, at the end of the process, the precomputing of the at least one process parameter based on the measured input values and the measured at least one process parameter supplied to the computing means, the step of adaptively improving including sub-steps of

i) computing a plurality of results obtained from the plurality of partial models,

ii) supplying the plurality of results to the neural network,

iii) obtaining a network response from the neural network derived from the plurality of results supplied to it,

iv) comparing the network response of the neural network with the measured parameter to obtain a deviation, and

v) adaptively modifying the network parameters of the neural network to reduce the deviation, the network parameters being adaptively modified for training the neural network on-line.

5,608,843

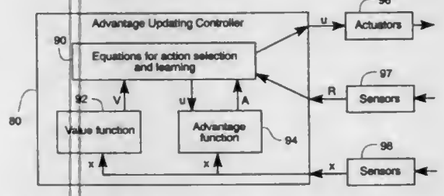
LEARNING CONTROLLER WITH ADVANTAGE UPDATING ALGORITHM

Leemon C. Baird, III, Colorado Springs, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 1, 1994, Ser. No. 283,729

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—23 **10 Claims**



1. A learning controller comprising:

means for storing a value function V and an advantage function A in a function approximation memory system;

means for updating said value function V and said advantage function A according to reinforcements received from an environment;

said means for updating including learning means for performing an action u, in a state x_t, leading to a state $x_{t+\Delta t}$ and a reinforcement $R_{\Delta t}(x_t,u_t)$;

said means for updating also including means for updating said advantage function A, and changing a maximum value, A_{max}, thereof;

said means for updating also including means for updating said value function V in response to said A_{max} value change;

means for normalizing update of said advantage function A, by choosing an action u randomly, with uniform probability; and

means for performing said action u and said normalizing update of said advantage function A in a state x;

said learning means and said normalizing update functioning according to an algorithm of:

$$A(x_t,u_t) \xleftarrow{\alpha} A_{max}(x_t) + \frac{\gamma^{\Delta t}V(x_{t+\Delta t}) + R_{\Delta t}(x_t,u_t) - V(x_t)}{\Delta t}$$

$$V(x_t) \xleftarrow{\beta} V(x_t) + \frac{A_{max_{new}}(x_t) - A_{max_{old}}(x_t)}{\alpha}$$

learning updates

$$A(x,u) \xleftarrow{\omega} A(x,u) - A_{max}(x)$$

normalizing update

where said

$$X \xleftarrow{\alpha} Y$$

symbology represents a function-approximating supervised learning system, generating an output of X, being trained to generate a desired output of Y at a learning rate of a.

5,608,844

NEURAL PROCESSOR COMPRISING DISTRIBUTED SYNAPTIC CELLS

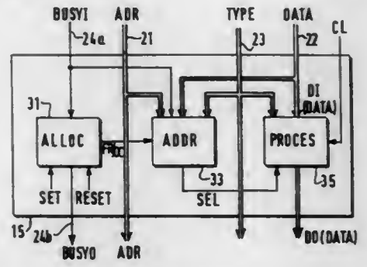
Jean Gobert, Mabons-Alfort, France, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 405,567, Mar. 16, 1995, which is a continuation of Ser. No. 23,548, Feb. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,617

Claims priority, application France, Feb. 26, 1992, 92 02250

Int. Cl.[6] G11C *13/00;* **G06F** *15/18*

U.S. Cl. 395—27 **9 Claims**



1. A neural processor (**10**) comprising:

a) input means for inputting digital signals;

b) a first plurality of storage means for storing synaptic coefficients, each synaptic coefficient defining a strength of a respective synapse connecting a respective pair of neurons;

c) a second plurality of storage means for storing neuron states;

d) an address bus (**21**);

e) an operation type bus (**23**);

f) at least one linked data path (**22**) for propagating data;

g) at least one free/busy path (**24***a*, **24***b*) for propagating a free/busy signal; and

h) a plurality of means for computing neural potentials, comprising a plurality of synaptic cells, each synaptic cell being devoted to a respective one of the synapses, the synaptic cells being coupled in parallel to receive input signals from the address bus and the operation type bus, the synaptic cells being arranged in a chain, connected from one cell to another along the linked data path and the free/busy path, each respective synaptic cell comprising:

i) respective allocating means (**31**) for allocating, to the respective synaptic cell, a free/busy state propagated by the linked free/busy path;

ii) respective addressing means (**33**) for

A) storing an address identifying the respective synaptic cell, the address comprising a source neuron identifier (**51**) and a destination neuron identifier (**53**), and

B) comparing the address to a current address (SID, DID) appearing on the address bus (**21**) for determining whether the respective synaptic cell should be activated; and

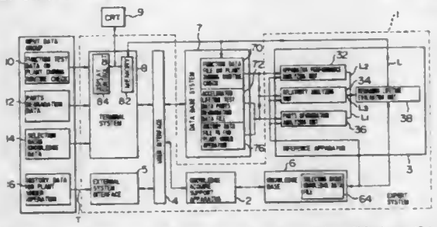
iii) respective processing means (**35**) for performing operations, defined by the operation type bus (**22**), on data received from the linked data path (**22**).

5,608,845

METHOD FOR DIAGNOSING A REMAINING LIFETIME, APPARATUS FOR DIAGNOSING A REMAINING LIFETIME, METHOD FOR DISPLAYING REMAINING LIFETIME DATA, DISPLAY APPARATUS AND EXPERT SYSTEM

Hisao Ohtsuka, and Motoaki Utamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 494,629, Mar. 16, 1990, abandoned. This application Nov. 29, 1993, Ser. No. 158,439
Claims priority, application Japan, Mar. 17, 1989, 1-063852
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—50 11 Claims



5. An expert system for diagnosing a remaining lifetime (L) of an apparatus included in a plant and selecting an apparatus to be inspected, said expert system comprising:

an external system interface for taking history data of the plant under on line operation from an external sensor;

a terminal system for taking data including knowledge data through an input/output apparatus;

a user interface connected to said external system interface and said terminal system;

a data base connected to said user interface for managing data including the history data supplied from said external system interface and said terminal system via said user interface;

a knowledge acquire support apparatus connected to said user interface for receiving the knowledge data from said terminal system via said user interface;

a knowledge base connected to said knowledge acquire support apparatus for storing the knowledge data supplied from said knowledge acquire support apparatus; and

an inference apparatus connected to said knowledge base and said data base for diagnosing the remaining lifetime (L) of an apparatus of the plant based on said data including the history data and the knowledge data respectively stored in said data base and said knowledge base;

wherein said terminal system takes two kinds of data including:

function test data which is acquired in a function test of a constructive apparatus of the plant during a periodical check and is stored in said data base every time the periodical check is carried out, and

parts degradation characteristic data which is acquired in an accelerated lifetime test of parts of the constructive apparatus or materials of the plant and is stored in said data base,

wherein knowledge data is obtained from specification of the constructive apparatus and parts, performance, and maintenance information, or from past experience of experts concerning preventive maintenance work.

5,608,846

FUZZY RULE GENERATOR

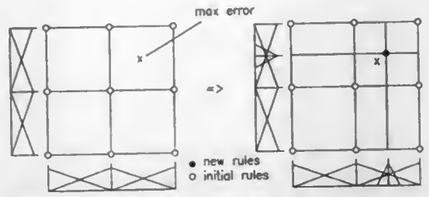
Keiji Mitsubuchi, and Satoru Isaka, both of Santa Clara, Calif., assignors to Omron Corporation, Nagakakyo, Japan

Continuation of Ser. No. 8,583, Jan. 25, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 535,328
Int. Cl.[6] G06F *9/44;17/00;15/00*
U.S. Cl. 395—75 20 Claims

1. A fuzzy rule generator for synthesizing fuzzy rules, comprising:

input means for receiving a fuzzy system input vector;

system initialization means for setting an initial fuzzy system value;



inference error calculation means for determining an inference error value and for defining a target output value;

rule generating means responsive to said inference error calculation means for generating fuzzy rules wherein said target output value is assigned to a plurality of fuzzy rules as a weight value and membership functions are thereby generated from said fuzzy rules; and

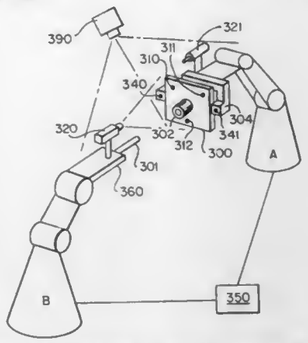
weight adjusting means for adjusting said weight value to reduce said inference error value such that said fuzzy rules and membership functions are added at a maximum error point in order to determine a peak value and width of each membership function and to minimize the number of additional fuzzy rules that are creased for each said fuzzy system input vector.

5,608,847

VISION TARGET BASED ASSEMBLY

Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 875,282, Apr. 29, 1992, which is a continuation of Ser. No. 478,078, Feb. 9, 1990, Pat. No. 5,148,591, which is a continuation of Ser. No. 110,541, Oct. 20, 1987, abandoned, which is a continuation of Ser. No. 865,637, May 14, 1986, abandoned, which is a continuation of Ser. No. 660,280, Oct. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 348,803, Feb. 16, 1982, abandoned, and a continuation-in-part of Ser. No. 453,910, Dec. 28, 1982, abandoned, and a continuation-in-part of Ser. No. 651,325, Sep. 17, 1994, Pat. No. 4,769,700, which is a continuation-in-part of Ser. No. 323,395, Nov. 20, 1981, Pat. No. 4,482,960, and a continuation-in-part of Ser. No. 592,443, Mar. 22, 1984, Pat. No. 4,602,163, which is a continuation-in-part of Ser. No. 262,492, May 11, 1981, Pat. No. 4,453,085. This application Jun. 6, 1995, Ser. No. 466,300
Int. Cl.[6] G06F *15/46;* H04N *7/18*
U.S. Cl. 395—83 18 Claims



1. A method for assembling of objects comprising the steps of:

providing at least two programmable robots, each operable in three or more degrees of freedom,

grasping a first object with at least one first robot,

grasping a second object with at least one second robot,

robotically placing said first object in a correct location with respect to said second object, and

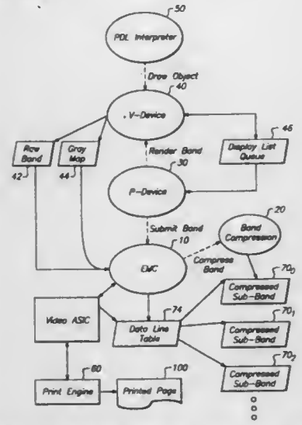
assembling said first and second objects.

5,608,848

PROCESSING BLANK DATA-LINES OF PRINT DATA

Ted W. Walker, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 6, 1995, Ser. No. 470,960
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—116 7 Claims



1. A method for printing pages of print data, comprising the steps of:

(a) receiving a raw band of print data corresponding to a current page to be printed;

(b) variably dividing said raw band into a plurality of sub-bands of print data each having a variable number of scan lines corresponding to a data line;

(c) detecting whether data lines in each of said sub-bands has data;

(d) generating a pointer in a data line pointer table to a blank compressed data line initially stored in a page frame buffer for each data line when said step (c) does not detect data for the corresponding data line; and

(e) processing and storing each data line in said page frame buffer when said step (c) detects data for the corresponding data line.

5,608,849

METHOD OF VISUAL GUIDANCE FOR POSITIONING IMAGES OR DATA IN THREE-DIMENSIONAL SPACE

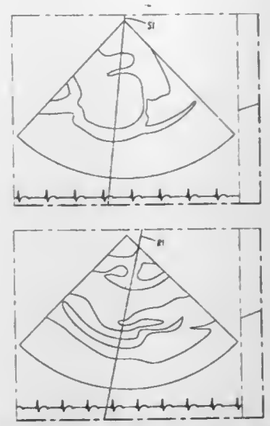
Donald King, Jr., 931 Cloud Ave., Menlo Park, Calif. 94025

Continuation-in-part of Ser. No. 750,627, Aug. 27, 1991. This application Jan. 26, 1994, Ser. No. 187,621
Int. Cl.[6] G06T *7/20;* G09B *23/28*
U.S. Cl. 395—119 10 Claims

1. A method for instantaneously displaying interactively a three dimensional spatial relationship between at least one real-time ultrasound image of tissue and at least one reference image of that tissue, comprising the steps of:

(a) producing at least one reference image by obtaining reference image data through a probe means, obtaining positional data corresponding to the reference image data by a spatial locater means, and transmitting the reference image data and the reference positional data to a processing and storage means;

(b) producing a plurality of real-time images that are at selected orientations relative to the reference image by obtaining real-time image data through an ultrasound probe, obtaining positional data corresponding to the real-time image data through a spatial locater means, and transmitting the real-time image data and the corresponding positional data to the processing and storage means;



(c) generating independent data representing spatial relationships between the real-time image data and the reference image data by processing the reference image positional data and the real-time image positional data in the processing and storage means; and

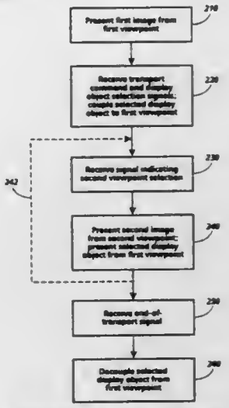
(d) displaying the real-time images and the at least one reference image, wherein each real-time image is displayed instantaneously with the obtaining of its real-time image data, and wherein the displayed images further instantaneously display the three-dimensional spatial relationship between the reference image and the real-time images using the generated independent data.

5,608,850

TRANSPORTING A DISPLAY OBJECT COUPLED TO A VIEWPOINT WITHIN OR BETWEEN NAVIGABLE WORKSPACES

George G. Robertson, Foster City, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1994, Ser. No. 227,762
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—127 38 Claims



1. A method of operating a system including a display, a user input device for producing signals indicating actions of a system user, memory for storing data, and a processor connected for receiving signals and for presenting images on the display; the method comprising:

presenting a first image on the display that is perceptible as viewed from a first viewpoint in a first navigable workspace; the first image including a first display object;

receiving a first signal from the user input device indicating a transport request from the system user to transport a selected display object; the first signal further indicating a selection of the first display object as the selected display object;

coupling the selected display object to the first viewpoint in response to the first signal indicating the transport request;

receiving a second signal from the user input device indicating a selection of a second viewpoint by the system user;

presenting a second image including the selected display object on the display in response to the second signal; the second image being perceptible as viewed from the second viewpoint; the selected display object being presented in the second image so that the selected display object is perceptible as being viewed from the first viewpoint;

receiving a third signal from the user input device indicating that transporting the selected display object is completed; and

uncoupling the selected display object from the first viewpoint in response to the third signal.

5,608,851

COLOR VARIATION SPECIFICATION METHOD AND A DEVICE THEREFOR

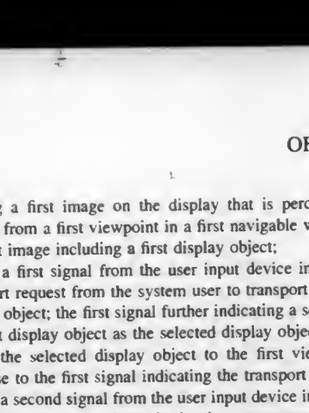
Yuichi Kobayashi, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,848

Claims priority, application Japan, Jun. 17, 1992, 4-158352; Jun. 19, 1992, 4-161445

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—131 **16 Claims**



2. A restricted color determination method comprising the steps of:

reading least significant bits of digital data expressing values of the three primary colors of each picture element of image data, wherein the three primary colors are red, green and blue;

determining a periodicity at which identical values are exhibited in said least significant bits of said picture elements disposed in a connected manner in said image data;

determining weighting coefficients based on periodicity data;

conducting weighting revision of a histogram of each of said picture elements of said image data in a 3-dimensional space by means of said weighting coefficients;

determining representative colors by utilizing a discriminant analysis with respect to the revised histograms; and

approximating said image data by means of said representative colors.

5,608,852

EVALUATION DATA DISPLAY DEVICES

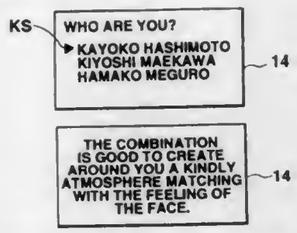
Kayoko Hashimoto, Ome; Emiko Morooka, Fuchu, and Fuminobu Nakamura, Kawasaki, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,352

Claims priority, application Japan, Nov. 16, 1993, 5-311225; Nov. 30, 1993, 5-326241; Nov. 30, 1993, 5-326242

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—135 **16 Claims**



1. An evaluation data display device comprising:

first designating means for designating one of a plurality of face images;

second designating means for designating one of a plurality of garments;

evaluation data storage means for storing a plurality of evaluation data each on a combination of a face image and a garment;

reading means for reading evaluation data on a combination of the face image designated by said first designating means and the garment designated by said second designating means from said evaluation data storage means; and

evaluation data display means for displaying the evaluation data read by said reading means.

5,608,853

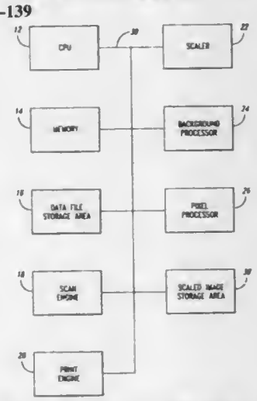
SYSTEM AND METHOD FOR GRAPHICS SCALING AND LOCALIZED COLOR ENHANCEMENT

Rajeev Dujari, Kirkland, Wash., and Beerud D. Sheth, New York, N.Y., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 19, 1995, Ser. No. 376,008

Int. Cl.[6] G06T *3/00*

U.S. Cl. 395—139 **24 Claims**



1. A system for the selective enhancement of an unscaled graphic image represented by a plurality of pixels having a first extent, the system comprising:

a scaler for changing the unscaled graphic image from the first extent to a second extent to define a pixel representation having at least one pixel;

a background processor for analyzing pixels to determine a local background color for said at least one pixel; and

a pixel processor to receive said local background color and to determine a color different from said local background color for said at least one pixel.

5,608,854

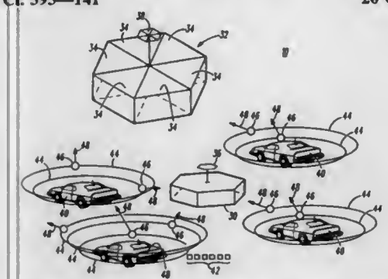
METHOD AND APPARATUS FOR DISPLAYING INFORMATION IN A COMMUNICATION SYSTEM

Gerald P. Labedz, Chicago; Mark T. Ahlenius, Lombard, and Robert T. Love, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 25, 1995, Ser. No. 429,253

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—141 **20 Claims**



1. A method of displaying communication system performance parameters comprising the steps of:

selecting a first group of system elements;

selecting a second group of system elements;

displaying each element of the first group of system elements as a shape having a plurality of defining parameters, the defining parameters associated with performance characteristics of the first group of system elements;

displaying each element of the second group of system elements as a shape having a plurality of defining parameters while displaying each element of the first group, the defining parameters associated with performance characteristics of the second group of system elements: and

modifying the shape representing the first group of system elements by altering the plurality of defining parameters as performance parameter data changes with time during system operation.

5,608,855

METHOD OF AND SYSTEM FOR DISPLAYING THREE-DIMENSIONAL CURVE ON TWO-DIMENSIONAL DISPLAY DEVICE

Ichiro Harashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,383

Claims priority, application Japan, Sep. 9, 1991, 3-229095

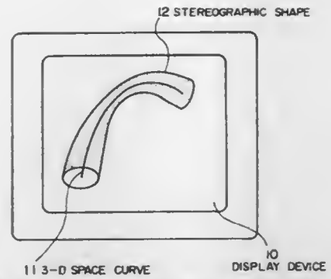
Int. Cl.[6] G06T *15/10*

U.S. Cl. 395—142 **19 Claims**

7. A computer method performed using a computer wherein a two-dimensional image representing a three-dimensional curve is displayed on a two-dimensional display device, comprising the steps of;

generating, using a three-dimensional shape display device, a three-dimensional shape by a locus which is formed when a circle having an arbitrary radius is moved along said curve serving as a central axis; and

displaying, using said two-dimensional display device, a two-dimensional image of said three-dimensional shape instead of said curve or together with said curve,



wherein a side surface of said three-dimensional shape is colored and displayed in different colors into a striped pattern, depending upon angles from binormal vectors at individual points on said three dimensional curve.

5,608,856

COMPUTER GRAPHICS APPARATUS AND METHOD FOR INTERPOLATING CONTROL VALUES TO GENERATE IMAGE DATA

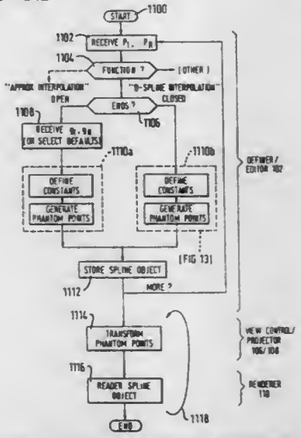
Thomas C. McInally, Farnborough, England, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1994, Ser. No. 249,910

Claims priority, application United Kingdom, May 28, 1993, 9311157

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—142 **46 Claims**



1. A computer graphics apparatus for generating image data representing a graphic object having a curved shape, the curved shape approximately interpolating a set of N control points, comprising:

means for receiving electrical signals defining the set of N control points;

processing means for processing the electrical signals to generate a set of phantom control points, comprising means for combining respective subsets of N' (fewer than N) of the control points in accordance with a set of N' coefficients, such that the set of N' coefficients is used repeatedly and combined with a respective different subset of the control points to generate each of at least a middle subset of the phantom control points;

means for storing the set of phantom control points generated by the processing means as part of an object database for subsequent use in generating the image data;

generating means for generating one or more interpolated points by using the phantom control points stored in the object

database in a parametric equation, so as to generate the image data, the interpolated points representing the curved shape of the object.

5,608,857

DOCUMENT PREPARATION SUPPORT SYSTEM USING KNOWLEDGE DATABASE TO DETERMINE DOCUMENT LAYOUT

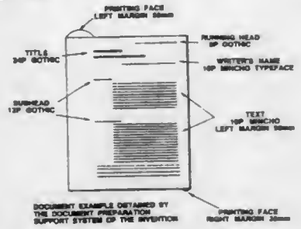
Joji Ikeo, and Tsuyoshi Tanaka, both of Yokohama, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 499,010, Jul. 6, 1995, abandoned, which is a continuation of Ser. No. 955,835, Oct. 2, 1992, abandoned. This application Dec. 29, 1995, Ser. No. 580,492

Claims priority, application Japan, Oct. 4, 1991, 3-258013

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—761 **14 Claims**



EVALUATION RESULT OF QUESTIONNAIRE

EFFECT (QUESTION#)	ORIGINAL DOCUMENT	PROCESSED DOCUMENT*1
LEGIBLE	1	1.29
ATTACTIVE	1	1.80
READABLE	1	1.50
UNDERSTANDABLE	1	1.30
GOOD	1	1.29

*1 DOCUMENT EXAMPLE OBTAINED BY THE DOCUMENT PREPARATION SUPPORT SYSTEM OF THE INVENTION

CORRECTED BASED ON QUESTIONNAIRE RESULT OF ABOVE SAMPLES WITH REFERENCE RATE OF PRESETTED DOCUMENT: 1

1. A document preparation support system wherein a document to be prepared and supported, which is a document being partially prepared or being under a preparation process, is modified to be a document having a nice-looking and optimal document design that satisfies an intention of a person who is preparing the document to be prepared and supported and that is suitable for a purpose of the document, comprising:

document data memory means for storing therein contents and attributes of the document to be prepared and supported, incidental data, selected from the group consisting of readability, clarity, impression and formality, said data being evaluation measures that indicate in a ranking format the intention of the person preparing the document to be prepared and supported or a finished impression of the document to be prepared and supported;

a knowledge database including a plurality of rules which are prepared based on document design knowledge and which leads out one or more satisfactory document design parameters for each data indicative of the document attributes and the incidental data; and

document design deciding means for extracting the document attributes stored in said document data memory means and said incidental data, applying associated rules in the knowledge database to all of the extracted document attributes and the incidental data, performing inferring processing of combining one or more document design parameters let out from said applied rules, and determining a collection of the combined document design parameters as the optimal document design for the document to be prepared and supported.

5,608,858

METHOD AND SYSTEM FOR REGISTERING AND FILING IMAGE DATA

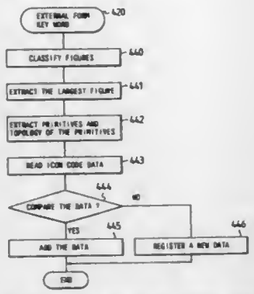
Yasuo Kurosu, Yokosuka; Seiichi Kanema; Hitoshi Tachi, both of Yokohama; Hajime Uchiyama; Masahiro Okumura, both of Odawara; Masaaki Fujinawa, Hinode-machi; Naoaki Kubushiro, Minamiashigara, and Hirowo Shimizu, Kumagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Microsoftware Systems, Inc., Kanagawa-ken, both of Japan

Continuation of Ser. No. 17,999, Feb. 16, 1993, Pat. No. 5,428,727, which is a continuation of Ser. No. 469,383, Jan. 24, 1990, abandoned. This application Apr. 28, 1995, Ser. No. 430,827

Claims priority, application Japan, Jan. 27, 1989, 1-16146

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—763 **15 Claims**



1. A registering method of registering image data of figures into an electronic filing system having means for storing the image data and corresponding key-words thereof, means for searching the image data stored in the storing means in response to one of the key-words, and means for outputting the image data searched by the searching means, comprising the steps of:

receiving vector data of the figures to be stored;

converting said vector data into the image data of the figures; and

producing each of the corresponding key-words of the image data by extracting data corresponding to an indicated attribute from said vector data received in said receiving step.

5,608,859

SCENARIO EDITING APPARATUS

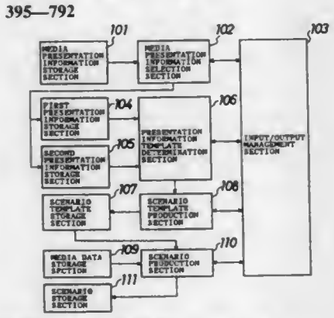
Daigo Taguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,007

Claims priority, application Japan, Dec. 28, 1993, 5-334161

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—792 **3 Claims**



1. A scenario editing apparatus, comprising:

media presentation information storage means for storing a plurality of sets of media presentation information including multi-media data having image, text and sound data, and information indicative of media types, presentation positions, presentation times and presentation effects of the image, text and sound data;

presentation information selection and determination means for selecting two sets of media presentation information from among the plurality of sets of media presentation information stored in said media presentation information storage means and comparing the selected two sets of media presentation information to determine a new presentation information template in accordance with the media types, the presentation positions, the presentation times and the presentation effects of the selected two sets of media presentation information, said presentation information selection and determination means including a media presentation information selection means for selecting the two sets of media presentation information from among the plurality of sets of media presentation information stored in said media presentation information storage means, a pair of presentation information storage means for individually storing the two sets of media presentation information selected by said media presentation information selection means, and a presentation information template determination means for comparing the information of the presentation positions, the presentation times and the presentation effects of the two sets of media presentation information stored in said presentation information storage means to determine the new presentation information template;

media data storage means for storing data identification information for individual identification of the multi-media data;

scenario template production means for producing a scenario template by adding, to the new presentation information template determined by said presentation information selection and determination means, a number for identification of the new presentation information template and a number of data which is an object of the template;

scenario template storage means for storing the scenario template produced by said scenario template production means;

scenario production means for producing a scenario wherein the data identification information is related to the scenario template retrieved from said scenario template storage means;

scenario storage means for storing the scenario produced by said scenario production means; and

input/output management means for managing inputs by a user of said scenario editing apparatus during selection of media presentation information, determination of the new presentation information template, production of the scenario template and production of the scenario and for displaying the data used in the editing and a result thereof.

5,608,860

METHOD AND APPARATUS FOR MULTIPLE SOURCE AND TARGET OBJECT DIRECT MANIPULATION TECHNIQUES

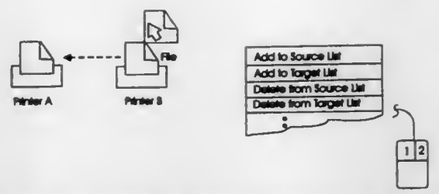
Greg P. Fitzpatrick, Keller, and Thom R. Haynes, Euless, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 318,595, Oct. 6, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,768

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—352 **18 Claims**

1. In a multi-windowed electronic data processing system in which a drag and drop operation has been initiated with at least one source graphical object selected to create a direct manipulation list, a method of selectively adding and deleting graphical objects from the direct manipulation list prior to completion of the drag and drop operation, comprising the steps of:



creating a group graphical object comprising all graphical objects on the direct manipulation list;

hovering said group graphical object proximate at least one other graphical object for a predetermined period of time while continuing to select said group graphical object;

after said predetermined period of time, automatically opening a menu comprising a plurality of selectable options including at least add to the direct manipulation list and delete from the direct manipulation list;

while continuing to select said group graphical object, designating at least one of said plurality of selectable options; and

continuing the drag and drop operation.

5,608,861

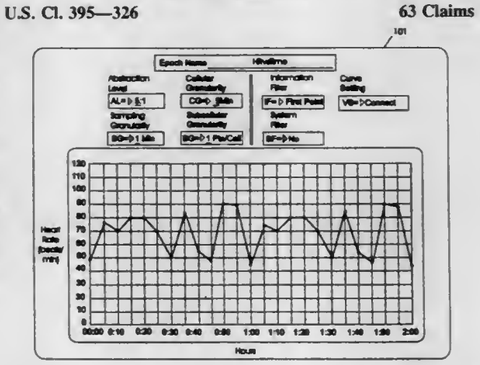
SYSTEMS AND METHODS FOR DYNAMICALLY MODIFYING THE VISUALIZATION OF RECEIVED DATA

Charles N. Mead, St. Louis, and Dale B. Frye, Florissant, both of Mo., assignors to CareCentric Solutions, Inc., Duluth, Ga.

Filed Feb. 14, 1994, Ser. No. 195,932

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 **63 Claims**



1. A computer for processing a received input data set comprised of one or more datum in response to a received input command and generating an output data set for display on a data visualization device, said computer comprising:

at least one processing unit for interpreting and executing one or more instructions;

at least one memory storage device for storing data and one or more instructions; and

a processing module, responsive to said input command, selectably operable to delineate one or more circumscribed, context-sensitive data subsets within said input data set, and operable to enable selected ones of a plurality of abstraction metrics algorithms and filters and to process each datum of said input data set utilizing said enabled selected abstraction

metrics algorithms and filters to generate said output data set, wherein said input data set is multivariate, time-ordered medical data.

5,608,862

APPARATUS FOR PROCESSING HIERARCHICALLY-CODED IMAGE DATA

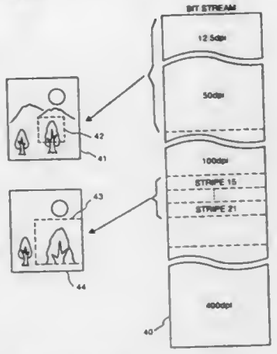
Miyuki Enokida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 997,935, Dec. 29, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 424,593

Claims priority, application Japan, Jan. 6, 1992, 4-000109

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **20 Claims**



1. An image processing apparatus comprising:

storing means for storing hierarchically coded image data and tag information, the hierarchically-coded image data representing a plurality of layers of images whose resolutions are different from each other and the tag information indicating data length of the hierarchically-coded image data representing each of the layers of images;

providing means for providing image data by decoding the hierarchically coded image data stored in said storing means, on the basis of the tag information;

display memory means for storing image data provided from said providing means;

displaying means for displaying an image in accordance with the image data stored in said display memory means; and

designating means for designating an area within the image displayed by said displaying means;

wherein said providing means provides first image data having a first resolution by decoding the hierarchically-coded image data on the basis of the tag information, wherein said display memory means stores first image data provided from said providing means and said displaying means displays a first image having a first resolution in accordance with the first image data stored in said display memory means, and wherein said providing means provides second image data, having a second resolution and representing an image in the area designated by said designating means, by decoding the hierarchically-coded image data on the basis of the tag information, said display memory means, which is storing the first image data, stores the second image data provided from said providing means while maintaining the first image data, and said displaying means displays a combined image including the first image having the first resolution and the second image having the second resolution in accordance with the first and second image data stored in said display memory means.

5,608,863

PORTABLE COMPUTER SYSTEM HAVING A DISPLAY HOUSING PROVIDING A STACKED STRUCTURE TO ACCOMMODATE DISPLAY PANEL, CIRCUIT BOARD, RECHARGEABLE SHEET BATTERY, CHARGING CIRCUIT AND TERMINAL

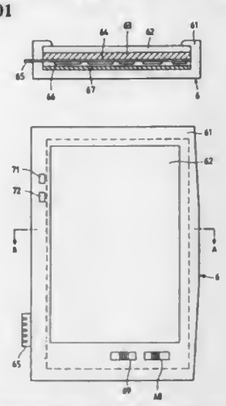
Shoichi Ishizawa, and Kyoichi Ideno, both of Suwa, Japan, assignors to Seiko Epson Corporation, Nagano-ken, Japan

Continuation of Ser. No. 252,439, Jun. 1, 1994, abandoned, which is a continuation of Ser. No. 860,738, Mar. 25, 1992, Pat. No. 5,347,630. This application Aug. 2, 1995, Ser. No. 510,435

Claims priority, application Japan, Apr. 23, 1991, 3-92227

Int. Cl.[6] G06F *1/26;15/00;15/20*

U.S. Cl. 395—501 **6 Claims**



1. A computer system with a sheet battery, said computer system comprising:

a. a display housing defined as a single box, said display housing having a front;

b. a stacked structure provided in said display housing, said stacked structure comprising:

a display panel disposed generally within the front of said display housing, said display panel having a rear surface;

a circuit board, provided on the rear surface of said display panel, for performing the display control of said display panel; and

a rechargeable sheet battery, provided at the rear surface of said display panel, and supplying power to said circuit board, wherein said circuit board is accommodated in a space between said display panel and said rechargeable sheet battery;

c. a charging circuit electrically connecting said rechargeable sheet battery, said charging circuit being accommodated in said space between said display panel and said rechargeable sheet battery; and

d. a terminal for electrically connecting said charging circuit, said terminal provided on an outer surface of said display housing.

5,608,864

VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS

Rakesh K. Bindlish, San Jose; Vlad Bril, Campbell, and Alexander Eglit, San Carlos, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 29, 1994, Ser. No. 235,764

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—507 **35 Claims**

1. An apparatus for generating a display, comprising:

a memory array having a single address bus, a single data bus, and a single memory controller,

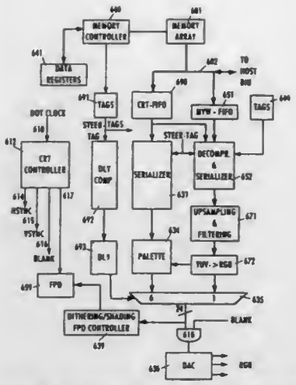
said memory array storing an image as pixel data, said image including first pixel data having a first predetermined pixel depth, and second pixel data having a second predetermined pixel depth, said first pixel data representing a first portion of said image and said second pixel data representing a second portion of said image;

register means coupled to said single memory controller for storing location data representing a location of said second portion of said image within said image, said location data comprising at least a horizontal location defined by a number of fetches required from said memory to retrieve a scan line of said first portion of said image abutting said second portion of said image;

a first FIFO, coupled to said memory array, for receiving said first pixel data;

a second FIFO, coupled to said memory array, for receiving said second pixel data having pixel depth different from pixel depth of said first pixel data; and

control means, coupled to said memory array, said register means, said first FIFO, and said second FIFO, for receiving said location data, controlling said memory array to perform a number of fetches of first pixel data as indicated by said horizontal location data, from said memory array to said first FIFO, and fetching subsequent second pixel data from said memory array to said second FIFO.



data information and a write indication signal for indicating write of said data information and address information, and

a measuring and analyzing information processor which comprises

a plurality of first buffers for storing said data information and address information together with time information as measurement data,

write control means for writing said measurement data into said plurality of first buffers in response to said write indication signal,

a plurality of second buffers for storing said measurement data read from said first buffers,

transfer control means for reading measurement data out of said first buffer to which write is completed to transfer the read measurement data to said second buffer,

measurement data storage means for writing and storing, in time series order, said measurement data transferred to said second buffer, wherein

write of said measurement data to said first buffer, transfer of said measurement data from said first buffer to said second buffer, and write of said measurement data from said second buffer to said measurement data storage means are executed in parallel to each other.

5,608,867

DEBUGGING SYSTEM USING VIRTUAL STORAGE MEANS, A NORMAL BUS CYCLE AND A DEBUGGING BUS CYCLE

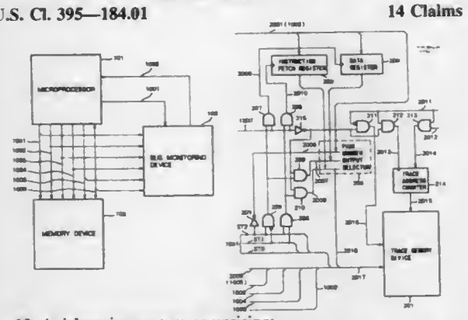
Toshinori Ishihara, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 5, 1994, Ser. No. 223,654

Claims priority, application Japan, Apr. 5, 1993, 5-077305

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—184.01 **14 Claims**



10. A debugging system comprising:

a microprocessor operatively connected to a data bus and an address bus, said microprocessor including virtual storage means operatively connected to said data bus and said address bus, said virtual storage means providing a virtual storage with a plurality of virtual addresses, said microprocessor for outputting a real address on said address bus during a normal bus cycle and for outputting a virtual address of said plurality of virtual addresses on said address bus during a debugging bus cycle, said microprocessor outputting transfer data and other data signals on said data bus;

a memory device connected to said microprocessor through said address bus and said data bus, for storing said transfer data and said other data in memory locations corresponding to said real address and said virtual address; and

a bus monitoring device operatively connected to said data bus and said address bus, said bus monitoring device for monitoring, during the debugging bus cycle, said virtual address, said transfer data and said other data signals issued by said microprocessor,

said bus monitoring device including a trace circuit operatively connected to said data bus and said address bus, said trace circuit for storing trace data including the virtual address and the transfer data, in order, when said second signal indicates an outputting state of the virtual address from said microprocessor, and

said debugging system further including a trap circuit operatively connected to said data bus and said address bus, said trap circuit for outputting a predetermined trap address and a trap demand signal to said microprocessor when said predetermined trap address matches said virtual address during the normal bus cycle,

wherein said microprocessor outputs a first signal indicative of a kind of access and a second signal indicative of an outputting state of said virtual address on said data bus during outputting of said virtual address in said debugging bus cycle, and

said trace circuit comprises:

trace data storage means operatively connected to said data bus and said address bus, said trace data storage means including virtual address storage means operatively connected to said microprocessor, said virtual address storage means storing said trace data;

said virtual address storage means temporarily holding said virtual address output in said debugging cycle;

setting means operatively connected to said virtual address storage means, said setting means being responsive to said first signal and said second signal, said setting means outputting a set signal to said virtual address storage means for controlling storing of said virtual address in said virtual address storage means;

trace address outputting means operatively connected to said trace data storage means, said trace address outputting means generating an address for storing said trace data in said trace data storage means, during said normal bus cycle; and

means for outputting an access signal operatively connected to said trace data storage means, said access signal outputting means controlling storage of said trace data into said trace data storage means.

12. A debugging system comprising:

a microprocessor operatively connected to a data bus and an address bus, said microprocessor including virtual storage means operatively connected to said data bus and said address bus, said virtual storage means providing a virtual storage with a plurality of virtual addresses, said microprocessor for outputting a real address on said address bus during a normal bus cycle and for outputting a virtual address of said plurality of virtual addresses on said address bus during a debugging bus cycle, said microprocessor outputting transfer data and other data signals on said data bus;

a memory device connected to said microprocessor through said address bus and said data bus for storing said transfer data and said other data in memory locations corresponding to said real address and said virtual address; and

a bus monitoring device operatively connected to said data bus and said address bus, said bus monitoring device for monitoring, during the debugging bus cycle, said virtual address, said transfer data and said other data signals issued by said microprocessor,

said bus monitoring device including a trace circuit operatively connected to said data bus and said address bus said trace circuit for storing trace data including the virtual address and the transfer data, in order, when said second signal indicates an outputting state of the virtual address from said microprocessor, and

said debugging system further including a trap circuit operatively connected to said data bus and said address bus, said trap circuit for outputting a predetermined trap address and a trap demand signal to said microprocessor when said predetermined trap address matches said virtual address during the normal bus cycle,

wherein said microprocessor outputs a first signal indicative of a kind of access and a second signal indicative of an outputting state of said virtual address on said data bus during outputting of said virtual address in said debugging bus cycle, and

said trap circuit comprises:

virtual address storage means operatively connected to said virtual storage means, said virtual address storage means temporarily storing said virtual address;

setting means operatively connected to said virtual address storage means, said setting means outputting a set signal for controlling storing of said virtual address into said virtual address storage means on the basis of the first signal and the second signal;

trap address storage means operatively connected to said microprocessor, said trap address storage means setting said trap address for trapping said microprocessor;

comparing means operatively connected to said virtual address storage means and said trap address storage means, said comparing means comparing the virtual address stored in said virtual address storage means and said trap address stored in said trap address storage means, during the normal bus cycle; and

trap demand signal output means operatively connected to said comparing means, said trap demand signal output means outputting a trap demand signal to said microprocessor when said virtual address and said trap address match as a result of said comparing by said comparing means.

5,608,868

METHOD FOR SECURING THE DISPLAY ON A SCREEN OF MIMIC DIAGRAMS REPRESENTING THE STATUS OF A SYSTEM

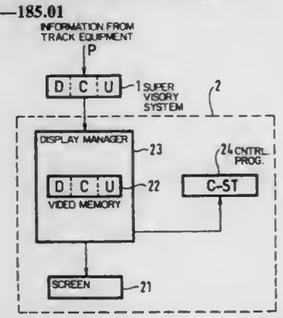
François Simon, Arpajon, France, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Jan. 16, 1996, Ser. No. 586,386

Claims priority, application France, Jan. 17, 1995, 95 00453

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—185.01 **3 Claims**



1. Method for securing the display on a screen of a workstation of mimic diagrams reflecting the status of a system connected to the workstation, the method including:

maintaining a first counter in said system and maintaining a second counter in said workstation;

periodically, in said system, incrementing said first counter, calculating a first signature from said first counter and from image data generated by said system for a current period and defining a mimic diagram reflecting the current status of said system, and storing in memory said image data, said first counter and said first signature;

in said workstation, in response to the transmission of said data, storage in memory of said image data, said first counter and said first signature, displaying on said screen a mimic diagram based on said image data stored in said memory, incrementing said second counter, calculating a second signature from said image data stored in said memory and said second counter, and calculating a test value from said second signature, from said first signature and from said first counter stored in memory, said test value providing a basis for detection of a display error.

5,608,869

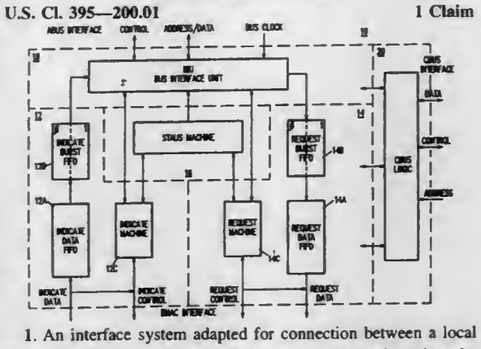
METHOD AND APPARATUS FOR RELIABLE DESCRIPTOR CHAINING IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

James R. Hamstra, Shorewood, Minn., and David C. Brief, Brookline, Mass., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 144,124, Oct. 27, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990. This application Dec. 16, 1994, Ser. No. 357,772

Int. Cl.[6] G06F *13/00;3/00*

U.S. Cl. 395—200.01 **1 Claim**



1. An interface system adapted for connection between a local area network communications medium and a network station, the interface system comprising:

a bus interface unit adapted for connection to the network station for receiving information objects stored in a memory system associated with the network station, each information object stored in the memory system consisting of a sequence of one or more parts, each part having a descriptor associated therewith, the desciptor identifying the associated part as either a "first" part which is the first part in the sequence, a "last" part which is the last part in the sequence, a "middle" part that occurs between a first part and a last part, or an "only" part wherein the sequence consists of only one part, such that transfer of a correct information object from the memory system to the interface system will meet consistency criteria as follows: a "first" part must follow either a "last" part or an "only" part; an "only" part must follow either a "last" part or an "only" part; a "first" part or a "middle" part must precede a "last" part;

request circuitry connected to the bus interface unit and adapted for connection to the communications medium for transferring information objects received by the interface system from the memory system via the bus interface unit to the communications medium; and

detection circuitry connected to monitor each information object received by the interface system to determine if said information object meets the consistency criteria, the detection circuitry including an interrupt generator that provides an interrupt signal to the network station if the consistency criteria is not met for said information object,

whereby incorrect information objects are prevented from being transferred from the memory system to the communications medium.

5,608,870

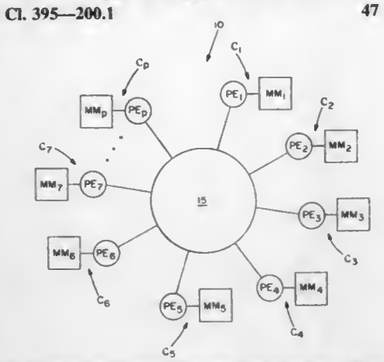
SYSTEM FOR COMBINING A PLURALITY OF REQUESTS REFERENCING A COMMON TARGET ADDRESS INTO A SINGLE COMBINED REQUEST HAVING A SINGLE REFERENCE TO THE TARGET ADDRESS

Leslie G. Valiant, Belmont, Mass., assignor to The President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 972,856, Nov. 6, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,367

Int. Cl.[6] G06F *15/16;13/20*

U.S. Cl. 395—200.1 **47 Claims**



1. In a parallel processing computer system having a plurality of components interconnected by a distribution system, each component having an identifier on the distribution system, a universal multiple-phase method of routing a plurality of requests, the requests originating from at least one source component having a source identifier and each request referencing a target address accessible by a target destination component having a target identifier, comprising the steps of:

originating a first request from a first source component;

redirecting, through a non-sorting function, the first request across the distribution system away from the target destination component and toward an intermediate destination component having an intermediate identifier not equal to the target identifier;

combining a plurality of requests including the first request at the intermediate destination component into a single destination request formed for the target address, the single destination request having a single reference to the target address computed by operating on the references to the target address in the plurality of requests; and

directing the destination request across the distribution system toward the target destination component having access to the target address.

5,608,871

INTER-NETWORK CONNECTION APPARATUS HAVING ADDRESS SEARCHING/REGISTERING SECTIONS, NETWORK CONTROL SECTIONS WITH A RECEIVING FIFO MEMORY AND A SENDING FIFO MEMORY

Takahiro Murono, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 17, 1994, Ser. No. 343,872

Claims priority, application Japan, Nov. 17, 1993, 5-288102

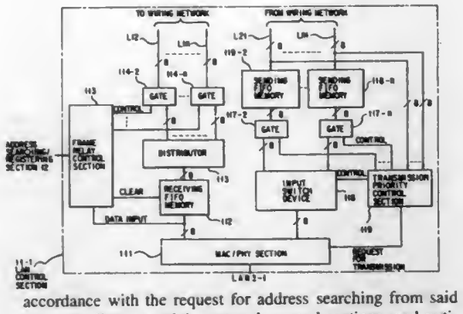
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.02 **6 Claims**

1. An inter-network connection apparatus comprising:

network control sections provided for networks for transmitting frames, respectively, and capable of issuing at least a request for address registration and a request for address searching;

address searching/registering sections each having means for registering a network address in accordance with the request for address registration from a corresponding one of the network control sections, searching a network address in



accordance with the request for address searching from said corresponding one of the network control sections, and notifying said corresponding one of the network control sections, which has issued the request for address searching, of a searching result; and

a wiring network which comprises transmission lines, and which is provided between the network control sections for independently transmitting frame therebetween,

wherein each of the network control sections includes:

a receiving FIFO memory for temporarily registering a frame supplied from a corresponding one of the networks;

a sending FIFO memory for temporarily registering a frame transmitted from said each of the network control sections;

means for relaying and discharging the frame registered in the receiving FIFO memory and transmitting the frame registered in the sending FIFO memory, to said corresponding one of the networks;

means for performing first frame relay processing in which a request for searching a destination address contained in a frame supplied from said corresponding one of the networks is supplied to the address searching/registering section, and supplying via the wiring network the received frame registered in the receiving FIFO memory to another network control section in accordance with the notification of a searching result from the address searching/registering section;

means for performing second frame relay processing in which the received frame is transmitted to the other network control sections via the wiring network;

means for issuing to the address searching/registering section a request for searching a sender address contained in the received frame, and issuing a request for registering the sender address in accordance with the notification of a searching result with respect to the request for registering the sender address.

5,608,872

SYSTEM FOR ALLOWING ALL REMOTE COMPUTERS TO PERFORM ANNOTATION ON AN IMAGE AND REPLICATING THE ANNOTATED IMAGE ON THE RESPECTIVE DISPLAYS OF OTHER COMUTERS

Krista S. Schwartz, Batavia; Allison A. Carleton, Lisle; Catherine M. FitzPatrick, Winfield, and Theresa M. Pommier, Westmont, all of Ill., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 19, 1993, Ser. No. 34,313

Int. Cl.[6] G06F *15/16;15/20*

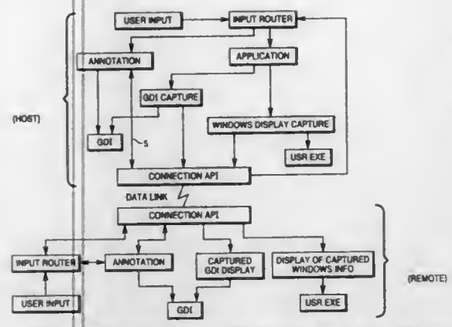
U.S. Cl. 395—200.04 **2 Claims**

1. A computer system, comprising:

a) multiple computers connected by a data channel;

b) program means for running on each computer, comprising one program means which

i) transforms input from a user of a computer into an image, which is added to a pre-existing image generated by an application program to form an annotated image, on a display at said computer, and



ii) transmits information on the data channel about the annotated image;

comprising second program means which

iii) replicates the annotated image on the respective displays of other computers; and

comprising third program means which

iv) accepts commands from selected other computers, and delivers the commands to said application program,

wherein said application program means is capable of running independently of said first, second, and third program means.

5,608,873

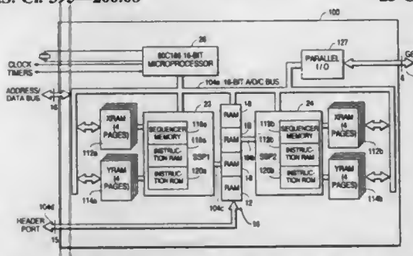
DEVICE AND METHOD FOR INTERPROCESSOR COMMUNICATION USING MAILBOXES OWNED BY PROCESSOR DEVICES

Ryan Feenstra, and David Dettmer, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 113,299, Aug. 30, 1993, abandoned. This application Jul. 3, 1996, Ser. No. 675,217

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—200.08 **23 Claims**



1. An apparatus for communication between a plurality of processor devices, comprising:

a post office memory including a plurality of mailbox memories;

each of the mailbox memories being write accessible at any time only by a corresponding owner processor device, and read-accessible by the corresponding owner processor device and other processor devices of the plurality of processor devices at times determined independently of a write access;

the plurality of processor devices including a transmitting processor device and a receiving processor device;

a mailbox memory corresponding to the transmitting processor device containing information to be transferred to the receiving processor device; and

the transmitting processor device being determined prior to the receiving processor device reading the information to be transferred.

5,608,874

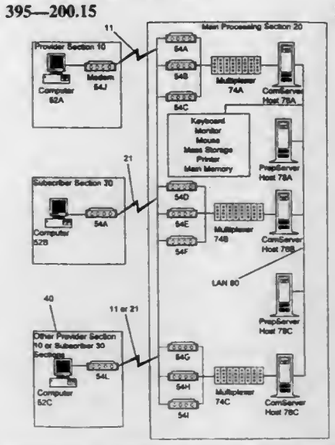
SYSTEM AND METHOD FOR AUTOMATIC DATA FILE FORMAT TRANSLATION AND TRANSMISSION HAVING ADVANCED FEATURES

Stuart S. Ogawa, San Francisco, Calif., and Kevin R. Pierce, Fairview, N.J., assignors to AutoEntry OnLine, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 349,022, Dec. 2, 1994. This application Apr. 8, 1995, Ser. No. 435,071

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.15 **28 Claims**



1. In a distributed computer system including a data provider section, a main processing section, and a data subscriber section, each said section selectably couplable to another section by a communications link including communications control means, a method for translating and transferring data from a provider source format to a subscriber destination format using a priori knowledge of said source and destination formats between said data provider section and a said data subscriber section, said method comprising the steps of:

(A) transmitting, by said provider section, a particular provider data file from said provider section to said main processing section via said communications link, said transmitting including the steps of:

monitoring communications from said provider section;

recognizing receipt of a valid communications initiation prompt generated by said provider section communications control means according to predetermined communications initiation rules, said rules providing safeguards for ensuring the quality of the data delivered to valid data subscribers;

initiating connection of provider section with main processing section in response to receipt of said valid communications initiation prompt;

connecting said provider section with said main processing section and upon being validated as a valid provider section, receiving clearance from said main processing section to transmit a copy of said provider data file to said main processing section;

reading said provider data file;

transmitting said provider data files over said communications link to said main processing section; and

determining whether said provider data file has been transmitted successfully and signaling successful data transmission to said main processing section; and

(B) receiving, by said main processing section, said provider data file from said provider section and storing said received data files in said main processing section;

(C) translating, by said main processing section, said stored provider data file by: (i) copying said stored provider data file to a work area file within said main processor section, and (ii) converting said work area file from the native format of said provider data file to a midformat file format;

(D) forming a communications link, by said main processing section, with a particular one of said subscriber sections and transmitting said midformat file to said subscriber section;

(E) receiving, by subscriber section, said midformat file from said main processing section and storing said received file in storage within said subscriber section; and

(F) translating using said selected second-to-third file translation procedure, by said subscriber section, said midformat file into a subscriber destination format file compatible with said preselected subscriber application software routine.

5,608,875

PRE-READ CONTROL METHOD FOR MAGNETIC TAPE AND APPARATUS FOR PERFORMING THE SAME

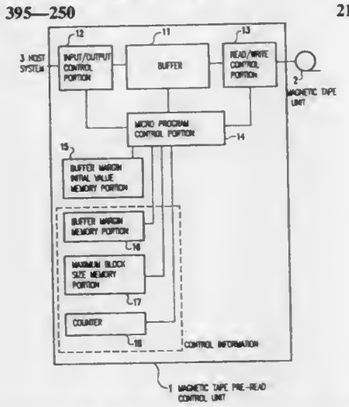
Yoshiaki Mori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,728

Claims priority, application Japan, Oct. 8, 1993, 5-275988

Int. Cl.[6] G06F *3/06*

U.S. Cl. 395—250 **21 Claims**



1. A magnetic tape pre-read control method to be executed in a magnetic tape pre-read control unit including a buffer, first memory means and a counter, comprising the steps of:

(a) setting an initial value in said first memory means;

(b) reading a block from said magnetic tape and storing said block in said buffer;

(c) obtaining a size of said block;

(d) adding a predetermined value to a value of said counter when the size of said block is larger than a content of said first memory means;

(e) updating the content of said first memory means on the basis of a size of a block read out in the past, when the value of said counter reaches a predetermined value as a result of the addition in the step (d); and

(f) interrupting a pre-read when an available capacity of said buffer is smaller than the content of said first memory means and, otherwise, continuing the pre-read.

5,608,876

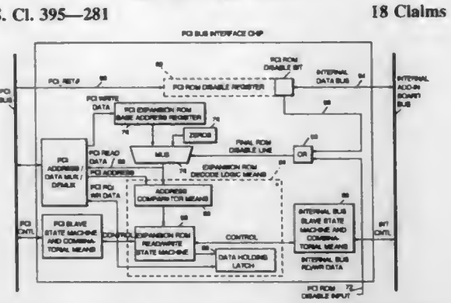
ADD-IN BOARD WITH ENABLE-DISABLE EXPANSION ROM FOR PCI BUS COMPUTERS

Ariel Cohen, Zichron-Yaacov, Israel; William G. Holland, Cary; Joseph F. Logan, Raleigh, both of N.C., and Avi Parash, Ramat-Yishay, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1995, Ser. No. 447,022

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—281 **18 Claims**



1. An add-in board for using in a PCI computer system comprising:

a first bus;

a subassembly task generator means, coupled to the first bus, for performing predetermined functions to accomplish a desired task;

a non-volatile storage coupled to the first bus, said non-volatile storage containing an Expansion ROM for storing code to be executed by a processor not connected to the first bus;

an on-board microprocessor coupled to the first bus, said on-board microprocessor configuring the add-in board to allow the processor not connected to the first bus access or no access to the Expansion ROM;

a PCI bus interface chip for interconnecting to the first bus and a second bus, said PCI bus interface chip including at least one control register with at least one bit to be activated by the on-board microprocessor;

a PCI Expansion ROM base address register accessible by the processor not connected to the first bus; and

a logic means being responsive to the logical state of the at least one bit for allowing a predetermined bit pattern to be outputted from the PCI Expansion ROM base address register wherein the predetermined bit pattern is an indication of no Expansion ROM to the processor not connected to the first bus.

5,608,877

RESET BASED COMPUTER BUS IDENTIFICATION METHOD AND CIRCUIT RESILIENT TO POWER TRANSIENCE

Chih-Ta Sung, Princeton, N.J.; Tzoyao Chan, Saratoga, and Jih-Hsien Soong, Cupertino, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

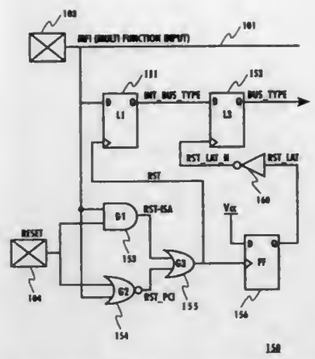
Filed Mar. 24, 1995, Ser. No. 409,243

Int. Cl.[6] G06F *13/00;13/42*

U.S. Cl. 395—284 **15 Claims**

14. A transience-resilient method of automatically detecting system bus type from a bus type identification signal received over a first input line of a host system bus and a system reset signal transmitted over a second input line of a host system, the method comprising the steps of:

receiving and latching a first signal from said first input line in response to a system reset signal and outputting a first bus identification signal;



receiving and latching the first bus identification signal response to a latching signal and outputting a second bus type identification signal; and

outputting said latching signal in response to the system reset signal, wherein said step of outputting said latching signal comprises the steps of:

latching a supply voltage signal in response to the system reset signal and outputting a low level logic signal;

outputting a low level latching signal upon power up; and

latching said low level logic signal in response to said system reset signal and outputting a high level logic signal in response to said ststem reset signal as the latching signal.

5,608,878

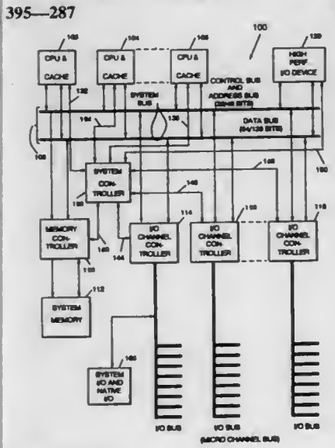
DUAL LATENCY STATUS AND COHERENCY REPORTING FOR A MULTIPROCESSING SYSTEM

Ravi K. Arimilli, Round Rock; John M. Kaiser, Cedar Park; William K. Lewchuk, and Michael S. Allen, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y., and Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 316,980

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—287 **20 Claims**



1. A computer system, comprising:

a plurality of bus devices including one or more processors;

a storage device;

a bus coupling said plurality of bus devices and said storage device;

means for sending a bus request from one of said plurality of bus devices via said bus;

first means for returning, via said bus to said one of said plurality of bus devices sending said bus request, an error or flow control signal in response to said bus request; and

second means for returning, via said bus to said one of said plurality of bus devices sending said bus request, a coherency signal separate from said error or flow control signal in response to said bus request.

5,608,879

METHOD AND APPARATUS FOR ARBITRATING DATA REQUESTS AND RESPONSES THERETO AS SEPARATE BUS TRANSACTIONS

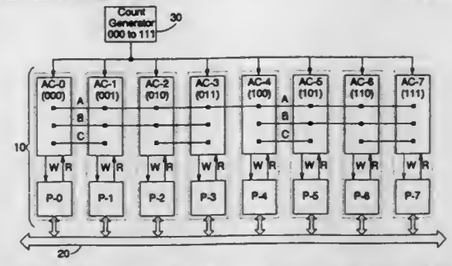
Conrad C. Cooke, Witney, United Kingdom, assignor to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Continuation of Ser. No. 125,148, Sep. 23, 1993, abandoned. This application Aug. 17, 1995, Ser. No. 516,518

Claims priority, application United Kingdom, Dec. 11, 1992, 9225924

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—290 **11 Claims**



10. A data processing apparatus in which a plurality of data buses are connected to a main bus, said apparatus comprising:

a plurality of data handling nodes connected to each one of said plurality of data buses, each data handling node comprising means for controlling a selected one of said data buses for an access period of a predetermined length, means for transmitting a data item during said access period, and means for relinquishing control of said selected data bus at the end of said access period;

a first set of arbitration means, in communication with a corresponding set of data buses, for allocating control of said corresponding set of data buses to selected ones of said plurality of data handling nodes for successive access periods of a predetermined length;

a plurality of interface nodes, each one of said interface nodes being connected to each one of said plurality of data buses and to said main bus, each interface node comprising means for storing said data item transmitted during said access period by one of said data handling nodes or by another interface node, means for controlling said main bus for another access period of said predetermined duration, means for transmitting said data item during said other access period, and means for relinquishing control of said main data bus at the end of said other access period; and

main bus arbitration means, in communication with said main bus, for allocating control of said main bus to selected ones of said interface nodes for successive access periods of a predetermined length.

5,608,880

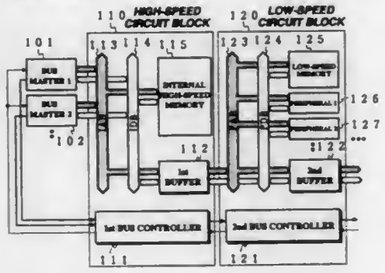
Patent Not Issued For This Number

5,608,881

MICROCOMPUTER SYSTEM FOR ACCESSING HIERARCHICAL BUSES

Shigeki Masumura, Kodaira; Hideo Nakamura, Tokyo; Kouki Noguchi, Kokubunji; Shumpei Kawasaki, Kodaira; Kaoru Fukada, Koganei, and Yasushi Akao, Kokubunji, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corporation, both of Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 143,142
Claims priority, application Japan, Nov. 6, 1992, 4-296779
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—306 9 Claims



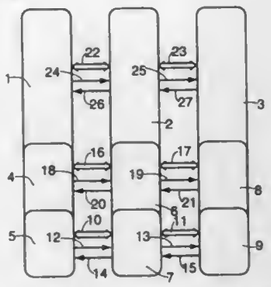
1. A microcomputer system comprising:
a plurality of bus masters;
a first address bus to which an address from a bus master is transferred;
a first data bus to which data from said bus master is transferred;
a high-speed memory coupled with the first address bus and the first data bus;
a first bus buffer coupled with the first address bus and the first data bus;
a second address bus coupled via the first bus buffer to the first address bus;
a second data bus coupled via the first bus buffer to the first data bus;
a low-speed device coupled with the second address bus and the second data bus; and
a bus controller for granting bus ownership of the first address bus and said first data bus in response to an access request issued from said bus master;
wherein said bus controller controls execution of pipeline operation on said first address bus and said first data bus with respect to said access request, and said pipeline operation includes a bus arbitration stage, an address output stage and a data read/write stage; and
said bus controller controls said bus master and said first bus buffer in such a manner that when an access object of said access request from said bus master is said low-speed device, said bus ownership of said first address bus, said first data bus, said second address bus and said second data bus is granted to said bus master to suspend subsequent pipeline operation on said first address bus and said first data bus, and said first bus buffer holds said address of said first address bus for a predetermined cycle, thereby transferring said address to said second address bus.

5,608,882

ARRANGEMENT FOR TRANSMITTING DATA OVER A BUS

Michael Abert, Au; Siegfried Block, Kandel; Johannes Bozenhardt; Franz Leigsnering, both of Ettlingen; Werner Pfatteicher, Pfinztal, and Franz-Clemens Schewe, Karlsruhe, all of Germany, assignors to Siemens Aktiengesellschaft, Munch, Germany

PCT No. PCT/DE93/01098, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO94/12936, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 18, 1993, Ser. No. 436,403
Claims priority, application Germany, Nov. 24, 1992, 42 39 461.9
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—307 8 Claims



1. An arrangement for transmitting data over a bus said arrangement having a central unit which initiates data transmission and one or more peripheral units linked to each other by the bus, the units and the bus having first control lines for a first transmission request signal of the central unit and for a first transmission acknowledgement signal of a peripheral unit for parallel transmission of a data word of a first data width, at least one unit and/or the bus having second control lines for parallel transmission of a data word of a second data width, which carry a second transmission request signal in the peripheral unit and a second transmission acknowledgement signal in the central unit, such that the second transmission request signal in the peripheral unit and the second transmission acknowledgement signal in the central unit assume an active state only if all devices involved in the transmission have second control lines.

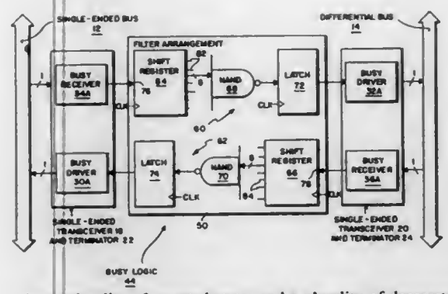
5,608,883

ADAPTER FOR INTERCONNECTING SINGLE-ENDED AND DIFFERENTIAL SCSI BUSES TO PREVENT 'BUSY' OR 'WIRED-OR' GLITCHES FROM BEING PASSED FROM ONE BUS TO THE OTHER

Robert R. Kando, Woburn, and Paul L. Godin, Bedford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 1, 1993, Ser. No. 12,484
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 6 Claims

1. A bus adapter for interconnecting a first bus and a second bus, said bus adapter preventing a 'wired-or' glitch from being passed from said first bus to said second bus, said bus adapter comprising:
A) first transceiver means for receiving a plurality of first signals from said first bus;
B) second transceiver means for transmitting a plurality of second signals on said second bus;
C) filter means coupled with said first transceiver means for receiving said first signals, said received first signals including a plurality of asserted states and a plurality of deasserted states, wherein said filter means selectively suppresses each said deasserted state having a duration under a predetermined limit, thereby producing a plurality of filtered received signals; and
D) supplying means coupled with said filter means and said second transceiver means for supplying said filtered received signals to said second transceiver means for transmission on said second bus as said second signals, whereby said bus adapter prevents transfer of a wired-or glitch in said received first signal from said first bus to said second bus.

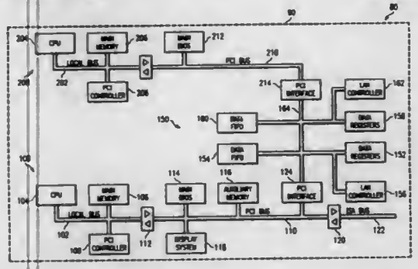


5,608,884

COMMONLY HOUSED MULTIPLE PROCESSOR TYPE COMPUTING SYSTEM AND METHOD OF MANUFACTURING THE SAME

Bruce Potter, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed May 17, 1995, Ser. No. 443,274
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 8 Claims



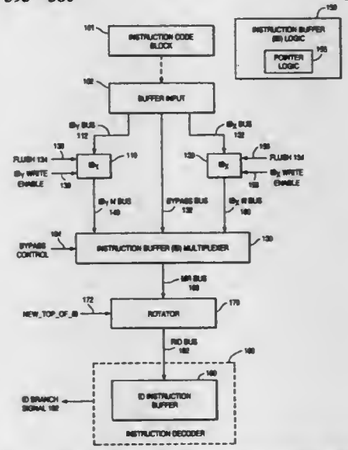
1. A multiple processor computing system, comprising:
a first PCI bus;
a first processor subsystem coupled to said first PCI bus;
a second PCI bus;
a second processor subsystem coupled to said second PCI bus;
an interface device coupled to said first PCI bus and said second PCI bus, said interface device including:
a first memory device, said first memory device holding address, data and control signals being transferred from said first processor subsystem to said second processor subsystem;
a second memory device, said second memory device holding address, data and control signals being transferred from said second processor subsystem to said first processor subsystem;
a LAN controller, said LAN controller controlling bi-directional exchanges of address, data and control signals between said first processor subsystem and said second processor subsystem via said first PCI bus, said interface device and said second PCI bus by arranging the transfer of address, data and control signals placed in said first memory device by said first processor subsystem to said second processor subsystem and the transfer of address, data and control signals placed in said second memory device by said second processor subsystem to said first processor subsystem.

5,608,885

METHOD FOR HANDLING INSTRUCTIONS FROM A BRANCH PRIOR TO INSTRUCTION DECODING IN A COMPUTER WHICH EXECUTES VARIABLE-LENGTH INSTRUCTIONS

Ashwani K. Gupta, Beaverton; Glenn J. Hinton, and Chan W. Lee, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 205,022
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—380 3 Claims



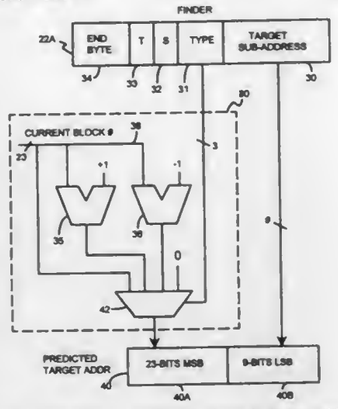
1. In a computer which executes variable-length instructions, and includes first and second buffers for storage of instructions provided from a memory, a bypass bus coupled to the memory that bypasses the first and second instruction buffers, a multiplexer configured to select between the first and second instruction buffers and the bypass bus, a rotator coupled to the multiplexer, an instruction decoder coupled to the rotator, and instruction buffer logic for control thereof, a method of handling instructions from a branch comprising the steps of:
(a) flushing instructions of an initial instruction stream from the first and second instruction buffers responsive to a flush signal generated by the instruction buffer logic;
(b) loading the first instruction buffer with a first block of instructions of a target instruction stream specified by the branch;
(c) providing instruction bytes to the rotator via the bypass bus;
(d) initializing a pointer generated by the instruction buffer logic to point to a byte location in the first block of instructions associated with a first valid instruction of the target instruction stream;
(e) loading a next block of instructions of the target instruction stream into the second instruction buffer;
(f) alternately selecting by the multiplexer instructions of the target instruction stream from the first and second instruction buffers for input to the rotator;
(g) rotating by the rotator the instructions provided by the multiplexer in accordance with the pointer to align the instructions on boundaries.

5,608,886

BLOCK-BASED BRANCH PREDICTION USING A TARGET FINDER ARRAY STORING TARGET SUB-ADDRESSES

James S. Blomgren, San Jose; Earl T. Cohen, Fremont, and Brian R. Baird, Pleasanton, all of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Filed Aug. 31, 1994, Ser. No. 298,778
Int. Cl.[6] G06F *9/30;9/38*
U.S. Cl. 395—586 **21 Claims**



1. A target finder for predicting a branch target address for a pipelined processor, the branch target address being a target for a branch instruction, an address of the branch instruction being within a current block, the current block having a predetermined blocksize and starting and ending at a multiple of the predetermined blocksize, the current block being identified by a current block number, the target finder comprising:

a finder entry which comprises:

a predicted target sub-address, the predicted target sub-address being an address within a target block, the target block having the predetermined blocksize and starting and ending at a multiple of the predetermined blocksize;

a block encoding indicating if the target block is the current block, a previous block, or a next block, the previous block having the predetermined blocksize and starting and ending at a multiple of the predetermined blocksize, the next block having the predetermined blocksize and starting and ending at a multiple of the predetermined blocksize; and

a target generator, receiving the finder entry, for generating a predicted target address from the block encoding and the predicted target sub-address, the predicted target sub-address being an address within the target block encoded by the block encoding,

whereby the predicted target address is generated from the predicted target sub-address and the block encoding stored in the finder entry.

5,608,887

METHOD OF PROCESSING DATA STRINGS

Robert M. Dinkjian, Woodstock; Lisa C. Helier, Saugerties; Steven R. Kordus, Kingston; Kenneth A. Lauricella, Hurley; Thomas W. Seigendall, Saugerties, all of N.Y.; Robert A. Skaggs, Manassas, Va., and Nelson S. Xu Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 3,369, Jan. 12, 1993, Pat. No. 5,465,374.
This application Jun. 2, 1995, Ser. No. 460,347
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—375 **3 Claims**

1. A method of processing data strings in a data processor comprising a memory having a plurality of multi-byte data word locations with each data word location having a predefined memory address and comprising a plurality of byte locations, the method comprising the steps of:

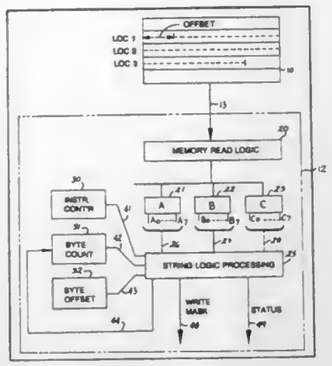
storing a data string in the memory beginning at a starting data word location and storing a first byte of the data string at a predefined byte location in the starting data word location;

providing an offset value defining the predefined location of the first byte of the data string in the starting data word location;

generating a byte count mask defining position in the data string of a byte being processed;

reading a data word containing at least one byte of the data string from the memory into a data register;

combining the offset value together with the byte count mask to define a position of a first byte and of a last byte of the string in the memory.

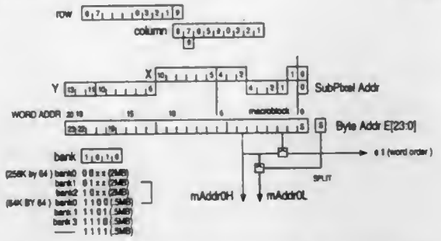


5,608,888

METHOD AND APPARATUS FOR MAPPING DATA OF A 2-DIMENSIONAL SPACE FROM A LINEARLY ADDRESSED MEMORY SYSTEM

Stephen C. Purcell, Mountain View; David E. Galbi, Santa Clara; Frank H. Liao, Sunnyvale, and Yvonne C. Tse, Fremont, all of Calif., assignors to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of Ser. No. 46,474, Apr. 13, 1993, Pat. No. 5,379,356, which is a continuation of Ser. No. 669,818, Mar. 15, 1991, abandoned. This application Aug. 26, 1994, Ser. No. 296,943
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—412 **8 Claims**



1. A method for mapping a 2-dimensional space represented by x and y vectors (x, y) into a linear address space of a paged memory system, said paged memory system being organized into words, each word having individually addressable first and second portions, said method comprising the steps of:

designating a bit yu in the binary representation of vector y;

designating a bit xe in the binary representation of vector x; and

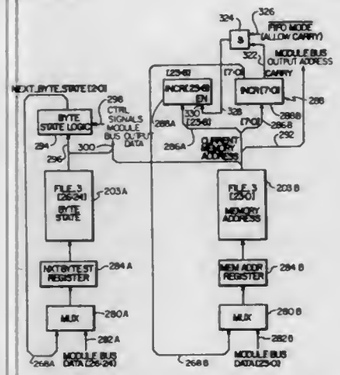
mapping into (i) memory addresses of said first portion vectors having the values of xe and yu being respectively **1** and **0**, and vectors having the values of xe and yu being **0** and **1**, and (ii) memory addresses of said second portion vectors having the values of xe and yu being both **1**, and vectors having the values of xe and yu both **0**.

5,608,889

DNA CONTROLLER WITH WRAP-AROUND BUFFER MODE

Larry M. Werlinger, Burnsville; James A. Dahlberg, Eagan, and Kermit E. Frye, Bloomington, all of Minn., assignors to Ceridian Corporation, Minneapolis, Minn.

Filed Aug. 17, 1994, Ser. No. 292,339
Int. Cl.[6] G06F *11/00;* **G11C** *7/00*
U.S. Cl. 395—421.07 **22 Claims**



1. A dual mode direct memory access (DMA) controller for controlling communication between a module bus, which communicates with a processor and a main memory, and an input/output (I/O) bus, which communicates with an external device, the DMA controller comprising:

a mode controller subsystem for providing a mode bit having a first state and a second state;

a data controller subsystem for receiving and selectively storing I/O bus input data from the I/O bus to provide module bus output data to the module bus, and for receiving and selectively storing module bus input data from the module bus to provide I/O bus output data to the I/O bus;

a device address controller subsystem for receiving and selectively storing a device address from the module bus to provide an I/O device output address to the I/O bus, the device address representing the external device;

a memory addressing subsystem for storing and providing a memory address to the module bus representative of a storage location in the main memory, the memory addressing subsystem receiving module bus input data to form an initial memory address, the memory addressing subsystem including

an incrementer for repeatedly incrementing by at least one count the memory address from the initial memory address through a selected range of memory addresses representing a grouping of storage locations, the incrementing means being responsive to the mode bit being in a first state to increment an upper multiple bit portion from an overflow carry from a lower multiple bit portion, and

blocking means for blocking the overflow carry from the lower multiple bit portion in response to the mode bit being in the second state to restart the memory address at the initial memory address after the incrementer has incremented the memory address a selected number of addresses above the initial memory address to cause the memory address to wrap around at the initial memory address to thereby form a wrap around buffer in the main memory;

a transfer counter for calculating and storing a transfer count representing the number of selected data groupings of the I/O bus output data written into the main memory from the module bus; and

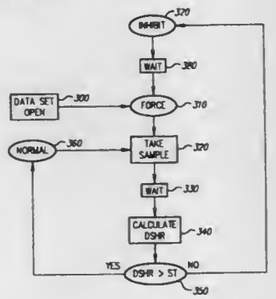
a detector for detecting when the transfer count stored in the transfer count storage means has reached a selected value to indicate that a normal DMA operation of storing module bus output data to main memory is complete in response to the mode bit being in the first state, and for detecting when the wrap-around buffer in the main memory is full based on transfer count signalling an error condition in response to the mode bit being in the second state.

5,608,890

DATA SET LEVEL CACHE OPTIMIZATION

Jeffrey A. Berger, San Jose, and Stanley C. Kurtz, Watsonville, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 908,698, Jul. 2, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 417,631
Int. Cl.[6] G06F *12/08;12/00*
U.S. Cl. 395—440 **8 Claims**



FLOW OF CONTROL OF CACHE STATES

1. A method for self tuning a least recently used (LRU) disciplined cache in the data path between a storage subsystem and a processor, said processor generating input/output accesses (I/O) referencing cacheable units of data stored in said storage subsystem, comprising the steps by said storage subsystem of:

(a) calculating a threshold value as a function of I/O references generated by said processor to all cacheable units of data;

(b) responsive to an initial processor reference to a cacheable unit of data allowing said unit of data access to cache for M I/O references, and determining a hit ratio of said unit of data;

(c) periodically calculating a hit ratio (hits/(hits+misses)) of the unit of data in step (b) and allowing said unit of data access to cache so long as its hit ratio is greater than the threshold value; and

(d) upon a condition that the hit ratio of a unit of data in step (c) becomes less than the threshold value, inhibiting use of the cache by said unit of data for the following N I/O operations after which said unit of data becomes eligible for caching, where the magnitude of M is very much less than the magnitude of N.

5,608,891

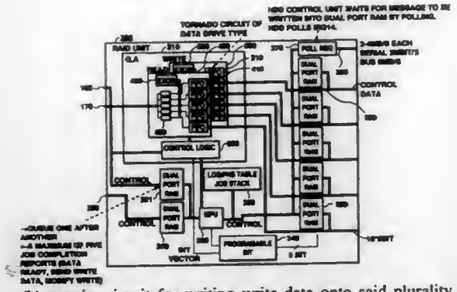
RECORDING SYSTEM HAVING A REDUNDANT ARRAY OF STORAGE DEVICES AND HAVING READ AND WRITE CIRCUITS WITH MEMORY BUFFERS

Masahiro Mizuno; Shiro Ogura, and Kazuhiko Ito, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 132,170, Oct. 5, 1993, abandoned. This application Apr. 19, 1996, Ser. No. 634,140
Claims priority, application Japan, Oct. 6, 1992, 4-267364
Int. Cl.[6] G06F *11/10*
U.S. Cl. 395—441 **32 Claims**

1. An array type recording system comprising:

(a) a plurality of recording media for recording data;



(b) a write circuit for writing write data onto said plurality of recording media, the write circuit including:

a write redundancy code generator, and

a plurality of write buffers coupled to the write redundancy code generator, selectively receiving the write data to be written onto the plurality of recording media, the write redundancy code generator including a write redundancy buffer to store the write data and a write redundancy circuit, coupled to the write redundancy buffer, to provide a write redundancy code based on the write data stored in the write redundancy buffer and an intermediate code;

(c) a read circuit for reading read data from said plurality of recording media, the read circuit including a read redundancy code generator and a plurality of read buffers coupled to the read redundancy code generator, each recording medium being coupled to a respective one of the plurality of read buffers to receive the read data and a respective one of the plurality of write buffers to write the write data, wherein the read redundancy code generator is coupled to the write redundancy code generator, to provide the intermediate code based on the read data and a read redundancy code read from the plurality of read buffers when data is to be written; and

(d) a controller that selects a read buffer and selects a write buffer for storing the read redundancy code and the write redundancy code, respectively.

5,608,892

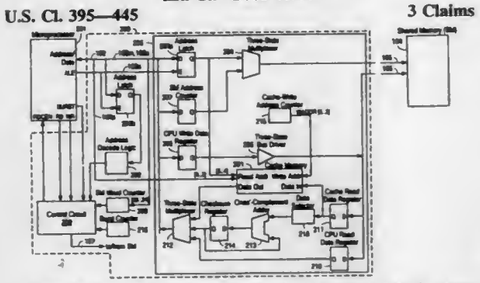
ACTIVE CACHE FOR A MICROPROCESSOR

John F. Wakerly, Mountain View, Calif., assignor to Alantec Corporation, San Jose, Calif.

Filed Jun. 9, 1995, Ser. No. 489,411

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—445 **3 Claims**



1. An active cache for use in a microprocessor based system comprising:

a) memory bus means for accessing a random access memory,

b) request-reception means for receiving a memory request, at least a portion of an address of said random access memory and data from a microprocessor,

c) memory control means for performing read operations independent of said microprocessor on said random access memory, coupled to said memory bus means and said request-reception means,

c) address decode means coupled to said request-reception means, said address decode means determining if said memory request is to enable said memory control means,

d) means for enabling said memory control means if said address decode means indicates an active cache request and disabling said memory control means otherwise, and

e) storage means for caching memory data of said random access memory for access by said microprocessor, wherein cacheability is enhanced.

5,608,893

METHOD FOR MAINTAINING DATA COHERENCY USING THREAD ACTIVITY SUMMARIES IN A MULTICOMPUTER SYSTEM

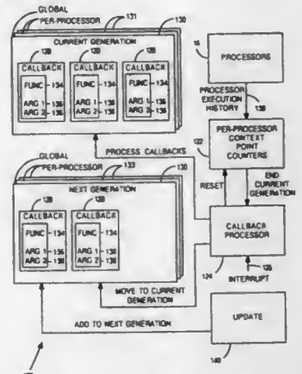
John D. Slingwine, and Paul E. McKenney, both of Beaverton, Oreg., assignors to Sequent Computer Systems, Inc., Beaverton, Oreg.

Division of Ser. No. 94,629, Jul. 19, 1993, Pat. No. 5,442,758.

This application Jun. 7, 1995, Ser. No. 480,627

Int. Cl.[6] G06F *12/12;13/00*

U.S. Cl. 395—468 **13 Claims**



1. A method for maintaining data coherency of a shared data structure having first and second copies thereof stored in respective first and second computers, comprising the steps of:

storing in the first and second computers respective first and second mutual-exclusion mechanisms each having a thread activity summary and an update processor that processes data structure updates in response to the thread activity summary;

updating the first copy of the data structure with the first mutual-exclusion mechanism, thereby rendering the first and second copies of the data structure incoherent;

transferring the updated first copy of the data structure no the second computer; and

using the second mutual-exclusion mechanism to replace the second copy of the data structure with the updated first copy of the data structure, thereby restoring the coherency of the first and second copies of the data structure.

5,608,894

EXECUTION CONTROL SYSTEM

Kumiko Kawakami; Yasuko Akagawa, and Masumi Takahashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 19, 1994, Ser. No. 325,056

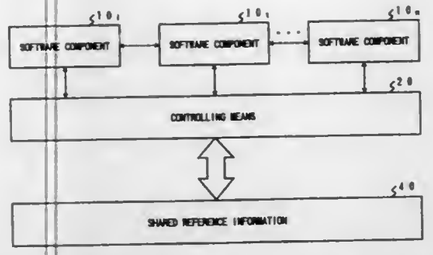
Claims priority, application Japan, Mar. 18, 1994, 6-049504

Int. Cl.[6] G06F *7/10*

U.S. Cl. 395—500 **32 Claims**

1. An execution control system which controls execution of software components and message exchanging between software components for software components issuing execution request information, comprising:

shared reference information containing procedure information to be referred to by said software components when any of said software components issues execution request information; and



control means for referring to said shared reference information when execution request information is issued by any of said software components, for combining necessary ones of said software components in response to the issued execution request information, and for controlling execution of the combined necessary ones of said software components.

5,608,895

METHOD FOR PROVIDING MOUSE FUNCTIONALITY USING EITHER AN INTERNAL OR EXTERNAL MOUSE INPUT DEVICE

Kwanho Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

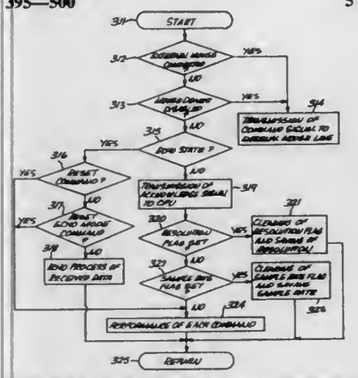
Continuation of Ser. No. 991,096, Dec. 15, 1992, abandoned.

This application Nov. 30, 1994, Ser. No. 346,843

Claims priority, application Rep. of Korea, Jun. 13, 1992, 92-10300

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **5 Claims**



1. A method for providing mouse emulation in a computer system having a CPU and a mouse driver, said system capable of using an external mouse and a keyboard emulating a mouse based on inputs from keyboard keys, said keyboard having a controller, comprising the steps of:

detecting whether said external mouse is connected to said commuter system upon a command for mouse input;

detecting whether said mouse driver is enabled or disabled;

transmitting command signals to said external mouse when said external mouse is connected to the system or said mouse driver is disabled;

detecting whether said mouse driver is in an echo state echoing through the keyboard controller all data transmitted from the CPU;

detecting whether received data is a reset control command when said mouse driver is in said echo state;

performing said reset control command when said received data is said reset control command and said mouse driver is in said echo state;

echoing said received data when said mouse driver is in said echo state and said received data is not said reset control command;

transmitting an acknowledgement signal to a central processing unit (CPU) when said mouse driver is not in said echo state;

determining, by the keyboard controller, whether a control flag is set when said mouse driver is not in said echo state;

performing an operation indicated by said control flag when said control flag is set; and

performing a mouse command, emulating the functionally of said external mouse, when said mouse driver is not in said echo state and said control flag is not set.

5,608,896

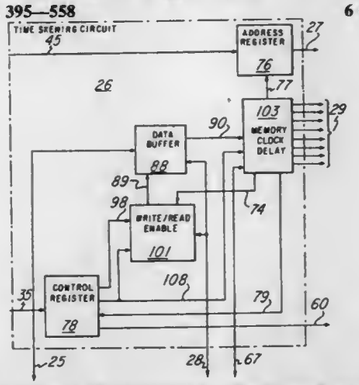
TIME SKEWING ARRANGEMENT FOR OPERATING MEMORY DEVICES IN SYNCHRONISM WITH A DATA PROCESSOR

Wilbur C. Vogley, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 891,483, May 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,032

Int. Cl.[6] G06F *1/10;12/00*

U.S. Cl. 395—558 **6 Claims**



1. A circuit for a data processing system, the circuit comprising:

an address register arranged for receiving and storing synchronous random access memory address information;

a control signal register arranged for receiving and storing synchronous random access memory control signals;

a data buffer register arranged for receiving and storing data bits during a memory read operation; and

a memory clock delay circuit, responsive to a system clock signal and memory clock delay data, for producing a plurality of time skewed memory clock signals, each memory clock signal being delayed a different increment of time so that a plurality of synchronous random access memories each can operate at a different time in response to one of the memory clock signals to receive the address information and the control signals for reading out data bits in coordination with the system clock signal.

5,608,897

PROGRAMMABLE LINEAR FEEDBACK SHIFT REGISTER TIMEOUT MECHANISM

Margaret Claffey-Cohen, Juniper; Mark G. Noll, Lake Worth; Jose A. Olive, Miami; Roberto V. Perez, Palm Beach, and James P. Ward, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

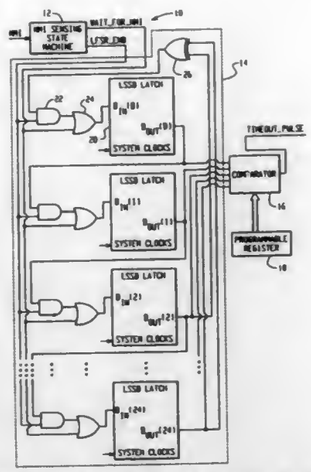
Continuation of Ser. No. 223,188, Apr. 5, 1994, abandoned.

This application Jun. 21, 1996, Ser. No. 667,767

Int. Cl.[6] G06F *1/14*

U.S. Cl. 395—557 **17 Claims**

1. A timeout mechanism for a computer system in which an interrupt signal is generated to temporarily suspend current operation of a microprocessor in the system, the timeout mechanism comprising:



an interrupt sensing mechanism for sensing the presence or absence of an interrupt signal and outputting a single detection signal if an interrupt signal is present;

a linear feedback shift register comprising a series of latches serially connected to each other, said linear feedback shift register having an input for receiving said detection signal and being responsive to said detection signal to (i) incrementally count sequentially solely in response to the presence of said single detection signal to provide a distinct binary vector array at the outputs of said latches for each count in the sequence, said distinct binary vector array representative of the duration of said detection signal, and (ii) reset to a particular binary vector array in the absence of said detection signal;

a system clock for clocking the operation of said linear feedback shift register to enable the incremental counting sequence;

a memory device for storing a predetermined binary vector array; and

a comparing mechanism for (i) comparing said distinct binary vector array at the outputs of said latches with said predetermined binary vector array and (ii) outputting a timeout command if said distinct binary vector array matches said predetermined binary vector array.

5,608,898

DEVELOPMENT SYSTEM WITH METHODS FOR MAINTAINING DATA INTEGRITY OF INFORMATION STORED AS A DATA RECORD IN A DATABASE WITH A COPY OF THE INFORMATION DISPLAYED ON A SCREEN DEVICE

William M. Turpin, Santa Cruz; Kevin L. Brown, Scotts Valley, and Steven W. Bogrett, Campbell, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 606,537, Oct. 31, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,302

Int. Cl.[6] G06F *17/30*

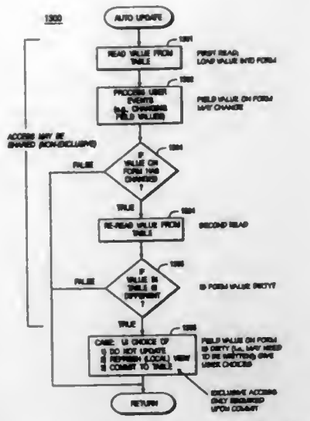
U.S. Cl. 395—619 **20 Claims**

1. In a computer system, a computer-implemented method for maintaining data integrity of information stored as a data record in a database table with information displayed on a screen device without continuous, exclusive locking of a shared data record, the method comprising:

(a) reading at least one field value from said data record of said database table, said reading being performed by the system with shared access to said data record;

(b) displaying a form on the screen device said form displaying at least one field value read from the database;

(c) modifying said at least one field value as it is displayed on the screen device;



(d) in response to step (c), re-reading said at least one field value from said database table;

(e) determining whether said information stored in the database table differs from said information displayed on said screen device by comparing said at least one field value being displayed with said re-read at least one field value; and

(f) if said system determines at step (e) that said information stored in the database table differs from said information displayed on said screen device, performing, in response to user input, a selected one of:

(i) refreshing said information displayed on said screen device with said at least one field value re-read at step (d), and

(ii) updating said information stored in said database table with said information displayed on said screen device.

5,608,899

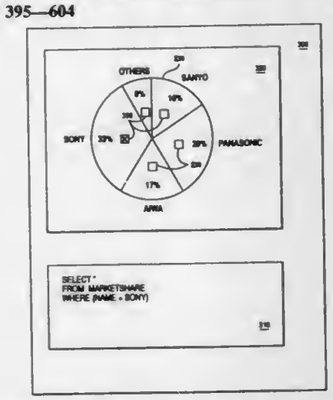
METHOD AND APPARATUS FOR SEARCHING A DATABASE BY INTERACTIVELY MODIFYING A DATABASE QUERY

Shih-Gong Li, and Bruce A. Tate, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1993, Ser. No. 72,618

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—604 **20 Claims**



1. An apparatus for modifying a database query comprising:

means for graphically displaying, in at least two dimensions, data obtained from a database by the database query in a graph window and for separately displaying said database query in a query window;

means for selecting at least one portion of the graphically displayed data in said graph window; and

means for modifying the database query with a WHERE clause according to the selected portion of the graphically displayed data, said database query modifying means including means for reflecting the modification to the database query in the query window and means for modifying the graphically displayed data using the modified database query.

5,608,900

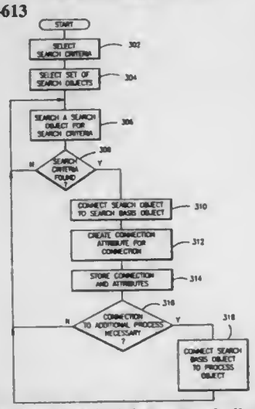
GENERATION AND STORAGE OF CONNECTIONS BETWEEN OBJECTS IN A COMPUTER NETWORK

Michael J. Dockter, Hollister; Joel F. Farber; Jeffrey D. Gordon, both of San Jose, all of Calif.; Kevin D. Seppi, Austin, Tex., and James C. Kleeweln, San Jose, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 21, 1994, Ser. No. 262,999

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **17 Claims**



1. A computer-based method for automatically generating and storing connections between objects in advance of queries for them, comprising the steps of:

detecting free processor cycles in a computer system;

invoking, under program control, a process for execution on the computer system to use the free cycles to search for objects which are related to one another;

upon the locating of objects which are related to one another, creating under program control a globally unique identified connection and attribute between the objects;

storing, in computer memory, the globally unique identified connection under program control in logical association with the related objects, and

wherein for a given search criteria one or more connections and attributes thereof are iteratively created between every object and every other available related object and stored within computer memory to be available to future queries.

5,608,901

METHOD AND SYSTEM FOR IMPROVING THE CONTIGUITY OF SECTORS OF A FILE

James G. Letwin, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

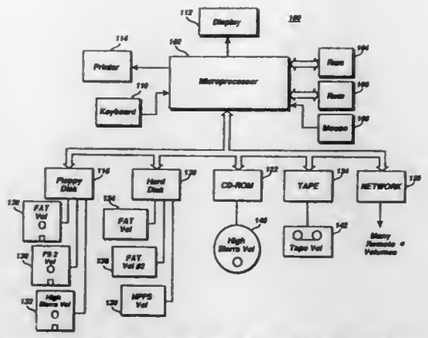
Division of Ser. No. 400,533, Aug. 29, 1989, Pat. No. 5,371,885. This application Sep. 1, 1994, Ser. No. 299,542

Int. Cl.[6] G06F *17/30;12/00*

U.S. Cl. 395—621 **3 Claims**

1. A method in a computer system of reading information from a storage device, the storage device having a plurality of sectors, the method comprising the steps of:

allocating a first run of logically contiguous sectors to a file, wherein one of the logically contiguous sectors is mapped to an alternate sector;



designating a sector within the first run from which to read information;

determining whether the designated sector is mapped to an alternate sector;

when the designated sector is not mapped to the alternate sector, retrieving information from the designated sector;

when the designated sector is mapped to the alternate sector, retrieving information from the alternate sector;

receiving a request to improve the contiguity of the sectors in the file;

in response to the request,

allocating a second run of logically contiguous sectors for the file; and

for each sector of the first run,

when the sector of the first run is not mapped to an alternate sector, copying the data from the sector of the first run to a sector of the second run; and

when a sector of the first run is mapped to an alternate sector, copying the data from the alternate sector to a sector of the second run and adding the sector of the first run to a list of sectors with errors so that the sectors of the file are stored in the logically contiguous sectors of the second run; and

reallocating a sector of the first run of logically contiguous sectors to another file.

5,608,902

FILE MANAGEMENT SYSTEM FOR MEMORY CARD

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1994, Ser. No. 352,581

Claims priority, application Japan, Dec. 10, 1993, 5-310172

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—616 **18 Claims**

FILE DISCRIMINATION ID NO.

ID 0	ID 1	ID 2	
FINF 00	FINF 10	FINF 20	LEVEL 0
STS 00	STS 10	STS 20	
FINF 01	FINF 11	FINF 21	LEVEL 1
STS 01	STS 11	STS 21	
FINF 02	FINF 12	FINF 22	LEVEL 2
STS 02	STS 12	STS 22	

1. A file management system wherein a memory is divided into a plurality of regions allotted to a plurality of files, respectively, and the files are accessed based on external commands, the file management system comprising:

a directory for storing file definition information including file names, file location information and size information, and file discrimination information corresponding to the file definition information;

a file status storage having a plurality of storage areas for storing file discrimination information of current files;

referring means for, when a file selection external command including a command code, a file discrimination ID number and a file name is received, referring to the directory based on the file name contained in the file selection external command, for adding the file discrimination ID number of file discrimination information corresponding to the file name, and for storing the file discrimination information in the storage areas of the file status storage; and

detecting means for, when a file access external command including a command code and a file discrimination ID number is received, detecting file discrimination information having the file discrimination ID number contained in the file access external command from the file status storage; and

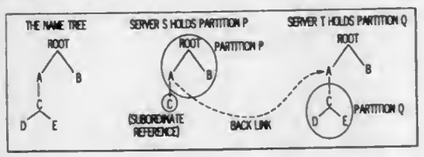
means for referring to the directory based on the file discrimination information detected by the detecting means, and for accessing a file corresponding to the detected file discrimination information.

5,608,903

METHOD AND APPARATUS FOR MOVING SUBTREES IN A DISTRIBUTED NETWORK DIRECTORY

Ranjan Prasad, and Dale R. Olds, both of Sandy, Utah, assignors to Novell, Inc., Orem, Utah

Filed Dec. 15, 1994, Ser. No. 357,466
Int. Cl.[6] G06F *17/30;12/00*
U.S. Cl. 395—610 **21 Claims**



1. A method of moving a partition in a distributed directory operating over a plurality of servers, said directory having a plurality of partitions with one or more objects in each of said partitions, said one or more objects including a root object, at least one of said plurality of servers having a replica of one or more of said plurality of partitions and having a hierarchy of superior and subordinate objects in which at least of one of the root objects is subordinate to a superior object, said method comprising the steps of:

(a) identifying a target partition having a root object that is subordinate to a source object;

(b) identifying a destination object within a destination partition;

(c) requesting a move of the target partition from the source object to the destination object;

(d) identifying one or more relevant servers that hold one or more of:

(i) a replica of the target partition;

(ii) a replica of the destination partition; or

(iii) a reference to an object in the target partition; and

(e) moving the target partition using at least one of the steps of:

(i) changing in each relevant server the subordination of the root object in the target partition from the source object to the destination object if such relevant server has at least one of the following:

(A) a replica of the target partition and a replica of the destination partition;

(B) a replica of the target partition and a reference to the root object of the destination partition;

(C) a replica of the target partition and neither a replica of the destination partition nor a reference to the root object of the destination partition; or

(D) a reference to the root object of the target partition and a reference to the root object of the destination partition;

(ii) creating in each relevant server a reference to the root object of the target partition if such relevant server has at least one of the following:

(A) a reference to the root object of the target partition and a replica of the destination partition; or

(B) neither a replica of the target partition nor a reference to the root object of the target partition and a replica of the destination partition; or

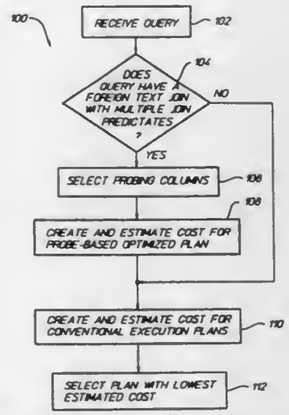
(iii) creating in each relevant server a reference to the destination object if such relevant server has a reference to the root object of the target partition and neither a replica of the destination partition nor a reference to the root object of the destination partition.

5,608,904

METHOD AND APPARATUS FOR PROCESSING AND OPTIMIZING QUERIES HAVING JOINS BETWEEN STRUCTURED DATA AND TEXT DATA

Surajit Chaudhuri, Stanford; Umeshwar Dayal, Saratoga, and Tak W. Yan, Stanford, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 13, 1995, Ser. No. 387,527
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 **9 Claims**



1. A method for executing a conjunctive query that includes joins of structured data from a structured database system and external textual data from a text retrieval system, the joins having multiple join predicates, comprising:

(a) selecting at least one probing column from the multiple join predicates; and

(b) reducing execution time of the conjunctive query by probing the external textual database to eliminate redundant queries to the external textual database which produce no matching documents.

5,608,905

DOS AND MACINTOSH PREFORMATTED COMPUTER STORAGE MEDIA

Mark R. Weinstein, San Diego, Calif., assignor to Software Architects, Inc., Bothell, Wash.

Filed Apr. 25, 1995, Ser. No. 428,885
Int. Cl.[6] G11B *5/09;* **G06F** *15/14;15/40*
U.S. Cl. 395—621 **10 Claims**

1. An initialized computer memory storage medium, comprising:

(a) a readable and writable digital memory medium, organized into blocks having a sequence with a beginning and an end,

1.44MB DOS AND MACINTOSH STORAGE MEDIUM

SEQUENCE BLOCK NUMBER(S)	DESCRIPTION OF CONTENTS	
1	DOS BIOS Parameter Block (BPB)	•26
2	DOS File Allocation Table (FAT)	•27
3	Copy of File Allocation Table	•28
3	MacIntosh Master Directory Block (MDB)	•29
4-10	DOS Root Directory	•30
4	MacIntosh Volume Bitmap (VBM)	•31
9	Start of usable space for MacIntosh	•32
11	Start of usable space for DOS	•33
2839-3958	MacIntosh Extents Overflow File	•34
3957-3978	MacIntosh Catalog file	•35
3979	Backup Master Directory Block	•36

(b) the first block containing a DOS BIOS Parameter Block in which the twenty-third byte contains a specification of the number of sectors in each FAT of one,

(c) the second block containing a DOS File Allocation Table, wherein said storage medium can be accessed by a DOS file system, and

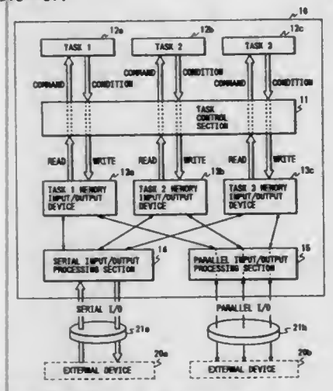
(d) the third block containing a MACINTOSH™ Master Directory Block, wherein said storage medium can be accessed by a MACINTOSH™ file system.

5,608,906

MULTIPLE-TASK CONTROLLER HAVING A PLURALITY OF TASK MEMORY INPUT/OUTPUT DEVICES, INPUT/OUTPUT PROCESSING DEVICE, AND A PLURALITY OF TASKS CONTROLLED BY EXTERNAL DEVICES

Hiroshi Tonouchi, and Masashi Furukawa, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Jun. 23, 1994, Ser. No. 264,376
Claims priority, application Japan, Jun. 24, 1993, 5-175882
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—677 **4 Claims**



1. A multiple-task controller comprising:

a plurality of tasks controlled by external devices;

a plurality of task memory input/output devices provided respectively for said tasks;

input/output processing device for processing signals transmitted between said external devices and said input/output processing device, and for performing writing and reading operations between said input/output processing device and said task memory input/output devices; and

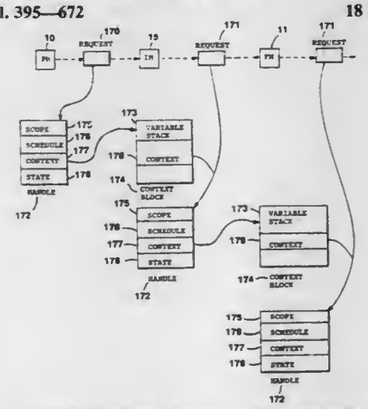
a task control device for applying commands written in said task memory input/output devices respectively to said tasks, and for applying the states of process of said tasks respectively to said task memory input/output devices.

5,608,907

EXTENSIBLE ENTITY MANAGEMENT SYSTEM INCLUDING AN INFORMATION MANAGER FOR OBTAINING, STORING AND RETRIEVING INFORMATION FROM ENTITIES

Leonard G. Fehskens, Westboro; Colin Strutt, Westford; Arundahati G. Sankar, Andover, and Steven K. Wong, Chelmsford, all of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 159,858, Nov. 30, 1993, abandoned, which is a division of Ser. No. 402,391, Sep. 7, 1989, Pat. No. 5,345,587, which is a continuation-in-part of Ser. No. 244,114, Sep. 13, 1988, Ser. No. 244,495, Sep. 13, 1988, abandoned, Ser. No. 244,503, Sep. 13, 1988, Ser. No. 244,506, Sep. 13, 1988, Ser. No. 244,691, Sep. 13, 1988, abandoned, Ser. No. 244,730, Sep. 13, 1988, Ser. No. 244,742, Sep. 13, 1988, abandoned, Ser. No. 244,834, Sep. 13, 1988, abandoned, Ser. No. 244,845, Sep. 13, 1988, Ser. No. 244,850, Sep. 13, 1988, abandoned, Ser. No. 244,851, Sep. 13, 1988, abandoned, and Ser. No. 244,919, Sep. 13, 1988, abandoned. This application Apr. 4, 1995, Ser. No. 416,928
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—672 **18 Claims**



1. A system for retrieving management information about an assemblage of entities in response to commands specifying a time schedule with at least one desired time range, said time range possibly including past, present and future times, wherein said entities interface within said assemblage for control of primary information handling functions and said entities further interface with said system to permit the accessing of said management information, said system comprising:

storage containing records relating to said management information, each record including an indication of an associated time, and

an information manager for retrieving management information contained in said records or accessing management information from said entities in response to a command specifying a time schedule with a time range, which performs scheduling routines issuing a succession of subsidiary accesses or retrievals corresponding to said command at multiple times according to said time schedule, by retrieving management information contained in said records, if possible, and otherwise accessing information relating to the specified time range from the entities.

5,608,908

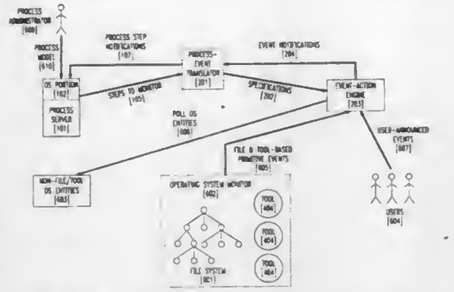
PROCESS CONTROL SYSTEM RESPONSIVE TO DEVICE EVENTS

Naser S. Barghouti, Clifton, and Balachander Krishnamurthy, Chatham, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 118,982, Sep. 8, 1993, abandoned. This application Oct. 5, 1995, Ser. No. 539,000

Int. Cl.[6] G06F *11/30;15/20*

U.S. Cl. 395—703 **12 Claims**



1. Apparatus for controlling a process defined as an ordered set of steps, each of said steps defined as a set of at least one event, at least a portion of the process being performed in a device and the apparatus comprising:

means responsive at least to events in the device for generating event messages;

means having a modifiable representation of the process which includes a representation of a step of the process which is performed in the device; and

means for automatically generating a set of events to monitor based on the representation of the step and which selectively responds to the event messages as required by the generated set of events and initiates modification of the modifiable representation as required by the event messages.

5,608,909

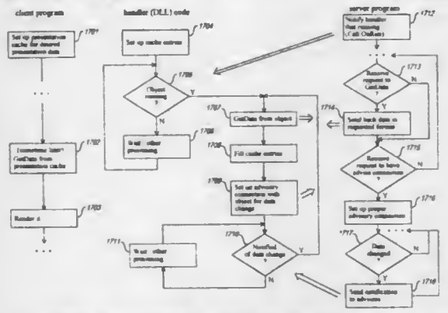
METHOD AND SYSTEM FOR CACHING PRESENTATION DATA OF A SOURCE OBJECT IN A PRESENTATION CACHE

Robert G. Atkinson, Woodinville; Antony S. Williams, Redmond; Craig Wittenberg, Mercer Island; Srinivasa R. Koppolu, and C. Douglas Hodges, both of Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Apr. 15, 1994, Ser. No. 227,970

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—703 **44 Claims**



1. A method in a computer system for caching presentation data of a source object, the presentation data for rendering a representation of the source object, the computer system having client code and object handler code, the source object having server code for communicating with the object handler code, the method comprising the computer-implemented steps of:

under control of the client code, invoking the object handler code;

under control of the invoked object handler code, instantiating a presentation cache object having presentation cache code and having a plurality of entries;

under control of the client code, requesting the presentation cache code of the instantiated cache object to cache presentation data in a plurality of specified presentation formats;

under control of the presentation cache code, in response to the request to cache presentation data,

requesting presentation data from the server code in the plurality of specified presentation formats;

receiving the requested presentation data in the plurality of specified presentation formats from the server code; and

storing each of the received presentation data in the specified presentation format in an entry in the presentation cache object;

under control of the client code, invoking the object handler code to request presentation data in one of the plurality of specified presentation formats;

under control of the invoked object handler code and in response to the request for presentation data,

determining which entry in the presentation cache contains the requested presentation data;

retrieving the stored presentation data from the determined entry in the presentation cache; and

sending the retrieved presentation data to the client code; and

under control of the client code,

receiving the sent presentation data from the object handler code; and

rendering the received preparation data to represent the source object.

5,608,910

METHOD FOR UPDATING A CONTROL PROGRAM FOR AN INFORMATION PROCESSING APPARATUS, AND AN INFORMATION PROCESSING APPARATUS FOR UPDATING A CONTROL PROGRAM OF AN ASSOCIATED REWRITABLE MEMORY OR A MEMORY DISK

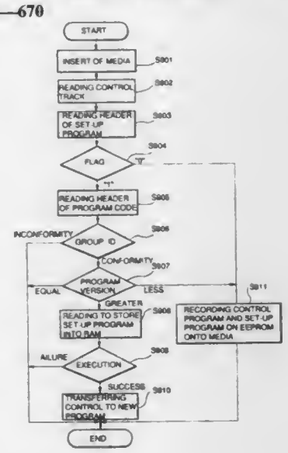
Masami Shimakura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 673,453, Mar. 22, 1991, abandoned. This application May 9, 1994, Ser. No. 240,211

Claims priority, application Japan, Mar. 23, 1990, 2-072102; Mar. 23, 1990, 2-072103; Mar. 27, 1990, 2-075385

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—670 **31 Claims**



1. A recording and/or reproducing apparatus for effecting at least one of information recording and reproduction by instruction from a host computer, said apparatus effecting at least one of the recording of information on and reproduction of information from a memory medium in which a control program is stored and being removably mounted in said apparatus, the control program stored in the memory medium including a region for storing information indicative of its version, said apparatus comprising:

a rewritable memory for storing a control program for controlling the apparatus, the control program stored in said rewritable memory including a region for storing information indicative of its version;

discriminating means for discriminating whether the control program stored in the memory medium is a control program of the same type as, and replaceable with, the control program stored in said rewritable memory, wherein when said discriminating means discriminates that the control program stored in the memory medium is not a control program of the same type as the control program stored in said rewritable memory, a control program of an older version is not replaced with a control program of a newer version;

comparison means for comparing the version of the control program stored in said rewritable memory with the version of the control program stored in the memory medium; and

means for replacing a control program of an older version with a control program of a newer version in conformity with the discrimination made by said discriminating means and the comparison made by said comparison means.

5,608,911

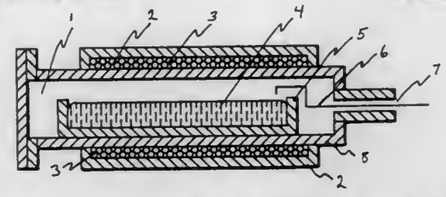
PROCESS FOR PRODUCING FINELY DIVIDED INTERMETALLIC AND CERAMIC POWDERS AND PRODUCTS THEREOF

Karl G. Shaw, Spring Avenue Extension; David E. Alman, 212 River St., Apt. #3, both of Troy, N.Y. 12180; René M. Cooper, 70 Frederick St., Ballston Spa, N.Y. 12020; Randall M. German, 1145 Outer Dr., State College, Pa. 16801, and Kazuo P. McCoy, 56 Euclid Ave., Troy, N.Y. 12180

Division of Ser. No. 843,605, Feb. 28, 1992, Pat. No. 5,330,701. This application Jun. 23, 1994, Ser. No. 239,287

Int. Cl.[6] B22F *3/23*

U.S. Cl. 419—45 **8 Claims**



2. A method for controlling a self-propagating reaction in a particulate medium comprising controlling the boundary heat flux of said reaction to produce a product having a unitary, solid structure with layers of alternating density.

OL
96
SS
1
MR
4
997
UMI

378,237

IMITATION TUXEDO GARMENT

Thomas B. McDonald, Skaneateles, N.Y., assignor to Bright Ideas Group, Inc., Skaneateles, N.Y.

Filed Jul. 3, 1995, Ser. No. 41,505

Term of patent 14 years

U.S. Cl. D2—743



378,238

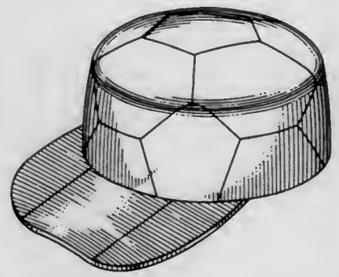
BASEBALL CAP

Fletcher Anderson, 23248 Calvert St., Woodland Hills, Calif. 91367

Filed Jun. 27, 1995, Ser. No. 40,821

Term of patent 14 years

U.S. Cl. D2—869



378,239

COMBINED TREAD SURFACE AND PERIPHERY OF A SHOE SOLE

Marco Bramani, Milan, Italy, assignor to Vibram S.p.A., Albizzate, Italy

Filed Nov. 30, 1995, Ser. No. 47,315

Claims priority, application WIPO, May 31, 1995, DMA/002955

Term of patent 14 years

U.S. Cl. D2—953



378,240

SHOE SOLE

Jean Paul Merceron, Monthodon, France, assignor to Article Chaussant Europeen (Arche S.A.), Chateau-Renault, France

Filed Aug. 15, 1994, Ser. No. 27,342

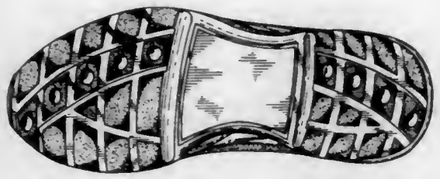
Claims priority, application France, Feb. 16, 1994, 940.902

Term of patent 14 years

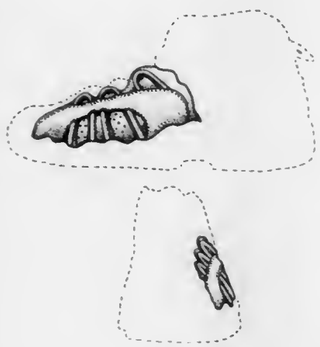
U.S. Cl. D2—953



378,241
SHOE SOLE
Michael S. Featherston, and Denis J. Ryan, both of Dallas, Tex., assignors to Strategic Partners, Inc., Pacoima, Calif.
Filed Aug. 2, 1995, Ser. No. 42,161
Term of patent 14 years
U.S. Cl. D2—954



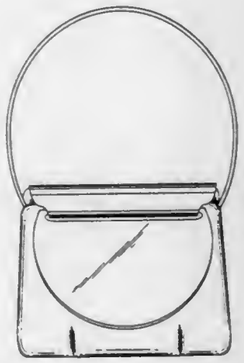
378,242
ELEMENT OF A SHOE
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jan. 5, 1996, Ser. No. 48,625
Term of patent 14 years
U.S. Cl. D2—972



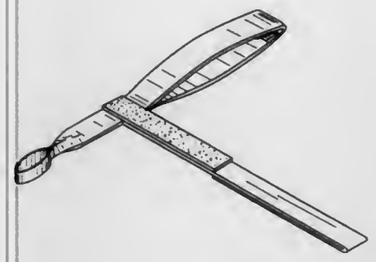
378,243
KNIFE SHEATH
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Jan. 18, 1995, Ser. No. 33,667
Term of patent 14 years
U.S. Cl. D3—220



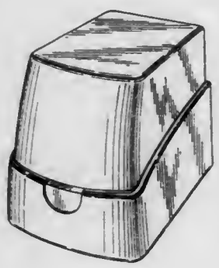
378,244
HANDBAG
Michele R. Cassida, 7166 White Buffalo Rd., Colorado Springs, Colo. 80919
Filed May 26, 1995, Ser. No. 39,470
Term of patent 14 years
U.S. Cl. D3—243



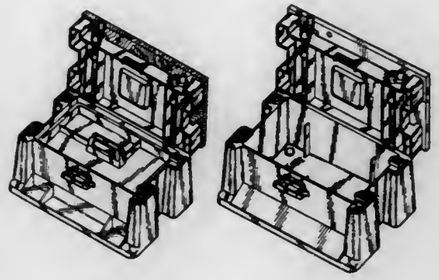
378,245
COMBINED SKI AND BOOT SLING
Daniel W. DeMier, 4103 S. Jasper St., Aurora, Colo. 80013
Continuation-in-part of Ser. No. 31,133, Nov. 18, 1994. This application Feb. 16, 1995, Ser. No. 36,607
Term of patent 14 years
U.S. Cl. D3—261



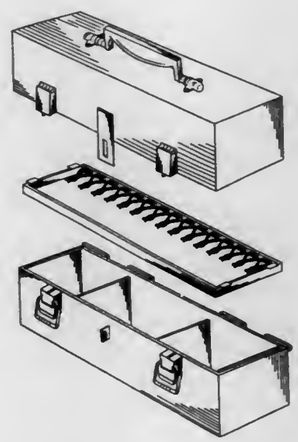
378,246
KEEPING BOX FOR HEAD UNIT OF PRINTER
Tooru Nakazawa; Masahiro Isono, and Mugio Kawasaki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 26, 1995, Ser. No. 44,572
Claims priority, application Japan, Mar. 27, 1995, 7-8266
Term of patent 14 years
U.S. Cl. D3—273



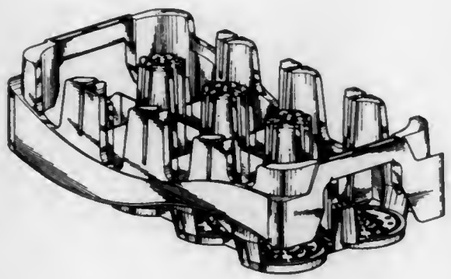
378,247
UTILITY BOX INCORPORATING AN INTEGRAL CLAMPING VISE
Edward H. Meisner, Short Hills, N.J.; Keith Kristiansen, Stratford, Conn.; Michael Ballone, New Providence, N.J.; Roberta S. Hall, Sparks; Michael A. Loferski, Monkton, both of Md.; Michael D. Dolson, Millbrook, Canada; Christopher Bennett, Whitby, Canada; John B. Mason, Sr.; Frank Basten, both of Brockville, Canada, and Colin Overy, North Augusta, Canada, assignors to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 27,533, Aug. 12, 1994, abandoned. This application Jul. 12, 1995, Ser. No. 41,850
The portion of the term of this patent subsequent to Nov. 26, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—274



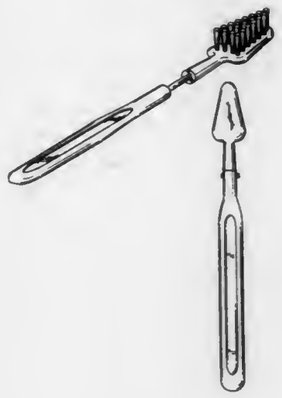
378,248
PAINT BRUSH RACK CONTAINER
Willis E. Griffin, 19325 Robin Hood Way, Monument, Colo. 80132
Filed Jul. 11, 1995, Ser. No. 41,282
Term of patent 14 years
U.S. Cl. D3—291



378,249
BOTTLE CASE WITH INTEGRAL SIDEWALL LOGO
William P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta, both of Ga., assignors to Rehrig-Pacific, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 37,469, Apr. 13, 1995, which is a continuation-in-part of Ser. No. 18,317, Feb. 3, 1994, Pat. No. 361,431, and a continuation-in-part of Ser. No. 34,317, Feb. 1, 1995, which is a continuation-in-part of Ser. No. 919,376, Jul. 29, 1992. This application Jun. 7, 1995, Ser. No. 39,952
Term of patent 14 years
U.S. Cl. D3—310



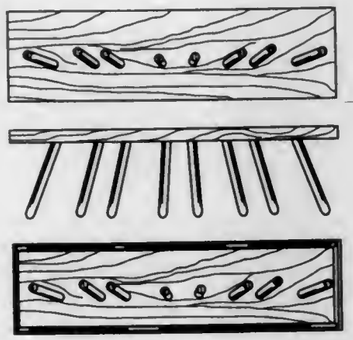
378,250
DETACHABLE TOOTHBRUSH HEAD AND HANDLE UNIT
John Marchello, 148 St. Andrews Dr., Hamilton, On L8K 6C3, Canada
Filed Oct. 30, 1995, Ser. No. 45,786
Term of patent 14 years
U.S. Cl. D4—104



378,251
PICTURE FRAME
Samuel Levin, 333 Southwestern Blvd., Suite 202, Suger Land, Tex. 77478
Filed Nov. 29, 1995, Ser. No. 47,233
Term of patent 14 years
U.S. Cl. D6—300



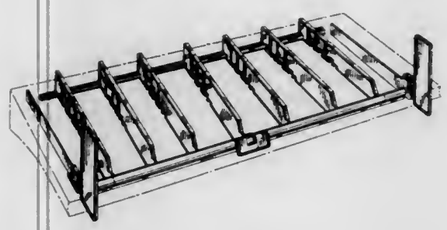
378,252
BOOT RACK
Monica A. Smith, 620 B W. 47th Ave., Anchorage, Ak. 99503
Filed Jun. 27, 1995, Ser. No. 40,806
Term of patent 14 years
U.S. Cl. D6—320



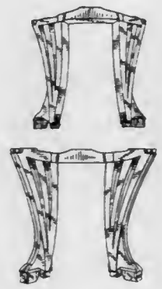
378,253
CHAIR
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Sep. 13, 1995, Ser. No. 43,862
Term of patent 14 years
U.S. Cl. D6—375



378,254
ADVERTISING DISPLAY FOR SHELVING
Richard Markson, Goshen, N.Y., assignor to Markson Rosenthal & Company, Edgewater, N.J.
Filed Jul. 19, 1995, Ser. No. 41,617
Term of patent 14 years
U.S. Cl. D6—449



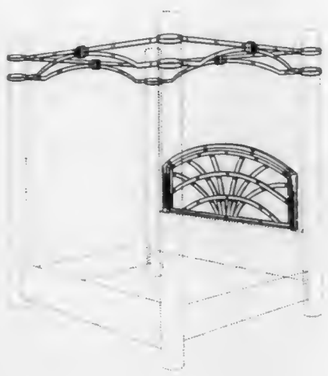
378,255
LEG ASSEMBLY FOR TABLES
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex SARL, Oyonnax, France
Filed Nov. 6, 1995, Ser. No. 46,056
Claims priority, application Hague Agreement, May 11, 1995, DMA/002935
Term of patent 14 years
U.S. Cl. D6—495



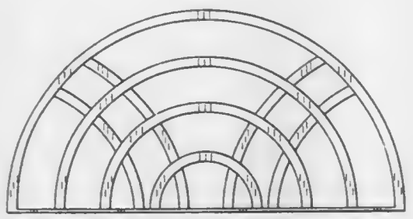
378,256
CARVED TABLE LEG
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Company, Lenoir, N.C.
Filed Sep. 13, 1994, Ser. No. 28,377
Term of patent 14 years
U.S. Cl. D6—497



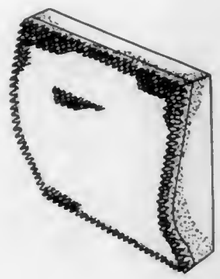
378,257
HEADBOARD AND CANOPY UNIT
Charles C. Cain, High Point, N.C., assignor to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Division of Ser. No. 29,984, Oct. 20, 1994, Pat. No. Des. 368,601. This application Jan. 31, 1996, Ser. No. 51,022
Term of patent 14 years
U.S. Cl. D6—505



378,258
ENDBOARD
Charles C. Cain, High Point, N.C., assignor to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Division of Ser. No. 29,991, Oct. 20, 1994. This application May 6, 1996, Ser. No. 54,037
Term of patent 14 years
U.S. Cl. D6—507



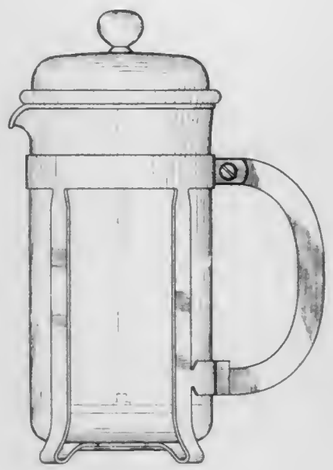
378,259
BACK SUPPORT CUSHION OF SYNTHETIC FOAM
Vincenzo A. Bonaddio, Boothwyn, Pa., and Feyyaz O. Baskent, Newport Beach, Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Sep. 27, 1994, Ser. No. 29,002
Term of patent 14 years
U.S. Cl. D6—601



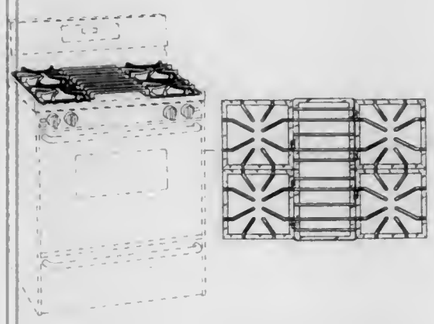
378,260
BEVERAGE DISPENSER
Roger A. Precelton, Warwickshire, United Kingdom, assignor to Whitlenge Drink Equipment Limited, United Kingdom
Filed Jan. 24, 1996, Ser. No. 49,364
Term of patent 14 years
U.S. Cl. D7—301



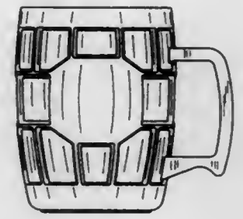
378,261
COFFEE MAKER
Carsten Jørgensen, Kriens, Denmark, assignor to Pi-Design AG, Triengen, Switzerland
Filed Sep. 16, 1994, Ser. No. 28,603
Claims priority, application Denmark, Mar. 16, 1994, 242/94
Term of patent 14 years
U.S. Cl. D7—319



378,262
GAS COOKTOP GRATE
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Dec. 27, 1995, Ser. No. 48,372
Term of patent 14 years
U.S. Cl. D7—408



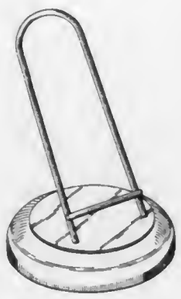
378,263
BEVERAGE MUG WITH SURFACE PATTERN
David P. Lage, St. Louis County, Mo., assignor to Quick Point, Inc., Fenton, Mo.
Filed Jun. 29, 1995, Ser. No. 40,856
Term of patent 14 years
U.S. Cl. D7—536



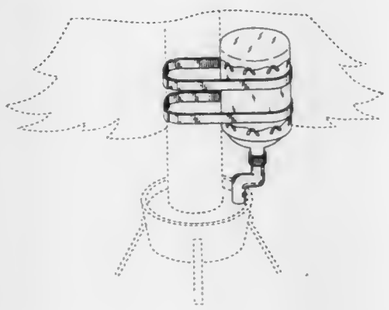
378,264
BEVERAGE MUG
David P. Lage, Manchester, and John G. Goessling, Ladue, both of Mo., assignors to Quick Point, Inc., Fenton, Mo.
Continuation of Ser. No. 18,162, Jan. 31, 1994, abandoned,. This application Aug. 31, 1995, Ser. No. 43,477
Term of patent 14 years
U.S. Cl. D7—536



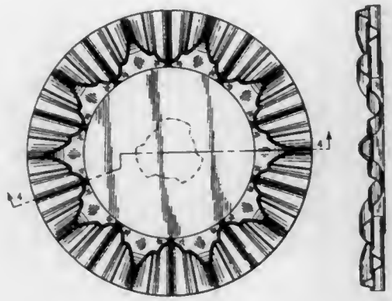
378,265
DISPLAY HOLDER FOR A WINE BOTTLE
Jean Vicard, Cognac, and Gaëtan Clery, Roullet Saint-Estephe, both of France, assignors to Lafitte Tonnellerie D'Art, Cognac, France
Filed Mar. 27, 1995, Ser. No. 36,794
Claims priority, application France, Sep. 26, 1994, 94 5381
Term of patent 14 years
U.S. Cl. D7—619



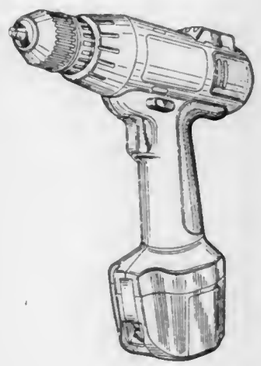
378,266
COMBINED AUTOMATIC CHRISTMAS TREE WATERER AND COVER THEREFOR
Horst J. Buehler, R.R. 1, Box 1194, Shohola, Pa. 18458
Filed Mar. 4, 1994, Ser. No. 19,536
Term of patent 14 years
U.S. Cl. D8—1



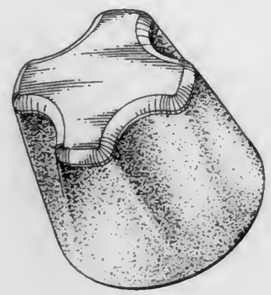
378,267
CIRCULAR CUTTING BLADE
Thomas L. Murkowski, Athens, and Lloyd W. Brandenburg, Jr., Wausau, both of Wis., assignors to Fiskars Inc., Madison, Wis.
Continuation-in-part of Ser. No. 41,597, Jul. 19, 1995. This application Oct. 10, 1995, Ser. No. 46,593
Term of patent 14 years
U.S. Cl. D8—20



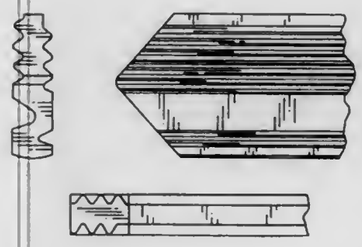
378,268
BATTERY OPERATED POWER TOOL
William H. Schultz, Northbrook, Ill., assignor to S-B Power Tool Company, Chicago, Ill.
Filed Nov. 21, 1995, Ser. No. 47,079
Term of patent 14 years
U.S. Cl. D8—68



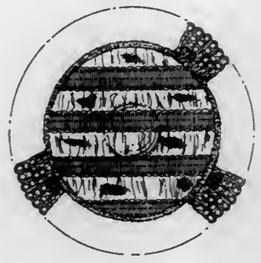
378,269
HANDLE
Frederic C. Doughty, 842 Oneonta Dr., S. Pasadena, Calif. 91030, and Darren M. Mark, 29109 Eveningside Dr., Castaic, Calif. 91384
Filed Sep. 22, 1995, Ser. No. 44,299
Term of patent 14 years
U.S. Cl. D8—307



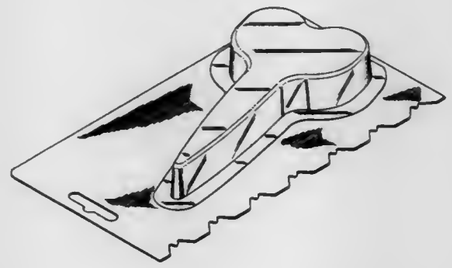
378,270
PORTION OF A KEY BLADE BLANK
Joanne M. Aston, Wolverhampton, England, assignor to Yale Security Inc., Monroe, N.C.
Filed Jan. 19, 1996, Ser. No. 49,182
Term of patent 14 years
U.S. Cl. D8—347



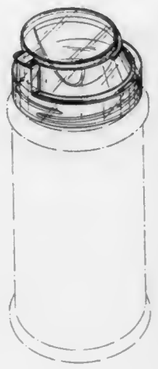
378,271
CHAIR LEG BOOTIE
Barbara J. Bury, 1107 Esther St., Franklin Square, N.Y. 11010
Filed Dec. 27, 1994, Ser. No. 32,737
Term of patent 14 years
U.S. Cl. D8—400



378,272
BLISTER CARD PACKAGING FOR SCISSORS
Javier V. Weatherford, Canton, and William H. Valls, Harwinton, both of Conn., assignors to Acme United Corporation, Fairfield, Conn.
Filed Nov. 7, 1995, Ser. No. 46,076
The portion of the term of this patent subsequent to Jun. 27, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—415



378,273
DISPENSING CAP
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661, and Gregory S. Burcham, Spruce Pine, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.
Filed Aug. 8, 1995, Ser. No. 42,403
Term of patent 14 years
U.S. Cl. D9—449



378,274
PARTIAL EXTERIOR SURFACE OF A CONTAINER SIDEWALL
Ted L. Beaver, Roselle, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Nov. 27, 1995, Ser. No. 47,126
Term of patent 14 years
U.S. Cl. D9—530



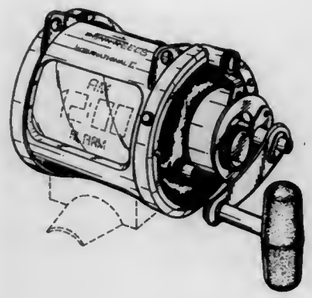
378,275
BEVERAGE BOTTLE WITH DECORATIVE SURFACE
Kevin R. Rusnock, Broomfield, and Dale M. Monahan, Lakewood, both of Colo., assignors to Coors Brewing Company, Golden, Colo.
Filed Jan. 29, 1996, Ser. No. 49,715
Term of patent 14 years
U.S. Cl. D9—545



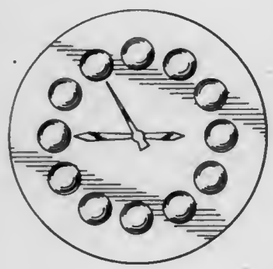
378,276
BOTTLE BODY
Randolf C. Kotoucek, St. Louis, and Suzanne L. Fenton, St. Charles, both of Mo., assignors to Kranson Industries, St. Louis, Mo.
Filed Sep. 29, 1995, Ser. No. 44,817
Term of patent 14 years
U.S. Cl. D9—558



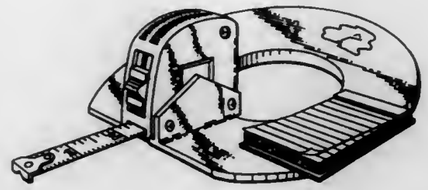
378,277
FISHING REEL CLOCK
Joseph Napolitan, 15026 Kovats Dr., Philadelphia, Pa. 19116, and Robert Stricker, 3336 Englewood St., Philadelphia, Pa. 19149
Filed Oct. 16, 1995, Ser. No. 45,318
Term of patent 14 years
U.S. Cl. D10—6



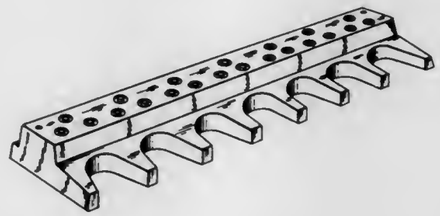
378,278
CLOCK
William P. McGraw, 19009 Laurel Park Rd., Space 360, Dominguez Hills, Calif. 90220
Filed Aug. 7, 1995, Ser. No. 42,333
Term of patent 14 years
U.S. Cl. D10—22



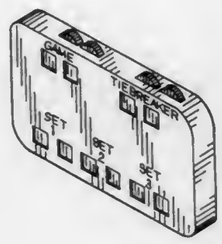
378,279
GOLF MEASURING APPARATUS
Arthur W. Pischette, 3 Middlesex Ave., Worcester, Mass. 01604
Filed Mar. 15, 1995, Ser. No. 36,208
Term of patent 14 years
U.S. Cl. D10—46.1



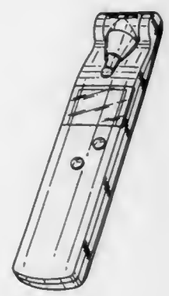
378,280
GAME SCORING BOARD
Michael A. Furr, 129 W. Wilson, Ste. 203, Costa Mesa, Calif. 92627, and Haleem A. Williams, 2959 Plaza Leonardo, Bonita, Calif. 91902
Filed Dec. 18, 1995, Ser. No. 47,967
Term of patent 14 years
U.S. Cl. D10—46.1



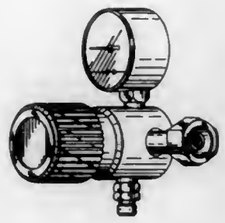
378,281
HAND-HELD TENNIS SCOREKEEPER
Marc A. Takacs, 17472 Duello La., Huntington Beach, Calif. 92647
Filed Jan. 16, 1996, Ser. No. 49,638
Term of patent 14 years
U.S. Cl. D10—46.1



378,282
THERMOMETER
Peter Hartwein, Kronberg, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Jan. 30, 1996, Ser. No. 49,725
Claims priority, application Germany, Jul. 31, 1995, M 95 06024.3
Term of patent 14 years
U.S. Cl. D10—57



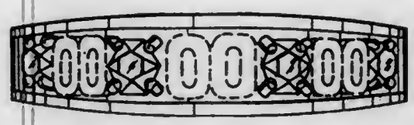
378,283
COMPRESSED GAS REGULATOR
Gregory W. Diehl, Florence, S.C., assignor to The ESAB Group, Inc., Florence, S.C.
Filed Dec. 1, 1995, Ser. No. 47,361
Term of patent 14 years
U.S. Cl. D10—85



378,284
LIQUID LEVEL SENDER
Henry G. Grilk, Lancaster; David P. Riegel, Landisville, and John A. Roser, Elizabethtown, all of Pa., assignors to Datcon Instrument Co., Inc., East Petersburg, Pa.
Filed Jun. 30, 1995, Ser. No. 40,941
Term of patent 14 years
U.S. Cl. D10—101



378,285
RING
Jon Fox, Westport, Conn., assignor to Samuel Aaron, Inc., Long Island City, N.Y.
Filed Mar. 2, 1995, Ser. No. 35,575
Term of patent 14 years
U.S. Cl. D11—34



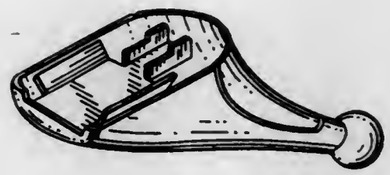
378,286
MINIATURE HOUSE DECORATION
Li-Mei Chiu, No. 67 Hong Nan St., Kuan Nan Village, Kung Kuan Hsiang, Miaoli, Taiwan
Filed Aug. 14, 1995, Ser. No. 42,610
Term of patent 14 years
U.S. Cl. D11—121



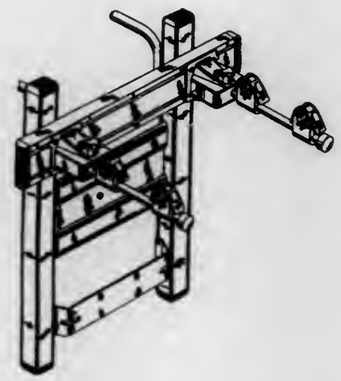
378,287
MOUNDTYPE PLANT CAGE
Dawn I. Alligood, 503 W. Lincoln Ave., Belvidere, Ill. 61008
Filed Sep. 7, 1995, Ser. No. 43,619
Term of patent 14 years
U.S. Cl. D11—143



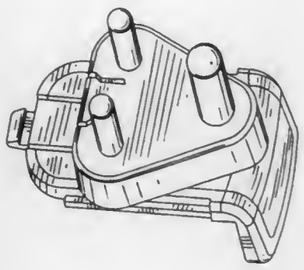
378,288
REARVIEW MIRROR SUPPORT
Antonio F. E. Santo, São Paulo, Brazil, assignor to Metagal Industria E Comercio LTDA., Sao Paulo, Brazil
Filed Jul. 8, 1994, Ser. No. 25,698
Claims priority, application Brazil, Jan. 31, 1994, 5400152-8
Term of patent 14 years
U.S. Cl. D12—187



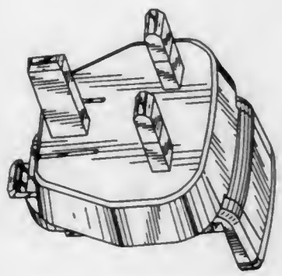
378,289
REAR MOUNTED BIKE CARRIER
Alvar Lundgren, Göteborg, Sweden, assignor to Industri AB Thule, Hillerstorp, Sweden
Filed Apr. 12, 1994, Ser. No. 21,263
Claims priority, application Sweden, Oct. 14, 1993, 932283
Term of patent 14 years
U.S. Cl. D12—412



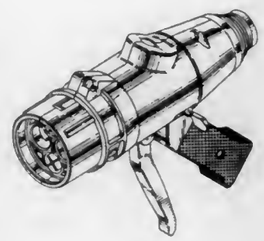
378,290
INTERCHANGEABLE PLUG DEVICE
Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.
Division of Ser. No. 44,048, Sep. 15, 1995. This application Jun. 14, 1996, Ser. No. 55,860
Term of patent 14 years
U.S. Cl. D13—143



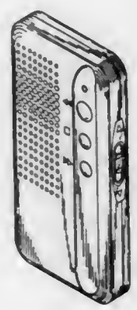
378,291
INTERCHANGEABLE PLUG DEVICE
Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.
Division of Ser. No. 44,048, Sep. 15, 1995. This application Jun. 17, 1996, Ser. No. 55,909
Term of patent 14 years
U.S. Cl. D13—143



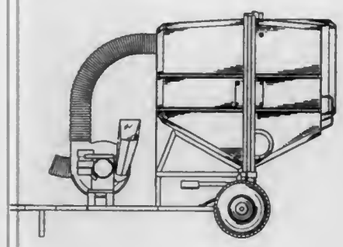
378,292
CONNECTOR FOR ELECTRIC SUPPLIER FOR ELECTRIC CAR
Nobuaki Yoshioka, and Hirotaka Fukushima, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Japan
Division of Ser. No. 30,229, Oct. 24, 1994, Pat. No. Des. 370,461. This application May 2, 1996, Ser. No. 53,966
Term of patent 14 years
U.S. Cl. D13—146



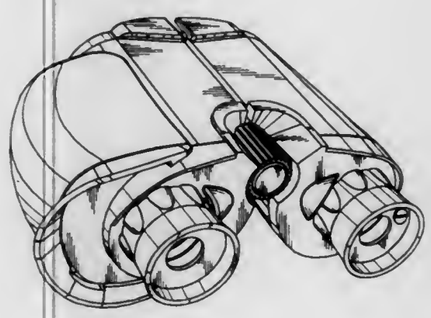
378,293
ELECTRONIC RECORDER
Peter Chou, P.O. Box 82-144, Talpei, Taiwan
Filed Feb. 8, 1996, Ser. No. 50,098
Term of patent 14 years
U.S. Cl. D14—167



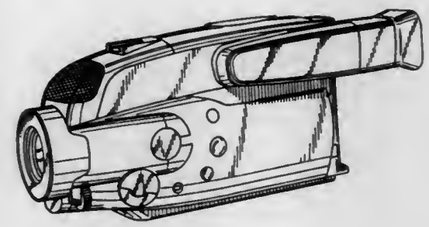
378,294
LAWN TRAILER
J. Bradon Barnes; Mark P. Schafer, and Mark B. Gramelspacher, all of Indianapolis, Ind., assignors to EverGreen International, Inc., Lebanon, Ind.
Filed Nov. 22, 1995, Ser. No. 46,962
Term of patent 14 years
U.S. Cl. D15—17



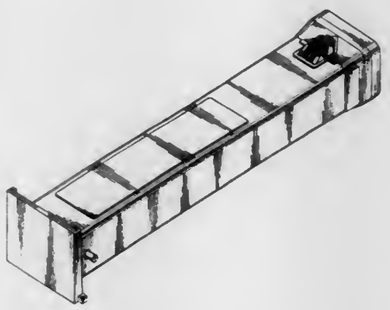
378,295
BINOCULARS
Matt Esecson, Pride's Crossing; Thomas Swyst; Alan Ball, both of Somerville; Austin Esecson, Pride's Crossing; Kyle Esecson, Pride's Crossing, and Diane Esecson, Pride's Crossing, all of Mass., assignors to Esecson Associates, Inc., Pride's Crossing, Mass.
Filed Aug. 16, 1995, Ser. No. 42,743
Term of patent 14 years
U.S. Cl. D16—133



378,296
CAMCORDER
Byung O. Choi, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 21, 1995, Ser. No. 41,507
Claims priority, application Rep. of Korea, Mar. 31, 1995, 1995-5813
Term of patent 14 years
U.S. Cl. D16—202



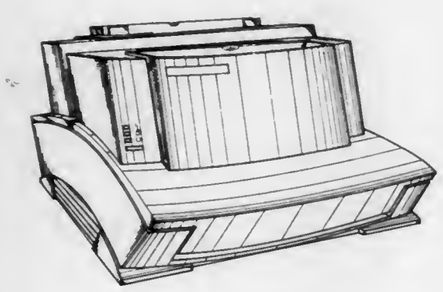
378,297
CARTRIDGE FOR A PHOTOGRAPHIC PROCESSOR
Toshiyuki Ikariya; Hideo Kobayashi, and Hideo Ishii, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 12, 1994, Ser. No. 29,643
Claims priority, application Japan, May 18, 1994, 6-14166; Sep. 5, 1994, 6-26850
Term of patent 14 years
U.S. Cl. D16—250



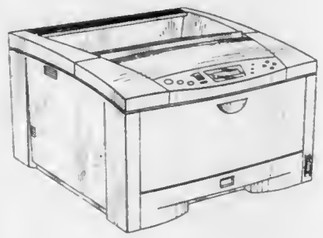
378,298
FRONT FACE OF A TUNER DISPLAY PANEL
Ned Steinberger, 12 Rudy Rd., New Windsor, N.Y. 12553
Division of Ser. No. 251,632, May 31, 1994, Pat. No. 5,427,011, which is a continuation of Ser. No. 966,391, Oct. 26, 1992, abandoned. This application Mar. 10, 1995, Ser. No. 35,993
Term of patent 14 years
U.S. Cl. D17—99

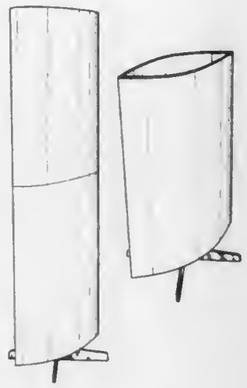


378,299
DOCUMENT PRINTER
Will G. Fetherolf, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 20, 1995, Ser. No. 44,227
Term of patent 14 years
U.S. Cl. D18—50



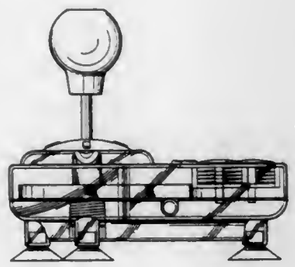
378,300
LASER BEAM PRINTER
Hideki Ito, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 24, 1995, Ser. No. 43,565
Claims priority, application Japan, Jan. 25, 1995, 7-1506
Term of patent 14 years
U.S. Cl. D18—55





378,301
DISPLAY STAND
Carl Leksell, Göteborg, Sweden, assignor to Maxi Display AB, Vastra Frolunda, Sweden
Filed Apr. 9, 1996, Ser. No. 52,792
Claims priority, application Sweden, Oct. 10, 1995, 951898
Term of patent 14 years
U.S. Cl. D20—10

378,302
JOYSTICK
Michael Kin-Man Tse, Room 1204, Block U, Telford Garden, Kowloon Bay, Kowloon, Hong Kong
Filed Mar. 16, 1992, Ser. No. 852,106
Claims priority, application United Kingdom, Oct. 15, 1991, 2018304
Term of patent 14 years
U.S. Cl. D21—48



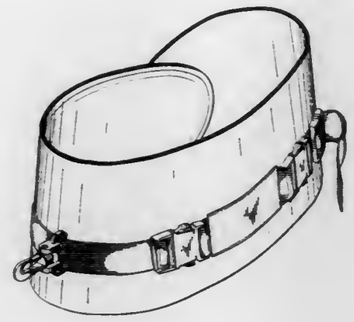
378,303
JOY STICK
Chung-Pin Yang, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Mar. 12, 1996, Ser. No. 51,488
Term of patent 14 years
U.S. Cl. D21—48



378,304
TOY FIGURE
John M. Flynn, 33 Opawa Road, Christchurch, New Zealand
Filed Oct. 18, 1994, Ser. No. 29,868
Claims priority, application New Zealand, Apr. 19, 1994, 25851
Term of patent 14 years
U.S. Cl. D21—155



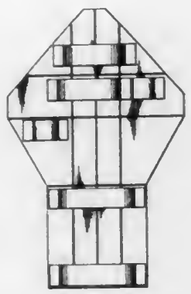
378,305
EXERCISE BELT
John F. Tolleson, 35 Jones Mill Dr., Carrollton, Ga. 30116
Filed Mar. 23, 1995, Ser. No. 36,629
Term of patent 14 years
U.S. Cl. D21—191



378,306
SHUTTLECOCK
Don W. Schallert, 3121 S. Franklin St., Denver, Colo. 80110
Filed Aug. 4, 1995, Ser. No. 42,209
Term of patent 14 years
U.S. Cl. D21—207



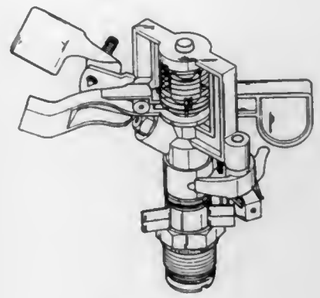
378,307
SWIMMING HAND PADDLE
Marshall Desveaux, 108 Duffas Drive, Bedford, Nova Scotia, Canada
Filed Nov. 8, 1995, Ser. No. 46,187
Claims priority, application Canada, May 9, 1995, 1995-1008
Term of patent 14 years
U.S. Cl. D21—239



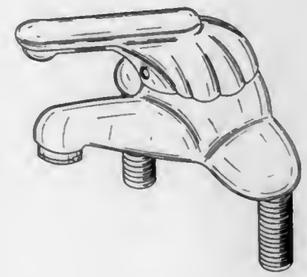
378,308
TROLL LURE
Douglas R. Roe, 109 Warchant Dr., Gillette, Wyo. 82716, and Harold F. Galbraith, 305 E. Redwood, Gillette, Wyo. 82718
Filed Feb. 20, 1996, Ser. No. 50,445
Term of patent 14 years
U.S. Cl. D22—132



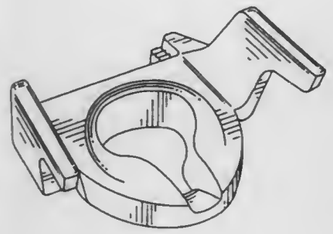
378,309
SPRINKLER
Mei-Pi Cheng, Changhua Hslen, Taiwan, assignor to Ting Yang Industrial Co., Ltd., Changhua Hsien, Taiwan
Filed Feb. 13, 1996, Ser. No. 50,282
Term of patent 14 years
U.S. Cl. D23—214



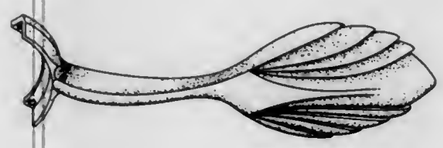
378,310
FAUCET
In-Ho Moon, Seoul, Rep. of Korea, assignor to American Standard Inc., Piscataway, N.J.
Filed Sep. 12, 1994, Ser. No. 28,290
Claims priority, application Rep. of Korea, Mar. 14, 1994, 1994-4811
Term of patent 14 years
U.S. Cl. D23—238



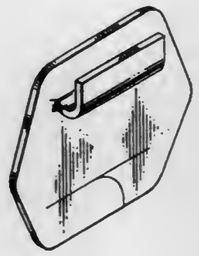
378,311
TOILET SEAT
Adrian D. E. Dartnall, Loughborough, England, assignor to Gordon Ellis & Company, Derby, United Kingdom
Filed Dec. 6, 1995, Ser. No. 47,499
Claims priority, application United Kingdom, Jun. 13, 1995, 2048152
Term of patent 14 years
U.S. Cl. D23—311



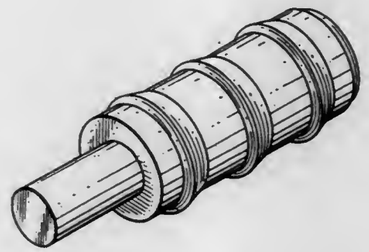
378,312
BLADE MEDALLION AND SUPPORT ARM FOR A CEILING FAN
William S. Davis, Jr., Fort Worth, Tex., assignor to Davoil, Inc., Fort Worth, Tex.
Filed Jul. 7, 1995, Ser. No. 41,195
Term of patent 14 years
U.S. Cl. D23—411



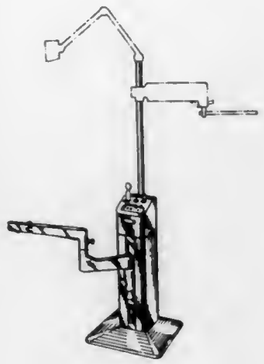
378,313
SPACER - SEPTAL SPLINT
Donald E. Doyle, 4105 Hospital Rd., #102A, Pascagula, Miss. 39581
Filed Apr. 24, 1995, Ser. No. 37,938
Term of patent 14 years
U.S. Cl. D24—128



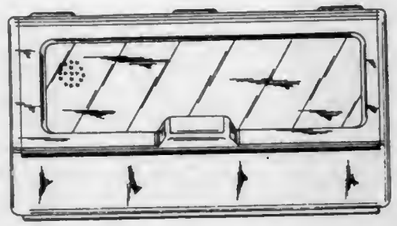
378,314
BONE SPINAL IMPLANT
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Mar. 20, 1995, Ser. No. 36,381
Term of patent 14 years
U.S. Cl. D24—155



378,315
INSTRUMENT DELIVERY STAND
Gary G. Schwaegerle, Cincinnati, and Gregory M. Crook, Columbus, both of Ohio, assignors to Reliance Medical Products, Inc., Mason, Ohio
Filed Oct. 30, 1995, Ser. No. 45,773
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U.S. Cl. D24—172



378,316
INFANT AUDIOMETRIC CHAMBER
Alan Eckel, 10 Hildreth St., Westford, Mass. 01886
Filed Aug. 14, 1995, Ser. No. 43,994
Term of patent 14 years
U.S. Cl. D24—173



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TO WHOM

PATENTS WERE ISSUED ON THE 4th DAY OF MARCH, 1997

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Meng, Shi-Yuan; Morris, Charles F.; and Tsai, Larry B., 5,608,036, Cl. 530-324.000.
Amir, Nadiv; Rigal, Meir; and Gilon, Yoel, to Ormat Industries, Ltd. Energy recovery, pressure reducing system and method for using the same. 5,606,858, Cl. 60-648.000.
Amore, Leo J., to Martin Marietta Corp. Heat rejecting spacecraft array antenna. 5,608,414, Cl. 343-700.0MS.
Amplatz, Curtis A.; and Sharrow, James S., to AngioMedics II Inc. Method and apparatus for treating vessel wall with UV radiation following angioplasty. 5,607,419, Cl. 606-7.000.
Andersen, Erik; and Jorgensen, Ib, to Boston Scientific Corp. Dilatation catheter having a field stylet. 5,607,394, Cl. 604-102.000.
Andersen, Knud E.: *See*—
Petersen, Hans; Andersen, Knud E.; Sørensen, Per O.; Lau, Jesper; Petersen, Henning B.; and Lundt, Behrend F., 5,608,069, Cl. 546-194.000.
Anderson, Anne J.: *See*—
Moon, Darin J.; and Anderson, Anne J., 5,607,856, Cl. 435-259.000.
Anderson, Gary J.: *See*—
Wallis, Frank S.; Caillat, Jean-Luc; Simpson, Francis M.; Anderson, Gary J.; Rode, Donald W.; and Beck, Norman G., 5,607,288, Cl. 417-310.000.
Anderson, James R., to Evergreel Tool Co., Inc. Speed reducer assembly. 5,607,266, Cl. 408-124.000.
Anderson, Norman C.: *See*—
Rupert, Robert E.; Anderson, Norman C.; and Weiss, Morris, 5,608,356, Cl. 331-18.000.
Anderson, Robert: *See*—
Garrison, John E.; Garrison, Edgar L.; and Anderson, Robert, 5,607,302, Cl. 433-39.000.
Andersson, Kjell; Johansson, Hans; Lindgren, Erik; and Tokarz, Marek, to Eka Nobel, AB. Aqueous suspensions of colloidal particles, preparation and use of the suspensions. 5,607,552, Cl. 162-181.600.
Andersson, Leif A., to Isover Saint-Gobain. Wall structure. 5,606,833, Cl. 52-506.010.
Andersson, Matts; and Törnquist, Anders. Process and device for production of three-dimensional dental bodies. 5,607,305, Cl. 433-223.000.
Andersson, Ralph E., to Level One Communications, Inc. Electrical circuit for setting internal chip functions without dedicated configuration pins. 5,608,341, Cl. 326-38.000.
Ando, Shinichi; and Ichida, Taizo, to Taiyo Toyo Sanso Co., Ltd. Method for detecting the concentration of the hydrogen peroxide vapor and the apparatus therefor. 5,608,156, Cl. 73-31.060.
Andre, James R.: *See*—
Hall, Robert E.; Andre, James R.; and Leason, J. K., 5,607,530, Cl. 156-143.000.
Andresen, Peter L.; Hettiarachchi, Samson; Kim, Young J.; and Diaz, Thomas P., to General Electric Company. Co-deposition of palladium during oxide film growth in high-temperature water to mitigate stress corrosion cracking. 5,608,766, Cl. 376-305.000.
Andrews, Steven W.: *See*—
Woodward, David F.; Andrews, Steven W.; Burk, Robert M.; and Garst, Michael E., 5,607,978, Cl. 514-646.000.
Andruszkiewicz, Ryszard: *See*—
Silverman, Richard B.; Andruszkiewicz, Ryszard; Yuen, Po-Wai; Sobieray, Denis M.; Franklin, Lloyd C.; and Schwindt, Mark A., 5,608,090, Cl. 552-10.000.
Aneha, Akira: *See*—
Sakuma, Susumu; Inokoshi, Satoshi; Aneha, Akira; Arai, Masahiro; and Tokita, Masashi, 5,608,758, Cl. 375-238.000.
Angeion Corporation: *See*—
Kroll, Mark W.; Brewer, James E.; and Armitage, Scott T., 5,607,460, Cl. 607-30.000.
AngioMedics II Inc.: *See*—
Amplatz, Curtis A.; and Sharrow, James S., 5,607,419, Cl. 606-7.000.
Anser, Inc.: *See*—
Puett, Edwin E., Jr., 5,607,027, Cl. 180-242.000.
Anthony, Michael; and Joslin, William D., Jr., to Joseph Company, The. Heat exchange unit for self-cooling beverage containers. 5,606,866, Cl. 62-294.000.
Anthony, Michael M. Spill and scald resistant beverage apparatus. 5,607,076, Cl. 220-501.000.
Antonucci, Jeffrey L., to Southco, Inc. Flexible draw latch. 5,607,195, Cl. 292-247.000.
Antwerpen, Werner; Hille, Martin; and Reinhardt, Gerd, to Hoechst Aktiengesellschaft. Use of a water-soluble copolymers based on acrylamidoalkylenesulfonic acid as a detergent additive. 5,607,618, Cl. 510-302.000.
Aosaki, Ko: *See*—
Shimizu, Mitsuru; Aosaki, Ko; and Cho, Michio, 5,608,477, Cl. 396-6.000.
Aoto, Hiroshi: *See*—
Sakakibara, Teigo; Fujimura, Naoto; Sakai, Kiyoshi; Aoto, Hiroshi; and Nishida, Shunichiro, 5,607,751, Cl. 428-195.000.
Aoyama, Hirokazu: *See*—
Nakada, Tatsuo; Aoyama, Hirokazu; and Takubo, Seiji, 5,608,128, Cl. 570-175.000.
APA Optics, Inc.: *See*—
Boord, Warren T.; and Jain, Anil K., 5,608,826, Cl. 385-37.000.
Aphton Corporation: *See*—
Gevas, Philip C.; Karr, Stephen L.; Grimes, Stephen; and Littenberg, Richard L., 5,607,676, Cl. 424-197.110.
Apple Computer, Inc.: *See*—
Blaney, Timothy J., 5,608,606, Cl. 361-686.000.
Francis, Richard M., 5,608,604, Cl. 361-681.000.
Luciw, William W., 5,608,624, Cl. 395-794.000.
Walker, Ted W., 5,608,848, Cl. 395-116.000.
Applied Komatsu Technology, Inc.: *See*—
Su, Yuh-Jia; Wong, Yuen-Kui; Law, Kam S.; and Goto, Haruhiro, 5,607,602, Cl. 216-76.000.
Applied Materials, Inc.: *See*—
Beinglass, Israel; and Carlson, David K., 5,607,724, Cl. 427-255.100.
Mueller, Mark A.; Guo, Xin; and Egermeier, John C., 5,607,776, Cl. 428-472.000.
Turner, Norman L.; White, John M.; and Berkstresser, David, 5,607,009, Cl. 165-48.100.
Wu, Robert; and Yin, Gerald Z., 5,607,542, Cl. 156-643.100.
Ye, Yan; and Gupta, Anand, 5,608,155, Cl. 73-28.010.
Aradigm Corporation: *See*—
Rubsamen, Reid M.; and Johansson, Eric T., 5,608,647, Cl. 364-509.000.
Aragon, Joel T.: *See*—
Bunce, Steven M.; and Aragon, Joel T., 5,608,578, Cl. 359-609.000.
Arai, Kunihiko: *See*—
Fujioka, Toyokazu; and Arai, Kunihiko, 5,608,169, Cl. 73-803.000.
Arai, Masahiro: *See*—
Sakuma, Susumu; Inokoshi, Satoshi; Aneha, Akira; Arai, Masahiro; and Tokita, Masashi, 5,608,758, Cl. 375-238.000.
Arakawa, Hidetoshi; Sugawara, Yoshitaka; and Inaba, Masamitsu, to Hitachi, Ltd.; and Hitachi Haramichi Electronics Co., Ltd. Semiconductor device. 5,608,236, Cl. 257-123.000.
Arakawa, Shigeru: *See*—
Ohkouchi, Kousaku; Yoshida, Shigeru; Hayashi, Kenji; and Arakawa, Shigeru, 5,607,578, Cl. 210-172.000.
Aramaki, Shinji: *See*—
Shimizu, Kazuo; Kobayashi, Shigeru; Masuyama, Hideyuki; and Aramaki, Shinji, 5,608,824, Cl. 382-276.000.
Aranyi, Ernest: *See*—
Zvenyatsky, Boris; Aranyi, Ernest; and Tovey, H. Jonathan, 5,607,450, Cl. 606-206.000.
Aranyi, Ernie: *See*—
Klinger, John F.; Matula, Paul A.; Tovey, H. Jonathan; and Aranyi, Ernie, 5,607,391, Cl. 604-33.000.

Pratt, James R.; Kappel, Gary S.; Cuny, Douglas J.; Tovey, H. Jonathan; Phillips, Paul J.; Peyser, Mark S.; and Aranyi, Ernie, 5,607,436, Cl. 606-143.000.

Arbeiter, Jason R.; Scandalis, Aneesa R.; Richtsmeier, Brent; and Nakano, Brad, to Hewlett-Packard Company. Densitometer for adaptive control of ink drying time for inkjet printer. 5,608,439, Cl. 347-102.000.

Arbeiter, Jason R.: *See—*
Wilson, Arthur K.; Brown, Patricia S.; and Arbeiter, Jason R., 5,608,434, Cl. 347-50.000.

ARCH Development Corporation: *See—*
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, 5,607,741, Cl. 428-68.000.

Archer Daniels Midland Company: *See—*
Sleeter, Ronald T.; and Roos, Kenneth D., 5,607,633, Cl. 264-115.000.

Archer, Patricia L.: *See—*
Stanley, Christopher J.; and Archer, Patricia L., 5,607,832, Cl. 435-6.000.

Archetti, Barbara; and Assamongkorn, Varin, to Kurt Gutmann Jewelry, Inc. Detachable jewelry ornamentation. 5,606,874, Cl. 63-21.000.

Ardon, Menachem T., to Lucent Technologies Inc. Trunk utilization in a telecommunications network. 5,608,790, Cl. 379-230.000.

Arimilli, Ravi K.; Kaiser, John M.; Lewchuk, William K.; and Allen, Michael S., to International Business Machines Corporation; and Motorola, Inc. Dual latency status and coherency reporting for a multiprocessing system. 5,608,878, Cl. 395-287.000.

Arizmendi, Napoleon: *See—*
Owens, Steve; Bouldin, Brett; and Arizmendi, Napoleon, 5,607,017, Cl. 166-288.000.

Arlt, Robert A., Sr.: *See—*
McGuffin, Gerald R., Sr.; Gord, Aaron C.; Guenther, Raymond E.; Snyder, Chris W.; and Arlt, Robert A., Sr., 5,607,113, Cl. 241-82.100.

Armington, Steven E.; Ratzel, Richard O.; and Lencoski, Michael J., to Ranpak Corp. Modular cushioning conversion machine. 5,607,383, Cl. 493-464.000.

Armitage, Scott T.: *See—*
Kroll, Mark W.; Brewer, James E.; and Armitage, Scott T., 5,607,460, Cl. 607-30.000.

Armour, Kathryn L.: *See—*
Harris, William J.; Carr, Francis J.; and Armour, Kathryn L., 5,607,847, Cl. 435-69.600.

Armstrong, David R.; and Van Eck, Hendrick J. R., to Hertford Medical Limited. Heart monitoring apparatus. 5,606,978, Cl. 128-711.000.

Armstrong, Randolph K., to Intermedics, Inc. Method and apparatus for automatic shock electrode enabling. 5,607,455, Cl. 607-8.000.

Arnaud-Sebillotte, Laurence: *See—*
Ribier, Alain; Simonnet, Jean-Thierry; Fanchon, Chantal; Arnaud-Sebillotte, Laurence; and Segot, Evelyne, 5,607,692, Cl. 424-450.000.

Arndts, Dietrich: *See—*
Lösel, Walter; Roos, Otto; and Arndts, Dietrich, 5,607,943, Cl. 514-301.000.

Arnould, Jean-Claude, to Zeneca Limited; and Zeneca Pharma SA. Carbapenem derivatives containing a bicyclic ketone substituent and their use as anti-infectives. 5,607,928, Cl. 514-210.000.

AroSport Marketing, Inc.: *See—*
Schoen, Steven J.; Schoen, Paul E.; and Luoma, Todd M., 5,607,347, Cl. 451-558.000.

Arreghini, Luigi; and Cimetta, Silvano, to Electrolux Zanussi Elettrodomestici S.p.A. Clothes washing machine with improved water recovery tank. 5,606,878, Cl. 68-17.00R.

Arslanouk, Mahmoud: *See—*
Wallace, John S.; and Arslanouk, Mahmoud, 5,607,720, Cl. 427-181.000.

Artann Corporation, a NJ Corp.: *See—*
Sarvazyan, Armen P., 5,606,971, Cl. 128-660.020.

Arturo Salice S.p.A.: *See—*
Salice, Luciano, 5,607,271, Cl. 411-349.000.

Aruga, Keiji: *See—*
Mizoshita, Yoshifumi; Yamada, Tomoyoshi; Kuroba, Yasumasa; Kouhei, Toru; Sugawara, Takao; Matsumoto, Masaru; Mase, Hiroyuki; Tsunekewa, Masao; Koganezawa, Shinji; and Aruga, Keiji, 5,608,592, Cl. 360-105.000.

Arzbaecher, Robert C., to Illinois Institute of Technology. Implantable drug delivery apparatus. 5,607,418, Cl. 604-891.100.

Asahi Chemical Industry Co., Ltd.: *See—*
Inoue, Akio; and Suzuki, Yoshio, 5,607,617, Cl. 252-73.000.

Asahi Corporation: *See—*
Yano, Hideo; and Tsunoda, Norio, 5,608,702, Cl. 369-32.000.

Asahi Denka Kogyo Kabushiki Kaisha: *See—*
Akutsu, Mitsuo; Tominaga, Nobuhide; Oya, Keiji; Tomita, Athuo; and Shigeno, Kouichi, 5,607,894, Cl. 503-209.000.
Maekawa, Kazuo; Nakahara, Yutaka; and Shinpo, Kouzaburo, 5,607,988, Cl. 524-100.000.

Asahi Glass Company Ltd.: *See—*
Samejima, Shunichi; Kitamura, Kenroh; Watanabe, Naohiro; Asano, Teruo; Kamimura, Toru; and Usami, Yoko, 5,607,912, Cl. 510-411.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ito, Kohzoh; Ueno, Ikuo; Nakayama, Yoshiaki; and Hikasa, Katsuzi, 5,607,636, Cl. 264-205.000.
Nakayama, Yoshimichi; and Yonezawa, Masaaki, 5,608,022, Cl. 526-212.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Okuda, Isao; Shinozaki, Shimpei; Kanazawa, Hiroshi; and Takishima, Suguru, 5,608,709, Cl. 369-112.000.
Ozaki, Hiroyasu, 5,608,489, Cl. 396-51.000.

Asahi Seiko Kabushiki Kaisha: *See—*
Tani, Kiyoshi, 5,607,352, Cl. 453-57.000.

Asai, Hiroshi: *See—*
Yoshida, Mitsuhiro; and Asai, Hiroshi, 5,608,535, Cl. 386-123.000.

Asai, Ikuo, to Meiki Co., Ltd. Mold for molding disc substrata. 5,607,705, Cl. 425-190.000.

Asai, Satoru: *See—*
Haruki, Tamae; Nakagawa, Kenji; Taguchi, Masao; Tanaka, Hiroyuki; Asai, Satoru; and Hanyu, Isamu, 5,607,821, Cl. 430-396.000.

Asai, Seiichi, to OA Care System Co., Ltd. Method for effecting cleaning. 5,607,516, Cl. 134-21.000.

Asanasavest, Chainarong, to National Semiconductor Corporation. Apparatus and method for ultrasonic bonding lead frames and bonding wires in semiconductor packaging applications. 5,607,096, Cl. 228-1.100.

Asano, Seiji: *See—*
Takagi, Junichi; and Asano, Seiji, 5,608,486, Cl. 396-6.000.

Asano, Teruo: *See—*
Samejima, Shunichi; Kitamura, Kenroh; Watanabe, Naohiro; Asano, Teruo; Kamimura, Toru; and Usami, Yoko, 5,607,912, Cl. 510-411.000.

Ascione, Jean-Marc; Allard, Delphine; and Hansenne, Isabelle, to L'Oreal. Photoprotective/cosmetic compositions comprising UV-A and/or UV-B sunscreens and polymers compatible therewith. 5,607,664, Cl. 424-59.000.

Asea Brown Boveri AB: *See—*
Brantmark, Håkan; Eriksson, Peter; Johansson, Sven-Erik; and Reyier, Ingemar, 5,608,619, Cl. 364-192.000.
Holmström, Göran; Lundquist, Jan; and Wieck, Håkan, 5,608,597, Cl. 361-127.000.

Asfari, Zouhair: *See—*
Dozol, Jean-François; Asfari, Zouhair; Hill, Clément; and Vicens, Jacques, 5,607,591, Cl. 210-638.000.

Asgrow Seed Company: *See—*
Paschal, E. Hamer, II, 5,608,141, Cl. 800-200.000.

Ashie, Nobuyuki: *See—*
Hiasa, Masami; Ashie, Nobuyuki; Saito, Susumu; and Ohtani, Takayuki, 5,607,595, Cl. 210-669.000.

Ashland Inc.: *See—*
Kim, Young D., deceased; and Haugse, A. Leonard, 5,607,986, Cl. 523-141.000.

Asmo Co., Ltd.: *See—*
Kanou, Wataru; and Yamada, Takahiro, 5,606,827, Cl. 49-352.000.

Assamongkorn, Varin: *See—*
Archetti, Barbara; and Assamongkorn, Varin, 5,606,874, Cl. 63-21.000.

Associated RT, Inc.: *See—*
Stilp, Louis A.; Knight, Curtis A.; and Webber, John C., 5,608,410, Cl. 342-387.000.

Astle, Brian, to Intel Corporation. Reducing blocking effects in block transfer encoders. 5,608,652, Cl. 364-514.00R.

Astoria Jewelry Mfg. Co., Inc.: *See—*
Zeller, Joseph; and Rubin, Bruce, 5,606,873, Cl. 63-15.000.

Astra Aktiebolag: *See—*
Boar, Robin B.; Cross, Alan J.; Gray, Duncan A.; and Green, Richard A., 5,607,956, Cl. 514-365.000.

Astrolab, Inc.: *See—*
Toma, Stephen J., 5,607,325, Cl. 439-578.000.

Asulab S.A.: *See—*
Grupp, Joachim, 5,608,567, Cl. 359-275.000.

AT&T: *See—*
Carlsen, Ralph; Kaplan, Marc P.; and Robertson, John S., 5,608,782, Cl. 379-63.000.

AT&T Global Information Solutions Company: *See—*
Bartlett, Donald M., 5,608,273, Cl. 307-64.000.
Gasparik, Frank, 5,608,390, Cl. 340-870.010.

Ataka, Hiroyuki: *See—*
Tanaka, Tomoki; Ataka, Hiroyuki; and Iwasaki, Yoichi, 5,608,493, Cl. 399-83.000.

Atari Corporation: *See—*
Schwartz, David M., 5,607,356, Cl. 463-31.000.

Atari Games Corporation: *See—*
Copperman, Norman S.; and Winblad, Wade O., 5,607,308, Cl. 434-62.000.

Athanasiou, Kyriacos A.; and Boyan, Barbara D., to Board of Regents, University of Texas System. Multi-phase bioerodible implant/carrier and method of manufacturing and using same. 5,607,474, Cl. 623-11.000.

Atherton, Mark L.: *See—*
Mandell, Douglas E.; Richards, Martin J.; Atherton, Mark L.; Goldberg, Paul R.; and Davis, Mark F., 5,608,805, Cl. 381-77.000.

Atkinson, David I. H.; Walton, Ian C.; Glotin, Bernard J. P.; and Segeral, Gérard, to Schlumberger Technology Corporation. Flow measurement system. 5,608,170, Cl. 73-861.040.

Atkinson, Robert G.; Williams, Antony S.; Wittenberg, Craig; Koppolu, Srinivasa R.; and Hodges, C. Douglas, to Microsoft Corporation. Method and system for caching presentation data of a source object in a presentation cache. 5,608,909, Cl. 395-703.000.

Atlantic Richfield Company: *See—*
Bergren, Frank E.; Blount, Curtis G.; Withers, Robert J.; and Bond, Andrew J., 5,607,015, Cl. 166-250.010.

Atlas, Daphne: *See—*
Miman, Isaac; Veinberg, Alexander; Atlas, Daphne; and Melamed, Eldad, 5,607,969, Cl. 514-538.000.

Attridge, David M., to Xerox Corporation. Vacuum transport apparatus. 5,608,511, Cl. 399-398.000.

Au, Anson Y. G.; and Wu, Shin-Tson, to Hughes Electronics. Focal-plane detector imaging system with improved optical damage threshold. 5,608,833, Cl. 385-116.000.

Aucremanne, Cécile, to Saphir. Device for detecting gas by infrared absorption. 5,608,219, Cl. 250-343.000.

Audebert, Jean-Claude: *See—*
Brun, Didier; Pahmer, François; and Audebert, Jean-Claude, 5,607,144, Cl. 266-249.000.

Ausimont S.p.A.: *See—*
Colaianna, Pasqua; Abusleme, Julio A.; and Fanti, Natalino D., 5,608,020, Cl. 526-206.000.
Cuzzato, Paolo; and Masiero, Antonio, 5,608,125, Cl. 570-166.000.

Austel, Volkhard: *See—*
Linz, Günter; Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Müller, Thomas; Weisenberger, Johannes; and Guth, Brian, 5,607,944, Cl. 514-301.000.

Austmarine Pty. Ltd.: *See—*
Hanrahan, Michael G., 5,606,935, Cl. 119-203.000.

AutoEntry OnLine, Inc.: *See—*
Ogawa, Stuart S.; and Pierce, Kevin R., 5,608,874, Cl. 395-200.150.

Automated Currency Instruments, Inc.: *See—*
Schwartz, Andrew J., 5,607,351, Cl. 453-32.000.

Autosplice Systems, Inc.: *See—*
Nyman, Bengt E., 5,607,313, Cl. 439-83.000.

Avery Dennison Corporation: *See—*
Podosek, Edward, 5,607,246, Cl. 402-73.000.

Avon Products, Inc.: *See—*
Ptchelintsev, Dmitri, 5,607,968, Cl. 514-474.000.

Avtron Manufacturing, Inc.: *See—*
Emery, John W.; Hetzel, Robert J., deceased, 5,608,277, Cl. 310-68.00B.

Axworthy, Donald B.; Theodore, Louis J.; Gustavson, Linda M.; and Reno, John M., to NeoRx Corporation. Biotinidase-resistant biotin-DOTA conjugates. 5,608,060, Cl. 540-474.000.

Azarnia, Roobik; Fuentes, Susan M.; and Russell, Thomas R., to Coulter Corporation. Apparatus for measuring analytes in a fluid sample. 5,607,565, Cl. 204-403.000.

Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A.: *See—*
Spatafora, Mario, 5,607,042, Cl. 198-347.300.

B & W Nuclear Technologies: *See—*
Schafer, Bruce W., 5,606,792, Cl. 29-727.000.

B-O-F Corporation: *See—*
Coretti, Joseph, Jr.; and Knorring, Edward I., Jr., 5,607,068, Cl. 211-59.200.

B.V. Optische Industrie "De Oude Delft": *See—*
Geluk, Ronald J., 5,608,777, Cl. 378-146.000.

Babcock & Wilcox Company, The: *See—*
MacLauchlan, Daniel T., 5,608,164, Cl. 73-599.000.
MacLauchlan, Daniel T.; Latimer, Paul J.; and Latham, Wayne M., 5,608,691, Cl. 367-140.000.

Babiarz, Joseph E.: *See—*
Winter, Roland A. E.; Ravichandran, Ramanathan; Holt, Mark S.; von Ahn, Volker H.; Babiarz, Joseph E.; and Leppard, David G., 5,607,987, Cl. 524-91.000.

Bach, Volker: *See—*
Schefczik, Ernst; Bach, Volker; Reichelt, Helmut; and Grund, Clemens, 5,608,041, Cl. 534-752.000.

Back, Dwight D.; Grzyll, Lawrence R.; Ramos, Charlie; and Samad, Nidal A., to Mainstream Engineering Corporation. Process and apparatus for oxidizing and neutralizing caustic waste to liquid fertilizer. 5,607,653, Cl. 423-235.000.

Bäck, Roland: *See—*
Höglund, Hans; Bäck, Roland; Danielsson, Ove; and Falk, Bo, 5,607,546, Cl. 162-25.000.

Back Swing Management, Inc.: *See—*
Mastandrea, William J.; and Curtis, Donald R., 5,607,361, Cl. 473-207.000.

Bacon, Edward R.: *See—*
D'Ambra, Thomas E.; Bacon, Edward R.; Bell, Malcolm R.; and Ward, Susan J., 5,607,933, Cl. 514-253.000.

Baden, Catherine S.; Dunsmuir, Pamela; and Lee, Kathleen Y., to DNA Plant Technology Corp. Plant group 2 promoters and uses thereof. 5,608,144, Cl. 800-205.000.

Bader, Heinz: *See—*
Drexler, Johannes; Wöhrl, Alfons; Bader, Heinz; Bernitt, Andreas; Spies, Hans; Fendt, Günter; and Hora, Peter, 5,608,628, Cl. 364-424.055.

Badorc, Alain; Bordes, Marie-Françoise; de Cointet, Paul; Herbert, Jean-Marc; and Maffrand, Jean-Pierre, to Sanofi. Substituted 4-phenylthiazole derivatives, process for their preparation and pharmaceutical compositions containing them. 5,607,952, Cl. 514-326.000.

Bae, Sung H. Bottom structure of a bag. 5,607,175, Cl. 280-655.000.

Baek, Bok H.: *See—*
Park, Ho T.; Jae, Keun Y.; Baek, Bok H.; and Ryu, Kyung K., 5,608,534, Cl. 386-83.000.

Baek, Seung H.; Mackin, Thomas A.; and Woo, Nea Y., to Eastman Kodak Company. Thermal cross-talk compensating current driver for laser diode array. 5,608,747, Cl. 372-33.000.

Baensch, Michael; and Schrey, Wilfried, to Mannesmann Aktiengesellschaft. Device for the guiding away cold-rolled tubes behind a cold pilger rolling mill. 5,606,885, Cl. 72-250.000.

Bagwell, C. Bruce, to Maine Medical Center Research Institute. Fluorescent imperfect hairpin nucleic acid probes. 5,607,834, Cl. 435-6.000.

Bahlman, Julia S.: *See—*
Farrington, Theodore E., Jr.; Bahlman, Julia S.; Burazin, Mark A.; Chen, Fung-jou; Goerg, Kristin A.; Hermans, Michael A.; Makolin, Robert J.; and Rekoske, Michael J., 5,607,551, Cl. 162-109.000.

Bahns, Ted L.; and Peacock, Bruce T., to Imation Corp. Marking of optical disc for customized identification. 5,607,188, Cl. 283-113.000.

Bahuguna, Ramendra D.: *See—*
Esparza, Joel; Bahuguna, Ramendra D.; and Williams, Gareth T., 5,608,210, Cl. 250-226.000.

Baik, Bok H.: *See—*
Kim, Jong W.; Lee, Jeong W.; and Baik, Bok H., 5,607,357, Cl. 463-40.000.

Bailey, A. Gregory; and Folsom, A. C., Jr., to Crystal Medical Technology, a division of Folsom Metal Products, Inc. Implant connector. 5,607,304, Cl. 433-174.000.

Bailey, James S.: *See—*
Freund, Kenneth S.; Giles, Andrew J.; and Bailey, James S., 5,606,776, Cl. 19-105.000.

Bailey, John M. Distance marker within a golf course fairway. 5,607,153, Cl. 473-150.000.

Bailey, Kirk J., to Biomet, Inc. Bone stabilization implant having a bone plate portion with integral cable clamping means. 5,607,430, Cl. 606-74.000.

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Jarrett, Michael, 5,607,904, Cl. 507-131.000.

Baker, Robert E. Shower chair and bathtub transfer assembly. 5,606,751, Cl. 4-560.100.

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Balder, Richard E.: *See—*
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Baldwin, David N.: *See—*
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Keith, James A., Jr.; and Ballew, William S., 5,607,343, Cl. 451-344.000.

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Murofushi, Katsumi; Hosoda, Yoshikazu; Kawasaki, Toshiya; Abe, Yuki; Yamaguchi, Kiyotaka; and Yoshida, Takayuki, 5,607,803, Cl. 430-106.000.

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Fulks, Garv C.; Jones, Nicholas; Barbosa, Manuel T.; Jimenez, Francisco J. S.; De La Lastra Arjona, Antonio P.; Garcia, Miguel C.; and Gorostidi, Jose I. M., 5,607,035, Cl. 188-322.190.

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Kecmer, Robert P.; and Barnes, James B., 5,607,273, Cl. 411-79.000.

Barnes, Michael W.; and Taylor, Robert D., to Morton International, Inc. Gas generant compositions containing amine nitrates plus basic copper (II) nitrate and/or cobalt(III) triammine trinitrate. 5,608,183, Cl. 149-45.000.

Baron, Emilio A.; Berneking, David J.; Chisholm, John W.; Fisher, Marc K.; Trainor, William F.; and Foreman, James R., to Protechnics International, Inc. Gamma ray spectral tool for well logging. 5,608,214, Cl. 250-262.000.

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Schefczik, Ernst; Bach, Volker; Reichelt, Helmut; and Grund, Clemens, 5,608,041, Cl. 534-752.000.
Schmid, Raimund; and Mronga, Norbert, 5,607,504, Cl. 106-403.000.

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Heyman, Duane A.; Smiecinski, Theodore M.; and Mente, Donald C., 5,607,982, Cl. 521-67.000.

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Liepold, August; Thiele, Hartmut; Toral, Jose; Lutz, Gottfried; and Brandstetter, Hermann, 5,607,052, Cl. 206-307.000.

Bashengezi, Constantin M., to C.S.S.A.H.A., Inc. Purified extract of uvaria brevistipitata and a process for obtaining the purified extract therefor. 5,607,673, Cl. 424-195.100.

Bashkin, James K.: *See—*
Stern, Michael K.; Allman, James M.; Bashkin, James K.; and Rains, Roger K., 5,608,111, Cl. 564-398.000.

Basik, Ronald; and Colvin, Richard. Arrow rest assembly. 5,606,961, Cl. 124-44.500.

Baskeyfield, Lewis J.; Jay, Graham F.; and Wright, Paul, to Fisons, PLC. Pharmaceutical inhalation compositions. 5,607,662, Cl. 424-46.000.

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Bauer, Jeffrey R., to Darko Company, Inc. Method of, and panel for, applying a graphic image to slat walls. 5,606,834, Cl. 52-506.010.

Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., to Hewlett-Packard Company. Inkjet printer printhead having equalized shelf length. 5,608,436, Cl. 347-65.000.

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Baumann, Hanns U. Energy dissipating connector. 5,606,839, Cl. 52-726.100.

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Hoffmann, Gerhard; Lukas, Klaus; Lechner, Stephan; Steiner, Ferdinand; Baumgärtner, Helmut; Löhmann, Ekkehard; and Leclerc, Matthias, 5,608,800, Cl. 380-25.000.

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Weihing, Gerhard; Ebinger, Georg; Hartick, Ulrike; Runtschke, Horst; and Baur, Eberhard, 5,607,220, Cl. 362-66.000.

Bausch & Lomb Incorporated: *See—*
Flemmer, Rory L. C.; and Byron, David L., 5,608,454, Cl. 348-88.000.

Bayer Aktiengesellschaft: *See—*
Fröhlen, Hans-Günter; Block, Hans-Dieter; Ohlendorf, Wolfgang; Moretto, Hans-Heinrich; and Schmidt, Peter, 5,608,099, Cl. 558-150.000.
Hassenrück, Karin; Wild, Peter; and Michna, Martin, 5,607,502, Cl. 106-22.00K.
Müller-Gliemann, Matthias; Müller, Ulrich; Beuck, Martin; Zaiss, Siegfried; Gerdes, Christoph; Domdey-Bette, Anke; Grützmann, Rudi; Lohmer, Stefan; Wohlfeil, Stefan; Yalkinoglu, Özkan; Elting, James; and Denzer, Dirk, 5,607,962, Cl. 514-415.000.
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,607,942, Cl. 546-200.000.
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Beaty, Keith D., to Implant Innovations, Inc. Surgically implantable prosthetic devices. 5,607,480, Cl. 623-16.000.

Becher, Heinz-Manfred; Drandarevski, Christo; Mengel, Rudolf; and Ost, Walter, to Shell Agrar GmbH & Co. KG. Benzoylureas. 5,607,977, Cl. 514-594.000.

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Beck, Norman G.: *See—*
Wallis, Frank S.; Caillat, Jean-Luc; Simpson, Francis M.; Anderson, Gary J.; Rode, Donald W.; and Beck, Norman G., 5,607,288, Cl. 417-310.000.

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Beckham, Doyle K. Safety device. 5,607,029, Cl. 182-3.000.

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Lerner, Bernard J., 5,607,654, Cl. 423-240.00S.

Becton Dickinson and Company: *See—*
Dufresne, Christopher; and Mousset, Patrice, 5,607,402, Cl. 604-263.000.
Grimard, Jean P.; and Olive, Eric, 5,607,399, Cl. 604-220.000.
Hoang, Minh Q.; and Khan, Mohammad A., 5,607,699, Cl. 424-672.000.
Thibault, Jean-Claude; Grimard, Jean-Pierre; and Faure, Catherine F., 5,607,400, Cl. 604-230.000.

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Beer, Markus; and Nelson, Kenneth V., to IBS Filtran GmbH; and Filtran. Method of manufacturing a transmission fluid filter. 5,607,637, Cl. 264-271.100.

Beer, Paul D.: *See—*
Wear, Trevor J.; Moore, Christopher P.; Goulden, Alistair J.; Beer, Paul D.; and Fletcher, Nicholas C., 5,608,059, Cl. 540-465.000.

Begley, Adrian: *See—*
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Behr Thomson-Dehnstoffregler GmbH & Co.: *See—*
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Srüber, Werner; and Fickenscher, Karl, 5,607,858, Cl. 436-69.000.
Stief, Thomas; and Heimburger, Norbert, 5,607,837, Cl. 435-13.000.

Beinglass, Israel; and Carlson, David K., to Applied Materials, Inc. Low temperature high pressure silicon deposition method. 5,607,724, Cl. 427-255.100.

Belanger, Roger R.: *See—*
Novick, Michael A.; and Belanger, Roger R., 5,607,146, Cl. 270-42.000.

Belcher, James F.; and Osborn, Craig, to Texas Instruments Incorporated. Optical coat reticulation post hybridization. 5,607,600, Cl. 216-24.000.

Belcher, James F.: *See—*
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Belenkiy, Yuriy; Grois, Igor; Gumin, Irina; Makhlin, Ilya; Margolin, Mark; and Pescetto, Michael J., to Molex Corporation. Adapter assembly for fiber optic connectors. 5,608,830, Cl. 385-78.000.

Bell Atlantic: *See—*
Farry, George A.; Bigham, John A.; Brooks, Kenneth R.; Lucas, Amos H., Jr.; and O'Donoghue, Colton E., Jr., 5,608,447, Cl. 348-7.000.

Bell Communications Research, Inc.: *See—*
Aiello, William A.; and Venkatesan, Ramarathnam, 5,608,801, Cl. 380-46.000.

Fisher, Gregory M.; Cebulka, Kathleen D.; Man, Susan K.; Nazif, Zaher A.; and Vinciguerra, Lori J., 5,608,789, Cl. 379-201.000.
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Bell, Donald R.: *See—*
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Bell Helicopter Textron Inc.: *See—*
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Bell, Malcolm R.: *See—*
D'Ambra, Thomas E.; Bacon, Edward R.; Bell, Malcolm R.; and Ward, Susan J., 5,607,933, Cl. 514-253.000.

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Bellaire, Helmut: *See—*
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Bellussi, Giuseppe: *See—*
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Benecke-Kaliko AG: *See—*
Vollbrecht, Michael; Hildebrandt, Gustav; Kruse, Hans-Hinrich; and Bruder, Axel, 5,607,755, Cl. 428-217.000.

Bennefeld, David H.; Elliot, Jonathan D.; Vatland, Danny J.; and Gilbert, John M., to Lasermaster Corporation. Heating control for thermal printers. 5,608,442, Cl. 347-211.000.

Bennison, Brenda W.: *See—*
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Benscoter, Richard D.: *See—*
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Benton, William J.; and Koskan, Larry P., to Donlar Corporation. Inhibition of carbon dioxide corrosion of metals. 5,607,623, Cl. 252-392.000.

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Bentz, Joseph C.; Carroll, John T., III; Peters, Lester L.; Yonushonis, Thomas M.; and Campbell, Jeffrey L., to Cummins Engine Company; and Toshiba Corporation. Low inertia, wear-resistant valve for engine fuel injection systems. 5,607,106, Cl. 239-88.000.

Berg, Arne; Klaveness, Jo; Strande, Per; and Stubberud, Lars, to Nycomed Imaging AS. Aggregates of x-ray microparticles for ultrasound imaging. 5,607,661, Cl. 424-9.520.

Berg, Michael: *See—*
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Berge, Harald M. Process for treating fresh meat with saccharose. 5,607,713, Cl. 426-332.000.

Bergemont, Albert: *See—*
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Berger, Jeffrey A.; and Kurtz, Stanley C., to International Business Machines Corporation. Data set level cache optimization. 5,608,890, Cl. 395-440.000.

Berger, Richard M., to American Filtrona Corporation. Polyethylene terephthalate sheath/thermoplastic polymer core bicomponent fibers, method of making same and products formed therefrom. 5,607,766, Cl. 428-373.000.

Bergren, Frank E.; Blount, Curtis G.; Withers, Robert J.; and Bond, Andrew J., to Atlantic Richfield Company. Method and apparatus for installing acoustic sensors in a wellbore. 5,607,015, Cl. 166-250.010.

Bergström, Karin: *See—*
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Berkeley, James E.; and McMillan, John A. Spin disk humidifier. 5,607,627, Cl. 261-91.000.

Berkstresser, David: *See—*
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Bernard, Dominique; and Nguyen, Quang Lan, to L'Oreal. Stabilized cosmetic or dermatological composition containing several precursors of the same active agent in order to maximize its release, and use thereof. 5,607,921, Cl. 514-23.000.

Bernard, Patrick E. Y.; and Manas, Guy A. J., to Eastman Kodak Company. Process and device for the separation of substances dissolved in the washing water used in processing bath of a photographic film. 5,607,592, Cl. 210-641.000.

Berneking, David J.: *See—*
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Bernitt, Andreas: *See—*
Drexler, Johannes; Wöhrl, Alfons; Bader, Heinz; Bernitt, Andreas; Spies, Hans; Fendt, Günter; and Hora, Peter, 5,608,628, Cl. 364-424.055.

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Berol Nobel AB: *See—*
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Berta, Norbert I., to McNeil-PPC, Inc. Indexing and feeding systems for apparatus for gelatin coating tablets. 5,607,044, Cl. 198-468.400.

Bertelsen, Hugo; Nellemann, Peter; Murphy, Matthew J.; Wellnitz, Donald R.; and Hines, Horace H., to ADAC Laboratories. Multi-head nuclear medicine camera for dual SPECT and PET imaging with monuniform attenuation correction. 5,608,221, Cl. 250-363.030.

Bertocchio, Rene, to Elf Atochem S.A. Process for the purification of difluoromethane. 5,608,129, Cl. 570-179.000.

Bertrand, Jacques C.; Ciccarelli, Roger N.; Pickering, Thomas R.; and Bayley, Denise R., to Xerox Corporation. Combination, set, or gamut toners. 5,607,804, Cl. 430-106.000.

Besselink, Petrus A.: *See—*
Sachdeva, Rohit C. L.; and Besselink, Petrus A., 5,607,435, Cl. 606-139.000.

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Bettenhausen, Roger V. Apparatus for wrapping a package. 5,606,849, Cl. 53-556.000.

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Betz, William R.; and Desorcie, James L., to Supelco, Inc. Nucleophilic bodies bonded to siloxane and use thereof for separations from sample matrices. 5,607,580, Cl. 210-198.200.

BetzDearborn Inc.: *See—*
Hart, Paul R., 5,607,574, Cl. 208-188.000.
Wright, J. Barry; and Michalopoulos, Daniel L., 5,607,597, Cl. 210-755.000.

Beuck, Martin: *See—*
Müller-Gliemann, Matthias; Müller, Ulrich; Beuck, Martin; Zaiss, Siegfried; Gerdes, Christoph; Domdey-Bette, Anke; Grützmann, Rudi; Lohmer, Stefan; Wohlfeil, Stefan; Yalkinoglu, Özkan; Elting, James; and Denzer, Dirk, 5,607,962, Cl. 514-415.000.

Beyner, André: *See—*
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Bezwada, Rao S.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Polymer blends containing absorbable polyoxaesters. 5,607,687, Cl. 424-426.000.

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Bhattacharyya, Bidyut K.; and Tanahashi, Shigeo, to Intel Corporation. High performance and high capacitance package with improved thermal dissipation. 5,607,883, Cl. 437-209.000.

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Bhushan, Reva: *See—*
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Biegel, Charles H.; Carter, Nicholas J.; Chen, Chung; Christofferson, Michael; Desai, Mahesh P.; Eberhart, Rita A.; Klonsky, Steven M.; Missett, Shaun; Rabenko, Theodore F.; Tomassone, John R.; and Turvene, David S., to Hubbell Incorporated. Control system and operations system interface for a network element in an access system. 5,608,720, Cl. 370-249.000.

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Bielinski, Slawomir J.; McCormick, Larry L.; and Stephenson, Roger C., to G & H Technology, Inc. Reusable initiator for use in triggering high-load actuators. 5,606,889, Cl. 74-2.000.

Biemann, Klaus; and Juhasz, Peter, to Massachusetts Institute of Technology. Methods and products for mass spectrometric molecular weight determination of polyionic analytes employing polyionic reagents. 5,607,859, Cl. 436-173.000.

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Bigaud, Marc: *See—*
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Bigham, John A.: *See—*
Farry, George A.; Bigham, John A.; Brooks, Kenneth R.; Lucas, Amos H., Jr.; and O'Donoghue, Colton E., Jr., 5,608,447, Cl. 348-7.000.

Biles, Jonathon R.; and Conner, Arlie R., to In Focus Systems, Inc. Display panel assembly with microlens structure. 5,608,551, Cl. 359-95.000.

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Diago, Jose; and Ludescher, Johannes, 5,608,055, Cl. 540-222.000.

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Pellegrini, Vittoria; Fineschi, Nicoletta; and Zuckerman, Arie J., 5,607,851, Cl. 435-236.000.

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Bishop, Gary, to Moore Business Forms, Inc. Multiple-part carbonless pressure seal business form assembly. 5,607,738, Cl. 428-43.000.

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BK Ladenburg GmbH für Chemische Erzeugnisse: *See*—
Salzburger, Wolfram; Eifler, Silke; and Scholl, Margarete, 5,607,544, Cl. 162-5.000.

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Farrington, Richard I.; and Drizos, George M., 5,606,810, Cl. 38-77.700.
Hedrick, Michael W.; and Winfield, Douglas C., 5,607,364, Cl. 473-318.000.

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Innes, Mark E.; and Blakely, John H., 5,608,311, Cl. 323-218.000.

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Block, Hans-Dieter: *See*—
Fröhlen, Hans-Günter; Block, Hans-Dieter; Ohlendorf, Wolfgang; Moretto, Hans-Heinrich; and Schmidt, Peter, 5,608,099, Cl. 558-150.000.

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Yun, Jong H.; Meyerhoff, Mark E.; and Yang, Victor C., 5,607,567, Cl. 204-418.000.

Board of Regents, University of Texas System: *See*—
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Magda, Darren; Sessler, Jonathan L.; Iverson, Brent L.; Sansom, Petra I.; and Wright, Meredith, 5,607,924, Cl. 514-44.000.

BOC Group plc, The: *See*—
Garrett, Michael E., 5,607,499, Cl. 96-108.000.
Palmer, Richard E., 5,608,197, Cl. 204-157.150.

Boche, Daniel K.: *See*—
Thomas, John E.; McCall, John E.; Boche, Daniel K.; Rolando, John J.; and Klos, Terry J., 5,607,651, Cl. 422-266.000.

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Lösel, Walter; Roos, Otto; and Arndts, Dietrich, 5,607,943, Cl. 514-301.000.

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Merz, Herbert; Mueller, Enzio; Stransky, Werner; and Streller, Ilse, 5,607,941, Cl. 514-289.000.

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Kuo, Chung M.; and Bogan, Richard T., 5,608,050, Cl. 536-69.000.

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Gandhi, Rajesh B.; Bogardus, Joseph B.; Garofalo, Peter M.; Marr, Timothy R.; Perrone, Robert K.; and Kaplan, Murray A., 5,608,048, Cl. 536-28.200.

Bogrett, Steven W.: *See*—
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Bohn, Manfred: *See*—
Stache, Ulrich; Alpermann, Hans-Georg; Dürckheimer, Walter; and Bohn, Manfred, 5,608,093, Cl. 552-601.000.

Boigegrain, Robert; Gully, Danielle; Jeanjean, Francis; and Molimard, Jean-Charles, to Sanofi. 3-amidopyrazole derivatives, process for preparing these and pharmaceutical compositions containing them. 5,607,958, Cl. 514-406.000.

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Morgan, Ira L.; Rice, Robert H.; Bolger, Joseph E.; and Schindler, Donald G., 5,608,660, Cl. 364-562.000.

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Bombardier Inc.: *See*—
Rioux, Roger; Pesant, Gilles; Bostelmann, Willy; Talbot, Jean-Guy; Fecteau, Berthold; Cote, Raymond; and Gagne, Yvon, 5,607,026, Cl. 180-190.000.

Bommarius, Andreas: *See*—
Kottenhahn, Matthias; Drauz, Karlheinz; and Bommarius, Andreas, 5,608,076, Cl. 548-317.100.

Bond, Andrew J.: *See*—
Bergren, Frank E.; Blount, Curtis G.; Withers, Robert J.; and Bond, Andrew J., 5,607,015, Cl. 166-250.010.

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Wedlake, Roger J.; Bones, Roger J.; and Segal, David L., 5,607,787, Cl. 429-62.000.

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Stephen, Robert L.; Bonezzi, Cesare; Rossi, Cino; and Eruzzi, Silvio, 5,607,940, Cl. 514-282.000.

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Irgens, Christopher R.; McDowell, Philip D.; Nguyen, Chinh D.; and Bonifield, James, 5,608,369, Cl. 335-281.000.

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Odell, Peter G.; Gibson, George A.; Larson, James R.; and Bonsignore, Frank J., 5,607,807, Cl. 430-137.000.

Bonte, Frédéric; and Meybeck, Alain, to LVMH Recherche. Cosmetic or pharmaceutical composition, especially dermatological composition, containing oxyacanthine, intended in particular for stimulating hair growth or retarding hair loss. 5,607,693, Cl. 424-450.000.

Boord, Warren T.; and Jain, Anil K., to APA Optics, Inc. Wavelength division multiplexed optical modulator and multiplexing method using same. 5,608,826, Cl. 385-37.000.

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Galley, Edward; Godfrey, Dene C.; Guthrie, Walter G.; Hodgkinson, Darren M.; and Linnington, Helen L., 5,607,681, Cl. 424-405.000.

Bordeau, Kenneth J.: *See*—
Glamkowski, Edward J.; Chiang, Yulin; Strupczewski, Joseph T.; Bordeau, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,607,945, Cl. 514-307.000.

Borden, Dennis W.: *See*—
Dadgar, Ahmad; Howarth, Jonathan N.; Sergent, Rodney H.; Favstritsky, Nicolai A.; McKeown, Julie A.; Borden, Dennis W.; Sanders, Brent M.; and Likens, Jane, 5,607,619, Cl. 252-187.200.

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Badorc, Alain; Bordes, Marie-Françoise; de Cointet, Paul; Herbert, Jean-Marc; and Maffrand, Jean-Pierre, 5,607,952, Cl. 514-326.000.

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Costin, Daniel P., 5,607,036, Cl. 192-45.100.

Borgardt, Detta, to Cleanpack GmbH Innovative Verpackungen. Process and device for printing sheeting in rotary offset press. 5,606,914, Cl. 101-488.000.

Boriani, Silvano; and Minarelli, Alessandro, to G.D S.p.A. Roll depletion monitoring device for use in particular with wrapping machines. 5,607,121, Cl. 242-563.200.

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Borland International, Inc.: *See*—
Turpin, William M.; Brown, Kevin L.; and Bogrett, Steven W., 5,608,898, Cl. 395-619.000.

Born, Gunthard, to Deutsche Aerospace AG. Method for avoiding eye damage when using high-power lasers. 5,608,746, Cl. 372-33.000.

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Purcell, Stephen C.; and Bose, Subroto, 5,608,656, Cl. 364-514.00R.

Boss, Scott D.: *See*—
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Andersen, Erik; and Jorgensen, Ib, 5,607,394, Cl. 604-102.000.

Bothwell, Robert L., to Lockheed Fort Worth Company. Method and apparatus for training. 5,607,306, Cl. 434-29.000.

Boucher, Richard C.; Weisman, Gary A.; Turner, John T.; Harden, Thomas K.; Parr, Claude E.; Sullivan, Daniel M.; Erb, Laura J.; and Lustig, Kevin D., to University of Missouri, The Curators of the. Methods of detecting compounds which bind to the P_{2U} receptor. 5,607,836, Cl. 435-7.200.

Boucly, Yvonne. Application of active skin treatments under neutral atmosphere. 5,607,408, Cl. 604-289.000.

Bouldin, Brett: *See*—
Owens, Steve; Bouldin, Brett; and Arizmendi, Napoleon, 5,607,017, Cl. 166-288.000.

Bourne, Malcolm C., to Cornell Research Foundation, Inc. Processing of vegetables which are frozen before canning and sterilizing. 5,607,712, Cl. 426-321.000.

Bourquin, Daniel J.: *See*—
Cuddihy, Mark A.; Drummond, J. B., Jr.; and Bourquin, Daniel J., 5,608,629, Cl. 364-423.098.

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Bowler, Thomas A.: *See*—
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Boyan, Barbara D.: *See*—
Athanasiou, Kyriacos A.; and Boyan, Barbara D., 5,607,474, Cl. 623-11.000.

Boyd, Ewan C.: *See*—
Alexander, Rikki P.; Warrellow, Graham J.; Head, John C.; Boyd, Ewan C.; and Porter, John R., 5,608,070, Cl. 546-270.000.

Boyd, Rick A.: *See*—
Collins, Albert L., Jr.; Boyd, Rick A.; Bradshaw, Herbert L., II; Huber, Alvin J.; Wessner, Charles T.; and Ruch, Dennis B., 5,608,186, Cl. 174-7.000.

Boylan, Eugene B.; Koerner, Robert F.; Hebert, Russell R.; and Megli, Robert, to Bet Technology, Inc. Method of playing a matching card game. 5,607,162, Cl. 273-292.000.

Boyle, William W.: *See*—
Browne, John F.; Wilkinson, Richard L.; and Boyle, William W., 5,608,711, Cl. 369-116.000.
Rilum, John H.; Wilkinson, Richard L.; Li, Shigang; Browne, John F.; and Boyle, William W., 5,608,712, Cl. 369-116.000.

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Abert, Michael; Block, Siegfried; Bozenhardt, Johannes; Leigsnering, Franz; Pfatteicher, Werner; and Schewe, Franz-Clemens, 5,608,882, Cl. 395-307.000.

BP Chemicals Limited: *See*—
Nelson, Helen L.; Richards, David I.; and Simonson, Rune, 5,608,051, Cl. 536-76.000.

BP Exploration & Oil, Inc.: *See*—
Toups, John A., Jr.; Young, David B.; Yousif, Majeed H.; Smolen, B. C.; and Holt, Jonathan, 5,607,901, Cl. 507-103.000.

Bracco International B.V.: *See*—
Ramalingam, Kondareddiar; and Raju, Natarajan, 5,608,110, Cl. 564-253.000.

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Pereira, Heloise A.; Brackett, Daniel J.; and Lerner, Megan R., 5,607,916, Cl. 514-12.000.

Braden, Jeffrey S.: *See*—
Mahulikar, Deepak; Tyler, Derek E.; Braden, Jeffrey S.; and Popplewell, James M., 5,608,267, Cl. 257-796.000.

Bradford, William F.; and Glass, Richard J., to Texas Instruments Incorporated. Method and apparatus for a universal programmable boundary scan driver/sensor circuit. 5,608,736, Cl. 371-22.300.

Bradley, Ralph H.: *See*—
Janssen, Peter J.; Bradley, Ralph H.; Bingham, Joseph P.; Guerinot, William F.; and Otto, Detlev, 5,608,467, Cl. 348-744.000.

Bradshaw, Herbert L., II: *See*—
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Brandes, George R.: *See*—
Twichell, Jonathan C.; Brandes, George R.; Geis, Michael W.; Macaulay, John M.; Duboc, Robert M., Jr.; and Curtin, Christopher J., 5,608,283, Cl. 313-309.000.

Brandle, Charles D., Jr.; Fratello, Vincent J.; and Licht, Steven J., to Lucent Technologies Inc. Article comprising a magneto-optic material having low magnetic moment. 5,608,570, Cl. 359-321.000.

Brandstetter, Hermann: *See*—
Liepold, August; Thiele, Hartmut; Toral, Jose; Lutz, Gottfried; and Brandstetter, Hermann, 5,607,052, Cl. 206-307.000.

Brandt, Jesper: *See*—
Pejryd, Lars; Lundberg, Robert; and Brandt, Jesper, 5,607,887, Cl. 501-94.000.

Brannen, John B.; and Khan, Salahuddin F., to AIDCO Manufacturing, Inc. Depalletizing and dispensing apparatus and method. 5,607,282, Cl. 414-796.300.

Brantmark, Håkan; Eriksson, Peter; Johansson, Sven-Erik; and Reyier, Ingemar, to Asea Brown Boveri AB. Robot control system. 5,608,619, Cl. 364-192.000.

Brault, Jean-Charles: *See*—
Boscher, Daniel; Brault, Jean-Charles; and Landouar, Jean-Michel, 5,608,827, Cl. 385-55.000.

Braun, Eric E.; Pillar, Duane R.; and Halgrimson, Curtis. All-wheel steering system. 5,607,028, Cl. 180-408.000.

Brazier, Glen. Wheel mount track conversion assembly. 5,607,210, Cl. 305-131.000.

Breda, Jean M., to Sextant Avionique. Laser velocimetric and clinometric probe. 5,608,522, Cl. 356-345.000.

Bredemeyer, Lindsey D., to Cooper Cameron Corporation. Sealing system for a valve having biassed sealant under pressure. 5,607,165, Cl. 277-2.000.

Breeze Technology Partnership: *See*—
O'Dwyer, James M., 5,606,806, Cl. 36-3.00B.

Bremmer, Jonathan W.; Cosgrove, Martin C.; and Malofsky, Bernard M., to Loctite Corporation. Roller coating system for impregnation of multifilament web with resin, and method of making a fiber/resin composite material. 5,607,728, Cl. 427-428.000.

Brendel, Albert E., to Sensor Developments, Inc. Force measuring apparatus having electrically-insulated load bearing surfaces. 5,608,173, Cl. 73-862.628.

Brenner, Roland: *See*—
Reimer, Peter; Abramowsky, Heinz; and Brenner, Roland, 5,608,748, Cl. 372-35.000.

Breslow, Ronald: *See*—
Marks, Paul A.; Rifkind, Richard A.; Breslow, Ronald; and Jursic, Branko, 5,608,108, Cl. 562-621.000.

Brewer, James E.: *See*—
Kroll, Mark W.; Brewer, James E.; and Armitage, Scott T., 5,607,460, Cl. 607-30.000.

Brewis, Roderick C. Drilling apparatus. 5,607,257, Cl. 405-184.000.

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Bridgestone Corporation: *See*—
Yanagisawa, Manabu, 5,606,852, Cl. 57-207.000.

Brief, David C.: *See*—
Hamstra, James R.; and Brief, David C., 5,608,869, Cl. 395-200.010.

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Bruener, Patrick J.; Tharman, Paul A.; Fiorenza, John A., II; Pfaff, Joseph L.; Dykstra, Richard A.; and Reitman, William H., 5,606,851, Cl. 56-11.900.
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Butler, James P.; Topulos, George P.; and Lehr, John L., 5,606,969, Cl. 128-653.100.

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Smith, Robert J.; and Wilmore, Douglas, 5,607,975, Cl. 514-563.000.

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Brinkmann, Ulrich: *See*—
Pastan, Ira; Willingham, Mark; Fitzgerald, David; Brinkmann, Ulrich; and Pai, Lee, 5,608,039, Cl. 530-387.300.

Brisby, Ian. Animal feeding apparatus. 5,606,934, Cl. 119-53.500.

Brissonnet, Jean P.; and Burnier, Véronique, to La Roche Posay Laboratoire Pharmaceutique. Makeup remover/skin cleanser compositions comprising quaternary phosphates and peg diesters. 5,607,680, Cl. 424-401.000.

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Cipollina, Joseph A.; Mattson, Ronald J.; and Sloan, Charles P., 5,607,961, Cl. 514-415.000.
Gandhi, Rajesh B.; Bogardus, Joseph B.; Garofalo, Peter M.; Marr, Timothy R.; Perrone, Robert K.; and Kaplan, Murray A., 5,608,048, Cl. 536-28.200.
Okuyama, Satsuki; Okita, Takaaki; and Kamachi, Hajime, 5,608,044, Cl. 536-6.400.
Singh, Janak; Bisacchi, Gregory S.; Godfrey, Jollie D., Jr.; Mitt, Toomas; Mueller, Richard H.; Zahler, Robert; and Kissick, Thomas P., 5,608,064, Cl. 544-277.000.
Spector, Richard H.; Chen, Bang-Chi; and Quinlan, Sandra L., 5,608,049, Cl. 536-28.200.

British Nuclear Fuels plc: *See—*
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Hutchings, Adrian C.; Grimes, John; and Shaw, Kevin, 5,607,353, Cl. 454-187.000.

British Technology Group Limited: *See—*
Brown, Richard C., 5,607,497, Cl. 95-3.000.
Lonergan, Andrew R.; and McDonald, Peter J., 5,608,322, Cl. 324-309.000.
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Laidler, Graham A., 5,608,792, Cl. 379-386.000.

Broese, Einar; Gramckow, Otto; Martinetz, Thomas; and Soergel, Guenter, to Siemens Aktiengesellschaft. Method and device for conducting a process in a controlled system with at least one precomputed parameter based on a plurality of results from partial mathematical models combined by a neural network. 5,608,842, Cl. 395-21.000.

Bronco, Simona; Consiglio, Giambattista; Di Benedetto, Silvia; Drent, Eit; Heeres, Hero J.; Van Broekhoven, Johannes A. M.; and Reynhout, Marinus J., to Shell Oil Company. Preparation of polymers of carbon monoxide and an aliphatic alpha-olefin. 5,608,001, Cl. 524-709.000.

Brookley, Charles E. Blackbody type heating element for calibration furnace with pyrolytic graphite coating disposed on end cap electrode members. 5,608,838, Cl. 392-407.000.

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Muka, Richard S.; Pippins, Michael W.; and Drew, Mitchell A., 5,607,276, Cl. 414-331.000.

Brooks, Kenneth R.: *See—*
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Brooks, Richard J., 5,607,496, Cl. 75-670.000.

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Brother Kogyo Kabushiki Kaisha: *See—*
Fujioka, Masaya, 5,607,501, Cl. 106-22.00A.
Makino, Kazumasa, 5,608,501, Cl. 399-119.000.

Brotz, Gregory R. Illuminated clipboard with movable writing surface. 5,607,223, Cl. 362-99.000.

Brown, Allan E., to Philips Electronics North America Corp. Multiple pulsing throughout the glow mode. 5,608,296, Cl. 315-289.000.

Brown, Dale M.: *See—*
Shu, Emily Y.; Brown, Dale M.; and Petrucco, Louis J., 5,608,515, Cl. 356-43.000.

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Brown, James P., to Kimberly-Clark Corporation. High efficiency dust sock. 5,607,735, Cl. 428-36.100.

Brown, Kevin L.: *See—*
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Brown, Kris K., to Micron Technology Inc. Storage capacitor structures using CVD tin on hemispherical grain silicon. 5,608,247, Cl. 257-306.000.

Brown, Merl E.: *See—*
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Brown, Patricia S.: *See—*
Wilson, Arthur K.; Brown, Patricia S.; and Arbeiter, Jason R., 5,608,434, Cl. 347-50.000.

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Coltec Industries Inc.: *See*—
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Colvin, Richard: *See*—
Basik, Ronald; and Colvin, Richard, 5,606,961, Cl. 124-44.500.
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Cameron, Richard J.; Tang, Wai-Cheung; and Dokas, Van, 5,608,363, Cl. 333-202.000.
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Bourzat, Jean-Dominique; and Commerçon, Alain, 5,608,102, Cl. 560-39.000.
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Dozol, Jean-François; Asfari, Zouhair; Hill, Clément; and Vicens, Jacques, 5,607,591, Cl. 210-638.000.
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Dittmer, Charles H., 5,608,607, Cl. 361-686.000.
Condux International, Inc.: *See*—
Hasse, Gregory L., 5,607,248, Cl. 403-78.000.
Conner, Arlie R.: *See*—
Biles, Jonathon R.; and Conner, Arlie R., 5,608,551, Cl. 359-95.000.
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Shrinkle, Louis J., 5,608,583, Cl. 360-46.000.
Conner, Timothy W., to Monsanto Company. Fruit specific promoters. 5,608,150, Cl. 800-205.000.
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Van Gorp, Cornelius L.; Vosburgh, Frederick; and Schubert, Robert L., II, 5,607,840, Cl. 435-68.100.
Conway, Richard B.; and Wendell, Edward G., to Delta H. Systems, Inc. Interactive diagnostic system. 5,608,657, Cl. 364-551.010.
Cook, Ivan J., to Cook, Ivan J. Bale handling apparatus and process. 5,607,274, Cl. 414-111.000.
Cook, Phillip D.; and Hoke, Glenn, to ISIS Pharmaceuticals, Inc. Oligonucleotides for modulating cytomegalovirus having phosphorothioate linkages of high chiral purity. 5,607,923, Cl. 514-44.000.
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Szudarek, Robert G.; Yeow, Yew T.; Nielsen, Arnold D.; and Cook, Roger, 5,608,611, Cl. 361-753.000.
Cooke, Conrad C., to Sony Corporation; and Sony United Kingdom Limited. Method and apparatus for arbitrating data requests and responses thereto as separate bus transactions. 5,608,879, Cl. 395-290.000.
Cooke, William E., to Ford Motor Company. Method of manufacturing a circuit assembly. 5,607,538, Cl. 156-291.000.
Cooper Cameron Corporation: *See*—
Bredemeyer, Lindsey D., 5,607,165, Cl. 277-2.000.
Cooper, Douglas, to Vendstar, Inc. Tamper proof vending mahcine with interchangeable product compartments. 5,607,085, Cl. 222-153.030.
Cooper Power Systems, Inc.: *See*—
Smith, Robert W.; Marvin, Michael G.; Limburg, Deborah L.; Kershaw, Stanley S., Jr.; Schettler, Robert N.; and Goedde, Gary L., 5,608,596, Cl. 361-118.000.
Cooper, René M.: *See*—
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Cope, Eddie W. Self-supporting funnel assembly and drip catcher. 5,607,004, Cl. 141-340.000.
Copel, Matthew W.: *See*—
Agnello, Paul D.; Cabral, Cyril, Jr.; Clevenger, Lawrence A.; Copel, Matthew W.; d'Heurle, Francois M.; and Hong, Qi-Zong, 5,608,266, Cl. 257-768.000.
Copeland Corporation: *See*—
Wallis, Frank S.; Caillat, Jean-Luc; Simpson, Francis M.; Anderson, Gary J.; Rode, Donald W.; and Beck, Norman G., 5,607,288, Cl. 417-310.000.
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Kunkle, Timothy E.; Shea, Allan K.; and Kuntz, Richard F., 5,607,626, Cl. 261-27.000.
Copperman, Norman S.; and Winblad, Wade O., to Atari Games Corporation. Vehicle simulator with realistic operating feedback. 5,607,308, Cl. 434-62.000.
Coquin, Laurent: *See*—
Lecomte, Pierre; and Coquin, Laurent, 5,608,627, Cl. 364-424.012.
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Burdick, Jon S.; Herold, Robert A.; Corcoran, Paul T.; Szentes, John F.; and Gudat, Adam J., 5,607,205, Cl. 299-1.500.
Cordaro, J. Thomas: *See*—
Burns, Bryan L.; and Cordaro, J. Thomas, 5,608,404, Cl. 342-25.000.
Cordis Corporation: *See*—
Calhoun, Michael W.; and Viera, Fernando M., 5,606,980, Cl. 128-772.000.
Hernandez, Ernesto; Castillo, Francisco O.; and Pagan, Israel, 5,607,406, Cl. 604-264.000.
Smeets, Joseph L. R. M.; and Van Erp, Wilhelmus P. M. M., 5,607,422, Cl. 606-41.000.
Cordola, Jean-Pierre; and Idjakiren, Rachid, to ITW De France. Support and protection housing element for a tube, pipe, electric cable or other long article, particularly for a motor vehicle. 5,607,126, Cl. 248-68.100.
Coretti, Joseph, Jr.; and Knorring, Edward I., Jr., to B-O-F Corporation. Gravity flow shelving system. 5,607,068, Cl. 211-59.200.
Corley, William D.: *See*—
Ulm, John; Corley, William D.; Mazza-Brennan, Cynthia; and Grobicki, Christopher, 5,608,728, Cl. 370-488.000.
Cornell, Ralph E.: *See*—
Yeh, Shing; Higdon, William D.; and Cornell, Ralph E., 5,607,099, Cl. 228-180.220.
Cornell Research Foundation, Inc.: *See*—
Bourne, Malcolm C., 5,607,712, Cl. 426-321.000.
Corning Incorporated: *See*—
Kerko, David J.; and Wedding, Brent M., 5,607,493, Cl. 65-30.100.
Corning, Vern; and Pocapalia, Dan, to Kit Manufacturing Company. Lock for slideout box. 5,607,134, Cl. 248-354.300.
Cornu, Hervé; Le Bihan, Loic; and Robbes, Jean-Pierre, to Legrand. Marker devices. 5,606,813, Cl. 40-316.000.
Correa, Carlos: *See*—
Rothermel, Albrecht; and Correa, Carlos, 5,608,460, Cl. 348-525.000.
Corrigan, Thomas J.: *See*—
Guthrie, Robin J.; and Corrigan, Thomas J., 5,607,786, Cl. 429-34.000.
Cosgrove, Martin C.: *See*—
Bremmer, Jonathan W.; Cosgrove, Martin C.; and Malofsky, Bernard M., 5,607,728, Cl. 427-428.000.
Costin, Daniel P., to Borg-Warner Automotive, Inc. One-way clutch with stretchable spring member. 5,607,036, Cl. 192-45.100.
Costin, John A.: *See*—
Polla, Dennis L.; Costin, John A.; Erdman, Arthur G.; and Peichel, David J., 5,607,433, Cl. 606-107.000.
Cote, Pierre; Faivre, Michel; Moulin, Catherine; and Desbos, Gilbert, to OTV Omnium De Traitements et de Valorisation S.A. Installation for making water potable with submerged filtering membranes. 5,607,593, Cl. 210-650.000.
Cote, Raymond: *See*—
Rioux, Roger; Pesant, Gilles; Bostelmann, Willy; Talbot, Jean-Guy; Fecteau, Berthold; Cote, Raymond; and Gagne, Yvon, 5,607,026, Cl. 180-190.000.
Coulter Corporation: *See*—
Azarnia, Roobik; Fuentes, Susan M.; and Russell, Thomas R., 5,607,565, Cl. 204-403.000.
Coulter, J. Scott: *See*—
Ray, Carl; and Coulter, J. Scott, 5,607,234, Cl. 366-214.000.
Courtaulds Fibres (Holdings) Limited: *See*—
Akers, Paul J., 5,607,550, Cl. 162-102.000.
Courty, Philippe: *See*—
Travers, Christine; Courty, Philippe; and Sarrazin, Patrick, 5,607,891, Cl. 502-229.000.
Coutts, Bruce; and Roe, Christopher A., to ITT Corporation. Fiber optic connector apparatus. 5,608,828, Cl. 385-59.000.
Cowan, Robert L., II: *See*—
Terhune, James H.; and Cowan, Robert L., II, 5,608,767, Cl. 376-321.000.
Cox, Daniel R.: *See*—

Leavy, Mark; Veeramoney, Murali; Rosenzweig, Michael D.; Boss, Scott D.; Hurwitz, Roger; Davies, Bob; and Cox, Daniel R., 5,608,651, Cl. 364-514.00R.

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Craft, David J.: *See*—
Cheng, Joe-Ming; Craft, David J.; Garibay, Larry J.; and Karnin, Ehud D., 5,608,396, Cl. 341-50.000.

Crause, Peter: *See*—
Englert, Heinrich; Gerlach, Uwe; Crause, Peter; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,607,976, Cl. 514-584.000.

Cravens, Dennis: *See*—
Patterson, James A.; and Cravens, Dennis, 5,607,563, Cl. 204-269.000.

Crayton, John W.; Krone, John J.; and Oltman, Terry D., to Caterpillar Inc. Apparatus for detecting particles in a fluid and a method for operating same. 5,608,315, Cl. 324-204.000.

Crayton, John W.; Krone, John J.; Oltman, Terry D.; and Walacavage, Cecilia A., to Caterpillar Inc. Apparatus for detecting particles in a fluid and a method for operating same. 5,608,316, Cl. 324-204.000.

Crayton, John W.; Lee, Eric F.; Morgan, Denny; and Schumacher, Dennis L., to Caterpillar Inc. Dynamic gain adjustment in electromagnetic wave hydraulic cylinder piston position sensing. 5,608,332, Cl. 324-633.000.

Creative Integrated Systems, Inc.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.

Crews, Inc.: *See*—
Sheffield, Keith W., 5,608,470, Cl. 351-47.000.

Crews, Phillip: *See*—
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, 5,607,741, Cl. 428-68.000.

Cripe, Jerry D.; Menchio, Michael P.; and Rak, Kevin, to Motorola, Inc. Hazardous material liquid dispensing system and method. 5,607,000, Cl. 141-21.000.

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Ramsey, Maynard, III; and Medero, Richard, 5,606,977, Cl. 128-680.000.

Crlenjak, Jack; and Caserza, Steven F. Vacuum operated dust and debris removal and collection system. 5,606,767, Cl. 15-301.000.

Crosby, James K.: *See*—
Jain, Atul; and Crosby, James K., 5,608,407, Cl. 342-126.000.

Crosby, Richard; DeRudder, James L.; Flowers, Larry I.; Lin, Ye-Gang; and Odle, Roy R., to General Electric Company. Complex stabilizer composition to improve the melt stability and color stability of polycarbonates. 5,608,027, Cl. 528-51.000.

Crosby, Robert A., Jr.: *See*—
Henninger, David B.; Rutchik, Jeffrey A.; Crosby, Robert A., Jr.; Goodell, Michael E.; and Pasewark, Charles W., 5,607,211, Cl. 312-204.000.

Cross, Alan J.: *See*—
Boar, Robin B.; Cross, Alan J.; Gray, Duncan A.; and Green, Richard A., 5,607,956, Cl. 514-365.000.

Cross, Peter E.: *See*—
Alker, David; Cross, Peter E.; and Mackenzie, Alexander R., 5,607,950, Cl. 514-320.000.

Crystal Medical Technology, a division of Folsom Metal Products, Inc.: *See*—
Bailey, A. Gregory; and Folsom, A. C., Jr., 5,607,304, Cl. 433-174.000.

Crystal Semiconductor Corporation: *See*—
Medlock, David L.; and Swanson, Eric J., 5,608,676, Cl. 365-189.090.

Crystallume: *See*—
Plano, Linda S.; Peters, Michael G.; Ravi, Kramadhati V.; and Pinneo, John M., 5,607,723, Cl. 427-249.000.

CTB, Inc.: *See*—
Krehl, Micbael E.; and Dowty, Larry, 5,607,046, Cl. 198-741.000.

CTS Corporation: *See*—
Martin, Tom O., 5,608,373, Cl. 338-21.000.

Cuddihy, Mark A.; Drummond, J. B., Jr.; and Bourquin, Daniel J., to Ford Motor Company. Vehicle crash data generator. 5,608,629, Cl. 364-423.098.

Cummins Engine Company: *See*—
Bentz, Joseph C.; Carroll, John T., III; Peters, Lester L.; Yonushonis, Thomas M.; and Campbell, Jeffrey L., 5,607,106, Cl. 239-88.000.

Cummins Engine Company, Inc.: *See*—
Calhoun, Keith A., 5,606,937, Cl. 123-41.280.

Cuno Incorporated: *See*—
Swiatek, Frank; Leavitt, Richard, deceased; Chanski, Donald; Repetti, Ronald V.; and Willoughby, Drew, 5,607,584, Cl. 210-238.000.

Cuny, Douglas J.: *See*—
Pratt, James R.; Kappel, Gary S.; Cuny, Douglas J.; Tovey, H. Jonathan; Phillips, Paul J.; Peyser, Mark S.; and Aranyi, Ernie, 5,607,436, Cl. 606-143.000.

Curry, John D.: *See*—
Sherry, Alan E.; and Curry, John D., 5,607,910, Cl. 510-235.000.

Curtin, Christopher J.: *See*—
Twichell, Jonathan C.; Brandes, George R.; Geis, Michael W.; Macaulay, John M.; Duboc, Robert M., Jr.; and Curtin, Christopher J., 5,608,283, Cl. 313-309.000.

Curtis, Donald R.: *See*—
Mastandrea, William J.; and Curtis, Donald R., 5,607,361, Cl. 473-207.000.

Custer, Milton F.: *See*—
Christensen, Don C.; and Custer, Milton F., 5,607,761, Cl. 428-366.000.

Custom Packaging Systems, Inc.: *See*—
LaFleur, Lee, 5,607,237, Cl. 383-22.000.

Cuzzato, Paolo; and Masiero, Antonio, to Ausimont S.p.A. Process for preparing 1,1,1,2-tetrafluoroethane. 5,608,125, Cl. 570-166.000.

Dadgar, Ahmad; Howarth, Jonathan N.; Sergent, Rodney H.; Favstritsky, Nicolai A.; McKeown, Julie A.; Borden, Dennis W.; Sanders, Brent M.; and Likens, Jane, to Great Lakes Chemical Corporation. Inorganic perbromide compositions and methods of use thereof. 5,607,619, Cl. 252-187.200.

Daewoo Electronics Co., Ltd.: *See*—
Kim, Dong-Kuk, 5,608,569, Cl. 359-291.000.
Park, KwangLim, 5,608,706, Cl. 369-77.200.

Dahl, Joel M. Asphalt plant drum drive. 5,607,232, Cl. 366-63.000.

Dahlberg, James A.: *See*—
Werlinger, Larry M.; Dahlberg, James A.; and Frye, Kermit E., 5,608,889, Cl. 395-421.070.

Dahlgren, Lennart; and Bergström, Karin, to Berol Nobel AB. Alkoxylate of 2-propyl heptanol and detergent containing same. 5,608,118, Cl. 568-625.000.

Dahll, Hans H., to Albert Trostel Packings, Ltd. Seal incorporating a resilient sealing element. 5,607,168, Cl. 277-152.000.

Dahlquist, John C.; and Mazurek, Mieczyslaw H., to Imation Corp. Radiation cured radiographic intensifying screen. 5,607,774, Cl. 428-447.000.

Dai Nippon Printing Co., Ltd.: *See*—
Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,607,895, Cl. 503-227.000.
Nishizawa, Masumi; Iijima, Masayuki; and Miyama, Takashi, 5,607,808, Cl. 430-137.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Toyoda, Tsunehiko; Tsuchiya, Harufumi; Omoto, Hiroaki; Kohno, Mitsuru; and Ii, Maki, 5,608,004, Cl. 524-539.000.

Daikin Industries, Ltd.: *See*—
Kubo, Motonobu; and Hayashi, Kazunori, 5,608,002, Cl. 524-795.000.
Nakada, Tatsuo; Aoyama, Hirokazu; and Takubo, Seiji, 5,608,128, Cl. 570-175.000.

Daily, Mack S.: *See*—
Bestler, Caitlin B.; and Daily, Mack S., 5,608,732, Cl. 370-474.000.

Daimler-Benz Aerospace Airbus GmbH: *See*—
Hararat-Tehrani, Mohammad, 5,606,829, Cl. 52-1.000.

Daito, Toshiji: *See*—
Ogawa, Masaya; Daito, Toshiji; and Takata, Shinichi, 5,608,707, Cl. 369-84.000.

Daiwa Seiko, Inc.: *See*—
Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, 5,606,819, Cl. 43-22.000.
Yamaguchi, Nobuyuki; and Murayama, Tomohiro, 5,607,116, Cl. 242-247.000.

Dalebout, William T.; and Law, Greg W. Inclination mechanism for a treadmill. 5,607,375, Cl. 482-54.000.

Daley, Westphal. Table tennis ball projector. 5,607,151, Cl. 124-78.000.

Dallaire, Michel: *See*—
Lavallière, Jean; and Dallaire, Michel, 5,606,749, Cl. 4-502.000.

D'Alo', Simonetta: *See*—
Long, Giorgio; Spinelli, Silvano; Rozzi, Antonella; D'Alo', Simonetta; and Gallico, Licia, 5,607,930, Cl. 514-235.800.

Dalsa, Inc.: *See*—
Kamasz, Stacy R.; and Farrier, Michael G., 5,608,242, Cl. 257-216.000.

Dalton, James S. N., to Eastman Chemical Company. Paper machine fabric. 5,607,757, Cl. 442-301.000.

Damadian, Raymond V., to Fonar Corporation. Multiple patient scanning on a magnetic resonance imaging apparatus. 5,606,970, Cl. 128-653.200.

Damar Leisure Products Inc.: *See*—
Lekhtman, David, 5,607,331, Cl. 440-23.000.

D'Ambra, Thomas E.; Bacon, Edward R.; Bell, Malcolm R.; and Ward, Susan J., to Sterling Winthrop Inc. 3-arylcarbonyl-1(C-attached-N-heteryl)-1H-indoles. 5,607,933, Cl. 514-253.000.

Dame, Robert A. Two in one hinge. 5,606,775, Cl. 16-387.000.

Damrow Company: *See*—
Jay, Jeffrey L., 5,606,907, Cl. 99-455.000.

Dana Corporation: *See*—
Maughan, Garth, 5,607,249, Cl. 403-165.000.
Roll, Mark A.; Stamey, Willie L.; and Loafman, Christopher L., 5,606,989, Cl. 137-203.000.
Yarnell, James A.; Lefevre, William R.; and Rang, Brian L., 5,607,037, Cl. 192-53.331.

Dana Farber Cancer Institute: *See*—
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, 5,608,037, Cl. 530-350.000.

Dang, Hien: *See*—
Sri-Jayantha, Muthuthamby; Sharma, Arun; Dang, Hien; and Yamamoto, Satoshi, 5,608,586, Cl. 360-77.040.

Dang, Vu A.: *See*—
Bishop, Clyde E.; Dang, Vu A.; and Metrick, Joseph, 5,607,989, Cl. 524-102.000.

Danielsson, Ove: *See*—
Höglund, Hans; Bäck, Roland; Danielsson, Ove; and Falk, Bo, 5,607,546, Cl. 162-25.000.

Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., to Endoscopic Concepts, Inc. Trocar with lockable shield. 5,607,440, Cl. 606-185.000.

Danly Corporation: *See*—

Katz, Wolfgang, 5,606,910, Cl. 100-208.000.

Dansac A/S: *See*—
Holmberg, Steen; and Larsen, Joergen F., 5,607,413, Cl. 604-342.000.

Danziger, Robert N.: *See*—
Debbage, Lawrence; Kelley, Eugene; Guth, Eugene D.; Campbell, Larry E.; Danziger, Robert N.; and Padron, Sally, 5,607,650, Cl. 422-178.000.

Darko Company, Inc.: *See*—
Bauer, Jeffrey R., 5,606,834, Cl. 52-506.010.

Darr, Robert E.: *See*—
Mojden, Wallace W.; Mojden, Andrew; and Darr, Robert E., 5,607,278, Cl. 414-416.000.

da Silva, Jean-Pierre M. Audio-adapted eyeglass retainer. 5,608,808, Cl. 381-183.000.

Data, Stanley E.; Koziara, Robert P.; Lent, Mark S.; O'Gorman, Patrick A.; Rose, Thomas K.; Shanks, Eugene G.; and Norrick, Daniel A., to Onan Corporation. Auxiliary power unit for a hybrid electric vehicle. 5,606,946, Cl. 123-198.00E.

Datta, Paul J.; Coenen, Joseph D.; Mintern, Glenn A.; and Powell, David W., to Kimberly-Clark Corporation. Flexible absorbent article. 5,607,415, Cl. 604-385.100.

Daugherty, Mark: *See*—
Dowd, Michael; Scarborough, Nelson; and Daugherty, Mark, 5,607,269, Cl. 409-134.000.

Daughtry, Allen B.: *See*—
Patton, James A.; and Daughtry, Allen B., 5,608,769, Cl. 377-20.000.

D'aurelio, David P.: *See*—
Kruhe, Michael D.; Porcellio, Rocco J.; and D'aurelio, David P., 5,608,542, Cl. 358-449.000.

Davidson, Bruce L.: *See*—
Gerber, H. Joseph; Straayer, Ronald J.; Davidson, Bruce L.; Snietka, Scott P.; Walsh, Peter M.; Seniff, Dana W.; and Kohler, James P., 5,608,453, Cl. 348-87.000.

Davidson, Donald R.: *See*—
Tobias, Samuel; Davidson, Donald R.; and Hanes, Robert H., 5,607,224, Cl. 362-101.000.

Davies, Bob: *See*—
Leavy, Mark; Veeramoney, Murali; Rosenzweig, Michael D.; Boss, Scott D.; Hurwitz, Roger; Davies, Bob; and Cox, Daniel R., 5,608,651, Cl. 364-514.00R.

Davies, John H. E. Personal identification devices and access control systems. 5,608,387, Cl. 340-825.340.

Davies, Jorge Q.: *See*—
Meyer, Kevin L.; Lyons, David F.; Davies, Jorge Q.; Heron, Stephen; and Fraquelli, Roberto G., 5,606,920, Cl. 108-50.000.

Davis, Harry G.: *See*—
McDonough, Leslie M.; Davis, Harry G.; and Smithhisler, Constance L., 5,607,670, Cl. 424-84.000.

Davis, James E. Animal restraining system. 5,606,936, Cl. 119-721.000.

Davis, Mark F.: *See*—
Mandell, Douglas E.; Richards, Martin J.; Atherton, Mark L.; Goldberg, Paul R.; and Davis, Mark F., 5,608,805, Cl. 381-77.000.

Davis, Stephen E.: *See*—
Hovis, Floyd E.; Davis, Stephen E.; Shepherd, Bart A.; Sanders, Walter R.; and Selleck, Ronald R., 5,608,744, Cl. 372-21.000.

Dayal, Umeshwar: *See*—
Chaudhuri, Surajit; Dayal, Umeshwar; and Yan, Tak W., 5,608,904, Cl. 395-602.000.

Dayco Products, Inc.: *See*—
Wilson, Samuel L., 5,607,191, Cl. 285-256.000.

Dearhammer, John. Plant-cutting shears with chemical applicator. 5,606,822, Cl. 47-1.700.

Debacker, Andre, to Siemens Aktiengesellschaft. Method for supporting test routines. 5,608,644, Cl. 364-481.000.

Debbage, Lawrence; Kelley, Eugene; Guth, Eugene D.; Campbell, Larry E.; Danziger, Robert N.; and Padron, Sally, to Goal Line Environmental Technologies. Apparatus for removing contaminants from gaseous stream. 5,607,650, Cl. 422-178.000.

De Bruyn, Marcel F. L.: *See*—
Van Lommen, Guy R. E.; De Bruyn, Marcel F. L.; and Janssens, Walter J. J., 5,607,949, Cl. 514-319.000.

Decker, Rand A.; and Kroner, Ludwig F. Surgical insertion device and method. 5,607,405, Cl. 604-264.000.

De Clercq, Erik D. A.; Herdewijn, Piet A. M.; and Van Aerschot, Arthur A. E., to Stichting Rega VZW. 1,5-anhydrohexitol nucleoside analogues. 5,607,922, Cl. 514-43.000.

de Cointet, Paul: *See*—
Badorc, Alain; Bordes, Marie-Françoise; de Cointet, Paul; Herbert, Jean-Marc; and Maffrand, Jean-Pierre, 5,607,952, Cl. 514-326.000.

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De Gennaro, Sergio K. Baby bottle with pressure relief valve. 5,607,074, Cl. 215-11.500.

DeGroot, Robert J.: *See*—
Opas, George F.; and DeGroot, Robert J., 5,608,761, Cl. 375-296.000.

Deguchi, Takashi, to Konica Corporation. Photographic color-developing chemicals in the form of granules. 5,607,822, Cl. 430-465.000.

Degussa Aktiengesellschaft: *See*—
Kottenhahn, Matthias; Drauz, Karlheinz; and Bommarius, Andreas, 5,608,076, Cl. 548-317.100.

Soicke, Hartwig; and Mannebach, Georg, 5,607,656, Cl. 423-513.000.

De Guzman, Joselito, to Micronova Manufacturing, Inc. Self-wringing mop and wringer assembly, cleaning element assembly and cleaning element for use with same. 5,606,760, Cl. 15-119.200.

De Haan, Wiebe; and Van Der Meer, Jan, to U.S. Philips Corporation. Record carrier containing an audio and/or video signal which has been encoded and includes a decoder delay time parameter indicating a time delay for one or more portions of the signal. 5,608,697, Cl. 369-48.000.

DeLaby, Aaron D.; and Havlovitz, Paul M., to Republic Tool & Mfg. Corp. Collapsible drop spreader. 5,607,079, Cl. 222-45.000.

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Delco Electronics Corp.: *See*—
Kearney, Mark B., 5,608,347, Cl. 327-512.000.
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Sanftleben, Henry M.; and Hermansen, Ralph D., 5,608,028, Cl. 528-60.000.
Yeh, Shing; Higdon, William D.; and Cornell, Ralph E., 5,607,099, Cl. 228-180.220.

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Potter, Bruce, 5,608,884, Cl. 395-309.000.

De Long, Raymond K., to TRW Inc. Polarization compensated imaging spectrometer. 5,608,521, Cl. 356-326.000.

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Deltron Precision, Inc.: *See*—
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DeMello, Alan J.; Hartford, Douglas W.; Mertinooke, Peter E.; Muessel, Dan C.; and Halberstadt, Louis, to Amesbury Group Inc. Process for extruding low density foam using water as a blowing agent. 5,607,629, Cl. 264-45.900.

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Demlow, William W.; Hurewitz, David L.; and Pope, Francis J., III, to Lucent Technologies Inc. Information display provided to calling party. 5,608,788, Cl. 379-142.000.

DeMotte, Frank E. Portable three-way light bulb-socket insertable switch converter. 5,608,195, Cl. 200-50.280.

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Faivre, François; and Denoize, Xavier, 5,608,392, Cl. 340-967.000.

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De Ruyter, Peter W.; Almey, Noel; Slanik, Josef; and Teich, Wesley W. Process and apparatus for making meat analogs. 5,607,710, Cl. 426-237.000.

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Deutsche ITT Industries GmbH: *See—*
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Kando, Robert R.; and Godin, Paul L., 5,608,883, Cl. 395-309.000.
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Domino, Bruce D.; and Balder, Richard E., to Riverwood International Corporation. Cartoner clean out system and method. 5,606,848, Cl. 53-534.000.
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Donlar Corporation: *See—*
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Dürckheimer, Walter: *See—*
Stache, Ulrich; Alpermann, Hans-Georg; Dürckheimer, Walter; and Bohn, Manfred, 5,608,093, Cl. 552-601.000.
Durfee, Loren D.: *See—*
Ulman, Katherine L.; Sweet, Randall P.; and Durfee, Loren D., 5,607,721, Cl. 427-208.400.
Dutta, Mitra; and Shappirio, Joel R., to United States of America, Army. Multi-directional electro-optic switch. 5,608,566, Cl. 359-248.000.
Duty, John E., to Duty, John E. Push-up device. 5,607,380, Cl. 482-141.000.
Dwivedi, Anil M.: *See—*
Campbell, Gordon C., Jr.; Dwivedi, Anil M.; Levorse, Dorothy A.; McCauley, James A.; and Raghavan, Krishnaswamy S., 5,608,075, Cl. 548-252.000.
Dybro, Niels; and Miller, Harold J., III, to AlliedSignal Inc. Retractor with adjustable load limiting levels. 5,607,118, Cl. 242-379.100.
Dykstra, Richard A.: *See—*
Bruener, Patrick J.; Tharman, Paul A.; Fiorenza, John A., II; Pfaff, Joseph L.; Dykstra, Richard A.; and Reitman, William H., 5,606,851, Cl. 56-11.900.
Dyno Nobel Inc.: *See—*
Granholm, Richard H.; and Lawrence, Lawrence D., 5,608,185, Cl. 149-108.400.
Dystar Japan Ltd.: *See—*
Himeno, Kiyoshi; Hihara, Toshio; and Sekioka, Ryouichi, 5,608,042, Cl. 534-788.000.
E & E Specialties, Inc.: *See—*
Hellyer, Daniel P., 5,607,070, Cl. 211-189.000.
E. I. dupont de Nemours and Company: *See—*
Gumprecht, William H., 5,608,127, Cl. 570-170.000.
E-Tek Dynamics, Inc.: *See—*
Pan, Jing-Jong, 5,608,831, Cl. 385-85.000.
E-Z Metal Products, Inc.: *See—*
Markham, Howard L.; and Markham, Perry D., 5,607,133, Cl. 248-313.000.
Earley, John A. Down spout spacer and anchoring arrangement. 5,607,124, Cl. 248-48.200.
Easson, D. Davidson, Jr.: *See—*

Jamas, Spiros; Ostroff, Gary R.; and Easson, D. Davidson, Jr., 5,607,677, Cl. 424-278.100.

Eastman Chemical Company: *See—*
Dalton, James S. N., 5,607,757, Cl. 442-301.000.
Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,608,034, Cl. 528-409.000.
Kuo, Chung M.; and Bogan, Richard T., 5,608,050, Cl. 536-69.000.
Matayabas, James C., Jr.; and Falling, Stephen N., 5,608,117, Cl. 568-616.000.
Yau, Cheuk C.; and Moody, Leslie S., 5,608,031, Cl. 528-281.000.

Eastman Kodak Company: *See—*
Baek, Seung H.; Mackin, Thomas A.; and Woo, Nea Y., 5,608,747, Cl. 372-33.000.
Bartholomeusz, Brian J., 5,607,739, Cl. 428-64.100.
Bernard, Patrick E. Y.; and Manas, Guy A. J., 5,607,592, Cl. 210-641.000.
Furlani, Edward P.; Mey, William; Stephany, Thomas M.; and Lee, J. Kelly, 5,608,484, Cl. 396-463.000.
Hung, Liang-Sun; Tang, Ching W.; and Lee, S. Tong, 5,608,287, Cl. 313-503.000.
Krahe, Michael D.; Porcellio, Rocco J.; and D'aurelio, David P., 5,608,542, Cl. 358-449.000.
Maskasky, Joe E., 5,607,828, Cl. 430-567.000.
Mey, William; Barzideh, Bijan; and Stephany, Thomas M., 5,608,278, Cl. 310-90.000.
Pierce, Brett A.; Penta, Fred C.; and Manico, Joseph A., 5,608,487, Cl. 396-564.000.
Siwinski, Michael J., 5,607,245, Cl. 400-614.000.
Smart, David C.; Sugano, Kauyoshi; Itoh, Kiyohide; and Shirahama, Takashi, 5,608,480, Cl. 396-6.000.
Tsou, Andy H.; Greener, Jehuda; Smith, Gary D.; and Mosehauer, Gary M., 5,607,826, Cl. 430-533.000.
Watkins, Joseph A.; and Smart, David C., 5,608,482, Cl. 396-6.000.
Wear, Trevor J.; Moore, Christopher P.; Goulden, Alistair J.; Beer, Paul D.; and Fletcher, Nicholas C., 5,608,059, Cl. 540-465.000.

Eaton Corporation: *See—*
Hirokawa, Suguru; and Sinclair, Frank, 5,608,223, Cl. 250-447.110.
Innes, Mark E.; and Blakely, John H., 5,608,311, Cl. 323-218.000.
Kanda, Robert J.; and LaMothe, Michael A., 5,607,137, Cl. 251-129.070.
Zoller, Walter M.; Hunter, David S., Jr.; Wellner, Edward L.; Larsen, Michael R.; Theisen, Peter J.; and Link, Donald A., 5,608,367, Cl. 335-132.000.

Ebara, Takeshi; Kiyota, Teruyosi; and Imai, Akio, to Sumitomo Chemical Company, Limited. α-olefin polymerization catalyst system and process for producing α-olefin catalyst. 5,608,018, Cl. 526-119.000.

Eberhart, Rita A.: *See—*
Biegel, Charles H.; Carter, Nicholas J.; Chen, Chung; Christofferson, Michael; Desai, Mahesh P.; Eberhart, Rita A.; Klonsky, Steven M.; Missett, Shaun; Rabenko, Theodore F.; Tomassone, John R.; and Turvene, David S., 5,608,720, Cl. 370-249.000.

Eberlein, Charlotte E.: *See—*
Souza, Edward J.; and Eberlein, Charlotte E., 5,606,823, Cl. 47-58.000.

Eberth, Gerhard; and Schuermann, Josef H., to Texas Instruments Incorporated. Device for controlling discharge of a charge capacitor in a transponder. 5,608,406, Cl. 342-51.000.

Ebinger, Georg: *See—*
Weihing, Gerhard; Ebinger, Georg; Hartick, Ulrike; Runtschke, Horst; and Baur, Eberhard, 5,607,220, Cl. 362-66.000.

Ebisawa, Takayuki: *See—*
Hikita, Sakae; Maeda, Yuuji; Fujishita, Masakatsu; Sato, Masahiro; Kawasaki, Seiichi; and Ebisawa, Takayuki, 5,608,309, Cl. 322-28.000.

Ebrahimi, Touradj: *See—*
Chen, Homer H.; Ebrahimi, Touradj; Haskell, Barin G.; and Horne, Caspar, 5,608,458, Cl. 348-413.000.

Ebukuro, Masahiro, to NEC Corporation. Operational amplifier with control sequence circuit. 5,608,350, Cl. 330-51.000.

Eches, Nicolas; and Cappy, Yves, to Giat Industries. Device for joining propellant charge containers and container having such a device. 5,607,057, Cl. 206-509.000.

Echeverry, Jan M.: *See—*
Kieturakis, Maciej J.; Mollenauer, Kenneth H.; Echeverry, Jan M.; Hermann, George D.; Howell, Thomas A.; Monfort, Michelle Y.; Tanaka, Shigeru; and Jervis, James E., 5,607,443, Cl. 606-192.000.

Eck, Gary R.: *See—*
Machacek, Oldrich; Eck, Gary R.; and Gilion, J. Brent, 5,608,184, Cl. 149-98.000.

Eck, Herbert; Ball, Peter; Lutz, Hermann; and Hopf, Heinrich, to Wacker-Chemie GmbH. Crosslinkable polymer powder compositions. 5,608,011, Cl. 525-344.000.

Eck, Ralf; Kneringer, Günter; and Köck, Wolfgang. Chromium-based alloy. 5,608,174, Cl. 75-235.000.

Eckart, Donald W.: *See—*
Wilber, William D.; Potenziani, Ernest, II; Tidrow, Steven C.; Tauber, Arthur; and Eckart, Donald W., 5,608,282, Cl. 505-211.000.

Eckel, Hans-Gerd, to Carl Freudenberg. Pump drive apparatus. 5,607,285, Cl. 416-170.00R.

Eckenhoff, James B.: *See—*
Rivera, David L.; Merrill, Sonya; Eckenhoff, James B.; Wright, Jeremy C.; and Osborne, James L., 5,607,696, Cl. 424-473.000.

Ecker, Friedrich: *See—*
Zikeli, Stefan; Ecker, Friedrich; Rauch, Ernst; Renner, Klaus; and Schönberg, Anton, 5,607,639, Cl. 264-561.000.

Ecolab Inc.: *See—*
Thomas, John E.; McCall, John E.; Boche, Daniel K.; Rolando, John J.; and Klos, Terry J., 5,607,651, Cl. 422-266.000.

Eda, Akira, to Mitsui Petrochemical Industries, Ltd. Optical mirror and optical device using the same. 5,608,577, Cl. 359-584.000.

Eda, Susumu: *See—*
Hyodo, Ryuji; Eda, Susumu; Oomuro, Katsumi; Sekihata, Osamu; Tanaka, Kenji; Hatta, Hiroyuki; and Norizuki, Reiko, 5,608,719, Cl. 370-250.000.

Edberg, Eric L.: *See—*
Carr, Daniel J.; Edberg, Eric L.; Majeti, Venkata C.; and Shepherd, John L., 5,608,446, Cl. 348-6.000.

Edgar, Albert D.; and Penn, Steven C., to International Business Machines Corporation. Scan line queuing for high performance image correction. 5,608,538, Cl. 358-406.000.

Edis, David; and Poort, Bert, to Liem, Jerry. Vacuum vice for bowling balls and method. 5,607,268, Cl. 409-131.000.

Edwards, David J.; Knight, Donn C.; and Wemple, Jonathan L., to Rockwell International Corporation. Cam brake shoe with formed edges. 5,607,034, Cl. 188-250.00A.

Edwards, Martin W.: *See—*
Carter, Bruce L. A.; and Edwards, Martin W., 5,607,917, Cl. 514-12.000.

Edwards, Michael L.: *See—*
Matthews, Donald P.; Bitonti, Alan J.; Edwards, Michael L.; and McCarthy, James R., 5,607,925, Cl. 514-45.000.
Parker, Roger A.; Edwards, Michael L.; Vaal, Mark J.; Matt, James E., Jr.; Chen, Kim S.; Yates, Mark T.; Wright, Paul S.; and Busch, Steven J., 5,608,095, Cl. 556-413.000.

Edwards, Russell J.: *See—*
Lepper, John M.; Edwards, Russell J.; and Wang, Daniel T., 5,607,642, Cl. 422-62.000.

Edwards, Stuart D.; Lax, Ronald G.; Sharkey, Hugh R.; and Lundquist, Ingemar H., to Vidamed, Inc. Medical probe with biopsy stylet. 5,607,389, Cl. 604-22.000.

EFH, Inc.: *See—*
Campbell, James W.; and Margrave, John L., 5,607,668, Cl. 424-75.000.

Egelhof, Dieter: *See—*
Grossmann, Udo; Egelhof, Dieter; and Meinecke, Albrecht, 5,607,555, Cl. 162-304.000.

Egermeier, John C.: *See—*
Mueller, Mark A.; Guo, Xin; and Egermeier, John C., 5,607,776, Cl. 428-472.000.

Eglit, Alexander: *See—*
Bindlish, Rakesh K.; Bril, Vlad; and Eglit, Alexander, 5,608,864, Cl. 395-507.000.

Egolf, Theo; and Flühmann, Urs, to Styner & Bienz AG. Transfer device in a press. 5,607,281, Cl. 414-751.000.

Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, to Dai Nippon Printing Co., Ltd. Thermal transfer sheet. 5,607,895, Cl. 503-227.000.

Eibl, Johann; Linnau, Yendra; and Teschner, Wolfgang, to Immuno Aktiengesellschaft. Highly concentrated immunoglobulin preparation and method for its production. 5,608,038, Cl. 530-387.100.

Eifler, Silke: *See—*
Salzburger, Wolfram; Eifler, Silke; and Scholl, Margarete, 5,607,544, Cl. 162-5.000.

Eisai Chemical Co., Ltd.: *See—*
Hamamura, Kimio; Seki, Chiaki; and Konishi, Masayuki, 5,608,092, Cl. 552-2.990.
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,608,068, Cl. 546-118.000.

Eisai Co., Ltd.: *See—*
Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,607,953, Cl. 514-327.000.
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,608,068, Cl. 546-118.000.

Eisenberg, Juli H.; and Vitkavage, Susan C., to Lucent Technologies Inc. Integrated circuit etching. 5,607,543, Cl. 156-662.100.

Eisman, Glenn A.: *See—*
Henley, John P.; Cochran, Gene A.; Dunn, David A.; Eisman, Glenn A.; and Weimer, Alan W., 5,607,297, Cl. 432-99.000.

Ejnar Jensen & Søn A/S: *See—*
Jensen, Jørn M., 5,606,811, Cl. 38-143.000.
Jensen, Jørn M., 5,606,812, Cl. 38-143.000.

Ek, Bo R.; Eriksson, Kjell G.; Nyqvist, Per Gustaf H.; and Ragnarsson, Gert A., to Pharmacia & Upjohn AB. Process for the manufacture of porous cellulose matrices. 5,607,695, Cl. 424-468.000.

Eka Nobel, AB: *See—*
Andersson, Kjell; Johansson, Hans; Lindgren, Erik; and Tokarz, Marek, 5,607,552, Cl. 162-181.600.

Ekholm, Hans: *See—*
Droeser, Walter; and Ekholm, Hans, 5,606,762, Cl. 15-183.000.

Ekiner, Okan M., to L'Air Liquide, S.A. Blends of polyethersulfones with aromatic polymides, polyamides or polyamide-imides useful for making gas separation membranes. 5,608,014, Cl. 525-432.000.

Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni: *See—*
Ricco, Mario; and Bruni, Giovanni, 5,608,368, Cl. 335-281.000.

Elder, Andrew W.; and Skinner, William J., to Stratis Corporation. Stackable pallet. 5,606,921, Cl. 108-53.300.

Electric Power Research Institute: *See—*
Smith, Richard D.; Lentz, Ronald R.; and Meachim, Patrick C., 5,606,804, Cl. 34-261.000.

ElectroChem, Inc.: *See—*
Jalan, Vinod, deceased; Desai, Mahesh N.; and Johnson, Derek A., 5,607,784, Cl. 429-16.000.

Electrolux Zanussi Elettrodomestici S.p.A.: *See—*
Arreghini, Luigi; and Cimetta, Silvano, 5,606,878, Cl. 68-17.00R.

Electronic Concepts Inc.: *See—*
Lavene, Bernard, 5,608,600, Cl. 361-303.000.

Elf Aquitaine: *See—*
Prosdocimi, Jacques; and Spinner, Bernard, 5,607,889, Cl. 502-80.000.

Elf Aquitaine Production: *See—*
Philippe, André; Nougayrede, Jean; and Kvasnikoff, Georges, 5,607,657, Cl. 423-576.200.

Elf Atochem North America, Inc.: *See—*
Wismer, John A., 5,608,124, Cl. 570-164.000.

Elf Atochem S.A.: *See—*
Banchereau, Evelyne; Lacombe, Sylvie; and Ollivier, Jean, 5,608,103, Cl. 562-115.000.
Bertocchio, Rene, 5,608,129, Cl. 570-179.000.

Eli Lilly and Company: *See—*
Briggs, Barbara S.; and Zmijewski, Milton J., Jr., 5,607,850, Cl. 435-228.000.
Hipskind, Philip A., 5,607,947, Cl. 514-316.000.
Wirth, David D., 5,608,043, Cl. 536-4.100.

Elie, Larry D.: *See—*
Nichols, Mark E.; Ginder, John M.; Elie, Larry D.; and Pett, Robert A., 5,607,996, Cl. 524-439.000.

Elin Energieanwendung GmbH: *See—*
Tomazic, Gerd, 5,607,788, Cl. 429-72.000.

Ellingsen, Olav, Method for selective and/or unselective vaporization and/or decomposition of, particularly, hydrocarbon compounds and apparatus for carrying out such a method. 5,607,558, Cl. 203-89.000.

Elliot, Jonathan D.: *See—*
Bennefeld, David H.; Elliot, Jonathan D.; Vatland, Danny J.; and Gilbert, John M., 5,608,442, Cl. 347-211.000.

Ellis, John G.: *See—*
Vallée, Richard; and Ellis, John G., 5,608,733, Cl. 370-394.000.

Ellis, Paul E., Jr.: *See—*
Wijesekera, Tilak; Lyons, James E.; Ellis, Paul E., Jr.; and Bhinde, Manoj V., 5,608,054, Cl. 540-145.000.

Elmendorf, David L.: *See—*
Grossman, Matthew J.; Lee, Mary K.; Senius, James D.; Burghoff, Robert L.; and Elmendorf, David L., 5,607,857, Cl. 435-282.000.

El-Sabaaly, Peter G.: *See—*
Heironimus, Scott N.; El-Sabaaly, Peter G.; and Pludeman, John B., 5,607,411, Cl. 604-319.000.

Elting, James: *See—*
Müller-Gliemann, Matthias; Müller, Ulrich; Beuck, Martin; Zaiss, Siegfried; Gerdes, Christoph; Domdey-Bette, Anke; Grützmann, Rudi; Lohmer, Stefan; Wohlfeil, Stefan; Yalkinoglu, Özkan; Elting, James; and Denzer, Dirk, 5,607,962, Cl. 514-415.000.

Elushik, Richard D.: *See—*
Pierce, Paul M.; and Elushik, Richard D., 5,607,214, Cl. 312-310.000.

Emerson Electric Co.: *See—*
Tomasiak, Mark J.; Young, Jeffrey L.; and Holsten, Stuart V., 5,606,769, Cl. 15-327.600.

Emery, David E.: *See—*
King, Steven J.; Emery, David E.; and Benscoter, Richard D., 5,607,317, Cl. 439-215.000.

Emery, John W.; Hetzel, Robert J., deceased (by Dorothy A. Hetzel, legal representative), to Avtron Manufacturing, Inc. Rotary pulse generator having preset sensor gap. 5,608,277, Cl. 310-68.00B.

Emery, Monti D., to Emhart Glass Machinery Investments Inc. Glass bottle inspection machine. 5,608,516, Cl. 356-240.000.

Emhart Glass Machinery Investments Inc.: *See—*
Emery, Monti D., 5,608,516, Cl. 356-240.000.

Emi, Shigenori: *See—*
Hattori, Shizuo; Yamamoto, Yoshihiro; Sogabe, Yukihiro; and Emi, Shigenori, 5,607,838, Cl. 435-22.000.

Emil Aarestrup Sørensen: *See—*
Petersen, Anders I. D., 5,607,001, Cl. 141-59.000.

Emmel, John J.: *See—*
Blackwell, Elmer; Emmel, John J.; and Loder, Harry A., 5,607,737, Cl. 428-40.100.

Emory University: *See—*
Thompson, Keith P., 5,607,472, Cl. 623-6.000.

Endelman, Ken. Exercise apparatus. 5,607,381, Cl. 482-142.000.

Endermann, Rainer: *See—*
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,607,942, Cl. 546-200.000.

Endo, Hideyuki: *See—*
Miyamoto, Yoshio; Endo, Hideyuki; and Abe, Toyohiko, 5,607,732, Cl. 428-1.000.
Nihira, Takayasu; Miyamoto, Yoshio; Endo, Hideyuki; and Abe, Toyohiko, 5,608,033, Cl. 528-353.000.

Endo, Saijiro, to Canon Kabushiki Kaisha. Fixing device having a pivotally movable separating member. 5,608,512, Cl. 399-323.000.

Endo, Shinichi: *See—*
Hirai, Toshiaki; Takami, Atsushi; Endo, Shinichi; and Kurosawa, Yoshihisa, 5,608,488, Cl. 396-125.000.

Endoscopic Concepts, Inc.: *See—*
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,607,440, Cl. 606-185.000.

Endres, Nicholas. Apparatus for gripping and holding glass during a glass grinding process. 5,607,344, Cl. 451-386.000.

Engelberth, Jon W.: *See—*
Carcone, John M.; Engelberth, Jon W.; LaGrotta, James T.; and Newell, Joseph V., 5,608,159, Cl. 73-49.800.

Englert, Heinrich; Gerlach, Uwe; Crause, Peter; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. Substituted benzenesulfonyl-thioureas and pharmaceutical preparations containing them. 5,607,976, Cl. 514-584.000.

Eniricerche S.p.A.: *See—*
Perego, Carlo; Bellussi, Giuseppe; and Calemma, Vincenzo, 5,608,134, Cl. 585-750.000.

Enokida, Miyuki, to Canon Kabushiki Kaisha. Apparatus for processing hierarchically-coded image data. 5,608,862, Cl. 395-501.000.

Ensminger, William D.; and Gavin, Robert F., to Michigan TransTech Corporation. Implantable access devices. 5,607,393, Cl. 604-93.000.

Epple, Ulrich; Kubillus, Uwe; and Schmidt, Holger, to Hoechst Aktiengesellschaft. Copolymers, their preparation, and their use in high-solids coating compositions. 5,608,012, Cl. 525-374.000.

Epstein, Kenneth A.; and Wenz, Robert P., to Minnesota Mining and Manufacturing Company. Front-lit liquid crystal display having brightness enhancing film with microridges which directs light through the display to a reflector. 5,608,550, Cl. 359-40.000.

Epworth, Richard E.; Robinson, Andrew N.; and Stewart, Moira J., to Northern Telecom Limited. Optical amplifiers. 5,608,571, Cl. 359-341.000.

Erb, Laura J.: *See—*
Boucher, Richard C.; Weisman, Gary A.; Turner, John T.; Harden, Thomas K.; Parr, Claude E.; Sullivan, Daniel M.; Erb, Laura J.; and Lustig, Kevin D., 5,607,836, Cl. 435-7.200.

Erdman, Arthur G.: *See—*
Polla, Dennis L.; Costin, John A.; Erdman, Arthur G.; and Peichel, David J., 5,607,433, Cl. 606-107.000.

Erickson, Bradley C.; and Holmes, Garrett R., to Coltec Industries Inc. Pulse width modulated solenoid. 5,606,992, Cl. 137-596.170.

Ericsson Inc.: *See—*
Rybeck, Nils R. C.; Hansson, Magnus; and Holmqvist, Peter, 5,608,306, Cl. 320-15.000.

Eriksson, Kjell G.: *See—*
Ek, Bo R.; Eriksson, Kjell G.; Nyqvist, Per Gustaf H.; and Ragnarsson, Gert A., 5,607,695, Cl. 424-468.000.

Eriksson, Peter: *See—*
Brantmark, Håkan; Eriksson, Peter; Johansson, Sven-Erik; and Reyier, Ingemar, 5,608,619, Cl. 364-192.000.

Eriksson, Ulf; Olofsson, Birgitta; Alitalo, Kari; and Pajusola, Katri, to Ludwig Institute for Cancer Research; and Helsinki University Licensing Ltd. Oy. Vascular endothelial growth factor-B and DNA coding therefor. 5,607,918, Cl. 514-12.000.

Erken, Manfred: *See—*
Osing, Dirk; Ritter, Günter; Treutlein, Günter; and Erken, Manfred, 5,607,505, Cl. 106-745.000.

Eruzzi, Silvio: *See—*
Stephen, Robert L.; Bonezzi, Cesare; Rossi, Cino; and Eruzzi, Silvio, 5,607,940, Cl. 514-282.000.

Esparza, Joel; Bahuguna, Ramendra D.; and Williams, Gareth T. Infrared aided method and apparatus for venous examination. 5,608,210, Cl. 250-226.000.

Espinosa, Jorge L. Cigar Humidor. 5,607,051, Cl. 206-213.100.

Esselte N.V.: *See—*
Palmer, Matthew R.; and Thompson-Bell, Ian, 5,608,443, Cl. 347-218.000.

Esteam Manufacturing Ltd.: *See—*
Sundberg, Lorne, 5,606,768, Cl. 15-313.000.

Etablissements Bollé S.n.c.: *See—*
Bollé, Maurice J. G., 5,608,469, Cl. 351-44.000.

Ethicon Endo-Surgery, Inc.: *See—*
Sierocuk, Thomas J.; Garrison, William A.; and Michetti, Allan R., 5,607,441, Cl. 606-190.000.

Ethicon, Inc.: *See—*
Bezwada, Rao S.; and Jamiolkowski, Dennis D., 5,607,687, Cl. 424-426.000.
Clark, George A.; Burwell, Malcolm C.; Gola, John A.; Robinson, Christopher; and Snyder, Fred E., 5,607,094, Cl. 227-175.100.
Smith, Jack E.; Bedi, James J.; Sierocuk, Thomas J.; and Graves, Thomas H., Jr., 5,607,095, Cl. 227-177.100.
Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., 5,607,397, Cl. 604-167.000.

Eungard, William C., to Johnson Worldwide Associates. Scuba diving harness for use with a buoyancy control device. 5,607,258, Cl. 405-186.000.

Evans, Michael L., to Schlumberger Technology Corporation. Method and apparatus for determining density of earth formations. 5,608,215, Cl. 250-269.600.

Evans, Samuel: *See—*
Nesvadba, Peter; Evans, Samuel; and Schmitt, Ralf, 5,607,624, Cl. 252-589.000.
Evdokimenko, Yuri; Kadyrov, Ernest; Kadyrov, Valery; Frolov, Gennady; and Kisel, Vladislav, to Demeton USA, Inc. High velocity flame jet apparatus for thermoabrasive cutting or cleaning or for the application of protective coatings. 5,607,342, Cl. 451-75.000.
Evergreel Tool Co., Inc.: *See—*
Anderson, James R., 5,607,266, Cl. 408-124.000.
Ewall, Ralph, to Hercules Incorporated. Multi-purpose wound dressing. 5,607,388, Cl. 602-58.000.
Exabyte Corporation: *See—*
Woodruff, Daniel J.; Hoekstra, Daniel W.; Scott, Christopher L.; Volckhausen, Thomas W.; Studebaker, Thomas J.; and Younglove, Bruce L., 5,607,275, Cl. 414-331.000.
Exandier, Philippe; and Godeau, Denis, to Hutchinson. Quick and leaktight joining device for tubular pipes. 5,607,190, Cl. 285-93.000.
Exide Corporation: *See—*
Redden, Galen; and Luzader, Rex E., 5,607,484, Cl. 29-623.100.
Expertest Pty. Ltd.: *See—*
Tatterson, Vincent P.; and Hilder, Mark, 5,607,250, Cl. 403-325.000.
Exponential Technology, Inc.: *See—*
Blomgren, James S.; Cohen, Earl T.; and Baird, Brian R., 5,608,886, Cl. 395-586.000.
Extraction Systems, Inc.: *See—*
Kinkead, Devon A., 5,607,647, Cl. 422-122.000.
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Frolov, Gennady: *See—*
Evdokimenko, Yuri; Kadyrov, Ernest; Kadyrov, Valery; Frolov, Gennady; and Kisel, Vladislav, 5,607,342, Cl. 451-75.000.
Frolov, George; and Lavelle, Gary E., to Harrow Products, Inc. Privacy protection for electronic lock system. 5,608,298, Cl. 318-286.000.
Frommer, Juergen: *See—*
Schock, Manfred; Frommer, Juergen; Illg, Manfred; and Pfitzenreiter, Werner, 5,607,321, Cl. 439-460.000.
Frommer, Wolf-Bernd; and Riesmeier, Jorg, to Institut Für Genbiologische Forschung Berlin GmbH. DNA sequences with oligosaccharide transporter, plasmids, bacteria and plants containing a transporter as well as a process for the preparation and transformation of yeast strains for identification of the transporter. 5,608,146, Cl. 800-205.000.
Frunzetti, Barbu: *See—*
Saur, Roland; and Frunzetti, Barbu, 5,607,324, Cl. 439-565.000.
Frye, Dale B.: *See—*
Mead, Charles N.; and Frye, Dale B., 5,608,861, Cl. 395-326.000.
Frye, Kermit E.: *See—*
Werlinger, Larry M.; Dahlberg, James A.; and Frye, Kermit E., 5,608,889, Cl. 395-421.070.
Fucci, Joseph, to Linvatec Corporation. Threaded suture anchor retriever. 5,607,432, Cl. 606-104.000.
Fuderer, Andrija. Process for the production of phthalic anhydride. 5,608,083, Cl. 549-249.000.
Fuentes, Susan M.: *See—*
Azarnia, Roobik; Fuentes, Susan M.; and Russell, Thomas R., 5,607,565, Cl. 204-403.000.
Fuji Autotech Aktiebolag: *See—*
Tisell, Claes G. E. Y.; and Strömberg, Kurt, 5,606,891, Cl. 74-493.000.
Fuji Electric Co., Ltd.: *See—*
Komatsu, Sachiaki; and Izumi, Akio, 5,608,513, Cl. 356-3.000.
Mori, Kenichi, 5,608,664, Cl. 364-822.000.
Nishizawa, Masato; Hashimoto, Shinichi; and Sugahara, Yoshiyuki, 5,607,875, Cl. 437-63.000.
Onodera, Katsumi, 5,607,783, Cl. 428-694.00T.
Toyama, Koichi; and Yamamura, Tatsuo, 5,608,815, Cl. 382-142.000.
Ueyanagi, Katsumichi, 5,608,153, Cl. 73-1.00D.
Umida, Hidetoshi, 5,608,302, Cl. 318-802.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Harada, Kuniyuki; Sawada, Kazutaka; Hosoya, Yoshiteru; and Shibusawa, Tetsuo, 5,607,752, Cl. 428-203.000.
Fuji Photo Film Co., Ltd.: *See—*
Hayakawa, Toshiro, 5,608,743, Cl. 372-20.000.
Hayashi, Junji, 5,608,333, Cl. 324-711.000.
Ishida, Toshio; Satake, Masaki; and Okita, Tsutomu, 5,607,782, Cl. 428-694.00T.
Ishikawa, Takatoshi, 5,607,819, Cl. 430-386.000.
Kataoka, Hideaki; and Takahashi, Tomoyuki, 5,608,485, Cl. 396-514.000.
Kato, Eiichi, 5,607,533, Cl. 156-230.000.
Komatsu, Akihiro; Tokiwa, Nobuaki; and Saito, Yoshio, 5,607,861, Cl. 436-50.000.
Konno, Takeshi; and Ochiai, Takeji, 5,607,764, Cl. 428-327.000.
Naito, Hideki; and Sasaki, Hiroki, 5,607,812, Cl. 430-214.000.
Nakajima, Nobuyoshi, 5,608,813, Cl. 382-132.000.
Nakamura, Hideyuki; Takeda, Akihiko; and Namiki, Tomizo, 5,607,809, Cl. 430-201.000.
Nakamura, Koichi, 5,607,820, Cl. 430-393.000.
Nishizawa, Shinzi, 5,607,823, Cl. 430-496.000.
Oda, Kazuya, 5,608,455, Cl. 348-245.000.
Oya, Toyohisa; Inagaki, Yoshio; and Goto, Takahiro, 5,607,829, Cl. 430-578.000.
Shimizu, Mitsuru; Aosaki, Ko; and Cho, Michio, 5,608,477, Cl. 396-6.000.
Shimura, Kazuo, 5,608,812, Cl. 382-128.000.
Takagi, Junichi; and Asano, Seiji, 5,608,486, Cl. 396-6.000.
Takahashi, Yonosuke; and Shinozaki, Fumiaki, 5,608,441, Cl. 347-171.000.
Fuji Photo Optical Co., Ltd.: *See—*
Kamoda, Takashi, 5,608,478, Cl. 396-503.000.
Nishimura, Syunji, 5,608,481, Cl. 396-440.000.
Fuji Xerox Co., Ltd.: *See—*
Furusawa, Fumio; Kamata, Akira; and Suzuki, Tomohisa, 5,608,504, Cl. 399-18.000.
Ikeo, Joji; and Tanaka, Tsuyoshi, 5,608,857, Cl. 395-761.000.
Koike, Takao; Saito, Koichi; Tabata, Shinji; and Naitoh, Koichi, 5,608,438, Cl. 347-100.000.
Matsunoshita, Junichi, 5,608,654, Cl. 364-514.00R.
Fujikin Incorporated: *See—*
Tanikawa, Tsuyoshi; and Yamamoto, Kenji, 5,606,994, Cl. 137-627.500.
Fujikura Ltd.: *See—*
Kaizu, Masahiro; and Horii, Atsuhiro, 5,607,048, Cl. 200-314.000.
Fujimaki, Takahiro: *See—*
Inaniwa, Masahiro; Kido, Nobuharu; Fujimaki, Takahiro; Watanabe, Shinji; Matsufuji, Noriyasu; and Tobita, Yoshinori, 5,608,301, Cl. 318-729.000.
Fujimori, Minoru. Incinerator with a recombustion chamber. 5,606,923, Cl. 110-211.000.
Fujimori, Shinya: *See—*

Masuda, Kenmei; Ogiro, Kenji; Goto, Hidefumi; Hirose, Sadao; Fujino, Satoshi; Fujimori, Shinya; and Izumi, Katsuhiko, 5,608,585, Cl. 360-72.100.
Fujimori, Toshinari: *See—*
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Fujimura, Naoto: *See—*
Sakakibara, Teigo; Fujimura, Naoto; Sakai, Kiyoshi; Aoto, Hiroshi; and Nishida, Shunichiro, 5,607,751, Cl. 428-195.000.
Fujinawa, Masaaki: *See—*
Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.
Fujino, Kousou: *See—*
Yoshida, Noriyuki; Fujino, Kousou; Hayashi, Noriki; Okuda, Shigeru; Hara, Tsukushi; and Ishii, Hideo, 5,607,899, Cl. 505-474.000.
Fujino, Satoshi: *See—*
Masuda, Kenmei; Ogiro, Kenji; Goto, Hidefumi; Hirose, Sadao; Fujino, Satoshi; Fujimori, Shinya; and Izumi, Katsuhiko, 5,608,585, Cl. 360-72.100.
Fujioka, Masaya, to Brother Kogyo Kabushiki Kaisha. Hot melt ink utilizable for ink jet printer. 5,607,501, Cl. 106-22.00A.
Fujioka, Toyokazu; and Arai, Kunihiko, to Chiyoda Corporation. Device and method for testing the bearing capacity of piles. 5,608,169, Cl. 73-803.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Katsuta, Kiyotaka; Takamatsu, Hiroyuki; Ueda, Yoshiko; Nakanishi, Hajime; and Yoshida, Keizo, 5,607,938, Cl. 514-267.000.
Murata, Masayoshi; Tsutsumi, Hideo; Matsuda, Keiji; Hattori, Kohji; and Nakajima, Takashi, 5,608,056, Cl. 540-350.000.
Fujishita, Masakatsu: *See—*
Hikita, Sakae; Maeda, Yuuji; Fujishita, Masakatsu; Sato, Masahiro; Kawasaki, Seiichi; and Ebisawa, Takayuki, 5,608,309, Cl. 322-28.000.
Fujita, Yoshitsugu: *See—*
Ishiguro, Saburo; Inoue, Tatsuo; Fujita, Yoshitsugu; and Iwata, Tetsuhiro, 5,607,453, Cl. 607-2.000.
Fujitsu Limited: *See—*
Akaogi, Takao; Kawashima, Hiromi; Takeguchi, Tetsuji; Hagiwara, Ryoji; Kasa, Yasushi; Itano, Kiyoshi; Ogawa, Yasushige; and Kawamura, Shouichi, 5,608,670, Cl. 365-185.230.
Haruki, Tamae; Nakagawa, Kenji; Taguchi, Masao; Tanaka, Hiroyuki; Asai, Satoru; and Hanyu, Isamu, 5,607,821, Cl. 430-396.000.
Hyodo, Ryuji; Eda, Susumu; Oomuro, Katsumi; Sekihata, Osamu; Tanaka, Kenji; Hatta, Hiroyuki; and Norizuki, Reiko, 5,608,719, Cl. 370-250.000.
Kawakami, Kumiko; Akagawa, Yasuko; and Takahashi, Masumi, 5,608,894, Cl. 395-500.000.
Matsuda, Tatsuharu; and Minamizawa, Masaharu, 5,607,877, Cl. 437-180.000.
Mizoshita, Yoshifumi; Yamada, Tomoyoshi; Kuroba, Yasumasa; Kouhei, Toru; Sugawara, Takao; Matsumoto, Masaru; Mase, Hiroyuki; Tsunekewa, Masao; Koganezawa, Shinji; and Aruga, Keiji, 5,608,592, Cl. 360-105.000.
Moriizumi, Kiyokazu; and Seyama, Kiyotaka, 5,608,192, Cl. 174-255.000.
Mukai, Kohki; and Ohtsuka, Nobuyuki, 5,608,229, Cl. 257-14.000.
Ogawa, Satoshi, 5,608,540, Cl. 358-434.000.
Ojima, Hisayuki; and Kuwahara, Hiroshi, 5,608,343, Cl. 326-93.000.
Okumura, Masafumi, 5,608,304, Cl. 320-5.000.
Sakuyama, Seiki; Uchida, Hiroki; and Watanabe, Isao, 5,607,609, Cl. 219-388.000.
Tsukada, Mineharu; and Omote, Koji, 5,607,535, Cl. 156-252.000.
Yamada, Akio; and Yasuda, Hiroshi, 5,608,226, Cl. 250-491.100.
Fujitsu Ten Limited: *See—*
Ueyanagi, Katsumichi, 5,608,153, Cl. 73-1.00D.
Fujiwara, Hiroaki: *See—*
Sato, Kenichi; Kanematsu, Koichi; Fujiwara, Hiroaki; and Okada, Yasuhiro, 5,607,097, Cl. 228-8.000.
Fujiwara, Masayuu, to Rohm, Co. Ltd. Device for driving a LED display. 5,608,339, Cl. 326-27.000.
Fujiwara, Naoto, to NEC Corporation. Information storage apparatus. 5,608,759, Cl. 375-242.000.
Fujiwara, Shinji: *See—*
Morita, Keisuke; Matsunaga, Hiroshi; Muramatsu, Shigeru; and Fujiwara, Shinji, 5,607,291, Cl. 417-410.100.
Fujiwara, Shiomi. Feminine undergarment with calender. 5,606,748, Cl. 2-406.000.
Fujiwara, Toru; and Tubakiji, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling the quantity of intake air to be supplied to an engine. 5,606,950, Cl. 123-399.000.
Fujiwara, Toshimitsu; Iino, Shuji; and Miyamoto, Hidetoshi, to Minolta Co., Ltd. Image forming apparatus using an intermediate transfer member, an intermediate transfer member and image forming method. 5,608,503, Cl. 399-302.000.
Fujiwara, Yoshio; and Saito, Etsuro, to Sony Corporation. Image displaying device. 5,608,474, Cl. 352-160.000.
Fujiyama, Yuichiro: *See—*
Kamiya, Kozo; Morita, Toru; Fujiyama, Yuichiro; and Ushio, Masaru, 5,607,575, Cl. 208-251.00R.
Fukada, Kaoru: *See—*
Masumura, Shigeki; Nakamura, Hideo; Noguchi, Kouki; Kawasaki, Shumpei; Fukada, Kaoru; and Akao, Yasushi, 5,608,881, Cl. 395-306.000.
Fukagai, Toshio: *See—*
Tamura, Hiroshi; Fukagai, Toshio; Mishima, Naoshi; and Sasaki, Masaomi, 5,608,010, Cl. 525-328.200.
Fukuchi, Masakazu: *See—*
Haneda, Satoshi; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,608,497, Cl. 399-153.000.
Fukuda, Yasuaki; and Matsumoto, Shigeyuki, to Canon Kabushiki Kaisha. Process for preparing an X-ray mask structure. 5,607,733, Cl. 427-585.000.
Fukuda, Yasuhiro, to Oki Electric Industry Co., Ltd. Semiconductor integrated circuit with surge-protected output MISFET's. 5,608,594, Cl. 361-58.000.
Fukuhara, Satoru: *See—*
Sato, Mitsugu; Ose, Yoichi; Fukuhara, Satoru; Todokoro, Hideo; and Ezumi, Makoto, 5,608,218, Cl. 250-310.000.
Fukumochi, Yoji: *See—*
Sata, Ichiko; and Fukumochi, Yoji, 5,608,623, Cl. 395-754.000.
Fukumura, Keiji: *See—*
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.
Fukumura, Yoshikazu, to NTN Corporation. Wheel bearing asembly. 5,607,241, Cl. 384-537.000.
Fukushima, Shinya: *See—*
Takahashi, Nobu; and Fukushima, Shinya, 5,606,960, Cl. 123-684.000.
Fulks, Gary C.; Jones, Nicholas; Barbosa, Manuel T.; Jimenez, Francisco J. S.; De La Lastra Arjona, Antonio P.; Garcia, Miguel C.; and Gorostidi, Jose I. M., to Delphi France Automotive Systems; and Delphi Automotive Systems Espana S.A. Hydraulic damper. 5,607,035, Cl. 188-322.190.
Fumoto, Yasunori: *See—*
Ohkawa, Hideo; Kitajima, Koji; Kodaka, Kenji; Fumoto, Yasunori; and Kumeta, Takako, 5,608,104, Cl. 562-473.000.
Funabashi, Eiji; and Aita, Shuichi, to Canon Kabushiki Kaisha. Contact charging member and electrophotographic apparatus using the same. 5,608,500, Cl. 399-176.000.
Furlani, Edward P.; Mey, William; Stephany, Thomas M.; and Lee, J. Kelly, to Eastman Kodak Company. Electromagnetic camera shutter. 5,608,484, Cl. 396-463.000.
Furukawa Co., Ltd.: *See—*
Ishiguro, Saburo; Inoue, Tatsuo; Fujita, Yoshitsugu; and Iwata, Tetsuhiro, 5,607,453, Cl. 607-2.000.
Furukawa Electric Co., Ltd., The: *See—*
Hirayama, Yoshiyuki; Nishikata, Kazuaki; and Irikawa, Michinori, 5,608,230, Cl. 257-18.000.
Furukawa, Hideharu, to Texas Instruments Incorporated. Compact protector. 5,607,610, Cl. 219-505.000.
Furukawa, Ken: *See—*
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,608,068, Cl. 546-118.000.
Furukawa, Masashi: *See—*
Tonouchi, Hiroshi; and Furukawa, Masashi, 5,608,906, Cl. 395-677.000.
Furukawa, Takashi: *See—*
Tsushima, Kazunori; Furukawa, Takashi; Iwasaki, Tomonori; Ishiwatari, Takao; and Nakamachi, Mikako, 5,607,963, Cl. 514-425.000.
Furusawa, Fumio; Kamata, Akira; and Suzuki, Tomohisa, to Fuji Xerox Co., Ltd. Transfer material detecting device. 5,608,504, Cl. 399-18.000.
Furusawa, Koutarou: *See—*
Goto, Takenori; Hayashi, Nobuhiko; Miyake, Teruaki; Matsumoto, Mitsuaki; Matsukawa, Kenichi; Ide, Daisuke; Furusawa, Koutarou; Ibaraki, Akira; Yodoshi, Keiichi; and Kunisato, Tatsuya, 5,608,752, Cl. 372-46.000.
Fushimi, Tetsuya: *See—*
Minemura, Hiroyuki; and Fushimi, Tetsuya, 5,608,710, Cl. 369-116.000.
Futaba Denshi Kogyo, K.K.: *See—*
Sakuma, Susumu; Inokoshi, Satoshi; Aneha, Akira; Arai, Masahiro; and Tokita, Masashi, 5,608,758, Cl. 375-238.000.
G & H Technology, Inc.: *See—*
Bielinski, Slawomir J.; McCormick, Larry L.; and Stephenson, Roger C., 5,606,889, Cl. 74-2.000.
G.D Societa' Per Azioni: *See—*
Chini, Stefano; Di Stefano, Giuseppe; and Neri, Armando, 5,608,818, Cl. 382-153.000.
G.D S.p.A.: *See—*
Boriani, Silvano; and Minarelli, Alessandro, 5,607,121, Cl. 242-563.200.
Boriani, Silvano; and Minarelli, Alessandro, 5,607,382, Cl. 493-182.000.
Gagne, Yvon: *See—*
Rioux, Roger; Pesant, Gilles; Bostelmann, Willy; Talbot, Jean-Guy; Fecteau, Berthold; Cote, Raymond; and Gagne, Yvon, 5,607,026, Cl. 180-190.000.
Gailus, Mark W.: *See—*
McNamara, David M.; Provencher, Daniel B.; Stokoe, Philip T.; Howard, William E.; and Gailus, Mark W., 5,607,326, Cl. 439-608.000.
Galbi, David E.: *See—*
Purcell, Stephen C.; Galbi, David E.; Liao, Frank H.; and Tse, Yvonne C., 5,608,888, Cl. 395-412.000.

Galley, Edward; Godfrey, Dene C.; Guthrie, Walter G.; Hodgkinson, Darren M.; and Linnington, Helen L., to Boots Company PLC, The. Anti-microbial compositions. 5,607,681, Cl. 424-405.000.
Gallico, Licia: *See*—
Long, Giorgio; Spinelli, Silvano; Rozzi, Antonella; D'Alo', Simonetta; and Gallico, Licia. 5,607,930, Cl. 514-235.800.
Galvis, Oscar: *See*—
Stahl, Daniel A.; Johnson, Walter W.; and Galvis, Oscar. 5,607,448, Cl. 606-203.000.
Gandhi, Rajesh B.; Bogardus, Joseph B.; Garofalo, Peter M.; Marr, Timothy R.; Perrone, Robert K.; and Kaplan, Murray A., to Bristol-Myers Squibb Company. d_4T polymorphic Form 1 process. 5,608,048, Cl. 536-28.200.
Ganser, Hans G.: *See*—
Derra, Gunther H.; Fischer, Hanns E.; Ganser, Hans G.; and Monch, Holger. 5,608,294, Cl. 315-224.000.
Gao, Yong. Automatic dental flossing device. 5,606,984, Cl. 132-325.000.
Garcia, Jorge L.; Habbaba, Faris; Tarabolous, Mark C.; and Phelps, William C., III, to Motorola, Inc. Battery interface structure for an electrical device. 5,607,791, Cl. 429-96.000.
Garcia, Jorge L.; Siddoway, Craig F.; and Habbaba, Faris S., to Motorola, Inc. Battery latch. 5,607,792, Cl. 429-97.000.
Garcia, Miguel C.: *See*—
Fulks, Gary C.; Jones, Nicholas; Barbosa, Manuel T.; Jimenez, Francisco J. S.; De La Lastra Arjona, Antonio P.; Garcia, Miguel C.; and Gorostidi, Jose I. M., 5,607,035, Cl. 188-322.190.
Garibay, Larry J.: *See*—
Cheng, Joe-Ming; Craft, David J.; Garibay, Larry J.; and Karnin, Ehud D., 5,608,396, Cl. 341-50.000.
Garlick, Paul L.; and Pettit, Neville T., to ITW Limited. Nozzle and aircap for spray guns. 5,607,108, Cl. 239-424.000.
Garofalo, Giovanni, to HTM Sport S.p.A. Swim fin equiped with buckle for the fastening of the heel strap. 5,607,334, Cl. 441-64.000.
Garofalo, Peter M.: *See*—
Gandhi, Rajesh B.; Bogardus, Joseph B.; Garofalo, Peter M.; Marr, Timothy R.; Perrone, Robert K.; and Kaplan, Murray A., 5,608,048, Cl. 536-28.200.
Garrett, Michael E., to BOC Group plc, The. Pressure swing adsorption plants. 5,607,499, Cl. 96-108.000.
Garrett, Scott M.; Desai, Venus D.; Meadows, Vernon; and Fernandez, Jose M., to Motorola, Inc. Apparatus for controlling excess recharge current applied to a battery. 5,608,307, Cl. 320-39.000.
Garris, Michael: *See*—
Hughen, John; Ferguson, Scott; and Garris, Michael, 5,607,790, Cl. 429-93.000.
Garrison, Edgar L.: *See*—
Garrison, John E.; Garrison, Edgar L.; and Anderson, Robert, 5,607,302, Cl. 433-39.000.
Garrison, John E.; Garrison, Edgar L.; and Anderson, Robert. Matrix retainer apparatus for dental restorations. 5,607,302, Cl. 433-39.000.
Garrison, William A.: *See*—
Sierocuk, Thomas J.; Garrison, William A.; and Michetti, Allan R., 5,607,441, Cl. 606-190.000.
Garroway, Allen N.; Miller, Joel B.; Zax, David B.; and Liao, Ming-Yuan, to United States of America, Navy. Method and apparatus for detecting target species having quadropolar nuclei by stochastic nuclear quadrupole resonance. 5,608,321, Cl. 324-307.000.
Garst, Michael E.: *See*—
Woodward, David F.; Andrews, Steven W.; Burk, Robert M.; and Garst, Michael E., 5,607,978, Cl. 514-646.000.
Gärtner, Fritz-Jürgen: *See*—
Buchold, Henning; Gärtner, Fritz-Jürgen; Mallok, Gert; Schlichting, Eberhard; and Stönner, Hans-Martin, 5,608,122, Cl. 568-885.000.
Gasparik, Frank, to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Synchronous telemetry channel. 5,608,390, Cl. 340-870.010.
Gates, Donald C., to General Inspection, Inc. Inspection device for measuring a geometric dimension of a part. 5,608,530, Cl. 356-384.000.
Gaul, Stephen J., to Harris Corporation. Surface mountable integrated circuit with conductive vias. 5,608,264, Cl. 257-734.000.
Gavin, Robert F.: *See*—
Ensminger, William D.; and Gavin, Robert F., 5,607,393, Cl. 604-93.000.
Gay, David E., to General Motors Corporation. Method of making an AC generator rotor segment. 5,607,525, Cl. 156-62.800.
Gay, Michael J., to Motorola, Inc. Telephone line interface circuit. 5,608,795, Cl. 379-399.000.
Gealow, Kendra K.: *See*—
Francischelli, David; Gealow, Kendra K.; Grandjean, Pierre A.; Hammargren, John; Neisz, Johann J.; and Peterson, David K., 5,607,385, Cl. 600-17.000.
Gebhardt, Godfred L. Remote controlled, portable deluge systems and method. 5,607,020, Cl. 169-48.000.
Gec Alsthom Limited: *See*—
Jones, Martin S.; and Thomas, David W. P., 5,608,327, Cl. 324-522.000.
Gehling, Matthias: *See*—
Reiff, Helmut; Wigger, Herbert; Gehling, Matthias; and Passon, Karl-Heinz, 5,607,482, Cl. 8-495.000.
Geier, William F. Elongated carrier support apparatus for securing items to the roof or luggage rack of a vehicle. 5,607,093, Cl. 224-318.000.
Geis, Michael W.: *See*—
Twichell, Jonathan C.; Brandes, George R.; Geis, Michael W.; Macaulay, John M.; Duboc, Robert M., Jr.; and Curtin, Christopher J., 5,608,283, Cl. 313-309.000.
GelTex Pharmaceuticals, Inc.: *See*—
Mandeville, W. Harry, III; and Holmes-Farley, Stephen R., 5,607,669, Cl. 424-78.120.
Geluk, Ronald J., to B.V. Optische Industrie "De Oude Delft". Slit radiography apparatus. 5,608,777, Cl. 378-146.000.
GenCorp Inc.: *See*—
Hall, Glenn; and Brown, Merl E., 5,606,828, Cl. 49-490.100.
General Electric Company: *See*—
Andresen, Peter L.; Hettiarachchi, Samson; Kim, Young J.; and Diaz, Thomas P., 5,608,766, Cl. 376-305.000.
Crosby, Richard; DeRudder, James L.; Flowers, Larry I.; Lin, Ye-Gang; and Odle, Roy R., 5,608,027, Cl. 528-51.000.
Froelicher, Stephen B.; and Richterkessing, Frank H., Jr., 5,606,879, Cl. 68-23.300.
Gilmore, Robert S.; and Howard, Patrick J., 5,608,814, Cl. 382-141.000.
Hoover, James F.; and Fontana, Luca P., 5,608,026, Cl. 528-26.000.
Hsieh, Jiang, 5,608,776, Cl. 378-145.000.
Matzner, Bruce; Dunlap, Thomas G.; and Proebstle, Richard A., 5,608,768, Cl. 376-451.000.
Medford, George F., 5,607,729, Cl. 427-495.000.
Shu, Emily Y.; Brown, Dale M.; and Petrucco, Louis J., 5,608,515, Cl. 356-43.000.
Steigerwald, Robert L.; Mallick, John A.; and Park, John N., 5,608,771, Cl. 378-15.000.
Terhune, James H.; and Cowan, Robert L., II, 5,608,767, Cl. 376-321.000.
Wadekamper, Donald C., 5,607,296, Cl. 432-3.000.
Wang, Hsin-Pang; and Kakulavar, Srinivasu, 5,608,637, Cl. 364-468.030.
Welles, Kenneth B., II; Ali, Irfan; and Harrison, Daniel D., 5,608,412, Cl. 342-457.000.
General Inspection, Inc.: *See*—
Gates, Donald C., 5,608,530, Cl. 356-384.000.
General Motors Corporation: *See*—
Buchanan, William J.; Wasse, Siegfried A.; and Bowler, Thomas A., 5,607,012, Cl. 165-173.000.
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Eibl, Johann; Linnau, Yendra; and Teschner, Wolfgang, 5,608,038, Cl. 530-387.100.
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Kim, Young S., 5,607,129, Cl. 248-98.000.
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Inoue, Hideya, to Nikon Corporation. Camera with device for identifying used film magazine. 5,608,475, Cl. 396-207.000.
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Streicher, Christian, 5,607,557, Cl. 203-39.000.
Travers, Christine; Courty, Philippe; and Sarrazin, Patrick, 5,607,891, Cl. 502-229.000.
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Frommer, Wolf-Bernd; and Riesmeier, Jorg, 5,608,146, Cl. 800-205.000.
Institut für Mikroelektronik Stuttgart: *See*—
Höfflinger, Bernd; Landgraf, Marc; and Seger, Ulrich, 5,608,204, Cl. 250-208.100.
Institut National D'Optique: *See*—
Doric, Sead, 5,607,492, Cl. 65-174.000.
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Patsalos, Philip N.; and O'Connell, Mark L., 5,607,390, Cl. 604-29.000.
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Kumar, Sudarshan; Kuo, Shyue L.; and Yip, Chung Y., 5,608,741, Cl. 371-49.100.
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Distinti, Robert J., 5,608,402, Cl. 341-162.000.

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Arimilli, Ravi K.; Kaiser, John M.; Lewchuk, William K.; and Allen, Michael S., 5,608,878, Cl. 395-287.000.
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Johnson, Larry D.; and Pilling, David J., to Integrated Device Technology, Inc. Adjacent row shift redundancy circuit having signal restorer coupled to programmable links and a method thereof. 5,608,685, Cl. 365-230.060.

Johnson, Larry K.; and Lange, Stephen J., to Procter & Gamble Company, The. Method for making a flangeless seam for use in disposable articles. 5,607,537, Cl. 156-289.000.

Johnson Matthey PLC: *See*—
Ciszewski, Lech; Amedio, John; Kapa, Prasad; Kucerovy, Andrew; and Lee, George T., 5,608,061, Cl. 540-474.000.

Johnson, Noble M.: *See*—
Biegelsen, David K.; Sheridon, Nicholas K.; and Johnson, Noble M., 5,607,876, Cl. 437-129.000.

Johnson, Robert W.: *See*—
Boehm, Michael W.; and Johnson, Robert W., 5,606,905, Cl. 99-375.000.

Johnson, Thomas R.: *See*—
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,607,440, Cl. 606-185.000.

Johnson, Walter W.: *See*—
Stahl, Daniel A.; Johnson, Walter W.; and Galvis, Oscar, 5,607,448, Cl. 606-203.000.

Johnson Worldwide Associates: *See*—
Eungard, William C., 5,607,258, Cl. 405-186.000.

Joiner Associates, Inc.: *See*—
Finn, Lynda M., 5,607,309, Cl. 434-107.000.

Joly, Jean C., to Whitaker Corporation, The. One-piece receptacle terminal. 5,607,328, Cl. 439-852.000.

Jonckheere, Luc: *See*—
Morlion, Danny; Van Koetsem, Jan P. K.; and Jonckheere, Luc, 5,608,836, Cl. 385-137.000.

Jones, Brian C., to Wilshire Partners. Ice bank control for a beverage dispensing machine. 5,606,864, Cl. 62-139.000.

Jones, Dennis R.; and Jones, Patricia A. Hair loss replacement method and system. 5,607,479, Cl. 623-15.000.

Jones, Fred K., Jr.; and Klaas, Steven J., to Du Pont de Nemours, E. I., and Company. Engine mount from polychloroprene copolymer composition. 5,608,007, Cl. 525-125.000.

Jones, Martin S.; and Thomas, David W. P., to Gec Alsthom Limited. Methods and apparatus for identifying faulted phases on an electric power transmission line. 5,608,327, Cl. 324-522.000.

Jones, Michael E.; and Karambelas, Randy C., to Tektronix, Inc. Printer print head positioning apparatus and method. 5,608,430, Cl. 347-8.000.

Jones, Nicholas: *See*—
Fulks, Gary C.; Jones, Nicholas; Barbosa, Manuel T.; Jimenez, Francisco J. S.; De La Lastra Arjona, Antonio P.; Garcia, Miguel C.; and Gorostidi, Jose I. M., 5,607,035, Cl. 188-322.190.

Jones, Patricia A.: *See*—
Jones, Dennis R.; and Jones, Patricia A., 5,607,479, Cl. 623-15.000.

Joo, Sung I. Cylindrical ice cube maker. 5,606,869, Cl. 62-347.000.

Jorgensen, Glen E.: *See*—
Latham, Allen, Jr.; Jorgensen, Glen E.; Sibinga, Theodoor H. S.; Plante, Joseph R.; and Knapp, Tracey E., 5,607,579, Cl. 210-195.100.

Jorgensen, Ib: *See*—
Andersen, Erik; and Jorgensen, Ib, 5,607,394, Cl. 604-102.000.

Joseph Company, The: *See*—
Anthony, Michael; and Joslin, William D., Jr., 5,606,866, Cl. 62-294.000.

Joshi, Abhay: *See*—
Perreault, John A.; Joshi, Abhay; Chen, Albert; and Labowicz, Eva, 5,608,727, Cl. 370-462.000.

Joshi, Ashok V., to Ceramatec, Inc. Removal of oxygen from inert gases. 5,607,572, Cl. 205-763.000.

Joslin, William D., Jr.: *See*—
Anthony, Michael; and Joslin, William D., Jr., 5,606,866, Cl. 62-294.000.

Jot-That-Thought, Inc.: *See*—
Morrissey, Thomas J., 5,607,067, Cl. 211-50.000.

Joung, Mun C.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,608,589, Cl. 360-85.000.

Juhasz, Peter: *See*—
Biemann, Klaus; and Juhasz, Peter, 5,607,859, Cl. 436-173.000.

Juki Corporation: *See*—
Nakamura, Masao; Goto, Sumio; Tomioka, Hiroyuki; Mori, Takayoshi; and Iwasaki, Nozomi, 5,606,927, Cl. 112-470.010.

Jung, Il N.; Cho, Eun J.; Han, Joon S.; and Cho, Yon S., to Korea Institute of Science and Technology. Process for preparation of silane compounds of which chlorine atoms of C-Cl bonds have been reduced. 5,608,097, Cl. 556-466.000.

Jungkind, Roland, to PUMA AG Rudolf Dassler Sport. Shoe closure. 5,606,778, Cl. 24-68.0SK.

Jurgenson, Ryan A.: *See*—
Ziegler, David A.; Jurgenson, Ryan A.; Lien, Brent D.; Christensen, Thomas K.; and Mahoney, James R., 5,608,590, Cl. 360-104.000.

Juri, Tatsuro: *See*—
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Jursic, Branko: *See*—
Marks, Paul A.; Rifkind, Richard A.; Breslow, Ronald; and Jursic, Branko, 5,608,108, Cl. 562-621.000.

Justus, Jeff E. Hook-up light for a truck tractor. 5,607,221, Cl. 362-83.300.

Juttner, Klaus-Michael: *See*—
Franz, Klaus-Dieter; Parusel, Manfred; Schraml-Marth, Mathias; Juttner, Klaus-Michael; and Schafer, Sabine, 5,607,571, Cl. 205-493.000.

K.A. Schmersal GmbH & Co.: *See*—
Drake, David, 5,606,881, Cl. 70-352.000.

Kabasawa, Yasuhiro: *See*—
Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,607,953, Cl. 514-327.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Sakai, Kenji; Hamada, Yoshihiro; Hagiwara, Katsunobu; Ujihara, Toshio; Yanagihara, Toshio; and Nakano, Hiromi, 5,607,703, Cl. 425-145.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Oki, Isao, 5,606,901, Cl. 91-461.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Tonouchi, Hiroshi; and Furukawa, Masashi, 5,608,906, Cl. 395-677.000.

Kabushiki Kaisha Sumitomo Kinzoku Ceramics: *See*—
Nakano, Sumio; Hirashita, Kazumi; and Sumida, Reiko, 5,607,569, Cl. 205-118.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Shioda, Kazuya, 5,607,049, Cl. 200-557.000.

Kabushiki Kaisha TOPCON: *See*—
Ogawa, Yohei, 5,606,802, Cl. 33-276.000.

Kabushiki Kaisha Toshiba: *See*—
Aizawa, Yoshiaki; and Katoh, Toshimitu, 5,608,237, Cl. 257-132.000.
Chida, Nobuyoshi; and Yoshida, Masayuki, 5,607,868, Cl. 437-34.000.
Hashimoto, Yoshimi, 5,606,877, Cl. 68-12.040.
Ichihara, Katsutaro; Okubo, Michiko; and Horioka, Keiji, 5,607,599, Cl. 216-22.000.
Iijima, Yasuo, 5,608,902, Cl. 395-616.000.
Itakura, Tetsuro, 5,608,352, Cl. 330-253.000.
Maezawa, Yukishige; Hayata, Terunobu; Shimada, Hideki; Ito, Isao; Suzuki, Kazuo; Tadauchi, Masahiro; Tezuka, Fuminobu; and Kano, Jiro, 5,608,136, Cl. 588-228.000.
Matsuda, Hideo, 5,608,238, Cl. 257-140.000.
Morono, Takahiro, 5,608,871, Cl. 395-200.020.
Nakajima, Shigeru, 5,608,388, Cl. 340-825.070.
Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, 5,608,772, Cl. 378-16.000.
Ogura, Masahiko; and Honda, Masashi, 5,608,494, Cl. 399-366.000.
Okuno, Shiho; Hashimoto, Susumu; and Inomata, Koichiro, 5,607,781, Cl. 428-694.0ML.
Otsuka, Mari; Kitakura, Tomonori; Otsuka, Kenichi; and Mori, Kazuya, 5,607,878, Cl. 437-187.000.
Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, 5,607,718, Cl. 427-97.000.
Shibuya, Sachiko; Yoshida, Masayuki; Chida, Nobuyoshi; and Matsumoto, Osamu, 5,608,241, Cl. 257-207.000.
Sugita, Yasushi; Ishikawa, Tatsuya; and Seki, Takashi, 5,608,764, Cl. 375-344.000.
Yabe, Tomoaki; and Numata, Kenji, 5,608,674, Cl. 365-189.050.
Yamanishi, Eiichi, 5,608,544, Cl. 358-453.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Ikeda, Hayato; Kawamura, Hisato; Michiyuki, Hiromi; and Yokoi, Masanobu, 5,607,287, Cl. 417-269.000.
Takenaka, Kenji; Tokunaga, Eiji; and Sugiura, Manabu, 5,607,286, Cl. 417-222.200.

Kabushiki Kaisya Advance: *See*—
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Kabushiki Kaisya Ohara: *See*—
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Kabushikikaisha Wacom: *See*—
Ogawa, Yasuji, 5,608,528, Cl. 356-375.000.

Kadyrov, Ernest: *See*—
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Kadyrov, Valery: *See*—
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Kaetsu, Atsushi: *See*—
Watanabe, Keisuke; Yamamoto, Noboru; Kaetsu, Atsushi; and Yamada, Yoshimi, 5,608,088, Cl. 549-529.000.

Kafuku, Komei: *See*—
Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,607,895, Cl. 503-227.000.

Kagawa, Tetsuya, to Ricoh Company, Ltd. Facsimile device and communication control method thereof. 5,608,545, Cl. 358-468.000.

Kahn, Jeffrey A.: *See*—
Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., 5,608,436, Cl. 347-65.000.

Kaida, Hiroaki: *See*—
Nishimura, Toshio; Inoue, Jiro; and Kaida, Hiroaki, 5,608,362, Cl. 333-191.000.

Kaieda, Osamu: *See*—
Masuda, Kiyoshi; Tamaura, Yukie; and Kaieda, Osamu, 5,608,091, Cl. 552-250.000.

Kaiser, Joachim: *See*—
Englert, Heinrich; Gerlach, Uwe; Crause, Peter; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,607,976, Cl. 514-584.000.

Kaiser, John M.: *See*—
Arimilli, Ravi K.; Kaiser, John M.; Lewchuk, William K.; and Allen, Michael S., 5,608,878, Cl. 395-287.000.

Kaizu, Masahiro; and Horii, Atsuhiro, to Fujikura Ltd. Light illumination membrane switch with reduced size and improved light illumination. 5,607,048, Cl. 200-314.000.

Kaji, Tetsunori: *See*—
Makino, Akitaka; Tamura, Naoyuki; and Kaji, Tetsunori, 5,607,510, Cl. 118-723.0MA.

Kajihara, Kazuhisa; Taniyama, Masatosi; Yanai, Kunio; and Ueno, Hiroshi, to Koyo Seiko Co., Ltd. Bearing sealing device and bearing sealing mechanism capable of preventing the leakage of grease. 5,607,240, Cl. 384-480.000.

Kajioka, Hiroshi: *See*—
Kumagai, Tatsuya; Abe, Keiji; Akiyama, Munehiro; Kajioka, Hiroshi; Sonobe, Hisao; and Ono, Shigeru, 5,608,525, Cl. 356-350.000.

Kakulavar, Srinivasu: *See*—
Wang, Hsin-Pang; and Kakulavar, Srinivasu, 5,608,637, Cl. 364-468.030.

Kalem, Lee; and Wilson, Robert L., to Hewlett-Packard Company. Circuit and method for controlling glitches in low intensity signals. 5,608,523, Cl. 356-345.000.

Kalnitsky, Alexander, to SGS-Thomson Microelectronics S.A. Volatile memory cell with interface charge traps. 5,608,250, Cl. 257-314.000.

Kamachi, Hajime: *See*—
Okuyama, Satsuki; Okita, Takaaki; and Kamachi, Hajime, 5,608,044, Cl. 536-6.400.

Kamasz, Stacy R.; and Farrier, Michael G., to Dalsa, Inc. Variable width CCD register with uniform pitch and charge storage capacity. 5,608,242, Cl. 257-216.000.

Kamata, Akira: *See*—
Furusawa, Fumio; Kamata, Akira; and Suzuki, Tomohisa, 5,608,504, Cl. 399-18.000.

Kambara, Hideki: *See*—
Okano, Kazunori; and Kambara, Hideki, 5,607,646, Cl. 422-101.000.

Kamei, Toshio, to NEC Corporation. Method of smoothing a ridge direction pattern and an equipment used therefor. 5,608,811, Cl. 382-124.000.

Kamikawa, Yumiko: *See*—
Ikeda, Yoshiharu; Ueki, Yasuyuki; Nishihara, Toshio; and Kamikawa, Yumiko, 5,607,948, Cl. 514-316.000.

Kamimura, Kunio; Ohashi, Kunitoshi; and Oshima, Toshio, to Hitachi Maxell, Ltd.; and Maxell Seiki, Ltd. Fluorescent detecting apparatus and method. 5,608,225, Cl. 250-458.100.

Kamimura, Toru: *See*—
Samejima, Shunichi; Kitamura, Kenroh; Watanabe, Naohiro; Asano, Teruo; Kamimura, Toru; and Usami, Yoko, 5,607,912, Cl. 510-411.000.

Kaminaga, Kozo: *See*—
Tachi, Katsuichi; Kaminaga, Kozo; Taylor, Jeffrey E.; and Flemming, Howard J., 5,608,473, Cl. 352-27.000.

Kaminsky, Mark E.: *See*—
Ichnowski, Jeanne; Yuan, Chris; Patel, Bipin; and Kaminsky, Mark E., 5,608,783, Cl. 379-67.000.

Kamitani, Mamoru: *See*—
Takeda, Yutaka; and Kamitani, Mamoru, 5,607,514, Cl. 134-12.000.

Kamiya, Kozo; Morita, Toru; Fujiyama, Yuichiro; and Ushio, Masaru, to Nippon Oil Co., Ltd. Process for removing iron impurities from petroleum oil distillation residues. 5,607,575, Cl. 208-251.00R.

Kamiya, Soji: *See*—
Kumada, Yoshio; Hashizume, Katsuyuki; and Kamiya, Soji, 5,607,239, Cl. 384-192.000.

Kamiyama, Masafumi; Maeda, Masahiro; Totsuka, Hiroki; and Sano, Akihiro, to Tomoegawa Paper Co., Ltd. Suspension polymerization method. 5,608,017, Cl. 526-88.000.

Kamoda, Takashi, to Fuji Photo Optical Co., Ltd. Camera with lock-controlling lens barrier. 5,608,478, Cl. 396-503.000.

Kanai, Fumihiko: *See*—
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,607,955, Cl. 514-359.000.

Kanaoka, Atsushi: *See*—
Takagi, Kazuhiro; Ohshima, Tetsuji; Hasegawa, Nobuyoshi; Katoh, Chiaki; Kanaoka, Atsushi; and Kanno, Hideo, 5,608,109, Cl. 564-36.000.

Kanazawa, Hiroshi: *See*—
Okuda, Isao; Shinozaki, Shimpei; Kanazawa, Hiroshi; and Takishima, Suguru, 5,608,709, Cl. 369-112.000.

Kanbayashi, Makoto; and Iida, Wakashi, to Canon Kabushiki Kaisha. Toner with organically treated alumina for developing electrostatic image. 5,607,806, Cl. 430-110.000.

Kanda, Robert J.; and LaMothe, Michael A., to Eaton Corporation. Electrically operated flow control valve. 5,607,137, Cl. 251-129.070.

Kanda, Takashi: *See*—
Ohnishi, Masahito; Kataoka, Shozo; Kanda, Takashi; Yamasaki, Takashi; and Yoshida, Kazuo, 5,608,614, Cl. 363-60.000.

Kando, Akiyoshi; Yoshida, Hiroshi; and Kuse, Kazuki, to YKK Corporation. Synthetic resin pelletizing machine. 5,607,700, Cl. 425-71.000.

Kando, Robert R.; and Godin, Paul L., to Digital Equipment Corporation. Adapter for interconnecting single-ended and differential SCSI buses to prevent 'busy' or 'wired-or' glitches from being passed from one bus to the other. 5,608,883, Cl. 395-309.000.
Kaneko, Norio; and Kobayashi, Tamaki, to Canon Kabushiki Kaisha. Method of manufacturing metallic oxide and metallic oxide manufactured by the same. 5,607,658, Cl. 423-593.000.
Kaneko, Toshihide; and Toide, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Projection display apparatus. 5,607,216, Cl. 353-97.000.
Kanema, Seiichi: *See*—
Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.
Kanematsu, Koichi: *See*—
Sato, Kenichi; Kanematsu, Koichi; Fujiwara, Hiroaki; and Okada, Yasuhiro, 5,607,097, Cl. 228-8.000.
Kanemura, Yoshinobu: *See*—
Okazaki, Koju; Kanemura, Yoshinobu; and Nagata, Teruyuki, 5,608,115, Cl. 568-61.000.
Kang, Ho-young: *See*—
Han, Woo-sung; Sohn, Chang-jin; Kang, Ho-young; Kim, Cheol-hong; and Choi, Seong-oon, 5,608,576, Cl. 359-562.000.
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., to Goldstar Co., Ltd. Tape running system for magnetic recording and reproducing apparatus. 5,608,589, Cl. 360-85.000.
Kang, Seong S.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,608,589, Cl. 360-85.000.
Kanner, Rowland W., to Ryder International Corporation. Fixed needle connector for IV assembly and method of assembling. 5,607,392, Cl. 604-86.000.
Kanno, Hideo: *See*—
Takagi, Kazuhiro; Ohshima, Tetsuji; Hasegawa, Nobuyoshi; Katoh, Chiaki; Kanaoka, Atsushi; and Kanno, Hideo, 5,608,109, Cl. 564-36.000.
Kanno, Isao; and Kato, Masahiko, to Yamaha Hatsudoki Kabushiki Kaisha. Engine control system. 5,606,952, Cl. 123-413.000.
Kano, Jiro: *See*—
Maezawa, Yukishige; Hayata, Terunobu; Shimada, Hideki; Ito, Isao; Suzuki, Kazuo; Tadauchi, Masahiro; Tezuka, Fuminobu; and Kano, Jiro, 5,608,136, Cl. 588-228.000.
Kanou, Wataru; and Yamada, Takahiro, to Asmo Co., Ltd. Wire type window regulator. 5,606,827, Cl. 49-352.000.
Kansai Paint Kabushiki Kaisha: *See*—
Hayashihara, Shoiti; and Shinmoto, Masaki, 5,608,429, Cl. 346-135.100.
Kao Corporation: *See*—
Matsuse, Takashi; Yanagi, Hideki; Mitobe, Hiroyuki; Miyamoto, Masafumi; and Nawa, Masayoshi, 5,607,771, Cl. 428-423.100.
Semura, Tetsuhiro; and Morimoto, Eiji, 5,607,805, Cl. 430-106.600.
Kapa, Prasad: *See*—
Ciszewski, Lech; Amedio, John; Kapa, Prasad; Kucerovy, Andrew; and Lee, George T., 5,608,061, Cl. 540-474.000.
Kaphammer, Bryan J. tfdA gene selectable markers in plants and the use thereof. 5,608,147, Cl. 800-205.000.
Kapitex Healthcare Ltd.: *See*—
Smith, Rory J. M., 5,606,966, Cl. 128-200.260.
Kaplan, Marc P.: *See*—
Carlsen, Ralph; Kaplan, Marc P.; and Robertson, John S., 5,608,782, Cl. 379-63.000.
Kaplan, Murray A.: *See*—
Gandhi, Rajesh B.; Bogardus, Joseph B.; Garofalo, Peter M.; Marr, Timothy R.; Perrone, Robert K.; and Kaplan, Murray A., 5,608,048, Cl. 536-28.200.
Kappel, Gary S.: *See*—
Pratt, James R.; Kappel, Gary S.; Cuny, Douglas J.; Tovey, H. Jonathan; Phillips, Paul J.; Peyser, Mark S.; and Aranyi, Ernie, 5,607,436, Cl. 606-143.000.
Karambelas, Randy C.: *See*—
Jones, Michael E.; and Karambelas, Randy C., 5,608,430, Cl. 347-8.000.
Karidis, John P.: *See*—
Flint, Ephraim B.; Karidis, John P.; McVicker, Gerard; and Pence, William E., 5,608,608, Cl. 361-686.000.
Karl Thomae GmbH: *See*—
Linz, Günter; Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Müller, Thomas; Weisenberger, Johannes; and Guth, Brian, 5,607,944, Cl. 514-301.000.
Karlsson, Kai: *See*—
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Karnin, Ehud D.: *See*—
Cheng, Joe-Ming; Craft, David J.; Garibay, Larry J.; and Karnin, Ehud D., 5,608,396, Cl. 341-50.000.
Karr, Stephen L.: *See*—
Gevas, Philip C.; Karr, Stephen L.; Grimes, Stephen; and Littenberg, Richard L., 5,607,676, Cl. 424-197.110.
Karube, Norio: *See*—
Murakami, Takafumi; Morita, Yasuyuki; and Karube, Norio, 5,608,754, Cl. 372-93.000.
Karubian, Ralph K.; and Leamen, John A., to Kentmaster Mfg. Co., Inc. Carcass cleaning system. 5,607,349, Cl. 452-173.000.
Kasa, Yasushi: *See*—
Akaogi, Takao; Kawashima, Hiromi; Takeguchi, Tetsuji; Hagiwara, Ryoji; Kasa, Yasushi; Itano, Kiyoshi; Ogawa, Yasushige; and Kawamura, Shouichi, 5,608,670, Cl. 365-185.230.
Kasday, Leonard R., to Lucent Technologies Inc. Method and apparatus for telephone prize opportunities. 5,608,785, Cl. 379-90.000.
Kashef, Hooman: *See*—
Lev, Valy; Urs, Kamala; and Kashef, Hooman, 5,608,779, Cl. 379-88.000.
Kataoka, Hideaki; and Takahashi, Tomoyuki, to Fuji Photo Film Co., Ltd. Photographic film cassette having a spool locking device and camera for use with the same. 5,608,485, Cl. 396-514.000.
Kataoka, Shozo: *See*—
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Katayama, Akira: *See*—
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Katayama, Carol D.: *See*—
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Katayama, Mituharu: *See*—
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Katehi, Linda P. B.: *See*—
Drayton, Rhonda F.; and Katehi, Linda P. B., 5,608,263, Cl. 257-728.000.
Kato, Eiichi, to Fuji Photo Film Co., Ltd. Method for preparation of printing plate by electrophotographic process and apparatus for use therein. 5,607,533, Cl. 156-230.000.
Kato, Kaneyoshi; Sugiura, Yoshihiro; Kato, Koichi; and Nagai, Yasuo, to Takeda Chemical Industries, Ltd. Condensed heterocyclic compounds, their production and use. 5,607,939, Cl. 514-278.000.
Kato, Koichi: *See*—
Kato, Kaneyoshi; Sugiura, Yoshihiro; Kato, Koichi; and Nagai, Yasuo, 5,607,939, Cl. 514-278.000.
Kato, Masahiko: *See*—
Kanno, Isao; and Kato, Masahiko, 5,606,952, Cl. 123-413.000.
Kato, Nobuhide; and Hamada, Yasuhiko, to NGK Insulators, Ltd. Carbon monoxide sensor. 5,608,154, Cl. 73-23.310.
Kato, Norihisa: *See*—
Shiba, Katsuhiro; Goto, Minoru; Yamada, Takao; Kato, Norihisa; Takahashi, Jun; Okuda, Kenji; and Muratani, Kenji, 5,608,714, Cl. 369-178.000.
Kato, Shinichi: *See*—
Tojyou, Tutomu; Shirai, Shoji; and Kato, Shinichi, 5,608,284, Cl. 313-414.000.
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Aizawa, Yoshiaki; and Katoh, Toshimitu, 5,608,237, Cl. 257-132.000.
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Kubota, Yoshihiro; and Kawai, Makoto, 5,607,541, Cl. 156-538.000.
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Honma, Yoshihiro; Tanaka, Shozo; Oshima, Mitsuyoshi; Tanioka, Soji; and Kawamoto, Fumiaki, 5,608,057, Cl. 540-451.000.
Kawamoto, Hideo: *See*—
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Ikeda, Hayato; Kawamura, Hisato; Michiyuki, Hiromi; and Yokoi, Masanobu, 5,607,287, Cl. 417-269.000.
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Kawamura, Takanori: *See*—
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Tamba, Shinichi; and Yamane, Yoshiro, 5,606,943, Cl. 123-90.230.
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Kawasaki, Shumpei: *See*—
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Kawashima, Hiromi: *See*—
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Kearney, Mark B., to Delco Electronics Corp. Apparatus and method for dual slope calibration of a digitally calibrated transducer amplifier over temperature. 5,608,347, Cl. 327-512.000.
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Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant L.; and Shelburne, Charles E., 5,607,663, Cl. 424-49.000.
Keeler, Sheri D.: *See*—
Richards, Mark R.; Noel, John R.; Mackey, Larry N.; Lee, Yann-Per; Haney, Anna R.; Hammons, John L.; Lloyd, Susan N. W.; and Keeler, Sheri D., 5,607,414, Cl. 604-378.000.
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Keith, David O.; and Hansen, David M., to H. K. Composites, Inc. Connectors used in making highly insulated composite wall structures. 5,606,832, Cl. 52-410.000.
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Fan, Roxy N.; and Kellogg, Reid E., 5,607,814, Cl. 430-258.000.
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Kennametal Inc.: *See*—
Siddle, David R.; and Massa, Ted R., 5,607,206, Cl. 299-102.000.
Kent, Peter M., to Abb Vetco Gray Inc. Adjustable mandrel hanger for a jackup drilling rig. 5,607,019, Cl. 166-344.000.
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Karubian, Ralph K.; and Leamen, John A., 5,607,349, Cl. 452-173.000.
Keogh, Raymond S.: *See*—
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Kerko, David J.; and Wedding, Brent M., to Corning Incorporated. Method of making non-photochromic optical filter glasses. 5,607,493, Cl. 65-30.100.
Kerr, Michael A.: *See*—
Nicolaou, K. C.; Riemer, Claus G.; and Kerr, Michael A., 5,608,087, Cl. 549-510.000.
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Smith, Robert W.; Marvin, Michael G.; Limburg, Deborah L.; Kershaw, Stanley S., Jr.; Schettler, Robert N.; and Goedde, Gary L., 5,608,596, Cl. 361-118.000.
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Katsoulis, Dimitris E.; and Keryk, John R., 5,608,096, Cl. 556-462.000.
Khachaturian, Jon E. Method and apparatus for the offshore installation of multi-ton prefabricated deck packages on partially submerged offshore jacket foundations. 5,607,260, Cl. 405-204.000.
Khairkhahan, Kourosh, to Medtronic, Inc. Low friction inner lumen. 5,607,404, Cl. 604-264.000.
Khalessi, Mohammad R.: *See*—
Lin, Hong-Zong; and Khalessi, Mohammad R., 5,608,659, Cl. 364-554.000.
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Sato, Kazushige; Watanabe, Atsuo; Kikushima, Kenichi; Owada, Nobuo; and Iida, Masaya, 5,607,866, Cl. 437-31.000.

Kilburn, Randall S.: *See*—
Martin, James C.; Kilburn, Randall S.; Hamilton, Robert L.; Schmalz, Mary J.; and Palmer, Brian E., 5,607,387, Cl. 602-6.000.

Kilpatrick, Ted D. Article of furniture with footrest mounted pivotally to drawer. 5,607,212, Cl. 312-237.000.

Kim, Bonnie M., executrix: *See*—
Kim, Young D., deceased; and Haugse, A. Leonard, 5,607,986, Cl. 523-141.000.

Kim, Byung-Chul: *See*—
Yoon, Sei-Seung; Park, Chan-Jong; and Kim, Byung-Chul, 5,608,677, Cl. 365-189.090.

Kim, Cheol-hong: *See*—
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Kim, Dong-Kuk, to Daewoo Electronics Co., Ltd. Method for manufacturing an array of thin film actuated mirrors. 5,608,569, Cl. 359-291.000.

Kim, Ji-Bum, to LG Semicon Co., Ltd. Refresh method of reusing electric charge. 5,608,683, Cl. 365-222.000.

Kim, Jong K.: *See*—
Choi, Jong M.; and Kim, Jong K., 5,607,865, Cl. 437-21.000.

Kim, Jong W.; Lee, Jeong W.; and Baik, Bok H., to Goldstar Co., Ltd. Video apparatus having a game function. 5,607,357, Cl. 463-40.000.

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Kim, Kyung-sik, to Samsung Display Devices Co., Ltd. Back light for a liquid crystal display. 5,608,553, Cl. 349-61.000.

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Andresen, Peter L.; Hettiarachchi, Samson; Kim, Young J.; and Diaz, Thomas P., 5,608,766, Cl. 376-305.000.

Kim, Young K. Artificial soil composition and a method of growing vegetation on a sloped surface. 5,607,494, Cl. 71-6.000.

Kim, Young K.; and Nix, J. Lamar, to Quantum Peripherals Colorado, Inc. Shaped spin valve type magnetoresistive transducer and method for fabricating the same incorporating domain stabilization technique. 5,608,593, Cl. 360-113.000.

Kim, Young S., to Inno Design, Inc. Garment bag luggage cart. 5,607,129, Cl. 248-98.000.

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Brown, James P., 5,607,735, Cl. 428-36.100.
Datta, Paul J.; Coenen, Joseph D.; Mintern, Glenn A.; and Powell, David W., 5,607,415, Cl. 604-385.100.
Farrington, Theodore E., Jr.; Bahlman, Julia S.; Burazin, Mark A.; Chen, Fung-jou; Goerg, Kristin A.; Hermans, Michael A.; Makolin, Robert J.; and Rekoske, Michael J., 5,607,551, Cl. 162-109.000.
Giles, Frank H.; King, Claire; and Yoh, Ho-Ward J., 5,607,754, Cl. 428-211.000.
Kobylivker, Peter M.; Ofosu, Simon K.; Shawver, Susan E.; and Lance, Roger L., 5,607,798, Cl. 442-381.000.

Kimura, Noboru; Iwai, Ryouji; and Hirata, Kazuhito, to Shin-Etsu Chemical Co., Ltd. Article for use under high vacuum at high temperature. 5,607,775, Cl. 428-461.000.

Kimura, Shuichi: *See*—
Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, 5,606,819, Cl. 43-22.000.

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Kimura, Tsuneo; and Inoue, Yoshio, to Shin-Etsu Chemical Co., Ltd. Room temperature curable organopolysiloxane composition. 5,607,997, Cl. 524-493.000.

King, Claire: *See*—
Giles, Frank H.; King, Claire; and Yoh, Ho-Ward J., 5,607,754, Cl. 428-211.000.

King, Donald, Jr. Method of visual guidance for positioning images or data in three-dimensional space. 5,608,849, Cl. 395-119.000.

King, Steven J.; Emery, David E.; and Benscoter, Richard D., to Haworth, Inc. Electrical powerway for furniture panel. 5,607,317, Cl. 439-215.000.

Kinkead, Devon A., to Extraction Systems, Inc. Air filtering within clean environments. 5,607,647, Cl. 422-122.000.

Kinzie, William: *See*—
Needham, Donald G.; Kinzie, William; and Harris, James H., 5,607,531, Cl. 156-166.000.

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Kirk, Mark P.; Parodi, Stefano; and Vacca, Paolo, to Minnesota Mining & Manufacturing. Silver halide photographic material comprising pyridinium carbamoyl hardeners. 5,607,827, Cl. 430-567.000.

Kisaka, Masashi, to International Business Machines Corporation. Method for controlling digital closed servo loop system and disk storage apparatus using the system. 5,608,588, Cl. 360-78.040.

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Kumagai, Hiroaki; Menjo, Takeshi; Kishino, Kazuo; Takahashi, Masaaki; Saito, Rie; Ishizuka, Jiro; Kawamoto, Hideo; and Maeyama, Ryuichiro, 5,608,508, Cl. 399-339.000.

Kishore, Ganesh M.: *See*—
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Kissick, Thomas P.: *See*—
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Kit Manufacturing Company: *See*—
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Kita, Atsushi: *See*—
Yamauchi, Kiyoshi; Yoshida, Hiroyuki; and Kita, Atsushi, 5,607,756, Cl. 442-6.000.

Kita, Kazuhiko: *See*—
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Kitagawa, Kazuyuki: *See*—
Ueda, Seishi; Maeyama, Kaoru; Tsuji, Nobuhide; Tsujide, Masahiro; and Kitagawa, Kazuyuki, 5,607,622, Cl. 252-312.000.

Kitajima, Koji: *See*—
Ohkawa, Hideo; Kitajima, Koji; Kodaka, Kenji; Fumoto, Yasunori; and Kumeta, Takako, 5,608,104, Cl. 562-473.000.

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Otsuka, Mari; Kitakura, Tomonori; Otsuka, Kenichi; and Mori, Kazuya, 5,607,878, Cl. 437-187.000.

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Samejima, Shunichi; Kitamura, Kenroh; Watanabe, Naohiro; Asano, Teruo; Kamimura, Toru; and Usami, Yoko, 5,607,912, Cl. 510-411.000.

Kitamura, Wahei; Murakami, Gen; and Nishi, Kunihiko, to Hitachi, Ltd. Surface package type semiconductor package and method of producing semiconductor memory. 5,607,059, Cl. 206-720.000.

Kitano, Makoto; Nishimura, Asao; Yaguchi, Akihiro; Yoneda, Nae; Kohno, Ryuji; Tanaka, Naotaka; and Kumazawa, Tetsuo, to Hitachi, Ltd. Encapsulated semiconductor device package having holes for electrically conductive material. 5,608,265, Cl. 257-738.000.

Kitaoka, Hideaki: *See*—
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Salive, Harold T.; Slade, Kevin G.; and Salive, Rachel K., 5,607,187, Cl. 283-67.000.

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Tsubokura, Akira; Yoneda, Hisashi; Takaki, Mikihiro; and Kiyota, Takashi, 5,607,839, Cl. 435-67.000.

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Ebara, Takeshi; Kiyota, Teruyosi; and Imai, Akio, 5,608,018, Cl. 526-119.000.

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Jones, Fred K., Jr.; and Klaas, Steven J., 5,608,007, Cl. 525-125.000.

Klaassen, Klaas B., to International Business Machines Corporation. Integrated head-electronics interconnection suspension for a data recording disk drive. 5,608,591, Cl. 360-104.000.

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Berg, Arne; Klaveness, Jo; Strande, Per; and Stubberud, Lars, 5,607,661, Cl. 424-9.520.

Kleewein, James C.: *See*—
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Klein, David A.: *See*—
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Hellmuth, Paul; Klein, Norbert; and Theis, Michael, 5,607,652, Cl. 422-300.000.

Kleinknecht, Harald: *See*—
Loix, René; Graf, Hans-Joachim; and Kleinknecht, Harald, 5,608,228, Cl. 252-182.130.

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Sappok, Manfred; Kleinkröger, Wolfgang; and Sapahpour, Mohammad, 5,607,603, Cl. 219-76.140.

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Mizoshita, Yoshifumi; Yamada, Tomoyoshi; Kuroba, Yasumasa; Kouhei, Toru; Sugawara, Takao; Matsumoto, Masaru; Mase, Hiroyuki; Tsunekewa, Masao; Koganezawa, Shinji; and Aruga, Keiji, 5,608,592, Cl. 360-105.000.

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Smoral, Vincent J.; Kogge, Peter M.; and Sementilli, Phillip J., Jr., 5,608,448, Cl. 348-7.000.

Kohler, James P.: *See*—
Gerber, H. Joseph; Straayer, Ronald J.; Davidson, Bruce L.; Snietka, Scott P.; Walsh, Peter M.; Seniff, Dana W.; and Kohler, James P., 5,608,453, Cl. 348-87.000.

Kohno, Mitsuru: *See*—
Toyoda, Tsunehiko; Tsuchiya, Harufumi; Omoto, Hiroaki; Kohno, Mitsuru; and Ii, Maki, 5,608,004, Cl. 524-539.000.

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Kitano, Makoto; Nishimura, Asao; Yaguchi, Akihiro; Yoneda, Nae; Kohno, Ryuji; Tanaka, Naotaka; and Kumazawa, Tetsuo, 5,608,265, Cl. 257-738.000.

Kohtani, Yutaka: *See*—
Tohyama, Masamichi; and Kohtani, Yutaka, 5,608,457, Cl. 348-335.000.

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Nakamura, Kazufumi; Koike, Kazuyoshi; Sakamoto, Masashi; and Nasuno, Ichiro, 5,607,898, Cl. 504-282.000.

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Choji, Masataka, 5,607,218, Cl. 362-61.000.
Ozaki, Akiyosi; Shiozawa, Toichiro; and Suzuki, Kazuyoshi, 5,607,228, Cl. 362-263.000.

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Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.

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Ishihara, Kiyomitsu; Yonetani, Takayuki; Yamaguchi, Yoshiharu; and Koma, Toru, 5,607,621, Cl. 252-301.360.

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Komiya, Shigeo: *See*—
Masuhara, Eiichi; Komiya, Shigeo; Sawamoto, Takeyuki; and Satou, Yumiko, 5,607,985, Cl. 522-28.000.

Komura, Yoshiyuki: *See*—
Nishitani, Hirokazu; and Komura, Yoshiyuki, 5,606,875, Cl. 66-77.000.

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Allen, Barbara A.; Klein, David A.; and Kong, Hongzhi, 5,608,207, Cl. 250-214.0AG.

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Deguchi, Takashi, 5,607,822, Cl. 430-465.000.
Haneda, Satoshi; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,608,497, Cl. 399-153.000.
Nagase, Hisayoshi; Hamada, Shuta; and Haneda, Satoshi, 5,608,498, Cl. 399-130.000.
Omoto, Tetsuko, 5,608,506, Cl. 399-315.000.
Sakamoto, Norio; Ohkawa, Toshiyuki; and Misawa, Takashi, 5,606,842, Cl. 53-54.000.

Tanaka, Shinri; and Kawashima, Yasuhiko, 5,608,058, Cl. 540-454.000.
König, Udo; and Tabersky, Ralf, to Widia GmbH. Tool with diamond cutting edge having vapor deposited metal oxide layer and a method of making and using such tool. 5,607,264, Cl. 407-118.000.
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Konno, Mitsujiro; and Hasegawa, Akira, to Olympus Optical Co., Ltd. Endoscope apparatus. 5,608,451, Cl. 348-69.000.
Konno, Takeshi; and Ochiai, Takeji, to Fuji Photo Film Co., Ltd. Optical diffuser. 5,607,764, Cl. 428-327.000.
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Koppolu, Srinivasa R.: *See—*
Atkinson, Robert G.; Williams, Antony S.; Wittenberg, Craig; Koppolu, Srinivasa R.; and Hodges, C. Douglas, 5,608,909, Cl. 395-703.000.
Kordus, Steven R.: *See—*
Dinkjian, Robert M.; Heller, Lisa C.; Kordus, Steven R.; Lauricella, Kenneth A.; Seigendall, Thomas W.; Skaggs, Robert A.; and Xu, Nelson S., 5,608,887, Cl. 395-375.000.
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Jung, Il N.; Cho, Eun J.; Han, Joon S.; and Cho, Yon S., 5,608,097, Cl. 556-466.000.
Korenaga, Nobusige; Hara, Kouichi; and Hara, Shinichi, to Canon Kabushiki Kaisha. Mask holding device, and an exposure apparatus and a device manufacturing method using the device. 5,608,773, Cl. 378-34.000.
Kornel, Alfred: *See—*
Rogers, Charles J.; and Kornel, Alfred, 5,608,130, Cl. 570-227.000.
Kornhauser, Murray. Airbag inflation devices and methods. 5,607,180, Cl. 280-736.000.
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Kosich, Joseph, to Wheelock Inc. Synchronized visual/audible alarm system. 5,608,375, Cl. 340-293.000.
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Benton, William J.; and Koskan, Larry P., 5,607,623, Cl. 252-392.000.
Koskiniemi, Juha, to Ahlstrom Machinery Corporation. Method for the manufacture of cooking liquors of different sulphidity by green liquor crystallization. 5,607,549, Cl. 162-30.110.
Koszarycz, Roman; Taciuk, William; and Begley, Adrian, to Alberta Oil Sands Technology and Research Authority. Prevention of sulfur gas emissions from a rotary processor using lime addition. 5,607,577, Cl. 208-391.000.
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Osakabe, Yoshio; Tanaka, Shigeo; Katsuyama, Akira; Yamazaki, Hiroshi; Kusagaya, Yasuo; Kotabe, Noriko; Sugiyama, Kouichi; and Sato, Makoto, 5,608,730, Cl. 370-471.000.
Kotaki, Yasuo: *See—*
Iwata, Kazuo; Takenouchi, Masanori; Watanabe, Kenjiro; Ujita, Toshihiko; Osada, Torachika; Nakajima, Kazuhiro; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichiro; Sato, Yohei; and Saito, Takashi, 5,608,437, Cl. 347-86.000.
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Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič , Mateja, 5,608,052, Cl. 536-103.000.
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Koyanagi, Tomoyoshi: *See—*
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Koyo Seiko Co., Ltd.: *See—*
Kajihara, Kazuhisa; Taniyama, Masatosi; Yanai, Kunio; and Ueno, Hiroshi, 5,607,240, Cl. 384-480.000.
Koziara, Robert P.: *See—*
Data, Stanley E.; Koziara, Robert P.; Lent, Mark S.; O'Gorman, Patrick A.; Rose, Thomas K.; Shanks, Eugene G.; and Norrick, Daniel A., 5,606,946, Cl. 123-198.00E.
Kragh, Karsten M.: *See—*
Bojsen, Kirsten; Kragh, Karsten M.; Mikkelsen, Jørn D.; Nielsen, Klaus K.; and Nielsen, John E., 5,607,919, Cl. 514-12.000.
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Krah, David L.: *See—*
Provost, Philip J.; Krah, David L.; and Friedman, Paul A., 5,607,852, Cl. 435-404.000.
Krahe, Michael D.; Porcellio, Rocco J.; and D'aurelio, David P., to Eastman Kodak Company. Formatted digital index print system and method. 5,608,542, Cl. 358-449.000.
Kramer, Colleen A. Bath toy and a method of use of the same. 5,607,339, Cl. 446-491.000.
Kramer, Karl-Heinz, to Siemens Aktiengesellschaft. Circuit arrangement for generating a constant output voltage. 5,608,313, Cl. 323-269.000.
Kranzen, Bruno: *See—*
Rajkanan, Kamal; and Kranzen, Bruno, 5,608,258, Cl. 257-532.000.
Krause, Rainer: *See—*
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Krebs, Andreas: *See—*
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,607,942, Cl. 546-200.000.
Krehl, Michael E.; and Dowty, Larry, to CTB, Inc. Manure removal system and method. 5,607,046, Cl. 198-741.000.
Krejci, James J.; Heberger, John M.; Moore, Cathy R.; and Donald, Robin M., to Hoechst Celanese Corporation. Coating composition for a subbing layer on a polyester film for light sensitive material. 5,607,777, Cl. 428-480.000.
Krepak, John C. Photon and/or electron generating power cell. 5,607,519, Cl. 136-253.000.
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Kretzschmar, James L.; and Kretzschmar, Deborah A., 5,607,403, Cl. 604-263.000.
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Krol, William P., Jr.: *See—*
Cho, Chahee P.; Bedingfield, Ralph A.; Krol, William P., Jr.; and Uhlman, James S., Jr., 5,607,329, Cl. 440-6.000.
Kröll, Joachim; and Richter, Peter, to Mannesmann Aktiengesellschaft. Crane, especially a track-bound mobile crane. 5,607,071, Cl. 212-231.000.
Kroll, Mark W.; Brewer, James E.; and Armitage, Scott T., to Angeion Corporation. Physician interface expert system for programming implantable arrythmia treatment devices. 5,607,460, Cl. 607-30.000.
Kronberger, Maximilian: *See—*
Drummer, Eugen; Kronberger, Maximilian; Sattmann, Helmut; Strahberger, Herbert; and Weisz, Gerhard, 5,606,953, Cl. 123-506.000.
Krone, John J.: *See—*
Crayton, John W.; Krone, John J.; and Oltman, Terry D., 5,608,315, Cl. 324-204.000.
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Krumm, Valentin: *See—*
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Krupp Koppers GmbH: *See—*
Pohl, Werner; and Menzel, Johannes, 5,607,594, Cl. 210-662.000.
Kruse, Hans-Hinrich: *See—*
Vollbrecht, Michael; Hildebrandt, Gustav; Kruse, Hans-Hinrich; and Bruder, Axel, 5,607,755, Cl. 428-217.000.
Krzyskow, Marek: *See—*
Religa, Zbigniew; Stolarzewicz, Bogdan; Cichon, Romuald; Krzyskow, Marek; and Stozek, Jolanta, 5,606,928, Cl. 112-475.080.
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Epple, Ulrich; Kubillus, Uwe; and Schmidt, Holger, 5,608,012, Cl. 525-374.000.
Kubo, Motonobu; and Hayashi, Kazunori, to Daikin Industries, Ltd. Water- and oil-repelling agent composition and process for preparing the same. 5,608,002, Cl. 524-795.000.
Kubota, Hidemi: *See—*
Iwata, Kazuo; Takenouchi, Masanori; Watanabe, Kenjiro; Ujita, Toshihiko; Osada, Torachika; Nakajima, Kazuhiro; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichiro; Sato, Yohei; and Saito, Takashi, 5,608,437, Cl. 347-86.000.
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Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.
Kucerovy, Andrew: *See—*
Ciszewski, Lech; Amedio, John; Kapa, Prasad; Kucerovy, Andrew; and Lee, George T., 5,608,061, Cl. 540-474.000.
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Kulagowski, Janusz J.; Leeson, Paul D.; and Mawer, Ian M., to Merck Sharp & Dohme Ltd. Quinolone derivatives as dopamine D_4 ligands. 5,607,946, Cl. 514-312.000.
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Kumagai, Hiroaki; Menjo, Takeshi; Kishino, Kazuo; Takahashi, Masaaki; Saito, Rie; Ishizuka, Jiro; Kawamoto, Hideo; and Maeyama, Ryuichiro, to Canon Kabushiki Kaisha. Rotatable member for fixing in which inorganic filler is contained in silicone rubber, and fixing device having the same. 5,608,508, Cl. 399-339.000.
Kumagai, Kouichi, to NEC Corporation. Semiconductor integrated circuit having at least one asymmetrical CMOS transistor. 5,608,240, Cl. 257-204.000.
Kumagai, Tatsuya; Abe, Keiji; Akiyama, Munehiro; Kajioka, Hiroshi; Sonobe, Hisao; and Oho, Shigeru, to Hitachi Cable, Ltd. Phase adjustable optical fiber gyro using both even order harmonics and an orthogonal component of an even-order harmonic. 5,608,525, Cl. 356-350.000.
Kumakawa, Shiro: *See—*
Nishimura, Kunio; Nakagawa, Hideo; and Kumakawa, Shiro, 5,607,183, Cl. 280-743.200.
Kumar, Sudarshan; Kuo, Shyue L.; and Yip, Chung Y., to Intel Corporation. Fast parity generator using complement pass-transistor logic. 5,608,741, Cl. 371-49.100.
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Nakatani, Munehiro; Ikenoue, Yoshikazu; Ishikawa, Atsushi; Nakajima, Akio; Kumashiro, Hideo; Tajima, Katsuaki; Itoh, Tetsuya; Nakatani, Keiji; and Hirota, Sou, 5,608,547, Cl. 358-505.000.
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Kumazawa, Tetsuo: *See—*
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Kumeta, Takako: *See—*
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Mizoshita, Yoshifumi; Yamada, Tomoyoshi; Kuroba, Yasumasa; Kouhei, Toru; Sugawara, Takao; Matsumoto, Masaru; Mase, Hiroyuki; Tsunekewa, Masao; Koganezawa, Shinji; and Aruga, Keiji, 5,608,592, Cl. 360-105.000.
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Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, to Hitachi, Ltd.; and Hitachi Microsoftware Systems, Inc. Method and system for registering and filing image data. 5,608,858, Cl. 395-763.000.
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Kurt Gutmann Jewelry, Inc.: *See—*
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Kurt H. Volk, Inc.: *See—*
Stenner, John W., 5,607,100, Cl. 229-69.000.
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Kuwahara, Hiroshi: *See—*
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Pettersson, Bertil, 5,607,548, Cl. 162-30.110.
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Kwong, Chan Y.: *See—*
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Kyle, Robert J. S.: *See—*
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,608,254, Cl. 257-432.000.
Kyodo Yushi Co., Ltd.: *See—*
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Kyoeisha Chemical Co., Ltd.: *See—*
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Kyosan Denki Co., Ltd.: *See—*
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Kyoto Dai-ichi Kagaku Co., Ltd.: *See—*
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Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,607,955, Cl. 514-359.000.
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Kicklighter, Berry C.; and Najmi, Sohail, 5,606,863, Cl. 62-89.000.
L.S. Starrett Company, The: *See—*
Stoddard, Ralph, 5,606,900, Cl. 83-846.000.
La Roche Posay Laboratoire Pharmaceutique: *See—*
Brissonnet, Jean P.; and Burnier, Véronique, 5,607,680, Cl. 424-401.000.
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Lab S.A.: *See—*
Vicard, Jean-Francois, 5,607,596, Cl. 210-739.000.
Labedz, Gerald P.; Ahlenius, Mark T.; and Love, Robert T., to Motorola, Inc. Method and apparatus for displaying information in a communication system. 5,608,854, Cl. 395-141.000.
Labowicz, Eva: *See—*
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Labranche, Gérard. Recumbent bicycle. 5,607,171, Cl. 280-288.100.
Lackey, Stanley A.; and Grosslight, Gordon. Row tool. 5,607,340, Cl. 451-5.000.
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Lacouture, Richard M.: *See—*
Adams, Alan J.; Lacouture, Richard M.; and Ferraro, Robert J., 5,606,922, Cl. 108-129.000.
LaCroix, Thomas R.: *See—*
Swift, Daniel P.; LaCroix, Thomas R.; and Bullock, William E., 5,607,030, Cl. 188-1.120.
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LaFleur, Lee, to Custom Packaging Systems, Inc. Bulk bag with lift straps. 5,607,237, Cl. 383-22.000.
La Fratta, Pietro: *See—*
Rovesti, Guido; Segalla, Gabriele; La Fratta, Pietro; and Di Schiena, Michele G., 5,607,674, Cl. 424-195.100.
Lagos, Bryan C.: *See—*
Treger, Jack; Lagos, Bryan C.; Fenn, John B.; Gibbard, H. Frank; and Wei, Guang, 5,607,789, Cl. 429-90.000.
LaGrotta, James T.: *See—*
Carcone, John M.; Engelberth, Jon W.; LaGrotta, James T.; and Newell, Joseph V., 5,608,159, Cl. 73-49.800.
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Lai, Yung-Hsin. Adjustable parking frame of bicycle. 5,607,173, Cl. 280-293.000.
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Ekiner, Okan M., 5,608,014, Cl. 525-432.000.
Lake, David E., to Scitex Im Acquisition Corp. Video mixer control signal generator modular element. 5,608,465, Cl. 348-584.000.
Lam, Sharon, to Advanced Cardiovascular Systems, Inc. Ostial stent for bifurcations. 5,607,444, Cl. 606-194.000.
Lambdin, John W.: *See—*
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Lambert, Karel J.; and Jablonski, Edward G., to Molecular biosystems, Inc. Liquid core microdroplets for ultrasound imaging. 5,606,973, Cl. 128-662.020.
Lambert, Peter G.: *See—*
Reighard, Michael A.; Lambert, Peter G.; and Loosli, Robert G., 5,607,498, Cl. 95-19.000.
Lambert, William R.; and Weld, John D., to Lucent Technologies Inc. Multi-component electronic devices and methods for making them. 5,607,882, Cl. 437-209.000.
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Lamson, Arthur: *See—*
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Lance, Roger L.: *See—*
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Ulm, John; Corley, William D.; Mazza-Brennan, Cynthia; and Grobicki, Christopher, 5,608,728, Cl. 370-488.000.
Landgraf, Marc: *See—*
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Landi, Frank, to Toymax Inc. Toy with unravelable cord material for simulating hair or fur. 5,607,338, Cl. 446-394.000.
Landouar, Jean-Michel: *See—*
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Lane, Michael S. Reciprocating attachment for hand drills. 5,607,265, Cl. 408-20.000.
Lange, Charles H.: *See—*
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Lange, Rene: *See—*
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Lange, Stephen J.: *See—*
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Langner, Herbert G. J. Screening apparatus for wood pulp. 5,607,587, Cl. 210-380.300.
Large, James; Newcomer, Joseph M.; and Thibadeau, Robert, to Television Computer, Inc. Packet filter engine. 5,608,662, Cl. 364-724.010.
LaRock, Paul A.: *See—*
Reeves, Robert H.; Bennison, Brenda W.; and LaRock, Paul A., 5,607,835, Cl. 435-6.000.
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Larsen, Leo; Pedersen, Charles; and Madsen, Jens, to GN Netcom A/S. On-line indicator for multipurpose headset amplifier. 5,608,797, Cl. 379-442.000.
Larsen, Marvin L.; and McConnell, Kenneth L., to Tri/Mark Corporation. Lock assembly with interchangeable key plug. 5,606,882, Cl. 70-369.000.
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Larsen, Richard K., to AlliedSignal Inc. Actuation system with passive compensation for transient loads. 5,607,123, Cl. 244-52.000.
Larson, Dana. Telephone headset in-use indicator. 5,608,794, Cl. 379-396.000.
Larson, James R.: *See—*
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Lasermaster Corporation: *See—*
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Latham, Allen, Jr.; Jorgensen, Glen E.; Sibinga, Theodoor H. S.; Plante, Joseph R.; and Knapp, Tracey E., to Haemonetics Corporation. Apheresis apparatus for separating an intermediate density component from whole blood. 5,607,579, Cl. 210-195.100.
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Lathrop, Peter H., to NexMed, Inc. Apparatus and method for delivering electrical stimulus to tissue. 5,607,461, Cl. 607-75.000.
Latimer, Paul J.: *See—*
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Lau, Jesper: *See—*
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Lauricella, Kenneth A.: *See—*
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Lauritano, Giuseppe. Tool for manipulating multiple rotatable balanced bodies. 5,607,247, Cl. 403-16.000.
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Lavelle, Gary E.: *See—*
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Lavene, Bernard, to Electronic Concepts Inc. Metallized film capacitor with increased dielectric breakdown voltage. 5,608,600, Cl. 361-303.000.
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Law, Kam W.; Greczyna, James A.; Wolff, Leslie M.; Sabade, Milind B.; and Katzenmaier, Kevin R., to Minnesota Mining and Manufacturing Company. Magnetic recording media having a backside coating which includes multicomponent, nonmagnetic particles. 5,607,747, Cl. 428-141.000.
Lawrence, Lawrence D.: *See—*
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Lax, Ronald G.: *See—*
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Leach, Jerald G., to Texas Instruments Incorporated. Video display processor with pixel by pixel hardware scrolling. 5,608,423, Cl. 345-123.000.
Leach, Michael A. Method and structure for polishing a wafer during manufacture of integrated circuits. 5,607,341, Cl. 451-41.000.
Leamen, John A.: *See—*
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Leason, J. K.: *See—*
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Leavitt, Richard, deceased (by Robert Leavitt, legal representative): *See—*
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Leavy, Mark; Veeramoney, Murali; Rosenzweig, Michael D.; Boss, Scott D.; Hurwitz, Roger; Davies, Bob; and Cox, Daniel R., to Intel Corporation. Method and apparatus for scheduling and mixing media in a multi-media environment. 5,608,651, Cl. 364-514.00R.
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Le Bihan, Loïc: *See—*
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Lee, Albert. Joint bushing device for a windshield wiper frame. 5,606,766, Cl. 15-250.460.
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Lee, Eric F.: *See—*
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Lee, George T.: *See—*
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Lee, Keum S.; and Rhee, Byoung J., to Youare Electronics Co. Gas flat display tube with anode gates. 5,608,419, Cl. 345-74.000.
Lee, Kwanho, to Samsung Electronics Co., Ltd. Method for providing mouse functionality using either an internal or external mouse input device. 5,608,895, Cl. 395-500.000.
Lee, Mary K.: *See—*
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Lee, Shih-ping. Tubing connection construction for a water purification system. 5,607,192, Cl. 285-305.000.
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Lee, S. Tong: *See—*
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Lee, Sung-Ho, to Samsung Electronics Co., Ltd. Operating switch of microwave oven and control circuit thereof. 5,607,611, Cl. 219-702.000.
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Leeson, Paul D.: *See—*
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Byun, Jeong S., 5,607,884, Cl. 437-41.000.
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Martin, James C.; Kilburn, Randall S.; Hamilton, Robert L.; Schmalz, Mary J.; and Palmer, Brian E., to M-Pact Worldwide Management Corporation. Orthopedic splint. 5,607,387, Cl. 602-6.000.
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Martin, Russel A., to Xerox Corporation. Array on substrate with repair line crossing lines in the array. 5,608,245, Cl. 257-291.000.
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Martin, Tom O., to CTS Corporation. Glass frit compositions and electrical conductor compositions made therefrom compatible with reducing materials. 5,608,373, Cl. 338-21.000.
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Marx, Gerard, to New York Blood Center, Inc. Biologic bioadhesive compositions containing fibrin glue and liposomes, methods of preparation and use. 5,607,694, Cl. 424-450.000.
Masaki, Junya, to Canon Kabushiki Kaisha. Device for determining state of electricity generation of solar battery. 5,608,385, Cl. 340-636.000.
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Maskasky, Joe E., to Eastman Kodak Company. High chloride {100} tabular grain emulsions improved by peptizer modification. 5,607,828, Cl. 430-567.000.
Maslow, James E.; and Folino, Frank A., to Synkinetics, Inc. Variable output speed converter. 5,607,370, Cl. 475-196.000.
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Masuda, Kaoru; and Meguro, Takashi, to Hitachi Metals, Ltd. Target for magneto-optical recording medium and process for production thereof. 5,607,780, Cl. 428-694.0ML.
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Masuda, Narihiro, to Diafoil Hoechst Company, Limited. Polyester film for sublimation-type thermosensitive transfer recording medium. 5,607,897, Cl. 503-227.000.
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Masuhara, Eiichi; Komiya, Shigeo; Sawamoto, Takeyuki; and Satou, Yumiko, to Adell Co., Ltd. Photopolymerization initiator for visible light-polymerizing adhesive. 5,607,985, Cl. 522-28.000.

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Masumura, Shigeki; Nakamura, Hideo; Noguchi, Kouki; Kawasaki, Shumpei; Fukada, Kaoru; and Akao, Yasushi, to Hitachi, Ltd.; and Hitachi ULSI Engineering Corporation. Microcomputer system for accessing hierarchical buses. 5,608,881, Cl. 395-306.000.

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Mathurin, Trevor S. Ives, Sr. Currency counter-feit detection device. 5,607,040, Cl. 194-207.000.

Matossian, Jesse N.: *See*—
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Matsuda, Hideo, to Toyo Sangyo Co., Ltd. Method and apparatus for measuring motion amount of a laboratory animal. 5,608,209, Cl. 250-221.000.

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Matsuda, Hiroshi, to Minnesota Mining and Manufacturing Company. Decorative film with PSA for easy application. 5,607,763, Cl. 428-323.000.

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Matsufuji, Noriyasu: *See*—
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Hashimoto, Kinji; Nishino, Masakazu; Juri, Tatsuro; and Hasebe, Takumi, 5,608,398, Cl. 341-76.000.
Ikeuchi, Takenobu, 5,608,819, Cl. 382-156.000.
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Hirono, Atsuyuki; Ito, Takayasu; and Hashimoto, Takeshi, 5,608,211, Cl. 250-234.000.
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Grossweiler, Gary; and McArdle, Timothy, 5,607,717, Cl. 427-4.000.

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McCleary, Michael D., 5,607,256, Cl. 404-105.000.

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Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., 5,608,436, Cl. 347-65.000.

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Slingwine, John D.; and McKenney, Paul E., 5,608,893, Cl. 395-468.000.

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Dadgar, Ahmad; Howarth, Jonathan N.; Sergent, Rodney H.; Favstritsky, Nicolai A.; McKeown, Julie A.; Borden, Dennis W.; Sanders, Brent M.; and Likens, Jane, 5,607,619, Cl. 252-187.200.

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McNally, Sean M., to Sun Microsystems, Inc. Flat panel display interface for a high resolution computer graphics system. 5,608,418, Cl. 345-3.000.

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Gonzalez, Fernando, 5,608,249, Cl. 257-306.000.

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Mitobe, Hiroyuki: *See*—
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Moon, Darin J.; and Anderson, Anne J., to High Desert Research Group, Inc. Soil treatment for agriculture. 5,607,856, Cl. 435-259.000.

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Bishop, Gary, 5,607,738, Cl. 428-43.000.
Folsom, James C., 5,607,120, Cl. 242-559.400.
Raby, James M.; and Coats, Garry R., 5,606,846, Cl. 53-415.000.

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Fahey, James T.; Herbst, Brian W.; Linehan, Leo L.; Moreau, Wayne M.; Spinillo, Gary T.; Welsh, Kevin M.; and Wood, Robert L., 5,607,824, Cl. 430-510.000.

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Cameron, David; Lyster, Thomas D.; Powers, Daniel J.; Gliner, Bradford E.; Cole, Clinton S.; and Morgan, Carlton B., 5,607,454, Cl. 607-5.000.

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Crayton, John W.; Lee, Eric F.; Morgan, Denny; and Schumacher, Dennis L., 5,608,332, Cl. 324-633.000.

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Ninomiya, Teruyuki; Watanabe, Toshio; Mori, Akira; Ikebe, Takaki; and Iwamoto, Atsushi, 5,608,121, Cl. 568-852.000.

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Nakamura, Masao; Goto, Sumio; Tomioka, Hiroyuki; Mori, Takayoshi; and Iwasaki, Nozomi, 5,606,927, Cl. 112-470.010.

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Mori, Yoshiaki, to NEC Corporation. Pre-read control method for magnetic tape and apparatus for performing the same. 5,608,875, Cl. 395-250.000.

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Morrell, Edward A., to Lucent Technologies Inc. Outdoor cabinet for electronic equipment. 5,608,609, Cl. 361-690.000.

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Chiasson, Gregory M.; and Baum, Kevin L., 5,608,763, Cl. 375-332.000.
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Perreault, John A.; Joshi, Abhay; Chen, Albert; and Labowicz, Eva. 5,608,727, Cl. 370-462.000.
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MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH: *See—*
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Mucci, Peter E. R.; Hearn, Graham L.; and Eyers, Ann M., to Ford Motor Company. Plastics identification. 5,608,326, Cl. 324-454.000.
Mück, Karl-Friedrich: *See—*
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Mueller, Enzio: *See—*
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Mueller, Mike A.: *See—*
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Mueller, Richard H.: *See—*
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Murakami, Kakuji: *See—*
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Murphy, Frank W., III; Rose, Vincent H.; Brumley, Timothy D.; and Francisco, James R., to Murphy Management, Inc. Adjustable hall effect switch gauge. 5,608,386, Cl. 340-688.000.
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Nagasaka, Hideki; Tsuchiyama, Masaaki; and Urano, Toshiyuki, to Mitsubishi Chemical Corporation. Photopolymerizable composition. 5,607,817, Cl. 430-281.100.
Nagase, Hisayoshi; Hamada, Shuta; and Haneda, Satoshi, to Konica Corporation. Image forming apparatus in which at least an image carrying member and plural exposure means are constructed in a single body. 5,608,498, Cl. 399-130.000.
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Nagashima, Takeshi, to Sega Enterprises, Ltd. Multi-connection device for use in game apparatus. 5,607,157, Cl. 273-148.00B.
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Nakajima, Akio: *See—*
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Nakajima, Shigeru, to Kabushiki Kaisha Toshiba. Data transfer system using memory with FIFO structure. 5,608,388, Cl. 340-825.070.
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Yamazaki, Kazumi; Nakajima, Takeaki; Hidano, Koichi; Wakashiro, Tetuo; Hara, Takeshi; Horiuchi, Masaaki; and Kawakami, Tomoyuki, 5,606,954, Cl. 123-520.000.
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Nakamura, Hideo: *See—*
Masumura, Shigeki; Nakamura, Hideo; Noguchi, Kouki; Kawasaki, Shunpei; Fukada, Kaoru; and Akao, Yasushi, 5,608,881, Cl. 395-306.000.
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Nakamura, Katsuya: *See—*
Yamakawa, Masahiro; Akimoto, Kenji; Nakamura, Katsuya; Takano, Futnio; and Takasaki, Takahiro, 5,607,772, Cl. 428-425.900.
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Nakamura, Kenji: *See—*
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Nakamura, Koichi, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic material. 5,607,820, Cl. 430-393.000.
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Nakamura, Shoukou. Accessory apparatus of dentistry drills for putting oral cavity organs out of way. 5,607,303, Cl. 433-140.000.
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Inada, Hiroshi; Nakamura, Takao; Iiyama, Michitomo; and Tanaka, So, 5,607,900, Cl. 505-500.000.
Nakamura, Tetsuya, to Sakura Rubber Co., Ltd. Outdoor working automating system. 5,606,850, Cl. 56-10.20A.
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Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.
Nakanishi, Hajime: *See—*
Katsuta, Kiyotaka; Takamatsu, Hiroyuki; Ueda, Yoshiko; Nakanishi, Hajime; and Yoshida, Keizo, 5,607,938, Cl. 514-267.000.
Nakanishi, Kazuo: *See—*
Yasueda, Hisashi; Nakanishi, Kazuo; Motoki, Masao; Nagase, Kazuo; and Matsui, Hiroshi, 5,607,849, Cl. 435-193.000.
Nakanishi, Noriyuki: *See—*
Tsujihara, Kenji; Hashiyama, Tomiki; Ohashi, Motoaki; and Nakanishi, Noriyuki, 5,608,073, Cl. 548-215.000.
Nakano, Brad: *See—*
Arbeiter, Jason R.; Scandalis, Aneesa R.; Richtsmeier, Brent; and Nakano, Brad, 5,608,439, Cl. 347-102.000.
Nakano, Hiromi: *See—*
Sakai, Kenji; Hamada, Yoshihiro; Hagiwara, Katsunobu; Ujihara, Toshio; Yanagihara, Toshio; and Nakano, Hiromi, 5,607,703, Cl. 425-145.000.
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Tone, Hitoshi; Morisue, Masatoshi; Tamura, Katsumi; Miyazaki, Toshiki; and Nakano, Yoshimasa, 5,607,934, Cl. 514-253.000.
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Yamada, Masayuki; Ishikawa, Akira; Saito, Tadahiko; Nakase, Kiyoshi; Hatanaka, Katsuyuki; and Inaba, Hiroshi, 5,607,559, Cl. 204-192.130.
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Mori, Atsushi; and Nakata, Yoshinori, 5,607,606, Cl. 219-121.670.
Nakatani, Keiji: *See—*
Nakatani, Munehiro; Ikenoue, Yoshikazu; Ishikawa, Atsushi; Nakajima, Akio; Kumashiro, Hideo; Tajima, Katsuaki; Itoh, Tetsuya; Nakatani, Keiji; and Hirota, Sou, 5,608,547, Cl. 358-505.000.
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Nakato, Tatsuo, to Sharp Microelectronics Technology, Inc.; and Sharp Kabushiki Kaisha. Semiconductor with implanted dielectric layer having patched pin-holes. 5,608,252, Cl. 257-347.000.
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Miyamoto, Hironobu; and Nakayama, Tatsuo, 5,608,239, Cl. 257-192.000.
Nakayama, Yoshiaki: *See—*
Ito, Kohzoh; Ueno, Ikuo; Nakayama, Yoshiaki; and Hikasa, Katsuzi, 5,607,636, Cl. 264-205.000.
Nakayama, Yoshimichi; and Yonezawa, Masaaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Perfluorocarbon copolymer containing functional groups and a method for producing it. 5,608,022, Cl. 526-212.000.
Nam, Jong G., to Hyundai Electronics Industries Co. Ltd. Current control circuit for sense amplifier. 5,608,675, Cl. 365-189.060.
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Naoi, Koichi, to Citizen Watch Co., Ltd. Hard carbon coating-clad base material. 5,607,779, Cl. 428-634.000.
Narita, Tomohiro; Tsuge, Hiroki; Nishikawa, Susumu; Ishida, Kazumi; and Yamazaki, Takeshi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Braking apparatus and braking method for vehicle. 5,607,209, Cl. 303-122.110.
Narlow, Douglas; and Patterson, Hubert A., to Sensormatic Electronics Corporation. Deactivatable EAS tag. 5,608,379, Cl. 340-572.000.
Narui, Hironobu: *See—*
Sahara, Kenji; Narui, Hironobu; Doi, Masato; and Matsuda, Osamu, 5,608,233, Cl. 257-80.000.
Narum, Jeffrey L.: *See—*
Fristad, William E.; Narum, Jeffrey L.; Mattison, Phillip L.; Virnig, Michael J.; and Fast, John, 5,607,060, Cl. 209-12.200.
Nasuno, Ichiro: *See—*
Nakamura, Kazufumi; Koike, Kazuyoshi; Sakamoto, Masashi; and Nasuno, Ichiro, 5,607,898, Cl. 504-282.000.

Natarajan, Kadathur S.; and Murty, Katta G., to Motorola, Inc. Communications network and method which implement diversified routing. 5,608,721, Cl. 370-238.000.

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Peckjian, Bryan M.; Doyle, Joseph P.; and Reilly, John H., Jr., 5,606,862, Cl. 62-77.000.

National Research Council of Canada: *See*—
Monchalin, Jean-Pierre; and Blouin, Alain, 5,608,166, Cl. 73-657.000.

National Semiconductor Corporation: *See*—
Asanasavest, Chainarong, 5,607,096, Cl. 228-1.100.
Chen, Hung-Sheng; Nguyen, Tim; Moberly, Larry; and Teng, Chih S., 5,607,873, Cl. 437-51.000.
Chi, Min-Hwa; and Bergemont, Albert, 5,608,243, Cl. 257-249.000.
Hamstra, James R.; and Brief, David C., 5,608,869, Cl. 395-200.010.
Likens, Thomas H.; and Childs, Matthew H., 5,608,798, Cl. 380-2.000.

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Thomas, Pierre-Armand; and Naudin, Jean-Claude, 5,607,259, Cl. 405-198.000.

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Matsuse, Takashi; Yanagi, Hideki; Mitobe, Hiroyuki; Miyamoto, Masafumi; and Nawa, Masayoshi, 5,607,771, Cl. 428-423.100.

Nazif, Zaher A.: *See*—
Fisher, Gregory M.; Cebulka, Kathleen D.; Man, Susan K.; Nazif, Zaher A.; and Vinciguerra, Lori J., 5,608,789, Cl. 379-201.000.

NCR Corporation: *See*—
Hester, John, 5,608,426, Cl. 345-153.000.
Schwartz, Krista S.; Carleton, Allison A.; FitzPatrick, Catherine M.; and Pommier, Theresa M., 5,608,872, Cl. 395-200.040.

ND Industries, Inc.: *See*—
Wallace, John S.; and Arslanouk, Mahmoud, 5,607,720, Cl. 427-181.000.

NEC Corporation: *See*—
Ebukuro, Masahiro, 5,608,350, Cl. 330-51.000.
Fujiwara, Naoto, 5,608,759, Cl. 375-242.000.
Hirano, Akihiro, 5,608,804, Cl. 381-71.000.
Hori, Hidetoshi, 5,608,354, Cl. 331-1.00A.
Horikawa, Takashi, 5,608,866, Cl. 395-183.150.
Ishihara, Toshinori, 5,608,867, Cl. 395-184.010.
Kamei, Toshio, 5,608,811, Cl. 382-124.000.
Kumagai, Kouichi, 5,608,240, Cl. 257-204.000.
Matsushita, Hideaki, 5,608,738, Cl. 371-37.100.
Miyamoto, Hironobu; and Nakayama, Tatsuo, 5,608,239, Cl. 257-192.000.
Mori, Yoshiaki, 5,608,875, Cl. 395-250.000.
Nakamoto, Nobuya, 5,608,466, Cl. 348-587.000.
Ninomiya, Kazuhisa, 5,608,671, Cl. 365-185.290.
Nishijima, Yasuo; Hiromori, Kunio; and Kubota, Toshiharu, 5,607,063, Cl. 209-584.000.
Nozue, Hiroshi, 5,607,801, Cl. 430-22.000.
Ohmori, Junichi, 5,608,463, Cl. 348-540.000.
Saida, Yoshihide, 5,607,795, Cl. 429-100.000.
Suzuki, Mieko; and Homma, Tetsuya, 5,607,880, Cl. 437-195.000.
Taguchi, Daigo, 5,608,859, Cl. 395-792.000.
Takai, Yasuhiro, 5,608,686, Cl. 365-233.000.
Tanoue, Katsumi, 5,608,765, Cl. 375-365.000.
Uriya, Susumu, 5,608,793, Cl. 379-387.000.
Yamazaki, Yasushi, 5,607,869, Cl. 437-40.000.
Yoshida, Toshio, 5,608,324, Cl. 324-426.000.

Needham, Donald G.; Kinzie, William; and Harris, James H., to Polyplus, Inc. Filament coating process. 5,607,531, Cl. 156-166.000.

Neil, Clifford R. Automatic temperature alarm system. 5,608,383, Cl. 340-588.000.

Neisz, Johann J.: *See*—
Francischelli, David; Gealow, Kendra K.; Grandjean, Pierre A.; Hammargren, John; Neisz, Johann J.; and Peterson, David K., 5,607,385, Cl. 600-17.000.

Nellemann, Peter: *See*—
Bertelsen, Hugo; Nellemann, Peter; Murphy, Matthew J.; Wellnitz, Donald R.; and Hines, Horace H., 5,608,221, Cl. 250-363.030.

Nelsen, James M.; Whinery, Larry D.; Gwinn, Kenneth W.; McBride, Donald D.; Luna, Daniel A.; Holder, Joseph P.; and Bliton, Richard J., to Sandia Corporation; and Precision Fabrics Group, Inc. Structurally efficient inflatable protective device. 5,607,182, Cl. 280-743.100.

Nelson, Helen L.; Richards, David I.; and Simonson, Rune, to BP Chemicals Limited. Acetylation of lignocellulosic materials. 5,608,051, Cl. 536-76.000.

Nelson, Jeffrey G.: *See*—
Neurgaonkar, Ratnakar R.; Oliver, John R.; and Nelson, Jeffrey G., 5,607,632, Cl. 264-61.000.

Nelson, Kenneth V.: *See*—
Beer, Markus; and Nelson, Kenneth V., 5,607,637, Cl. 264-271.100.

Nemirovsky, Yael, to Technion Research & Development Foundation Ltd. Single layer planar HgCdTe photovoltaic infrared detector with heterostructure passivation and p-on-n homojunction. 5,608,208, Cl. 250-214.100.

Nemoto, Peter A.: *See*—
Glamkowski, Edward J.; Chiang, Yulin; Strupczewski, Joseph T.; Bordeau, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,607,945, Cl. 514-307.000.

NeoRx Corporation: *See*—
Axworthy, Donald B.; Theodore, Louis J.; Gustavson, Linda M.; and Reno, John M., 5,608,060, Cl. 540-474.000.
Gustavson, Linda M.; and Fritzberg, Alan R., 5,607,659, Cl. 424-1.730.

Neri, Armando: *See*—
Chini, Stefano; Di Stefano, Giuseppe; and Neri, Armando, 5,608,818, Cl. 382-153.000.

Nesler, Leslie F., to Caswell International Corporation. Granulate backstop assembly. 5,607,163, Cl. 273-410.000.

Nespeta, Horst; Pötzl, Alfred; Simon, Manfred; and Pfob, Franz, to Zettl GmbH CNC Prazisions-und Sonderwerkzuege. Cutting tool. 5,607,263, Cl. 407-61.000.

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Melbye, William L.; Nestegard, Susan K.; Wood, Leigh E.; Lindseth, Marvin D.; and Bychinski, Dale A., 5,607,635, Cl. 264-169.000.

Nesvadba, Peter; Evans, Samuel; and Schmitt, Ralf, to Ciba-Geigy Corporation. Process for the preparation of 3-arylbenzofuranones. 5,607,624, Cl. 252-589.000.

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Midgely, Christopher W.; Holland, Charles; and Holberger, Kenneth D., 5,608,865, Cl. 395-180.000.

Neurgaonkar, Ratnakar R.; Oliver, John R.; and Nelson, Jeffrey G., to Rockwell International Corporation. Method of fabricating PLZT piezoelectric ceramics. 5,607,632, Cl. 264-61.000.

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Albaugh, Pamela; and Hutchison, Alan, 5,608,079, Cl. 548-492.000.

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Marx, Gerard, 5,607,694, Cl. 424-450.000.

Newberg, Irwin L.; Wagner, Gene A.; Rzyski, Gene; and Stevens, Richard A., to Hughes Electronics. Noise measurement test system. 5,608,331, Cl. 324-613.000.

Newcomer, Joseph M.: *See*—
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Newell, Joseph V.: *See*—
Carcone, John M.; Engelberth, Jon W.; LaGrotta, James T.; and Newell, Joseph V., 5,608,159, Cl. 73-49.800.

NexMed, Inc.: *See*—
Lathrop, Peter H., 5,607,461, Cl. 607-75.000.

NGK Insulators, Ltd.: *See*—
Hayakawa, Koji; Nakajima, Isao; and Utsumi, Yusuke, 5,607,702, Cl. 425-121.000.
Hirai, Takami; and Watanabe, Masahiko, 5,608,364, Cl. 333-204.000.
Kato, Nobuhide; and Hamada, Yasuhiko, 5,608,154, Cl. 73-23.310.

NGK Spark Plug Co., Ltd.: *See*—
Musasa, Mamoru; and Matsutani, Wataru, 5,607,605, Cl. 219-121.640.

Nguyen, Chinh D.: *See*—
Irgens, Christopher R.; McDowell, Philip D.; Nguyen, Chinh D.; and Bonifield, James, 5,608,369, Cl. 335-281.000.

Nguyen, Khe C., to Hewlett-Packard Company. Direct transfer of liquid toner image from photoconductor drum to image receiver. 5,608,507, Cl. 399-307.000.

Nguyen, Quang Lan: *See*—
Bernard, Dominique; and Nguyen, Quang Lan, 5,607,921, Cl. 514-23.000.

Nguyen, Tim: *See*—
Chen, Hung-Sheng; Nguyen, Tim; Moberly, Larry; and Teng, Chih S., 5,607,873, Cl. 437-51.000.

Nichols, Mark E.; Ginder, John M.; Elie, Larry D.; and Pett, Robert A., to Ford Motor Company. Electrorheological elastomers useful as variable stiffness articles. 5,607,996, Cl. 524-439.000.

Nicholson, James A. Orthodontic brackets. 5,607,299, Cl. 433-3.000.

Nicol, Robin H.; Slater, Martin J.; and Hodgson, Simon T., to Glaxo Wellcome Inc. Antiviral dibenzothiazepinone derivatives. 5,607,929, Cl. 514-211.000.

Nicolaou, K. C.; Riemer, Claus G.; and Kerr, Michael A., to Scripps Research Institute, The. Water soluble taxol derivatives. 5,608,087, Cl. 549-510.000.

Niedenzu, Thomas: *See*—
Brummel, Reinhold; Doering, Berthold; and Niedenzu, Thomas, 5,607,219, Cl. 362-61.000.

Niederberger, Klaus; and Niederberger, Peter K., to Althammer GmbH & Co. KG. Apparatus for the testing of air bags. 5,608,158, Cl. 73-37.000.

Niederberger, Peter K.: *See*—
Niederberger, Klaus; and Niederberger, Peter K., 5,608,158, Cl. 73-37.000.

Niederer, Armin. Method of monitoring the condition of soiling and /or calcification of heat exchangers in heating and cooling installations. 5,607,008, Cl. 165-11.100.

Nielsen, Arnold D.: *See*—
Szudarek, Robert G.; Yeow, Yew T.; Nielsen, Arnold D.; and Cook, Roger, 5,608,611, Cl. 361-753.000.

Nielsen, Jan C.: *See*—
Prahl, Claus; and Nielsen, Jan C., 5,607,854, Cl. 435-252.100.

Nielsen, John E.: *See*—
Bojsen, Kirsten; Kragh, Karsten M.; Mikkelsen, Jørn D.; Nielsen, Klaus K.; and Nielsen, John E., 5,607,919, Cl. 514-12.000.
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Nielsen, Klaus K.: *See*—
Bojsen, Kirsten; Kragh, Karsten M.; Mikkelsen, Jørn D.; Nielsen, Klaus K.; and Nielsen, John E., 5,607,919, Cl. 514-12.000.
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Nies, Berthold: *See*—
Cimbollek, Monika; and Nies, Berthold, 5,607,685, Cl. 424-422.000.

Niescierenko, Joseph: *See*—
Morrison, James S.; Niescierenko, Joseph; and Zsamboky, Kalman F., 5,608,617, Cl. 363-147.000.

Nifco Inc.: *See*—
Hamamoto, Yoshiaki, 5,606,784, Cl. 24-662.000.

Nihira, Takayasu; Miyamoto, Yoshio; Endo, Hideyuki; and Abe, Toyohiko, to Nissan Chemical Industries, Ltd. Liquid crystal alignment film. 5,608,033, Cl. 528-353.000.

Nihon Koshitsu Garasu Kabushiki Kaisha: *See*—
Hase, Toshizo, 5,606,840, Cl. 52-780.000.

Nihon Nohyaku Co., Ltd.: *See*—
Takagi, Kazuhiro; Ohshima, Tetsuji; Hasegawa, Nobuyoshi; Katoh, Chiaki; Kanaoka, Atsushi; and Kanno, Hideo, 5,608,109, Cl. 564-36.000.

Niimi, Masami: *See*—
Tamemoto, Hiroaki; Nagao, Yasuhiro; and Niimi, Masami, 5,608,280, Cl. 310-239.000.

Nika Health Products Limited: *See*—
Religa, Zbigniew; Stolarzewicz, Bogdan; Cichon, Romuald; Krzyskow, Marek; and Stozek, Jolanta, 5,606,928, Cl. 112-475.080.

Niklasson, Donald: *See*—
Petersson, Conny; and Niklasson, Donald, 5,606,884, Cl. 72-41.000.

Nikon Corporation: *See*—
Hagiuda, Nobuyoshi; and Sakamoto, Hiroshi, 5,608,476, Cl. 396-155.000.
Hori, Kenji, 5,608,529, Cl. 356-376.000.
Inoue, Hideya, 5,608,475, Cl. 396-207.000.
Ogawa, Hidehiro, 5,608,490, Cl. 396-300.000.
Sasagaki, Nobuaki; and Saegusa, Takashi, 5,608,491, Cl. 396-243.000.
Tokuda, Noriaki, 5,608,456, Cl. 348-340.000.

Nilssen, Ole K. Electronic ballast with pulsing output voltage. 5,608,291, Cl. 315-209.00R.

Nilsson, Per, Lifting apparatus, 5,607,142, Cl. 254-298.000.

Ninomiya, Kazuhisa, to NEC Corporation. Non-volatile semiconductor memory. 5,608,671, Cl. 365-185.290.

Ninomiya, Teruyuki; Watanabe, Toshio; Mori, Akira; Ikebe, Takaki; and Iwamoto, Atsushi, to Mitsubishi Gas Chemical Company, Inc. Process for producing polyhydric alcohol. 5,608,121, Cl. 568-852.000.

Nintendo Co., Ltd.: *See*—
Takahashi, Toyofumi; Miyoshi, Michitaka; Otake, Masahiro; and Nishiumi, Satoshi, 5,608,424, Cl. 345-141.000.

Nippon Conlux Co., Ltd.: *See*—
Hayashi, Hiroshi; Ogino, Tadao; and Matsuo, Minoru, 5,608,699, Cl. 369-13.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Hayashihara, Shoiti; and Shinmoto, Masaki, 5,608,429, Cl. 346-135.100.

Nippon Oil Co., Ltd.: *See*—
Kamiya, Kozo; Morita, Toru; Fujiyama, Yuichiro; and Ushio, Masaru, 5,607,575, Cl. 208-251.00R.
Tsubokura, Akira; Yoneda, Hisashi; Takaki, Mikihiro; and Kiyota, Takashi, 5,607,839, Cl. 435-67.000.

Nippon Shokubai Co., Ltd.: *See*—
Masuda, Kiyoshi; Tamaura, Yukie; and Kaieda, Osamu, 5,608,091, Cl. 552-250.000.

Nippon Telegraph And Telephone Corporation: *See*—
Suzuki, Yasuhiro; Kumozaki, Kiyomi; and Watanabe, Ryuichi, 5,608,565, Cl. 359-237.000.

Nippon Zeon Co., Ltd.: *See*—
Yamakawa, Masahiro; Akimoto, Kenji; Nakamura, Katsuya; Takano, Fumio; and Takasaki, Takahiro, 5,607,772, Cl. 428-425.900.

Nippondenso Co., Ltd.: *See*—
Green, Donald R., Jr., 5,608,724, Cl. 370-307.000.
Isaji, Kazuyoshi; Iwai, Shinichi; and Ohashi, Yutaka, 5,607,185, Cl. 280-806.000.
Kato, Takahiko; and Ito, Motoya, 5,607,283, Cl. 415-55.100.
Samukawa, Katsuhiko; and Honda, Yuji, 5,607,105, Cl. 236-49.300.
Tamemoto, Hiroaki; Nagao, Yasuhiro; and Niimi, Masami, 5,608,280, Cl. 310-239.000.
Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,608,616, Cl. 363-132.000.

Niro Holding A/S: *See*—
Hansen, Ove, 5,607,649, Cl. 422-147.000.

Nisca Corporation: *See*—
Kobayashi, Misao, 5,607,147, Cl. 271-293.000.

Nishi, Kunihiko: *See*—
Kitamura, Wahei; Murakami, Gen; and Nishi, Kunihiko, 5,607,059, Cl. 206-720.000.

Nishida, Shunichiro: *See*—
Sakakibara, Teigo; Fujimura, Naoto; Sakai, Kiyoshi; Aoto, Hiroshi; and Nishida, Shunichiro, 5,607,751, Cl. 428-195.000.

Nishihara, Toshio: *See*—
Ikeda, Yoshiharu; Ueki, Yasuyuki; Nishihara, Toshio; and Kamikawa, Yumiko, 5,607,948, Cl. 514-316.000.

Nishii, Michiharu: *See*—
Nagashima, Takashi; and Nishii, Michiharu, 5,607,207, Cl. 303-113.100.

Nishijima, Yasuo; Hiromori, Kunio; and Kubota, Toshiharu, to NEC Corporation. Paper object sorting apparatus having means for erasing bar codes printed on paper object and paper sorting method using said apparatus. 5,607,063, Cl. 209-584.000.

Nishikata, Kazuaki: *See*—
Hirayama, Yoshiyuki; Nishikata, Kazuaki; and Irikawa, Michinori, 5,608,230, Cl. 257-18.000.

Nishikawa, Shinji: *See*—
Matsumoto, Takaya; Nishikawa, Shinji; and Kumata, Fumio, 5,608,132, Cl. 585-452.000.

Nishikawa, Susumu: *See*—
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Nishimura, Asao: *See*—
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Tsutsumi, Kazumichi; and Nishimura, Takahiro, 5,608,631, Cl. 364-426.018.

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Nishino, Masakazu: *See*—
Hashimoto, Kinji; Nishino, Masakazu; Juri, Tatsuro; and Hasebe, Takumi, 5,608,398, Cl. 341-76.000.

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Nishiumi, Satoshi: *See*—
Takahashi, Toyofumi; Miyoshi, Michitaka; Otake, Masahiro; and Nishiumi, Satoshi, 5,608,424, Cl. 345-141.000.

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Miyamoto, Yoshio; Endo, Hideyuki; and Abe, Toyohiko, 5,607,732, Cl. 428-1.000.
Nihira, Takayasu; Miyamoto, Yoshio; Endo, Hideyuki; and Abe, Toyohiko, 5,608,033, Cl. 528-353.000.

Nissan Motor Co., Ltd.: *See*—
Ochiai, Tatsuo; and Okahara, Hirofumi, 5,607,373, Cl. 477-46.000.
Ohara, Toshiki; and Matsuo, Isaya, 5,606,949, Cl. 123-396.000.
Okada, Yoshihiro; and Yamashita, Shuhei, 5,608,633, Cl. 364-431.080.
Yamaguchi, Toshio, 5,607,371, Cl. 475-210.000.

Nissin Shokuhin Kabushiki Kaisha: *See*—
Harris, William J.; Carr, Francis J.; and Armour, Kathryn L., 5,607,847, Cl. 435-69.600.

Nitta, Jun; and Nakamura, Kenji, to Canon Kabushiki Kaisha. Optical apparatus and a method using the apparatus, which utilizes the occurrence of a change in a both-end voltage of an amplifying region. 5,608,572, Cl. 359-344.000.

Nittetsu Mining Co., Ltd.: *See*—
Taniguchi, Seihou; Hazeyama, Takeshi; and Otaka, Hitoshi, 5,607,490, Cl. 55-524.000.

Nix, J. Lamar: *See*—
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Siegele, Stephen H.; Noah, Craig M.; and Gregg, John N., 5,607,002, Cl. 141-198.000.

Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, to Kabushiki Kaisha Toshiba. Computerized tomography apparatus. 5,608,772, Cl. 378-16.000.

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Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, 5,606,819, Cl. 43-22.000.

Noel, John R.: *See—*
Richards, Mark R.; Noel, John R.; Mackey, Larry N.; Lee, Yann-Per; Haney, Anna R.; Hammons, John L.; Lloyd, Susan N. W.; and Keeler, Sheri D., 5,607,414, Cl. 604-378.000.

Noguchi, Kouichi; and Sasaki, Eiichi, to Ricoh Company, Ltd. Frequency converter outputting a clock signal having a stable and accurate frequency. 5,608,770, Cl. 377-47.000.

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Masumura, Shigeki; Nakamura, Hideo; Noguchi, Kouki; Kawasaki, Shumpei; Fukada, Kaoru; and Akao, Yasushi, 5,608,881, Cl. 395-306.000.

Noguchi, Yasunori, to Rohm Co., Ltd. Automatic adjustment circuit for an oscillator. 5,608,355, Cl. 331-1.00A.

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Nolcheff, Nick A.: *See—*
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Noll, Mark G.: *See—*
Claffey-Cohen, Margaret; Noll, Mark G.; Olive, Jose A.; Perez, Roberto V.; and Ward, James P., 5,608,897, Cl. 395-557.000.

Nomura, Tsuneharu, to Sony Corporation. Projection TV set apparatus. 5,608,579, Cl. 359-820.000.

Norbeck, Daniel W.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; and Zhao, Chen, 5,608,072, Cl. 548-204.000.

Nordberg, Brian E.; and Nordberg, Maria D. Device for counting and measuring liquid consumption. 5,607,078, Cl. 220-756.000.

Nordberg, Maria D.: *See—*
Nordberg, Brian E.; and Nordberg, Maria D., 5,607,078, Cl. 220-756.000.

Nordson Corporation: *See—*
Reighard, Michael A.; Lambert, Peter G.; and Loosli, Robert G., 5,607,498, Cl. 95-19.000.

Norizuki, Reiko: *See—*
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Norrick, Daniel A.: *See—*
Data, Stanley E.; Koziara, Robert P.; Lent, Mark S.; O'Gorman, Patrick A.; Rose, Thomas K.; Shanks, Eugene G.; and Norrick, Daniel A., 5,606,946, Cl. 123-198.00E.

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North Coast Medical, Inc.: *See—*
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Northern Telecom Limited: *See—*
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Driscoll, Michael M., 5,608,360, Cl. 331-107.00A.
Tipton, David G., 5,607,520, Cl. 148-241.000.

Northrup, John E.: *See—*
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Northwestern University: *See—*
Silverman, Richard B.; Andruszkiewicz, Ryszard; Yuen, Po-Wai; Sobieray, Denis M.; Franklin, Lloyd C.; and Schwindt, Mark A., 5,608,090, Cl. 552-10.000.

Norton Company: *See—*
Li, Rounan, 5,607,489, Cl. 51-309.000.

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Nougayrede, Jean: *See—*
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NovaTech, Inc.: *See—*
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Novell, Inc.: *See—*
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Novick, Michael A.; and Belanger, Roger R., to Heidelberger Druckmaschinen AG; and Heidelberg Harris, Inc. Mechanism for diverting of products in a folding apparatus. 5,607,146, Cl. 270-42.000.

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Nozue, Hiroshi, to NEC Corporation. Direct patterning method of resist film using electron beam. 5,607,801, Cl. 430-22.000.

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Fukumura, Yoshikazu, 5,607,241, Cl. 384-537.000.
Hida, Yoshikazu; Izutsu, Tomoyoshi; and Hayakawa, Hisashi, 5,607,368, Cl. 474-110.000.

Numata, Kenji: *See—*
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Nyberg, Bo Erik: *See—*
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Nycomed Imaging AS: *See—*
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Nye, Jeffrey; and Fairbank, Martin G., to Hoechst Celanese Corporation. Method for reduced sulfur dioxide formation in refiner bleaching. 5,607,547, Cl. 162-26.000.

Nygaardsvik, Atle: *See—*
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Nyman, Bengt E., to Autosplice Systems, Inc. Surface mounted holes for printed circuit boards. 5,607,313, Cl. 439-83.000.

Nyqvist, Per Gustaf H.: *See—*
Ek, Bo R.; Eriksson, Kjell G.; Nyqvist, Per Gustaf H.; and Ragnarsson, Gert A., 5,607,695, Cl. 424-468.000.

OA Care System Co., Ltd.: *See—*
Asai, Seiichi, 5,607,516, Cl. 134-21.000.

Obase, Hiroyuki: *See—*
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,607,955, Cl. 514-359.000.

Obi, Tatsuya: *See—*
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O'Carroll, James G.; and Pelton, Bruce A., to Lumatech Corporation. Fluorescent lamp adapter with shell form ballast. 5,608,289, Cl. 315-58.000.

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Katsumata, Ryoichi; Hashimoto, Shinichi; and Ochiai, Keiko, 5,607,848, Cl. 435-143.000.

Ochiai, Takeji: *See—*
Konno, Takeshi; and Ochiai, Takeji, 5,607,764, Cl. 428-327.000.

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Ochiai, Toshihiko: *See—*
Takeuchi, Akihiko; Ochiai, Toshihiko; Katoh, Motoi; Miyashiro, Toshiaki; and Suzuki, Takehiko, 5,608,505, Cl. 399-314.000.

O'Connell, Mark L.: *See—*
Patsalos, Philip N.; and O'Connell, Mark L., 5,607,390, Cl. 604-29.000.

Oda, Kazuya, to Fuji Photo Film Co., Ltd. Interline transfer CCD image sensor with reduced dark current. 5,608,455, Cl. 348-245.000.

Oda, Kenzo; and Shoji, Hiroyuki, to Whitaker Corporation, The. Optical connector having optical fiber protection member. 5,608,829, Cl. 385-76.000.

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Yamaoka, Naoji; and Oda, Koji, 5,608,817, Cl. 382-152.000.

Odell, Peter G.; Gibson, George A.; Larson, James R.; and Bonsignore, Frank J., to Xerox Corporation. Supercritical processes and liquid developers. 5,607,807, Cl. 430-137.000.

Odell, Peter G.; Veregin, Richard P. N.; Hamer, Gordon K.; and Georges, Michael K., to Xerox Corporation. Rate enhanced polymerization processes. 5,608,023, Cl. 526-225.000.

Odle, Roy R.: *See—*
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Odom, James T.; Hoyt, Robert M.; and Hamilton, Daniel V., to Hubbell Incorporated. Clamshell power installed screw anchor. 5,607,261, Cl. 405-244.000.

O'Donoghue, Colton E., Jr.: *See—*
Farry, George A.; Bigham, John A.; Brooks, Kenneth R.; Lucas, Amos H., Jr.; and O'Donoghue, Colton E., Jr., 5,608,447, Cl. 348-7.000.

O'Dougherty, Michael D.; Claussen, Steven W.; and Claussen, Robert L., to C.A.P. Inc. Chemical measuring system. 5,607,080, Cl. 222-67.000.

O'Dwyer, James M., to Breeze Technology Partnership. Self-ventilating footwear. 5,606,806, Cl. 36-3.00B.

Ofosu, Simon K.: *See—*
Kobylivker, Peter M.; Ofosu, Simon K.; Shawver, Susan E.; and Lance, Roger L., 5,607,798, Cl. 442-381.000.

Ogawa, Hidehiro, to Nikon Corporation. Apparatus for and a method of communicating between a camera and external equipment. 5,608,490, Cl. 396-300.000.

Ogawa, Kinichiro: *See—*
Delavaux, Jean-Marc P.; Ogawa, Kinichiro; and Yeates, Paul D., 5,608,562, Cl. 359-161.000.

Ogawa, Masaya; Daito, Toshiji; and Takata, Shinichi, to Pioneer Electronic Corporation. Recording system for signalong disc player. 5,608,707, Cl. 369-84.000.

Ogawa, Satoshi, to Fujitsu Limited. Preferential recording system for a facsimile apparatus. 5,608,540, Cl. 358-434.000.

Ogawa, Stuart S.; and Pierce, Kevin R., to AutoEntry OnLine, Inc. System and method for automatic data file format translation and transmission having advanced features. 5,608,874, Cl. 395-200.150.

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Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,607,953, Cl. 514-327.000.

Ogawa, Yasuji, to Kabushikikaisha Wacom. Optical position detecting method using asynchronous modulation of light source. 5,608,528, Cl. 356-375.000.

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Ogawa, Yohei, to Kabushiki Kaisha TOPCON. Laser gradient setting device. 5,606,802, Cl. 33-276.000.

Ogden, Inc.: *See—*
Ogden, John M., 5,607,745, Cl. 428-138.000.

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O'Gorman, Patrick A.: *See—*
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Ogura, Masahiko; and Honda, Masashi, to Kabushiki Kaisha Toshiba. Image forming apparatus using ID card having counter. 5,608,494, Cl. 399-366.000.

Ogura, Shiro: *See—*
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Oh, Young N., to Hyundai Electronics Industries Co., Ltd. Bit line sense amplifier for restoring and sensing data on a bit line. 5,608,680, Cl. 365-205.000.

Ohara, Toshiki; and Matsuo, Isaya, to Nissan Motor Co., Ltd. Throttle valve device of V-type engine. 5,606,949, Cl. 123-396.000.

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Ohashi, Motoaki: *See—*
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Ohashi, Yutaka: *See—*
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Ohba, Osamu; Yamamoto, Yoshikazu; Matsunaga, Koichiro; Tsuchiya, Takayuki; and Nakahama, Toshihiro, to Yazaki Corporation. Method for manufacturing a wiring harness using a set of electric wires therefor. 5,606,795, Cl. 29-863.000.

Ohkawa, Hideo; Kitajima, Koji; Kodaka, Kenji; Fumoto, Yasunori; and Kumeta, Takako, to Mitsui Toatsu Chemicals, Inc. Immunological detection method of pyrethroid compound, haptenic compound, intermediate for the haptenic compound, immunogen and antibody. 5,608,104, Cl. 562-473.000.

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Ohkouchi, Kousaku; Yoshida, Shigeru; Hayashi, Kenji; and Arakawa, Shigeru, to Aisan Kogyo Kabushiki Kaisha. Filter system for an in-tank fuel pump. 5,607,578, Cl. 210-172.000.

Ohlendorf, Wolfgang: *See—*
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Ohmi, Tadahiro: *See—*
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Ohmori, Junichi, to NEC Corporation. Oscillator circuit suitable for picture-in-picture system. 5,608,463, Cl. 348-540.000.

Ohnishi, Keiichi: *See—*
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Ohnishi, Masahito; Kataoka, Shozo; Kanda, Takashi; Yamasaki, Takashi; and Yoshida, Kazuo, to Matsushita Electric Works, Ltd. Power converter. 5,608,614, Cl. 363-60.000.

Ohno, Tetsuji: *See—*
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,607,955, Cl. 514-359.000.

Ohno, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with planarization structure. 5,608,248, Cl. 257-306.000.

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Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, to Kyowa Hakko Kogyo Co., Ltd. Tricyclic compounds on angiotensin II receptor antagonists. 5,607,955, Cl. 514-359.000.

Ohshima, Tetsuji: *See—*
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Ohta, Kazuhiro: *See—*
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Ohta, Satoshi: *See—*
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Ohta, Yoshinobu; and Taniguchi, Kenichi, to Sumitomo Wiring Systems, Ltd. Apparatus for winding tape. 5,606,909, Cl. 100-8.000.

Ohtani, Kazuo, to Canon Kabushiki Kaisha. Image reading apparatus for correcting density levels. 5,608,823, Cl. 382-271.000.

Ohtani, Takayuki: *See—*
Hiasa, Masami; Ashie, Nobuyuki; Saito, Susumu; and Ohtani, Takayuki, 5,607,595, Cl. 210-669.000.

Ohtsuka, Hisao; and Utamura, Motoaki, to Hitachi, Ltd. Method for diagnosing a remaining lifetime, apparatus for diagnosing a remaining lifetime, method for displaying remaining lifetime data, display apparatus and expert system. 5,608,845, Cl. 395-50.000.

Ohtsuka, Nobuyuki: *See—*
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Ohya, Tomoki: *See—*
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Oikawa, Yoshiaki: *See—*
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Oishi, Motohiro: *See—*
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.

Ojima, Hisayuki; and Kuwahara, Hiroshi, to Fujitsu Limited. Circuit for varying read timing. 5,608,343, Cl. 326-93.000.

Oka, Masami: *See—*
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,608,543, Cl. 358-450.000.

Okada, Hisao, to Sharp Kabushiki Kaisha. Drive circuit for a display apparatus. 5,608,421, Cl. 345-100.000.

Okada, Mitsuyoshi: *See—*
Ibamoto, Masahiko; Sato, Kazuhiko; Okada, Mitsuyoshi; Kuroiwa, Hiroshi; Minowa, Toshimichi; Yamaguchi, Kazuhiko; and Ozaki, Naoyuki, 5,608,626, Cl. 364-424.080.

Okada, Shinjiro, to Canon Kabushiki Kaisha. Liquid crystal display apparatus. 5,608,420, Cl. 345-89.000.

Okada, Yasuhiro: *See—*
Sato, Kenichi; Kanematsu, Koichi; Fujiwara, Hiroaki; and Okada, Yasuhiro, 5,607,097, Cl. 228-8.000.

Okada, Yoshihiro; and Yamashita, Shuhei, to Nissan Motor Co., Ltd. System and method for detecting knocking for internal combustion engine. 5,608,633, Cl. 364-431.080.

Okahara, Hirofumi: *See—*
Ochiai, Tatsuo; and Okahara, Hirofumi, 5,607,373, Cl. 477-46.000.

Okamoto, Hidekazu: *See—*
Morikawa, Shinsuke; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tatematsu, Shin, 5,608,126, Cl. 570-167.000.

Okamoto, Manabu; and Takeya, Noriyoshi, to Pioneer Electronic Corporation. Video signal recording/reproducing apparatus where the order of access to video data during a write mode is different than the order of access during a read mode. 5,608,533, Cl. 386-91.000.

Okaniwa, Takashi; and Osawa, Hisayuki, to Kyodo Yushi Co., Ltd. Grease composition for constant velocity joints. 5,607,906, Cl. 508-168.000.

Okano, Haruo: *See—*
Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, 5,607,718, Cl. 427-97.000.

Okano, Kazunori; and Kambara, Hideki, to Hitachi, Ltd. Device for separating polynucleotides having a plurality of electrode-containing cells and movable collecting capillary. 5,607,646, Cl. 422-101.000.

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Fukuda, Yasuhiro, 5,608,594, Cl. 361-58.000.

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Okuda, Shigeru: *See—*
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Okuda, Yoshihiro: *See*—
Uchiyama, Yujiro; Matsumoto, Junichi; and Okuda, Yoshihiro, 5,608,021, Cl. 526-210.000.

Okumiya, Masataro: *See*—
Ichii, Tomoko; Suzuki, Keiichiro; and Okumiya, Masataro, 5,607,885, Cl. 501-9.000.

Okumura, Masafumi, to Fujitsu Limited. Battery protection circuit and battery pack and apparatus using the battery pack. 5,608,304, Cl. 320-5.000.

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Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.

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Hale, Ron L.; Lu, Amy; Solas, Dennis; Selick, Harold E.; Oldenburg, Kevin R.; and Zaffaroni, Alejandro C., 5,607,691, Cl. 424-449.000.

Olds, Dale R.: *See*—
Prasad, Ranjan; and Olds, Dale R., 5,608,903, Cl. 395-610.000.

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Prewett, Annamarie B.; and O'Leary, Robert K., 5,607,476, Cl. 623-11.000.

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Mahulikar, Deepak; Tyler, Derek E.; Braden, Jeffrey S.; and Popplewell, James M., 5,608,267, Cl. 257-796.000.

Olive, Eric: *See*—
Grimard, Jean P.; and Olive, Eric, 5,607,399, Cl. 604-220.000.

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Hoffert, Bradley W.; Storm, Shawn F.; Stano, Robert M.; and Olive, Horace A., Jr., 5,608,427, Cl. 345-201.000.

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Neurgaonkar, Ratnakar R.; Oliver, John R.; and Nelson, Jeffrey G., 5,607,632, Cl. 264-61.000.

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Banchereau, Evelyne; Lacombe, Sylvie; and Ollivier, Jean, 5,608,103, Cl. 562-115.000.

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Olsen, Charles A., to Marlin Firearms Company, The. Cocking mechanism for a muzzle loading firearm. 5,606,825, Cl. 42-69.010.

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Konno, Mitsujiro; and Hasegawa, Akira, 5,608,451, Cl. 348-69.000.
Ono, Katsuya; and Nishioka, Kimihiko, 5,608,835, Cl. 385-126.000.
Shimizu, Kazuo; Kobayashi, Shigeru; Masuyama, Hideyuki; and Aramaki, Shinji, 5,608,824, Cl. 382-276.000.
Yamazaki, Takeshi, 5,608,695, Cl. 369-44.120.

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Omote, Koji: *See*—
Tsukada, Mincharu; and Omote, Koji, 5,607,535, Cl. 156-252.000.

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Mitsubuchi, Keiji; and Isaka, Satoru, 5,608,846, Cl. 395-75.000.
Sako, Kazumi, 5,608,366, Cl. 335-78.000.

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Onizuka, Takahiro: *See*—
Saka, Yuuji; and Onizuka, Takahiro, 5,608,271, Cl. 307-10.100.

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Opas, George F.; and DeGroot, Robert J., to Motorola, Inc. Method, device, and radio for compensating for modulator frequency drift while allowing for data transmission. 5,608,761, Cl. 375-296.000.

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Pfandl, Walter; Schneider, Reiner; Stoecklein, Waldemar; Unger, Clemens; and Opel, Ernst, 5,608,832, Cl. 385-112.000.

Ophey, Willem G., to U.S. Philips Corporation. Optical beam-splitting element. 5,608,708, Cl. 369-109.000.

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Valliant, James G.; and Goebel, David G., 5,608,527, Cl. 356-371.000.

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Browne, John F.; Wilkinson, Richard L.; and Boyle, William W., 5,608,711, Cl. 369-116.000.
Rilum, John H.; Wilkinson, Richard L.; Li, Shigang; Browne, John F.; and Boyle, William W., 5,608,712, Cl. 369-116.000.

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Melzig, Manfred, 5,608,065, Cl. 546-15.000.

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Hale, John M.; and Weber, Eugen, 5,608,167, Cl. 73-715.000.

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Southern, Michael P.; Melbourne, Keith; and Thompson, Ian R., 5,606,951, Cl. 123-399.000.

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Amir, Nadiv; Rigal, Meir; and Gilon, Yoel, 5,606,858, Cl. 60-648.000.

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Williams, Gerald M., 5,607,598, Cl. 210-772.000.

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Watanabe, Hiroshi; Shiga, Michio; and Ohta, Satoshi, 5,607,907, Cl. 508-371.000.

Orr, Clyde; and Camp, Ronnie W., to Micromeritics Instrument Corporation. Method and apparatus for measuring envelope density. 5,608,157, Cl. 73-32.00R.

Orr, David R.: *See*—
Shafer, Scott F.; Carroll, Thomas S.; Meister, Steven F.; Orr, David R.; and Weber, J. Roger, 5,606,940, Cl. 123-90.120.

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Uchiyama, Yujiro; Matsumoto, Junichi; and Okuda, Yoshihiro, 5,608,021, Cl. 526-210.000.

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Osawa, Hisayuki: *See*—
Okaniwa, Takashi; and Osawa, Hisayuki, 5,607,906, Cl. 508-168.000.

Osawa, Toshimasa, to Sony Corporation. Ferroelectric memory automatically generating biasing pulse for plate electrode. 5,608,667, Cl. 365-145.000.

Osborn, Craig: *See*—
Belcher, James F.; and Osborn, Craig, 5,607,600, Cl. 216-24.000.

Osborn, Douglas B.: *See*—
Kearney, Mark B.; and Osborn, Douglas B., 5,608,348, Cl. 327-538.000.

Osborne, James L.: *See*—
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Ose, Yoichi: *See*—
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Honma, Yoshihiro; Tanaka, Shozo; Oshima, Mitsuyoshi; Tanioka, Soji; and Kawamoto, Fumiaki, 5,608,057, Cl. 540-451.000.

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Kamimura, Kunio; Ohashi, Kunitoshi; and Oshima, Toshio, 5,608,225, Cl. 250-458.100.

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Satoh, Mitsuyoshi; and Oshino, Genji, 5,607,244, Cl. 400-247.000.

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Osram Sylvania Inc.: *See*—
Wright, John O., 5,607,320, Cl. 439-394.000.

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Becher, Heinz-Manfred; Drandarevski, Christo; Mengel, Rudolf; and Ost, Walter, 5,607,977, Cl. 514-594.000.

Osteotech, Inc.: *See*—
Dowd, Michael; Scarborough, Nelson; and Daugherty, Mark, 5,607,269, Cl. 409-134.000.
Prewett, Annamarie B.; and O'Leary, Robert K., 5,607,476, Cl. 623-11.000.

Ostroff, Gary R.: *See*—
Jamas, Spiros; Ostroff, Gary R.; and Easson, D. Davidson, Jr., 5,607,677, Cl. 424-278.100.

O'Sullivan, Joseph. Tape measure and fixture. 5,606,803, Cl. 33-770.000.

Otaka, Hitoshi: *See*—
Taniguchi, Seihou; Hazeyama, Takeshi; and Otaka, Hitoshi, 5,607,490, Cl. 55-524.000.

Otake, Masahiro: *See*—
Takahashi, Toyofumi; Miyoshi, Michitaka; Otake, Masahiro; and Nishiumi, Satoshi, 5,608,424, Cl. 345-141.000.

OtoProtec, Inc.: *See*—
Tanguay, M. Sylvain, 5,608,272, Cl. 307-10.200.

Otsuka, Kenichi: *See*—
Otsuka, Mari; Kitakura, Tomonori; Otsuka, Kenichi; and Mori, Kazuya, 5,607,878, Cl. 437-187.000.

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Tone, Hitoshi; Morisue, Masatoshi; Tamura, Katsumi; Miyazaki, Toshiki; and Nakano, Yoshimasa, 5,607,934, Cl. 514-253.000.

Otto, Detlev: *See*—
Janssen, Peter J.; Bradley, Ralph H.; Bingham, Joseph P.; Guerinot, William F.; and Otto, Detlev, 5,608,467, Cl. 348-744.000.

OTV Omnium De Trajtements et de Valorisation S.A.: *See*—
Cote, Pierre; Faivre, Michel; Moulin, Catherine; and Desbos, Gilbert, 5,607,593, Cl. 210-650.000.

Outboard Marine Corporation: *See*—
Irgens, Christopher R.; McDowell, Philip D.; Nguyen, Chinh D.; and Bonifield, James, 5,608,369, Cl. 335-281.000.

Owada, Nobuo: *See*—
Sato, Kazushige; Watanabe, Atsuo; Kikushima, Kenichi; Owada, Nobuo; and Iida, Masaya, 5,607,866, Cl. 437-31.000.

Owen, Robert A.: *See*—
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,608,254, Cl. 257-432.000.

Owens, Steve; Bouldin, Brett; and Arizmendi, Napoleon, to PES, Inc. Dissolvable well plug. 5,607,017, Cl. 166-288.000.

Oya, Keiji: *See*—
Akutsu, Mitsuo; Tominaga, Nobuhide; Oya, Keiji; Tomita, Athuo; and Shigeno, Kouichi, 5,607,894, Cl. 503-209.000.

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Ozaki, Fumihiro: *See*—
Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,607,953, Cl. 514-327.000.

Ozaki, Hiroyasu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Eye direction detecting device. 5,608,489, Cl. 396-51.000.

Ozaki, Masahiro: *See*—
Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, 5,608,772, Cl. 378-16.000.

Ozaki, Naoyuki: *See*—
Ibamoto, Masahiko; Sato, Kazuhiko; Okada, Mitsuyoshi; Kuroiwa, Hiroshi; Minowa, Toshimichi; Yamaguchi, Kazuhiko; and Ozaki, Naoyuki, 5,608,626, Cl. 364-424.080.

Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, to Daiwa Seiko, Inc. Reel leg fixing device for fishing rod. 5,606,819, Cl. 43-22.000.

Pabon, Raul A., Jr.: *See*—
Fried, Herbert E.; Singleton, David M.; and Pabon, Raul A., Jr., 5,608,106, Cl. 562-538.000.

Pacesetter, Inc.: *See*—
Causey, James D., III; and Yang, Min-Yaug, 5,607,458, Cl. 607-27.000.

Pacetti, Larry D.; and Heiligenthal, Charles H., to Snap-on Technologies, Inc. Stackable divided drawer partition. 5,607,215, Cl. 312-348.300.

Padden, James B., to Purolator Products Company. Method of manufacturing a porous metal mat. 5,607,778, Cl. 428-613.000.

Padgett, Clarence W.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.

Padron, Sally: *See*—
Debbage, Lawrence; Kelley, Eugene; Guth, Eugene D.; Campbell, Larry E.; Danziger, Robert N.; and Padron, Sally, 5,607,650, Cl. 422-178.000.

Pagan, Israel: *See*—
Hernandez, Ernesto; Castillo, Francisco O.; and Pagan, Israel, 5,607,406, Cl. 604-264.000.

Pahmer, François: *See*—
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Pai, Lee: *See*—
Pastan, Ira; Willingham, Mark; Fitzgerald, David; Brinkmann, Ulrich; and Pai, Lee, 5,608,039, Cl. 530-387.300.

Pajusola, Katri: *See*—
Eriksson, Ulf; Olofsson, Birgitta; Alitalo, Kari; and Pajusola, Katri, 5,607,918, Cl. 514-12.000.

Palazzolo, Gregorio: *See*—
Palazzolo, Santo, 5,607,628, Cl. 264-18.000.

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Palm, Bernhard, to Milwaukee Electric Tool Corp. Impact absorption mechanism for power tools. 5,607,023, Cl. 173-178.000.

Palmer, Brian E.: *See*—
Martin, James C.; Kilburn, Randall S.; Hamilton, Robert L.; Schmalz, Mary J.; and Palmer, Brian E., 5,607,387, Cl. 602-6.000.

Palmer, Larry G.: *See*—
Palmer, Ricky S.; and Palmer, Larry G., 5,608,653, Cl. 364-514.00C.

Palmer, Matthew R.; and Thompson-Bell, Ian, to Esselte N.V. Drive system for a thermal label printer. 5,608,443, Cl. 347-218.000.

Palmer, Richard E., to BOC Group plc, The. Molecular processes and apparatus. 5,608,197, Cl. 204-157.150.

Palmer, Ricky S.; and Palmer, Larry G., to Digital Equipment Corporation. Video teleconferencing for networked workstations. 5,608,653, Cl. 364-514.00C.

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de Vall, Franklin B., 5,608,417, Cl. 343-895.000.

Paluszek, Michael A.: *See*—
Goodzeit, Neil E.; and Paluszek, Michael A., 5,608,634, Cl. 364-424.013.

Pan, Haiou: *See*—
Kato, Yukio; Pan, Haiou; and Doi, Kazuyuki, 5,607,920, Cl. 514-13.000.

Pan, Jing-Jong, to E-Tek Dynamics, Inc. Fiber optic coupler and method of making same. 5,608,831, Cl. 385-85.000.

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Caveney, Jack; and Winger, James, 5,608,621, Cl. 395-216.000.

Panz, Eric; and Panz, Steven E. Submerged combustion system. 5,606,965, Cl. 126-360.00A.

Panz, Steven E.: *See*—
Panz, Eric; and Panz, Steven E., 5,606,965, Cl. 126-360.00A.

Paoli, Thomas L.; and Northrup, John E., to Xerox Corporation. Semiconductor devices incorporating p-type and n-type impurity induced layer disordered material. 5,608,753, Cl. 372-50.000.

Paonessa, Ralph S.: *See*—
Diener, Carl E.; Mehta, Ashit A.; Paonessa, Ralph S.; Skarvinko, Eugene R.; and Wang, David W., 5,607,744, Cl. 428-131.000.

Parash, Avi: *See*—
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Parel, Jean-Marie A.: *See*—
Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., 5,607,437, Cl. 606-166.000.

Park, Chan-Jong: *See*—
Yoon, Sei-Seung; Park, Chan-Jong; and Kim, Byung-Chul, 5,608,677, Cl. 365-189.090.

Park, Eun-Gwan, to Samsung Aerospace Industries, Ltd. Automatic film winding/rewinding device for prevention of film exposure to light and related control method. 5,608,479, Cl. 396-390.000.

Park, Gyoung-chan, to Samsung Electronics Co., Ltd. Audio signal reproducing apparatus and method for use during a slow reproduction operation. 5,608,582, Cl. 360-8.000.

Park, Ho T.; Jae, Keun Y.; Baek, Bok H.; and Ryu, Kyung K., to Goldstar Co., Ltd. Apparatus and method for performing reservation-recording of video cassette recorder. 5,608,534, Cl. 386-83.000.

Park, Hyun-jeong, to Samsung Electronics Co., Ltd. Signal processing device and method for a slow mode function of a VTR. 5,608,532, Cl. 386-7.000.

Park, John N.: *See*—
Steigerwald, Robert L.; Mallick, John A.; and Park, John N., 5,608,771, Cl. 378-15.000.

Park, KwangLim, to Daewoo Electronics Co., Ltd. Front loading disc player. 5,608,706, Cl. 369-77.200.

Park, Sung M., to LG Semicon Co., Ltd. DRAM having output control circuit. 5,608,688, Cl. 365-233.500.

Parker, Roger A.; Edwards, Michael L.; Vaal, Mark J.; Matt, James E., Jr.; Chen, Kim S.; Yates, Mark T.; Wright, Paul S.; and Busch, Steven J., to Hoechst Marion Roussel, Inc. Alkyl-4-silyl-phenols and esters thereof as antiatherosclerotic agents. 5,608,095, Cl. 556-413.000.

Parkos, Joseph J., Jr.: *See*—
Gruver, Gary A.; Parkos, Joseph J., Jr.; and Adinolfi, Robert G., 5,607,561, Cl. 204-224.00R.

Parks, Rickey D., to Ford Motor Company. Plurality of separated glass sheets. 5,607,753, Cl. 428-210.000.

Parmigiani, Corrado S., to C.G.M. S.p.A. Holding device for a needle penetratable into the body. 5,607,398, Cl. 604-177.000.

Parnell, Edgar W.: *See—*
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,608,077, Cl. 548-365.100.

Parodi, Stefano: *See—*
Kirk, Mark P.; Parodi, Stefano; and Vacca, Paolo, 5,607,827, Cl. 430-567.000.

Parr, Claude E.: *See—*
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Partridge, B. Waring, III, to Lucent Technologies Inc. Cellular telephone as an authenticated transaction controller. 5,608,778, Cl. 379-58.000.

Parusel, Manfred: *See—*
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Rifkin, Andrew, to Mattel, Inc. Vehicle positioning game. 5,607,164, Cl. 273-446.000.

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Rigal, Meir: *See*—
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Rilling, Kenneth F. Adaptive array with automatic loop gain control. 5,608,409, Cl. 342-380.000.

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Ring, Edmund J.: *See*—
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Richardson, William B.; Rink, Karl K.; and Rink, Linda M., 5,607,181, Cl. 280-737.000.

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Hanzawa, Hiroshi; Hara, Yoshikazu; and Miyata, Masakazu, 5,608,496, Cl. 399-81.000.

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Rivera, David L.; Merrill, Sonya; Eckenhoff, James B.; Wright, Jeremy C.; and Osborne, James L., to Alza Corporation. Osmotic membrane and delivery device. 5,607,696, Cl. 424-473.000.

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Domino, Bruce D.; and Balder, Richard E., 5,606,848, Cl. 53-534.000.

Robbes, Jean-Pierre: *See*—
Corau, Hervé; Le Bihan, Loïc; and Robbes, Jean-Pierre, 5,606,813, Cl. 40-316.000.

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Drummer, Eugen; Kronberger, Maximilian; Sattmann, Helmut; Strahberger, Herbert; and Weisz, Gerhard, 5,606,953, Cl. 123-506.000.
Linder, Ernst; and Dettling, Hubert, 5,606,856, Cl. 60-286.000.
Lucdtke, Ulrich, 5,607,293, Cl. 417-423.700.
Weihing, Gerhard; Ebinger, Georg; Hartick, Ulrike; Runtschke, Horst; and Baur, Eberhard, 5,607,220, Cl. 362-66.000.

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Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,608,077, Cl. 548-365.100.

Robertson, George G., to Xerox Corporation. Transporting a display object coupled to a viewpoint within or between navigable workspaces. 5,608,850, Cl. 395-127.000.

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Carlsen, Ralph; Kaplan, Marc P.; and Robertson, John S., 5,608,782, Cl. 379-63.000.
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Robichaud, Albert J.: *See*—
Chiang, Yuan-Ching P.; Finke, Paul E.; Maccoss, Malcolm; Meurer, Laura C.; Miller, Daniel J.; Mills, Sander G.; Robichaud, Albert J.; and Shah, Shrenik K., 5,607,936, Cl. 514-255.000.

Robichon, Patrice, to Pernod Ricard. Process for washing refillable plastic bottles. 5,607,517, Cl. 134-22.190.

Robinson, Andrew N.: *See*—
Epworth, Richard E.; Robinson, Andrew N.; and Stewart, Moira J., 5,608,571, Cl. 359-341.000.

Robinson, Christopher: *See*—
Clark, George A.; Burwell, Malcolm C.; Gola, John A.; Robinson, Christopher; and Snyder, Fred E., 5,607,094, Cl. 227-175.100.

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Rockwell International Corporation: *See*—
Edwards, David J.; Knight, Donn C.; and Wemple, Jonathan L., 5,607,034, Cl. 188-250.00A.
Lin, Hong-Zong; and Khalessi, Mohammad R., 5,608,659, Cl. 364-554.000.
Neurgaonkar, Ratnakar R.; Oliver, John R.; and Nelson, Jeffrey G., 5,607,632, Cl. 264-61.000.

Rocoh Company Ltd.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.

Rodan, Gideon A.: *See*—
Friedman, Eitan; Holloway, M. Katharine; Rodan, Gideon A.; Schmidt, Azriel; and Vogel, Robert L., 5,607,967, Cl. 514-461.000.

Rode, Donald W.: *See*—
Wallis, Frank S.; Caillat, Jean-Luc; Simpson, Francis M.; Anderson, Gary J.; Rode, Donald W.; and Beck, Norman G., 5,607,288, Cl. 417-310.000.

Rodewald, Paul G.: *See*—
Chang, Clarence D.; and Rodewald, Paul G., 5,607,888, Cl. 502-64.000.

Roe, Christopher A.: *See*—
Coutts, Bruce; and Roe, Christopher A., 5,608,828, Cl. 385-59.000.

Roe, Donald C., to Procter & Gamble Company, The. Disposable absorbent article having a lotioned topsheet containing an emollient and a polyol polyester immobilizing agent. 5,607,760, Cl. 442-375.000.

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Rogers, Richard G. Spot identifying marker. 5,606,931, Cl. 116-209.000.

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Rogier, Robert: *See*—
Seguin, Jacques; and Rogier, Robert, 5,607,471, Cl. 623-2.000.

Rogozinski, Chaim. Apparatus, method and system for the treatment of spinal conditions. 5,607,425, Cl. 606-61.000.

Rohbani, Elias. Electroplating solution. 5,607,570, Cl. 205-297.000.

Rohde & Schwarz GmbH & Co. KG: *See*—
Heuermann, Holger; and Schiek, Burkhard, 5,608,330, Cl. 324-601.000.

Rohm, Co. Ltd.: *See*—
Fujiwara, Masayuu, 5,608,339, Cl. 326-27.000.
Kuriyama, Chojiro, 5,608,601, Cl. 361-532.000.
Kuriyama, Chojiro, 5,608,602, Cl. 361-534.000.
Noguchi, Yasunori, 5,608,355, Cl. 331-1.00A.

Rolando, John J.: *See*—
Thomas, John E.; McCall, John E.; Boche, Daniel K.; Rolando, John J.; and Klos, Terry J., 5,607,651, Cl. 422-266.000.

Roll, Mark A.; Stamey, Willie L.; and Loafman, Christopher L., to Dana Corporation. Self-venting valve arrangement. 5,606,989, Cl. 137-203.000.

Romagnoli, Eleonora: *See*—
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Roman, Patrick, to Lancer Orthodontics. Orthodontic bracket and method of mounting. 5,607,301, Cl. 433-8.000.

Romein, Daniel C. Light-weight massage table. 5,606,755, Cl. 5-620.000.

Romines, William H.: *See*—
Varney, Michael D.; and Romines, William H., 5,608,082, Cl. 549-70.000.

Roos, Kenneth D.: *See*—
Sleeter, Ronald T.; and Roos, Kenneth D., 5,607,633, Cl. 264-115.000.

Roos, Otto: *See*—
Lösel, Walter; Roos, Otto; and Arndts, Dietrich, 5,607,943, Cl. 514-301.000.

Rosa, Ralph: *See*—
Le Goff, Stephen H.; and Rosa, Ralph, 5,608,200, Cl. 235-462.000.

Rose, Conrad M., to Litton Systems, Inc. Apparatus for measuring a spatial angle to an emitter using squinted antennas. 5,608,411, Cl. 342-417.000.

Rose, Janna L.: *See*—
Jacus, Robert J.; and Rose, Janna L., 5,607,796, Cl. 429-165.000.

Rose, Keith R.: *See*—
Hoolehan, Phillip J.; Bulmahn, Wayne F.; Jebb, Michael B.; Stout, John A.; and Rose, Keith R., 5,608,661, Cl. 364-709.060.

Rose, Thomas K.: *See*—
Data, Stanley E.; Koziara, Robert P.; Lent, Mark S.; O'Gorman, Patrick A.; Rose, Thomas K.; Shanks, Eugene G.; and Norrick, Daniel A., 5,606,946, Cl. 123-198.00E.

Rose, Vincent H.: *See*—
Murphy, Frank W., III; Rose, Vincent H.; Brumley, Timothy D.; and Francisco, James R., 5,608,386, Cl. 340-688.000.

Rosén, Ake: *See*—
Joensson, Leif T.; and Rosén, Ake, 5,606,847, Cl. 53-471.000.

Rosenzweig, Michael D.: *See*—
Leavy, Mark; Veeramoney, Murali; Rosenzweig, Michael D.; Boss, Scott D.; Hurwitz, Roger; Davies, Bob; and Cox, Daniel R., 5,608,651, Cl. 364-514.00R.

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Ross, Jack A.: *See*—
Wichter, Martin A.; Pohrte, Tom R.; Ross, Jack A.; and Sadler, Ray G., 5,608,643, Cl. 364-479.140.

Rossaza, John P. N.: *See*—
Al-Mahmoud, Mohsen; Ford, Stephen P.; Short, Robert E.; Farley, Donna B.; Christenson, Lane; and Rossaza, John P. N., 5,607,971, Cl. 514-552.000.

Rossi, Cino: *See*—
Stephen, Robert L.; Bonezzi, Cesare; Rossi, Cino; and Eruzzi, Silvio, 5,607,940, Cl. 514-282.000.

Rothermel, Albrecht; and Correa, Carlos, to Deutsche Thomson-Brandt GmbH. Synchronizing signal separating circuit with controlled flywheel stage. 5,608,460, Cl. 348-525.000.

Routh, Helen F., to Advanced Technology Laboratories, Inc. Ultrasonic doppler measurement of blood flow velocities by array transducers. 5,606,972, Cl. 128-661.090.

Routhier, Brian J.: *See*—
Provost, George A.; Routhier, Brian J.; and Jacobs, Martin I., 5,606,781, Cl. 24-452.000.

Rovesti, Guido; Segalla, Gabriele; La Fratta, Pietro; and Di Schiena, Michele G., to Gisquare Technologies B.V. Use of Tarchonanthus camphoratus for repelling insects and alleviating edema, congestion and irritation of the skin. 5,607,674, Cl. 424-195.100.

Rowe, John A., to Tritec Power Systems Ltd. Tri-lobed cam engine. 5,606,938, Cl. 123-54.300.

Roxas, Renato: *See*—
Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., 5,607,397, Cl. 604-167.000.

Royal Appliance Mfg. Co.: *See*—
Sovis, John F.; Stephens, Paul D.; Wright, Michael F.; and Cipolla, Mark E., 5,606,770, Cl. 15-350.000.

Rozendaal, Peter C., to Vermeer Manufacturing Company. Apparatus for loading pipe onto a machine. 5,607,280, Cl. 414-745.700.

Rozzi, Antonella: *See*—
Long, Giorgio; Spinelli, Silvano; Rozzi, Antonella; D'Alo', Simonetta; and Gallico, Licia, 5,607,930, Cl. 514-235.800.

Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant L.; and Shelburne, Charles E., to Minnesota Mining and Manufacturing Company. Hydrocarbyl containing coatings, compositions and methods of use. 5,607,663, Cl. 424-49.000.

RTC Industries, Inc.: *See*—

Swafford, John W., Jr.; and Carlson, William P., 5,608,449, Cl. 348-13.000.
Rubin, Bruce: *See*—
Zeller, Joseph; and Rubin, Bruce, 5,606,873, Cl. 63-15.000.
Rubino, Michael; and Berg, Michael. Pulling tool. 5,606,788, Cl. 29-259.000.
Rubsamen, Reid M.; and Johansson, Eric T., to Aradigm Corporation. Method for releasing controlled amount of aerosol medication. 5,608,647, Cl. 364-509.000.
Ruch, Dennis B.: *See*—
Collins, Albert L., Jr.; Boyd, Rick A.; Bradshaw, Herbert L., II; Huber, Alvin J.; Wessner, Charles T.; and Ruch, Dennis B., 5,608,186, Cl. 174-7.000.
Rude, Harold E.: *See*—
Barry, John L.; Bell, Donald R.; Chesley, Jason A.; Rude, Harold E.; Sheffield, William F.; Slama, David F.; and Stephens, Alan N., 5,607,345, Cl. 451-539.000.
Ruff, William C.: *See*—
Stann, Barry L.; Ruff, William C.; and Sztankay, Zoltan G., 5,608,514, Cl. 356-5.090.
Ruibal, Michael A. Elevated plant holder. 5,606,824, Cl. 47-70.000.
Runtschke, Horst: *See*—
Weihing, Gerhard; Ebinger, Georg; Hartick, Ulrike; Runtschke, Horst; and Baur, Eberhard, 5,607,220, Cl. 362-66.000.
Rupert, Robert E.; Anderson, Norman C.; and Weiss, Morris, to Infratemp, Inc. Thermometer for remote temperature measurements. 5,608,356, Cl. 331-18.000.
Russ, Werner H.; and Schumacher, Christian, to Hoechst Aktiengesellschaft. Fiber-reactive anthraquinone dyes. 5,607,481, Cl. 8-463.000.
Russell, Jesse E.: *See*—
Gerszberg, Irwin; Kendig, Eugene T.; and Russell, Jesse E., 5,608,780, Cl. 379-58.000.
Russell, Thomas R.: *See*—
Azarnia, Roobik; Fuentes, Susan M.; and Russell, Thomas R., 5,607,565, Cl. 204-403.000.
Rutchik, Jeffrey A.: *See*—
Henninger, David B.; Rutchik, Jeffrey A.; Crosby, Robert A., Jr.; Goodell, Michael E.; and Pasewark, Charles W., 5,607,211, Cl. 312-204.000.
Rutkowski, Christian: *See*—
Guhl, Wieland; and Rutkowski, Christian, 5,608,641, Cl. 364-474.220.
RXS Schrumpftechnik-Garnituren GmbH: *See*—
Winterhoff, Hans; and Guenther, Andreas, 5,608,189, Cl. 174-65.0SS.
Ryan, John O.; Quan, Ronald; Holzgrafe, James R.; and Wonfor, Peter J., to Macrovision Corporation. Method and apparatus for scrambling and descrambling of video signal with edge fill. 5,608,799, Cl. 380-11.000.
Rybeck, Nils R. C.; Hansson, Magnus; and Holmqvist, Peter, to Ericsson Inc. Rechargeable battery pack with identification circuit, real time clock and authentication capability. 5,608,306, Cl. 320-15.000.
Rybicki, Mathew A.: *See*—
Grube, Gary W.; Markison, Timothy W.; Pendleton, Matthew A.; and Rybicki, Mathew A., 5,608,725, Cl. 370-338.000.
Ryder International Corporation: *See*—
Kanner, Rowland W., 5,607,392, Cl. 604-86.000.
Rykowski, Ronald F.; and Wilson, Steven S., to Radiant Imaging Inc. Illumination system including an asymmetrical projection reflector. 5,607,229, Cl. 362-346.000.
Ryobi Limited: *See*—
Kurihara, Katumi, 5,606,944, Cl. 123-90.310.
Ryobi North America: *See*—
Keith, James A., Jr.; and Ballew, William S., 5,607,343, Cl. 451-344.000.
Ryu, Kye Y.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,608,589, Cl. 360-85.000.
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Park, Ho T.; Jae, Keun Y.; Baek, Bok H.; and Ryu, Kyung K., 5,608,534, Cl. 386-83.000.
Rzyski, Gene: *See*—
Newberg, Irwin L.; Wagner, Gene A.; Rzyski, Gene; and Stevens, Richard A., 5,608,331, Cl. 324-613.000.
Sabade, Milind B.: *See*—
Law, Kam W.; Greczyna, James A.; Wolff, Leslie M.; Sabade, Milind B.; and Katzenmaier, Kevin R., 5,607,747, Cl. 428-141.000.
Sachdeva, Rohit C. L.; and Besselink, Petrus A., to Memory Medical Systems, Inc. Instrument for endoscopic-type procedures. 5,607,435, Cl. 606-139.000.
Sachse, Troi N., to Remington Arms Company, Inc. Muzzle-loading firearm. 5,606,817, Cl. 42-51.000.
Sadjadi, Firooz A.; and Farmer, Michael E., to Loral Corporation. Smart weed recognition/classification system. 5,606,821, Cl. 47-1.700.
Sadler, Ray G.: *See*—
Wichter, Martin A.; Pohrte, Tom R.; Ross, Jack A.; and Sadler, Ray G., 5,608,643, Cl. 364-479.140.
Sadowski, Greg; and Dignam, David L., to Silicon Graphics, Inc. Programmable video frame detector. 5,608,461, Cl. 348-526.000.
Sadowski, Henry B.: *See*—
Gilman, Michael Z.; and Sadowski, Henry B., 5,607,833, Cl. 435-6.000.
Saegusa, Takashi: *See*—
Sasagaki, Nobuaki; and Saegusa, Takashi, 5,608,491, Cl. 396-243.000.
Sagawa, Misuzu: *See*—
Nakatsuka, Shinichi; Uchida, Kenji; Sagawa, Misuzu; and Kikuchi, Satoru, 5,608,750, Cl. 372-45.000.
Saguatti, Stefano: *See*—
Rosini, Goffredo; Baldazzi, Claudia; Romagnoli, Eleonora; Saguatti, Stefano; and Piani, Silvano, 5,608,084, Cl. 549-267.000.
Sahara, Kenji; Narui, Hironobu; Doi, Masato; and Matsuda, Osamu, to Sony Corporation. Optical device for magneto-optical disc system. 5,608,233, Cl. 257-80.000.
Sahleen, Jared G.: *See*—
van Nimwegen, Edward G.; and Sahleen, Jared G., 5,607,149, Cl. 473-479.000.
Saida, Yoshihide, to NEC Corporation. Battery terminals of miniature electronic apparatus and structure for retaining the same. 5,607,795, Cl. 429-100.000.
Saijo, Eiji: *See*—
Wakata, Shigekazu; Katsuma, Takatoshi; Matsunaga, Hideki; and Saijo, Eiji, 5,607,319, Cl. 439-341.000.
Saito, Etsuro: *See*—
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Koike, Takao; Saito, Koichi; Tabata, Shinji; and Naitoh, Koichi, 5,608,438, Cl. 347-100.000.
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Kumagai, Hiroaki; Menjo, Takeshi; Kishino, Kazuo; Takahashi, Masaaki; Saito, Rie; Ishizuka, Jiro; Kawamoto, Hideo; and Maeyama, Ryuichiro, 5,608,508, Cl. 399-339.000.
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Hiasa, Masami; Ashie, Nobuyuki; Saito, Susumu; and Ohtani, Takayuki, 5,607,595, Cl. 210-669.000.
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Iwata, Kazuo; Takenouchi, Masanori; Watanabe, Kenjiro; Ujita, Toshihiko; Osada, Torachika; Nakajima, Kazuhiro; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichiro; Sato, Yohei; and Saito, Takashi, 5,608,437, Cl. 347-86.000.
Saito, Tetsushi: *See*—
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Saito, Toshiki. Postal matter. 5,607,101, Cl. 229-71.000.
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Yazawa, Naoto; Saito, Yoshinori; and Hiyoshi, Hidetaka, 5,608,080, Cl. 549-57.000.
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Komatsu, Akihiro; Tokiwa, Nobuaki; and Saito, Yoshio, 5,607,861, Cl. 436-50.000.
Saitoh, Tadashi: *See*—
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Saka, Yuuji; and Onizuka, Takahiro, to Sumitomo Wiring Systems, Ltd. Electric current distribution system for automotive vehicles. 5,608,271, Cl. 307-10.100.
Sakai, Kenji; Hamada, Yoshihiro; Hagiwara, Katsunobu; Ujihara, Toshio; Yanagihara, Toshio; and Nakano, Hiromi, to Kabushiki Kaisha Kobe Seiko Sho. Roller head extruder unit. 5,607,703, Cl. 425-145.000.
Sakai, Kiyoshi: *See*—
Sakakibara, Teigo; Fujimura, Naoto; Sakai, Kiyoshi; Aoto, Hiroshi; and Nishida, Shunichiro, 5,607,751, Cl. 428-195.000.
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Sakamoto, Hiroshi: *See*—
Hagiuda, Nobuyoshi; and Sakamoto, Hiroshi, 5,608,476, Cl. 396-155.000.
Sakamoto, Masahiro, to Canon Kabushiki Kaisha. Image processing method and apparatus thereof. 5,608,539, Cl. 358-426.000.
Sakamoto, Masashi: *See*—
Nakamura, Kazufumi; Koike, Kazuyoshi; Sakamoto, Masashi; and Nasuno, Ichiro, 5,607,898, Cl. 504-282.000.
Sakamoto, Norio; Ohkawa, Toshiyuki; and Misawa, Takashi, to Konica Corporation. Manufacturing method for photosensitive film magazines and manufacturing method for photosensitive film magazines packed in containers. 5,606,842, Cl. 53-54.000.
Sakatani, Atsushi: *See*—
Sakurai, Toshikazu; and Sakatani, Atsushi, 5,607,169, Cl. 277-168.000.
Sako, Kazumi, to Omron Corporation. Electronmagnetic device. 5,608,366, Cl. 335-78.000.
Sakuma, Susumu; Inokoshi, Satoshi; Aneha, Akira; Arai, Masahiro; and Tokita, Masashi, to Futaba Denshi Kogyo, K.K. Radio control device having crystal high frequency module and high frequency phase lockloop for selective use, modules detachably mounted. 5,608,758, Cl. 375-238.000.
Sakura Rubber Co., Ltd.: *See*—
Nakamura, Tetsuya, 5,606,850, Cl. 56-10.20A.
Sakurai, Toshikazu; and Sakatani, Atsushi, to Sumitomo Wiring Systems, Ltd. Sealing assembly for connector having deformation compensating shape. 5,607,169, Cl. 277-168.000.

Sakuyama, Seiki; Uchida, Hiroki; and Watanabe, Isao, to Fujitsu Ltd. Process and apparatus for soldering electronic components to printed circuit board, and assembly of electronic components and printed circuit board obtained by way of soldering. 5,607,609, Cl. 219-388.000.
Saliba, George A.: *See*—
Steinberg, Mitchell R.; and Saliba, George A., 5,608,584, Cl. 360-69.000.
Salice, Luciano, to Arturo Salice S.p.A. Fastening device for a metal fitting part preferably for a hinge part, provided with a fastening borehole. 5,607,271, Cl. 411-349.000.
Salive, Harold T.; Slade, Kevin G.; and Salive, Rachel K., to Kiwisoft Programs Limited. Method of identifying a plurality of labels having data fields within a machine readable border. 5,607,187, Cl. 283-67.000.
Salive, Rachel K.: *See*—
Salive, Harold T.; Slade, Kevin G.; and Salive, Rachel K., 5,607,187, Cl. 283-67.000.
Salzburger, Wolfram; Eifler, Silke; and Scholl, Margarete, to BK Ladenburg GmbH für Chemische Erzeugnisse. Process and agent for the oxidative bleaching of wood pulp and for deinking waste paper. 5,607,544, Cl. 162-5.000.
Samad, Nidal A.: *See*—
Back, Dwight D.; Grzyll, Lawrence R.; Ramos, Charlie; and Samad, Nidal A., 5,607,653, Cl. 423-235.000.
Samarasinghe, Amaradivakara-Sam. Apparatus for playing games. 5,607,156, Cl. 273-146.000.
Samejima, Shunichi; Kitamura, Kenroh; Watanabe, Naohiro; Asano, Teruo; Kamimura, Toru; and Usami, Yoko, to Asahi Glass Company Ltd. Hydrochlorofluorocarbon azeotropic or azeotropic-like mixture. 5,607,912, Cl. 510-411.000.
Sameshima, Toshiyuki: *See*—
Ugajin, Ryuichi; and Sameshima, Toshiyuki, 5,608,231, Cl. 257-24.000.
Sampsell, Jeffrey B.: *See*—
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Samson, Wade D.: *See*—
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Nelsen, James M.; Whinery, Larry D.; Gwinn, Kenneth W.; McBride, Donald D.; Luna, Daniel A.; Holder, Joseph P.; and Bliton, Richard J., 5,607,182, Cl. 280-743.100.
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Sato, Dai: *See*—
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Sato, Mitsuya, to Canon Kabushiki Kaisha. Scanning type exposure apparatus and method device manufacturing method. 5,608,492, Cl. 355-68.000.
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Iwata, Kazuo; Takenouchi, Masanori; Watanabe, Kenjiro; Ujita, Toshihiko; Osada, Torachika; Nakajima, Kazuhiro; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichiro; Sato, Yohei; and Saito, Takashi, 5,608,437, Cl. 347-86.000.
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Satoh, Takeshi: *See*—
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Schefczik, Ernst; Bach, Volker; Reichelt, Helmut; and Grund, Clemens, to BASF Aktiengesellschaft. Azo dyestuffs containing a diazo component from the aniline series and coupling component from the triazolopyridine series. 5,608,041, Cl. 534-752.000.
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Schiewe, Hilmar, to Sonopress Produktionsgesellschaft für Ton- und Informationsträger mbH. Disk-shaped optical storage medium exhibiting an identification mark, and method of making such a storage medium. 5,608,718, Cl. 369-275.400.
Schiffmann, Robert F.: *See*—
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Schikowski, Jürgen: *See*—
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Schmid, Raimund; and Mronga, Norbert, to BASF Aktiengesellschaft. Multiply coated metallic luster pigments. 5,607,504, Cl. 106-403.000.
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Schnorr, George, III. Portable batter's box. 5,607,150, Cl. 473-499.000.
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Schoen, Paul E.: *See*—
Schoen, Steven J.; Schoen, Paul E.; and Luoma, Todd M., 5,607,347, Cl. 451-558.000.
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Scholl, Margarete: *See*—
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Schönfeld, Dieter; and Schmidt, Ralph-Michael, to MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH. Process for cooling diesel engine exhaust gases. 5,607,010, Cl. 165-51.000.
Schoroth, Anno, to Leybold Aktiengesellschaft. Temperature compensation in a regulated heat conduction vacuum gauge. 5,608,168, Cl. 73-755.000.
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Schubert, Robert L., II: *See*—
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Schüller, Hans. Pacemaker with evoked response detection by using differential sensing between two unipolar electrodes. 5,607,457, Cl. 607-9.000.
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Schumacher, Robert W.; Matossian, Jesse N.; and Goebel, Dan M., to Hughes Electronics. High impedance plasma ion implantation apparatus. 5,607,509, Cl. 118-723.0FE.
Schuman, Daniel, to Surgical Laser Technologies, Inc. Surgical tool for use with a contact laser. 5,607,420, Cl. 606-15.000.
Schurz, James L.: *See*—
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Schwartz, Andrew J., to Automated Currency Instruments, Inc. Coin counting machine. 5,607,351, Cl. 453-32.000.
Schwartz, David M., to Atari Corporation. Interactive game film. 5,607,356, Cl. 463-31.000.
Schwartz, Jeffrey, to Trustees of Princeton University, The. Process for reducing organic pollutants. 5,608,112, Cl. 564-415.000.
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Schwartz, Krista S.; Carleton, Allison A.; FitzPatrick, Catherine M.; and Pommier, Theresa M., to NCR Corporation. System for allowing all remote computers to perform annotation on an image and replicating the annotated image on the respective displays of other comuters. 5,608,872, Cl. 395-200.040.
Schwartz, Richard, to North American Enclosures Inc. Mobile of modular construction for displaying pictures. 5,606,816, Cl. 40-617.000.
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Schwartz, William C., to BGF Industries, Inc. Smoke containment curtain. 5,607,758, Cl. 442-67.000.
Schwindt, Mark A.: *See*—
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Scientific Generics Limited: *See*—
Stanley, Christopher J.; and Archer, Patricia L., 5,607,832, Cl. 435-6.000.
Scitex Corporation Ltd.: *See*—
Carlebach, Ephraim E., 5,608,822, Cl. 382-270.000.
Woodham, David J., 5,608,464, Cl. 348-578.000.
Scitex Im Acquisition Corp.: *See*—
Lake, David E., 5,608,465, Cl. 348-584.000.
Scoffone, Karen F.: *See*—
Piwonka-Corle, Timothy R.; Scoffone, Karen F.; Chen, Xing; Lacomb, Lloyd J., Jr.; Stehle, Jean-Louis; Zahorski, Dorian; and Rey, Jean-Pierre, 5,608,526, Cl. 356-369.000.
Scorl, Hans-Dieter: *See*—
Wahhoud, Adnan; Scorl, Hans-Dieter; Krumm, Valentin; and Loehr, Ulrich, 5,606,998, Cl. 139-194.000.
Scots Pine Enterprises: *See*—
Mill, Peter; and Tice, Richard, 5,607,354, Cl. 454-189.000.
Scott, Christopher L.: *See*—
Woodruff, Daniel J.; Hoekstra, Daniel W.; Scott, Christopher L.; Volckhausen, Thomas W.; Studebaker, Thomas J.; and Younglove, Bruce L., 5,607,275, Cl. 414-331.000.
Scott, Michael L. Weight ring exercise system. 5,607,379, Cl. 482-107.000.
Scripps Research Institute, The: *See*—
Nicolaou, K. C.; Riemer, Claus G.; and Kerr, Michael A., 5,608,087, Cl. 549-510.000.
SeaBeam Instruments Inc.: *See*—
Capell, William J., Sr., 5,608,689, Cl. 367-87.000.
Seagate Technology, Inc.: *See*—
Smith, Robert F., 5,608,587, Cl. 360-77.080.
Sealock, John W. Fuel shut-off valve. 5,606,945, Cl. 123-198.0DB.
Sears Manufacturing Company: *See*—
Gryp, Dennis, 5,607,204, Cl. 297-284.110.
Sedlack, Mark A., to Century Products Company. Child's car seat with improved overhead shield. 5,607,203, Cl. 297-256.150.
Sega Enterprises, Ltd.: *See*—
Nagashima, Takeshi, 5,607,157, Cl. 273-148.00B.
Segal, David L.: *See*—
Wedlake, Roger J.; Bones, Roger J.; and Segal, David L., 5,607,787, Cl. 429-62.000.
Segalla, Gabriele: *See*—
Rovesti, Guido; Segalla, Gabriele; La Fratta, Pietro; and Di Schiena, Michele G., 5,607,674, Cl. 424-195.100.
Seger, Ulrich: *See*—
Höfflinger, Bernd; Landgraf, Marc; and Seger, Ulrich, 5,608,204, Cl. 250-208.100.
Segeral, Gérard: *See*—
Atkinson, David I. H.; Walton, Ian C.; Glotin, Bernard J. P.; and Segeral, Gérard, 5,608,170, Cl. 73-861.040.
Segot, Evelyne: *See*—
Ribier, Alain; Simonnet, Jean-Thierry; Fanchon, Chantal; Arnaud-Sebillotte, Laurence; and Segot, Evelyne, 5,607,692, Cl. 424-450.000.
Seguin, Jacques; and Rogier, Robert, to Seguin, Jacques. Prosthetic ring for heart surgery. 5,607,471, Cl. 623-2.000.
Seha, Thomas R.: *See*—
Ahlburn, Byron T.; and Seha, Thomas R., 5,607,773, Cl. 428-427.000.
Seiderman, Abe. Method of eliminating or reducing cloning of electronic identification numbers of cellular telephones. 5,608,781, Cl. 379-59.000.
Seigendall, Thomas W.: *See*—
Dinkjian, Robert M.; Heller, Lisa C.; Kordus, Steven R.; Lauricella, Kenneth A.; Seigendall, Thomas W.; Skaggs, Robert A.; and Xu, Nelson S., 5,608,887, Cl. 395-375.000.
Seiko Epson Corporation: *See*—
Hirabayashi, Tomokazu, 5,608,394, Cl. 341-11.000.
Ikejiri, Masahisa, 5,608,374, Cl. 338-35.000.
Ishizawa, Shoichi; and Ideno, Kyoichi, 5,608,863, Cl. 395-501.000.
Makigaki, Tomohiro, 5,608,696, Cl. 369-44.140.
Shimizu, Junko; Tsukahara, Michinari; and Yanase, Nobuyuki, 5,607,999, Cl. 524-503.000.
Suzuki, Takashi; Matsuzawa, Masanao; and Miyazawa, Yoshinori, 5,607,242, Cl. 400-124.100.
Takagi, Michiaki; and Nagai, Mitsuru, 5,607,236, Cl. 374-117.000.
Seiko Precision Inc.: *See*—
Hirai, Toshiaki; Takami, Atsushi; Endo, Shinichi; and Kurosawa, Yoshihisa, 5,608,488, Cl. 396-125.000.
Seki, Chiaki: *See*—
Hamamura, Kimio; Seki, Chiaki; and Konishi, Masayuki, 5,608,092, Cl. 552-2.990.
Seki, Takashi: *See*—
Sugita, Yasushi; Ishikawa, Tatsuya; and Seki, Takashi, 5,608,764, Cl. 375-344.000.
Sekihata, Osamu: *See*—
Hyodo, Ryuji; Eda, Susumu; Oomuro, Katsumi; Sekihata, Osamu; Tanaka, Kenji; Hatta, Hiroyuki; and Norizuki, Reiko, 5,608,719, Cl. 370-250.000.
Sekine, Kazumi: *See*—
Shirai, Hiroyuki; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shoji, Takeo; Noda, Shinya; Kobayashi, Kazunori; and Adachi, Hiroyuki, 5,608,509, Cl. 399-351.000.
Sekioka, Ryouichi: *See*—
Himeno, Kiyoshi; Hihara, Toshio; and Sekioka, Ryouichi, 5,608,042, Cl. 534-788.000.

Selick, Harold E.: *See*—
Hale, Ron L.; Lu, Amy; Solas, Dennis; Selick, Harold E.; Oldenburg, Kevin R.; and Zaffaroni, Alejandro C., 5,607,691, Cl. 424-449.000.
Selleck, Ronald R.: *See*—
Hovis, Floyd E.; Davis, Stephen E.; Shepherd, Bart A.; Sanders, Walter R.; and Selleck, Ronald R., 5,608,744, Cl. 372-21.000.
Sementilli, Phillip J., Jr.: *See*—
Smoral, Vincent J.; Kogge, Peter M.; and Sementilli, Phillip J., Jr., 5,608,448, Cl. 348-7.000.
Semeraz, John T.: *See*—
Carter, Robert; and Semeraz, John T., 5,607,648, Cl. 422-137.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Inushima, Takashi; Vaitkus, Rimantas; and Teramoto, Satoshi, 5,608,666, Cl. 365-112.000.
Konuma, Toshimitsu; Hiroki, Masaaki; Zhang, Hongyong; Yamamoto, Mutsuo; and Takemura, Yasuhiko, 5,608,251, Cl. 257-337.000.
Yamazaki, Shunpei; Takemura, Yasuhiko; Zhang, Hongyong; Takayama, Toru; and Uochi, Hideki, 5,608,232, Cl. 257-66.000.
Semura, Tetsuhiro; and Morimoto, Eiji, to Kao Corporation. Toner for electrophotography and developer composition containing the same. 5,607,805, Cl. 430-106.600.
Senanayake, Daya R. Solar chimney arrangement with a liquid filled non-evaporative area used to pre-heat a liquid filled evaporative area. 5,608,268, Cl. 290-54.000.
Seniff, Dana W.: *See*—
Gerber, H. Joseph; Straayer, Ronald J.; Davidson, Bruce L.; Snietka, Scott P.; Walsh, Peter M.; Seniff, Dana W.; and Kohler, James P., 5,608,453, Cl. 348-87.000.
Senius, James D.: *See*—
Grossman, Matthew J.; Lee, Mary K.; Senius, James D.; Burghoff, Robert L.; and Elmendorf, David L., 5,607,857, Cl. 435-282.000.
Sensor Adaptive Machines, Inc.: *See*—
Pryor, Timothy R., 5,608,847, Cl. 395-83.000.
Sensor Developments, Inc.: *See*—
Brendel, Albert E., 5,608,173, Cl. 73-862.628.
Sensormatic Electronics Corporation: *See*—
Narlow, Douglas; and Patterson, Hubert A., 5,608,379, Cl. 340-572.000.
SenTech Corporation: *See*—
Tikijian, George H., 5,608,384, Cl. 340-632.000.
Seppi, Kevin D.: *See*—
Dockter, Michael J.; Farber, Joel F.; Gordon, Jeffrey D.; Seppi, Kevin D.; and Kleewein, James C., 5,608,900, Cl. 395-613.000.
Sequent Computer Systems, Inc.: *See*—
Slingwine, John D.; and McKenney, Paul E., 5,608,893, Cl. 395-468.000.
Sergent, Rodney H.: *See*—
Dadgar, Ahmad; Howarth, Jonathan N.; Sergent, Rodney H.; Favstritsky, Nicolai A.; McKeown, Julie A.; Borden, Dennis W.; Sanders, Brent M.; and Likens, Jane, 5,607,619, Cl. 252-187.200.
Sessler, Jonathan L.: *See*—
Magda, Darren; Sessler, Jonathan L.; Iverson, Brent L.; Sansom, Petra I.; and Wright, Meredith, 5,607,924, Cl. 514-44.000.
Sextant Avionique: *See*—
Breda, Jean M., 5,608,522, Cl. 356-345.000.
Faivre, François; and Denoize, Xavier, 5,608,392, Cl. 340-967.000.
Sexton, John S.: *See*—
Wilson, Stuart M.; Sexton, John S.; and Wright, Derek N., 5,607,346, Cl. 451-540.000.
Seyama, Kiyotaka: *See*—
Moriizumi, Kiyokazu; and Seyama, Kiyotaka, 5,608,192, Cl. 174-255.000.
Seyyedy, Mirmajid: *See*—
Zagar, Paul S.; and Seyyedy, Mirmajid, 5,608,668, Cl. 365-149.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Lysinger, Mark A., 5,608,678, Cl. 365-200.000.
Marlow, C. Allen, 5,608,344, Cl. 327-206.000.
SGS-Thomson Microelectronics S.A.: *See*—
Kalnitsky, Alexander, 5,608,250, Cl. 257-314.000.
Pezzani, Robert, 5,608,235, Cl. 257-119.000.
Tailliet, François, 5,608,335, Cl. 324-763.000.
Shafer, Scott F.; Carroll, Thomas S.; Meister, Steven F.; Orr, David R.; and Weber, J. Roger, to Caterpillar Inc. Engine valve seating velocity hydraulic snubber. 5,606,940, Cl. 123-90.120.
Shah, Rajendra K.: *See*—
Van Ostrand, William F.; and Shah, Rajendra K., 5,607,014, Cl. 165-240.000.
Shah, Shrenik K.: *See*—
Chiang, Yuan-Ching P.; Finke, Paul E.; Maccoss, Malcolm; Meurer, Laura C.; Miller, Daniel J.; Mills, Sander G.; Robichaud, Albert J.; and Shah, Shrenik K., 5,607,936, Cl. 514-255.000.
Shalaby, Shalaby W.: *See*—
Totakura, Nagabhushanam; and Shalaby, Shalaby W., 5,607,686, Cl. 424-426.000.
Sham, Hing L.: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; and Zhao, Chen, 5,608,072, Cl. 548-204.000.
Shamine, Dennis R.; and Reisinger, Paul G., to AlliedSignal Truck Brake Systems Co. Desiccant air dryer with combined attachment and air flow management component. 5,607,500, Cl. 96-144.000.
Shammout, Mohammed. Articulated gripping box wrench for tight spaces. 5,606,896, Cl. 81-77.000.
Shanks, Eugene G.: *See*—
Data, Stanley E.; Koziara, Robert P.; Lent, Mark S.; O'Gorman, Patrick A.; Rose, Thomas K.; Shanks, Eugene G.; and Norrick, Daniel A., 5,606,946, Cl. 123-198.00E.
Shappell, Robert A., to Pike Machine Products, Inc. Reversible hinge assembly. 5,606,773, Cl. 16-298.000.
Shappirio, Joel R.: *See*—
Dutta, Mitra; and Shappirio, Joel R., 5,608,566, Cl. 359-248.000.
Sharkey, Hugh R.: *See*—
Edwards, Stuart D.; Lax, Ronald G.; Sharkey, Hugh R.; and Lundquist, Ingemar H., 5,607,389, Cl. 604-22.000.
Sharma, Arun: *See*—
Sri-Jayantha, Muthuthamby; Sharma, Arun; Dang, Hien; and Yamamoto, Satoshi, 5,608,586, Cl. 360-77.040.
Sharp Kabushiki Kaisha: *See*—
Inada, Kiyoshi; Shiota, Motoji; Yoshida, Hirokazu; and Tagusa, Yasunobu, 5,608,559, Cl. 349-149.000.
Katsumi, Irie, 5,608,558, Cl. 349-192.000.
Nakato, Tatsuo, 5,608,252, Cl. 257-347.000.
Okada, Hisao, 5,608,421, Cl. 345-100.000.
Onishi, Noriaki; Yamada, Nobuaki; Kondo, Masahiko; Nagae, Nobukazu; Hirai, Toshiyuki; and Kohzaki, Shuichi, 5,608,555, Cl. 349-156.000.
Sata, Ichiko; and Fukumochi, Yoji, 5,608,623, Cl. 395-754.000.
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,608,543, Cl. 358-450.000.
Tanaka, Tomoki; Ataka, Hiroyuki; and Iwasaki, Yoichi, 5,608,493, Cl. 399-83.000.
Sharp Microelectronics Technology, Inc.: *See*—
Nakato, Tatsuo, 5,608,252, Cl. 257-347.000.
Sharrow, James S.: *See*—
Amplatz, Curtis A.; and Sharrow, James S., 5,607,419, Cl. 606-7.000.
Shaw, Karl G.; Alman, David E.; Cooper, René M.; German, Randall M.; and McCoy, Kazuo P. Process for producing finely divided intermetallic and ceramic powders and products thereof. 5,608,911, Cl. 419-45.000.
Shaw, Kevin: *See*—
Hutchings, Adrian C.; Grimes, John; and Shaw, Kevin, 5,607,353, Cl. 454-187.000.
Shawver, Susan E.: *See*—
Kobylivker, Peter M.; Ofosu, Simon K.; Shawver, Susan E.; and Lance, Roger L., 5,607,798, Cl. 442-381.000.
Shea, Allan K.: *See*—
Kunkle, Timothy E.; Shea, Allan K.; and Kuntz, Richard F., 5,607,626, Cl. 261-27.000.
Shealy, Glenn S.: *See*—
Minor, Barbara H.; Chisolm, Tuneen E. C.; and Shealy, Glenn S., 5,607,616, Cl. 252-67.000.
Shearer, Gene M.: *See*—
Henkart, Pierre; Sarin, Apurva; Clerici, Mario; and Shearer, Gene M., 5,607,831, Cl. 435-5.000.
Shefchunas, Thomas E. Instructional apparatus for simulating the operation of an aircraft. 5,607,307, Cl. 434-30.000.
Sheffield, Keith W., to Crews, Inc. Prescription lens attachable to safety glasses. 5,608,470, Cl. 351-47.000.
Sheffield, William F.: *See*—
Barry, John L.; Bell, Donald R.; Chesley, Jason A.; Rude, Harold E.; Sheffield, William F.; Slama, David F.; and Stephens, Alan N., 5,607,345, Cl. 451-539.000.
Shelberg, Robert A.; and Petrone, Joseph, to Position-Aire, Inc. Air bladder positioner for cadavers. 5,606,785, Cl. 27-19.000.
Shelburne, Charles E.: *See*—
Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant L.; and Shelburne, Charles E., 5,607,663, Cl. 424-49.000.
Shell Agrar GmbH & Co. KG: *See*—
Becher, Heinz-Manfred; Drandarevski, Christo; Mengel, Rudolf; and Ost, Walter, 5,607,977, Cl. 514-594.000.
Shell Oil Company: *See*—
Bronco, Simona; Consiglio, Giambattista; Di Benedetto, Silvia; Drent, Eit; Heeres, Hero J.; Van Broekhoven, Johannes A. M.; and Reynhout, Marinus J., 5,608,001, Cl. 524-709.000.
Fried, Herbert E.; Singleton, David M.; and Pabon, Raul A., Jr., 5,608,106, Cl. 562-538.000.
Fried, Herbert E.; and Singleton, David M., 5,608,107, Cl. 562-538.000.
Koelman, Johannes M. V. A., 5,608,323, Cl. 324-368.000.
Shelton, Terri; and Barger, Steven. Cool-life vest with detachable hood. 5,606,746, Cl. 2-102.000.
Shen, Chi-Cheong: *See*—
Levine, Jules D.; Shen, Chi-Cheong; and Gnade, Bruce E., 5,608,286, Cl. 313-495.000.
Vickers, Kenneth G.; Shen, Chi-Cheong; Gnade, Bruce E.; and Levine, Jules D., 5,608,285, Cl. 313-466.000.
Shenton, John M., III: *See*—
Shenton, John M., Jr.; and Shenton, John M., III, 5,606,752, Cl. 4-609.000.
Shenton, John M., Jr.; and Shenton, John M., III. Splash guard apparatus for shower curtains. 5,606,752, Cl. 4-609.000.
Shepherd, Bart A.: *See*—
Hovis, Floyd E.; Davis, Stephen E.; Shepherd, Bart A.; Sanders, Walter R.; and Selleck, Ronald R., 5,608,744, Cl. 372-21.000.
Shepherd, Jeffrey A.: *See*—

Lenart, Robert A.; Shepherd, Jeffrey A.; and Webber, James L., 5,607,179, Cl. 280-728.200.
Shepherd, John L.: *See*—
Carr, Daniel J.; Edberg, Eric L.; Majeti, Venkata C.; and Shepherd, John L., 5,608,446, Cl. 348-6.000.
Sheridon, Nicholas K.: *See*—
Biegelsen, David K.; Sheridon, Nicholas K.; and Johnson, Noble M., 5,607,876, Cl. 437-129.000.
Sherman, Victor, to Deltron Precision, Inc. Reduced friction linear slide with rolling elements. 5,607,238, Cl. 384-49.000.
Sherry, Alan E.; and Curry, John D. Detergent gels containing ethoxylated alkyl sulfates and secondary sulfonates. 5,607,910, Cl. 510-235.000.
Sheth, Beerud D.: *See*—
Dujari, Rajeev; and Sheth, Beerud D., 5,608,853, Cl. 395-139.000.
Shiau, Jeng-Nan: *See*—
Metcalfe, David J.; Shiau, Jeng-Nan; and Williams, Leon C., 5,608,821, Cl. 382-252.000.
Shiba, Katsuhiro; Goto, Minoru; Yamada, Takao; Kato, Norihisa; Takahashi, Jun; Okuda, Kenji; and Muratani, Kenji, to Pioneer Electronic Corporation. Structure for supporting disc stockers in a disc changer with a manually operable release lever. 5,608,714, Cl. 369-178.000.
Shibahara, Seiji: *See*—
Tsushima, Masaki; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,607,927, Cl. 514-206.000.
Shibata, Kohichi: *See*—
Nakamura, Mitsuhiro; and Shibata, Kohichi, 5,608,546, Cl. 358-468.000.
Shibata, Tadashi; and Ohmi, Tadahiro, to Tadashi Shibata. Four-terminal semiconductor device. 5,608,340, Cl. 326-36.000.
Shibata, Toshisuke: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; Nagahora, Junichi; Shibata, Toshisuke; and Kita, Kazuhiko, 5,607,523, Cl. 148-415.000.
Shibusawa, Tetsuo: *See*—
Harada, Kuniyuki; Sawada, Kazutaka; Hosoya, Yoshiteru; and Shibusawa, Tetsuo, 5,607,752, Cl. 428-203.000.
Shibuya, Sachiko; Yoshida, Masayuki; Chida, Nobuyoshi; and Matsumoto, Osamu, to Kabushiki Kaisha Toshiba. Semiconductor device having a memory cell portion and a logic portion. 5,608,241, Cl. 257-207.000.
Shifflett, Dennis, to TRW Inc. Rolling detent mechanism. 5,606,893, Cl. 74-527.000.
Shiffman, Jack. Golf putting game apparatus. 5,607,360, Cl. 473-180.000.
Shiga, Michio: *See*—
Watanabe, Hiroshi; Shiga, Michio; and Ohta, Satoshi, 5,607,907, Cl. 508-371.000.
Shigeno, Kouichi: *See*—
Akutsu, Mitsuo; Tominaga, Nobuhide; Oya, Keiji; Tomita, Athuo; and Shigeno, Kouichi, 5,607,894, Cl. 503-209.000.
Shih, Jenn S., to ISP Investments Inc. Process for making polymers of vinyl lactam and a polymerizable carboxylic acid, optionally with, a hydrophobic monomer, as a stable composition in an alcohol-water solvent system, having a residual vinyl lactam content of less than 500 PPM. 5,608,024, Cl. 526-264.000.
Shih, Kelvin: *See*—
Dinsmore, Robert C.; and Shih, Kelvin, 5,608,320, Cl. 324-253.000.
Shikuma, Haruo: *See*—
Machida, Shuji; Shikuma, Haruo; Tazaki, Toshinori; Tatsumi, Tomio; and Kurokawa, Shinichi, 5,608,009, Cl. 525-247.000.
Shima Seiki Manufacturing Ltd.: *See*—
Nishitani, Hirokazu; and Komura, Yoshiyuki, 5,606,875, Cl. 66-77.000.
Shimada, Hideki: *See*—
Maezawa, Yukishige; Hayata, Terunobu; Shimada, Hideki; Ito, Isao; Suzuki, Kazuo; Tadauchi, Masahiro; Tezuka, Fuminobu; and Kano, Jiro, 5,608,136, Cl. 588-228.000.
Shimakura, Masami, to Canon Kabushiki Kaisha. Method for updating a control program for an information processing apparatus, and an information processing apparatus for updating a control program of an associated rewritable memory or a memory disk. 5,608,910, Cl. 395-670.000.
Shimamune, Takayuki; and Sawamoto, Isao, to Permelec Electrode Ltd. Electrolytic ozone generator. 5,607,562, Cl. 204-265.000.
Shimizu, Hirowo: *See*—
Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.
Shimizu, Junko; Tsukahara, Michinari; and Yanase, Nobuyuki, to Seiko Epson Corporation. Water-based recording ink. 5,607,999, Cl. 524-503.000.
Shimizu, Kazuo; Kobayashi, Shigeru; Masuyama, Hideyuki; and Aramaki, Shinji, to Olympus Optical Co., Ltd. Image processing apparatus in which filters having different filtering characteristics can be switched among themselves. 5,608,824, Cl. 382-276.000.
Shimizu, Mitsuru; Aosaki, Ko; and Cho, Michio, to Fuji Photo Film Co., Ltd. Instant camera. 5,608,477, Cl. 396-6.000.
Shimizu, Toshikazu: *See*—
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,608,068, Cl. 546-118.000.
Shimizu, Yasuhiko. Material for medical use and process for preparing same. 5,607,590, Cl. 210-490.000.
Shimoda, Kazuhiko: *See*—
Hasegawa, Toshirou; Shimoda, Kazuhiko; Makino, Kunio; and Tomioka, Mitsuo, 5,607,797, Cl. 429-208.000.
Shimoda, Yasuyuki: *See*—
Hashimoto, Yoshiki; Shimoda, Yasuyuki; Obi, Tatsuya; Matsuo, Yasuhiro; and Ohya, Tomoki, 5,608,299, Cl. 318-568.110.
Shimoyama, Kenji; Fujimori, Toshinari; Nagao, Satoru; and Gotoh, Hideki, to Mitsubishi Chemical Corporation. Laser diode and process for producing the same. 5,608,751, Cl. 372-46.000.
Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Abnormal pattern detecting apparatus, pattern finding apparatus, and linear pattern width calculating apparatus. 5,608,812, Cl. 382-128.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Kimura, Noboru; Iwai, Ryouji; and Hirata, Kazuhito, 5,607,775, Cl. 428-461.000.
Kimura, Tsuneo; and Inoue, Yoshio, 5,607,997, Cl. 524-493.000.
Kubota, Yoshihiro; and Kawai, Makoto, 5,607,541, Cl. 156-538.000.
Shin-Etsu Vinyl Acetate Co., Ltd.: *See*—
Honma, Yoshihiro; Tanaka, Shozo; Oshima, Mitsuyoshi; Tanioka, Soji; and Kawamoto, Fumiaki, 5,608,057, Cl. 540-451.000.
Shin Jiuh Corp.: *See*—
Su, Su, 5,608,603, Cl. 361-680.000.
Shin, Ryouiti: *See*—
Ishihara, Kazuoki; and Shin, Ryouiti, 5,607,970, Cl. 514-546.000.
Shinmoto, Masaki: *See*—
Hayashihara, Shoiti; and Shinmoto, Masaki, 5,608,429, Cl. 346-135.100.
Shinozaki, Fumiaki: *See*—
Takahashi, Yonosuke; and Shinozaki, Fumiaki, 5,608,441, Cl. 347-171.000.
Shinozaki, Shimpei: *See*—
Okuda, Isao; Shinozaki, Shimpei; Kanazawa, Hiroshi; and Takishima, Suguru, 5,608,709, Cl. 369-112.000.
Shinpo, Kouzaburo: *See*—
Maekawa, Kazuo; Nakahara, Yutaka; and Shinpo, Kouzaburo, 5,607,988, Cl. 524-100.000.
Shioda, Kazuya, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Rocking switch. 5,607,049, Cl. 200-557.000.
Shiota, Motoji: *See*—
Inada, Kiyoshi; Shiota, Motoji; Yoshida, Hirokazu; and Tagusa, Yasunobu, 5,608,559, Cl. 349-149.000.
Shiozawa, Toichiro: *See*—
Ozaki, Akiyosi; Shiozawa, Toichiro; and Suzuki, Kazuyoshi, 5,607,228, Cl. 362-263.000.
Shirahama, Takashi: *See*—
Smart, David C.; Sugano, Kauyoshi; Itoh, Kiyohide; and Shirahama, Takashi, 5,608,480, Cl. 396-6.000.
Shirai, Hiroyuki; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shoji, Takeo; Noda, Shinya; Kobayashi, Kazunori; and Adachi, Hiroyuki, to Canon Kabushiki Kaisha. Process cartridge with blade member having a flat-surface side and an angled-surface side. 5,608,509, Cl. 399-351.000.
Shirai, Shoji: *See*—
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Markusch, Peter H.; Hausser, Jack W.; and Starcher, Rick V., 5,607,998, Cl. 524-494.000.

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Trzmiel, Alfred; Stephan, Wolfgang; Alber, Thomas; Jaksch, Andreas; and Fiedler, Olaf, 5,606,941, Cl. 123-90.150.

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Stephens, Dennis L.: *See*—
Konopka, John G.; and Stephens, Dennis L., 5,608,292, Cl. 315-209.00R.

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Sovis, John F.; Stephens, Paul D.; Wright, Michael F.; and Cipolla, Mark E., 5,606,770, Cl. 15-350.000.

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Lee, Robert W.; Illig, Carl R.; and Caulfield, Thomas J., 5,607,660, Cl. 424-9.400.

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Twardowski, Joseph W.; Graham, Raymond J.; and Stevens, Scott A., 5,608,639, Cl. 364-469.040.

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Stewart, Moira J.: *See*—
Epworth, Richard E.; Robinson, Andrew N.; and Stewart, Moira J., 5,608,571, Cl. 359-341.000.

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De Clercq, Erik D. A.; Herdewijn, Piet A. M.; and Van Aerschot, Arthur A. E., 5,607,922, Cl. 514-43.000.

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Stozek, Jolanta: *See*—
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Strum, Alton R. Sportsman back pack. 5,607,089, Cl. 224-155.000.

Strumor, Mathew A. Ergonomic kinetic acupressure massaging system. 5,607,749, Cl. 428-156.000.

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Glamkowski, Edward J.; Chiang, Yulin; Strupczewski, Joseph T.; Bordeau, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,607,945, Cl. 514-307.000.

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Su, Su, to Shin Jiuh Corp. Computer keyboard with circuit board positioning device including positioning plates and L-shaped plug units. 5,608,603, Cl. 361-680.000.

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Sumitomo Wiring Systems, Ltd.: *See*—
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Sundberg, Lome, to Esteam Manufacturing Ltd. Emissions collection and venting system for van-mounted cleaning apparatus. 5,606,768, Cl. 15-313.000.
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Sundt, Cornelius V. Method and apparatus for generating profiles of cooperating screw rotors. 5,608,648, Cl. 364-512.000.
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Svec, Daniel C., to Schafer Systems Inc. Display and dispensing device with lock securing structure. 5,606,883, Cl. 70-370.000.
Svecia USA, Inc.: *See—*
Szarka, Sandor, 5,607,243, Cl. 101-126.000.
Svensson, Patrik, to Abu AB. Fishing reel of the multiplier type. 5,607,117, Cl. 242-261.000.
Swafford, John W., Jr.; and Carlson, William P., to RTC Industries, Inc. Wireless interactive consumer video system. 5,608,449, Cl. 348-13.000.
Swanson, Eric J.: *See—*
Medlock, David L.; and Swanson, Eric J., 5,608,676, Cl. 365-189.090.
Sweet, Randall P.: *See—*
Ulman, Katherine L.; Sweet, Randall P.; and Durfee, Loren D., 5,607,721, Cl. 427-208.400.
Swiatek, Frank; Leavitt, Richard, deceased (by Robert Leavitt, legal representative); Chanski, Donald; Repetti, Ronald V.; and Willoughby, Drew, to Cuno Incorporated. Filter cells providing lifting means and related methods. 5,607,584, Cl. 210-238.000.
Swift, Daniel P.; LaCroix, Thomas R.; and Bullock, William E. Centrifugal shopping cart brake. 5,607,030, Cl. 188-1.120.
Syfert, Scott W.: *See—*
Kefauver, Philip J.; Tolléns, Fernando R.; and Syfert, Scott W., 5,607,909, Cl. 510-152.000.
Syfert, Timothy J.: *See—*
Fox, Robert A.; Miedema, Wayne B.; Weener, Robert C.; Greenman, Stephen B.; and Syfert, Timothy J., 5,606,919, Cl. 108-50.000.
Symbios Logic Inc.: *See—*
Bartlett, Donald M., 5,608,273, Cl. 307-64.000.
Gasparik, Frank, 5,608,390, Cl. 340-870.010.
Symbol Téchnologies, Inc.: *See—*
Bridgelall, Raj; and Katz, Joseph, 5,608,202, Cl. 235-462.000.
Le Goff, Stephen H.; and Rosa, Ralph, 5,608,200, Cl. 235-462.000.
Synkinetics, Inc.: *See—*
Maslow, James E.; and Folino, Frank A., 5,607,370, Cl. 475-196.000.
Systec, Inc.: *See—*
Gerner, Yuri; and Sims, Carl W., 5,607,581, Cl. 210-198.200.
Systems Analysis and Integration, Inc.: *See—*
Pomatto, Lawrence A., 5,608,646, Cl. 364-492.000.
Szarka, Sandor, to Svecia USA, Inc. Rear section located and stabilized pallet support plate and method for accurate positioning of said plate. 5,607,243, Cl. 101-126.000.
Szentes, John F.: *See—*
Burdick, Jon S.; Herold, Robert A.; Corcoran, Paul T.; Szentes, John F.; and Gudat, Adam J., 5,607,205, Cl. 299-1.500.
Szirth, Bernard C.; Murphree, Alan L.; Lusty, Steven E.; and Burris, James A., to Research Development Foundation. Eye imaging system. 5,608,472, Cl. 351-206.000.
Sztankay, Zoltan G.: *See—*
Stann, Barry L.; Ruff, William C.; and Sztankay, Zoltan G., 5,608,514, Cl. 356-5.090.
Szudarek, Robert G.; Yeow, Yew T.; Nielsen, Arnold D.; and Cook, Roger, to United Technologies Automotive, Inc./Ford Motor Company. Vehicle electronic module with integral mounting and grounding means. 5,608,611, Cl. 361-753.000.
Szywalla, Henry; and Melville, James, to Adverite PLC. Film winding mechanism and display apparatus. 5,606,814, Cl. 40-471.000.
T.A.M.I. Industries: *See—*
Grangeon, André; and Lescoche, Philippe, 5,607,586, Cl. 210-321.780.
Ta, Paul; and Cheng, Michael, to VLSI Technology, Inc. High speed phase aligner with jitter removal. 5,608,357, Cl. 331-57.000.
Tabat, Martin D.: *See—*
Loper, Gary L.; and Tabat, Martin D., 5,607,601, Cl. 216-63.000.
Tabata, Shinji: *See—*
Koike, Takao; Saito, Koichi; Tabata, Shinji; and Naitoh, Koichi, 5,608,438, Cl. 347-100.000.
Tabersky, Ralf: *See—*
König, Udo; and Tabersky, Ralf, 5,607,264, Cl. 407-118.000.
Tablow, Kenneth A.: *See—*
Hansen, Robin; and Tablow, Kenneth A., 5,606,871, Cl. 62-457.500.
Tachi, Hitoshi: *See—*
Kurosu, Yasuo; Kanema, Seiichi; Tachi, Hitoshi; Uchiyama, Hajime; Okumura, Masahiro; Fujinawa, Masaaki; Kubushiro, Naoaki; and Shimizu, Hirowo, 5,608,858, Cl. 395-763.000.
Tachi, Katsuichi; Kaminaga, Kozo; Taylor, Jeffrey E.; and Flemming, Howard J., to Sony Corporation; and Sony Cinema Products Corporation. Audio data readout device for motion picture film and clock generating device in motion picture film changeover system. 5,608,473, Cl. 352-27.000.
Taciuk, William: *See—*
Koszarycz, Roman; Taciuk, William; and Begley, Adrian, 5,607,577, Cl. 208-391.000.
Tadashi Shibata: *See—*
Shibata, Tadashi; and Ohmi, Tadahiro, 5,608,340, Cl. 326-36.000.
Tadauchi, Masahiro: *See—*
Maezawa, Yukishige; Hayata, Terunobu; Shimada, Hideki; Ito, Isao; Suzuki, Kazuo; Tadauchi, Masahiro; Tezuka, Fuminobu; and Kano, Jiro, 5,608,136, Cl. 588-228.000.
Taga, Yoshiaki: *See—*
Kawabata, Yasutomo; Yamada, Eiji; Miura, Tetsuya; and Taga, Yoshiaki, 5,608,300, Cl. 318-721.000.
Tagliaferri, Frank: *See—*
Baker, David C.; Deshtande, Prashant P.; Yan, Shijia; Tagliaferri, Frank; and Victory, Samuel F., 5,608,085, Cl. 549-277.000.
Taguchi, Daigo, to NEC Corporation. Scenario editing apparatus. 5,608,859, Cl. 395-792.000.
Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, to TDK Corporation. Hexagonal ba-ferrite sintered magnet, its making method, and polar anisotropy ring magnet. 5,607,615, Cl. 252-62.630.
Taguchi, Masao: *See—*
Haruki, Tamae; Nakagawa, Kenji; Taguchi, Masao; Tanaka, Hiroyuki; Asai, Satoru; and Hanyu, Isamu, 5,607,821, Cl. 430-396.000.
Tagusa, Yasunobu: *See—*
Inada, Kiyoshi; Shiota, Motoji; Yoshida, Hirokazu; and Tagusa, Yasunobu, 5,608,559, Cl. 349-149.000.
Tai, Chen-Yu: *See—*
Tai, Ping-Kaung; and Tai, Chen-Yu, 5,608,837, Cl. 385-146.000.
Tai, King L.: *See—*
Degani, Yinon; Dudderar, Thomas D.; Han, Byung J.; Lyons, Alan M.; and Tai, King L., 5,608,262, Cl. 257-723.000.
Tai, Ping-Kaung; and Tai, Chen-Yu, to Clio Technologies, Inc. Transmissive type display and method capable of utilizing ambient light. 5,608,837, Cl. 385-146.000.
Taiho Kogyo Co., Ltd.: *See—*
Kumada, Yoshio; Hashizume, Katsuyuki; and Kamiya, Soji, 5,607,239, Cl. 384-192.000.
Tailliet, François, to SGS-Thomson Microelectronics, S.A. Method for the testing of integrated circuit chips and corresponding integrated circuit device. 5,608,335, Cl. 324-763.000.
Tain, Alexander C.; Kuhnke, Georg; and Chou, Kris Shih-Yen, to Advanced Micro Devices. Device and method for automation of a build sheet to manufacture a packaged integrated circuit. 5,608,638, Cl. 364-468.280.

Taiwan Semiconductor Manufacturing Company Ltd.: *See—*
Huang, Jenn M., 5,607,881, Cl. 437-195.000.
Wang, Chen-Jong; and Liang, Mong-Song, 5,607,874, Cl. 437-52.000.
Wuu, Shou-Gwo; Wang, Chen-Jong; Liang, Mong-Song; and Su, Chung-Hui, 5,607,879, Cl. 437-193.000.
Taiyo Toyo Sanso Co., Ltd.: *See—*
Ando, Shinichi; and Ichida, Taizo, 5,608,156, Cl. 73-31.060.
Tajima, Katsuaki: *See—*
Nakatani, Munehiro; Ikenoue, Yoshikazu; Ishikawa, Atsushi; Nakajima, Akio; Kumashiro, Hideo; Tajima, Katsuaki; Itoh, Tetsuya; Nakatani, Keiji; and Hirota, Sou, 5,608,547, Cl. 358-505.000.
Takagaki, Tadao; Noguchi, Yasuo; and Katayama, Mituharu, to Sumitomo Bakelite Company, Limited. Process for producing a self-supporting package having an outlet stopper and an apparatus for producing said package. 5,606,844, Cl. 53-410.000.
Takagi, Junichi; and Asano, Seiji, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film package. 5,608,486, Cl. 396-6.000.
Takagi, Kazuhiro; Ohshima, Tetsuji; Hasegawa, Nobuyoshi; Katoh, Chiaki; Kanaoka, Atsushi; and Kanno, Hideo, to Nihon Nohyaku Co., Ltd. Insecticidal hydrazine derivatives. 5,608,109, Cl. 564-36.000.
Takagi, Michiaki; and Nagai, Mitsuru, to Seiko Epson Corporation. Quartz oscillator temperature sensor. 5,607,236, Cl. 374-117.000.
Takahara, Shiho: *See—*
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,607,955, Cl. 514-359.000.
Takahashi, Hideki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor diode with reduced recovery current. 5,608,244, Cl. 257-267.000.
Takahashi, Hironari, to Mitsubishi Denki Kabushiki Kaisha. Method of cleaning CVD apparatus. 5,607,515, Cl. 134-18.000.
Takahashi, Jun: *See—*
Shiba, Katsuhiro; Goto, Minoru; Yamada, Takao; Kato, Norihisa; Takahashi, Jun; Okuda, Kenji; and Muratani, Kenji, 5,608,714, Cl. 369-178.000.
Takahashi, Koji, to Canon Kabushiki Kaisha. System printer. 5,608,536, Cl. 386-46.000.
Takahashi, Masaaki: *See—*
Kumagai, Hiroaki; Menjo, Takeshi; Kishino, Kazuo; Takahashi, Masaaki; Saito, Rie; Ishizuka, Jiro; Kawamoto, Hideo; and Maeyama, Ryuichiro, 5,608,508, Cl. 399-339.000.
Takahashi, Masumi: *See—*
Kawakami, Kumiko; Akagawa, Yasuko; and Takahashi, Masumi, 5,608,894, Cl. 395-500.000.
Takahashi, Nobu; and Fukushima, Shinya, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling valve operating characteristic and air-fuel ratio in internal combustion engine. 5,606,960, Cl. 123-684.000.
Takahashi, Tomoyuki: *See—*
Kataoka, Hideaki; and Takahashi, Tomoyuki, 5,608,485, Cl. 396-514.000.
Takahashi, Toyofumi; Miyoshi, Michitaka; Otake, Masahiro; and Nishiumi, Satoshi, to Nintendo Co., Ltd.; and Ricoh Co., Ltd. Moving picture display apparatus and external memory used therefor. 5,608,424, Cl. 345-141.000.
Takahashi, Yonosuke; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Thermal-transfer recording process. 5,608,441, Cl. 347-171.000.
Takai, Yasuhiro, to NEC Corporation. Synchronous semiconductor memory device with low power consumption. 5,608,686, Cl. 365-233.000.
Takaki, Mikihiro: *See—*
Tsubokura, Akira; Yoneda, Hisashi; Takaki, Mikihiro; and Kiyota, Takashi, 5,607,839, Cl. 435-67.000.
Takama, Toshio: *See—*
Xiaoming, Dou; and Takama, Toshio, 5,607,643, Cl. 422-82.050.
Takamatsu, Hiroyuki: *See—*
Katsuta, Kiyotaka; Takamatsu, Hiroyuki; Ueda, Yoshiko; Nakanishi, Hajime; and Yoshida, Keizo, 5,607,938, Cl. 514-267.000.
Takami, Atsushi: *See—*
Hirai, Toshiaki; Takami, Atsushi; Endo, Shinichi; and Kurosawa, Yoshihisa, 5,608,488, Cl. 396-125.000.
Takanashi, Hitoshi: *See—*
Ito, Katsuya; and Takanashi, Hitoshi, 5,608,376, Cl. 340-454.000.
Takano, Fumio: *See—*
Yamakawa, Masahiro; Akimoto, Kenji; Nakamura, Katsuya; Takano, Fumio; and Takasaki, Takahiro, 5,607,772, Cl. 428-425.900.
Takano, Shunsuke, to Minnesota Mining and Manufacturing Company. Image scanning/recording apparatus and method. 5,608,444, Cl. 347-259.000.
Takasago International Corporation: *See—*
Amano, Akira; and Tokoro, Kazuhiko, 5,608,119, Cl. 568-676.000.
Takasaki, Takahiro: *See—*
Yamakawa, Masahiro; Akimoto, Kenji; Nakamura, Katsuya; Takano, Fumio; and Takasaki, Takahiro, 5,607,772, Cl. 428-425.900.
Takata, Shinichi: *See—*
Ogawa, Masaya; Daito, Toshiji; and Takata, Shinichi, 5,608,707, Cl. 369-84.000.
Takatori, Kazuto: *See—*
Okazaki, Hiroshi; Hamada, Akihiro; Takemura, Hiroo; and Takatori, Kazuto, 5,608,194, Cl. 181-228.000.
Takayama, Toru: *See—*
Yamazaki, Shunpei; Takemura, Yasuhiko; Zhang, Hongyong; Takayama, Toru; and Uochi, Hideki, 5,608,232, Cl. 257-66.000.
Takebe, Eisuke, to Alps Electric Co., Ltd. Thermal printer for selectively printing on one or more sheets of paper. 5,608,440, Cl. 347-171.000.
Takeda, Akihiko: *See—*
Nakamura, Hideyuki; Takeda, Akihiko; and Namiki, Tomizo, 5,607,809, Cl. 430-201.000.
Takeda Chemical Industries, Ltd.: *See—*
Kato, Kaneyoshi; Sugiura, Yoshihiro; Kato, Koichi; and Nagai, Yasuo, 5,607,939, Cl. 514-278.000.
Takeda, Yutaka; and Kamitani, Mamoru, to Chugai Ro Company, Ltd. Cleaning apparatus. 5,607,514, Cl. 134-12.000.
Takeguchi, Tetsuji: *See—*
Akaogi, Takao; Kawashima, Hiromi; Takeguchi, Tetsuji; Hagiwara, Ryoji; Kasa, Yasushi; Itano, Kiyoshi; Ogawa, Yasushige; and Kawamura, Shouichi, 5,608,670, Cl. 365-185.230.
Takeishi, Taku: *See—*
Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, 5,607,615, Cl. 252-62.630.
Takemura, Hiroo: *See—*
Okazaki, Hiroshi; Hamada, Akihiro; Takemura, Hiroo; and Takatori, Kazuto, 5,608,194, Cl. 181-228.000.
Takemura, Yasuhiko: *See—*
Konuma, Toshimitsu; Hiroki, Masaaki; Zhang, Hongyong; Yamamoto, Mutsuo; and Takemura, Yasuhiko, 5,608,251, Cl. 257-337.000.
Yamazaki, Shunpei; Takemura, Yasuhiko; Zhang, Hongyong; Takayama, Toru; and Uochi, Hideki, 5,608,232, Cl. 257-66.000.
Takenaka Corporation: *See—*
Inoue, Yoshinori; Kusumoto, Nozomu; Yoshitake, Yuji; and Akashi, Tokuyuki, 5,607,013, Cl. 165-207.000.
Takenaka, Kenji; Tokunaga, Eiji; and Sugiura, Manabu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Structure of pressure passages between chambers of a reciprocating type compressor. 5,607,286, Cl. 417-222.200.
Takenouchi, Masanori: *See—*
Iwata, Kazuo; Takenouchi, Masanori; Watanabe, Kenjiro; Ujita, Toshihiko; Osada, Torachika; Nakajima, Kazuhiro; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichiro; Sato, Yohei; and Saito, Takashi, 5,608,437, Cl. 347-86.000.
Takeuchi, Akihiko; Ochiai, Toshihiko; Katoh, Motoi; Miyashiro, Toshiaki; and Suzuki, Takehiko, to Canon Kabushiki Kaisha. Image forming apparatus. 5,608,505, Cl. 399-314.000.
Takeuchi, Takashi: *See—*
Ito, Tamotsu; Banno, Hiroshi; Koike, Ryuichi; and Takeuchi, Takashi, 5,608,717, Cl. 369-275.300.
Takeya, Noriyoshi: *See—*
Okamoto, Manabu; and Takeya, Noriyoshi, 5,608,533, Cl. 386-91.000.
Takiguchi, Ryohei: *See—*
Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,607,895, Cl. 503-227.000.
Takishima, Suguru: *See—*
Okuda, Isao; Shinozaki, Shimpei; Kanazawa, Hiroshi; and Takishima, Suguru, 5,608,709, Cl. 369-112.000.
Takubo, Seiji: *See—*
Nakada, Tatsuo; Aoyama, Hirokazu; and Takubo, Seiji, 5,608,128, Cl. 570-175.000.
Talbot, Jean-Guy: *See—*
Rioux, Roger; Pesant, Gilles; Bostelmann, Willy; Talbot, Jean-Guy; Fecteau, Berthold; Cote, Raymond; and Gagne, Yvon, 5,607,026, Cl. 180-190.000.
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, to Sharp Kabushiki Kaisha. Joint-portion processing device for image data for use in an image processing apparatus. 5,608,543, Cl. 358-450.000.
Tamai, Haruhisa, to Zexel Corporation. Navigation system for a vehicle with route recalculation between multiple locations. 5,608,635, Cl. 364-449.300.
Tamaura, Yukie: *See—*
Masuda, Kiyoshi; Tamaura, Yukie; and Kaieda, Osamu, 5,608,091, Cl. 552-250.000.
Tamba, Shinichi; and Yamane, Yoshiro, to Kawasaki Jukogyo Kabushiki Kaisha. Four-cycle engine. 5,606,943, Cl. 123-90.230.
Tamemoto, Hiroaki; Nagao, Yasuhiro; and Niimi, Masami, to Nippondenso Co., Ltd. Commutator type rotary electric machine. 5,608,280, Cl. 310-239.000.
Tamura, Atsushi: *See—*
Tsushima, Masaki; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,607,927, Cl. 514-206.000.
Tamura, Hiroshi; Fukagai, Toshio; Mishima, Naoshi; and Sasaki, Masaomi, to Ricoh Company, Ltd. Polymers of acrylic acid ester derivatives having a triphenyl amine skeleton. 5,608,010, Cl. 525-328.200.
Tamura, Katsumi: *See—*
Tone, Hitoshi; Morisue, Masatoshi; Tamura, Katsumi; Miyazaki, Toshiki; and Nakano, Yoshimasa, 5,607,934, Cl. 514-253.000.
Tamura, Naoyuki: *See—*
Makino, Akitaka; Tamura, Naoyuki; and Kaji, Tetsunori, 5,607,510, Cl. 118-723.0MA.
Tanabe Seiyaku Co., Ltd.: *See—*
Tsujihara, Kenji; Hashiyama, Tomiki; Ohashi, Motoaki; and Nakanishi, Noriyuki, 5,608,073, Cl. 548-215.000.
Tanahashi, Hiroshi: *See—*
Kondo, Kazuo; Itakura, Hiroshige; Koda, Hirofumi; Tanahashi, Hiroshi; and Hosoda, Kazuaki, 5,607,965, Cl. 514-456.000.
Tanahashi, Shigeo: *See—*
Bhattacharyya, Bidyut K.; and Tanahashi, Shigeo, 5,607,883, Cl. 437-209.000.

Bhattacharyya, Bidyut K.; and Tanahashi, Shigeo, 5,608,261, Cl. 257-700.000.
Tanaka, Akira, to Sony Corporation. Disk loading apparatus with rotationally engaging disk table. 5,608,705, Cl. 369-77.100.
Tanaka Giken Co., Ltd.: *See—*
Tanaka, Shigehiro, 5,607,298, Cl. 432-118.000.
Tanaka, Hiroyuki: *See—*
Haruki, Tamae; Nakagawa, Kenji; Taguchi, Masao; Tanaka, Hiroyuki; Asai, Satoru; and Hanyu, Isamu, 5,607,821, Cl. 430-396.000.
Tanaka, Kenji: *See—*
Hyodo, Ryuji; Eda, Susumu; Oomuro, Katsumi; Sekihata, Osamu; Tanaka, Kenji; Hatta, Hiroyuki; and Norizuki, Reiko, 5,608,719, Cl. 370-250.000.
Tanaka Kikinzoku Kogyo K.K.: *See—*
Tozawa, Takeshi; and Toshima, Nobuhito, 5,607,785, Cl. 429-33.000.
Tanaka, Masaru, to Ricoh Company, Ltd. Apparatus and method for cleaning rollers in image formers. 5,608,499, Cl. 399-99.000.
Tanaka, Naotaka: *See—*
Kitano, Makoto; Nishimura, Asao; Yaguchi, Akihiro; Yoneda, Nae; Kohno, Ryuji; Tanaka, Naotaka; and Kumazawa, Tetsuo, 5,608,265, Cl. 257-738.000.
Tanaka, Shigehiro, to Tanaka Giken Co., Ltd. Conveyable heating apparatus. 5,607,298, Cl. 432-118.000.
Tanaka, Shigeo: *See—*
Osakabe, Yoshio; Tanaka, Shigeo; Katsuyama, Akira; Yamazaki, Hiroshi; Kusagaya, Yasuo; Kotabe, Noriko; Sugiyama, Kouichi; and Sato, Makoto, 5,608,730, Cl. 370-471.000.
Tanaka, Shigeru: *See—*
Kieturakis, Maciej J.; Mollenauer, Kenneth H.; Echeverry, Jan M.; Hermann, George D.; Howell, Thomas A.; Monfort, Michelle Y.; Tanaka, Shigeru; and Jervis, James E., 5,607,443, Cl. 606-192.000.
Tanaka, Shinri; and Kawashima, Yasuhiko, to Konica Corporation. Processing for purifying crown compounds. 5,608,058, Cl. 540-454.000.
Tanaka, Shozo: *See—*
Honma, Yoshihiro; Tanaka, Shozo; Oshima, Mitsuyoshi; Tanioka, Soji; and Kawamoto, Fumiaki, 5,608,057, Cl. 540-451.000.
Tanaka, So: *See—*
Inada, Hiroshi; Nakamura, Takao; Iiyama, Michitomo; and Tanaka, So, 5,607,900, Cl. 505-500.000.
Tanaka, Takeshi: *See—*
Gourab, Majumdar; Hiramoto, Takahiro; and Tanaka, Takeshi, 5,608,595, Cl. 361-79.000.
Tanaka, Tomoki; Ataka, Hiroyuki; and Iwasaki, Yoichi, to Sharp Kabushiki Kaisha. Image forming apparatus capable of setting an operational mode by reading image of a predetermined format. 5,608,493, Cl. 399-83.000.
Tanaka, Tsuyoshi: *See—*
Ikeo, Joji; and Tanaka, Tsuyoshi, 5,608,857, Cl. 395-761.000.
Tang, Ching W.: *See—*
Hung, Liang-Sun; Tang, Ching W.; and Lee, S. Tong, 5,608,287, Cl. 313-503.000.
Tang, Peter T.: *See—*
Bech-Nielsen, Gregers; and Tang, Peter T., 5,607,521, Cl. 148-261.000.
Tang, Wai-Cheung: *See—*
Cameron, Richard J.; Tang, Wai-Cheung; and Dokas, Van, 5,608,363, Cl. 333-202.000.
Tang, Yuan; Chen, Jian; and Chang, Chung K., to Advanced Micro Devices, Inc. Correction method leading to a uniform threshold voltage distribution for a flash eprom. 5,608,672, Cl. 365-185.300.
Tanguay, M. Sylvain, to OtoProtec, Inc. Vehicle anti-theft device. 5,608,272, Cl. 307-10.200.
Tani, Kiyoshi, to Asahi Seiko Kabushiki Kaisha. Coin dispensing apparatus. 5,607,352, Cl. 453-57.000.
Taniguchi, Katsutoshi: *See—*
Makino, Shoji; and Taniguchi, Katsutoshi, 5,607,634, Cl. 264-130.000.
Taniguchi, Kenichi: *See—*
Ohta, Yoshinobu; and Taniguchi, Kenichi, 5,606,909, Cl. 100-8.000.
Taniguchi, Seihou; Hazeyama, Takeshi; and Otaka, Hitoshi, to Nittetsu Mining Co., Ltd. Filter having chemical resistance, antistatic property and water vapor resistance, and process for producing the same. 5,607,490, Cl. 55-524.000.
Taniguchi, Tsutomu: *See—*
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,608,543, Cl. 358-450.000.
Tanikawa, Kiyoshi: *See—*
Kawanishi, Toshiyuki; Igarashi, Masato; Kawamura, Eiichi; Saitoh, Tadashi; Tanikawa, Kiyoshi; and Murakami, Kakuji, 5,607,534, Cl. 156-234.000.
Tanikawa, Tsuyoshi; and Yamamoto, Kenji, to Fujikin Incorporated. Three way switching controller. 5,606,994, Cl. 137-627.500.
Tanioka, Soji: *See—*
Honma, Yoshihiro; Tanaka, Shozo; Oshima, Mitsuyoshi; Tanioka, Soji; and Kawamoto, Fumiaki, 5,608,057, Cl. 540-451.000.
Taniyama, Masatosi: *See—*
Kajihara, Kazuhisa; Taniyama, Masatosi; Yanai, Kunio; and Ueno, Hiroshi, 5,607,240, Cl. 384-480.000.
Tanner, Scott B.: *See—*
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,608,687, Cl. 365-233.500.
Tanoue, Katsumi, to NEC Corporation. Radio frame synchronization system. 5,608,765, Cl. 375-365.000.
Tappon, Ellen R.: *See—*
Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., 5,608,436, Cl. 347-65.000.
Tarabolous, Mark C.: *See—*
Garcia, Jorge L.; Habbaba, Faris; Tarabolous, Mark C.; and Phelps, William C., III, 5,607,791, Cl. 429-96.000.
Tarascon, Jean-Marie: *See—*
Gozdz, Antoni S.; Schmutz, Caroline N.; Tarascon, Jean-Marie; and Warren, Paul C., 5,607,485, Cl. 29-623.500.
Tartacower, Richelle; Jansen, Lex; Gilbert, Joanne; and Testa, Rebecca C., to C. R. Bard, Inc. Catheter guidewire with radiopaque markers. 5,606,981, Cl. 128-772.000.
Task, Harry L.: *See—*
Pinkus, Alan R.; and Task, Harry L., 5,608,213, Cl. 250-252.100.
Tatar, Steve: *See—*
Ralph, James D.; and Tatar, Steve, 5,607,426, Cl. 606-61.000.
Tate, Bruce A.: *See—*
Li, Shih-Gong; and Tate, Bruce A., 5,608,899, Cl. 395-604.000.
Tate, Philip E. R.; Prince, John W.; and Hilton, John M., to Rhone-Poulenc Chemicals Limited. Metal organic compounds and their use. 5,607,991, Cl. 524-184.000.
Tatematsu, Shin: *See—*
Morikawa, Shinsuke; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tatematsu, Shin, 5,608,126, Cl. 570-167.000.
Tatsumi, Tomio: *See—*
Machida, Shuji; Shikuma, Haruo; Tazaki, Toshinori; Tatsumi, Tomio; and Kurokawa, Shinichi, 5,608,009, Cl. 525-247.000.
Tatterson, Vincent P.; and Hilder, Mark, to Expertest Pty. Ltd. Quick connect coupling. 5,607,250, Cl. 403-325.000.
Tauber, Arthur: *See—*
Wilber, William D.; Potenziani, Ernest, II; Tidrow, Steven C.; Tauber, Arthur; and Eckart, Donald W., 5,608,282, Cl. 505-211.000.
Taupiac, Jean-Pierre: *See—*
Boen, Roger; Cartier, René; Taupiac, Jean-Pierre; and Baronnet, Jean-Marie, 5,606,925, Cl. 110-346.000.
Taylor, Jeffrey E.: *See—*
Tachi, Katsuichi; Kaminaga, Kozo; Taylor, Jeffrey E.; and Flemming, Howard J., 5,608,473, Cl. 352-27.000.
Taylor, Leland T. Bottom feed - updraft gasification system. 5,607,487, Cl. 48-111.000.
Taylor, Robert D.: *See—*
Barnes, Michael W.; and Taylor, Robert D., 5,608,183, Cl. 149-45.000.
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TDK Corporation: *See—*
Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, 5,607,615, Cl. 252-62.630.
Technion Research & Development Foundation Ltd.: *See—*
Nemirovsky, Yael, 5,608,208, Cl. 250-214.100.
Technip Geoproduction: *See—*
Thomas, Pierre-Armand; and Naudin, Jean-Claude, 5,607,259, Cl. 405-198.000.
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Glamkowski, Edward J.; Chiang, Yulin; Strupczewski, Joseph T.; Bordeau, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,607,945, Cl. 514-307.000.
Teich, Wesley W.: *See—*
De Ruyter, Peter W.; Almey, Noel; Slanik, Josef; and Teich, Wesley W., 5,607,710, Cl. 426-237.000.
Teijin Limited: *See—*
Makino, Shoji; and Taniguchi, Katsutoshi, 5,607,634, Cl. 264-130.000.
Nishimura, Kunio; Nakagawa, Hideo; and Kumakawa, Shiro, 5,607,183, Cl. 280-743.200.
Teijin Seiki Co., Ltd.: *See—*
Onishi, Hisatomo, 5,607,540, Cl. 156-379.800.
Teikoku Seiyaku Co., Ltd.: *See—*
Akazawa, Mitsuji, 5,607,690, Cl. 424-443.000.
Teinert, Victor E.: *See—*
Naedler, Mark H.; and Teinert, Victor E., 5,607,033, Cl. 188-71.800.
Tektronix, Inc.: *See—*
Jones, Michael E.; and Karambelas, Randy C., 5,608,430, Cl. 347-8.000.
Televerket: *See—*
Latour-Henner, Alexander; and Isheden, Bjorn, 5,608,756, Cl. 375-228.000.
Television Computer, Inc.: *See—*
Large, James; Newcomer, Joseph M.; and Thibadeau, Robert, 5,608,662, Cl. 364-724.010.
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Temic Telefunken microelectronic GmbH: *See—*
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Tencor Instruments: *See—*
Piwonka-Corle, Timothy R.; Scoffone, Karen F.; Chen, Xing; Lacomb, Lloyd J., Jr.; Stehle, Jean-Louis; Zahorski, Dorian; and Rey, Jean-Pierre, 5,608,526, Cl. 356-369.000.
Tender Corporation: *See—*
Grout, Kenneth M., 5,607,512, Cl. 134-6.000.

Teng, Chih S.: *See—*
Chen, Hung-Sheng; Nguyen, Tim; Moberly, Larry; and Teng, Chih S., 5,607,873, Cl. 437-51.000.
Teng, Kelly: *See—*
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Tenney, Denver N.: *See—*
Champion, James R.; Tenney, Denver N.; and Simms, Laurence C., 5,608,416, Cl. 343-773.000.
Tepper, Harry W. Removable resilient orthodontic retainer. 5,607,300, Cl. 433-6.000.
Teradyne, Inc.: *See—*
McNamara, David M.; Provencher, Daniel B.; Stokoe, Philip T.; Howard, William E.; and Gailus, Mark W., 5,607,326, Cl. 439-608.000.
Teramoto, Satoshi: *See—*
Inushima, Takashi; Vaitkus, Rimantas; and Teramoto, Satoshi, 5,608,666, Cl. 365-112.000.
Terasaki, Masatosi, to Hitachi, Ltd. Compression type refrigerator. 5,606,872, Cl. 62-471.000.
Terhune, James H.; and Cowan, Robert L., II, to General Electric Company. Neutron-activated direct current source. 5,608,767, Cl. 376-321.000.
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Teschner, Wolfgang: *See—*
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Testa, Rebecca C.: *See—*
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Teva Pharmaceutical Industries Ltd.: *See—*
Milman, Isaac; Veinberg, Alexander; Atlas, Daphne; and Melamed, Eldad, 5,607,969, Cl. 514-538.000.
Texas Instruments Incorporated: *See—*
Ahlburn, Byron T.; and Seha, Thomas R., 5,607,773, Cl. 428-427.000.
Amerasekera, Ajith; and Chatterjee, Amitava, 5,607,867, Cl. 437-31.000.
Belcher, James F.; and Osborn, Craig, 5,607,600, Cl. 216-24.000.
Bell, Weldon J.; and Grimes, H. Michael, 5,607,507, Cl. 117-201.000.
Bradford, William F.; and Glass, Richard J., 5,608,736, Cl. 371-22.300.
Eberth, Gerhard; and Schuermann, Josef H., 5,608,406, Cl. 342-51.000.
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,608,254, Cl. 257-432.000.
Furukawa, Hideharu, 5,607,610, Cl. 219-505.000.
Gove, Robert J.; Sampsell, Jeffrey B.; and Markandey, Vishal, 5,608,468, Cl. 348-771.000.
Gross, Steven K.; and Hailes, Wesley S., 5,606,793, Cl. 29-760.000.
Hashimoto, Masashi; and Laczko, Frank L., Sr., 5,608,459, Cl. 348-416.000.
Leach, Jerald G., 5,608,423, Cl. 345-123.000.
Levine, Jules D.; Shen, Chi-Cheong; and Gnade, Bruce E., 5,608,286, Cl. 313-495.000.
McDonnell, Donald G., 5,607,522, Cl. 148-281.000.
Rao, Kalipatnam V., 5,608,256, Cl. 257-510.000.
Vickers, Kenneth G.; Shen, Chi-Cheong; Gnade, Bruce E.; and Levine, Jules D., 5,608,285, Cl. 313-466.000.
Vogley, Wilbur C., 5,608,896, Cl. 395-558.000.
de Magalhaes Machado, Ricardo J. S.; and Cardoso, Andre G. M., 5,608,172, Cl. 73-862.541.
Texas United Chemical Company, LLC.: *See—*
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Texo AB: *See—*
Johansson, Hans, 5,606,999, Cl. 139-257.000.
Tezuka, Fuminobu: *See—*
Maezawa, Yukishige; Hayata, Terunobu; Shimada, Hideki; Ito, Isao; Suzuki, Kazuo; Tadauchi, Masahiro; Tezuka, Fuminobu; and Kano, Jiro, 5,608,136, Cl. 588-228.000.
Thai Merry Co., Ltd.: *See—*
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Thaler, Warren A.; Zushma, Stephen; and Gutierrez, Antonio, to Exxon Chemical Patents Inc. Mannich base polymers. 5,608,029, Cl. 528-129.000.
Tharman, Paul A.: *See—*
Bruener, Patrick J.; Tharman, Paul A.; Fiorenza, John A., II; Pfaff, Joseph L.; Dykstra, Richard A.; and Reitman, William H., 5,606,851, Cl. 56-11.900.
Theis, Michael: *See—*
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Theisen, Peter J.: *See—*
Zoller, Walter M.; Hunter, David S., Jr.; Wellner, Edward L.; Larsen, Michael R.; Theisen, Peter J.; and Link, Donald A., 5,608,367, Cl. 335-132.000.
Theobald, Nick J.: *See—*
Slivon, George R.; and Theobald, Nick J., 5,607,213, Cl. 312-301.000.
Theodore, Louis J.: *See—*
Axworthy, Donald B.; Theodore, Louis J.; Gustavson, Linda M.; and Reno, John M., 5,608,060, Cl. 540-474.000.
Theriault, Elizabeth. Method of treating traumatic CNS tissue injury with a metabotropic glutamate receptor agonist. 5,607,973, Cl. 514-561.000.
Thermal Clean, Inc.: *See—*
Stroobants, Steven P.; Stroobants, Marvin J.; and Schulz, Douglas J., 5,607,069, Cl. 211-113.000.
Thermo Separation Products Inc.: *See—*
Munk, Miner N., 5,608,517, Cl. 356-246.000.
Thetford, Dean; and Gregory, Peter, to Zeneca Limited. Poly-substituted phthalocyanines. 5,608,053, Cl. 540-140.000.
Thibadeau, Robert: *See—*
Large, James; Newcomer, Joseph M.; and Thibadeau, Robert, 5,608,662, Cl. 364-724.010.
Thibault, Jean-Claude; Grimard, Jean-Pierre; and Faure, Catherine F., to Becton, Dickinson and Company. Pre-fillable syringe and stopper assembly therefor. 5,607,400, Cl. 604-230.000.
Thiele, Hartmut: *See—*
Liepold, August; Thiele, Hartmut; Toral, Jose; Lutz, Gottfried; and Brandstetter, Hermann, 5,607,052, Cl. 206-307.000.
Thomas, Amona D.: *See—*
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Thomas & Betts Corporation: *See—*
Collins, Albert L., Jr.; Boyd, Rick A.; Bradshaw, Herbert L., II; Huber, Alvin J.; Wessner, Charles T.; and Ruch, Dennis B., 5,608,186, Cl. 174-7.000.
Thomas, David W. P.: *See—*
Jones, Martin S.; and Thomas, David W. P., 5,608,327, Cl. 324-522.000.
Thomas, Glen E.; and Thomas, Amona D. Method of milling to form highway depressions. 5,607,255, Cl. 404-90.000.
Thomas, John E.; McCall, John E.; Boche, Daniel K.; Rolando, John J.; and Klos, Terry J., to Ecolab Inc. Multiple product dispensing system including dispenser for forming use solution from solid chemical compositions. 5,607,651, Cl. 422-266.000.
Thomas, Pierre-Armand; and Naudin, Jean-Claude, to Technip Geoproduction. Process for assembling long sections of booms of support legs of an oil platform. 5,607,259, Cl. 405-198.000.
Thomas, Todd R.: *See—*
Smith, Kevin W.; and Thomas, Todd R., 5,607,902, Cl. 507-120.000.
Thomas, Wayne M.: *See—*
Bantli, Heinrich; Ring, Edmund J.; and Thomas, Wayne M., 5,608,391, Cl. 340-933.000.
Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., to University of Florida. Clinical marker and therapeutic agent in kidney stone disease and methods of use. 5,607,964, Cl. 514-452.000.
Thomine, Jean-Baptiste: *See—*
Abram, Izo; Thomine, Jean-Baptiste; and Chandrakumar, Valuppilai, 5,608,560, Cl. 359-156.000.
Thompson, Darren M.; and Chew, William M., to United States of America, Army. Fuel gas generator for airbreathing propulsion systems. 5,608,182, Cl. 149-22.000.
Thompson, Ian R.: *See—*
Southern, Michael P.; Melbourne, Keith; and Thompson, Ian R., 5,606,951, Cl. 123-399.000.
Thompson, Keith P., to Emory University. Intraocular lens for restoring accommodation and allows adjustment of optical power. 5,607,472, Cl. 623-6.000.
Thompson-Bell, Ian: *See—*
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Thomson-CSF: *See—*
Chabbert, Philippe; Chatenay, Alain; Menard, Christian; and Meux, Dominique, 5,608,325, Cl. 324-426.000.
Thurm, Kenneth: *See—*
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Tidrow, Steven C.: *See—*
Wilber, William D.; Potenziani, Ernest, II; Tidrow, Steven C.; Tauber, Arthur; and Eckart, Donald W., 5,608,282, Cl. 505-211.000.
Tikijian, George H., to SenTech Corporation. Method and apparatus for monitoring for the presence of a gas. 5,608,384, Cl. 340-632.000.
Tikka, Raimo, to Tikka-System Oy. Method and apparatus for coating objects with a plastic film. 5,607,536, Cl. 156-285.000.
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Tippmann, Joseph R.; and Tippmann, Vincent P. Enclosed monolithic swimming pool. 5,606,831, Cl. 52-169.700.
Tippmann, Vincent P.: *See—*
Tippmann, Joseph R.; and Tippmann, Vincent P., 5,606,831, Cl. 52-169.700.
Tipton, David G., to Northrop Grumman Corporation. Reel-to-reel passivation of stainless steel wire. 5,607,520, Cl. 148-241.000.
Tischer, Duain E. Highway collision containment system. 5,607,252, Cl. 404-6.000.
Tisell, Claes G. E. Y.; and Strömberg, Kurt, to Fuji Autotech Aktiebolag. Slidable and tiltable steering column support. 5,606,891, Cl. 74-493.000.
Titan Corporation, The: *See—*
Miller, Robert B., 5,608,403, Cl. 342-13.000.
Tobias, Samuel; Davidson, Donald R.; and Hanes, Robert H., to H-Tech, Inc. Plastic niche and grounding assembly therefor. 5,607,224, Cl. 362-101.000.

Tobita, Yoshinori: *See—*
Inaniwa, Masahiro; Kido, Nobuharu; Fujimaki, Takahiro; Watanabe, Shinji; Matsufuji, Noriyasu; and Tobita, Yoshinori, 5,608,301, Cl. 318-729.000.
Toda, Minoru, to Whitaker Corporation, The. Multi-layer polymer electroacoustic transducer assembly. 5,608,692, Cl. 367-157.000.
Todd, James S.: *See—*
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, 5,607,741, Cl. 428-68.000.
Todd, John M.: *See—*
Grieve, James A.; and Todd, John M., 5,607,107, Cl. 239-195.000.
Todd, Michael L. Shelving storage unit. 5,607,065, Cl. 211-40.000.
Todokoro, Hideo: *See—*
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Tohoku Ricoh Co., Ltd.: *See—*
Satoh, Mitsuyoshi; and Oshino, Genji, 5,607,244, Cl. 400-247.000.
Tohyama, Masamichi; and Kohtani, Yutaka, to Canon Kabushiki Kaisha. Video camera apparatus. 5,608,457, Cl. 348-335.000.
Toide, Eiichi: *See—*
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Tojyou, Tutomu; Shirai, Shoji; and Kato, Shinichi, to Hitachi, Ltd. Color cathode ray tube having a low dynamic focus voltage. 5,608,284, Cl. 313-414.000.
Tokai Kogyo Kabushiki Kaisha: *See—*
Yada, Yukihiko, 5,607,197, Cl. 296-93.000.
Tokarz, Marek: *See—*
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Toki, Yusuke: *See—*
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Tokin Corporation: *See—*
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Tokita, Masashi: *See—*
Sakuma, Susumu; Inokoshi, Satoshi; Aneha, Akira; Arai, Masahiro; and Tokita, Masashi, 5,608,758, Cl. 375-238.000.
Tokiwa, Nobuaki: *See—*
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Tokoro, Kazuhiko: *See—*
Amano, Akira; and Tokoro, Kazuhiko, 5,608,119, Cl. 568-676.000.
Tokuda, Noriaki, to Nikon Corporation. Image sensor used with substantially monochromatic illuminating light of high coherence for preventing or reducing interference fringes. 5,608,456, Cl. 348-340.000.
Tokunaga, Eiji: *See—*
Takenaka, Kenji; Tokunaga, Eiji; and Sugiura, Manabu, 5,607,286, Cl. 417-222.200.
Tokura, Norihito: *See—*
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Tokyo Electric Power Company Incorporated, The: *See—*
Yoshida, Noriyuki; Fujino, Kousou; Hayashi, Noriki; Okuda, Shigeru; Hara, Tsukushi; and Ishii, Hideo, 5,607,899, Cl. 505-474.000.
Tolkoff, Marc J.; and de Toledo, Fernando A. Catheter assembly. 5,607,407, Cl. 604-282.000.
Tollakson, Steven W.: *See—*
Coaldrake, Peter D.; and Tollakson, Steven W., 5,608,140, Cl. 800-200.000.
Tolléns, Fernando R.: *See—*
Kefauver, Philip J.; Tolléns, Fernando R.; and Syfert, Scott W., 5,607,909, Cl. 510-152.000.
Toma, Stephen J., to Astrolab, Inc. Connector for coaxial cable. 5,607,325, Cl. 439-578.000.
Tomasiak, Mark J.; Young, Jeffrey L.; and Holsten, Stuart V., to Emerson Electric Co. Wet/dry utility vacuum cleaner with detachable blower. 5,606,769, Cl. 15-327.600.
Tomasko, John A.: *See—*
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Tomassone, John R.: *See—*
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Tomazic, Gerd, to Elin Energieanwendung GmbH. Zinc-bromine battery with circulating electrolytes. 5,607,788, Cl. 429-72.000.
Tominaga, Nobuhide: *See—*
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Tomioka, Mitsuo: *See—*
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Tomisawa, Naoki, to Unisia Jecs Corporation. Apparatus and method for estimating the temperature of an automotive catalytic converter. 5,606,855, Cl. 60-274.000.
Tomita, Athuo: *See—*
Akutsu, Mitsuo; Tominaga, Nobuhide; Oya, Keiji; Tomita, Athuo; and Shigeno, Kouichi, 5,607,894, Cl. 503-209.000.
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Tomoegawa Paper Co., Ltd.: *See—*
Kamiyama, Masafumi; Maeda, Masahiro; Totsuka, Hiroki; and Sano, Akihiro, 5,608,017, Cl. 526-88.000.
Tone, Hitoshi; Morisue, Masatoshi; Tamura, Katsumi; Miyazaki, Toshiki; and Nakano, Yoshimasa, to Otsuka Pharmaceutical Co., Ltd. Piperazine derivatives and salts thereof. 5,607,934, Cl. 514-253.000.
Tonouchi, Hiroshi; and Furukawa, Masashi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Multiple-task controller having a plurality of task memory input/output devices, input/output processing device, and a plurality of tasks controlled by external devices. 5,608,906, Cl. 395-677.000.
Tontarra Medizintechnik GmbH: *See—*
Tontarra, Thomas, 5,607,449, Cl. 606-205.000.
Tontarra, Thomas, to Tontarra Medizintechnik GmbH. Tubular-shaft surgical instrument. 5,607,449, Cl. 606-205.000.
Tooley, Patricia A.; Holtzen, Dwight A.; and Musiano, Joseph A., to Du Pont de Nemours, E. I., and Company. Processibility and lacing resistance when silanized pigments are incorporated in polymers. 5,607,994, Cl. 524-265.000.
Toppan Printing Co., Ltd.: *See—*
Kobayashi, Yuichi, 5,608,851, Cl. 395-131.000.
Yoshinaga, Masanobu, 5,608,015, Cl. 526-75.000.
Topulos, George P.: *See—*
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Toral, Jose: *See—*
Liepold, August; Thiele, Hartmut; Toral, Jose; Lutz, Gottfried; and Brandstetter, Hermann, 5,607,052, Cl. 206-307.000.
Torax Company, Inc., The: *See—*
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Torkelson, Torkel E. Food beverage and accessories plate. 5,607,077, Cl. 220-575.000.
Törnquist, Anders: *See—*
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Toshiba Corporation: *See—*
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Toshima, Nobuhito: *See—*
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Toshimori, Yoshihiro: *See—*
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Toso, Victor; and Hockenberry, Jack K. Collapsible back support. 5,607,202, Cl. 297-44.000.
Tosoh Corporation: *See—*
Miyata, Hiroshi; Yamaguchi, Masayuki; and Suzuki, Kenichi, 5,608,008, Cl. 525-240.000.
Totakura, Nagabhushanam; and Shalaby, Shalaby W., to United States Surgical Corporation. Polymeric composition. 5,607,686, Cl. 424-426.000.
Toth, Christine; and Bryson, Terrance L., to Z Tech. Illuminated hockey stick. 5,607,226, Cl. 362-251.000.
Toto Ltd.: *See—*
Hiasa, Masami; Ashie, Nobuyuki; Saito, Susumu; and Ohtani, Takayuki, 5,607,595, Cl. 210-669.000.
Totsuka, Hiroki: *See—*
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Tottori Sanyo Electric Co.: *See—*
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Toups, John A., Jr.; Young, David B.; Yousif, Majeed H.; Smolen, B. C.; and Holt, Jonathan, to BP Exploration & Oil, Inc. Environmentally safe annular fluid. 5,607,901, Cl. 507-103.000.
Tovar, Oscar A.: *See—*
Smith, David M.; and Tovar, Oscar A., 5,608,757, Cl. 375-229.000.
Tovey, H. Jonathan: *See—*
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Harada, Kenichi, 5,606,857, Cl. 60-322.000.
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Tropiano, Patrick. Domed cage. 5,607,424, Cl. 606-61.000.
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Trzmiel, Alfred; Stephan, Wolfgang; Alber, Thomas; Jaksch, Andreas; and Fiedler, Olaf, to Dr.Ing. h.c.F. Porsche AG. Variable timing camshaft drive system. 5,606,941, Cl. 123-90.150.
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Turi, John J. Extended bicycle frame in combination with a harness apparatus. 5,607,172, Cl. 280-290.000.
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Derra, Gunther H.; Fischer, Hanns E.; Ganser, Hans G.; and Monch, Holger, 5,608,294, Cl. 315-224.000.
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University of California, The Regents of the: *See*—
Lagunas-Solar, Manuel C., 5,607,711, Cl. 426-248.000.
Schindler, Robert; and Maas, Corey, 5,607,477, Cl. 623-12.000.
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Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, 5,607,741, Cl. 428-68.000.
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Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., 5,607,964, Cl. 514-452.000.
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Hillman, Jeffrey D., 5,607,672, Cl. 435-172.300.
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Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., 5,607,437, Cl. 606-166.000.
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Brown, Richard B.; Cha, Guen-Sig; and Goldberg, Howard D., 5,607,566, Cl. 204-418.000.
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Boucher, Richard C.; Weisman, Gary A.; Turner, John T.; Harden, Thomas K.; Parr, Claude E.; Sullivan, Daniel M.; Erb, Laura J.; and Lustig, Kevin D., 5,607,836, Cl. 435-7.200.
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Wilkins, Ebtisam, 5,608,137, Cl. 588-259.000.
University of Oklahoma, The Board of Regents of the: *See*—
Pereira, Heloise A.; Brackett, Daniel J.; and Lerner, Megan R., 5,607,916, Cl. 514-12.000.
University of Pennsylvania, Trustees of the: *See*—
Marshall, Bryan E.; Marshall, Carol; Hanson, C. William; Frasch, Fred; and Medsker, Carl, 5,606,976, Cl. 128-671.000.
University of Pittsburgh: *See*—
Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., 5,607,844, Cl. 435-69.100.
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Phomsakha, Vongvilay; Chang, Robert S. F.; and Djeu, Nicholas I., 5,607,506, Cl. 117-33.000.
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Baker, David C.; Deshtande, Prashant P.; Yan, Shijia; Tagliaferri, Frank; and Victory, Samuel F., 5,608,085, Cl. 549-277.000.
Uochi, Hideki: *See*—
Yamazaki, Shunpei; Takemura, Yasuhiko; Zhang, Hongyong; Takayama, Toru; and Uochi, Hideki, 5,608,232, Cl. 257-66.000.
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Usami, Akihiro, to Canon Kabushiki Kaisha. Apparatus and method for processing a color image. 5,608,549, Cl. 358-530.000.
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Utamura, Motoaki: *See*—
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Uytterhoeven, Herman J.; Müller, Michael; Podszun, Wolfgang; Van Damme, Marc I.; and Laas, Hans-Josef, to Agfa-Gevaert, N.V. Photopolymerizable composition of high sensitivity and method for obtaining images therewith. 5,607,813, Cl. 430-252.000.
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Vaccaro, Kenneth: *See*—
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Vaes, Jos; and Wabbes, Luc, to AGFA-Gevaert, N.V. Method for making a lithographic printing plate using ascorbic acid developer. 5,607,811, Cl. 430-204.000.
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Vaisala OY: *See*—
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Vallée, Richard; and Ellis, John G. ATM inverse multiplexing. 5,608,733, Cl. 370-394.000.
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Valmont Industries, Inc.: *See*—
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De Clercq, Erik D. A.; Herdewijn, Piet A. M.; and Van Aerschot, Arthur A. E., 5,607,922, Cl. 514-43.000.
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Van Becelaere, Robert M., to Tomkins Industries, Inc. Mounting bracket for damper. 5,607,355, Cl. 454-369.000.
Van Broekhoven, Johannes A. M.: *See*—
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Van Eck, Hendrick J. R.: *See*—

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Smeets, Joseph L. R. M.; and Van Erp, Wilhelmus P. M. M., 5,607,422, Cl. 606-41.000.

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Varney, Michael D.; and Romines, William H., to Agouron Pharmaceuticals, Inc. Compounds useful as antiproliferative agents and GARFT inhibitors. 5,608,082, Cl. 549-70.000.

Vartuli, James C.: *See*—
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Vaslin, Sophie: *See*—
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Vatland, Danny J.: *See*—
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Leavy, Mark; Veeramoney, Murali; Rosenzweig, Michael D.; Boss, Scott D.; Hurwitz, Roger; Davies, Bob; and Cox, Daniel R., 5,608,651, Cl. 364-514.00R.

Veinberg, Alexander: *See*—
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Velcro Industries, B.V.: *See*—
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Velodyne Acoustics, Inc.: *See*—
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Vendstar, Inc.: *See*—
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Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič , Mateja, 5,608,052, Cl. 536-103.000.

Verhoeven, Michel: *See*—
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Vermeer Manufacturing Company: *See*—
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Vickers, Kenneth G.; Shen, Chi-Cheong; Gnade, Bruce E.; and Levine, Jules D., to Texas Instruments Incorporated. Black matrix sog as an interlevel dielectric in a field emission device. 5,608,285, Cl. 313-466.000.

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Victory, Samuel F.: *See*—
Baker, David C.; Deshtande, Prashant P.; Yan, Shijia; Tagliaferri, Frank; and Victory, Samuel F., 5,608,085, Cl. 549-277.000.

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Edwards, Stuart D.; Lax, Ronald G.; Sharkey, Hugh R.; and Lundquist, Ingemar H., 5,607,389, Cl. 604-22.000.

Viera, Fernando M.: *See*—
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Viggiano, Mark S. Quick-release lock retaining bracket method and apparatus. 5,606,880, Cl. 70-86.000.

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Virgile, Kenneth, to Cabletron Systems, Inc. Network bridge with multicast forwarding table. 5,608,726, Cl. 370-401.000.

Virnig, Michael J.: *See*—
Fristad, William E.; Narum, Jeffrey L.; Mattison, Phillip L.; Virnig, Michael J.; and Fast, John, 5,607,060, Cl. 209-12.200.

Visonic Ltd.: *See*—
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Vitkavage, Susan C.: *See*—
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Sandler, Lorin H.; and Wingen, Neal T., 5,608,734, Cl. 370-509.000.
Spyrou, Athanasius W., 5,608,645, Cl. 364-491.000.
Ta, Paul; and Cheng, Michael, 5,608,357, Cl. 331-57.000.

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Grossmann, Udo; Egelhof, Dieter; and Meinecke, Albrecht, 5,607,555, Cl. 162-304.000.

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Volk, Stephan: *See*—
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Volker, David A.: *See*—
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Wabbes, Luc: *See*—
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Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, 5,607,718, Cl. 427-97.000.

Wadekamper, Donald C., to General Electric Company. Method for repairing an interchangeable sintering furnace. 5,607,296, Cl. 432-3.000.

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Wahl Clipper Corporation: *See*—
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Wakashiro, Teruo: *See*—
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Wakefield, Jayne L.: *See*—
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Wakerly, John F., to Alantec Corporation. Active cache for a microprocessor. 5,608,892, Cl. 395-445.000.

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Walker, Jonathan, to Warner-Lambert Company. Process for the synthesis of 5-amino tetrazole derivatives. 5,608,074, Cl. 548-251.000.

Walker, Leon R.; and Clark, Thomas P. Concrete drop hammer attachment device. 5,607,022, Cl. 173-10.000.

Walker, Ted W., to Apple Computer, Inc. Processing blank data-lines of print data. 5,608,848, Cl. 395-116.000.

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Wallace, Dean, to Linfinity Microelectronics, Inc. Source and sink voltage regulator for terminators. 5,608,312, Cl. 323-224.000.

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Wallis, Frank S.; Caillat, Jean-Luc; Simpson, Francis M.; Anderson, Gary J.; Rode, Donald W.; and Beck, Norman G., to Copeland Corporation. Scroll machine with reverse rotation protection. 5,607,288, Cl. 417-310.000.

Walsh, Michael J.; and Gerent, Gerald R. Tamper-resistant cash box. 5,607,102, Cl. 232-1.00D.

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Walton, Ian C.: *See*—
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Wang, Daniel. Mask and snorkel assembly. 5,606,967, Cl. 128-201.110.

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Wang, Hongmo: *See*—
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Ward Holding Company: *See*—
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Ward, James P.: *See*—
Claffey-Cohen, Margaret; Noll, Mark G.; Olive, Jose A.; Perez, Roberto V.; and Ward, James P., 5,608,897, Cl. 395-557.000.

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Yokota, Masatoshi; Horiuchi, Kuniyasu; Hiraoka, Hidenori; and Yamada, Mikio, to Sumitomo Rubber Industries, Ltd. Two-piece golf ball. 5,607,366, Cl. 473-372.000.
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Tsubokura, Akira; Yoneda, Hisashi; Takaki, Mikihiro; and Kiyota, Takashi, 5,607,839, Cl. 435-67.000.
Yoneda, Nae: *See*—
Kitano, Makoto; Nishimura, Asao; Yaguchi, Akihiro; Yoneda, Nae; Kohno, Ryuji; Tanaka, Naotaka; and Kumazawa, Tetsuo, 5,608,265, Cl. 257-738.000.
Yonetani, Takayuki: *See*—
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Yonezawa, Masaaki: *See*—
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Yonushonis, Thomas M.: *See*—
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Yoon, InBae. Retractable safety penetrating instrument for portal sleeve introduction. 5,607,396, Cl. 604-165.000.
Yoon, InBae. Safety penetrating instrument with penetrating member moving during penetration and triggered safety member protrusion. 5,607,439, Cl. 606-185.000.
Yoon, Sei-Seung; Park, Chan-Jong; and Kim, Byung-Chul, to Samsung Electronics Co., Ltd. Boosting voltage circuit used in active cycle of a semiconductor memory device. 5,608,677, Cl. 365-189.090.
Yoshida, Hirokazu: *See*—
Inada, Kiyoshi; Shiota, Motoji; Yoshida, Hirokazu; and Tagusa, Yasunobu, 5,608,559, Cl. 349-149.000.
Yoshida, Hiroshi: *See*—
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Yoshida, Hiroyuki: *See*—
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Yoshida, Kazuo: *See*—
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Yoshida, Keizo: *See*—
Katsuta, Kiyotaka; Takamatsu, Hiroyuki; Ueda, Yoshiko; Nakanishi, Hajime; and Yoshida, Keizo, 5,607,938, Cl. 514-267.000.
Yoshida, Koji: *See*—
Matsumura, Yukinori; Yoshida, Koji; and Yamazaki, Taku, 5,608,563, Cl. 359-202.000.
Yoshida, Masayuki: *See*—
Chida, Nobuyoshi; and Yoshida, Masayuki, 5,607,868, Cl. 437-34.000.
Shibuya, Sachiko; Yoshida, Masayuki; Chida, Nobuyoshi; and Matsumoto, Osamu, 5,608,241, Cl. 257-207.000.
Yoshida, Mitsuhiro; and Asai, Hiroshi, to Victor Company of Japan, Ltd. Video signal reproduction or record/reproduction apparatus. 5,608,535, Cl. 386-123.000.
Yoshida, Noriyuki; Fujino, Kousou; Hayashi, Noriki; Okuda, Shigeru; Hara, Tsukushi; and Ishii, Hideo, to Sumitomo Electric Industries, Ltd.; and Tokyo Electric Power Company Incorporated, The. Method of forming single-crystalline thin film. 5,607,899, Cl. 505-474.000.
Yoshida, Shigeru: *See*—
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Yoshida, Takayuki: *See*—
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Yoshida, Toshio, to NEC Corporation. Apparatus for detecting a remaining capacity of a battery in a portable data transmission/reception device. 5,608,324, Cl. 324-426.000.
Yoshinaga, Masanobu, to Toppan Printing Co., Ltd. Processes for producing cyclodextrin derivatives and polymers containing immobilized cyclodextrin therein. 5,608,015, Cl. 526-75.000.
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Do, Young-rag; You, Young-chul; Jeong, Joa-young; and You, Yong-chan, 5,608,554, Cl. 349-70.000.
You, Young-chul: *See*—
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Young, Colin J., to Ford Motor Company. Flexible guide for a sliding door of a vehicle. 5,606,771, Cl. 16-90.000.
Young, David B.: *See*—
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Young, Jeffrey L.: *See*—
Tomasiak, Mark J.; Young, Jeffrey L.; and Holsten, Stuart V., 5,606,769, Cl. 15-327.600.
Young, Richard H., Sr.: *See*—
Hansen, Michael R.; and Young, Richard H., Sr., 5,607,759, Cl. 442-417.000.
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Woodruff, Daniel J.; Hoekstra, Daniel W.; Scott, Christopher L.; Volckhausen, Thomas W.; Studebaker, Thomas J.; and Younglove, Bruce L., 5,607,275, Cl. 414-331.000.
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Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,608,589, Cl. 360-85.000.
Yuan, Chris: *See*—
Ichnowski, Jeanne; Yuan, Chris; Patel, Bipin; and Kaminsky, Mark E., 5,608,783, Cl. 379-67.000.
Yuda, Shuji, to Toyota Jidosha Kabushiki Kaisha. Apparatus for disposing of fuel vapor. 5,606,955, Cl. 123-520.000.
Yuen, Po-Wai: *See*—
Silverman, Richard B.; Andruszkiewicz, Ryszard; Yuen, Po-Wai; Sobieray, Denis M.; Franklin, Lloyd C.; and Schwindt, Mark A., 5,608,090, Cl. 552-10.000.
Yun, Jong H.; Meyerhoff, Mark E.; and Yang, Victor C., to Board of Regents Acting for and on behalf of University of Michigan, The. Protamine-responsive polymeric membrane electrode. 5,607,567, Cl. 204-418.000.
Yuo, Wu-Bin; Chen, Jong-Wu; and Chao, Yu-Shan, to Industrial Technology Research Institute. Catalytic compositions for the preparation of poly(ethylene terephthalate) with attenuated yellow color. 5,608,032, Cl. 528-286.000.
Z Tech: *See*—
Toth, Christine; and Bryson, Terrance L., 5,607,226, Cl. 362-251.000.
Zadworny, Richard. Multiple harmonica holder. 5,608,177, Cl. 84-379.000.
Zaffaroni, Alejandro C.: *See*—
Hale, Ron L.; Lu, Amy; Solas, Dennis; Selick, Harold E.; Oldenburg, Kevin R.; and Zaffaroni, Alejandro C., 5,607,691, Cl. 424-449.000.
Zagar, Paul S.; and Seyyedy, Mirmajid, to Micron Technology, Inc. Dram wtih open digit lines and array edge reference sensing. 5,608,668, Cl. 365-149.000.
Zahler, Robert: *See*—
Singh, Janak; Bisacchi, Gregory S.; Godfrey, Jollie D., Jr.; Mitt, Toomas; Mueller, Richard H.; Zahler, Robert; and Kissick, Thomas P., 5,608,064, Cl. 544-277.000.
Zahorski, Dorian: *See*—
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Zecal Incorporated: *See*—
Morrison, James S.; Niescierenko, Joseph; and Zsamboky, Kalman F., 5,608,617, Cl. 363-147.000.
Zeiler, Hans-Joachim: *See*—
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,607,942, Cl. 546-200.000.

Zeller, Joseph; and Rubin, Bruce, to Astoria Jewelry Mfg. Co., Inc. Finger ring. 5,606,873, Cl. 63-15.000.
Zeneca Limited: *See*—
Arnould, Jean-Claude, 5,607,928, Cl. 514-210.000.
Thetford, Dean; and Gregory, Peter, 5,608,053, Cl. 540-140.000.
Zeneca Pharma SA: *See*—
Arnould, Jean-Claude, 5,607,928, Cl. 514-210.000.
Zenharusern, Frederic; and Wickramasinghe, Hemantha K., to International Business Machines Corporation. Assembly suitable for identifying a code sequence of a biomolecule in a free-solution embodiment. 5,607,568, Cl. 204-600.000.
Zenith Electronics Corporation: *See*—
Bestler, Caitlin B.; and Daily, Mack S., 5,608,732, Cl. 370-474.000.
Zettl GmbH CNC Prazisions-und Sonderwerkzuege: *See*—
Nespeta, Horst; Pötzl, Alfred; Simon, Manfred; and Pfob, Franz, 5,607,263, Cl. 407-61.000.
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Yamazaki, Shunpei; Takemura, Yasuhiko; Zhang, Hongyong; Takayama, Toru; and Uochi, Hideki, 5,608,232, Cl. 257-66.000.
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Zheng, Shaohui: *See*—
Yao, David D.; Chen, Jinfa; and Zheng, Shaohui, 5,608,658, Cl. 364-552.000.
Zhevlev, Boris; and Moldavsky, Mark, to Visonic Ltd. Acoustic anti-tampering detector. 5,608,377, Cl. 340-506.000.
Zhong, Lingxiu: *See*—
Rao, A. Gururaj; and Zhong, Lingxiu, 5,607,914, Cl. 514-12.000.
Zhou, Jie-Zhang. Writing board with an automatic erase device. 5,607,312, Cl. 434-411.000.
Zhou, Peter S.; Buchanan, Harry C., Jr.; and McClain, Michael J., to ITT Automotive Electrical Systems, Inc. Windshield wiper system having a wiper blade capable of retraction for hidden park. 5,606,764, Cl. 15-250.160.
Zhu, Dong-Wei, to Minnesota Mining and Manufacturing Company. Aqueous fluorochemical compositions and abrasion-resistant coatings therefrom. 5,608,003, Cl. 524-516.000.
Ziai, Mohammad R.: *See*—
Sokol, Patricia T.; and Ziai, Mohammad R., 5,607,843, Cl. 435-69.100.
Ziegler, David A.; Jurgenson, Ryan A.; Lien, Brent D.; Christensen, Thomas K.; and Mahoney, James R., to Hutchinson Technology Incorporated. Gimballing flexure with static compensation and load print intregal etched features. 5,608,590, Cl. 360-104.000.
Ziger, David H., to Lucent Technologies Inc. Method and arrangement for characterizing micro-size patterns. 5,607,800, Cl. 430-8.000.
Zikeli, Stefan; Ecker, Friedrich; Rauch, Ernst; Renner, Klaus; and Schönberg, Anton, to Lenzing Aktiengesellschaft. Process for the preparation of cellulose sheet. 5,607,639, Cl. 264-561.000.
Zilog, Inc.: *See*—
Movshovich, Aleksandr, 5,608,425, Cl. 345-141.000.
Rajkanan, Kamal; and Kranzen, Bruno, 5,608,258, Cl. 257-532.000.
Zimmerman, Karl M. Retention system for transporting ski-type vehicles. 5,607,270, Cl. 410-3.000.
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, to ARCH Development Corporation; and University of California, The Regents of the. Phenolic acid sulfate esters for prevention of marine biofouling. 5,607,741, Cl. 428-68.000.
Zimmerman, Wendy C.; and Farrell, Roberta L., to Sandoz Ltd. Fungi for pitch reduction and their preparation. 5,607,855, Cl. 435-254.100.
Zmijewski, Milton J., Jr.: *See*—
Briggs, Barbara S.; and Zmijewski, Milton J., Jr., 5,607,850, Cl. 435-228.000.
Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič , Mateja, to LEK, tovarna farmacevtskih in kemicnih. Inclusioin complexes of clavulanic acid and of alkali salts thereof with hydrophilic and hydrophobic beta-cyclodextrin derivatives, a process for the preparation thereof and the use thereof. 5,608,052, Cl. 536-103.000.
Zoller, Walter M.; Hunter, David S., Jr.; Wellner, Edward L.; Larsen, Michael R.; Theisen, Peter J.; and Link, Donald A., to Eaton Corporation. Molded case circuit breaker with interchangeable trip unit having bimetal assembly which registers with permanent heater transformer airgap. 5,608,367, Cl. 335-132.000.
Zopf, William D., to Heil Co., The. Automated intermediate container and method of use. 5,607,277, Cl. 414-408.000.
Zsamboky, Kalman F.: *See*—
Morrison, James S.; Niescierenko, Joseph; and Zsamboky, Kalman F., 5,608,617, Cl. 363-147.000.
Zuckerman, Arie J.: *See*—
Pellegrini, Vittoria; Fineschi, Nicoletta; and Zuckerman, Arie J., 5,607,851, Cl. 435-236.000.
Zushma, Stephen: *See*—
Thaler, Warren A.; Zushma, Stephen; and Gutierrez, Antonio, 5,608,029, Cl. 528-129.000.
Zvenyatsky, Boris; Aranyi, Ernest; and Tovey, H. Jonathan, to United States Surgical Corporation. Articulating endoscopic surgical apparatus. 5,607,450, Cl. 606-206.000.
ZymoGenetics, Inc.: *See*—
Carter, Bruce L. A.; and Edwards, Martin W., 5,607,917, Cl. 514-12.000.
2679965 Canada, Inc., Vogue Pool Products: *See*—
Lavallière, Jean; and Dallaire, Michel, 5,606,749, Cl. 4-502.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Hammer Strength Corporation: *See*—
Jones, Gary A., Re. 35,470, Cl. 482-97.000.

Jones, Gary A., to Hammer Strength Corporation. Incline press exercise machine. Re. 35,470, Cl. 482-97.000.

Newman, William C. Patient transfer device. Re. 35,468, Cl. 5-81.10R.

Ueki, Yasuhiro, to Victor Company of Japan, Ltd. Disc record/reproduce apparatus with brushless motor having rotational speed controlled by a disc. Re. 35,469, Cl. 318-138.000.

Victor Company of Japan, Ltd.: *See*—
Ueki, Yasuhiro, Re. 35,469, Cl. 318-138.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Aero Transportation Products: *See*—
Early, Stephen R., B1 5,355,808, Cl. 105-377.010.

Bargagli-Stoffi, Carlo, to Sangiacomo N.A. Ltd. Bed headboard. B1 8,366,378, Cl. D6-505.000.

Coflexip: *See*—
Maloberti, René; Coutarel, Alain; and Espinasse, Philippe F., B1 5,348,423, Cl. 405-166.000.

Coutarel, Alain: *See*—
Maloberti, René; Coutarel, Alain; and Espinasse, Philippe F., B1 5,348,423, Cl. 405-166.000.

Dresser Industries, Inc.: *See*—
Huffstutler, Alan D., B1 5,439,067, Cl. 175-339.000.

Early, Stephen R., to Aero Transportation Products. Battenless railcar hatch cover assembly. B1 5,355,808, Cl. 105-377.010.

Espinasse, Philippe F.: *See*—
Maloberti, René; Coutarel, Alain; and Espinasse, Philippe F., B1 5,348,423, Cl. 405-166.000.

Feamster, Scott; and Klemba, Keith, to Hewlett-Packard Company. Computer system utilizing compact intelligent disks. B1 5,235,586, Cl. 369-100.000.

Hewlett-Packard Company: *See*—
Feamster, Scott; and Klemba, Keith, B1 5,235,586, Cl. 369-100.000.

Huffstutler, Alan D., to Dresser Industries, Inc. Rock bit with enhanced fluid return area. B1 5,439,067, Cl. 175-339.000.

Klemba, Keith: *See*—
Feamster, Scott; and Klemba, Keith, B1 5,235,586, Cl. 369-100.000.

Kuo, Chang-Kiang, to Texas Instruments Inc. Method of making implant programmable n-channel ROM. B1 4,230,504, Cl. 437-48.000.

Maloberti, René; Coutarel, Alain; and Espinasse, Philippe F., to Coflexip. Device and process for unrolling flexible tubular conduits essentially vertically. B1 5,348,423, Cl. 405-166.000.

Sangiacomo N.A. Ltd.: *See*—
Bargagli-Stoffi, Carlo, B1 8,366,378, Cl. D6-505.000.

Texas Instruments Inc.: *See*—
Kuo, Chang-Kiang, B1 4,230,504, Cl. 437-48.000.

LIST OF DESIGN PATENTEES

Acme United Corporation: *See*—
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Alligood, Dawn I. Moundtype plant cage. 378,287, Cl. D11-143.000.

American Standard Inc.: *See*—
Moon, In-Ho, 378,310, Cl. D23-238.000.

Anderson, Fletcher. Baseball cap. 378,238, Cl. D2-869.000.

Apps, William P.; and Koefelda, Gerald R., to Rehrig-Pacific, Inc. Bottle case with integral sidewall logo. 378,249, Cl. D3-310.000.

Article Chaussant Europeen (Arche S.A.): *See*—
Merceron, Jean Paul, 378,240, Cl. D2-953.000.

Asian Micro Sources, Inc.: *See*—
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Hahn, Stan S., 378,291, Cl. D13-143.000.

Aston, Joanne M., to Yale Security Inc. Portion of a key blade blank. 378,270, Cl. D8-347.000.

Ball, Alan: *See*—
Esecson, Matt; Swyst, Thomas; Ball, Alan; Esecson, Austin; Esecson, Kyle; and Esecson, Diane, 378,295, Cl. D16-133.000.

Ballone, Michael: *See*—
Meisner, Edward H.; Kristiansen, Keith; Ballone, Michael; Hall, Roberta S.; Loferski, Michael A.; Dolson, Michael D.; Bennett, Christopher; Mason, John B., Sr.; Basten, Frank; and Overy, Colin, 378,247, Cl. D3-274.000.

Barnes, J. Bradon; Schafer, Mark P.; and Gramelspacher, Mark B., to EverGreen International, Inc. Lawn trailer. 378,294, Cl. D15-17.000.

Baskent, Feyyaz O.: *See*—
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Basten, Frank: *See*—
Meisner, Edward H.; Kristiansen, Keith; Ballone, Michael; Hall, Roberta S.; Loferski, Michael A.; Dolson, Michael D.; Bennett, Christopher; Mason, John B., Sr.; Basten, Frank; and Overy, Colin, 378,247, Cl. D3-274.000.

Beaver, Ted L., to Continental Plastic Containers, Inc. Partial exterior surface of a container sidewall. 378,274, Cl. D9-530.000.

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Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., to Foamex L.P. Back support cushion of synthetic foam. 378,259, Cl. D6-601.000.

Bramani, Marco, to Vibram S.p.A. Combined tread surface and periphery of a shoe sole. 378,239, Cl. D2-953.000.

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Bright Ideas Group, Inc.: *See*—
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Buck Knives, Inc.: *See*—
Seber, Brett P., 378,243, Cl. D3-220.000.

Buehler, Horst J. Combined automatic Christmas tree waterer and cover therefor. 378,266, Cl. D8-1.000.

Burcham, Gregory S.: *See*—
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Bury, Barbara J. Chair leg bootie. 378,271, Cl. D8-400.000.

Cain, Charles C., to Thomasville Furniture Industries, Inc. Headboard and canopy unit. 378,257, Cl. D6-505.000.

Cain, Charles C., to Thomasville Furniture Industries, Inc. Endboard. 378,258, Cl. D6-507.000.

Canon Kabushiki Kaisha: *See*—
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Cassida, Michele R. Handbag. 378,244, Cl. D3-243.000.

Cheng, Mei-Pi, to Ting Yang Industrial Co., Ltd. Sprinkler. 378,309, Cl. D23-214.000.

Chiu, Li-Mei. Miniature house decoration. 378,286, Cl. D11-121.000.

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Dartnall, Adrian D. E., to Gordon Ellis & Company. Toilet seat. 378,311, Cl. D23-311.000.

Datcon Instrument Co., Inc.: *See*—
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DeMier, Daniel W. Combined ski and boot sling. 378,245, Cl. D3-261.000.

Desveaux, Marshall. Swimming hand paddle. 378,307, Cl. D21-239.000.

Diehl, Gregory W., to ESAB Group, Inc., The. Compressed gas regulator. 378,283, Cl. D10-85.000.

Dolson, Michael D.: *See*—
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Doughty, Frederic C.; and Mark, Darren M. Handle. 378,269, Cl. D8-307.000.

Doyle, Donald E. Spacer - septal splint. 378,313, Cl. D24-128.000.

Eckel, Alan. Infant audiometric chamber. 378,316, Cl. D24-173.000.

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Esecson, Austin: *See*—
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Esecson, Diane: *See*—
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Hahn, Stan S., to Asian Micro Sources, Inc. Interchangeable plug device. 378,291, Cl. D13-143.000.

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Bourke, Janet E.; and Bourke, John P. C., to Blooms of Bressingham Ltd. Campanula plant named Chettle Charm. 9,815, Cl. Plt.-68.100.

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De Meyer, Henri, to H. De Meyer - De Rouck b.v.b.a. Guzmania plant named 'Red Pearl'. 9,820, Cl. Plt.-88.800.

Fernlea Flowers, Ltd.: *See*—
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H. De Meyer - De Rouck b.v.b.a.: *See*—
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Leighfield, William, to Fernlea Flowers, Ltd. Poinsetta plant named 'Marble Sails'. 9,819, Cl. Plt.-86.100.

VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named 'Fidelio'. 9,816, Cl. Plt.-77.000.

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VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named 'Laurie'. 9,818, Cl. Plt.-78.000.

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VandenBerg, Cornelis P., 9,818, Cl. Plt.-78.000.

Zaandam, Diana. Ixora plant—'Diora'. 9,814, Cl. Plt.-54.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

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Crainic, Sorin. Catamenial device. H1,639, Cl. 604-368.000.

Fujie, Akihiko: *See*—
Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

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Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

Iwamoto, Toshiro: *See*—
Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

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Litchholt, John J.; Thomas, Dennis A.; and Hammond, Keith W., to Procter & Gamble Company, The. Reinforced landing surface for mechanical fasteners on disposable products. H1,640, Cl. 604-389.000.

Nitta, Kumiko: *See*—
Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

Offord, Bruce W.; Russell, Stephen D.; and Weiner, Kurt H. Laser-assisted fabrication of bipolar transistors in silicon-on-sapphire (SOS). H1,637, Cl. 437-173.000.

Okuhara, Masakuni: *See*—
Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

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Sevenants, Michael R.; and Hart, John M. Flavor enhancement of reduced fat nut butters through the addition of citric acid. H1,636, Cl. 426-633.000.

Shigematsu, Nobuharu: *See*—
Furuta, Takahisa; Iwamoto, Toshiro; Fujie, Akihiko; Nitta, Kumiko; Tsurumi, Yasuhisa; Shigematsu, Nobuharu; Kasahara, Chiyoshi; Hino, Motohiro; and Okuhara, Masakuni, H1,638, Cl. 514-11.000.

Thomas, Dennis A.: *See*—
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Tsurumi, Yasuhisa: *See*—
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Vander Meer, James M., to Procter & Gamble Company, The. Detergent compositions with oleoyl sarcosinate and amine oxide. H1,635, Cl. 510-220.000.

Weiner, Kurt H.: *See*—
Offord, Bruce W.; Russell, Stephen D.; and Weiner, Kurt H., H1,637, Cl. 437-173.000.

CLASSIFICATION OF PATENTS

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CLASS 65

30.1 5,607,493
174 5,607,492

CLASS 66

77 5,606,875
148 5,606,876

CLASS 68

12.04 5,606,877
17 R 5,606,878
23.3 5,606,879

CLASS 70

86 5,606,880
352 5,606,881
369 5,606,882
370 5,606,883

CLASS 71

6 5,607,494

CLASS 72

41 5,606,884
250 5,606,885
296 5,606,886
357 5,606,887
443 5,606,888

CLASS 73

1 D 5,608,153
23.31 5,608,154
28.01 5,608,155
31.06 5,608,156
32 R 5,608,157
37 5,608,158
49.8 5,608,159
65.03 5,608,160
117.3 5,608,161
152.48 5,608,162
599 5,608,164
5,608,165
657 5,608,166
715 5,608,167
755 5,608,168
803 5,608,169
861.04 5,608,170
861.63 5,608,171
862.541 5,608,172
862.628 5,608,173

CLASS 74

2 5,606,889
411 5,606,890
493 5,606,891
5,606,892
527 5,606,893
594.6 5,606,894

CLASS 75

235 5,608,174
502 5,607,495
670 5,607,496

CLASS 76

108.4 5,606,895

CLASS 81

77 5,606,896
124.6 5,606,897
436 5,606,898

CLASS 82

158 5,606,899

CLASS 83

846 5,606,900

CLASS 84

171 5,608,175
337 5,608,176
379 5,608,177
609 5,608,178

CLASS 89

7 5,608,179
43.01 5,608,180

CLASS 91

461 5,606,901

CLASS 92

88 5,606,902
5,606,903

CLASS 95

3 5,607,497
19 5,607,498

CLASS 96

108 5,607,499
144 5,607,500

CLASS 99

326 5,606,904
375 5,606,905
450.2 5,606,906
455 5,606,907
467 5,606,908

CLASS 100

8 5,606,909
208 5,606,910

CLASS 101

126 5,607,243
127 5,606,911
127.1 5,606,912
183 5,606,913
488 5,606,914

CLASS 104

172.4 5,606,915

CLASS 105

286 5,606,916
377.01 B1 5,355,808

CLASS 106

22 A 5,607,501
22 K 5,607,502
287.11 5,607,503
403 5,607,504
745 5,607,505

CLASS 108

42 5,606,917
5,606,918
50 5,606,919
5,606,920
53.3 5,606,921
129 5,606,922

CLASS 110

211 5,606,923
341 5,606,924
346 5,606,925

CLASS 112

273 5,606,926
470.01 5,606,927
475.08 5,606,928

CLASS 114

77 R 5,606,929
144 R 5,606,930

CLASS 116

209 5,606,931

CLASS 117

33 5,607,506
201 5,607,507

CLASS 118

213 5,607,508
723 FE 5,607,509
723 MA 5,607,510
725 5,607,511

CLASS 119

14.14 5,606,932
51.03 5,606,933
53.5 5,606,934
203 5,606,935
721 5,606,936

CLASS 123

41.28 5,606,937
54.3 5,606,938
90.12 5,606,940
90.15 5,606,941
90.16 5,606,942
90.23 5,606,943
90.31 5,606,944
90.5 5,606,939
198 DB 5,606,945
198 E 5,606,946
339.17 5,606,947
352 5,606,948
396 5,606,949
399 5,606,950
5,606,951
413 5,606,952
506 5,606,953
520 5,606,954
5,606,955
545 5,606,956
571 5,606,957
601 5,606,958
673 5,606,959
684 5,606,960

CLASS 124

44.5 5,606,961
5,606,962
78 5,607,151
86 5,606,963

CLASS 126

350 R 5,606,964
360 A 5,606,965

CLASS 128

200.26 5,606,966
201.11 5,606,967
207.14 5,606,968
653.1 5,606,969
653.2 5,606,970
660.02 5,606,971
661.09 5,606,972
662.02 5,606,973
662.06 5,606,974
5,606,975
671 5,606,976
680 5,606,977
711 5,606,978
772 5,606,979
5,606,980
5,606,981
842 5,606,982

CLASS 132

229 5,606,983
325 5,606,984

CLASS 134

6 5,607,512
8 5,607,513
12 5,607,514
18 5,607,515
21 5,607,516
22.19 5,607,517
31 5,607,518

CLASS 135

72 5,606,985
87 5,606,986

CLASS 136

200 5,608,181
253 5,607,519

CLASS 137

1 5,606,987
68.14 5,606,988
203 5,606,989
259 5,606,990
510 5,606,991
596.17 5,606,992
596.18 5,606,993
627.5 5,606,994
846 5,606,995

CLASS 138

30 5,606,996
98 5,606,997

CLASS 139

194 5,606,998
257 5,606,999

CLASS 141

21 5,607,000
59 5,607,001
198 5,607,002
285 5,607,003
340 5,607,004

CLASS 144

353 5,607,005

CLASS 148

241 5,607,520
261 5,607,521
281 5,607,522
415 5,607,523
521 5,607,524

CLASS 149

22 5,608,182
45 5,608,183
98 5,608,184
108.4 5,608,185

CLASS 156

62.8 5,607,525
64 5,607,526
71 5,607,527
73.2 5,607,528
143 5,607,529
5,607,530
166 5,607,531
169 5,607,532
230 5,607,533
234 5,607,534
252 5,607,535
285 5,607,536
289 5,607,537
291 5,607,538
364 5,607,539
379.8 5,607,540
538 5,607,541
643.1 5,607,542
662.1 5,607,543

CLASS 162

5 5,607,544
19 5,607,545
25 5,607,546
26 5,607,547
30.11 5,607,548
5,607,549
102 5,607,550
109 5,607,551
181.6 5,607,552
205 5,607,553
210 5,607,554
304 5,607,555

CLASS 164

112 5,607,006
122.2 5,607,007

CLASS 165

11.1 5,607,008
48.1 5,607,009
51 5,607,010
104.14 5,607,011
173 5,607,012
207 5,607,013
240 5,607,014

CLASS 166

250.01 5,607,015
263 5,607,016
288 5,607,017
303 5,607,018
344 5,607,019

CLASS 169
48 5,607,020
54 5,607,021

CLASS 173
10 5,607,022
178 5,607,023

CLASS 174
7 5,608,186
25 G 5,608,187
35 R 5,608,188
65 SS 5,608,189
135 5,608,190
151 5,608,191
255 5,608,192

CLASS 175
339 B1 5,439,067
431 5,607,024
5,607,025

CLASS 177
25.13 5,608,193

CLASS 180
190 5,607,026
242 5,607,027
408 5,607,028

CLASS 181
228 5,608,194

CLASS 182
3 5,607,029

CLASS 188
1.12 5,607,030
26 5,607,031
67 5,607,032
71.6 5,607,033
250 A 5,607,034
322.19 5,607,035

CLASS 192
45.1 5,607,036
53.331 5,607,037
85 R 5,607,038

CLASS 193
37 5,607,039

CLASS 194
207 5,607,040

CLASS 198
347.3 5,607,042
438 5,607,043
468.4 5,607,044
476.4 5,607,045
741 5,607,046

CLASS 200
50.28 5,608,195
61.19 5,608,196
303 5,607,047
314 5,607,048
557 5,607,049

CLASS 201
15 5,607,556

CLASS 203
39 5,607,557
89 5,607,558

CLASS 204
157.15 5,608,197
192.13 5,607,559
192.15 5,607,560
224 R 5,607,561
265 5,607,562
269 5,607,563
284 5,607,564
403 5,607,565
418 5,607,566
5,607,567
600 5,607,568

CLASS 205
118 5,607,569
297 5,607,570
493 5,607,571
763 5,607,572
782.5 5,607,573

CLASS 206
63.5 5,607,050
213.1 5,607,051
307 5,607,052
315.2 5,607,053
320 5,607,054
364 5,607,055
427 5,607,056
509 5,607,057
581 5,607,058
720 5,607,059

CLASS 208
188 5,607,574
251 R 5,607,575
308 5,607,576
391 5,607,577

CLASS 209
12.2 5,607,060
139.1 5,607,061
283 5,607,062
584 5,607,063

CLASS 210
172 5,607,578
195.1 5,607,579
198.2 5,607,580
5,607,581
234 5,607,582
236 5,607,583
238 5,607,584
316 5,607,585
321.78 5,607,586
380.3 5,607,587
396 5,607,588
415 5,607,589
490 5,607,590
638 5,607,591
641 5,607,592
650 5,607,593
662 5,607,594
669 5,607,595
739 5,607,596
755 5,607,597
772 5,607,598

CLASS 211
5 5,607,064
40 5,607,065
45 5,607,066
50 5,607,067
59.2 5,607,068
113 5,607,069
189 5,607,070

CLASS 212
231 5,607,071

CLASS 215
10 5,607,072
11.4 5,607,073
11.5 5,607,074

CLASS 216
22 5,607,599
24 5,607,600
63 5,607,601
76 5,607,602

CLASS 218
147 5,608,198

CLASS 219
76.14 5,607,603
110 5,607,604
121.64 5,607,605
121.67 5,607,606
121.68 5,607,607
133 5,607,608
388 5,607,609
505 5,607,610
702 5,607,611
759 5,607,612
771 5,607,613

CLASS 220
319 5,607,075
501 5,607,076
575 5,607,077
756 5,607,078

CLASS 222
45 5,607,079
67 5,607,080
83.5 5,607,081
95 5,607,082
129.1 5,607,083
153.03 5,607,084
5,607,085
525 5,607,086
610 5,607,087

CLASS 223
66 5,607,088

CLASS 224
155 5,607,089
217 5,607,090
222 5,607,091
258 5,607,092
318 5,607,093

CLASS 227
175.1 5,607,094
177.1 5,607,095

CLASS 228
1.1 5,607,096
8 5,607,097
17 5,607,098
180.22 5,607,099

CLASS 229
69 5,607,100
71 5,607,101

CLASS 232
1 D 5,607,102
17 5,607,103

CLASS 235
435 5,608,199
462 5,608,200
5,608,201
5,608,202
487 5,608,203

CLASS 236
34.5 5,607,104
49.3 5,607,105

CLASS 239
88 5,607,106
195 5,607,107
424 5,607,108
568 5,607,109
598 5,607,110

CLASS 241
18 5,607,111
33 5,607,112
82.1 5,607,113

CLASS 242
43 A 5,607,115
244 5,607,114
247 5,607,116
261 5,607,117
379.1 5,607,118
532.6 5,607,119
559.4 5,607,120
563.2 5,607,121

CLASS 244
17.19 5,607,122
52 5,607,123

CLASS 248
48.2 5,607,124
51 5,607,125
68.1 5,607,126
72 5,607,127
96 5,607,128
98 5,607,129
125.3 5,607,130
215 5,607,131
220.42 5,607,132
313 5,607,133
354.3 5,607,134
456 5,607,135
640 5,607,136

CLASS 250
208.1 5,608,204
5,608,205
208.2 5,608,206
214 AG 5,608,207
214.1 5,608,208
221 5,608,209
226 5,608,210
234 5,608,211
252.1 5,608,212
5,608,213
262 5,608,214
269.6 5,608,215
282 5,608,216
288 5,608,217
310 5,608,218
343 5,608,219
353 5,608,220
363.03 5,608,221
369 5,608,222
442.11 5,608,224
447.11 5,608,223
458.1 5,608,225
491.1 5,608,226
492.1 5,608,227

CLASS 251
129.07 5,607,137
149.6 5,607,139
305 5,607,140

CLASS 252
62.63 5,607,615
62.9 PZ 5,607,614
67 5,607,616
73 5,607,617
182.13 5,608,228
187.2 5,607,619
299.67 5,607,620
301.36 5,607,621
312 5,607,622
392 5,607,623
589 5,607,624
700 5,607,625

CLASS 254
200 5,607,141
298 5,607,142
342 5,607,143

CLASS 257
14 5,608,229
18 5,608,230
24 5,608,231
66 5,608,232
80 5,608,233
94 5,608,234
119 5,608,235
123 5,608,236
132 5,608,237
140 5,608,238
192 5,608,239
204 5,608,240
207 5,608,241
216 5,608,242
249 5,608,243
267 5,608,244
291 5,608,245
295 5,608,246
306 5,608,247
5,608,248
5,608,249
314 5,608,250
337 5,608,251
347 5,608,252
365 5,608,253
432 5,608,254
466 5,608,255
510 5,608,256
529 5,608,257
532 5,608,258
547 5,608,259
666 5,608,260
700 5,608,261
723 5,608,262
728 5,608,263
734 5,608,264
738 5,608,265
768 5,608,266
796 5,608,267

CLASS 261
27 5,607,626
91 5,607,627

CLASS 264
18 5,607,628
45.9 5,607,629
60 5,607,630
61 5,607,631
5,607,632
115 5,607,633
130 5,607,634
169 5,607,635
205 5,607,636
271.1 5,607,637
560 5,607,638
561 5,607,639
572 5,607,640

CLASS 266
249 5,607,144

CLASS 270
1.01 5,607,145
42 5,607,146

CLASS 271
293 5,607,147
303 5,607,148

CLASS 273
110 5,607,155
146 5,607,156
148 B 5,607,157
5,607,158
5,607,159
249 5,607,160
292 5,607,161
5,607,162
410 5,607,163
446 5,607,164

CLASS 277
2 5,607,165
27 5,607,166
72 FM 5,607,167
152 5,607,168
168 5,607,169

CLASS 280
63 5,607,170
288.1 5,607,171
290 5,607,172
293 5,607,173
653 5,607,174
655 5,607,175
656 5,607,176
673 5,607,177
716 5,607,178
728.2 5,607,179
736 5,607,180
737 5,607,181
743.1 5,607,182
743.2 5,607,183
775 5,607,184
806 5,607,185

CLASS 283
65 5,607,186
67 5,607,187
113 5,607,188

CLASS 285
39 5,607,189
93 5,607,190
256 5,607,191
305 5,607,192
308 5,607,193
334.5 5,607,194

CLASS 290
54 5,608,268

CLASS 292
247 5,607,195

CLASS 294
99.2 5,607,196

CLASS 296
93 5,607,197
146.16 5,607,198
180.1 5,607,199
181 5,607,200

CLASS 297
44 5,607,202
256.15 5,607,203
284.11 5,607,204
452.62 5,607,201

CLASS 299
1.5 5,607,205
102 5,607,206

CLASS 303
113.1 5,607,207
113.5 5,607,208
122.11 5,607,209

CLASS 305
131 5,607,210

CLASS 307
9.1 5,608,269
10.1 5,608,270
5,608,271
10.2 5,608,272
64 5,608,273
119 5,608,274
130 5,608,275
152 5,608,276

CLASS 310
68 B 5,608,277
90 5,608,278
156 5,608,279
239 5,608,280
268 5,608,281

CLASS 312
204 5,607,211
237 5,607,212
301 5,607,213
310 5,607,214
348.3 5,607,215

CLASS 313
309 5,608,283
414 5,608,284
466 5,608,285
495 5,608,286
503 5,608,287
612 5,608,288

CLASS 315
58 5,608,289
200 A 5,608,290
209 R 5,608,291
5,608,292
219 5,608,293
224 5,608,294
247 5,608,295
289 5,608,296
344 5,608,297

CLASS 318
138 Re.35,469
286 5,608,298
568.11 5,608,299
721 5,608,300
729 5,608,301
802 5,608,302

CLASS 320
2 5,608,303
5 5,608,304
13 5,608,305
15 5,608,306
39 5,608,307

CLASS 322
11 5,608,308
28 5,608,309
29 5,608,310

CLASS 323
218 5,608,311
224 5,608,312
269 5,608,313
313 5,608,314

CLASS 324
204 5,608,315
5,608,316
207.2 5,608,317
233 5,608,318
251 5,608,319
253 5,608,320
307 5,608,321
309 5,608,322
368 5,608,323
426 5,608,324
5,608,325
454 5,608,326
522 5,608,327
529 5,608,328
537 5,608,329
601 5,608,330
613 5,608,331
633 5,608,332
711 5,608,333
758 5,608,334
763 5,608,335
765 5,608,337
770 5,608,338

CLASS 326
27 5,608,339
36 5,608,340
38 5,608,341
5,608,342
93 5,608,343

CLASS 327
206 5,608,344
337 5,608,345
382 5,608,346
512 5,608,347
538 5,608,348
553 5,608,349

CLASS 330
51 5,608,350
107 5,608,351
253 5,608,352
295 5,608,353

CLASS 331
1 A 5,608,354
5,608,355
18 5,608,356
57 5,608,357
65 5,608,358
68 5,608,359
107 A 5,608,360

CLASS 333
1.1 5,608,361
191 5,608,362
202 5,608,363
204 5,608,364

CLASS 335
8 5,608,365
78 5,608,366
132 5,608,367
281 5,608,368

5,608,369
19 5,608,450
69 5,608,451
87 5,608,453
120 88 5,608,454
210 5,608,371 245 5,608,455
335 5,608,457
CLASS 337 340 5,608,456
198 5,608,372 413 5,608,458
416 5,608,459
CLASS 338 525 5,608,460
21 5,608,373 526 5,608,461
35 5,608,374 531 5,608,462
CLASS 340 540 5,608,463
578 5,608,464
293 5,608,375 584 5,608,465
454 5,608,376 587 5,608,466
506 5,608,377 744 5,608,467
568 5,608,378 771 5,608,468
572 5,608,379
5,608,380 **CLASS 349**
573 5,608,381 5 5,608,552
5,608,382 42 5,608,557
588 5,608,383 61 5,608,553
632 5,608,384 70 5,608,554
636 5,608,385 143 5,608,556
688 5,608,386 149 5,608,559
825.07 5,608,388 156 5,608,555
825.34 5,608,387 192 5,608,558
825.57 5,608,389
870.01 5,608,390 **CLASS 351**
933 5,608,391 44 5,608,469
967 5,608,392 47 5,608,470
988 5,608,393 161 5,608,471
206 5,608,472
CLASS 341
11 5,608,394 **CLASS 352**
50 5,608,395 27 5,608,473
5,608,396 160 5,608,474
58 5,608,397
76 5,608,398 **CLASS 353**
139 5,608,399 97 5,607,216
143 5,608,400
144 5,608,401 **CLASS 355**
162 5,608,402 68 5,608,492

CLASS 342 **CLASS 356**
13 5,608,403 3 5,608,513
25 5,608,404 5.09 5,608,514
5,608,405 43 5,608,515
51 5,608,406 240 5,608,516
126 5,608,407 246 5,608,517
196 5,608,408 300 5,608,518
380 5,608,409 318 5,608,519
387 5,608,410 5,608,520
417 5,608,411 326 5,608,521
457 5,608,412 345 5,608,522
5,608,523
CLASS 343 350 5,608,524
700 MS 5,608,413 5,608,525
5,608,414 369 5,608,526
731 5,608,415 371 5,608,527
773 5,608,416 375 5,608,528
895 5,608,417 376 5,608,529
384 5,608,530
CLASS 345
3 5,608,418 **CLASS 358**
74 5,608,419 401 5,608,537
89 5,608,420 406 5,608,538
100 5,608,421 426 5,608,539
101 5,608,422 434 5,608,540
123 5,608,423 448 5,608,541
141 5,608,424 449 5,608,542
5,608,425 450 5,608,543
153 5,608,426 453 5,608,544
201 5,608,427 468 5,608,545
5,608,546
CLASS 346 505 5,608,547
135.1 5,608,429 522 5,608,548
530 5,608,549
CLASS 347
8 5,608,430 **CLASS 359**
13 5,608,431 40 5,608,550
33 5,608,432 95 5,608,551
37 5,608,433 156 5,608,560
50 5,608,434 161 5,608,561
58 5,608,435 5,608,562
65 5,608,436 202 5,608,563
86 5,608,437 205 5,608,564
100 5,608,438 237 5,608,565
102 5,608,439 248 5,608,566
171 5,608,440 275 5,608,567
5,608,441 288 5,608,568
211 5,608,442 291 5,608,569
218 5,608,443 321 5,608,570
259 5,608,444 341 5,608,571
344 5,608,572
CLASS 348 392 5,608,573
4 5,608,445 510 5,608,574
6 5,608,428 558 5,608,575
5,608,446 562 5,608,576
7 5,608,447 584 5,608,577
5,608,448 609 5,608,578
13 5,608,449 820 5,608,579
831 5,608,580
861 5,608,581

CLASS 360
8 5,608,582
46 5,608,583
69 5,608,584
72.1 5,608,585
77.04 5,608,586
77.08 5,608,587
78.04 5,608,588
85 5,608,589
104 5,608,590
5,608,591
105 5,608,592
113 5,608,593

CLASS 361
58 5,608,594
79 5,608,595
118 5,608,596
127 5,608,597
160 5,608,598
283.1 5,608,599
303 5,608,600
532 5,608,601
534 5,608,602
680 5,608,603
681 5,608,604
684 5,608,605
686 5,608,606
5,608,607
5,608,608
690 5,608,609
704 5,608,610
753 5,608,611
814 5,608,612

CLASS 362
35 5,607,217
61 5,607,218
5,607,219
66 5,607,220
83.3 5,607,221
84 5,607,222
99 5,607,223
101 5,607,224
125 5,607,225
249 5,607,227
251 5,607,226
263 5,607,228
346 5,607,229
396 5,607,230

CLASS 363
21 5,608,613
60 5,608,614
102 5,608,615
132 5,608,616
147 5,608,617

CLASS 364
167.01 5,608,618
192 5,608,619
423.098 5,608,629
424.012 5,608,627
424.013 5,608,634
424.04 5,608,630
424.055 5,608,628
424.08 5,608,626
426.018 5,608,631
431.051 5,608,632
431.08 5,608,633
449.3 5,608,635
464.18 5,608,636
468.03 5,608,637
468.28 5,608,638
469.04 5,608,639
474.22 5,608,641
474.3 5,608,640
478.01 5,608,642
479.14 5,608,643
481 5,608,644
491 5,608,645
492 5,608,646
509 5,608,647
510 5,608,650
512 5,608,648
514 C 5,608,649
5,608,653
514 R 5,608,651
5,608,652
5,608,654
5,608,655
5,608,656
551.01 5,608,657
552 5,608,658
554 5,608,659
562 5,608,660
709.06 5,608,661
724.01 5,608,662
748.5 5,608,663
822 5,608,664
825 5,608,665

CLASS 365
112 5,608,666
145 5,608,667
149 5,608,668
185.19 5,608,669
185.23 5,608,670
185.29 5,608,671
185.3 5,608,672
185.33 5,608,673
189.05 5,608,674
189.06 5,608,675
189.09 5,608,676
5,608,677
200 5,608,678
201 5,608,679
205 5,608,680
207 5,608,681
222 5,608,682
5,608,683
228 5,608,684
230.06 5,608,685
233 5,608,686
233.5 5,608,687
5,608,688

CLASS 366
7 5,607,231
63 5,607,232
102 5,607,233
214 5,607,234
325.2 5,607,235

CLASS 367
87 5,608,689
138 5,608,690
140 5,608,691
157 5,608,692

CLASS 368
10 5,608,693
127 5,608,694

CLASS 369
13 5,608,699
24 5,608,700
32 5,608,701
5,608,702
44.12 5,608,695
44.14 5,608,696
48 5,608,697
54 5,608,698
55 5,608,703
56 5,608,704
77.1 5,608,705
77.2 5,608,706
84 5,608,707
100 B1 5,235,586
109 5,608,708
112 5,608,709
116 5,608,710
5,608,711
5,608,712
124 5,608,713
178 5,608,714
275.1 5,608,715
5,608,716
275.3 5,608,717
275.4 5,608,718

CLASS 370
238 5,608,721
249 5,608,720
250 5,608,719
307 5,608,724
320 5,608,722
335 5,608,723
338 5,608,725
394 5,608,733
401 5,608,726
445 5,608,729
462 5,608,727
471 5,608,730
474 5,608,732
488 5,608,728
509 5,608,734
513 5,608,735
516 5,608,731

CLASS 371
22.3 5,608,736
30 5,608,737
37.1 5,608,738
5,608,739
37.4 5,608,740
49.1 5,608,741

CLASS 372
6 5,608,742
20 5,608,743
21 5,608,744
26 5,608,745
33 5,608,746
5,608,747
35 5,608,748
36 5,608,749
45 5,608,750
46 5,608,751
5,608,752
50 5,608,753
93 5,608,754

CLASS 374
117 5,607,236

CLASS 375
219 5,608,755
228 5,608,756
229 5,608,757
238 5,608,758
242 5,608,759
285 5,608,760
296 5,608,761
319 5,608,762
332 5,608,763
344 5,608,764
365 5,608,765

CLASS 376
305 5,608,766
321 5,608,767
451 5,608,768

CLASS 377
20 5,608,769
47 5,608,770

CLASS 378
15 5,608,771
16 5,608,772
34 5,608,773
98.8 5,608,774
5,608,775
145 5,608,776
146 5,608,777

CLASS 379
58 5,608,778
5,608,780
59 5,608,781
63 5,608,782
67 5,608,783
88 5,608,779
5,608,784
90 5,608,785
100 5,608,786
142 5,608,788
201 5,608,789
230 5,608,790
265 5,608,791
386 5,608,792
387 5,608,793
396 5,608,794
399 5,608,795
403 5,608,796
442 5,608,797

CLASS 380
2 5,608,798
11 5,608,799
25 5,608,800
46 5,608,801
50 5,608,802

CLASS 381
68.2 5,608,803
71 5,608,804
77 5,608,805
86 5,608,806
119 5,608,807
183 5,608,808
188 5,608,809
193 5,608,810

CLASS 382
124 5,608,811
128 5,608,812
132 5,608,813
141 5,608,814
142 5,608,815
149 5,608,816
152 5,608,817
153 5,608,818
156 5,608,819
169 5,608,820
252 5,608,821
270 5,608,822
271 5,608,823
276 5,608,824

CLASS 383
22 5,607,237

CLASS 384
49 5,607,238
192 5,607,239
480 5,607,240
537 5,607,241

CLASS 385
24 5,608,825
37 5,608,826
55 5,608,827
59 5,608,828
76 5,608,829
78 5,608,830
85 5,608,831
112 5,608,832
116 5,608,833
125 5,608,834
126 5,608,835
137 5,608,836
146 5,608,837

CLASS 386
1 5,608,531
7 5,608,532
46 5,608,536
83 5,608,534
91 5,608,533
123 5,608,535

CLASS 392
407 5,608,838

CLASS 395
2.44 5,608,839
2.45 5,608,840
2.65 5,608,841
21 5,608,842
23 5,608,843
27 5,608,844
50 5,608,845
75 5,608,846
83 5,608,847
116 5,608,848
119 5,608,849
127 5,608,850
131 5,608,851
135 5,608,852
139 5,608,853
141 5,608,854
142 5,608,855
5,608,856
180 5,608,865
183.15 5,608,866
184.01 5,608,867
185.01 5,608,868
200.01 5,608,869
200.02 5,608,871
200.04 5,608,872
200.08 5,608,873
200.1 5,608,870
200.15 5,608,874
201 5,608,620
216 5,608,621
250 5,608,875
281 5,608,876
284 5,608,877
287 5,608,878
290 5,608,879
306 5,608,881
307 5,608,882
309 5,608,883
5,608,884
326 5,608,861
352 5,608,860
375 5,608,887
380 5,608,885
412 5,608,888
421.07 5,608,889
440 5,608,890
441 5,608,891
445 5,608,892
468 5,608,893
500 5,608,894
5,608,895
501 5,608,862
5,608,863
507 5,608,864
557 5,608,897
558 5,608,896
586 5,608,886
602 5,608,904
604 5,608,899
610 5,608,903
613 5,608,900
616 5,608,902
619 5,608,898
621 5,608,901
5,608,905
670 5,608,910
672 5,608,907
677 5,608,906
703 5,608,908
5,608,909
753 5,608,622
754 5,608,623

761 5,608,857
763 5,608,858
792 5,608,859
793 5,608,625
794 5,608,624

CLASS 396

6 5,608,477
5,608,480
5,608,482
5,608,486
51 5,608,489
125 5,608,488
155 5,608,476
207 5,608,475
243 5,608,491
300 5,608,490
373 5,608,483
390 5,608,479
440 5,608,481
463 5,608,484
503 5,608,478
514 5,608,485
564 5,608,487

CLASS 399

18 5,608,504
72 5,608,495
81 5,608,496
83 5,608,493
99 5,608,499
119 5,608,501
130 5,608,498
153 5,608,497
176 5,608,500
276 5,608,502
302 5,608,503
307 5,608,507
314 5,608,505
315 5,608,506
323 5,608,512
339 5,608,508
351 5,608,509
366 5,608,494
398 5,608,511

CLASS 400

124.1 5,607,242
247 5,607,244
614 5,607,245

CLASS 402

73 5,607,246

CLASS 403

16 5,607,247
78 5,607,248
165 5,607,249
325 5,607,250
348 5,607,251

CLASS 404

6 5,607,252
47 5,607,253
79 5,607,254
90 5,607,255
105 5,607,256

CLASS 405

166 B1 5,348,423
184 5,607,257
186 5,607,258
198 5,607,259
204 5,607,260
244 5,607,261
284 5,607,262

CLASS 407

61 5,607,263
118 5,607,264

CLASS 408

20 5,607,265
124 5,607,266

CLASS 409

81 5,607,267
131 5,607,268
134 5,607,269

CLASS 410

3 5,607,270

CLASS 411

7 5,606,753
79 5,607,273
349 5,607,271
533 5,607,272

CLASS 414

111 5,607,274
331 5,607,275
5,607,276
408 5,607,277
416 5,607,278
478 5,607,279
745.7 5,607,280
751 5,607,281
796.3 5,607,282

CLASS 415

55.1 5,607,283
58.5 5,607,284

CLASS 416

170 R 5,607,285

CLASS 417

222.2 5,607,286
269 5,607,287
310 5,607,288
375 5,607,289
393 5,607,290
410.1 5,607,291
417 5,607,292
423.7 5,607,293

CLASS 419

45 5,608,911

CLASS 422

62 5,607,642
82.05 5,607,643
82.07 5,607,644
5,607,645
101 5,607,646
122 5,607,647
137 5,607,648
147 5,607,649
178 5,607,650
266 5,607,651
300 5,607,652

CLASS 423

235 5,607,653
240 S 5,607,654
498 5,607,655
513 5,607,656
576.2 5,607,657
593 5,607,658

CLASS 424

1.73 5,607,659
9.4 5,607,660
9.52 5,607,661
46 5,607,662
49 5,607,663
59 5,607,664
61 5,607,665
69 5,607,666
70.1 5,607,667
75 5,607,668
78.12 5,607,669
5,607,670
84 5,607,671
94.1 5,607,673
195.1 5,607,674
5,607,675
195.11 5,607,676
197.11 5,607,677
278.1 5,607,678
401 5,607,679
5,607,680
405 5,607,681
5,607,682
5,607,683
5,607,684
422 5,607,685
426 5,607,686
5,607,687
429 5,607,688
435 5,607,689
443 5,607,690
449 5,607,691
450 5,607,692
5,607,693
5,607,694
468 5,607,695
473 5,607,696
495 5,607,697
613 5,607,698
672 5,607,699

CLASS 425

71 5,607,700
72.2 5,607,701
121 5,607,702
145 5,607,703
183 5,607,704
190 5,607,705
526 5,607,706

CLASS 426

2 5,607,707
96 5,607,708
106 5,607,709
237 5,607,710
248 5,607,711
321 5,607,712
332 5,607,713
599 5,607,714
604 5,607,715
660 5,607,716

CLASS 427

4 5,607,717
97 5,607,718
117 5,607,719
181 5,607,720
208.4 5,607,721
248.1 5,607,722
249 5,607,723
255.1 5,607,724
255.5 5,607,725
261 5,607,726
393 5,607,727
428 5,607,728
495 5,607,729
512 5,607,730
529 5,607,731
585 5,607,733

CLASS 428

1 5,607,732
7 5,607,734
36.1 5,607,735
36.3 5,607,736
40.1 5,607,737
43 5,607,738
64.1 5,607,739
65.3 5,607,740
68 5,607,741
98 5,607,742
131 5,607,743
5,607,744
138 5,607,745
5,607,746
141 5,607,747
156 5,607,748
5,607,749
172 5,607,750
195 5,607,751
203 5,607,752
210 5,607,753
211 5,607,754
217 5,607,755
321.3 5,607,762
323 5,607,763
327 5,607,764
364 5,607,765
366 5,607,761
373 5,607,766
403 5,607,768
408 5,607,769
5,607,770
423.1 5,607,771
425.9 5,607,772
427 5,607,773
447 5,607,774
461 5,607,775
472 5,607,776
480 5,607,777
613 5,607,778
634 5,607,779
694 ML 5,607,780
5,607,781
694 T 5,607,782
5,607,783

CLASS 429

16 5,607,784
33 5,607,785
34 5,607,786
62 5,607,787
72 5,607,788
90 5,607,789
93 5,607,790
96 5,607,791
97 5,607,792
100 5,607,793
5,607,794
5,607,795
165 5,607,796
208 5,607,797

CLASS 430

1 5,607,799
8 5,607,800
22 5,607,801
58 5,607,802
106 5,607,803
5,607,804
106.6 5,607,805
110 5,607,806
137 5,607,807
5,607,808
201 5,607,809
5,607,810
204 5,607,811
214 5,607,812
252 5,607,813
258 5,607,814
264 5,607,815
271.1 5,607,816
281.1 5,607,817
311 5,607,818
386 5,607,819
393 5,607,820
396 5,607,821
465 5,607,822
496 5,607,823
510 5,607,824
529 5,607,825
533 5,607,826
567 5,607,827
5,607,828
578 5,607,829

CLASS 431

46 5,607,294
153 5,607,295

CLASS 432

3 5,607,296
99 5,607,297
118 5,607,298

CLASS 433

3 5,607,299
6 5,607,300
8 5,607,301
39 5,607,302
140 5,607,303
174 5,607,304
223 5,607,305

CLASS 434

29 5,607,306
30 5,607,307
62 5,607,308
107 5,607,309
157 5,607,310
274 5,607,311
411 5,607,312

CLASS 435

2 5,607,830
5 5,607,831
6 5,607,832
5,607,833
5,607,834
5,607,835
7.2 5,607,836
13 5,607,837
22 5,607,838
67 5,607,839
68.1 5,607,840
5,607,841
69.1 5,607,842
5,607,843
5,607,844
5,607,845
69.3 5,607,846
69.6 5,607,847
143 5,607,848
172.3 5,607,672
193 5,607,849
228 5,607,850
236 5,607,851
252.1 5,607,854
254.1 5,607,855
259 5,607,856
282 5,607,857
287.3 5,607,860
404 5,607,852

CLASS 436

50 5,607,861
69 5,607,858
173 5,607,859
176 5,607,870
501 5,607,862
518 5,607,863
533 5,607,864

CLASS 437

21 5,607,865
31 5,607,866
5,607,867
34 5,607,868
40 5,607,869
41 5,607,884
43 5,607,871
48 B1 4,230,504
50 5,607,872
51 5,607,873
52 5,607,874
63 5,607,875
129 5,607,876
180 5,607,877
187 5,607,878
193 5,607,879
195 5,607,880
5,607,881
209 5,607,882
5,607,883

CLASS 439

83 5,607,313
5,607,314
130 5,607,315
164 5,607,316
215 5,607,317
274 5,607,318
341 5,607,319
394 5,607,320
460 5,607,321
500 5,607,322
557 5,607,323
565 5,607,324
578 5,607,325
608 5,607,326
752 5,607,327
852 5,607,328

CLASS 440

6 5,607,329
11 5,607,330
23 5,607,331
41 5,607,332
88 5,607,333

CLASS 441

64 5,607,334

CLASS 442

6 5,607,756
67 5,607,758
301 5,607,757
375 5,607,760
381 5,607,798
417 5,607,759

CLASS 445

50 5,607,335

CLASS 446

297 5,607,336
369 5,607,337
394 5,607,338
491 5,607,339

CLASS 451

5 5,607,340
41 5,607,341
75 5,607,342
194 5,607,348
344 5,607,343
386 5,607,344
539 5,607,345
540 5,607,346
558 5,607,347

CLASS 452

173 5,607,349

CLASS 453

17 5,607,350
32 5,607,351
57 5,607,352

CLASS 454

187 5,607,353
189 5,607,354
369 5,607,355

CLASS 463

31 5,607,356
40 5,607,357

CLASS 464

111 5,607,358

CLASS 472

21 5,607,359

CLASS 473

150 5,607,153
180 5,607,360
207 5,607,361
231 5,607,362
287 5,607,363
318 5,607,364
328 5,607,365
372 5,607,366
451 5,607,152
479 5,607,149
499 5,607,150
562 5,607,154

CLASS 474

80 5,607,367
110 5,607,368

CLASS 475

12 5,607,369
196 5,607,370
210 5,607,371
216 5,607,372

CLASS 477

46 5,607,373

CLASS 482

51 5,607,374
54 5,607,375
5,607,376
83 5,607,377
97 Re.35,470
105 5,607,378
107 5,607,379
141 5,607,380
142 5,607,381

CLASS 493

182 5,607,382
464 5,607,383

CLASS 501

9 5,607,885
73 5,607,886
94 5,607,887

CLASS 502

64 5,607,888
80 5,607,889
202 5,607,890
229 5,607,891
304 5,607,892
439 5,607,893

CLASS 503

209 5,607,894
227 5,607,895
5,607,896
5,607,897

CLASS 504

282 5,607,898

CLASS 505

211 5,608,282
474 5,607,899
500 5,607,900

CLASS 507

103 5,607,901
120 5,607,902
131 5,607,904
202 5,607,903
211 5,607,905

CLASS 508

168 5,607,906
371 5,607,907

CLASS 510

115 5,607,908
152 5,607,909
235 5,607,910
253 5,607,911
302 5,607,618
411 5,607,912
413 5,607,913

CLASS 514

12 5,607,914
5,607,915
5,607,916
5,607,917
5,607,918
5,607,919
13 5,607,920
23 5,607,921
43 5,607,922
44 5,607,923
5,607,924
45 5,607,925
205 5,607,926
206 5,607,927
210 5,607,928
211 5,607,929
235.8 5,607,930
237 5,607,931
252 5,607,932
253 5,607,933
5,607,934
255 5,607,935
5,607,936
5,607,937
267 5,607,938
278 5,607,939
282 5,607,940
289 5,607,941
301 5,607,943
5,607,944
307 5,607,945

312 5,607,946
316 5,607,947
5,607,948
319 5,607,949
320 5,607,950
323 5,607,951
326 5,607,952
327 5,607,953
355 5,607,954
359 5,607,955
365 5,607,956
381 5,607,957
406 5,607,958
414 5,607,959
5,607,960
5,607,961
5,607,962
425 5,607,963
452 5,607,964
456 5,607,965
458 5,607,966
461 5,607,967
474 5,607,968
476 5,607,980
538 5,607,969
546 5,607,970
552 5,607,971
558 5,607,972
561 5,607,973
562 5,607,974
563 5,607,975
584 5,607,976
594 5,607,977
646 5,607,978
759 5,607,979

CLASS 521

41 5,607,981
67 5,607,982
84.1 5,607,983
172 5,607,984

CLASS 522

28 5,607,985

CLASS 523

141 5,607,986

CLASS 524

91 5,607,987
100 5,607,988
102 5,607,989
115 5,607,990
184 5,607,991
190 5,607,992
237 5,607,993
265 5,607,994
431 5,607,995
439 5,607,996
493 5,607,997
494 5,607,998
503 5,607,999
516 5,608,003
539 5,608,004
556 5,608,005
591 5,608,000
709 5,608,001
795 5,608,002

CLASS 525

54.1 5,608,006
125 5,608,007
240 5,608,008
247 5,608,009
328.2 5,608,010
344 5,608,011
374 5,608,012
422 5,608,013
432 5,608,014
438 5,608,016

CLASS 526

75 5,608,015
88 5,608,017
119 5,608,018
129 5,608,019
206 5,608,020
210 5,608,021
212 5,608,022
225 5,608,023
264 5,608,024
312 5,608,025

CLASS 528

26 5,608,026
51 5,608,027
60 5,608,028
129 5,608,029
232 5,608,030
281 5,608,031
286 5,608,032
353 5,608,033
409 5,608,034

CLASS 530

324 5,608,035
5,608,036
350 5,608,037
387.1 5,608,038
387.3 5,608,039
500 5,608,040

CLASS 534

752 5,608,041
788 5,608,042

CLASS 536

4.1 5,608,043
6.4 5,608,044
18.6 5,608,045
23.1 5,608,046
26.26 5,608,047
28.2 5,608,048
5,608,049
69 5,608,050
76 5,608,051
103 5,608,052

CLASS 540

140 5,608,053
145 5,608,054
222 5,608,055
350 5,608,056
451 5,608,057
454 5,608,058
465 5,608,059
474 5,608,060
5,608,061

CLASS 544

238 5,608,062
244 5,608,063
277 5,608,064

CLASS 546

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48 5,608,066
82 5,608,067
118 5,608,068
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200 5,607,942
270 5,608,070
345 5,608,071

CLASS 548

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252 5,608,075
317.1 5,608,076
365.1 5,608,077
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59 5,608,081
70 5,608,082
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529 5,608,088
531 5,608,089

CLASS 552

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10 5,608,090
250 5,608,091
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413 5,608,095
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524 5,608,133
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891.1 5,607,418

CLASS 606

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8 5,607,473
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D3— 220 378,243
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D7— 301 378,260
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P— 54.1 9,814
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86.1 9,818
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PATENTS

01	:	5,607,304	5,607,133	5,607,631	5,608,297	5,608,687		5,608,625
		5,607,392	5,607,154	5,607,632	5,608,303	5,608,690		5,608,684
		5,607,667	5,607,161	5,607,650	5,608,312	5,608,711		5,608,762
		5,608,182	5,607,164	5,607,682	5,608,314	5,608,712		5,608,843
		5,608,735	5,607,176	5,607,691	5,608,331	5,608,722	09 :	5,606,805
02	:	5,607,015	5,607,226	5,607,696	5,608,337	5,608,723		5,606,810
04	:	5,606,746	5,607,247	5,607,708	5,608,341	5,608,724		5,606,825
		5,607,000	5,607,265	5,607,711	5,608,342	5,608,742		5,606,864
		5,607,029	5,607,268	5,607,714	5,608,357	5,608,753		5,606,922
		5,607,031	5,607,279	5,607,723	5,608,382	5,608,755		5,607,054
		5,607,078	5,607,290	5,607,724	5,608,396	5,608,767		5,607,067
		5,607,267	5,607,296	5,607,741	5,608,407	5,608,768		5,607,100
		5,607,532	5,607,300	5,607,776	5,608,409	5,608,774		5,607,151
		5,607,883	5,607,301	5,607,790	5,608,413	5,608,783		5,607,391
		5,608,261	5,607,308	5,607,794	5,608,418	5,608,799		5,607,436
		5,608,650	5,607,312	5,607,799	5,608,425	5,608,805		5,607,561
		5,608,663	5,607,313	5,607,842	5,608,427	5,608,806		5,607,584
		5,608,721	5,607,335	5,607,873	5,608,433	5,608,810		5,607,686
05	:	5,606,828	5,607,340	5,607,876	5,608,434	5,608,828		5,607,728
		5,607,141	5,607,341	5,607,915	5,608,439	5,608,831		5,607,786
06	:	5,606,760	5,607,348	5,607,923	5,608,461	5,608,833		5,607,959
		5,606,767	5,607,349	5,607,924	5,608,465	5,608,846		5,607,961
		5,606,804	5,607,356	5,607,926	5,608,473	5,608,848		5,607,962
		5,606,818	5,607,362	5,607,974	5,608,483	5,608,849		5,608,071
		5,606,830	5,607,363	5,607,978	5,608,507	5,608,850		5,608,079
		5,606,839	5,607,365	5,607,993	5,608,517	5,608,864		5,608,108
		5,606,869	5,607,376	5,608,006	5,608,521	5,608,874		5,608,267
		5,606,871	5,607,381	5,608,035	5,608,523	5,608,886		5,608,298
		5,606,889	5,607,384	5,608,036	5,608,552	5,608,888		5,608,402
		5,606,894	5,607,389	5,608,046	5,608,557	5,608,890		5,608,453
		5,606,896	5,607,404	5,608,082	5,608,583	5,608,892		5,608,518
		5,606,897	5,607,410	5,608,087	5,608,587	5,608,898		5,608,648
		5,606,929	5,607,443	5,608,101	5,608,591	5,608,900		5,608,731
		5,606,973	5,607,444	5,608,144	5,608,604	5,608,904		5,608,834
		5,606,974	5,607,458	5,608,145	5,608,606	5,608,905	10 :	5,606,936
		5,606,975	5,607,461	5,608,152	5,608,610	5,235,586		5,607,388
		5,607,002	5,607,462	5,608,155	5,608,624	08 :	5,606,870		5,607,989
		5,607,009	5,607,467	5,608,179	5,608,632	5,606,915		5,607,994
		5,607,060	5,607,477	5,608,203	5,608,635	5,606,962		5,608,014
		5,607,061	5,607,503	5,608,204	5,608,638	5,607,275		5,608,063
		5,607,066	5,607,509	5,608,210	5,608,645	5,607,491		5,608,075
		5,607,079	5,607,527	5,608,216	5,608,646	5,607,529		5,608,116
		5,607,084	5,607,530	5,608,221	5,608,647	5,608,246		5,608,127
		5,607,088	5,607,542	5,608,243	5,608,656	5,608,273		5,608,820
		5,607,096	5,607,570	5,608,245	5,608,659	5,608,390	12 :	5,606,757
		5,607,102	5,607,573	5,608,253	5,608,669	5,608,417		5,606,765
		5,607,123	5,607,601	5,608,258	5,608,672	5,608,471		5,606,826
		5,607,127	5,607,602	5,608,276	5,608,679	5,608,548		5,606,841
		5,607,129	5,607,613	5,608,289	5,608,685	5,608,593		5,606,866

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March 11, 1997 Volume 1196 Number 2

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on March 8, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,291,616 through 5,293,645

Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 6, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,905,320 through 4,907,294
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 4, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,573,216 through 4,574,395
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED January 1, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,490,855	06/503,037	01/01/85
4,490,865	06/452,713	01/01/85
4,490,866	06/447,240	01/01/85
4,490,867	06/456,088	01/01/85
4,490,868	06/535,090	01/01/85
4,490,874	06/469,589	01/01/85
4,490,878	06/501,842	01/01/85
4,490,889	06/363,494	01/01/85
4,490,890	06/300,488	01/01/85
4,490,892	06/447,933	01/01/85
4,490,893	06/443,147	01/01/85
4,490,895	06/310,815	01/01/85
4,490,901	06/491,944	01/01/85
4,490,905	06/458,797	01/01/85
4,490,927	06/374,584	01/01/85
4,490,928	06/516,358	01/01/85
4,490,930	06/517,231	01/01/85
4,490,936	06/483,655	01/01/85
4,490,940	06/502,211	01/01/85
4,490,941	06/292,359	01/01/85
4,490,944	06/455,212	01/01/85
4,490,947	06/434,908	01/01/85
4,490,950	06/327,073	01/01/85
4,490,952	06/337,017	01/01/85
4,490,959	06/429,617	01/01/85
4,490,962	06/522,139	01/01/85
4,490,963	06/321,694	01/01/85
4,490,969	06/479,000	01/01/85
4,490,981	06/427,736	01/01/85
4,490,983	06/537,030	01/01/85
4,490,986	06/450,487	01/01/85
4,490,988	06/499,321	01/01/85
4,490,990	06/566,788	01/01/85
4,490,992	06/566,789	01/01/85
4,490,994	06/535,254	01/01/85
4,491,000	06/509,598	01/01/85
4,491,001	06/451,932	01/01/85
4,491,002	06/355,594	01/01/85
4,491,007	06/446,222	01/01/85
4,491,010	06/506,208	01/01/85
4,491,016	06/438,513	01/01/85
4,491,018	06/505,209	01/01/85
4,491,019	06/450,217	01/01/85
4,491,020	06/439,586	01/01/85
4,491,028	06/479,075	01/01/85
4,491,032	06/411,848	01/01/85
4,491,035	06/475,528	01/01/85
4,491,036	06/475,575	01/01/85
4,491,039	06/438,433	01/01/85
4,491,044	06/472,000	01/01/85
4,491,058	06/521,792	01/01/85
4,491,061	06/536,502	01/01/85
4,491,065	06/375,453	01/01/85
4,491,071	06/482,211	01/01/85
4,491,073	06/404,819	01/01/85
4,491,080	06/449,830	01/01/85
4,491,094	06/476,962	01/01/85
4,491,097	06/494,768	01/01/85
4,491,103	06/500,142	01/01/85

Patent Number	Serial Number	Issue Date
4,491,104	06/398,100	01/01/85
4,491,111	06/408,977	01/01/85
4,491,119	06/494,805	01/01/85
4,491,121	06/407,140	01/01/85
4,491,126	06/395,830	01/01/85
4,491,131	06/371,329	01/01/85
4,491,135	06/438,796	01/01/85
4,491,136	06/218,548	01/01/85
4,491,139	06/358,855	01/01/85
4,491,142	06/418,513	01/01/85
4,491,143	06/471,853	01/01/85
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4,491,185	06/516,811	01/01/85
4,491,186	06/442,162	01/01/85
4,491,196	06/420,409	01/01/85
4,491,197	06/476,941	01/01/85
4,491,198	06/492,328	01/01/85
4,491,199	06/509,120	01/01/85
4,491,205	06/401,559	01/01/85
4,491,209	06/412,464	01/01/85
4,491,228	06/393,986	01/01/85
4,491,229	06/528,312	01/01/85
4,491,234	06/483,577	01/01/85
4,491,250	06/401,119	01/01/85
4,491,258	06/374,520	01/01/85
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5,175,219	07/677,629	12/29/92
5,175,220	07/816,566	12/29/92
5,175,221	07/663,963	12/29/92
5,175,223	07/665,851	12/29/92
5,175,226	07/508,601	12/29/92
5,175,239	07/634,796	12/29/92
5,175,242	07/315,327	12/29/92
5,175,248	07/533,022	12/29/92
5,175,251	07/785,155	12/29/92
5,175,264	07/776,081	12/29/92
5,175,268	07/416,657	12/29/92
5,175,286	07/651,389	12/29/92
5,175,298	07/623,702	12/29/92
5,175,310	07/494,715	12/29/92
5,175,314	07/818,013	12/29/92
5,175,331	07/809,430	12/29/92
5,175,346	07/692,959	12/29/92
5,175,354	07/678,425	12/29/92
5,175,368	07/908,587	12/29/92
5,175,370	07/806,585	12/29/92
5,175,371	07/851,644	12/29/92
5,175,372	07/683,554	12/29/92
5,175,373	07/779,491	12/29/92
5,175,377	07/814,597	12/29/92
5,175,378	07/851,611	12/29/92
5,175,381	07/736,832	12/29/92
5,175,387	07/636,503	12/29/92
5,175,390	07/805,005	12/29/92
5,175,400	07/662,014	12/29/92
5,175,414	07/707,621	12/29/92
5,175,427	07/595,369	12/29/92
5,175,436	07/720,426	12/29/92
5,175,442	07/594,061	12/29/92
5,175,468	07/798,526	12/29/92
5,175,471	07/734,611	12/29/92
5,175,474	07/765,936	12/29/92
5,175,476	07/868,902	12/29/92
5,175,478	07/764,726	12/29/92
5,175,486	07/543,818	12/29/92
5,175,490	07/863,642	12/29/92
5,175,497	07/606,055	12/29/92
5,175,499	07/421,191	12/29/92
5,175,516	07/682,815	12/29/92
5,175,526	07/787,630	12/29/92
5,175,529	07/711,961	12/29/92
5,175,539	07/617,914	12/29/92
5,175,542	07/554,739	12/29/92
5,175,554	06/234,040	12/29/92
5,175,559	07/782,189	12/29/92
5,175,573	07/571,658	12/29/92
5,175,576	07/792,032	12/29/92
5,175,597	07/714,588	12/29/92
5,175,617	07/802,328	12/29/92
5,175,627	07/688,667	12/29/92
5,175,636	07/535,743	12/29/92
5,175,642	07/632,154	12/29/92
5,175,653	07/157,330	12/29/92
5,175,668	07/621,135	12/29/92
5,175,670	07/773,803	12/29/92
5,175,671	07/672,571	12/29/92
5,175,672	07/565,645	12/29/92
5,175,673	07/759,600	12/29/92
5,175,686	07/624,091	12/29/92
5,175,694	07/478,815	12/29/92
5,175,695	07/833,641	12/29/92
5,175,723	07/541,807	12/29/92
5,175,724	07/719,364	12/29/92
5,175,766	07/735,694	12/29/92
5,175,767	07/641,392	12/29/92
5,175,791	07/598,421	12/29/92
5,175,799	07/590,938	12/29/92
5,175,800	07/742,577	12/29/92
5,175,803	06/870,472	12/29/92
5,175,850	07/323,288	12/29/92
5,175,857	07/458,361	12/29/92
5,175,876	07/694,775	12/29/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,154,809, Re. S.N. 08/778,714, Dec. 27, 1996, Cl. 204/182, PROCESS FOR PURIFYING WATER, Yoram Oren, et. al., Owner of Record: *Millipore Corp., Bedford, Mass.,* Attorney or Agent: Peter C. Lando, Ex. Gp.: 1102

5,199,587, Re. S.N. 08/726,743, Oct. 7, 1996, Cl. 215/001.000, BIAXIAL-ORIENTATION BLOW-MOLDED BOTTLE-SHAPED CONTAINERS WITH RIBS, Akiho Ota, et. al., Owner of Record: *Yoshino Kogyosho Co., LTD, Tokyo, Japan,* Attorney or Agent: James A. Oliff, Ex. Gp.: 3208

5,231,051, Re. S.N. 08/784,040, Jan. 16, 1996, Cl. 437, METHOD FOR FORMATION OF CONTACT PLUGS UTILIZING ETCHBACK, Livio Baldi, et. al., Owner of Record: *SGS-Thomson Microelectronics SRl, Milano, Italy,* Attorney or Agent: Bryan A. Santarelli, Ex. Gp.: 1104

5,291,916, Re. S.N. 08/614,847, Mar. 8, 1996, Cl. 137/112, CHECK VALVE, Kenneth D. Kloosterman, et. al., Owner of Record: *Excel Industries, Inc., Elkhart, Ind.,* Attorney or Agent: Dale A. Malone, Ex. Gp.: 3407

5,331,245, Re. S.N. 08/684,042, Jul. 19, 1996, Cl. 310/186, PERMANENT MAGNET EXCITED ELECTRIC MOTOR WITH IMPROVED TORQUE RIPPLE, Martin Burgbacher, et. al., Owner of Record: *Papst Licensing Gmbh, Spaichingen, Federal Republic of Germany,* Attorney or Agent: Jeffrey W. Salmon, Ex. Gp.: 2102

5,348,619, Re. S.N. 08/739,885, Oct. 31, 1996, Cl. 156/664, METAL SELECTIVE POLYMER REMOVAL, Brynne K. Bohannon, et. al., Owner of Record: *FSI International, Inc., Chaska, Minn.,* Attorney or Agent: Walter J. Steinkraus, Ex. Gp.: 1109

5,356,940, Re. S.N. 08/773,396, Dec. 26, 1996, Cl. 521/77, PROCESS FOR PRODUCING A FINE PORED SILICONE FOAM, Franz J. Giesen, Owner of Record: *H. B. Fuller Patents and Licensing Inc.,* Attorney or Agent: Walter J. Steinkraus, Ex. Gp.: 1503

5,359,985, Re. S.N. 08/778,059, Nov. 1, 1996, Cl. 124/66, PROJECTILE DISCHARGE APPARATUS, Dean Schumacher, Owner of Record: *Inventor,* Attorney or Agent: Dorian B. Kennedy, Ex. Gp.: 3501

5,361,591, Re. S.N. 08/746,287 Nov. 7, 1996, Cl. 62/50.4, PORTABLE LIFE SUPPORT SYSTEM, Bruce D. Caldwell, Owner of Record: *Oceaneering International Inc., Houston, Tex.,* Attorney or Agent: Steven L. Christian, Ex. Gp.: 3404

5,369,325, Re. S.N. 08/758,422, Nov. 29, 1996, Cl. 310/156, ROTOR FOR BRUSHLESS ELECTROMOTOR AND METHOD FOR MAKING SAME, Takashi Nagate, et. al., Owner of Record: *Seiko Epson Corp.,* Attorney or Agent: Yusoke Takeuchi, Ex. Gp.: 2102

5,370,623, Re. S.N. 08/760,033, Dec. 4, 1996, Cl. 604/165, CATHETER WITH PROTECTIVE COVER AND METHOD OF CATHETERIZATION, Jeffry W. Kreamer, Owner of Record: *Inventor,* Attorney or Agent: Kent A. Herink, Ex. Gp.: 3306

5,371,436, Re. S.N. 08/761,526, Dec. 6, 1996, Cl. 315/58, COMBUSTION IGNITOR, James E. Griswold, et. al., Owner of Record: *Septima Enterprises Inc., Latrobe, Pa.,* Attorney or Agent: John R. Landsdowne, Ex. Gp.: 2502

5,371,794, Re. S.N. 08/759,573, Dec. 5, 1996, Cl. 380/21, METHOD AND APPARATUS FOR PRIVACY AND AUTHENTICATION IN WIRELESS NETWORKS, Whitfield Diffie, Owner of Record: *Sun Microsystems, Inc., Mountain View, Calif.,* Attorney or Agent: Michael D. Hartogs, Ex. Gp.: 2202

5,373,873, Re. S.N. 08/761,212, Dec. 6, 1996, Cl. 141/18, GAUGE BLOCK HAVING CHECK VALVE WITH ORIFICE, Richard W. Miller, et. al., Owner of Record: *Victor Equipment Co., Denton, Tex.,* Attorney or Agent: Michael E. Godar, Attorney or Agent: 3105

5,416,471, Re. S.N. 08/669,201, Sep. 23, 1996, Cl. 340/825, METHOD AND APPARATUS FOR PROGRAMMING A SPARE KEY INTO A SECURITY SYSTEM, William D. Treharne, et. al., Owner of Record: *Ford Motor Co., Dearborn, Michigan,* Attorney or Agent: Kevin G. Mierzwa, Ex. Gp.: 2211

5,417,208, Re. S.N. 08/764,729, Dec. 6, 1996, Cl. 128/642, ELECTRODE-CARRYING CATHETER AND METHOD OF MAKING SAME, Josef Winkler, Owner of Record: *Arrow International Investment Corp., Wilmington, Del.,* Attorney or Agent: Neal L. Rosenberg, Ex. Gp.: 3311

5,418,506, Re. S.N. 08/766,085, Dec. 16, 1996, Cl. 333/134, TRIAXIAL TRANSMISSION LINE FOR TRANSMITTING TWO INDEPENDENT FREQUENCIES, Ali R. Mahnad, Owner of Record: *Inventor,* Attorney or Agent: Jerry G. Wright, Ex. Gp.: 2502

5,458,645, Re. S.N. 08/698,781, Aug. 16, 1996, Cl. 623/20, METHOD FOR RESECTING THE KNEE USING A RESECTION GUIDE AND PROVISIONAL PROSTHETIC COMPONENT, Kim C. Bertin, Owner of Record: *Inventor,* Attorney or Agent: M. Reid Russell, Ex. Gp.: 3308

5,478,662, Re. S.N. 08/691,121, Aug. 1, 1996, Cl. 429/13, METHOD AND APPARATUS FOR DISPOSING OF WATER AND/OR INERT GAS FROM A FUEL CELL BLOCK, Karl Strasser, Owner of Record: *Siemens Aktiengeselschaft, Munich, Germany,* Attorney or Agent: None, Ex. Gp. 1111

5,499,814, Re. S.N. 08/774,070, Dec. 23, 1996, Cl. 473/329, HOLLOW CLUB HEAD WITH DEFLECTING INSERT FACE PLATE, Clive S. Lu, Owner of Record: *Inventor,* Attorney or Agent: John L. Welsh, Ex. Gp.: 3304

5,512,578, Re. S.N. 08/782,452, Jan. 13, 1997, Cl. 514/282, METHOD OF SIMULTANEOUSLY ENHANCING ANALGESIC POTENCY AND ATTENUATING DEPENDENCE LIABILITY CAUSED BY EXOGENOUS AND ENDOGENOUS OPIOID AGONISTS, Stanley M. Crain, et. al., Owner of Record: *Albert Einstein College of Medicine of Yeshiva, Bronx, N.Y.,* Attorney or Agent: Craig J. Arnold, Ex. Gp.: 1205

5,539,225, Re. S.N. 08/710,997, Sep. 25, 1996, Cl. 250/269.4, ACCELERATOR-BASED METHODS AND APPARATUS FOR MEASUREMENT WHILE DRILLING, William A. Loomis, et. al., Owner of Record: *Schlumberger Technology Corp.,* Attorney or Agent: Brigitte L. Jeffery, Ex. Gp.: 2506

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 32,940, Reexam. No. 90/004,532, Jan. 22, 1997, Cl. 601/152, MEDICAL APPLIANCE, Arthur M. N. Gardner, et. al., Owner of Record: *Novamedix Ltd., Andover, UK,* Attorney or Agent: Roy Hopgood, Stephen Judlowe, Hopgood, Calimafde, Kalil, Blaustein & Judlowe, New York, N.Y., Ex. Gp.: 3301, Requester: Charles W. Hanor, Akin, Gump, Strauss Hauer & Feld, San Antonio, Tex.

4,521,990, Reexam. No. 90/004,533, Jan. 28, 1997, Cl. 047/41.12, RETAINER FOR ATTACHING FLORAL LID CONTAINER, John F. Murray, Owner of Record: *Roll International Corp., Los Angeles, Calif.,* Attorney or Agent: Pretty, Schroeder, Brueggemann & Clark, Los Angeles, Calif., Ex. Gp.: 3501, Requester: Monika J. Hussell, Jackson & Kelly, Washington, D.C.

4,723,228, Reexam. No. 90/004,534, Jan. 31, 1997, Cl. 365/189.05, MEMORY DECODING CIRCUIT, Ashwin H. Shah, et. al., Owner of Record: *Texas Instruments Inc., Dallas, Tex.,* Attorney or Agent: Ira S. Matsil, Dallas, Tex., Ex. Gp.: 2511, Requester: Owner

5,125,016, Reexam. No. 90/004,488, Jan. 13, 1997 Cl. 378/072, PROCEDURE AND MEASURING APPARATUS BASED ON X-RAY DIFFRACTION FOR MEASURING STRESSES, Matti Korhonen, et. al., Owner of Record: *Outokumpu Electronics, Inc. Englewood Colo.,* Attorney or Agent: Steinberg, Raskine Davidson, New York, N.Y., Ex. Gp.: 2506,

Requester: Technology For Energy Corp., c/o Pitts & Brittian, Knoxville, Tenn.,

5,234,280, Reexam. No. 90/004, 535, Jan. 31, 1997 Cl. 404/006, TRAFFIC CHANNELING DEVICES, David A. Cowan, Owner of Record: *Plastic Safety Systms, Inc., Cleveland, Ohio,* Attorney or Agent: Donald L. Otto, Renner, Otto, Boisselle, & Sklar, Cleveland, Ohio, Ex. Gp.: 3506, Requester: Donald E. Stout, Myers Uxa & Stout, San Clemente, Calif.

5,255,096, Reexam. No. 90/004, 536, Feb. 3, 1997, Cl. 348/095, VIDEO TIME CODE SYNCHRONIZED ROBOT CONTROL APPARATUS, William M. Boyle, Owner of Record: *Inventor,* Attorney or Agent: Kevin G. Mierzwa, Dykema Gossett, Bloomfield Hills, Mich., Ex. Gp.: 2615, Requester: Owner

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Notice of Expiration of Trademark Registration Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration maybe renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 02, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
104,728	71/084,195	06/15/1915
108,787	71/086,957	02/29/1916
108,789	71/090,201	02/29/1916
108,791	71/090,081	02/29/1916
108,809	71/090,485	02/29/1916
108,865	71/087,985	02/29/1916
316,104	71/350,244	08/14/1934
317,288	71/346,564	09/18/1934
332,693	71/370,492	02/25/1936
332,739	71/358,983	02/25/1936
332,758	71/370,712	02/25/1936
332,786	71/366,999	02/25/1936
332,787	71/370,425	02/25/1936
332,788	71/368,664	02/25/1936
332,795	71/364,639	02/25/1936
332,809	71/357,256	02/25/1936
332,813	71/367,213	02/25/1936
332,819	71/368,960	02/25/1936
332,833	71/370,127	02/25/1936
332,843	71/369,072	02/25/1936
614,140	71/662,427	10/11/1955
621,948	71/672,878	02/28/1956
621,952	71/685,110	02/28/1956
621,965	71/671,241	02/28/1956
621,966	71/674,422	02/28/1956
621,967	71/674,423	02/28/1956
621,976	71/685,353	02/28/1956
621,978	71/686,039	02/28/1956
621,986	71/678,489	02/28/1956
621,989	71/686,643	02/28/1956
621,993	71/675,022	02/28/1956
622,007	71/675,369	02/28/1956
622,008	71/675,370	02/28/1956
622,010	71/677,352	02/28/1956
622,012	71/680,169	02/28/1956
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622,035	71/671,545	02/28/1956
622,037	71/676,025	02/28/1956
622,045	71/679,358	02/28/1956
622,055	71/684,878	02/28/1956
622,057	71/685,934	02/28/1956
622,059	71/686,502	02/28/1956
622,061	71/687,764	02/28/1956
622,064	71/682,980	02/28/1956
622,069	71/673,490	02/28/1956
622,073	71/682,999	02/28/1956
622,074	71/684,196	02/28/1956
622,080	71/691,054	02/28/1956
622,081	71/691,056	02/28/1956
622,087	71/684,284	02/28/1956
622,091	71/661,339	02/28/1956
622,106	71/681,113	02/28/1956
622,108	71/681,737	02/28/1956
622,118	71/687,656	02/28/1956
622,119	71/687,657	02/28/1956
622,124	71/687,922	02/28/1956
622,127	71/688,052	02/28/1956
622,128	71/688,087	02/28/1956
622,136	71/688,454	02/28/1956
622,137	71/688,455	02/28/1956
622,140	71/688,560	02/28/1956
622,146	71/688,858	02/28/1956
622,147	71/688,941	02/28/1956
622,155	71/689,890	02/28/1956
622,156	71/689,932	02/28/1956
622,158	71/690,115	02/28/1956
622,161	71/690,205	02/28/1956
622,165	71/690,349	02/28/1956
622,167	71/690,384	02/28/1956
622,170	71/690,631	02/28/1956
622,179	71/692,962	02/28/1956
622,181	71/693,152	02/28/1956
622,185	71/693,348	02/28/1956
622,186	71/693,478	02/28/1956
622,190	71/694,305	02/28/1956
622,191	71/676,020	02/28/1956
622,197	71/661,578	02/28/1956
622,201	71/672,652	02/28/1956
622,212	71/684,873	02/28/1956
622,218	71/687,582	02/28/1956
622,235	71/689,971	02/28/1956
622,236	71/686,458	02/28/1956
622,237	71/686,459	02/28/1956
622,247	71/691,926	02/28/1956
622,248	71/691,927	02/28/1956
622,255	71/685,332	02/28/1956
622,256	71/685,396	02/28/1956
622,259	71/692,010	02/28/1956
622,260	71/683,989	02/28/1956
622,261	71/666,549	02/28/1956
622,262	71/672,556	02/28/1956
622,263	71/672,557	02/28/1956
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622,271	71/677,917	02/28/1956
622,292	71/677,830	02/28/1956
622,296	71/682,929	02/28/1956
622,299	71/683,955	02/28/1956
622,302	71/692,230	02/28/1956
622,304	71/692,976	02/28/1956
622,320	71/685,185	02/28/1956
622,331	71/670,021	02/28/1956
622,334	71/672,819	02/28/1956
622,335	71/673,305	02/28/1956
622,348	71/685,431	02/28/1956
622,349	71/685,498	02/28/1956
622,356	71/686,230	02/28/1956
622,382	71/686,762	02/28/1956
622,391	71/613,004	02/28/1956
622,394	71/641,412	02/28/1956
622,397	71/652,520	02/28/1956
622,403	71/661,285	02/28/1956
622,409	71/679,043	02/28/1956
622,412	71/682,762	02/28/1956
622,414	71/682,906	02/28/1956
622,439	71/663,994	02/28/1956
622,447	71/679,738	02/28/1956
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622,455	71/654,973	02/28/1956
622,461	71/674,910	02/28/1956
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1,026,429	72/452,291	12/02/1975
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1,034,166	73/006,096	02/24/1976
1,034,167	73/016,768	02/24/1976
1,034,169	73/032,130	02/24/1976
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1,034,190	73/019,580	02/24/1976
1,034,192	73/029,559	02/24/1976
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1,034,205	73/054,008	02/24/1976
1,034,206	73/056,050	02/24/1976
1,034,213	73/060,906	02/24/1976
1,034,216	73/023,036	02/24/1976
1,034,220	73/031,248	02/24/1976
1,034,232	73/038,241	02/24/1976
1,034,233	73/038,565	02/24/1976
1,034,234	73/038,620	02/24/1976
1,034,236	73/045,871	02/24/1976
1,034,238	73/051,594	02/24/1976
1,034,239	73/052,009	02/24/1976
1,034,241	73/021,699	02/24/1976
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1,034,245	73/048,833	02/24/1976
1,034,250	73/052,054	02/24/1976
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1,034,261	73/048,731	02/24/1976
1,034,262	73/048,732	02/24/1976
1,034,270	73/032,381	02/24/1976
1,034,271	73/033,133	02/24/1976
1,034,273	73/041,519	02/24/1976
1,034,275	73/053,366	02/24/1976
1,034,276	73/056,356	02/24/1976
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1,034,285	73/053,082	02/24/1976
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1,034,297	73/002,836	02/24/1976
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1,034,308	73/039,895	02/24/1976
1,034,312	73/041,011	02/24/1976
1,034,313	73/041,012	02/24/1976
1,034,314	73/041,197	02/24/1976
1,034,316	73/042,156	02/24/1976
1,034,317	73/042,227	02/24/1976
1,034,318	73/042,703	02/24/1976
1,034,319	73/043,021	02/24/1976
1,034,321	73/045,050	02/24/1976
1,034,322	73/046,408	02/24/1976
1,034,324	73/048,212	02/24/1976
1,034,325	73/042,929	02/24/1976
1,034,334	73/033,347	02/24/1976
1,034,338	73/044,734	02/24/1976
1,034,341	73/050,051	02/24/1976
1,034,342	73/051,156	02/24/1976
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1,034,455	73/018,480	02/24/1976
1,034,459	73/040,611	02/24/1976
1,034,460	73/051,081	02/24/1976
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1,034,464	73/050,616	02/24/1976
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1,034,483	73/038,855	02/24/1976
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1,034,491	73/051,131	02/24/1976
1,034,498	73/062,402	02/24/1976
1,034,510	72/467,076	02/24/1976
1,034,511	72/440,703	02/24/1976
1,034,513	72/459,958	02/24/1976
1,034,519	72/405,252	02/24/1976
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Service by Publication

A petition to cancel the registrations identified below has been filed, and a copy of the petition together with the notice of institution of such proceeding is being sent to registrants at their last known address. Simultaneously therewith, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, or unless an answer or other response to the petition is filed within forty days after the mailing of the institution notice, or within an extension of time therefor, the cancellation will proceed as in the case of default.

Societe Aroli, S.A., Libourne, FRX, Reg. No. 1,094,892, for the mark "CERTITUDE", Canc. No. 25,779.

Ferranti International PLC, Gatley, Cheadle, Cheshire SK8 4HZ, GB2, Reg. No. 1,233,394, for the mark "AUTOFIL" and Design, Canc. No. 25,847.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for

ROBERT M. ANDERSON
Deputy Assistant Commissioner for Trademarks

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, .notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

General Circuits Inc., New York, N.Y., Reg. No. 1,251,553, for the mark "GC AND DESIGN", Canc. No. 25,544.

American Synthesis, Inc., Pleasanton, Calif., Reg. No. 1,673,683, for the mark "PURESYN", Canc. No. 25,715.

S & Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y., Reg. No. 648,194, for the mark "S & S AND DESIGN", Canc. No. 25,725.

Mel-Bern Apparel Sales, Inc., New York, N.Y., Reg. No. 1,140,438, for the mark "DESIGN SIGNATURES AND DESIGN", Canc. No. 25,477.

Medical Equipment Industries, Inc., Berlin, Conn., Reg. No. 1,644,382, for the mark "BAG N' BOX", Canc. No. 25,375.

Joan Cook, Inc., Fort Lauderdale, Fla., Reg. No. 1,696,923, for the mark "UPSTAIRS DOWNSTAIRS AND DESIGN", Canc. No. 25,356.

Lifeline Computing, Inc., Hilliard, Ohio, Reg. No. 1,623,088, for the mark "LIFELINE COMPUTING, INC. AND DESIGN", Canc. No. 25,745.

JEAN BROWN
Technical Support Manager, Trademark Trial and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner for Trademarks

Errata

"All reference to Patent No. 5,590,223 to Stephen Schiller of California for METHOD OF GENERATING A THRESHOLD ARRAY appearing in the Official Gazette of December 31, 1996 should be deleted since no patent was granted."

Patents Available For License or Sale

4,885,126 — INTERCONNECTION MECHANISMS FOR ELECTRONIC COMPONENTS

Contact: Donald B. Haslett
Chernoff Vilhauer McClung Stenzel
600 Benj. Franklin Plaza
One Southwest Columbia
Portland, Oreg. 97258-2007
(voice) : (503) 227-5631

4,999,854 — PANTY HOSE GARMENT WITH INNER-THIGH PANELS

Contact: Donna L. Fell
6101 Wigmore Lane, Unit E
Kingstowne, Va. 22315
(voice) : (703) 971-3770
(fax) : (703) 602-3142

5,065,282 — INTERCONNECTION MECHANISMS FOR ELECTRONIC COMPONENTS

Contact: Donald B. Haslett
Chernoff Vilhauer McClung Stenzel
600 Benj. Franklin Plaza
One Southwest Columbia
Portland, Oreg. 97258-2007
(voice) : (503) 227-5631

5,246,238 — ROLLER SKATE WHEEL (WITH BRAKING ACTION)

Contact: Jeremiah Lynch
Lahive & Cockfield
60 State Street
Boston, Mass. 02109-1875
(voice) : (617) 227-7400
(fax) : (617) 227-5941

5,420,108 — A METHOD OF CONTROLLING DIABETES MELLITUS

Contact: Isaac Shohet
70-34 Kissena Blvd
Flushing, N.Y. 11367

5,425,707 — METHOD FOR NON-SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME

Contact: Robert Zielinski
Wolf Block Schorr and Solis-Cohen
Twelfth Floor Packard Building
S E Corner 15th and Chestnut St.
Philadelphia, Pa. 19102-2678
(voice) : (215) 977-2000

5,457,820 — ATTACHABLE BIB, HOLDER & CATCH

Contact: Patricia G. Yielding
5313 Verlinda Drive
Richmond, Va. 23237
(voice) : (804) 768-1030

5,519,939 — HAIR CUTTING DEVICE

Contact: James E. Smith
10 Elm Street
Saraland, Ala. 36571

5,533,526 — METHOD AND APPARATUS FOR NON-SURGICALTREATMENT OF CARPAL TUNNEL SYNDROME

Contact: Robert F. Zielinski
Wolf Block Schorr and Solis-Cohen
Twelfth Floor Packard Building
S E Corner 15th and Chestnut St.
Philadelphia, Pa. 19102-2678
(voice) : (215) 977-2000

5,587,988 — COMPUTER CONTROLLED DISK STORAGE UNIT WITH A TELESCOPIC ARM FOR READING AND WRITING INFORMATION ON A DISK LOCATED IN A MAGAZINE

Contact: Gilles Boulanger
2100 Route 112 Unit 106
Magog, Que Canada J1X 5X4
(voice) : (819) 847-4204
(fax) : (819) 847-0176

Disclaimers

5,342,666 — Thomas M. Ellison, Charlotte; Brian M. Keith, Waxhaw; both of N.C. INJECTION MOLDED PLASTIC ARTICLE WITH INTEGRAL WEATHERABLE PIGMENTED FILM SURFACE. Patent dated August 30, 1994. Disclaimer filed September 26, 1996, by the assignee, Rexham Industries Corporation.

Hereby enters this disclaimer to claim 6 of said patent.

5,388,170 — Fred L. Heismann, Freehold; Steven K. Korotky, Toms River; John J. Veselka, Freehold, all of N.J. ELECTRO-OPTIC DEVICE STRUCTURE AND METHOD FOR REDUCING THERMAL EFFECTS IN OPTICAL WAVEGUIDE MODULATORS. Patent dated February 7, 1995. Disclaimer filed November 6, 1996, by the assignee, AT&T Corp.

Hereby enters this disclaimer to claim 12 of said patent.

5,479,425 — Edward Tegge, Palm Bay, Florida. THERMAL COMPENSATION OF INJECTION LASER DIODES DRIVEN BY SHUNT CURRENT MODULATIONS. Patent dated December 26, 1995. Disclaimer filed November 12, 1996, by the assignee Harris Corporation.

Hereby enters this disclaimer to claims 1, 3, 7, 8, 16, 18, and 19 of said patent.

5,489,241 — Brent Perrier, West Des Moines, Iowa. ULTRAVIOLET LIGHT ILLUMINATED BOWLING GAME. Patent dated February 6, 1996. Disclaimer filed May 9, 1996, by the assignee, Brunswick Bowling & Billiards Corp.

Hereby enters this disclaimer to claim 7 of said patent.

5,566,905 — Takashi Iwade, Kyoto; June Takagi; Yoshiro Migaki, both of Otsu, all of Japan. APPARATUS FOR WINDING A PLURALITY OF YARNS. Patent dated October 22, 1996. Disclaimer filed November 21, 1996, by the assignee, Toray Engineering Co., Ltd.

Hereby enters this disclaimer to claims 12 and 14 of said patent.

Disclaimer and Dedication

5,463,172 — Alain A. Marvy, Saskatchewan, Canada. WASTE DISPOSAL PROCESS. Patent dated October 31, 1995. Disclaimer and Dedication filed November 26, 1996, by the assignee, Cigar Lake Mining Corporation.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Department of Commerce
Patent and Trademark Office

[Docket No. 970129014-7014-01]

RIN 0651-XX09

Interim Guidelines for the Examination of Claims Directed to Species of Chemical Compositions Based Upon a Single Prior Art Reference

Agency: Patent and Trademark Office, Commerce.
Action: Notice.

Summary: The Patent and Trademark Office (PTO) requests comments from any interested member of the public on interim guidelines to be used by office personnel in their review of patent applications which contain claims directed to a species or subgenus of chemical compositions for compliance with 35 U.S.C. § 103 based upon a single prior art reference which discloses a genus embracing the claimed species or subgenus but does not expressly describe the particular claimed species or subgenus.

Dates: The interim guidelines are effective February 11, 1997.

Written comments on the interim guidelines will be accepted by the PTO until April 14, 1997.

Addresses: Written comments should be addressed to the attention of Linda Moncys Isacson, Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 or to Linda S. Therkorn, Box Comments, Assistant Commissioner for Patents, Washington, D.C. 20231, or by facsimile transmission to (703) 305-9373 or by electronic mail to baird-comments@uspto.gov.

Written comments will be made available for public inspection at the Patent Search Room, Crystal Plaza 3, 2021 South Clark Place, Arlington, Va. In addition, comments provided in machine-readable format will be available through the PTO's Website at http://www.uspto.gov.

For Further Information Contact: Linda Moncys Isacson, Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 or Linda S. Therkorn, Box Comments, Assistant Commissioner for Patents, Washington, D.C. 20231, or by facsimile transmission to (703) 305-9373 or by electronic mail to baird-comments@uspto.gov.

Supplementary Information: The Commissioner of Patents and Trademarks issued a Notice in the *Official Gazette* (O.G.) on April 17, 1995 (1174 O.G. 68), withdrawing the Office's March 22, 1994 O.G. Notice (1161 O.G. 314). Both notices were entitled "In re Baird." Pursuant to the April 17, 1995 O.G. Notice, the following interim examination guidelines are being published for public comment. The purpose of these guidelines is to assist PTO personnel in the examination of applications which contain claims directed to a species or subgenus of chemical compositions for compliance with 35 U.S.C. § 103 based upon a single prior art reference which discloses a genus embracing the claimed species or subgenus but does not expressly describe the particular claimed species or subgenus. Therefore, these interim guidelines will be referred to as "Genus-Species Guidelines."

It has been determined that these interim guidelines are not a significant rule for purposes of Executive Order 12866. Because these guidelines govern internal practices, they are exempt from notice and comment rulemaking under 5 U.S.C. § 553(b)(A).

Members of the public may present written comments on these guidelines. Written comments should include the following information:

—Name and affiliation of the individual responding;
—An indication of whether the comments offered represent views of the respondent's organization or are the respondent's personal views; and
—If applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, nonprofit organization).

The PTO is particularly interested in comments relating to the accuracy of the emphasized prior art teachings, and comments identifying any additional teachings that should be emphasized in determining whether a *prima facie* case of obviousness exists in the types of cases covered by these interim guidelines. The PTO is also interested in comments relating to the effect these guidelines may have on future application submissions.

February 5, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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I. Interim Guidelines for the Examination of Claims Directed to Species of Chemical Compositions Based Upon a Single Prior Art Reference

These "Genus-Species Guidelines" are to assist Office personnel in the examination of applications which contain claims to species or a subgenus of chemical compositions for compliance with 35 U.S.C. § 103 based upon a single prior art reference which discloses a genus encompassing the claimed species or subgenus but does not expressly disclose the particular claimed species or subgenus. Office personnel should attempt to find additional prior art to show that the differences between the prior art primary reference and the claimed invention as a whole would have been obvious. Where such additional prior art is not found, Office personnel should follow these guidelines to determine whether a single reference 35 U.S.C. § 103 rejection would be appropriate. The guidelines are based on the Office's current understanding of the law and are believed to be fully consistent with binding precedent of the Supreme Court, the Federal Circuit, and the Federal Circuit's predecessor courts.

The analysis of the guidelines begins at the point during examination after a single prior art reference is found disclosing a genus encompassing the claimed species or subgenus. Before reaching this point, Office personnel should follow normal examination procedures. Accordingly, Office personnel should first analyze the claims as a whole in light of and consistent with the written description, considering all claim limitations.[1] Next, Office personnel should conduct a thorough search of the prior art and identify all relevant references.[2] If the most relevant prior art consists of a single prior art reference disclosing a genus encompassing the claimed species or subgenus, Office personnel should follow the guidelines set forth herein.

These guidelines do not constitute substantive rulemaking and hence do not have the force and effect of law. Rather, they are to assist Office personnel in analyzing claimed subject matter for compliance with substantive law. Thus, rejections must be based upon the substantive law, and it is these rejections which are appealable, not any failure by Office personnel to follow these guidelines.

Office personnel are to rely on these guidelines in the event of any inconsistent treatment of issues between these guidelines and any earlier provided guidance from the Office.

II. Determine Whether the Claimed Species or Subgenus Would Have Been Obvious to One of Ordinary Skill in the Pertinent Art at the Time the Invention Was Made

The patentability of a claim to a specific compound or subgenus embraced by a prior art genus should be analyzed no differently than any other claim for purposes of 35 U.S.C. § 103.[3] A determination of patentability under 35 U.S.C. § 103 should be made upon the facts of the particular case in view of the totality of the circumstances.[4] Use of *per se* rules by Office personnel is improper for determining whether claimed subject matter would have been obvious under 35 U.S.C. § 103.[5] The fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a *prima facie* case of obviousness.[6]

A proper obviousness analysis involves a three-step process. First, Office personnel should establish a *prima facie* case of unpatentability considering the factors set out by the Supreme Court in *Graham v. John Deere*.[7] If a *prima facie* case is established, the burden shifts to applicant to come forward with rebuttal evidence or argument to overcome the *prima facie* case.[8] Finally, Office personnel should evaluate the totality of the facts and all of the evidence to determine whether they still support a conclusion that the claimed invention would have been obvious to one of ordinary skill in the art at the time the invention was made.[9]

A. Establishing a *Prima Facie* Case of Obviousness

To establish a *prima facie* case of obviousness in a genus-species chemical composition situation, as in any other 35 U.S.C. § 103 case, it is essential that Office personnel find some motivation or suggestion to make the claimed invention in light of the prior art teachings.[10] In order to find such motivation or suggestion there should be a reasonable likelihood that the claimed invention would have the properties disclosed by the prior art teachings.[11] These disclosed findings should be made with a complete understanding of the first three "Graham factors."[12] Thus, Office personnel should (1) determine the "scope and content of the prior art"; (2) ascertain the "differences between the prior art and the claims at issue"; and (3) determine "the level of ordinary skill in the pertinent art."[13]

1. Determine The Scope and Content of the Prior Art

As an initial matter, Office personnel should determine the scope and content of the relevant prior art. Each reference must qualify as prior art under 35 U.S.C. § 102,[14] and should be in the field of applicant's endeavor, or be reasonably pertinent to the particular problem with which the inventor was concerned.[15]

In the case of a prior art reference disclosing a genus, Office personnel should make findings as to (1) the structure of the disclosed prior art genus and that of any expressly described species or subgenus within the genus; (2) any physical or chemical properties and utilities disclosed for the genus, as well as any suggested limitations on the usefulness of the genus, and any problems alleged to be addressed by the genus; (3) the predictability of the technology; and (4) the number of species encompassed by the genus taking into consideration all of the variables possible.

2. Ascertain The Differences Between the Prior Art Genus and the Claimed Species or Subgenus

Once a relevant prior art genus is identified, Office personnel should compare it to the claimed species or subgenus to determine the differences. Through this comparison, the closest disclosed species or subgenus in the prior art reference should be identified and compared to that claimed. Office personnel should make explicit findings on the similarities and differences between the closest prior art reference and the claimed species or subgenus including findings relating to similarity of structure, chemical properties and utilities.[16]

3. Determine the Level of Skill in the Art

Office personnel should evaluate the prior art from the standpoint of the hypothetical person having ordinary skill in the art at the time the claimed invention was made.[17] In most cases, the only facts of record pertaining to the level of skill in the art will be found within the prior art reference. However, any additional evidence presented by applicant should be evaluated.

4. Determine Whether One of Ordinary Skill in the Art Would Have Been Motivated to Select the Claimed Species or Subgenus

In light of the findings made relating to the three Graham factors, Office personnel should determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, *i.e.*, to select the claimed species or subgenus from the disclosed prior art genus.[18] To address this key issue, Office personnel should consider all relevant prior art teachings, focusing on the following, where present.

a. Consider the Size of the Genus

Consider the size of the prior art genus, bearing in mind that size alone cannot support an obviousness rejection.[19] There is no absolute correlation between the size of the prior art genus and a conclusion of obviousness.[20] Thus, the mere fact that a prior art genus contains a small number of members does not create a *per se* rule of obviousness. Some motivation to select the claimed species or subgenus must be taught by the prior art.[21] However, a genus may be so small that it would anticipate the claimed species or subgenus. For example, it has been held that a prior art genus containing only 20 compounds inherently anticipated a claimed species within the genus because "one skilled in [the] art would . . . envisage each member" of the genus.[22]

b. Consider the Express Teachings

If the prior art reference expressly teaches a particular reason to select the claimed species or subgenus, Office personnel should point out the express disclosure which would have motivated one of ordinary skill in the art to select the claimed invention.[23]

c. Consider the Teachings of Structural Similarity

Consider any teachings of a "typical," "preferred," or "optimum" species or subgenus within the disclosed genus. If such a species or subgenus is structurally similar to that claimed, its disclosure may motivate one of ordinary skill in the art to choose the claimed species or subgenus from the genus,[24] based on the reasonable expectation that structurally similar species usually have similar properties.[25] The utility of such properties will normally provide some motivation to make the claimed species or subgenus.[26]

In making an obviousness determination, Office personnel should consider the number of variables which must be selected or modified, and the nature and significance of the differences between the prior art and the claimed invention.[27] The closer the physical and chemical similarities between the claimed species or subgenus and any exemplary species or subgenus disclosed in the prior art, the greater the expectation that the claimed subject matter will function in an equivalent manner to the genus.[28]

Similarly, consider any teaching or suggestion in the reference of a preferred species or subgenus that is significantly different in structure from the claimed species or subgenus. Such a teaching may weigh against selecting the claimed species or subgenus and thus against a determination of obviousness.[29] For example, teachings of preferred species of a complex nature within a disclosed genus may motivate an artisan of ordinary skill to make similar complex species and thus teach away from making simple species within the genus.[30] Concepts used to analyze the structural similarity of chemical compounds in other types of chemical cases are equally useful in analyzing genus-species cases.[31] Generally, some teaching of a structural similarity will be necessary to suggest selection of the claimed species or subgenus.[32]

d. Consider the Teachings of Similar Properties or Uses

Consider the properties and utilities of the structurally similar prior art species or subgenus. It is the properties and utilities that provide real world motivation for a person of ordinary skill to make species structurally similar to those in the prior art.[33] Conversely, lack of any known useful properties weighs against a finding of motivation to make or select a species or subgenus.[34] However, the prior art need not disclose a newly discovered property in order for there to be a *prima facie* case of obviousness.[35] If the claimed invention and the structurally similar prior art species share a useful property, that will generally be sufficient to motivate an artisan of ordinary skill to make the claimed species.[36] For example, based on a finding that a tri-orthoester and a tetra-orthoester behave similarly in certain chemical reactions, it has been held that one of ordinary skill in the relevant art would have been motivated to select either structure.[37] In fact, similar properties may normally be presumed when compounds are very close in structure.[38] Thus, evidence of similar properties weighs in favor of a conclusion that the claimed invention would have been obvious.[39]

e. Consider the Predictability of the Technology

Consider the predictability of the technology.[40] If the technology is unpredictable, it is less likely that structurally similar species will render a claimed species obvious because it may not be reasonable to infer that they would share similar properties.[41] However, obviousness does not require absolute predictability, only a reasonable expectation of success, *i.e.*, a reasonable expectation of obtaining similar properties.[42]

f. Consider Any Other Teaching to Support the Selection of the Species or Subgenus

The categories of relevant teachings enumerated above are those most frequently encountered in a genus-species case, but they are not exclusive. Office personnel should consider the totality of the evidence in each case. In unusual cases, there may be other relevant teachings sufficient to support the selection of the species or subgenus and, therefore, a conclusion of obviousness.

5. Make Express Fact-Findings And Determine Whether They Support A *Prima Facie* Case of Obviousness

Based on the evidence as a whole,[43] Office personnel should make express fact-findings relating to the Graham factors, focusing primarily on the prior art teachings discussed above. The fact-findings should specifically articulate what teachings or suggestions in the prior art would have motivated one of ordinary skill in the art to select the claimed species or subgenus.[44] Thereafter, it should be determined whether these findings, considered as a whole, support a *prima facie* case that the claimed invention would have been obvious to one of ordinary skill in the relevant art at the time the invention was made.

B. Determining Whether Rebuttal Evidence Is Sufficient To Overcome the Prima Facie Case of Obviousness

If a *prima facie* case of obviousness is established, the burden shifts to the applicant to come forward with arguments and/or evidence to rebut the *prima facie* case.[45] Rebuttal evidence and arguments can be presented in the specification,[46] by counsel,[47] or by way of an affidavit or declaration under 37 CFR 1.132.[48] However, arguments of counsel cannot take the place of factually supported objective evidence.[49] Office personnel should consider all rebuttal arguments and evidence presented by applicants.[50] Rebuttal evidence may include evidence of "secondary considerations," such as "commercial success, long felt but unsolved needs, [and] failure of others,"[51] evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art,[52] or evidence that the claimed invention was copied by others.[53] It may also include evidence of the state of the art, the level of skill in the art, and the beliefs of those skilled in the art.[54]

Consideration of rebuttal evidence and arguments requires Office personnel to weigh the proffered evidence and arguments. Office personnel should avoid giving evidence no weight, except in rare circumstances.[55] However, to be entitled to substantial weight, the applicant should establish a nexus between the rebuttal evidence and the claimed invention,[56] *i.e.*, objective evidence of nonobviousness must be attributable to the claimed invention.[57] Additionally, the evidence must be reasonably commensurate in scope with the claimed invention.[58] However, an exemplary showing may be sufficient to establish a reasonable correlation between the showing and the entire scope of the claim, when viewed by a skilled artisan.[59] On the other hand, evidence of an unexpected property may not be sufficient regardless of the scope of the showing.[60] Accordingly, each case should be evaluated individually based on the totality of the circumstances.

Office personnel should not evaluate rebuttal evidence for its "knockdown" value against the *prima facie* case[61] or summarily dismiss it as not compelling or insufficient. If the evidence is deemed insufficient to rebut the *prima facie* case of obviousness, Office personnel should specifically set forth the facts and reasoning that justify this conclusion.

III. Reconsider All Evidence and Clearly Communicate Findings and Conclusions

A determination under 35 U.S.C. § 103 should rest on all the evidence and should not be influenced by any earlier conclusion.[62] Thus, once the applicant has presented rebuttal evidence, Office personnel should reconsider any initial obviousness determination in view of the entire record.[63] All the proposed rejections and their bases should be reviewed to confirm their correctness. Only then should any rejection be imposed in an Office action. The Office action should clearly communicate the Office's findings and conclusions, articulating how the conclusions are supported by the findings.

Where applicable, the findings should clearly articulate which portions of the reference support any rejection. Explicit findings on motivation or suggestion to select the claimed invention should also be articulated in order to support a 35 U.S.C. § 103 ground of rejection.[64] Conclusory statements of similarity or motivation, without any articulated rationale or

evidentiary support, do not constitute sufficient factual findings.

VI. Notes

1. When evaluating the scope of a claim, every limitation in the claim must be considered. *E.g., In re Ochiai,* 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995). However, the claimed invention may not be dissected into discrete elements to be analyzed in isolation, but must be considered as a whole. *E.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.,* 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), *cert. denied,* 469 U.S. 851 (1984); *Jones v. Hardy,* 727 F.2d 1524, 1530, 220 USPQ 1021, 1026 (Fed. Cir. 1983) ("treating the advantage as the invention disregards the statutory requirement that the invention be viewed 'as a whole'").

2. Both claimed and unclaimed aspects of the invention should be searched if there is a reasonable expectation that the unclaimed aspects may be later claimed.

3. "The section 103 requirement of unobviousness is no different in chemical cases than with respect to other categories of patentable inventions." *In re Papesch,* 315 F.2d 381, 385, 137 USPQ 43, 47 (CCPA 1963).

4. *E.g., In re Dillon,* 919 F.2d 688, 692-93, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (in banc), *cert. denied,* 500 U.S. 904 (1991).

5. *E.g., In re Brouwer,* 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996); *In re Ochiai,* 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995); *In re Baird,* 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994).

6. *In re Baird,* 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."); *In re Jones,* 958 F.2d 347, 350 21 USPQ2d 1941; 1943 (Fed. Cir. 1992) (Federal Circuit has "decline[d] to extract from *Merck [& Co. v. Biocraft Laboratories Inc.,* 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989)] the rule that regardless of how broad, a disclosure of a chemical genus renders obvious any species that happens to fall within it."). *See also In re Deuel,* 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995).

7. *E.g., In re Bell,* 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) ("The PTO bears the burden of establishing a case of *prima facie* obviousness."); *In re Rijckaert,* 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker,* 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966), requires that to make out a case of obviousness, one must: (1) determine the scope and contents of the prior art; (2) ascertain the differences between the prior art and the claims in issue; (3) determine the level of skill in the pertinent art; and (4) evaluate any evidence of secondary considerations.

8. *E.g., Bell,* 991 F.2d at 783-84, 26 USPQ2d at 1531; *Rijckaert,* 9 F.3d at 1532, 28 USPQ2d at 1956; *Oetiker,* 977 F.2d at 1445, 24 USPQ2d at 1444.

9. *Id.*

10. *E.g., In re Brouwer,* 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996)("[T]he mere possibility that one of the esters or the active methylene group-containing compounds . . . could be modified or replaced such that its use would lead to the specific sulfoalkylated resin recited in claim 8 does not make the process recited in claim 8 obvious 'unless the prior art suggested the desirability of [such a] modification' or replacement.") (quoting *In re Gordon,* 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984); *In re Vaeck,* 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991) ("[A] proper analysis under § 103 requires, *inter alia,* consideration of . . . whether the prior artwould have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process.").

11. The prior art disclosure may be express, implicit, or inherent. Regardless of the type of disclosure, the prior art must provide some motivation to one of ordinary skill in the art to make the claimed invention in order to support a conclusion of obviousness. *E.g., Vaeck,* 947 F.2d at 493, 20 USPQ2d at 1442 (A proper obviousness analysis requires consideration of "whether the prior art would also have revealed that in so making or carrying out [the claimed invention], those of ordinary skill would have a reasonable expectation of success."); *In re Dow Chemical Co.,* 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art."); *Hodosh v. Block Drug Co.,* 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir.), *cert. denied,* 479 U.S. 827 (1986).

12. When evidence of secondary considerations such as unexpected results is initially before the Office, for example in the specification, that evidence should be considered in deciding whether there is a *prima facie* case of obviousness. The determination as to whether a *prima facie* case exists should be made on the full record before the Office at the time of the determination.

13. *Graham v. John Deere,* 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). *Accord, e.g., In re Paulsen,* 30 F.3d 1475, 1482, 31 USPQ2d 1671, 1676 (Fed. Cir. 1994).

14. *E.g., Panduit Corp. v. Dennison Mfg. Co.,* 810 F.2d 1561, 1568, 1 USPQ2d 1593, 1597 (Fed. Cir.)("Before answering *Graham's* 'content' inquiry, it must be known whether a patent or publication is in the prior art under 35 U.S.C. § 102."), *cert. denied,* 481 U.S. 1052 (1987).

15. *In re Oetiker,* 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). *Accord, e.g., In re Clay,* 966 F.2d 656, 658-59, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992).

16. In *Stratoflex, Inc. v. Aeroquip Corp.,* 713 F.2d 1530, 1537, 218 USPQ 871, 877 (Fed. Cir. 1983), the Court noted that "the question under 35 U.S.C. § 103 is not whether the differences [between the claimed invention and the prior art] would have been obvious" but "whether the claimed invention *as a whole* would have been obvious." (emphasis in original).

17. *See, Ryko Manufacturing Co. v. Nu-Star Inc.,* 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991) ("The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry."); *Uniroyal Inc. v. Rudkin-Wiley Corp.,* 837 F.2d 1044, 1050, 5 USPQ2d 1434, 1438 (Fed. Cir.), *cert. denied,* 488 U.S. 825 (1988) (evidence must be viewed from position of ordinary skill, not of an expert).

18. *E.g., Ochiai,* 71 F.3d at 1569-70, 37 USPQ2d at 1131; *Deuel,* 51 F.3d at 1557, 34 USPQ2d at 1214 ("[A] *prima facie* case of unpatentability requires that the teachings of the prior art suggest *the claimed compounds* to a person of ordinary skill in the art." (emphasis in original)); *Jones,* 958 F.2d at 351, 21 USPQ2d at 1943-44 (Fed. Cir. 1992); *Dillon,* 919 F.2d at 692, 16 USPQ2d at 1901; *In re Lalu,* 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984) ("The prior art must provide one of ordinary skill in the art the motivation to make the proposed molecular modifications needed to arrive at the claimed compound."). *See also In re Kemps,* 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996) (discussing motivation to combine).

19. *See, e.g., Baird,* 16 F.3d at 383, 29 USPQ2d at 1552 (observing that "it is not the mere number of compounds in this limited class which is significant here but, rather, the total circumstances involved").

20. *Id.*

21. *See, e.g., Deuel,* 51 F.3d at 1558-59, 34 USPQ2d at 1215 ("No particular one of these DNAs can be obvious unless there is something in the prior art to lead to the particular DNA and indicate that it should be prepared."); Baird, 16 F.3d at 382-83, 29 USPQ2d at 1552; Bell, 991 F.2d at 784, 26 USPQ2d at 1531 ("Absent anything in the cited prior art suggesting which of the 10^{36} possible sequences suggested by Rinderknecht corresponds to the IGF gene, the PTO has not met its burden of establishing that the prior art would have suggested the claimed sequences.").

22. *In re Petering,* 301 F.2d 676, 681, 133 USPQ 275, 280 (CCPA 1962)(emphasis in original). *Accord In re Schaumann,* 572 F.2d 312, 316, 197 USPQ 5, 9 (CCPA 1978)(prior art genus encompassing claimed species which disclosed preference for lower alkyl secondary amines and properties possessed by the claimed compound constituted description of claimed compound for purposes of 35 U.S.C. § 102(b)). *C.f., In re Ruschig,* 343 F.2d 965, 974, 145 USPQ 274, 282 (CCPA 1965)(Rejection of claimed compound in light of prior art genus based on Petering is not appropriate where the prior art does not disclose a small recognizable class of compounds with common properties.).

23. An express teaching may be based on a statement in the prior art reference such as an art recognized equivalence. For example, *see Merck & Co. v. Biocraft Labs.,* 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir.), *cert. denied,* 493 U.S. 975 (1989)(holding claims directed to diuretic compositions comprising a specific mixture of amiloride and hydrochlorothiazide were obvious over a prior art reference expressly teaching that amiloride was a pyrazinoylguanidine which could be co-administered with potassium excreting diuretic agents, including hydrochlorothiazide which was a named example, to produce a diuretic with desirable sodium and potassium eliminating properties). *See also, In re Kemps,* 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1312 (Fed. Cir. 1996) (holding there is sufficient motivation to combine teachings of prior art to achieve claimed invention where one reference specifically refers to the other).

24. *E.g., Dillon,* 919 F.2d at 696, 16 USPQ2d at 1904. *See also Deuel,* 51 F.3d at 1558, 34 USPQ2d at 1214 ("Structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties.").

25. *E.g., Dillon,* 919 F.2d at 693, 16 USPQ2d at 1901.

26. *See id.*

27. *E.g., In re Jones,* 958 F.2d 347, 350, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992) (reversing obviousness rejection of novel dicamba salt with acyclic structure over broad prior art genus encompassing claimed salt, where disclosed examples of genus were dissimilar in structure, lacking an ether linkage or being cyclic); *In re Susi,* 440 F.2d 442, 445, 169 USPQ423, 425 (CCPA 1971) (the difference from the particularly preferred subgenus of the prior art was a hydroxyl group, a difference conceded by applicant "to be of little importance.").

In the area of biotechnology, an exemplified species may differ from a claimed species by a conservative substitution ("the replacement in a protein of one amino acid by another, chemically similar, amino acid . . . [which] is generally expected to lead to either no change or only a small change in the properties of the protein." *Dictionary of Biochemistry and Molecular Biology* 97 (John Wiley & Sons, 2d ed. 1989)). The effect of a conservative substitution on protein function depends on the nature of the substitution and its location in the chain. Although at some locations a conservative substitution may be benign, in some proteinsonly one amino acid is allowed at a given position. For example, the gain or loss of even one methyl group can destabilize the structure if close packing is required in the interior of domains. James Darnell et al., *Molecular Cell Biology* 51 (2d ed. 1990).

28. *E.g., Dillon,* 919 F.2d at 696, 16 USPQ2d at 1904 (and cases cited therein). *C.f. Baird,* 16 F.3d at 382-83, 29 USPQ2d at 1552 (disclosure of dissimilar species can provide teaching away).

29. *Baird,* 16 F.3d at 382-83, 29 USPQ2d at 1552 (reversing obviousness rejection of species in view of large size of genus and disclosed "optimum" species which differed greatly from and were more complex than the claimed species); *Jones,* 958 F.2d at 350, 21 USPQ2d at 1943 (reversing obviousness rejection of novel dicamba salt with acyclic structure over broad prior art genus encompassing claimed salt, where disclosed examples of genus were dissimilar in structure, lacking an ether linkage or being cyclic).

30. *Baird,* 16 F.3d at 382, 29 USPQ2d at 1552. *See also Jones,* 958 F.2d at 350, 21 USPQ2d at 1943 (disclosed salts of genus held not sufficiently similar in structure to render claimed species *prima facie* obvious).

31. For example, a claimed tetra-orthoester fuel composition was held to be obvious in light of a prior art tri-orthoester fuel composition based on their structural and chemical similarity and similar use as fuel additives. *Dillon,* 919 F.2d at 692-93, 16 USPQ2d at 1900-02.

Likewise, claims to amitriptyline used as an antidepressant were held obvious in light of the structural similarity to imipramine, a known antidepressant prior art compound, where both compounds were tricyclic dibenzo compounds and differed structurally only in the replacement of the unsaturated 24 carbon atom in the center ring of amitriptyline with a nitrogen atom in imipramine. *In re Merck & Co.,* 800 F.2d 1091, 1096-97, 231 USPQ 375, 378-79 (Fed. Cir. 1986).

Similarly, a claimed protein compound having an amino acid sequence including Met-Phe-Pro-Leu-$(Asp)_4$-Lys-Y was held to be obvious in light of structural similarities to the prior art. One reference provided motivation to create fusion proteins in the forms X-$(Asp)_4$-Lys-Y. Other references taught positioning Met at the start of the amino acid sequence and that the sequences Phe-Pro-Ile or Leu-Pro-Leu could serve as X in the basic formula. The known structural similarity of Ile and Leu meant that appellants merely substituted one element known in the art for a known equivalent. Thus, the substitution was held to be obvious. *In re Mayne,* No. 95-1522, slip op. at 6-8 (Fed. Cir. Jan. 17, 1997).

Other structural similarities have been found to support a *prima facie* case of obviousness. *E.g., In re May,* 574 F.2d 1082, 1093-95, 197 USPQ 601, 610-11 (CCPA 1978) (stereoisomers); *In re Wilder,* 563 F.2d 457, 460, 195 USPQ 426, 429 (CCPA 1977) (adjacent homologs and structural isomers); *In re Hoch,* 428 F.2d 1341, 1344, 166 USPQ 406, 409 (CCPA 1970) (acid and ethyl ester); *In re Druey,* 319 F.2d 237, 240, 138 USPQ 39, 41 (CCPA 1963) (omission of methyl group from pyrazole ring).

32. *Id.*

33. *Dillon,* 919 F.2d at 697, 16 USPQ2d at 1905; *In re Stemniski,* 444 F.2d 581, 586, 170 USPQ 343, 348 (CCPA 1971).

34. *In re Albrecht,* 514 F.2d 1389, 1392, 1395-96, 185 USPQ 585, 587, 590 (CCPA 1975)(The prior art compound so irritated the skin that it could not be regarded as useful for the disclosed anesthetic purpose, and therefore a person skilled in the art would not have been motivated to make related compounds.); *Stemniski,* 444 F.2d at 586, 170 USPQ at 348 (close structural similarity alone is not sufficient to create a *prima facie* case of obviousness when the reference compounds lack utility, and thus there is no motivation to make related compounds.).

35. *Dillon,* 919 F.2d at 697, 16 USPQ2d at 1904-05 (and cases cited therein).

36. *E.g., id.*

37. *Id.* at 692, 16 USPQ2d at 1900-01.

38. *Dillon*, 919 F.2d at 693, 696, 16 USPQ2d at 1901, 1904. *See also In re Grabiak*, 769 F.2d 729, 731, 226 USPQ 870, 871 (Fed. Cir. 1985) ("When chemical compounds have 'very close' structural similarities and similar utilities, without more a *prima facie* case may be made.").

39. *Dillon*, 919 F.2d at 697-98, 16 USPQ2d at 1905; *In re Wilder, 563 F.2d 457, 461, 195 USPQ 426, 430 (CCPA 1977); In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

40. *See, e.g., Dillon*, 919 F.2d at 692-97, 16 USPQ2d at 1901-05; *In re Grabiak*, 769 F.ld 729, 732-33,226 USPQ 870, 872 (Fed. Cir. 1985).

41. *See e.g., In re May*, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978) (*prima facie* obviousness of claimed analgesic compound based on structurally similar prior art isomer was rebutted with evidence demonstrating that analgesia and addiction properties could not be reliably predicted on the basis of chemical structure); *In re Schechter*, 205 F.2d 185,191, 98 USPQ 144, 150 (CCPA 1953) (unpredictability in the insecticide field, with homologs, isomers and analogs of known effective insecticides having proven ineffective as insecticides, was considered as a factor weighing against a conclusion of obviousness of the claimed compounds).

42. *See, e.g., In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

43. *In re Bell*, 991 F.2d 781, 784, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993); *In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1057 (Fed. Cir. 1990).

44. *Kulling*, 897 F.2d at 1149, 14 USPQ2d at 1058; *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1579 n.42, 1 USQP2d 1593, 1606 n.42 (Fed. Cir.), *cert. denied*, 481 U.S. 1052 (1987).

45. *E.g., Dillon*, 919 F.2d at 692, 16 USPQ2d at 1901.

46. *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995).

47. *In re Chu*, 66 F.3d 292, 299, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995).

48. *E.g., Soni*, 54 F.3d at 750, 34 USPQ2d at 1687; *In re Piasecki*, 745 F.2d 1468, 1474, 223 USPQ 785, 789-90 (Fed. Cir. 1984).

49. E.g., *In re Huang*, 100 F.3d 135, 139-40, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996); *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984).

50. *E.g., In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995) (error not to consider evidence presented in the specification). *C.f., In re Alton*, 76 F.3d 1168, 37 USPQ2d 1578 (Fed. Cir. 1996) (error not to consider factual evidence submitted to counter a section 112 rejection); *In re Beattie*, 974 F.2d 1309, 1313, 24 USPQ2d 1040, 1042-43 (Fed. Cir. 1992) (Office personnel should consider declarations from those skilled in the art praising the claimed invention and opining that the art teaches away from the invention.); *Piasecki*, 745 F.2d at 1472, 223 USPQ at 788 ("[Rebuttal evidence] may relate to any of the Graham factors including the so-called secondary considerations.").

51. *Graham v. John Deere Co.*, 383 U.S. at 17, 148 USPQ at 467. *See also, e.g., In re Piasecki*, 745 F.2d 1468, 1473, 223 USPQ 785, 788 (Fed. Cir. 1984) (commercial success).

52. Rebuttal evidence may consist of a showing that the claimed compound possesses unexpected properties. *Dillon*, 919 F.2d at 692-93, 16 USPQ2d at 1901. A showing of unexpected results must be based on evidence, not argument or speculation. *In re Mayne*, No. 95-1522, slip op. at 9-10 (Fed. Cir. Jan. 17, 1997) (conclusory statements that claimed compound posesses unusually low immune response or unexpected biological activity that is unsupported by comparative data held insufficient to overcome *prima facie* case of obviousness).

53. *E.g., In re GPAC*, 57 F.3d 1573, 1580, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995); *Hybritech Inc. v. Monoclonal* Antibodies, 802 F.2d 1367, 1380, 231 USPQ 81, 90 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

54. *E.g., In re Oelrich*, 579 F.2d 86, 91-92, 198 USPQ 210, 214 (CCPA 1978) (Expert opinions regarding the level of skill in the art were probative of the nonobviousness of the claimed invention.); *Piasecki*, 745 F.2d at 1471, 1473-74, 223 USPQ at 790 (Evidence of non-technological nature is pertinent to the conclusion of obviousness. The declarations of those skilled in the art regarding the need for the invention and its reception by the art were improperly discounted by the Board); *Beattie*, 974 F.2d at 1313, 24 USPQ2d at 1042-43 (Seven declarations provided by music teachers opining that the art teaches away from the claimed invention must be considered, but were not probative because they did not contain facts and did not deal with the specific prior art that was the subject of the rejection.).

55. *Id. See also In re Alton*, 76 F.3d 1168, 1174-75, 37 USPQ2d 1578, 1582-83 (Fed. Cir. 1996).

56. The Federal Circuit has acknowledged that applicant bears the burden of establishing nexus, stating:

> In the *ex parte* process of examining a patent application, however, the PTO lacks the means or resources to gather evidence which supports or refutes the applicant's assertion that the sales constitute commercial success. *c.f. Ex parte Remark*, 15 USPQ2d 1498, 1503 ([BPAI] 1990) (evidentiary routine of shifting burdens in civil proceedings inappropriate in *ex parte* prosecution proceedings because examiner has no available means for adducing evidence). Consequently, the PTO must rely upon the applicant to provide hard evidence of commercial success.

In re Huang, 100 F.3d 135, 139-40, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996). See also GPAC, 57 F.3d at 1580, 35 USPQ2d at 1121; *In re Paulsen*, 30 F.3d 1475, 1482, 31 USPQ2d 1671,1676 (Fed. Cir. 1994).

57. *E.g., Paulsen*, 30 F.3d at 1482, 31 USPQ2d at 1676. (Evidence of commercial success of articles not covered by the claims subject to the 35 U.S.C. § 103 rejection was not probative of nonobviousness).

58. *E.g., In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 /Fed. Cir. 1990); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 777 (Fed. Cir. 1983). *In re Soni*, 54 F.3d 746, 34 USPQ2d 1684 (Fed. Cir. 1995) does not change this analysis. In *Soni*, the Court declined to consider the Office's argument that the evidence of non-obviousness was not commensurate in scope with the claim because it had not been raised by the Examiner. 54 F.3d at 751, 34 USPQ2d at 1688.

When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the applicant to show unexpected results over the entire range of properties possessed by a chemical compound or composition. *E.g., In re Chupp*, 816 F.2d 643,646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987). Evidence that the compound or composition possesses superior and unexpected properties in one of a spectrum of common properties can be sufficient to rebut a *prima facie* case of obviousness. *Id.*

For example, a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a *prima facie* case of obviousness if a skilled artisan "could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof." *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980) (Evidence of the unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him to reasonably extend the probative value thereof.). *But see, Grasselli*, 713 F.2d at 743, 218 USPQ at 778 (evidence of superior properties for sodium containing composition insufficient to establish the non-obviousness of broad claims for a catalyst with "an alkali metal" where it was well known in the catalyst art that different alkali metals were not interchangeable and applicant had shown unexpected results only for sodium containing materials); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (evidence of superior properties in one species insufficient to establish the nonobviousness of a subgenus containing hundreds of compounds); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356,358 (CCPA 1972) (one test not sufficient where there was no adequate basis for concluding the other claimed compounds would behave the same way).

59. *E.g., Chupp*, 816 F.2d at 646, 2 USPQ2d at 1439; Clemens, 622 F.2d at 1036, 206 USPQ at 296.

60. Where the claims are not limited to a particular use, and where the prior art provides other motivation to select a particular species or subgenus, a showing of a new use may not be sufficient to confer patentability. *See Dillon*, 919 F.2d at 692, 16 USPQ2d at 1900-01.

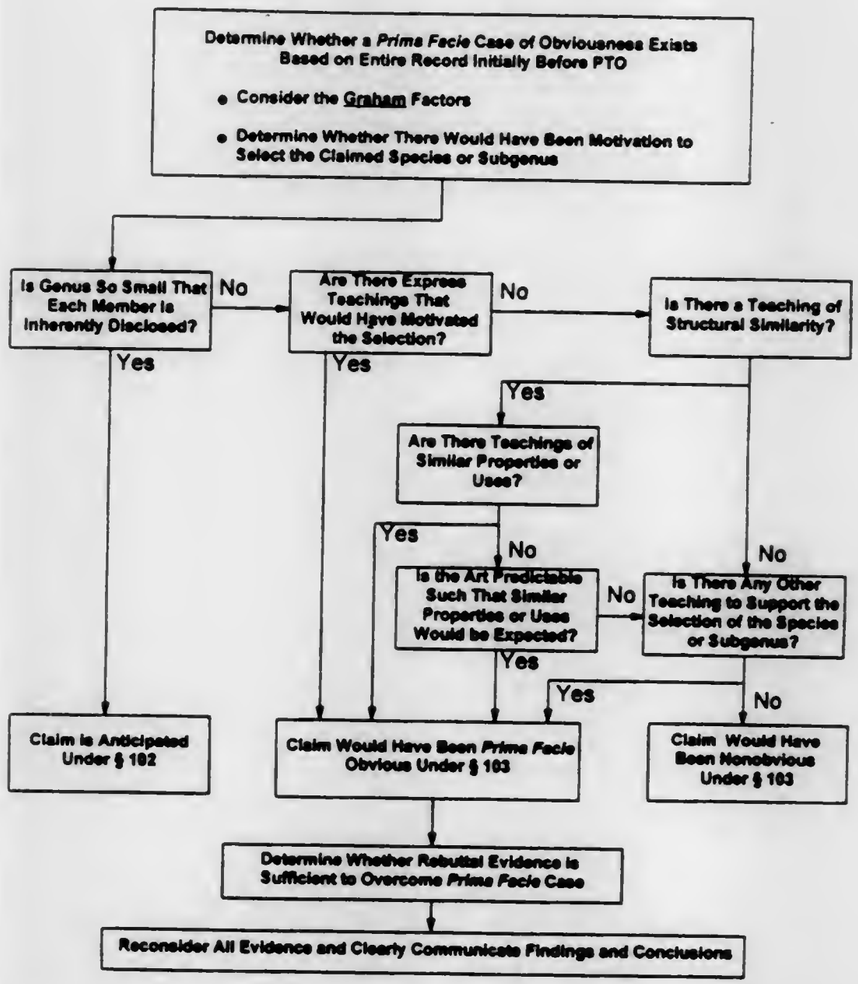
61. *Piasecki*, 745 F.2d at 1473, 223 USPQ at 788.

62. *E.g., Piasecki*, 745 F.2d at 1472-73, 223 USPQ at 788; *In re Eli Lilly & Co.*, 902 F.2d 943, 945, 14 USPQ2d 1741, 1743 (Fed. Cir. 1990).

63. *E.g., Piasecki*, 745 F.2d at 1472, 223 USPQ at 788; Eli Lilly, 902 F.2d at 945, 14 USPQ2d at 1743.

64. *Dillon*, 919 F.2d at 693, 16 USPQ2d at 1901; *In re Mills*, 916 F.2d 680, 683, 16 USPQ2d 1430, 1433 (Fed. Cir. 1990).

If the closest prior art is a single reference disclosing a genus, determine whether the claimed species or subgenus would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made by performing the following analysis...



Certificate of Correction for Week of March 11, 1997

P. 09,650	5,456,256	5,516,631	5,541,366	5,553,130	5,563,973	5,571,436	5,579,860
P. 09,664	5,457,066	5,516,647	5,541,741	5,553,695	5,564,497	5,571,443	5,580,426
Re. 35,257	5,461,027	5,516,904	5,541,778	5,554,523	5,564,854	5,571,533	5,580,493
D. 374,890	5,462,792	5,521,027	5,542,122	5,554,786	5,565,359	5,571,817	5,580,714
D. 375,834	5,467,090	5,521,681	5,542,649	5,555,082	5,565,447	5,572,275	5,581,022
5,054,672	5,470,359	5,523,296	5,543,835	5,555,230	5,565,642	5,572,347	5,581,036
5,195,287	5,473,175	5,523,794	5,544,283	5,555,889	5,565,957	5,572,834	5,581,098
5,208,754	5,483,270	5,523,834	5,544,417	5,556,680	5,566,080	5,573,177	5,581,283
5,225,183	5,483,834	5,525,117	5,544,893	5,556,919	5,566,275	5,573,347	5,581,540
5,236,836	5,487,985	5,525,202	5,545,625	5,557,321	5,567,034	5,573,789	5,581,903
5,244,843	5,490,231	5,528,528	5,545,940	5,557,365	5,567,115	5,574,102	5,582,434
5,257,239	5,491,806	5,528,682	5,547,322	5,557,601	5,567,495	5,574,696	5,582,787
5,355,464	5,493,177	5,529,021	5,547,431	5,558,167	5,568,157	5,574,866	5,583,323
5,361,093	5,493,660	5,529,031	5,547,836	5,558,211	5,568,180	5,574,872	5,583,366
5,362,792	5,494,384	5,529,165	5,548,001	5,558,506	5,568,233	5,574,937	5,583,824
5,376,430	5,494,638	5,529,725	5,548,041	5,559,158	5,568,339	5,575,360	5,583,834
5,387,119	5,495,374	5,530,670	5,548,375	5,559,256	5,568,461	5,575,546	5,585,128
5,408,034	5,496,370	5,531,172	5,548,706	5,559,535	5,568,609	5,575,586	5,585,202
5,412,589	5,498,779	5,532,193	5,548,885	5,559,974	5,568,737	5,575,769	5,585,805
5,416,019	5,504,672	5,532,237	5,549,046	5,560,647	5,569,057	5,575,811	5,585,996
5,417,923	5,510,457	5,532,912	5,549,401	5,560,649	5,569,339	5,576,158	5,586,770
5,418,062	5,510,689	5,533,658	5,550,034	5,560,997	5,569,605	5,576,199	5,587,449
5,421,333	5,512,459	5,534,119	5,550,051	5,561,441	5,569,724	5,576,273	5,587,463
5,427,119	5,513,503	5,535,287	5,550,559	5,561,533	5,569,731	5,576,293	5,589,534
5,427,928	5,513,713	5,537,338	5,550,612	5,561,584	5,569,747	5,576,636	5,589,750
5,428,236	5,514,225	5,537,525	5,551,167	5,561,650	5,569,761	5,577,115	5,592,442
5,439,518	5,514,646	5,540,829	5,551,389	5,561,745	5,569,835	5,577,180	5,594,477
5,445,838	5,514,976	5,540,988	5,551,828	5,561,751	5,570,251	5,577,430	
5,448,388	5,515,540	5,541,156	5,552,006	5,561,790	5,570,263	5,577,772	
5,451,275	5,515,852	5,541,171	5,552,604	5,562,052	5,570,332	5,577,856	
5,451,398	5,515,870	5,541,324	5,552,981	5,562,117	5,570,606	5,577,999	
				5,562,127	5,570,734	5,578,187	
				5,562,803	5,570,947	5,579,103	
				5,563,086	5,571,154	5,579,281	

OFFICIAL GAZETTE NOTICE

Training for Public Users
Automated Patent System for the Desktop Workstation

The Patent Search Image Retrieval Facility (PSIRF) will be upgraded with equipment to handle the Automated Patent System (APS) for the Desktop Workstation (DTWS). This capability of searching patents on the Desktop Workstation will further enhance the ability of the public user to fully utilize the searching capabilities offered by the Patent and Trademark Office. This upgrade replaces the current Classified Search Image Retrieval (CSIR) system presently utilized in the PSIRF.

Desktop Workstation (DTWS) training classes similar to those offered to the PTO examiners will be made available to the public. Training will consist of classroom instruction and "hands on" practice using the DTWS terminals. All major search features of the DTWS will be covered. Prior APS Text training or experience is strongly recommended.

These free classes will be held at the PTO located in Arlington, Virginia. Each class will last four hours. Space in each session will be limited to 12 people. Training will begin March 17, 1997. Class assignments will be determined by date of received application.

If further information is required. please call the Public Search Services Division (703) 309-3040. An application form for DTWS training must include all information shown below

Patent and Trademark Office
Automated Patent System Desktop Workstation APSDTWS Training
Application Form

Name: _____
First Last MI

Mailing Address: _____

_____

_____

Phone Number: (_____) _____
Area Code

Employer: _____

Applications should be deposited in the Patent Search Room or forwarded via mail, telefax or Internet mail to:

BOX PSSD-TRAINING
Commissioner of Patents and Trademarks
Washington, DC 20231
FAX: 703-308-0876
Email: Juanita.Baker@uspto.gov

2/21/97
Date

Wesley H. Gewehr
Administrator for Information Dissemination

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

January 13-17, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
*1-10***	EX	74/235,238	PSE Concepts, Inc.	2(d)	Refusal Reversed		"PEEK-A-BOO BABY" [plush dolls]	"PEEK-A-BOO PALS" [stuffed toy animals]	No
1-13	EX	74/519,199	K. Aram Zildjian	2(d)	Refusal Affirmed		"ZILDJIAN SPEAKERS" [loudspeakers]	"ZILDJIAN" (in stylized lettering) [three registrations, for, respectively, "musical percussion instruments," "cymbals, gongs, and bells," and "shirts, sleepwear, shorts, jackets, caps and sweatbands"]; plus six other registrations incorporating the word "ZILDJIAN" [each for musical percussion instruments or clothing items]	No
1-13	EX	74/475,277	QVC, Inc.	2(d)	Refusal Affirmed		"THE LOCKER ROOM" [providing at home shopping services in the field of sports clothing and equipment by means of television]	"THE LOCKER ROOM" [retail store services specializing in footwear] and "THE NATIONAL LOCKER ROOM" [and design) [retail outlet services and mail order catalog services featuring items licensed by professional sports league organizations]	No
1-13	EX	74/520,360	City of Norfolk Virginia	2(e)(4) [surname]	Refusal Affirmed		"MACARTHUR CENTER" [operation of a shopping mall and leasing of shopping space to others]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

***This decision was inadvertently omitted from the Summary of Final Decisions for the week of January 6-10, 1997.*

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-14	EX	74/207,315	EBSCO Industries, Inc.	de jure functionality; distinctiveness under Sec. 2(f)	Refusal Reversed		configuration of a fishing lure [fishing lures]		Yes
1-14	EX	74/445,928	Louis C. Gunsberg dba PitStop Techologies	2(d)	Refusal Affirmed		"PIT STOP" (and design) [glass repair kits for automobile windshields, consisting of sealant compositions, a syringe applicator, O-rings, and a clamping apparatus]	"PIT STOP" (and design) [automobile service station services; motor oil]	No
1-14	OPP	89,301	Desarrollo Industrial Y Tecnologico, S.A. de C.V. v. 758895 Ontario Ltd. T/A N.O.A.O. Imports & Exports and S.C.M.N. Global Traders	2(d); 2(e)(1) [merely descriptive]; 2(e)(1) [deceptively misdescriptive]	Opposition Dismissed	"MASECA" (and design) [corn flour]	"LA MEJIHARINA" (and design) [prepared and packaged corn masa mix]		No
1-14	EX	74/325,394	Santangelo Law Offices, P.C.	whether the matter asserted for registration has been used on "goods in trade" and, thus, "in commerce"	Refusal Affirmed		design of a U.S. patent on a greeting card [greeting cards]		No
1-16	OPP (R)	92,996	Miguel Torres, S.A. v. Cantine Mezzacorona S.C.A.R.L.	2(d)	Request for Reconsideration Denied [Opposition Sustained]	"GRAN CORONAS" (in stylized form) and "CORONAS" (and design) [wine]	"MEZZACORONA" (and design) [wines and sparkling wines]		No
1-16	OPP	93,492	Lehman Brothers Inc. v. John L. Loeb, Jr. Associates, Inc.	2(d)	Opposition Sustained	"LEHMAN BROTHERS" and "LEHMAN-LOGIC" [various financial and investment services]	"LOEB-LEHMAN FUND MANAGEMENT CO." [financial management and advisory services]		No
1-16	EX	74/562,451	Manco, Inc.	2(d)	Refusal Affirmed (as to both cited registrations)		"NO LICK SURE STICK" [envelopes]	"SURE STICK" [pressure sensitive adhesive labels]; "NO-LIK" [envelopes]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-17	EX	74/634,915	Wartsila Diesel Int'l. Ltd. Oy	whether the mark asserted for registration is in use in commerce [mutilation]	Refusal Reversed		"WARTSILA" [diesel motors and internal combustion engines used in energy-production power plants and in ships as main propulsion engines and as auxiliary engines]		No
1-17	EX EX	74/138,310 74/141,491	Microfibres, Inc.	As to word mark "MICROFIBRES": 2(a) [deceptive], genericness, and Section 2(f) distinctiveness As to mark "MICROFIBRES" (and design): 2(a) [deceptive], requirement for Sec. 6 disclaimer of word "MICROFIBRES," and Section 2(f) distinctiveness	Refusal Reversed (in both cases)		"MICROFIBRES" and "MICROFIBRES" (and design) [both marks for fabrics for use in the manufacture of upholstered furniture sold to the upholstery industry]	"SIERRA-CRUNCH" [breakfast cereal]	No
1-17	EX	74/504,838	The Breadshop, Inc.	2(d)	Refusal Reversed			"SIERRA SNACKS" (and design) [snack mix, consisting primarily of processed cereals, pretzels, breadsticks, wheat-based snacks and nuts]	No
1-17	EX	74/397,042	Nobody's Perfect, Inc.	2(d)	Refusal Reversed		"NOBODY'S PERFECT" (in stylized lettering) [apparel retail store services selling goods of both first and irregular quality]	"NO BODY'S PERFECT" [feminine underwear]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Utah	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Vermont	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Virginia	Seattle: Engineering Library, University of Washington	(206) 543-0740
Washington	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
West Virginia	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
Wisconsin	Milwaukee Public Library	(414) 286-3051
	Casper: Natrona County Public Library	(307) 237-4935
Wyoming		

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/25/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/10/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/20/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/17/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/03/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	03/27/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/10/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/09/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/19/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/16/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/23/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/23/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/19/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/31/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/30/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/06/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/22/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126	12/13/96	—0—
Affidavits Under Sections 8 & 15 (All Classes)	11/14/96	—0—
Renewals (All Classes)	07/26/96	—0—
Section 12(c) Publications (All Classes)		

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

MARCH 11, 1997

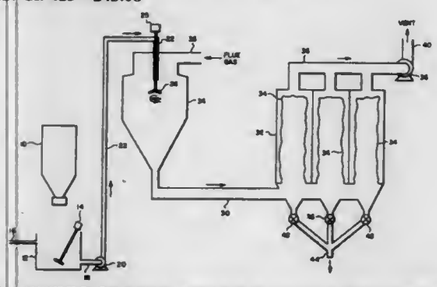
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,197,278 (3151st)

SEQUENTIAL REMOVAL OF SULFER OXIDES FROM HOT GASES

Dennis C. Gehri, Agoura, Calif.; Richard L. Adams, Bethel Park, and John H. Phelan, Pittsburgh, both of Pa., assignors to ABB Flakt, Inc., Knoxville, Tenn.

Reexamination Request No. 90/004,183, Mar. 14, 1996.
Reexamination Certificate for Patent 4,197,278, issued Apr. 2, 1996, Ser. No. 880,927, Feb. 24, 1978.
Int. Cl.[6] C01B *17/00;* **B01D** *53/50*
U.S. Cl. 423—243.08



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. A two-zone method for removing sulfur dioxide and particulate impurities from a hot waste gas comprising:

(a) introducing the waste gas at a temperature of at least 100° C. and containing from about 200 to 500 p.p.m. by volume of sulfur dioxide into a first spray-dryer reaction zone;

(b) contacting said waste gas in the first zone with a finely dispersed spray of an aqueous medium consisting essentially of water and a sodium alkali or calcium alkali absorbent, said aqueous medium being introduced into the spray dryer at a controlled rate so as to provide water to the waste gas in an amount such that the exit gas from the spray dryer is water-unsaturated and has an absolute humidity of from about 0.07 to 0.5 g./g. and is at a temperature between about 65° and 135° C.; said aqueous medium containing absorbent in an amount to provide from 90% to 200% of the stoichiometric amount required to react with the sulfur dioxide to be removed from said waste gas, whereby sulfate and sulfite dry reaction products are formed;

(c) withdrawing from the first reaction zone said water-unsaturated exit gas containing finely dispersed particles of said reaction products and of unreacted absorbent having enhanced reactivity, said gas containing from about 20 to 50 vol. % of its initial sulfur dioxide content;

(d) introducing said exit gas into a second fabric filter reaction zone by directly impinging said particle-containing gas upon an upstream surface of a gas-permeable porous fabric of said fabric filter whereby a substantially uniform coating of said particles present in the gas is formed on said upstream surface of said fabric so that absorbent in said coating reacts with sulfur oxide present in the introduced gas to form sulfate and sulfite; and

(e) withdrawing from a downstream surface of said fabric the treated gas substantially free of particles and having a substantially reduced content of the sulfur dioxide originally present in the waste gas.

B1 4,725,519 (3152nd)

DUAL LAYER ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISES TITANIUM PHTHALOCYANINE CHARGE TRANSPORT MATERIALS

Tetsumi Suzuki, Isehara; Tetsuo Murayama, Machida; Hitoshi Ono, Yokohama; Shigenori Otsuka, Omiya, and Mamoru Nozomi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

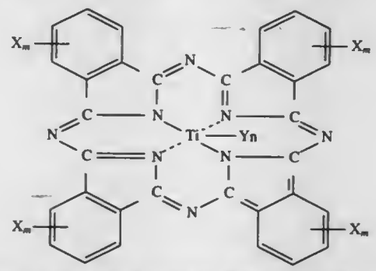
Reexamination Request No. 90/004,039, Nov. 28, 1995.
Reexamination Certificate for Patent 4,725,519, issued Feb. 16, 1988, Ser. No. 782,684, Oct. 1, 1985.
Claims priority, application Japan, Nov. 1, 1984, 59-230982
Int. Cl.[6] G03G *5/06;5/047*
U.S. Cl. 430—58

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

New claims **4–6** are added and determined to be patentable.

1. A dual layer photoreceptor for use in electrophotography, wherein a charge transport layer is laminated on a charge generation layer overlaid on an electroconductive substrate, characterized in that the charge generation layer contains a titanium phthalocyanine compound represented by the following general formula I:



wherein X represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, an allyloxy group, a nitro group, a cyano group, a hydroxy group, a benzyloxy group or a halogen atom, Y represents a halogen atom, an alkoxy group or an oxygen atom, N represents an integer of 1 or 2 and m represents an integer of 0 to 4, and a binder polymer, and that the charge transport layer contains a hydrazone compound and a binder polymer.

B1 4,978,213 (3153rd)

APPARATUS FOR DETERMINING THE CONTOUR OF THE CORNEA OF A HUMAN EYE

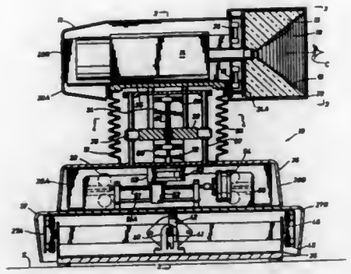
Sami G. El Hage, Houston, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Reexamination Request No. 90/004,136, Feb. 13, 1996.
Reexamination Certificate for Patent 4,978,213, issued Dec. 18, 1990, Ser. No. 322,680, Mar. 13, 1989.
Continuation of Ser. No. 89,535, Aug. 26, 1987, abandoned.
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—212

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4** and **6** are determined to be patentable as amended.

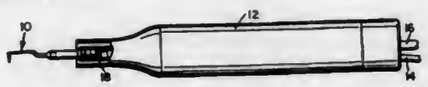
Claims **2**, **3**, **5**, **7** and **8** dependent on an amended claim, are determined to be patentable.



New claims **9–16** are added and determined to be patentable.

1. Apparatus for use in determining the contour of the cornea of a human eye, comprising a housing having an open end, a source of light within the housing, means within the housing for transmitting concentric rings of light from the source of the cornea of a human eye located at the open end of the housing, each ring being several pixels wide, camera means having a lens positioned with its optical axis coaxial to the rings of light reflected by the cornea and means to sense and display images of the rings that are reflected by the cornea, means for measuring the intensity of the light of each pixel across *each of* a *plurality of* profiles of each reflected ring, *which plurality of profiles are defined from the inner edge to the outer edge of each reflected ring and are substantially contiguously positioned around the entire 360° C. arc of each reflected ring,* means for determining **[**the**]** *a ring-shaped subset of* pixels in each *reflected* ring **[**that has**]** *comprising the single pixel from each of the plurality of profiles within that ring having* the highest intensity of reflected light, and means for calculating the contour of the cornea **[**using the pixel having the highest intensity of reflected light of each ring of light reflected by the cornea**]** by fitting a mathematical curve to **[**such**]** *each ring-shaped subset of pixels.*

B1 5,094,617 (3154th)
DENTAL RETRO-FILLING PREPARATION TOOL AND METHOD
Gary B. Carr, 273 Church Ave., Chula Vista, Calif. 92010
Reexamination Request No. 90/003,920, Aug. 17, 1995.
Reexamination Certificate for Patent 5,094,617, issued Mar. 10, 1992, Ser. No. 625,360, Dec. 11, 1990.
Int. Cl.[6] **A61C** *1/07*
U.S. Cl. 433—119



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **9–12** and **14** are determined to be patentable as amended.

Claims **3–8** and **13**, dependent on an amended claim, are determined to be patentable.

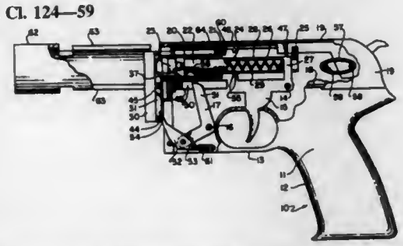
New claims **15–39** are added and determined to be patentable.

1. A *piezoelectrically vibratable retro-filling preparation* tool for drilling bores in the *bottoms of* roots of teeth, comprising:

an elongate drill member having coupling means at one end for coupling the member to **[**an**]** *a piezoelectric* ultrasonic transducer head, and a *straight* hooked portion at the opposite end *terminating at its outer extremity in a point* for forming a bore in a tooth root; and

an elongate shaft portion which is not straight extending between said coupling means and said *straight* hooked portion, said hooked portion projecting at an angle to said elongate shaft portion, and said hooked portion being offset at an angle relative to the plane of the nonstraight shaft portion *for retro-filling preparation of teeth.*

B1 5,186,156 (3155th)
AIR OPERATED TOY GUN
Richard A. Clayton, 10200 Hillview Ave., Chatsworth, Calif. 91311
Reexamination Request No. 90/003,284, Dec. 20, 1993.
Reexamination Certificate for Patent 5,186,156, issued Feb. 16, 1993, Ser. No. 793,186, Nov. 18, 1991.
Int. Cl.[6] **F41B** *11/00; 11/14*
U.S. Cl. 124—59



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–6**, **9–11**, **14–20** is confirmed.

Claims **1**, **7**, **8**, **12** and **13** are cancelled.

New claims **21–38** are added and determined to be patentable.

18. An air operated dart gun comprising:

a frame;

an elongated air cylinder movably carried on said frame for forward and reverse travel between a cocking position and a firing position;

said air cylinder comprising a nozzle to allow air to exit said cylinder;

a piston movably carried in said air cylinder;

a spring normally biasing said piston within said cylinder toward said nozzle;

a magazine movably carried on said frame;

said magazine comprising a plurality of dart barrels in spaced relationship;

said barrels being selectively alignable with said nozzle of said air cylinder;

one end of each said barrel being adapted to be engageable with said nozzle to form a substantially airtight seal when said air cylinder is in said firing position;

the other end of each said barrel being adapted to receive a projectile so as to form a substantially airtight seal between said barrel and said projectile;

means for drawing said piston rearward away from said magazine and against said spring bias; friction of said rearward moving piston within said cylinder dragging said cylinder rearward to said cocking position to disengage said nozzle from said selected barrel;

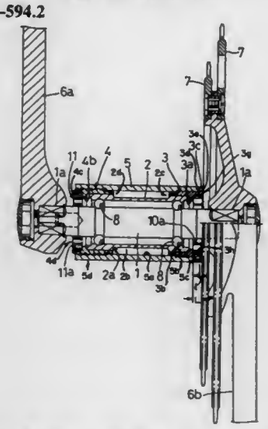
means for drawing said piston further rearward to engage a latch, said latch holding said piston against said spring bias;

a trigger for releasing said latch to allow said spring bias to propel said piston forward within said cylinder toward said nozzle;

said cylinder being urged forward toward said firing position by friction of said piston moving within whereby said nozzle is forcibly engaged with said selected barrel;

said piston furthermore displacing air from said cylinder through said nozzle to eject said projectile from said selected barrel.

B1 5,243,879 (3156th)
CRANK AXLE UNIT FOR A BICYCLE
Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Sakai, Japan
Reexamination Request No. 90/003,954, Sep. 11, 1995.
Reexamination Certificate for Patent 5,243,879, issued Sep. 14, 1993, Ser. No. 705,543, May 24, 1991.
Claims priority, application Japan, May 2, 1991, 3-030778 U
Int. Cl.[6] **G05G** *1/14*
U.S. Cl. 74—594.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **5** is confirmed.

Claims **1–3** are cancelled.

Claim **4** is determined to be patentable as amended.

New claims **6–17** are added and determined to be patentable.

4. **[**A crank axle unit as claimed in claim **2,]** *A crank axle unit to be mounted in a bottom bracket (5) assembled to a bicycle frame, comprising:*

a tubular element (2) surrounding and rotatably supporting a crank axle (1), said tubular element (2) being surrounded by said bottom bracket (5) when mounted in said bottom bracket (5), and

fixing means (3,4) for positioning and fixing said tubular element (2) in said bottom bracket (5), said fixing means (3,4) including:

a first screw ring (3) fitted on an outside wall (2b) in a first end region (2c) of said tubular element (2) for screwing to an inside wall (5a) of said bottom bracket (5) in a first end region (5b) of said bottom bracket (5),

an abutment (3c) projecting radially defined on an outer end (3g) of said first screw ring (3) for contacting with an end face (5c) of said bottom bracket (5) adjacent said first end region (5b) of said bottom bracket (5), whereby a relative position of said screw ring (3) to said bottom bracket (5) is secured,

a first tool engaging means (10) provided on an inside wall (3h) of said first screw ring (3) at said outer end (3g), wherein said first tool engaging means (10) includes a first plurality of teeth (10a) on said inside wall (3h) of said first screw ring (3);

a second screw ring (4) fitted on the outside wall (2b) in a second end region (2d) of said tubular element (2) for screwing to said inside wall (5a) of said bottom bracket (5) in a second end region (5d) of said bottom bracket (5), said entire second screw ring (4) being screwable into said bottom bracket (4), and

second tool engaging means (11) provided on an inside wall (4c) of said second screw ring (4) at an outer end (4d), wherein said second tool engaging means (11) includes a second plurality of teeth (11a) on said inside wall (4c) of said second screw ring (4); wherein said first screw ring *(3)* and said second screw **[**rings**]** *ring (4)* are formed of **[**the**]** different materials, and wherein a pitch *(P1)* of said first plurality of teeth *(10)* and a pitch *(P2)* of said second plurality of teeth *(11)* are different.

REISSUES

MARCH 11, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,471

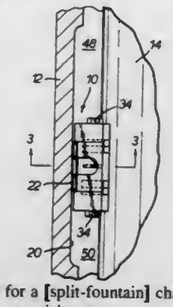
SEAL FOR FOUNTAIN CHAMBERED DOCTOR BLADE FOR A FLEXOGRAPHIC PRINTING PRESS

Joseph J. Weishew, Springfield, Pa., assignor to The Langston Corporation, Cherry Hill, N.J.

Original No. 5,243,907, dated Sep. 14, 1993, Ser. No. 824,822, Jan. 22, 1992. Application for reissue Sep. 14, 1995, Ser. No. 528,368

Int. Cl.[6] **B41F** *31/00*

U.S. Cl. 101—208 **24 Claims**



1. A [divider] seal for a [split-fountain] chambered doctor blade for a printing press, comprising

a seal means contoured to sealingly engage a circumferential surface of a rotating cylinder,

b retaining means for retaining the seal means in sealing engagement with the rotating cylinder,

c pneumatic biasing means positionable with the retaining means and acting on the retaining means for resiliently biasing the seal means into sealing engagement with the rotating cylinder; and

means for mounting the retaining means and the pneumatic biasing means for axial movement together along the surface of the cylinder, thereby allowing the retaining means and the pneumatic biasing means to be selectably positionable along the surface of the cylinder.

Re. 35,472

HIGH SPEED ANALOG-TO-DIGITAL CONVERTER USING CELLS WITH BACK-TO-BACK CAPACITORS FOR BOTH ROUGH AND FINE APPROXIMATION

Giulio Frigerio, Cavenago Brianza, and Alessandro Cremonesi, S. Angelo Lodigiano, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Original No. 5,086,299, dated Feb. 4, 1992, Ser. No. 520,724, May 9, 1990. Application for reissue Feb. 4, 1994, Ser. No. 192,104

Claims priority, application Italy, May 17, 1989, 20537 A/89

Int. Cl.[6] **H03M** *1/14*

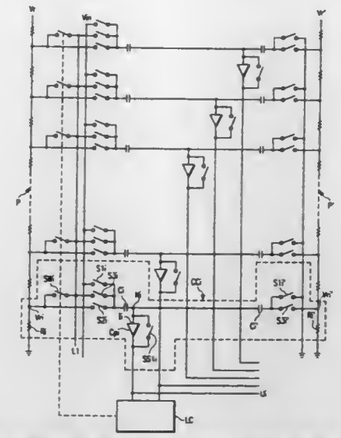
U.S. Cl. 341—156 **15 Claims**

1. [High] *A high* speed analog-to-digital converter, [characterized in that it comprises] *comprising:*

a plurality of comparison cells which in successive steps determine the [four] most significant bits of the conversion and then [the four least significant bits] after the more significant bits have been reconverted to analog and [their subsequent subtraction] *subtracted* from the input signal, *the least significant bits;*

[where] *wherein* each [of] said comparison [cells is constituted by] *cell comprises*

a comparator [with] *having an* input connected to an intermediate branch point between [two] *first and second* condensers in series,



[one of which is] *said first condenser being* supplied in a first step with an input signal,

in a second step with a first reference voltage different for each cell, and

in a third step with a selected reference voltage equal to [that] *the one* of said first reference voltages which approximates said input signal [downward] *from below* with the highest accuracy, [and by a]

said second condenser [which is] *being* grounded during said first and second steps , *and connected, during said* [while in the] third step, [it is connected] to *a respective* one [respective] of a plurality of second reference voltages *which are* submultiples of said first reference voltage.

Re. 35,473

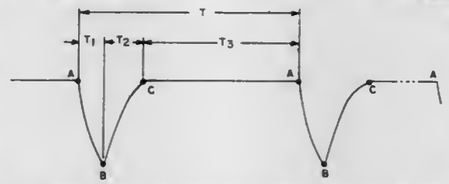
SLUDGE FLOW MEASURING SYSTEM

Edward A. Oakley, South Salem, N.Y.; Harry K. Crow, Ridgefield, Conn.; Thomas M. Anderson, Forest Lake; Richard T. Atherton, Excelsior, both of Minn., and Berthold A. Fehn, Krefeld, Germany, assignors to Schwing America, Inc., White Bear, Minn.

Original No. 5,106,272, dated Apr. 21, 1992, Ser. No. 595,457, Oct. 10, 1990. Application for reissue Feb. 23, 1995, Ser. No. 392,533

Int. Cl.[6] **F04B** *35/02*

U.S. Cl. 417—347 **34 Claims**



1. A pump system for pumping a sludge material, the pump system comprising:

a positive displacement pump which includes:

an inlet for receiving sludge material which contains solids, liquids, and gases and which is partially compressible;

an outlet at which sludge material is delivered under pressure;

a first cylinder;

a first piston movable in the first cylinder;

first hydraulic drive means for moving the first piston reciprocatively through a cycle which includes a pumping stroke and a filling stroke; and

first valve means for connecting the first cylinder to the outlet during the pumping stroke and connecting the first cylinder to the inlet during the filling stroke;

means for providing a first signal which indicates when sludge material begins to flow from the first cylinder at a time following the beginning of piston movement during the pumping stroke; and

means for determining volume of sludge material delivered at the outlet during the pumping stroke based upon the first signal.

Re. 35,474

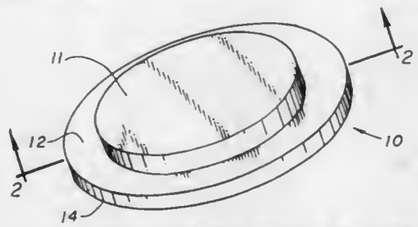
TRANSDERMAL DRUG DELIVERY DEVICES WITH AMINE-RESISTANT SILICONE ADHESIVES

John T. Woodard, Midland, and Virgil L. Metevia, Saginaw, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Original No. 4,655,767, dated Apr. 7, 1987, Ser. No. 780,505, Sep. 26, 1985. Continuation-in-part of Ser. No. 665,803, Oct. 29, 1984, abandoned. Application for reissue Oct. 13, 1994, Ser. No. 322,975

Int. Cl.[6] A61F *13/02;* **A61L** *15/00*

U.S. Cl. 424—448 **52 Claims**



1. In a transdermal drug delivery device for the controlled transdermal delivery of a drug comprising a container having a controlled drug delivery means associated therewith, said container being adapted to hold said drug delivery means in close proximity to the skin of a wearer, said device having a biocompatible silicone pressure-sensitive adhesive layer thereon for maintaining contact between said container and the skin of a wearer, the improvement which comprises the combination of an amino-functional drug to be delivered from said drug delivery means and a biocompatible silicone pressure-sensitive adhesive layer which has been deposited from a silicone pressure-sensitive adhesive composition containing silicon-bonded hydroxyl radicals which comprises a combination of (A) from 40 to 70 inclusive parts by weight of at least one benzene-soluble resionous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{1/2}$ and tetrafunctional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetrafunctional siloxy unit present in the copolymer and (B) from 30 to 60 parts by weight of at least one polydiorganosiloxane consisting essentially of $ARSiO$ units terminated with endblocking $TRASiO_{1/2}$ units, each said polydiorganosiloxane having a viscosity of from 100 centipoise to 30,000,000 centipoise at 25° C. where each T is R— or X—, which composition has been chemically treated with at least one chemical treating agent that is reactive to silicon-bonded hydroxyl groups to reduce the silicon-bonded hydroxyl content of the composition to a sufficient degree to thereby render said adhesive layer more resistant to the loss of tack and instant adherence to the skin caused by said amino-functional drug, wherein each R is a monovalent organic radical selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each X radical is selected from the group consisting of HO—, H— and R'O— radicals, each R' is an alkyl radical of from 1 to 4 inclusive carbon atoms, and each A radical is selected from the group consisting of R— and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms.

Re. 35,475

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY WITH THIOPHENE CONTAINING MOIETY ON CHARGE TRANSPORT COMPOUND

Masami Kuroda; Youichi Nakamura, and Noboru Furusho, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

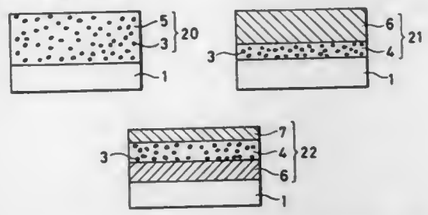
PCT No. PCT/JP88/01016, § 371 Date Jun. 6, 1989, § 102(e) Date Jun. 6, 1989, PCT Pub. No. WO89/03546, PCT Pub. Date Apr. 2, 1989

Original No. 5,089,365, dated Feb. 18, 1992, Ser. No. 368,333, Jun. 6, 1989. This PCT application Oct. 6, 1988, Ser. No. 197,599

Claims priority, application Japan, Oct. 7, 1987, 62-253080; Dec. 9, 1987, 62-311311; Dec. 21, 1987, 62-323236

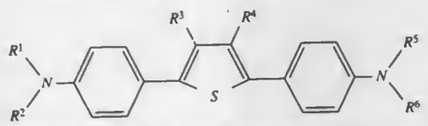
Int. Cl.[6] G03G *5/047;5/06*

U.S. Cl. 430—59 **9 Claims**

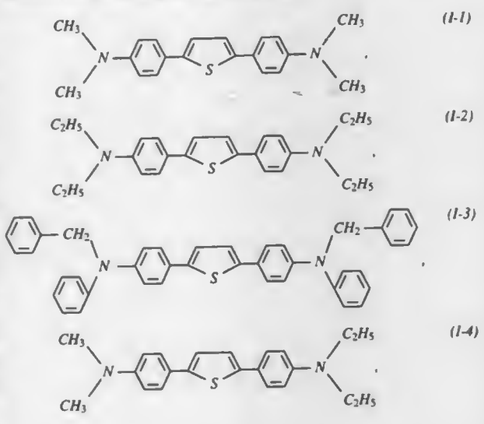


13. A photosensitive member for electrophotography, comprising:

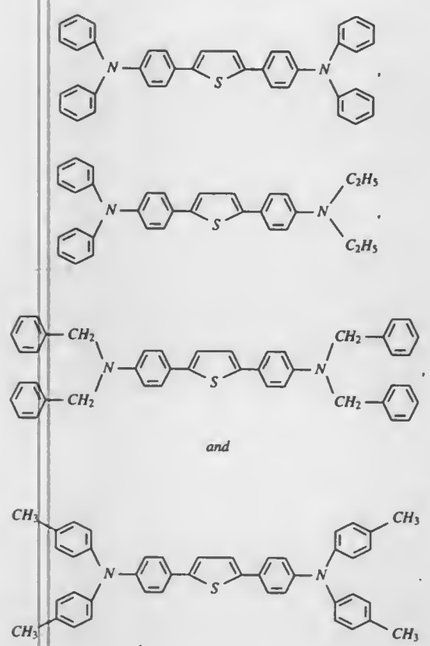
an electroconductive substrate; and photosensitive layer formed on said electroconductive substrate and containing a charge generating substance and a charge transporting substance, said charge transporting substance being at least one thiophene derivative selected from the group consisting of thiophene derivatives having a formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 each represents a substituted or unsubstituted alkyl, aryl or aralkyl group,



-continued



Re. 35,476

ELECTRICAL CONNECTOR BLOCK

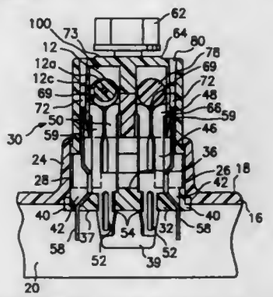
(I-5) **Sidney Levy, Belle Mead, N.J., assignor to Raychem Corporation, Menlo Park, Calif.**

Original No. 4,993,966, dated Feb. 19, 1991, Ser. No. 515,796, Apr. 27, 1990. Continuation of Ser. No. 18,758, Feb. 17, 1993, abandoned. Application for reissue Apr. 26, 1994, Ser. No. 233,728

Int. Cl.[6] H01R *4/24*

(I-6) **U.S. Cl. 439—411** **40 Claims**

(I-7)



(I-10) 1. An electrical connector block for electrically connecting plural pairs of conductors of a multiconductor cable to plural pairs of drop wires comprising:

an elongate terminal block housing having a planar surface and plural discrete apertures extending therethrough; and

a plurality of identical electrical terminal modules, one module of said plurality insertably mounted in each aperture of said terminal block housing, each terminal module including means for electrically interconnecting one pair of said plural [paris] *pairs* of conductors of said multiconductor cable to one pair of said plural pain of drop wires.

PLANT PATENTS

GRANTED MARCH 11, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,821

MINIATURE ROSE PLANT NAMED 'SAVASEAT'

F. Harmon Saville, Newburyport, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Feb. 14, 1996, Ser. No. 601,364
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,822

ASIAN PEAR TREE NAMED 'ASIO 4'

Joel S. Spira; Ruth R. Spira, both of Coopersburg; Eugene S. Konno, Germansville, and Neil J. Vincent, Quakertown, all of Pa., assignors to Subarashii Kudamono Co., Inc., Coopersburg, Pa.

Filed Oct. 8, 1995, Ser. No. 538,201
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct cultivar of Asian Pear, substantially as illustrated and described, which:

(a) forms attractive late-season medium-sized ovate fruit having a light brown russet surface with prominent tan lenticles and a very sweet and rich flavor,
(b) forms a large-sized tree having a well-branched, dense, and spreading growth habit, and
(c) forms generally elliptical medium-sized green leaves with pinnate venation and an acuminate apex.

9,823

CHRYSANTHEMUM PLANT NAMED 'CORAL SPLENDOR'

Frederick H. Rabb, Box 21, Site 14, RR 1, Strathmore, Alta, Canada

Filed Aug. 14, 1995, Ser. No. 514,553
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Coral Splendor as described and illustrated.

9,824

CHRYSANTHEMUM PLANT NAMED 'BRONZE PAPILLON'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 7, 1995, Ser. No. 525,299
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct Chrysanthemum plant named Bronze Papillon, as described and illustrated.

9,825

CHRYSANTHEMUM PLANT NAMED 'PINK PAPILLON'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 7, 1995, Ser. No. 525,314
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct Chrysanthemum plant named Pink Papillon, as described and illustrated.

9,826

FERN PLANT NAMED 'GLOWSTAR'

Wim Tas, Aalsmeer, Netherlands, assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Aug. 21, 1995, Ser. No. 517,111
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.3 **1 Claim**

1. A new and distinct cultivar of Fern plant named Glowstar, as illustrated and described.

PATENTS

GRANTED March 11, 1997

ERRATA

For CLASS	See PATENT NO.
108–055	5,615,608
160–370	5,615,729
166–084	5,615,736
166–085	5,615,737
227–071	5,615,816
473–424	5,615,879
473–471	5,615,880
473–238	5,615,884
473–469	5,615,890
473–492	5,615,891
473–590	5,615,892
415–209	5,616,003
438–693	5,616,212
438–718	5,616,213
510–220	5,616,277
442–060	5,616,405
442–019	5,616,406
442–118	5,616,407
442–346	5,616,408
473–378	5,616,640
510–221	5,616,781
534–795	5,616,797
396–055	5,617,159
396–060	5,617,160
396–319	5,617,161
396–318	5,617,162
396–176	5,617,163
396–401	5,617,164
396–418	5,617,165
396–055	5,617,166
396–448	5,617,167
396–413	5,617,168
396–284	5,617,169
396–378	5,617,170
396–512	5,617,171
396–539	5,617,172

ERRATA–CONTINUED

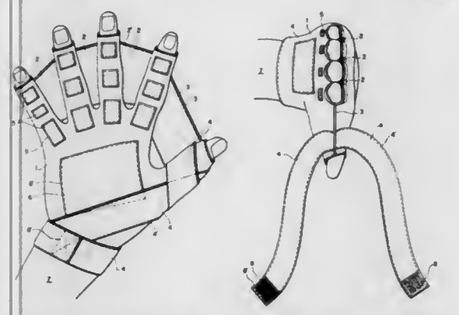
For CLASS	See PATENT NO.
396–078	5,617,173
396–095	5,617,174
396–166	5,617,175
396–055	5,617,176
396–053	5,617,177
399–032	5,617,187
399–013	5,617,188
399–254	5,617,189
399–159	5,617,190
399–286	5,617,191
399–263	5,617,192
399–316	5,617,193
399–349	5,617,194
399–027	5,617,195
399–379	5,617,196
399–398	5,617,197
399–027	5,617,198
386–129	5,617,218
349–010	5,617,226
349–057	5,617,227
349–019	5,617,228
349–042	5,617,229
349–110	5,617,230
349–112	5,617,231
395–203	5,617,313
395–803	5,617,314
379–114	5,617,448

PATENTS

GRANTED MARCH 11, 1997

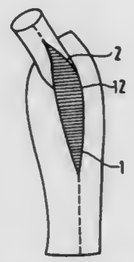
GENERAL AND MECHANICAL

5,608,912
ATHLETIC SUPPORT GLOVE AND STRAP
Keith Cumberland, 3625 Lyles Dr., Oxford, Miss. 38655
Filed Apr. 10, 1996, Ser. No. 630,446
Int. Cl.[6] A41D *13/10;19/00*
U.S. Cl. 2—16 **1 Claim**



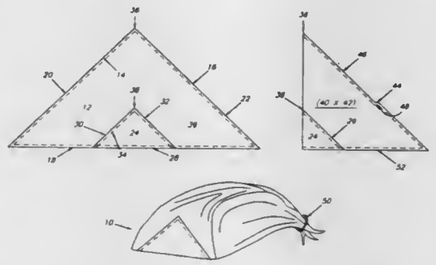
1. An athletic support glove comprising a hand, a wrist, four fingers and a thumb that includes substantially non-elastic partitions affixed between each of the two adjacent fingers of that glove and a substantially non-elastic partition affixed between the index finger and thumb of that glove, and a two-tipped strap provided with fastening means affixed to each of said two tips, said strap affixed to the thumb of that glove in a manner that allows said strap to be wrapped around the thumb of that glove, thence around the hand of that glove, and thence around the wrist of that glove and fastened by said fastening means affixed to each of the two tips of that strap.

5,608,913
UPPER BODY GARMENTS HAVING ELASTIC GUSSETS
René Lacoste, Saint-Jean-De-Luz, France, assignor to La Chemise Lacoste, France
PCT No. PCT/FR94/00954, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO95/03717, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 28, 1994, Ser. No. 407,013
Claims priority, application France, Jul. 29, 1993, 93 09350
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—115 **6 Claims**



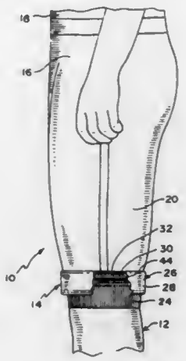
1. A garment for covering the upper torso having
a body portion with two sides and traditionally sewn together to form an armhole on each side;
a pair of sleeves; and,
stretch gussets;
wherein the sleeves are traditionally sewn to the sides of the body portion at the armholes;
wherein the sleeves traditionally have a seam running along an underside of each sleeve;
wherein the body portion traditionally has a seam running along each of its sides;
wherein each stretch gusset has a symmetrical opposite-isosceles-triangle-like shape with two equal sides; a base, in which the base is shorter in length than the equal sides; and an axis of symmetry passing through a center of the base and through a vertex of the equal sides;
wherein one stretch gusset is sewn into the underside of each one of the sleeves such that the axis of symmetry of the stretch gusset is parallel to the seam traditionally running along the underside of the sleeve to which the stretch gusset is sewn;
wherein one stretch gusset is sewn into each side of the body portion such that the axis of symmetry of the stretch gusset is parallel to the seam traditionally running along the side of the body portion to which the stretch gusset is sewn; and,
wherein the base of each stretch gusset sewn into the side of the body portion is sewn to the base of the gusset sewn into the underside of the sleeve attached to the same side of the body portion such that the gusset bases come together at the armhole.

5,608,914
HEADCOVER
Daren Keesler, 1147 E. 4975 South, Ogden, Utah 84405
Filed Nov. 21, 1994, Ser. No. 342,600
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—207 **2 Claims**



1. A headcover comprising an isosceles triangle shaped fabric sheet having a peak and an edge opposite the peak forming a base of the said isosceles triangle shaped fabric sheet;
a smaller isosceles triangle formed of a supple material having a peak and having one edge forming a base of the said smaller isosceles triangle and sewn to said isosceles triangle shaped fabric sheet with the base of the smaller isosceles triangle centered on the base edge of said isosceles triangle shaped fabric sheet;
a pair of hypotenuse edges formed in the fabric sheet when said fabric sheet is folded to bisect said base edge of said isosceles triangle shaped fabric sheet and to form right angle triangles;
a dart formed in each said hypotenuse edge
means securing said darts together; and
a resilient ring adjustably securing the fabric sheet between said hypotenuse edges and said base edge of the fabric sheet to provide sizing for said headcover and wherein a peak of said isosceles triangle shaped fabric sheet is inserted between said ring and said means securing said darts together at the back of a head of a user of said headcover.

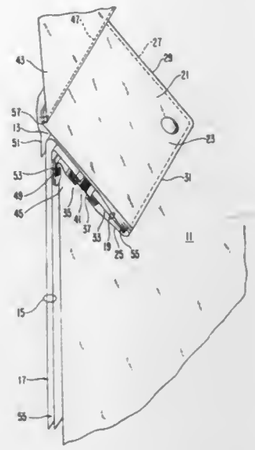
5,608,915
COMBINATION GARMENT WITH DETACHABLE TORSO AND LEG ENCLOSING COMPONENTS
Jeanne E. Libit, 2322 N. Upton St., Arlington, Va. 22207
Filed Jun. 22, 1995, Ser. No. 493,704
Int. Cl.[6] A41D *17/00;1/06*
U.S. Cl. 2—228 **6 Claims**



1. A shorts type garment constructed of fabric material enclosing the lower torso region of a wearer and including depending legs covering upper end portions of the legs of a wearer to a point adjacent the knees, a leg covering member covering each of the legs of a wearer below the legs of the garment and coacting fasteners on lower ends of the legs of the garment and upper ends of the leg covering members detachably connecting the lower ends of the legs of the garment and the upper ends of the leg covering members, said shorts type garment being constructed of stretch material snugly engaging the anatomical surfaces enclosed by the garment, said leg covering members being constructed of fabric material covering the anatomical surfaces enclosed by said leg covering members, said coacting fasteners including areas of hook and loop pile fastener material oriented peripherally of the lower end of each leg of the garment and the upper end of each leg enclosing member, the areas of fastener material on the leg enclosing member being on the interior surface thereof and the areas of fastener material on the leg of the garment being on the exterior surface thereof, the exterior surface of each of said depending legs including an inner fabric cuff and an outer fabric cuff mounted thereon, a reverse bend of fabric joining said cuffs along a top edge thereof, said areas of fastener material on the leg being secured to the external surface of the inner cuff and concealed by the outer cuff, said inner and outer cuffs having bottom edges that are unconnected to provide a downwardly facing circumferential opening to enable the upper end of the leg enclosing member to be received between the inner cuff and outer cuff for engagement of the areas of fastener material on the interior surface of the leg enclosing member with the areas of fastener material on the external surface of the inner cuff.

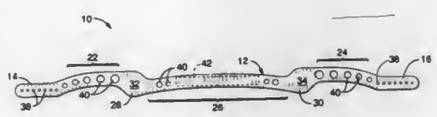
5,608,916
INSERTED POCKET OF A WATERPROOF GARMENT
Hans Aumann, Bergham 2, D-8206 Bruckmuhl, Germany
Continuation of Ser. No. 166,975, Dec. 14, 1993, abandoned. This application May 14, 1996, Ser. No. 645,882
Claims priority, application Germany, Dec. 15, 1992, 92 17 078 U
Int. Cl.[6] A41D *27/00;27/20*
U.S. Cl. 2—247 **7 Claims**

1. A waterproof garment comprising:
(a) a face fabric having an innersurface and an outer surface with a waterproof functional layer laminated to its inner surface;



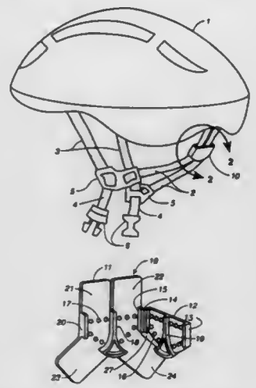
(b) a waterproof bag shaped pocket, a portion of which is located on
the inner side of said face fabric and a portion of which extends into a pocket flap which covers an opening in said face fabric that is adapted to receive that portion of the pocket that is located with the face fabric, said pocket flap having an outer part that is attached to the outer surface of said face fabric and an inner part also attached to the outer surface of said face fabric and having an openable closure device, said portion of said pocket extending into said pocket part being located between said inner and outer parts of said pocket flap and attached thereto by a waterproof seam.

5,608,917
ERGONOMIC HEAD BAND APPARATUS
Timothy J. Landis, Loomis; Kyle D. Fields, El Dorado Hills; James P. Dudley, Sacramento, and Scott M. Perry, Colfax, all of Calif., assignors to OP-D-OP, Inc., Roseville, Calif.
Continuation-in-part of Ser. No. 388,671, Feb. 13, 1995, abandoned. This application Mar. 7, 1996, Ser. No. 614,820
Int. Cl.[6] A42B *1/22;3/14*
U.S. Cl. 2—418 **16 Claims**



13. A head band apparatus, comprising:
(a) an elongated strap, said strap having first and second tails;
(b) said strap including first and second side arcuate segments, said first side arcuate segment adjacent said first tail, said second side arcuate segment adjacent said second tail, said first and second side arcuate segments each bowed in an upward direction;
(c) said strap including a front arcuate region, said front arcuate region positioned between said first and second side arcuate segments, said front arcuate region bowed in an upward direction;
(d) said strap including first and second platforms, said platforms each having a flat outer mounting surface, said first platform located between said first side arcuate segment and said front arcuate region, said second platform located between said second side arcuate segment and said front arcuate region; and
(e) means for coupling said first tail to said second tail.

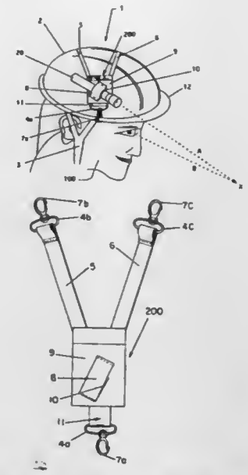
5,608,918
HELMET STRAP STABILIZER CLIP
Frank Salvaggio, Mount Royal, Canada, assignor to Western State Import Company, Inc., Camarillo, Calif.
Filed Sep. 8, 1994, Ser. No. 303,030
Int. Cl.[6] A42B *3/08;* **A44B** *11/00*
U.S. Cl. 2—421 **8 Claims**



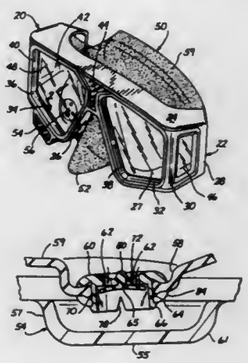
1. A helmet having a middle back portion, said helmet having a strapping system to secure said helmet to a wearer, said strapping system comprising first and second straps that are attached to a back portion of said helmet, a moveable rear stabilizer clip providing a bridge between said first and second straps at a location substantially under the middle back portion of the helmet, said first and second straps extending in substantially adjacent, parallel fashion from the middle back portion of the helmet to said rear stabilizer clip, said rear stabilizer clip including a junction plate member having slots for receiving said first and second rearward straps.

5,608,919
HELMET FLASHLIGHT RETAINER
Richard N. Case, 2525 Arapahoe Ave. #E4-277, Boulder, Colo. 80302
Continuation of Ser. No. 32,855, Mar. 16, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,348
Int. Cl.[6] A42B *1/24;* **F21L** *15/14*
U.S. Cl. 2—422 **16 Claims**

1. A flashlight holding assembly, including no horizontal headband components, said assembly adapted to be mounted on to a helmet having a top, side surfaces and a substantially continuous circumferential rim below the side surfaces of the helmet, said flashlight holding assembly including:
a mounting base pad having a top surface, a bottom surface, an upper edge, and a lower edge, said bottom surface of said mounting base pad adapted to be positioned against and slidingly engage a side surface of a helmet;
at least one flashlight retainer loop carried on said top surface of said mounting base pad;
first and second mounting straps, each said first and second mounting straps having a proximal end and a distal end, each of said proximal ends connected to and extending from said upper edge of said mounting base pad;
a third mounting strap having a proximal end and a distal end, said proximal end connected to and extending from said lower edge of said mounting base pad;
first, second and third attaching means connected at said distal ends of said first, second and third mounting straps, respectively, each of said attaching means adapted to be removably connected to a substantially continuous portion of a rim of a helmet; whereby, by connecting said third removable attaching means to the rim of a helmet with said bottom surface of said mounting base pad positioned to slidingly engage a portion of the side of the same helmet, and with at least one said flashlight retainer loop carried on said top surface of said mounting base pad and accessible to receive and hold a flashlight, and extending said first and second mounting straps over the top of the same helmet to portions of the side of the helmet which are substantially opposed to said mounting base pad, and by connecting said first and second removable attaching means to spaced apart portions of the continuous rim which are also spaced from said third removable attaching means, so that a secure mounting for the mounting base pad on a helmet and for any flashlight carried by said at least one said flashlight retainer loop carried on said top surface of said mounting base pad may thereby be provided.



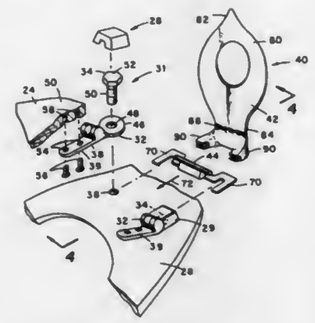
5,608,920
DIVER'S FACE MASK WITH OFFSET PURGE VALVE
Bill N. Oliver, Dana Point, and Peter Manno, La Jolla, both of Calif., assignors to Sea Quest, Inc., Carlsbad, Calif.
Filed Jan. 5, 1995, Ser. No. 369,178
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—428 **15 Claims**



1. A diver's face mask comprising:
a support frame defining an inner chamber having a top, left bottom, right bottom, left and right sides, and an upright front extending to the left and right of a central area adapted for enclosing the nose and eyes of a diver in a substantially fluid tight manner;

at least one transparent lens for viewing disposed within said frame; and,
a purge valve connected to said frame and offset from said central area whereby water can be purged from the mask by tilting the mask toward the purge valve and exhaling through the nose;
a depression within said left or said right bottom of said mask for pooling of water; and,
said purge valve being disposed within said depression.

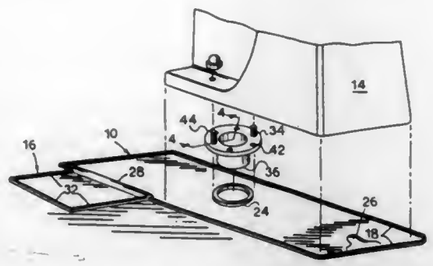
5,608,921
CHILD'S TOILET SEAT ASSEMBLY FOR USE WITH AN ADULT-SIZED TOILET
Larry J. Barrett, and Nancy B. Barrett, both of 1470 Turkey Pen La., Lenoir City, Tenn. 37772
Filed Sep. 11, 1995, Ser. No. 526,514
Int. Cl.[6] A47K *13/00*
U.S. Cl. 4—239 **16 Claims**



1. A child's toilet seat assembly for attachment to an adult toilet including a bowl having an upper rim having an upwardly-directed surface, an adult toilet seat, and means for hingedly connecting the adult toilet seat to the bowl to accommodate the movement of the adult toilet seat between raised and lowered positions and wherein the hingedly connecting means includes at least one fastener having a head and a shank which extends downwardly into the upwardly-facing surface of the rim, the assembly comprising:
a child's toilet seat including a body adapted to overlie the seat of an adult toilet when the adult toilet seat is in a lowered position, and
attachment means for hingedly securing the body of the child's toilet seat to the bowl of the adult toilet including
a) a platen portion securable between the head of the fastener of the hingedly connecting means of the adult toilet and the upper rim of the toilet bowl and
b) a body portion for cooperating with the body of the child's toilet seat to accommodate the securement of the body of the child's seat and the body portion of the attachment means in a snap-fit relationship.

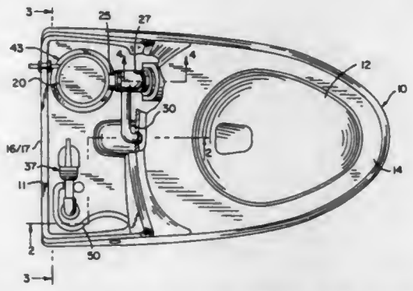
5,608,922
TOILET STABILIZING AND SEALING GASKET
William I. Lewis, 4724 Eastern Ave., NE., Washington, D.C. 20017
Continuation-in-part of Ser. No. 407,084, Mar. 20, 1995, abandoned. This application Oct. 31, 1995, Ser. No. 550,626
Int. Cl.[6] A47K *17/00*
U.S. Cl. 4—251.1 **1 Claim**

1. A toilet stabilizing and sealing gasket for protection of a floor under a toilet by providing for retention and detection of leakage through a primary seal between a base of a toilet and a soil pipe, the gasket comprising:



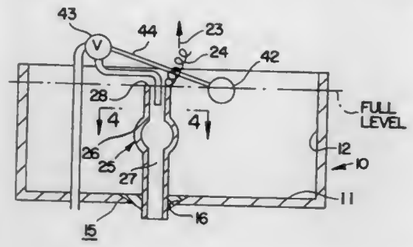
a primary rubber planar pad having an outer edge, dimensioned and configured to extend beyond the base of the toilet, and an inner edge defining an interior circular opening in said pad, the opening dimensioned and configured to tightly fit around a closet flange connecting the toilet to the soil pipe, said primary pad including:
a raised lip surrounding said outer edge of said pad;
a raised lip surrounding said inner edge of said pad;
a depression for preventing the retention of water under the base of the toilet; and
a secondary rubber planar pad having an outer edge, said secondary pad including:
a connection channel formed on a portion of the outer edge of said secondary pad, said connection channel defining a groove for cooperation with said raised lip surrounding said outer edge of said primary pad; and
a raised lip surrounding said outer edge of said secondary pad.

5,608,923
PUMP OPERATED PLUMBING FIXTURE
Norman J. Jaeckels, and Randy O. Mesun, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 192,331, Feb. 4, 1994, Pat. No. 5,542,132, which is a division of Ser. No. 976,109, Nov. 13, 1992, Pat. No. 5,305,475. This application Jun. 7, 1995, Ser. No. 477,052
Int. Cl.[6] E03D *1/28;5/01*
U.S. Cl. 4—325 **4 Claims**



1. A plumbing fixture for receiving flushable waste comprising:
at least one toilet bowl for receiving said waste, said toilet bowl having a rim and basin part;
a reservoir tank for storing a volume of flush water;
pump means including a pump outlet in fluid communication with the interior of the reservoir tank;
conduits connected between said pump outlet and the toilet bowl rim and basin part and an additional conduit between a source of flush water and the toilet bowl rim; and
control means selectively and operatively connected to the pump means to operate the pump means for one period of time to deliver one quantity of flush water to the toilet bowl and in the alternative to operate the pump means for at least one other period of time to deliver at least one other quantity of flush water to the toilet bowl, wherein water is delivered to the rim independently of the pump means through said additional conduit after the delivery of flush water to the rim and the toilet bowl basin.

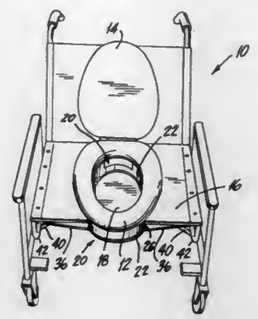
5,608,924
CONSISTENT DELIVERY FLUSH AND FILL SYSTEM FOR A TANK
Bruce A. Antunez, 1143 Indian Springs, Glendora, Calif. 91740
Filed Mar. 24, 1995, Ser. No. 420,002
Int. Cl.[6] E03D *1/34*
U.S. Cl. 4—391 **8 Claims**



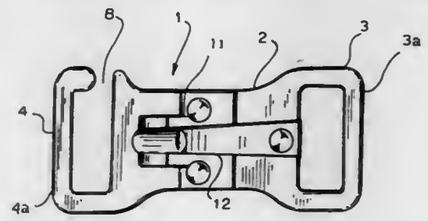
1. A water storage and delivery system for a commode comprising:
a water tank having a bottom, a peripheral sidewall, and an outlet port through said bottom;
a flush valve fitted in said outlet port, said flush valve including a peripheral valve seat and a valve plug having a seat complementary to said valve seat to close said flush valve when said seats are in abutment;
a vertically movable post to which said valve plug is attached, said post including engagement means and a center passage;
buoyancy means on said post;
a tank valve in said tank receiving water under system pressure, said tank valve including a supply outlet to supply water into said tank;
a float in said tank floatable in said water and linked to said tank valve, whereby when the float is at an upper water storage level the tank valve is closed, and when it is below said upper water storage level, said tank valve is open;
said buoyancy means is selected so that when said valve plug is separated from said valve seat, said post will rise causing said engagement means to bear supportively upwardly on said float from below to hold the float in an upper position wherein the tank valve is closed, and which, when the post is not buoyantly floating as the consequence of closure of the flush valve, said engagement means is separated from said float to permit said float to move below said upper water storage level and permit said tank valve to open and fill the tank.

5,608,925
WHEELCHAIR WITH BED PAN
Virginia M. Porter, 2220 E. Tremont Ave., Bronx, N.Y. 10462
Filed Jun. 19, 1995, Ser. No. 492,172
Int. Cl.[6] A61G *7/02*
U.S. Cl. 4—480 **11 Claims**

1. A wheelchair, comprising:
a wheelchair frame having a front end portion and a rear end portion;
a wheelchair seat attached to said frame, said wheelchair seat having an aperture formed therein;
a toilet seat provided on said wheelchair seat adjacent said aperture;
a manually removable bed pan support resiliently mounted below said wheelchair seat and aligned with said aperture for receiving, supporting and positioning a bed pan directly below said aperture; and
a plurality of manually fastenable resilient fasteners extending between said bed pad support and said wheelchair frame add biasing said bed pan support toward said toilet seat.

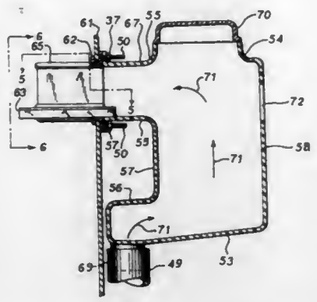


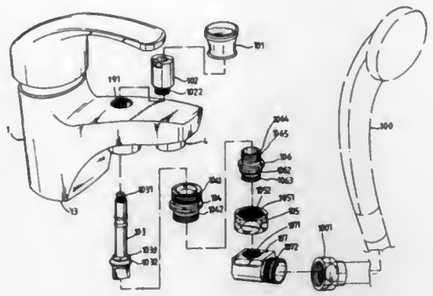
5,608,926
SWIMMING POOL COVER LOOP-LOC FASTENER
William S. Donaton, 100 Engineers Rd., Hauppauge, N.Y. 11788
Filed Jul. 3, 1995, Ser. No. 497,813
Int. Cl.[6] E04H *4/00*
U.S. Cl. 4—503 **3 Claims**



1. A combination swimming pool cover and pool wall fastener, said cover attachable to a wall of a swimming pool;
said fastener comprising a longitudinally extending base chassis member having at each end thereof a loop of a pair of first and second loops,
said first loop being an open loop engaged with a preformed fabric loop fastener portion attached to said pool cover,
said second loop being a closed loop engaged with a further fastener portion of said pool cover,
said fastener further comprising a book member engagable with a fastener extending from the wall of the swimming pool,
said pool cover having a core material covered with further fabric outer layer,
said further fabric outer layer extending around an edge of said pool cover and continuing to cover a bottom side of said pool cover,
said further fabric outer layer forming said fabric loop through which said open loop member of said chassis member is insertable.

5,608,927
RECIRCULATING BATHING FIXTURE
Scott R. Lowry, Hamilton, Ohio; Thomas A. Bonnell, and Robert C. Giese, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Continuation of Ser. No. 371,059, Jan. 10, 1995, abandoned, which is a continuation of Ser. No. 91,490, Jul. 14, 1993, abandoned. This application Jan. 29, 1996, Ser. No. 593,290
Int. Cl.[6] A47K *3/22*
U.S. Cl. 4—615 **9 Claims**



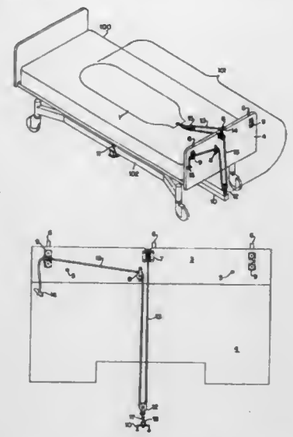


1. A bathing fixture wherein water is recirculated to a spout, comprising:
a lower basin for collecting water, said basin including a basin wall;
a conduit connected to and extending from the lower basin;
a waterfall spout in fluid communication with the lower basin via the conduit, said spout having an inlet operatively connected to said conduit and an outlet mounted above the basin, said outlet including an upwardly open ledge member with a contoured undulating upper surface for directing water in a generally parallel manner from said outlet, the undulating upper surface positioned at a front edge of the ledge member and extending from the front edge toward a rear thereof and essentially in a horizontal manner to direct the water in an essentially horizontal manner with respect to the lower basin and said spout and in the form of a continuous sheet of water;
a pump forming a part of the conduit for recirculating water that has collected in the basin to the spout;
an accumulator including a cavity positioned at an inlet of the spout, said pump also being connected to the spout via the conduit and the accumulator cavity being constructed and arranged to effect an essentially uniform rate of water flow out the spout during operation of said pump, the spout being upwardly open over a majority of the ledge portion of said undulating upper surface; and
a plurality of wager outlet spray nozzles operatively connected to said conduit, said outlet nozzles positioned with respect to each other in an essentially vertical manner between the basin and the spout outlet and above the basin wall.

5,608,928
FAUCET OF A SINK
Wen-Mu Wang, No. 32, Lane 266, Fu Te 1 Rd., Hsi Tze Chen, Taipei Hsien, Taiwan
Filed Jun. 3, 1996, Ser. No. 656,765
Int. Cl.[6] E03C *1/042*
U.S. Cl. 4—678 **1 Claim**

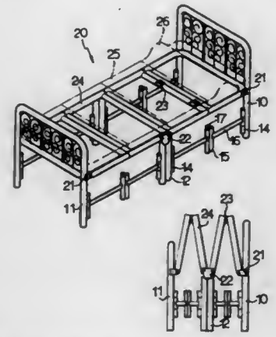
1. A faucet comprising:
a casing having an bottom opening and an outlet;
a partition wall positioned transversely of said bottom opening and spaced a distance therefrom inside of said casing, said partition wall including hot and cold water through-holes and recessed locating holes;
rigid pipe connectors, each respectively connected to one of said hot and cold water through-holes, said rigid pipes adapted for connection to flexible hot and cold water supply pipes for supplying hot and cold water to said faucet, said partition wall being spaced from said bottom opening of said casing such that, when said casing is mounted upon a support surface, said rigid pipe connectors do not contact said support surface and said flexible supply pipes can be gathered together upon said rigid pipe connectors;
a water outlet pipe extending from said outlet of said casing, said water outlet pipe comprising a spout at an end thereof covered with a mesh cap and having a bore extending transversely therethrough, said bore further having interior connecting threads at opposite top and bottom ends thereof, said water outlet pipe further having a first water conduit communicating said spout with said outlet of said casing and a second water conduit communicating said outlet of said casing with said bottom end of said bore;
a valve mounted in said casing between said bottom opening and said outlet and connected to said rigid pipe connectors, said valve being operable by a handle to selectively mix and admit water from said hot and cold water supply pipes, through said rigid pipe connectors and said outlet, to said water outlet pipe, said valve having two locating rods extending therefrom which are received in said recessed locating holes in said partition wall;
a hollow connector having exterior threads for connection to said interior threads at said top end of said bore;
a first connector having exterior threads for connection to said interior threads at said bottom end of said bore;
a second connector sealingly mounted in said first connector;
a nut fixedly mounted around said first connector to sealingly hold said second connector to said first connector;
a shower head connector having one end sealingly connected to said second connector and an opposite end adapted for connection to a shower head;
a valve stem inserted in said bore with a top end thereof having threads and extending through said hollow connector and a bottom end thereof located proximate said second connector;
a cap having interior threads connected to said threaded top end of said valve stem exteriorly of said hollow connector;
a water stopper and a water seal ring mounted to said bottom end of said valve stem;
whereby,
when said valve stem is pulled upwardly from a first position via said cap to a second position, said water sealing ring and said stopper close said first water conduit so that water flows from said valve, through said outlet in said casing, into said second water conduit, and through said shower head connector to supply water to said shower head, and when said cap is in said first position, said water sealing ring and said stopper close said second water conduit so that water flows from said valve, through said outlet in said casing, into said first water conduit, and through said spout.

5,608,929
PATIENT-POSITIONING DEVICE
Lawrence Crane, 299 Presumpscot St., Portland, Me. 04103
Filed Jan. 11, 1996, Ser. No. 584,406
Int. Cl.[6] A61C *7/10*
U.S. Cl. 5—81.1 R **14 Claims**



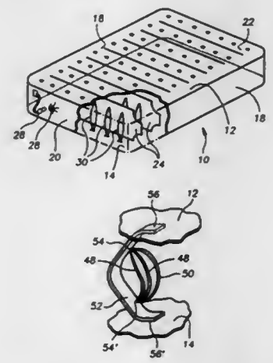
1. A device for positioning a person in a bed, said device comprising:
a. a draw sheet;
b. a frame assembly affixable to a structural frame of said bed; and
c. coupling means passing over a headboard of said bed for joining said draw sheet to said frame assembly.

5,608,930
FOLDABLE BED
Mao-Wang Chen, No. 29, Lane 465, Lieng Tsuen Road, Fong Yuen City, Taichung Hsien, Taiwan
Filed May 10, 1995, Ser. No. 438,528
Int. Cl.[6] A47C *19/00;19/12*
U.S. Cl. 5—174 **1 Claim**



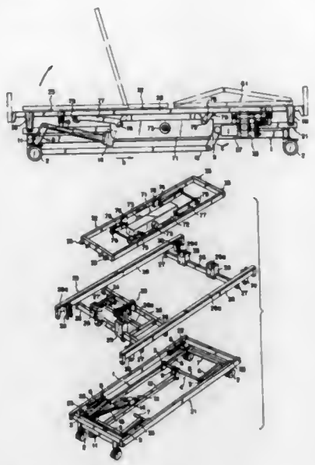
1. A foldable bed comprising:
a head member,
a foot member,
a pair of legs arranged between said head member and said foot member,
a plurality of pivot shafts secured to said head member and said foot member and said legs,
four pivot axels arranged between said head member and said foot member and said legs,
four pairs of links pivotally coupling said pivot shafts to said pivot axels,
a first pair of frames pivotally coupled between said legs and said head member, a second pair of frames pivotally coupled between said legs and said foot member, said first pair and said second pair of said frames each including a middle portion pivotally coupled together by hinge means so as to allow said frames to be moved to a folded position upward about said hinge means and so as to support said first pair and said second pair of frames in horizontal position by said hinge means, when the frames are in said horizontal position the frames spaceable from a floor by means of the legs,
there being two of the pivot shafts mounted on each legs and each of said two pivot shafts spaced inwardly from ends of its associated leg,
wherein the pivot axels and the pivot shafts are always arranged in a common plane parallel and below a plane described by the frames in said horizontal position.

5,608,931
SPRINGLIKE COUPLINGS OF FLEXIBLE WALLS OF INFLATABLE BODY SUPPORTS
Alan B. Gancy, 8810 Wandering Way, Baldwinsville, N.Y. 13027
Continuation-in-part of Ser. No. 7,272, Jan. 21, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,066
Int. Cl.[6] A47C *27/08*
U.S. Cl. 5—712 **22 Claims**



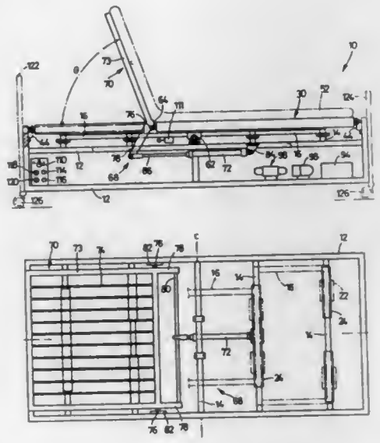
1. In an air mattress having flexible wall means forming at least a portion of a gas-impervious chamber, said wall means being outwardly moveable over a predetermined range of movement in response to pressure of a compressible fluid acting uniformly over an internal surface of said chamber, means resiliently opposing said outward movement over at least a portion of said range of movement, said resiliently opposing means comprising:
a) at least one elastic member having a fully extended, unstretched length and a fully stretched length at its elastic limit, said elastic member being connected to spaced points on said wall means within said chamber to be stretched by outward movement of said wall means, thereby resiliently opposing said outward movement over at least a portion thereof; and
b) a flexible, substantially inelastic member having opposite ends connected to said wall means to limit the stretched length of said elastic member by said outward movement of said wall means to a length less than said fully stretched length.

5,608,932
ARTICULATED BED APPARATUS
Takashi Hasegawa, Higashiyamato, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Apr. 6, 1995, Ser. No. 417,956
Claims priority, application Japan, May 2, 1994, 6-093194
Int. Cl.[6] A47B *9/00*; A47C *17/16*
U.S. Cl. 5—611 19 Claims



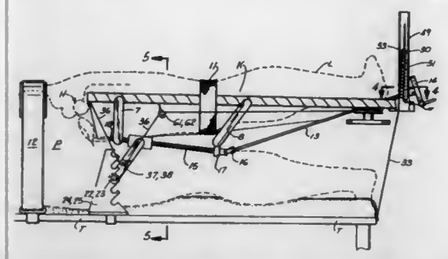
1. A bed apparatus comprising:
a support frame;
a rotation frame having a one-end side and an other-end side supported on the support frame in a width direction, each of the one-end side and the other-end side serving as a fulcrum, and one of the one-end side and the other-end side being rotatable in a direction in which an opposite-end side of the rotation frame is raised;
rotation drive means for rotating the rotation frame, the rotation drive means having a link mechanism coupled to the rotation frame and a drive source provided on the support frame and adapted to drive the link mechanism; and
a bed plate structure having a middle bed plate assembly and a pair of side bed plate assemblies, each of the pair of side bed plate assemblies being provided on a side of the middle bed plate assembly and being rotatable only in an upward direction, the bed plate structure being provided on the rotation frame such that when the rotation frame is rotated in a rotation direction the respective one of the pair of side bed plate assemblies which is situated on a lower side of the rotation direction is abutted against the support frame to allow the bed plate structure to be upwardly bent;
wherein the rotation frame includes retaining means for preventing the rotation frame from shaking in the rotation direction, the retaining means comprising:
retaining link devices coupled at both end portions to the link mechanism such that when the link mechanism is driven in a longitudinal direction the one of the one-end side and the other-end side of the rotation frame situated rearward of the longitudinal direction serves as a fulcrum and the other of the one-end side and the other-end side of the rotation frame is rotated in a raised direction;
a pair of retaining members having a retaining groove opened at one-end face side and at a lower-end face side and provided at longitudinal end portions with the one-end face sides of the respective grooves situated in an opposed relation; and
a pair of engaging pins provided on the support frame, the engaging pins being engaged with the retaining grooves to prevent the rotation frame from being rotated in a width direction, and disengaging from the retaining grooves situated on a forward end side in a moving direction when the retaining link devices are moved by the link mechanism in the longitudinal direction.

5,608,933
BED HAVING MAT SUPPORT ROLLS ROTATED TO MOVE A MAT FOR BLOOD CIRCULATION OF A PERSON LYING ON THE MAT
Hideto Hanada, Aichi-ken; Tadashi Obara, Kasugai; Sigeyuki Takasugi; Nobumasa Imoto, both of Fukuoka; Michiko Nakamura, Onojo; Atushi Minohara, Fukuoka-ken; Norihiko Morinaga, Fukuoka; Hidenori Oshibuchi, Matsuura; Shunnichi Sakaguchi, Tamana, and Mitukane Hoshino, Aichi-ken, all of Japan, assignors to N.H.K Builder Co., Ltd., Aichi-ken, Japan
Filed May 19, 1995, Ser. No. 444,575
Int. Cl.[6] A61G *7/00*
U.S. Cl. 5—612 22 Claims



1. A bed having a mat on which a patient lies, comprising:
a main frame;
an array of cylindrical support members supported by said main frame such that said support members are spaced apart from each other at a predetermined spacing interval in a transverse direction of the bed and such that said support members are rotatable about axes thereof, said mat being placed on said array of cylindrical support members; and
drive means for rotating said cylindrical support members in rolling contact with said mat, for changing areas of contact of said mat with said support members to thereby change areas of contact of the patient with said mat and promoting blood circulation in a portion of the patient in contact with said mat wherein said cylindrical support members have enough flexibility to prevent deflection thereof, said bed further comprising:
engaging means supported by said frame, for engaging with opposite end portions of each of said cylindrical support members; and
a movable frame supported by said main frame such that said movable frame is movable in said transverse direction and is held in contact with at least an intermediate portion of each of said cylindrical support members to thereby support the patient and said mat,
each of said cylindrical support members being deflected due to the flexibility thereof at said intermediate portion in a horizontal plane when said movable frame is moved in said transverse direction by said drive means, such that said mat is deflected in said horizontal plane.

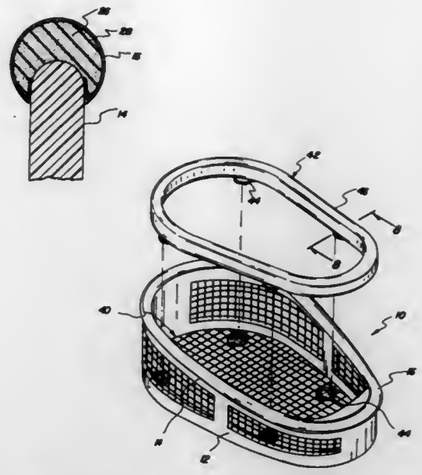
5,608,934
HIP DISTRACTOR
Paul A. Torrie, Marblehead, Mass., and Graham Smith, Plaistow, N.H., assignors to Smith & Nephew Dyonics, Inc., Andover, Mass.
Filed Oct. 6, 1994, Ser. No. 319,970
Int. Cl.[6] A47B *7/00*
U.S. Cl. 5—624 63 Claims



1. An apparatus for positioning a leg of a patient relative to his or her pelvis and an operating table upon which the patient is located during surgery, comprising:
(a) a pivotable support for holding the leg of the patient, said support having a distal end and a proximal end and being adapted for positioning to engage a medial side of the patient's leg with the patient's thigh at the proximal end;
(b) means for moving the distal end of the support means so that the patient's leg can be adjusted relative to the operating table for selectively positioning the patient's leg relative to the patient's pelvis;
(c) means for securing the support means in a fixed position relative to the operating table;
(d) wherein the moving means comprises a pair of mounting members with a plurality of vertically aligned notches for adjusting the height of the support means relative to the operating table, and a pair of seating members adjustably connected to the frame and adapted to fit in the mounting member notches; and
(e) wherein the means for moving the distal end of the support means comprises a cable releasably connected between the frame and the operating table, and the means for securing the support means in position relative to the operating table includes a fastening element connected to the frame for holding the cable in tension.

5,608,935
GROUND SUPPORTED HEAD REST
Christopher A. Warfield, 17 Jonathans Ct., Hunt Valley, Md. 21030
Filed May 30, 1995, Ser. No. 450,668
Int. Cl.[6] A47C *20/00*
U.S. Cl. 5—639 5 Claims

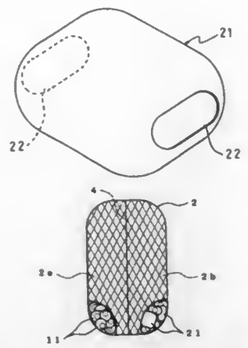
1. A ground supported head rest comprising:
a base frame positionable upon a ground surface, the base frame residing within a plane;
an upper frame mounted relative to the base frame so as to extend at an oblique angle relative to the plane containing the base frame;
a perimeter pad extending about the upper frame for engaging a human head such that the human bead can be supported relative to the ground surface in both prone and supine positions;
wherein the upper frame is supported relative to the base frame by a plurality of stanchions extending therebetween; and
wherein the head rest includes a first end spaced from a second end, with the upper frame being spaced a first distance apart from the base frame at the first end thereof, and the upper frame being spaced a second distance apart from the base frame at the second end thereof, wherein the second distance



is substantially greater than the first distance so as to define an inclined angular orientation of the upper frame relative to the base frame;
and wherein the upper frame is of a first transverse width at the first end of the head rest and continues to enlarge to a second transverse width proximal to the second end of the head rest, wherein the second width is substantially greater than the first width so as to define a substantially ovoid shade of the upper frame;
the head rest further comprising a chin rest projecting from an interior portion of the upper frame proximal to the first end of the head rest for receiving and supporting a chin of an individual lying in a prone position;
wherein the perimeter pad comprises an elongated cylindrical foam core having a slot directed thereinto which receives a portion of the upper frame; and an outer covering encapsulating the foam core;
the head rest further comprising a plurality of mesh pockets extending between adjacent stanchions and between the upper end base frames, wherein each of the mesh pockets comprises an outer mesh web secured to adjacent stanchions and to the base frame; and an inner mesh web secured to adjacent stanchions and to the base frame, the mesh webs projecting upwardly from the base frame and terminating in upper longitudinal edges having an elastic band extending thereacross, the elastic bands permitting selective separation of the mesh webs to permit insertion of objects therebetween for storage.

5,608,936
FLEXIBLE RESIN FILLED CUSHION PERMITTING DRAINAGE
Kiyoshi Nomura, Kaiduka, Japan, assignor to Yamaichi Co., Ltd., Osaka, Japan
Filed Sep. 19, 1995, Ser. No. 530,412
Int. Cl.[6] A47G *9/00*
U.S. Cl. 5—645 8 Claims

1. A support for providing cushion-type comfort, comprising:
a bag; and
a filling material filled in said bag, said filling material including a plurality of hollow pieces made of a flexible resin, each hollow piece including a shell wall having two or more openings therethrough,
wherein each opening is large enough to enhance heat dissipation and water drainage,
said shell wall has rounded portions adjacent to each opening such that said shell wall between said openings is curved convexly outward between said openings, and



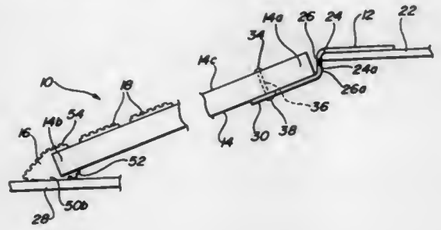
at least some of said plurality of hollow pieces are in the form of flat and hollow bodies having a generally flat region formed between said rounded portions at opposite sides thereof.

5,608,937

PORTABLE RAMP

Robert L. Seigneur, Pioneer, and Richard W. Frankel, Hudson, both of Ohio, assignors to Universal Industrial Products Company, Pioneer, Ohio

Filed Nov. 4, 1993, Ser. No. 147,862
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—69.5 **24 Claims**



22. In a fabricated member for providing a bridge between an upper location and a lower location and having an upper end and a lower end and an upper surface for supporting persons for walking with the member being made of a non-metallic material, the improvement comprising a plurality of traction plates, said traction plates adapted to be secured to the upper surface of the fabricated member generally over its length, each said traction plate having formed therein a series of outwardly protruding projections defining a series of annular, tapered flanges upstanding from punched holes for defining a slip resistant traction surface, said extruded flanges each tapering in thickness to an outermost edge and being defined by a generally annular continuous surface having a thickness of around 0.03 inches whereby sharp, jagged contact surfaces are avoided and whereby said traction surface is substantially free of sharp cutting points or edges, said traction plate being a one-piece construction made of stamped sheet steel and being substantially planar except for said projections,

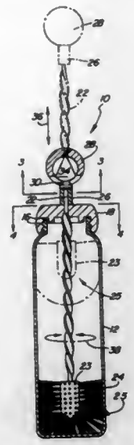
securing means located substantially within the perimeter of said traction plate for securing said traction plate to said upper surface of the fabricated member, and an elastomeric foot member added to engage said lower end of said fabricated member for supporting said lower end of said fabricated member at the lower location.

5,608,938

BOTTLE BRUSH ASSEMBLY

Bruno Baschenis, c/o Ike Keao, Ltd., 13 Bluebird La., Aliso Viejo, Calif. 92656

Filed Feb. 8, 1996, Ser. No. 590,036
Int. Cl.[6] A47L *15/37*
U.S. Cl. 15—68 **11 Claims**



10. A combination baby bottle and brush assembly for cleaning the interior of said baby bottle, comprising:

said baby bottle having a top opening;

a cap mounted on said top opening; said cap having screw threads formed internally therein, and said bottle having screw threads formed externally around said opening, whereby said cap is screwed onto said bottle;

a slotted opening formed in said cap;

a rectangular, twisted, elongated stem means having two ends passing through and movably held in said slotted opening;

an operating holding means secured to a first of said two ends of said rectangular, twisted, elongated stem means;

a sphere-shaped operating means, rotatably held on a reduced diameter portion of said operating holding means, around a shaped end thereof; and

a bristle holding means mounted on a second of said two ends of said elongated stem means, and a plurality of bristles held in said bristle holding means to form a brush.

5,608,939

MOTOR AND DRIVER MOUNT DIAPHRAGM BURNISHER

Steve Waldhauser, Niagara Falls, N.Y., and Richard F. Wulff, Maple Plain, Minn., assignors to Castex Incorporated, Holland, Mich.

Filed Aug. 31, 1995, Ser. No. 522,171
Int. Cl.[6] A47L *11/14;11/20*
U.S. Cl. 15—98 **14 Claims**

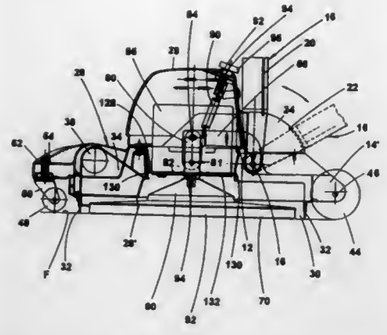
1. A floor burnisher comprising:

a frame including a peripheral housing, rear wheels and a front caster;

said housing having an internal wall defining a vertical chamber having an open bottom;

a suspended, floating, rotational drive motor in said chamber, and a rotational pad-driver underlying and connected to said motor to be rotationally driven thereby, said pad-driver having means for mounting a burnishing pad thereon;

suspension elements connected between said frame and said drive motor suspending said drive motor and said pad-driver and any pad thereon in a manner allowing said floating drive motor and underlying pad-driver to have limited vertical movement relative to said wall of said housing;



a flexible, peripheral, floor-engagement skirt suspended from said peripheral housing to control air flow to said pad-driver; and

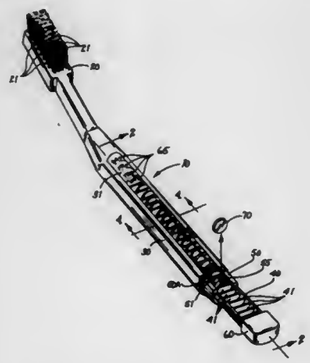
an air flow seal between said motor and said wall for limiting air flow between said motor and said wall even when said motor moves vertically relative to said wall and said housing, whereby a negative pressure created at said pad-driver and a burnishing pad thereon, when rotated, will cause said motor and pad-driver to move downwardly to burnish a floor.

5,608,940

COMBINATION TOOTHBRUSH AND STORAGE/DISPENSER APPARATUS AND METHOD OF MAKING THE SAME THEREOF

Larry A. Panyon, Jr., Scottsdale, Ariz., assignor to L.A.P. Innovations, Inc., Scottsdale, Ariz.

Filed Aug. 7, 1995, Ser. No. 511,976
Int. Cl.[6] A47L *15/00*
U.S. Cl. 15—105 **15 Claims**



1. A combination toothbrush and storage apparatus comprising:

a handle having a hollow chamber,

a toothbrush head attached to an end of the handle, and

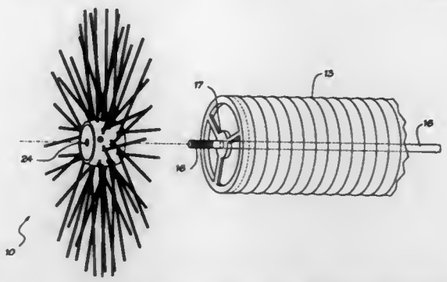
at least one tray adapted to store articles wherein the at least one tray slidingly inserts into and moves inside the hollow chamber of the handle and wherein the at least one tray further has a plurality of divider walls for dividing the at least one tray into a plurality of sections wherein each section can hold at least one article.

5,608,941

ROTARY BRUSH FOR DUCT-WORK CLEANING

James E. Kleinfeld, 4514 Perin La., Harrison, Ohio 45030

Filed Apr. 25, 1995, Ser. No. 428,020
Int. Cl.[6] F23J *3/02*
U.S. Cl. 15—179 **15 Claims**



1. A debris loosening rotary brush for use in vacuum cleaning of duct interiors, said rotary brush comprising:

(a) a hub with a center hole for receiving a drive shaft of a power source;

(b) an annular collar positioned over the hub and secured thereto, said collar having a series of substantially uniformly spaced radial holes extending through its wall; and

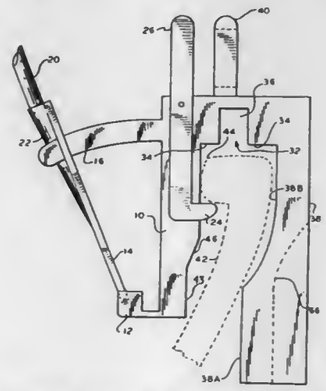
(c) a strand set of individual polymeric flexible strands extending outwardly from the radial holes of the annular collar wherein the polymeric flexible strands are capable of being bent axially of the annular collar so as to access the duct interior through a small opening and further wherein each polymeric flexible strand extends at least about two inches from the collar and spacing of the individual polymeric flexible strands is low density to facilitate vacuum removal through the strand set of debris loosened by the strands during use.

5,608,942

MOP WRINGER

Richard Disbrow, 24 Linda Pl., Denville, N.J. 07834

Filed Jun. 3, 1994, Ser. No. 253,313
Int. Cl.[6] A47L *13/59*
U.S. Cl. 15—261 **20 Claims**



1. A mop wringer adapted for mounting on a rim of a basin or toilet bowl comprising:

a pressure plate having a lower edge;

a mounting frame having a lower receptacle for receiving the lower edge of said pressure plate and an upper receptacle adapted to fit onto the rim of the basin or bowl, said upper

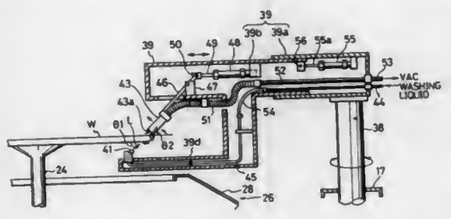
receptacle has a channel sized to receive the rim of a bowl, said channel being broached by a narrower groove sized to fit the rim of a basin, said pressure plate being mounted on said mounting frame for compressing a mop between said pressure plate and said mounting frame, said mounting frame having a lug projecting from said mounting frame away from said pressure plate such that it is adapted to fit under an inner lip of a bowl when said mop wringer is mounted thereon, said lug being above said lower receptacle and below said upper receptacle when said wringer is mounted on the basin or bowl.

5,608,943

APPARATUS FOR REMOVING PROCESS LIQUID

Nobuo Konishi, and Kenji Sekiguchi, both of Tokyo, Japan, assignors to Tokyo Electron Limited

Filed Aug. 22, 1994, Ser. No. 293,582
Claims priority, application Japan, Aug. 23, 1993, 5-229550
Int. Cl.[6] B08B *5/04*
U.S. Cl. 15—302 **24 Claims**



11. An apparatus for removing a part of a processing liquid layer attached to a peripheral portion of an upper surface, a peripheral edge, and a peripheral portion of an undersurface of a circular substrate having a substantially circular edge and a cutout linear edge comprising:

means for supporting and rotating the substrate;

washing nozzle means for jetting a washing liquid to the peripheral portion of the undersurface of the substrate;

means for guiding the washing liquid jetted from the nozzle means to the peripheral portion of the upper surface of the substrate from the peripheral portion of the undersurface through the peripheral edge, while the washing liquid dissolves the part of the process liquid layer;

means for sucking the washing liquid and dissolved processing liquid from the peripheral portion of the upper surface of the article; and

means for keeping the washing nozzle means and sucking means against the rotating substrate so that the washing liquid is jetted to the peripheral portion of the undersurface of the substrate, and the washing liquid and dissolved processing liquid are sucked from the peripheral portion of the undersurface of the substrate during a washing operation.

5,608,944

VACUUM CLEANER WITH DIRT DETECTION

Evan A. Gordon, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

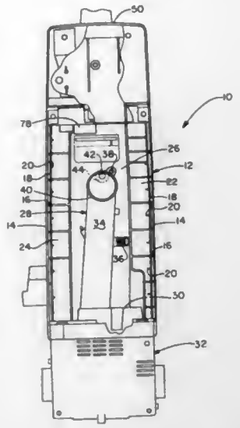
Filed Jun. 5, 1995, Ser. No. 461,151
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—319 **8 Claims**

1. A vacuum cleaner having a dirt detecting circuit including:

a) an upper fill tube;

b) a microphone mounted outside said fill tube but closely adjacent thereto;

c) a dirt detecting circuit electrically connected to said microphone;



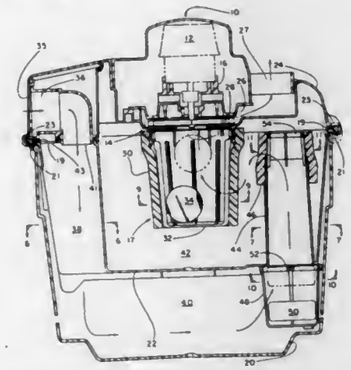
d) said dirt collecting circuit including a switchable integrator circuit portion for providing sensitivity selection for said dirt detector circuit.

5,608,945

WET/DRY UTILITY VACUUM CLEANER

Darwin S. Crouser, Canton; Nick M. Bosyj, North Canton; Donald R. Bowers; Nicholas Koukourakis, both of Akron; Richard A. Wareham, and Conway Vincent, both of North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio

Division of Ser. No. 7,982, Jan. 15, 1993, Pat. No. 5,455,983.
This application Jul. 5, 1995, Ser. No. 498,394
Int. Cl.[6] A47L *7/00*
U.S. Cl. 15—328 **23 Claims**



1. A tank type vacuum cleaner comprising:

a) a first tank having a removable cover sealingly attached,

b) a second tank positioned within said first tank, said second tank displacing a portion of the internal volume of said first tank,

c) sealing means between said first and second tanks,

d) fan means for drawing air from said second tank thereby reducing the pressure therein below atmospheric,

e) a first conduit means fluidly communicating with said first tank,

f) a second conduit means fluidly communicating with said second tank,

g) a vacuum inlet port fluidly communicating with said first and second conduit means,

h) means for selectively closing said first or second conduit means whereby fluid communication between said inlet port and said first or second tank is thereby interrupted,

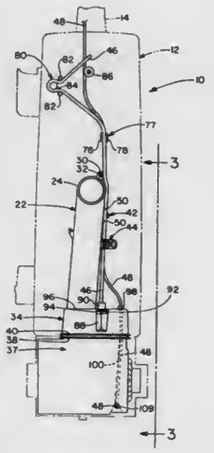
i) seal bypass means providing fluid communication between said first and second tanks whereby debris laden air when entering said first inlet means passes into said first tank, depositing said debris therein, and enters said second tank through said seal bypass means, and exiting therefrom into said fan means.

5,608,946

CONTROL CABLE AND WIRING ARRANGEMENT FOR A VACCUM CLEANER

David B. Rennecker; Timothy B. Hisrich, both of Canton, and Gary L. Berkshire, Dover, all of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed May 15, 1995, Ser. No. 440,998
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—339 **11 Claims**



1. A vacuum cleaner including:

a) an upwardly extending hard bag housing portion;

b) a suction duct extending upwardly in said vacuum cleaner within said upwardly extending hard bag housing portion;

c) an electrical cord extending downwardly in said cleaner; and

d) said electrical cord disposed outside said suction duct within said hard bag housing portion and lying at least partly along said suction duct and attached thereto for secure mounting.

5,608,947

FLOOR CLEANING APPARATUS WITH PRE-FILTER

Christopher M. Knowlton, Pinehurst; Timothy A. Strickland, Raeford, both of N.C., and Robert J. O'Hara, Castle Rock, Colo., assignors to Windsor Industries, Inc., Englewood, Colo.

Continuation of Ser. No. 233,014, Apr. 25, 1994, Pat. No. 5,485,653. This application May 31, 1995, Ser. No. 455,076
Int. Cl.[6] B08B *5/04*
U.S. Cl. 15—340.4 **25 Claims**

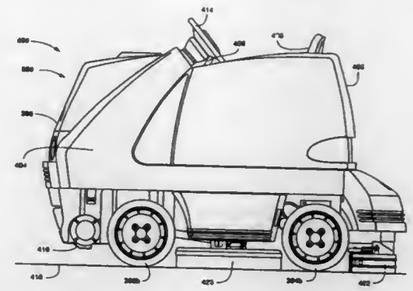
1. An apparatus for cleaning a surface comprising:

a frame;

means, operatively attached to said frame, for cleaning surface;

at least three wheels for moving said frame and said means for cleaning over a surface; and

means for steering at least one of said at least three wheels;



said means for cleaning includes a hopper for receiving a debris laden airstream, precipitating first heavier debris from said debris laden airstream, collecting said first heavier debris, and providing a first exit airstream that may contain lighter debris;

a pre-filter for receiving said first exit airstream, precipitating out second heavier debris that is generally lighter than said first heavier debris from said first exit airstream, collecting said second heavier debris, and providing a second exit airstream that may contain lighter debris; and

a filter for receiving said second exit airstream, precipitating out third heavier debris that is generally lighter than said first and second heavier debris from said airstream, collecting third heavier debris and providing a third exit airstream that is substantially free of debris;

wherein said pre-filter includes means for moving into contact with at least a portion of said second beavier debris in said first exit airstream.

5,608,948

COMPRESSION ROD HAVING RECTANGULAR SHAPE

Friedrich Hauner, Ingolstadt, and Alfons Zehndbauer, Wettstetten, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

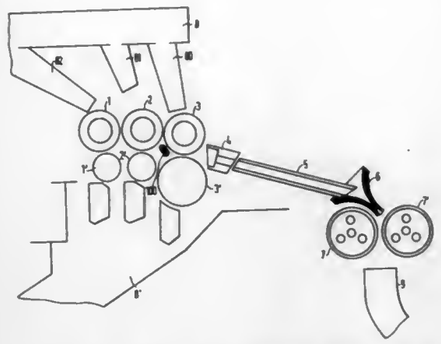
Continuation of Ser. No. 164,482, Dec. 9, 1993, abandoned.
This application Apr. 17, 1996, Ser. No. 633,502
Claims priority, application Germany, Dec. 17, 1992, 42 42 722.3
Int. Cl.[6] D01H *5/72*
U.S. Cl. 19—288 **5 Claims**

1. A drafting device for drafting a textile fiber sliver, said device comprising:

a first set of drafting rollers and a second set of drafting rollers disposed downstream from said first set of drafting rollers in a conveying direction of said fiber sliver;

a main drafting zone defined between said first and second sets of drafting rollers having a width corresponding essentially to the width of said drafting rollers wherein said fiber sliver is conveyed between said sets of drafting rollers and drafted in said main drafting zone; and

a compression bar operably disposed between said sets of drafting rollers across said width of said main drafting zone, said compression bar further comprising a generally rectangular cross-sectional profile having shorter sides and longer sides, said longer sides being substantially parallel and non-radiused over the length thereof at least one of said shorter sides being



curved and radiused, said compression bar disposed at an orientation such that said curved short side contacts and deflects said sliver.

5,608,949

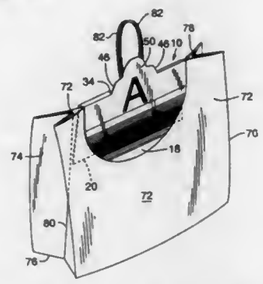
FASTENABLE BAG CLOSURE

June E. Cooley, and Anna H. Mack, both of Lake Oswego, Oreg., assignors to Kolor Kollar, Inc., Portland, Oreg.

Filed Sep. 13, 1995, Ser. No. 527,513

Int. Cl.[6] B65D *77/00*

U.S. Cl. 24—30.5 R **1 Claim**



1. A bag closure having a closed position for storage and an open position for use with a bag having handles thereon, the bag closure comprising:

an elongated planar strip having a centrally-located slot therein adapted to receive the handles of the bag with the bag closure in the open position, the planar strip having first and second side edges and first and second ends, the bag closure having a longitudinal axis extending between the ends of the planar strip;

a first flap having a top edge pivotably joined to the first edge of the planar strip and having a recessed area therein adjacent the slot, the first flap depending downwardly from the planar strip when the bag closure is in the open position and being coplanar with the planar strip when the bag closure is in the closed position;

a second flap having a top edge pivotably joined to the second edge of the planar strip, the second flap depending downwardly from the planar strip when the bag closure is in the open position and being coplanar with the planar strip when the bag closure is in the closed position;

a tab projecting from the top edge of the second flap, the tab being substantially coextensive and coplanar with the slot and the recessed area in the first flap with the bag closure in the closed position so as to cover the slot and recessed area, the tab projecting above the planar strip with the bag closure in the open position so as to expose the slot in the planar strip and the recessed area; and

one or more sections of double-sided tape on an inside surface of each flap, adapted for securing the flaps to the bag with the bag closure in the open position.

5,608,950

FILE WITH GRIPPING DEVICES

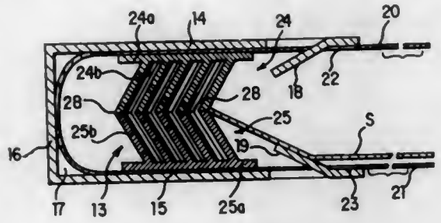
Toshio Noguchi, 542-5, Koyama, Matsudo-shi, Chiba-ken, Japan, assignor to Toshio Noguchi, Matsudo; Yasushi Yamaguchi, Tokyo, both of Japan; Colleague Iowa, Inc., Iowa, and Colleague Agencies, Inc., Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 563,095

Claims priority, application Japan, Aug. 23, 1995, 7-250037

Int. Cl.[6] A44B *1/00*

U.S. Cl. 24—67.3 **7 Claims**



1. A file for gripping sheets comprising,

an elongated base member having front and back sides, said base member being formed of upper and lower portions disposed substantially parallel to each other, a back portion situated between the upper and lower portions at the back side thereof, and upper and lower guide members fixed to the upper and lower portions to face to each other at the front side, each guide member diagonally extending toward the back portion so that when the sheets are inserted between the upper and lower portions, the sheets are guided in a center area between the upper and lower portions, said upper and lower guide members being integrally formed with the upper and lower portions respectively, a part of the upper and lower portions being cut and bent inwardly to form the guide members, and

at least two gripping devices fixed to the elongated base member at a predetermined distance away from each other along a longitudinal direction thereof, each of said gripping devices having upper and lower frictional members with elasticity, said upper frictional member being fixed to the upper portion and said lower frictional member being fixed to the lower portion to face to each other so that when the sheets are inserted between the upper and lower frictional members, the sheets are frictionally retained between the frictional members, said gripping devices being arranged such that the upper and lower guide members are formed at least at portions between each of the gripping devices and the front side of elongated base member to face to each other.

5,608,951

STRAP LOCKING DEVICE

An-Chuan Chou, No. 212, Yung An Street, Tainan, Taiwan

Continuation-in-part of Ser. No. 155,789, Nov. 23, 1993, Pat. No. 5,440,790. This application Aug. 1, 1995, Ser. No. 509,112

Int. Cl.[6] B65B *11/00*

U.S. Cl. 24—302 **5 Claims**

1. A strap locking device for use in binding freight, comprising:

a plurality of strap members, each of said plurality of strap members having opposing first and second ends;

a plurality of strap hook members, each of said plurality of strap hook members being fixedly coupled to a first end of a respective one of said plurality of strap members;



means for securing each of said plurality of strap members one to another at a respective section of each said strap member displaced from said first end thereof, said securing means including (1) a plurality of attachment members, each of said attachment members having a longitudinally extended base plate coupled to a respective one of said plurality of strap members adjacent a first end of said base plate, said base plate having an opening formed therethrough adjacent a second end thereof, and (2) a pivot pin member extending through said through opening of each said base plate to provide a pivotal coupling of each of said plurality of attachment member base plates one to another for relative rotative displacement therebetween, said plurality of attachment member base plates being disposed in radially spaced relationship, whereby said plurality of strap members are directed in different directions from said securing means over freight for engagement of said plurality of hooks with corresponding fasteners of a freight transport.

5,608,952

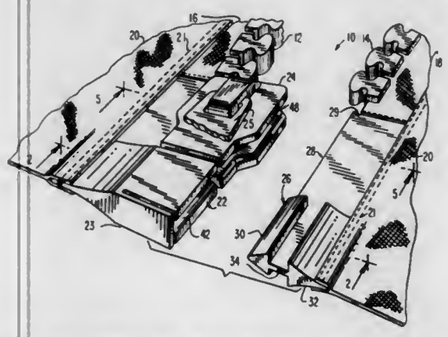
END CONNECTOR FOR A SLIDE FASTENER

Andrew Wilder, Amawalk Rd., Katonah, N.Y. 10536

Filed Jun. 29, 1995, Ser. No. 496,576

Int. Cl.[6] A44B *19/40*

U.S. Cl. 24—433 **9 Claims**



1. An end connector for a slide fastener comprising a first and a second opposed interlocking edge surface, a slider member displaceable in one direction along the first edge surface for selective engagement with the second edge surface and for alternate displacement in an opposite direction for disengagement of the edge surfaces, said end connector including coupling means for attaching a lower end of each of the respective edge surfaces, said coupling means including a socket member disposed at the lower end of the first edge surface, said socket member defining a chamber in communication with an entrance slot, a locking blade member disposed at a corresponding lower end of the second edge surface, said locking blade member including a nose element positionable in confronting relationship to the entrance slot and adapted for accessing the entrance slot for snap-fit engagement within the socket chamber, the slider member defining a channel in correspondence with the socket entrance slot, a guide blade member disposed coincidentally to the locking blade member, said guide blade member being receivable within said channel for registering the slider member with the second edge surface simultaneously with the snap-fit coupling of the locking blade member whereby the respective first and second edge surfaces are interlockable by the slider member.

5,608,953

SNAP-HOOK WITH LOCKING RING

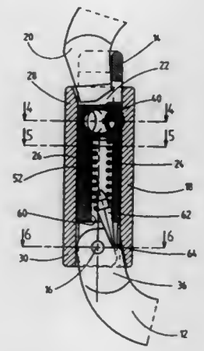
Paul Petzl, Barraux, and Alain Maurice, Gieres, both of France, assignors to Zedel, Crolles, France

Filed Feb. 6, 1996, Ser. No. 597,205

Claims priority, application France, Mar. 2, 1995, 95 02658

Int. Cl.[6] A63B *29/00*

U.S. Cl. 24—573.5 **10 Claims**



1. A snap-hook, notably for mountain climbing, comprising a C-shaped metallic body, having a first end provided with a male securing part, and a second end for articulation of a mobile finger around a pivoting spindle between a closed position and an open position, said finger comprising:

a female securing part arranged opposite the pivoting spindle to cooperate with the male securing part in the closed position,

a first return spring to return the finger to the closed position,

a locking ring mounted with limited rotation coaxially around the finger between a first locking position and a second unlocking position, said ring comprising memory means to keep it in the second unlocking position so long as the finger is open,

a second return spring to return the locking ring to the first locking position when the finger is closed,

a locking bolt arranged on said finger for cooperating in the active position with the ring to lock the latter positively in the first locking position,

and operating means to actuate the locking bolt to an inactive position allowing rotation of the ring to the second unlocking position.

5,608,954

PILE FABRIC MANUFACTURING PROCESS AND RESULTING FABRICS

Rene J. Vernay, St. Andre D'Apchon, France, assignor to A. Vernay et Fils Sarl, and Andre Vernay Teintures, S.A.

PCT No. PCT/FR94/00123, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO94/18368, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 1, 1994, Ser. No. 500,866
Claims priority, application France, Feb. 2, 1993, 93 01368
Int. Cl.[6] D06C 23/02
U.S. Cl. 28—162 8 Claims

1. A finishing process for a polar fabric, said fabric having a plush-loop side and a smooth side, said fabric being knitted on a plush loom and made from 100% polyester multi-filaments in which the fabric has been subjected to a dyeing operation by means of diverse dyes, wherein the process is characterized by the steps of:

pulling said filaments of at least one side of said fabric in a raising apparatus;

bursting said pulled filaments of said at least one side of said fabric in a second napping operation;

compacting said burst filaments of said at least one side of said fabric in a third napping operation;

mingling said filaments of said at least one side of said fabric in a fourth napping operation to produce at least one felted fabric surface having a high density of fiber filaments;

raising said at least one felted side of said fabric to extend the mingled filaments; and

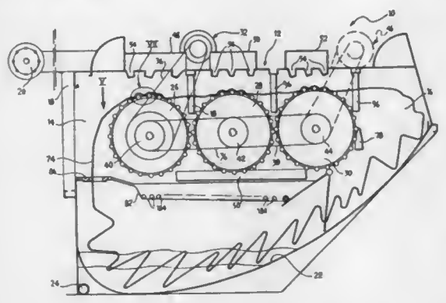
shearing the extended mingled filaments to produce at least one fabric surface having a velvety finish.

5,608,955

FABRIC FINISHING MACHINE WITH AIR-JET FABRIC TO DRUM ENTRAINER

Lino Bozzo, Quaregna, Italy, assignor to Flainox S.R.L., Quaregna, Italy

Filed Dec. 20, 1995, Ser. No. 578,065
Claims priority, application Italy, Dec. 23, 1994, TO94A1069
Int. Cl.[6] D06B 15/09; B65H 23/24
U.S. Cl. 28—167 12 Claims



1. A fabric-finishing machine, comprising:

a tank having a front portion and rear portion,

a set of drums which form a substantially rectilinear entrainment path extending above the drums from the front portion of the tank to the rear portion, the widths of the drums being such as to permit the entrainment thereon of a single piece of fabric spread out or of a plurality of pieces gathered in ropes,

drive means for rotating the drums in the same direction, and

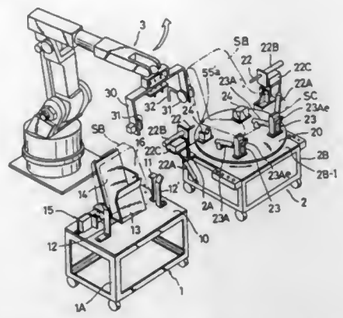
at least one nozzle associated with each drum for supplying an air-jet to press the fabric spread out or in ropes onto the respective drum so as to achieve conditions of adhesion between the fabric and the drums such that dry, moist or wet fabrics can be entrained.

5,608,956

SYSTEM FOR AUTOMATICALLY ASSEMBLING A SEAT

Kenichi Seki, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1996, Ser. No. 609,526
Int. Cl.[6] B68G 7/00; B23P 11/00
U.S. Cl. 29—91 16 Claims



1. A system for automatically connecting a seat back to a seat cushion to assemble a seat, in which the seat back has an upholstery and a first connecting member covered with a part of the upholstery, and the seat cushion has a second connecting member to be connected to said first connecting member, said system comprising:

a first setting means for setting said seat back at a predetermined position in a generally upright state;

said first setting means including a retaining means for receiving and retaining said part of upholstery of said seat back which is peeled or turned up from the same seat back, so as to keep said first connecting member exposed therefrom;

a second setting means for setting said seat cushion at a predetermined position in a generally horizontal state;

said second setting means including an automated connecting means for automatically connecting said first connecting member exposed from said seat back, to said second connecting member of said seat cushion;

a robot hand means for automatically grasping and transferring said seat back set by said first setting means towards said second setting means; and

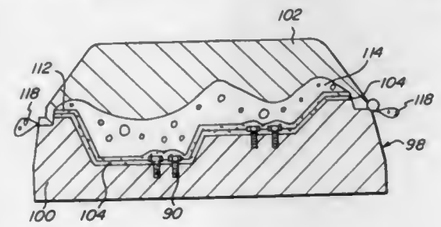
said robot hand means including a pressure arm means for pressingly holding said part of upholstery of said seat back which is turned up on said retaining means of said first setting means, to thereby continue to keep said first connecting member exposed from the seat back.

5,608,957

METHOD OF MAKING A MOTORCYCLE SEAT

Michael W. Hanagan, 25980 Paseo Estribo, Monterey, Calif. 93940

Division of Ser. No. 377,650, Jan. 25, 1995, Pat. No. 5,544,937.
This application May 23, 1996, Ser. No. 652,811
Int. Cl.[6] B29C 44/06;44/12
U.S. Cl. 29—91.1 5 Claims



1. In a method for making a motorcycle seat for attachment to the frame of an associated motorcycle, the steps comprising:

(a) providing a mold dimensioned and configured to form a unitary, rigid, elongated platform member configured to seat upon and be secured to the frame of the associated motorcycle for firm support thereby, said mold having a lower element and an upper element;

(b) applying a first layer of a mixture of glass fibers and polyester resin onto the surface of said lower element of said mold;

(c) embedding hardware in said first layer;

(d) applying a second layer of a mixture of glass fibers and polyester resin on said first layer and about said hardware so as to encapsulate at least a portion of said hardware in said first layer and said second layer;

(e) partially curing said first layer and said second layer;

(f) introducing a foamable synthetic resin into said lower element of said mold on said partially cured second layer and about said hardware;

(g) interfitting said upper element of said mold on said lower element of said mold;

(h) curing said first and second layers and said foamable synthetic resin in said assembled mold to produce a cellular cushioning layer from said foamable synthetic resin and to produce a chemical bond between said second layer and said cellular cushioning layer to provide a seat body;

(i) removing said upper mold element; and

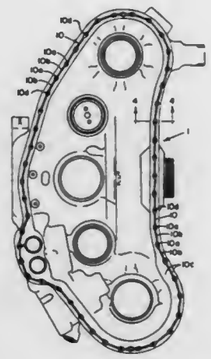
(j) removing said seat body from said lower mold element.

5,608,958

GEAR BOX HOUSING FACE REPAIR

Elmer A. Stockton, Dallas, Tex., assignor to UNC Artex, Inc., Addison, Tex.

Filed Oct. 19, 1994, Ser. No. 326,027
Int. Cl.[6] B23P 6/00
U.S. Cl. 29—402.11 3 Claims



1. The method of repairing a metallic casting having a first peripheral planar mating surface machined thereon for sealing engagement with a similarly shaped second planar mating surface on another metallic component wherein said first peripheral planar mating surface has become sufficiently warped during usage to destroy the integrity of said sealing engagement; said first peripheral planar mating surface being traversed by a plurality of peripherally spaced bolt holes; comprising the steps of:

machining said first peripheral mating surface to restore the planar configuration thereof and thereby reducing the height of said first mating surface by a known dimension;

forming a thin metallic gasket to conform to said first peripheral mating surface and having holes respectively alignable with said bolt holes, said gasket having a thickness substantially equal to said known dimension;

further machining the edges of said first peripheral mating surface to uniformly reduce the height thereof in all areas except an annular area immediately adjacent each of said bolt holes and a narrow band area extending between all said annular areas adjacent each of said bolt holes, thereby defining an upstanding peripheral rib having a planar surface, the depth of this machining operation being selected to conform to a desired thickness of an adhesive sealant and the upstanding peripheral rib defining a gasket locating surface;

applying an adhesive sealant to said further machined edge areas;

aligning said metallic gasket with said bolt holes; and

pressing the metallic gasket to intimately engage one surface thereof with said upstanding rib and said adhesive sealant, whereby the other surface of said metal gasket defines a peripheral planar mating surface corresponding in dimensions and location to said first peripheral planar mating surface as originally machined.

5,608,959

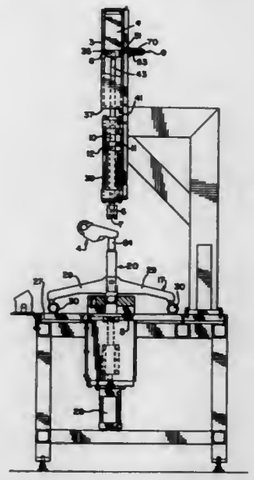
Patent Not Issued For This Number

5,608,960

APPARATUS AND METHOD FOR MOUNTING A SUPPORT COLUMN TO A CHAIR BASE AND TILT CONTROL HOUSING

Robert Nyhuis, Holland; Brent Fredricks, Grand Haven, and Martin Van Ryckeghem, Holland, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Jun. 7, 1995, Ser. No. 487,804
Int. Cl.[6] B23P 11/00
U.S. Cl. 29—434 24 Claims



1. A method of mounting a support column to a chair base and tilt-control housing, said support column having a top portion and a bottom portion, said base having a cavity formed therein, and said tilt control housing having a hub defining a core, the method comprising:

placing a bottom portion of the support column within the cavity of the base;

placing the hub of the tilt control housing onto the top portion of the support column such that said top portion is positioned within the core of the hub;

supporting a bottom side of the base; and

applying an impact force against the tilt-control housing to simultaneously press fit the top portion of the support column within the hub and the bottom portion of the support column within the cavity.

5,608,961

PROCESS FOR MAKING A LOOM HARNESS

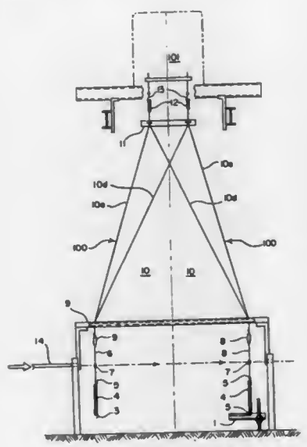
Gerd Piegeler, Haan, Germany, assignor to Schroers-Jacquard-Papieindustrie GmbH & Co., Germany

Continuation of Ser. No. 98,437, Jul. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 741,107, Aug. 6, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,748

Claims priority, application Germany, Aug. 24, 1990, 40 26 815.2; Oct. 5, 1990, 40 31 515.0

Int. Cl.[6] B21D *39/00;* **D03C** *3/24*

U.S. Cl. 29—452 **7 Claims**



1. A method of making a loom harness interconnected between a base element and a spaced apart, moveable upper element of a loom, comprising the steps of:

prefabricating a plurality of subassemblies, each prefabricated subassembly including a flexible harness cord having first and second ends, a heald having first and second ends, and an eye in said heald and a counterpull having first and second ends, with said first end of said flexible harness cord being connected to said second end of said heald and said first end of said heald connected to said second end of said counterpull;

connecting said first end of each counterpull to a base loom element; then

passing said second end of each of said harness cords through a different one of a plurality of openings provided at spaced apart intervals in a comber board positioned between said base element and a spaced apart, moveable upper loom element;

passing said second ends of said harness cords through a single aperture provided in an aperture board positioned between said comber board and the other of said moveable upper loom element; and

bundling together said harness cords and connecting said second ends of said bundled harness cords to said moveable upper loom element while said eyes of said subassemblies are aligned with one another and while said cords are held taut.

5,608,962

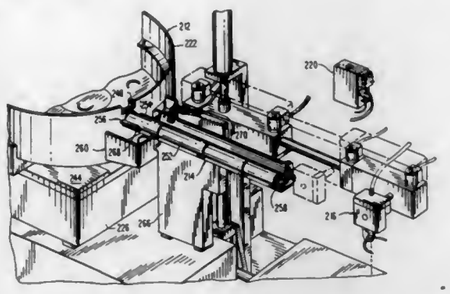
METHOD AND APPARATUS FOR ATTACHING SURGICAL SUTURE COMPONENTS

Francis D. Colligan, Waterbury, and Donald C. Ross, Orange, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 100,716, Aug. 2, 1993, Pat. No. 5,394,971, which is a continuation-in-part of Ser. No. 959,114, Oct. 9, 1992, Pat. No. 5,350,373. This application Feb. 16, 1995, Ser. No. 389,472

Int. Cl.[6] B21D *39/00;* **B23P** *11/00*

U.S. Cl. 29—517 **24 Claims**



7. Apparatus for attaching surgical sutures to surgical needles, which comprises:

a container assembly configured to receive a plurality of surgical needles each of the surgical needles having a pointed end and an opposite end having an end face defining a bore therein, the container assembly orienting each surgical needle of the plurality of surgical needles in a predefined arrangement such that each end face of each surgical needle is oriented similarly;

a transmission member configured to receive each oriented surgical needle from the container assembly and transfer the oriented surgical needle to a presenting position, the transmission member including a vibratory rail adapted to receive and maintain each surgical needle of the plurality of surgical needles in a predefined arrangement and to sequentially position each oriented surgical needle in the presenting position;

a transfer system configured to transfer each oriented surgical needle between the presenting position and a crimping position, such that the end face having the bore is presented to the crimping position; and

a crimping assembly configured to crimp a surgical suture to the transferred surgical needle.

5,608,963

METHOD OF FORMING HOSE AND FIRE SLEEVE END ASSEMBLY

Robert M. Lefere, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Division of Ser. No. 123,865, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 897,843, Jun. 12, 1992, abandoned. This application Nov. 13, 1995, Ser. No. 557,706

Int. Cl.[6] B29C *65/56*

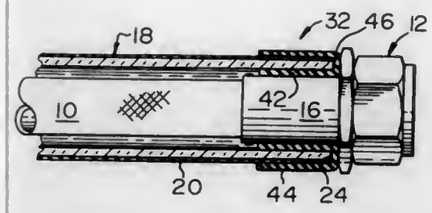
U.S. Cl. 29—525.01 **3 Claims**

1. A method of forming a hose and firesleeve end assembly comprising the steps of:

(a) providing a hose attached to a fitting, the hose having an outer diameter, the fitting comprising a hose receiving socket, which circumscribes an end of the hose, and an enlarged portion, the socket having a diameter;

(b) providing a tubular firesleeve; the tubular firesleeve including an inner surface, an end and an outer surface;

(c) coaxially circumscribing the socket and the enlarged portion with a relatively short, flexible, tubular cuff sleeve having an axis and an inner diameter substantially equal to the diameter



of the socket and ends defining the cuff sleeve length such that the cuff sleeve is located on the socket;

(d) axially inserting the cuff sleeve located upon the socket into the end of the firesleeve such that the firesleeve end is located between the cuff sleeve ends whereby the portion of the cuff sleeve within the firesleeve constitutes a cuff sleeve inner portion and the portion of the cuff sleeve extending beyond the firesleeve end constitutes a cuff sleeve outer portion; and then

(e) folding the cuff sleeve outer portion over the firesleeve end upon the firesleeve outer surface in opposed radial relationship to the cuff sleeve inner portion thereby enclosing and protecting the end of the firesleeve.

5,608,964

METHOD FOR PRODUCING A THIN FILM MAGNETIC HEAD HAVING AN IMPROVED COIL CONDUCTOR LAYER

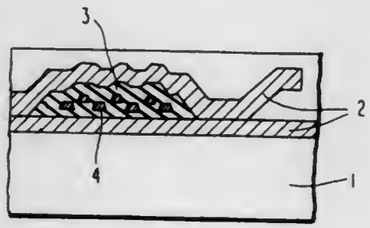
Osamu Shimizu, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 262,520, Jun. 20, 1994, abandoned, which is a continuation of Ser. No. 780,937, Oct. 23, 1991, Pat. No. 5,369,539. This application May 28, 1996, Ser. No. 654,043

Claims priority, application Japan, Oct. 25, 1990, 2-285925

Int. Cl.[6] G11B *5/42*

U.S. Cl. 29—603.14 **5 Claims**



1. A method for producing a thin film magnetic head, comprising the steps of:

(a) providing a substrate having thereon a magnetic layer, an insulating layer, and a gap layer, at least a portion of said gap layer defining a gap surface;

(b) forming and patterning to a predetermined shape a conductor layer constituting a coil on said insulating layer by lithography and ion milling; and then

(c) heat treating said substrate at a temperature of at least 450° C.

wherein said conductor layer consists essentially of Cu—Ag alloy, and said gap surface has a surface irregularity level of about 350 Angstroms or less R_{max}.

5,608,965

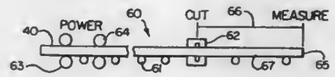
METHOD OF MAKING ELECTRICAL CONNECTORS

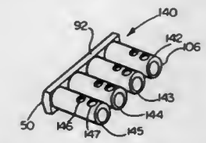
Antonius M. Kies, Oisterwijk, Netherlands, assignor to Erico International Corporation, Solon, Ohio

Filed Jun. 6, 1995, Ser. No. 466,464

Int. Cl.[6] H01R *43/16*

U.S. Cl. 29—874 **16 Claims**





1. A method of making electrical connectors of the type having a bus bar interconnecting a plurality of posts projecting from the bar with means to secure a conductor to the posts, comprising the steps of extruding an elongate generally rectangular bar stock profile having a long transverse dimension substantially equal to the projection of the posts and thickness of the bar, and having a width substantially equal to the diameter of the posts and width of the bar,

cutting the bar stock to length to form blocks suitable for making a connector with a selected number of posts,

placing a number of such cut-to-length blocks on a pallet of a machining center, said machining center including a programmably movable pallet and a tool changer,

indexing the pallet to cause the machining center to form posts in said block, said posts being formed with a hollow mill, and

drilling and tapping fastener holes on said posts to secure conductors thereto.

5,608,966

PROCESS FOR MANUFACTURE OF SPRING CONTACT ELEMENTS AND ASSEMBLY THEREOF

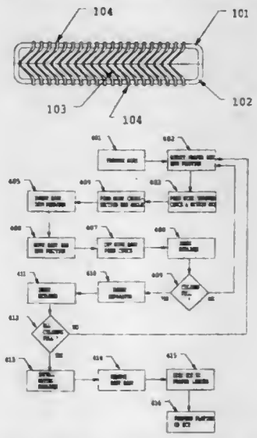
Edward O. Donner, Poughkeepsie, N.Y., and Michael L. Zumbrunnen, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1994, Ser. No. 356,025

Int. Cl.[6] H01R *43/00*

U.S. Cl. 29—884 **19 Claims**

1. A method of providing a connector assembly having a plurality of spring contact elements in a retainer, said method comprising:



feeding a metallic spring wire through a chuck between a die to a measure stop; the chuck having a stop, a holding device, two opposing die and a wire cutter;

forming said metallic spring wire into a flat portion with a bend having an angle in a plane;

cutting said metallic spring wire after being formed by the forming step to provide a formed spring contact element with a length longer than a finished length of said formed spring contact element;

rotating said chuck containing the formed spring contact element to align the plane of the element with a column being arranged in the retainer;

guiding by the chuck of an end of the formed spring contact element through a hole in a first part of said retainer;

indexing a position of the first part of said retainer relative to said chuck to align with a next hole in the first part of the retainer;

installing a separator in slots in said first part of said retainer adjacent to edges of said formed spring contact element being placed in the column; and

engaging a second part of said retainer with the first part while passing said spring contact element through opposite holes in a second part of the retainer.

5,608,967

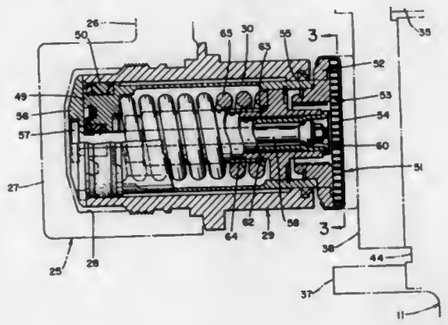
METHOD OF MAKING PISTON FOR AN AIRCRAFT BRAKE WITH HONEYCOMB INSULATED PISTON HEAD

John P. Swank, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 192,230, Feb. 4, 1994, Pat. No. 5,538,109, which is a continuation-in-part of Ser. No. 623,862, Dec. 4, 1990, abandoned. This application Jun. 12, 1995, Ser. No. 489,528

Int. Cl.[6] B21D *39/00*

U.S. Cl. 29—888.045 **4 Claims**



1. The method of making a honeycomb piston head structure comprising the steps of: deforming longitudinally spaced portions of longitudinally extending thin strips of metal that have substantial width compared to their thickness in a direction generally normal to their longitudinal axes; joining said deformed strips to form a honeycomb structure that has a plurality of cells and oppositely disposed sets of end edges; locating an end cap having oppositely disposed surfaces against said honeycomb structure with one surface contacting one set of end edges of said honeycomb structure; positioning a plate on the other set of end edges of said honeycomb structure; and fastening said end cap to said plate by rolling an end edge of said end cap over and into abutting contact with the peripheral edge of said plate, such that said honeycomb structure is captured between said end cap and said plate to form a piston head structure, said end cap being the sole means for interconnecting said honeycomb structure to said plate, thereby making said honeycomb structure the sole means for transmitting forces from said end cap to said plate.

5,608,968

METHOD OF MAKING A METAL HONEYCOMB BODY OF INTERTWINED SHEET-METAL LAYERS

Wolfgang Maus; Helmut Swars; Rolf Brück, all of Bergisch Gladbach, and Bohumil Humpolik, Ludwigsburg, all of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany

Division of Ser. No. 91,613, Jul. 14, 1993, Pat. No. 5,464,679. This application Jul. 20, 1995, Ser. No. 504,768

Claims priority, application Germany, Jul. 14, 1992, 42 23 096.9; Jul. 14, 1992, 42 23 134.5

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890 **12 Claims**



1. A method for producing a metal honeycomb body of at least partly structured sheet-metal layers, which comprises:

a) forming a multi-layer hollow coil with an inside and an outside from at least one sheet-metal strip which has at least partial structuring;

b) defining an inner annular region and an outer annular region on the inside of the multi-layer coil;

c) deforming the multi-layer hollow coil from the outside thereof towards the inside at at least three lines distributed about a circumference of the multi-layer hollow coil, and forming a corresponding number of inner reversal lines in the inner annular region and outer reversal lines in the outer annular region, such that the at least one sheet-metal strip extends in loops between the outer and inner reversal lines; and

d) compacting the resulting deformed multi-layer structure about the inner reversal lines by rotationally intertwining the loops in a given direction.

5,608,969

PROCESS FOR PRODUCING A UNIFORM COATING GRADIENT FOR A GRAVURE ROLL

Thomas R. Fields, Charlotte; Amy E. Bohr, Matthews; Kendalyn R. McCoy, Monroe, all of N.C., and Lawrence C. Forszen, Novi, Mich., assignors to Rexam Industries Corp., Charlotte, N.C.

Division of Ser. No. 218,721, Mar. 28, 1994, Pat. No. 5,522,786. This application May 11, 1995, Ser. No. 438,838

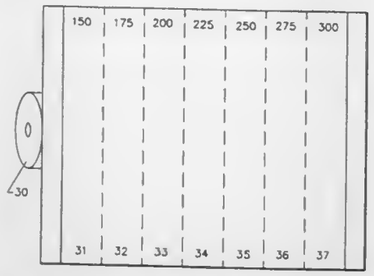
Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—895.3 **4 Claims**

1. A method of making a gravure roll that will produce a uniform coating gradient on a substrate, the method comprising:

forming a first section of cells on the circumferential surface of a cylindrical gravure roll at a constant line density while concurrently progressively reducing the cell volumes along the axial direction of the cylindrical gravure roll; and

forming a second section of cells on the circumferential surface of the gravure roll adjacent to the first section, and at a constant line density that is greater than the line density of the first section, and while substantially matching the volumes of the first cells in the second section to the last cells in the first section, and while concurrently progressively reducing the cell volumes in the second section along the axial direction of the roll.



5,608,970

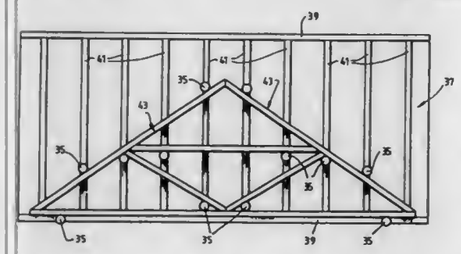
QUICK RELEASE TRUSS CLAMP AND METHOD

Reginald J. Owen, Warrnambool, Australia, assignor to Mount Shamrock Pty Ltd., Victoria, Australia

Filed Sep. 19, 1995, Ser. No. 530,455

Int. Cl.[6] B30B *3/02*

U.S. Cl. 29—897.31 **8 Claims**



1. Quick release clamp for clamping relative to a member, said member having a first surface and a second surface and wherein an aperture extends through said member between said first surface and said second surface, said clamp having:

(a) a moveable clamping jaw

(b) a threaded clamping shaft

(c) a threaded clamping nut

said jaw being attached to one end of said shaft so that it will rotate with said shaft as said shaft is rotated,

said shaft having a stop at the opposite end to said one end,

said nut being screw threadably attached to said shaft between said one end and said opposite end,

said jaw and said aperture being shaped so that in one angular rotated position of said jaw relative to said aperture said jaw can pass through said aperture but in another angular rotated position relative to said aperture said jaw cannot pass through said aperture,

said clamp being such that said nut is of a size which will span said aperture, and so said nut will bear into engagement with said first surface when said shaft extends through said aperture and said jaw is situated adjacent said second surface with said first and said second surfaces being between said nut and said jaw,

said clamp permitting clamping to said member by said jaw being screw threadably moved into engagement with said second surface on tightening said nut towards said jaw whereby clamping is effected as said nut bears into tightened engagement with said first surface,

said clamp permitting quick release by untightening said nut whereby said jaw is moved away from said second surface and so that when said nut engages said stop said jaw will be free of said second surface to angularly rotate with said shaft as said shaft is further rotated whereby said nut can be moved to an angularly rotated position where said jaw can be drawn through said aperture so said clamp can then be removed from said member.

5,608,971

APPARATUS AND PROCEDURE FOR THE MOUNTING OF A JOURNAL BOX

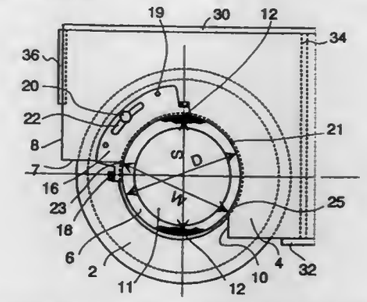
Markku Koivula, and Abti Lukkaroinen, both of Urjala, Finland, assignors to KCI Konecranes International Corporation, Hyvinkaa, Finland

Filed Dec. 1, 1994, Ser. No. 352,161

Claims priority, application Finland, Dec. 2, 1993, 935411

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—898.07 **7 Claims**



1. A method for mounting a bearing wheel (2) and a journal box (6) attached thereto to a supporting structure including a side plate (4) having a seating (21) for an outer periphery of the journal box (6), in which method a gap delimited by a first corner (23) and a second corner (25) is formed on a curb of the seating (21), through which gap the journal box (6) is fitted into the seating (21), comprising the steps of:

segmenting the outer periphery of the journal box to one side of a journal box diameter (D) to form an outer segment and a central segment;

removing the outer segment material radially outward of an interface between the segments, the distance from the midpoint of the interface through the center of the journal box to the outer periphery opposite the interface being a distance S which is smaller than the journal box diameter D;

inserting the journal box into the seating with the interface substantially parallel to the direction of insertion; and

rotating the journal box such that the interface does not lie opposite the corners.

5,608,972

STRETCHING AND CONTRACTING RAZOR CASE

Chern Tsae-Chyn, No. 21, Lane 82, Alley 422, Min-Tzwu Rd., Lu Jou Hsiang, Taipei Hsien, Taiwan

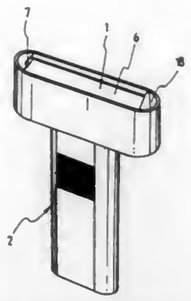
Filed Nov. 24, 1995, Ser. No. 562,380

Int. Cl.[6] B26B *21/52*

U.S. Cl. 30—526 **2 Claims**

1. A retractable shaving head razor comprising:

(a) a main body member having a substantially T-shaped contour formed by a positioning block portion and a supporting rod portion, said positioning block portion being adapted to securely engage a razor blade cartridge, said supporting rod portion extending transversely from said positioning block portion along a longitudinal direction and terminating at a free end, said supporting rod portion having formed therein adjacent said free end a longitudinally extending hollow chamber, said supporting rod portion having formed on the outer surface thereof a recess and a pivot pin projecting from said recess;



(b) a shell member displaceably coupled to said main body member, said shell member having substantially a T-shaped contour and having formed therein transversely disposed horizontal and vertical cavities for respectively receiving therein said positioning block and supporting rod portions of said main body member, said vertical cavity being in open communication with said horizontal cavity, said shell member having a sidewall defining at least a portion of said vertical cavity, said sidewall having formed thereon first and second protrusions projecting into said vertical cavity and an elongate positioning slot, said positioning slot being engaged by said pivot pin of said supporting rod portion of said main body member;

(c) a compressible member received within said hollow chamber of said main body member supporting rod portion for maintaining said main body member in spring biased relation to said shell member; and,

(d) a lock member pivotally coupled to said pivot pin of said main body member supporting rod portion, said lock member having formed respectively at each of a first pair of distal peripheral portions thereof a notched section and on each of a second pair of distal peripheral portions thereof a smooth section, each said notched section being adapted to limit the longitudinal displacement of said main body member in a first direction relative to said shell member upon engagement with said first protrusion of said shell member sidewall and to limit the axial displacement of said main body member in a second direction relative to said shell member upon engagement with said second protrusion of said shell member sidewall, each said smooth section being adapted for angular deflection about said pivot pin upon engagement with said first and second shell member sidewall protrusions;

whereby said main body member may be retractably displaced longitudinally relative to said shell member between a shaving position and a stowed position.

5,608,973

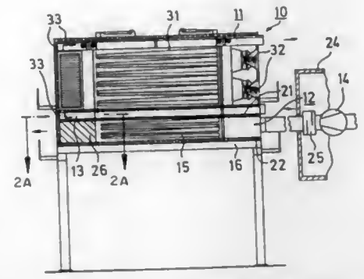
ARRANGEMENT FOR LOWERING THE NOISE LEVEL OF A COOLING LAYER IN A PULP DRYER AND A PULP DRYER

Bertel Karlstedt, Parainen, and Henrik Pettersson, Mynämäki, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jun. 20, 1995, Ser. No. 492,657
Claims priority, application Finland, Jun. 29, 1994, 943115
Int. Cl.[6] F26B *25/06*
U.S. Cl. 34—60 **20 Claims**

1. In a cooling layer of a pulp dryer including a top wall and a bottom wall spaced therefrom defining a space, means for passing a fibrous web through said space and nozzles arranged in said space and through which air is blown to support and dry the web, the improvement comprising

each of said top wall and said bottom wall comprising sheet means and thermal insulation means situated adjacent said sheet means and exterior of said space, said sheet means comprising apertures formed therein for allowing sound generated in said space to be passed into said thermal insulation means to be absorbed such that said thermal insulation means act as sound attenuation means.

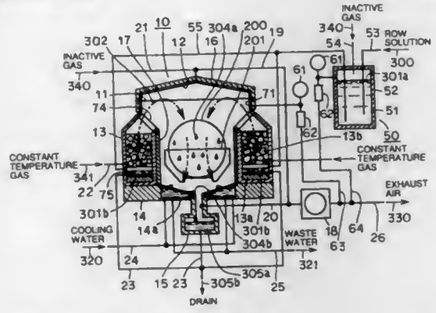


5,608,974

STEAM DRYING APPARATUS, CLEANING APPARATUS INCORPORATING THE SAME, AND STEAM DRYING PROCESS

Hiroshi Tanaka; Nobuaki Doi; Masashi Omori, and Hiroaki Ishikawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan

Filed Sep. 11, 1995, Ser. No. 526,478
Claims priority, application Japan, Nov. 7, 1994, 6-272102; Jan. 12, 1995, 7-003247
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—78 **24 Claims**



17. A cleaning apparatus comprising:

a loader/unloader chamber for loading and unloading a semiconductor substrate;

a chemical processing tank mounted adjacently to said loader/unloader chamber, for chemically processing said semiconductor substrate;

a water washing tank mounted adjacently to said chemical processing tank, for water-washing said semiconductor substrate; and

a steam drying means mounted adjacently to said water washing tank, for drying said semiconductor substrate by exposing said semiconductor substrate to processing solution vapor;

said steam drying means comprising:

(a) a process chamber having an unloading opening at the upper end thereof for taking in and out said semiconductor substrate, and for loading said semiconductor substrate; and

(b) a lid for closing said loading opening of said process chamber from above to hermetically close said process chamber;

(c) said inner wall surface of said process chamber having a first surface which is formed in the lower part thereof and is substantially in parallel with the direction of gravity, and a second surface which extends from the upper end portion of said first surface and bent outwards to face the inner wall surface of said lid;

(d) said second surface being provided with a steam supply port for supply said processing solution vapor into said process chamber; and

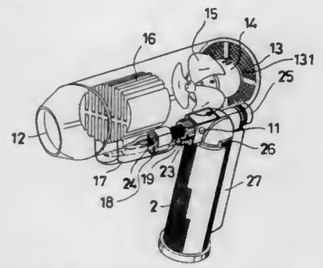
(e) said steam drying means further having a steam supply means connected to said steam supply port, for supplying said processing solution vapor into said process chamber.

5,608,975

COLLAPSIBLE AND PORTABLE HAIR DRYER WITH COMBUSTION HEAT SUPPLY SYSTEM

Jong-Yes Hsu, No. 31, Lane 32, Chiang Nan 10th Street, Tao Yuan Shih, Tao Yuan Hsien, Taiwan

Filed May 29, 1996, Ser. No. 657,048
Int. Cl.[6] A45D *00/00*
U.S. Cl. 34—97 **4 Claims**



1. A collapsible and portable hair dryer with gas combustion heat supply system, in combination:

a main body housing a motor, a fan, and a plurality of bladelike portions therein;

the bladelike portions being arranged in front of the fan; the fan being rotated by the motor, which is controlled by a motor switch and energized with an electric power source installed in the hair dryer; the bladelike portions allowing air blown from the fan to pass through;

a handle part provided to hold gas therein;

a gas pipe fitted on a top of the handle part;

a combustion chamber under the bladelike portions;

a heat adjustment screw, connected with a front end of the gas pipe, for one to set up a temperature value of the hair dryer;

a flame nozzle fitted in front of 'the heat adjustment screw;

a flame guide pipe, communicating with the combustion chamber, for flame of gas under combustion to pass therethrough; said flame of gas under combustion heating up the bladelike portions to heat the air passed through the bladelike portions;

a sliding rod controlling outflow quantity of gas;

a temperature sensor, installed inside the flame guide pipe, and operationally associated with both the sliding rod and the heat adjustment screw for sensing a current temperature and adjusting the current temperature in accordance the set temperature value of the heat adjustment screw by moving the sliding rod to control the gas outflow quantity;

a button fitted on the handle part to start gas combustion;

an indicating light fitted on the bandle part to indicate the gas combustion and running of the motor.

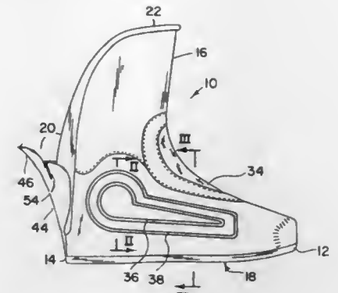
5,608,976

INNER SHOE FOR SKI-BOOTS

Antonello Marega, and Mario Sartor, both of Volpago, Italy, assignors to Tecnica Spa, Treviso, Italy

Filed Dec. 5, 1994, Ser. No. 353,334
Claims priority, application Italy, Dec. 7, 1993, TV93A0111
Int. Cl.[6] A43B *23/07*
U.S. Cl. 36—10 **19 Claims**

1. In an inner shoe (**10**) for being placed inside a rigid shell of a ski-boot, said inner shoe comprising a sole (**18**) and an upper (**16**) which includes a padding (**24**) enclosed between an inner lining (**26**) and outer lining (**28**), the improvement wherein the inner shoe (**10**) is of a rear-entry type having a rear opening (**20**) extending perpendicular to the sole (**18**) starting from a top end (**22**) of the upper (**16**) and extending toward a sole area, said padding (**24**) having at least one slit (**30,32**) formed at a front part of the inner shoe at an area corresponding to a wearer's instep and at least one of the inner and outer linings (**26,28**) being elastic with said elastic of said at least one of the inner and outer lining spanning an otherwise open edge of said at least one slit so as to extend across the edge the slit to thereby cover the edge of the slit.

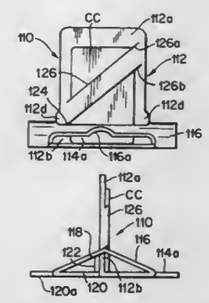


5,608,977

ERECTABLE PERISCOPING DISPLAY DEVICE

Ronald P. Burtch, 4226 Asherton Dr., Charlotte, N.C. 28210, and Irving M. Koltz, 175 Bamburgh Cir., Scarborough, Ontario, Canada

Continuation-in-part of Ser. No. 263,337, Jun. 21, 1994, Pat. No. 5,479,732. This application Nov. 15, 1995, Ser. No. 555,987
Int. Cl.[6] G09F *1/06*
U.S. Cl. 40—124.15 **25 Claims**



1. A display device comprising a support portion and an integral display portion adjoined to said support portion, said display and support portions being relatively movable between a first, planar configuration wherein said display portion is substantially covered by said support portion, and a second, erected configuration wherein said display portion extends upwardly from a base formed by said support portion, said support portion including first and second pairs of serially arranged panels defined by fold lines and formed integrally with said display portion so that, in said planar configuration, said pairs of panels lie flat and overlie respective faces of said display portion and so that in said erected configuration said pairs of panels are disposed at an angle to form said base for said display portion, adjacent panels of said pairs of panels being joined along a central fold line having a central opening therein through which said display portion periscopes during said relative movement of said display and support portions from said planar configuration to said erected configuration, non-adjacent

panels of said pairs of panels lying flat on a supporting surface in said erected configuration of the device, and said device including retaining means for retaining the device in the erected configuration upon movement thereof to said erected configuration from said planar configuration.

5,608,978

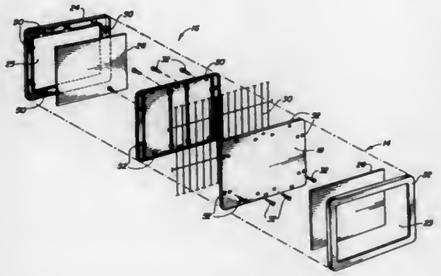
DISPLAY CARD HOLDER

Thomas E. Sawyer, and James E. Hoback, both of Valencia, Calif., assignors to T.V. Fanfare Publications, Inc., Valencia, Calif.

Continuation of Ser. No. 93,514, Jul. 19, 1993, Pat. No. 5,363,575, which is a continuation of Ser. No. 855,451, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 398,702, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,156, May 8, 1989, abandoned. This application Aug. 19, 1994, Ser. No. 293,041

Int. Cl.[6] G09F *3/00*

U.S. Cl. 40—308 **20 Claims**



1. A display card holder for receiving a display card for use in combination with a shopping cart, the display card holder comprising:
a first backing member;
coupling means for coupling said first backing member to the cart;
a first outer frame member having a periphery of substantially the same size and shape of at least a portion of the periphery of the first backing member; and
a first plurality of fasteners independent of the coupling means, for releasably fastening the first outer frame member to the first backing member, each fastener comprising a first hook carried by the first outer frame member, said fastener further comprising a second hook carried by the first backing member and positioned to be engaged by the first hook so as to fasten the first outer frame member and the first backing member together and to effect clamping a card at its periphery between the first outer frame and the first backing member, wherein at least one of said first and second hooks is movable to disengage the other hook so as to allow the first outer frame member to be released from the first backing member.

5,608,979

MULTI-MESSAGE SIGN

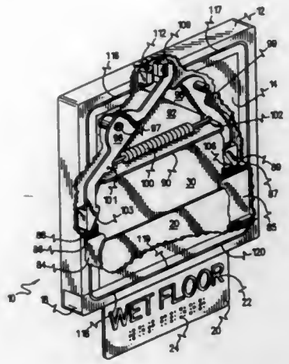
Michael V. Johnson, 1602 SW. 2nd St., Bentonville, Ark. 72712

Filed Jun. 17, 1994, Ser. No. 261,737

Int. Cl.[6] G09F *11/30*

U.S. Cl. 40—491 **30 Claims**

1. A sign, comprising:
a frame;
at least one sign mounted for sliding movement in said frame between a first position in which indicia on said sign is at least partially concealed and a second position in which indicia on said sign is exposed; and



a retaining mechanism for selectively retaining said sign in said first position, said retaining mechanism concealed to inhibit tampering and including an access aperture through which an implement must be inserted to release said retaining mechanism.

5,608,980

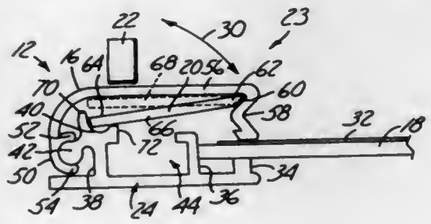
TAMPER-RESISTANT DISPLAY HOLDER

Gary D. Pangerl, Braham, Minn., assignor to Clearr Corp., Minnetonka, Minn.

Filed Oct. 23, 1995, Ser. No. 546,946

Int. Cl.[6] G09F *1/12*

U.S. Cl. 40—793 **22 Claims**



1. A display holder comprising:
at least one frame section having an elongated front member and an elongated back member which are generally parallel to one another and have first and second lateral ends, wherein first ends of the front and back members are interconnected with one another in a pivotal relationship and wherein the front member has a first groove at its second end and the back member has a second groove at its first end, with the first and second grooves generally opposing one another; and
a locking tab having first and second opposite ends extending between the first and second grooves, respectively, wherein the first end of the tab is pivotally attached in the first groove such that the second end of the tab is movable relative to the back member between a locked position in which the second end of the tab is engaged in the second groove and an unlocked position in which the second end of the tab is disengaged from the second groove, and wherein the locking tab is formed of a magnetically attractable material.

5,608,981

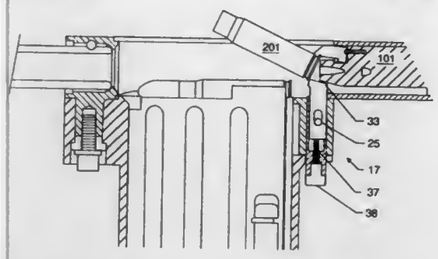
SINGLE SPRING BOLT LOCK AND CARTRIDGE EJECTOR

Michael M. Canaday, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1995, Ser. No. 514,576

Int. Cl.[6] F41A *15/16*

U.S. Cl. 42—25 **4 Claims**



2. A combination bolt lock and cartridge ejector mechanism comprising:
means for locking a bolt in a rearward position;
means for ejecting a cartridge inserted into said means for locking;
a single spring located within said means for locking, said spring operating both said means for locking and said means for ejecting; and
a single retaining pin securing said locking and said ejecting means adapted for attachment to a small firearm.

5,608,982

METHOD AND APPARATUS FOR AN ELECTRIC ARC FIRING SYSTEM FOR CASELESS AMMUNITION

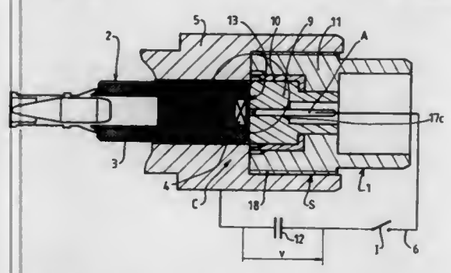
Franck Bouvard, Bourges, and Françoise Simon, Plaimpied, both of France, assignors to Giat Industries, Versailles, France

Filed Dec. 5, 1995, Ser. No. 567,584

Claims priority, application France, Dec. 12, 1994, 94 14912

Int. Cl.[6] F41A *19/00*

U.S. Cl. 42—84 **15 Claims**



1. A firing system for a caseless munition having a primer, the caseless munition being discharged by an electric arc in a vicinity of the primer, the firing system comprising:
a firing chamber that supports the munition;
an anode;
a support fastened to a rear portion of the firing chamber to ensure sealing for combustive gases, the support including an electrically insulating cylindrical body surrounding the anode, such that a base of the munition in the chamber presses on a facing surface of the electrically insulating cylindrical body, a surface area of the facing surface being approximately equal to a surface area of the base of the munition, the support further including a ring made of an elastically deformable material surrounding the electrically insulating cylindrical body and a ring shaped cap fitted around the rings; and
a cathode electrically connected to the anode, the cathode including parts of the firing chamber.

5,608,983

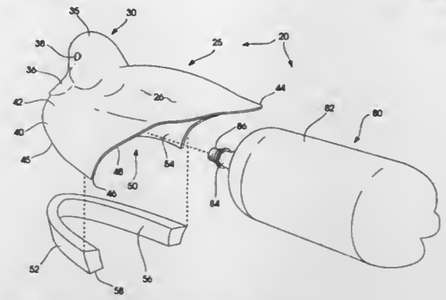
WATERFOWL DECOY SYSTEM

George G. Adams, 60 Meadowbrook, Marion, Ark. 72364

Filed Sep. 11, 1995, Ser. No. 526,692

Int. Cl.[6] A01M *31/06*

U.S. Cl. 43—3 **5 Claims**



2. A waterfowl decoy system comprising:
a decoy comprising a hollow shell having an exterior that resembles a waterfowl and a hollow interior;
a flotation device adapted to be removably coupled in said shell interior for floating said decoy system, said flotation device comprising a bottle having a threaded end; and,
said interior comprises a threaded receptacle adapted to be at least temporarily threadably coupled to said threaded end and said interior further comprises an arcuate, foam subframe releasably, frictionally engaging said flotation device.

5,608,984

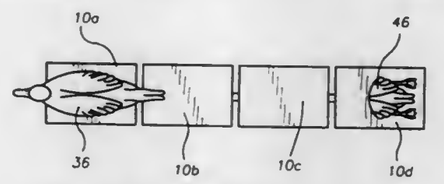
WATERFOWL DECOY SYSTEM

Russell W. Shaffer, 29W 537 Country Ridge Dr., Apt. A, Warrenville, Ill. 60555

Filed Mar. 28, 1996, Ser. No. 623,138

Int. Cl.[6] A01M *31/06*

U.S. Cl. 43—3 **12 Claims**



1. A waterfowl decoy system comprising:
a plurality of combined feed decoy/anchor members each having an outer surface pigmented with a color that contrasts with a water bottom and having a weight-to-volume ratio sufficient to cause each of said plurality of combined feed decoy/anchor members to sink to said water bottom of a body of water, each of said plurality of combined feed decoy/anchor members having connecting rings extending from opposed side walls thereof in a manner to allow two or more of said plurality of combined feed decoy/anchor members to be linked end to end with a connecting mechanism, each of said plurality of combined feed decoy/anchor members having an upper surface thereof having at least one threaded eyebolt receiving aperture formed therein and a lower surface having a ballast receiving

chamber member secured thereto, said ballast receiving chamber member having a sealable ballast cavity formed therein and filled with a ballast material;

a plurality of threaded eyebolts threaded to engage said eyebolt apertures, each eyebolt having an eye aperture therethrough through which a flexible tether is positionable;

a feeding duck decoy member having a buoyant feeding-bird shaped, first decoy portion, a first ballast portion secured beneath said first decoy portion and a first tether line securable to said eye aperture of one of said plurality of eyebolts; and

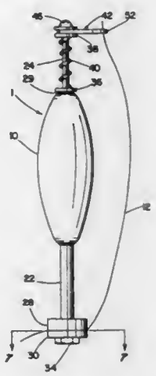
a swimming duck decoy member including a buoyant, full-bird shaped, second decoy portion, a second ballast portion secured beneath said second decoy portion and second tether line securable to said eye aperture of one of said plurality of eyebolts.

5,608,985

FISHING LINE ACCESSORY RELEASE DEVICE

Edward J. Kainec, 9460 Ledge Acres Rd., Macedonia, Ohio 44056

Filed Jun. 7, 1995, Ser. No. 472,498
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—43.1 **16 Claims**



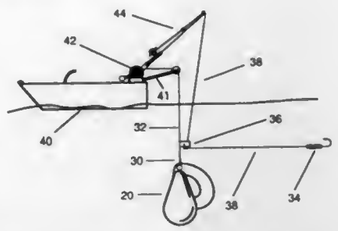
15. A fishing line accessory gripping and releasing device comprising: a columnar sleeve having first and second opposite ends; a rod received within said sleeve to slide freely therein, said rod having first and second opposite ends projecting beyond corresponding opposite ends of said sleeve; a compressible spring having first and second opposite ends, encircling said first opposite end of said rod, said spring's second opposite end resting on said first opposite end of said sleeve; a pressure plate secured on said first opposite end of said rod, above and adjacent to said spring's first opposite end, placing said spring in compression between said pressure plate and said first opposite end of said sleeve; a first elastoplastic planar disk permanently secured about the said second opposite end of said sleeve; a second elastoplastic planar disk permanently secured about said second opposite end of said rod and concentric to said first elastoplastic planar disk, said elastoplastic planar disks being placed in compression by said spring, wherein said disks are adapted to receive a fishing line held therebetween and said disks are separable responsive to tension applied to said fishing line.

5,608,986

TROLLING WEIGHT FOR DOWNRIGGER TYPE FISHING SYSTEMS

Cecil R. Spurgeon, Richmond, and Arthur H. Barnes, Sebastopol, both of Calif., assignors to Joe/Art, Inc., Sebastopol, Calif.

Filed Oct. 27, 1995, Ser. No. 549,248
Int. Cl.[6] A01K *91/08;95/00*
U.S. Cl. 43—43.13 **6 Claims**



1. A device for lowering a downrigger trolling cable to desired fishing depths comprising

(a) a main body including a top generally hemispherical end portion, a bottom generally hemispherical end portion which is larger than said top generally hemispherical end portion, and a generally cone-shaped portion between the top generally hemispherical end portion and the bottom generally hemispherical end portion,

(b) a fin for stabilizing movement of said device when pulled through water, said fin being attached to said top generally hemispherical end portion and to an intermediate portion of said main body whereby said fin curves around said body,

(c) a trolling cable attachment eye in said fin above said top generally hemispherical end portion, and

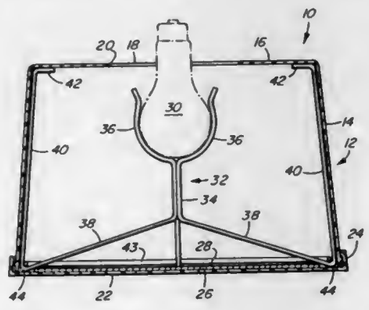
(d) an opening between said fin and said generally cone-shaped portion whereby said fin functions as a handle for the device.

5,608,987

FLY AND INSECT TRAP

Frank Meyer, Box 4785, Williams Lake, British Columbia, Canada

Filed May 30, 1995, Ser. No. 452,501
Int. Cl.[6] A01M *1/04*
U.S. Cl. 43—113 **3 Claims**



1. A fly and insect trap for attachment to a depending light bulb, comprising:

an enclosure of translucent plastic material for installation around the light bulb;

said enclosure having an upwardly open annular top defining an opening for receiving the bulb into the interior of said enclosure with said top spaced outwardly from the bulb to form therebetween an inlet gap the entry of flies and insects into the interior of said enclosure, a downwardly divergent frusto-

conical side wall and a bottom separate from said side wall and releasably engageable with said side wall; and

an array of wires;

said wires forming a plurality of prongs distributed in an upwardly open array;

said prongs being resiliently deflectable outwardly of said army for sprung engagement with the bulb; and

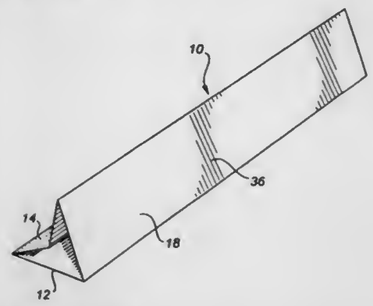
said wires including upwardly extending portions adjacent and in supporting relationship with said side wall and support portions underlying and supporting said annular top of said enclosure.

5,608,988

METHOD OF TRAPPING FLIES AND FLY TRAP

Earl Dowling, Lacombe, and Todd Hummelle, Ponoka, both of Canada, assignors to Allbrook Developments Ltd., Ponoka, Canada

Filed Jan. 16, 1996, Ser. No. 585,899
Int. Cl.[6] A01M *1/14*
U.S. Cl. 43—114 **4 Claims**



3. A fly trap, comprising:

a tube triangular in cross-section having a first side, a second side and a third side;

an adhesive layer on the first side, the adhesive layer being of sufficient strength that when a fly comes in contact with the adhesive layer it is held securely to the first side, the first side having a longitudinally extending centrally positioned fold line which divides the first side into two substantially equal halves, such that the first side is foldable along the fold line into a stored position with the two halves adhered together by the adhesive layer;

the second side having at least one adhesive spot covered by a peel-off sheet, such that by removing the peel-off sheet to expose the at least one adhesive spot, the second side is adhered to a surface; and

the third side having a decorative finish.

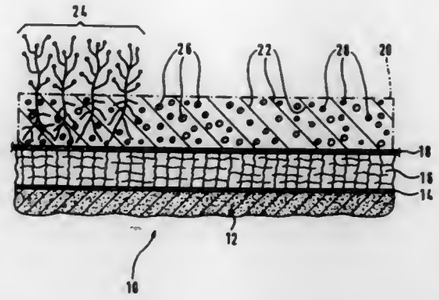
5,608,989

PLANT GROWTH SYSTEM FOR THE ENHANCEMENT OF THE ENVIRONMENT

Wolfgang Behrens, Trespenmoor 25, D-27243 Gross Ippener, Germany

Filed Apr. 6, 1995, Ser. No. 417,904
Claims priority, application Germany, Apr. 16, 1994, 44 13 260.3
Int. Cl.[6] A01G *9/00*
U.S. Cl. 47—65.9 **8 Claims**

1. A system to support plant growth during the landscaping of an artificial surface that normally is incapable of supporting plant growth consisting essentially of (a) a drainage and venting layer, (b) a separation layer located on top of said drainage and venting layer, and (c) a substrate layer having a minimum thickness of 0.5 cm. located on top of said separation layer comprising an effective concentration of solid particles of activated carbon dispersed therein that are capable of absorbing hazardous substances from the surrounding atmosphere, and an effective concentration of living microorganisms dispersed therein that are capable of converting said hazardous substances into non-hazardous substances that are capable of being utilized during the growth of plants that are rooted in said substrate layer.

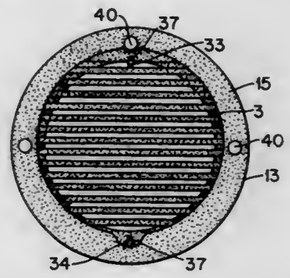


5,608,990

REMOVABLE LIGHT LIMITING BLIND ASSEMBLY

James H. Kyle, Keene, N.H., assignor to Pompanette, Inc., Charlestown, N.H.

Filed Sep. 7, 1995, Ser. No. 524,545
Int. Cl.[6] E06B *7/02*
U.S. Cl. 49—38 **6 Claims**



1. A removable light limiting blind assembly for controlling the amount of light which passes through an opening in a vessel comprising:

a port or window in the opening in the vessel and resilient gasket means surrounding the opening and sealingly engaging said port or window;

a fixed panel having a plurality of light transmitting and light deflecting areas thereon and a movable panel superposed on said fixed panel and having a plurality of light transmitting and light deflecting areas thereon, means for moving said movable panel within a plane defined thereby and with respect to said fixed panel in a first direction to bring the light deflecting areas of said movable panel into registration with the light transmitting areas of said fixed panel to thereby minimize the amount of light which passes through said panels and for moving said movable panel within a plane defined thereby and with respect to said fixed panel in an opposite direction to bring the light deflecting areas of said movable panel into registration with the light deflecting areas of said fixed panel to thereby maximize the amount of light which passes through said panels;

means including said gasket means for positioning and maintaining said fixed and movable panels within the opening in the vessel and adjacent to said window; and

means including the resiliency of said gasket means for removing the fixed and movable panels from said opening.

5,608,991

FLEXIBLE FORM MEMBER AND METHOD OF FORMING THROUGH HOLE BY MEANS OF THE FORM MEMBER

Senji Yamashita, 26-1, Nishiura-cho, Naginotsuji, Yamashina-ku, Kyoto-shi, Kyoto 607, Japan

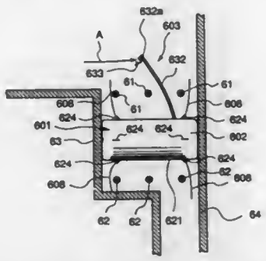
PCT No. PCT/JP94/00382, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/27002, PCT Pub. Date Nov. 24, 1994

PCT Filed Mar. 9, 1994, Ser. No. 367,270

Claims priority, application Japan, May 18, 1993, 5-115976

Int. Cl.[6] E04G *11/04;* **E04H** *15/20*

U.S. Cl. 52—2.17 **10 Claims**



1. A flexible form member comprising; a hollow-shaped flexible body having an openable fluid introducing and discharging means for permitting fluid to be introduced into and discharged from the body, and a detachable cover, said cover having an outer surface and a plurality of connecting elements on its outer surface to connect a fixing member for securing itself.

5,608,992

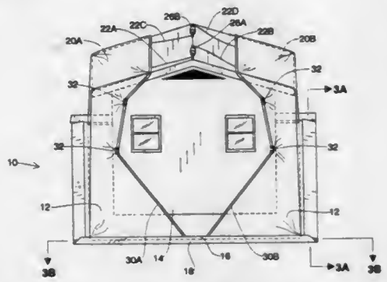
FIRE RESISTANT HOUSE COVER

April Floyd, 18433 Bohnert Rd., Rialto, Calif. 92377

Filed Jun. 21, 1995, Ser. No. 493,354

Int. Cl.[6] E04B *1/34*

U.S. Cl. 52—3 **7 Claims**



1. A fire isolation device for protection of a fire prone free standing structure comprising:

a. a left tarp and a right tarp fabricated from a fire resistant material;

b. a plurality of support members connected to the left tarp and to the right tarp and being capable of moving to an upward position where the left tarp and the right tarp completely enclose the free standing structure from a downward position where the left tarp, the right tarp and the support members expose the free standing structure;

c. a means for moving the plurality of support members connected to the left tarp and the right tarp from the downward position to the upward position enclosing the free standing structure therein; and

d. a storage encasement disposed around the perimeter of the free standing structure and containing the left tarp, the right tarp and the plurality of support members when the support members are in the downward position.

5,608,993

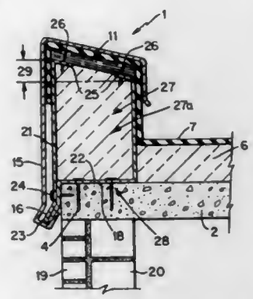
MINI-WALL PARAPET FOR ROOF EDGING OR COPING

John G. Argiropoulos, 4741 N. Rock Spring Rd., Arlington, Va. 22207

Filed May 1, 1996, Ser. No. 641,548

Int. Cl.[6] E04D *1/36*

U.S. Cl. 52—96 **10 Claims**



1. A mini-wall parapet structure for the edge of a building roof, said roof including an insulation layer and a roof membrane to prevent entry of water into said building comprising:

a. An elongated generally U-shaped in cross section sheet metal member including two vertical side walls, and a bottom wall at a first level joining said two vertical side walls, forming lower corners;

b. One of said lower corners of said generally U-shaped sheet metal member being formed of a continuous extension from one of said vertical side walls of said generally U-shaped sheet metal member, and from an extension of said bottom wall of said generally U-shaped sheet metal member;

c. Said extensions being folded together and extended vertically downward below said first level of said bottom wall of said generally U-shaped sheet metal member to form a cleat for said mini-wall parapet structure;

d. The tops of said two vertical side walls of said generally U-shaped member being bent inwardly to provide a supporting and attaching structure;

e. A top member attached to said tops of said two vertical side walls;

f. Said top member attached to said side walls by convenient attaching means, and providing rigidity to said mini-wall parapet.

5,608,994

EARTH ANCHOR FOR LIGHT STANDARD APPARATUS

E. Ray Carter, 2515 N. 7th St., Phoenix, Ariz. 85006

Division of Ser. No. 238,001, May 3, 1994, abandoned. This application Feb. 1, 1996, Ser. No. 595,098

Int. Cl.[6] E02D *5/80;5/74;* **E04H** *15/62*

U.S. Cl. 52—156 **6 Claims**

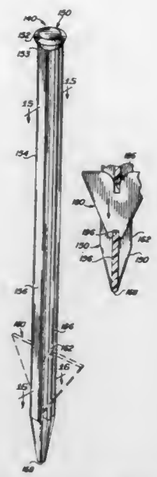
1. Earth anchor apparatus comprising in combination:

stake means to be driven into the earth, including

a head defining a top end,

a bottom point remote from the top end,

a shank extending between the head and the bottom point, and



a slot in the shank having an upper portion and a lower portion; and

stabilizer means extending through the slot in the shank for stabilizing the stake means in the earth, including

a generally flat body,

a top slot in the body for receiving a portion of the shank adjacent to the upper portion of the slot in the shank, and

a bottom slot in the body remote from the top slot for receiving a portion of the shank adjacent to the lower portion of the slot.

5,608,995

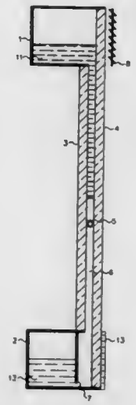
SOLAR-ACTUATED FLUID WINDOW SHUTTER

Rex M. Borden, 8158 Kenova St., San Diego, Calif. 92126

Filed Aug. 15, 1995, Ser. No. 518,556

Int. Cl.[6] E06B *7/00*

U.S. Cl. 52—171.3 **6 Claims**



1. A device for automatic regulation of illumination comprising

(a) Two essentially vertical parallel transparent panes having an upper edge, a lower edge, and two vertical edges separated by a distance less than their thickness and sealed at said vertical edges to form a closed cavity between said panes,

(b) A gas tight lower reservoir containing gas and connected at its bottom to a lower edge of said cavity in a manner suitable for fluid flow between said cavity and said lower reservoir,

(c) A gas tight upper reservoir containing gas and connected at its bottom to an upper edge of said cavity,

(d) An attenuation fluid confined within said cavity and said upper and lower reservoirs suitable to reduce intensity of illumination passing through said attenuation fluid,

(e) A transparent light-transmissive fluid with density different from said attenuation fluid and confined with it, said transmissive fluid being immiscible with said attenuation fluid,

(f) Means to isolate one of the two reservoirs from the heating effects of sun light, and

(g) Means to expose the opposite reservoir to the heating effects of sun light.

5,608,996

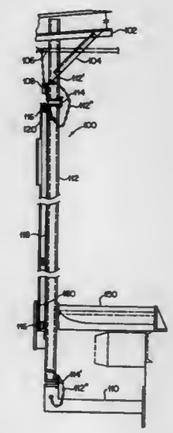
SHELTER WALL ASSEMBLY FOR TRUCK/TRAILER TERMINAL DOCKS

Thomas R. Brockman, Kenton, and Mark Dillon, Upper Sandusky, both of Ohio, assignors to Fairborn USA Inc., Upper Sandusky, Ohio

Filed Oct. 17, 1995, Ser. No. 544,217

Int. Cl.[6] E04H *14/00*

U.S. Cl. 52—173.2 **5 Claims**



1. In a warehouse building having side-by-side dock doors to receive open truck/trailers for loading and unloading, the combination with a building canopy of connected wall mounted gap fill closures (**100**), each comprising:

a) spaced apart common base frames (**110**), anchored to a building wall beneath adjacent dock doors, the base frames (**110**) bearing vertical tubing supports (**112**) upon which adjacent side curtain frames (**118—118'**) are respectively pivoted for transverse rotation, each said tubing support (**112**) having a top extension (**112'**) and displaceable bottom which rests upon the base frame (**110**), aligning shear pin connections (**114—114'**) and safety chains (**112"**) linking the top extension (**112'**) to the tubing support (**112**) and to the base frame (**110**) respectively;

b) resilient left-hand and right-hand side curtains (**120**) each curtain being swingably mounted at an anchor end (**122**) upon adjacent side curtain frames (**118—118'**), each side curtain (**120**) being cantilevered at a free end thereof;

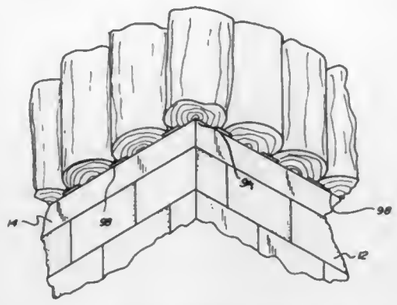
c) a summer/winter side curtain lockout assembly (**140**), mounted upon the tubing support (**112**) the lockout assembly having supporting connection with side-by-side adjacent curtain frames (**118—118'**), said lockout assembly comprising a removable insert pin (**142**) bearing in and through supported side curtain frames (**118—118'**).

5,608,997

VERTICAL LOG BUILDING AND METHOD FOR CONSTRUCTING THE SAME

Alexander E. Mahowich, P.O. Box 223, Van Anda, British Columbia, Canada

Filed Mar. 4, 1996, Ser. No. 610,203
Int. Cl.[6] E04B *1/10*
U.S. Cl. 52—233 **12 Claims**



1. A new and improved vertical log building for use as housing or similar enclosed structure comprising in combination:

a generally rectangular foundation having a floor plate being attached along an upper portion of the foundation and anchored thereto by anchor bolts;

a plurality of wall structures with each of the wall structures being formed of a plurality of vertically oriented logs disposed side by side and a plurality of corner logs, each of the wall structures meeting at one of the corner logs and being coupled thereto, each log of the wall structures being secured to the floor plate;

the plurality of vertically oriented logs each having a ceiling end and a floor end, each of the vertical logs having two sides with each side having a pair of rectangular, longitudinally extending slots therein, each of the plurality of vertical logs having an L-shaped notch at the floor end and the ceiling end for allowing each vertical log to have an outer side and an inner side, each L-shaped notch having a flat base and a notch back, the flat base of the floor end being capable of resting upon a perimeter board of the foundation while the notch back of the floor end being positioned against the floor plate, each notch back of each vertical log being fastened to the floor plate with a lag bolt;

the corner logs each having a floor end and a ceiling end, each of the corner logs having a frontal area with a plurality of rectangular, longitudinally extending slots therein, the plurality of slots forming two outer slots and two inner slots, the floor end and the ceiling end of each of the corner logs having a generally V-shaped notch therein, each V-shaped notch having a V-shaped base and a pair of sides, the V-shaped base of the floor end capable of resting upon the perimeter board and the pair of sides of the floor end being positioned against a corner of the floor plate, each side of the V-shaped notch of the floor end being attached to the floor plate with lag bolts;

a plurality of rigid planks having a predetermined width of about 2½ to 3 inches, one of the planks being slidably positioned within the slots of adjacent vertical logs, with another of the planks being slidably positioned within another of the slots of the same adjacent vertical logs, one of the plurality of planks being positioned within the slots of adjacent vertical logs over and over again for formation of at least one of the plurality of wall structures, the one wall structure having an inner space being formed between the planks positioned within the parallel slots of the adjacent logs;

one of the planks being slidably positioned within the inner slots of each corner log and the slot of an adjacent vertical log, with another of the planks being slidably positioned within the outer slots of the same corner log and the slot of another adjacent vertical log for joining of the plurality of wall structures, the planks, when interlocking the wall structures to each corner log forming another inner space between the joining of the wall structures with each corner log;

a plurality of horizontal beams being positioned within the L-shaped notch of the ceiling end of each vertical log; and

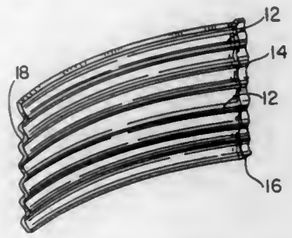
finishing boards being positioned between the plurality of horizontal beams along an inner side of the vertical logs and the corner logs.

5,608,998

PANEL FOR LINING MANHOLES AND THE LIKE

James M. Hume, 2555 CR 13A, S. Elkton, Fla. 32033

Filed Mar. 8, 1995, Ser. No. 400,900
Int. Cl.[6] E04B *2/08*; E04G *11/04*
U.S. Cl. 52—245 **3 Claims**



1. A panel for building a liner for lining a manhole in situ, said panel comprising:

a substantially rectangular plate having opposite ends, an upper edge, a lower edge, a concave arcuate cross-section and corrugated ribs, said ribs running parallel to said upper and lower edges of said panel, said lower edge having a U-shaped channel, said upper edge having a lip with an enlarged portion adapted to be snap-fit into said U-shaped channel; and one of said opposite ends of said panel including a lap channel for receiving the other of said opposite ends of said panel; whereby a plurality of said panels may be stacked in an upper edge to lower edge relationship and may be placed in an opposite end to opposite end relationship to form an annular tubular member of predetermined height.

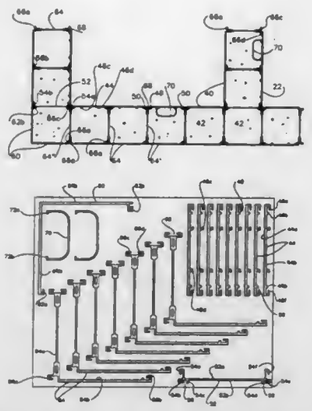
5,608,999

PREFABRICATED BUILDING PANEL

Bernard McNamara, 122, rue Guibault, Longueuil (Québec), Canada

Filed Jul. 27, 1995, Ser. No. 507,881
Int. Cl.[6] E04B *2/28*; *2/72*
U.S. Cl. 52—275 **4 Claims**

1. An assembly of extruded thermoplastic structural components for use in the construction of the upright side walls and roofing of a building, each structural component including an elongated rigid sheet member provided with at least two integral lengthwise edgewise rail members, said structural components including first and third flat wall structural components and second and fourth elbowed corner structural components, wherein the second elbowed corner structural components are provided with at least three integral lengthwise rail members, and wherein a few of said structural components are releasably slidingly interlocked with one another about their said rail members, without tools being required, to form hollow elongated panels wherein each said hollow panel defines a main body, including a flat exterior face and a flat interior face, and circumscribing a generally closed inner enclosure cell, said inner cell for receiving concrete to be poured and said hollow panel body adapted to withstand the load of a column of concrete poured therein; said sliding interlock engagement between said few structural components forming said hollow panels defining continuous lengthwise adjustment means for one said structural component relative to the other of said few structural components, said hollow panels releasably interlocking with adjoining hollow panels successively to form a continuous wall structure; and wherein said structural components in their disassembled state released from one another are compactly stackable in the smallest volume of storage whereby shipping costs from the home country manufacture to the local building site are very low.

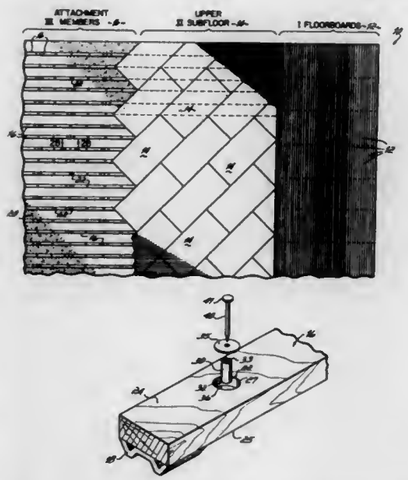


5,609,000

ANCHORED/RESILIENT HARDWOOD FLOOR SYSTEM

Michael W. Niese, Cincinnati, Ohio, assignor to Robbins, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 912,310, Jul. 13, 1992, Pat. No. 5,388,380. This application Feb. 14, 1995, Ser. No. 388,388
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—480 **39 Claims**



1. A floor system supporting a wear surface above a non-portable base comprising:

an elongated attachment member with upper and lower surfaces;

at least two compressible pads contacting the lower surface and supporting the attachment member in spaced relation above the base; and

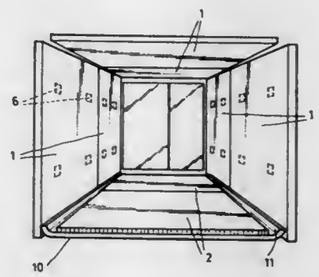
a fastener arrangement for anchoring the attachment member to the base in a manner which does not hold the pads in a precompressed state when the floor system is unloaded, said fastener arrangement being located at spaced positions along the attachment member and enabling said member to be downwardly deflectable but not upwardly raisable beyond a static position, wherein the attachment member has at least one vertically oriented bore extending therethrough from the upper surface to the lower surface, said bore having an enlarged-diameter upper portion and a reduced-diameter lower portion and said fastener arrangement extends through said bore.

5,609,001

MODULAR INSULATING UPHOLSTERY FOR CLOSED CHAMBER

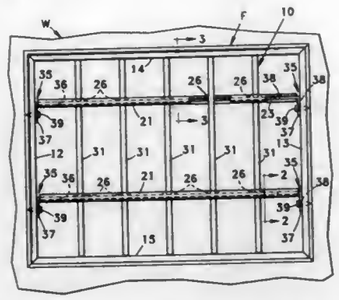
Jacques R. Pantaloni, Marseilles, and Roger L. Martin, La Gavotte, both of France, assignors to Enthalpy S.A., Marseilles, France

PCT No. PCT/FR93/00018, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO93/18335, PCT Pub. Date Sep. 16, 1993
PCT Filed Jan. 8, 1993, Ser. No. 295,730
Claims priority, application France, Mar. 9, 1992, 92 03070
Int. Cl.[6] E04B *1/74*
U.S. Cl. 52—506.02 **13 Claims**



1. The combination comprising modular insulating means and a closed chamber having peripheral walls, a ceiling and a floor, the closed chamber having standardized dimensions for said walls, ceiling and floor, said modular insulation means comprising a plurality of prefabricated insulating panels which are dimensioned to cover the walls, ceiling and floor of the closed chamber, and a plurality of spacer blocks of substantially smaller size than said panels, said spacer blocks being interposed between said panels and said peripheral walls and ceiling of the closed chamber to maintain said panels in spaced relation from said peripheral walls and said ceiling, said spacer blocks being made of a material which is substantially thermally nonconductive, said panels comprising quadrangular plates which are self-supporting and made of an insulating material, a plurality of said panels being installed in said closed chamber in adjacent, juxtaposed relation to one another opposite said walls and said ceiling, the panels having dimensions to enable a number of the panels to be individually and separately mounted on any of the walls, ceiling and floor of the closed chamber to collectively cover the walls, ceiling and floor such that a modular assembly of the panels on the walls, ceiling and floor of the closed chamber can be carried out, in situ, within the closed chamber.

5,609,002
SECURITY WINDOW BAR SYSTEM
Bruce Fernandez, 23 Walden Rd., Rochester, N.Y. 14610
Filed Dec. 12, 1995, Ser. No. 570,900
Int. Cl.[6] E06B *3/68*
U.S. Cl. 52—507 **7 Claims**



1. A security window bar system for preventing unauthorized entry through the opening in a window frame of the type having a sill and a pair of spaced side walls projecting upwardly from the sill, comprising

a first plurality of elongate bars each having therethrough intermediate opposite ends thereof a plurality of longtitudinally spaced openings, and having in each of said opposite ends thereof a longitudinally extending recess,

a second plurality of bars each having a cross sectional area smaller than the area of each of said openings in said first plurality of bars, whereby each of said second plurality of bars is slidable intermediate opposite ends thereof in any of said openings in said first plurality of bars, and

means for mounting at least one pair of said first plurality of bars at said opposite ends thereof in said frame to extend in spaced relation to each other transversely between the side walls of said frame with the spaced openings in one of said pair of bars registering with the spaced openings in the other of said pair of bars and with at least one of said second plurality of bars extending slidably through each pair of registering openings in said one pair of bars and resting movably at the lower end thereof on said sill,

said mounting means comprising at least two pairs of generally right-angular brackets each having a pair of integral legs extending substantially at right angles to each other,

each of said brackets disposed to have one leg thereof seated slidably in said recess in one end of one of said pair of bars of said first plurality thereof, and with the other leg thereof confronting upon one of said side walls of said frame, and

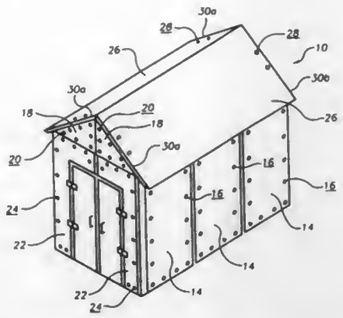
means for permanently securing each of said other legs of said brackets to said side wall of the frame upon which said other leg confronts.

5,609,003
MODULAR CONSTRUCTION SYSTEM
Chris G. Jouty, 444 Hwy. 628, LaPlace, La. 70068
Filed Nov. 13, 1995, Ser. No. 556,380
Int. Cl.[6] E04B *1/48*
U.S. Cl. 52—585.1 **15 Claims**

1. A modular construction system comprising:

a plurality of building sections having connecting apertures positioned along at least a section of a perimeter thereof, each connecting aperture having two fastener bores of equal dimension intersecting at about a ninety degree angle and at a predetermined distance from an opening of each of said two fastener bores formed through an exterior surface of one of said plurality of building sections;

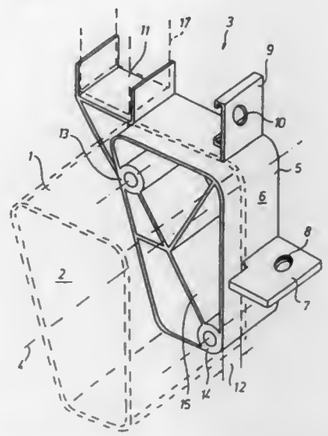
a quantity of connecting aperture plugs having a head portion too large to pass into any said fastener bore, a shaft portion



having dimensions selected to allow snug positioning of said shaft portion within a said fastener bore, and a smooth bore shaft aperture passing through said shaft portion that is alignable with one of said fastener bores when positioned within said intersecting fastener bore, said shaft aperture being spaced from said head portion in a manner such that when said shaft portion is inserted into a fastener bore of one of said connecting apertures a center of said shaft aperture is aligned with a center of the other perpendicularly oriented fastener bore forming the one of said connecting apertures when said head portion contacts an exterior surface of a building section; and

a quantity of fastener assemblies having a bolt having a shaft portion insertable through said shaft aperture and a threaded end positioned out of said fastener bore, and a nut, companionately threaded for connection with said threaded end.

5,609,004
END PART FOR A VEHICLE LONGITUDINAL BEAM
Gundolf Kreis, Oberstimm, Germany, assignor to Audi, AG, Ingolstadt, Germany
Filed Mar. 22, 1995, Ser. No. 408,320
Claims priority, application Germany, Oct. 23, 1992, 42 35 738.1
Int. Cl.[6] F16B *7/04*
U.S. Cl. 52—655.1 **11 Claims**



1. An end part for connection to an open end of a hollow section longitudinal beam of a vehicle bodywork, the hollow section longitudinal beam having a longitudinal axis, the end part comprising:

a) an extruded section having a first end, a second end, a longitudinal axis, and a longitudinal length disposed between said first end and said second end and defining a closed, ring-shaped outer wall separating said first end from said second end, and wherein:

i) said longitudinal axis of said extruded section is substantially parallel to an extrusion direction of said extruded section,

ii) said ring-shaped outer wall having an outer contour configured to conformingly match an inner wall contour of the hollow section longitudinal beam to provide form fitting mating contact between said outer contour and the inner wall contour as said first end of said extruded section is inserted within the open end of the hollow section longitudinal beam with the longitudinal axis of said extruded section aligned with the longitudinal axis of the hollow section longitudinal beam;

b) at least one flange structure integrally formed along said outer contour of said ring-shaped outer wall and oriented substantially parallel to the longitudinal axis of said extruded section, wherein:

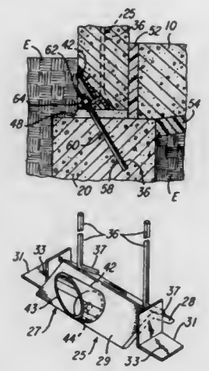
i) said flange structure has a leading edge disposed at a distance inward from said first end of said extruded section corresponding to a predetermined insertion depth of said first end of said extruded section within the open end of the hollow section longitudinal beam;

ii) said flange structure extends across a longitudinal length of said ring-shaped outer wall of said extruded section: p2 iii) said flange structure includes a notch at a base end thereof adjacent said first end of said extruded section, said notch having a depth corresponding to said insertion depth and a height sufficient to receive a wall thickness of the open end of the hollow section longitudinal beam;

iv) said flange structure includes mounting means for detachably mounting other components to said extruded section; and

c) connecting means for connecting said extruded section to the open end of the hollow section longitudinal beam.

5,609,005
FOUNDATION CONNECTOR FOR TILT-UP CONCRETE WALL PANEL AND METHOD OF USE
David M. Schierloh, Centerville, and Kurt S. Eyring, Dayton, both of Ohio, assignors to Con/Steel Design Systems, Inc., Dayton, Ohio
Filed Aug. 1, 1996, Ser. No. 691,097
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—699 **19 Claims**



1. A connector assembly for securing a tilt-up concrete wall panel to a supporting concrete foundation, comprising a metal anchor member adapted to be embedded in the wall panel and having an inclined surface with a hole, means for positioning said anchor member adjacent the bottom surface of the wall panel, a cavity defining member secured to said inclined surface adjacent said hole, said cavity defining member having an outer end surface adapted to extend substantially flush with a side surface of the wall panel, a threaded rod adapted to extend through said cavity and said hole and into an inclined hole formed within the foundation, and a threaded fastener adapted to be secured to an upper end portion of said rod to tie said anchor member and the wall panel to the foundation.

5,609,006
WALL STUD
Robert W. Boyer, Rte. 2, Box 554, Newton, Iowa 50208
Filed Oct. 17, 1995, Ser. No. 544,336
Int. Cl.[6] E04C *1/40*
U.S. Cl. 52—731.9 **9 Claims**



1. A wall stud for use in framing structures such as houses and buildings, said wall stud comprising:

two elongated generally C-shaped frame members each having an outer surface, an inner surface, a top end, a bottom end, a back wall, two opposing side walls extending from said back wall, and two keepers, each of said keepers being attached to one of said side walls and extending generally toward the other of said keepers, said inner surfaces being spaced apart from one another to form a cavity there between;

a top core element positioned within said cavity near said top ends and at least partially enclosed by said inner surfaces of said frame members; and

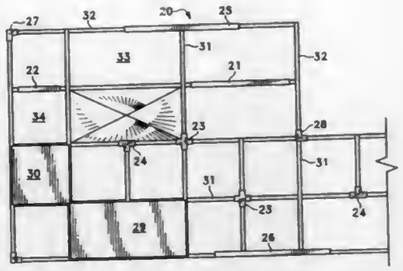
a bottom core element positioned within said cavity near said bottom ends and at least partially enclosed by said inner surfaces of said frame members;

said keepers securing said top and bottom core elements to said frame members;

said top and bottom core elements being spaced apart and forming a space between said core elements and said frame members.

5,609,007
INTEGRATED REFACING SYSTEM FOR SUSPENDED CEILINGS
Vincent T. Eichner, R.D. 2, Box 196, Chester, N.Y. 10918
Filed Feb. 6, 1995, Ser. No. 383,874
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—747.1 **4 Claims**

4. For a subceiling of a type having rectangular panels supported by a suspended framework of longitudinal grids and cooperating transverse grids, each being in the form of an inverted T-bar having



horizontal flanges bisected by a vertical web, and peripheral grids each being in the form of an L-bar with a singular horizontal flange, a refacing system that completely covers all exposed grid surfaces by providing a new surface cover for said grids thereby improving the appearance of said subceiling, said refacing system comprising:

a plurality of mating members configured to cover the T-bar grids and the L-bar grids and the intersections of said grids, said mating members defining T-bar molding means for covering the longitudinal and transverse T-bar grids, cross piece molding means for covering the intersections of one of said longitudinal T-bar grids and two of said transverse T-bar grids, T-piece molding means for covering the intersection of one of said longitudinal T-bar grids with one of said transverse T-bar grids, L-bar molding means for covering the peripheral L-bar grids, and inside corner molding means and outside corner molding means for covering the intersections of the L-bar molding means at the corners of the room;

the T-bar molding means being linear, the cross piece molding means being X-shaped with four equal arms radiating from a common point at right angles to each other, the T-piece molding means being T-shaped with three equal arms radiating from a common point, two of said arms being linearly configured and the third at right angles thereto;

the T-bar molding means, cross piece molding means and T-piece molding means each having a flat base with an upper surface defining the interior base and an outer surface defining the exposed face, and opposing exterior edges;

the T-bar molding means, and the arms of said cross piece molding means and said T-piece molding means having opposing vertical side walls contiguous with said exterior edges, return flanges extending inwardly and disposed along the upper edge of each side wall and having an upward facing surface, a horizontal downward facing surface and an inward facing edge, said upward facing surfaces extending from the vertical sidewalls and forming acute angles therewith and said T-bar molding means and the arms of said cross piece molding means and said T-piece molding means being identical in transverse cross-section enabling intimate cooperation with each other when properly positioned;

the L-bar molding means being linear, the inside corner molding means and the outside corner molding means being L-shaped with two equal arms radiating from a common point at right angles to each other, and each of said molding means having a flat base with an upper surface defining the interior base and a lower surface defining the exposed face, and opposing exterior edges;

the L-bar molding means, the inside corner molding means and the outside corner molding means having two opposing vertical sidewalls contiguous with said exterior edges, one of said sidewalls being the taller sidewall and the other sidewall being the shorter sidewall, said shorter sidewall being away from the periphery of the room and having a return flange extending inwardly and disposed along its upper edge, said return flange having a upward facing surface, a horizontal downward facing surface and an inward facing edge, said upward facing surface extending from the vertical sidewall and forming an acute angle therewith and said L-bar molding means and the arms of said inside corner molding means and the arms of said outside corner molding means being identical in transverse cross-section enabling intimate cooperation when properly positioned and the L-bar molding means having notches in the shorter sidewalls spaced and shaped coact with the ends of the T-bar molding means when properly positioned;

all of said mating members being made of a flexible and resilient material;

pliable facing means to be superimposed on said rectangular panels, said facing means being sheets of material sized to completely cover the exposed surfaces of said rectangular panels;

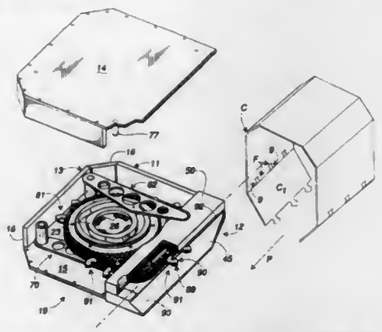
whereby said acute angles of the upward facing surfaces of the return flanges are oriented to assist said mating members in sliding smoothly onto the grids by causing the ranged vertical sidewalls of said mating members to be displaced outwardly by pressure from the flanges of the grids along the angled surface as the mating members are pressed upward against said grids during installation, and the mating members are capable of being seated onto the grids with minimal upward force so as not to cause distortion or misalignment of said grids and thereafter each mating member lies flat against the grid and contiguous with the adjoining mating member to provide an unbroken covering over the exposed surfaces of said grids and the pliable facing means covering the exposed surfaces of said rectangular panels resulting in a new and clean appearance to the subceiling.

5,609,008

CARTON FLAP FOLDING ASSEMBLY AND METHOD

Urs Reuteler, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 16, 1995, Ser. No. 543,720
Int. Cl.[6] B65B *27/04;21/24*
U.S. Cl. 53—398 **17 Claims**



1. A method for folding the flaps of a carton blank, the carton blank having a side wall and at least two prescored flap areas defined in the side wall, each of the prescored flap areas having a pair of flaps for being opened inwardly of the side wall of the carton blank, the carton blank being conveyed through a packaging machine and along a path of travel, said method comprising the steps of:

(a) disposing a carton flap folding assembly having engagement means for engaging the at least two prescored areas of the carton blank along the path of travel so that the carton blank passes in spaced relationship to said flap folding assembly as the carton blank is conveyed along the path of travel;

(b) inserting said engagement means into each of the at least two prescored flap areas of the carton blank and folding the flaps of each prescored flap area to a first open position in response thereto;

(c) folding the flaps of each of the at least two prescored flap areas simultaneously into a second open position in response to actuating said engagement means; and

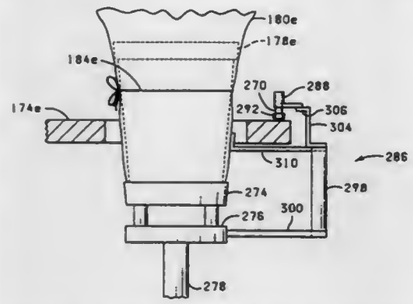
(d) withdrawing said engagement means from the at least two prescored flap areas of the carton blank.

5,609,009

SINGLE STATION COVERING AND FASTENING SYSTEM

Donald E. Weder; Joseph G. Straeter, both of Highland, Ill., and Paul Fantz, Imperial, Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 88,692, Jul. 7, 1993, Pat. No. 5,481,850, and a continuation-in-part of Ser. No. 88,976, Jul. 8, 1993, Pat. No. 5,450,707, and a continuation-in-part of Ser. No. 979,389, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 832,096, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application Jun. 2, 1994, Ser. No. 252,876
Int. Cl.[6] B65B *11/00;51/08*
U.S. Cl. 53—399 **36 Claims**



1. A method for fastening a cover about a pot means containing a botanical item, comprising:

providing a platform having a support surface formed thereon and an opening extending through the support surface, the opening sized to receive a cover forming means and having a cover forming means disposed therein, the cover forming means having contacting portions and sized to receive a pot means having an upper end, a lower end, and an outer peripheral surface;

providing a sheet of material having an inner surface, an outer surface and a peripheral edge;

placing the sheet of material in a cover forming position over the opening and on the support surface wherein the sheet of material, in the cover forming position, is positioned over the cover forming means;

providing the pot means;

positioning the pot means in a position over the sheet of material and in a position wherein the lower end of the pot means is disposed generally above and near the portion of the sheet of material which is above the cover forming means;

covering the pot means by moving the pot means in a direction which causes the lower end of the pot means to engage a portion of the sheet of material, the pot means and portions of the sheet of material passing through the cover forming means causing the sheet of material to contact or nearly contact both the outer peripheral surface of the pot means and the contacting portions of the cover forming means as the pot means is moved wherein the sheet is formed about the outer peripheral surface of the pot means to form a cover about the pot means, the cover having the inner surface facing the outer peripheral surface of the pot means and further having a portion extending a distance from the upper end of the pot means thereby leaving an uncovered area over the upper end of the pot means;

automatically applying a fastener about a portion of the outer surface of the cover of the pot means; and

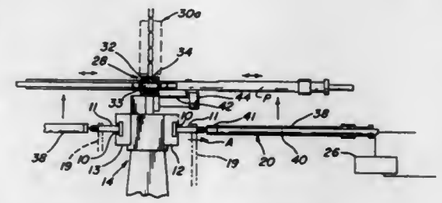
removing the covered pot means from the platform.

5,609,010

ENCAPSULATION METHOD

Erich W. Sauter, Washington Crossing, Pa., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 180,550, Jan. 12, 1994, Pat. No. 5,511,361, which is a division of Ser. No. 927,066, Aug. 7, 1992, Pat. No. 5,317,849. This application Dec. 7, 1995, Ser. No. 568,980
Int. Cl.[6] B65B *43/42*
U.S. Cl. 53—467 **13 Claims**



8. A method of encapsulation of an elongated cylindrical object within a pair of substantially cylindrical capsule parts, said method comprising providing a pair of capsule parts for each object, each part having an open end dimensioned to fit snugly onto one end of said cylindrical object;

holding said object in position for encapsulation;

aligning said capsule parts with the axis of the cylindrical object with the open end of each capsule part oriented toward one end of the object to be encapsulated; and

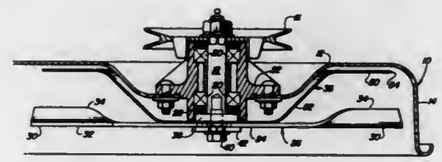
thereafter axially moving each said open-ended capsule part a predetermined distance onto the object until the open ends of said capsule parts are in abutting relationship, but not overlapping with each other.

5,609,011

ROTATING MOWER BAFFLE MECHANISM

John B. Kuhn, Rubicon; Daniel J. Kettler, Horicon, and David K. Stricker, Columbus, all of Wis., assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 212,071, Mar. 11, 1994, Pat. No. 5,483,790, which is a continuation-in-part of Ser. No. 121,817, Sep. 15, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 539,901
Int. Cl.[6] A01D *34/72*
U.S. Cl. 56—17.5 **29 Claims**



1. A mower mechanism comprising:

a rotatively driven spindle,

a blade having a radially inner portion coupled for rotation with the spindle and a radially outer portion for cutting vegetation,

a housing within which the blade rotates, and

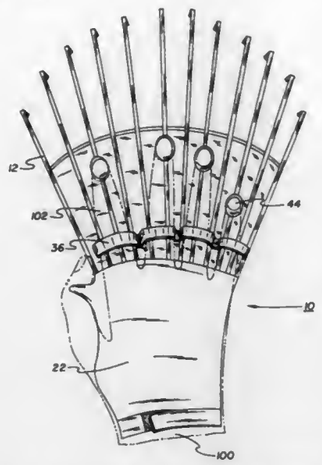
a disc operatively carried within the housing for rotation with the blade and having a radially outer portion spaced above the blade, said disc also having an inner portion extending radially inwardly from the outer portion to a position in close proximity to the blade, said inner and outer portions of the disc serving to confine air and clippings near the outer portion of the blade.

5,609,012

RAKING APPARATUS WORN ON A HAND

Peter S. Anthes, and Jeanne Anthes, both of 8 Gem Ct., Westerly, R.I. 02891

Filed Sep. 15, 1995, Ser. No. 529,081
Int. Cl.[6] A01D 7/06
U.S. Cl. 56—400.01 5 Claims



1. A raking apparatus worn on a hand for gathering up leaves and debris without the need for long-handed rakes comprising, in combination:

a plurality of L-shaped rake portions, each of the L-shaped rake portions having a first extent and a second extent, the second extent extending downwardly nearly perpendicular to the first extent, the plurality of rake portions coupled together by an arcuate support rod extending along the first extents thereof;

a palm receiving portion having an open first end and an open second end, a lower portion of the open first end secured to end portions of the plurality of L-shaped rake portions, the open second end dimensioned to receive a user's hand therein, the palm receiving portion having a pair of securement straps extending from opposing sides of a lower surface thereof to wrap around a user's hand, the securement straps having cooperating hook and loop fasteners therein for securement around a hand, the palm receiving portion having a thumb resting portion extending from a side portion thereof;

a finger receiving portion secured to the first extents of the plurality of L-shaped rake portions adjacent to the open first end of the palm receiving portion, the finger receiving portion comprising four curved portions forming openings for receipt of a user's fingers therethrough; and

four finger rest portions secured to the first extents of the plurality of L-shaped rake portions upwardly of the finger receiving portion, the finger rest portions comprising four small curved oval pads for receipt of a user's fingertips to rest thereon.

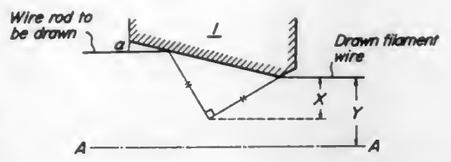
5,609,013

STEEL CORDS FOR THE REINFORCEMENT OF RUBBER ARTICLES

Akihiro Kaneda; Koichi Yokota, and Masao Nakamura, all of Kuroiso, Japan, assignors to Bridgestone Bekaert Steel Cord Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 163,696, Dec. 9, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 383,178
Claims priority, application Japan, Dec. 10, 1992, 4-330706
Int. Cl.[6] D02G 3/02;3/36
U.S. Cl. 57—200 3 Claims

1. A steel cord for the reinforcement of rubber articles formed by twisting a plurality of steel filament wires, each filament wire



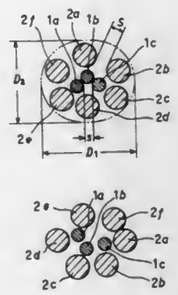
being formed by dry-drawing a wire rod of high carbon steel comprising C: 0.78–0.90% by weight, Si: 0.10–0.30% by weight, Mn: 0.30–0.55% by weight and the remainder being iron and inevitable impurities, subjecting the drawn wire to a finish patenting treatment and wet-drawing to a given diameter according to a die path schedule such that a reduction of area and approach angle in the die are selected to make a depth of wire drawing maximum at a true strain in wire drawing of 1 to 2, in which all of the filament wires satisfy a relationship of $T \geqq 230-148 \log D$, wherein D is a diameter of the filament wire and T is a tensile strength of the filament wire, and a difference in tensile strength between a surface layer portion and an internal portion in the filament wire is not more than 80 kgf/mm^2.

5,609,014

RUBBER REINFORCING STEEL CORD

Tamio Obara, and Kazuo Matsumaru, both of Iwate-ken, Japan, assignors to Tokyo Rope Manufacturing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 322,954, Oct. 13, 1994, abandoned, which is a continuation of Ser. No. 048,426, Apr. 14, 1993, abandoned. This application Jan. 2, 1996, Ser. No. 581,982
Claims priority, application Japan, Apr. 20, 1992, 4-126754
Int. Cl.[6] D02G 3/36
U.S. Cl. 57—212 8 Claims



1. A steel cord for reinforcing a rubber article or the like, comprising nine wires twisted in a common direction and with a common pitch and composed of three wires forming a center core and six wires forming an outer jacket and having a larger diameter than that of said three center core wires,

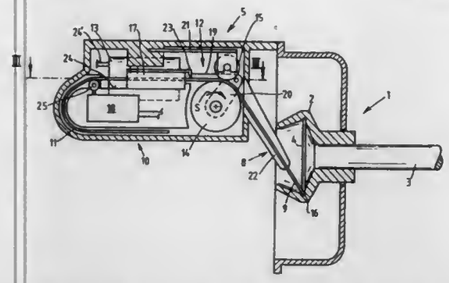
wherein the improvement resides: in that said steel cord has a flat shape in the section taken perpendicularly to the longitudinal direction thereof; in that said six outer wires surround said three core wires and have at least two gaps (S) between their adjacent ones; and in that said three core wires have at least one gap (s) between their adjacent ones, wherein said flat section has a longer diameter D_1 and a shorter diameter D_2 at a ratio of D_1/D_2 of 1.05 to 1.20.

5,609,015

APPARATUS FOR CLEANING A ROTOR REVOLVING IN THE ROTOR HOUSING OF AN OPEN-END SPINNING UNIT

Hans Raasch, and Helmuth Hensen, both of Mönchengladbach, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Mar. 30, 1995, Ser. No. 413,240
Claims priority, application Germany, Mar. 31, 1994, 44 11 343.9
Int. Cl.[6] D01H 11/00
U.S. Cl. 57—302 9 Claims



1. In an open-end spinning unit including a rotor housing and a rotor revolving in the rotor housing and having a fiber collecting groove formed therein defining a groove bottom, an apparatus for cleaning the rotor, comprising:

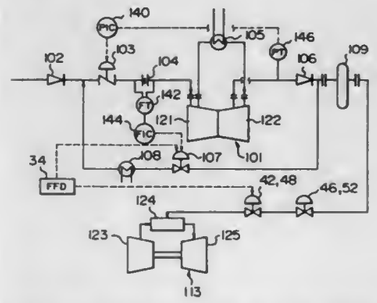
a cleaning device movably disposed relative to the rotor, said cleaning device including a wear part in the form of a flexible scraper strip to be positioned in a predetermined position in the fiber collecting groove of the rotor, a reservoir for storing said flexible scraper strip, and a displacement device for frictionally engaging said scraper strip and causing said scraper strip to automatically extend from said reservoir an optimal length independently of its abrasion from wear upon entry of said cleaning device into the rotor, for assuring a secure placement of said scraper strip in the bottom of the fiber collecting groove.

5,609,016

GAS TURBINE APPARATUS AND METHOD OF OPERATING SAME ON GASEOUS FUEL

Hiroshi Yamada; Tadanobu Negishi, and Yoshitsugu Honda, all of Ibaraki-ken, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,503
Claims priority, application Japan, Dec. 28, 1993, 5-334933
Int. Cl.[6] F02C 3/22;9/26
U.S. Cl. 60—39.02 14 Claims



1. In a gas turbine apparatus, comprising a gas turbine which includes a compressor stage, a turbine stage and a combustor, and serves to feed a combustible gas under pressure to said combustor by means of a centrifugal compressor and burn the same to produce power, and a gas turbine control device for controlling said gas turbines, the improvement wherein said centrifugal compressor comprises:

bypass means for separating a portion of fuel, which has passed through said centrifugal compressor, and for returning said portion to a suction side of said centrifugal compressor, and control means for controlling a flow rate of fuel passing through said bypass means; and

said gas turbine control device comprises start-up control means, acceleration control means, speed/load control means, load limitation means, exhaust gas temperature control means, and selection means for selecting the least one among control signals outputted from said five control means and outputting the selected signal; and

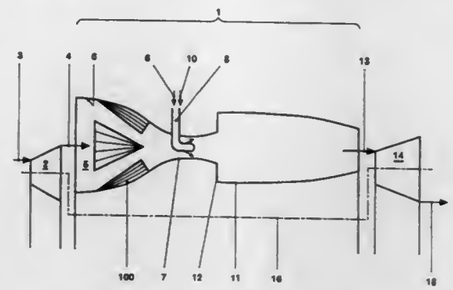
wherein said gas turbine control device acts to control a flow rate of fuel, which passes through said bypass means, by making use of said bypass rate control means on the basis of outputs from said selection means.

5,609,017

METHOD AND APPARATUS FOR OPERATING A COMBUSTION CHAMBER FOR AUTOIGNITION OF A FUEL

Rolf Althaus, Kobe, Japan, assignor to ABB Management AG, Baden, Switzerland

Filed Apr. 24, 1995, Ser. No. 427,590
Claims priority, application Germany, May 19, 1994, 44 17 536.1
Int. Cl.[6] F23C 5/08
U.S. Cl. 60—39.06 5 Claims



1. A method for operating a combustion chamber, comprising the steps of:

guiding a hot gas having a temperature sufficient to initiate auto-ignition of a fuel into a combustion space,

spraying a fuel into the hot gas via a plurality of fuel lances, wherein the fuel lances are connected for fuel supply in at least two separately controllable groups, wherein during start up of the combustion chamber, spraying the fuel comprises the steps of:

supplying fuel first to a first group and increasing the fuel to reach a temperature of about 1100° C.,

supplying fuel in addition to the first group to a second group and increasing the fuel to reach a temperature of about 1100° C., and

when the at least two groups are operating at about 1100° C., increasing the fuel to all the fuel lances to reach an operating temperature.

5,609,018

COMBINED INSTALLATION FOR GAS AND STEAM TURBINES

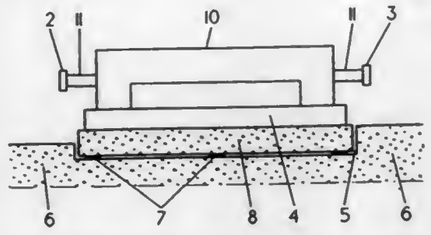
Ernst Brem, Schlieren, Switzerland; Roland Ulrich, Tiengen, Germany, and Peter W. Stadelmann, Thalwil, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Aug. 2, 1995, Ser. No. 510,507

Claims priority, application Switzerland, Aug. 19, 1994, 2554/94

Int. Cl.[6] F02C *6/18;7/20*

U.S. Cl. 60—39.182 **9 Claims**



1. A combined installation configured as a single-shaft installation with common shafting having a gas turbine, a steam turbine, a generator, which is located between the gas turbine and the steam turbine, and associated auxiliary systems of the generator, comprising a movable mounting slab positioned on sliding elements and in lateral guides on a machine foundation, wherein the lateral guides are formed by a recess in the machine foundation, and wherein the generator and the associated auxiliary systems are arranged on the slab, the slab is arranged between the gas turbine and the steam turbine, and the slab is displaceable transverse to the common shafting so that a rotor of the generator can be withdrawn from the generator.

5,609,019

APPARATUS FOR OPERATING A GAS TURBINE IN A SIMPLE CYCLE AND IN A CYCLE COMBINED WITH A STEAM TURBINE

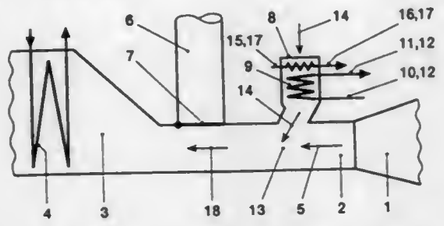
Henrik Nielsen, Wettingen, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Division of Ser. No. 358,563, Dec. 14, 1994, Pat. No. 5,493,854. This application Oct. 23, 1995, Ser. No. 546,717

Claims priority, application Germany, Dec. 29, 1993, 43 44 857.7

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.182 **3 Claims**



1. A gas turbine operable in a cycle combined with a steam turbine, comprising:

a gas turbine;

a waste-heat boiler;

a transition piece connected to direct exhaust gas of the gas turbine to the waste-heat boiler;

a cooler with an integrated heat exchanger connected to the transition piece between the gas turbine and the waste-heat boiler, the cooler connect to receive a flow of one of ambient air and a waste heat medium of the waste heat boiler, wherein both the gas turbine and the cooler open into a common mixing zone in the transition piece for mixing the exhaust gas of the gas turbine and the flow from the cooler; and

a supply conduit and an extraction conduit to circulate cooling air for the gas turbine to the heat exchanger and direct the cooling air to the gas turbine.

5,609,020

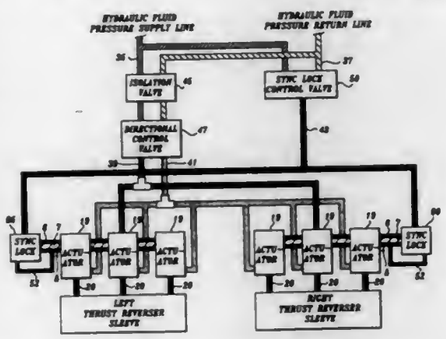
THRUST REVERSER SYNCHRONIZATION SHAFT LOCK

John Jackson, Renton; Mark J. Gucker, Kirkland, both of Wash., and Mark H. Smith, Birmingham, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,581

Int. Cl.[6] F02K *3/02*

U.S. Cl. 60—226.2 **15 Claims**



1. A thrust reverser synchronization shaft lock system for a jet engine hydraulic thrust reverser synchronization shaft, the synchronization shaft lock system comprising:

(a) a signal-controllable sync lock control valve having an input port a return port and a output port, the input port being suitable for connection to a supply line and the return port being connected to a return line; and

(b) a sync lock connected to the output port of the sync lock control valve and connected to a synchronization shaft of a jet engine thrust reverser for prohibiting the synchronization shaft from rotating, the sync lock including:

(i) a rotating jaw including a cylindrical rotor having teeth on one of its circular faces and a shaft extending outwardly from the other cylindrical face, the shaft being coupled to the synchronization shaft;

(ii) a sliding jaw including a stator having teeth on one end for engaging the teeth on the rotating jaw, the sliding jaw also including a sliding drive rod and a piston, the sliding drive rod attached at one end to the stator and at the other end to the piston;

(iii) a lock spring for applying a force to the piston to urge the teeth of the sliding jaw into engagement with the teeth of the rotating jaw; and

(iv) a conduit for coupling the output port of the sync lock control valve to the piston such that hydraulic pressure in the conduit creates a force that urges the teeth of the sliding jaw out of engagement with the teeth of the rotating jaw.

5,609,021

OPERATION OF AN INTERNAL COMBUSTION ENGINE

Thomas T. Ma, South Woodham Ferrers, Great Britain, assignor to Ford Motor Company, Dearborn, Mich.

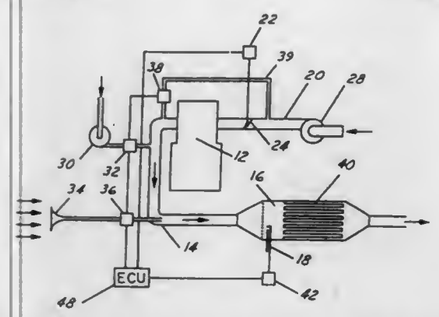
PCT No. PCT/GB92/02012, § 371 Date May 17, 1994, § 102(e) Date May 17, 1994, PCT Pub. No. WO93/10337, PCT Pub. Date May 27, 1993

PCT Filed Nov. 2, 1992, Ser. No. 244,183

Claims priority, application United Kingdom, Nov. 22, 1991, 9124855

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **13 Claims**



1. A method of operating an internal combustion engine burning a fuel containing carbon and hydrogen, which method comprises the steps of:

a) determining when the engine is operating in a deceleration mode,

b) reducing the throttle opening of the air intake to the engine only during deceleration modes below the throttle opening for steady speed idling to reduce the mass of air in each combustion charge when the engine is overrunning while continuing to admit fuel into the combustion chamber to result in excessively rich combustion in at least a region of the combustion charge and thereby create a proportion of combustible gases in the exhaust gas stream,

c) ensuring the presence in the exhaust gas stream of additional air to mix with the combustible gases to achieve during deceleration modes an exhaust mixture having sufficiently high concentrations of combustible gases and oxygen to be ignitable, and

d) igniting the mixture to burn as a flame within an afterburner chamber arranged upstream of an element of the exhaust system in order to heat the element during deceleration modes.

5,609,022

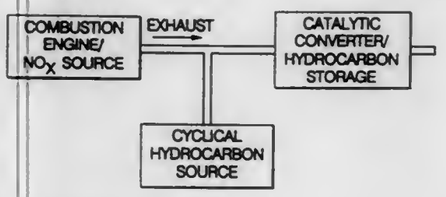
METHOD OF REDUCING NO_x EMISSIONS FROM LEAN-BURN COMBUSTION ENGINES

Byong K. Cho, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1994, Ser. No. 331,410

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **7 Claims**



1. A method comprising:

operating a combustion engine in a lean half cycle having an air/fuel ratio greater than 17, collecting the exhaust including NO_x from the combustion engine in an exhaust system and steadily feeding a stream of exhaust to a reactor including a zeolite-based material having a catalyst thereon;

operating the catalyst in a rich half cycle by periodically adding hydrocarbon pulses from a source other than the combustion engine to the steady stream of exhaust in the exhaust system prior to the exhaust flowing over the catalyst, and wherein said catalyst has an operating temperature ranging from light-off temperature to about 500° C., so that hydrocarbons are stored in the catalyst during the rich half cycle and thereafter released during the lean half cycle to improve reduction of NO_x in the exhaust.

5,609,023

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

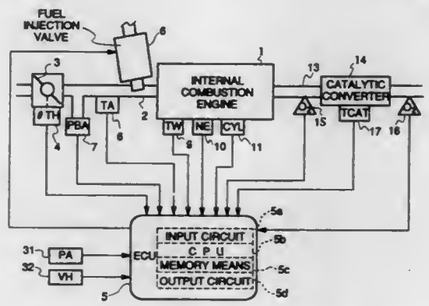
Akira Katoh; Hiroshi Kitagawa, and Toshiaki Hirota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 353,201

Claims priority, application Japan, Dec. 1, 1993, 5-329780

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—276 **13 Claims**



1. A fuel supply control system for an internal combustion engine having an exhaust system, and a catalytic converter arranged in said exhaust system, comprising:

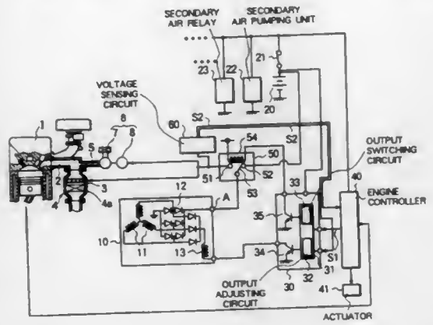
oxygen storage amount-estimating means for estimating a storage amount of oxygen stored in said catalytic converter;

physical amount-calculating means for calculating a physical amount having correlation with a purification rate of said catalytic converter, based on said storage amount of oxygen estimated by said oxygen storage amount-estimating means;

air-fuel ratio control means for controlling an air-fuel ratio of an air-fuel mixture to be supplied to said engine, based on said physical amount calculated by said physical amount-calculating means; and

maximum oxygen storage amount-calculating means for calculating a maximum oxygen storage amount which can be stored in said catalytic converter, and wherein said physical amount-calculating means corrects said physical amount in a direction corresponding to a decrease of said purification rate of said catalytic converter when at least one of conditions are satisfied that said storage amount of oxygen stored in said catalytic converter exceeds a first predetermined amount which is close to said maximum oxygen storage amount of said catalytic converter, and that said storage amount of oxygen is below a second predetermined amount which is close to zero.

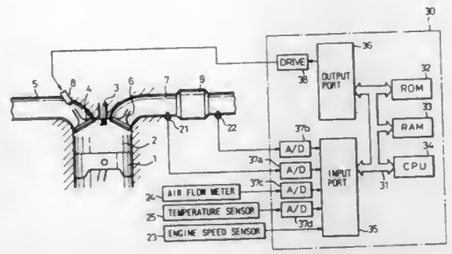
5,609,024
EXHAUST GAS PURIFICATION APPARATUS FOR INTERNAL COMBUSTION ENGINE
Toru Fujiwara; Tadashi Tsubakiji, both of Tokyo, and Kenichi Tsuchiya, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1995, Ser. No. 560,495
Claims priority, application Japan, Dec. 28, 1994, 6-328580
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—284 **7 Claims**



1. An exhaust gas purification apparatus for internal combustion engine, comprising:
a catalytic converter disposed in the exhaust gas pipe of an internal combustion engine for purifying an exhaust gas;
a heating element for heating said catalytic converter;
a secondary air passage connected to said exhaust gas pipe upstream of said catalytic converter;
secondary air introduction means having a pump for supplying secondary air to said secondary air passage and a motor for driving said pump;
a generator having a stator winding and a field winding and driven by said internal combustion engine;
output adjusting means for controlling the field current of said field winding to thereby adjusting the current output from said generator;
a switching relay having a first contact connected to both of the motor of said secondary air introduction means and said heating element and a second contact connected to a battery; and
output switching means for controlling said switching relay so that the output terminal of said generator is electrically connected to said first contact and the output terminal of said generator is electrically isolated from said second contact when said internal combustion engine is started.

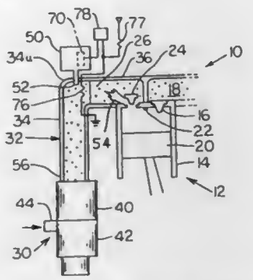
5,609,025
AIR-FUEL RATIO CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE
Shinichi Abe, Aichi-gun, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Nov. 30, 1995, Ser. No. 565,507
Claims priority, application Japan, Dec. 2, 1994, 6-299584
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—285 **5 Claims**

1. An air-fuel ratio control device for an internal combustion engine having a fuel injector and a catalytic converter, with an O_2 storage ability, arranged in an exhaust passage, comprising:
a first air-fuel ratio detector, for detecting an air-fuel ratio in exhaust gas, which is arranged in said exhaust passage upstream of said catalytic converter;
a second air-fuel ratio detector, for detecting an air-fuel ratio in exhaust gas, which is arranged in said exhaust passage downstream of said catalytic converter;



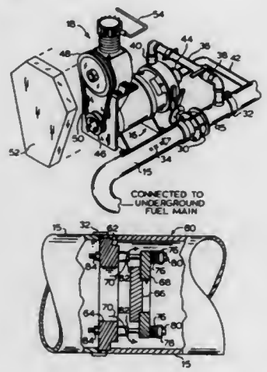
control means for controlling an amount of fuel injected by said fuel injector on the basis of an output of said first air-fuel ratio detector;
correction means for correcting a standard output of said first air-fuel ratio detector corresponding to the stoichiometric air-fuel ratio by a correction value determined on the basis of a difference between an air-fuel ratio detected by said second air-fuel ratio detector and the stoichiometric air-fuel ratio; and
changing means for changing said correction value such that the lower a current O_2 storage ability is, determined on the basis of a variable which varies in accordance with said current O_2 storage ability, the smaller said correction value becomes.

5,609,026
ENGINE NOX REDUCTION
Lester P. Berriman, Irvine; John M. Zabsky, Santa Ana; James W. Davis, Rancho Mirage, and William M. Hylton, Sacramento, all of Calif., assignors to Kleenair Systems, Inc., Irvine, Calif.
Continuation-in-part of Ser. No. 701,497, May 16, 1991, Pat. No. 5,224,346. This application Jun. 28, 1993, Ser. No. 83,657
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—286 **2 Claims**



1. Apparatus for use with an engine having a power-generating portion that burns a hydrocarbon fuel and air and produces hot exhaust gases, having a catalytic converter device that includes a catalyst for enhancing reactions of components of said exhaust gases, and having a conduit that couples said power-generating portion to said catalytic converter device, for reducing pollution in the exhaust, comprising:
a device coupled to said conduit, which stores ammonia and injects it into said conduit at an inject location, to mix with said hot exhaust gases and pass with them along said conduit and then through said catalyst;
said power-generating portion comprises a plurality of cylinders in which said fuel and air are burned, a mechanism for applying fuel and air to said cylinders, and a plurality of exhaust valves through which burned fuel and air is exhausted and which are connected to said upstream end of said conduit, said conduit including a manifold which includes a chamber that is connected to a plurality of said exhaust valves and a downstream conduit portion which connects said manifold to said catalytic converter device;
said inject location lies in said manifold to lie spaced from said exhaust valves but at a location where exhaust gases are very hot.

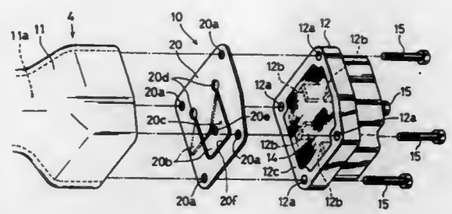
5,609,027
REFUELING DEVICE WITH CONSTANT-SPEED AUXILIARY DRIVE
F. Paul Dunlevy, Kernersville, N.C., assignor to Beta Fluid Systems, L.L.C., Reidsville, N.C.
Filed Jun. 21, 1995, Ser. No. 492,982
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—396 **10 Claims**



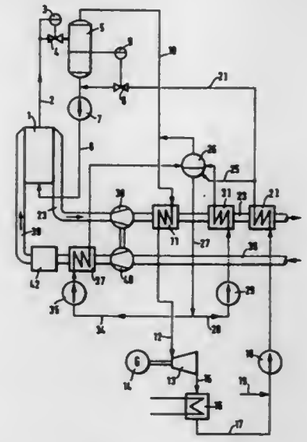
1. A portable device for refueling self-propelled vehicles from a fixed, pressurized fuel source, including a source of nearly constant-speed auxiliary mechanical power derived from the flowing, pressurized fuel, comprising:
a variable orifice through which a bulk of the pressurized fuel flows, for generating a pressure difference, the effective area of the orifice being variable so as to generate substantially the same pressure difference over a wide range of flow rates of the fuel flowing through the variable orifice and not bypassing the variable orifice;
a fluid motor driven by the fuel bypassing the variable orifice under pressure from the pressure difference generated by the fuel flowing through the variable orifice, said fluid motor producing mechanical output power in response to the flowing fuel;
an auxiliary instrumentality, on the portable device, for utilizing the mechanical output power of the fluid motor.

5,609,028
PNEUMATIC TOOL
Nobuyuki Kakuda, and Noriyuki Nishido, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 5, 1996, Ser. No. 612,016
Claims priority, application Japan, Mar. 6, 1995, 7-045569
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—407 **9 Claims**

1. A pneumatic tool comprising:
a body having a pressure accumulation chamber formed therein for accumulating compressed air;
a cap mounted on said body and having a cap chamber formed therein for communication with said pressure accumulation chamber, said cap having a joint for connection with an air hose from a compressed air source; and
a gasket interposed between said pressure accumulation chamber and said cap chamber, said gasket having means forming a valve for preventing counterflow of the air within said pressure accumulation chamber to said cap chamber, so that exhaust sounds of the air are prevented from being produced when the air hose is disconnected from said joint.

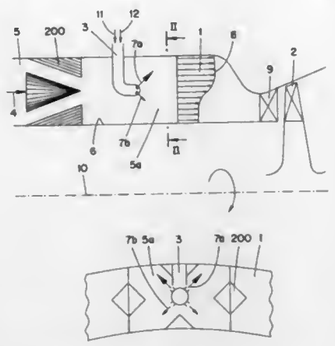


5,609,029
THERMAL POWER ENGINE AND ITS OPERATING METHOD
Anders Ahnger; Stefan Storholm, both of Vasa, and Kaj Bäckman, Esbo, all of Finland, assignors to Wartsila Diesel International Ltd Oy, Helsinki, Finland
Continuation of Ser. No. 270,494, Jul. 5, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,128
Claims priority, application Finland, Jul. 8, 1993, 933126
Int. Cl.[6] F01K *23/10*
U.S. Cl. 60—618 **23 Claims**



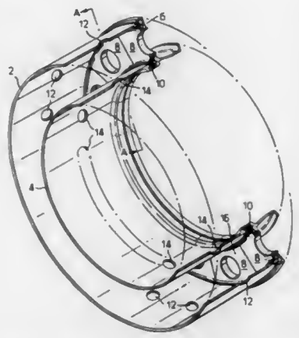
1. A method of operating a liquid-cooled thermal power diesel engine that is used in a power plant for production of mechanical energy and includes a secondary energy utilization system for utilization of waste thermal energy produced by the engine, said method comprising maintaining a higher coolant pressure in the engine than in a vaporization space defined by the secondary energy utilization system, said higher coolant pressure being sufficient that the coolant in the engine is liquid, delivering coolant that has been heated in the engine to the vaporization space and thereby vaporizing some of the coolant in the vaporization space, superheating the coolant vapor by thermal exchange with a hot fluid flow of the engine, and using the coolant vapor for energy transport and/or recovering energy from the coolant vapor, and wherein the quantity of energy required for vaporizing the coolant in the vaporization space substantially corresponds to the quantity of energy transferred to the coolant during its cooling of the thermal power engine block, whereby a thermally balanced cooling and heat utilization arrangement is achieved.

5,609,030
COMBUSTION CHAMBER WITH TEMPERATURE GRADUATED COMBUSTION FLOW
Rolf Althaus, Kobe, Japan, assignor to ABB Management AG, Baden, Switzerland
Filed Nov. 3, 1995, Ser. No. 552,776
Claims priority, application Germany, Dec. 24, 1994, 44 46 611.0
Int. Cl.[6] F02C *1/00*
U.S. Cl. 60—737 **11 Claims**



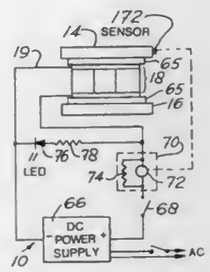
1. A combustion chamber, which comprises:
an inflow duct followed downstream in a flow direction by a premixing zone and a combustion zone,
a plurality of vortex generators mounted in the inflow duct to form individual vortices in the flow, and
at least one fuel lance for injecting a fuel on a downstream side of the vortex generators into combustion air,
wherein the fuel lance injects fuel with a graduated quantity profile across a radial direction of the duct and relative to the vortices generated by the vortex generators so a combusted gas flow has a temperature graduated profile over a radial direction of the combustion zone, with a minimum temperature at a radial inner side.

5,609,031
COMBUSTOR ASSEMBLY
Leighton Jones, Bristol, England, assignor to Rolls-Royce plc, London, England
Filed Dec. 5, 1995, Ser. No. 567,587
Claims priority, application United Kingdom, Dec. 8, 1994, 9425038
Int. Cl.[6] F02C *1/00*
U.S. Cl. 60—753 **9 Claims**



1. A gas turbine engine combustor assembly comprising:
a combustor barrel including a cylindrical portion having an upstream end formed with a raised rim,
a combustor head including a metering panel formed with a deformable lip and a heatshield,
wherein the barrel, metering panel and heatshield are assembled with portions of the heatshield trapped between the metering panel and the barrel by the deformable lip on the panel being swaged or rolled to engage the raised rim on the barrel.

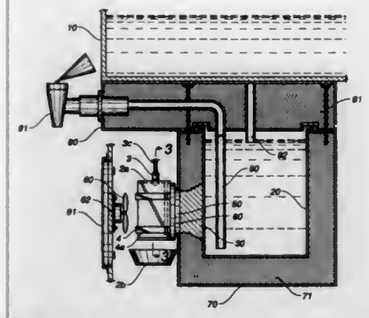
5,609,032
THERMOELECTRIC COOLING SYSTEM
George Bielinski, 1606 Carver St., Appleton, Wis. 54914
Continuation-in-part of Ser. No. 217,182, Mar. 23, 1994, abandoned. This application Mar. 17, 1995, Ser. No. 406,287
Int. Cl.[6] F25B *21/02;* **H01L** *35/28*
U.S. Cl. 62—3.7 **29 Claims**



1. A thermoelectric cooling system having an electric circuit comprising:
a d.c. power source, a thermoelectric module having at least one heat sink and at least one heat source capable of being cooled to a predetermined temperature range, and a control assembly;
the d.c. power source, the control assembly, and the thermoelectric module being connected to each other in series;
the control assembly comprising a thermostat control switch mechanism and a resistive element connected to each other in parallel;
the thermostat control switch mechanism having a sensor generally coupled to the heat source of the thermoelectric module, the thermostat control switch mechanism being open in the predetermined temperature range;
the resistive element having a predetermined resistance sufficient for a level of voltage to be provided to the thermoelectric module sufficient to substantially prevent reversal of the heat source and the heat sink.

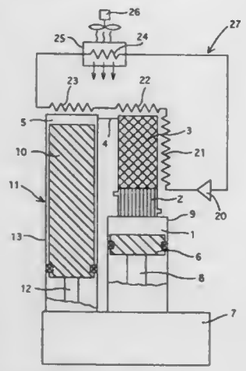
5,609,033
WATER COOLING DEVICE FOR WATER PURIFIERS
Joung W. Dong, Seoul, Rep. of Korea, assignor to Chung Ho NAIS Incorporation, Seoul, Rep. of Korea
Filed Jan. 16, 1996, Ser. No. 585,446
Int. Cl.[6] F25B *21/02;* **F28D** *5/00*
U.S. Cl. 62—3.64 **4 Claims**

1. A water cooling device for water purifiers comprising a cold water tank for containing purified water and a thermoelement for absorbing heat from the cold water tank at its cold junction and dissipating the heat to atmosphere at its hot junction, further comprising:
a cooling water absorbing member covering said hot junction and adapted for absorbing cooling water in order to be saturated with the cooling water, the cooled water saturated in the water absorbing member being heated and vaporized by the heat of said hot junction thereby cooling the hot junction;
a cooling water supplying unit adapted for continuously supplying cooling water to said cooling water absorbing member,



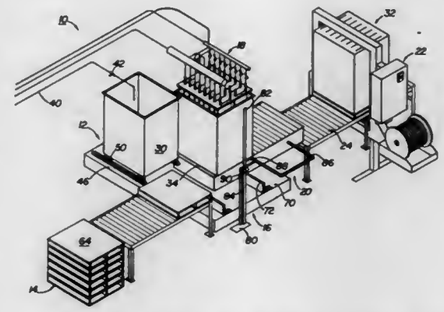
wherein said hot junction is provided with a plurality of radiating fins exposed to the atmosphere, and said cooling water absorbing member being bent into a plurality of zigzag-shaped bent portions fitted over said radiating fins;
a clip unit for clipping the radiating fins and zigzagged water absorbing member together in order to cause the zigzagged water absorbing member to come into close contact with said radiating fins, said clip unit having a plurality of pressing arms elastically engaging with the radiating fins covered with the water absorbing member; and
a plurality of vertical grooves formed on rear portions of said radiating fins and adapted for elastically engaging with tip portions of said pressing arms of the clip unit.

5,609,034
COOLING SYSTEM
Hideo Mita, Okazaki; Hideo Misawa; Naoto Kurita, both of Anjo, and Katsunobu Kanda, Toyohashi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 13, 1995, Ser. No. 501,938
Claims priority, application Japan, Jul. 14, 1994, 6-162310; Oct. 31, 1994, 6-267304
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **17 Claims**



1. A cooling system, comprising:
a cold-accumulating refrigerator including:
a compression chamber in which a working medium is compressed;
a chiller for dissipating heat resulting from the compression of the working medium;
a cold accumulator communicating with the chiller; and
an expansion chamber in which the working medium, transferred via the cold accumulator, is expanded; and
a cooling circuit including:
a heat exchanger for conducting cold, the heat exchanger being thermally brought into contact with a portion of the cold accumulator whose temperature is varied from a high temperature to a low temperature by the working medium flowing therein; and
pressure delivering means for delivering cold produced by the heat exchanger to a substance to be cooled.

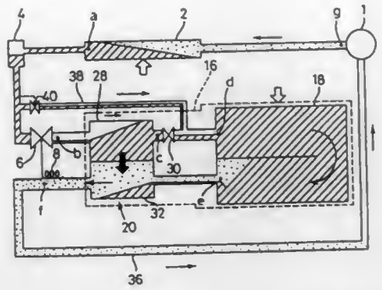
5,609,035
METHOD AND APPARATUS FOR FREEZING LARGE BLOCKS OF A LIQUID OR SLURRY
Billy Cothern, Alpharetta; Joseph A. Ramsey, Lawrenceville, and Clifford L. Stapler, Fayetteville, all of Ga., assignors to Uni-Temp Refrigeration, Inc., Norcross, Ga.
Division of Ser. No. 334,207, Nov. 4, 1994, Pat. No. 5,535,598. This application Jun. 6, 1995, Ser. No. 466,571
Int. Cl.[6] F25C *5/08*
U.S. Cl. 62—73 **9 Claims**



9. A method for freezing a large amount of a liquid or slurry comprising:
filling a product containment apparatus with one of a liquid and a slurry to be frozen;
supplying a refrigerant through an outlet in said product containment apparatus whereby heat is transferred from said liquid to said refrigerant and said liquid freezes;
supplying a defrosting media to an inlet in said product containment apparatus;
suctioning said refrigerant through an outlet in said product containment apparatus whereby heat is transferred from said liquid to said refrigerant and said liquid freezes;
supplying a defrosting media to an inlet in said product containment apparatus;
suctioning said defrosting media through an outlet in said product containment apparatus whereby heat is transferred to said liquid from said defrosting media and said frozen liquid adjacent said product containment apparatus thaws; and
rotating said product containment apparatus to remove said frozen block.

5,609,036
EVAPORATOR FOR COOLING APPARATUS
Toshiya Nagasawa, Obu; Etuo Hasegawa, Kounan, and Nobuharu Kakehashi, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Oct. 6, 1995, Ser. No. 539,525
Claims priority, application Japan, Oct. 7, 1994, 6-244294; May 17, 1995, 7-118447
Int. Cl.[6] F25B *41/00;41/04*
U.S. Cl. 62—198 **9 Claims**

1. An evaporator for cooling apparatus comprising:
an evaporating portion having an inflow passage and an outflow passage, said inflow passage communicating in parallel with said outflow passage through a plurality of refrigerant flow passages;



a heat exchanging portion having a cooled flow passage arranged to lead to a pressure reducing valve for a refrigerating cycle and a cooling flow passage arranged to lead said outflow passage to introduce a refrigerant outside said heat exchanging portion, heat exchange being performed between said cooled flow passage and said cooling passage;

pressure reducing means for reducing a pressure of said refrigerant within said cooled flow passage to introduce said refrigerant to said inflow passage;

means for defining a bypass passage bypassing said heat exchanging portion and said pressure reducing means to introduce said refrigerant into said inflow passage; and

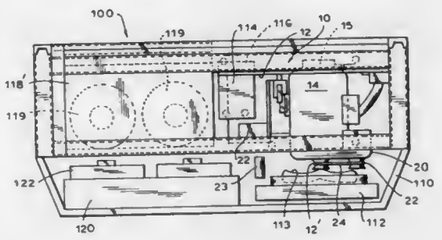
a valve element disposed in said bypass passage and opening and closing said bypass passage in accordance with a refrigerant pressure at the upstream side of said pressure reducing valve.

5,609,037

SELF-CONTAINED VEHICLE REFRIGERATION UNIT

Richard Fischler, 168-01 12th Ave., Apt. 7A, Whitestone, N.Y. 11357

Filed Nov. 15, 1994, Ser. No. 340,060
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—239 **27 Claims**



1. A vehicle refrigeration unit comprising:

a refrigeration unit housing comprising a substantially rectangular body having a pair of longer sides and a pair of shorter sides each connected to a respective one of the longer sides, the refrigeration unit housing having a first half and a second half being separated by an imaginary line extending parallel to the shorter sides and perpendicular to the longer sides of the refrigeration unit housing;

a drive system for driving at least one driven component, the drive system including a driving pulley and a drive shaft;

an evaporator section; and

a condensing section; wherein

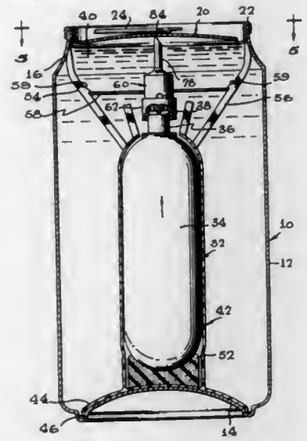
the evaporator section and the condensing section are each located completely within only the second half of the refrigeration unit housing and the drive system, including the drive pulley and the drive shaft, is located completely within only the first half of the refrigeration unit housing.

5,609,038

SELF-CHILLING BEVERAGE CONTAINER AND PARTS THEREFOR

Edward M. Halimi, 6155 Carpinteria Ave., Carpinteria, Calif. 93013

Filed Aug. 22, 1995, Ser. No. 518,034
Int. Cl.[6] F25D *3/10*
U.S. Cl. 62—294 **24 Claims**



1. A self-chilling beverage container comprising:

walls and ends, including at least one separate end for defining a beverage container, so that said beverage container can be filled with a self-pressurizing beverage and said separate ends sealed thereon to close said container, at least a portion of said container being a deflectable portion which is resiliently deflected by pressurization of said container;

a pressurized refrigerant cartridge, said cartridge having a diaphragm thereon which can be punctured for release of refrigerant within said cartridge to cause cooling by refrigerant expansion, said refrigerant cartridge being in thermal communication with beverage within said container so that cooling of said cartridge causes cooling of beverage within said container; and

a piercer adjacent said diaphragm, said piercer being engaged with said container so that when said deflectable portion of said container is released from its deflected position by release of pressurization of said container, said piercer pierces said diaphragm to release refrigerant from said cartridge to cause cooling of beverage in said container.

5,609,039

COOLING CARTRIDGE FOR PLASTIC DRINKING BOTTLES

Dennis E. Green, 102 Falcon Hills Dr., Highlands Ranch, Colo. 80126, and Harry Collier, Highlands Ranch, Colo., assignors to Dennis E. Green, Highlands Ranch, Colo.

Filed May 24, 1995, Ser. No. 449,018
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—475.3 **9 Claims**

1. A combination drinking bottle and internal cooling cartridge comprising:

a cooling cartridge having:

(a) a top surface and a bottom surface, said top surface having at least one raised vertical protrusion;

(b) a rubulate side wall extending between said top surface and said bottom surface having a plurality of longitudinal protrusions, each adjacent pair of said longitudinal protrusions being separated by a longitudinally extending concave surface;



(c) a closed interior cavity within said cooling cartridge surrounded by said side wall, top surface, and bottom surface; and

(d) a refrigerant sealed within said interior cavity; said cooling cartridge having a predetermined height; and

a drinking bottle having:

(a) an interior cavity for containing a quantity of a beverage and said cooling cartridge;

(b) a tubulate mouth sufficiently large to permit said cooling cartridge to be inserted through said mouth into said interior cavity of said drinking bottle, said mouth also providing lateral support for a portion of said side wall adjacent to said top surface of said cooling cartridge to maintain said cooling cartridge in a substantially vertical orientation within said bottle; and

(c) a cap for removably sealing said mouth and having an opening for drinking;

said raised vertical protrusion of said top surface allowing said beverage within said interior cavity of said drinking bottle to flow freely past said cooling cartridge and through said opening in said cap;

said cavity of said drinking bottle having a predetermined height, wherein the height of said cooling cartridge is slightly less than said height of said cavity to prevent substantial vertical movement of said cooling cartridge within said drinking bottle.

5,609,040

PROCESS AND PLANT FOR PRODUCING CARBON MONOXIDE

Jean Billy, Le Plessis Trevise, and François Granier, Nogent sur Marne, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

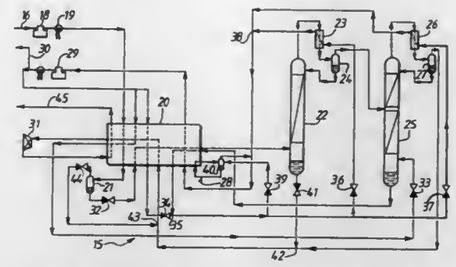
Filed Mar. 28, 1995, Ser. No. 411,878
Claims priority, application France, Apr. 11, 1994, 94 04219
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—622 **24 Claims**

1. A process for producing carbon monoxide from a mixture containing essentially carbon monoxide, hydrogen and other constituents including nitrogen and methane, which comprises:

separating the carbon monoxide from said other constituents by distillation at an intermediate pressure, said distillation including a first distillation column having a first head and a first sump, and a second distillation column having a second head and a second sump;

separating methane in the first sump;

separating carbon monoxide in the second sump from a mixture originating from the first distillation column;



cooling the head of one of said distillation columns using liquid at low pressure; and

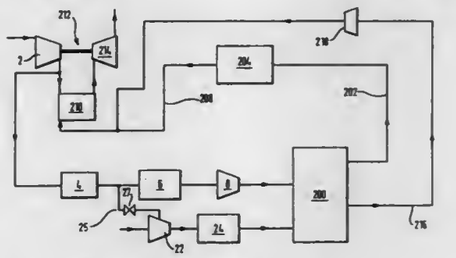
drawing off liquid at an intermediate location in said one of said distillation columns to provide reflux to the other of said distillation columns.

5,609,041

AIR SEPARATION

Thomas Rathbone, and Brian A. Keenan, both of Surrey, United Kingdom, assignors to The BOC Group plc, Windlesham, England

Filed Dec. 13, 1995, Ser. No. 572,230
Claims priority, application United Kingdom, Dec. 16, 1994, 9425484
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—646 **20 Claims**



1. In a method of separating air comprising:

a) taking a first flow of air from a first air compressor associated with a gas turbine;

b) purifying said first flow of air by separating water vapour and carbon dioxide therefrom;

c) further compressing at least part of the first air flow in a second air compressor;

d) heat exchanging at least part of the further compressed and purified first air flow with a stream of pressurised oxygen taken from a lower pressure rectification column in liquid state;

e) reducing the pressure of at least part of the heat exchanged first air flow and introducing it into a higher pressure rectification column;

f) compressing a second flow of air in a third air compressor which is independent of said gas turbine;

g) purifying said second flow of air by separating water vapour and carbon dioxide therefrom, cooling the second flow of air, and introducing the cooled second flow of air into the higher pressure rectification column;

h) rectifying the air flows in the higher and lower pressure rectification columns; and

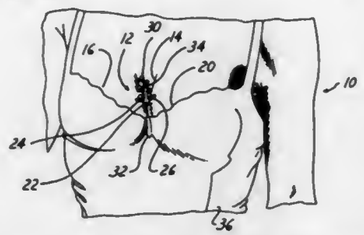
i) withdrawing a gaseous nitrogen stream from the lower pressure rectification column;

the improvement comprising:

i) operating the second air compressor with an outlet pressure independent of fluctuations in the power output of the gas turbine;

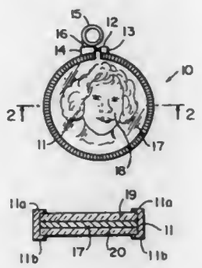
ii) purifying of the first air flow at a pressure at least about 5 bar less than that at which the said part of the first air flow leaves the second compressor;
iii) operating the lower pressure rectification column at pressures in excess of about 2 bar;
iv) pressurising the liquid oxygen to a pressure of at least about 25 bar.

5,609,042
BREAST ORNAMENT
Maybelline Williams, 14213 Longacre, Detroit, Mich. 48227
Filed Aug. 23, 1995, Ser. No. 518,356
Int. Cl.[6] A44C *25/00*
U.S. Cl. 63—20 **16 Claims**



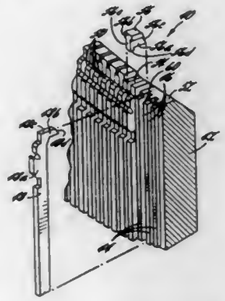
1. A jewelry ornament for accentuating a pair of breasts, the ornament comprising:
an elongate stem having a first end portion and a second end portion;
a mount attached to the second end portion;
a decoration secured by the mount to the second end portion; and
a pair of support arm extending laterally from the elongate stem, each arm adapted to abut a respective breast to prevent the elongate stem from rotating when the ornament is worn by a user;
wherein the ornament may be placed and retained in the cleavage defined between a pair of breasts with the decoration being visibly displayed.

5,609,043
DECORATIVE ARTICLE WITH ENGRAVED IMAGE
David Benderly, New York, N.Y., assignor to NFB of New York, Inc., New York, N.Y.
Filed Aug. 4, 1995, Ser. No. 511,558
Int. Cl.[6] A44C *25/00*
U.S. Cl. 63—23 **12 Claims**



1. A decorative article of jewelry comprising:
a) a frame; and
b) a sandwich mounted on said frame and including a pair of confining elements, at least one of which is transparent and has a predetermined thickness, and at least one non-self-supporting precious metal foil selected from the group consisting of gold, silver and platinum and confined between and supported by said confining elements, said foil having two major surfaces spaced apart by a thickness less than said predetermined thickness and, each of said major surfaces facing a different one of said confining elements and carrying at least one laser-engraved relief image on that one of said major surfaces thereof that faces said transparent one of said confining elements.

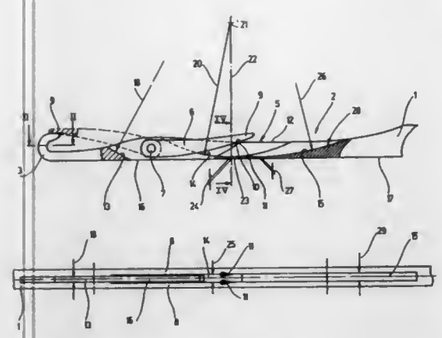
5,609,044
DURABLE KNITTING MACHINE CYLINDER ASSEMBLY AND METHOD OF MAKING SAME
Elizabeth K. Tacy, Monroe, N.C., assignor to Monarch Knitting Machinery Corp., Glendale, N.Y.
Filed Jan. 19, 1996, Ser. No. 588,743
Int. Cl.[6] D04B *9/08*
U.S. Cl. 66—115 **25 Claims**



1. A cylinder assembly for a circular knitting machine comprising:
a cylinder body including an outer cylindrical face having a plurality of spaced-apart, radial slots, and
a plurality of first inserts, each of said inserts being positioned within one of said slots and having a radially extending upper face to define a bearing surface for reciprocating elements of the knitting machine, each of said first inserts being substantially L-shaped to define a first leg and a second leg, and each of said first inserts being positioned on said cylinder body such that said first leg of each of said first inserts is within one of said slots and said second leg of each of said first inserts extends across said upper face of said cylinder body.

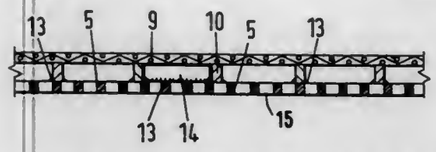
5,609,045
LATCH NEEDLE FOR KNITTING MACHINES
Wolfgang Schmoll, Haigerloch-Owingen, and Siegfried Wissmann, Albstadt-Pfeffingen, both of Germany, assignors to Theodor Groz & Söhne, and Ernst Beckert Nadelfabrik Commandit-Gesellschaft, both of Albstadt, Germany
Filed Mar. 29, 1996, Ser. No. 623,707
Claims priority, application Germany, Apr. 1, 1995, 19512375
Int. Cl.[6] D04B *35/04*
U.S. Cl. 66—121 **8 Claims**

1. In a knitting needle including
a shank having a length, a height perpendicular to said length, opposite ends, a shank back and an upper shank side opposite said shank back;
a needle hook carried by said shank at one of said ends thereof;
a sawslot provided in said shank; said sawslot extending in said length dimension and being bordered by elastically deformable shank cheeks provided by upper supporting surfaces; said sawslot having a throughgoing aperture being open toward said shank back;



a latch rivet traversing said sawslot and supported in said cheeks; and
a needle latch having a latch back provided with engagement faces; said needle latch being pivotally supported by said latch rivet for swinging motions between a closed position in which said needle latch engages said needle hook and an open position in which said engagement faces on said latch back lie on said supporting surfaces of said shank cheeks;
the improvement wherein said sawslot comprises, in a series as viewed from said needle hook,
(a) a first sawslot portion containing said throughgoing aperture and having a width;
(b) a second sawslot portion having a width greater than the width of said first sawslot portion; said supporting surfaces being located in a zone of said second sawslot portion; said second sawslot portion having a depth greater than one half of said height of said shank and being closed underneath said supporting surfaces; and
(c) a third sawslot portion adjoining said second sawslot portion and having a width less than the width of said second sawslot portion.

5,609,046
DEVICE FOR CONTINUOUS TREATMENT OF TEXTILE MATERIAL OR THE LIKE
Gerold Fleissner, Zug, Switzerland, assignor to Fleissner GmbH & Co., KG, Egelsbach, Germany
Filed Jun. 21, 1995, Ser. No. 493,321
Claims priority, application Germany, Jun. 28, 1994, 44 22 508.3
Int. Cl.[6] D06B *5/08*
U.S. Cl. 68—5 D **9 Claims**



1. A device for continuous treatment of textile material, fleeces paper with a gaseous or liquid treatment medium circulated in the device, said device comprising, as a transport member, a permeable sheet metal drum jacket under suction draft and with bases at its ends, said jacket being surrounded on its periphery by a screen mesh covering and between the screen mesh covering and the drum jacket, a support means for increasing the distance between the drum jacket and the covering, said support means comprising sheet metal strips that extend rectilinearly and unbent from one base to the other base parallel to a longitudinal axis of the drum jacket and over an entire length of the drum jacket, said sheet metal strips having radially inward lying edges and the sheet metal drum jacket bearing directly on the radially inwardly lying edges of the sheet metal strips, said edges of the sheet metal strips being securely fixed to an external periphery of the sheet metal drum jacket, and said drum jacket having a plurality of perforations arranged between said metal strips.

5,609,047
GARMENT STEAMING DEVICE WITH SAFETY NOZZLE
Robert R. Hellman, Jr., Oxford, Conn.; Nadia Wechsler, and Ephraim Wechsler, both of 300 Winston Dr. #1210, Cliffside Park, N.J. 07010, assignors to Nadia Wechsler, and Ephraim Wechsler, both of Cliffside Park, N.J.
Filed Jun. 6, 1995, Ser. No. 467,412
Int. Cl.[6] D06F *73/00*
U.S. Cl. 68—222 **39 Claims**

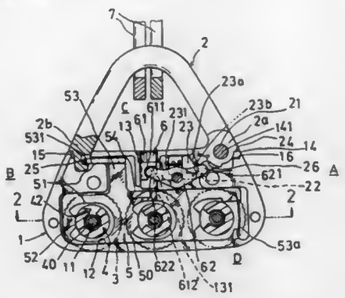
1. A portable garment steaming device for steaming an article of clothing comprising:
a housing;
a clothes hanger assembly for hanging the article of clothing to be steamed;
a safety nozzle assembly through which steam is emitted for steaming the article of clothing; and a water bottle compartment for supplying water to be generated as steam for said safety nozzle assembly;
wherein said clothes hanger assembly, said safety nozzle assembly and said water bottle compartment are self-contained with said housing;
wherein said safety nozzle assembly comprises a safety nozzle for emitting steam on the article of clothing to be steamed, a hose operatively connected to said safety nozzle for carrying the steam to said safety nozzle, and a nozzle plate having a plurality of perforation through which steam is emitted: and
means for rotating said nozzle plate from a use position, wherein said nozzle plate is in a position such that steam can be emitted toward the article to be steamed, and a retracted position, wherein said nozzle plate is rotated into an inaccessible position such steam cannot be emitted through its perforations.

5,609,048

PIVOTALLY LOCKABLE AND SEESAWLY RESTORABLE COMBINATION PADLOCK

Chong-Kuan Ling, c/o Sinox Co., Ltd. P.O. Box 96-156, Taipei, Taiwan

Filed Apr. 17, 1996, Ser. No. 633,678
Int. Cl.[6] E05B 37/14
U.S. Cl. 70—28 5 Claims



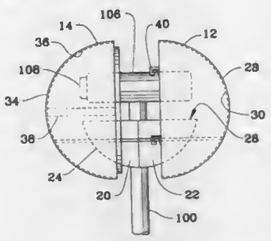
1. A combination padlock comprising:
a housing having a pivotal portion disposed at a pivotal side of said housing, and a locking cavity recessed in said housing at a locking side opposite to said pivotal side;
a shackle having a pivotal end portion pivotally secured to the pivotal portion of said housing, and a locking end portion of said shackle lockable in said locking cavity in said housing;
a plurality of dials and sleeves rotatably mounted in said housing;
a control plate slidably held in said housing and operatively lockable with said locking end portion of said shackle as rotatably driven by said sleeves and said dials for locking said padlock; and
a combination-changing means having an actuating plunger reciprocatively held in said housing and operatively depressible for limiting movement of said control plate and stopping rotation of said sleeves when said padlock is unlocked for free rotation of said dials for resetting a new combination, and a seesaw lever having two opposite lever ends of said lever respectively engageable with said actuating plunger and said pivotal end portion of said shackle, whereby upon a pivotal movement of said shackle to lock said housing and to depress one said lever end of said seesaw lever, the actuating plunger will be biased upwardly by the other lever end of said seesaw lever for automatically restoring the plunger of the combination-changing means.

5,609,049

TRANSMISSION LOCK DEVICE

Christopher Rundle, 12598 SW. 60th Ct., Miami, Fla. 33156, and Michael Borell, 7787 SW. 86th St., Apt. 310, Miami, Fla. 33143

Filed Mar. 30, 1995, Ser. No. 413,478
Int. Cl.[6] B60R 25/06
U.S. Cl. 70—202 13 Claims



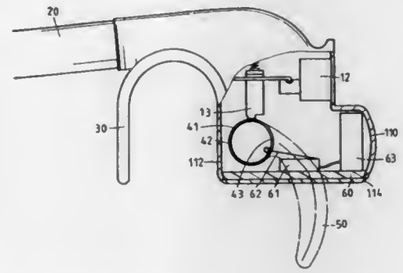
1. An anti-theft device for disabling a floor mounted transmission selector in motor vehicles, said device comprising:
a base member means securable along the length of a support post on a floor mounted transmission selector;
a housing means formed from a first and second rigid substantially semi-spherical shaped cap, said first cap having a leading edge forming an engagement tab, said second cap having a second edge forming a receptacle for coupling to said engagement tab, said housing means sized to encompass a finger operated transmission handle release of a floor mounted transmission selector with an inner surface of said housing means releasably securable to said base member and operatively associated with said base member to inhibit movement of the floor mounted transmission selector; and a means for locking said housing means to said base member said base member means being securable to the support post independently of the housing means.

5,609,050

AUTOMOBILE STEERING WHEEL LOCKING DEVICE

Chien H. Yu, P.O. Box 1032, Tainan, Taiwan

Filed Mar. 15, 1996, Ser. No. 616,338
Int. Cl.[6] B60R 25/02
U.S. Cl. 70—209 3 Claims



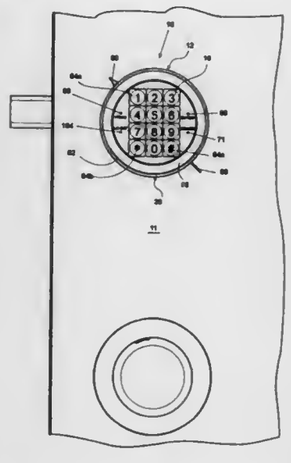
1. An automobile steering locking device comprising:
a bar element having a first end and a second end;
a locking portion connected to said first end of said bar element and including a base disposed to an under side of said first end of said bar element, said base having a front surface, two side surfaces, a rear surface, a top surface and a bottom, a tube rotatably and transversely disposed through said two side surfaces of said base and having an end section extending from each one of said two side surfaces respectively, each of said two end sections having a covered-up portion extending radially therefrom, said tube having a hole and an actuating portion respectively defined in an outer peripheral surface thereof and both of said hole and said actuating portion located within said base;
an alarm means disposed on said bottom and having a limit switch connected to said alarm means wherein said limit switch having an actuating rod extending therefrom so as to connect to said actuating portion of said tube;
a lock disposed in said first end of said bar element, said lock operatably connected to a pin disposed in said first end of said bar element so as to controllably operate said pin inserted into said hole of said tube, and
a plate extending from said bar element and having a space defined between said plate and said rear surface of said base, said covered-up portion rotated to a position by rotating said tube to cover up said space between said rear surface of said base and said plate.

5,609,051

KEYLESS ENTRY SYSTEM FOR REPLACEMENT OF EXISTING KEY LOCKS

Edward M. Donaldson, 7234 E. Cave Creek Rd. #128, Carefree, Ariz. 85377

Filed Aug. 16, 1995, Ser. No. 515,993
Int. Cl.[6] E05B 49/00
U.S. Cl. 70—278 13 Claims



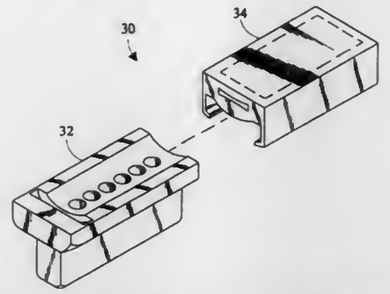
1. A keyless entry system for use with a deadbolt latch mechanism mounted on a door, the door having an exterior and an interior, the latch mechanism having an arm having a slot for engaging and disengaging an associated deadbolt, the keyless entry system comprising:
an interior portion comprising:
a housing mounted on the interior of the door, the housing having a base plate, the base plate having a first opening aligned with the slot;
a camlock having a ratchet rotatably mounted on the base plate, the camlock having a second opening aligned with the first opening and the slot;
a solenoid having a slug mounted on the base plate, the slug having a retracted position and an extended position, the slug engaging the ratchet in the extended position to prevent rotation of the camlock;
electronic control means mounted on the base plate, the electronic control means being in electrical communication with the solenoid, the electronic control means moving the solenoid slug from an extended position to a retracted position and vice versa in response to entry of a coded sequence;
and exterior portion comprising:
a keypad in electrical communication with the electronic control means for manual entry of the coded sequence, the keypad being mounted on the exterior of the door; and
a drive arm extending through the first and second openings, the drive arm rotating with the camlock, the drive arm extending through the slot of the latch mechanism, the drive arm being connected to a linkage, the linkage comprising a strip of high memory spring steel having one end mounted to the drive arm while the other end engages a rotary ring mounted on the exterior of the door, the drive arm being rotable by the linkage when the slug is in the retracted position.

5,609,052

LOADER AND METHOD FOR LOADING LOCK PINS

Joel M. Denning, P.O. Box M, Pacific Grove, Calif. 93950

Filed Nov. 18, 1994, Ser. No. 342,160
Int. Cl.[6] E05B 27/00; B23Q 3/00
U.S. Cl. 70—368 5 Claims



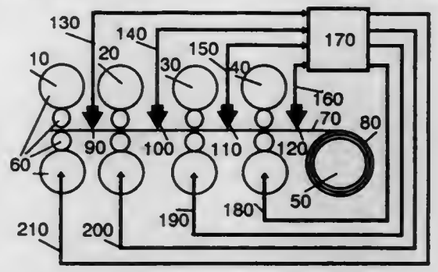
1. A pin loader for loading lock pins into the plug portion of a cylindrical lock, the plug portion being of cylindrical shape having a first diameter, the plug portion having a plurality of cylindrical pin cavities of a second diameter sized to receive the lock pins, the pin cavities arranged in a first substantially linear predetermined pattern, the plug portion having a circular flange, said pin loader comprising:
a body having a corresponding plurality of cylindrical pin dispensing barrels arranged in a second substantially linear predetermined pattern, said second pattern adapted to conform to the first pattern of the plug portion;
said body further having a cylindrically shaped flute having a third effective diameter and a longitudinal centerline, said third diameter adapted to conform to the first diameter of the plug portion; and,
a cover removeably connected to said body and concavely contoured to closely fit over said cylindrically shaped flute, said body further having shoulders, and said cover having an integral pair of runners which longitudinally engage said shoulders of said body so that said cover may slide onto said body and thereby closely cover said flute and contain the lock pins therewithin.

5,609,053

CONSTANT REDUCTION MULTI-STAND HOT ROLLING MILL SET-UP METHOD

Adriano M. P. Ferreira, Bridgeport, W. Va., and Terry L. Horton, Martville, N.Y., assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Aug. 22, 1994, Ser. No. 293,834
Int. Cl.[6] B21B 37/02
U.S. Cl. 72—9.2 10 Claims



2. A method for determining setup parameters for a rolling mill comprising a plurality of mill stands which reduces the thickness of web material comprising the steps of:

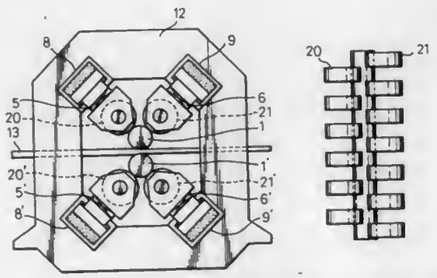
(a) determining a plurality of web material classes according to similar hardness and rollability characteristics;
(b) determining an interstand class thickness for web material of each web material class to have between each stand in the rolling mill at which a temperature remains constant; and
(c) storing said interstand class thickness as elements in a web material class versus stand matrix.

5,609,054

ROLLING MILL FOR FLAT PRODUCTS

Shigeru Ogawa, and Toshiyuki Shiraishi, both of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP92/01087, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO93/04795, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 27, 1992, Ser. No. 50,102
Claims priority, application Japan, Sep. 10, 1991, 3-230450; Nov. 5, 1991, 3-288553; Dec. 2, 1991, 3-343926
Int. Cl.[6] B21B *31/32;37/08*
U.S. Cl. 72—14.1 **10 Claims**



1. A rolling mill for rolling a rolled flat product including a pair of work-rolls confronted reciprocally and a set of support rolls for directly supporting rolling force mounted for rotation on a periphery of at least one of said work-rolls, comprises a roll assembly in at least either an upper or lower side having a structure in which said one work-roll is supported by said set of support rolls; said set of support rolls comprises not less than two support-rolls each of which is divided into not less than three short-barrel support-rolls in a roll axiswise direction, and each divided short-barrel support-roll is provided, independently, with load detector equipment, said one work-roll having a roll axiswise distribution of rolling force acting between the rolled flat product and said one work-roll when said rolling mill is rolling said rolled flat product, and said rolling mill has a device for calculating the roll axiswise distribution of the rolling force acting between the rolled flat product and said one work-roll only using measured force acting between each short-barrel support-roll and said one work-roll when said rolling mill is rolling said rolled flat product measured with said load detector equipment independently provided to each short-barrel support-roll and for immediately regulating said short-barrel support rolls in response to said calculated roll axiswise distribution.

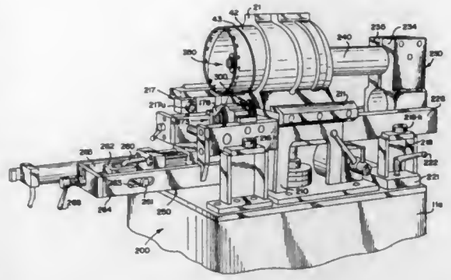
5,609,055

METHOD AND APPARATUS FOR CUTTING AND NOTCHING A HOLLOW PIPE

Wilhelmus P. H. Castricum, Palatine, Ill., assignor to Spiral-Helix, Inc., Buffalo Grove, Ill.

Filed Mar. 20, 1995, Ser. No. 407,318
Int. Cl.[6] B21F *11/00;* **B21C** *37/00*
U.S. Cl. 72—49 **23 Claims**

5. An apparatus for simultaneously cutting and notching a pipe comprising:
a first upper notch cutting knife having a cutting edge adjacent an inner surface of the pipe;



an upper pipe cutting knife positioned adjacent to the first upper notch cutting knife, said upper pipe cutting knife having a cutting edge adjacent the inner surface of the pipe;
a second upper notch cutting knife positioned adjacent to the upper pipe cutting knife wherein the upper pipe cutting knife is positioned between the first and second upper notch cutting knives, said second upper notch cutting knife having a cutting edge adjacent the inner surface of the pipe;
a first lower notch cutting knife having a cutting edge adjacent an outer surface of the pipe for cooperating with the first upper notch cutting knife to puncture the pipe at a plurality of points a predetermined distance from an end of the pipe to form notches;
a lower pipe cutting knife positioned adjacent to the first lower notch cutting knife, said lower pipe cutting knife having a cutting edge adjacent the outer surface of the pipe;
a second lower notch cutting knife for cooperating with the second upper notch cutting knife to puncture the pipe at a plurality of points a predetermined distance from an end of the pipe to form notches, said second lower botch cutting knife positioned adjacent the lower pipe cutting knife and having a cutting edge adjacent the outer surface of the pipe; and
a knife positioning mechanism for moving the lower pipe cutting knife and the first and second lower notch cutting knives from a standby position to a cutting position wherein said upper and lower pipe cutting knives will overlap and cut the pipe to form a severed pipe section and a section of pipe being formed, and wherein the notch cutting knives will simultaneously cut notches along a trailing end of the severed pipe section and a leading end of the section of pipe being formed.

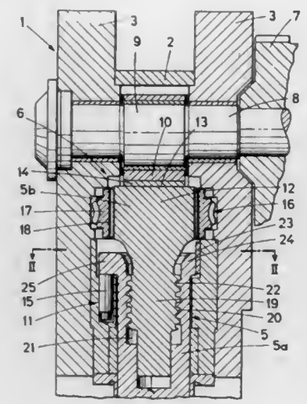
5,609,056

SWAGING MACHINE

Alfred Seeber, Garsten/Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Jan. 17, 1995, Ser. No. 373,638
Claims priority, application Austria, Jan. 18, 1994, A 83/94
Int. Cl.[6] B21J *13/00*
U.S. Cl. 72—446 **10 Claims**

1. In a swaging machine comprising
a machine frame,
an eccentric shaft mounted in said machine frame for rotation on an axis,
an eccentric non-rotatably mounted on said eccentric shaft,
a connecting-rod like swaging hammer, which is radially guided in said machine frame with respect to said axis and is operatively connected to said eccentric by a slide ring that surrounds and is rotatably mounted on said eccentric, wherein a sliding surface formed on said hammer at its radially inner end is in sliding contact with said slide ring,
the improvement residing in that
said sliding surface is merely in frictional contact with said slide ring and



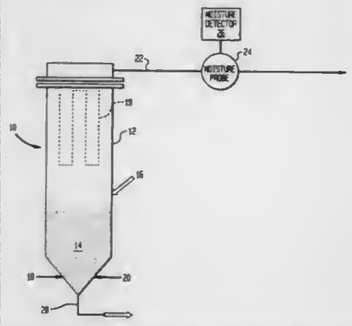
compression spring means are supported in said machine frame and arranged to apply pressure to said hammer to urge said sliding surface against said slide ring.

5,609,057

METHOD AND SYSTEM FOR IN-LINE DETECTION OF MOISTURE IN URANIUM-CONTAINING POWDERS

Inaky J. Urza, Richland, Wash., assignor to Siemens Power Corporation, Richland, Wash.

Continuation of Ser. No. 128,402, Sep. 29, 1993, Pat. No. 5,377,532. This application Sep. 22, 1994, Ser. No. 310,920
Int. Cl.[6] G01N *33/22;27/00*
U.S. Cl. 73—73 **6 Claims**



1. A moisture detection system for in-process nuclear fuel powder comprising:
containing means for directing a flow of a nuclear fuel powder therethrough;
purge gas supply means for providing a purge gas to said containing means, said purge gas contacting the flowing powder;
transport means connected to said containing means for transporting at least part of said purge gas therethrough, after said purge gas contacts the powder; and,
moisture detection means for measuring the moisture in said transported purge gas, said measure of moisture correlating to a measure of overall moisture in said flowing powder.

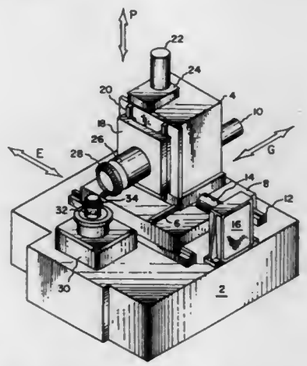
5. A process for detecting moisture in an in-process nuclear fuel powder comprising the steps of:
providing a nuclear fuel powder;
providing a containing means;
flowing the nuclear fuel powder through the containing means;
supplying a purge gas to the containing means;
contacting the flowing nuclear fuel powder with the purge gas so that the purge gas absorbs moisture therefrom;
transporting at least part of said purge gas to moisture detection means; and
measuring the moisture of said transported purge gas, said measure of moisture correlated to a measure of overall moisture content of said flowing powder.

5,609,058

METHOD OF DETERMINING BACKLASH

James J. Gnadt, Fairport, and David A. Wright, Victor, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

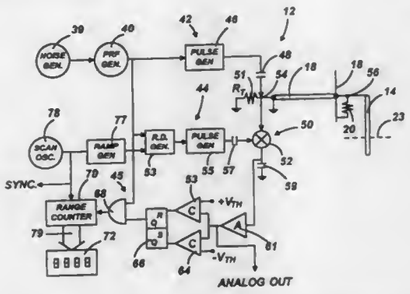
Filed May 31, 1994, Ser. No. 251,552
Int. Cl.[6] G01M *13/02*
U.S. Cl. 73—162 **17 Claims**



1. A method of determining backlash in a gear set comprising first and second gear members, said first member having a number of teeth equal to or greater than said second member, said method comprising:
placing said first and second members in mesh,
rotating said members whereby said first member is rotated in a first direction,
recording the rotary position of one of said first and second members at predetermined increments,
recording the rotary position of the other of said first and second members simultaneously with said recording of said one member,
rotating said members whereby said first member is rotated in the opposite direction,
recording the rotary positions of said one of said first and second members at each of said predetermined increments, said rotary positions for said one direction of rotation being the same as said rotary positions for said opposite direction of rotation,
recording the rotary position of the other of said first and second members simultaneously with said recording of said one member,
calculating the difference between the rotation positions recorded for said other of said first and second members at each like increment of said one member rotation in said first direction and said opposite direction,
determining one of the median value or average value from said calculated rotation position differences,
comparing said one of said median value or average value with a predetermined acceptable backlash value,
and,
(a) if said one of said median value or average value is within a desired range from said predetermined acceptable backlash value,
further processing said gear and pinion members, or,
(b) if said one of said median value or average value is outside of said desired range,

determining the relative positional changes of said gear and pinion members necessary to achieve said acceptable backlash,
relatively positioning said gear and pinion members to said determined relative positions, and,
further processing said gear and pinion members.

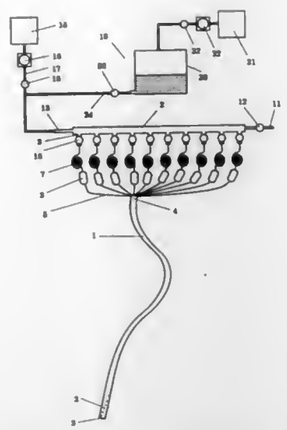
5,609,059
ELECTRONIC MULTI-PURPOSE MATERIAL LEVEL SENSOR
Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Dec. 19, 1994, Ser. No. 359,090
Int. Cl.[6] G01S *13/00*
U.S. Cl. 73—290 R **33 Claims**



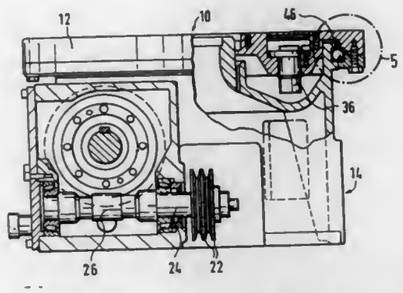
1. A sensor for determining the surface or interface level of a material comprising in combination:
a transceiver for generating electrical transmit pulses;
a guide wire at least partially immersed in the material;
a conductor electrically coupling said transceiver and said guide wire;
a launcher plate connected to said conductor at said coupling to said guide wire;
said transmit pulses being conducted over said conductor to said launcher plate, said launcher plate acting as a transmit antenna ground plane, and helping launch said electrical pulses as near field, guided electromagnetic (EM) waves, and also producing a fiducial pulse back to the transceiver;
said EM waves propagating along said guide wire, and being at least partially reflected by the surface or interface;
said reflected EM waves propagating back along said guide wire toward said launcher plate, said launcher plate acting as a receive antenna ground plane, and therefrom said reflected EM waves being transmitted as reflected pulses to said transceiver; and
said transceiver determining a time delay between said fiducial and reflected pulses, thus establishing the surface or interface level relative to said launcher plate.

5,609,060
MULTIPLE CHANNEL PERFUSED MANOMETRY APPARATUS AND A METHOD OF OPERATION OF SUCH A DEVICE
John Dent, Belair, Australia, assignor to Dentsleeve Pty Limited, Australia
Filed Apr. 28, 1995, Ser. No. 431,052
Int. Cl.[6] G01L *13/04*
U.S. Cl. 73—700 **20 Claims**

1. A perfused manometry apparatus comprising a manometric line assembly having a plurality of channels therein with each channel terminating towards an operative end of the manometric line assembly at an opening in the line at a selected distance along the line, a manifold including a plurality of outlets for supplying a manometric infusate under pressure to each of the channels via the outlets at a manifold end of the manometric line assembly and the transducer associated with each channel to measure the pressure in each of the channels, the manifold including a flushing gas inlet to allow for to introduction of a flushing gas into the manifold and a infusate inlet to allow for introduction of the manometric infusate into the manifold, the first inlet means being connected with a source of flushing gas and the second inlet means being in connection with a source of manometric infusate under pressure.

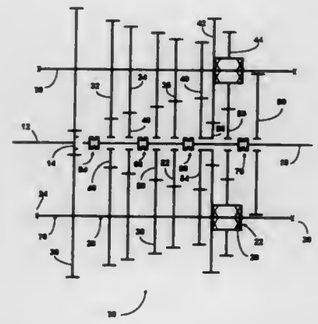


5,609,061
TURNTABLE WITH STEPPING DRIVE
Reinfried Möller, Weinheim, Germany, assignor to Expert Maschinenbau GmbH, Germany
Continuation of Ser. No. 343,553, Nov. 29, 1994. This application Apr. 22, 1996, Ser. No. 636,023
Claims priority, application Germany, Apr. 2, 1993, 9305031 U
Int. Cl.[6] F16H *29/04*
U.S. Cl. 74—120 **2 Claims**



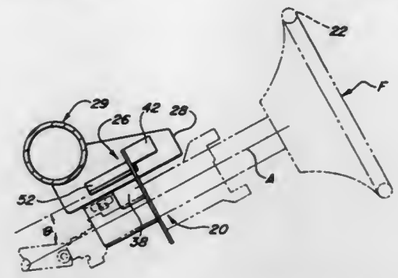
1. A bearing system for a turntable (**10**) with a stepping drive, the turntable having a circularly defined table plate (**12**), journaled on the upper side of a housing, from the bottom of the table plate a plurality of drive pins (**36**) project which are disposed at uniform angular distances on the same diameter, and which engage a control groove (**34**) in a drive cylinder (**32**) mounted in the housing (**14**) and motor-driven, the course of the control groove (**34**) determining the characteristic of the rotatory movement of the table plate (**12**), and wherein the circularly defined table plate (**12**) has a diameter that is greater than the associated upper part, likewise circularly defined, of the housing (**14**), wherein said bearing system comprises;
the housing (**14**);
an outer table plate margin (**48**), overreaching radially beyond the housing and having an increasing thickness downwardly such that it slightly overlaps downwardly a bearing area (**14**) of the housing (**40**);
a bearing ring (**50**), removably fastened on the downwardly facing surface of the outer table plate margin (**48**) reaching downwardly past the housing (**14**) in the bearing area, and
a bearing race for ball bearings (**46**) for the table plate wherein said bearing race comprises;
housing-side races (**42**) formed in the radially outwardly facing wall of the housing (**14**) in the beating area (**40**),
an inner surface of the outer table plate margin (**48**) opposite the housing-side races in the housing (**14**); and
the bearing ring (**50**).

5,609,062
COMPOUNDED COUNTERSHAFT TRANSMISSION
Joseph D. Reynolds, Climax, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jun. 19, 1995, Ser. No. 491,823
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—325 **28 Claims**



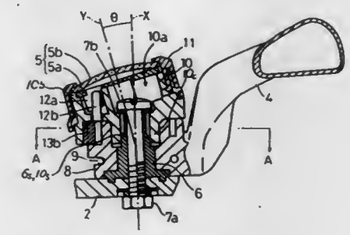
1. A mechanical change-gear transmission comprising:
an input shaft having an input gear supported thereon for rotation therewith;
a mainshaft generally coaxial with said input shaft;
at least one compounded countershaft having an axis of rotation substantially parallel to the axis of rotation of said mainshaft, said countershaft having a plurality of countershaft gears supported thereby for rotation therewith, one of said countershaft gears in constant meshing engagement with said input gear to establish a constant driving relation between said input shaft and said countershaft;
a plurality of mainshaft gears surrounding said mainshaft for free rotation relative thereto, each of said mainshaft gears being constantly meshed with one of said countershaft gears; and
means to selectively clutch said mainshaft gears, one at a time, to said mainshaft to establish a driving relationship between said countershaft and said mainshaft;
said compounded countershaft comprising a first portion carrying said countershaft gear constantly meshed with said input gear and a second portion, a countershaft gear on said first portion and a countershaft gear on said second portion each being constantly meshed with an idler gear member to establish a constant driving relationship between said first and second countershaft portions wherein rotation of said input shaft cause said first portion to have a greater angular velocity than said second portion, one of said first and second countershaft portions being of a generally tubular shape and telescopically surrounding the other of said countershaft portions and supported thereon by bearings carried by said other of said countershaft portions.

5,609,063
STEERING COLUMN SUPPORT FOR A COLLAPSIBLE STEERING COLUMN
Gregory T. Hedderly, Livonia; Lisa A. Tyus, Belleville, and Leonard M. Brown, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 5, 1995, Ser. No. 417,353
Int. Cl.[6] B62D *1/11*
U.S. Cl. 74—492 **9 Claims**



1. A steering column support apparatus for use in a motor vehicle with an energy absorbing steering column having a steering axis about which steering takes place during operation of the vehicle, said support apparatus comprising:
a guide secured to said vehicle, said guide having a longitudinal axis extending along a predetermined axis;
a strap that extends transversely with respect to the steering axis and has a central portion that mounts the steering column on the strap;
said strap having opposite ends each of which include a mounting portion for mounting on the vehicle; and
said strap further including a hook extending from said central portion to an open end adjacent to said guide, said open end being adapted to engage said guide, whereby collapse of the steering column along the steering axis deforms the strap to absorb energy and said hook engages said guide, thereby directing the steering column to collapse in a predetermined orientation.

5,609,064
SHIFTING APPARATUS FOR A BICYCLE
Takeo Abe, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Filed Feb. 22, 1995, Ser. No. 392,186
Claims priority, application Japan, Feb. 23, 1994, 6-025017
Int. Cl.[6] B62M *25/04*
U.S. Cl. 74—502.2 **17 Claims**



1. A shifting apparatus for a bicycle comprising:
fixed shaft means extending along a first axis;
a takeup element coaxially rotatable with said first axis of said fixed shaft means to wind a control cable thereon;
shift lever means for rotating said takeup element; and
an indicator including a rotatable member interlocked to said takeup element to be coaxially rotatable with a second axis,

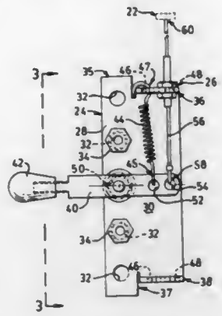
and a fixed member for indicating a speed stage of a change gear device based on a displacement relative to said rotatable member, wherein said second axis is inclined relative to said first axis, at least a portion of said indicator being present on an extension of said first axis.

5,609,065

CABLE ACTUATOR ASSEMBLY

James D. Brewer, Cary, and Alan A. Davidovich, Garner, both of N.C., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 6, 1995, Ser. No. 469,402
Int. Cl.[6] G05G *5/06*
U.S. Cl. 74—528 **7 Claims**



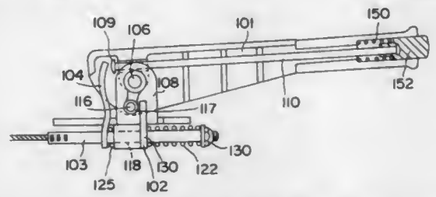
1. A cable actuating assembly, comprising:
a plate having a flat planar surface and a first plurality of through holes, a plurality of threaded devices secured to said plate in axial alignment with selected one of said first through holes, and first and second connecting portions, each connecting portion being bent to form a right angle to said planar surface;
an actuating lever pivotally secured to said plate midway between said connecting portions; and
a cable device directly connected to one of said connecting portions and a cable of said cable device directly connected to said lever.

5,609,066

MECHANISM FOR ACTUATING A VEHICLE PARKING BRAKE

Gavin Bunker, Stony Stratford, and Timothy Bunker, Rearsby, both of United Kingdom, assignors to Simplistik Design Limited, United Kingdom

PCT No. PCT/GB91/02022, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO92/08628, PCT Pub. Date May 29, 1992
PCT Filed Nov. 15, 1991, Ser. No. 50,364
Claims priority, application United Kingdom, Nov. 17, 1990, 9025041
Int. Cl.[6] G05G *5/06*
U.S. Cl. 74—537 **22 Claims**



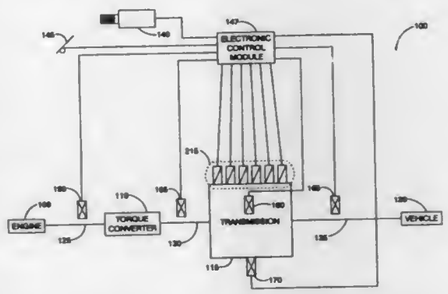
1. An actuating mechanism for a vehicle parking brake, comprising fixed mounting means for mounting the mechanism in a vehicle, an actuator which is pivotally mounted on the mounting means for movement relative thereto between a first and a second position, an elongate output member for connection to a vehicle parking brake, the elongate output member being slidably mounted in the mounting means and arranged to move in a brake-applying direction frown a brake-off to a brake-on position when the actuator moves from its first position to its second position, a driver which is uncoupled from the output member when the actuator is in the first position, which releasably couples the actuator to the output member during movement of the actuator from its first to its second position, and which uncouples the output member as the actuator is returned in the opposite direction from its second to its first position, a releasable holder which restrains the output member against reverse movement from its brake-on to its brake-off position during movement of the actuator in the said opposite direction, and a release means for the releasable holder for disengaging the holder from the output member.

5,609,067

TRANSMISSION CONTROL FAULT DETECTION

Randall M. Mitchell, Washington; Ashok Kajjam, and Alan L. Stahl, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 14, 1994, Ser. No. 323,281
Int. Cl.[6] F16H *59/46;61/12;* **B60K** *41/22*
U.S. Cl. 74—336 R **29 Claims**



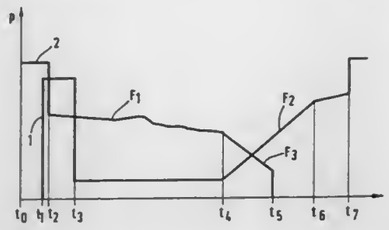
1. An apparatus for detecting a fault condition in a transmission having a plurality of rotating components, a plurality of clutches, and a transmission control having a means for modulating the engagement of the clutches, comprising:
a plurality of speed sensors producing speed and direction signals in response to the rotational speed of a plurality of the rotating components;
means for calculating the relative rotational speed between two or more clutches in response to said speed and direction signals; and
diagnostic means for indicating a fault condition in response to the relative rotational speed and the duration of a period of time.

5,609,068

PROCESS FOR CONTROLLING AND REGULATING THE LOAD TAKE-UP IN AN AUTOMATIC GEARBOX

Wolf-Dieter Gruhle, Tettnang; Peter Sigg, Friedrichshafen; Harald Deiss, Ravensburg; Manfred Schwab, Tettnang, and Wolfgang Danz, Friedrichshafen, all of Germany, assignors to ZF Friedrichshafen AB, Friedrichshafen, Germany

PCT No. PCT/EP93/03357, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO94/12814, PCT Pub. Date Jun. 9, 1994
PCT Filed Dec. 1, 1993, Ser. No. 433,451
Claims priority, application Germany, Dec. 3, 1992, 42 40 621.8
Int. Cl.[6] F16H *61/06;* **F16D** *25/10*
U.S. Cl. 74—336 R **19 Claims**



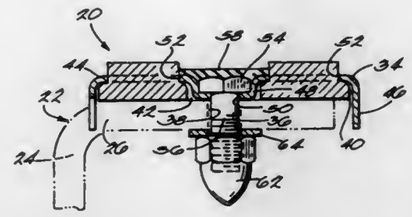
1. A process for the electronic control and regulation of an automatic transmission having an electronic control mechanism and electronically controlled clutches, of which, at least one first clutch (1) closes upon at least one change of gear while at least one second clutch (2) opens, comprising the steps of:
(a) during a quick loading phase of said first clutch:
(i) increasing a hydraulic pressure in said first clutch; while
(ii) lowering a hydraulic pressure of said second clutch (2) until a slip threshold is substantially achieved;
(b) during a load-compensation phase of said first clutch (1), controlling the hydraulic pressure of said second clutch (2) with a control process for lowering the hydraulic pressure of said second clutch (2) according to a first time function (F1), having a desired characteristic line, until a speed difference, calculated from a current input speed (6) minus a product (7) of a previous old reduction ratio multiplied by a current output speed, reaches a predetermined value;
(c) after the load compensation phase:
(i) raising the hydraulic pressure of said first clutch (1) according to a second time function (F2); while
(ii) lowering the hydraulic pressure of said second clutch (2) according to a third time function (F3), such that, a slope of said third time function (F3) quantitatively has substantially the same value as a slope of said second time function (F2) of said first clutch (1); and
(d) when said speed difference drops to a value substantially equal to zero:
(i) lowering the pressure of said second clutch (2) to zero; while
(ii) increasing the pressure of said first clutch to maximum pressure;
(e) wherein, as soon as the speed difference deviates from the desired value by a specific amount, the process further includes the steps of:
regulating the third time function with a regulation process, for decisively determining a regulated third time function (F3) by superimposing a controlled special function upon the third time function and lowering the hydraulic pressure of said second clutch (2) according to said regulated third time function (F3).

5,609,069

FOOT PEDAL ASSEMBLY

Dale Swenson, Wales, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jul. 21, 1995, Ser. No. 505,517
Int. Cl.[6] G05G *1/16*
U.S. Cl. 74—563 **12 Claims**



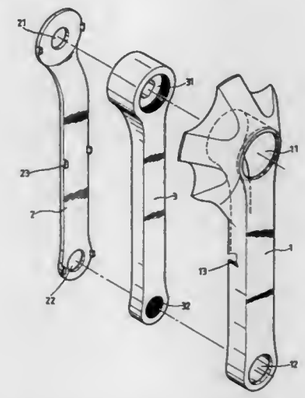
1. A foot pedal and pad assembly comprising:
a foot pedal;
a resilient pad positioned adjacent to said foot pedal; and
fastener means for securing said pad to said foot pedal, said fastener means including:
a fastener member having a shaft portion and a head portion; and
a resilient member covering said head portion and directly secured only to said head portion.

5,609,070

CRANK COVER ASSEMBLY FOR A BICYCLE

King-Chen Lin, No. 173, Kuei Suei Street, and Ming-Chang Lin, No. 66, Huai An Street, both of Kaohsiung City, Taiwan

Filed Aug. 1, 1995, Ser. No. 509,727
Int. Cl.[6] B62M *3/16*
U.S. Cl. 74—594.1 **4 Claims**



1. A crank cover assembly covering a forged bicycle crank having at least one through hole comprising:
(a) a shell member covering an outer portion of said bicycle crank, said shell member having formed therein an elongate cavity receiving therein at least said outer portion of said bicycle crank; said shell member having formed therethrough at least one opening, said opening substantially aligning with one said bicycle crank through hole when said outer portion of said bicycle crank is received in said cavity; and,
(b) a leaf member coupling with said shell member to cooperate therewith to substantially encase said bicycle crank, said leaf member having formed therein at least one through opening.

said through opening substantially aligning with said shell member opening when said leaf member is coupled to said shell member.

5,609,071

SHIFTABLE PEDAL BEARING GEARING FOR A BICYCLE OR THE LIKE

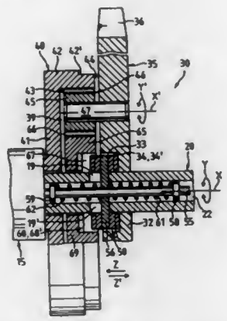
Florian Schlumpf, Dorfstrasse 10, 7324 Vilters, Switzerland

Filed Feb. 6, 1995, Ser. No. 383,961

Claims priority, application Switzerland, Feb. 7, 1994, 345/94

Int. Cl.[6] B62M *11/14*; **G05G** *1/14*

U.S. Cl. 74—594.2 **13 Claims**



1. A shiftable pedal bearing for use in a pedal-driven vehicle, comprising:

a bousing;

a crank axle axially traversing the housing and carrying at least one pedal crank; and

a gearing including

a chainwheel mounted on said crank axle;

a disk mounted on said crank axle in parallel relationship to said chainwheel, said chainwheel and said disk having opposing end faces of a configuration as to form part of a locking mechanism;

a coupler rotatably mounted on said crank axle between said chainwheel and said disk and being movable in axial direction between two switching positions, said coupler having opposite sides extending perpendicular to said crank axle and respectively facing said end faces of said chainwheel and said disk, said sides of said coupler being configured as to form another part of the locking mechanism so that said coupler is in interlocked engagement with said chainwheel to rotate therewith in one of the switching positions and in interlocked engagement with said disk to rotate therewith in the other one of the switching positions; and

actuating means secured to said crank axle and operatively connected to said coupler for shifting said coupler between the switching positions.

5,609,072

CHANGE-SPEED GEARBOX FOR MOTOR VEHICLES WITH A FRONT MOUNTED TRANSVERSE DRIVE UNIT

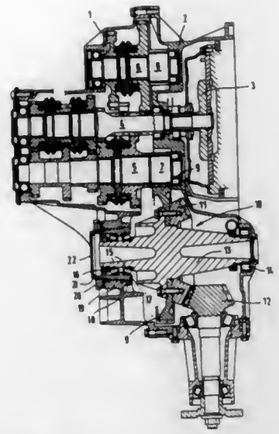
Rolf Lequis, Hennef; Gerd Adams, Leichlingen, and Hartmut Deldewig, Roesrath, all of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1995, Ser. No. 528,269

Claims priority, application Germany, Nov. 15, 1994, 44 40 742.4

Int. Cl.[6] F16H *57/02*

U.S. Cl. 74—606 R **3 Claims**



1. A change-speed gearbox for motor vehicles having a front-mounted transverse drive unit, comprising:

a gearbox housing;

a change-speed gearbox located in the gearbox housing, arranged in line with an engine and having an output gearwheel; and

a bevel gear right-angle final drive unit driveably connected to the output gearwheel, including an axle made of the same material as the gearbox housing, a crown wheel supported on the axle and a pinion driveably engaged with the crown wheel, the axle being located in the gearbox housing.

5,609,073

CAMMING DIFFERENTIAL WITH OIL PUMP MEANS

John Spooner, Leamington Spa; Alastair J. Young, Kenilworth, and John P. Chippendale, Knowle, all of Great Britain, assignors to Automotive Products, plc, Leamington Spa, England

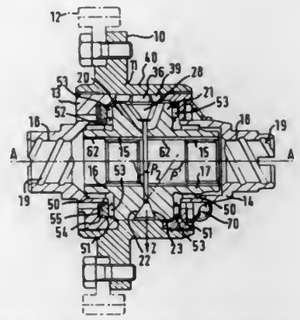
PCT No. PCT/GB93/02137, § 371 Date Sep. 28, 1994, § 102(e) Date Sep. 28, 1994, PCT Pub. No. WO94/09291, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 15, 1993, Ser. No. 244,950

Claims priority, application United Kingdom, Oct. 16, 1992, 9221817

Int. Cl.[6] F16H *48/14*;*57/04*

U.S. Cl. 74—650 **26 Claims**



2. A differential mechanism (**10**) comprising two output cam members (**16**,**17**) rotatable about an axis (A), each said member having an annular cam surface thereon of undulating form comprising pairs of mutually inclined surfaces (**24**,**25**,**26**,**27**), and a plurality of cam followers (**28**) having end surfaces (**29**,**30**) engaging the cam surfaces of the output cam members, the arrangement being such that relative contra rotation of said output cam members (**16**,**17**) causes the cam followers to slide axially, and an input element (**11**–**14**) engaging and supporting the followers (**28**) and moving the followers circumferentially relative to the output cam members, characterized in that a component (**11**,**14**) of the differential which rotates during use of the differential drives oil pump means (**70**) for forcing oil into the differential and wherein the oil pump means (**70**) comprises scoops (**72**) arranged externally on the component (**11**,**14**) which rotates and is connected to oil passageways (**73**) through the component (**14**).

5,609,074

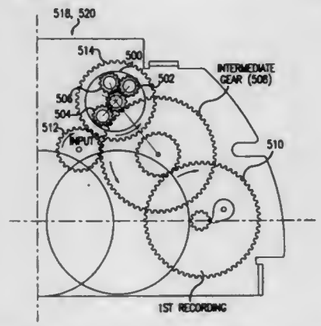
UNIDIRECTIONAL REGISTER FOR ELECTRICITY METER

Norman B. Venaas, Seneca, S.C., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Filed Feb. 8, 1995, Ser. No. 385,488

Int. Cl.[6] G06M *1/00*

U.S. Cl. 74—810.1 **20 Claims**



1. A unidirectional register apparatus comprising:

an input gear mechanism adapted to receive a rotational input from an external source;

a yoke, operatively coupled to said input gear mechanism, and arranged to pivot between a first predetermined position and a second predetermined position in response to a change in direction of the rotational input;

a first gear mechanism, attached to said yoke, and arranged to produce a first rotational output in a same direction as a rotational input direction;

a second gear mechanism, attached to said yoke, and arranged to produce a second rotational output in a direction opposite to the rotational input direction; and

an output gear mechanism, alternately engageable with each of said first and second gear mechanisms, wherein (i) said output gear mechanism engages said first gear mechanism when said yoke is in the first predetermined position, and (ii) said output gear mechanism engages said second gear mechanism when said yoke is in the second predetermined position.

5,609,075

RAZOR BLADE MANUFACTURE

Nicolae Neamtu, Quincy, Mass., assignor to The Gillette Company, Boston, Mass.

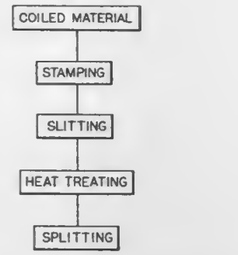
Continuation-in-part of Ser. No. 210,002, Mar. 17, 1994, Pat. No. 5,458,025. This application Jan. 9, 1995, Ser. No. 370,415

Int. Cl.[6] B21K *11/00*

U.S. Cl. 76—104.1 **7 Claims**

1. A process for manufacturing a plurality of strands of razor blades in a continuous strip which includes the steps of:

providing a continuous strip of blade material having a width dimension substantially equal to the width dimensions of the plurality of strands;



forming a plurality of openings in said continuous strip, said openings defining precise attach points to be employed in retaining a blade onto a razor handle or in a cartridge and then;

partially slitting said strip along equally spaced parallel lines over the length of said strip to form a plurality of linear connected blade strands one strand being formed between each of said parallel lines, and between a parallel line and the edge of said strip; and

separating said strands to form a plurality of equal width strands having said openings precisely aligned with, and located from, the edges of said strands.

5,609,076

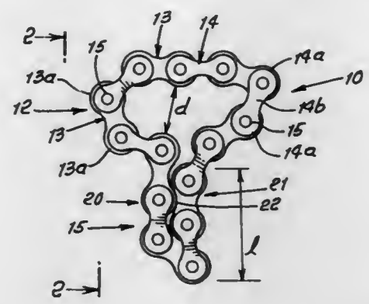
CONTAINER OPENER

Carsten Idland, 3526 Centinela Ave., #8, Los Angeles, Calif. 90066

Filed Sep. 11, 1995, Ser. No. 526,684

Int. Cl.[6] B67B *7/16*

U.S. Cl. 81—3.57 **9 Claims**



1. A chain link device to remove a cap from a container, comprising:

a) a chain having a series of links interconnected at pivot locations,

b) the chain having a first looping portion sized to grip a bottle cap,

c) the chain having a second handle portion projecting away from the looping portion for grasping to exert prying leverage on said first portion,

d) the chain having adjacent chain segments which interfit at said handle portion,

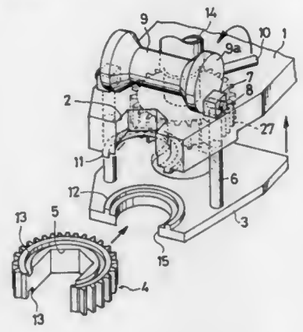
e) and including a clip retaining said segments in adjacent relation.

5,609,077

TIGHTENING DEVICE

Tadahiro Ohmi, Sendai; Nobukazu Ikeda, Osaka; Ryosuke Dohi, Osaka; Kunio Nagai, Osaka; Eiji Ideta, Osaka; Koji Nishino, Osaka; Michio Yamaji, Osaka; Tsutomu Shinohara, Osaka, and Naofumi Yasumoto, Osaka, all of Japan, assignors to Fujikin Incorporated, Osaka, Japan

Continuation of Ser. No. 253,738, Jun. 3, 1994, abandoned.
This application Aug. 20, 1996, Ser. No. 697,031
Claims priority, application Japan, Jun. 4, 1993, 5-134788
Int. Cl.[6] B25B *21/00*
U.S. Cl. 81—57.13 **18 Claims**



1. A device for tightening up a nut screwed on an externally threaded member having a flange, the device comprising:

a body,

a preventing member for preventing rotation of the externally threaded member, the preventing member projecting forward from a front end of the body and having a flange fitting portion open in a predetermined direction,

a gear support member attached to the preventing member and having a gear support portion coaxial with the flange fitting portion,

a nut rotating gear having a nut fitting portion coaxial with and open generally in the same direction as the flange fitting portion,

the nut rotating gear being supported by the gear support member so as to be rotatable about a longitudinal axis of the nut fitting portion,

a transmission gear attached to the preventing member and meshable with the nut rotating gear to rotate the gear, and

means for driving the transmission gear,

wherein said gear support member is movable in the longitudinal direction to and from said body between a position adjacent said body where the nut rotating gear meshes with the transmission gear and a position distal from said body where the rotating gear is out of mesh with the transmission gear;

wherein the gear support member is movable between said adjacent position where the nut rotating gear meshes with the transmission gear and said distal position where the gears are out of meshing engagement with each other via a guide means provided on one of said body and said gear support member and extending in said longitudinal direction, said guide means penetrating through respective openings in the other of said body and said gear support member.

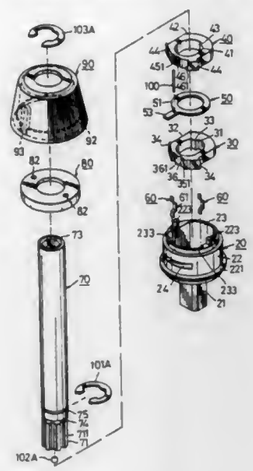
5,609,078

HIGH-TORSION RATCHET MECHANISM ASSEMBLY FOR A RATCHET SCREWDRIVER

Tsung-Hsun Yang, No. 2, Lane 108, Yung-Feng Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Sep. 13, 1995, Ser. No. 527,637
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—63.1 **3 Claims**

1. A ratchet mechanism assembly for a ratchet screwdriver,



comprising:

a substantially cylindrical casing having a substantially annular surrounding wall defining a receiving space therein, the casing being adapted to be connected securely to an elongated handle of said ratchet screwdriver;

a drive shaft having a fixed ratchet wheel rotatably journalled within said receiving space of said cylindrical casing;

a pair of annular pawl members disposed within said receiving space of said cylindrical casing and sleeved movably on said ratchet wheel, each of said pawl members having a pawl projection projecting from an inner periphery thereof, said pawl projections of said pawl members being spaced apart from each other to define a gap therebetween;

a spring unit biasing said pawl projections of said pawl members to engage said ratchet wheel so that a tooth of said ratchet wheel is located in said gap to prevent rotation of said ratchet wheel relative to said casing; and

an actuator disposed operatively on said cylindrical casing and being movable between a first position, where said pawl projection of one of said pawl members disengages said ratchet wheel to permit rotation of said shaft in said casing in a first direction, and a second position, where said pawl projection of the other one of said pawl members disengages said ratchet wheel to permit rotation of said shaft in said casing in a second direction opposite to the first direction,

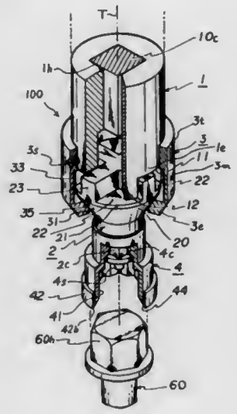
wherein said surrounding wall has a circumferentially extending slot formed therethrough and communicated with said receiving space, each of said pawl members having an outer peripheral surface formed with a cam face adjacent to said slot, said actuator including a circular ring sleeved rotatably around said shaft and located between said pawl members, a radially extending rotary lever secured to said circular ring and extending from said casing through said slot so as to rotate along said slot, and an axially extending push rod secured to said rotary lever and located between said cam faces of said pawl members, rotation of said rotary lever to said first position causing said push rod to engage one of said cam faces and pushing said pawl projection of one of said pawl members to disengage from said ratchet wheel, while rotation of said rotary lever to said second position causing said push rod to engage the other one of said cam faces and pushing said pawl projection of the other one of said pawl members to disengage from said ratchet wheel.

5,609,079

SOCKET MECHANISM HAVING FLEXIBLE COUPLING THEREIN USED WITH VERTICAL TYPE POWERED BOLT/NUT DRIVING APPARATUS

Ryoichi Hashimoto, Iwaki, Japan, assignor to K.K. Johan Engineering, Iwaki, Japan

Filed Mar. 13, 1996, Ser. No. 614,640
Claims priority, application Japan, Mar. 14, 1995, 7-054751
Int. Cl.[6] B25B *23/16*
U.S. Cl. 81—177.75 **4 Claims**



2. A socket mechanism having a flexible coupling therein for rotating an object fastening piece that is used with a vertical type powered driving apparatus, comprising:

(a) a spindle that can be removably connected to a vertical drive shaft of the driving apparatus so as to be vertically moved and rotated by the driving apparatus, said spindle having at least one downwardly projecting lug in a bottom end thereof;

(b) a generally cylindrically-shaped core holder that is fixedly and coaxially connected to said spindle so that said core holder is rotated as said spindle is rotated, said core holder having a circular bottom opening having a chamfered rim whose geometric center is in a common rotating axis of said spindle and said core holder;

(c) a socket holding core having a downwardly tapered mid section, said core freely lying on said rim of said bottom opening of said core holder in said downwardly tapered mid section thereof in a manner that a first part of said core is above said bottom opening, within said core holder, and movable therein within predetermined vertical and lateral limits, a second part of said core is below said opening and suspending from said core holder, and said core is tiltable with respect to said core holder, said core having at least one upwardly projecting ridge in said top section thereof in a manner that when said spindle is rotated said downwardly projecting lug thereof engages with said upwardly projecting ridge of said core so that a rotating power is transmitted from said spindle to said core; and

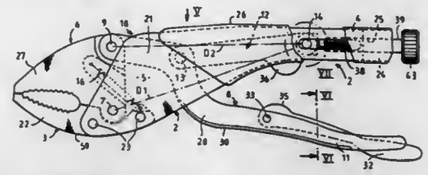
(d) a socket for engaging with the object fastening piece to be rotated, said socket being fixedly connected to said second part of said core coaxially therewith.

5,609,080

LOCKING PLIERS

Jean-Pierre Flavigny, Linas, France, assignor to FACOM, Morangis Cedex, France

Filed May 22, 1995, Ser. No. 447,027
Claims priority, application France, May 20, 1994, 94 06192
Int. Cl.[6] B25B *7/12*
U.S. Cl. 81—368 **24 Claims**



1. Locking pliers comprising:

a stationary unit of generally elongate shape having a front end portion and a rear end portion, said stationary unit defining a stationary jaw at said front end portion and a stationary handle at said rear end portion;

a movable unit including a movable jaw, a pivot pin pivotally mounting said movable jaw on said stationary jaw, an actuating lever having a front end portion and a rear end portion defining a movable handle, and a first articulation pivotally connecting said front end portion of said actuating lever to said movable jaw;

a rear bearing member connected to said stationary handle and defining a rear bearing point;

a link having a front end portion pivotally connected by a second articulation to an intermediate point of said actuating lever, and a rear end portion positioned adjacent said rear bearing point;

a means for adjusting the position of said rear bearing point along said fixed handle; and

a return spring associated with said movable jaw and said stationary jaw to open said movable jaw relative to said stationary jaw,

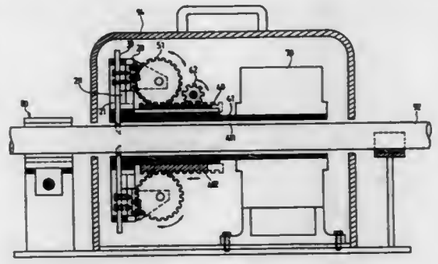
wherein said actuating lever crosses a first straight line extending between said pivot pin and said rear bearing point, an angular position of said first straight line relative to said stationary handle is modified by a displacement of said rear bearing point by said adjusting means along said stationary handle, and, in any closed position of said locking pliers, said stationary handle extends substantially along a second straight line extending between said first articulation and said rear bearing point.

5,609,081

PORTABLE ROUND-TUBE CUTTER

Shoei C. Lin, 318 8th Elr, Fu Sabng Rd., Sec, 3, Taichung, Taiwan

Filed Mar. 30, 1995, Ser. No. 413,455
Int. Cl.[6] B23B *5/14*
U.S. Cl. 82—59 **4 Claims**



1. A portable tubing cutter comprising:

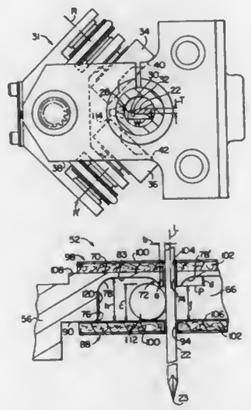
a) an elongated, hollow control shaft configured to receive a length of tubing therethrough;
b) a generally annular transmission gear jacket mounted on the central shaft so as to rotate therewith and to slide along the central shaft, the transmission gear jacket having a plurality of parallel gear teeth extending around the periphery;
c) drive means connected to the central shaft to rotate the central shaft and the transmission gear jacket;
d) a tool chuck fixedly attached to the central shaft so as to rotate therewith;
e) a cutting tool;
f) tool feed means comprising:
i) a sliding block attached to the cutting tool and slidably mounted on the tool chuck, the sliding block having a gear rack;
ii) a transmission gear rotatably attached to the tool chuck and having a plurality of teeth engaging the plurality of teeth of the transmission gear jacket and the gear rack on the sliding block, and;
iii) a control gear engaging the teeth of the transmission gear jacket and connected to a hand wheel such that rotation of the hand wheel in a first direction rotates the control gear, such rotation causing the transmission gear jacket to move along the central shaft, such movement causing the rotation of the transmission gear which, in turn, causes movement of the sliding block and cutting tool towards the length of tubing while rotation of the hand wheel in a second direction causes the cutting tool to move away from the length of the tubing; and,
g) tube clamping means to hold the length of tubing in a desired position during the cutting operation.

5,609,082

LUBRICATION AID FOR TREATING CUTTING BLADE AND SHARPENER

Richard Kuchta, Tolland, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Continuation of Ser. No. 37,077, Mar. 25, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,520
Int. Cl.[6] B26D *7/08*
U.S. Cl. 83—13 **17 Claims**



13. A method of cutting sheet material having adhesive applied to at least one surface thereof, said method comprising the steps of:
providing a cutting implement having cutting surfaces capable of cutting the sheet material;
providing a reservoir with a chamber therein;
providing within said chamber a lubricant in a non-liquid gel form and a dispersing means, which includes spherical members, for dispersing the lubricant onto the cutting surfaces of the cutting implement to treat the cutting surfaces by applying a thin film of said lubricant to said cutting surfaces as the cutting implement is reciprocated through the reservoir to prevent amounts of the adhesive from otherwise adhering to and building up on the cutting surfaces of the cutting implement during a cutting operation;
providing upper and lower slots in said reservoir; and
reciprocating the cutting element to cut the material, wherein the step of reciprocating includes reciprocating the cutting surfaces through the slots and said chamber of said reservoir so that the cutting surfaces of the cutting implement are treated with said lubricant by contact between the spherical members and the cutting surfaces to transfer a portion of said lubricant onto the cutting surfaces and prevent the adherence and building up of adhesive on the cutting surfaces.

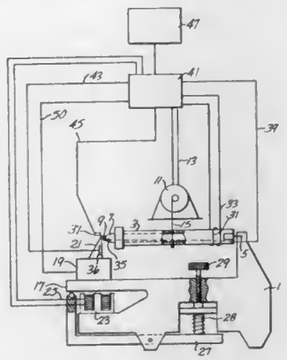
17. A cutting apparatus including a knife blade for cutting sheet material of the type which leaves deposits of the material on the knife blade during a cutting operation, said apparatus comprising:
means for keeping the knife blade free of material buildup including;
(a) a reservoir positioned adjacent to said knife blade, said reservoir defining a chamber;
(b) a non-liquid gel lubricant contained within said chamber; and
(c) spherical means positioned within said chamber for applying said lubricant onto at least a portion of the knife blade.

5,609,083

METHOD OF AND AN APPARATUS FOR SECTIONING A SPECIMEN

Algy Persson, Stockholm, Sweden, assignor to Glass Ultra Micro Trading Company, Stockholm, Sweden

PCT No. PCT/SE90/00527, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/02960, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 15, 1990, Ser. No. 829,067
Claims priority, application Sweden, Aug. 16, 1989, 8902751
Int. Cl.[6] G01N *1/06;* B26D *5/20*
U.S. Cl. 83—14 **14 Claims**



1. A method for sectioning a specimen with a microtome, the microtome having a knife to produce sections with desired characteristics by varying one or more essential sectioning parameters, wherein the essential sectioning parameters are selected from a group consisting of type of knife, knife angle, clearance angle, sectioning speed, specimen pretreatment and combinations thereof, to thereby select a sectioning-parameter or combination of sectioning-parameters which provides an optimized sectioning function, comprising the steps of sectioning making said successive sectioning cuts through the specimen using a microtome; generating at least one signal during a sectioning cut which is a measure of the sectioning function by means of at least two sensors associated with the microtome of which a first one of the sensors is an optical sensor means for optical detection of a surface characteristic of the section produced, and a second one of the sensors is a sensor means for detecting sectioning work; and varying, on the basis of the at least one signal, at least one of said essential sectioning parameters so as to optimize the sectioning function to an optimal predetermined sectioning parameter value, without examination of successive sections in a high-resolution microscope.

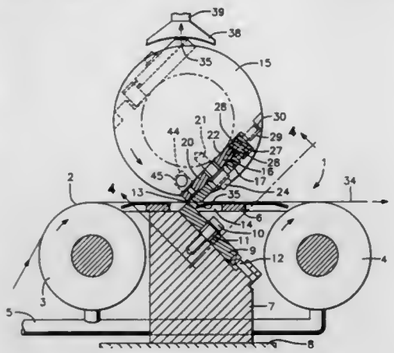
8. An apparatus for performing a sectioning function on a specimen, said apparatus having a knife for cutting the specimen, while exerting sectioning force and performing sectioning work, and varying means for varying a number of essential sectioning parameters, characterized in that said apparatus comprises a plurality of sensors including an optical sensor means for detecting a surface characteristic of sections produced, each sensor emitting, during sectioning, a signal dependent on at least one characteristic of the sectioning function, and the varying means includes means for receiving the sensor signals emitted and for providing a measure of the sectioning function on the basis of the signals emitted.

5,609,084

MACHINE FOR CUTTING A PAPER WEB INTO SHEETS WITH SIMULTANEOUS CUTTING OF A TRANSVERSE STRIP

Ib Gronbjerg, Vingetoften 24, 2730 Herlev, Denmark

PCT No. PCT/DK93/00166, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO93/23215, PCT Pub. Date Nov. 25, 1993
PCT Filed May 17, 1993, Ser. No. 338,474
Claims priority, application Denmark, May 18, 1992, 0649/92
Int. Cl.[6] B26D *7/18;7/26*
U.S. Cl. 83—100 **13 Claims**



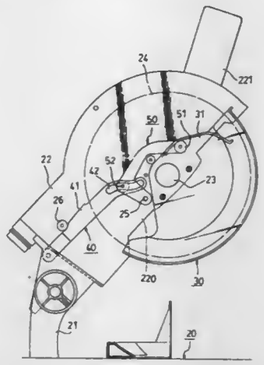
1. A machine for simultaneously cutting a web into sheets and adjacent strips, the web movable in a direction during cutting, said machine comprising:
a substantially stationary knife having a knife edge extending substantially transverse to said direction;
a knife-supporting cylinder mounted for powered rotation about an axis of rotation, and having a peripheral surface which has at least one chord face;
a first knife mounted to said chord face for movement with said cylinder;
a second knife mounted to said chord face for rotation with said cylinder;
said first and second knives having first and second knife edges, respectively, circumferentially spaced from each other in the direction of rotation of said cylinder about said axis, and mounted for cooperation with said stationary knife to effect cutting of the web during rotation of said cylinder;
a web cut strip-retaining groove provided between said first and second knife edges, said groove connected to a channel system formed in one or both of said first and second knives, and a valve arrangement for selectively connecting said channel system to a source of vacuum, or to a source of compressed or ambient air.

5,609,085

CUTTING DEVICE WITH A PIVOTABLE COVER FOR COVERING AN EXPOSED CUTTING PORTION

Chiu-Tsun Chang, Taichung, Taiwan, assignor to P & F Brother Industrial Corporation, Taiwan

Filed Mar. 2, 1995, Ser. No. 397,367
Int. Cl.[6] B27B *5/18*
U.S. Cl. 83—397 **2 Claims**



1. A cutting device including a bench with an upright post, and a carrier mounted swingably to said upright post and biased to dispose said carrier normally at an inclined position with respect to said bench, said carrier having a horizontal mounting shaft with a circular cutting tool mounted rotatably thereon, an opening through which a cutting portion of the cutting tool is exposed, and a motor for driving said circular cutting tool, wherein said cutting tool further comprises:
a substantially semi-circular cover member mounted pivotally to said mounting shaft and pivotable relative to said mounting shaft between a first position, wherein said semi-circular cover member covers said cutting portion of said circular cutting tool, and a second position, wherein said cutting portion of said cutting tool is uncovered by said cover member; and
means for moving said semi-circular cover member between said first and second positions including a guiding flange integrally formed on an inner surface of said cover member, a pivot pin parallel to and spaced from said mounting shaft and located closer to said upright post than said mounting shaft, an elongated rod provided within the carrier transverse to said mounting shaft and having an end portion connected pivotally to said upright post, and a crank having a first end connected pivotally to said pivot pin, a second end connected slidably to said guiding flange, and an angular portion which is formed between said first and second ends and which is connected pivotally to an other end portion of said elongated rod in order to retain said cover member at said first position, said carrier further including a press roller mounted rotatably therein for pressing said elongated rod when said carrier is pivoted relative to said bench;
pivoting action of said carrier relative to said bench enables said press roller to depress said elongated rod, thereby urging said angular portion of said crank to pivot about said pivot pin so as to move said cover member to said second position.

5,609,086

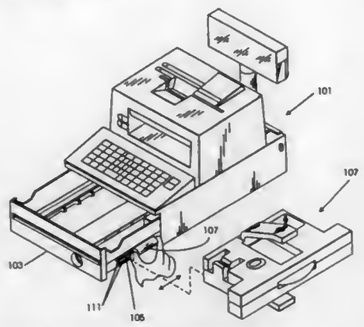
COIN ROLL OPENING DEVICE

Danny H. Addison, Durham; George Hufford, III, Clayton; Charles M. McCray, Raleigh; Kevin L. Schultz, Raleigh, and Craig W. Turner, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,954

Int. Cl.[6] B26D *1/02*

U.S. Cl. 83—440 **1 Claim**



1. A coin roll opening device comprising:

a cash drawer having two guides located on a first side of said cash drawer, said guides adapted for receiving a coin roll, said cash drawer having a blade assembly receptacle located between said guides; and

a blade assembly having a blade and a blade holder, the blade having a cutting edge, the blade holder having two jacket halves, each jacket half having a male post, a male post slot, a snap post, and a snap arm for securing said blade in the blade assembly, the blade holder having flexible arms that extend away from the blade holder that are used to secure said blade assembly between said guides such that the cutting edge of the blade is exposed and for removing the blade assembly from said blade assembly receptacle.

5,609,087

VALVE MECHANISM FOR BOOSTER

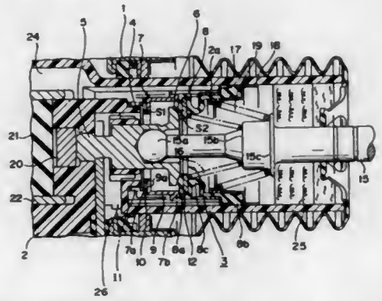
Satoru Horikoshi, Saitama-ken, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,210

Claims priority, application Japan, Mar. 31, 1995, 7-099938

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—376 R **3 Claims**



1. In a booster including a valve body slidably disposed within a shell, a power piston mounted on the valve body, a constant pressure chamber and a variable pressure chamber formed across the power piston, a valve mechanism including a valve plunger slidably fitted into the valve body, a constant pressure passage communicating the valve mechanism with the constant pressure chamber, a variable pressure passage communicating the valve mechanism with the variable pressure chamber, and a pressure passage supplying a pressure fluid to the valve mechanism, with the valve plunger, which constitutes the valve mechanism, being actuated to switch a flow path within the valve mechanism to supply the pressure fluid to the variable pressure chamber to move the power piston forward;

a valve mechanism comprising an annular, first valve seat formed on the valve body, a tubular first valve element slidably fitted into the valve body and having a front end which is adapted to be seated upon the first valve seat, an annular, second valve seat formed on the rear side of the valve plunger, a tubular second valve element having a rear end which is hermetically secured to an inner peripheral surface of the valve body and a front end which is adapted to be seated upon the second valve seat, a first spring for urging the first valve element rearward and for maintaining the rear end of the first valve element in abutment against the second valve element hermetically at a location radially outward of a seating engagement between the second valve element and the second valve seat, and a second spring for urging the front end of the second valve element toward the second valve seat and having a resilience greater than the resilience of the first spring, and wherein the constant pressure passage communicates with a space radially outward of the first valve element, the variable pressure passage communicates with a space located radially inward of the first valve element, and the pressure passage communicates with a space radially inward of the second valve element.

5,609,088

HYDRAULIC CONTROL SYSTEM FOR EXCAVATIONS WITH AN IMPROVED FLOW CONTROL VALVE

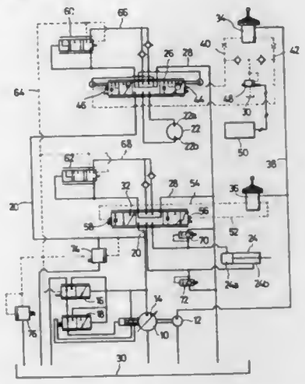
Hee W. Park, Seoul, Rep. of Korea, assignor to Daewoo Heavy Industries, Ltd., Incheon, Rep. of Korea

Filed Jul. 25, 1995, Ser. No. 506,792

Claims priority, application Rep. of Korea, Jul. 25, 1994, 94-18017

Int. Cl.[6] F15B *11/10*

U.S. Cl. 91—420 **7 Claims**



1. A hydraulic control system for excavators comprising:

a fluid reservoir;

a variable displacement pump in communication with the fluid reservoir for producing a pressurized working fluid;

a hydraulic actuator having first and second fluid ports through which the working fluid flows into and out of the hydraulic actuator; and

a flow control valve including a valve body and a valve spool slidably fitted to the valve body, the valve body having first and second control pressure chambers, each adapted to apply the pressure of the working fluid to first and second ends of the valve spool;

wherein the valve spool is shiftable with respect to the valve body between a first operative position with the first control pressure chamber in communication with the pump and the first fluid port of the actuator and with the second control pressure chamber in communication with the reservoir and the second fluid port of the actuator, a second operative position with the first control pressure chamber in communication with the reservoir and the first fluid port of the actuator and with the second control pressure chamber in communication with the pump and the second fluid port of the actuator, and a neutral position wherein the first and the second control pressure chambers are disconnected from the actuator and connected in common with the reservoir.

5,609,089

CONTROL FOR DIVIDING THE OUPUT FLOW IN HYDRAULIC SYSTEMS TO A PLURALITY OF USERS

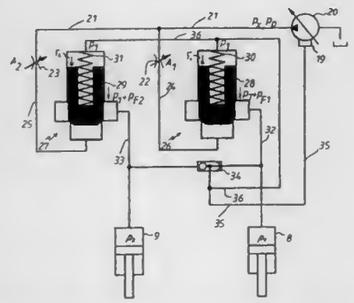
Gustav Leidinger, Friedberg, Germany, assignor to O&K Orenstein, and Koppel AG, both of Dortmund, Germany

Filed Dec. 1, 1994, Ser. No. 352,774

Claims priority, application Germany, Dec. 3, 1993, 43 41 244.0

Int. Cl.[6] F15B *11/08;13/04*

U.S. Cl. 91—516 **5 Claims**



1. A control assembly in a hydraulic system for dividing the output flow from at least one supply pump to at least two users on the basis of the load pressure-independent principle, comprising:

a feed line connected to the supply pump;

at least two further lines arranged in parallel to each other, and each connecting said feed line with the respective users;

at least two control slide valves, each being provided with a predeterminable control cross section, and each being arranged in a respective further line for allowing a predetermined amount of the output flow therethrough;

at least two compensators, each being connected to a respective further line downstream of a respective control slide valve and upstream of a respective user, and each comprising:

a piston that is movable to a position in which the respective further line is variably opened or closed to change an amount of the output flow that is received by the respective user; and

an actuating element comprising a spring that exerts a spring force against the respective piston, each respective spring exerting a spring force that is different from a spring force exerted by the other respective spring so that each respective piston opens at a pressure different from the other respective piston; and

means for interconnecting each of said compensators together so that, in case of an undersupply of flow to the users and as a result of the different spring forces acting against the respective pistons, the output flow from the supply pump is divided up based on a function of a degree of the undersupply of flow to the individual users so that each user receives a predetermined share of the output flow from the supply pump, with one user, associated with a respective compensator having a lower exerted spring force, receiving priority of the flow over the other user.

5,609,090

ACTUATOR WITH PROTECTIVE END CAP

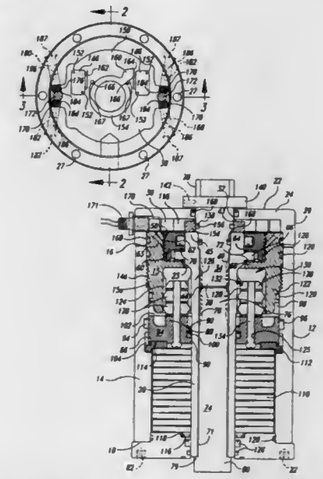
Paul P. Weyer, Enumclaw, Wash., assignor to 1994 Weyer Family Limited Partnership, Enumclaw, Wash.

Continuation of Ser. No. 388,368, Feb. 14, 1995, Pat. No. 5,477,772. This application Oct. 16, 1995, Ser. No. 543,530

The portion of the term of this patent subsequent to Dec. 26, 2012, has been disclaimed.

Int. Cl.[6] F01B *25/26*

U.S. Cl. 92—5 R **17 Claims**



1. A rotary actuator for providing rotary movement between first and second external members, comprising:

a body having a longitudinal axis, and first and second ends, said body being adapted for coupling to the first external member;

a shaft extending generally coaxially within said body and supported for rotation relative thereto, said shaft having an adjustable end limit of rotation relative to said body, said shaft having a grooved, outwardly facing circumferential sidewall portion positioned within said body and a portion adapted for coupling to the second external member to provide rotational movement between the first and second external members;

a body insert positioned generally coaxial with said body and at least partially within said body at said body first end and extending about said shaft with an annular space therebetween, said body insert having a grooved, inwardly facing circumferential sidewall portion, said body insert being formed as a separate part from said body and being adjustably rotatable relative to said body to permit adjustment of said end limit of rotation of said shaft relative to said body, said body insert being restrained by said body against axial movement relative to said body during powered operation of the actuator, said body insert having a contact portion;

an end cap securely attached to said body at said body first end and spaced axially outward of and away from said body insert to define a compartment therebetween, said end cap having an aperture therethrough extending between an exterior portion thereof and said compartment;

an adjustment member extending through said aperture with an interior portion within said end cap compartment in position to engage said contact portion of said body insert and an exterior portion accessible from the exterior of said end cap compartment, said adjustable member being adjustably movable in said aperture to apply an adjustment force on said

contact portion of said body insert to adjustably rotate said body insert relative to said body to a selected rotational position relative to said body in order to adjust said end limit of rotation of said shaft relative to said body, said adjustment member, when not being adjustably moved in said aperture, holding said contact portion of said body insert to prevent rotation of said body insert from said selected rotational position relative to said body; and

a torque-transmitting annular member positioned generally coaxially within said body in said annular space between said body insert and said shaft and extending about said shaft, said torque-transmitting member being mounted within said body and reciprocally axially movable therein, said torque-transmitting member engaging both said shaft grooved sidewall portion and said body insert grooved sidewall portion as said torque-transmitting member reciprocally moves within said body to translate axial movement of said torque-transmitting member toward said body first end into one of clockwise or counterclockwise relative rotational movement between said shaft and said body and axial movement of said torque-transmitting member toward said body second end into the other of clockwise or counterclockwise relative rotational movement between said shaft and said body, said selected rotational position of said body insert relative to said body determining said end limit of rotation of said shaft relative to said body produced by said torque-transmitting member.

5,609,091

FLUID POWER ADVANCING UNIT

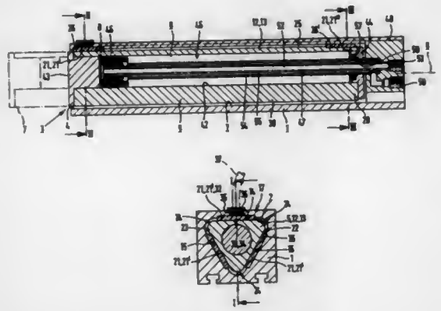
Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany

Filed Feb. 3, 1995, Ser. No. 383,071

Claims priority, application Germany, Feb. 5, 1994, 44 03 639.6

Int. Cl.[6] F01B *31/00*

U.S. Cl. 92—110 **19 Claims**



16. A fluid power advancing unit comprising:

a housing having an axial bore therein opening at a first end thereof;

a plunger adapted to slide axially in the bore of the housing for extension therefrom under the influence of a drive fluid, wherein the axial bore in the housing and the plunger are substantially triangular in cross-section;

first guide elements fixed in the axial bore of the housing adjacent to the first end thereof; and

second guide elements fixed on the plunger at an end distal to the housing opening, said second guide elements sliding within the axial bore of the housing upon activation of the plunger.

5,609,092

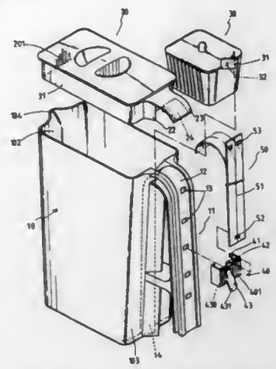
TEAPOT WITH AN ADJUSTABLE TEA INFUSER

Chien-Chou Chen, No. 340, Fu Lien Road, Tainan, Taiwan

Filed Jun. 21, 1996, Ser. No. 670,218

Int. Cl.[6] A47J *31/18*

U.S. Cl. 99—319 **4 Claims**



1. A teapot with an adjustable tea infuser and comprising:

a container having a bottom with a front plate, a rear plate and two side plates respectively extending from four sides of said bottom so as to define an open top, a handle disposed to an outer surface of said rear plate and extending from an upper edge of said rear plate, said handle having at least one notch defined therein;

a cover mounted to said container and engaged with said open top, a gap defined between said cover and said handle when said cover is mounted to said container, and

a flexible plate having a first end and a second end, said first end thereof having a positioning means connected thereto and said second end of said flexible plate connected to a tea infuser such that said flexible plate extends into said container via said gap and said tea infuser is positioned by adjusting said flexible plate and engaging said positioning means with said notch.

5,609,093

PASTA COOKER

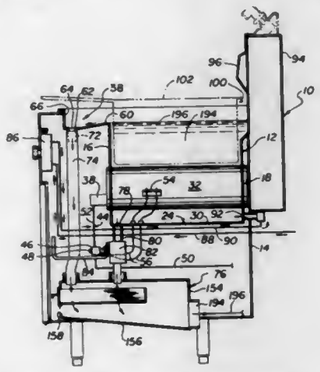
Melissa M. Hohler, Kettering, and Fermin Heras, Dayton, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Continuation of Ser. No. 141,117, Oct. 21, 1993, abandoned.

This application Jun. 26, 1995, Ser. No. 494,038

Int. Cl.[6] A47J *27/00*

U.S. Cl. 99—408 **15 Claims**



1. An apparatus for cooking pasta comprising:

a tank for holding water, the tank including an upper portion and a lower portion;

a heater for heating water in the tank;

a trough along one side of the tank and communicating with the tank, the trough including a wall sloping downwardly from the tank upper portion to the tank lower portion and the trough being positioned to receive and collect starch foam generated by cooking pasta and water from an upper surface of water in the tank;

a drain in communication with the trough lower portion for removing starch foam and water from the trough; and

a screen in communication with the drain for receiving and capturing pasta starch entrained in water received by the trough;

wherein starch foam generated by boiling of pasta in the tank is automatically and continually removed from the upper surface of the water in the tank during cooking of the pasta, and

further comprising a means for filling the tank with water.

5,609,094

APPARATUS FOR WINDING-UP CROISSANT DOUGH PIECES

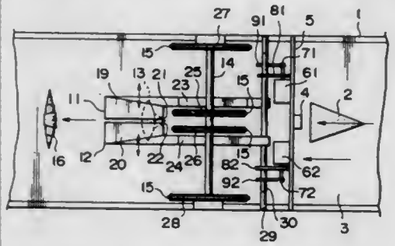
Sadao Ueno, and Michio Morikawa, both of Tochigi-ken, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tochigi-ken, Japan

Filed Mar. 16, 1995, Ser. No. 405,282

Claims priority, application Japan, Mar. 23, 1994, 6-078175

Int. Cl.[6] A21C *3/06;11/00;1/00;* **A21D** *6/00*

U.S. Cl. 99—450.2 **3 Claims**



1. An apparatus for winding up croissant dough pieces comprising a conveyor to convey croissant dough pieces downstream and a pair of pressing boards disposed symmetrically along the conveying direction of, and above, said conveyor, characterized in that:

each of said pair of pressing boards is adapted to move in a direction perpendicular to said conveying direction of said conveyor,

said apparatus is provided with a spacing means to move each of said pair of pressing boards outwardly and inwardly of said conveyor, thereby progressively spacing each pressing board apart from each other when a croissant dough piece is being wound up and causing each said pressing board to approach each other after the winding-up operation, and

said spacing means is provided with a dough-piece detecting means to actuate said spacing means.

5,609,095

HIGH PERFORMANCE COOKING OVEN WITH STEAM CHAMBER

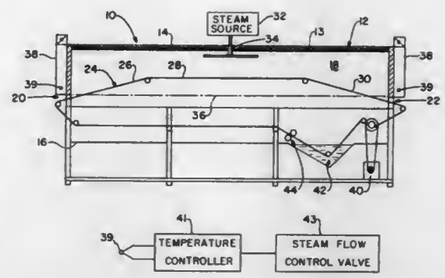
Ronald D. Lemke, Huron; Ramesh M. Gunawardena, Solon, and James G. Welt, Milan, all of Ohio, assignors to Stein, Inc., Sandusky, Ohio

Filed Jul. 1, 1993, Ser. No. 86,669

Int. Cl.[6] A23L *3/00;* **A47J** *27/16*

U.S. Cl. 99—468 **6 Claims**

1. An oven for cooking food products, comprising,



an oven housing defining a cooking chamber in an upper portion thereof and having at least one inlet opening and at least one outlet opening positioned in a predetermined relationship to said cooking chamber,

a continuous conveyer belt on which food products to be cooked are positioned, said conveyer belt traveling through said oven housing from said at least one inlet opening to said at least one outlet opening and defining a conveyance path through said cooking chamber, wherein said conveyer belt includes a first portion extending upwardly from said at least one inlet opening into said cooking chamber and a second portion extending downwardly from within said cooking chamber to said at least one outlet opening,

means to provide a heated gaseous cooking medium in said upper portion of said housing corresponding to said cooking chamber, including a source of steam, wherein said cooking chamber has a lower limit defined by the lower extent of the level of 100% saturated steam within said housing, and said at least one inlet and outlet openings are positioned below said lower limit of said cooking chamber,

control means to regulate the amount of steam introduced into said cooking chamber including a sensing means positioned adjacent to at least one of said inlet and outlet openings to monitor the amount of steam escaping through said at least one of said inlet and outlet openings and generating a signal used to control the flow rate of steam from said source of steam into said housing wherein,

said control means regulates the flow of steam into said housing in a manner such that a small amount of saturated steam is made to continuously escape through at least one of said inlet and outlet openings so as to maintain said lower limit of said cooking chamber, as defined by the lower extent of said level of 100% saturated steam, at a level substantially equal to the level at which steam continuously escapes said at least one of said inlet and outlet openings.

5,609,096

VEGETABLE FRESHNESS KEEPING DEVICE HAVING A SENSOR

Chul H. Kwon, Seoul; Hyung-Ki Hong, Kyungki-Do; Sung T. Kim, Seoul; Kyu C. Lee, Seoul; Dong H. Yun, Kyungki-Do; Hyun W. Shin, Kyungki-Do, and Hyeon S. Park, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 15, 1994, Ser. No. 356,546

Claims priority, application Rep. of Korea, Dec. 17, 1993, 28309/1993; Oct. 18, 1994, 26614/1994

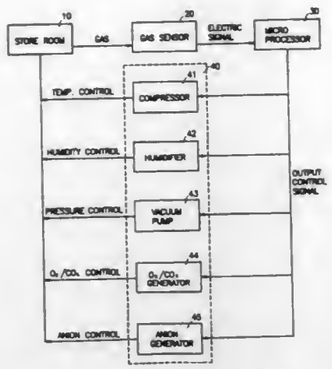
Int. Cl.[6] A01F *25/00;* **F25B** *41/00*

U.S. Cl. 99—468 **8 Claims**

1. A device for keeping freshness of a vegetable comprising:

means for sensing the freshness of the vegetable, said freshness sensing means sensing both component and concentration of a gas generated by the vegetable and converting sensing result into an electric signal and outputting said electric signal to a microprocessor;

the microprocessor receiving the electric signal from the freshness sensing means and discriminating conditions of the veg-



etable and outputting a control signal in accordance with vegetable condition discriminating result; and

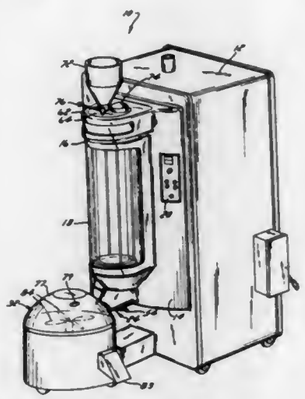
means for keeping the freshness of the vegetable, said freshness keeping means receiving the control signal from said microprocessor and controlling a predetermined factor for keeping the freshness of the vegetable.

5,609,097

COFFEE BEAN ROASTER WITH VISUAL DISPLAY COLUMN

Brian D. Newnan, 5312 China Garden Dr., P.O. Box 200129, Austin, Tex. 78720

Filed Apr. 24, 1995, Ser. No. 427,675
Int. Cl.[6] A47J *27/026;37/04;* **F26B** *17/00;21/06*
U.S. Cl. 99—470 **28 Claims**



1. A coffee bean roaster apparatus including

(a) a tower in which coffee beans are fluidized by and roasted in a upwardly directed hot gaseous stream;

(b) a gaseous stream line connecting said tower to a blower for supplying the gaseous stream at a velocity sufficient to fluidize a predetermined quantity of beans introduced into the tower;

(c) a heater for heating the gaseous stream to a temperature sufficient to roast the fluidized beans;

(d) a coffee bean cooling chamber spaced from and communicating with said tower for receiving said beans following roasting and allowing said beans to cool to a predetermined temperature; and

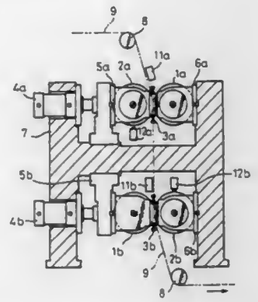
(e) valve assembly means positioned intermediate said gaseous line and said tower for allowing said gaseous stream to egress into said tower when positioned in a first position and allowing said beans to move from said tower into said cooling chamber when positioned in a second position.

5,609,098

PAPER CALENDERING APPARATUS

Tsuyoshi Abe, and Akira Nomoto, both of Tokyo, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,233
Claims priority, application Japan, Mar. 17, 1994, 6-046277
Int. Cl.[6] D21G *1/00*
U.S. Cl. 100—331 **4 Claims**



1. A paper calendering apparatus comprising a nip section for advancing a paper web, the nip section being formed by at least a pair of rollers, one of which is a metal roller and the other of which is one of a resilient roller and a metal roller, a first one of the rollers of said pair of rollers rotating at the same speed as the running speed of the paper web to be finished, and the other roller rotating at a faster circumferential speed than the first roller, the first roller which rotates at a faster circumferential speed than the other roller being a metal roller, the metal roller rotating at a circumferential speed which is 20% to 200% greater than that of the other roller, wherein a gap of equal spacing is formed along the entire width of the roller face at the nip section of said pair of rollers, and is set to less than the thickness of the paper web to be finished.

5,609,099

PRESS SHUTHEIGHT ADJUSTMENT MECHANISM WITH HYDROSTATIC BEARING PADS

Bradley A. Burns, Wapakoneta, and Brian A. Watercutter, Minster, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Oct. 6, 1995, Ser. No. 539,878
Int. Cl.[6] B30B *15/00*
U.S. Cl. 100—257 **23 Claims**

1. A mechanical press comprising:

a frame structure with a crown and a bed;

a slide guided by the frame structure for reciprocating movement in opposed relation to said bed;

a drive mechanism for reciprocating said slide;

a bolster member mounted below said slide; and

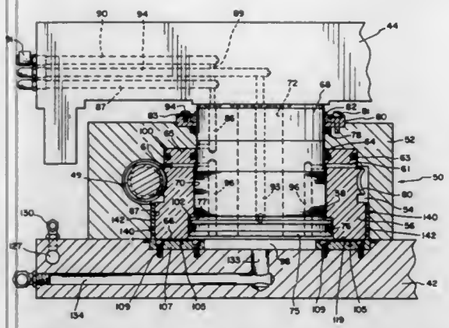
a shutheight adjustment assembly for moving said bolster member relative to said bed to adjust press shutheight, said assembly comprising:

an adjustment nut comprising internal threads within a bore;

an adjustment screw comprising external threads threadedly engaged with said adjustment nut internal threads whereby relative rotation between said adjustment nut and said adjustment screw moves said adjustment screw in an axial direction relative to said adjustment nut, said adjustment nut and screw associated with said bolster member and said bed to move said bolster member relative to said bed upon relative rotation of said adjustment screw and nut;

at least one hydrostatic bearing pad arranged below at least one of said adjustment nut and said adjustment screw and above said bed for lifting said at least one of said adjustment nut and said adjustment screw in a direction toward said bolster member to reduce frictional resistance during relative rotation of said adjustment nut and screw; and

at least one fluid conduit connecting a supply of pressurized fluid to said at least one hydrostatic bearing pad.

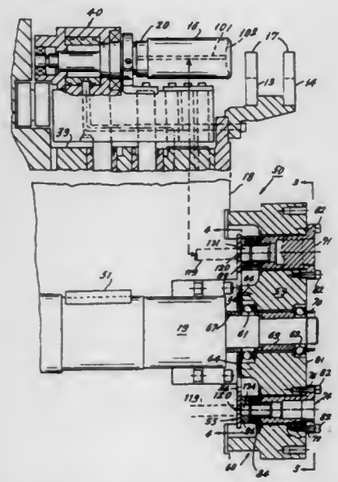


5,609,100

FACE VALVE APPARATUS FOR CONTINUOUS MOTION CAN DECORATOR

Robert Williams, Randolph, N.J., assignor to Sequa Corporation, Hackensack, N.J.

Filed Jun. 7, 1995, Ser. No. 476,595
Int. Cl.[6] B41F *17/22*
U.S. Cl. 101—40 **12 Claims**



1. High speed equipment for handling and applying decorations to bodies of cylindrical containers, said equipment including:

a decorating section for decorating bodies of cylindrical containers as they move in operative engagement with said decorating section;

a wheel continuously rotating on a main axis, a plurality of mandrels extending parallel to said main axis and mounted on said wheel adjacent its periphery, said mandrels carrying said bodies while decorations are applied thereto by said decorating section;

face valve apparatus including a first section operatively mounted for continuous rotation about said main axis in unison with said wheel and having a planar face perpendicular to said main axis,

a relatively stationary second section rearward of said face and confronting same;

said second section including a plurality of valve stations, and a fixed common support on which said valve stations are mounted;

each of said valve stations including a replaceable pad adjacent said face defining an outlet port in front of said support, fasteners removably securing said valve station to said support and accessible from behind said support for operation to selectively secure and release mounting of each of said valve stations with said support without disturbing mounting of any others of said valve stations and without moving said support relative to said first section, and an opening in said support through which said pad is movable rearward of said support where said pad is accessible for replacement thereof;

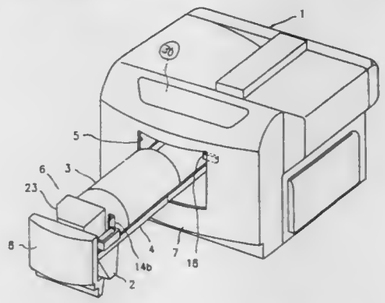
a plurality of inlet ports at said face and disposed offset radially from said axis, conduit means connecting each of said mandrels to an individual one of said inlet ports, said inlet ports being operatively positioned so that for part of each revolution of said first section each of said inlet ports communicates in succession directly with each of said outlet ports whereby working air that is applied to each of said valve stations at its rear appears at said mandrels.

5,609,101

INK CONTAINER HOLDING DEVICE IN ROTARY PRINTING MACHINE

Koichi Oyama, and Kuninori Sasaki, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 559,484
Claims priority, application Japan, Nov. 16, 1994, 6-282211
Int. Cl.[6] B41F *15/40;* **B41L** *13/00*
U.S. Cl. 101—116 **12 Claims**



1. An ink container holding device in combination with a rotary printing machine, said rotary printing machine including a printing machine body, an ink container detachably disposed in said printing machine body and having an ink discharge port, and an ink supply pump having an ink suction port, wherein an ink is supplied from said ink discharge port of said ink container to said ink suction port of said ink supply pump, said ink container holding device comprising:

a supporting member which is movable between a first position inside said printing machine body and a second position outside said printing machine body;

ink container holding means provided on said supporting member, for holding said ink container, wherein said ink container holding means is movable between a connecting position where said ink discharge port of said ink container is connected to said ink suction port of said ink supply pump and a disconnecting position where said ink discharge port is disconnected from said ink suction port; and

operating means for moving said ink container holding means to said connecting position in association with the movement of said supporting member to said first position inside said printing machine body.

5,609,102

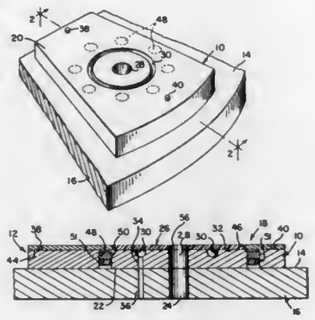
FIXTURE FOR HOLDING A COMPACT DISC TO BE SILK-SCREEN PRINTED

Chris P. Rapp, Nashua, N.H., assignor to Autoroll Machine Corporation, Middleton, Mass.

Filed Jan. 17, 1995, Ser. No. 373,548

Int. Cl.[6] B41F *15/36*

U.S. Cl. 101—127.1 **23 Claims**



1. Fixture for the holding of a compact disc in a horizontally disposed manner on a transport member while the compact disc is being transported to at least one work station comprising:

(a) a base member defined by top and bottom horizontally disposed, planar, surfaces parallel to one another and by a first circular-shaped, vertically disposed opening of predetermined diameter;

(b) a top member being detachably connected to the top planar surface of the base member, said top member being defined by top and bottom horizontally disposed, planar surfaces parallel to one another and to the top planar surface of the base member means for providing a well for a compact disc, said means including, a circular-shaped opening of predetermined diameter being provided in the top member concentric to the circular-shaped opening in the base member; and

(c) means for detachably connecting the top member to the base member.

5,609,103

SHEET-METAL GUIDE FOR A SHEET TURNING DEVICE

Günter Stephan, Wiesloch-Baiertal, and Michael Szeidl, Bammental, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

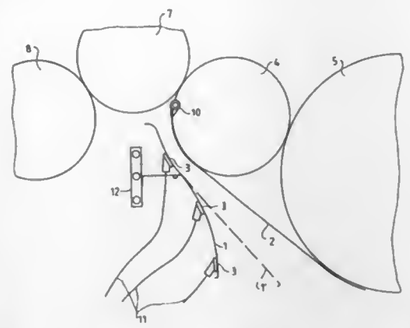
Filed Oct. 6, 1995, Ser. No. 539,843

Claims priority, application Germany, Oct. 6, 1994, 94 16 106.2

Int. Cl.[6] B41F *5/02*; **B65H** *29/24*

U.S. Cl. 101—230 **7 Claims**

1. In combination with a sheet-fed printing machine having a storage drum and a sheet turning device including a turning drum for turning over stock or a print carrier for recto/verso or first-form and perfector printing in between the storage drum and the turning drum, and wherein an ideal path of motion for the stock or print carrier is defined between the storage drum and the turning drum, a sheet-metal guide, the sheet-metal guide comprising a surface member formed with air outlet openings for floatingly guiding the stock or the print carrier, said surface member being disposed so as to face a printed side of the stock or the print carrier below the



turning drum and extending in a direction towards the storage drum, and said surface member extending parallel to the ideal path of motion of the stock or print carrier.

5,609,104

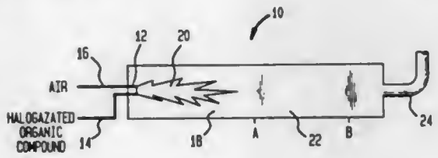
INCINERATOR FOR INCINERATING HALOGENATED ORGANIC COMPOUNDS

Loo T. Yap, Princeton, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Division of Ser. No. 157,515, Nov. 26, 1993, Pat. No. 5,449,854. This application May 19, 1995, Ser. No. 444,456

Int. Cl.[6] F23G *7/00*

U.S. Cl. 110—235 **1 Claim**



1. An incinerator for incinerating halogenated organic compounds, said incinerator comprising:

an incineration zone having means for incinerating the halogenated organic compounds in the presence of oxygen or oxygen-enriched air to produce combustion products potentially including a concentration of halogenated furans and dioxins produced through reactions between unreacted oxygen and halogen-containing organic compounds also potentially present within the combustion products;

a post-combustion zone in communication with the incineration zone;

an exhaust in communication with the post-combustion zone so that the combustion products pass through the post-combustion zone and then, through the exhaust; and

at least one burner firing into the post-combustion zone, said at least one burner having fuel and oxygen inlets and means for burning, at a fuel-rich stoichiometry, a hydrogen-containing fuel in the presence of oxygen so that the unreacted oxygen reacts with the fuel to reduce formation of the halogenated furans and dioxins and the halogenated furans and dioxins that have been produced react with hydrogen supplied by the fuel and decompose through dehalogenation reactions, whereby the reduced formation and decomposition of the halogenated furans and dioxins act to reduce the concentration of the halogenated furans and dioxins that otherwise would have been produced within the combustion products passing through the exhaust.

5,609,105

SHEET-CONVEYING DRUM FOR PRINTING MACHINES

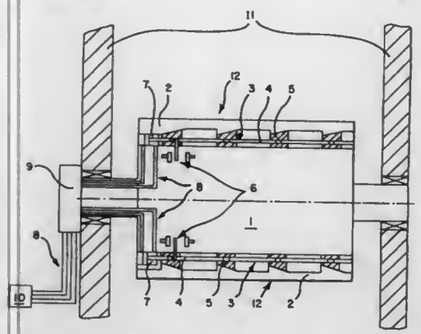
Dietrich Dettinger, Heusenstamm, and Roland Holl, Weiterstadt, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Oct. 6, 1995, Ser. No. 529,518

Claims priority, application Germany, Sep. 23, 1994, 44 34 000.1

Int. Cl.[6] B41F *21/10*

U.S. Cl. 101—409 **7 Claims**



1. A sheet-conveying drum for conveying sheets of different thickness between two units of a printing machine comprising, in combination,

a plurality of gripper bridges arranged substantially circumferentially symmetrically on the surface of said drum,

each of said gripper bridges including a gripper shaft, a gripper, and a gripper impact strip, said gripper impact strips for each gripper bridge being movable substantially radially relative to said drum between individually adjustable, predetermined first and second positions,

a respective positioning device associated with each of said gripper impact strips for causing said gripper impact strips to be moved in the radial direction relative to said drum when the respective positioning device is actuated,

actuating devices on said drum each for actuating a respective one of said positioning devices,

an energy supply, and

a rotary transducer for separately supplying energy from the energy supply to said actuating devices to separately actuate the actuating devices and the respective positioning devices between said predetermined first and second positions.

5,609,106

TRACK LAYING MACHINE FOR RENEWING RAILS

Tibor Aubermann, St Legier, Switzerland, assignor to Salpomec OY, Hollola, Finland

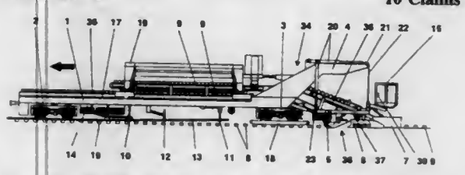
PCT No. PCT/EP94/03026, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO95/08029, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 9, 1994, Ser. No. 416,916

Claims priority, application Switzerland, Sep. 16, 1993, 2778/93

Int. Cl.[6] E01B *29/02*

U.S. Cl. 104—5 **10 Claims**



1. A track building machine for the renewal of tracks, comprising a single machine frame (1) with a front and a rear end supported on two rail mountings (2, 3) having a work aggregate (38) exhibiting devices (5, 6, 7) for preparing a ballast bed, for lifting out old ties (8) and for laying new ties (9), having devices (35, 36, 10, 11, 12) for transporting the old and new ties (8, 9) and for raising, guiding and stretching apart old rails (13) and having a slide mechanism (18), which is rollable on the old ties (8), for supporting the rail mounting (3) in working deployment, which rail mounting is disposed directly in front of the work aggregate (38) in the direction of working, wherein the work aggregate (38) for lifting out the old and laying the new ties (8, 9) is located outside a section of the machine frame (1) between the rail mountings (2, 3) connected to the machine frame (1) and is fastened on an extension arm (4) which juts out over the rear end of the machine frame (1), and wherein between the extension arm (4) and the work aggregate (38) there is provided a vertical-adjustment device (20).

5,609,107

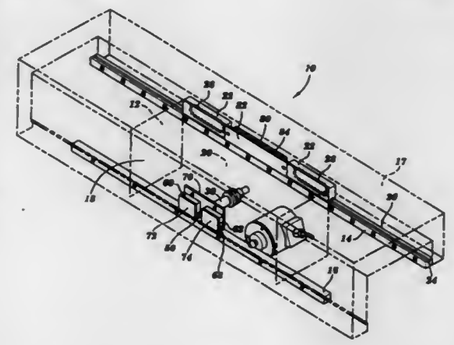
SUPPORT FOR A SELF-PROPELLED LINEAR MOTION DRIVE APPARATUS

David P. Viola, Andover, and Lawrence S. Blake, Peabody, both of Mass., assignors to Agfa Division, Bayer Corporation, Wilmington, Mass.

Continuation of Ser. No. 182,602, Jan. 14, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 613,550

Int. Cl.[6] B61C *11/00*

U.S. Cl. 105—77 **12 Claims**



1. A linear motion drive apparatus having a three point support movement along a linear motion axis comprising:

(a) a first rail and a second rail distinct from one another, spaced apart, and fixed in parallel with respect to one another and to the linear motion axis;

(b) a carriage supported for linear movement along the first and second rails;

(c) three-point support means attached to said carriage for movably supporting the carriage along the first and second rails at a maximum of three support points in rolling contact against the first and second rails having one of said three support points contacting said first rail and two of said three support points contacting said second rail, wherein said support means comprises a drive means for driving said carriage at one of said three support points, and a bearing means at two of said three support points; and,

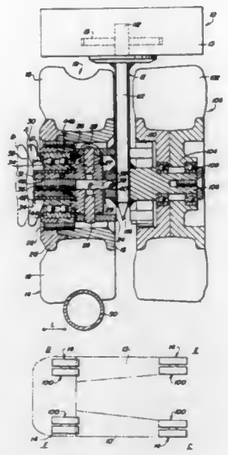
(d) biasing means for urging said drive means and said bearing means into contact with the first and second rails.

5,609,108

TRACK WHEEL KINGPIN SYSTEM FOR A CAMERA DOLLY

Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, Inc., North Hollywood, Calif.

Filed Dec. 15, 1995, Ser. No. 573,379
Int. Cl.[6] B61F *5/00*
U.S. Cl. 105—170 **14 Claims**



1. A camera dolly comprising:
a chassis;
a kingpin pivotably supported on the chassis;
a kingpin tube attached to the kingpin;
an axle pivotably attached to the kingpin tube;
a wheel bearing on the axle;
a track wheel attached around the bearing; and
a stop attached to the axle.

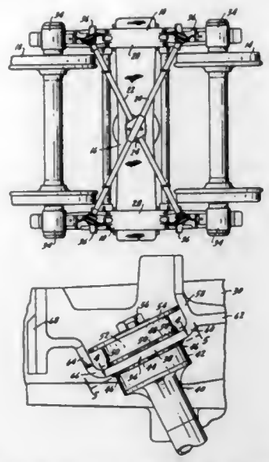
5,609,109

FRAME BRACE INTEGRAL CROSS BRACE SUPPORT BRACKET

Thomas R. Berg, Clarendon Hills, Ill., assignor to Standard Research and Design Corporation, Park Ridge, Ill.

Continuation-in-part of Ser. No. 270,505, Jul. 5, 1994, Pat. No. 5,461,986. This application Sep. 11, 1995, Ser. No. 526,204
Int. Cl.[6] B61F *5/00*
U.S. Cl. 105—206.1 **5 Claims**

1. A side frame for use in a frame brace truck having stabilizing cross braces extending between the side frames, said side frame including a top compression member and a bottom tension member, upwardly and outwardly slanted end walls connecting said compression and tension members, and a bracket at the lower end of each said end wall for use in mounting a cross brace, each said bracket including a first wall integral with the side frame and extending downwardly therefrom, said first wall having an opening therein for the mounting of a cross brace, a second wall integral with said first wall and said side frame and extending downwardly therefrom, said second wall being generally perpendicular to said first wall, and a third wall integral with said first wall and said side frame and extending downwardly therefrom, said third wall being generally perpendicular to said first wall, with said first, second and third walls, in combination, forming a generally U-shaped bracket, integral with the side frame, for the mounting of a cross brace.

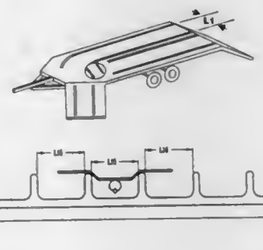


5,609,110

2D AND 3D PILOT-CHANNEL ARRAYS

Patrick E. Meacham, 20298 Hunter Ct., Lakeville, Minn. 55044; Michael S. Zellinger, 8916 72nd St., Cottage Grove, Minn. 55106; Clifford B. Meacham, 8730 E. 195th St., Prior Lake, Minn. 55372, and M. Conrad Huffstutler, Jr., 280 Cole Dr., Liberty Hill, Tex. 78642

Continuation-in-part of Ser. No. 134,709, Oct. 12, 1993. This application Nov. 21, 1994, Ser. No. 343,142
Int. Cl.[6] B61D *49/00*
U.S. Cl. 105—355 **4 Claims**



1. An apparatus for accommodating powered vehicles, each said vehicle having a drive track and a pair of parallel elongated runners for steering, said apparatus comprising:
a wheel-supported platform including at least one pivotable ramp section for loading and unloading said vehicles,
at least one pair of broad channel members fixed on said platform, each said channel member having a comb-shaped cross-section with an array of spaced-apart parallel, vertical rib elements, lateral midpoints of said broad channel members being spaced apart by a distance corresponding approximately to the spacing distance between the pair of elongated runners of said vehicle
each said channel member including a full-width horizontal mounting flange portion for directly engaging said platform, and a plurality of parallel and laterally spaced vertical ribs positioned on said mounting flange portion and extending the length of the channel member, each said rib having a rounded upper working surface zone for directly engaging the elongated runners of the vehicles,

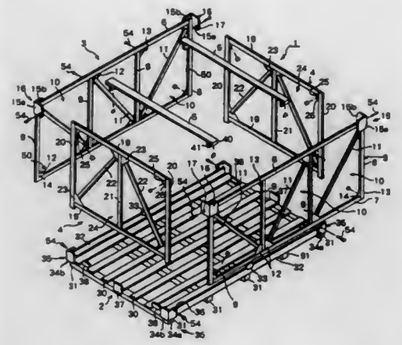
a plurality of channels forming recess zones in between said vertical ribs, for accommodating wear rods protruding from the elongated runners of the vehicles.

5,609,111

RETURNABLE FRAMEWORK STRUCTURE

Nobutoshi Hasegawa; Yoshio Hirota; Sumio Nagase, all of Suzuka; Hisato Fukuta, Yokkaichi, and Makoto Tani, Mieken, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Kabushiki Kaisha Honda Express, Japan

Filed Apr. 4, 1995, Ser. No. 415,997
Claims priority, application Japan, Apr. 5, 1994, 6-067493; Apr. 5, 1994, 6-067494
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—55.1 **6 Claims**



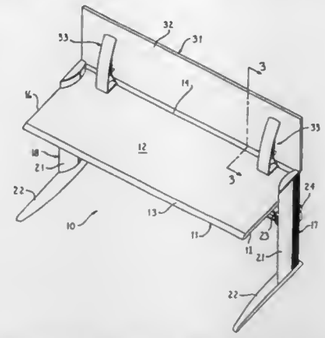
1. A returnable framework structure transporting freight, comprising:
a rectangular skid formed as a bottom plate;
four frames, one said frame mounted along each edge of said skid perpendicular to said skid when said structure is assembled, and parallel to said skid when said structure is disassembled;
a first plurality of L-shaped corner guides each having a first flat portion extending in a first direction of said skid and another flat portion extending in a second direction transverse to said first direction of said skid; each said corner guide being secured to a corner of said skid;
a first end of two of said frames mounted in said first direction is secured to said first flat portion of one of said L-shaped corner guides by means of a screw retainer;
a second plurality of L-shaped corner guides each having a third flat portion extending in said first direction of said skid and fourth flat portion extending in said second direction transverse to said first direction of said skid each said corner guide being secured to corners of said frames opposite to said skid;
a second end of the other two of said frames mounted in said second direction is secured to said fourth flat portion of one of said second L-shaped corner guides secured to upper corners of said frames by means of a screw retainer;
said L-shaped corner guides acting as projections extending over an upper surface of said framework structure when said structure is disassembled; and
a plurality of recessed receiving portions in lower portions of said skid in positions associated with said projections, such that said projections of one skid rest on said projections of a second skid when said one skid is stacked on said second skid.

5,609,112

TABLE WITH BRACKET-SUPPORTED REAR PANEL

Kevin L. Meyer, Hudsonville, Mich., and Roberto G. Fraquelli, London, England, assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 8, 1995, Ser. No. 488,490
Int. Cl.[6] A47B *3/06*
U.S. Cl. 108—153 **21 Claims**



1. In a freestanding desk or table having an enlarged worksurface defining thereon an enlarged and substantially horizontally planar upper surface, said worksurface defining thereon a horizontally and longitudinally extending rear edge, and an upright bracket-supported panel arrangement mounted on said worksurface and projecting upwardly therefrom in the vicinity of said rear edge, the improvement wherein said arrangement comprises:
at least two upright brackets removably attached to said worksurface adjacent the rear edge thereof in longitudinally spaced relation therealong;
a horizontally elongated upright panel fixedly but removably attached to said brackets so that said panel is disposed adjacent said rear edge and projects upwardly relatively to said upper surface;
each said bracket including a lower generally C-shaped mounting part which defines a generally horizontally and forwardly opening channel for accommodating therein a rear edge portion of said worksurface, said C-shaped mounting part having a clamping member movably mounted thereon for effecting clamping engagement of the rear edge portion of the worksurface within said channel;
said bracket also including an upright part which is fixed to said mounting part and is cantilevered upwardly above said upper surface, said upright part including a vertically extending support wall defining thereon a back edge which projects vertically upwardly relative to said worksurface in the vicinity of the rear edge thereof; and
first attachment parts provided on said support wall in vertically spaced relation along the back edge thereof for engagement with removable fastener means mounted on said panel for fixedly attaching said panel to said brackets so as to position said panel rearwardly of but adjacent said back edge of said support wall and with said panel extending horizontally between said brackets.

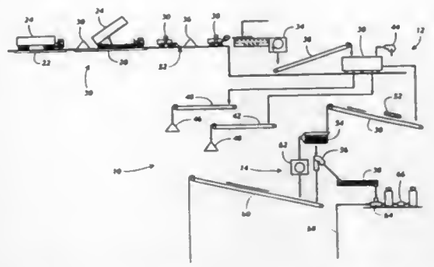
5,609,113

PARTICULATE WASTE WOOD FUEL, METHOD FOR MAKING PARTICULATE WASTE WOOD FUEL, AND A METHOD FOR PRODUCING ENERGY WITH PARTICULATE WASTE WOOD FUEL

Claude J. Galipeault, and Lawrence E. Staab, both of Savannah, Ga., assignors to Fiber Fuel International, Inc., Savannah, Ga.

Division of Ser. No. 313,650, Sep. 27, 1994. This application Sep. 29, 1995, Ser. No. 536,517
Int. Cl.[6] F23D *1/00*
U.S. Cl. 110—347 **22 Claims**

1. Method for producing energy comprising the steps of:



introducing an oxygen containing gas into a combustion chamber of a particulate fossil fuel suspension furnace to form a flow of gas through the combustion chamber, the combustion chamber being defined by a furnace wall;

injecting a particulate fossil fuel into the combustion chamber through a first port in the furnace wall and into the gas flow;

injecting a particulate wood fuel into the combustion chamber through a second port in the furnace wall and into the gas flow, the second port being separate from the first port such that the particulate wood is injected into the combustion chamber separately from the particulate fossil fuel; and

combusting the particulate fossil fuel and the particulate wood fuel in the gas flow to form a flame in the gas flow,

the particulate wood fuel comprising less than 20% water by weight and having a particle size distribution such that substantially 100% by weight of the wood particles will pass through a sieve having 9.5 mm diameter holes, up to 90% of the wood particles will pass through an 8 mesh sieve, up to 55% of the wood particles will pass through a 16 mesh sieve, at least 45% by weight of the wood particles pass through a 16 mesh sieve, up to 30% of the wood particles will pass through a 30 mesh sieve, up to 15% of the wood particles will pass through a 50 mesh sieve, and up to 5% of the wood particles will pass through a 100 mesh sieve, so that the wood particles are substantially completely combusted within the combustion chamber while suspended in the gas flow and are not combusted at the furnace wall.

5,609,114

NO-TILL DISK OPENING SYSTEM AND METHOD

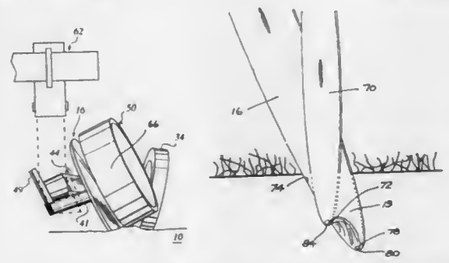
Hugh Barton, Box 123 Conquest, Saskatchewan, Canada

Filed Apr. 13, 1995, Ser. No. 421,326

Claims priority, application Canada, Apr. 15, 1994, 2121388; Apr. 12, 1995, 2146904

Int. Cl.[6] A01C *5/00*

U.S. Cl. 111—167 **40 Claims**



5. A tool assembly for use with an agricultural implement intended to be moved in a specified line of travel and having a frame and connecting means for connecting said tool assembly to said frame, said tool assembly comprising:

a first generally upright rotating disk extending from said connecting means, said disk being set at a first horizontal angle to the line of travel to provide a leading surface and a trailing surface relative to the direction of travel, and being set at a first angle to the vertical whereby a top of said disk is inclined generally toward said trailing surface;

a soil throw control and cleaning member mounted adjacent the leading surface of said disk, said member having a working surface positioned adjacent the soil surface such that no part of said working surface applies appreciable pressure to the soil surface when said tool assembly is in a working position;

a seed or fertilizer delivery mechanism disposed behind said trailing surface of said disk; and

a packer wheel substantially in line of travel behind said disk.

5,609,115

BUTTONHOLE CLOSING DEVICE FOR LOCKSTITCH BAR TACKING SEWING MACHINE

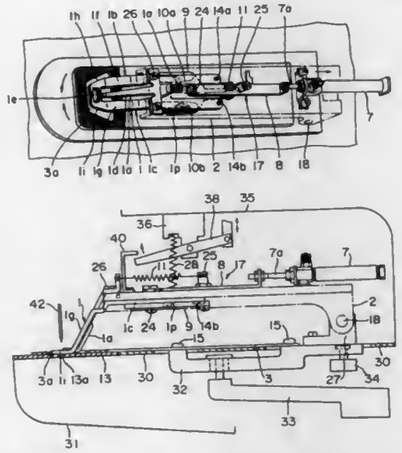
Masanori Ayuta, Tochigi; Koichi Nakayama, Utsunomiya, and Katsuo Hiratsuka, Tochigi-ken, all of Japan, assignors to The Singer Company N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 260,445, Jun. 15, 1994, abandoned. This application May 8, 1995, Ser. No. 436,926

Claims priority, application Japan, Aug. 11, 1993, 5-047743

Int. Cl.[6] D05B *3/06*

U.S. Cl. 112—70 **1 Claim**



1. A buttonhole closing device for a lockstitch bar tacking sewing machine comprising:

a feed plate having an opening portion located at a needle hole of a throat plate for holding the buttonhole of the sewn product thereon;

an arch clamp frame the rear end portion of which is supported by the feed plate on the side thereof so as to be vertically swingable;

a center clamp foot which extends from the front end portion of the arch clamp frame for positioning the buttonhole of the sewn product;

first and second movable clamp feet which are separately connected to the arch clamp frame by way of a pin so as to be swingable left and right, the first and second clamp feet being located on both sides of the end portions of the overedge chain stitches of a sewn product;

a clamp foot unit driving mechanism;

pin portions and cam portions being located between the first and second movable clamp feet and the clamp foot unit driving mechanism for converting longitudinal movement of the clamp foot unit driving mechanism into lateral swinging of the first and second movable clamp feet;

a first drive unit located and supported on the arch clamp frame and connected to the clamp foot unit driving mechanism;

a second drive unit located and supported on the arch clamp frame and connected to the clamp foot unit driving mechanism; and

the first and second driving units cooperating to move the clamp foot driving mechanism backward and forward causing the cam portions to effect opening or closing of the first and second movable clamp feet.

5,609,116

SEWING MACHINE INCLUDING CLOTH PRESSER LEVER LIFTING

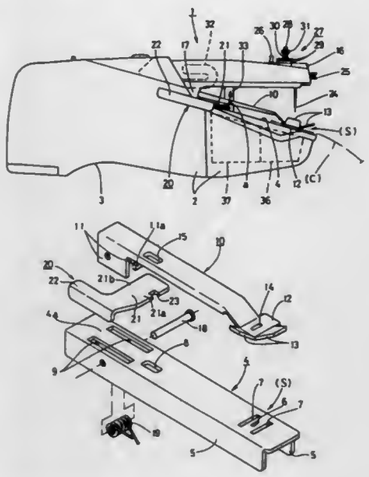
Huji Koike, Nagoya, Japan, assignor to Royal Industries Co., Ltd., Aichi, Japan

Filed Apr. 10, 1996, Ser. No. 632,353

Claims priority, application Japan, Aug. 10, 1995, 7-227035

Int. Cl.[6] D05B *29/02*

U.S. Cl. 112—169 **4 Claims**



1. A handy automatic sewing machine comprising:

a casing including a grip portion;

a sewing table projecting from one end of the casing;

a sewing head pivotally mounted on a rear end of the sewing table and including a sewing needle fastened to a front end thereof;

a cloth presser lever having at a front end thereof a pressing portion which is pressed against an upper surface of the sewing table by a spring force, the cloth presser lever being pivotally mounted on the rear end of the sewing table together with the sewing table;

an oscillation mechanism for vertically oscillating the sewing head;

a feed mechanism provided on the underside of the front end of the sewing table to be operatively connected to the oscillation mechanism for feeding an object to be sewed by predetermined pitches, the object being held between the sewing table and the pressing portion of the cloth presser lever; and

an operation lever provided in the vicinity of the grip portion for pushing the cloth presser lever against the spring force, thereby permitting the pressing portion of the cloth presser lever to depart above the sewing table.

5,609,117

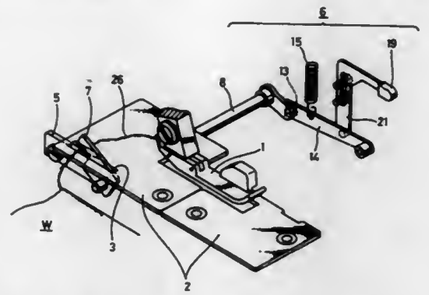
THREAD CUTTER FOR SEWING MACHINE

Yoshikazu Suzuki, Osaka, Japan, assignor to Jaguar Co., Ltd., Osaka, Japan

Filed Oct. 5, 1995, Ser. No. 539,252

Int. Cl.[6] D05B *65/00*

U.S. Cl. 112—288 **8 Claims**



1. A thread cutter for a sewing machine, comprising:

a groove being formed in either a needle plate or a sewing machine bed entirely positioned obliquely behind a presser foot of said sewing machine along a cloth feed direction, the entire groove extending in a direction substantially parallel to the cloth feed direction;

a fixed blade having a cutting edge and being so provided that its cutting edge is along an inner side surface of said fixed blade;

a movable blade for cutting either a thread or a chain loop in association with said fixed blade; and

a manual control member for driving said movable blade.

5,609,118

HOSIERY LINE CLOSER AND LOADER ASSEMBLY

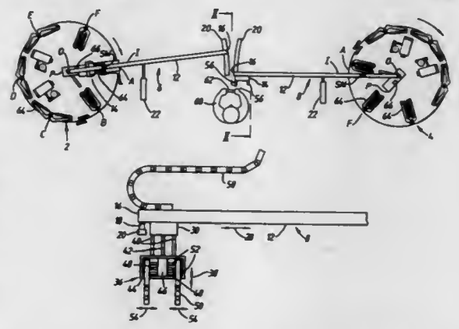
Michael J. Hodges, High Wycombe, and Darren Horton, Kirkby-in-Ashfield, both of England, assignors to Detexomat Machinery Limited, High Wycombe, England

Filed Feb. 9, 1995, Ser. No. 385,908

Claims priority, application United Kingdom, Feb. 11, 1994, 9402684

Int. Cl.[6] D05B *33/00;21/00*

U.S. Cl. 112—470.15 **22 Claims**



1. A hosiery line closer and loader assembly comprising:

a line closer having a plurality of carriers mounted on a rotatable carousel for carrying pairs of tubular hose, having welt ends, to be joined, wherein the carriers can be circulated around a path so as to pass in turn a hose mounting station, hose positioning and hose joining stations, and a hose dismounting station; and

a loader having a transfer mechanism including a loading frame arranged to be able to hold two hose by their welt ends and an

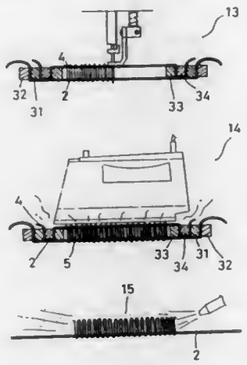
elongated linear support extending between a hose loading position, where the loading frame can be loaded with two hose, and the line closer, wherein the transfer mechanism is configured to move along the elongated support from the bose loading position to the line closer so that the transfer mechanism follows a linear path at least through the hose loading position, and wherein the transfer mechanism is arranged to co-operate with the line closer and a carrier thereof to transfer the two hose to the carrier at the hose mounting station.

5,609,119

METHOD OF MAKING EMBROIDERY

Ching-Lin Yeh, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jan. 19, 1996, Ser. No. 588,732
Int. Cl.[6] D05C *9/04;* **D06C** *3/08*
U.S. Cl. 112—475.23 **5 Claims**



1. A method of making a three-dimensional embroidery comprising the steps of:

framing a base fabric and framing a thermal-decomposed fabric with at least two frames to form a framed base fabric and a framed thermal-decomposed fabric, respectively;

placing said framed thermal-decomposed fabric on said framed base fabric closely;

embroidering embroidery patterns directly on said framed thermal-decomposed fabric and said framed base fabric with thermosetting embroidering threads;

pressing an iron on said framed thermal-decomposed fabric and said framed base fabric at a temperature of about 170° C. to 190° C. for a period of about 1 minute to decompose said framed thermal-decomposed fabric into charred pieces;

removing said frames from said framed base fabric to form a semi-product; and

spraying pressurized air on said semi-product to remove said charred pieces from said semi-product.

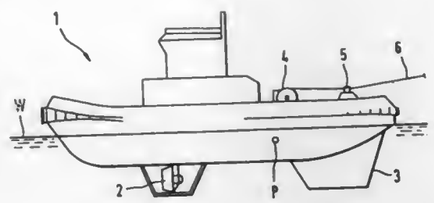
5,609,120

TRACTION ARRANGEMENT FOR A TUG BOAT

Harri K. Eronen, Raisio, Finland, assignor to Aquamaster-Rauma Ltd., Rauma, Finland

Filed Mar. 14, 1995, Ser. No. 403,680
Claims priority, application Finland, Mar. 14, 1994, 941195
Int. Cl.[6] B63B *21/04*
U.S. Cl. 114—253 **17 Claims**

1. Traction arrangement for a tug boat having a towing winch mounted on a forecastle of the tug boat behind a transverse bulwark or in front of a transverse bulwark on an aft deck and a tow rope or towing wire connected to the towing winch and connectable to a vessel to be assisted by the tug boat, comprising



a substantially arcuate tow arc mounted on the deck and arranged in a plane substantially parallel to a plane of the deck,

a towing eyelet movable along said tow arc, the tow rope or towing wire being passed from the towing winch through said towing eyelet for connection to the vessel being assisted, said towing eyelet being movable along said tow arc to different angular positions in relation to a towing angle defined between a longitudinal center line of the boat and a direction of the tow rope or towing wire extending from the boat to the vessel, and

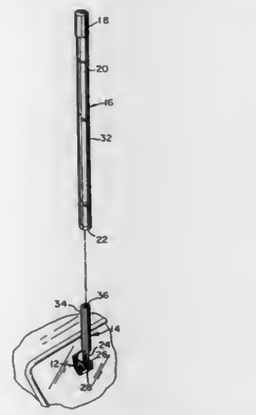
a steering runner through which the tow rope or towing wire passes from the towing winch to said towing eyelet, said steering runner being arranged substantially within an area of a centerpoint of said tow arc.

5,609,121

DEVICE FOR MARKING A VEHICLE

Leon S. Gross, Philadelphia, Pa., assignor to Enterprises, Inc., Philadelphia, Pa.

Filed Sep. 9, 1994, Ser. No. 303,457
Int. Cl.[6] B60Q *9/00;* **G09F** *7/20*
U.S. Cl. 116—28 R **23 Claims**



17. A device for marking a vehicle comprising:

(a) a base for mounting the device to the vehicle, the base having a mounting section for engaging the vehicle to permit the device to be mounted on the vehicle and a rod support having a pair of support ribs projecting from the base to provide a groove therebetween;

(b) a pivot pin traversing the groove supported by the support ribs;

(c) a cantilevered support rod projecting from the base having a free end of predetermined outside width and a mounting end disposed within the groove and pivotally connected with the pivot pin at the rod support of the base to permit the rod to be pivotally moved between selected positions relative to the base, the rod being frictionally held by the support ribs to

enable the rod to remain in position relative to the base after the rod is moved between positions; and

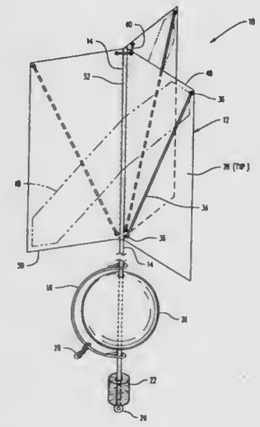
(d) a tubular marking sleeve having a transparent tube and an inner colored liner visible through said tube, the tubular marking sleeve having an open end to permit slidable mounting of the sleeve onto the cantilevered support rod in slip fit for marking of the vehicle and a closed end to cover the free end of the support rod when the sleeve is mounted on the rod, the open end of the tubular sleeve having an inside width that is generally the same as the outside width of the free end of the rod so that the cooperating contact between the sleeve and the rod retains the sleeve in position on the rod.

5,609,122

DIVERS SAFETY FLAG

Edward J. Jimmie, 524 NE. 5th Ave., Ft. Lauderdale, Fla. 33301

Filed Dec. 14, 1995, Ser. No. 572,698
Int. Cl.[6] G09F *17/00*
U.S. Cl. 116—173 **7 Claims**



1. A storable multi-panel diver's safety flag and mast in combination comprising:

three flexible rectangular shaped panels formed of three sheets of flexible material having a width substantially twice that of each said panel, said sheets connected together along a common central portion of each said sheet to define a central elongated pocket or cavity and three mating pairs of connected sheet haft portions, each said pair becoming one said panel, said panels being extendable radially from said pocket or cavity in spaced angular orientation one to another;

an elongated mast connectable within and extending in one direction from said pocket or cavity;

each said panel including a rigid or semi-rigid elongated slender support connected at each end thereof to, and extending between, an outer upper corner and a lower inner corner of each said panel whereby each said panel is generally straight and upstanding;

angular orientation means for maintaining said panels in the angular orientation;

diver down indicia on each said sheet viewable in any generally horizontal direction from said panels when in use.

5,609,123

ANIMAL LITTER COMPOSITIONS AND PROCESSES FOR MAKING THEM

Donald A. Luke, Valrico, Fla., and Geoffrey S. Gagen, Chesapeake, Va., assignors to Allied Colloids Limited, West Yorkshire, England

Filed Aug. 17, 1995, Ser. No. 516,195
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—173 **14 Claims**

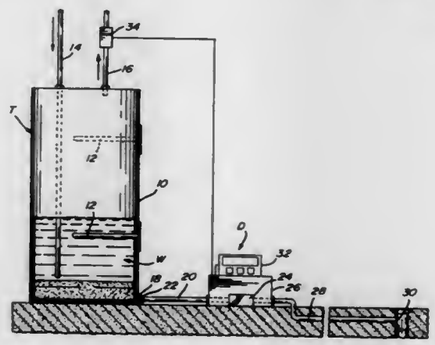
1. A particulate animal litter having a particle size of 90% by weight 0.1 to 5 mm and which comprises 100 parts by weight (pbw) substrate particles having a size of 90% by weight 0.1 to 3 mm onto which has been bonded about 1 to 15 pbw superabsorbent particles and a clumping amount, within the range about 0.1 to 10 pbw, of clumping particles, wherein the superabsorbent particles have a particle size 90% by weight below 500 μm and are formed of water insoluble, water swellable, cross linked polymeric material having an absorption capacity of at least 20 g deionised water per gram polymer and the clumping particles have a particle size 90% by weight below 1000 μm and are formed of water soluble polymeric material.

5,609,124

HOT WATER TANK CLEANING DEVICE

Jacques Leclerc, 4539 rue Lavoie, Shipshaw, Quebec, Canada

Continuation of Ser. No. 64,240, May 21, 1993, abandoned.
This application Oct. 12, 1994, Ser. No. 321,902
Int. Cl.[6] F22B *37/48;* **F28G** *9/00*
U.S. Cl. 122—388 **20 Claims**

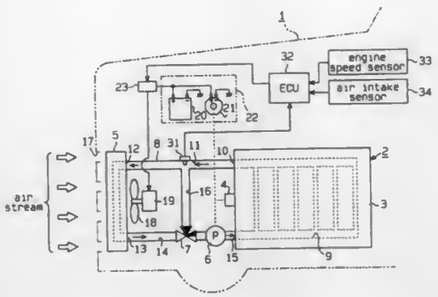


11. A method for cleaning a hot water tank of a type including a drain outlet at a bottom end thereof in flow communication with water contained in the tank and also including a cold water inlet and a hot water outlet, the cold water inlet continuously supplying pressurized water to the tank, the method comprising the steps of securing to the drain outlet a first end of a conduit means having also a second end and a valve means provided thereon intermediate said first and second ends thereof; opening said valve means for causing at least some of the water and impurities contained in the tank to be flushed out of the tank through the drain outlet thereof, through said conduit means and said valve means and out of said second end of said conduit means for appropriate disposal thereof, the water and the impurities exiting the tank at least partly under a pressure of the supply water continuously fed to the tank by way of the cold water inlet.

5,609,125
APPARATUS FOR CONTROLLING AN ELECTRICALLY OPERATED COOLING FAN USED FOR AN ENGINE COOLING DEVICE

Masahito Ninomiya, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1996, Ser. No. 655,113
Claims priority, application Japan, May 31, 1995, 7-134135
Int. Cl.[6] F01P 7/02
U.S. Cl. 123—41.12 29 Claims



1. An apparatus for controlling an electrically operated cooling fan used for an engine cooling device,

said engine having a block and a water jacket in the block, wherein said water jacket includes an inlet and an outlet;

said cooling device having a radiator, a first water passage, a second water passage and a water pump;

said radiator having an inlet and an outlet;

said first water passage serving to connect the outlet of the water jacket with the inlet of the radiator to supply the cooling water to the radiator from the water jacket;

said radiator being adapted to receive the cooling water from the first water passage to facilitate heat exchange between air surrounding the radiator and the cooling water so as to decrease the temperature of the cooling water;

said second water passage connecting the outlet of the radiator with the inlet of the water jacket to return the cooling water to the water jacket from the radiator;

said water pump being adapted to force the cooling water to pass through and out of the outlet of the water jacket to the first water passage;

wherein said cooling device circulates the cooling water between the block and the radiator to cool the block and wherein said apparatus controls said cooling fan to forcibly cool the radiator; the apparatus comprises:

detecting means for detecting a temperature of the cooling water;

activating means for activating the cooling fan when said detected water temperature is in excess of a first predetermined reference value;

measuring means for measuring an elapsed time from the actuation of the cooling fan;

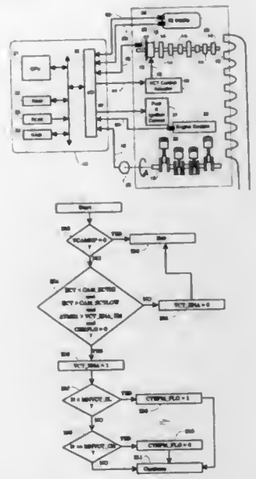
computing means for computing a variation rate based on the detected water temperature after when said elapsed time matches a second predetermined reference value; and

deactivating means for deactivating the cooling fan when said variation rate is smaller than a third predetermined reference value.

5,609,126
VARIABLE CAMSHAFT TIMING SYSTEM WITH ALTITUDE COMPENSATION

Michael J. Cullen, Northville; Alan R. Dona, Huntington Woods; Eric L. Clinton, Southfield, and Larry A. Hardy, Riverview, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 316,747, Oct. 3, 1994, abandoned.
This application May 15, 1996, Ser. No. 655,278
Int. Cl.[6] F01L 1/34; 13/00
U.S. Cl. 123—90.15 10 Claims



10. A variable camshaft timing system comprising:

means for generating an rpm signal indicative of the rotational speed of said engine;

means for generating an aircharge signal indicative of engine aircharge;

means responsive to said rpm signal and to said aircharge signal for generating a first cam timing value indicative of a first camshaft phase angle;

means for generating a throttle position signal indicative of engine throttle position;

means responsive to said rpm signal and to said throttle position signal for generating a second cam timing value indicative of a second camshaft phase angle; and

means for comparing said first camshaft phase angle to said second camshaft phase angle and for generating a phase angle for said camshaft which corresponds to the least amount of camshaft timing retard.

5,609,127
CENTRIFUGAL CONTROL ASSEMBLY FOR CAMSHAFT ADVANCE AND RETARDATION AND SUPPRESSION OF CYCLICAL VIBRATION

Edward J. Noplis, 824 Apache Trail, Lexington, Ky. 40503

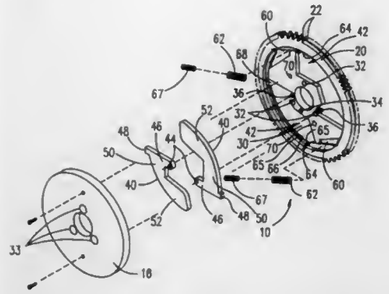
Filed Jun. 6, 1995, Ser. No. 471,658
Int. Cl.[6] F01L 1/344
U.S. Cl. 123—90.17 13 Claims

7. A timing sprocket assembly for attachment to a camshaft of an internal combustion engine having a crankshaft, for receiving drive forces from a timing chain and transmitting driving forces from said timing chain to said camshaft comprising:

a hub attachable to and rotatable with said camshaft;

a pair of centrifugally displaceable pivotal levers supported for pivoting movement relative to said hub;

a ring sprocket circumscribing said hub and said levers;



said levers engaged with said ring sprocket and effective to displace said ring gear rotationally relative to said hub under rotationally induced centrifugal displacement of said levers; and

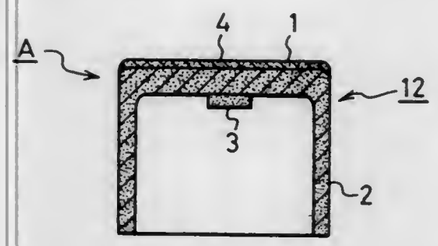
a flywheel coupled to and rotatable with said camshaft,

whereby said levers displace said ring sprocket to a position relative to said camshaft such that said camshaft is retarded with respect to said crankshaft.

5,609,128
TAPPET IN AN INTERNAL COMBUSTION ENGINE AND A METHOD OF MANUFACTURING IT

Masahito Hirose, Hayama-cho, Japan, assignor to Fuji Oozx, Inc., Japan

Division of Ser. No. 422,077, Mar. 10, 1995, Pat. No. 5,537,744. This application May 3, 1996, Ser. No. 642,643
Claims priority, application Japan, Sep. 21, 1994, 6-226299
Int. Cl.[6] F01L 1/14
U.S. Cl. 123—90.51 1 Claim

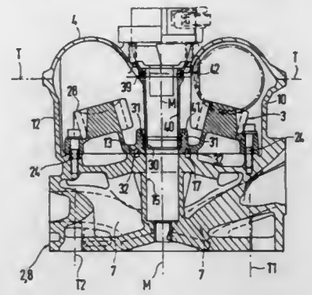


1. A tappet in an internal combustion engine, the tappet comprising a top wall and a cylindrical portion, a smaller diameter projection being provided in the middle of a lower surface of the top wall, hard metal layer being provided on a portion of the top wall which contacts a rotary cam, the smaller diameter projection which contacts an end of a valve being made of hard metal layer, the small diameter projection forming a first compressed powder material layer of hard metal, the top wall and the cylindrical portion forming a second compressed powder material layer of soft metal, and the upper surface of the top wall forming a third compressed powder material layer of hard metal wherein the first, the second and the third compressed powder material layers are sintered.

5,609,129
CYLINDER HEAD ARRANGEMENT OF AN INTERNAL-COMBUSTION ENGINE

Roland Hauf, Leonberg-Hoefingen, and Klaus Groeger, Hemmingen, both of Germany, assignors to Dr. Ing. H.C.F. Porsche AG, Germany

Filed Jun. 15, 1995, Ser. No. 490,575
Claims priority, application Germany, Jun. 16, 1994, 44 21 057.4
Int. Cl.[6] F02F 1/24; F01L 1/053; F01M 11/02
U.S. Cl. 123—193.5 30 Claims



1. Cylinder head arrangement for an internal combustion engine with a cylinder block, said cylinder head arrangement comprising:

a basic housing having charge cycle ducts and valve guides, said basic housing fitting on an engine cylinder block,

a bucket tappet housing placed on the basic housing,

and a cylinder head cover which covers cam shafts disposed in two part bearing brackets,

wherein the bucket tappet housing is arranged in a space formed by the basic housing and the cylinder head cover,

wherein the bucket tappet housing is constructed in one piece,

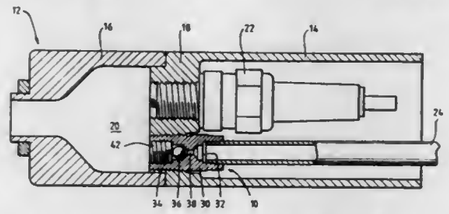
wherein lower bearing bracket halves of the two-part bearing brackets are integral with the basic housing,

and wherein upper bearing bracket halves of the two-part bearing brackets are constructed at least partially in the cylinder head cover.

5,609,130
NON-RETURN VALVE

Barry R. Neumann, Hillarys WA, Australia, assignor to Transcom Gas Technologies Pty Ltd., Herdsman, Australia

PCT No. PCT/AU93/00651, § 371 Date Nov. 14, 1995, § 102(e) Date Nov. 14, 1995, PCT Pub. No. WO94/13986, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 14, 1993, Ser. No. 481,416
Claims priority, application Australia, Dec. 14, 1992, PL 6347
Int. Cl.[6] F02B 19/02; F02M 21/02; F16K 15/04
U.S. Cl. 123—267 10 Claims



1. A non-return valve for controlling the flow of fluid in one direction through the valve and for preventing the flow of the fluid in the opposite direction, said valve comprising:

a body having an inlet passage and an outlet passage, said inlet passage and outlet passage being in fluid communication with

each other via an intermediate passage of reduced diameter, a valve seat being provided on the outlet side of said intermediate passage; and

a valve member movable between a first position in which it sits against said valve seat and closes the outlet passage and a second position in which it is spaced from said valve seat to form a flow area therebetween and wherein said outlet passage is open to allow the flow of said fluid through the valve, said intermediate passage being at least substantially equal in cross-sectional area when said valve member is in the second position, member when said valve member is in the second position, said valve member being adapted to move to the first position when a back pressure of fluid in said outlet passage exceeds the pressure of said fluid in said inlet passage.

5,609,131

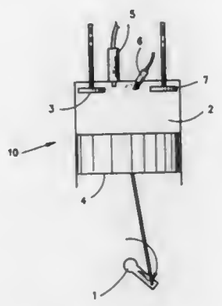
MULTI-STAGE COMBUSTION ENGINE

Charles L. Gray, Jr., Pinckney, and Karl H. Hellman, Ann Arbor, both of Mich., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Oct. 11, 1995, Ser. No. 540,767

Int. Cl.[6] F02B *3/04*

U.S. Cl. 123—299 **13 Claims**



1. A combustion method for an internal combustion engine having at least one combustion chamber and operating in a cycle with at least compression and expansion strokes, said method comprising:

introducing air and a first amount of fuel into said combustion chamber in relative amounts providing substantially greater than the stoichiometric amount of oxygen, to form a first mixture, introduction of the first amount of fuel being initiated earlier than 45° before top dead center in the compression stroke;

igniting the first mixture to produce a first ignition and to initiate a first burn as a first combustion event;

introducing a second amount of fuel into said combustion chamber to produce a second mixture, without introduction of additional air, introduction of the second amount of fuel being initiated subsequent to the end of the first burn defined by substantial completion of combustion of said first amount of fuel; and

igniting said second mixture to produce a second ignition and to initiate a second burn as a second combustion event distinct from said first combustion event.

5,609,132

CONTROL APPARATUS AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

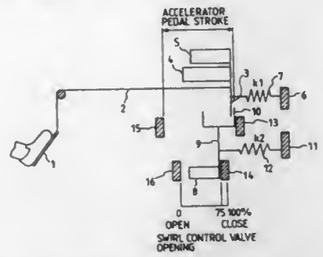
Toshimichi Minowa, Tokai-mura; Minoru Ohsuga; Mineo Kashiwaya, both of Hitachinaka, and Yasushi Sasaki, Urizura-machi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 23, 1995, Ser. No. 494,627

Claims priority, application Japan, Jun. 23, 1994, 6-141394

Int. Cl.[6] F02B *31/00*

U.S. Cl. 123—306 **18 Claims**



1. A control apparatus for an internal combustion engine for controlling an output torque of said engine of a vehicle having an accelerator pedal for setting an acceleration request for the vehicle and said engine which is a lean-burn engine, comprising:

a swirl control valve for controlling a swirl intensity of an air into at least one intake port

of said engine in a lean-burn condition; and a mechanical connection means for connecting said swirl control valve and said accelerator pedal wherein said mechanical connection means includes a delay mechanism keeping all opening of said swirl control valve in said lean-burn condition and an accelerator wire operating said delay mechanism by an operation of said accelerator pedal.

5,609,133

EXHAUST VALVE MECHANISM IN AN INTERNAL COMBUSTION ENGINE

Nils-Olof Håkansson, Stenkullen, Sweden, assignor to AB Volvo, Gothenburg, Sweden

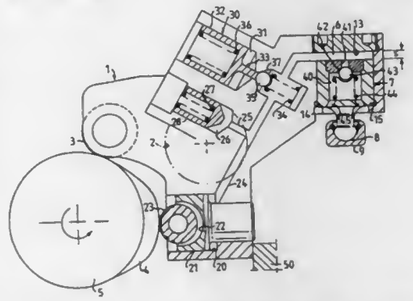
PCT No. PCT/SE94/00370, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO94/25740, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 26, 1994, Ser. No. 535,026

Claims priority, application Sweden, Apr. 27, 1993, 9301416

Int. Cl.[6] F01L *1/24;13/06*

U.S. Cl. 123—321 **11 Claims**



1. In an exhaust valve mechanism in an internal combustion engine, comprising at least one exhaust valve in each cylinder, a rocker arm, mounted on a rocker arm shaft, for each cylinder for operating the exhaust valve, a cam shaft with a cam lobe for each rocker arm, said cam lobe being in contact with a first follower at one end of the rocker arm, a valve play absorbing device arranged between an opposite end of the rocker arm and the exhaust valve, said valve play absorbing device comprising a piston element, which is housed in a first cylinder chamber disposed in said opposite rocker arm end, and a hydraulic circuit for supplying and draining hydraulic oil to and from said first cylinder chamber, the improvement wherein the hydraulic circuit comprises a hydraulic pump housed in the rocker arm and driven by the cam lobe, said hydraulic pump having a second cam follower arranged at a predetermined cam angle distance (a) from the first cam follower and communicating via a channel with the first cylinder chamber.

5,609,134

OPERATING MECHANISM FOR AN ENGINE BRAKE VALVE OF AN INTERNAL COMBUSTION ENGINE

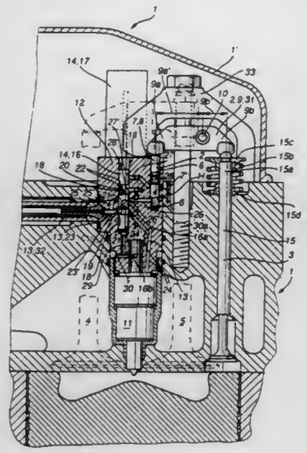
Erwin Schmidt, Baltmannsweiler; Eberhard Schneider, Waiblingen, and Siegfried Lamsbach, Stuttgart, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 5, 1995, Ser. No. 498,332

Claims priority, application Germany, Jul. 6, 1994, 42 23 657.3

Int. Cl.[6] F01L *13/06;* **F02D** *13/04*

U.S. Cl. 123—322 **8 Claims**



1. An operating mechanism for an engine brake valve of an internal combustion engine having a cylinderhead with at least one set of gas inlet and outlet valves, a fuel injector mounted in an injector mount removably received in a cavity formed ID said cylinder head and a high pressure fuel passage extending through said cylinderhead to said injector for delivering pressurized fuel from a high pressure fuel pump to said injector for injection into said engine, said engine brake valve being operable at the end of an engine compression stroke for discharging compressed gas and thereby destroying energy, said operating mechanism comprising a hydraulic piston disposed in a hydraulic cylinder formed in said injector mount, a pivotally supported operating lever having first and second arms, one engaging said engine brake valve and the other being engaged by said hydraulic piston for operating said engine brake valve, said injector mount further including a hydraulic control valve disposed in the path of said high pressure fuel passage for directing the high pressure fuel from said high pressure fuel passage selectively to said injector or said hydraulic cylinder for operating said brake valve and means for operating said hydraulic control valve to direct said high pressure fuel to said hydraulic piston for timed opening of said brake valve whenever engine braking operation is desired.

5,609,135

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

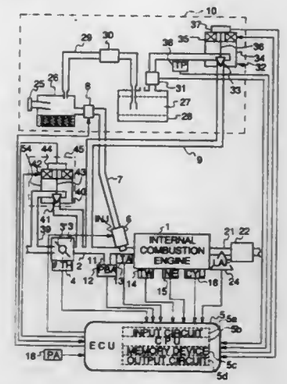
Ken Ogawa, and Toshiyuki Nishida, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 658,076

Claims priority, application Japan, Jun. 15, 1995, 7-172912

Int. Cl.[6] F02D *9/06;* **F02M** *33/02*

U.S. Cl. 123—325 **6 Claims**



1. In a control system for an internal combustion engine having an intake passage, a throttle valve arranged in said intake passage, an exhaust passage, catalyst means arranged in said exhaust passage, for purifying exhaust gases emitted from said engine, and a fuel tank, said control system including evaporative emission control means for adsorbing evaporative fuel generated within said fuel tank for temporary storage in said evaporative emission control means, and for purging said evaporative fuel into said intake passage, a secondary intake air passage bypassing said throttle valve, secondary intake air control means arranged in said secondary intake air passage for controlling an amount of auxiliary air to be supplied to said engine through said secondary intake air passage, and fuel supply control means for controlling an amount of fuel to be supplied to said engine,

the improvement comprising first determining means for determining whether or not at least one of a fuel cut which is cutting-off of supply of fuel to said engine and decreased fuel supply which is supplying of fuel to said engine in a decreased amount for deceleration of said engine has been started by said fuel supply control means, and second determining means for determining whether or not purging of said evaporative fuel into said intake passage by said evaporative emission control means was carried out within a first predetermined time period before said at least one of said fuel cut and said decreased fuel supply for deceleration of said engine has been started, and wherein said secondary intake air control means increases said amount of auxiliary air over a second predetermined time period after said at least one of said fuel cut and said decreased fuel supply for deceleration of said engine has been started.

5,609,136

MODEL PREDICTIVE CONTROL FOR HPI CLOSED-LOOP FUEL PRESSURE CONTROL SYSTEM

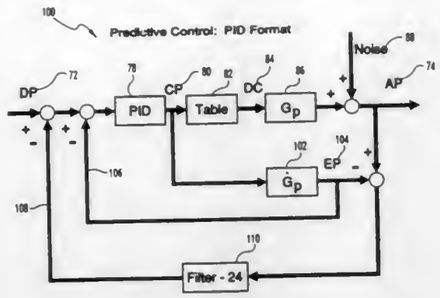
Taner Tuken, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 28, 1994, Ser. No. 267,606

Int. Cl.[6] F02M *7/00;* **F02D** *31/00*

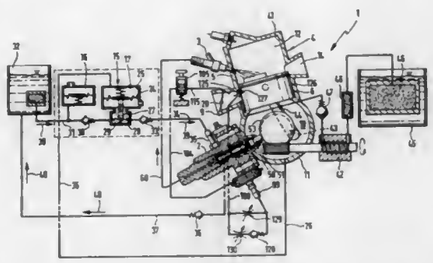
U.S. Cl. 123—357 **23 Claims**

1. A method of providing feedback in a closed-loop control system which controls a first system, comprising the steps of:



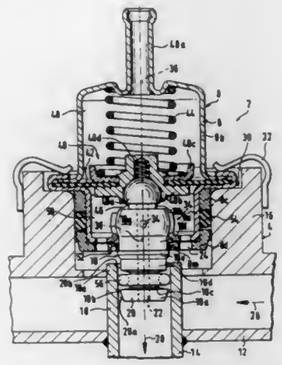
(a) predicting an expected output of the first system using a model of the first system;
(b) feeding back the expected output as a first feedback input to the control system;
(c) computing an error between an actual output of the first system and the expected output;
(d) filtering the error in order to attenuate unwanted frequency components;
(e) creating a second feedback input based on the filtered error;
(f) feeding back the second feedback input to the control system, wherein there is a delay between feedback of the first and second feedback inputs;
(g) producing a control system output based upon the first and second feedback inputs; and
(h) applying the control system output to the first system in order to control the first system.

5,609,137
FUEL INJECTION APPARATUS FOR A TWO-STROKE INTERNAL COMBUSTION ENGINE
Helmut Rembold, Stuttgart; Gottlob Haag, Markgroningen; Heinz Britsch, Bietigheim-Bissingen; Heinz Stutzenberger, Vaihingen, and Uwe Mueller, Korntal-Munchingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE95/01063, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO96/08644, PCT Pub. Date Mar. 21, 1996
PCT Filed Aug. 11, 1995, Ser. No. 648,037
Claims priority, application Germany, Sep. 14, 1994, 44 32 635.1
Int. Cl.[6] F02D *1/06;* **F02M** *69/10*
U.S. Cl. 123—382 **8 Claims**



1. A fuel injection apparatus for a two-stroke internal combustion engine, comprising a fuel injection pump, said fuel infection pump includes a pump piston driven via a drive element by a crankshaft accommodated in a crankcase of the two-stroke engine and guided longitudinally in a pump cylinder, said pump piston includes an end face which defines a pump work chamber and a jacket face which has an obliquely extending control edge that controls the fuel pumped out of the pump work chamber to a fuel injection valve that injects the fuel directly into a combustion chamber of the two-stroke engine, a control element connected to the pump piston, said control element controls a supply quantity of the fuel injection pump being effected by rotating the pump piston, the control element being actuatable by an adjusting device via a control rod accommodated in a housing of the fuel injection pump and connected to the control element, the adjusting device includes a diaphragm which divides two pressure chambers from one another and to which the control rod is connected, the adjusting device (**90**) is acted upon by the internal pressure prevailing in the crankcase (**11**) of the two-stroke engine (**2**).

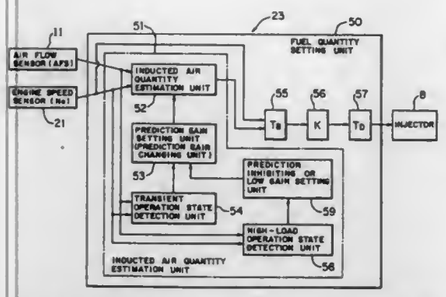
5,609,138
PRESSURE REGULATING DEVICE FOR A FUEL DELIVERY SYSTEM
Jan Mutschler, Alcala De Henares, Spain, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 17, 1996, Ser. No. 664,585
Claims priority, application Germany, Jun. 17, 1995, 195 22 042.0
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—463 **30 Claims**



1. A pressure regulating device which comprises a pressure regulating valve (**6**), which is connected to a fuel- carrying fuel housing (**4**) of a fuel supply of an internal combustion engine, which pressure regulating device has a valve housing and a connecting fitting, which exchanges fuel with the fuel housing, wherein the valve housing of the pressure regulating valve is stopped at a stop position provided on the fuel housing and the connecting fitting is connected to a connecting piece connected to the fuel housing, the pressure regulating valve (**6**) is provided with a pivot bearing (**34**), with which the connecting fitting (**10**) is pivotably supported in relation to the valve housing (**8**).

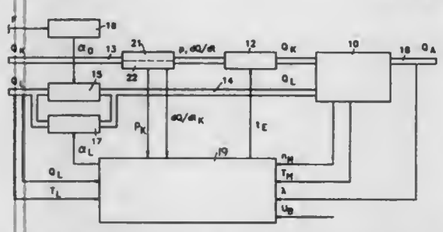
5,609,139
FUEL FEED CONTROL SYSTEM AND METHOD FOR INTERNAL COMBUSTION ENGINE
Katsunori Ueda; Toyoaki Fukui, both of Kyoto-fu, and Satoshi Yoshikawa, Shiga-ken, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 405,985, Mar. 17, 1995, abandoned. This application Feb. 1, 1996, Ser. No. 593,172
Claims priority, application Japan, Mar. 18, 1994, 6-049167
Int. Cl.[6] E02M *51/00*
U.S. Cl. 123—492 **28 Claims**

1. A fuel feed control system for a multi-cylinder internal combustion engine, comprising:
fuel quantity setting means for setting a quantity of fuel to be fed at a desired fuel feeding time in an induction stroke of the



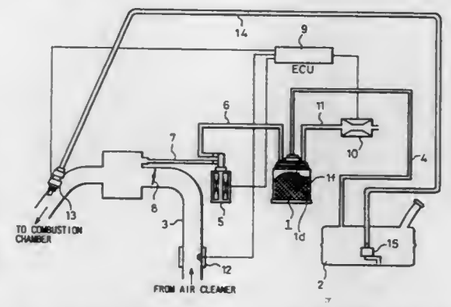
internal combustion engine on the basis of inducted air quantity information detected at a desired inducted air quantity detection time before an end of the induction stroke, and
means for feeding, at the desired fuel feeding time, fuel in the quantity set by the fuel quantity setting means;
wherein said fuel quantity setting means is provided with inducted air estimation means for estimating information on a quantity of air, which is to be inducted during the induction stroke corresponding to the desired fuel feeding time, on the basis of a result of detection of an inducted air quantity at the desired inducted air quantity detection time, inducted air quantity information detected before the desired inducted air quantity detection time and predicted information, and
said inducted air estimation means is provided with transient operation state detection means for detecting a transient operation state of the internal combustion engine and predicted information changing means for changing the predicted information so that, upon detection of the transient operation state of the internal combustion engine by said transient operation state detection means, the estimated quantity of inducted air and a corresponding real quantity of inducted air become closer to each other.

5,609,140
FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Claus Kramer, Besigheim; Armin-Maria Verhagen, Stuttgart; Dietrich Trachte, and Gerhard Keuper, both of Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 30, 1995, Ser. No. 550,491
Claims priority, application Germany, Dec. 23, 1994, 44 46 277.8
Int. Cl.[6] F02M *37/04;41/00*
U.S. Cl. 123—497 **9 Claims**



1. A fuel supply system for an internal combustion engine having at least one injection valve, the fuel system comprising:
an electric fuel pump for providing a flow of fuel, the electric fuel pump having a voltage, a current, a speed of rotation, and a torque; and
an electronic system for determining a pressure of the fuel and a rate of the fuel flow as a function of at least one of the voltage, current, speed of rotation, and torque of the electric fuel pump to control the at least one injection valve.

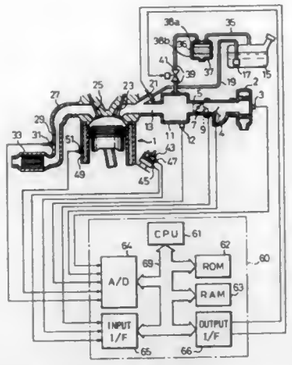
5,609,141
EVAPORATIVE FUEL CONTROL DEVICE
Hiroki Matsuoka, Susono, and Norihisa Nakagawa, Numazu, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jun. 19, 1995, Ser. No. 492,262
Claims priority, application Japan, Jun. 22, 1994, 6-140064
Int. Cl.[6] F02M *33/02;25/08*
U.S. Cl. 123—520 **14 Claims**



1. An evaporative fuel control device for an engine used in an automobile, the evaporative fuel control device comprising:
a canister for temporarily adsorbing fuel vapor produced in a fuel tank;
an air introducing means for introducing pure air into an upstream end of said canister;
an air amount sensor for detecting an mount of pure air, all of which is introduced into the upstream end of said canister;
a purge gas amount calculating means for calculating the amount of purge gas purged from a downstream end of said canister, said purge gas including pure air and fuel vapor desorbed from said canister;
a desorbed fuel amount calculating means for calculating the amount of fuel desorbed from said canister on the basis of a difference between the amount of purge gas calculated by said purge gas amount calculating means and the amount of pure air actually introduced into the upstream end of the canister detected by said air amount sensor; and
a purge gas control means for controlling the amount of purge gas purged from said canister into an intake passage of said engine on the basis of the amount of fuel desorbed from said canister calculated by said desorbed fuel amount calculating means.

5,609,142
FUEL-VAPOR TREATMENT METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE
Akinori Osanai, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Oct. 26, 1995, Ser. No. 548,887
Claims priority, application Japan, Nov. 21, 1994, 6-286493
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—520 **6 Claims**

1. A fuel-vapor treatment method for an internal combustion engine equipped with a canister for temporarily adsorbing and storing fuel vapor emitted from a fuel tank for said engine, and a solenoid valve installed in a purge passage communicating between said canister and an intake passage to said engine, for controlling a purge gas amount drawn into said intake passage through said purge passage, wherein the canister is connected to the fuel tank and to the purge passage so that fuel vapor may pass from the fuel tank, into the canister and out of the canister into the purge passage without being adsorbed therein, said method comprising the steps of:
(a) correcting a fuel injection amount in accordance with said purge gas amount;



(b) calculating a purge ratio, the ratio of said purge gas amount to an intake air amount for said engine, in accordance with operating conditions of said engine;

(c) calculating, based on the purge ratio obtained in step (b), the duty cycle of a pulse signal used to control the operation of said solenoid valve;

(d) making a judgement as to whether a first portion of the purge gas, a fuel vapor emitted from said fuel tank and introduced into said intake passage directly through said solenoid valve without being adsorbed in the canister, is in a dense stage as compared to a second portion of the purge gas which is the fuel vapor desorbed from said canister; and

(e) limiting the duty cycle calculated in step (c), or the amount of change of said duty cycle, to within a prescribed range when it is judged in step (d) that said first portion of the purge gas is in a dense state.

5,609,143

EXHAUST GAS RECIRCULATION VALVE FOR AN INTERNAL COMBUSTION ENGINE

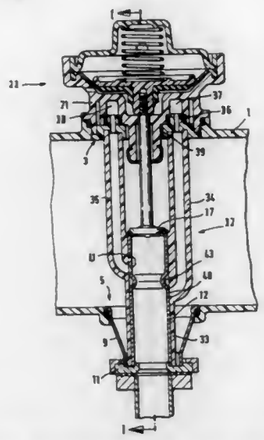
Gerhard Schellenberg, Fellbach, and Johannes Melwes, Markgroeningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1995, Ser. No. 559,232

Claims priority, application Germany, Nov. 18, 1994, 44 41 091.3

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—568 **23 Claims**



8. An exhaust gas recirculation valve for controlling exhaust gas recirculation quantities which are supplied to an induction side of an internal combustion engine, comprising an air flow pipe (**1**), a stub pipe (**12**) which protrudes into said pipe (**1**), said stub pipe is connected to an exhaust gas collecting system, which forms part of an exhaust gas recirculation conduit (**14**), a valve seat (**16**) on an end-face opening of said stub pipe, a valve element (**18**) actuated by an actuator (**22**) interacts with said valve seat, at least one part of a measuring device in the form of a measurement recording device for recording exhaust gas quantities supplied through the exhaust gas recirculation valve is arranged on the stub pipe (**12**) upstream of an opening into the air flow pipe (**1**).

5,609,144

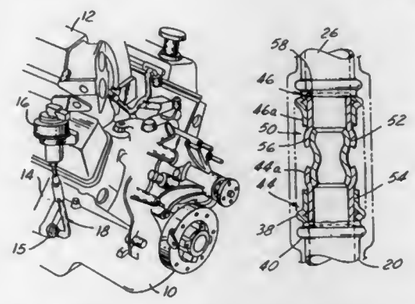
ARTICULATED EXHAUST GAS RECIRCULATION SUPPLY TUBE FOR AUTOMOTIVE ENGINE

Alex R. Selzew, Livonia, and Lamar L. King, II, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1996, Ser. No. 586,112

Int. Cl.[6] F02M *25/07*; **F16L** *27/113*

U.S. Cl. 123—568 **6 Claims**



1. An articulated exhaust gas recirculation supply tube for an automotive engine, comprising: an inlet tube with a first end adapted for connection with a source of exhaust gas from an engine and a second end having a telescoping joint portion;

an outlet tube with a first end adapted for connection with an exhaust gas recirculation control and a second end having a telescoping joint portion;

an articulated gas conducting joint interposed between and slidingly engaged with the telescoping joint portion of said inlet tube and the telescoping joint portion of said outlet tube; and

a gas sealing member extending about the telescoping joint portions of said inlet and outlet tubes and said articulated gas conducting joint.

5,609,145

INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Masami Kojima, Chiryu, and Naohito Kato, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 12, 1995, Ser. No. 371,702

Claims priority, application Japan, Jan. 12, 1994, 6-001753

Int. Cl.[6] F02P *3/055*

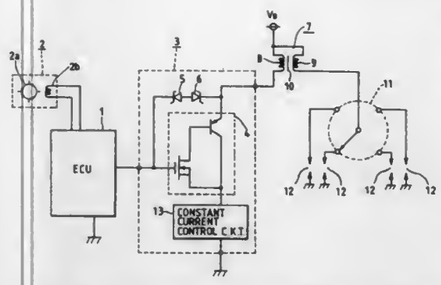
U.S. Cl. 123—634 **1 Claim**

1. A distributor-less ignition system for an internal combustion engine comprising:

an ignition coil including a primary winding and a secondary winding, said ignition coil providing ignition energy directly to a spark plug mounted in a cylinder of the internal combustion engine; and

a switching element for interrupting a current flow through the primary winding of said ignition coil at given timing, said switching element being a power-controlling semiconductor switching element and including:

an insulated-gate bipolar transistor; and



a controller for controlling the insulated-gate bipolar transistor,

the insulated-gate bipolar transistor being coupled between said ignition coil and the controller,

said ignition coil having a turns ratio a of the secondary to primary windings which satisfies the following condition:

$$V_D \cdot a > V_r$$

where V_r is a required voltage of the spark plug mounted in the engine which is greater than or equal to 30 kV and V_D is a breakdown voltage of said switching element which is greater than or equal to 450 V and less than or equal to 750 V, such that when the breakdown voltage V_D is 450 V, the turns ratio a is greater than a value given by an equation of V_r/V_D=30 kV/450 V and less than or equal to 80, and when the breakdown voltage V_D is 750 V, the turns ratio a is greater than or equal to 40 and less than or equal to 80.

a pair of zener diodes being coupled between said ignition coil and the controller and bypassing the insulated-gate bipolar transistor, said pair of zener diodes being oriented in opposite directions to define the breakdown voltage V_D.

5,609,146

WESTERN STYLE BOW

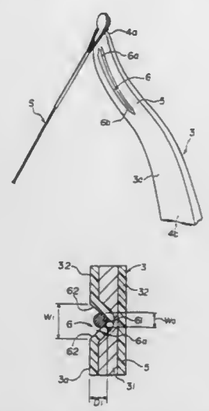
Tadao Izuta, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

Filed Mar. 8, 1995, Ser. No. 400,977

Claims priority, application Japan, Apr. 22, 1994, 6-106175

Int. Cl.[6] F41B *5/00*

U.S. Cl. 124—23.1 **9 Claims**



5. A western style bow comprising a handle, a pair of limbs connected to both ends of said handle, and a bowstring strung between tip ends of said limbs, each of said limbs being provided with a longitudinal string groove facing said bowstring, wherein said string groove has a constant bottom width, a variable opening width and a variable depth for the length of said string groove, said string groove comprises a bottom portion and two inclined side walls extending from said bottom portion and said string groove is substantially V-shaped in cross section.

5,609,147

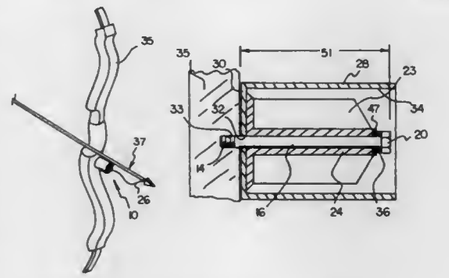
ARROW THREAD TRACKING APPARATUS FOR A BOW

William C. Withorn, Jr., 5065 Pointview Dr., Harrison, Mich. 48625

Filed Jun. 8, 1995, Ser. No. 488,758

Int. Cl.[6] F41B *5/14*

U.S. Cl. 124—86 **3 Claims**



1. An arrow thread tracking apparatus for attachment to a bow, comprising:

a bolt assembly which includes a threaded first bolt end, a middle bolt portion, and a second bolt end which includes a head, wherein said threaded first bolt end is adapted to be connected to the bow,

a thread assembly which includes a hollow bolt-receiving portion and a quantity of thread wound around said hollow bolt-receiving portion in a form of a spool of thread, wherein said hollow bolt-receiving portion jackets said middle bolt portion of said bolt assembly,

a housing assembly which includes a substantially closed first end which includes a bolt-receiving orifice, wherein said housing assembly includes a substantially open second end, wherein said second end receives said bolt assembly and said thread assembly, and

a brake element carried by said middle bolt portion of said bolt assembly adjacent to said bolt head,

further including:

an offset bracket located between said housing assembly and the bow, and

wherein said offset bracket includes:

a connector-receiving orifice located at a first end of said offset bracket, and

a bolt-receiving orifice located at a second end of said offset bracket, wherein said bolt-receiving orifice receives said threaded first bolt end of said bolt assembly.

5,609,148

METHOD AND APPARATUS FOR DICING SEMICONDUCTOR WAFERS

Alexander Mitwalsky, and Katsuya Okumura, both of Poughkeepsie, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany, and Kabushiki Kaisha Toshiba, Japan

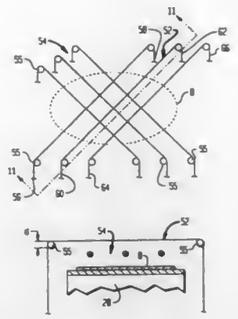
Filed Mar. 31, 1995, Ser. No. 414,871

Int. Cl.[6] B28D *1/06*

U.S. Cl. 125—16.01 **15 Claims**

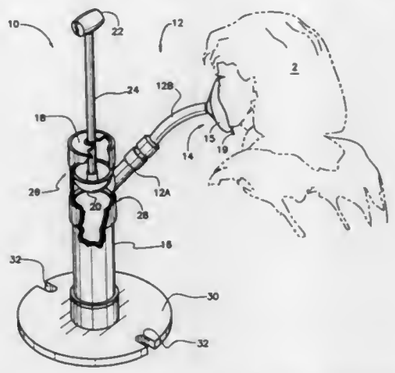
1. Apparatus for dicing a semiconductor wafer comprising:

a base having a surface for receiving and retraining said semiconductor wafer for dicing;



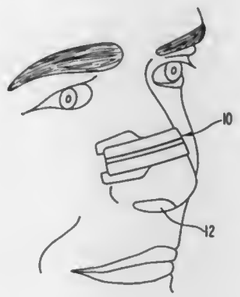
means for holding said semiconductor wafer in contact with said surface;
a first array of parallel wires;
a second array of parallel wires;
means for tensioning said wires;
means for moving the wires of said first and second arrays longitudinally;
means for holding, said first and second arrays of wires over said surface at a given distance from each other in such manner that the wires of the first array are closer to the surface of said base and orthogonal with respect to the wires of the second array; and
means for successively moving said first and second arrays of wires in a direction perpendicular to said surface for sawing through said semiconductor wafer.

5,609,149
ANTI-CHOKE DEVICE
Stephen J. Takach, 3 Durban Ave., Hopatcong, N.J. 07843
Filed Oct. 4, 1995, Ser. No. 539,332
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—200.24 **16 Claims**



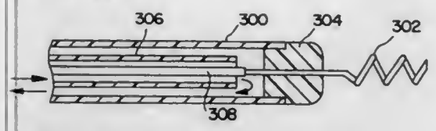
13. A suction device for clearing an object obstructing the breathing passage of a choking victim, said suction device comprising:
a cylinder assembly for generating vacuum, said cylinder assembly having
a cylinder including a proximal end, a cap sealing said proximal end, and an open distal end, and
a plunger slidably disposed within said cylinder, said plunger having an upper side, a lower side, and a rod passing through said cap, said plunger dividing said cylinder into an upper chamber located above said upper side of said plunger and a lower chamber located below said lower side of said plunger, a handle attached to said rod and disposed outside said cylinder, said handle accessible to a user; and
connection means for connecting the nose and mouth of a user to vacuum generated by said cylinder assembly, said connection means comprising
a face mask having a flexible, circular member for placing over a person's nose and mouth and excluding communication between the person's nose and mouth, and the ambient atmosphere, and
a plurality of necks each individually attachable to said cylinder assembly and when attached, communicating between said upper chamber of said cylinder and said face mask, whereby downward movement of said plunger generates vacuum within said upper chamber of said cylinder, and said vacuum is communicated through said neck and said face mask to the nose and mouth of a victim choking on an object, such that said vacuum draws the object from the breathing passage of the choking victim, one neck being fabricated from a rigid material for enabling self-administration of suction, and another neck being fabricated from a flexible material, for adjustable positioning on a choking victim,
each said neck having a strainer disposed therein, for trapping the object formerly obstructing the breathing passage of the choking victim when the object is removed by suction and drawn into said neck of said suction device.

5,609,150
METHOD FOR DILATING RESPIRATORY PASSAGES
Jeffrey M. Maged, 46400 Benedict Dr., #105, Sterling, Va. 20164
Division of Ser. No. 423,861, Apr. 18, 1995. This application Jan. 22, 1996, Ser. No. 588,047
Int. Cl.[6] A61L *15/07*
U.S. Cl. 128—201.18 **12 Claims**



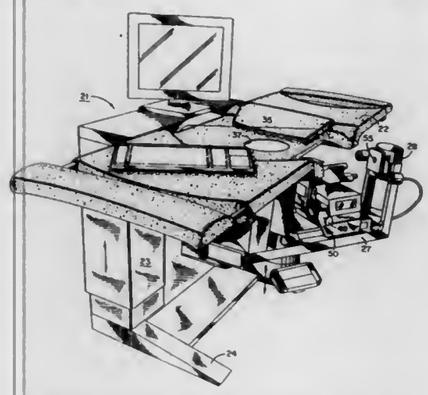
1. A method of increasing the ease with which nasal breathing through a human nose can be improved, comprising the steps of:
adhering a first end of a tape member adjacent the nose at a location just below the medial infra orbital region;
pulling the tape member to pull open and dilate a nasal concha and to establish a tension in the tape; and
adhering a second end of the tape member to a wearer's face at a location just inferior to the zygomatic ridge in a manner which maintains the tension in the tape member and therefore maintains the nasal concha in a dilated state.

5,609,151
METHOD FOR R-F ABLATION
Peter M. J. Muller, St. Paul, and Michael F. Hoey, Shoreview, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 8, 1994, Ser. No. 303,246
Int. Cl.[6] A61B *5/04;17/39;* **A61N** *1/05*
U.S. Cl. 128—642 **7 Claims**



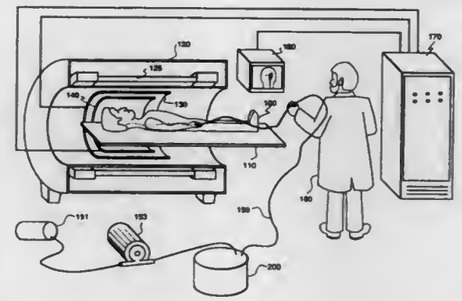
1. A method of mapping cardiac tissue, comprising:
advancing an elongated catheter including a catheter body having proximal and distal ends comprising a first tube having an internal longitudinal lumen open to the distal end of said catheter body to a desired tissue location;
delivering fluid to said internal lumen and to said desired tissue location through said internal lumen;
cooling said fluid while in said internal lumen; and
monitoring the response of said tissue to said cooled fluid.

5,609,152
PRONE POSITION STEREOTACTIC MAMMOGRAPHY NEEDLE BIOPSY APPARATUS AND METHOD FOR USING THE SAME
Anthony J. Pellegrino, New Fairfield; Milton Stoller, West Hartford, both of Conn.; Kenneth F. DeFreitas, Patterson, N.Y.; David D. Camarra, Fairfield; Anthony M. Scandura, Scotland, both of Conn.; Richard F. Schutz, Brewster, N.Y., and Jeffrey R. Storm, North Bend, Wash., assignors to Thermotrex Corporation, San Diego, Calif.
Division of Ser. No. 185,690, Jan. 24, 1994, Pat. No. 5,426,685, which is a division of Ser. No. 957,275, Oct. 6, 1992, Pat. No. 5,289,520, which is a continuation-in-part of Ser. No. 799,412, Nov. 27, 1991, abandoned. This application Feb. 15, 1995, Ser. No. 388,810
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—653.1 **10 Claims**



1. A patient-supporting table for performing prone stereotactic mammographic biopsy procedures, the table comprising:
a platform having a first end, a second end, and a breast-receiving aperture permitting pendulant presentation of a patient's breast therethrough, wherein the breast-receiving aperture is positioned on the platform so as to divide the platform into a first supporting portion extending from the first end to the breast-receiving aperture for supporting at least a patient's torso and legs in a first patient position and a second supporting portion extending from the second end to the breast-receiving aperture for supporting at least a patient's torso and legs in a second patient position.
whereby supporting a patient on the first supporting portion of the platform in the first patient position enables the patient's breast to be pendulantly presented in a first orientation through the breast-receiving aperture of the platform and whereby supporting a patient on the second supporting portion of the platform in the second patient position enables the patient's breast to be pendulantly presented in a second orientation through the breast-receiving aperture of the platform.

5,609,153
MAGNETIC RESONANCE (MR) ANGIOGRAPHY USING A TOROIDAL POLARIZING MAGNET AND A LOW-FIELD IMAGING MAGNET
Charles L. Dumoulin, Ballston Lake, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 27, 1995, Ser. No. 534,998
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 **2 Claims**

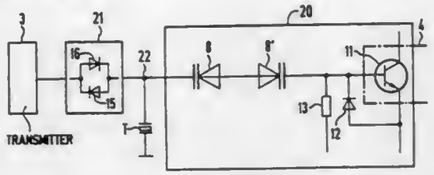


1. A magnetic resonance (MR) imaging system for obtaining vessel-selective MR images from a subject comprising:
a) a low-field imaging magnet for applying a substantially uniform magnetic field over said subject;
b) a high-field polarizing magnet having a toroidal geometry for polarizing a contrast fluid;
c) a catheter for routing the polarized contrast fluid from the high-field polarizing magnet into said subject;
d) an RF transmitter means for transmitting RF energy into said subject of a selected duration, amplitude and frequency to cause nutation of the contrast fluid and other tissue within said subject;
e) a gradient means for varying the amplitude of the magnetic field in at least one spatial dimension over time;
f) an RF receive coil for detecting a set of MR response signals from the contrast fluid and other tissue within said subject;
g) a receiver means coupled to the RF receive coil for receiving the detected MR response signals;
h) a calculation means for calculating an image from the detected MR response signals;
i) a controller means connected to the RF transmitter means, the receiver means, the calculation means and the gradient means, for activating the RF transmitter means, the receiver means, the calculation means and the gradient means each according to a predetermined MR pulse sequence; and
j) a display means connected to the calculation means for displaying the calculated image to an operator.

5,609,154
DUPLEXER INCLUDING A VARIABLE CAPACITANCE DIODE FOR AN ULTRASOUND IMAGING SYSTEM

Ralph Oppelt, Uttenreuth, and Markus Vester, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Apr. 20, 1995, Ser. No. 425,631
Claims priority, application Germany, May 19, 1994, 44 17 605.8
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.01 **12 Claims**

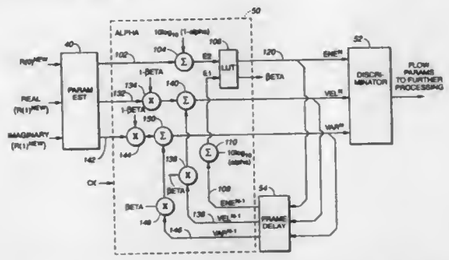


1. An ultrasound imaging system comprising:
at least one transducer element;
a transmitter for exciting the at least one transducer element with transmit pulses during a transmit mode of the imaging system;
a receiver for evaluating echo signals received by the at least one transducer element during a receive mode of the imaging system; and
a duplexer provided for each of the at least one transducer element, said duplexer comprising:
a first switch adapted to electrically couple the at least one transducer element to the receiver when the imaging system is in the receive mode, and to electrically decouple both the at least one transducer element and the transmitter from the receiver when the imaging system is in the transmit mode, said first switch comprising at least one variable capacitance diode connected between the at least one transducer element and the receiver and driven in reverse direction by the transmit pulses emitted by the transmitter; and
a second switch adapted to electrically couple the at least one transducer element to the transmitter when the imaging system is in the transmit mode, and to electrically decouple both the at least one transducer element and the receiver from the transmitter when the imaging system is in the receive mode,
wherein said first and second switches are electrically coupled to one another at a common connection point.

5,609,155
ENERGY WEIGHTED PARAMETER SPATIAL/ TEMPORAL FILTER

Ismayil M. Guracar, Redwood City, Calif., assignor to Acuson Corporation, Mountain View, Calif.

Filed Apr. 26, 1995, Ser. No. 429,056
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **43 Claims**

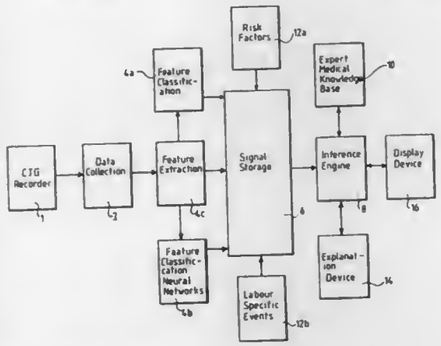


1. An apparatus for filtering a plurality of Doppler or time shift signals, each Doppler or time shift signal containing information on mean velocity, variance of velocity and on energy of such Doppler or time shift signal; said apparatus comprising:
an estimator estimating from each of said Doppler or time shift signals parameters related to mean velocity and/or variance of velocity of said Doppler or time shift signal; and
a device deriving a weighted average of the mean velocity related parameters and/or a weighted average of the variance of velocity related parameters by means of a weight or weights that are functions of the energies of the Doppler or time shift signals.

5,609,156
FOETAL MONITOR

Robert D. F. Keith; Keith R. Greene; Emmanuel C. Ifeachor, all of Plymouth, Great Britain, and Jennifer Westgate, Auckland, New Zealand, assignors to University of Plymouth, Great Britain

PCT No. PCT/GB93/01231, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995, PCT Pub. No. WO93/25971, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 9, 1993, Ser. No. 351,294
Claims priority, application United Kingdom, Jun. 9, 1992, 9212133
Int. Cl.[6] A61B *5/0444*
U.S. Cl. 128—670 **14 Claims**



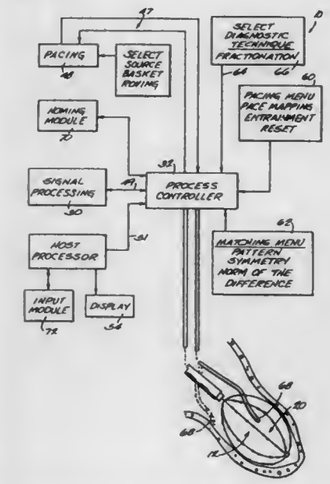
1. A foetal monitor comprising:
a sensing device including sensors for measuring uterine movement and foetal heart rate, of a patient under observation,
a data collection device, coupled to the sensing device and arranged to receive and sample an output signal of the sensing device and to generate digital signals representative of the parameter over a predetermined time interval,
data analysis means including recognition means operable periodically to calculate a baseline heart rate value by calculating a plurality of modal values for a respective plurality of modal ranges of the measured foetal heart rate over a predetermined time interval of the foetal heart rate and to recognize in the digital signals received over a signal link from the data collection device a plurality of predetermined information features by automatically analyzing the digital signals in relation to the baseline heart rate value and classification means for classifying at least one of the said features, to produce first output signals representative of the existence of such features and representative of feature classifications,
signal storage means arranged to receive and store the said first output signals as a short term knowledge base,
database storage means for storing reference data as long term knowledge base,
database storage means for storing reference data as a long term knowledge base,
an inference engine arranged to process signals representative of the short term and long term knowledge bases automatically to produce conclusion signals, and

indication means arranged to receive the conclusion signals and to provide an indication of said conclusion signals.

5,609,157
SYSTEMS AND METHODS FOR ANALYZING BIOPOTENTIAL MORPHOLOGIES IN BODY TISSUE USING ITERATIVE TECHNIQUES

Dorin Panescu, Sunnyvale; James G. Whayne, Saratoga, and David K. Swanson, Mountain View, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Feb. 17, 1995, Ser. No. 390,701
Int. Cl.[6] A61B *5/04; A61N 1/36*
U.S. Cl. 128—697 **69 Claims**



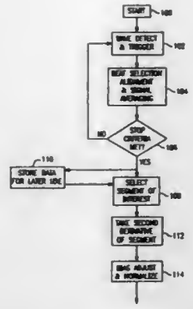
1. A processing element for analyzing biopotential morphologies in myocardial tissue comprising
first means for inputting a template of a cardiac event of known diagnosis in a region of myocardial tissue,
second means for inputting a first sample of paced biopotentials occurring in the tissue region as a result of pacing using a first technique,
third means for inputting a second sample of paced biopotentials occurring in the tissue region as a result of pacing using a second technique different than the first technique, and
fourth means for electronically comparing each of the first and second samples individually to the template and generating first and second outputs based upon each comparison.

5,609,158
APPARATUS AND METHOD FOR PREDICTING CARDIAC ARRHYTHMIA BY DETECTION OF MICROPOTENTIALS AND ANALYSIS OF ALL ECG SEGMENTS AND INTERVALS

Eric K. Y. Chan, Austin, Tex., assignor to Arrhythmia Research Technology, Inc., Austin, Tex.

Filed May 1, 1995, Ser. No. 431,992
Int. Cl.[6] A61B *5/0468*
U.S. Cl. 128—705 **27 Claims**

1. A method for detecting micropotentials to identify cardiac arrhythmia comprising the steps of:
selecting a segment of interest of an electrocardiographic signal of one cardiac cycle;
generating a profile waveform representative of a temporal attribute of said segment of interest;

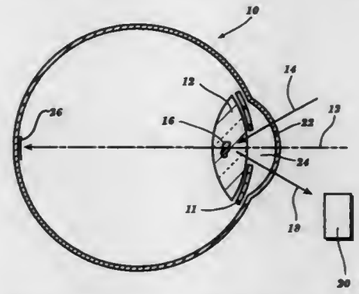


deriving a frequency domain spectral representation of said profile waveform, said frequency domain representation being representative of said segment of interest with high frequency micropotentials being amplified therein;
defining a bandwidth of interest of frequencies in said spectral representation;
determining a gradient from said spectral representation for each of a plurality of the frequencies within said bandwidth of interest;
obtaining a representative maximum amplitude of said spectral representation for the frequencies within said bandwidth of interest;
comparing said representative maximum amplitude and said gradients from said spectral representation for each of the plurality of the frequencies to detect the micropotentials in the segment of interest of the electrocardiographic signal; and
quantifying a degree of spectral fragmentation within said bandwidth of interest from said comparing of said representative maximum amplitude and said gradients to identify cardiac arrhythmia.

5,609,159
METHOD AND APPARATUS FOR NONINVASIVE DETERMINATION OF A DISEASE STATE OF A HUMAN EYE

Gillray L. Kandel, Troy, and John Schroeder, Schenectady, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Jun. 7, 1995, Ser. No. 477,314
Int. Cl.[6] A61B *13/00*
U.S. Cl. 128—745 **68 Claims**



1. A method for determining a disease state in an eye of a patient, comprising the steps of:
providing a plurality of metameric lights for viewing by said patient, each light comprising a light mixture of at least two different wavelength components, each component having an associated luminance value;

determining a proportion of associated luminance values of components of a select light of said plurality of lights when said select light is adjusted to match another of said plurality of lights as reported by said patient; and

determining said disease state based on said proportion by referencing said proportion to predetermined data of a standardization group, representative of standard proportions with respect to age of the standardization group, and determining an acceleration or retardation of said disease state in accordance with relative placement of said determined proportion to corresponding standard proportions of said predetermined data.

5,609,160

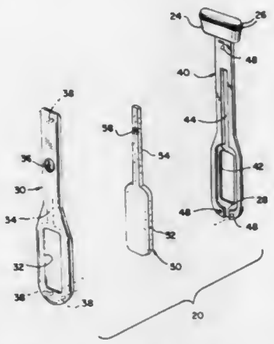
IN HOME ORAL FLUID SAMPLE COLLECTION DEVICE AND PACKAGE FOR MAILING OF SUCH DEVICE

Chander Bahl, Flemington, N.J.; James P. Galvin, Wilmington, Del., and Richard L. Egan, Flemington, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 30, 1995, Ser. No. 413,523

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—771 **5 Claims**



1. A reagent pad for collecting an oral fluid sample from the mouth, said pad having a distal end and a proximal end containing:

a test portion for collecting an oral fluid sample located at the distal end of said pad; and

an indicator portion located proximal to said test portion for indicating the collection of said oral fluid sample from the mouth collected in both said indicator portion and said test portion; and

wherein said test portion is surrounded by a plastic reinforcement; and

wherein said indicator portion contacts said oral fluid sample only after said test portion is entirely filled with sample.

5,609,161

OROFACIAL MYOGRAPHIC MEASUREMENT METHOD

Ronald E. Tura, 1598 Hillgrade Ave., Alamo, Calif. 94507, and Glen F. Bailey, 1920 Carquinez Ave., Richmond, Calif. 94805

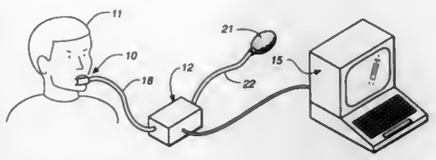
Division of Ser. No. 184,294, Jan. 21, 1994, Pat. No. 5,452,727. This application Jun. 5, 1995, Ser. No. 464,357

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—777 **5 Claims**

1. A method of measuring the strength of an orofacial muscle of a patient comprising the steps of:

applying a pressure-sensitive probe to engage aid orofacial muscle, said probe being yieldable in response to contraction of said orofacial muscle;



contracting said muscle to exert pressure on said probe;

sensing the pressure exerted on said probe by said orofacial muscle;

providing an electrical signal in real time representative of the pressure exerted on said probe by said orofacial muscle over the duration of a test run;

deriving from said electrical signal a characteristic maximum value thereof over the duration of said test run, wherein said maximum value of said electrical signal is characteristic of the maximum pressure exerted by said orofacial muscle over the duration of said test run; and

recording a maximum muscle strength value corresponding to said characteristic maximum value of said electrical signal over the duration of said test run.

5,609,162

DISPLAY SYSTEM FOR PROJECTING THE CENTER OF GRAVITY OF THE HUMAN BODY

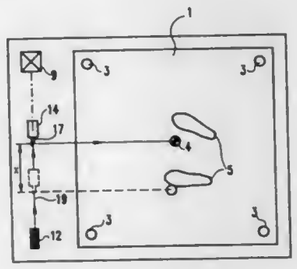
Siegmar Blumentritt; Thomas Brendel, both of Duderstadt; Steffen Sawatzki, Sollestedt, all of Germany, and Paul G. van de Veen, Enschede, Netherlands, assignors to Otto Bock Orthopadische Industrie Besitz-und-Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany

Filed Jan. 13, 1995, Ser. No. 372,114

Claims priority, application Germany, Jan. 15, 1994, 44 01 036.2

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—782 **25 Claims**



1. Display system controlled by the center of gravity, for measuring the human body and/or prosthetic and orthotic fittings in their position relative to the human body, comprising:

a measuring plate for determining the center of gravity, projected in the plane of said measuring plate, of a person standing on said measuring plate,

a projection device arranged outside said measuring plate and comprising an optical system for projecting a light beam defining a vertical measuring line and

a drive for displacing said optical system in a plane parallel to that of said measuring plate,

said measuring plate being provided with pressure sensors connected with another via a circuit, said sensors delivering an electrical signal defining the position of the center of gravity thus determined,

said electrical signal controlling said drive for displacing said optical system to a terminal position in which the projected vertical measuring line and the center of gravity of the measured person lying within the same vertical plane.

5,609,163

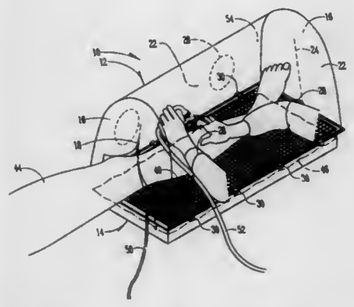
SURGICAL SHIELD FOR ORTHOPEDIC SURGERY

David M. Beard, 579 S. Willard St. Apartment 2, Burlington, Vt. 05401-4024

Filed Dec. 27, 1995, Ser. No. 578,858

Int. Cl.[6] A61F *5/37*

U.S. Cl. 128—846 **9 Claims**



1. A surgical shield for use in limb surgery to isolate an extremity upon which surgery is to be performed, comprising

a basin having a bottom wall and an upstanding peripheral wall, said peripheral wall having a horizontally extending flange, and said peripheral wall extending along opposite sides and opposite ends of said basin,

an enclosure of transparent plastic material on said basin forming a chamber to receive an extremity, said enclosure having a bottom peripheral edge engaging said basin peripheral wall flange,

fasteners removably securing said bottom peripheral edge of said enclosure to said peripheral wall flange of said basin, and

a grid in said basin positioned on supports on the peripheral wall of said basin, said grid being in spaced relation to the bottom wall of said basin to allow said extremity to be positioned above irrigation liquids collected in said basin below said grid.

5,609,164

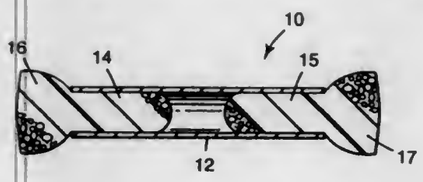
METHOD OF FORMING AN EARPLUG CONTAINMENT DEVICE

James F. Dyrud, New Richmond, Wis.; Gerald V. Elstran, Woonsocket, S. Dak., and Paul E. Olson, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1995, Ser. No. 547,062

Int. Cl.[6] A61F *11/00*

U.S. Cl. 128—864 **7 Claims**



1. A method for forming an earplug containment device comprising providing at least one thin-walled, hollow sleeve having an inside diameter less than the diameter of the human ear canal, compressing a slow-recovery earplug having a diameter greater than that of the human ear canal to a cross-sectional size less than that of said sleeve and inserting said compressed earplug into said sleeve.

5,609,165

FLEXIBLE THIMBLE TYPE FINGER PROTECTOR

Frank H. Lambert, Hertfordshire, United Kingdom, assignor to Stuart Wallace, Melford, United Kingdom

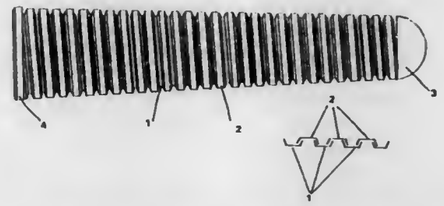
PCT No. PCT/GB92/01498, § 371 Date May 3, 1994, § 102(e) Date May 3, 1994, PCT Pub. No. WO93/04638, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 13, 1992, Ser. No. 204,190

Claims priority, application United Kingdom, Sep. 4, 1991, 9118928; Jan. 31, 1992, 9202095

Int. Cl.[6] A61F *5/37*; A41D *19/00*; D05B *91/04*

U.S. Cl. 128—879 **8 Claims**



1. A finger protector comprising a tube-like portion with a closed end, the wall of said tube being formed of at least two elongate strips of a material which strongly resists penetration by a needle and which are in helical configuration, said strips being of such cross section that adjacent edges of adjacent turns of the helices interlock to prevent the turns separating axially but allowing a limited amount of axial movement such that said tube-like portion may be bent to a limited extent without adjacent turns separating, wherein said cross section is selected from the group consisting of U-shaped, S-shaped or in a shape consisting of two U-shapes fused at one edge.

5,609,166

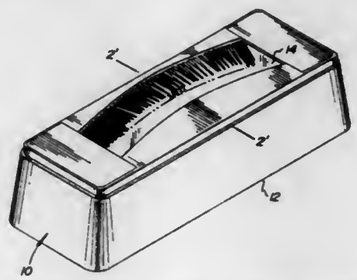
DEVICE FOR REMOVING ARTIFICIAL FINGERNAILS

Alvin M. Walker, 143 Lake Shore Dr. North, Palm Harbor, Fla. 34684

Filed Sep. 5, 1995, Ser. No. 523,331

Int. Cl.[6] A45D *29/00*

U.S. Cl. 132—73 **19 Claims**



1. A manicuring device adapted for selectively cleaning or removing artificial fingernails from a plurality of fingers comprising a plastic, integrally molded container body with an inner structure defining a chamber, said inner structure being constructed with a closed bottom portion and side wall means secured to said

bottom portion to define an opening of sufficient width and length to receive a plurality of fingers, said side wall means being provided with a plurality of rib members extending into said chamber and secured to a bristle housing, said bristle housing being positioned within said chamber and including a flexible brush means integrally molded thereto comprising a plurality of bristles spaced in a plurality of rows extending inward from said bristle housing and defining a curved passageway allowing fingers to pass therethrough engaging said bristles, and a cover removably mounted to said container body.

5,609,167

ACIDIC HAIR CARE PREPARATIONS

Hermann Hensen, Haan, Germany; Dagmar Stuhrmann, Miami, Fla.; Oriol Ponsati Obiols, and Esther Prat Queralt, both of Barcelona, Spain, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 244,437, Sep. 26, 1994, abandoned.

This application Sep. 7, 1995, Ser. No. 524,735

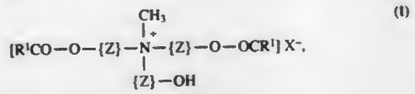
Claims priority, application Germany, Nov. 25, 1991, 41 38 630.2

Int. Cl.[6] A61K *7/06;7/08*

U.S. Cl. 132—202 **20 Claims**

1. The process of treating human hair comprising contacting said hair with a hair care preparation consisting of:

(a) quaternized fatty acid trialkanolamine ester salts corresponding to formula (I):



$$[R^1CO-O-\{Z\}-\overset{\overset{CH_3}{|}}{\underset{\underset{\{Z\}-OH}{|}}{N^+}}-\{Z\}-O-OCR^1]\,X^-, \quad (I)$$

in which

R^1CO is a linear or branched aliphatic acyl radical containing 6 to 22 carbon atoms and not more than one double bond, {Z} is an ethylene, propylene or isopropylene group and

X is chloride, bromide, sulfate, methosulfate or phosphate,

(b) fatty alcohols, and

(c) fatty alcohol polyglycol ethers.

5,609,168

HAIR TREATMENT COMPOSITION AND METHOD OF USING SAME

Karl-Heinz Kischka, Darmstadt, and Ernst Flemming, Heusenstamm, both of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

Filed May 11, 1995, Ser. No. 439,262

Claims priority, application Germany, Jun. 3, 1994, 44 19 457.9

Int. Cl.[6] A45D *7/04*

U.S. Cl. 132—204 **14 Claims**

1. An aqueous-alcoholic hair treatment composition comprising:

A) from 0.1 to 10 percent by weight of at least one film-forming compound selected from the group consisting of cationic, anionic and amphoteric film-forming polymers;

B) from 0.1 to 9 percent by weight of at least one amphoteric surfactant;

C) from 0.1 to 40 percent by weight of at least one C_2- to C_4-alcohol; and

D) from 0.01 to 2.0 percent by weight of at least one organic acid; and not containing a cationic surfactant.

5,609,169

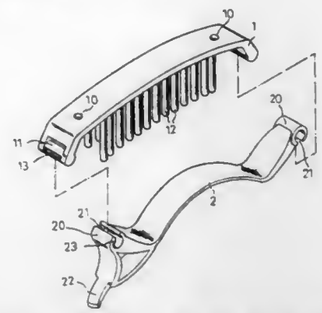
HAIR CLIP

I-Chien Yang, P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 18, 1995, Ser. No. 574,282

Int. Cl.[6] A45D *8/32;8/24*

U.S. Cl. 132—279 **1 Claim**



1. A hair clip comprising a clip base and a clamping leaf, wherein said clip base has two integral male coupling portions at two opposite ends, said clamping leaf having two integral female coupling portions respectively pivotably coupled to the male coupling portions of said clip base, the female coupling portions of said clamping leaf having a respective mouth disposed in reversed directions for coupling to the male coupling portions of said clip base, and a respective projection at one side of the respective mouth for engagement with a respective groove of the corresponding male coupling portion, said clamping leaf having an outward finger strip at one end for pulling by hand to disengage the adjacent female coupling portion from the respective male coupling portion.

5,609,170

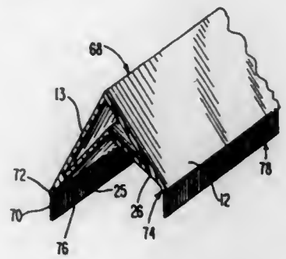
INTERPROXIMAL TOOTHBRUSH AND METHOD OF USE THEREOF

Edward S. Roth, 144-75 70th Rd., Kew Garden Hills, N.Y. 11367

Continuation-in-part of Ser. No. 237,028, May 3, 1994, Pat. No. 5,507,646. This application Oct. 27, 1995, Ser. No. 549,254

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—329 **8 Claims**



1. A method of cleaning a sub-gingival region comprising:

inserting an interproximal toothbrush into a periodontal interproximal region, said interproximal toothbrush having outer and inner V-shaped working portions of flexible material, where said outer V-shaped working portion has outer working surfaces intersecting to establish an outer spine, said inner V-shaped working portion having inner working surfaces intersecting to establish an inner spine, where said outer and inner working surfaces form intersections at the distal ends of said working surfaces from said spines and where bristles extend from said intersections; and

contacting the periodontal area between the marginal gingiva and the teeth below the gum line with said bristles.

5,609,171

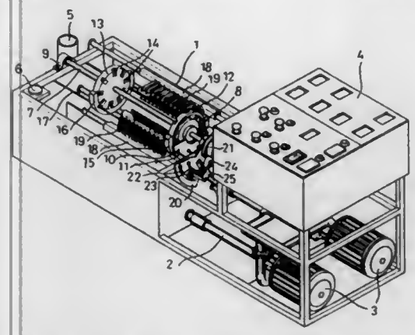
LIPSTICK MOLDING MOLD CLEANING APPARATUS

Fu-Chin Kuo, P.O. Box 82-144, Taipei, Taiwan

Filed Feb. 13, 1996, Ser. No. 600,733

Int. Cl.[6] B08B *9/02*

U.S. Cl. 134—56 R **6 Claims**



1. A lipstick molding mold cleaning apparatus, comprising a washing tank unit, a set of motor pumps controlled to pump water in and out of said washing tank unit, a water supply pipe system connected between said washing tank unit and said set of motor pumps, a control box for controlling the operation of the apparatus, a detergent filling trough, and a water level controller, which detects the level of water in said washing tank and control the operation of said water circulation control motors subject to the level of water in said washing tank unit, wherein said washing tank unit comprises a longitudinal center shaft supported between a front axle bearing and a rear axle bearing, a smoothly arched sensor holder disposed behind said front axle bearing, four sensors respectively mounted in said smoothed arched sensor holders sensors at four different positions around said longitudinal center shaft to detect the presence of the lipstick molding mold under washing, a front locating wheel and a rear locating wheel respectively mounted around said center shaft and spaced between said sensor holder and said rear axle bearing to hold said lipstick molding mold at one of said four different positions, two longitudinal locating rods bilaterally disposed below said longitudinal center shaft, a smoothly arched front locating plate and a smoothly arched rear locating plate mounted on said locating rods and respectively attached to the periphery of said front locating wheel and said rear locating wheel at a bottom side to hold said lipstick molding plate in place, four nozzle holders spaced around said longitudinal center shaft between said front locating wheel and said rear locating wheel corresponding to the four different positions of said sensors, four sets of nozzles respectively installed in said four nozzle holders, an oscillating sector plate mounted around said longitudinal center shaft in front of said front locating wheel, said oscillating sector plate having a bearing block mounted around said longitudinal center shaft, a first arched slot and a second arched slot spaced from said bearing block at different distances, a first hydraulic cylinder fixedly secured to said oscillating sector plate and bridged over said second arched slot and controlled to stop said ratchet wheel from rotation, a rotating barrel mounted around said bearing block, a ratchet wheel fixedly secured to said rotating barrel, an one-way bearing fixedly mounted around said longitudinal center shaft adjacent to said ratchet wheel, a cylinder holder disposed below said longitudinal center shaft adjacent to said oscillating sector plate, a second hydraulic cylinder mounted on said cylinder holder and controlled to turn said one-way bearing and said longitudinal center shaft, and a friction member stopped against the periphery of said said rotating barrel, said first hydraulic cylinder having a piston rod moved relative to said ratchet wheel, said second hydraulic cylinder having a piston rod reciprocated relative to said one-way bearing, said front locating wheel and said rear locating wheel being turned by said longitudinal center shaft to move said lipstick molding mold between said four different positions upon the rotary motion of said one-way bearing.

5,609,172

WASHING WATER FILTERING APPARATUS FOR DISH WASHING MACHINE

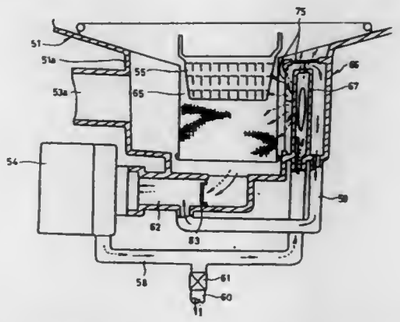
Jae W. Chang, Kyungki-do, and Joon W. Kim, Seoul, both of Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 580,507

Claims priority, application Rep. of Korea, Jan. 7, 1995, 19237/1995; Jan. 9, 1995, 28588/1995

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—57 **5 Claims**



1. A washing water filtering apparatus for a dish washing machine, comprising:

a waste gathering box having a coarse filter, a fine-meshed filter, and a passing-through opening formed at an inner surface thereof for receiving washing water and wastes such as food debris;

a drain pump disposed below said waste gathering box;

filtering means disposed at an inner surface of the waste gathering box;

a washing water circulation tube connected between a lower portion of said drain pump and said filtering means;

a suction tube connected between a certain portion of the drain pump and a certain portion of the waste gathering box; and

a washing water and wastes drain tube connected between a certain portion of said suction tube and a certain portion of the filtering means.

5,609,173

DEVICE FOR PREWASHING AND SORTING GOLF BALLS

J. Richard Hollrock, South Deerfield, Mass., assignor to Hollrock Engineering, Inc., Hadley, Mass.

Filed Jun. 9, 1995, Ser. No. 488,506

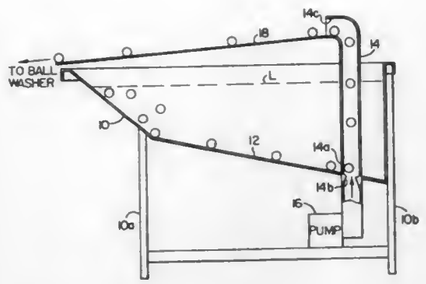
Int. Cl.[6] B08B *3/04*

U.S. Cl. 134—83 **4 Claims**

1. A device for prewashing and sorting golf balls prior to the delivery of the balls to a conventional ball washer, said device comprising:

a fluid filled tub for receiving the balls to be prewashed and sorted, said tub defining an inclined shelf for conveying the balls toward one side of the tub,

fluid circulating means including a standpipe at said one side of said tub, through which standpipe fluid and balls are moved upwardly and out of said fluid filled tub through an exit end of



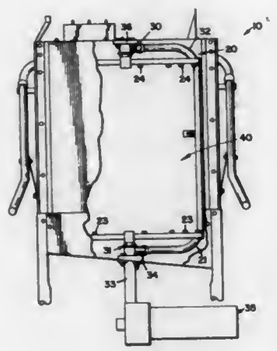
said standpipe, said standpipe having a ball inlet opening for receiving balls conveyed thereto on said inclined shelf at said one side of said tub,

said fluid circulating means including a pump provided below said shelf at the lower end of said standpipe provided adjacent the bottom of said tub, whereby said pump provides a stream of fluid flowing upwardly in said standpipe past the ball inlet opening of said standpipe in order to move the balls upwardly in the standpipe toward the exit end of said standpipe,

means defining a track for receiving the balls moving out of the standpipe exit end, and

said track defining a path for inducing rotation of round golf balls and defining opening means through which non-round golf balls or the like drop away from said track whereby only prewashed round balls are provided at the ball washer.

5,609,174
SEALED WASH ARM BEARING
Mark A. Ferguson, Lavergne, Tenn., assignor to Ecolab Inc., St. Paul, Minn.
Filed Aug. 14, 1995, Ser. No. 514,676
Int. Cl.[6] A47L *15/22;15/42*
U.S. Cl. 134—180 **21 Claims**

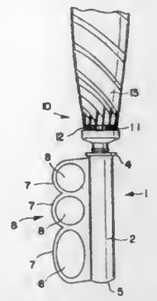


1. A wash arm hub for use in a dishwasher to rotatably connect a wash arm to a fluid supply, the wash arm hub comprising:

(a) first and second hub members defining an internal channel for communicating fluid between the fluid supply and the wash arm, wherein the first and second hub members each include a threaded fitting for respectively securing the first and second hub members to the wash arm and the fluid supply on the dishwasher; and

(b) a sealed bearing coupled between the first and second hub members for sealing the internal channel and permitting relative rotation between the first and second hub members.

5,609,175
HANDLE AND HANDLE ACCESSORY FOR HAND CARRIED ARTICLES
Todd M. Gerry, 512 Main St., Ashfield, Mass. 01330, and Mark E. Gerry, 1 Elm St., Byfield, Mass. 01922
Filed Aug. 14, 1995, Ser. No. 515,062
Int. Cl.[6] A45B *1/00*
U.S. Cl. 135—16 **7 Claims**

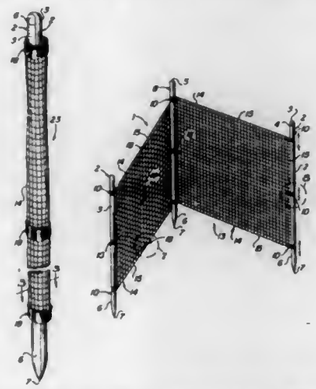


1. In an umbrella having an elongated shaft with an upper end and a lower end, a plurality of articulated ribs pivotally joined to said shaft about the upper end, a flexible canopy attached to said ribs, a mechanism for articulating the ribs to open and close the canopy and a handle attached to the lower end of said shaft and extending in substantial longitudinal alignment with the shaft, the improvement comprising:

rigid finger engaging means joined to and extending perpendicularly from said handle along the longitudinal axis thereof and in linear alignment therewith said finger engaging means comprising at least one aperture adapted to receive at least one finger of a user's hand therethrough with the handle body laid against the hand, whereby the umbrella is capable of being maintained in a substantially upright position of use on the fingers and the fingers and thumb are simultaneously free to manipulate other articles, said finger engaging means comprising a plurality of loops linearly aligned along said handle, at least one loop having a linearly elongated aperture adapted to receive a plurality of fingers of the hand therethrough.

5,609,176
COMBINATION WALKING STICK AND BLIND
Casey M. Weeks, HC 86 Box 9AA, Sicily Island, La. 71368
Filed Jan. 6, 1995, Ser. No. 369,353
Int. Cl.[6] A45B *3/00;* **A45F** *4/00*
U.S. Cl. 135—96 **20 Claims**

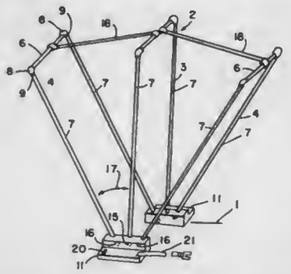
1. A combination walking stick and blind comprising at least



two elongated supports and camouflage means attached to said

supports, said supports longitudinally shaped to nest or fit together, said at least two elongated supports comprising a pair of longitudinal half-round supports, each of said half-round supports having a grip end and a ground-engaging end, said half-round supports each further comprising a flat longitudinal side and a round longitudinal side extending from said flat longitudinal side, whereby said half-round supports are aligned and nested with said flat longitudinal sides disposed in facing relationship with respect to each other, said camouflage means being wrapped around said half-round supports to define said walking stick in a first configuration, said half-round supports being separated from each other to deploy said camouflage means between said half-round supports to define said blind in a second configuration.

5,609,177
PORTABLE CABANA
Morton Iver, 535 Waterside Dr., Lantana, Fla. 33462
Filed Apr. 18, 1996, Ser. No. 634,296
Int. Cl.[6] E04H *15/38*
U.S. Cl. 135—130 **12 Claims**



1. A readily assembled and disassembled beach cabana comprising:

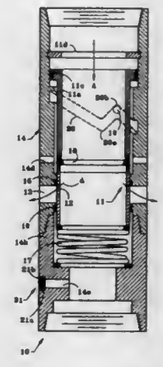
(A) a frame comprising three substantially U shaped frame elements, a center frame element and two end frame elements, each frame element having a long center tube and two parallel long end tubes removably joined together by rigid connectors; two rigid bases, each base having a bottom surface with a long axis, the bottom surface adapted for supporting the assembled cabana on a supporting surface, and having an upper surface with three passages for receiving therein the tubular ends of the three frame elements, a central passage extending into the base orthogonally to the long axis, removably receiving the end tube of the center frame element, and two side passages extending into the base at an angle of between fifteen and fifty degrees to the central passage, removably receiving the tubular ends of the end frame elements; a first elongate tubular strut removably joining the center tube of the center frame element to the center tube of one of the end frame elements; and a second elongate tubular strut removably joining the center tube of the center frame element to the center tube of the other of the end frame elements;

(B) a flexible street top panel removably covering the center tubes of the three frame elements and extending over the rigid connectors, the top panel having a broad underside, a broad outerside and a perimeter, the underside provided with means for removably attaching to the center tubes of the two end frame elements, the perimeter of the outerside being provided with joining means for removably joining to other flexible sheet panels;

(C) two flexible sheet side panels, each side panel having a wide top edge removably joined by said joining means to the top panel and two side edges extending downward from the top edge and toward one another to removably cover the end tubes of the three frame elements, each side edge provided with means for removably attaching to the end tubes of the two end frame elements; and

(D) a flexible sheet end panel having a substantially rectangular shape and a top margin removably joined by said joining means to the top panel and two side margins, removably attached to the side edges of the side panels.

5,609,178
PRESSURE-ACTUATED VALVE AND METHOD
Gregory E. Hennig, Aberdeen, Scotland, and Gary J. Pape, Ellow, United Kingdom, assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Sep. 28, 1995, Ser. No. 535,846
Int. Cl.[6] E21B *34/10*
U.S. Cl. 137—10 **28 Claims**



18. A method of operating a downhole subsurface valve from a remote surface location, the subsurface valve positioned in a wellbore along a tubular string, comprising:

initiating fluid flow through the tubular string and to said valve adequate to shift a flow responsive bypass valve closure mechanism in the valve from a first open position to a second open position;

reducing the pressure of the fluid in the tubular string and to the valve to mechanically shift the bypass valve closure mechanism to a third open position;

increasing the pressure of the fluid in the tubular string and to the valve to shift the bypass valve closure mechanism from said third open position to a first closed position; and

lowering the pressure of the fluid in the tubular string and to the valve to allow the valve closure mechanism to shift the bypass to a mechanically retained second closed position.

5,609,179
AUTOMATIC SHUT-OFF VALVE
Alfred Z. Knapp, Bozeman, Mont., assignor to Dawn Hartman, Kalispell, Mont.
Filed Sep. 25, 1995, Ser. No. 533,341
Int. Cl.[6] F16K *17/40*
U.S. Cl. 137—68.16 **17 Claims**

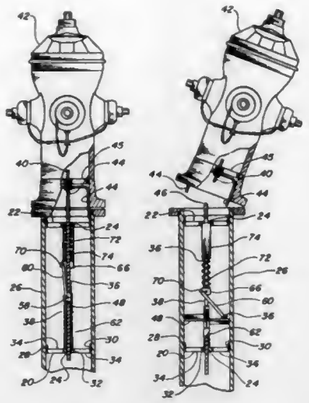
1. An automatic shut-off valve for a fluid carrying pipe that has straight internal walls contiguous with an attached device vulnerable to breakage comprising:

a) a rod having a rigid portion and a frangible end with the frangible end retained by the pipe attached device vulnerable to breakage,

b) rod centering means for slidably retaining the rigid portion of the rod in the center of the fluid carrying pipe,

c) a restricting disc rotatably positioned on the rigid portion of the rod, add

d) disc rotating means attached to the rod compressably urging the rod away from the device vulnerable to breakage said



rotating means further having link means connected to the restricting disc such that when the device attached to the pipe is broken off the frangible end is disconnected permitting the link means to rotate the disc to a restricting position under the urging of the rotating means shutting-off fluid flow within the pipe in which the shut-off valve is mounted.

5,609,180

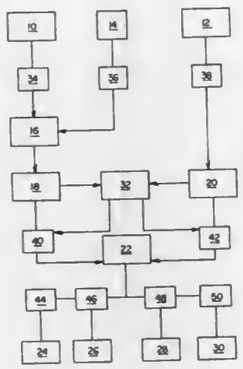
LIQUID ALKALI SYSTEM FOR FIBER REACTIVE DYEING

Samuel B. Moore, Burlington; Edwin T. Turner, Greensboro, and James F. Leuck, Gibsonville, all of N.C., assignors to Burlington Chemical Co., Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 327,041, Oct. 21, 1994, abandoned, which is a division of Ser. No. 874,754, Apr. 27, 1992, Pat. No. 5,382,262. This application Oct. 27, 1995, Ser. No. 549,622

Int. Cl.[6] G05D *11/13*

U.S. Cl. 137—101.19 6 Claims



1. An apparatus for producing a liquid caustic solution for use in reactive dyeing of cotton and cotton blended fibers comprising:

(a) a first storage container containing a sodium hydroxide solution;

(b) a second storage container containing a liquid buffered alkali solution;

(c) a mixer in communication with the first and second storage containers to continuously receive and mix sodium hydroxide and buffered alkali to form and supply said liquid caustic solution; and

(d) first and second mass flow meters to monitor the quantities of sodium hydroxide and buffered alkali received by said mixer.

5,609,181

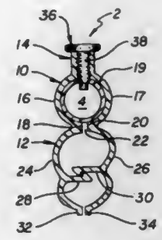
TUBE CONNECTOR AND TAPPING DEVICE

Donald L. Evans, 1405 Huntington Clr., Reno, Nev. 89509

Filed Apr. 2, 1996, Ser. No. 626,471

Int. Cl.[6] F16K *43/00;* F16L *41/06*

U.S. Cl. 137—318 5 Claims



1. A tapping device for tapping a tube, comprising

(A) a tube portion for clamping and substantially enclosing a section of the tube, said tube portion having a substantially cylindrical shape and a substantially C-shaped cross section,

(B) at least two substantially semicircular shaped spring members formed of elastic material, each said spring member having a proximal and distal end and a central portion located between said proximal and distal ends, each said proximal end being attached to said tube portion, one of said distal ends being adapted to abut said other distal end, and locking means attached to said central portions of said spring members for holding said spring members in a deformed position, whereby said spring members may be pressed together to elastically deform said spring members, an elastic recovery force being created in said spring members, a clamping force being created in said tube portion for firmly clamping the tube, and said locking means holding said spring members in a deformed position, and

(A) a guide portion associated with said tube portion for guiding and supporting tube piercing instruments and tapping fixtures.

5,609,182

VALVE

Erhard Beck, Weilburg, and Albrecht Otto, Hanau, both of Germany, assignors to ITT Automotive Europe Gmbli, Germany

PCT No. PCT/EP93/03186, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/12789, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 13, 1993, Ser. No. 436,448

Claims priority, application Germany, Dec. 24, 1992, 42 39 362.0

Int. Cl.[6] E03B *3/18;* F16K *15/00*

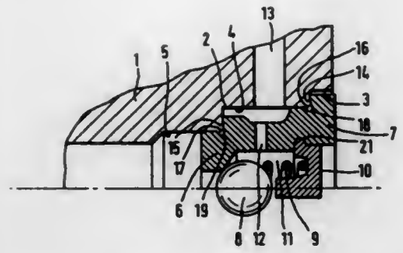
U.S. Cl. 137—539 12 Claims

1. A valve assembly, comprising:

a valve seat housing formed of a first metal and having a stepped bore therein,

a valve seat disposed in the stepped bore of the valve seat housing and having a first diameter section and an adjacent larger second diameter section defining a stepped shoulder and having an undercut circumferential groove at the stepped shoulder in which is disposed a cold extrusion of the first metal from the valve seat housing thereby connecting the valve seat housing and the valve seat,

a valve member disposed within the valve seat,



a biasing spring disposed between the housing and the valve member urging said valve member against said seat, and

a housing cover axially aligned with the valve seat and sealingly closing the stepped bore in the valve seat housing.

5,609,183

BUTTERFLY VALVE WITH SENSING COIL

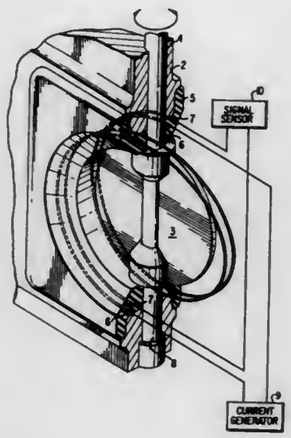
Christopher J. Parker, Shrewsbury, England, assignor to BTR plc, London, England

Filed Feb. 16, 1995, Ser. No. 389,452

Claims priority, application United Kingdom, Feb. 16, 1994, 9402918

Int. Cl.[6] F16K *37/00;1/22*

U.S. Cl. 137—554 5 Claims



1. A butterfly valve comprising a body having a flow path therethrough, an electrically conductive disc mounted in said flow path to rotate between a closed position and an open position, a spindle drivably connected to the disc, an annular seal mounted within the body and around said flow path, said seal sealingly engaged with the periphery of the disc when in a closed position, at least one coil mounted coaxially with the seal around said flow path, a generator for generating an electrical current within the coil and a sensor capable of detecting an electrical signal from the coil indicative of the position of the disc.

5,609,184

REGULATING DEVICE

Peter Apel, Suedkirchen; Marion Hauschopp, and Klaus Wilczek, both of Werne, all of Germany, assignors to AB Elektronik GmbH, Werne, Germany

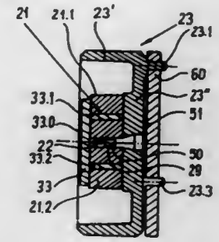
PCT No. PCT/EP94/03825, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO95/14911, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 18, 1994, Ser. No. 491,951

Claims priority, application Germany, Nov. 20, 1993, 9317797 U

Int. Cl.[6] F16K *31/02*

U.S. Cl. 137—554 17 Claims



1. A regulating device comprising

an adjustable throttle-valve shaft accommodated in a housing in a subassembly,

a stationary sensor subassembly of a angle-of-rotation sensor accommodating a stator comprising two stator components shaped like blunted crescents secured by a stator-tensioning subassembly and accommodated in a stator holder in the form of a cap,

a clearance between the stator components, and another sensor subassembly of the angle-of-rotation sensor that rotates around the stationary sensor subassembly,

whereby the rotating sensor subassembly is an annular magnet accommodated in a magnet holder, secured by a spacing disk, and attached to the shaft

such that the magnet moves around the stator components and leaves an air gap.

5,609,185

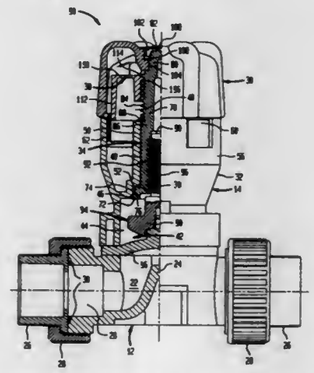
VALVE INDICATOR AND HANDLE ASSEMBLY

Walter Booth, East Hanover, and Alan R. Levin, Somerville, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.

Filed May 31, 1995, Ser. No. 455,321

Int. Cl.[6] F16K *37/00*

U.S. Cl. 137—556 27 Claims



1. An actuator for actuating a valve from a first position to a second position and vice versa, comprising a housing; actuating

means, mounted within said housing, for actuating the valve from the first position to the second position and vice versa, said actuating means including a rotatable stem mounted within said housing and restricted from moving axially and a non-rotatable plunger mounted within said stem and threadedly engaging said stem such that said plunger is axially movable in response to rotation of said stem, whereby the valve is actuated from the first position to the second position and vice versa; and indicating means for indicating the first position and the second position, said indicating means including a non-rotatable indicator member mounted within a chamber of said housing and engaging said stem such that said indicator member is axially movable between one position and another position in response to rotation of said stem.

5,609,186

METHODS OF LINING THE INTERNAL SURFACE OF A PIPE

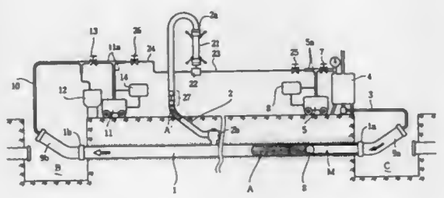
Shinobu Satake, Tokyo; Tadao Yahata, Kanagawa-ken; Takashi Shigefuji, Tokyo; Shigeru Toyoda, Saitama-ken; Shuichi Yagi, and Masaaki Itagaki, both of Kanagawa-ken, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 548,300

Claims priority, application Japan, Nov. 14, 1994, 6-279253; Mar. 29, 1995, 7-071946; Oct. 16, 1995, 7-267491

Int. Cl.[6] B05D *7/22*

U.S. Cl. 138—97 **6 Claims**



1. A method of lining the internal surface of a main pipe having a branch pipe, said method comprising the steps of:

injecting a necessary amount of resin for lining the branch pipe into the branch pipe from an open end thereof;

introducing behind, the resin, a first pig apparatus into the branch pipe;

applying a positive pressure behind the resin and first pig apparatus in the branch pipe to cause the resin and first pig apparatus to move forward until the entire internal surface of the branch pipe is lined with the resin by means of the first pig apparatus and until the first pig apparatus reaches and slightly passes beyond a branching position where the branch pipe is branching from the main pipe;

applying a negative pressure behind the first pig apparatus in the branch pipe to cause the first pig apparatus to slightly move back and stop at the branching position such that the branch pipe is completely isolated from the main pipe;

injecting a necessary amount of resin for lining the main pipe into the main pipe from an open end thereof;

inserting behind the resin a second lining pig into the main pipe;

providing a positive pressure and applying the positive pressure behind the resin and second lining pig in the main pipe;

causing the resin and second lining pig to move through the main pipe along the entire length thereof by means of the positive pressure, so as to form a resin lining layer on the internal surface of the main pipe and causing said second lining pig to exit the main pipe at an end thereof; and

applying in the branch pipe a positive pressure behind the first pig apparatus stopped at the branching position in order to cause the first pig apparatus to drop into the main pipe so as to remove the first pig apparatus out of the main pipe.

5,609,187

DEVICE FOR FORMING WAVE WINDING, AND JIGS FOR FORMING AND HOLDING WAVE WINDING

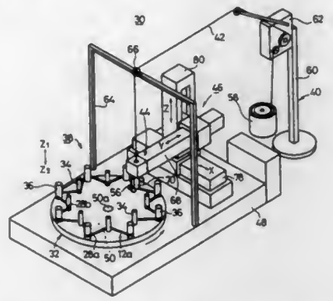
Kimio Hachisuka; Hiroyuki Noguchi, and Tomoaki Momose, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,885

Claims priority, application Japan, Apr. 28, 1994, 6-91656; Apr. 28, 1994, 6-91658; Apr. 28, 1994, 6-91670

Int. Cl.[6] B21F *3/00*

U.S. Cl. 140—92.2 **18 Claims**



1. A wave winding forming device for forming a winding to be inserted into slots of an iron core, into a wavy shape complementary to the slots, comprising:

a turntable;

a winding jig mounted on said turntable, said winding jig comprising a plurality of first posts for forming inwardly curved portions of the wavy shape and a plurality of second posts for forming outwardly curved portions of the wavy shape;

a conductive wire supply for supplying a plurality of conductive wires;

a guide jig for guiding said plurality of conductive wires from said conductive wire supply to said winding jig, wherein said guide jig has a rotatable nozzle for simultaneously guiding said plurality of conductive wires, said rotatable nozzle has a plurality of guide rollers for guiding said plurality of conductive wires in a given direction, and a plurality of outlet holes for guiding said plurality of conductive wires from said guide rollers to an outside of said nozzle, and further wherein said plurality of outlet holes are arranged in upper and lower rows; and

a displacing mechanism for relatively displacing said winding jig and said guide jig in axial and radial directions of said turntable to wind said plurality of conductive wires guided by said guide jig alternately around inner circumferential surfaces of said first posts and outer circumferential surfaces of said second posts for thereby forming a wave winding.

5,609,188

SANITARY MIXER TAP

Hans Oberdörfer, Stuttgart, Germany, assignor to Hansa Metallwerke AG, Stuttgart, Germany

PCT No. PCT/EP94/00588, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO94/21948, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 1, 1994, Ser. No. 525,768

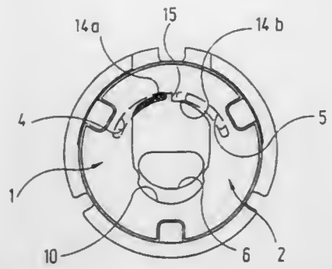
Claims priority, application Germany, Mar. 20, 1993, 43 08 994.1

Int. Cl.[6] F16K *11/06*

U.S. Cl. 137—625.4 **5 Claims**

1. Sanitary mixer tap with

a) a fixed control disc (**1**) which has a first through aperture (**4**) communicating with a cold water supply and, symmetrically to a central plane, a second through aperture (**5**) communicating with a hot water supply;



b) a second movable control disc (**2**) lying on the fixed control disc (**1**) which, with respect to the fixed control disc (**1**), may be moved linearly for alteration of the amount of water flowing out and twisted for alteration of the temperature and has for this a recess (**10**) connected to an outlet which may be caused to overlap variably with the two through apertures (**4**, **5**) of fixed control disc (**1**), whereby

c) a control edge (**14**) is formed on the leading limiting line of the recess (**10**) in the movable control disc (**2**) in the direction of opening which is shaped such that the movable control disc (**2**) in its central rotated position when opening unblocks both through apertures (**4**, **5**) of the fixed control disc (**1**) in different ways,

characterised in that

d) the control edge (**14**) on the recess (**10**) of the movable control disc (**2**) is shaped such that when opening the tap in the central rotated position of the movable control disc (**2**) first of all only the through aperture (**4**) of the fixed control disc (**1**) connected to the cold water supply is opened and only after continued linear motion of movable control disc (**2**) is the through aperture (**5**) of fixed control disc (**1**) connected to the hot water supply also unblocked.

5,609,189

DRAIN CLEANER DISPENSER

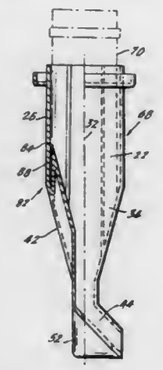
Arthur Sternheimer, Spring Valley, N.Y., and Anthony Delia, W. Redding, Conn., assignors to Block Drug Company Inc., Jersey City, N.J.

Division of Ser. No. 152,836, Nov. 15, 1993, Pat. No. 5,398,738, which is a division of Ser. No. 110,353, Aug. 23, 1993, Pat. No. 5,303,750, which is a division of Ser. No. 681,953, Apr. 8, 1991, Pat. No. 5,253,684. This application Feb. 14, 1995, Ser. No. 388,527

Int. Cl.[6] B67D *5/00*

U.S. Cl. 141—1 **2 Claims**

1. A method of cleaning a drain, comprising the steps of:



(A) supporting a dispenser in the vicinity of a drain;

(B) while supporting said dispenser in the vicinity of said drain, opening a container within said dispenser by pushing downwardly on said container;

(C) dispensing drain cleaner from said container, substantially by gravity and without applying an additional force, through said dispenser, and into said drain; and

(D) reacting said drain cleaner with water within said drain.

5,609,190

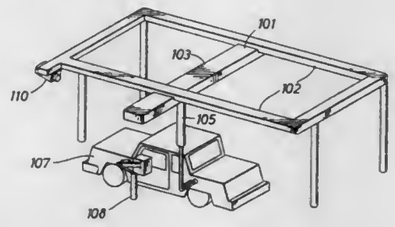
AUTOMATED REFUELING SYSTEM

Scott R. Anderson, North Vancouver; Chin T. Tham, Burnaby; Joseph A. Padula, Vancouver; Owen R. Williams; Jesse S. Houle, both of New Westminster; David A. Besler, Burnaby, all of Canada, and William D. Ramsey, Jr., Kingwood, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1995, Ser. No. 461,281

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—59 **14 Claims**



1. A refuelling system comprising:

a seal cylinder defining the outside surface of an axial vapor recovery volume within the seal cylinder having a first end and a second end;

a flexible fuel conduit to supply fuel to within the seal cylinder through the first end;

a movable piston within the seal cylinder connected to the flexible fuel conduit, the piston effective to isolate at least a portion of the axial vapor recovery volume within the seal cylinder from the atmosphere surrounding the flexible fuel conduit;

an insert tube connected to the seal piston and extending through at least a portion of the vapor recovery volume wherein a portion of the insert tube within the seal cylinder defines the inside surface of the axial vapor recovery volume;

a seal boot attached to the seal cylinder at the second end of the axial vapor recovery volume, the boot seal effective to seal with a fuel tank inlet nozzle; and

a means to move the piston laterally through the seal cylinder and thereby moving said flexible fuel conduit through the seal cylinder and extending the insert tube through the second end of the axial vapor recovery volume and into a fuel tank inlet nozzle when the boot seal is mated to the fuel tank inlet nozzle.

5,609,191

LIQUID TRANSFER APPARATUS

Joseph C. Topping, Austin, Tex., and William M. Neeb, Rochester Hills, Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Feb. 6, 1995, Ser. No. 384,161

Int. Cl.[6] B65B *1/04;3/04*

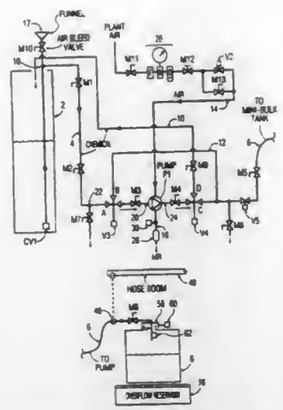
U.S. Cl. 141—198 **20 Claims**

19. Liquid transfer apparatus for transferring liquid from a storage tank comprising:

a supply line;

a fill line;

a shunt line;



a return line adapted to be coupled at one end to the storage tank;

a pump having an inlet and an outlet;

first valve means for selectively coupling said inlet of said pump to one end of said supply line or to one end of said shunt line;

the other end of said shunt line being coupled to said fill line; and

second valve means for selectively coupling the outlet of said pump to one end of said fill line or to one end of said return line;

whereby liquid may be delivered by said pump from said supply line to said return line, from said supply line to said fill line, or purged from said fill line to said return line depending on the coupling provided by said first and second valve means.

5,609,192

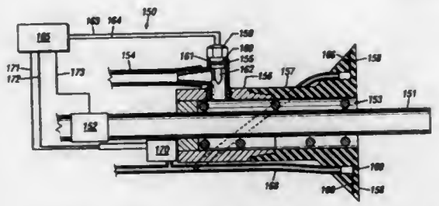
FUEL DISPENSER

Scott R. Anderson, Vancouver; Jesse S. Houle, New Westminster; David A. Besler, Burnaby, and Andrew E. Loen, Port Alberni, all of Canada, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1995, Ser. No. 461,278

Int. Cl.[6] B67D *5/00*

U.S. Cl. 141—208 **12 Claims**



1. A method to refill a fuel tank, the method comprising the steps of:

providing a sealing means effective to mate in a sealing relationship with a fuel tank inlet, the sealing means comprising a boot having an elastomeric sealing surface, a source of pressurized gas, a channel providing communication from the source of pressurized gas to outside of the boot wherein pressure on the elastomeric sealing surface restricts flow through the channel, and a means to block fuel flow through the fuel dispensing nozzle and to allow fuel flow only when a threshold pressure or greater exists at the source of gas supply, the threshold pressure indicative of a sealing relationship between the sealing surface of the boot and a fuel tank inlet;

mating the sealing surface to the fuel tank inlet; and

passing fuel into the fuel tank only when the pressure within the gas supply conduit exceeds the threshold pressure.

5,609,193

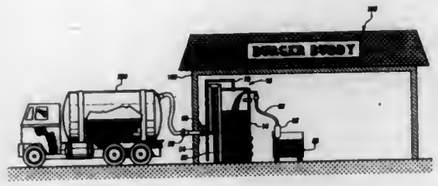
AUTOMATED CONTAINER FOR WASTE GREASE

John F. Steckler, Houston, Tex., assignor to Darling International Inc., Dallas, Tex.

Filed Aug. 17, 1995, Ser. No. 516,064

Int. Cl.[6] B67D *5/02*

U.S. Cl. 141—231 **7 Claims**



1. An automated container for waste grease recycling for installation within a building containing food preparation equipment comprising:

a tank having a top, bottom, at least one sidewall and a plurality of openings, said tank installed adjacent a wall and inside of a building containing food preparation equipment;

liquid level sensor means mounted to said tank, said sensor means located to respond to a high liquid level and to respond to a low liquid level;

an inlet line for transfer of waste grease to said tank, said inlet line mounted in one of the openings in said tank and connected thereto, the opening located in said tank at a level above the high liquid level;

an outlet line passing through the wall of the building and having a first end inserted in an opening in said tank and connected thereto, said outlet line terminating outside the building for connection to a tank truck, said outlet line having an inlet in said tank at a level below the low liquid level; and

a vent line passing through the wall of the building and inserted in an opening in said tank and connected thereto, the opening located in said tank at a level above the opening for the inlet line; and

means connected to said outlet line for controlling access to the waste grease within the tank.

5,609,194

LID FOR A CARAFE FOR HOLDING A BREWED BEVERAGE

Karl Link, Bad Homburg; Günter Oppermann, Dietzenbach, and Utz Wagner, Frankfurt am Main, all of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

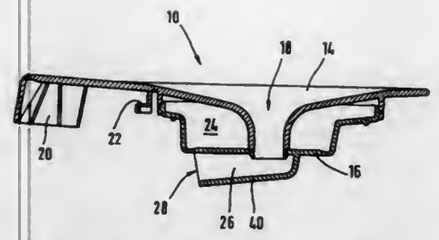
Filed Jun. 14, 1995, Ser. No. 490,305

Claims priority, application Germany, Jul. 1, 1994, 44 23 110.5

Int. Cl.[6] B65B *39/00;* **B67C** *11/04*

U.S. Cl. 141—331 **6 Claims**

1. A lid for a carafe for holding a brewed beverage and including a pouring means, said lid including an inlet opening, and comprising a steam deflector and an essentially laterally extending inlet channel wherein the inlet opening terminates into the essentially



laterally extending inlet channel in the lid, and wherein the inlet channel extends away from the pouring means of the carafe when the lid is assembled onto the carafe.

5,609,195

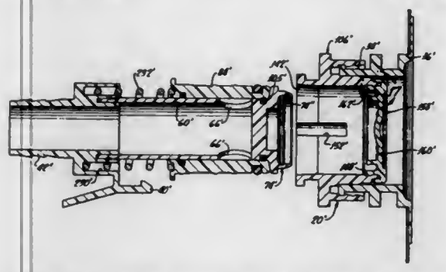
TWO-PART COUPLING STRUCTURE HAVING COOPERATING PARTS EFFECTING FLUID FLOW UPON CONNECTION AND MUTUAL RESEALING UPON DISCONNECTION

Douglas K. Stricklin, Brea, and Chester Savage, Irvine, both of Calif., assignors to Schoile Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 240,978, May 10, 1994, Pat. No. 5,467,806. This application Jul. 7, 1995, Ser. No. 499,291

Int. Cl.[6] F16L *37/28*

U.S. Cl. 141—346 **29 Claims**



1. A two-part coupling structure having a female coupling part for fluid flow communication with a vessel, and a male coupling part for fluid flow communication with a conduit, said coupling parts being mutually engageable to effect fluid flow communication between said vessel and said conduit, and being disengageable to both discontinue said fluid flow communication and also to mutually close fluid flow communication between ambient and each of said vessel and conduit; said two-part coupling structure comprising:

said female coupling part having:

a yieldably shape-retaining female cap member defining a through bore communicating between ambient and said vessel, and a radially inwardly opening circumferential groove on said through bore spaced outwardly of said vessel along said through bore;

a yieldably shape-retaining disk-like plug member having a wall portion for spanning and closing said through bore of said cap member, said plug member including a circumferential first ring portion which is sealingly receivable forcefully into said through bore of said cap member in an axial direction outwardly of said vessel, and said first ring portion radially outwardly defining a circumferential ridge receivable into said circumferential groove of said cap member to lock said plug member into sealing relation therewith, said plug member further defining a radially inner second ring portion spaced from said first ring portion and like disposed, said second ring portion further defining an outer radially outwardly opening circumferential groove;

said cap member and said plug member cooperating to define a first axial force for engagement of said plug member first ring portion into said through bore of said cap member and an oppositely directed second axial force for disengagement of said plug member from said cap member removing said plug member inwardly of said vessel from said through bore of said cap member;

said male coupling part having:

an elongate yieldably shape-retaining probe member defining a blind axial passage for fluid flow communication with said conduit and a wall portion closing said axial passage adjacent a forward end of said probe member, said probe member defining a stepped outer diameter with an enlarged-diameter forward flange portion including a forwardly extending third ring portion, said third ring portion defining a radially inwardly protruding annular rib by the cooperation of oppositely axially extending angulated surface portions, said third ring portion being received between said first and said second ring portion of said plug member to engage said rib of said third ring portion into said groove of said second ring portion, and said flange portion also cooperating with a smaller-diameter portion of said probe member to define a rearwardly-disposed shoulder, said probe member defining a lateral aperture opening from said blind passage outwardly on said smaller-diameter portion rearwardly of and adjacent to said shoulder;

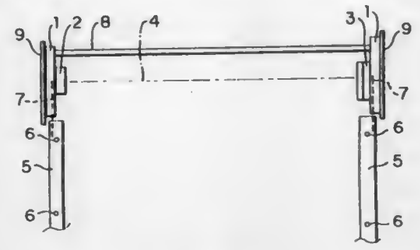
a yieldably shape-retaining sleeve member carried slidably on said smaller-diameter portion of said probe member between a first position across and closing said lateral aperture and a second position at least partially rearwardly of and opening said lateral aperture, said sleeve member having a stepped outer diameter with an elongate smaller-diameter portion of a size to be received closely into said through bore of said cap member, said sleeve member having a circumferential axially-disposed forward end edge surface engageable in said first position of said sleeve member with said shoulder of said probe member flange portion, and further having a larger-diameter radially outwardly extending flange portion at a rear end thereof opposite to said forward end edge, said flange portion of said sleeve member being engageable with said cap member to slide said sleeve member from said first position to said second position thereof, said sleeve member also outwardly carrying resilient sealing means for sealingly engaging retainingly into said circumferential groove of said cap member substantially simultaneously with said flange portion of said sleeve member engaging said cap member;

said probe member and said plug member cooperatively defining a third axial force for engagement of said flange portion third ring portion with said plug member second ring portion, which third axial engagement force is less than said second axial force for disengagement of said plug member from said cap member; upon insertion of said male coupling part into said female coupling part said probe member first sequentially engaging with said plug member and then disengaging said plug member from said cap member for movement of said plug member inwardly of said vessel with said inserting probe member, said sleeve member engaging said cap member and moving to said second position thereof relative to said inserting probe member to uncover said lateral aperture and to open fluid flow communication between said vessel and said conduit;

said probe member and said plug member cooperatively defining a fourth axial force for disengagement of said probe member from said third ring portion of said plug member which is greater than said first axial force necessary to engage said plug member first ring portion into said bore of said cap member, so that upon withdrawal of said male coupling part from said female coupling part said plug member first sequentially re-engages with said cap member followed by said probe member disengaging from said plug member, said resilient sealing means retaining and relatively moving said sleeve member forwardly along said withdrawing probe member to said first position thereof to re-close said lateral aperture, and said shoulder of said enlarged-diameter flange portion of said withdrawing probe member engaging said sleeve-member to overcome said

resilient retention and remove said sleeve member axially outwardly from within said cap member.

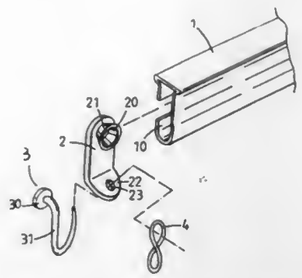
5,609,196
ROLLER BLIND SYSTEM
Franz Kraler, A-9913 Abfaltersbach 125, Austria
Continuation of Ser. No. 320,067, Oct. 7, 1994, abandoned. This application Jul. 5, 1996, Ser. No. 675,811
Claims priority, application Austria, Oct. 11, 1993, 2030/93; Sep. 9, 1994, 282/94
Int. Cl.[6] E06B *9/17*
U.S. Cl. 160—271 **19 Claims**



1. A roller blind system comprising:
a winding shaft for carrying a roller blind shuttering;
a draw-up mechanism for operating said winding shaft to wind said roller blind shuttering thereon;
two lateral guide rails in which the roller blind shuttering is guided;
two lateral carrier members, each of said carrier members being connected to a respective one of said lateral guide rails for carrying the draw-up mechanism and a mounting;
at least one cover plate for each of said carrier members which is separate from said carrier members and which can be fixed on the outside of said carrier members; and
a functionally passive roller blind casing housing said draw-up mechanism, said mounting, said carrier members, and said winding shaft,
wherein said roller blind system can be used as a ready-made roller blind when said cover plates are fixed to said carrier members and said roller blind casing is attached for housing said draw-up mechanism, said mounting, said carrier members and said winding shaft, and wherein said roller blind system can be used as a build-in roller blind when said cover plates and said roller blind casing are removed.

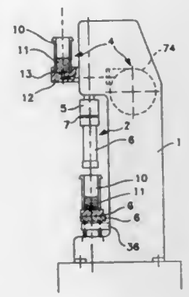
5,609,197
APPARATUS FOR HANGING CURTAINS
Shih-Lu Liao, No. 20, Thai-Shing Str., San-Ming Li, Shung-Kang Dist., Kaohsiung, Taiwan
Filed Dec. 12, 1995, Ser. No. 570,962
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—330 **4 Claims**

1. A combination of an apparatus for hanging curtains and a curtain comprising a track having a longitudinal sliding groove, carrier slides, bendable hooks, and hanging loops; said carrier slides respectively having a projecting block fitting behind said longitudinal sliding groove, a neck sliding in said longitudinal sliding groove, a flat portion arranged in front of said longitudinal sliding groove, a bottom slope extending from said flat portion, and a hole in said bottom slope; said hooks respectively comprising a hook body and a rounded head, said hooks respectively arranged in said holes of said carrier slides by said hook body passing through said hole with said rounded head abutting said flat portion behind said hole and bending said hook body to secure said hook on said carrier slide by bending said hook body to have a straight portion



extending at an angle from said rounded head and a U-shaped portion extending from said straight portion, and said hanging loops respectively and removably hooked on said hook bodies and fastened to pleats of said curtain by stitches.

5,609,198
APPARATUS FOR MEASURING THE PROPERTIES OF MOLD MATERIALS
Ernst O. Kruse, Gottmadingen/Randegg, Germany, and Christian Renner, Beringen, Switzerland, assignors to Georg Fischer Giessereianlagen AG, Schaffhausen, Switzerland
Filed Dec. 21, 1994, Ser. No. 360,458
Claims priority, application Switzerland, Dec. 23, 1993, 03842/93
Int. Cl.[6] B22C *9/02;19/00*
U.S. Cl. 164—150.1 **8 Claims**



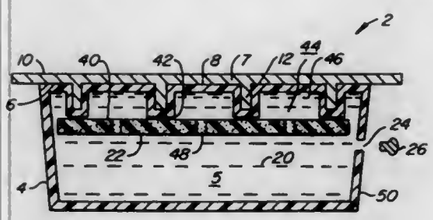
1. An apparatus for measuring mechanical and physical properties of foundry molding material comprises:
a stand;
press means mounted on said stand, said press means includes a ram, ram actuating means, pressure measuring means and a support for a test piece;
gas permeability measuring means mounted on said stand, said gas permeability measuring means includes a gas pressure generator and a pressure drop sensor; and
weight measuring means including a balance wherein said ram and said support include means adapted to selectively receive one of the following: first means for measuring compression strength, second means for measuring shear strength, third means for measuring bending strength and fourth means for producing test pieces from the foundry molding material.

5,609,199
METHOD OF MANUFACTURING STEEL CONTAINING CA
Yoshiei Kato; Seiko Nara, both of Chiba, and Kenichi Sorimachi, Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Jun. 12, 1995, Ser. No. 489,994
Claims priority, application Japan, Jun. 14, 1994, 6-131981
Int. Cl.[6] B22D *11/10*
U.S. Cl. 164—473 **6 Claims**



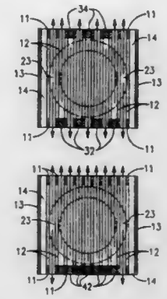
1. A method of manufacturing steel having Ca added thereto, comprising the steps of:
preparing a molten steel;
killing said molten steel by adding a reducing agent;
adding Ca metal or alloy containing Ca to said killed molten steel in a predetermined quantity when or after said molten steel has been discharged from a converter;
subjecting said molten steel containing Ca to a vacuum degasification process;
introducing said degasified molten steel into a tundish;
adding additional Ca metal or alloy containing Ca to said degasified molten steel while said degasified molten steel is in said tundish; and
supplying said molten steel containing additional Ca to a mold through said tundish so that said molten steel is continuously cast.

5,609,200
INTEGRAL ROOF COOLING CONTAINER
David C. Harrison, Albuquerque, N.M., assignor to Zomeworks Corporation, Albuquerque, N.M.
Filed Jul. 20, 1994, Ser. No. 277,925
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.19 **9 Claims**



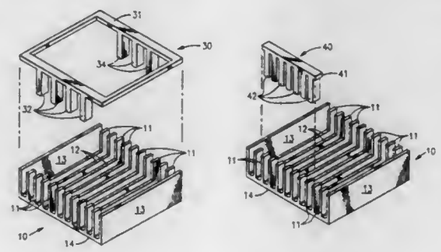
1. A temperature regulator for use with a roof of a structure comprising:
a thermally conductive planar element having an uneven lower surface;
a molded container defining an inner chamber and having an upper surface integrally molded to the planar element such that the upper surface substantially conforms to the uneven lower surface thereby rigidly securing the container to the planar element;
a supply of water within the chamber, the water being in contact with a portion of a heat transfer area of the upper surface; and
insulation disposed in the chamber and located adjacent the upper surface, the insulation defining passages that allow the water to flow vertically through or around the insulation,
wherein the planar element contains a plurality of channels extending from the lower surface, the upper surface of the container conforming to the channels,
whereby heat is radiated from the water through the roof into the night sky, and heat transfer to an interior of the structure is minimized during the day by the insulation and the water.

5,609,201
ENHANCED FLOW DISTRIBUTOR FOR INTEGRATED CIRCUIT SPOT COOLERS
Timothy M. Anderson; Gregory M. Chrysler, and Robert E. Simons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 497,496, Jun. 30, 1995. This application May 21, 1996, Ser. No. 651,060
Int. Cl.[6] F28F *13/12*
U.S. Cl. 165—80.3 **1 Claim**



1. A method for enhancing air flow in a spot cooling device having a heat sink with parallel plate fins and an air moving device which directs an annular volume of air against said heat sink, said method comprising:
selectively blocking individual exhaust paths defined by said parallel plate fins so as to redirect the flow of air to an interior volume defined by said fins and an innermost boundary of a region defined by said annular volume.

5,609,202
ENHANCED FLOW DISTRIBUTOR FOR INTEGRATED CIRCUIT SPOT COOLERS
Timothy M. Anderson; Gregory M. Chrysler, and Robert E. Simons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 497,496, Jun. 30, 1995. This application May 21, 1996, Ser. No. 651,061
Int. Cl.[6] F28F *13/12*
U.S. Cl. 165—80.3 **2 Claims**



2. An enhanced flow distributor for use in a heat removal apparatus which includes a base portion having a plurality of parallel plate fins which are configured with a limited depth recess for receiving a fan, said enhanced flow distributor comprising:
a base member; and
a plurality of flow blocking teeth which depend from said base member and which are sized and positioned so as to block, at ends thereof, at least some flow paths defined by said parallel plate fins.

5,609,203

LAMINATED HEAT EXCHANGER

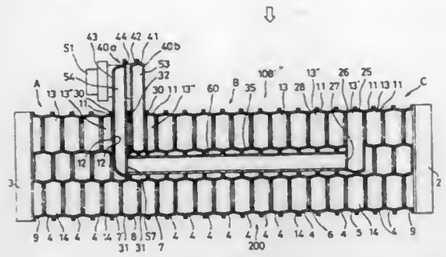
Takashi Kinugasa; Kunihiko Nishishita, and Seiji Inone, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

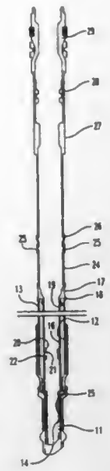
Filed Aug. 17, 1995, Ser. No. 516,151

Claims priority, application Japan, Aug. 25, 1994, 6-224204; May 22, 1995, 7-146717

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **6 Claims**





1. A laminated heat exchanger constituted by a plurality of tube elements and a plurality of sets of fins alternately laminated with said tube elements, each of said tube elements being constituted by two formed plates fitted together and having a pair of tanks at one end and a heat exchanging medium passage communicating between said tanks, said tanks of said plurality of tube elements constituting an intake/outlet tank group and a non-intake/outlet tank group separate from said intake/outlet tank group;

wherein said intake/outlet tank group is divided, by two non-communicating portions, into three tank sub-groups including a first end tank sub-group, a second end tank sub-group and a central tank sub-group disposed between said first and second end tank sub-groups;

wherein said non-intake/outlet tank group is a single group of tanks, undivided by partitions, which are in communication with one another;

wherein a first intake/outlet portion is provided in said first end tank sub-group and is fluidically connected to said second end tank sub-group by a fluid relay member; and

wherein a second intake/outlet portion is provided in said central tank sub-group.

5,609,204

ISOLATION SYSTEM AND GRAVEL PACK ASSEMBLY

Wade Rebardi, Carencro, and Donald H. Michel, Broussard, both of La., assignors to OSCA, Inc., Lafayette, La.

Filed Jan. 5, 1995, Ser. No. 368,964

Int. Cl.[6] E21B *43/08*

U.S. Cl. 166—51 **2 Claims**

1. An isolation assembly which comprises:

a cylindrical production screen having a proximal end and a distal end, said screen defining an area of fluid passage between a screen interior and a screen exterior;

an isolation pipe defining at least one port therethrough, said isolation pipe having a proximal end and a distal end, at least one of the proximal and distal ends being affixed to said production screen;

first sealing means for sealing the proximal end of said isolation pipe with said production screen;

second sealing means for sealing the distal end of said isolation pipe with said production screen;

a sleeve movably coupled with said isolation pipe, said sleeve defining at least one aperture, said sleeve having an open position with the aperture of said sleeve in fluid communication with the port in said isolation pipe, said sleeve having a closed position with the aperture of said sleeve not in fluid communication with the port of said isolation pipe, said sleeve in the open position permitting fluid passage between the exterior of said screen and the interior of said isolation pipe, said sleeve in the closed position preventing fluid passage between the exterior of said screen and the interior of said isolation pipe;

an isolation pipe extension defining at least one port therethrough, said isolation pipe extension having a proximal end and a distal end, said distal end affixed to the proximal end of said production screen;

a closing sleeve movably coupled with said isolation pipe extension, said closing sleeve defining at least one aperture, said closing sleeve having an open position with the aperture of said closing sleeve in fluid communication with the port in said isolation pipe extension, said closing sleeve having a closed position with the aperture of said closing sleeve not in fluid communication with the port of said isolation pipe extension, said closing sleeve in the open position permitting fluid passage between the exterior of said isolation pipe extension and the interior of said isolation pipe extension, said closing sleeve in the closed position preventing fluid passage between the exterior of said isolation pipe extension and the interior of said isolation pipe extension; and

a lower seal bore affixed to said isolation pipe extension between said at least one port and the distal end of said isolation pipe extension.

5,609,205

WELL FLUID SAMPLING TOOL

Keith J. Massie, 39 Beechgrove Terrace, Aberdeen, and Jonathan W. Brown, 20 Richmond Terrace, Aberdeen AB2 4RL, both of Great Britain

PCT No. PCT/GB93/00016, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO93/14295, PCT Pub. Date Jul. 22, 1993

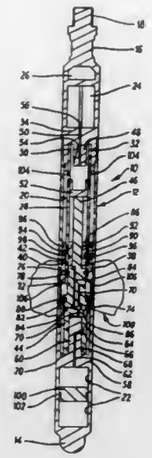
PCT Filed Jan. 7, 1993, Ser. No. 256,328

Claims priority, application United Kingdom, Jan. 7, 1992, 9200182

Int. Cl.[6] E21B *49/08*

U.S. Cl. 166—163 **12 Claims**

1. A well fluid sampling tool comprising a sample chamber for receiving and holding a sample of well fluid, said tool being characterised in that at least fluid-contacting surfaces of said sample chamber are formed of an inert material which is chemically substantially non-reactive with well fluid, wherein said tool comprises pressure equalisation means functioning in use of said tool substantially to equalise pressures inside and outside said sample chamber whereby substantially to relieve said sample chamber of mechanical stresses otherwise resulting from the holding of a pressurised well fluid sample therein, and wherein said tool has the sample chamber in the form of a variable-volume sample chamber, and in that said tool further comprises pressurisation means for pressurising a well-fluid sample held within said variable-volume sample chamber to maintain said well-fluid sample in a single-phase state, and wherein said sample chamber is provided with a variable volume by forming one end of said sample chamber as a first floating piston subjected, in use of the tool, on one side thereof to the pressure of sampled well fluid and on the other side thereof to the pressure of said pressurisation means and to the pressure of said pressure equalisation means.



5,609,207

EPOXY RESIN COMPOSITION AND WELL TREATMENT METHOD

Brahmadeo Dewprashad, Newcastle, and Jimmie D. Weaver, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 442,220, May 16, 1995, abandoned, which is a division of Ser. No. 166,561, Dec. 13, 1993, abandoned. This application Dec. 22, 1995, Ser. No. 570,886

Int. Cl.[6] E21B *43/04;43/267*

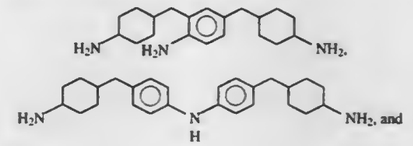
U.S. Cl. 166—276 **13 Claims**

1. A method of treating a subterranean formation comprising the step of placing a well treating composition in said formation, said well treating composition comprising:

an epoxy resin;

a multifunctional partially reduced aromatic amine hardening agent;

wherein said aromatic amine hardening agent is a compound selected from the group consisting of:



combinations thereof;

a carrier fluid; and

a particulate material.

5,609,208

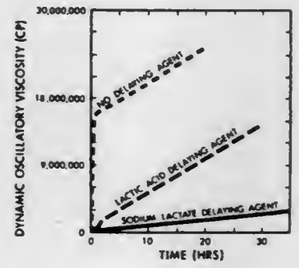
PH DEPENDENT PROCESS FOR RETARDING THE GELATION RATE OF A POLYMER GEL UTILIZED TO REDUCE PERMEABILITY IN OR NEAR A SUBTERRANEAN HYDROCARBON-BEARING FORMATION

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 176,737, Jan. 3, 1994, Pat. No. 5,421,411. This application Jul. 6, 1995, Ser. No. 481,535

Int. Cl.[6] E21B *33/138*

U.S. Cl. 166—295 **10 Claims**



1. A process for substantially reducing the permeability of a treatment region below an earthen surface to facilitate the recovery of hydrocarbons from beneath the earthen surface, the process comprising:

a) mixing a gelation solution at an earthen surface, wherein said gelation solution consists essentially of:

i) a carboxylate-containing polymer,

ii) a chromium(III) complex having one or more chromium(III) cations and one or more carboxylate anions,

iii) a salt having one or more carboxylate anions, and

iv) an aqueous solvent,

5,609,206

PLANT DERIVED CATECHOL COMPLEXES AND PROCESSES

Thomas J. Clough, Grover Beach, Calif., assignor to Ensci Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 242,187, May 16, 1994, which is a continuation-in-part of Ser. No. 981,185, Nov. 24, 1992, Pat. No. 5,339,900. This application Jun. 6, 1995, Ser. No. 468,521

Int. Cl.[6] E21B *43/22*

U.S. Cl. 166—274 **22 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing reservoir comprising: contacting said reservoir with at least one added plant derived aromatic component having catechol functionality complexed with iron (+3) wherein the catechol functionality is present in the component in the range of from at least about 1 wt % to about 40 wt % of the total weight of the plant derived aromatic component and mixtures thereof, said contacting occurring at conditions effective to chemically modify components of hydrocarbons in said reservoir; and recovering hydrocarbons from said reservoir.

b) placing said gelation solution into a treatment region beneath the earthen surface; and

c) gelling said gelation solution to produce a gel that substantially reduces the permeability of said treatment region.

5,609,209

HIGH TEMPERATURE PROFILE GEL FOR CONTROL OF OIL RESERVOIR PERMEABILITY

Paul Shu, Cranbury, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 20, 1995, Ser. No. 504,879

Int. Cl.[6] E21B *33/138*

U.S. Cl. 166—295 **24 Claims**

1. A method for reducing the permeability of the higher permeability zones of a hydrocarbon producing reservoir formation at an elevated temperature comprising adding a latent acid, which slowly liberates an active acid, to an aqueous gelation solution containing dissolved therein a water-soluble copolymer of vinylalcohol and vinyl amine (PVOH-VAM), a cross-linking agent selected from the group consisting of water-soluble dialdehydes and polyaldehydes and their acetal and bisulfite derivatives, and a strong base which causes the solution to have an initial basic pH at which gelling of the solution due to reaction between the PVOH-VAM and cross-linking agent does not occur, and injecting the solution, after the addition of said latent acid, into said reservoir formation such that said solution gels after filling the pores and interstices of said higher permeability zones, due to a lowering of the pH of the solution to an acid value at which a reaction between said PVOH-VAM and cross-linking agent occurs.

5,609,210

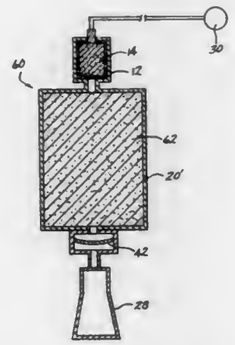
APPARATUS AND METHOD FOR SUPPRESSING A FIRE

Lyle D. Galbraith, Redmond; Gary F. Holland, Snohomish; Donald R. Poole, Woodinville, and Robert M. Mitchell, Issaquah, all of Wash., assignors to Olin Corporation, Redmond, Wash.

Division of Ser. No. 248,932, May 26, 1994, Pat. No. 5,423,384, which is a continuation-in-part of Ser. No. 82,137, Jun. 24, 1993, Pat. No. 5,449,041. This application Jun. 6, 1995, Ser. No. 468,678

Int. Cl.[6] A62C *35/00*

U.S. Cl. 169—26 **6 Claims**



1. An apparatus for suppressing a fire, said apparatus comprising:

a) a gas generator having a combustive propellant effective to produce a gas yield in excess of 1.5 moles per 100 grams of propellant;

b) a packed powder contained within a chamber and selected from the group consisting of magnesium hydroxide, calcium hydroxide, strontium hydroxide, barium hydroxide, aluminum hydroxide, magnesium carbonate, potassium sulfate, and mixtures thereof;

c) a first conduit providing a passageway between said gas generator and said chamber; and

d) a second conduit providing a passageway between said chamber and said fire.

5,609,211

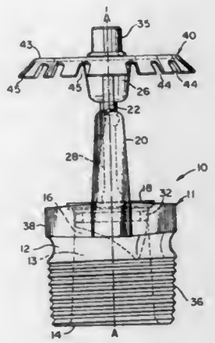
EXTENDED COVERAGE AUTOMATIC CEILING SPRINKLER

George G. Meyer; Stephen J. Meyer, both of Malvern; George S. Polan, Harleysville, and Kevin Dolan, North Wales, all of Pa., assignors to Central Sprinkler Company, Lansdale, Pa.

Continuation-in-part of Ser. No. 342,465, Nov. 21, 1994, which is a continuation of Ser. No. 875,928, Apr. 29, 1992, Pat. No. 5,366,022, which is a continuation-in-part of Ser. No. 769,917, Sep. 30, 1991, abandoned. This application Mar. 22, 1995, Ser. No. 408,854

Int. Cl.[6] A62C *37/08*

U.S. Cl. 169—37 **7 Claims**



1. An extended coverage ceiling sprinkler comprising:

a generally tubular body having an inlet open end and opposing, outlet open end, the tubular body having a minimum internal diameter greater than 0.65 inches and a K-factor of between about 14 and about 15, where the K-factor equals the flow of water in gallons per minute through the tubular body divided by the square root of the pressure of the water fed to the tubular body in pounds per square inch;

a plug at least essentially closing the outlet end of the tubular body;

an element releasably retaining the plug in the outlet end at least essentially closing the outlet end;

a deflector support extending axially away from the outlet end of the tubular body; and

a deflector coupled to the tubular body through the deflector support, the deflector having a major surface facing, spaced from and generally aligned with the outlet open end of the tubular body, the deflector having a circular outer perimeter and an outer diameter of less than 1.7 inches and, as mounted with the deflector support, a central area without water passing openings therethrough, the central area of the deflector being at least 0.75 inches in diameter.

5,609,212

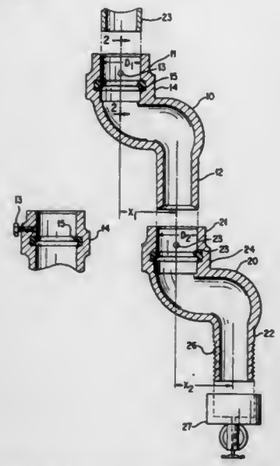
ADJUSTABLE SPRINKLER HEAD POSITIONING ASSEMBLY

George J. McHugh, Broomall, Pa., assignor to AGF Manufacturing, Inc., Warren, N.J.

Continuation of Ser. No. 931,920, Aug. 18, 1992, Pat. No. 5,409,066, which is a continuation-in-part of Ser. No. 810,129, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 663,029, Mar. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,098, May 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,469, May 3, 1990, abandoned. This application Apr. 24, 1995, Ser. No. 427,591

Int. Cl.[6] F16L *27/00;27/06;* **B05B** *15/06;15/08*

U.S. Cl. 169—52 **29 Claims**



1. An adjustable fire-suppression sprinkler head positioning assembly comprising:

a first conduit having a first conduit inlet and a first conduit outlet wherein a center line of the first conduit outlet is offset from and parallel to a center line of the first conduit inlet, said first conduit inlet and said first conduit outlet being oriented to direct fluid flow in the same direction, the first conduit inlet and the first conduit outlet being substantially circular in cross section and the centerlines of said first conduit inlet and of said first conduit outlet being offset in the radial direction by a distance equal to at least the diameter of said first conduit inlet, said first conduit outlet comprising a socket, said socket being integral with said first conduit;

a second conduit having a second conduit inlet and a second conduit outlet wherein a center line of the second conduit outlet is offset from and parallel to a center line of the second conduit inlet, said second conduit inlet and said second conduit outlet being oriented to direct fluid flow in the same direction, the second conduit inlet and the second conduit outlet being substantially circular in cross section and the centerlines of said second conduit inlet and said second conduit outlet being offset in the radial direction by a distance equal to at least the diameter of said second conduit inlet, said second conduit inlet having a smooth outer circumferential surface with a smooth outer contour, said smooth outer circumferential surface with a smooth outer contour of said second conduit inlet being receivable within said socket, said socket having a set screw for securing said second conduit in a desired circumferential position relative to said first conduit, said socket further comprising sealing means for preventing fluid leakage between said first conduit outlet and said second conduit inlet;

means for receiving a sprinkler head, said means for receiving being disposed at said second conduit outlet;

first attachment means for adjustably securing said first conduit to a sprinkler drop line which is disposed behind a surface from which a sprinkler head is intended to protrude, said first attachment means being disposed at said first inlet of said first conduit, said first attachment means being integral with said first conduit;

whereby said means for receiving a sprinkler head may be variably positioned so as to be provided at a predetermined location along said surface from which a sprinkler head is intended to protrude.

5,609,213

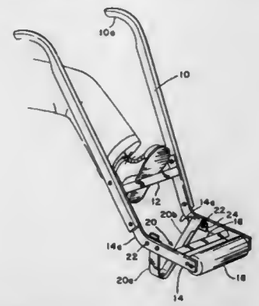
SOD CUTTING EDGER AND TRENCHER

Robert C. Anderson, 3248 N. Second St., Minneapolis, Minn. 55412

Filed Sep. 22, 1995, Ser. No. 532,490

Int. Cl.[6] A01D *35/08*

U.S. Cl. 172—17 **3 Claims**



1. A sod cutting edger and trencher comprising

a supporting frame having forward and rear portions including hand gripping means at the rear portions,

a ground engaging roller journaled at the forward portion of the frame structure, a generally V-shaped sod cutting trencher blade fixed to the frame behind the roller and extending downwardly below the roller into ground engaging trenching position, said V-shaped blade having a generally vertical segment at one side thereof to form a generally straight-sided trench wall and also having a sloping segment extending at an acute angle laterally across the trencher to an opposite side of the frame, means attaching the blade to the frame, a kick-bar fixed to the frame at a location above the blade wherein the frame includes rear handle portion extending upwardly for secure gripping by an operator, and

a pair of forwardly extending frame elements fixed at the lower end of the handle portions and extending at an obtuse angle therefrom to provide attachment means for the cutter blade and the roller at the lower end of the structure.

5,609,214

AGRICULTURAL MACHINE

Ruben H. Vermaak, 196 Leeupoort Street, Boksburg, Transvaal Province, South Africa

Filed Jan. 19, 1995, Ser. No. 374,952

Claims priority, application South Africa, Jan. 20, 1994, 94/0411

Int. Cl.[6] A01B *49/00*

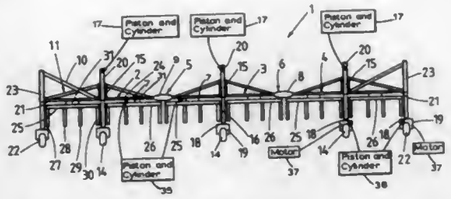
U.S. Cl. 172—311 **5 Claims**

1. An agricultural machine comprising:

a frame;

a plurality of swivelable land wheels supporting the frame;

at least two sub-frames which are at least partially rotatable relative to and secured to the frame with each of the sub-frames being arranged for supporting at least two agricultural tools, and further including telescopic supports for at least some of the land wheels and hydraulic piston and cylinder



arrangements for controlling the telescopic supports to vary the height of the frame above the ground; and

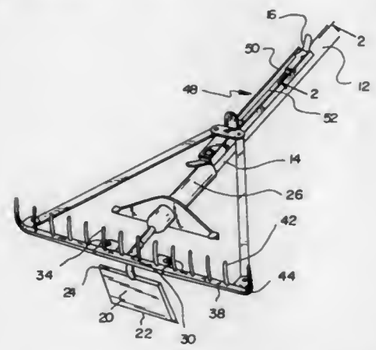
bracing structures extending forwardly and rearwardly and above the frame with the land wheels positioned at the forward and rearward ends of the structures and at the ends of the frame.

5,609,215

COMBINATION HOE AND PIVOTING RAKE TOOL

George C. Rios, and M. Joyce Rios, both of 759 Rincon Rd., El Sarante, Calif. 94803

Filed May 6, 1996, Ser. No. 642,917
Int. Cl.[6] A01B *1/22;* **A01C** *5/02*
U.S. Cl. 172—373 **1 Claim**



1. A combination hoe and pivoting rake tool comprising, in combination:

a handle having a lower end portion and an upper end portion;

a hoe portion having a sharpened lower edge and a blunt upper edge, the hoe portion having a cylindrical sleeve extending outwardly from the blunt upper edge in a generally perpendicular arrangement therewith, the cylindrical sleeve dimensioned for receiving an end of the lower end portion of the handle thereio, the sleeve having a pivoting handle disposed on an upper end thereof;

a central rake portion having an elongated bar, the elongated bar secured to the blunt upper edge of the hoe portion, the elongated bar having a plurality of teeth extending outwardly therefrom in an opposite direction from the sharpened lower edge of the hoe portion, the central rake portion facing in an opposite direction with respect to the hoe portion;

a pair of outer rake portions each having an elongated bar with a plurality of teeth extending downwardly therefrom, each elongated bar having a securement portion extending upwardly from a distal portion thereof, each of the outer rake portions pivotally coupled with one of opposing ends of the elongated bar of the central rake portion, the pair of outer rake portions facing in an opposite direction with respect to the hoe portion;

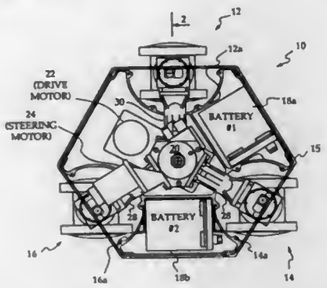
a pivoting mechanism comprising an elongated track having a vertical slot formed therein, the elongated track secured to the lower end portion of the handle, a sliding member coupled within the elongated track, the sliding member having a locking mechanism coupled with an upper end thereof, the sliding member having a pair of wings extending outwardly of opposed side walls thereof, the pivoting mechanism having a pair of arms, the pair of arms having upper ends pivotally secured to the pair of wings and lower ends pivotally coupled with the securement portion of the elongated bars of the pair of outer rake portions.

5,609,216

MOBILE BASE HAVING LEG ASSEMBLIES WITH TWO WHEELS

David E. Fisher, Roanoke; John M. Holland, Shawsville, and Kenneth F. Kennedy, Roanoke, all of Va., assignors to Cybermotion, Inc., Salem, Va.

Filed Mar. 1, 1995, Ser. No. 396,918
Int. Cl.[6] B62D *61/10*
U.S. Cl. 180—24.03 **12 Claims**



1. A mobile base for moving on a surface, comprising:

driving and steering means, for providing a drive shaft force and for further providing a steering force; and

a plurality of wheel assembly means for supporting and moving the mobile base, each having a wheel assembly axis, and each wheel assembly means having

concentric drive shaft means, responsive to the drive shaft force, for providing a concentric drive shaft force; and

steering column means, responsive to the steering force, for providing a steering column force;

wheel means having a first and a second wheel contacting the surface, responsive to the steering column force, for rotating the first and second wheels in the same direction to pivoting the steering column means about the wheel assembly axis, and also responsive to the concentric drive shaft force, for rotating the first and second wheels in the opposite directions for moving the mobile base forward or backwards on the surface.

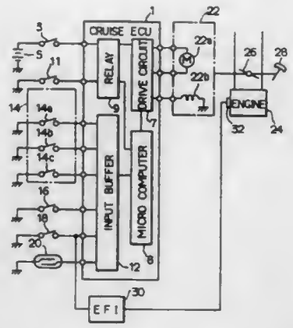
5,609,217

CONSTANT-SPEED CRUISE CONTROL APPARATUS FOR A VEHICLE

Toshiya Honda, Okazaki, and Yoshinari Torii, Gamagori, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 26, 1995, Ser. No. 451,142
Claims priority, application Japan, May 26, 1994, 6-112780
Int. Cl.[6] B60K *31/00*
U.S. Cl. 180—170 **8 Claims**

1. A constant-speed cruise control apparatus for providing cruise control to a vehicle, provided with vehicle speed detecting means for detecting a traveling vehicle speed of a vehicle, and driving-force control means for controlling a driving-force adjustment system for adjusting the driving force of an engine so as to adjust the traveling vehicle speed detected by said vehicle speed detection means to a target traveling speed in accordance with deviation between the traveling vehicle speed and the target traveling speed, comprising:



acceleration correction means for temporarily driving the driving-force adjustment system to an acceleration position during cruise control; and

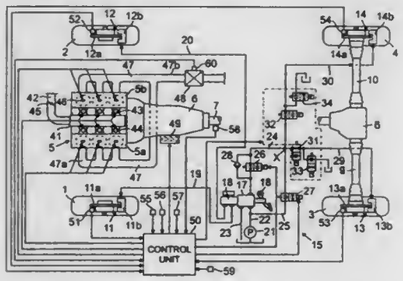
acceleration correction stop means for comparing a comparative vehicle speed which is based on said traveling vehicle speed detected by said vehicle speed detection means with the target traveling speed and stopping the temporary driving of said driving-force adjustment system to said acceleration position when the comparative vehicle speed is higher than the target traveling speed.

5,609,218

TRACTION CONTROL SYSTEM FOR VEHICLES

Tetsuhiro Yamashita; Koji Hirai, and Masaki Fujii, all of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Apr. 24, 1995, Ser. No. 427,057
Claims priority, application Japan, Apr. 22, 1994, 6-107571; Apr. 26, 1994, 6-112278
Int. Cl.[6] B60K *28/16*
U.S. Cl. 180—197 **24 Claims**



1. A traction control system for an automotive vehicle for performing a traction control by controlling an engine equipped with an exhaust system having a catalytic converter so as to reduce driving force delivered to driving wheels, thereby diminishing excessive slippage of said driving wheels, the engine being operated differently in an ordinary control mode than in an exhaust temperature reduction mode, said traction control system comprising:

temperature detection means for detecting a temperature of said catalytic converter; and

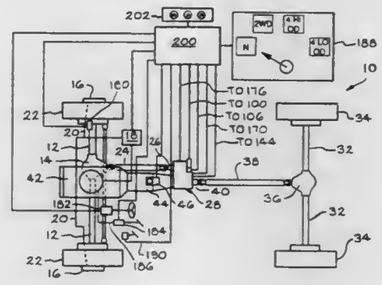
control means for changing an engine control mode from said ordinary control mode to said exhaust temperature reduction mode when said temperature detection means detects a temperature higher than a predetermined temperature and changing a control parameter of engine control, so that said engine provides more output torque in said exhaust temperature reduction mode than in said ordinary control mode.

5,609,219

ON DEMAND VEHICLE DRIVE SYSTEM

Will Watson, Southfield, Mich.; Alan L. Miller, Ithaca, N.Y.; Drew A. Sundquist, Canton, Mich.; Roger T. Simpson, Ithaca, N.Y.; Diane K. Ducklow, Farmington, Mich.; Joseph W. Beckerman, Livonia, Mich., and Dan J. Showalter, Plymouth, Mich., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Division of Ser. No. 387,139, Feb. 10, 1995, Pat. No. 5,485,894, which is a division of Ser. No. 903,696, Jun. 24, 1992, Pat. No. 5,407,024. This application Jun. 7, 1995, Ser. No. 485,563
Int. Cl.[6] B60K *17/348*
U.S. Cl. 180—248 **23 Claims**



1. An on demand vehicle torque distribution system comprising, in combination,

a primary drive line including a primary drive shaft, a primary differential and a set of primary drive wheels,

a secondary drive line including a secondary drive shaft, a secondary differential and a set of secondary wheels,

a transfer case having a drive shaft for receiving drive energy from a prime mover, said drive shaft coupled directly to a primary output adapted to drive said primary drive line, a secondary output adapted to drive said secondary drive line and modulating clutch means for selectively transferring torque from said drive shaft to said secondary output,

said modulating clutch means including a disc pack assembly operably disposed between said drive shaft and said secondary output, an electrical actuator, intermediate force generating means acted upon by said actuator and means for applying said force to said disc pack assembly,

means for sensing the rotational speed of said primary drive line,

means for sensing the rotational speed of said secondary drive line, and

a microcontroller including means for providing an increasing clutch engagement signal when a difference between said speeds of said drive lines is greater than a quantity having a first predetermined value and providing a decreasing clutch engagement signal when said speed difference is less than a second predetermined value of said quantity, whereby a maximum clutch engagement signal is provided if said difference remains greater than said first predetermined value for a measured time.

5,609,220
OPERATION CONTROL SYSTEM FOR TRAVELING VEHICLE

Yukio Moriya; Satoru Koyanagi; Tetsuya Fujimura; Masayuki Nagahama; Kazuyuki Yamazaki, and Toru Hishiyama, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

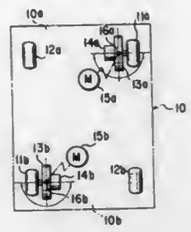
PCT No. PCT/JP93/01207, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/05539, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 26, 1993, Ser. No. 379,603

Claims priority, application Japan, Aug. 27, 1992, 4-228603; Apr. 26, 1993, 5-099535

Int. Cl.[6] B62D *7/08*

U.S. Cl. 180—253 **11 Claims**



1. An operation control system for a traveling vehicle having first and second driving wheels arranged along one diagonal line of a vehicle body for turning by means of respective turning actuators coupled to said driving wheels and idler wheels pivotally arranged along another diagonal line of the vehicle body, the operation control system comprising:

traveling mode selection changeover means for selecting a desired traveling mode among a plurality of traveling modes;

operation lever means for selecting a desired traveling direction in said desired traveling mode; and

control means for:

controlling driving of said turning actuators in response only to inputting of a traveling mode signal from said traveling mode selection changeover means for driving at least one of said turning actuators to turn the respective driving wheels of said at least one driven turning actuator to a predetermined initial position corresponding to said selected traveling mode, and

further controlling driving of only said first turning actuator in response to any turning direction selected as the traveling direction in said selected traveling mode.

5,609,221
STEERING CONTROL SYSTEM

John C. Endsley, Washington; C. Nickolas Goloff, Secor; William F. Guse, Jr., Park Ridge, and Joseph P. Reilly, Oak Park, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

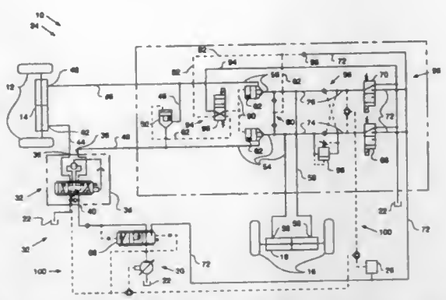
Filed Mar. 6, 1995, Ser. No. 289,738

Int. Cl.[6] B62D *5/08*

U.S. Cl. 180—414 **10 Claims**

1. A steering control system adapted for use on an all wheel steer machine having front and rear pairs of steerable wheels with each pair of wheels being interconnected to the machine by a fluid actuated mechanism, a source of pressurized fluid and a reservoir, the steering control system comprising:

a steer control mechanism operative to select a plurality of steering modes including a first mode in which only the front wheels are steerable, a second mode in which the front and rear wheels are steered simultaneously with the rear wheels being steered in a direction opposite to the steering direction of the front wheels, and a third mode in which the rear wheels are steered independently of the front wheels, the steer control mechanism includes a steering valve having first and second outlet ports and being disposed between the source of pressurized fluid and the front and rear fluid actuated mechanisms, the first outlet port is connected directly to one end of the front fluid actuated mechanism, a normally open pilot operated poppet valve disposed between the second outlet port and another end of the front fluid actuated mechanism, a first normally closed pilot operated poppet valve disposed between one end of the rear fluid actuated mechanism and the second outlet port of the steering valve and a second normally closed pilot operated poppet valve disposed between another end of the rear fluid actuated mechanism and the front fluid actuated mechanism, a rear steer valve mechanism disposed between the source of pressurized fluid and the rear fluid actuated mechanism to selectively steer the rear pair of wheels, a sensing arrangement connected to both ends of the rear fluid actuated mechanism and operative to continuously sense and deliver the highest pressure signal therefrom, and a signal control mechanism that selectively directs the highest pressure signal from the sensing arrangement or the source of pressurized fluid to the normally open pilot operated poppet valve or to the pair of normally closed pilot operated poppet valves to selectively control the flow of fluid between the front and rear fluid actuated mechanisms.



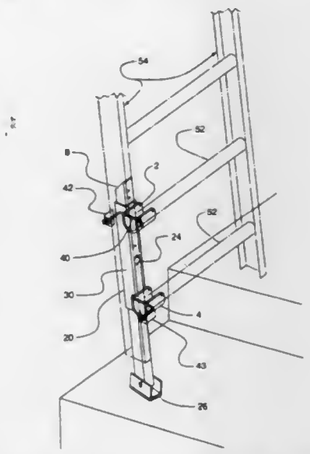
5,609,222
LADDER LEVELER

Theodore Horbacewicz, 198 Atkins St., and Lawrence Morse, 20 Hemlock Pl., both of Middletown, Conn. 06457

Filed May 26, 1995, Ser. No. 452,294

Int. Cl.[6] F06C *7/44*

U.S. Cl. 182—203 **2 Claims**



1. An improved ladder leveler comprising an outer square tube and inner square bar, said inner square bar being freely axially movable within said outer square tube, said inner square bar and outer square tube having perforations there through, said inner and outer perforations acting to align as said inner bar is axially moved through said outer tube, when said perforation align a cotterless pin is passed there-through thus establishing the extension of said inner bar; said outer tube having affixed thereon parallel upper and lower rung brackets, the distance between said upper and lower rung brackets being established to accommodate spacing between ladder rungs, said rung brackets having a semi-circular cross section and inner and outer side members connected to a semi-circular base, said ladder rungs supportable on said rung brackets semi-circular base said inner and outer side members of said rung brackets each having two aligned holes through which a formed threaded pin passes extendably over said ladder rung to lock the same in place in said rung brackets; said formed threaded pin subsequently passing through a stile bracket, said threaded formed pin with a lock washer, wing nut and hair pin lock for fastening said stile bracket to the said ladder stile and said ladder rung into said rung bracket.

5,609,223
CHECKOUT SYSTEM WITH AUTOMATIC REGISTRATION OF ARTICLES BY BAR CODE OR PHYSICAL FEATURE RECOGNITION

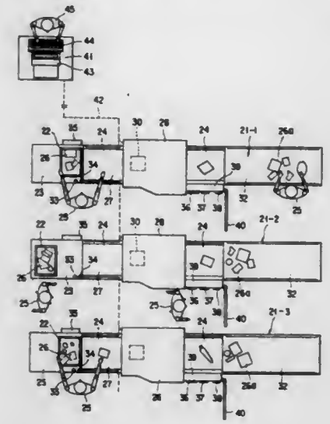
Hitoshi Iizaka, Fuji; Masahito Sano, and Yasuo Matsumoto, both of Numazu, all of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed May 30, 1995, Ser. No. 451,278

Claims priority, application Japan, May 30, 1994, 6-116841

Int. Cl.[6] A47F *10/02*

U.S. Cl. 186—61 **14 Claims**



1. A checkout system having a checkout lane comprising:

carrying means for carrying articles in one direction;

image obtaining means for obtaining an image of an article which is being carried by said carrying means;

reading means for reading out a bar code affixed to an article which is being carried by said carrying means;

registering means for recognizing the article on the basis of one of (i) the bar code read out by said reading means, and (ii) physical features of the article which are included in the article image obtained by said image obtaining means, and then automatically registering the article;

instruction inputting means for inputting a start and an end instruction of article registration;

counting means for counting a number of articles conveyed into a predetermined area after the start instruction is input by said inputting means and for counting a number of articles which have been registered; and

completion detecting means for detecting completion of article registration by confirming that the numbers of conveyed articles and registered articles counted by said counting means coincide with each other after the end instruction is input by said instruction inputting means.

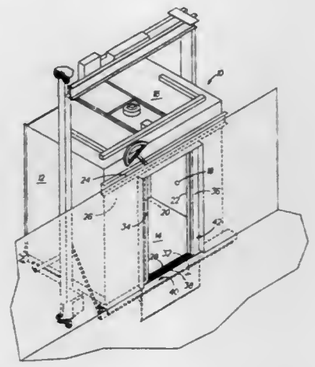
5,609,224
ELEVATOR DOOR SILL

Breffni X. Baggot, Storrs, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed May 31, 1995, Ser. No. 455,299

Int. Cl.[6] B66B *13/02*

U.S. Cl. 187—313 **18 Claims**



6. An elevator system comprising:

a hoistway having at least one landing along the hoistway and said landing having a landing sill,

an elevator cab mounted for movement within the hoistway to and from said landing,

said cab having walls forming an enclosure with a door opening and a door sill extending along said door opening,

said door sill being adjacent said landing sill with a gap therebetween when said cab is at said landing,

said door sill having a first outer surface and said landing sill having a second outer surface, and

one of said first and second outer surfaces having a predetermined portion configured to produce a visual effect of enlarging the visual appearance of said gap.

5,609,225
COMPENSATION GUIDANCE SYSTEM

Miles P. Lamb, Chester, and Louis Capuano, Westfield, both of N.J., assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Apr. 25, 1995, Ser. No. 428,648

Int. Cl.[6] B66B *7/02*

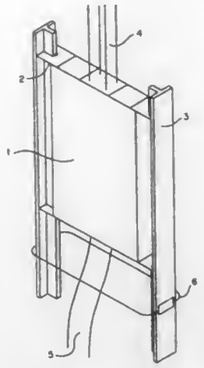
U.S. Cl. 187—406 **20 Claims**

1. An apparatus for limiting suspension means oscillations and compensation means oscillations in an elevator system, the elevator system including a counterweight, at least one guide for guiding movement of the counterweight, suspension means coupled to a top portion of the counterweight, and compensation means coupled to a bottom portion of the counterweight, said apparatus comprising:

at least one limiting frame defining a boundary;

said at least one limiting frame for attaching to the at least one guide; and

said boundary for surrounding the at least one guide, the counterweight, the suspension means, and the compensation means; and



said at least one limiting frame for limiting deflections of the suspension means and compensation means due to oscillations.

5,609,226

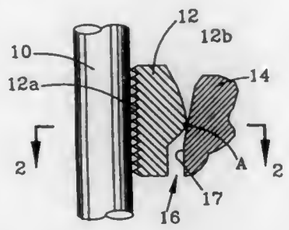
SLIP-TYPE GRIPPING ASSEMBLY

Dennis J. Penisson, 319 Willow St., Raceland, La. 70394

Division of Ser. No. 288,082, Aug. 9, 1994, Pat. No. 5,484,040, which is a continuation of Ser. No. 994,640, Dec. 22, 1992, Pat. No. 5,335,756. This application Nov. 1, 1995, Ser. No. 548,334

Int. Cl.[6] E21B *19/10*

U.S. Cl. 188—67 20 Claims



1. A method of gripping a tubular member with a plurality of slip bodies each disposed generally about an outer body, each slip body having gripping teeth on a radially inner surface thereof, the method comprising:

pivotably mounting each of a plurality of slip bodies with respect to the outer body about a respective tangential axis for radial movement of an upper portion of each slip body with respect to a lower portion of each slip body;

pivotably mounting each of the plurality of slip bodies with respect to the outer body about a respective longitudinal axis for radial movement of a left side of each slip body with respect to a right side of each slip body; and

providing a longitudinal inclined camming surface for longitudinal movement of each slip body with respect to the outer body to radially move each slip body with respect to the outer body for gripping engagement with the tubular member.

5,609,227

BRAKE APPLICATION DEVICE WITH PLATES, BALLS AND A CENTERING CAGE

Jean Claude Mery, Pavillons-Sous-Bois, France, assignor to AlliedSignal Europe Services Techniques, Drancy, France

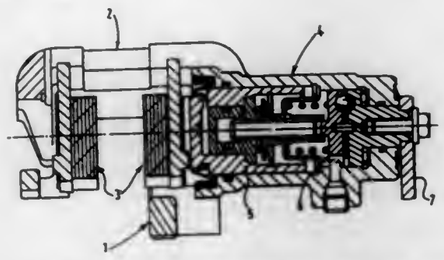
PCT No. PCT/FR94/00062, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO94/19617, PCT Pub. Date Sep. 1, 1994

PCT Filed Jan. 19, 1994, Ser. No. 182,168

Claims priority, application France, Feb. 16, 1993, 93 01706

Int. Cl.[6] F16D *65/16*

U.S. Cl. 188—72.7 2 Claims



1. A brake-application device comprising: first and second plates having opposite first and second disc faces, respectively, which are substantially parallel to each other, at least one of said first and second plates being capable of being driven in rotational movement about an axis perpendicular to said first and second faces, a plurality of guide cavities formed in at least one of said first and second plates at a fixed distance from said axis; a plurality of corresponding balls located in said guide cavities and held between said first and second plates, and a support disk placed between the first and second plates and pierced with circular housings in which the said balls are held in fixed relative angular positions, said first and second disk faces are respectively provided with first and second central protuberances, while said first and second plates are respectively provided with first and second axial bores, said first and second central protuberances being resiliently engaged in said respective first and second axial bores to secure said support disk to said first and second plates.

5,609,228

ASSEMBLY OF A FRICTION MEMBER AND OF A SPRING FOR A DISK-BRAKE AND DISK-BRAKE EQUIPPED WITH SUCH AN ASSEMBLY

Gerard Le Delt, Courtry, and Jean Louis Gerard, Bagnolet, both of France, assignors to AlliedSignal Europe Service Techniques, Drancy, France

PCT No. PCT/FR93/01067, § 371 Date Nov. 4, 1993, § 102(e) Date Nov. 4, 1993, PCT Pub. No. WO94/12803, PCT Pub. Date Jun. 9, 1994

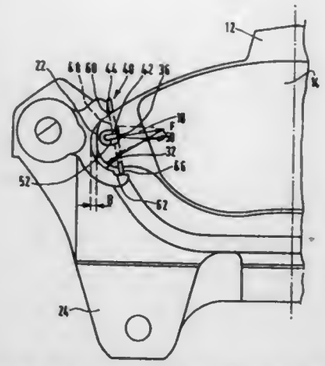
PCT Filed Oct. 29, 1993, Ser. No. 140,194

Claims priority, application France, Nov. 26, 1992, 92 14208

Int. Cl.[6] F16D *55/226;65/097*

U.S. Cl. 188—73.35 6 Claims

1. A disk-brake for a vehicle, comprising at least one friction member having a support plate whose circumferential ends are received with sliding and anchoring on a torque-withstanding member, control means being associated with the torque-withstanding member in order to stress the friction member into braking contact with a corresponding face of a brake disk, at least a first of circumferential ends of the friction member comprising at least one rounded surface capable of interacting in sliding and anchoring manner with a corresponding rounded surface defined on said torque-withstanding member, one of said rounded surfaces being concave and the other rounded surface being convex, the radius of curvature of the convex rounded surface being less than that of the concave surface, the friction member received with a predetermined circumferential clearance in the torque-withstanding



member so that the friction member may occupy first and second extreme circumferential positions corresponding to said friction member being anchored onto the torque-withstanding member by one of said first and second circumferential ends, respectively, according to the direction of rotation of said brake disk, a spring being provided to stress said friction member into said first extreme circumferential position and into contact with said rounded surface defined on the torque-withstanding member, said spring comprising an action part interacting with the first circumferential end and a reaction part interacting with the concave rounded surface, characterized in that said reaction part interacts with flanks of the concave rounded surface and said action part of the spring interacts with an opening made in the first circumferential end and exerts, on the support plate of the friction member, a force having a tangential component and a radial component perpendicular to the tangential component and directed toward the outside of the disk, said tangential component of said force being exerted by the spring being directed in the direction of rotation of the disk corresponding to the forward travel of the vehicle.

5,609,229

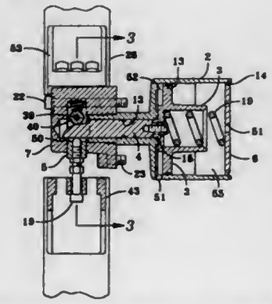
ACTUATOR ARRANGEMENT FOR A BAND BRAKE

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 5, 1995, Ser. No. 523,713

Int. Cl.[6] F16D *51/00*

U.S. Cl. 188—77 R 7 Claims



1. An actuator adapted to be attached to a brake band orientated in one plane perpendicular to a rotating drum rotating about a drum axis comprising:

a linear actuating means including a linear projecting cam means for deploying said brake band;

said linear actuating means and said cam means being projected along a linear path parallel to said drum axis to intercept a compression yoke at a circumferential point of said brake band to cause said brake band to contract and apply braking force;

said compression yoke further comprises a yoke body attached to a winch frame for the rotating drum and one end of said brake band and said yoke body being further provided with a plunger bore to receive a reciprocating cylindrical plunger attached to a second end of said brake band and said plunger being further provided with a generally rectangular cross bore for receiving said cam means.

5,609,230

VIBRATION CANCELLATION DEVICE

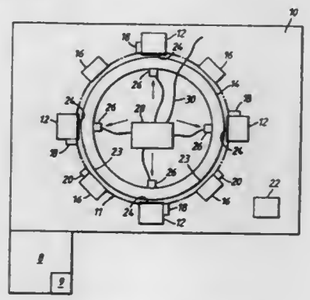
Malcolm A. Swinbanks, Cambridge, United Kingdom, assignor to MAS Research Limited, Cambridge, United Kingdom

Filed Jun. 1, 1994, Ser. No. 252,556

Claims priority, application United Kingdom, Jun. 10, 1993, 9312021

Int. Cl.[6] F16F *15/03;15/18*

U.S. Cl. 188—267 22 Claims



1. A vibration cancellation device comprising:

a substantially spherical housing having mounting means for mounting the substantially spherical housing to a structure which may have vibrations which are to be cancelled by the device;

a substantially spherical auxiliary mass freely positioned within the substantially spherical housing;

magnetic radial drive levitation means for producing at least one first magnetic force which acts on the substantially spherical auxiliary mass;

proximity sensor means, associated with the magnetic radial drive levitation means, for sensing the proximity of the substantially spherical auxiliary mass;

magnetic tangential drive levitation means for producing at least one second magnetic force which acts on the substantially spherical auxiliary mass;

photosensor means, associated with the magnetic radial drive levitation means, for sensing the relative angular position of the substantially spherical auxiliary mass with respect to the substantially spherical housing; and

control means, operatively connected to the magnetic radial drive levitation means and the magnetic tangential drive levitation means for selectively energizing the magnetic radial drive levitation means and the magnetic tangential drive levitation means, and to the proximity sensor means and the photosensor means for receiving at least one signal therefrom indicative of position and relative movement of the substantially spherical auxiliary mass with respect to the substantially spherical housing;

wherein the magnetic radial drive levitation means and the magnetic tangential drive levitation means, when selectively energized under control of the control means, can move the spherical auxiliary mass in six degrees of freedom relative to the substantially spherical housing;

wherein the control means selectively energizes the magnetic radial drive levitation means and the magnetic tangential drive levitation means to either maintain the substantially spherical auxiliary mass in a predetermined position in relation to the

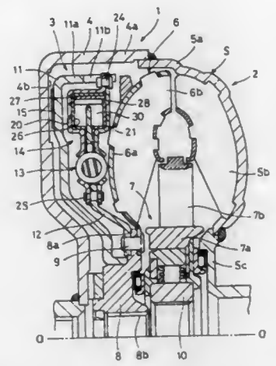
substantially spherical housing, or to move the substantially spherical auxiliary mass in relation to the substantially spherical housing, thereby producing a reaction force to cancel vibrations of the structure.

5,609,231

TORSIONAL VIBRATION DAMPENING APPARATUS AND LOCK-UP CLUTCH MECHANISM FOR A TORQUE CONVERTER

Yoshihiro Matsuoka, Neyagawa, Japan, assignor to Exedy Corporation, Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,719
Claims priority, application Japan, Jul. 28, 1994, 6-177190
Int. Cl.[6] F16H *45/02*
U.S. Cl. 192—3.29 **16 Claims**



12. A torque converter having lock-up mechanism and a vibration dampening device comprising:

a front cover and a power output element of a torque converter configured for torque transmission from said front cover to said power output element;

a piston element selectively engagable with said front cover;

a disk-like element coupled to said power output element for rotation therewith and having a plurality of first engagement portions,

an elastic element disposed between said piston element and said disk-like element so as to restrict relative rotation between them;

a torsional vibration dampening device for dampening torsional vibration of torque transmitted from said piston element to said disk-like element, said torsional vibration dampening device including:

a plurality of arc-shaped fluid chambers coupled to said piston element for rotation therewith, each of said arc-shaped fluid chambers having an elongated opening extending circumferentially;

a plurality of annular slider seal elements, each formed unitarily with an arc-shaped seal portion and two block-shaped slider elements, one of said block-shaped slider elements at each end of said arc-shaped seal portion, each of said annular slider seal elements further formed with second engagement portions engaging said first engagement portions, said slider elements dividing each said fluid chamber into two subchambers and being movable in circular directions relative to said fluid chambers, and said slider seal elements extending between adjacent ones of said fluid chambers to seal said elongated openings, and

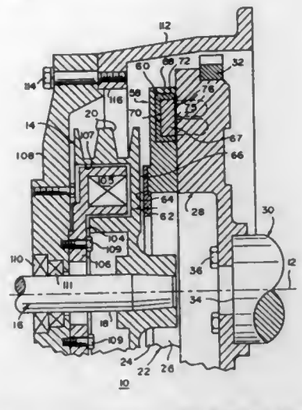
chokes defined between inner surfaces of said fluid chambers and outer surfaces of said block-shaped slider elements allowing the passage of fluid between said subchambers in response to relative movement of said slider seal elements.

5,609,232

ELECTROMAGNETIC CLUTCH WITH PERMANENT MAGNET RETURN MECHANISM

Jerry A. Brownfield, Minneapolis; Lowell M. Anderson, and Steven C. Eberly, both of Bloomington, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 16, 1996, Ser. No. 586,096
Int. Cl.[6] F16D *27/01;27/112*
U.S. Cl. 192—84.9 **15 Claims**



1. An improved electromagnetic clutch having a rotor rotatable about an axis that is connected to a driven device, a rotatable member connected to a driving device, a contact plate assembly for transmitting torque between said rotatable member and said rotor when moved from a disengagement to an engagement position, and electromagnetic means for axially moving said contact plate assembly into said engagement position, wherein the improvement comprises:

magnetic biasing means for biasing said contact plate assembly into a disengagement position and for allowing said rotatable member to oscillate circumferentially relative to the contact plate assembly in response to torsional oscillations in the driving device.

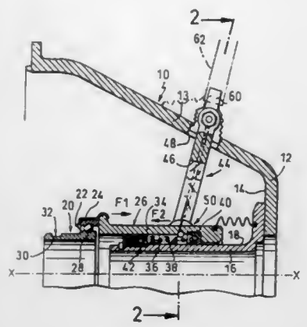
5,609,233

HYDRAULICALLY ACTUATED MOTOR VEHICLE CLUTCH OF THE PULL TO RELEASE TYPE

Gino Villata, Buttigliera D'Asti, Italy, assignor to Valeo, Paris, France

PCT No. PCT/FR94/01096, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO93/09313, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 20, 1994, Ser. No. 446,637
Claims priority, application Italy, Sep. 29, 1993, 93 11574
Int. Cl.[6] F16D *25/08*
U.S. Cl. 192—91 A **10 Claims**

1. A friction clutch of the pull to release type, comprising a clutch casing (**10**), within which there is arranged a declutching control device (**20**) which comprises, firstly, a clutch release bearing (**20**), secondly a hydraulic actuating device (**26**, **34**) comprising at least one actuating piston, one end of which works on the clutch release bearing (**20**) to urge said release bearing (**20**) axially in a first direction (**F1**), so as to cause declutching to take place when the hydraulic actuating device is supplied with fluid under pressure, and, thirdly, a mechanical lever (**44**) having a body (**46**), a first end portion (**50**) coupled in axial translation with the piston (**26**, **34**) and pivoted on the piston about a pivot axis (Y—Y) at right angles to the axis (X—X) of axial sliding movement of the piston (**26**, **34**), and a second end portion (**60**), with said lever (**44**) extending through the wall (**13**) of the casing (**10**), characterized in that the body (**46**) of the mechanical lever (**44**) extends through an oblong aperture (**48**) formed in the wall of the casing (**10**), in that



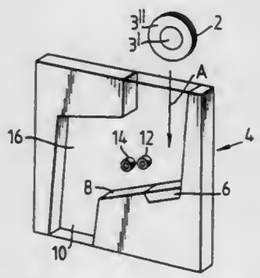
the second end portion (**60**) of the mechanical lever projects outside the casing so as to enable the clutch release bearing (**20**) to be urged axially, through the piston (**26**, **34**), in a second direction (**F2**) opposite to the first direction (**F1**), so that the mechanical lever (**44**) is an actuating lever.

5,609,234

COIN VALIDATOR

Robert S. Walker, 2 Chelwood Drive Little Sandhurst, Camberley, Surrey, United Kingdom, and Timothy P. Waite, 31 Severn Drive Hinchley Wood, Esher, Surrey, United Kingdom

PCT No. PCT/GB93/00929, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO93/22747, PCT Pub. Date Nov. 11, 1993
PCT Filed May 5, 1993, Ser. No. 331,594
Claims priority, application United Kingdom, May 6, 1992, 9209737
Int. Cl.[6] G07D *5/08*
U.S. Cl. 194—317 **13 Claims**



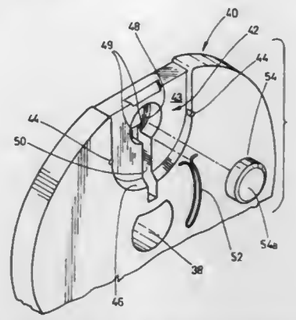
1. A coin validator for composite coins consisting of a first material core surrounded by one or more rings of one or more second materials comprising means defining a coin path for conveying coins to be tested, and a sensing circuit comprising two spaced magnetic sensors each substantially smaller in width than the diameter of a composite coin with which the validator is to be used, the sensors being positioned such that they are passed in succession by a coin travelling along the path, and so that they can be affected simultaneously by a coin passing the sensors, the circuit further including means responsive to the difference between the outputs of the sensors whilst respective regions of different metals of a coin are affecting the respective sensors, to determine whether signals provided thereby are representative of a genuine coin.

5,609,235

COIN MECHANISM WITH MAGNETIC COIN DISCRIMINATOR

Josef W. Schwarzli, Stouffville, Canada, assignor to Machine-O-Matic Limited, Newmarket, Canada

Filed Oct. 13, 1995, Ser. No. 542,773
Claims priority, application Canada, Aug. 23, 1995, 2156787
Int. Cl.[6] G07F *5/02*
U.S. Cl. 194—320 **20 Claims**



1. A coin mechanism for a merchandise-dispensing apparatus, comprising

a rotatably mounted coin conveyor connected to means for rotating the coin conveyor and means for dispensing merchandise from the apparatus responsive to rotation of the coin conveyor,

the coin conveyor including carrying means for carrying a coin or token along a rotational path of the carrying means,

a cover plate having an opening for the insertion of a coin or token in substantial alignment with the carrying means when the coin conveyor is in a rest position,

the carrying means being provided with magnetized means for attracting a coin or token having a magnetic component and retaining same in the carrying means and urging means for repelling a coin or token having no magnetic component and unseating same from the carrying means, whereby an attractive force of the magnetized means is greater than a repelling force of the urging means, and

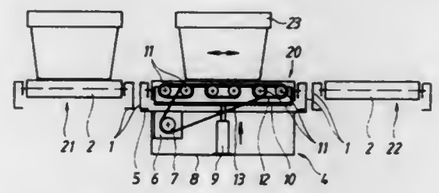
means for releasing the coin or token from the carrying means as the coin conveyor is rotated past a coin deposit position.

5,609,236

ROLLER CONVEYING DEVICE

Helmut Neukam, Hausmannstätten, Austria, assignor to P.E.E.M. Förderanlagen Gesellschaft m.b.H., Graz, Austria

Filed Feb. 22, 1996, Ser. No. 604,862
Claims priority, application Austria, Mar. 21, 1995, 498/95
Int. Cl.[6] B65G *47/46*
U.S. Cl. 198—370.1 **1 Claim**



1. Device which is part of a roller conveyor, said device serving to laterally shove off transported goods transversally to a conveying direction, said roller conveyor being provided with a multitude of pivoted rollers arranged between two parallel-running longitudinal spars, the surfaces of said rollers serving as a supporting

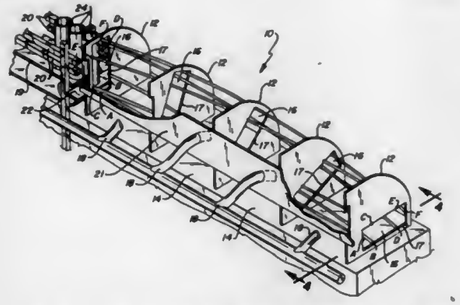
surface for the goods to be transported, and at least one of said rollers being connected to a drive unit, transversal rollers being arranged at least between two adjacent rollers of the roller conveyor, which transversal rollers can be driven by means of an elastic driving belt embracing a stationary drive unit, the axes of said transversal rollers standing at a right angle to the axes of the rollers of the roller conveyor and being held in a carrier which may be lifted and lowered by means of a lifting appliance acting upon the carrier, the supporting surface created by the transversal rollers thereby being allowed to be lifted above the supporting surface for the goods which is created by the rollers of the roller conveyor, characterized in that several pairs of transversal rollers are pivotally arranged in the carrier, each pair of adjacent transversal rollers being embraced by an endless discharge belt and the driving belt running over at least one transversal roller of each pair of transversal rollers.

5,609,237

CYLINDRICAL OBJECT TIPPING DEVICE AND METHOD

Ronald A. Lenhart, Lakewood, Colo., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Dec. 9, 1994, Ser. No. 352,367
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—406 **13 Claims**



1. A device for sequentially tipping containers to a desired orientation as they move in single file from an upstream location to a downstream location, said device comprising:
- a straight member extending through said device from said upstream location to said downstream location;
- a plurality of spiral members extending through said device from said upstream location to said downstream location arranged in spacial relationship with said straight member forming an interior open space corresponding to the shape of the containers passing therethrough, the containers being rotatable about an axis defined by said straight member to tip the containers to the desired orientation;
- means for supporting said straight member and said spiral members;
- means for moving the containers from the upstream location to the downstream location; and
- wherein said straight member and said plurality of spiral members include rods having substantially circular cross-sectional shapes.

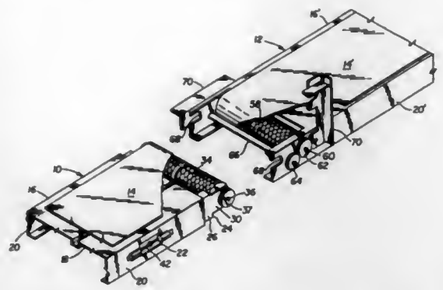
5,609,238

CONVEYOR SECTION OF MULTI-SECTION CONVEYOR

Frantz G. Christensen, 2655 6th Ave. South, St. Petersburg, Fla. 33712-1642

Filed Jan. 11, 1996, Ser. No. 583,878
Int. Cl.[6] B65G *21/06*
U.S. Cl. 198—583 **11 Claims**

1. For use in a multi-section belt conveyor, the conveyor section comprising:



a continuous conveyor belt;
- a slider bed defining a longitudinally extending support plate and longitudinally extending, channel-shaped, opposite side edge members, wherein said support plate carries said conveyor belt for longitudinal movement along an upper surface thereof, and at least a first of said side edge members defines a first longitudinally extending slot therethrough near a proximal end of the slider bed;
- a pair of transversely spaced, longitudinally disposed extension arms each having a proximal end portion and a distal, channel-shaped shank portion, each shank portion slidably engaging an opposite side edge member of the slider bed at a proximal end thereof, wherein at least said shank portion engaging the first side edge member defines a second slot therethrough, the proximal end of the second slot overlapping the distal end of the first slot, defining an overlapping portion of the first and second slots;
- a proximal belt roller carried on a transverse roller shaft by the proximal end portions of the extension arms and engaging said continuous conveyor belt;
- a belt tensioner carried in said overlapping portion of the first and second slots, having opposed first and second pushing blocks threadedly connected by a rod having oppositely threaded ends such that upon rotation in a first direction the pushing blocks are moved relatively apart and upon rotation in the opposite direction the pushing blocks are moved relatively together;
- wherein each pushing block defines a longitudinal groove in its outer edge and receives in said groove the edges of the first and second slots, retaining together the first side edge member of the slider bed and its extension arm; and
- wherein said rod is of sufficient length that, upon rotation in the first direction, it applies tension to the conveyor belt by causing the pushing blocks to extend the extension arm with respect to the slider bed by separating the proximal end of the second slot from the distal end of the first slot.

5,609,239

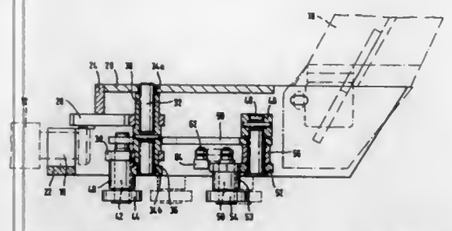
LOCKING SYSTEM

Helmut Schlecker, Plochingen, Germany, assignor to Thyssen Aufzuege GmbH, Neuhausen A.D.F., Germany

Filed Mar. 16, 1995, Ser. No. 405,809
Claims priority, application Germany, Mar. 21, 1994, 94 04 771.5
Int. Cl.[6] B65G *17/32*
U.S. Cl. 198—680 **12 Claims**

1. A locking system at a mounting structure, ie a holding frame displaced by a conveying system, for a connection component (**12**) of a workpiece being processed, comprising a seat (**10**) for the connection component (**12**) and a latch cooperating with the seat (**10**),

characterized in that
- the latch (**28**) pivotable between an open position and a closed position relative to the seat (**10**) is solidly joined to a first drive member (**42**),
- a securing rail (**50**) pivotable parallel to the latch's pivoting plane is pivotable between a retention position and a release



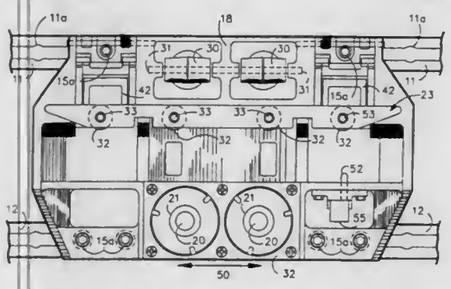
position and is joined to a second drive member (**58**) and comprises stop means (**66, 68**) associated with the first drive member (**42**) in order to lock the latch (**28**) into its open position and its closed position,
- and a start roller (**44, 54**) rests on the first and on the second drive member (**42, 58**) resp. and is controlled by start cams mounted in the conveyance path of the holding frame (**18**).

5,609,240

CONVERTIBLE ROLLER ASSEMBLY FOR LOADING CARGO IN VEHICLE

Edward Moradians, Canoga Park, Calif., assignor to Ancra International Corporation, Hhawthorne, Calif.

Filed Oct. 23, 1995, Ser. No. 546,688
Int. Cl.[6] B65G *13/12*
U.S. Cl. 198—782 **7 Claims**



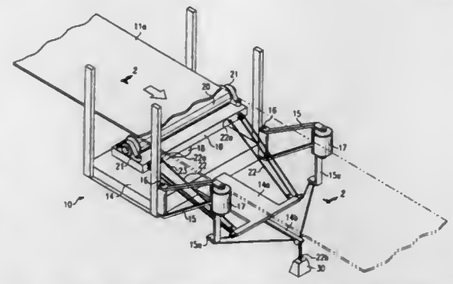
1. A roller assembly for loading and unloading cargo in a vehicle having a retracted configuration for facilitating the movement of cargo therealong in a first direction and an erected configuration for facilitating the movement of cargo therealong in a second direction normal to the first direction comprising:
- a floor (**18**) formed in said assembly,
- a first set of rollers (**20**) mounted on said floor for universal rotation,
- a second set of rollers (**30**) mounted on said floor for rotation about a first axis,
- said assembly including a main assembly portion and a sub-assembly portion (**23**) mounted pivotally on said main assembly portion,
- a third set of rollers (**32**) mounted on said sub-assembly portion (**23**) for rotation about a second axis normal to said first axis, said third set of rollers being above the surface of one side of said sub-assembly portion (**23**) and below the surface of the side of said sub-assembly portion (**23**) opposite said one side thereof,
- means (**40**) for driving said sub-assembly portion (**23**) from a retracted position forming part of the floor (**18**) to an erected position standing upwardly normal to said floor (**18**,
- said roller assembly being in the retracted configuration for facilitating the movement of cargo in the first direction when the sub-assembly portion (**23**) is in a retracted position whereat the cargo rides on said first and second set of rollers (**20,30**) and the side of said sub-assembly (**23**) opposite said one side thereof and the third set of rollers (**32**) are opposite the cargo with the third set of rollers (**32**) beneath the surface of the side of the sub-assembly (**23**) opposite said one side thereof and in the erected configuration for facilitating the movement of cargo in said second direction when said sub-assembly portion (**23**) is in an erected position whereat the cargo rides on said first set of rollers (**20**) and against said third set of rollers (**32**).

5,609,241

TRAINING IDLER ASSEMBLY FOR A CONVEYOR SYSTEM

Grover P. Shaw, Paonia, Colo., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 23, 1995, Ser. No. 408,773
Int. Cl.[6] B65G *39/16*
U.S. Cl. 198—806 **6 Claims**



1. A trainer idler assembly for a conveyor belt, said assembly comprising:
- a support;
- an idler roller means pivotably mounted on said support for movement about a vertical axis, said idler roller means adapted engage said conveyor belt;
- guide roller means pivotably mounted on either side of said support for movement about vertical axes and adapted to engage the respective sides of the conveyor belt when the belt is in engagement with said idler roller means;
- means for moving said idler roller about its vertical axis in response to said conveyor belt tracking away from its centered position on said idler roller means and against a respective guide roller means to thereby cause the belt to move back towards its centered position on said idler roller means wherein said means for moving said idler roller means about its vertical axis comprises:
  - a pair of cables, each cable being symmetrically-rigged with one end being connected to a respective side of said idler roller means, said each cable then passing through respective sheaves on said support, said idler roller means, and said respective guide roller means, and each of said cables having its other end connected to a single, freely-suspended weight.

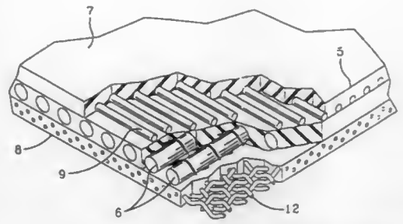
5,609,242

STEEL CABLE CONVEYOR BELT WITH IMPROVED PENETRATION AND RIP RESISTANCE

Thomas G. Hutchins, Uniontown, Ohio, and Herbert L. Terreau, Oshawa, Canada, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 12, 1995, Ser. No. 501,527
Int. Cl.[6] B65G *15/34*
U.S. Cl. 198—847 **8 Claims**

1. A cured conveyor belt that exhibits superior resistance to penetration and tear testing comprised of a core member having a series of rubberized closely along side parallel longitudinal steel wires or cables, covered on each side with rubber layer, at least the least on top side of the longitudinal wire or cable one layer of a



rubberized closely spaced series of transversely positioned steel wires or cables adhered above the core, a rubberized fabric breaker adhered below the core, an upper cover suitable for carrying a load and pulley cover beneath said core.

5,609,243

TOOTHED CONVEYING BELT

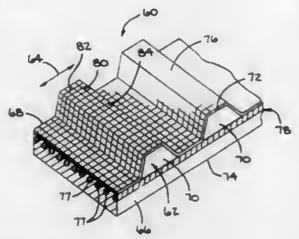
Yoshihisa Fujita, Nishi-ku; Takahide Mizuno, Hyogo-ku; Hiroyuki Nishio, Tarumi-ku; Kuniharu Uto, and Kazutoshi Ishida, both of Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Dec. 27, 1995, Ser. No. 578,092

Claims priority, application Japan, Dec. 28, 1994, 6-340263

Int. Cl.[6] B65G *15/34*

U.S. Cl. 198—847 **28 Claims**



1. A toothed belt comprising:

a body having a length, laterally spaced sides, an inside and an outside, and defining a plurality of teeth spaced in a lengthwise direction on one of the inside and the outside of the body,

said body defined at least in part by a rubber composition comprising at least an ethylene propylene diene monomer (EPDM) and a diene rubber; and

a cloth layer on the teeth on the one of the inside and outside of the body, said cloth layer being treated with a resorcin-formalin-latex solution.

5,609,244

INTERLOCK DEVICE

John P. Reiter, Apple Valley, Minn., assignor to Reitech Corporation, Burnsville, Minn.

Filed Nov. 13, 1995, Ser. No. 557,963

Int. Cl.[6] H01H *9/28*

U.S. Cl. 200—43.11 **23 Claims**

1. Interlock device for an enclosure having an opening and a closure having a closed position extending over the opening and an open position allowing access through the opening, comprising, in combination: a latch rotatable about an axis between a first position and a second position; means for selectively preventing rotation of the latch and having a latch position and an unlatch position, with the selectively preventing means in the unlatch position allowing rotation of the latch and the selectively preventing means in the latch position preventing rotation of the latch from its second position to its first position; means mountable to the closure for catching the latch in the first position when the closure is in the closed position to prevent the closure from moving from the closed position; and means for moving the selectively preventing means from the latch position to the unlatch position when the closure is in the closed position.

5,609,245

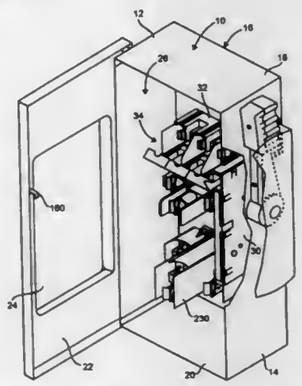
MODULAR SWITCH INTERIOR ASSEMBLY AND METHOD OF ASSEMBLING SAME

Terry A. Cassity, Paris; David E. Greer, Lexington; Jeffrey J. Buchanan, Lexington; Steve M. Ledbetter, Lexington, and Jonathan H. Van Camp, Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Dec. 20, 1994, Ser. No. 359,977

Int. Cl.[6] H01H *1/26*

U.S. Cl. 200—283 **16 Claims**



1. An interior assembly for an electrical distribution device having a fuse for each phase in a circuit and an enclosure with a handle external to the enclosure for operator control, the interior assembly comprising:

a plurality of modules, each module having a housing;

one of the modules being a switch mechanism module, the switch mechanism module including;

a modular housing having a generally planar first base with upstanding side walls around the circumference of the first base, the side walls having a top edge defining a mating surface, the modulator housing having a generally planar second base with upstanding side walls having a top edge for abutting the mating surface of the first base;

means for demountably fastening the first base to the second base, the fastening means being integrally formed with the first and second base;

a shaft having two ends, the first end being adapted to connect with the handle external to the modular housing, the second end being adapted to connect to the adjacent module of the interior assembly through the modular housing;

an operating mechanism being connected to the shaft and the first and second bases without discrete fasteners;

a switch contact for opening and closing the circuit for each phase; and,

means for demountably securing the housing to at least one adjacent module of the interior assembly, the securing means being manually operated and integrally formed with the housing of each module.

5,609,246

BLISTER PACK FOR AN OPTICAL LENS

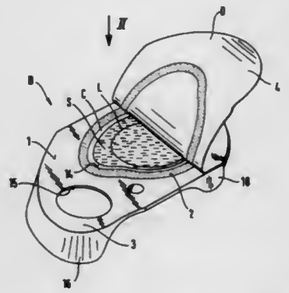
Sharla Borghorst, Frankfurt am Main; Erich Baumann, Goldbach; John Golby, Aschaffenburg; Peter Hagmann, Erlenbach am Main; Peter Herbrechtsmeier, Königstein; Otto Kretzschmar, Einhausen; Bernhard Seiferling, Goldbach, all of Germany; Michele De Lucchi, Angera, Italy; Torsten Fritze, and Masahiko Cubo, both of Milan, Italy, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

Filed May 3, 1995, Ser. No. 434,088

Claims priority, application European Pat. Off., May 4, 1994, 94810260

Int. Cl.[6] B65D *81/24*

U.S. Cl. 206—5.1 **29 Claims**



1. A blister pack for an optical lens having a base portion and a cover layer,

the base portion comprising a hollow chamber, said hollow chamber containing the optical lens and a sterile preserving solution and having an upper opening periphery, and comprising a substantially flat flange that extends in a plane around the opening periphery of the hollow chamber;

the cover layer being substantially flat and being releasably sealed to the flange in a sealing zone that extends right around the opening periphery of the hollow chamber; and

the flange comprising a front grip region, a rear region and two sides, with respect to the hollow chamber, the front grip region extending from the hollow chamber beyond the sealing zone and being at least partially covered by a corresponding grip region of the cover layer but not being sealed thereto so that the grip regions of the flange and the cover layer forming grip means for separating the cover layer from the flange,

wherein the hollow chamber comprises a substantially hemispherical main chamber and, adjoining a side of that main chamber, a secondary chamber,

wherein the main chamber contains said optical lens, is not significantly larger than said optical lens and makes a substantially smooth transition into the secondary chamber,

wherein the secondary chamber is narrower than the main chamber, substantially in the shape of a channel tapering away from the main chamber and forming a tip towards the front grip region,

thereby the secondary chamber provides means for easy removal of the lens from the hollow chamber and minimizes the amount of the preserving solution contained in the bollow chamber.

5,609,247

RELEASE MECHANISM FOR CANS

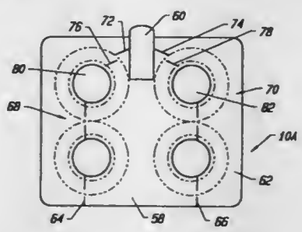
Arthur J. Appleton, 61 Eagle Lake La. #31, San Ramon, Calif. 94583

Filed Nov. 1, 1994, Ser. No. 333,145

The portion of the term of this patent subsequent to Jnn. 9, 2014, has been disclaimed.

Int. Cl.[6] B65D *71/06*

U.S. Cl. 206—150 **14 Claims**



1. A release mechanism for multiple containers having a space between first and second portions thereof

comprising:

a. a band of resilient material extending about at least a portion of the peripbery of each of the multiple containers, said band forming a closed loop about the entirety of the multiple containers, said closed loop exerting a force on each of the multiple containers, said closed loop possessing at least one frangible element therealong;

b. a connecting member located along the space between the first and second portions of the multiple containers, said connecting member including a plurality of frangible elements linking said connecting member to said band to form a breakable collar about each of the multiple containers; and

c. grasping means for permitting the application of a pulling force on said connecting member to separate any of said frangible elements linking said connecting member to said band and to separate any of said breakable collars formed about each of the multiple containers.

9. A release mechanism for multiple containers having a space between first and second portions thereof

comprising:

a. a band of resilient material extending about at least a portion of the periphery of each of the multiple containers;

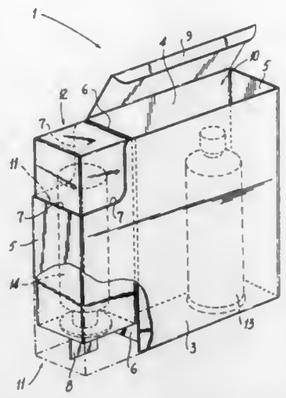
b. a connecting member located along the space between the space between the first and second portions of the multiple containers, said connecting member including a plurality of frangible elements linking said connecting member to said band to form a breakable collar about each of the multiple containers, said plurality of frangible elements including at least a pair of frangible elements spaced from one another about each container and a pair of frangible elements spaced from one another between said connecting element and said band.

5,609,248

MULTI-PART PACKAGE

John Rohrbough, Scottsdale, Ariz., and John Franck, City of Industry, Calif., assignors to F. H. Faulding & Co. Limited, Parkside, Australia

Filed Apr. 20, 1995, Ser. No. 450,470
Claims priority, application Australia, Oct. 21, 1992, PL5393
Int. Cl.[6] B65D *71/12*
U.S. Cl. 206—216 21 Claims



1. A multi-part package for packaging a drug vial container containing a drug and a drug delivery apparatus, or for packaging a drug container containing a freeze dried or powder drug, and a vial container containing solvent for the freeze dried or powder drug, said multi-part package including:

a main container dimensioned to accommodate the drug delivery apparatus or the vial container, respectively, said main container being in the form of a box having

front and rear panels joined together at opposing edges thereof by respective side panels,

a separation panel extending between and joined to the front and rear panels so as to separate the main container into first and second storage compartments, each of the storage compartments being defined by the front and rear panels, the separation panel and a respective side panel, and the panels together defining open top and bottom ends to each of the storage compartments,

bottom closure means joined to at least one of the panels adjacent the bottom end and covering so as to close the bottom end of both storage compartments,

top closure means joined adjacent the top end to at least one of the panels and covering so as to close the top end of the first storage compartment but not covering the top end of the second storage compartment, the top closure means being actuable to uncover the top end of the first storage compartment for access thereto, and

the open top end of the second storage compartment remaining permanently uncovered for access thereto; and

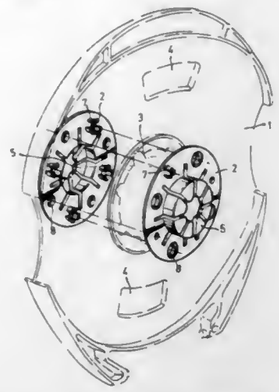
at least one subsidiary container dimensioned to accommodate the drug vial container or the drug container, respectively said subsidiary container being removably carried in the second storage compartment and being removable from and insertable into the second storage compartment without actuating the top closure means and while the top closure means closes the first storage compartment.

5,609,249

COMPACT DISC HOLDER ASSEMBLY

Billy Cheng, 1 Fl., 31-2, San Ming Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Jun. 7, 1995, Ser. No. 487,687
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 6 Claims



1. A compact disc holder assembly comprising:

a) a planar-shaped carrier having a positioning through hole formed therein;

b) a pair of clasp seats, each seat including a plurality of spaced posts and a plurality of spaced insert holes, and at least one seat being provided with an elastic pawl means for securing a compact disc; and

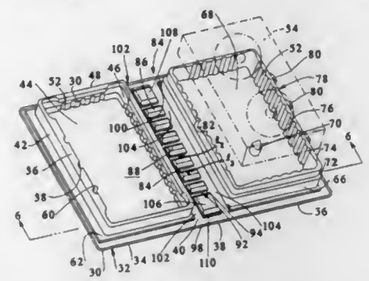
c) the clasp seats being disposable on opposite sides of the positioning through hole to permit the posts of each seat to engage within the insert holes of the other seat and define a plurality of joints for securing the seats and the carrier together.

5,609,250

BOOK-STYLE CASSETTE HOLDER WITH STAY-FLAT SPINE PORTION

Robert E. Moser, Cape Girardeau, Mo., assignor to Blair Industries Incorporated, Des Plaines, Ill.

Filed Jul. 3, 1995, Ser. No. 498,686
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.13 15 Claims



1. A book-style cassette holder comprising:

a first one-piece flexible sheet including a front flap portion, a rear flap portion and a spine portion disposed between the flap portions and connecting the flap portions in a laterally spaced, side-by-side relation;

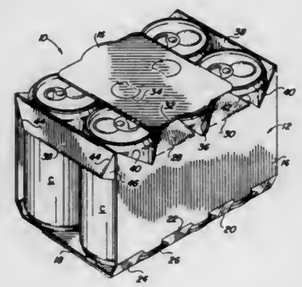
a second one-piece stiff molded sheet having a raised tray portion on an inner face of each flap portion of said first sheet and an integral spine liner portion between the tray portions connecting the tray portions in a laterally spaced, side-by-side relation and covering the spine portion of the first sheet, a bond connecting said first and second sheets together around the peripheries thereof, the tray portions on the front and rear flap portions being complementary to stack together in a closed position of the holder to define an enclosed cassette-receiving cavity, said spine liner portion including a plurality of centrally disposed raised protrusions separated by a plurality of intermediate depressions, the raised protrusions being positioned so that in the closed position, raised distal surfaces on the raised protrusions abut adjacent surfaces on the tray portions of the front and rear flap portions to provide a taut and flat spine portion for the holder, and the depressions forming a series of spaced struts defining support surfaces that contact the spine portion of said first flexible sheet and are effected to maintain the spine portion in a stay-flat condition upon repeated opening and closing of the holder in use.

5,609,251

WRAP-AROUND CARRIER WITH PARTIAL END PANELS

Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 1, 1995, Ser. No. 566,236
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—434 9 Claims



1. A package comprised of a wrap-around carrier containing a plurality of articles, comprising:

a top panel having opposite side edges and opposite end edges;

opposite side panels foldably connected to the side edges of the top panel;

a bottom panel connected to the side panels;

opposite end panels;

the end edges of the top panel being spaced from the end panels;

a connecting panel connected by a fold line to opposite end portions of each end panel, each connecting panel being connected by a diagonal fold line to a side panel, at least a portion of the connecting panel being in contact with an adjacent article and being located between the adjacent article and the associated side panel;

each side panel including opposite upper ends, the diagonal fold line of each connecting panel extending substantially to the upper end of an associated side panel; and

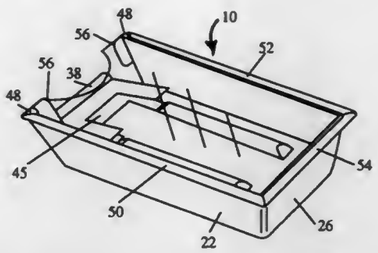
the side panels including cutouts between the end edges of the top panel and the end panels, the fold line connecting each connecting panel to an associated side panel coinciding with an outer edge of the cutout in said side panel.

5,609,252

PHOTOGRAPH DISPLAY AND STORAGE TRAY SYSTEM

Richard C. Koch, Rancho Santa Margarita, Calif., assignor to View 'N Store, Inc., Rancho Santa Margarita, Calif.

Filed Apr. 21, 1995, Ser. No. 426,028
Int. Cl.[6] B65D *85/30;* A47G *1/06*
U.S. Cl. 206—455 19 Claims



1. A photograph display and storage tray for a stack formed by a plurality of photographs, the tray comprising:

a unitary housing having an interior that forms a recess adapted to hold the stack of the plurality of photographs;

a retaining member coupled to the housing to retain the stack of the plurality of photographs within the recess of the housing;

at least one guiding member coupled to the housing;

a first opening slot formed between the at least one guiding member and the retaining member, the first opening slot being adapted to permit removal of one of the plurality of photographs from the stack and the photograph display and storage tray at a time;

wherein the at least one guiding member is for guiding the one photograph to a bottom of the stack of the plurality of photographs when the one photograph is to be placed back in the stack of the plurality of photographs and the photograph display and storage tray;

a second opening slot formed between a back of the housing and the at least one guiding member, the second opening slot being adapted to permit insertion of one or more photographs into the stack of the plurality of photographs and the photograph display and storage tray; and

a lifting member coupled to the housing to press against the bottom of the stack of the plurality of photographs to maintain the stack of the plurality of photographs within the recess of the housing,

wherein the one photograph is removed from and inserted back into the stack of the plurality of photographs independent of moving parts.

5,609,253

DATA CARD SECURITY DISPLAY PACKAGING

Ron E. Goade, Sr., Edmond, Okla., assignor to SSI Photo I.D., Oklahoma City, Okla.

Filed Jun. 30, 1995, Ser. No. 497,578
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—460 11 Claims

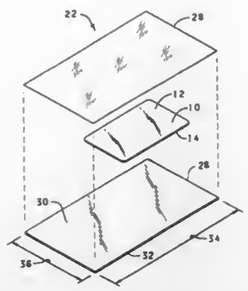
1. A data card display packaging, comprising:

a backing having a first side and a second side, at least a portion of the backing being opaque;

a data card having coded data disposed on one side thereof, the data card disposed on the first side of the backing such that the coded data on the data card is positioned against the backing and masked from view by the backing; and

a covering bonded to the backing and to the data card so as to seal the data card between the covering and the backing such that unauthorized tampering with the covering and the backing to gain access to the coded data on the data card is readily detectable.

5. A data card display packaging, comprising:



an opaque backing characterized as having a first side and a second side;

a data card having coded data disposed on one side thereof, the data card disposed on the first side of the backing such that the coded data on the data card is positioned against the backing and masked from view by the backing; and

a transparent covering bonded to a portion of the first side of the backing and to the data card so as to seal the data card between the covering and the backing such that unauthorized tampering with the covering and the backing to gain access to the coded data on the data card is readily detectable.

9. A method of packaging a data card having coded data on one side thereof, the method comprising the steps of:

disposing the data card on one side of an opaque backing such that the coded data on the data card is positioned against the backing and masked from view by the backing; and

bonding a transparent covering to the backing and the data card so as to seal the data card between the covering and the backing such that unauthorized tampering with the covering and the backing to gain access to the coded data on the data card is readily detectable.

5,609,254

CONTAINER

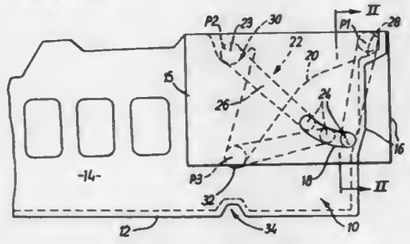
Stephen C. Loftus, and Andrew C. Cope, both of West Midlands, United Kingdom, assignors to McKechnie UK Ltd., West Midlands, England

Filed Feb. 16, 1993, Ser. No. 18,003

Claims priority, application United Kingdom, Feb. 15, 1992, 9203266; Mar. 14, 1992, 9205640; Aug. 29, 1992, 9218441

Int. Cl.[6] B65D *21/06*

U.S. Cl. 206—506 **34 Claims**



1. A container having a base, and comprising:

(a) a support member mountable on said container at a stacking position to support a second container rested on the support member to form a stack;

(b) said support member having a plurality of stacking positions at which a second container may be supported at respective heights above the container base;

(c) said support member further having a nesting position in which the support member allows a second container to be nested in said container;

(d) the container further comprising mounting means operable to mount the support member on the container and so arranged as to allow the support member to be movable relative to the rest of the container, and to be pivotable relative to the rest of the container about a pivot axis which is movable relative to one of said container and said support member;

whereby said support member is able to pivot and move between said nesting position and said plurality of stacking positions, and wherein said mounting means comprise detent means which tend to resist movement of said pivot axis to allow access only to said nesting position and the uppermost of said stacking positions unless the pivot axis is released from the detent means.

5,609,255

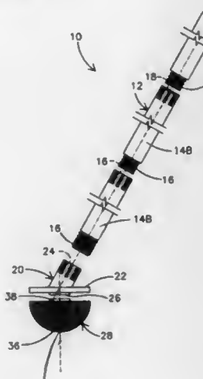
WASHABLE SCRUBBING MOP HEAD AND KIT

Sally S. Nichols, 5815 Westover Dr., Knoxville, Tenn. 37919

Filed May 31, 1995, Ser. No. 455,137

Int. Cl.[6] B65D *69/00;* **A47L** *13/20;13/24*

U.S. Cl. 206—576 **12 Claims**



1. A mop pad comprising:

a base member fabricated from an at least semi-rigid material, said base member defining a planar configuration a having a first side and a second side;

a covering member enclosing said base member and defining a discrete volume within and on said first side of said base member;

a netting material carded by said covering member for enhancing scrubbing action of said mop pad;

a filler material received within said discrete volume defined by said covering member, said filler material for absorbing fluids; and

a securement device carried by said netting material proximate said second side of said base member, said securement device cooperating with a securement device carried by a mop head to which said mop pad is releasably secured, said mop pad being washable in a conventional washing machine and dryable in a conventional clothes dryer such that said mop pad is reusable, said mop pad requiring minimal water and cleaning agents for cleaning surfaces and for cleaning said mop pad, said mop pad producing minimal waste as a result of degradation thereof.

5,609,256

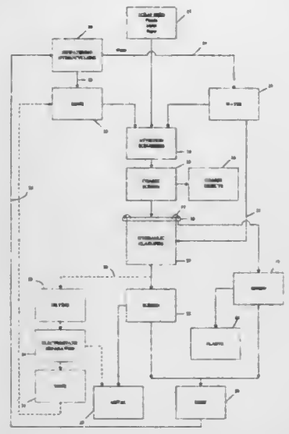
PROCESS FOR RECOVERY OF VALUES FROM SOLID WASTE MATERIALS

Michael J. Mankosa, Jacksonville, Fla., assignor to Carpco, Inc., Jacksonville, Fla.

Filed Jan. 4, 1995, Ser. No. 368,536

Int. Cl.[6] B03B *5/00;7/00*

U.S. Cl. 209—5 **20 Claims**



1. A continuous process for separating insulation material and metal material from a raw particulate scrap feed stock of chopped insulated wire which comprises:

(a) adding to said scrap feed stock sufficient water and sand to produce a slurry having 25–90% by weight solids;

(b) subjecting said slurry to high shear agitation to disperse the various components of the solids throughout said slurry;

(c) screening said agitated slurry to remove all particles greater than about 25 mm. in size;

(d) subjecting said screened and agitated slurry to a dense medium separation in a zone wherein said medium has a density of about 1.1–2.0 grams/cubic centimeter with water being introduced upwardly into the zone;

(e) recovering a lower density product stream from the upper portion of said zone and a higher density product stream from the lower portion of said zone;

(f) separating and recovering insulation particles from said lower density product; and

(g) separating and recovering metal particles from said higher density product stream.

5,609,257

STORAGE RACK FOR OPTICAL PRISMS

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.

Continuation-in-part of Ser. No. 349,044, Dec. 2, 1994, Pat. No. 5,584,400. This application May 12, 1995, Ser. No. 437,406

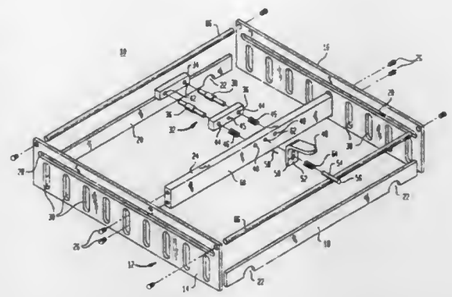
Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—13 **20 Claims**

1. A rack for simultaneously storing prisms having varying sizes and shapes, comprising:

clamping means for holding prisms, said clamping means including at least one fixed clamping block and a plurality of movable clamping blocks, each movable clamping block being oppositely disposed to said at least one fixed clamping block for enabling said clamping means to self-adjust to the size and shape of a prism to be held therein; and

frame means for mounting said clamping means.



5,609,258

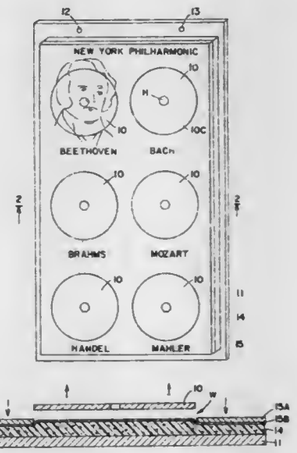
WALL HANGER DISPLAYING COMPACT DISC ARRAY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 173,045, Dec. 27, 1993, which is a continuation of Ser. No. 945,408, Sep. 16, 1992, Pat. No. 5,600,628, which is a continuation-in-part of Ser. No. 821,062, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,078, May 16, 1991, Pat. No. 5,090,561. This application Jul. 20, 1995, Ser. No. 504,420

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—40 **5 Claims**



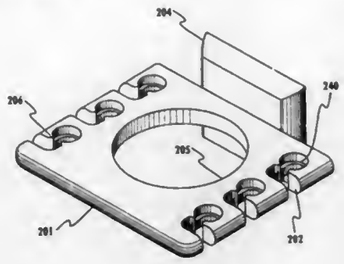
1. A wall hanger and an array of compact discs displayed by said hanger comprising:

A. a backboard mountable on a wall;

B. a layer of sponge-like compressible material of uniform thickness laminated to the backboard; and

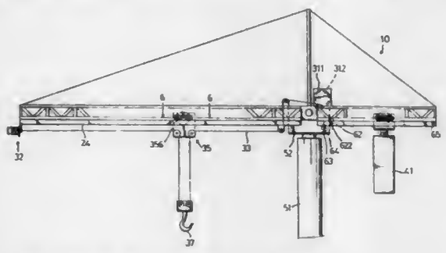
C. a panel of flexible material bonded to the layer which is then sandwiched between the backboard and the panel, said panel having formed therein an array of circular wells in each of which is snugly nested a respective compact disc having a matching diameter; whereby to remove a selected disc from its well, an operator has only to depress a region of the panel surrounding the disc, thereby compressing the corresponding region of the layer and causing the disc to pop out of the well.

5,609,259
MODERN TOOTHBRUSH HOLDER
Richard Menard, P.O. Box 698, Hollywood, Md. 20636
Filed Mar. 16, 1995, Ser. No. 405,091
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—66 **24 Claims**



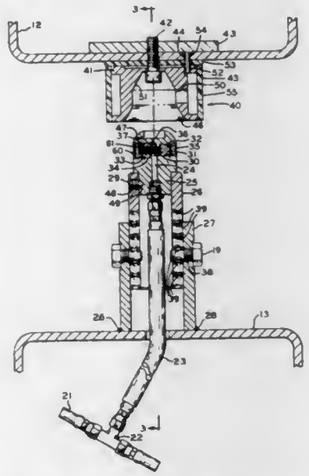
1. A device for holding a toothbrush comprising:
a generally planar support plate; and
at least one substantially L-shaped slot formed at a periphery of the generally planar support plate, said substantially L-shaped slot having a major axis and a minor axis, the minor axis of said substantially L-shaped slot intersecting the periphery of said generally planar support plate, said substantially L-shaped slot further being provided with a recessed portion provided along said major axis of the substantially L-shaped slot to retain the toothbrush; wherein the recessed portion is provided substantially at an end of said substantially L-shaped slot furthest from said minor axis.

5,609,260
DERRICK STRUCTURE
Fu-Chang Liao, No. 20, Alley 10, Lane 99, Chunghua Rd., Chunan Chen, Miaoli Hsien, Taiwan
Filed Feb. 5, 1996, Ser. No. 596,512
Int. Cl.[6] B66C *23/76*
U.S. Cl. 212—279 **8 Claims**



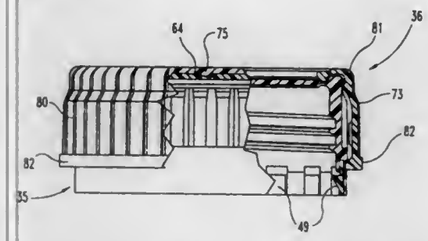
1. An improved derrick structure, comprising:
a column;
a bracket substantially horizontally and rotatably mounted on the column;
a boom vertically pivotably mounted on the bracket to divide the boom into a first portion and a second portion;
two springs respectively compressed between the bracket and the first portion of the boom and the second portion of the boom;
hoisting means adapted to transport a heavy article, comprising:
a winch fixedly mounted on the boom and drivable to generate a hoisting force;
a flexible force transmission member connected to the winch;
engaging means adapted to engage a heavy article to be transported and connected to the flexible force transmission member to receive the hoisting force of the winch to have a substantially vertical movement; and
a first dolly slideably mounted on the first portion of the boom and drivable to move the engaging means along the first portion of the boom;
a counterweight assembly drivable to move along the second portion of the boom; and
controlling means adapted to be connected to an electrical control circuit for controlling the driving of the winch, the first dolly and the counterweight assembly, having a first portion mounted on the boom and a second portion mounted on the bracket and shiftable between a first position and a second position and the first position and a third position, wherein when in the first position, in which the boom is in a substantially horizontal position, the winch and the first dolly are drivable to hoist the engaging means and move the engaging means along the first portion of the boom, further wherein when in the second position, in which the first portion of the boom is pivoted upwardly, the winch and the first dolly cannot be driven to hoist the engaging means and move the engaging means along the first portion of the boom and the counterweight assembly is driven to move along the second portion of the boom toward the bracket, and also wherein when in the third position, in which the first portion of the boom is pivoted downwardly, the winch and the first dolly also cannot be driven to hoist the engaging means and move the engaging means along the first portion of the boom and the counterweight assembly is driven to move along the second portion of the boom away from the bracket.

5,609,261
PIVOTABLE BOOM REST AND LATCH
David L. Hensler, Leesburg, Ind., assignor to Hydra Tech, Inc., Fort Wayne, Ind.
Filed Sep. 19, 1995, Ser. No. 531,180
Int. Cl.[6] F16D *1/00*
U.S. Cl. 212—292 **16 Claims**



1. A latch system for a boom movable between a use position and a stowage position, said latch system comprising:
a latch receiving means; and
a latch comprising a latch body, an inner nose tube, an outer nose tube, and a latch member, said latch body movable relative to said latch receiving means, whereby alignment of said latch body with said latch receiving means is enabled, said latch member disposed within said latch body and movable between an unlatched position and a latched position, said latch member engageable with said latch receiving means, said inner nose tube including a plurality of apertures along its longitudinal axis, said inner nose tube being connected to said outer nose tube by at least one fastener, said fastener being connected to said outer nose tube and passing through at least one of said apertures, said inner nose tube pivotable about said at least one fastener and axially adjustable relative to said outer nose tube by selection of a particular aperture to which said at least one fastener is connected.

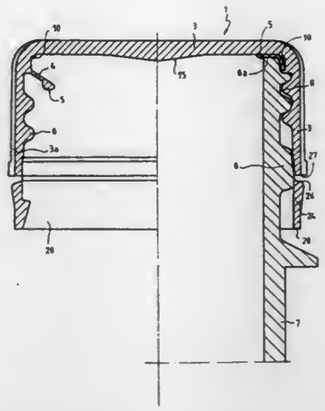
5,609,262
TAMPER EVIDENT, CHILD-RESISTANT CLOSURE
Stanley D. Trout, Huntington, Ind., assignor to Rieke Corporation, Auburn, Ind.
Filed Sep. 22, 1995, Ser. No. 532,157
Int. Cl.[6] B65D *55/02*
U.S. Cl. 215—219 **12 Claims**



1. A tamper-evident closure for sealing an open-topped container having an external screw thread formed on a neck finish of the container and an annular lip below said screw thread, said tamper-evident closure comprising:
a closure cap having an upper wall and an internally-threaded, surrounding sidewall, said sidewall extending downwardly from said upper wall to a lower edge portion, said closure cap further including in unitary construction with said sidewall and said lower edge portion, an annular bead downwardly extending beyond said lower edge portion; and
tamper-indicating means comprising a break-away annular ring depending from said lower edge portion of the sidewall, a plurality of frangible elements detachably securing said annular ring to said lower edge portion, and a plurality of tabs bent upwardly, said frangible elements being radially spaced outwardly from said annular bead and defining therewith an annular channel, a portion of said tabs being positioned within said annular channel, whereby said annular bead is used to hold said tabs in their folded position, and whereby tab abutment against said annular lip during removal of said closure cap causes said frangible elements to break, separating said annular ring from the remainder of said closure cap.

5,609,263
THREADED BOTTLE CAP
Jacques Perchepied, Route des Chataigniers, 76590 Bertreville Saint Quen, France
Continuation of Ser. No. 310,530, Sep. 22, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 630,887
Claims priority, application France, Sep. 22, 1993, 93 11475
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—252 **6 Claims**

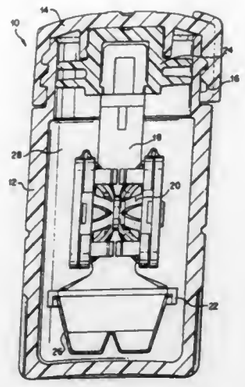
1. In combination with a bottle having a tubular neck formed with an external screwthread and terminating at an annular rim surface having an outside diameter, a cap comprising:
a cup-shaped body generally centered on an axis and formed unitarily with
an end wall generally perpendicular to the axis,



an annular skirt projecting axially downward from the end wall,
an internal screwthread in the skirt matable with the screwthread of the bottle neck,
a flexible and thin annular web having an outer periphery joined to the skirt adjacent and spaced from the end wall and an inner periphery,
a thick seal ring secured to the inner periphery of the web, the web and seal ring being dimensioned to engage the rim surface when the cap is threaded onto the neck, and
an annular lip projecting axially downward from the end wall immediately adjacent the skirt radially outside the seal ring and engageable with the web only radially outward of the seal ring between the seal ring and the skirt, the lip having a diameter greater than the outside diameter of the rim surface, whereby when the neck is screwed fully into the cap its rim surface crushes the seal ring directly against the end wall and compresses the lip with the web; and
an antitamper ring secured to a lower end of the skirt.

5,609,264
SEALING AND VENTING MEANS FOR DISINFECTION APPARATUS
David E. Cerny, 1451 Sandford Trail, Lilburn, Ga. 30247, and Christopher J. Brooks, 13 Meadow La., Glen Head, N.Y. 11545
Division of Ser. No. 515,782, Sep. 16, 1995. This application Jul. 17, 1996, Ser. No. 682,212
Int. Cl.[6] B65D *51/16;41/28*
U.S. Cl. 220—203.13 **5 Claims**

1. A sealing and venting component for an apparatus including a substantially cylindrical container which retains solution, which apparatus is exposed to internally generated gas which must be vented during apparatus use or storage, said sealing and venting component comprising:
(a) a housing having an internal and an external surface;
(b) at least two elongated rims extending outwardly from said external surface a distance which is sufficient for said rims to contact an internal surface of a cylindrical container in which said housing is disposed to establish a sealed chamber with said container, which sealed chamber is substantially liquid impermeable,
wherein said alms are sufficiently flexible to at least partially deform to allow gas to vent from said chamber when the internal pressure of the chamber exceeds a predetermined amount beyond the pressure outside said rims, and



wherein said rims are sufficiently resilient to return to contact said internal surfaces of said container after venting, thereby reestablishing said sealed chamber.

5,609,265

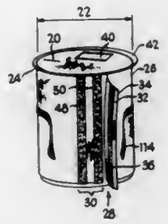
ADJUSTABLE DRUM AND KEG QUILT

Robert W. Haberkorn, 8809 Prestwick La., and John J. Lanigan, 14560 S. Golf, both of Orland Park, Ill. 60462

Filed Apr. 11, 1995, Ser. No. 518,867

Int. Cl.[6] B65D *25/34*

U.S. Cl. 220—421 **15 Claims**



1. A drum quilt adapted for insulating a container with temperature sensitive contents from the surrounding environment, comprising:

a substantially tubular open-bottom body having an open-bottom including a sidewall section and a top section having a slit portion, the slit portion is positioned adjacent to a portion of the sidewall and adapted to receive a hook portion of a drum truck, for facilitating transportation thereof;

the sidewall includes a predetermined diameter defined as a distance from one side of the sidewall to an opposite, other side; and

a diameter adjusting device whereby the sidewall diameter is adjustable from a wide diameter potation to a narrow diameter position.

5,609,266

REFILLING CONTAINER HAVING FLEXIBLE SHOULDER PORTION MOVABLE BETWEEN SUBSIDED AND EXTENDED POSITIONS

Shinsaku Nakazato, and Toshiyuki Yokoyama, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

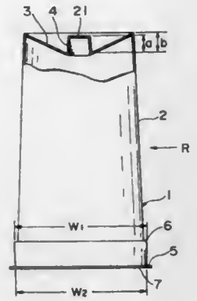
PCT No. PCT/JP93/01475, § 371 Date Aug. 9, 1994, § 102(e) Date Aug. 9, 1994, PCT Pub. No. WO94/08860, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 14, 1993, Ser. No. 244,658

Claims priority, application Japan, Oct. 16, 1992, 4-078553 U; Dec. 15, 1992, 4-086019 U; Dec. 15, 1992, 4-086020 U; Dec. 15, 1992, 4-086021 U; Dec. 15, 1992, 4-086022 U; Dec. 15, 1992, 4-086023 U; Dec. 15, 1992, 4-334719; Dec. 15, 1992, 4-334720; Mar. 19, 1993, 5-060749; May 28, 1993, 5-028312 U; May 28, 1993, 5-028313 U

Int. Cl.[6] B65D *17/28*

U.S. Cl. 220—703 **22 Claims**



1. A refilling container, comprising:

a thermoformed container body made of a synthetic resin sheet, said container body having:

a barrel portion having a lower end formed with an opening and an upper end formed opposite the lower end,

a flange positioned along the lower end and substantially in a common plane with the opening,

a flexible shoulder portion integrally formed along the upper end of the barrel portion,

a nozzle portion integrally formed with and extending away from the shoulder portion, and

a platen integrally formed with a top section of said nozzle portion, wherein said shoulder portion, said nozzle portion and said platen are movable with respect to the barrel portion between an extended position and a subsided position in which said shoulder portion, said nozzle portion and said platen are disposed substantially within an interior of said barrel portion; and

a seal film connected to the flange and being formed across the lower end of the barrel portion to sealably close the opening.

5,609,267

CORROSION-RESISTANT STORAGE TANK FOR RUNOFF LIQUIDS

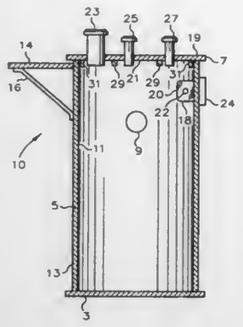
Malcolm L. Johnson, and Jimmy J. Lee, both of Plano, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 26, 1995, Ser. No. 506,748

Int. Cl.[6] B65D *25/22*

U.S. Cl. 220—751 **2 Claims**

1. A corrosion-resistant storage tank for runoff liquids comprising: an enclosure having a vertical side wall formed from a cylindrical plastic tube having an interior side, an exterior side and at least one wall aperture extending from said interior side to said exterior side such that an inlet conduit can be attached to said wall aperture so that said inlet conduit is in fluid flow communication



with the interior of said enclosure such that runoff liquids can be introduced into said enclosure; a bottom welded onto the bottom end of said vertical side wall; a removable cap having a first aperture and a first flange positioned in said first aperture such that any fluid contained within said enclosure can be pumped out through said first flange, a second aperture and a second flange positioned in said second aperture such that gas within said enclosure can be vented from said enclosure, and a third aperture and a third flange positioned in said third aperture such that the level of runoff liquid within said enclosure can be determined through said third flange; a shelf attached to the exterior surface of said vertical side wall suitable for supporting a pump for pumping fluids contained within said enclosure out through said first flange; and lifting lugs attached to said vertical side wall wherein said lifting lugs are spaced apart on said vertical side wall such that said storage tank can be lifted by attaching a lifting means to said lifting lugs, wherein said bottom, said vertical side wall and said cap are formed from a plastic selected from the group comprising polyethylene, polypropylene and copolymers thereof and wherein said storage tank comprises no additional structural support.

5,609,268

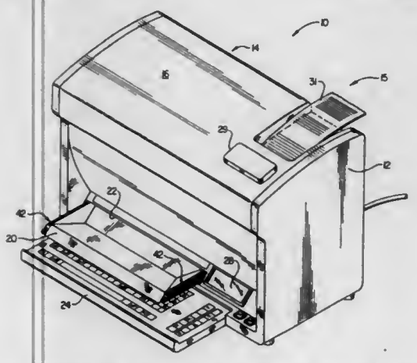
AUTOMATIC PILL DISPENSING APPARATUS

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

Division of Ser. No. 178,926, Jan. 7, 1994, Pat. No. 5,472,113, which is a continuation of Ser. No. 260, Jan. 4, 1993, abandoned. This application Nov. 3, 1995, Ser. No. 552,701

Int. Cl.[6] G07F *11/00*

U.S. Cl. 221—2 **14 Claims**



1. An automatic pill dispenser for dispensing pills to a patient according to a predetermined prescription schedule, comprising:

storage means for storing a quantity of at least one medication; and

control means operable to

(a) accept input data designating which of said at least one medication are to be dispensed at what times,

(b) son the input data into time order,

(c) shift the position of the storage means to one of successive dispensing positions when a dispensing time has arrived; and

(d) activating a patient operable dispenser for a time interval beginning when a dispensing time has arrived so the patient can receive the designated medicine from the storage means during the time interval.

5,609,269

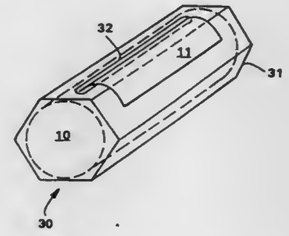
ROLLED TISSUE PRODUCTS CONTAINING DISCRETE OVERLAPPED TISSUE SHEETS

Janica S. Behnke, Appleton; Scott A. Baum, Fremont, and Rodney L. Abba, Oshkosh, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 17, 1994, Ser. No. 291,806

Int. Cl.[6] A47K *10/24*

U.S. Cl. 221—48 **45 Claims**



1. A tissue product comprising a coreless roll of multiple, discrete consecutive tissue sheets which overlap each other in the circumferential direction of the roll such that opposite edges of the sheets in sum total define the opposite ends of the roll, wherein the sheets can be dispensed from within the center of the roll in the axial direction such that removal of one sheet partially removes the next consecutive sheet in a "pop-up" fashion.

5,609,270

DRIED BIOLOGICAL REAGENT PILL DISPENSER WITH VIBRATING MECHANISM

David W. Walker, Milwaukee, Wis., assignor to Pharmacia Biotech, Inc., Milwaukee, Wis.

Filed Nov. 27, 1995, Ser. No. 563,163

Int. Cl.[6] B65G *59/00*

U.S. Cl. 221—202 **6 Claims**

1. A pill dispensing apparatus comprising:

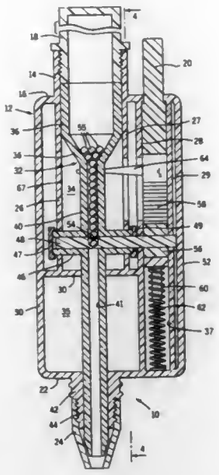
a housing having an inlet through which the pills are received, and having an outlet;

a tube forming a passageway within said housing through which the pills pass between the inlet and the outlet;

a metering element dividing the passageway into two sections and having a depression for conveying a predefined number of pills at a time between the two sections upon movement of said metering element;

a plunger slidably mounted to said housing;

a transmission coupling said plunger to said metering element wherein movement of the plunger causes movement of said metering element; and



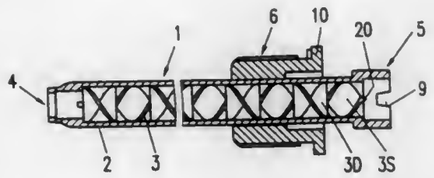
a member engaging said plunger and said tube so as to transfer movement of said plunger to said tube in order to loosen pills that become jammed in said tube.

5,609,271

MIXER AND MULTIPLE COMPONENT DISPENSING DEVICE ASSEMBLY AND METHOD FOR THE ALIGNED CONNECTION OF THE MIXER TO THE MULTIPLE COMPONENT DISPENSING DEVICE

Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland, and Richard J. Wilson, Andover, Mass., assignors to Wilhelm A. Keller, Merlischachen, Switzerland

Continuation of Ser. No. 378,000, Jan. 25, 1995, abandoned.
This application Aug. 31, 1995, Ser. No. 522,108
Claims priority, application European Pat. Off., Aug. 24, 1995, 95810530
Int. Cl.[6] B67D *5/60*
U.S. Cl. 222—145.6 **14 Claims**



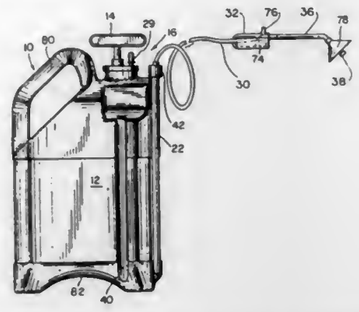
1. A mixer and a multiple reactive component dispensing device assembly, in particular a two-component cartridge, the mixer comprising a mixer housing, a mixer element group, a mixer inlet section having separate inlets for each outlet of the cartridge, the cartridge comprising at least two containers and an outlet area with separate outlets for each container, the mixer and the cartridge being provided with cooperating attaching means, wherein said mixer inlet section of the mixer comprises separating means for maintaining separation of the components beyond the separate inlets, the mixer element group and the inlet section being arranged such, that while sealingly connecting the mixer to the cartridge, the inlets of the mixer inlet section remain aligned with the corresponding and matching outlets of the cartridge and the separating means are —after attaching the mixer —aligned with a first dividing element of the mixer element group.

5,609,272

ONE TIME USE, NON REUSABLE SPRAYER

Richard Brass, Reinbeck, Iowa; Raymond F. Cracauer, Plymouth; Roland Beihl, Invergrove Heights, both of Minn., and Robert C. Hudson, Jr., Northbrook, Ill., assignors to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Apr. 4, 1995, Ser. No. 416,137
Int. Cl.[6] B65D *49/12*
U.S. Cl. 222—147 **13 Claims**



1. A one time use non reusable garden and industrial sprayer comprising:

a vertically upright plastic tank having an exterior and an interior for liquid to be dispensed under pressure, the tank having an inlet for filling the tank with the liquid and an outlet for the liquid contained in the tank and having a base adapted to rest on a horizontal surface whereby the tank is in an upright vertical position;

pump means for forcing the liquid out the outlet under pressure, the pump means including a cylinder and piston movable in the cylinder, the cylinder being disposed in the tank and having an outer end, the tank having surfaces proximal the cylinder outer end;

destructible connecting means for connecting the cylinder upper end to the proximal surfaces of the tank and being so constructed and arranged to destroy at least one of the cylinder upper end, the proximal surfaces of the tank and the connecting means so that the sprayer can not be reused;

a hose having a proximal end extending from the tank outlet and having a distal end;

a vertical supply tube having a lower end communicating with the tank interior and an upper end coupled with the hose;

a control valve associated with the hose for controlling the amount of discharge of the liquid that is sprayed, the control valve including a handle having a passageway, the hose extending through the passageway of the handle, a movable arm on the handle adapted to be moved away from the hose and towards the hose to pinch the hose and restrict the flow of liquid therein;

a discharge nozzle coupled with the distal end of the hose for the selected discharge pattern of the liquid to be sprayed; and

venting means for preventing over pressurization of the tank interior.

5,609,273

BARRIER PACKAGING AND MATERIALS THEREFOR

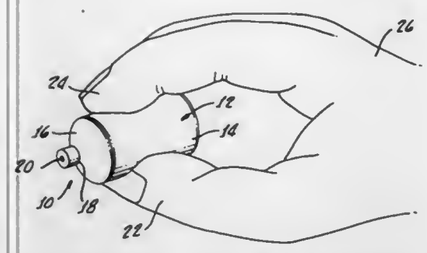
Bruce A. Firestone, Irvine, and Matthew A. Dickason, Tustin, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Mar. 3, 1995, Ser. No. 398,557
Int. Cl.[6] B65D *47/18*
U.S. Cl. 222—215 **22 Claims**

1. A packaged pharmaceutical product having extended shelf-life comprising:

a pharmaceutical preparation comprising chlorobutanol; and

a dispensing container comprising:



a hollow body, having an open end therein, formed from a blend of low density polyethylene, having high chlorobutanol permeability, and a polypropylene, having low chlorobutanol permeability;

means, defining a body wall thickness, for both enabling drop-by-drop dispensing of the pharmaceutical preparation by manual squeezing of the body, and, in combination with the blend of polymers, preventing significant loss of chlorobutanol through the body wall upon storage of the container with the body filled with the pharmaceutical preparation; and

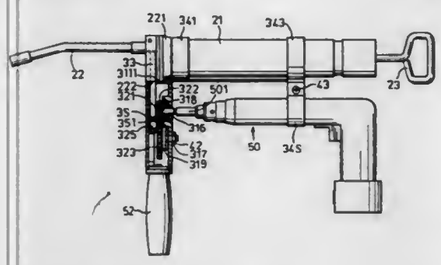
dropper tip means, fixed to the body open end, for forming droplets of pharmaceutical preparation upon manual squeezing of the body.

5,609,274

GREASE DISPENSING DEVICE

Huan-Yuan Shih, Tao-Yuan, and Yung-Feng Chiang, No. 15, Chuang-Ching Tuan, Chung-Feng Rd., Ping-Chen City, Tao-Yuan Hsien, both of Taiwan, assignors to Yung-Feng Chiang, Tao-Yuan Hsien, Taiwan

Filed Nov. 16, 1995, Ser. No. 559,098
Int. Cl.[6] F16W *3/10*
U.S. Cl. 222—262 **2 Claims**



1. A grease dispensing device, comprising:

a gun body having a barrel for receiving grease, and a grease dispensing tube member with an end portion connected to said barrel;

a push rod member inserted radially and slidably into said end portion of said dispensing tube member in order to push said grease out of said dispensing tube member when said push rod member is moved reciprocally;

driving means having a rotatable output shaft;

linkage means interconnecting said rotatable output shaft and said push rod member for converting rotary motion of said output shaft into reciprocating motion of said push rod member;

means for connecting said driving means to said gun body;

said linkage means comprising:

a housing having a top wall, front and rear walls connected oppositely to said top wall, said top wall being fixed to and being located under said end portion of said dispensing tube member, said push rod member extending through and top wall;

a pair of L-shaped guide rails, each having a vertical arm and a horizontal arm which is connected to an internal face of said front wall so that a sliding space is formed between each said vertical arm and said internal face of said front wall;

a bar member connected transversely to a lower end of said push rod member and having a transverse slot formed lengthwise thereof, said bar member being disposed slidably in said sliding spaces formed by said guide rails and said front walls such that an upper end of said push rod member extends into said end portion of said dispensing tube member;

a driven gear mounted rotatably to an internal face of said rear wall and having an axle which passes through said rear wall and which is connected to said rotatable output shaft of said driving means so that said driven gear can rotate with said rotatable output shaft when said driving means is actuated; and

a speed reduction gear rotatably mounted to said internal face of said rear wall, said speed reduction gear meshing with said driven gear and having an eccentric shaft which extends into said transverse slot of said bar member,

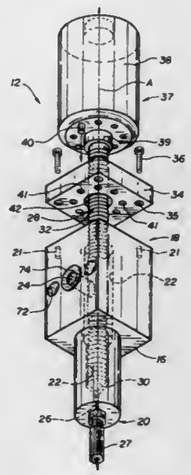
whereby when said driven gear is rotated, said speed reduction gear rotates to enable said eccentric shaft to move reciprocally in said transverse slot of said bar member so that said bar member can move up and down in said sliding spaces, thereby resulting in a reciprocating motion of said push rod member.

5,609,275

METERING APPARATUS HAVING A SCREW MEMBER

Robert L. Brown, Hartville; William H. Miller, Wadsworth, and David E. Baxter, Ravenna, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation of Ser. No. 80,021, Jun. 21, 1993, abandoned.
This application Apr. 14, 1995, Ser. No. 422,746
Int. Cl.[6] G01F *11/20*
U.S. Cl. 222—413 **11 Claims**



2. A metering apparatus for continuously supplying a specified amount of liquid material, said metering apparatus comprising,

a reservoir subassembly for holding a supply of liquid material to be supplied by said metering apparatus,

a metering subassembly having a housing including a central bore therethrough, a receiving opening for receiving liquid material from said reservoir to said central bore, and an exit opening through which liquid materials exits said housing,

said metering subassembly further includes a rotatable screw member engaged through said housing within said central bore,

said metering subassembly further including a driver supported adjacent said housing and engaged with said screw member for variable rotation thereof within said bore to continuously supply liquid material to said exit opening at variable flow rates, and

said metering subassembly housing further includes an efficiency regulator engaged with said housing at a location adjacent said screw member, for permitting liquid material to exit said housing, and wherein said efficiency regulator is adjustable for varying the distance provided between said efficiency regulator and said screw member to thereby adjust the efficiency of said metering apparatus.

5,609,276

ADJUSTABLE SPRAY DISPENSING CLOSURE FOR CONTAINERS

Keith J. Greatbatch, Crowthorne, Great Britain, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

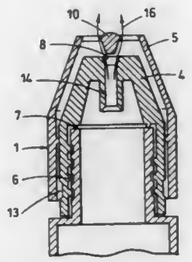
PCT No. PCT/US93/11546, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/12426, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 30, 1993, Ser. No. 454,099

Claims priority, application United Kingdom, Dec. 2, 1992, 9225241

Int. Cl.[6] B67D *5/32*

U.S. Cl. 222—520 **7 Claims**



1. A dispensing closure device for a container, the device comprising inner and outer coaxial parts each having an exit orifice for the flow therethrough of the contents of the container, one part being movable axially relative to the other part, and control means being located on one part for controlling the flow of fluid from the container, the control means comprises an inwardly tapering frusto-conical valve plug on the outer part of the (closure cap) device, the movable one of the parts being movable between a closed off (condition) location, (an) a first open (conical pattern) location defining a divergent passage therebetween which provides a divergent fluid flow from the output of the closure device and (an) a second open (jet stream condition of fluid flow) location wherein fluid flow from the output of the closure device has opposed sides which are substantially parallel.

5,609,277

INSULATING SLEEVE AND BEVERAGE CAN HOLDER

Anthony P. McDonald, 12 Warrenton Ct., Huntington, N.Y. 11743

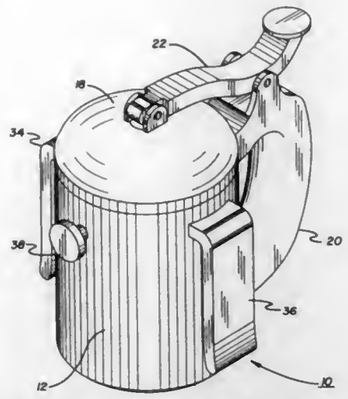
Filed Jul. 14, 1995, Ser. No. 502,383

Int. Cl.[6] A45F *3/18*

U.S. Cl. 224—148.3 **18 Claims**

1. An insulating sleeve and beverage can holder comprising;

a cylindrical container having a closed lower end and an open upper end, the cylindrical container being adapted to receive a removable insulating sleeve having a beverage can positioned within the insulating sleeve;



a handle mounted to an exterior surface of the cylindrical container; and a lid movably mounted relative to the open upper end of the cylindrical container by a thumb lever pivotally mounted to an upper end of the handle, with a first end of the thumb lever extending from the handle and being pivotally coupled with a center portion of the lid, and a second end of the thumb lever extending from the handle for depression by an individual to effect pivoting of the lid away from the open upper end of the cylindrical container.

5,609,278

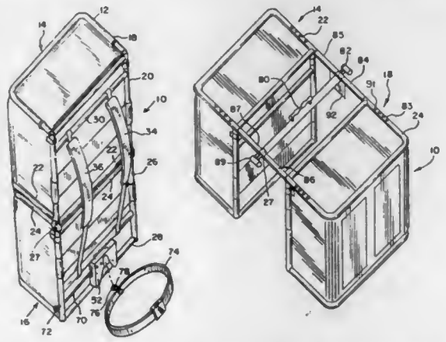
ARTICULATED BACKPACK APPARATUS

Andre Fresco, 2650 Cottage Grove Ave. #5, Des Moines, Iowa 50311

Filed Nov. 18, 1994, Ser. No. 342,153

Int. Cl.[6] A45F *4/02;* **B62J** *9/00*

U.S. Cl. 224—153 **9 Claims**



1. An articulated backpack apparatus for transporting material while attached to a user, in which an upper storage element of the apparatus is capable of pivotal movement in relationship to a lower storage element of the apparatus, said articulated backpack apparatus comprising:

(a) an upper storage element;

(b) a lower storage element operably secured to said upper storage element by pivot means for allowing said upper storage element to pivot relative to said lower storage element when said upper storage element and said lower storage element are attached to a user;

(c) a shoulder strap operably secured to said upper storage element;

(d) a belt member;

(e) said pivot means enabling said upper storage element to pivot from a side-by-side relationship to a face-to-face relationship relative to said lower storage element; and

(f) means operably secured to said upper storage element and operably secured to said lower storage element for allowing said upper storage element to be moved away from said lower storage element while substantially maintaining said face-to-face relationship relative to said lower storage element and while maintaining operably connected to said lower storage element.

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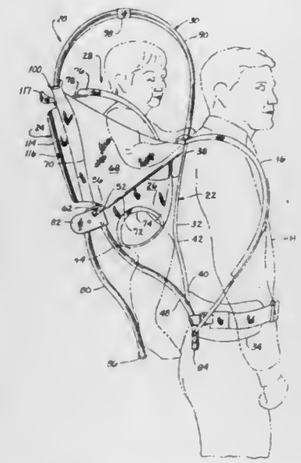
CHILD CARRIER

Timothy O'Shea, Seattle, Wash., assignor to American Recreation Products, Inc., St. Louis, Mo.

Filed Jul. 14, 1995, Ser. No. 502,489

Int. Cl.[6] A61G *1/00*

U.S. Cl. 224—160 **28 Claims**



1. A child carrier for supporting a child adjacent the back of a hiker's torso comprising:

a forward portion having straps engageable with the hiker's torso for enabling the hiker to tote the child carrier in a hands-free manner;

a rearward portion generally rearward of and spaced from the forward portion;

a seat portion generally between the forward and rearward portions and operatively connected thereto for supporting a child;

a child compartment between the forward and rearward portions and defined at least in part by the seat portion;

a hood of flexible sheet material moveable between a covering position in which the hood extends generally from the rearward portion to the forward portion to cover the child compartment and an uncovering position in which the child compartment is exposed; and

a cover support comprising at least one flexible resilient rib adapted to extend up from adjacent the rearward portion, over the child compartment and down to adjacent the forward portion when the hood is in its covering position for supporting the hood over the child compartment.

5,609,280

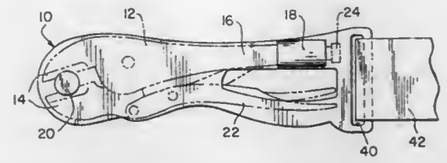
BELT BUCKLE WITH TOOL CARRIER

Robert D. Smith, 2116 E. Cleveland Ave., Hobart, Ind. 46342

Filed Jul. 3, 1995, Ser. No. 497,906

Int. Cl.[6] A44B *11/00*

U.S. Cl. 224—163 **20 Claims**



1. A belt buckle adapted for securing a tool having a pair of jaws biased toward a closed position by a pair of arms, the belt buckle comprising:

a body having a first axis and a second axis transverse to the first axis;

a fixed stationary means associated with the body for receiving a first arm of the pair of arms of the tool, the receiving means being adapted to retain the first arm so as to limit movement of the first arm in two opposing directions substantially parallel to the second axis yet enable the first arm to be removable from the receiving means as the tool is moved relative to the body in a direction substantially parallel to the first axis wherein said receiving means remains stationary as the first arm is removed therefrom;

means associated with the body for engagement with the jaws of the tool, the engagement means having a surface oriented substantially normal to the body so as to enable the jaws of the tool to be biasingly clamped thereon when the jaws are in the closed position and the first arm is retained within the receiving means such that the tool is securely retained on the belt buckle; and

means associated with the body for attaching the belt buckle to a belt;

wherein the engagement means and the receiving means are oppositely disposed on the body in the direction substantially parallel to the first axis so as to orient the tool to be approximately parallel to the first axis.

5,609,281

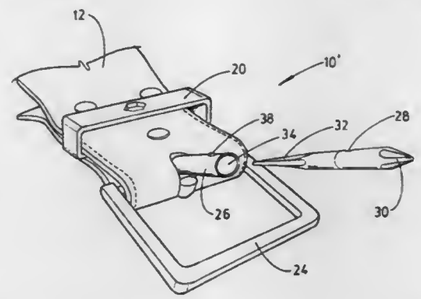
COMBINATION BELT AND TOOLS

Michael A. West, 1450 W. 228th St., Ste. 14, Torrance, Calif. 90501

Filed May 14, 1996, Ser. No. 649,119

Int. Cl.[6] A44B *11/00*

U.S. Cl. 224—163 **15 Claims**



1. A belt having a buckle removably secured thereto and comprising in combination:

said buckle being releasably secured to said belt and having at least one prong therein;

said prong having at least one screwdriver means with a specifically formed screwdriver head at an outer end thereof, away from said belt; said screwdriver head cooperates with a further portion of said buckle; and

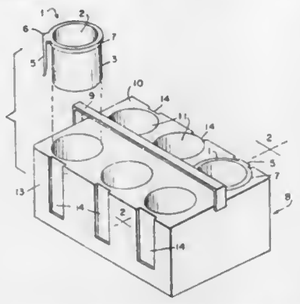
a belt loop, releasably carried on said belt adjacent to said belt buckle; said belt loop including at least one wrench means formed therein.

5,609,282

BELT-MOUNTED RECEPTACLES AND TOTE TRAY THEREFOR

Charles J. Mclanson, 1025 Staghorn St., West Palm Beach, Fla. 33414

Filed Jun. 12, 1995, Ser. No. 489,590
Int. Cl.[6] A45F *4/00;5/00*
U.S. Cl. 224—576 **14 Claims**



1. The combination of belt-mounted receptacles for carrying about supplies of small items and a tote tray therefor comprising:

(A) a plurality of rigid receptacles, each receptacle having an open, horizontal top, closed, substantially vertical sides, a closed bottom, and only one belt clip attached at an upper end thereof to said receptacle at only one location and extending downward closely adjacent to a vertical side exterior to said receptacle; and

(B) a tote tray having a planar horizontal upper surface supplied with more than two openings, one for each receptacle, each opening of a size and shape to closely correspond to a receptacle outline to receive therein only one of said receptacles with sufficient security to prevent capsizing of said receptacle, said tray having a carrying handle attached thereto and extending over said upper surface for stable carrying, said tray arranged to rest with stability upon a supporting surface when loaded with said receptacles when said receptacles are loaded with small items.

5,609,283

UTILITY BELT FOR PAINTERS AND METHODS

William E. Harrison, Jr., Norman, Okla., assignor to Dunlap & Codding, P.C., Oklahoma City, Okla.

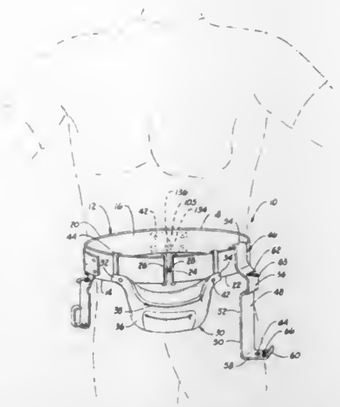
Filed Jun. 7, 1995, Ser. No. 472,094
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—678 **10 Claims**

1. A utility belt for holding a painting device, comprising:

a belt, said belt having an upper surface, a lower surface, and an outer periphery, said belt having a closure element, said belt capable of extending around the waist of an operator;

a holder for holding a painting device, the holder comprising an upper holding means having first and second spaced portions, a side holding means, a lower holding means and a retaining and releasing means, said retaining and releasing means disposed on the lower holding means and being compressible,

wherein the painting device comprises a handle having a lower handle section, a mid-handle section and an upper handle section,



wherein the lower handle section of the painting device is set adjacent the lower holding means and against the retaining and releasing means thereby compressing the retaining and releasing means,

wherein the mid-handle section of the painting device is pivotally moved adjacent and against the side holding means while the retaining and releasing means are compressed, and wherein the upper handle section is placed between the first and second portions of the upper holding means, and

wherein the retaining and releasing means compress and hold both the upper handle section of the painting device against the upper holding means and the lower handle section adjacent the lower holding means when the retaining and releasing means are in an uncompressed position, thereby holding and maintaining the painting device in the holder; and

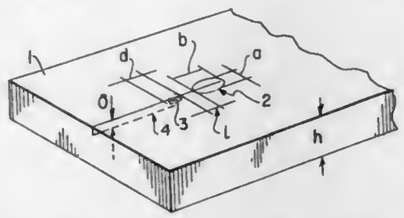
connecting means for connecting the holder to the belt, wherein any significant tug on the holder causes a disconnection of the connecting means from the belt.

5,609,284

METHOD OF SPLITTING NON-METALLIC MATERIALS

Vladimir S. Kondratenko, Moscow, Russian Federation, assignor to Fonon Technology Limited, London, England

Filed Sep. 30, 1994, Ser. No. 355,078
Claims priority, application Russian Federation, Apr. 2, 1992, 5030537
Int. Cl.[6] B23K *15/00;* **B26F** *3/16*
U.S. Cl. 225—1 **15 Claims**



1. A method of separating two portions of a body of brittle non-metallic material from each other including the step of forming a blind crack extending into the body to a given depth from a surface thereof, and in an intended direction along the surface, by effecting relative movement at a rate of relative displacement between the body and an elliptical target area on the surface thereof, said target area having a transverse minor axis and a longitudinal major axis, and being formed by directing an elliptical

beam of coherent radiation towards the surface, the elliptical beam incident on the surface forming a spot, the spot having a major axis aligned substantially along the intended direction of the crack, and controlling the energy of the beam so that the beam heats the surface to a temperature below the softening point of the material while simultaneously directing a stream of fluid coolant at an area of the heated surface which constitutes a cooling zone in the intended direction, the fluid coolant being displaced behind the heated target area by a chosen distance, wherein the rate of relative displacement between the beam and the body satisfies the equation:

$$V=ka(b+L)/\delta$$

where

V is the rate of relative displacement of the beam spot and the body;

k is a proportionality factor dependent on the thermophysical properties of the material of the body and a beam power density of the beam;

a is the length of said transverse minor axis;

b is the length of said longitudinal major axis;

L is the distance from the rear edge of the heat beam spot to the from edge of the cooling zone; and

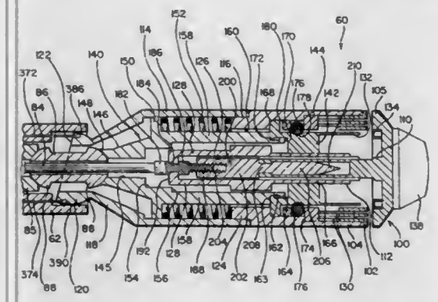
δ is the depth of the blind crack.

5,609,285

SURGICAL ANASTOMOSIS STAPLING INSTRUMENT WITH FLEXIBLE SUPPORT SHAFT AND ANVIL ADJUSTING MECHANISM

Richard L. Grant, Cincinnati, Ohio; Michael Lang, North Andover, Mass.; Philip J. Churchill, North Potomac, Md., and W. Thompson Lawrence, Lexington, Mass., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 189,346, Feb. 1, 1994, Pat. No. 5,439,156, which is a division of Ser. No. 71,280, Jun. 2, 1993, Pat. No. 5,312,024, which is a division of Ser. No. 832,299, Feb. 7, 1992, Pat. No. 5,271,543. This application Apr. 6, 1995, Ser. No. 417,586
Int. Cl.[6] A61B *17/115*
U.S. Cl. 227—179.1 **3 Claims**



1. A stapling head assembly for a circular anastomosis stapling instrument for applying a circular array of staples to tissue, comprising:

a staple holder for receiving a plurality of surgical staples arranged in a circular array;

an anvil for clamping the tissue against said staple holder and forming the staples;

an annular knife for cutting the tissue clamped between said anvil and said staple holder;

a driver assembly including a knife driver for advancing said annular knife to cut the tissue and a staple driver for advancing the staples from said staple holder into the tissue and against said anvil; and

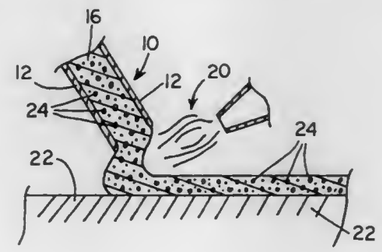
said driver assembly having a first stage of operation in which said staple driver and said knife driver are engaged and advanced together to drive the staples into the tissue, a second stage of operation in which the staple driver is disengaged from said knife driver when the tissue is cut, and a third stage of operation occurring after said second stage in which said staple driver engages with said knife driver to form the staples against said anvil.

5,609,286

BRAZING ROD FOR DEPOSITING DIAMOND COATING METAL SUBSTRATE USING GAS OR ELECTRIC BRAZING TECHNIQUES

Royce A. Anthon, 3909 W. 8700 South, West Jordan, Utah 84088

Filed Aug. 28, 1995, Ser. No. 520,160
Int. Cl.[6] C08J *5/14*
U.S. Cl. 228—56.3 **8 Claims**



1. A brazing rod for use in depositing an abrasive metal coating on a metal substrate, wherein the metal coating contains an abrasive material selected from the group consisting of diamond particles and mixtures of diamond particles and carbide particles, said brazing rod comprising

an elongate metal tube made of a metal selected from the group consisting of copper, bronze, brass, nickel, nickel alloys, iron, cobalt and steel; and

a brazing mixture contained in said metal tube, said brazing mixture comprising

a particulate abrasive material selected from the group consisting of diamond particles and mixtures of diamond particles and carbide particles; and

powdered braze alloy in which one component of the braze alloy is a member selected from the group consisting of nickel, nickel alloy, silver, silver alloy, gold, gold alloy, copper, copper alloy and mixtures thereof, and in which a second component of said braze alloy is selected from the group consisting of iron, iron alloy, cobalt, cobalt alloy, tin, tin alloy, boron, silicon, chromium, chromium alloy and mixtures thereof,

wherein (a) the diamond particles have been coated with a material selected from the group consisting of tungsten, molybdenum, chromium, nickel, iron, cobalt, palladium, tungsten carbide, molybdenum carbide, chromium carbide and iron carbide, and (b) the carbide particles are selected from the group consisting of tungsten carbide, molybdenum carbide and chromium carbide.

5,609,287

SOLDER MATERIAL, JUNCTIONING METHOD, JUNCTION MATERIAL, AND SEMICONDUCTOR DEVICE

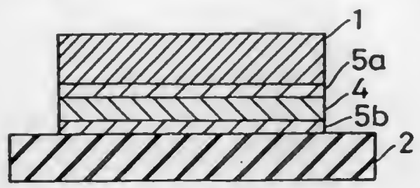
Goro Izuta, Amagasaki; Shunichi Abe, Itami; Yoshirou Nishinaka, Itami; Katsuyuki Fukutome, Itami; Naoto Ueda, Itami; Toshio Takeuchi, Itami; Yoshihiro Kashiba, and Masaaki Namatame, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 955,307, Oct. 1, 1992, Pat. No. 5,375,295. This application Nov. 8, 1994, Ser. No. 335,995

Claims priority, application Japan, Oct. 4, 1991, 3-257282; Jan. 7, 1992, 4-000662; May 26, 1992, 4-133468

Int. Cl.[6] H01L *21/58*

U.S. Cl. 228—123.1 **19 Claims**



1. A solder material comprising:

a first solder plate having a first surface, a second surface and a melting point; and

a pair of second solder plates having a thickness greater than 2 microns disposed on said first and second surfaces of said first solder plate, respectively, comprising a material selected from the group consisting of a material having a lower melting point than said first solder plate and a material which reacts with said first solder plate to produce an alloy having a lower melting point than said first solder plate, wherein said first solder plate and said pair of second solder plates each comprise an alloy of materials selected from the group consisting of lead, indium and tin, and wherein said pair of second solder plates further comprise materials selected from the group consisting of copper, zinc, cobalt and mixtures thereof.

5,609,288

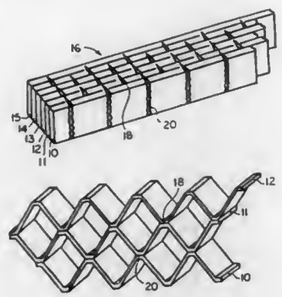
HONEYCOMB CORE STRUCTURE AND METHOD AND APPARATUS RELATING THERETO

Jeffrey D. Johnson, 5320 W. Main, Parsons, Kans. 67357

Division of Ser. No. 945,234, Sep. 14, 1992, Pat. No. 5,437,936, which is a continuation-in-part of Ser. No. 699,981, May 13, 1991. This application Jun. 6, 1995, Ser. No. 476,671

Int. Cl.[6] B23K *26/00;101/02*

U.S. Cl. 228—157 **10 Claims**



1. In a method for fabricating a sheet assemblage ultimately expansible into a honeycomb core structure, the steps of: locating first and second metallic foil sheets with their confronting surfaces in uniform, continuous engagement with each other; forming a plurality of first laser weld patterns between said first and second sheets, said weld patterns being characterized by longitudinal spacing and by termination of the weldments above the bottom surface of said first sheet; placing a third sheet in overlying and contacting relationship with said second sheet, creating longitudinally spaced second weld patterns between said third and second sheets, said second weld patterns being located between said first weld patterns and terminating above the bottom of said second sheet; and expanding said sheets to create a honeycomb core structure.

5,609,289

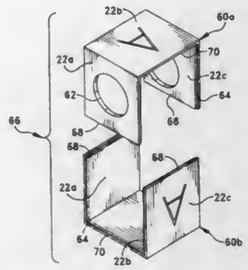
METHOD OF MAKING SQUARE JEWELRY BEADS

Ronald J. Boccanfuso, West Warwick, R.I., assignor to Precision Etchings & Findings, Inc., Warwick, R.I.

Filed Jun. 1, 1995, Ser. No. 456,549

Int. Cl.[6] B23K *1/008*

U.S. Cl. 228—173.6 **5 Claims**



1. A method for making an article of gold jewelry of hollow construction comprising the steps of:

(a) providing two thin, rectangular pieces of solder flush material, each piece having four peripheral edges each with a step formation formed therein;

(b) bending each piece to a U-shaped configuration so as to form a piece having a pair of parallel walls and a middle wall joining the parallel walls;

(c) assembling the two pieces together to create a hollow enclosed structure whereby the step formations of the peripheral edges of the two pieces interlock to form a continuous joint between the mating edges of the two pieces;

(d) inserting the assembled structure in a fixture having at least one opening sized for simply receiving the assembled structure therein for securely positioning the assembled structure in such a manner that abutting peripheral edges of the pieces engage one another, said mold being made from heat-resistant material;

(e) heating the fixture to a sufficient temperature so that the continuous joints between the assembled structure weld together for fixedly securing the two pieces together thereby forming an enclosed, hollow article of jewelry; and

(f) removing the article of jewelry from the fixture.

5,609,290

FLUXLESS SOLDERING METHOD

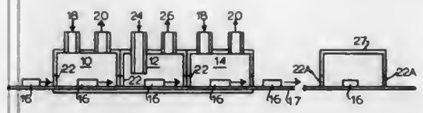
Stephen M. Bobbio, Wake Forest; Thomas D. DuBois; Farid M. Tranjan, Charlotte, all of N.C.; George K. Lucey, Jr., Burtonsville, Md.; James D. Geis, Cheshire, Conn.; Robert F. Lipscomb, Chapel Hill, and Timothy Piekarski, Charlotte; both of N.C., assignors to The University of North Carolina at Charlotte, Charlotte, N.C.

Filed Apr. 20, 1995, Ser. No. 425,864

Int. Cl.[6] B23K *1/20*

U.S. Cl. 228—206 **33 Claims**

1. A fluxless soldering method, comprising:



(a) selecting a strongly internally bonded fluorine-containing gas; and

(b) exposing a substance to be soldered to the strongly internally bonded fluorine-containing gas at a temperature of about 10°–250° C., wherein said method results in a treatment of said substance which enables solder to be reflowed on a surface at a later time, wherein the surface is selected from the group consisting of solder precoated on a surface, tin, copper and gold.

5,609,291

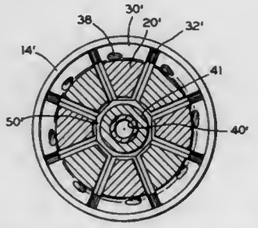
EXPANDABLE TOOL FOR HOLDING AND ALIGNING PIPES TO BE WELDED

Jon C. Hummel, 210 W. Front St., Perrysburg, Ohio 43551

Continuation-in-part of Ser. No. 370,807, Jan. 10, 1995, Pat. No. 5,538,173. This application Apr. 20, 1995, Ser. No. 425,903

Int. Cl.[6] B23K *37/053*

U.S. Cl. 228—212 **10 Claims**



1. An expandable tool for axially aligning and holding pipes during the welding of the abutting ends of the pipes including:

an annular array of radially movable gripping members for engagement with and alignment of the pipes to be welded, said members cooperating to define a predetermined zone adjacent inner surfaces of the ends of the pipes to be welded, said members provided with passageways to establish communication between a source of gas and the predetermined zone, the outwardly facing surfaces of said members formed with at least one peripherally aligned groove; and

means for selectively radially moving said gripping members.

5,609,292

MANUFACTURING CIRCUIT BOARDS USING A PICK AND PLACE MACHINE

Harold Kohn, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 182,902, Jan. 14, 1994, abandoned, which is a division of Ser. No. 985,397, Dec. 4, 1992, Pat. No. 5,303,824. This application May 24, 1995, Ser. No. 449,632

Int. Cl.[6] H05K *3/34*

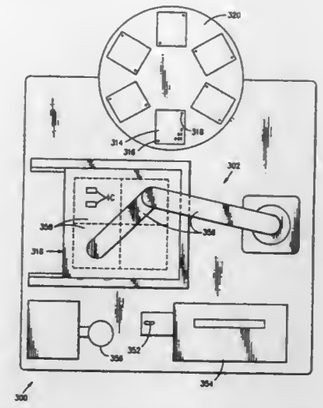
U.S. Cl. 228—246 **7 Claims**

1. A process for operating a pick-and-place machine, manufacturing circuit board assemblies, comprising:

providing at least one holder containing a two dimensional array of solder preforms in a stationary position on the machine;

providing a circuit board with a two dimensional array of component positions, in a stationary position in the machine;

automatically vacuum picking a plurality of respective preforms up from the holder and placing the preforms at component positions on the circuit board;



automatically picking up components and placing the components over the respective preforms;

removing the circuit board from the machine;

heating the circuit board, preforms, and components sufficient to melt the solder preforms for reflow soldered connection of the components to the circuit board; and

cooling the circuit board.

5,609,293

LINED AND COATED CORRUGATED PAPERBOARD PACKAGE SYSTEMS FOR MODIFIED ATMOSPHERE PACKAGING OF FRESH FRUITS AND VEGETABLES

Chiu H. Wu, Vancouver, Canada; Juhani I. Oikarinen, Lahti, Finland; William D. Powrie, North Vancouver, Canada, and Hannu K. Tykkaelae, Helsinki, Finland, assignors to The University of British Columbia, Vancouver, Canada

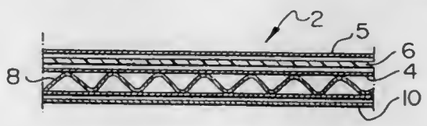
PCT No. PCT/CA93/00168, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO93/22138, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 20, 1993, Ser. No. 325,376

Claims priority, application Canada, Apr. 27, 1992, 2067256

Int. Cl.[6] B65D *81/24*

U.S. Cl. 229—3.5 R **14 Claims**



1. A modified atmosphere box or carton for packaging and extending the freshness of fresh produce comprising a sandwich-type plastic-paperboard complexity comprising in sequence from the interior to the exterior:

(a) a first layer of polymeric film;

(b) a second layer of kraft paper adjacent the first layer;

(c) a third layer of kraft paper corrugated flute adjacent the second layer; and

(d) a fourth layer of kraft paper adjacent the third layer; wherein the body of the box or carton is constructed of a complexity comprising:

(i) a rectangular base;

(ii) a first rectangular side flap on one side of the base joined to the side of the base by a fold line;

(iii) a first rectangular flange joined by a fold line to the first rectangular side flap on the side removed from the base;

(iv) a second rectangular side flap on the side of the base opposite to the first flap joined to the side of the base by a fold line;

(v) a second rectangular flange joined by a fold line to the second rectangular side flap on the side removed from the base;

(vi) a rectangular end flap on one end of the base joined to the end of the base by a fold line;

(vii) a first rectangular end flange joined by a fold line to the first rectangular end flap on the side removed from the body;

(viii) a second rectangular end flap on the end of the base opposite the first end flap joined to the end of the base by a fold line;

(ix) a second rectangular end flange joined by a fold line to the second end flap on the side removed from the body; and

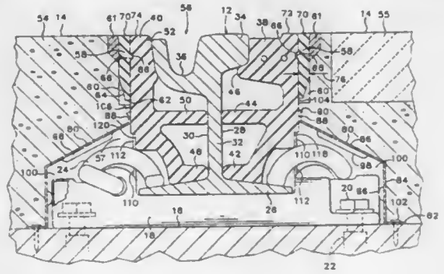
(x) fold lines formed in the exterior corners of the first and second end flanges removed from the body; said box or carton being sealed airtight at all intersections and joints, the walls of said box or carton having an oxygen permeability of about 800 to 28,000 mL/m²/24 hr./25° C.

5,609,294

RAILROAD TRACK ASSEMBLY AND METHOD

Joseph Lucas, Jr., 25023 NW. Oak Island Rd., Portland, Oreg. 97231

Filed Jul. 21, 1995, Ser. No. 505,381
Int. Cl.[6] P01B *1/00*
U.S. Cl. 238—9 **24 Claims**



1. A railroad track assembly, comprising:

(a) a track foundation located below grade level of a paving structure located adjacent said track assembly;

(b) a plurality of rail support bodies spaced apart from one another on said track foundation;

(c) an elongate rail having a pair of opposite sides and including a base flange resting atop said plurality of rail support bodies, a web extending upwardly from said base flange, and a head located atop said web;

(d) a plurality of attachment devices fastening said rail to said rail support bodies;

(e) a pair of preformed elastomeric filler bodies each located alongside a respective one of said opposite sides of said rail and in contact with said base flange, said web, and said head of said rail; and

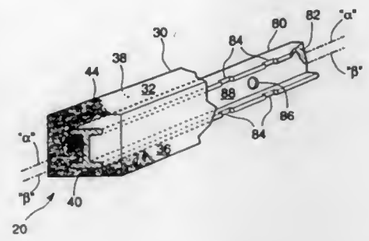
(f) a cap resting on said foundation adjacent a respective one of said rail support bodies and defining a cavity over said attachment device of a respective one of said rail support bodies, said cap having an upper margin thereof resting against a respective one of said filler bodies, and said cap also including a lower margin fastened to said foundation, a side extending upward from said lower margin, and a top extending diagonally upward from said side toward said filler body.

5,609,295

COMPOSITE RAILWAY TIE AND METHOD OF MANUFACTURE THEREOF

Denis C. Richards, Mississauga, Canada, assignor to Green Track Inc., Bolton, Canada

Filed Jan. 5, 1995, Ser. No. 368,903
Int. Cl.[6] E01B *3/36*
U.S. Cl. 238—84 **15 Claims**



1. A composite railway tie, comprising:

a main body portion having a top surface, a bottom surface, first and second side surfaces, first and second ends, and a first longitudinal axis oriented along the length of said tie;

wherein said main body portion is made of a first composite material comprising a binding constituent in a proportion of about 10% to about 20% by volume, and an aggregate material in a proportion of about 80% to about 90% by volume;

wherein said binding constituent in said main body portion comprises a plastic material chosen from the group of polyethylene and a polyethylene blend having at least 10% polyethylene;

wherein said aggregate material is in the form of irregular multi-faceted pieces chosen from the group consisting of crushed furnace slag, crushed gravel, crushed limestone, crushed granite, crushed basalt, and crushed trap rock, and mixtures thereof; and

wherein the pieces of said aggregate material are distributed and otherwise arranged within said main body portion so that opposed surfaces of said pieces of aggregate material have at least partial contact, one with another, in a contiguous manner.

5,609,296

WATER FEED DEVICE FOR HUMIDIFICATION AND AIR CONDITIONING APPARATUS INCORPORATING THE SAME

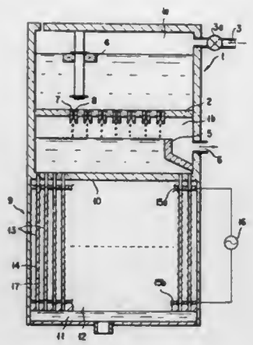
Toshihide Imamura; Kanichi Kadotani; Bunji Hayakashi; Hisaakira Imaizumi; Tetsuo Shakushi; Toshihiko Matsumoto, and Genichiro Watanabe, all of Kanagawa-ken, Japan, assignors to Komatsu, Ltd., Tokyo, Japan

PCT No. PCT/JP94/01336, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/05563, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 11, 1994, Ser. No. 537,865
Claims priority, application Japan, Aug. 12, 1993, 5-200741; Aug. 12, 1993, 5-200752
Int. Cl.[6] A24F *25/00*; F24F *6/08*
U.S. Cl. 239—43 **3 Claims**

1. A water feed device for humidification, comprising:

an outflow reservoir that is disposed above a humidifier for feeding water into said humidifier by way of a permeation and that is provided with an overflow dam for maintaining a level of the water in said outflow reservoir substantially constant;

an inflow reservoir that is disposed upwards of said outflow reservoir and that is provided with a flow inlet;



a partition plate that is disposed between said inflow reservoir and said outflow reservoir; and

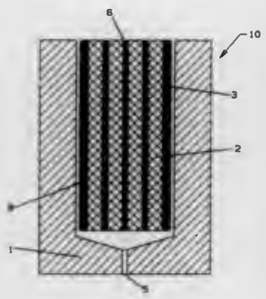
a plurality of drip feed members which are provided in said partition plate for allowing the water in said inflow reservoir to drop by gravity in a form of droplets into said outflow reservoir.

5,609,297

FUEL ATOMIZATION DEVICE

Herbert Gladigow, and Wolfgang Schaetzing, both of Magdeburg, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 11, 1995, Ser. No. 420,267
Claims priority, application Germany, Apr. 12, 1994, 44 12 448.1
Int. Cl.[6] B05B *1/24*; F02M *31/125*
U.S. Cl. 239—135 **6 Claims**



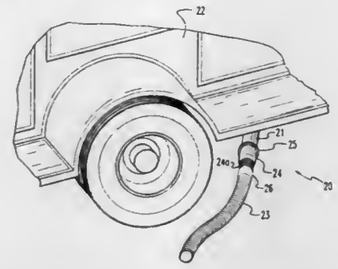
1. A device for the atomization of fuel for a combustion engine adapted for use with an injector of a fuel injection system comprising a housing having a fuel inlet orifice and a fuel outlet orifice and a fuel passage means for connecting said inlet and outlet orifices, heating elements contained within said housing, contact baffle means for supplying electric power to said heating elements, said contact baffle means forming a plurality of narrow restricting cavities directly adjacent said heating elements for increasing the pressure of the fuel flowing in said housing along with heating of said fuel so as to produce atomized fuel upon exiting from said outlet orifice.

5,609,298

EXHAUST NOZZLE ASSEMBLY FOR AN EXHAUST EXTRACTION SYSTEM

William J. Hyslop, 7708 Graham Rd., Indianapolis, Ind. 46250

Filed Nov. 3, 1995, Ser. No. 552,914
Int. Cl.[6] B05B *15/00*
U.S. Cl. 239—289 **21 Claims**



1. A magnetically-attached nozzle assembly adapted to be used on a vehicle exhaust pipe as part of an exhaust extraction system, said nozzle assembly comprising:

a nozzle locator ring constructed and arranged to fit onto a vehicle exhaust pipe, said nozzle locator ring including an end wall and an outer wall; and

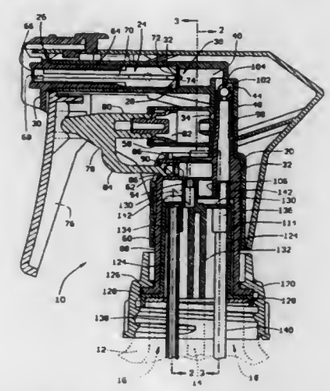
an exhaust nozzle constructed and arranged with an inside surface which fits around said outer wall, said exhaust nozzle including a magnet housing attached to said inside surface and being constructed and arranged to magnetically contact a vehicle exhaust pipe.

5,609,299

BOTTLE ADAPTER FOR DUAL PISTON TRIGGER SPRAYER

Donald D. Foster, St. Charles; Martin S. Laffey, O'Fallon, and John A. Zurcher, St. Charles, all of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 349,741, Dec. 5, 1994. This application Jun. 7, 1995, Ser. No. 476,637
Int. Cl.[6] B05B *9/043*; B67D *5/52*
U.S. Cl. 239—304 **25 Claims**



1. An adapter for use in a liquid dispenser configured to dispense at least two liquid substances from at least two separate container volumes to which the dispenser may be attached, the liquid dispenser having an orifice through which the liquid substances are dispensed and at least one pump chamber for drawing the liquid substances from the separate container volumes and dispensing the substances through the orifice, the adapter comprising:

a plurality of outlet passage portions positioned on the adapter to convey liquid from the adapter to the liquid dispenser, each of the outlet passage portions has a center axis;

a plurality of inlet passage portions positioned on the adapter to convey liquid from the at least two separate container volumes to the adapter, each of the inlet passage portions has a center axis; and

a plurality of intermediate passage portions positioned on the adapter to convey liquid from the plurality of inlet passage portions to the plurality of outlet passage portions, each of the intermediate passage portions has a center axis and at least one of the intermediate passage center axes is oriented at an angle relative to at least one of the inlet passage center axes.

5,609,300

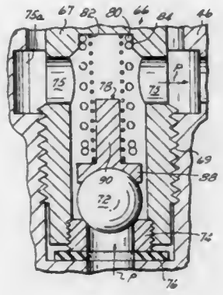
AIRLESS PAINT SPRAYER OUTLET CHECK VALVE

Roger Conatser, Franklin, Tenn., assignor to Campbell Hausfeld/Scott Fetzer Company, Westlake, Ohio

Continuation-in-part of Ser. No. 370,159, Jan. 9, 1995. This application Apr. 5, 1995, Ser. No. 417,096

Int. Cl.[6] B05B *9/04*

U.S. Cl. 239—332 **19 Claims**



10. An outlet for a pump of an airless paint sprayer having a suction tube supplying paint from a paint source through the pump to a spray nozzle, the outlet comprising:

a valve being biased toward a closed position to prevent paint from flowing through the outlet, paint being permitted to flow through the outlet when said valve is in an open position; and

a first spring engaging said valve in said open position and biasing said valve toward said closed position,

wherein said valve is biased toward said closed position when in said open position at a greater rate than when said outlet check valve is in said closed position.

5,609,301

CERAMIC OXY-GAS TORCH TIP

Thomas M. Burke, deceased, late of Los Gatos, Calif.; by Bernadette M. Burke, administrator, 259 More Ave., Los Gatos, Calif. 95030, and Dale L. Dickeson, 2873 LaJolla Ave., San Jose, Calif. 95124

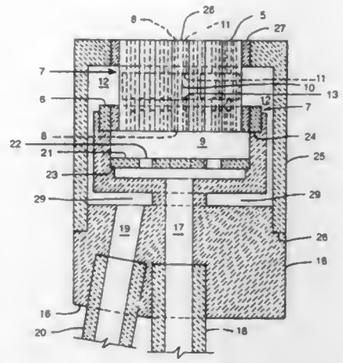
Division of Ser. No. 462,208, Jun. 5, 1995, Pat. No. 5,502,894, which is a continuation-in-part of Ser. No. 234,844, Apr. 28, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,590

Int. Cl.[6] F23D *11/10*

U.S. Cl. 239—423 **5 Claims**

1. A ceramic dual-gas externally mixing torch tip comprising:

a ceramic body including a multiplicity of intimately adjacent gas emission bores, said ceramic body consisting of clustered ceramic tubes of substantially equal length, each of said tubes having an upper and a lower end and a multiplicity of through bores extending between said upper and lower ends, said



through bores and selected upper interstices between the upper ends of the clustered tubes forming said gas emission bores;

a sealed ceramic housing having two isolated gas chambers with respective gas supply ports for respectively supplying separate pressurized gases to said chambers and housing said ceramic body such that said gas emission bores are in communication with said chambers and exit to ambient for external mixing of the separate pressurized gases issuing therefrom;

wherein selected of said tubes have side notches therein, said side notches exposing a predetermined number of said bores of each of said selected tubes and effectively dividing portions of each of said selected tubes into upper and lower tube portions, with the bores of the lower tube portions, all interstices between the clustered tubes at their lower ends, and a number of interstices between the clustered tubes at their upper ends being sealed off, leaving said side notches, said selected upper interstices, and interstices intermediate said upper and lower ends of said tubes open and intercommunicative, said notches, said intermediate interstices, said selected upper interstices, and the bores of said upper tube portions of said selected tubes being exposed to said one of said chambers, and all other through bores in the clustered tubes being exposed to said other of said chambers.

5,609,302

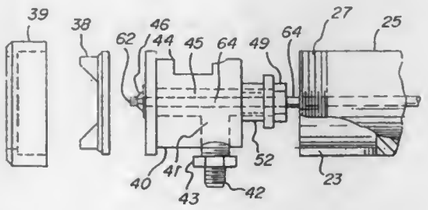
REMOVABLE SPRAY GUN FLUID FLOW ASSEMBLY

William C. Smith, 7701 Whiterim Ter., Potomac, Md. 20854

Filed Apr. 19, 1995, Ser. No. 425,083

Int. Cl.[6] B05B *15/02;7/12*

U.S. Cl. 239—526 **2 Claims**



2. In a spray gun of the class wherein the flow of pressurized fluid through a fluid flow assembly located in the spray gun barrel is controlled by a needle valve which interacts with a nozzle, and whose needle valve shaft passes through a packing gland in said fluid flow assembly, and which needle valve is controlled by a trigger, the improvement comprising:

a fluid flow assembly which is removable for cleaning,

said fluid flow assembly comprising a fluid flow block having a fluid reservoir fitting for attachment of a fluid reservoir, a right angle passage through which fluid flows, a nozzle attached to the fluid flow block, a needle valve bore which pierces the fluid flow block for accommodation of a needle valve shaft, a cylindrical extension located at the rear of the fluid flow block and a packing gland in the cylindrical extension for sealing a needle valve shaft, and,

a packing gland adjustment means located external to the spray gun barrel.

5,609,303

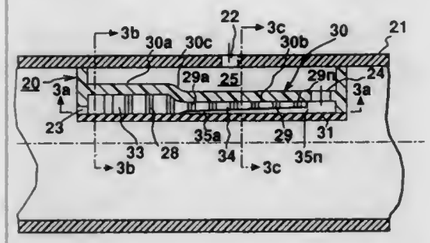
REGULATED FLOW RESTRICTOR DEVICE PARTICULARLY USEFUL AS A DRIP IRRIGATION EMITTER

Amir Cohen, Yuvalim, 20 142 Doar Na Gush Segev, Israel

Continuation of Ser. No. 99,509, Jul. 30, 1993, Pat. No. 5,400,973. This application Nov. 28, 1994, Ser. No. 348,852 Claims priority, application Israel, Jun. 20, 1994, 110062; Jul. 15, 1994, 110337

Int. Cl.[6] B05B *15/00*

U.S. Cl. 239—542 **23 Claims**



1. A fluid flow control device, comprising:

a housing including an inlet connectible to a source of pressurized fluid, an outlet, and a flow control passageway connecting said inlet to said outlet;

said flow control passageway including a plurality of baffles and a deformable elastomeric membrane defining therewith a labyrinth passageway having a plurality of clearances with respect to the baffles which said clearances are sequentially closed by the deformation of the elastomeric membrane with increasing pressure at the housing inlet to maintain a substantially uniform flow to and through the housing outlet in response to variations in the pressure of the water at the housing inlet;

said clearances being sequentially closed in the direction from said housing outlet towards said housing inlet with said increasing pressure.

5,609,304

ELECTROMAGNETIC TYPE FUEL INJECTION VALVE

Isamu Sasao, Kakuda, Japan, assignor to Keihin Seiki Manufacturing Co., Ltd., Japan

Filed Dec. 29, 1994, Ser. No. 366,412

Claims priority, application Japan, Dec. 29, 1993, 5-350696

Int. Cl.[6] F02M *51/06*

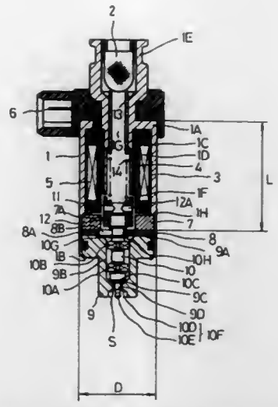
U.S. Cl. 239—585.4 **6 Claims**

1. An electromagnetic type fuel injection valve comprising:

a cylindrical housing having an opened tip end, a bottom and a stationary core extending from said bottom toward said opened tip end;

an annular yoke positioned in a vicinity of the opened tip end of the housing, and magnetically coupling with the housing **1**;

a coil positioned in a space defined by the housing, the stationary core and the yoke;



a valve seat piece formed with a valve seat arranged at a tip end side of said yoke and to be opened and closed by a valve portion formed at a tip end of a needle valve and a metering-and-injecting aperture continuous with said valve seat and opening toward said opened tip end; and

a movable plunger located at a rear end of the needle valve and opposing to a tip end of the stationary core,

a flow rate at which a fuel is injected from the fuel injection valve when fully opened is 20 L/H with the fuel metering-and-injection aperture having a maximum effective injection area of 0.3 mm^2; and

a product (L×D) of a longitudinal length (L) of a magnetic path formed by the housing and the yoke and a diameter D crossing the longitudinal length L ranging from 1.8 cm^3 to 3.6 cm^3.

5,609,305

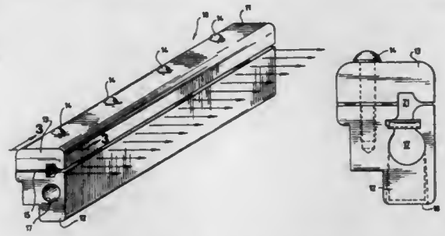
APPARATUS FOR PROVIDING AN AIR CURTAIN

Richard Webb, Fairfield, Ohio, assignor to Vortec Corporation, Cincinnati, Ohio

Filed Sep. 19, 1994, Ser. No. 308,662

Int. Cl.[6] B05B *1/04*

U.S. Cl. 239—590.3 **11 Claims**



1. An apparatus for providing a thin, continuous film of jetting gas fluid, said apparatus comprising: an elongate body member defining a first elongate plenum chamber for receiving compressed fluid, inlet opening means for providing fluid communication between the first plenum chamber and the outside of the body member, said first plenum chamber receiving compressed fluid through said inlet opening means, a second elongate plenum chamber for receiving compressed fluid from the first plenum chamber, passageway means disposed between the first and second plenums for conveying compressed fluid from the first plenum chamber to the second plenum chamber, and outlet opening means for providing fluid communication between the second plenum chamber and the outside of the body member, said second plenum chamber discharging the fluid through said outlet opening means, said outlet opening means restricting the flow of the fluid as it discharges; said

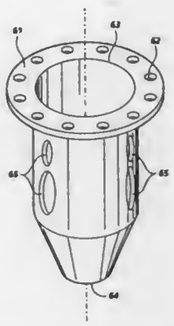
body member including a base segment, a cap segment, and securing means for securing the two segments together; edge portions of the two segments defining opposite surfaces of the outlet opening and an outer face of the body member adjacent the outlet opening from which the gas fluid discharges outwardly of the body; outer portions of the opposite surfaces of the outlet opening being flat and generally parallel to one another and the outer face adjacent the outlet opening being generally flat without any overhanging portions proximate the opening; said securing means maintaining the surfaces of the outlet opening at a predetermined position.

5,609,306

EDUCTOR LINER ARTICLE AND METHOD OF USE

Larry D. Siegel, Fairport, and Robert R. Heim, East Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1994, Ser. No. 327,734
Int. Cl.[6] B05B *1/00*
U.S. Cl. 239—591 **14 Claims**



1. An eductor liner article comprising: a flexible and substantially cylindrically shaped sleeve member with upstream and downstream ends wherein the sleeve member has at least one side wall opening, and a flange collar member outwardly oriented and integrally and perpendicularly attached at an internal edge surface to the upstream end of said sleeve member, wherein said flange collar member is adapted to anchor the liner within an eductor joint, and wherein the liner eliminates or substantially reduces the deposition and accumulation of particulate material contained in a continuous flow particulate process stream educing through an eductor member in the vicinity of the eductor joint.

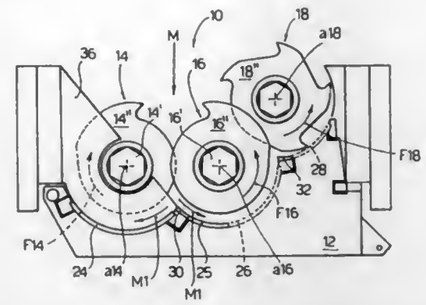
5,609,307

SHREDDING APPARATUS WITH ROTATING ROLLERS EQUIPPED WITH NON-PERFORATED CURVED PLATES COAXIAL WITH THE ROLLERS

Fabio Rota, Milan, Italy, assignor to Satrind s.r.l., Milan, Italy

Filed Feb. 22, 1995, Ser. No. 394,263
Claims priority, application Italy, Mar. 10, 1994, MI94A0444
Int. Cl.[6] B02C *18/22*
U.S. Cl. 241—73 **10 Claims**

1. An apparatus for shredding material comprising:
a frame,
rotating shredding rollers with a substantially horizontal axis within the frame,
the rollers comprising toothed disk type blades spaced out axially along drive shafts,
at least two of the rollers cooperating with each other such that, for each one of the at least two cooperating rollers, blades thereof enter into spaces between two blades of another one of the at least two cooperating rollers,



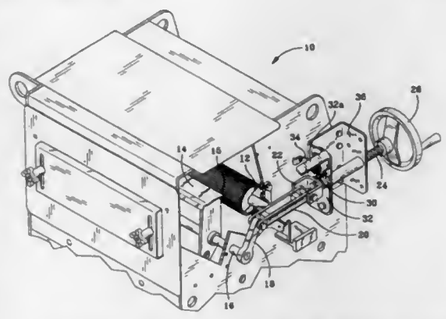
a grille beneath at least the at least two cooperating rollers, at a distance from and coaxial therewith, the grille comprising axially extending portions of non-perforated plate and one or more axially extending portions of perforated plate, adjacent to the non-perforated portions, disposed beneath a portion of the at least two cooperating rollers, at a distance from edges of the at least two cooperating rollers and having curved surfaces coaxial with the at least two cooperating rollers, the non-perforated portions extending beneath at least one of the at least two cooperating rollers through an arc of at least 30°,
wherein the rollers include three rollers with parallel axes, two of the rollers being cooperating rollers rotating in opposite directions, rotating at different speeds from each other and a third of the rollers being situated above and to a side of a faster of the two cooperating rollers, wherein the non-perforated portions are situated beneath the slower of the two cooperating rollers and beneath a portion of the faster of the two cooperating rollers, and wherein the whole portion beneath the slower roller of the at least two cooperating rollers is non-perforated.

5,609,308

FINE ADJUSTMENT/QUICK ACTING MANUAL ACTUATOR FOR ROLLER MILL FEED GATES

Kelsey C. Thom, Jr., Cedar Falls, and Heath L. Hartwig, Waterloo, both of Iowa, assignors to California Pellet Mill Company, Nashua, N.H.

Filed Oct. 16, 1995, Ser. No. 543,431
Int. Cl.[6] B02C *4/28*
U.S. Cl. 241—301 **9 Claims**



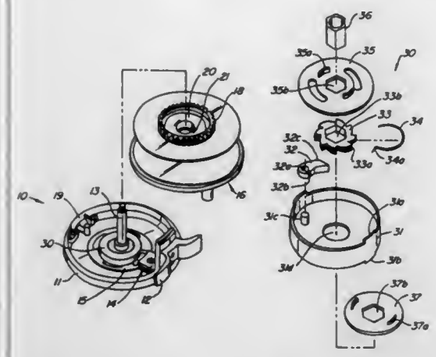
1. An apparatus for adjusting a feed gate, the apparatus comprising:
a feed gate;
a lever actuator;
a threaded rod threadedly engaging the lever actuator;
a means for disengaging the lever actuator from the threaded rod; and
a means for connecting the threaded rod to the feed gate.

5,609,309

FLY REEL DRAG DIRECTION CHANGER WITH A RATCHET MECHANISM

Chul S. Oh, Seoul, Rep. of Korea, assignor to Shin A Sports Co., Ltd., Inchon, Rep. of Korea

Filed Jul. 3, 1995, Ser. No. 498,297
Claims priority, application Rep. of Korea, Apr. 20, 1995, 95U-8041
Int. Cl.[6] A01K *89/015*
U.S. Cl. 242—282 **3 Claims**



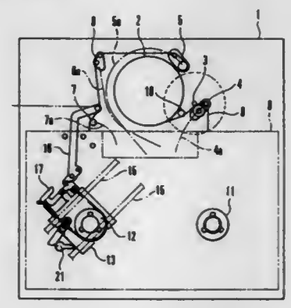
1. A fly reel having a spool rotatably fitted over a frame shaft, a drag disc selectively rotating only when the spool is rotated in a given direction, a drag power controller restricting the rotation of said drag disc to restrict the rotation of the spool in the given direction, and a drag direction changer rotatably fitted over the frame shaft between the drag disc and the spool, rotating the drag disc only when the spool is rotated in the given direction and changing the rotational direction of the drag disc in accordance with a right-handed fisherman and left-handed fisherman by being fitted over the frame shaft in both a normally fitted position and an inversely fitted position, wherein said drag direction changer comprises:
a ratchet member having a ratchet gear part formed on the circumference of the ratchet member, a circular silent cam slot formed on the circumference of the ratchet member, and a first coupling means for coupling the ratchet member to the spool and enabling the ratchet member to be rotated along with the spool in opposite directions;
a silent cam frictionally received in said silent cam slot such that said silent cam is rotated along with the ratchet member due to friction but simply slides in the silent cam slot when the friction is overcome, said silent cam having an arm radially extending toward the circumference of the ratchet member;
a stopper having a recess for receiving the arm of the silent cam such that the stopper is rotated between a ratchet engaging position and a ratchet releasing position in accordance with the rotating direction of the ratchet member; and
a rotatable coupling wheel on which said stopper is mounted rotatably between the ratchet engaging position and the ratchet releasing position such that the rotatable coupling wheel is selectively rotated along with the ratchet member in the ratchet engaging position only, said rotatable coupling wheel having a second coupling means for coupling the rotatable coupling wheel to the drag disc such that the rotatable coupling wheel is rotated with the drag disc in both the normally fitted position and the inversely fitted position, said rotatable coupling wheel comprising a cylindrical housing having an open top and including a bottom plate with an inner side, an outer side, a center opening and a side wall having top and bottom edges;
said first coupling means of the ratchet member further comprising:
at least one coupling hole formed on a bottom surface of the spool facing the drag disc;
top and bottom cover plates, each cover plate having at least one coupling projection which is engageable with the coupling hole of the spool, and a center coupling hole; and
a hollow rotating shaft rotatably fitted between the frame shaft and the center opening of the rotatable coupling wheel and adapted for coupling the ratchet member and the top and bottom cover plates to each other in their center coupling holes such that the top cover plate and the ratchet member are disposed on the inner side of the bottom plate of the rotatable coupling wheel and the bottom cover plate is disposed on the outer side of the bottom plate of the rotatable coupling wheel and the ratchet member and the top and bottom cover plates are rotatable relative to the rotatable coupling wheel; and
said second coupling means of the rotatable coupling wheel further comprising:
at least one coupling hole formed on said drag disc; and
at least one coupling projection formed on the top and bottom edges of the side wall of said rotatable coupling wheel such that said at least one of the coupling projections is engaged with said at least one of the coupling holes of the drag disc so as to rotate the drag disc.

5,609,310

RECORDING AND/OR REPRODUCING APPARATUS HAVING A TAPE TENSION CONTROL DEVICE

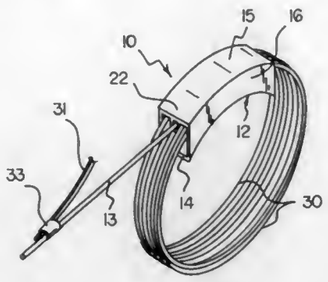
Junji Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 326,695, Oct. 20, 1994, abandoned.
This application Jul. 29, 1996, Ser. No. 681,609
Claims priority, application Japan, Oct. 29, 1993, 5-294690
Int. Cl.[6] B65H *59/38;* **G11B** *15/46;23/04*
U.S. Cl. 242—334.6 **23 Claims**



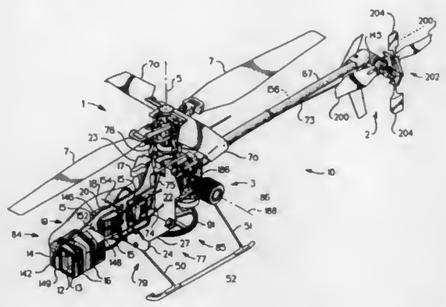
1. An apparatus capable of selectively loading cassettes of different sizes each containing a tape therein, comprising:
a) a first base on which a reel mount and a brake mechanism operable to apply a braking force to said reel mount are disposed;
b) a second base arranged to support said first base to allow for linear movement of said first base into a plurality of positions corresponding to the different sizes of cassettes loadable on the apparatus;
c) a tension detecting mechanism disposed on said second base and arranged to detect the tension of a tape pulled out from a cassette loaded on said apparatus; and
d) control means for selectively diversely interrelating said brake mechanism and said tension detecting mechanism such that said brake mechanism is operable to apply braking force to said reel mount when said first base takes each of the plurality of positions.

5,609,311
COILING APPARATUS
James W. Palm, 340 Bastian Dr., Sugar Grove, Ill. 60554
Filed Oct. 13, 1995, Ser. No. 543,141
Int. Cl.[6] B65H *75/36*
U.S. Cl. 242—405.1 6 Claims



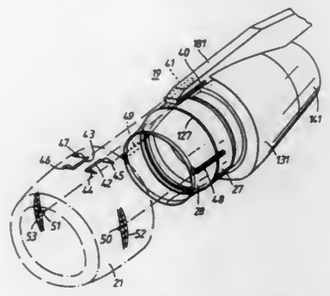
1. A coiling apparatus, comprising:
a storage tube assembly which includes a bottom portion, a top portion, and a pair of side wall portions connected between said bottom portion and said top portion, and
a guide assembly connected to an inside surface of said storage tube assembly,
wherein said guide assembly is positioned along a mid-portion of said top portion of said storage tube assembly.

5,609,312
MODEL HELICOPTER
Paul E. Arlton, and David J. Arlton, both of 1132 Anthrop Dr., West Lafayette, Ind. 47906
Continuation-in-part of Ser. No. 233,159, Apr. 25, 1994, which is a continuation-in-part of Ser. No. 770,013, Sep. 30, 1991, Pat. No. 5,305,968. This application Aug. 18, 1994, Ser. No. 292,718
Int. Cl.[6] B64C *1/14;27/06;27/82;25/52*
U.S. Cl. 244—17.11 92 Claims



1. A fuselage structure for use on a model helicopter, the fuselage structure comprising
a longitudinally extending elongated keel having a front, middle, and rear portion and means for supporting a canopy, landing gear, flight control system, and drive train, the supporting means including a support frame having a laterally extending floor arranged to lie perpendicular to the elongated keel, the floor having a forward end facing toward the front portion of the elongated keel and a rearward end facing toward the rear portion of the elongated keel, respectively, a front bulkhead appended to the elongated keel and the forward end of the floor, and a firewall appended to the elongated keel and the rearward end of the floor.

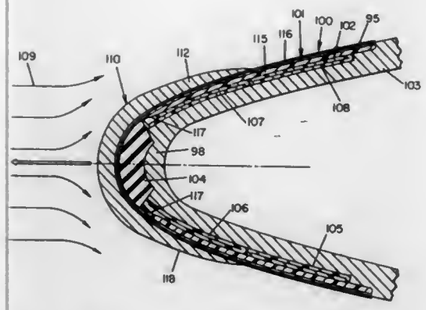
5,609,313
AIRCRAFT PROPULSIVE POWER UNIT
Derek Cole, Bangor; Philip D. Sherry, Larne, and Alan J. Blair, Holywood, all of Ireland, assignors to Short Brothers PLC, Belfast, Ireland
PCT No. PCT/GB94/00131, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO94/16945, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 24, 1994, Ser. No. 307,722
Claims priority, application United Kingdom, Jan. 26, 1993, 9301457
Int. Cl.[6] B64D *29/00*
U.S. Cl. 244—54 24 Claims



1. An aircraft propulsive power unit comprising an engine, a nacelle structure housing the engine and having a forward nacelle portion and a rearward nacelle portions the rearward end of the forward nacelle portion in an operational position of the forward nacelle portion adjoining the forward end of the rearward nacelle portion and the forward end of the forward nacelle portion including an intake opening leading to an intake barrel upstream of the engine for the supply of intake air to the engine, the unit including support means to support the forward nacelle portion while permitting it to be moved on the support means from the operational position to a forward position in which it is supported by the support means forwardly of the operational position to provide access to components of the power unit which are inaccessible with the forward nacelle portion in the operational position, the engine being a turbofan engine including a ducted fan installation enclosed by a fan case which is inaccessible with the forward nacelle portion in the operational position and to which access is gained by movement of the forward nacelle portion on the support means to the forward position.

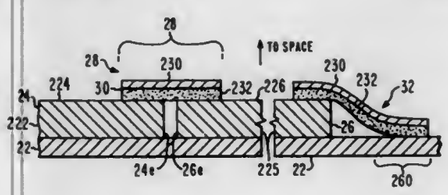
5,609,314
SKIN FOR A DEICER
Richard L. Rauckhorst, III, North Canton, and Kevin L. Leffel, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Division of Ser. No. 253,027, Jun. 2, 1994. This application Jun. 7, 1995, Ser. No. 485,751
Int. Cl.[6] B64D *15/00*
U.S. Cl. 244—134 A 26 Claims

1. A deicer for attachment to an airfoil comprising from top to bottom:
a primary layer comprised of a first fabric impregnated with a nitrile phenolic resin;
a backing layer comprised of a second fabric impregnated with an epoxy resin; and,
distortion means for distorting said primary layer in order to impose strain in ice accumulated thereon,



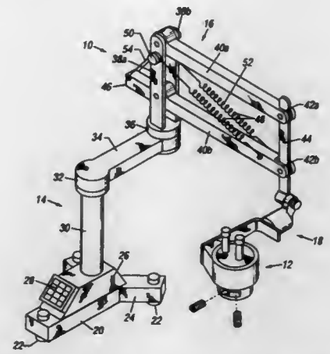
wherein said primary and backing layers transfer force with increased resistance to fatigue.

5,609,315
THERMAL BLANKET JOINING TAPE
Albert Lepore, Jr., Upper Holland, Pa., assignor to Martin Marietta Corp., Fast Windsor
Filed Mar. 13, 1995, Ser. No. 402,674
Int. Cl.[6] B64G *1/00;* B32B *7/12*
U.S. Cl. 244—163 3 Claims



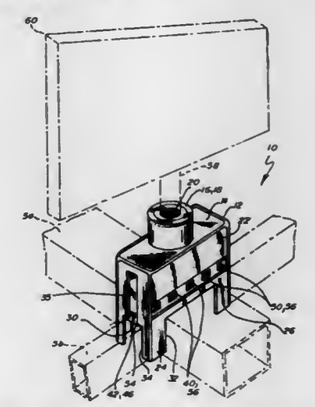
1. A spacecraft, comprising:
a body to be protected from insolation;
a first thermal sheet of polyimide material defining first and second broad sides, said first broad side being placed adjacent to a portion of said body for protecting said portion of said body from insolation, said first thermal sheet being opaque as seen from the spacecraft, and also having a transparent, conductive coating on said second broad side thereof;
a second thermal sheet of polyimide material defining first and second broad sides, said first broad side of said second sheet being placed adjacent to a portion of said body for protecting said portion of said body from insolation, and adjacent to said first sheet to define a seam region therebetween, said second thermal sheet being opaque as seen from the spacecraft, and also having a transparent, conductive coating on said second broad surface thereof;
a length of conductive adhesive tape applied to said second broad sides of said first and second thermal sheets in said seam region, said length of conductive adhesive tape including
(a) a sheet of opaque, electrically conductive polyimide material defining a first broad surface; and
(b) a layer of electrically conductive adhesive affixed to said first broad surface of said sheet of opaque, electrically conductive polyimide material and to said second broad surfaces of said first and second thermal sheets.

5,609,316
SUSPENSION SYSTEM FOR SURGICAL MICROSCOPE
George S. Tigliev, House 55, Apt. 190, 191104, St. Petersburg, Russian Federation
Filed Sep. 5, 1995, Ser. No. 523,765
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—123.11 9 Claims



1. A suspension system for a surgical instrument, comprising:
a generally vertical support structure;
a levered assembly extending out from the support structure;
attachment means for mounting the surgical instrument to an outer member of the levered assembly; and
spring means connected at a first end thereof to the levered assembly adjacent the attachment means, movably extending across an upper portion of an inner member of the levered assembly, and connected at a second end thereof to a vertically movable portion of the levered assembly adjacent the support structure.

5,609,317
MAGNETIC CLAMP
Ira J. Glynn, Rogers, and Kari-Heinz Pohl, Plymouth, both of Minn., assignors to Glynn Company, Inc., Minnetonka, Minn.
Filed Jan. 18, 1995, Ser. No. 374,253
Int. Cl.[6] A47G *1/17*
U.S. Cl. 248—206.5 30 Claims



1. A clamp releasably engageable by magnetism to a metal surface comprising:
(a) a substantially rectangular housing with an interior and four side walls;

(b) a magnetic body comprises alternating magnets and metal pole plates forming side faces and a metal surface engaging face and an indexing ear on each pole plate for proper initial orientation of the magnets with respect to the pole plates, the magnetic body placeable within the interior; and

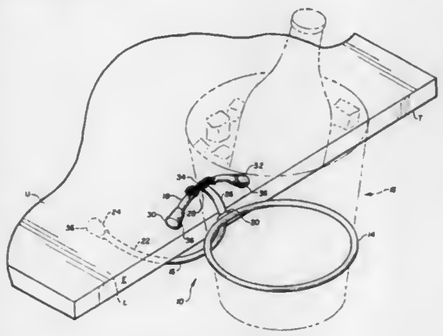
(c) mechanical interference means on the magnetic body and housing for securing the magnet within the interior of the housing.

5,609,318

BEVERAGE CONTAINER HOLDER

Curtis L. Scheb, 17460 Judson Rd., San Antonio, Tex. 78247

Filed Nov. 8, 1995, Ser. No. 555,068
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 **20 Claims**



1. A beverage container holder, comprising:

a circular beverage container ring adapted to hold a beverage container therein, with said ring having an upper surface defining a holder plane;

a single elongate first support leg secured directly to said ring and normal to said holder plane, with said first leg having a long portion extending generally downwardly and outwardly from said ring with a first distal end having a single table lower contact point thereat, and an opposite short portion extending generally upwardly and outwardly from said ring, with said short portion having a second end opposite said first end;

a second support leg member having a central point thereon joined to and extending transversely across said second end of said first leg to form a generally T shaped configuration, with said second leg member central point and said second end of said first leg defining a support leg joint;

said second leg having a first end and an opposite second end, with said first end and said second end respectively comprising a first table upper contact point and an opposite second table upper contact point thereat, and;

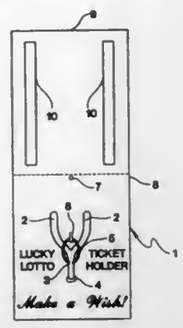
said lower contact point of said first leg and said first and said second upper contact point of said second leg, providing three table contact points defining a stable triangular table attachment plane and providing for the cantilevered support of said beverage container ring when said beverage container holder is removably secured to a table by said lower contact point and said first and said second upper contact point gripping the table therebetween.

5,609,319

LOTTO TICKET HOLDER

Daniel W. Kelley, 957 Tamarack Trail, Forest Park, Ga. 30050

Filed Oct. 24, 1995, Ser. No. 547,128
Int. Cl.[6] A47G *1/10;* **B42D** *15/02*
U.S. Cl. 248—316.7 **7 Claims**



1. A holder for flat articles comprising:

a flat card of rectangular configuration,

said card having a top portion and a bottom portion,

said top portion of said card having a mounting means for mounting said card on a vertical surface,

said bottom portion having a Y-shaped element attached thereto,

said Y-shaped element having a vertical arm and two arms diverging from said vertical arm,

means for attaching said Y-shaped element to said card at a bottom of said vertical arm,

resilient means having one end attached to said Y-shaped element below the point where said two arms diverge,

means for attaching another end of said resilient means to said card,

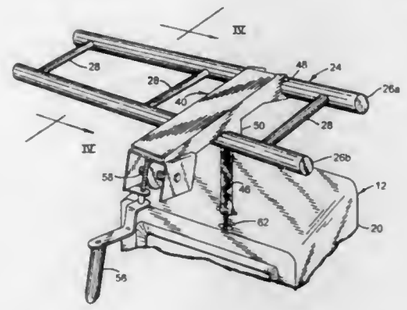
whereby a flat article may be secured between said diverging arms and said flat card.

5,609,320

METHOD AND APPARATUS FOR MOUNTING A BOWLING SCORING MONITOR

Michael D. Peters, Westbend, Wis., assignor to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Filed Jan. 9, 1995, Ser. No. 370,031
Int. Cl.[6] A47H *1/10*
U.S. Cl. 248—329 **13 Claims**



1. A method of mounting and dismounting an overhead bowling scoring monitor including:

positioning a support member at the overhead location for the bowling scoring monitor;

said support member being a rigid frame;.

said rigid frame being substantially horizontally planar; and

said rigid frame including at least two spaced apart parallel tubular members and at least two support struts extending between said tubular members;

providing a lifting mechanism having an elongated lifting member and a force-producing device for extending and retracting said lifting member;

said lifting mechanism including an elongated body that spans said at least two tubular members;

attaching said lifting mechanism to said bowling scoring monitor and to said support member located above the bowling scoring monitor, wherein retraction of said lifting member will raise the bowling scoring monitor toward said support member; and

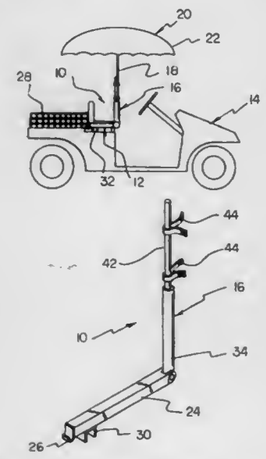
operating said force-producing device in order to raise the bowling scoring monitor into proximity with said support member.

5,609,321

GOLF CART UMBRELLA HOLDER

Joseph E. McClellan, 281 Woodview Rd., West Grove, Pa. 19380

Filed Jun. 26, 1995, Ser. No. 494,931
Int. Cl.[6] A47G *25/12*
U.S. Cl. 248—534 **1 Claim**



1. A golf cart umbrella holder comprising:

a mounting means for securing to a golf cart, the mounting means comprises an elongated base member having a first end spaced from a second end, a hook secured to the first end of the base member and being adapted to engage a portion of a wire basket of the golf cart, a channel receiver mounted to a lower surface of the base member and being adapted to receive and engage a seat supporting rail of the golf cart, whereby the hook can be engaged to a portion of the wire basket, with the base member then being pivotable into a horizontal position such that the channel receiver is adapted to accept the seat supporting rail therein to secure the base member relative to the golf cart, the second end of the base member being bifurcated;

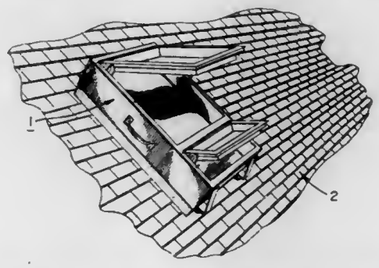
an adjustable support means adjustably and pivotally mounted to the mounting means for engaging a center pole of an umbrella so as to support a canopy of the umbrella in a position above the golf cart, the adjustable support means comprises an elongated support stanchion pivotally mounted to the second end of the base member of the mounting means, a mounting post coupled to the support stanchion so as to project upwardly therefrom, at least one strap secured to the mounting post, the strap including free distal ends having fasteners coupled to the ends to permit fastening of the strap about the center pole of the umbrella to couple the umbrella to the adjustable support means, a portion of the support stanchion being received between the spaced furcations of the second end of the base member, a fastener with an associated wing nut directed through the furcations of the base member and through a portion of the support stanchion which can be selectively tightened so as to secure an angular position of the support stanchion relative to the base member, an upper end of the support stanchion being shaped so as to define a bore directed thereinto, with the mounting post being removably positioned within the bore of the support stanchion so as to project upwardly and colinearly therefrom.

5,609,322

UTILITY JACK FOR ROOFING WORK

William R. Bond, 4710 Asdee La., Woodbridge, Va. 22192

Filed Nov. 28, 1995, Ser. No. 563,240
Int. Cl.[6] F16M *13/00;* **B25H** *1/18;* **B05C** *21/00*
U.S. Cl. 248—558 **68 Claims**



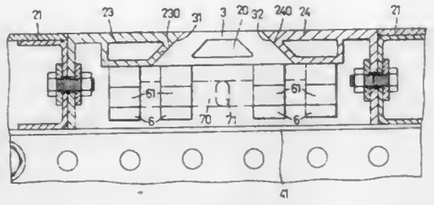
1. A utility jack for an inclined roof comprising a substantially rectangular mainframe having upstanding walls and a lateral partition therewithin so as to form two major cavities therein, an upper cavity and a lower cavity, a vertical partition within said upper cavity subdividing said upper cavity into two chambers, a first chamber and a second chamber, said first chamber being larger than said second chamber, at least one adjustable support frame movably attached to said mainframe and having a first reversible tray associated therewith, said at least one adjustable support frame extending within the upper part of said first chamber, a second reversible tray being associated with said second chamber, at least one pair of fixed brackets wherein each fixed bracket has a fixed guiding means attached thereto, one pair of rotatably movable brackets wherein each movable bracket has an elongated aperture therein, each of said one pair of rotatably movable brackets being attached to an opposite outer side of said at least one adjustable support frame, each of said one pair of fixed brackets being attached to an opposite sidewall of said mainframe within said first chamber such that it is adjacent a respective one of said one pair of rotatably movable brackets and such that a respective one of said fixed guiding means passes through the elongated aperture of a respective one of said at least one pair of rotatably movable brackets, one pair of fastening means for securing said at least one adjustable support frame to said fixed guiding means such that said at least one adjustable support frame is in an open position and provides a level support for said first reversible tray, and a large area, non-skid, elastomeric element being positioned within said lower cavity such that a portion thereof extends externally of said lower cavity of said mainframe.

5,609,323

MODULAR WALL FORM ASSEMBLY

Kon-An Lee, No. 851, Chung-Shan Rd., Nan-Shing Tsun, Kui-Jen Hsiang, Tainan Hsien, Taiwan

Filed Aug. 18, 1995, Ser. No. 516,971
Int. Cl.[6] E04G *11/08*
U.S. Cl. 249—193 **4 Claims**



1. A modular wall form assembly comprising:
two upright wall form panels;
a bridging plate interposed removably between said wall form panels, each of said wall form panels and said bridging plate having a rear side;
a plurality of coupling devices provided on said rear sides of said wall form panels and said bridging plate of connecting securely said wall form panels and said bridging plate;
horizontal first and second reinforcing bars, each of which is mounted on said rear side of a respective one of said wall form panels, said first and second reinforcing bars having overlapping end portions; and
first and second positioning devices, each of which includes:
first and second positioning plates, each of which is mounted on a respective one of said first and second reinforcing bars at one side of said overlapping end portions of said reinforcing bars, said first and second positioning plates having adjacent ends formed with a respective rearward flange portion, said flange portion of said first positioning plate being formed with a through-hole, said flange portion of said second positioning plate being formed with a threaded hole that is aligned with said through-hole; and
a screw extending through said through-hole and said threaded hole in said flange portions of said first and second positioning plates;
said second position plates of said positioning devices being disposed between said first positioning plates of said positioning devices;
whereby, loosening of said screw of one of said first and second positioning devices and tightening of said screw of the other one of said first and second positioning devices result in relative movement between said wall form panels.

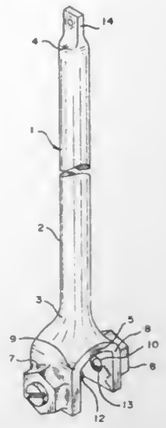
5,609,324

ONE PIECE COUPLER FOR A CURB BOX VALVE

William J. Pinkney, Ontario, Canada, assignor to Hayward Iron & Metal, Canada

Continuation-in-part of Ser. No. 317,572, Oct. 4, 1994, abandoned. This application May 8, 1995, Ser. No. 436,737
Int. Cl.[6] F16K *31/46*
U.S. Cl. 251—292 **1 Claim**

1. A one piece coupler for a curb box shut off valve comprised of a shaft having a top and a base, the base being comprised of a U-shaped member having two depending arms extending longitudinally parallel to the longitudinal centerline of the shaft, each depending arm of the U-shaped member having spring loaded fastening means therein, at least one of said spring loaded fastening means being adjustable, the spring loaded fastening means extending substantially perpendicularly to the longitudinal axis of the shaft, the top of the shaft being shaped to receive turning means.

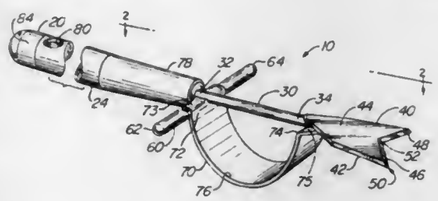


5,609,325

WEED PULLING DEVICE

William L. DeArmond, 3710 Bembow Dr., Redding, Calif. 96002

Filed Mar. 13, 1995, Ser. No. 403,179
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—132 **11 Claims**



1. A weed extracting device comprising:
a handle having an end,
a shaft extending axially from said handle end, said shaft having an end,
a step member mounted transversely of the handle and adjacent to said handle end,
a blade attached at said shaft end and adapted for insertion into the ground, and
an arcuate leverage member mounted between said step member and said blade and extending outwardly from the shaft, whereby upon rotation of the handle to rotate the leverage member on the ground a weed is uprooted.

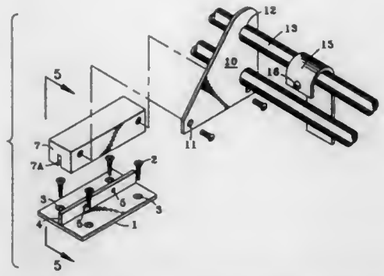
5,609,326

IMPERVIOUS MEMBRANOUS ROOF SNOW FENCE SYSTEM

Brian C. Stearns, P.O. Box 802, and Alan L. Stearns, 1026 Weeks Hill Rd., both of Stowe, Vt. 05672

Filed Jun. 16, 1995, Ser. No. 491,073
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—12.5 **10 Claims**

1. An impervious membranous roof snow fence system comprising:



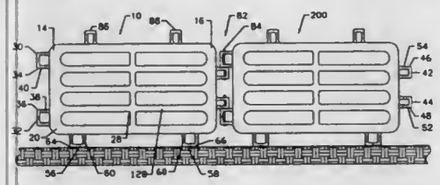
(a) a plurality of flat six sided mounting plates wherein each of the mounting plates is adapted to lie against a surface of roofing;
(b) a plurality of vertical through holes extending through said each mounting plate;
(c) means for fastening said each mounting plate via said through holes through said roofing to a roof deck below said roofing;
(d) a vertically inclined spline affixed to said each mounting plate;
(e) a plurality of membranous patches wherein each of said membranous patches is fitted over said each mounting plate, said each membranous patch having a top surface area greater than a top surface area of said each mounting plate and also having a slit thereon for allowing said spline to protrude therethrough;
(f) means for completely sealing said each membranous patch covering said mounting plate with the spline protruding through the slit to prevent moisture from reaching the roofing surface; and
(g) a fencing structure including means for securing said fencing structure onto said mounting plates.

5,609,327

PORTABLE FENCE PANEL

William D. Amidon, P.O. Box 1418, 5402 Main Ave., Ashtabula, Ohio 44005-1418

Filed Apr. 3, 1995, Ser. No. 415,728
Int. Cl.[6] E04H *17/16*
U.S. Cl. 256—24 **12 Claims**



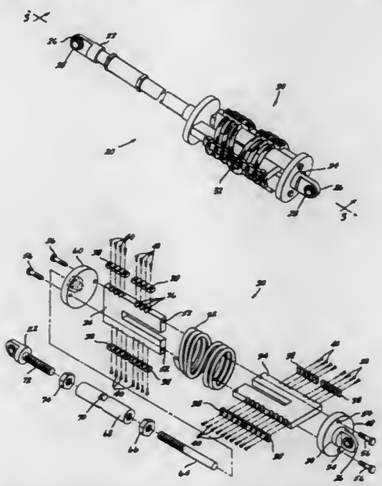
7. A portable fence panel for use on a support surface comprising:
(a) a plastic frame member having a pair of side frame portions and a top and a bottom frame portion, said side frame portions connecting said top and bottom portions to form a generally rectangular frame, each of said frame portions having an outer surface and an inner surface defining an aperture through said frame member;
(b) means positioned in said aperture of said frame member for restricting passage therethrough;
(c) a plurality of first connector portions extending from said outer surface of one of said side frame portions, each of said first connector portions defining a connector surface with said first connector portion extending a predetermined length from one side of its said connector surface along said one side frame portion, each of said first connector portions having at least one aperture therethrough along an axis substantially parallel to said one side frame portion and positioned a predetermined distance from said outer surface of said one side frame portion, at least one of said first connector portions having an additional aperture therethrough substantially perpendicular to said at least one aperture of said at least one first connector portion;
(d) a plurality of second connector portions extending from said outer surface of the other of said side frame portions, each of said second connector portions defining a connector surface in a plane substantially coplanar with said connector surface of a complimentary first connector portion, each of said second connector portions extending from its connector surface along said other side frame portion a distance less than the predetermined length of said first connector portion in a direction opposite from which its complimentary first connector portion extends, each of said second connector portions having at least one aperture therethrough along an axis substantially parallel to said other side frame portion and positioned a predetermined distance from said outer surface of said other side frame portion;
(e) at least one support portion extending from the outer surface of said bottom frame portion, said support portion having a contact portion for support by the support surface.

5,609,328

PIPE RESTRAINT

Lawrence A. Loziuk, Vernon Hills, Ill.; Brian C. Bucholtz, Lakeview, and Ralph L. Clinard, Jr., Getzille, both of N.Y., assignors to Vectra Technologies, Inc., Federal Way, Wash.

Continuation-in-part of Ser. No. 274,645, Jul. 13, 1994, Pat. No. 5,441,243. This application Nov. 23, 1994, Ser. No. 344,825
Int. Cl.[6] F16F *3/00*
U.S. Cl. 267—136 **17 Claims**



1. A pipe restraint for permitting thermal expansion of a piping system, while inhibiting movement of the piping system in a single direction during dynamic events and providing vibration isolation, the pipe restraint comprising:
(a) a first displacement member;
(b) a second displacement member; and
(c) restraining means for restraining displacement of the first and second displacement members relative to one another, the restraining means including:
(i) first and second portions, the first and second portions generally positioned on opposing sides of the central axis of the restraining means; and

(ii) third and fourth portions generally positioned on opposing sides of the central axis of the restraining means, wherein the first and second portions are connected to one of the displacement members, and the third and fourth portions are connected to the other displacement member, said restraining means comprising first and second helical coils wound around said displacement members, said first coil being axially displaced from said second coil, said first coil being wound in a direction opposite to said second coil.

5,609,329

VIBRATION DAMPING ATTACHMENT OF A DRIVE UNIT FOR WINDSHIELD WIPERS

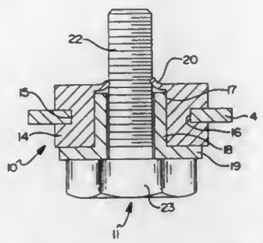
Wolfgang Scholl, Gemmrigheim, Germany, assignor to ITT Automotive Europe GmbH, Germany

Filed Jun. 23, 1995, Ser. No. 493,971

Claims priority, application Germany, Jun. 23, 1994, 44 21 878.8

Int. Cl.[6] B60S *1/24*

U.S. Cl. 267—141 **20 Claims**



1. A vibration damping attachment for a drive unit for windshield wipers on automotive vehicles, the drive unit of the type including a retainer at a predetermined attachment point for accommodating a fastener for fastening the drive unit to the automotive vehicle, the vibration damping attachment comprising:

a fastener of a predetermined diameter;

an elastomeric vibration damping element attached to said retainer and receiving said fastener, said elastomeric vibration damping element including an opening in the elastomeric vibration damping element; and

an elastomeric diaphragm disposed across and closing the opening of said elastomeric vibration damping element, and the diaphragm in an undeformed condition having a central hole with a smaller inside diameter than the predetermined diameter of the fastener wherein said fastener is held captive on the elastomeric vibration damping element by said diaphragm clamping said fastener at the central hole.

5,609,330

Patent Not Issued For This Number

5,609,331

TORSION SPRING ADJUSTMENT APPARATUS

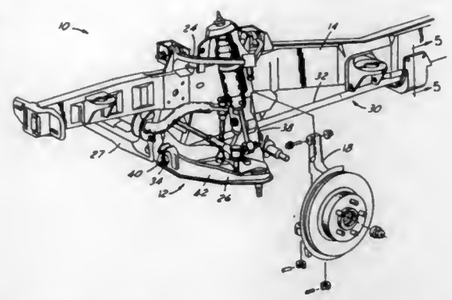
Scott T. Hoag, Plymouth, and Arnold R. Cooper, Trenton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1995, Ser. No. 523,668

Int. Cl.[6] B60G *11/18*

U.S. Cl. 267—154 **15 Claims**

1. A torsion spring adjustment apparatus for use in a motor vehicle having a torsion spring suspension, said adjustment apparatus comprising:



an adjuster having a non-circular aperture for receiving one end of a torsion bar therein and a first contact face disposed on an outer surface;

an adjuster seat having a first surface and a second surface, said first surface having a second contact face disposed thereon to matingly receive said first contact face of said adjuster; and

an elastomeric pad disposed between said second surface of said adjuster seat and a chassis member, said resilient pad being operative to reduce noise generated by operation of the torsion spring suspension.

5,609,332

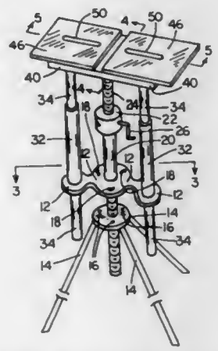
DEVICE FOR LIFTING AND HOLDING CABINETS

Clayton Hassell, 1055 W. 1600 North, Lehi, Utah 84043

Filed Nov. 14, 1995, Ser. No. 558,692

Int. Cl.[6] B25H *1/08*

U.S. Cl. 269—16 **19 Claims**



1. A device for lifting and holding a heavy or bulky item such as a cabinet that is to be mounted to a wall or ceiling, whereby the item can be accurately positioned and safely held in position while an installer secures the item to the wall or ceiling, said device comprising

a base member that can be mounted on a suitable support such as a floor, a counter top, a table or a tripod;

said base member having a hollow, linear, elongate drive shaft extending upwardly therefrom;

a worm gear drive positioned at the upper end of said drive shaft;

an elongate lift shaft received coaxially within said drive shaft, said lift shaft having an upper end that extends upwardly from the worm gear, said worm gear being capable of moving the elongate lift shaft in a longitudinal movement up and down within said drive shaft such that (1) the upper end of said lift shaft moves upwardly away from said worm gear when the lift shaft moves upwardly in said drive shaft, and (2) the upper end of said lift shaft moves downwardly toward said worm gear when the lift shaft moves downwardly in said drive shaft;

at least two elongate, hollow stabilizer shafts spaced outwardly from said drive shaft so that each stabilizer shaft is held in fixed position relative to said drive shaft, with a longitudinal axis of each stabilizer shaft being substantially parallel with a longitudinal axis of said drive shaft;

each of said stabilizer shafts being positioned in a radial direction from said drive shaft that is different from the radial direction of any other stabilizer shaft;

an elongate idler shaft received coaxially within each of said stabilizer shafts, each of said idler shafts having an upper end that extends upwardly from an upper end of a respective stabilizer shaft;

each of said idler shafts being movable longitudinally within its respective stabilizer shaft so that the upper end of the idler shaft can move up and down relative to the upper end of the respective stabilizer shaft;

a planar lift plate attached to the upper end of said lift shaft and the upper ends of each of said idler shafts so that the lift plate moves up and down as the upper ends of said lift shaft and said idler shafts move up and down, with said lift plate being oriented substantially perpendicular to said drive shaft and said idler shafts and constrained to remain substantially perpendicular to said drive shaft and said idler shafts as the lift plate moves up and down; and

means for operating said worm gear to move said lift shaft,

whereby said device is used by placing said base member on a suitable support, placing said item on said lift plate and operating said worm gear to move said lift shaft upwardly until said item is in proper position to be installed to the wall or ceiling.

5,609,333

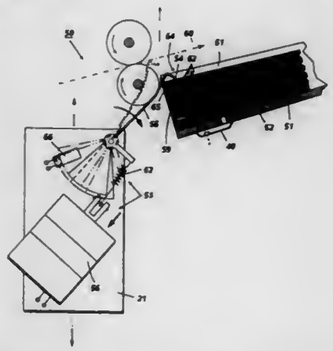
SHEET STACK HEIGHT CONTROL SYSTEM

Barry P. Mandel, and John D. Hower, Jr., both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,031

Int. Cl.[6] B42B *1/02;2/02*

U.S. Cl. 270—58.09 **10 Claims**



1. In a sheet stacking system for stacking plural printed flimsy print substrate sheets from a printed sheets output path into at least one sheet stacking tray, including a sheet entrance path into said sheet stacking tray by which the printed sheets are fed into said sheet stacking tray to be stacked on top of sheets previously stacked in said sheet stacking tray, and including a stack height sensing system with a stack height sensor for detecting the height of the stack of printed sheets stacked in said sheet stacking tray, and a stacking control system controlled by said stack height sensor; the improvement in said stack height sensor comprising:

an elongated maximum stack height sensing bar,

a sensing bar movement system for intermittently moving said maximum stack height sensing bar into said sheet stacking tray and placing said sensing bar into an operative measurement position on top of the stack of printed sheets in said sheet stacking tray at a position transversely of said sheet entrance path with a normal force pressing downwardly against the top of the stack of printed sheets in said sheet stacking tray for a maximum stack height measurement,

said maximum stack height sensing bar in said operative measurement position extending at least substantially across the top of the stack in said sheet stacking tray at the height of the highest level of any portion of the stack underlying said maximum stack height sensing bar in said operative measurement position,

and a sensing system actuated by said height of said maximum stack height sensing bar in said operative measurement position to provide signals to said stacking control system corresponding to the maximum stack height,

said stacking control system providing a control signal when said maximum stack height in said sheet entrance path as signaled by said sensing system reaches a preset height which is preset below the height which would obstruct said sheet entrance path to said sheet stacking tray.

5,609,334

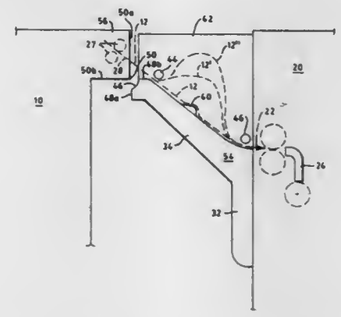
APPARATUS AND METHOD FOR TRANSFERRING SHEETS OF PRINTED MEDIA

Frank S. Silveira, Wilmington, and John B. Morse, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1995, Ser. No. 415,735

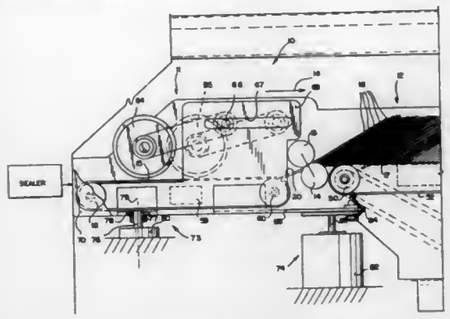
Int. Cl.[6] B65H *29/70*

U.S. Cl. 271—188 **7 Claims**



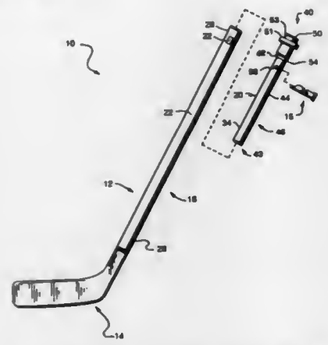
1. Apparatus for transferring a laminate from a printer having an exit slot through which a driven laminate exits to a separate processing device having an inlet opening for the laminate, comprising in combination: in-feed means connected to the processing device; said in-feed means including a feeding surface upon which the laminate slides as it exits from the exit slot of the printer toward the inlet opening; means on said surface for engaging a leading edge of the laminate as the laminate advances toward the inlet opening for inducing a bending of the laminate which diminishes the driving forces on the laminate; and, means spaced from said feeding surface and the laminate traveling thereon for controlling the amount of laminate bending induced by said bending means so that a trailing edge of the laminate is inhibited from curling over a leading edge of the laminate adjacent the inlet opening; said control means includes a pair of spaced apart guide rods which extend generally transversely relative to the inlet opening and which are spaced apart such that one of said rods is adjacent the inlet opening and a leading edge of the laminate and the other of said rods is adjacent a trailing edge of the laminate, such that a trailing edge of a curved laminate will be inhibited from folding or curling over so as to be adjacent a leading edge of the laminate at the inlet opening.

5,609,335
HIGH CAPACITY STACKER/SEPARATING DEVICE
Rebecca L. Parker, Grand Island, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jun. 7, 1995, Ser. No. 480,861
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—302 **27 Claims**



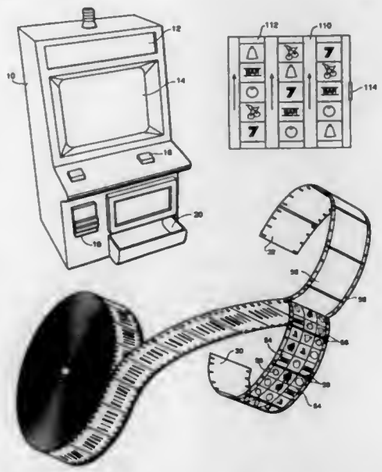
1. A high capacity conveyor assembly for business forms, comprising:
an infeed conveyor having a first conveyance surface and for feeding forms in a first direction;
an outfeed conveyor having a second conveyance surface and for feeding forms in the first direction;
a pair of nip wheels between said infeed and outfeed conveyors for receiving a business form from said infeed conveyor and directing the business form to said outfeed conveyor in the first direction, said pair of nip wheels including a top nip wheel and a bottom nip wheel with a nip between them, said bottom nip wheel having a top peripheral surface closer to said outfeed conveyor than is said nip; and
a transition element between said nip and said outfeed conveyor, said transition element including a form-supporting surface lower than said bottom nip wheel top peripheral surface.

5,609,336
ADJUSTABLE HOCKEY STICK
Jerry J. Tashjian, 31 Sunset Rd., Needham, Mass. 02194
Filed May 1, 1996, Ser. No. 641,577
Int. Cl.[6] A63B *59/14*
U.S. Cl. 473—560 **19 Claims**



1. An adjustable length hockey stick, said hockey stick comprising:
(a) an elongate handle means, said handle means having a first end and a second end, said handle means including an outer member and an inner member, said inner member being telescopically positionable in said outer member, said inner member being frictionally engaged in substantially surface-to-surface contact with said outer member, said inner member extending from said first end of said handle means;
(b) a locking means for securing said inner member against longitudinal movement relative to said outer member; and,
(c) a blade means extending from said second end of said handle means.

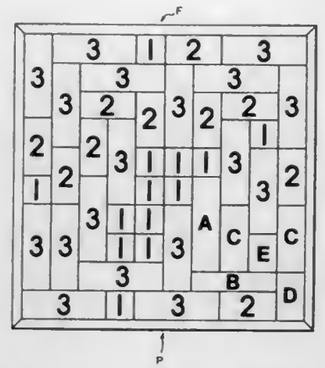
5,609,337
GAMING TICKET DISPENSER APPARATUS AND METHOD OF PLAY
Ronald C. Clapper, Jr., 20753 Horace St., Chatsworth, Calif. 91311
Continuation-in-part of Ser. No. 999,268, Nov. 16, 1992, Pat. No. 5,377,975, which is a continuation-in-part of Ser. No. 879,747, May 6, 1992, Pat. No. 5,348,299. This application Jul. 10, 1995, Ser. No. 500,053
Int. Cl.[6] A63F *9/24;3/06*
U.S. Cl. 273—138.2 **46 Claims**



22. An electronic gaming apparatus capable of dispensing gaming tickets containing indicia thereon upon actuating the apparatus and where the tickets are served from an elongate strip of such tickets and indicia on certain of the gaming tickets represent winning indicia, said apparatus comprising:
a) frame means defining a ticket movement path;
b) drive means for moving an elongate strip of the tickets in the ticket movement path;
c) severing means after the drive means in the direction of movement of the strip of tickets for serving an endmost ticket from the strip in the ticket movement path; and
d) means for dispensing the served ticket after the severing means and upon actuation of the apparatus such that the ticket containing strip in effecting pushed through the ticket movement path.

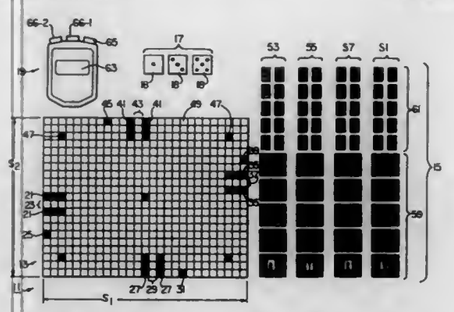
5,609,338
PUZZLE WITH RECTANGULAR PIECES OF DIFFERENT LENGTHS
Aftab Ibrahim, 99 Blackwell Avenue, Apt. #604, Scarborough, Ontario, Canada
Filed Nov. 28, 1995, Ser. No. 563,276
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—156 **5 Claims**

1. A puzzle having different groups of playing pieces which form a full rectangle only when properly fitted with one another, all



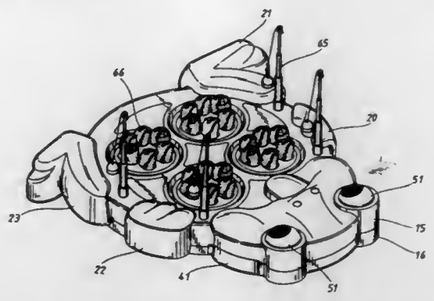
of the playing pieces from all of said groups having a rectangular configuration and each playing piece of a particular group having the same shape and size and being interchangeable in position in said puzzle with all other pieces from that particular group, all of the pieces in said different groups being of the same width with the pieces in one group being of a different length than the pieces of all other groups, said puzzle also including a number of individual rectangular playing pieces which must be fitted with said groups of playing pieces to complete said puzzle and wherein one of said individual pieces is longer than all of the other playing pieces and another of said individual playing pieces is thinner than all of the other playing pieces.

5,609,339
BOARD GAME
Paul C. Mahoney, 18 Maugus Ave., Wellesley, Mass. 02181-7617
Filed Jul. 17, 1996, Ser. No. 683,753
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—255 **6 Claims**



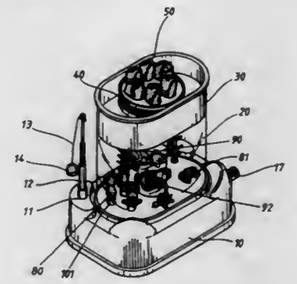
1. A board game for two or more participants comprising:
(a). a game board overlaid with a grid pattern to define a plurality of sections, certain sections on the game board being uniquely identified to designate a docking bay and an entering square for each participant;
(b). a set of game pieces for each participant, each set of game pieces including at least one ship and at least one bomb, a bomb being mountable on an associated ship, and wherein a ship is adapted for movement within prescribed sections on said game board;
(c). a random number generator for indicating the amount of movement of a ship on said game board; and
(d). a timing device for indicating a time interval related to the amount of movement on said game board of a bomb from the ship on which said bomb is mounted toward a ship of an opponent.

5,609,340
TOY SET OF FISHING PLAY
Chuan-Tien Chuang, No. 40, Lane 174, Da-Shing Street, Tainan, Taiwan
Filed Mar. 11, 1996, Ser. No. 599,366
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—448 **3 Claims**



1. A toy set of fishing play mainly comprising a casing inside which there is arranged a driving mechanism and a plurality of toothed rotary trays for fishing play, wherein said driving mechanism drives gear sets to activate an eyeball moving mechanism and limb moving mechanisms via connecting rods;
said casing having an animal's form and containing a motor that is used to drive a worm of said driving mechanism;
said driving mechanism delivering the power of said motor to a driving gear of a first gear set so that a driven gear, engaged with said driving gear, uses an eccentric pin to spur a connecting rod to move up and down eyeballs affixed to said eyeball moving mechanism;
said driven gear of said first gear set further rotating a first toothed rotary tray, which causes a driving gear of a second gear set and a central gear to turn so that an eccentric pin of a driven gear of said second gear set pushes the first limb-shaped parts to sway;
said central gear concurrently driving a plurality of toothed rotary trays to operate, of which a second rotary tray also turns a driving gear of a third gear set so that an eccentric pin on the driven gear of said third gear set sets the second limb-shaped parts in motion.

5,609,341
SIGHT-DESIGNED FISHING GAME TOY
Chuan-Tien Chuang, No. 40, Lane 174, Da-Shing Street, Tainan, Taiwan
Filed Mar. 11, 1996, Ser. No. 614,002
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—448 **8 Claims**



1. A sight-designed fishing game toy comprising a base and a transmission mechanism disposed therein, a sight tower of transparent material being disposed on upper surface of the base,

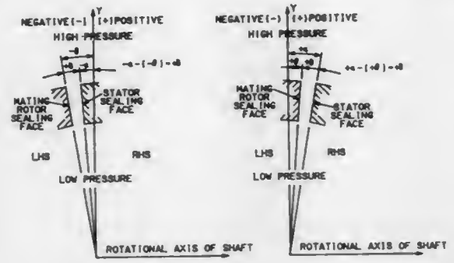
various kinds of sight articles being disposed in the sight tower, a chamber being connected on top face of the sight tower and having a rotary disk therein, multiple fish dolls being disposed on the rotary disk, a hollow transmission column having a bottom end drivingly connected with the transmission mechanism in the base, a connecting ring being disposed on the transmission column, and a central shaft depending from the rotary disk through the bottom of the chamber and drivingly connected with the transmission column.

5,609,342

GAS SHAFT SEAL WITH FLEXIBLE CONVERGING SEALING FACES

Robert A. Peterson; Robert S. Evenson, and Clayton Bear, all of Calgary, Canada, assignors to Revolve Technologies, Inc., Calgary, Canada

Filed Jul. 11, 1994, Ser. No. 273,357
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—81 R **1 Claim**



1. In a dry gas seal having a rotor and a stator, wherein said dry gas seal is operable with a machine having a rotating shaft, the improvement comprising:

a) a flexible rotor which:

1) has a radially extending sealing face, and

2) is sealingly affixed to said shaft, wherein said rotor is characterized by being deliberately flexible; and

b) a flexible stator having a radially extending sealing face, wherein

said stator is characterized by being deliberately flexible, such that, under hydrostatic conditions said rotor and said stator cooperate so as to provide a seal and such that, under stable hydrodynamic conditions, said flexible stator cooperates with said flexible rotor so as to provide a seal having a converging coning angle;

further characterized by having an integrally formed annular element, wherein said annular element substantially encircles a portion of said shaft and with the further proviso that the total length of said annular element is greater than the minimum thickness of said radially extending sealing face;

still further characterized in that said flexible rotor is deflectable, under operating conditions, to a maximum angle of up to 0.4 degrees in the negative direction and to a maximum angle of up to 0.2 degrees in the positive direction, wherein each of said positive angle and said negative angle is defined according to the following convention:

a) each angle is measured from a reference plane which extends radially from said shaft at a perpendicular angle to the axis of rotation of said shaft;

b) from a defined perspective in which, in a cross sectional view of said seal, said rotor is located on the left hand side of said reference plane and said stator is located on the right hand side of said reference plane; and

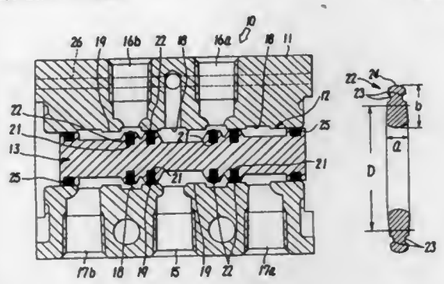
c) from the defined perspective recited in said b) above, said positive angle is measured clockwise from said reference plane and said negative angle is measured counter-clockwise from said reference plane.

5,609,343

SEALING RINGS FOR SPOOL VALVES

Yoshio Asou; Takumi Matsumoto, and Shinichi Yoshimura, all of Yawara-mura, Japan, assignors to SMC Corporation, Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 323,128
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—152 **4 Claims**



1. A sealing assembly, which comprises:

a spool having a groove cut around a periphery of the spool; and

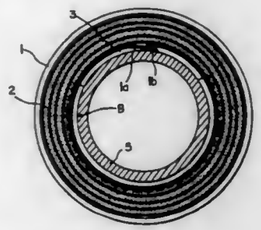
a sealing ring having constrictions imparting flexibility to the ring wherein said constrictions are located radially outside a center of a band width of the ring wherein the band width comprises the difference between the inner and outer diameters of the ring and wherein the ring is of a greater axial thickness on a radially inner side thereof than at said constrictions so as to be firmly fitted in the groove of the spool.

5,609,344

SPIRAL GASKET HAVING A CENTERING SPRING

Kenji Tamaoki; Hideaki Shimamoto; Masaki Kawada, all of Hiroshima; Shigeru Morita; Michio Fujino, both of Kanagawa, and Youzi Hamazaki, Osaka, all of Japan, assignors to Yumex Corporation, Hiroshima; Nichias Corporation, Tokyo, and Kokubu Indusrial Co., Ltd., Osaka, all of Japan

Continuation-in-part of Ser. No. 359,450, Dec. 20, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 500,678
Claims priority, application Japan, Dec. 28, 1993, 5-074544
U
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—157 **2 Claims**



1. In a spiral gasket constructed by winding a metal hoop member and a filler member in a spiral form, superposed on each other, a part of the hoop member being raised partially in a circumferential direction with respect to the hoop member on the inner peripheral side, which is wound as much as several turns, the part of the hoop member being formed so as to act as a spring with respect to an outer peripheral surface of a pipe, the hoop member in the proximity of the part of the hoop member acting as a spring being fixed,

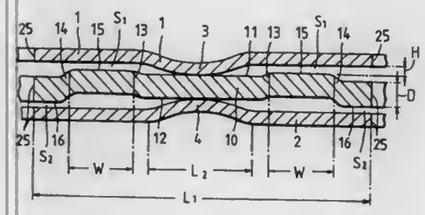
the improvement wherein a centering ring-shaped spring made of a metal bar having a round cross-section formed in a C-shape, which is opened at one place, is thrust by its elastic force against an inner peripheral surface of said hoop member, said pipe being inserted into said C-shaped ring spring so that the spring engages with the peripheral surface of the pipe, and the part of the hoop member is engaged with the outer peripheral surface of the pipe through the opened place of the C-shaped ring spring.

5,609,345

METAL GASKET WITH STEPPED INTERMEDIATE PLATE

Masahiko Miura, Kawachinagano; Tadayoshi Akutsu, Fujisawa; Kazukuni Takada, Ibaragi; Kunitoshi Inoue, Higashiosaka; Kenji Kubouchi, Hirakata; Yoshikazu Shinpo, Nisshin, and Kazuya Nakata, Toyota, all of Japan, assignors to Nippon Gasket Co., Ltd., Osaka-fu, Japan

Filed Jul. 12, 1995, Ser. No. 501,662
Claims priority, application Japan, Aug. 5, 1994, 6-202922; Jan. 27, 1995, 7-030213
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—180 **11 Claims**



1. A metal gasket comprising;

a pair of bead plates formed by elastic metal plates provided with parallelly aligned holes and beads formed along the circumferences of said holes, said beads on said bead plates being provided in mutually opposed relation,

an intermediate plate which has holes corresponding to said holes in said bead plates, and which is interposed between said bead plates, said intermediate plate being formed by a single plate of a substantially uniform thickness having no folded portions at circumferential edges of said holes, said intermediate plate being provided with stepped portions constituting stopper portions having a sealing function,

said stepped portions being provided on the regions of said intermediate plate which extend at least along said holes and are away from said beads on said bead plates toward said holes, said stepped portions comprising a continuous bend of said intermediate plate toward said bead plates to a height smaller than the bead height of said beads, and

said stepped portions of said intermediate plate comprising first stepped portions formed in the regions thereof which are closer to said holes than to said beads so as to extend toward one of said bead plates with a height smaller than the bead height of said beads, and

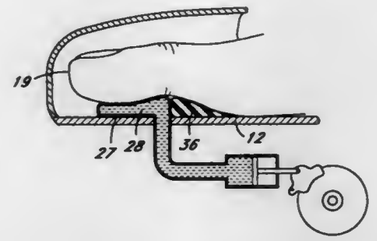
second stepped portions formed in the regions of said intermediate plate which are on the inner side of said first stepped portions so as to extend toward the other bead plate with a height larger than that of said first stepped portions and smaller than the sum of the height of said first stepped portions and the bead height of said beads.

5,609,346

TOE ACTIVATED BRAKING SYSTEM FOR INLINE ROLLER SKATES

Alex R. Bellehumeur, 6242 Napoli Ct., Long Beach, Calif. 90803

Filed Mar. 10, 1995, Ser. No. 401,798
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **2 Claims**



1. A toe activated braking system for in-line roller skates which have a sole which supports a frame which, in turn, supports a plurality of in-line rollers, said system comprising:

brake pad means supported adjacent at least one of said in-line rollers, said brake pad means being movable from a free position where it does not contact said at least one of said in-line rollers and a braking position where it touches said at least one of said in-line rollers; and

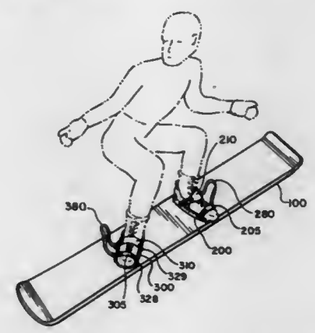
a hydraulically controlled linkage assembly for connecting the rearward bending of a user's toes to said brake pad means, said linkage assembly including a bladder hydraulically connected to a hydraulic piston and linkage means connecting the piston to said brake pad means, whereby the rearward bending of a wearer's toes will compress the bladder thereby moving the brake pad means into contact with said at least one of the rollers to slow the movement of the in-line roller skate and whereby the degree of slowing may be regulated by the degree of pressure applied by a skater's toes.

5,609,347

SNOWBOARD BINDINGS WITH RELEASE APPARATUS

Donald Dressel, 21610 Bealisville Rd., Barnesville, Md. 20838

Filed May 17, 1995, Ser. No. 443,401
Int. Cl.[6] A63C *5/03*
U.S. Cl. 280—14.2 **8 Claims**



1. A binding latch and release device for use with a binding structure for a snowboard, the binding structure for use in binding to an upper surface of the snowboard footwear of a person employing the snowboard and including a base having opposite first and second sides and means for fixing the base to the snowboard, and a laterally spaced apart pair of first and second binding straps, the

binding straps having proximal ends connected to the first side of the base and an opposite distal end, the binding latch and release device comprising:

first and second latch means, each having an actuation member movable between an open position and a closed position, the first and second latch means being adapted to respectively releasably retain the distal ends of the binding straps in latched positions when the actuation member is in the closed position, the first and second latch means being responsive to respective forces on the actuation members thereof in directions away from the snowboard upper surface to move the actuation members to the open positions, thereby being adapted to release the distal ends of the binding straps from the latched positions; and

a release strap having opposite ends connected to the respective actuation members, so that by pulling on the release strap in the directions away from the snowboard upper surface, the respective forces are applied to the actuation members of the first and second latch means to move the actuation members to the open position thereby being adapted to release the distal ends of the binding straps from the latched positions.

5,609,348

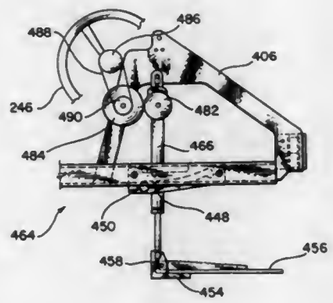
WHEELCHAIR

Michael H. Galumbeck, Columbia, Md., assignor to ReGain, Inc., Columbia, Md.

Continuation-in-part of Ser. No. 969,066, Oct. 30, 1992, Pat. No. 5,401,044, which is a continuation-in-part of Ser. No. 741,589, Aug. 7, 1991, Pat. No. 5,211,414, which is a continuation-in-part of Ser. No. 527,295, May 23, 1990, abandoned. This application Mar. 27, 1995, Ser. No. 410,897

Int. Cl.[6] B62M *1/14;* **A47C** *7/50*

U.S. Cl. 280—250.1 **15 Claims**



8. A wheelchair for transporting an occupant over a support surface comprising:

a structural frame;

wheelchair support wheels mounted for rotation on said structural frame for engaging said support surface;

an occupant supporting seat mounted upon said structural frame;

a footpad support structure for supporting the feet of an occupant,

and a foot support assembly pivotally mounted on said structural frame for selectively moving said footpad support structure either pivotally or in a straight line path relative to said structural frame, said foot support assembly including footpad drive means connected to said footpad support structure for raising and lowering said footpad support structure in a straight line path of travel extending in a direction between said support surface and said seat to raise or lower an occupant standing on said footpad support structure, said footpad drive means operating to lower said footpad support structure to a lowermost position adjacent to said support surface and to an uppermost position spaced above said lowermost position.

5,609,349

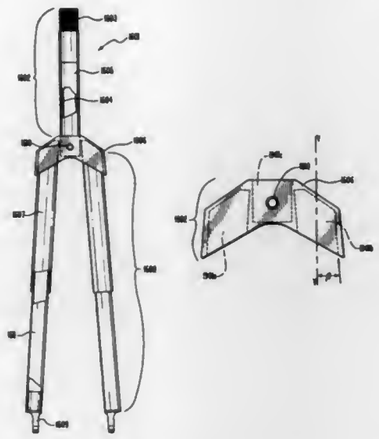
VEHICLE FORK

Daniel K. Buckmiller; David W. Erickson; Douglas G. Olsen, and Randall J. Philpot, all of Salt Lake City, Utah, assignors to Advanced Composites, Inc., Salt Lake City, Utah

Filed Aug. 22, 1994, Ser. No. 294,421

Int. Cl.[6] B62K *21/04*

U.S. Cl. 280—280 **4 Claims**



1. A fork for a vehicle, comprising:

(a) a steer tube, said steer tube having:

(1) an elongate tubular main steer tube section having a first end, a second end, an exterior surface, and an interior passageway, said main steer tube section comprising:

(i) a main body portion having a first end, a second end, an exterior surface, and an interior passageway, and

(ii) an inner reinforcing sleeve having a first end, a second end and an exterior surface,

said main steer tube section having a longitudinal axis along which said main body portion and said inner reinforcing sleeve are oriented, each of said main body portion and said inner reinforcing sleeve having fiber helically wound along said longitudinal axis, said fiber being permanently fixed with respect to said longitudinal axis by a resin, the combination of fiber and resin forming a high strength and fatigue-resistant main steer tube section which possesses vibration and shock absorbing properties, said inner reinforcing sleeve being bonded in a fixed position in the interior passageway of said main body portion so that said inner reinforcing sleeve exterior surface is in contact with said main body portion interior passageway, and

(2) an upper insert having an upper threaded portion and a lower portion, said lower portion inserted into said main steer tube section interior passageway so that said upper threaded portion protrudes from said main steer tube section. said upper insert being constructed from a high-strength and lightweight metal,

(b) a crown, said crown having:

(1) an upper receptacle receiving said steer tube therein, and

(2) a lower receptacle receiving a leg member therein, and

(c) said leg member having a first end and a second end, said leg member first end being inserted into said lower receptacle, and said leg member second end receiving a wheel drop out thereon, said leg member having a longitudinal axis and having fiber helically wound along said longitudinal axis, said fiber being permanently fixed with respect to said longitudinal axis by a resin, the combination of fiber and resin forming a high strength and fatigue-resistant leg member which possesses vibration and shock absorbing properties.

5,609,350

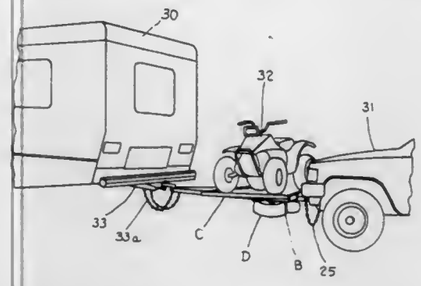
MOTOR HOME TOWING AND CARRYING APPARATUS AND METHOD

William M. Chumley, 3303 Green Pond Rd., and Kenneth D. Chumley, 835 Lightwood Knot Rd., both of Woodruff, S.C. 29388

Continuation of Ser. No. 331,995, Oct. 31, 1994, Pat. No. 5,501,481. This application Mar. 21, 1996, Ser. No. 619,309

Int. Cl.[6] B60D *1/14;* **B62D** *53/00*

U.S. Cl. 280—476.1 **19 Claims**



1. Apparatus for securement of an automobile to a motor home and for carrying articles between the motor home and the automobile for towing behind the motor home comprising:

a tow bar having an attachment device on one end for making a steering connection to said motor home pivoted about an upright axis permitting movement of the tow bar in a substantially horizontal plane about said axis;

a connecting frame fastened against horizontal movement adjacent a forward end thereof to a rear portion of said tow bar;

a carrier platform member including a flat support surface carried by said connecting frame in superposed substantial alignment therewith so that said tow bar may position a forward end of said carrier platform member adjacent a rear end of said motor home;

a transversely spaced pair of wheels for supporting said carrier platform member for hookup of the apparatus for towing and supporting said carrier platform members for acting as a trailer;

a retracting device for facilitating raising of the wheels and locking the wheels during towing in raised out-of-the-way position;

a towing connection for said automobile carried by said connecting frame adjacent a rear end of said carrier platform member; and

said towing connection including

a substantially horizontal transverse pivotal connection for securement to said automobile substantially fixing said automobile against horizontal movement in respect to said connecting frame but permitting pivotal movement in a vertical plane during towing;

whereby said carrier platform member is positioned between said tow bar and said towing connection providing a carrier accessible for use avoiding storage of articles in the motor home and for stabilizing the motor home and automobile during towing.

5,609,351

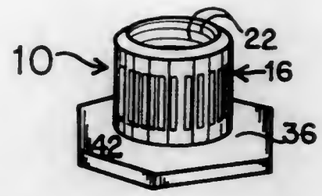
SNOW BOARD INSERT WITH HEXAGONAL BASE

James H. Vermillion, 2025 W. Century Way, Boise, Id. 83709

Continuation-in-part of Ser. No. 27,632, Aug. 25, 1994. This application Nov. 22, 1994, Ser. No. 343,783

Int. Cl.[6] A63C *11/00*

U.S. Cl. 280—611 **11 Claims**



5. A binding attachment system for receiving binding screws, the system comprising:

a recreational board having a bottom surface and a top surface and a hole bored through the board from the bottom surface to the top surface,

an insert received in the said hole, the insert comprising:

a generally planar, non-round base, having an outer perimeter edge that is non-circular, and

a hollow, generally cylindrical shaft extending perpendicularly from the said base and extending toward the top surface of the recreational board, the shaft having an exterior surface and an interior surface having threads and defining an interior space for receiving the binding screws, and

cement inside the hole and contacting the insert to fill the hole and to secure the insert in the hole.

5,609,352

VEHICLE SUSPENSION SYSTEM AND CONTROL VALVE THEREFOR

Philip Di Maria, 106 Helen Street, Morwell, Victoria, 3840, Australia

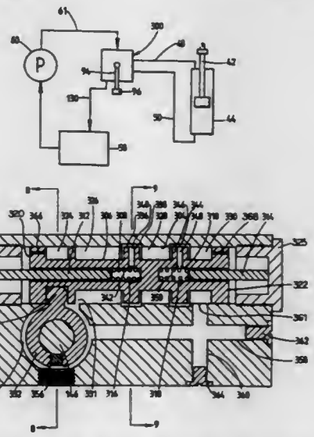
PCT No. PCT/AU93/00366, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/02767, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 22, 1993, Ser. No. 373,291

Claims priority, application Australia, Jul. 22, 1992, PL3719

Int. Cl.[6] B60G *17/01;21/073;* **F16K** *11/07*

U.S. Cl. 280—689 **14 Claims**



1. A control valve for an antiroll suspension for a vehicle said control valve comprising a valve body having a bore, a valve element mounted for sliding movement in the bore of the valve body, a control arm and coupling means for translating rotational movement of the control arm to linear displacement of the valve element relative to the valve body to thereby selectively control the hydraulic fluid pressure at first and second outlet ports in the valve body, and wherein linear displacement of the valve element in a first direction from a neutral position causes a relatively high pressure at the first outlet port and a relatively low pressure at the

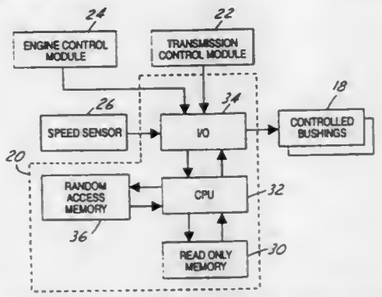
second outlet port and linear displacement of the valve element in a second direction from the neutral position causes a relatively high pressure at the second outlet port and a relatively low pressure at the first outlet port, and wherein an inlet port, return ports and the outlet ports are formed in the bore and the valve element includes first and second valve faces which cooperate with the bore so as to control the hydraulic fluid pressure at the outlet ports and wherein the bore includes first and second recesses which cooperate with the first and second valve faces on said element, the arrangement being such that in the neutral position of the valve element hydraulic fluid in use passes from the inlet port through said recesses to said return ports and the first and second outlet ports are at substantially the same pressure, said control valve including balancing means to generate forces on said valve element which tend to oppose said displacements in the first and second directions whereby the valve element moves to an equilibrium position which is dependent upon the forces transmitted to it from the control arm and wherein the balancing means includes first piston means slidable relative to a first bore in the valve element and second piston means slidable relative to a second bore in the valve element and wherein said first and second bores are in fluid communication with said inlet port in accordance with displacements of the valve element and wherein said first and second valve faces include first and second ducts respectively to provide hydraulic fluid paths between the first and second bores to said first and second recesses respectively.

5,609,353

METHOD AND APPARATUS FOR VARYING THE STIFFNESS OF A SUSPENSION BUSHING

Jon R. Watson, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 11, 1996, Ser. No. 585,069
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—707 **12 Claims**



1. A controllable suspension apparatus for controlling the relative displacement of a first structural component with respect to a second structural component in response to an operating state of a transmission in a motor vehicle, said controllable suspension apparatus comprising:

a first structural component;

a second structural component;

a magnetorheological elastomer interposed between and connected to said first and second structural components;

an electrical coil operatively associated with said magnetorheological elastomer for generating a variable magnetic field dependent upon an electrical current supplied to said electrical coil;

transmission control means for generating a transmission state signal; and

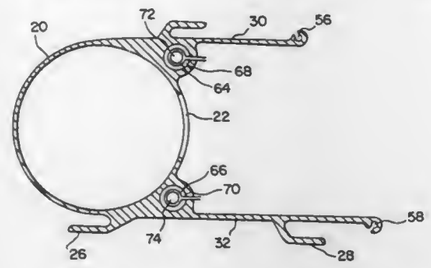
suspension control means for generating said electrical current in response to said transmission state signal so as to vary the stiffness of said magnetorheological elastomer during a predetermined transmission event thereby controlling the relative displacement of said first structural component with respect to said second structural component.

5,609,354

CONTINUOUS CIRCUMFERENCE DIFFUSER REACTION CANISTER

Donald R. Lauritzen, Hyrum, and Bradley W. Smith, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 272,407, Jul. 8, 1994, Pat. No. 5,480,182, which is a continuation of Ser. No. 123,824, Sep. 20, 1993, abandoned, which is a division of Ser. No. 840,238, Feb. 24, 1992, Pat. No. 5,332,256. This application Dec. 18, 1995, Ser. No. 574,171
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.2 **9 Claims**



1. An air bag module comprising:

an extruded reaction canister, said reaction canister including a diffuser tube and extending sides, characterized in that said diffuser tube is formed in one piece with said extending sides, said diffuser tube including a portion situated at a designated position along each side integrally extending between the sides, the sides and the diffuser tube forming an open ended receptacle capable of receiving an inflator to inflate an associated air bag; each side, at a rearwardly located edge thereof, includes a first slot, said reaction canister further includes a second slot located generally at the juncture of said diffuser portion and each side,

an inflatable air bag, said air bag including a generated gas inlet opening having a looped portion of air bag material formed at opposite sides thereof, a rod fitted into each looped portion, each rod and associated looped portion are positioned in one of the corresponding second slots, the remaining portions of the air bag being positioned in the space between said sides and said diffuser portion,.and

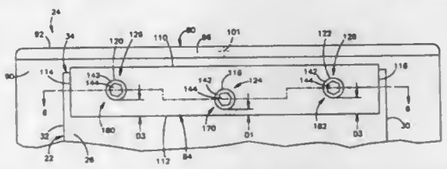
a cover for said reaction canister, said cover being positioned adjacent said first slots that are provided at the rearwardly located edges of said reaction canister sides.

5,609,355

DEPLOYMENT APPARATUS FOR AN INFLATABLE VEHICLE OCCUPANT RESTRAINT

Andrew J. Smydra, Rochester; Rodger M. Cherry, Macomb Township, and Scott A. Kelley, Algonac, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 1, 1995, Ser. No. 510,110
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **18 Claims**



1. Apparatus for use with an inflatable vehicle occupant restraint, said apparatus comprising:

a door panel; and

closure means for securing said door panel in a closed position, said closure means releasing said door panel for pivotal movement to an opened position under the influence of the restraint upon inflation of the restraint;

said closure means including a plurality of couplings which block said pivotal movement of said door panel, each of said couplings comprising a rigid member which ruptures a rupturable member upon relative movement of said members under the influence of the inflating restraint, said couplings being opened so as to release said door panel for said pivotal movement upon said rupturing by said rigid members;

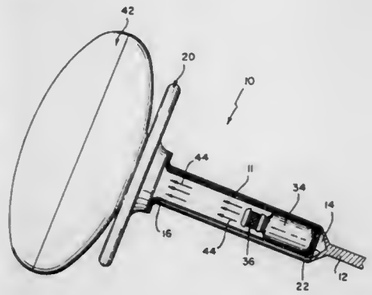
said couplings including a first coupling at a first location and a second coupling at a second location, said first coupling being opened before said second coupling is opened, whereby said door panel is released at said first location before being released at said second location.

5,609,356

CYLINDRICAL AIR BAG MODULE ASSEMBLY

G. Dean Mossi, Roy, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jan. 11, 1995, Ser. No. 371,337
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **21 Claims**



1. A cylindrical air bag module assembly comprising:

a module housing including an elongated tubular member having an open first end and a closed second end,

a cylindrical air bag inflator device disposed within the housing tubular member, said inflator device having opposed first and second axial ends, with the second axial end of said inflator device being closed and adjacent the second end of the housing tubular member and, upon actuation, said inflator device emitting inflation gas from the first axial end thereof, and

an inflatable collapsed air bag also disposed within the housing tubular member, said air bag having an opening permitting passage of inflation gas into the air bag resulting in inflation and deployment of the air bag out of the open first end of the housing tubular member.

5,609,357

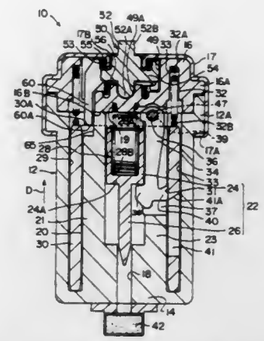
MECHANICAL IGNITION SENSOR

Hiroatsu Amano, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Apr. 21, 1995, Ser. No. 426,927
Claims priority, application Japan, Jun. 21, 1994, 6-138643
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—734 **20 Claims**

1. A mechanical ignition sensor, comprising:

an ignition pin which moves in an axial direction of said ignition pin so as to ignite a detonating member;



an inertial mass which is moved by an inertial force when a predetermined amount of load acts on said inertial mass;

a trigger lever which engages said ignition pin and bolds said ignition pin at a position separated from the detonating member, and when said inertial mass is moved, said trigger lever moves in a direction of separating from said ignition pin so as to allow movement of said ignition pin; and

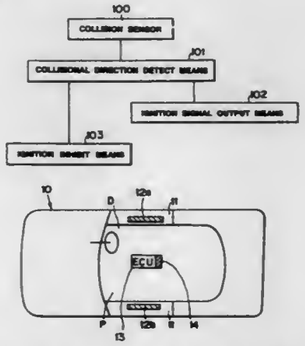
a safety device which is movable from a position at which said safety device abuts said inertial mass so as to prevent movement of said inertial mass, to a position at which said safety device and said inertial mass are in a state of non-abutment so as to allow movement of said inertial mass.

5,609,358

ACTIVATION CONTROL SYSTEM FOR VEHICULAR AIR BAGS

Motomi Iyoda, Seto; Yoshikazu Ohno, Okazaki; Koichi Fujita, Nagoya; Naoki Ishii, Handa; Toshiaki Matsuhashi, Gamagori, and Yukihito Okada, Anjo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Nippon Soken Inc., Nishio, both of Japan

Continuation of Ser. No. 101,077, Aug. 3, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,591
Claims priority, application Japan, Aug. 4, 1992, 4-227905; Aug. 10, 1992, 4-234168
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **4 Claims**



1. An activation control system for controlling activation of a plurality of air bag systems for protecting a passenger by expanding an air bag between the passenger and a vehicular body when the vehicle makes a collision, said activation control system comprising:

collision detect means for outputting a signal having its polarity changed alternately to plus and minus values according to the direction and magnitude of the collision;

collisional direction detect means for detecting the direction of the collision on the basis of both the integrated value of the numbers of times at which the signal of said collision detect means exceeds a predetermined plus threshold value, and the integrated value of the number of times at which the same signal exceeds a predetermined minus threshold value; and

ignition signal output means for outputting an ignition signal to the air bag system which is determined on the basis of the collisional direction detected.

5,609,359

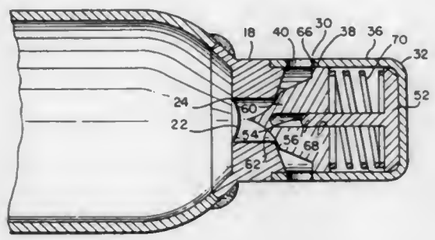
PINTLE CONTROLLED ORIFICE INFLATOR

Kelly B. Johnson, Layton, and Brett Hussey, Bountiful, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 15, 1995, Ser. No. 528,972

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **6 Claims**



1. An inflator for providing gas to inflate an air bag comprising:

a gas source stored under pressure in a container, said container having a gas outlet end

said container including a diffuser shaped in the form of a cylinder affixed to said gas outlet end of said container,

means for defining a gas outlet opening in said diffuser to allow flow of gas from said gas source into said air bag to cause said air bag to inflate, and

valve means for controlling flow of said gas through said diffuser gas outlet opening,

said valve means comprising a spring loaded piston slidably contained within said cylinder,

said piston having formed as a part thereof a conical or curved pintle portion terminating in a first non-linear surface against which said flow of gas moves said piston in a first direction to allow increased flow of gas through said gas outlet opening,

said valve means including a coil spring disposed in the path of movement of said piston for controlling the movement of said piston in said cylinder.

5,609,360

AIR BAG INFLATOR

Ernst M. Faigle, Dryden; Tracy S. Sparks, Lapeer, and Richard J. Thompson, Imlay City, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 22, 1995, Ser. No. 445,652

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—740 **24 Claims**

1. Apparatus for inflating an inflatable vehicle occupant restraint, said apparatus comprising:

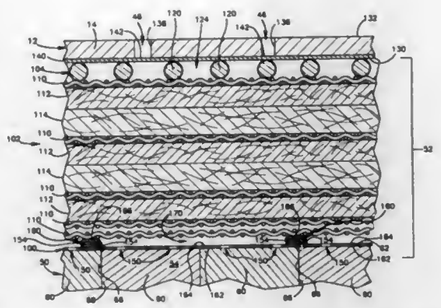
an ignitable gas generating material which, when ignited, generates gas for inflating the restraint;

initiator means for igniting said gas generating material;

means for defining a combustion chamber containing said gas generating material, said means for defining a combustion chamber comprising a tubular wall having a central axis and a plurality of gas flow openings extending radially outward from said combustion chamber through said tubular wall; and

a tubular filter extending circumferentially and axially over said tubular wall;

said tubular wall comprising means for defining a space extending radially outward from said gas flow openings to said filter.



5,609,361

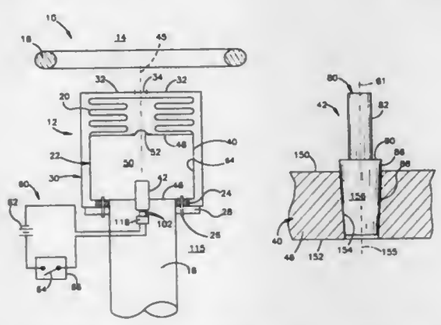
INFLATION FLUID CONTAINER AND INITIATOR WITH PRESS-FIT FLUID SEAL

Lee D. Bergerson, Fountain Valley, and Ivan L. Stonich, Hermosa Beach, both of Calif., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 24, 1995, Ser. No. 518,825

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—741 **13 Claims**



1. Apparatus for inflating an inflatable vehicle occupant restraint, said apparatus comprising:

container means for defining a storage chamber, said container means including a container wall having a frusto-conical surface defining a passage extending outward from said storage chamber through said container wall;

inflation fluid contained under pressure in said storage chamber; and

initiator means for initiating a flow of said inflation fluid from said storage chamber to the restraint to inflate the restraint, said initiator means including pyrotechnic material and conductor means for igniting said pyrotechnic material upon the passage of electric current through said conductor means;

said initiator means further including a tubular part containing said pyrotechnic material and said conductor means, said tubular part extending into said storage chamber through said passage in said container wall and having a frusto-conical peripheral surface;

said frusto-conical surfaces having a condition of being pressed tightly against each other in sealing contact so as to comprise first sealing means for blocking said inflation fluid from

exiting said storage chamber through said passage between said tubular part and said container wall;

said tubular part defining a conduit extending along an axis, said conduit containing a glass part which comprises second sealing means for isolating said pyrotechnic material from the ambient atmosphere, said first sealing means applying a radially compressive sealing force to said tubular part, said glass part being spaced from said first sealing means along said axis.

5,609,362

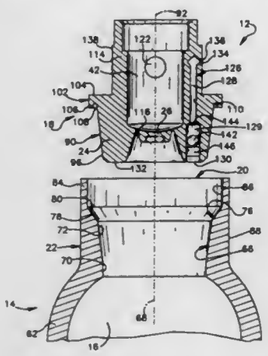
INFLATOR

Tracy S. Sparks, Lapeer, and Ernst M. Faigle, Dryden, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Apr. 19, 1996, Ser. No. 635,366

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—741 **20 Claims**



1. An inflator for inflating an inflatable vehicle occupant protection device, said inflator comprising:

a vessel having a chamber for holding fluid under pressure to inflate the inflatable device, said vessel having inner surface means for at least partially defining an opening to the chamber;

a plug disposed in the opening in said vessel to block the opening, said plug having passage means for directing fluid from said chamber to the inflatable device; and

a weld between said inner surface means on said vessel and said plug to retain said plug in said vessel and to form a fluid tight seal between said vessel and said plug;

said vessel having a rim which is disposed outward of said weld and extends over a portion of said plug to further retain said plug in said vessel.

5,609,363

PASSENGER SIDE AIR BAG WITH TETHER

Thomas A. Finelli, Ypsilanti, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 17, 1995, Ser. No. 559,898

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.2 **5 Claims**

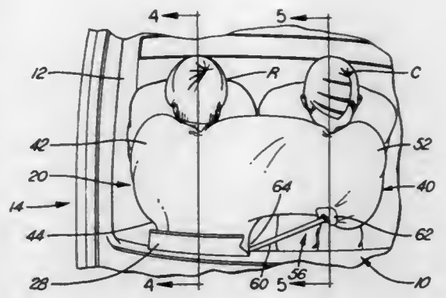
1. An air bag assembly for an automotive vehicle comprising a housing having a wall formed with an opening,

an air bag stored in said housing and adapted when inflated to deploy through said opening,

said air bag having a main sac portion and said main sac portion having a lateral extension,

said lateral extension being in full communication with said main sac portion and when said air bag is inflated and deployed said lateral extension cooperating with said main sac portion in providing a broad cushion to protect two persons seated side by side in the vehicle rearwardly of the housing, and

an anchor attached to said lateral extension for restricting air bag rotation when the air bag is inflated.



5,609,364

ENERGY-ABSORBING DEVICE, PARTICULARLY FOR AUTOMOBILE VEHICLE STEERING COLUMNS

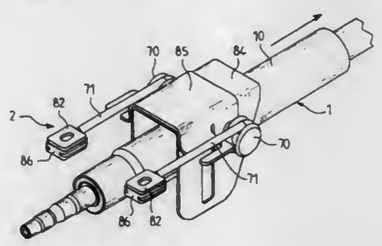
Jean-Michel Fouquet; Benoit Duval, and Eddy DuPont, all of Vendome, France, assignors to NACAM, Vendome, France

Filed Jan. 5, 1995, Ser. No. 369,096

Claims priority, application France, Jan. 6, 1994, 94 00085

Int. Cl.[6] B62D *1/11*

U.S. Cl. 280—777 **11 Claims**



1. An energy-absorbing device disposed between two elements movable apart from each other in response to an externally applied force comprising:

a wire having a deformable coil winding having a plurality of turns and a rectilinear length portion extending from a turn of said coil winding;

a first element of said two elements having mounted thereon an axial core in said coil winding defining an axis about which said coil winding turns are wound axially and circumferentially of an axial length thereof;

an end turn of said coil winding having an end of said wire fixed to said axis;

a second one of said two elements having an end of said wire rectilinear length portion fixedly connected thereto; and

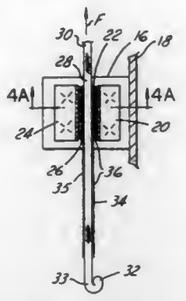
said coil winding turns being deformable for unwinding about said axis to absorb energy of a force applied relatively separating the two elements in a direction parallel to said rectilinear length portion.

5,609,365

ENERGY ABSORBING APPARATUS FOR A MOTOR VEHICLE

Thomas C. Holka, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 11, 1995, Ser. No. 570,029
Int. Cl.[6] B62D *1/11*; **B60R** *22/28*
U.S. Cl. 280—777 **12 Claims**



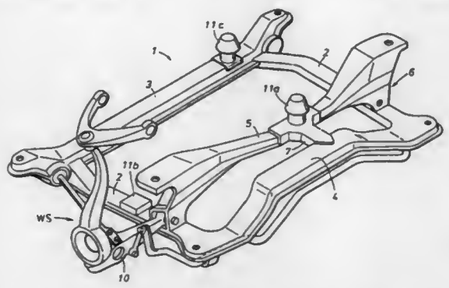
1. An energy absorbing apparatus for use in a motor vehicle, said energy absorbing apparatus comprising:
an anchor securely attached to said motor vehicle;
a first member mounted to said anchor and having a first surface;
a second member disposed adjacent to said first member and having a second surface spaced a predetermined distance from said first surface, said second member being adapted to receive an impact force from within said motor vehicle;
a plurality of first projections disposed on said first surface; and
a plurality of second projections disposed on said second surface and adapted to engage said first projections, said first and second projections being adapted to disengage when said impact force exceeds a predetermined minimum, thereby providing sliding resistance between said second member and said first member to controllably dissipate and absorb energy from said impact force.

5,609,366

WHEEL SUSPENSION SYSTEM MOUNT ASSEMBLY

Takahiro Kamei, and Yoshitaka Sekiguchi, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,778
Claims priority, application Japan, Oct. 5, 1994, 6-266301
Int. Cl.[6] B62D *7/22*; *21/00*
U.S. Cl. 280—788 **8 Claims**



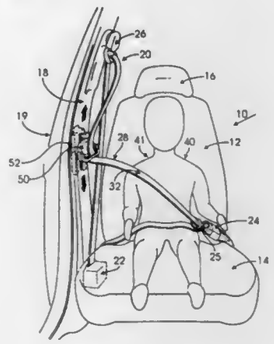
1. A wheel suspension system mount assembly, comprising:
a vehicle subframe including front and rear lateral members and left and right longitudinal members connected to each other in an approximately rectangular shape, said subframe being attached to a vehicle body, and said subframe supporting at least a part of a wheel suspension system; and
a pair of brackets provided in said subframe on said left and right longitudinal members for attaching said subframe to said vehicle body;
each of said brackets being provided with a bearing portion located at a lower end of said brackets adjacent a position where said brackets are connected to said left and right longitudinal members, respectively, for pivotably supporting an inner end of a lower arm of said wheel suspension system.

5,609,367

ADJUSTABLE THREE-POINT RESTRAINT SEAT BELT SYSTEM FOR CHILDREN AND ADULTS

Christopher Eusebi, White Lake, and Raymond Vivacqua, Northville, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 1, 1995, Ser. No. 565,767
Int. Cl.[6] B60R *22/16*
U.S. Cl. 280—808 **11 Claims**



1. In a seat belt restraint system comprising: a three-point seat belt restraint system (**20**) wherein one of the restraint points is a first web guide (**26**) which defines the angle at which the seat belt crosses the upper torso of a seated occupant, first means for lowering the restraint point to permit a belt to cross the upper torso of a smaller occupant child at a determined angle, and wherein the first means comprises a second web guide means (**50**) which selectively receives the seat belt (**28**) and adjusts the departure angle from the restraint point across the seated smaller occupant, said second web guide means being attached to a height adjusting means (**52**) for vertically adjusting the position of said second web guide means, wherein the second web guide means comprises a rotatably mounted, load absorbing loop having an opening or open end (**68**) therein to receive a shoulder belt portion (**32**) of the seat belt.

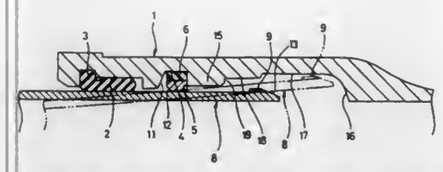
5,609,368

SEPARATION PREVENTIVE PIPE JOINT

Atsushi Maki; Toshio Toshima, and Takahiro Ishihara, all of Amagasaki, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Feb. 21, 1996, Ser. No. 604,476
Claims priority, application Japan, Jul. 26, 1995, 7-189642; Dec. 8, 1995, 7-319860
Int. Cl.[6] F16L *25/00*
U.S. Cl. 285—12 **7 Claims**

1. A separation preventive pipe joint wherein a spigot formed in an end portion of one of two pipes to be joined together is insertable into a socket formed in an end portion of the other pipe, the pipe joint comprising:
a locking ring receiving groove formed in an inner periphery of the socket;



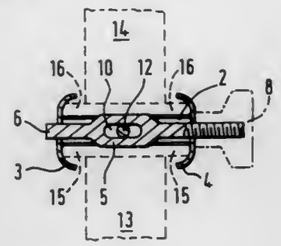
a locking ring having one split in the circumference thereof and fitted in the locking ring receiving groove;
an elastic ring interposed between an inner periphery of the locking ring receiving groove and an outer periphery of the locking ring and holding the locking ring while centering the same;
an outer peripheral projection formed on an outer periphery of an end portion of the spigot, the outer peripheral projection being capable of passing through the locking ring toward a deeper side of the socket while resiliently enlarging the diameter of the locking ring when the spigot is inserted into the socket and being engageable with the locking ring from a location deeper than the locking ring in the socket after passing through the locking ring;
an inner peripheral projection, formed in an inner peripheral portion of the socket which is located deeper than the locking ring receiving groove, for backing up the locking ring;
a first inner peripheral surface having a larger diameter than the inner peripheral projection and formed in an inner peripheral portion of the socket which is located deeper than the inner peripheral projection; and
a second inner peripheral surface formed between the first inner peripheral surface and the inner peripheral projection, the second inner peripheral surface being larger than the inner peripheral projection and smaller than the first inner peripheral surface in diameter.

5,609,369

CLAMP APPARATUS WITH OPENING FOR A PROBE

Anthony J. Wilder, Sussex, and Mark C. Hope, Surrey, both of United Kingdom, assignors to The BOC Group plc, Windlesham, England

Filed Jun. 16, 1995, Ser. No. 491,438
Claims priority, application United Kingdom, Jun. 20, 1994, 9412319
Int. Cl.[6] F16L *41/00*; **F16J** *9/00*
U.S. Cl. 285—93 **5 Claims**



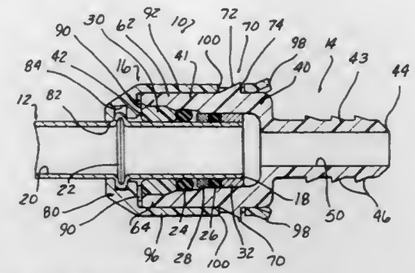
1. A clamp comprising:
means for securing together adjacent lengths of pipe having flanged ends;
said securing means having upstanding end portions and screw means for urging the flanged ends together, said screw means having a rod member passing through apertures in said upstanding end portions and positioned substantially tangentially to the lengths of pipe, said rod member having an opening; and
an elongated probe projecting through said opening of said rod member and extending between said adjacent lengths of pipe for measuring one of temperature and pressure within said adjacent length of pipe.

5,609,370

POSITIVE LATCH QUICK CONNECTOR

George Szabo, Ortonville; Tom E. Grooters, Rochester Hills, and Craig Cheney, Lapeer, all of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 2, 1994, Ser. No. 349,075
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—319 **41 Claims**



1. A quick connector comprising:
a female component having a stepped through bore extending axially from a first open end of the female component to a second end of the female component;
a male component having a through bore and a radially extending annular flange spaced from an end insertable through the first open end of the female component into the stepped through bore in the female component;
at least a first seal engagable with the male component and the stepped bore in the female component;
a retainer carried on the male component;
means on the female component and on the retainer for releasibly interconnecting the male and female components together upon insertion of the male component into the female component;
means, carried on the retainer, for mounting the retainer on the annular flange of the male component; and
the first seal, the stepped through bore, the male component, and the releasibly interconnecting means are disposed in a dimensional relationship such that the releasibly interconnecting means interconnects the male and female components substantially simultaneously with engagement of the first seal with both of stepped through bore and the male component.

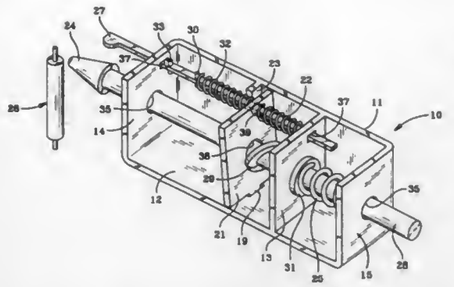
5,609,371

PUSH PAD TRIGGER RELEASE EXIT DEVICE WITH INFINITE DEADLOCKING

Gerald E. Mader; William P. Dye, and Matthew S. Prucinsky, all of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Dec. 26, 1995, Ser. No. 578,770
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—164 **7 Claims**

1. A push pad releasable exit device with continuous deadlocking for mounting near a door edge for engaging a lock strike, comprising:
a housing having first and second sidewalls upon which are mounted two end walls and an internal wall parallel to said end walls, each of said end walls and said internal wall having a hole, said holes being aligned on a common axis, said first sidewall having a wedge stop projecting inwardly therefrom toward the axis of said holes in said end walls and said internal wall;



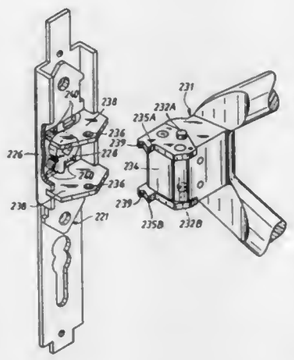
a tapered or similarly profiled latch bolt mounted on a cylindrical shaft, said shaft extending through said holes and having means for urging said latch bolt toward said lock strike;

a wedge plate having a hole providing clearance around said shaft and aligned with the holes in said end walls, having a tab pivotally resting in a slot of said second wall, and having a corner distal from said tab resting against said wedge stop when said door is in an open position;

means for sensing when said door is in a closed position and for flipping said wedge plate away from said wedge stop to grip the shaft and to thereby deadlock the latch bolt; and

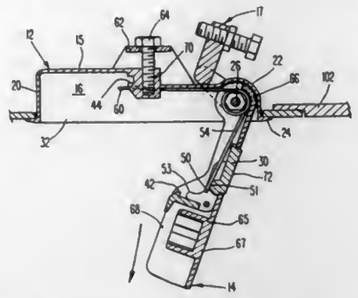
means for releasing said shaft in response to minimal deflection of said push pad to permit said latch bolt to ride over said lock strike.

5,609,372
PUSH-PULL LOCK OPERATING DEVICE
Viviane Poncile, Chatillon, France, assignor to J P M Chauvat S.A., Avermes, France
Filed Nov. 28, 1994, Ser. No. 348,202
Int. Cl.[6] E05C *3/04*
U.S. Cl. 292—200 **7 Claims**



1. Push or pull type device for operating a lock bolt, the device including a support adapted to be attached to a door carrying said lock, said support carrying a cam rotatably mounted on a plate and including a square hole for a corresponding cross-section rod to be inserted into said lock to operate said bolt and an actuator member mounted to pivot about a rotation axis substantially parallel to said plate and having two spaced lugs whose paths on pivoting lie on either side of the rotation axis of said cam, wherein said spaced lugs pivot about the rotation axis and one of said spaced lugs is dimensioned and positioned to contact said cam during pivoting of said actuator member.

5,609,373
LEVER LATCH
Gabriel Gromotka, Caledonia, N.Y., assignor to Southco, Inc., Concordville, Pa.
Division of Ser. No. 838,313, Feb. 20, 1992, Pat. No. 5,267,762. This application Mar. 11, 1993, Ser. No. 29,477
Int. Cl.[6] E05C *3/02*
U.S. Cl. 292—229 **24 Claims**



1. A lever latch for mounting in an aperture formed in a door panel for releasably retaining the door panel against a corresponding frame, the lever latch comprising:

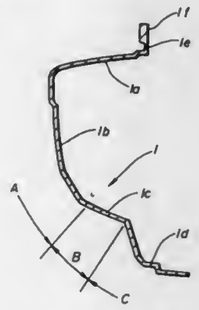
a housing;

a handle assembly pivotally attached to the housing, the handle assembly being rotatable between an opened and a closed position, and including detent means associated therewith adapted for retaining the handle assembly in the closed position thereof;

fastening means, the fastening means connected with the housing and handle assembly adapted for engaging the frame for retaining the door when the handle assembly is rotated to its closed position, and

biasing means, the biasing means being adapted for biasing the detent means for retaining the handle assembly in the closed position and urging the handle assembly from the closed position to the opened position upon disengagement thereof.

5,609,374
AUTOMOBILE BUMPER
Shinichi Sawae; Akihiko Koshiro; Koulti Odaka, and Teruaki Ogino, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Division of Ser. No. 145,838, Nov. 2, 1993, Pat. No. 5,423,673. This application Mar. 24, 1995, Ser. No. 410,108
Claims priority, application Japan, Nov. 2, 1992, 4-317805; Nov. 6, 1992, 4-321397; Nov. 6, 1992, 4-321398
Int. Cl.[6] B60R *19/00*
U.S. Cl. 293—102 **11 Claims**



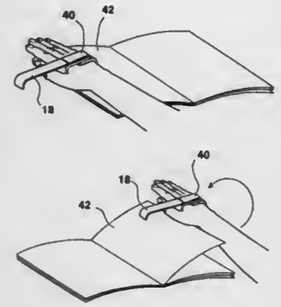
1. An automobile bumper for use on an automobile body, comprising:

a thicker region having a relatively large wall thickness at a top portion of said bumper;

a thinner region having a relatively small wall thickness at a bottom portion of said bumper; and

a gradually varying region formed integrally between said thicker region and said thinner region to slope downwardly and inwardly towards the automobile, said gradually varying region having a wall thickness reduced from a wall thickness of said thicker region to a wall thickness of said thinner region in a direction from said thicker region toward said thinner region, the reduction in wall thickness being 35% or less where the reduction in wall thickness is defined to be $100\times((c/a)-1)\%$, c being the wall thickness of said thinner region and a being the wall thickness of said thicker region, and wherein said gradually varying region has a length of about 50 mm or greater from said thicker region to said thinner region.

5,609,375
PERSONAL DEVICE FOR PAGE TURNING/ TRANSFERRING
Efrat Cohen, 39 Beeri, 76351 Rehovot, Israel
Filed Sep. 6, 1995, Ser. No. 523,857
Int. Cl.[6] B25J *1/00*
U.S. Cl. 294—25 **13 Claims**



1. A device for facilitating the turning of pages using a user's major limb, comprising:

(a) a strap configured for attachment about the limb of the user, said strap having an inner and an outer surface;

(b) attachment means connected to said strap for detachably attaching the device to the limb of the user;

(c) an adhesive material connected to said outer surface of said strap for alternately adhering and releasing the pages;

(d) an extension connected to said strap for preventing the return of a turned page to its original position.

5,609,376
WAFER CARRIER HANDLE ASSEMBLY
Robert J. Lardinais, Boise, and Leo L. Maimin, Nampa, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Sep. 8, 1995, Ser. No. 525,402
Int. Cl.[6] B65D *25/28*
U.S. Cl. 294—27.1 **14 Claims**

1. A wafer carrier handle assembly, comprising:

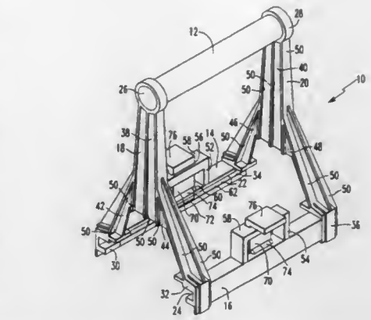
a handle;

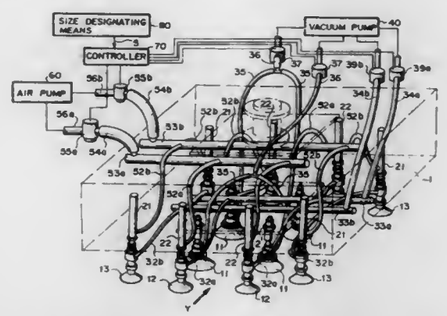
a pair of attachment rails, each of said rails having a groove therein for receipt of a flange of a wafer carrier;

at least one support attached to said handle and each of said rails to support said rails from said handle; and

at least one latch connected to one of said support and said rails, said latch being movable between an unlatched position wherein movement of the flanges of the wafer carrier within said grooves is unrestrained, and a latched position wherein such movement is restrained.

5,609,377
VACUUM CHUCK APPARATUS
Hirohisa Tanaka, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 8, 1994, Ser. No. 351,698
Claims priority, application Japan, Dec. 8, 1993, 5-307894
Int. Cl.[6] B66C *1/02*
U.S. Cl. 294—65 **5 Claims**





1. A vacuum chuck apparatus for chucking an article, comprising:

a plurality of movable suction cups mounted in a suction cup array on a support member and operative to move up and down relative to the support member between an operative position where each of the movable suction cups can attract the article by suction and a retracted position above the operative position,

drive means for moving the respective movable suction cups up and down relative to the support member independently from each other between the operative position and the retracted position, said drive means including a plurality of air cylinders mounted on said support member, with each of said air cylinders associated with a corresponding one of the movable suction cups, an air pump for supplying pressurized air to said air cylinders, air lines which connect said air pump to said air cylinders, and valve means located in said air lines between said air pump and said air cylinders and for opening and closing said air lines, said valve means comprising first and second electromagnetic valves, and in which each of said air cylinders in a first group thereof is connected to a first common air pipe through a discrete air hose, and said first common air pipe is connected to said air pump via said first electromagnetic valve, whereas each of said air cylinders in a second group thereof is connected to a second common air

pipe through a discrete air hose, and said second common air pipe is connected to said air pump via said second electromagnetic valve,

an article size designating means for outputting a size signal representing the size of the article to be chucked, and

a control means for controlling the drive means according to the size signal from the article size designating means so that a part of the movable suction cups which are not necessary for chucking the article of the size represented by the size signal are held in the retracted position and the other suction cups are held in the operative position.

5,609,378

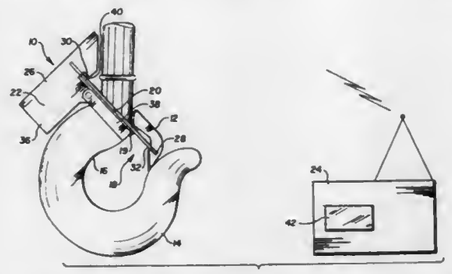
AUTOMATIC CRANE HOOK SAFETY LATCH

Peter Bowers, and Stephen Hart, both of Oroville, Calif., assignors to Latchit Enterprises, Inc., Oroville, Calif.

Filed Aug. 25, 1995, Ser. No. 519,190

Int. Cl.[6] B66C *1/36*

U.S. Cl. 294—82.19 **12 Claims**



1. A remotely operated safety latch device for a hook, said device comprising:

a safety latch movable between an open and a closed position;

an actuating link attached to said safety latch, said actuating link selectively movable between a first position and a second position, said safety latch being in the open position when said actuating link is in said first position and said safety latch being in the closed position when said actuating link is in said second position;

actuating means engaging said actuating link and selectively moving said actuating link to said first position and to said second position;

a collar for attaching said safety latch and said actuating means to a hook, said actuating means attached to said collar, and said safety latch pivotally attached to said collar;

a transmitter for transmitting operating commands inputted by a user; and

a receiver controlling said actuating means and causing said actuating means to selectively move said actuating link to said first position and to said second position in response to said operating commands.

5,609,379

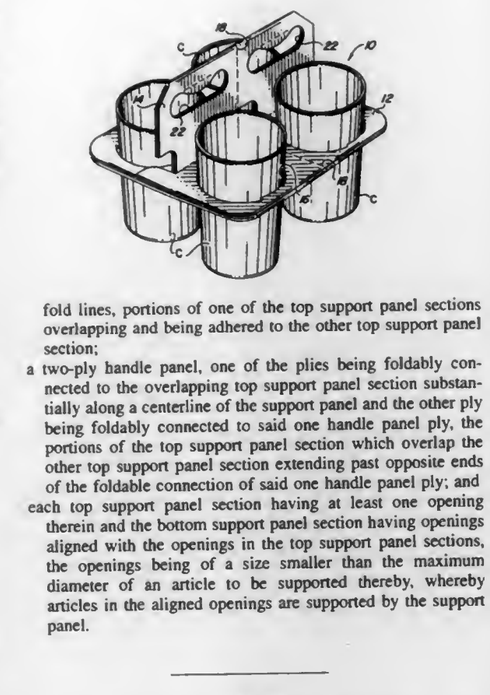
BEVERAGE CUP CARRIER

Glen R. Harrelson, Gainsville, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Nov. 29, 1995, Ser. No. 564,762

Int. Cl.[6] B65D *71/00*

U.S. Cl. 294—87.2 **8 Claims**



1. A carrier for articles which are circular in cross-section and are inwardly tapered from top to bottom, comprising:

an article support panel comprised of a bottom support panel section and two top support panel sections, the top support panel sections being connected to the bottom support panel section at opposite ends thereof along substantially parallel fold lines, portions of one of the top support panel sections overlapping and being adhered to the other top support panel section;

a two-ply handle panel, one of the plies being foldably connected to the overlapping top support panel section substantially along a centerline of the support panel and the other ply being foldably connected to said one handle panel ply, the portions of the top support panel section which overlap the other top support panel section extending past opposite ends of the foldable connection of said one handle panel ply; and

each top support panel section having at least one opening therein and the bottom support panel section having openings aligned with the openings in the top support panel sections, the openings being of a size smaller than the maximum diameter of an article to be supported thereby, whereby articles in the aligned openings are supported by the support panel.

5,609,380

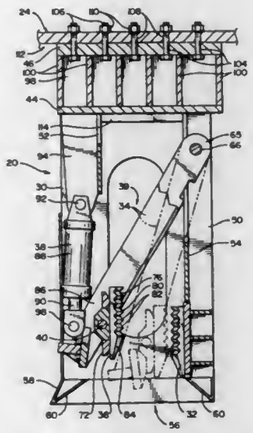
CLAMP ASSEMBLIES FOR DRIVING PILES INTO THE EARTH

John L. White, Kent, Wash., assignor to American Piledriving Equipment, Inc., Kent, Wash.

Filed Nov. 15, 1994, Ser. No. 340,052

Int. Cl.[6] B66C *1/44;* **E02D** *7/18*

U.S. Cl. 294—104 **20 Claims**



1. A clamp assembly for attaching a pile to a pile driving apparatus for inserting and/or extracting the pile, comprising:

a. a housing;

b. a first gripping assembly rigidly attached to the housing;

c. a pivot member pivotably attached to the housing by a pivot pin;

d. a second gripping assembly rotatably attached to the pivot member; and

e. actuating means for displacing the pivot member and the second gripping assembly such that the pile is gripped between the first and second gripping assemblies, the actuating means comprising a piston actuator having a first end rotatably connected to the housing and a second end rotatably attached to the pivot member by an actuator pin; wherein

f. as the second gripping assembly engages the pile, the second gripping assembly moves relative to the pivot member into a desired orientation relative to the pile; and

g. the pivot pin and the actuator pin are removed to allow removal and replacement of the second gripping assembly.

5,609,381

PARALLEL GRIPPER HAVING A FORCE MEASURING ARRANGEMENT

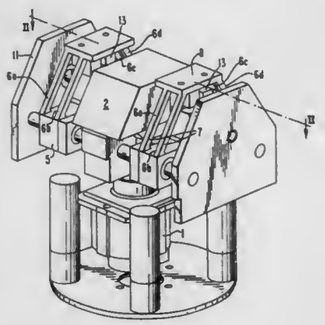
Heinz Thom; Alfred Neumann; Wolfgang Johansen, and Peter Zier, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Mar. 28, 1995, Ser. No. 413,856

Claims priority, application Germany, Mar. 28, 1994, 44 11 319.6

Int. Cl.[6] B25J *15/02;19/02*

U.S. Cl. 294—119.1 **7 Claims**



1. A parallel gripper comprising

(a) an electric motor;

(b) a threaded spindle connected to said motor to be driven thereby about a longitudinal spindle axis;

(c) a spindle nut threadedly mounted on said spindle for longitudinal travel therealong upon rotation of said spindle;

(d) a support block affixed to said nut;

(e) means for preventing a rotation of said spindle nut about said spindle axis;

(f) a mounting plate for accommodating a gripper jaw thereon;

(g) a first, a second, a third and a fourth web coupling said mounting plate to said support block; said first and second webs being parallel to one another and being spaced in a direction parallel to the spindle axis; said third and fourth webs being parallel to one another and being spaced in a direction parallel to the spindle axis; and

(h) deformation signalling means mounted on said webs for emitting signals representing a bending deformation said webs undergo in response to a reaction force generated by a gripping force of the gripper.

5,609,382

MOTOR VEHICLE CENTRAL CONSOLE

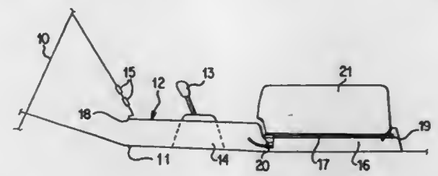
Peter Schmid, Schorndorf; Siegfried Schreiber, Laufen a.N., and Helmut Grantz, Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Oct. 2, 1995, Ser. No. 537,437

Claims priority, application Germany, Oct. 12, 1994, 44 36 420.2

Int. Cl.[6] B60R *7/04*

U.S. Cl. 296—37.8 **9 Claims**



1. A central console for a motor vehicle which extends from an instrument panel at a forward portion of a passenger compartment into the vehicle interior between the front seats and has operating elements constituting a console with a finished appearance and prefabricated mechanical and electrical connections and is configured to receive during manufacture at least one add-on part comprising optional additional devices and operating elements with means for being operatively associated with the mechanical and electrical connections of said console so as to provide a variety of console configurations having different ones of the at least one add-on part.

5,609,383

VEHICLE LINER UNDERNEATH VEHICLE FLOOR

John W. Cahill, Fulton County, Ga., assignor to National Shelter Products, Inc., Issaquah, Wash.

Filed Jul. 20, 1995, Ser. No. 512,515

Int. Cl.[6] B60R *13/00*

U.S. Cl. 296—39.1 **18 Claims**



1. A liner for preventing moisture from entering and removing moisture from underneath a vehicle's floor, said liner comprising a first strip of a waterproof material provided underneath the vehicle's floor, a second strip of a waterproof material provided underneath the vehicle's floor in spaced-apart, parallel relationship to said first strip so that a gap is provided therebetween and a third strip of a waterproof material provided underneath the vehicle's floor and covering the gap provided between said first and second strips, wherein means for removing moisture is provided between at least one of said first and third strips and said second and third strips.

5,609,384

FAIRING

Gordon Loewen, 3500 Shuswap Ave., Richmond, B.C., Canada

Filed Jun. 20, 1996, Ser. No. 667,201

Int. Cl.[6] B62D *35/00*

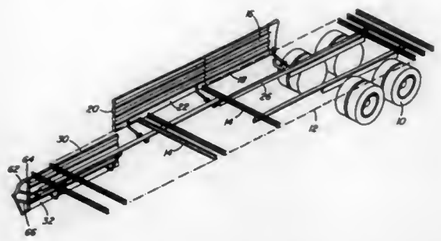
U.S. Cl. 296—180.4 **7 Claims**

1. A fairing for use on a trailer and comprising:

a first member having a first edge hingedly attached to said trailer at said first edge;

a second member having a first edge hingedly attached to said trailer at said second member first edge;

a third member having a first edge hingedly attached to said trailer at said third member first edge and arranged adjacent



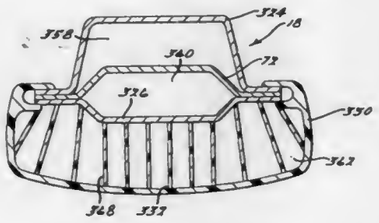
the second member, and telescopically receivable within said second member, said fairing being arranged along the lower edge of the trailer, adjacent the wheels.

5,609,385

ENERGY ABSORBING VEHICLE PILLAR STRUCTURE

Roger P. Daniel, Dearborn; Praful Patel, Novi; George G. Lim, Northville, and Clifford C. Chou, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 225,689, Apr. 11, 1994, abandoned.
This application Mar. 28, 1996, Ser. No. 623,519
Int. Cl.[6] B60R *27/00*
U.S. Cl. 296—188 **13 Claims**



1. An energy absorbing pillar structure for an automotive vehicle, comprising:

an exterior panel arranged in generally vertical orientation to define an outwardly concave exterior surface of the vehicle;

an interior panel arranged in longitudinal registration with the exterior panel and defining an interior surface convex with respect to the exterior panel exterior surface;

an intermediate panel fixedly secured between the exterior panel and the interior panel to define a first chamber with the exterior panel and a second chamber with the interior panel, the second chamber being arranged in series relationship with the first chamber, the intermediate panel defining a central bridge truss portion having a shape generally complementary with one of the exterior or interior panels;

means defining peripheral flange portions for joining the exterior, interior, and intermediate panels together;

a trim cover joined to the peripheral flange portions and having a third chamber formed therein inwardly adjacent the interior panel, the third chamber being arranged in series relationship with the first and second chambers; and

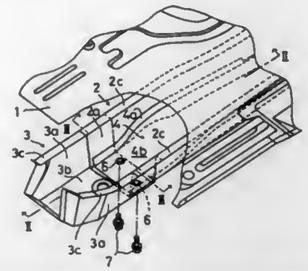
energy absorbing media fixedly secured to one of the interior panel or the trim cover and substantially filling the third chamber.

5,609,386

STRUCTURE OF FRAME CONNECTING PORTION IN VEHICLE

Akio Takahashi; Yoshio Abe, and Hideaki Takaishi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,238
Claims priority, application Japan, Jul. 21, 1994, 6-190175
Int. Cl.[6] B60R *27/00*
U.S. Cl. 296—204 **1 Claim**



1. A frame connecting portion for a vehicle comprising:

a floor panel;

a longitudinally extending floor frame member disposed beneath said floor panel, said floor frame member having a bottom plate section and oppositely spaced side sections upstanding from said floor frame member bottom plate section defining a substantially U-shaped cross-section;

means on upper portions of said floor frame member side sections supportingly engaging said floor panel;

a side frame member having a bottom plate section and opposed side plate sections upstanding from said side frame member bottom plate section defining a substantially U-shaped cross-section and receiving corresponding sides and bottom plate sections of said floor frame member in stacked, continuous, mutually contiguous engagement;

a frame stiffener having a bottom plate section and opposed side plate sections upstanding from said frame stiffener bottom plate section, at least a portion of said frame stiffener being in stacked, continuous, mutually contiguous engagement with said bottom plate section and said side sections of said side frame member; and

means for integrally joining said frame members and said stiffener member including a plurality of mutually aligned through-holes extending through contiguous sections of said members and tightening means defined by nut and bolt means extending through said through-holes operative for securing sections of said members in tight, mutually contiguous engagement.

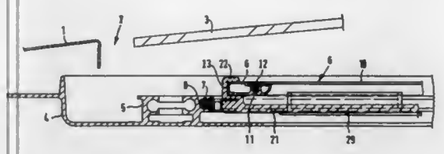
5,609,387

LINING PANEL FOR A SLIDING ROOF FOR A VEHICLE

Klaus Stallfort, Maintal; Rainer Hattass, Gründau, and Dieter Federmann, Hanau, all of Germany, assignors to Rockwell International GmbH, Germany

Filed Dec. 21, 1995, Ser. No. 576,145
Claims priority, application Germany, Dec. 30, 1994, 44 47 014.2
Int. Cl.[6] B60J *7/00*
U.S. Cl. 296—214 **7 Claims**

1. A lining panel for a vehicle sliding roof, said sliding roof being arranged to displaceably open and close a roof opening, said lining panel being slidably mounted beneath a sliding lid of the sliding roof, said lining panel displaceably associated with the roof opening and mounted on at least two laterally spaced guide rails, said lining panel comprising a stiff lining frame covered with a flexible air-permeable sheet of material, wherein said lining panel further comprises an additional lining plate, said lining plate



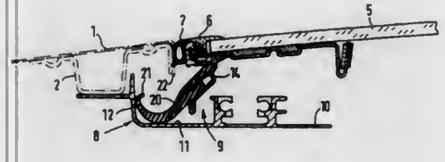
located beneath the covered lining frame, wherein the covered lining frame and the lining plate are disposed displaceably relative to each other, and wherein the covered lining frame and the lining plate further each have two lateral edges and wherein the covered lining and the lining plate engage each other slidably at said lateral edges.

5,609,388

WIND DEFLECTOR FOR A SLIDING ROOF FOR A VEHICLE

Rainer Hattass, Gründau, and Brigitte Weidmann, Frankfurt, both of Germany, assignors to Rockwell International GmbH, Germany

Filed Dec. 15, 1995, Ser. No. 572,938
Claims priority, application Germany, Dec. 15, 1994, 44 44 630.6
Int. Cl.[6] B60J *7/22*
U.S. Cl. 296—217 **15 Claims**



1. A wind deflector for a sliding roof of a vehicle, said vehicle roof having a transverse curvature, said vehicle roof including a sliding roof plate which seats within a roof opening when closed, said roof opening having a front rim, said vehicle roof further including a roof frame underneath said roof plate, said roof frame including a forward transverse member, said wind deflector comprising;

an air guide having an air guidance portion, said air guide extending transversely to the direction of travel of the vehicle, said air guide comprising a strip of elastic material having a tapered profile, said air guide having a top edge and a bottom edge, said tapered profile being thicker at said top edge and narrower at said bottom edge,

said air guide fixed to a rigid bar,

wherein said bar is mounted upwardly sprung on a sliding roof frame for the purpose of automatically raising the air guide with its air guidance portion above the roof into a working position against said front roof opening rim when the sliding roof plate is opened, and when the sliding roof plate is closed, said air guide is lowered against the spring action of said upwardly sprung mount into a stowed position,

wherein the air guide surface and the rigid bar are housed, when said sliding roof plate is closed, in said forward frame transverse member,

wherein the elastic strip is fixed to the rigid bar near said upper edge of the elastic strip,

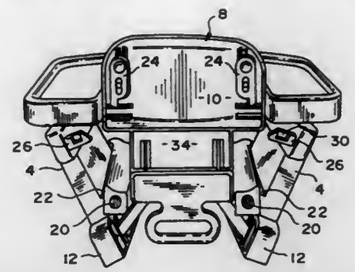
wherein the lower edge of the elastic strip, when the sliding roof plate is closed, comes into contact against the front transverse member, wherein said elastic member is constructed to be bent upwardly forwards.

5,609,389

COLLAPSIBLE BOOSTER SEAT

Jose Longoria, Miami, Fla., and Stephen P. Chininis, Norcross, Ga., assignors to Kids II, Inc., Alpharetta, Ga.

Filed Jul. 24, 1995, Ser. No. 506,109
Int. Cl.[6] A47D *1/10*
U.S. Cl. 297—37 **14 Claims**



1. A collapsible booster seat which is collapsible from a normal use configuration to a collapsed configuration, comprising

a seat member for supporting a seated occupant,

a back member which is connected to said seat member for pivotal movement about a transverse pivot axis, said back member having a backrest portion which is movable from a normal use position which is perpendicular to the seat member to a collapsed position which is parallel to the seat member;

two side members, each of said side members having an upper arm portion and a lower leg portion, said arm portion and said leg portion of each side member being rigidly connected together, each of said side members being connected to said seat member for pivotal movement about a single longitudinal pivot axis which is stationary with respect to the seat member and the respective side member;

each of said side members being movable about its said longitudinal pivot axis between a normal use position which is perpendicular to the seat member and a collapsed position which is parallel to the seat member, said side members being parallel to each other and perpendicular to the back member when said booster seat is in its normal use configuration, said arm portions extending laterally outboard of the seat member when the booster seat is in its collapsed configuration.

5,609,390

HEIGHT-ADJUSTABLE FOLDING CHAIR

Hirosuke Takafuji, Osaka, Japan, assignor to Seiko Industrial Corporation, Osaka-fu, Japan

Filed Sep. 6, 1995, Ser. No. 524,435
Claims priority, application Japan, Sep. 6, 1994, 6-239610
Int. Cl.[6] A47C *4/00*
U.S. Cl. 297—55 **12 Claims**

1. A height-adjustable folding chair comprising:

(a) a main frame having at least a pair of left and right supporting poles and plural lateral bars; each lateral bar having a circular cross section and being bridged between the supporting poles;

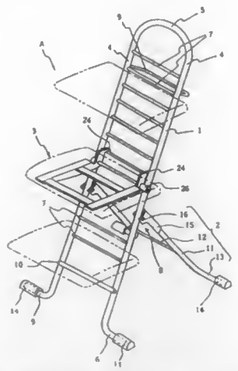
(b) an auxiliary leg foldably connected with the main frame;

(c) a seat detachably mounted on the main frame;

(d) said seat having a pair of vertical ribs each rib having an end which has a hook curving vertically downward with a J-shape to be rotatably hooked with one of the lateral bars at a rear end thereof; and

(e) said seat having a pair of left and right abutting members for abutting against surfaces of the poles so that the seat hooked with the lateral bar can be supported at a substantially horizontal angle;

(f) a means for hanging the seat on the main frame in a folded position of the chair; and



(g) said lateral bars being arranged with intervals larger than a height of the hook.

5,609,391

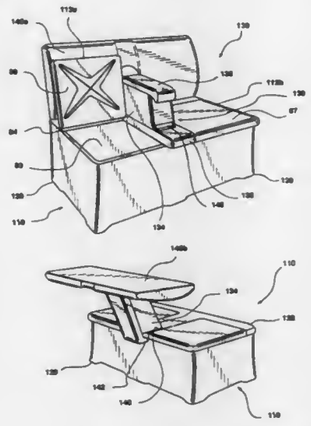
CONVERTIBLE BENCH/TABLE CONTAINER APPARATUS

Stephen P. Watts, Orem, and M. Brent Norton, Provo, both of Utah, assignors to Premiere Products, Provo, Utah

Continuation-in-part of Ser. No. 207,940, Mar. 8, 1994, Pat. No. 5,398,990, which is a continuation of Ser. No. 937,473, Aug. 28, 1992, Pat. No. 5,292,172. This application Feb. 10, 1995, Ser. No. 386,958

Int. Cl.[6] A47B *85/06*

U.S. Cl. 297—127 **20 Claims**



1. A convertible bench/table container apparatus, comprising:

at least one seat member;

a means for supporting said seat member, said support means having an internal chamber disposed therein;

a backrest/tabletop member;

means for pivoting said backrest/tabletop member from a first position, exhibiting said seat member with an adjacent tabletop, into a second position, exhibiting said seat member with a backrest; and

means for structurally supporting said backrest/tabletop member comprising at least one structural stop engaging said means for supporting said seat member, said structural stop providing means for sustaining said tabletop when the backrest/tabletop member is pivoted into said first position, and wherein said means for structurally supporting said backrest/tabletop member comprises a hingeable engagement with said means for supporting said seat member when said backrest/tabletop member pivoted into the second position.

5,609,392

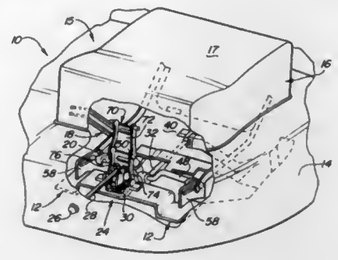
INTEGRATED CHILD SEAT

Tomas Stigson, Skene, Sweden, assignor to Lear Seating Corporation, Southfield, Mich.

Filed Dec. 28, 1995, Ser. No. 579,747

Int. Cl.[6] A47C *15/00*

U.S. Cl. 297—237 **18 Claims**



1. A seat (**10**), comprising:

a seat frame (**12**);

a cushion (**14**) supported on said seat frame, said cushion defining a seating surface (**15**);

a moveable cushion insert (**16**) supported on said seat frame for movement between a lower passenger seating position, wherein said cushion insert is aligned with and defines a portion of said seating surface, and a raised child seating position, wherein said cushion insert is disposed above and generally parallel to said seating surface;

support means (**18**) for supporting said cushion insert in said raised position, said support means (**18**) including a scissor arm support structure;

a latch member (**20**) for engaging said support means and maintaining said cushion insert in said raised position, said latch member (**20**) engaging a portion of said scissor arm support structure when said cushion insert (**16**) is in said raised position;

a locking member (**22**) for locking said cushion insert in said lower position; and

characterized by release means (**24**) for releasing said locking member (**22**) when said cushion insert is to be moved from said lower position and for releasing said latch member (**20**) when said cushion insert is to be moved from said raised position.

5,609,393

RECLINING MECHANISM FOR TODDLER SEAT

Paul K. Meeker, Hiram, and William R. Gibson, Canton, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.

Continuation of Ser. No. 330,454, Oct. 28, 1994. This application Feb. 6, 1996, Ser. No. 602,872

Int. Cl.[6] A47C *1/08;* **B60N** *2/26*

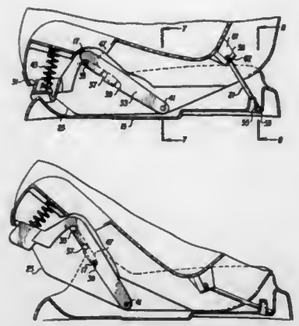
U.S. Cl. 297—256.13 **2 Claims**

1. A toddler carrier comprising

a shell having a seat, a back, opposed sides, and opposed leg members extending downwardly from said seat, said leg members having a front and a rear, said seat having a front and a rear, said leg members being located at the front of said seat;

opposed elongated slots in said front of said leg members;

a base having a front end and a rear end, said base having opposed upwardly extending towers at said front end;



a rigid link member for attaching said shell to said rear end of said base at said rear of said seat, said link pivotally connecting said shell to said base;

an axle extending through said opposed elongated slots in said leg members and opposed towers of said base;

a slot in the sides of said shell for acceptance of said axle;

a release handle having an integral pair of release arms extending at a predetermined angle from said handle, said release arms being pivotally secured to said shell;

a plurality of notches in said release arm, said notches being configured so as to releasably mate with said axle;

a spring between said shell and said release handle for biasing said notches into a mating position with said axle;

whereby said notches may be selectively aligned with said axle by depression of said release handle and pivoting said shell in a selected direction.

5,609,394

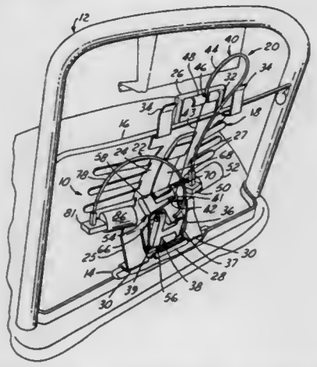
FOUR-WAY LUMBAR SUPPORT

James T. Ligon, Sr., Almont, and Stephen P. Porter, Imlay City, both of Mich., assignors to Ligon Brothers Manufacturing Company, Almont, Mich.

Filed Feb. 23, 1996, Ser. No. 606,257

Int. Cl.[6] A47C *3/025*

U.S. Cl. 297—284.4 **12 Claims**



7. A combination of a lumbar support mechanism and a frame for a seatback comprising:

a first horizontally disposed bar fixed to the frame;

second horizontally disposed bar fixed to the frame and spaced from the first horizontally disposed bar;

a flexible support member having oppositely disposed first and second longitudinal ends, the first longitudinal end being rotatably attached to the first horizontally disposed bar and the second longitudinal end slidably connected to the second horizontally disposed bar;

means disposed between the first longitudinal end and the second longitudinal end for longitudinally subtending the support member, whereby the support member arches outwardly to define an apex engaging a user's back; and

an apex shift linkage including a first shift link and a second shift link with the first shift link having a first end thereof pivotably connected to the flexible support member proximate to the first longitudinal end and the second shift link pivotably connected on a first end thereof to the flexible support at a point between the second longitudinal end and the first end of the first apex shift link and the second apex shift link also being pivotably connected to the first apex shift link at a hinge point wherein the first apex shift link and the second apex shift link define an angle therebetween; and

a loading means engaging one of the first shift link and the second shift link at a load point wherein applying a load at the load point tends to shift the apex toward the second longitudinal end.

5,609,395

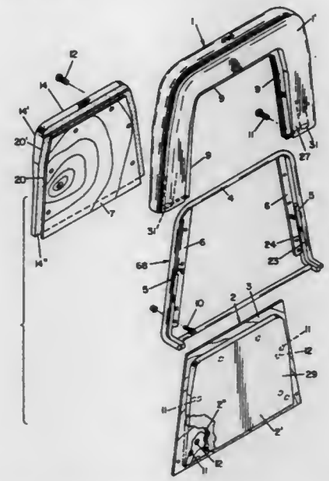
MODULAR BUS SEAT AND METHOD OF RETROFITTING EXISTING BUS SEATS

Selwyn A. Burch, 30627 Webster Rd., Bay Village, Ohio 44140

Filed Sep. 18, 1995, Ser. No. 530,451

Int. Cl.[6] A47C *7/18*

U.S. Cl. 297—452.55 **12 Claims**



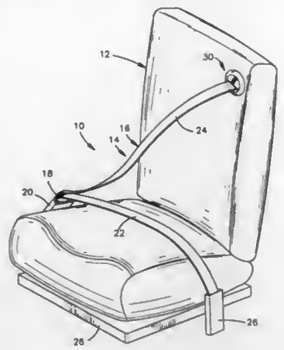
1. A bus seat back comprising a metal frame; a front modular portion; a rear modular portion; and a collar portion; said front modular portion comprises a front substrate and an elastomer skinned foam adhered to said front substrate; said rear modular portion comprises a rear substrate and an elastomer skinned foam adhered to said rear substrate; said collar portion comprises an elastomer skinned foam having a void therein; said front substrate of said front modular portion affixed to said metal frame; said rear substrate of said rear modular portion affixed to said front substrate of said front modular portion; said collar portion affixed to said front substrate of said front modular portion adjacent said front and rear modular portions; and, said metal frame and said front substrate of said front modular portion residing partially in said void of said collar portion.

5,609,396

APPARATUS FOR RESTRAINING A VEHICLE OCCUPANT

Steven R. Loxton, Lake Port, and Donald P. Czarnecki, Marysville, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jul. 26, 1995, Ser. No. 507,110
Int. Cl.[6] A62B *35/00;* **B60R** *21/00;22/12;22/34*
U.S. Cl. 297—473 **26 Claims**



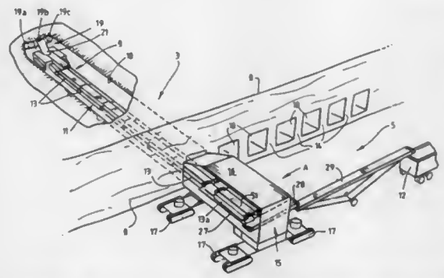
1. An apparatus for restraining a vehicle occupant, said apparatus comprising:
seat belt webbing extendable about the vehicle occupant;
a structure having an opening through which said webbing extends;
a movable closure member which blocks the opening in said structure, said closure member having a slot through which said webbing extends; and
means supporting said closure member for rotation about an axis extending through said opening and for pivotal movement about a center spaced from said closure member.

5,609,397

HIGHWALL MINING SYSTEM WITH DRIVEN CONVEYOR UNITS

Gordon A. Marshall, Camberwell; Rene P. Abela, New South Wales, and Henry J. Bartoslewicz, Mount Waverley, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed Jul. 11, 1994, Ser. No. 272,547
Claims priority, application Australia, Jul. 12, 1993, PL 9888; Apr. 29, 1994, PM 5380
Int. Cl.[6] E21C *29/00;* **B61G** *5/10*
U.S. Cl. 299—67 **37 Claims**



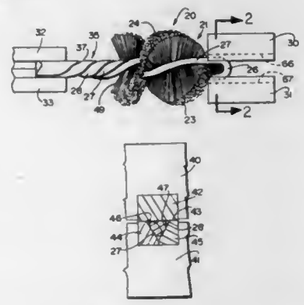
1. A highwall mining system for mining aggregate material from a seam comprising:
(a) a mining means for cutting aggregate material from the seam and thereby forming a drive in the seam;
(b) a conveying means for conveying mined aggregate material from the drive, the conveying means comprising a plurality of modular conveyor units having a means for releasably coupling together the conveyor units;
(c) a driving means for driving the mining means and the conveyor means into the seam to form the drive; and
(d) a controlling means for controlling forward movement of the mining means and the conveying means so that the mining means and the conveying means can move together at a predetermined rate of advance into the seam without there being any uncontrolled forward movement of the mining means and/or the conveying means in response to the incline of the seam and/or during the addition of a new conveyor unit to the conveying means.

5,609,398

TWISTED STEM ABRADING TOOL AND METHOD OF MAKING

Rueben B. Warner, and James B. Tyler, both of Westlake, Ohio, assignors to Jason Incorporated, Cleveland, Ohio

Filed Oct. 20, 1994, Ser. No. 326,488
Int. Cl.[6] A46D *1/08*
U.S. Cl. 300—21 **15 Claims**



11. A method of making a twisted stem tool comprising the steps of forming a flat bundle of parallel filaments of a uniform width and thickness said filaments having a reduced compressive strength, wrapping a half round wire about the center of the bundle by bending it over at one end of the bundle, firmly gripping the bent over end of the wire with generally uniform pressure over the exterior of the half round wire, said uniform pressure being less than the compressive strength of the filaments, gripping the free ends of the wire, and twisting the wire to form a twisted stem projecting from the opposite end of the bundle said gripping including the step of biting into the exterior of the cotter pin to resist the torque of the twisting.

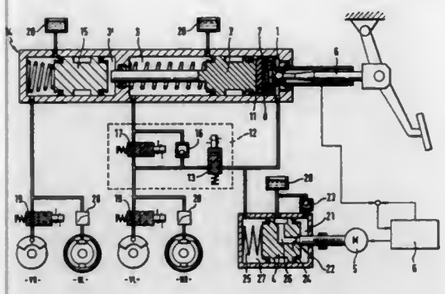
5,609,399

HYDRAULIC BRAKING SYSTEM WITH SLIP CONTROL

Hans-Jorg Feigel, Rosbach; Ulrich Neumann, Rossdorf, and Lothar Schiel, Hofheim, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP94/00885, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/22699, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 22, 1994, Ser. No. 530,232
Claims priority, application Germany, Mar. 27, 1993, 43 10 061.9
Int. Cl.[6] B60T *8/32;8/44;8/48*
U.S. Cl. 303—113.4 **9 Claims**

1. A hydraulic braking system with slip control, for automotive vehicles, comprising:
at least one working piston guided in a brake pressure generator, a booster piston of a hydraulic brake force booster for actuating the working piston,



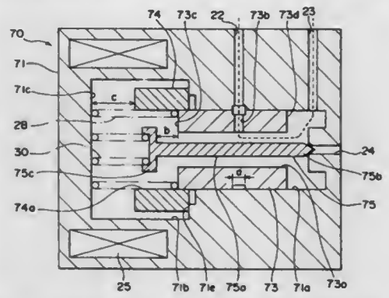
at least one wheel brake connected to the brake pressure generator and an electrically actuable auxiliary pressure source connected to the booster piston,
a control and regulator electronic assembly for detecting the wheel rotating pattern of a wheel attached to said at least one brake and for controlling the wheel brake pressure by means of pressure modulating valves,
an electronic sensor means for detecting the relative movement between a pressure rod attached to the brake pressure generator and the booster piston, the output signals of which are input to the control and regulator electronic assembly, wherein the electrically actuable auxiliary pressure source is formed of a floating piston and a servo drive, wherein the auxiliary pressure source is provided with a locking means for maintaining a holding force, wherein the locking means includes a fluid-filled, blockable pressure chamber the internal pressure of which generates the required holding force, wherein the locking means establishes a first hydraulic connection between the pressure chamber and an intake reservoir in which said first connection is inserted a check valve opening toward the pressure chamber and a second hydraulic connection established between the pressure chamber and the intake reservoir by means of an electrically actuable shut-off valve.

5,609,400

THREE POSITION SOLENOID CONTROLLED VALVE

Koichi Hashida, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 14, 1994, Ser. No. 305,655
Claims priority, application Japan, Sep. 27, 1993, 5-240187
Int. Cl.[6] B60T *8/00*
U.S. Cl. 303—119.2 **20 Claims**



1. A three position solenoid controlled valve, comprising:
a housing having a first port, a second port and a third port;
a first valve body for selectively bringing said first port and said second port into communication with each other;
first urging means for urging said first valve body in a direction that brings said first port and said second port into communication with each other;
a second valve body for selectively bringing said second port and said third port into communication with each other;
second urging means for urging said second valve body in a direction that brings said second port and said third port out of communication with each other;
a movable member; and
electromagnetic urging means for imparting an electromagnetic force to said movable member;
wherein an urging force of said first urging means causes said first valve body to bring said first port and said second port into communication with each other and an urging force of said second urging means causes said second valve body to bring said second port and said third port out of communication with each other, when said electromagnetic force of said electromagnetic urging means is zero;
wherein said movable member causes said first valve body to bring said first port and said second port out of communication with each other against said urging force of said first urging means and said urging force of said second urging means causes said second valve body to bring said second port and said third port out of communication with each other, when said electromagnetic force of said electromagnetic urging means is set to a first predetermined value;
wherein said movable member causes said first valve body and said second valve body to bring said first port and said second port out of communication with each other against said urging force of said first urging means, and said second port and said third port into communication with each other against said urging force of said second urging means, when said electromagnetic force of said electromagnetic urging means is set to a second predetermined value that is larger than said first predetermined value;
one of said first valve body and said movable member being formed with a detour that allows communication of working fluid between opposite ends of said first valve body in a sliding direction of said first valve body, regardless of a position of said movable member, such that a liquid pressure force applied to one of said opposite ends of said first valve body in said sliding direction of said first valve body from said first port to said second port and a liquid pressure force applied to another of said opposite ends of said first valve body in said sliding direction of said first valve body from said first port to said second port cancel each other;
wherein said first valve body and said movable member are provided integrally with each other.

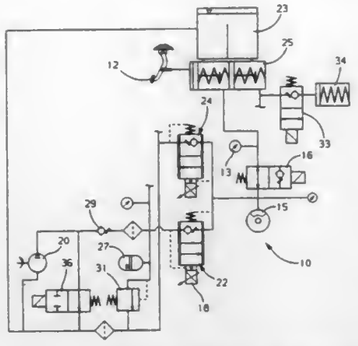
5,609,401

PROPORTIONAL BRAKING SYSTEM WITH DUAL POPPET VALVES

Gary L. Johnston, Pleasant Hill; James W. Zehnder, II, Huber Heights; William C. Kruckemeyer, Beaver Creek; Michael L. Oliver, Xenia, and Richard E. Longhouse, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 21, 1995, Ser. No. 391,384
Int. Cl.[6] B60T *8/40*
U.S. Cl. 303—155 **9 Claims**

1. A brake system comprising:
a master cylinder capable of actuation;
a wheel brake responsive to an application of fluid pressure;
a hydraulic circuit interconnecting the wheel brake with the master cylinder;
an isolation valve capable of isolating the master cylinder from the wheel brake interconnected in the hydraulic circuit such that a normally open connection is provided between the master cylinder and the wheel brake through the isolation valve;
a pump having an inlet and an outlet interconnected in the hydraulic circuit;
a first poppet valve having a single operative braking flow path interconnected in the hydraulic circuit between the wheel brake and the pump outlet; and



a second poppet valve having a single operative braking flow path interconnected in the hydraulic circuit between the wheel brake and the pump inlet including a valve seat and a poppet biased toward the valve seat by a spring and providing a pressure release from the wheel brake to the pump inlet through the valve seat wherein fluid pressure is applied to the wheel brake from the pump in response to and proportional to an input pressure resulting from the actuation of the master cylinder solely by operation of the first poppet valve while the second poppet valve remains closed setting the application of fluid pressure to which the wheel brake is responsive.

5,609,402

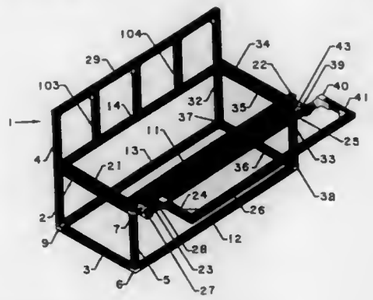
TRADER DESK FRAME

John Kemp, Columbia, S.C., assignor to Specialized Banking Furniture (International), Newberry, S.C.

Continuation of Ser. No. 420,444, Apr. 10, 1995, abandoned, which is a continuation of Ser. No. 162,491, Dec. 3, 1993, abandoned. This application Apr. 23, 1996, Ser. No. 636,725

Int. Cl.[6] A47B *47/00*

U.S. Cl. 312—265.4 **25 Claims**



1. A desk frame comprising:
a first lateral support having a first end;
a first vertical support having a second end;
said first end and said second end being interconnected to one another to form a junction;
a first cross support extending from said junction;
a second lateral support superposed onto said first lateral support;
a diagonal support having one end interconnected to said second lateral support, said diagonal support inclined at an angle with respect to an axis of said second lateral support;
a third lateral support interconnected to another end of said diagonal support, said third lateral support constituting a primary desk work surface support; and
a second vertical support fixedly connected to said first lateral support, said second vertical support extending beyond the elevation of said first lateral support.

5,609,403

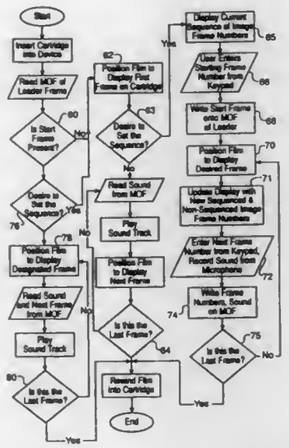
FILM IMAGE DISPLAY APPARATUS AND METHOD

Cynthia S. Bell, Webster, and Lynn K. Neff, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1994, Ser. No. 336,441

Int. Cl.[6] G03B *23/00*

U.S. Cl. 353—26 A **15 Claims**



1. Film image display apparatus for displaying image frames on photographic film stored within a film cartridge, said frames occurring in chronological sequential order of photographing on the film, the film having a magnetic recording layer formed thereon on which is recorded first data representative of said sequential order of photographing and second data representative of a predetermined frame viewing sequence other than said sequential order of photographing, the apparatus comprising:
a display station for receiving said cartridge and sequentially displaying images from said frames on said photographic film;
magnetic read means for reading said first and second data recorded on said film magnetic layer; and
film advance control means responsive to said recorded first and second data for periodically advancing said film to said display station for display of said image frames in said predetermined frame viewing sequence.

5,609,404

APPARATUS AND RELATED METHOD FOR CORRECTING SLIDE WARPAGE IN A SLIDE PROJECTOR

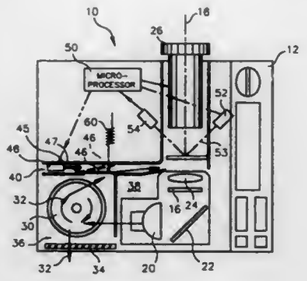
Brian W. Keelan, Rochester, and Daniel M. Pagano, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 632,867

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—101 **14 Claims**

7. A method of correcting improper curvature of a slide in a slide projector, comprising the steps of:
i) positioning a slide in a projection gate of a projector;
ii) measuring an amount of curvature present in the slide;



iii) comparing the amount of curvature to determine if the amount of curvature of the slide exceeds a predetermined value; and
iv) applying a quantity of forced warm air solely onto said slide in the projection gate if the amount of curvature exceeds the predetermined value.

5,609,405

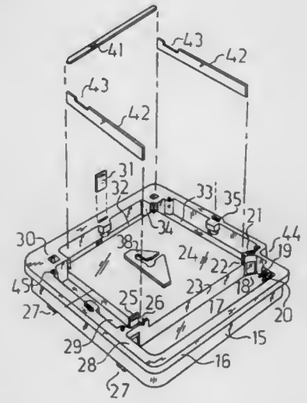
OVERHEAD PROJECTOR FLUID DYNAMICS SIMULATOR

Dennis J. Dougherty, 1931 Riverside Dr., Sault Ste. Marie, Mich. 49783

Filed Aug. 21, 1995, Ser. No. 520,207

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—122 **21 Claims**



1. An educational device for use with overhead projectors, comprising:
a base member having a plurality of fluid reservoirs which are disposed along the periphery thereof;
an activity area which is disposed in a central portion of said base member, over which fluid flows;
means for selectively distributing fluid between said fluid reservoirs;
means for selectively controlling a flow of fluid over said activity area from one of said fluid reservoirs to another of said fluid reservoirs;
said activity area is elevated relative to flooring of said reservoirs so that fluid depth over said activity area is substantially constant; and
said activity area is substantially transparent.

5,609,406

HEADLAMP FOR MOTOR VEHICLES

Milan Cejnek, Nový Jičín, Czech Rep., assignor to AUTOPAL s.r.o., Novy Jicin, Czech Rep.

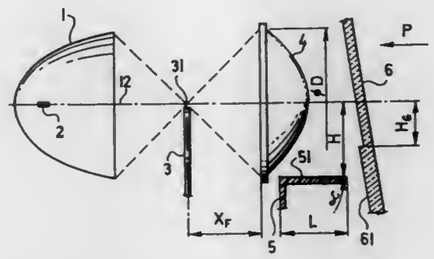
PCT No. PCT/CZ93/00030, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO94/17326, PCT Pub. Date Aug. 4, 1994

PCT Filed Dec. 16, 1993, Ser. No. 313,066

Claims priority, application Czech Rep., Jan. 25, 1993, 72-93; WIPO, Dec. 16, 1993, PCT/CZ93/0030

Int. Cl.[6] B60Q *1/04*

U.S. Cl. 362—61 **10 Claims**



1. A projection type headlamp for a motor vehicle comprising
a concave reflector;
a light source within said concave reflector, said light source and said concave reflector providing a beam of light projected outwardly along an axis from said light source;
a screen spaced from said concave reflector and below said axis and preventing passage of a portion of the light provided by said light source and said concave reflector;
a lens having a diameter (D) spaced at a distance X_F from said screen;
an aperture reflector spaced from a front of a lower portion of said lens and extending outwardly from said lens, said aperture reflector having a reflective surface,
said reflective surface being spaced from said axis by a distance (H) wherein

$$H=(0.15 \text{ to } 0.6) * D,$$

said reflective surface being inclined with respect to said axis at an angle (α) wherein

$$\alpha=0\pm7°, \text{ and}$$

said reflective surface having a length (L) wherein

$$L=(0.2 \text{ to } 0.7) * X_F; \text{ and}$$

a refractor spaced forwardly from said lens to receive light reflected upwardly from said reflective surface,
said refractor defining a zone encompassing said aperture reflector and said lower portion of said lens, said zone being spaced from said axis by a distance (H_6) wherein

$$H_6=(0.1 \text{ to } 0.9) * H,$$

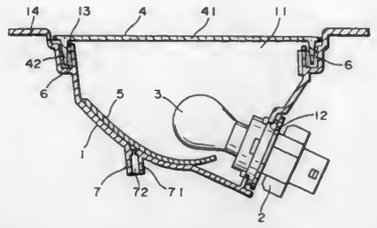
said zone providing at least one of lateral and vertical deviation of the beam of light provided by said light source and said concave reflector.

5,609,407

VEHICULAR LAMPS, AND APPARATUS AND METHOD FOR MOLDING THE SAME

Hirokazu Yanagihara, and Shirou Takezawa, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,691
Claims priority, application Japan, Apr. 25, 1994, 6-107419
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—61 5 Claims



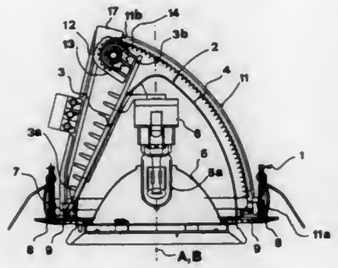
1. A vehicular lamp comprising:
a lamp body having a front opening formed of resin,
a reflector disposed in said lamp body;
a front lens mounted on a front opening of said lamp body;
a projection formed in a curved surface of said lamp body, said projection having a flat top surface; and
an air ventilation hole having a through hole disposed on the curved surface of said lamp body and extending into said projection, said ventilation hole being formed perpendicular to said flat top surface of said projection.

5,609,408

DEVICE FOR ORIENTING A LIGHTING APPARATUS SUCH AS, IN PARTICULAR BUT NOT EXCLUSIVELY, AN ENCASED LAMP, SUITED FOR BOTH MANUAL AND MOTORISED ADJUSTMENT

Paolo Targetti, Florence, Italy, assignor to Targetti Sankey S.p.A., Florence, Italy

Filed Apr. 2, 1996, Ser. No. 626,373
Claims priority, application Italy, Apr. 5, 1995, FI95U0033
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—66 20 Claims



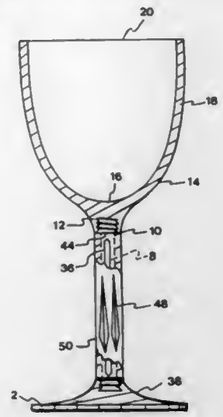
1. Orientation device of a lighting apparatus, said apparatus comprising:
a fixed support;
a mobile support connected to said fixed support in a rotatable manner about a pivot by virtue of which an extraction movement of the latter with respect to the former is allowed for;
at least one spotlight or similar light source connected to said mobile support;
an arcuate rack integral to said fixed support and concentric to said pivot; and
a pinion meshing on said rack and connected in a rotatable manner to said mobile support.

5,609,409

CHEMILUMINESCENT STEMMED DRINKING GLASS

Kris R. Diehl, P.O. Box 10826, S. Lake Tahoe, Calif. 96158

Filed Jan. 31, 1995, Ser. No. 382,087
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—101 6 Claims



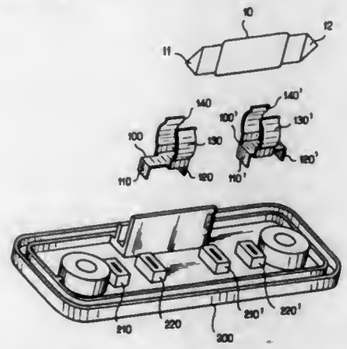
1. A chemiluminescent stemmed drinking glass comprising:
a cup portion supported by a hollow stem portion which in turn is supported by a base portion;
said hollow stem portion being illuminated at least partially by a chemiluminescent means contained within said hollow stem portion; and
said hollow stem portion being made of either a transparent or translucent material.

5,609,410

LIGHTING OR SIGNALLING DEVICE FOR A MOTOR VEHICLE, THE DEVIE INCLUDING A MINIATURE BULB

Claude Rives, Evreux, France, assignor to Valeo Vision, Bobigny, France

Filed Apr. 7, 1993, Ser. No. 44,182
Claims priority, application France, Apr. 8, 1992, 92 04292
Int. Cl.[6] H01R *33/00*
U.S. Cl. 362—226 9 Claims



1. A support element for a bulb, in particular a miniature bulb, the support element being of a type including at least one elasti-

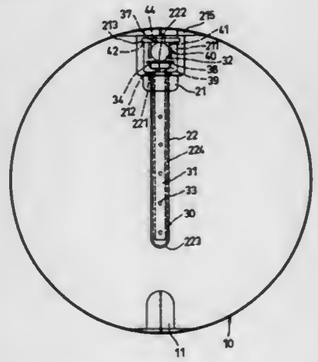
cally deformable branch for holding and making electrical connection with an end terminal of the bulb and fastening means for fixing the support element to a base, said fastening means comprising at least one fixing tab including at least one projecting toe, said element support being fixed to said base by a translatory movement in a direction essentially perpendicularly to a plane of said base such that during said translatory movement said fixing tab is forced into at least one housing provided in the base, said housing being parallel to said direction for installing the support element on the base, in such a manner that the, or each project toe firmly grips into a wall of said housing.

5,609,411

INFLATABLE ARTICLE WITH AN ILLUMINATING DEVICE

Wen-Ching Wang, No. 15, Fu-Chia Lane, Chen-Nan Rd., Sha-Lu Chen, Taichung Hsien, Taiwan

Filed Jun. 11, 1996, Ser. No. 660,577
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—234 12 Claims



1. An inflatable article comprising:
a gas tight hollow body having a rounded wall which encloses a first space; and
an illuminating device mounted inside said hollow body and occupying a portion of said first space, said device including containing means which has a base sealingly and integrally bonded to said rounded wall and which confines a second space hermetically sealed from remaining portion of said first space, said base having at least a part exposed from said rounded wall and an opening formed in said part for access to said second space, said device further including electric circuit means received in said second space, said electric circuit means including a light emitting element and a power source; and
a cap for removably closing said opening in said base.

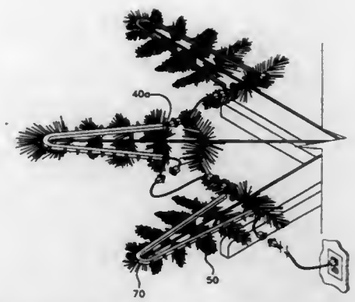
5,609,412

LIGHTING SYSTEMS FOR CHRISTMAS TREES

Frank Contigiani, 2020 Mac Larie La., Broomall, Pa. 19008

Filed Sep. 19, 1995, Ser. No. 530,703
Int. Cl.[6] F21V *21/14*
U.S. Cl. 362—249 20 Claims

1. A lighting assembly for receiving a string of lights having alight bulbs held in a socket and used as a decorating ornament on a tree, a lighting assembly comprising:
a plurality of support members for receiving a string of lights, each of said support member being semi-flexible such that each support member may be manipulated to fit on different size tree branches; said support member having a relative inner portion and a relative outer portion defining at least one channel having an opening, said channel opening formed at least in the relative outer portion of said support member for receiving a string of lights, said channel formed such that when the support member and a string of tree lights are assembled and placed on a tree branch, the light bulbs will be supported relatively parallel to the tree branch.

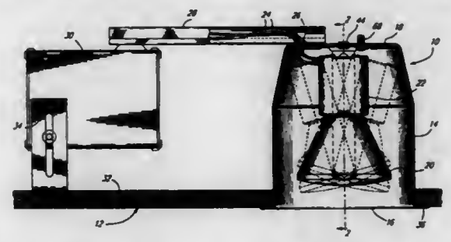


5,609,413

ADJUSTABLE LIGHT FIXTURE

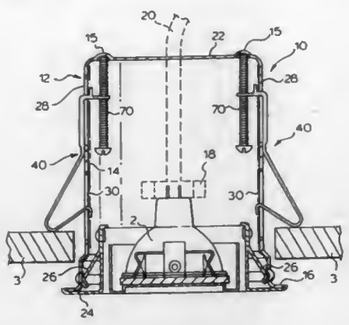
Michel Lecluze, St-Nicolas, Canada, assignor to Eclairage Contraste, St-Jean-Chrysostome, Canada

Filed Feb. 12, 1996, Ser. No. 599,658
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—364 6 Claims



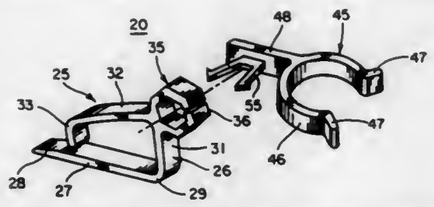
1. An adjustable light fixture recessed in a ceiling for directing light at various angles comprising:
a hollow elongated housing having an open end and a closed end;
a first inverted-U shaped member having a top portion rotatably mounted to said closed end and a pair of downwardly extending leg portions having lower extremities wherein said top portion of said first member defines an arc-shaped slot;
a second inverted-U shaped member mounted within said top and leg portions of said first member; said second member having a top portion and a pair of downwardly extending leg potions pivotally mounted at their respective lower extremities to the lower extremities of said first member whereby said second member may be pivoted about a horizontal axis to adopt various positions relative thereto and within said first member;
a light socket for receiving a light bulb fixedly secured to said top portion of said second member;
pivot means in said top portion of said first member allowing rotation of said first member relative to said housing about a vertical axis extending centrally through said housing whereby the light socket may be pivoted about said horizontal and vertical axes to provide a light bulb with various angles of illumination; and
means for fixing said first member to said housing after rotational adjustment of said first member relative to said housing wherein said fixing means extends through said slot and through said closed end of said housing.

5,609,414
RECESSED LIGHTING FIXTURE
Giuseppe Caluori, Dollard-des-Ormeaux, Canada, assignor to Canlyte Inc., Lacine, Canada
Filed Nov. 24, 1995, Ser. No. 562,571
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—366 19 Claims



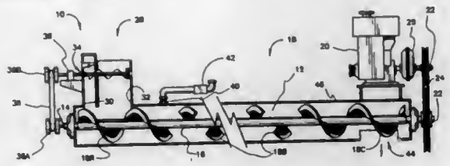
1. A recessed lighting fixture comprising
a housing having a housing wall with an outwardly extending housing flange about a lower end thereof,
a retaining clip mounted to the housing wall, the retaining clip being mounted so as to permit axial movement along the housing wall and comprising
an upper portion having a neck disposed through a slot in the housing wall and extending to a spring arm and an anchoring portion, the spring arm being biased to an open position in which the spring arm extends radially from the housing, part of the upper portion being flexible such that the spring arm can be depressed toward the housing wall, and
means for preventing a lower portion of the spring arm from radially extending beyond an outer limit, and
means for adjustably fixing the retaining clip to an axial position along the housing wall comprising an adjusting screw bearing against a surface of the housing and disposed through a threaded opening in the anchoring portion.

5,609,415
LIGHT CLIP FOR SHINGLES OR GUTTERS
William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.
Filed Feb. 9, 1995, Ser. No. 387,133
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—396 15 Claims



1. A light clip for holding a light bulb, comprising an attachment portion for removably mounting said light clip to a support surface, means carried by said attachment portion including a cylinder having a longitudinal axis and having interior surfaces which in transverse cross section form a regular polygon, at least one of said interior surfaces having a slat therein to provide resilience to said cylinder, and a bulb holder having a deformable connecting mechanism, including a pair of spaced resilient prongs adapted to fit within said cylinder, said cylinder and said prongs cooperating to mount said bulb holder to said attachment portion and to provide a plurality of discrete angular positions of a bulb carried by said bulb holder with respect to said attachment portion, said means including a cylinder having a longitudinal axis forming a polygon perpendicular to the longitudinal axis of said cylinder.

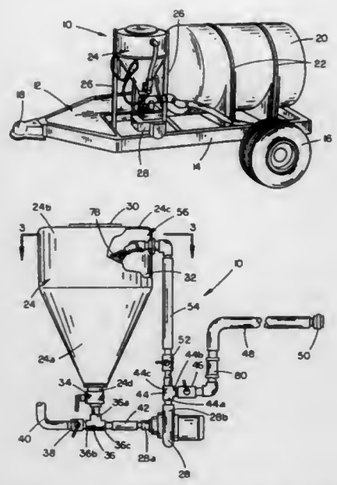
5,609,416
PORTABLE CONTINUAL MIXER
Donald L. Duckworth, 702 Columbia St., NE., Roanoke, Va. 24016
Filed Jun. 4, 1996, Ser. No. 657,956
Int. Cl.[6] B28C *7/14;* B01F *15/02*
U.S. Cl. 366—34 9 Claims



1. A portable continual mixer for mixing dry, granular or powdered material with a liquid, comprising:
a feed auger for feeding the powdered material;
a mixing chamber comprising a housing and a mixing auger disposed within said housing, said mixing auger disposed in communication with said feed auger to receive powdered material from said feed auger, said mixing auger including a blade having a first section having a continuous screw blade arranged at a pitch, a second section having paddles arranged at a second pitch urging powdered material and liquid to migrate in the same direction as urged by said first section, said mixture blade further having a third section disposed after said first section and said second section, said third section characterized by a second continuous screw blade having a third pitch urging the powdered material and liquid to move in the same direction as urged by said first blade section and said second blade section; and
drive means for driving said feed auger and said mixing auger, said drive means comprising a single motor and means for drivingly connecting said feed auger and said mixing auger to said single motor.

5,609,417
APPARATUS FOR MIXING AND CIRCULATING CHEMICALS AND FLUIDS
Doyle D. Otte, Rte. 1, Box 139, Clarinda, Iowa 51632
Filed Nov. 28, 1994, Ser. No. 345,837
Int. Cl.[6] B01F *5/04*
U.S. Cl. 366—137 6 Claims

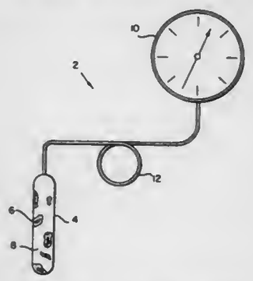
1. A transportable chemical mixing system, comprising:
a trailer having a pair of wheels for moving the trailer over ground, a hitch at a forward end for connecting the trailer to a prime mover, and a frame;
a drum for storing diluent fluid, removably mounted on said trailer frame;
a mixing tank for mixing chemicals with diluent fluid from the drum, mounted on the trailer frame;
said mixing tank having a lower cone-shaped funnel portion with an outlet centered in a lower end and an upper portion with a removable lid on an upper end;
liquid within said tank forming a vortex with a vertical axis passing through the outlet as the liquid is dispensed from the outlet;
an ejector disposed within said tank upper portion, for ejecting a liquid into the tank and mixing the ejected liquid with the liquid within the tank, said ejector including:
a pair of spaced apart outlet nozzles for dispensing fluid from the ejector;
said nozzles having axes along which liquid is sprayed and which are generally parallel to one another and spaced equally apart on diametric sides of the vortex axis;



said nozzle spray axes oriented downwardly at an angle from horizontal to direct liquid sprayed from the nozzles into the liquid in the tank forming the vortex, to thereby disrupt the vortex;
an hydraulic circuit fluidly connecting the tank outlet and the ejector, to circulate fluid from the tank through the ejector and back to the tank;
a pump interposed in said hydraulic circuit for moving liquid within the circuit in a direction from the tank outlet to the ejector;
a conduit extending from the drum and connected to the hydraulic circuit upstream of said pump to provide diluent fluid from the drum to the circuit;
a hose having an inlet end connected to said hydraulic circuit downstream of said pump to direct fluid from the circuit to a distal end of the hose; and
means on the distal end of the hose for connecting the hose to fluid dispensing apparatus.

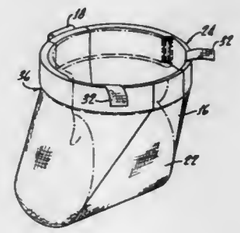
5,609,418
CLAPEYRON THERMOMETER
Patrick B. Black, Hanover, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 6, 1994, Ser. No. 354,070
Int. Cl.[6] G01K *11/00;11/06*
U.S. Cl. 374—159 3 Claims

1. A pressure responsive thermometer for determining ambient



temperatures at or below the equilibrium melting point of a substance comprising
(a) a vessel containing the substance, the substance being changeable between solid and liquid phases in accordance with the ambient temperature, the proportion of the liquid phase of the substance within said vessel increasing with increases in ambient temperature while the proportion of solid phase of the substance within said vessel decreases thereby increasing the pressure within said vessel, and the proportion of the liquid phase of the substance within said vessel decreasing with decreases in ambient temperature while the proportion of solid phase of the substance within said vessel increases, thereby decreasing the pressure within said vessel;
(b) means connected to said vessel for sensing said pressure within said vessel;
(c) means connected to said sensing means for indicating said pressure; and means cooperating with said pressure indicating means for converting said pressure within said vessel to an indication of the ambient temperature.

5,609,419
CHALK BAG FOR ROCK CLIMBING
James H. Byers, Jr., 23010 Lake Forest Dr., #271, Laguna Hills, Calif. 92653
Filed Apr. 24, 1995, Ser. No. 427,421
Int. Cl.[6] B65D *33/30*
U.S. Cl. 383—33 12 Claims



1. A bag for receiving an article which are to be easily accessed with the hand, said bag comprising:
a flexible bag structure having an opening to an internal cavity, said bag structure being adapted to receive and contain the article in said cavity;
means for securing said flexible bag structure to a person;
a closure device associated with said opening of said flexible bag structure, said closure device including means for in an open first position disposing said flexible bag structure at said opening in a shape-retaining substantially circular configuration providing a substantially circular passage into said cavity of said bag structure, and in a closed second position disposing opposite walls at said opening of said flexible bag structure adjacent to one another to substantially close said passage into an arcuate substantially half-circular shape;
wherein said closure device includes a substantially rigid and substantially half-circular member partially circumscribing said opening and having a pair of opposite end portions, an elongate resilient flexible member also having a pair of end portions and also being of substantially half-circular shape in said open first position and said closed second position of said closure device, said flexible member partially circumscribing said opening in opposition to said rigid member in said open first position of said closure device, and hinge means attaching respective end portions of said substantially rigid member and said flexible member to one another so as to allow said flexible member to flex between said first and said second positions, in said closed second position said flexible member laying adjacent to said rigid member to urge opposite walls of said bag structure into association with one another at said opening, closing said opening into a substantially half-circular arcuate shape;
wherein said hinge means of said closure device includes structure connecting adjacent end portions of said substantially

rigid member and of said elongate resilient flexible member to one another and including an integral flexible hinge portion; and

wherein said hinge means of said closure device includes a length of heat-shrink tubing connecting adjacent end portions of said substantially rigid member and of said elongate resilient flexible member to one another in spaced apart relation to provide therebetween a flexible integral hinge portion of said heat-shrink tubing.

5,609,420

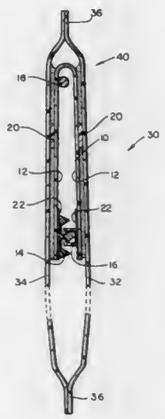
RECLOSABLE BAG CLOSURE WITH TEAR CONTAINING STRIPS

Andrew J. Palmisano, Peotone, Ill., assignor to Minigrip, Inc., Orangeburg, N.Y.

Continuation of Ser. No. 252,187, Jun. 1, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 675,725

Int. Cl.[6] B65D *33/02*

U.S. Cl. 383—203 **8 Claims**



1. A polymeric resin film package comprising:

a front package film;

a rear package film;

a zipper tape film of a first polymeric resin material, said zipper tape film having a first surface and a second surface, two lateral edges, and a center line halfway between said two lateral edges;

a tear bead on said first surface of said zipper tape film, said tear bead being attached to said zipper tape film substantially adjacent to said center line thereof;

a male profile on said zipper tape first surface on one side of said center line;

a female profile on said zipper tape first surface on an opposite side of said center line;

a first tear containing strip of a second polymeric material and a second tear containing strip of said second polymeric material on said second surface of said zipper tape film, said first tear containing strip being disposed between said male profile and said tear bead and said second tear containing strip being disposed between said female profile and said tear bead; and,

means, including said first and second tear containing strips, for bonding said second surface of said zipper tape film to said front package film and said rear package film.

5,609,421

ROLLED BEARING BUSH AND JOURNAL OR SHAFT CONNECTION WITH SUCH A BEARING BUSH

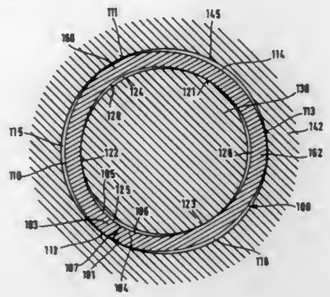
Heinz Schulze-Eyssing, Dielheim, and Erhardt Mundil, Walldorf, both of Germany, assignors to Glyco-Metall-Werke, Glyco B.V. & Co. KG, Wiesbaden, Germany

Continuation of Ser. No. 341,580, Nov. 28, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,473

Claims priority, application Germany, Apr. 28, 1992, 42 13 831.0

Int. Cl.[6] F16C *33/04*

U.S. Cl. 384—125 **5 Claims**



1. A bush, comprising:

a tubular body having a substantially circular cross section, said body comprising a pair of abutted touching end portions defining an axially-extending butt joint, said butt joint having a V-shaped profile extending radially outwardly beyond said circular cross section for engaging a housing and elastically deforming said tubular body during installation of said bush into said housing.

5,609,422

CRANKSHAFT BEARING

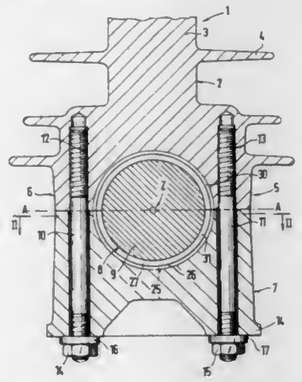
Robert Mueller, Moensheim, and Johannes Wuest, Heilbronn, both of Germany, assignors to Dr. Ing.h.c.F Porsche AG, Weissach, Germany

Filed Aug. 26, 1994, Ser. No. 297,094

Claims priority, application Germany, Sep. 9, 1993, 43 30 565.2

Int. Cl.[6] F16C *17/22*

U.S. Cl. 384—278 **24 Claims**



1. Crankshaft bearing for internal combustion engines provided in a housing of the internal combustion engine that comprises a light metal alloy, comprising a bearing bore for a crankshaft journal of a crankshaft, and a bearing play reducing device,

provided between a crankshaft journal and the bearing bore to thereby form a slide bearing for the crankshaft journal, said bearing play reducing device including an annular compensating element surrounding the crankshaft journal, said compensating element being made of a material with a relatively higher coefficient of thermal expansion then material of the housing and crankshaft journal.

5,609,423

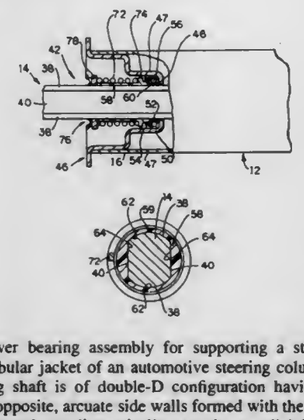
LOWER BEARING ASSEMBLY INCLUDING BEARING WEDGE

Mirjana Jurik; Thomas Dziegielewski, both of Rochester Hills, and Thomas Grzybowski, Fraser, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 24, 1996, Ser. No. 668,798

Int. Cl.[6] F16C *33/58;* **B62D** *1/18*

U.S. Cl. 384—518 **4 Claims**



1. A lower bearing assembly for supporting a steering shaft within a tubular jacket of an automotive steering column wherein the steering shaft is of double-D configuration having two diametrically opposite, arcuate side walls formed with the same radius of curvature and two diametrically opposite, parallel flats between said side walls, comprising:

a cup fitted within the jacket having a bottom wall formed with a hole through which the steering shaft extends,

an annular bearing within said cup sleeved on the steering shaft and supporting the steering shaft for rotation,

means holding said bearing seated on the bottom wall of the cup comprising a wedge sleeved on the steering shaft,

said wedge having an inner double-D configuration matching that of the steering shaft and having an end provided with a tapered nose wedged between said bearing and said steering shaft, and

a spring bearing on said wedge to hold the nose of said wedge wedged tightly between said bearing and said steering shaft.

5,609,424

TAPE-SHAPED LABEL PRODUCING DEVICE HAVING INPUT INSTRUCTING MESSAGES

Shoji Sakuragi; Hideo Ueno, both of Nagoya; Shiro Yamada, Kasugai; Mayumi Nishio; Kazuhisa Hirono, both of Nagoya; Kazumi Kanda, Gifu-ken; Sachiyo Nakahigashi, Nagoya; Sachiko Nakagawa, Kariya, and Akihiro Sawada, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 18, 1995, Ser. No. 503,685

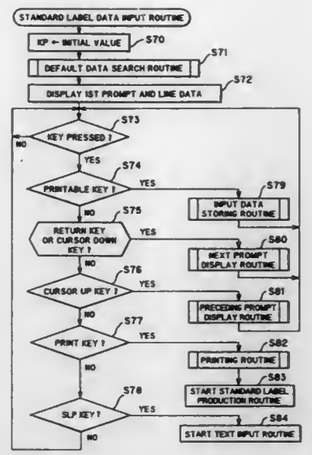
Claims priority, application Japan, Jul. 18, 1994, 6-188835; Jul. 18, 1994, 6-188836; Jul. 18, 1994, 6-188837

Int. Cl.[6] B41J *11/42*

U.S. Cl. 400—61 **12 Claims**

1. A tape-shaped label producing device comprising:

input means for inputting a variety of data and commands;



display means for displaying images;

print means for printing on a tape-shape printing medium;

control means for controlling said input means, said display means, and said print means;

layout information memory storing a plurality of label names among which a label name is selectable by an operator, display information regarding input instructing messages for instructing the operator to input text data through said input means following each of the input instructing messages, and print layout information regarding a print layout of the text data inputted by the operator; and

display control means for displaying on said display means, based on commands inputted through said input means and based on the display information stored in said layout information memory, the plurality of label names sequentially and for displaying on said display means the plurality of input instructing messages associated with a selected label name, said display control means including indicating means for indicating a portion of said display means into which the text data is inserted following the input instructing messages.

5,609,425

THERMAL SUBLIMATION PRINTER FOR USE WITH DIFFERENT RIBBONS

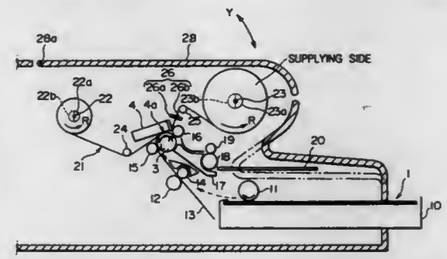
Junji Kawano, and Hiroaki Fukuoka, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Chuo-Ku, Japan

Filed Feb. 22, 1995, Ser. No. 394,650

Claims priority, application Japan, Feb. 28, 1994, 6-030481

Int. Cl.[6] B41J *2/32*

U.S. Cl. 400—120.01 **13 Claims**



1. A thermal sublimation printer for printing on a printing object comprising:

a dye donor ribbon having a base material and sublimation dyes coating the base material;

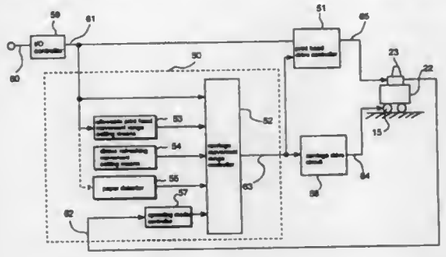
a thermal head for heating the dye donor ribbon and transferring the sublimation dyes onto the printing object;
a fade preventive donor ribbon separate from said dye donor ribbon having a base material and an over-coating material coating the base material to coat the sublimation dyes transferred to the printing object by the heating of the dye donor ribbon; and
a single ribbon mounting means for selectively mounting only one of said dye donor ribbon and said fade preventive donor ribbon.

5,609,426

PRINTING APPARATUS AND A CONTROL METHOD THEREFOR

Yoshikazu Ito, and Kazuhisa Aruga, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,178
Claims priority, application Japan, Apr. 20, 1994, 6-081902; Apr. 20, 1994, 6-081903
Int. Cl.[6] B41J *21/00*
U.S. Cl. 400—279 **16 Claims**



1. A printing apparatus for printing on a recording medium withio a predetermined printing range, comprising:
a platen;
a print head;
receiving means for receiving a recording medium, said receiving means having one predetermined side guiding one side of the recording medium for positioning the recording medium;
range determination means for determining a current movement range of said print head in accordance with print data supplied from a host system;
range limit storing means for storing a movement range limit of said print head which is defined with reference to said predetermined side of said receiving means and is smaller than the predetermined printing range;
masking means, disposed between said print head and the recording medium, for pressing the recording medium against said platen, said masking means moving with said print head within the movement range limit of said print head; and
range expansion means for selectively expanding the current movement range of said print head within the movement range limit of said print head.

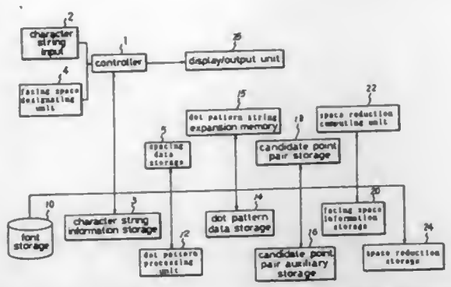
5,609,427

KERNING METHOD AND A TYPOGRAPHIC APPARATUS UTILIZING SAME

Toru Takasawa, and Yasuaki Araki, both of Tokyo, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Feb. 17, 1995, Ser. No. 390,844
Claims priority, application Japan, Feb. 28, 1994, 6-055218
Int. Cl.[6] B41J *19/32*
U.S. Cl. 400—304 **10 Claims**

1. A kerning method for adjusting a position of an object character relative to an adjacent reference character already fixed in place, in arranging characters of a character string in a predetermined direction based on rectangular character frames including character patterns therein, said method comprising the steps of:
(a) designating a minimum two-dimensional space between the faces of said reference character and said object character;
(b) shifting a dot pattern of the face of said object character dot by dot toward a dot pattern of the face of said reference character, and determining, at respective shifts, pairs of dots providing minimum facing space between said dot patterns in a direction perpendicular to a shifting direction;
(c) storing facing space information in said shifting direction and facing space information in said direction perpendicular thereto of said candidate point pairs when the imaginary bodies of said reference character and said object character contact each other;
(d) moving said object character toward said reference character from a position in which said imaginary bodies contact each other, based on said facing space information in said shifting direction and said facing space information in said direction perpendicular thereto of said candidate point pairs and said facing space designated, and computing space reductions for the respective candidate point pairs until the facing space between said candidate point pairs agrees with said facing space designated;
(e) determining a space reduction providing a minimum facing space among said space reductions computed; and
(f) positioning said object character relative to said reference character with said minimum facing space therebetween.

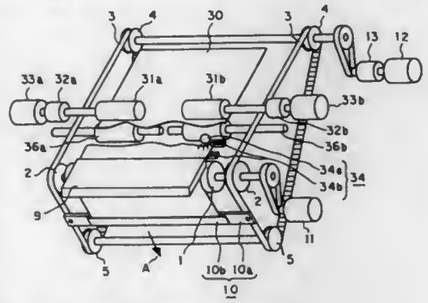


5,609,428

SHEET CARRYING APPARATUS

Naoya Tanaka; Hiroshi Fukumoto, both of Hyogo; Keiichi Fukazawa, and Mitsuaki Tanaka, both of Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 507,611
Claims priority, application Japan, Jul. 26, 1994, 6-174466; Jun. 29, 1995, 7-164132
Int. Cl.[6] B41J *11/42*
U.S. Cl. 400—579 **2 Claims**



1. A sheet carrying apparatus, comprising:
sheet carrying means for carrying a sheet;

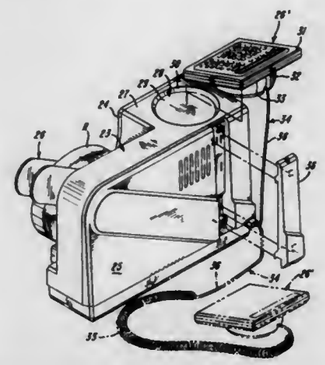
position detecting means for detecting a position of the sheet during carriage in a direction perpendicular to a sheet carrying direction;
calculating means for calculating a skew angle of the sheet depending upon a deviation of the position of the sheet detected by the position detecting means from a predetermined reference position;
carrying force control means, independent of said sheet carrying means, disposed on the right and left sides with respect to a sheet center line in the sheet carrying direction so as to extend in the direction perpendicular to the sheet carrying direction, for controlling, during carriage, a carrying force for the sheet carried by the sheet carrying means; and
driving means for independently driving the right and left carrying force control means depending upon the skew angle calculated by the calculating means;
wherein the carrying force control means include carriage load applying means for applying carriage load to the sheet at a portion in the upstream of the sheet carrying means; and
wherein the carriage load applying means are disposed in the upstream of the sheet carrying means, and include load rollers rotating by pressure contact with the sheet with a predetermined pressure contacting force, braking means able to apply a constant or predetermined range of braking force to the load rollers, and following rollers disposed at positions opposed to the load rollers through the sheet.

5,609,429

METHOD OF USING AND OPERATING A PRINTER

Ronald L. Fogle, Lebanon, and Orville C. Huggins, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 116,193, Sep. 3, 1993, Pat. No. 5,443,319, which is a division of Ser. No. 872,267, Apr. 21, 1992, Pat. No. 5,246,298, which is a division of Ser. No. 703,089, May 20, 1991, Pat. No. 5,186,553, which is a division of Ser. No. 232,207, Aug. 15, 1988, Pat. No. 5,051,009, which is a division of Ser. No. 885,886, Jul. 15, 1986, Pat. No. 4,776,714. This application May 25, 1995, Ser. No. 449,875
Int. Cl.[6] B41J *29/02*
U.S. Cl. 400—692 **3 Claims**



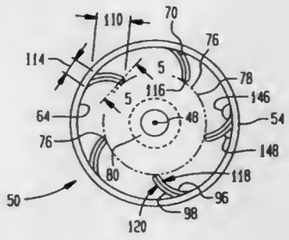
1. Method of using and operating a printer from a selectively positionable keyboard, comprising:
providing a printer, a keyboard and a data cord connected the keyboard and the printer, the printer having a nesting recess, the keyboard having a base portion receivable in the nesting recess, the keyboard being solely supported by the printer when the base portion is in the recess, the data cord being sufficiently long to enable the keyboard to be selectively positioned with its base portion either in the nesting recess or on an adjacent surface which supports the printer, wherein the nesting recess is above the surface which supports the printer;
selectively positioning the keyboard with its base portion either in the nesting recess or on the supporting surface; and
operating the positioned keyboard while the keyboard is either in the nesting recess or on the supporting surface.

5,609,430

DISPENSING DEVICE FOR SEMI-SOLID PRODUCTS

Bernard V. Mazzola, Ramsey, and Gary Montalbano, Haziet, both of N.J., assignors to Avon Products, Inc., New York, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,207
Int. Cl.[6] A45D *40/00;40/12*
U.S. Cl. 401—87 **15 Claims**



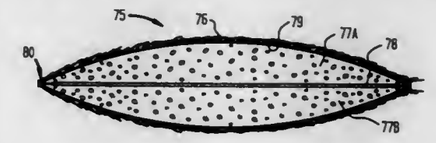
1. A device for dispensing a semi-solid product that has a tendency to shrink radially with time, said device includes a support member for gripping an outer surface of the product and for supporting the product within said device, said support member comprising:
a hollow member having an inner wall, said hollow member having a center axis passing therethrough that is equidistant from all locations on said inner wall;
said hollow member being adapted to receive the semi-solid product, wherein the outer surface of the product is flush against said inner wall of said hollow member when initially inserted therein;
a plurality of circumferentially spaced ribs disposed axially within said hollow member; and
at least one of said plurality of ribs extending non-radially inward from said inner wall of said hollow member to support the product both orbitally about said center axis and centripetally toward said center axis.

5,609,431

CLEANING MATERIAL WITH MATERIAL SUPPLY

Matthew B. Carroll, Dunellen, N.J., assignor to Innovative Cleaning Concepts, Inc., Dunellen, N.J.

Continuation-in-part of Ser. No. 197,237, Feb. 16, 1994, abandoned, which is a division of Ser. No. 923,240, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 448,668, Dec. 11, 1989, Pat. No. 5,134,746. This application Aug. 31, 1994, Ser. No. 298,605
Int. Cl.[6] A47L *13/17*
U.S. Cl. 401—201 **14 Claims**



1. A cleaning pad comprising a first outer layer and a second outer layer, at least said first outer layer being made of a cleaning material having plurality of flat synthetic fibers and a backing

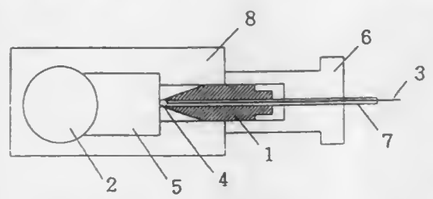
which fixes said flat fibers such that said flat fibers will not flake off of said cleaning material during use, each said fiber being attached to said backing such that most of the fibers thereof extend at a slight angle to said backing, said second outer layer being made of material other than a sponge material, two absorbent sponge layers disposed between said first outer layer and said second outer layer, and soap between the said two absorbent sponge layers, said first and second outer layers being sealed together such that said absorbent sponge layers and said soap are not removable from between said first and second outer layers.

5,609,432

BALLPOINT PEN CONTAINING AN AQUEOUS INK COMPOSITION

Takeyuki Yamamoto; Yasuyuki Sugimoto, both of Hiratsuka; Itaru Wakagi, Kanagawa; Shinichi Murakata, Kanagawa, and Yasuzo Murata, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Pilot, Tokyo, Japan

Filed May 19, 1995, Ser. No. 446,072
Claims priority, application Japan, Dec. 16, 1994, 6-338276
Int. Cl.[6] B43K *7/00;7/08;7/10*
U.S. Cl. 401—209 **10 Claims**



1. A ballpoint pen containing an aqueous ink composition obtained by directly filling (A) an aqueous ink comprising (a) an aqueous medium, (b) a pigment and (c) a carboxyl group-containing crosslinked hydrophilic polymer which swells and disperses in a gel state in the form of particles having a particle diameter of 0.5 to 10 μm and which is crosslinked with a crosslinkable monomer having at least two polymerizable unsaturated groups in an amount of 0.5 mol % or more based on the total of a carboxyl group-containing monomer and a copolymerizable monoethylenic monomer used together if desired, into (B) an ink reservoir tube equipped with a ballpoint pen tip in which a clearance between a ball and a ball receiver is in the range of 10 to 40 μm.

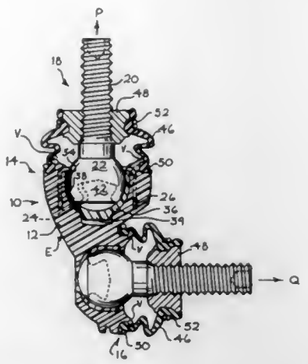
5,609,433

BALL JOINT LINK AND METHOD OF PRODUCING SAME

Jiri Pazdirek, Schaumburg, and Ernst M. Gaertner, Wheeling, both of Ill., assignors to Maclean-Fogg Company, Wheeling, Ill.

Filed Aug. 1, 1995, Ser. No. 509,806
Int. Cl.[6] F16C *11/06*
U.S. Cl. 403—140 **18 Claims**

1. A ball joint link comprising:
a ball stud comprising a stud which supports a ball;
a strengthening element disposed around the ball stud, said strengthening element comprising a first portion sized to receive at least part of the ball and a second portion extending radially inwardly from the first portion; and
a molded body formed around at least a portion of the ball to form a ball joint and around at least a portion of the first portion of the strengthening element to bold the ball in the ball joint, said molded body comprising a fiber-reinforced material;
said first portion of the strengthening element at least partially molded in place and embedded in the molded body;



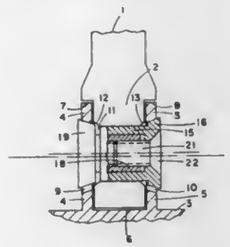
said strengthening element increasing resistance of the fiber-reinforced material of the molded body to pull out forces on the ball stud.

5,609,434

SURFACE CONNECTOR

Oded Yehezkieli, Kiryat Tivon, and Israel Kehaty, Karmiel, both of Israel, assignors to State of Israel, Ministry of Defence, The Rafael Armament Development Authority, Tel-Aviv, Israel

Continuation of Ser. No. 601,649, Feb. 14, 1996, abandoned, which is a continuation of Ser. No. 267,770, Jul. 6, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 672,241
Claims priority, application Israel, Jul. 7, 1993, 106286
Int. Cl.[6] F16B *9/00*
U.S. Cl. 403—260 **5 Claims**



1. An intersecting rigid assembly comprising:
at least one first constituent member and one second constituent member of a kind in which a flat engagement portion of said at least one first constituent member having at least one transverse bore is held between two brackets of said second constituent member, which brackets are of a suitable height for engaging said first constituent member, a bracket base extending between the brackets and the brackets have at least one pair of aligned bracket holes in register with the transverse bore of the flat engagement portion to form a tightening canal that accommodates a tightening device, wherein:
(i) said flat engagement portion has a lower edge matching said bracket base and two shoulders spaced from said lower edge by a distance corresponding to a height of said brackets;
(ii) each bracket hole has a slanted, inwardly convergent peripheral wall and each transverse bore having beveled edges;
(iii) said tightening device is accommodated within said tightening canals, said tightening device includes a first cylindrical member which is axially bored therethrough and has a frusto-conical head portion and a constant diameter part

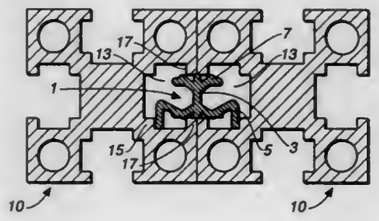
extending from said frusto-conical head portion to an end thereof, a second cylindrical member slidably accommodated in the bore of the first cylindrical member and having a screw-threaded axial bore, a frusto-conical head portion and a constant diameter part extending from said frusto-conical head portion to an end of the second cylindrical member, the constant diameter part of the second cylindrical member being smaller in diameter than the constant diameter part of the first cylindrical member, and a tightening screw connecting both cylindrical members, each of said frusto-conical head portions being of smaller size than the associated bracket hole and having a slant matching that of the peripheral wall of the bracket bole;
wherein when the tightening screw is tightened said first and second cylindrical members are drawn together causing their respective frusto-conical head portions to engage the respective bracket holes and therein urge the two shoulders and lower edge of the flat engagement portion of said at least one first constituent member to bear firmly against, respectively, upper edges of the two brackets and the bracket base of the second constituent member wherein mutually normal tightening forces are provided between the flat engagement member of the first constituent member and the brackets of the second constituent member.

5,609,435

CONNECTORS FOR FRAME BARS WITH T-SHAPED GROOVES

Ryoichi Nomura, Toyama, Japan, assignor to NIC Autotec, Inc., Japan

Filed Sep. 7, 1995, Ser. No. 526,118
Claims priority, application Japan, Oct. 31, 1994, 6-290657
Int. Cl.[6] B25G *3/36*
U.S. Cl. 403—387 **5 Claims**



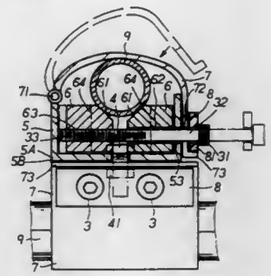
1. A connector for connecting together elongated frame bars having T-shaped grooves on side surfaces, said connector being a single elongated structure having a longitudinally uniform cross-sectional shape, said structure including:
a central wall defining a central plane, said structure being symmetrical with respect to said central plane;
a first pair of wings protruding opposite to each other from said central wall; and
a second pair of elastic wings protruding opposite to each other from said central wall, each being cross-sectionally Z-shaped with an inner part, a middle part and an end part, said inner part protruding obliquely from said central wall, said middle part being between said inner part and said end part and extending obliquely to said central wall, said end part extending parallel to said central wall.

5,609,436

COUPLING STRUCTURE

Yuh-Chiou Jou, No. 49, Linyun Street, Ban Chyau City, Taipei Hsien, Taiwan

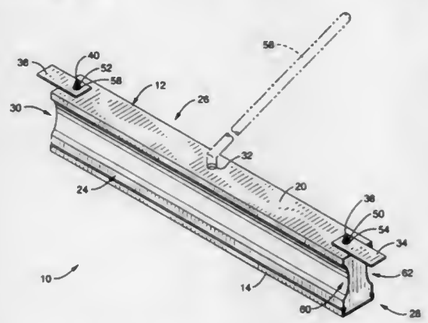
Filed Dec. 6, 1995, Ser. No. 568,420
Int. Cl.[6] E04H *15/34*
U.S. Cl. 403—400 **1 Claim**



1. A coupling structure consisting of two couplings joined back-to-back as a unit by means of a bolt, said couplings comprising:
a box-like base having four side walls, two hollow rods being disposed on either side of an upper surface of a rear lateral side wall thereof, two notches being individually formed in middle sections of two longitudinal side walls thereof for supporting a tube, and two bolt holes being formed on either side of a front lateral side wall thereof, said base further having a bottom side provided with a bottom hole in a central portion thereof;
a pair of non-skid blocks arranged face-to-face in a longitudinal manner and placed inside said base with a first non-skid block lying against said front lateral side wall of said base and a second non-skid block lying against said rear lateral side wall of said base such that lateral displacement of said non-skid blocks being restricted by said longitudinal side walls of said base, each of said non-skid blocks having a substantially U-shaped notch in a middle section thereof and slanting arms the upper surfaces thereof being provided with non-skid surfaces, said first non-skid block having a couple of through holes matching said bolt boles of said front lateral side wall of said base, while said second non-skid block having a couple of screw holes aligning with said through holes of said first non-skid block, said screw holes having an internal diameter slightly smaller than that of said through holes, a space defined between said notches of said non-skid blocks allowing insertion of a hand tool to drive a bolt through said bottom bole in said base into a bottom hole of an adjacent base to be locked with a nut;
a cover pivotally connected to said base and having a curved section and a straight section, a rim of said curved section being provided with a hollow rod for passage of a post which joins said cover pivotally to said hollow rods of said rear lateral side wall of said base so that said cover may be lifted up to allow insertion or removal of the tube into or from said base, the tube being firmly held between a bottom side of said cover and said non-skid surfaces of said non-skid blocks, said rear section of said cover having two inverted-U shaped notches disposed at the left and right sides thereof and a lip formed at a rim thereof, said notches having upper portions thereof aligning with said bolt holes of said front lateral side wall of said base when said cover is positioned and locked in place;
a press plate having a thickness equivalent to a width of said lip, said press plate being provided with a couple of bolt holes in the left and right sides thereof for matching said bolts boles of said front lateral side wall of said base and aligning with said notches of said cover; and
a pair of adjusting screw bolts each of which is provided with an enlarged cap section to be clamped by a hand tool during turning, a middle section and a rear threaded section, said bolts being passed through said bolt holes of said press plate

and said notches of said cover into said bolt holes of said front lateral side wall of said base and said through holes of said first non-skid block to be locked within said screw holes of said second non-skid block for securing said non-skid blocks within said base before said cover is positioned in place, said cover being positioned in place with said notches thereof fitting onto said middle sections of said screw bolts after the tube is mounted on said notches of said longitudinal side walls of said base, said screw bolts being turned tightly so that said press plate is located on said lip of said cover to press against said straight section of said cover so as to keep said cover firmly in place, said second non-skid block being forced to draw near said first non-skid block by turning of said screw bolts so that said non-skid blocks may urge against a lower portion of the tube above while the bottom side of said cover exerts a force downwardly upon an upper portion of the tube.

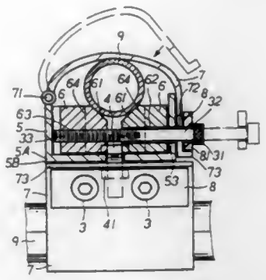
5,609,437
CONCRETE SCREED
Steve Silva, 10141 Gerber Rd., Sacramento, Calif. 95829
Filed Sep. 21, 1995, Ser. No. 531,472
Int. Cl.[6] E01C *19/44*
U.S. Cl. 404—118 **14 Claims**



7. A concrete screed, comprising:
(a) an elongated rail, said rail including a top edge and a bottom edge, said rail including a first side and a second side, said rail including a first end and a second end;
(b) a removable shoe, said shoe including a screeding surface;
(c) first and second longitudinal slots, said slots included on said rail adjacent said bottom edge of said rail;
(d) first and second upwardly disposed longitudinal flanges, said flanges included on said shoe, each of said flanges including an inwardly disposed lip, said lips on said flanges structured and configured to reversibly engage said slots on said rail; and
(e) means for grasping said rail by a user.

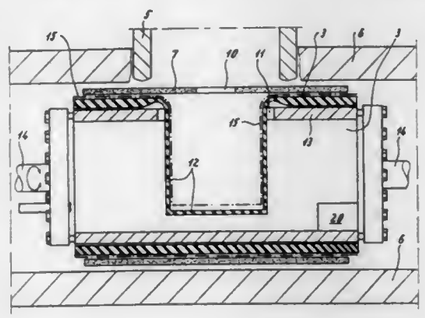
5,609,438
FLOOD BARRIER AND A METHOD FOR FORMING A FLOOD BARRIER
Andrew Liao, Kingwood, Tex., assignor to Barold Technology, Inc., Houston, Tex.
Continuation of Ser. No. 248,798, May 25, 1994, Pat. No. 5,454,668. This application Jul. 27, 1995, Ser. No. 508,003
Int. Cl.[6] E02B *7/06*
U.S. Cl. 405—117 **19 Claims**

16. A method of minimizing cave-in of an excavated earthen cavity, comprising:
preparing a slurry comprised of fresh water, dry powdered partially hydrolyzed polyacrylamide polymer, and soda ash;
controlling the amount of dry powdered partially hydrolyzed polyacrylamide polymer to provide the slurry with a funnel viscosity of at least 45 sec/quart;



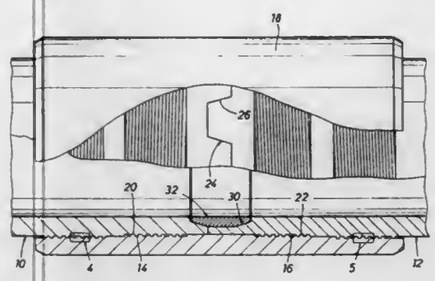
filling the earthen cavity with the slurry; and
thereafter forming a mechanical barrier in the excavated earthen cavity to prevent cave-in.

5,609,439
METHOD OF AND APPARATUS FOR REPAIRING AND SEALING JUNCTIONS BETWEEN MAINS AND BRANCH PIPES
Herbert Schreiner, Steinheim, and Hermann Suerbaum, Scheider-Schwalenberg, both of Germany, assignors to KMG Kanal-Müller-Gruppe International GmbH & Co. KG, Schieder-Schwalenberg, Germany
Continuation-in-part of Ser. No. 27,516, Mar. 8, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,800
Claims priority, application Germany, Mar. 6, 1992, 42 07 038
Int. Cl.[6] B63B *35/03*
U.S. Cl. 405—154 **16 Claims**



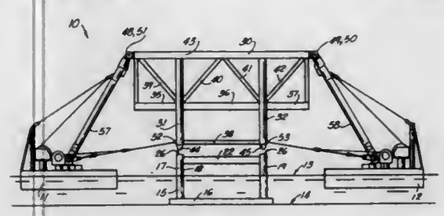
1. A remote controlled device for repairing a faulty pipe junction which is buried in the ground and includes a sewer main and a sewer branch entering the main, said device comprising:
a flexible rubber bladder having a first axial end and a second axial end, said bladder having means for expanding only radially when pressurized;
a metal pipe being disposed inside of said bladder, said axial ends of said bladder being airtightly connected to said metal pipe, said metal pipe having a bore disposed about the middle of an axial length of said metal pipe, a satellite bladder being connected to said bladder and being disposed adjacent to said bore, within said bladder.

5,609,440
APPARATUS AND METHOD FOR ARRESTING THE PROPAGATION OF A BUCKLE IN A PIPELINE
Joseph R. Roche, Kingwood, Tex., assignor to Hydril Company, Houston, Tex.
Filed Jun. 16, 1995, Ser. No. 490,057
Int. Cl.[6] F16L *1/0012;25/00*
U.S. Cl. 405—158 **6 Claims**



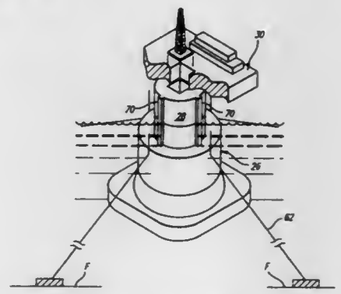
1. An underwater pipeline that is resistant to collapse by a propagating buckle that may occur as the pipeline is being laid in deep water, said pipeline comprising a plurality of joints of pipe connected by threaded connections, each connection including external cylindrical threads of opposite hand on adjacent ends of each of said plurality of pipe joints, and a coupling having right and left-hand cylindrical threads for moving the ends of the pipe joints into abutting position, the abutting ends providing a physical discontinuity between the ends of the pipe joints, and each of said threaded connections including means to stop the propagation of a buckle or collapse in the pipeline, and a seal ring to seal the connection.

5,609,441
METHOD AND APPARATUS FOR THE OFFSHORE INSTALLATION OF MULTI-TON PREFABRICATED DECK PACKAGES ON PARTIALLY SUBMERGED OFFSHORE JACKET FOUNDATIONS
Jon E. Khachaturian, 5827 Rhodes Ave., New Orleans, La. 70131
Filed Mar. 15, 1995, Ser. No. 404,421
Int. Cl.[6] E02B *17/00*
U.S. Cl. 405—204 **18 Claims**



1. A lifting apparatus for placing a multi-ton deck package on an offshore jacket foundation, comprising:
a) a pair of barges, each defining a base that can support a large multi-ton load;
b) truss means supported by the barges about the periphery of the deck package for forming a load transfer between the barges and the deck package to be placed, said truss means including a plurality of diagonally extending lift booms, each lift boom having a lower end attached to the barge and an upper free end;
c) upper and lower connection means for forming attachments of the truss means to the deck package at upper and lower respective elevational positions; and
d) said upper and lower connection means including corresponding connecting portions that enable the barges and package to quick disconnect, one of said corresponding quick connecting portions including the upper free end portion of the lifting boom, said other quick connecting portion being positioned at said upper elevational position wherein a projection registers in a socket to form a connection between the lifting boom and the deck package;
e) means for lowering the combination of the truss means and the supported deck package with respect to the jacket foundation during placement of the deck package on the jacket foundation.

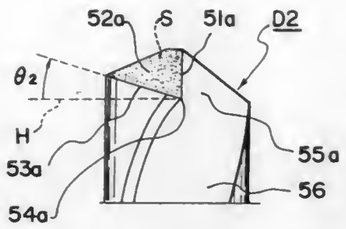
5,609,442
OFFSHORE APPARATUS AND METHOD FOR OIL OPERATIONS
Edward E. Horton, Rancho Palos Verdes, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.
Filed Aug. 10, 1995, Ser. No. 513,288
Int. Cl.[6] E02B *17/00*
U.S. Cl. 405—205 **17 Claims**



1. An apparatus for offshore operations, comprising in combination:
an upper hull and a deck carried thereby;
a lower hull having an upwardly facing body opening to receive said upper hull for relative vertical movement between closed telescopic relation and extended non-telescopic relation;
said lower hull including pontoon means to support said upper and lower hulls and said deck during transit and to provide sufficient water plane moment of inertia for stability during transit;
tension line means connecting said deck and said lower hull; guide means on said upper and lower hulls for said relative vertical movement;
stop means on said upper hull engageable with stop means on said lower hull for limiting extended relation of said upper and lower hulls;
and means for selectively ballasting said upper and lower hulls and said pontoon means for controlling relative positions of said hulls and of the centers of buoyancy and gravity of the apparatus during transit, installation, and operations.

5,609,443
METHOD FOR DRILLING DIFFICULT MACHINABLE MATERIALS
Taizo Shimomura, Kawasaki, Japan, assignor to Kabushiki Kaisha Shimomura Seisakusho, Kanagawa-ken, Japan
Division of Ser. No. 335,326, Nov. 7, 1994, Pat. No. 5,531,548. This application Feb. 7, 1996, Ser. No. 597,861
Int. Cl.[6] B23B *35/00*
U.S. Cl. 408—1 R **2 Claims**

1. Method of drilling difficult machinable materials comprising the steps of providing a drill having major flanks extending in a



backward direction of rotation from the major cutting edges, an ascending slope and ultra-hard cutting grains adhered to said major flanks, engaging said drill and work-piece and varying the contact pressure between said drill and the work-piece.

5,609,444

DRILLING DEVICE WITH AN EXTENSION ARM

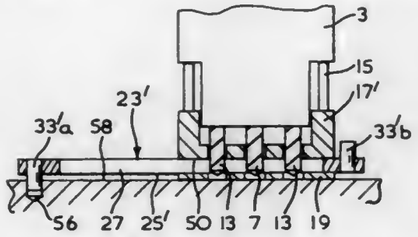
Giovanni Valsecchi, Civate, Italy, assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 382,413, Feb. 3, 1995, abandoned. This application Dec. 20, 1995, Ser. No. 575,444

Claims priority, application United Kingdom, Feb. 4, 1994, 9402121

Int. Cl.[6] B23B *49/00*

U.S. Cl. 408—79 **14 Claims**



1. A multiple hole drilling device comprising a frame having a first surface for abutting a workpiece and drive means to plunge a row of rotating drill bits through the first surface into the workpiece, and an extension arm comprising a body, adapted for attachment to the frame of the drilling device, defining a slit colinear with the row of drill bits, and a protrusion for engaging a drill hole formed in a workpiece, wherein the protrusion is lockable to the body of the extension arm such that additional drill holes can be formed in the workpiece at repeatable distances along the workpiece.

5,609,445

STRAIGHT MOTORIZED HANDPIECE, IN PARTICULAR FOR MEDICAL PURPOSES, PREFERABLY FOR A MEDICAL OR DENTAL LABORATORY

Josef Düsing, Leutkirch, Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Germany

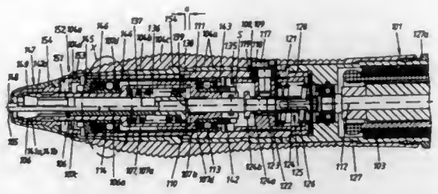
Filed Feb. 17, 1995, Ser. No. 389,957

Claims priority, application Germany, Mar. 2, 1994, 44 06 855.7

Int. Cl.[6] A61C *1/05;1/08;* **B23B** *47/04*

U.S. Cl. 408—124 **12 Claims**

1. A straight handpiece (**101**) for medical and dental purposes; comprising a sleeve-like casing (**111**); a clamping device (**106**) arranged in said casing for the selective clamping of tools (**105**) insertable into the handpiece (**101**) from a front end thereof; a drive shaft (**107**) which is rotatably mounted in the casing (**111**); a rearward and a forward roller bearing (**113, 114**) supporting said clamping device (**106**) on said drive shaft; a first shoulder (**143**) on the casing (**111**) against which there bears an outer ring of one of the roller bearings (**113**) for axially retaining the drive shaft; a releasable arresting shoulder (**145**) being positioned opposite to the first shoulder (**143**) at an axial spacing therewith, the first shoulder (**143**) being arranged on the outside of the outer ring of the rearward roller bearing (**113**), the arresting shoulder (**145**) being arranged on the outside of the forward roller bearing (**114**), the drive shaft (**107**) being demountable and mountable as a modular unit with the roller bearings (**113, 114**) from the side of the casing (**111**) on which the releasable arresting shoulder (**145**) is located, the outer ring of the forward roller bearing (**114**) being rearwardly located in contact with an internal shoulder of the casing (**111**); a ring seal (**146**) being arranged between the internal shoulder and the forward roller bearing (**114**), and wherein the first shoulder (**143**) is arranged at the rear side of the rearward roller bearing (**113**) and the modular unit is demountable to the front and remountable from the front of the handpiece.



5,609,446

COMBINATION TOOL

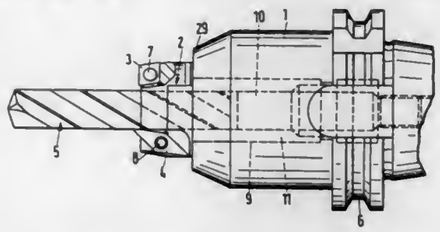
Hans-Jörg Link, Stuttgart, and Werner Schurer, Schönaich, both of Germany, assignors to Joh. & Ernst Link GmbH & Co. KG, Stuttgart, Germany

Filed Jun. 16, 1995, Ser. No. 490,937

Claims priority, application Germany, Jun. 17, 1994, 44 21 002.7

Int. Cl.[6] B23B *51/10*

U.S. Cl. 408—224 **13 Claims**



1. A combination tool comprising:
a tool holding fixture for connecting said combination tool to a drive spindle of a machine tool;
said tool holding fixture comprising an axially extending receiving member;
a grip with a tension sleeve, said grip received in said receiving member of said tool holding fixture, said receiving member clamping said tension sleeve;
said tension sleeve of said grip having an axially extending receiving opening for receiving a shank of a working tool;
said tension sleeve comprising elastic clamping portions being pushed radially inwardly by said receiving member for clamping the shank of the working tool in said receiving opening;
said grip having an end facing away from said tool holding fixture;
said grip comprising clamping elements distributed at a distance from one another in a circumferential direction of said grip at said end facing away from said tool holding fixture; and at least one cutting member connected to an end face of said end of said grip.

5,609,447

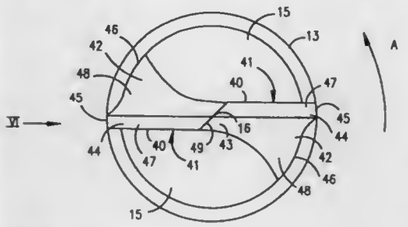
SURFACE DECARBURIZATION OF A DRILL BIT

Robert W. Britzke; Jimmy Eason, both of Rogers, Ark., and Zhigang Fang, The Woodlands, Tex., assignors to Rogers Tool Works, Inc., Rogers, Ark.

Continuation-in-part of Ser. No. 151,800, Nov. 15, 1993, abandoned. This application Sep. 28, 1994, Ser. No. 314,510

Int. Cl.[6] B23B *51/02*

U.S. Cl. 408—230 **10 Claims**



1. A drill comprising:
a drill body having a cutting tip, an axis of symmetry, and a plurality of flutes wherein said flutes have a rake surface at said cutting tip;
said cutting top comprising a plurality of side blades between said flutes and joined at a web, a plurality of flank surfaces extending from an outer diameter of said cutting tip to said axis of symmetry, and a plurality primary cutting edges at the intersection of said flank surfaces with said rake surfaces which have a plurality of outer surfaces;
wherein said primary cutting edges include an angular surface formed on the forward end of said rake surfaces;
wherein said primary cutting edges comprise a hardened layer formed from the outer surface of the drill.

5,609,448

APPARATUS FOR MANUFACTURING PLATE FOR GRAVURE

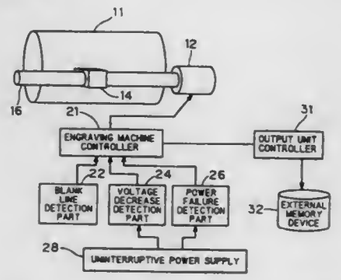
Setsuo Oohara, and Tadashi Shudo, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Apr. 3, 1996, Ser. No. 627,314

Claims priority, application Japan, Apr. 4, 1995, 7-104686

Int. Cl.[6] B23C *3/04;* **H04N** *1/24;* **G01D** *15/00*

U.S. Cl. 409—80 **8 Claims**



1. An apparatus for manufacturing a plate for a gravure which moves a plate material in a main scanning direction while moves an engraving head for engraving said plate material in accordance with gravure data in a sub scanning direction with supply of electric power from a commercial power source, so as to manufacture a plate having cells and blank lines which correspond to the gravure data, the main scanning direction being perpendicular to the sub scanning direction, said apparatus comprising:
a) a back-up power source for supplying electric power instead of a commercial power source when power failure occurs in said commercial power source;
b) power failure detecting means for detecting said power failure within said commercial power source;
c) blank line detecting means for detecting a closest blank line among blank lines which are ahead of said engraving head, said closest blank line being closest to a current position of said engraving head when said power failure is detected; and
d) first control means for allowing said engraving head to continue engraving up to said closest blank line and for stopping said engraving head upon detection of said closest blank line.

5,609,449

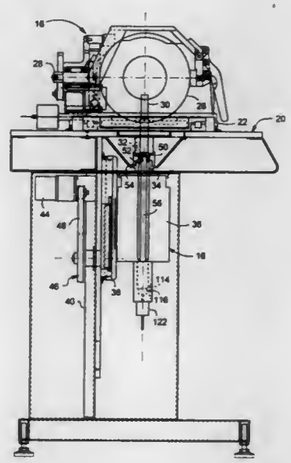
APPARATUS FOR FITTING AND FOR DRILLING VARIABLE SIZE HOLES IN A BOWLING BALL

Bill E. Towers, c/o Brunswick Bowling & Billiards Corp., 525 W. Laketon, Muskegon, Mich. 49443; Ladislav Jurik, c/o JAL Enterprises, Inc., 770 G.N. Church Rd., Elmhurst, Ill. 60126, and Richard L. Weinbrenner, c/o CyberPak Co., P.O. Box 190, Lemont, Ill. 60439

Continuation-in-part of Ser. No. 380,077, Jan. 30, 1995, which is a continuation-in-part of Ser. No. 336,143, Nov. 14, 1994. This application Jun. 26, 1995, Ser. No. 495,752

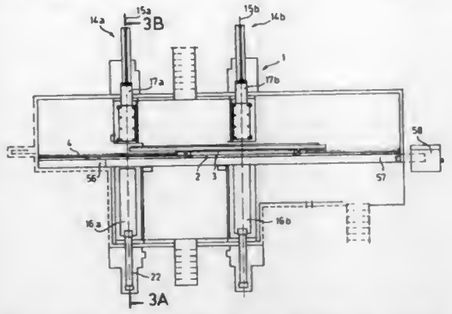
Int. Cl.[6] B23C *3/00;* **B23B** *41/00*

U.S. Cl. 409—200 **11 Claims**



1. An apparatus for use in fitting bowling balls to bowlers and for drilling the balls comprising:
a fitting apparatus usable by a bowler to determine the size of a thumb hole and at least one finger hole to be drilled in a bowling ball; and
a drilling apparatus including a ball support, a rotatable drilling tool, said ball support and said drilling tool being mounted for relative movement toward and away from each other to effect drilling of a ball on said ball support; means for rotating said drilling tool; means for moving said drilling tool in an orbital path; and means for varying the diameter of said orbital path to thereby vary the diameter of a hole drilled in said ball including a control motor responsive to said fitting apparatus;
said control motor being carried by said means for rotating said drilling tool.

5,609,450
METHOD AND APPARATUS FOR BROACHING OPENING IN A PLATE
Daniel Béraudier, Dracy Le Fort, and Jean-Yves Doubéret, D'Andenay, both of France, assignors to Framatome, Courbevole, France
Filed Oct. 28, 1994, Ser. No. 330,626
Claims priority, application France, Oct. 29, 1993, 93 12917
Int. Cl.[6] B23D *41/00*
U.S. Cl. 409—244 **11 Claims**



8. A process for broaching passage openings in a plate by passing a profiled broach successively through each hole of an array of rough-drilled holes passing through said plate, said process being carried out by means of a plant comprising

(a) a support for holding said plate in a broaching position;

(b) at least two broaching units forming two broaching lines with successive action, each of said units comprising a traction device and an accompanying device arranged on either side of said plate in working position on said support and having axes of travel aligned along a common work axis of a broaching line perpendicular to said faces of said plate, the work axes of the two broaching lines being separated by a distance which is at least equal to a maximum dimension of said plate in a first direction of travel of said plate, and the two traction devices and the two accompanying devices being respectively arranged on a first and a second side of said plate; and

(c) means for moving said plate in at least said first direction of travel and a second direction of travel parallel to said faces of said plate;

(d) wherein said traction device, said accompanying device and the broach of a second broaching line are returned into an initial arrangement allowing broaching to begin on a second broaching line of said broaching lines during a broaching operation on a first broaching line of said two broaching lines.

5,609,451
DISPLAY UNIT WITH IMPROVED SUPPORT FEET
Donald E. McCorkle, Jr., Dearing, Ga., assignor to McStack USA, Marietta, Ga.
Filed Dec. 16, 1994, Ser. No. 358,093
Int. Cl.[6] B60P *7/135*
U.S. Cl. 410—90 **6 Claims**

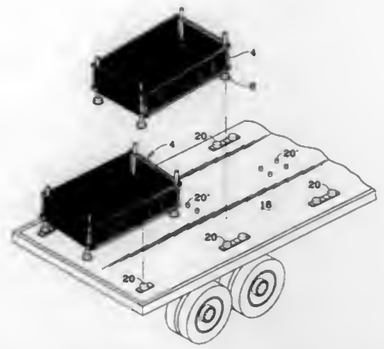
1. A shelving unit, comprising:

a horizontal tray for supporting merchandise;

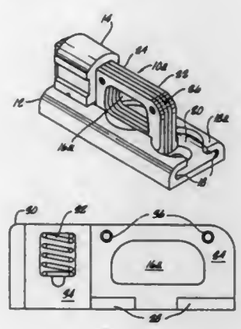
first support means extending below said tray for supporting said tray on a lower surface,

and a narrow vertical post extending above said tray for engaging and supporting a second one of said shelving units; and

a plurality of shoes attached to said first support means, each of said shoes having a cylindrical side having a width substantially greater than that of said vertical post, a rounded top extending from the upper edge of said cylindrical side, and a flange curving outward from a lower edge of said cylindrical side with a radius of curvature of about ½ inch and tapering downward slightly from said lower edge of said cylindrical side, said shoe encompassing an interior space for receiving a rounded protrusion.



5,609,452
CARGO TRACK FITTING
Robert Looker, Carpenteria, and Richard McLennan, Rancho Palos Verdes, both of Calif., assignors to Satron, Inc., El Segundo, Calif.
Filed Dec. 9, 1993, Ser. No. 164,147
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—105 **13 Claims**

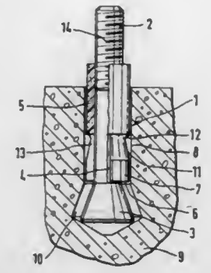


1. A removable fitting for use with an airline cargo track, said airline cargo track being contained within an airline cargo vehicle, said cargo track having plunger engagement means, said removable fitting comprising:

a plurality of plate inserts, comprising a plurality of center inserts sandwiched between a plurality of peripheral inserts, said center inserts extending beyond said peripheral inserts in a longitudinal direction, said peripheral inserts having extensions, said extensions extending in a lateral direction perpendicular to said longitudinal direction and being removably engageable with said cargo track; and

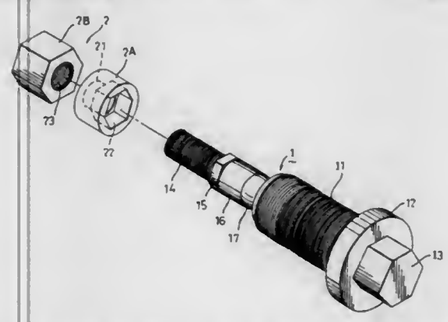
a plunger slidably secured about said center inserts and contacting a biasing means to cause controlled rectilinear movement of said plunger so that said plunger is removably matable with said cargo track plunger engagement means.

5,609,453
EXPANSIBLE PLUG FOR ANCHORING IN A DRILLED HOLE HAVING AN UNDERCUT
Artur Fischer, Waldachtal, Germany, assignor to fischerwerke, Artur Fischer GmbH & Co AG, Waldachtal, Germany
Filed Jan. 30, 1996, Ser. No. 593,787
Claims priority, application Germany, Feb. 9, 1995, 195 04 216.6
Int. Cl.[6] F16B *13/06*
U.S. Cl. 411—54 **5 Claims**



1. An expansible plug for anchoring in a drilled hole having an undercut, the plug comprising a threaded bolt having a leading end with an expander cone at said leading end; an expansible sleeve having a leading end and a rear end and provided with a plurality of longitudinal slits starting from said leading end of said expansible sleeve and extending for a part of a length of said expansible sleeve, said expansible sleeve having a cylindrical portion arranged at said leading end of said expansible sleeve, said expansible sleeve also having an annular groove adjoining said cylindrical portion and tapering toward said rear end of said expansible sleeve, said groove being bounded in a region of said slits by a rounded portion, said expansible sleeve being composed of a fiber-reinforced, high-strength plastic material.

5,609,454
DRIVING ASSEMBLY FOR DRIVING OPPOSED MEMBERS TO MOVE TOWARD AND AWAY FROM EACH OTHER
Wen-Yuan Lee, 7F-3, No. 8, Lane 390, Sec. 1, Chien-Kang Rd., Tainan City, Taiwan
Filed Jan. 18, 1995, Ser. No. 374,171
Int. Cl.[6] F16B *35/00*
U.S. Cl. 411—384 **3 Claims**



1. A driving assembly for driving opposed first and second driven members to move toward and away from each other, the first driven member being formed with a screw hole therethrough, the second driven member being formed with a through-hole therethrough, the through-hole of the second driven member being axially aligned with and having a smaller diameter than the screw hole of the first driven member, said driving assembly comprising:

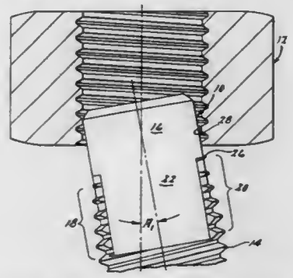
an elongated rod having an enlarged threaded first portion adapted to extend threadably through the screw hole of the first driven member, a second portion adapted to extend out of the through-hole of the second driven member, and a third portion interconnecting said first and second portions and being adapted to extend through the through-hole of the second driven member, said third portion having a polygonal member provided thereon which is located adjacent to said second portion, said polygonal member adapted to be located outside the through-hole of the second driven member;

a stop unit including a sleeve member formed with a receiving hole which is complementary to said polygonal member receive said polygonal member therein, and an axial rod-extending hole which is in communication with said receiving hole and which is sized to permit extension of said second portion of said elongated rod through said rod-extending hole and to prevent extension of said polygonal member through said rod-extending hole; and

a locking nut connected threadably to said second portion of said elongated rod so as to prevent disengagement of said sleeve member from said elongated rod in a direction toward said second portion of said elongated rod;

whereby rotation of said elongated rod in one direction is adapted to result in movement of the first driven member toward the second driven member, while rotation of said elongated rod in the opposite direction is adapted to result in movement of the first driven member away from the second driven member.

5,609,455
ANTICROSS-THREADING MALE FASTENER
Arthur J. McKewan, 798 Lakeside, Birmingham, Mich. 48009
Filed Mar. 24, 1995, Ser. No. 410,350
Int. Cl.[6] F16B *25/00*
U.S. Cl. 411—386 **4 Claims**



1. An externally threaded male fastener having an entrance configuration that precludes cross-threading with an internally threaded female element, said male fastener comprising:

A first threaded portion at one end of said male fastener, said threads having a cross-sectional shape and helix angle;

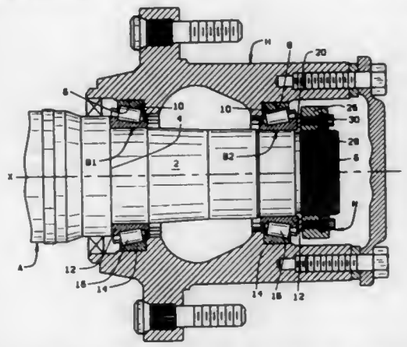
A right circular cylindrical portion at the opposite end of said male fastener devoid of threads and having a diameter equal to the root diameter of the first threaded portion thereon so as to be slidably engageable with the internal threads of a female element upon insertion of said male fastener thereinto;

a pair of diametrically opposed circumferentially interrupted approach thread portions between the right circular cylindrical portion and the first threaded portion of said male fastener, said approach threads having the same helix angle and the same cross sectional shape at the crest as the first threaded portion but truncated at the root to have a reduced crest diameter, the crest diameter increasing from the cylindrical end portion toward the first threaded portion of said fastener in a truncated conical array; and

a pair of diametrically opposed unthreaded portions between said approach thread portions, respectively, having a diameter equal to the right circular cylindrical portion of said fastener

whereby initial engagement between the crest of one of said approach threads and the threads of the female element is released upon 90 degree rotation of said male fastener so as to permit advancement of the cylindrical portion of said male fastener towards alignment with a central axis of said female element.

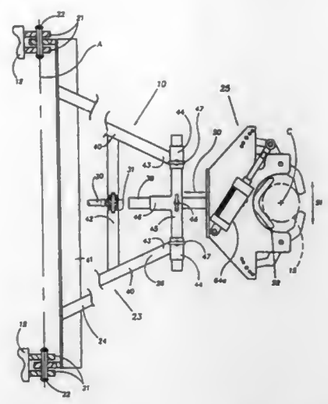
5,609,456
LOCKING NUT
Mark A. Joki, Dover, Ohio, assignor to The Timken Corporation, Canton, Ohio
Filed Feb. 21, 1995, Ser. No. 391,107
Int. Cl.[6] F16B *37/08;39/22*
U.S. Cl. 411—433 **19 Claims**



1. A locking nut for engaging an external thread, said nut comprising: a first ring having an axis and an axially directed bore along which a thread exists, the first ring also having a shoulder that is oriented at an angle with respect to the axis and a recess that is offset axially into the shoulder; a second ring having an end face that is against the shoulder of the first ring, the second ring also having a relief that opens out of its periphery, the second ring in the region of the relief being aligned with the recess and being small enough to fit into the recess, the second ring also having a bore which is axially aligned with the bore of the first ring and has a thread which matches the thread of the first ring so that there is no interruption in pitch between the threads of the first and second rings when the second ring lies undistorted against the shoulder of the first ring; and a distorting device engaged with the first and second rings and having the capacity to deform the second ring in the region of its relief into the recess of the first ring to thereby interrupt the pitch between the first and second rings, whereby the nut will pass easily over the external thread when the second ring is not deformed, but when the second ring is deformed by the distorting device, the two rings will jam on an external thread and prevent rotation of the nut on the external thread.

5,609,457
PIPE ALIGNMENT APPARATUS FOR USE ON WELLHEAD DERRICK
Kenneth M. Burns, Calgary, Canada, assignor to Burns, Stevenson & Associates, Ltd., Calgary, Canada
Filed May 16, 1995, Ser. No. 441,849
Claims priority, application Canada, Jan. 13, 1995, 2140203
Int. Cl.[6] E21B *19/16*
U.S. Cl. 414—22.51 **18 Claims**

1. A well pipe alignment apparatus for mounting on a derrick framework above a wellhead, said apparatus being engagable with an upper pipe section having a screw connection at the lower end thereof for threaded engagement with an upper end of a lower pipe section within a well bore for aligning said upper pipe section with said lower pipe section, said apparatus comprising,



a supporting frame having an outer end for connection to the derrick framework,

a head assembly carried at an inner end of said frame above said upper end of said lower pipe section,

said head assembly having a base member and pipe engaging means carried by said base member for engaging and axially aligning said upper pipe section with the axis of the lower pipe section and allowing rotation of said upper pipe section within said head assembly,

said pipe engaging means including a pipe guide member and movable arm means pivotable between an open position and a closed position,

said pipe guide member and said arm means together having at least three pipe engaging surfaces for engaging a pipe section of a particular outer diameter at points about more than 180° of the pipe section circumference,

said pipe guide member being mounted in said base member of said head assembly for movement toward and away from a central longitudinal axis of said upper pipe section,

locking means for selectively affixing said pipe guide member in one of a plurality of positions depending on the size of the pipe section to be engaged,

said arm means being connected by pivot means to said base member of said head assembly,

cylinder means pivotally connected between said base member and said arm means for swinging said arm means on actuating thereof between the open and closed positions,

stop means selectively adjustable between a plurality of positions for determining the position of the pipe engaging surface of the arm means in the closed position relative to the pipe engaging surface of the guide member for thereby selectively accommodating pipe sections of a plurality of circumferences.

5,609,458
METHOD OF CHARGING COAL INTO CHAMBER FURNACE-TYPE COKE OVEN AND APPARATUS THEREFOR
Kouji Hanaoka; Katsutoshi Igawa, both of Okayama; Seiji Taguchi, Chiba; Takashi Matsui, and Kenichi Sorimachi, both of Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed Mar. 13, 1995, Ser. No. 403,205
Claims priority, application Japan, Mar. 23, 1994, 6-051847
Int. Cl.[6] C10B *31/02*
U.S. Cl. 414—173 **12 Claims**

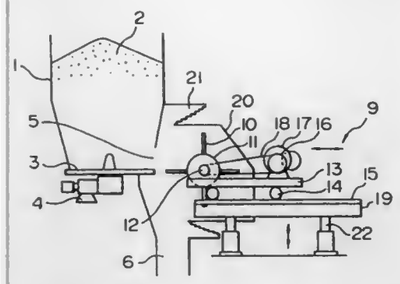
6. An apparatus for charging coal into a chamber furnace-type coke oven, comprising:

a coal hopper for storing the coal therein;

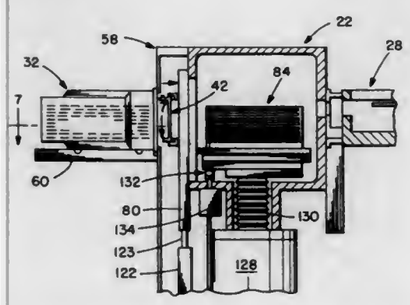
a table feeder for feeding the coal from said hopper;

rotation vanes for increasing the speed of the coal fed from said feeder at the initial stage in which the coal drops from said feeder, said vanes having a rotation center which is located upward on an exterior of a locus of free fall gravitated by the coal; and

a charging cylinder for guiding the coal, which has been accelerated by said vanes and dropped, into said carbonization chamber.



5,609,459
DOOR DRIVE MECHANISMS FOR SUBSTRATE CARRIER AND LOAD LOCK
Richard S. Muka, Topsfield, Mass., assignor to Brooks Automation, Inc., Chelmsford, Mass.
Filed Jul. 6, 1995, Ser. No. 498,597
Int. Cl.[6] B65G *49/07*
U.S. Cl. 414—217 **9 Claims**



1. In combination with a system for batch loading semiconductor wafers including a portable carrier for supporting and transporting in a substantially particle free environment a plurality of the wafers in spaced generally stacked relationship, said carrier having a carrier port for providing access to the interior thereof, said system including a load lock defining a chamber therein having a substantially particle free environment and including a load lock port opening into the load lock chamber, and an isolation housing for sealingly isolating the load lock chamber and the interior of the carrier from the surrounding atmosphere, a communication access assembly comprising:

a carrier door on said carrier movable between a closed position overlying said carrier port for sealing the interior of said carrier from the surrounding atmosphere and an open position spaced from said carrier port;

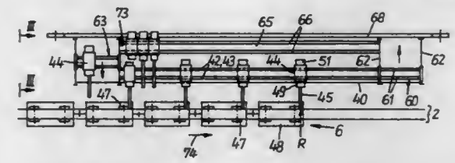
a load lock door on said load lock movable between a closed position overlying said load lock port for sealing the load lock chamber from the surrounding atmosphere and an open position spaced therefrom;

a carrier door drive mechanism on said load lock door for moving said carrier door between the closed and open positions;

said isolation housing having an aperture generally aligned with said load lock port but spaced therefrom and including a platform for supporting said carrier thereon such that said carrier port is proximate the aperture in said isolation housing; and

seal means between said isolation housing and said carrier and encompassing said carrier port and the aperture in said isolation housing for isolating the interior of said carrier when said carrier is supported on said platform, the interior of said isolation housing and the load lock chamber from the surrounding atmosphere.

5,609,460
PROCESS FOR TRANSFERRING GOODS LOAD UNITS ON OR FROM A TRAIN
Burkhard Abel, Bottrop; Gerhard Birkenfeld, Bochum; Manfred Lücking, Essen; Ulrich P. Vogt, Essen, and Dieter Zimek, Essen, all of Germany, assignors to Krupp Fordertechnik GmbH, Duisburg, Germany
PCT No. PCT/EP93/02611, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/07784, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 25, 1993, Ser. No. 403,877
Claims priority, application Germany, Oct. 1, 1992, 42 33 007.6
Int. Cl.[6] B65G *63/00*
U.S. Cl. 414—334 **3 Claims**



1. A process for transloading goods units which comprises the steps of:

(a) assigning a reference point to each of a series of railway cars displaced as a train along a track by engaging with each of said cars a measurement carriage at an upstream location along said track and withdrawing said measurement carriages from engagement with said cars at a downstream location along said track;

(b) detecting load attack points of a goods unit on one of said cars and determining differential distances of said load attack points from a respective reference point of said one of said cars;

(c) automatically determining from said differential distances on said one of said cars a location of a common load attack center thereof with respect to said reference point of said one of said cars;

(d) detecting locating elements of another of said cars and determining differential distances of said locating elements from a respective reference point of said other of said cars;

(e) automatically determining from said differential distances on said other of said cars a location of a locating-element center thereof with respect to said reference point of said other of said cars;

(f) measuring positions of said reference points along said track; and

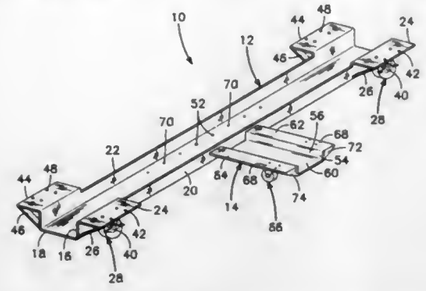
(g) for unloading said goods unit from said one of said cars displacing a transloading lifting gear while continuously measuring a position of a load receiving center thereof until said load receiving center coincides with said load attack center and then engaging said lifting gear with said goods unit of said one of said cars and lifting said goods unit from said one of said cars, and, for loading a goods unit on said other of said cars, displacing a transloading lifting gear carrying a goods unit to be loaded on said other of said cars until said transloading lifting gear carrying said goods unit to be loaded has a center coinciding with said locating-element center and lowering said goods unit onto said other car for engagement by the locating elements thereof.

5,609,461

MOTORCYCLE DOLLY

Bruce A. Lichtenberg, Valencia, Calif., assignor to Cycle Products of California, Inc., Valencia, Calif.

Filed Nov. 6, 1995, Ser. No. 554,592
Int. Cl.[6] B60P *3/00*
U.S. Cl. 414—426 **1 Claim**



1. A motorcycle dolly comprising:

a rigid chassis having an elongated channel of sufficient length to support both tires of a motorcycle, said chassis having a right side and a left side, said elongated channel terminating in a pair of opposite ends, at least one of said opposite ends being open ended, said channel being formed by a planar sheet material bottom and mounted between upstanding sidewalls with one said sidewall located at said right side and the remaining said sidewall located at said left side, said planar sheet material bottom being located a short distance from a supporting surface on which said chassis is located;

a plurality of first wheels being mounted on said chassis, said first wheels adapted to ride on the supporting surface locating said bottom said short distance from the supporting surface, said first wheels permitting easy manual movement of said chassis on the supporting surface;

a kickstand support platform fixed directly to and intermediate the length of said right side of said chassis, said kickstand support platform extending laterally from said right side, second wheel means mounted on said kickstand support platform, said second wheel means adapted to rest on the supporting surface;

whereby both tires of a motorcycle are to be located within said channel with the kickstand of the motorcycle resting on said kickstand support platform; and

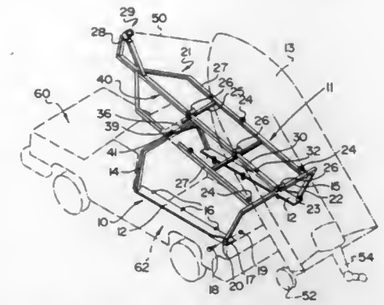
there being at least two in number of said first wheels along said right side and at least two in number of said first wheels along said left side, said wheels located along said right side including fixing means, said fixing means being manually movable to fix in position said first wheels to prevent said first wheels from rolling movement on said supporting surface.

5,609,462

BOAT LOADER AND CARRIER

Arnald E. Reimer, 833 Jordan Avenue, Nanaimo, British Columbia, Canada

Filed Jun. 7, 1995, Ser. No. 485,392
Int. Cl.[6] B60P *3/10*
U.S. Cl. 414—462 **15 Claims**



1. A boat loader and carrier for mounting on a motor vehicle, comprising:

(a) an upper frame for supporting a boat having a bottom;

(b) means for pivoting the upper frame about a horizontal transverse axis located below a selected end of the upper frame to allow the upper frame to pivot between a generally horizontal carrying position above and generally parallel to the ground and a loading/unloading position inclined downwardly at an angle of inclination to the horizontal carrying position and toward the selected end of the upper frame; and

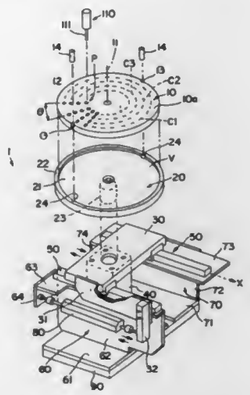
(c) a winch for attachment to a cable for pulling the boat onto the upper frame and for allowing the boat to be controllably lowered off the upper frame, so that when the boat loader and carrier is mounted on a motor vehicle, the upper frame can pivot only about the horizontal transverse axis.

5,609,463

METHOD OF SUPPLYING PARTS AND SUPPLYING DEVICE

Haruhito Kobayashi; Yoshinobu Ohta, and Shigeharu Nakahira, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 20, 1994, Ser. No. 359,894
Claims priority, application Japan, Dec. 28, 1993, 5-350005
Int. Cl.[6] G06M *1/00*
U.S. Cl. 414—675 **12 Claims**



6. A supplying device for supplying parts to a conveyance apparatus for receiving and conveying the parts, comprising:

a turntable having an upper surface with a plurality of recesses, the recesses being arranged circumferentially at a pitch determined by a specified angle on arcs of a plurality of concentric circles centered on a longitudinal axis,

a vibration means for giving to the turntable a sufficient vibration to cause a plurality of the parts supplied on the upper surface of the turntable to move and become accommodated in the respective recesses,

support means for detachably supporting the turntable, and

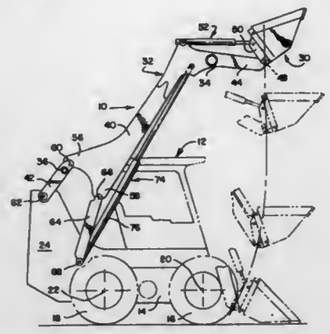
shift means for intermittently moving the support means so that a desired recess of the turntable can be located at a specified receiving position of the conveyance apparatus, the shift means including drive means for intermittently rotating the turntable about the longitudinal axis by the specified angle and slide means for radially sliding the turntable.

5,609,464

LIFT BOOM ASSEMBLY FOR A LOADER MACHINE

John M. Moffitt, Wichita, and Stephen A. Youngers, Clearwater, both of Kans., assignors to Case Corporation, Racine, Wis.

Filed Feb. 6, 1995, Ser. No. 383,774
Int. Cl.[6] E02F *3/28*
U.S. Cl. 414—685 **23 Claims**



1. A lift boom assembly mounted on a machine having a fore-and-aft extending frame, comprising:

a pair of generally vertical supports for supporting the boom assembly, said supports being disposed toward a rear of the frame;

a lift assembly having a pair of lift arms arranged on opposite lateral sides of the frame, each lift arm having a forward end to which a working tool is mounted and comprises a main lift link and a second lift link pivotally connected to each other, said main lift link extending rearwardly from a forward portion of the frame and including at a rear end thereof upper and lower connecting portions, said second lift link being substantially shorter in length than said main lift link and has a first end pivotally connected to the upper connecting portion of the main lift link and a second end pivotally connected to one of said supports;

a pair of extendable and retractable drivers arranged on opposite sides of the frame and connected between the frame and a respective lift arm for effecting powered

vertical movements of the lift assembly and the tool carried thereby relative to the frame; and

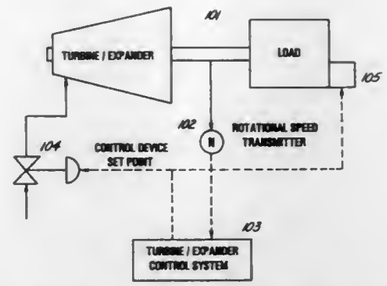
a pair of control arms, each control arm having a first end pivotally connected to the frame adjacent the rear end thereof beneath the location whereat the second lift link is connected to the frame and having a second end which, when the boom assembly is in a lowered position, extends upwardly and rearwardly from the first end and is pivotally connected to said lower connecting portion of a respective main lift link.

5,609,465

METHOD AND APPARATUS FOR OVERSPEED PREVENTION USING OPEN-LOOP RESPONSE

Brett W. Batson, Dallas Center, and Byron K. Broussard, West Des Moines, both of Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Sep. 25, 1995, Ser. No. 533,517
Int. Cl.[6] F01D *17/06*
U.S. Cl. 415—1 **16 Claims**



1. A method to stop an angular acceleration of a driver driving a rotational load by way of a shaft, the entire set of rotational parts having a moment of inertia, I, the method comprising the steps of:

(a) measuring an angular speed, N, Of the shaft at various times;

(b) recording a sample time between each of these measurements, Δt;

(c) calculating a value of N^2 at each of these sample times;

(d) calculating a time derivative, dN^2/dt, based on the calculated values of N^2 at the various times and the times between each sample, Δt;

(e) multiplying the value of dN^2/dt by the total inertia, I, of all rotating parts and dividing by two, thereby calculating a difference between a power applied to the shaft and a power extracted from the shaft, ΔP;

(f) evaluating, based on the value of ΔP calculated in the prior step, the required change in a manipulated parameter to reduce the driver's power to balance the power applied to the shaft with the power extracted from the shaft;

(g) defining a set point for the manipulated parameter based on the evaluation; and

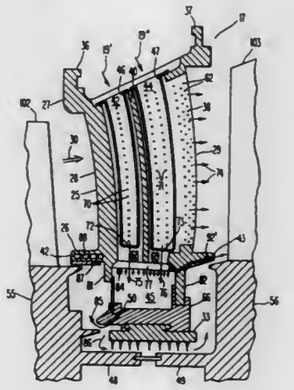
(h) adjusting the manipulated parameter to meet the set point.

5,609,466

GAS TURBINE VANE WITH A COOLED INNER SHROUD

William E. North, Winter Springs, and Mark T. Kennedy, Oviedo, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 336,895, Nov. 10, 1994, abandoned.
This application Nov. 27, 1995, Ser. No. 562,945
Int. Cl.[6] F01D *9/04;9/06*
U.S. Cl. 415—115 **19 Claims**



1. A gas turbine comprising:

a) a compressor for producing compressed air;

b) a combustor for heating at least a portion of said compressed air, thereby producing a hot compressed gas; and

c) a turbine for expanding said hot compressed gas so as to produce shaft power, said turbine further comprising:

i) a rotor centrally disposed therein;

ii) a generally hollow stationary vane disposed therein that is exposed to said hot compressed gas, said stationary vane having an outer shroud portion, an inner shroud portion and an airfoil portion disposed therebetween, said outer shroud

portion being in flow communication with a flow of cooling air formed by a second portion of said compressed air, said cooling air passing through said outer shroud portion and said airfoil portion;

iii) a cavity being formed between said inner shroud portion and said rotor, said cavity receiving said flow of cooling air after passing through said inner shroud portion;

iv) said inner shroud portion having a first passage formed therein, said first passage being in flow communication with said cavity, whereby said first passage receives at least a first portion of said cooling air, an array of pin fins disposed in said first passage and substantially radially oriented therein for increasing heat transfer from said inner shroud to said first portion of said cooling air; and wherein said inner shroud further comprises:

a) leading and trailing edges, said first passage being formed in a portion of said inner shroud adjacent said leading edge;

b) a chamber formed therein, said first passage in flow communication with said chamber, whereby said chamber receives at least a portion of said cooling air received by said first passage; and

c) a plurality of second passages formed in said trailing edge portion, said second passages in flow communication with said chamber, wherein said second passages receive at least a portion of said cooling air received by said chamber.

5,609,467

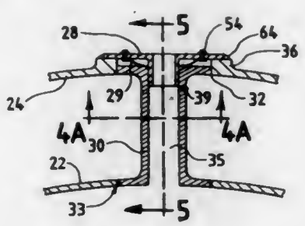
FLOATING INTERTURBINE DUCT ASSEMBLY FOR HIGH TEMPERATURE POWER TURBINE

Kenneth J. Lenhart, Cincinnati, and Tom D. Stream, Mount Vernon, both of Ohio, assignors to Cooper Cameron Corporation, Houston, Tex.

Filed Sep. 28, 1995, Ser. No. 535,558

Int. Cl.[6] F04D *29/04*

U.S. Cl. 415—142 **11 Claims**



1. A floating duct system for conveying high temperature fluid medium between a gas generator and a power turbine including an outer annular ring, an inner annular ring, a hollow strut fairing extending between said annular rings, an end cap having sealing means for maintaining a substantial fluid medium seal between said strut fairing and said outer annular ring.

5,609,468

CENTRIFUGAL SEAL ASSEMBLY

Kevin E. Burgess, Carlingford, Australia, assignor to Warman International Limited, Artarmon, Australia

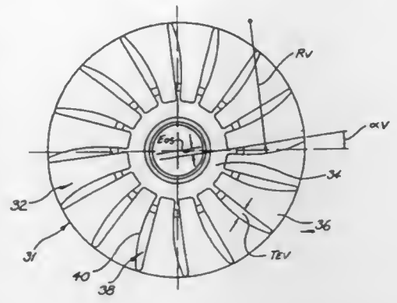
PCT No. PCT/AU94/00116, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/21923, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 10, 1994, Ser. No. 525,780

Claims priority, application Australia, Mar. 18, 1993, 7894/93

Int. Cl.[6] F01D *5/00*

U.S. Cl. 415—171.1 **28 Claims**



1. A centrifugal seal device suitable for use with a pump which comprises a pump casing having a pump chamber therein and a pump impeller with an impeller passageway, the pump impeller being mounted on a rotatable shaft, the pump impeller being disposed within the pump chamber, the seal device including a main body which is disposed within a seal chamber and mounted for rotation on the pump shaft, a plurality of circumferentially spaced apart vanes on one side of the main body, the vanes extending from an inner zone of the main body to the outer peripheral edge of the main body, each vane including a curved leading edge portion with respect to the direction of rotation of the device and a main axis which extends between the inner and outer ends of the vane, the main body having an inner section and an outer section, characterised in that the vanes are configured in accordance with the following relative dimensions:

Rv/Deo in the range from 0.3 to 0.7

Rv=curvature of the leading edge of the vanes

Deo=outer diameter of the vanes.

5,609,469

ROTOR ASSEMBLY SHROUD

Kevin L. Worley, Palm Beach Gardens, Fla.; Daniel E. Kane, Tolland, Conn.; Joseph H. Ewing, Jr., Lake Park, and Arthur J. Van Suetendael, IV, Stuart, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 22, 1995, Ser. No. 561,767

Int. Cl.[6] F01D *25/12*

U.S. Cl. 415—173.1 **10 Claims**

1. A shroud for a rotor assembly, comprising:

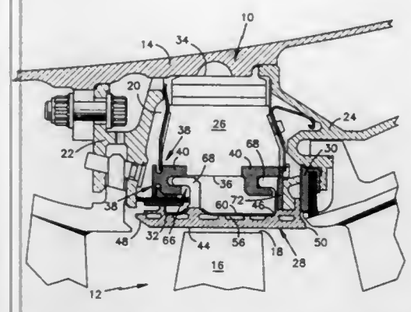
a mounting ring, fixed within a casing, said mounting ring having a first attachment means;

an aft seal ring; and

a blade outer air seal, including:

a plurality of body segments, each said body segment having a first face, a second face, and a plurality of passages for receiving cooling air disposed between said faces;

a second attachment means, extending out from said second face of each said segment, wherein said first and second attachment means cooperate to suspend said blade outer air seal from said mounting ring; and



a post, for biasing each said body segment in contact with said aft seal ring, said post extending out from said second face of each said segment.

5,609,470

TURBOMACHINE AEROFOIL WITH CONCAVE SURFACE IRREGULARITIES

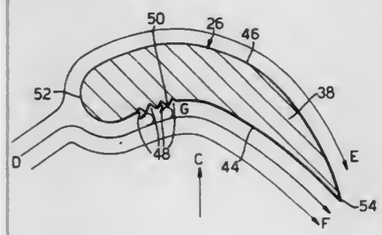
Alec G. Dodd, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Jun. 27, 1995, Ser. No. 495,174

Claims priority, application United Kingdom, Sep. 30, 1994, 9419712

Int. Cl.[6] F01D *5/14*

U.S. Cl. 416—192 **7 Claims**



1. A cast and hot isostatically pressed turbomachine aerofoil including a concave surface and a convex surface, the concave surface having surface irregularities produced by the action of a hot isostatic pressing process on voids in the cast turbomachine aerofoil located in that region of the concave surface where in operation aerodynamic separation, a reverse flow, a slow flow or a stagnant flow occurs, the remainder of the concave surface and the convex surface being substantially free of surface irregularities.

5,609,471

MULTIPROPERTY ROTOR DISK AND METHOD OF MANUFACTURE

Christine M. Frasier, Greenwood; James C. Muskat, Mooresville, and Charles J. Teague, Indianapolis, all of Ind., assignors to Allison Advanced Development Company, Inc., and Allison Engine Company, Inc., both of Indianapolis, Ind.

Filed Dec. 7, 1995, Ser. No. 568,986

Int. Cl.[6] F04D *29/44*

U.S. Cl. 416—204 A **18 Claims**

1. In combination:

a rotor disk;

a plurality of single crystal attachment lugs positioned along the circumference of said rotor disk; and

a restraining member positioned adjacent the radial outward surface of said plurality of attachment lugs, said restraining member having a coefficient of thermal expansion less than the coefficient of thermal expansion of said rotor disk.

5,609,472

ROTOR BLADE FOR A ROTARY-WING AIRCRAFT

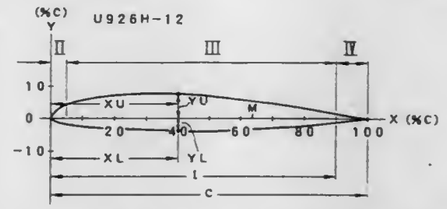
Masahiro Obukata, and Masaaki Nakadate, both of Utsunomiya, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,854

Claims priority, application Japan, Aug. 2, 1994, 6-181555

Int. Cl.[6] B64C *27/467*

U.S. Cl. 416—223 R **5 Claims**

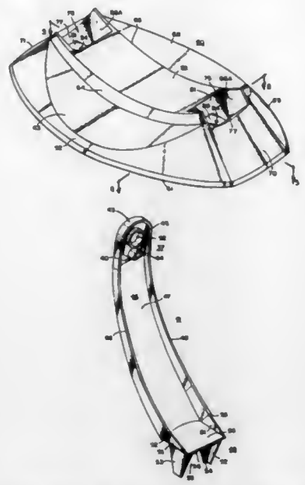


1. A rotor blade for a rotary-wing aircraft, having a blade thickness at 12% chord length and a portion between the leading edge and about 90% chord length defined by an airfoil section represented by coordinates:

Upper surface		Lower surface	
X_U/C × 100(%)	Y_U/C × 100(%)	X_L/C × 100(%)	Y_L/C × 100(%)
0.000	0.000	0.000	0.000
0.150	0.939	0.150	−0.391
0.500	1.600	0.500	−0.668
1.150	2.457	1.250	−0.968
2.500	3.357	2.500	−1.276
5.000	4.577	5.000	−1.670
7.500	5.420	7.500	−1.953
10.000	6.060	10.000	−2.162
15.000	6.995	15.000	−2.469
20.000	7.631	20.000	−2.754
30.000	8.299	30.000	−3.328
40.000	8.306	40.000	−3.689
50.000	7.663	50.000	−3.775
60.000	6.428	60.000	−3.550
70.000	4.828	70.000	−3.018
80.000	3.084	80.000	−2.238
90.000	1.411	90.000	−1.379

where X_U, X_L represent the distances from the leading edge of the airfoil section along the chord, Y_U represent the vertical distance from the chord to a point on the upper surface of the airfoil section, Y_L represent the vertical distance from the chord to a point on the lower surface of the airfoil section.

5,609,473
PIVOT FAN
Charles Litvin, 1065 Stable La., West Chester, Pa. 19382
Filed Mar. 13, 1996, Ser. No. 614,527
Int. Cl.[6] F04D *29/64*
U.S. Cl. 416—246 **4 Claims**



1. A pivot fan which sits on a flat surface, which includes a fan outer housing having an electric fan motor and blade mounted in the housing for blowing air, the improvement for mounting said fan outer housing which comprises

a pair of yoke members to which said outer fan housing is detachably engaged and which can be rotatably positioned therebetween;

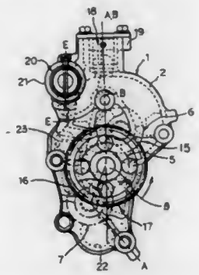
said yoke members each having a yoke base end;

a semi-rectangular base which sits on a flat surface;

a pair of recesses in said base to receive said yoke base ends, and

means to secure said yoke member base ends in said recesses.

5,609,474
GEAR PUMP
Tohru Ohno, Kanagawa, Japan, assignor to Tokyo Buhin Kogyo Co., Ltd., Yamato, Japan
Filed Mar. 31, 1994, Ser. No. 220,715
Claims priority, application Japan, Sep. 30, 1993, 5-58375 U; Oct. 18, 1993, 5-61139 U
Int. Cl.[6] F04B *49/035*
U.S. Cl. 417—288 **4 Claims**



1. A gear pump for pumping lubricant from an oil pan, said gear pump comprising:

a pump case formed of a pump body and a cover covering at least part of said pump body;

three gears which are supported by separate rotating shafts mounted to said pump case and that engage each other in series, a central one of said three gears being a central driving gear, and said gears on either side of said central driving gear being driven gears;

first and second pumps, each said pump being composed of said central driving gear and a separate one of said driven gears, each said pump having an inlet side and an outlet side;

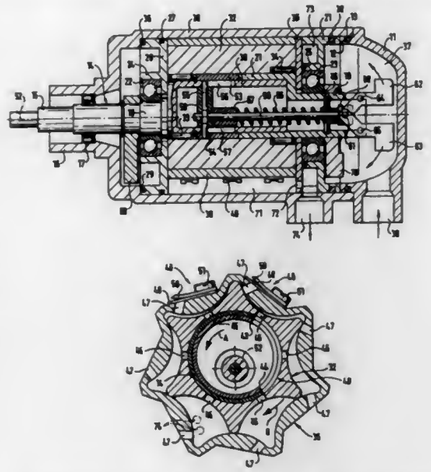
an inlet port for receiving the lubricant from the oil pan which is formed at one end of said pump case and connected through a supply passage provided in said cover of said pump case to said inlet side of said first pump an outlet port formed on said outlet side of said second pump in said pump case, and a regulation passage leading from said outlet side of said first pump to said outlet port;

a flow regulation passage leading from said regulation passage through a flow regulation valve that is connected to said regulation passage to the oil pan;

a one-way, non-return valve seated in said regulation passage to allow lubricant to flow from said regulation passage to said outlet port when the pressure of the lubricant in said regulation passage exceeds a predetermined pressure relative to the pressure of the lubricant at said outlet port; and

wherein said flow regulation valve is connected between said regulation passage and said flow regulation passage for controlling lubricant flow from said regulation passage to said flow regulation passage.

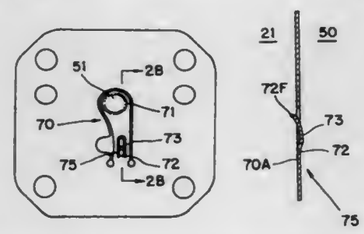
5,609,475
COMPRESSOR WITH A HYPOTROCHOIDAL DESIGN HAVING A FLUID DELIVERY WHICH IS NOT SOLELY DEPENDENT ON A DRIVE RPM
Dankwart Eiermann, Weissensberg, Germany, assignor to Wankel Rotary GmbH, Korb, Germany
Filed Oct. 24, 1995, Ser. No. 547,334
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—294 **12 Claims**



1. Compressor of hypotrochoidal design with a rotor housing in which a circular piston rotor rotates, said circular piston rotor being mounted on a hollow eccentric shaft provided with an intake opening delimited in a circumferential direction by control edges that primarily in an axial direction and determine a beginning of intake and a beginning of compression, said control edges corresponding with radial intake channels of the circular piston rotor

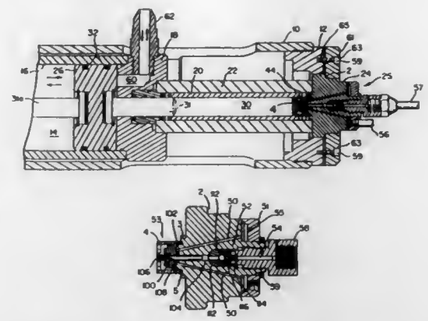
that terminate in chambers formed between the circular piston rotor and the rotor housing, with the rotor housing being provided in a vicinity of said chambers with outlet openings controlled by pressure valves, wherein a control edge angular position device changes in the circumferential direction and angular position of at least one of said control edges of said intake opening of the eccentric shaft that determines the beginning of compression.

5,609,476
RECIPROCATING COMPRESSOR WITH FLOW PASSAGE CLOSED BY VALVE PRE-BIASED TO AN OPEN POSITION
Ki M. Kim, and Sung T. Lee, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jan. 26, 1996, Ser. No. 592,234
Claims priority, application Rep. of Korea, Jan. 28, 1995, 1995-1686
Int. Cl.[6] F04B *39/10*
U.S. Cl. 417—447 **4 Claims**



1. A reciprocating compressor comprising a housing; a cylinder block forming a chamber; a cylinder head disposed at one end of the chamber; a valve plate disposed between the chamber and the cylinder head and forming an intake orifice and a discharge orifice for admitting and discharging, respectively, a refrigerant; an intake valve for opening and closing the intake orifice, a discharge valve for opening and closing the discharge orifice; at least one of the intake and discharge valves comprising a resilient material check valve having an inherent bias to a position closing its respective orifice; and a pre-biasing structure arranged to impose a pre-bias on the at least one valve urging the at least one valve to an open position, wherein the pre-biasing structure comprises a strip partially cut from the at least one valve and including a resilient zone engaging an element situated adjacent the at least one valve.

5,609,477
INLET/OUTLET VALVE ARRANGEMENT FOR A FLUID PRESSURE INTENSIFYING APPARATUS
Albert C. Saurwein, Granger, Wash., assignor to Forgesharp Limited, Cleveland, England
PCT No. PCT/US93/02379, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO94/20754, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 12, 1993, Ser. No. 335,807
Int. Cl.[6] F04B *53/10*
U.S. Cl. 417—567 **34 Claims**



1. A fluid pressure-intensifying apparatus which comprises:

a) a low pressure-high pressure cylinder means comprising a low pressure cylinder providing a cylindrical low pressure chamber and a pair of high pressure cylinders providing a pair of elongated cylindrical high pressure chambers, the high pressure chambers extending from opposite ends of said low pressure chamber and each having an inner end proximal to the low pressure chamber and an outer end distal to the low pressure chamber; low pressure-high pressure piston means having a double acting low pressure piston section mounted for reciprocal movement in said low pressure chamber, and having a pair of elongated high pressure piston sections each connected to an opposite side of said low pressure piston section and extending from said low pressure chamber into an adjacent one of said high pressure chambers for reciprocal movement therein;

b) and a pair of fluid inlet-outlet means each communicating with a corresponding one of said high pressure chambers and comprising a check valve body having a first portion fitted into the outer end of a corresponding one of said high pressure cylinders and a second portion so mounted that the outer end of said corresponding high pressure cylinder is maintained in alignment with said low pressure cylinder, said valve body being provided with a longitudinal axial fluid passage opening at one end for fluid communication with said corresponding high pressure chamber and opening at the other end into a cavity provided in a high pressure outlet line coupling; a low pressure fluid inlet distributor mounted adjacent to said valve body, with said valve body being provided with an elongated inlet fluid passage opening at one end for fluid communication with said corresponding high pressure chamber and opening at the other end into said low pressure fluid inlet distributor, said inlet fluid passage extending acutely outward through said valve body from its inner end to its outer end; an inlet valve mechanism for said valve body comprising an elongated guide tube extending into said axial fluid passage and extending out from the inner end of said valve body and providing fluid communication between said corresponding high pressure chamber and the interior of said axial passage, and further comprising an inlet poppet slidable mounted on the inner end of said guide tube and being so configured as to overlay and seal off the inner end of the inlet fluid passage opening when the force exerted by fluid from a high pressure fluid chamber exceeds the force exerted by inlet fluid within said inlet fluid passage; and an outlet valve mechanism for said valve body comprising a valve seat element fitted into a valve seat cavity provided therefor in said valve body, said valve seat element having a fluid passage therethrough oriented in fluid communication with said valve body axial fluid passage and having a hemispherical valve seat provided in an end of the valve seat fluid passage remote from the valve body axial fluid passage, a ball poppet seatable within the valve seat to seal off the valve seat fluid passage, a ball retainer element positioned within a retainer cavity provided therefor in said valve body and being configured at an inner end to contact said ball poppet to seat the ball poppet on the valve seat and being further configured to permit fluid to pass through said valve body axial passage to an outlet line

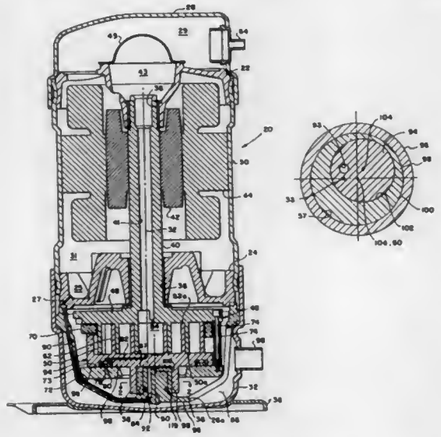
coupling when the ball poppet is forced off the valve seat by fluid pressure build up in said corresponding high pressure chamber.

5,609,478

RADIAL COMPLIANCE MECHANISM FOR COROTATING SCROLL APPARATUS

Robert E. Utter, Whitehouse; Chih M. Lin, and Michael P. Mackelfresh, both of Tyler, all of Tex., assignors to Alliance Compressors, Tyler, Tex.

Filed Nov. 6, 1995, Ser. No. 554,077
Int. Cl.[6] F01C *1/04*; F04C *18/04*
U.S. Cl. 418—55.5 **12 Claims**



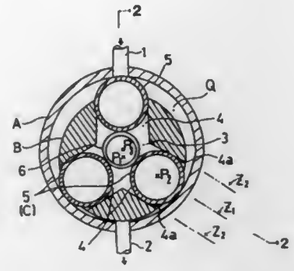
1. A scroll fluid handling apparatus comprising:
housing means;
a first scroll member supported on said housing means for rotation with respect to said housing means about a first axis, said first scroll member having an axially extending spiroidal scroll wrap disposed thereon;
a second scroll member disposed on said housing means and having a shaft portion disposed on a support for rotation about a second axis spaced from and substantially parallel to said first axis, said second scroll member having an axially extending spiroidal scroll wrap interfitted with said scroll wrap of said first scroll member to define at least one variable volume chamber delimited by said scroll wraps, said shaft portion of said second scroll member being disposed on said support for movement substantially along a line of action forming an angle with respect to a line extending between said first axis and said second axis, in response to a pressure fluid force acting on said second scroll member;
said support comprising a bushing including bearing means for supporting said shaft portion and operable to undergo movement about a pivot axis disposed at a point spaced from said first axis and said second axis; and
said housing means including a stub shaft part for supporting said bushing for rotation about said pivot axis to effect said movement of said second scroll member.

5,609,479

FORCED COMPRESSION TYPE PUMP

Hirokazu Yoshida, Osaka, Japan, assignor to Japan I.D. Tech. Inc., Osaka, Japan

Filed Aug. 30, 1995, Ser. No. 522,305
Int. Cl.[6] F04C *2/344*; *5/00*
U.S. Cl. 418—153 **4 Claims**



1. A forced compression type pump including a cylindrically shaped pump case, an eccentric rotating body shaft-supported on said pump case at an eccentric position relative to said pump case and a compressing and forcibly sending member movable in a radial direction of said eccentric rotating body and adapted to be brought into press contact with the interior wall of said pump case, characterized in that an interior space is formed at a central part of said eccentric rotating body, a central cylindrical body disposed in said interior space, a plurality of guide grooves are formed in a radial direction from said interior space to a circumferential surface of said eccentric rotating body, a plurality of circumferentially contacting cylindrical bodies inserted in said guide grooves and movable freely in a radial direction are formed, said plurality of circumferential contacting cylindrical bodies are in planetary relationship relative to said central cylindrical body, outer circumferential surfaces of said circumferentially contacting bodies are brought into press contact with an interior wall of said pump case while said circumferential surfaces of said circumferentially contacting bodies on center sides thereof are brought into press contact with said central cylindrical body, each of said circumferentially contacting cylindrical bodies is a hollow cylinder, each of said circumferentially contacting cylindrical bodies has a diameter greater than a width of each of said guide grooves and each of said circumferentially contacting cylindrical bodies is deformed into an ellipse shape when compressed so that each of said circumferentially contacting bodies is reduced in diameter in a direction of a width of said guide groove and is expanded in a direction of length of said guide groove thus increasing a sealing effect of said eccentric rotating body with reference to said interior space whereby said circumferentially contacting cylindrical bodies are made to act as compressing and forcibly sending members.

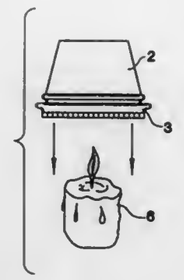
5,609,480

CANDLE SNUFFER

Jim K. Boyd, 1608 N. D. St., Midland, Tex. 79701

Filed Dec. 14, 1995, Ser. No. 572,010
Int. Cl.[6] F23Q *25/00*
U.S. Cl. 431—144 **2 Claims**

1. A candle snuffer comprising:
a shroud having a closed bottom, sides, and an open top,
said shroud is made from a transparent material,
exterior screw threads on said sides adjacent said open top,
a ring having an open bottom, sides, and an open top,
said ring having interior screw threads on said sides between said open top and said open bottom,



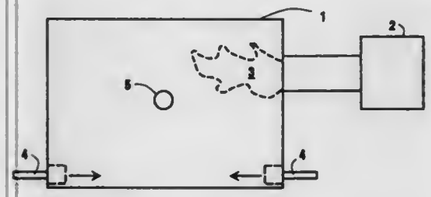
whereby said ring may be attached to said shroud by means of said interior screw threads cooperating with said exterior screw threads.

5,609,481

DIRECT-FIRED STRATIFIED ATMOSPHERE FURNACE SYSTEM

Hisashi Kobayashi, Putnam Valley, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 13, 1995, Ser. No. 489,883
Int. Cl.[6] F27B *3/22*
U.S. Cl. 432—22 **13 Claims**



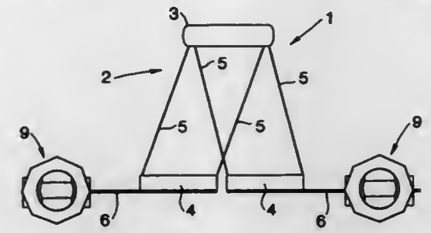
1. A method for heating or melting a charge of material in a direct-fired furnace, comprising:
(A) introducing said charge into said furnace to expose said charge to radiant heat from a direct-fired burner placed above said charge;
(B) providing fuel and oxidant into the furnace from said direct-fired burner at a mass average velocity not exceeding 50 feet per second, and combusting the fuel and oxidant within the furnace to generate heat and to produce combustion gases; and
(C) introducing a charge-proximal gas into the furnace between said direct-fired burner and said charge at a point at least 50 percent of the vertical distance from the burner to the charge at a velocity not exceeding 50 feet per second wherein said charge-proximal gas has a higher density than said fuel and oxidant to create charge-proximal atmospheric stratum that contains a substantially reduced amount of said combustion gases, thereby exposing said charge to a furnace atmosphere of oxidative properties that are different from those that exist in the absence of said charge-proximal gas, and exhausting combustion gases from the furnace from an exhaust located above the burner.

5,609,482

ORTHODONTIC BRACE

Erik H. Pedersen, Engskovvej 48, DK-8541 Skoedstrup, and Kim L. Andersen, Graven 14, 2, DK-8000 Aarhus C, both of Denmark

PCT No. PCT/DK93/00139, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO93/21854, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 27, 1993, Ser. No. 325,238
Claims priority, application Denmark, May 1, 1992, 0566/92
Int. Cl.[6] A61C *7/00*
U.S. Cl. 433—18 **10 Claims**



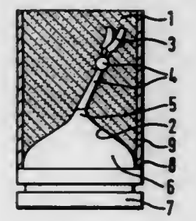
1. An orthodontic brace for moving teeth comprising force-transmitting means connected with the teeth to be moved for transmitting an actuation force to the teeth; a guiding mechanism with a bending stable, upper mounting bar, two bending stable, lower mounting bars which extend substantially parallel to the upper mounting bar, and a spring means of a superelastic material; and a fastening means for connecting the guiding mechanism with the force-transmitting means, said spring means resiliently actuating said two lower mounting bars and causing desired movement of said teeth.

5,609,483

PROCESS FOR DOCUMENTING THE PRODUCTION OF A DENTAL CAST OBJECT

Peter K. Thomsen, Wiesenweg 7 24113, Molfsee/Schulensee, Germany

Filed Oct. 17, 1994, Ser. No. 324,767
Claims priority, application European Pat. Off., Oct. 18, 1993, 93116811
Int. Cl.[6] A61C *13/08*
U.S. Cl. 433—202.1 **15 Claims**



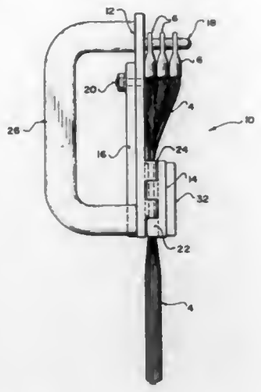
1. In a process for documenting the production of a dental cast object comprising the steps of creating a model of the object on a gate molder, attaching a muffle mold sbell to the gate molder and embedding the model in a molding compound to form a mold, the gate molder determining the position of the muffle mold shell, the improvement comprising pictorially recording the position of the model on the gate molder prior to the embedding of the model by
a) providing a marking which indicates the subsequent position, to be adopted, by a substantial part of the surface of the mold, and
b) determining the gate molder to be used where the casting gate molder can only be combined with a muffle mold shell of a specific size.

5,609,484

APPARATUS FOR ILLUSTRATING AND DETERMINING QUANTITY OF HAIR PIGMENT CONCENTRATE TO ACHIEVE DESIRED HAIR COLOUR

Andrea S. Hawluk, 102-35 Bennett Street, Red Deer, Alberta, Canada

Filed Dec. 21, 1994, Ser. No. 360,634
Int. Cl.[6] G09B *19/10*
U.S. Cl. 434—94 **9 Claims**



1. An apparatus comprising:

(a) a holder for releasably holding two or more coloured filament swatches by respective filament base ends wherein the holder holds adjacent base ends and filaments from adjacent swatches contiguously; and

(b) two or more coloured swatches, wherein each swatch comprises a group of elongated coloured filaments, the filaments being held together in parallel relationship with another, and secured together at one end by the filament base wherein at least two of the swatches have filaments of a different colour and Wherein the holder allows the coloured filaments of the held swatches to be brushed together whereby the colours of differently coloured swatches are blended together giving a visual impression of a colour different from the individual colours of each of the swatches.

5,609,485

MEDICAL REPRODUCTION SYSTEM

Mark Bergman; Dror Aiger; Dan Levit, and Ron Tepper, all of Kfar-Sava, Israel, assignors to MedSim, Ltd., Israel

Filed Oct. 3, 1994, Ser. No. 316,841
Int. Cl.[6] G09B *9/00*
U.S. Cl. 434—262 **15 Claims**

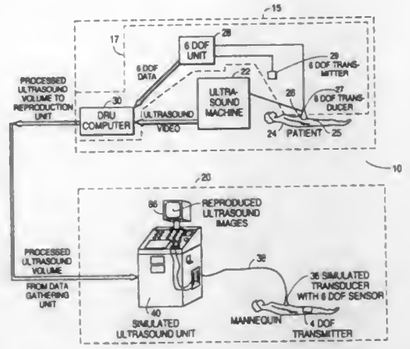
1. An ultrasound training system, comprising:

a memory unit storing ultrasound biological display data previously gathered from a living body examined with an ultrasound machine;

a transmitter;

a sensor housed in a simulated ultrasound probe operable to detect position data corresponding to a position of the sensor with respect to the transmitter;

a processor for selecting a portion of the stored previously-gathered ultrasound biological display data reproducing an examination of the living body corresponding to the position data detected by the sensor; and



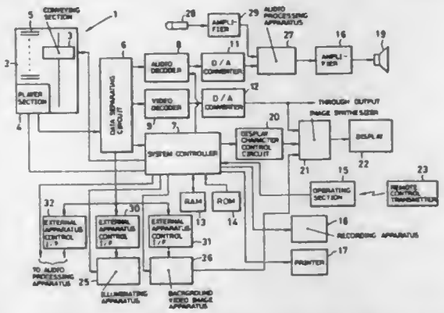
a display unit operable to display an output corresponding to the portion of the previously-gathered ultrasound biological display data selected by the processor.

5,609,486

KARAOKE REPRODUCING APPARATUS

Masahiko Miyashita, Tokorozawa; Tatsuyuki Miyazawa; Hiroshi Fujii, both of Tokyo, and Yoshihiro Kitano, Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 314,961
Claims priority, application Japan, Oct. 1, 1993, 5-246988
Int. Cl.[6] G09B *5/08;* **G10H** *1/36*
U.S. Cl. 434—307 A **3 Claims**



1. A Karaoke reproducing apparatus for reproducing a Karaoke playing sound and controlling an external apparatus, comprising:

a recording medium having recorded information thereon, the recorded information including at least Karaoke playing sounds of a plurality of music pieces and control information, for said external apparatus, for every one of said plurality of music pieces;

reproducing means for reading out the recorded information from said recording medium and for reproducing the information that is read out;

memory means having previously stored control information from the recording medium therein;

means for generating a music piece selecting command indicative of one of said plurality of music pieces in accordance with an operation; and

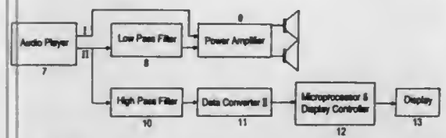
control means for reading out the previously stored control information for said one music piece from said memory means according to said music piece selecting command, for supplying said read out control information to said external apparatus before said reproducing means begins to play said recording medium for reproducing said one music piece according to the music piece selecting command, and subsequently instructing said reproducing means to play said recording medium for reproducing said one music piece according to the music piece selecting command.

5,609,487

AUDIO VISUAL KARAOKE SYSTEM USING AUDIO CASSETTE

Dwidjaja Setiabudi; Djunedhi Listyono; Ketut Wihardika, all of Kudus; Markus S. B. Sutikno, Semarang; Ariffin Setawidjaja, Yogyakarta; Budianto, Kudus, and Fransiscus X. S. Wijaya, Semarang, all of Indonesia, assignors to P. T. Hartono Istana Electronics, Indonesia

Filed Feb. 8, 1995, Ser. No. 385,716
Int. Cl.[6] G09B *5/00;* **G10H** *1/36*
U.S. Cl. 434—307 A **5 Claims**



1. A karaoke system comprising a combination of a karaoke audio cassette player and a video display device, together with a karaoke audio cassette, said karaoke audio cassette having signals recorded thereon comprises of a mixed audio signal and a high frequency encoded data information signal, said player including audio reproduction means for reproducing an audio signal from said karaoke audio cassette, a low pass filter for separating said high frequency encoded data information signal from said mixed audio signal, and amplifying means for amplifying the audio signal and said mixed audio signal from the output of the low pass filter suitable for reproduction of the same through a speaker system; and

said player further including a high pass filter adapted to separate a high frequency component of said high frequency encoded data information signal from said mixed audio signal, data converter means for converting the output of said high pass filter into an encoded data information signal, and microprocessor means associated with a display controller for processing said encoded data information signal and for controlling said display device.

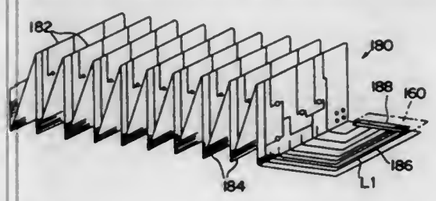
5,609,488

METHOD OF COMBINING AUDIO AND VISUAL INDICIA

Stephen I. McTaggart, 12037 N. 62nd Pl., Scottsdale, Ariz. 85254

Division of Ser. No. 980,649, Nov. 24, 1992, Pat. No. 5,484,292, which is a continuation-in-part of Ser. No. 685,278, Apr. 15, 1991, Pat. No. 5,167,508, which is a continuation-in-part of Ser. No. 396,129, Aug. 21, 1989, abandoned. This application Feb. 14, 1994, Ser. No. 195,755
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—317 **6 Claims**

1. A method for combining audio and visual indicia comprising



the steps of:

printing in flexible conductive ink, a circuit on a continuous substrate sheet;

disposing electrical elements in the printed circuits;

printing visual indicia on the continuous sheet, with particular portions of the visual indicia associated with the electrical elements;

folding the continuous sheet to at least one pair of adjacent segments, the printed circuit extending across the folds of the sheet; and

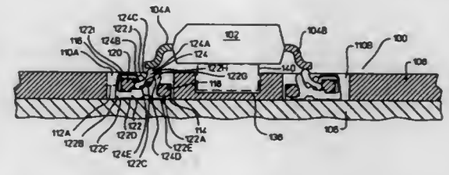
electrically connecting a common electronic circuit to the printed circuit to cooperate with the electrical elements on the respective segments, the electronic circuit effecting generation of the audio indicia.

5,609,489

SOCKET FOR CONTACTING AN ELECTRONIC CIRCUIT DURING TESTING

Joel D. Bickford, and Julius K. Botka, both of Santa Rosa, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1994, Ser. No. 360,507
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—72 **18 Claims**



1. A socket for contacting an electronic circuit during testing, the electronic circuit including at least one electrically conductive lead, the socket for connecting the at least one lead to a device-under-test (DUT) board of an electronic circuit tester, the socket comprising:

an electrically insulative housing, the housing comprising at least one slot having a longitudinal axis and a predetermined width, the housing further comprising a first channel and a second channel approximately perpendicular to the longitudinal axis of the slot;

a first elastomeric member disposed in the first channel, the first elastomeric member spanning the width of the slot;

a second elastomeric member disposed in the second channel, the second elastomeric member spanning the width of the slot;

an electrically conductive contact frame disposed in the slot, the contact frame having a first end, a second end, a first surface substantially parallel to the at least one lead of the electronic circuit, and a second surface substantially parallel to the DUT board, the first end of the contact frame being sandwiched between the first elastomeric member and the DUT board and the second end of the contact frame being sandwiched between the second elastomeric member and the DUT board so that the first and second elastomeric members are compressed between the first and second channels of the housing and the first and second ends of the contact frame to mechanically bias the second surface of the contact frame into electrical contact with the DUT board;

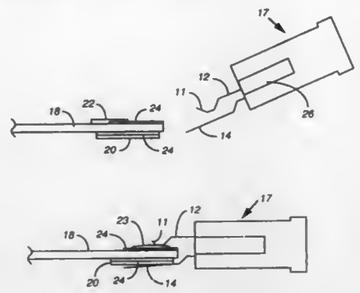
an electrically conductive contact having a first end, a second end, a first surface substantially parallel to the at least one lead of the electronic circuit, and a second surface opposite the first surface of the contact frame, the first end of the contact being configured to electrically contact the lead of the electronic circuit with the second end of the contact being in engagement with the second elastomeric member to mechanically bias the first end of the contact against the lead of the electronic circuit, the second surface of the contact being in electrical contact with the first surface of the contact frame.

5,609,490

METHOD AND APPARATUS FOR ATTACHMENT OF EDGE CONNECTOR TO SUBSTRATE

DiAnn J. Beesch, Jupiter; Duane J. Enck, West Palm Beach, and Janet Dieb, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1995, Ser. No. 391,844
Int. Cl.[6] H05K *3/34*
U.S. Cl. 439—79 6 Claims



1. A method for attaching a connector to an edge of a substrate such that an electrical connection is formed between a plurality of circuits on the substrate and a plurality of leads on the connector comprising the steps of:

providing the connector, wherein the plurality of leads are arranged into a top row and a bottom row of leads, the rows extending substantially horizontally therefrom, and wherein the top row of leads of the connector provide compression when the edge of the substrate is inserted between the top row and the bottom row of leads of the connector, and wherein the bottom row of leads extends horizontally beyond the top row of leads;

(a) reflowing a row of solder paste pads on a bottom side of the substrate to achieve a row of solder bumps corresponding with said bottom row of leads of said connector, wherein said row of solder paste pads are elongated to control crowning and to form a larger surface area for the bottom row of leads of the connector to make contact;

(b) following step (a), offset printing a row of solder paste pads on a top side of the substrate corresponding to said top row of leads of said connector, such that the solder paste pads are located a sufficient distance from a row of connection sites to prevent said top row of leads from displacing the row of solder paste pads during attachment of the connector;

(c) following step (b), approaching the edge of the substrate with the connector at an angle;

(d) following step (c), straddling the edge of the substrate with the top row and the bottom row of leads, such that the top row of leads rests on the top side of the substrate and the bottom row of leads rests against a bottom edge of the substrate;

(e) following step (d), rotating the connector into parallel alignment with the substrate such that the bottom row of leads registers with and contacts the row of solder bumps on the bottom side of the substrate and the top row of leads registers with and contacts the row of connection sites; and

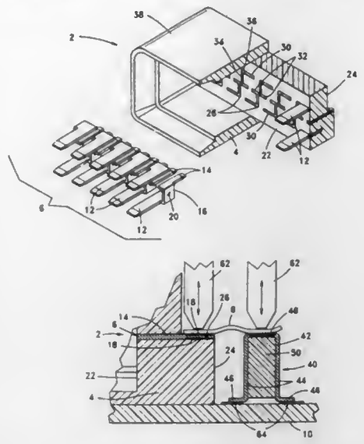
(f) following step (e), heating the substrate to reflow, wherein the row of solder paste pads on the top side of the substrate liquefies and flows onto the connection sites, thereby contacting the top row of leads, and wherein the row of solder bumps on the bottom side of the substrate wets the bottom row of leads, thereby forming the electrical connection.

5,609,491

ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARD ASSEMBLY

Ralph M. Cooper, Clemmons, and Donald G. Stillie, Winston-Salem, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 10, 1995, Ser. No. 402,079
Int. Cl.[6] H01R *13/04*
U.S. Cl. 439—79 48 Claims



1. An electrical connector comprising an insulative housing and multiple terminals positioned laterally side by side in the insulative housing, each terminal further comprising:

a contact tab;

a termination tab; and

a support section extending between the contact tab and the termination tab, the contact tab and the termination tab extending in opposite directions from the support section, the contact tab being positioned in a first plane and the termination tab being positioned in a second plane, at least a portion of the support section extending transverse to the first and the second planes, the contact tab having a contact tab centerline in the first plane, the termination tab having a termination tab centerline in the second plane, the contact tab centerline being laterally offset from the termination tab centerline.

5,609,492

ELECTRICAL CONNECTOR HAVING LINKAGE CONNECTING CAP WITH CONNECTOR HOUSING

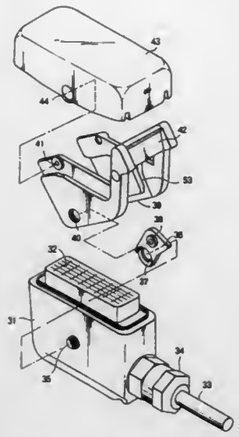
Kazuomi Sato; Toshihiro Kume; Yoshiaki Ichimura, and Takuya Takahashi, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

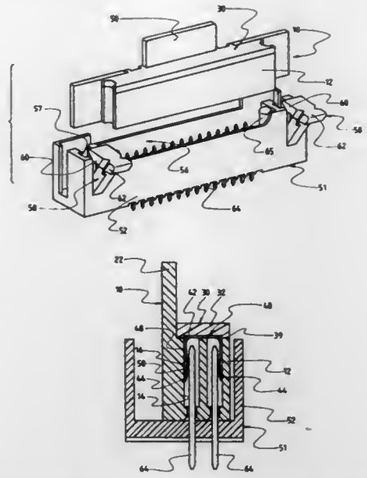
Filed Oct. 24, 1995, Ser. No. 547,149
Claims priority, application Japan, Oct. 25, 1994, 6-259934; Jul. 24, 1995, 7-187428
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—136 6 Claims

1. An electrical connector comprising a connector housing with an opening for connecting a mating connector therethrough and a cap for closing the opening, which comprises:

a pair of first links pivotally mounted onto an outer surface of said connector housing at opposite positions by a pair of first pivotal connections, respectively, said first pivotal connections coexisting on a line parallel with a plane of said opening; and

a pair of second links pivotally connected to said first links by a pair of second pivotal connections, respectively, said second pivotal connections being a first distance from said first pivotal connections along said first links, said second links being pivotally connected to an outer side surface of said cap at opposite positions thereof by a pair of third pivotal connections, respectively, said third pivotal connections being a second distance from said second pivotal connections along said second links, said second distance being larger than said first distance, said first distance and said second distance being determined so that said cap comes into a tight contact with an edge of said opening of said connector housing when said first pivotal connections is brought onto said second distance between said second pivotal connections and said third pivotal connections by rotation of said first links around said first pivotal connections, while said cap can be rotated on said first pivotal connections around said connector housing at a state where said second pivotal connections are maintained on a distance between said first pivotal connections and said third pivotal connections around said first pivotal connections.



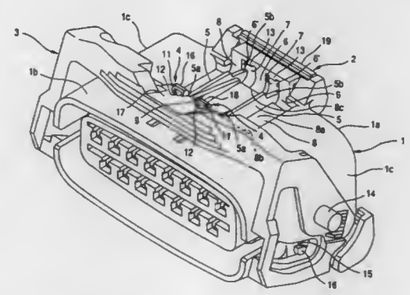


5,609,494

CONNECTOR LEVER LOCKING MECHANISM

Noboru Yamaguchi, and Kenichi Okamoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 30, 1995, Ser. No. 564,941
Claims priority, application Japan, Nov. 30, 1994, 6-297486
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 3 Claims



1. A connector, comprising:

a connector housing;

an operation lever pivotably disposed on said connector housing, and including a lever horizontal rod portion and an engagement portion formed on said lever horizontal rod portion;

a locking portion formed directly on said connector housing, and engaged with said engagement portion by pivoting said operation lever; and

a tapered surface formed directly on said connector housing so as to confront a back wall of said lever horizontal rod portion opposite to said engagement portion to prevent disengagement of said locking portion and said engagement portion.

5,609,493

DEVICE FOR SHORT-CIRCUITING FOR USE WITH CONNECTOR

Lee-Ming Cheng, Cupertino; Conrad Choy, San Francisco, both of Calif., and George Lee, Taipei, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Mar. 16, 1995, Ser. No. 405,236
Int. Cl.[6] H01R *13/635;31/08*
U.S. Cl. 439—157 14 Claims

1. A shorting block for use with an electrical connector which is originally designed for receiving a VRM in a space of said connector, comprising:

an elongated insulative housing having a plurality of cavities corresponding to contacts of said connector; and

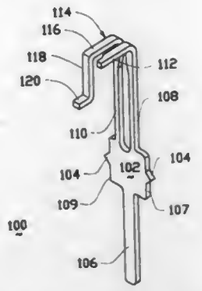
a conductive bar including a plurality of arms extending into the corresponding cavities of the housing so that when there is no VRM required and received within the space of said connector, said shorting block can be inserted into the space of said connector to replace said VRM wherein the contacts of the connector can be received within the cavities of the shorting block and some of the contacts of the connector substantially engage the arms of the conductive bar which are already positioned within the corresponding cavities, such that the contacts of the connector engaging the corresponding arms of the conductive bar, may be short-circuited together for forming a closed circuitry for an operative system in a computer; and wherein said shorting block further includes a board integrally extending beside said housing, and said board comprises a pair of locking walls at two opposite ends for cooperation with ejectors of the connectors to latch or release the shorting block within or from the connector.

5,609,495

ZERO INSERTION FORCE CONNECTOR AND CONTACT THEREIN

Robert G. McHugh, Evergreen, Colo., assignor to Hon Hai Precision Ind. Co., Ltd., Taiwan

Division of Ser. No. 93,321, Jul. 16, 1993, Pat. No. 5,456,613.
This application Oct. 10, 1995, Ser. No. 541,420
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—268 **3 Claims**



1. A contact for use with a PGA socket assembly, comprising:
a flat main square segment having barbs positioned on two opposite sides;
a tail extending downwardly from a bottom portion of the square segment for reception in a hole in a PC board on which the socket assembly is mounted; and
an active arm and an immovable arm respectively extending upwardly from a top portion of the square segment and spaced from each other for clamping a conductive pin extending downwardly from a PGA component; wherein
said active arm has an engagement section extending from a top portion thereof in a first direction perpendicular to the main square segment, and said immovable arm has a retention section including two ends, wherein one of the ends integrally formed with a top end of the immovable arm; and wherein the retention section of the immovable arm comprises an upper horizontal section which is positioned at a same height as the engagement section of the active arm, an intermediate section extending downwardly from one distal end of the upper horizontal section of said retention section of the immovable arm, and a lower horizontal section horizontally extending from a lower end of the said intermediate section in the same first direction.

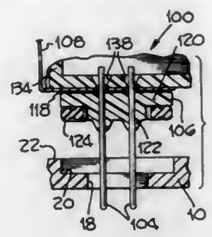
5,609,496

AIR-TIGHT CONNECTOR ASSEMBLY

Dan L. Kilmer, Chatsworth, and Rick L. Freeman, Camarillo, both of Calif., assignors to Micropolis Pte Ltd., Chatsworth, Calif.

Filed Nov. 15, 1994, Ser. No. 340,141
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—271 **15 Claims**

1. A connector for use with a sealed disk drive housing having



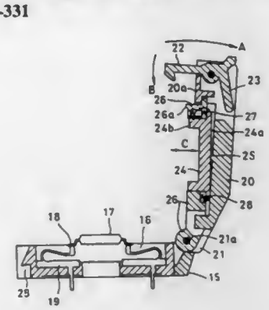
an inner surface and a connector slot associated with the inner surface, the connector comprising:
a bulkhead including a base portion, defining first and second sides, and a raised portion on the first side of the base portion, the raised portion being adapted to be inserted into the connector slot, the bulkhead further defining a plurality of apertures extending from the first side through the raised portion and base portion to the second side;
a plurality of electrical connection pins extending through the apertures;
a flex circuit defining a first side and a second side and including a plurality of electrical leads which are soldered to respective pins on the first side of the flex circuit, the flex circuit being substantially adjacent the second side of the bulkhead base portion such that a space is defined therebetween;
a continuous layer of pressure sensitive adhesive formed in the space between the second side of the base portion of the bulkhead and the second side of the flex circuit and around respective portions of the pins located in the space such that a cross-section of the connector defines a layered structure including the bulkhead and flex circuit with the adhesive and respective portions of the pins therebetween; and
a rubber seal adjacent the raised portion of the bulkhead, the rubber seal resting substantially between the first side of the base portion of the bulkhead and a ledge formed adjacent to the inner surface of the connector slot when the raised portion of the bulkhead is inserted into the connector slot.

5,609,497

IC SOCKET

Eiji Kawabe, Machida, Japan, assignor to I-PEX Co., Ltd., Tokyo, Japan

Filed May 30, 1995, Ser. No. 452,827
Claims priority, application Japan, Jun. 14, 1994, 6-132055
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—331 **13 Claims**



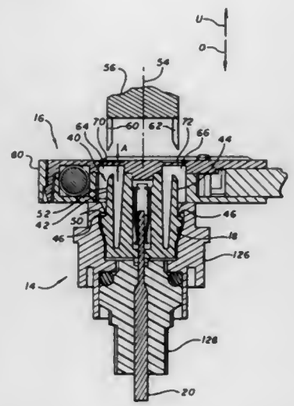
1. An IC socket comprising:
a socket substrate provided with contact terminals, for housing an IC having electrodes while each of the electrodes of the IC is positioned on an associated one of the contact terminals of the socket substrate when the IC is positioned on the socket substrate, the socket substrate having a shaft;
a cover lid for covering the socket substrate, the cover lid having one end rotatably supported by the shaft of the socket substrate, and another end having a stop lever for engaging the socket substrate and a stop member;
a pressing member provided between the cover lid and the socket substrate, for pressing the IC positioned on the socket substrate down so as to ensure conduction between the contact terminals of the socket substrate and the electrodes of the IC when the socket substrate is closed with the cover lid;
a guide means for supporting the pressing member in a specific location above the IC such that it can slide up and down in a direction perpendicular to the socket substrate, the guide means having a frame structure with first and second ends and springs arranged within the first and second ends for holding the pressing member within the frame structure and biasing the pressing member toward the cover lid, the first end of the guide means rotatably supported by the shaft of the socket substrate, and the second end of the guide means engaging the stop member of the cover lid; and
pressing means provided between the cover lid and the pressing member, for pressing against the pressing member when the socket substrate is closed with the cover lid.

5,609,498

SECURE CONNECTOR SYSTEM

Steven Z. Muzslay, Huntington Beach, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Sep. 19, 1995, Ser. No. 534,921
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **6 Claims**



1. An electrical connector system which includes a receptacle connector having a recess and a plurality of electrical first contacts, and a plug connector which has a plug part that fits into said recess and which has a plurality of electrical second contacts that are mateable to said first contacts, said plug connector having a releasable latch mechanism which locks to said receptacle connector when they are engaged together, with one of said connectors having at least one release passage for receiving a release tool to release said latch mechanism so said connectors can be separated from each other, characterized by:
said one of said connectors has an outer wall of largely rigid engineering plastic that includes a thin section forming a breakable barrier lying along said at least one passage, which blocks movement of the release tool along said passage until said barrier is broken but which breaks when said release tool is inserted into said at least one passage, to thereby discourage tool insertion by an unskilled person.

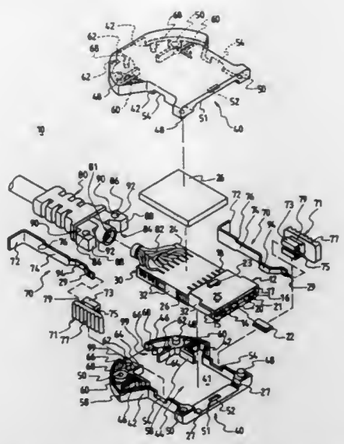
5,609,499

CABLE CONNECTOR ASSEMBLY WITH REINFORCEMENT STRUCTURE

Haw-Chan Tan; Frank C. Ma, both of Diamond Bar, Calif., and Chin T. Lai, Tao-Yuan Hsien, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Aug. 15, 1995, Ser. No. 515,129
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—445 **9 Claims**

1. A cable connector assembly for use with an I/O connector in an I/O card, comprising:
a pair of top and bottom covers;
a connector kit having an insulative housing defining a cavity for receiving said I/O connector therein;
a plurality of contacts side by side positioned within the housing;
a board disposed behind the connector kit with tails of the contacts of the connector kit mounted thereon;
a cable unit with a tubular jacket enclosing a plurality of wires electrically connected to said board;
a pair of pier blocks positioned on the cable unit and substantially by two horizontally diametrically opposite sides of said jacket, each pier block further including a hole therein;
at least a hollow formed by said covers having therein at least a pair of opposite posts vertically extending wherein said pier blocks of the cable unit may be properly retainably received within said hollow with the posts of the hollow extending through the corresponding holes in the pier blocks, respectively, and functions as strain relief means.

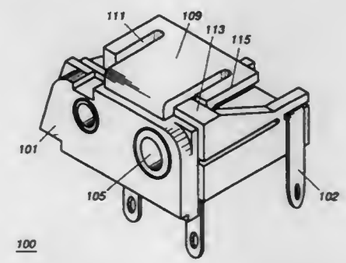


5,609,500

ACCESSORY CONNECTOR ALIGNMENT AND SUPPORT PLATE

Martin E. Holmes, Hoffman Estates; Paige M. Painter, Bartlett, both of Ill., and Mark J. McGrath, Mt. Pleasant, Iowa, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1996, Ser. No. 581,868
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—540.1 **2 Claims**



1. A support plate assembly used for securing a plurality of electrical connectors to a printed circuit board comprising:
a support plate having a plurality of apertures which engage with an electrical connector, each of the plurality of apertures including at least one deformable rib for frictionally engaging with the electrical connector to hold it into a fixed position;
a top wall attached to an edge of the support plate for providing an attachment area for machinery, the top wall having a plurality of support members forming a slotted section with the top wall for engaging with each respective one of the

plurality of electrical connectors to prevent axial movement of each respective electrical connector;

at least one rib attached to a surface of the support plate, between two of the plurality of apertures for preventing rotation of each one of the plurality of electrical connectors; and

wherein the support plate assembly can be easily positioned by a machine onto a printed circuit board during manufacture without the need to individually mount the plurality of electrical connectors.

5,609,501

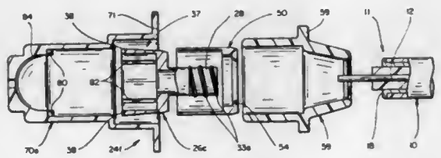
FEED THROUGH COAXIAL CABLE CONNECTOR

Corey McMills, Los Altos; John Mattis, Sunnyvale; John A. Ross, Fremont, and Jeff Sampson, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 897,621, Jun. 11, 1992, Pat. No. 5,207,602, which is a continuation of Ser. No. 509,669, Apr. 19, 1990, Pat. No. 5,127,853, which is a continuation-in-part of Ser. No. 434,068, Nov. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 364,917, Jun. 9, 1989, abandoned. This application May 3, 1993, Ser. No. 57,575

Int. Cl.[6] H01R *9/05*

U.S. Cl. 439—578 **21 Claims**



1. A feedthrough coaxial cable connector for connecting to a prepared end of a coaxial cable having an exposed solid-wire central conductor, the connector comprising:

a tubular mandrel body of a conductive material dimensioned to be pressed between a dielectric core and an outer conductor of the prepared end of the cable, the mandrel body including a cable engagement surface portion defining a projecting knife edge extended therearound for engaging an outer conductor of the coaxial cable, a tubular shank portion extending from the cable engagement surface portion to a radial walled portion, and a receptacle engagement portion coaxially extending forwardly from the radial wall portion and a coaxially disposed about the exposed center conductor and dimensioned to slide onto and contact in close fitting friction engagement an outer surface of a receptacle means with which the connector mates in use, and an exterior connector shell and radial compression means for compressing the inside surface of the outer conductor of the coaxial cable over the knife edge of the cable engagement surface of the mandrel body in order to place the outer conductor into shear stress and without shearing the outer conductor, the compression means including a resiliantly deformable elastomeric material, and wherein the receptacle engagement portion is dimensioned to diverge radially from the radial wall portion and further comprising slideable shell means disposed over at least the receptacle engagement portion of the mandrel body, slideably positionable generally away from a connector end facing the outer surface of the receptacle to enable the receptacle engagement portion of the connector to slide freely over the outer surface of the receptacle, the slideable shell means being slideably positionable toward the connector end so as to radially compress the radially diverging receptacle engagement portion against the outer surface of the receptacle and thereby lock the connector thereto.

5,609,502

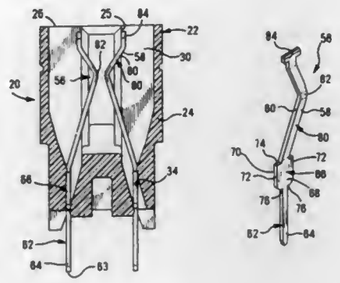
CONTACT RETENTION SYSTEM

Mark R. Thumma, Oberlin, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 31, 1995, Ser. No. 414,260

Int. Cl.[6] H01R *13/432*

U.S. Cl. 439—747 **4 Claims**



1. A contact retention system using a self-seating contact comprising:

a housing having at least one contact receiving passageway extending from an assembly face to a connecting face;

a contact associated with said passageway, and insertable thereinto from said assembly face, said contact having opposed side surfaces and opposed edges, and leading and trailing end portions of selected widths, said contact further having a body portion intermediate said leading and trailing end portions to be disposed along a portion of said passageway upon full contact insertion, said contact body portion having a dimension wider than said leading and trailing end portions and extending laterally outwardly from at least one said edge of said contact and defining at least one forwardly facing latch surface and at least one rearwardly facing latch surface;

said housing passageway portion having opposed first and second side surfaces associated with said side surfaces of said contact, said first passageway side surface having at least one first latching projection extending toward said second passageway side surface and defining a forwardly facing stop surface associated with said rearwardly facing latch surface on said contact, said second passageway side surface having at least one second latch projection extending toward said first passageway side surface and defining a rearwardly facing stop surface associated with said forward facing latch surface of said contact, said first and second latch projections being offset from said edges of trailing and leading end portions of said contact and axially spaced from each other a distance slightly greater than the length of said body portion;

said housing including a biasing surface proximate said assembly face and opposed from said first passageway side surface, and said contact including a biasing portion along said trailing end portion engageable with said biasing surface prior to full contact insertion, urging said body portion against said first projection along said first passageway side surface until said body portion passes said projection;

whereby upon inserting said leading end portion of said contact into said passageway from the assembly face of said housing, said leading end portion encounters said first latching projection so that said trailing end portion of said contact is constrained to urge said contact against said first latching projection until full insertion thereafter said latch seats, whereafter said wide body portion is disposed between said first and second latch projections upon being fully inserted in said housing and is self-seating in said passageway portion.

5,609,503

DOUBLE-LOCK TYPE CONNECTOR

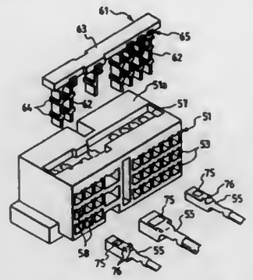
Masanori Tsuji, and Keishi Jinno, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 5, 1995, Ser. No. 435,787

Claims priority, application Japan, May 30, 1994, 6-116865

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **4 Claims**



1. A double-lock type connector comprising:

a connector housing including terminal accommodating chambers, said connector housing having a cavity which is extended across said terminal accommodating chambers, opened in the an outer wall of said connector housing having an opening communicating with said cavity;

a spacer insertable through said opening and into said cavity, said spacer being moveable from a temporary locking state, in which terminals are insertable into said terminal accommodating chambers, to a final locking state, in which said terminals are retained in said terminal accommodating chambers by said spacer, said spacer including:

a top wall similar in configuration to said opening; and

a pair of elastically deformable flexible walls which are extended downwardly from said top wall and defining a space therebetween, said connector housing having an internal protruded portion which is received in said space such that said flexible walls slidably engage opposing faces of said protruding portion; and

locking means for locking said spacer in the temporary locking state and in the final locking state,

wherein when said spacer is forcibly moved from the temporary locking state toward the final locking state under a condition where at least one of said terminals is not completed inserted, said spacer is automatically returned to the temporary locking state by an elastic restoring force of said flexible walls acting on said protruding portion after said force is removed even when a portion of said Spacer has been locked in said final position by said locking means.

5,609,504

WIRE CONNECTOR WITH IMPROVED CLASP

Hitesh Cherry; Michael A. Kandros, and Daniel V. Nardone, all of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 28, 1995, Ser. No. 412,045

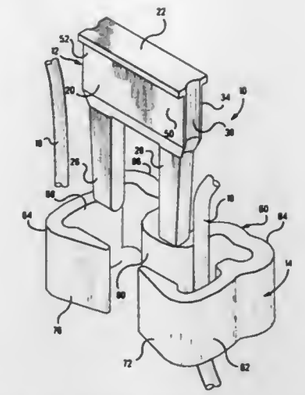
Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—783 **9 Claims**

1. An electrical wire connector for electrically and physically connecting two conductors together comprising:

(a) a clamp member having a resilient intermediate portion, two inwardly facing opposed first and second channels formed in first and second walls, respectively, said walls extending from opposite sides of said intermediate portion, and first and second flanges attached to said first and second walls, respectively, opposite said intermediate portion;

(b) a wedge having first and second opposite edges, a first bearing surface adjacent said first edge, and a second bearing surface adjacent said second edge,



wherein said wedge is to be conformably received in a closed position between said first and second channels of said clamp member where said first and second opposite edges are in opposed relationship with said first and second channels for clamping first and second conductors therebetween, respectively, so that when moving said wedge into engagement with said first and second conductors and into said closed position within said clamp member, said first and second channels are cammed outwardly against the urging of said resilient intermediate portion thereby applying a clamping force on said first and second conductors so that said first conductor is clamped between said first edge and said first channel and said second conductor is clamped between said second edge and said second channel, and only when said first and second conductors are less than a predetermined size combination said first and second flanges are forced outwardly by said first and second bearing surfaces, respectively, so that said first and second channels are urged against said first and second conductors, respectively, with additional force.

5,609,505

TERMINAL AND METHOD OF MANUFACTURING SAME

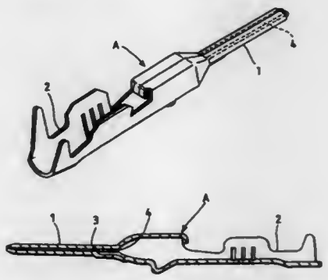
Takayoshi Endo, and Naoto Sugie, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 5, 1995, Ser. No. 435,665

Claims priority, application Japan, May 17, 1994, 6-102716

Int. Cl.[6] H01R *9/24*

U.S. Cl. 439—886 **3 Claims**



1. A terminal, comprising:

an electrically conductive plate including a wire connecting portion for clamping a wire thereto and an electric contact portion for mating with another terminal, said contact portion including a cavity therein; and

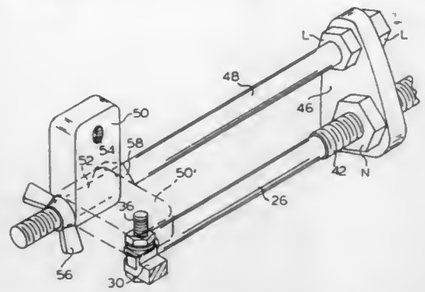
a filler material disposed in said cavity, wherein when said terminal is subjected to a metal plating, solutions associated with said metal plating are substantially prevented from entering into said cavity.

5,609,506

OUTBOARD BOAT MOTOR TRANSPORT STABILIZER

Thomas M. Williams, Jr., 2310 Old Oxford Hwy., Durham, N.C. 27704

Filed Jan. 4, 1996, Ser. No. 582,935
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—53 **3 Claims**



1. A stabilizer for preventing lateral rotation of an outboard motor while being transported mounted on a boat transom, said motor having a steering mechanism comprising a fixed portion secured to said transom and a moveable portion supported by said fixed portion and connected to said motor, said stabilizer comprising:

(a) a connector extending between a first end pivotably mounted on said fixed portion and a second end adapted when said connector is appropriately pivoted to engage said moveable portion; and

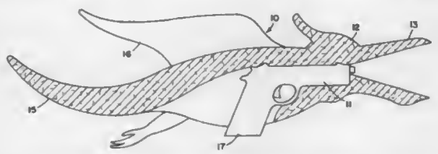
(b) locking means mounted on said fixed portion and adapted when said second end engages said moveable portion to releasably secure said second end to said moveable portion and thereby prevent lateral rotation of said motor.

5,609,507

PISTOL AND TOY DRAGON FIGURE ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 554,259, Nov. 6, 1995, which is a continuation-in-part of Ser. No. 431,834, May 1, 1995, Pat. No. 5,564,961. This application Nov. 6, 1995, Ser. No. 554,258
Int. Cl.[6] A63H *3/00;33/30;5/04*
U.S. Cl. 446—72 **6 Claims**



1. A pistol and dragon figure assembly comprising:

A. a dragon figure having a head provided with open jaws, a body joined to the head having an internal cavity communicating with the head, the cavity being open at an underside of the body; and

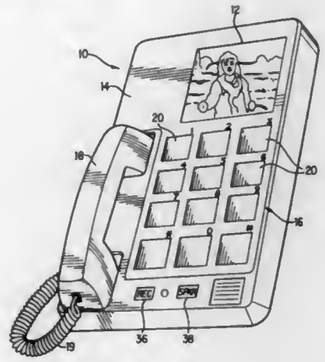
B. a pistol including means to produce when a trigger is actuated light flashes and roaring sounds, said pistol being concealed in the cavity of the figure and having a barrel whose front end is socketed in the head and is provided with a muzzle in alignment with the open jaws, said pistol having a hand grip provided with a trigger which when the grip is grasped by the fingers of a player's hand extended into the cavity, the figure then appears to be held by the player, and when the player pulls the trigger with a finger of his hand, light flashes are then emitted by said means from the open jaws accompanied by roaring sounds to simulate a live dragon.

5,609,508

TOY TELEPHONE WITH VISUAL DISPLAY FOR RECORDED MESSAGES

Richard C. Wingate, Scarsdale, N.Y., assignor to Sony Corporation, Japan, and Sony Electronics Inc.

Filed Oct. 23, 1995, Ser. No. 546,770
Int. Cl.[6] A63H *33/30;5/00*
U.S. Cl. 446—142 **6 Claims**



1. A toy telephone comprising:

a display disposed on a main body of said toy telephone;

a handset in which a first speaker is disposed, said handset being supported on the main body of said toy telephone;

a key pad having a plurality of manually manipulable key, said key pad being disposed on the main body;

memory means for storing moving or animated image data and audio data, each of said keys being linked to an individual segment of said memory means; and

control means operatively connected with said key pad and each of said keys, said memory means, the first speaker in said handset and said display, said control means being responsive to the manipulation of any one of said plurality of keys on the key pad in a manner to read out predetermined moving or animated image and audio data from said memory means the individual segment and direct the moving or animated image data and the audio data to said display and first speaker respectively.

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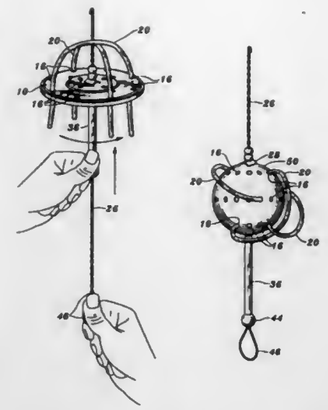
AMUSEMENT AND RECREATIONAL APPARATUS

Bryan W. Stamos, 900 Pinot Noir, Lodi, Calif. 95240

Continuation-in-part of Ser. No. 419,891, Apr. 11, 1995, Pat. No. 5,536,195, which is a continuation-in-part of Ser. No. 321,249, Oct. 11, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,674
Int. Cl.[6] A63H *33/22;1/06;* **G09F** *13/00;* **F21V** *21/30*
U.S. Cl. 446—219 **12 Claims**

1. Amusement and recreational apparatus comprising in combination:

a rotatable support rotatable about a support axis of rotation and defining at least one opening spaced from the support axis of rotation;



at least one elongated flexible member in engagement with and supported by said rotatable support, said at least one elongated flexible member having a flexible light transmitting portion spaced from said rotatable support and defining an interior closed to the ambient atmosphere;

chemiluminescent liquid material within the interior of said flexible light transmitting portion, said at least one elongated flexible member extending through said at least one opening defined by said rotatable support spaced from the support axis of rotation and said flexible light transmitting portion projecting from said at least one opening spaced from the support axis of rotation whereby rotation of said rotatable support causes said flexible light transmitting portion to flex and move outwardly away from said support axis of rotation under centrifugal force to provide a variable light display from chemiluminescent light material within the interior of said flexible light transmitting portion; and

means for imparting rotational movement to said rotatable support and said at least one elongated flexible member in engagement with and supported by said rotatable support, said means for imparting rotational movement to said rotatable support including an elongated structural element extending through said rotatable support and engagement means engaging said elongated structural element and said rotatable support and cooperable with said elongated structural element and said rotatable support for causing rotational movement of said rotatable support when said engagement means moves said rotatable support axially along said elongated structural element.

5,609,510

TOY VEHICLE WITH A CHASSIS-BENDING MECHANISM

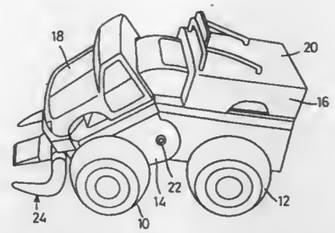
Leonard Stubenfoll, Oak Brook, Ill., and Zenichi Ishimoto, Tokyo, Japan, assignors to Fertig Stubenfoll Design Group, Inc., Oak Brook, Ill.

Filed May 25, 1995, Ser. No. 450,708
Claims priority, application Japan, May 25, 1994, 6-111478
Int. Cl.[6] A63H *33/04;17/00;17/26*
U.S. Cl. 446—456 **8 Claims**

1. A chassis bending mechanism in a toy vehicle having a chassis divided in a longitudinal direction into first and second parts which are hinged to each other, wherein said chassis bending mechanism comprises:

a shaft which is fixed to said second part of said chassis, said shaft extending in a horizontal direction which is perpendicular to said longitudinal direction;

a connection member comprising first and second portions unitarily formed, said first and second portions of said connection member respectively extending over said first and second parts of said chassis, said first portion of said connection member being fixed to said first part of said chassis, said connection member having a recess at a boundary between said first and second portions for receiving said shaft so that said connection member and said first and second chassis parts pivot around said shaft;



a motor for generating a rotation force, said motor mounted in said chassis;

a transmission gear mechanism being mechanically connected to said motor for transmitting said rotation force;

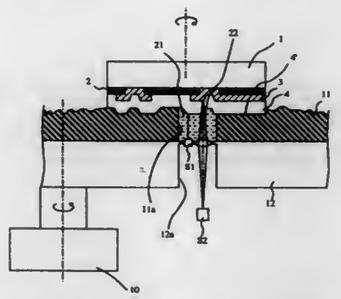
a disk-like member being rotatably provided on said chassis, said disk-like member being positioned adjacent to said second portion of said connection member, said disk-like member being engaged with said transmission gear mechanism for receiving said rotation force, said disk-like member being provided on one side with a projection which projects in said horizontal direction and extends over a part of a peripheral portion of said disk-like member so that a rotation of said disk-like member forces said projection into contact with and push up said second portion of said connection member to have said connection member and said first and second chassis parts rotate around said shaft whereby said second portion of said connection member is forced above said shaft whilst said first portion of said connection member fixed to said chassis first part is forced below said shaft to thereby direct said first part of said chassis downward and bend said chassis at said boundary.

5,609,511

POLISHING METHOD

Shigeo Moriyama, Tama; Yoshio Kawamura, Kokubunji; Yoshio Homma, Hinode-machi; Kikuo Kusukawa, Fujinomachi, and Takeshi Furusawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1995, Ser. No. 421,247
Claims priority, application Japan, Apr. 14, 1994, 6-075625
Int. Cl.[6] B24B *49/00;51/00*
U.S. Cl. 451—5 **13 Claims**



1. A method of polishing a thin film layer to be polished, which is formed on the surface of a substrate, by pressing said substrate on the surface of a polishing pad and relatively moving said substrate and said polishing pad, said method comprising the steps of:

detecting the position of a front surface of said thin film layer to be polished using a first sensor and also detecting the position of a bottom surface of said thin film layer using a second sensor, on the way of said polishing;

calculating the residual thickness of said thin film layer on the basis of the detected positions of the front and bottom surfaces of said thin film layer; and

controlling the processing condition of the subsequent polishing on the basis of the calculated residual thickness of said thin film layer.

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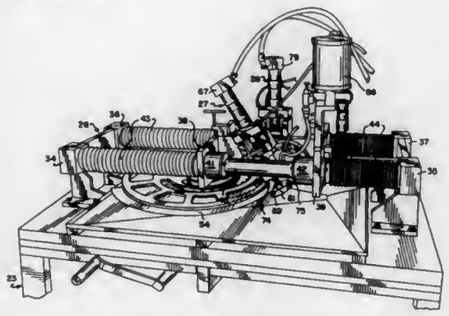
METHOD AND APPARATUS FOR OFF-LINE HONING OF SLICER BLADES

Terry L. Holmes, DeForest; Gary R. Skaar, Marshall; Larry C. Gundlach, Madison, and Dennis G. Flisram, Plainfield, all of Wis., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Jan. 9, 1995, Ser. No. 370,722

Int. Cl.[6] B24B *1/00;3/12;9/04;49/06*

U.S. Cl. 451—48 **19 Claims**



1. A method for honing or grinding a slicer blade having a curved cutting surface, comprising the steps of:

removing a slicer blade having a curved cutting surface from a food slicer, and transporting same to a honing apparatus at an off-line location;

securing the slicer blade in association with a cam member such that at least a substantial portion of a curved pathway camming surface of the cam member follows the curved cutting surface of the slicer blade at a location spaced inwardly of the curved cutting surface of the slicer blade;

engaging the curved cutting surface of the slicer blade with a honing or grinding member, wherein said engaging step includes engaging a top portion of the curved cutting surface of the slicer blade with one honing or grinding member while also engaging a bottom portion of the curved cutting surface of the slicer blade with another honing or grinding member;

rotating the slicer blade and the cam member together while a cam follower engages and follows the cam member, including controlling the position of the honing or grinding members by moving the cam follower along the cam member; and

said engaging and rotating steps combine to hone or grind both the top portion and the bottom portion of the curved cutting surface of the slicer blade.

5,609,513

CLEANING AND DRESSING FLY LINES

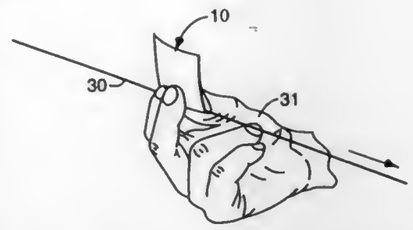
John E. Stark, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 11, 1994, Ser. No. 225,545

Int. Cl.[6] B24B *1/00;* **B24D** *15/04*

U.S. Cl. 451—59 **4 Claims**

1. A method for cleaning a fly line having a generally cylindrical surface, said method comprising the steps of:



providing a flexible, pliable abrasive article including a nonwoven fibrous mat backing formed of individual fibers from 10 to 50 μm in diameter, the nonwoven mat backing having a thickness of from 100 to 375 μm and having first and second major surfaces, and a composite bonded to the first surface of the backing, the composite comprising a binder and 5 to 50 g/m^2 of abrasive granules uniformly distributed in the binder, the abrasive granules having diameters substantially within the range 10 to 20 μm and a MOH hardness of at least 8;

folding the abrasive article around and conforming the abrasive article to the surface of the fly line with the abrasive granules against the surface of the fly line;

manually pressing the abrasive granules of the abrasive article against the surface of the fly line during the folding step; and

causing relative movement longitudinally of the fly line between the abrasive article and the surface of the fly line during the pressing step.

5,609,514

WAFER CHAMFERING MACHINE

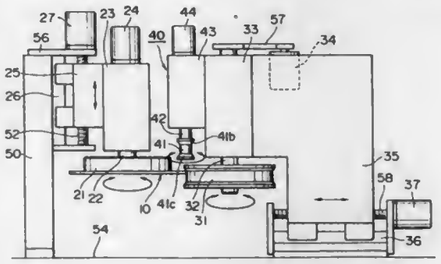
Masaaki Yasunaga, and Takeshi Kagamida, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 337,498

Claims priority, application Japan, Nov. 16, 1993, 5-311351

Int. Cl.[6] B24B *9/06*

U.S. Cl. 451—65 **9 Claims**



1. A wafer chamfering machine comprising:

a wafer holding unit provided with a wafer table for holding a wafer and a motor for drivably rotating the wafer table;

a vertical direction moving mechanism for moving the wafer holding unit in the vertical direction;

a chamfering unit opposed to the wafer holding unit and provided with a grindstone for chamfering an outer periphery of the wafer and a motor for drivably rotating the grindstone for chamfering the outer periphery of the wafer;

a notch chamfering unit mounted on the chamfering unit, disposed at a position not interfering with the grindstone for chamfering the outer periphery of the wafer, and provided with a notch working grindstone for chamfering a notch formed on the outer periphery of the wafer and a motor for drivably rotating the notch working grindstone; and

a horizontal direction moving mechanism for moving the chamfering unit and the notch chamfering unit toward and away from the wafer holding unit in the horizontal direction,

wherein rotational axes of the wafer table, the grindstone for chamfering the outer periphery of the wafer and the notch working grindstone are substantially parallel to one another and arranged along a line extending parallel to the direction of movement of the chamfering unit.

5,609,515

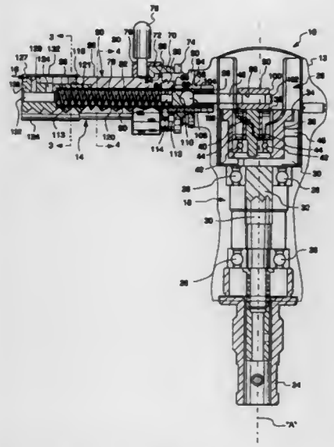
HAND-HELD RECIPROCATING DEVICE WITH AN IMPROVED TOOL GUIDE SYSTEM

Thomas G. Takach, 7N061 Canterbury Ct., St. Charles, Ill. 60175

Filed Nov. 23, 1994, Ser. No. 344,071

Int. Cl.[6] B24B *23/00*

U.S. Cl. 451—344 **21 Claims**



1. A hand-held reciprocating device for driving a tool in a substantially linear path comprising:

a housing having an internal cavity and a first bore extending out of the housing and communicating with the cavity;

a drive mechanism located in the cavity of the housing for providing reciprocating movement;

an outer guide sleeve having an inner end mounted against longitudinal movement to the housing, an outer end opposite the inner end, and a second bore being aligned with the first bore and extending between the inner end and the outer end, the second bore having a plurality of contiguous, inner guide surfaces defining the second bore at the outer end of the guide sleeve;

an inner reciprocating sleeve located intermediate the inner end and outer end in the second bore of the outer guide sleeve for movement in the outer guide sleeve, the inner reciprocating sleeve having a first end coupled to the drive mechanism and a second end located adjacent the outer end of the outer guide sleeve;

a connector extending from the cavity through the first bore for coupling the first end of the inner reciprocating sleeve to the drive mechanism; and

a tool holder being capable of holding the tool and being coupled to the second end of the inner reciprocating sleeve for substantially linear reciprocating movement with the inner reciprocating sleeve, the tool holder having a plurality of contiguous, outer engagement surfaces, each of the contiguous engagement surfaces disposed to slidingly engage a corresponding contiguous guide surface of the outer guide sleeve to guide the substantially linear reciprocating movement of the tool holder.

5,609,516

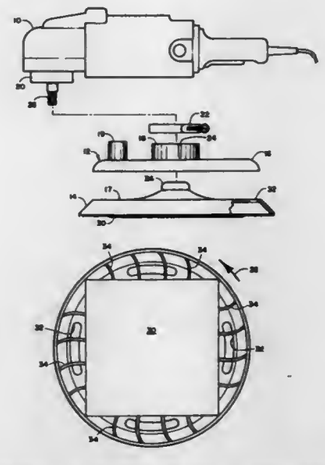
ROTATING ABRADER WITH POLYGONAL PAD AND DUST EVACUATION

Michael W. Courson, 1088 Thunderbird, El Paso, Tex. 79912; Daniel C. Courson, 12806 Traviata, Houston, Tex. 77024, and William H. Courson, 1088 Thunderbird, El Paso, Tex. 79912

Filed Sep. 25, 1995, Ser. No. 533,262

Int. Cl.[6] B24B *23/02*

U.S. Cl. 451—456 **24 Claims**



1. An assembly for mounting a sheet of abrasive material on a rotary abrading tool which comprises:

a mounting member having a generally circular outer edge;

said mounting member having a first generally flat surface;

a second surface opposite said first surface having means for securing said mounting member to a rotary abrading tool shaft for rotation therewith about an axis;

a backup pad on said flat surface having a thickness of at least about 0.020 inch;

said backup pad having an edge formed from a succession of approximately straight lines;

a shroud covering said backup pad and extending beyond widest diameter of said backup pad; and

means for withdrawing air from said shroud;

whereby a sheet of abrading material having a configuration corresponding to said backup pad can be secured to said backup pad.

5,609,517

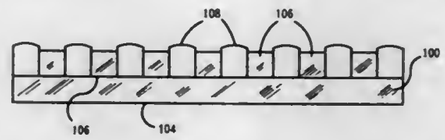
COMPOSITE POLISHING PAD

Michael F. Lofaro, Milton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1995, Ser. No. 560,721

Int. Cl.[6] B24D *11/00*

U.S. Cl. 451—529 **13 Claims**



1. A composite polishing pad for polishing semiconductor wafers, comprising:

a supporting layer of a first hardness type, the supporting layer having an upper and a lower surface;

a plurality of nodes of a second hardness type attached to the upper surface of the supporting layer;

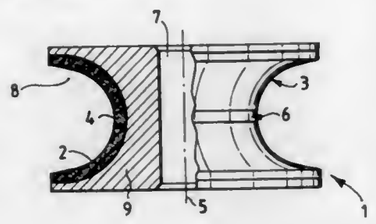
an upper layer of a third hardness type attached to the upper surface of the supporting layer, the upper layer surrounding but not covering the plurality of nodes, and the upper layer having a height greater than the nodes.

5,609,518

GRINDING WHEEL FOR FORMING CONVEX SHAPES, APPLICABLE IN PARTICULAR TO MANUAL GRINDERS

Mario Lucchesi, Venezia, Italy, assignor to Vincent S.r.l., Italy

Filed Oct. 21, 1994, Ser. No. 327,283
Claims priority, application Italy, Oct. 25, 1993, MI93U0819
Int. Cl.[6] B23F *21/03*
U.S. Cl. 451—541 **7 Claims**



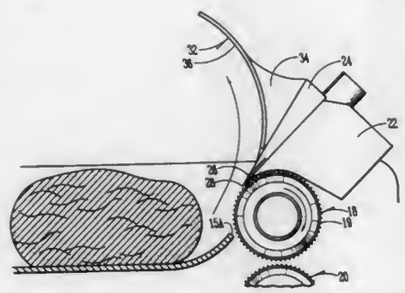
1. A grinding wheel (1) for forming convex shapes applicable in particular to manually controlled grinders, comprising an abrasive mass (2) arranged about an axis of rotation (5) and shaped to present at least one concavity (8), characterised in that at the base of said concavity (8) and embedded in the abrasive mass (2) there is provided an element (4) which counteracts with the surface being ground, is of identical profile to that of the concavity and is coaxial with the axis of rotation, said counteracting element (4) being of a non-abrasive material which is more resistant to wear by abrasion and tendentially harder than the abrasive mass (2) in which it is positioned.

5,609,519

METHOD AND MEANS OF SKINNING HAM CHUNKS

Ray T. Townsend, 3131 Fleur Dr., Des Moines, Iowa 50321

Filed Jul. 11, 1996, Ser. No. 678,663
Int. Cl.[6] A22B *5/16*; **A22C** *17/12*
U.S. Cl. 452—127 **5 Claims**



1. A meat skinning machine having a frame, a substantially horizontal meat supporting member on the frame having a forward meat discharge edge, a rotatable meat gripping roll rotatably mounted on the frame and having a plurality of gripping teeth thereon and being located adjacent said discharge edge, an elongated meat skinning blade adjacent said gripping roll and adapted to remove membranes or the like from a piece of meat moved from said supporting member and pulled into contact with the blade by the gripper roll, the improvement comprising,

a curved deflector plate mounted on said frame adjacent said curved blade,

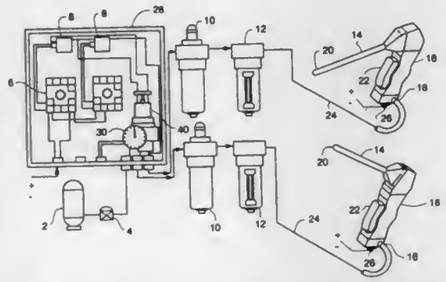
said deflector plate extending upwardly and rearwardly with respect to said blade so that a piece of meat moved into contact with said blade by said gripping roll will depart the blade and will move upwardly and rearwardly on said curved deflector plate by the momentum imposed thereon by said gripping roll, and will thereupon drop on said supporting member.

5,609,520

APPARATUS AND METHOD FOR INJECTING COMPRESSED GAS TO SEPARATE MEAT

James M. Stewart, Longmont, Colo., assignor to Monfort, Inc., Greeley, Colo.

Filed Sep. 1, 1995, Ser. No. 523,016
Int. Cl.[6] A22B *5/16*
U.S. Cl. 452—131 **36 Claims**



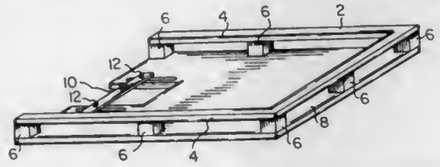
1. A method for reducing the human ergonomic stresses encountered during the separation of meat from an animal carcass, comprising injecting gas into an animal carcass to loosen the adherence of meat to adjacent meat portions and communicating a signal between a data storage means a means for regulating a parameter selected the group consisting of the pressure of said gas being injected, the time period in which said gas is being injected and the volume of said gas being injected.

5,609,521

BAIT CUTTING BOARD

Steven E. Allred, and Robin E. Allred, both of 2162 Longbow La., Clearwater, Fla. 34624

Filed Oct. 16, 1995, Ser. No. 543,265
Int. Cl.[6] A22C *25/06*
U.S. Cl. 452—194 **15 Claims**



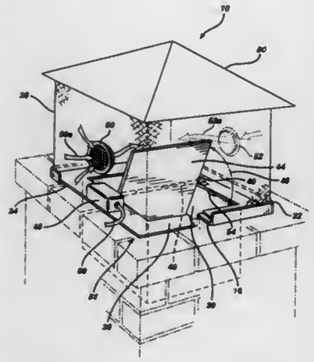
1. A cutting board attachable to a boat comprising: a quantity of rigid, cut-resistant material having a perimeter; a cutout portion extending through said perimeter, said cutout portion having dimensions slightly greater than a cleat on said boat; closing means for said cutout portion, said closing means being movable between open and closed positions; and means to attach said closing means to said quantity of rigid, cut-resistant material so that said closing means may be moved from said open position, that allows said cutout portion to be placed adjacent to said cleat on said boat, to a closed position that securely attaches said cutting board around said cleat leveling means associated with said board for placing said board in a substantially horizontal position after being attached to said cleat.

5,609,522

COMBINATION DAMPER AND CHIMNEY CAP APPARATUS

Henry S. Szwartz, 17 Terrace Ave., P.O. Box 123, Suffern, N.Y. 10901

Filed Jan. 18, 1995, Ser. No. 374,038
Int. Cl.[6] F23L *17/02*
U.S. Cl. 454—7 **16 Claims**



1. A damper apparatus for a flue of a chimney, comprising:

support means, comprising;

a sidewall constructed and arranged to be removably mounted to the chimney and to define an aperture which extends through the support means for communication with the flue,

regulating means mounted to the support means to regulate the flow of a draft through the aperture and the flue;

drive means mounted to the support means and coupled to the regulating means to move the regulating means to a position with respect to the aperture; and

ventilating means associated with the support means and disposed external to the aperture of the sidewall to displace air near the aperture to ventilate the drive means.

5,609,523

COTTON BASKET LATCH STRUCTURE

Jeffrey J. Ringwald, Ankeny, and Jeffrey R. Fox, Minburn, both of Iowa, assignors to Deere & Company, Moline, Ill.

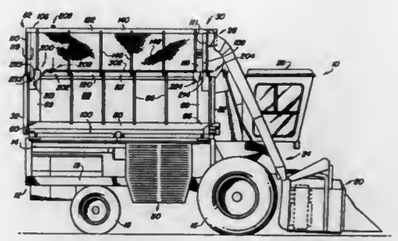
Filed Aug. 11, 1995, Ser. No. 514,280
Int. Cl.[6] A01F *12/60*
U.S. Cl. 460—119 **20 Claims**

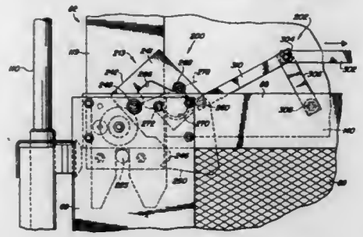
1. In a cotton harvester having a fore-and-aft extending frame adapted for forward movement over a field of cotton plants, a cotton basket structure for receiving harvested cotton and unloading the harvested cotton, the basket structure including a telescoping basket having a main basket portion and an extension portion telescopingly received by the main basket portion, means for moving the extension portion between an extended harvest position and a retracted storage position, and latching structure for releasably securing the extension portion in the harvest position, the latching structure comprising:

movable latch structure including a plurality of latches located at spaced locations on the basket structure, the latches having latching positions for automatically securing the extension portion in the extended harvest position as the extension portion moves into the extended harvest position, and a release position for permitting retraction of the extension portion from the harvest position towards the storage position;

linkage structure operably connecting the latches for movement in unison between the release position and the latching position; and

a reset member connected to the basket structure and contacting the linkage structure as the extension moves to a location offset from the harvest position and thereby moving the latches to the latching positions to position the latches for automatic securing of the extension portion when the extension next moves into the extended harvest position.



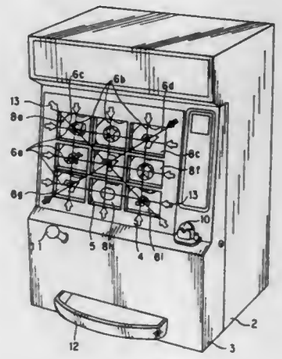


5,609,524

SLOT MACHINE

Haruo Inoue, Tokyo, Japan, assignor to Eagle Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,315
Claims priority, application Japan, Dec. 22, 1994, 6-320973
Int. Cl.[6] A63F *5/04*
U.S. Cl. 463—20 **18 Claims**



1. In a slot machine comprising:

a plurality of display windows;

a plurality of reels mounted rotatable each behind a respective one of said display windows, said plurality of reels each

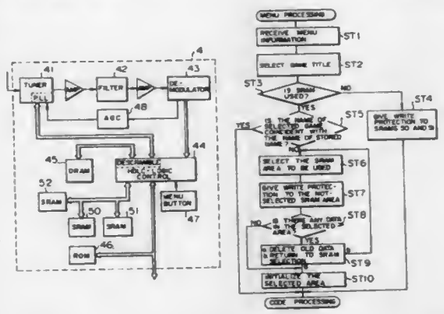
having a series of symbols affixed on an outer circumference of each of said plurality of reels;
a plurality of motors each assigned for rotating a respective one of said plurality of reels;
a first motor drive device which starts driving said plurality of motors in response to a start signal, and stops driving said plurality of motors in accordance with stop signals sequentially generated for respective ones of said plurality of motors;
at least a winning line extending across said plurality of display windows; and
a game result determining device for determining if any winning symbol combination appears on any of said at least a winning line when all of said plurality of reels get stopped in accordance with said stop signals;
the improvement comprising:
a second motor drive device for driving at least a part of said plurality of motors in a special fashion, said at least a part of said motors corresponding to those ones of said plurality of reels which stop with symbols constituting said any winning symbol combination.

5,609,525

VIDEO GAME DATA RECEPTION APPARATUS

Yugo Ohno; Shunichi Shoji, both of Yokohama, and Atsushi Kitahara, Tokyo, all of Japan, assignors to NEC Mobile Communications, Ltd.; Comsys Corporation, both of Yokohama, and Sega Enterprises, Ltd., Tokyo, all of Japan

Filed May 22, 1995, Ser. No. 445,017
Claims priority, application Japan, May 23, 1994, 6-132521
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—43 **4 Claims**



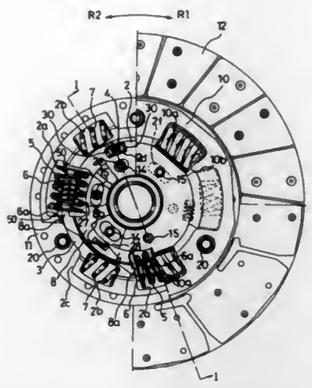
1. A video game data reception apparatus which receives a data signal of video games transmitted from a base station in a wireless manner or through wire on a local station side to play a game, said reception apparatus comprising a game operation memory for storing a data signal of a predetermined game and a save memory for storing a predetermined game state on termination of a game, said save memory being write protected when said save memory should not perform save operation.

5,609,526

DAMPER DISC ASSEMBLY

Koji Kitayama, and Hideyuki Imanaka, both of Neyagawa, Japan, assignors to Daikin Clutch Corporation, Osaka, Japan

Continuation of Ser. No. 977,661, Nov. 18, 1992, abandoned.
This application Jun. 14, 1994, Ser. No. 259,345
Claims priority, application Japan, Nov. 18, 1991, 3-094316 U
Int. Cl.[6] F16D *3/14*
U.S. Cl. 464—68 **12 Claims**



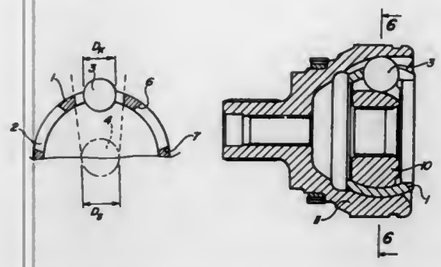
1. A damper disc assembly comprising:
a hub connectable to an output shaft, having a radially extending flange, formed with at least one circumferentially extending first window, at least one circumferentially extending second window and at least one circumferentially extending third window;
at least one lateral plate member disposed adjacent to said flange for limited rotary displacement therebetween, said lateral plate member having at least one pair of circumferentially extending claws and at least one circumferentially extending plate window;
an input rotation member disposed about said hub for limited rotary displacement with respect to said lateral plate member and limited rotary displacement with respect to said flange greater than the displacement of said lateral plate member with respect to said flange, said input rotation member having at least one circumferentially extending input member window;
a first spring member disposed in said third window and said plate window elastically connecting said flange and said lateral plate member to absorb vibration in response to relative displacement therebetween;
second and third co-axial spring members disposed within said first window and said input member window, and between said pair of claws elastically connecting said lateral plate member and said input rotation member, each of said second and third co-axial spring members having a rigidity greater than that of said first spring member, the rigidity of said second spring member being smaller than that of said third spring member, said claws on said lateral plate member being configured to compress said second spring member in response to relative rotation between said hub and said lateral plate member;
said first window formed with at least one circumferentially protruding protuberance contactable with said second spring member in response to relative displacement of said input rotation member and said flange;
a first friction member disposed between said hub and said lateral plate member which creates friction in response to relative displacement therebetween;
a second friction member disposed between said lateral plate member and said input rotation member which creates friction in response to relative displacement therebetween, which develops greater friction than that of said first friction member;
wherein only said second spring member being compressible in a first displacement range and both said second and third spring members being compressible in a second displacement range in response to relative displacement between both said lateral plate member relative to said hub and said input rotation member relative to said lateral plate member.

5,609,527

CONSTANT VELOCITY UNIVERSAL JOINT HAVING AN IMPROVED CAGE DESIGN

Charles Fuerstenau, Porto Alegre, Brazil; Herbert Konegen, Rösrath, Germany; Wolfgang Hildebrandt, Siegburg, Germany, and Peter Seigert, Lohmar, Germany, assignors to GKN Automotive AG, Germany

Filed Aug. 10, 1994, Ser. No. 288,344
Claims priority, application Germany, Aug. 12, 1993, 43 27 016.6
Int. Cl.[6] F16D *3/224*
U.S. Cl. 464—145 **1 Claim**



1. A universal joint defining a joint axis, said joint comprising:
an outer joint member defining an internal cavity having a plurality of outer running grooves;
an inner joint member disposed within said internal cavity, said inner joint member having a plurality of inner running grooves corresponding with said plurality of outer running grooves;
a plurality of balls, each ball defining a ball diameter and being disposed within a respective inner and outer running groove;
a cage disposed within said internal cavity having a central cross sectional plane and a plurality of windows corresponding with said plurality of outer and inner running grooves, each of said plurality of balls being disposed in one of said plurality of windows, each of said windows having side walls, said side walls of said windows being aligned such that a radial extension of said sidewalls in cross section is tangent to a sphere having a sphere center disposed at an intersection of said central cross sectional plane of said cage and said joint axis, said sphere having a diameter generally equal to said ball diameter.

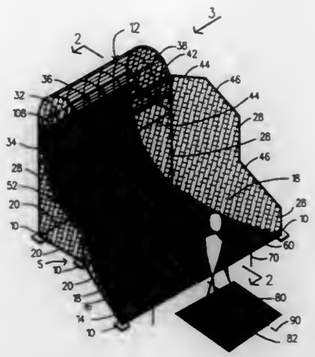
5,609,528

COMPACT GOLF DRIVING RANGE NET

Robert P. Kehoe, 1515 Beechurst Ct., Houston, Tex. 77062

Continuation of Ser. No. 359,411, Dec. 20, 1994, abandoned.
This application Apr. 3, 1996, Ser. No. 626,921
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—157 **17 Claims**

1. A compact golf driving range net apparatus comprising:
a frame of elongate support members releasably connected together, said frame supported adjacent a teeing area on a support surface;
a substantially fabric ramp having a lower leading edge releasably connected to a lower portion of said frame adjacent said teeing area and an upper trailing edge releasably connected to an upper end of said frame, said ramp curving progressively upward from said leading edge to said trailing edge and supported on said frame in a substantially tensioned state; and
a substantially cylindrical ball receiving member formed of material through which an object may be viewed supported generally horizontally at an upper end of said frame above said ramp and having a longitudinal opening in communication with said fabric ramp upper trailing edge for receiving a ball thereinto; whereby



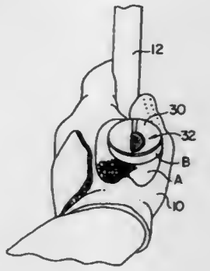
golf balls hit by a golfer from said teeing area will impact said fabric ramp and be guided progressively upward thereby and rotate along the interior surface of said ball receiving member a number of times under observation of said golfer and the path of said rotating golf ball being indicative of the manner in which it was hit.

5,609,529

GOLF TRAINING DEVICE

George M. Brown, 120 Platt Ave., Norwich, Conn. 06360

Filed Oct. 27, 1995, Ser. No. 549,245
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—205 **4 Claims**



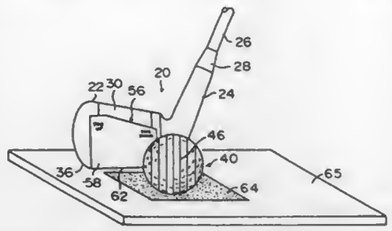
1. A golf training device for use on a golfer's glove hand to aid the golfer at address in assuming a consistent hand and golf club orientation, said device comprising:
a golf glove of the type having a first component of a hook and loop combination fastener on the back of the golf glove and having a first strap containing the second component of a hook and loop combination fastener such that the golf glove can be fitted to the golfer's hand,
a second strap having a loop for encircling the thumb of the golfer's glove hand, said strap having a first component of a hook and loop combination fastener material on its top surface, and adapted to be secured to the glove by said first strap on said glove,
a wedge shaped plug having top and bottom surfaces,
a reflective mirror secured to said top surface of said wedge, and said bottom surface including the second component of a hook and loop combination fastener being releasably secured to said first component on said top surface of said second strap whereby said second strap can be secured to said golf glove in conjunction with the first strap on the golf glove, and whereby said wedge and mirror can be rotated in order to achieve a desired angle of reflection as between the mirror, the eye of the golfer, and the head of the golf club at address.

5,609,530

DYNAMIC LIE DETERMINATION DEVICE AND METHOD

Joseph H. Butler, Jr., Collierville, Tenn., assignor to Emhart Inc., Newark, Del.

Filed Aug. 31, 1995, Ser. No. 522,442
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—237 **26 Claims**



1. A device for determining the dynamic lie of a golf club having a head with an impact face, which comprises:

a target object;

an impressionable medium securable to the impact face of the head of the golf club for covering at least a portion of the face which is to be aimed to strike the target object when the club is swung; and

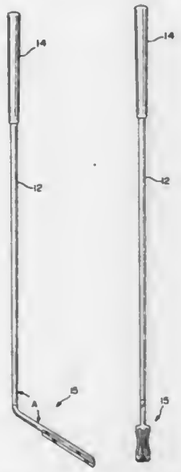
an impression-making structure located on the target object, the structure being of a prescribed linear configuration to make an impression in the medium when the medium and the impact face strike the target object indicative of the relative angular position between the structure and the dynamic lie of the club upon striking the target object.

5,609,531

GOLF TRAINING APPARATUS

Elliot C. Gates, 2485 Bounty St. SE., Prior Lake, Minn. 55372

Filed Jun. 5, 1995, Ser. No. 465,408
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—256 **20 Claims**



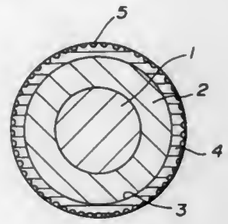
1. Golf training apparatus comprising an elongated shaft having an upper end and a lower end and extending along a straight axis, a handle grip affixed at the upper end and an longitudinal elongated head affixed to said lower end and having a longitudinal axis of elongation extending away from the shaft, said head having a predetermined mass aligned along the head axis, said head axis being aligned at an angle of greater than 90° relative to the shaft axis, and said mass having a center of mass displaced from said shaft axis at a distance of at least about four inches, the weight of the head being about 265 to 285 grams.

5,609,532

THREAD-WOUND GOLF BALL

Toshio Chikaraishi, Akishima, Japan, assignor to Bridgestone Sports Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 271,969, Jul. 8, 1994, abandoned. This application Oct. 12, 1995, Ser. No. 541,262
Claims priority, application Japan, Jul. 8, 1993, 5-193066
Int. Cl.[6] A63B *37/06;37/12;37/14*
U.S. Cl. 473—365 **4 Claims**



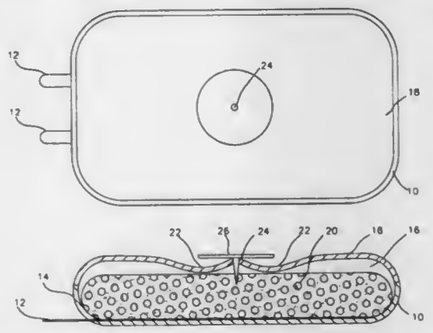
1. A thread-wound golf ball comprising a wound core consisting of a center and a thread rubber layer thereon, and a cover enclosing the core and having a plurality of dimples thereon, wherein the thread rubber layer has a thickness of 5 to 9 mm and a larger weight than the center of said core, said cover is made of an ionomer resin and has a thickness of 1 to 2.5 mm and a Shore D hardness of 52 to 68, and the ball has an outer diameter of 42.9 to 46 mm and the total volume of dimples of 300 to 400 mm^3.

5,609,533

BALL MARK REMOVER TOOL

Robert A. Wheeler, 5075 Carnoustie Dr., Reno, Nev. 89502

Continuation-in-part of Ser. No. 349,874, Dec. 6, 1994. This application Dec. 15, 1995, Ser. No. 568,401
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—408 **13 Claims**



1. A tool for use in the game of golf comprising a substantially polygonal body having a radiused edge wherein said polygonal body comprises:

a case and a cover forming a substantially leak proof enclosed chamber to accommodate moistened material;

an opening to accommodate a ball marker;

a single or a plurality of indentations in said substantially polygonal body proximate to the opening, each indentation spans and extends beyond an area of the body to be covered by the ball marker; and

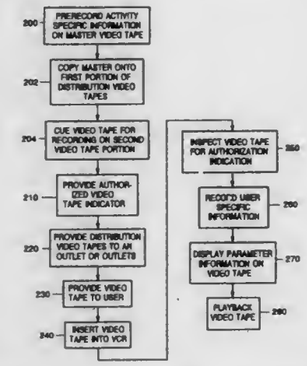
a plurality of prongs extending in the direction of the radiused edge proximate and substantially parallel to a side of said substantially polygonal body and substantially perpendicular to said radiused edge.

5,609,534

INFORMATIONAL/TRAINING VIDEO SYSTEM

William J. Gebhardt; James P. Thome, both of Fort Collins, and Leslie C. Hildenbrandt, Windsor, all of Colo., assignors to The Distancecaddy Company, L.L.C., Ft. Collins, Colo.

Filed Oct. 20, 1994, Ser. No. 326,787
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—409 **23 Claims**



1. A method for providing a combined informational and training video product for use by a user to improve performance with respect to a skilled physical activity performed by the user, the method comprising the steps of:

recording at least a first informational video segment on a first video record portion of a video unit, said first informational video segment including physical activity-specific information corresponding in type with said skilled physical activity performed by said user, said physical activity specific information comprising one of instructional information and product related information relating to said skilled physical activity;

disposing a video recording assembly at a given user activity site adapted to accommodate said skilled physical activity;

providing said video unit to a given user for use in said video recording assembly at said user activity site, wherein a video record of said video unit is cued for recording user-specific information corresponding to said skilled physical activity performed by said user on a second video record portion different from said first video record portion;

utilizing said video recording assembly to record a skilled physical activity performed by said user; and

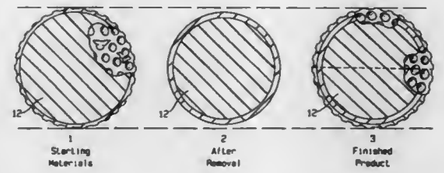
providing said video unit to said user for independent replay by said user, whereby said user receives a combination of physical activity-specific information and user-specific information relative to said skilled physical activity performed by said user such that said user can reflect upon said skilled physical activity performed by said user at said user activity site and said physical activity specific information to improve performance with respect to said skilled physical activity.

5,609,535

METHOD OF RESTORING USED GOLF BALL

William E. Morgan, Barrington, R.I., assignor to Acushnet Company, Fairhaven, Mass.

Continuation of Ser. No. 910,816, Jul. 9, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 359,212
Int. Cl.[6] A63B *37/06;37/12*
U.S. Cl. 473—409 **12 Claims**



1. A method of treating a golf ball having an exterior surface of a predetermined diameter, a core and a cover composed of cover material having a predetermined thickness and dimples and indicia on said exterior surface comprising:

(a) removing the entire exterior surface material of said cover and all said dimples and indicia to reduce the thickness of said cover and provide a dimple free and indicia free intermediate cover surface; and

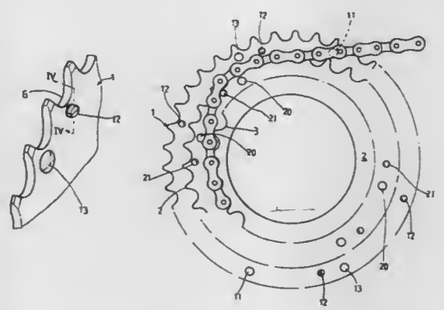
(b) adding to said intermediate cover surface a layer of cover material including dimples which is substantially equal in thickness to the material removed in step (a).

5,609,536

BICYCLE FREEWHEEL GEAR CLUSTER GEAR-SHIFTING MECHANISM

Sheng-Sheuan Hsu, Tao Yuan, Taiwan, assignor to Tracer Company, Ltd., Taiwan

Filed Jun. 13, 1995, Ser. No. 489,810
Int. Cl.[6] B62M *9/12*
U.S. Cl. 474—160 **7 Claims**



1. A freewheel gear cluster provided on the rear of a bicycle of the type using a derailleur to shift its drive chain between at least a large-diameter sprocket wheel, an intermediate-diameter sprocket wheel, and a small-diameter sprocket wheel, wherein the improvement comprising:

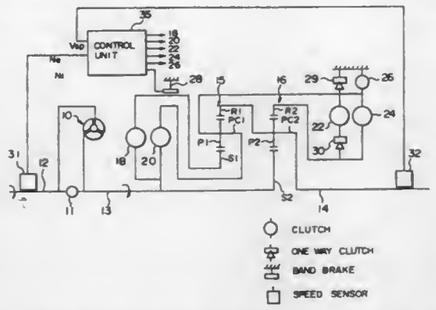
a plurality of protrusions provided on the rim of the large-diameter sprocket wheel on the side facing the intermediate-diameter sprocket wheel, said plurality of protrusions being used to prevent the drive chain from overshooting to the large-diameter sprocket wheel when the drive chain is being shifted from the small-diameter sprocket wheel to the intermediate-diameter sprocket wheel.

5,609,537

PLANETARY GEAR AUTOMATIC TRANSMISSION

Nobuaki Mochizuki, and Yoshimi Iwaya, both of Isehara, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Dec. 21, 1995, Ser. No. 576,356
Claims priority, application Japan, Dec. 26, 1994, 6-323334
Int. Cl.[6] F16H *3/56*
U.S. Cl. 475—144 4 Claims



1. A planetary gear automatic transmission comprising an input shaft, output shaft and gear train comprising a plurality of rotation elements which select a plurality of set gear ratios between said shafts, further comprising:

a one way clutch that allows a specific rotation element in said gear train to rotate in a forward direction, and prevents said element from rotating in a reverse direction, and

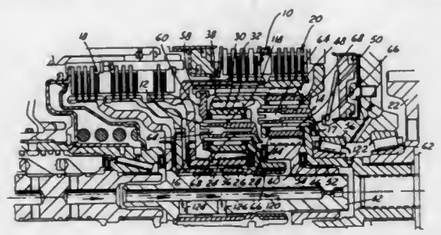
means for reducing an acceleration of said rotation element in said reverse direction when there is a gear shift such that the rotation of said predetermined rotation element changes from said forward direction to said reverse direction.

5,609,538

LUBRICATING DEVICE FOR A PLANETARY GEAR UNIT

Thomas D. Nogle, Troy; Steven A. Mikel, Farmington Hills, and Berthold Martin, Shelby Township, Macomb County, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 27, 1995, Ser. No. 562,866
Int. Cl.[6] F16H *57/04*
U.S. Cl. 475—159 6 Claims



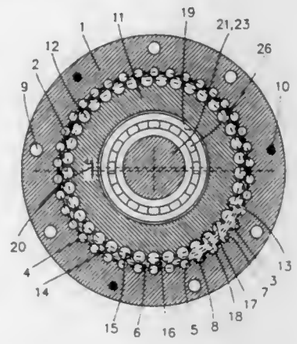
1. An improved device for lubricating bearings located between pinion gears and support shafts in a planetary gear unit in which the support shafts are tubular with end openings and the shafts are supported by a carrier member, the support shafts having a port extending therethrough for passage of oil from the interior of the shaft to an encircling bearing, whereby the pinion carrier member arranges the shafts in spaced relationship about the rotative center of the planetary gear unit, the improved bearing lubrication device, comprising: a generally cylindrical plug for each support shaft and having an end configuration adapted to be insertable into an end opening of a support shaft; each plug having a funnel portion integrally formed on an opposite end portion of said plug member, said funnel portion having a fan shaped configuration and adapted to extend exteriorly of the support shaft in fixed relationship with the pinion carrier member whereby oil passing radially outwardly from the central portion of the planetary gear unit can be intercepted by said funnel portion; said plug member having a channel formed to guide flow of intercepted oil to the port in the shaft; means flexibly connecting adjacent funnel portions together forming a one-piece integral lubricating device.

5,609,539

TRANSMISSION MEANS FOR TRANSMITTING A ROTARY MOVEMENT

Jozef Herstek, Bartosovce 97, 086 42 Hertnik, Slovakia, and Bartolomej Janek, Smrekova 7, 08001 Presov, Slovakia

PCT No. PCT/SK93/00005, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/16242, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 30, 1992, Ser. No. 492,097
Claims priority, application Czech Rep., Dec. 31, 1992, 04049-92
Int. Cl.[6] F16H *1/32*
U.S. Cl. 475—168 21 Claims



1. Transmission means for transmitting a rotary movement, having a driven toothed wheel (**1**) provided with an internal toothing (**2**), which is drivably connected to an external toothing (**12**) of a driving toothed wheel (**11**), the axes of the toothed wheels (**1, 11**) extending parallel to one another and having a constant spacing from one another, characterized in that the internal toothing (**2**) comprises first interchangeable entrainment means (**4**) and has a circular cross-section, and the external toothing (**12**) comprises second interchangeable entrainment means (**14**) and has a circular cross-section, wherein a first receiving means (**3**) and the first interchangeable entrainment means (**4**) have complementary cross-sections in their contact region, and wherein a second receiving means (**13**) and the second interchangeable entrainment means (**14**) have complementary cross-sections in their contact region.

5,609,540

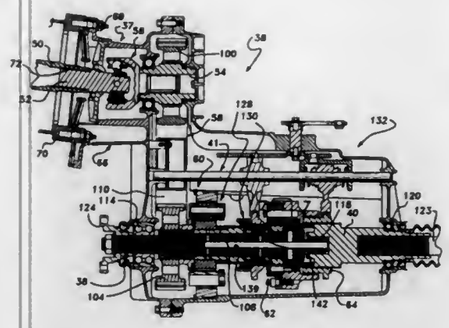
FULL-TIME DOUBLE OFFSET TRANSFER CASE

James S. Brissenden, Baldwinsville, and John D. Zalewski, Liverpool, both of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Aug. 17, 1995, Ser. No. 516,441
Int. Cl.[6] B60K *17/346;* F16H *48/30;37/08;48/10*
U.S. Cl. 475—202 25 Claims

1. A power transfer apparatus for transferring drive torque from a vehicular drivetrain to first and second drivelines, comprising:

a first input shaft rotatably driven by the drivetrain about a first rotary axis;



a second input shaft supported for rotation about a second rotary axis that is angled relative to said first rotary axis;

a constant velocity universal joint interconnecting said second input shaft for rotation with said first input shaft;

first and second output shafts respectively interconnected to the first and second drivelines, at least one of said first and second output shafts being supported for rotation about a third rotary axis that is offset from said second rotary axis;

an interaxle differential interconnecting said first and second output shafts for permitting speed differentiation therebetween so as to establish a Full-Time four-wheel drive mode; and

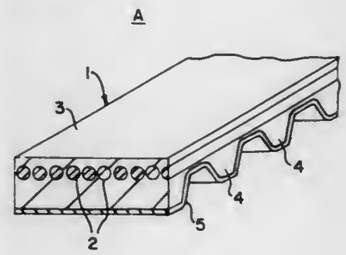
a torque transfer mechanism interconnecting said interaxle differential to said second input member for transferring drive torque to said first and second output shafts.

5,609,541

SYNCHRONOUS BELT USING RUBBERIZED FACING FABRIC

Hiroyuki Tachibana; Mitumori Kasada, and Kimichika Ohno, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Mar. 16, 1995, Ser. No. 406,185
Claims priority, application Japan, Mar. 17, 1994, 6-046668
Int. Cl.[6] F16G *1/28*
U.S. Cl. 474—205 4 Claims



1. A synchronous belt comprising:

a belt body having a backing rubber layer in which a plurality of cords are embedded in a longitudinal direction of belt and a large number of tooth rubber layers are integrally provided on the backing rubber layer at regular intervals in the longitudinal direction of belt; and

a facing fabric covering tooth faces of the tooth rubber layers of the belt body, said facing fabric being treated with a rubber composition in which hydrogenated acrylonitrile-butadiene rubber is mixed with N, N'-m-phenylenedimaleimide,

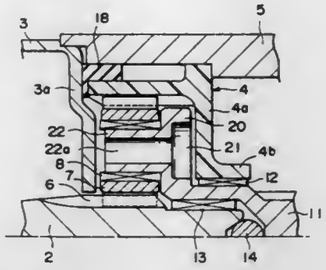
wherein at least said tooth rubber layers each contain as a main ingredient acrylonitrile-butadiene rubber to enhance adhesiveness between said facing fabric and said tooth rubber layers.

5,609,542

PLANETARY GEAR SPEED REDUCER AND MACHINING METHOD FOR PLANETARY GEAR SUPPORTING PIN FOR THE SAME

Kelichi Kusumoto; Kelichi Konishi; Shuzo Isozumi, and Akira Morishita, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,927
Claims priority, application Japan, Aug. 18, 1995, 7-210613
Int. Cl.[6] F16H *1/38*
U.S. Cl. 475—331 4 Claims



1. A planetary gear speed reducer comprising:

an internal gear;

an output rotary shaft which has a flange section formed as an integral part thereof at the rear end and which is supported by a bearing fitted to the internal periphery of a flange of said internal gear;

a rotary shaft which is supported by a bearing fitted in a recessed section of the rear internal peripheral surface of said output rotary shaft;

a plurality of supporting pins provided on the same circumference on the rear end surface of said flange section; and

a plurality of planetary gears which are rotatably mounted on said plurality of supporting pins in such a manner that they engage with said internal gear and a sun gear formed at the front end of said rotary shaft; wherein

said supporting pins are pressed out in hollow cylindrical shapes at the rear end surface of said flange section, and the front end surface of said flange section is provided with recessed sections which have an inside diameter larger than the outside diameters of said supporting pins and which are coaxial with said supporting pins.

5,609,543

CLUTCH OPERATIONAL CONTROL APPARATUS

Takashi Aoki, Fujimi; Masahiro Kanda, Matsuyama; Takahiro Matsuda, Hiki-gun, and Keisuke Katsuta, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,019
Claims priority, application Japan, Feb. 17, 1994, 6-043220
Int. Cl.[6] F16D *25/062*
U.S. Cl. 477—45 10 Claims

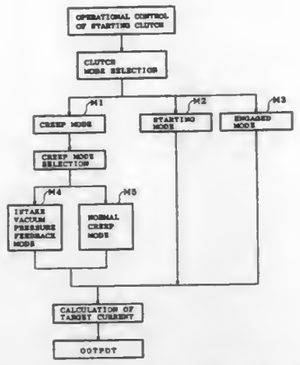
5. A clutch operational control apparatus for controlling an engaging force of a clutch provided in a power transmitting path from an engine through an automatic transmission to drive wheels with the power transmitting path being controlled by the clutch, comprising;

idling state detecting means for detecting whether the engine is in an idling state;

braking operation detecting means for detecting whether a vehicle brake is applied;

vacuum pressure detecting means for detecting an actual intake vacuum pressure of the engine;

range judging means for judging whether a shift position of a manual shift means of the automatic transmission is in one of a driving range and a non-driving range;

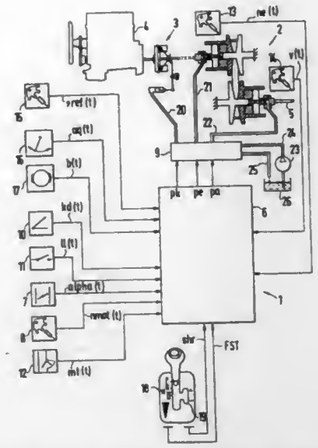


target intake vacuum pressure determining means for determining a target intake vacuum pressure based on the actual intake vacuum pressure when said range judging means judges that the shift position is at the non-driving range and further when said idling state detecting means detects that the engine is in the idling state;

creep-mode selection means for selecting a first creep-mode when said range judging means judges that the shift position is in the driving range and further when by said braking operation detecting means detects that the vehicle brake is not applied, and for selecting a second creep-mode when said range judging means judges that the shift position is in the driving range and further when said braking operation detecting means detects that the vehicle brake is applied;

the creep force transmitted through the clutch being larger in said first creep-mode than in said second creep-mode; and

clutch engaging force control means for controlling the clutch engaging force so that the actual intake vacuum pressure coincides with the target intake vacuum pressure when said second creep-mode is selected by said creep mode selection means.



an adapting device, operative in response to a detection of low speed driving, for reducing a highest preset transmission ratio when a preset rotational input speed is reached.

5,609,545

CONTROL SYSTEM FOR A SERVO ASSISTED GEARBOX

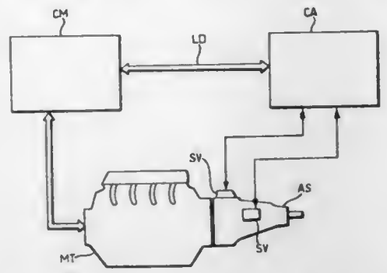
Cesare Sola, Valperga Caluso; Biagio Termine, Settimo Torinese, and Massimo Seminara, Novara, all of Italy, assignors to Magneti Marelli S.p.A., Milan, Italy

Filed Aug. 4, 1995, Ser. No. 511,597

Claims priority, application Italy, Aug. 5, 1994, TO94A0653

Int. Cl.[6] B60K *41/28*

U.S. Cl. 477—78 **12 Claims**



1. A control system for an automatic gearbox associated with a heat engine of a vehicle, including actuator devices operable to perform the operation of:

gear engagement and disengagement,

gear selection,

clutch engagement and disengagement,

the said heat engine including first processor means operable to control at least one operating parameter of the said heat engine,

and including second processor means, operatively connected to the said actuator means, wherein the said second processor means are connected in such a way as to exchange information with the said first processor means, and are configured in such a way as to:

control the said actuator means to perform a plurality of operations to effect a gear change of the said automatic gearbox,

transmit to the said first processor means, during at least part of the said operations, predetermined information for the purpose of controlling the said at least one operating parameter of the said heat engine, and

receive, from the said first processor means, detected information relating to the said at least one operating parameter of the said heat engine,

wherein the said at least one operating parameter comprises the torque delivered by the said heat engine, and

wherein another operating parameter comprises the speed of rotation of the said heat engine,

wherein the said plurality of operations, operable to effect a gear-change, comprise:

disengagement of a first gear,

selection of a second gear,

engagement of the said second gear, and

wherein the said second processor means are configured in such a way as to perform the following operations:

disengagement of the said first gear after having reduced the said delivered torque substantially to zero, and, subsequently:

transmission of predetermined information to the said first processor means for the purpose of modifying the said speed of rotation of the said heat engine in such as a way as substantially to equalise the speed of rotation of a primary shaft of the said gearbox with the speed of rotation of a secondary shaft of the said gearbox,

reception of detected information relating to the said speed of rotation from the said first processor means

selection of the said second gear

engagement of said second gear on the basis of the said detected information,

maintaining, at the same time, the said delivered torque substantially at zero.

5,609,544

CONTROL DEVICE AND CONTROL PROCESS FOR AN INFINITELY VARIABLE TRANSMISSION

Patrick Lardy, Weil der Stadt, and Joseph Petersmann, Wimsheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Nov. 13, 1995, Ser. No. 558,288

Claims priority, application Germany, Nov. 24, 1994, 44 41 878.7

Int. Cl.[6] F16H *59/06;59/36;* **B60K** *41/16*

U.S. Cl. 477—46 **20 Claims**

1. In a control device for an infinitely variable motor vehicle transmission which simulates a stepped transmission by selecting desired transmission ratios from among a group of preset transmission ratios, apparatus for adjusting a selected desired transmission ratio, said apparatus comprising:

a recognition device for detecting a state of low speed driving;

down-shift detection means for detecting a down-shift in said automatic transmission control device;

constant speed cruising control means for adjusting a driving force of said engine based on a difference between said detected vehicular speed and a target cruising speed by controlling said actuator, using an actuator adjustment amount, to make said vehicular speed coincide with said target cruising speed;

down-shift adjustment amount storage means for storing an actuator adjustment amount generated by said constant speed cruising control means when said down-shift detection means detects a down-shift;

up-shift prohibition means for prohibiting a regular up-shift of said automatic transmission control device after said down-shift detection means detects a down-shift; and

up-shift release means for releasing an up-shift prohibition of said up-shift prohibition means when said actuator adjustment amount generated by said constant speed cruising control means drops by an amount, not less than a first predetermined amount, from said actuator adjustment amount stored by said down-shift adjustment amount storage means.

5,609,546

VEHICULAR CONSTANT SPEED CRUISING CONTROL DEVICE

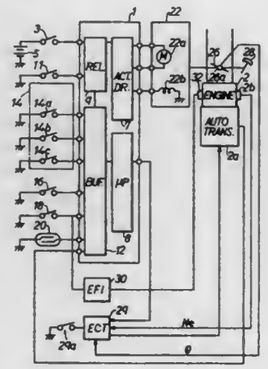
Yoshinari Torii, Gamagori, and Toshihide Nakashima, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 26, 1995, Ser. No. 548,878

Claims priority, application Japan, Oct. 27, 1994, 6-264154

Int. Cl.[6] B60K *41/04*

U.S. Cl. 477—108 **18 Claims**



1. A vehicular constant speed cruising control system for a vehicle which has an automatic transmission control device that automatically shifts gears of a transmission in said vehicle, said vehicular constant speed cruising control system comprising:

vehicular speed detection means for detecting a vehicular speed of said vehicle;

an actuator for adjusting a throttle opening of an engine of said vehicle;

5,609,547

ENGINE OVERRUN PREVENTING SYSTEM FOR A VEHICLE

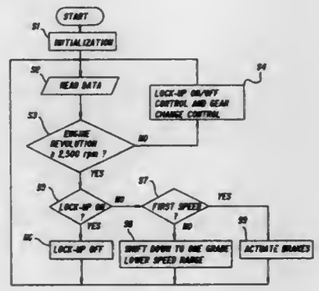
Shigenori Matsushita; Shigeru Yamamoto; Shu huai Zhang; Satoru Nishita, and Kazushi Nakata, all of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,869

Claims priority, application Japan, Oct. 20, 1993, 5-262639; Sep. 22, 1994, 6-227840

Int. Cl.[6] B60K *41/04*

U.S. Cl. 477—110 **8 Claims**



1. An engine overrun preventing system for use in a vehicle, comprising:

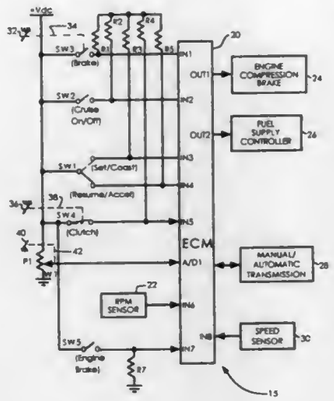
(a) overrun detector means for detecting the overrun of an engine; and

(b) overrun control means for preventing the overrun of the engine when the overrun of the engine is detected by the overrun detector means, by actuating a brake to reduce vehicle speed.

5,609,548
APPARATUS AND METHOD FOR COMMANDING A GEAR AFTER AN ABORTED SHIFT ATTEMPT IN CONTROLLING A MANUAL-AUTOMATIC TRANSMISSION

Gregory R. White, Columbus; Bryan S. Gatewood, Westport; Mark L. Wilson, Columbus, all of Ind.; Peter J. Griffen, Richmond, United Kingdom; Richard E. Kleine, and Larry R. Webber, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 7, 1995, Ser. No. 488,260
Int. Cl.[6] B60K *41/08*
U.S. Cl. 477—124 **20 Claims**



1. A method for commanding a transmission gear after an aborted automatic shift attempt in a vehicle having an engine with a throttle capable of being enabled for operator control and of being inhibited from operator control, and a manual/automatic transmission having a plurality of manual and automatically selectable gears, wherein the aborted automatic shift attempt includes inhibiting throttle control by the operator, disengaging the transmission from the engine, controlling the engine speed to a synchronous RPM value at which an ensuing automatic shift should take place, and commanding one of the plurality of automatically selectable gears, the method comprising the steps of:

(1) performing steps (2)–(4) if the shift was aborted because the transmission did not disengage from the engine within a first predetermined time period;

(2) commanding the lowest of the automatically selectable gears if the aborted automatic shift attempt was an upshift;

(3) commanding the highest of the automatically selectable gears if the aborted automatic shift attempt was a downshift; and

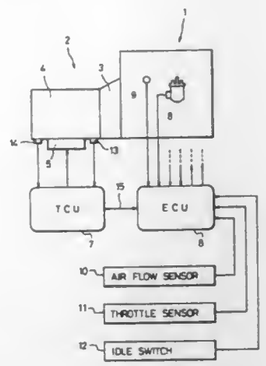
(4) enabling throttle control by the operator.

5,609,549
SPEED CHANGE CONTROL APPARATUS FOR AN AUTOMATIC TRANSMISSION

Katsutoshi Usuki, Kyoto; Kenjiro Fujita, Kusatsu, and Katsuhiro Hatta, Uji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,946
Claims priority, application Japan, Nov. 16, 1994, 6-282031
Int. Cl.[6] F16H *61/12*
U.S. Cl. 477—125 **3 Claims**

1. A speed change control apparatus for an automatic transmission in which a determination is made by power-on/off determining means as to whether an internal combustion engine coupled to the automatic transmission is in a power-on state or in a power-off state and in which required one of upshift control and downshift control is executed in accordance with a control rule corresponding



to a result of the determination made by the power-on/off determining means, comprising:

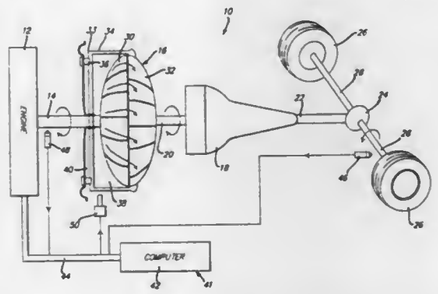
fault diagnosing means for determining the presence/absence of a fault of the power-on/off determining means; and wherein:

in a case where said fault diagnosing means determines a fault of the power-on/off determining means, said control apparatus carries out a power-on upshift control by regarding the internal combustion engine as being in the power-on state when upshifting is requested, and carries out a power-off downshift control by regarding the internal combustion engine as being in the power-off state when downshifting is requested.

5,609,550
METHOD FOR DIAGNOSING A TORQUE CONVERTER'S LOCK-UP MECHANISM

Rajiv Saxena, Livonia; John R. Boldt, Troy; Samuel Campbell, III, Southfield; Himshweta R. Amin, Novi, and William O. Robinson, Detroit, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 17, 1995, Ser. No. 425,012
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—166 **16 Claims**



1. A method of diagnosing a lock-up mechanism for a torque converter in an automatic transmission of an automotive vehicle, said method comprising the steps of:

sensing vehicle speed and engine speed;

calculating a vehicle speed to engine speed ratio based on the sensed vehicle speed and engine speed;

knowing when the torque converter transitions between unlock and lock are initiated;

determining whether the calculated ratio is greater than a predetermined threshold when the torque converter transitions between unlock and lock; and

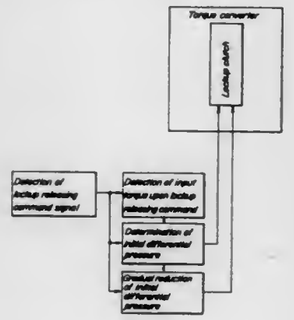
concluding that a failure of the lock-up mechanism has occurred if the calculated ratio is not greater than the predetermined threshold within a predetermined time since transition of the torque converter; and

announcing a torque converter malfunction based on the concluded failure of the lock-up mechanism.

5,609,551
LOCKUP CONTROL SYSTEM FOR TORQUE CONVERTER

Hiromasa Sakai, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 12, 1995, Ser. No. 570,887
Claims priority, application Japan, Dec. 12, 1994, 6-307420
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—168 **5 Claims**



1. A lockup control system for a torque converter including an input element, an output element and a lockup clutch, and being operative selectively in a converter mode in which rotation of the input element is transferred to the output element via a working fluid within the torque converter, and in a lockup mode in which the lockup clutch is engaged by a differential pressure across the clutch for directly coupling the input and output elements, wherein said control system comprises:

lockup releasing command detecting means for detecting a lockup releasing command for releasing the direct coupling of the input and output elements;

input torque detecting means for determining a torque converter input torque when said lockup releasing command signal is detected;

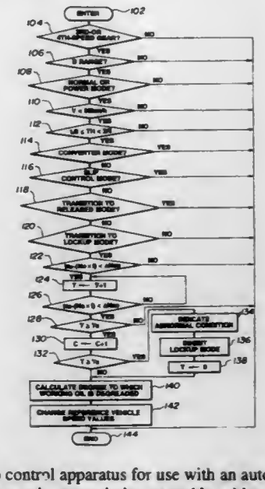
initial differential pressure setting means for setting the differential pressure across the lockup clutch upon detection of said lockup releasing command signal, so as to be an initial differential pressure which corresponds to the torque converter input torque when said lockup releasing command signal is detected; and

differential pressure gradual reduction means for gradually reducing the differential pressure across the lockup clutch from said initial differential pressure to zero, for a predetermined duration from detection of said lockup releasing command signal.

5,609,552
LOCKUP CLUTCH CONTROL RESPONSIVE TO DEGRADED ATF FLUID CONDITION

Masayuki Furuya, Sagamihara, and Hirofumi Michioka, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 26, 1995, Ser. No. 378,265
Claims priority, application Japan, Jan. 31, 1994, 6-009521; Jan. 31, 1994, 6-009522
Int. Cl.[6] F16H *61/14;47/06*
U.S. Cl. 477—174 **54 Claims**



1. A lockup control apparatus for use with an automotive vehicle having an automatic transmission operable with a working fluid, the automatic transmission being coupled to an engine through a torque converter operable in a lockup mode where a mechanical connection is completed between the engine and the automatic transmission in response to a lockup command signal, the apparatus comprising:

sensor means sensitive to a speed of travelling of the vehicle for producing a sensor signal indicative of a sensed vehicle speed;

lockup command production means for producing the lockup command signal when the sensed vehicle speed exceeds a reference value;

degraded working fluid detection means for monitoring the torque converter operating in response to the lockup command signal to detect a degree to which the working fluid is degraded;

control signal production means for producing a control signal when the detected degree exceeds a predetermined value; and

control means responsive to the control signal for increasing the reference vehicle speed value.

5,609,553
CERAMIC ROLLER FOR ESA PRINTING AND COATING

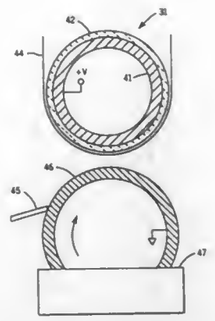
Bruce E. Hyllberg, Gurnee, Ill., assignor to American Roller Company, Union Grove, Wis.

Continuation-in-part of Ser. No. 973,447, Nov. 9, 1992, and a continuation-in-part of Ser. No. 171,884, Dec. 21, 1993, which is a continuation of Ser. No. 3,156, Jan. 12, 1993, abandoned.
This application May 3, 1994, Ser. No. 237,485
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—53 **10 Claims**

1. An electrostatically chargeable roller usable in a machine for coating or printing, the roller comprising:

a cylindrical roller core of a fiber-reinforced composite material;

a ceramic semiconductive layer bonded to the cylindrical roller core;



wherein the ceramic semiconductive layer is formed of at least one plasma-sprayed coating of ceramic material the resistance of which is controlled by plasma spraying of the ceramic material on the cylindrical roller core to form a semiconductive ceramic layer; and

wherein the electrical resistance of the ceramic semiconductive layer is further controlled by the manner in which the ceramic material is plasma-sprayed.

5,609,554

CONDUCTIVE ROLL

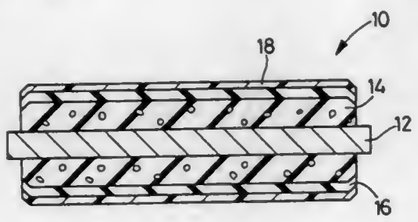
Saburou Hayashi; Keita Shiraki, and Takafumi Yamamoto, all of Kasugai, Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Apr. 5, 1995, Ser. No. 416,638

Claims priority, application Japan, Apr. 22, 1994, 6-084692

Int. Cl.[6] G03G *15/20*

U.S. Cl. 492—56 **15 Claims**



1. A conductive roll comprising:

a conductive shaft;

a rubber foam layer formed on an outer circumferential surface of said conductive shaft; and

a semi-conductive solid rubber layer provided radially outwardly of said rubber foam layer.

5,609,555

FILM FOR PACKAGING HAVING OXYGEN BARRIER CHARACTERISTICS

Chi-Long Lee, and Ming-Hsiung Yeh, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 124,120, Sep. 20, 1993, Pat. No. 5,370,937. This application Jul. 22, 1994, Ser. No. 279,457

Int. Cl.[6] B31B *49/04*

U.S. Cl. 493—210 **20 Claims**

1. A process for using a multi-layer film in a package comprising the steps of

1) laminating or adhering a multi-layer film on a skeletal layer and

2) forming the skeletal layer into a package, wherein:

said multi-layer film is selected from the group consisting of (I), (II) and (III), where:

(I) is a multi-layer film comprising:

a core layer of polyvinyl alcohol,

an intermediate layer of a plastic substrate disposed on each side of said core layer, and

an outer layer of a silicone resin of sufficient thickness to protect the polyvinyl alcohol from moisture, said silicone resin disposed on each respective intermediate layer,

(II) is a multi-layer film comprising:

a core layer of polyvinyl alcohol,

an intermediate layer of a silicone resin of sufficient thickness to protect the polyvinyl alcohol from moisture, said silicone resin disposed on each side of said core layer, and

an outer layer of a plastic substrate disposed on each respective intermediate layer, and

(III) is a multi-layer film comprising:

a first outer layer of a plastic substrate,

a first intermediate layer of a silicone resin disposed on said first outer layer,

a core layer of polyvinyl alcohol disposed on said first intermediate layer,

a second intermediate layer of a plastic substrate disposed on said core layer, and

a second outer layer of a silicone resin disposed on said second intermediate layer,

wherein said silicone resin disposed on said first and second intermediate layers is of sufficient thickness to protect the polyvinyl alcohol from moisture, and wherein the silicone resin of (I), (II) and (III) is derived from a silane solution having the following reactants:

(a) a silane having the formula:



where:

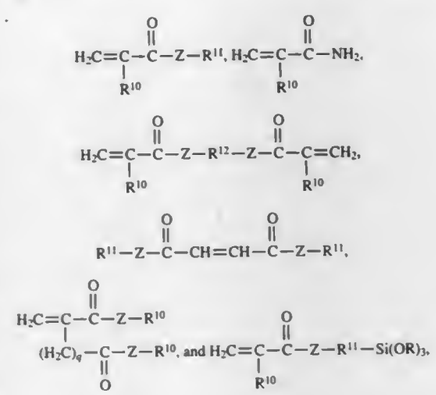
R is a hydrocarbon radical having from one to four carbon atoms inclusive,

R^5, R^6, R^8 are selected from the group consisting of hydrogen, methyl and ethyl radicals, and at least one of R^5, R^6, or R^8 is a hydrogen radical,

R^7 is a hydrocarbon radical having from two to four carbon atoms inclusive,

R^9 is a hydrocarbon radical having from three to six carbon atoms inclusive,

(b) an acrylate individually selected from the group consisting of:



where:

R is as defined above,

R^{10} is a hydrogen or methyl group,

R^{11} is an alkyl or alkenyl group,

R^{12} is an alkyl group, an alkenyl group, or a $-[(CH_2)_n-O]_x-(H_2C)_n$ group, where each n is from 2 to 4 inclusive, and x is from 1 to 6,

q is 1 or 0, and

Z is oxygen, NH, NR, or NR^{11} where R is a hydrocarbon radical having from one to four carbon atoms inclusive, and R^{11} is an alkyl or alkenyl group, and

(c) a solvent.

5,609,556

METHOD AND APPARATUS FOR MANUFACTURING BAGS WITH STRAP-SHAPED CARRYING HANDLES

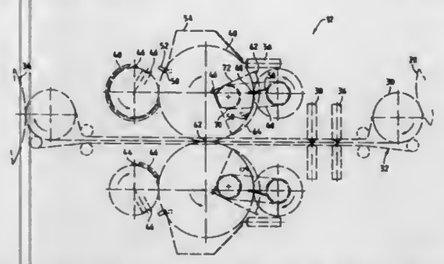
Fred Rostalski, Bielefeld; Diethard Obermeier, Bad Salzuflen; Ewald Steinweg, Borgholzhausen; Wilfried Kolbe, Gülzow, and Klaus Schirrich, Bielefeld, all of Germany, assignors to Fischer & Krecke GmbH & Co., Bielefeld, Germany

Filed Oct. 21, 1994, Ser. No. 328,288

Claims priority, application Germany, May 27, 1994, 44 18 470; Sep. 6, 1994, 94 14 380 U

Int. Cl.[6] B31B *29/86;31/86*

U.S. Cl. 493—226 **6 Claims**



1. A method for manufacturing bags with strap shaped handles, each of said handles comprising a handle portion protruding beyond the bag while the bag is in use and having two attachment portions of respective handle legs to be bonded to an outside face of the bag, comprising the following steps:

continuous feed of endless tube stock as starting material for bag production to a bag making machine;

folding handle legs over such that said handle legs are bent over forwardly in a tube stock transport direction, said handle legs being formed partially of said two attachment portions and partially of said handle portion;

assembling and bonding only said two handle attachment portions to an outside face of the tube stock during continuous transport;

detachable tacking of the folded over handle legs to at least one of:

the tube stock, and

the attachment portions;

cutting the tube stock into sections for forming individual bags; and

folding and sealing a bag bottom of each section inside the bag making machine.

5,609,557

PAPER PALLET WITH AN IMMPROVED CONFIGURATION

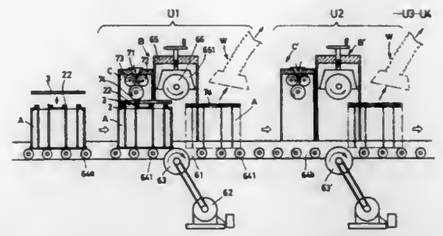
Tan Y. Te, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan

Continuation-in-part of Ser. No. 246,188, May 19, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 637,300

Int. Cl.[6] B31B *1/14;* **B65D** *19/00*

U.S. Cl. 493—344 **8 Claims**

1. A pallet forming system for forming a pallet from a plurality of cardboard panels comprising:



(a) a cutting device for the extruding portions of respective cardboard panels of said plurality of cardboard panels therethrough to form a plurality of extrusion members having a predetermined peripheral contour, said cutting device sequentially accumulating said extrusion members in a peripherally aligned manner;

(b) an extruding mechanism operably coupled to said cutting device for pressing said respective cardboard panels into engagement with said cutting device for extruding said extrusion members thereby; and,

(c) adhesive application means coupled to said extruding mechanism for applying before extruding thereof an adhesive composition to said respective cardboard panels.

5,609,558

WASTE-TREATING MATERIAL

Taiichiro Sasae; Tomio Nishida, both of Kyoto; Masakazu Uekita, and Takashi Funahashi, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, and En-Tech Research Institute, Inc., Kyoto, both of Japan

Filed Mar. 23, 1993, Ser. No. 35,577

Claims priority, application Japan, Dec. 16, 1992, 4-355104

Int. Cl.[6] B09B *3/00;5/00*

U.S. Cl. 588—257 **9 Claims**

1. A material for treatment of waste containing at least one hazardous material selected from the group consisting of mercury, arsenic, copper, lead, nickel, cadmium, chromium, and cyanide, which comprises cement and at least one reducing metal in a form of powder or grain and capable of reducing metals of said hazardous material, the reducing metal being from 5 to 75 wt. % of the material for treatment of waste.

6. A method for treatment of waste containing at least one hazardous material selected from the group consisting of mercury, arsenic, copper, lead, nickel, cadmium, chromium, and cyanide, which comprises mixing the waste with a waste treating material including cement and at least one reducing metal in a form of powder or grain capable of reducing metals of the hazardous material, and solidifying the mixture by curing.

5,609,559

DEVICE FOR FEMALE PATIENTS TO PREVENT INVOLUNTARY LOSS OF URINE

Howard B. Weitzner, 6729 NW. 29 Way, Fort Lauderdale, Fla. 33309

Continuation-in-part of Ser. No. 441,089, May 15, 1995, abandoned. This application Oct. 26, 1995, Ser. No. 548,642

Int. Cl.[6] A61F *2/00*

U.S. Cl. 600—29 **7 Claims**

1. An intra-vaginal device for controlling involuntary loss of urine comprising:

an anterior inflatable body including an outer wall structure and a hollow interior air chamber structured to receive a charge of pressurized air to expand said anterior inflatable body from a relaxed, at least partially collapsed state to an operable inflated state to define an enlarged diameter thereof, said



anterior inflatable body including an air passage opening disposed in communication with said air chamber,

pressure application means on said anterior inflatable body for applying concentrated pressure to an abutting surface when said anterior inflatable body is inflated to said operable state, said pressure application means including at least one bulge segment protruding from said outer wall structure,

a posterior portion integral with and extending from said anterior inflatable body and having an elongate configuration with a reduced diameter relative to said enlarged diameter of said anterior inflatable body and terminating at a rounded distal end to promote insertion and passage of said posterior portion and said anterior inflatable body within the vagina,

an air passage conduit extending from said air passage opening and terminating at a free distal end, said air passage conduit being structured and disposed to facilitate air flow therethrough into and out from said air chamber, and

closure means for selectively and controllingly blocking air flow between said air chamber and said distal end of said air passage conduit to thereby capture said charge of pressurized air within said air chamber, maintaining said anterior inflatable body in said operable inflated state.

5,609,560

MEDICAL OPERATION DEVICE CONTROL SYSTEM FOR CONTROLLING A OPERATION DEVICES ACCESSED RESPECTIVELY BY ID CODES

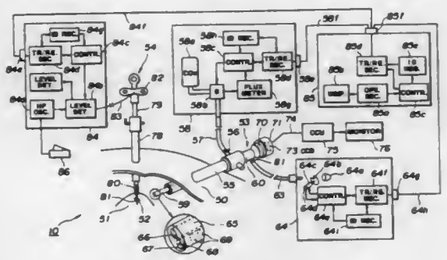
Yoshito Ichikawa, Ogose-machi; Satoshi Takemoto, Oume, and Kouji Tanikawa, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokoyo, Japan

Continuation of Ser. No. 107,172, Aug. 17, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,527

Claims priority, application Japan, Aug. 19, 1992, 4-220479

Int. Cl.[6] A61B *1/00;* **G06F** *15/82;* **G05B** *23/00*

U.S. Cl. 600—101 **24 Claims**



1. A medical operation control system, comprising:

a first operation means having a first communication port for performing bidirectional communication, a first ID recognizing means for recognizing whether agreement is made with a first ID information, a first treatment section means for performing treatment operation, and a first control section means for controlling operation of said first treatment section in accordance with recognition results due to said first ID recognizing section means, with respect to information which is received through said first communication port;

a second operation means having a second communication port capable of performing bidirectional communication, a second ID recognizing section means for recognizing whether agreement is made with second ID information, a second treatment section means for performing treatment operation, and a second control section means for controlling operation of said second treatment section means in accordance with recognition results due to said second ID recognizing section means, with respect to information which is received through said second communication port; and

a concentrated control means for: (a) controlling operation of said first and second treatment section means, (b) performing bidirectional communication with said first and second communication ports, and (c) transmitting ID information corresponding to said first and second ID information, wherein said concentrated control means further stores reference information for interpreting said ID information and operational information for controlling operations of said first and second treatment section means.

5,609,561

ELECTRONIC TYPE ENDOSCOPE IN WHICH IMAGE PICKUP UNIT IS DISMOUNTED TO EXECUTE DISINFECTION/STERILIZATION PROCESSING

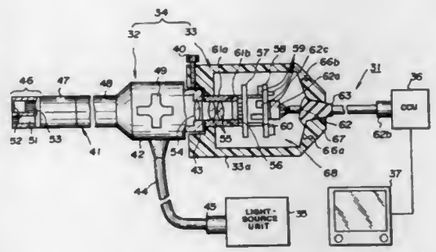
Masao Uehara; Katsuyuki Saito, both of Hachioji; Masahito Goto, Oi-machi; Shinji Yamashita, Hachioji; Akinobu Uchikubo, Ome; Akihiro Miyashita, Hachioji; Takehiro Nakagawa, Hachioji; Kazunari Kobayashi, Hachioji; Akira Murata, Hino; Mototsugu Ogawa, and Seiji Yamaguchi, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 936,015, Aug. 27, 1992, abandoned. This application Dec. 22, 1994, Ser. No. 362,731

Claims priority, application Japan, Jun. 9, 1992, 4-149705; Jun. 10, 1992, 4-150927; Jun. 10, 1992, 4-150928; Jun. 10, 1992, 4-150930

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—112 **16 Claims**



1. An electronic type endoscope comprising:

an endoscope body having an elongated inserting section;

illuminating-light projection means for projecting an illuminating light from a distal end portion of said inserting section;

an objective optical system provided at the distal end portion of said inserting section for imaging a subject illuminated by said illuminating light;

an image pickup unit provided with an image pickup element for photoelectrically transferring an optical image based on said objective optical system, to generate an image pickup signal;

a pickup unit receiving body which receives and fully encloses said image pickup unit including a first detaching means located on a distal end of said pickup unit receiving body for detachably mounting said pickup unit receiving body on said endoscope body; and

a second detaching means for detaching said image pickup unit from said pickup unit receiving body, said second detaching means being located on a proximal end of said pickup unit receiving body wherein said image pickup unit is detachable from said pickup unit receiving body via said second detaching means while said pickup unit receiving body is mounted on said endoscope body,

wherein said second detaching means forms a portion of an outer surface of said proximal end of said pickup unit receiving body when attached to said pickup unit receiving body.

5,609,562

VISUALLY DIRECTED TROCAR AND METHOD

Steven G. Kaali, Dobbs Ferry, N.Y., assignor to Worldwide Optical Trocar Licensing Corporation, Dobbs Ferry, N.Y.

PCT No. PCT/US93/11109, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/11040, PCT Pub. Date May 26, 1994

PCT Filed Nov. 16, 1993, Ser. No. 433,445

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—114 **16 Claims**



1. A surgical penetration device comprising:

a) an inflexible hollow tubular member,

b) a light transmission and imaging member formed essentially of transparent material provided at one end of said hollow tubular member to project light and receive light images,

c) a piercing edge cooperable with said light transmission and imaging member for piercing human flesh to permit surgical insertion of said light transmission and imaging member through human flesh into a body cavity,

d) said light transmission and imaging member being formed separately of said hollow tubular member and affixed to said one end of said hollow tubular member to extend beyond said one end of said hollow tubular member, said light transmission and imaging member having a portion that is of diminishing cross-sectional magnitude the further distant said portion is from said one end of said hollow tubular member, and

e) an opposite end of said hollow tubular member being open and the open end and the inside space of said hollow tubular member being of a predetermined size to permit detachable slidable insertion of a conventional lighting member and a conventional light image receiving member in the form of a conventional light telescope into the inside space from the open end of the hollow tubular member, and slidable removal of the conventional light telescope from the open end of the hollow tubular member, whereby said light transmission and imaging member is cooperable with said conventional light telescope when said conventional light telescope is inserted in said hollow tubular member.

5,609,563

ENDOSCOPE APPARATUS PROVIDED WITH CURVATURE AND FLUID FLOW CONTROL

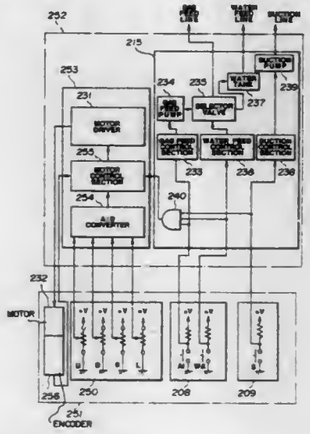
Akira Suzuki; Hiroki Hibino, both of Hachioji; Yoshikatsu Nagayama, Sagamihara, and Motokazu Nakamura, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 990,483, Dec. 11, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,528

Claims priority, application Japan, Dec. 12, 1991, 3-328999; Feb. 24, 1992, 4-036349; May 21, 1992, 4-129073; Aug. 5, 1992, 4-209230

Int. Cl.[6] A61B *1/005;1/015*

U.S. Cl. 600—118 **14 Claims**



1. An endoscope comprising:

an elongated inserting section including a curvable curvature portion formed adjacent to a distal end of said inserting section, wherein said curvature portion is curvable in more than two directions;

illuminating-light outgoing means for projecting an illuminating light from said distal end of said inserting section;

an objective optical system formed at said distal end of said inserting section, for observing an object illuminated by said illuminating light;

a fluid line having an opening thereof formed adjacent to said distal end of said inserting section, for executing at least one function of outflow and inflow of fluid with respect to said opening;

an operating section formed at a proximal end of said inserting section, and provided with a grasping portion capable of being grasped by a hand of an operator;

a cross-pad having a plurality of touch-actuated pad sections for controlling curvature in a plurality of directions including one upward-direction curvature indicating touch-actuated pad section being disposed nearest the inserting section of the endoscope in said plurality of touch-actuated pad sections, said cross-pad being mounted on a first surface of said operating section for executing a curvature operation in an indicated direction selectable from said more than two directions to curve said curvature portion in said direction, wherein said upward-direction curvature indicating touch-actuated pad section indicates curving of said curvature portion in a direction corresponding to an upward direction of afield of view of said objective optical system, and wherein said first surface is inclined with respect to an adjacent surface of said grasping portion located on the same side of said operating section as said first surface;

at least one fluid control operating element arranged on a second surface of said operating section, and arranged at a position substantially opposed to said cross-pad mounted on said first surface for executing operation to control at least one function of the outflow and the inflow of said fluid;

detecting means for detecting whether or not said cross-pad and said fitlid control operating element are simultaneously operated and

inhibiting means for inhibiting operation of said curvature section when said cross-pad is activated whenever said detecting means detects that said cross-pad and said fitlid control operating element are simultaneously operated.

5,609,564

SPECULUM COVER, METHOD OF MANUFACTURING SAME AND COVER ACCOMMODATING CASE

Shigeru Makita; Yoshihiko Sano; Hiroyuki Ota, all of Kyoto, Japan, and Yasushi Nakamura, Irvine, Calif., assignors to Omron Corporation, Kyoto, Japan

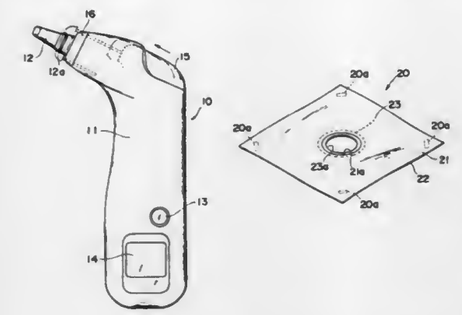
PCT No. PCT/JP93/00406, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/19662, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1993, Ser. No. 343,440

Claims priority, application Japan, Apr. 1, 1992, 4-079515; Apr. 6, 1992, 4-083517

Int. Cl.[6] A61B *1/26*

U.S. Cl. 600—200 **8 Claims**



1. A sensor probe cover comprising:

a first film formed to have a first hole at a central portion thereof;

a fitting ring fixed to a periphery of the first hole of said first film and having a second hole configured to be fitted on a sensor probe to which the cover is to be attached;

a second film overlapping one side of said first film and bonded to said first film at a plurality of locations and not bonded to said fitting ring,

wherein a portion of said second film that is larger in unstretched surface area than an area of the second hole and is not bonded to said first film is available to pass through said second hole to cover a sensor probe without substantial stretching.

5,609,565

ARTICULATED TOOL-HOLDING ARM

Katsushige Nakamura, Tokyo, Japan, assignor to Mitaka Kohki Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 512,225

Claims priority, application Japan, Sep. 8, 1994, 6-187614

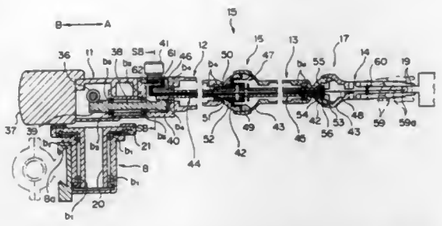
Int. Cl.[6] A61B *17/02*

U.S. Cl. 600—229 **4 Claims**

1. An articulated-tool holding arm comprising:

a plurality of tubular arms connected to one another at joints each consisting of an outer ball and an inner ball slidably fitted therein;

a handle for holding a tool, attached to the foremost end of the thus connected tubular arms;



pivotal axes penetrating said arms such that said axes may be connected to one another at the end portions in said joints, respectively, to be able to transmit turning motions to one another;

a clutch disposed to either said inner ball or said outer ball in each joint, said clutch being pressed by a pressure spring to be brought into contact with the other ball; and

a movable barrel engaged with an external thread formed near the end portion of each pivotal axis;

wherein each of said pivotal axes is designed to be normally urged to turn in one direction by an urging means to allow said movable barrel to press said pressure spring; whereas the pressure applied to said pressure spring by said movable barrel is adapted to be releasable by turning said pivotal axis by a driving means in the opposite direction against the urging force of said urging means.

5,609,566

APPARATUS FOR TREATMENT, PHYSICAL THERAPY, REHABILITATION, RECREATION AND TRAINING OF SPINE AND OTHER HUMAN BODY PARTS

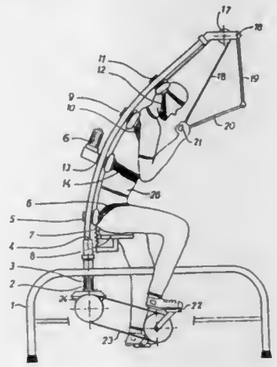
Milenko Pupovic, F. Filipovica Str. No. 40, 11400 Mladenovac, Yugoslavia

Filed Oct. 26, 1993, Ser. No. 141,655

Claims priority, application Yugoslavia, Oct. 27, 1992, 937/92

Int. Cl.[6] A61H *1/00*

U.S. Cl. 601—23 **6 Claims**



4. A therapeutic exercising device comprising:

a) a base member;

b) an elongated arched member having first and second ends, said arched member is movably find to said base member at said first end and generally extends transverse to said base member, said arched member is adapted to selectively rotate at said first end and thereby move said second end through an arcuate path of travel;

c) a drive device, said drive device operably associated with said arched member to cause movement thereof;

d) a fixing member for movably securing the torso of a user to said arched member so that it is positioned substantially

parallel thereto whereby selective rotation of said arched member will cause the torso of a user to bend therewith and therapeutically manipulate the user's spine;

e) a stretching device operatively associated with said fixing member for causing the torso to be selectively extended along the longitudinal axis of said arched member thereby stretching the same;

f) said base member includes a seat for supporting a user in a sitting position member, said seat positioned adjacent said arched member first end; and

g) tension device extending between said fixing member and said seat to provide tension resistance for said stretching device.

5,609,567

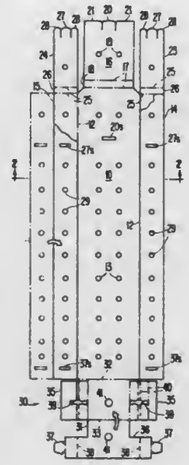
DISPOSABLE TRACTION SPLINT

Thomas P. Kennedy, Key Biscayne, Fla., and Howard Schiffman, New City, N.Y., assignors to Effie Technologies,, Cocoa Beach, Fla.

Filed Mar. 16, 1995, Ser. No. 405,223

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—5 **4 Claims**



1. A temporary traction splint formed from a sheet of material comprising:

a central panel having parallel side fold lines along opposite side edges thereof and parallel distal and proximal end fold lines along opposite end edges thereof;

first and second side panels joined to said central panel at said side fold lines,

each said side panel including first and second layers of material glued together,

said side panels being foldable along said side fold lines to positions perpendicular to said central panel, thereby forming a U-shaped receiver,

each said side panel having a fold line at a proximal end thereof;

a first extension panel joined to said proximal end of said central panel at said proximal end fold line;

second and third extension panels joined to said side panels at said end fold lines, said first, second and third extension panels being foldable against their respectively joined panels, each said extension panel having latching means for holding said extension panel in its folded position; and

a foot plate joined to a distal end of said central panel at said distal end fold line, said foot plate comprising

a central portion including two layers of material glued together and being foldable to a position perpendicular to said central panel and said side panels,

first and second flaps extending laterally from said central portion and having means for latching said flaps in said folded position, and

third and fourth flaps extending laterally from said central portion, each of said third and fourth flaps having a plurality of fold lines to permit folding said third and fourth flaps toward each other to form triangular polygonal supports, each said polygonal support having a base portion resting against said end plate and having means defining a slot for receiving an end of a tension rod, whereby a limb of a patient can be held in traction between said proximal end of said splint and a portion of said tension rod between said polygonal supports.

5,609,568

ANTERIOR FLOOR-REACTION TYPE ANKLE-FOOT ORTHOSIS

Brian Andrews, Riverbend, Canada, assignor to University of Alberta, Edmonton, Canada

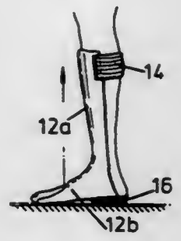
PCT No. PCT/GB93/01354, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/00083, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 29, 1993, Ser. No. 360,680

Claims priority, application United Kingdom, Jun. 30, 1992, 9113876

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—28 **10 Claims**



1. A floor-reaction orthosis comprising a below-knee moulded anterior floor-reaction orthosis shell proportioned and dimensioned to be in close proximity to the anatomical limbs, said shell having a rigid leg portion and a foot portion, said leg portion fitting over the anterior surface of the limb and adapted to permit the limb to pull away from being in contact with the leg portion when in a standing state, and the foot portion being coupled to the leg portion adapted to wrap around the foot, said leg portion having an elastic strap coupled thereto adapted to fit around the calf of the limb, said shell being moulded for a single ankle position of plantarflexion; and a separate heel means on said foot portion for providing correct vertical alignment of the subject in orthosis whereby a predetermined ground reaction vector position is achieved.

5,609,569

DRESSING FOR AXILLA AND UPPER TORSO

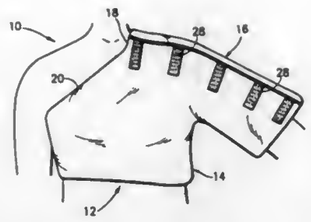
Colin O'D. Offenhartz, Chappaqua, N.Y., assignor to Exu-Dry Wound Care Products, Inc., Bronx, N.Y.

Filed Apr. 24, 1995, Ser. No. 427,197

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—61 **18 Claims**

1. A dressing for coveting the axilla and upper torso areas of a patient comprising a sheet of conformable material, said sheet of conformable material including a rear back portion which covers at least a part of the patient's back, said rear back portion forming a



first sleeve portion, and at least one front chest portion which covers at least a part of the patient's chest, said front chest portion forming a second sleeve portion, first connecting means for connecting said front chest portion and rear back portion to secure the dressing about the torso of the patient, said first and second sleeve portions together forming a generally fitted dressing at least for the upper arm which includes at least a partial length tubular sleeve to only receive and fully surround at least a portion of an arm of the patient; and second connecting means along said tubular sleeve for releasably securing said first and second sleeve portions and for selectively opening said sleeve to expose the shoulder, axilla and upper torso of the patient when said connecting means secures said first and second sleeve portions, whereby the dressing can be quickly and safely placed on and removed from the patient with minimum inconvenience and trauma to the injuries sustained by the patient and the patient with minimum inconvenience and away from the region of the torso.

5,609,570

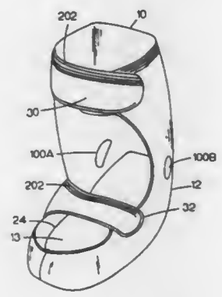
PROTECTIVE MEDICAL BOOT AND ORTHOTIC SPLINT

William D. Lamont, Shelby Township, Mich., assignor to LaMed, Inc., Shelby Township, Mich.

Continuation-in-part of Ser. No. 90,895, Jul. 12, 1993, Pat. No. 5,367,789. This application Nov. 21, 1994, Ser. No. 343,090

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—65 **3 Claims**



3. A medical boot for orthotic or wound-care applications comprising a soft flexible boot body that includes a first lower panel defining the sole of the boot, and a second upper annular panel defining an upright portion of the boot;

each of said panels comprising a resilient foam core, an inner fabric covering on said core having wicking properties, and an outer fabric covering on said core having a loop fastener surface;

said upper annular panel being adapted to partially surround the wearer's foot and calf including the wearer's toes, said panel defining an opening exposing substantially the entire upper surface of the wearer's foot and substantially the entire frontal surface of the wearer's lower leg and ankle;

said upper annular panel having an integral leg strap adapted to span the exposed frontal surface of the wearer's leg, and an integral foot strap adapted to span the exposed upper surface of the wearer's foot;

each of said straps having a patch of fibrous hook fastener material adapted to interlock with the outer surface of said upper annular panel; and

said upper annular panel having an exposed edge defined by mating surfaces of the inner and outer coverings heat-fused together, to provide a smooth uninterrupted inner surface facing the wearer's skin.

5,609,571

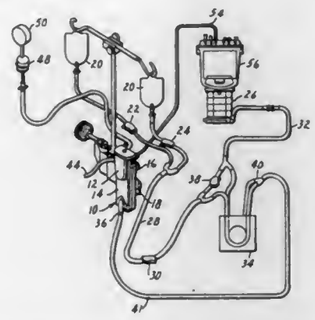
APPARATUS AND METHOD OF CARDIOPLEGIA DELIVERY

Gerald D. Buckberg, Los Angeles; Russell A. Heimstaedt, Irvine, and John M. Taylor, Trabuco Canyon, all of Calif., assignors to Sorin Biomedical Inc.

Filed Jan. 26, 1995, Ser. No. 379,393

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—4 **13 Claims**



1. A blood cardioplegia delivery device comprising:

a housing having a fluid inlet port adapted to receive a cardioplegia fluid comprising one of blood, a mixture of blood and cardioplegia solution, and cardioplegia solution, and having a fluid outlet port in fluid communication with the fluid inlet port;

an air removal element located within the housing; and

a pressure relief valve incorporated into the housing, the pressure relief valve being adapted to divert fluid flow if the fluid pressure in an interior portion of the housing exceeds a selected fluid pressure.

5,609,572

CASSETTE INFUSION SYSTEM

Volker Lang, Zugspitzstrasse 52, 82131 Gauting, Germany

PCT No. PCT/EP93/03286, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO94/12225, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 23, 1993, Ser. No. 256,326

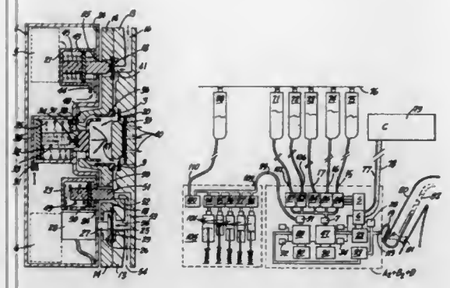
Claims priority, application Germany, Nov. 23, 1992, 42 39 285.3; Mar. 26, 1993, 43 09 972.6; May 26, 1993, 43 17 430.2; Sep. 7, 1993, 43 30 203.3; Oct. 25, 1993, 43 36 336.9

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—22 **34 Claims**

1. A modular cassette infusion system for multiple infusions with a special suitability for intensive care comprising at least the following modules:

a) an infusion pump cassette comprising at least one pump chamber with an inlet duct, an inlet valve, an outlet duct and an outlet valve,



b) an infusion distributor cassette, which has two or more connections for infusion lines with associated inlet valves and following liquid distribution ducts, which open into one or more outlet connections,

c) a disposable medicament administration cassette comprising a plurality of medicament containers respectively connectable to one another and to an outlet connection of the medicament administration cassette,

wherein the outlet connections of the infusion distributor cassetter are connected to the inlet valve of the at least one infusion pump cassette via a connection hose,

the outlet connection of the medicament administration cassette is connected to an inlet valve of a further pump chamber via a further connection hose, the further pump chamber further comprising an outlet valve, an inlet duct and an outlet duct,

and the outlet ducts of the respective pump chambers are connectable to one another via their respective outlet valves.

5,609,573

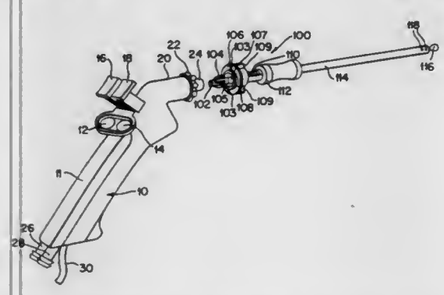
ELECTROSURGICAL SUCTION/IRRIGATION INSTRUMENT

Paul Sandock, New Hartford, N.Y., assignor to Conmed Corporation, Utica, N.Y.

Filed Feb. 28, 1996, Ser. No. 608,330

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—22 **8 Claims**



1. An electrosurgical device comprising:

A handle assembly adapted to be held in the hand of a user, having a proximal side and a distal end, said handle assembly comprising:

a suction port for coupling to a suction supply;

an irrigation port for coupling to an irrigation supply;

an instrument port located on said distal end of said handle assembly and including a rotatable finger wheel for rotating said instrument port in relation to said handle assembly, said finger wheel being disposed on said distal end of said handle assembly at a location thereof such that rotation can be accomplished with a finger of the hand of a user;

suction valve means, actuated by a suction button located on said proximal side of said handle assembly so as to be depressed with the thumb of the hand of a user, for selectively providing fluid communication between said suction port and said instrument port;

irrigation valve means, actuated by an irrigation button located on said proximal side of said handle assembly so as to be depressed with the thumb of the hand of a user, for selectively providing fluid communication between said irrigation port and said instrument port;

conductor means for carrying therapeutic current, electrically coupled to said instrument port through a safety switch means, said safety switch means being actuated by depression of either said suction button or said irrigation button to decouple said conductor means from said instrument port; and

current switch means, located on the proximal side of said handle assembly, for, when actuated, enabling therapeutic current to be supplied to said conductor means; and

an instrument assembly detachably connected to said instrument port so as to rotate with said instrument port when said instrument port is rotated by said finger wheel.

5,609,574

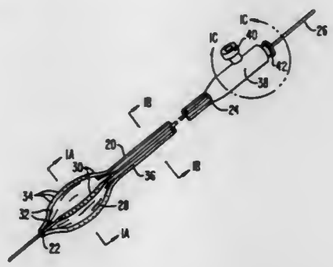
INTRAVASCULAR CATHETER WITH INFUSION ARRAY

Aaron V. Kaplan, Los Altos; James R. Kermode, Sunnyvale, and Enrique J. Klein, Los Altos, all of Calif., assignors to LocalMed, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 47,737, Apr. 15, 1993, Pat. No. 5,336,178, which is a continuation-in-part of Ser. No. 969,595, Nov. 2, 1992, abandoned. This application May 11, 1994, Ser. No. 241,428

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—53 **23 Claims**



1. A method of delivering an agent to a treatment site on an interior wall of a blood vessel, the method comprising:

positioning a catheter in the blood vessel with an infusion array having a plurality of fluidly isolated delivery conduits at the distal end of the catheter near the treatment site, wherein each delivery conduit has a multiplicity of infusion orifices;

expanding an expansion member at the distal end of the catheter to position the infusion array adjacent to the treatment site, the expansion member being fluidly isolated from the infusion array;

thereafter, delivering an agent from a proximal housing to the infusion array such that delivery of the agent through each delivery conduit is controlled independently.

5,609,575

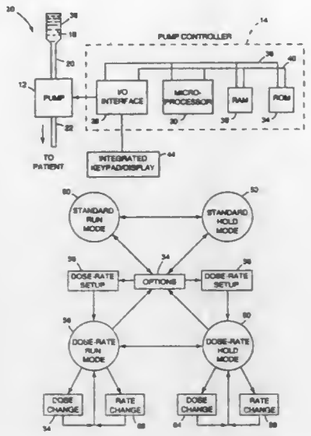
INFUSION PUMP AND METHOD WITH DOSE-RATE CALCULATION

Stella D. Larson, Columbus Township, Anoka County; Anne F. Mickelson, Woodbury, and Peter M. Eisenberg, Minneapolis, all of Minn., assignors to Graseby Medical Limited, Watford, United Kingdom

Continuation of Ser. No. 225,753, Apr. 11, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 417,434

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—65 **44 Claims**



1. A method of operating an infusion pump comprising the steps of:

(a) prompting a user of the infusion pump to input a plurality of infusion parameters into the infusion pump, said plurality of infusion parameters including an intended drug dose of a drug to be administered to a patient;

(b) calculating a drug flow rate based upon said plurality of infusion parameters input by the user during said step (a);

(c) rounding said drug flow rate calculated in said step (b) to generate a rounded drug flow rate;

(d) calculating an actual drug dose from said rounded drug flow rate, said actual drug dose representing the actual drug dose to be infused to the patient; and

(e) generating a visual display of said actual drug dose to allow the user to compare said actual drug dose with said intended drug dose.

5,609,576

FLUID FLOW IMPEDANCE MONITORING SYSTEM

Gregory I. Voss, Solana Beach; Robert D. Butterfield, Poway; Gail D. Baura, San Diego, and Casper W. Barnes, Murrieta, all of Calif., assignors to IVAC Medical Systems, Inc., San Diego, Calif.

Filed Sep. 13, 1994, Ser. No. 305,904

Int. Cl.[6] A61M *31/00*

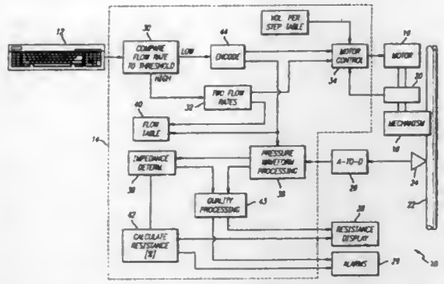
U.S. Cl. 604—67 **62 Claims**

1. A system for monitoring impedance to flow in a fluid delivery system in which a flow control device acts on a fluid conduit to control the flow of fluid through the conduit, the system comprising:

a pressure sensor coupled to the conduit for providing pressure signals in response to the pressure sensed in the conduit;

a memory that provides a flow waveform corresponding to the flow of fluid in the conduit;

a processor that receives the pressure signals and the flow waveform, processes those pressure signals with the flow



waveform, determines the impedance to flow based on said processing, and extracts a resistance from the determined impedance; and

a display that displays a value representing the extracted resistance.

5,609,577

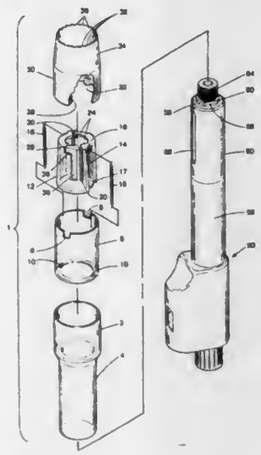
AUTOMATICALLY LOCKING HYPODERMIC NEEDLE HIDING SHIELD FOR A DOSE METERING SYRINGE

Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630; William H. Smedley, 33285 Blanche Dr., Lake Elsinore, Calif. 92330, and Clark B. Foster, 23631 Wakefield Ct., Laguna Niguel, Calif. 92677

Filed Jan. 29, 1996, Ser. No. 593,046

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **15 Claims**



1. In combination:

a syringe to administer an injection, said syringe comprising a medication cartridge housing in which a fluid medication is stored and a hypodermic needle coupled to and projecting outwardly from said medication cartridge housing in fluid communication therewith; and

a needle shield to shield said hypodermic needle prior to and after the administration of the injection, said needle hiding shield comprising:

an inner sleeve surrounding said medication cartridge housing and being coupled thereto,

an outer sleeve surrounding said inner sleeve,

a needle guard having proximal and distal ends, the proximal end of said needle guard connected to said outer sleeve, said needle guard surrounding and shielding said hypodermic needle coupled to said medication cartridge housing,

spring means extending between said inner sleeve and said outer sleeve for locating said inner sleeve at the proximal end of said needle guard, said inner sleeve and said medication cartridge housing coupled thereto adapted to be advanced distally through said needle guard, and

locking means releasably engaging said inner sleeve to block the distal advancement of said inner sleeve through said needle guard,

said locking means releasing said inner sleeve to permit said inner sleeve and said medication cartridge housing coupled thereto to be advanced distally through said needle guard when the injection is to be administered to cause said spring means to be stretched and said hypodermic needle to be moved outwardly from the distal end of said needle guard to be unshielded and penetrate an injection site at which to deliver the fluid medication from said medication cartridge housing, said spring means relaxing at the conclusion of the injection to drive said inner sleeve and said medication cartridge housing proximally through said needle guard to retract said hypodermic needle inwardly of the distal end of said needle guard to be reshielded thereby.

5,609,578

Patent Not Issued For This Number

5,609,579

Patent Not Issued For This Number

5,609,580

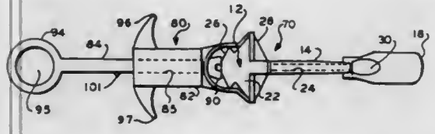
INJECTION HOLDER FOR A PLUNGERLESS SYRINGE AND COMBINATION PLUNGERLESS SYRINGE AND INJECTION HOLDER

Edward J. Kwiatkowski, Denville, and David G. Swaim, Bradley Beach, both of N.J., assignors to Vital Signs, Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 307,077, Sep. 16, 1994. This application Jul. 14, 1995, Ser. No. 502,062

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—212 **19 Claims**



1. Combination apparatus for ejecting liquid, comprising:

a plungerless syringe having opposed ends, a cannula portion at one end, ejection force receiving means at the other end and a collapsible bellows portion intermediate said ends, said syringe for receiving liquid to be ejected through said cannula portion upon said bellows portion being collapsed; and

ejection force applying means including receptacle means for releasably receiving at least said ejection force receiving means and said bellows portion to permit said ejection force applying means to apply ejection force to said ejection force receiving means to collapse said bellows portion and cause liquid received in said syringe to be ejected through said cannula, said receptacle means comprising a hollow generally semi-spherical member generally complementary in shape to said bellows portion and provided with a lateral opening for permitting at least said bellows portion to be inserted laterally into said member and for permitting said cannula portion to extend outwardly from said member.

5,609,581

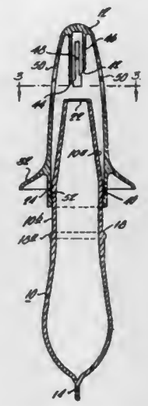
SINGLE DOSE MEDICAMENT DISPENSER ASSEMBLY

Harry Fletcher, Bridgeton, and Merrel J. Locke, Linwood, both of N.J., assignors to Lawson Mardon Wheaton Inc., Millville, N.J.

Filed Oct. 11, 1995, Ser. No. 541,086

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—212 **10 Claims**



5,609,582

DRINKING AID DEVICE FOR ELDERLY PEOPLE, PATIENTS AND THE LIKE

Victor Krütten, Richard-Klinger-Strasse 27, W-6270 Idstein, Germany

Filed Apr. 14, 1995, Ser. No. 422,255

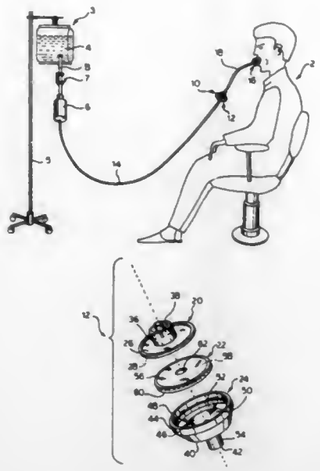
Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—247 **15 Claims**

1. A drinking aid device for elderly people, patients or the like used in conjunction with a remote liquid reservoir which has liquid therein, the drinking aid device comprising:

a. a valve assembly including a lower housing member, a flexible closure member for blocking said liquid from flowing through the valve assembly in one direction, and an upper lid member;

b. said lower housing member having a bottom with a central opening and a sidewall integrally formed with and upwardly extending from the bottom to an upper rim and forming an interior chamber which has a concave cavity and an annular groove located on the periphery of and surrounding the concave cavity;



c. an outlet port attachment integrally attached to said bottom of said lower housing member, and protruding and communicating with said concave cavity of said interior chamber through said central opening of said lower housing member;

d. said flexible closure member having a bottom surface, a top surface, an annular ring shaped flange extending down from the bottom surface and located on the periphery of said closure member, and a multiplicity of apertures extending through from the top surface to the bottom surface;

e. said flexible closure member disposed within said interior chamber of said lower housing member such that said annular ring shaped flange of said closure member is tightly engaged with and secured within said annular groove of said lower housing member and movable by suction between an open position and a closed position for allowing said liquid to flow therethrough;

f. said upper lid member having a bottom side, a top side, and a central opening extending through from the top side to the bottom side, the bottom side having a protuberating valve seat mounted within the central opening of said upper lid member;

g. a coupling member integrally attached to said top side of said upper lid member and communicating with said central opening of said upper lid member;

h. means for air-tightly attaching said upper lid member to said upper rim of said lower housing member such that said protuberating valve seat is brought into contact with said top surface of said closure member in said closed position;

i. a drinking means having an outlet opening and an inlet opening for allowing the patient to suck and drink said liquid;

j. first connection means having one end attached to said coupling member and the other end attached to said liquid reservoir for allowing said liquid to flow therethrough;

k. second connection means having one end attached to said outlet port attachment of said lower housing member and the other end attached to said inlet opening of said drinking means for allowing said liquid to flow therethrough; and

l. an operating piece member attached between said coupling member and said upper lid member and movable towards an axial direction to lift said closure member from said protuberating valve seat of said upper lid member into said open position to allow said liquid reservoir to be refilled through said outlet opening of said drinking means;

m. whereby when suction is applied to said outlet opening of said drinking means, said top surface of said closure member is moved to said open position away from said protuberating valve seat of said upper lid member, thereby allowing said liquid to flow through said multiplicity of apertures of said closure member for allowing the person to drink said liquid, and when suction is ceased, said top surface of said closure member is moved back to said closed position and said liquid stops flowing through said multiplicity of apertures of said closure member.

5,609,583

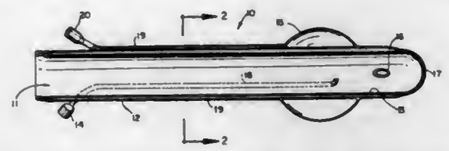
COLLAPSIBLE CATHETER

A-Hamid I. Hakki, and Said I. Hakky, both of 8547 Merrimoor Blvd., E., Largo, Fla. 34647-3145

Filed Sep. 21, 1995, Ser. No. 531,476

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **8 Claims**



1. A urinary catheter for insertion into a patient, said catheter having a proximal end and a distal end and comprising:

a) a first substantially collapsible elongated elastomeric tube which is open at the proximal end and closed at the distal end;

b) a second substantially collapsible elongated elastomeric tube outside of said first tube, said tubes being joined or bonded at said proximal end so as to form an opening into said inner tube and joined and bonded at said distal end, whereby a space is provided between said tubes for insertion of a fluid to stiffen said tubes, said tubes having at least one opening about the distal end for drainage of fluid from the patient into said inner tube;

c) a valve system for injecting or withdrawing said fluid between said tubes, whereby injection of fluid between said tubes causes stiffening of said catheter and withdrawal of fluid causes collapse of said catheter; and

d) balloon means about said distal end of said catheter, said balloon means having a valve means separate from the valve system for inserting fluid into said balloon means and inflating said balloon means so as to maintain the catheter within a patient.

5,609,584

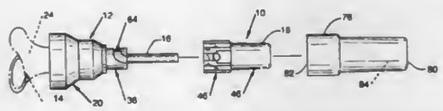
ADAPTOR SYSTEM FOR USE WITH A SYRINGE

William A. Gettig, and Larry E. Shook, both of Millheim, Pa., assignors to Gettig Technologies, Inc., Spring Mills, Pa.

Continuation-in-part of Ser. No. 246,611, May 18, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 481,080

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—283 **15 Claims**



1. An adaptor system for use in connection with a syringe having a fluid carrying body, the system comprising:

a syringe fitting having a hollow element protruding therefrom and being attachable to said syringe such that said hollow element is in fluid communication with said fluid carrying body;

an adaptor member having a port therein, said port having an interior surface configured for fluid-tight engagement with the outer surface of said hollow element; and

means for retaining said hollow element in fluid-tight engagement with said adaptor port, said retaining means comprising at least one protrusion on said adaptor member and a T-shaped slot in said syringe fitting corresponding to each said protrusion such that when said protrusions are simultaneously aligned with their corresponding T-shaped slot, said hollow element may be axially inserted into said adaptor port to establish said fluid-tight seal therewith and be selectively rotated in two radial directions relative to said syringe fitting while maintaining said fluid-tight seal therebetween.

5,609,585

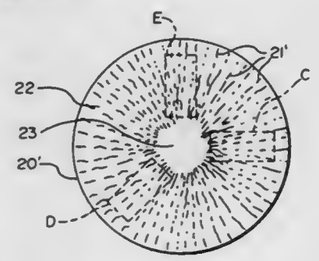
WAFER HAVING ADHESIVE SKIN BARRIER LAYER

Ronald S. Botten, Gurnee; Larry R. DeCamp, Wauconda; Calla K. Stoick, Des Plaines, and Eric D. Ellingson, Mount Prospect, all of Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Aug. 1, 1995, Ser. No. 510,035

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—332 **3 Claims**



1. An adhesive wafer comprising (a) a thin barrier layer of soft, pliant, adhesive material having particles of one or more hydrocolloids dispersed therein and having upper and lower surfaces, (b) a flexible cover layer extending over one of said surfaces of said barrier layer, and (c) a removable release sheet extending over the other of said surfaces of said barrier layer; wherein the improvement comprises

said wafer having a central zone and an annular outer zone; said material of said barrier layer in said outer zone being of generally uniform molecular orientations in radial directions over an arc of 360° about said central zone and being of substantially uniform tensile strength when measured in all of said radial directions.

5,609,586

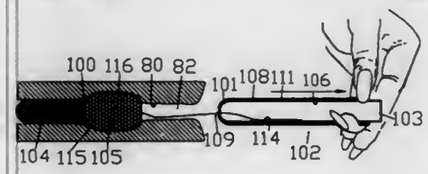
INTRAVAGINAL EXPANDABLE MEMBER FOR PREVENTION OF VAGINAL BLEEDING

Filiberto P. Zadini, and Giorgio Zadini, both of 2237 Hilltop La., Camarillo, Calif. 93012

Filed Apr. 18, 1995, Ser. No. 425,951

Int. Cl.[6] A61F *13/20;13/15*

U.S. Cl. 604—358 **17 Claims**



1. A catamenial device for insertion into a vaginal canal having a wall, said device comprising:

a first member which is absorbent; and

a second member for sealingly engaging said wall of said canal, said second member being substantially fluid impermeable and connected in tandem with said first member, said second member being resiliently expandable from a first state having a first diameter to a second state having a second diameter, said second diameter being greater than a diameter of said first member.

5,609,587

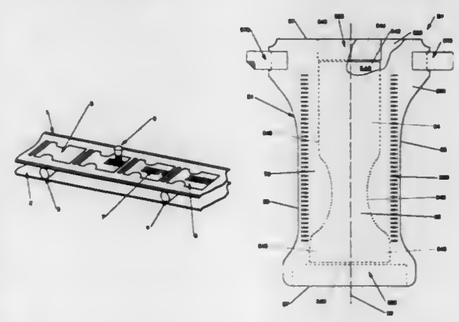
DIAPER HAVING A LOTIONED TOPSHEET COMPRISING A LIQUID POLYOL POLYESTER EMOLLIENT AND AN IMMOBILIZING AGENT

Donald C. Roe, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 3, 1995, Ser. No. 510,681

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—360 **25 Claims**



1. A disposable absorbent article adapted to be used in contact with human skin of a wearer, said absorbent article having an interior and an exterior, wherein said disposable article comprises:

a) a liquid impervious backsheet;

b) a liquid pervious topsheet joined to said backsheet, said topsheet having an inner surface oriented toward the interior of said absorbent article and an outer surface oriented toward the skin of the wearer when said diaper is being worn, wherein at least a portion of said topsheet outer surface comprises an effective amount of a lotion coating to reduce the adherence of BM to the wearer's skin, wherein said lotion coating is solid or semi-solid at 20° C. is partially transferable to the wearer's said lotion coating comprising:

(i) from about 5 to about 95% of a liquid polyol polyester emollient comprising a polyhydric alcohol containing at least 4 hydroxyl groups esterified with fatty acid or other organic radicals having at least 2 carbon atoms and up to 30 carbon atoms;

(ii) from about 5% to about 95% of an agent capable of immobilizing said liquid polyol polyester emollient on said outer surface of the topsheet, said immobilizing agent having a melting point of at least 35° C.; and,

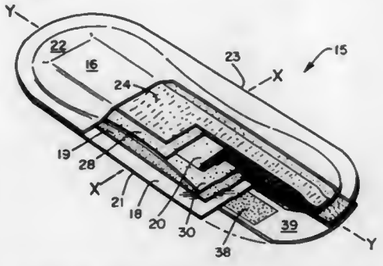
c) an absorbent core positioned intermediate said topsheet and said backsheet.

5,609,588

ARTICLE HAVING A NON-ABSORBENT RESILIENT LAYER

Joseph DiPalma; David R. King, both of Neenah; Thomas H. Gilman, Appleton; Laurie Couture-Dorschner, Hortonville; Timothy S. Stilp, Appleton, and Valerie V. Finch, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 891,361, May 29, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,840
Int. Cl.[6] A61F 13/15; B32B 7/12
U.S. Cl. 604—369 24 Claims



1. An absorbent article having a central longitudinal axis, a caliper of less than about 5 millimeters, and a total width adapted to span the width of a user's labia majora, said absorbent article comprising:

a) an absorbent means having a predetermined length and width, a central longitudinal axis substantially aligned along the central longitudinal axis of said absorbent article, said absorbent means having the capacity to absorb at least 10 grams of body fluid; and

b) a substantially resilient layer comprising a closed cell, polyethylene foam having a width ranging from 60% to 100% of the total width of said absorbent article, said resilient layer being sufficiently resilient to resist bunching, as indicated by a Circular Bend Flex in the range of from about 9 to about 42 grams at a rebound resiliency of 50%.

5,609,589

Patent Not Issued For This Number

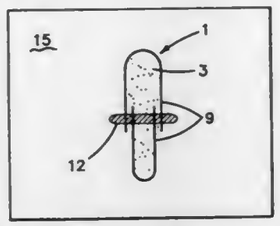
5,609,590

PH-TRIGGERED OSMOTIC BURSTING DELIVERY DEVICES

Scott M. Herbig, and Kelly L. Smith, both of Bend, Oreg., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 23,227, Feb. 25, 1993, Pat. No. 5,358,502. This application Oct. 19, 1994, Ser. No. 325,730
Int. Cl.[6] A61K 9/22
U.S. Cl. 604—892.1 24 Claims

1. An osmotic bursting device for dispensing a beneficial agent



to an aqueous environment comprising:

a. a beneficial agent;

b. an osmagent;

c. a wall surrounding said beneficial agent and osmagent, said wall substantially impermeable to the beneficial agent, said wall lacking a passageway through which a beneficial agent can pass and said wall formed at least in part of a semipermeable membrane which is permeable to the aqueous environment and substantially impermeable to the osmagent; and

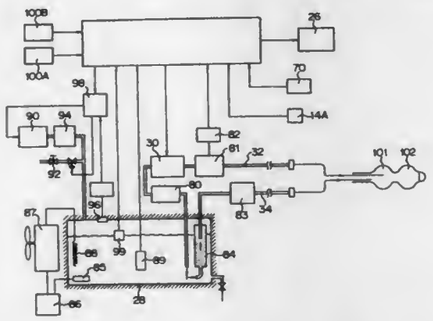
d. pH-sensitive trigger means for triggering the bursting of the device and rapid release of beneficial agent as a bolus, said trigger means attached to said semipermeable membrane and said trigger means activated by a predetermined pH of from 3 to 9 wherein said device is a tablet or bead coated with the pH-sensitive trigger means wherein said device is an osmotic bursting device.

5,609,591

LASER BALLOON CATHETER APPARATUS

Norio Daikuzono, Chiba-ken, Japan, assignor to S.L.T. Japan Co., Ltd., Tokyo, Japan

Division of Ser. No. 131,666, Oct. 5, 1993, Pat. No. 5,415,654. This application Mar. 9, 1995, Ser. No. 401,823
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—15 2 Claims



1. A laser balloon catheter apparatus for emitting laser light, received through an optical fiber, via a balloon for irradiating tissue, comprising:

laser light emitting means comprising holder means holding a distal end portion of the optical fiber in relation to the balloon so as to emit laser light through the balloon;

a cooling water supply passage located in said balloon for supplying a coolant thereto;

a cooling water discharge passage located in said balloon for discharging the coolant;

cooling water circulating means for supplying the cooling water to the balloon through said cooling water supply passage to inflate the balloon while discharging the cooling water through said coolant discharge passage;

said cooling water circulating means including a closed cooling water tank, a pressurizing pump to feeding pressurized air to the cooling water tank, a cooling water feeding line, a cooling water circulating pump for pumping the cooling water to the balloon from said cooling water tank via the cooling water supply passage, and a cooling water return line for returning the cooling water from said balloon to the cooling water tank below a water level therein via the cooling water discharge passage;

temperature detecting means for detecting a temperature of irradiated tissue and for generating a corresponding tissue temperature signal; and

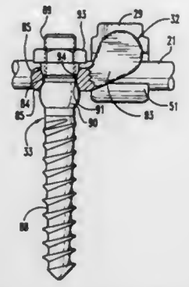
circulated cooling water flow rate control means for controlling a flow rate of the circulated cooling water by controllably driving said cooling water circulating pump.

5,609,592

SPINAL FIXATION SYSTEM

David L. Brumfield, South Haven, Mich.; M. Neil Anderson, Memphis, Tenn., and Eduardo R. Luque, Mexico City, Mexico, assignors to Danek Medical, Inc., Memphis, Tenn.

Division of Ser. No. 278, Jan. 4, 1993, Pat. No. 5,527,314. This application Jun. 7, 1995, Ser. No. 481,045
Int. Cl.[6] A61B 17/70
U.S. Cl. 606—61 20 Claims



1. A spinal implant system for correcting spinal deformities and abnormalities, comprising:

an elongated spinal rod configured to be implanted adjacent the spinal column of a patient spanning across several vertebral levels;

a fixation element for engaging a vertebra;

a lateral offset coupler having an elongated coupler stem and an integral offset body, said offset body including means for engaging said fixation element; and

rod connector means for connecting said lateral offset coupler to said spinal rod, said rod connector means including:

a connector having a one-piece body defining a rod channel adapted to receive said spinal rod therethrough, a stem bore adapted to slidably receive said elongated coupler stem therethrough and a threaded bore;

a threaded set screw adapted to be received within said threaded bore,

wherein said stem bore has a length through said body and said rod channel intersects said stem bore along a portion of said length to permit contact between said rod and said coupler stem when the rod is received within said rod channel and the coupler stem is received within said stem bore, and

further wherein, said threaded bore intersects one of said rod channel and said stem bore to permit contact between said set screw and one of said rod or said coupler stem when the set screw is threaded into the threaded bore, whereby said coupler stem is slidably received within said stem bore to position said offset body at variable lateral distances from said spinal rod, and

further whereby said coupler stem and said rod are in clamped engagement when said set screw is threaded into said threaded bore to restrain relative movement between said rod and said fixation element.

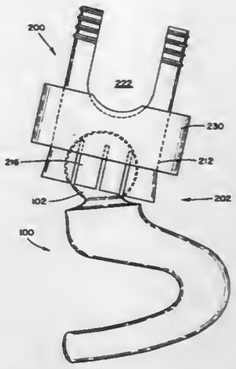
5,609,593

ADVANCED POLYAXIAL LOCKING HOOK AND COUPLING ELEMENT DEVICE FOR USE WITH TOP LOADING ROD FIXATION DEVICES

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit, and James D. Ralph, Oakland, all of N.J., assignors to Fastenetix, LLC, Summit, N.J.

Continuation-in-part of Ser. No. 502,803, Jul. 14, 1995, which is a continuation-in-part of Ser. No. 502,285, Jul. 13, 1995, Pat. No. 5,549,608. This application Oct. 13, 1995, Ser. No. 542,527
Int. Cl.[6] A61B 17/70
U.S. Cl. 606—61 22 Claims

1. A polyaxial hook assembly for use with orthopedic rod implantation apparatus, comprising:



a blade portion, having a curved shape for cupping the lamina, a lower extending member for disposition beneath the lamina, and a semi-spherical head which is disposed above the lower extending member;

a coupling element including

an expandable and contractable interior chamber in a lower portion thereof for receiving therein said semi-spherical head, said interior chamber further having an expandable and contractable opening for receiving therethrough said semi-spherical head,

a pair of upwardly extending members formed of an upper portion of the coupling element, defining a rod receiving channel for receiving therein a support rod of said orthopedic rod implantation apparatus, and

a surface threading disposed on an uppermost exterior surface of said upwardly extending members;

a locking ring mounted around said coupling element, the downward translation of said ring providing a force which causes said interior chamber and said opening thereof to contract, therein locking the blade portion to the coupling element; and

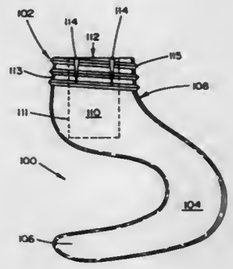
a top locking nut, mateable with said surface threading.

5,609,594

EXTENDING HOOK AND POLYAXIAL COUPLING ELEMENT DEVICE FOR USE WITH SIDE LOADING ROAD FIXATION DEVICES

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit, and James D. Ralph, Oakland, all of N.J., assignors to Fastenetix LLC, Summit, N.J.

Continuation-in-part of Ser. No. 502,285, Jul. 13, 1995, Pat. No. 5,549,608. This application Oct. 13, 1995, Ser. No. 542,528
Int. Cl.[6] A61B 17/70
U.S. Cl. 606—61 16 Claims



1. A polyaxial hook assembly for use with orthopedic rod implantation apparatus, comprising:

a blade portion, having a curved shape for cupping the lamina, a flat extending member for disposition beneath a lamina, and a cylindrical recess in a portion of the blade portion which is disposed above the flat extending member, said cylindrical recess having a selectively contractable upper portion;

a body including

a shaft portion, slideably mountable within said cylindrical recess, whereby selective contraction of said upper portion of said cylindrical recess crush locks said shaft to said blade portion,

a rod receiving channel formed in a side thereof for receiving therein a support rod of said orthopedic rod implantation apparatus, and

a surface threading disposed on an upper exterior portion thereof;

means for selectively contracting said selectively contractable upper portion of said cylindrical recess for locking said shaft to said blade portion;

a rod securing sleeve comprising a hollow cylindrical body, having a opposing vertical slots, said sleeve being positionable around said body for securing said rod within said rod receiving channel with said rod extending through said vertical slots; and

a top locking nut which is mateable with said surface threading on said upper exterior portion.

5,609,595

FIXATION PIN FOR SMALL-BONE FRAGMENTS

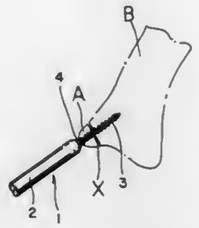
Dietmar Pennig, Hans-Driesch-Strasse 12, 50935 Koln, Germany

Continuation-in-part of Ser. No. 214,365, Mar. 16, 1994, Pat. No. 5,433,719. This application Feb. 22, 1995, Ser. No. 392,386

Claims priority, application Germany, Mar. 25, 1993, 43 09 707.3

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—73 **10 Claims**



1. The method of fixating a fractured bone fragment to adjacent remainder structure of the bone from which the fragment has been fractured, said method comprising the steps of:

(a) selecting a compression wire having an elongate proximal shank of uniform diameter in the range 1-mm to 3-mm, and having a self-tapping distally extending threaded portion of lesser diameter than the shank, said wire having an annular shoulder formation at juncture of said shank to said threaded portion;

(b) selecting a rotary drill and chucking the wire shank to the drill, thereby distally projecting the self-tapping threaded portion;

(c) applying the self-tapping distal end of the wire to exposed cortex of the fragment while positioning the fragment against said remainder structure of the bone, and operating the drill to tap and advance the threaded portion through the fragment and into implanted anchoring engagement with said remainder structure until the shoulder formation engages the fragment to retain the fragment against said remainder structure; and

(d) unchucking the drill from the wire.

5,609,596

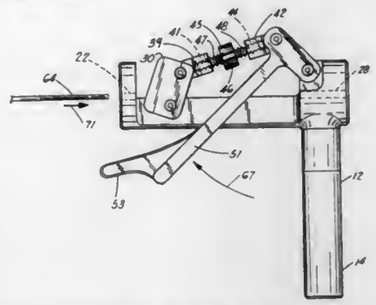
GUIDE ROD HOLDER FOR MANIPULATING SURGICAL WIRES AND PINS

John R. Pepper, Germantown, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Mar. 9, 1995, Ser. No. 401,150

Int. Cl.[6] A61B *17/82*

U.S. Cl. 606—103 **9 Claims**



1. A guide rod holder for supporting and manipulating a surgical guide wire comprising:

a) an instrument frame having a handle for gripping the frame and a trigger movably mounted on the frame;

b) a barrel section on the frame for receiving and holding a surgical guide wire, said barrel having a distal end and a proximal end, the barrel having a bore that receives the wire during use;

c) a multi-link assembly having a length disposed adjacent the barrel section, said assembly including a plurality of links that are movable between grasping and releasing positions, wherein the links abut the wire in the grasping position and wherein the links are spaced away from the wire in the releasing position;

d) means for biasing the multi-link assembly to the grasping position; and

e) the multi-link assembly includes an adjuster for adjusting the length of the assembly.

5,609,597

APPARATUS AND METHOD OF EXTRACORPOREALLY APPLYING AND LOCKING LAPAROSCOPIC SUTURE AND LOOP LIGATURES

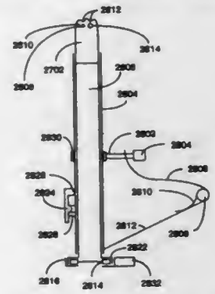
Theodor Lehrer, 936 Intracoastal Dr., Apt. 21C, Ft. Lauderdale, Fla. 33304

Continuation-in-part of Ser. No. 351,550, Dec. 7, 1994, which is a continuation of Ser. No. 164,462, Dec. 9, 1993, Pat. No. 5,536,273. This application May 3, 1995, Ser. No. 433,627

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—139 **20 Claims**

1. A ligator device for extracorporeally manipulating the ends



two suture strands of a slip knot and pushing hitch knots, comprising:

an internal/inner sleeve having a proximal end and a distal end, the internal sleeve having at least one side aperture at its distal end sized such that at least one suture strand is slidably inserted into the side aperture;

an external/outer sleeve having a proximal end and a distal end, the external sleeve further having an inner diameter sized to slidably accept the internal sleeve; and

extension means to slidably move the external sleeve a predetermined distance range over the internal sleeve such that the distal end of the external sleeve is advanced over the internal sleeve or extended past the internal sleeve.

5,609,598

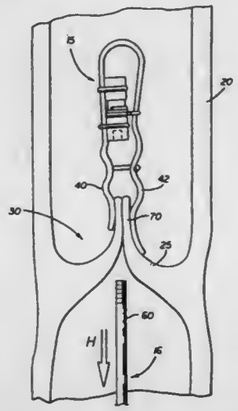
METHOD AND APPARATUS FOR MINIMALLY INVASIVE TREATMENT OF CHRONIC VENOUS INSUFFICIENCY

Michael D. Laufer, and H. DuBose Montgomery, both of Menlo Park, Calif., assignors to VNUS Medical Technologies, Inc., Menlo Park, Calif.

Filed Dec. 30, 1994, Ser. No. 367,063

Int. Cl.[6] A61B *17/10*

U.S. Cl. 606—142 **10 Claims**



1. A method for treating chronic venous insufficiency using a minimally invasive catheter based system, the method comprising:

providing an appliance for repairing an incompetent valve in a vein and a catheter for delivering the appliance;

inserting the catheter and the appliance into a vein of a patient;

positioning the appliance proximate the incompetent valve; and

deploying the appliance such that the valve is repaired to be substantially competent.

5,609,599

LEAK CLIP

John M. Levin, 412 Fairview Rd., Narbeth, Pa. 19072

Filed Jul. 27, 1995, Ser. No. 508,323

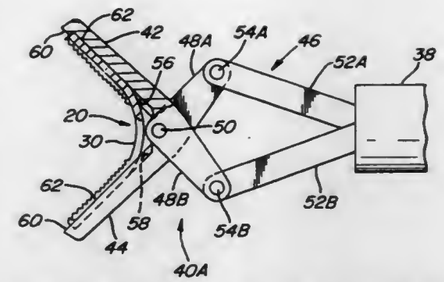
Int. Cl.[6] A61B *17/08*

U.S. Cl. 606—153 **35 Claims**

1. An apparatus for quickly closing an opening in an internal body part to prevent the leakage of contaminating fluids from the opening, said apparatus comprising:

a clamp having a pair of movable jaws pivotally coupled, each of said jaws having a width of a sufficient dimension to encompass the entire opening whenever said jaws are brought into contact with each other;

each of said jaws having a periphery containing teeth, said respective teeth interdigitating whenever said jaws are brought into contact with each other; and



applicator means for releasably retaining said clamp for applying said clamp to the opening and then releasing said clamp from said applicator means.

5,609,600

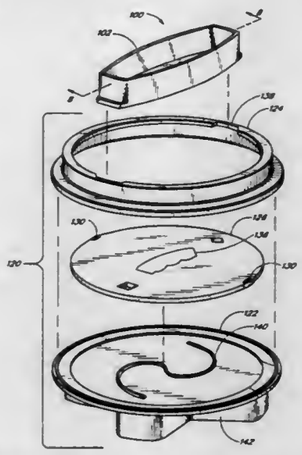
TISSUE CUTTING DIE

Charles S. Love, Santa Barbara; Terrance J. Dahl, Solvang; Phillip J. Hudak, Goleta, and Steven K. Lemp, Santa Barbara, all of Calif., assignors to AUTOGENICS, Newbury Park, Calif.

Continuation-in-part of Ser. No. 169,620, Dec. 17, 1993, Pat. No. 5,425,741. This application Jun. 7, 1995, Ser. No. 483,466

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **19 Claims**



1. An apparatus for cutting tissue to be used in a heart valve, said heart valve having an inner stent configured with a plurality of posts, each of said posts including outwardly-projecting tissue alignment members, and an outer stent having a plurality of posts and an expandable base with tensioning means, said inner stent positioned inside said outer stent, said outer stent tensioning means providing a clamping force securing said inner stent, said apparatus comprising:

a cutting die assembly including a handle with a plurality of attachment points, a first blade retainer and a second blade retainer, said blade retainers adapted to be attached to said handle at said attachment points;

an insert positioned within said blade retainers such that a narrow gap exists between said insert and said blade retainers, said insert further having a peripheral configuration corresponding to the configuration into which the tissue will be cut;

a blade with a razor sharpened edge retained within said gap, said blade edge extending above the surface defined by said insert and said blade retainers;

a plurality of attachments provided to secure said handle to said blade retainers;

a base assembly adapted to receive said cutting die assembly, said base assembly including a cutting base having a substantially circular upper surface and a molded lower surface, said upper surface having a raised portion comprising a cutting bump;

a circular cutting pad with an upper face and a lower face, said pad positioned on said upper surface of said cutting base and adapted to be rotated thereon, said cutting bump being adapted to contact said lower face when said pad is rotated, wherein said contact forces said blade edges into contact with the upper face of said cutting pad so that tissue retained between said blade edges and said upper face is cut; and

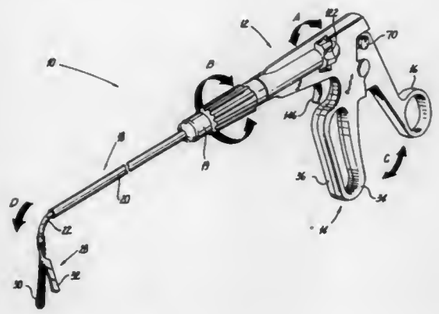
an annular cutting die guide fixedly secured to the upper surface of said cutting base, such that said cutting pad is rotatably retained between said cutting base and said cutting die guide.

5,609,601

ENDOSCOPIC SURGICAL APPARATUS WITH ROTATION LOCK

Michael S. Kolesa, Norwalk; Ernie Aranyi, Easton, both of Conn., and Gary S. Kappel, Waltham, Mass., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 23, 1994, Ser. No. 311,493
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—170 **23 Claims**



1. A surgical apparatus comprising:

a handle portion;

a body portion extending from said handle portion and defining a longitudinal axis:

a tool structure connected to a distal portion of the tubular body portion, said tool structure being remotely operable from said handle portion;

a rotation assembly for effectuating remote rotation of the tool structure about the longitudinal axis of the body portion relative to the handle portion, said rotation assembly including an axially rotatable collar; and

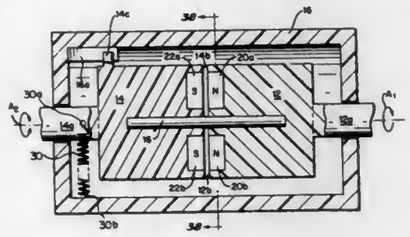
a rotation lock assembly movably mounted in said handle portion for movement between a locking position to lock the rotation assembly at a fixed angular position such that the rotation assembly cannot be rotated with respect to the handle portion and a disengaged position such that the rotation assembly can be freely rotated with respect to the handle portion.

5,609,602

OSCILLATORY COUPLING FOR SURGICAL INSTRUMENTS AND METHODS OF IMPARTING OSCILLATORY MOTION THERETO

Robert Machemer, Durham, N.C.; Dyson Hickingbotham, Marietta, Ga., and Brian Dodge, Durham, N.C., assignors to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 486,575, Jun. 7, 1995, abandoned. This application Aug. 16, 1996, Ser. No. 698,918
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—171 **33 Claims**



1. An oscillatory coupling comprising:

a pair of opposed hubs rotatable independently about a common axis;

a housing which houses said pair of opposed hubs;

a pair of permanent magnets, one of said magnets being carried by one of said hubs, and the other of said magnets being carried by the other of said hubs; and

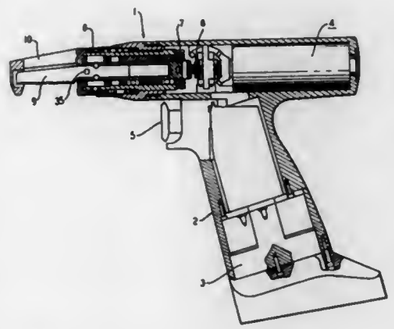
said housing includes a stop element for arresting rotation of said other hub in a selected rotation direction.

5,609,603

SURGICAL CUTTING DEVICE WITH SAFETY INTERLOCK

Harry A. Linden, Santa Barbara, Calif., assignor to Hali Surgical Div. of Zimmer Inc., Carpenteria, Calif.

Continuation of Ser. No. 355,387, Dec. 13, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 641,292
Int. Cl.[6] A61B *17/14*
U.S. Cl. 606—177 **10 Claims**



1. A surgical saw system comprising:

an elongated surgical blade having a proximal end, a distal end and at least one notch detent at the proximal end;

a housing having an opening for receiving said surgical blade;

a drive shaft having an end adjacent said opening;

means for driving said drive shaft;

blade receiving means at the end of said drive shaft for receiving said surgical blade, said blade receiving means comprising a first locking-ball retaining means having at least one ball

situated on said drive shaft adjacent said end thereof for engaging said at least one notch at said proximal end of said surgical blade;

a first, unitary cylindrical cam ring means for cooperative engagement with said first locking-ball retaining means, said first, unitary cylindrical cam ring means comprising an inner surface for urging said at least one ball of said first locking-ball retaining means into said at least one notch of said surgical blade, and an outer surface provided with an annular groove;

cam ring receiving means for receiving said first, unitary cylindrical cam ring means, said cam ring receiving means comprising a second locking-ball retaining means having at least one ball situated on said housing for engaging said annular groove;

a second cylindrical cam ring means movably situated on said housing for cooperative engagement with said second locking-ball retaining means, said second cylindrical cam ring means comprising a collar having an inner surface for urging said at least one ball of said second locking-ball retaining means into said annular groove; and

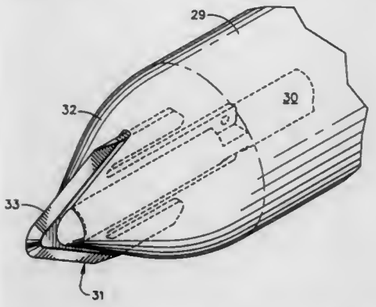
means to hold said second cylindrical cam ring means fixed to thereby hold said at least one ball of said second locking-ball retaining means in said annular groove.

5,609,604

TROCAR WITH IMPROVED BLADE ATTACHMENT

Richard F. Schwemberger; Darrel Powell, both of Cincinnati; Randy R. Stephens, Fairfield, and Salvatore Privitera, West Chester, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Oct. 16, 1995, Ser. No. 543,547
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—185 **15 Claims**



1. A surgical trocar comprising an obturator, said obturator having:

a) an obturator housing at a first end of said obturator;

b) a piercing tip at an opposite end of said obturator for piercing bodily tissue, said piercing tip including a cutting edge surface and first and second spaced-apart legs generally parallel to each other extending away from said cutting edge surface, said first and second legs having first and second inwardly-extending, mutually opposed barbs thereon; and

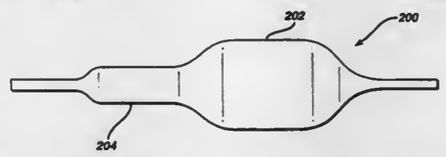
c) an elongated rigid stem having a distal tip thereon, said stem attached to said obturator housing at said first end of said obturator, said stem having first and second sidewalls thereon, said sidewalls having first and second slots disposed therein and first and second notches embedded therein, said first and second legs of said piercing tip being straddled about said stem at said opposite end of said obturator, said first and second legs being disposed within said first and second slots embedded in said sidewalls of said stem, and said first and second barbs of said legs being embedded in said first and second notches of said stem so as to attach said piercing tip to said stem; wherein said first and second slots are tapered from a deep region adjacent said distal tip of said stem to a shallow region adjacent said first and second notches.

5,609,605

COMBINATION ARTERIAL STENT

Paul Marshall, Washington Crossing, and Anthony S. Miksza, Bethlehem, both of Pa., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 296,216, Aug. 25, 1994. This application May 4, 1995, Ser. No. 434,615
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—191 **4 Claims**



1. A medical device comprising a balloon in combination with at least two stents,

said balloon comprising a generally cylindrically expandable length, said length having first and second sections each of which have expanded diameters, and said first and second section expanded diameters having different dimensions; and

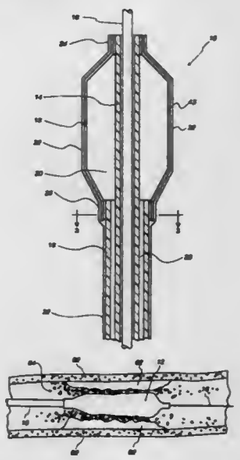
each of said at least two stents carried on a separate section of said balloon.

5,609,606

ULTRASONIC ANGIOPLASTY BALLOON CATHETER

Matthew O'Boyle, Webster, Tex., assignor to Joe W. & Dorothy Dorsett Brown Foundation, New Orleans, La.

Continuation of Ser. No. 14,021, Feb. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,184
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—194 **29 Claims**



1. An angioplasty balloon catheter suitable for use in openings a stenosis in a vascular vessel, said catheter having an inflation lumen which connects with an inflatable balloon fabricated at least partially from a polymeric material having piezoelectric properties, and a means of delivering ultrasonic energy to the inflatable balloon via an ultrasonic electrical excitation signal whereby the inflatable balloon can be excited into ultrasonic vibratory states

capable of opening the stenosis in the vascular vessel when the excited and vibrating inflatable balloon is in contact with the stenosis.

5,609,607

DEVICE FOR MODELING OR SIMULATING THE SENSE OF TOUCH IN A SURGICAL INSTRUMENT

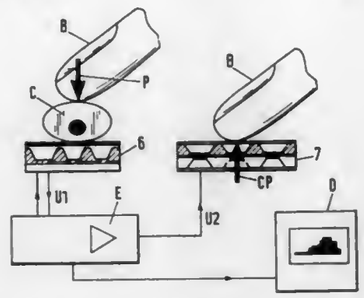
Kurt-Volker Hechtenberg, Bruckmuehl; Dieter Bosch, Munich, and Hajo Hermeking, Germering, all of Germany, assignors to Deutsche Aerospace AG, Munich, Germany

Filed Sep. 26, 1994, Ser. No. 313,856

Claims priority, application Germany, Sep. 24, 1993, 43 32 580. 7

Int. Cl.[6] F16K *31/00*

U.S. Cl. 606—205 **30 Claims**



1. A surgical instrument for treating tissue, comprising:
a tissue contacting member,
a manually engageable handle operatively connected to the tissue contacting member,
a sensor array on said tissue contacting member,
an actuator array on said handle, and
an electric signal circuit connecting the sensor array and the actuator array, wherein the actuator array is formed by a plurality of pressure sensitive cells containing electrorheological fluid.

5,609,608

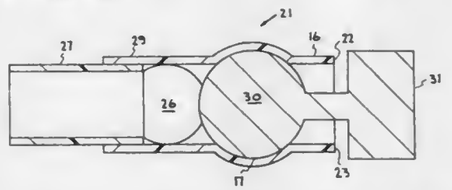
MINIATURE PLASTIC GRIPPER AND FABRICATION METHOD

William J. Benett, Livermore; Peter A. Krulevitch, Los Altos; Abraham P. Lee, Walnut Creek; Milton A. Northrup, Berkeley, and James A. Folta, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Oct. 27, 1995, Ser. No. 549,497

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—205 **19 Claims**



1. A microgripper constructed to operate in a 250–500 μm area such as a blood vessel comprising:
a body having an annular cross-section constructed of a heat deformable or moldable material;
said body including an enlarged section located intermediate two tubular configured end sections;
at least one of said tubular configured end sections being of a lesser diameter than said enlarged section;
said body including a cut extending through at least one of said tubular configured end sections and at least a portion of said enlarged section to define a pair of jaws; and
means for actuating said pair of jaws adapted for retaining a device therebetween and releasing therefrom.

5,609,609

SURGICAL SUTURE AND METHOD FOR PREPARATION THEREOF

Hiroshi Ohshima, and Satoshi Hashimoto, both of Ayabe, Japan, assignors to Gunze Limited, Ayabe, Japan

Filed Dec. 21, 1995, Ser. No. 587,453

Claims priority, application Japan, Dec. 28, 1994, 6-327846

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—231 **12 Claims**

1. A surgical suture comprising a suture body and a coating layer comprising ingredients A, B and C:
<ingredient A> at least one higher fatty acid salt;
<ingredient B> at least one film-forming polymer selected from the group consisting of polycaprolactone, caprolactone-lactic acid copolymer, caprolactone-glycolic acid copolymer, polylactic acid and lactic acid-glycolic acid copolymer; and
<ingredient C> at least one sucrose fatty acid ester.

5,609,610

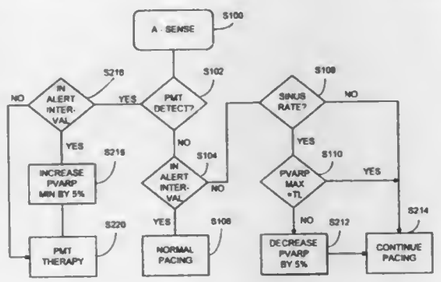
DUAL CHAMBER PACEMAKER WITH AUTOMATIC ADAPTATION FOR INTRINSIC ATRIAL EVENTS

Tibor Nappholz, Englewood, Colo., assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Sep. 19, 1995, Ser. No. 530,054

Int. Cl.[6] A61N *1/365*

U.S. Cl. 607—9 **13 Claims**



1. A pacemaker comprising:
atrial sensing means for sensing atrial activity;
classifying means for determining if said atrial activity is pathological or physiological;
first delay means for establishing an A-V delay in response to said atrial activity;
ventricular sensing means for sensing ventricular activity;
ventricular pacing means for generating ventricular pacing pulses at the end of said A-V delay in the absence of ventricular activity;
second delay means for establishing a PVARP after one said ventricular activity sensing and pacing;
third delay means for establishing an alert interval at the end of said PVARP; and
means for adjusting the length of said PVARP and alert interval in response to sensing atrial activity for optimizing the PVARP without changing the total duration of said PVARP and said alert intervals.

5,609,611

PACEMAKER SYSTEM WITH POROUS ELECTRODE AND RESIDUAL CHARGE OR AFTER-POTENTIAL REDUCTION

Armin Bolz, and Max Schaldach, both of Erlangen, Germany, assignors to Biotronik Mess-und Therapiegeraete GmbH & Co. Ingenieurbuero Berlin, Berlin, Germany

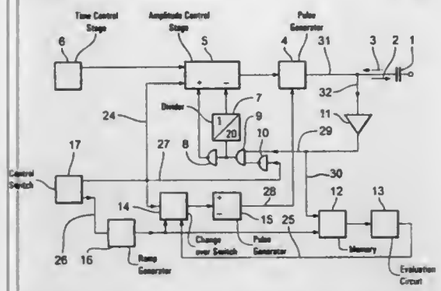
PCT No. PCT/DE93/00887, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06508, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 16, 1993, Ser. No. 403,723

Claims priority, application Germany, Sep. 17, 1992, 42 31 603.0

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—13 **19 Claims**



1. A cardiac pacemaker system including: a stimulation electrode adapted for being arranged in the heart; an output capacitor coupled to the stimulation electrode; a stimulation circuit, coupled to the output capacitor, for generating stimulation pulses; a pulse-generating circuit, coupled to the output capacitor, and being activated for generating a pulse following each stimulation pulse for at least one of reducing a residual charge of the output capacitor and eliminating an afterpotential following a stimulation pulse by the stimulation electrode; and an evoked response circuit, coupled to a control input of the pulse generating circuit, for acquiring an evoked heart action from an electrical signal picked up by an electrode installed in the heart, the improvement wherein:
the stimulation electrode includes a porous surface coating made of an inert material and having an active surface that is substantially larger than a surface of the basic geometric form of an uncoated stimulation electrode; and the pacemaker system includes circuit means for changing a time duration of the activation of the pulse generating circuit as a function of the acquisition of the evoked pulses, with the time duration of the activation being limited to no longer than 70 ms.

5,609,612

DEVICE FOR DETERMINING MYOCARDIAL FUNCTION AND CORRESPONDING PROCEDURE AND METHOD

Gianni Pilcchi, Bologna; Giorgio Corbucci, S. Giovanni in Persiceto, and Bruno Garberoglio, Turin, all of Italy, assignors to Sorin Biomedica Cardio S.p.A., Saluggia, Italy

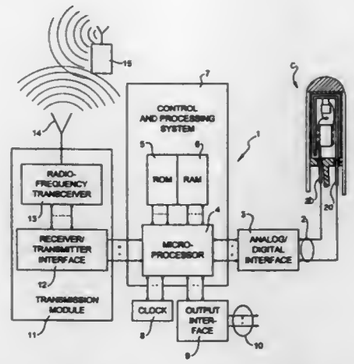
Continuation-in-part of Ser. No. 318,463, Oct. 5, 1994, Pat. No. 5,496,351. This application Dec. 13, 1995, Ser. No. 571,621

Claims priority, application Italy, Oct. 5, 1993, TO93A0729; Oct. 20, 1995, TO95A0853

Int. Cl.[6] A61N *1/365*

U.S. Cl. 607—17 **46 Claims**

1. A pacemaker comprising:
a natural heart acceleration sensor;
a signal generator coupled to the sensor to provide a signal representative of the natural heart acceleration;
a processor connected to receive the signal for determining a value indicative of a characteristic of the signal during a selected time segment and calculating the difference between the determined value and a reference value, the processor being operative to select a pacing rate based upon the difference between the determined value and the reference value;
a pulse generator responsive to the selected pacing rate to generate stimulating pulses corresponding to the selected pacing rate; and
at least one electrode for applying the stimulation pulses to at least one chamber of a patient's heart.



5,609,613

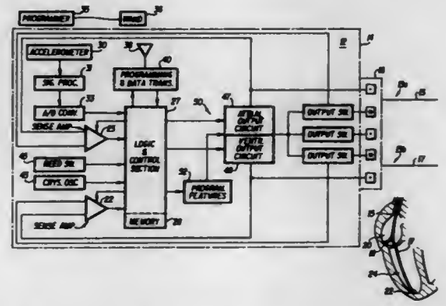
CONTROL OF PACING RATE IN DUAL-CHAMBER, RATE-ADAPTIVE PACEMAKERS

Drury Woodson; Michael Lee; Joseph Vandegriff, all of Angleton, Tex.; Eckhard Alt, Ottobrunn, Germany, and Lawrence J. Stotts, Angleton, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed May 3, 1995, Ser. No. 433,788

Int. Cl.[6] A61N *1/00*

U.S. Cl. 607—19 **12 Claims**



1. An implantable, programmable, dual-chamber, rate-adaptive cardiac pulse generator for sensing atrial activity of the patient's heart and for tracking the sensed atrial activity as a pacing rate for the ventricle within programmable lower and upper rate limits, the upper rate limit being a programmable maximum pacing rate for the ventricle, said pulse generator comprising sensor means for developing a rate control signal representative of the status of physical activity of the patient, means responsive to said sensor means for providing a ventricular tracking limit between said lower and upper rate limits that establishes a maximum ventricular pacing rate ranging upward from a resting ventricular tracking limit whenever the sensor means rate cootrol signal is indicative of no physical activity, and control means further responsive to said sensor means for dynamically varying the ventricular tracking limit directly with the sensor means rate control signal indicative of

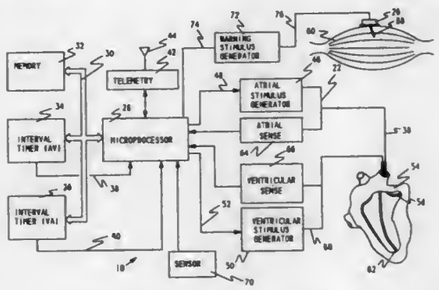
physical activity to allow the sensed atrial activity to be tracked in the ventricle as a dynamic ventricular tracking limit constituting a new operational limit for ventricular response consistent with current level of physical activity indicated by the sensor means up to the upper rate limit constituting said maximum pacing rate for the ventricle.

5,609,614

IMPLANTABLE CARDIAC STIMULATION DEVICE WITH WARNING SYSTEM HAVING AUTOMATIC REGULATION OF STIMULATION

Lawrence J. Stotts; Patrick J. Paul, and David Prutchi, all of Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Oct. 27, 1995, Ser. No. 549,050
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—29 **22 Claims**



1. An implantable cardiac stimulator system comprising a cardiac stimulator comprising

means for producing a cardiac therapy,

means for detecting a predetermined condition,

means for producing a physiologic stimulation to warn said patient of said detected condition, said stimulation having an adjustable magnitude,

electrode means for connecting said physiologic stimulation producing means to selected tissue of said patient,

sensor means for detecting a reaction of said patient to application of said physiologic stimulation, and

means for adjusting the magnitude of said physiologic stimulation in response to said sensor means, and

at least one lead, said lead comprising

at least one electrode adapted to be implanted adjacent a patient's heart for delivering said stimulation therapy to the heart,

a conductor for electrically connecting said therapy producing means to said electrode.

5,609,615

IMPLANTABLE CARDIAC STIMULATION DEVICE WITH WARNING SYSTEM AND CONDUCTIVE SUTURE POINT

Richard S. Sanders, Houston; Patrick J. Paul, and David Prutchi, both of Lake Jackson, all of Tex., assignors to Intermedics, Inc., Angleton, Tex.

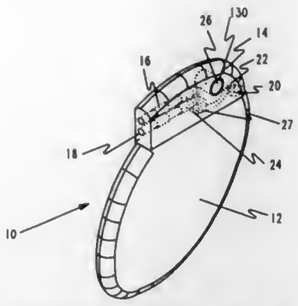
Filed Sep. 22, 1995, Ser. No. 532,929
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—36 **24 Claims**

1. An implantable cardiac stimulator comprising

means for producing a cardiac therapy,

a stimulator case containing said therapy producing means,

at least one electrode adapted to be implanted adjacent a patient's heart for delivering said therapy to the heart,



a cardiac stimulation lead electrically connecting said therapy producing means to said electrode,

means for detecting a predetermined condition,

means for producing a physiologic stimulation to warn said patient of said detected condition,

suture point means for providing an electrically conductive suture point on said stimulator case, said suture point means being adapted to receive a sunure for securing said stimulator case to adjacent tissue of a patient, and

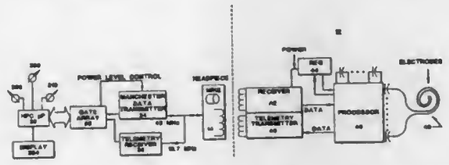
an electrical conductor providing electrical communication between said means for producing a physiologic stimulation and said suture point means.

5,609,616

PHYSICIAN'S TESTING SYSTEM AND METHOD FOR TESTING IMPLANTABLE COCHLEAR STIMULATOR

Joseph H. Schulman, Santa Clarita; John C. Gord, Venice; Primoz Strojnik, Granada Hills, and David 1. Whitmoyer, Los Angeles, all of Calif., assignors to Alfred E. Mann Foundation for Scientific Research, Sylman, Calif.

Continuation of Ser. No. 23,584, Feb. 26, 1993, which is a continuation of Ser. No. 752,069, Aug. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,563, Sep. 22, 1989, abandoned. This application May 25, 1995, Ser. No. 447,157
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—56 **14 Claims**



1. A physician's testing system for testing a multichannel cochlear stimulating system, comprising a physician's tester, an external headpiece/transmitter, and an implanted cochlear stimulator (ICS),

the external headpiece/transmitter having transmitting means for transmitting data-containing signals to the ICS;

the ICS comprising: (a) receiving means for receiving the data-containing signals, (b) processor means for processing the data-containing signals to generate stimulation signals, (c) a plurality of tissue-stimulating electrodes for receiving the stimulation signals, (d) monitor means in the processor means and responsive to the data-containing signals for (1) selectively monitoring at least one pair of the tissue-stimulating electrodes as one of the stimulation signals is applied thereto to measure a voltage associated with said pair of electrodes, and (2) generating stimulator status-indicating signals, and (e) telemetry means for transmitting the stimulator status-indicating signals to the external headpiece/transmitter means; and

the physician's tester comprising:

external processor means coupled to the transmitting means of the external headpiece/transmitter for receiving and processing the status-indicating signals to derive information therefrom regarding the operation of the implanted stimulator and its plurality of tissue stimulating electrodes;

user-controllable means connected to the external processor means for selectively generating and controlling the data-containing signals transmitted by the transmitting means of the external headpiece/transmitter means, said user-controllable means including manual means for specifying a peak output current for the stimulation signals to be applied to the at least one pair of tissue-stimulating electrodes; and

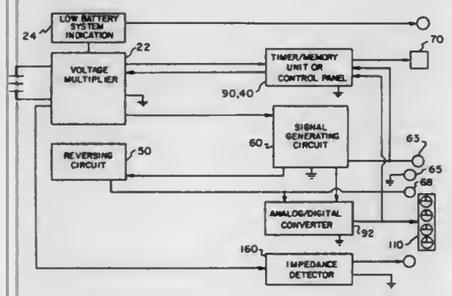
display means for displaying the information derived from the status-indicating signals.

5,609,617

METHOD FOR ENHANCEMENT OF DEHYDROEPIANDROSTERONE

C. Norman Shealy, Rte. 1, Box 216, Fair Grove, Mo. 65648; Saul Liss, Hawthorne, N.J.; Caroline M. Myss, Melrose Park, Ill., and Roger K. Cady, Springfield, Mo., assignors to C. Norman Shealy, Fair Grove, Mo.

Filed Feb. 21, 1995, Ser. No. 390,965
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—68 **12 Claims**



1. A method of raising serum DHEA levels in an individual comprising the steps of:

(a) applying electrodes sequentially to at least one acupuncture points selected from a Ring of Fire acupuncture points of the individual's body; and

(b) applying a high frequency of at least 1 kHz electrical stimulus bearing a low frequency amplitude modulation to the electrodes at each selected acupuncture point repetitively over a period of time sufficient to result in stimulation of endogenous production of DHEA within the individual.

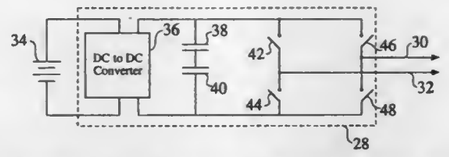
5,609,618

APPARATUS AND METHOD FOR INDUCING FIBRILLATION

Stephen T. Archer, Sunnyvale, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Dec. 6, 1995, Ser. No. 568,036
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—74 **15 Claims**

1. A method of inducing fibrillation in a patient's heart using an implantable pulse generator, comprising:



activating a DC-to-DC converter in said pulse generator; and

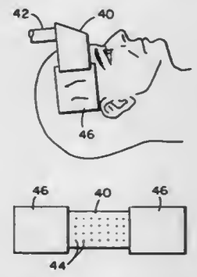
coupling a series of alternating polarity pulses directly from said DC-to-DC converter to said patient's heart to deliver a fibrillation inducing stimulus.

5,609,619

METHOD AND APPARATUS FOR HEATING BODIES

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 765,486, Sep. 25, 1991, Pat. No. 5,292,347, which is a continuation-in-part of Ser. No. 479,332, Feb. 13, 1990, abandoned. This application Jan. 10, 1994, Ser. No. 179,538
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **13 Claims**



1. A system for regulating a patient's body temperature, comprising:

heat transfer means for causing heat transfer relative to a portion of a patient's body limited to a forehead area of the patient by a heated vapor having a dew point temperature greater than tympanic temperature, the heat transfer means comprising a manifold having a perforated surface rigidly contoured to follow the shape of a forehead and means for spacing the manifold from the forehead;

a temperature monitor for monitoring the patient's body temperature; and

a controller for controlling heat transfer by the heat transfer means in response to the temperature monitor.

5,609,620

CARDIAC COOLING JACKET

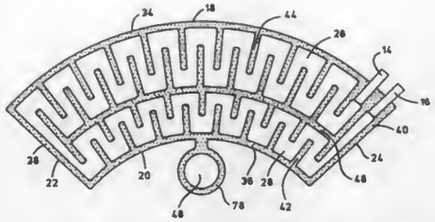
Pat O. Daily, 16560 El Camino Real, Rancho Santa Fe, Calif. 92067, assignor to Pat O. Daily, San Diego, Calif.

Filed Jun. 6, 1995, Ser. No. 467,565
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—105 **16 Claims**

1. A flexible thermal jacket of a generally thin flat arcuate configuration having a thermal transfer face and a thermal insulating face comprising:

a first thin flat sheet of impervious material having an arcuate inner edge and a arcuate outer edge, said inner edge being of lesser diameter than said outer edge;

a second sheet substantially identical to said first sheet bonded to said first sheet along said arcuate edges and along lines defining elongated serpentine fluid passages throughout said pad; and,



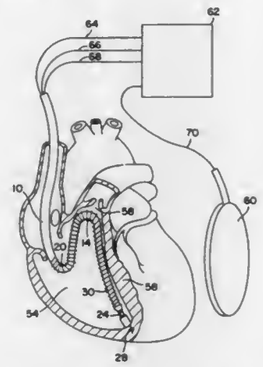
a generally circular insulating closure tab formed of inner and outer impervious sheets and an inner insulating sheet secured to said inner edge and operative to substantially close an opening formed by said inner edge upon arranging said pad into a frusto-conical configuration.

5,609,621

RIGHT VENTRICULAR OUTFLOW TRACT DEFIBRILLATION LEAD

Matthew D. Bonner, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 4, 1995, Ser. No. 511,200
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—122 **16 Claims**



1. A cardioversion/defibrillation lead for location in a human heart, comprising:

an elongated lead body having a proximal section extending distally from a proximal end of said lead body and a distal section extending proximally from a distal end of said lead body and having an intermediate section including a first loop portion and two leg portions, a first of said leg portions extending from a second loop portion located at a distal end of said proximal lead section, toward said proximal end of said lead body and ending at said first loop portion, a second of said leg portions extending distally from said first loop portion toward the distal end of said lead body;

means for introducing said intermediate section and said distal section into the right ventricle of the heart with said distal section directed into the apex of the right ventricle of the heart and for locating said first loop portion in the outflow tract of the heart to urge one of said leg portions against the septum of the heart between the outflow tract and the apex;

an elongated defibrillation electrode extending along at least said first and second leg portions;

a conductor located within said lead body, coupled to said defibrillation electrode and extending to said proximal section of said lead body; and

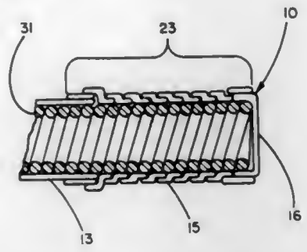
connector means coupled to said proximal section of said lead body for electrically coupling said conductor to an implantable defibrillator.

5,609,622

IMPLANTABLE ELECTRODE WITH CONDUCTIVE POLYTETRAFLUOROETHYLENE ELECRODE

Thomas M. Soukup, and Richard A. Staley, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 14,882, Feb. 1, 1993, abandoned.
This application Dec. 12, 1995, Ser. No. 571,580
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **19 Claims**



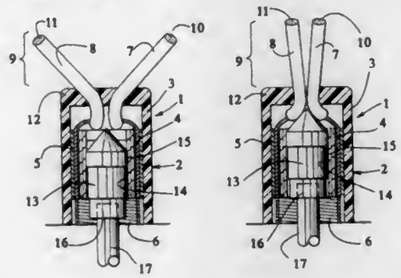
1. An implantable electrode comprising at least one helically wound conductor having a first length portion wherein a layer of porous expanded polytetrafluoroethylene having a microstructure of nodes interconnected by fibrils and containing an electrically conductive filler coaxially surrounds and contacts the first length portion of the at least one helically wound conductor, wherein said porous expanded polytetrafluoroethylene has a mean fibril length less than about ten microns, wherein the layer of porous expanded polytetrafluoroethylene containing an electrically conductive filler is electrically conductive in a dry state prior to implantation, wherein the porous polytetrafluoroethylene containing an electrically conductive filler is in the form of a helically wrapped tape and wherein adjacent edges of the helically wrapped tape are in physical contact.

5,609,623

ELECTRODE DEVICE FOR INTRACARDIAC STIMULATION OF HEART TISSUE AND/OR SENSING HEART SIGNALS HAVING CONDUCTIVE SURFACES RELATIVELY POSITIONABLE WITH RESPECT TO EACH OTHER BY A CONTROL ELEMENT

Ulf Lindegren, Enskededalen, Sweden, assignor to Pacesetter AB, Solna, Sweden

Filed Aug. 21, 1995, Ser. No. 517,182
Claims priority, application Sweden, Aug. 19, 1994, 9402775
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—128 **11 Claims**



1. An electrode device for in vivo electrical interaction with cardiac tissue, comprising:

an electrode cable containing at least two elongate, flexible conductors insulated from each other, said electrode cable terminating in an electrode head;

said electrode head including at least two moveable, rigid parts mounted in said electrode head so as to be moveable relative to each other, each rigid part carrying at least one electrically conductive surface thereon adapted for in vivo interaction with cardiac tissue, the conductive surfaces being respectively electrically connected to said conductors in said electrode cable; and

control means disposed in said electrode cable immediately behind said electrode head for mechanically acting on said rigid parts for causing a distance between the respective conductive surfaces carried by said rigid parts to be continuously varied as a position of said control means in said electrode cable is changed; and

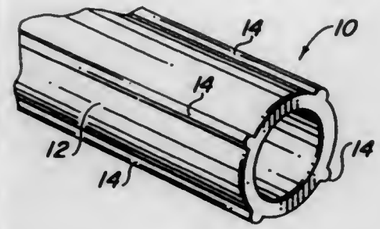
means for manually changing the position of said control means in said electrode cable.

5,609,624

REINFORCED VASCULAR GRAFT AND METHOD OF MAKING SAME

Robert W. Kalis, Mesa, Ariz., assignor to Impra, Inc., Tempe, Ariz.

Filed Oct. 8, 1993, Ser. No. 134,072
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **18 Claims**



1. A flexible, monolithic, polymer tube, comprising:

a microporous expanded polytetrafluoroethylene tubular member having a microstructure of nodes interconnected by fibrils and having an inner wall diameter and an outer wall diameter, and

at least one microporous expanded polytetrafluoroethylene external rib member projecting outwardly from the outer wall diameter, the at least one expanded polytetrafluoroethylene external rib member being integral with the microporous expanded polytetrafluoroethylene tubular member, said microporous expanded polytetrafluoroethylene tubular member and said at least one expanded polytetrafluoroethylene external rib member having substantially equal porosities.

5,609,625

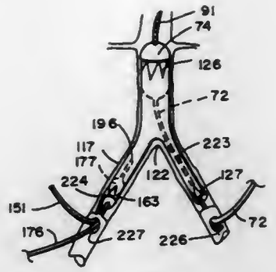
ENDOVASCULAR GRAFT HAVING BIFURCATION AND APPARATUS AND METHOD FOR DEPLOYING THE SAME

Alec A. Piplani, Mountain View; Dinah B. Quiachon, San Jose, and Wesley D. Sterman, San Francisco, all of Calif., assignors to Endovascular Technologies, Inc., Menlo Park, Calif.

Division of Ser. No. 66,414, May 21, 1993, Pat. No. 5,489,295, which is a continuation of Ser. No. 684,018, Apr. 11, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 166,069
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **7 Claims**

1. A method for intraluminal emplacement of a graft in a bifurcated vessel of a patient, the method comprising:

providing a graft having a main tubular body including a first attachment system secured thereto, the graft further having a first tubular leg and a second tubular leg including a second attachment system secured thereto;



inserting the graft intraluminally into a main vessel of a patient, the main vessel having a bifurcation forming a first minor vessel and a second minor vessel;

positioning the main tubular body of the graft in the main vessel;

securing the first attachment system and the main tubular body of the graft in the main vessel;

positioning the first tubular leg of the graft in the first minor vessel;

positioning the second tubular leg of the graft in the second minor vessel; and

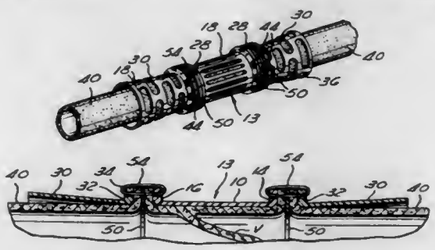
securing the second attachment system and the second tubular leg of the graft in a second minor vessel.

5,609,626

STENT DEVICES AND SUPPORT/RESTRICTOR ASSEMBLIES FOR USE IN CONJUNCTION WITH PROSTHETIC VASCULAR GRAFTS

R. C. Quijano, Laguna Hills, and Aws Nashef, Huntington Beach, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 871,414, Apr. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 500,821, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 359,449, May 31, 1989, abandoned. This application Jun. 22, 1994, Ser. No. 264,225
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **8 Claims**



1. A vascular implant prosthesis, comprising:

a) an exovascular stent comprising:

a generally elongate cylindrical body, a first end, a second end, and a hollow bore extending longitudinally therethrough;

a first flange extending perpendicularly about the first end of the stent body;

a second flange extending perpendicularly about the second end of the stent body;

a plurality of apertures formed in the stent body to permit flow of fluid therethrough;

b) a bioprosthetic vascular graft comprising a segment of mammalian blood vessel which has been treated with a chemical fixative known to cross link collagen, said bioprosthetic vas-

cular graft being positioned coaxially within the bore of the stent body and affixed to the first and second end flanges of the stent.

5,609,627

METHOD FOR DELIVERING A BIFURCATED ENDOLUMINAL PROSTHESIS

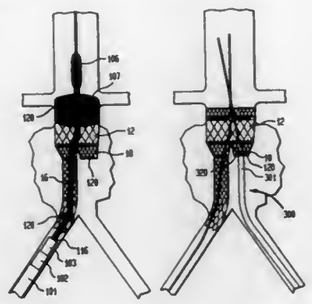
George Goicoechea, Freeport, Bahamas; John Hudson, Clearwater, Fla., and Claude Mialhe, Draguignan, France, assignors to Boston Scientific Technology, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 312,881, Sep. 27, 1994. This application Oct. 4, 1994, Ser. No. 317,763

Claims priority, application European Pat. Off., Feb. 9, 1994, 94400284; Jun. 10, 1994, 94401306

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **2 Claims**



1. A method for delivering a bifurcated endoluminal stent or prosthesis to a bifurcation site where a blood vessel branches into a first branched vessel and a second branched vessel, said method comprising the steps of:

(a) providing a first section of said bifurcated endoluminal stent or prosthesis including a proximal portion and a first distal portion;

(b) providing a first introducer having an outer sheath, a proximal portion pusher disposed at least partially within said outer sheath, and a distal portion pusher disposed at least partially within said proximal portion pusher;

(c) placing said first section of said bifurcated endoluminal stent or prosthesis within said first introducer such that said proximal portion of said first section of said bifurcated endoluminal stent or prosthesis is disposed within said outer sheath, and such that said distal portion of said bifurcated endoluminal stent or prosthesis is disposed within said proximal portion pusher;

(d) inserting said first introducer containing said first section of said bifurcated endoluminal stent or prosthesis into a body to a predetermined delivery location at said bifurcation site;

(e) partially withdrawing said outer sheath of said first introducer while maintaining said proximal portion pusher in a fixed position until said proximal portion of said first section of said bifurcated endoluminal stent or prosthesis is deployed from said first introducer into said blood vessel at said bifurcation site;

(f) further withdrawing said outer sheath and partially withdrawing said proximal portion pusher while maintaining said distal portion pusher in a fixed position until said first distal portion of said first section of said bifurcated endoluminal stent or prosthesis is deployed from said first introducer at least partially into said first branched vessel;

(g) fully withdrawing said first introducer from the body;

(h) providing a second section of said bifurcated endoluminal stent or prosthesis including a second distal portion;

(i) providing a second introducer having an outer sheath and a pusher disposed at least partially within said outer sheath;

(j) placing said second section of said bifurcated endoluminal stent or prosthesis within the outer sheath of said second introducer;

(k) inserting said second introducer containing said second section of said bifurcated endoluminal stent or prosthesis into the body to said bifurcation site;

(l) partially withdrawing said outer sheath of said second introducer while maintaining said pusher of said second introducer in a fixed position until said second distal portion of said second section of said bifurcated endoluminal stent or prosthesis is deployed from said second introducer such that a proximal end of said second distal portion securely connects to said proximal portion of said first section of said bifurcated endoluminal stent or prosthesis, and such that a distal end of said second distal portion extends at least partially into said second branched vessel; and

(m) fully withdrawing said second introducer from the body.

5,609,628

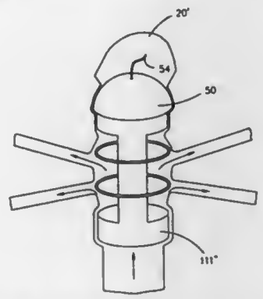
INTRAVASCULAR GRAFT AND CATHETER

Victor J. Keranen, 410 Murray Hill Rd., Fayetteville, N.C. 28303

Filed Apr. 20, 1995, Ser. No. 425,833

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **13 Claims**



1. An intravascular graft comprising:

an elongate body having a flexible wall defining a tubular passageway and having opposite proximal and distal ends, said body proximal end open to fluid flow therethrough; and

a cap having opposite proximal and distal cap surfaces, said proximal cap end attached to and obstructing said body distal surface and preventing fluid flow through said body distal end,

said cap proximal surface having a diameter greater than that of said elongate body.

5,609,629

COATED IMPLANTABLE MEDICAL DEVICE

Neal E. Fearnot; Thomas G. Kozma; Anthony O. Ragheb, and William D. Voorhees, all of West Lafayette, Ind., assignors to MED Institute, Inc., West Lafayette, Ind.

Filed Jun. 7, 1995, Ser. No. 484,532

Int. Cl.[6] A61F *2/06*

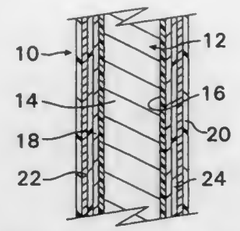
U.S. Cl. 623—1 **19 Claims**

1. An implantable medical device (**10**) comprising:

a structure (**12**) adapted for introduction into a patient, the structure (**12**) being composed of a base material (**14**);

at least one layer (**18**) of a bioactive material positioned over the structure (**12**);

at least one porous layer (**20**) positioned over the bioactive material (**18**), composed of a polymer applied by vapored deposition or plasma deposition, and being of a thickness adequate to provide a controlled release of the bioactive material; and



at least one additional coating layer (**16**) applied to the base material (**14**) and being less porous than, but composed of the same polymer as, at least one porous layer (**20**).

5,609,630

INTRAOCULAR IMPLANT

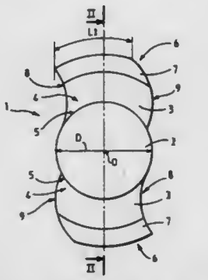
Philippe Crozafon, 55, Promenade des Anglais, 06000 Nice, France

Filed Aug. 15, 1995, Ser. No. 515,533

Claims priority, application France, Aug. 22, 1994, 94 10187

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **3 Claims**



1. An intraocular implant (**1, 12, 18**) having an outer side and an inner side, said intraocular implant comprising: a central lens (**2**) which is circular in shape, two elastically deformable securing arms (**3, 13, 19**) and beads (**7, 16**), each of said securing arms (**3, 13, 19**) having two ends and each of said securing arms (**3, 13, 19**) being connected via one of its ends to said central lens (**2**) and via the other of its ends to one of said beads (**7, 16**), said securing arms (**3, 13, 19**) having edges which have a shape curved in the plane of said central lens (**2**) and exhibiting a general direction which is radial with respect to said central lens (**2**), said securing arms (**3, 13, 19**) being identical to each other, said securing arms (**3, 13, 19**) having a substantially constant width which is approximately equal to the length of one of said beads, and said securing arms (**3, 13, 19**) being arranged in a symmetrical manner, in one plane, with respect to the center (O) of the central lens (**2**), and said beads (**7, 16**) being convex toward the outer side, the curvilinear length (L1, L2) of said bead (**7, 16**) being at least equal to a third of the diameter (D) of the central lens (**2**).

5,609,631

FIBRIN D-DOMAIN MULTIMER COATED PROSTHESES AND METHODS FOR THEIR PRODUCTION

Fraser D. Rubens, 27 Castlethorpe Cresc., Nepean, Ontario, Canada, and Paul D. Bishop, 28425 SE. 8th St., Fall City, Wash. 98024

Filed Apr. 28, 1995, Ser. No. 430,792

Int. Cl.[6] A61F *2/02*; **A61K** *37/547*

U.S. Cl. 623—11 **20 Claims**

1. A method of coating a prosthetic surface with an antithrombogenic protein, comprising the step of:

contacting said prosthetic surface with a composition comprising multimers of fibrin degradation products, the multimers having cross-linked D-domains, to produce an antithrombogenic coating comprising said multimers on said prosthetic surface.

5,609,632

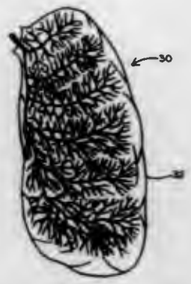
METHOD OF FABRICATING AN ARTIFICIAL LUNG

Roger J. Elgas, Anaheim Hills, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 18, 1996, Ser. No. 618,474

Int. Cl.[6] A61F *2/04*

U.S. Cl. 623—12 **10 Claims**



1. A method of making an implantable artificial lung, comprising the steps of:

a) introducing into cavities of a natural lung a reversibly hardenable fluid;

b) hardening said fluid;

c) dissolving the tissue of said natural lung while said fluid is hardened;

d) coating said bardened fluid with a material forming a gas permeable membrane; and

e) removing said hardenable fluid from said gas permeable membrane.

5,609,633

TITANIUM-BASED BONE-BONDING COMPOSITES HAVING INVERTED CONCENTRATION GRADIENTS OF ALKALI AND TITANIUM IONS IN A SURFACE LAYER

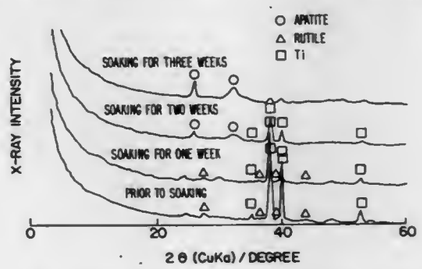
Tadashi Kokubo, Kyoto, Japan, assignor to The Foundation for Promotion of Ion Engineering, Kyoto, Japan

Filed Nov. 9, 1994, Ser. No. 338,171

Claims priority, application Japan, Nov. 9, 1993, 5-304659

Int. Cl.[6] A61F *2/28*

U.S. Cl. 623—16 **14 Claims**



1. A bone repairing material comprising a substrate of titanium or a titanium alloy and on the surface of the substrate a primary surface layer comprising a titanium oxide phase and an amorphous phase of alkali titanate, said primary surface layer thereby forming

an interface between said substrate and primary surface layer, said primary surface layer having an interior and an outer surface, said primary surface layer comprising a titanium oxide phase and an amorphous phase of alkali titanate, said primary surface layer having been treated so as to provide a layer comprising amorphous alkali titanate phase and a sufficient concentration gradient of alkali and titanium ions to permit apatite from natural or simulated body fluid to be grown thereon and wherein the concentration of titanium oxide phase in the primary surface layer gradually decreases from the layer interior towards the outer surface, while the concentration of the total alkali ions in the primary surface layer gradually increases from the layer interior towards the outer surface, and wherein said interface between said substrate and said primary surface layer and boundaries of the phases within the surface layer are tightly bonded, said primary surface layer having been heated in a gas comprising oxygen to from about 300° C. to not more than the titanium or titanium alloy transition temperature, for about 1 to 24 hours.

5,609,634

INTERVERTEBRAL PROSTHESIS MAKING POSSIBLE ROTATORY STABILIZATION AND FLEXION/EXTENSION STABILIZATION

Gilles Voydeville, 90 quai Claude Le Lorrain, Nancy, France

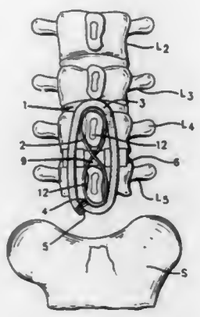
PCT No. PCT/FR93/00664, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/01057, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 362,583

Claims priority, application France, Jul. 7, 1992, 92 08391

Int. Cl.[6] A61F *2/44*; A61B *17/56*

U.S. Cl. 623—17 **3 Claims**



1. An intervertebral prosthesis which comprises:

a semi-flexible interspinous block configured to be disposed between adjacent spinous processes, said block having two pairs of continuous ducts of different cross-sections formed therethrough,

a flexible ligament having a first thin part of small width and thickness, and a second wide part in continuation of said first part, of greater width and thickness than said first part, wherein said ducts are adapted for passage of each of said first and second parts, respectively, of the ligament such that said first part is adapted to be laced through one of said pair of ducts in a figure eight around the spinous processes of two adjacent vertebrae; and the second part of the ligament is adapted to be laced through the other of said pair of ducts for perispinous encircling, and

means for closing the ligament on itself.

5,609,635

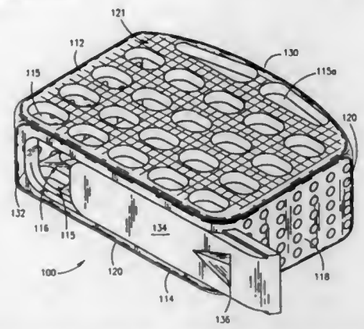
LORDOTIC INTERBODY SPINAL FUSION IMPLANTS

Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291

Continuation-in-part of Ser. No. 263,952, Jun. 22, 1994, abandoned, which is a continuation of Ser. No. 52,211, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 546,849, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 212,480, Jun. 28, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 482,146

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 **51 Claims**



1. An interbody spinal fusion implant for fusion of two adjacent vertebrae in the human spine in which said implant to be interposed between the vertebral endplates of said adjacent vertebrae, comprising:

upper and lower walls, insertion and trailing walls, and side walls;

a plurality of openings in at least said upper and lower walls, at least some of said plurality of openings allowing for communication between said upper wall and said lower wall so as to be capable of containing fusion promoting materials for promoting bone ingrowth is continuity through said implant from the vertebral endplate of one of said adjacent vertebrae to the vertebral endplate of the other of said adjacent vertebrae for fusion of said adjacent vertebrae;

said upper and lower walls forming a support structure including at least a portion of the surfaces of said upper and lower walls between said plurality of openings and between said insertion, trailing, and side walls for bearing against the vertebral endplates of the adjacent vertebrae, said upper and lower walls being disposed at least in part in a diverging angular relationship to each other from said insertion wall to said trailing wall, said upper and lower walls being spaced apart at a distance from each other that is greater at said trailing wall than at said insertion wall;

whereby the insertion of said implant between the vertebral endplates of the two adjacent vertebrae supports the two adjacent vertebrae in an angular relationship and allows for bone growth to occur through said implant from one vertebral endplate adjacent to said implant to the other vertebral endplate adjacent to said implant.

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SPINAL IMPLANT

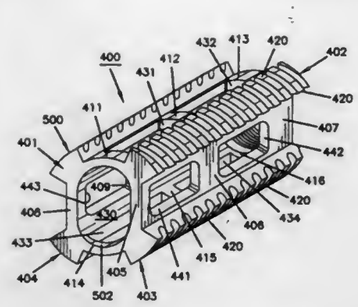
Douglas W. Kohrs, Edina, Minn.; Hansen A. Yuan, Fayetteville, N.Y., and David W. Stassen, Edina, Minn., assignors to Spine-Tech, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 247,857, May 23, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,297

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 **13 Claims**

1. An implant for use in spinal stabilization for placement into a disc space between two vertebra having end plates of cortical bone and a vertebra interior of cancellous bone, said implant comprising:



a plurality of generally linear thread segments;

rigid supports for holding said thread segments in spaced apart alignment;

said thread segments including a plurality of individual threads with said individual threads of said segments defining a thread pattern;

said supports and said thread segments defining a hollow implant interior exposed to an exterior of said implant.

5,609,637

SPACE KEEPER, IN PARTICULAR FOR AN INTERVERTEBRAL DISK

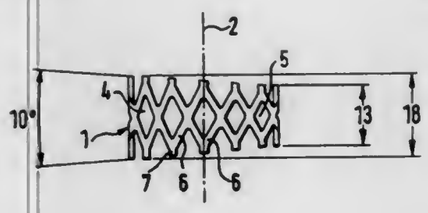
Lutz Biedermann, Am Schäferstelg 8, D-78048 VS-Villingen, and Jürgen Harms, Maximilianstr. 5, D-76133 Karlsruhe, both of Germany

Continuation of Ser. No. 367,335, Mar. 2, 1995, abandoned. This application Apr. 17, 1996, Ser. No. 632,327

Claims priority, application Germany, Jul. 9, 1993, 43 23 034.2

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 **7 Claims**



1. A space keeper for replacing an intervertebral disk, the space keeper comprising:

a wall being closed around an axis defining a hollow body generally sized and shaped to replace said intervertebral disk, said wall having two opposite edges providing a bottom and a top surface of said body,

a plurality of holes defined by said wall, said holes being disposed circumferentially around said wall and having a height in a direction parallel to said axis, said height decreasing from a maximum value at one side of said wall to a minimum value at an opposite side of said wall,

a plurality of points provided at said edges, and severable projecting portions provided at said points for adjusting said shape by severing selected ones of said portions.

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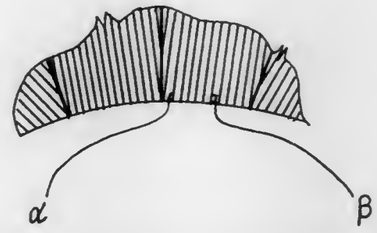
REINFORCED POLYETHYLENE FOR ARTICULAR SURFACES

Howard C. Price, Wendell, N.C.; Steve T. Lin, Fort Wayne; Michael E. Hawkins, Columbia City, both of Ind., and Jack E. Parr, Arlington, Tenn., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Nov. 29, 1994, Ser. No. 346,125

Int. Cl.[6] A61F *2/30*

U.S. Cl. 623—18 **7 Claims**



1. An articular component of a prosthetic joint implant for the human body, the component comprising a body having an articular surface, the body including elongated fibers extending to and having terminating ends defining the articular surface, said fibers being oriented approximately normal to the articular surface.

5,609,639

PROSTHESIS FOR KNEE REPLACEMENT

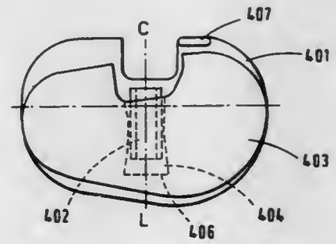
Peter S. Walker, The Institute of Orthopaedics. Dept. of Biomedical Engineering, Royal National Orthopaedic Hospital, Brockley Hill Stanmore, Middlesex, United Kingdom

Continuation-in-part of Ser. No. 829,369, Feb. 3, 1992, Pat. No. 5,330,533. This application Dec. 9, 1993, Ser. No. 163,623

Claims priority, application United Kingdom, Feb. 4, 1991, 9102348; Jul. 16, 1993, 9314839

Int. Cl.[6] A61F *2/38*

U.S. Cl. 623—20 **18 Claims**



1. A knee prosthesis which comprises:

(a) a femoral component having a pair of condylar bearing surfaces;

(b) a tibial component comprising a tibial platform having medial and lateral sides;

(c) a single unitary meniscal component located between the femoral and tibial components, said single unitary meniscal component having concave areas on medial and lateral sides thereof for receiving the condylar surfaces and being arranged for sliding movement in a generally anterior-posterior (a-p) direction on said tibial platform;

(d) guide means extending generally along an axis in said a-p direction for guiding said single unitary meniscal component for sliding motion relative to the tibial platform in said a-p direction but with limited rotational movement; and

(e) stop means on the tibial platform positioned to limit posterior motion of said single unitary meniscal component on the medial side, so as to cause the meniscal component to pivot about a medially displaced axis, said guide means comprising a guide member which is fixed to or is integral with the tibial base plate and engages in a recess in the meniscal component, the meniscal component being rotatable on the guide member.

5,609,640

PATELLA PROSTHESES

David P. Johnson, North Chew Farm, Norton Lane, Chew Magna Avon, United Kingdom

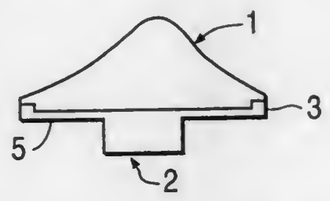
PCT No. PCT/GB92/01226, § 371 Date Apr. 1, 1994, § 102(e) Date Apr. 1, 1994, PCT Pub. No. WO93/00871, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 175,349

Claims priority, application United Kingdom, Jul. 5, 1991, 9114603

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 **22 Claims**



1. A patella prosthesis comprising:

a body portion having an articulating side, a patella connection side, a first surface on said articulating side and a second surface on said patella connection side, wherein said first surface has a single rounded projection which is asymmetrical with respect to both coronal and sagittal views, and

an anchor stem projecting from said second surface in a direction away from said first surface for reception in a hole countersunk in a surface of a patella articular surface.

5,609,641

TIBIAL PROSTHESIS

Chris E. Johnson; Thomas A. Carls, both of Memphis, and David L. Evans, Bartlett, all of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Jan. 31, 1995, Ser. No. 381,118

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 **33 Claims**

1. A tibial prosthetic knee component comprising:

a) a tibial tray for replacing a portion of the patient's proximal tibia;

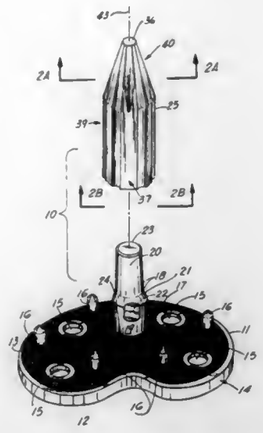
b) a stem portion having proximal and distal end portions, the stem defining a projection from the tray, forming an angle therewith, for anchoring the tibial tray to the proximal tibia;

c) the stem including means at the proximal end portion for attachment to the tray and a distal tip at the distal end portion;

d) the stem comprising a generally cylindrically shaped proximal portion and a conically shaped distal portion;

e) a plurality of longitudinal extending, generally parallel circumferentially spaced fins extending substantially the length of the stem, the fins communicating with the distal tip;

f) a plurality of longitudinally extending channels positioned respectively between the fins, the channels gradually deepening and the fins gradually increasing in radial thickness at greater distances from the distal tip at least at the conically shaped distal portion; and



g) a flat surface of generally constant width extending longitudinally between the proximal and distal ends, said flat surface having edges that are generlly parallel to said fins.

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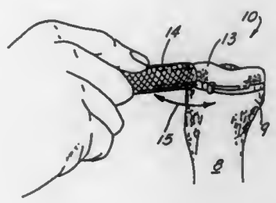
TIBIAL TRIAL PROSTHESIS AND BONE PREPARATION SYSTEM

Chris E. Johnson; Tim Vendrely, both of Memphis, Tenn.; Leo A. Whiteside, Bridgeton, Mo.; Thomas A. Carls, Memphis, Tenn.; John Steele, Aurora, Colo., and Khosrow Naraghian, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Feb. 15, 1995, Ser. No. 389,100

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 **13 Claims**



1. A method of implanting trial femoral and trial tibial knee prosthesis components comprising the steps of:

a) forming a plurality of surgical cuts on the patient's distal femur;

b) fitting a femoral trial prosthesis to the surgically prepared distal femur, the femoral trial prosthesis having a femoral articulating surface and a non-articulating surface that fits the patient's distal femur at the surgical cuts;

c) forming a transverse cut on the patient's proximal tibia;

d) placing a tibial trial prosthesis on the patient's proximal tibia, said tibial trial prosthesis including a tibial stem that fits the patient's intramedullary canal, a metallic tibial tray, and a plastic trial insert that fits the tibial tray said plastic insert having a tibial articulating surface that articulates with the femoral articulating surface;

e) placing the femoral articulating surface against the tibial articulating surface;

f) moving the patient's tibia through a range of motion during which the femoral and tibial articulating surfaces articulate with each other;

g) rotating the tibial trial prosthesis about its stem with an instrument that engages the plastic insert and wherein the instrument can be used to remove the plastic insert thus allowing replacement with another insert of a different size;

h) wherein articulation of the femoral trial prosthesis and tibial trial prosthesis in step "f" can be observed by the surgeon during the surgical procedure when the patient's tibia is moved through a range of motion relative to the patient's femur; and

i) wherein in step "h" the trial tibial prosthesis is moved into different rotational trial positions.

5,609,643

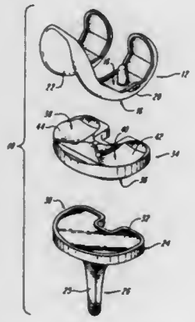
KNEE JOINT PROSTHESIS

Dennis P. Colleran, Plainville; Robert E. Sommerich, and Jorge A. Ochoa, both of Norton, all of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Mar. 13, 1995, Ser. No. 404,195

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 **11 Claims**



1. A knee prosthesis system, comprising:

at least one femoral component having an inferior surface mountable on a distal end of the femur of a patient and a superior articulation surface including two adjacent, semi-parallel bearing surfaces, each bearing surface being of substantially the same curved, convex shape and size both in the anterior-posterior direction and in the medial-lateral direction, wherein the curvature of each bearing surface lying in the sagittal plane, in contact with a tibial condylar element, and extending in the anterior-posterior direction is defined by at least two semi-parallel radii wherein a first sagittal radius is more anterior than a second sagittal radius, and wherein the curvature of each bearing surface lying in the coronal plane, in contact with a tibial condylar element, and extending in the medial-lateral direction is defined by a coronal radius;

at least one tibial component having a proximal end and a distal end mountable on the tibia of a patient; and

at least one tibial bearing member having a distal surface mountable within the proximal end of the tibial component and a proximal articulation surface, the proximal articulation surface including two adjacent tibial condylar elements, each having substantially the same size and shape, that seat the adjacent semi-parallel bearing surfaces of the femoral component, each condylar element being of a curved, concave shape in both the anterior-posterior and medial-lateral directions, the curvature of the tibial condylar elements in the anterior-posterior direction being defined by a single radius that is approximately 104% to 120% of the first sagittal radius, medial-lateral direction being defined by a single radius that is approximately 120% to 152% of the coronal radius.

the prosthesis being characterized by improved contact between the femoral bearing surfaces and the tibial condylar elements throughout the range of motion of a knee joint such that contact stress between the bearing surfaces of the femoral component and the condylar elements of the tibial bearing member, when subject to a load of approximately 2060 N, does not exceed approximately 15 MPa when the prosthesis is in perfect alignment and does not exceed approximately 20 MPa when the prosthesis is subjected to varus-valgus lift and/or internal-external rotation conditions of malaligmnent.

5,609,644

PROSTHETIC PATELLO FEMORAL JOINT ASSEMBLY

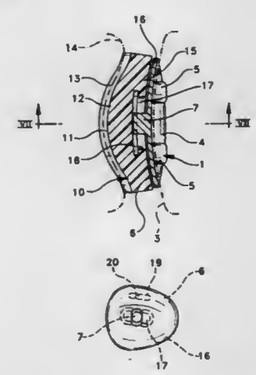
Alan M. Ashby, Caen, France, and Lindsay Laird, New Lambton Heights, Australia, assignors to Howmedica International, Shannon, Ireland

Filed Mar. 22, 1995, Ser. No. 409,116

Claims priority, application United Kingdom, Mar. 23, 1994, 9405746

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 **5 Claims**



1. A prosthetic patello femoral joint assembly comprising a patella femoral joint having a patella mounting component including a movable mobile bearing component, a first side of which is shaped to engaged the patella groove of a natural or an artificial femoral component, and a second side of which has a substantially spherical concave bearing surface which engages and can articulate against a substantially spherical posterior convex bearing surface on said mounting component, and a control element acting between the components which restricts substantially vertical movement of the bearing component relative to the mounting component about a medio-lateral axis of the knee with which it is to be used, but allow substantially medio-lateral movement and relative rotation between said mounting component and said bearing component wherein said control element comprises a peg carried on said mounting component which engages a substantially horizontal slot in said bearing component, said peg comprising a post part with a flange at its posterior end which is held in an undercut in said horizontal slot, and

wherein a second control element acts to limit relative rotational movement between said mounting component and said bearing component.

5,609,645

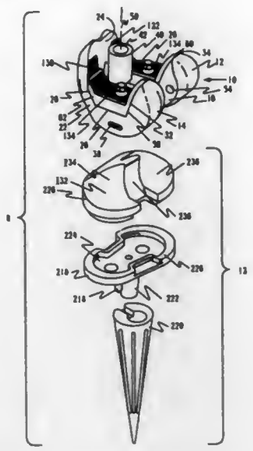
KNEE REVISION PROSTHESIS WITH SHIMS

John D. Vinciguerra, Austin, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Continuation of Ser. No. 331,049, Oct. 28, 1994. This application Jan. 22, 1996, Ser. No. 589,570

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 18 Claims



1. An implantable knee prosthesis comprising:

a tibial component having medial and lateral articulating surfaces;

a femoral component having medial and lateral condylar articulating surfaces configured to engage and articulate against said medial and lateral articulating surfaces, respectively, of said tibial component, said femoral component having planar surfaces configured to engage resected bone surfaces on a distal end of a femur and arranged relative to an axis to define an internal box geometry, including:

a base planar surface forming a substantially right angle with said axis and having a length in an anterior-posterior direction,

an anterior planar surface forming an acute angle with said axis,

a posterior planar surface intersecting said base planar surface at a first corner, said posterior planar surface being spaced from and disposed substantially in opposition to said anterior planar surface, and

a chamfer planar surface intersecting said anterior planar surface, and intersecting said base planar surface at a third corner, and having a length in an anterior-posterior direction; and

a shim including a base portion, a posterior portion, and a chamfer portion;

said base portion including a bottom wall lying adjacent said base planar surface, and a top wall spaced from and substantially parallel to said bottom wall, said top wall having a length in an anterior-posterior direction, which length is substantially equal to said length of said base planar surface;

said posterior portion including a rear wall lying adjacent said posterior planar surface, and a front wall spaced from and substantially parallel to said rear wall, said front wall intersecting said top wall at a second corner;

said chamfer portion including a lower wall lying adjacent said chamfer planar surface, and an upper wall spaced from and substantially parallel to said lower wall, said upper wall intersecting said top wall at a fourth corner and having a length in an anterior-posterior direction which length is substantially equal to said length of said chamfer planar surface;

wherein said second corner is displaced from said first corner in a direction substantially parallel to said anterior plane, and said fourth corner is displaced from said third corner in a direction substantially parallel to said anterior plane, such that said top wall, front wall and upper wall of said shim, together with said anterior planar surface of said femoral component, define an internal box geometry that is congruent with but displaced from said internal box geometry defined by said planar surfaces of said femoral component.

5,609,646

ACETABULAR CUP FOR A TOTAL HIP PROSTHESIS

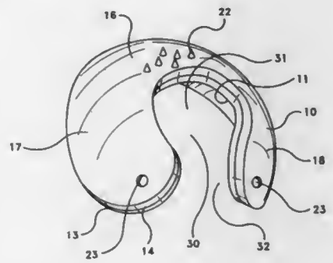
Richard E. Field, London, England; Peter Nuijten, County Limerick, Ireland, and Neil Rushton, Cambridge, England, assignors to Howmedica International, Shannon, Ireland

Continuation-in-part of Ser. No. 3,164, Jan. 12, 1993, abandoned. This application Aug. 26, 1994, Ser. No. 296,580

Claims priority, application United Kingdom, Jan. 23, 1992, 9201477

Int. Cl.[6] A61F 2/34

U.S. Cl. 623—22 12 Claims



1. An acetabular cup for a total hip prosthesis comprising:

an inner bearing component; and

an outer shell mechanically coupled to said inner bearing component, said shell having been formed from chopped carbon fiber reinforced plastic by molding around the inner bearing component and having an elastic modulus similar to subchondral bone of between 5.6 GPa and 18.6 GPa, with said inner bearing component having a lower elastic modulus and said shell having a part-spherical main portion and two independent arms separated from each other and projecting from said main portion forming an opening, each of said arms terminating at end portions adjacent said opening and opposite said main portion, each of said end portions having an aperture formed therethrough for receiving a fixation means to fix said arms to the natural acetabulum and a plurability of spikes extending from said main portion of said shell on a portion thereof adjacent to a central portion of said opening.

5,609,647

SPHERICAL HIP JOINT SOCKET

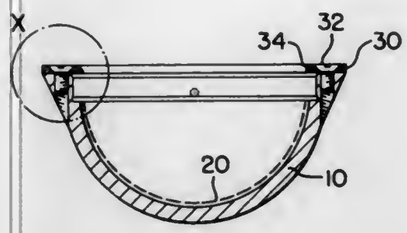
Hartmut Kälberer, Deizisau, and Hans-Georg Pfaff, Ostfildern, both of Germany, assignors to Cerasiv GmbH, Innovatives Keramik-Engineering, Plochingen, Germany

Filed Oct. 17, 1994, Ser. No. 324,266

Claims priority, application Germany, Nov. 6, 1993, 43 37 936.2

Int. Cl.[6] A61F 2/32

U.S. Cl. 623—22 12 Claims



1. A hip joint socket for insertion into bone tissue, comprising: a spherically shaped outside metal shell; a spherically shaped ceramic shell anchored in the metal shell wherein the inside of the metal shell and the outside of the ceramic shell are accurately fitted to one another; and means for the equalization of the transmission of forces between the ceramic shell and the metal shell wherein said means comprises a surface roughening applied to the inside surface of the metal shell, whereby the surface is plastically deformable.

5,609,648

ACETABULAR CUP ASSEMBLY

Jürg Oehy; Kurt Bider, Winterthur, and Martin Schoch, Stallikon, all of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

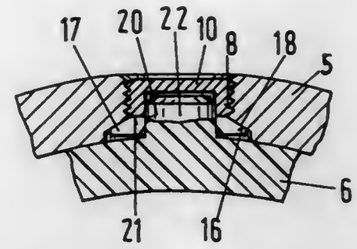
Filed Jan. 27, 1995, Ser. No. 379,836

Claims priority, application European Pat. Off., Feb. 7, 1994, 94810064

Int. Cl.[6] A61F 2/32

U.S. Cl. 623—22 8 Claims

1. A joint socket of a hip joint prosthesis comprising:



an outer shell adapted for being anchored into a bone seat, the outer shell having a perforated threaded bore for receiving a driver tool;

an inner shell adapted for receiving a ball of a joint, the inner shell having a polar region and an equatorial region;

a threaded plug threadably coupled within the threaded bore for sealing the threaded bore from the bone seat, the threaded plug having an axial recess opening towards the inner shell; and

a projection extending from the polar region of the inner shell and having a center portion projecting into the axial recess of the threaded plug to center the inner shell relative to the outer shell.

5,609,649

TINCTORIAL COMPOSITION FOR KERATINOUS FIBERS CONTAINING OXIDATION DYE PRECURSORS AND COUPLERS DERIVED FROM 4-HYDROXYINDOLE, AND DYEING METHOD USING THEM

Alex Junino, Livry-Gargan; Jean J. Vandenbossche, Aulnay-sous-Bois; Herve Richard, Paris, and Jean Cotteret, Verneuil-sur-Seine, all of France, assignors to L'Oreal, Paris, France

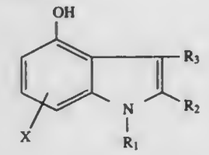
Continuation of Ser. No. 933,937, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 611,139, Nov. 9, 1990, abandoned. This application Jun. 20, 1994, Ser. No. 262,444

Claims priority, application France, Nov. 10, 1989, 8914794

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—409 **21 Claims**

1. A tinctorial composition for dyeing keratinous fibers comprising in a medium suitable for dyeing said fibers at least one oxidation dyestuff precursor selected from the group consisting of a paraphenylenediamine, a para-aminophenol, a bisphenylalkylenediamine, an ortho aminophenol and an orthophenylenediamine, in combination with at least one heterocyclic coupler having the formula



(I)

wherein

R_1 represents hydrogen or C_1–C_4 alkyl,

R_2 represents hydrogen, C_1–C_4 lower alkyl, carboxyl or alkoxycarbonyl,

R_3 represents hydrogen, halogen, C_1–C_4 lower alkyl, carboxyl, alkoxycarbonyl or formyl,

X represents hydrogen, C_1–C_4 alkyl, halogen, acetylamino or di(C_1–C_4) alkylaminomethyl, with the proviso that at least one of X, R_1, R_2 and R_3 is other than hydrogen, and the salts thereof,

said heterocyclic coupler being present in an amount ranging from 0.05 to 3.5 percent by weight based on the total weight of said composition, and the combined weight of said oxidation dyestuff precursor and said heterocyclic coupler ranging from 0.3 to 7 percent based on the total weight of said composition,

said composition being free of any benzoquinone or naphthoquinone capable of oxidizing said heterocyclic coupler of formula I and being free of any iodide or nitrite in an amount capable of oxidizing said oxidation dyestuff precursor and the said heterocyclic coupler of formula I.

5,609,650

DYEING OF KERATIN FIBRES WITH INDOLINES USING METAL SALTS AS CATALYSTS

Georg Knuebel; Horst Hoeffkes, both of Duesseldorf; Winifried Neuhaus, Mettmann, and Edgar Lieske, deceased, late of Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien

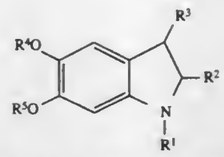
Continuation of Ser. No. 302,852, Nov. 16, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,696

Claims priority, application Germany, Mar. 16, 1992, 42 08 297.8

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—423 **5 Claims**

1. An oxidation dye composition for keratin fibers consisting of component A and component B wherein component A is an oxidation dye precursor indoline derivative of the formula I:



(I)

wherein each of R^1, R^2, R^3 is hydrogen or an alkyl group having from 1 to 4 carbon atoms; each of R^4 and R^5 is hydrogen or an alkyl group having from 1 to 4 carbon atoms or together with the oxygen atom to which they are attached represent an alkylenedioxy group containing 1 to 4 carbon atoms; or a salt thereof; and wherein component B is a metal salt having a non-oxidizing anion selected from the group consisting of a lithium, magnesium, calcium, aluminum and a zinc salt, said component A being present is an amount of from about 0.1 to about 30 mmoles per 100 g of said composition and said component B being present in an amount of from about 0.1 to about 50 mmoles per 100 g of said composition, wherein color development of said composition takes place by oxidation with atmospheric oxygen in the absence of additional oxidizing agents.

5,609,651

OXIDATION HAIR DYE COMPOSITION MADE FROM A CREAMY HAIR DYE-CONTAINING CARRIER AND A PREPARATION CONTAINING AN OXIDIZING AGENT AND POLYMER AND METHOD FOR OXIDATIVE DYEING OF HAIR

Herbert Mager, and Johann Aeby, both of Marly, Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

Continuation of Ser. No. 301,299, Sep. 6, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,374

Claims priority, application Germany, Sep. 28, 1993, 43 32 965.9

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—435 **12 Claims**

1. An oxidation hair dye composition made by mixing a viscous creamy hair dye-containing carrier and a fluid preparation,

wherein said viscous creamy hair dye-containing carrier has a viscosity of at least 10,000 mPa.s and contains 0.01 to 12 percent by weight of a combination of at least one developer substance and at least one coupler substance and 15 to 60 percent by weight of a thickener mixture containing at least one member selected from the group consisting of fatty alcohols having from 10 to 24 carbon atoms, fatty acid esters, petrolatum, thickened polyacrylic acid derivatives, nonylphenol ethoxylated with 2 to 8 moles of ethylene oxide, fatty acids, starch and spermaceti; and

wherein said fluid preparation contains 0.1 to 20 percent by weight of an oxidizing agent and 0.01 to 6 percent by weight of a nonionic polymer of formula (I),

$$R—(O—CH(CH_3)—CH_2)_x—(O—CH_2—CH_2)_y—OH \quad (I)$$

wherein R is selected from the group consisting of alkyl groups having from 1 to 25 carbon atoms, hydroxyalkyl groups having from 2 to 25 carbon atoms and dihydroxyalkyl groups having from 3 to 25 carbon atoms, and

x=a whole number from 10 to 200;

y=a whole number from 0 to 200; and

$x+y \geqq 20$,

and a weight ratio of said creamy hair dye-containing carrier to said fluid preparation in said mixing is from 2:1 to 1:3.

5,609,652

METHOD OF MANUFACTURING A SYNTHETIC RESIN PART INTEGRALLY FORMED WITH METAL MEMBERS

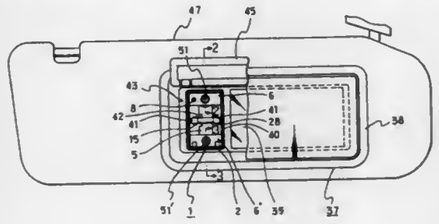
Atsushi Yamada; Tadayuki Okuda; Masaki Hagiwara, and Yoshihide Yoshida, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,410

Claims priority, application Japan, Apr. 13, 1994, 6-097880; Mar. 16, 1995, 7-084896

Int. Cl.[6] B29C *45/14*

U.S. Cl. 29—882 9 Claims



1. A method of manufacturing a synthetic resin part integrally formed with metal members, comprising the steps of:

integrally forming a plurality of flat metal member sets which are coupled together through coupling portions, each of the flat metal member sets comprising a plurality of metal members coupled together;

bending said plurality of coupled together metal members to form a set of coupled together contacts;

inserting said metal member sets after bending into molding dies of a forming machine;

injecting a synthetic resin for molding into said molding die, and forming a synthetic resin part integrally formed with each of the metal member sets in sequence to form an integral synthetic resin part where a plurality of synthetic resin parts are connected by said coupling portions; and

cutting off said coupling portions to manufacture said plurality of synthetic resin parts.

5,609,653

FUEL COMPOSITIONS CONTAINING AT LEAST ONE FULVENE DERIVATIVE AND THEIR USE

Jean-Philippe Roman, Mornant, and Alain Chaffardon, Lyons, both of France, assignors to Elf Antar France, Courbevoie, France

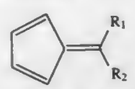
Filed Jul. 14, 1995, Ser. No. 502,606

Claims priority, application France, Jul. 26, 1994, 94 09230

Int. Cl.[6] C10L *1/16*

U.S. Cl. 44—300 20 Claims

1. A fuel composition, comprising a major proportion of at least one fuel base and a minor proportion of at least one fulvene derivative, wherein the fulvene derivative is a 5-(alkylalkylidene)-1,3-cyclopentadiene of formula (I):



(I)

wherein R_1 is hydrogen or an alkyl group having from 1 to 3 carbon atoms, and R_2 is hydrogen or a saturated or unsaturated aliphatic group containing from one to four carbon atoms.

5,609,654

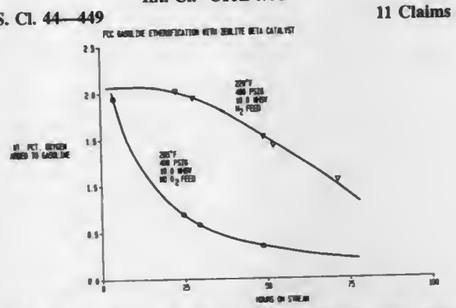
PROCESS FOR HYDROISOMERIZATION AND ETHERIFICATION OF ISOALKENES

Quang N. Le, Singapore, Singapore, and Robert T. Thomson, Lawrenceville, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 896,072, Jun. 2, 1992, Pat. No. 5,489,719. This application May 31, 1995, Ser. No. 455,746

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—449 11 Claims



1. A catalytic process for the production of high octane value gasoline containing tertiary alkyl ethers with a reduced rate of catalyst deactivation comprising:

contacting a feedstream comprising C_5+ hydrocarbons rich in isoolefins and containing dienes and alpha olefins, an alkanol feedstream and a cofed hydrogen feedstream with regenerable, acidic metallosilicate catalyst particles, said catalyst containing zeolite beta and Group VIIIA metal, in an etherification zone under etherification and alpha olefin hydroisomerization conditions whereby a portion of said alpha olefins are converted to internal olefins and an effluent stream is produced comprising high octane value gasoline containing alkyl tertiary alkyl ether, unconverted isoolefin and unconverted alkano and the rate of catalyst deactivation is reduced and passing said effluent stream to a second etherification zone containing acidic resin catalyst particles under etherification conditions whereby a portion of said unconverted isoolefin and unconverted alkanol is converted to alkyl tertiary alkyl ether at a lower temperature.

5,609,655

GAS TURBINE APPARATUS

James B. Kesseli, Mont Vernon, N.H., and Eric R. Norster, Notts, England, assignors to Northern Research & Engineering Corp., Woburn, Mass.

Division of Ser. No. 113,500, Aug. 27, 1993, Pat. No. 5,450,724. This application Dec. 19, 1994, Ser. No. 359,231

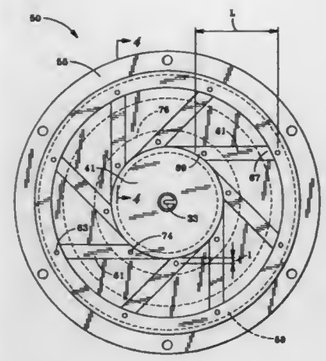
Int. Cl.[6] C10K *3/06;* F02M *23/00;* F02C *7/22*

U.S. Cl. 48—180.1 6 Claims

1. An apparatus for mixing compressed air with a fuel, the apparatus comprising:

a base plate, the base plate having a centrally located fuel-air chamber;

a plurality of mixing channels for mixing compressed air and fuel, each mixing channel having an entrance for introduction of compressed air into the mixing channel, an exit in fluid communication with the fuel-air chamber, an interior peripheral surface, a first fuel inlet, the first fuel inlet including a fuel conduit extending from the mixing channel interior peripheral surface for introduction of fuel into the mixing channel, the fuel conduit having at least one fuel injector through which the fuel is introduced into the mixing channel, each mixing channel having a hydraulic diameter (D), the distance from the first fuel inlet to the mixing channel exit defining a first distance (L), the quantity (L×number of fuel injectors per mixing channel/D) being greater than 10, the mixing channels being oriented such that a swirling motion is imparted to the compressed air and fuel such that the compressed air and fuel exits the fuel-air chamber in a vortex configuration, each mixing channel being divided into two zones, a boundary layer zone adjacent the mixing channel peripheral surface and a free stream zone; and a second fuel inlet located in each mixing channel, the second fuel inlet introducing the fuel into the mixing channel boundary zone, the second fuel inlet being positioned a second distance (l) from the mixing channel exit, the ratio of l/D being less than 3.



5,609,656

PLANT FIBER GRAIN-SPACER FOR ABRASIVE BONDS

David B. Hanson, Afton, Wis., assignor to Western Atlas, Incorporated, Beloit, Ill.

Filed Jul. 17, 1996, Ser. No. 682,294

Int. Cl.[6] B24D *3/02*

U.S. Cl. 51—298 13 Claims

1. An abrasive bond comprising a binder, abrasive grain, and a particulate grain-spacer comprising interlocked and bonded plant fibers.

5,609,657

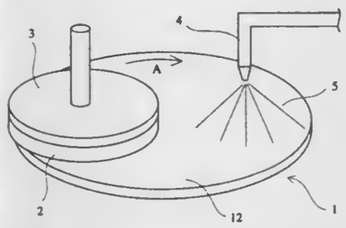
COMPOSITION FOR TEXTURING MAGNETIC DISK

Ken Ishitobi, Shiojiri, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Feb. 22, 1996, Ser. No. 604,837

Int. Cl.[6] B24D *3/34*

U.S. Cl. 51—309 6 Claims



1. A composition for texturing a magnetic disk comprising abrasives of polycrystalline sintered alumina prepared by a sol-gel method, and a grinding fluid.

5,609,658

AIR CLEANER FOR A VEHICLE

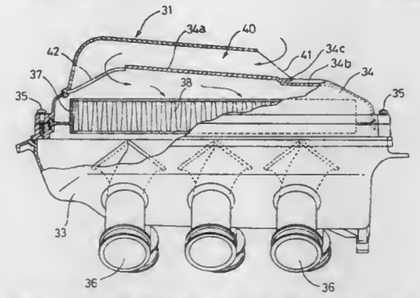
Hiroo Takemura, and Hajime Yamada, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,320

Claims priority, application Japan, Jul. 13, 1994, 6-161528

Int. Cl.[6] B01D *50/00*

U.S. Cl. 55—385.3 16 Claims



1. An air cleaner for supplying air to an engine of a vehicle, said air cleaner comprising:

an air cleaner case having an upper wall including an upper surface;

an air intake duct attached to said upper wall of said air cleaner case, said air intake duct including an opening for passage of air therethrough, said upper surface of said air cleaner case forming a lower surface of said air intake duct;

said upper wall having a recess therein located adjacent to said opening and exterior of the air intake duct, said recess having a floor portion located at an elevation lower than a bottom portion of said opening.

5,609,659

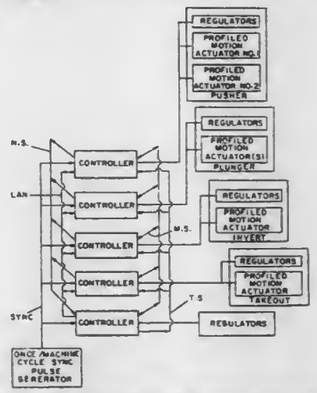
GLASS CONTAINER FORMING MACHINE CONTROL

George T. Peterson, Bristol; Timothy J. Liska, West Simsbury, both of Conn.; Can Nguyen, Longmeadow, Mass.; John W. McDevitt, Vernon, Conn.; Kevin N. O'Connor, Belchertown, Mass., and George J. Collins, Somers, Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Continuation of Ser. No. 164,677, Dec. 9, 1993, Pat. No. 5,445,662, which is a continuation of Ser. No. 992,717, Dec. 18, 1992, abandoned. This application Jun. 21, 1995, Ser. No. 494,354

Int. Cl.[6] C03B *9/13*

U.S. Cl. 65—29.11 8 Claims



1. A machine for forming glass containers comprising a plurality of controlled peripherals, and

a plurality of controllers each controlling at least one of said peripherals, each of said controllers including
a library of machine states, and
means for operating said controlled peripherals in any of said machine states,
one of said controllers additionally including
means for selecting a machine state, and
means for instructing each of said other controllers to operate said controlled peripherals in said selected machine state, and
each of said other controllers further including means for determining that each of said controllers should operate controlled peripherals in a predetermined machine state and means for requesting said one controller to instruct each of said other controllers to operate said controlled peripherals in said predetermined machine state.

5. An individual section of an I.S. machine for forming glass containers comprising
a plurality of controlled peripherals, and
a plurality of controllers each controlling at least one of said peripherals, each of said controllers including
a library of machine states, and
means for operating said controlled peripherals in any of said machine states,
one of said controllers additionally including
means for selecting a machine state, and
means for instructing each of said other controllers to operate said controlled peripherals in said selected machine state, and
each of said other controllers further including means for determining that each of said controllers should operate said controlled peripherals in a predetermined machine state and means for requesting said one controller to instruct each of said other controllers to operate said controlled peripherals in said predetermined machine state.

5,609,660

METHOD OF REDUCING WATER SENSITIVITY OF PHOSPHATE GLASS PARTICLES

Gaylord L. Francis, Painted Post, N.Y.; Ronald E. Johnson, Tioga, Pa.; Paul A. Tick, Corning, and Lung-Ming Wu, Horseheads, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 251,326, May 31, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,611
Int. Cl.[6] C03C *17/22*; C03B *8/04*
U.S. Cl. 65—30.1 **3 Claims**

1. A method for reducing the water sensitivity of particles of a crystallized phosphate glass, said glass being composed essentially of P_2O_5 and one or more cations selected from the group consisting of magnesium, cobalt, arsenic, zinc, iron, aluminum, and zirconium, said method comprising nitriding the particles under conditions sufficient to reduce the water sensitivity of said particles.
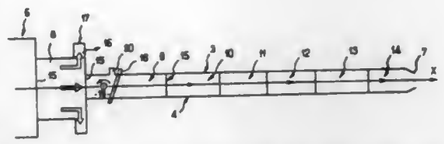
5,609,661

CHANNEL FOR THE TRANSFER AND CONDITIONING OF MOLTEN GLASS

Raymond Moreau, Croissy sur Seine; Roger Gobert, Feucherolles, and Pierre Jeanvoine, Poissy, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Nov. 1, 1994, Ser. No. 333,304
Claims priority, application France, Nov. 2, 1993, 93 13022
Int. Cl.[6] C03B *5/18;5/225*
U.S. Cl. 65—135.1 **30 Claims**

27. A furnace for melting vitrifiable materials comprising a zone for the melting and refining of vitrifiable materials and a channel device for containing molten glass flowing between the melting and refining zone supplied with vitrifiable materials and a molten



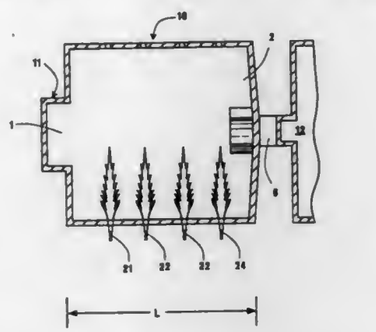
glass forming zone and for conditioning the molten glass from its melting temperature to its forming temperature, said channel device comprising:
a duct and a superstructure covering said duct to define a channel positionable between the melting and refining zone and the molten glass forming zone, the channel defining a multiplicity of zones which are arranged successively in relation to a direction of glass flow along a longitudinal axis of said channel, said zones successively comprising at least one transition zone, at least one drainage zone, at least one cooling zone, at least one thermal homogenization zone and at least one chemical homogenization zone;
means for thermally separating each of said zones; and
means for individually controlling the temperature in each of said zones.

5,609,662

METHOD FOR PROCESSING NITER-CONTAINING GLASSMAKING MATERIALS

Hisashi Kobayashi, Putnam Valley; Maynard G. Ding, Yorktown Heights, and Arthur W. Francis, Jr., Monroe, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 118,346, Sep. 9, 1993, abandoned. This application May 1, 1995, Ser. No. 432,444
Int. Cl.[6] C03B *5/20*
U.S. Cl. 65—135.1 **5 Claims**



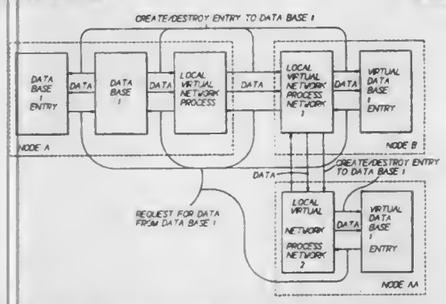
1. A method for processing glassmaking materials in a glass-melting furnace having a charge zone and a discharge zone with reduced emissions of nitrogen oxides comprising:
(A) introducing glassmaking materials including nitrate into said charge zone and decomposing nitrate therein to form nitrogen oxides;
(B) introducing fuel and oxygen in a fuel-rich ratio into said charge zone, combusting them therein to form combustion reaction products including products of incomplete combustion, and reducing nitrogen oxides in the charge zone to form nitrogen; and
(C) passing the glassmaking materials, products of incomplete combustion and nitrogen into the discharge zone, introducing fuel and oxygen in an oxygen-rich ratio into said discharge zone and combusting them therein, reacting the products of incomplete combustion with oxygen to form products of complete combustion, and passing the products of complete combustion out from the glassmelting furnace from the discharge zone.

5,609,663

GLASS OR PLASTIC CONTAINER MANUFACTURING SYSTEM

Can Nguyen, Longmeadow, Mass., and Timothy J. Liska, W. Simsbury, Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Sep. 6, 1994, Ser. No. 300,883
Int. Cl.[6] C03B *9/40*
U.S. Cl. 65—160 **3 Claims**



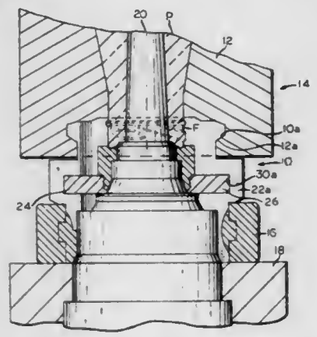
1. A system for manufacturing glass or plastic containers such as an I.S. machine and an associated shear mechanism comprising:
a plurality of nodes,
network means for connecting said plurality of nodes,
each of said nodes including a local virtual network process for
a) notifying all of the other local virtual network processes when a database is opened or closed in its node,
b) creating or destroying a local virtual database entry when notified that a database has been opened or closed in another of said nodes,
c) establishing a connection with any other of said nodes, and
d) maintaining communication between any database on its node and each of said local virtual database entries.

5,609,664

GUIDE RING FOR I. S. GLASS FORMING MACHINE

Dudley T. Olson, Toledo, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed May 17, 1995, Ser. No. 446,889
Int. Cl.[6] C03B *11/06;9/00*
U.S. Cl. 65—361 **9 Claims**



1. A self-lubricating neck ring assembly for a glass forming machine comprising:
a pair of neck ring sections, each of said neck ring sections having an opposed pair of ends, said neck ring sections being capable of being positioned end to end to form a substantially continuous mold to form a finish portion of a hollow glass article, said neck ring sections being separable from one another to permit the hollow glass article to be withdrawn therefrom, each of said sections having a slot therein, said slots of said pair of sections forming a continuous annular slot when said neck ring sections are positioned end to end; and
a guide ring assembly, said guide ring assembly comprising a larger diameter annular flange member and a smaller diameter annular hub member, said hub member extending coaxially from said flange member and being removably joined to said flange member, said flange member being formed of graphite and being slidably received in said slots of said neck ring sections to guide said neck ring sections as they open and close with respect to one another.

5,609,665

METHOD OF MAKING OPTICAL FIBER WITH LOW MELTING GLASS CORE

Allan J. Bruce, Westfield, and David J. DiGiovanni, Montclair, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1995, Ser. No. 521,934
Int. Cl.[6] C03B *37/012*
U.S. Cl. 65—379 **9 Claims**



1. Method of making an optical fiber comprising making a preform that comprises a first glass core and a second glass cladding surrounding the core, and drawing the optical fiber from the preform, the first and second glass each having a softening temperature, with the first glass softening temperature being lower than the second glass softening temperature;
CHARACTERIZED IN THAT said making a preform comprises the steps of
a) providing a starting tube comprising second glass and having a bore, and partially collapsing at at least a portion of the starting tube;
b) providing a quantity of said first glass, and heating the quantity such that at least a portion thereof is at or above the first glass softening temperature and is in communication with said bore; and
c) creating in said bore a pressure differential that is effective for causing at least some of the heated first glass to flow into said bore, the resulting body to be referred to as the mixed glass body.

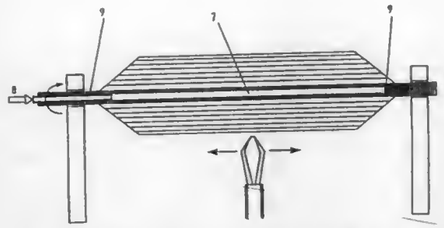
5,609,666

PROCESS OF PRODUCING PREFORMS FOR SILICA GLASS OPTICAL WAVEGUIDES WHILE FLOWING GAS THROUGH A TUBULAR SUBSTRATE

Walter Heitmann, Gross-Bieberau, Germany, assignor to Heraeus Quarzglas GmbH, Bundesrepublik, Germany

PCT No. PCT/EP93/02919, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/10097, PCT Pub. Date May 11, 1994
PCT Filed Oct. 22, 1993, Ser. No. 387,729
Claims priority, application Germany, Oct. 29, 1992, 42 36 578.3
Int. Cl.[6] C03B *37/018*
U.S. Cl. 65—421 **7 Claims**

1. Process of manufacturing a quartz glass preform, said process comprising
providing a tubular substrate made of a porous oxide ceramic,
providing a hydrolysis gas mixture containing silicon tetrachloride and oxygen,
building up a deposit of glass soot consisting of partially fused quartz glass on said tubular substrate by moving said substrate



relative to a flame while exposing said substrate to said flame and said hydrolysis gas mixture,

purging said deposit by providing a drying gas mixture under positive pressure inside said tubular substrate while said deposit is being built-up on said substrate and,

removing said deposit of glass soot from said substrate as a quartz glass preform.

5,609,667

PROCESS AND MATERIAL FOR BIOREMEDIATION OF HYDROCARBON CONTAMINATED SOILS

Theodore Dickerson, Jackson, Miss., assignor to Product Services Co., Ridgeland, Miss.

Continuation-in-part of Ser. No. 219,843, Mar. 30, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,089

Int. Cl.[6] C05F *11/08*

U.S. Cl. 71—6 **33 Claims**

1. A method of treating hydrocarbon contaminated soils to remove a hydrocarbon comprising (a) providing a composition comprising a cellulose derived from an oil-bearing plant including therein bacteria which is a naturally present component of the cellulose and naturally occurs in said cellulose and at least one nutrient, and said composition being characterized by having ability to absorb water and hydrocarbon material as well as release water absorbed by said composition in favor of absorbing additional hydrocarbon material but which will not release hydrocarbon material previously absorbed by said composition; (b) applying said composition of (a) into hydrocarbon contaminated soil by tilling or disking; (c) wetting the soil subsequent to application (b) to establish and maintain a continuous moist condition in said soil; and (d) leaving said soil in said continuous moist condition for a period of time, whereby said method provides absorption of hydrocarbon material from said soil by said composition.

5,609,668

SPILL CLEAN-UP PROCESS

Paul E. Gill, 2005 De La Cruz Blvd. #235, Santa Clara, Calif. 95050

Continuation-in-part of Ser. No. 315,570, Sep. 30, 1994, Pat. No. 5,525,139. This application Mar. 21, 1996, Ser. No. 619,433

Int. Cl.[6] B08B *7/00*; C02F *1/28*; C05F *11/02*;*11/08*

U.S. Cl. 71—9 **9 Claims**

1. A process for absorbing and decontaminating an organic chemical spill comprising the steps of:

a. partially composting plant material;

b. mixing approximately 80% of said partially composted plant material with approximately 20% of dry plant material;

c. inoculating the mixture with about 50 to 100 parts per million by weight of an organic chemical selected from the group consisting of residues of ethylene glycol, 1,1,1-trichloroethane, 1,1-dichloroethane, trans-1,2-dichloroethene, trichloroethylene, methylene chloride, petroleum fuel hydrocarbons and their mixtures to form an absorbent;

d. mixing said absorbent with about 20% to 40% by volume of said spilled organic chemical;

e. adding water;

f. adding an aqueous mixture of a nitrate salt and a phosphate salt; and

g. allowing the mixture to incubate for a suitable time at ambient temperature until said organic chemical spill is neutralized.

5,609,669

METHOD OF MANUFACTURING STAINLESS STEEL

Mikael Brunner, Tvärvägen 1, S-183 39 Täby, Sweden

Continuation-in-part of Ser. No. 90,212, Nov. 22, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 306,910

Int. Cl.[6] C21C *7/068*

U.S. Cl. 75—548 **11 Claims**

1. A method of producing stainless steel comprising:

a. providing a molten ferrous alloy containing chromium in a converter vessel,

b. introducing oxygen rich gas containing at least 75% oxygen in amount sufficient to decarburize said molten alloy in a first decarburization period down to about 0.2 to about 0.1% carbon content,

c. interrupting said introduction of the oxygen rich gas at least once during said first decarburization period by introducing an inert gas rich gas containing at least 80% inert gas,

d. performing the rest of the decarburization down to an end carbon content by further treatment with gases containing inert gas and oxygen,

e. performing reduction and finishing operations, and

f. recovering a stainless steel product.

5,609,670

EMULSION INK FOR STENCIL PRINTING

Sadanao Okuda, and Hideo Watanabe, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,599

Claims priority, application Japan, Jul. 25, 1994, 6-172837

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **6 Claims**

1. An emulsion ink for stencil printing having a water phase in an oil phase, wherein said water phase contains a macromolecular compound having a tertiary amino group and has a water-insoluble colorant dispersed therein.

5,609,671

WATER-BASED PIGMENT INK AND PROCESS FOR PRODUCING THE SAME

Toshiyuki Nagasawa, Yawata, Japan, assignor to Orient Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 492,798, Jun. 20, 1995, abandoned. This application Dec. 1, 1995, Ser. No. 566,168

Claims priority, application Japan, Jun. 20, 1994, 6-136943

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **17 Claims**

1. Water-based pigment ink comprising water and carbon black, wherein said carbon black has a surface active hydrogen content of not less than 1.5 mmol/g.

5,609,672

COMPOSITION FOR COLOR DEVELOPMENT COMPRISING 4-HYDROXY-4'-ISOPROPOXYDIPHENYLSULFONE, AND A WET METHOD FOR GRINDING AND A DISPERSIBLE SOLUTION FOR APPLYING THE SAME

Tomoya Hidaka; Shinichi Sato, both of Yusyudai-Higashi; Hiroyasu Sato, Iwaki, and Yutaka Takashina, Takahagi, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/02221, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO95/18018, PCT Pub. Date Jul. 6, 1995

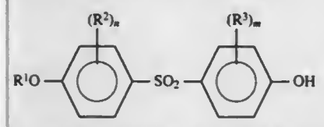
PCT Filed Dec. 26, 1994, Ser. No. 495,442

Claims priority, application Japan, Dec. 27, 1993, 5-348443

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—21 R **6 Claims**

1. A composition for color development comprising 4-hydroxy-4'-isopropoxydiphenylsulfone wherein the composition contains at least one compound selected from the group consisting of diphenylsulfone derivatives represented by formula (I):



(I)

wherein R^1 represents hydrogen or lower alkyl, R^2 and R^3 each independently represent a lower alkyl, n and m are 0 or an integer of from 1 to 4, with the proviso that n and m are not both 0, in an amount in total ranging from 0.05 to 5.0 parts by weight in respect to 100 parts by weight of 4-hydroxy-4'-isopropoxydiphenylsulfone.

5,609,673

RECORDING LIQUID

Hiroshi Takimoto; Hideo Sano, and Masahiro Yamada, all of Kanagawa, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

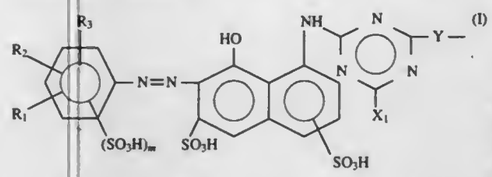
Filed Dec. 12, 1995, Ser. No. 571,179

Claims priority, application Japan, Dec. 12, 1994, 6-307708; May 18, 1995, 7-120060

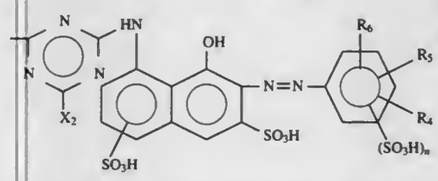
Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 K **12 Claims**

1. A recording liquid comprising an aqueous medium and at least one dye selected from dyes, the free acid forms of which are represented by formula (I):



(I)



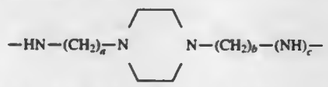
wherein R_1, R_2, R_3, R_4, R_5, and R_6 each independently represents a substituted or unsubstituted alkyl group having 1 to 9 carbon atoms, an alkoxy group having 1 to 9 carbon atoms, a halogen atom, a hydrogen atom, a hydroxyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted sulfamoyl group, a substituted or unsubstituted amino group, a nitro group, a sulfonic ester group, a sulfonyl group, a carboxyl group, or a carboxylic ester group;

m and n each independently represents a number of 0, 1, or 2;

X_1 and X_2 each independently represents a group represented by $—OR_7$;

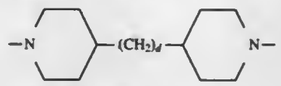
R_7 represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, an alkenyl group having 2 or 3 carbon atoms, an aryl group, an aralkyl group, a cyclohexyl group, or a nitrogenous heterocyclic group, these groups each optionally having a substituent; and

Y represents a divalent connecting group represented by any one of formulae (II) to (V):



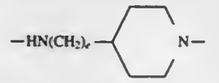
(II)

wherein a and b each represents a number of 0 to 6 and c represents a number of 0 or 1,



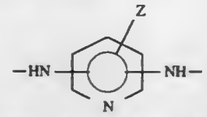
(III)

wherein d represents a number of 1 to 6,



(IV)

wherein e represents a number of 1 to 6,



(V)

wherein Z represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

5,609,674

MITIGATION OF DYE CRYSTALLIZATION IN IMAGES ON TRANSPARENCIES AND GLOSSY MEDIA

Roger A. Brown, Carlsbad, Calif.; Hiang Lauw, and Loren E. Johnson, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 1, 1995, Ser. No. 566,247

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 R **18 Claims**

1. A method for reducing crystallization of yellow ink-jet ink printed by an ink-jet printer on a print media having a clear polymer-based surface coating thereon, said clear polymer-based surface coating having a measurable thickness, said yellow ink-jet ink comprising Acid Yellow 23 anionic dye and a vehicle, said vehicle including an inorganic salt comprising a cation and an anion and said yellow ink-jet ink having a measurable pH, said method comprising:

(a) formulating said yellow ink-jet ink in accordance with at least one of the following conditions:

(i) a first condition, wherein said vehicle is formulated such that said yellow ink-jet ink includes about 6 to 9 wt % ethylthydroxypropanediol, about 3 to 9 wt % 2-pyrrolidone, and about 3 to 9 wt % diethylene glycol,

(ii) a second condition, wherein said vehicle is formulated to include a buffer in amount sufficient to maintain said pH of said yellow ink-jet ink within the range of about 5 to 7, and

(iii) a third condition, wherein said vehicle is formulated such that said cation of said inorganic salt comprises calcium ions to the substantial exclusion of magnesium ions.

5,609,675

INORGANIC COMPOSITION

Masaki Noritake, and Shigeki Yuasa, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Jun. 30, 1995, Ser. No. 496,280
Claims priority, application Japan, Jul. 4, 1994, 6-152428
Int. Cl.[6] C04B *35/10*
U.S. Cl. 106—35 **15 Claims**



1μm

1. An inorganic composition (C) which comprises (A) 60 to 99% by weight of spherical inorganic oxide particles having a mean particle diameter greater than 0.1 μm but not greater than 1 μm, and (B) 40 to 1% by weight of inorganic oxide fine particles having a mean particle diameter not greater than 0.1 μm, wherein a volume of micro pores due to strongly aggregated particles having pore diameters not smaller than 0.08 μm is not greater than 0.1 cc per gram of the inorganic composition (C).

5,609,676

RECYCLING OF DYED CELLULOSIC WASTE

Andreas von der Eltz, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 8, 1995, Ser. No. 569,510
Claims priority, application Germany, Dec. 13, 1994, 44 44 245.9
Int. Cl.[6] C09D *101/24;* **C08L** *1/24*
U.S. Cl. 106—166.01 **17 Claims**

1. A process for recycling dyed cellulosic waste into reusable viscose, which comprises suspending a reactive-dyed cellulose material in an alkali metal hydroxide solution to produce alkali cellulose, then allowing the alkali cellulose to ripen at temperatures from 30° to 80° C. for at least 30 minutes, dissolving the ripened alkali cellulose at a temperature from 10° to 30° C. by conversion with carbon disulfide into a reusable viscose.

10. The process of claim 1, wherein the alkali cellulose is subjected to the action of a reducing sulfur compound at a temperature from 20° to 80° C. prior to ripening.

5,609,677

BIODEGRADABLE CELLULOSE ESTER COMPOSITION AND ARTICLE

Masanori Itoh, Kashiwa; Atsunobu Kiyose, Himeji, and Katsumi Hirao, Akashi, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 151,037, Nov. 12, 1993, Pat. No. 5,478,386. This application Jun. 23, 1995, Ser. No. 494,284
Claims priority, application Japan, Nov. 13, 1992, 4-328646; Jul. 13, 1993, 3-196819; Jul. 13, 1993, 3-196820
Int. Cl.[6] C08L *1/08;1/10;1/12*
U.S. Cl. 106—168.01 **31 Claims**

1. A biodegradable cellulose ester composition comprising:

a cellulose ester having an average degree of substitution not exceeding 2.15, an average degree of polymerization of 50 to 250, and showing a 4-week decomposition rate of not less than 60 weight percent as determined according to ASTM D 5209.

5,609,678

PAINT SOLVENT WITH GLYCOL ETHER, OXIDIZING OIL, PROPYLENE GLYCOL OR PROPYLENE CARBONATE, AND NMP OR ISOALKANE

Leo M. Bergman, Portland, Oreg., assignor to American Color Company, Portland, Me.

Continuation-in-part of Ser. No. 50,504, Apr. 20, 1993, abandoned. This application May 9, 1995, Ser. No. 438,188
Int. Cl.[6] C08K *5/05;5/06;5/3415;* **C11D** *7/26*
U.S. Cl. 106—311 **8 Claims**

1. A solvent formulation for diluting resins including oil-based paints, said solvent formulation consisting essentially of:

a) about 10% to no more than 60% by weight of a glycol ether compound selected from the group consisting of ethylene glycol monomethyl ether, ethylene glycol monobutyl ether, diethylene glycol monomethyl ether, diethylene glycol monobutyl ether, propylene glycol phenyl ether, propylene glycol monomethyl ether, propylene glycol monopropyl ether, dipropylene glycol monopropyl ether, propylene glycol monobutyl ether, and dipropylene glycol monobutyl ether;

b) about 2% to about 30% by weight of an oil selected from the group consisting of linseed oil, safflower oil, walnut oil, poppyseed oil, and sunflower oil;

c) about 2% to about 40% by weight of a co-solvent selected from the group consisting of propylene glycol and propylene carbonate; and

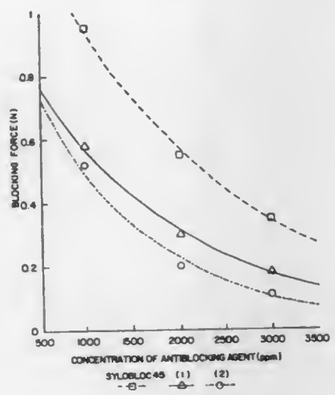
d) 0% to about 10% by weight of N-methyl pyrrolidone.

5,609,679

POLYOL-TREATED ANTIBLOCKING AID

Georg Lüers, Westhofen; Richard Sobottka, Worms, both of Germany, and Paul M. Dunn, Herts, England, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 486,417
Claims priority, application Germany, Jan. 19, 1995, 195 02 629.2
Int. Cl.[6] C04B *14/04*
U.S. Cl. 106—491 **17 Claims**



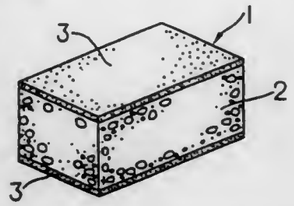
1. A method of reducing blocking tendency in an extruded polymer film formed from a polymer resin composition, said method comprising adding an antiblocking agent to said composition prior to extrusion, wherein said antiblocking agent is characterized in that it contains silicon dioxide particles having a particle size of 2 to 8 μm, a specific surface area of 150 to 850 m^2/g and a specific pore volume of 1.4 to 2.0 ml/g, which silicon dioxide particles have been treated with 3 to 15 wt. % (based on the weight of said silicon dioxide) of polyol selected from polyols having 3 to 5 OH groups.

5,609,680

CEMENT, CEMENT PRODUCTS, MOLDING MATERIAL, A CONCRETE MEMBER AND A METHOD OF PRODUCING THE SAME

Tadashi Kobayashi; Game K. D. Pushpalal, both of Sakata, and Masaki Hasegawa, Tokyo, all of Japan, assignors to Maeta Concrete Industry Ltd., Yamagata, Japan

Division of Ser. No. 427,341, Apr. 24, 1995, abandoned, which is a continuation of Ser. No. 129,590, Sep. 30, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,004
Claims priority, application Japan, Dec. 21, 1992, 4-361899; Jun. 28, 1993, 5-210815; Jun. 28, 1993, 5-210816
Int. Cl.[6] C04B *24/00*
U.S. Cl. 106—696 **7 Claims**



1. A concrete member comprising a concrete body and at least one reinforcing body integrally associated with said concrete body, said reinforcing body comprising a cement composition having at least one kind of hydraulic cement and a polymer precursor that is substantially anhydrous and generates water by curing reaction, wherein said cement composition has from 12 to 60 parts by weight of said polymer precursor relative to 100 parts by weight of said hydraulic cement and wherein said cement composition is reactable in the absence of additional water.

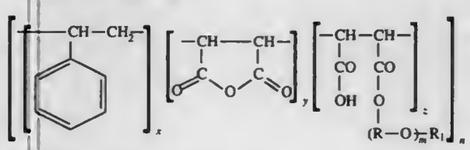
5,609,681

WORKABLE CEMENTITIOUS COMPOSITIONS

Josef F. Drs, Vienna, Austria; Tom Melbye, Zurich, Switzerland; Odd M. Tjugum, Dal, Norway, and Salvatore Valenti, Binningen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 95,125, Jul. 20, 1993, Pat. No. 5,494,516. This application Jun. 6, 1995, Ser. No. 466,312
Claims priority, application United Kingdom, Jul. 22, 1992, 9215600; Dec. 18, 1992, 9226411
Int. Cl.[6] C04B *24/00;24/16*
U.S. Cl. 106—802 **7 Claims**

1. A process of maintaining the slump of a cement mix, comprising adding to a cement mix 0.001 to 0.01% by weight of cement of a water-soluble poly(alkylene oxide) of molecular weight from 100,000–8,000,000 0.03 to 0.5% by weight of cement of and a plasticizer or superplasticizer selected from the group consisting of lignosulphonates, melamine sulfonate-formaldehyde condensates, carboxylates and styrene-maleic anhydride copolymers in free acid or salt form, said styrene-maleic anhydride copolymer selected from



(a)

in which

R is a C_{2-6}alkylene radical

R_1 is a C_{1-20}alkyl-, C_{6-9}cycloalkyl- or phenyl group,

x, y, and z are numbers from 0.01 to 100

m is a number from 1 to 100 and

n is a number from 10 to 100

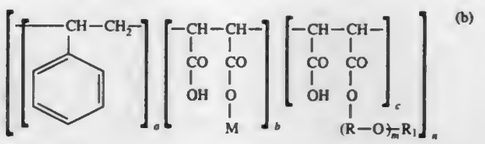
with the provisos that

i) the ratio of x to (y+z) is from 1:10 and 10:1 inclusive,

ii) the ratio of z:y is from 3:1 to 100:1 and

iii) m+n=15–100

and



(b)

in which

M is hydrogen or the residue of a hydrophobic polyalkylene glycol or polysiloxane,

R, R_1, m and n are as hereinabove defined,

a, b, and c are numbers from 1 to 100

with the provisos that

i) the ratio of a to (b+c) is from 1:10 to 10:1 inclusive,

ii) the ratio of c:b is from 5:1 to 100:1 and

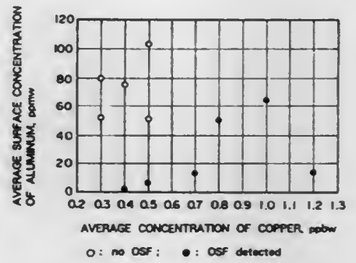
iii) m+n=15–100.

5,609,682

METHOD FOR THE PREPARATION OF SILICON SINGLE CRYSTAL

Wataru Sato; Masahiro Sakurada; Ohta Tomohiko, and Katsuhiko Kemmochi, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., and Shin-Etsu Quartz Co., Ltd., both of Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,894
Claims priority, application Japan, Jul. 6, 1994, 6-154576
Int. Cl.[6] C30B *15/10*
U.S. Cl. 117—2 **3 Claims**



1. In a method for the preparation of a semiconductor silicon single crystal by the Czochralski method, in which a silicon single crystal rod is pulled up on the lower end of a seed crystal from a melt of silicon prepared by melting polycrystalline silicon in a fused silica glass crucible, the improvement which comprises using a fused silica glass crucible having such distribution profiles of aluminum and copper as impurities in the direction of the wall thickness of the crucible that an average concentration of aluminum is in the range from 40 to 500 ppm by weight in a surface layer of 30 μm thickness from an inner surface of the crucible and not exceeding 40 ppm by weight within the layer adjacent to the surface layer in a depth of from 30 μm to 1 mm from the inner surface of the crucible and the concentration of copper does not exceed 0.5 ppb by weight within the layer from the inner surface to the outer surface of the crucible.

5,609,683

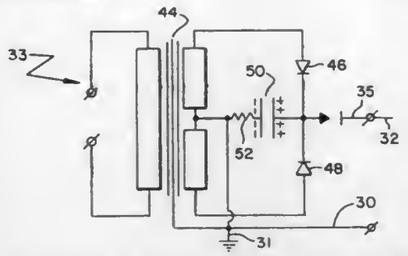
APPARATUS FOR MAKING INDUSTRIAL DIAMOND

Maciej J. Pike-Biegunski, 28 W. 355 Rogers Ave., Warrenville, Ill. 60555

Division of Ser. No. 909,087, Jul. 1, 1992, Pat. No. 5,437,243. This application Jun. 2, 1995, Ser. No. 458,400

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—200 3 Claims



1. An apparatus for transforming a graphite specimen to diamond, said apparatus comprising a housing of compression resistant material that defines a reacting chamber for containing the entire graphite specimen, a liner of a dielectric substance inside of said housing and lining the reacting chamber, first and second electrodes in contact with the graphite specimen for applying an electrical charge to the entire graphite specimen positioned within the chamber, sealing means for hermetically sealing the chamber, pressure means for applying sufficient pressure to the sealing means so as to maintain the hermetic seal, an electrical circuit capable of producing through the electrodes a pulse of an electrical current of super critical density and extremely short duration, and flash over prevention means combined with the reacting chamber and the graphite specimen to prevent electrical flash over the said specimen.

5,609,684

CURING VESSEL IN A GEL-COATED SEED PROCESSING DEVICE

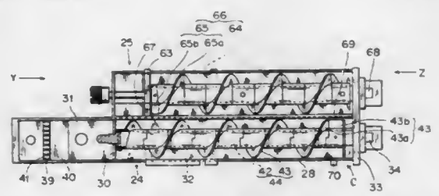
Yoichi Ido, and Yasushi Kohno, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 562,815

Claims priority, application Japan, Nov. 29, 1994, 6-294261

Int. Cl.[6] A23G *3/00*

U.S. Cl. 118—13 4 Claims



1. A curing vessel for curing the surface of gel-coated seeds in a gel-coated seed processing device, said curing vessel comprising:

a curing vessel main body for accommodating a curing agent in a seed receiving section thereof for receiving gel-coated seeds dropped down thereto and in a conveying channel in connection with said receiving section, said seed receiving section and said conveying channel being partly separated by a separating wall,

a pump for circulating the curing agent from said receiving section to the upstream thereof by way of said conveying channel,

a rectifying plate having a horizontal upper end brim, said rectifying plate disposed in the upstream of said receiving section to make the curing agent overflow said horizontal upper end brim, and

a horizontal guide wall extendedly disposed in the downstream side of said rectifying plate of horizontally guiding the overflown curing agent toward the downstream.

5,609,685

APPARATUS SUITABLE FOR PROVIDING DIRECTLY BY MEANS OF CALENDERING AN EXCELLENT ANCHORAGE BETWEEN A FABRIC AND ITS PLASTIC COATING MATERIAL

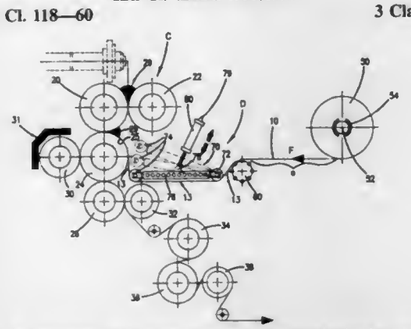
Charly Fux, Cravesano, Switzerland, assignor to Interplastic SA, Inferiore, Switzerland

Filed Mar. 2, 1995, Ser. No. 397,389

Claims priority, application Italy, Mar. 17, 1994, M194A0493

Int. Cl.[6] B05C *1/08; 1/12*

U.S. Cl. 118—60 3 Claims



1. An apparatus for coating without adhesive a plastic material layer onto a backing fabric of any kind, wherein the fabric is biaxially stretched and untreated, the apparatus comprising:

a calendar having a heated cylinder for coating the fabric with a layer of plastic material; and

a rocking device having a frame and including,

a preliminary heating element;

a front end roll and a rear end roll, both on the frame, to guide the stretched fabric onto the heated cylinder of the calendar to control the dwell time of the stretched fabric in contact with the heated cylinder; and

the preliminary heating element being interposed between said front end roll and said rear end roll.

5,609,686

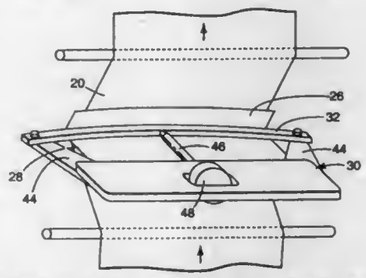
FLEXIBLE ADJUSTABLE SMOOTHING BLADE

Glen A. Jerry, Lake Elmo; Stephan F. Kistler, Minneapolis; Joseph H. Lam, Woodbury, all of Minn., and Scott D. Stenstrom, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 30, 1995, Ser. No. 521,404

Int. Cl.[6] B05C *11/02; 11/04*

U.S. Cl. 118—123 14 Claims



1. An apparatus for continuously smoothing a wet coating on a longitudinally moving substrate comprising:

a flexible film having first and second transverse ends, a first longitudinal end, and a second longitudinal end, wherein the second longitudinal end is secured and the first longitudinal end is free to drag against the wet coating on the substrate to cause the flexible film to form an arc between the second longitudinal end and a contact line of the flexible film and the coating:

means for holding the second longitudinal end of the flexible film;

flexible means for deflecting the film adjacent the first longitudinal end toward the substrate and in a direction generally perpendicular to the plane of the substrate, along a line extending between the first and second transverse ends;

means for adjusting and varying the amount of deflection adjacent the first longitudinal end during the coating of the substrate to adjust the radius of curvature of the deflection along the line extending between the first and second transverse ends; and

means for holding the flexible film in contact with the wet coating on the substrate:

wherein the contact line is located between the first longitudinal end and the second longitudinal end.

5,609,687

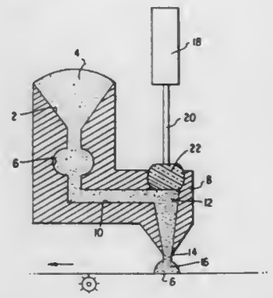
NOZZLE FOR COUPLING ELECTROMAGNETIC ENERGY AND HEATABLE COMPOSITION

Craig A. Neff, Golden, Colo., assignor to AST Holding, Ltd., Arvada, Colo.

Continuation-in-part of Ser. No. 10,859, Jan. 29, 1993, Pat. No. 5,348,604. This application Sep. 19, 1994, Ser. No. 308,439

Int. Cl.[6] B05B *5/00*

U.S. Cl. 118—641 10 Claims



1. A nozzle for application of a fluid composition to a substrate comprising flow channel means forming a flow channel for directing the flow of said fluid composition and optical coupler means at one end of said flow channel for admitting a beam of electromagnetic radiation to said flow channel, wherein said flow channel includes an inlet for admitting said fluid composition and an outlet for dispensing said fluid composition, said inlet is adjacent said optical coupler, and said inlet directs the flow of said fluid composition across said optical coupler.

5,609,688

APPARATUS FOR PRODUCING SEMICONDUCTOR DEVICE

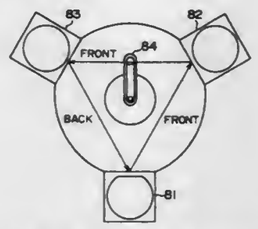
Tetsuya Hayashi, Kawasaki; Kazunori Okuyama, Aizuwakamatsu; Tsuyoshi Inomata, Kawasaki; Koji Nozaki, Kawasaki, and Minoru Hirose, Kawasaki, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Mar. 22, 1994, Ser. No. 215,603

Claims priority, application Japan, May 7, 1993, 5-106358; Oct. 27, 1993, 5-268974

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 25 Claims



1. A semiconductor device producing method comprising the steps of:

(a) subjecting a substrate which is transported by first transport means to at least a first process within a first unit; and

(b) subjecting the substrate which is subjected to said step (a) and is transported by second transport means other than said first transport means to at least a second process within a second unit.

5,609,689

VACUUM PROCESS APPARAUS

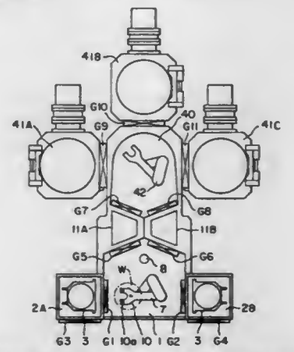
Susumu Kato, Isawa-Cho, and Hirofumi Yamaguchi, Sndama-Cho, both of Japan, assignors to Tokyo Electron Limited, Tokyo-to, Japan

Filed Jun. 3, 1996, Ser. No. 660,215

Claims priority, application Japan, Jun. 9, 1995, 7-168142

Int. Cl.[6] C23C *16/00*; H01L *21/00*

U.S. Cl. 118—719 7 Claims



1. A vacuum process apparatus, which is provided with a plurality of vacuum process chambers for subjecting an object of process to predetermined processes, comprising:

a vacuum reserve chamber for delivering the object in a substantially vacuum state to the vacuum process chambers and receiving the processed object substantially at the atmospheric pressure from the vacuum process chambers;

a cooling table for cooling the processed object in the vacuum reserve chamber; and

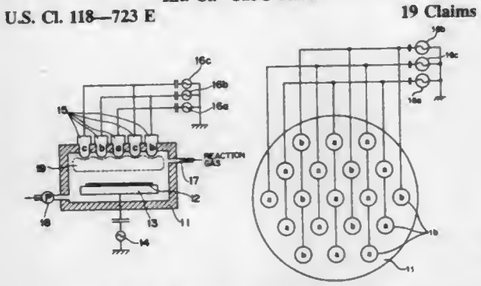
support members arranged so as to support the object over the cooling table with predetermined gaps between the object and the table.

5,609,690

VACUUM PLASMA PROCESSING APPARATUS AND METHOD

Syouzou Watanabe, Moriguchi; Masaki Suzuki, Hirakata; Ichiro Nakayama, Kadoma, and Tomohiro Okumura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Feb. 15, 1995, Ser. No. 389,229
Claims priority, application Japan, Feb. 15, 1994, 6-018280
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **19 Claims**



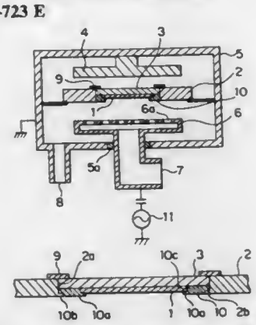
1. A vacuum plasma processing apparatus comprising:
a vacuum processing container accommodating a to-be-processed substrate;
a feeding means for feeding a reaction gas to the container;
a vacuumizing means for discharging a gas in the container therefrom;
a susceptor for holding the to-be-processed substrate arranged in the container;
split electrodes arranged in a lattice at a wall surface of the container facing the to-be-processed substrate; and
a power source unit for impressing to the split electrodes RF powers having phases different from each other,
wherein the split electrodes are arranged in such a lattice at the wall surface of the container facing the to-be-processed substrate that phases and phase voltages of the RF powers form a Lissajous figure.

5,609,691

PLASMA CVD APPARATUS FOR FORMING A THIN FILM OF UNIFORM THICKNESS

Shuki Yamamori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 563,113
Claims priority, application Japan, Nov. 29, 1994, 6-294859
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **3 Claims**



1. A plasma CVD apparatus comprising:
a high-frequency electrode connected to a high-frequency power supply;
a bolding electrode arranged in parallel to said high-frequency electrode and having a window formed in an area where a substrate on which a film is to be grown is to be secured, said substrate having a front side, on which said film is to be grown, and a back side;
a ring-shaped insulating plate having an outer peripheral portion contactable to said window and an inner peripheral portion forming an opening where said substrate is to be fitted, said insulating plate being detachably attached to said window such that said substrate contacts said inner peripheral portion; and
a backing plate for providing uniform heating of said substrate, disposed in contact with and completely covering said back side of said substrate.

5,609,692

METHOD OF REMOVING CHLORIDE ION OR A COMPOUND THEREOF FROM A SURFACE CONTAMINATED THEREWITH

James R. Johnson, Chandler; Jerry J. Colahan, Mesa, and Todd R. Eden, Scottsdale, all of Ariz., assignors to Chlor Rid International, Inc., Chandler, and H.E.R.C. Products Incorporated, Phoenix, both of Ariz.

Filed May 5, 1994, Ser. No. 238,594
Int. Cl.[6] C23G *1/02*
U.S. Cl. 134—3 **15 Claims**

1. A method of removing chloride from a surface contaminated therewith, comprising the steps of:
providing a surface contaminated with chloride; and
applying a dilute aqueous solution containing an active agent selected from the group consisting of an amine, anionic surfactant, organic carboxylic acid, organic sulfonic acid, and mixtures thereof to said surface in an amount sufficient to remove substantially all of said chloride from said surface, wherein said organic carboxylic acid is selected from the group consisting of hydroxyacitic, citric, acetic, gluconic, salicylic, tartaric, benzoic, and mixtures thereof.

5,609,693

METHODS FOR REMOVING ACRYLIC-BASED POLYMER COATINGS

John F. Dobrez, Flossmoor, and David A. Strawser, Palatine, both of Ill., assignors to Dober Chemical Corp., Midlothian, Ill.

Filed Nov. 17, 1993, Ser. No. 154,871
Int. Cl.[6] B08B *3/08;* **C23G** *1/02*
U.S. Cl. 134—38 **14 Claims**

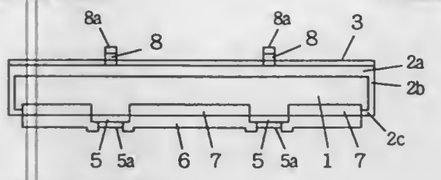
1. A method for removing an acrylic-based polymeric material useful as enteric coatings located on a surface of a vessel or other process equipment comprising the steps of:
contacting said acrylic-based polymeric material located on said surface with a composition comprising at least about 50% by weight of water, an organic component containing at least one alkylene oxide group per molecule in an amount effective to solubilize at least a portion of said acrylic-based polymeric material, and a carboxylic acid component selected from the group consisting of carboxylic acids, acid salts of carboxylic acids and mixtures thereof in an amount effective to reduce the adhesion between said acrylic-based polymeric material and said surface; and
removing said acrylic-based polymeric material from said surface.

5,609,694

SOLAR CELL AND A METHOD OF MANUFACTURING THEREOF

Masahito Asai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 25, 1995, Ser. No. 428,869
Claims priority, application Japan, Apr. 28, 1994, 6-091443
Int. Cl.[6] H01L *31/06;31/18*
U.S. Cl. 136—255 **8 Claims**



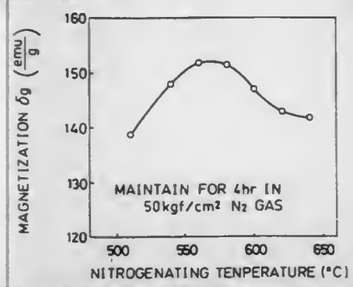
1. A solar cell comprising:
a p type semiconductor substrate including a first main surface, a second main surface, and an edge face therebetween;
a first n type layer formed on said first main surface;
a p type layer formed on said second main surface and having a dopant impurity concentration higher than that of said substrate; and
a second lower doped n type layer formed at least on said edge face so as to connect said first n type layer with said p type layer, wherein said second n type layer has a dopant impurity concentration lower than that of said first n type layer at least proximate the region in contact with said p type layer.

5,609,695

METHOD FOR PRODUCING ALLOY POWDER OF THE R_2T_{17} SYSTEM, A METHOD FOR PRODUCING MAGNETIC POWDER OF THE $R_2T_{17}N_X$ SYSTEM, AND A HIGH PRESSURE HEAT-TREATMENT APPARATUS

Kiyoshi Kojima, Nara, and Takeshi Takahashi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1994, Ser. No. 360,078
Claims priority, application Japan, Dec. 21, 1993, 5-322356; Dec. 22, 1993, 5-324321; Apr. 26, 1994, 6-088592
Int. Cl.[6] H01F *1/03*
U.S. Cl. 148—104 **11 Claims**



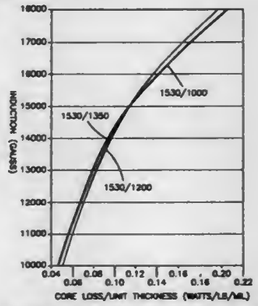
1. A method for producing a $R_2T_{17}N_x$ magnetic powder, wherein R is Sm or a substance obtained by replacing a part of Sm with one or more rare earth elements, T is Fe or a substance obtained by replacing a part of Fe with one or more transition elements and x is 1.9 to 3.5, the method comprising:
(a) heat-treating an ingot containing R and T to form a homogenized R_2T_{17} alloy ingot having a Th_2Zn_{17} crystal lattice structure;
(b) hydrogen decrepitating said R_2T_{17} alloy ingot in a high pressure vessel containing hydrogen gas at a temperature of 70° C. to 300° and at a pressure of 5 kgf/cm^2 or more whereby said alloy ingot is caused to absorb said hydrogen gas and is changed into a R_2T_{17} alloy powder having a particle size of less than 150 μm;
(c) replacing said hydrogen gas with nitrogen gas;
(d) nitrogenating said R_2T_{17} alloy powder to obtain a $R_2T_{17}N_x$ alloy powder; and
(e) finely crushing said $R_2T_{17}N_x$ alloy powder to obtain a $R_2T_{17}N_x$ magnetic powder having a particle size of 3 μm or less.

5,609,696

PROCESS OF MAKING ELECTRICAL STEELS

Barry A. Lauer, Macedonia; Gerald F. Beatty, Solon; Ann M. R. Larson, Stow, and Richard J. Blotzer, Parma, all of Ohio, assignors to LTV Steel Company, Inc., Cleveland, Ohio

Continuation of Ser. No. 233,371, Apr. 26, 1994, abandoned. This application Jul. 14, 1995, Ser. No. 502,675
Int. Cl.[6] H01F *1/04*
U.S. Cl. 148—111 **23 Claims**



1. A method of making electrical steel strip characterized by low core loss and high permeability comprising the steps of:
producing a slab with a composition consisting essentially of (% by weight):

C:	up to 0.01
Si:	0.20–1.35
Al:	0.10–0.45
Mn:	0.10–1.0
S:	up to 0.015
N:	up to 0.006
Sb:	up to 0.07
Sn:	up to 0.12

hot rolling the slab into a strip with a finishing temperature in the austenite region;
coiling the strip at a temperature ranging from 1300°–1450° F.;
followed by the sequential steps of annealing the strip, cold rolling the strip, batch annealing the strip, and temper rolling the strip, wherein said temper rolling reduces the thickness of the strip by an amount ranging from about 0.25 to about 0.6% and the strip has a permeability when stress relief annealed of at least 2500 Gauss/Oersted.

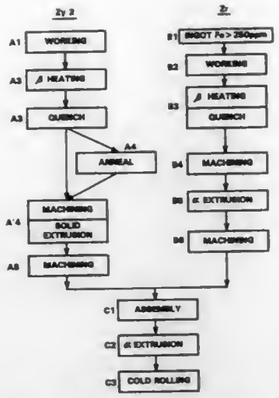
5,609,697

PROCESS FOR THE PRODUCTION OF A TUBULAR ZIRCALOY 2 BLANK INTERNALLY CLAD WITH ZIRCONIUM AND SUITABLE FOR ULTRASOUND MONITORING OF THE ZIRCONIUM THICKNESS

Philippe Moinard, Montreuil-Juigné , and Yvon Millet, Beaucouzé, both of France, assignors to Compagnie Europeene du Zirconium Cezus, Courbevole, France

Filed Mar. 7, 1995, Ser. No. 399,555
Claims priority, application France, Mar. 24, 1994, 92 03724
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—519 **15 Claims**

9. In a process for the production of a composite tubular blank of zircaloy 2 internally clad with zirconium comprising:



a) water quenching a worked zircaloy 2 bar from the beta phase, optionally followed by annealing, before cutting into billets and machining and optionally preboring said billets;

b) water quenching, from a temperature of between 880° C. and 1050° C., an unalloyed zirconium billet with an iron content of between 250 and 1000 ppm, before machining and boring;

c) extruding the zirconium billet in the alpha phase into the form of a tube;

d) positioning and assembling the zirconium tube in the bored zircaloy 2 billet, to form an assembly;

e) extruding the assembly into the form of a composite extruded blank;

f) cold rolling and heat treating the composite extruded blank to produce a composite tubular blank,

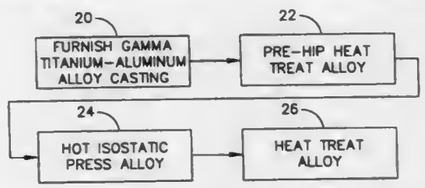
the improvement comprising, after said machining and optional preboring, boring said zircaloy 2 billet by solid extrusion in the alpha phase with an extruding and upsetting press at between 400° and 600° C., and after said water quenching of said billet, the zircaloy 2 having its grain size adjusted to an ASTM index of between 9 and 12, wherein the unalloyed zirconium has its grain size at an ASTM index of between 6and 10, the grain size index difference ΔI between the zircaloy 2 and the unalloyed zirconium being at least 2 ASTM index numbers.

5,609,698

PROCESSING OF GAMMA TITANIUM-ALUMINIDE ALLOY USING A HEAT TREATMENT PRIOR TO DEFORMATION PROCESSING

Thomas J. Kelly, Cincinnati; Curtiss M. Austin, Loveland, and Robert E. Allen, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 23, 1995, Ser. No. 376,519
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—671 **13 Claims**



1. A method for processing a titanium-aluminide alloy, comprising the steps of:

furnishing an as-cast gamma titanium-aluminide alloy having a metastable microstructure, the alloy being in the shape of an article selected from the group consisting of a low-pressure turbine blade, a low-pressure turbine vane, a bearing support, a compressor casing, a high-pressure hanger, a low-pressure hanger, a frame, and a low pressure turbine brush seal support;

pretreating the gamma titanium-aluminide alloy to stabilize the metastable microstructure of the gamma titanium-aluminide alloy; and

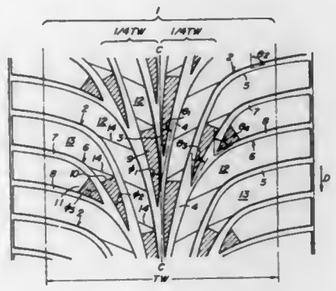
hot isostatic pressing the gamma titanium-aluminide alloy, the step of hot isostatic pressing to occur after the step of pretreating.

5,609,699

PNEUMATIC RADIAL TIRES INCLUDING A FORK-SHAPED GROOVE

Yasuo Himuro, Tachikawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Sep. 15, 1995, Ser. No. 528,557
Claims priority, application Japan, Sep. 20, 1994, 6-244919
Int. Cl.[6] B60C *115/00*
U.S. Cl. 152—209 R **8 Claims**



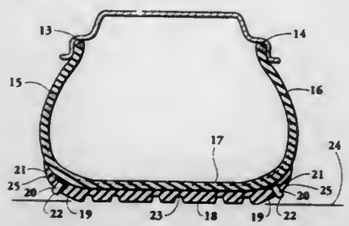
1. A pneumatic radial tire having a tread portion and a tread pattern in the tread portion, the tread pattern including in a ground contact area of the tread portion a plurality of main slant grooves, the main slant grooves bordering on a center of the pattern and extending in a gradually expanding direction from bottom toward top viewed from a front of the tire at a state of mounting of the tire on a vehicle and opening to an end of the tread portion; each of said main slant grooves being comprised of a steeply slant segment being located in a region near the pattern center and having an inclination angle of 0°–30° with respect to a circumferential direction of the tire and a gently slant segment smoothly connected to the steeply slant segment and being located in a region near a side end of the tread portion without crossing any other grooves and having an inclination angle of 60°–90° with respect to the circumferential direction, wherein a fork-shaped groove is bifurcated from the steeply slant segment of each of the main slant grooves at a position between the pattern center and a position which is located a distance of ¼ of a width of the tread portion from the pattern center and extended toward each end of the tread portion and provided with at least two branch groove segments, each of the two branch segments opening to the end of the tread portion without crossing any other grooves, a land portion being defined for each of the main slant grooves between the main slant groove and the fork-shaped groove and having an included angle of 5°to 40° and a land portion being defined for each fork-shape groove between the branch groove segments of the fork-shaped groove and having an included angle of 5°–40°, each of the land portions including a tapered zone having an end and a surface height of the tapered zone of each of the land portions is gradually decreased toward the end of the tapered zone.

5,609,700

OPERATOR SELECTABLE "ON DEMAND" STUDDED TIRE

Allen D. West, P.O. Drawer 310, Catoosa, Okla. 74015

Continuation of Ser. No. 149,274, Nov. 6, 1993, abandoned. This application Oct. 5, 1995, Ser. No. 539,628
Int. Cl.[6] B60C *23/00;11/14*
U.S. Cl. 152—210 **7 Claims**



1. An improved studded tire of the type having a pair of outwardly facing and air pressure retaining wheel-engaging beads, opposing multi-ply sidewalls, a transverse treadwall in continuous integral conjoinment with said sidewalls, and an integrally formed and continuous circumferential tread band situated upon said treadwall, wherein the improvement comprises:

(a) a circumferential beveled area integrally formed at each of the two outer edges of said tread band;

(b) a circumferential translation area integrally formed at the outer edge of each said beveled area, said translation area terminating at the area of conjoinment of said treadwall with said sidewalls;

(c) a plurality of angularly disposed, radially spaced apart bores positioned at the outer edge of said beveled area, said bores only partially penetrating said beveled area; and

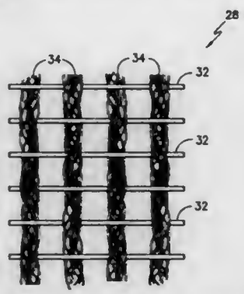
(d) a plurality of traction enhancing studs placed within said bores, such that when said improved studded tire is filled with air at a relatively high pressure, said studs do not contact with the road surface, and when said improved studded tire is filled with air at a relatively low pressure, said studs contact the road surface.

5,609,701

RADIAL TIRE WITH BIAS CUT WOVEN NYLON CHAFER FABRIC

Roger H. Soderberg, and Michael J. Chekan, both of LaGrange, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 4, 1995, Ser. No. 511,595
Int. Cl.[6] B60C *9/00;15/06;* **D03D** *15/00*
U.S. Cl. 152—543 **4 Claims**



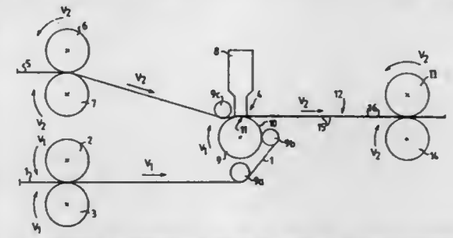
1. In a tubeless tire having a bead area, a sidewall/shoulder area and a tread area, the improvement comprising a wickproof bias cut chafer fabric in the bead area for abrasion resistance during the mounting/dismounting of the tire to a rim, said chafer fabric being a woven fabric constructed of a nylon monofilament fill yam and a textured nylon multifilament warp yam having a denier in the range of 400–1400, said warp and fill yams both extending at an angle to the bead area of the tire.

5,609,702

METHOD AND ARRANGEMENT FOR MUTUALLY BONDING MOVING MATERIAL WEBS, AND ABSORBENT ARTICLES THAT INCLUDE MATERIAL LAYERS MUTUALLY BONDED IN ACCORDANCE WITH THE METHOD

Verner E. Andersen, Mölnlycke, Sweden, assignor to Molnlycke AB, Gothenburg, Sweden

PCT No. PCT/SE93/00827, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/08789, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 11, 1993, Ser. No. 411,809
Claims priority, application Sweden, Oct. 12, 1992, 9202993
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.1 **11 Claims**



1. A method for mutually bonding at least two moving continuous material webs to form a laminate having at least one puckered material layer, comprising the following steps:

advancing a first material web from a first depot at a first speed;

advancing a second material web from a second depot at a second speed which is lower than the first speed;

bringing the first material web and the second material web together and mutually bonding said webs together to form the laminate in a web-bonding means while maintaining a difference in speed between the first and the second material webs, wherein the first material web is puckered upon entering the web-bonding means as a result of the higher first speed of the first material web in relation to the second speed of the second material web at a web-bonding moment, whereas the second material web remains essentially smooth; and

advancing the laminate from the web-bonding means at a speed which is equal to the lower second speed.

5,609,703

PROCESS FOR PREPARING THERMOPLASTIC ELASTOMER LAMINATES

Shun-ichi Hamada; Akira Uchiyama, and Shizuo Shimizu, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 124,853, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 895,451, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 409,318, Sep. 19, 1989, abandoned. This application Mar. 27, 1995, Ser. No. 412,515
Claims priority, application Japan, Sep. 22, 1988, 63-238431
Int. Cl.[6] B32B *5/18*
U.S. Cl. 156—79 **15 Claims**

1. A process for preparing a two layer thermoplastic elastomer laminate having a foamed layer, which consists essentially of the steps of:

dynamically heat treating a blend of a peroxide non-crosslinkable polyolefin resin and an ethylene/α-olefin/non-conjugated diene terpolymer rubber in the presence of a peroxide, thereby partially crosslinking said ethylene/α-

olefin/non-conjugated diene terpolymer rubber and forming a first thermoplastic elastomer;

forming said first thermoplastic elastomer into a pre-formed non-foamable sheet consisting essentially of said peroxide non-crosslinkable polyolefin resin and said ethylene/α-olefin/non-conjugated diene terpolymer rubber within the range of weight ratios from 80/20 to 20/80;

dynamically heat treating a blend of a peroxide non-crosslinkable polyolefin resin and an ethylene/α-olefin/non-conjugated diene terpolymer rubber in the presence of a peroxide, thereby partially crosslinking said ethylene/α-olefin/non-conjugated diene terpolymer rubber and forming a second thermoplastic elastomer;

forming said second thermoplastic elastomer into a foamable sheet consisting essentially of said peroxide non-crosslinkable polyolefin resin and said ethylene/α-olefin/non-conjugated diene terpolymer rubber within the range of weight ratios from 80/20 to 20/80, and containing a foaming agent;

laminating said pre-formed non-foamable sheet by thermal fusion bonding, with said pre-formed foamable sheet to provide a laminated sheet; and

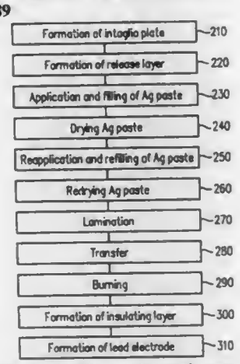
heating said laminated sheet to a temperature so as to expand said foamable sheet 1.1 to 20 times to obtain a thermoplastic laminate of said pre-formed non-foamable sheet and a foamed sheet having a thickness of 0.1 to 10 mm.

5,609,704

METHOD FOR FABRICATING AN ELECTRONIC PART BY INTAGLIO PRINTING

Masaaki Hayama, Nara; Noboru Mohri, Katano, and Keiichi Nakao, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 20, 1994, Ser. No. 309,049
Claims priority, application Japan, Sep. 21, 1993, 5-234522
Int. Cl.[6] B32B *31/12;31/20*
U.S. Cl. 156—89 **15 Claims**



1. A method for fabricating an electronic part comprising a first conductor pattern on a substrate by intaglio printing, the method comprising the steps of:

(a) forming an intaglio plate by forming a groove on a surface of a flexible resin in a pattern corresponding to the first conductor pattern;

(b) forming a release layer on the surface of the intaglio plate for facilitating the separation of the intaglio plate and the substrate, the release layer being a fluorine-carbon monomolecular film;

(c) filling conductive paste into the groove;

(d) drying the conductive paste;

(e) refilling the conductive paste so as to resoften the conductive paste dried in step (d) and compensate for the decrease in volume thereof and redrying the refilled conductive paste, the refilling and the redrying being repeated at predetermined times;

(f) laminating the intaglio plate and the substrate at a temperature and pressure set in a predetermined range;

(g) peeling the intaglio plate from the substrate so as to thereby transfer the pattern of the conductive paste onto the substrate; and

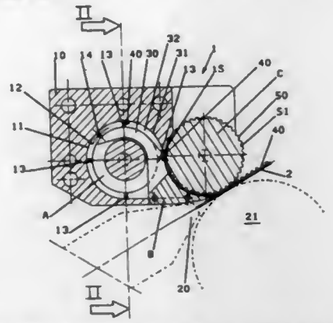
(h) burning the transferred pattern of the conductive paste to thereby form the first conductor pattern.

5,609,705

CORD REINFORCEMENT OF RUBBER MATERIAL

Daniel Laurent, Meylan, and Miguel Torres Castellano, Ceyrat, both of France, assignors to Sedepro, Paris, France

Filed Sep. 28, 1995, Ser. No. 535,884
Claims priority, application France, Sep. 29, 1994, 94 11776
Int. Cl.[6] B29D *30/08;* **B32B** *5/00*
U.S. Cl. 156—117 **12 Claims**



1. A process for arranging cut lengths of reinforcing cords onto a moving rubber surface comprising feeding the cord through an opening in a chamber containing a moving rotor having cord receiving receptacles around the periphery of the rotor, cutting the cords introduced into the receptacles into predetermined lengths, removing the cords from the receptacles by means intermeshing with the rotor and guiding and advancing the cords onto the movable rubber surface while maintaining the cords in parallel relation.

2. An apparatus for arranging cut lengths of reinforcement cord in parallel on a moving rubber surface comprising a rotor within a chamber, means defining a plurality of cord receiving receptacles around the outer periphery of the rotor, an opening into the chamber through which a cord is fed into the receptacles, means for cutting the cords introduced into the receptacles into predetermined lengths, means intermeshing with the rotor to remove the cords from the receptacles and means for guiding the cords onto the moving rubber surface.

5,609,706

METHOD OF PREPARATION OF A COATED ABRASIVE BELT WITH AN ENDLESS, SEAMLESS BACKING

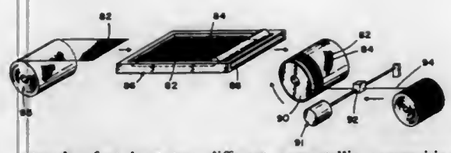
Harold W. Benedict, Cottage Grove; Diana D. Zimny, St. Paul, and Donna W. Bange, Eagan, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 145,773, Oct. 29, 1993, which is a division of Ser. No. 919,541, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 811,784, Dec. 20, 1991, abandoned. This application May 8, 1995, Ser. No. 437,454
Int. Cl.[6] B24D *11/02;* **B29C** *53/66*
U.S. Cl. 156—137 **26 Claims**

1. A method for preparing a coated abrasive belt comprising an endless, seamless backing; said method comprising the steps of:

(a) providing a support structure having an outer periphery;

(b) preparing a loop of liquid organic polymeric binder material having nonmetallic fibrous reinforcing material engulfed therein, in extension around the outer periphery of the support structure, comprising winding at least two fibrous reinforcing



strands of at least two different nonmetallic compositions around the outer periphery of the support structure;

(c) solidifying the liquid organic polymeric binder material to form a flexible, solidified, endless, seamless backing loop having fibrous reinforcing material engulfed therein, and an outer and an inner surface;

(d) laminating a preformed sheet material, having abrasive material coated thereon, onto the outer surface of the endless, seamless backing loop having reinforcing material therein; and

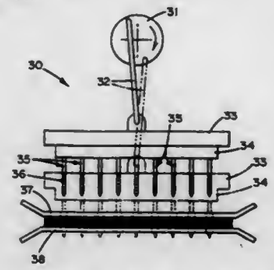
(e) removing the laminated backing loop from the support structure.

5,609,707

CARBON FIBER REINFORCED CARBON/CARBON COMPOSITE AND METHOD OF ITS MANUFACTURE

Afshin Bazshushtari, Rancho Palos Verdes, Calif., and Edward L. Morris, Jr., Pueblo, Colo., assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 223,942, Apr. 6, 1994, which is a continuation of Ser. No. 754,774, Sep. 4, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,331
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—148 **27 Claims**



1. A method of making a sheet of fibrous material comprising

a) opening fibrous material having a fiber volume of from about 29 to about 58 percent having a plurality of layers of fibrous material made from PAN fibers including OPF, carbon fibers, graphite fibers, ceramic fibers, precursors of carbon fibers and precursor of ceramic fibers, and mixtures of these that are mechanically united by needlepunching, to provide discrete staple fibers having a mean length of between about 10 and about 25 millimeters (0.4 and 1.0 inches) when tested according to ASTM D 1440; and

b) airlaying said opened fibers into a web having substantially uniform randomness in direction.

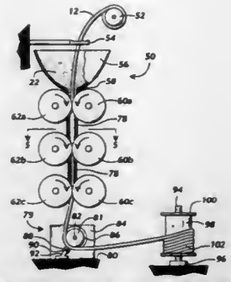
5,609,708

METHOD OF MAKING A SEAL FOR SHAFTS AND VALVE STEMS

Steven M. Suggs, 201 Cedarwood Dr., and Reid M. Meyer, 916 Northwood Cir., both of Nacogdoches, Tex. 75961

Division of Ser. No. 85,550, Jun. 30, 1993, Pat. No. 5,499,827. This application Dec. 11, 1995, Ser. No. 569,948
Int. Cl.[6] F16J *15/00*
U.S. Cl. 156—166 **8 Claims**

1. A method of making a seamless packing material for use in forming a seal, comprising:



surrounding a flexible elongate core with a plurality of particles;

feeding the core and the particles through an opening defined by at least one pair of adjacent V-groove rollers;

wrapping the core under tension around an arc of a cylinder between a pair of spaced-apart radial walls extending outwardly from the cylinder; and

pushing a roller against the core on the arc,

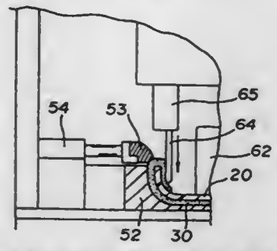
whereby the packing material, being pressed by the wheel in the arcuate section, is compressed.

5,609,709

BONDING PROCESS FOR FABRICATING AN INTERIOR COMPONENT

Masao Doumae; Hisashi Yamada, and Fumihiko Saito, all of Kanagawa-ken, Japan, assignors to Kasai Kogyo Co., Ltd., Japan

Continuation of Ser. No. 8,581, Jan. 25, 1993, abandoned, which is a division of Ser. No. 871,423, Apr. 21, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 348,899
Claims priority, application Japan, Sep. 17, 1991, 3-74441
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—216 **6 Claims**



1. A bonding process for fabricating a vehicle interior component comprising a core member and a surface skin member covering a front surface of said core member and folded back over an edge and a concave reverse surface of said core member at a peripheral part of said surface skin member, comprising the steps of:

bonding, on a bonding station, said surface skin member onto said front surface of said core member to form an assembly;

conveying, via an upper die for retaining said core member, said assembly from said bonding station to a peripheral part folding back station;

folding, on said peripheral part folding back station, said peripheral part of said surface skin member over said edge of said core member;

securing, on said peripheral part folding back station, said peripheral part of said surface skin member onto said concave reverse surface of said core member;

wherein said bonding step further comprises the steps of:

mounting said surface skin member to a first die, made of a block of resilient material, secured to said bonding station;

pushing said core member against said surface skin member mounted to said first die;

wherein said folding step further comprises the steps of:

retaining said assembly of said core member and said surface skin member on a second die secured to said peripheral part folding back station;

applying a plurality of first slide bars to push said peripheral part of said surface skin member across said edge of said core member; and

wherein said securing step further comprises the step of:

applying a plurality of second slide bars along a peripheral part of said concave reverse surface of said core member generally in parallel with said concave reverse surface adjacent to said edge of said core member.

5,609,710

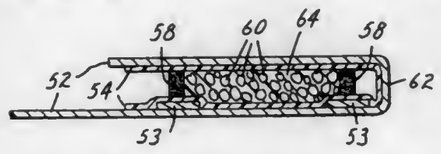
REDUCED ODOR FRAGRANCE SAMPLER

Jack W. Charbonneau, Somerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 65,643, May 21, 1993, Pat. No. 5,419,958, which is a continuation-in-part of Ser. No. 889,732, May 28, 1992, abandoned. This application May 26, 1995, Ser. No. 451,880

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—276 **13 Claims**



1. A method of making a sampler for delivery of microencapsulated liquid fragrance material comprising

a) printing a substrate sheet with release coating,

b) applying a volatile liquid containment treatment which, when cured, is an organic polymer, to said substrate sheet and overlying at least a portion of said release coating,

c) allowing said volatile liquid containment treatment to cure to a state so that it is liquid water-stable and organic liquid capsule fill-stable such that said substrate sheet having volatile liquid containment treatment thereon allows the transmission of water moisture vapor therethrough,

d) applying an adhesive generally overlying the area corresponding to the release coating and overlying at least a portion of said volatile liquid containment treatment,

e) applying microcapsules comprising microencapsulated organic liquid capsule fill to said substrate sheet such that they are disposed on at least a portion of the volatile liquid containment treatment,

f) folding said substrate sheet so that the adhesive and portions of the substrate sheet define an enclosed cavity having said microcapsules disposed therein.

5,609,711

METHOD OF BONDING LAMINATES USING PREGELATINIZED STARCH

Ray R. Miller, 8816 Warren Dr. NW., Gig Harbor, Wash. 98335

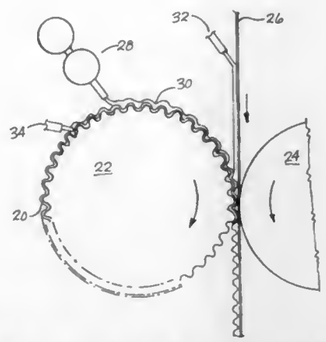
Continuation-in-part of Ser. No. 444,936, May 19, 1995, abandoned, which is a continuation-in-part of Ser. No. 263,360, Jun. 21, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 574,270

Int. Cl.[6] B31F *5/04*

U.S. Cl. 156—292 **24 Claims**

1. A method of adhesively bonding two essentially continuous plies of material which comprises:

providing an application device adapted to extrude an adhesive material comprising a significantly gelatinized aqueous starch bearing composition, said composition being gelatinized within the application device to a viscosity greater than 200 seconds as determined by the Stein-Hall cup method;



extruding the starch bearing adhesive composition between the plies of material; and

combining the plies to adhesively bond them one to the other.

5,609,712

METHOD OF MANUFACTURING SCREW HOLDER FOR CONTINUOUS SCREWDRIVER

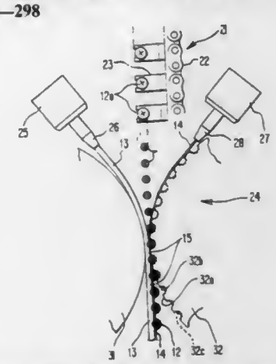
Akira Takumi, Karasuyama-machi, Japan, assignor to Muro Corporation, Tokyo, Japan

Division of Ser. No. 316,362, Oct. 3, 1994, Pat. No. 5,409,111, which is a continuation of Ser. No. 961,370, Oct. 15, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,151

Claims priority, application Japan, Oct. 15, 1991, 3-295172

Int. Cl.[6] B29C *47/02;* **B32B** *31/10*

U.S. Cl. 156—298 **2 Claims**



1. A method of manufacturing a screw holder having a series of screws, comprising the steps of:

arranging a plurality of screws in a series;

feeding said plurality of screws between a main band of semi-molten synthetic resin having a larger cross-sectional area and a secondary band of semi-molten synthetic resin having a smaller cross-sectional area; and

pressing said main and secondary bands, having said plurality of screws therebetween, between two pressing rollers so as to unify said bands and said plurality of screws,

wherein a first of said pressing rollers presses on a side of said secondary band, said first of said pressing rollers having a plurality of screw holding grooves into which said plurality of screws fit during said pressing step, said first pressing roller forming teeth between said grooves, tips of said teeth each defining a pressing surface of said first roller,

wherein a second of said pressing roller lacks said screw holding grooves, and

wherein said first and second pressing rollers are spaced, and said teeth have a height, such that part of each of the plurality of screws bites into said main band during said pressing step so as to reduce a thickness of said main band, and such that said pressing surface presses on said main band and said secondary band during said pressing step so that an intermediate part of said bands between adjoining ones of said screws is substantially flattened without the secondary band forming a rib at the intermediate part.

5,609,713

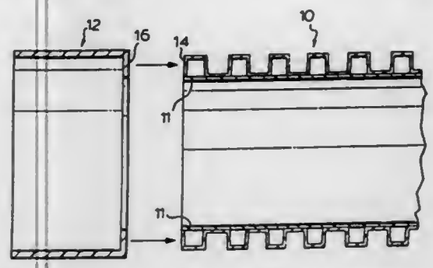
METHOD FOR PRODUCING A BELL JOINT

Geofrey G. Kime, London, and Carl D. Chapman, Stratford, both of Canada, assignors to Big 'O' Inc., Exeter, Canada

Division of Ser. No. 179,292, Jan. 10, 1994, Pat. No. 5,441,588. This application May 26, 1995, Ser. No. 451,805

Int. Cl.[6] B29C *65/20*

U.S. Cl. 156—304.2 **5 Claims**



1. A method for producing a bell joint on an end of thermoplastic polyolefin corrugated pipe comprising the steps: supporting a thermoplastic polyolefin bell having an inwardly facing circumferential bell flange with bell support means disposed at an end of a supporting framework such that the bell is concentric with a longitudinal axis of the bell support means, securing an end of a thermoplastic polyolefin corrugated pipe on pipe support means disposed at the other end of the supporting framework; raising and lowering said pipe whereby said pipe is disposed co-axial with said longitudinal axis; trimming the end of the pipe secured on the pipe securing means to form a circumferential end pipe flange from a corrugation of the pipe such that an annular face of the pipe flange is substantially perpendicular to the longitudinal axis; extending heating means operatively mounted on the supporting framework between the annular face of the pipe flange and the annular face of the bell flange and heating the annular faces of the flange at the end of the pipe and the flange of the bell to a desired melting temperature; retracting the heating means; and immediately abutting the heated faces of the bell flange and the pipe flange against each other at a desired pressure for a time sufficient to fuse the bell flange and pipe flange together without collapse of the corrugated pipe.

5,609,714

APPARATUS FOR DRY PROCESSING OF OPTICAL PRINT MEDIA

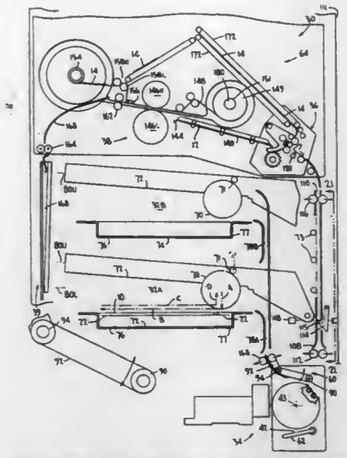
George D. Whiteside, Lexington; Richard A. Rosenthal, Winchester, and Margaret A. Obermiller, Wayland, all of Mass., assignors to Sterling Dry Imaging, Inc., Glasgow, Del.

Continuation-in-part of Ser. No. 240,459, May 10, 1994. This application Nov. 17, 1994, Ser. No. 341,527

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—387 **9 Claims**

1. An apparatus for sheetwise dry processing of thermographic print media formed of a thermally printable substrate and an overlying laminated disposable peel sheet joined to the substrate by an intermediate multicomponent adhesive image forming layer being selectively adhesive between the substrate and the peel sheet in response to radiant energy, said substrate has a frangible substrate tab formed in a free surface of the substrate along a score line adjacent the marginal edge of the media comprising:



feeder sheet means for feeding the sheets one at a time from the first position end orientation to a second position wherein the substrate is oriented with the tab at a trailing edge;

print roller means mounted for reversible rotation in infeed and outfeed directions including a wrapping surface for receiving the sheet from the sheet feeder in intimate confronting contact thereabout, said print roller means including adjacent leading and trailing edge clamps for engaging the respective leading and trailing edges of the sheet as received from the sheet feeder means in the infeed direction of rotation to support the sheet oo the print roller means for rotation thereon, and for releasing the sheet in the outfeed direction with the tab leading;

thermal printer means cooperating with the print roller means for exposing the image forming layer through the peel sheet as the print roller means rotates to radiant energy so as to produce an image selectively adhered to the substrate;

peeler means for receiving the sheet from the print roller means with the tab at the leading edge, said peeler means engaging the tab from the free surface of the substrate for bending the substrate about the score line causing it to fracture and for pulling the peeler relative to the substrate and the selectively adhered image forming layer for separating the peeler therefrom to thereby produce a peeled image layer formed on the substrate and a waste peeler sheet; and

thermal lamination means for receiving the substrate therein with the peeled image layer substrate oriented for thermal laminating engagement with a thermosensitive film having a thermosensitive layer transferrable to the image layer on the substrate for producing a laminated sheet; and,

wherein the feeder means, the print roller means, the peeler means and the lamination means are modules each of which separated from each other by an operational distance sufficient so that a sheet of film in a module is functionally separated from of another module and whereby one module does not operate on a film sheet while another module operates on the same film sheet.

5,609,715

TIRE PUNCTURE REPAIR APPARATUS

Bill Gallentine, 615 Country Club Rd., Hood River, Oreg. 97031

Filed Jul. 21, 1995, Ser. No. 505,657

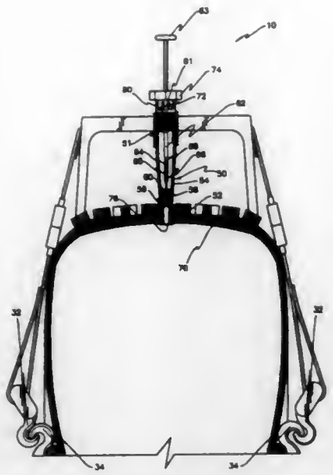
Int. Cl.[6] B29C *73/08*

U.S. Cl. 156—394.1 **10 Claims**

1. A tire puncture repair apparatus comprising;

a mounting unit having a tapped bore,

an elongated probe having external threads mating with said mounting unit tapped bore, said probe provided with a hollow



interior and having opposite distal and proximal open ends with said distal open end adapted to be inserted through a tire puncture from the tread of a tire to the inner surface of a tire casing,

said probe, upon rotation in opposite directions, is advanced and retracted through the tire puncture,

attachment elements operable to fixedly secure said mounting unit to the tire adjacent the puncture,

a rubber boot initially disposed within said probe interior and including a collapsed main body attached to a central stem,

a piston within said probe hollow interior at said proximal open end and having an aperture therethrough,

a plunger rod engaging said boot and having an upper end projecting through said piston aperture and above said probe proximal open end,

a flexible foldable tether joining said boot to said plunger rod, whereby following insertion of said probe distal end through the puncture to the inner surface of a tire casing, subsequent downward displacement of said plunger rod forces said boot main body through the puncture and into an un-collapsed position radially extending in a coextensive manner around the puncture while withdrawal of said plunger rod unfolds and then withdraws said flexible tether through said piston aperture in said probe proximal open end,

said probe hollow interior adapted to receive a measure of rubber bonding fluid beneath said piston, and

a drive rod having a lower end insertable into said probe and engageable atop said piston, whereby upon downward displacement of said drive rod said piston forces said rubber bonding fluid to exit said probe distal open end to sealingly attach said boot main body to the tire inner surface juxtaposed the puncture.

5,609,716

APPARATUS FOR MANUFACTURING AND DISPENSING IDENTIFICATION BRACELETS

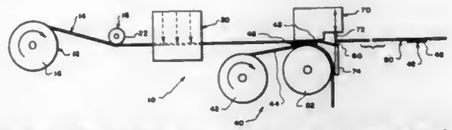
Walter W. Mosher, Jr., Northridge, Calif., assignor to Precision Dynamics Corporation, Van Nuys, Calif.

Continuation of Ser. No. 973,269, Nov. 9, 1992, abandoned. This application Jan. 10, 1995, Ser. No. 370,830

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—522 **7 Claims**

1. In an apparatus for fabricating an identification bracelet intended for immediate application without modification to an object to be identified upon the issuance of said bracelet from said apparatus, the combination of: a source of bracelet strip material; informatioo imparting means for imparting information regarding



said object and storing it upon a surface of said strip; adhesive fastener transfer means for applying said fastener means to said strip only at one extremity of said strip; severance means for separating said strip into bracelet lengths conformable to the size of the object to be identified by said bracelet; and an exit from said apparatus whereby said bracelet is delivered to the user with said bracelet and said fastener means exposed for immediate application of said bracelet.

5,609,717

APPARATUS FOR MANUFACTURE OF INSULATING GLASS FOR AUTOMOBILES

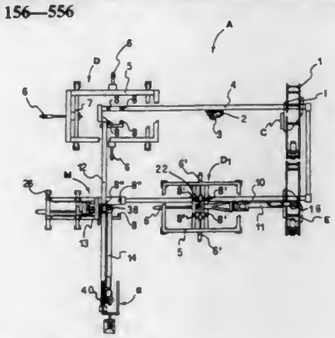
Carmine Pascale, and Pietro Aresu, both of Vasto, Italy, assignors to Societa Italiana Vetro -SIV - S.p.A., San Salvo, Italy

Filed Jun. 29, 1994, Ser. No. 267,394

Claims priority, application Italy, Jun. 30, 1993, RM93A0428

Int. Cl.[6] B32B *31/12*; **B29C** *65/52*; **B65G** *25/04*; **B65H** *37/04*

U.S. Cl. 156—556 **7 Claims**



1. An apparatus comprising:

a) a first station for centering internal glass sheets and applying butyl rubber;

a first transport line for linking an internal glass sheet loading station with said first station;

a first glass carrier provided on said first transport line for movement thereon;

b) a second station for centering external glass sheets;

a second transport line, extending substantially parallel to said first transport line, for linking an external glass sheet loading station with said second station;

a third station, on said second transport line, for assembling internal and external glass sheets, and for adjusting the thickness thereof;

a second glass carrier, having a first end and a second end, provided on said second transport line for movement between a first position at which said first end engages an external glass sheet in an external glass sheet loading station and said second end engages an external glass in said second centering station, and a second position where said first end engages an external glass sheet in said second station and said second end engages an external glass sheet in said third station;

c) a fourth station for unloading an assembled double-glazed glass;

a third transport line extending between said first station and said fourth station for connecting said first, third and fourth stations; and

a third glass carrier, having a first end and a second end, provided on said third transport line to allow movement between a first position at which said first end engages an internal glass in said first station and said second end engages a double-glazed glass to be assembled and adjusted in said third station, and a second position at which said first end engages a double-glazed glass to be assembled and adjusted in said third station and said second end engages an assembled double-glazed glass in said fourth station.

5,609,718

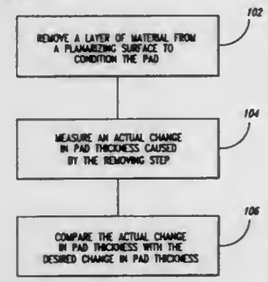
METHOD AND APPARATUS FOR MEASURING A CHANGE IN THE THICKNESS OF POLISHING PADS USED IN CHEMICAL-MECHANICAL PLANARIZATION OF SEMICONDUCTOR WAFERS

Scott G. Meikle, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 535,991, Sep. 29, 1995. This application Nov. 20, 1995, Ser. No. 560,734

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—626.1 **3 Claims**



1. In chemical-mechanical planarizing of a semiconductor wafer against a polishing pad, a method of identifying a change in wafer polishing operating parameters, comprising the steps of:

removing a layer of material from a planarizing surface on the pad to condition the pad according to a set of conditioning parameters, the conditioning parameters being set to remove a layer of material having a thickness equal to an expected change in pad thickness;

measuring an actual change in pad thickness caused by the removing step; and

comparing the actual change in pad thickness with the expected change in pad thickness, whereby a difference between the actual change in pad thickness and the expected change in pad thickness indicates an undesired change of the wafer polishing operating parameters.

5,609,719

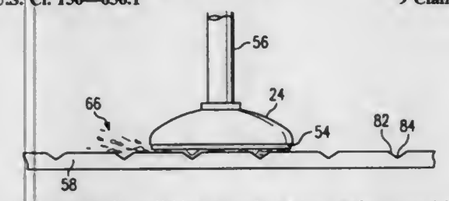
METHOD FOR PERFORMING CHEMICAL MECHANICAL POLISH (CMP) OF A WAFER

Eugene O. Hempel, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1994, Ser. No. 333,674

Int. Cl.[6] B24B *1/00*

U.S. Cl. 156—636.1 **9 Claims**



1. A method for polishing a semiconductor wafer, comprising the steps off:

placing the semiconductor wafer on a carrier device;

coating a slurry on a pad to a predetermined thickness, the pad having a plurality of channel paths and a plurality of slurry recesses at intersections of certain ones of the plurality of channel paths, said recesses having a depth greater than that of said channel paths to facilitate slurry collection and retention in said recesses, the slurry thickness being sufficient to fill the slurry recesses and flow through the channel paths;

imparting relative motion to said semiconductor wafer and to said pad;

contacting the semiconductor wafer with the pad for polishing the semiconductor wafer, while maintaining a sufficient layer of the slurry on the pad for lubricating the semiconductor wafer.

5,609,720

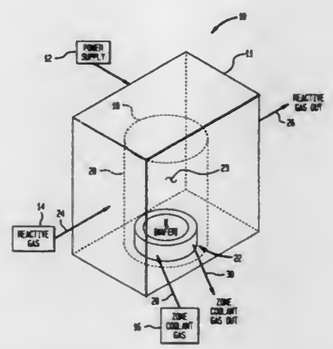
THERMAL CONTROL OF SEMICONDUCTOR WAFER DURING REACTIVE ION ETCHING

Eric H. Lenz, San Jose, and Keith E. Dawson, Livermore, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Sep. 29, 1995, Ser. No. 536,459

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 **17 Claims**



12. A method for controlling temperature across workpieces during processing thereof comprising the steps of:

holding a workpiece during processing against a top face of a chuck in a reactor chamber;

configuring the top face into a plurality of zones into which zone coolant gas can flow along and between the top face and an underside of the workpiece;

admitting of a cooling gas into the respective zones; and

controlling the pressures of zone coolant gas separately in the respective zones so as to control the temperature across a workpiece during processing.

5,609,721

SEMICONDUCTOR DEVICE MANUFACTURING APPARATUS AND ITS CLEANING METHOD

Atsuhiro Tsukune; Kiyokatsu Suzuki; Katsuyoshi Matsuura; Fumitake Mieno, and Hirokazu Yamanishi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

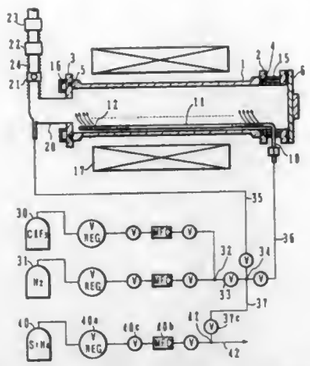
Filed Jan. 3, 1995, Ser. No. 367,828

Claims priority, application Japan, Mar. 11, 1994, 6-041335; Sep. 19, 1994, 6-223335

Int. Cl.[6] C23C *16/00*

U.S. Cl. 156—646.1 **21 Claims**

1. A method of cleaning a reaction chamber of a semiconductor device manufacturing apparatus by supplying cleaning gas contain-



ing ClF_3 to said reaction chamber, said reaction chamber being adapted to exhaust gas therefrom, comprising the step of:

adding alcohol vapor to said cleaning gas.

5,609,722

DEINKING WASTEPAPER USING REACTION PRODUCTS OF EPOXIDIZED C_{16}–C_{22} CARBOXYLIC ACIDS WITH ALKOXYLATED POLYOLS

José M. Rodriguez, Fort Mill, S.C.; Anthony B. Cook, Charlotte, N.C., and Gail M. Howell, Fort Mill, S.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 854,982, Apr. 23, 1992, abandoned. This application Dec. 1, 1995, Ser. No. 566,193

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **8 Claims**

1. The process of regenerating wastepaper containing printing ink comprising the steps of:

A. fiberizing said wastepaper in an aqueous deinking solution containing from about 0.01% to about 5% by weight, based on the weight of air-dry wastepaper of the reaction products of about 1 part by weight of an epoxidized mono-, di- or triglyceride containing unsaturated C_{10}–C_{22} carboxylic acids moieties having an epoxide content of about 7% by weight and which are free from OH groups and have at least 1 or 2 double bond(s) in the 9- or 13- position with about 2 Parts by weight of an alkoxylated carbohydrate-derived polyol selected from the group consisting of sorbitol and mannitol containing from about 4% to about 600% by weight of alkylene oxide to detach ink particles from said wastepaper; and

B. removing the detached ink particles from the deinking solution.

5,609,723

OXYGEN BLEACHING PROCESS FOR CELLULOCIS PULPS WITH A POLYHYDRIC ALCOHOL CELLULOSE PROTECTOR

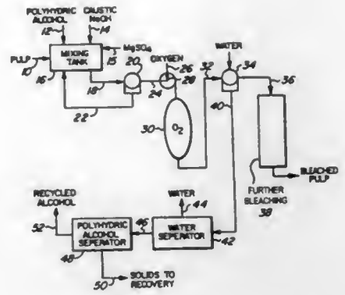
Marco Solinas, Vancouver, and Allan M. Proust, Surrey, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Continuation of Ser. No. 234,028, Apr. 28, 1994, abandoned. This application Jun. 9, 1995, Ser. No. 489,075

Int. Cl.[6] D21C *9/147*

U.S. Cl. 162—65 **18 Claims**

1. An improved oxygen bleaching process for bleaching cellulosic pulp comprising mixing said pulp with an aqueous medium containing a polyhydric alcohol cellulose protector and caustic to uniformly distribute the caustic and protector throughout the pulp to form a treated pulp, said polyhydric alcohol being selected from



the group consisting of ethylene glycol, propylene glycol, glycerol, pentaerythrytol and diethylene glycol, passing said treated pulp in said aqueous medium into said oxygen bleaching stage, said aqueous medium in said oxygen bleaching stage containing between 10% and 70% by weight of said polyhydric alcohol and sufficient of said caustic to obtain the desired reduction in kappa no. during said oxygen bleaching stage, bleaching said pulp with oxygen in said oxygen bleaching stage in an oxygen atmosphere in said aqueous medium containing said caustic and between 10% and 70% by weight of said polyhydric alcohol at a pressure to obtain oxygen bleaching and produce an oxygen bleached pulp having a higher viscosity than a similar softwood pulp oxygen bleached to the same kappa no. using the same conditions but in water substantially free of cellulose protectors.

5,609,724

FUNGI FOR PITCH REDUCTION AND THEIR PREPARATION

Roberta L. Farrell, Danvers, Mass.; Yitzhak Hadar, Rehovot, Israel; Philip A. Wendler, Belmont, and Wendy Zimmerman, Watertown, both of Mass., assignors to Sandoz Ltd, Basel, Switzerland

Division of Ser. No. 131,260, Oct. 1, 1993, Pat. No. 5,476,789, which is a continuation of Ser. No. 657,581, Feb. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 560,521, Jul. 31, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,535

Int. Cl.[6] D21C *1/00*

U.S. Cl. 162—72 **3 Claims**

1. A pulpwood treated with a homokaryotic wood-penetrating, pitch-degrading fungus of the genus Ophiostoma and embodying sufficient natural infestion by *heterokaryotic* native pulpwood coloring fungi that the brightness of the non-sterilized, untreated pulpwood prior to treatment is reduced by at least 10% compared to the sterilized, untreated pulpwood when each are maintained for comparison at room temperature over the lesser of 14 days or the period during which the pulpwood was fungus-treated, said treated pulpwood having a brightness level at least as great as the brightness level exhibited by said non-sterilized and untreated pulpwood after said non-sterilized, untreated pulpwood was maintained at room temperature for the period during which the pulpwood is fungus-treated.

5,609,725

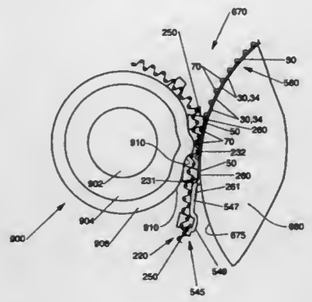
MULTI-REGION PAPER STRUCTURES HAVING A TRANSITION REGION INTERCONNECTING RELATIVELY THINNER REGIONS DISPOSED AT DIFFERENT ELEVATIONS, AND APPARATUS AND PROCESS FOR MAKING THE SAME

Dean Van Phan, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 268,133, Jun. 29, 1994, Pat. No. 5,549,790. This application May 11, 1995, Ser. No. 438,804

Int. Cl.[6] D21H *11/00*

U.S. Cl. 162—117 **6 Claims**



1. A method of forming a paper structure comprising the steps of:

providing a wet web of paper making fibers;

deflecting the web in a first deflection step to provide a non-monoplanar web having a first uncompacted web region, and a second uncompacted web region having an elevation different from the elevation of the first uncompacted web region while the web has a consistency of between about 8 and about 30 percent;

deflecting the first uncompacted web region relative to the second uncompacted web region in a second deflection step to temporarily reduce the difference in elevation between the first uncompacted web region and the second uncompacted web region;

compacting a predetermined portion of the first uncompacted web region at a web consistency of between about 40 to about 80 percent to provide a first compacted region and a third uncompacted region;

compacting at least a portion of the second uncompacted web region at a web consistency of between about 40 to about 80 percent to form a second compacted web region; and

restoring at least some of the difference in elevation lost in the second deflection step to provide the first compacted region at an elevation different from the elevation of the second compacted region.

5,609,726

HEADBOX AND METHOD FOR PRODUCING MULTILAYER AND MULTI-PLY PAPER WEBS

Hans-Peter Sollinger, Heidenheim, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany

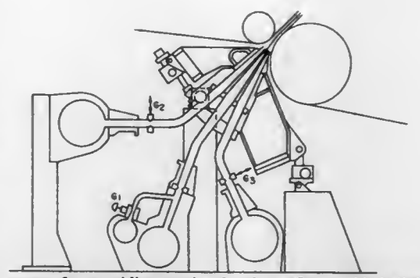
Filed Jun. 27, 1994, Ser. No. 266,425

Claims priority, application Germany, Jun. 28, 1993, 43 21 268.9

Int. Cl.[6] D21F *11/04*

U.S. Cl. 162—125 **12 Claims**

1. A multilayer headbox of a paper machine for producing a paper web having a plurality of layers, each of said plurality of layers having a basis weight cross profile and a fiber orientation cross profile, and wherein at least some of said plurality of layers have properties that differ from the properties of another layer, comprising:



means for providing sectional volume flows with individually adjustable stock consistency in at least one layer for adjustment of the basis weight cross profile of said at least one layer; and

means for providing sectional volume flows with adjustable flow in at least one other layer for adjustment of the fiber orientation cross profile of said at least one other layer.

5,609,727

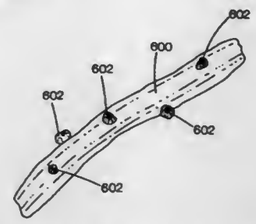
FIBROUS PRODUCT FOR BINDING PARTICLES

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 931,213, Aug. 17, 1992, Pat. No. 5,300,192. This application Feb. 7, 1994, Ser. No. 193,301

Int. Cl.[6] D21H *25/02*

U.S. Cl. 162—184 **29 Claims**



1. A fibrous product for binding particles having a hydrogen bonding or coordinate covalent bonding functionality comprising:

wet laid fibers that have hydrogen bonding functional sites; and

non-polymeric binder on the fibers for binding the particles to the fibers the binder having a volatility less than water and a functional group that forms a hydrogen bond with the fibers and another functional group that is capable of forming a hydrogen bond or coordinate covalent bond with the particles.

5,609,728

METHOD AND APPARATUS FOR TRANSFERRING A WEB FROM A FORMING WIRE TO A TRANSFERRING FELT IN A PAPER MAKING MACHINE

Phillip R. Durden, Merdian, Miss., assignor to James River Corporation of Virginia, Richmond, Va.

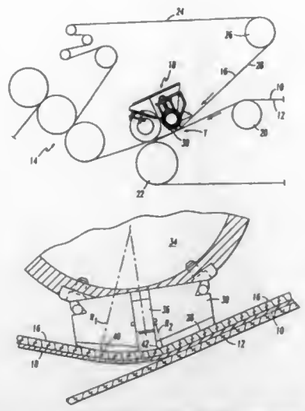
Continuation-in-part of Ser. No. 409,642, Mar. 24, 1995. This application Oct. 6, 1995, Ser. No. 540,037

Int. Cl.[6] D21F *2/00*

U.S. Cl. 162—205 **23 Claims**

1. A method for transferring a web from a forming, fabric in a forming section of a paper making machine to a transfer fabric comprising:

directing the web carrying forming fabric in a substantially longitudinal direction adjacent an underside of a transfer shoe in a transfer zone with said web being positioned between the forming fabric and the transfer shoe, the transfer shoe having a substantially planer lead-in surface and an arcuate exiting



surface of a predetermined radius of curvature, said lead-in surface including an arcuate trailing edge having a predetermined radius of curvature less than that of said arcuate exiting surface, said trailing edge and said exiting surface being separated by a suction opening;

directing the transfer fabric in a substantially longitudinal direction adjacent the underside of the transfer shoe with the transfer fabric being positioned between said web and the transfer shoe, the transfer fabric entering said transfer zone at an angle with respect to the forming fabric;

creating a nip region between the arcuate trailing edge of the transfer shoe and the forming fabric where the transfer fabric is pressed against the web in a concentrated area for initiating the transfer of the web from the forming fabric to the transfer fabric;

applying a suction to the web through the transfer felt adjacent the suction opening whereby the web is transferred from the forming fabric to the transfer fabric; and

directing the transfer fabric and transferred web over said arcuate exiting surface and away from said forming fabric.

5,609,729

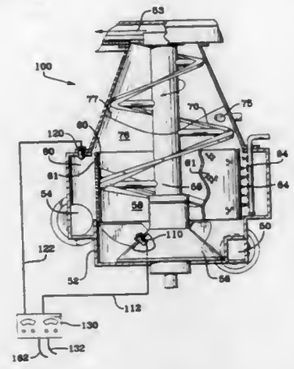
APPARATUS FOR CONTROLLING LIQUID LEVEL IN A KNOT DRAINER

Ian J. H. Clarke-Pounder, and Douglas L. G. Young, both of Nashua, N.H., assignors to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 991,606, Dec. 16, 1992, abandoned, which is a division of Ser. No. 780,675, Oct. 21, 1991, Pat. No. 5,209,822. This application Feb. 28, 1995, Ser. No. 396,095

Int. Cl.[6] D21H *23/00*

U.S. Cl. 162—380 **6 Claims**



1. A liquid level control apparatus for a knot drainer, comprising:

means for establishing an inlet liquid level set point;

means for sensing apparent inlet liquid level within said knot drainer;

means for comparing said inlet liquid level set point to said sensed inlet liquid level, and for transmitting a signal having an appropriate sign and a magnitude proportional to a difference, if any, between said inlet liquid set point and said sensed inlet liquid level;

means, in an accepts discharge line, for establishing a minimum liquid level within the knot drainer irrespective of variations of feed flow rate and accepts outflow rate, the means comprising a siphonic loop in the accepts discharge line; and

means, responsive to said transmitted signal, for regulating an accepts outflow rate from said knot drainer.

5,609,730

METHOD OF OPERATING DRY QUENCHING APPARATUS FOR HOT COKE

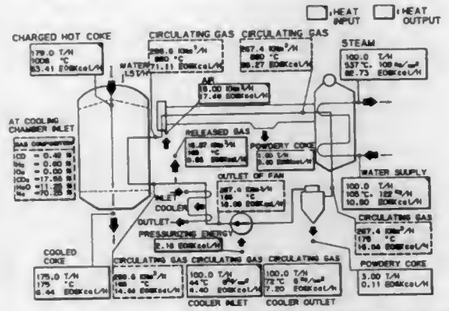
Takeshi Shimooka; Isamu Minamisawa; Kosaku Sunouchi, and Michitake Takahashi, all of Ibaraki-ken, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 7,019, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 865,650, Apr. 10, 1992, abandoned, which is a continuation of Ser. No. 611,782, Nov. 13, 1990, abandoned. This application Dec. 20, 1994, Ser. No. 360,123

Claims priority, application Japan, Nov. 14, 1989, 1-296867; Nov. 14, 1989, 1-296870

Int. Cl.[6] C10B *1/00*; **G05B** *13/00*

U.S. Cl. 201—1 **9 Claims**



1. A method of operating a dry quenching apparatus for hot coke wherein hot coke descends in a cooling chamber and is cooled by gas circulating through the cooling chamber and a heat exchanger comprising:

collecting data on preceding operations of the dry quenching apparatus by measuring (1) amount, temperature and pressure of steam recovered from a boiler of the heat exchanger; (2) amount, temperature and pressure of water supplied to the boiler; (3) temperatures of the circulating gas at an inlet and outlet of the boiler; (4) amount of recovered powdery coke; (5) amount of air blown in cooling chamber; (6) temperatures of the circulating gas at an inlet and outlet of the cooling chamber; and (7) temperature and amount of cooled coke discharged from the cooling chamber;

calculating a heat balance for a hot coke quenching system on the basis of the collected data on the preceding operations to determine a temperature of a charged hot coke and a composition and amount of combustible gases remaining in the charged hot coke when the hot coke is charged into the dry quenching apparatus;

calculating on the basis of the results of this calculation an optimal operating schedule including a blow rate of cooling gas, a water supply rate to the boiler, and a discharged rate of cooled coke;

calculating on the basis of the optimal operating schedule and running costs optimal operating conditions under which maximum benefits can be obtained, the optimal operating conditions including amount of hot coke to charge into the dry quenching apparatus; and

operating the dry quenching apparatus in accordance with the optimal operating conditions.

7. A method of operating a dry quenching apparatus for hot coke wherein hot coke descends in a cooling chamber and is cooled by gas circulating through the cooling chamber and a heat exchanger comprising:

collecting data on preceding operations of the dry quenching apparatus by measuring (1) amount, temperature and pressure of steam recovered from a boiler of the heat exchanger; (2) amount, temperature and pressure of water supplied to the boiler; (3) temperatures of the circulating gas at an inlet and outlet of the boiler; (4) amount of recovered powdery coke; (5) amount of air blown in the cooling chamber; (6) temperatures of the circulating gas at an inlet and outlet of the cooling chamber; and (7) temperature or amount of cooled coke discharged from the cooling chamber;

using the data collected in the data collecting step to determine a shift in heat balance of the dry quenching apparatus and the heat exchanger and determine (i) a temperature of the hot coke when the hot coke is charged into the dry quenching apparatus and (ii) a composition and amount of combustible gases remaining in the hot coke when the hot coke is charged into the dry quenching apparatus;

using the temperature, the composition and amount of combustible gasses to determine an optimal operating schedule of the dry quenching apparatus;

calculating on the basis of the optimal operating schedule optimal operating conditions including amount of hot coke to charge into the dry quenching apparatus; and

operating the dry quenching apparatus in accordance with the optimal operating conditions.

5,609,731

PROCESS FOR GAS PRESSURE REGULATION IN THE RETORT OF A COKE OVEN

Hans J. Giertz, Ratingen; Werner Eisenhut, Essen; Friedrich Hubn, Ratingen, and Hans J. Hammermann, Oer-Erkenschwick, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

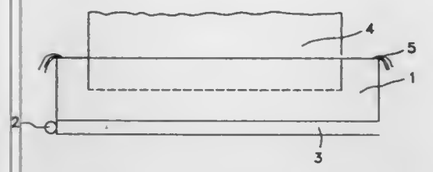
PCT No. PCT/EP93/01817, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/01513, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 12, 1993, Ser. No. 367,120

Claims priority, application Germany, Jul. 14, 1992, 42 23 069; Jun. 30, 1993, 43 21 676

Int. Cl.[6] C10B *47/00*

U.S. Cl. 201—35 **6 Claims**



1. In a process for regulation of the gas pressure of a coke oven retort in which pivotable cup valves arranged in elbows of an ascending pipe are actuated as throttling members according to a pressure curve resulting from gas formation from the coal to be cokefied wherein the improvement comprises varying a supply of water to the pivotal cup valve to regulate the extent of submersion of the elbows in water and to further regulate gas pressure within the coke oven retort.

5,609,732

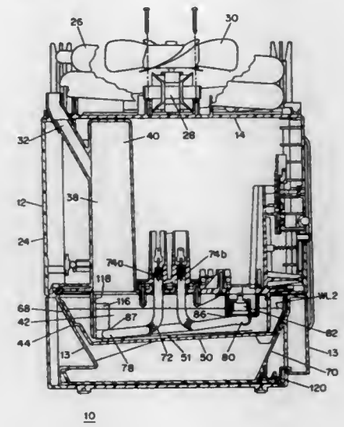
DISTILLING APPARATUS

Stanley I. Magidson, Morristown, N.J., assignor to Genesis, An Environmental Corp., Morristown, N.J.

Filed Mar. 14, 1995, Ser. No. 403,475

Int. Cl.[6] B01D *3/00*

U.S. Cl. 202—83 **20 Claims**



1. A water distilling apparatus comprising:

a vaporizing module comprising an electric heating element and a thermostatic control means for preventing overheating of said heating element, said heating element having forward and rear portions, said forward portion of said heating element being elevated relative to said rear portion;

a condensing module, said condensing module including a condenser coil in fluid communication with said vaporizing module by a steam conduit and defining an outlet conduit for permitting outflow of water therefrom;

a fan operable to direct cooling air over a portion of said condenser coil to cool said condenser coil;

means for supplying raw water to said vaporizing module, and means for receiving distilled water from said condensing module;

wherein said vaporizing module comprises a raw water receptacle including a removable raw water tray, said removable raw water tray including a main compartment having bottom and upstanding side walls, and a filling compartment for supplying raw water up to a predetermined height, said filling compartment communicating with said main compartment through an opening effecting a substantially uniform water level in said filling department and in said main compartment, said heating element positioned below said substantially uniform water level so that said heating element is surrounded by raw water;

a vertical vaporizing chamber having a closed top and open bottom of smaller horizontal dimensions than those of said main receptacle compartment of said vaporizing module and positioned in said main compartment adjacent and distanced from the bottom of said compartment; and

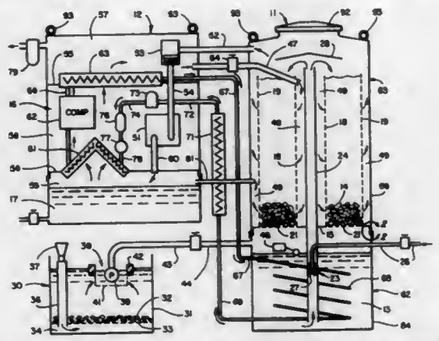
wherein raw water is supplied to said receptacle by means of a can provided with an opening including a spring-loaded valve serving to close said opening and adapted to be positioned in an upturned state and with said opening placed over said filling compartment, a vertical pin intregal with said compartment urging said valve into an opened state.

5,609,733

SYSTEM AND METHOD FOR CONVERTING TOXIC WASHWATER TO DISTILLED WATER

R. Edward Burton, Willits, Calif., assignor to Advanced Bio-Gest, Inc., Willits, Calif.

Filed Apr. 27, 1995, Ser. No. 432,050
Int. Cl.[6] B01D 3/00;3/34;37/00; C02F 9/00
U.S. Cl. 203—10 19 Claims



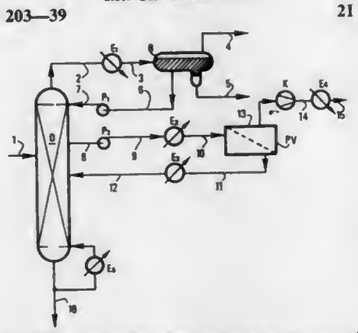
1. A method for converting toxic washwater to industrial-grade distilled water, comprising the steps of: heating the washwater to a temperature on the order of 100° F. in a sump positioned beneath a bed of horse manure media which contains aerobic fungi and bacteria for filtering out and digesting gross and colloidal particles from liquid in the media, foam lifting washwater from the sump to a point above the media bed, distributing the water over the upper surface of the media bed and allowing the water to filter down through the media, blowing hot dry air through the media to maintain the media at a temperature on the order of 100° F. and thereby promote microbiological activity and evaporation of the water in the media, passing warm moist air from the media through a cooler to condense moisture contained in the air, and collecting the condensed moisture from the cooler as distilled water.

5,609,734

COMBINED DISTILLATION AND PERMEATION PROCESS FOR THE SEPARATION OF OXYGENATED COMPOUNDS FROM HYDROCARBONS AND USE THEREOF IN ETHERIFICATION

Christian Streicher, Ruell Malmaison, and Lionel Asselineau, Paris, both of France, assignors to Institut Francais du Petrole, Ruell-Malmaison, France

Filed Nov. 7, 1994, Ser. No. 336,222
Claims priority, application France, Nov. 5, 1993, 93 13319
Int. Cl.[6] B01D 3/36
U.S. Cl. 203—39 21 Claims



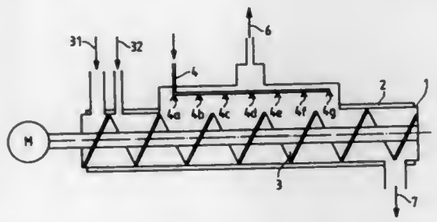
1. A process for the separation of oxygenated compounds from a mixture of hydrocarbons of 3 to 8 carbon atoms containing the oxygenated compounds, comprising distilling the mixture in a distillation zone to produce overhead a gaseous distillate containing oxygenated compounds and hydrocarbons, at least partially condensing and at least partially recycling said gaseous distillate to the distillation zone, extracting a phase as a side stream from the distillation zone and sending said phase to a permeation zone comprising at least one membrane which is selectively permeable to alcohol; carrying out permeation on said phase, recovering at least one permeate enriched in alcohol downstream of the permeation zone, recovering a purified C_{3-8}-hydrocarbon mixture from the bottom of the distillation zone.

5,609,735

PROCESS AND A DEVICE FOR SEPARATING A SOLID RESIDUE FROM ITS SOLUTION IN A STIRRED BED OF MATERIAL

Hartmut Hetzel, Köln; Dieter Grenner, Leverkusen; Wolfgang Ebner, Dormagen, and Klaus Biskup, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 22, 1995, Ser. No. 518,092
Claims priority, application Germany, Aug. 31, 1994, 44 30 951.1
Int. Cl.[6] B01D 3/34
U.S. Cl. 203—52 7 Claims



1. In a process for separating a solid residue from a solution of the residue in evaporable materials and/or solvents with the addition of up to 20% by weight of high-boiling hydrocarbons which are inert under evaporation conditions of the evaporable materials comprising heating said solution under vacuum to the evaporation temperature of said evaporable materials, whereby said evaporable materials evaporate, are drawn off and condensed and whereby the residue is obtained as a free-flowing solid, the improvement wherein said solution is introduced onto a stirred bed of granular, solid material kept at said evaporation temperature.

5,609,736

METHODS AND APPARATUS FOR CONTROLLING TOXIC COMPOUNDS USING CATALYSIS-ASSISTED NON-THERMAL PLASMA

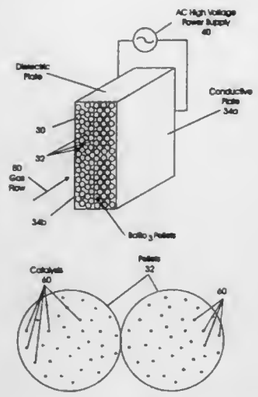
Toshiaki Yamamoto, Chapel Hill, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed Sep. 26, 1995, Ser. No. 533,932
Int. Cl.[6] H05F 3/00
U.S. Cl. 204—164 3 Claims

1. A method for decomposing volatile organic compounds and reducing by-products produced therefrom in a single stage with a catalysis-assisted non-thermal plasma, said method comprising the steps of:

introducing a carrier gas, having at least one volatile organic compound entrained therein, through at least one pair of spaced apart plates, wherein at least one of the plates is coated with at least one active catalyst; and

applying nano-second pulsed high voltage to a wire positioned between said plates to produce a plasma therebetween which decomposes the at least one volatile organic compound and



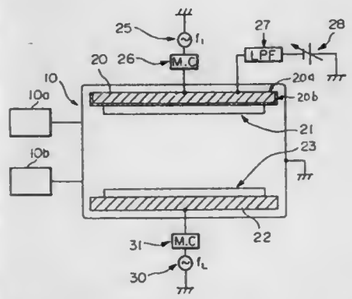
produces decomposition by-products therefrom, said at least one active catalyst being selected to react with said decomposition by-products.

5,609,737

FILM MANUFACTURING METHOD USING SINGLE REACTION CHAMBER FOR CHEMICAL-VAPOR DEPOSITION AND SPUTTERING

Hirofumi Fukui, Talwa-machi; Masanori Miyazaki; Masami Aihara, both of Sendai; Chisato Iwasaki, Miyagi-ken; Koichi Fukuda, and Yasuhiko Kasama, both of Sendai, all of Japan, assignors to Frontec Incorporated, Miyagi, Japan

Filed Aug. 12, 1994, Ser. No. 289,713
Claims priority, application Japan, Aug. 24, 1993, 5-209760
Int. Cl.[6] C23C 14/34;16/00
U.S. Cl. 204—192.12 4 Claims



1. A method for forming thin films in a single pressure-reducible deposition chamber having spaced-apart first and second electrodes, the method comprising the steps of:

forming a first film by chemical vapor deposition (CVD) by:

attaching a dummy target to the first electrode, the dummy target being formed from a material which resists reaction during CVD, thereby preventing contamination of the first film,

attaching a substrate to said second electrode,

supplying reactive gas into said deposition chamber,

supplying high frequency electrical power to said first electrode and to said second electrode, thereby depositing the first film on said substrate by CVD,

removing remaining reactive gases and the dummy target from the deposition chamber, and forming a second film on the substrate by a sputtering process by:

attaching a sputtering target to said first electrode,

supplying reactive gas into said deposition chamber,

simultaneously supplying high frequency electrical power to said first electrode and to said second electrode, thereby depositing the second film on said substrate by sputtering,

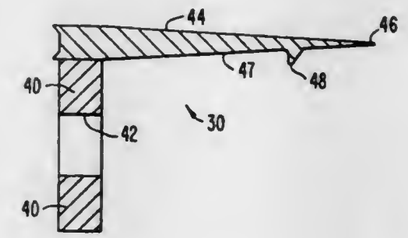
wherein the steps of forming the first film and forming the second film are carried out successively without exposing said substrate to an oxidative atmosphere.

5,609,738

ELECTRODE CAP WITH INTEGRAL TANK COVER FOR ACID MIST COLLECTION

James A. Murray, Walnut Creek; Michael R. Nees, Clayton; William P. Imrie, Layfayette; Christopher C. Rayner, Alamo; Chris L. Pfalzgraff, Concord; Robert K. Bates, San Ramon, all of Calif.; Valmer H. Ness, Hieblends Ramon, Colo., and Terrance J. Cox, San Francisco, Calif., assignors to Bechtel Group, Inc., San Francisco, Calif.

Division of Ser. No. 226,785, Apr. 12, 1994, Pat. No. 5,470,445, which is a continuation-in-part of Ser. No. 978,945, Nov. 20, 1992, abandoned. This application Nov. 27, 1995, Ser. No. 563,164
Int. Cl.[6] C25D 7/02
U.S. Cl. 204—279 3 Claims



1. In a multi-element cover system applied below electrode connections and above a surface of a bath of in an electrowinning process having circulated acid electroplating solution containing acid passing between side-by-side planar anode electrodes and cathode electrodes in an array, each electrode having electrical connections above the surface of the bath, the multi-element cover system comprising:

a plurality of flexible electrode caps adapted for being fastened to at least one side of the anode electrodes below the electrical connection thereto and above the bath, the flexible electrode caps having an underside exposed to the bath;

each said flexible electrode caps having sufficient dimension to span to adjacent cathode electrodes to form a continuous, substantially air tight cover between the electrodes of the electrode array;

a continuous ridge on the underside of the cap exposed to the bath for preventing the coalesced acid from running along the underside of the flexible electrode caps;

the underside of the cap having a first slope with a high end of the slope at a cathode and a low end of the slope at the continuous ridge so that during insertion of the cathodes, the coalesced acid is substantially prevented from passing from the underside of the caps to an adjacent cathode during flexure of the caps.

5,609,739

SPUTTERING APPARATUS

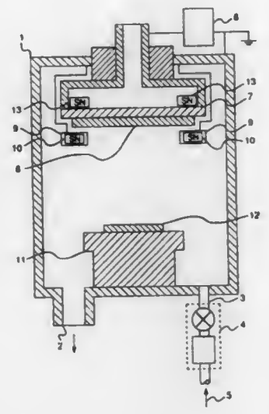
Isamu Aokura, Osaka; Hitoshi Yamanishi; Youichi Ohnishi, both of Higashiosaka, and Tanejiro Ikeda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 362,778

Claims priority, application Japan, Dec. 24, 1993, 5-328513; Jul. 20, 1994, 6-167801

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—298.19 11 Claims



1. A sputtering apparatus for performing sputtering operation by using a rectangular target made of ferromagnetic material, the apparatus comprising an electrode in which

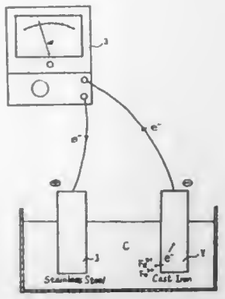
one first permanent magnet is disposed on each side edge of a front surface of the target,

polarities of the first permanent magnets confronting each other with the target interposed between the first permanent magnets are opposite to each other,

one second permanent magnet is disposed on each side edge of a rear surface of the target,

polarities of the second permanent magnets confronting each other with the target interposed between the second permanent magnets are opposite to each other, and

the polarity of each second permanent magnet disposed on the rear surface of the target is the same as that of the first permanent magnet disposed on the front surface of the target.



separately submerged in said coolant and the redox potential generated between said reference electrode and said working electrode to be measured by said voltage meter.

5,609,741

METHOD OF MANUFACTURING A COMPOSITE MATERIAL

Trevor J. Illston; Paul A. Doleman, both of Derby; Edwin G. Butler, Warwick; Peter M. Marquis, Solihull; Clive B. Ponton, Birmingham; Reza Piramoon, Coventry, and Mark J. Gilbert, Birmingham, all of England, assignors to Rolls-Royce plc, London, England

Continuation of Ser. No. 244,077, May 22, 1994, abandoned. This application Oct. 20, 1994, Ser. No. 326,289

Claims priority, application United Kingdom, Nov. 22, 1991, 9124816

Int. Cl.[6] C04B *35/80;41/45;* C25B *7/00*

U.S. Cl. 204—471 13 Claims

1. A method of manufacturing a composite material characterised in that said method comprises the steps of placing a porous reinforcing medium adjacent an electrode generally corresponding in shape with said porous reinforcing medium, immersing said electrode and said porous reinforcing medium in a suspension of ceramic particles, each of said ceramic particles carrying a surface charge, applying an electric field to said suspension sufficient to cause said ceramic particles to migrate to said electrode through said porous reinforcing medium and continuing the application of said electric field until ceramic particles attracted to said electrode are deposited thereon to such a depth that said deposited particles additional substantially completely permeate said porous reinforcing medium, discontinuing said electric field, taking steps to ensure that said permeating ceramic particles remain in position within said porous reinforcing medium after the discontinuation of said electric field, removing said permeated porous medium from said electrode and from said suspension of ceramic particles and subsequently sintering said permeating ceramic particles within said porous reinforcing medium.

5,609,740

CORROSION PREVENTIVENESS EVALUATION SYSTEM FOR COOLANT

Masatsune Hasegawa; Toshikazu Oya, both of Gifu; Takashi Hashimoto, and Hironori Ezaki, both of Tokyo, all of Japan, assignors to CCI Co., Ltd., Gifu, Japan

Filed Apr. 19, 1995, Ser. No. 425,054

Claims priority, application Japan, Apr. 20, 1994, 6-081751

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—400 5 Claims

1. A system for evaluating the metal corrosion preventiveness of a coolant, comprising a stainless steel reference electrode, a working electrode made of cast iron and a voltage meter electrically connected with said reference electrode and said working electrode such that the electric potential generated between said reference electrode and said working electrode can be measured, said reference electrode and said working electrode to be partially and

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5,609,742

ELECTROLYTIC PROCESS AND APPARATUS FOR THE CONTROLLED REDUCTION OF INORGANIC AND ORGANIC SPECIES IN AQUEOUS SOLUTIONS

Richard L. Sampson, and Allison H. Sampson, both of San Antonio, Tex., assignors to Halox Technologies Corporation, San Antonio, Tex.

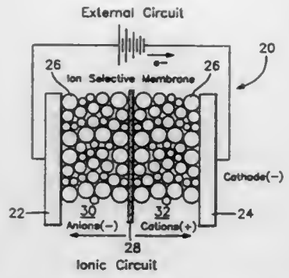
Continuation-in-part of Ser. No. 141,675, Oct. 27, 1993, Pat. No. 5,419,816. This application Mar. 9, 1995, Ser. No. 400,950

Int. Cl.[6] C25B *1/00*

U.S. Cl. 204—536 18 Claims

9. An electrolytic process for reducing a species in a dilute aqueous solution, comprising the steps of:

passing an aqueous feed solution containing said species to be reduced through a monobed of particulate modified anion exchange material interposed between an anode and a cath-



ode, with said bed of modified anion exchange material in direct contact with said cathode and separated from said anode by an anion exchange membrane;

applying a direct current across the anode and cathode;

contacting said aqueous feed solution with said bed for a time to cause at least a portion of said species to be reduced by said modified anion exchange material so that said aqueous solution contains said species in a reduced form; and

recovering the aqueous solution containing said reduced species.

5,609,743

ELECTROPHORESIS FRACTIONATOR

Tatsuru Sasagawa, and Yutaka Fujii, both of Kamakura, Japan, assignors to Toray Research Center, Inc., Tokyo, Japan

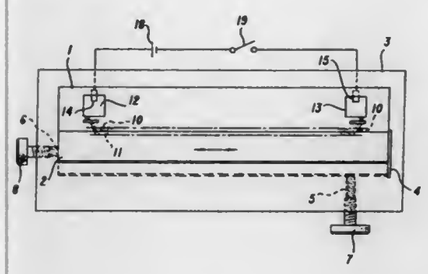
PCT No. PCT/JP94/01999, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO95/14923, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 29, 1994, Ser. No. 495,674

Claims priority, application Japan, Nov. 29, 1993, 5-298583

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—600 7 Claims



1. An electrophoresis fractionator comprising a multiplicity of separate cells provided on respective contact surfaces of two members, said members being in contact with each other movably relative to each other and adapted to move relative to each other to enable alternate switching between a position where the multiplicity of cells are connected together to form a single electrophoresis passage and a position where the multiplicity of cells are separated from one another, and electrodes provided on both respective ends of the electrophoresis passage formed to be single.

5,609,744

ASSEMBLY SUITABLE FOR IDENTIFYING A CODE SEQUENCE OF A BIOMOLECULE IN A GEL EMBODIMENT

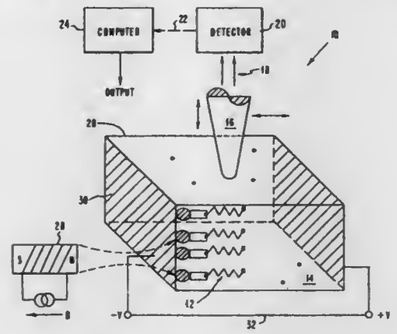
Frederic Zenharusern, Mohegan Lake, and Hemantha K. Wickramasinghe, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,481

The portion of the term of this patent subsequent to Mar. 16, 2012, has been disclaimed.

Int. Cl.[6] B01D *61/42;* C12M *3/00*

U.S. Cl. 204—606 13 Claims



1. An assembly comprising:

1) first means for migrating and separating a portion of a biomolecule in a gel;

2) second means comprising a near-field probe for generating a super-resolution chemical analysis of the portion of the biomolecule in conjunction with the first means;

and

3) third means for correlating the super-resolution chemical analysis of the portion of the biomolecule with a broad spectral content of a referent biomolecule, for generating a code sequence of the portion of the biomolecule.

5,609,745

PROCESS FOR THE ELECTROCHEMICAL OXIDATION OF AM(III) TO AM(VI) USABLE FOR SEPARATING AMERICIUM FROM SPENT NUCLEAR FUEL REPROCESSING SOLUTIONS

Jean M. Adnet, Roquemavre; Louis Donnet, Bagnols sur Cèze; Philippe Brossard, Villeneuve des Avignon, and Jacques Bourges, Verrières le Buisson, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France, and Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

Filed Mar. 6, 1996, Ser. No. 611,625

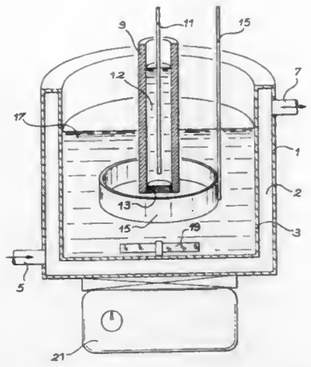
Claims priority, application France, Mar. 15, 1995, 95 02998

Int. Cl.[6] C25C *1/00;* C25B *1/00*

U.S. Cl. 205—43 11 Claims

1. Process for the electrochemical oxidation of americium(III) to americium(VI) in an aqueous nitric solution, comprising the steps of adding to the aqueous nitric solution containing Am(III) a) a heteropolyanion that complexes the americium and b) an Ag(II)ion which is converted into Ag(I) during the oxidation of the

Am(III), and subjecting the solution to electrolysis under conditions wherein



the Ag(I) ion obtained during said oxidation is electrochemically regenerated to the Ag(II) ion.

5,609,746

PRINTED CIRCUIT MANUFACTURE

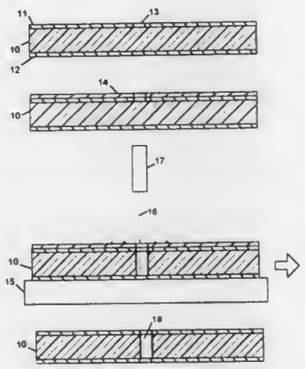
Simon Farrar, Stoke-On-Trent, and Neil Taylor, Worsley Mesnes, both of England, assignors to International Computers Limited, London, England

Filed Oct. 3, 1995, Ser. No. 538,469

Claims priority, application United Kingdom, Oct. 6, 1994, 9420182

Int. Cl.[6] C25D *5/02;5/48;* **C23C** *28/02*

U.S. Cl. 205—125 **7 Claims**



1. A method of manufacturing a printed circuit board, including the steps:

(a) depositing a sacrificial layer on the surface of the board;

(b) forming a hole in said board by laser ablation, debris from the ablation process being adsorbed on said sacrificial layer; and

(c) removing said sacrificial layer by means of a chemical stripping process, where said debris adsorbed on said sacrificial layer is removed simultaneously with said sacrificial layer.

5,609,747

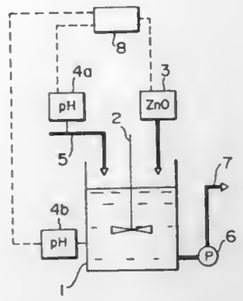
METHOD OF DISSOLVING ZINC OXIDE

Akio Sakurai; Tamotsu Mizuta; Yasubide Okada; Hiroshi Nakano; Takao Ikenaga; Osamu Shin, and Yuuji Ikenaga, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Aug. 17, 1995, Ser. No. 567,350

Int. Cl.[6] C25D *5/00*

U.S. Cl. 205—246 **5 Claims**



1. In a method of dissolving zinc oxide during continuous zinc-system electroplating of a steel sheet, using an insoluble anode and a dissolution bath providing a circuit for a sulfuric acid plating liquid, said method comprising the steps of:

circulating said plating liquid through said dissolution bath,

dissolving said zinc oxide in said plating liquid in said dissolution bath,

monitoring the pH of said plating liquid while in said dissolution bath,

controlling the amount of said zinc oxide thrown into said dissolution bath so that said pH of said plating liquid at said outlet of said dissolution bath is less than about 2.3.

5,609,748

ANODE FOR CATHODIC PROTECTION AGAINST CORROSION

Stephan Kotowski, Seligenstadt; Reinhard Bedel, Muehlheim-Laemmerspiel, and Bernd Busse, Darmstadt, all of Germany, assignors to Heraeus Elektroden GmbH, Hanau, Germany

Continuation of Ser. No. 794,322, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 458,727, Feb. 2, 1990, abandoned. This application May 31, 1995, Ser. No. 454,622

Claims priority, application Germany, Aug. 9, 1988, 38 26 926.0

Int. Cl.[6] C23F *13/00*

U.S. Cl. 205—734 **6 Claims**

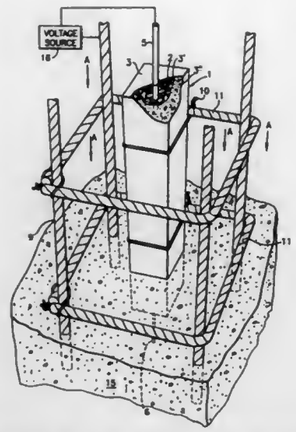
1. A method for protecting steel reinforcement bars (**11**) in a reinforced concrete construction (**15**), comprising

providing a sub-assembly anode structure having a rigid block (**1**) of concrete containing ion-conductive cement, and a core (**2**) of a valve metal provided with an activation layer included and embedded within said block (**1**) of concrete, said block (**1**) extending spatially beyond said valve metal;

immovably securing the block (**1**) with the core (**2**) therein to at least one of said steel reinforcement bars (**11**) in the reinforced concrete construction;

pouring mixed concrete around the steel reinforcement bars (**11**) and said block (**1**) to embed said block secured to said at least one reinforcement bar and others of said bars (**11**) within the poured concrete;

permitting the poured concrete to cure; and



connecting said core (**2**) and at least one of said steel reinforcement bars (**11**) to the terminals of a direct current electrical energy source (**16**).

5,609,749

ELECTROCHEMICAL ASSAY METHOD WITH NOVEL P-PHENYLENEDIAMINE COMPOUND

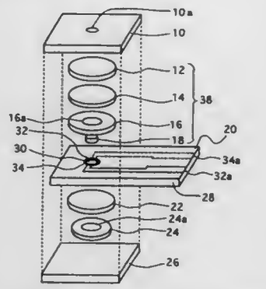
Tadakazu Yamauchi, and Hideyuki Terasawa, both of Saitama, Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1994, Ser. No. 366,040

Claims priority, application Japan, Dec. 29, 1993, 5-353377

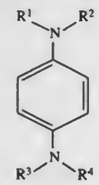
Int. Cl.[6] G01N *27/327*

U.S. Cl. 205—777.5 **13 Claims**



1. A method of measuring a substance in a liquid biological sample which comprises

contacting with a sample containing said substance at least one oxidation-reduction enzyme and an electron mediator wherein said electron mediator is a compound represented by the following formula (I) or a salt thereof:



(I)

wherein R^1, R^2, R^3 and R^4 may be the same or different from one another and each represents a straight- or branched-chain alkyl group having 1 to 4 carbon atoms with the proviso that at least one of R^1, R^2, R^3 and R^4 has at least one group selected from the group consisting of hydroxyl, mercapto, carboxyl, phosphonooxy and sulfo; and

measuring said substance with an electrode capable of performing electron transfer with said electron mediator.

5,609,750

BORON-CONTAINING CATALYST

Pieter J. Nat, Amersfoort; Jacob L. de Booys, Bussum, and Johannes W. F. M. Schoonhoven, Leusden, all of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

Division of Ser. No. 892,090, Jun. 2, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,209

Claims priority, application Netherlands, Jun. 3, 1991, 9100950

Int. Cl.[6] B01J *21/00;21/06*

U.S. Cl. 208—122 **22 Claims**

1. A catalyst composition for the hydrodesulfurization, hydrodenitrogenation and simultaneous hydrocracking of hydrocarbon feeds comprising a carrier material, a Group VIB metal component, a Group VIII metal component and a catalytically active quantity of boron, wherein said Carrier material comprises alumina and a silica-alumina, the silica-alumina being amorphous silica-alumina or silica-coated alumina and wherein the boron is not bound in a molecular sieve structure.

5,609,751

PARA-XYLENE SELECTIVE REFORMING/ AROMATIZATION

Robert G. Wall, Pinole, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Jul. 26, 1994, Ser. No. 280,279

Int. Cl.[6] C10G *35/09*

U.S. Cl. 208—133 **18 Claims**

1. A method of reforming or aromatizing a C_5–C_9 predominantly paraffinic or olefinic hydrocarbon feedstock to produce a reformate which is enriched in para-xylene, comprising:

contacting the feedstock under reforming or aromatization conditions with a para-modified catalyst comprising an intermediate pore size molecular sieve support, a platinum group component and a component selected from the group consisting of gallium, zinc, indium, iron, tin and boron to produce a hydrocarbon product, the para-modified catalyst having an activity sufficient to produce a yield of at least about 30%, on a hydrogen free basis, based on a C_6–C_8 non-aromatics portion of the feedstock, of benzene-toluene-xylenes-ethyl benzene (BTX) from a C_5–C_9 predominantly paraffinic or olefinic hydrocarbon feedstock, the C_6–C_8 non-aromatics portion comprising at least about 30% of the feedstock, at least about 15% of the BTX consisting of xylenes, with the xylenes being at least about 30% para-xylene.

5,609,752

PROCESS FOR CETANE IMPROVEMENT OF DISTILLATE FRACTIONS

Kenneth J. Del Rossi, Woodbury, N.J.; Gregory A. Jablonski, Yardley, Pa., and David O. Marler, Deptford, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 227,824, Apr. 14, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 570,808

Int. Cl.[6] C10G *45/00*

U.S. Cl. 208—144 **10 Claims**

1. A process for selectively increasing the Cetane Index of a distillate hydrocarbon fraction, said distillate hydrocarbon fraction being contained in a hydrocarbon feed to said process, said process comprising the steps of:

(a) contacting said hydrocarbon feed and hydrogen with a catalyst under reaction conditions sufficient to increase the Cetane

Index of said distillate hydrocarbon fraction, wherein said catalyst comprises zeolite Beta and at least one hydrogenation component, wherein said zeolite Beta has a silica to alumina molar ratio of at least 250, and

(b) recovering said distillate fraction.

5,609,753

BIOFILTER

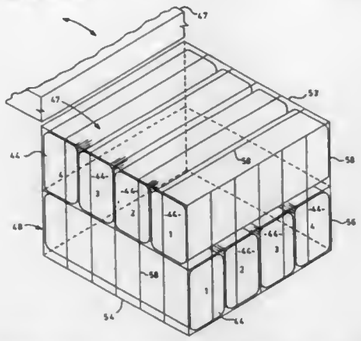
B. Donald Prazmowski, 3400 Riverspray Crescent, Suite 506, Mississauga, Ontario, Canada

Filed Sep. 26, 1995, Ser. No. 534,257

Claims priority, application Poland, Jun. 21, 1995, 308989

Int. Cl.[6] B01D *35/027*

U.S. Cl. 210—150 **25 Claims**



1. A reactor vessel for the treatment of fluid waste comprising:

a frame;

a plurality of filter elements contained within said frame each of which includes a flexible porous outer sleeve and filter medium contained by said sleeve, said filter medium being formed from fragmented plastic and being compressible to permit flexure of said sleeve, said filter elements being arranged side by side and in abutment with longitudinal axes of each filter element being generally parallel, said filter elements having a free body width greater than the width of said frame and being fitted within said frame by flexure of said sleeves.

5,609,754

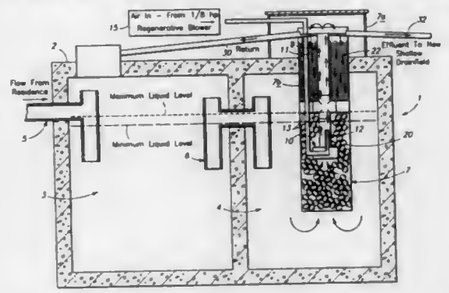
SECONDARY SEWAGE TREATMENT SYSTEM

William L. Stuth, P.O. Box 950, Maple Valley, Wash. 98038

Filed Sep. 7, 1995, Ser. No. 526,117

Int. Cl.[6] C02F *3/04;3/06*

U.S. Cl. 210—151 **22 Claims**



1. A sewage treatment system which comprises a tank having an influent inlet to the interior of the tank located in the upper region of said tank;

treatment vessel means disposed within said tank having an upper end portion extending above the tank inlet and a lower end portion disposed within the tank interior below said tank inlet; a first microbial growth-supporting media contained within said treatment vessel lower end portion; and a second microbial growth-supporting media contained within said treatment vessel upper end portion, the second media being located above the first media; said treatment vessel means and said first and second media being constructed and arranged so that, when said tank is filled to operating levels with liquid effluent, said first media is substantially submerged and said second media is unsubmerged;

liquid aerating means comprising a draft tube disposed within said treatment vessel and air supply apparatus; said draft tube extending through said second media and into said first media and having an upper end adjacent the treatment vessel upper end above said tank inlet and above said second media and a lower end below said tank inlet, said draft tube having a liquid effluent inlet located within said first media in liquid communication with the interior of said treatment vessel below said tank inlet; said air supply apparatus being connected to said treatment vessel to supply air to said draft tube; said aerating means supplying air into said draft tube so that liquid within said draft tube will be both aerated and conducted upward through said draft tube and expelled from said draft tube into the treatment vessel upper end portion so that at least a first portion of liquid expelled from said draft tube will trickle through said second media and so that the first portion of liquid that trickled through said second media will flow through said first media, and so that liquid within said treatment vessel will be circulated through said first media and mixed with the first portion of liquid and then conducted through the draft tube liquid inlet into said draft tube; and

effluent outlet means in said treatment vessel upper end portion for collecting a second portion of liquid expelled from said draft tube so that said second portion can be collected at an elevation above said tank inlet and discharged from said system.

5,609,755

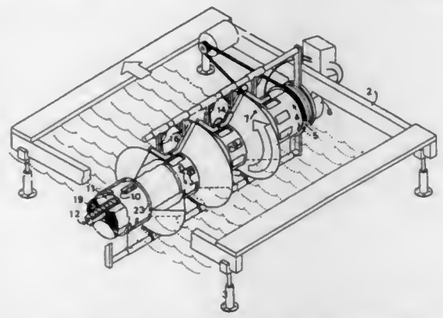
OIL RECOVERING APPARATUS INTEGRATED WITH TEMPERATURE CONTROLLED ELEMENTS

M. Gilles Vilandré, 1343 De La Montagne Quest,, Val-Bélair, Québec, Canada

Filed Jul. 17, 1995, Ser. No. 503,391

Int. Cl.[6] E02B *15/04*

U.S. Cl. 210—179 **6 Claims**



1. An oil skimming apparatus for the recovery of hydrocarbons floating on or within the surface of water comprising:

an outer collecting cylinder having collection means and means for rotating said outer cylinder around a concentric inner fixed recovery cylinder having oil recovery means;

said collecting means comprising rotating oleophilic conic discs for collecting oil from the water, oil feeders on the surface of said outer cylinder communicating with a space between said cylinders, and oil scoops connected to the inside of the outer cylinder within said space between said cylinders;

oil distribution means for directing oil into the oil recovery means; and

temperature control means comprising a central heated reservoir within said recovery cylinder to maintain the fluidity of oil in transit.

5,609,756

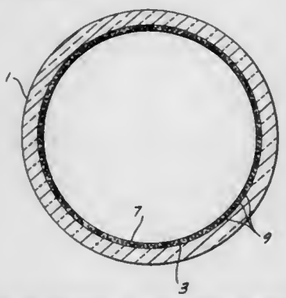
NUCLEOPHILIC BODIES BONDED TO SILOXANE AND USE THEREOF FOR SEPARATIONS FROM SAMPLE MATRICES

William R. Betz, Bellefonte, and James L. Desorcie, State College, both of Pa., assignors to Supelco, Inc., Bellefonte, Pa.

Division of Ser. No. 283,210, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 276,048, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 201,752, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,644, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,072

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **16 Claims**



1. A method for bonding of bodies having a functional surface property to a substrate through a medium comprising a siloxane polymer, said bodies comprising a nucleophilic composition, the method comprising the steps of:

contacting said substrate with a mixture of said bodies and a hydrosiloxane or halosiloxane polymer; and

heating said mixture to cause said polymer to be bonded to said bodies and to said substrate.

5,609,757

HOUSING ASSEMBLY FOR THE FILTRATION OF CORROSIVE LIQUIDS AND A METHOD FOR TEMPORARY SEALING OF A HOUSING ASSEMBLY

John J. Schiavo, Santa Clara, and Robert G. Garber, San Jose, both of Calif., assignors to Hytec Flow Systems, San Jose, Calif.

Filed Feb. 8, 1994, Ser. No. 193,691

Int. Cl.[6] B01D *27/08*

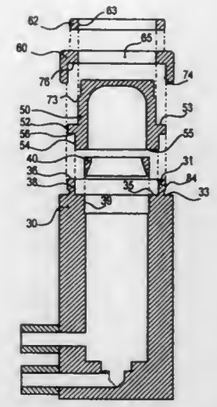
U.S. Cl. 210—232 **11 Claims**

9. A method for temporary sealing of a housing assembly (**10**) for the filtration of liquids using a replaceable filter cartridge (**20**), comprising, in combination:

a cup-shaped cap (**50**) having a flange (**52**) and a stub (**54**) at its open end,

a cup-shaped housing (**30**) having an inlet (**32**) and an outlet (**34**) with a recess (**38**) at its open end for receiving said stub (**54**) of the cap (**50**) to form a closed sealed cavity, the open end of the housing (**30**) having a lip (**31**) with an outside thread (**84**), and

a cap nut (**60**) having a flat recess (**76**) around its opening and an inside thread (**74**),



the method comprising the steps of

a) providing an upper annular surface (**53**) of the flange (**52**) of the cap (**50**), shaped like a cone with its apex pointing downward;

b) providing a flat lower annular surface (**56**) of the flange (**52**) of the cap (**50**);

c) providing a first annular surface (**55**) at a mouth of the cap (**50**) with at least one concentric groove (**95**) for receiving at least one O-ring (**90**);

d) providing an annular surface (**36**) on said lip (**31**) of the housing (**30**), shaped like a cone with its apex pointing upward;

e) providing a recess (**38**) with a second annular surface (**35**) at said open end of the housing (**30**), said surface (**35**) having at least one concentric groove (**94**) matching said groove (**95**) for receiving said O-ring (**90**);

f) sliding the cap nut (**60**) over the cap (**50**);

g) fastening the cap (**50**) to the housing (**30**) by using said inside thread (**74**) of the cap nut (**60**) to engage said outside thread (**84**) of the lip (**31**) of the housing (**30**), thus avoiding a rotational movement of said first annular surface (**55**) of the cap (**50**) relative to said second planar surface (**35**) of the housing (**30**) to prevent abrasive twisting of said O-ring (**90**), wherein

the outer perimeter of said upper annular surface (**53**) of said cap flange (**52**) is slightly deformed when engaging said recess (**76**) of the cap nut (**60**) to exert axial pressure evenly distributed around the perimeter and the inner perimeter of said annular surface (**36**) of said lip (**31**) of the housing (**30**) is slightly deformed when engaging said flat lower surface (**56**) of said flange (**52**) of the cap (**50**), the deformation of both perimeters increasing with elevated temperature and pressure of a liquid contained within the housing assembly, for providing a tight seal.

5,609,758

CONTAINER WITH SLIDING COVER AND STRAINER MEANS

Chyh-Wen Hwang, 12F-1, No. 311, Chung Hsiao E. Rd., Sec. 4, Taipei, Taiwan

Filed Aug. 7, 1995, Ser. No. 512,087

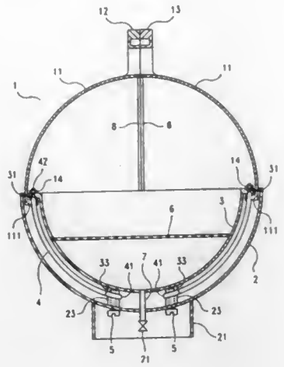
Int. Cl.[6] B01D *35/00*

U.S. Cl. 210—244 **4 Claims**

1. A container comprising:

a hollow, rounded casing having a hollow foot on a bottom of said casing, a center through hole through a center of said casing, a plurality of upright stub rods on an inside of said casing around the center through hole of said casing;

a bowl mounted within said casing, said bowl comprising a rim, an outward top flange around said rim, a drain hole at a center of said bowl, a plurality of mounting holes around said drain



hole respectively fastened to said upright stub rods of said casing by fastening elements, a drain pipe extended from said drain hole and inserted through the center through hole on said casing;

a strainer mounted within said bowl;

a top cover for covering said bowl, said top cover comprising two symmetrical cover halves each having a mating edge, wherein said cover halves are guided by track means between a first position in which said mating edges abut one another to close said bowl and a second position to open said bowl, each cover half having an inward bottom flange stopped by the outward flange of said bowl within a space defined between said bowl and said casing, and a top carrying handle on top of each cover half for carrying by hand;

wherein said track means comprises a plurality of guide rods, each guide rod having a mounting ring at one end mounted around one upright stub rod on said casing and a screw rod at an opposite end inserted through a respective through hole on the inward flange of said cover half and a respective through hole on the outward flange of said bowl, a plurality of nuts, and each said nut being screwed onto a respective said screw rod to retain the cover halves and the bowl to said casing; and

lock means for locking said cover halves in said first position.

5,609,759

BOTTLE FILTER CAP

John E. Nohren, Jr.; Henry C. Reid; Joseph H. Nohren; John T. Smith, and Donald G. Huggins, Jr., all of Clearwater, Fla., assignors to Innova Pure Water Inc., Clearwater, Fla.

Filed Jun. 2, 1995, Ser. No. 460,721

Int. Cl.[6] C02F *1/28*

U.S. Cl. 210—266 **23 Claims**

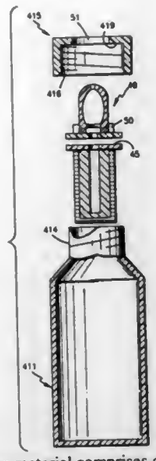
1. A filter assembly for use with a bottle having a circular cross-section neck or open end to simultaneously cap the neck or open end and filter liquid poured out of the bottle through the neck or open end, comprising:

a tube of filtering material, having a substantially continuous liquid-porous side wall a hollow interior, a first closed end, and a second open end;

a cap for a bottle neck or end, having a fitting portion thereof for cooperating with a bottle neck or end and closing a neck or end, said cap having first and second substantially opposite surfaces;

a manual valve operatively associated with said cap, in fluid communication with said tube of filtering material and manually movable between a position defining means for allowing liquid flow through said tube and a position defining means not allowing liquid flow through said tube; and

said tube operatively connected to said cap second surface at said tube second open end, and



wherein said filtering material comprises a substantially continuous self-supporting, self-venting body of activated carbon and binder having a porosity of about 10–120 microns.

5,609,760

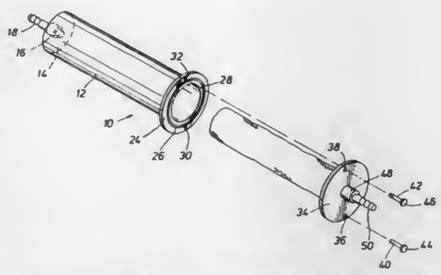
OIL FILTERING SYSTEM FOR BILGE WATER OF MARINE VESSELS

James T. Leach, 2300 E. Lucas, Beaumont, Tex. 77703

Filed May 1, 1995, Ser. No. 431,433

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—416.1 **10 Claims**



1. An oil separator filter assembly for separating oil from the bilge water of marine vessels, comprising:

(a) a generally cylindrical filter housing defining an internal filter chamber and having a closed end having a filter outlet coupling for receiving a discharge conduit through which filtered bilge water is discharged overboard, said filter housing having an access flange defining an access opening;

(b) a closure and filter support plate being disposed in removable sealed assembly with said access flange of said filter housing and having a filter inlet connection for connection with a supply conduit through which contaminated bilge water is caused to flow into said internal filter chamber;

(c) an elongate perforate tubular filter positioning and supply element being located within said filter housing and having first and second ends, said first end defining a tubular filter support being supported by said closure and filter support plate and being in fluid conducting communication with said filter inlet, said second end of said elongate perforate tubular filter positioning and supply element being closed and being spaced from said closed end of said filter housing; and

(d) a tubular filter media having an open end and a closed end, said open end being secured about said tubular filter support

of said elongate perforate filter positioning and supply element and being adapted to retain oil separated from said bilge water during flow of oil contaminated bilge water therethrough.

5,609,761

FILTER MEDIUM AND PROCESS FOR MAKING SAME

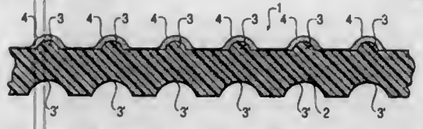
Andreas Franz, Fernholzstr. 118, 48159 Münster, Germany

Filed Sep. 12, 1995, Ser. No. 527,139

Claims priority, application Germany, Sep. 16, 1994, 44 33 129.0

Int. Cl.[6] B01D *27/06*

U.S. Cl. 210—493.1 **14 Claims**



1. For use in a filter cartridge, a filter medium comprising: a laminate having disposed on at least one surface thereof a plurality of protuberances oriented so as to provide spacing between components of the filter cartridge, said filter medium being formed into a pleated moveable bellows having a plurality of pleats forming said components, characterized in that a coating mass is applied exclusively in the area of the protuberances which contact each other during use of the filter cartridge so as to provide protection against wear in said area of the protuberances, the remaining surface of the filter medium being free from said coating mass.

5,609,762

CELLULOSE MEMBRANES COMPRISING COTTON FIBERS AND METHOD OF MANUFACTURING THEM

Jurgen Seifert, Grosswallstadt, Germany, assignor to AKZO Nobel NV, Arnhem, Netherlands

Filed Oct. 11, 1994, Ser. No. 321,302

Claims priority, application Germany, Oct. 8, 1993, 43 34 277.9

Int. Cl.[6] B01D *71/10*

U.S. Cl. 210—500.24 **46 Claims**

1. A method for manufacturing biocompatible cellulose membranes in the form of hollow filaments, tubular films, or flat films, said method comprising:

bleaching and cleaning raw cotton fibers with gaseous molecular oxygen in an alkaline liquor by a one-step process and, without further bleaching,

separating the treated cotton fibers from the alkaline liquor;

washing the separated cotton fibers;

dissolving the washed cotton fibers to form a solution;

regenerating or precipitating cellulose from the solution; and

processing the cellulose into biocompatible membranes.

42. A cellulose membrane prepared according to the method of claim **1.**

5,609,763

POROUS SUPPORT FOR THE REMOVAL OF SMALL EXOGENOUS MOLECULES FROM BIOLOGICAL FLUIDS

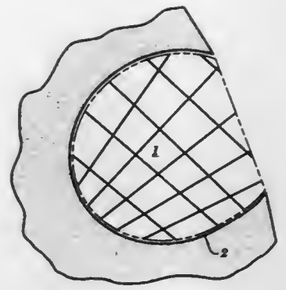
Egisto Boschetti, Croissy; Pierre Girot, Paris, and Luc P. Guerrier, Chilly-Mazarin, all of France, assignors to HemaSure, Inc., Marlborough, Mass.

Division of Ser. No. 215,201, Mar. 21, 1994, Pat. No. 5,486,293. This application Nov. 30, 1995, Ser. No. 564,994

Int. Cl.[6] B01D *15/00;15/08*

U.S. Cl. 210—502.1 **8 Claims**

1. A porous support for removing contaminants from biological fluids comprising a porous mineral oxide matrix having interior



porous volume substantially filled by a cross-linked hydrophobic polymer network, said mineral oxide matrix having interior porous volume free of hydrophilic polymers, said hydrophobic polymer network overlaying, but not covalently bound to said mineral oxide matrix, and said hydrophobic polymer having an exclusion limit of about 10 kilodaltons.

5,609,764

EXTRACTION COLUMN OR TOWER WITH SEPARATE VOLUMES

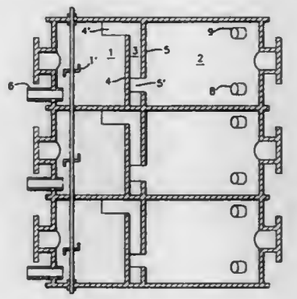
Antonio M. Celi, Frosinone, Italy, assignor to In.Tec. International Environment Technology S.r.L., Frosinone, Italy

Filed Feb. 1, 1995, Ser. No. 382,185

Claims priority, application Italy, Feb. 8, 1994, RM94A0055

Int. Cl.[6] B01D *11/04*

U.S. Cl. 210—511 **2 Claims**



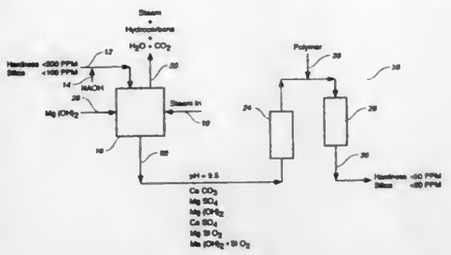
1. An extraction column comprising a plurality of vertically aligned stages; each stage including a settling chamber, and a mixing chamber disposed within said settling chamber; said mixing chamber being cotangential with said settling chamber, and having a smaller cross-sectional area than that of said settling chamber; first inlet means for introducing into said mixing chamber a phase containing a component that is desired to be extracted, and second inlet means for introducing into said mixing chamber an extracting phase; fluid communication means between said mixing chamber and said settling chamber; a first outlet means for withdrawing a lighter phase from an upper region of said settling chamber; a second outlet means for withdrawing a heavier phase from a lower region of said settling chamber; and wherein the first and second outlet means of an upper stage are respectively fluidly connected to the first and second inlet means of a lower stage.

5,609,765

STEAM STRIPPING METHOD FOR THE SOFTENING OF WATER

Ronald W. Bowman, 5574-B Everglades St., Ventura, Calif. 93003

Continuation-in-part of Ser. No. 246,039, May 19, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,323
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—638 20 Claims



1. A method for the softening of a feedstream of water containing hardness ions and acid gases comprising the steps of:

passing the feedstream of water into intimate contact with uncondensed steam such that the uncondensed steam elevates a temperature of the feedstream of water;

increasing the pH of the feedstream of water;

reacting the feedstream of water with the uncondensed steam so as to increase the temperature of the water to a maximum temperature of between 150° F. and 250° F. and to produce uncondensed steam byproducts including said acid gases and liquid byproducts; stripping said uncondensed steam byproducts from said water; and

passing the liquid byproducts through a filter so as to remove solids including said hardness ions from the liquid byproducts.

5,609,766

PROCESS FOR TREATING BROMIDE-CONTAINING WATER USING OZONE

Wilhelm Schneider, Heidenrod, and Ralf Gerz, Mainz, both of Germany, assignors to Schmidding-Werke, Wilhelm Schmidding GmbH & Co., Cologne, Germany

PCT No. PCT/DE94/00487, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO94/26671, PCT Pub. Date Nov. 24, 1994
PCT Filed May 3, 1994, Ser. No. 549,825
Claims priority, application Germany, May 17, 1993, 43 16 447.1; Jun. 11, 1993, 43 19 321.8
Int. Cl.[6] C02F *1/28;1/76;1/78*
U.S. Cl. 210—662 13 Claims

1. Process for preventing the formation of bromate during the ozonation of bromide-containing water having a pH value not below 6.5; wherein:

CO_2 is introduced into said bromide-containing water until a pH value below 6.5 is attained; and then

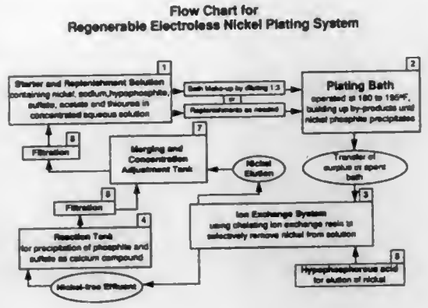
CO_2 and ozone are simultaneously introduced into the bromide-containing water for a period of several minutes, whereby the amount of CO_2 introduced is chosen such that a pH value below 6.5 is maintained and sufficient ozone is introduced into the quantity of water to produce oxidation, sterilization and degermination.

5,609,767

METHOD FOR REGENERATION OF ELECTROLESS NICKEL PLATING SOLUTION

Erhard T. Eisenmann, 5423 Vista Sandia, NE., Albuquerque, N.M. 87111

Filed May 11, 1994, Ser. No. 241,234
Int. Cl.[6] B01D *15/04*
U.S. Cl. 210—665 9 Claims



1. A method for regeneration of spent EN plating solution, wherein spent EN plating solution comprises nickel ions, hypophosphite ions, an acetic acid or acetate buffer, a stabilizer, phosphite ions, sulfate ions, and water, comprising the steps of:

a) passing spent EN plating solution through a chelating ion exchange resin column to remove selectively and substantially all nickel ions from said solution for retention in said resin column;

b) treating the effluent from step (a) with a base selected from the group consisting of calcium hydroxide and magnesium oxide in an amount sufficient to precipitate substantially all phosphite ions and a major portion of sulfate ions therefrom, the precipitate being substantially free of Ni;

c) separating the resulting solution from the precipitate of step (b);

d) eluting the nickel ions from the ion exchange resin resulting from step (a) with a solution of hypophosphorous acid; and

e) combining the resultant solution from steps (b) and (d) to obtain a regenerated EN plating solution.

5,609,768

PROCESS FOR SEPARATING AND/OR RECOVERING HYDROCARBON OILS FROM WATER USING BIODEGRADABLE ABSORBENT SPONGES

Marc B. Mueller, 48 Fairlawn Ave., South Portland, Me. 04106, and Karl J. Marean, R.D. 1, Box 555, North Whitefield, Me. 04353

Continuation of Ser. No. 742,351, Aug. 8, 1991, abandoned, which is a continuation of Ser. No. 387,825, Aug. 1, 1989, Pat. No. 5,039,414. This application Apr. 19, 1995, Ser. No. 424,074
Int. Cl.[6] C02F *1/28*
U.S. Cl. 210—691 5 Claims

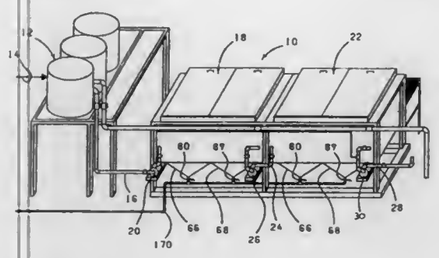
1. A process for absorbing oils comprising the step of contacting the oils with an absorbent oleophilic biodegradable sponge material consisting essentially of at least one essentially fat free, foamed oleophilic, biodegradable, natural product, which material is capable of absorbing at least about thirty times its weight of oils.

5,609,769

WATER TREATMENT METHODS

Joseph P. Krieger, Guthrie, Okla., assignor to JTJ Systems, Inc., Edmond, Okla.

Division of Ser. No. 100,876, Aug. 1, 1993, which is a continuation-in-part of Ser. No. 969,615, Oct. 30, 1992, Pat. No. 5,288,737, which is a continuation of Ser. No. 616,583, Nov. 21, 1990, Pat. No. 5,173,184. This application Nov. 14, 1994, Ser. No. 338,311
Int. Cl.[6] C02F *1/24;11/12*
U.S. Cl. 210—704 5 Claims



1. A method for treating wastewater comprising:

passing wastewater into a mixing zone in a housing;

introducing air into the wastewater prior to the wastewater being introduced into the mixing zone in an amount sufficient so that large air bubbles are formed in the mixing zone;

spraying water onto the wastewater in the mixing zone so that the sprayed water contacts the large air bubbles in the mixing zone and substantially reduces the size of the large air bubbles in the mixing zone;

passing the wastewater from the mixing zone into a quiescent zone where heavy sludge in the wastewater is permitted to move into a heavy sludge area and light sludge in the wastewater is permitted to move to a light sludge area in the quiescent zone, the treated wastewater being disposed between the light sludge area and the heavy sludge area, passing the treated wastewater from the quiescent zone into a discharge zone and discharging the treated wastewater from the discharge zone;

passing automatically the heavy sludge out from the heavy sludge area at predetermined discharge times and at predetermined discharge intervals;

removing the light sludge from the light sludge area in the quiescent zone and discharging automatically the light sludge removed from the quiescent zone at predetermined discharge times and at a predetermined time intervals.

5. A method for drying sludge removed from a wastewater treatment apparatus comprising:

passing the sludge onto a perforated conveyor belt having a plurality of openings therein;

moving the perforated conveyor belt to move the sludge disposed thereon through an oven having a drying zone whereby water is driven from the sludge and passed through the openings in the perforated conveyor belt so that the sludge is dried by passage through the oven and moving the perforated conveyor belt through the oven to remove the dried sludge from the oven whereupon the dried sludge is discharged from the perforated conveyor belt; and

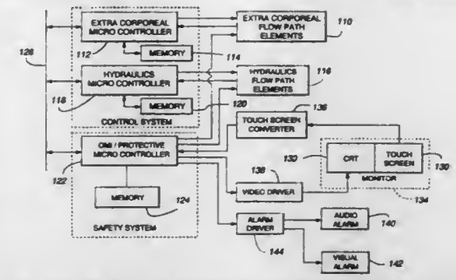
discharging water removed from the sludge during the drying of same from the oven.

5,609,770

GRAPHICAL OPERATOR MACHINE INTERFACE AND METHOD FOR INFORMATION ENTRY AND SELECTION IN A DIALYSIS MACHINE

Eric Zimmerman, Littleton; Jim Rosa, Conifer; Steve Love, Bailey, and Catherine DiMuzio, Denver, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Filed Jun. 7, 1995, Ser. No. 486,944
Int. Cl.[6] B01D *61/32;* G06F *17/30;159/00*
U.S. Cl. 210—739 38 Claims



14. A method of programming a dialysis machine using a graphical operator machine interface to establish machine operating and dialysis treatment parameters employed by the dialysis machine in a dialysis treatment, comprising the steps of:

using a graphical screen to access, select, display and enter information;

displaying in a first screen display on the graphical screen a first predetermined group of a plurality of predetermined machine operating and dialysis treatment parameters used by the dialysis machine in a dialysis treatment; and

entering parameter selection information on the graphical screen at the first screen display to select a second selected group of the parameters from the first group, the second selected group formed by a lesser number of the parameters than are present in the first group; and thereafter

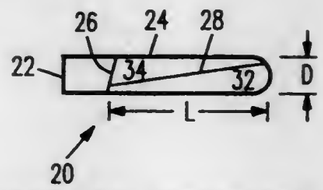
displaying the second selected group of parameters on the graphical screen in a second screen display, the second screen display being different from the first screen display.

5,609,771

METHOD OF SEPARATING RED BLOOD CELLS FROM A VOLUME OF BLOOD

John P. Pelmulder, Chatsworth, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Mar. 3, 1995, Ser. No. 398,432
Int. Cl.[6] B01D *21/00*
U.S. Cl. 210—800 17 Claims



1. A method of separating red blood cells within a volume of blood, the method comprising:

a) filling a container with the volume of blood while the container is in a substantially vertical position, the container having an open top portion, a side wall, and a closed bottom portion, the volume of blood in the container defining a first surface region having a particular spatial relationship to the side wall;

b) moving the container to a first position, away from the substantially vertical position, and maintaining the container

at the first position for at least a first predetermined time such that red blood cells within the volume of blood settle substantially to the side wall of the container, the cross sectional area of the container at the first surface region of the volume of blood being such that the particular spatial relationship is maintained between the first surface region and the side wall even when the container is moved to the first position; and

c) moving the container to a second position substantially without agitating the volume of blood contained therein, the second position being closer to the substantially vertical position than is the first position, and maintaining the container at the second position for at least a second predetermined time, whereby the red blood cells settled substantially to the side wall of the container in step b) slide to the closed bottom portion of the container.

5,609,772

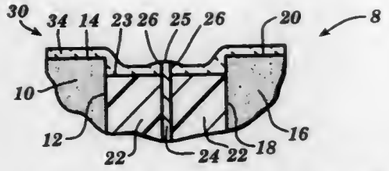
CUBE MASKLESS LEAD OPEN PROCESS USING CHEMICAL MECHANICAL POLISH/LEAD-TIP EXPOSE PROCESS

Timothy H. Daubenspeck, Colchester; Steven J. Holmes, Milton, and Thomas G. Ference, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1995, Ser. No. 463,537

Int. Cl.[6] C03C *15/00;25/06;* **C23F** *1/00;* **B44C** *1/22*

U.S. Cl. 216—14 **11 Claims**



1. A method of exposing a conductive lead disposed within a first insulative material of a semi-conductor device, the first insulative material being disposed between a first integrated circuit chip having a first cube face, and a second integrated circuit chip having a second cube face, said conductive lead, first insulative material and cube faces defining a plane, said method comprising the step of:

selectively etching the insulative material to expose the lead without substantially etching the chips.

5,609,773

METHOD FOR MANUFACTURE OF MULTILAYER WIRING BOARD AND THE MULTILAYER WIRING BOARD

Mitsuru Usui, and Tetsuya Watanabe, both of Hadano, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 31, 1994, Ser. No. 332,134

Claims priority, application Japan, Nov. 1, 1993, 5-273729

Int. Cl.[6] H05K *3/00*

U.S. Cl. 216—20 **2 Claims**

1. A method for manufacture of a multilayer wiring board comprising a substrate and two of more patterned material layers provided on the substrate, which includes the following steps:

(a) laminating two or more material layers on a substrate,

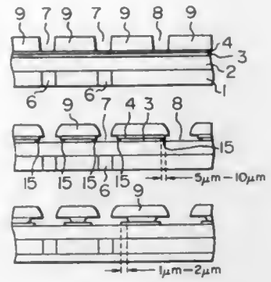
(b) forming a mask on the laminated layers,

(c) Etching the respective layers successively from the top layer toward the bottom layer,

(d) etching the layers successively from the second layer form the bottom layer toward the top layer, and

(e) removing the mask

wherein a specific material layer in the material layers is processed in the reversely tapered form by carrying out the etching of the material layer underneath the specific material layer in the step (a) so that under-etching occurs in the underneath layer and carrying out isotropic etching of the specific material layer in the step (d).



5,609,774

APPARATUS FOR MICROWAVE PROCESSING IN A MAGNETIC FIELD

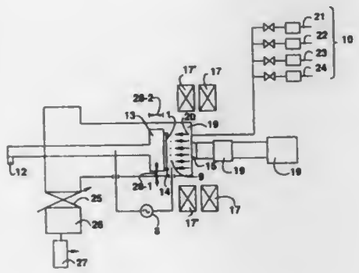
Shunpei Yamazaki, Tokyo; Masaya Kadono, Atsugi; Kenji Itoh, Zama; Toru Takayama; Yasuyuki Arai, both of Atsugi, and Noriya Ishida, Asahikawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Inc., Kanagawa-ken, Japan

Division of Ser. No. 892,710, May 29, 1992, Pat. No. 5,302,226, which is a continuation of Ser. No. 537,300, Jun. 13, 1990. This application Feb. 10, 1994, Ser. No. 194,571

Claims priority, application Japan, Jun. 15, 1989, 1-152909; Jun. 15, 1989, 1-152910

Int. Cl.[6] H01L *21/302*

U.S. Cl. 216—69 **10 Claims**



1. A plasma processing method comprising the steps of:

preparing a substrate holder in a reaction chamber so that a reaction space is defined in the chamber by inside walls of the chamber and a side of the substrate holder carrying a substrate;

inputting a reactive gas into said reaction space;

converting said reactive gas into plasma by supplying an electromagnetic energy to said reactive gas;

evacuating said reaction space during the plasma processing through a gap between the substrate holder and the inside wall of the chamber, wherein said gap is not larger than ¼ of a wavelength of the inputted electromagnetic energy; and

treating a surface of the substrate located on said substrate holder with said plasma;

wherein said plasma is confined in said reaction space, whereby reactive gas in a part of the reaction chamber outside said reaction space has non-plasma form.

5,609,775

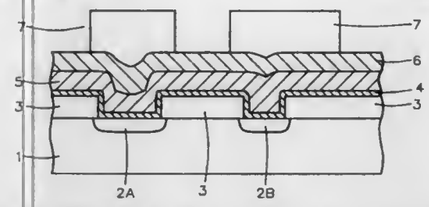
DRY ETCH PROCESS FOR TITANIUM-TUNGSTEN FILMS

Lianjun Liu, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Mar. 17, 1995, Ser. No. 405,718

Int. Cl.[6] H01L *21/02*

U.S. Cl. 216—77 **22 Claims**



1. A method for forming metal patterns on a semiconductor substrate comprising the steps of:

depositing a first composite metal film, composed of a titanium underlay film, a titanium—tungsten film, and a aluminum overlay film, on said substrate;

forming a first organic photoresist image on part of said first composite metal film;

anisotropically etching the exposed part of said first composite metal, to form a specific metal shape, using an etching mixture comprising CF_4 and N_2 for the titanium underlay film and the titanium—tungsten film;

removing said first organic photoresist;

depositing a first dielectric insulator film on said first composite metal shape and said substrate;

using photolithography and etching, to open a via in said first dielectric insulator film, to said first composite metal shape;

depositing a second composite metal film, composed of a titanium underlay film, a titanium—tungsten film, and a aluminum overlay film, on said first dielectric insulator film and on said first composite metal shape, in said opened via;

forming a second organic photoresist image on part of said second composite metal film;

anisotropically etching the exposed part of said second composite metal, to form a specific metal shape, using an etching mixture comprising CF and N for the titanium underlay film and the titanium—tungsten film; and

removing said second organic photoresist.

5,609,776

METHOD OF REPAIRING MOULDS MADE OF ALUMINIUM

Yan Li, Shanghai, China, assignor to Novapax Kunststofftechnik Steiner GmbH & Co. KG, Berlin, Germany

Filed Dec. 21, 1995, Ser. No. 576,311

Claims priority, application Germany, Dec. 23, 1994, 44 47 403.2

Int. Cl.[6] B23K *9/04*

U.S. Cl. 219—76.14 **11 Claims**



1. A method of repairing moulds made of aluminium, characterised by the following steps:

trimming the end of a wire-shaped filling material made of aluminium to form a point,

making contact with the point at a position of a mould to be repaired, said mould being made of aluminium,

charging the wire-shaped filling material with a current in order to melt away the point of the filling material and form an arc,

melting the mould at the position to be repaired, and the filling material,

pressing the filling material into the mould at the position to be repaired, and

cutting the wire-shaped filling material close above the surface of the mould.

5,609,777

ELECTRIC-ARC PLASMA STEAM TORCH

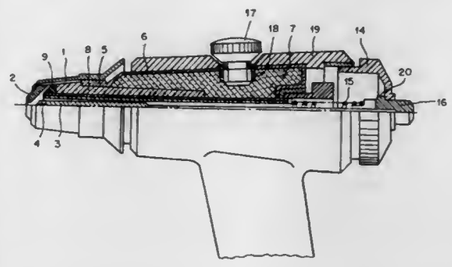
Alexandr I. Apunevich, Moscow, and Evgeny I. Titarenko, Zelenograd, both of Russian Federation, assignors to Adamas AT AG, Ceilenkirchen, Germany

Continuation-in-part of Ser. No. 325,250, Oct. 20, 1994, abandoned. This application Apr. 25, 1996, Ser. No. 638,880

Claims priority, application Russian Federation, Feb. 23, 1993, PCT/RU93/00053

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.48 **5 Claims**



1. An electric-arc plasma torch, comprising a body (**1**) with a discharge chamber (**11**), both being arranged coaxially with an outlet nozzle-anode (**2**) and a rod-shaped centrally located cathode (**4**) fixed in a holder (**3**), characterized in that it is provided with a container (**6**) for a working fluid, said container being connected to the body (**1**) and being filled with a moisture-absorbing material (**7**), and a gap between the body (**1**) and the container (**6**) said gap filled with a porous heat-conducting material (**8**) which contacts, on a side of the container (**6**), the moisture-absorbing material (**7**) in the container (**6**), and on the side of the body (**1**), a ring (**9**) made of a heat-conducting material and provided with passages (**10**) opening into a discharge chamber (**11**), said ring being in contact with the nozzle-anode (**2**).

5,609,778

PROCESS FOR HIGH CONTRAST MARKING ON SURFACES USING LASERS

Doris P. Pulaski, Holmes; Richard T. Anderson, Wappingers Falls; Christopher L. Tessler, Campbell Hall; Stephen J. Tirch, III, Poughkeepsie, and Dawn J. Tudryn, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,294

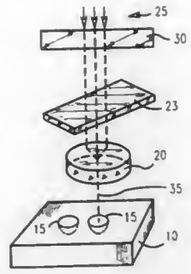
Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.69 **12 Claims**

1. A process for forming micro-reflectors on an object, comprising the steps of:

(a) placing said object proximate to a transfer lens system,

(b) shining a beam of laser light through a mask, and a wobble plate onto said object through said transfer lens system,



(c) said wobble plate wobbling said beam of laser light such that a parabolic shaped micro-reflector is formed on said object, and thereby forming said micro-reflectors on said object.

5,609,779

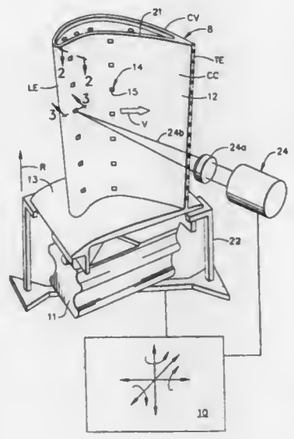
LASER DRILLING OF NON-CIRCULAR APERTURES

John M. Crow, Maineville, Ohio; James G. Kelley, California, Ky., and Todd J. Rockstroh, Maineville, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 15, 1996, Ser. No. 648,472

Int. Cl.[6] B23K *26/08*

U.S. Cl. 219—121.71 **20 Claims**



1. A method for forming an aperture in a component wall made of metal, the aperture including a diffuser which opens up and outward from a bottom of the diffuser to a first surface of the wall, said method comprising the following steps:

A) laser machining the wall with a laser which produces a laser beam having a pulse rate and power sufficient to vaporize the metal;

B) firing and traversing the laser beam at an acute angle across the surface to a predetermined first edge of the diffuser in a single pass starting at a centerline of the diffuser; and

C) traversing the laser beam at an increasing rate of speed during said pass so that each beam pulse vaporizes the metal at a laser spot such that successive laser spots substantially overlap each other in decreasing amounts and the pulses nibble out the metal to form a continuous trench below the surface.

5,609,780

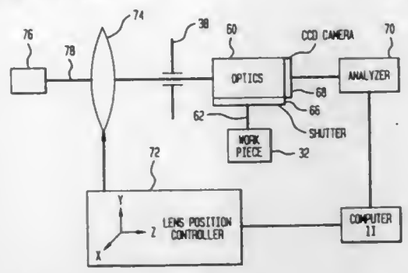
LASER SYSTEM

Candace J. F. Freedenberg, Poughkeepsie; Joshua M. Cobb, Millbrook, and Uldis A. Ziemins, Poughkeepsie, all of N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Nov. 14, 1994, Ser. No. 337,799

Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.73 **29 Claims**



1. A laser system, comprising:

an aperture or mask through which a laser beam from a source is transmitted;

a means for dividing laser energy emanating from said aperture or said mask into work piece and diagnostic beams:

two identical reflective objective lenses, a first of said reflective objective lenses positioned in the path of said work piece beam and directing a first image of said aperture or said mask onto a work piece, a second of said reflective objective lenses positioned in the path of said diagnostic beam and creating a second image of said aperture or said mask, said first and second images having identical uniformity; and

a beam uniformity analyzer which determines a uniformity of said laser beam at said second image of said aperture or said mask.

5,609,781

MACHINING HEAD AND LASER MACHINING APPARATUS

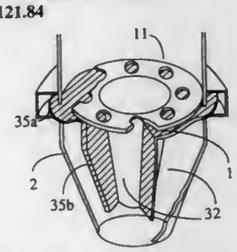
Kunihiko Kaga; Satoru Kotoh, both of Amagasaki; Shuji Ogawa, Nagoya; Masaru Kanaoka, Nagoya, and Toru Murai, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 139,888, Oct. 22, 1993. This application Oct. 20, 1994, Ser. No. 326,265

Claims priority, application Japan, Oct. 23, 1992, 4-285801; Oct. 21, 1993, 5-263608

Int. Cl.[6] B23K *26/14*

U.S. Cl. 219—121.84 **15 Claims**



1. A laser machining apparatus including a machining head through which a laser beam passes, comprising:

a main assist gas nozzle at a center portion of the machining head for supplying a main assist gas; and

at least one annular sub assist gas nozzle surrounding the main assist gas nozzle, a jet outlet at an innermost diameter of the annular sub assist gas nozzle being no smaller than a jet outlet of the main assist gas nozzle; and

means for adjusting flow speed distribution at the sub assist gas nozzle outlet, while maintaining the main assist nozzle fixed relative to said at least one sub assist nozzle, said means for adjusting flow speed distribution including a plurality of partition members forming a plurality of small compartments in said sub assist nozzle, each partition member extending outward from an outer wall of said main assist nozzle in a generally radial direction.

5,609,782

SHIELDING GAS PRE-FLOW TIME CONTROL SYSTEM FOR GAS METAL ARC WELDER

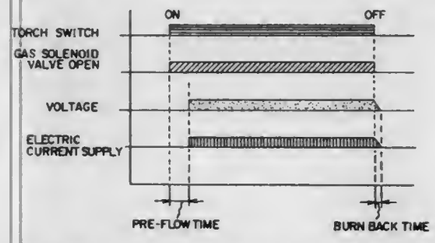
Jong-Hee Kim, Ulsani-Si, Rep. of Korea, assignor to Hyundai Heavy Industries Co., Ltd., Ulsani-Si, Rep. of Korea

Filed Oct. 24, 1995, Ser. No. 547,335

Claims priority, application Rep. of Korea, Oct. 29, 1994, 94-28446

Int. Cl.[6] B23K *9/16*

U.S. Cl. 219—132 **2 Claims**



1. In a gas metal arc welder having a welding power supply means, a wire feeding device and a welding torch,

a shielding gas pre-flow time control system having a torch switch which, when turned on, opens a shielding gas solenoid valve for providing pre-flow of a shielding gas to a point where metal arc welding is to be performed,

a second switch which, when turned on during said preflow of said shielding gas feed operates a wire feeding device and simultaneously applies a voltage to the wire and generates an arc so as to perform a welding work, and

when said torch switch is turned off, stops said above described wire feeding, said shielding gas flow, and said arc all at the same time as said torch switch is turned off.

5,609,783

INERT GAS FOR THE ARC WELDING OF ALUMINUM

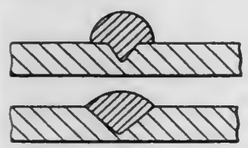
Alfward Fawer, Meerbuch, Germany, assignor to Messer Griesheim GmbH, Germany

Continuation of Ser. No. 488,484, Jun. 8, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 665,587

Claims priority, application Germany, Dec. 12, 1992, 42 41 982.4; WIPO, Dec. 2, 1993, PCT/EP93/03388

Int. Cl.[6] B23K *9/167*

U.S. Cl. 219—137 WM **8 Claims**



3. A process for arc welding of aluminum, which comprises adding 80 to 250 ppm of nitrous oxide to an inert gas, wherein the inert gas is

a) argon or

b) a mixture of argon and helium.

5,609,784

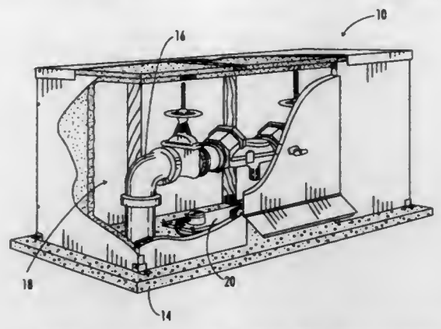
METHOD AND APPARATUS FOR COVERING AND HEATING FLUID FLOW DEVICES

Ronald D. Davenport, Hermitage, Tenn., assignor to Hydrocowl, Inc., Nashville, Tenn.

Filed Sep. 8, 1994, Ser. No. 302,534

Int. Cl.[6] F27D *11/02;* **F03B** *7/12;* **F16L** *55/00*

U.S. Cl. 219—385 **23 Claims**



1. A heated cover assembly for a fluid flow device extending from a ground surface, comprising:

a cover having a side wall, a roof, and an interior for enclosing a fluid flow device;

a heater positioned within the interior of the cover and supported by and in contact with the ground surface in order to heat the ground surface in the regions where the fluid flow device emerges from the ground surface and extends upwardly into the interior of the cover;

the heater has a top side, a bottom side, an edge, and heating coil means disposed within a body of the heater for producing heat in response to a supplied electrical current, wherein the heat is transmitted to the body of the heater and emanates therefrom to establish a substantially uniform thermal gradient in the interior of the cover from the ground surface on which the heater is supported to the roof.

5,609,785

METHOD AND APPARATUS FOR IMPROVING THE PERFORMANCE OF A HEATING FURNACE FOR METAL SLABS

Johannes Sallinen, and Pekka Mäntylä, both of Siikajoki, Finland, assignors to Acon Finland Oy Ltd., Siikajoki, and Rautaruukki Oy, Oulu, both of Finland

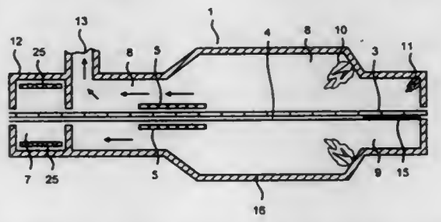
PCT No. PCT/FI92/00357, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/08190, PCT Pub. Date Apr. 14, 1994

PCT Filed Dec. 23, 1992, Ser. No. 403,751

Claims priority, application Finland, Oct. 5, 1992, 924469

Int. Cl.[6] F27B *9/12;9/36*

U.S. Cl. 219—388 **26 Claims**



1. Method for heating metal slabs in an elongated heating furnace, said heating furnace including means for carrying metal slabs through the heating furnace and at least one fossil-fuel

operated burner for heating the metal slabs, said heating furnace further including a convection zone without burners wherein the metal slabs are heated primarily by the action of convection heat delivered by combustion gases driven therethrough, and a heating zone wherein the metal slabs are heated primarily by the action of radiation heat emitted by the fossil-fuel operated burner which is located therein, comprising the steps of:

heating the metal slabs by at least one active radiant heater positioned at a location before said fossil-fuel operated burner in an advancing direction of the metal slabs in the convection zone or in the heating zone; and

then heating the metal slabs by the action of radiation heat emitted by said fossil-fuel operated burner in the heating zone.

5,609,786

MICROWAVE OVEN AND METHOD OF CONTROLLING THE OPERATION THEREOF

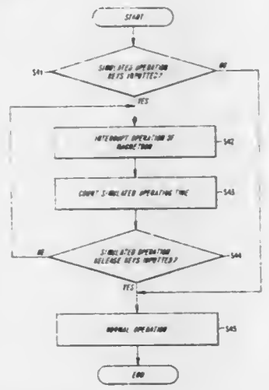
Hyun-Jun An, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 26, 1995, Ser. No. 507,560

Claims priority, application Rep. of Korea, Jul. 26, 1994, 94-18080

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—702 **10 Claims**



1. A microwave oven comprising:

operating means including a plurality of keys for inputting key signals representing functions of a cooking operation,

key select means for selecting a desired one of said plurality of keys on said operating means to simulate the operation of said microwave oven;

simulated operation change means for changing the operation of said microwave oven to the simulated operation in response to said key being selected by said key select means; and

control means, including a microcontroller, for storing an algorithm to simulate the operation of said microwave oven, wherein during the simulated operation, a magnetron is not operated.

5,609,787

METHOD FOR EXTINGUISHING FIRE

Takashi Abe, Kasugai; Haruhiko Fukaya, Oobu; Eiji Hayashi, Konan, and Yoshio Hayakawa, Kita-ku, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 341,068

Claims priority, application Japan, Nov. 18, 1993, 5-312624

Int. Cl.[6] A62D *1/02;1/00*

U.S. Cl. 252—3 **1 Claim**

1. A method for extinguishing fire comprising applying to the fire a gaseous fire extinguishing composition comprising, as an active component, a polyfluoro-tertiary amine represented by the formula:

$$(CF_3)_2NRf$$

wherein Rf is a polyfluoroalkenyl group of 2–4 carbon atoms.

5,609,788

MAGNETIC PAINT ADDITIVE

Dayton J. Deetz, 43 Taft Ave., Mendon, Mass. 01756

Filed Mar. 17, 1995, Ser. No. 405,850

Int. Cl.[6] G09F *7/04*

U.S. Cl. 252—62.54 **27 Claims**

1. A magnetic sign board comprising a substrate painted with a paint comprising paint and, per gallon of said paint, from about 500 to about 2000 grams ferromagnetic powder having a mixed particle size varying from about 0.01μ to about 44μ.

5,609,789

COBALT-CONTAINING MAGNETIC IRON OXIDE AND PROCESS FOR PRODUCING THE SAME

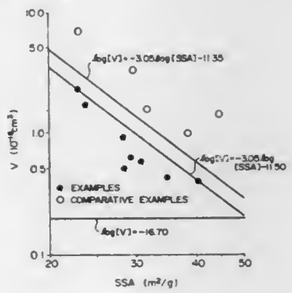
Kiyoshi Asano; Arata Koyama; Nobusuke Takumi; Shigeru Takatori; Kouichi Tamura, and Tokuo Suita, all of Yokkaichi, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Continuation of Ser. No. 174,469, Dec. 28, 1993, abandoned. This application Apr. 22, 1996, Ser. No. 635,540

Claims priority, application Japan, Dec. 29, 1992, 4-362114; Feb. 2, 1993, 5-052843

Int. Cl.[6] C04B *35/26*

U.S. Cl. 252—62.56 **9 Claims**



1. Cobalt-coated magnetic iron oxide particles satisfying the following equations (1), (2) and (3):

$$20 \leqq SSA \leqq 50 \quad (1)$$

$$-16.70 \leqq \log [V] \leqq -3.05 \log [SSA] - 11.35 \quad (2)$$

$$0.10 \leqq Fe^{2+}/\text{total Fe} \leqq 0.30 \quad (3)$$

where SSA is a BET specific surface area (m^2/g), and V is a magnetic switching unit (cm^3).

5,609,790

LIQUID CRYSTAL COMPOSITIONS

Takashi Tanaka; Yuzuru Sato, both of Suwa; Hiroshi Iwane, and Shiro Inui, both of Inashiki-gun, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

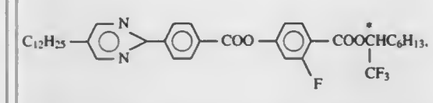
Continuation of Ser. No. 129,063, Nov. 12, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,741

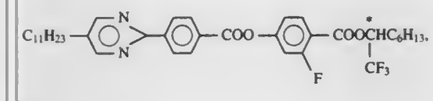
Claims priority, application Japan, Feb. 4, 1992, 4-047849

Int. Cl.[6] C09K *19/34;19/52;19/12*

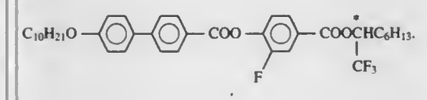
U.S. Cl. 252—299.61 **4 Claims**

1. A liquid crystal composition which shows an antiferroelectric smectic liquid crystalline phase at room temperatures, wherein said composition comprises a mixture of:





and



5,609,791

DIENE DERIVATIVE

Atsuko Fujita; Shuichi Matsui; Yuichi Onji; Makoto Ushioda, and Yasuyuki Goto, all of Chiba-ken, Japan, assignors to Chisso Corporation, Ohsaka-fu, Japan

Division of Ser. No. 41,184, Apr. 1, 1993, Pat. No. 5,449,810. This application May 25, 1995, Ser. No. 450,805

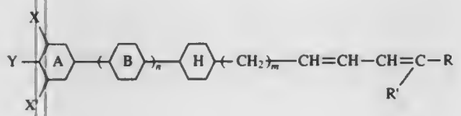
Claims priority, application Japan, Apr. 3, 1992, 4-82209

Int. Cl.[6] C07C *255/50*

U.S. Cl. 252—299.63 **7 Claims**

1. A diene derivative expressed by the formula (I)

(I)



wherein R and R' each independently represent a hydrogen atom or an alkyl group of 1 to 5 carbon atoms; A represents 1,4-phenylene and B represents 1,4-cyclohexylene or 1,4-phenylene; n represents 0 or 1; m represents an integer of 0 to 2; X and X' each independently represent a hydrogen atom or a fluorine atom and Y represents an alkyl group of 1 to 5 carbon atoms, a halogen atom, a cyano group, an alkoxy group of 1 to 5 carbon atoms, a methyl group substituted by 1 to 3 halogen atoms or a trihaloalkoxy group of 1 to 5 carbon atoms and R and R' do not represent simultaneously an alkyl group of 4 or more carbon atoms.

5,609,792

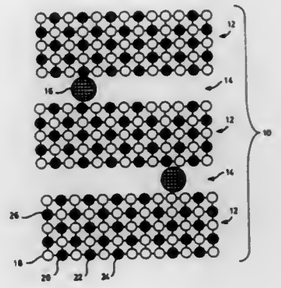
PHOSPHOR AND METHOD OF MAKING SAME

James R. Cox, Monroeton, and Ronald E. Karam, Towanda, both of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 425,536, Apr. 20, 1995, Pat. No. 5,531,926, which is a continuation-in-part of Ser. No. 189,012, Jan. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 999,637, Dec. 31, 1992, abandoned. This application May 21, 1996, Ser. No. 646,780

Int. Cl.[6] C09K *11/59;11/61*

U.S. Cl. 252—301.4 F **4 Claims**



1. A phosphor comprising europium activated tetra silicic mica.

5,609,793

FLUORESCENT SUBSTANCE, METHOD FOR PRODUCTION THEREOF, RADIATION DETECTOR USING THE FLUORESCENT SUBSTANCE, AND X-RAY CT APPARATUS USING THE RADIATION DETECTOR

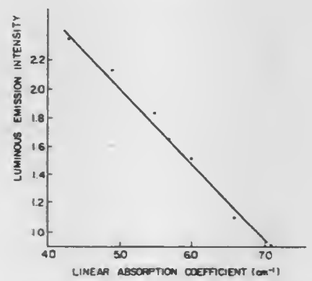
Kazuto Yokota, and Yukihiro Fukuta, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 22, 1994, Ser. No. 362,004

Claims priority, application Japan, Dec. 27, 1993, 5-332733

Int. Cl.[6] C09K *11/00*

U.S. Cl. 252—301.4 S **8 Claims**



1. A fluorescent substance comprising a rare earth oxysulfide represented by the chemical formula $R_{2(1-x)}Pr_{2x}O_2S$, wherein R stands for at least one member selected from the group consisting of Y, Gd, La, and Lu and x for a numerical value satisfyiog the expression, $5\times10^{-5} \leqq x \leqq 1\times10^{-2}$, and containing a measurable amount of PO_4 not exceeding 15 ppm.

5,609,794

DEMULSIFIER FOR WATER-IN-OIL EMULSIONS, AND METHOD OF USE

Grahame N. Taylor, Houston, Tex., assignor to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Aug. 5, 1994, Ser. No. 286,779

Int. Cl.[6] B01D *17/04;* **C08G** *63/91;* **C08L** *67/00*

U.S. Cl. 252—341 **9 Claims**

1. A method of breaking water-in-oil emulsions comprising the steps of

(a) introducing into the water-in-oil emulsion an effective amount of an emulsion breaker to break the emulsion, said emulsion breaker prepared by

(i) reacting a polyalkylene glycol having a molecular weight of 8,000 to 26,000 with ethylene oxide to form a polyalkylene/ethylene oxide adduct;

(ii) reacting the adduct of step (i) with an unsaturated diacid anhydride to form an ester of the polyalkylene/ethylene oxide adduct;

(iii) reacting the ester of step (ii) with acrylic acid to form an adduct of the step (ii) ester and acrylic acid; and

(iv) esterifying the adduct of step (iii) with an oxyalkylated alkyl phenol formaldehyde resin.

5,609,795

SOLID POLYMER ELECTROLYTE AND METHOD OF MANUFACTURE THEREOF

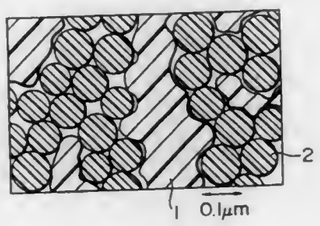
Morihiko Matsumoto, Tokorozawa; Toshihiro Ichino, Hoya, and Shiro Nishi, Kodaira, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 219,820, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 5,129, Jan. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,343

Claims priority, application Japan, Jan. 20, 1992, 4-027463

Int. Cl.[6] H01B *1/00;1/20;* **H01G** *9/15*

U.S. Cl. 252—500 **24 Claims**



1. A method for making a solid polymer electrolyte comprising: a step of making a polymer matrix having a multiphase microstructure; and a step of impregnating said polymer matrix with a liquid electrolyte solution, wherein said multiphase microstructure comprises a high polar phase having a highly polar solid polymeric component and a less polar phase having a solid polymeric component that is less polar than the highly polar polymeric component and selected from the group consisting of polystyrene, polypropylene, polyisobutene, polyethylene, polybutadiene, polyisoprene, polychloroprene, poly(α-methylstyrene), a polybutylmethacrylate, polybutylacrylate, poly(2-ethylhexylacrylate), polydibutylphthalate, polyvinylbutylether, polyvinyl butyral, polyvinyl formal, and copolymers, mixtures and derivatives of said less polar polymeric components.

5,609,796

DYE CONTAINING POLARIZING FILM

Setsuko Yamamoto; Kazuya Ogino; Narutohsi Hayashi, all of Osaka, and Takashi Omura, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 13, 1994, Ser. No. 322,620

Claims priority, application Japan, Oct. 14, 1993, 5-257083; Jul. 27, 1994, 6-175689

Int. Cl.[6] F21V *9/14*

U.S. Cl. 252—585 **11 Claims**

1. A dye-containing polarizing film which comprises, in a film substrate, at least one dye selected from,

1) a dye represented by the following formula (1):



wherein:

Q1 and Q4, which are the same or different, are each independently naphthyl group which is substituted by at least one group selected from hydroxy or amino, and may be further substituted by sulfo, carboxy, C1–C4 alkylamino, C1–C4 alkylcarbonylamino, phenylamino or benzoyl amino;

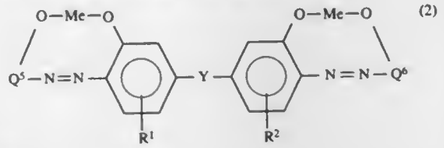
Q2 and Q3, which are the same or different, are each unsubstituted phenylene or phenylene group substituted by one or two substituents from hydroxy, C_1–C_4alkyl, C_1–C_4 alkoxy and sulfo; and

X is —N=N— or



and

2) a dye represented by the following formula (2):

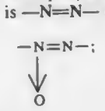


wherein:

each Me is a transition metal selected from copper, nickel, zinc and iron;

Q^5 and Q^6, which are the same or different, are each 1,2-naphthylene group unsubstituted or substituted by substituent selected from amino, sulfo, hydroxy, carboxy, C_1–C_4 alkyl and C_1–C_4 alkoxy;

Y is —N=N— or



and

R^1 and R^2, which are the same or different, are each hydrogen atom, lower alkyl, lower alkoxy or sulfo group.

5,609,797

METHOD FOR RECORDING REFRACTIVE INDEX PATTERNS IN POLYIMIDE FILMS

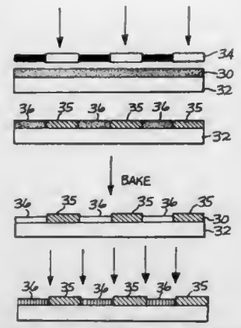
Kishore K. Chakravorty, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 56,453, May 3, 1993, abandoned. This application May 21, 1996, Ser. No. 650,260

Int. Cl.[6] G02F *1/00*

U.S. Cl. 252—589 **10 Claims**

1. A method for creating a difference in refractive indices between selected regions of a polyimide material comprising the steps of:



introducing into the material a dopant which will alter the index of refraction of the material;

exposing selected regions of the material to radiation in a first preselected spectral range, whereby the material will include first regions which have been exposed to radiation and second regions which have not been exposed to radiation;

removing at least some of the dopant from the second regions; and

exposing the second regions to radiation in a second preselected spectral range selected so as to increase the index of refraction of said second regions.

5,609,798

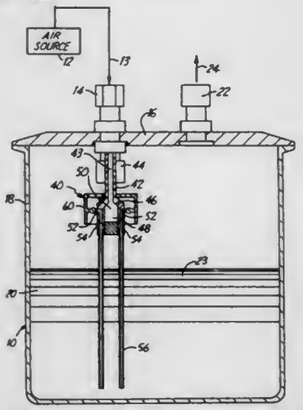
HIGH OUTPUT PSL AEROSOL GENERATOR

Benjamin Y. H. Liu, North Oaks, and James J. J. Sun, New Brighton, both of Minn., assignors to MSP Corporation, Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 475,351

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—78.2 **12 Claims**



1. An aerosol generator system comprising a central gas conduit having a plurality of spaced nozzles positioned around the gas conduit and facing outwardly, each nozzle being connected to a source of liquid, a source of gas under pressure connected to the central conduit and providing a high velocity jet of gas through each nozzle causing a reduction in pressure for atomizing a liquid from the source of liquid through the discharge nozzle, and a ring surrounding the nozzles and having an impingement surface in proximity to but spaced outwardly from and aligned with the discharge nozzles on which the gas and atomized liquid impinges, a support for the ring spaced outwardly from the ring, the ring being unobstructed in direction above and below the ring, said impingement surface causing large droplets to collect thereon for removal from the gas, the high velocity gas flowing along and around the impingement surface, and also causing secondary atomization by the high velocity gas moving across the impingement surface, the high velocity gas being fee to move in both directions relative to a central plane of the ring.

5,609,799

PROCESS FOR PRODUCING CUPROUS OXIDE POWDER

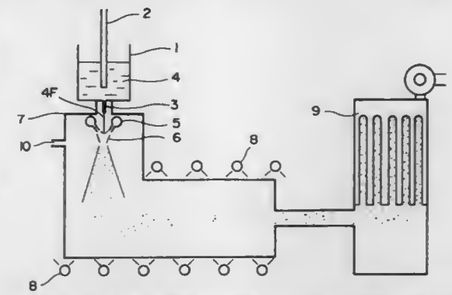
Masao Shima; Katsuhiko Yaolta; Masaharu Nagahara, all of Ashio-machi, and Hiroshi Kametani, Yokohama, all of Japan, assignors to Furukawa Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 337,938

Claims priority, application Japan, Sep. 19, 1994, 6-223729

Int. Cl.[6] B29B *9/10*

U.S. Cl. 264—12 **5 Claims**



1. A process for producing a cuprous oxide powder comprising the steps of:

discharging a molten copper, which is kept at a temperature at or higher than the melting point and at or lower than 1450° C. and contained in a container having a nozzle disposed at a bottom, from the nozzle into a reactor vessel disposed below the container to form a downward flow of the molten copper;

atomizing the downward flow of the molten copper by a jet stream of an oxygen-contained gas to produce fine liquid droplets or fine particles and, thereby simultaneously, oxidizing the fine liquid droplets or fine particles having a large surface area for oxidization to form cuprous oxide;

cooling the liquid droplets or solid particles of the thus formed cuprous oxide; and then

collecting the liquid droplets or the solid particles from the reactor vessel.

5,609,800

PROCESS FOR PRODUCING HIGH-DENSITY AND HIGH-STRENGTH CARBON ARTIFACTS SHOWING A FINE MOSAIC TEXTURE OF OPTICAL ANISOTROPY

Isao Mochida, Fukuoka-ken; Ryuji Fujiura, Ibaraki-ken; Takashi Kojima, Ibaraki-ken, and Hitoshi Sakamoto, Ibaraki-ken, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Division of Ser. No. 350,679, Dec. 7, 1994, Pat. No. 5,484,520. This application Sep. 18, 1995, Ser. No. 529,439

Claims priority, application Japan, Dec. 9, 1993, 30982; Dec. 16, 1993, 316767

Int. Cl.[6] C01B *31/02*

U.S. Cl. 264—29.6 **6 Claims**

1. A process for producing a carbon artifact showing a fine mosaic texture of optical anisotropy by the steps of molding self-adhesive carbonaceous grains into a predetermined shape under pressure and baking the mold in a nonoxidizing atmosphere at a sufficient temperature to achieve carbonization or graphitization of said mold, with the heating rate being not more than 20° C./h in the temperature range from 400° to 600° C., said self-adhesive carbonaceous grains containing 0.5–1.5 wt % of a quinoline-soluble but pyridine-insoluble component and at least 97

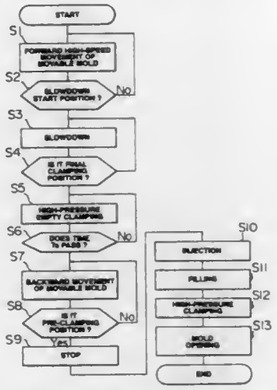
wt % of a quinoline-insoluble component and being prepared by the heat treatment in a nonoxidizing atmosphere of a mesophase pitch that is obtained by polymerizing a condensed polycyclic hydrocarbon or a substance containing the same in the presence of hydrogen fluoride and boron trifluoride.

5,609,801

CLAMPING METHOD OF INJECTION AND COMPRESSION MOLDING MACHINE

Tsuyoshi Arai, Nagano, Japan, assignor to Nissei Plastic Industrial Co., Ltd., Nagano-ken, Japan

Filed Apr. 17, 1995, Ser. No. 422,783
Claims priority, application Japan, Apr. 20, 1994, 6-106078
Int. Cl.[6] B29C *45/56*
U.S. Cl. 264—40.5 **7 Claims**



1. A method of clamping an injection and compression molding machine comprising the following steps:

moving a movable mold from a mold opening position to a final clamping empty position prior to starting an injection and filling of resin into the mold;

applying a final clamping pressure to the mold in the final clamping empty position for a predetermined time period;

moving the movable mold by a predetermined distance to a pre-clamping empty position wherein the mold is injected and filled with resin; and

moving the movable mold from a pre-clamping filled position to a preset slowdown start molding position wherein the moving speed of the movable mold is slowly decreased from the slowdown start position to a final clamping position.

5,609,802

HELMET MAKING PROCESS

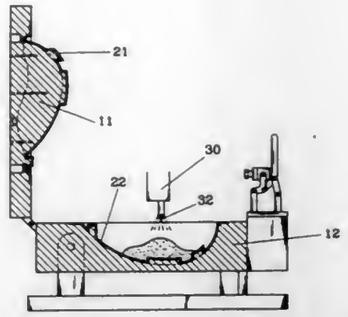
Yen-Ming Jeng, 48, Fong Lean Street, Hsin-Fong, Hsiang, Hsin Chu Hsien, Taiwan

Filed Mar. 7, 1996, Ser. No. 612,031
Int. Cl.[6] B29C *44/06;44/12*
U.S. Cl. 264—46.5 **5 Claims**

1. A helmet making process layer comprising the steps of:

(a) opening an upper die which is formed with flash gates and air holes relative to a lower die which is attached to a conveying device, cleaning said upper and lower dies, heating said upper and lower dies to a temperature of 35° C. to 40° C. in an oven, and applying a releasing agent to outlet ends of said flash gates;

(b) fitting a shape-molded plastic lower shell into said upper die, said lower shell being printed with evenly distributed colors in a predetermined pattern and having a plurality of recessed portions and a plurality of flash holes that are formed through an outer periphery of said lower shell;



(c) filling a liquefied polyurethane mixture on a shape-molded plastic upper shell with a plurality of projected portions from a polyurethane mixing and discharging machine and then fitting said upper shell into said lower die;

(d) closing said upper die and shaking said upper and lower dies when said upper and lower dies are moved by means of said conveying device in order to apply uniformly said liquefied polyurethane mixture to internal wall faces of said upper and lower shells and in order to allow said liquefied polyurethane mixture to begin to foam;

(e) delivering slowly said upper and lower dies into said oven to heat said upper and lower dies about 2 to 5 minutes in order to allow said polyurethane mixture to be nearly completely foamed;

(f) removing said upper and lower dies from said oven while said polyurethane mixture is foaming to allow a part of a foamed polyurethane to expand into said flash gates of said upper die and to form as a flash, and then piercing through said air holes of said upper die and through said lower shell by means of needles in order to allow a gas produced from said foamed polyurethane to escape to an exterior of said upper die through said air holes;

(g) removing said flash and removing a semi-finished helmet thus obtained and piercing internal wall faces of said recessed portions in order to form a plurality of vent holes to allow said gas to escape through said vent holes and then allowing said semi-finished helmet to cool in air; and

(h) cutting off said recessed and projected portions which abut complementarily one another from said upper and lower shells by means of a cutting tool in order to form a plurality of ventilation holes in said semi-finished helmet and then trimming and surface-treating said semi-finished helmet to produce a finished helmet.

5,609,803

PROCESS FOR MANUFACTURING BODIES OF POLYMERIC MATERIAL, HAVING A CORE OF FOAMED MATERIAL ENCLOSED IN AN OUTER SHELL

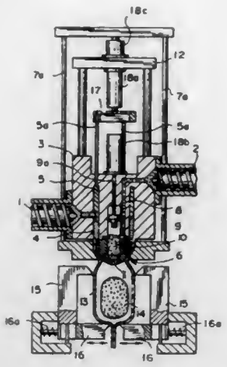
Antonio Addeo, Novara; Francesco Mascia, Guanzate; Annibale Vezzoli, Carugo, and Aurelio Biscotti, Milan, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Milan, Italy

Division of Ser. No. 208,093, Mar. 8, 1994, Pat. No. 5,368,458, which is a continuation of Ser. No. 974,941, Nov. 12, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,619
Claims priority, application Italy, Nov. 13, 1991, MI91A3014
Int. Cl.[6] B29C *44/06*
U.S. Cl. 264—46.6 **1 Claim**

1. A process for manufacturing an article of polymeric material having a core of foamed material enclosed by an outer shell, the method comprising the steps of:

(a) providing a mold comprising a pair of separable half-molds arranged facing each other;

(b) extruding a substantially tubular thermoplastic parison having interior walls and exterior walls between the half-molds;



(c) closing the half-molds around the parison, the mold and the parison having dimensions whereby a hollow space is formed between the parison and the exterior walls of the mold;

(d) simultaneously with the closing of the two half-molds from step (c), injecting into the inside of the parison a foamable thermoplastic polymeric material admixed with a physical blowing agent, the injection being carried out in a time equal to 2 seconds or less;

(e) the foamable thermoplastic polymeric material admixed with the physical blowing agent expanding within the parison, causing the parison to expand into contact with the walls of the mold so as to conform to the shape of the mold, and thermowelding the foamable thermoplastic material to the interior walls of the parison; and

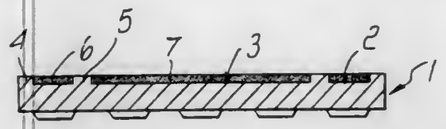
(f) removing the article from the mold.

5,609,804

PROCESS FOR DECORATING CERAMIC TILES

Rodiero Alieri, Imola, Italy, assignor to Sacmi Cooperativa Meccanici Imola S.c.r.l., Imola, Italy

Filed Jun. 10, 1994, Ser. No. 257,977
Claims priority, application Italy, Jun. 21, 1993, BO93A0281
Int. Cl.[6] C04B *33/32*
U.S. Cl. 264—56 **14 Claims**



1. Process for decorating ceramic tiles, comprising the following steps:

a) pressing powders for forming a pressed item, said item comprising a decoratable surface;

b) forming on said surface, during the pressing step, at least one recess, said at least one recess being peripherally surrounded by rims, said rims having an extension which matches a contour of a decoration to be obtained;

c) preparing a decorative material product for application in said recesses, said product having a fluid consistency;

d) applying, in said recess, preset doses of said product having fluid consistency, said product spreading in said recess surrounded by said rims which have the extension matching said contour of a decoration;

e) baking said item,

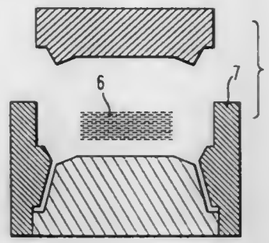
f) polishing said item for obtaining a finished decorated surface.

5,609,805

PROCESS FOR PRODUCING A COMPOSITE PART BY COMPRESSION MOLDING

Francois Finck, Deyvillers; Jacques Follanfant, Clermont-Ferrand, and Yves Vernet, Cournon-D'Auvergne, all of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & CIE, Clermont-Ferrand Cedex, France

Filed Nov. 22, 1994, Ser. No. 344,662
Claims priority, application France, Nov. 22, 1993, 93/14032
Int. Cl.[6] B32B *3/26*
U.S. Cl. 264—134 **7 Claims**



1. A process for producing a composite part of a complex shape comprising:

(i) placing reinforcing fibers into a transfer mold;

(ii) impregnating said reinforcing fibers with a low viscosity resin to obtain an impregnated preform;

(iii) maintaining said impregnated preform in said transfer mold, at a first temperature T_1 until said impregnated preform becomes a pasty preform suitable for compression molding;

(iv) placing said pasty preform in a compression mold adapted to the complex shape of said composite part at a temperature T_2, wherein $T_2 > T_1$;

(v) compression molding said pasty preform to the complex shape of said composite part;

(vi) polymerizing said resin of said pasty preform at, at least, a third temperature T_3, wherein $T_3 \geq T_2$ to obtain said composite part.

5,609,806

METHOD OF MAKING PREPREG

Sean P. Walsh, Carrboro, and Nelson H. Douglass, Garner, both of N.C., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Jun. 28, 1994, Ser. No. 267,862
Int. Cl.[6] B29C *67/00*
U.S. Cl. 264—136 **29 Claims**

1. A method of making a formable prepreg comprising:

(a) impregnating reinforcing fiber with a thermosetting resin matrix comprising a thermosetting resin selected from the group consisting of unsaturated polyester, phenolic and vinyl ester resins; and

(b) passing the resin impregnated reinforcing fiber through a die within which the resin impregnated reinforcing fiber is subjected to conditions sufficient to thicken the thermosetting resin matrix to a B-stage, to provide a formable prepreg.

5,609,807

PRODUCTION OF CERAMIC STRUCTURAL BODIES

Yukihisa Wada, Aichi-gun; Shinobu Naito, and Kazuhiko Kumazawa, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Oct. 31, 1994, Ser. No. 331,909
Claims priority, application Japan, Nov. 10, 1993, 5-281306
Int. Cl.[6] B28B *3/20*
U.S. Cl. 264—177.11 4 Claims

1. A process for producing a cordierite ceramic structural body, comprising the steps of:

mixing a corderite raw material with 0.2 to 3 wt % of emulsified polyethylene wax, 2 to 7 wt % of methyl cellulose, and 0.2 to 3 wt % of at least one kind of a surface active agent selected from the group consisting of a soap-series surface active agent, an ester-series surface active agent and an ether-series surface active agent;

plasticizing the resulting mixture for extrusion; and

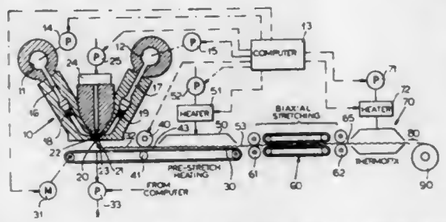
extruding the resulting plasticized mixture to form a ceramic structural body.

5,609,808

METHOD OF MAKING A FLEECE OR MAT OF THERMOPLASTIC POLYMER FILAMENTS

Rolf H. Joest, Duisburg; Hans G. Geus, Niederkassel; Hermann Balk, Troisdorf; Bernd Kunze, Hennef, and Herbert Schulz, Troisdorf, all of Germany, assignors to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Germany

Filed Jan. 11, 1996, Ser. No. 587,883
Claims priority, application Germany, Jan. 17, 1995, 195 01 123.6
Int. Cl.[6] B29C *47/88;55/16*
U.S. Cl. 264—210.7 18 Claims



1. A method of making a nonwoven web of thermoplastic polymeric filament, comprising the steps of:

(a) feeding a molten thermoplastic synthetic resin having a crystallitic state and an amorphous state through a plastic guide core to a multiplicity of orifices in a melt-blowing head issuing polymeric filaments and directing flat jets of blowing air along a resulting curtain of said filaments from slit nozzles of said melt-blowing head having outlets in a region of said orifices, said melt-blowing head being operated such that said curtain consists of long filaments;

(b) controlling a volume rate of flow of said molten synthetic resin through said melt-blowing head, a velocity of said jets and a temperature of said blowing air that individual filaments of said curtain have a filament diameter of less than 100 μm and a degree of crystallinity of less than 45%;

(c) collecting filaments of said curtain in a mat on a continuously moving sieve belt so that said polymer filaments cross over one another and fuse together at crossover weld points to render said mat coherent;

(d) heating the mat formed in step (c) to a stretching temperature;

(e) biaxially stretching the mat heated to said stretching temperature in both a longitudinal direction and in a transverse direction by 100% to 400%;

(f) thermofixing the mat biaxially stretched in step (e) at a thermal fixing temperature which is greater than said stretching temperature; and

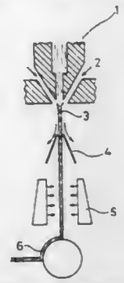
(g) carrying out the biaxial stretching in step (e) and the thermofixing in step (f) so that the filaments in the thermofixed mat have at their centers a degree of crystallinity of at least 50%.

5,609,809

METHOD OF MANUFACTURING BIODEGRADABLE NONWOVEN FABRICS

Hiroshi Tanaka, Joyo; Yoshiki Miyahara, Uji; Satoshi Kasetani, Nara; Kouji Esaki, Matsudo; Shigetaka Nishimura, Uji, and Takashi Inoue, Kawasaki, all of Japan, assignors to Unitika Ltd, Hyogo, Japan

Division of Ser. No. 947,412, Sep. 18, 1992, Pat. No. 5,506,041.
This application Feb. 15, 1996, Ser. No. 601,950
Claims priority, application Japan, Sep. 26, 1991, 3-246360; Sep. 26, 1991, 3-246361
Int. Cl.[6] B29C *49/08*
U.S. Cl. 264—210.7 4 Claims



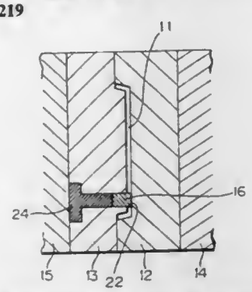
1. A method of manufacturing a biodegradable nonwoven fabric which comprises the steps of melt-spinning poly-ε-caprolactone and/or poly-β-propiolactone into a multifilament via spinnerets at temperatures of 100° to 240° C. above the melting point of the poly-ε-caprolactone and/or poly-β-propiolactone, cooling to solidify the spun multifilament, then drawing and and taking off the solidified multifilament at a suction-take off rate of more than 2000 m/min. through take-off means arranged at a position which is at least 100 cm beneath the spinnerets, then opening the multifilament and forming same into a web.

5,609,810

METHOD OF MOLDING CASES USED IN INFORMATION DETECTION HOLE SYSTEM AND APPARATUS THEREFOR

Morio Fujiwara, and Takashi Ohgiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 23, 1995, Ser. No. 377,092
Claims priority, application Japan, Jan. 31, 1994, 6-025929
Int. Cl.[6] B29C *33/30*
U.S. Cl. 264—219 7 Claims



1. A method of molding a case used in an information detection hole system in which the presence of an identification hole formed in the case, the position of said identification hole, and the form of said identification hole are detectable for indicating specific information related to said case, said method comprising the steps of:

providing a removable bush pin which forms said identification hole by projecting said removable bush pin into a cavity of a mold which forms said case;

fixing said bush pin by providing a fixing member which passes through said bush pin, which inserts into said mold, and which can be manipulated from a surface of said mold which faces a cavity of said mold;

molding said case;

providing a bush fitting hole in the mold to which said bush pin is attached, into which said bush pin is inserted and which passes from said surface to the side opposite to the cavity; and

inserting an insertion body into said bush fitting hole from a side opposite said surface, for regulating the depth of penetration of said bush pin into said bush fitting hole,

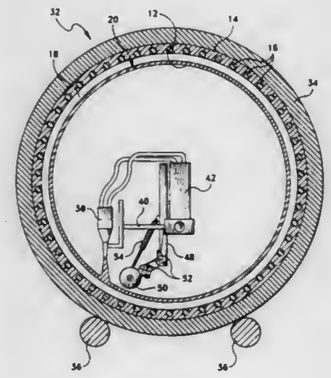
wherein changing said specific information between molding operations is conducted by one of replacing said bush pin and altering its attachment position by manipulating said fixing member.

5,609,811

METHOD FOR MANUFACTURING AN ENDLESS REINFORCED ELASTOMERIC PRESS BELT

Olli A. Jermo, Tampere, Finland, assignor to Tamfelt Corp., Tampere, Finland

Division of Ser. No. 231,375, Apr. 22, 1994, Pat. No. 5,525,194.
This application May 12, 1995, Ser. No. 439,859
Int. Cl.[6] B29C *9/00;29/00*
U.S. Cl. 264—255 3 Claims



1. A method of forming an endless loop press belt for use in an extended nip press including a press shoe and a press roller, said method comprising the steps of:

positioning a first layer of reinforcing yarns inside a casting cylinder having an inside diameter equal to a desired outside diameter of said press belt, said first layer of reinforcing yarns extending in a crosswise direction parallel to a turning axis of said press roller;

casting a first layer of elastomeric material over said first layer of crosswise reinforcing yarns;

positioning a second layer of reinforcing yarns on top of said first layer of elastomeric material while said first layer of elastomeric material is wet, said second layer of reinforcing yarns extending in a lengthwise direction perpendicular to said turning axis of said press roller;

casting a second layer of elastomeric material over said second layer of lengthwise reinforcing yarns; and

allowing said first and second layers of elastomeric material to cure simultaneously to form an integral elastomeric entity which encases both said crosswise and said lengthwise reinforcing yarns of said endless loop press belt.

5,609,812

METHOD OF MAKING A THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY

Craig M. Childers, and Charles W. Hull, both of Santa Clarita, Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 906,207, Jun. 25, 1992, Pat. No. 5,256,340, which is a continuation of Ser. No. 702,031, May 17, 1991, Pat. No. 5,182,055, which is a continuation-in-part of Ser. No. 516,145, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,435, Oct. 30, 1989, Pat. No. 5,130,064, which is a continuation-in-part of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359, said Ser. No. 429,435is a continuation-in-part of Ser. No. 339,246, Apr. 17, 1989, Pat. No. 5,104,592, which is a continuation-in-part of Ser. No. 182,823, Apr. 18, 1988, abandoned. This application Sep. 14, 1993, Ser. No. 121,846
Int. Cl.[6] B29C *35/08;41/02*
U.S. Cl. 264—401 13 Claims

1. In a stereolithographic method for constructing an object from a medium solidifiable upon exposure to synergistic stimulation, comprising the successive formation of layers of the medium applied to previously formed layers of the medium, each layer of the medium having a desired thickness, and selectively exposing the layers to a beam of synergistic stimulation in a pattern corresponding to cross-sections of the three-dimensional object, to build up the three-dimensional object layer by layer, the pattern including paths of exposure defined by vectors, the improvement comprising the steps of:

identifying an endpoint of a first vector and a beginning point of a second vector;

scanning the synergistic stimulation along the first vector at a substantially fixed velocity;

shuttering the synergistic stimulation when it reaches the endpoint of the first vector without significantly varying the substantially fixed velocity;

directing the synergistic stimulation, while it is shuttered, in a pattern to the beginning point of the second vector so that the proper velocity for exposing the second vector is achieved when the beginning point of the second vector is reached

unshuttering the synergistic stimulation when it reaches the beginning point of the second vector; and

scanning the synergistic stimulation along the second vector at a substantially constant velocity.

5,609,813

METHOD OF MAKING A THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY

Joseph W. Allison, Valencia; Dennis R. Smalley, Baldwin Park; Charles W. Hull, Santa Clarita, and Paul F. Jacobs, La Crescenta, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 121,846, Sep. 14, 1993, which is a continuation of Ser. No. 906,207, Jun. 25, 1992, Pat. No. 5,256,340, which is a continuation of Ser. No. 702,031, May 17, 1991, Pat. No. 5,182,055, which is a continuation-in-part of Ser. No. 516,145, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,435, Oct. 30, 1989, Pat. No. 5,130,064, which is a continuation-in-part of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359, said Ser. No. 429,435is a continuation-in-part of Ser. No. 339,246, Apr. 17, 1989, Pat. No. 5,104,592, which is a continuation-in-part of Ser. No. 182,823, Apr. 18, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 475,714

Int. Cl.[6] B29C *35/08;41/02*

U.S. Cl. 264—401 **30 Claims**

1. A method of forming at least a portion of a three-dimensional object on a stacked layer-by-layer basis using stereolithography comprising:

a) applying a layer of flowable material capable of solidification upon exposure to synergistic stimulation;

b) generating and sequencing a pattern of exposure paths, in a prescribed order and direction, for said layer corresponding to a cross section of said object;

c) exposing said exposure paths to synergistic stimulation according to said sequencing of said exposure paths to form a layer of said three-dimensional object; and

d) repeating steps b) and c) for subsequent layers until said three-dimensional object is formed, wherein the step of sequencing the exposure of said exposure paths is altered with a different sequence of exposure on at least one subsequent layer.

5,609,814

OPTICAL MOLDING PROCESS

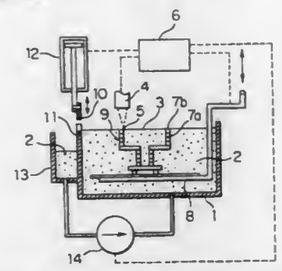
Yoichi Takano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 215,375, Mar. 21, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 560,152

Claims priority, application Japan, Mar. 22, 1993, 5-061583

Int. Cl.[6] B29C *35/08;41/02*

U.S. Cl. 264—401 **7 Claims**



1. An optical molding process for obtaining a three-dimensional resin model comprising the steps of:

providing a photocurable resin liquid tank having a supply of photocurable resin liquid therein and an elevator in the photocurable resin liquid tank;

scanning a surface of the photocurable resin liquid accommodated in the photocurable resin liquid tank with a light beam to cure a first three-dimensional layer of the photocurable resin liquid between the surface of the photocurable resin liquid and the elevator;

arranging an overflow tank in flow communication with said photocurable resin liquid tank;

blocking temporarily an overflow of the photocurable resin liquid from the photocurable resin liquid tank to said overflow tank;

making the elevator descend;

releasing blocking of the overflow of the photocurable resin liquid from the photocurable resin liquid tank to said overflow tank; and

molding a next three-dimensional constant-height section layer on said first three-dimensional layer after releasing said blocking of the overflow.

5,609,815

PROCESS FOR FAST MANUFACTURING OF CARBONACEOUS PRODUCTS

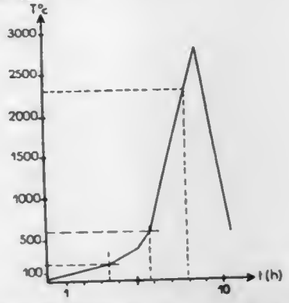
Jean-Michel Bauer, Pagny sur Moselle, France, assignor to Le Carbone Lorraine, Courbevoie, France

Continuation of Ser. No. 198,783, Feb. 18, 1994, abandoned. This application May 8, 1995, Ser. No. 436,641

Claims priority, application France, Feb. 23, 1993, 93 02346

Int. Cl.[6] B29C *35/12*

U.S. Cl. 264—414 **16 Claims**



1. In a process for manufacturing carbonaceous parts comprising heat shaping a mixture of carbonaceous powder and bonding agent to form raw parts, cooling said raw parts to ambient temperature at a known rate, and firing said cooled raw parts in a furnace from ambient temperature to a final firing temperature of at least 600° C. to release volatile products from said bonding agent, the improvement comprising:

a) placing said cooled raw parts containing about 20 to 50% by weight bonding agent in an electric furnace in the absence of heating filler;

b) heating said raw parts in said electric furnace to an intermediate temperature of about 200° C. at a fixed initial heating rate, the intermediate temperature being selected such that loss of volatile products is less than 10% by weight of total volatile products contained in the raw parts, and said initial heating rate being selected at a rate of less than 100° C./hr, and being inversely dependent on said known rate of cooling such that parts cooled slowly to ambient temperature under an atmosphere at ambient temperature are heated at a rate of 50°–100° C./hr, and parts rapidly cooled in water at ambient temperature are heated at a rate of less than about 5° C./hr, said heating rate thereby freeing internal strain of said cooled parts from said shaping and cooling; and

c) heating said raw parts in said electric furnace in the absence of filler from said intermediate temperature to a temperature greater than about 600° C. at a rate greater than said initial heating rate and selected to remove about 5 to 65 wt %/hr of volatile products contained within said parts, said heating to a temperature greater than about 600° C. removing at least about 80% by weight of said volatile products,

said heating steps taking place under a flow of non-oxidizing gas through said electric furnace to remove said volatile products from said parts, said gas flow compensating for the loss of the volatile products, and removing the volatile products from the furnace.

5,609,816

PROCESS AND DEVICE FOR PREPARING A MOLDING

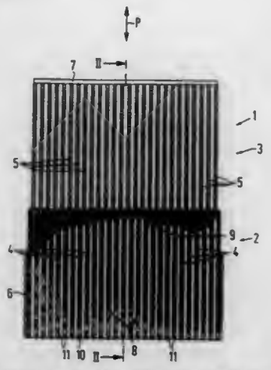
Wulf Thoma, Lisberg, and Ekkehard Labitzke, Hilden, both of Germany, assignors to Schaeffler Teppichboden GmbH, Bamberg, Germany

Filed Apr. 29, 1996, Ser. No. 639,778

Claims priority, application Germany, Jun. 9, 1995, 195 21127.8

Int. Cl.[6] B29C *35/02*

U.S. Cl. 264—517 **11 Claims**



1. A process for preparing a molding from a fibrous material and a thermoplastic binder, the process comprising the steps of:

forming a filling contour calculated for the given molding to be produced by a first mold disk set;

filling the material into a mold cavity defined by said filling contour from an open filling side of said first disk set;

placing an upper finished contour mold at said open filling side;

providing a second mold disk set with disks displaceable between said disks of said first mold disk set to form a second finished contour of said molding; and

subsequently displacing said first mold disk set against the first finished contour mold to compact the material present in the filling contour and subsequently bonding the material by applying heat.

8. A device for preparing a molding from fibrous material and a thermoplastic binder, comprising:

a mold formed of a first set of mold disks and a second set of mold disks, mold disks of said first set of mold disks being arranged between corresponding mold disks of said second set of mold disks whereby said second set of mold disks is displaceable in relation to said first set of mold disks, said first set of mold disks defining a filling contour for filling in said material, said second set of mold disks forming one finished contour of a resulting molding.

5,609,817

EXTRUSION-BLOWN FILMS FROM GRAFT POLYMERS PREPARED FROM CEREAL FLOUR

Damodar R. Patil, Waseca, Minn., and George F. Fanta, Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 6, 1995, Ser. No. 468,489

Int. Cl.[6] B29C *55/28*

U.S. Cl. 264—564 **10 Claims**

1. A moisture-shrinkable, film-forming composition comprising: (1) a graft copolymer of a cereal flour and a synthetic monomer, wherein said monomer is characterized as yielding upon polymerization a polymer having a glass transition temperature of less than about 35° C., and wherein said flour has not been modified to improve the water solubility of its starch component; and (2) an effective amount of a plasticizer capable of promoting uniform, continuous flow of said graft copolymer through an extruder.

7. A method of preparing a moisture-shrinkable film comprising the steps of:

a. blending at a temperature in the range of about 20° to about 40° C., a composition comprising: (1) a graft copolymer of a cereal flour and a synthetic monomer, wherein said monomer is characterized as yielding upon polymerization a polymer having a glass transition temperature of less than about 35° C., and wherein said flour has not been modified to improve the water solubility of its starch component; and (2) an effective amount of a plasticizer capable of promoting uniform, continuous flow of said graft copolymer through an extruder;

b. forming said blended composition into a film;

c. stretching the film into a stretched state; and

d. rendering the film dimensionally stable in the stretched state.

5,609,818

STEEL EXCELLENT IN CORROSION RESISTANCE AND PROCESSABILITY

Kenji Kato, and Akihiro Miyasaka, both of Aichi-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP93/01790, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/13848, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 9, 1993, Ser. No. 448,592

Claims priority, application Japan, Dec. 11, 1992, 4-331652; Dec. 11, 1992, 4-331653; Dec. 11, 1992, 4-331654

Int. Cl.[6] C22C *38/06*

U.S. Cl. 420—62 **8 Claims**

1. A steel excellent in corrosion resistance and processability which, in weight percent,

consists

of not less than 0.01% and less than 1.2% of Si,

0.1–1.5% of Mn,

5.5–9.9% of Cr and

1.0–3.0% of Al,

has reduced contents of

C of not more than 0.02%,

P of not more than 0.03%,

S of not more than 0.01% and

N of not more than 0.02%,

further consists of

one or more elements selected from among Nb, V, Ti, Zr, Ta and Hf in a total amount of 0.01–0.5%, and

satisfies the relationship

$$(Nb/93)+(V/51)+(Ti/48)+(Zr/91)+(Ta/181)+(Hf/179)-0.8\times[(C/12)+(N/14)]\geqq 0,$$

the remainder being Fe and unavoidable impurities.

5,609,819

METHOD OF STERILIZING SEALED VIAL AND APPARATUS FOR SEALING THE VIAL

Katsumi Shimizu, and Washiro Honda, both of Honjo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

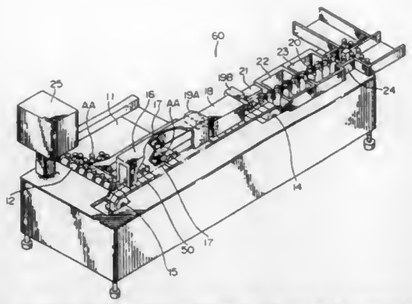
Filed Jul. 7, 1995, Ser. No. 499,658

Claims priority, application Japan, Jul. 12, 1994, 6-160013

Int. Cl.[6] A61L *2/12;2/24;* **B65B** *55/02;55/14*

U.S. Cl. 422—3 **18 Claims**

1. A method for sterilizing an interior of a sealed vessel and a liquid medicine contained therein, wherein the sealed vessel has a sealing plug with an inside surface disposed in an upper neck of the sealed vessel when in a vertical orientation, comprising:



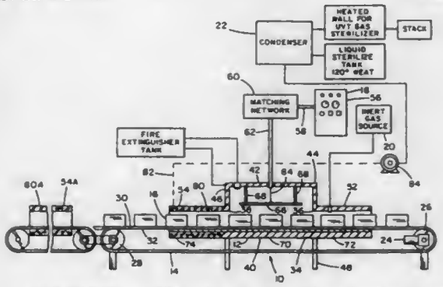
(1) moving the sealed vessel from the vertical orientation to a slanted orientation sufficiently that the liquid medicine touches the inside surface of the sealing plug;
(2) rotating the sealed vessel while in the slanted orientation; and
(3) heating the sealed vessel and liquid medicine therein while the sealed vessel is being rotated in said slanted orientation to a predetermined temperature sufficiently to sterilize the interior of the sealed vessel, the liquid medicine and the inside surface of the plug.

5,609,820

APPARATUS FOR RENDERING MEDICAL MATERIALS SAFE

Jack E. Bridges, 1937 Fenton La., Park Ridge, Ill. 60068; Guggilam C. Sresty, 8241 S. Mason, Burbank, Ill. 60459; Jeffrey S. Held, 900 N. Lake Shore Dr., Chicago, Ill. 60611; James W. Sharp, 621 S. Bristol La., Arlington Heights, Ill. 60005, and Thomas J. Bajzek, 164 N. Walnut, Woodale, Ill. 60191

Division of Ser. No. 290,002, Aug. 12, 1994, Pat. No. 5,543,111, which is a continuation of Ser. No. 193,724, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 77,046, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 549,576, Jul. 6, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 480,879
Int. Cl.[6] A61L *2/14*
U.S. Cl. 422—23 **1 Claim**



1. An apparatus for rendering infectious medical material harmless, comprising:
a radio-frequency treatment unit for accepting medical material to be treated:
means for transporting infectious medical material in closed bulk containers through the radio-frequency treatment unit;
means for energizing the radio-frequency treatment unit with the time-varying electric field having a frequency below the frequency of microwave; and
means for injecting inert gas into the radio-frequency unit thereby to sweep oxygen therefrom to avoid oxidizing heated medical material and to cause a flow of gas from a relatively cool portion of the radio-frequency treatment unit to a relatively warm portion and thereby to prevent any vapor which might have escaped from the medical material from condensing on cooler medical material entering the radio-frequency treatment unit.

5,609,821

PROCESS FOR THE TREATMENT OF AN ARTICLE AND A NEW AQUEOUS HYDROGEN PEROXIDE SOLUTION

Aurélie Grimberg, Rostock, Germany; Gérard DeClerck, Saint-Gratien, France; Jean-Marc Rabillier, Guyancourt, France, and Raymond Soumarmon, Noisy Le Sec, France, assignors to Chemoxal S.A., Paris, France

Filed Jul. 22, 1994, Ser. No. 279,209
Claims priority, application France, Jul. 22, 1993, 93 09061
Int. Cl.[6] A61L *2/18;* **C01B** *15/037*
U.S. Cl. 422—28 **21 Claims**

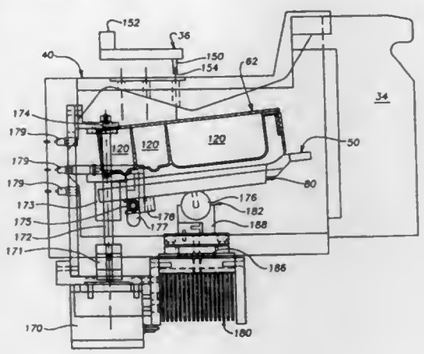
1. A process for disinfecting or sterilizing an article, using a spraying system, comprising spraying on at least one surface of said article a stabilized aqueous hydrogen peroxide solution which comprises a disinfecting or sterilizing amount of hydrogen peroxide and an organic phosphonic acid in an amount effective to stabilize said hydrogen peroxide solution, said hydrogen peroxide solution being free of other stabilizing agents; wherein after more then a week of use, no blockage of the spraying system is observed.

5,609,822

REAGENT HANDLING SYSTEM AND REAGENT PACK FOR USE THEREIN

Glen A. Carey, Grafton, and David P. Weber, Strongsville, both of Ohio, assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jul. 7, 1995, Ser. No. 499,271
Int. Cl.[6] G01N *37/00*
U.S. Cl. 422—63 **7 Claims**



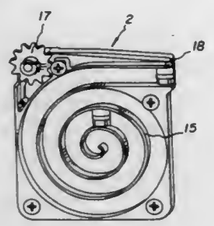
1. A reagent handling system comprising:
plural reagent packs, each reagent pack comprising
plural chambers formed by opposing and parallel end walls, opposing and parallel side walls substantially orthogonal to said end walls, a floor surface attached to said end and side walls at a lower edge thereof, and at least one intermediate wall substantially parallel to said end walls and disposed between said side walls, wherein said end, side and intermediate walls define a pack upper edge, and
a pair of mixing baffles,
each of said baffles disposed on a respective one of said side walls from said floor surface to said pack upper edge, extending toward an opposite one of said side walls, disposed on a like side of said at least one intermediate wall, and dividing one of said plural chambers into two sub-chambers having substantially equal volume interconnected by a throat region formed between said baffles,
one of said baffles more proximate said first end than another of said baffles, and
a lid having plural penetrable regions formed from at least one film, said lid disposable on said pack upper edge for completely covering said plural chambers, wherein each of said plural penetrable regions is aligned above a respective one of said plural chambers;
a plurality of reagent pack slides, each of said slides for slidably transporting a respective reagent pack disposed thereon within said reagent handling system;
a tray for slidably retaining said plurality of reagent pack slides in a side by side configuration along a first axis; and
an inclination drive and hinge mechanically connected to said tray for selectably inclining said tray about said first axis and said hinge.

5,609,823

SYSTEM FOR THE ANALYSIS OF SAMPLE LIQUIDS

Herbert Harttig, Altrip; Susanne Gentsch, Jever; Elmar Schmidt, Mannheim, and Rudolf Schuessler, Lampertheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jul. 29, 1994, Ser. No. 282,149
Claims priority, application Germany, Aug. 5, 1993, 43 26 339.9
Int. Cl.[6] G01N *33/52;35/10;* **B65D** *69/00*
U.S. Cl. 422—66 **9 Claims**



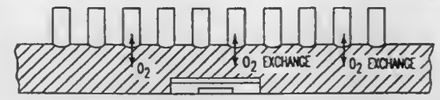
1. A system for analysis of sample liquids, said system comprising:
a) a measuring instrument including a radiation source, a radiation receiver and a display means for displaying an analytical result from radiation measured by the radiation receiver, and
b) a storage container having a guide mechanism thereupon, said storage container being insertable into the measuring instrument, said storage container holding a plurality of test elements attached to a tape in a spiral arrangement, with each of the test elements comprising a test zone, with each of said test zones being individually sealed by said tape,
wherein said measuring instrument is configured to individually perform an analysis on each of said plurality of test elements after said test element has been removed from said tape by passing said tape over said guide mechanism thereby changing a direction of movement of the tape by the guide mechanism.

5,609,824

METHODS AND APPARATUS FOR RAPID EQUILIBRATION OF DISSOLVED GAS COMPOSITION

Imants R. Lauks, Rockcliffe Park; Raymond J. Pierce, Ottawa, both of Canada; Joseph W. Rogers, Doylestown, Pa., and Michael P. Zelin, Brooklyn, N.Y., assignors to I-Stat Corporation, Princeton, N.J.

Filed Jul. 13, 1994, Ser. No. 274,387
Int. Cl.[6] G01N *7/00*
U.S. Cl. 422—83 **15 Claims**



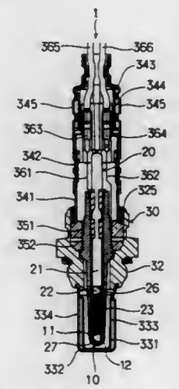
1. An apparatus for the rapid equilibration of the dissolved gas composition of an aqueous calibrant fluid comprising:
(a) a housing, including a calibrant fluid region which holds an aqueous calibrant fluid apart from a gas equilibration reservoir wherein said aqueous calibrant fluid has dissolved gases;
(b) at least one conduit within said housing joined to said calibrant fluid region, which conduit can be charged with said aqueous calibrant fluid held in said calibrant fluid region; and
(c) said gas equilibration reservoir positioned in said conduit wherein said reservoir contains a predetermined composition of calibrant gases such that when said aqueous calibrant fluid is charged into said conduit and brought in contact with said reservoir said calibrant fluid undergoes an exchange of said aqueous calibrant fluid's dissolved gases with calibrant gases contained in said reservoir to provide an aqueous calibrant fluid with an equilibrated dissolved gas composition that reflects substantially the predetermined composition of calibrant gases contained in said reservoir.

5,609,825

OXYGEN SENSOR

Tomoji Fukaya, Kariya, and Naoto Miwa, Tsushima, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 6, 1995, Ser. No. 468,761
Claims priority, application Japan, Jun. 7, 1994, 6-150373
Int. Cl.[6] G01N *27/26*
U.S. Cl. 422—90 **6 Claims**



1. An oxygen sensor comprising:
an oxygen detecting element having a cylindrical shape with a closed end and made of solid electrolyte;
a housing holding said oxygen detecting element;
a first insulator disposed within said oxygen detecting element and having an inner space therein;
a second insulator having a diameter smaller than that of said first insulator, said second insulator having therein an inner space, said second insulator including an opening through

which said inner space of said second insulator communicates with said inner space of said first insulator;

a pair of lead wires inserted through said inner spaces of said first insulator and said second insulator; and

a heating wire wound around said second insulator, wherein, said heating wire extends through said opening and is connected to said pair of lead wires.

5,609,826

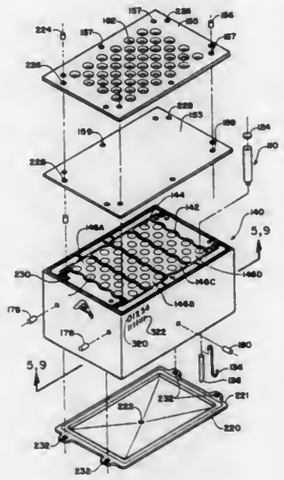
METHODS AND APPARATUS FOR THE GENERATION OF CHEMICAL LIBRARIES

John Cargill, San Diego, and Romaine R. Maiefski, Oceanside, both of Calif., assignors to Ontogen Corporation, Carlsbad, Calif.

Filed Apr. 17, 1995, Ser. No. 422,869

Int. Cl.[6] B01L *11/00*

U.S. Cl. 422—99 **76 Claims**



1. A reaction block comprising:

a plurality of reaction chambers;

a first side wall and a second side wall, the first and second side walls having a first width and a first height;

a first end wall and a second end wall, the first and second end walls having a second width narrower than the first width, and the first height;

a first top surface bordered by the first and second side walls and the first and second end walls, the first top surface having:

a plurality of generally circular openings for removably receiving the reaction chambers, the reaction chambers each having a circular opening and a second top surface;

a gas port; and

a plurality of raised beads defining the edges of a plurality of chambers;

the raised beads having a third top surface which is in approximately the same plane as the second top surface of the reaction chambers;

a flexible septum which seals against the second and third respective top surfaces of the reaction chambers and the raised beads; and

a retainer plate which covers the septum.

5,609,827

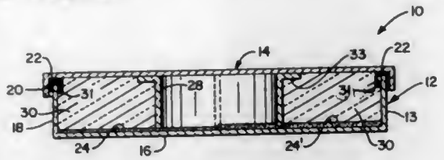
BIOPSY SPECIMEN CONTAINER

Donald G. Russell, Kensington, and Rosemary S. Maxim, Farmington, both of Conn., assignors to Beekley Corporation, Bristol, Conn.

Filed May 2, 1995, Ser. No. 431,675

Int. Cl.[6] B01L *3/00;* **A61B** *5/00;* **H05G** *1/28*

U.S. Cl. 422—102 **17 Claims**



1. A biopsy specimen container comprising:

a container body having a bottom with an inside bottom support surface;

a container cover adapted to be installed on the container body to form with the container body an internal, flat and shallow containment chamber;

a bottom support sheet of absorbent material on the bottom support surface;

a divider within the internal chamber having a plurality of upstanding wall portions dividing the internal chamber between the bottom sheet and cover into a plurality of separate compartments for a plurality of biopsy specimens to be deposited on the bottom support sheet;

and compartment identifying means for identifying the compartments in a radiograph of the container.

5,609,828

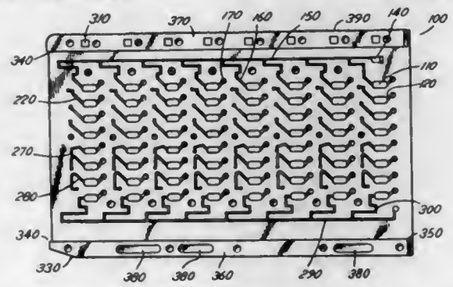
SAMPLE CARD

Raymond E. O'Bear, Granite City, Ill.; Bruno Colin, Marcy L'Etoile, France; G. R. Tegeler, Hazelwood, and John L. Staples, Florissant, both of Mo., assignors to bio Mérieux Vitek, Inc., Hazelwood, Mo.

Filed May 31, 1995, Ser. No. 455,534

Int. Cl.[6] C12M *1/18*

U.S. Cl. 422—102 **16 Claims**



1. An improved sample card, comprising:

a substantially flat card body with a first surface and a second surface opposite to said first surface;

an intake port formed in said card body;

a plurality of sample wells formed in said card body; and

a first fluid flow distribution channel, operatively connected to said intake port and traversing a portion of the first surface to distribute a fluid sample from said intake port to a first group of said sample wells and a second fluid flow distribution channel, operatively connected to said intake port traversing said second opposite surface to distribute a fluid sample from said intake port to a second group of said wells, said first and second fluid flow distribution channels thereby supplying fluid samples to said first and second groups of sample wells, whereby the separation distance between said wells may be increased.

5,609,829

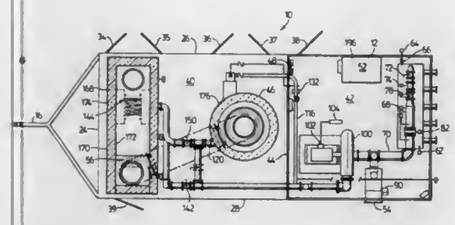
CATALYTIC/THERMAL CONVERTOR UNIT

Walter P. Lucas, Bolton, and Raymond Hsu, Richmond Hill, both of Canada, assignors to Comenco Systems Inc., Mississauga, Canada

Division of Ser. No. 54,453, Apr. 27, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 325,581

Int. Cl.[6] G05D *7/00;* **F23D** *14/00;* **F23G** *7/06*

U.S. Cl. 422—110 **13 Claims**



1. An oxidation apparatus for cleansing air contaminated by volatile organic compounds (VOC) in an exothermic reaction, said apparatus comprising:

piping means connectible to a source of VOC contaminated air;

means for oxidizing said volatile organic compounds with an exothermic reaction in order to remove same from said VOC contaminated air, said oxidizing means having an inlet connected to said piping means and an outlet for exhaust air, said oxidizing means including first oxidizing means comprising a combustion chamber, a burner mounted to said combustion chamber, and means for controlling the temperature in said combustion chamber during a thermal mode of operation and during a catalytic mode of operation, and further including a second oxidizing means comprising a separate catalytic oxidizer located outside of and away from said combustion chamber, having an outlet to atmosphere for exhaust and being used for said catalytic mode of operation, an inlet of said catalytic oxidizer being connected by means of an elongate pipe to an outlet of said combustion chamber, which is also used to heat the VOC contaminated air before this air is conducted to said catalytic oxidizer during the catalytic mode of operation, said temperature controlling means causing said burner to heat said combustion chamber to a first temperature for said catalytic mode of operation and to a second, different temperature for said thermal mode of operation, said second temperature being substantially more than said first temperature;

a fresh air conduit connected to said piping means at a pipe joint located along said piping means;

means for introducing a selected amount of fresh air into said piping means through said conduit so that the fresh air is mixed with said VOC contaminated air flowing through said piping means, said introducing means including an airflow control damper and a motor for operating said damper;

first means for measuring the low explosive limit (LEL) of the VOC contaminated air flowing through said piping means and producing a first electrical signal indicative thereof, said first measuring means being connected to said piping means between said source of VOC contaminated air and said pipe joint;

second means for measuring the LEL of the VOC contaminated air connected to said piping means between said pipe joint and said oxidizing means and producing a further electrical signal indicative thereof; and

electrical control means for controlling said fresh air introducing means on the basis of said first and further electrical signals, said control means being electrically connected to said first and second measuring means and said fresh air introducing means.

5,609,830

METHOD AND APPARATUS FOR THE STERILIZATION OF REFUSE, IN PARTICULAR HOSPITAL REFUSE

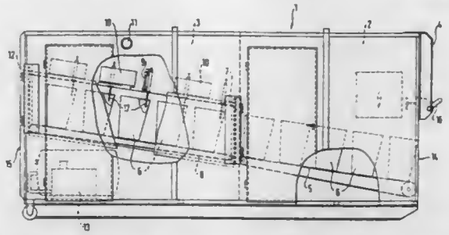
Willi Maihofer, Balingen/Weilstetten, Germany, assignor to Nordpunkt AG, Novaggio/Ti., Switzerland

Division of Ser. No. 37,513, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 555,003, Jul. 20, 1990, abandoned. This application Feb. 28, 1994, Ser. No. 202,600

Claims priority, application Germany, Jul. 26, 1990, 39 24 744.9

Int. Cl.[6] A61L *2/12;2/20*

U.S. Cl. 422—112 **28 Claims**



1. An apparatus for the sterilization of refuse, in particular hospital refuse, which is contained inside of a refuse container which is hermetically sealable by a cover and pierceable by an injection needle to inject water or a disinfectant into said refuse container to be evaporated, said apparatus comprises an injection means including at least one of said injection needles to be injected into said container and a device for moving said at least one of said injection means toward said refuse container for piercing the refuse container, wherein

a pressure measuring means is connected with said at least one injection needles and can be brought into contact with the interior of said refuse container,

a temperature measuring means which can be brought into contact with the interior of said container by means of said at least one injection needles.

5,609,831

MACHINE FOR PRODUCING A CROSS-LINKED EXTRUDED PRODUCT

Werner Kempter, St. Margrethen, Switzerland, assignor to Bernhard Rustige GmbH & Co. Kommanditgesellschaft, Bremen, Germany

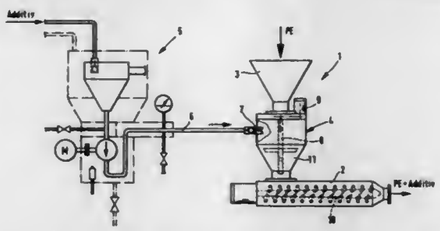
PCT No. PCT/CH93/00204, § 371 Date Jun. 28, 1994, § 102(e) Date Jun. 28, 1994, PCT Pub. No. WO94/04339, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 17, 1993, Ser. No. 211,915

Claims priority, application Germany, Aug. 20, 1992, 42 27 542.3

Int. Cl.[6] C08F *2/00;* **B01F** *5/04;* **B29C** *47/38;9/206*

U.S. Cl. 422—135 **15 Claims**



1. A machine for producing extruded products of polymers that are cross-linked by adding at least one additive to plastic granules in a polymerization reaction, said machine comprising:

a vertically disposed mixing container with a vertical central axis and having an upper end and a lower end;

a rotatably mounted cylinder arranged vertically at said upper end and having a central vertical bore defining an inlet to said mixing container for the plastic granules at said upper end;

a feed hopper for introducing the plastic granules into said container at said upper end;

feeding means in the side of said mixing container for feeding additives transverse to said central axis into said container, said feeding means comprising a pressurized source of additives, an injection nozzle connected to said source and including a pressure responsive check valve that opens or closes said injection nozzle as a function of ale pressure of the additive fed to said injection nozzle;

an extruder coupled to said lower end of said container: and

mixing means including a vertical stirring rod connected to said cylinder by radial webs, said mixing means in said container between said extruder and the combined plastic granules and additive.

5,609,832

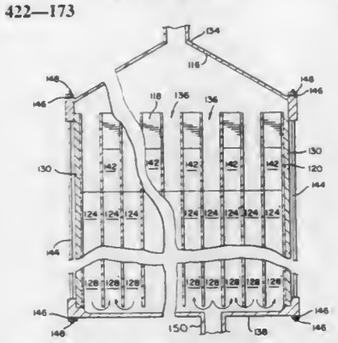
EMISSIONS CONTROL SYSTEM AND METHOD

Rodney L. Mieville, Glen Ellyn; Ronald A. Dictor, Naperville; Eugene H. Hirschberg, Park Forest; Lawrence C. Robinson, Joliet; Don M. Washecheck, and Terrence A. Renner, both of Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 205,320, Mar. 3, 1994, abandoned, which is a continuation of Ser. No. 869,028, Apr. 15, 1992, Pat. No. 5,303,547. This application Sep. 5, 1995, Ser. No. 523,634

Int. Cl.[6] F01N *3/10*

U.S. Cl. 422—173 **13 Claims**



1. A catalytically-active heat exchanger emissions control system for treating exhaust gas containing hydrocarbons, carbon monoxide, nitrogen oxide from an internal combustion engine, which comprises:

a catalytically-active heat exchanger including a plurality of first heat exchange channels defining a first catalytically-active zone which contains a first catalyst and is suitable for receiving an exhaust gas containing hydrocarbons, carbon monoxide, nitrogen oxide from an internal combustion engine, and including a plurality of second heat exchange channels defining a second catalytically-active zone which contains a second catalyst having a minimum effective operating temperature for catalyzing the oxidation of hydrocarbons and is disposed in flow communication with and downstream of the first heat exchange channels, the heat exchanger being arranged to transfer heat from the first channels to the second channels in a manner which promotes heating of the second catalyst to the minimum operating temperature during the time period from after a cold-start of the engine to before the second catalyst is heated to the minimum effective operating temperature; and

an adsorbent channel defining a hydrocarbon-adsorbing zone disposed in flow communication with and downstream of the first catalytically-active zone, and disposed in flow communication with and upstream of the second catalytically-active zone.

5,609,833

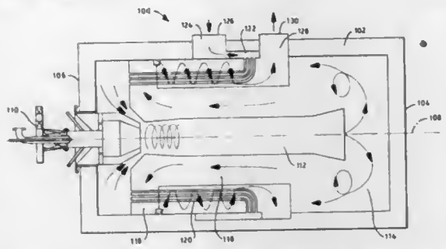
PROCESS AND APPARATUS FOR BURNING OXYGENIC CONSTITUENTS IN PROCESS GAS

Andreas Rühl, De Pere, Wis.; Gert Rentzel, Gelnhausen, Germany; Patrick McGehee, Green Bay, Wis.; Serguei Charamko, Potts Point, Australia, and Kim Anderson, Green Bay, Wis., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 356,600, Dec. 15, 1994. This application Sep. 22, 1995, Ser. No. 532,210

Int. Cl.[6] F01N *3/10*

U.S. Cl. 422—173 **7 Claims**



1. Process for burning in a main combustion enclosure the combustible constituents of a process gas, said main combustion enclosure being separated from but in communication with a burner combustion chamber into which oxygenic gas and fuel are fed, mixed and burnt, said process comprising: feeding said oxygenic gas into an inlet section in communication with said burner combustion chamber, causing said oxygenic gas to swirl prior to mixing it with said fuel, mixing said fuel and said swirling oxygenic gas; directing said mixture into said burner combustion chamber, burning said mixture in said burner combustion chamber, and causing said burnt mixture to exit said burner combustion chamber and to oxidize the combustible constituents in the process gas flowing outside said burner combustion chamber by yielding flameless heat energy to said process gas flowing outside said burner combustion chamber.

5,609,834

PLATE REFORMER

Kouki Hamada, Yokohama; Minoru Mizusawa, Matsudo, and Minoru Koga, Kawasaki, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,207

Claims priority, application Japan, Jul. 5, 1994, 6-174877

Int. Cl.[6] B01J *8/04; C10J 3/00; H01M 8/04*

U.S. Cl. 422—196 **9 Claims**

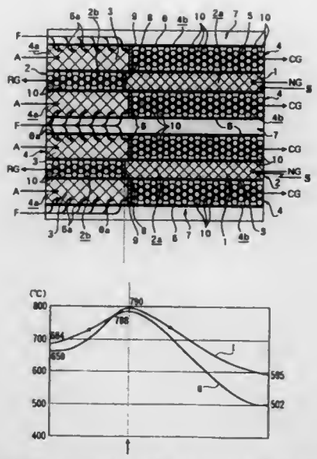
1. A plate reformer having a pair of combustion chambers, a reforming chamber in between the combustion chambers, and heat transfer plates sandwiched between the reforming chamber and the combustion chambers comprising:

an inlet end and an outlet end of the reforming chamber, the inlet end for introduction of reforming material gas and the outlet end for emission of reformed gas;

an inlet end and an outlet end of each combustion chamber, the inlet end for introduction of air and fuel and the outlet end for emission of combusted gas;

a gas permeable partition wall provided in the reforming chamber for partitioning the reforming chamber into a reforming reaction section having the inlet end of the reforming chamber and a heat exchange section having the outlet end of the reforming chamber, the reforming reaction section filled with reforming catalyst and the heat exchange section filled with heat transfer component; and

a gas permeable partition wall provided in each combustion chamber for partitioning it into a combustion reaction section having the inlet end of the combustion chamber and a heat exchange section having the outlet end of the combustion



chamber, the combustion reaction section filled with combustion catalyst and the heat exchange section filled with heat transfer component,

wherein the inlet end of each combustion chamber is aligned to the outlet end of the reforming chamber and the inlet end of the reforming chamber is aligned to the outlet end of each combustion chamber, and

the partition walls of the reforming chamber and the combustion chambers are provided such that they are approximately lined up and thus the reforming reaction section of the reforming chamber generally overlaps the heat exchange section of each combustion chamber, while the combustion reaction section of each combustion chamber generally overlaps the heat exchange section of the reaction chamber.

5,609,835

MULTI-PURPOSE APPARATUS

Maurice Pitcher, Stoke-On-Trent, United Kingdom, assignor to Powder Systems Limited, Liverpool, England

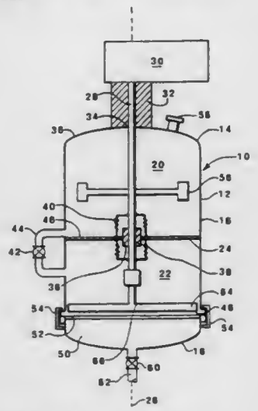
PCT No. PCT/GB93/01535, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO94/02241, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 21, 1993, Ser. No. 374,675

Claims priority, application United Kingdom, Jul. 22, 1992, 9215585

Int. Cl.[6] B01F *7/00;* **B28C** *5/00*

U.S. Cl. 422—225 **27 Claims**



1. A multi-purpose apparatus, comprising:

first and second units, wherein the first unit is a reaction vessel and the second unit is a filtration unit and/or a drying unit;

a mechanism enabling isolation and communication between the first and second units;

an elongate drive shaft which extends within both the first and second units, said drive shaft being capable of both longitudinal and rotational movement within the respective first and second units;

an agitator arm fitted to the drive shaft in the first unit; and

a smoothing and pressing arm fitted to the drive shaft in the second unit.

5,609,836

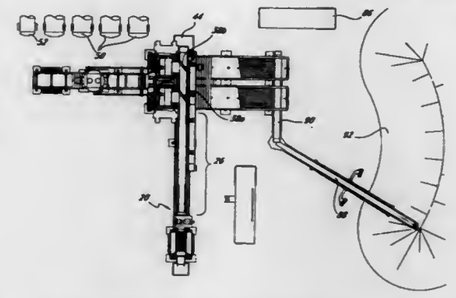
DCR TRANSPORTABLE TREATMENT UNIT

Richard W. McManus, Woodland; Alfonso Lugo, South San Francisco, and Michael C. Ellinger, San Rafael, all of Calif., assignors to Sound Environmental Services, Inc., Woodland, Calif.

Filed Nov. 9, 1994, Ser. No. 337,664

Int. Cl.[6] C02F *11/14*

U.S. Cl. 422—233 **20 Claims**



1. A unit for treating hydrocarbon contaminated soil and sludge waste material using exothermic stabilization processes, the unit comprising:

a weigh batch hopper divided into a first bin for holding waste material and a second bin for bolding reagent so that the waste material and reagent can be dispensed simultaneously or sequentially;

breaking means for receiving waste material and reducing solids in the waste material to a maximum dimension of four inches;

first conveying means for transferring the waste material from the breaking means to the first bin of the weigh batch hopper;

reagent storage tanks for storing reagent;

second conveying means for transferring the reagent from the reagent storage tanks to the second bin of the weigh batch hopper;

mixing means for receiving batches of the waste material and the reagent from the weigh batch hopper and for mixing water, the waste material and the reagent together;

a walking floor conveyor for receiving and transferring a mixture of the waste material and the reagent discharged from the mixing means without further mixing and holding the batches a sufficient time for a reaction between the reagent and the waste material to be completed; and

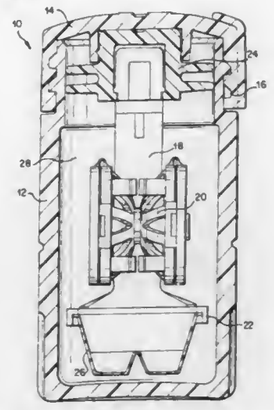
third conveying means for transferring the mixture received from the third conveying means to a stockpile for processed material.

5,609,837

DISINFECTION APPARATUS

David E. Cerny, 1451 Sandford Trail, Lilburn, Ga. 30247, and Christopher J. Brooks, 13 Meadow La., Glen Head, N.Y. 11545

Filed Aug. 16, 1995, Ser. No. 515,782
Int. Cl.[6] A61L 2/18; B65D 51/16;41/28
U.S. Cl. 422—301 **14 Claims**



1. A disinfection device, comprising:
(a) a container adapted to receive a disinfecting solution, said container having at least one end which includes a substantially circular periphery defining an opening which is adapted to receive a lens retaining means;
(b) a cap adapted to be releasably affixed to said container at said open end;
(c) an elongated member affixed to said cap, wherein said elongated member extends into said container when said cap is affixed to said container;
(d) means for retaining articles to be disinfected, said article-retaining means being affixed to said elongated member, whereby said article-retaining means extends into said container when said cap is affixed to said container;
(e) means for releasably sealing said container along the interior periphery of the substantially circular container, thereby providing a normally liquid-impermeable seal, wherein said sealing means is affixed to said elongated member interposed between said article-retaining means and said cap,
whereby said sealing means is at least partially deformable, such that internal gas generated within said container will vent to a point outside said container, when the internal pressure reaches a predetermined pressure in excess of the external pressure, by at least partially deforming a portion of said sealing means, thereby forming a passageway between a point inside said container to a point outside said container; and
(f) a catalytic element affixed to said elongated member, wherein said catalytic element is positioned inside said sealed container when said cap is affixed to said container.

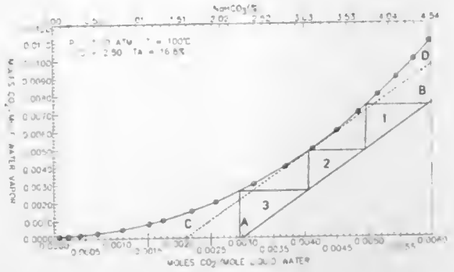
5,609,838

EQUILIBRIUM PRODUCTION OF SODIUM CARBONATE FROM SODIUM BICARBONATE

Thomas H. Neuman, Salt Lake City, Utah, and Richard W. Chastain, Lyman, Wyo., assignors to Tg Soda Ash, Inc., Granger, Wyo.

Filed Jun. 9, 1995, Ser. No. 489,103
Int. Cl.[6] C01D 7/37
U.S. Cl. 423—206.1 **55 Claims**

1. A method of reducing the bicarbonate content of an aqueous solution containing sodium bicarbonate comprising:
contacting an aqueous solution that contains sodium bicarbonate with steam that has a temperature of below 90° C. for a time



adequate for the steam to cause a sufficient amount of carbon dioxide to leave the aqueous solution to reduce the amount of bicarbonate ion in the solution by converting the bicarbonate to carbonate as the carbon dioxide leaves the solution.

5,609,839

NO_X REMOVAL CATALYST AND METHOD OF PURIFYING EXHAUST GAS BY USING THE SAME

Takashi Itoh; Yukio Kosaki; Takeshi Chonan; Takashi Matsuda; Yasuharu Kanno, all of Ichikawa; Masao Wakabayashi, Chiba, and Makoto Nakamura, Ichikawa, all of Japan, assignors to N.E. Chemcat Corporation, and Sumitomo Metal Mining Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 358,373, Dec. 19, 1994. This application Jun. 5, 1995, Ser. No. 463,889
Claims priority, application Japan, Dec. 17, 1993, 5-344302; Mar. 17, 1994, 6-046632; May 25, 1994, 6-135135
Int. Cl.[6] B01J 8/02
U.S. Cl. 423—213.2 **10 Claims**

1. A method of removing NO_x from exhaust gas containing reducing components and oxidizing components including NO_x from an internal combustion engine which is operated at a fuel lean air/fuel ratio, said oxidizing components being present in an amount more than the stoichiometric amount required for completely oxidizing said reducing components, which method comprises bringing said exhaust gas into contact with a NO_x removal catalyst, wherein the NO_x removal catalyst comprises an activated alumina wherein the specific surface area measured by the nitrogen adsorption method is 120 m^2/g or more, the bulk density measured by the mercury porosimetry is 0.60 g/cm^3 or more, and the skeleton density measured by the mercury porosimetry is 1.80 g/cm^3 or less and silver carried on said activated alumina under conditions effective for the removal of NO_x.

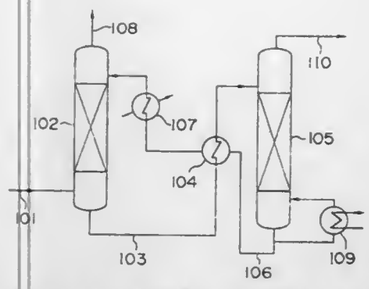
5,609,840

METHOD FOR THE REMOVAL OF HYDROGEN SULFIDE PRESENT IN GASES

Tomio Mimura; Shigeru Shimojo, both of Osaka; Masaki Iijima, Tokyo, and Shigeaki Mitsuoka, Hiroshima, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaki, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Mar. 15, 1995, Ser. No. 405,628
Claims priority, application Japan, Mar. 18, 1994, 6-048704; Mar. 18, 1994, 6-048705; Mar. 18, 1994, 6-048706
Int. Cl.[6] B01D 53/50
U.S. Cl. 423—228 **4 Claims**

1. A method for the removal of the H_2S from a gas which comprises bringing the gas into contact with an excess of an aqueous solution comprising a hindered amine selected from the group consisting of a tertiary amine which has two alkyl groups attached to a nitrogen, each alkyl group having 1 to 4 carbon atoms independently, and which has an alkanol group attached to the nitrogen atom having 2 to 6 carbon atoms, until the H_2S concentration in the treated gas is reduced to 10 ppm or less, wherein the



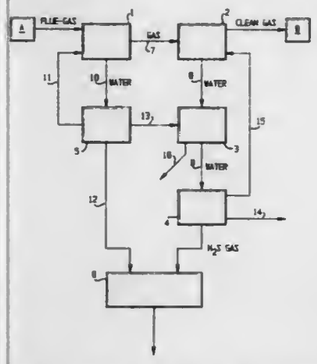
H_2S is present in an amount that will provide an amount of absorbed H_2S to moles of said amine of 0.0323 to 0.0531 until the H_2S breakthrough point and said solution consists of CO_2 absorbants which give a selective absorption capacity of 2.20 to 3.65 when the ratio of H_2S to CO_2 present in a starting gas is 1/50.

5,609,841

METHOD AND APPARATUS FOR TREATING A FLOW OF GAS CONTAINING OXIDIZED SULPHUR COMPOUNDS

Johannes Greefkes, Beverwijk, and Adrianus J. den Hartog, Oegstgeest, both of Netherlands, assignors to Hoogovens Staal, B.V., CA Ijmuiden, Netherlands

PCT No. PCT/EP93/03560, § 371 Date Oct. 19, 1995, § 102(e) Date Oct. 19, 1995, PCT Pub. No. WO94/13578, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 13, 1993, Ser. No. 454,310
Claims priority, application Netherlands, Dec. 17, 1992, 9202181
Int. Cl.[6] B01D 53/48;53/74
U.S. Cl. 423—243.01 **11 Claims**



1. A method of treating a flow of gas containing oxidized sulphur compounds to obtain one of sulphuric acid, condensed sulphur dioxide and elementary sulphur, comprising the steps of
(i) treating said flow of gas in a wet gas scrubber to obtain a flow of water containing at least 30% of the total oxidized sulphur compounds in said flow of gas, and a second gas flow containing the remainder of the total oxidized sulphur compounds in said flow of gas;
(ii) treating said flow of water in a degasifier to obtain gas containing sulphur dioxide in a concentration of at least 2.5% by volume;
(iii) contacting said second gas flow with water to absorb oxidized sulphur compounds in said second gas flow in water, and converting the oxidized sulphur compounds therein into hydrogen sulphide; and
(iv) supplying the sulfur dioxide containing gas of step (ii) and said hydrogen sulphide of step (iii) to a process which manufactures from them one of sulphuric acid, condensed sulphur dioxide and elementary sulphur.

5,609,842

ZEOLITIC DESULFURING AGENTS AND THEIR APPLICATION IN THE PROCESSING OF GASSES CONTAINING NOTABLE CO_2 PROPORTIONS

Albert M. Tsybulevski; Vladimir I. Mourine, both of Moscow, Russian Federation; Dominique Plec, Pau, and Francis Mayolet, Rambouillet, both of France, assignors to Vniigaz, Moscovskaia, Russian Federation

PCT No. PCT/FR94/00932, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO96/03199, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 26, 1994, Ser. No. 290,957
Int. Cl.[6] B01J 8/00
U.S. Cl. 423—244.11 **8 Claims**

1. Synthetic CaA zeolite-based adsorbent for the desulfurization of gases containing more than 1% CO_2, comprising
from 75 to 85% by weight of a type A zeolite whose microcrystal size is 1 to 2 μm and whose rate of exchange by Ca^{2+} ions is between 76 and 90%;
from 15 to 25% by weight of a clay containing less than 0.5% by weight of iron expressed as Fe_2O_3, whose acidity, expressed in ammonia adsorbable at 150° C., is less than 0.1 mmole/g and whose basicity, expressed in sulfur dioxide adsorbable at 150° C., is less than 0.15 mmole/g; and
secondary pores which occupy between 0.42 and 0.55 cm^3 per gram of the adsorbent.

5. A method for desulfurization of gases comprising loading the adsorbent of claim 1 as a bed in an adsorber, passing the gases to be purified into the adsorber such that the gases come into contact with the adsorbent, and collecting the desulfurized gases from the adsorber, wherein the gases to be desulfurized comprise:
C_1 20 to 99% by volume
C_2 0 to 20%
C_3 0 to 25%
C_4 0 to 5%
H_2 S0.0001 to 0.15%
CO_2 1 to 50% wherein C_1–C_4 are hydrocarbons of 1–4 carbon atoms.

5,609,843

MICROPOROUS CRYSTALLINE SILICO-ALUMINO-PHOSPHATE AND A PROCEDURE FOR MANUFACTURING IT

Rune Wendelbo, Oslo, Norway, assignor to Norsk Hydro a.s, Oslo, Norway

PCT No. PCT/NO94/00130, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO95/05342, PCT Pub. Date Feb. 23, 1995
PCT Filed Jul. 22, 1994, Ser. No. 591,657
Claims priority, application Norway, Aug. 17, 1993, 932915
Int. Cl.[6] C01B 25/36
U.S. Cl. 423—306 **12 Claims**

1. A microporous crystalline silico-alumino-phosphate, the theoretical composition of which, on a water-free basis after synthesis and calcination, is:

$$H_xSi_yAl_zP_2O_2$$

where x has a value between 0.005 and 0.1 and y and z are values between 0.4 and 0.6, characterised in that the product, after calcination in air at 550° C. for 4 hours, produces a characteristic X-ray diffractogram as shown in table 1

TABLE 1

2θ	d	100 × I/I$_o$
9.4–9.5	9.31–9.41	vs
10.5–10.6	8.35–8.43	w
12.8–12.9	6.86–6.92	w
13.4–13.5	6.56–6.61	w
16.0–16.1	5.51–5.54	w
16.8–16.9	5.25–5.28	m
17.1–17.2	5.16–5.19	m
19.0–19.1	4.65–4.67	w
19.6–19.7	4.51–4.53	w
19.9–20.0	4.44–4.46	w
20.6–20.7	4.29–4.31	m
21.3–21.4	4.15–4.17	m
21.7–21.8	4.08–4.10	w
21.9–22.0	4.04–4.06	w
22.3–22.5	3.95–3.99	w
23.8–23.9	3.72–3.74	w

vs = 90–100
m = 20–70
w = 5–19

5,609,844

CARBON ELECTRODE MATERIALS FOR ELECTROCHEMICAL CELLS AND METHOD OF MAKING SAME

Jinshan Zhang, Duluth, and Anaba A. Anani, Lawrenceville, both of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 534,427, Sep. 27, 1995. This application Feb. 12, 1996, Ser. No. 600,388

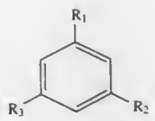
The portion of the term of this patent subsequent to Nov. 22, 2012, has been disclaimed.

Int. Cl.^{6} C01D *3/00*

U.S. Cl. 423—449.6 **15 Claims**

1. A method of fabricating an amorphous carbon material for use as an electrode in a rechargeable electrochemical cell, said method comprising the steps of:

providing a multi-functional organic monomer having the structure



wherein R_1, R_2, and R_3 are all selected from the group consisting of carboxylic acids of eight carbons or less, carboxylic esters of eight carbons or less, alcohols of eight carbons or less, carboxylic anhydrides of eight carbons or less, amines, and combinations thereof, and wherein at least one of R_1, R_2, and R_3 is different than the others;

mixing said multi-functional organic monomer with operative amounts of an acidic catalyst; and

subjecting said mixture to a solid state carbonization process in an inert environment.

5,609,845

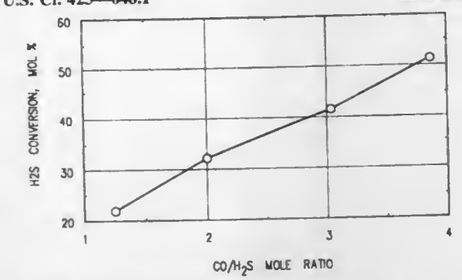
CATALYTIC PRODUCTION OF HYDROGEN FROM HYDROGEN SULFIDE AND CARBON MONOXIDE

Ronald J. Cimini, Sewell; David O. Marler, Deptford, both of N.J.; Stephen J. McCarthy, Glen Mills, Pa.; Harry A. McVeigh, Moorestown, N.J., and Gerald J. Teitman, Vienna, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 8, 1995, Ser. No. 385,529

Int. Cl.^{6} C01B *3/02;* **C01G** *1/04*

U.S. Cl. 423—648.1 **22 Claims**



1. A process for producing hydrogen from hydrogen sulfide and carbon monoxide comprising the steps of:

(a) directing a gas stream comprising hydrogen sulfide and carbon monoxide over a first catalyst at conditions effective to react the hydrogen sulfide with the carbon monoxide and to thereby produce hydrogen and carbonyl sulfide, said conditions comprising a temperature greater than about 250° F., the first catalyst being selected from the group consisting of $CoMoO_4$ on silica, $FeWO_4$ on silica, $NiWO_4$ on silica, $Ni_{0.5}Co_{0.5}MoO_4$ on silica, sulfided $CoMoO_4$ on silica, sulfided $CoMoO_4$ on alumina, sulfided $FeWO_4$ on silica, sulfided $FeWO_4$ on alumina, sulfided $NiWO_4$ on silica, sulfided $Ni_{0.5}Co_{0.5}Mo_4$ on silica, sulfided magnesium aluminate spinel further comprising cerium and vanadium and a magnesium aluminate further comprising cerium and vanadium;

(b) recovering at least a portion of the hydrogen produced in step (a) as a product;

(c) reacting at least a portion of the carbonyl sulfide produced in step (a) with oxygen under conditions effective to produce carbon dioxide and at least one of sulfur dioxide or elemental sulfur, the reaction being conducted in the absence of a second catalyst or the reaction being conducted over a second catalyst selected from the group consisting of activated alumina, gibbsite and mixtures thereof; and, optionally,

(d) reacting at least a portion of any sulfur dioxide produced in step (c) over a third catalyst with at least one of hydrogen sulfide, carbonyl sulfide or oxygen to produce at least one of water, elemental sulfur, carbon dioxide, sulfur trioxide and mixtures thereof; and, optionally,

(e) hydrolyzing at least a portion of any sulfur trioxide produced in step (d) with water to produce sulfuric acid.

5,609,846

RADIOLABELLED ANTIBODY CYTOTOXIC THERAPY OF INFECTIOUS OR AUTOIMMUNE DISEASE

Milton D. Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Continuation of Ser. No. 163,408, Dec. 8, 1993, abandoned, which is a continuation of Ser. No. 876,715, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 622,188, Dec. 5, 1990, Pat. No. 5,120,525, which is a continuation of Ser. No. 174,490, Mar. 19, 1988, abandoned. This application Mar. 27, 1995, Ser. No. 412,225

Int. Cl.^{6} A61K *51/04;45/05*

U.S. Cl. 424—1.41 **34 Claims**

1. In a method of therapy of an infectious or autoimmune disease, wherein a human patient suffering from an infectious or autoimmune disease susceptible to treatment with a cytotoxic agent is treated with a therapeutic amount of a cytotoxic agent which also produces hematopoietic or myeloid toxicity,

the improvement which comprises administering to said patient an amount effective for substantially preventing, mitigating or reversing such hematopoietic or myeloid toxicity, of interleukin-1 (IL-1) alone or in combination with one or more additional differentiation/maturation-inducing cytokines other than interleukin-2, prior to, simultaneously with or subsequent to exposure to said cytotoxic agent; wherein said cytotoxic agent is a radioisotope, drug or toxin conjugated to an antibody or antibody fragment which specifically binds to an antigen which is produced by or associated with an infectious agent or a non-cancerous lymphocyte, provided that said cytotoxic agent is not tumor necrosis factor (TNF).

5,609,847

TREATMENT METHODS USING METAL-BINDING TARGETED POLYPEPTIDE CONSTRUCTS

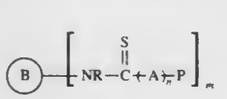
Benjamin A. Belinka, Jr., Kendall Park; Daniel J. Coughlin, Robbinsville, both of N.J.; Vernon L. Alvarez, Morrisville, Pa., and Richard Wood, Rocky Hill, N.J., assignors to Cytogen Corporation, Princeton, N.J.

Division of Ser. No. 127,351, Sep. 28, 1993, Pat. No. 5,449,761. This application Jun. 7, 1995, Ser. No. 480,370

Int. Cl.^{6} A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **31 Claims**

1. A method of treating a subject in need thereof, including a need for diagnosis and/or therapy, comprising administering to a subject an effective amount of the compound of the formula (I):



in which,

"B" is a saturated or unsaturated aliphatic or aromatic hydrocarbon backbone comprising 1–20 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

"P" is a polypeptide comprising 2–100 amino acids, said polypeptide capable of targeting particular cells, tissues or organs of the body;

"A" may be the group —NR'—NR"— or the group —NR'—NR"—L— in which L may be an aliphatic or aromatic linker group comprising 1– 12 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

R, R', and R" may be the same or different and may be hydrogen or an aliphatic group comprising 1–6 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

m is an integer ≧2, provided that the groups R, R', R", L and "P" of a given chain may be the same or different from the groups R, R', R", L and "P" of another chain;

n is an integer ≧0≦2;

or a pharmaceutically acceptable salt thereof complexed to a transition, lanthanide, or actinide metal.

5,609,848

RADIOHALOGENATED SMALL MOLECULES FOR PROTEIN LABELING

D. Scott Wilbur, and Alan R. Fritzberg, both of Edmonds, Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 388,864, Aug. 3, 1989, abandoned, which is a continuation of Ser. No. 333,394, Apr. 5, 1989, abandoned, which is a continuation of Ser. No. 137,952, Nov. 23, 1987, Pat. No. 5,045,303, which is a continuation of Ser. No. 735,392, May 17, 1985, abandoned. This application Sep. 23, 1991, Ser. No. 764,001

The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.

Int. Cl.^{6} A61K *51/02;* **C07D** *207/40;* **C07C** *25/02*

U.S. Cl. 424—1.85 **13 Claims**

1. A compound having the formula

*X—Ar—R

wherein *X is a radioisotope of iodine, bromine, fluorine, or astatine;

Ar is an aromatic ring;

R is CONH $(CH_2)_n$;

n is an integer from 0 to 12;

wherein R has attached thereto a functional group Q suitable for conjugation to a protein under conditions that preserve the biological activity of the protein; and

Q is an amine.

5,609,849

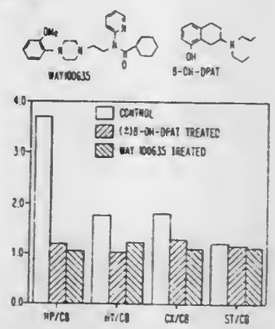
SEROTONIN (5-HT$_{1A}$) RECEPTOR LIGANDS AND IMAGING AGENTS

Hank F. Kung, Wynnewood, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

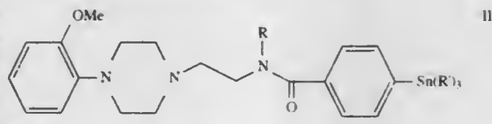
Filed Mar. 11, 1994, Ser. No. 209,985

Int. Cl.^{6} A61K *51/04;* **C07D** *401/00;403/00;241/02*

U.S. Cl. 424—185 **6 Claims**



1. Compounds of the formula

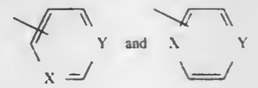


II

where

R' is a C_1–C_5 alkyl group;

R is selected from the group consisting of



X and Y are independently selected from the group consisting of N and CH, provided that at least one of X or Y is N.

5,609,850

TREATED APATITE PARTICLES FOR ULTRASOUND IMAGING

Edward A. Deutsch; Karen F. Deutsch, both of Maryland Heights; William P. Cacheris, Florissant; William H. Ralston, St. Charles; David H. White, Ballwin; Dennis L. Nosco, Florissant; Robert G. Wolfangel, Ballwin; Janet B. Wilking, Ferguson; Linda Meeh, St. Louis, and Steven R. Woulfe, Ballwin, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 271,921, Jul. 6, 1994, Pat. No. 5,468,465, which is a division of Ser. No. 948,540, Sep. 22, 1992, Pat. No. 5,344,640, which is a continuation-in-part of Ser. No. 784,325, Oct. 22, 1991, abandoned. This application Aug. 22, 1995, Ser. No. 518,124

Int. Cl.[6] A61B *8/13*

U.S. Cl. 424—9.5 **8 Claims**

1. A method for enhancing ultrasound images of body organs and tissues comprising:

(a) administering to a patient, a diagnostically effective amount of echogenic apatite particles, in a pharmaceutically acceptable carrier; and

(b) imaging the organs and tissues using ultrasound techniques.

5,609,851

COMPOUNDS WHICH CAN BE USED IN CONTRAST PRODUCTS FOR RADIOGRAPHY

Fatima Z. Bennani, Paris; Solzic le Greneur, Bures-Sur-Yvette; Christian Simonot, Paris, and Dominique Meyer, Saint-Maur, all of France, assignors to Guerbet S A., Villepinte, France

PCT No. PCT/FR93/00175, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/16983, PCT Pub. Date Sep. 2, 1993

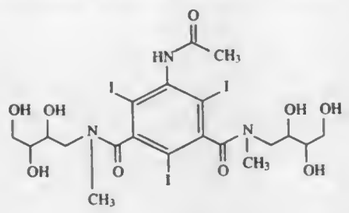
PCT Filed Feb. 22, 1993, Ser. No. 290,920

Claims priority, application France, Feb. 24, 1992, 92 02112

Int. Cl.[6] A61K *49/04;* **C07C** *233/05*

U.S. Cl. 424—9.454 **3 Claims**

1. Polyiodinated nonionic compound of formula:



5,609,852

SUNSCREEN WITH COATED MICROFINE PARTICLES

Edward Galley, and Nicola A. Fardell, both of Nottinghamshire, England, assignors to The Boots Company PLC, United Kingdom

PCT No. PCT/EP93/01179, § 371 Date Nov. 16, 1994, § 102(e) Date Nov. 16, 1994, PCT Pub. No. WO93/23483, PCT Pub. Date Nov. 25, 1993

PCT Filed May 12, 1993, Ser. No. 338,470

Claims priority, application United Kingdom, May 16, 1992, 9210516

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **7 Claims**

1. A sunscreen composition comprising 0.02 to 30% by weight of titanium dioxide particles having a mean primary particle size of less than 100 nm and having a dye Lake precipitated onto their surface in a dye lake:titanium dioxide ratio of between 10:90 and 80:20.

5,609,853

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING SYNERGISTIC ADMIXTURE OF SUNSCREEN COMPOUNDS

Isabelle Hansenne, Paris, France, assignor to L'Oreal, Paris, France

Filed Jun. 5, 1995, Ser. No. 464,940

Claims priority, application France, Jun. 3, 1994, 94 06829

Int. Cl.[6] A61K *7/42;7/40*

U.S. Cl. 424—59 **25 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising a photoprotecting synergistically effective amount of (i) benzene-1,4-di(3-methylidene-10-camphorsulfonic)acid, optionally either partially or totally neutralized, and (ii) 2-ethylhexyl α-cyano,β,β-diphenylacrylate, in a cosmetically acceptable vehicle, diluent or carrier therefor, wherein said composition optionally contains additional sunscreen compounds, adjuvants and/or additives, with the proviso that if such additional sunscreen compounds, adjuvants and/or additives are present, that said additional compounds do not substantially adversely affect the synergistic photoprotection achieved by the combination of said sulfonic acid compound (i) and said diphenylacrylate compound (ii).

5,609,854

THICKENED AND STABILIZED COSMETIC EMULSION COMPOSITIONS

Angel A. Guerrero, Huntington; Thomas C. Klepacky, and Pamela C. Asplund, both of Shelton, all of Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 470,515

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **9 Claims**

1. A cosmetic composition comprising:

(i) from about 1 to about 99% by weight of water;

(ii) from about 0.1 to about 30% by weight of an emollient oil;

(iii) from about 0.1 to about 30% of a sunscreen agent active in the ultraviolet radiation range from about 290 to 400 nm, the sunscreen agent being selected from the group consisting of zinc oxide, titanium oxide, benzophenone-3, benzophenone-4, benzophenone-6, benzophenone-8, benzophenone-12, butyl methoxy dibenzoyl methane, PABA, octyl dimethyl PABA, octyl methoxycinnamate and combinations thereof; and

(iv) from about 0.1 to about 5% by weight of an aluminum salt of a C_1–C_8 carboxylic acid.

5,609,855

GEL STICK ANTIPERSPIRANT COMPOSITIONS

Young S. Oh, Fairfield; Prem S. Juneja, and Daniel S. Connor, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 271,535, Jul. 7, 1994, abandoned, which is a continuation of Ser. No. 696,377, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 505,807, Apr. 6, 1990, abandoned. This application Oct. 18, 1995, Ser. No. 544,741

Int. Cl.[6] A61K *7/32;7/34;7/38*

U.S. Cl. 424—65 **22 Claims**

1. A solid antiperspirant composition in gel stick form, having an acidic pH, comprising:

(a) from about 0.5% to about 35% of an antiperspirant active;

(b) from about 0.5% to about 10% of a gelling agent selected from the group consisting of substituted dibenzylidene alditols, and mixtures thereof, wherein at least one of the substituents on the benzene ring is selected from the group consisting of:

(1) $—CH_2F$, $—CH_2Cl$, —F, —Cl, —Br, —I, and $—CH=CHNO_2$, wherein at least one of these substituents is located at the meta position; and

(2) $—NO_2$, $—N^+H_3$, $—N^+R_3$, $—P^+R_3$, $—P^+H_3$, $—S^+R_2$, $—CF_3$, $—CCl_3$, $—CHF_2$, $—CHCl_2$, —CHClF, $—CCl_2F$, $—CF_2Cl$, $—SO_3H$, $—SO_3R$, $—CO_2H$, $—CO_2R$, $—CONH_2$, —CHO, —COR, and —C≡N, wherein R is C_1–C_4 alkyl and at least one of these substituents is located at the meta or para position; and

(c) from about 5% to about 98% of a solvent for said gelling agent.

5,609,856

COMPOSITION AND PROCESS USING SILICONE THIOLS FOR THE COLOR OF DYED KERATINOUS FIBRES

Claude Dubief, Le Chesnay; Daniele Cauwet, Paris, and Jean M. Millequant, Saint-Maur, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 145,314, Nov. 3, 1993, abandoned, which is a continuation of Ser. No. 870,467, Apr. 17, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 353,394

Claims priority, application France, Apr. 19, 1991, 91 04886

Int. Cl.[6] A61K *7/06*

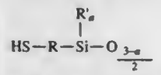
U.S. Cl. 424—70.1 **16 Claims**

1. A process for protecting the artificial colour of dyed hair from degradation by light and washing, which consists of applying to dyed hair a composition consisting essentially of:

a cosmetically acceptable medium; and

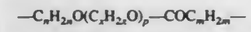
0.1 to 20% by weight, based on the total weight of the composition, of a thiol-functional polydiorganosiloxane having:

(i) at least one unit of formula



(I)

wherein R is a member selected from the group consisting of alkylene radicals having from 3 to 8 carbon atoms and groups of the formula



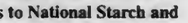
wherein n is a whole number ranging from 1 to 18, m is a whole number ranging from 1 to 8, x is 2 or 3 and when x is 3 the C_3H_6 radical is branched, and p is equal to 0 or a number up to 40,

R' is a member selected from the group consisting of alkyl radicals having 1 to 6 carbon atoms, alkoxy radicals having 1 to 4 carbon atoms, and a trimethylsilyloxy radical,

a is an integer equal to 0, 1 or 2, and

(ii) the remaining units being selected from

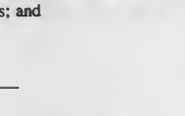
(a) units of formula



(II)

wherein R" is a member selected from the group consisting of C_1–C_{18} alkyl groups, phenyl substituted (C_1–C_6)alkyl groups and phenyl group, b is an integer equal to 1, 2 or 3; and

(b) mixtures of units of formula (II) and units of formula



(III)

in which R" is as defined above and n is a whole number from to 18;

wherein at least 50% of the groups R' and R" represent a methyl group; and

the weight content of the thiol groups present in said polydiorganosiloxane is between 0.1 and 15%, based on the weight of the thiol-functional polydiorganosiloxane, the total number of the (I), (II) and (III) units is between 10 and 500.

5,609,857

METHODS OF CONDITIONING HAIR WHICH UTILIZE POLYMERIC N-VINYL FORMAMIDE

Rama S. Chandran, S. Bound Brook; Jean-Pierre Leblanc, Somerville; John C. Leighton, Flanders, and Gary T. Martino, Plainsboro, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Apr. 5, 1995, Ser. No. 417,369

Int. Cl.[6] A61K *7/075*

U.S. Cl. 424—70.1 **10 Claims**

1. A method for conditioning hair, the method comprising:

applying to the hair an amount of a hair conditioning composition which is effective to condition the hair, wherein the hair conditioning composition comprises:

a hair conditioning polymer in amounts effective to impart hair conditioning properties to the hair conditioning composition, wherein said polymer is prepared by polymerizing N-vinyl formamide monomer and at least one vinyl polymerizable moiety which contains an amine selected from the group consisting of secondary, tertiary and quaternary amines,

one or more ingredients selected from the group consisting of conditioning agents, emulsifiers, viscosity modifiers, gelling agents, opacifiers, stabilizers, preservatives, sequestering agents, chelating agents, pearling agents, clarifying agents, fragrances, colorants, and propellants; and

water.

5,609,858

METHOD FOR TREATMENT OF ANDROGENIC ALOPECIA

Carol J. Buck, 30 Brooks Bend, Princeton, N.J. 08540

Continuation-in-part of Ser. No. 343,647, Nov. 22, 1994, Pat. No. 5,512,275. This application Feb. 7, 1996, Ser. No. 597,919

Int. Cl.[6] A61K *35/04*

U.S. Cl. 424—70.1 **1 Claim**

1. A method for treating alopecia in a mammal comprising administering topically to said mammal an effective amount of an agent capable of inhibiting the conversion of testosterone to dihydrotestosterone, wherein said agent is Liquor Carbonis Detergens.

5,609,859

HAIR RELAXER COMPOSITIONS AND METHODS FOR PREPARING SAME

Donald R. Cowsar, Savannah, Ga., assignor to Carson Products Company, Savannah, Ga.

Filed Jan. 13, 1995, Ser. No. 373,940

Int. Cl.[6] A61K *7/00;7/06*

U.S. Cl. 424—70.4 **9 Claims**

1. A method for the production of a one-component, stable and non-irritating lithium relaxer formulation comprising:

a) providing an oil-in-water emulsion;

b) adding a lithium salt and an alkaline earth metal hydroxide to the emulsion, wherein the lithium salt is in molar excess to the alkaline earth metal hydroxide and wherein the lithium salt is selected from the group consisting of lithium carbonate, lithium sulfate, and lithium phosphate, and the alkaline earth metal hydroxide is selected from the group consisting of calcium hydroxide, barium hydroxide, and strontium hydroxide.

5,609,860

CURLY HAIR-STRAIGHTENING COMPOSITION

Yoshiko Tabata; Takayoshi Kajino, and Naohisa Kure, all of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 355,557, Dec. 14, 1994, abandoned. This application Aug. 6, 1996, Ser. No. 692,645

Claims priority, application Japan, Dec. 17, 1993, 5-318534

Int. Cl.[6] A45D *7/04;* **A61K** *7/09*

U.S. Cl. 424—70.5 **13 Claims**

1. A curly hair-straightening composition comprising the following components (A), (B) and (C):

(A) from 1 to 20% by weight of one or more keratin-reducing substances selected from the group consisting of, thioglycolic acid and salts thereof, glyceryl thioglycolate, cysteine and salts thereof, N-acylcysteines and salts thereof, thioglyceryl alkyl ethers, mercaptoalkylamides, sulfites and hydrogensulfites;

(B) one or more alcohols selected from the group consisting of monohydric alcohols having a straight-chain or branched alkyl group having 3 or 4 carbon atoms and dihydric or trihydric alcohols having a straight-chain or branched alkyl group having 4 to 6 carbon atoms; and

(C) water;

wherein the weight ratio of the component (B) to the component (C) ranges from 1:3 to 3:1, the amount of said alcohol component (B) being in the range of from 30 to 70% by weight based on the weight of the total composition, said composition being capable of straightening frizzy hair when applied thereto.

5,609,861

COMPOSITION AND PROCESS USING SILICONE THIOLS FOR THE PROTECTION OF THE COLOR OF DYED KERATINOUS FIBRES

Claude Dubief, Le Chesnay; Daniele Cauwet, Paris, and Jean M. Millequant, Saint-Maur, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 353,394, Dec. 2, 1994. This application Jun. 5, 1995, Ser. No. 461,847

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—70.9 **12 Claims**

1. A composition for protecting the artificial colour of dyed hair from degradation by light and washing, consisting essentially of:

a cosmetically acceptable medium; and

0.1 to 20% by weight, based on the total weight of the composition, of a thiol-functional polydiorganosiloxane having:

(i) at least one unit of formula

$$HS-R-Si-O_{\frac{3-a}{2}} \quad (I)$$

(R'$_a$)

wherein R is a member selected from the group consisting of alkylene radicals having from 3 to 8 carbon atoms and groups of the formula

$$C_nH_{2n}O(C_xH_{2x}O)_p-COC_mH_{2m}-$$

wherein n is a whole number ranging from 1 to 18, m is a whole number ranging from 1 to 8, x is 2 or 3 and when x is 3 the C_3H_6 radical is branched, and p is equal to 0 or a number up to 40,

R' is a member selected from the group consisting of alkyl radicals having 1 to 6 carbon atoms, alkoxy radicals having 1 to 4 carbon atoms, and a trimethylsilyloxy radical,

a is an integer equal to 0, 1 or 2, and

(ii) the remaining units being selected from

(a) units of formula

$$R''_b-SiO_{\frac{4-b}{2}} \quad (II)$$

wherein R" is a member selected from the group consisting of C_1–C_{18} alkyl groups, phenyl substituted (C_1–C_6) alkyl groups and phenyl groups, b is an integer equal to 1, 2 or 3; and

(b) mixtures of units of formula (II) and units of formula

$$\begin{array}{l} R'' \\ | \\ [SiO] \\ | \\ C_nH_{2n}OH \end{array} \quad (III)$$

in which R" is as defined above and n is a whole number from 1 to 18;

wherein at least 50% of the groups R' and R" represent a methyl group;

the weight content of the thiol groups present in said polydiorganosiloxane is between 0.1 and 15%, based on the weight of the thiol-functional polydiorganosiloxane and the total number of units of formula (I), (II) and (III) ranges from 10 to 500.

5,609,862

AMPHOLYTE TEROPOLYMERS PROVIDING SUPERIOR CONDITIONING PROPERTIES IN SHAMPOOS AND OTHER HAIR CARE PRODUCTS

Shih-Ruey T. Chen, Pittsburgh, and Craig W. Vaughan, Freedom, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 723,001, Jun. 28, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 87,839

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.[6] A61K *7/06;7/08*

U.S. Cl. 424—70.11 **19 Claims**

1. A composition for treating hair in which a cosmetically acceptable medium is used which contains from 0.1–10% by weight of a water soluble ampholyte terpolymer having a weight average molecular weight of from about 10 thousand to 10 million, comprising:

(a) from at least 1 to as much as 95 weight percent of a nonionic monomer comprising from 1 to 3 members independently selected from the group consisting of the following monomers:

acrylamide (AM)	vinylacetate (VA)
N-alkylacrylamide (NAAM)	vinyl alcohol (VOH)
	acrylate esters
methacrylamide (MAM)	allyl alcohol (AAlc)

(b) from at least 5 to as much as 80 weight percent of a cationic monomer comprising 1 or 2 members independently selected from the group consisting of the following monomers:

dimethyldiallylammonium chloride (DMDAAC)

diallylamine (DAA)

methyldiallylamine (MDAA)

N,N-dialkyldiallylammonium chloride

dimethylaminoethylmethacrylate (DMAEM)

methacyloyloxyethyl trimethylammonium chloride (METAC)

methacyloyloxyethyl trimethylammonium metyl sulfate (METAMS)

acryloyloxyethyl trimethylammonium chloride (AETAC)

dimethylaminopropylmethacrylamide (DMAPMA)

methacrylamidopropyl trimethylammonium chloride (MAPTAC) and

(c) from at least 1 to as much as 75 weight percent of an anionic monomer comprising 1 or 2 members independently selected from the group consisting of the following monomers:

acrylic acid (AA)

methacrylic acid (MAA)

2-acrylamido-2-methylpropanesulfonic acid (AMPSA)

crotonic acid (CA)

sodium vinyl sulfonate (SVS)

acrylamidoglycolic acid (AGly)

2-acrylamido-2-methylbutanoic acid (AMBA)

2-acrylamido-2-methylpropanephosphonic acid (AMPPA)

sodium vinyl phosphonate (SVP)

allyl phosphonic acid (APA)

wherein the amounts of the cationic and the anionic components are such that the overall % net charge of the ampholyte terpolymer is between about −5.0 and +5.0.

5,609,863

GLYOXAL COMPOSITION FOR REDUCTION OF ANIMAL WASTE STENCH AND SEPTICITY, AND METHOD THEREOF

James P. Cox, and Robert W. D. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Continuation of Ser. No. 155,808, Nov. 22, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 509,334

Int. Cl.[6] A61L *11/00*

U.S. Cl. 424—76.6 **3 Claims**

1. An antibacterial composition for reducing stench from animal waste consisting of:

glyoxal;

benzaldehyde; and

a metal selected from the group consisting of zinc, copper, aluminum, iron, molybdenum, silver, boron, zirconium, salts thereof, chelates thereof, zeolites thereof, oxides thereof, carbonates thereof, hydroxides thereof, hydrates thereof, sulfates thereof, chlorides thereof, and nitrates thereof.

5,609,864

PRESERVATION OF BLOOD, TISSUES AND BIOLOGICAL FLUIDS

Edward Shanbrom, 2252 Liane La., Santa Ana, Calif. 92705

Division of Ser. No. 846,129, Mar. 3, 1992, Pat. No. 5,360,605, which is a continuation-in-part of Ser. No. 577,204, Sep. 4, 1990, abandoned, and a continuation-in-part of Ser. No. 577,295, Sep. 4, 1990, abandoned, and a continuation-in-part of Ser. No. 753,734, Sep. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 753,814, Sep. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 754,752, Sep. 4, 1991, abandoned. This application Jun. 8, 1994, Ser. No. 255,381

Int. Cl.[6] A61K *31/74;* **B01D** *35/00*

U.S. Cl. 424—78.08 **7 Claims**

1. An apparatus for treatment of liquid to kill microbes therein comprising a liquid container having, in use an upper reservoir portion for holding said liquid and a lower elutriation portion for recovering liquid and structure defining first and second beds of particulate matter, the first bed comprising substantially insoluble povidone iodine and the second bed consisting essentially of substantially insoluble povidone; the beds being so formed and configured as to permit the passage of the liquid therethrough in intimate contact with the surfaces of the particles forming the respective beds.

5,609,865

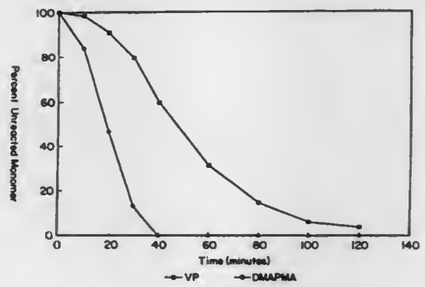
SUBSTANTIALLY HOMOGENEOUS COPOLYMERS OF VINYL PYRROLIDONE AND N-3,3-DIMETHYLAMINOPROPYL METHACRYLAMIDE FOR PERSONAL CARE APPLICATIONS

Kou-Chang Liu, Wayne; Lowell R. Anderson, Morristown; Eugene E. Hardy, East Brunswick, and Yakir Reuven, West Orange, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Dec. 28, 1994, Ser. No. 365,258

Int. Cl.[6] A61K *7/11;* **C08F** *2/10;220/60;226/10*

U.S. Cl. 424—78.24 **6 Claims**



1. A clear, aqueous solution of a homogeneous copolymer of VP and DMAPMA, in the compositional ratio of 20–99% by weight VP and 1–80% by weight DMAPMA, having a weight average molecular weight of about 200,000 to about 1,500,000, a solids content of about 5–20%, a Brookfield viscosity of about 10,000 to 80,000 cps, and a Hach clarity of less than about 2.

5,609,866

RADIATION STERILIZABLE ANTIMICROBIAL OINTMENT AND PROCESS TO MANUFACTURE

Mohammed A. Khan, Sandy, and John F. Moellmer, Salt Lake City, both of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 884,245, May 11, 1992, abandoned, which is a continuation of Ser. No. 595,719, Oct. 9, 1990, abandoned, which is a continuation of Ser. No. 348,758, Apr. 24, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 163,609

Int. Cl.[6] A61K *31/79;2/00*

U.S. Cl. 424—78.25 **1 Claim**

1. A method for making a sterilized antimicrobial ointment comprising the following steps:

chilling from about 62% to about 69% by weight of purified water to a temperature range of about 2° C. to about 9° C.;

mixing into the chilled purified water less than 0.5% by weight of a non-ionic low sudsing surfactant wherein said surfactant is a poly(oxypropylene)poly(oxyethylene) condensate having an average molecular weight of 2450;

mixing into the chilled purified water from about 9% to about 12% by weight of povidine iodine wherein said povidine iodine has an intrinsic viscosity of K-30 and is a powder mixture of povidine and iodine to form a homogenous solution;

mixing from about 20% to about 30% by weight of a non-ionic gelling agent wherein said non-ionic gelling agent is a pluronic polyol comprising an ethylene oxide to propylene oxide ratio of about 2.9 to about 1 into the chilled homogenous solution to form a liquid solution at a temperature from about 2° to about 9° C.;

increasing the temperature of the homogenous solution to above 9° C. to form an ointment mixture; and

irradiating the free standing ointment mixture at about 1.3 Mrads.

5,609,867

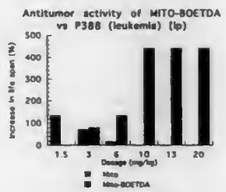
POLYMERIC ANTITUMOR AGENTS

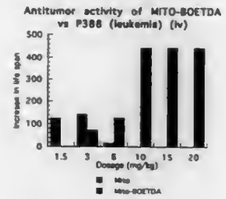
Hwei-Ru Tsou, Rockland, N.Y., assignor to American Cyanamid Company, Madison, N.J.

Continuation-in-part of Ser. No. 332,661, Nov. 1, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 521,505

Int. Cl.[6] A61K *31/785;31/765;* **C08F** *9/02*

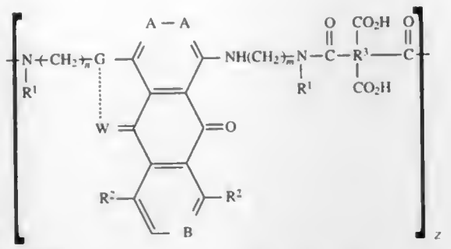
U.S. Cl. 424—78.36 **13 Claims**





I. A mixture of polymers which comprises a H end group on the left and an OH end group on the right and a chain, the ends of which are bonded to the respective end units, of the formula:

Formula I



wherein

A and B are CH or N, and when B is N, A is CH;

the dotted line is an optional bond;

W is O or N, and when W is O, G is NH, and when W is N, G is N and the dotted line is a bond;

R^1 is the same or different and is selected from H, $-(CH_2)_nOH$, straight or branched lower alkyl (C_1-C_4), and carbocyclic tings of 3, 4, 5, 6, or 7 carbon atoms;

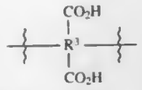
R^2 is the same or different and selected from hydrogen, OR, halogen, or $-NRR^1$;

R and R' are the same or different and selected from H or lower alkyl (C_1-C_4);

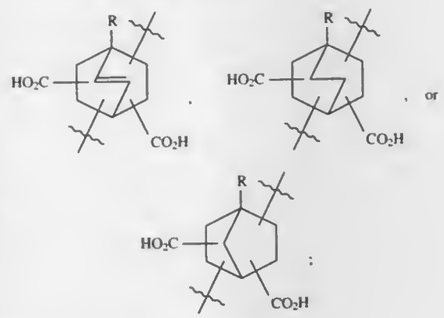
m and n are the same or different and are 2 or 3;

Z is 1–250; and

the moiety



is a bicyclic ring having the structure:



wherein R is H or lower alkyl (C_1-C_4);

or a pharmaceutically acceptable salt thereof.

5,609,868

PHARMACEUTICAL COMPOSITIONS COMPRISING HYBRID α-INTERFERON

Nicholas Lowther, Southwater; John D. Allen, Worthing, and Colin Howes, Horsham, all of England, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 10, 1994, Ser. No. 288,671

Claims priority, application United Kingdom, Aug. 13, 1993, 9316849; Mar. 24, 1994, 9405879

Int. Cl.[6] A61K *38/21;* **C07K** *14/52*

U.S. Cl. 424—857 **32 Claims**

1. A stable aqueous solution of hybrid α-Interferon which contains as the stabiliser a buffer at a pH of from 3.0 to 5.0; and wherein, the hybrid α-Interferon is α-Interferon BDBB (SEQ. ID NO. 1).

5,609,869

HYBRID IMMUNOGLOBULIN-THROMBOLYTIC ENZYME MOLECULES WHICH SPECIFICALLY BIND A THROMBUS, AND METHODS OF THEIR PRODUCTION AND USE

Thomas Quertermous, Nashville, Tenn.; Marschall S. Runge, Atlanta, Ga., and Edgar Haber, Salisbury, N.H., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 96,173, Jul. 26, 1993, which is a continuation-in-part of Ser. No. 2,861, Jan. 15, 1993, and Ser. No. 589,435, Sep. 27, 1990, which is a continuation-in-part of Ser. No. 435,485, Jul. 7, 1989, abandoned, said Ser. No. 2,861is a continuation of Ser. No. 234,051, Aug. 19, 1988, abandoned. This application May 30, 1995, Ser. No. 453,779

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—133.1 **5 Claims**

1. A recombinant hybrid immunoglobulin molecule comprising (1) at least a variable region which is also specific for fibrin and (2) a fibrinolytic enzyme, wherein said fibrinolytic enzyme is selected from the group consisting of tissue-type plasminogen activator, streptokinase, urokinase, and prourokinase, wherein said recombinant hybrid immunoglobulin molecule is a single chain molecule encoded by a single contiguous DNA sequence.

5,609,870

METHODS FOR THE PREPARATION OF IMMUNOGENS AGAINST GASTRIN

Philip C. Gevas, Honolulu, Hi.; Stephen L. Karr; Stephen Grimes, both of Davis, Calif., and Richard L. Littenberg, Kai Lua, Hi., assignors to Aphton Corporation, Woodland, Calif.

Continuation of Ser. No. 721,638, Jul. 22, 1991, which is a continuation-in-part of Ser. No. 351,193, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 301,353, Jan. 24, 1989, Pat. No. 5,023,077. This application Aug. 4, 1994, Ser. No. 285,984

Int. Cl.[6] C07K *5/00;* **A61K** *39/00;39/385;38/00*

U.S. Cl. 424—184.1 **5 Claims**

1. A method for the preparation of an anti-G_{17} immunogen which raises antibodies in a mammal against its own G_{17} which do not react with G_{34} comprising conjugating a peptide which consists of a sequence corresponding to a fragment of the N-terminal amino acid sequence of heptadecagastrin ("G_{17}") up to amino acid residue number 12 by its C-terminus to a spacer peptide which is conjugated to an immunogenic carrier.

5,609,871

ORAL ADMINISTRATION OF THERAPEUTIC PROTEINS FOR TREATMENT OF INFECTIOUS DISEASE

J. Gabriel Michael, 418 Chisholm Trail, Cincinnati, Ohio 45236, and Allen Litwin, 8729 Tiburon Dr., Cincinnati, Ohio 45242

Continuation of Ser. No. 178,503, Jan. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 994,932, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 719,160, Jun. 21, 1991, abandoned. This application Oct. 26, 1994, Ser. No. 329,685

Int. Cl.[6] A61K *39/00;9/16;13/00;39/12*

U.S. Cl. 424—184.1 **23 Claims**

1. An orally administrable immunogenic composition for activating the immune system of a warm-blooded animal comprising at least one immunogen of a virus microencapsulated in the complete absence of organic solvents with a water based enteric coating wherein said immunogen does not replicate.

5,609,872

PEPTIDES COMPRISING A PROTECTIVE EPITOPE FROM BLOOD STAGES OF PLASMODIUM FALCIPARUM

Niklas Ahlborg, Stockholm; Klavs Berzins, Täby, and Peter Perlmann, Stockholm, all of Sweden, assignors to Malvac Foundation, Stockholm, Sweden

PCT No. PCT/SE91/00541, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO92/03159, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 16, 1991, Ser. No. 969,305

Claims priority, application Sweden, Aug. 17, 1990, 9002684

Int. Cl.[6] A61K *39/015*

U.S. Cl. 424—185.2 **21 Claims**

1. A peptide consisting of an amino acid sequence selected from:
glu-ser-val-thr-glu-glu-ile (SEQ ID NO. 3);
ser-val-thr-glu-glu-ile-ala (SEQ ID NO. 4);
val-thr-glu-glu-ile-ala-glu (SEQ ID NO. 5);
ser-val-thr-glu-glu-ile (SEQ ID NO. 6);
val-thr-glu-glu-ile-ala (SEQ ID NO. 7);
val-thr-glu-glu-ile (SEQ ID NO. 8);
ile-thr-glu-glu-ile (SEQ ID NO. 9);
val-ala-glu-glu-ile (SEQ ID NO. 10); and
ile-ala-asp-glu-ile (SEQ ID NO. 11).

5,609,873

USE OF AN ECDYSTEROID FOR THE PREPARATION OF COSMETIC OR DERMATOLOGICAL COMPOSITIONS INTENDED, IN PARTICULAR, FOR STRENGTHENING THE WATER BARRIER FUNCTION OF THE SKIN OR FOR THE PREPARATION OF A SKIN CELL CULTURE MEDIUM, AS WELL AS TO THE COMPOSITIONS

Alain Meybeck; Frédéric Bonte, both of Courbevoie, and Gérard Redziniak, Saint Cyr En Val, all of France, assignors to LVMH Recherche, Nanterre, France

PCT No. PCT/FR93/00819, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/04132, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 20, 1993, Ser. No. 393,009

Claims priority, application France, Aug. 25, 1992, 92 10267

Int. Cl.[6] A61K *35/78;9/127;35/12;35/64*

U.S. Cl. 424—195.1 **15 Claims**

1. A method of treatment selected from the group consisting of promoting the cohesion of the cells of the epidermis, promoting keratynocite differentiation and improving the quality of hair constitution, comprising administering to zones of the skin and scalp in need thereof an effective amount of an ecdysteroid component selected from the group consisting of an ecdysteroid, a plant extract containing said ecdysteroid and an animal extract containing said ecdysteroid.

5,609,874

METHOD OF TREATING VIRAL INFECTIONS

Roelof W. Liebenberg, Pierneff Park; Petrus B. Kruger, Camps Bay; Patrick J. D. Bouic, Rondebosch East, and Carl F. De Vos Albrecht, Amanda Glen, all of South Africa, assignors to Virostat (NA) NVQ, Kralendijk, Netherlands Antilles

Continuation-in-part of Ser. No. 116,665, Sep. 3, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 398,865

Claims priority, application South Africa, Sep. 7, 1992, 92/6775; Jun. 4, 1993, 93/3949

Int. Cl.[6] A61K *35/78;31/70;31/095;31/045*

U.S. Cl. 424—195.1 **25 Claims**

1. A method of reducing the rate of decrease in CD4 lymphocyte counts in a subject having a human immunodeficiency viral infection, which method comprises administering to the subject a medicament which comprises an active therapeutic agent comprising a dried methanolic extract from a plant species which is a member of

the plant family Hypoxidaceae, the administering being over a period time and at a dosage rate which is effective for reducing the rate of decrease in CD4 lymphocyte counts in the subject.

5,609,875

SKIN WHITENING COMPOSITION

Nira Hadas, Ramat-Gan, Israel, assignor to Fischer Pharmaceuticals Ltd., Ramat Gan, Israel

Filed Mar. 13, 1995, Ser. No. 402,445
Claims priority, application Israel, Mar. 17, 1994, 109012
Int. Cl.[6] A61K *35/78;7/135;6/00*
U.S. Cl. 424—195.1 **10 Claims**

1. A skin whitening cosmetic composition which also prevents formation of dark skin spots, which composition comprises in combination an oil soluble extract selected from the group consisting of an oil soluble extract of *Glycyrrhiza glabra* and an oil soluble extract of a plant species related thereto, together with a compound selected from the group consisting of alpha-hydroxy acids, beta-hydroxy acids, keto-acids amides thereof, ammonium salts thereof, inorganic salts thereof and esters thereof, wherein said composition is effective for whitening skin and for preventing formation of dark spots on skin when applied to the skin.

5,609,876

PEPTIDE VACCINES AND ASSOCIATED METHODS FOR PROTECTION AGAINST FELINE LEUKEMIA VIRUS

Ronald C. Montelaro, Wexford, Pa., and J. Darrell Fontenot, Española, N.M., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Continuation of Ser. No. 287,474, Aug. 8, 1994, abandoned, which is a continuation of Ser. No. 104,527, Aug. 9, 1993, abandoned. This application May 23, 1995, Ser. No. 447,925
Int. Cl.[6] A61K *39/21*
U.S. Cl. 424—207.1 **12 Claims**

7. A peptide of from 50 to 60 amino acids in length and having at least 80% amino acid homology to the sequence of SEQ ID NO:1, wherein said peptide forms a polyproline beta turn helix in solution and induces inducing the production of antibodies that bind to feline leukemia virus.

5,609,877

TREATMENT OF THE ARTICULAR SYMPTOMS OF RHEUMATOID ARTHRITIS

Mario Cagnoni, 178, Via Bolognese, 50139 Firenze, Italy

Filed Nov. 30, 1994, Ser. No. 351,104
Int. Cl.[6] A61K *6/00;7/00*
U.S. Cl. 424—401 **11 Claims**

1. A method of treatment of articular inflammatory diseases comprising treating a patient in need thereof with an effective amount of an agent consisting essentially of melatonin.

5,609,878

INSECTICIDE COMPOSITION OF ROTENONE MICROSPHERES

Jean Gueyne, and Marie-Christine Seguin, both of Perigord 1, 6, lacets Saint-Leon, MC-98000 Monte-Carlo, Monaco

Continuation of Ser. No. 157,106, Feb. 3, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,534
Claims priority, application Japan, Jun. 5, 1991, 3-06797
Int. Cl.[6] A01N *25/28*
U.S. Cl. 424—408 **20 Claims**

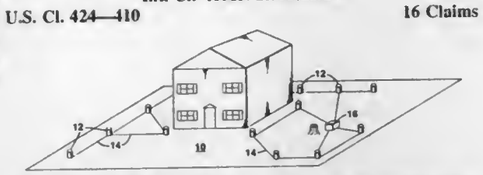
1. An insecticide composition comprising:
approximately 0.05% to 10% by weight of at least one active agent selected from the group consisting of rotenone, reduced rotenone and a mixture of rotenone and reduced rotenone, wherein said active agent is at least 90% pure;
microscopic polymer spherules, wherein said active agent is adsorbed to the surface of said spherules and wherein said polymer is selected from the group consisting of polysaccharide, polyamide, polyalkylene, polyarylalkylene, polyalkylidene and polysiloxane; and
approximately 80 to 95.5% of a carrier or diluent.

5,609,879

METHOD, APPARATUS, AND COMPOSITION FOR TREATING INSECTS

Timothy G. Myles, 177 St. George St., #307, Toronto M5R 2M5 Ontario, Canada

Continuation of Ser. No. 22,043, Feb. 24, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 414,141
Int. Cl.[6] A01N *25/10;25/24*
U.S. Cl. 424—410 **16 Claims**



1. A method of treating a population of social insects with a slow-acting toxicant, comprising the steps of:
a) collecting a portion of the population of the social insects, said social insects being selected from the group consisting of termites, cockroaches and carpenter ants;
b) applying topically to the dorsal area of the social insects of the collected portion a composition consisting essentially of an active ingredient that is a slow-acting toxicant for said social insects, a carrier and a solvent, said composition being adherable to the insect to provide a groomable, adherent non-tacky coating on said dorsal area of the social insect and with said active ingredient being a fluoroaliphatic sulfonamide, said carrier being a phenol-formaldehyde novolac resin having a CAS# of 28454-20-5 or 54579-44-1 and said solvent being selected from the group consisting of ethanol, n-propanol, n-butanol and diacetone alcohol, said composition having a concentration of active ingredient, when expressed in grams of active ingredient in milliliters of carrier and solvent, being in the range of 0.001 g/ml to 2 g/ml, and
c) releasing said collected portion into a population of social insects whereby, upon release, said composition is distributed through said population by virtue of the social habits thereof.

5,609,880

BAIT WITH CORN GERM

Derrill Munson, Pittsboro, N.C.; Chel W. Lew, San Antonio, Tex.; James M. Gaggero, Citrus Heights, Calif., and Keith Branly, Brandon, Fla., assignors to Micro Flo Company, Mulberry, Fla.

Division of Ser. No. 189,355, Jan. 31, 1994, Pat. No. 5,571,522. This application Jun. 6, 1995, Ser. No. 471,630
Int. Cl.[6] A01N *25/12*
U.S. Cl. 424—410 **11 Claims**

1. A method for controlling insect populations on plants consumed by said insects, said process comprising:
applying to an area exhibiting an insect infestation an amount of a bait effective to kill at least a portion of the immature or adult insects in said area wherein said bait consists essentially of a binder that is palatable to diabroticine insects and is able to bind together bait components yet pass through equipment used to form particles, an insecticide, and a feeding stimulant wherein said binder has homogeneously distributed therein: (a) insecticide in an amount within 0.01–99 wt. % based on the total weight of said bait; and (b) 0.01–99 wt. % based on the total weight of said bait of corn germ in an amount sufficient to stimulate feeding in a target insect and less than 25 wt. %, based on the weight of said corn germ, of corn endosperm associated therewith.

5,609,881

BIO-DEGRADABLE/ABSORBABLE BARRIER MEMBRANE

Yoshito Ikada; Shokyu Gen, both of Uji; Takao Kubota, Kamakura, and Ikuo Kyotani, Kitamoto, all of Japan, assignors to GC Corporation, Tokyo, and Biomaterials Universe Inc., Kyoto, both of Japan

Filed Oct. 25, 1995, Ser. No. 548,138
Claims priority, application Japan, Oct. 31, 1994, 6-288692
Int. Cl.[6] A61L *31/00;33/00;* **A61K** *9/70*
U.S. Cl. 424—425 **4 Claims**

1. A bio-degradable/absorbable sheet-like barrier member that is porous to blood and which is coated thereon with sucrose esters of fatty acids, said membrane comprising a synthetic polymer material or collagen, wherein the membrane shows reduced discoloration after immersion in blood.

5,609,882

ETOPOSIDE PREPARATIONS

Minoru Aoki, Tokyo; Minoru Nakada, Kitamoto; Yuichi Yazawa, Tokyo; Gen'ichi Izu, Saitama-ken, and Takashi Terada, Konosu, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 90,909, Jul. 13, 1993, abandoned, which is a continuation of Ser. No. 857,730, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 530,881, May 30, 1990, abandoned. This application Mar. 9, 1995, Ser. No. 402,778
Claims priority, application Japan, Jun. 7, 1989, 1-142983
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 **10 Claims**

1. An etoposide preparation containing an etoposide solution consisting essentially of an etoposide, poiyvinylpyrrolidone, and water-soluble cellulose ether derivative having a structure resulting from substitution of the hydroxyl groups with hydroxyalkoxy and/or lower alkoxy groups and a viscosity of 8000 cps or less in a 2% aqueous solution at 20° C. wherein the amount of said etoposide present in said solution is 9–25% (w/w), the amount of said polyvinylpyrrolidone present in said solution is 5–20% (w/w), the amount of said cellulose ether derivative present in said solution is 0.01–5% (w/w), and the amount of organic acid present in said solution is 0–5% (w/w).

5,609,883

COMPRESSED TABLET TRANSITORY LUBRICANT SYSTEM

William Valentine, and William K. Valentine, both of Lawrenceville, Ga., assignors to Advanced Technology Pharmaceuticals Corporation, Lawrenceville, Ga.

Filed Sep. 16, 1994, Ser. No. 307,922
Int. Cl.[6] A61K *9/46*
U.S. Cl. 424—464 **13 Claims**

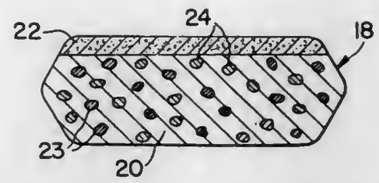
1. A method for making fast dissolving tablets on standard compression tabletting machinery comprising a die cavity, an upper punch and a lower punch the method comprising:
forming a formulation to be tabletted wherein at least one of the ingredients in the formulation is a carbohydrate in an amount of at least 50% by weight of the formulation and greater than 50% of the carbohydrate has a particle size greater than about 100 mesh;
using as a lubricant in the formulation a liquid material selected from the group consisting of alcohols, and mixtures thereof in an amount of about 1–5% by weight of the formulation;
feeding the formulation into the die cavity;
compressing the formulation using the standard compression tabletting machinery to form a compressed tablet, the compressed tablet having a hardness above about 1 Kp;
ejecting the compressed tablet from the die cavity; and
removing the lubricant from the compressed tablet to form the fast dissolving tablet.

5,609,884

CONTROLLED RELEASE NAPROXEN SODIUM PLUS NAPROXEN COMBINATION TABLET

Subhash Desai, Grayslake, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Aug. 31, 1992, Ser. No. 937,920
Int. Cl.[6] A61K *9/22*
U.S. Cl. 424—468 **12 Claims**



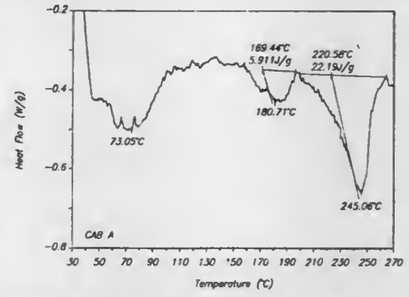
1. A controlled release pharmaceutical composition comprising:
a layer of naproxen; and
a layer of naproxen sodium.

5,609,885

OSMOTIC MEMBRANE AND DELIVERY DEVICE

David L. Rivera, San Jose; Sonya Merrill, Redwood City; James B. Eckenhoff; Jeremy C. Wright, both of Los Altos, and James L. Osborne, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 945,082, Sep. 15, 1992, abandoned. This application Feb. 10, 1995, Ser. No. 387,967
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—473 **8 Claims**



1. A process for selecting cellulose acetate butyrate for use in an osmotic delivery device, wherein the process comprises:
1) generating differential scanning calorimetry ("DSC") profiles for representative samples from lots of cellulose acetate butyrate ("CAB") being considered for use in the osmotic delivery device, said profiles having primary and secondary DSC minimum temperature peaks and
2) selecting for use in the manufacture of said osmotic delivery devices those lots of CAB for which the samples exhibit an acceptable DSC profile, which, if analyzed on a Du Pont 2100 Thermal Analyzer set to equilibrate the sample at a temperature of 30° C., and heat the sample to 270° C. at 20° C. per minute, would exhibit a DSC profile wherein the profile has a

minimum temperature peak above 228° C. and an area under the secondary minimum temperature peak which is equal to or less than 30% of the total combined areas under the primary and secondary DSC peaks.

5,609,886

MICROSPHERES FOR THE CONTROLLED RELEASE OF WATER-SOLUBLE SUBSTANCES AND PROCESS FOR PREPARING THEM

Henri Wantier, Dour; Fabienne Mathieu, Nivelles; Marc Baudrihaye, Waterloo, and Dominique Delacroix, Kraainem, all of Belgium, assignors to Teva Pharmaceutical Industries Ltd., Petah Tiqva, Israel

Division of Ser. No. 77,501, Jun. 17, 1993, Pat. No. 5,478,564, which is a continuation of Ser. No. 810,403, Dec. 23, 1991, which is a continuation of Ser. No. 768,701, Oct. 22, 1991, abandoned. This application Jul. 26, 1995, Ser. No. 507,079

Claims priority, application France, Feb. 22, 1990, 90 02189

Int. Cl.[6] A61K *9/16;9/50;* **B01J** *13/02;* **B32B** *5/16*

U.S. Cl. 424—497 **9 Claims**

1. Microspheres, consisting essentially of a matrix of a biocompatible and biodegradable polymer which is soluble in an organic solvent which is immiscible in water, within which a water-soluble polypeptide or a pharmaceutically acceptable salt thereof is uniformly distributed, said polypeptide being progressively and continuously released over a period of at least 8 days when the microspheres are placed in an aqueous physiological environment, with a reduced or substantially absent first phase of accelerated release; wherein the residual level of toxic solvent in said microspheres is lower than 1.5% by weight.

5,609,887

APPARATUS FOR PRODUCING GRANULAR MATERIAL INCLUDING A BELT FORMED OF ELASTICALLY JOINED LINKS

Reinhard Froeschke, Weinstadt-Beutelsbach, Germany, assignor to Santrade Ltd., Lucerne, Switzerland

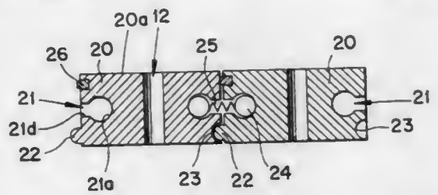
PCT No. PCT/EP95/00038, § 371 Date Oct. 24, 1995, § 102(e) Date Oct. 24, 1995, PCT Pub. No. WO95/20433, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 5, 1995, Ser. No. 522,261

Claims priority, application Germany, Jan. 29, 1994, 44 02 722.2

Int. Cl.[6] B29C *47/30*

U.S. Cl. 425—6 **9 Claims**



1. Apparatus for producing granular material from a free-flowing viscous mass, comprising a vessel charged with the free-flowing mass and containing a first discharge opening arrangement through which the mass is discharged, a pair of guide pulleys disposed on opposite sides of said vessel, and an endless belt wrapped around said guide pulleys such that a section of said belt disposed between said guide pulleys is conducted across an underside of said first opening arrangement; said belt including a plurality of second opening arrangements spaced apart in a direction of belt travel and positioned to come successively into alignment with said first opening arrangement to enable the mass to flow therethrough to a support surface disposed beneath said belt upon which the mass solidifies; said belt comprising a plurality of links each having long and short sides, said links arranged with their long sides parallel to one another and extending perpendicular to the direction of belt travel; and connectors elastically interconnecting said long sides of adjacent links for permitting relative pivotal movement of adjacent links during travel around the guide pulleys.

5,609,888

APPARATUS FOR PRODUCING MULTIFILAMENTS

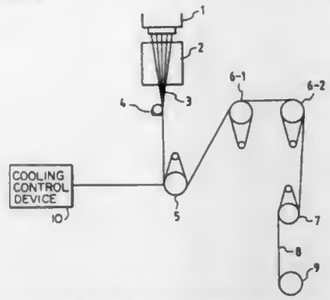
Hitoshi Uda; Tetsuya Takahashi; Ryosuke Kamei, and Takeshi Sano, all of Kanagawa, Japan, assignors to Showa Denko Kabushiki Kaisha, Tojyo, Japan

Continuation of Ser. No. 132,254, Oct. 6, 1993, abandoned, which is a division of Ser. No. 0,099, Jan. 4, 1993, Pat. No. 5,283,025. This application May 18, 1995, Ser. No. 444,029

Claims priority, application Japan, Jan. 9, 1992, 4-2216; Feb. 4, 1992, 4-19108

Int. Cl.[6] D01D *5/088;5/092;5/16*

U.S. Cl. 425—66 **21 Claims**



1. An apparatus for producing multifilaments having high fiber strength, comprising:

a melt-spinning device which melt spins a polyolefin at a first temperature into filaments;

a first chill device, disposed downstream from said melt-spinning device, which cools the spun filaments, said first chill device being a non-contact device and having a second temperature;

a gathering device, disposed downstream of said first chili device, which gathers said filaments to provide a gathered fiber;

a second chill device, disposed downstream from said first chill device and said gathering device, having a third temperature within a range of 5° to 30° C., said second chill device forcibly conductively cooling the gathering fiber;

a cooling control device which maintains said second chill device at said third temperature; and

heated drawing rolls, disposed downstream from said second chill device, which continuously draw the gathered fiber at a high draw ratio to produce said multifilaments, said heated drawing rolls having a predetermined surface temperature;

said melt-spinning device, first chill device, gathering device, second chill device, cooling control device and heated drawing rolls cooperating so that said multifilaments have said high fiber strength which is in a range of 4.6 to 8.0 g/d.

5,609,889

APPARATUS FOR ENCAPSULATING ELECTRONIC PACKAGES

Patrick O. Weber, San Jose, Calif., assignor to Hestia Technologies, Inc., Sunnyvale, Calif.

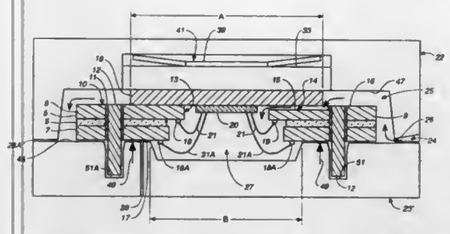
Filed May 26, 1995, Ser. No. 452,130

Int. Cl.[6] B29C *45/02;45/14*

U.S. Cl. 425—116 **4 Claims**

1. An apparatus for encapsulating a laminate substrate having a heat sink thereon, comprising:

a first mold platen having a recessed portion;



a second mold platen for mating with the first mold platen to form a mold cavity adapted to receive the laminate substrate with the heat sink thereon, the second mold platen having a recessed portion and a support surface surrounding the recessed portion for supporting the laminate substrate;

a member located in a cavity contiguous with the recessed portion in the first mold platen, the member having a width greater than the recessed portion of the second mold platen; and

biasing means located in the contiguous cavity for urging the member into contact with the heat sink such that mold compound entering the apparatus is prevented from covering a surface of the heat sink in contact with the member and holding the laminate substrate flat against the support surface of the second mold platen.

5,609,890

MOLDING MACHINE FOR INJECTION MOLDING OF TOOTH BRUSHES

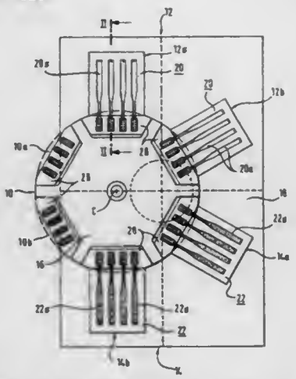
Bart G. Boucherie, Izegem, Belgium, assignor to G.B. Boucherie N.V., Belgium

Filed Apr. 18, 1995, Ser. No. 423,093

Claims priority, application United Kingdom, Apr. 19, 1994, 9407735

Int. Cl.[6] B29C *45/06;45/10;45/14*

U.S. Cl. 425—120 **12 Claims**



1. A molding machine for injection molding of tooth brushes from at least two different molding material components, comprising at least two injecting stations each associated with a different one of said components, a first one of said injecting stations having a mold cavity with a first cavity portion having the shape of a toothbrush handle and a second cavity portion having the shape of a toothbrush head, and a second one of said injecting stations having a mold cavity corresponding in shape to requirements of the second molding material component, each of said mold cavities being defined by relatively movable mold parts, one of said mold parts of each injecting station being divided to comprise a base member with a recess and a movable mold insert part fitting into said recess and which when joined to said base member completes said one mold pan, and the machine further comprising a tuft feeding station, said movable mold insert part defining said first cavity portion and having a plurality of tuft insertion holes arranged in a pattern corresponding to the tuft pattern of tooth brushes to be produced and being movable between a tuft feeding station to receive a tuft of bristles in each tuft insertion hole so that an end thereof projects into said cavity portion, a second position joined with the base member of the one mold part in the first injecting station and a third position joined with the base member of the one mold part in the second injecting station, each of said tuft ends being embedded in molding material of the first component upon injection thereof into the cavity of the first injecting station.

5,609,891

METHOD TO TREAT MATERIALS BY MICROWAVE

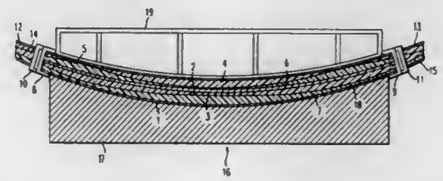
Didier Delaunay, Nantes; Henri Jullien, Bourg La Reine; Claude More; Lhoussain Outifa, both of Paris; Michel Delmotte, Bourg La Reine, and Bernard Maestrali, Fontainebleau, all of France, assignors to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Jun. 7, 1995, Ser. No. 487,642

Claims priority, application France, Jun. 8, 1994, 94 07008

Int. Cl.[6] B29C *35/08;* **H05B** *6/80*

U.S. Cl. 425—174.8 E **8 Claims**



1. Device for microwave treatment of materials other than a mass of metal materials, comprising a mold for holding the material to be treated and at least one microwave generator for applying the microwave energy necessary for treatment of the material in the mold the mold including at least two dielectric materials which surround the material to be treated, wherein the dielectric materials have dielectric permittivities which differ from one another so that the attenuation of one elementary segment of length l located between the points of side z(n−1) and zn of the longitudinal dimension of the material to be treated, which includes at least one section broken up into segments of length l, is controlled by the relationship

$$\alpha = \frac{1}{2l} \text{ Log } \left\{ 1 - 2\alpha o l \frac{Po}{P(n-1)} \right\}$$

in which:

α is the attenuation in the elementary segment in question,

αo is the initial attenuation in the body of the section which includes the elementary segment in question.

Po is the microwave power applied to the section,

P(n−1) is the microwave power transmitted in the plane of side z(n−1).

5,609,892

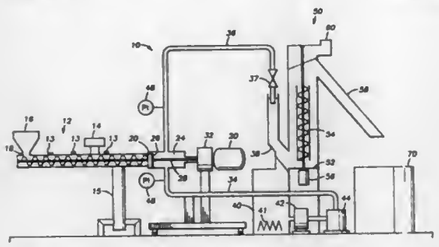
APPARATUS FOR THE PRODUCTION OF ENCAPSULATED FOAMING CONCENTRATES

Rodrigo A. Garcia, Montgomery, Tex., and Joseph G. Gho, Vancouver, Canada, assignors to GAIA Research, Conroe, Tex.

Continuation of Ser. No. 321,235, Oct. 11, 1994, abandoned, which is a division of Ser. No. 61,182, May 13, 1993, abandoned, which is a division of Ser. No. 974,109, Nov. 10, 1992, Pat. No. 5,234,963, which is a continuation-in-part of Ser. No. 882,279, May 13, 1992, abandoned. This application May 3, 1996, Ser. No. 646,725

Int. Cl.[6] B29B *9/06*

U.S. Cl. 425—311 **5 Claims**



1. An apparatus for the production of an encapsulated chemical foaming concentrate in a thermoplastic resin which comprises:

a thermoplastic extruder said extruder including a mixing zone with means for venting water from said mixing zone, said extruder further including a compounding zone in which said extruder compounds a mixture of a thermoplastic resin carrier and foaming agents, said compounding zone having means to maintain positive pressure within the compounding zone of said extruder such that there is no substantial reduction in pressure, said extruder having an outlet end,

a die at the outlet end of said extruder, said die having a plurality of openings, a short land length, less than 0.25 inches, and an outer face;

a plurality of cutter blades at said outer face of said die which cut said mixture into pellets as it is extruded from the openings of said die;

a water chamber surrounding said outer face of said die in which said pellets are subjected to cooled water (at a temperature from 400° to 130° F.) under positive pressure; and

means for circulating water to said water chamber and maintaining a positive pressure greater than 15 psig in said water chamber.

5,609,893

PROBE ASSEMBLY FOR INJECTION MOLDING APPARATUS

Gregg Eastwood, Alta Loma, Calif., assignor to JK Molds, Inc., Upland, Calif.

Filed Jan. 12, 1995, Ser. No. 372,045

Int. Cl.[6] B29C *45/20*

U.S. Cl. 425—549 **35 Claims**

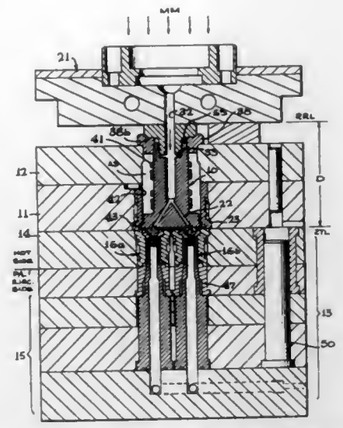
1. A probe for an injection molding apparatus comprising a probe body:

said probe body comprising a pair of body parts including regions in telescoping relationship and having a molding material passage therethrough;

a first of said pair of probe body parts having a rear mounting surface for mounting with said passage in communication with a source of molding material;

a second of said body parts including at least one runner communicating with said passage and the frunt face of said second of said body parts;

said front face having at least one molding material outlet communicating with at least one mold cavity through said runner and said outlet;



the front face of said probe being in sealing relationship with said mold cavity;

the telescoping region of said body parts defining an annular molding material filled cavity when the probe is supplied with molding material;

said annular cavity having a transverse cross section greater than the combined cross section of said outlet whereby molding material within said annular cavity applies sealing pressure between the probe and the mold and said source of molding material.

5,609,894

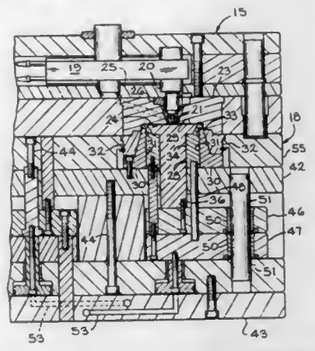
INJECTION MOLDING APPARATUS FOR PRODUCING PLASTIC LIDS

W. John Rathbun, Castalia, Ohio, assignor to Rathbun Family Real Estate Group, Castalia, Ohio

Filed Feb. 27, 1995, Ser. No. 394,959

Int. Cl.[6] B29C *45/44*

U.S. Cl. 425—556 **4 Claims**



1. A mold apparatus for injection molding of plastic parts having tops and depending skirts comprising, a cavity mold part defining at least one main cavity for one of said plastic parts, a core mold assembly complementary with said cavity mold part, said core mold assembly including an outer core mold part defining a center opening, an outer ejector part positioned for movement within said center opening of said outer core mold part, said outer ejector part and said outer core mold part defining at least one supplemental sidewall cavity in communication with said main cavity, and an inner stem ejector part positioned Within said outer ejector part, said outer ejector part and said inner stem ejector part being movable relative to said outer core mold part and also relative to one another, means for moving said outer core mold part and said outer ejector part between a molding position defining said at least one supplemental sidewall cavity and an open position wherein said outer core mold part and said outer rejector part are separated, a stripper part positioned adjacent said outer core mold part, means for moving said stripper part into engagement with such skirt of such one of such plastic parts when said outer core mold part and said outer ejector part are in such open position to rotate and move said plastic part from said at least one supplemental sidewall cavity.

5,609,895

METHOD FOR PRODUCING HALF-HULLED RICE MILK

Yoshiichi Takubo, Imabari, Japan, assignor to Takubo Kogyosho Co., Ltd., Ehime-ken, Japan

Continuation-in-part of Ser. No. 285,948, Aug. 4, 1994, Pat. No. 5,510,128. This application Jun. 6, 1995, Ser. No. 470,364

Int. Cl.[6] A23L *1/10*

U.S. Cl. 426—28 **14 Claims**

1. A method for producing a half-hulled rice milk having a solid content of 10% to 30%, comprising the steps of:

(a) preparing boiled half-hulled rice with water to make a gruel having a water content depending on the solid content of the half-hulled rice milk;

(b) adding malted rice to said half-hulled rice gruel to obtain a mixed gruel of malted rice and half-hulled rice;

(c) saccharifying the malted rice in said mixed gruel at 50° C. to 65° C.;

(d) heating the resulting gruel to terminate saccharification and sterilize said gruel;

(e) adjusting the water content of the resulting gruel before or after step (d);

(f) emulsifying the heated gruel; and

(g) filtering the emulsified gruel to obtain a half-hulled rice milk.

5,609,896

VITAMIN AUGMENTED RICE COMPOSITE AND METHOD THEREFOR

James P. Cox, and Robert W. D. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Filed Mar. 29, 1995, Ser. No. 412,552

Int. Cl.[6] A23L *1/0532;1/29*

U.S. Cl. 426—72 **60 Claims**

1. A vitamin augmented rice composite comprising:

rice particles;

vitamins;

a heat stabilizing agent;

a binding agent;

a cross-linking agent for setting said binding agent; and

an aqueous agent.

5,609,897

POWDERED BEVERAGE CONCENTRATE OR ADDITIVE FORTIFIED WITH CALCIUM AND VITAMIN D

Michael A. Chandler, Gahanna; Normanella T. DeWille, Columbus; Terrence B. Mazer, Reynoldsburg; Robert J. Ragan, Gahanna; Gregory A. Snowden, Westerville; Maureen E. Geraghty, Columbus; Catherine D. Johnson, Dublin, and Lonnie R. Drayer, Gahanna, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 7, 1995, Ser. No. 418,729

Int. Cl.[6] A23L *1/303;1/304*

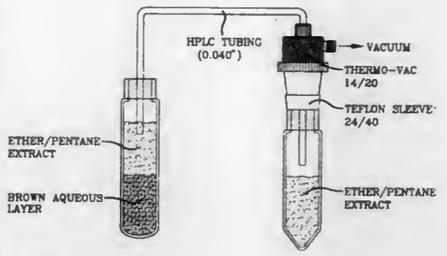
U.S. Cl. 426—73 **9 Claims**

1. A powdered beverage concentrate consisting essentially of:

a. calcium glycerophosphate;

b. vitamin D;

c. vegetable oil;



d. a gum;

e. vitamin C;

f. an acidulant:

g. a sweetener;

h. a glucose polymer; and

i. a flavoring agent, wherein said powdered beverage concentrate contains from 7.2 to 18.0% by wt. calcium.

5,609,898

CALCIUM-ENRICHED DRINK AND METHOD FOR PRODUCING THE SAME

Nobuo Kaji; Susumu Mizusawa; Masayuki Sahashi, and Takako Tsuchida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 567,240

Claims priority, application Japan, Dec. 7, 1994, 6-330348

Int. Cl.[6] A23L *1/0534;1/304*

U.S. Cl. 426—74 **14 Claims**

1. A calcium-enriched drink comprising a soybean milk drink or a milk drink which comprises colloidal microcrystalline cellulose and low-strength agar, each in an amount not to exceed a viscosity of 40 cp in the soybean milk drink or milk drink, and an edible and hardly soluble calcium compound in a homogeneously dispersed state, wherein the low-strength agar bas a jelly strength of about 30 to 200 g/cm^2.

5,609,899

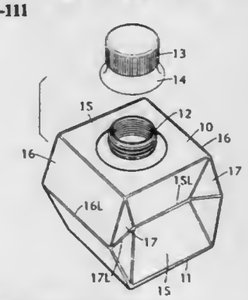
COLLAPSIBLE CANTEEN FOR SOFT DRINK

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 498,375, Jul. 5, 1995. This application Oct. 16, 1995, Ser. No. 543,614

Int. Cl.[6] B65D *85/00*

U.S. Cl. 426—111 **7 Claims**



1. A collapsible canteen comprising:

A. square top and bottom walls, the top wall being provided with a projecting neck on which a removable cap is received;

B. a first pair of opposed side wall extending between the top and bottom walls and being inwardly foldable in half whereby when the canteen is collapsed the folded-in first pair of side walls is sandwiched between said top and bottom walls;

C. a second pair of opposed side walls extending between the top and bottom walls and being outwardly foldable in half,

said second pair of walls being each provided with a triangular gusset that is joined to a side wall in the first pair of walls whereby when the canteen is collapsed, the gussets are then folded into the folded out second pair of side walls to define a pair of outstretching wings.

5,609,900

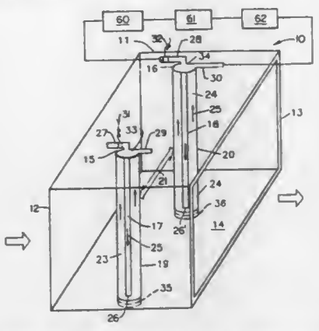
ELECTROHEATING OF FOOD PRODUCTS USING LOW FREQUENCY CURRENT

David Reznik, 2151 Barbara Dr., Palo Alto, Calif. 94303

Continuation of Ser. No. 125,933, Sep. 23, 1993, abandoned. This application Mar. 21, 1996, Ser. No. 624,651

Int. Cl.[6] A23L *1/025;1/32*

U.S. Cl. 426—244 **39 Claims**



1. A method of electroheating a food product comprising the steps of: continuously supplying a food product to be heated; passing said food product in a direction through an electroheating zone in an electroheating cell defined between at least one pair of spaced electrode assemblies, each of said electrode assemblies comprising an electrode, a porous barrier having a high degree of mechanical and thermal stability to withstand pressure differentials and long term elevated temperatures, and an electrolyte, wherein said electrolyte is located in a gap between said electrode and said barrier, and wherein said food product is in direct contact with said barrier and in electrical contact with said electrolyte through said pores of said porous barrier, said electrode in physical contact with said electrolyte but not with said food product; and applying substantially continuous alternating electrical energy having a frequency in the range of between about 50 Hz and about 99 kHz and having a current density between said electrode assemblies which is substantially in a direction other than the direction of food flow across said electrodes and through said food product to electroheat said food product to a first temperature sufficient to at least pasteurize said food product without significant electrolysis in said food product.

5,609,901

METHOD OF USING A PERFORATED PACKAGE

Daniel J. Geddes, Appleton; Kathy Rigotti, Neenah, both of Wis.; Linda L. Bunker, Rainier, Wash.; Arthur C. Berger, Mound, Minn.; Patrick L. Maynard, Combined Locks, Wis.; Robert Patterson, and David H. Hollenberg, both of Neenah, Wis., assignors to James River Corporation, Richmond, Va.

Division of Ser. No. 909,172, Jul. 6, 1992, Pat. No. 5,399,366. This application Feb. 9, 1995, Ser. No. 385,781

Int. Cl.[6] B32B *7/10;* **B65D** *30/08;85/00*

U.S. Cl. 426—394 **6 Claims**

1. A method of using a perforated package including:
a first layer of absorbent material;
a second layer of printable material; and
a water vapor-impermeable polymer layer interdisposed between the first and second layers; and
treated fibers in said first layer at least adjacent to the face thereof away from said water-vapor-impermeable polymeric layer, each treated fiber bearing a foraminous hydrophobic water-vapor-permeable pellicle,
wherein at least one of the first and second layers is discontinuously bonded to a respective side of the polymer layer at spaced locations, so that at least one of the first and second layers forms air pockets with the polymer layer at locations between the bond locations,
wherein said material forms a package having a plurality of perforations to allow access to substantially all of the interior of the package comprising
placing a food item therein;
sealing the package after placing the food item therein; and
separating the package at the plurality of perforations to access the interior of the package.

5,609,902

METHOD FOR CONTINUOUS ROASTING OF FOOD MATERIALS

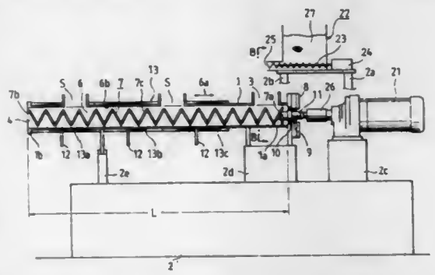
Takahiro Inakuma; Hiroyasu Furui, both of Tochigi; Yoshinori Tokugawa, Hiroshima; Fumiaki Tsuda, Hiroshima; Mitsuo Nagai, Hiroshima, and Shuitsu Kiribara, Hiroshima, all of Japan, assignors to Kagome Co., Ltd., Nagoya, and The Japan Steel Works, Ltd., Tokyo, both of Japan

Filed Feb. 22, 1995, Ser. No. 392,494

Claims priority, application Japan, Nov. 29, 1994, 6-294972

Int. Cl.[6] A23L *1/00*

U.S. Cl. 426—466 **7 Claims**



1 A method for continuous roasting of food materials, comprising the steps of:
continuously mixing a powdered, particulate, chipped or shredded food material within and transferring the food material through a horizontally placed, heated tubular cylinder with open ends while roasting the food material, said tubular cylinder having at least one heating element disposed thereon, said at least one heating element extending around at least a portion of the circumference of said tubular cylinder.

5,609,903

PROCESS FOR FORMING EXTRUDED MULTI-STRAND PRODUCTS

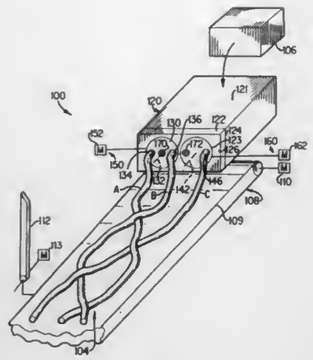
Gary E. Israel, West Nyack, N.Y.; John Knapp, Sicklerville, and Mark Foley, Blackwood, both of N.J., assignors to Pepperidge Farm, Incorporated, Norwalk, Conn.

Filed Jun. 7, 1995, Ser. No. 476,399

Int. Cl.[6] A21C *3/04;3/08;* **D01F** *9/00*

U.S. Cl. 426—500 **20 Claims**

10. A process of forming a braided product of extrusible material, the process comprising:
providing a plurality of laterally adjacent rotatable members each having at least two outlet ports fluidly coupled to a source of pressurized extrusible material;
blocking unblocked outlet ports;



preventing the extrusion of extrusible material from each blocked outlet port;
unblocking blocked outlet ports;
extruding a strand of extrusible material from each unblocked outlet port; and
alternately rotating the adjacent rotatable members in opposite directions; to form the braided product of extrusible material.

5,609,904

WHIPPING CREAM COMPOSITIONS POSSESSING A LOWERED FAT CONTENT AND IMPROVED ACID RESISTANCE AND FREEZE RESISTANCE, AND PROCESS FOR PRODUCING THE SAME

Hen-Sik Koh, Ohtsu, and Ichizo Hayama, Settsu, both of Japan, assignors to Asahi Foods Co., Ltd., Kyoto, Japan

Filed Jun. 12, 1995, Ser. No. 489,388

Claims priority, application Japan, Dec. 1, 1994, 6-341148

Int. Cl.[6] A23C *13/12;* **A23L** *1/19*

U.S. Cl. 426—565 **28 Claims**

1. A freeze-resistant whipping cream composition comprising:
(a) 35–70 weight % total solids including
(i) 16–40 weight % oil and fat, and
(ii) 0.3 to 6 weight % combined casein protein and whey protein at a casein protein/whey protein weight ratio of at least 0.24;
(b) an emulsifier comprising, based on the composition, 0.01 to 0.5 weight % lecithin, 0.05 to 1.2 weight % saturated fatty-acid ester of a polyglycerol having a mean glycerol polymerization degree of not less than 5 and an HLB value of not less than 9, and 0.02 to 0.6 weight % saturated fatty-acid ester of a polyglycerol having a mean glycerol polymerization degree of not less than 2 and an HLB value of less than 7, and
(c) 0.05 to 5 weight %, based on the composition, of at least one edible fiber selected from the group consisting of cellulose, hemicellulose, sparingly digestible dextrin, modified starch, polydextrose, and a combination thereof.

5,609,905

METHOD OF MAKING NATURAL CAROB FIBER

Ana M. R. Marco; Baltasar R. C. De Mora, both of Madrid, and Carlos S. Diaz, Rocafort, all of Spain, assignors to Compania General del Algarrobo de Espana, Spain

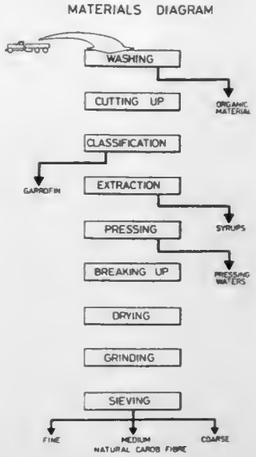
Division of Ser. No. 218,274, Mar. 25, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 395,413

Claims priority, application Spain, Mar. 26, 1993, 9300627

Int. Cl.[6] A23L *1/36*

U.S. Cl. 426—629 **10 Claims**

1. A method for obtaining a natural carob fiber comprising the steps of
(a) providing cleaned carob fruit pods;



(b) cutting the pods so as to obtain a pulp and at least one seed contained therein which passes through sieve with a hole diameter of 12 to 20 mm;
(c) separating pulp having a size of less than 10 mm from the mixture resulting from step (b);
(d) contacting the separated pulp with water for a time sufficient to obtain a raw juice having a concentration of between 30° and 50° Brix and a waste pulp which constitutes an insoluble fraction of the carob pulp;
(e) separating a sufficient quantity of water from the waste pulp so that the waste pulp can be broken up by pressure;
(f) breaking up the waste pulp from which water has been removed by application of pressure;
(g) further drying the pulp to a waste content of less than 5%; and
(h) grinding the dried pulp into a flour of between 50 and 250 mesh (ASTM E11-70).

5,609,906

ANTI-BLOOMING COMPOSITION, AND LAURIN FAT AND CHOCOLATE CONTAINING THE SAME

Kosuke Hokuyo; Miho Hayashi; Shuichi Yamaguchi, and Tsugio Izumi, all of Osaka-fu, Japan, assignors to Fuji Oil Company, Limited, Osaka-fu, Japan

Filed Mar. 9, 1995, Ser. No. 401,369

Claims priority, application Japan, Mar. 11, 1994, 6-041567

Int. Cl.[6] A23G *1/00*

U.S. Cl. 426—660 **2 Claims**

1. Chocolate comprising a laurin fat containing a fatty acid monoglyceride composed of a fatty acid having 16 carbon atoms (A) and a fatty acid monoglyceride composed of a fatty acid having 18 carbon atoms (B), a weight ratio of A/B being 40/60 to 60/40 in an total amount of A+B of at least 0.5% by weight on the fat ingredient of chocolate.

5,609,907

SELF-ASSEMBLED METAL COLLOID MONOLAYERS

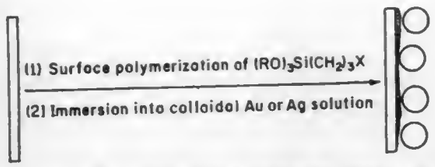
Michael Natan, State College, Pa., assignor to The Penn State Research Foundation, University Park, Pa.

Filed Feb. 9, 1995, Ser. No. 386,231

Int. Cl.[6] B01J *13/00;* **B05D** *3/00*

U.S. Cl. 427—2.12 **15 Claims**

1. A method for the preparation of metal colloid monolayers or submonolayers comprising the steps of:
a.) selecting a substrate



b.) coating the substrate with a bifunctional organic film to impart to said substrate a functionality that allows for bonding of metal colloid particles; and

c.) contacting the organic film coated substrate with a solution of colloid metal particles to bind said particles to the functional groups on said organic film thereby forming said monolayer or submonolayer,

said method resulting in an organic film coated substrate containing a surface layer of colloidal metal particles that are closely spaced, predominately unaggregated and confined to nearly a single plane.

5,609,908

APPARATUS FOR COATING A PRESSING CHAMBER WITH A LUBRICANT

Gunter Voss, Ziegelstadel 10, 86911 Diessen/Ammersee, Germany

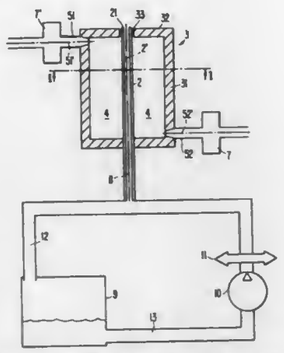
PCT No. PCT/DE92/00075, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO92/13643, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 5, 1992, Ser. No. 122,486

Claims priority, application Germany, Feb. 5, 1991, 41 03 413.9

Int. Cl.[6] B05D *1/00*

U.S. Cl. 427—214 **21 Claims**



1. An apparatus for coating a substrate with a fluid, comprising:

a two-substance nozzle for the discharge of a fluid and a gas, the two-substance nozzle comprising an inside nozzle having a longitudinal axis and an outlet opening, and a ring chamber surrounding the inside nozzle and having an opening coaxially arranged about the inside nozzle;

at least one gas inlet nozzle connected to the ring chamber for conveying gas onto a lateral surface inside the ring chamber, wherein the at least one gas inlet nozzle has a longitudinal axis which does not intersect the longitudinal axis of the inside nozzle;

a device, in fluid communication with the inside nozzle, for intermittently supplying fluid to the inside nozzle to provide a convex fluid meniscus at the outlet opening of the inside nozzle; and

a device, in fluid communication with the at least one gas inlet nozzle, for continuously supplying gas to the at least one gas inlet nozzle;

wherein a distance between the outlet of the inside nozzle and the outlet of the ring chamber is sufficient to attain entrainment of the convex fluid meniscus by the continuously supplied gas in a rotating path having a conical development.

5,609,909

PROLAMINE COATINGS FOR TASTE MASKING

Glenn A. Meyer, Waukegan, Ill., and Terrence B. Mazer, Reynoldsburg, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 245,927, May 19, 1994, which is a continuation-in-part of Ser. No. 23,301, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 815,458, Dec. 31, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 421,649

Int. Cl.[6] A61K *9/16;* **A23L** *1/305*

U.S. Cl. 427—2.14 **18 Claims**

1. A method for preparing a suspension of an encapsulated active substance, said suspension having the characteristics of stable taste masking and immediate release of the active substance in the gastrointestinal tract, said method consisting essentially of the steps of:

(a) forming particles of an active substance selected from the group consisting of clarithromycin and erythromycin by dissolving said substance in a solvent, drying and sieving the resultant powder to yield particles having a size in the range of between about 175 microns and about 420 microns;

(b) encapsulating the particles with a single outer coat by contacting the particles with a coating solution comprising a mixture of a prolamine and a hydrophobic plasticizer selected from water-insoluble vegetable source oils and waxes wherein said oils and waxes have a fatty acid chain length of about 6 to about22 carbon atoms;

(c) collecting the coated particles; and

(d) suspending the coated particles in a solution having a final pH greater than about 6.5.

5,609,910

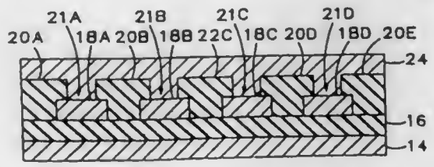
METHOD FOR FORMING THERMAL-INK HEATER ARRAY USING RECTIFYING MATERIAL

David E. Hackleman, Monmouth, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 925,355, Aug. 3, 1992, Pat. No. 5,414,245. This application Jan. 10, 1995, Ser. No. 370,947

Int. Cl.[6] B05D *5/12;* **C23C** *16/00*

U.S. Cl. 427—102 **10 Claims**



1. A fabrication method for a heater array in an ink jet printer, the method comprising the steps of:

forming an insulating substrate;

depositing a first material layer atop the insulating substrate;

patterning the first material layer;

depositing a first insulating layer atop the patterned first material layer;

patterning a plurality of contact windows in the first insulating layer at desired heating locations;

depositing a second material layer atop the patterned first insulating layer such that the first and second material layers are in physical contact with each other through the contact windows in the first insulating layer;

forming contacts on the first material layer; and

forming contacts on the second material layer,

wherein each physical contact region between the first and second material layers forms a vertically extending resistive diode junction within the contact window at the desired heating locations, the resistive diode junction in a forward biased condition transferring conductive heat directly to ink in the ink jet print head while simultaneously limiting forward current in said resistive diode junction.

5,609,911

PRODUCTION OF CERAMIC MATERIAL POWDER

Shinsei Okabe, Takatsuki; Shunsuke Nakaya, Omihachiman; Yukio Hamaji, Otsu, and Masami Yabuuchi, Yokaichi, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 19, 1995, Ser. No. 503,990

Claims priority, application Japan, Jul. 19, 1994, 6-166881

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 **19 Claims**

1. A method for producing powder of ceramic materials, comprising the steps of mixing a powder of a titanate ceramic composition, an organic solvent and a surfactant to prepare a slurry, adding at least one unsaturated fatty acid salt containing an additive metal element therein to the resultant slurry, polymerizing said at least one unsaturated fatty acid salt with a polymerization initiator to form a polymer of said at least one unsaturated fatty acid salt, drying the resultant slurry to form a layer of the resultant polymer on particle surfaces of said titanate ceramic composition, and then calcining the resultant coated powder of said titanate ceramic composition.

5,609,912

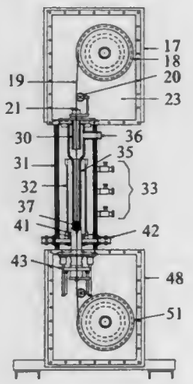
CERAMIC FABRIC FORMING METHOD

W. Jack Lackey, Marietta, Ga., and John A. Hanigofsky, Plano, Tex., assignors to Georgia Tech Research Corp., Altanta, Ga.

Filed Sep. 8, 1995, Ser. No. 522,987

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 **16 Claims**



1. A method for forming a ceramic fabric formed of coated carbon fibers, comprising the steps of:

(a) depositing a coating of a ceramic onto a carbon fiber tow;

(b) weaving the coated carbon fiber tow into a textile;

(c) laying up the textile into at least one layer to form a fibrous preform such that the ends of the coated carbon fibers are exposed to the ambient; and

(d) subjecting the fibrous preform to a temperature sufficient to oxidize the carbon fiber so as to remove a majority of the carbon fiber from the fibrous preform resulting in a ceramic fabric comprising the ceramic coating.

5,609,913

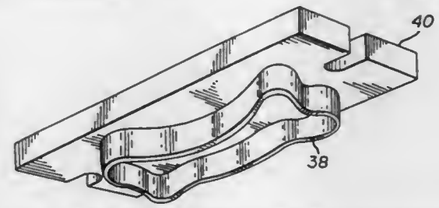
PROCESS FOR MANUFACTURING DOG CHEW TOYS OF TIRE SIDEWALLS

James W. Welch, El Paso, Tex., assignor to CB Worldwide Inc., Mammoth Lakes, Calif.

Filed Apr. 12, 1996, Ser. No. 631,370

Int. Cl.[6] B05D *3/12;* **A01K** *29/00*

U.S. Cl. 427—242 **21 Claims**



1. A process for manufacturing dog chew toys of tire sidewalls, comprising the steps of:

cutting a chew toy base from a tire sidewall;

cleaning and polishing the chew toy base within a cleaning tumbler utilizing sand and gravel;

rinsing residual sand from the chew toy base; and

flavoring the chew toy base with a flavoring agent within a final treatment tumbler.

5,609,914

METHOD FOR PREPARING HIGH RESOLUTION POLYIMIDE IMAGES USING NON-PHOTOSENSITIVE LAYERS OF POLY(AMIC ACID) OR SALTS THEREOF

Sbeau-Hwa Ma, Chaddsford; Walter R. Hertler, Kennett Square, both of Pa., and Howard E. Simmons, III, Wilmington, Del., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 2, 1995, Ser. No. 433,275

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—264 **21 Claims**

1. A method for preparing a high resolution wash-off polyimide image comprising the sequential steps of:

(a) providing a non-photosensitive layer on a substrate, said non-photosensitive layer comprising a compound selected from the group consisting of a substantially non-crystalline poly(amic acid) polymer and a salt of the substantially non-crystalline poly(amic acid) polymer;

(b) applying an aqueous ink imagewise to the non-photosensitive layer to change its solubility in the ink-applied areas, said aqueous ink comprising an aqueous carrier medium and a solubility altering agent;

(c) washing the non-photosensitive layer with an aqueous solution to remove the soluble areas of the non-photosensitive layer; and

(d) curing the poly(amic acid) polymer to form a polyimide layer.

5,609,915

HARDENED AND FIRE RETARDANT WOOD PRODUCTS

B. Shannon Fuller, Nashville, Tenn.; W. Dale Ellis, McFarland, and Roger M. Rowell, Madison, both of Wis., assignors to Triangle Pacific Corporation, Dallas, Tex.

Continuation of Ser. No. 574,469, Dec. 8, 1995, which is a continuation of Ser. No. 74,772, Jun. 9, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 595,814

Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—297 **14 Claims**

1. A method for hardening wood products comprising the steps of: placing the wood product under a vacuum to remove air; while maintaining the vacuum, contacting the wood product with a monomer solution containing a polymerizable monomer selected

from the group consisting of hexanediol diacrylate and hexanediol dimethacrylate and a free radical source as polymerization initiator to impregnate the wood with monomer; releasing the vacuum; initiating polymerization of the monomer to produce a hardened wood product upon polymerization of the monomer.

5,609,916

EMULSIFIABLE COMPOSITIONS, CURABLE EMULSIONS THEREOF AND USES OF SUCH CURABLE EMULSIONS

Denise E. Fiori, Trumbull, and Richard J. Quinn, Bethel, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 181,949, Jan. 14, 1994, abandoned. This application Apr. 10, 1995, Ser. No. 419,345

Int. Cl.[6] B05D *3/02;7/14;* **C08F** *2/32;* **C08L** *75/12*

U.S. Cl. 427—388.4 **25 Claims**

1. A method of coating a substrate comprising the steps of:

(a) applying to the substrate a coating composition based on an oil-in-water emulsion comprising an aqueous medium having substantially homogeneously emulsified therein a film-forming, non-aqueous substantially homogeneous emulsifiable composition comprising, as the primary film-forming components, a mixture of:

(1) an unblocked polyisocyanate crosslinking agent containing at least two reactive isocyanate groups, at least one of which is a non-primary isocyanate group, and which in and of itself is substantially hydrophobic and non-dispersible in water: and

(2) a surface active isocyanate reactive material; and thereafter

(b) curing the so-applied coating composition.

5,609,917

LATEX FOR HIGH PERFORMANCE MASKING TAPE

Pascale F. J. Muller, Vanves, and Fabienne Rouviere, Choisel, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 315,475, Sep. 30, 1994, Pat. No. 5,514,758. This application Dec. 22, 1995, Ser. No. 576,978

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—391 **21 Claims**

1. A process for treating paper to render it particularly beneficial for utilization in manufacturing high performance masking tape, which comprises the steps of (A) passing the paper through an aqueous bath which is comprised of a latex to impregnate the paper with the latex, wherein the latex is made by the sequential steps of (1) terpolymerizing monomer mixture which consists essentially of a vinyl aromatic monomer, an alkyl acrylate, and an alkyl propenoic acid monomer in an aqueous polymerization medium by free radical polymerization in a first polymerization step to produce a seed polymer latex; (2) neutralizing the seed polymer latex to a pH of about 6 to about 9 by the addition of an alkali to produce a neutralized seed polymer latex; (3) adding additional vinyl aromatic monomer and additional alkyl acrylate monomer to the neutralized seed polymer latex; and (4) allowing the additional vinyl aromatic monomer and the additional alkyl acrylate monomer to polymerize in a second polymerization step to a solids content of about 30% to about 59% to produce the latex which is particularly beneficial for utilization in manufacturing high performance masking tape; wherein about 30 percent to about 50 percent of the total amount of vinyl aromatic monomer polymerized is polymerized in the first polymerization step; wherein about 30 percent to about 50 percent of the total amount of alkyl acrylate polymerized is polymerized in the first polymerization step; wherein at least about 90 percent of the total amount of the alkyl propenoic acid monomer polymerized is polymerized in the first polymerization step; and wherein a total of from about 25 phm to about 39 phm of vinyl aromatic monomer, from about 60 phm to about 70 phm of alkyl acrylate monomer, and from about 1 phm to about 5 phm of alkyl propenoic acid monomer is polymerized in the first polymerization step and the second polymerization step; and (B) drying the impregnated paper to render it particularly beneficial for utilization in manufacturing masking tape.

5,609,918

METHOD OF FORMING A TOP COAT

Sachio Yamaguchi, deceased, late of Ofunato; Akimasa Nakahata; Satoshi Ikushima, both of Hiratsuka; Yasumasa Okumura, Yokohama; Haruhiko Aida; Shigeo Nishiguchi, both of Hiratsuka, and Osamu Isozaki, Yokohama, all of Japan, assignors to Kansai Paint Company Limited, Amagasaki, Japan

Filed Jun. 7, 1995, Ser. No. 477,613

Claims priority, application Japan, Jun. 13, 1994, 6-130254; Jun. 28, 1994, 6-146366

Int. Cl.[6] B05D *1/36;7/00*

U.S. Cl. 427—407.1 **23 Claims**

1. A method of forming a top coat by forming in sequence a colored base coat on a substrate and a clear coat, the method being characterized in that at least one of the colored base coat and the clear coat is formed by a curable coating composition consisting essentially of:

(a) (a-1) a resin having a hydroxyl group, a carboxyl group and an epoxy group in the same molecule, or (a-2) a mixture of a hydroxyl- and carboxyl-containing resin with a polyepoxide;

(b) a silicon compound having, per molecule, at least one silanol group and/or at least one hydrolyzable group directly bound to a silicon atom; and

(c) an organic solvent.

5,609,919

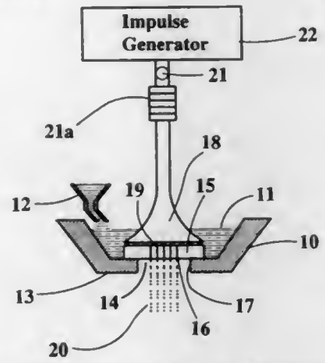
METHOD FOR PRODUCING DROPLETS

Ding Yuan; Hani Henein, both of Edmonton, and John A. Fallavollita, Victoria, all of Canada, assignors to Altamat Inc., Edmonton, Canada

Continuation of Ser. No. 437,934, May 9, 1995, abandoned, which is a continuation-in-part of Ser. No. 230,712, Apr. 21, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,214

Int. Cl.[6] B05D *1/02*

U.S. Cl. 427—421 **16 Claims**



1. A method of atomizing a fluid, the fluid being held in a container having an inside and an outside, the container having an opening communicating between the inside and the outside of the container, the method comprising the steps of:

positioning the fluid adjacent the opening in the container under a pressure such that a continuous stream of fluid does not pass through the opening; and

repetitively applying impulses to the fluid in the direction of the opening with a frequency of at least 10 Hz, the impulses being sufficient to impel the fluid through the opening as elongate discrete fluid segments.

5,609,920

METHOD OF AND APPARATUS FOR COATING AT LEAST ONE LIQUID MEDIUM ONTO A MOVING MATERIAL WEB, IN PARTICULAR OF PAPER OR CARDBOARD

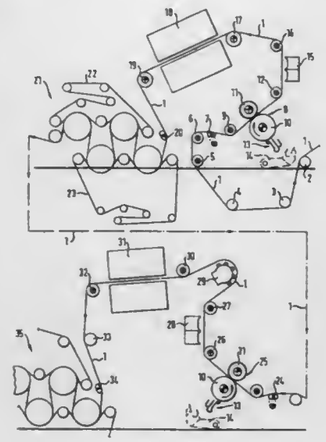
Bernd Riepenhausen, Heidenheim, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Apr. 28, 1995, Ser. No. 430,369

Claims priority, application Germany, Apr. 28, 1994, 44 14 921.2

Int. Cl.[6] B05D *1/28*

U.S. Cl. 427—428 **16 Claims**



1. Method of coating at least one liquid medium onto a moving material web, in which method the material web is either led in a first mode of operation along a first treatment path or, in a second mode of operation, along a second treatment path, the material web being led

a) along the first treatment path through a roll gap formed by a primary roll and a secondary roll to coat the liquid medium, or

b) along the second treatment path over a region of a shell surface of the primary roll remote from the roll gap for directly coating the liquid medium onto the material web in this region of the shell surface of the primary roll, and wherein

c) the primary roll is driven in one rotational direction in the first mode of operation and in an opposite rotational direction in the second mode of operation,

characterized in that

in both the first mode of operation and the second mode of operation coating of the liquid medium is performed by means of a nozzle coating mechanism;

in the first mode of operation along the first treatment path the liquid medium is coated via the nozzle coating mechanism onto the shell surface of the primary roll which in turn coats the liquid medium onto the material web in the roll gap formed between the primary roll and the secondary roll; and

upon changing the mode of operation from the first mode of operation to the second mode of operation and vice versa, the nozzle coating mechanism is disassembled, changed in direction by moving the nozzle coating mechanism about 180° and subsequently reassembled.

5,609,921

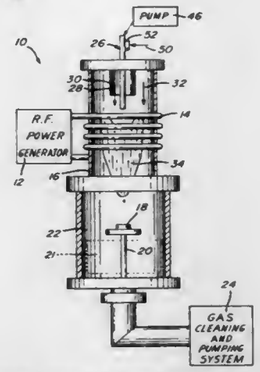
SUSPENSION PLASMA SPRAY

François Gitzhofer; Etienne Bouyer, and Maher I. Boulos, all of Sherbrooke, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Aug. 26, 1994, Ser. No. 296,674

Int. Cl.[6] C23C *4/12*

U.S. Cl. 427—446 **13 Claims**



1. A plasma spray method for agglomerating solid particles of a given material into at least partially melted drops, comprising the steps of:

producing an inductively coupled RF plasma discharge;

providing a suspension of said material, said suspension comprising solid particles of said material dispersed into a liquid or semi-liquid carrier substance;

atomizing said suspension into a stream of droplets and injecting said stream of droplets generally centrally of the plasma discharge; and

by means of the plasma discharge, (a) vaporizing said carrier substance, and (b) agglomerating the particles into said at least partially melted drops.

5,609,922

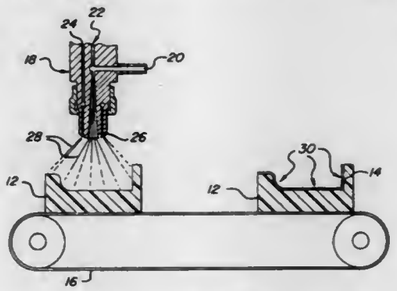
METHOD OF MANUFACTURING MOLDS, DIES OR FORMING TOOLS HAVING A CAVITY FORMED BY THERMAL SPRAYING

Robert R. McDonald, 1117 Quaker Valley Dr., Traverse City, Mich. 49684

Filed Dec. 5, 1994, Ser. No. 349,252

Int. Cl.[6] B05D *1/10;* **B29C** *33/38*

U.S. Cl. 427—447 **17 Claims**



1. A method of making a mold or die comprising the steps of:

a) providing a porous heat exchanging body support member having a defined porosity;

b) configuring a surface of the support member to a desired cavity; and

c) thermal spraying particles to the configured cavity in the support member, thereby producing a mold or die.

5,609,923

METHOD OF CURTAIN COATING A MOVING SUPPORT WHEREIN THE MAXIMUM PRACTICAL COATING SPEED IS INCREASED

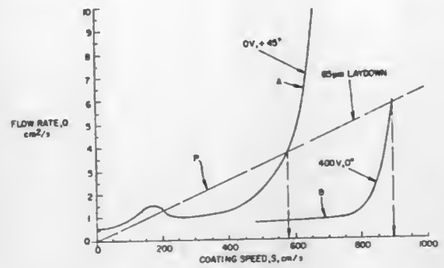
Andrew Clarke, Berkhamsted, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1996, Ser. No. 600,709

Claims priority, application United Kingdom, Feb. 25, 1995, 95003849

Int. Cl.[6] B05D *1/30*

U.S. Cl. 427—458 10 Claims



1. A method of curtain coating a composition on to a moving support in which maximum practical coating speed is increased, whereby a composition is applied to a moving support by curtain coating at a coating point, and an electrostatic voltage is applied to the support either prior to the coating point or at the coating point, said voltage being applied during the curtain coating process, the ratio of the electrostatic voltage at any point on the support to speed of said moving support being less than 1:1, the voltage being expressed in V and the speed of the moving support in cms^{-1}.

5,609,924

METHOD FOR PROTECTING GLASS SURFACES

Richard J. McCurdy, Toledo; Kenneth J. Heater, Columbus; Alice B. Parsons, Pataskala, and J. David Robbins, Worthington, all of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation of Ser. No. 170,532, Dec. 20, 1993, Pat. No. 5,951,457. This application May 25, 1995, Ser. No. 450,032

Int. Cl.[6] B05D *1/04;1/12;1/36*

U.S. Cl. 427—475 20 Claims

1. A method for protecting stacked glass sheets, each of said glass sheets having two major surfaces, comprising the steps of:

a) providing a particulate interleaving material comprised of polyethylene, said polyethylene consisting essentially of a polyethylene selected from the group consisting of high density polyethylene having a number average molecular weight of at least about 150,000 and ultra high molecular weight polyethylene having a number average molecular weight of at least about 1,000,000;

b) applying said particulate interleaving material to one of the major surfaces of a first glass sheet; and

c) bringing a major surface of a second glass sheet into face-to-face relation with said particulate interleaving material on the major surface of the first glass sheet.

5,609,925

CURING HYDROGEN SILSESQUIOXANE RESIN WITH AN ELECTRON BEAM

Robert C. Camilletti, Midland, Mich.; Irfan Saadat, Santa Clara, and Michael Thomas, Milpitas, both of Calif., assignors to Dow Corning Corporation, Midland, Mich., and National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 4, 1995, Ser. No. 566,820

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—503 10 Claims

1. A method of forming a silica-containing ceramic coating on a substrate comprising:

applying a coating comprising hydrogen silsesquioxane resin on a substrate; and

exposing the coated substrate to an electron beam for a time and at a dose effective to convert the hydrogen silsesquioxane resin coating to a silica-containing ceramic coating.

5,609,926

DIAMOND DOPING

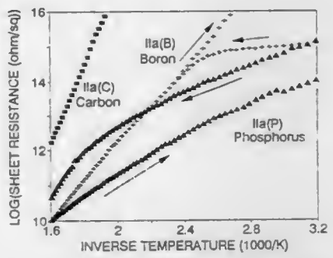
Johan F. Prins, 8 Portland Place, Northcliff, Johannesburg, South Africa

Filed Mar. 20, 1995, Ser. No. 406,559

Claims priority, application South Africa, Mar. 21, 1994, 94/1962; Sep. 26, 1994, 94/7485

Int. Cl.[6] C23C *14/00;* B05D *5/12;* H01L *21/265;* B01J *3/06*

U.S. Cl. 427—523 6 Claims



1. A method of producing a doped diamond comprising the steps of: (a) implanting at a temperature of below 0° C. dopant atoms in a diamond having a crystal lattice to create a damaged region of point defects, said point defects comprised of vacancies and interstitial dopant atoms within the crystal lattice; and (b) annealing the implanted diamond under conditions effective to reduce lattice damage and cause said interstitial dopant atoms to move into lattice positions within said crystal lattice, wherein the dopant atoms are selected from the group consisting of phosphorus, arsenic and antimony and are capable of providing the diamond with an optical or electrical property when situated in said lattice positions and wherein said implanting is at an implantation dose selected to create less damage than would be created when carbon atoms are implanted to a density of $2.5\times10^{18}/cm^3$ using a carbon ion dose of less than $5\times10^{13}/cm^2$ over a range of energies up to 150 keV giving an implanted width of 0.2 microns.

5,609,927

PROCESSING METHODS FOR HIGH-DIELECTRIC-CONSTANT MATERIALS

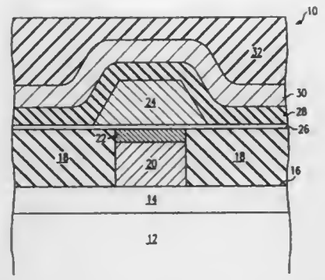
Scott R. Summerfelt, Dallas; Howard R. Beratan, Richardson, and Robert Tsu, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 6, 1995, Ser. No. 476,950

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—553 3 Claims

1. A method of forming an electronic device comprising the steps of:



depositing a layer of barium strontium titanate material on a surface;

irradiating the layer of barium strontium titanate material with ultraviolet radiation comprising photons more energetic than the band gap of the barium strontium titanate material in an ambient including ozone; and

etching the outer surface of the layer of barium strontium titanate material in a reactive ion etch process which includes oxygen and argon to substantially reduce the amount of hydroxide and carbonate contaminants on the outer surface of the layer.

5,609,928

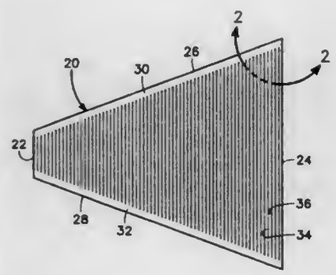
DECORATIVE ORNAMENT AND METHOD OF MAKING SAME

Monte A. Yedlin, and Mary M. Yedlin, both of 1441 Virginia Ave., Glendale, Calif. 91202-1531

Filed Mar. 5, 1996, Ser. No. 610,897

Int. Cl.[6] D04D *7/10*

U.S. Cl. 428—5 16 Claims



1. The method of making a decorative ornament comprising the steps of:

utilizing an elongated rigid core which has a sidewall;

forming a first section of thin, sheet material which has a truncated cone shape where said first section has a pair of opposite parallel edges at different lengths and a pair of opposite oblique edges of the same length;

cutting said first section into a mass of thin strips producing cuts occurring in a direction parallel to said opposite parallel edges with said cuts terminating at solid, uncut borders directly adjacent each of the said opposite oblique edges;

folding said first section once upon itself forming a fold line that is perpendicular to said parallel edges and locating said solid, uncut borders in abutting juxtaposition producing a series of loops with there being a single loop located between directly adjacent cuts; and

winding said borders several revolutions onto said sidewall producing said decorative ornament.

5,609,929

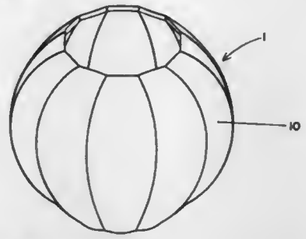
DEVICE SHELL

Yung-Chung Huang, 3F, No. 36-4, Shu-Hsin Rd., Shu-Lin Chen, Taipei Hsien, Taiwan

Filed Dec. 1, 1995, Ser. No. 565,671

Int. Cl.[6] A63B *39/00*

U.S. Cl. 428—11 3 Claims



1. A device shell, comprising:

a shell body being made of a plurality of shell pieces, the shell pieces extending side by side with each other between a top end and a bottom end of the shell body, each of the shell pieces having an arc shape to form a ball-shape shell body upon the shell pieces being fastened together by a beat sealing process; and

each shell piece being respectively molded from colored plastics in a predetermined pattern.

5,609,930

BAG FOR PACKAGING HEAVY MATERIALS

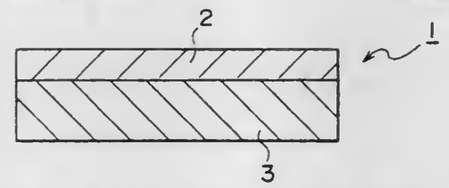
Takashi Matsunaga; Toshihiro Nishimura, and Hiroshi Inoue, all of Chiba-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,376

Claims priority, application Japan, Apr. 7, 1994, 6-069767

Int. Cl.[6] B65D *33/02*

U.S. Cl. 428—35.2 5 Claims



1. A bag with sufficient strength for packaging heavy materials comprising a multi-layer laminated film comprising:

(1) an outermost layer of a polyethylene film having a thickness of from 15 to 60 μm and containing an inorganic filler in an amount of from 20 to 80% by weight; and

(2) an innermost layer of a polyethylene film having a thickness of not less than 45 μm and containing an inorganic filler in an amount of from 10 to 40% by weight;

wherein the polyethylene of the outermost layer (1) has a melt flow rate at 190° C. of from 0.1 to 6.0 g/10 min., a density of from 0.900 to 0.925 g/m^3, and a molecular weight distribution as represented by the ratio of weight average molecular weight Mw to number average molecular weight Mn, of from 1.5 to 4.0, and the surface of the outermost layer (1) has a coefficient of static friction of not less than 0.5 (ASTM D 1894), a coefficient of dynamic friction of not greater than 0.5 (ASTM D1894), a gloss of not greater than 50% (ASTM D 523-80); and

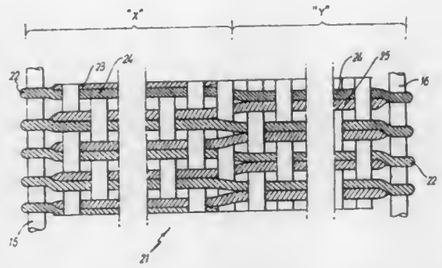
the polyethylene of the innermost layer (2) has melt flow rate at 190° C. of from 0.1 to 1.0 g/10 min, a density of from 0.920 to 0.935 g/cm^3, and a melt tension at 190° C. of not less than 4.0 g, and the amount of the inorganic filler in the innermost layer is ½ to ⅙ by weight of the amount of the inorganic filler

in the outermost layer and the ratio of the thickness of the innermost layer to the thickness of the outer layer is from 3 to 8.

5,609,931
PAPER MACHINE CLOTHING

Jean-Luc L. Delavallade, La Couronne, France, assignor to Scapa Group PLC, Lancashire, United Kingdom

PCT No. PCT/GB93/00963, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO93/23611, PCT Pub. Date Nov. 25, 1993
PCT Filed May 10, 1993, Ser. No. 331,574
Claims priority, application United Kingdom, May 9, 1992, 9210066
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—36.1 **5 Claims**



1. A method of weaving a papermakers fabric having weft loops wherein the loop forming weft yarn is woven as two picks in a common shed in each respective fabric layer as it exists in the loom, said yarn being wrapped about a core yarn at one edge of the fabric as it exists in the loom between successive weft insertions in said common shed, characterised in that the fabric is of plain weave construction and the method includes the further step of shifting the weave pattern longitudinally of the fabric by one pick at a position remote from said one edge prior to inserting two picks to form the next loop at said one edge.

5,609,932
MICROPARTICLE-CONTAINING PRESSURE SENSITIVE ADHESIVE TAPE

Richard J. Goetz, Woodbury; Daniel P. Pohl, Oakdale, and Mary L. Brown, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 222,668, Apr. 4, 1994. This application May 31, 1995, Ser. No. 454,953
Int. Cl.[6] B32B *1/08*
U.S. Cl. 428—36.91 **21 Claims**

1. An article comprising an at least partially hollow first member and a second member that is received in said first member an adhesively bonded to said first member by means of a pressure sensitive adhesive tape comprising a water-absorbing backing having first and second opposed surfaces, and a first microparticle-containing pressure sensitive adhesive on at least a portion of the first surface of the backing, wherein said microparticle-containing pressure sensitive adhesive comprises:

a) from about 90 to 100 parts by weight of a microparticle-containing component; and correspondingly

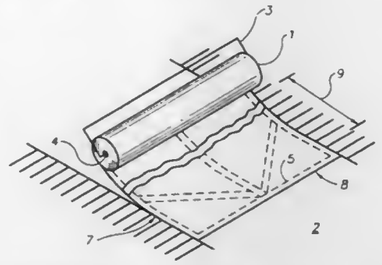
b) from 0 to 10 parts by weight of a water dispersible component,

wherein when said adhesive comprises 100 parts by weight of said microparticle-containing component, said microparticle-containing component contains a hydrophilic moiety.

5,609,933
ADHERING CEREMONIAL ROLL

Michael J. Stepanek, Hollis, N.H., assignor to Hampshire Paper Corp., Milford, N.H.

Continuation-in-part of Ser. No. 410,091, Mar. 23, 1995, and Ser. No. 369,650, Jan. 6, 1995, Pat. No. 5,449,539, which is a continuation-in-part of Ser. No. 144,333, Nov. 1, 1993, Pat. No. 5,401,548, which is a continuation-in-part of Ser. No. 954,027, Sep. 30, 1992, abandoned, said Ser. No. 410,091is a division of Ser. No. 144,333, Nov. 1, 1993, Pat. No. 5,401,548, which is a continuation-in-part of Ser. No. 954,027, Sep. 30, 1992, abandoned. This application Jul. 27, 1995, Ser. No. 508,049
Int. Cl.[6] D04D *9/00*
U.S. Cl. 428—40.1 **6 Claims**



1. A ceremonial covering for a walkway comprising a continuous ceremonial roll of non-woven material, excluding paper, said material comprising fabric material made by combining long, natural and synthetic fibers, said fibers taking from the group of materials consisting of polyesters, polypropylenes, polyamides, nylons, rayons, pulps, hemps, cottons, polyolefins and mixtures of two or more of these materials, said roll having a width and including a starting end, a starting end region, a walking surface adapted to a ceremony and a floor abutting surface;

at least a portion of said width of said floor abutting surface at said starting end region including a releasable, double-sided, pressure sensitive adhesive layer, said starting end region being defined as that portion of the length of the roll starting from two inches from said starting end and including up to 20 percent of the length of said roll;

wherein a first side of said releasable, double-sided, pressure sensitive adhesive layer is applied to said floor abutting Surface of said roll, and wherein a second side of said double-sided, pressure sensitive adhesive layer is covered by a releasable strip of material, thus forming a ceremonial covering for a walkway with a pressure sensitive adhesive layer at said starting end of said roll, for allowing said second side of said double-sided, pressure sensitive adhesive layer to be applied to said walkway, for releasably maintaining said starting end region of said roll in contact with said walkway, and for allowing said starting end region of said roll to be removed from contact with said walkway by positioning said starting end region of said roll at an angle relative to said walkway, and by applying a force to said roll.

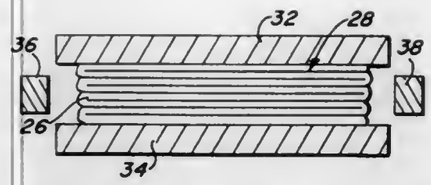
5,609,934
METHOD OF MANUFACTURING HEAT BONDED GLASS FIBER INSULATION BOARDS

Ralph M. Fay, Lakewood, Colo., assignor to Schuller INternational, Inc., Denver, Colo.

Filed Jan. 5, 1995, Ser. No. 369,204
Int. Cl.[6] B32B *1/04*
U.S. Cl. 428—74 **16 Claims**

1. A method of manufacturing an insulation panel having a binderless, heat bonded glass fiber insulation board comprising:

laying discrete length glass fibers into a thin glass fiber mat with said discrete length glass fibers predominately lying in and



randomly oriented in planes extending substantially parallel to major surfaces of said thin glass fiber mat;

layering said thin glass fiber mat to form an uncompressed, thick glass fiber blanket having first and second major surfaces, said thick glass fiber blanket comprising multiple layers of said thin glass fiber mat with said discrete length glass fibers of each layer of said thick glass fiber blanket predominately lying in planes extending substantially parallel to said first and second major surfaces of said thick glass fiber blanket;

heating said thick glass fiber blanket to a temperature between about 25° C. below and about 20° C. above the strain point temperature and below the softening point temperature of said discrete length glass fibers;

compressing said thick glass fiber blanket to a final thickness and density, while said glass fiber blanket is heated to said temperature, to form a heat bonded glass fiber insulation board of discrete length glass fibers with at least 80% of said discrete length glass fibers lying in planes extending parallel to or at angles of no more than 10° to first and second major surfaces of said binderless, heat bonded glass fiber insulation board and perpendicular to an intended path of heat flow through said heat bonded glass fiber insulation board; and

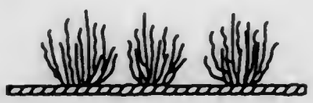
allowing said binderless, heat bonded glass fiber insulation.

5,609,935
FUR-LIKE PILED FABRIC AND METHOD FOR PRODUCTION THEREOF

Seiichi Yamagata, Ohtu, and Hidenobu Honda, Kouka-gun, both of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 859,518, Jun. 8, 1992, abandoned. This application Oct. 27, 1994, Ser. No. 330,118
Claims priority, application Japan, Oct. 9, 1990, 2-271363
Int. Cl.[6] B32B *3/02;* **D06C** *23/02;29/00;* **D03D** *39/22*
U.S. Cl. 428—89 **8 Claims**

(Before treatment)



1. A pile fabric having a two-layer pile construction, said pile fabric comprising:

a ground construction;

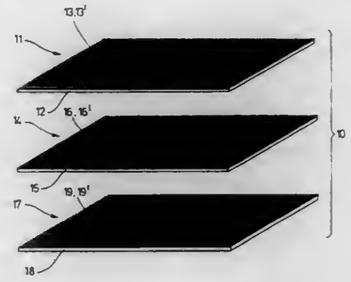
guard hair fibers connected to said ground construction and having various raised lengths ranging from about zero to a maximum guard hair fiber length, each said guard hair fiber being tapered and having a thickness not less than about 3 denier and not more than about 100 denier, said guard hair fibers being formed from polybutylene terephthalate or a copolymer having polybutylene terephthalate as a main component thereof; and

under-fur fibers connected to said ground construction and having various raised lengths and a maximum under-fur fiber length not exceeding about 70% of said maximum guard hair fiber length, about 20% to 80% of said under-fur fibers having a substantially uniform length substantially corresponding to said maximum under-fur fiber length, said under-fur fibers with said substantially uniform length having tapered leading ends, said under-fur fibers being formed from polyethylene terephthalate or a copolymer having polyethylene terephthalate as a main component thereof, and said under-fur fibers being less resistant to chemical treatment than said guard hair fibers, each said under-fur fiber having a thickness not more than about 5 denier.

5,609,936
DRYING SCREEN FOR PAPER MAKING MACHINE

Ernst Kohler, Eislingen; Bernd Sabrowski, Zell u.A., and Ulrich Altenhofen, Göppingen, all of Germany, assignors to Wurttembergische Filztuchfabrik D. Geschmay GmbH, Goppingen, Germany

Filed Jun. 24, 1994, Ser. No. 265,729
Int. Cl.[6] B32B *5/24;31/08;31/12;33/00*
U.S. Cl. 428—107 **21 Claims**



1. A drying screen for use in the drying section of a papermaking machine which comprises a thin, perforated or slit polymeric supporting sheet adhesively associated with an outermost non-woven layer composed of mutually parallel thermoplastic material-comprising filaments which are heat-bonded to one another to form what is intended to be a paper-contacting layer having improved smoothness across the entire outermost surface thereof which will enable the production of paper characterized by reduced surface marking.

14. A method of forming a drying screen for use in the dryer section of a papermaking machine which comprises heat-bonding a mutually parallel array of thermoplastic material-comprising filaments to one another and adhesively associating a thin, perforated or slit polymeric supporting sheet with said heat-bonded mutually parallel array of thermoplastic material-comprising filaments to form a laminate wherein the heat-bonded, mutually parallel array of thermoplastic material-comprising filaments provides a smooth surface across an entire outer laminate face, said smooth face intended to be the paper-contacting surface in the dryer section of said papermaking machine which will enable the production of paper characterized by reduced surface marking.

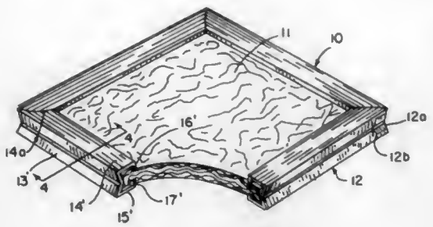
5,609,937
FRAME FOR ATTACHMENT TO AIR FILTERS

Dennis O. Reinstad, Stoughton, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Aug. 9, 1994, Ser. No. 287,876
Int. Cl.[6] A47G *1/12*
U.S. Cl. 428—122 **6 Claims**

1. A frame for a filter having two continuous sides terminating in an edge, said frame comprising:

a semi-resilient, deformable channel having an inwardly curved web with two piercing flanges extending from a convex side thereof, said curved web having at least one longitudinally extending, dimpled stiffening rib integrally formed on and projecting centrally from a surface of the web adjacent said



edge, said rib enabling said flanges to be forcibly urged into continuous, piercing engagement with the sides of the filter.

5,609,938

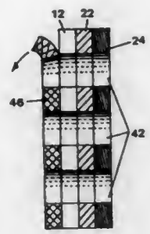
IMAGE DISPLAY APPARATUS WITH HOLES FOR OPPOSITE SIDE VIEWING

Rodney M. Shields, Lafayette, Calif., assignor to Creative Minds Foundation, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 81,728, Jun. 23, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 324,889

Int. Cl.[6] B32B *3/24*

U.S. Cl. 428—138 **7 Claims**



1. A one way vision display panel assembly specially constructed for pressure sensitive application onto a window of a building or vehicle, said one way vision display panel assembly comprising:

a) a perforated panel assembly including:

i) a perforated transparent panel formed of a flexible plastic sheet material having a front surface and a rear surface;

ii) a perforated protective liner;

iii) pressure sensitive adhering means disposed between said front surface of said perforated transparent panel and said perforated protective liner for removably adhering said perforated transparent panel to said perforated protective liner so that said perforated protective liner can be peeled off from said perforated transparent panel to permit pressure sensitive application of said perforated transparent panel to a clear substrate;

b) said rear surface of said perforated transparent panel having applied thereon a first coating of light-reflective color bearing an image followed by a second coating of an opaque color sufficiently dark for absorbing light, wherein:

i) said perforated panel assembly appears substantially transparent when viewed from a first direction;

ii) said image is clearly visible when said perforated panel assembly is viewed from a second, opposite direction; and

c) a non perforated backing layer removably attached to said perforated protective liner, wherein said non perforated backing layer being effective to facilitate handling of said perforated panel assembly.

5,609,939

VIEWING SCREEN FORMED USING COHERENT LIGHT

Joel Petersen, Valley Village, and Jeremy Lerner, Culver City, both of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Continnation of Ser. No. 97,533, Jul. 27, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,818

Int. Cl.[6] G03B *21/60;21/62*

U.S. Cl. 428—141 **20 Claims**



1. A viewing screen produced by a process comprising:

A. generating a micro-sculpted surface structure that controls the direction in which light propagates on a photosensitive medium having a refractive index by

(i) generating random, disordered and non-planar speckle in said photosensitive medium using coherent light which has been diffused through a holographic diffuser and then directly transmitted to said photosensitive medium so as to define non-discontinuous and smoothly varying changes in said refractive index of said photosensitive medium which scatter collimated light into a controlled pattern with smooth brightness variation; and

(ii) developing said photosensitive medium; and

B. making a replica of said micro-sculpted surface structure that controls the direction in which light propagates,

wherein light scattered from said replica of said micro-sculpted surface structure is characterized by said random, disordered and non-planar speckle.

5,609,940

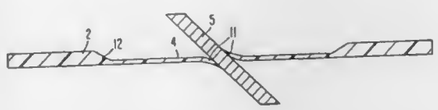
POLYMER PANEL WITH A SEALING MEMBRANE FOR MECHANICAL AND ELECTRICAL CONNECTIONS

Koichi Inaba, Zama; Kensuke Uchida, Tokyo, both of Japan, and Raymond F. Kolberg, Rochester Hills, Mich., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 28, 1993, Ser. No. 84,653

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—156 **25 Claims**



1. An article of manufacture comprising a molded polymer panel having at least one thin molded polymer membrane section wherein said membrane section is molded continuous with the panel and the membrane section has a modulus of elasticity of less than 500,000 psi and a thickness from about 0.001 to about 0.020 inches whereby said membrane section forms a seal against an object inserted through said membrane section.

5,609,941

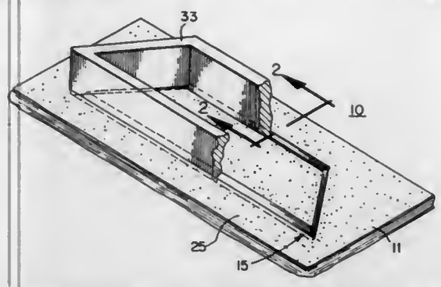
AUTOMOTIVE DOOR PANEL CONSTRUCTION

Albert V. Cawthon, c/o PHC Industries, Inc., Camden, N.J. 08103

Filed Jul. 11, 1995, Ser. No. 503,061

Int. Cl.[6] B32B *3/00;* **B60J** *5/00*

U.S. Cl. 428—172 **6 Claims**



1. Multi-layered automotive door panel construction for incorporation into a complete door panel, which comprises

a backing layer of vacuum formed plastic,

a raised rectangular plate in said layer,

a trough in said backing layer integral with said plate, surrounding and delineating the perimeter of said plate,

a layer of padding material in contact with and overlying said plate and said trough, and bonded thereto in said trough,

a layer of dry adhesive netting in adherent contact with said padding layer, and

an outer covering layer in adherent contact with said dry adhesive layer.

5,609,942

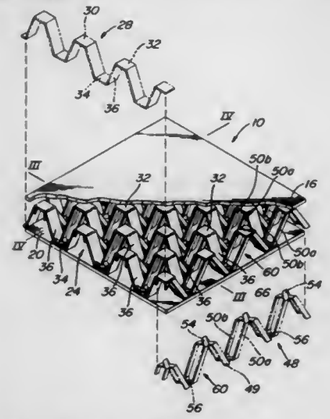
PANEL HAVING CROSS-CORRUGATED SANDWICH CONSTRUCTION

Hemen Ray, Perkasie, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 13, 1995, Ser. No. 403,029

Int. Cl.[6] B32B *3/28;* **B31F** *1/20*

U.S. Cl. 428—182 **12 Claims**



1. A cross-corrugated panel, comprising:

first and second faceplates positioned essentially parallel to and spaced apart from each other;

first and second pluralities of corrugated elements fixed between said first and second faceplates, the corrugated elements of each plurality having planar peaks and troughs positioned at regular intervals and connected by diagonally-extending segments, and being positioned parallel to and spaced apart from each other with the peaks and the troughs being 180 degrees out-of-phase with each other such that the peaks of one element are adjacent to the troughs of adjacent elements, said two pluralities of element being positioned perpendicular to each other, the elements of one plurality crossing the elements of the other plurality at their respective planar peaks and troughs, the diagonally-extending segments of said first plurality of elements comprising two flat strips whose flat surfaces are parallel to each other and perpendicular to said faceplates.

5,609,943

NON-WETTABLE LAYER FOR COLOR FILTERS IN FLAT PANEL DISPLAY DEVICES

Benjamin M. DeKoven; Donald J. Perettie; Donald L. Schmidt, and Murali Vedula, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 2, 1995, Ser. No. 460,159

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—195 **14 Claims**

1. In a liquid crystal display device having a transparent substrate and a light transmission-preventing composition patterned over the substrate, wherein the light transmission-preventing composition comprises a blackening material and a non-wettable resin which is a cure of a coating composition which is a solution containing:

a) a crosslinkable polymeric surfactant having i) at least one pendant fluoroalkyl moiety, and ii) a plurality of pendant ionic moieties which are capable of reacting with counterions to form a crosslinked polymer; and

b) a crosslinking agent having a plurality of ionic or potentially ionic moiety counterions capable of reacting with the ionic moieties of the surfactant; wherein the pattern defines a plurality of wells adapted to receive a coloring agent.

5,609,944

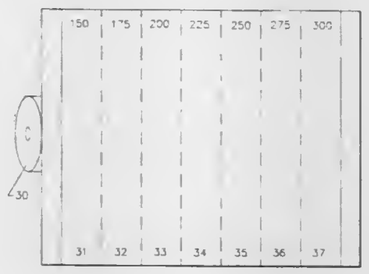
COLOR COATED TRANSPARENT POLYMER SUBSTRATE WEB

Thomas R. Fields, Charlotte; Amy E. Bohr, Matthews; Kendalyn R. McCoy, Monroe, all of N.C., and Lawrence C. Forszen, Novi, Mich., assignors to Rexam Industries Corp., Charlotte, N.C.

Division of Ser. No. 218,721, Mar. 28, 1994. This application May 11, 1995, Ser. No. 439,474

Int. Cl.[6] B32B *3/00;* **B41C** *1/00;* **B32B** *27/06*

U.S. Cl. 428—207 **4 Claims**



1. A transparent polymer substrate web with a gradient color coating thereon in which said color coating is continuous along said substrate web as the amount of said color coating on said polymer substrate web changes along said gradient, and wherein said transparent color coating is optically clear along said gradient.

5,609,945

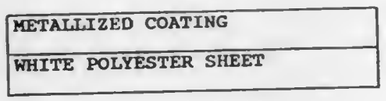
PARTIALLY TRANSLUCENT WHITE FILM HAVING METALLIZED SURFACE

Robert J. von Trebra, Flemington, N.J.; Gerald A. Smith, Easton, Pa.; Roy E. Hensel, Cranbury, and Oliver A. Barton, deceased, late of Florham Park, both of N.J., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 184,081, Jan. 18, 1994, abandoned, which is a division of Ser. No. 87,953, Jul. 6, 1993, Pat. No. 5,300,395, which is a division of Ser. No. 497,227, Mar. 22, 1990, Pat. No. 5,246,812. This application Sep. 29, 1995, Ser. No. 536,889

Int. Cl.[6] B32B *15/08;* G03C *1/805;1/825;1/77*

U.S. Cl. 428—209 20 Claims



1. An image-bearing element which comprises a white translucent, metallized film article, wherein the article comprises a flexible, heat resistant, polymeric film material having first and second opposite sides, said film material having deposited on a first side thereof a metal coating which is both light reflective and light transmissive in the visible region of the spectrum, wherein said coating has a thickness of from about 10 angstroms to about 200 angstroms, a specular gloss of from about 90 or more, and is capable of transmitting from about 1% to about 70% of incident visible light cast thereon; and wherein of said film material the second side has a white outermost surface, said second side having a visible light opacity of from about 0.5 to about 0.98, and having an image on the outermost surface of the second side.

5,609,946

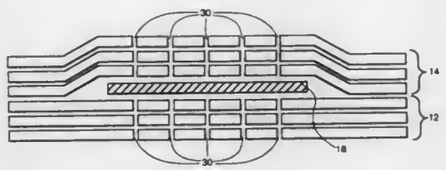
HIGH FREQUENCY, HIGH DENSITY, LOW PROFILE, MAGNETIC CIRCUIT COMPONENTS

Charles S. Korman, Schenectady; Israel S. Jacobs, Niskayuna; John A. Mallick, Scotia, and Waseem A. Roshen, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,488

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 10 Claims



1. A magnetic circuit component, comprising:

a magnetic core comprising a first magnetic layer and a second magnetic layer, each said magnetic layer comprising a multilayer structure comprising alternating magnetic and insulating films, said magnetic films each comprising a magnetic material having anisotropic magnetic properties such that, in operation, said magnetic material is driven in a direction parallel to its hard axis, said magnetic core having a distributed air gap formed therein; and

a conductive layer deposited between said first and second magnetic layers, said conductive layer comprising a conductive material patterned on an insulating substrate.

5,609,947

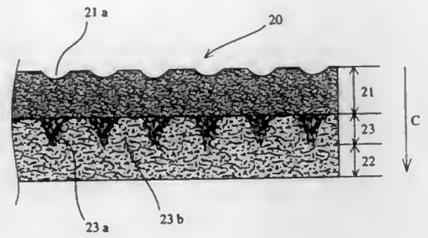
LAMINATED NON-WOVEN FABRIC FILTERING MEDIUM AND METHOD FOR PRODUCING SAME

Toshikazu Kamei, Isehara; Hidetoshi Takeuchi, and Makoto Suzuki, both of Yokohama, all of Japan, assignors to Tonen Chemical Corporation, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,309

Int. Cl.[6] B32B *7/02*

U.S. Cl. 428—212 7 Claims



1. A laminated non-woven fabric filtering medium, which comprises a plurality of non-woven fabric layers having different average pore sizes and laminated in the order of the average pore size, and a plurality of entangled regions interposed between any of adjacent two non-woven fabric layers which is formed by causing fibers of one of said adjacent two non-woven fabric layers to penetrate into the other layers to entangle the penetrated fibers with fibers of the other layers.

5,609,948

LAMINATE CONTAINING DIAMOND-LIKE CARBON AND THIN-FILM MAGNETIC HEAD ASSEMBLY FORMED THEREON

Moses M. David, and Theodore A. Schwarz, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 21, 1992, Ser. No. 933,335

Int. Cl.[6] G11B *5/25*

U.S. Cl. 428—216 13 Claims



1. A laminated base for a thin-film magnetic head, including:

a ceramic substrate comprising titanium carbide particles dispersed in an alumina matrix;

an adhesion promoting layer of a-Si:C:H provided on and in contact with the substrate, wherein the adhesion promoting layer has a thickness within the range from about 10 to 100 nm; and

an insulative, wear-resistant layer comprising diamond-like carbon provided on the adhesion promoting layer.

5,609,949

BIAXIALLY ORIENTED POLYESTER FILM

Satoru Nishino, Otsu; Koichi Abe, Kyoto; Takeo Fukuyama, Hikone, and Hidehito Minamizawa, Otsu, all of Japan, assignors to Toray Industries, Tokyo, Japan

Continuation of Ser. No. 151,132, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 996,851, Dec. 21, 1992, Pat. No. 5,284,699, which is a continuation of Ser. No. 461,003, Jan. 4, 1990, abandoned. This application Apr. 11, 1995, Ser. No. 420,704

Claims priority, application Japan, Jan. 11, 1989, 1-4131; Feb. 16, 1989, 1-35118; Apr. 28, 1989, 1-107333

Int. Cl.[6] B32B *7/02;5/16*

U.S. Cl. 428—217 30 Claims

1. A biaxially oriented polyester film having excellent scratch resistance and excellent chipping resistance, said polyester film containing 0.05–5 wt % of particles (A) selected from the group consisting of β-alumina, γ-alumina and δ-alumina having an average primary particle diameter of 5–200 nm and an average degree of aggregation in the range of greater than 50 and up to 100.

5,609,950

FLAME-RETARDANT NON-WOVEN TEXTILE ARTICLE AND METHOD OF MAKING

Reinhard Kampl, and Walter Six, both of Vöcklabruck, Austria, assignors to Lenzing Aktiengesellschaft, Austria

Filed May 31, 1995, Ser. No. 455,146

Claims priority, application Austria, Nov. 7, 1994, 2058/94

Int. Cl.[6] D04H *1/08*

U.S. Cl. 428—219 21 Claims

1. A flame-retardant non-woven textile article prepared by the process of bonding by hydroentanglement a fleece comprising cellulosic fibers incorporating at least one phosphorous containing flame-retardant compound, the area weight of said textile article being 30 to 120 g/m^2.

5,609,951

Patent Not Issued For This Number

5,609,952

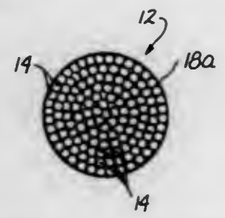
SENSORED COMPOSITE STRUCTURE

Richard J. Weiss, Sepulveda, Calif., assignor to Arthur Michael Solender; Stephen Lawrence Solender, and Elsie Solender, all of Los Angeles, Calif.

Filed Jan. 25, 1990, Ser. No. 470,343

Int. Cl.[6] D04H *13/00;* G02B *6/04*

U.S. Cl. 428—298.1 15 Claims



1. A sensored composite structure comprising:

at least one fiber, said fiber having the property of structural strengthening and the property of optical transmissivity; and

a matrix, said at least one fiber being embedded in said matrix and bonded thereto, such that at least one characteristic of said structure can be measured by means of variation in the optical transmissivity of said optical fiber.

5,609,953

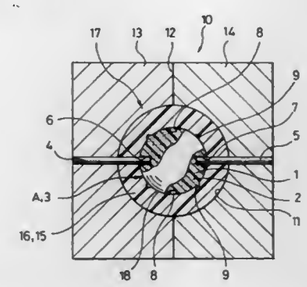
PLASTIC MOLDED ARTICLES HAVING RESIN FIBERS DISPERSED THEREIN

Masanobu Tamura, Yokohama, Japan, assignor to Nippon Planning Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 2, 1994, Ser. No. 253,033

Int. Cl.[6] B29C *44/06;44/12*

U.S. Cl. 428—316.6 19 Claims



1. A plastic molded article formed by expansion molding of a plastic raw material uniformly mixed with a blowing material, wherein said plastic molded article is formed by a two-stage expansion molding process comprising the steps of:

first-stage expansion molding of the uniformly mixed raw and blowing materials to form a core;

a second-stage expansion molding of a mixture of resin fibers dispersed randomly in said plastic raw material to produce an outer layer around said core such that outer layer is fusion bonded and integrated into one piece with a boundary region of said core, thereby forming a second-stage molded product.

5,609,954

STRIPPABLE PRESSURE-SENSITIVE ADHESIVE AND ADHESIVE MATERIAL USING THE SAME

Kaoru Aizawa, and Michirou Kawanishi, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Continuation of Ser. No. 164,844, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 929,019, Aug. 13, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 407,035

Claims priority, application Japan, Aug. 14, 1991, 3-228861

Int. Cl.[6] B32B *5/22;7/06;* C08J *9/16*

U.S. Cl. 428—317.5 19 Claims

8. An adhesive material, comprising:

a support having on at least one side thereof a strippable pressure-sensitive adhesive layer comprising a highly elastic base polymer whose dynamic modulus of elasticity is in the range of from 250,000 to 10,000,000 dyne/cm^2 at a temperature between ambient temperature and 150° C., said base polymer having incorporated therein a blowing agent, wherein the adhesive layer reduces or loses its adhesiveness on expansion or blowing of said blowing agent, and wherein said blowing agent is heat-expandable fine particles, the heat-expandable fine particles comprising first particles and second particles, said first particles having an average particle diameter of less than or equal to 7 μm, and said second particles having an average particle diameter of greater than or equal to 10 μm, wherein said first particles are present in an amount of between about 1 and about 50 weight percent based on the weight of the sum of the first and second particles.

5,609,955

DIAMOND FILM AND MIXED DIAMOND AND NON-DIAMOND PARTICLE COMPOSITE COMPOSITIONS

John M. Pinneo, Redwoodcity, Calif., assignor to Crystallume, Santa Clara, Calif.

Division of Ser. No. 704,997, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 32,169, Mar. 30, 1987, abandoned. This application Oct. 20, 1994, Ser. No. 327,354

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—323 4 Claims



1. An article comprising a preform of a mixture of diamond particles and non-diamond particles consolidated with polycrystalline diamond, said polycrystalline diamond formed on regions of said particles not in contact with one another.

5,609,956

ADHESIVE TAPE FOR ELECTRONIC PARTS AND LIQUID ADHESIVE

Yukinori Sakumoto; Takeshi Hashimoto; Takeshi Nishigaya, and Fumiyoshi Yamanashi, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,090

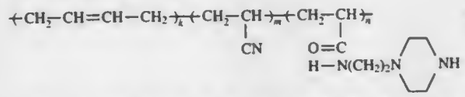
Claims priority, application Japan, Mar. 30, 1995, 7-095917

Int. Cl.[6] B32B *7/10, 27/28*

U.S. Cl. 428—352 10 Claims

1. An adhesive tape for electronic parts which comprises an adhesive layer provided on a surface of a release film, said adhesive layer being semi-cured into a B-stage and composed of:

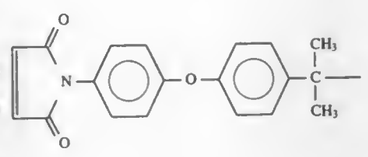
(a) a piperazinylethylaminocarbonyl-containing butadiene-acrylonitrile copolymer having a weight average molecular weight of 10,000–200,000, an acrylonitrile content of 5–50% by weight, and an amino equivalent of 500–10,000, represented by the following formula (I):



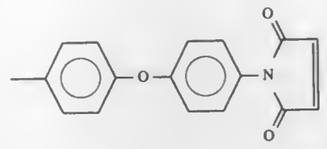
(I)

wherein, k, m, and n are molar ratios and taking n as 1, k is a number of 3–175, and m is a number of 0.3 to 93; and

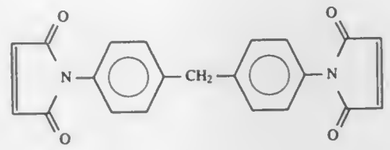
(b) a compound having at least two maleimide groups selected from the compounds represented by the following formulae (II-1) to (II-6):



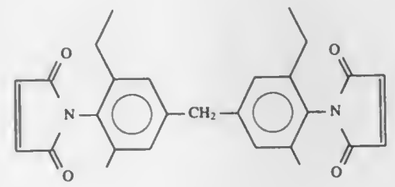
(II-1)



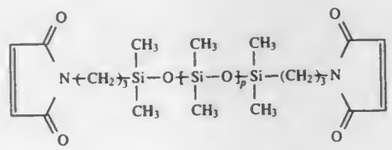
(II-2)



(II-3)

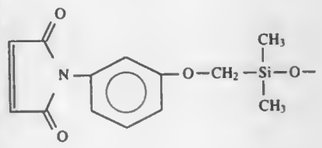


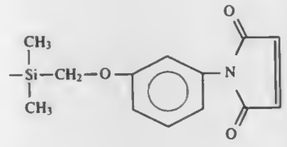
(II-4)



wherein p is an integer of from 0 to 7,

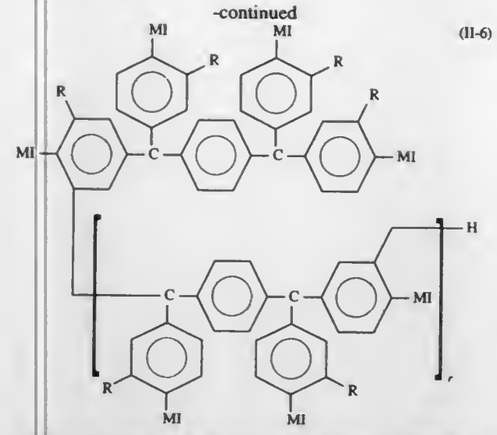
(II-4)





-continued

(II-6)



wherein MI=maleimide group, R=H or CH_3 and r=1–5, the ratio of component (b) based on 100 parts by weight of component (a) being in a range of 10 to 900 parts by weight, and said adhesive layer being composed of at least two semi-cured layers having each a different status of semi-cure.

5,609,957

FIBER

Stuart Page, Coventry, and Paul L. Probert, Rugby, both of United Kingdom, assignors to Courtaulds plc, United Kingdom

PCT No. PCT/GB94/00370, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO94/20653, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 24, 1994, Ser. No. 507,501

Claims priority, application United Kingdom, Mar. 2, 1993, 9304151

Int. Cl.[6] D02O *3/00*

U.S. Cl. 428—372 10 Claims

1. Delustered regenerated cellulosic fiber, containing within the body of the fiber hollow beads, wherein said beads permit water to pass from the interior of the beads to the exterior.

5,609,958

COATING AGENTS FOR ELECTROPHOTOGRAPHY CARRIERS AND ELECTROPHOTOGRAPHY CARRIER PARTICLES

Yuji Yoshikawa; Kouichi Tanaka; Kenji Yamamoto, and Masaaki Yamaya, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 429,870, Apr. 27, 1995, abandoned. This application Dec. 15, 1995, Ser. No. 573,579

Claims priority, application Japan, Apr. 27, 1994, 6-113508

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—402 21 Claims

1. A carrier particle composition comprising:

electrophotography carrier particles coated with a covering agent, wherein said covering agent contains an organopolysiloxane of the formula:

$$R^1_a Si(OR^2)_b(OR^3)_c(OR^4)_d O_{(4-a-b-c-d)/2}$$

wherein

R^1 is, in each case independently, an organic group with 1 to 12 carbon atoms;

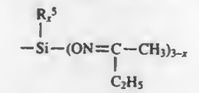
R^2 is, in each case independently, $-C_mH_{2m+1}$;

R^3 is, in each case independently, $-C_nH_{2n+1}$;

m is ≧3;

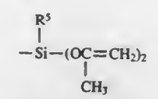
n is 1 or 2;

R^4 is, in each case independently, a hydrogen atom or a group expressed by formulae (1) or (2)



(1)

or



(2)

R^5 is, in each case independently, an organic group with 1 to 6 carbon atoms;

x is a number which satisfies $1 \leqq x \leqq 2$; and

subscripts a, b, c, and d are numbers which satisfy the following conditions:

$$0.5 < a < 2.0 < b \leqq 3.0 < c \leqq 3.0 < d \leqq 0.5$$

and

$$0.5 < a+b+c+d < 4$$

wherein the amount of alkoxy groups OR^2 is 0.5–10 mole % with respect to the organopolysiloxane.

5,609,959

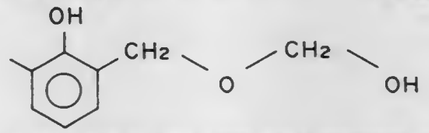
CARBON SUBSTRATE AND PRODUCTION THEREOF

Maki Hamaguchi; Tetsuya Yamamoto; Tetsuo Suzuki; Hideki Yamamuro, and Hiroshi Chosokabe, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 393,363, Feb. 23, 1995, abandoned. This application May 30, 1995, Ser. No. 453,887

Int. Cl.[6] C01B *31/02*

U.S. Cl. 428—408 10 Claims



1. A carbon substrate which is made from a thermosetting resin having a content of Fe, Al, Ni, Co, Cr, and Mg insoluble in the resin which is not less than 1 ppm each or a content of Ca and Si insoluble in the resin which is not less than 2 ppm each,

wherein said resin is treated to provide a content of Fe, Al, Ni, Co, Cr, and Mg insoluble in the resin of less than 1 ppm each and a content of Ca and Si insoluble in the resin of less than 2 ppm each, and

wherein said treated resin is thereafter subjected to pyrolysis in an inert atmosphere and carbonization.

5,609,960

PROCESS FOR FORMING OVERCOAT

Akira Kasari; Satoshi Ikushima; Osamu Isozaki; Naoji Matsumoto, all of Kanagawa, Japan, and John D. Nordstrom, Huntington Woods, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/JP93/00669, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/27740, PCT Pub. Date Dec. 8, 1994

PCT Filed May 21, 1993, Ser. No. 553,398

Int. Cl.[6] B05D *1/36*

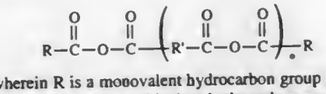
U.S. Cl. 428—413 13 Claims

1. A process for forming an overcoat by the two-coat one-bake method wherein a base coat composition and a clear coat compo-

sition are applied to a substrate wet-on-wet and thereafter cured at the same time by heating, the process being characterized in that the base coat composition is a coating composition consisting primarily of a hydroxyl-containing resin, an amino resin, a pigment and an organic solvent, the clear coat composition being a coating composition comprising:

(A) at least one resin selected from the group consisting of (i) a resin having at least one epoxy group and at least one hydroxyl group in the molecule, (ii) a resin mixture of (ii-1) a resin having at least two epoxy groups in the molecule and (ii-2) a resin having at least two hydroxyl groups in the molecule, (iii) a resin having at least two epoxy groups in the molecule, and (iv) any mixture thereof,

(B) a crosslinking agent comprising a compound having at least two noncyclic acid anhydride groups and represented by the formula



(I)

wherein R is a monovalent hydrocarbon group having 2 to 50 carbon atoms, R' is a bivalent hydrocarbon group having 2 to 50 carbon atoms, the hydrocarbon groups R and R' containing or not containing an ether linkage, urethane linkage or ester linkage, and n is an integer of 1 to 500, and

(C) a curing catalyst.

5,609,961

SINGLE-LAYER HIGH TEMPERATURE COATING ON A CERAMIC SUBSTRATE AND ITS PRODUCTION

Galina A. Solovjeva; Vladimir M. Tjurin, and Stanislav S. Solntsev, all of Moscow, Russian Federation, assignors to Aerospatiale Societe Nationale Industrielle VIAM-, Paris, France, and All Russian Institut of Aviation Materials, Moscow, Russian Federation

Division of Ser. No. 404,918, Mar. 16, 1995, Pat. No. 5,518,778. This application Mar. 5, 1996, Ser. No. 610,935

Claims priority, application France, Mar. 16, 1994, 94 03050

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—469 **5 Claims**

1. A single-layer, high temperature coating composition, said coating composition comprising 45 to 55% by weight of a frit made from a high silica gel, 5 to 20% by weight of alumina, and 25 to 50% by weight of an emissitivity agent selected from $MoSi_2$ and Cr_2O_3.

5,609,962

METHOD TO ADHERE THERMOPLASTIC ELASTOMER BLENDS TO POLYESTER SUBSTRATES

Trazollah Ouhadi, Gloesener, Belgium, assignor to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed Dec. 18, 1995, Ser. No. 573,709

Claims priority, application European Pat. Off., Dec. 24, 1994, 94120649

Int. Cl.[6] B32B *27/36;* **C09J** *5/04*

U.S. Cl. 428—480 **13 Claims**

1. A method for adhering thermoplastic elastomer blends to a polyester substrate, said method comprising the steps of:

(A) treating the polyester substrate with a blocked di-isocyanate in aqueous dispersion and an epoxy resin in aqueous emulsion,

(B) applying to the treated polyester substrate a thermoplastic elastomer blend comprising

(a) at least one thermoplastic polyolefin,

(b) at least one elastomer which has been at least partially cured by dynamic vulcanization in the presence of (a),

(c) a functionalized polyolefin, and

(d) optionally additives, then

(C) bonding the thermoplastic elastomer blend to the polyester substrate at a temperature between about 170° C. and about 280° C. and at a pressure between about 0.1 MPa (1 bar) and about 20 MPa (200 bar).

12. A shaped article comprising a substrate and a thermoplastic elastomer adhering to the surface or part of the surface of said substrate, said shaped article being obtainable by the method as defined in any one of claims 1, 3–11 or 2.

5,609,963

ANHYDRIDE-FUNCTIONAL MONOMERS AND POLYMERS AND REACTIVE COMPOSITIONS PREPARED FROM SAME

Rubing Cai, and Thomas W. Yokoyama, both of Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 336,033, Nov. 8, 1994, Pat. No. 5,580,995, which is a division of Ser. No. 176,732, Jan. 3, 1994, Pat. No. 5,364,945. This application Mar. 1, 1996, Ser. No. 611,441

Int. Cl.[6] B32B *27/08*

U.S. Cl. 428—515 **37 Claims**

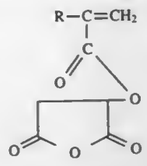
1. In a substrate coated with a multi-layer decorative and/or protective coating which comprises:

(a) a basecoat comprising a pigmented film-forming polymer; and

(b) a transparent clearcoat comprising a film-forming polymer applied to the surface of the basecoat composition;

the improvement which comprises utilizing as the clearcoat and/or the basecoat a multi-component curable composition which is reactive upon mixing of the components, wherein the multi-component curable composition comprises:

(a) an anhydride-functional polymer which comprises the polymerization which comprises the polymerization reaction product of: (i) an anhydride-functional monomer having the structure:



wherein R is hydrogen or methyl; and, optionally,

(ii) at least one other unsaturated monomer copolymerizable with the anhydride-functional monomer; and

(b) a hydroxy-functional compound having an average of at least two hydroxyl groups per molecule.

5,609,964

INK JET RECORDING SHEET AND METHOD FOR PRODUCING SAME

Susumu Ogawa; Hideaki Senoh, and Kouji Idei, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 143,123, Oct. 29, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,551

Claims priority, application Japan, Nov. 9, 1992, 4-298684; Dec. 10, 1992, 4-330132; Dec. 10, 1992, 4-330133

Int. Cl.[6] B41M *5/00*

U.S. Cl. 428—520 **10 Claims**

1. An ink jet recording sheet which comprises a support comprising a wood pulp and 10% by weight or more of a pigment and one ink-receiving layer on one side of the support, the support having no back-coat layer on the other side of the support, wherein the ratio of gas permeability P according to JIS P8117 to density D according to JIS P8118 of the recording sheet (P/D ratio) is in the range of 25–200.

5,609,965

CROSSLINKABLE SURFACE COATINGS

Richard J. Esser, Aarlanderveen, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

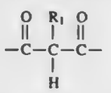
Division of Ser. No. 320,795, Oct. 7, 1994, Pat. No. 5,498,659, which is a continuation of Ser. No. 833,250, Feb. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,809

Int. Cl.[6] B32B *27/30*

U.S. Cl. 428—522 **42 Claims**

1. A crosslinked polymeric surface coating produced in accordance with a method comprising the steps of:

producing an aqueous evaporable polymeric formulation by admixing at least one polymeric ingredient, a non-polymeric polyfunctional amine, and base, in an evaporable aqueous carrier, wherein the polymeric ingredient has both acid-functional pendant moieties and pendant moieties having the ability to form stable enamine structures by reaction with amines and contain a divalent group of the structure



wherein R_1 is either H, a C_1 to C_{10} alkyl group or phenyl, wherein the non-polymeric polyfunctional amine has at least two amine-functional moieties and wherein the amount of base in the formulation is effective for inhibiting gellation, which would otherwise occur as a result of crosslinking between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, thereby producing a reaction mixture;

holding the reaction mixture at a preselected reaction temperature for a predetermined period of time, thereby producing the aqueous evaporable polymeric formulation;

applying the aqueous evaporable polymeric formulation onto a substrate; and

evaporating that amount of evaporable ingredients from the substrate-applied formulation which is effective for enabling desired crosslinking to take place as between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, thereby producing the crosslinked polymeric surface coating on the substrate.

5,609,966

SHEET PRODUCED BY A PAPERMAKING TECHNIQUE FOR ABRASION-RESISTANT LAMINATES

Claude Perrin, Apprieu, and Pierre Caulet, Voiron, both of France, assignors to Arjo Wiggins S.A., France

Filed Nov. 30, 1994, Ser. No. 351,129

Claims priority, application France, Dec. 2, 1993, 93 14441

Int. Cl.[6] B32B *21/06*

U.S. Cl. 428—535 **16 Claims**

1. An abrasion-resistant laminate comprising a plurality of resin impregnated paper sheets and a protective covering overlay sheet, wherein the overlay sheet is produced by a papermaking technique and is comprised of glass wool fibers and cellulose fibers.

5,609,967

DECORATIVE PLATE

Hiromi Matsunami, Gifu, Japan, assignor to Kayoh Technical Industry Co., Ltd., Gifu-ken, Japan

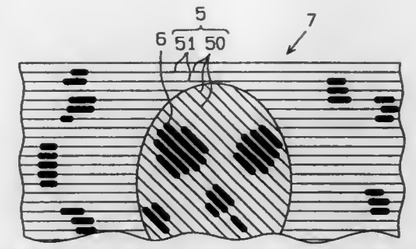
Filed Jan. 5, 1995, Ser. No. 369,404

Claims priority, application Japan, Jan. 12, 1994, 6-001754; Aug. 30, 1994, 6-205375

Int. Cl.[6] B32B *3/10;15/00*

U.S. Cl. 428—601 **9 Claims**

1. A decorative plate having a plating layer portion on a metal substrate, said plate comprising:



said layer portion forming a pattern, said pattern having an object portion and a background portion;

a first group of plurality of lines representing a degree of a shade of the object portion, said lines in the first group extending parallel to one another;

a second group of plurality of lines representing a degree of a shade of the background portion, said lines in the second group extending parallel to one another; and

said lines in the first group and said lines in the second group extending in different directions from one another.

5,609,968

WELDABLE COLORED STEEL SHEET

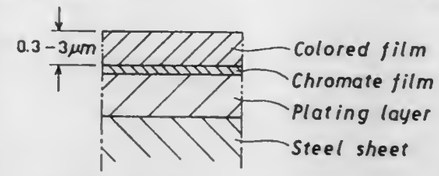
Naoto Yoshimi; Toyofumi Watanabe; Masaaki Yamashita; Toshiyuki Ookuma, and Tatsuya Miyoshi, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 795,681, Nov. 21, 1991, abandoned. This application May 27, 1994, Ser. No. 250,634

Claims priority, application Japan, Nov. 30, 1990, 2-338978

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—623 **11 Claims**



1. A weldable colored steel sheet comprising a steel sheet having a surface plated with zinc or a zinc alloy, and carrying a chromate film formed on said plated surface and having a coating weight of 1 to 200 mg/m^2 in terms of metallic chromium, and a colored film formed on said chromate film from a composition comprising 100 parts by weight of a thermosetting resin as a base resin and 5 to 120 parts by weight of a dye as a coloring agent, said resin and said dye being soluble in an organic solvent, said colored film having a thickness of 0.5 to 2.5 microns, and a color other than black.

5,609,969

STATIC DISSIPATIVE ELECTRONIC PACKAGING ARTICLE

William J. Clatanoff, Austin, Tex.; Eric D. Morrison, Minneapolis, Minn., and Nanayakkara L. D. Somasiri, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

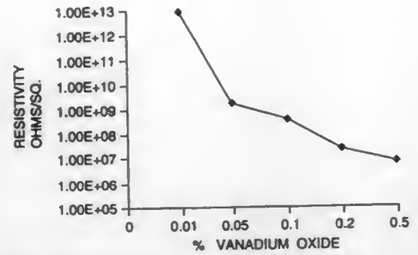
Filed Jun. 30, 1995, Ser. No. 491,365

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—632 **21 Claims**

1. An antistatic electronic packaging article comprising an insulative polymer overcoated with a single layer antistatic/protective coating comprising:

a) from about 8 mg/m^2 to about 70 mg/m^2 vanadium pentoxide,



b) from about 36 mg/m^2 to about 270 mg/m^2 of a polymer latex having a hydrophilic functionality selected from the group consisting of sulfopolymers and addition polymers, and

c) from about 210 mg/m^2 to about 842 mg/m^2 of a nonsulfonated protective topical binder,

wherein said antistatic coating has a ratio of sulfopolymer to vanadium pentoxide of from about 0.5 to about 5.

5,609,970

ELECTROLUMINESCENT DEVICE WITH POLYMERIC CHARGE INJECTION LAYER

Eric S. Kolb, Ipswich, and Parag G. Mehta, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 12, 1995, Ser. No. 371,848

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—690 **22 Claims**

1. A process for generating electromagnetic radiation, which process comprises:

providing first and second electrodes;

providing a layer of an electroluminescent polymer disposed between the first and second electrodes;

providing, between the first electrode and the layer of electroluminescent polymer, a hole injection layer, the hole injection layer comprising a polymer having a main chain and a plurality of sidechains each attached at one of its ends to the main chain, at least one of the sidechains containing an electron-donating group such that the oxidation potential of the polymer is less positive than about +1.6 V; and

applying a potential difference between the first and second electrodes sufficient to cause current to flow from the first electrode to the second electrode and electromagnetic radiation to be emitted from the layer of electroluminescent polymer,

the layer of electroluminescent polymer being free from any polymer having a main chain and a plurality of sidechains each attached at one of its ends to the main chain, wherein at least one of the sidechains contains an electron-donating group such that the oxidation potential of the excluded polymer is less positive than about +1.6 V.

5,609,971

THIN FILM MAGNETIC HEAD

Naoto Matono, Kadoma; Hitoshi Noguchi, Higashiosaka; Tomomi Yamamoto; Shinji Kobayashi, both of Hirakata, and Masahiro Nakata, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

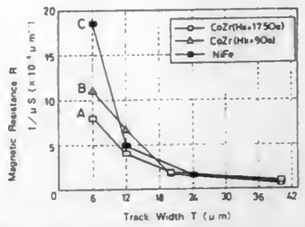
Filed Jun. 24, 1994, Ser. No. 264,918

Claims priority, application Japan, Jun. 24, 1993, 5-153673; Oct. 5, 1993, 5-249331

Int. Cl.^{6} G11B *5/66;5/147;* **B32B** *9/00*

U.S. Cl. 428—692 **5 Claims**

1. A thin film magnetic head comprising a lower magnetic core layer and an upper magnetic core layer formed over the lower core layer with a coil layer, a gap spacer layer and an insulating layer provided therebetween, at least one of the lower magnetic core layer and the upper magnetic core layer having a core tip region between a core tip and a portion increasing in core width, the core tip region having a track width of not greater than 6 μm, the magnetic core layer with the core tip region being formed by a CoZr amorphous magnetic thin film having an anisotropic magnetic field of at least 10 Oe.



5,609,972

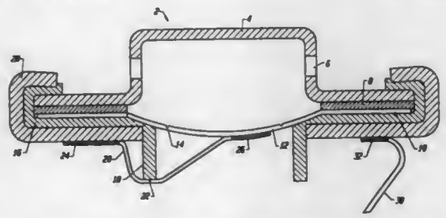
CELL CAP ASSEMBLY HAVING FRANGIBLE TAB DISCONNECT MECHANISM

James L. Kaschmitter, Pleasanton; Frank L. Martucci, Dublin; Steven T. Mayer, San Leandro; Jung H. Soub, Pleasanton, and Sean Thompson, Dublin, all of Calif., assignors to PolyStor Corporation, Dublin, Calif.

Filed Mar. 4, 1996, Ser. No. 610,388

Int. Cl.^{6} H01M *10/52*

U.S. Cl. 429—56 **24 Claims**



1. A cell cap subassembly for controlling pressure build-up in a cell interior having an electrode, said cell cap subassembly comprising:

a terminal contact for making electrical contact with an external circuit;

a deflection member being in electrical communication with said terminal contact, said deflection member undergoing a displacement in response to an increase in pressure within the cell interior;

a frangible member connected to and making electrical contact with said deflection member, said frangible member having a defined frangible region located away from said deflection member, wherein when said deflection member undergoes displacement in response to a first defined pressure, said frangible member breaks at said frangible region and thereby electrically disconnects said terminal contact from said electrode.

5,609,973

REDUCED ENVIRONMENTAL HAZARD LECLANCHE CELL HAVING IMPROVED PERFORMANCE

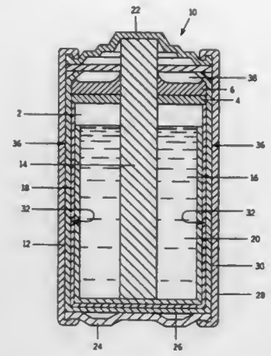
Ronald J. Ekern, and Terry G. Messing, both of Verona, Wis., assignors to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 275,019, Jul. 13, 1994. This application Jun. 7, 1995, Ser. No. 475,202

Int. Cl.^{6} H01M *6/08*

U.S. Cl. 429—166 **24 Claims**

1. A LeClanche electrochemical cell, comprising:



(a) a zinc anode, the anode consisting essentially of a zinc alloy containing at least 95% zinc and no more than about 12 ppm iron by weight,

(b) a manganese dioxide cathode;

(c) an ionically permeable separator interposed between the anode and the cathode;

(d) an electrolyte comprising zinc chloride as a primary component, the electrolyte at least partially wetting the anode, the cathode, and the separator, and

(e) a current collector electrically connected to the cathode.

5,609,974

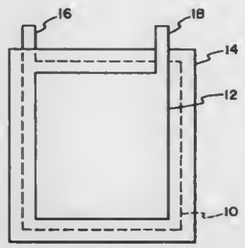
RECHARGEABLE BATTERY POLYMERIC ELECTROLYTE

Luying Sun, Stoughton, Mass., assignor to Battery Engineering, Inc., Hyde Park, Miss.

Filed Aug. 4, 1995, Ser. No. 511,470

Int. Cl.^{6} H01M *6/16;6/18;* **C08J** *5/20;* **C25B** *13/00*

U.S. Cl. 429—192 **15 Claims**



1. A solid polymer electrolyte comprised of the incorporation of a salt in a crosslinked terpolymer network formed by the polymerization of a first monomer having two acryloyl functionalities; a second monomer selected from group consisting of a monomer having one acryloyl functionality and a monomer having one allyl functionality, said second monomer also having a high polarity resulting from the incorporation therein of a high polarity group selected from the group consisting of a compound having a carbonate functionality and a cyano functionality; and a third monomer selected from the group having an acryloyl functionality and an oligo(oxyethylene) group.

5,609,975

POSITIVE ELECTRODE FOR NON-AQUEOUS ELECTROLYTE LITHIUM SECONDARY BATTERY AND METHOD OF MANUFACTURING THE SAME

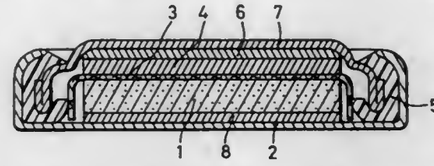
Masaki Hasegawa, Hirakata; Yasuhiko Bito, Osaka Prefecture; Shuji Ito, Akashi; Toshibide Murata, Izumiotsu, and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 11, 1995, Ser. No. 439,218

Claims priority, application Japan, May 13, 1994, 6-099989

Int. Cl.^{6} H07M *4/62*

U.S. Cl. 429—217 **13 Claims**



1. A positive electrode for a non-aqueous electrolyte lithium secondary battery, which comprises a positive electrode active material represented by the general formula $Li_xA_{1-y}M_yO_2$ wherein A represents at least one transition element selected from the group consisting of Mn, Co, and Ni, M represents at least one element selected from the group consisting of B, Mg, Ca, Sr, Ba, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Al, In, Nb, Mo, W, Y, and Rh, and wherein $0.05 \leqq x \leqq 1.1$, and $0 \leqq y \leqq 0.5$; a binder; a conductive agent; and a current collector,

wherein said binder is at least one member selected from the group consisting of a copolymer comprising a vinylidene fluoride unit, a copolymer comprising a propylene unit and a tetrafluoroethylene unit, and a polymer comprising a trifluoropropylmethylsiloxane unit.

5,609,976

ALKALINE STORAGE BATTERY

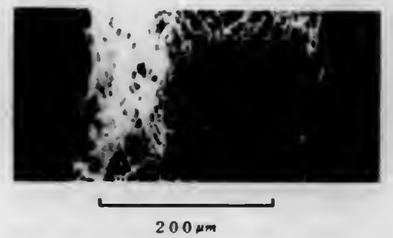
Takao Ueda, and Yoshihisa Takizawa, both of Itano-gun, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 18, 1995, Ser. No. 529,642

Claims priority, application Japan, Oct. 7, 1994, 6-244186

Int. Cl.^{6} H01M *2/16*

U.S. Cl. 429—254 **51 Claims**



46. An alkaline storage battery comprising:

(1) a positive electrode;

(2) a negative electrode in opposition to the positive electrode;

(3) an alkaline electrolyte retained within a separator; and

(4) said separator disposed between the positive electrode and negative electrode

wherein the separator is a synthetic resin fiber non-woven fabric which is a three-dimensional aggregate of composite segmented fibers and bonding fibers interconnected at fiber crossing points, said non-woven fabric having a single layer structure, and wherein a degree of interconnection and segmentation of composite segmented fibers at surface regions of the single layer of the non-woven fabric is greater than a degree of interconnection and segmentation in an interior thereof.

5,609,977

REFLECTION PHASE SHIFTING MASK AND METHOD OF FORMING A PATTERN USING THE SAME

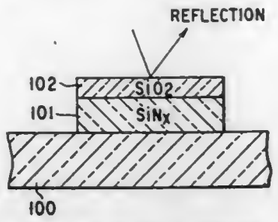
Takayuki Iwamatsu, Abiko; Kenji Kawano, Tokyo; Hideya Miyazaki, Kawasaki; Shinichi Ito, Yokohama; Soichi Inoue, Yokohama; Hiroyuki Sato, Yokohama; Satoshi Tanaka, Kawasaki, all of Japan, and Koji Hashimoto, Wappingers Falls, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 249,038, May 29, 1994, Pat. No. 5,514,499. This application Jan. 22, 1996, Ser. No. 589,638

Claims priority, application Japan, May 25, 1993, 5-122816; Jun. 28, 1993, 5-156454; Dec. 28, 1993, 5-336849; May 23, 1994, 6-108700; May 23, 1994, 6-108701

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **10 Claims**



1. A reflection phase shifting mask comprising:

a substrate for reflecting exposure light;

a phase shifting layer formed on a portion on said substrate; and

a light transmitting medium formed on said phase shifting layer,

wherein a thickness of said phase shifting layer is set such that a phase difference between light reflected by said substrate and light reflected by said phase shifting layer becomes substantially 180°, and

wherein refractive indexes of said light transmitting medium, said phase shifting layer, and said substrate are respectively represented by n_0, n_1, and n_2, and H and L are integers satisfying H<L, a material and thickness d of said phase shifting layer are determined such that the refractive index n_1 and thickness d of the phase shifting layer satisfy the following conditions:

$$\{(H+0.06\ L)/1.06\ L\}n_0 \le n_1 < \{(H-0.06\ L)\ 0.94\ L\}n_0\ d=\{L/2n_0 \pm 0.06/4n_1\}\lambda \text{ for } n_1 \le n_0 \le n_2,$$

and satisfy the following conditions:

$$\{(H-0.06\ L)/0.94\ L\}n_0 \le n_1 < \{(H+0.06\ L)/1.06\ L\}n_0\ d=\{(2L+1)/4n_0 \pm 0.06/4n_1\}\lambda \text{ for } n_2 \le n_0 \le n_1.$$

5,609,978

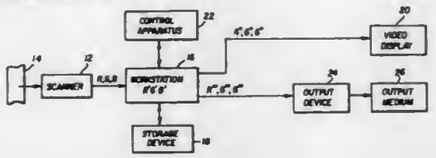
METHOD FOR PRODUCING AN ELECTRONIC IMAGE FROM A PHOTOGRAPHIC ELEMENT

Edward J. Giorgianni, Rochester; Brian E. Mittelstaedt, W. Henrietta; Jose E. Rivera; Richard A. Simon, both of Rochester, all of N.Y.; Teresa A. Smith, Watertown, Mass., and James E. Sutton, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,862

Int. Cl.[6] G03F *3/10*; G03C *1/08*

U.S. Cl. 430—30 **19 Claims**



1. A method of producing an electronic image comprising:

a) providing a photographic element that records exposure information, comprised of a support and three image-recording units coated upon said support, each image recording unit containing at least one silver halide emulsion layer, wherein said exposure information is recorded in the three image recording units and wherein the spectral sensitivities of said image recording units are chosen such that the average color error, fheightΔE^*_{ab}, is less than or equal to 3.1, wherein said fheightΔE^*_{ab} is computed for a specified set of 190 test colors of known spectral reflectance at 10 nm increments, and the light source is specified as D_{65}, and wherein said fheightΔE^*_{ab} is the average CIE 1976 (L*a*b*) ΔE^*_{ab} between the CIE 1976 (L*a*b*)-space coordinates of said test colors and the CIE 1976 (L*a*b*)-space coordinates corresponding to transformed exposure signals, wherein said transformed exposure signals are formed by applying an exposure-space matrix to the exposure signals derived from said photographic element to transform said derived exposure signals to exposure signals corresponding to the color-matching functions of the CCIR Recommendation 709 primary set, and wherein said exposure-space matrix is derived so as to minimize

$$\sum_i (\Delta E^*_{ab,i})^2,$$

and noise-gain factor, Ψ, defined as the sum of the square roots of the sum of the squares of each row of the elements in the exposure space matrix is less than or equal to 6.5;

b) photographically processing said photographic element to produce image-bearing density records;

c) scanning said image-bearing density records on a pixel-wise basis with an opto-electronic scanner to produce image-bearing electronic signals;

d) digitizing said image-bearing electronic signals; and

e) producing the electronic image from said electronic image-bearing signals.

5,609,979

SPHEROIDAL PARTICLES USEFUL FOR ELECTROSTATOGRAPHY

Terence M. Lawson, Aldgate, Australia, assignor to Research Laboratories of Australia Pty Ltd., State of South Australia, Australia

PCT No. PCT/AU93/00051, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/16415, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 10, 1993, Ser. No. 290,751

Claims priority, application Australia, Feb. 14, 1992, PL 0870

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—109 **14 Claims**

1. A method of production of spheroidal microparticles of a material suitable as a toner for electrostatographic processes wherein the material comprises a thermoplastic polymer, the method comprising the steps of,

melting the material in a non-aqueous continuous phase having a boiling point higher than the melting point of the material, the material being non-soluble in the continuous phase, adding a surface active agent to control or regulate particle size of the microparticles,

mixing the material in the continuous phase to produce an emulsion, and

cooling the emulsion to produce a dispersion of solid microparticles of the material in the continuous phase, wherein the continuous phase is a low viscosity liquid paraffin.

5,609,980

RADIATION-SENSITIVE MATERIALS COMPRISING A LAYER HAVING CORE-SHELL PARTICLES AND A SECOND LAYER WITH A RADIATION SENSITIVE COMPONENT

Andrew E. Matthews; David E. Murray, both of Leeds; Allen P. Gates, Knaresborough; John R. Wade, Otley; Michael J. Pratt, Menston, and William A. King, Alwoodley, all of United Kingdom, assignors to DuPont (U.K.) Ltd., Leeds, United Kingdom

Filed May 14, 1992, Ser. No. 883,019

Claims priority, application United Kingdom, May 14, 1991, 9110418

Int. Cl.[6] G03C *1/72*; G03F *7/11*

U.S. Cl. 430—138 **10 Claims**

1. A radiation-sensitive plate, the plate comprising

a substrate; and

a radiation-sensitive coating thereon, the coating including

a first layer comprising core-sbell particles, the core-shell particles comprising an oleophilic water-insoluble, heat-softenable core component (A) having a minimum film-forming temperature above room temperature and a shell component (B) which is soluble or swellable in aqueous medium; and

a second layer comprising a radiation-sensitive component (C) which, on exposure to radiation, changes the solubility characteristics of the coating wherein the core and the shell component of the particles remain as separate components prior to the application of heat to the coating but coalesce on the application of heat to the coating, and wherein said second layer is coated on said substrate and said first layer is coated on said second layer.

5,609,981

WATERLESS PRESENSITIZED PRINTING PLATE COMPRISING FOUR LAYERS AND METHOD OF MAKING THEREOF

Robert W. Hallman, Palisades Park, N.J.; Suck-Ju Hong, Bronxville, and Ken-ichi Shimazu, Briarcliff Manor, both of N.Y., assignors to Sun Chemical Corporation, Fort Lee, N.J.

Division of Ser. No. 392,456, Feb. 22, 1995, Pat. No. 5,512,420. This application Dec. 1, 1995, Ser. No. 566,331

Int. Cl.[6] G03F *7/095*; *7/023*; *7/027*

U.S. Cl. 430—166 **15 Claims**

1. A camera speed, waterless, multilayered presensitized printing plate comprising:

a hydrophilic or non-hydrophilic solid substrate;

a first layer on said substrate having an oleophilic photoadhesive coating containing an ethylenically unsaturated photopolymerizable monomer or oligomer that adhesively polymerizes when exposed to actinic light or a photoreleasable adhesive coating containing quinonediazides that solubilize upon exposure to actinic light;

an actinic light transparent second layer having a solvent swellable, ink repellent silicone rubber;

a third layer having a polymeric protective film essentially transparent to actinic light; and

a fourth layer having a gelatino silver halide emulsion, said emulsion containing polymeric binders or keying agents to promote adhesion of said fourth layer to said protective film.

14. A process for the production of a camera speed, waterless, multilayered presensitized printing plate comprising:

coating a solid substrate with a first layer having an oleophilic photoadhesive coating containing an ethylenically unsaturated photopolymerizable monomer or oligomer that adhesively polymerizes when exposed to actinic light or a photoreleasable adhesive coating containing crosslinked quinonediazides that solubilizes upon exposure to actinic light;

coating said first layer with an actinic light transparent second layer having a solvent swellable, ink repellant silicone rubber;

coating said second layer with a third layer having a polymeric protective film essentially transparent to actinic light; and

coating said fourth layer having a gelatino silver halide emulsion, said emulsion containing polymeric binders or keying agents to promote adhesion of said fourth layer to said protective film, wherein said polymeric binders comprise acrylic latex emulsions selected from the group of polymers or copolymers consisting of poly(methylmethacrylate/n-butyl methacrylate/methacrylic acid), poly(methylmethacrylate/methacrylic acid), poly(ethylmethacrylate), poly(isobutyl methacrylate), poly(methylmethacrylate) and poly (n-butyl/isobutyl acrylate), butyl acrylate/methyl methacrylate, and vinyl acetate/butyl acrylate.

5,609,982

POSITIVE-WORKING PHOTORESIST COMPOSITION

Kenichiro Sato; Yasumasa Kawabe; Toshiaki Aoai, and Shinji Sakaguchi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

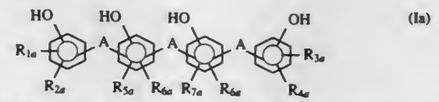
Filed Dec. 16, 1994, Ser. No. 357,748

Claims priority, application Japan, Dec. 17, 1993, 5-318194; Dec. 17, 1993, 5-318195; Mar. 31, 1994, 6-063859

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—192 **10 Claims**

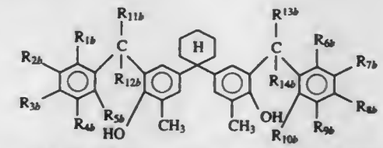
1. A positive-working photoresist composition, comprising an alkali-soluble resin and a 1,2-naphthoquinonediazide- 5-(and/or -4-)sulfonic ester of a water-insoluble alkali-soluble low molecular compound represented by formula (Ia), wherein the high-performance liquid chromatography of said ester with an ultraviolet ray at 254 nm shows that the patterns corresponding to the diester components and complete ester component of said ester are not less than 50% and less than 10% of the total pattern area of said ester, respectively:



(Ia)

wherein A's may be the same or different and each represent a single bond or a divalent organic group, with the proviso that at least one of A's is selected from the group consisting of a single bond, —O—, —S—, —SO—, —SO_2—, —SO_3—, —NH—, —C(=O)—, —C(=O)O—, —C(=S)—, and —C(=O)NH—; and R_{1a} to R_{8a} may be the same or different and each represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an acyl group, an alkenyl group or a halogen atom.

2. A positive-working photoresist composition, comprising an alkali-soluble resin and a 1,2-naphthoquinonediazide- 5-(and/or -4-)sulfonic ester of a water-insoluble alkali-soluble low molecular compound represented by formula (Ib) obtained by the esterification reaction of the water-insoluble alkali-soluble low molecular compound represented by formula (Ib) with 1,2-naphthoquinonediazide- 5-(and/or -4-) sulfonyl chloride, wherein the high-performance liquid chromatography of said ester with an ultraviolet ray at 254 nm shows that the patterns corresponding to the diester components and complete ester component of said ester are not less than 40% and less than 10% of the total pattern area of said ester, respectively:



(Ib)

wherein R_{1b} to R_{10b} may be the same or different and each represent a hydrogen atom, a halogen atom, an alkyl group, a cyclic alkyl group, an aryl group, an alkoxy group, an acyl group, an alkenyl group or a hydroxyl group, with the proviso that at least one of R_{1b} to R_{5b} and at least one of R_{6b} to R_{10b} each is a hydroxyl group; and R_{11b} to R_{14b} may be the same or different and each represent a hydrogen atom or an alkyl group.

5. A positive-working photoresist composition comprising a water-insoluble alkali-soluble resin, a water-insoluble alkali-soluble low molecular compound, and an ionization-sensitive radioactive compound, said ionization-sensitive radioactive compound comprises a mixture of a naphthoquinonediazidesulfonic diester of a water-insoluble alkali-soluble low molecular compound having three phenolic hydroxyl groups as an ionization-sensitive radioactive compound (A) and a naphthoquinonediazidesulfonic diester of a water-insoluble alkali-soluble low molecular compound having four phenolic hydroxyl groups as an ionization-sensitive radioactive compound (B) in an amount of 30% or more by weight based on the total amount of said ionization-sensitive radioactive compound.

5,609,983

POSITIVE WORKING PHOTOSENSITIVE COMPOSITIONS

Koichi Kawamura; Kenichiro Sato, and Shinji Sakaguchi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

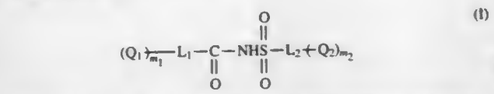
Filed May 24, 1995, Ser. No. 449,294

Claims priority, application Japan, May 25, 1994, 6-111441; Mar. 28, 1995, 7-069586

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—193 **7 Claims**

1. A positive working photosensitive composition, comprising a quinonediazide ester compound represented by the following general formula (I):



(I)

wherein L_1 and L_2 each represent an unsubstituted or substituted polyvalent linkage group which consists of nonmetallic atoms; Q_1 and Q_2 each represent a hydrogen atom or a quinonediazide structure; m_1 and m_2 each represent an integer from 1 to 15; provided that at least one Q_1 or Q_2 group represents a quinonediazide structure.

5,609,984

PROTECTIVE COATING FOR IMAGING ELEMENTS

Anchi Hou, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 186,342, Jan. 25, 1994, Pat. No. 5,437,959. This application May 4, 1995, Ser. No. 434,874

Int. Cl.[6] G03C *1/805*

U.S. Cl. 430—256 **7 Claims**

1. A method of preparing a prepares color proof with a protective covering, comprising in order the steps of:

(a) providing an element which comprises, in order, a removable substrate (a); a transparent, nonphotosensitive, polymeric layer having a thickness of less than 0.002 cm and a gloss of 45–70; said polymeric layer consisting essentially of at least one thermoplastic polymer having an elongation at break of greater than 30%, and a glass transition temperature of 35°–70° C.; and an elastomeric layer;

(b) laminating the element to a prepares color proof, wherein the elastomeric layer is adjacent to the surface of the prepress color proof; and

(c) peeling off the removable substrate, whereby the polymeric layer becomes the outermost layer of the prepress color proof.

5,609,985

COLOR IMAGE-FORMABLE MATERIAL AND PROCESS FOR PREPARING THE SAME

Tetsuya Taniguchi; Kiyoshi Goto; Takeo Akiyama; Miyuki Hosoi, all of Hino; Tetsuya Masuda, Machida, and Hideaki Mochizuku, Yokohama, all of Japan, assignors to Konica Corporation, and Mitsubishi Chemical Corporation, both of Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,400

Claims priority, application Japan, Sep. 22, 1993, 5-259338

Int. Cl.[6] G03C *1/805*; G03F *7/11*

U.S. Cl. 430—259 **16 Claims**

1. A color image-formable material which comprises a support, a cushion layer provided on the support and a color light-sensitive layer containing a light-sensitive composition and a coloring agent and gives a transferred image by forming a color image portion by imagewise exposure and developing treatment and then transferring the color image portion alone to an image-receiving material, wherein the surface at a color light-sensitive layer side of the cushion layer has an average gloss (GS (60°)) of 30 or more and the color light-sensitive layer is provided on the cushion layer.

5,609,986

AGEING IMPROVEMENTS OF PHOTOGRAPHIC ELEMENTS COMPRISING DEXTRAN

Rino Feduzi, Ranco; Cristina Soncini, Savona; Antonella Celada, Genoa; Salvatore Selvaggio, Albenga, and Ivo Zullo, Cairo Montenotte, all of Italy, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Apr. 25, 1996, Ser. No. 638,068

Claims priority, application European Pat. Off., Jun. 2, 1995, 95108519

Int. Cl.[6] G03C *1/04; 1/295*

U.S. Cl. 430—264 **10 Claims**

1. A silver halide photographic element, free of photolytically generated latent images, comprising a support bearing at least one gelatin light-sensitive silver halide emulsion layer and at least one gelatin light-insensitive layer, the silver halide light-sensitive emulsion layer including negative acting surface latent image-type silver halide grain in association with a contrast promoting agent and a hydrazine compound, wherein a total amount of at least 0.40 grams per square meter of dextran is contained in at least a light-sensitive silver halide emulsion layer and/or in at least a light-insensitive layer.

5,609,987

IMPROVEMENTS IN OR RELATING TO PRINTING PLATES

John M. Kitteridge, Leeds; Andrew E. Matthews, Nr. Stamford, and Philip J. Watkiss, Leeds, all of United Kingdom, assignors to Du Pont (U.K.) Limited, Herts, United Kingdom

Continuation of Ser. No. 249,774, May 26, 1994, abandoned, which is a continuation of Ser. No. 28,089, Jan. 29, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 513,034

Claims priority, application United Kingdom, Feb. 13, 1992, 9202985

Int. Cl.[6] G03F *7/038; 7/30*

U.S. Cl. 430—265 **11 Claims**

1. A radiation sensitive lithographic printing plate precursor adapted for tanning development comprising a hydrophilic substrate bearing a radiation sensitive composition comprising

(a) a silver halide photosensitive material and a hydrophilic colloid in admixture with

(b) a hydrophobic, tannable, oleophilic synthetic resin wherein said resin is soluble in an alkaline aqueous solution, said resin being selected from the group consisting of a styrene-maleic anhydride resin modified by reaction with ethanolamine hydrochloride to provide primary amino groups and carboxylic acid groups; a polyvinyl formamide copolymer having acidic and hydrophobic groups modified by hydrolysis to produce free amino groups; a polyallylamine polymer or copolymer modified by reaction with an acid anhydride and acid chloride to provide acidic and hydrophobic groups; or a hydrophobic carboxyl-containing polymer modified by reaction with methyl aziridine to provide amino groups

(c) said hydrophilic colloid comprising less than 20% by weight of said resin.

2. A method of preparing a lithographic printing plate comprising:

(a) providing a radiation sensitive composition by

(1) dissolving a hydrophobic, tannable, oleophylic synthetic resin in an alkaline aqueous solution, said resin containing (i) 1 to 20 mole percent of repeating primary amino units derived from an ethylenically unsaturated monomer containing one or more primary amino groups, (ii) 5 to 40 mole percent of sulphonamide repeating units or acidic repeating units selected from the group consisting of carboxylic, sulphonic, phosphoric, sulphinic and phosphinic acid groups derived from an ethylenically unsaturated monomer containing one or more acidic groups, and (iii) 10 to 85 mole percent of hydrophobic repeating units derived from an ethylenically unsaturated monomer containing at least one hydrophobic unit; and

(2) admixing said solution with a silver halide photosensitive material in admixture with a hydrophilic colloid to provide a radiation sensitive composition, said hydrophilic colloid comprising less than 20% by weight of said resin,

(b) coating said radiation sensitive composition onto a substrate having a hydrophilic surface,

(c) image-wise exposing said composition to actinic radiation;

(d) subjecting the image-wise exposed composition to tanning-development in the presence of a tanning-development agent whereby the radiation-struck areas of the composition become tanned, and

(e) washing out the untanned areas of the composition to reveal the hydrophilic surface of the substrate while leaving the tanned areas of the composition as an oleophilic relief image.

8. A radiation sensitive lithographic printing plate precursor adapted for tanning development comprising a hydrophilic substrate bearing a radiation sensitive composition comprising

(a) a silver halide photosensitive material and a hydrophilic colloid in admixture with

(b) a hydrophobic, tannable, oleophilic synthetic resin wherein said resin is soluble in an alkaline aqueous solution, said resin containing

(1) 1 to 20 mole percent of primary amino repeating units derived from an ethylenically unsaturated monomer containing one or more primary amino groups,

(2) 5 to 40 mole percent of sulphonamide repeating units or acidic repeating units selected from the group consisting of carboxylic, sulphonic, phosphonic, sulphinic and phosphinic acid groups derived from an ethylenically unsaturated monomer containing one or more acidic groups, and

(3) 10 to 85 mole percent of hydrophobic repeating units derived from an ethylenically unsaturated monomer containing at least one hydrophobic unit,

(c) said hydrophilic colloid comprising less than 20% by weight of said resin.

5,609,988

RADIATION SENSITIVE RESIN COMPOSITION

Hidetoshi Miyamoto; Shinji Shiraki; Yoshiji Yumoto, and Takao Miura, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,746

Claims priority, application Japan, Apr. 19, 1993, 5-114202

Int. Cl.[6] G03C *1/492*

U.S. Cl. 430—270.1 **4 Claims**

1. A radiation sensitive resin composition, comprising:

(1) 100 parts by weight of an alkali-soluble novolak resin having a polystyrene reduced weight average molecular weight of 1,000 to 10,000,

(2) 1 to 10 parts by weight of a compound having at least one group selected from the group consisting of a methylol group and an alkoxymethyl group and capable of cross-linking the alkali-soluble novolak resin (1) in the presence of an acid, and

(3) 0.01 to 5 parts by weight of a radiation sensitive acid-generating agent, wherein said radiation sensitive acid-generating agent is 2-(1-(3,4-benzodioxolyl))-4,6-bis(trichloromethyl)-1,3,5-triazine.

5,609,989

ACID SCAVENGERS FOR USE IN CHEMICALLY AMPLIFIED PHOTORESISTS

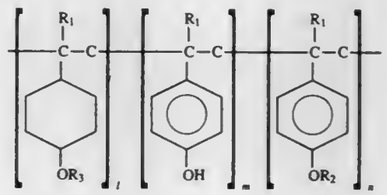
Nageshwer R. Bantu, Hopewell Junction; William R. Brunsvold, Poughkeepsie; George J. Hefferon, Fishkill; Wu-Song Huang, Poughkeepsie; Ahmad D. Katnani, Poughkeepsie; Mahmoud M. Khojasteh, Poughkeepsie, all of N.Y.; Ratnam Sooriyakumaran, San Jose, Calif., and Dominic C. Yang, Mesa, Ariz., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,568

Int. Cl.[6] G03F *7/039*

U.S. Cl. 430—270.1 **11 Claims**

1. A photoresist composition, comprising: 1–99% by weight of a polymer having the chemical formula:



where l is zero, 1 or greater than 1, and m and n are both greater than 1, where R_1 is selected from the group consisting of hydrogen and a C_{1-12} alkyl group, where R_2 is an acid labile functional group; and where R_3 is a hydrogen or acid labile functional group;

1–99% by weight of a solvent for said polymer;

0.01–20% by weight of an acid generating compound; and

0.01–10% by weight of a base selected from the group consisting of berberine, and proton sponge.

5,609,990

OPTICAL RECORDING DISK HAVING A SEALCOAT LAYER

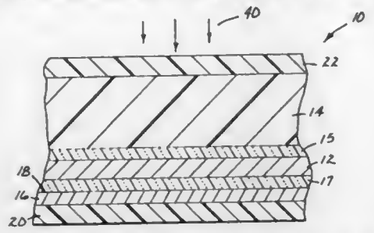
Chau T. Ha, St. Paul, and William M. Lamanna, Stillwater, both of Minn., assignors to Imation Corp., St. Paul, Minn.

Filed Feb. 8, 1995, Ser. No. 385,681

Int. Cl.[6] G11B *7/24*

U.S. Cl. 430—270.11 **23 Claims**

I. An optical recording disk having a sealcoat layer provided on



at least one surface of the disk, wherein the sealcoat layer is a cured composition obtained from ingredients comprising

a) a radiation-curable component;

b) a nonionic perfluoro surfactant; and

c) a radiation-curable silicone-containing compound; and

wherein the nonionic perfluoro surfactant has the formula:

$$F_{2n+1}C_n(CH_2CH_2O)_xR^6$$

wherein R^6 is hydrogen or an alkyl group, n is in the range from 1 to 12, and x is in the range from 1 to 50.

5,609,991

PHOTOIMAGEABLE COMPOSITION HAVING IMPROVED ALKALINE PROCESS RESISTANCE AND TACK-FREE SURFACE FOR CONTACT IMAGING

James J. Briguglio, Balboa; Charles R. Keil, Rancho Santa Margarita; Vinai M. Tara, Anaheim; Edward J. Reardon, Jr., Laguna Nigel, and Randall W. Kautz, Irvine, all of Calif., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 386,974, Feb. 10, 1995, Pat. No. 5,576,145. This application Aug. 3, 1995, Ser. No. 510,836

Int. Cl.[6] G03C *1/73*

U.S. Cl. 430—281.1 **30 Claims**

1. A photoimageable composition comprising

A) between about 20 and about 70 wt % of a binder polymer, said binder polymer A) comprising a backbone formed of monomers, between about 45 and about 65 mole percent of which monomers are selected from the group i) consisting of styrene, C_1–C_6-substituted styrene and mixtures thereof and between about 35 and about 55 mole percent of which monomers are selected from the group ii) consisting of maleic anhydride, alkyl-substituted maleic anhydride, aromatic-substituted maleic anhydride and mixtures thereof, monomers of said group ii) providing anhydride groups to the backbone of said polymer, said anhydride groups being mono-esterified to between about 50 and about 65 mole percent with an alkyl, aryl, cycloalkyl, alkylaryl, or arylalkyl first alcohol a) having a molecular weight of at least 100 or mixture of said first alcohols a), and said anhydride groups being mono-esterified to between about 15 and about 50 mole percent of a C_1–C_3-alkyl second alcohol b) or mixture of said second alcohols b), said polymer A) being mono-esterified to at least about 80 mole percent total of said anhydride groups, said polymer having a weight average molecular weight of between about 80,000 and about 200,000, and an acid number of between about 170 and about 220,

B) between about 20 and about 55 wt % of a photoimageable material which is a multifunctional photopolymerizeable monomer or short chain oligomer,

C) between about 2 and about 15 wt % of a photoinitiator chemical system,

D) between about 5 and about 10 wt % of an epoxy-acrylate oligomer in addition to and exclusive of B), and

E) between about 1 and about 5 wt % of an hydroxyl group-reactive aminoplast,

said weight percentages are based on total of components A)–E).

5,609,992

PHOTOPOLYMERIZABLE COMPOSITION

Tadahiro Sorori; Yasuo Okamoto; Syunichi Kondo, and Hiromichi Kurita, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Oct. 27, 1995, Ser. No. 549,227

Claims priority, application Japan, Nov. 1, 1994, 6-269047; Feb. 10, 1995, 7-023085

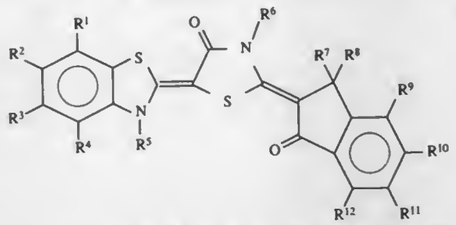
Int. Cl.[6] G03F *7/031*

U.S. Cl. 430—281.1 **13 Claims**

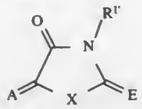
I. A photopolymerizable composition comprising the following components (i), (ii) and (iii):

(i) a compound having at least one addition-polymerizable, ethylenically unsaturated bond;

(ii) a compound represented by formula (IA) or (IB):



wherein R^1, R^2, R^3, R^4, R^9, R^{10}, R^{11} and R^{12} each independently represents a hydrogen atom, a halogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, a hydroxyl group, a substituted oxy group represented by $R^{14}O$— wherein R^{14} is a monovalent nonmetallic atom group exclusive of hydrogen, a mercapto group, a substituted thio group, an amino group, a substituted amino group, a substituted carbonyl group, a sulfo group, a sulfonato group, a substituted sulfinyl group, a substituted sulfonyl group, a phosphono group, a substituted phosphono group, a phosphonato group, a substituted phosphonato group, a cyano group or a nitro group or R^1 and R^2, R^2 and R^3, R^3 and R^4, R^9 and R^{10}, R^{10} and R^{11}, R^{11} and R^{12} are combined with each other to form an aliphatic or aromatic ring; R^5 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group; R^6 represents a substituted or unsubstituted alkenylalkyl group, a substituted or unsubstituted alkynylalkyl group, a substituted or unsubstituted alkenyl group or a substituted or unsubstituted alkynyl group; and R^7 and R^8 each independently represents a hydrogen atom, a halogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a substituted carbonyl group,



wherein A= represents a substituted or unsubstituted 2(1H)-pyridylidene group or a substituted or unsubstituted 4(1H)-pyridylidene group; —X— represents —O—, —S—, —$NR^{2'}$— or —CONR3'—; $R^{1'}$, $R^{2'}$ and $R^{3'}$ each independently represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group,

an alkenyl group, a substituted alkenyl group, an alkynyl group or a substituted alkynyl group; and =E represents a substituted or unsubstituted 1,3-dihydro-1-oxo-2H-indene-2-ylidene; and

(iii) a compound which generates an active radical upon light irradiation when in the presence of component (ii).

5,609,993

PROCESS FOR PRODUCING LITHOGRAPHIC PRINTING PLATE, PHOTOSENSITIVE PLATE AND AQUEOUS INK COMPOSITION THEREFOR

Takakazu Hase, Nishinomiya; Seiji Arimatsu, and Koichi Kimoto, both of Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka-fu, Japan

Continuation-in-part of Ser. No. 870,423, Apr. 17, 1992, abandoned. This application Oct. 5, 1994, Ser. No. 318,559

Claims priority, application Japan, Apr. 17, 1991, 3-085176

Int. Cl.[6] G03F *7/30*

U.S. Cl. 430—302 **8 Claims**

I. In a process for producing a lithographic printing plate comprising forming a light transmittable oxygen barrier film on a portion of a photopolymerizable layer, which is present on a substrate, then exposing the photopolymerizable layer to light to cure a portion thereof on which the oxygen barrier film is present, and thereafter removing all of the photopolymerizable film not covered with the oxygen barrier film, the improvement wherein a hydroxypropylmethyl cellulose protective layer, which is permeable to oxygen gas and is capable of transmitting the light for curing, is formed on the photopolymerizable layer when forming the lithographic printing plate and the oxygen barrier film is formed thereon by ink-jet printing before development and after forming the protective layer with an aqueous ink composition comprising:

(a) 0.5 to 15% by weight of a polyvinyl alcohol, having a saponification number of 80 mol % or more which is capable of transmitting the light to cure the photopolymerizable layer,

(b) 0.5 to 40% by weight of a polyhydric alcohol, and

(c) 0.1 to 5% by weight of a surfactant.

5,609,994

METHOD FOR PATTERNING PHOTORESIST FILM HAVING A STEPWISE THERMAL TREATMENT

Jun Seok Lee, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Dec. 21, 1994, Ser. No. 360,418

Claims priority, application Rep. of Korea, Nov. 11, 1994, 29650/1994

Int. Cl.[6] G03F *7/36*

U.S. Cl. 430—323 **16 Claims**

1. A method for patterning a photoresist film, comprising the steps of:

forming a layer to be patterned over a substrate;

coating a photoresist film over the layer;

selectively forming a recess at a predetermined region of the photoresist film;

performing a stepwise thermal treatment of the recessed photoresist film in a temperature ranging from 110° C. to 300° C.;

forming a planarized inorganic material layer on the recess of the photoresist film; and

removing a predetermined portion of the photoresist film under a condition that the inorganic material layer is used as a mask.

2. A method for patterning a photoresist film, comprising the steps of:

forming a layer to be patterned over a substrate;

coating a photoresist film over the layer;

selectively forming a recess at a predetermined region of the photoresist film by exposing a selected portion of the photoresist film;

performing a stepwise thermal treatment of the recessed photoresist film in a temperature ranging from 110° C. to 300° C.;

forming a planarized inorganic material layer on the recess of the photoresist film; and

removing a predetermined portion of the photoresist film under a condition that the inorganic material layer is used as a mask.

5,609,995

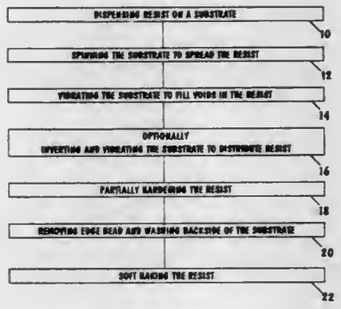
METHOD FOR FORMING A THIN UNIFORM LAYER OF RESIST FOR LITHOGRAPHY

Salman Akram; Paul Shirley, and William Rericha, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 30, 1995, Ser. No. 520,871

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—327 **32 Claims**



1. A method for forming a layer of resist on a non-planar substrate, said method comprising:

dispensing resist onto the substrate;

spinning the substrate to spread the resist;

vibrating the substrate;

removing an edge bead of resist from the substrate; and

heating the resist.

7. A method for forming a layer of resist on a substrate, said method comprising:

providing a substrate having a non-planar surface;

dispensing resist onto the substrate;

spinning the substrate to spread the resist;

vibrating the substrate to remove voids in the resist;

removing an edge bead from the resist;

washing a backside of the substrate; and

heating the resist.

25. A method for forming a layer of resist on a substrate having a non-planar topography, said method comprising:

dispensing resist onto the substrate;

spinning the substrate; and

inverting and vibrating the substrate to eliminate voids in the resist.

5,609,996

PHOTOGRAPHIC EMULSION LAYER CONTAINING PYRAZOLOAZOLE COUPLER EXHIBITING IMPROVED DYE LIGHT FADE

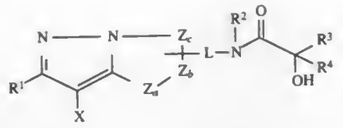
Ping W. Tang; Stanley W. Cowan; David J. Decker, and Terrence C. Mungal, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,916

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—386 **22 Claims**

1. A photographic light sensitive silver halide emulsion layer having associated therewith a pyrazoloazole dye-forming coupler having the formula:



wherein:

R^1 is a substituent bonded to the pyrazolotriazole nucleus by a fully substituted carbon atom;

X is hydrogen or a coupling-off group;

L is a divalent linking group;

R^2, R^3, and R^4 are independently hydrogen or substituent groups; and

Z_a, Z_b, and Z_c are independently —C(R')(R")—, =N—, =C(R')—, or —NH—, wherein R', and R" are independently H or a substituent, provided that one of either the Z_a—Z_b or the Z_b—Z_c bond is a double bond and the other is a single bond, and provided that when the Z_b—Z_c bond is a double bond, it may form part of a fused ring.

18. A photographic element comprising an emulsion layer of claim **1**.

21. A method of forming an image in an element as described in claim **18** after the element has been imagewise exposed to light, comprising contacting the element with a color developing agent.

5,609,997

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND A PROCESSING METHOD FOR THAT MATERIAL

Yasuhiro Okamoto, and Tsutomu Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 40,981, Mar. 31, 1993. This application Jul. 18, 1994, Ser. No. 277,414

Claims priority, application Japan, Apr. 1, 1992, 4-105265

Int. Cl.[6] G03C *1/09; 1/12*

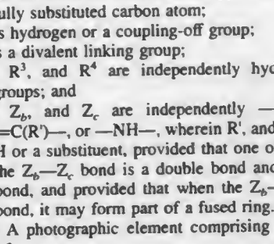
U.S. Cl. 430—399 **10 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one light-sensitive silver halide emulsion layer containing silver halide grains, wherein the silver halide grains contain 50 mol % or more of silver chloride, contain a metal compound represented by Formula I, and have been subjected to chemical sensitization with a sulfur sensitizer, a gold sensitizer and a selenium sensitizer and to spectral sensitization with a sensitizing dye represented by Formula II:

$$[M(CN)_mX_{6-m}]^n \quad (I)$$

wherein M represents iron, rhenium, osmium, ruthenium, or iridium; X represents a bridging ligand; m is 4, 5 or 6; and n is −2, −3 or −4;

(II)



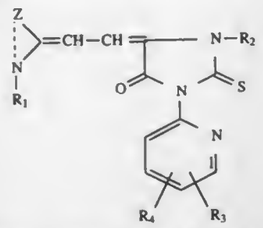
wherein Z represents a group of atoms necessary to form an oxazole nucleus, a benzoxazole nucleus or a naphthooxazole nucleus; R_1 represents an alkyl group which may optionally have a substituent; R_2 represents an alkoxycarbonylalkyl group, a hydroxyalkyl group, a hydroxyalkoxyalkyl group, a carbamoylalkyl group, a hydroxyphenyl group, or a hydroxyalkylphenyl group; and R_3 and R_4 may be the same or different and each represents a hydrogen atom, an alkyl group, an alkoxy group, an alkylsulfonyl group, a sulfo group, a chlorine atom, a fluorine atom, or a carboxy group.

7. A method for processing a silver halide photographic material comprising the steps of image-wise exposing the photographic material and developing the image-wise exposed photographic material, wherein the photographic material comprises a support having thereon at least one light-sensitive silver halide emulsion layer containing silver halide grains, said silver halide grains (i) containing 50 mol % or more of silver chloride, (ii) containing a metal compound represented by Formula I and (iii) having been subjected to chemical sensitization with a sulfur sensitizer, a gold sensitizer and a selenium sensitizer and to spectral sensitization with a sensitizing dye represented by Formula II:

$$[M(CN)_mX_{6-m}]^n \quad (I)$$

wherein M represents iron, rhenium, osmium, ruthenium, or iridium; X represents a bridging ligand; m is 0, 1 or 2; and n is −2, −3 or −4;

(II)



wherein Z represents a group of atoms necessary to form an oxazole nucleus, a benzoxazole nucleus or a naphthooxazole nucleus; R_1 represents an alkyl group which may optionally have a substituent; R_2 represents an alkoxycarbonylalkyl group, a hydroxyalkyl group, a hydroxyalkoxyalkyl group, a carbamoylalkyl group, a hydroxyphenyl group, or a hydroxyalkylphenyl group; and R_3 and R_4 may be the same or different and each represents a hydrogen atom, an alkyl group, an alkoxy group, an alkylsulfonyl group, a sulfo group, a chlorine atom, a fluorine atom, or a carboxy group.

10. The method described in claim **7**, wherein the light-sensitive material is developed with an automatic developing machine in which the replenishing amounts for a developing solution and a fixing solution each are 200 ml/cm^2 or less.

5,609,998

PROCESS FOR DISPERSING CONCENTRATED AQUEOUS SLURRIES

John Texter, Rochester; Ravi Sharma, Fairport, and David A. Czekai, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 366,088, Dec. 29, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 417,876

Int. Cl.[6] G03C *1/38*

U.S. Cl. 430—449 **16 Claims**

1. A process for dispersing a particulate solid substance in a continuos aqueous phase comprising the steps of:

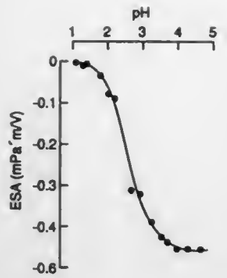
providing a comminution reactor;

providing a particulate solid substance comprising a weak acid functional group, having effective $pK_{a1}>1$ and less than 1% by weight aqueous solubility at $pH=pK_{a1}$;

providing an aqueous solution consisting essentially of water or a mixture of water with water-miscible solvent, at pH less than the greater of 7 and $pK_{a1}+2$;

providing a buffering salt of a weak acid, where the weak acid associated with this buffering salt has pK_{a2} and where

$$pK_{a1}-2 \leqq pK_{a2};$$



providing milling media;

combining said particulate solid substance, said aqueous solution, said buffering salt, and said milling media in said comminution reactor to produce a multiphase mixture; and

milling said mixture to produce a reduced particle size slurry of said particulate solid substance.

5,609,999

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shunichi Aida; Keisuke Matsumoto; Toshiyuki Watanabe, and Koji Warlishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 7, 1995, Ser. No. 524,462

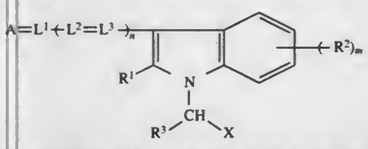
Claims priority, application Japan, Sep. 8, 1994, 6-239623; Sep. 30, 1994, 6-259745

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—505 **19 Claims**

1. A silver halide color photographic material comprising a support having thereon, in the order from the support side, a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a blue-sensitive silver halide emulsion layer, said material further comprising a light-insensitive layer disposed between said green-sensitive layer and said blue-sensitive layer and which contains at least one fine grain solid dispersion of a yellow dye represented by formula (I), and a light-insensitive layer disposed between said red-sensitive layer and said green-sensitive layer and which contains at least one fine grain solid dispersion of a magenta dye represented by formula (II):

(I)



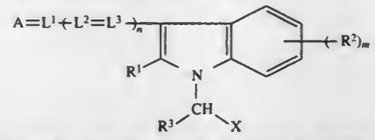
wherein A represents an acidic nucleus having at least one carboxyl group, L^1, L^2 and L^3 each represents a substituted or unsubstituted methine group, R^1 and R^3 each represents a hydrogen atom or a substituent, R^2 represents a substituent, n represents 0 or 1, m represents an integer of from 0 to 4, provided that when m is an integer of from 2 to 4, the R^2 groups are the same or different, and X represents an electron-withdrawing group having a Hammett's substituent constant σ_m of from 0.3 to 1.5;

$$D\text{-}(X)_y \quad (II)$$

wherein D represents a compound having a chromophore, X represents a dissociative proton bonded to D directly or through a divalent linking group or a group having the dissociative proton and y represents an integer of from 1 to 7.

3. A silver halide color photographic material comprising a blue-sensitive silver halide emulsion layer containing a yellow coupler, a green-sensitive silver halide emulsion layer containing a magenta coupler and a red-sensitive silver halide emulsion layer containing a cyan coupler, each of said silver halide emulsion layers being comprised of at least two silver halide emulsion sublayers having different sensitivities from each other, said silver halide color photographic material further comprising (1) at least one hydrophilic colloid layer containing at least one solid disperse dye of a compound represented by formula (i) and (2) satisfying at least one of the following requirements (a) to (c):

(i)



wherein A represents an acidic nucleus having at least one carboxyl group, L^1, L^2 and L^3 each represents a substituted or unsubstituted methine group, R^1 and R^3 each represents a hydrogen atom or a substituent, R^2 represents a substituent, n represents 0 or 1, m represents an integer of from 0 to 4, provided that when m is an integer of from 2 to 4, the R^2 groups are the same or different, and X represents an electron-withdrawing group having a Hammett's substituent constant σ_m of from 0.3 to 1.5;

(a) a surface- and/or inside-fogged silver halide emulsion is contained in a light-sensitive silver halide emulsion layer or a layer adjacent to a light-sensitive silver halide emulsion layer;

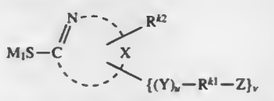
(b) a DIR compound represented by formula (F) is contained in a light-sensitive silver halide emulsion layer or a light-insensitive layer;

$$A\text{—}(L)_n\text{—}(G)_m\text{—}(Time)_t\text{—}X \quad (F)$$

wherein A represents a redox mother nucleus or a precursor thereof which is a group able to first allow —(Time)$_t$—X to split off when the group is oxidized in the process of photographic development processing, Time represents a group capable of releasing X after the release of the —(Time)$_t$—X group and may have a timing controlling function, X represents a development inhibitor, L represents a divalent linking group, G represents an acidic group and n, m and t each represents 0 or 1, provided that when n is 1, m is not 0; and

(c) a compound represented by formula (ii) is contained in at least one emulsion layer:

(ii)



wherein M_1 represents a hydrogen atom, a cation or a protective group of the mercapto group to be cleaved in an alkali, X represents an atomic group necessary for forming a 5- or 6-membered heterocyclic ring (which may be substituted or condensed), with two or three nitrogen atoms being present in the five or six atoms constituting said heterocyclic ring, R^{41} represents a linear or branched alkylene, alkenylene, aralkylene or arylene group, Y represents a divalent polar linking group, R^{42} represents a hydrogen atom or a group capable of substitution thereto, Z represents a polar substituent, u represents 0 or Z and v represents 0, Z or 2.

5,610,000

2'-HYDROXYPHENYL BENZOTRIAZOLE BASED UV ABSORBING POLYMERS AND PHOTOGRAPHIC ELEMENTS CONTAINING THEM

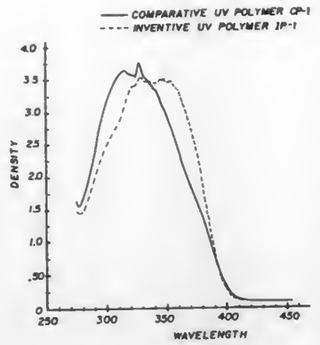
Lal C. Vishwakarma; Hwei-Ling Yau, both of Rochester, and Tienteh Chen, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

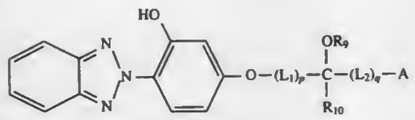
Filed May 31, 1995, Ser. No. 454,719

Int. Cl.[6] G03C *1/815*

U.S. Cl. 430—512 **28 Claims**

1. A photographic element comprising a light sensitive silver halide and an ultraviolet absorbing polymer which includes units formed from monomers of the structure of formula (II):





wherein:
p and q are, independently, 0 or 1;
L_1 and L_2 are bivalent linking groups;
R_9 is an acyl group, aryl group or heterocyclyl group;
R_{10} is H, alkyl group, aryl group, or heterocyclyl group;
A is an ethylenically unsaturated polymerizable group; the benzene ring of the benzotriazole and the 2'-hydroxyphenyl ring each may be further substituted or unsubstituted.

5,610,001

PRIMED RESIN FILM

Erik Mostaert, Boechout; August Mariën, Westerlo, and Marc Van Damme, Heverlee, all of Belgium, assignors to Agfa-Gevaert N. V., Mortsel, Belgium

Continuation of Ser. No. 19,677, Feb. 19, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,157
Claims priority, application European Pat. Off., Feb. 29, 1992, 9220593
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—533 **5 Claims**

1. A web or sheet material which comprises a hydrophobic resin support having coated thereon:

(I) A first primer layer coated directly on said resin support and consisting essentially of a mixture of ingredients (A), (B) and (C) applied as a dispersion from an aqueous medium, wherein:

(A) is a copolyester containing recurrent ester groups derived from ethylene glycol and an acid mixture containing terephthalic acid, isophthalic acid and 5-sulphoisophthalic acid whose sulpho group is in salt form, said acid mixture consisting essentially of from 20 to 60 mole % of isophthalic acid, 6 to 10 mole % of said sulphoisophthalic acid, 0.05 to 1 mole % of cross-linking agent being an aromatic polycarboxylic acid compound having at least three carboxylic acid groups or corresponding acid generating anhydride or ester groups, the remainder in said acid mixture being terephthalic acid,

(B) is a copolymer formed from 40 to 70% by weight of a lower (C1–C4) alkyl methacrylate, 25 to 50% by weight of butadiene and from 2 to 5% by weight of an ethylenically unsaturated carboxylic acid,

(C) is colloidal silica, and the ratio by weight of (A) to (B) is in the range of 40/40 to 70/10, the amount of (C) being in the range of 10 to 40% by weight with respect to (A)+(B);

(II) A second primer layer coated on said first primer layer and comprising a gelatin binder containing colloidal silica; and

(III) A photosensitive layer present on said second primer layer and containing gelatin as a binder for a photosensitive material.

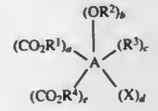
5,610,002

PHOTOGRAPHIC COMPOSITION CONTAINING A THICKENING AGENT

Robert J. Ross, Rochester; Pranab Bagchi, Webster, and Richard W. Connelly, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 264,552, Jun. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 975,238, Nov. 12, 1992, abandoned. This application Nov. 13, 1995, Ser. No. 558,974
Int. Cl.[6] G03C *1/047*
U.S. Cl. 430—54.6 **18 Claims**

1. A photographic composition comprising an aqueous medium containing gelatin present in an amount less than about 4% by weight, based on the weight of the composition., and a compound (II) of the formula:



wherein:
A is an aromatic group;
X is SO_3M or CO_2M,
M is H or an alkali metal, ammonium or pyridinium ion; each R^1, R^2, and R^3 is independently a straight or branched chain alkyl group having 1 to 30 carbon atoms;
R^4 is H or a straight or branched chain alkyl group having 1 to 30 carbon atoms;
each of a, b, c and e is independently 0, 1, 2 or 3, with the proviso that a+ b+ c+ e is at least 1; and
d is 1, 2, or 3;
with the further proviso that the sum of a+ b+ c+ e is at least 2 when A is phenyl, X is SO_3M, d is 1 and any one of a, c, or e is 1; and wherein said composition would have a viscosity of less than 5 cP at a shear rate of 100 sec^{-1} and a temperature of 40° C. in the absence of said compound, and said compound is present in said composition in an amount sufficient to raise the viscosity of said composition to above 5 cP at said shear rate and said temperature.

5,610,003

TWO-EQUIVALENT MAGENTA PHOTOGRAPHIC COUPLERS WITH ACTIVITY-MODIFYING BALLASTING GROUPS

Barbara B. Lussier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

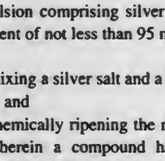
Continuation of Ser. No. 264,402, Jun. 23, 1994, abandoned. This application Jul. 10, 1995, Ser. No. 500,818
Int. Cl.[6] G03C *1/08;7/26;7/32*
U.S. Cl. 430—555 **22 Claims**

1. A photographic element comprising a support bearing at least one silver halide emulsion layer having associated therewith a two-equivalent 5-pyrazolone magenta-dye-forming coupler; said coupler having a coupling-off group in the 4-position and an activity-modifying ballasting group in the 3-position; said ballasting group:

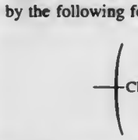
(1) comprising an —NHCO— radical which is attached via the nitrogen atom thereof to the 3position of the 5-pyrazolone ring;

(2) having a ClogP value of at least 6; and

(3) comprising a hydrogen-bonding substituent which (a) forms a five- or six-membered hydrogen-bonded ring with said —NHCO— radical and (b) contains a sterically hindering group with a negative Es value greater than the absolute value of −1.5 wherein said two-equivalent 5 -pyrazolone magenta-dye-forming coupler is represented by the formula:



wherein
R^1 is hydrogen or a monovalent organic radical,
R^3 is a coupling-off group, and
R^2 is an activity-modifying ballasting group of the formula:



wherein n is 1 or 2
R^4 is a monovalent organic group with a π value of at least 2.1,
X is a heteroatom that can hydrogen bond to the hydrogen atom of the —NHCO— radical, and
Y is a monovalent organic group which sterically hinders leuco dye formation.

5,610,004

METHOD OF MANUFACTURING SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Shigeo Tanaka, Hino, Japan, assignor to Konica Corporation, Japan

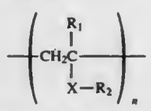
Filed Dec. 21, 1995, Ser. No. 576,500
Claims priority, application Japan, Dec. 26, 1994, 6-321111
Int. Cl.[6] G03C *1/09;1/035*
U.S. Cl. 430—569 **8 Claims**

1. A method of manufacturing a silver halide photographic emulsion comprising silver halide grains having a silver chloride content of not less than 95 mol %, the method comprising the steps of:

mixing a silver salt and a halide to form a silver halide emulsion; and

chemically ripening the resulting silver halide emulsion,

wherein a compound having two or more sulfonic acid or sulfonic acid salt groups in its molecule is added to the silver halide emulsion at the chemical ripening step, the compound being a condensation compound of napthalene sulfonic acid or naphthalene sulfonic acid salt with formaldehyde or a polymeric compound having a chemical structure represented by the following formula (1):



formula (1)

wherein R_1 represents a hydrogen atom or an alkyl group; X represents —OCO—, CONR'— or —SO_2NR'—, in which R' represents a hydrogen atom or an alkyl group; R_2 represents an alkyl, aryl or aralkyl group each having a sulfonic acid or sulfonic acid salt group; and n represents an integer of 2 or more.

5,610,005

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

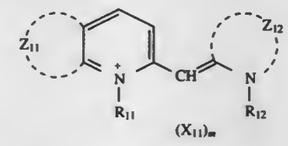
Hiroshi Kawakami, and Junji Nishigaki, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 346,928, Nov. 23, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,290
Claims priority, application Japan, Nov. 25, 1993, 5-317483
Int. Cl.[6] G03C *1/16;1/09;1/08*
U.S. Cl. 430—574 **20 Claims**

1. A silver halide color photographic light-sensitive material which comprises, on a support, at least one blue-sensitive silver halide emulsion layer containing a yellow dye forming coupler, at least one green-sensitive silver halide emulsion layer containing a magenta dye forming coupler, and at least one red-sensitive silver halide emulsion layer containing a cyan dye forming coupler,

wherein at least one light-sensitive silver halide emulsion layer is spectrally sensitized with at least one spectral sensitizing dye represented by Formula (I) below, and at least one silver halide emulsion contained in said light-sensitive silver halide emulsion layer is subjected to reduction sensitization in the manufacturing process of said emulsion:

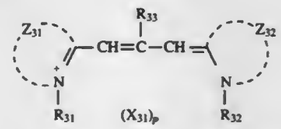
Formula (I)



wherein R_{11} and R_{12} may be the same or different and each represent an alkyl group; Z_{11} represents an atomic group required to form a benzene ring together with the carbon atoms; Z_{12} represents an atomic group required to form, together with the nitrogen atom and the carbon atom, a benzoxazole nucleus; X_{11} represents a charge-balancing counter anion; and m represents 0 or 1, with m being 0 when an intramolecular salt is formed.

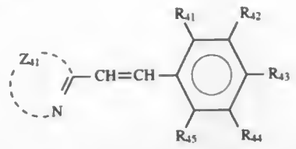
4. The material according to claim 1, wherein said at least one emulsion layer is spectrally sensitized with a combination of at least one compound represented by Formula (I) and at least one compound represented by Formula (V) or (VI) below:

Formula (V)



where R_{31} and R_{32} have the same meanings as R_{11} and R_{12} in Formula (I); R_{33} represents a hydrogen atom, an alkyl group, or an aryl group; one of Z_{31} and Z_{32} represents an anomic group required to form a benzoxazole ring together with the carbon atom and the nitrogen atom, and the other represents an atomic group required to form a benzoxazole ring, a benzothiazole ring, a benzoselenazole ring or a benzimidazole ring together with the carbon atom and the nitrogen atom; and X_{31} and p have the same meanings as X_{11} and m, respectively, in Formula (I);

Formula (VI)



where Z_{41} represents an atomic group required to form a 5- or 6-membered nitrogen containing heterocyclic ring together with the carbon atom and the nitrogen atom; and each of R_{41}, R_{42}, R_{43}, R_{44}, and R_{45} represents a substituted amino group, a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group, an alkoxy group, or an aryl group, or every adjacent two of R_{41} to R_{45} may form a 5- or 6-membered ring together with the carbon atoms.

5,610,006

HEAT-DEVELOPABLE PHOTOGRAPHIC MATERIAL

Takuya Yokokawa, and Tomoyuki Koide, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 970,157, Nov. 2, 1992. This application May 9, 1994, Ser. No. 240,220

Claims priority, application Japan, Nov. 5, 1991, 3-315219; Apr. 21, 1992, 4-126629

Int. Cl.[6] G03C *1/09*

U.S. Cl. 430—604 **9 Claims**

1. A heat-developable photographic material comprising on a support a light-sensitive silver balide emulsion, a reducing agent, a binder and a dye-donating compound, in which at least one light-sensitive silver halide emulsion on the support comprises cubic silver chlorobromide grains having a silver bromide content of at least about 90 mol % and containing from 1×10^{-7} to 1×10^{-3} mol of iron ions per mol of silver halide.

5,610,007

CHIMERIC SHEETS OF EPITHELIAL CELLS

François A. Auger; Mahmoud Rouabhia; Louis Lafleur, and Lucie Germain, all of Québec, Canada, assignors to Université Laval, Quebec, Canada

Filed Jan. 21, 1993, Ser. No. 7,318

Int. Cl.[6] C12N *5/06*; A61F *2/10*

U.S. Cl. 435—1.1 **22 Claims**

1. A process for producing a chimeric sheet of epithelial cells suitable for transplanting onto a host, said process comprising the steps of:

mixing together in vitro epithelial cells that are autologous to said host with epithelial cells that are either allogeneic or xenogeneic to said host, and

culturing the mixture of epithelial cells in vitro under conditions suitable to promote confluent growth in the epithelial cells into a chimeric sheet of epithelial cells suitable for transplanting onto a host.

5,610,008

METHOD OF RECOVERING ENDOTHELIAL MEMBRANE FROM TISSUE AND APPLICATIONS THEREOF

Jan E. Schnitzer, San Diego, Calif., and Bruce S. Jacobson, Amherst, Mass., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 124,797, Sep. 22, 1993, abandoned, which is a division of Ser. No. 928,912, Aug. 11, 1992, Pat. No. 5,281,700. This application Jun. 5, 1995, Ser. No. 461,180

Int. Cl.[6] C12Q *1/00*

U.S. Cl. 435—4 **48 Claims**

1. A process for identification of a characteristic molecule associated with an endothelial membrane which is exposed to a luminal cavity, which process comprises:

a. forming on a luminal surface of said endothelial membrane, a coating of first ionic material comprising particles of an adherent first ionic material s having an affinity for said endothelial membrane which have been perfused into said luminal cavity;

b. forming said coating of first ionic material into a pellicle adherent to said endothelial membrane by contacting the luminal surface of said coating of first ionic material with an oppositely charged second ionic material reactive with said first ionic material;

c. homogenizing tissue associated with said membrane, said pellicle and said endothelial membrane and separating said pellicle with said endothelial membrane adhered thereto from other tissue elements;

d. separating and isolating molecules from said pellicle with said endothelial membrane adhered thereto; and

e. analyzing molecules separated and isolated in step d. to identify a characteristic molecule associated with said endothelial membrane.

5,610,009

MAMMALIAN EXPRESSION SYSTEMS FOR HEPATITIS C VIRUS ENVELOPE GENES

Shinichi Watanabe, Northbrook; Julie Yamaguchi, Chicago; Suresh M. Desai, Libertyville, and Sushil G. Devare, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 28, 1994, Ser. No. 188,281

Int. Cl.[6] C12Q *1/70*; C07K *16/08*

U.S. Cl. 435—5 **7 Claims**

1. A method of detecting hepatitis C virus, HCV, antigen or antibody in a test sample suspected of containing HCV antigen or antibody comprising contacting the test sample with a glycosylated HCV envelope antigen fusion protein expressed by plasmid pHCV425, wherein said fusion protein is produced in a mammalian expression system; and detecting the presence of binding complexes containing said HCV envelope antigen fusion protein, said binding complexes indicating the presence of HCV antigen or antibody in said test sample.

5,610,010

PROCESS AND APPARATUS FOR FRAGMENTING BIOMATERIALS

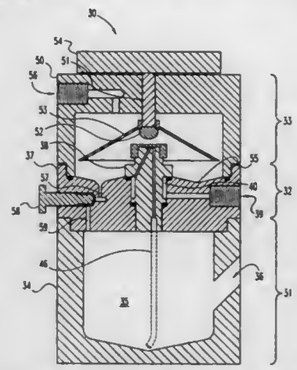
Stefan J. Surzycki; Masahito Kityama, and Robert K. Togasaki, all of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

PCT No. PCT/US91/07530, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO92/07091, PCT Pub. Date Apr. 30, 1992

Continuation-in-part of Ser. No. 660,650, Feb. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 595,429, Oct. 11, 1990, abandoned. This PCT application Oct. 11, 1991, Ser. No. 39,430

Int. Cl.[6] C12Q *1/68*; C12M *1/00*; C12N *15/10*

U.S. Cl. 435—6 **29 Claims**



1. In a process for fragmenting a biomaterial and isolating and recovering a component thereof, the improvement comprising performing said fragmenting by nebulizing a liquid containing said biomaterial, said nebulizing including directing the liquid containing the biomaterial against a nebulization barrier so as to cause the biomaterial to be fragmented.

5,610,011

VIRULENCE-ENCODING DNA SEQUENCES OF *STREPOCOCCUS SUIS* AND RELATED PRODUCTS AND METHODS

Hilda E. Smith, Cz Lelystad, and Uri Vecht, As Ermelo, both of Netherlands, assignors to Centraal Diergeneeskundig Instituut, PH Lelystad, Netherlands

PCT No. PCT/NL92/00054, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO92/16630, PCT Pub. Date Jan. 10, 1992

PCT Filed Mar. 19, 1992, Ser. No. 119,125

Claims priority, application Netherlands, Mar. 21, 1991, 9100510

Int. Cl.[6] C12Q *1/68*; C07H *21/04*

U.S. Cl. 435—6 **9 Claims**



1. A DNA sequence comprising at least 15 contiguous nucleotides of

(a) the nucleotide sequence set forth as SEQ ID NO: 1, 2 or 3; or

(b) a nucleotide sequence encoding the polypeptide set forth as SEQ ID NO: 1, 2 or 3.

5,610,012

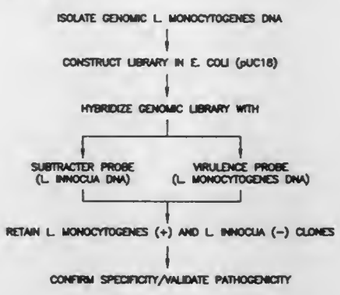
DNA PROBES SPECIFIC FOR VIRULENT LISTERIA MONOCYTOGENES

John B. Luchansky, Madison, Wis., and Jianchi Chen, Tallahassee, Fla., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 8, 1994, Ser. No. 225,473

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*;*19/04*

U.S. Cl. 435—6 **22 Claims**



1. A method for detecting the presence of *Listeria monocytogenes* in vitro in a sample suspected of containing nucleic acids from *L. monocytogenes*, comprising:

(a) contacting the nucleic acids of the sample with a probe under conditions permitting hybridization; and

(b) detecting any probe that hybridizes to said nucleic acids; wherein said probe is DNA selected from a group consisting of an about 0.9 kb HindIII-EcoRI fragment of plasmid pLUCH52 or a part thereof, as depicted in FIG. 2(A); an about 1.1 kb HindIII-EcoRI fragment of plasmid pLUCH51 or a part thereof, as depicted in FIG. 2(B); and an about 1.8 kb HindIII-EcoRI fragment of plasmid pLUCH44 or a part thereof, as depicted in FIG. 2(C); wherein said part is sufficiently long to provide for the selectivity of the in vitro detection of *L. monocytogenes* DNA.

5,610,013

METHOD FOR DIAGNOSING A DISORDER BY DETERMINING EXPRESSION OF GAGE TUMOR REJECTION ANTIGEN PRECURSORS

Benoit Van den Eynde, and Thierry Boon-Falleur, both of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 96,039, Jul. 22, 1993, abandoned. This application May 27, 1994, Ser. No. 250,162

Int. Cl.[6] C12Q *1/68*; C12N *5/00*;*1/20*; C07H *19/00*

U.S. Cl. 435—6 **37 Claims**

1. Method for screening for a disorder characterized by expression of a GAGE tumor rejection antigen precursor, comprising contacting a sample which does not contain normal testes cells from a subject believed to have said disorder, with a probe which hybridizes to a cDNA or mRNA molecule which codes for said GAGE tumor rejection antigen precursor, and determining hybridization of said probe to said cDNA or mRNA, wherein said hybridization is an indication of said disorder in said subject.

5,610,014

Patent Not Issued For This Number

5,610,015

SYSTEM TO DETECT PROTEIN-RNA INTERACTIONS

Marvin P. Wickens, Madison, Wis., and Stanley Fields, Setauker, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis., and State University of New York at Stony Brook, Stony Brook, N.Y.

Filed Mar. 23, 1995, Ser. No. 409,561
Int. Cl.[6] C12Q *1/68;1/02;* **C07H** *21/02*
U.S. Cl. 435—6 **18 Claims**

1. A method for detecting an interaction between an RNA-binding domain and a test RNA molecule, the method comprising:

(1) introducing into a host cell:

(a) a detectable gene wherein the detectable gene expresses a detectable protein when the detectable gene is activated by an amino acid sequence including a transcriptional activation domain when the transcriptional activation domain is in sufficient proximity to the detectable gene;

(b) a first chimeric gene that encodes a first hybrid protein comprising:

(i) a DNA-binding domain that recognizes a binding site on the detectable gene in the host cell; and

(ii) a first RNA binding domain;

(c) a second chimeric gene that encodes a second hybrid protein comprising:

(i) a transcriptional activation domain; and

(ii) a second RNA-binding domain;

(d) a third chimeric gene that encodes a hybrid RNA comprising:

(i) a first RNA sequence that binds one of the first or second RNA-binding domains; and

(ii) a second RNA sequence to be tested for interaction with the RNA-binding domain not bound to the first RNA sequence;

wherein interaction between both the first RNA-binding domain and the hybrid RNA and the second RNA-binding domain and the hybrid RNA in the host cell causes the transcriptional activation domain to activate transcription of the detectable gene;

(2) subjecting the host cell to conditions under which the first hybrid protein, the second hybrid protein, and the hybrid RNA are expressed in sufficient quantity for the detectable gene to be activated; and

(3) determining whether the detectable gene has been expressed to a degree greater than expression of the detectable gene in the absence of interactions between both the first RNA-binding domain and the hybrid RNA and the second RNA-binding domain and the hybrid RNA.

5,610,016

METHOD FOR MEASURING ADENYL GROUP-CONTAINING SUBSTANCES USING HETEROPOLY-ACID

Naofumi Sato, and Kamon Shirakawa, both of Saitama, Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,279
Claims priority, application Japan, Mar. 30, 1994, 6-084085
Int. Cl.[6] C12Q *1/68;* **C12P** *19/24;* **C07H** *21/04;* **G01T** *1/20*
U.S. Cl. 435—6 **13 Claims**

1. A method for detecting the presence of or quantitating the amount of an adenyl group-containing substance which comprises:

i) deriving a chemiluminescent substance by reacting a compound represented by formula (1):

$$R^1—CO—R^2 \quad (1)$$

wherein R^1 is a member selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an alkenyl group having 1 to 12 carbon atoms, an alkynyl group having 1 to 12 carbon atoms, an aryl group having 1 to 18 carbon atoms and an aromatic heterocyclic group having 1 to 18 carbon atoms, wherein R^1 may be substituted or may form a condensed ring, and

wherein R^2 is an aldehyde group or a group represented by the formula (2):

$$—CH(XR^3)(X'R^4) \quad (2)$$

wherein X and X' are independently an oxygen atom or a sulfur atom, and R^3 and R^4 are independently selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an alkenyl group having 1 to 12 carbon atoms, an alkynyl group having 1 to 12 carbon atoms and an aryl group having 1 to 16 carbon atoms, wherein R^3 and R^2 may be substituted or may form a condensed ring;

wherein R^3 and R^4 can optionally form a ring by binding;

with said adenyl group in the substance to be measured in the presence of a heteropolyacid or a salt thereof which is at least one compound selected from the group consisting of tungstosilicic acid, tungstophosphoric acid, tungstoarsenic acid, tungstogermanic acid, molybdosilicic acid, molybdophosphoric acid, molybdoarsenic acid, molybdogermanic acid, vanadophosphoric acid, and sodium, potassium and ammonium salts thereof, and

ii) measuring chemiluminescence of the chemiluminescent substance in a luminescence solvent, thereby detecting the presence of or quantitating the amount of said adenyl group-containing substance.

5,610,017

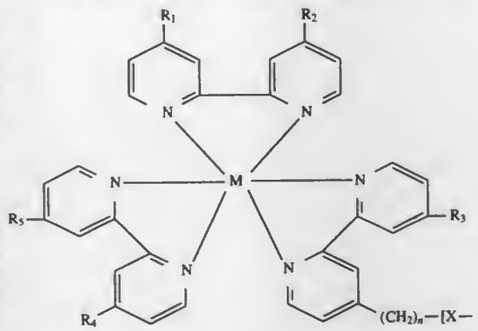
METHOD FOR CONDUCTING A POLYMERASE CHAIN REACTION USING AN IMPROVED ELECTROCHEMILUMINESCENT LABEL

Satyanarayana R. Gudibande, Rockville, Mass., and John H. Kenten, Gaithersburg, Md., assignors to Igen, Inc., Gaithersburg, Md.

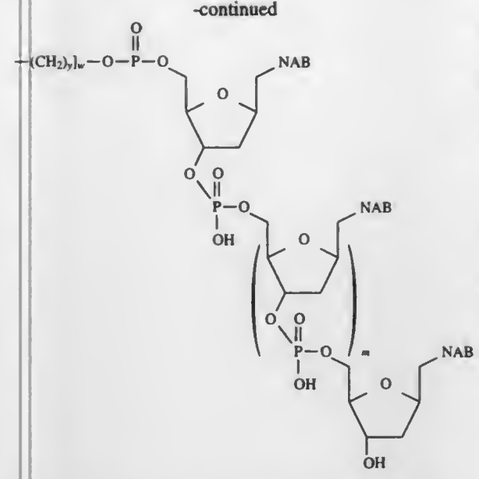
Division of Ser. No. 307,026, Sep. 15, 1994, abandoned, which is a continuation of Ser. No. 805,537, Dec. 11, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,038
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C12N** *15/00*
U.S. Cl. 435—6 **1 Claim**

1. A method of conducting a polymerase chain reaction or other primer-directed reaction so as to detect a nucleic acid of interest in an amplification product of said reaction comprising:

(a) incorporating in said polymerase chain reaction or other primer-directed reaction a primer of the formula



-continued



wherein M is selected from the group consisting of ruthenium, osmium and rhenium; R_1, R_2, R_3, R_4 and R_5 are the same or not all the same and each is H or alkyl of 1–4 carbon atoms; n is an integer from 1 to 20; X is selected from the group consisting of O, S, SO_2, COO and CONH; y is an integer of from 1– 20; z is 0 or 1; m is an integer of from 1–1000; and NAB is a nucleic acid base which may be modified or unmodified; said complex being capable of electrochemiluminescene;

(b) conducting a polymerase chain reaction or other primer-directed reaction; and

(c) measuring the electrochemiluminescence of the amplified nucleic acid of interest.

5,610,018

SUBSTRATE FOR THE EPIDERMAL GROWTH FACTOR RECEPTOR KINASE, ANTIBODIES THERETO AND METHODS OF USE THEREOF

Pier P. Di Fiore, Bethesda, Md., and Francesca Fazioli, Ancona, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 935,311, Aug. 25, 1992, Pat. No. 5,378,809. This application Jan. 3, 1995, Ser. No. 368,079
Int. Cl.[6] G01N *33/53;* **C07K** *16/24*
U.S. Cl. 435—7.1 **7 Claims**

3. Isolated antibody to eps8, said eps8 encoded by a polynucleotide that contains a protein-encoding domain, said polynucleotide hybridizes under high stringency conditions to DNA selected from the group consisting of:

(a) DNA encoding the amino acid sequence of SEQ ID NO:2;

(b) DNA encoding the amino acid sequence of SEQ ID NO:4;

(c) DNA sequence SEQ ID NO:1; and

(d) the protein-encoding domain of SEQ ID NO:3.

7. A method of determining eps8 in a sample, comprising the steps of:

contacting the sample with antibody of any of claims **1**, **2**, **3**, **4**, **5**, or **6**, such that an inmaunological complex forms; and

detecting the formation of the immunological complex.

5,610,019

METHODS OF DETECTING PHOSPHOLIPID TRANSFER ACTIVITY AND KITS THEREFOR

Joseph R. Day, Brier; John J. Albers, Seattle; Catherine E. Lofton-Day, Brier, and Janet L. Adolphson, Mountlake Terrace, all of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Division of Ser. No. 176,402, Dec. 30, 1993. This application Jun. 5, 1995, Ser. No. 462,733
Int. Cl.[6] C12N *9/10;9/12;11/00;* **C12Q** *1/48*
U.S. Cl. 435—7.1 **4 Claims**

1. A method for detecting the presence of a phospholipid transfer activity in a test sample comprising:

providing a sample of recombinant phospholipid transfer protein (PLTP) selected from the group consisting of (a) a polypeptide having the amino acid sequence of SEQ ID NO:2 from amino acid residue number 1 (Met) to amino acid residue number 493 (Val); (b) a polypeptide having the amino acid sequence of SEQ ID NO:2 from amino acid residue number 18 (Glu) to amino acid residue number 493 (Val); (c) a polypeptide having the amino acid sequence of SEQ ID NO:2 from amino acid residue number 137 (Gly) to amino acid residue number 493 (Val); and (d) allelic variants of a, b, and c;

measuring the ability of a test sample to inhibit transfer of phospholipid from LDL to an acceptor lipoprotein; and

comparing the inhibition by the test sample to that obtained using recombinant phospholipid transfer protein, and determining from said comparison the presence of a phospholipid transfer activity in the test sample.

5,610,020

RELEASE TAG COMPOUNDS PRODUCING KETONE SIGNAL GROUPS

Roger W. Giese, Quincy, Mass.; Samy Abdel-Baky, Cary, N.C., and Linxiao Xu, Cambridge, Mass., assignors to Northeastern University, Boston, Mass.

Division of Ser. No. 53,608, Apr. 22, 1993, Pat. No. 5,516,931, which is a continuation-in-part of Ser. No. 710,318, Mar. 11, 1985, Pat. No. 5,360,819, which is a continuation-in-part of Ser. No. 344,394, Feb. 1, 1982, Pat. No. 4,709,016. This application Feb. 8, 1996, Ser. No. 598,439
Int. Cl.[6] G01N *33/566*
U.S. Cl. 435—7.1 **9 Claims**

1. In an assay which includes contacting an analyte-containing sample with a labeled reagent, or with a conjugate made by covalently reacting a labeled reagent with standard said analyte, or with an analog of, ligand for, or specific binding partner of said analyte, incubating said contacted sample, and measuring the amount of label, the improvement which comprises:

using as the labeled reagent a release tag compound, S-Re-Rx, wherein S is a signal group covalently bound to group Re, and Re is a cleavable release group which is covalently bound to group Rx which is a reactivity group;

and S is further defined as comprising a halogenated electron-absorbing group which can be measured by electron capture detection;

and Re is further defined as comprising a functionality selected from the group consisting of α-hydroxyketos and β-hydroxyketos, and is capable of releasing the signal group in a volatile form suitable for measuring by electron capture detection;

and Rx is further defined as comprising a functional group which is capable of forming a covalent bond with another molecule.

5,610,021

COMPOSITIONS AND METHODS FOR IDENTIFICATION AND USE OF SOLUBLE COMPLEX FORMS OF OSTEOGENIC PROTEINS

David C. Rueger, Hopkinton; William K. Jones, Brookline; Ronald F. Tucker, Holliston; Hermann Oppermann, Medway; Engin Ozkaynak, Milford, and Kuber T. Sampath, Medway, all of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Continuation-in-part of Ser. No. 27,070, Mar. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 841,646, Feb. 21, 1992, Pat. No. 5,266,683. This application Mar. 4, 1994, Ser. No. 206,864

Int. Cl.[6] G01N *33/53;33/541;33/68;* **C07K** *16/18*

U.S. Cl. 435—7.2 **30 Claims**

14. A method for specifically identifying a soluble complex form of an osteogenic protein in solution, wherein a binding partner has specific binding affinity for said soluble complex form, said soluble complex being characterized as a dimeric promin comprising a pair of protein subunits associated to define a dimeric structure capable of inducing endochondral bone formation in a mammal when implanted in said mammal in association with a matrix, each said subunit having less than about 200 amine acids; at least one of said subunits being noncovalenfly complexed with a peptide comprising a pro domain of a precursor form of an osteogeaic protein subunit, or an allelic, species, or sequence variant thereof, to form a soluble complex which is more soluble in aqueous solvents than the tmcomplexed pair of subunits, said binding partner being characterized as having binding affinity for said complexed form and said uncomplexed dimeric form but not said pro domain of a precursor form of one of said subunits, said method comprising the steps of:

(a) exposing a solution likely to contain said soluble complex to a binding partner having specific binding affinity for a said soluble complex under conditions to promote specific binding between said soluble complex and said binding partner to form a complex, and

(b) detecting the complex formed.

5,610,022

INTERNAL CONTROL FOR IMMUNOCYTOCHEMISTRY ASSAY

Hector A. Battifora, Arcadia, Calif., assignor to City of Hope, Duarte, Calif.

Continuation-in-part of Ser. No. 789,939, Nov. 12, 1991, abandoned, and Ser. No. 700,184, May 22, 1991, abandoned, which is a continuation of Ser. No. 412,450, Sep. 26, 1989, abandoned. This application Jun. 8, 1993, Ser. No. 73,669

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **8 Claims**

1. An immunocytochemical method for the direct, quantitative determination of the presence or absence of a target molecule in the cells of a tissue specimen which comprises concurrently subjecting said specimen and a control to all of the same processing steps including immunostaining, measuring the difference in optical density of said control before and after said processing steps and of said specimen after said processing steps and thereafter using said control optical density difference as a standard for determining the pre-processing optical density of said specimen, wherein said control comprises (1) a cell embedding medium; and (2) cells embedded in said medium, said embedded cells having a quantifiable level of optical density which varies with the processing steps and conditions to which said control is subjected, wherein the difference in the quantified level of optical density of said control before and after concurrent processing with the tissue specimen provides a quantitative standard for determining the pre-processing optical density of said tissue specimen.

5,610,023

METHOD OF PURIFICATION OF CLOSTRIDIUM DIFFICILE TOXIN A AND PRODUCTION OF MONO-SPECIFIC ANTIBODIES

John W. Deutsch, Marietta, Ga., assignor to Lee Laboratories, Inc., Grayson, Ga.

Filed Mar. 31, 1995, Ser. No. 414,640

Int. Cl.[6] G01N *33/554;33/569*

U.S. Cl. 435—7.32 **9 Claims**

1. A method of purifying *Clostridium difficile* Toxin A, comprising:

coupling Toxin A antibodies to a hydrazide group containing matrix;

contacting a solution containing Toxin A with said matrix so that said Toxin A is selectively retained on said coupled antibody matrix; and

eluting purified Toxin A from said antibody matrix wherein the elution buffer comprises Tween 20.

5,610,024

METHOD FOR THE DETERMINATION OF LUPUS ANTICOAGULANT ANTIBODIES THAT CAUSE THROMBOSIS

Gert Müller-Berghaus; Bernd Pötzsch, both of Giessen, and Christoph Seelig, Aslar, all of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Gottingen, Germany

Continuation of Ser. No. 116,685, Sep. 7, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,854

Claims priority, application Germany, Sep. 8, 1992, 42 29 933.0

Int. Cl.[6] C12Q *1/56*

U.S. Cl. 435—13 **13 Claims**

1. A method for determining the presence or amount of lupus anticoagulant (LA) antibodies in a sample of plasma or tissue, wherein said LA antibodies selectively inhibit activated protein C, said method consisting essentially of:

a) contacting said sample with said activated protein C,

b) contacting said sample from step a) with reactants for determining factor VIIIa activity to form a reaction mixture,

c) incubating said reaction mixture,

d) determining any factor VIIIa activity in said reaction mixture, and

e) comparing the factor VIIIa activity in said reaction mixture with factor VIIIa activity obtained by contacting a standard sample which does not contain any LA antibodies with said reactants,

wherein any increase in factor VIIIa activity in said reaction mixture relative to the factor VIIIA activity obtained from said standard sample indicates

the presence or amount of said LA antibodies which selectively inhibit said activated protein C in said sample.

13. A method of screening a patient for a predisposition to thrombosis due to a disease in which LA antibodies which selectively inhibit activated protein C are present, comprising the following steps:

a) contacting said sample with said activated protein C,

b) contacting said sample from step a) with reactants for determining factor VIIIa activity to form a reaction mixture,

c) incubating said reaction mixture,

d) determining any factor VIIIa activity in said reaction mixture, and

e) comparing the factor VIIIa activity in said reaction mixture with factor VIIIa activity obtained by contacting a standard sample which does not contain any LA antibodies with said reactants,

wherein any increase in factor VIIIa activity in said reaction mixture relative to the factor VIIIA activity obtained from said standard sample indicates

said predisposition to thrombosis in said patient.

5,610,025

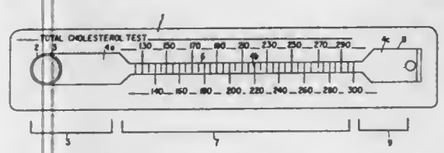
INHIBITION OF INTERFERING ENDOGENOUS ENZYME ACTIVITY IN ASSAYS OF BIOLOGICAL FLUIDS

Mark D. White, and Wai T. Law, both of Sewell, N.J., assignors to Actimed Laboratories, Inc., Burlington, N.J.

Continuation-in-part of Ser. No. 828,453, Jan. 31, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 92,425

Int. Cl.[6] C12Q *1/37;1/26;1/51;* **G01N** *33/566*

U.S. Cl. 435—25 **26 Claims**



1. A method for analyzing biological fluid samples for the presence of an analyte other than an enzyme which decomposes hydrogen peroxide consisting essentially of:

adding to said sample an inhibitor for said enzyme, said inhibitor selected from the group consisting of hydroxylamine salts;

using hydrogen peroxide as an oxidizing agent to oxidize a dye or other intermediate to generate a detectable species; and

measuring said detectable species and correlating the measurement to the amount of analyte in the sample.

5,610,026

AGENT FOR THE DETERMINATION OF PEROXIDASE ACTIVITY, A PROCESS FOR ITS PREPARATION AND ITS USE

Hans E. Pauly, Dautphetal, and Herbert Schwarz, Ebsdorfergrund, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 817,955, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 935,333, Nov. 26, 1986, abandoned. This application Aug. 8, 1994, Ser. No. 291,059

Claims priority, application Germany, Nov. 28, 1985, 35 41 978.4

Int. Cl.[6] C12Q *1/28;1/26;1/00;1/32*

U.S. Cl. 435—28 **8 Claims**

1. An agent for the detection and/or for the determination of peroxidase activity, comprising in a predominantly aqueous solution a tetraalkylbenzidine or one of its salts, a peroxide or a system generating hydrogen peroxide, and one or more buffer substances in an amount sufficient to provide a pH in the range of 2.5 to 3.9.

5,610,027

MICROPHOTO LYSIS-ANLAYSIS PROCESS TO MEASURE CELL CHARACTERISTICS

Frederick N. Miller, Louisville, Ky., assignor to Micro-Med, Inc., Louisville, Ky.

Filed Oct. 30, 1992, Ser. No. 969,764

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **70 Claims**

1. A microphoto lysis-analysis process for measuring the strength of a cell membrane and detecting abnormalities thereof by applying precise quantities of a first focused light of selected frequency and energy density to a precise microscopic area of a cell sample containing test cells for measuring as a function of time the precise degree of cell disruption, applying a second focused light of second selected frequency and energy density to said cell sample thereby photo-activating a light activated cell-attack fluorochrome for attacking cell membranes in said microscopic area of light-stimulated cell-attack providing a quantitative, time-related, light-dose dependent measure of cell fragility, comprising the steps of:



suspending test cells whose membrane strength are to be measured in a physiologic salt solution of selected osmolality forming a cell containing solution;

adding an inactive light activated cell-attack fluorochrome to said cell containing solution, said inactive cell-attack fluorochrome comprising molecules absorbing light energy in a known range of excitation frequencies producing a photosensitive chemical solution;

preparing a micro-sample of said photosensitive chemical solution containing said test cells;

identifying a localized microscopic area within said micro-sample of said photosensitive solution;

applying a specific amount of the focused first frequency-specific light energy in the cell absorption range to said micro-sample of said photosensitive chemical solution, exposing said cell(s) in said photosensitive chemical solution to said first frequency-specific light energy for a selected period of time for determining light absorption by intact test cells in said localized microscopic area of said micro-sample at any time period;

determining the light absorption and number of intact test cells in said localized microscopic area by measuring the amount of said first frequency-specific light energy passing through said cells in said micro-sample of said photosensitive chemical solution in said localized microscopic area;

applying a specific amount of the focused second frequency-specific light energy in the fluorochrome-excitation range for a selected time in a selected time interval at a selected different wavelength than said first frequency-specific light energy, said second frequency-specific light energy photo-activating said photosensitive chemical solution forming a cell-reacting medium;

reacting said cell-reacting medium containing said test cells in said localized microscopic area disrupting the cell membranes of said test cells permitting loss of said cell contents and changing the absorption of said first frequency-specific light energy by said test cells in said localized microscopic area;

analyzing the strength of said cell membrane quantitatively by comparing the amount of said first frequency-specific light energy passing through said test cells in said micro-sample after micro-sample exposure to said second frequency-specific light energy, with the amount of said first frequency-specific light energy passing through said test cell(s) in said micro-sample before micro-sample exposure to said second frequency-specific light energy for determining light absorption by remaining intact test cells in said localized microscopic area at selected time intervals; and

coordinating and comparing the above test results to values for normal cell(s) to measure changes in cell fragility.

5,610,028

GENETICALLY MODIFIED VIBRIO

Marc E. Frischer, and John H. Paul, both of St. Pete, Fla., assignors to University of South Florida, Tampa, Fla.

Continuation of Ser. No. 116,113, Sep. 2, 1993, abandoned, which is a division of Ser. No. 785,557, Oct. 31, 1991, Pat. No. 5,273,902. This application Jan. 23, 1995, Ser. No. 376,295

Int. Cl.[6] C12Q *1/02;1/68*

U.S. Cl. 435—29 6 Claims

1. A method of detecting the propensity of plasmid transformation in an aqueous or sediment environment comprising:

(a) obtaining an aqueous or sediment sample from said aqueous or sediment environment;

(b) adding to said sample, cells of a high frequency of transformation (HfT) strain of estuarine Vibrio species selected from the group of HfT strains consisting of JT-1 and WJT-1C;

(c) adding transforming DNA encoding a selectable marker to said sample; and

(d) plating cells from said sample on non-selective and selective media and determining the frequency of transformation as an indication of the propensity of plasmid transformation in the aqueous or sediment environment.

5,610,029

MEDIUM FOR DETECTING TARGET MICROBES IN A SAMPLE

Elizabeth Ehrenfeld, Falmouth, Me.; Colin Fricker, Reading, Great Britain, and David E. Townsend, Scarborough, Me., assignors to Idexx Laboratories, Inc., Westbrook, Me.

Continuation-in-part of Ser. No. 334,788, Nov. 4, 1994, abandoned. This application Apr. 18, 1995, Ser. No. 423,134

Int. Cl.[6] C12Q *1/04;1/02;1/10;* G01N *33/48*

U.S. Cl. 435—34 27 Claims

1. A target microbe-specific medium which allows the detection of the presence or absence of a target microbe in a liquified environmental or biological sample comprising:

a) an effective amount of vitamin, amino acid, element and salt ingredients operable to allow viability and reproduction of said target microbe at a rate such that any detectable change in said sample observable within 18 hours for a sample with less than 10 target microbes per 100 ml; and

b) an effective amount of one or more nutrient-indicators provided in an amount sufficient to produce a detectable characteristic signal in the medium during growth of the target microbe; and said nutrient-indicator being operable to alter a detectable characteristic of the sample if metabolized by the target microbe so as to confirm the presence or absence of the target microbe in the sample.

5,610,030

Patent Not Issued For This Number

5,610,031

B1K CHAIN OF LAMININ AND METHODS OF USE

Robert E. Burgeson, Marblehead, and David W. Wagman, Melrose, both of Mass., assignors to The General Hospital Corporation, Boston, Mass., and The State of Oregon Acting By & Thru the State Board . . ., Portland, Oreg.

Filed Oct. 27, 1993, Ser. No. 144,121

Int. Cl.[6] C12N *15/11;15/12;* C07K *14/78*

U.S. Cl. 435—69.1 9 Claims

1. A purified DNA which encodes a fragment of the B1k chain of laminin of SEQ ID NO:2 said fragment including all or part of domain VI and said fragment being at least 30 amino acid residues in length, provided that said fragment in not part of a full length B1k sequence and said fragment has the ability to bind to a K-laminin A chain.

5,610,032

AMPA-BINDING HUMAN GLUR1 RECEPTORS

Rajender Kamboj, Mississauga; Candace E. Elliott, and Stephen L. Nutt, both of Etobicoke, all of Canada, assignors to Allelix Biopharmaceutical Inc., Mississauga, Canada

Continuation of Ser. No. 896,611, Jun. 10, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,573

Int. Cl.[6] C12N *15/00*

U.S. Cl. 435—69.1 14 Claims

1. An isolated polynucleotide which encodes a protein having the sequence of SEQ ID NO:2.

5,610,033

METHOD OF PRODUCING PROTEINS WITH FVIII ACTIVITY AND/OR FVIII DERIVATIVES

Poul B. Rasmussen, Hellerup, and Ole Nordfang, Hillerod, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 877,347, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 514,072, Apr. 25, 1990, abandoned. This application Oct. 11, 1994, Ser. No. 320,773

Int. Cl.[6] C12N *15/00;5/00;* C12P *21/06;* C07H *21/04*

U.S. Cl. 435—69.1 3 Claims

1. A method for obtaining a Factor VIII heavy chain and Factor VIII light chain protein-complex having Factor VIII activity comprising

(a) expressing the Factor VIII heavy chain, the Factor VIII light chain and a selectable marker from two expression cassettes wherein the first expression cassette comprises a DNA sequence encoding a Factor VIII heavy chain and the second expression cassette comprises a DNA sequence encoding a Factor VIII light chain and wherein a DNA sequence encoding a selectable marker is expressed from either or both expression cassettes, in an in vitro culture of a mammalian cell in which said mammalian cell is cultured at a;

(b) selecting for the expression of the Factor VIII heavy chain and Factor VIII light chain, and

(c) isolating the Factor VIII heavy chain and Factor VIII light chain complex.

5,610,034

IMMUNOGLOBULIN PRODUCTION BY TRICHODERMA

Eini Nyyssönen; Sirkka Keränen; Merja Penttilä, all of Helsinki; Kristiina Takkinen, Espoo, and Jonathan K.C. Knowles, Helsinki, all of Finland, assignors to Alko Group Ltd., Helsinki, Finland

Continuation-in-part of Ser. No. 552,757, Jul. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 496,155, Mar. 19, 1990, which is a continuation of Ser. No. 44,077, Apr. 29, 1987, abandoned. This application Aug. 30, 1991, Ser. No. 756,251

The portion of the term of this patent subsequent to Dec. 28, 2020, has been disclaimed.

Int. Cl.[6] C12N *15/80;15/13*

U.S. Cl. 435—69.6 48 Claims

1. A method for producing an immunoglobulin, wherein said method comprises the steps of:

a. transforming a Trichoderma host cell with a recombinant construct encoding an immunoglobulin heavy chain or an immunologically active fragment thereof wherein the DNA encoding said immunoglobulin heavy chain or said fragment thereof is operably linked to DNA elements selected from the group consisting of Trichoderma and Aspergillus transcriptional regulatory elements;

b. transforming said host cell with a recombinant construct encoding an immunoglobulin light chain or an immunologically active fragment thereof wherein the DNA encoding said immunoglobulin or said fragment thereof is operably linked to DNA elements selected from the group consisting of Trichodertna and Aspergillus transcriptional regulatory elements;

c. culturing said host cell under conditions which express said heavy chain and said light chain; and

d. recovering the immunoglobulin produced by said host cell of part c.

5,610,035

METHODS FOR THE PREPARATION OF HYBRIDOMAS PRODUCING LYMPHADENOPATHY-ASSOCIATED VIRUS (LAV) GP110-SPECIFIC MONOCLONAL ANTIBODIES AND METHODS FOR THE PURIFICATION OF GP110 EMPLOYING SAID MONOCLONAL ANTIBODIES

Luc Montagnier, Le Plessis Robinson; Bernard Krust, Paris; Solange Chamaret, Paris; Francois Clavel, Paris; Jean-Claude Chermann, Elancourt, and Francoise Barre-Sinoussi, Issy les Moulineaux, all of France, assignors to Institut Pasteur Centre National de la Recherche Scientific, Paris, France

Continuation of Ser. No. 950,294, Sep. 24, 1992, Pat. No. 5,407,811, which is a division of Ser. No. 647,209, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 494,858, Mar. 14, 1990, which is a continuation of Ser. No. 279,280, Dec. 2, 1988, abandoned, which is a continuation of Ser. No. 771,247, Sep. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 771,230, Aug. 30, 1985, which is a continuation-in-part of Ser. No. 706,562, Feb. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 558,109, Dec. 5, 1983, abandoned. This application Sep. 27, 1994, Ser. No. 313,572

Claims priority, application France, Oct. 18, 1984, 84 16013

Int. Cl.[6] C12P *21/04;21/08;* C07K *16/00;* A23J *1/00*

U.S. Cl. 435—70.21 3 Claims

1. A method for the preparation of hybridomas which produce monoclonal antibodies specific for the human immunodeficiency virus type 1 (HIV-1) envelope glycoprotein, gp110, comprising the following steps:

(a) immunizing a mammal with HIV-1 gp110;

(b) isolating immunized splenocytes from said mammal;

(c) fusing the immunized splenocytes with a myeloma cell line to produce hybridomas;

(d) selecting for said hybridomas by culturing in selective media;

(e) clonally expanding said hybridomas in appropriate culture media; and,

(f) identifying and characterizing those clones, or hybridomas, that produce monoclonal antibodies specific for HIV-1 gp110.

5,610,036

MUTANT AOX2 PROMOTER, MICROORGANISM CARRYING SAME, METHOD OF PREPARATION THEREOF AND PRODUCTION OF HETEROLOGOUS PROTEIN USING SUCH MICROORGANISM

Masami Miura; Yutaka Ishida; Hideyuki Oi; Koji Murakami; Yukimitsu Nakagawa, and Haruhide Kawabe, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation of Ser. No. 858,830, Mar. 27, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,899

Claims priority, application Japan, Mar. 27, 1991, 3-63598; Mar. 27, 1991, 3-63599

Int. Cl.[6] C07H *21/04;* C12N *1/16;1/19;* C12P *21/02*

U.S. Cl. 435—71.1 8 Claims

1. A mutant *Pichia pastoris* AOX2 promoter consisting of the natural AOX2 promoter of SEQ ID NO: 1 comprising at least one of the following mutations:

(i) a deletion of the bases from 749 to 1187, inclusive;

(ii) a substitution of C for base 1274; or

(iii) an insertion of SEQ ID NO: 7 between bases 1314 and 1315.

5,610,037

PRODUCTION OF POLYSACCHARIDES OF HIGH VISCOSITY USING XANTHOMONAS CAMPESTRIS AND GLYCOAMYLASE WITH FLUIDIZED STARCH

Patrick Cros, Melle, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 914,000, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 675,945, Mar. 27, 1991, abandoned, which is a continuation of Ser. No. 279,653, Dec. 5, 1988, abandoned. This application Jan. 27, 1995, Ser. No. 379,111

Claims priority, application France, Dec. 4, 1987, 87 16855

Int. Cl.[6] C12P *19/06*

U.S. Cl. 435—104 9 Claims

1. A fermentation process for the production of polysaccharides comprising:

(i) culturing *Xanthomonas campestris* in a fermentation medium comprising a fluidized starch having a dextrose equivalent ranging from about 3 to 20 and containing about 50% to 95% polysaccharides with a degree of polymerization greater than 7 glucose units and glucoamylase under conditions which result in the formation of polysaccharides having increased viscosity; and

(ii) recovering said polysaccharides of increased viscosity from the fermentation medium, wherein said *Xanthomonas campestris* is capable of assimilating said fluidized starch in the absence of said glucoamylase and wherein the addition of said glucoamylase results in the formation of said polysaccharides having increased viscosity relative to an otherwise identical fermentation process effected in the absence of said glucoamylase.

5,610,038

THIANGAZOLE, ITS PREPARATION, COMPOSITIONS AND USE THEREOF

Gerhard Höfle, Brunswick; Norbert Bedorf, Königslutter; Edgar Forche; Klaus Gerth, both of Brunswick; Herbert Irschik, Wolfenbüttel; Rolf Jansen; Brigitte Kunze, both of Brunswick; Hans Reichenbach, Wolfenbüttel; Florenz Sasse, Brunswick; Heinrich Steinmetz, Hildesheim-Sorsum; Wolfram Trowitzsch-Kienast, Brunswick, and Johannes P. Pachlatko, Seltisberg, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y., and Gesellschaft fur Biotechnologische Forschung mbH, Brunswick, Germany

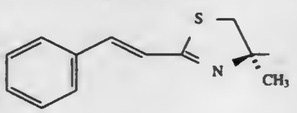
Division of Ser. No. 286,309, Aug. 5, 1994, abandoned, which is a division of Ser. No. 78,159, Sep. 17, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,385

Claims priority, application Germany, Dec. 24, 1990, 40 41 685.2

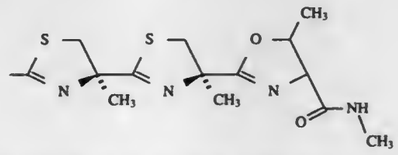
Int. Cl.[6] C12P *17/16*

U.S. Cl. 435—118 1 Claim

1. A method for the preparation of a compound having the absolute configuration of formula Ia



(Ia)



or an acid addition salt thereof, said method comprising:

culturing Polyangium DSM 6267 in a medium containing carbon sources, nitrogen sources and mineral salts,

extracting the harvested cell mass with acetone,

concentrating the (combined) extract,

taking up the concentrate in ether/water,
separating off the aqueous phase and if necessary extracting with ether,
concentrating the (combined) ethereal phase,
taking up the concentrate in methanol/heptane,
separating off the methanol phase and if necessary extracting with heptane,
filtering the extract in tert-butyl methyl ether over Florisil,
crystallising the compound (for antibiotic and/or fungi cidal activity) from the extract and
if appropriate converting the compound (for antibiotic and/or fungi cidal activity) into an acid addition salt thereof.

5,610,039

PROCESS FOR PRODUCING N-SUBSTITUTED-1-DEOXYNOJIRIMYCIN

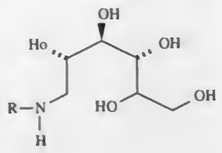
Roy W. Grabner, Ballwin; Bryan H. Landis; Ping T. Wang, both of Manchester, all of Mo.; Michael L. Prunier, Vernon Hills, and Mike G. Scaros, Arlington Heights, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 585,588, Sep. 20, 1990, abandoned. This application May 19, 1995, Ser. No. 444,505

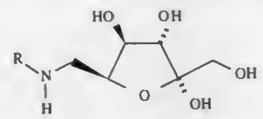
Int. Cl.[6] C12P *17/06;17/04;19/26*

U.S. Cl. 435—125 **14 Claims**

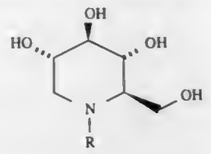
1. A process which comprises oxidizing a glucamine of the formula:



or salts thereof, wherein R is phenyl, C_1–C_{10} alkyl, C_1–C_{10} alkyl substituted with phenyl or carboxyl, or C_2–C_{10} alkyl substituted with hydroxy, with microorganism or extract thereof, which oxidizes said glucamine to produce a compound of the formula:



wherein R is as described above, and then reducing said compound to produce N-substituted-1-deoxynojirimycin of the formula:



wherein R is as described above, and recovering the N-substituted-1-deoxynojirimycin.

5,610,040

ENZYMATIC SYNTHESIS OF CERAMIDES AND HYBRID CERAMIDES

Jan W. H. Smeets, Vlaardingen; Robertus M. De Pater, Delft, and Johannes W. J. Lambers, Pijnacker, all of Netherlands, assignors to Gist-brocades, n.v., Netherlands

PCT No. PCT/EP94/01495, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/26919, PCT Pub. Date Nov. 24, 1994

PCT Filed May 6, 1994, Ser. No. 367,300

Claims priority, application European Pat. Off., May 6, 1993, 93201299

Int. Cl.[6] C12P *13/02;* **C12N** *9/20*

U.S. Cl. 435—129 **13 Claims**

1. A process for production of ceramides and hybrid ceramides, which process comprises the steps of reacting a lysosphingolipid in the presence of a lipase, and in an organic medium, with an acid of the formula RCOOH or with an ester thereof, and recovering said ceramide or said hybrid ceramide;

wherein R is straight-chain or branched-chain alkyl group of 1–55C, optionally interrupted by an oxygen atom or by an internal ester group; optionally containing one or more double bonds; and optionally substituted with one or more protected hydroxyl moieties.

5,610,041

PROCESSES FOR PRODUCING POLYHYDROXYBUTYRATE AND RELATED POLYHYDROXYALKANOATES IN THE PLASTIDS OF HIGHER PLANTS

Christopher R. Somerville, Portola Valley; Christiane Nawrath, and Yves Poirier, both of Palo Alto, all of Calif., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 108,193, Aug. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 732,243, Jul. 19, 1991, abandoned. This application Jun. 6, 1994, Ser. No. 254,357

The portion of the term of this patent subsequent to Jun. 7, 2012, has been disclaimed.

Int. Cl.[6] C12P *7/62;* **A01H** *5/00;* **C12N** *15/31;15/87*

U.S. Cl. 435—135 **36 Claims**

36. A method for producing polyhydroxyalkanoate comprising:

a) mating by sexual fertilization two plants which do not produce PHA, each containing foreign DNA from a bacterium encoding one or more different enzymes in a pathway leading to polymerization of hydroxyacyl-CoA by PHA synthase to produce the plant which synthesizes the PHA in a plastid in the plant; wherein the each of said enzymes encoded by foreign DNA is operably fused at its amino terminus to a transit peptide which effects targeting of the polypeptide into the plastid of the plant.

b) recovering the polyhydroxyalkanoate.

5,610,042

METHODS FOR STABLE TRANSFORMATION OF WHEAT

Yin-Fu Chang, Carrboro, N.C.; James R. Wong, Milpitas, Calif.; Andrea Itano, Berkley, Calif.; Stephen J. Mejza, Union City, Calif., and Leslie Walker, Littleton, Colo., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 992,391, Dec. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 772,435, Oct. 7, 1991, abandoned. This application Nov. 1, 1993, Ser. No. 147,261

Int. Cl.[6] A01H *5/00;* **C12N** *15/87;15/82;15/90*

U.S. Cl. 435—172.3 **5 Claims**

1. A method for producing stably transformed fertile wheat plants, said method comprising:

isolating an immature embryo from a wheat plant;
plating said immature embryo on growth medium;
delivering a DNA sequence of interest by high velocity microprojectile bombardment to said immature embryo up to 10 days after excision;
treating said immature embryo in a manner sufficient to produce embryogenic callus;
selecting for transformed cells; and,
regenerating fertile transformed plants.

5,610,043

HUMAN PROSTATIC CELL LINES IMMORTALIZED BY ADENOVIRUS 12-SIMIAN VIRUS 40 (AD12/SV40) HYBRID VIRUS

Mukta M. Webber, Eagle, Mich., and Johng S. Rhim, Potomac, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 28, 1994, Ser. No. 234,981

Int. Cl.[6] C12N *15/65;5/10*

U.S. Cl. 435—172.3 **21 Claims**

1. An immortalized adult human normal prostatic epithelial or fibroblast cell derived cell line free of other cell lines and containing DNA of adenovirus and simian virus 40 as a hybrid virus, the cell line having the identifying characteristics of the prostatic epithelial or fibroblast cell without the hybrid virus in addition to being immortalized by the hybrid virus.

5,610,044

MICROORGANISMS WITH MANNOPINE CATABOLIZING ABILITY

Stephen T. Lam, 8900 Jeanew Ct., Raleigh, N.C. 27613; Nancy R. Torkewitz, 7301 Gates Rd., Hurdle Mills, N.C. 27541; Chandra S. Nautiyal, 2800, rue de l'anse, Sainte-Foy, Canada, and Patrice Dion, 2774, rue de Montarville, Sainte-Foy, Canada

Continuation of Ser. No. 102,394, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 590,905, Oct. 1, 1990, abandoned. This application Nov. 29, 1994, Ser. No. 346,331

Int. Cl.[6] C12N *1/20;1/21;15/09;15/56*

U.S. Cl. 435—172.3 **7 Claims**

1. An isolated and purified DNA sequence, obtainable from a Pseudomonad, which consists of at least one gene capable of conferring a mannopine utilizing phenotype upon a genetically engineered microorganism, wherein said DNA sequence is contained in pCIB117.

6. A method of enhancing colonization of a desired bacterium in a localized environment of a plant, comprising genetically transforming said desired bacterium with the DNA sequence of claim 1, and introducing said bacterium into the environment.

5,610,045

PRODUCING A HIGH CONTENT OF ACETATE KINASE USING *BACILLUS STEAROTHERMOPHILUS*

Masao Kageyama, Kyoto; Toyohiko Suga, Osaka; Kenzo Motosugi, and Hiroshi Nakajima, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 931,507, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 604,392, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 789,934, Oct. 22, 1985, abandoned, which is a continuation of Ser. No. 152,957, May 23, 1980, abandoned. This application Jun. 2, 1995, Ser. No. 458,770

Claims priority, application Japan, May 23, 1979, 54-64301

Int. Cl.[6] C2IN *9/12;1/20*

U.S. Cl. 435—194 **11 Claims**

1. A process for producing acetate kinase, comprising the steps of

cultivating a thermophilic bacterium selected from the group consisting of *Bacillus stearothermophilus* ATCC 7953, *Bacillus stearothermophilus* ATCC 8005, *Bacillus stearothermophilus* ATCC 10149, and *Bacillus stearothermophilus* NCA 1503, which has the ability to produce acetate kinase under continuous cultivation conditions at a dilution rate (D) in the range of from at least 0.9 μ_{max} to 1.0 μ_{max}, wherein D is the dilution rate (1/hr) and μ_{max} is the maximum specific growth rate of said bacterium to thereby enhance the acetate kinase content of the cells of said thermophilic bacterium, harvesting said cells, and

extracting and purifying said acetate kinase.

5,610,046

CLONING AND EXPRESSION OF XYLANASE B

Albert J. J. van Ooyen, Voorburg; Leendert H. DeGraaff, Oosterbeek; Henriette C. van den Broeck, and Jacob Visser, both of Wageningen, all of Netherlands, assignors to Gist-brocades, N.V., Ma Delft, Netherlands

PCT No. PCT/EP93/03701, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO94/14965, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 24, 1993, Ser. No. 290,979

Claims priority, application European Pat. Off., Dec. 24, 1992, 92204092

Int. Cl.[6] C12N *9/24;1/19;15/63;* **C07H** *21/04*

U.S. Cl. 435—200 **14 Claims**

1. A purified and isolated polynucleotide molecule which encodes a polypeptide having the xylanase activity of the *Aspergillus tubigensis* xylanase B enzyme wherein the nucleotide sequence of said polynucleotide molecule is selected from the group consisting of:

a) the nucleotide sequence of FIG. 2 or SEQ ID NO:7;

b) nucleotide sequences encoding the xylanase B polypeptide of 225 amino acids shown in FIG. 2 or SEQ ID NO:8; and

c) nucleotide sequences encoding the mature xylanase B polypeptide of 188 amino acids shown at amino acid positions 38–225 in FIG. 2 or SEQ ID NO:8.

5,610,047

NON-REDUCING SACCHARIDE-FORMING ENZYME, ITS PREPARATION AND USES

Kazuhiko Maruta, Okayama; Michio Kubota, Osaka; Toshiyuki Sugimoto, and Toshio Miyake, both of Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 172,707, Dec. 27, 1993, Pat. No. 5,455,168. This application Mar. 29, 1995, Ser. No. 412,865

Claims priority, application Japan, Dec. 28, 1992, 4-362131; Sep. 30, 1993, 5-265416

Int. Cl.[6] C12N *9/26;9/24;9/14;9/10*

U.S. Cl. 435—201 **2 Claims**

1. An isolated enzyme which converts a reducing partial starch hydrolysate to a non-reducing saccharide having a trehalose structure, said non-reducing saccharide comprising one mole of trehalose and at east one mole of glucose.

5,610,048

XYLANASE, DNA SEQUENCES, CODING FOR THE XYLANASES AND METHODS OF USE THEREOF

Martin Schülein, København; Torben Halkier, Frederiksberg; Hans P. Heldt-Hansen; Henrik Dalbøge, both of Virum, and Lars S. Pedersen, Lyngby, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

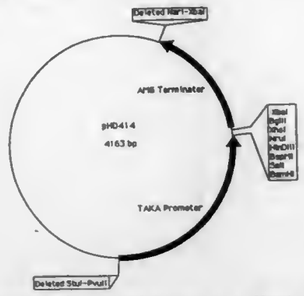
PCT No. PCT/DK92/00099, § 371 Date Sep. 21, 1993, § 102(e) Date Sep. 21, 1993, PCT Pub. No. WO92/17573, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 27, 1992, Ser. No. 119,169

Claims priority, application European Pat. Off., Apr. 2, 1991, 91610027

Int. Cl.[6] C12N *9/42;15/56;15/80*

U.S. Cl. 435—209 **31 Claims**



1. An isolated xylanase endogenous to a *Humicola insolens* strain, which has the following partial amino acid sequences

a. Asn-Thr-Gly-Asn-Phe-Val-Gly-Gly-Lys-Gly-Trp-Asn-Pro-Gly-Thr-Gly-Arg-Thr-Ile-Asn-Tyr- (SEQ ID NO: 1),

b. Thr-Arg-Asn-Pro-Leu-Val-Glu-Tyr-Tyr- (SEQ ID NO: 2),

c. Ser-Trp-Trp-Ser-Asp-Gly-Gly-Gly-Gln-Val-Gln-Tyr- (SEQ ID NO: 3),

d. Val-Ser-Thr-Arg-Tyr-Asn-Gln-Pro-Ser-Ile-Asp-Gly-Thr-Arg-Thr-Phe-Gln-Gln-Tyr-Trp-Ser-Ile-Arg-Lys- (SEQ ID NO: 4),

e. Tyr-Val-Ile-Glu-Ser-Tyr-Gly-Thr-Tyr-Asn-Pro-Gly-Ser-Gln-Ala-Gln-Tyr-Lys-Gly-Thr-Phe-Tyr-Thr-Asp-Gly-Asp-Gln-Tyr-Asp- (SEQ ID NO: 5), and

f. Gln-Val-Thr-Pro-Asn-Ala-Glu-Gly-Trp-His-Asn-Gly-Tyr-Phe-Tyr- (SEQ ID NO: 6).

5,610,049

HUMAN ROTAVIRUS HCR3A AND METHOD OF GROWING SAID ROTAVIRUS

H. Fred Clark, Philadelphia, Pa., assignor to The Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

Filed May 1, 1991, Ser. No. 694,968

Int. Cl.[6] C12N *7/00;7/02;7/08;* **A61K** *39/15*

U.S. Cl. 435—235.1 **2 Claims**

1. An isolated human rotavirus strain HCR3A ATCC No. VR2325 of serotype 3, subgroup 1.

5,610,050

METHODS OF PREVENTING VIRAL REPLICATION

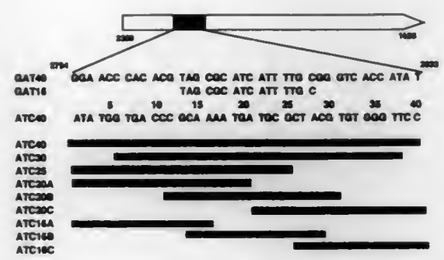
Hubert E. Blum, Zurich, Switzerland; Tsanyang Liang, Brookline, Mass.; Ethan Galun, Jerusalem, Israel, and Jack R. Wands, Waban, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 846,328, Mar. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 511,428, Apr. 20, 1990, abandoned. This application Apr. 23, 1993, Ser. No. 51,935

Int. Cl.[6] C12N *7/06;* **C07H** *21/04*

U.S. Cl. 435—238 **26 Claims**

1. A method for inhibiting replication of hepatitis B virus in a cultured cell, comprising introducing into said cell an antiviral



antisense oligonucleotide the sequence of which consists of 12 to 40 contiguous nucleotides of (a) ATC-40: ATA TGG TGA CCC GCA AAA TGA TGC GCT ACG TGT GGG TTC C (SEQ ID NO: 11), or (b) the RNA equivalent of ATC-40, whereby hepatitis B virus replication is inhibited.

5,610,051

METHOD FOR PRODUCTION OF CONIFEROUS ISOGENIC CELL LINES

Michael R. Becwar, and Thomas D. Blush, both of Summerville, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 18, 1991, Ser. No. 717,042

Int. Cl.[6] C12N *1/20;3/00;5/00*

U.S. Cl. 435—422 **8 Claims**

1. A process for the production of isogenic cell lines from conifers, comprising:

(a) dissecting an immature conifer seed and removing zygotic embryo-containing megagametophyte,

(b) placing said megagametophyte on a culture induction medium for 4 to 56 days to induce extrusion of embryogenic tissue comprising zygotic embryos,

(c) isolating and extracting the individual embryos from the extruded tissue, and

(d) transferring said isolated individual embryos to appropriate culture induction medium to permit the individual cell lines to proliferate.

5,610,052

ENZYMATIC RNA WITH ACTIVITY TO RAS

James D. Thompson, and Kenneth G. Draper, both of Boulder, Colo., assignors to Ribozyme Pharmaceuticals Inc., Boulder, Colo.

Filed Aug. 26, 1992, Ser. No. 936,110

Int. Cl.[6] C12N *5/00;* **C07H** *21/04*

U.S. Cl. 435—366 **12 Claims**

1. The enzymatic RNA molecule which specifically cleaves K-ras RNA.

5,610,053

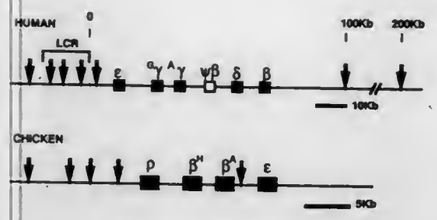
DNA SEQUENCE WHICH ACTS AS A CHROMATIN INSULATOR ELEMENT TO PROTECT EXPRESSED GENES FROM CIS-ACTING REGULATORY SEQUENCES IN MAMMALIAN CELLS

Jay H. Chuog, Bethesda, and Gary Felsenfeld, Chevy Chase, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 45,266, Apr. 7, 1993, abandoned. This application Jul. 29, 1994, Ser. No. 283,125

Int. Cl.[6] C07H *21/04;* **C12N** *5/10;15/11;* **C12P** *21/00*

U.S. Cl. 435—172.3 **25 Claims**



15. An isolated DNA construct for incorporation into a host cells and for insulation of the expression of a gene therein, comprising:

(a) DNA comprising a transcription unit comprising an heterologous gene, a promoter to drive transcription of the gene, and an enhancer element; and

(b) one or more insulator elements having insulator activity and operative in eukaryotic cells, wherein said isolated insulator DNA element consists of a eukaryotic 5' constitutive DNase I-hypersensitive site from the 5' region of the chicken β-globin gene locus and is isolated from a 1.2 kilobase SacI-SspI DNA fragment and minimally comprises the DNA of Seq. ID. No.1, and further wherein said insulator element is positioned in sufficient proximity to the transcription unit to insulate the transcription and expression of the gene from cis-acting DNA regulatory sequences in chromatin into which the gene has integrated; said insulator element being outside of the DNA according to (a) above.

5,610,054

ENZYMATIC RNA MOLECULE TARGETED AGAINST HEPATITIS C VIRUS

Kenneth G. Draper, Boulder, Colo., assignor to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 882,888, May 14, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 182,968

Int. Cl.[6] C12N *15/85;* **C12Q** *1/68;* **A61K** *48/00*

U.S. Cl. 435—363 **16 Claims**

1. An enzymatic RNA molecule which is active to specifically cleave RNA of hepatitis C virus (HCV).

6. The enzymatic RNA molecule of claim 1 which specifically cleaves RNA of HCV in the RNA encoding the core (c) region.

5,610,055

Patent Not Issued For This Number

5,610,056

USE OF STEM CELL FACTOR INTERLEUKIN-6 AND SOLUBLE INTERLEUKIN-6 RECEPTOR TO INDUCE THE DEVELOPMENT OF HEMATOPOIETIC STEM CELLS

Tatsutoshi Nakahata, Tokyo, Japan, assignor to Amgen Inc., Thousand Oaks, Calif., and Tosoh Corporation, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 340,559

Int. Cl.[6] A01N *63/00;* **C12N** *5/00;* **A61K** *38/20*

U.S. Cl. 435—378 **6 Claims**

1. A method of producing erythroid cells in vitro. comprising: culturing hematopoietic cells in a culture medium comprising stem cell factor, an interleukin-6 and soluble interleukin-6 receptor to induce proliferation and differentiation of said hematopoietic cells and thereby producing erythroid cell wherein said stem cell factor, interleukin-6 and soluble interleukin-6 receptor is in an amount effective to induce proliferation and differentiation of said hematopoietic cells.

5,610,057

MONOCLONAL ANTIBODY SPECIFIC FOR IGA RECEPTOR

Li Shen, Thetford Center, Vt., and Michael W. Fanger, Lebanon, N.H., assignors to Medarex, Inc., Annandale, N.J.

Continuation of Ser. No. 871,561, Apr. 16, 1992, abandoned, which is a continuation of Ser. No. 424,883, Oct. 20, 1989, abandoned. This application Apr. 4, 1994, Ser. No. 222,572

Int. Cl.[6] C12N *5/20;* **C07K** *16/28*

U.S. Cl. 435—334 **2 Claims**

1. Hybridoma cell line My43, ATCC accession number HB-12128.

5,610,058

CYTOTROPHOBLAST ANTIGEN AND MONOCLONAL ANTIBODIES WHICH SPECIFICALLY BIND CYTOTROPHOBLAST CELLS

Simon C. Shorter, Sunnyvale, Calif.; Bernadette L. Ferry; Phyllis M. Starkey, both of Oxford, United Kingdom; Ian L. Sargent, Yarnton, United Kingdom, and Christopher W. G. Redman, Oxford, United Kingdom, assignors to Isis Innovation Limited, Oxford, United Kingdom

PCT No. PCT/GB93/01212, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO93/25664, PCT Pub. Date Dec. 23, 1993

Continuation-in-part of Ser. No. 913,957, Jul. 17, 1992, abandoned. This PCT application Jun. 8, 1993, Ser. No. 351,468

Claims priority, application United Kingdom, Jun. 8, 1992, 9212074

Int. Cl.[6] C07K *16/28;* **C12N** *5/00*

U.S. Cl. 435—332 **3 Claims**

1. The cell line ECACC 92052819 and subclones thereto which produce antibody capable of binding specifically to cytotrophoblast.

5,610,059

ETIOLOGICAL AGENT FOR PORCINE ENTERITIS

Lynn A. Joens, Tucson, Ariz., and Robert D. Glock, Fort Collins, Colo., assignors to University of Arizona, Tucson, Ariz.

Filed Nov. 9, 1992, Ser. No. 973,018

Int. Cl.[6] C12N *1/20;5/00*

U.S. Cl. 435—252.1 **4 Claims**

1. A biologically pure culture of a mammalian host cell infected by an obligate intracellular bacterium that causes porcine proliferative enteritis after inoculation into pigs having all of the identifying characteristics of ATCC Accession No. 55370.

5,610,060

ISOLATED *HELICOBACTER HEPATICUS*

Jerrold M. Ward, Gaithersburg, Md.; James G. Fox, Harvard, Mass.; Michael J. Collins, Jr., Laurel, Md.; Peter L. Gorelick, Frederick, Md.; Raoul E. Benveniste, Bethesda, Md.; Joseph G. Tully, Germantown, Md.; Matthew A. Gonda, Walkersville, Md.; Bruce J. Paster, Lee, N.H., and Floyd E. Dewhirst, III, Medfield, Mass., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 24, 1994, Ser. No. 266,414
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—252.1 1 Claim

1. An isolated *Helicobacter hepaticus* bacterium.

5,610,061

MICROORGANISMS FOR BIODEGRADING COMPOUNDS

George E. Pierce, Lebanon, N.J., assignor to Cytec Industries, Inc., Wilmington, Del.

Division of Ser. No. 357,822, Dec. 16, 1994. This application May 23, 1995, Ser. No. 448,289
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—252.1 2 Claims

1. A biologically pure culture of microorganisms selected from the group consisting of:

Microorganism	ATCC Accession No.
Pseudomonas sp. (DAP 70)	55646
Pseudomonas sp. (DAP 111)	55645
Pseudomonas sp. (DAP 622)	55648
Pseudomonas sp. (DAP 631)	55647
Aeromonas sp. (DAP 68)	55642
Aeromonas sp. (DAP 119)	55641
Corynebacterium sp. (DAP 66)	55643 and
Zoogloea sp.)DAP 73)	55649.

5,610,062

DISPERSANT SOLUTIONS FOR DISPERSING HYDROCARBONS

Richard L. Tyndall, Clinton, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 388,862, Feb. 15, 1995, Pat. No. 5,518,919, which is a division of Ser. No. 203,452, Feb. 28, 1994, Pat. No. 5,420,035, which is a division of Ser. No. 11,841, Feb. 1, 1993, Pat. No. 5,314,821, which is a continuation of Ser. No. 693,998, Apr. 26, 1991, abandoned. This application May 19, 1995, Ser. No. 444,455
Int. Cl.[6] B01F *17/00;* B09C *1/02;1/10;* C12N *1/20*
U.S. Cl. 435—252.4 3 Claims

1. A dispersant solution comprising an autoclaved bacterium selected from the group consisting of ATCC 75527, a mutant of said bacterium possessing all the identifying characteristics of said bacterium, and mixtures thereof.

5,610,063

CDNA FOR α-N-ACETYL-GALACTOSAMINIDASE FROM *GALLUS DOMESTICUS*

Daniel S. Smith, and John C. Walker, both of Columbia, Mo., assignors to Curators of the University of Missouri, Columbia, Mo.

Continuation-in-part of Ser. No. 135,920, Oct. 13, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 406,070
Int. Cl.[6] C12N *15/56;15/81*
U.S. Cl. 435—254.23 5 Claims

1. A purified and isolated cDNA clone as set forth in SEQ ID No:1 encoding the mature chicken α-N-acetylgalactosaminidase enzyme.

5,610,064

BACTERIUM USEFUL IN THE REMOVAL OF SULPHUR BLACK DYE FROM A SUBSTRATE

Mark K. Keung, Dept. of Biology/Chinese University of Hong Kong, Shatin NT, Hong Kong

Filed Feb. 16, 1994, Ser. No. 198,044
Int. Cl.[6] D06M *16/00*
U.S. Cl. 435—262 2 Claims

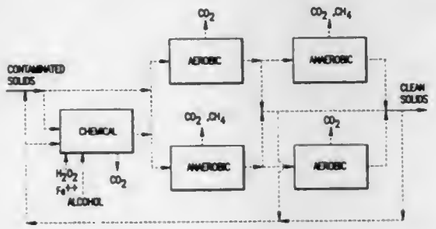
1. An isolated bacterium capable of reducing the concentration of sulphur black dye in a substrate, wherein said reducing is accomplished by biadsorption of said sulphur black dye by said bacterium, wherein said bacterium is designated W3 and has an ATCC number of 55566.

5,610,065

INTEGRATED CHEMICAL/BIOLOGICAL TREATMENT OF ORGANIC WASTE

Robert L. Kelley, Mt. Prospect; Andy H. Hill, Glen Ellyn; Vipul J. Srivastava, Forest Park; W. Kennedy Gauger, Pflugerville, and John J. Kilbane, II, Woodstock, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 56,527, May 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 718,330, Jun. 21, 1991, abandoned. This application Mar. 10, 1995, Ser. No. 402,421
Int. Cl.[6] C12S *3/02*
U.S. Cl. 435—264 27 Claims



1. A process for remediation of contaminated solid materials selected from the group consisting of polynuclear aromatic hydrocarbon contaminated solid materials, polychlorinated hydrocarbon contaminated materials, and mixtures thereof by integrated chemical/biological treatment comprising the steps of:

contacting for chemical treatment said contaminated solid materials with hydrogen peroxide in the presence of ferrous ion in amounts and conditions suitable for chemical oxidation at a temperature of about 10° C. to about 100° C. forming a mixture, oxidizing said contaminated solid materials producing biodegradable hydrocarbon product materials having enhanced biodegradability, and biodigesting under suitable conditions said product materials by at least one of aerobic and anaerobic biodigestion.

5,610,066

NUCLEIC ACID MODIFYING PROTEINS FROM *PYROCOCCUS FURIOSUS*

Carl W. Fuller, Cleveland Heights; Joseph Szasz, Chesterland, both of Ohio; Frank T. Robb, Silver Spring; Kimberly M. Borges, Ellicott City, both of Md., and Maria Davis, Twinsburg, Ohio, assignors to Amersham Life Science, Inc., Cleveland, Ohio

Filed Dec. 10, 1993, Ser. No. 166,346
Int. Cl.[6] C12N *15/63;15/11;15/55*
U.S. Cl. 435—320.1 2 Claims

1. Purified nucleic acid comprising the nucleotide base sequence of SEQ. ID NO. 1 in a vector.

5,610,067

METHOD OF PREPARING PLASMID HAVING BOTH EXPRESSING ABILITY OF RETROVIRAL GENE AND PROCESSING ABILITY AFTER TRANSLATION, AND RESULTANT PLASMID AND EXPRESSION PRODUCTS

Atsusi Saito, Kagawa; Hideo Shinagawa, and Atsuo Nakata, both of Osaka, all of Japan, assignors to The Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Continuation of Ser. No. 809,489, Jan. 14, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 202,684
Claims priority, application Japan, May 28, 1990, 2-139358
Int. Cl.[6] C12P *21/00;* C12N *15/00;9/50;* C07H *21/04*
U.S. Cl. 435—320.1 4 Claims

1. A method for preparing a plasmid for use in a method of producing HIV proteins that are processed by HIV protease when the plasmid is expressed in an Escherichia coli UT481 recipient cell, the method comprising:

(a) preparing a cDNA fragment comprising HIV genes encoding from the 5' end to the 3' end of the cDNA fragment:
p17, p24, p15, and protease;
p17, p24, and protease;
p24, p15, and protease;
p17 and protease;
p24 and protease; or
p15 and protease; and

(b) inserting the cDNA fragment into a pUR290 series plasmid in a matching reading frame with a lacZ gene operably linked to a lacUV5 promoter.

2. A method of producing a plasmid for use in producing at least one HIV protein that is processed by HIV protease when the plasmid is expressed in an E. coli BL21 (DE3) recipient cell, the method comprising:

(a) preparing a cDNA fragment comprising an HIV gene or genes encoding from the 5' end to the 3' end of the cDNA fragment:
protease;
protease and reverse transcriptase;
reverse transcriptase and protease;
protease and endonuclease;
protease, reverse transcriptase, and endonuclease;
p17, p24, p15, and protease;
p17, p24, and protease;
p24, p15, and protease;
p17 and protease;
p24 and protease;
p15 and protease; and

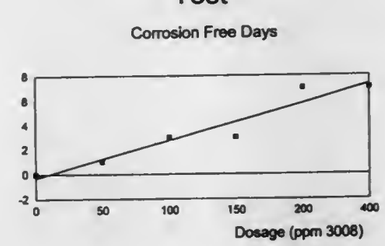
(b) inserting the cDNA fragment into plasmid pT7-7 operably linked to a T7 promoter of plasmid pT7-7.

5,610,068

FIELD METHOD FOR DETERMINING IF ADEQUATE CORROSION INHIBITION HAS BEEN APPLIED TO THERMALLY PROCESSED CANS

Christine M. Stuart, Wheaton; Deborah M. Rogers, Naperville; James R. Van Camp, Glen Ellyn, all of Ill., and Michael P. Sowinski, Gig Harbor, Wash., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 28, 1995, Ser. No. 508,655
Int. Cl.[6] G01N *17/00*
U.S. Cl. 436—6 4 Claims



1. A method of determining the efficacy of a corrosion prevention treatment applied to a metal surface which comprises:

a) wetting at least a first and a second absorbent patches capable of retaining a liquid corrosive to metal surfaces to be tested with the corrosive liquid to obtain wetted patches;

b) contacting a portion of a first metal surface to be tested with the first patch under corrosive conditions;

c) contacting a portion of a second metal surface to be tested with the second patch, wherein the second metal surface having the same composition as the first metal surface has been treated with an effective amount of a corrosion prevention treatment;

d) subjecting the second patch in contact with the second metal surface to the same corrosive conditions as the corrosive conditions applied to the first patch in contact with the first metal surface;

e) removing the first and the second patches from the first and the second metal surfaces, respectively;

f) treating the first and the second patches with an effective amount of a tetrazolium compound; and,

g) comparing the amount of stain present on the first patch to the amount of stain present on the second patch, whereby the efficacy of the corrosion prevention treatment can be qualitatively determined.

5,610,069

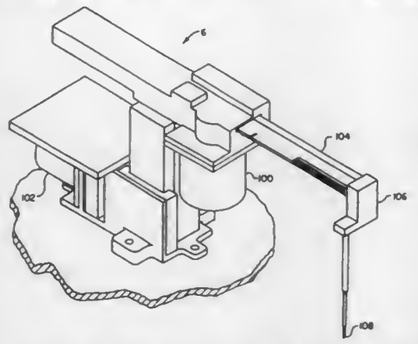
APPARATUS AND METHOD FOR WASHING CLINICAL APPARATUS

Frederick L. Clark, Plano; Kendall B. Hendrick, Southlake; Richard R. Martin, Irving; Larry W. Moore, Plano, all of Tex.; William J. Raymoure, Lake Bluff, Ill.; Paul R. Schrier, Carrollton, Tex.; Edna S. Walker, Chicago, Ill.; Donny R. Walker, Coppell, Tex.; Gary E. Winter, Hanover Park; Kevin M. Cloonan, Round Lake, both of Ill.; David A. Yost, Poolesville, Md.; John M. Clemens, Wadsworth, Ill.; William J. Kanewske, III, Dallas, Tex.; Douglas D. McDowell, Wildwood, Ill.; Carl M. Oleksak, Fort Worth; William D. Rumbaugh, Carrollton, both of Tex.; B. Jane Smith, Vernon Hills, Ill.; James A. Vaught, Euless, Tex.; Apparao Tayi, Grayslake, Ill.; Robert A. Wohlford, Irving, Tex.; James E. Mitchell, Lake Barrington, Ill.; Robert B. Hance, Evanston, Ill.; Peter A. Lagocki, Park Ridge, Ill.; Richard A. Merriam, Dallas, Tex.; Charles D. Pennington, Lake Zurich, Ill.; Linda S. Schmidt, Mundelein, Ill.; Adrian M. Spronk, Lindenhurst, Ill.; Richard L. Vickstrom, Algonquin, Ill.; William E. Watkins, III, Cedar Hill; Gilbert Clift, Mesquite, both of Tex.; Alyn K. Stanton, Barrington, Ill., and David B. Hills, Plano, Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 176,632, Jan. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, abandoned, said Ser. No. 126,411is a continuation-in-part of Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, abandoned, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, abandoned, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, abandoned, and Ser. No. 27,481, Mar. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,269, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 917,634, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,482, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 916,556. This application Oct. 27, 1995, Ser. No. 549,020

Int. Cl.[6] G01N *35/00*

U.S. Cl. 436—49 10 Claims



6. A method for washing a probe used in a clinical apparatus, said probe being employed to contain a first test substance during a first testing step and a second test substance during a second testing step, said second testing step subsequent to said first testing step, said probe capable of being washed by a wash solution for removal of said first test substance after said first testing step but before said second testing step, said method comprising the steps of:

supplying said wash solution to said probe;

varying a quantity of said wash solution supplied to said probe; and

controlling said step of varying said quantity of said wash solution in order to vary said quantity of said wash solution in proportion to a potential for contamination of said second test substance by said first test substance remaining on said probe from said first testing step, wherein said potential for contamination of said second test substance by said first test substance remaining on said probe from said first testing step is determined by said controlling step from a matrix containing values related to (1) probability that said first test substance from said first testing step will contaminate said second test substance from said second testing step and (2) susceptibility of said second test substance from said second testing step of being contaminated by said first test substance from said first testing step,

said step of supplying said wash solution to said probe automatically supplying said wash solution after said first testing step and prior to said second testing step in a quantity sufficient to prevent said first test substance from said first testing step from contaminating said second test substance from said second testing step when said controlling step indicates that said first test substance from said first testing step does not have the potential to contaminate said second test substance from said second testing step or that said second test substance from said second testing step is not susceptible to contamination from said first test substance from said first testing step,

said step of supplying said wash solution providing extra wash solution subsequent to said automatic supplying of wash solution after said first testing step and prior to said second testing step in a quantity sufficient to prevent said first test substance from said first testing step from contaminating said second test substance from said second testing test when said step of controlling indicates that said first test substance from said first testing step has the potential to contaminate said second test substance from said second testing step and that said second test substance from said second testing step is susceptible to contamination from said first test substance from said first testing step.

5,610,070

STERILE OR SPECIFIC PATHOGEN FREE ENVIRONMENT METHODS

Michael Wilson, Cambridgeshire, and Philip Monro, Southampton, both of Great Britain, assignors to Hampshire Advisory and Technical Services Limited, Southhampton, England

Continuation of Ser. No. 940,969, Nov. 5, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 237,719

Claims priority, application United Kingdom, Mar. 26, 1990, 9006747; Mar. 26, 1990, 9006748

Int. Cl.[6] G01N *21/75*

U.S. Cl. 436—63 7 Claims

1. A method for testing a potentially infectious substance, from the group including blood, tissue, or other biological samples consisting of the steps of:

(a) placing the substance to be tested in a container of which at least a part of the container is formed of semi-permeable membrane, the semi-permeable membrane having a molecular weight cut-off such that viruses and other potentially infectious organisms are retained within the container by virtue of having a molecular weight higher than the molecular weight cut-off;

(b) closing the container; and

(c) contacting the semi-permeable membrane with at least one reagent solution having a molecular weight lower than the molecular weight cut-off of the membrane thereby allowing the test reagent to pass through the membrane and react with the potentially infectious substance.

5,610,071

METHOD OF HAIR ANALYSIS

Jacqueline A. Sabal, 315 SE. Mizner Blvd. Ste. 204, Boca Raton, Fla. 33432

Continuation-in-part of Ser. No. 228,680, Apr. 18, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,484

Int. Cl.[6] G01N *1/00;33/48*

U.S. Cl. 436—79 4 Claims

1. A method of hair analysis to determine a history of mineral absorption comprising:

releasing a trapped grown hair from a clogged hair follicle;

removing said released hair from said follicle; and

determining mineral absorption in said removed hair by atomic absorption spectroscopy analysis;

wherein said step of releasing comprises contacting said dogged follicle with a formulation in a manner and amount effective for unclogging said clogged follicle, whereby said trapped hair is released and extended through said unclogged follicle; and

further wherein said contacting step comprises applying to a scalp containing said clogged follicle a first herbal formulation for a first period of time sufficient to enable the first formulation to be absorbed into the scalp, rinsing the first formulation from the scalp, and applying a second herbal formulation to the scalp for a second period of time sufficient to enable said clogged follicle to become unclogged.

5,610,072

DETECTION OF CAFFEINE IN BEVERAGES

Michael Scherl, 257 N. Woodland St., Englewood, N.J. 07631; Zev Scherl, 88 Pine Crest Rd., Orange, Conn. 06477, and Susan B. Fiedler, 200 Hemlock Rd., New Haven, Conn. 06515

Filed Mar. 25, 1996, Ser. No. 620,545

Int. Cl.[6] G01N *33/00;33/02*

U.S. Cl. 436—96 11 Claims



11. A method for detecting the concentration of caffeine in a beverage in a container, said method comprising the steps of:

a) transferring a portion of the beverage from the container onto an absorbant material;

b) reacting said transferred portion of the beverage with a reagent in said absorbant material so as to produce a color hue in the reagent which color hue varies with the concentration of caffeine in the beverage; and

c) preventing the reagent from comingling with the beverage in the container.

5,610,073

USE OF CO_2 ABSORBANT FOR STABILIZATION OF DRIED ALKALINE REAGENT IN CREATININE ASSAY

Amy H. Chu; Wei-Sen Chu, and Howard A. Cooper, all of Elkhart, Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed Sep. 26, 1995, Ser. No. 534,267

Int. Cl.[6] G01N *33/00*

U.S. Cl. 436—98 12 Claims

1. In a method for the detection of creatinine in which creatinine in aqueous solution is contacted with a dry reagent system comprising an indicator for creatinine at a pH above about 11.5 which pH is maintained by an alkaline material, the improvement which comprises packaging the reagent system with a material capable of absorbing CO_2 and at least some ambient water vapor in sufficient amount to substantially inhibit the formation of carbonic acid in the area of the reagent system to thereby reduce the neutralization of the alkaline material during storage.

5,610,074

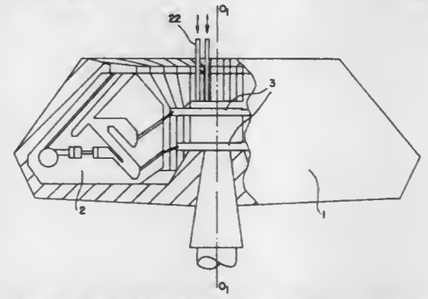
CENTRIFUGAL METHOD AND APPARATUS FOR ISOLATING A SUBSTANCE FROM A MIXTURE OF SUBSTANCES IN A SAMPLE LIQUID

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Filed Feb. 24, 1993, Ser. No. 22,047

Int. Cl.[6] G01N *1/18;* C07H *21/02;* C12M *1/12;* C12N *1/02*

U.S. Cl. 436—177 25 Claims



1. A method of isolating a substance sought to be isolated from a mixture of substances in a sample liquid comprising the following steps:

(a) loading a first compartment of a fractionation cell with a predetermined volume of the sample liquid by way of an entry port opening into the first compartment;

(b) inserting the cell into a centrifugal rotor equipped with a dynamic flow distributor;

(c) rotating the rotor in a first direction at a first predetermined speed to cause the sample liquid to flow into a second compartment of the cell;

(d) while continuing to rotate the rotor, injecting a predetermined volume of a first liquid reagent into a first flow distributor, said first flow distributor being aligned to permit a flow of the first reagent into the first compartment of the cell and therethrough to the second compartment where the first reagent contacts and mixes with the sample liquid to form a conditioned sample liquid;

(e) stopping rotation of the rotor to permit the conditioned sample liquid to flow away from a material sedimented in a chamber in the second compartment during step (d) and into a third compartment of the cell;

(f) rotating the rotor again in the first direction at the first predetermined speed to cause the conditioned sample liquid to flow into a fourth compartment wherein the conditioned sample liquid contacts a retaining means fixed within the

fourth compartment for releasably retaining, selectively, the substance sought to be isolated;

(g) while continuing to rotate the rotor to cause the conditioned sample liquid to pass through the fourth compartment into a waste collection chamber, injecting a predetermined volume of a second reagent into a second flow distributor, said second flow distributor being aligned to permit a flow of the second reagent into the third compartment and, therethrough, into the fourth compartment, to elute substances from the retaining means, which retaining means, when contacted by the second reagent, selectively retains the substance sought to be isolated;

(h) while continuing to rotate the rotor to permit the second reagent to flow out of the fourth compartment into the waste collection chamber, injecting a third reagent into the second flow distributor to rinse traces of the second reagent into the waste collection chamber;

(i) rotating the rotor in a second direction at a second predetermined speed less than the first predetermined speed and injecting a fourth reagent into the second flow distributor to cause the retaining means to release the substance sought to be isolated into the fourth reagent;

(j) rotating the rotor in the second direction at about the first predetermined speed to cause the fourth reagent with the isolated substance contained therein to flow out of the fourth compartment into a sample collection chamber.

18. An apparatus for isolating a substance sought to be isolated from a mixture of substances in a sample liquid, said apparatus comprising, in combination:

a) a centrifugal rotor having a superior region, an inferior region, an axis of rotation disposed in controllable relation to a gravitational force, and a reversible impelling means for applying a predetermined centrifugal force thereto;

b) a fractionation cell contained in said rotor, said cell comprising walls defining an entry port and a plurality of interconnected chambers and passages, said chambers and passages being sized, angled and disposed relative to one another to provide, in combination with said impelling means, a means for controlling a flow therebetween of a predetermined liquid volume under a centrifugal force and said gravitational force, wherein the centrifugal force is a means for constraining and for advancing the flow and wherein the gravitational force is a means for constraining and for advancing the flow, and wherein said interconnected chambers and passages in the cell are distributed among a plurality of contiguous compartments comprising:

1) a first compartment comprising:

a first chamber for containing said sample liquid and, axially, a first passage connecting the first chamber with a first entry port, the first passage and the first chamber being sized and angled to prevent said liquid volume from overflowing the first compartment when said rotor is static;

a first centrifugal surface, said centrifugal surface being angled such that centrifugal force urges said liquid volume out of the first compartment into

2) a second compartment, disposed generally in a radially outward direction relative to the first compartment, comprising:

a second chamber and, superiorly, a first vent passage connecting the second cheer to a first vent port, the second chamber being sized and the first vent passage being sized and angled to prevent said liquid volume from flowing out of the cell under the centrifugal force;

a second centrifugal surface disposed in parallel to and radially outward from the first centrifugal surface such that gravitational force urges said liquid volume out of the second compartment into

3) a third compartment disposed inferiorly to the first and second compartments, the third compartment comprising:

a third chamber and, axially, a second passage connecting the third chamber with a second entry port, the third chamber and second passage being sized and angled to prevent said liquid volume from overflowing said third compartment when said rotor is static;

a third centrifugal surface angled such that centrifugal force urges substantially all of said liquid volume in the third chamber into

4) a fourth compartment disposed radially outward and superiorly in relation to the third compartment, the fourth compartment comprising a fourth chamber and a means for controllably permitting an outflow of said liquid volume from the fourth chamber, whereby, upon sequential exposure of said rotor to said centrifugal and gravitational forces, said sample liquid is urged through said interconnected chambers and passages thereby isolating a substance present in said sample liquid into said fourth chamber.

5,610,075

COMPETITIVE ELECTROCHEMILUMINESCENCE ASSAYS FOR ENDOTOXINS USING A RUTHENIUM LABEL

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Filed Jan. 17, 1995, Ser. No. 373,365

Int. Cl.[6] G01N *33/53*

U.S. Cl. 436—501 **10 Claims**

1. A process for performing a competitive electrochemiluminescence assay for endotoxins, comprising the steps of:

(a) protecting the lipid A portion of the endotoxins with a protective molecule;

(b) labeling endotoxin with ruthenium (II) tris-bipyridine NHS ester (TAG) to obtain TAG-labeled endotoxin;

(c) separating the TAG-labeled endotoxins from the protective molecule;

(d) derivatizing polymyxin B with biotin ester to obtain biotinylated polymyxin B;

(e) mixing the biotinylated polymyxin B with the TAG-labeled endotoxin and with sample endotoxin so that the TAG-labeled endotoxin and the sample endotoxin compete with each other for binding to the biotinylated polymyxin B and allowing incubation to proceed in the resulting mixture;

(f) exposing the resulting mixture to electrochemical energy to thereby cause electrochemiluminescence; and

(g) measuring the electrochemiluminescence and determining from said measurement the amount of sample endotoxin.

5,610,076

METHOD FOR DETECTING HEMOGLOBIN ADVANCED GLYCOSYLATION ENDPRODUCTS

Henry W. Founds, Mendham, N.J.; Michael A. Yamin, Tappan, N.Y.; Richard J. Bucala, New York, N.Y., and Anthony Cerami, Shelter Island, N.Y., assignors to Alteon Inc., Ramsey, N.J.

Filed Apr. 29, 1994, Ser. No. 236,416

Int. Cl.[6] G01N *33/543*

U.S. Cl. 436—518 **25 Claims**

1. A method for detecting the presence of hemoglobin-advanced glylosylation end-products, hemoglobin-AGE, in a sample comprising:

a) diluting the sample in a dilution buffer, which dilution buffer comprises sodium dodecyl sulfate at a concentration sufficient to denature hemoglobin-AGE;

b) contacting the diluted sample with a binding partner of an AGE; and

c) detecting the presence of hemoglobin-AGE in the sample by detecting binding of the binding partner of an AGE to hemoglobin-AGE.

5,610,077

PROCESSES AND APPARATUS FOR CARRYING OUT SPECIFIC BINDING ASSAYS

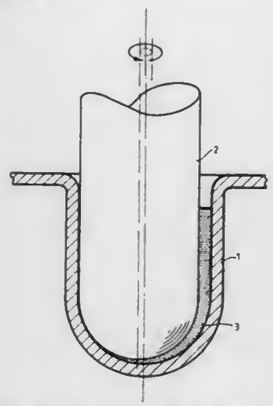
Paul J. Davis, Bedfordshire, and Philip Porter, Bedford, both of England, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 744,658, Jun. 14, 1985, abandoned, which is a continuation of Ser. No. 348,048, Jan. 29, 1982, abandoned. This application Jul. 19, 1994, Ser. No. 275,755

Claims priority, application United Kingdom, Jun. 20, 1980, 8020160

Int. Cl.[6] G01N *33/53*

U.S. Cl. 436—518 **2 Claims**



1. In the process for carrying out a specific binding assay comprising the steps of reacting (a) a sample under assay, possibly containing a substance being tested for, with (b) a specific binding partner for the substance being tested for, immobilised on a solid support, and (c) a specific binding partner for the substance being tested for which is conjugated to a detectable marker, thereby to form a sandwich complex by reaction between whatever quantities are present of the substance being tested for with reagents (b) and (c) and immobilising the marker to the support via the substance being tested for, the marker being detected or assayed as an index of the quantity of the substance being tested for present in the sample (a), the improvement which comprises using reagents (b) and (c) together for reaction with sample (a) and avoiding competitive interference between the binding reactions of the substance being tested for and reagents (b) and (c) by using as reagents (b) and (c), monoclonal antibodies each of narrow and different, non-interfering specificity, the binding reagent (b) being immobilised on the surface of a displacer body which occupies a majority of the volume of a well or cup containing aqueous liquid in which the specific binding reaction takes place.

5,610,078

METHOD FOR MAKING TRANSMISSION MODE 1.06μM PHOTOCATHODE FOR NIGHT VISION

Joseph P. Estrera, Dallas, and Keith T. Passmore, Rowlett, both of Tex., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Division of Ser. No. 282,810, Jul. 29, 1994, Pat. No. 5,506,402. This application Jan. 31, 1996, Ser. No. 594,944

Int. Cl.[6] H01L *31/18*

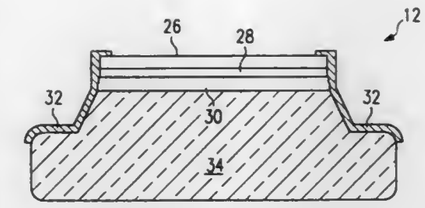
U.S. Cl. 437—5 **17 Claims**

1. A method of making a photocathode, comprising:

forming a wafer structure according to the steps of

growing an indium-gallium-arsenide active layer wherein the composition of indium, x, as defined by the formula $In_xGa_{1-x}As$, in said active layer is between 0.15 and 0.25,

growing an aluminum-gallium-arsenide window layer on said active layer,



bonding a face plate to said wafer structure;

forming an electrode coupled to said face plate, said active layer, and said window layer.

5,610,079

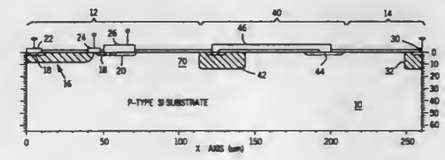
SELF-BIASED MOAT FOR PARASITIC CURRENT SUPPRESSION IN INTEGRATED CIRCUITS

Gerard G. Skebe, Eastlake, and Steven M. Galecki, Concord Township, both of Ohio, assignors to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Jun. 19, 1995, Ser. No. 491,669

Int. Cl.[6] H01L *49/00*

U.S. Cl. 437—6 **8 Claims**



1. A method of controlling parasitic currents in a semiconductor device that includes a substrate and a moat assembly, the substrate defining a first section having a plurality of doped regions that define power devices, and a second section having at least one doped region, the moat assembly including a first doped moat region of the substrate extending between said doped regions of the first and second sections, a second doped moat region on a second section side of the first doped moat region which second doped moat region is doped to receive a flow of majority charge carriers from the substrate, and an electrical conductor connecting the first and second doped moat regions, the moat assembly being isolated from ground, the first section and fixed voltage sources, the method comprising:

biasing the doped regions of the first and second sections at least intermittently such that minority carriers are injected into the substrate causing a parasitic minority carrier current flow from the first section to the second section causing the doped regions of the first and second sections to function as a parasitic device;

collecting a portion of the minority carriers in the first doped moat region;

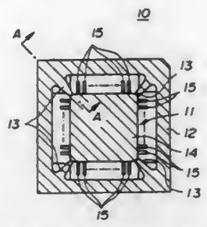
establishing a current flowing through the electrical conductor from the first doped moat region to the second doped moat region, and flowing through the substrate under the first doped moat region from the first section toward the second doped moat region to establish a voltage bias that inhibits and reduces minority carrier flow from the first section to the second section.

5,610,080

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE HAVING A BODY WITH A CARRIER RING CONNECTED THERETO

Yoji Murakami, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

Division of Ser. No. 21,579, Feb. 24, 1993, Pat. No. 5,473,199.
This application Sep. 11, 1995, Ser. No. 526,228
Claims priority, application Japan, Mar. 2, 1992, 4-044861
Int. Cl.[6] H01L *21/66*
U.S. Cl. 437—8 **7 Claims**



1. A method of producing a semiconductor device comprising the steps of:

(a) forming a semiconductor device assembly including a semiconductor device body which is supported by a ring part via connecting parts, said semiconductor device body including a resin package and a plurality of leads extending outwardly from the resin package, said ring part being made of a resin and surrounding said semiconductor device body so that tip ends of the leads are embedded in the ring part, said connecting parts being made of a resin and connecting said semiconductor device body and said ring part; and

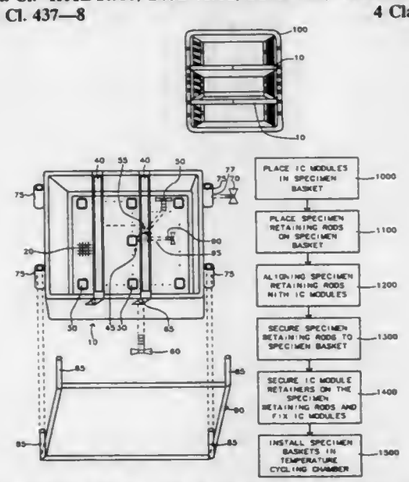
(b) cutting the leads in a vicinity of the ring part so that tip ends of the leads are separated from the ring part.

5,610,081

INTEGRATED CIRCUIT MODULE FIXING METHOD FOR TEMPERATURE CYCLING TEST

King-Ho Ping, Tainan, and Jin-Yuan Lee, Hsin-Chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin-Chu, Taiwan

Filed Jun. 3, 1996, Ser. No. 658,525
Int. Cl.[6] H01L *21/66;* **B65D** *73/02;* **F27D** *5/00;* **G01R** *31/26*
U.S. Cl. 437—8 **4 Claims**



1. A method for the fixing of a plurality of integrated circuit modules to prevent damage to said plurality of integrated circuit modules during handling prior to placement in, during testing in, and during handling after removal from a temperature cycling chamber for a cycling of temperature of said plurality of integrated circuit modules from a first temperature to a second temperature and from the second temperature to the first temperature for a plurality of iterations, comprising the steps of:

a) placing the plurality of integrated circuit modules within a specimen basket;

b) setting a plurality of specimen retaining rods upon the specimen basket

c) aligning each of the plurality of specimen retaining rods with a row of the plurality of integrated circuit modules;

d) securing the plurality of specimen retaining rods to the specimen basket with a specimen retaining rod securing means;

e) adjusting each of a plurality of integrated circuit module retaining means so as to couple the plurality specimen retaining rods to the plurality the integrated circuit modules thus fixing said plurality of integrated circuit modules from movement within the specimen basket; and

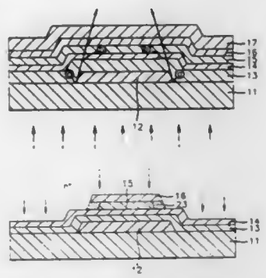
f) installing the specimen basket within the temperature cycling chamber.

5,610,082

METHOD FOR FABRICATING THIN FILM TRANSISTOR USING BACK LIGHT EXPOSURE

Eui Y. Oh, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Dec. 28, 1993, Ser. No. 174,208
Claims priority, application Rep. of Korea, Dec. 29, 1992, 1992/26230; Dec. 29, 1992, 1992/26233; Jan. 11, 1993, 1993/263
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—21 **10 Claims**



1. A method for fabricating a thin film transistor, comprising the steps of:

forming a gate electrode on an insulating transparent substrate to produce a first resulting structure;

stacking a plurality of gate insulating films having different refractive indices over a surface of the first resultant structure to produce a second resultant structure, the refractive index being higher as a gate insulating film is closer to the insulating transparent substrate;

sequentially depositing a semiconductor layer, an etch stopper layer, and a first photoresist film over a surface of the second resultant structure to produce a third resultant structure;

exposing the third resulting structure to a first back light using said gate electrode as a mask and patterning said first photoresist film so that the patterned first photoresist film has a width smaller than a width of the gate electrode;

etching and patterning the etch stopper layer using the patterned first photoresist film as a mask and then removing the patterned first photoresist film to produce a fourth resultant structure;

depositing a second photoresist film over a surface of the fourth resulting structure to produce a fifth resultant structure;

exposing the fifth resulting structure to a second back light using the gate electrode as a mask to produce a sixth resultant structure;

developing the sixth resulting structure and patterning the second photoresist film so that the patterned second photoresist film has a width smaller than the width of the gate electrode, and larger than a width of the patterned etch stopper layer;

etching the semiconductor layer using the patterned second photoresist film as a mask and then removing the patterned second photoresist film;

implanting high concentration impurity ions on a surface of the semiconductor layer using the patterned etch stopper layer as a mask to produce a seventh resultant structure;

depositing a metal layer over a surface of the seventh resulting structure;

annealing the metal layer to form a silicide layer at an interface between the metal layer and the semiconductor layer; and

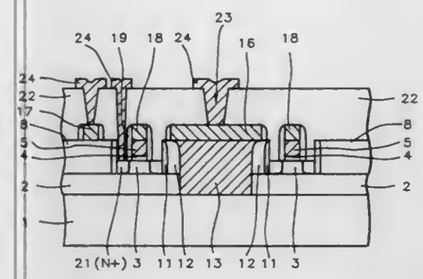
selectively removing a portion of the metal layer disposed over the patterned etch stopper layer to form a source electrode and a drain electrode.

5,610,083

METHOD OF MAKING BACK GATE CONTACT FOR SILICON ON INSULATOR TECHNOLOGY

Láp Chan, San Francisco, Calif.; Ravis H. Sundaresan, and Che-Chia Wei, both of Plano, Tex., assignors to Chartered Semiconductor Manufacturing Pte LTD, Singapore, Singapore

Filed May 20, 1996, Ser. No. 650,697
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—21 **28 Claims**



1. A method for fabricating silicon devices, in a layer of silicon on a first insulator layer, on a semiconductor substrate, incorporating a back gate contact for said silicon devices, to said semiconductor substrate, comprising the steps of:

providing said semiconductor substrate;

providing said first insulator layer, on said semiconductor substrate;

providing said silicon layer, on said first insulator layer, on said semiconductor substrate;

growing a second insulator layer on a surface of said silicon, on said first insulator layer;

depositing a first polysilicon layer on said second insulator layer;

ion implanting a first conductivity imparting dopant into said first polysilicon layer;

patterning of said first polysilicon layer to form polysilicon structures;

growing a first sidewall oxide on exposed surfaces of said polysilicon structures;

depositing a third insulator layer on said polysilicon structures, and between said polysilicon structures;

first photoresist masking to expose a region of said first sidewall oxide, and underlying said polysilicon structures;

anisotropic etching of said third insulator layer, of said first sidewall oxide, of said polysilicon structures, of said second insulator layer, and of said silicon layer, in said exposed region of said first photoresist masking, to create a trench;

removal of said first photoresist masking;

growing a second sidewall oxide on exposed surfaces of said polysilicon structures, and exposed surfaces of said silicon layer, in said trench;

depositing a fourth insulator layer at the bottom and sides of said trench, and one a surface of said third insulator layer;

anisotropic etching of said fourth insulator layer to form first insulator sidewall spaces on sides of said trench, while removing said fourth insulator layer from the surface of said third insulator layer;

anisotropic etching of said first insulator layer, at a bottom of said trench, to extend said trench to a surface of said semiconductor substrate, while thinning said third insulator layer;

depositing a second polysilicon layer in said trench, and on the surface of said third insulator layer;

removal of said second polysilicon layer from the surface of said third insulator layer;

removal of said third insulator layer, and of said first sidewall oxide, from the surface of said polysilicon structures;

depositing a third layer of polysilicon on the surface of said third insulator layer, between said polysilicon structures, on the surface of said polysilicon structures, and on a surface of said second polysilicon layer, in said trench;

ion implanting a second conductivity imparting dopant into said third polysilicon layer;

patterning: of said third polysilicon layer, overlying said second polysilicon layer, in said trench, to form said back gate contact structure; of said third polysilicon layer, overlying said third insulator layer, to form a polysilicon resistor structure; and of said third polysilicon layer and said first polysilicon layer, overlying said second insulator layer, to form polysilicon gates;

depositing a fifth insulator layer;

anisotropic etching of said fifth insulator layer to form second insulator sidewall spacers on sides of said polysilicon gates, on sides of said polysilicon resistor structure, and on sides of said back gate contact structure;

a second photoresist masking to expose only a region of said silicon layer, and said polysilicon gates;

ion implanting a third conductivity imparting dopant into said region of said silicon layer, not covered by said polysilicon gates, and not covered by said second photoresist masking;

removal of said second photoresist masking;

deposition of a sixth insulator layer;

opening contact holes in said sixth insulator layer, to said back gate contact structure, to said polysilicon resistor structure, and to said region of said silicon layer;

deposition of a metal; and

forming metal contact structures to said back gate contact structure, to said polysilicon resistor structure, and to said region of said silicon layer.

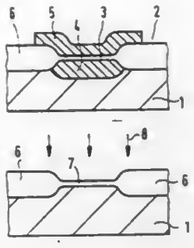
5,610,084

METHOD OF MANUFACTURING AN ANTIFUSE UTILIZING NITROGEN IMPLANTATION

Jose Solo de Zaldivar, Wadenswil, Switzerland, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 488,541
Claims priority, application European Pat. Off., Apr. 21, 1995, 95201019
Int. Cl.[6] H01L *21/8247;21/265*
U.S. Cl. 437—24 **6 Claims**

1. A method of manufacturing a semiconductor device whereby a semiconductor body is provided at a surface with a programmable element in the form of an anti-fuse comprising a thin silicon oxide layer situated between a surface zone in the semiconductor body and an electrode applied on the silicon oxide layer, the anti-fuse being brought from a first, non-conducting state into a second, conducting state during programming in that a voltage is applied between the electrode and the surface zone, characterized



in that the semiconductor body is doped with nitrogen at the area of the silicon oxide layer to be formed, after which the silicon oxide layer is formed through thermal oxidation.

5,610,085

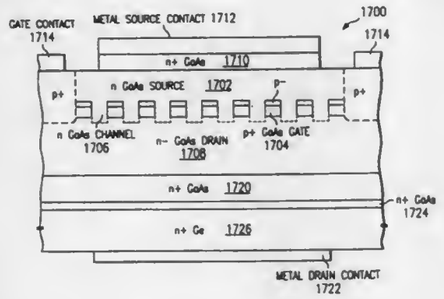
METHOD OF MAKING A VERTICAL FET USING EPITAXIAL OVERGROWTH

Han-Tzong Yuan; Tae S. Kim, and Donald L. Plumton, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 323,959, Oct. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 159,353, Nov. 29, 1993, Pat. No. 5,554,561. This application Jun. 7, 1995, Ser. No. 483,028

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—29 **6 Claims**



1. A method for fabrication of a vertical field effect transistor, comprising the steps of:

(a) providing a substrate of a first semiconductor material and first conductivity type with a first epitaxial layer of a second semiconductor material and said first conductivity type on said substrate, said second semiconductor material being different from said first semiconductor material;

(b) forming a plurality of gate fingers of said second semiconductor material and of a second conductivity type on said first epitaxial layer; and

(c) forming a second epitaxial layer on said gate fingers and said first epitaxial layer, said second epitaxial layer of said second semiconductor material and said first conductivity type and forming channels between adjacent ones of said gate fingers and a planar source over said gate fingers and said channels.

5,610,086

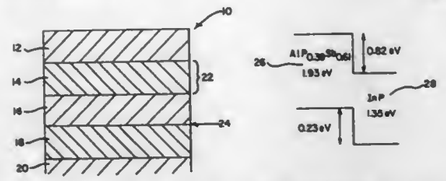
METHOD OF MAKING AN ALPSB/INP SINGLE HETEROJUNCTION BIPOLAR TRANSISTOR ON INP SUBSTRATE FOR HIGH-SPEED, HIGH-POWER APPLICATIONS

Takyiu Liu; Chanh Nguyen, both of Newbury Park, and Mehran Matloubian, Encino, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 468,584

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **12 Claims**



1. A method of making an epitaxial structure for a single heterojunction bipolar transistor, the steps comprising:

(a) providing a collector over a semiconductive support, said collector comprising a first semiconductor material;

(b) providing a base over said collector, said base comprising a second semiconductor material; and

(c) providing an emitter over said base, said emitter comprising about 39 mole percent AlP and about 61 mole percent Sb.

5,610,087

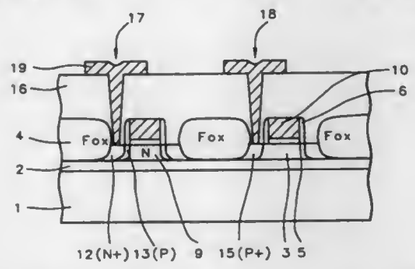
METHOD FOR FABRICATING NARROW BASE WIDTH LATERAL BIPOLAR JUNCTION TRANSISTOR, ON SOI LAYER

Ching-Hsiang Hsu, Hsin Chu; Shyh-Chyi Wong, Taichang; Mong-Song Liang, and Steve S. Chung, both of Hsinchu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed Nov. 9, 1995, Ser. No. 565,202

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—32 **20 Claims**



1. A method for fabricating silicon devices in a layer of silicon on insulator, on a semiconductor substrate, comprising the steps of:

providing said semiconductor substrate;

providing said silicon on insulator layer, on said semiconductor substrate;

growing field oxide regions on specific areas of said silicon on insulator layer;

growing a first insulator layer on surface of said silicon on insulator layer, not covered by said field oxide regions;

depositing a polysilicon layer on said first insulator layer and on said field oxide regions;

ion implanting a first conductivity imparting dopant into said polysilicon layer;

patterning of said polysilicon layer to form polysilicon gate structure;

first photoresist masking to expose only a first specific region of said silicon on insulator layer;

ion implanting a second conductivity imparting dopant into said first specific region of silicon on insulator layer, not covered by said first photoresist masking, not covered by said field oxide regions, and not covered by said polysilicon gate structure;

removal of said first photoresist masking;

deposition of a second insulator layer;

anisotropic etching of said second insulator layer to form insulator sidewall spacer on sides of said polysilicon gate structure;

second photoresist masking to expose only the said first specific region of said silicon on insulator layer;

ion implanting a third conductivity imparting dopant into said first specific region of silicon on insulator layer, not covered by said second photoresist masking, not covered by said field oxide region, not covered by said polysilicon gate structure, and not covered by said insulator sidewall spacer;

removal of said second photoresist masking;

third photoresist masking to expose only a second specific region of said silicon on insulator layer;

ion implanting a fourth conductivity imparting dopant into said second specific region of said silicon on insulator layer, not covered by said third photoresist masking, not covered by said field oxide regions, not covered by said polysilicon gate structure, and not covered by said insulator sidewall spacer;

removal of said third photoresist masking;

deposition of a third insulator layer;

opening contact holes in said third insulator layer, to said first specific region, and to said second specific region of said silicon on insulator layer;

deposition of a metal; and

forming metal contact structures to said first specific region, and to said second specific region of said silicon on insulator layer.

5,610,088

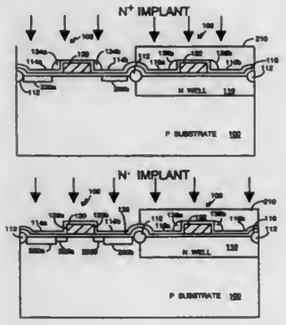
METHOD OF FABRICATING FIELD EFFECT TRANSISTORS HAVING LIGHTLY DOPED DRAIN REGIONS

Kuang-Yeh Chang, Los Gatos, and Yowjuang W. Liu, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 16, 1995, Ser. No. 405,321

Int. Cl.[6] H01L *21/265;21/8238*

U.S. Cl. 437—34 **21 Claims**



1. A method of fabricating a field effect transistor having a lightly doped drain region, comprising the sequential steps of:

(a) providing a substrate having an active region defined by field oxide regions;

(b) providing a gate, having side edges, overlying a portion of said active region;

(c) forming a nitride layer over said substrate including said gate;

(d) forming an oxide layer over said nitride layer;

(e) selectively etching said oxide layer with respect to said nitride layer to form oxide sidewall spacers about the side edges of said gate;

(f) implanting heavily doped source and drain regions into said substrate and about the side edges of said gate using said oxide sidewall spacers as masks; and

(g) implanting the lightly doped drain region about one of the side edges of said gate adjacent to said heavily doped drain region.

5,610,089

METHOD OF FABRICATION OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

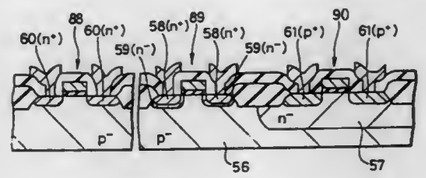
Hidetoshi Iwai, Ohme; Kazumichi Mitsusada, Kodaira; Masamichi Ishihara, Minode-machi; Tetsuro Matsumoto, Higashiyamato; Kazuyuki Miyazawa, Iruma; Hisao Katto, Minode-machi, and Kousuke Okuyama, Kawagoe, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 142,965, Oct. 29, 1993, Pat. No. 5,436,483, which is a continuation of Ser. No. 815,863, Jan. 2, 1992, Pat. No. 5,276,346, which is a continuation of Ser. No. 404,618, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 106,341, Oct. 9, 1987, abandoned, and Ser. No. 390,427, Aug. 4, 1989, abandoned, which is a continuation of Ser. No. 198,597, May 23, 1988, abandoned, which is a continuation of Ser. No. 937,452, Dec. 1, 1986, abandoned, which is a continuation of Ser. No. 686,598, Dec. 26, 1984, abandoned, said Ser. No. 105,341is a division of Ser. No. 825,587, Feb. 3, 1986, Pat. No. 4,717,684. This application Apr. 27, 1995, Ser. No. 429,868

Claims priority, application Japan, Dec. 26, 1983, 58-243801; Feb. 1, 1985, 60-16508

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 437—34 **19 Claims**



14. A method of manufacturing a semiconductor integrated circuit device, comprising the steps of:

providing a semiconductor substrate having a second MISFET forming region and an internal circuit forming region, with a first gate insulating film on said second MISFET forming region, and a first gate electrode of a second MISFET on said first gate insulating film, and with a second gate insulating film on said internal circuit forming region, and a second gate electrode of a first MISFET on said second gate insulating film;

introducing into said second MISFET forming region at least one impurity in self-alignment with said first gate electrode to form respectively at least a first semiconductor region of a first conductivity type such that a pn-junction is formed, under said first gate electrode, between said first semiconductor region and said semiconductor substrate;

introducing into said internal circuit forming region an impurity in self-alignment with said second gate electrode to form a second semiconductor region of said first conductivity type such that a pn-junction is formed, under said second gate electrode, between said second semiconductor region and said semiconductor substrate and such that an impurity concentration of said first semiconductor region is higher than that of said second semiconductor region;

forming a third semiconductor region of said first conductivity type in said internal circuit forming region by introducing an impurity in said internal circuit forming region; and

forming a first bonding pad, on said semiconductor substrate, being electrically connected to said first semiconductor region,

said second semiconductor region being formed between said third semiconductor region and a channel forming region of said first MISFET,

an impurity concentration of said third semiconductor region being higher than that of said second semiconductor region,

said second and third semiconductor regions serving as a drain region of said first MISFET, and

said first semiconductor region serving as a drain region of said second MISFET.

5,610,090

METHOD OF MAKING A FET HAVING A RECESSED GATE STRUCTURE

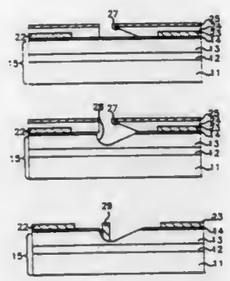
Jun W. Jo, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 232,953, Apr. 25, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,569

Claims priority, application Rep. of Korea, Apr. 27, 1993, 7083/1993

Int. Cl.[6] H01L *21/265;21/20;21/44;21/48*

U.S. Cl. 437—39 **11 Claims**



1. A method of fabricating a field effect transistor having a recessed gate comprising the steps of:

preparing a substrate including, a source electrode and a drain electrode formed thereon;

forming a planarizing layer on the substrate;

forming a feature transfer layer on the planarizing layer;

forming an imaging layer on the feature transfer layer;

patterning the imaging layer into a gate electrode pattern;

etching the feature transfer layer using the imaging layer as a first mask;

removing the imaging layer;

subjecting the planarizing layer to anisotropic etching using the feature transfer layer as a second mask to undercut at the drain electrode side thereof without undercutting at the source electrode side thereof to form an undercut planarizing layer;

forming an asymmetric recessed channel region by etching the substrate using the undercut planarizing layer as a third mask;

depositing a metal layer so as to form a gate electrode on the asymmetric recessed channel region and the feature transfer layer; and

removing the planarizing layer, the feature transfer layer, and the metal layer on the feature transfer layer.

5,610,091

METHOD FOR MANUFACTURING A NON-VOLATILE MEMORY CELL

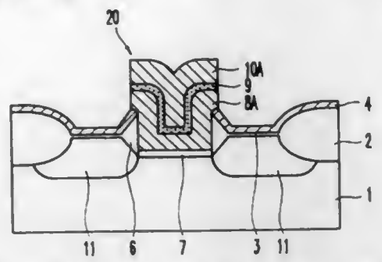
Byung J. Cho, Kyungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 8, 1995, Ser. No. 525,149

Claims priority, application Rep. of Korea, Sep. 8, 1994, 94-22564

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—43 **3 Claims**



1. A method for manufacturing a non-volatile memory cell, comprising the steps of:

sequentially forming a pad oxide layer and a nitride layer on a silicon substrate having a field oxide layer;

patterning said nitride layer so as to expose a selected portion of said pad oxide layer;

forming a cell oxidation layer by oxidizing the selection portion of said pad oxide layer;

etching an exposed portion of said cell oxidation layer by an etching process using said patterned nitride layer as an etch barrier, thereby forming a recess in said silicon substrate and leaving an unexposed portion of said cell oxidation layer;

forming a tunnel oxide layer on said silicon substrate exposed by etching said cell oxidation layer;

sequentially forming a first conductive layer, a dielectric layer and a second conductive layer on the resulting structure after forming said tunnel oxide layer;

forming a stacked gate electrode at the recess by sequentially patterning said second conductive layer, said dielectric layer and said first conductive layer, and

forming source and drain regions by injecting an impurity into said silicon substrate and then annealing said silicon substrate.

5,610,092

METHOD FOR FABRICATING LARGE CAPACITY NAND TYPE ROM WITH SHORT MEMORY CELL GATE LENGTH

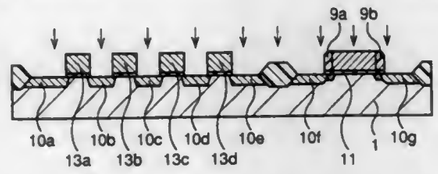
Kazuhiro Tasaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 10, 1996, Ser. No. 644,272

Claims priority, application Japan, May 12, 1995, 7-114322

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 437—48 **7 Claims**



1. A method for fabricating a semiconductor device, comprising the steps of:

forming diffusion layers in a memory cell region and a peripheral transistor region that are separately defined on a semiconductor substrate;

depositing an insulating film on said diffusion layers; and

etching-back said insulating film to remove said insulating film in said memory cell region while forming side walls from said insulating film in said peripheral transistor region, thereby forming an LDD transistor in said peripheral transistor region and cell transistors in said memory cell region in a self-aligned form.

5,610,093

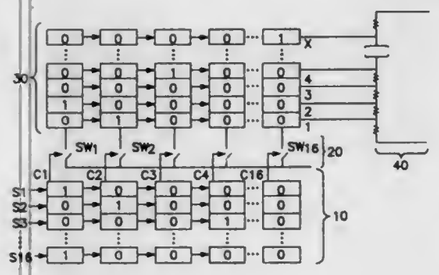
METHOD OF MANUFACTURING A PROGRAMMABLE HYBRID BALANCE NETWORK

Salomon Vulih, Neshanic; George R. Briggs, Princeton, and Thomas D. Housten, Somerville, all of N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 13, 1995, Ser. No. 527,548

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 437—51 **5 Claims**



1. A method of manufacturing an integrated circuit hybrid balance network having a fixed number of predetermined network configurations

where the network includes a high pass filter section, a low pass filter section, and a gain section, and

where each of the sections of the network include one or more switchable circuit elements placed into the network by the selective operation of a switch responsive to a selectively activated one of a plurality of ROM selection lines to thereby configure the network into one of the fixed number of predetermined network configurations, the method comprising the steps of:

a) providing a first NxM ROM matrix with N ROMs for each of M switches in the network, each of the N ROMs being accessible from one of N ROM selection lines to control the selective operation of one or more of the M switches, so that an accessing signal on any one of the N ROM selection lines will control the operation of each of the M switches;

b) selectively programming the first ROM matrix to thereby determine which of the M switches are closed in response to an accessing signal by each of the N ROM selection lines;

c) providing a second ROM matrix having MxO ROMs with M ROMs for each of the O circuit elements, each of the M ROMS being accessible from one of the M switches to control the connection of such switch to one of the O circuit elements; and

d) selectively programming the second ROM matrix to thereby determine which of the M switches are connected to which of O circuit elements;

whereby the number of possible configurations of switchable elements in the manufacturing of a network is increased without increasing the number of available configurations of switchable elements in the manufactured network.

5,610,094

PHOTOELECTRIC CONVERSION DEVICE

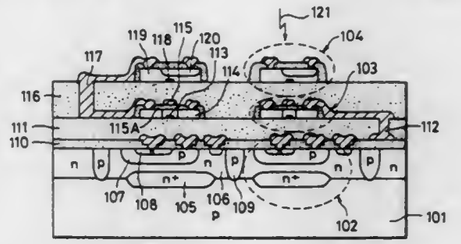
Masaharu Ozaki, Yokohama, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 270,304, Jul. 5, 1994, abandoned, which is a continuation of Ser. No. 93,437, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 970,234, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 815,846, Dec. 31, 1991, abandoned, which is a continuation of Ser. No. 361,830, Jun. 5, 1989, abandoned, which is a continuation of Ser. No. 70,778, Jul. 7, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 475,830

Claims priority, application Japan, Jul. 11, 1986, 61-162129

Int. Cl.[6] H01L *27/02*

U.S. Cl. 437—62 **14 Claims**



1. A method for fabricating a photoelectric conversion device, said method comprising the steps of:

forming a substrate having a first semiconductor element of the photoelectric conversion device therein;

forming, on the substrate, an insulating layer of a first material;

forming, by deposition on a surface of the insulating layer, a seed of amorphous material different from the first material;

selecting a vapor deposition growth process in which the first material of the insulating layer has a nucleation density sufficiently smaller than a nucleation density of the amorphous material that substantially all crystal growth occurs on the amorphous material and substantially no crystal growth occurs on the insulating layer, the seed of amorphous material having an area sized so as to form only one nucleus during crystal growth in the selected vapor deposition crystal growth process;

applying the selected vapor deposition crystal growth process to grow the nucleus from the seed;

continuing the selected vapor deposition crystal growth process to grow, from the nucleus, a thin film single crystal layer over at least a portion of the surface of the insulating layer; and

forming a photoelectric conversion device using the single crystal layer and including the first semiconductor element.

5,610,095

MONOLITHICALLY INTEGRATED CIRCUITS HAVING DIELECTRICALLY ISOLATED, ELECTRICALLY CONTROLLED OPTICAL DEVICES AND PROCESS FOR FABRICATING THE SAME

Martin Zirngibl, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 298,705

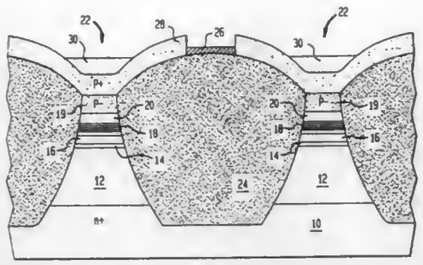
Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—129 **10 Claims**

1. A process for fabricating a monolithically integrated optoelectronic circuit, comprising the steps of:

forming a plurality of electrically controllable optical devices on a compound semiconductor surface;

defining at least one region of semi-insulating material between adjacent optical devices, each region having a strip of dielectric material disposed thereon, to electrically isolate said optical devices from one another; and



epitaxially growing a cap layer of compound semiconductor material over said optical devices, said dielectric material being selected such that said cap layer will not grow thereon.

5,610,096

SEMICONDUCTOR LASER WITH A SELF SUSTAINED PULSATION

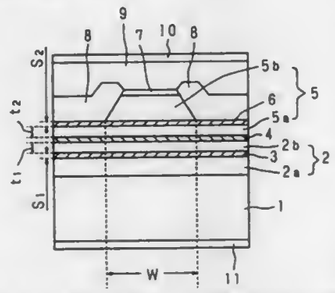
Keiichi Yodoshi; Akira Ibaraki; Masayuki Shono; Shoji Honda; Takatoshi Ikegami; Nobuhiko Hayashi; Koutarou Furusawa; Atushi Tajiri; Toru Ishikawa; Kenichi Matsukawa; Teruaki Miyake; Takenori Goto; Mitsuaki Matsumoto; Daisuke Ide, and Yasuyuki Bessho, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 365,176, Dec. 28, 1994, Pat. No. 5,506,170, which is a division of Ser. No. 147,779, Nov. 4, 1993, Pat. No. 5,416,790. This application Sep. 29, 1995, Ser. No. 536,370

Claims priority, application Japan, Nov. 6, 1992, 4-297178; Feb. 26, 1993, 5-038561; Mar. 2, 1993, 5-041492; Jun. 30, 1993, 5-161925

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—129 **11 Claims**



1. A method for fabricating a semiconductor laser with a self-sustained pulsation, comprising the steps of:

forming by epitaxial growth on a semiconductor substrate of a first conductive type in the order of, a first cladding layer of a compound semiconductor of the first conductive type containing at least Al, a first saturable optical absorbing layer of a compound semiconductor of the first conductive type, a second cladding layer of a compound semiconductor of the first conductive type containing at least Al, an active layer containing a compound semiconductor with Al composition ratio q (with $g \geqq 0$) a third cladding layer of a compound semiconductor containing at least Al of a second conductive type opposite to the first conductive type, a second saturable optical absorbing layer made of a compound semiconductor of the second conductive type, a fourth cladding layer of a compound semiconductor of the second conductive type containing at least Al, and a cap layer of the second conductive type;

an Al composition ratio of each of said first to fourth cladding layers being larger than that of said active layer, a composition ratio of each of said saturable optical absorbing layers being substantially equal to that of said active layer;

forming a striped mask pattern on said cap layer;

etching, using the formed striped mask pattern as a mask, said cap layer and said fourth cladding layer on said second saturable optical absorbing layer to leave a small portion of said fourth cladding layer unetched by an etchant whose etching rate is large regardless of Al composition ratio; and

etching off, using the formed striped mask pattern as a mask, the remaining fourth cladding layer by a selective etchant whose etching rate is smaller for a compound semiconductor with lower Al composition ratio than for a compound semiconductor with higher Al composition ratio to form a striped ridge section.

5,610,097

METHOD FOR FORMING ELECTRODE ON SEMICONDUCTOR

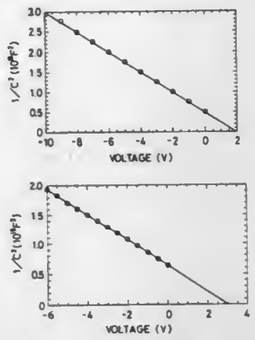
Takashi Shimizu, Kashiwa, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 14, 1996, Ser. No. 615,106

Claims priority, application Japan, Mar. 24, 1995, 7-065561

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—175 **2 Claims**



1. A method for forming electrodes on a semiconductor, comprising introducing at least one reactive oxidizing gas selected from the group consisting of ozone, atomic oxygen, nitrogen dioxide, oxygen ion and oxygen plasma to an oxide semiconductor surface and depositing electrode material on the oxide semiconductor surface without atmospheric exposure of the surface.

5,610,098

N-INP SCHOTTKY DIODE STRUCTURE AND A METHOD OF MAKING THE SAME

Wen C. Huang; Tan F. Lei, and Chung L. Lee, all of Hsinchu, Taiwan, assignors to National Science Council, Talpei, Taiwan

Division of Ser. No. 426,643, Apr. 21, 1995, Pat. No. 5,517,054, which is a continuation of Ser. No. 255,163, Jun. 7, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,114

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—176 **3 Claims**

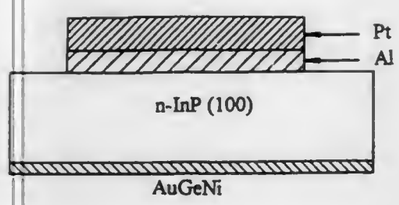
1. A method of manufacturing all n-InP Schottky diode structure comprising the following steps:

a) forming an insulating layer on a surface of an n-InP substrate having a native $InPO_4$ on its surfaces;

b) forming contact patterns on the insulating layer by photolithography with a photoresist composition;

c) etching the patterned insulating layer to form contact windows on the n-InP substrate;

d) depositing an aluminum layer having a thickness of from about 80 Å to about 120 Å on the surface having contact windows of the resulting n-InP substrate of step c);



e) depositing a platinum layer on the aluminum layer;

f) dissolving the photoresist composition patterns under the aluminum layer with a solvent so that the portions of the aluminum and the platinum deposited on the photoresist composition patterns are removed and the portions of the aluminum and the platinum deposited in the contact windows remain on the n-InP substrate; and

g) annealing the resulting Pt/Al/n-InP contact of step f.

5,610,099

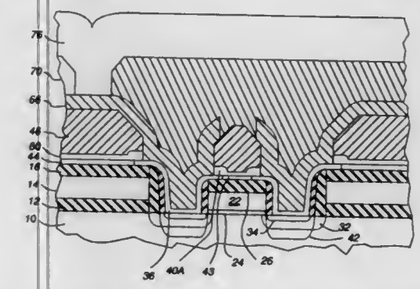
PROCESS FOR FABRICATING TRANSISTORS USING COMPOSITE NITRIDE STRUCTURE

E. Henry Stevens; Richard A. Bailey, and Thomas C. Taylor, all of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Filed Jun. 28, 1994, Ser. No. 267,278

Int. Cl.[6] H01L *21/283*

U.S. Cl. 437—192 **11 Claims**



8. In the fabrication of an integrated circuit transistor having an electrode to which electrical contact is to be made, the electrode being proximate to another structure of the integrated circuit to which electrical contact is not to be made and wherein said another structure is surrounded by dielectric layers, a process comprising the steps of:

establishing a first nitride layer that completely covers the electrode and overlies a first region that includes the electrode and the other structure, the first nitride layer and the electrode being formed by in-situ reaction of a deposited transition metal followed by reactive-sputter deposition of a transition metal nitride or refractory metal nitride;

establishing a second nitride layer over the first nitride layer

patterning the second nitride layer to leave portions of the second nitride layer covering the electrode; and

oxidizing the first nitride layer using the portions of said second layer as a mask, so that the exposed portions of the first nitride layer are converted into an insulative layer and;

establishing an additional nitride layer over said first and second nitride layers, said additional nitride layer providing oxidation protection for said first nitride layer;

depositing a thick dielectric layer over said nitride layers;

performing a high temperature reflow anneal to said thick dielectric layer in an oxidizing ambient;

etching said thick dielectric layer and nitride layers to open a window over said electrode, so that a contact material can be placed in said window to become electrically coupled to said electrode;

depositing a conductive refractory material such that it becomes electrically coupled to said electrode, patterning said conductive refractory material by photolithography and etching to form a conductive interconnect layer;

depositing an additional thick dielectric layer over said conductive refractory material;

performing a high temperature reflow anneal to said additional thick dielectric layer an oxidizing or non-oxidizing ambient;

etching said additional thick dielectric layer to open a window over said conductive refractory interconnect; and

depositing and patterning a final conductive interconnect layer.

5,610,100

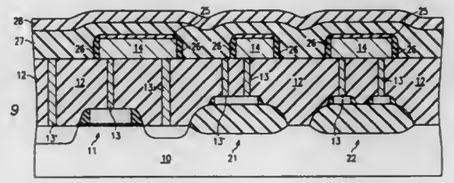
METHOD FOR CONCURRENTLY FORMING HOLES FOR INTERCONNECTION BETWEEN DIFFERENT CONDUCTIVE LAYERS AND A SUBSTRATE ELEMENT OR CIRCUIT ELEMENT CLOSE TO THE SUBSTRATE SURFACE

Hiroyuki Kurino, and Yoichi Miyai, both of Ibaraki, Japan, assignors to Texas Instruments Inc., Dallas, Tex.

Filed Apr. 13, 1995, Ser. No. 421,708

Int. Cl.[6] H01L *21/283*

U.S. Cl. 437—195 **14 Claims**



1. A method for concurrently forming electrical connections between areas proximate a semiconductor substrate surface and both a first and a second conductive layer, said method comprising the steps of:

a.) forming a first insulator layer over a surface of a semiconductor substrate and over any circuit element formed thereon;

b.) patterning and etching holes in said first insulator region to expose regions to which electrical contact is to be made;

c.) forming concurrently a connection plug of conductive material in said holes, said electrical material filling each hole and forming electrical connections with said exposed areas;

d.) depositing over said first insulator layer and said filled holes said first conductive layer;

e.) forming a second insulating layer over said first conductive layer;

f.) patterning and etching said second insulating layer and said first conductive layer to expose selected filled holes in said first conductive layer;

g.) forming a side wall insulator layer over said patterned and etched first conductive and second insulating region;

h.) etching said side wall insulator layer to expose said selected filled holes in said first insulating level; and

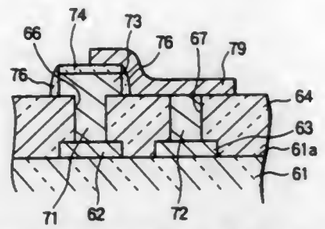
i.) depositing said second conductive layer.

5,610,101

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING IMPROVED COVERAGE WITH INCREASED WIRING LAYERS

Kuniaki Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 314,968, Sep. 29, 1994, Pat. No. 5,554,864. This application Jun. 2, 1995, Ser. No. 459,780
Claims priority, application Japan, Oct. 18, 1993, 5-258786
Int. Cl.[6] H01L *21/441*
U.S. Cl. 437—195 **23 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing a base film having a principal surface;

(b) forming first and second conductor sections on/over the principal surface of said base film;

(c) depositing an interlayer insulating region having an upper surface on the principal surface of said base film, said interlayer insulating region covering said first and said second conductive sections;

(d) simultaneously boring first and second contact holes in said interlayer insulating region, the first and the second contact holes reaching said first and said second conductive sections, respectively;

(e) depositing a first conductive material in the first and the second contact holes and on the upper surface of said interlayer insulating region;

(f) covering said first conductive material with an upper insulating material;

(g) patterning said upper insulating material and said first conductive material to embed first and second conductors in the first and the second contact holes, to form a first conductive region having a side surface on the upper surface of said interlayer insulating region with the first conductive region connected with the first conductor, to cover the first conductive region with an upper insulating film having an upper surface, and to expose the upper surface of said interlayer insulating region and an upper surface of the second conductor;

(h) depositing a side-wall insulating material on the upper surface of said interlayer insulating region, on the upper surface of said second conductor, on the upper surface of said upper insulating film, and on the side surface of said first conductive region;

(i) etching said side-wall insulating material by means of anisotropic dry etching process to form a side-wall insulating film on the side surface of said first conductive region and to expose the upper surface of said interlayer insulating region and the upper surface of the second conductor;

(j) forming a second conductive material on the upper surface of said interlayer insulating region, on the upper surface of said second conductor, on the upper surface of said upper insulting film, and on said side-wall insulating film; and

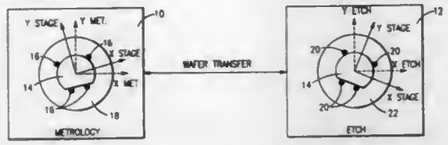
(k) etching said second conductive material to form a second conductive region on the upper surface of said interlayer insulating region so as to connect the second conductive region with the upper surface of the second conductor, said second conductive region covering the upper insulating film and the side wall insulating film, whereby said second conductive region overlies said first conductive region with said second conductive region isolated from said first conductive region by said upper insulating film and said side-wall insulating film.

5,610,102

METHOD FOR CO-REGISTERING SEMICONDUCTOR WAFERS UNDERGOING WORK IN ONE OR MORE BLIND PROCESS MODULES

George J. Gardopee, Southbury; Paul J. Clapis, Sand Hook; Joseph P. Prusak, Danbury, and Sherman K. Poultney, Ridgefield, all of Conn., assignors to Integrated Process Equipment Corp., Phoenix, Ariz.

Filed Nov. 15, 1993, Ser. No. 152,780
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—225 **18 Claims**



1. A method for co-registering a semiconductor wafer undergoing work in one or more blind process modules, said method comprising the steps of:

registering a semiconductor wafer to a first stage in a first blind process module in a consistent but arbitrary manner with respect to the coordinate axes of said first stage and the coordinate axes of said first blind process module;

patterning said registered semiconductor wafer in said first blind process module;

registering said patterned semiconductor wafer to a second stage in a second blind process module in a consistent but arbitrary manner with respect to the coordinate axes of said second stage and the coordinate axes of said second blind process module;

detecting the location of said pattern in said registered patterned semiconductor wafer in said second blind process module; and

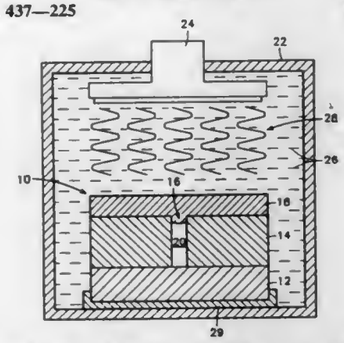
calculating a coordinate transform between coordinate axes of said first blind process module and said second blind process module based on the location of said detected pattern to determine the relative location of the coordinate axes of said first blind process module with respect to the coordinate axes of said second blind process module, and vice versa, thereby co-registering said semiconductor wafer to both said first blind process module and said second blind process module.

5,610,103

ULTRASONIC WAVE ASSISTED CONTACT HOLE FILLING

Zheng Xu, Foster City, and Fusen Chen, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Dec. 12, 1995, Ser. No. 570,762
Int. Cl.[6] H01L *21/463*
U.S. Cl. 437—225 **8 Claims**



1. A method of substantially eliminating voids caused when material previously deposited in a vacuum over a surface of a substrate having holes extending through a film layer thereon fills a top portion of the holes but not a bottom portion thereof, the method comprising the steps of:

(a) placing the substrate in an ultrasonic processing chamber, said chamber being filled with a fluid and including an ultrasonic source; and,

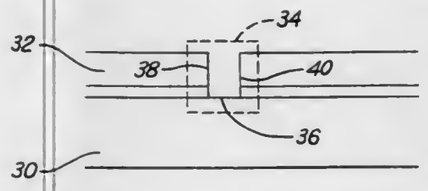
(b) generating ultrasonic waves in the fluid with the ultrasonic source, said waves traveling through said fluid to impinge on an exposed surface of the material deposited over the surface of the substrate, thereby causing the material to flow into the untilled bottom portion of the holes.

5,610,104

METHOD OF PROVIDING A MARK FOR IDENTIFICATION ON A SILICON SURFACE

Peter Mitchell, Bloomington, Minn., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed May 21, 1996, Ser. No. 664,252
Int. Cl.[6] H01L *21/465*
U.S. Cl. 437—228 **19 Claims**



1. A method for providing a mark on a silicon surface comprising the steps of:

removing a section of an insulating layer on said silicon surface to expose said silicon surface, said section resembling said mark, and

oxidizing said exposed silicon surface to form an oxidation product.

5,610,105

DENSIFICATION IN AN INTERMETAL DIELECTRIC FILM

Landon B. Vines; Sigmund A. Koenigseder, both of San Antonio; John L. Cain, Taylor; Chang-Ou Lee, and Felix Fujishiro, both of San Antonio, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 967,472, Oct. 23, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 258,180
Int. Cl.[6] H01L *21/316*
U.S. Cl. 437—235 **18 Claims**

1. A process for preparing a dielectric layer on a silicon wafer, said process comprising:

(a) depositing a dielectric layer on a silicon wafer using water and TEOS in a plasma-enhanced chemical vapor deposition apparatus;

(b) thermally heating the silicon wafer including the dielectric layer produced by step (a) under reduced pressure; and

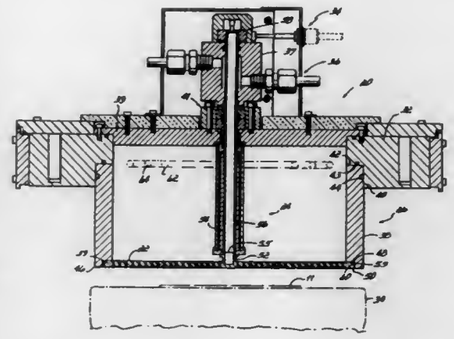
(c) annealing the dielectric layer on the silicon wafer of step (b) under an atmosphere including oxygen gas.

5,610,106

PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION OF TITANIUM NITRIDE USING AMMONIA

Robert F. Foster, Phoenix; Joseph T. Hillman, Scottsdale, and Rikhit Arora, Mesa, all of Ariz., assignors to Sony Corporation, Tokyo, Japan, and Materials Research Corporation, Park Ridge, N.J.

Filed Mar. 10, 1995, Ser. No. 401,859
Int. Cl.[6] H01L *21/465;21/441*
U.S. Cl. 437—245 **8 Claims**



1. A method of depositing titanium nitride onto a substrate by chemical vapor deposition comprising establishing a plasma of reacting gases wherein said reacting gases are titanium tetrachloride and ammonia, and wherein said plasma is created at a showerhead spaced from said substrate at a distance of about 0.25 to about 3 inches;

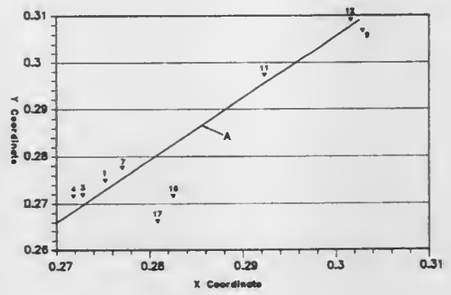
contacting said substrate with said plasma wherein titanium nitride is deposited on said substrate.

5,610,107

BLUE HIGH SILICA GLASS

Paul S. Danielson, Corning, N.Y.; Sheryl L. Hultman, Martinsburg, W. Va., and Christine C. Wolcott, Horseheads, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,126
Int. Cl.[6] C03C *3/06;1/10*
U.S. Cl. 501—54 **15 Claims**



1. A high silica glass exhibiting a blue color by transmitted light that contains, as essential components in individual amounts below 1% by weight, the oxides of cobalt, aluminum, and at least one oxide selected from the group consisting of calcium, strontium, barium and potassium, and wherein the cobalt is predominantly present in tetrahedral coordination with oxygen.

5,610,108

REDUCING MELT BOROSILICATE GLASS HAVING IMPROVED UV TRANSMISSION PROPERTIES AND WATER RESISTANCE AND METHODS OF USE

Eckhart Watzke; Thomas Kloss, both of Jena; Peter Brix, Mainz, and Franz Ott, Mitterteich, all of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Oct. 7, 1994, Ser. No. 319,969

Claims priority, application Germany, Oct. 15, 1993, 43 35 204.9

Int. Cl.[6] C03C *3/091;4/08*

U.S. Cl. 501—59 6 Claims

1. A borosilicate glass made by melting under reducing conditions and having a UV transmittance of at least 85% for ultraviolet radiation having a wavelength of 254 nm for a layer thickness of 1 mm of said glass, a water-resistance of less than 100 micrograms Na_2O per gram of glass powder according to ISO 719 and a thermal expansion coefficient $\alpha_{20/300}$ of from 5 to $6\times 10^{-6}K^{-1}$ and comprising from 58 to 65% by weight SiO_2, from 18 to 20.5% by weight B_2O_3, from 8.1 to 10.4% by weight Al_2O_3, from 0 to 1% by weight CaO, from 0 to 2% by weight BaO, from 0 to 2% by weight SrO, from 0 to 1.5% by weight Li_2O, from 5.5 to 8.5% by weight Na_2O, from 0 to 3% by weight K_2O, from 0 to 2% by weight fluorine, up to 10 ppm of iron oxides including iron (III) oxide and a sufficient amount of a reducing agent to maintain the iron (III) oxide concentration less than 2 ppm, and

wherein a sum total content of all of alkali metal oxides present including said Li_2O, said Na_2O and said K_2O is not-greater than 10%, a sum total content of said CaO, said BaO and said SrO is not greater than 3% all values of said % by weight are on an oxide basis and a molar ratio of Al_2O_3:Na_2O is from 0.6 to 1.

5,610,109

POROUS CERAMIC MATERIAL

Marc A. Anderson, and Lixin Chu, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 196,341, Feb. 14, 1994, Pat. No. 5,439,624. This application Jun. 2, 1995, Ser. No. 458,932

Int. Cl.[6] C04B *38/00;35/624*

U.S. Cl. 501—80 17 Claims

1. A porous ceramic material formed according to a process comprising the steps of:

providing an acidified silica sol comprising particles comprising silicon dioxide, each of said particles having a surface comprising silicon atoms and oxygen atoms;

combining the acidified sol with a sufficient amount of a solution comprising atoms of a metal to form a substituted sol wherein a portion of the silicon atoms at the surface of each of the silicon dioxide particles is replaced by atoms of the metal;

drying the substituted sol to form a porous gel comprising packed particles having therebetween a plurality of pores; and

firing the gel until a porous ceramic material having a narrowly distributed mean pore size of about 20 Angstroms or less is formed.

5,610,110

SINTERED SIC SHAPED ARTICLES AND MECHANICAL PACKINGS COMPRISED THEREOF

Olivier Azema, Tarbes, and Michel Bougoin, Aurelhan, both of France, assignors to Ceramiques & Composites S.A., Bazet, France

Continuation of Ser. No. 137,780, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 777,920, Oct. 17, 1991, abandoned. This application May 17, 1995, Ser. No. 442,968

Claims priority, application France, Oct. 17, 1990, 90 12783

Int. Cl.[6] C04B *35/56*

U.S. Cl. 501—88 19 Claims

1. A porous silicon carbide sintered shaped article having a total pore volume ranging from 4% to 18% thereof, the pores of which being essentially spherical in shape, essentially closed and having an average diameter ranging from greater than 50 to 200 μm.

5,610,111

CERAMIC COMPOSITION FOR THERMISTOR

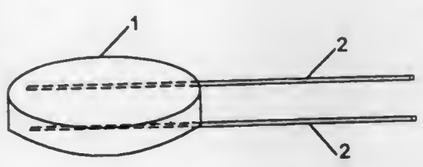
Masaki Iwaya, and Kyohei Hayashi, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 21, 1994, Ser. No. 345,684

Claims priority, application Japan, Nov. 25, 1993, 5-321428; Dec. 29, 1993, 5-350190

Int. Cl.[6] C04B *35/42;35/505*

U.S. Cl. 501—136 7 Claims



1. A ceramic composition for a thermistor comprising a compound represented by a chemical formula

$$(Y_{1-x}Sr_x)(Cr_{1-y-z}Fe_yTi_z)O_3$$

where $0.351\geqq x\geqq 0.01$,
$0.4\geqq y/(1-y-z)\geqq 0.05$, and
$0.35\geqq z\geqq 0.025$.

2. A ceramic composition for a thermistor comprising a compound represented by a chemical formula

$$((Y_{1-w}Sm_w)_{1-x}Sr_x)(Cr_{1-y-z}Fe_yTi_z)O_3$$

where $1.0\geqq w>0$,
$0.351\geqq x\geqq 0.01$,
$0.4\geqq y/(1-y-z)\geqq 0.05$, and
$0.35\geqq z\geqq 0.025$.

5,610,112

METHOD FOR MODIFYING A CATALYST

Rudolph M. Lago, Yardley, Pa.; David O. Marler, Deptford, N.J., and Sharon B. McCullen, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 42,431, Apr. 5, 1993, Pat. No. 5,349,144. This application Jun. 23, 1994, Ser. No. 264,287

Int. Cl.[6] B01J *29/06*

U.S. Cl. 502—63 12 Claims

1. A method for modifying a catalytic molecular sieve comprising pre-selectivating the molecular sieve with a first silicon-containing compound selected from the group consisting of silicones, tetraalkoxy silanes, and organoamine silane polymers, calcining and subsequently steaming at about 200° C. to about 400° C.

5,610,113

PROCESS FOR THE PREPARATION OF α-TOCOPHEROL DERIVATIVES, AND CATALYST

Makoto Matsui, and Hisashi Yamamoto, both of Aichi, Japan, assignors to Eisai Co., Ltd., Japan

Division of Ser. No. 419,407, Apr. 10, 1995. This application Dec. 18, 1995, Ser. No. 574,329

Claims priority, application Japan, Apr. 12, 1994, 6-096994; Sep. 1, 1994, 6-208358

Int. Cl.[6] B01J *21/14*

U.S. Cl. 502—84 1 Claim

1. A catalyst which comprises scandium saponite.

5,610,114

CATALYST FOR THE POLYMERIZATION OF DIOLEFINS, METHOD FOR ITS PREPARATION, AND ITS USE FOR THE PREPARATION OF POLYMERS

Pierre Robert, Clermont-Ferrand, and Roger Spitz, St-Symphorien-D'Ozon, both of France, assignors to Compagnie Generale Des Estab. Michelin-Michelin & Cie, Clermont-Ferrand Cedex, and Elf Atochem S.A., Puteaux, both of France

Continuation of Ser. No. 156,029, Nov. 19, 1993, abandoned. This application Aug. 2, 1995, Ser. No. 510,406

Claims priority, application France, Nov. 23, 1992, 92 14145

Int. Cl.[6] C08F *4/52*

U.S. Cl. 502—115 20 Claims

1. A supported catalyst comprising metal atoms borne by the support, wherein the catalyst comprises the reaction product of:

a) a solid support which consists essentially of magnesium dihalide;

b) a swelling agent of the support, wherein the swelling agent is an ether;

c) at least one carboxylic acid salt of a metal selected from the group consisting of rare-earth metals having an atomic number of between 57 and 71 in Mendelyeev's periodic table of elements and a metal having an atomic number of 92, wherein the carboxylic acid moiety thereof has from 2 to 12 carbon atoms; and

d) a halogenation agent selected from the group consisting of: halogenated compounds of aluminum represented by the formula X_nAlR_{3-n} in which X represents chlorine, bromine, iodine or fluorine atoms, Al represents aluminum, R represents an alkyl radical having one to fifteen carbon atoms, and n represents a number having a value of between 1 and 3; halogenated compounds not containing aluminum that have an exchangeable labile halogen; and if the halogenation agent is not a halogenated derivative of aluminum,

(i) at least one organic derivative of aluminum represented by the formula $X_mAl(R')_{3-m}$ in which X represents a halogen atom, Al represents aluminum, R' a hydrogen atom or an alkyl radical having from one to eight carbon atoms, the substituents R' however not all representing a hydrogen atom simultaneously, m represents the value 0, 1 or 2, in which the organic derivative of aluminum is necessarily present when the halogenation agent is a halogen compound not containing aluminum and optionally present when the halogenation agent contains aluminum,

wherein during the reaction the swelling agent spreads the lattice planes of the support, and after the reaction the swelling agent is extracted from the support.

5,610,115

ORGANIC CARRIER SUPPORTED METALLOCENE CATALYST FOR OLEFIN POLYMERIZATION

Gazuo Soga, Ishigawa, Japan; Hyun-joon Kim, Daejun, Rep. of Korea; Sang-kyun Lee, Daejun, Rep. of Korea; Min-chul Jung, Daejun, Rep. of Korea; Byung-hee Son, Daejun, Rep. of Korea; Wuozmi Thosiya, Ishigawa, Japan; Irai Thakhasi, Ishigawa, Japan, and Nishida Hiroro, Ishigawa, Japan, assignors to Samsung General Chemicals Co., Ltd., Rep. of Korea

Filed Jan. 16, 1996, Ser. No. 585,694

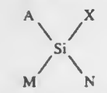
Claims priority, application Rep. of Korea, Jul. 20, 1995, 95-21312; Jul. 20, 1995, 95-21313

Int. Cl.[6] C08F *4/649*

U.S. Cl. 502—152 7 Claims

1. A process for preparing an organic carrier supported metallocene catalyst for olefin polymerization, which comprises:

preparing a ligand complex of a silicone compound having at least one halogen, an alkyl group and a cycloalkanedienyl group, represented by the general formula(I):



(I)

wherein A is a halogen or a lower alkyl of C_1–C_6, X is halogen, a lower alkoxy of C_1–C_6 or a phenoxy, and M and N are selected from the group consisting of cyclopentadienyl, indenyl, fluorenyl, alkyl-substituted indenyl, and alkyl-substituted fluorenyl, and are the same or different from each other;

activating an organic carrier with a strong base containing a metal atom selected from the group consisting of Li, Na, K and Mg;

reacting said activated organic carrier with said ligand complex of a silicone compound, wherein said ligand is supported on said activated organic carrier; and

reacting said organic carrier supported ligand with a compound of a transition metal of Group IVb of the Periodic Table or Lanthanides of Atomic Number 58-71.

5,610,116

CATALYST CARRIER AND METHOD FOR PRODUCING SAME

Waltraud Werdecker, Hanau; Rolf Gerhardt, Hammersbach, and Wolfgang Krock, Maintal, all of Germany, assignors to Heraeus Quarzglas GmbH, Hanau, Germany

PCT No. PCT/EP93/03440, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO94/13399, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 7, 1993, Ser. No. 284,500

Claims priority, application Germany, Dec. 15, 1992, 42 42 227.2

Int. Cl.[6] B01J *21/08;* C04B *35/64*

U.S. Cl. 502—232 19 Claims

1. Catalyst support comprising a gas-permeable support body with a porous surface layer wherein the support body and the surface layer form a chemically and physically uniform structure shaped in one common procedure and having an SiO_2content of at least 99 wt. % and a specific surface area between 5 m^2/g and 50 m^2/g, said support body having an alkali and alkaline earth content of no more than 200 ppm.

8. Method for preparing a catalyst support comprising the following steps

forming a plastic dough comprising silica particles having an SiO_2 content of at least 99.5%, a fluid, a binding agent, and plasticizers, said dough having an alkali and alkaline earth content of not more than 200 ppm,

extruding said dough to form a monolithic greenware, and

sintering said greenware at a temperature in the range of 800° C. to 1400° C.

5,610,117

CATALYST FOR PURIFICATION OF DIESEL ENGINE EXHAUST GAS

Makoto Horiuchi, and Masahito Kida, both of Hyogo, Japan, assignors to ICT Co., Ltd., Osaka-fu, Japan

Filed Feb. 22, 1995, Ser. No. 392,381
Int. Cl.[6] B01J *23/32*
U.S. Cl. 502—324 **25 Claims**

1. A catalyst for purification of diesel engine exhaust gas, which comprises having a component of group A comprising the two elements of iron and manganese and a refractory inorganic oxide and a catalytic component of group B comprising at least one noble metal selected from the group consisting of palladium, platinum, and rhodium and a refractory inorganic oxide deposited in the form of a single layer on a refractory three-dimensional structure, wherein said refractory inorganic oxide has an average particle diameter in the range of from 0.1 to 5 μm and a BET surface area in the range of from 1 to 200 m^2/g.

5,610,118

ABRASION RESISTANT THERMOSENSITIVE RECORDING ELEMENT

Albert H. Smith, Carrollton, Tex., assignor to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 179,542, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 781,557, Oct. 22, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 366,395
Int. Cl.[6] B41M *5/28*
U.S. Cl. 503—214 **24 Claims**

1. A thermosensitive recording element having improved abrasion resistance, said element comprising:

(a) a support;

(b) a first coating composition layer consisting essentially of an organic polymeric binder and a substantially colorless electron donating dye precursor, said dye precursor present in the amount of about 1 to 15% by weight based on the weight of the coating composition; and

(c) a second coating composition layer consisting essentially of an organic polymeric binder compatible with the binder in (b) and an electron accepting compound, said electron accepting compound present in the amount of about 50 to 500% by weight based on the weight of said dye precursor;

said organic polymeric binder in said first and second layers are water soluble binders having a molecular weight of 20,000 to 200,000 and are each applied from aqueous solutions having a concentration of 1 to 20% by weight;

wherein said first layer is interposed between said support and said second layer.

5,610,119

THERMAL TRANSFER IMAGE RECEIVING SHEET

Takeshi Ueno; Katsuyuki Oshima; Mikio Asajima; Mineo Yamauchi; Kazunobu Imoto; Hidetake Takahara, and Jitsuhiko Ando, all of Tokyo-to, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

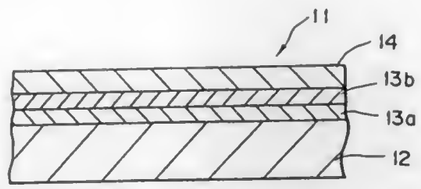
Continuation of Ser. No. 160,411, Dec. 1, 1993, abandoned, which is a division of Ser. No. 887,482, May 22, 1992, Pat. No. 5,318,943. This application Dec. 19, 1995, Ser. No. 575,014

Claims priority, application Japan, May 30, 1991, 3-153804; May 27, 1991, 3-149294; May 27, 1991, 3-149295; May 28, 1991, 3-150910; Jul. 1, 1991, 3-185798; Jul. 24, 1991, 3-206208; Jul. 30, 1991, 3-211438
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **8 Claims**

1. A thermal transfer image receiving sheet comprising:

a substrate sheet;

a bubble-containing layer provided on at least one side surface of the substrate sheet containing bubbles formed by foaming microcapsules and an adhesive;



an intermediate layer coated on a surface of the bubble-containing layer; and

a dye receptor layer provided on a surface of the intermediate layer.

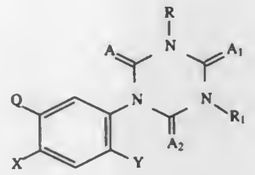
5,610,120

1-(3-HETEROCYCLYLPHENYL)-S-TRIAZINE-2,4,6-OXO OR THIOTRIONE HERBICIDAL AGENTS

Alvin D. Crews, Jr., Voorhees; Philip M. Harrington, Mercer; Gary M. Karp, Mercer; Mark C. Manfredi, Mercer, and Michael A. Guaciaro, Hightstown, all of N.J., assignors to American Cyanamid Company, Madison, N.J.

Filed Jun. 2, 1995, Ser. No. 458,639
Int. Cl.[6] A01N *43/82;43/90;43/66;43/707*
U.S. Cl. 504—191 **10 Claims**

1. A method for controlling undesirable plant species which comprises applying to the foliage of said plants or to the soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having the structural formula



wherein

X and Y are each independently hydrogen, halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $S(O)_mR_2$;

m is an integer of 0, 1 or 2;

R_2 is C_1–C_4alkyl or C_1–C_4haloalkyl;

R is hydrogen, C_1–C_6alkyl, C_2–C_{12}alkoxyalkyl, C_3–C_{12} alkylcarbonylalkyl, C_3–C_{12}haloalkylcarbonylalkyl, C_3–C_{12}alkoxycarbonylalkyl, C_3–C_{12}haloalkoxycarbonylalkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, an alkali metal, phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or benzyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups;

R_1 is hydrogen, C_3–C_6alkenyl, C_3–C_6alkynyl, cyano, C_1–C_2alkyl optionally substituted with one or more halogen atoms, or one cyano, $C(O)R_3$, $C(W)R_4$, $OC(O)R_5$, $CH_2OC(O)R_5$, OR_4, CH_2OR_4 or $CR_6(OR_7)_2$ group, or one phenyl group optionally substituted with one to three halogen, C_1–C_4 alkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups;

R_3 is OH, OR_8, SR_8, or NR_9R_{10};

W is O, NOR_9, $NCOR_9$ or $NNHCONH_2$;

R_4, R_5 and R_6 are each independently hydrogen, C_1–C_4alkyl or C_1–C_4haloalkyl;

R_7 is C_1–C_4alkyl;

R_8 is C_1–C_6alkyl optionally substituted with C_1–C_4alkoxy, C_1–C_4alkylthio, halogen, hydroxy, C_3–C_6cycloalkyl, furyl or

phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups,

C_3–C_6alkenyl optionally substituted with C_1–C_4alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,

C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen,

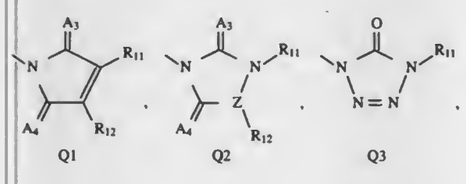
C_3–C_6cycloalkyl,

$N{=}C(R_4R_5)$, or

alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation;

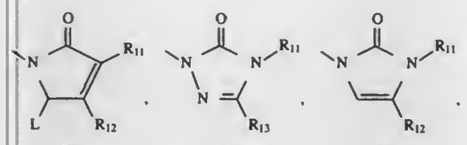
R_9 and R_{10} are each independently hydrogen, C_1–C_6alkyl, benzyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4 haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;

Q is selected from


Q1

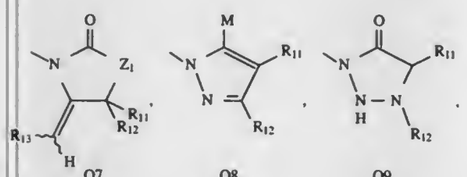
Q2

Q3


Q4

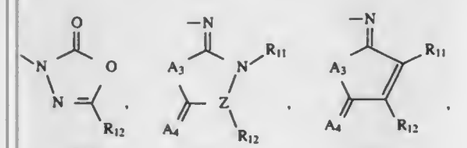
Q5

Q6


Q7

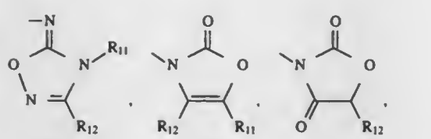
Q8

Q9


Q10

Q11

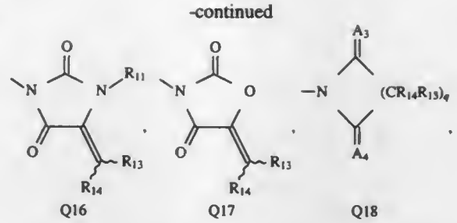
Q12

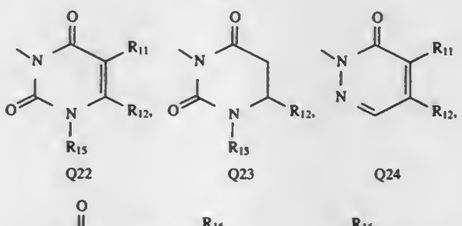

Q13

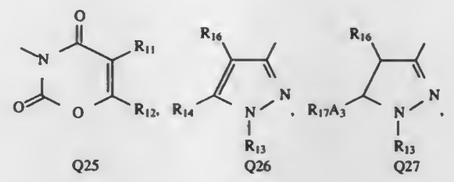
Q14

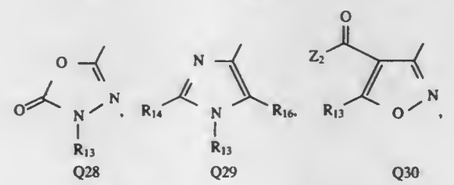
Q15

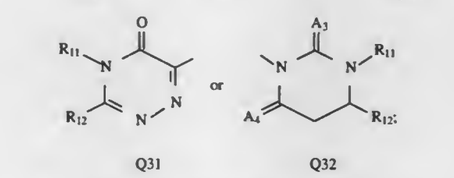
-continued


Q16 Q17 Q18 Q19 Q20 Q21


Q22 Q23 Q24


Q25 Q26 Q27


Q28 Q29 Q30


Q31 or Q32

R_{11} and R_{12} are each independently hydrogen, C_1–C_6alkyl optionally substituted with one or more halogen atoms, or C_3–C_6cycloalkyl optionally substituted with one or more halogen atoms, and when R_{11} and R_{12} are taken together with the atoms to which they are attached, they represent a four- to seven-membered saturated or unsaturated ring optionally interrupted by O, S(O), or N, and optionally substituted with one to three methyl groups or one or more halogen atoms;

R_{13}, R_{14} and R_{15} are each independently hydrogen, C_1–C_3alkyl or C_1–C_3haloalkyl;

R_{16} is hydrogen or halogen;

R_{17} is C_1–C_4alkyl or C_1–C_4haloalkyl;

A, A_1, A_2, A_3 and A_4 are each independently O or S;
L is hydroxy, halogen, C_1–C_3alkoxy or C_1–C_3alkylthio;
M is halogen or C_1–C_3alkyl;
Z is N or CH;
Z_1 is NR_9 or O;
Z_2 is OR_7 or NR_9R_{10};
r is an integer of 0, 1 or 2; and
q is an integer of 2, 3 or 4.

5,610,121

HETEROCYCLICALLY DISUBSTITUTED SULPHONYLAMINO(THIO)CARBONYL COMPOUNDS

Hans-Jochem Riebel, Wuppertal; Ernst R. F. Gesing, Erkrath-Hochdahl; Klaus-Helmut Müller, Düsseldorf; Peter Müller, Langenfeld; Kurt Findeisen; Hans-Joachim Santel, both of Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/01227, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/24482, PCT Pub. Date Dec. 9, 1993

PCT Filed May 17, 1993, Ser. No. 335,797

Claims priority, application Germany, May 29, 1992, 42 17 719.7

Int. Cl.[6] A01N *43/66;43/54;* **C07D** *239/42;251/40*

U.S. Cl. 504—230 **4 Claims**

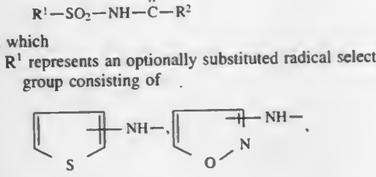
1. Heterocyclically disubstituted sulphonylaminocarbonyl compounds of the general formula (I)



(I)

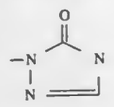
in which

R^1 represents an optionally substituted radical selected from the group consisting of



and

R^2 represents the 2,4-dihydro-3H-1,2,4-triazol-3-on-2-yl radical of the formula



which is optionally substituted in its 4-position, its 5-position, or both, and wherein the substituents for R^1 and R^2 are selected from the group consisting of fluorine, chlorine, bromine, iodine, cyano, nitro, carboxyl, carbamoyl, amino, hydroxyl, formyl; C_1–C_5-alkyl, C_5–C_6-alkanediyl, C_2–C_5-alkenyl, C_2–C_5-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_3-alkyl, C_1–C_5-alkoxy, C_2–C_5-alkenyloxy, C_2–C_5-alkinyloxy, C_1–C_5-alkylthio, C_2–C_5-alkenylthio, C_2–C_5-alkinylthio, C_1–C_5-alkylsulphinyl, C_1–C_5-alkylsulphonyl, C_1–C_5-alkylamino, di-(C_1–C_3-alkyl)-amino, C_1–C_5-alkyl-carbonyl, C_3–C_6-cycloalkyl-carbonyl, C_1–C_5-alkoxy-carbonyl, C_1–C_2-alkoxy-C_1–C_2-alkoxy-carbonyl, di-(C_1–C_3-alkyl)-amino-carbonyl, dimethoxyphosphoryl, diethoxyphosphoryl, dimethoxythiophosphoryl and diethoxythiophosphoryl, each of which is optionally substituted by fluorine or chlorine; phenyl, phenoxy, phenylthio, phenylsulphinyl, phenylsulphonyl, phenyl-C_1–C_3-alkyl and phenyl-C_2–C_3-alkenyl, each of which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, nitro, carboxyl, carbamoyl, amino, hydroxyl, formyl, C_1–C_4-alkyl (which is optionally substituted by fluorine or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine or chlorine), C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl (each of which is optionally substituted by fluorine and/or chlorine) and C_1–C_4-alkoxycarbonyl, and salts of the compounds of the formula (I).

5,610,122

3-ARYL-4-HYDROXY-DELTA3-DIHYDROFURANONE DERIVATIVES

Reiner Fischer, Monheim; Thomas Bretschneider, Lohmar; Bernd-Wieland Krüger, Bergisch Gladbach; Hans-Joachim Santel; Markus Dollinger, both of Leverkusen; Ulrike Wachendorff-Neumann, Monheim, and Christoph Erdelen, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

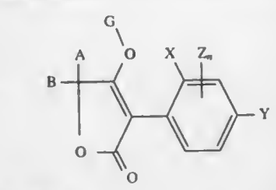
Filed Sep. 9, 1994, Ser. No. 303,987

Claims priority, application Germany, Sep. 17, 1993, 43 31 672.7; Nov. 5, 1993, 43 37 853.6

Int. Cl.[6] A01N *43/08*

U.S. Cl. 504—251 **14 Claims**

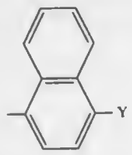
1. 3-Aryl-4-hydroxy-Δ^3-dihydrofuranone derivatives of the general formula (I)



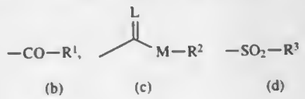
(I)

in which

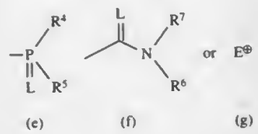
X represents alkyl, halogen, alkoxy or halogenoalkyl,
Y represents hydrogen, alkyl, halogen, alkoxy or halogenoalkyl,
Z represents alkyl, halogen or alkoxy,
n represents a number from 0–3, or in which the radicals X and Z together with the phenyl radical to which they are bonded form the naphthalene radical of the formula



in which Y has the abovementioned meaning,
G represents hydrogen (a) or the groups



(b) (c) (d)



(e) (f) (g)

A and B together with the carbon atom to which they are bonded form a cycle which is substituted by alkoxy, alkylthio, alkylsulphoxyl, alkylsulphonyl, carboxyl or CO_2R^2 or

A and B together with the carbon atom to which they are bonded represent a cycle in which two substituents together with the carbon atoms to which they are bonded represent a saturated cycle which is optionally substituted by alkyl, alkoxy or halogen and which can be interrupted by oxygen or sulphur,

$E^{\oplus}$ represents a metal ion equivalent or an ammonium ion,

L and M represent in each case oxygen or sulphur,

R^1 represents in each case optionally substituted alkyl, alkenyl, alkoxyalkyl, alkylthioalkyl, polyalkoxyalkyl or cycloalkyl which can be interrupted by at least one hetero atom, in each case optionally substituted phenyl, phenylalkyl, hetaryl, phenoxyalkyl or hetaryloxyalkyl and

R^2 represents alkyl, cycloalkyl, alkenyl, alkoxyalkyl or polyalkoxyalkyl, each of which is optionally substituted or represents in each case optionally substituted phenyl or benzyl,

R^3, R^4 and R^5 independently of one another represent alkyl, alkoxy, alkylamino, dialkylamino, alkylthio, alkenylthio, alkinylthio or cycloalkylthio, each of which is optionally substituted by halogen, and in each case optionally substituted phenyl, phenoxy or phenylthio,

R^6 and R^7 independently of one another represent hydrogen, or represent alkyl, alkenyl, alkoxy or alkoxyalkyl, each of which is optionally substituted by halogen, optionally substituted phenyl, optionally substituted benzyl,

or in which R^6 and R^7 together represent an alkylene radical which is optionally interrupted by oxygen or sulphur,

and the stereomerically and enantiomerically pure forms and their mixtures.

5,610,123

METHOD OF PREPARING BISMUTH OXIDE SUPERCONDUCTOR

Kenichi Sato; Takeshi Hikata, and Munetsugu Ueyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 123,594, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 976,306, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 675,221, Mar. 26, 1991, abandoned. This application Feb. 8, 1995, Ser. No. 385,240

Claims priority, application Japan, Mar. 26, 1990, 2-77467; Apr. 18, 1990, 2-104304; Jan. 31, 1991, 3-011127

Int. Cl.[6] H01L *39/24*

U.S. Cl. 505—433 **11 Claims**

1. A method of preparing a bismuth oxide superconducting wire, comprising the steps of:

preparing a raw material in a composition of Bi, Sr, Ca, and Cu having a superconducting phase and non-superconducting phases mixed therein, wherein said superconducting phase of said raw material contains from about 75 to about 90 percent of a 2212 phase and from about 10 to about 25 percent of a 2223 phase;

pulverizing said raw material;

filling said pulverized raw material into a metal sheath; and

performing deformation processing and heat treatment on said metal sheath and pulverized raw material, thereby forming a superconductor having a non-superconducting phase which is finely dispersed in the superconducting phase.

5,610,124

TIN/CERIUM COMPOUNDS FOR LIGNOSULFONATE PROCESSING

Bharat B. Patel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 981,162, Nov. 24, 1992, Pat. No. 5,401,718. This application Nov. 9, 1994, Ser. No. 336,610

Int. Cl.[6] C09K *7/02;* **C07G** *1/00*

U.S. Cl. 507—109 **34 Claims**

1. A process for making tin- or cerium-bearing lignosulfonates comprising the steps of:

(a) contacting an aqueous calcium lignosulfonate and a sulfate reactant comprising at least one sulfate salt selected from the sulfate group consisting of tin sulfate and cerium sulfate to produce an aqueous product lignosulfonate and a calcium sulfate precipitant; and

(b) separating said precipitant from said aqueous product lignosulfonate.

5,610,125

RHEOPECTIC COSMETIC CLEANSER

Amy C. Zimmerman, Ansonia, Conn., assignor to Chesebrough-Ponds USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 7, 1995, Ser. No. 475,150

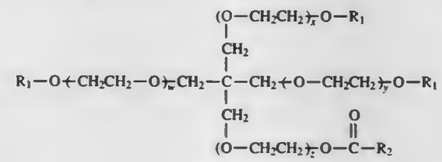
Int. Cl.[6] C11D *17/00;* **C07C** *67/02;* **A01N** *27/00*

U.S. Cl. 510—123 **4 Claims**

1. A cosmetic composition comprising:

(i) from about 0.1 to about 40% of an alkyl polyglycoside surfactant having the formula $RO(R^1O)_t(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms and wherein R contains from about 8 to about 18 carbon atoms and is selected from the group consisting of alkyl, alkylphenyl, hydroxyalkylphenyl, hydroxyalkyl and mixtures thereof; R^1 contains from 2 to about 4 carbon atoms; t is from 0 to about 30; and x is a number from about 1.0 to about 10; and

(ii) from about 0.1 to about 20% of a polyether ester of the formula:



wherein:

R_1 is —H or



R_2 is a hydrocarbon chain having greater than 5 carbon atoms; and (W+X+Y+Z) is greater than 60, and

wherein the composition is a semi-solid gel at rest which upon application of slow shear converts to a solid.

5,610,126

LAVATORY CLEANSING COMPOSITIONS

Eric D. Barford, Stanton; Peter J. Clark, Tring; John Marshall, Norwich, and Daniel J. Jeffrey, Thetford, all of England, assignors to Jeyes Group Limited, Norfolk, England

Continuation of Ser. No. 307,097, Sep. 16, 1994, which is a continuation of Ser. No. 158,801, Nov. 19, 1993, which is a continuation of Ser. No. 22,424, Feb. 16, 1993, which is a continuation of Ser. No. 821,144, Jan. 16, 1992, which is a continuation of Ser. No. 667,253, Mar. 11, 1991, which is a continuation of Ser. No. 524,713, May 17, 1990, which is a continuation of Ser. No. 338,400, Mar. 13, 1989, which is a continuation of Ser. No. 165,342, Feb. 26, 1988, which is a continuation of Ser. No. 874,060, Jun. 13, 1986. This application Jun. 6, 1995, Ser. No. 466,119

Claims priority, application United Kingdom, Jun. 14, 1985, 8515181

Int. Cl.[6] C11D *3/395;3/02*

U.S. Cl. 510—191 **12 Claims**

1. A method of cleansing a lavatory comprising dosing at each flush a metered amount of dissolved active material from a solid lavatory cleansing block formed of a composition comprising a mixture of from 5 to 75% by weight of (A) a surface active component comprising at least one anionic surface active agent and from 10 to 65% by weight of (B) a halogen release component selected from the group consisting of a first halogen release agent and a mixture of a first and second halogen release agent, said first halogen release agent being N-chlorosuccinimide, said second halogen release agent being selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid and chlorinated sodium tripolyphosphate, said N-chlorosuccinimide being present in the composition in an amount of at least 5% by weight and said second halogen release agent being present in the composition in an amount of from 0 to 30% by weight.

5,610,127

HIGH FOAMING NONIONIC SURFACTANT BASED LIQUID DETERGENT

Rita Erilli, Liege, Belgium; Gilbert S. Gomes, Somerset, N.J.; Stephen T. Repinec, Jr., Flemington, N.J., and Ronald Kern, Buttzville, N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 91,517, Jul. 9, 1993, Pat. No. 5,389,304, which is a continuation-in-part of Ser. No. 893,138, Jun. 3, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 381,009

Int. Cl.[6] C11D *1/83;1/84;1/722;1/75*

U.S. Cl. 510—235 **7 Claims**

1. A high foaming, nonionic surfactant-based, light duty, liquid detergent comprising approximately, by weight:

(a) 13% to 20% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with about 5 to 30 moles of ethylene oxide, condensates of C_8–C_{20} alkanol with a heteric mixture of ethylene oxide and propylene oxide having a weight ratio of ethylene oxide to propylene oxide from about 2.5:1 to 4:1 and a total alkylene oxide content of 60% to 85% by weight and condensates of about 2 to 30 moles of ethylene oxide with sorbitan mono and tri- C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;

(b) 2% to 15% of a magnesium salt of a C_8–C_{18} alkyl ethoxylated ether sulfate surfactant;

(c) 2% to 10% of a water-soluble betaine surfactant; and

(d) 1% to 8% of sodium, potassium or ammonium salt of a C_8–C_{14} alkyl sulfate surfactant;

(e) the balance being water as an aqueous medium in which said surfactants are solubilized in said water, wherein the concentration of the nonionic surfactant always exceeds the concentration of the alkyl sulfate surfactant or the concentration of an ethoxylated alkyl ether sulfate surfactant or the betaine surfactant, wherein the composition does not contain any clay or polymeric thickener, any sulfonate surfactant, amine oxide or any fatty acid alkanol amide and the composition has a Brookfield viscosity #2 spindle, 30 rpm of 100 to 1,000 cps and has a light transmission of at least 95%.

5,610,128

SURFACTANTS AND DRYING AND DRYCLEANING COMPOSITIONS WHICH UTILIZE SAID SURFACTANTS

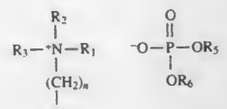
Gary J. Zyhowski; David Nalewajek, and Leonard M. Stachura, all of Erie, N.Y., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Dec. 14, 1994, Ser. No. 355,587

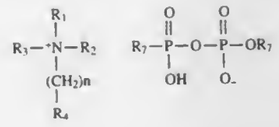
Int. Cl.[6] C11D *1/34;1/62*

U.S. Cl. 510—288 **27 Claims**

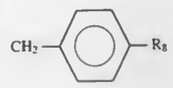
1. A surfactant of the formulae:



or



wherein R_1, R_2, R_3 can be the same or different and are linear or branched C_1 to C_{16} alkyl, fluoroalkyl, alkylaryl or



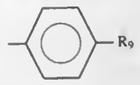
where

R_8 is hydrogen or a linear or branched C_1 to C_{16} alkyl or fluoroalkyl group;

R_4 is C_1 to C_{18} perfluoroalkyl;

n is from 1 to 4;

R_5, R_6 and R_7 can be the same or different and are H, linear, or branched C_1 to C_{16} alkyl, fluoroalkyl or alkylaryl group or



where R_9 is linear or branched C_1 to C_{16} alkyl or fluoroalkyl group provided not more than one of R_5, R_6 and R_7 is H.

5,610,129

DYE TRANSFER INHIBITING COMPOSITIONS

Finlay McCorquodale, Woluwe-St.-Lambert, and Alfred Busch, Londerzeel, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US92/09204, § 371 Date May 5, 1994, § 102(e) Date May 5, 1994, PCT Pub. No. WO89/09813, PCT Pub. Date Oct. 19, 1989

PCT Filed Oct. 28, 1992, Ser. No. 232,249

Claims priority, application European Pat. Off., Nov. 6, 1991, 91202882

Int. Cl.[6] C11D *3/386;7/42*

U.S. Cl. 510—320 **14 Claims**

1. A dye transfer inhibiting composition comprising

an enzyme exhibiting peroxidase activity,

a hydrogen peroxide or a hydrogen peroxide precursor compound, or an enzymatic system capable of generating hydrogen peroxide,

an oxidizable substrate for said enzyme exhibiting peroxidase activity, and

a cellulase, wherein said cellulase has the amino acid sequence shown in the appended sequence listing ID#2, which provides at least 10% removal of immobilized radioactive labeled carboxymethyl cellulose according to the C14CMC method at 25×10^{-6}% by weight of the cellulase protein in the test solution.

5,610,130

MICROEMULSION ALL-PURPOSE LIQUID CLEANING COMPOSITIONS WITH INSECT REPELLENT

Barbara J. Thomas, Princeton, N.J.; Myriam Loth, Saint-Nicolas, Belgium; Thomas F. Connors, Piscataway, N.J., and Myriam Mondin, Seraing, Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 381,606, Jan. 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 228,538, Apr. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,317, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,314, Aug. 4, 1993, abandoned. This application May 20, 1996, Ser. No. 650,211

Int. Cl.[6] C11D *3/32;1/74;1/83;17/00*

U.S. Cl. 510—383 **13 Claims**

1. A stable oil-in-water microemulsion cleaning composition which is especially effective for the removal of oily and greasy soil from a hard surface and for repelling insects therefrom, the aqueous phase of said microemulsion comprising by weight of the total composition:

(A) from about 0.1% to about 25% of a surfactant mixture of

(i) an anionic surfactant;

(ii) an ethoxylated glycerol-based nonionic surfactant mixture; the weight ratio of (i) to (ii) being from about 1:1 to about 5:1; and

(iii) a salt of a multivalent metal cation in an amount sufficient to provide from 0.5 to 1.5 equivalents of cation per equivalent of (i); the anionic surfactant and amount of multivalent metal cation being selected so as to provide a cloud point of at least about 45° C. in the finished microemulsion composition;

(B) from about 0 to 5% of a fatty acid;

(C) from about 0.1% to about 30% of a water-soluble cosurfactant having substantially no ability to dissolve oily or greasy soil, and wherein said cosurfactant is different from (i) and (ii); and

(D) the balance water;

the oil phase of said microemulsion being comprised essentially of an effective amount of an insect repellent compound, and optionally a perfume or water insoluble hydrocarbon, said microemulsion composition being effective for removing oily and greasy soils from a hard surface and repelling insects therefrom by solubilizing such soils in the microemulsion while concomitantly depositing the insect repellent compound upon the hard surface to be cleaned to provide insect repelling properties thereto.

5,610,131

STRUCTURING LIQUID NONIONIC SURFACTANTS PRIOR TO GRANULATION PROCESS

Scott J. Donoghue; Kay E. Fitzgibbon, both of Tyne, England; Paul A. R. G. France, Kessel-lo, Belgium; Robin G. Hall, Tyne, England; Carole P. D. Wilkinson, Ixelles, Belgium; David W. York, Tyne, England, and John C. Schmitt, Kirchheim, Germany, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/04843, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/25553, PCT Pub. Date Oct. 11, 1994

PCT Filed Apr. 29, 1994, Ser. No. 537,751

Claims priority, application European Pat. Off., Apr. 30, 1993, 93870075

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—444 **10 Claims**

1. A process for making a granular laundry detergent component or composition having a bulk density of at least 650 g/l comprising the steps of:

a) dissolving a structuring agent, said structuring agent comprising a polymer, in a nonionic surfactant to form a pumpable premix; and

b) finely dispersing said premix wiih an effective amount of powder characterized in that the fine dispersing of the premix is carded out at an operating temperature of from about 15° to 30° C., and at which the premix has a viscosity of from about 380 to about 23,000 mPas when measured at said operating temperature and at a shear rate of $25s^{-1}$; wherein said powder is selected from the group consisting of zeolite, silica, carbonate, silicate, sulfate, phosphate, citrate, citric acid or mixtures of these.

5,610,132

CLEANING AGENT FOR REMOVING FATS AND OILS FROM METAL SURFACES

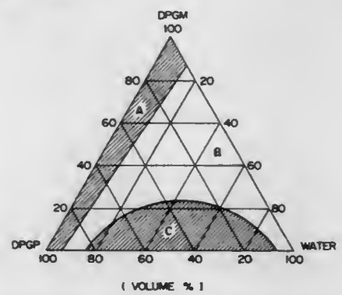
Kayo Momoda, Tsukuba, and Syuji Baba, Tokuyama, both of Japan, assignors to Tokuyama Corporation, Yamaguchi-ken, Japan

Filed Jun. 22, 1995, Ser. No. 493,460

Claims priority, application Japan, Jun. 24, 1994, 6-142812

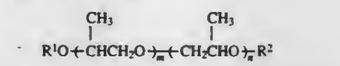
Int. Cl.[6] C11D *7/50;7/26*

U.S. Cl. 510—506 **7 Claims**



1. A cleaning agent for removing fats and oils adhered to metal pieces, electronic parts or semiconductor parts which comprises the following components:

(A) at least one water easily soluble propylene glycol alkyl ether represented by the formula (I)



(I)

wherein

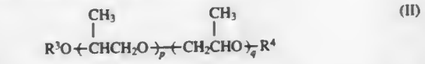
R^1 and R^2 are, independently, hydrogen atoms, methyl groups or ethyl groups,

m and n are, independently, 0 or an integer of 1 to 3, and

m+n is 1 to 3, provided that, one of R^1 and R^2 is a group other than a hydrogen atom, and

when both R^1 and R^2 are groups other than hydrogen atoms, both these substituents are methyl groups, and m is 1 and n is 0,

(B) at least one water sparingly soluble propylene glycol alkyl ether represented by the formula (II)



(II)

wherein

R^3 and R^4 are, independently, hydrogen atoms, C_{1-4} alkyl groups,

p and q are, independently, 0 or an integer of 1 to 3, and

p+q is 1 to 3, provided that one of R^3 and R^4 is a group other than a hydrogen atom, and

when one of R^3 and R^4 is a hydrogen atom, the other substituent is an alkyl group of C_3 or more,

when R^3 and R^4 are independently, methyl or ethyl groups, p+q is an integer of 2 or more, and

(C) water;

said cleaning agent forming a single phase wherein the propylene glycol ether (A) is present in amounts of 25% or more by volume, the propylene glycol alkyl ether (B) is present in amounts of 20% or more by volume and, the water (C) is present in amounts of 20% or more by volume, respectively, based on the whole volume of the cleaning agent.

5,610,133

ALKYL-SUBSTITUTED-C1-C3 ALKOXY-C6-CYCLOALIPHATIC COMPOUNDS, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

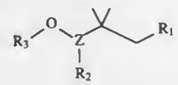
Michael G. Monteleone, Hazlet; Richard A. Weiss, Pine Brook; Marc D. Evans, South Orange, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 522,122, Aug. 12, 1995, Pat. No. 5,543,398. This application May 9, 1996, Ser. No. 647,330

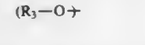
Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—20 **18 Claims**

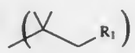
12. A process for augmenting, enhancing or imparting an aroma to a consumable material selected from the group consisting of perfume compositions, perfumed articles and colognes comprising the step of intimately admixing with said consumable material an aroma imparting, augmenting or enhancing quantity of at least one compound defined according the structure:



wherein Z represents meta or para cyclohexylene or meta or para phenylene and wherein R_1 and R_2 are the same or different hydrogen or methyl; and wherein R_3 represents C_1C_3 alkyl; and wherein the moiety:



is ortho with respect to R_2 and para or meta with respect to the moiety:



with the proviso that the sum of the number of carbon atoms in $R_1+R_2+R_3$ is 3 or 4.

5,610,134

TREATMENT OF CONGESTIVE HEART FAILURE

Ross G. Clark, Pacifica; Hongkui Jin, San Bruno; Nicholas F. Paoni, Belmont, and Renhui Yang, San Bruno, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 284,859, Aug. 2, 1994, which is a continuation of Ser. No. 227,923, Apr. 15, 1994, abandoned. This application Nov. 3, 1994, Ser. No. 333,909

Int. Cl.[6] A61K *38/00;31/40*

U.S. Cl. 514—2 **10 Claims**

1. A method of treating congestive heart failure in a mammal, said method comprising administering to said mammal an effective amount of a combination of GH, IGF-1, and an ACE inhibitor.

5,610,135

Patent Not Issued For This Number

5,610,136

METHOD FOR TREATMENT OF BENIGN PROSTATIC HYPERTROPHY

John McMichael, Delanson, N.Y., assignor to Milkhaus Laboratory, Inc., Delanson, N.Y.

Filed Jan. 30, 1996, Ser. No. 593,501

Int. Cl.[6] A61K *38/24*

U.S. Cl. 514—8 **6 Claims**

1. A method for the treatment of benign prostatic hypertrophy comprising the step of:

administering to a subject suffering from benign prostatic hypertrophy a chorionic gonadotropin or a pharmaceutically active fragment or derivative thereof in an amount effective to alleviate one or more symptoms of benign prostatic hypertrophy.

5,610,137

TRANSGENIC, CROSS-LINKED HEMOGLOBIN

Tim M. Townes, and Steven L. McCune, both of Birmingham, Ala., assignors to The UAB Research Foundation, Birmingham, Ala.

Continuation-in-part of Ser. No. 630,825, Dec. 20, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 100,465

Int. Cl.[6] A61K *38/00;* **C12P** *21/06;* **C07K** *1/00;2/00*

U.S. Cl. 514—12 **3 Claims**

1. A transgenic, polymeric human hemoglobin molecule consisting of the Kansas mutation and the Porto Alegre mutation.

5,610,138

PROCESS FOR TREATING INFERTILITY AND AN AGENT FOR USE IN THE PROCESS

Howard S. Jacobs, London, England, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 299,958, Sep. 1, 1994, which is a continuation of Ser. No. 17,958, Feb. 12, 1993, abandoned, which is a continuation of Ser. No. 709,900, Jun. 4, 1991, abandoned, which is a division of Ser. No. 488,490, Mar. 2, 1990, Pat. No. 5,063,204, which is a continuation of Ser. No. 64,846, Jun. 19, 1987, abandoned. This application Apr. 27, 1995, Ser. No. 430,513

Claims priority, application Denmark, Jan. 30, 1987, 499/87

Int. Cl.[6] A61K *38/08;38/22;38/24;38/27*

U.S. Cl. 514—12 **25 Claims**

1. A composition for treating infertility in mature higher female mammals, the composition comprising a combination of gonadotrophins and growth hormone present in individually adapted amounts effective to enhance ovarian follicle and oocyte maturation in said mammal.

5,610,139

ANTIMICROBIAL COMPOSITIONS AND PHARMACEUTICAL PREPARATIONS THEREOF

Michio Ohta, and Nobuo Kato, both of Nagoya, Japan, assignors to Seikagaku Corporation, Tokyo, Japan

Continuation of Ser. No. 38,162, Mar. 26, 1993, abandoned. This application Jan. 18, 1995, Ser. No. 375,165

Claims priority, application Japan, Mar. 30, 1992, 4-103511

Int. Cl.[6] A61K *38/10*

U.S. Cl. 514—13 **12 Claims**

5. A method of inhibiting growth of methicillin-resistant *Staphylococcus areus* in a mammal infected therewith comprising administering to said mammal a composition comprising a synergistic combination of an antimicrobial peptide, or a pharmaceutically acceptable salt thereof, and an antibiotic, wherein said peptide is selected from the group consisting of tachyplesin I, tachyplesin II, tachyplesin III, polyphemusin I, polyphemusin II, and gigasin II and wherein said antibiotic is selected from the group consisting of cefazolin, ampicillin, and chloramphenicol.

5,610,140

BRADYKININ RECEPTOR ANTAGONISTS WITH NEUROKININ RECEPTOR BLOCKING ACTIVITY

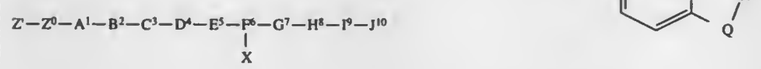
Val S. Goodfellow, Westminster; Eric T. Whalley, Golden, and Francine E. Wincott, Longmont, all of Colo., assignors to Cortech, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 974,000, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 859,582, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 677,391, Apr. 1, 1991, abandoned. This application Aug. 1, 1994, Ser. No. 284,068

Int. Cl.[6] A61K *38/08;* **C07K** *7/18*

U.S. Cl. 514—15 **10 Claims**

1. A compound of the formula:



wherein:

Z^1—Z^0—A^1—B^2—C^3—D^4—E^5—F^6—G^7—H^8—I^9—J^{10} is a peptide antagonist of bradykinin;

where

Z^1 is optional but, if present, is hydrogen, acetyl, adamantylcarboxyl, or adamantylacetyl;

Z^0 is optional but, if present, is D or L arginine, D or L lysine or D or L ornithine;

A^1 is D or L arginine, D or L lysine or D or L ornithine;

B^2 is proline, hydroxyproline, serine, threonine, N-methyl serine or N-methyl threonine;

C^3 is proline or hydroxyproline;

D^4 is glycine or alanine;

E^5 is phenylalanine, 2-indaneglycine or 2-thienylalanine;

F^6 is cysteine, homocysteine, penicillamine or β-methylcysteine;

G^7 is D-Tic, D-phenylalanine, 2-indaneglycine, D-cyclopentylglycine or D-cyclohexylglycine;

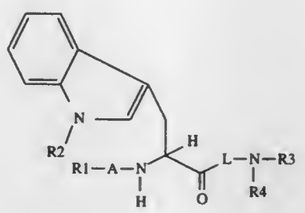
H^8 is phenylalanine, leucine, Oic, norvaline or glycine substituted at the N atom with a cyclopentyl, cyclobexyl or phenyl group;

I^9 is OH, arginine or lysine;

J^{10} is optional but, if present, is OH; and

X is

(I)



wherein

R1 is -Z-$(CH_2)_m$—CO—

where Z is a succinimido, phenyl or pyrrolidinone group where the sulfur atom of F^6 is attached to Z directly or via (CH_2), and m is an integer from 1 to 8;

A is threonine;

L is phenylalanine;

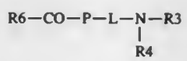
R2 is H or C_1–C_8 alkyl;

R3 is C_1–C_8 alkyl; and

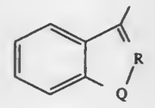
R4 is benzyl; or

X is

(II)



where R6 is

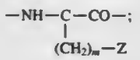


where R is N or CH; and

Q is NH;

P is

(III)



wherein m is 1 to 8 and Z is a succinimido, phenyl or pyrrolidinone group optionally substituted with $(C_1$–$C_8)$ alkylamide where the sulfur atom of F^6 is attached to Z directly or via (CH_2); and

L is phenylalanine, tyrosine, 3-(2-naphthyl)-alanine, 2-indaneglycine or Tic;

R3 is C_1–C_8 alkyl; and

R4 is benzyl;

where said compound is an antagonist of bradykinin receptors and neurokinin 1 receptors.

9. A method of treating asthma or bronchitis comprising administering the compound according to claim 1 to a subject in need of such treatment.

5,610,141

DOUBLE CHAIN PEPTIDE COMPOUNDS HAVING HEMOREGULATORY ACTIVITY

Kjell Undheim, Sandvika; Magne Solbakken; Erik Agner, both of Oslo, all of Norway; Peter Kremminger, Linz, Austria, and Meinolf Lange, Oslo, Norway, assignors to Nycomed Imaging AS, Norway

PCT No. PCT/GB93/01171, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/24523, PCT Pub. Date Dec. 9, 1993

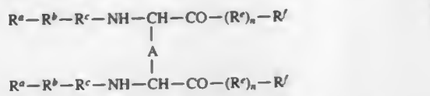
PCT Filed Jun. 2, 1993, Ser. No. 362,411

Claims priority, application United Kingdom, Jun. 2, 1992, 9211674; Jun. 2, 1992, 9211675; Jun. 2, 1992, 9211676

Int. Cl.[6] A61K *38/00*

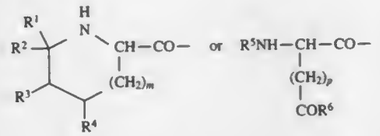
U.S. Cl. 514—15 **11 Claims**

1. A peptide compound of formula II

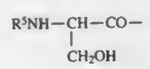


wherein —A— is a C_{1-6} carbon chain interrupted by one or more double or triple carbon-carbon bonds,

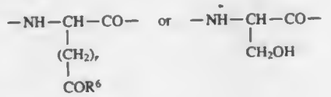
R^a represents



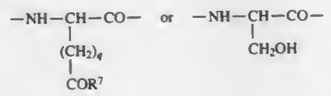
or



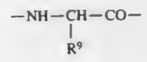
R^b represents



R^c represents

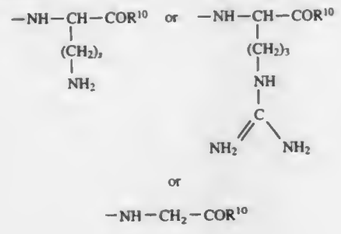


R^e represents



and

R^f represents



or

(wherein n and m independently represent 0 or 1;

p, q and r independently represent 1 or 2;

s represents 3 or 4;

R^1 and R^2 are both hydrogen atoms or together represent an oxo group;

R^3 and R^4 are both hydrogen atoms or together represent a carbon-carbon bond;

R^5 is hydrogen or an acyl group;

each R^6 and R^7 independently represent a hydroxy group or an amino group, but are preferably hydroxy groups,

R^8 represents hydrogen; a C_{2-6} alkyl group; a C_{7-20} aralkyl group, which may carry one or more hydroxy, amino or methoxy substituents; or a metabolically labile S-protecting group;

R^9 represents hydrogen or a methyl group; and

R^{10} represents a hydroxy or amino group, the residue of the amino acid glutamine or a peptide having an N-terminal glutamine unit).

5,610,142

BRADYKININ ANTAGONIST PSEUDOPEPTIDE DERIVATIVES OF SUBSTITUTED 4-KETO-1,3,8-TRIAZASPIRO[4.5]DECAN-3-ALKANOIC ACIDS

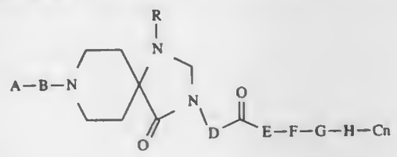
Babu J. Mavunkel, Baltimore, Md.; Zhijian Lu, Scotch Plains, N.J., and Donald J. Kyle, Abingdon, Md., assignors to Scios Inc., Mountain View, Calif.

Continuation of Ser. No. 118,558, Sep. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 957,879, Oct. 8, 1992, Pat. No. 5,521,158. This application Apr. 3, 1995, Ser. No. 416,524

Int. Cl.[6] A61K *38/08*

U.S. Cl. 514—16 **7 Claims**

1. A pseudopeptide which has an affinity for a bradykinin receptor having the formula:



wherein,

A is selected from the group consisting of the L-and D-isomers of Arg and Lys;

B is selected from the group consisting of the L-and D-isomers of Arg and Lys;

R is selected from the group consisting of a straight, branched, saturated or unsaturated lower alkyl chain of 1 to 6 carbon atoms, a cycloalkyl or cycloalkylmethyl moiety in which the cyclalkyl ring comprises 3 to 6 carbon atoms, an aralkyl group, or an aryl group, wherein the aryl group is optionally substituted with a C_1–C_4 alkyl group, a C_{1-C4} alkoxy group, or a balogen;

D is a saturated or unsaturated alkylene bridging group consisting of 1 to 8 carbon atoms;

E is a direct bond or selected from the group consisting of Ser, Thr, Gly and Val;

F is selected from the group consisting of a D-Phe, D-Tic and D-trans-Hype, wherein an aryl or aralkyl group, if present in Hype, is selected from the group consisting of a phenyl, naphthyl, benzyl, and naphthylmethyl group;

G is selected from the group consisting of Oic, Aoc, Phe, Tic, and a Hype, wherein an aryl or a aralkyl group, if present in Hype, is selected from the group consisting of a phenyl, naphthyl, benzyl, and naphthylmethyl group;

H is selected from the group consisting of Arg and Lys;

Cn is selected from the group consisting of a hydroxyl group, an amino group, and an alkoxy group;

and pharmaceutically accepted salts thereof.

7. A pharmaceutical preparation for treating local pain and inflammation from burns, wounds, cuts, rashes or other trauma and pathological conditions caused by the production of bradykinin or related kinins by an animal, which comprises a peptide of claim 1 in an amount effective to antagonize bradykinin, together with a pharmaceutically acceptable carrier.

5,610,143

ANTIBIOTICS GE 37468 A, B AND C

Sergio Stella, Legnano; Nicoletta Montanini, Carpiano; Francis J. LeMonnier, Saronno; Luigi Colombo, Mainate; Enrico Selva, Gropello Cairoli, all of Italy, and Maurizio Denaro, Cincinnati, Ohio, assignors to Gruppo Lepetit S.p.A., Varese, Italy

Filed Jun. 21, 1995, Ser. No. 493,043

Int. Cl.[6] C07K *5/00;* **A61K** *37/02*

U.S. Cl. 514—18 **5 Claims**

1. An antibiotic selected from antibiotic GE37468A, antibiotic GE37468B, and antibiotic GE37468C, or their salts with bases having, in the non-salt form, the following respective characteristics:

Antibiotic GE37468A

A) Ultraviolet absorption spectrum exhibiting the following absorption maxima:

Lambda max (nm)

0.1 M HCl307

340 (shoulder)

0.1 M KOH302

317 (shoulder)

334 (shoulder)

Phosphate buffer pH 7.4 302

338 (shoulder)

Methanol 306

331 (shoulder)

B) Infrared absorption spectrum in nujol mull exhibiting the following absorption maxima (cm^{-1}): 600; 3100; 2924 (nujol); 2853 (nujol); 1705; 1653; 514; 1466 (nujol); 1377 (nujol); 1310; 1269; 1200; 173; 1153; 1101; 1024; 1007; 878; 808; 758; 721 (nujol) 702;

C) ^{1}H-NMR spectrum exhibiting the following groups of signals (in ppm) at 500 MHz recorded in DMSO-d_6 (hexadeuterodimethylsulfoxide) using TMS as the internal standard (0.00 ppm);

[δ, ppm multiplicity, (s, singlet, d=doublet; dd =doublet of doublets; m=multiplet; br s=broad signal)]:

10.08, s; 9.59, s; 9.03, br s; 8.67, s; 8.64, d; 8.57, d; 8.54, d; 8.38, d; 8.19, s; 7.91, s; 7.75, s; 7.30–7.28, m; 7.20, m; 7.18, br s; 7–06, d; 6.78, br s; 6.58, d; 6.49, br s; 6.45, s; 6.06, s; 5.82, s; 5.79, br s; 5.29, m;5.07, m; 4.93, m; 4.87, m; 4.64, d; 3.63, dd; 3.4–3.3, m; 3.19, dd; 2.94, m; 2.73, s; 2.67, m; 2.62, m; 2.11, m;1.98, m; 1.91, m; 1.14, m;

D) ^{13}C-NMR (^{1}H-decoupled) spectrum exhibiting the following groups of signals (δ, ppm) at 125 MHz in DMSO-d_6 with TMS as the internal reference (0.00 ppm); Q means quaternary carbon atoms or C=O groups;

174.4 (Q); 174.0 (Q); 173.0 (Q); 171.6 (Q); 171.4 (Q); 169.3 (Q); 167.6 (Q); 165.0 (Q); 162.3 (Q); 161.3 (Q); 161.2 (Q); 160.8 (Q); 159.0 (Q); 156.0 (Q); 155.7 (Q); 153.9 (Q); 153.3 (Q); 152.1 (Q); 150.5 (Q, 2C); 149.3 (Q); 147.4 (Q); 140.1 (CH); 137.3 (Q); 134.7 (Q); 134.6 (Q); 130.7 (2 CH); 129.8 (Q); 129.5 (2 CH); 129.0 (CH); 128.4 (2 CH); 127.4 (Q); 126.8 (CH); 123.9 (C); 123.1 (Q); 122.3 (CH); 118.7 (CH); 116.7 (CH); 115.1 (2 CH); 111.2 (CH2); 105.4 (CH_2); 81.9 (CH); 77.5 (CH); 66.7 (CH); 54.3 (CH); 52.3 (CH); 48.5 (CH); 42.8 (CH_2); 39.0 (CH); 38.5 (CH2); 38.1 (CH_2); 37.0 (CH_2); 36.3 (CH_2); 16.0 (CH_3); 11.7 (CH_3)

E) Retention-time (R_t) of 14.4 min when analyzed by reverse-phase HPLC under the following conditions:

column: Ultrasphere ODS (reverse-phase silanized silica gel; 5 micrometer) Altex (Beckman) 4.6 mm (i.d.)×250 mm

pre-column: Brownlee Labs RP 18 (octadecylsilane silica gel; 5 micrometer)

eluent A: acetonitrile:16mM ammonium phosphate 80:20 (v/v), adjusted to pH 6.0

eluent B: acetonitrile:16mM ammonium phosphate 5:95 (v/v), adjusted to pH 6.0

elution mode: linear gradient of eluent A in eluent B from 10% to 90% in 20 min

flow rate: 1.5 ml/min

U.V. detector: 230 nm

internal standard: antibiotic GE 2270 factor A, (R_t=16.7 min)

F) Elemental analysis, of a sample dried at about 100° C. under inert atmosphere, indicating the following composition: carbon, hydrogen, nitrogen, sulfur;

G) R_f value of 0.15 in the following chromatographic system: dichloromethane:methanol, 85:15 (v/v) using silica gel plates (silica gel $60F_{254}$, Merck Co)

Visualization: U.V. light at 254 nm, yellow spot with iodine vapors or bioautography using *B. subtilis* ATCC 6633 on minimal Davis medium; internal standard: antibiotic GE 2270 factor A, (R_f 0.77)

H) FAB-MS analysis showing the lowest mass isotope of the protonated molecular ion at a m/z value corresponding to a molecular wight of 1308.3±0.1 dalton. Upon analysis with a Kratos MS-50TC double focusing mass spectrometer under the following experimental conditions: Xe fast atom bombardment at 8 kV; m-nitrobenzylalcohol matrix; positive ionization mode

I) An aminoacid analysis of the hydrochloric hydrolysate showing the presence of the following natural aminoacids: cysteine, phenylalanine, tyrosine, and cystine;

Antibiotic GE37468B

A) Retention-time (R_t) of 11.5 min when analyzed by reverse-phase HPLC under the following conditions:

column: Ultrasphere ODS (reverse-phase silanized silica gel; 5 micrometer) Altex (Beckman) 4.6 mm (i.d.)×250 mm

eluent A: acetonitrile:16 mM ammonium phosphate 80:20 (v/v), adjusted to pH 6.0

eluent B: acetonitrile:16 mM ammonium phosphate 5:95 (v/v), adjusted to pH 6.0

elution mode: linear gradient of eluent A in eluent B from 40% to 90% in 20 min

flow rate: 1.5 ml/min

U.V. detector: 230 nm

internal standard: Chloramphenicol (R_t=4.0 min)

B) FAB-MS analysis showing the lowest mass isotope of the protonated molecular ion at a m/z value corresponding to a molecular weight of 1169.3±0.1 dalton. All other peaks above 800 m/z mass units (not counting isotope peaks) in the spectrum resulting lower than 20% of the molecular ion, upon analysis with a Kratos MS-50TC double focusing mass spectrometer under the following experimental conditions: Xe fast atom bombardment at 8 kV; m-nitrobenzylalcohol matrix; positive ionization mode;

Antibiotic GE37468C

A) Retention-time (R_t) of 13.0 min when analyzed by reverse-phase HPLC under the following conditions:

column: Ultrasphere ODS (reverse-phase silanized silica gel; 5 micrometer) Altex (Beckman) 4.6 mm (i.d.)×250 mm

eluent A: acetonitrile:16 mM ammonium phosphate 80:20 (v/v), adjusted to pH 6.0

eluent B: acetonitrile:16 mM ammonium phosphate 5:95 (v/v), adjusted to pH 6.0

elution mode: linear gradient of eluent A in eluent B from 40% to 90% in 20 min

flow rate: 1.5 ml/min

U.V. detector: 230 nm

internal standard: Chloramphenicol (R_t=4.0 min)

B) FAB-MS analysis showing the lowest mass isotope of the protonated molecular ion at a m/z value corresponding to a molecular weight of 1238.3±0.1 dalton. Upon analysis with a Kratos MS-50TC double focusing mass spectrometer under the following experimental conditions: Xe fast atom bombardment at 8 kV; m-nitrobenzylalcohol matrix; positive ionization mode.

5,610,144
PYRROLIDINE AND THIAZOLIDINE DERIVATIVES, THEIR PREPARATION AND MEDICAMENTS CONTAINING THEM

Marc Capet, Thiais; Claude Cotrel, Paris; Claude Guyon, Saint Maur des Fosses; Michel Joannic, Neuilly Sur Mame; Franco Manfre, Limeil-Brevannes; Gérard Roussel, Soisy Sur Seine; Marie-Christine Dubroeuco, Enghein Les Bains; Michel Cheve, Soisy Sur Seine, and Gilles Dutruc-Rosset, Paris, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR92/00626, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO93/01167, PCT Pub. Date Jan. 21, 1993

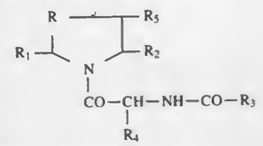
PCT Filed Jul. 3, 1992, Ser. No. 175,381

Claims priority, application France, Jul. 10, 1991, 91 08675

Int. Cl.[6] C07D *207/06;* **A61K** *38/00*

U.S. Cl. 514—19 **7 Claims**

1. A compound of the formula:



(I)

in which

either R represents a methylene, ethylene, SO, SO_2 or CHOH radical or a sulphur atom, R_1 represents a pyridyl radical optionally substituted by one or more alkyl radicals, a furyl radical optionally substituted by one or more alkyl radicals, a thienyl radical optionally substituted by one or more alkyl radicals, a quinolyl radical optionally substituted by one or more alkyl radicals, a naphthyl radical optionally substituted by one or more alkyl radicals, an indolyl radical optionally substituted by one or more alkyl radicals, or a phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, hydroxyl, nitro, amino, monoalkylamino, dialkylamino, alkoxycarbonyl, —CO—NR_7R_8, —NH—CO—CH_3, trifluoromethyl and trifluoromethoxy radicals, and R_5 represents a hydrogen atom,

or R represents a methylene radical, R_1 represents a hydrogen atom and R_5 represents a phenyl radical,

or R represents a radical CHR_6 and R_1 and R_5 each represent a hydrogen atom,

R_2 represents an alkoxycarbonyl, cycloalkyloxycarbonyl, cycloalkylalkyloxycarbonyl, $CONR_9R_{10}$ or phenyl radical optionally substituted by one or more substituents chosen from alkyl, alkoxy, and hydroxyl radicals,

R_3 represents a phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, and alkylthio radicals; a naphthyl, indolyl, quinolyl or phenylamino radical, the phenyl ring of which is optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, alkylthio, trifluoromethyl, carboxyl, alkoxycarbonyl, hydroxyl, nitro, amino, acyl, cyano, sulphamoyl, carbamoyl, hydroxyiminoalkyl, alkoxyiminoalkyl, hydroxyamino-carbonyl, alkoxyaminocarbonyl, 5-tetrazolyl, 5-tetrazolylalkyl, trifluoromethylsulphonamido, alkylsulphinyl, mono- and polyhydroxyalkyl, sulpho, -alk-O—CO-alk, alk-COOX, alk-O-alk, alk'-COOX, —O-alk-COOX, —CH=CH—COOX, —CO—COOX, alk-SO_3H in the form of a salt, —CH=CH-alk', —C(=NOH)—COOX, S-alk-COOX, —O—CH_2-alk'-COOX, CX=N—O-alk-COOX, alk-N(OH)—CO-alk and 2,2-dimethyl-4,6-dioxo-1,3-dioxan-5-yl radicals,

R_4 represents a hydrogen atom or an alkyl radical,

R_6 represents a phenyl radical,

R_7 represents a hydrogen atom or an alkyl, phenylalkyl or phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, and alkylthio radicals,

R_8 represents an alkyl, phenylalkyl or phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, and alkylthio radicals,

or R_7 and R_8 form with the nitrogen atom to which they are attached a mono- or polycyclic saturated or unsaturated heterocycle containing 4 to 9 carbon atoms and one or more hetero atoms selected from oxygen and nitrogen and optionally substituted by one or more alkyl radicals,

R_9 represents a hydrogen atom or an alkyl, cycloalkylalkyl, cycloalkyl, phenylalkyl or phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, and alkylthio radicals,

R_{10} represents an alkyl, cycloalkylalkyl, cycloalkyl, phenylalkyl or phenyl radical optionally substituted by one or more substituents chosen from halogen atoms and alkyl, alkoxy, and alkylthio radicals,

or R_9 and R_{10} form with the nitrogen atom to which they are attached a mono- or polycyclic saturated or unsaturated heterocycle containing 4 to 9 carbon atoms and one or more hetero atoms selected from oxygen, nitrogen, and sulfur, and optionally substituted by one or more alkyl radicals,

X represents a hydrogen atom, an alkyl, or phenylalkyl radical,

alk represents an alkyl or alkylene radical,

alk' represents a hydroxyalkyl, hydroxyalkylene, alkoxyalkyl or alkoxyalkylene radical, the alkyl, alkylene and alkoxy radicals and the alkyl, alkylene, and alkoxy moieties containing 124; carbon atoms in a straight or branched chain, the acyl radicals and moieties; containing 2 to 4 carbon atoms and the cycloalkyl radicals and; moieties containing 3 to 6 carbon atoms, or a pharmaceutically acceptable salt of the compound of formula (I).

5,610,145
TACHYKININ ANTAGONISTS

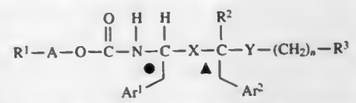
David C. Horwell, Cambridge; William Howson; Martyn C. Pritchard, both of Cambridgeshire, and Jennifer Raphy, Herts, all of England, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 228,236, Apr. 15, 1994, abandoned. This application Nov. 29, 1994, Ser. No. 346,052

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **9 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable salt thereof wherein:

R^1 is

cyclohexane,

cyclopentane,

methylcyclohexane,

mehylcyclopentane,

phenylethyl,

t-butyl,

2,2-dimethylpropane, or

2,2-dimethylpentane;

A is $-(CH_2)_q(C(CH_3)_2)_r(CH_2)_s-$wherein q, r, and s are integers of from 0 to 3, 0 to 1, and zero, respectively;

Ar^1 and Ar^2 are each phenyl unsubstituted or substituted with from 1 to 3 substituents selected from:

alkyl,

halogen,

nitro,

CP_3,

$(CH_2)_{1\text{-}6}OR^6$,

$(CH_2)_tCO_2R^6$, or

$(CH_2)_tNR^6R^7$ wherein t is an integer of from 0 to 6 and R^6 and R^7 are each independently hydrogen or alkyl;

X and Y are each independently selected from -CONH- and $-CH_2NH-$;

R^2 is methyl;

n is an integer of from 3 to 8;

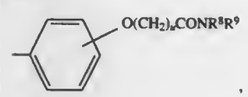
R^3 is straight, branched, or cycloalkyl of from 3 to 9 carbons with 1 substituent selected from:

OH,

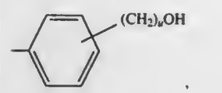
$-OCH_3$,

$-CONR^8R^9$,

$-NHCONR^8R^9$,



or



wherein u is an integer of from 0 to 3 and R^8 and R^9 are each independently selected from hydrogen and methyl.

5,610,146
2,3-DISUBSTITUTED ISOXAZOLIDINES, A PROCESS FOR THEIR PREPARATION, AGENTS CONTAINING THEM, AND THEIR USE

Stephan Henke, Bad Soden am Taunus; Dietrich Brocks, Wiesbaden, and Volkmar Günzler, Marburg-Cappel, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

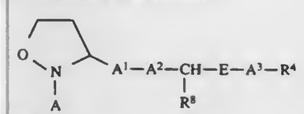
Division of Ser. No. 47,074, Apr. 16, 1993, Pat. No. 5,422,342, which is a continuation of Ser. No. 133,273, Dec. 15, 1987, abandoned. This application Feb. 24, 1995, Ser. No. 393,814

Claims priority, application Germany, Dec. 17, 1986, 36 43 012.9

Int. Cl.[6] A61K *38/05;* **G07D** *261/02*

U.S. Cl. 514—19 **11 Claims**

1. A compound of the formula I



(I)

in which

A is $(C_1–C_8)$-alkanoyl or $(C_1–C_8)$-alkoxycarbonyl which are unsubstituted or are substituted in the alkyl chain by 1, 2 or 3 radicals from the group consisting of carboxyl, amino, $(C_1–C_4)$-alkylamino, hydroxyl, $(C_1–C_4)$-alkoxy, halogen, di-$(C_1–C_4)$-alkylamino, carbamoyl, sulfamoyl, $(C_1–C_4)$-alkylsulfonyl, $(C_1–C_4)$-alkoxycarbonyl, $(C_6–C_{12})$-aryl and $(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl, or which are monosubstituted in the alkyl chain by a radical from the group consisting of $(C_3–C_8)$-cycloalkyl, $(C_1–C_4)$-alkylsufonyl, $(C_1–C_4)$-alkylsulfinyl, $(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkylsulfonyl, $(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkylsulfinyl and $(C_6–C_{12})$-aryloxy, and mono- or disubstituted by radicals from the group consisting of carboxyl, amino, $(C_1–C_4)$-alkylamino, hydroxyl, $(C_1–C_4)$-alkoxy, halogen, di-$(C_1–C_4)$-alkylamino, carbamoyl, sulfamoyl, $(C_1–C_4)$-alkoxycarbonyl, $(C_6–C_{12})$-aryl and $(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl, each of $(C_6–C_{12})$-aryl being unsubstituted or substituted by 1, 2 or 3 radicals from the group consisting of carboxyl, amino, nitro, $(C_1–C_4)$-alkylamino; hydroxyl, $(C_1–C_4)$-alkoxy, halogen, cyano, di-$(C_1–C_4)$-alkylamino, carbamoyl, sulfamoyl and $(C_1–C_4)$-alkoxycarbonyl,

A^1 is carbonyl,

A^2 is imino or N-methylimino,

E is carbonyl,

A^3 is oxy or a direct bond,

R^4 is $(C_1–C_6)$-alkyl, $(C_3–C_6)$-cycloaklyl, $(C_6–C_{12})$-aryl, $(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_5)$-alkyl, in which each alkyl can be substituted by 1 or 2 radicals from the group consisting of carboxyl, amino, $(C_1–C_4)$-alkylamino, hydroxyl, $(C_1–C_4)$-alkoxy, halogen, di-$(C_1–C_4)$-alkylamino, carbamoyl, sulfamoyl, $(C_1–C_4)$-alkoxycarbonyl, $(C_6–C_{12})$-aryl and $(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl, and in which each $(C_6–C_{12})$-aryl can be substituted by 1, 2 or 3 radicals from the group consisting of carboxyl, cyano, amino, nitro, $(C_1–C_4)$-alkylamino, hydroxyl, $(C_1–C_4)$-alkoxy, halogen, di-$(C_1–C_4)$-alkylamino, carbomoyl, sulfamoyl and $(C_1–C_4)$-alkoxycarbonyl, and

R^8 is hydrogen or $(C_1–C_6)$-alkyl which is unsubstituted or monosubstituted by amino, benzyloxycarbonylamino, hydroxyl, carboxyl, carbamoyl, guanidino, ureido, mercapto, methylmercapto, phenyl, 4-chlorophenyl, 4-fluorophenyl, 4-nitrophenyl, 4-methoxyphenyl, 4-hydroxyphenyl, phthalimido, 3-pyridyl or cyclohexyl,

or a physiologically tolerated salt thereof, with the exception of the compound in which, at the same time, A is benzyloxycarbonyl, A^1 is carbonyl, A^2 is imino, E is carbonyl, A^3 is oxy, R^4 is methyl, and R^8 is C_1-alkyl which is monosubstituted by 4-hydroxyphenyl.

5,610,147
VIRUS-SAFE BLOOD COAGULATION FACTOR XIII PREPARATION

Thomas Seelich, Vienna, Austria, assignor to Immuno Aktiengesellschaft, Vienna, Austria

Filed Jul. 26, 1994, Ser. No. 280,514

Claims priority, application Austria, Aug. 3, 1993, 1548/93

Int. Cl.[6] A61K *38/36;35/16;* **C07K** *14/745;14/47*

U.S. Cl. 514—21 **20 Claims**

1. A method for producing an aqueous pharmaceutical preparation comprising factor XIII, comprising the steps of:

obtaining an aqueous solution comprising at least 2 U of factor XIII/mg protein, and

heating said solution at 40° to 65° C. in order to inactivate viruses to form said virus-safe factor XIII preparation without adding thermostabilizers, wherein said aqueous pharmaceutical preparation has more than 50% of the original biological activity of the factor XIII present in said aqueous solution before said heating step.

5,610,148
MACROSCOPICALLY ORIENTED CELL ADHESION PROTEIN FOR WOUND TREATMENT

Robert Brown, Middlesex, United Kingdom, assignor to University College London, United Kingdom

Continuation of Ser. No. 87,733, Jul. 16, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,465

Claims priority, application United Kingdom, Jan. 18, 1991, 9101191

Int. Cl.[6] A61K *38/39*

U.S. Cl. 514—21 **13 Claims**

1. A method of treating a wound comprising applying an effective, non-toxic amount of a porous macroscopically unidirectionally oriented cell adhesion protein selected from the group consisting of fibronectin, vitronectin and von Willebrand protein to the wound, in which fibrils of the cell adhesion protein are macroscopically unidirectionally oriented.

5,610,149

STEROIDAL POLYAMINES

Cynthia J. Burrows, Salt Lake City, Utah, and Hsing-Pang Hsieh, Taipei, Taiwan, assignors to The Research Foundation of State University of New York, Albany, N.Y.

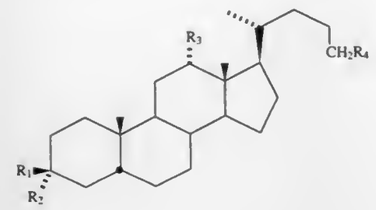
Filed May 12, 1995, Ser. No. 439,808

Int. Cl.[6] A61K *31/575;* **C07J** *9/00;41/00*

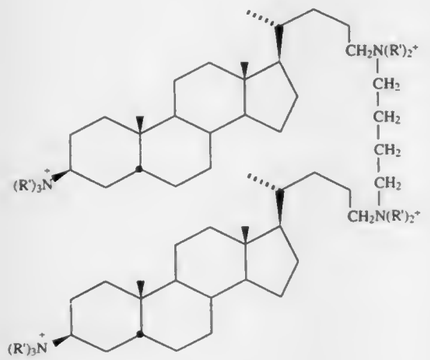
U.S. Cl. 514—169 **10 Claims**

1. A compound of formula I or formula II, or a salt thereof:

formula I



formula II



wherein

R_1 and R_2 are independently $N(R')_3^+$ or H in the α- or β-position except both R_1 and R_2 are not H;

R_3 is $N(R')_3^+$ in the α- position or hydrogen

R_4 is OH, $N(R')_3^+$ or $NHC(NH_2)NH_2^+$ and

R' is selected from the group consisting of hydrogen, alkyl of one to four carbons, aralkyl or combinations thereof.

5,610,150

METHOD OF TREATMENT OF ANDROGEN-RELATED DISEASES

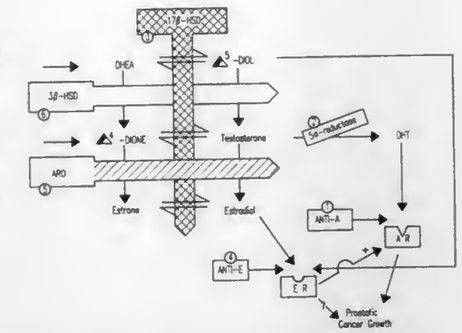
Fernand Labrie, Ste-Foy, Canada, assignor to Endorecherche Inc., Canada

Division of Ser. No. 98,607, Sep. 10, 1993, which is a division of Ser. No. 963,278, Oct. 19, 1992, Pat. No. 5,372,996, which is a continuation of Ser. No. 376,710, Jul. 7, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 472,512

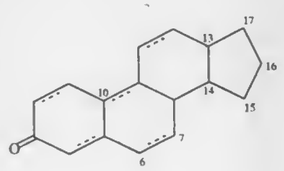
Int. Cl.[6] A01N *45/00*

U.S. Cl. 514—170 **15 Claims**

9. A kit, comprising a plurality of separate containers, wherein at least one of said containers contains at least one active ingredient which is distinct from all other active ingredients contained in at least one other of said containers, wherein at least one of said containers contains at least one compound which is a sex steroid



formation inhibitor which does not suppress adrenal activity and which inhibits an enzyme that catalyzes a step in the synthesis of sex steroids from sex steroid precursors in peripheral tissues, and wherein at least one of said containers contains an antiandrogen having, as part of its molecular structure, a substituted or unsubstituted androgenic nucleus of the formula:



wherein the dotted line represents an optional double bond; and said antiandrogen having as another part of its molecular structure, at least one side chain represented by the formula: $—R^1[—B—R^2—]_xL—G$, said chain being substitued onto said androgenic nucleuus at a position substituted onto said androgenic nucleus at a position selected from the group consisting of 6α, 7α, 14α, 15α, 16α and 17, wherein:

x is an integer from 0 to 6, wherein at least one of L and G is a polar moiety distanced from said ring carbon by at least three intervening atoms, and wherein:

R^1 and R^2 are independently either absent or selected from the group consisting of straight or branched-chain alkylene, straight or branched-chain alkenylene straight or branched-chain alkynylene, phenylene and fluoro-substituted analogs of the foregoing;

B is either absent or selected from the group consisting of —O—, —S—, —SO—, $—SO_2—$, $—NR^3—$, $—CR^3OR^3—$, and phenylene (R^3 being hydrogen or lower alkyl);

L is selected from the group consisting of lower alkyl, $—CONR^4—$, $—CSNR^4—$, $—NR^5CO—$, $—NR^5CS—$, $—NR^5CONR^4—$, $—SO_2NR^4—$, $—NR^5SO_2—$, $—NR^4—$, —S—, —SO—, $—SO_2—$, and a moiety which together with G, forms a heterocyclic ring having at least one nitrogen atom (R^4 and R^5 being independently selected from the group consisting of hydrogen and lower alkyl); and

G is selected from a group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, $(C_3–C_7)$cycloalkyl, bromo(lower)alkyl, chloro(lower)alkyl, fluoro(lower)alkyl, cyano(lower) alkyl, carboxyl(lower)alkyl, (lower)alkoxycarbonyl-(lower)alkyl, $(C_6–C_{10})$aryl, $(C_7–C_{11})$-arylalkyl, di(lower)alkylamino(lower)alkyl, fluoro-substituted analogs of the foregoing and a moiety which together with L forms a heterocyclic ring having at least one nitrogen atom.

5,610,151

MONOMERIC BILE ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THE USE OF THESE COMPOUNDS AS MEDICAMENTS

Heiner Glombik, Hofheim; Alfons Enhsen, Büttelborn; Werner Kramer, Mainz, and Günther Wess, Erlensee, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 5, 1994, Ser. No. 238,749

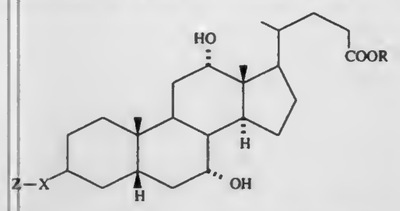
Claims priority, application Germany, May 8, 1993, 43 15 439.5

Int. Cl.[6] A61K *31/585;* **C07J** *17/00*

U.S. Cl. 514—172 **4 Claims**

1. A monomeric bile acid derivative of the formula IA

IA



wherein

R is H, CH_3 or M and M is a metal capable of forming a salt,

X is a bridge group of the formula $(CH_2)_n$, where n=1 to 3, in which 1 to 3 (CH_2)-groups can be replaced by NH or

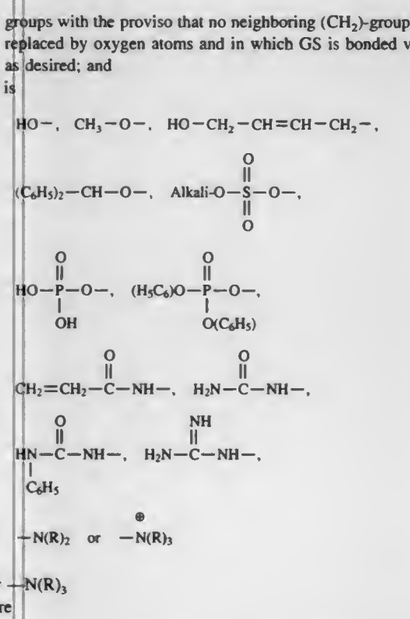


groups, or a bridge group of the formula $(CH_2)_n$ where n=4 to 10, in which 1 to 3 (CH_2)-groups can be replaced by oxygen atoms, NH or



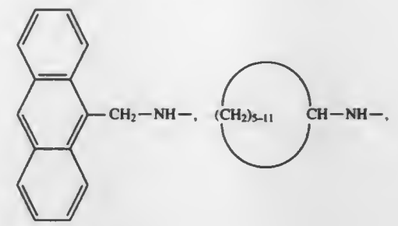
groups with the proviso that no neighboring (CH_2)-groups are replaced by oxygen atoms and in which GS is bonded via X as desired; and

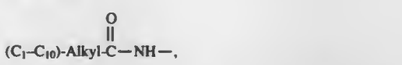
Z is



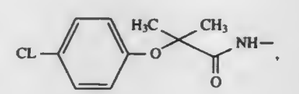
where

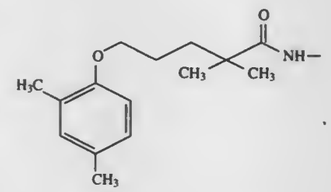
R is in each case $C_1–C_7$ alkyl, or $H_2—N—(CH_2)_6$;

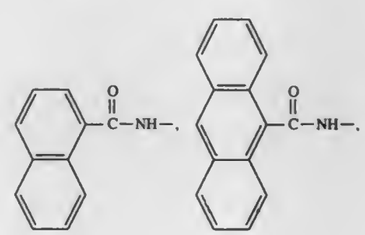


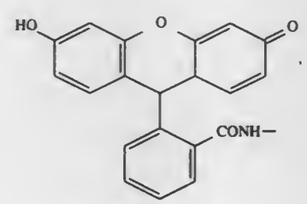


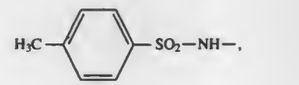
where the alkyl moiety is optionally substituted by a COOH group,

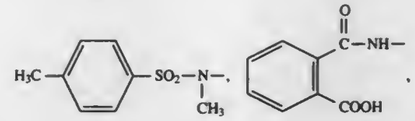




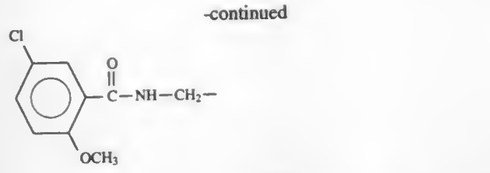


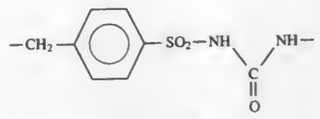


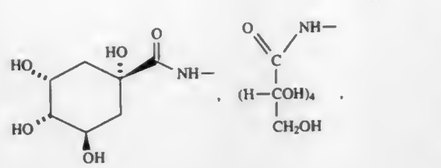


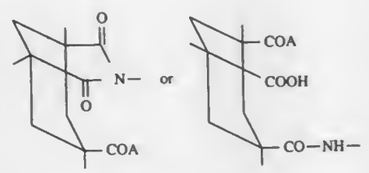


-continued









where A is in each case OH or NH (C_1–C_{10}) alkyl.

5,610,152

ANTI-OBESITY AGENT 4-CHOLESTEN-3-ONE

Kunio Suzuki, Wako, Japan, assignor to Rikagaku Kenkyusho, Wako, Japan

Continuation of Ser. No. 244,719, Jun. 17, 1994, Pat. No. 5,420,121. This application Jan. 11, 1995, Ser. No. 371,429

Claims priority, application Japan, Dec. 20, 1991, 3-338916

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—177 **4 Claims**

1. An anti-obesity food composition comprising from 1 to 5,000 mg of 4-cholesten- 3-one per 100 g of said food.

5,610,153

BENZAZEPINONE DERIVATIVES

Peter Bühlmayer, Arlesheim, Switzerland, and Pascal Furet, Thann, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP93/03426, § 371 Date Jul. 12, 1995, § 102(e) Date Jul. 12, 1995, PCT Pub. No. WO94/13651, PCT Pub. Date Jun. 23, 1994

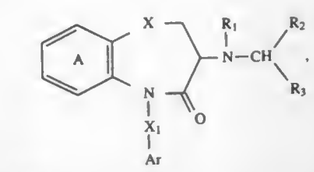
PCT Filed Dec. 6, 1993, Ser. No. 454,106

Claims priority, application Switzerland, Dec. 11, 1992, 3801/92

Int. Cl.[6] A61K *31/55;* **C07D** *513/04*

U.S. Cl. 514—211 **18 Claims**

1. A 3-amino-1-arylalkyl-benzazepin-2-one of the general formula



(I)

wherein

Ar is selected from the group consisting of phenyl, naphthyl, monocyclic, monoza-, monooxa-, monothia-, diaza-, oxaza- and thiaza-aryl;

X is —O— or —S(O)$_n$ and n is 0, 1 or 2;

X_1 is C_1-C_2 alkylene or a direct bond;

R_1 is hydrogen, lower alkyl, pyrrolyl, pyridyl, furyl, thienyl, imidazolyl, isoxazolyl, thiazolyl lower alkanoyl, aroyl, or benzoyl;

R_2 is lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, pyrrolyl, pyridyl, furyl, thienyl, imidazolyl, isoxazolyl, thiazolyl or C_3-C $_7$cycloalkyll-lower alkyl;

R_3 is carboxy; lower alkoxycarbonyl; lower alkoxy-lower alkoxycarbonyl; pyrrolyl, pyridyl, furyl, thienyl, imidazolyl, isoxazolyl, thiazolyl; carbamoyl; carbamoyl that (I) is monosubstituted or disubstituted, the substituents being independent of one another, by lower alkyl, lower alkenyl, lower alkynyl or by phenyl-lower alkyl or (iii) is disubstituted by lower alkylene or by lower alkylene-Z_1-lower alkylene. Z_1 being O, S or NH; 5-tetrazolyl; Po_2H_2; PO_3H_2 or SO_3H_2; the ring A and aromatic radicals are, independently of one another, unsubstituted or mono- or poly-substituted by substituents selected from the group consisting of: lower alkyl, pyrrolyl, pyridyl, furyl, thienyl, imidazolyl, isoxazolyl, thiazolyl, lower alkoxy-lower alkyl, lower alkoxy, lower alkoxy-lower alkoxy, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkyl-lower alkyl, nitrol, halogen, trifluoromethyl, amino and amino that is monosubstituted or disubstituted, the substituents being independent of one another, by lower alkyl, pyrrolyl, pyridyl, furyl, thienyl, imidazolyl, isoxazolyl, thiazolyl or by phenyl, naphthyl, monocyclic, monoza-, monooxa-, monothia-, diaza-, oxaza- and thiaza-aryl, or disubstituted by lower alkylene or by lower alkyleneoxy-lower alkylene;

a steroisomer or a salt thereof.

15. A method of stimulating growth-inhibiting and antiproliferative effects of tyrosine phosphatase comprising administering a therapeutically effective amount of a compound according to claim 1, or of a stereoisomer or a pharmaceutically acceptable salt thereof.

5,610,154

BICYCLIC CARBOXAMIDES

Ian A. Cliffe, Farnham Common; Howard L. Mansell, Burnham Bucks; Terence J. Ward, Reading, all of Great Britain; James A. Nelson, Bucks County, Pa.; Uresh S. Shah, Cranbury, and Mira A. Kanzelberger, Monmouth Junction, both of N.J., assignors to John Wyeth & Brother, Ltd., Maidenhead, England, and American Home Products Corp., Madison, N.J.

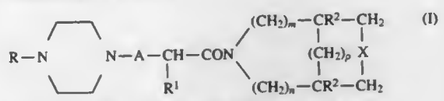
Filed May 24, 1995, Ser. No. 448,962

Claims priority, application United Kingdom, Sep. 21, 1994, 9419024

Int. Cl.[6] A61K *31/55;* **C07D** *295/16*

U.S. Cl. 514—216 **6 Claims**

1. A compound of formula I



(I)

or a pharmaceutically acceptable salt thereof in which

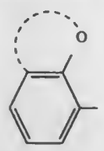
X represents —CR^2=CR^2— or —$(CR^2)_q$;

m represents 0, 1 or 2; n represents 0, 1 or 2; p represents 0, 1, 2 or 3 and q represents 0, 1, 2 or 3

A is an alkylene chain of 1 or 2 carbon atoms optionally substituted by one or more lower alkyl groups,

R is a mono or bicyclic aryl or heteroaryl radical, wherein

aryl is a phenyl, naphthyl or tetrahydronaphthyl radical optionally substituted by one or more substituents selected from C_{1-6}-alkyl, C_{1-6} alkenyl, C_{1-6} alkynyl, C_{1-6}alkoxy, halogen, halo(C_{1-6})alkyl (e.g. trifluoromethyl), hydroxy, nitrile, (C_{1-6})alkylcarbonyl, (C_{1-6})alkoxy-carbonyl, amino, (C_{1-6})alkylamino, di(C_{1-6})alkylamino, aminocarbonyl, (C_{1-6})alkylaminocarbonyl, di(C_{1-6})alkylaminocarbonyl, nitro, —CHO or thio(C_{1-6})alkyl; or a bicyclic oxygen-containing radical of the formula



wherein the heterocyclic ring containing the oxygen atom contains a total of 5 to 7 ring atoms, is non-aromatic, optionally contains one further oxygen atom, and may be optionally substituted as above; and

heteroaryl is an aromatic radical selected from a monocyclic heteroaryl radical containing 5 to 7 ring atoms or a bicyclic heteroaryl radical containing 8 to 10 ring atoms, one or two hetero ring atoms being selected from nitrogen, oxygen and sulphur, which radical may be optionally substituted as above for aryl;

R^1 is an aryl or aryl(lower)alkyl radical,

and each R^2 is independently hydrogen or lower alkyl.

5,610,155

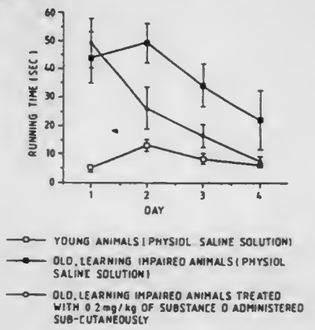
CONDENSED DIAZEPINONES, PROCESSES FOR PREPARING THEM AND AGENTS CONTAINING THESE COMPOUNDS FOR TREATING DISEASES OF THE CENTRAL NERVOUS SYSTEM AND FOR PROMOTING CEREBRAL BLOOD CIRCULATION

Wolfgang Eberlein; Gerhard Mihm; Wolfhard Engel; Klaus Rudolf, all of Biberach; Henri Doods, Warthausen; Harald Ziegler, Biberach, and Michael Entzeroth, Warthausen, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

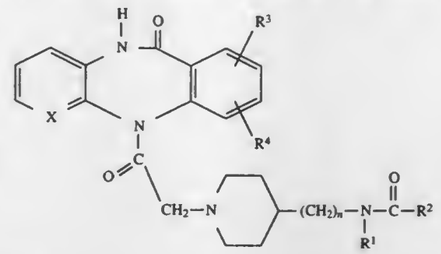
Division of Ser. No. 421,108, Apr. 13, 1995, which is a continuation of Ser. No. 287,574, Aug. 9, 1994, abandoned, which is a continuation of Ser. No. 134,332, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 865,575, Apr. 9, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,061

Int. Cl.[6] A61K *31/55;* **C07D** *243/10*

U.S. Cl. 514—220 **6 Claims**



1. A method for treating or inhibiting memory deterioration caused by impaired release of acetylcholine, which method comprises administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula



wherein

X is a =CH— group or a nitrogen atom,

n represents the number 3 or 4,

R^1 is a straight-chained C_{1-4} alkyl group,

R^2 is a branched C_{4-6}alkyl group, a cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, methylcyclopentyl, methylcyclohexyl, methylcycloheptyl or adamantyl group,

R^3 and R^4 represent hydrogen atoms or one of these groups represents a methyl group or a halogen atom,

or a pharmaceutically acceptable salt thereof with an inorganic or organic acid.

5,610,156

TRICYCLIC BENZAZEPINE VASOPRESSIN ANTAGONISTS

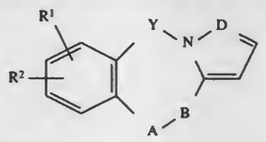
Jay D. Albright, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 373,132, Jan. 17, 1995, Pat. No. 5,536,718. This application Jun. 2, 1995, Ser. No. 458,210

Int. Cl.[6] C07D *487/04;* **A61K** *31/55*

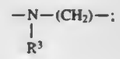
U.S. Cl. 514—220 **6 Claims**

1. A compound selected from those of the formula:

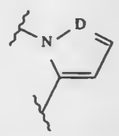


wherein Y is a moiety —(CH_2)—;

A–B is a moiety:



the moiety:



is a five membered aromatic (unsaturated) nitrogen containing heterocyclic ring optionally substituted by halogen, (C_1–C_3)lower alkyl, or —$(CH_2)_q$—$N(R_b)_2$ wherein:

D is carbon;

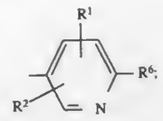
q is 1 or 2;

R_b is independently selected from hydrogen, —CH_3, and —C_2H_5;

R^3 is a moiety of the formula:



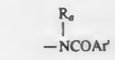
wherein Ar is the moiety:



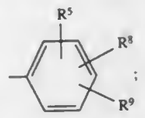
R^1 and R^2 are independently selected from hydrogen, (C_1–C_3)lower alkyl, (C_1–C_3)lower alkoxy or halogen;

R^6 is selected from:

a) moiety of the formula:



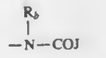
wherein R_a is hydrogen and Ar' is a moiety of the formula:



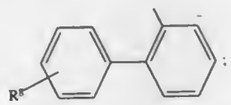
R^5 is selected from the group of hydrogen, lower alkyl(C_1–C_3) lower alkoxy or halogen;

R^8 and R^9 are selected from the group of hydrogen, lower alkyl(C_1–C_3), —S-lower alkyl(C_1–C_3), halogen, —NH-lower alkyl(C_1–C_3), —N-[lower alkyl(C_1–C_3)] $_2$, — OCF_3, —OH, —CN, —S-CF_3, —NO_2, —NH_2, O-lower alkyl(C_1–C_3), CF_3, or

b) a moiety of the formula:



wherein R_b is hydrogen and J is a moiety:



and the pharmaceutically acceptable salts, esters and pro-drug forms thereof.

5. A method for treating disease in a mammal characterized by excess renal reabsorption of water, the method comprising administering to a mammal in need thereof an effective amount of a compound of claim 1, or a pharmaceutically acceptable salt, ester or prodrug form thereof, and a suitable pharmaceutical carrier.

5,610,157

N-(3-HYDROXY-4-PIPERIDINYL) (DIHYDROBENZOFURAN, DIHYDRO-2H-BENZOPYRAN OR DIHYDROBENZO-DIOXIN) CARBOXAMIDE DERIVATIVES

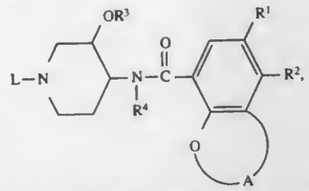
Georges H. P. Van Daele, Turnhout, and Frans M. A. Van den Keybus, Essen, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 301,825, Sep. 7, 1994, Pat. No. 5,552,553, which is a division of Ser. No. 489,419, Mar. 6, 1990, Pat. No. 5,374,637, which is a continuation-in-part of Ser. No. 326,941, Mar. 22, 1989, abandoned. This application Apr. 13, 1995, Ser. No. 421,728

Int. Cl.[6] A61K *31/54;* **C07D** *253/08*

U.S. Cl. 514—224.2 **70 Claims**

1. A compound of the formula:



(I)

an N-oxide form, a pharmaceutically acceptable salt thereof, or a stereochemically isomeric form thereof, wherein:

A represents a group of the formula:

—CH_2—CH_2—, (a-1)
—CH_2—CH_2—CH_2—, (a-2)
—CH_2—CH_2—CH_2—CH_2—, (a-3)
—CH_2—O—, (a-4)
—CH_2—CH_2—O—, or (a-5)
—CH_2—CH_2—CH_2—O—, (a-6)

wherein one or two hydrogen atoms in said groups (a-1) to (a-6) may be replaced by a C_{1-6}alkyl group;

R^1 represents hydrogen, halo, C_{1-6}alkylsulfonyl, or aminosulfonyl;

R^2 represents hydrogen, amino, mono-or di(C_{1-6}alkyl)amino, arylC_{1-6}alkylamino, or C_{1-6}alkylcarbonylamino;

R^3 and R^4 each independently represent hydrogen or C_{1-6}alkyl; and

L represents a group of the formula:

-Alk-R^5; or (b-1)
-Alk-X—R^6; (b-2)

wherein:

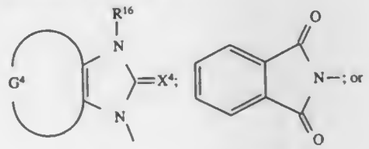
each Alk represents C_{1-6}alkanediyl;

R^5 and R^6 represent Het; and

X represents O, S, SO_2, or NR^7 wherein R^7 represents hydrogen, C_{1-6}alkyl, or aryl;

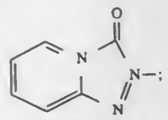
wherein in the foregoing:

Het represents a group of the formula:



(d-9)

(d-10)



(d-11)

wherein:

X^4 represents O or S;

R^{16} represents hydrogen, C_{1-6}alkyl or arylC_{1-6}alkyl; and

G^4 represents —CH=CH—CH=CH—, —CH=CCl—CH=CH— or —CCl=CH—CH=CH—; and

aryl represents phenyl or phenyl substituted with 1, 2, or 3 substituents each independently selected from the group consisting of halo, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxy, aminosulfonyl, C_{1-6}alkylcarbonyl, nitro, trifluoromethyl, amino, and aminocarbonyl.

5,610,158

4-OXO- AND 4H-IMIDAZO(5,1-C)(1,4)BENZOXAZINES USEFUL AS BENZODIAZEPINE RECEPTOR-BINDING AGENTS

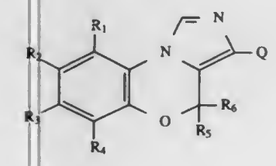
Sharon N. Bisaha, Titusville, N.J., and Ronald B. Gammill, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 836,645, Feb. 13, 1992, abandoned. This application Aug. 3, 1994, Ser. No. 285,560

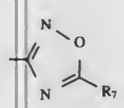
Int. Cl.[6] A61K *31/535;* **C07D** *498/04*

U.S. Cl. 514—230.2 **9 Claims**

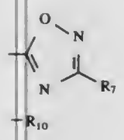
1. A compound of formula (I)



where Q is selected from (A) through (C)



(A)



(B)

(C)

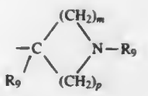
or a pharmaceutically acceptable salt thereof wherein

R_1, R_2 and R_4 are independently H, F, Cl, Br, CF_3, C_{1-6} alkyl, CN, OH, OC_{1-6} alkyl, —OC(O)C_{1-6} alkyl, NH_2, NHR_9 or $N(R_9)_2$;

R_3 is F;

R_5 and R_6 are independently H C_{1-6} alkyl, OH, CF_3, OCO—C_{1-6}alkyl, —OCO—C_{6-12}aryl or R_5 and R_6 together are =O;

R_7 is H, F, Cl, Br, I, CN, CF_3, C_{1-6} alkyl, —$CH_2CH_2CF_3$, —$CH_2CH(CF_3)CH_3$; C_{3-7} cycloalkyl (optionally, substituted with F, Cl, Br, C_{1-6} alkyl, OH or NH_2), C_{1-6} alkyl-C_{3-7} cycloalkyls (optionally, substituted with F, Cl, Br, C_{1-6} alkyl, OH or NH_2), or —$(CH_2)_n$— $N(R_9)_2$, —$(CH_2)_n$—N(O)R_8, or



R_8 is H, C_{1-6} alkyl, C_{6-12} aryl, C_{1-6} alkyl-C_{6-12} aryl or C_{1-6} alkyl-hetero-C_{6-12} aryl;

R_9 is independently H, C_{1-6} alkyl, C_{6-12} aryl, C_{1-6} alkyl-C_{6-12} aryl, C_{1-6} alkyl-C_{6-12} beteroaryl, —C(O)—R_8, —C(O)$N(R_8)_2$ or —$(CH_2)_n$— $N(R_8)_2$;

R_{10} is —CO_2R_8 or —$CON(R_9)_2$; and

m=0–3, n=0–5, p=1–3.

6. A method for treating central nervous system disorders associated with the benzodiazepine receptors in a patient in need of such treatment comprising:

administering to said patient a therapeutically effective amount of a compound of Formula I as defined in claim 1 for alleviation of such disorder.

5,610,159

N-OXIDES OF MORPHOLINE DERIVATIVES AND THEIR USE AS THERAPEUTIC AGENTS

(I) **Jonathan D. Moseley, Bristol; Christopher J. Swain, Duxford, and Brian J. Williams, Great Dunmow, all of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England**

Filed Jun. 19, 1996, Ser. No. 668,592

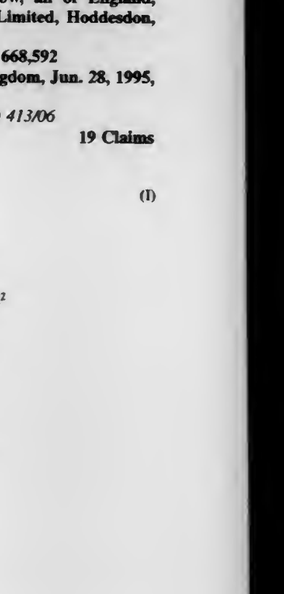
Claims priority, application United Kingdom, Jun. 28, 1995, 9513118

Int. Cl.[6] A61K *31/535;* **C07D** *413/06*

U.S. Cl. 514—236.2 **19 Claims**

I. A compound of the formula (I):

(I)



wherein

R^1 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy, CF_3, OCF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2R^a, $CONR^aR^b$, C_{2-6}alkenyl, C_{2-6}alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, wherein R^a and R^b each independently represent hydrogen or C_{1-4}alkyl;

R^2 is hydrogen, halogen, C_{1-6}alkyl, CF_3, OCF_3 or C_{1-6}alkoxy substituted by C_{1-4}alkoxy;

R^3 is hydrogen, halogen, CF_3 or OCF_3;

R^4 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy, CF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2R^a, $CONR^aR^b$, C_{2-6}alkenyl,

C_{2-6}alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, wherein R^a and R^b are as previously defined;

R^5 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy substituted by C_{1-4}alkoxy or CF_3;

R^6 is hydrogen, C_{1-4}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, or C_{2-4}alkyl substituted by C_{1-4}alkoxy or hydroxy;

R^7 is hydrogen, C_{1-4}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, or C_{2-4}alkyl substituted by one or two substituents selected from C_{1-4}alkoxy, hydroxy or a 4, 5 or 6 membered heteroaliphatic ring containing one or two heteroatoms selected from N, O and S;

or R^6 and R^7, together with the nitrogen atom to which they are attached, form a saturated or partially saturated heterocyclic ring of 4 to 7 ring atoms, which ring may optionally contain in the ring one oxygen or sulphur atom or a group selected from NR^8, S(O) or $S(O)_2$ and which ring may be optionally substituted by one or two groups selected from hydroxy, C_{1-4}alkyl, hydroxyC_{1-4}alkyl, C_{1-4}alkoxyC_{1-4}alkyl, oxo, COR^a or CO_2R^a where R^a is as previously defined;

or R^6 and R^7 together with the nitrogen atom to which they are attached, form a non-aromatic azabicyclic ring system of 6 to 12 ring atoms;

or Z, R^6 and the nitrogen atom to which they are attached form a heteroaliphatic ring of 4 to 7 ring atoms which may optionally contain an oxygen ring atom;

R^8 is hydrogen, C_{1-4}alkyl, hydroxyC_{1-4}alkyl or C_{1-4}alkoxyC_{1-4}alkyl;

R^{9a} and R^{9b} are each independently hydrogen or C_{1-4}alkyl, or R^{9a} and R^{9b} are joined so, together with the carbon atoms to which they are attached, there is formed a C_{5-7} ring;

Het is a 5- or 6-membered heterocyclic ring containing 2 or 3 nitrogen atoms optionally substituted by =O, =S or a C_{1-4}alkyl group;

X is an alkylene chain of 1 to 4 carbon atoms optionally substituted by oxo;

Y is a C_{1-4}alkyl group optionally substituted by hydroxy;

Z is C_{1-6}alkylene or C_{3-7}cycloalkylene;

m is 0 or 1; and

n is 0 or 1, where the sum total of n+m is 1 or 2;

or a pharmaceutically acceptable salt thereof.

7. A compound as claimed in claim **1** wherein Y is a C_{1-4}alkyl group.

5,610,160

TOPICAL 5-FLUOROURACIL PRODRUG COMPOSITION AND METHOD

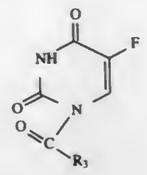
Kenneth B. Sloan, 3551 NW. 23 Pl., Gainesville, Fla. 32605, and Howard D. Beall, 4507 SW. 83rd Dr., Gainesville, Fla. 32608

Continuation of Ser. No. 680,945, Apr. 5, 1991, abandoned. This application Nov. 22, 1994, Ser. No. 347,108

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—274 **10 Claims**

1. A pharmaceutical composition in unit dosage form adapted for topical administration to the skin of a human or non-human animal in need of the pharmacological activity of 5-fluorouracil comprising a pharmacologically effective amount of a prodrug of 5-fluorouracil having the formula:



wherein R_3 is bonded to said C=O by a carbon to carbon bond and is a group such that said prodrug (1) has an enhanced delivery across topical membranes of said animal upon topical application of said composition as compared with 5-fluorouracil and (2) hydrolyzes after delivery across said topical membrane to yield a pharmacologically effective amount of 5-fluorouracil.

5,610,161

THERAPEUTIC AGENTS

Paul J. Harris, and Frank Kerrigan, both of Nottingham, England, assignors to The Boots Company PLC, Nottingham, England

PCT No. PCT/EP93/02951, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/11346, PCT Pub. Date May 26, 1994

PCT Filed Oct. 23, 1993, Ser. No. 424,388

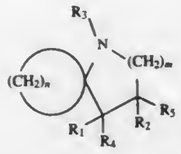
Claims priority, application United Kingdom, Nov. 9, 1992, 9223445

Int. Cl.[6] C07D *221/20;* **A61K** *31/445*

U.S. Cl. 514—278 **13 Claims**

1. Compounds of formula I

I



and pharmaceutically acceptable salts thereof

in which m is an integer from 1 to 3;

n is an integer from 2 to 6;

R_1 is phenyl optionally substituted by one or more substituents selected from halo, hydroxy, alkoxy containing 1 to 3 carbon atoms, alkanoyl containing 2 or 3 carbon atoms, alkyl containing 1 to 3 carbon atoms, halogenated alkyl containing 1 to 3 carbon atoms, alkylthio containing 1 to 3 carbon atoms, alkylsulphinyl containing 1 to 3 carbon atoms, alkylsulphonyl containing 1 to 3 carbon atoms, cyano, nitro, amino optionally substituted by 1 or 2 alkyl groups each containing 1 to 3 carbon atoms, sulphamoyl optionally substituted by 1 or 2 alkyl groups each containing 1 to 3 carbon atoms, carbamoyl optionally substituted by 1 or 2 alkyl groups each containing 1 to 3 carbon atoms, or phenyl, or R_1 is naphthyl;

R_2 is H, alkyl containing 1 to 3 carbon atoms or phenyl;

R_3 is H, alkyl containing 1 to 6 carbon atoms, alkenyl containing 3 to 6 carbon atoms, or alkoxyalkyl in which the alkoxy group contains 1 to 4 carbon atoms and the alkyl group contains 2 to 4 carbon atoms;

R_4 i s H or hydroxy; and

R_5 is H or together with R_4 represents a bond.

5,610,162

ESTER DERIVATIVES OF 4-AZA-STEROIDS

Bruce E. Witzel, Westfield; Gary H. Rasmusson, Watchung; Richard L. Tolman, Warren, and Shu Shu Yang, Bridgewater, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/04771, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO93/23041, PCT Pub. Date Nov. 25, 1993

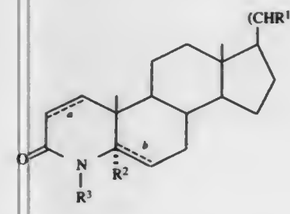
Continuation-in-part of Ser. No. 886,022, May 20, 1992, abandoned. This PCT application May 19, 1993, Ser. No. 338,573

Int. Cl.[6] A61K *31/435;* **C07D** *221/02*

U.S. Cl. 514—284 **8 Claims**

1. A compound of formula I

I



wherein "a" and "b" are both single bonds and R^2 is hydrogen, or "a" is a double bond, "b" is a single bond and R^2 is hydrogen, or "a" is a single bond, "b" is a double bond and R^2 is absent;

R^1 can be the same or different at each occurrence when n is greater than 1 and is selected from —H, aryl, and $—C_{1-3}$alkyl unsubstituted or substituted with aryl;

R^3 is —H, methyl, ethyl, —OH, $—NH_2$ or $—SCH_3$;

n is an integer selected from zero to 10;

X is —O— or —S—;

R^4 is

(1) $—NR^5R^5$;

R^5 is independently selected from the group consisting of

(i) —H,

(ii) $—C_{1-8}$alkyl unsubstituted or substituted with one of R^7, aryl or heterocycle, the aryl being unsubstituted or substituted with one of R^7 or R^9,

(iii) aryl unsubstituted or substituted with one of R^7 or R^9, or

(iv) heterocycle, unsubstituted or substituted with one of R^7 or R^9;

R^7 is selected from

(1) —OH,

(2) $—C_{1-3}$alkoxy,

(3) —CN,

(4) $—COOR^6$,

(5) $—C_{1-8}$alkyl-$COOR^6$

(6) $—NO_2$,

(7) -halo; and

(8) amino, mono-C_1–C_4-alkylamino, di-C_1–C_4-alkylamino;

R^9 is

(1) $—C_{1-8}$alkyl, unsubstituted or substituted with one or two or three of aryl or R^7,

(2) —CO—A, $—C_{1-8}$alkyl-CO—A, —NHCO—A, or $—S(O)_p$—A, wherein p is zero, 1 or 2, and A is

(a) —H,

(b) $—C_{1-8}$alkyl, unsubstituted or substituted with one of

(i) $—R^7$, or

(ii) aryl, unsubstituted or substituted with one of R^7, or

(c) aryl, unsubstituted or substituted with one of R^7.

(3) —NHCO-heterocycle,

(4) $—N(R^{10})_2$ or $—CON(R^{10})_2$ wherein R^{10} is independently heterocycle or —A,

(5) $—NHCO—(CH_2)_q—CO—Q$, wherein q is an integer from 1–4, and Q is $—N(R^{10})_2$ or $—OR^{10}$;

aryl is phenyl or naphthyl;

heterocycle is piperidinyl, 2-oxopiperidinyl, 2-oxopyrrolodinyl, pyrrolyl, 4-piperidonyl, pyrrolidinyl, pyrazolyl, pyrazolidinyl, imidazolyl, imidazolinyl, imidazolidinyl, pyridyl, oxazolyl, oxazolidinyl, isoxazolyl, isoxazolidinyl, morpholinyl, thiazolyl, thiazolidinyl, isothiazolyl, quinuclidinyl, isothiazolidinyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl, thiadiazoyl, benzopyranyl, benzothiazolyl, benzoxazolyl, furyl, tetrahydrofuryl, thienyl, benzothienyl, or oxadiazolyl;

or a pharmaceutically acceptable salt or ester thereof, where the ester is acetate, maleate or pivaloyloxymethyl.

5,610,163

ESTERS OF THIENYL CARBOXYLIC ACIDS AND AMINO ALCOHOLS AND THEIR QUATERNIZATION PRODUCTS

Rolf Banholzer, Ingelheim am Rhein; Rudolf Bauer, Wiesbaden, and Richard Reichl, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

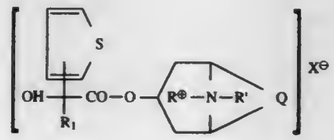
Continuation of Ser. No. 254,324, Jun. 6, 1994, abandoned, which is a continuation of Ser. No. 100,822, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 838,724, Mar. 13, 1992, abandoned. This application Mar. 16, 1995, Ser. No. 405,111

Claims priority, application Germany, Sep. 16, 1989, 39 31 041.8

Int. Cl.[6] A61K *31/435;* **C07D** *401/00;451/12*

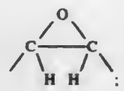
U.S. Cl. 514—291 **16 Claims**

1. A compound of the formula



wherein

Q is a group of the formula $—CH_2—CH_2—$, —CH=CH— or



R and R' are each independently C_1–C_4-alkyl;

R_1 is thienyl, phenyl, cyclopentyl or cyclohexyl; and,

X^- is a physiologically acceptable anion.

5,610,164

(THIOPHEN-2-YL)-PIPERIDIN OR TETRAHYDROPYRIDIN AZABICYCLOCARBOXAMIDES

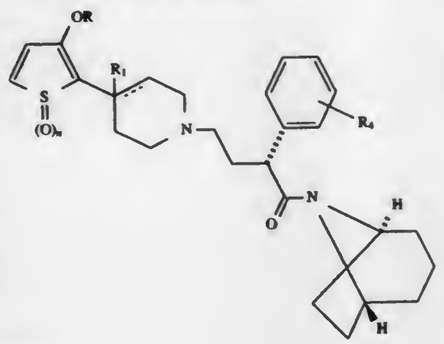
Reinhardt B. Baudy, Yardley; James A. Nelson, Washington Crossing, both of Pa., and Mira A. Kanzelberger, Monmouth Junction, N.J., assignors to American Home Products Corporation, Madison, N.J.

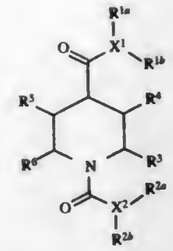
Filed Jul. 24, 1996, Ser. No. 685,132

Int. Cl.[6] A61K *31/435;* **C07D** *451/02*

U.S. Cl. 514—304 **9 Claims**

1. A compound having the structure





wherein

R is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, —COR[2], phenyl, or phenylalkyl of 7–10 carbon atoms; the dotted line represents an optional double bond;

R^1 is hydrogen, —OH, OR^3, or is absent if the optional double bond is present;

R^2 and R^3 are each, independently, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, phenyl, or phenylalkyl of 7–10 carbon atoms;

R^4 is hydrogen, —OR^5, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, —COR^5, —CO_2R^5, —$CONR^5R^6$, perhaloalkyl of 1– 6 carbon atoms, halogen, phenyl, or phenylalkyl of 7–10 carbon atoms;

R^5 and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, phenyl, or phenylalkyl of 7–10 carbon atoms; and

n=0–2

or a pharmaceutically acceptable salt thereof.

5,610,165

N-ACYLPIPERIDINE TACHYKININ ANTAGONISTS

Malcolm MacCoss, Freehold, and Sander G. Mills, Woodbridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 17, 1994, Ser. No. 198,025

Int. Cl.[6] A61K *31/445;* **C07D** *211/06*

U.S. Cl. 514—315 **10 Claims**

1. A compound of structural formula:

1

or a pharmaceutically acceptable salt thereof, wherein:

R^{1a} is selected from the group consisting of:

1) H,

2) C_{1-8} alkyl,

3) phenyl, either unsubstituted or substituted with one or two substituents selected from the group consisting of:

a) —C_{1-4} alkyl,

b) -halo,

c) —OH,

d) —CF_3,

e) —NH_2,

f) —$NH(C_{1-4}$ alkyl),

g) —$N(C_{1-4}$ alkyl)(C_{1-4} alkyl),

h) —CO_2H,

i) —$CO_2(C_{1-4}$ alkyl), and

j) —C_{1-4} alkoxy;

4) —C_{1-4}alkyl-phenyl, wherein the phenyl is either unsubstituted or substituted with one or two substituents selected from:

a) —C_{1-4} alkyl,

b) -halo,

c) —OH,

d) —CF_3,

e) —NH_2,

f) —$NH(C_{1-4}$ alkyl),

g) —$N(C_{1-4}$ alkyl)$_2$,

h) —CO_2H,

i) —$CO_2(C_{1-4}$ alkyl), and

j) —C_{1-4} alkoxy;

R^{1b} is selected from the group consisting of:

1) R^{1a}

2) —C_{3-7} cycloalkyl, and

3) —CH_2—R^{1a};

R^{2a} and R^{2b} are independently phenyl, either unsubstituted or substituted with one or two substituents selected from the group consisting of:

1) —C_{1-4} alkoxy,

2) -halo,

3) —OH,

4) —CF_3,

5) —NH_2,

6) —$NH(C_{1-4}$ alkyl),

7) —$N(C_{1-4}$ alkyl)$_2$,

8) —CO_2H,

9) —$CO_2(C_{1-4}$ alkyl), and

10) —C_{1-6} alkyl, either unsubstituted or substituted with one or more substituents selected from the group consisting of:

a) -halo,

b) —OH,

c) —CF_3,

d) —NH_2,

e) —$NH(C_{1-4}$ alkyl),

f) —$N(C_{1-4}$ alkyl)(C_{1-4} alkyl)

g) —CO_2H,

h) —$CO_2(C_{1-4}$ alkyl),

i) C_{1-4}alkoxy,

j) —$S(O)_x(C_{1-4}$ alkyl) wherein x is 0, 1 or 2,

k) —C_{3-7} cycloalkyl;

and the phenyl groups of R^{2a} and R^{2b} may be joined together at the ortho carbon atoms through a carbon-carbon single bond or C_{1-3} alkylene to form a tricyclic group with the X^2 to which they are attached;

X^1 is —N, —CH or O, and if X^1 is O, R^{1a} is absent;

X^2 is —N or —CH;

R^3 is selected from the group consisting of:

1) —$CONR^7R^8$, and

2) —CO_2R^9;

R^4, R^5 and R^6 are H or are independently selected from the definitions of R^3;

R^7 is C_{1-6} alkyl substituted with one or more substituents selected from the group consisting of:

1) —NHR^{10},

2) —$NR^{10}R^{11}$,

3) —$NHCO(C_{1-6}$alkyl),

4) —$NR^{10}CO_2R^{11}$,

5) —$N(R^{10})((C_{1-6}$ alkyl)$CONHR^{11})$,

6) —$N(CO_2R^{10})((C_{1-6}$alkyl)$CONHR^{11})$, and

7) —$NR^{10}(C_{1-6}$ alkyl)$CONHR^{11}$;

R^8 is H, C_{1-6} alkyl or is independently selected from the definitions of R^7;

R^9 is H or —CH_2-phenyl, wherein the phenyl is either unsubstituted or substituted with one or more substituents selected from the group consisting of:

1) —C_{1-4} alkoxy,

2) -halo,

3) —OH,

4) —CF_3

5) —NH_2,

6) —$NH(C_{1-4}$ alkyl),

7) —$N(C_{1-4}$ alkyl)$_2$,

8) —CO_2H,

9) —$CO_2(C_{1-4}$ alkyl), and

10) —C_{1-6} alkyl, either unsubstituted or substituted with one or more substituents selected from the group consisting of:

a) -halo,

b) —OH,

c) —CF_3,

d) —NH_2,

e) —$NH(C_{1-4}$ alkyl),

f) —$N(C_{1-4}$ alkyl)(C_{1-4} alkyl)

g) —CO_2H,

h) —$CO_2(C_{1-4}$ alkyl),

i) C_{1-4}alkoxy,

j) —$S(O)_x(C_{1-4}$ alkyl) wherein x is 0, 1 or 2,

k) —C_{3-7} cycloalkyl; and

R^{11} is H, C_{1-6} alkyl, or is independently selected from the definitions of R^{10}.

5,610,166

METHODS FOR INHIBITING ANGIOGENESIS

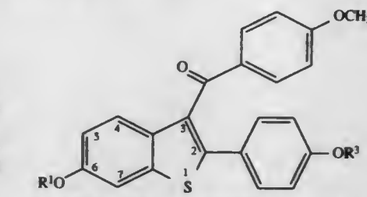
Jai P. Singh, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 137,703, Oct. 15, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 409,475

Int. Cl.[6] A61K *31/38;31/40;31/445*

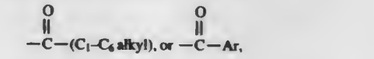
U.S. Cl. 514—324 **4 Claims**

I. A method of inhibiting angiogenesis comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine and piperidino; or a pharmaceutically acceptable salt or solvate thereof.

5,610,167

METHODS OF INHIBITING ATROPHY OF THE SKIN AND VAGINA

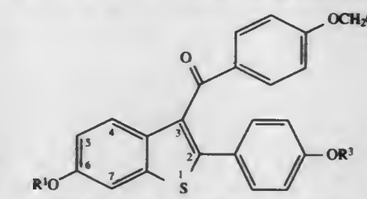
George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 171,087, Dec. 21, 1993, Pat. No. 5,461,064. This application May 19, 1995, Ser. No. 444,665

Int. Cl.[6] A61K *31/445;31/40*

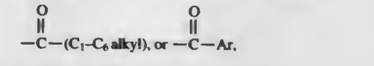
U.S. Cl. 514—324 **7 Claims**

I. A method of inhibiting skin atrophy comprising prophylactically administering to a post menopausal woman in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamthylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,610,168

METHODS OF USE FOR INHIBITING BONE LOSS AND LOWERING SERUM CHOLESTEROL

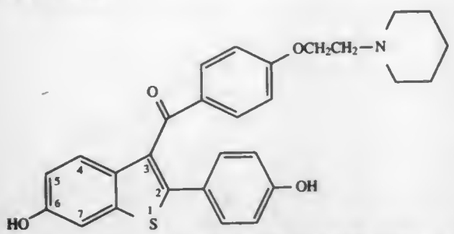
Michael W. Draper, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 205,012, Mar. 2, 1994, Pat. No. 5,478,847. This application Apr. 14, 1995, Ser. No. 422,289

Int. Cl.[6] A61K *31/44;31/40;37/06*

U.S. Cl. 514—333 **11 Claims**

1. A method of lowering serum cholesterol levels in a human comprising administering to a human in need thereof a compound of the formula



(I)

or a pharmaceutically acceptable salt or solvate thereof, in an amount of about 50 to about 150 mg/day.

5,610,169

PHARMACEUTICAL COMPOSITION CONTAINING SLIGHTLY WATER-SOLUBLE DRUG

Toru Iwao; Kenichi Hirai; Nobuo Kondoh; Koichi Yamanouchi, and Kazumasa Yokoyama, all of Hirakata, Japan, assignors to The Green Cross Corporation, Osaka, Japan

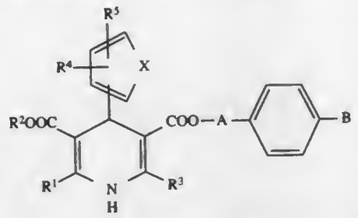
Continuation of Ser. No. 115,785, Sep. 3, 1993, Pat. No. 5,462,951, which is a continuation of Ser. No. 672,498, Mar. 20, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,549

Claims priority, application Japan, Mar. 23, 1990, 2-73695

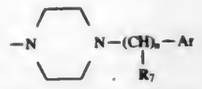
Int. Cl.[6] A61K *31/44;31/495;47/00*

U.S. Cl. 514—334 **11 Claims**

1. A non-micelle pharmaceutical composition for oral administration comprising a dihydropyridine derivative of the formula



wherein R^1, R^2, and R^3 are the same or different and are an alkyl, a cycloalkyl or an alkoxyalkyl, R^4 and R^5 are the same or different and are hydrogen atom, a halogen, nitro, a halogenated alkyl, an alkylsulfonyl, a halogenated alkoxy, an alkylsulfinyl, an alkyl, a cycloalkyl, an alkoxy, cyano, an alkoxycarbonyl or an alkylthio wherein R^4 and R^5 are not hydrogen atoms at the same time, X is a group of vinylene or azomethine, A is an alkylene and B is $—N(R^6)_2$ or



wherein R^6 and R^7 are respectively hydrogen atom, an alkyl, a cycloalkyl, an aralkyl, an aryl or pyridyl, Ar is an aryl or pyridyl and n is an integer of 0 to 2, or their acid addition salts dissolved in a polyoxyethylenesorbitan fatty acid ester and a fatty acid monoglyceride.

5,610,170

PACKAGE FORM FOR BICARBONATE-CONTAINING POWDERY PHARMACEUTICAL COMPOSITIONS AND A METHOD OF STABILIZING THE COMPOSITIONS

Fujio Inoue; Masamitsu Izumi, both of Naruto, and Satoru Hayashi, Tokushima-ken, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima-ken, Japan

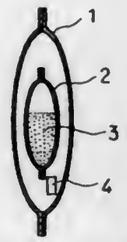
PCT No. PCT/JP94/00041, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/16663, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 14, 1994, Ser. No. 307,804

Claims priority, application Japan, Jan. 22, 1993, 5-009419

Int. Cl.[6] A61J *1/00*

U.S. Cl. 514—340 **9 Claims**



1. A method of stabilizing a bicarbonate-containing powdery pharmaceutical composition comprising

filling the bicarbonate-containing powdery pharmaceutical composition in a moisture- and gas-permeable plastic container,

wrapping the so-filled container in a moisture- and gas-impermeable plastic wrapper and

carrying out at least one procedure selected from the group consisting of

a procedure of introducing carbon dioxide into a space between said container and wrapper,

a procedure of introducing a carbon dioxide-liberating deoxygenating agent in said space and

a procedure of introducing a desiccant previously saturated with carbon dioxide by way of adsorption in said space.

5,610,171

INHIBITION OF METASTASIS IN PATIENTS HAVING CANCER WITH PYRIDYLOXAZOLE-2-ONES

Alan J. Bitonti, Cincinnati, Ohio, assignor to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

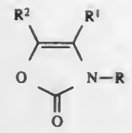
Continuation of Ser. No. 54,464, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 890,321, May 26, 1992, abandoned, which is a continuation of Ser. No. 699,821, May 14, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 368,253

Int. Cl.[6] A61K *31/44;31/42*

U.S. Cl. 514—340 **7 Claims**

1. A method of inhibiting metastasis in a patient having metastatic lung cancer which comprises administering to the patient an amount of a compound of the formula I effective to inhibit

metastasis



(I)

wherein

R and R^1 are each independently selected from the group consisting of hydrogen, C_1–C_6 alkyl, and phenyl or C_1–C_3 alkylphenyl wherein the phenyl ring is optionally substituted with one, two or three of the substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, and C_1–C_4 alkoxy; and

R^2 is a 2-, 3-, or 4-pyridyl group wherein the pyridyl group is optionally substituted with one or two substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, cyano, carboxy, carb(C_1–C_5)alkoxy, carbamido, (C_1–C_5)alkanoylamino, imidazolyl, nitro and trifluoromethyl or wherein the pyridyl group is optionally substituted with a phenyl group which is optionally substituted with one, two or three of the substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, and C_1–C_4 alkoxy;

or a pharmaceutically-acceptable salt thereof.

5,610,172

SULFONAMIDOCARBONYLPYRIDINE-2-CARBOXAMIDES AND PYRIDINE-N-OXIDES WHICH ARE USEFUL AS PHARMACEUTICALS

Klaus Weidmann, Kronberg; Martin Bickel, Bad Homburg, and Volkmar Günzler-Pukall, Marburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

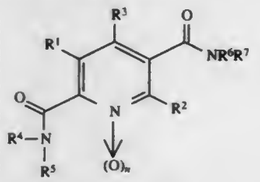
Filed Mar. 24, 1995, Ser. No. 410,259

Claims priority, application Germany, Mar. 25, 1994, 44 10 423.5

Int. Cl.[6] C07D *213/81;213/82;* **A61K** *31/44*

U.S. Cl. 514—350 **14 Claims**

1. A sulfonamidocarbonylpyridine-2-carboxamide or its pyridine-N-oxide of the formula I



formula I

in which

R^1 is hydroxyl or (C_1–C_6)-alkoxy,

R^2 and R^3 are identical or different and are hydrogen, unsubstituted or substituted (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, halogen, nitrile, hydroxyl or amino,

R^6 is hydrogen, (C_1–C_6)-alkyl (C_1–C_8)-alkanoyl, (C_1–C_6)-alkylcarbamoyl, (C_1–C_6)-alkoxycarbonyl, benzyloxycarbonyl, (C_1–C_{10})-acyloxy-(C_1–C_6)-alkyl, benzoyloxy-(C_1–C_6)-alkyl, benzyloxycarbonyloxy-(C_1–C_6)-alkyl or (C_1–C_6)-alkoxycarbonyloxy-(C_1–C_6)-alkyl, a 1-, 2-, 3- or 4-valent physiologically utilizable cation, or an ammonium ion, optionally substituted 1–3 times by (C_1–C_8)-alkyl, (C_1–C_8)-hydroxyalkyl, (C_1–C_4)-alkoxy-(C_1–C_8)-alkyl, phenyl, benzyl or (C_1–C_8)-alkyl which can be substituted 1 to 3 times by hydroxyl or (C_1–C_4)-alkoxy, or a cation of a basic amino acid derivative,

R^7 is a radical of the formula II, excluding $—SO_2H$,

$$—Y—[C—U]_r—D—W \qquad \text{(II)}$$

in which

Y is $—SO_2—$ or —CO—,

C is a bond or

a branched or unbranched aliphatic (C_1–C_{16})-alkanediyl or cycloaliphatic (C_3–C_{10})-alkanediyl radical or a branched or unbranched (C_2–C_{16})-alkenediyl or cycloalkenediyl radical, or a (C_2–C_{16})-alkynediyl radical or a (C_2–C_{16})-alkenynediyl radical, which in each case can contain one or more C—C multiple bonds,

U is a bond or hydrogen or —CO—, —O(CO)—, —(CO)—O—, —(CO)NR—, —NR(CO)—, —O—, —SO—, $—SO_2—$, or —NR, in which R is (C_1–C_3)-alkyl or hydrogen,

r is 1, 2, 3 or 4,

D is a bond or hydrogen or a branched or unbranched aliphatic (C_1–C_{10})-alkanediyl radical, or a branched or unbranched (C_2–C_{10})-alkenediyl radical, a (C_2–C_{10})-alkynediyl radical or a (C_2–C_{10})-alkenynediyl radical, which in each case can contain one or more C—C multiple bonds,

W is a bond or hydrogen or a (C_3–C_{10})cycloaliphatic alkyl, alkenyl, alkynyl or alkenynyl radical or a (C_6–C_{16})-aryl radical or a 5- or 6-membered heteroaryl radical, where at least one of the variables C or D or W is not a bond and U is only a heteroatom group if C is not a bond or if D and/or W are not a bond and

C and/or W, if these are not a bond or hydrogen, are unsubstituted or substituted,

R^4 is hydrogen, (C_1–C_6)-alkyl, phenyl or phenyl-(C_1–C_4)-alkyl,

R^5 is an unsubstituted or substituted, branched or unbranched, aliphatic (C_1–C_8)-alkyl radical which carries an acidic group and furthermore can carry one or more substituents.

5,610,173

FORMULATIONS FOR LIPOPHILIC COMPOUNDS

Donna P. Schwartz, San Mateo, and Laura K. Shawver, San Francisco, both of Calif., assignors to Sugen, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 370,574, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 179,570, Jan. 7, 1994. This application Apr. 26, 1995, Ser. No. 429,206

Int. Cl.[6] A61K *31/42;31/165*

U.S. Cl. 514—378 **18 Claims**

1. A formulation comprising:

a) a first solution comprising a pharmaceutically acceptable surfactant and ethanol in a surfactant:ethanol ratio of 10:1 to 1:10 (v/v), and

b) at least 1 mg/ml of a lipophilic compound, wherein said lipophilic compound comprises either an isoxazole group or a cyanoacetamide group.

5,610,174

USE OF α_{1A}-SELECTIVE ADRENOCEPTOR AGONISTS FOR THE TREATMENT OF URINARY INCONTINENCE

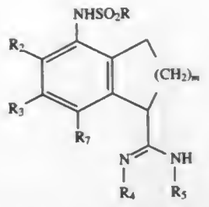
Douglas A. Craig, Fair Lawn; Carlos C. Forray, Paramus; Charles Gluchowski, Wayne, and Theresa A. Branchek, Teaneck, all of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Filed Jun. 2, 1995, Ser. No. 459,410

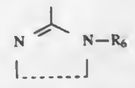
Int. Cl.[6] A61K *31/415;31/18;31/40;31/405*

U.S. Cl. 514—401 **3 Claims**

1. A method of treating urinary incontinence in a subject which comprises administering to the subject a therapeutically effective amount of a compound having the structure:



wherein m is an integer from 0 to 2; wherein each of R_2, R_3 and R_7 is independently H; OR; R; halo; amino; or acetamido; wherein R is H or C_1–C_6 alkyl; wherein R_3 and R_7 taken together constitute a methylenedioxy, ethylenedioxy, benzimidazole or indole ring; wherein each of R_4 and R_5 are independently H or taken together has the following formula:



wherein the dashed line represents a single or double bond; and R_6 is H or C_1–C_6 alkyl; or a pharmaceutically acceptable salt thereof.

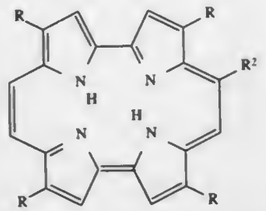
5,610,175

9-SUBSTITUTED PORPHYCENES

Emanuel Vogel; Martin Mueller, both of Cologne, Germany; Otto Halpern, Gerona, Spain, and Alexander D. Cross, Atherton, Calif., assignors to Cytopharm, Inc., Menlo Park, Calif.

Filed Apr. 6, 1995, Ser. No. 418,118
Int. Cl.[6] A61K *31/40;* **C07D** *487/22*
U.S. Cl. 514—410 **18 Claims**

1. A porphycene of the formula:



wherein each R is, independently, $—(CH_2)_n—X$, n=1–10, X is OR^1, and R^1 is alkyl, aralkyl or aryl,

R^2 is (1) hydroxy, alkoxy or $OCOR^3$, wherein R^3 is $—(CH_2)_m—Y$, m=1–10 and Y is:

(a) hydrogen or halogen,

(b) $C(O)OR^4$, wherein R^4 is hydrogen, alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl,

(c) NR^5R^6 wherein R^5 and R^6, independently, are hydrogen, alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl,

(d) $NR^4R^5R^{6+}A^{31}$, wherein A^{31} is an anion and R^4, R^5 and R^6 are as defined above,

(e) $NHC(O)OR^4$, wherein R^4 is as defined above; or

R^2 is (2):

$OC(O)R^7$, wherein R^7 is substituted or unsubstituted aryl or $—CHR^8=CHR^9—R^{10}$, R^8 and R^9 are, independently, hydrogen or C_{1-6} alkyl, and R^{10} is alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl; or

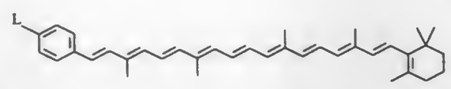
R^2 is (3):

(a) $NR^{11}R^{12}$, wherein R^{11} and R^{12} independently, are hydrogen, alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl,

(b) $NHCO—(CH_2)_p$**13** Z, wherein p=1–10 and Z is H, OH, $NR^{11}R^{12}$, $C(O)OR^4$, $OC(O)R^4$, $C(O)NHR^4$ or $NHC(O)OR^4$, wherein R^4, R^{11} and R^{12} are as defined above; or

R^2 is (4):

(III)



wherein L is —OC(O)— or —NHC(O)—; salts or metal complexes thereof, provided that said porphycene is not 9-acetoxy-2,7,12,17-tetrakis (methoxyethyl) porphycene.

5,610,176

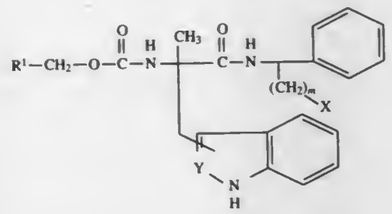
TACHYKININ (NK1) RECEPTOR ANTAGONISTS

David C. Horwell, Foxton; William Howson, Sandwich, and Martyn C. Pritchard, St. Ives, all of England, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 254,821, Jun. 6, 1994, abandoned. This application Sep. 7, 1995, Ser. No. 525,228
Int. Cl.[6] C07D *419/06;201/10;* **A61K** *31/40;31/495*
U.S. Cl. 514—414 **25 Claims**

1. A compound of formula

I



or a pharmaceutically acceptable salt thereof wherein

R^1 is phenyl, pyridyl, thienyl, furanyl, naphthyl, indolyl, benzofuranyl, or benzothienyl each unsubstituted, mono-, di-, or trisubstituted by alkyl, hydroxy, alkoxy, nitro, halogen, amino, or trifluoromethyl;

X is OR^2 wherein R^2 is hydrogen, $(CH_2)_nNR_3R_4$, or a promoiety, or

X is NH_2,

NHCO-promoiety,

$NHCO(CH_2)_nNR_3R^4$,

NR^3R^4, or

$(CH_2)_nNR^3R^4$ wherein n is an integer of from 0 to 5 and R^3 and R^4 are each independently selected from hydrogen and methyl;

m is an integer of from 1 to 6; and

Y is CH, CCH_3, CF, CCl, CBr, $CSCH_3$, or N.

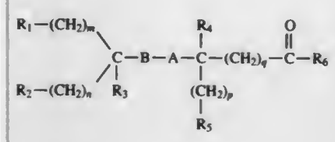
5,610,177

ACYLATED AMINO ACIDS AS ENDOTHELIN ANTAGONISTS

Annette M. Doherty, Ann Arbor; Harriet W. Hamilton, Chelsea; James S. Kaltenbronn, and John Quin, III, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 8, 1994, Ser. No. 287,389
Int. Cl.[6] C07D *209/20;403/06;401/06;413/06;* **A61K** *3/405;3/445;31/535;31/495*
U.S. Cl. 514—419 **12 Claims**

1. A compound of formula



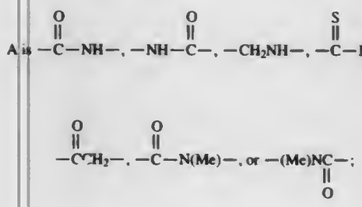
or a pharmaceutically acceptable salt thereof wherein

R_1 and R_2 are each independently a substituted or unsubstituted aryl selected from phenyl, naphthyl, anthracenyl, and fluorenyl, a partially or completely saturated compound derived from the said aryl or is a substituted or unsubstituted 3- to 5-membered cycloalkyl wherein the substituents are from 1 to 3 groups selected from alkyl which is a straight or branched chain of front 1 to 6 carbons, alkoxy, the alkyl portion of which is a straight or branched chain of 1 to 6 carbons, hydroxy, or halogen;

m and n are each independently an integer of from 1 to 3:

R_3 is hydrogen or a straight or branched alkyl of from 1 to 4 carbon atoms;

B is absent or —CH=CH—, or $—(CH_2)_r$ wherein r is an integer of from 1 to 3;



R_4 is a straight or branched alkyl of from 1 to 4 carbon atoms, alkenyl of from 2 to 4 carbon atoms, or benzyl or benzyl substituted with 1 to 3 halo, alkoxy, or alkyl groups;

p is an integer of from 0 to 3;

R_5 is a substituted or unsubstituted 2- or 3-indolyl;

q is an integer of from 0 to 3; and

R_6 is OR_7 wherein R_7 is hydrogen or lower alkyl or R_6 is NR_8R_9, wherein K_8 and R_9 are each independently hydrogen or lower alkyl; or

R_8 and R_9 together form a ring selected from pyrrolidine, piperidine, morpholine, and N-methylpiperazine.

5,610,178

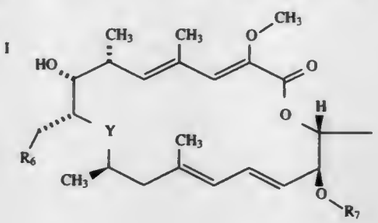
MACROLIDES AND THE USE THEREOF

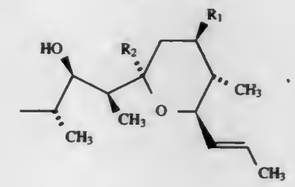
Axel Zeeck, Göttingen; Kai U. Bindseil, Rheinfelden, and Claudia Boddien, Göttingen, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 9, 1994, Ser. No. 287,984
Claims priority, application Switzerland, Aug. 16, 1993, 2435/93
Int. Cl.[6] A61K *31/335;* **C07D** *313/00*
U.S. Cl. 514—450 **24 Claims**

1. A method for using a compound of formula

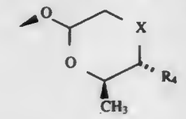
(I)





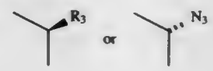
wherein

R_1 is hydroxy, 2-hydroxyethoxy, C_1–C_4alkoxy, C_1–C_4alkanoyloxy, halogen, amino, azido, a keto, p-nitrobenzenesulfonyl or a pyranyloxy group of the formula



wherein

X is a group of the formula



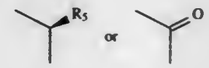
wherein

R_3 is hydroxy, C_1–C_4alkanoyloxy or organic sulfonyloxy, and

R_4 is hydroxy, C_1–C_4alkanoyloxy or carbamoyloxy,

R_2 is hydrogen, hydroperoxy, hydroxy or C_1–C_4alkoxy,

Y is a group of the formula



wherein

R_5 is hydroxy or C_1–C_4alkanoyloxy, and

R_6 and R_7 are each independently of the other hydrogen or methyl,

comprising preparing of a medicament that is suitable for the prophylaxis and treatment of diseases that respond to the inhibition of the osteoclast proton pump.

5,610,179

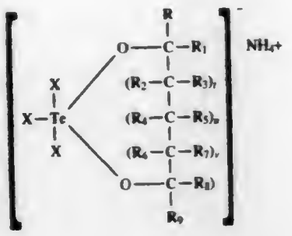
METHOD OF TREATING BABESIOSIS

Benjamin Sredni, Shachal 3 Street, Kfar-Saba, and Michael Albeck, 8 Harel Street, 52444 Ramat-Gan, both of Israel

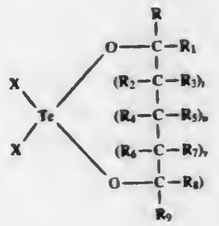
Filed Dec. 15, 1994, Ser. No. 357,129
Int. Cl.[6] A61K *31/335;31/35;31/34;33/24*
U.S. Cl. 514—450 **10 Claims**

1. A method for treating or preventing babesiosis which comprises administering to a host that is in need of treatment or is susceptible to babesiosis an effective amount, for the treatment or prevention of babesiosis, of a tellurium compound of the formula:

(A)



or



(B)

or

TeO_2 or complexes of TeO_2

or

$PhTeCl_3$ (D)

or

$(C_6H_5)_4P+(TeCl_3(O_2C_2H_4))-$

TeX_4.

wherein t is 1 or 0; u is 1 or 0; v is 1 or 0; R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, and R_9 are the same or different and are independently selected from the group consisting of hydrogen, hydroxyalkyl of 1 to 5 carbons, hydroxy, alkyl of 1 to 5 carbon atoms, halogen, haloalkyl of 1 to 5 carbon atoms, carboxy, alkylcarbonylalkyl of 2 to 10 carbons, alkanoyloxy of 1 to 5 carbon atoms, carboxyalkyl of 1 to 5 carbons atoms, acyl, amido, cyano, amidoalkyl of 1 to 5 carbons, N-monoalkylamidoalkyl of 2 to 10 carbons, N,N-dialkylamidoalkyl of 4 to 10 carbons, cyanoalkyl of 1 to 5 carbons alkoxy of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 10 carbon atoms and —COR_{10} wherein R_{10} is alkyl of from 1 to 5 carbons; X is halogen and complexes of said tellurium compound.

5,610,180

IONIZABLE CONGENERS OF AROMATIC AND ALIPHATIC ALCOHOLS AS ANTI-LEUKEMIA AGENTS

Marc W. Fariss, Manakin-Sabot, Va., assignor to Virginia Commonwealth University, Richmond, Va.

Continuation-in-part of Ser. No. 28,831, Mar. 10, 1993, Pat. No. 5,336,485, which is a continuation of Ser. No. 678,110, Apr. 1, 1991, Pat. No. 5,198,432, which is a continuation-in-part of Ser. No. 316,789, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 149,762, Jan. 29, 1988, abandoned. This application Aug. 8, 1994, Ser. No. 286,994
Int. Cl.[6] A61K *31/355;31/56*
U.S. Cl. 514—458 **11 Claims**

1. A method for suppressing or preventing cancer selected from the group consisting of lymphoid and myeloid leukemias comprising the step of providing a patient in need thereof with a therapeutic dose of a compound selected from the group consisting of tocopheryl succinate, tocopheryloxybutyric acid, cholesteryl succinate, cholesteryloxybutyric acid, or pharmaceutically acceptable salts, tris salts, ethers and esters thereof.

5,610,181

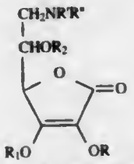
DERIVATIVES OF AMINO-ASCORBIC ACID, THE PROCESSES FOR THEIR PREPARATION AND USE

Božidar Šušković ; Vanja Vela, and Mira Bunčić , all of Zagreb, Croatia, assignors to Pliva, farmaceutska, kemijska, prehrambena i kozmeticka industrija dionicko drustvo, Zagreb, Croatia

Division of Ser. No. 190,921, Feb. 3, 1994, Pat. No. 5,559,251. This application Sep. 18, 1995, Ser. No. 529,394
Claims priority, application Croatia, Feb. 5, 1993, P930131A
Int. Cl.[6] A61K *31/34*
U.S. Cl. 514—471 **11 Claims**

1. A method for treating a patient in need of an anticarcinogenic agent, which comprises administering to said patient an effective amount of a derivative of amino-ascorbic acid of the formula (1):

1



wherein R'=H, R"=COR""
wherein R""=H, C_1–C_{18} alkyl, C_6 cycloalkyl, C_6–C_{12} aryl, or heteroyl atoms, which represents a heterocyclic compound containing in the ring oxygen, sulfur or nitrogen as heteroatom, R, R_1 and R_2=H or benzyl and their salts with acids and alkalis.

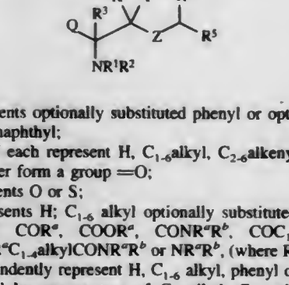
5,610,182

PHARMACEUTICAL COMPOSITION FOR THE THERAPY OF CEREBRAL THROMBOSIS

Yutaka Mizushima, 1-1-11, Umegaoka, Setagaya-ku, Tokyo 154, Japan; Kiyoshi Bannai, Scardale, N.Y., and Shigeru Nakayana, Tokyo, Japan, assignors to Teijin, Limited, Osaka; Taisho Pharmaceutical Co., Ltd., and Yutaka Mizushima, both of Tokyo, all of Japan

PCT No. PCT/JP94/00142, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO94/17804, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 2, 1994, Ser. No. 313,244
Claims priority, application Japan, Feb. 3, 1993, 5-016321
Int. Cl.[6] A61K *31/557*
U.S. Cl. 514—530 **12 Claims**

1. A method for the therapy of cerebral thrombosis, in which a pharmaceutical composition which is an emulsion containing 0.2 to 1,000 μg, per ml of the composition of isocarbacyclin represented by the following formula (1),



(1)

wherein R^1 is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms and R^2 is an optionally substituted alkyl group having 1 to 13 carbon atoms, an optionally substituted alkenyl or alkynyl group having 2 to 13 carbon atoms or an optionally substituted cycloalkyl group having 3 to 10 carbon atoms, 0.05 to 0.5 g, per ml of the composition, of a plant oil, 0.01 to 0.5 g, per gram of the plant oil, of a phospholipid and water, in an effective amount of isocarbacylin is parenterally administered to a patient of cerebral thrombosis at an acute stage.

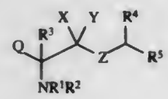
5,610,183

PHENYLGLYCINE DERIVATIVES PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE IN THERAPY

Andrew P. Owens, Rushden, and Brian J. Williams, Great Dunmow, both of United Kingdom, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, United Kingdom

PCT No. PCT/GB92/01241, § 371 Date Dec. 17, 1993, § 102(e) Date Dec. 17, 1993, PCT Pub. No. WO93/01165, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 8, 1992, Ser. No. 167,870
Claims priority, application United Kingdom, Jul. 10, 1991, 9114886; Apr. 2, 1992, 9207278
Int. Cl.[6] A61K *31/195;* **C07C** *255/03;271/10;233/00*
U.S. Cl. 514—539 **11 Claims**

1. A method for the treatment of pain, inflammation, migraine or postherpetic neuralgia, which method comprises administration to a patient in need thereof of a tachykinin-reducing amount of a compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein

Q represents optionally substituted phenyl or optionally substituted naphthyl;

X and Y each represent H, C_{1-6}alkyl, C_{2-6}alkenyl or X and Y together form a group =O;

Z represents O or S;

R^1 represents H; C_{1-6} alkyl optionally substituted by hydroxy, cyano, COR^a, $COOR^a$, $CONR^aR^b$, $COC_{1-4}alkylNR^aR^b$, $CONR^aC_{1-4}alkylCONR^aR^b$ or NR^aR^b, (where R^a and R^b each independently represent H, C_{1-6} alkyl, phenyl optionally substituted by one or two of C_{1-6}alkyl, C_{1-6} alkoxy, halo or trifluoromethyl or phenyl(C_{1-4}alkyl) optionally substituted in the phenyl ring by one or two of C_{1-6} alkyl, C_{1-6} alkoxy, halo or trifluoromethyl); phenyl(C_{1-4} alkyl) (optionally substituted in the phenyl ring by one or two of C_{1-6} alkyl, C_{1-6} alkoxy, halo or trifluoromethyl); C_{2-6} alkenyl; COR^a; $COOR^a$; $CONHR^a$; COC_{1-6}alkylhalo; $COC_{1-6}alkylNR^aR^b$; or $CONR^aC_{1-6}alkylCONR^aR^b$, where R^a and R^b are as previously defined;

R^2 represents C_{1-6} alkyl substituted by hydroxy, cyano, COR^a, $COOR^a$, $CONR^aR^b$, $COC_{1-4}alkylNR^aR^b$, $CONR^aC_{1-4}alkylCONR^aR^b$ or NR^aR^b, (where R^a and R^b are as above defined); phenyl(C_{1-4} alkyl) (optionally substituted by one or two of C_{1-6} alkyl, C_{1-6} alkoxy, halo and trifluoromethyl in the phenyl ring); C_{2-6} alkenyl; COR^a; $COOR^a$; $CONHR^a$; COC_{1-6}alkylhalo; $COC_{1-6}alkylNR^aR^b$; or $CONR^aC_{1-6}alkylCONR^aR^b$, where R^a and R^b are as previously defined;

R^3 represents H or C_{1-6}alkyl;

R^4 represents H, C_{1-6} alkyl or phenyl (optionally substituted by one or two of C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, SR^c, SOR^c, SO_2R^c, OR^c, NR^cR^d, NR^cCOR^d, NR^cCOOR^d, $COOR^c$ or $CONR^cR^d$, where R^c and R^d each independently represent H, C_{1-6} alkyl, phenyl or trifluoromethyl); and

R^5 represents $(CH_2)_q$phenyl, wherein q is 0, 1, 2 or 3, which may optionally be substituted in the phenyl ring by one or two of C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, SR^c, SOR^c, SO_2R^c, OR^c, NR^cR^d, NR^cCOR^d, NR^cCOOR^d, $COOR^c$ or $CONR^cR^d$, where R^c and R^d are as above defined.

5,610,184

METHOD FOR SUSTAINED AND EXTENDED CORNEAL ANALGESIA

Lee Shahinian, Jr., 1506 Country Club Dr., Los Altos, Calif. 94024

Continuation-in-part of Ser. No. 183,186, Jan. 14, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,184
Int. Cl.[6] A61K *31/24*
U.S. Cl. 514—540 **32 Claims**

1. An in vivo method for safe, extended and sustained corneal analgesia in a human patient without corneal toxicity and without loss of the cornea's protective touch sensation, comprising topical administration to the patient's cornea of an ophthalmic analgesic solution containing a subanesthetic concentration of local anesthetic from about 0.001% to about 0.05%.

5,610,185

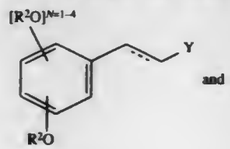
METHOD FOR THE TREATMENT OF HYPERPROLIFERATIVE EPITHELIAL SKIN DISEASES BY TOPICAL APPLICATION OF HYDROXYLATED AROMATIC PROTEIN CROSS-LINKING COMPOUNDS

Caroline Stanwell; Stuart H. Yuspa, and Terrence R. Burke, Jr., all of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 17, 1995, Ser. No. 389,845
Int. Cl.[6] A61K *31/235;31/47*
U.S. Cl. 514—544 **9 Claims**

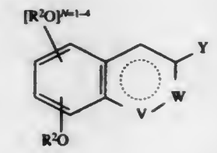
1. A method of treating hyperproliferative epithelial cell lesion comprising topically applying to the lesion an effective amount of a composition containing at least one compound of the formula:

[I.]



and

[II.]



R^1, R^2=H;

where Z=alkyl, aryl, aralkyl or alkaryl;
Y=H, alkyl; aralkyl, alkaryl; aryl;

where Q=H, alkyl-O, N; O-alkaryl; O-aralkyl; N-alkaryl; or N-aralkyl;
- - - represents an optional double bond and V and W=nitrogen or carbon, wherein the alkyl, aralkyl, alkaryl are 2 to 13 carbons in size, and the aryl is 6 to 12 carbons in size.

5,610,186

FLEA KILLER METHOD AND COMPOSITIONS

Lester J. Workman, P.O. Box 5547, Sarasota, Fla. 34277

Filed Mar. 31, 1993, Ser. No. 41,060
Int. Cl.[6] A01N *37/02;37/06;65/00*
U.S. Cl. 514—547 **3 Claims**

1. An insecticidal composition for eliminating or controlling ectoparasites on domestic animals, said composition consisting essentially of from 25 weight percent to 75 weight percent of
a coconut oil soap, and
a surfactant which is dioctyl sodium sulfosuccinate, and the balance water, wherein the ratio of coconut oil soap to dioctyl sodium sulfosuccinate on a weight-to-weight basis is from about 2:3 to about 3:2.

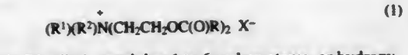
5,610,187

BIODEGRADABLE QUATERNARY HAIR AND SKIN CONDITIONERS

Munna M. Manning; Andrea S. Allardice, both of Columbus, and Floyd Friedli, Dublin, all of Ohio, assignors to Witco Corporation, Greenwich, Conn.

Division of Ser. No. 286,544, Aug. 5, 1994. This application Jun. 7, 1995, Ser. No. 480,349
Int. Cl.[6] A61K *31/23*
U.S. Cl. 514—552 **11 Claims**

1. A method for conditioning skin comprising applying to the skin a conditioning effective amount of a composition comprising
(a) from 0.1 wt. % to 10 wt. % of a mixture of compounds of the formula (1)



(1)

wherein Ris alkyl containing 1 to 6 carbon atoms, or hydroxyalkyl containing 1 to 6 carbon atoms; R2 is alkyl containing 1 to 6 carbon atoms, or benzyl; X^- is an anion; and R is selected from the group consisting of alkyl and alkylene groups containing 11 to 23 carbon atoms and up to 3 carbon—carbon double bonds, provided that said mixture contains compounds of formula (1) containing R groups which have at least 2 different chain lengths and containing R groups which have 0, 1 and 2 carbon—carbon double bonds; and
(b) a cosmetically acceptable vehicle which imparts to said composition fluidity upon application thereof to the skin and which has a pH value compatible with said skin.

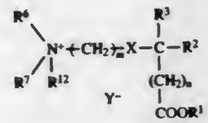
5,610,188

ANTICHOLINERGIC COMPOUNDS, COMPOSITIONS AND METHODS OF TREATMENT

Richard H. Hammer, and Nicholas S. Bodor, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

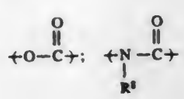
Division of Ser. No. 104,650, Aug. 11, 1993, Pat. No. 5,418,244, which is a division of Ser. No. 931,320, Aug. 18, 1992, Pat. No. 5,258,388, which is a division of Ser. No. 558,823, Jul. 27, 1990, Pat. No. 5,223,528, which is a continuation of Ser. No. 245,333, Sep. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 189,709, May 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 130,454, Nov. 17, 1987, abandoned, and a continuation-in-part of Ser. No. 839,941, Mar. 17, 1986, abandoned. This application Dec. 30, 1994, Ser. No. 366,464
Int. Cl.[6] A61K *31/24;* **C07C** *229/34*
U.S. Cl. 514—538 **22 Claims**

1. A quaternary ammonium salt of the formula



(I)

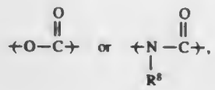
wherein:
R^1 is C_1–C_8 straight or branched alkyl; C_2–C_8 straight or branched alkenyl; (C_3–C_8 cycloalkyl)-C_pH_{2p}— wherein p is an integer from 0 to 4, and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; (C_3–C_8 cycloalkenyl)-C_pH_{2p}— wherein p is an integer from 0 to 4 and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; C_6H_5—C_qH_{2q}— wherein q is an integer from 1 to 4; or (C_6–C_{18} polycarbocyclic)-C_pH_{2p}— wherein p is an integer from 0 to 4, the 6- to 18-membered ring portion consisting of 2 to 4 rings which are bridged or fused, which are saturated or unsaturated and which optionally bear one or more C_1–C_8 straight or branched alkyl substituents, the total carbon atom content of all such optional alkyl substituents being from 1 to 10;
R^2 is phenyl optionally bearing 1 to 3 C_1–C_4 straight or branched alkyl substituents; C_3–C_8 branched alkenyl; (C_3–C_8 cycloalkyl)-C_pH_{2p}— wherein p is an integer from 0 to 4, and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; (C_3–C_8 cycloalkenyl)-C_pH_{2p}— wherein p is an integer from 0 to 4 and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; or C_6H_5—C_qH_{2q}— wherein q is an integer from 1 to 4;
R^3 is H, phenyl optionally bearing 1 to 3 C_1–C_4 straight or branched alkyl substituents, or (C_3–C_8 cycloalkyl)-C_pH_{2p}— wherein p is an integer from 0 to 4 and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents;
a is an integer from 0 to 4;
X is



wherein R^8 is H or C_1–C_5 straight or branched alkyl; or



wherein each of R^9 and R^{10}, which are the same or different, is H or C_1–C_5 straight or branched alkyl;
when X is



then m is 1, 2 or 3;
when X is



then m is 1 or 2;
each of R^6 and R^7, which are the same or different, is selected from the group consisting of C_1–C_5 straight or branched alkyl, C_6H_5—C_qH_{2q}— wherein q is an integer from 1 to 4, phenyl optionally bearing 1 to 3 C_1–C_4 straight or branched alkyl substituents, and (C_3–C_8 cycloalkyl)-C_pH_{2p}— wherein p is an integer from 0 to 4 and wherein the 3- to 8- membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents;
R^{12} is C_1–C_4 straight or branched alkyl or benzyl;
and Y is a pharmaceutically acceptable anion.

5,610,189

DISINFECTING COMPOSITION

Reginald K. Whiteley, 18 Glenside Street, Balgowlah Heights, NSW 2093, Australia

PCT No. PCT/AU93/00087, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/17558, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 295,741
Claims priority, application Australia, Mar. 3, 1992, PL1145
Int. Cl.[6] A01N *37/00;35/00;27/00*
U.S. Cl. 514—557 **32 Claims**

1. A disinfecting composition comprising stable aqueous solutions of:
(a) a blend of biocidally active terpenes;
(b) one or more biocidally active surfactants;
(c) one or more proton donor type biocides; and
(d) a salt of mono, di or trihydroxy aliphatic or aromatic acid;
wherein the blend of biocidally active terpenes is tea tree oil.

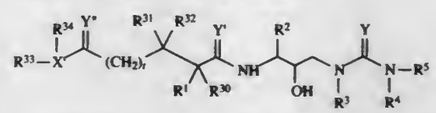
5,610,190

RETROVIRAL PROTEASE INHIBITORS

John J. Talley; Daniel P. Getman, both of Chesterfield; Gary A. DeCrescenzo, St. Peters; Ko-Chung Lin, St. Louis, all of Mo.; Michael L. Vazquez, Gurnee; Richard A. Mueller, Glencoe, both of Ill.; Kathryn L. Reed, Raleigh, N.C.; Robert M. Heintz, Ballwin, Mo.; Michael Clare, Skokie, Ill.; John N. Freskos, Clayton, Mo., and Eric T. Sun, Buffalo Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 152,934, Nov. 15, 1993, Pat. No. 5,482,947, which is a continuation of Ser. No. 886,558, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,646, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,009
Int. Cl.[6] A61K *31/17;* **C07C** *275/18*
U.S. Cl. 514—595 **48 Claims**

1. Compound represented by the formula:



or a pharmaceutically acceptable salt thereof, wherein: t is either 0 or 1; R^1 represents hydrogen, —$CH_2SO_2NH_2$, —CO_2CH_3, —$CONHCH_3$, —$CON(CH_3)_2$, —$CH_2C(O)NHCH_3$, —$CH_2C(O)N(CH_3)_2$, —$CONH_2$, —$C(CH_3)_2(SCH_3)$, —$C(CH_3)_2(S[O]CH_3)$, —$C(CH_3)_2(S[O]CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano alanine, and allothreonine side chains;
R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals optionally substituted with a group selected from —OR^9, —SR^9, and halogen radicals, wherein R^9 represents hydrogen and alkyl radicals;
R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;
R^4 and R^5, independently represent hydrogen and radicals as defined by R^3, or R^4 and R^5, together with the nitrogen atom to which they are bonded represent heterocycloalkyl and heteroaryl radicals;
R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical;
R^{33} and R^{34} independently represent hydrogen and radicals as defined for R^3, or R^{33} and R^{34} together with X' represent cycloalkyl, aryl, heterocyclyl and heteroaryl radicals, provided that when X' is O, R^{34} is absent;
X' represents N, O or C(R^{17}) wherein R^{17} represents hydrogen and alkyl radicals; and
Y, Y' and Y" independently represent O and S.

5,610,191

THIOAMIDES AND THEIR USE AS CROP PROTECTION AGENTS

Horst Wingert; Hubert Sauter; Herbert Bayer, all of Manheim; Klaus Oberdorf, Heidelberg; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

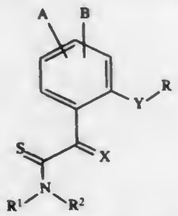
Division of Ser. No. 336,044, Nov. 4, 1994, Pat. No. 5,510,529, which is a division of Ser. No. 158,390, Nov. 29, 1993, Pat. No. 5,393,782. This application Nov. 22, 1995, Ser. No. 562,098

Claims priority, application Germany, Dec. 14, 1992, 42 42 081.4

Int. Cl.[6] A01N *37/18;* **C07C** *327/40*

U.S. Cl. 514—599 **5 Claims**

1. A thioamide of the formula I,



where A, B, and R' are identical or different and each is hydrogen, cyano, C_{1-4}-alkyl, C_{1-4}-alkoxy or halogen;

X is $=CHCH_3$ OR $=N-OCH_3$;

R^1 and R^2 are hydrogen or C_{1-4}-alkyl;

Y is $-CH_2-O-N=C(R')-$; and

R is hydrogen unsubstituted or substituted C_{1-10}-alkyl, unsubstituted or substituted C_{1-6} cycloalkyl, unsubstituted or substituted aryl the term "unsubstituted or substituted" denoting, in addition to hydrogen, halogen, cyano C(O) (C_1–C_4-alkyl) , nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-alkoximino-C_1–C_4-alkyl, aryl, aryloxy, benzyloxy or C_3–C_6-cycloalkyl.

5,610,192

INHIBITORS OF METAZOAN PARASITE PROTEASES

Fred E. Cohen; James H. McKerrow; Christine S. Ring, all of San Francisco; Philip J. Rosenthal, Nicasio; George L. Kenyon, and Zhe Li, both of San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

PCT No. PCT/US93/08708, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/06280, PCT Pub. Date Mar. 31, 1994

Continuation-in-part of Ser. No. 943,925, Sep. 11, 1992, abandoned. This PCT application Sep. 13, 1993, Ser. No. 387,760

Int. Cl.[6] A61K *31/15*

U.S. Cl. 514—614 **18 Claims**

1. A method for treating a patient infected with a metazoan parasite, said method comprising administering an amount effective to kill the parasite of at least one metazoan protease inhibitor of general formula

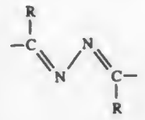
A-X-B

wherein A is a substituted or unsubstituted homoaromatic ring system comprising one to three rings which binds to the S2 subsite of the metazoan protease;

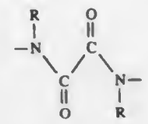
B is a substituted or unsubstituted homoaromatic ring system comprising one to three rings which binds to the S1 or S1' subsite of the metazoan protease;

X is a linker comprising a substantially planar linear array with a backbone of four to eight atoms in length;

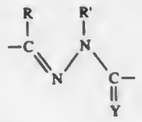
wherein A and B are not heterocycles, and X is selected from the group consisting of:



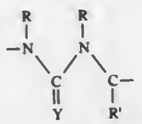
wherein R is hydrogen or lower alkyl;



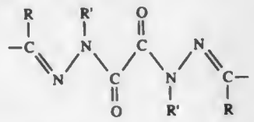
wherein R is hydrogen or lower alkyl;



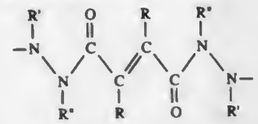
wherein R is hydrogen or lower alkyl, R' is hydrogen, lower alkyl, or aryl, and Y is O or S;



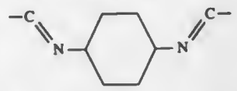
wherein R is hydrogen or lower alkyl, R' is hydrogen, lower alkyl, or aryl, and Y is O or S;



wherein R is hydrogen or lower alkyl and R' is hydrogen, lower alkyl, or aryl;

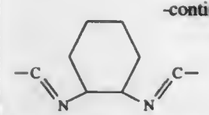


wherein R and R" are independently selected from hydrogen and lower alkyl; and R' is independently selected from hydrogen, lower alkyl, and aryl;

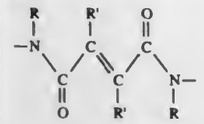


and

-continued



wherein the cyclohexyl group is unsubstituted or substituted; and



wherein R is independently selected from hydrogen and lower alkyl; and R' is independently selected from hydrogen, lower alkyl, and aryl.

5,610,193

PHARMACEUTICAL COMPOSITION

Lamaan A. Al-Razzak, Libertyville; Kennan C. Marsh, Lake Forest, and Richard A. Pyter, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 424,740, Apr. 18, 1995, abandoned, which is a division of Ser. No. 297,004, Aug. 31, 1994, Pat. No. 5,559,158, which is a continuation-in-part of Ser. No. 267,273, Jun. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 130,409, Oct. 1, 1993, abandoned. This application May 22, 1996, Ser. No. 650,261

Int. Cl.[6] A61K *31/16;31/695;31/425;9/48*

U.S. Cl. 514—616 **3 Claims**

1. A solid pharmaceutical composition comprising a pharmaceutically acceptable adsorbent or a mixture of pharmaceutically acceptable adsorbents to which is adsorbed a mixture of (1) a pharmaceutically acceptable organic solvent or a mixture of pharmaceutically acceptable organic solvents, (2) an HIV protease inhibiting compound selected from the group consisting of:

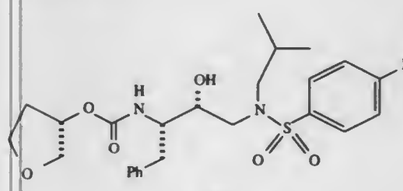
N-(2(R)-hydroxy-1(S)-indanyl)-2(R)-phenylmethyl-4(S)-hydroxy-5-(1-(4-(3-pyridylmethyl)-2(S)-N'-(t-butylcarboxamido)-piperazinyl))-pentaneamide;

N-tert-butyl-decahydro-2-(2(R)-hydroxy-4-phenyl-3(S)-((N-(2-quinolylcarbonyl)-L-asparaginyl) amino)butyl)-(4aS,8aS)-isoquinoline-3(S)-carboxamide;

5(S)-Boc-amino-4(S)-hydroxy-6-phenyl-2(R)-phenylmethylhexanovl-(L)-Val-(L)-Phe-morpholin-4-ylamide;

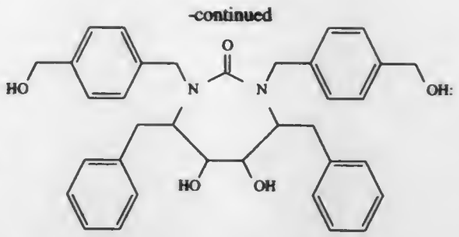
1-Naphthoxyacetyl-beta-methylthio-Ala-(2S,3S)-3-amino-2-hydroxy-4-butanoyl-1,3-thiazolidine- 4-t-butylamide;

(1S-(1R*(R*), 2S*)}-N[1](3-((((1.1-dimethylethyl)amino) carbonyl)(2-methylpropyl)amino)-2 hydroxy-1-(phenylmethyl) propyl)-2-((2-quinolinylcarbonyl)amino)-butanediamide;



and

-continued



or a pharmaceutically acceptable salt thereof;
and (3) a pharmaceutically acceptable acid or a combination of pharmaceutically acceptable acids.

5,610,194

INSECT REPELLING COMPOSITIONS COMPRISING MIXTURES OF AN N-ALKYL NEOALKANAMIDE AND DEET

Thomas G. Polefka, Somerset; Pallassana Ramachandran, Robbinsville; Robert J. Steltenkamp, Somerset; Thomas F. Connors, Piscataway, and Kevin M. Kinscherf, Freehold, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

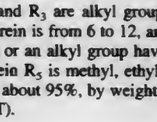
Filed Jun. 10, 1996, Ser. No. 662,745

Int. Cl.[6] A01N *37/18*

U.S. Cl. 514—617 **17 Claims**

1. An insect repellent composition comprising a mixture of:

(a) from about 5 to about 95%, by weight, of an N-alkyl neoalkanamide having the formula:



wherein R_1 R_2, and R_3 are alkyl groups and the sum of the carbon atoms therein is from 6 to 12, and wherein R_4 is either a hydrogen atom or an alkyl group having one to two carbon atoms, and wherein R_5 is methyl, ethyl, or propyl; and

(b) from about 5 to about 95%, by weight, of N,N-diethyl-meta-toluamide (DEET).

5,610,195

ORNITHINE DECARBOXYLASE INHIBITING BRANCHED AMINOOXY AMINO ALKANE DERIVATIVES

Jörg Frei, Hölstein, and Jaroslav Stanek, Ariesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/01036, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO94/24094, PCT Pub. Date Oct. 27, 1994

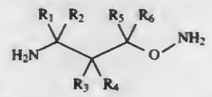
PCT Filed Apr. 2, 1994, Ser. No. 351,336

Claims priority, application Switzerland, Apr. 13, 1993, 1129/93

Int. Cl.[6] A61K *31/13*

U.S. Cl. 514—645 **39 Claims**

1. A compound of the formula I



(I)

in which

a) four of the radicals R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen and the others independently of one another are in each case

C_1–C_2alkyl, these groups being bonded to the same carbon atom or to two different carbon atoms, or

b) five of the radicals R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen and the other radical is C_1–C_2alkyl or hydroxymethyl,

or a salt thereof.

5,610,196

TOPICAL ANTIMICROBIAL AGENTS

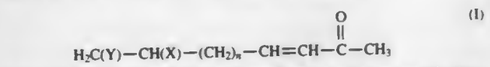
William F. Wood, McKinleyville, Calif., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 408,913, Mar. 22, 1995. This application Dec. 11, 1995, Ser. No. 570,675

Int. Cl.[6] A61K *31/12*

U.S. Cl. 514—675 **6 Claims**

1. A method of treating acne comprising topically applying to the skin of a human afflicted with acne a composition comprising an effective amount of a compound of formula (I):



(I)

$$H_2C(Y)-CH(X)-(CH_2)_n-CH=CH-\overset{O}{\overset{\|}{C}}-CH_3$$

wherein n is 6–16 and X and Y are H or together are a colvalent bond; in combination with a dermatologically acceptable carrier.

5,610,197

BENZYL AND NAPHTHALENYLMETHYL THIOPHENONES AND CYCLOPENTENONES AS ANTIHYPERGLYCEMIC AGENTS

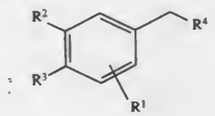
Michael S. Malamas, 2443 Oleander St., Jamison, Pa. 18929

Division of Ser. No. 220,753, Mar. 31, 1994, Pat. No. 5,444,086. This application Apr. 17, 1995, Ser. No. 423,624

Int. Cl.[6] A61K *31/12*; **C07C** *49/213*

U.S. Cl. 514—678 **9 Claims**

1. A compound according to the formula

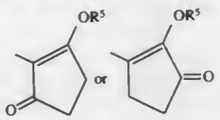


wherein:

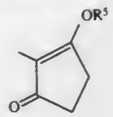
R^2 and R^3 are independently selected from hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, thio-C_{1-6} alkyl, or trifluoromethyl or R^2 together with R^3 forms a benzo ring fused to the phenyl ring and optionally substituted with one or two substituents independently selected from C_{1-6} alkyl, halogen, C_{1-6} alkoxy, thio-C_{1-6} alkyl, or trifluoromethyl;

R^1 is selected from hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, thio-C_{1-6} alkyl, or trifluoromethyl; and

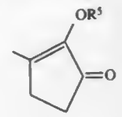
R^4 is selected from the group consisting of:



wherein R^5 is H or C_{1-6} alkyl, or a pharmaceutically acceptable salt thereof, with a proviso that when R^4 is



then R^2 and R^3 must form a benzo ring fused to the phenyl ring, and with the further proviso that when R^4 is



then R^1, R^2, and R^3 cannot be hydrogen.

5,610,198

ANTI-MYCOBACTERIAL COMPOSITIONS AND THEIR USE FOR THE TREATMENT OF TUBERCULOSIS AND RELATED DISEASES

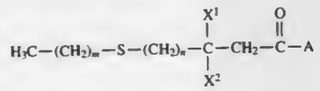
Clifton E. Barry, III, Hamilton, and Ying Yuan, Missoula, both of Mont., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 18, 1994, Ser. No. 210,519

Int. Cl.[6] A61K *31/10*

U.S. Cl. 514—712 **5 Claims**

1. A pharmaceutical composition comprising, in unit dosage form, a compound of formula I,



(I)

$$H_3C-(CH_2)_m-S-(CH_2)_n-\overset{X^1}{\overset{|}{C}}-CH_2-\overset{O}{\overset{\|}{C}}-A$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \underset{X^2}{|}$$

wherein

n is an integer of from 0 to 3;

m is an integer of from 12 to 23, with the proviso that n+m is from 15 to 23;

A is selected from the group consisting of $—O^{31}$, its pharmaceutically acceptable salts, —OH, and —OR;

wherein

R is an alkyl group having from 1 to 10 carbons; and

X^1 and X^2 are each independently selected from the group consisting of H and F; and a sterile pharmaceutically acceptable carrier.

5,610,199

SOLID LIPOPHILIC COMPOSITION AND PROCESS FOR ITS PREPARATION

Isaac D. Cohen, Brooklyn; Andrew J. Bevacqua, East Setauket; Daniela Toma, Floral Park, and Konstantinos M. Lahanas, No. Babylon, all of N.Y., assignors to Estee Lauder Inc., New York, N.Y.

Continuation-in-part of Ser. No. 216,151, Mar. 22, 1994, abandoned. This application Dec. 29, 1994, Ser. No. 365,810

Int. Cl.[6] A61K *31/075;7/42*

U.S. Cl. 514—721 **21 Claims**

1. A solid lipophilic composition suitable for topical application to human skin, which comprises:

(a) from about 1.5% by weight to about 30% by weight of DBMSA;

(b) from about 70% by weight to about 98.0% by weight of a lipophilic material; and

(c) from about 0.5% by weight to about 28.5% by weight of a cosmetic material selected from the group consisting of colorants, fragrances, sunscreens, dermatologic agents, and mixtures thereof.

5,610,200

ANHYDRORETINOL AND DERIVATIVES THEREOF AS ANTAGONISTS OF IMMUNE RESPONSES AND INHIBITORS OF CANCER CELL GROWTH

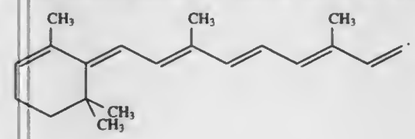
Ulrich Hammerling; Jochen Buck; Fadila Derguini, and Koji Nakanishi, all of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y., and The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 27,880, Mar. 8, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,435

Int. Cl.[6] A61K *31/015;31/07*

U.S. Cl. 514—763 **6 Claims**

1. A method of inhibiting the growth of cells in a subject, wherein the cells are growth-dependent on retinol or 14-hydroxy-4,14-retroretinol, comprising administering to the subject an effective growth inhibiting amount of a compound having the structure:



5,610,201

COSMETIC OR PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF HAIR AND OF THE SCALP

Jean-François Grollier, and Isabelle Hansenne-Richoux, both of Paris, France, assignors to L'Oreal, Paris, France

Filed May 31, 1991, Ser. No. 708,379

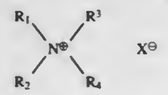
Claims priority, application France, May 31, 1990, 90 06777

Int. Cl.[6] A61K *47/00*

U.S. Cl. 514—773 **26 Claims**

1. A cosmetic or pharmaceutical composition for the treatment of the hair and scalp comprising an ionic amphiphilic lipid capable of forming a water-insoluble hydrated lipidic lamellar phase, optionally in combination with a stabilizer, said lipid being in a dispersed form in a continuous aqueous phase containing:

(1) at least one cationic surface active agent having the formula



(I)

wherein

X is chlorine or $CH_3SO_4^-$ and R_1 is a C_1–C_4 alkyl radical and wherein

(a) when X is chlorine,

(i) either R_2 and R_3 are C_1–C_4 alkyl radicals identical with or different from R_1 and from each other and R_4 is a C_{16}–C_{22} alkyl radical;

or

(ii) R_2=R_1 and

(i') either R_3=R_4=C_{18} alkyl radical, or

(ii') R_3=(C_{17} alkyl) amidopropyl radical and R_4=(C_{14} alkyl) acetate radical and

(b) when X is $CH_3SO_4^-$

R_2 represent an (alkyl) amidoethyl radical, an (alkenyl) amidoethyl radical or an (alkylalkenyl) amidoethyl radical wherein each of the alkyl and alkenyl moieties is a C_{13}–C_{21} radical and is derived from tallow fatty acids, and

R_3 and R_4 together with the nitrogen atom to which they are attached form a 4,5-dihydroimidazole ring substituted in position 2;

or

(2) at least one quaternized protein consisting of a chemically modified polypeptide carrying at the end of a chain or grafted onto the latter at least one quaternary ammonium group containing at least one C_1–C_{16} alkyl chain, said polypeptide being an animal protein hydrolyzate,

or both (1) and (2) defined above,

with the proviso that when said composition contains distearyldimethylammonium chloride as a cationic surface active agent, said composition necessarily contains at least one quaternized protein defined in (2) above.

5,610,202

CATALYST SYSTEM AND PROCESS FOR THE LIQUID-PHASE PRODUCTION OF METHANOL FROM SYNTHESIS GAS

Mario Marchionna, and Massimo Lami, both of Milan, Italy, assignors to Enricerche S.p.A., and Snamprogetti S.p.A., both of Milan, Italy

Continuation of Ser. No. 43,660, Apr. 6, 1993, abandoned, which is a division of Ser. No. 851,325, Mar. 16, 1992, Pat. No. 5,238,895. This application Dec. 22, 1994, Ser. No. 361,859

Claims priority, application Italy, Mar. 22, 1991, MI91A0775

Int. Cl.[6] C07C *27/06*; **B01J** *31/00*

U.S. Cl. 518—700 **10 Claims**

1. A process for the liquid-phase production of methanol from synthesis gas, characterized by reacting CO with H_2 in the presence of (a) a catalyst system characterized by consisting of:

one or more copper compounds selected from the group consisting of copper alkoxides, copper halides, copper carboxylates and copper hydrides and mixtures thereof;

one or more alkoxides of the lanthanum group of formula $(R_1O)_xLn$ and/or one or more inorganic oxides of lanthanum and/or aluminum group;

one or more alkaline and/or alkaline-earth alkoxides of formula $(R_aO)x^M$,

if at least one alkoxide of the lanthanum group is present, then one or more alkoxides of the formula $(R_rO)_xT$ is present,

where R_1, R_a and R_r, which may be the same or different, are C_1–C_{10} alkyl groups,

M is the alkaline or alkaline-earth metal,

Ln is an element of the lanthanum group,

T is an element of the titanium group,

x is equal to the valency of the metal or element,

the $(R_aO)_xM$/Cu molar ratio being equal to or greater than 4, the $(R_1O)_xLn+(R_1O)_xT/(R_aO)_xM$ molar ratio being between 0.01 and 0.3 if at least one alkoxide of the lanthanum group is present, and the inorganic oxide/cu molar ratio being greater than 0.5 if at least one inorganic oxide of the lanthanum or aluminum group is present and of (b) one or more solvents selected from the group consisting of simple ethers, complex ethers, esters of carboxylic acids, sulphones, sulphoxides and amines, and mixtures thereof, to which are added methanol and/or one or more alkyl formates of formula $HCOOR_f$, where R_f is a C_1–C_{20} alkyl group, in the case of methanol addition, a methanol/Cu molar ratio of between 1 and 500, or in the case of alkyl formate addition, a $HCOOR_f$/Cu molar ratio of between 1 and 1000, operating at a temperature higher than 60° C. and lower than 150° C. and with a copper concentration in the solution formed from the solvents and catalyst system of between 0.001 and 1 molar.

5,610,203

FOAMABLE FLUOROPOLYMER COMPOSITION

Marlin D. Buckmaster, Vienna, W. Va., and Stuart K. Randa, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 10, 1996, Ser. No. 631,765

Int. Cl.[6] C08J *9/00*

U.S. Cl. 521—85 **6 Claims**

1. In the process of foaming melt-fabricable fluoropolymer resin in the presence of boron nitride nucleating agent and (a) at least

one inorganic salt containing a polyatomic anion, or (b) at least one sulfonic or phosphonic acid or salt of the acid, or (c) a combination of (a) and (b), the improvement comprising carrying out said foaming wherein crystals of said boron nitride have been grown to essentially final size and have an average particle size no more than 12 micrometer.

5,610,204

METHOD OF CURING METHACRYLATE-BASED COMPOSITIONS

Yu-Chin Lai, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 280,694, Jul. 26, 1994, abandoned. This application May 23, 1996, Ser. No. 652,182

Int. Cl.[6] C08F *2/46; 24/00; G02C 7/04*

U.S. Cl. 522—44 **21 Claims**

1. In a method of making a hydrogel from a polymerizable monomer mixture comprising 2-hydroxyethyl methacrylate, and a UV photoinitiator, the improvement of which comprises, polymerizing the monomer mixture under a UV lamp at a rate such that the peak time of the polymerization reaction of the monomer mixture is achieved in from about 1 minute to about 3 minutes and complete polymerization of the monomer mixture is achieved within about 3 minutes, the monomer mixture comprising at least 50 weight percent of 2 -hydroxyethyl methacrylate and no more than about 1.0 weight percent of the photoinitiator.

5,610,205

PROCESS FOR MAKING A POLYETHERESTER BY INSERTION OF A CARBOXYLIC ACID INTO A POLYETHER

Lau S. Yang, Wilmington, Del., and Jeffrey A. Klang, Exton, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 419,323, Apr. 10, 1995, Pat. No. 5,569,737, which is a division of Ser. No. 228,845, Apr. 18, 1994, Pat. No. 5,436,314. This application May 14, 1996, Ser. No. 644,997

Int. Cl.[6] C08F *2/46;* **C08J** *3/28*

U.S. Cl. 522—102 **4 Claims**

1. A process for making a cured polyetherester product, said process comprising:

(a) reacting polyether with an unsaturated dicarboxylic acid in the presence of a protic acid having a pKa less than about 0 in an amount effective to promote random insertion of the dicarboxylic acid into polyether carbon-oxygen bonds and produce an unsaturated polyetherester resin;

(b) combining the unsaturated polyetherester resin with a vinyl monomer and a free-radical initiator; and

(c) heating the mixture at a temperature effective to produce the cured polyetherester product.

5,610,206

HIGH MOLECULAR WEIGHT COMPOUND HAVING A MONOMER CHAIN FORMING A HOMOPOLYMER RUBBER AND A PHOTOPOLYMERIZABLE RESIN COMPOSITION CONTAINING THE SAME

Hirokazu Komuro, Yokahama; Hiromichi Noguchi, Atsugi, and Takahiro Mori, Yokahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 15,879, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 323,019, Mar. 14, 1989, abandoned. This application Dec. 12, 1994, Ser. No. 354,442

Claims priority, application Japan, Mar. 16, 1988, 63-60320; Mar. 9, 1989, 1-55088

Int. Cl.[6] C08L *51/06; 51/00*

U.S. Cl. 522—121 **3 Claims**

1. A photopolymerizable resin composition consists essentially of:

(i) a block or graft polymer having a number average molecular weight of 5,000 to 30,000 comprising (a) a styrenic or acrylic polymer chain and (b) a rubber homopolymer chain, said block or graft polymer comprising 60 to 80% of said of said styrene or acrylic polymer chain (a) based on the total weight of (a) and (b), and said chain (a) and said chain (b) being present in the block or graft state,

(ii) a photopolymerizable compound having two or more groups selected from the group consisting of acryloyl group and methacryloyl group in one molecule, and

(iii) a photopolymerization initiator.

5,610,207

MANUFACTURE OF LOW DENSITY PRODUCTS CONTAINING RECYCLED FOAM

Valérie de Simone, Saint Mandé, and Gérard Courveille, Pont Saint Maxence, both of France, assignors to ARCO Chemical Technology, L. P., Greenville, Del.

Filed May 24, 1995, Ser. No. 448,849

Claims priority, application United Kingdom, May 25, 1994, 9410460

Int. Cl.[6] C08J *9/32;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/00*

U.S. Cl. 523—218 **30 Claims**

1. A process for the manufacture of a re-bonded foam product, the process comprising:

(a) mixing a liquid comprising polyol with a liquid comprising polyisocyanate in the presence of small pieces of foam;

(b) consolidating the mixture; and

(c) causing or allowing the polyol and polyisocyanate to react and bond the coated pieces together

wherein step (a) comprises;

(i) coating a first portion of small pieces of foam with the liquid comprising polyol;

(ii) coating a second portion of small pieces of foam with the liquid comprising polyisocyanate; and

(iii) mixing the coated portions together.

5,610,208

WATER-ABSORBENT AGENT, METHOD FOR PRODUCTION THEREOF, AND WATER-ABSORBENT COMPOSITION

Yorimichi Dairoku; Kinya Nagasuna; Yoshihiko Masuda, all of Hyogo; Nobuyuki Harada, Osaka; Yoshihiro Motono, Hyogo, and Kunihiko Ishizaki, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Feb. 15, 1995, Ser. No. 388,838

Claims priority, application Japan, Feb. 17, 1994, 6-020295; Mar. 22, 1994, 6-050365

Int. Cl.[6] C08F *8/14*

U.S. Cl. 525—384 **13 Claims**

1. A method for the production of a water-absorbent agent which comprises mixing a water-absorbent resin containing a carboxyl group with (1) an additive soluble in the aqueous solution of at least one member selected from the group consisting of inorganic acids, organic acids, and polyamino acids and (2) a cross-linking agent capable of reacting with said carboxyl group.

5,610,209

HEAT-RESISTANT EPOXY RESIN COMPOSITION HAVING EXCELLENT STABILITY AT NORMAL TEMPERATURE AND CURING AGENT FOR EPOXY RESIN

Shigeo Kiyono, Tokyo, Japan, assignor to Japan Hydrazine Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,382

Claims priority, application Japan, Jun. 3, 1994, 6-122124

Int. Cl.[6] C08G *59/44; 59/50; 65/00*

U.S. Cl. 523—428 **5 Claims**

1. A heat-resistant epoxy resin composition having excellent stability at room temperature comprising an epoxy compound having two or more epoxy groups, and a curing agent which includes 2,6-naphthalenedicarboxylic dihydrazide as a main component, wherein the 2,6-naphthalenedicarboxylic dihydrazide is contained in an amount of from 10 to 70 parts by weight per 100 parts by weight of the epoxy compound, and the epoxy compound comprises a combination of an epoxy compound (A) which remains solid or semi-solid at room temperature and a liquid epoxy compound (B) having an epoxy equivalent not larger than 200.

5,610,210

AMINOVINYLPHOSPHONIC ESTER STABILIZERS FOR ORGANIC MATERIAL

Martin Holderbaum, Ludwigshafen; Alexander Aumueller, Neustadt, and Hubert Trauth, Dudenhofen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00254, § 371 Date Aug. 9, 1995, § 102(e) Date Aug. 9, 1995, PCT Pub. No. WO94/18210, PCT Pub. Date Aug. 18, 1994

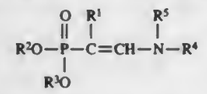
PCT Filed Jan. 29, 1994, Ser. No. 495,581

Claims priority, application Germany, Feb. 9, 1993, 43 03 648.1

Int. Cl.[6] C08K *5/5373; 5/5333;* **C07F** *9/06;* **C07C** *229/00*

U.S. Cl. 524—99 **9 Claims**

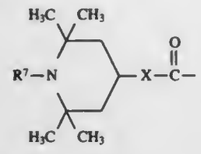
1. A method for stabilizing an organic material to the action of light, oxygen and heat, comprising adding to said organic material an aminovinylphosphonic ester of the formula I



(I)

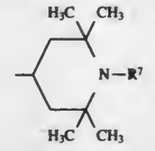
where

R^1 is cyano, a radical of the formula —CO—OR^6 or a group of the formula



R^2, R^3 and R^6 are C_1–C_{20}-alkyl, C_5–C_8-cycloalkyl, C_7–C_{18}-aralkyl, phenyl or tolyl,

R^4 is phenyl which may be substituted by one to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups, phenyl groups or groups of the formula —CO—OR^6, —CO—R^6, —CO—NHR^6, —O—CO—R^6 or —NH—CO—R^6, or is a five-membered or six-membered unsaturated or saturated heterocyclic ring having up to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, which may additionally be benzofused and may be substituted by one to three C_1–C_{12}-alkyl groups, hydroxyl groups, phenyl groups, phenoxy groups or C_1–C_{12}-alkoxycarbonyl groups, wherein said heterocyclic ring is attached to the nitrogen of formula I through a carbon atom on said ring, or is a group of the formula



R^5 is hydrogen or C_1–C_{12}-alkyl,

R^7 is hydrogen, C_1–C_6-alkyl, formyl, C_2–C_6-alkanoyl, C_1–C_{12}-alkoxy, C_5- or C_6-cycloalkoxy, cyanomethyl, 2-hydroxyethyl, benzyl or a radical of the formula —CR^8=CH—CO—OR^6,

R^8 is a hydrogen, C_1–C_6-alkyl or a radical of the formula —CO—OR^6, and

X is oxygen or NH.

5,610,211

2,2,6,6-TETRAMETHYLPIPERIDINE DERIVATIVES FOR USE AS STABILIZING AGENTS FOR ORGANIC MATERIALS

Valerio Borzatta, and Roberto Scrima, both of Bologna, Italy, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

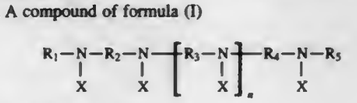
Filed Nov. 2, 1995, Ser. No. 552,043

Claims priority, application Italy, Nov. 9, 1994, MI94A002260

Int. Cl.[6] C08K *5/3492;* **C07D** *403/00*

U.S. Cl. 524—100 **12 Claims**

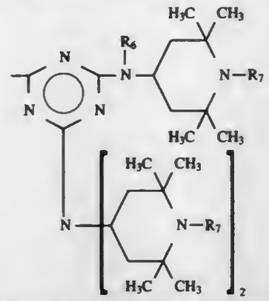
1. A compound of formula (I)



(I)

in which n is zero or 1;

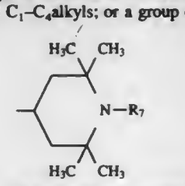
X denotes a group of formula (II),



(II)

R_1 and R_5, which may be identical or different, are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, unsubstituted or substituted with 1, 2 or 3 C_1–C_4alkyls;

C_7–C_9phenylalkyl, unsubstituted or substituted on the phenyl with 1, 2 or 3 C_1–C_4alkyls; or a group of formula (III)



(III)

R_2, R_3 and R_4, which may be identical or different, are C_2–C_{12}alkylene;

R_6 is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, unsubstituted or substituted with 1, 2 or 3

C_1–C_4alkyls, C_3–C_6alkenyl, C_7–C_9phenylalkyl, unsubstituted or substituted on the phenyl with 1, 2 or 3 C_1–C_4alkyls;

R_7 is hydrogen, C_1–C_8alkyl, O. OH, CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12} cycloalkoxy,

C_3–C_6alkenyl, C_7–C_9phenylalkyl, unsubstituted or substituted on the phenyl with 1, 2 or 3 C_1–C_4alkyls; or R_7 is an aliphatic C_1–C_8acyl.

8. A composition comprising an organic material subject to degradation induced by light, heat or oxidation and at least one compound of formula (I) according to claim 1.

5,610,212

MEANS FOR MECHANICALLY STABILIZING DEPROTEINIZED NATURAL RUBBER LATEX

Yasuyuki Tanaka, Tokyo; Yuichi Hioki; Masaharu Hayashi, both of Wakayama; Naoya Ichikawa, and Toshiaki Sakaki, both of Hyogo, all of Japan, assignors to Kao Corporation, Tokyo, and Sumitomo Rubber Industries, Ltd., Hyogo, both of Japan

Filed May 13, 1994, Ser. No. 241,989

Claims priority, application Japan, May 13, 1993, 5-111765

Int. Cl.[6] C08K *5/41*

U.S. Cl. 524—156 **5 Claims**

1. A method for improving mechanical stability of a deproteinized natural rubber latex, which comprises the step of adding to the deproteinized natural rubber latex a stabilizer selected from the group consisting of

an alkylbenzene sulfonate and a polyoxyalkylene alkylsulfuric acid ester salt,

wherein the stabilizer is employed in an amount to give a concentration of from 0.01 to 10% by weight based on the total weight of the deproteinized natural rubber latex.

5,610,213

HEAT CURED RUBBERS

Chris A. Sumpter, Scotia, and Brian J. Ward, Valley Falls, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,275

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **21 Claims**

1. A cold processable heat curable alkenyl silicone rubber composition comprising:

(1) 100 parts by weight of an alkenyl silicone gum or mixture of alkenyl silicone gums selected from the group of alkenyl silicone gums having the formula:

$$(M_aM^{vi}{}_{1-a})(D^{vi})_x(D)_y(M_aM^{vi}{}_{1-a})$$

where a is zero or one and x and y are zero or integers whereby the sum of x+y yields a gum having a viscosity ranging from about 200,000 to about 200,000,000 centipoise at 25° C. and whereby the sum of a+x+y yields a gum having an alkenyl content ranging from about 0.20 to about 14.00 weight percent, subject to the limitation that x must be greater than zero when a is one, where

$M=R^1{}_3SiO_{1/2}$ with R^1 selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl;

$M^{vi}=R^2(R^1)_2SiO_{1/2}$ with R^1 selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl and R^2 selected from the group of 2 to 10 carbon atom linear or cyclic alkenyl groups;

$D^{vi}=R^2(R^1)SiO_{2/2}$ where R^1 and R^2 are as previously defined;

$D=(R^3)_2SiO_{2/2}$ where each R^3 is independently selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl;

(2) from about 0.01 to about 1.5 parts by weight of a vinyl specific peroxide curing agent whereby the total weight of (1) and (2) ranges from 100.01 parts by weight to about 101.5 parts by weight; and

(3) from about 15 to about 80 part by weight of a fumed silica filler functioning as a reinforcing filler, having a BET surface area in the range of 90–400 m^2/gm where the residual level of surface hydroxyl groups determined by nitrogenous base chemisorption and magic angle spinning solid state nmr is below a threshold value of 3.1 hydroxyl groups/nm^2.

5,610,214

METHOD FOR INCREASING THE RATE OF ABSORPTION OF POLYCAPROLACTONE

James R. Olson, New York, N.Y., assignor to Deknatel Technology Corporation, Inc., Fall River, Mass.

Division of Ser. No. 345,386, Nov. 18, 1994, which is a division of Ser. No. 944,861, Sep. 14, 1992, Pat. No. 5,300,780, which is a continuation of Ser. No. 291,486, Dec. 29, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 486,808

Int. Cl.[6] C08J *5/10*

U.S. Cl. 524—311 **5 Claims**

1. A method for increasing the rate of absorption of polycaprolactone comprising the step of blending about 95% to about 5% by weight of a homopolymer of ε-caprolactone and about 5 to about 95% by weight of a crystallization modifier selected from the group consisting of crystalline fatty acids and crystalline esters of fatty acids which are saturated C_{12}–C_{18} fatty acid esters of polyhydric alcohols.

5,610,215

AQUEOUS EMULSION-BASED COATING COMPOSITIONS

Mark A. Nonweiler, Oshkosh; Gregory F. Konrad, Van Dyne, and Dennis A. Wiatrowski, Oshkosh, all of Wis., assignors to Gregory A. Konrad, Van Dyne, Wis.

Continuation of Ser. No. 707,890, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,317, Apr. 3, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 156,999

Int. Cl.[6] C08K *5/06*

U.S. Cl. 524—376 **37 Claims**

1. An aqueous emulsion-based coating composition for substrates commonly used for modeling and toys consisting essentially of:

(A) about 20 parts to about 50 parts by weight of a latex binder having a Tg of at least 30° C. selected from the group consisting of waterborne polyurethane dispersions, epoxy emulsions, vinyl acetate copolymers, carboxylated ethylene vinyl acetate, carboxylated acrylic copolymers, hydroxy acrylic copolymers, acrylonitrile acrylic copolymers, self-crosslinking acrylic copolymers, carboxylated polyvinylchloride acrylic copolymers, carboxylated styrene-butadiene copolymer, styrene butadiene, styrene acrylate copolymers, and vinyl-pyridine copolymers, and mixtures thereof, dispersed in water;

(B) up to about 60 parts by weight of a filler selected from the group consisting of pigments, aluminum silicate, magnesium silicate, barium sulfate, calcium carbonate, amorphous silica, microcrystalline silica, and mixtures thereof, and

(C) coalescents in an amount of 2.8% to 16.5% by weight of said coating composition, and humectants in an amount of about 5% to about 15% by weight of said coating composition,

said composition having a viscosity of from about 20 centipoise to about 1500 centipoise as measured using a standard Brookfield viscosity test using a RVT #2 spindle at 10 RPM, a filler to binder ratio of from 0.0:1 to about 3:1, and a total solids content of 20% to 60% by weight.

5,610,216

SILICA REINFORCED RUBBER COMPOSITION AND TIRE WITH TREAD THEREOF

Paul H. Sandstrom, and Lawson G. Wideman, both of Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 20, 1996, Ser. No. 603,678

Int. Cl.[6] C08K *5/05;5/54;5/04*

U.S. Cl. 524—301 **18 Claims**

1. A rubber composition comprised of (A) 100 parts by weight of at least one diene-based elastomer, (B) about 25 to about 100 phr of filler composed of particulate, precipitated silica and carbon black, and (C) a silica coupler selected from (i) poly-(2-propanol-1,3-polysulfide), having from 2 to 6 sulfur atoms in its polysulfide bridge, or from (ii) a combination of about 95 to about 25 weight percent of said poly-(2-propanol-1,3-polysulfide) and, correspondingly, about 5 to about 75 weight percent of bis-(3-trialkoxysilylalkyl) polysulfide containing from 2 to 8 sulfur atoms in its polysulfide bridge; wherein the weight ratio of said silica coupler to silica is in a range of about 0.01/1 to about 0.2/1; wherein the weight ratio of silica to carbon black, is at least about 0.1/1.

5,610,217

ETHYLENE-ALPHA-OLEFIN BELTING

Larry Yarnell, Morrison, and Bobbie E. South, Littleton, both of Colo., assignors to The Gates Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 331,825, Oct. 31, 1994. This application Oct. 30, 1995, Ser. No. 549,892

Int. Cl.[6] C08K *5/09;* **F16G** *1/02;1/10*

U.S. Cl. 524—397 **21 Claims**

1. An article subject to dynamic loading selected from the group consisting of power transmission belting, flat belting, air sleeves and engine mounts incorporating as its primary elastomeric composition a composition cured using a free-radical promoting material, and comprising the reaction product of:

(a) 100 parts by weight of an ethylene-alpha-olefin elastomer, which serves as the primary elastomer of said composition;

(b) from about 1 to about 20 parts per hundred weight of said elastomer of a metal salt of an alpha-beta-unsaturated organic acid; and,

(c) from about 25 to about 250 parts per hundred weight of said elastomer of a reinforcing filler;

said elastomeric composition exhibiting sufficient modulus, hardness and flex fatigue resistance to serve as the primary elastomeric component of said article.

5,610,218

ORGANOPOLYSILOXANE COMPOSITIONS WHICH ARE STABILIZED TO HEAT AND CAN BE CROSSLINKED TO GIVE ELASTOMERS

Enno Funk, Burghausen; Norbert Egerter, Mehring; Sabine Schreyer, Burghausen; Frank Achenbach, Simbach, and Herbert Barthel, Emmerting, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 4, 1995, Ser. No. 368,183

Claims priority, application Germany, Jan. 20, 1994, 44 01 606.9

Int. Cl.[6] C08K *3/10*

U.S. Cl. 524—413 **12 Claims**

1. An organopolysiloxane composition which is stabilized to heat and can be crosslinked to give elastomers, comprising:

(A) organopolysiloxanes consisting essentially of units of the formula

$$R_aSiO_{\frac{4-a}{2}} \quad (I)$$

where

R is identical or different on each appearance and is an unsubstituted or substituted hydrocarbon radical and a is 0, 1, 2 or 3 and has an average numerical value of from 1.9 to 2.1,

(B) optionally, reinforcing and/or non-reinforcing fillers,

(C) a catalyst promoting the crosslinking of the organopolysiloxane compositions or an agent effecting the crosslinking,

(D) a copper compound in an amount of from 1 to 180 ppm by weight calculated as elemental copper, and based on the total weight of the organopolysiloxane composition,

(E) a zinc compound in an amount from 1 to 180 ppm by weight calculated as element zinc and based on the total weight of the organopolysiloxane composition, and

(F) optionally, an organic fatty acid.

5,610,219

RESIN COMPOUND FOR MOLDING PRECISION PARTS, AND SLEEVE AND FERRULE PRODUCED THEREFROM

Shiro Takatani; Tetsuo Mitani; Fumiaki Baba, all of Amagasaki; Tsutomu Ohta, and Kazuo Nakamura, both of Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP95/00456, § 371 Date Nov. 6, 1995, § 102(e) Date Nov. 6, 1995, PCT Pub. No. WO95/25770, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 16, 1995, Ser. No. 545,661

Claims priority, application Japan, Mar. 18, 1994, 6-048923

Int. Cl.[6] C08K *3/10;3/36;3/40;* **G02B** *6/44*

U.S. Cl. 524—413 **10 Claims**

2. A resin compound for molding precision parts comprising 20 to 40% by weight of at least one of a polyphenylene sulfide and an aromatic polyester thermotropic liquid crystalline polymer, 15 to 25% by weight of a whisker, 40 to 75% by weight of spherical fine particles and 0.5 to 3% by weight of a silane coupling agent, wherein the total content of the whisker and the spherical fine particles is 60 to 80% by weight, and wherein the spherical fine particles satisfy the particle size distribution represented by the inequality:

$$D_w/D_n>5$$

wherein D_w represents weight average particle diameter and D_n represents number average particle diameter.

5,610,220

POWDER-FORM POLYMERS WHICH ABSORB, EVEN UNDER PRESSURE, AQUEOUS LIQUIDS AND BLOOD, A METHOD OF PRODUCING THEM AND THEIR USE IN TEXTILE ARTICLES FOR BODY-HYGIENE APPLICATIONS

Helmut Klimmek, and Helmut Brehm, both of Krefeld, Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

PCT No. PCT/EP93/03586, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/15651, PCT Pub. Date Jun. 21, 1994

PCT Filed Dec. 17, 1993, Ser. No. 464,823

Claims priority, application Germany, Dec. 30, 1992, 42 44 548.5

Int. Cl.[6] C08K *3/32*

U.S. Cl. 524—417 **16 Claims**

1. A powdery polymer composition which is capable of absorbing aqueous or serous liquids and blood comprising:

(A) a cross-linked polymer formed of:

a) 55–99.9%-wt. polymerized unsaturated, polymerizable acid-groups-comprising monomers which are neutralized to the extent of at least 25 mol-%,

b) 0–40%-wt. polymerized unsaturated monomers which are copolymerizable with a), and

c) 0.1–5.0%-wt. of a cross-linking agent, and

(B):

d) 0–30%-wt. of a water-soluble polymer, the weight amounts of a) to d) being based on said cross-linked polymer,

wherein 100 parts of particles of said polymer composition is mixed with at least 0.1 and not more than 10 parts by weight of an at least 10% by weight aqueous solution of phosphoric acid, and

e) 0.05–0.3 parts by weight, based on said polymer composition, of a compound capable of reacting with at least two carboxyl groups and not comprising an alkali-salt-forming group in the molecule, and/or

f) 0.05–1 parts by weight, based on said polymer composition, of a compound capable of reacting with at least two carboxyl groups and comprising an alkali-salt-forming group in the molecule,

and heated to 150°–250° C.

5,610,221

TIRE TREAD COMPOSITION COMPRISING HIGHLY REINFORCING REINFORCED AMORPHOUS PRECIPITATED SILICA

Walter H. Waddell, Pittsburgh; Larry R. Evans, Jeannette, and Thomas G. Krivak, Irwin, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 170,474, Dec. 20, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 533,808

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—492 **21 Claims**

1. In a tire comprising:

(a) a carcass having a crown; and

(b) cured tread rubber composition adhered to said crown of said carcass;

the improvement wherein said cured tread rubber composition comprises in combination:

(c) organic rubber;

(d) from 40 to 150 phr of reinforcing carbon black; and

(e) reinforcing reinforced amorphous precipitated silica wherein said reinforcing reinforced amorphous precipitated silica has a surface area of from 160 to 340 m^2/g and a pore diameter at the maximum of the volume pore size distribution function of from 5 to 19 nm.

5,610,222

POLYMERIC FILM

Paul D. A. Mills, Darlington, United Kingdom; Junaid A. Siddiqui, Richmond, Va., and Karl Rakos, Chilton, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 271,138, Jul. 7, 1994. This application Sep. 27, 1994, Ser. No. 312,757

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—493 **13 Claims**

1. A method of producing a polymeric film comprising the steps of:

(i) calcining, at a temperature of at least 250° C., precursor silicone resin particles to produce calcined filler particles having a volume distributed median particle diameter of from 0.1 to 12.5 μm,

(ii) mixing the calcined filler particles with polymer or polymer-forming material at a concentration of 0.0005% to 2% by weight, based upon the weight of the polymer, and

(iii) extruding the polymer/calcined filler particle mixture to form a film.

5,610,223

IMPACT MODIFIED POLYAMIDE-BASED MOLDING COMPOSITION

James P. Mason, McKees Rocks, Pa., assignor to Bayer Corporation, Pittsburgh, Pa.

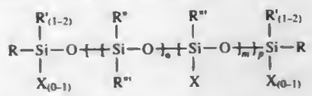
Filed Jul. 13, 1995, Ser. No. 501,911

Int. Cl.[6] C08F *283/12;* **C08L** *83/05*

U.S. Cl. 524—504 **11 Claims**

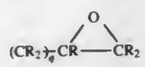
1. A thermoplastic molding composition comprising (a) about 75 to 99 percent of a polyamide resin, and (b) about 1 to 25 percent of a silicone rubber powder, said percent relative to the weight of the composition, said silicone rubber powder having an average particle size of about 1 to 1000 microns and containing

(i) 100 pbw of a polydiorganosiloxane having a viscosity at 25° C. is about 10^6 to 10^9 centipoise and siloxane structural units represented by the general formula

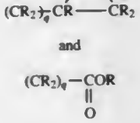


wherein R', R° and R'° independently denote a hydrogen atom, C_{1-10}-alkyl, cycloalkyl radicals or aryl groups, and where p is about 1000 to 8000 and where the relative weight proportions of n and m is 98.5 to 100:0 to 1.5, and where

X denotes a member selected from the group consisting of



and



where R denotes hydrogen, C_{1-10}-alkyl, cycloalkyl radicals or aryl groups and where q is 1–10, and

(ii) about 10 to 80 pbw of a finely divided silica selected from among fumed silica, precipitated silica and silica gel having a surface area of at least 50 m^2/g,

said composition characterized in that it has a notched Izod impact strength value which is greater than that of the polyamide resin alone.

5,610,224

WATER DISPERSIBLE IONIC AND NONIONIC POLYAMIDE MODIFIED POLYURETHANE RESINS FOR USE IN COATING COMPOSITION

Jeffrey S. DePue, Urbana, Ill., and Gregory G. Menovcik, Farmington Hills, Mich., assignors to BASF Corporation, Southfield, Mich.

Continuation of Ser. No. 328,623, Oct. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 969,662, Oct. 30, 1992, abandoned. This application Jul. 29, 1996, Ser. No. 695,324

Int. Cl.[6] C08L *75/12;77/00*

U.S. Cl. 524—538 **6 Claims**

1. An aqueous coating composition comprising

A. a water dispersible polyamide modified polyurethane resin which is the reaction product of

a) 1 to 25% by weight of a polyamide compound having both reactive termini substituted with hydroxyl groups which is the reaction product of

i) a compound selected from the group consisting of aromatic, aliphatic, and cycloaliphatic anhydrides, and diacid halides and

ii) 30 to 70% of amine containing monomers selected from the group consisting of amino monools, and mixtures thereof,

b) 30 to 70% by weight of a chain extending polymeric alcohol selected from the group consisting of polyester polyols, polyether polyols, polycarbonate polyols, and mixtures thereof,

c) 15 to 30% by weight of a diisocyanate monomer, and

d) a hydrophilic compound, to provide water miscibility, selected from the group consisting of nonionic compounds selected from the group consisting of polyethylene imine, polyaziridine, polyvinyl methyl ether, and mixtures thereof, and anionic compounds selected from the group consisting of primary alkylamines, secondary alkylamines, tertiary alkylamines, carboxyl containing compounds, and mixtures thereof, wherein the compounds (d) having non-ionizable functional groups are present in an amount between 5 and 30% by weight, when used, and the alkylamines when used as compound (d) are present in an amount between 5 and 30% by weight, and

B. a crosslinking agent.

5,610,225

LATEX PAINTS WHICH ARE FREE OF VOLATILE COALESCENTS AND FREEZE-THAW ADDITIVES

Rajeev Farwaha, Brampton; Lien Phan, Mississauga, and William Currie, Elmira, all of Canada, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 3, 1995, Ser. No. 434,098

Int. Cl.[6] C08L *33/14;* **C08F** *220/28*

U.S. Cl. 524—558 **10 Claims**

1. A latex paint composition, comprising: a latex which comprises

(a) a polymer which is the polymerization product of

(i) a polymerizable polyethylene glycol monomer of Structure I



(I)

wherein R_1 and R_2 are independently H or CH_3 and x is from about 4 to 25, and wherein the polymerizable polyethylene glycol monomer is present in an amount effective to impart freeze-thaw stability to the latex without the use of a volatile freeze-thaw additive, up to about 2.5 pphm and wherein the molecular weight of the ethylene oxide moiety in said polymerizable polyethylene glycol monomer is from about 200 to about 1000,

(ii) at least one acrylic monomer which is copolymerizable with the polymerizable polyethylene glycol monomer;

(iii) 0 to 40 pphm of a styrenic monomer;

(iv) an ionic monomer present in an amount effective to impart mechanical stability to the latex, up to 2 pphm; and

(v) 0 to 2 pphm of a wet adhesion monomer,

(b) water; and

(c) an emulsifier selected from the group consisting of anionic, cationic and nonionic emulsifiers present in amounts effective to disperse the polymer in the water,

wherein the polymer is present in amounts effective to function as a binder in the latex paint composition and wherein the latex and the latex paint composition are freeze-thaw stable and mechanically stable.

5,610,226

(METH)ACRYLATE COPOLYMER AND ITS ELASTOMER COMPOSITIONS

Keisaku Yamamoto; Kiyoshi Ikeda; Masahiro Fukuyama, and Tadaaki Nishiyama, all of Chiba-ken, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

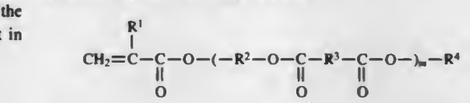
Filed May 22, 1995, Ser. No. 446,136

Claims priority, application Japan, May 20, 1994, 6-106654; Mar. 8, 1995, 7-048220

Int. Cl.[6] C08L *31/00;* **C08F** *22/10*

U.S. Cl. 524—559 **15 Claims**

1. A (meth)acrylate copolymer comprising about 80.0 to about 99.9% by weight of a (meth)acrylate monomer having a structure represented by the following formula (I):



wherein R^1 represents a hydrogen atom or a methyl group, R^2 and R^3 each independently represent an alkylene group having 1 to 20 carbon atoms, a phenylene group or a cyclohexanylene group, R^4 represents an alkyl group having 1 to 20 carbon atoms, a phenyl group or a substituted phenyl group which is at least one member selected from the group consisting of benzyl, 2-methyl phenyl, 3-methyl phenyl and a 4-methyl phenyl, and m represents an integer from 1 to 10, or a mixture of said (meth)acrylate monomer and an alkyl acrylate having an alkyl ester comprising an alcohol having 1 to 8 carbon atoms; and about 20.0 to about 0.1% by weight of crosslinking monomer copolymerizable with the said (meth)acrylate monomer.

5,610,227

LITHIUM AMINO MAGNESIATE POLYMERIZATION INITIATORS AND ELASTOMERS HAVING REDUCED HYSTERESIS

Thomas A. Antkowiak, Wadsworth, and James E. Hall, Mogadore, both of Ohio, assignors to Bridgestone/Firestone, Inc., Tokyo, Japan

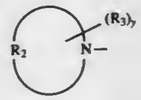
Filed Jun. 7, 1995, Ser. No. 487,349

Int. Cl.[6] C08K *3/04;* **C08F** *4/50;36/04*

U.S. Cl. 524—572 **23 Claims**

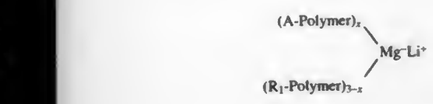
1. An anionic polymerization initiator comprising a lithium amino magnesiate complex having the formula

where A is selected from the group consisting of cyclic amine substituents having the formula



where x is the integer 2 or 3; the A substituents are the same or mixtures of different substituents; R_2 is from about 3 to about 20 methylene groups; R_1 and R_3, which can be the same or different from one another, are selected from the group consisting of alkyls, cycloalkyls, alkenyls, alkynyls, aryls and aralkyls, having from 1 to about 20 carbon atoms; y is an integer of from zero to about 10; and where y is greater than zero, the R_3 substituents are the same or mixtures of different substituents.

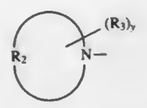
9. A polymer comprising:
a polymer chain having the formula



prior to quenching; wherein x in the integer 2 or 3, and A is a functional group derived from an anionic polymerization initiator comprising a lithium amino magnesiate complex having the formula

$$A_xMg(R_1)_{3-x}Li$$

where A is selected from the group consisting of cyclic amine substituents having the formula



where R_2 is from about 3 to about 20 methylene groups; R_1 and R_3, which can be the same or different from one another, are selected from the group consisting of alkyls, cycloalkyls, alkenyls, alkynyls, aryls and aralkyls having from 1 to about 20 carbon atoms; the A substituents are the same or mixtures of different substituents; x is the integer 2 or 3; y is an integer of from zero to about 10; and where y is greater than zero, the R_3 substituents are the same or mixtures of different substituents.

5,610,228

ANIONIC POLYMERIZATION INITIATORS CONTAINING ADDUCTS OF CYCLIC SECONDARY AMINES AND CONJUGATED DIENES, AND PRODUCTS THEREFROM

David F. Lawson, Uniontown; Thomas A. Antkowiak, Wadsworth; James E. Hall, Mogadore, and Mark L. Stayer, Jr., Suffield, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 175,294, Dec. 29, 1993, Pat. No. 5,491,230. This application Jun. 6, 1995, Ser. No. 471,276
Int. Cl.[6] C08K *5/01*
U.S. Cl. 524—573 **2 Claims**

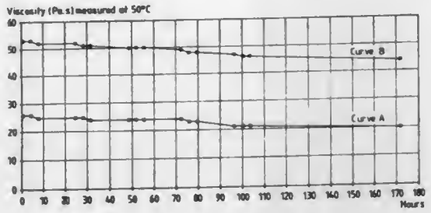
1. A vulcanizable elastomer formed by compounding a polymer with from about 5 to about 80 parts by weight of carbon black, per 100 parts by weight of said polymer;
wherein said polymer is prepared by polymerizing a solution of one or more anionically polymerizable monomers in a hydrocarbon solvent with an anionic polymerization initiator;
wherein said anionic polymerization initiator comprises a carbon lithio salt of the adduct of a cyclic secondary amine with a conjugated diene.

5,610,229

PROCESS FOR ADJUSTING THE VISCOSITY OF HIGHLY CONCENTRATED ELASTANE SOLUTIONS FOR THE DRY SPINNING OR WET SPINNING OF ELASTANE FIBRES

Ulrich Reinehr; Günter Türck, both of Dormagen; Tilo Sehm, Düsseldorf; Wolfgang Anderheggen; Toni Herbertz, both of Dormagen, all of Germany, and Gino Antolini, Bergamo, Italy, assignors to Bayer Faser GmbH, Dormagen, Germany

Division of Ser. No. 573,704, Dec. 18, 1995. This application May 7, 1996, Ser. No. 646,191
Claims priority, application Germany, Dec. 23, 1994, 44 46 339.1
Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*
U.S. Cl. 524—589 **8 Claims**



1. A highly concentrated stable-viscosity elastane spinning solution, viscosity of the spinning solution altering by a maximum of 5% over a period of 24 hours and by a maximum of ±10% over a period of 48 hours, the spinning solution having been produced by adding to an elastane solution of a polyester- or polyetherurethanes (urethane ureas) with a polyurethane content of at least 30 wt. % 0.2 to 1 wt. % of a secondary aliphatic amine, based on a 100 wt. % polyurethane content, in order to reduce the viscosity, allowing the solution to react at a temperature of at least 20° C. for a period of 1 to 60 minutes and subsequently bringing it to a process temperature of 20° to 80° C. for spinning.

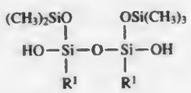
5,610,230

LIQUID SILICONE RUBBER COMPOSITIONS

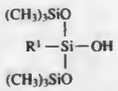
Takeo Yoshida, and Manabu Narumi, both of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 561,938
Claims priority, application Japan, Nov. 24, 1994, 6-314174
Int. Cl.[6] C08K *5/54*
U.S. Cl. 524—730 **12 Claims**

1. A liquid silicone rubber composition comprising
(A) an organopolysiloxane having at least two alkenyl groups each attached to a silicon atom in a molecule,
(B) a reinforcing silica filler having a specific surface area of at least 50 m^2/g as measured by BET,
(C) a condensation catalyst,
(D) a compound of the following general formula (1) or (2):



(1)



(2)

wherein R^1 is selected from the group consisting of a methyl, trimethylsiloxy, vinyl and trifluoropropyl radical,
(E) an organohydrogenpolysiloxane having at least two hydrogen atoms each attached to a silicon atom in a molecule, and
(F) a platinum catalyst.

5,610,231

PREPARATION OF THERMOPLASTIC POLYESTERS

Peter Braune, Erbes-Büdesheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 314,906, Sep. 29, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 633,521
Claims priority, application Germany, Oct. 5, 1993, 43 33 930.1
Int. Cl.[6] C08K *3/08;* **C08G** *63/83*
U.S. Cl. 524—779 **8 Claims**

1. In a process for the production of a thermoplastic polyester by multistage polycondensation of dihydroxy compounds with dicarboxylic acids or esters or ester-forming derivatives thereof,
the improvement wherein
in at least one first stage an alkali metal alcoholate or an alkaline earth metal alcoholate is added in an amount of from 1 to 10 mmol, calculated as alkali metal or alkaline earth metal per kg of polyester,
and at least one further stage is carried out as a solid-phase condensation,
which improvement results in a substantially speck-free and gel-free high molecular weight thermoplastic polyester.

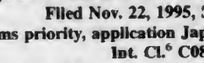
5,610,232

AQUEOUS NON-GELLING, ANIONIC POLYURETHANE DISPERSIONS AND PROCESS FOR THEIR MANUFACTURE

Youlu Duan, Minneapolis; Sonja Stammler, St. Criox; Scott Rhein, Forest Lake, and Lowell Lindquist, St. Paul, all of Minn., assignors to H.B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 304,653, Sep. 9, 1994, and Ser. No. 343,676, Nov. 22, 1994, which is a continuation-in-part of Ser. No. 126,508, Sep. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,780
Int. Cl.[6] C08L *75/06;* **C09J** *175/06;* **B32B** *27/40*
U.S. Cl. 524—840 **31 Claims**

1. An aqueous dispersion of an anionic polyurethane, the polyurethane comprising the reaction product of an isocyanate terminated polyurethane prepolymer and water, the polyurethane prepolymer comprising the reaction product of a polyol component and a diisocyanate component, the polyol component comprising:
a sulfonated polyester polyol,
a hydroxy carboxylic acid of the formula:



wherein (R) represents a straight or branched, hydrocarbon radical containing 1 to 12 carbon atoms, and x and y represent values from 1 to 3, and as optional components
a low molecular weight aliphatic diol having a molecular weight of from 60 to 400 and
a non-sulfonated polymeric polyol,
and the diisocyanate component selected from the group consisting of aromatic diisocyanates, isopborone diisocyanate, hexamethylene diisocyanate and mixtures thereof.

5,610,233

AQUEOUS COATING COMPOSITIONS CONTAINING CELLULOSE ESTERS

Mahendra K. Sharma, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 3, 1995, Ser. No. 511,078
Int. Cl.[6] C08B *3/22*
U.S. Cl. 525—54.21 **8 Claims**

1. An aqueous coating composition comprising:
(A) 1 to 60 weight percent of a water-soluble or water dispersible cellulose ester having a weight average molecular weight of 10,000 to 60,000, a hydroxyl value of 100 to 1,000, and an inherent viscosity of 0.05 to 1.5 dL/g, said cellulose ester containing a low degree of substitution in the range of 0.3 to 1.5;
(B) 5 to 90 weight percent of an amino resin cross-linking agent;
(C) 0.1 to 15 weight percent of an acid catalyst; and
(D) 5 to 50 weight percent water,
wherein the water-soluble or water dispersible cellulose ester when dissolved or dispersed in the water and mixed with the amino resin cross-linking agent in the presence of the acid catalyst forms a network of high molecular weight cross-linked polymer.

5,610,234

FLEXIBLE POLAR THERMOPLASTIC POLYOLEFIN COMPOSITIONS

Heinz H. Spelthann, Trier, Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US93/07369, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/04610, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 10, 1993, Ser. No. 381,939
Claims priority, application United Kingdom, Aug. 14, 1992, 9217381
Int. Cl.[6] C08L *51/06*
U.S. Cl. 525—64 **12 Claims**

1. A flexible, non-halogen-containing polymer composition which comprises a blend of:
(a) 35–96% by weight of a non-polar thermoplastic polyolefin;
(b) 2–50% by weight of a polar ethylene copolymer which comprises
(i) 30–80% by weight of ethylene;
(ii) 5–60% by weight of at least one copolymerizable, ethylenically unsaturated organic compound; and
(iii) 3–30% by weight of carbon monoxide; and
(c) 1–30% by weight of a compatibilizing agent which is a carboxylic acid or derivative thereof grafted olefin polymer.

5,610,235

HIGH GLOSS GRAFT COPOLYMER BLEND CONTAINING EMULSION GRAFT COPOLYMER AND BULK GRAFT COPOLYMER

Yasuyuki Hiromoto, Ube, Japan; Satish K. Gaggar, Parkersburg, and Vijaya K. Kuruganti, Washington, both of W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 11, 1995, Ser. No. 514,045
Int. Cl.[6] C08G *63/48*
U.S. Cl. 525—71 **17 Claims**

1. A high gloss thermoplastic composition comprising:
(a) an emulsion vinyl aromatic-vinyl cyanide-rubber graft copolymer present at a level of from 25 to 55 percent by weight based on the total weight of the composition, said emulsion graft copolymer having a rubber level of from 40 to 85 percent by weight based on the total weight of the emulsion graft copolymer, said rubber being a vinyl aromatic-diene rubber,
(b) a bulk vinyl aromatic-vinyl cyanide-rubber graft copolymer present at a level of from 15 to 45 percent by weight based on the total weight of the composition, said bulk graft copolymer having a rubber level of from 5 to 25 percent by weight based on the total weight of the bulk graft copolymer, wherein the respective weight ratio of emulsion graft copolymer to bulk graft copolymer is between 2:1 and 1:1,
(c) a high molecular weight vinyl aromatic-vinyl cyanide rigid copolymer having a weight average molecular weight of from 90,000 to 300,000,
(d) a low molecular weight vinyl aromatic-vinyl cyanide rigid copolymer having a weight average molecular weight of from 30,000 to 80,000.

5,610,236

POLYMER BLENDS OF PVC AND POLYKETONES

James G. Bonner, Edinburgh, Scotland, assignor to BP Chemicals Limited, London, England

Filed Feb. 23, 1995, Ser. No. 393,322

Claims priority, application United Kingdom, Feb. 25, 1994, 9403701

Int. Cl.[6] C08G 67/02

U.S. Cl. 525—185 11 Claims

1. A polymer blend composition consisting essentially of a polyketone and PVC provided that the polyketone is a linear polymer having an alternating structure of a) units derived from carbon monoxide and b) units derived from one or more olefinically unsaturated compounds and is not a propylene/CO copolymer having a number average molecular weight of less than 10,000.

5,610,237

AMINOALKYLLITHIUM COMPOUNDS CONTAINING CYCLIC AMINES AND POLYMERS THEREFROM

David F. Lawson, Uniontown; Thomas A. Antkowiak, Rittman; James E. Hall, Mogadore; Mark L. Stayer, Jr., Suffield, and John R. Schreffler, Clinton, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 382,358, Feb. 1, 1995, Pat. No. 5,574,109.

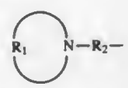
This application Jun. 4, 1996, Ser. No. 658,242

Int. Cl.[6] C08F 293/00

U.S. Cl. 525—280 4 Claims

1. A tire having decreased rolling resistance and having at least one structural element selected from the group consisting of treads, subtreads, black sidewalls, body ply skims and bead fillers, wherein said structural element results from a vulcanizable elastomeric compound comprising:

a polymer molecule having the general formula AYLi, prior to quenching where A is a cyclic amine-containing radical having the general formula



wherein R_1 is a divalent alkylene, an oxy- or amine-alkylene having from 6 to about 20 carbon atoms; R_2 is a linear-, branched-, or cyclo-alkylene having from about 2 to about 20 carbon atoms; and Y is a divalent polymer radical comprises at least one monomer selected from the group consisting of conjugated dienes having 4–12 carbon atoms, monovinyl aromatic monomers having 8–18 carbon atoms and trienes, and Li is a lithium atom bonded to a carbon atom of Y; and

from about 5 to 80 parts by weight of carbon black, per 100 parts of said functionalized polymer.

5,610,238

DISSIMILAR ARM ASYMMETRIC RADIAL OR STAR BLOCK COPOLYMERS FOR ADHESIVES AND SEALANTS

Glenn R. Himes; Bridget A. Spence; Ronald J. Hoxmeier, and Steven S. Chin, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 336,632, Nov. 9, 1994, Pat. No. 5,486,574, which is a continuation-in-part of Ser. No. 149,595, Nov. 9, 1993, Pat. No. 5,393,841. This application Oct. 2, 1995, Ser. No. 537,498

Int. Cl.[6] C08F 297/04

U.S. Cl. 525—314 21 Claims

1. Radial or star asymmetric block copolymers of the formulae

$((UD)_y—A—HD)_x—Y—(UD)_z$

wherein A is a vinyl aromatic hydrocarbon block having a peak molecular weight as determined by gel permeation chromatography of from 4000 to 20,000, HD is a hydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 10,000 to 100,000, Y is a multifunctional coupling agent, UD is a partially hydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 1000 to 80,000, x is an integer from 2 to 20, y is 0 or 1, z is an integer from 1 to 20, and x+ z ranges from 3 to 30, and the vinyl aromatic hydrocarbon content ranges from 4 to 35 percent by weight.

5,610,239

TWO COMPONENT ADHESIVE

Richard Skelley, Hillsborough, N.C., assignor to Reichhold Chemicals, Inc., Research Triangle Park, N.C.

Filed Oct. 20, 1995, Ser. No. 546,065

Int. Cl.[6] C09J 107/02;109/02;109/06;123/16

U.S. Cl. 525—331.7 6 Claims

1. A two component adhesive suitable for spraying through application means adapted for dispensing single component adhesives, the two component adhesive comprising a natural or synthetic rubber first component and glyoxal capable of destabilizing the natural or synthetic rubber first component slowly, the glyoxal being present in an amount of less than about 5 percent by weight of the two component adhesive.

5,610,240

ANTI-REVERSION COAGENTS FOR RUBBER VULCANIZATION

Andreas H. Hogt, Enschede; Auke G. Talma, Bathmen; Rudolf F. de Block, and Rabindra N. Datta, both of Deventer, all of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

Continuation of Ser. No. 50,049, Apr. 28, 1993, Pat. No. 5,426,155. This application Mar. 30, 1995, Ser. No. 413,567

Claims priority, application European Pat. Off., Oct. 29, 1990, 90202864

Int. Cl.[6] C08F 8/34

U.S. Cl. 525—332.6 14 Claims

1. A sulfur-vulcanized rubber composition which comprises the vulcanization reaction product of:

A) 100 parts by weight of at least one natural or synthetic rubber;

B) 0.1 to 25 parts by weight of sulfur and/or a sufficient amount of a sulfur donor to provide the equivalent of 0.1 to 25 parts by weight of sulfur; and

C) 0.1 to 5.0 parts by weight of a coagent which only partially reacts under sulfur-vulcanization reaction conditions up to optimum cure, and which, after optimum cure, forms cross-links bonded to the sulfur cross-linked rubber by a carbon-carbon linkage at a rate sufficient to compensate for from 10 to 200 percent of the reversion in said rubber composition.

5,610,241

REACTIVE GRAFT POLYMER WITH BIODEGRADABLE POLYMER BACKBONE AND METHOD FOR PREPARING REACTIVE BIODEGRADABLE POLYMERS

Keun H. Lee; Chee Y. Won, and Chih-Chang Chu, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 7, 1996, Ser. No. 646,060

Int. Cl.[6] C08G 63/08;63/685;63/91

U.S. Cl. 525—411 11 Claims

1. Graft polymer having a biodegradable backbone and side chains with reactive amino acid groups and/or protected amino acid groups, said graft polymer being obtained from a biodegradable homopolymer or copolymer starting material having carbonyl group and carbon alpha to carbon of the carbonyl group and having H atom on carbon alpha to carbonyl carbon and consisting essentially of biodegradable homopolymer or copolymer backbone joined at backbone carbon alpha to backbone carbonyl group, to side chain amino acid pendant group at a carbonyl moiety of said pendant group, which side chain amino acid pendant group contains reactive amino acid group(s) and/or protected amino acid groups.

11. Biodegradable homopolymer or copolymer containing carbonyl group and carbon alpha to the carbonyl group and having carbanion on the carbon alpha to the carbon of the carbonyl group.

5,610,242

PROCESS FOR MODIFYING POLYMERS

Paul Birnbrich, Solingen; Ulrich Eicken, Korschenbroich; Herbert Fischer, Duesseldorf; Joerg-Dieter Klamann, Bremerhaven, and Ludwig Schieferstein, Ratingen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/01986, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03523, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 26, 1993, Ser. No. 379,627

Claims priority, application Germany, Aug. 3, 1992, 42 25 627.5

Int. Cl.[6] C08F 283/02; C08G 63/91; C08L 67/08

U.S. Cl. 525—444.5 20 Claims

1. A process for modifying a polymer containing at least one functional group selected from the group consisting of carboxyl groups, amino groups and phenolic hydroxyl groups which comprises: reacting at least one delta[2]-oxazoline selected from the group consisting of mono-oxazolines substituted in the 2-position by an optionally substituted alkyl or alkenyl group containing 7 to 23 carbon atoms and bis-oxazolines substituted in the 2-position by an optionally substituted alkyl or alkenyl group containing 7 to 23 carbon atoms with the polymer.

5,610,243

POLYSULFIDE-EPOXY THERMOPLASTIC ELASTOMERS

David E. Vietti, Cary; Keith B. Potts, Elgin, and Kimberley A. Leone, McHenry, all of Ill., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 493,015, Jun. 21, 1995, abandoned, which is a continuation of Ser. No. 330,229, Oct. 27, 1994, abandoned, which is a continuation of Ser. No. 169,941, Dec. 20, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 543,251

Int. Cl.[6] C08G 59/66;81/00

U.S. Cl. 525—523 13 Claims

1. A thermoplastic elastomer comprising an adduct of a liquid polysulfide having a general structure described by the formula

$$HSCH_2CH_2OCH_2OCH_2CH_2S[SCH_2CH_2OCH_2OCH_2CH_2S]_m[—SCH_2CH(SH)CH_2S—]_nSCH_2CH_2OCH_2O—CH_2CH_2SH$$

wherein m is from about 5 to about 50, n is from 0 to about 1 and n/m is from about 0.005 to about 0.02 when n is greater than 0 and a solid epoxy resin in which the ratio of epoxy equivalents to mercapto equivalents is from about 0.6:1 to about 0.7:1, or a liquid epoxy resin in which the ratio of epoxy equivalents to mercapto equivalents is from about 0.7:1 to about 0.95:1 and, optionally, an amount of a monofunctional epoxy compound sufficient to raise the ratio of total epoxy equivalents to mercapto equivalents from 0.95:1 to a maximum of 1:1.

5,610,244

PROCESS FOR THE GAS PHASE POLYMERIZATION OF ALPHA-OLEFINS

Gabriele Govoni, Renazzo; Roberto Rinaldi, and Giuseppe Penzo, both of Mantova, all of Italy, assignors to Montell North America Inc., Wilmington, Del., and Montell Technology Company BV, Netherlands

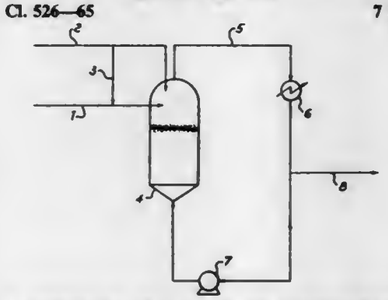
PCT No. PCT/EP95/00544, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO95/22565, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 15, 1995, Ser. No. 537,708

Claims priority, application Italy, Feb. 21, 1994, MI94A0305

Int. Cl.[6] C08F 2/34

U.S. Cl. 526—65 7 Claims



1. A continuous process for the gas phase polymerization of one or more olefins CH_2=CHR, where R is hydrogen or a alkyl, cycloalkyl or aryl radical having 1–12 carbon atoms, using a catalyst comprising the product of the reaction among the following components: (A) a titanium or vanadium compound having, respectively, at least one Ti-halogen or V-halogen bond, a magnesium halide and optionally an electron donor; (B) a trialkylaluminium compound; (C) optionally, an electron donor compound, said polymerization being carried out in one or more fluidised bed reactors comprising a polymerization zone and a gas speed reduction zone, said fluidised bed reactor being joined to a recycle line, comprising compression and cooling devices, by means of which the exiting gas at the top of the reactor is compressed, cooled and again sent to the reactor at a point below the reaction zone, characterised by the fact that the make-up monomer or monomers are directly sent to said fluidised bed reactor in one or more points above the fluidised bed.

5,610,245

POLYMERIZATION METHOD PRODUCING VINYL CHLORIDE POLYMER

Yasuhiro Takahashi; Tadashi Amano, both of Kashima-gun, and Yoshihiro Shirota, Maebashi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

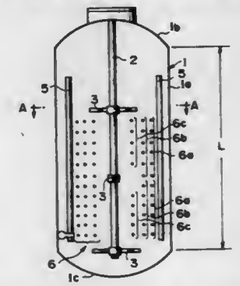
Filed Dec. 27, 1994, Ser. No. 364,461

Claims priority, application Japan, Dec. 27, 1993, 5-351849

Int. Cl.[6] C08F 2/18

U.S. Cl. 526—88 8 Claims

1. A method of producing a vinyl chloride polymer comprising



the step of subjecting vinyl chloride or a monomer mixture con-

taining vinyl chloride in an amount of 50% by weight or more to suspension polymerization in an aqueous medium by using a polymerization apparatus equipped with a polymerization vessel, the internal volume of which is 40 m^3 or more, comprised of a substantially cylindrical container,

said polymerization vessel comprising a reflux condenser placed at the upper part of the polymerization vessel; a cooling jacket, in which a refrigerant is passed through, placed outside the polymerization vessel; two to eight cooling baffles, in which a refrigerant is passed through, comprised of pipes vertically extending in the polymerization vessel and arranged symmetrically about the axis of the polymerization vessel and further placed 40 mm or more away from the inner wall of the polymerization vessel, the total of the sectional areas of said baffles ranging from 0.4 to 3% of the horizontal sectional area of the cylindrical section constituting the space in the polymerization vessel; and at least one coiled cooling pipe, in which a refrigerant is passed through, placed around the axis of the polymerization vessel and away from the inner wall of the polymerization vessel, the clearance between said coiled cooling pipe and said baffles ranging from 40 to 600 mm;

wherein, when the temperature of the reaction mixture charged has reached a desired polymerization temperature, the refrigerant is passed through the cooling jacket, the baffles, and the coiled cooling pipe to start the heat dissipation of the reaction mixture, and when polymerization conversion has reached 4 to 20%, the dissipation of heat by the reflux condenser is started.

5,610,246

PROCESS FOR POLYMERIZING PROPYLENE USING A SILICA-SUPPORTED CATALYST

Charles K. Buehler, and Albert P. Masino, both of Naperville, Ill., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation of Ser. No. 694,574, May 2, 1991, abandoned, which is a division of Ser. No. 521,302, May 9, 1990, Pat. No. 5,034,365. This application Feb. 5, 1996, Ser. No. 597,469

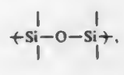
Int. Cl.[6] C08F *4/656*

U.S. Cl. 526—119 **5 Claims**

1. A process for polymerizing propylene comprising polymerizing propylene under propylene polymerization conditions in the presence of a catalyst system comprising

(I) a catalyst component comprising the product prepared by the steps of:

(a) contacting silica, pretreated to replace surface hydroxyl groups with a surface characterized by the structural formula



said silica characterized by a surface area of between about 80 m^2/g. and about 300 m^2/g, a median particle size of between about 20 microns and about 200 microns and a pore volume of between about 0.6 cc/g. and about 3.0 cc/g., with 2-methylpentyloxymagnesium chloride;

(b) contacting the product of step (a) with silicon tetrachloride;

(c) contacting the product of step (b) with trichlorosilane, with the proviso that the concentration of said silicon tetrachloride and said trichlorosilane contacting said products of steps (a) and (b), respectively, is such that the molar ratio of said silicon tetrachloride to said trichlorosilane is in the range of between about 70:30 and about 92:8;

(d) contacting the product of step (c) with titanium tetracresylate; and

(e) contacting the product of step (d) with titanium tetrachloride;

(II) a compound selected from the group consisting of triethylaluminum and tri-n-propylaluminum; and

(III) isobutylisopropyldimethyoxysilane.

5,610,247

UNBRIDGED METALLOCENES OF 9-SUBSTITUTED FLUORENYL COMPOUNDS AND USE THEREOF

Helmut G. Alt, Bayreuth, Germany; Syriac J. Palackal, Bartlesville, Okla.; Konstantinos Patsidis, Berlin, Germany; M. Bruce Welch, Bartlesville, Okla.; Rolf L. Geerts, Bartlesville, Okla.; Eric T. Hsieh, Bartlesville, Okla.; Max P. McDaniel, Bartlesville, Okla.; Gil R. Hawley, Dewey, Okla.; Paul D. Smith, Seabrook, Tex.; Jay Janzen, Bartlesville, Okla., and Michael Schmid, Bayreuth, Germany, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 194,944, Feb. 14, 1994, abandoned, and a continuation-in-part of Ser. No. 71,906, Jun. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305. This application Mar. 23, 1995, Ser. No. 410,154

Int. Cl.[6] C08F *4/64;10/02*

U.S. Cl. 526—160 **36 Claims**

1. An unbridged metallocene of the formula $(FlR_n)(CpR_m)MeQ_2$ wherein Fl is a 9-fluorenyl radical, Cp is selected from the group consisting of cyclopentadienyl, indenyl, tetrahydroindenyl, and fluorenyl radicals, each R is either the same or different organo radical having 1 to 20 carbon atoms, Me is a metal selected from the Group IVB metals, each Q is the same or different and is selected from the group consisting of hydrocarbyl or hydrocarbyloxy radicals having 1 to 20 carbon atoms and halogen, n is a number in the range of 1 to 7, and m is a number in the range of 0 to 7; wherein at least one R on FlR_n is at the 9 position of the 9-fluorenyl radical.

22. A process for preparing a polymer comprising contacting an olefin under suitable reaction conditions with a metallocene of claim 1.

5,610,248

BLOCK COPOLYMERS AND A NOVEL METHOD FOR PREPARING (CO)POLYMERS HAVING A NARROW MOLECULAR WEIGHT DISTRIBUTION BY METAL-FREE ANIONIC POLYMERIZATION IN THE PRESENCE OF A PHOSPHONIUM CATION

Thieo Hogen-Esch, and Angela Zagala, both of Los Angeles, Calif., assignors to The University of Southern California, Los Angeles, Calif.

Filed Mar. 6, 1995, Ser. No. 398,694

Int. Cl.[6] C08F *4/00*

U.S. Cl. 526—193 **16 Claims**

1. A method for preparing a (co)polymer, comprising the steps of:

reacting a monomer of the formula:



with an initiator of the formula

$$(PR^6R^7R^8R^9)^+(R^{10}R^{11}R^{12}C)^-$$

or of the formula

$$[(R^{10}R^{11}CCH_2)_2]^{2-}(P^+R^6R^7R^8R^9)_2$$

at a temperature of from −78° C. to 40° C., in a solvent in which the initiator at least partially dissolves and which does not quench the reaction, for a length of time sufficient to polymerize the monomer(s) and form a reaction mixture, wherein:

R^1 is selected from the group consisting of H, CN, CF_3, alkyl of from 1 to 6 carbon atoms and aryl,

R^2 is independently selected from the group consisting of CN, $C(=X)R^3$, $C(=X)NR^4R^5$ and heterocyclic rings capable of stabilizing an α-anion, where X is NR (R is C_1–C_{20} alkyl), O or S, R^3 is alkyl of from 1 to 20 carbon atoms, alkoxy of from 1 to 20 carbon atoms or alkylthio of from 1 to 20 carbon atoms, and R^4 and R^5 are independently alkyl of from 1 to 20 carbon atoms or are joined together to form an alkylene group of from 2 to 5 carbon atoms, thus forming a 3- to 6-membered ring;

R^6, R^7, R^8 and R^9 are independently alkyl of from 1 to 20 carbon atoms, aryl or aralkyl (wherein any pair of R^6, R^7, R^8 and R^9 may be joined to form a ring, including the possibility that both pairs of R^6–R^9 may be joined to form a ring),

R^{10} and R^{11} are independently alkyl of from 1 to 20 carbon atoms, an aryl group, CN, $C(=X)R^3$ as defined above and $C(=X)NR^4R^5$ as defined above, and R^{10} and R^{11} may be joined together to form a ring, except that R^{10} and R^{11} are not both alkyl of from 1 to 20 carbon atoms, and

R^{12} is independently H, alkyl of from 1 to 20 carbon atoms, aryl or a (co)polymer radical;

quenching the reaction mixture with an acyl halide, an acid anhydride or a substance containing an active hydrogen atom to form a (co)polymer; and

isolating the formed (co)polymer.

5,610,249

PROCESS FOR PRODUCTION OF STYRENE OR STYRENE DERIVATIVE POLYMER OF NARROW MOLECULAR WEIGHT DISTRUBITION

Tetsuo Ogawa, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo-ken, Japan

Filed Jan. 24, 1996, Ser. No. 590,478

Claims priority, application Japan, Jan. 24, 1995, 7-027230

Int. Cl.[6] C08F *2/38;12/04*

U.S. Cl. 526—193 **16 Claims**

1. A process for producing a styrene or styrene derivative polymer of narrow molecular weight distribution by radical (co)polymerization of a styrene or styrene derivative monomer or a styrene or styrene derivative monomer and other comonomer, wherein the (co)polymerization is conducted in the presence of a catalyst system composed of a free radical compound, a radical polymerization initiator and a phosphorus compound, said phosphorus compound being selected from the group consisting of organic phosphines, organic phosphorous acid esters, organic phosphorous amides, organic phosphine oxides, organic phosphoric acid esters and organic phosphoric triamides.

5,610,250

POLYMERIZATION PROCESSES

Richard P. N. Veregin; Peter M. Kazmaier, both of Mississauga; Michael K. Georges, Guelph, and Gordon K. Hamer, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 367,636, Jan. 3, 1995, Pat. No. 5,530,079. This application Mar. 25, 1996, Ser. No. 620,728

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—219.3 **16 Claims**

1. A polymer or copolymer resin composition obtained by the process comprising heating a mixture comprised of a free radical initiator, a non-nitroxide containing stable free radical agent selected from the group consisting of sterically hindered organic hydrazyls, organic verdazyls, pyridyl compounds, organic aroxyls, aryl alkyls and aryl cycloalkyls in which the unpaired electron is on a carbon atom in the alkyl or cycloalkyl group, and compatible mixtures thereof, at least one polymerizable monomer compound, and optionally a solvent, to form a polymer with a high monomer to polymer conversion of from about 50 to about 100 percent and a narrow polydispersity of from about 1.0 to about 2.0, wherein said polymer is comprised of a covalently bound free radical initiator fragment at one end and a covalently bound non-nitroxide containing stable free radical moiety at the other end of the polymer, and wherein said non-nitroxide containing stable free radical agent has high thermal, acidic, and photochemical stability which is greater than the corresponding nitroxide containing stable free radical agent and wherein said resins or elastomers have a weight average molecular weight (M_w) of from about 2,000 to 200,000 and a number average molecular weight (M_n) of from about 1,000 to about 100,000 and a polydispersity of about 1.0 to 2.0.

5,610,251

POLYMERISABLE COMPOSITIONS USING AIR-ACTIVATED LATENT INITIATOR SYSTEM OF HYDROGENATED PYRIDINE COMPOUND AND ACID

Brendan Kneafsey, County Dublin; John Guthrie, County Kildare, and David P. Melody, Dublin, all of Ireland, assignors to Loctite (Ireland) Limited, Tallaght Dublin, Ireland

Division of Ser. No. 173,267, Dec. 23, 1993, Pat. No. 5,523,347, which is a continuation of Ser. No. 847,157, Mar. 5, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,252

Claims priority, application Ireland, Mar. 6, 1991, 0741/91; Mar. 6, 1991, 0742/91; Feb. 13, 1992, 920471

Int. Cl.[6] C08F *220/18;220/26*

U.S. Cl. 526—264 **12 Claims**

1. A storage stable, one-part, air-activatable, polymerisable composition comprising:

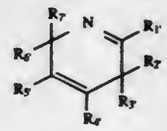
(a) at least one free-radically polymerisable ethylenically unsaturated monomer,

(b) an auto-oxidisable compound which is a partially hydrogenated pyridine having a general formula selected from III (i)–(v):

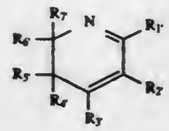
III(i)



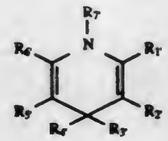
III(ii)



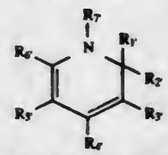
III(iii)



III(iv)



III(v)



wherein R_1, to R_7, which may be the same or different, are independently selected from hydrogen, substituted and unsubsti-

tuted hydrocarbyl groups, substituted and unsubstituted heterohydrocarbyl groups and substituted and unsubstituted silyl groups, and any two of the groups R_1 to R_7 may together form a substituted or unsubstituted mono-cyclic ring structure or a substituted or unsubstituted poly-cyclic ring structure, which may be a fused ring structure,

wherein

the term "substituted" refers to the appropriate group substituted with one or more groups comprising oxygen, nitrogen, sulfur or halogen atoms and

the term "heterohydrocarbyl" refers to hydrocarbyl interrupted by an oxygen, nitrogen or sulfur atom.

with the proviso that none of the groups R_1 to R_7 comprise or contain a group which is known to interfere with polymerisation, and

(c) a weak acid,

with the further provisos that

the composition does not contain a peroxide, or a peroxide precursor which produces peroxide in the absence of air, or any ingredient which is a significant source of radicals in the absence of air;

said composition having been prepared under anaerobic conditions: and

said polymerisable composition being maintained and stable under said anaerobic conditions and polymerisable under aerobic or anaerobic conditions after exposure to air.

5,610,252

VINYL CARBONATE AND VINYL CARBAMATE CONTACT LENS MATERIAL MONOMERS

Ronald E. Bambury, Fairport, and David E. Seelye, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

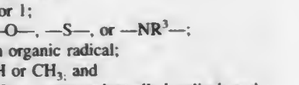
Division of Ser. No. 724,091, Jul. 19, 1991, which is a division of Ser. No. 346,204, May 2, 1989, Pat. No. 5,070,215. This application May 25, 1995, Ser. No. 450,510

Int. Cl.[6] C08F *230/08*

U.S. Cl. 526—279 **26 Claims**

1. A contact lens formed of a copolymer prepared by polymerizing a prepolymer mixture comprising:

(a) a monomer of the general formula (I):



(I)

wherein:

a is 1, 2, 3 or 4;

b is 0 or 1;

X is —O—, —S—, or —NR^3—;

R is an organic radical;

R^2 is H or CH_3; and

R^3 is H or a monovalent alkyl radical; and

(b) a crosslinking agent.

5,610,253

CYCLOOLEFIN POLYMERS

Wilfried Hatke, Hofheim, and Frank Osan, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

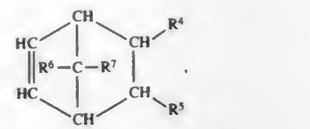
Filed Jul. 11, 1995, Ser. No. 501,263

Claims priority, application Germany, Jul. 13, 1994, 44 25 408.3

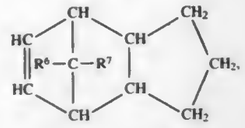
Int. Cl.[6] C08F *232/08*

U.S. Cl. 526—281 **5 Claims**

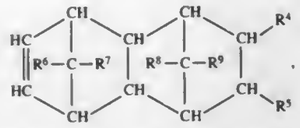
1. A cycloolefin polymer having a solution viscosity <0.25 dl/g (at 135° C. in decalin in accordance with DIN 53 728) comprising 0.1–100% by weight, based on the total mass of the cycloolefin polymer of polymerized units of at least one polycyclic olefin of the formula II, III, IV, V, VI or VII.



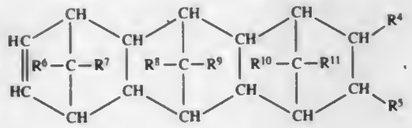
(II)



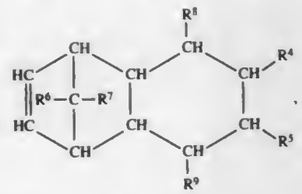
(III)



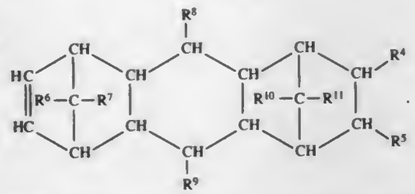
(IV)



(V)



(VI)

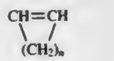


(VII)

where

R^4, R^5, R^6, R^7, R^8, R^9, R^{10} and R^{11} are identical or different and are each a hydrogen atom or a C_1–C_{30}-hydrocarbon radical or two or more radicals R^4 to R^{11} are joined cyclically, with identical radicals in the various formulae being able to have a different meaning,

from 0 to 45% by weight, based en the total mass of the cycloolefin polymer, of polymerized units of at least one monocyclic olefin of the formula VIII

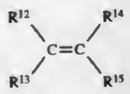


(VIII)

where

n is a number from 2 to 10,

from 5 to 80% by weight, based on the total mass of the cycloolefin polymer, of polymerized units of an acyclic olefin of the formula IX

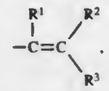


(IX)

where

R^{12}, R^{13}, R^{14}, R^{15} are identical or different and are each a hydrogen atom or a C_1–C_8-alkyl or a C_6–C_{14}-aryl, wherein

the cycloolefin polymer has at one or both ends an olefinically unsaturated group having at least three carbon atoms and wherein the olefinically unsaturated group is produced from an olefin that is different from the cycloolefins of the formulae II-VIII and the acyclic olefins of the formula IX and has the formula I



(I)

where

any of R^1, R^2, R^3 can be a hydrogen, except that each of R^1, R^2, R^3 cannot simultaneously be hydrogen, or R^1, R^2, R^3 are identical or different and are each a C_1–C_{16}-alkyl, a C_1–C_{16}-aryl, a C_1–C_{16}-alkenyl, a C_1–C_{16}-haloalkyl or a C_1–C_{16}-haloaryl.

5,610,254

ETHYLENE-α-OLEFIN-NONCONJUGATED POLYENE RANDOM COPOLYMER, RUBBER COMPOSITION, AND PROCESS FOR PREPARING THE RANDOM COPOLYMER

Toshihiro Sagane; Toshiyuki Tsutsui, both of Yamaguchi; Masaaki Kawasaki, Ichihara; Keiji Okada, Ichihara; Tetsuo Tojo, Ichihara, and Tatsuya Tanizaki, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 19, 1995, Ser. No. 574,684

Claims priority, application Japan, Dec. 20, 1994, 6-316952; Mar. 17, 1995, 7-059290; Dec. 6, 1995, 7-318401

Int. Cl.[6] C08F *236/20;232/06;4/64*

U.S. Cl. 526—282 **14 Claims**

1. An ethylene-α-olefin-nonconjugated polyene random copolymer which is a random copolymer of (a) ethylene, (b) an α-olefin of 3 or more carbon atoms and (c) a nonconjugated polyene containing, in one molecule, one carbon-to-carbon double bond polymerizable by a metallocene catalyst among carbon-to-carbon double bonds, and has the following properties:

(i) said copolymer contains (a) units derived from ethylene and (b) units derived from the α-olefin of 3 or more carbon atoms in a molar ratio of 40/60 to 95/5 ((a)/(b)),

(ii) the iodine value is in the range of 1 to 50,

(iii) the intrinsic viscosity (η), as measured in decahydronaphthalene at 135° C. is in the range of 0.1 to 8.0 dl/g, and

(iv) the ratio gη* of the intrinsic viscosity (η) of said copolymer defined above to the intrinsic viscosity [η]blank of a linear ethylene-propylene copolymer having the same weight-average molecular weight, measured by light scattering method, as the ethylene-α-olefin-nonconjugated polyene random copolymer and having an ethylene content of 70% by mol, (η)/(η)blank, is in the range of 0.2 to 0.9.

5,610,255

PROCESS FOR PREPARING POLYSUCCINIMIDE AND POLYASPARTIC ACID

Torsten Groth; Winfried Joentgen, both of Köln; Nikolaus Möller, Monheim, and Ulrich Liesenfelder, Köln, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Continuation-in-part of Ser. No. 195,321, Feb. 14, 1994, abandoned. This application Aug. 18, 1995, Ser. No. 516,811

Claims priority, application Germany, Feb. 22, 1993, 43 05 368.8; May 6, 1993, 43 14 965.0; Jun. 8, 1993, 43 19 044.8

Int. Cl.[6] C08F *120/58;122/02*

U.S. Cl. 526—304 **10 Claims**

1. Process for preparing polysuccinimide or polyaspartic acid, wherein a starting material which is selected from the group consisting of monoammonium maleate, diammonium maleate, mixtures of monoammonium maleate and diammonium maleate, monoammonium fumarate, diammonium fumarate and mixtures of monoammonium fumarate and diammonium fumarate; is subjected to a continuous thermal polyermization at from 120° C. to 200° C. in a continuous kneading reactor of the non-extruder type with a residence time of from 0.5 to 300 minutes to form said polysuccinimide and, optionally, subjecting said polysuccinimide to hydrolysis to form said polyaspartic acid or salts thereof.

5,610,256

METHOD OF PRODUCING AN ULTRA HIGH MOLECULAR WEIGHT POLYMER EMULSION

Tadashi Kato, Ibo gun; Takeshi Noguchi, Tuzuki gun, and Tadahiro Inada, Tatsuno, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 12,368, Feb. 2, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 309,610

Claims priority, application Japan, Feb. 4, 1992, 4-048075

Int. Cl.[6] C08F *20/10;222/10;2/00;4/30*

U.S. Cl. 526—318.4 **7 Claims**

1. A method of producing a high molecular weight polymer emulsion by emulsion polymerization of an acrylic ester or methacrylic ester or a mixture thereof, optionally with an unsaturated carboxylic acid,

wherein the oxygen concentration in the aqueous phase of a reaction system is maintained at zero or less as measured relative to the dissolved oxygen concentration in a 0.5 wt. % sodium bisulfite aqueous solution at 20° C. under atmospheric pressure, and

wherein an emulsifier, present in an amount of 0.5–5 parts by weight per 100 parts by weight of said monomer, and a redox polymerization initiator are used for said emulsion polymerization, said redox polymerization initiator containing a persulfate, a reducing agent and activating agent, the amount of said persulfate being 0.001–0.2 parts by weight per 100 parts by weight of the monomer.

3,610,257

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING BENZOTRIAZOLE-SUBSTITUTED POLYORGANOSILOXANES/POLYORGANOSILANES

Hervé Richard, Villepinte; Madeleine Leduc, Paris, and Alain Lagrange, Couvray, all of France, assignors to L'Oreal, Paris, France

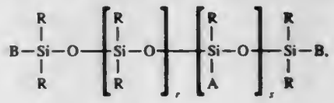
Filed Nov. 8, 1995, Ser. No. 555,046

Claims priority, application France, Nov. 8, 1994, 94 13395

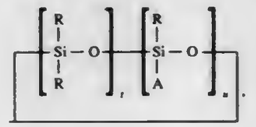
Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **23 Claims**

1. A benzotriazole-substituted polyorganosiloxane/polyorganosilane compound having one of the formulae (1) to (3):



(1)



(2)

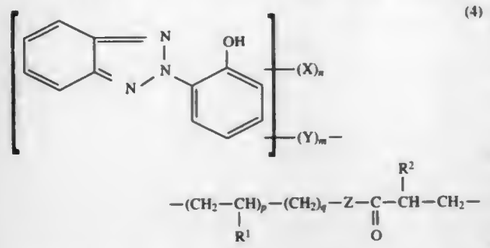
or



(3)

in which the radicals R, which may be identical or different, are each a C_1–C_{10} alkyl, phenyl or 3,3,3 trifluoropropyl radical, at least 80% by number of the radicals R being methyl radicals; the radicals B, which may be identical or different, are each a radical R

or a radical A as defined below; the radicals R', which may be identical or different, are each a C_1–C_8 alkyl radical or a phenyl radical; r is an integer ranging from 0 to 50, inclusive, and s is an integer ranging from 0 to 20, inclusive, with the proviso that, if s is zero, then at least one of the two radicals B is a radical A; u is an integer ranging from 1 to 6, inclusive, and t is an integer ranging from 0 to 10, inclusive, with the proviso that t+u is equal to or greater than 3; and the radical A is a monovalent radical bonded directly to a silicon atom and which has the following formula (4):



(4)

wherein n is an integer ranging from 0 to 3, inclusive, and the radicals X, which may be identical or different, are each a C_1–C_8 alkyl radical, a halogen atom or a C_1–C_4 alkoxy radical; n is 0 or 1, and Y is —O—, —NH—, —COO—, —O(CH$_2$)$_v$—COO— or —(CH$_2$)$_w$—OCONH— in which v and w are integers ranging from 0 to 12, inclusive; p is 0 or 1; g is an integer ranging from 0 to 12, inclusive; Z is —O— or —NH—; R^1 is hydrogen or a C_1–C_4 alkyl radical; and R^2 is hydrogen or a methyl radical.

5,610,258

CROSSLINKABLE NEMATIC POLYORGANOSILOXANES

Hans-Peter Weitzel, Reischach; Susanne Weber-Koegl, München, and Sotirios Chatzinerantzis, Unterschleissheim, all of Germany, assignors to Consortium für elektrochemische Industrie GmbH, Munich, Germany

Filed Oct. 11, 1995, Ser. No. 540,630

Claims priority, application Germany, Oct. 27, 1994, 44 38 418.1

Int. Cl.^{6} C08G *77/12*

U.S. Cl. 528—25 **5 Claims**

1. A nematic liquid crystalline cyclic polyorganosiloxane containing at least three different mesogenic side groups per polyorganosiloxane, where at least two mesogenic side groups per polyorganosiloxane each contain at least three radicals individually selected from the group consisting of aromatic, heteroaromatic and cycloaliphatic radicals, and at least one of the mesogenic side groups contains a methacrylic or acrylic group.

5,610,259

RTV SILICONES COMPRISING DIFUNCTIONAL ORGANOSILICON COMPOUNDS

James A. Cella, Clifton Park, and Timothy B. Burnell, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 387,695, Feb. 13, 1995, abandoned. This application Jan. 19, 1996, Ser. No. 588,946

Int. Cl.^{6} C08G *77/04*

U.S. Cl. 528—34 **10 Claims**

1. A room temperature vulcanizable composition comprising:

(a) an organopolysiloxane capable of forming a room temperature vulcanizable composition with

(b) a difunctional silacycloalkane capable of chain extending said organosiloxane; and

(c) a crosslinker capable of crosslinking said organopolysiloxane,

wherein the difunctional silacycloalkane is incorporated into the organosiloxane and remain cyclic after the room temperature vulcanizable composition cures.

5,610,260

POLYISOCYANATE MIXTURES WHICH ARE LIQUID AT GREATER THAN 5° C

Lutz Schmalstieg; Josef Pedain, and Harald Mertes, all of Köln, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 377,873, Jan. 25, 1995, abandoned. This application Feb. 9, 1996, Ser. No. 599,640

Claims priority, application Germany, Feb. 3, 1994, 44 03 233.1

Int. Cl.^{6} C08G *18/10*

U.S. Cl. 528—49 **6 Claims**

1. A polyisocyanate mixture which is a reaction product of 4,4'-diphenylmethane diisocyanate, is a liquid a 5° C. and above and has

A) an NCO content of 14.5 to 24% by weight and

B) an allophanate group content (calculated as $C_2HN_2O_3$ molecular weight=101) of 7.7 to 14.5 % by weight and

C) said reaction product is prepared by reacting

a) 4,4'-diphenylmethane diisocyanate with

b) one or more monohydric alcohols having 4 to 16 carbon atoms per molecule,

at an NCO/OH equivalent ratio of 5:1 to 8.5:1 to form urethane groups and subsequently allophanate groups.

5,610,261

ADAMANTANE BASED THREE-DIMENSIONAL RIGID-ROD POLYMERS

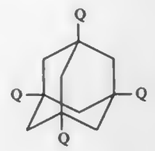
My Dotrong; Minhhoa Dotrong, both of Beavercreek, and Robert C. Evers, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1995, Ser. No. 505,719

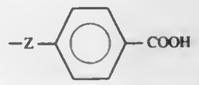
Int. Cl.^{6} C08G *63/133*

U.S. Cl. 528—184 **4 Claims**

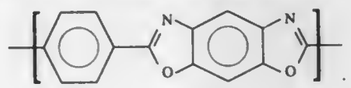
1. A three-dimensional para-oriented benzobisazole polymer of the formula:



wherein Q is



wherein Z represents repeating units of the formula:



5,610,262

PROCESS FOR PRODUCING POLYCARBONATE

Tsutomu Yamato; Yasuhiro Oshino; Yutaka Fukuda; Tatsuya Kanno, and Takaaki Kuwana, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 978,209, Nov. 18, 1992, Pat. No. 5,432,250, and a continuation-in-part of Ser. No. 946,335, Nov. 2, 1992, Pat. No. 5,418,314. This application Apr. 7, 1995, Ser. No. 418,510

Claims priority, application Japan, Mar. 13, 1991, 3-127018; Mar. 13, 1991, 3-127019

Int. Cl.^{6} C08G *64/30;63/78*

U.S. Cl. 528—196 **4 Claims**

1. A process for producing a polycarbonate by subjecting a dihydroxy compound and a diester of carbonic acid to melt polycondensation through transesterification, characterized in that after a polycarbonate prepolymer is prepared in the first-stage reaction, polycondensation is conducted as the second-stage reaction through the use of at least one paddle-type self-cleaning twin-screw extruder.

5,610,263

WATER THINNED POLYMERIC VEHICLE FOR COATING COMPOSITIONS WITH LOW AMOUNTS OF VOLATILE ORAGNIC COMPOUNDS

Frank N. Jones, Ann Arbor, Mich.; Shou-Kuan Fu, Shanghai, China; Wen Jing, Ypsilanti, Mich., and Suru Zhang, Highland Park, N.J., assignors to Eastern Michigan University, Ypsilanti, Mich.

Continuation-in-part of Ser. No. 378,042, Jan. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 186,429, Jan. 25, 1994, abandoned, and a continuation-in-part of Ser. No. 186,430, Jan. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,640

Int. Cl.^{6} C08G *63/02*

U.S. Cl. 528—272 **18 Claims**

1. A liquid polymeric vehicle effective for providing a coating binder and for providing a formulated coating composition having less than about three weight percent organic solvent and which formulated coating composition includes at least about 3 weight percent water, the polymeric vehicle comprising:

a linear or substantially linear oligoester diol having a molecular weight in the range of from about 275 to about 3000 and a polydispersity index of less than about 2.6; and

a hardening carbamate crosslinker selected from the group consisting of a polyisocyanate, polyfunctional biuret, blocked polyisocyanate, blocked polyfunctional biuret, a carbamate polyol and mixtures thereof, the harding carbamate crosslinker reactive with the oligoester diol or reactive with an additional crosslinker which is reactive with the oligoester diol, the hardening carbamate crosslinker not reactive with water and in an amount effective for providing the coating binder with from about 3 to about 20 weight percent carbamate groups based upon the weight of the coating binder, the oligoester diol having a molecular weight and structure effective for providing a liquid formulated coating composition when combined with at least about three weight percent water and not more than about three weight percent organic solvent, the hardening carbamate crosslinker and oligoester diol ir relative amounts effective for permitting the formulated coating composition to imbibe at least about 3 weight percent water, based upon the weight of the formulated coating composition, to provide a water thinned formulated coating composition with a viscosity of less than about 1.5 Pa.s at about 20° C. to about 60° C. at a shear rate of about 3 sec.$^{-1}$, the polymeric vehicle effective for providing the coating binder with a hardness of at least about H when applied to and thermoset on a substrate at a thickness of one mil dry.

5,610,264

CONTINUOUS PROCESS FOR POLYASPARTIC ACID SYNTHESIS

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Calwood Chemical Industries, Inc., Elkridge, Md.

Filed Nov. 16, 1995, Ser. No. 559,049

Int. Cl.^{6} C08G *69/10;63/44*

U.S. Cl. 528—328 **12 Claims**

1. A process for the production of a polyaspartate salt comprising the steps of:

a.) passing an aqueous solution of ammonium fumarate over a bed of immobilized cells, wherein said cells contain aspartase, to produce an aqueous solution of ammonium aspartate;

b.) adding to said solution of ammonium aspartate of one equivalent of a base per mole of asparate present, said base selected from the group of bases consisting of sodium hydroxide, sodium bicarbonate, sodium carbonate, potassium hydroxide, potassium bicarbonate and potassium carbonate, said base added to said solution of aspartic acid without isolation of aspartic acid;

c.) reducing the volume of said solution by evaporation thereby removing the ammonia contained in the solution;

d.) acidifying said solution with a sufficient quantity of sulfuric acid to produce a solution of aspartic acid and sodium bisulfate;

e.) mixing and heating said solution in a reactor at a temperature of 110°–300° C. for a length of time sufficient to convert at least 60% of the aspartic acid to polysuccinimide;

f.) hydrolyzing said polysuccinimide with a base selected from the group of bases consisting of sodium hydroxide, sodium bicarbonate, sodium carbonate ammonium hydroxide, ammonia, potassium hydroxide, potassium carbonate and potassium bicarbonate to provide solution of a salt of polyaspartic acid.

5,610,265

ARMOMATIC POLYIMIDES DERIVED FROM 2-(N-BENZOYLIMINO)-4,4-DIAMINOBIPHENYL

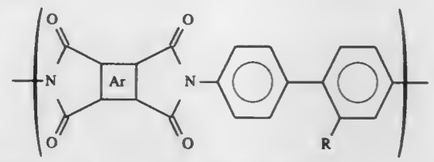
Loon-Seng Tan, Centerville, Ohio, assignor to The United States of America as represented by The Secretary of the Air Force, Washington, D.C.

Filed Feb. 2, 1996, Ser. No. 605,231

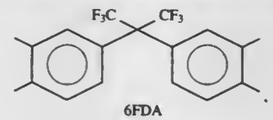
Int. Cl.^{6} C08G *69/26;73/10*

U.S. Cl. 528—353 **6 Claims**

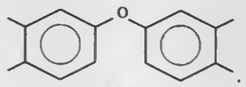
1. A rigid-rod aromatic polyimide having repeating units of the formula:



wherein Ar is selected from the group consisting of:

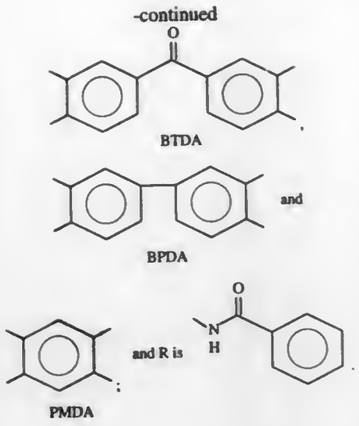


6FDA



ODA

-continued



b) heating a compound selected from the group consisting of malic acid, maleic acid and fumaric acid with ammonia, in a molar ratio of 1:1–2.1; at 170°–300° C. for four hours or less.

5,610,266

COPOLYMERS OF TRIMETHYLENECARBONATE AND OPTIONALLY INACTIVE LACTIDES

Berthold Buchholz, Ingelheim am Rhein, Germany, assignor to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Continuation of Ser. No. 342,662, Nov. 18, 1994, abandoned, which is a continuation of Ser. No. 204,722, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 73,835, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 942,542, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 824,430, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 610,616, Nov. 8, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 479,492

Claims priority, application Germany, Nov. 9, 1989, 39 37 272.3

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **3 Claims**

1. A copolymer comprising trimethylenecarbonate and D,L-lactide units, wherein said copolymer contains more than 30% D,L-lactide units.

5,610,267

PROCESS FOR PREPARING POLYSUCCINIMIDE BY HIGH TEMPERATURE REACTION

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Bayer AG, Leverkusen, Germany

Continuation-in-part of Ser. No. 118,589, Sep. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 7,376, Jan. 21, 1993, Pat. No. 5,288,783, which is a continuation-in-part of Ser. No. 882,919, May 14, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 357,444

Int. Cl.[6] C08G *63/44;67/02*

U.S. Cl. 528—363 **20 Claims**

1. A process for the preparation of polysuccinimide comprising either:

a) heating the mono- or diamide of a compound selected from the group consisting of malic acid, maleic acid and fumaric acid; or

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5,610,268

DENDRITIC MACROMOLECULE AND THE PREPARATION THEREOF

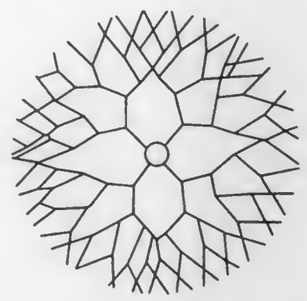
Egbert W. Meijer, Waalre; Hubertus J. M. Bosman, Sittard; Franciscus H. A. M. J. Vandenbooren, Maastricht; Ellen M. M. De Brabander-Van Den Berg, Geleen; Anna M. C. F. Castelijns, Beek; Hendrikus C. J. De Man, Geleen; Rafael W. E. G. Reintjens, Nuth; Christiaan J. C. Stoelwinder, and Atze J. Nijenhuis, both of Sittard, all of Netherlands, assignors to DSM N.V., Netherlands

Division of Ser. No. 208,452, Mar. 10, 1994, which is a continuation-in-part of Ser. No. 117,004, Sep. 10, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,294

Claims priority, application Netherlands, Jan. 13, 1992, 9200043; European Pat. Off., Nov. 12, 1992, 92203481

Int. Cl.[6] C08G *63/44;73/00*

U.S. Cl. 528—363 **14 Claims**



1. A thermally stable dendritic macromolecule which is insensitive to degradation through hydrolysis, said dentritic macromolecule comprising:

a core; and

branches emanating from the core, wherein the branches are made from vinyl-cyanide units, wherein the branches emanate from said core for N number of generations wherein $3 \leqq N \leqq 10$ and the dendritic macromolecule has a molecular weight of at least 1600.

5,610,269

PROCESS FOR MANUFACTURING THERMOSETTING RESIN PARTICLES

Haruhiko Sato, Yawata, and Yutaka Harada, Suita, both of Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

Filed Dec. 18, 1995, Ser. No. 574,130

Claims priority, application Japan, Oct. 3, 1995, 7-279734

Int. Cl.[6] C08F *6/18*

U.S. Cl. 528—499 **18 Claims**

1. A process for manufacturing thermosetting resin particles comprising

(a) providing a first water-soluble polymer having a cloud point within the range between 30° C. and 90° C. and a second water-soluble polymer not having any cloud point;

(b) preparing an aqueous suspension containing said first and second water-soluble polymers and an organic solvent-containing, liquid thermosetting resin composition having a temperature of lower than the cloud point of said first water-soluble polymer, in which said resin composition is suspended as primary particles of oil droplets having a number average particle size of less than 10 microns;

(c) heating said suspension to a temperature higher than said cloud point to allow said primary particles to agglomerate and fuse into secondary particles having a number average particle size from 2 to 20 times greater than that of the primary particles; and

(d) distilling off the solvent from said secondary particles during or after step (c).

5,610,270

Patent Not Issued For This Number

5,610,271

KAPPA RECEPTOR SELECTIVE OPIOID PEPTIDES

Colette T. Dooley, San Diego, and Richard A. Houghten, Del Mar, both of Calif., assignors to Torrey Pines Institute for Molecular Studies, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 472,219

Int. Cl.[6] A61K *38/07;38/08;* **C07K** *5/10;7/06*

U.S. Cl. 530—328 **6 Claims**

1. A peptide having the structure:

Ac-A1-B2-C3-Arg-Tyr-Arg-Tyr-Arg-Arg-Arg-NH_2, (SEQ ID NO. 28)

wherein A1 is Tyr or Arg;

B2 is Arg or Phe; and

C3 is Thr, Phe, or Met.

5,610,272

SOLID PHASE PROCESS FOR SYNTHESIZING THYMOSIN α_1

Su S. Wang, Belmont, Calif., assignor to Alpha-1 Biomedicals, Inc., Bethesda, Md.

Continuation of Ser. No. 192,349, May 10, 1988, abandoned. This application Apr. 15, 1991, Ser. No. 684,520

Int. Cl.[6] C07K *1/06;14/66*

U.S. Cl. 530—334 **1 Claim**

1. The process for producing thymosin α_1, or a biologically active analog or fragment thereof by solid-phase peptide synthesis, comprising the steps of (a) temporarily chemically protecting the reactive amino group at the alpha-position, and any other reactive groups, other than beta carboxylic acid group, on the C-terminal amino acid of the thymosin α_1 peptide with 4 -methoxybenzyloxycarbonyl; (b) chemically bonding the protected C-terminal amino acid via the unprotected carboxylic acid (—COOH) group thereof to a resin support; (c) chemically deprotecting the reactive amino group of the resin-bound protected amino acid by acidolytic cleavage using liquid trifluoroacetic acid; (d) chemically coupling via a peptide bond the next amino acid in the desired sequence by contacting the resin-bound amino acid from step (c) with the next amino acid in the desired sequence with all of the reactive groups thereof, other than the carboxylic acid group at the alpha-position, chemically protected with 4 -methoxybenzyloxycarbonyl, in the presence of a coupling agent; (e) chemically deprotecting the reactive amino group of the coupled amino acid from step (d) by acidolytic cleavage using liquid trifluoroacetic acid; (f) continuing the synthesis by repeating steps (d) and (e) with successive amino acids in the desired sequence being added one at a time until the total desired sequence of the protected peptide is built up on the resin; and (g) cleaving the protected peptide from the resin support and deprotecting protected reaction groups using liquid trifluoroacetic acid, whereby the volume of liquid trifluoroacetic acid used in steps (c) and (e) is substantially reduced as compared to the volume of liquid trifluoroacetic acid required in steps (c) and (e) when the alpha-amino groups of each successive amino acid are protected with tert-butyloxycarbonyl (BOC); said process further comprising neutralizing the chemically deprotected resin-bound amino acid from steps (c) and (e) with tributylamine.

5,610,273

Patent Not Issued For This Number

5,610,274

PRODUCTION AND USE OF MAGNETIC POROUS INORGANIC MATERIALS

Yuan N. Wong, Boonton, N.J., assignor to CPG, Inc., Lincoln Park, N.J.

Division of Ser. No. 794,910, Nov. 20, 1991. This application Sep. 28, 1992, Ser. No. 952,264

Int. Cl.[6] A61K *38/02*

U.S. Cl. 530—334 **2 Claims**

1. In a process for synthesizing a peptide in which an amino acid residue coupled to a solid support is coupled with additional amino acid residues, the improvement which comprises utilizing as said solid support magnetic controlled pore glass having an amino acid residue covalently attached thereto, said magnetic controlled pore glass having a particle size of from about 1 to about 200 microns, and pores having a diameter of from about 60 to about 6,000 Angstroms and a pore volume of from about 0.5 to about 2.5 cc/gm, said pores containing magnetic iron oxide particles absorbed within said pores.

5,610,275

REAGENT USEFUL FOR CLEAVING AND PROCESS FOR USING THIS REAGENT

Virginie Pevere, Lyons, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 958,258, Oct. 9, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,434

Claims priority, application France, Oct. 11, 1991, 91 12524

Int. Cl.[6] A61K *38/00;* **C07K** *1/00*

U.S. Cl. 530—338 **9 Claims**

1. An anhydrous reagent useful for cleaving an alkoxycarbonyl protecting group from a functional group that it protects, which reagent consists essentially of

a) a phenol having the general formula $(R_1)_n$-Ar-OH wherein Ar represents a phenyl ring, R_1 represents a halogen atom or a group -Z-R_2, where Z can be a single bond connecting R_2 to Ar or an oxygen atom and R_2 represents a hydrogen atom or an optionally hydroxylated or mono- or poly-halogenated alkyl or aryl radical containing at most 8 carbon atoms; and n

represents the number of substituents R_1 and is equal to 0 or an integer from 1 to the number of positions which can be substituted on the phenyl ring;

b) an organic diluent that is sufficiently polar to dissolve at least 1% by weight of hydroxybenzene and sufficiently hydrophobic as to be no more than 10% by weight soluble in water; and

c) an anhydrous hydrohalic acid, the acidity of which, expressed by its Hammett constant, is at least equal to that of formic acid.

5,610,276

POLYPEDTIDES AND ANTIBODIES DERIVED FROM GAP ASSOCIATED PROTEIN, P62

Gail L. Wong, La Jolla, and Francis P. McCormick, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Filed May 17, 1991, Ser. No. 702,771

The portion of the term of this patent subsequent to Jun. 17, 2009, has been disclaimed.

Int. Cl.[6] C07K *14/00;14/435*

U.S. Cl. 530—350 **9 Claims**

1. A purified and isolated polypeptide comprising an amino acid sequence of at least 20 consecutive amino acids from the amino acid sequence of table 1 (SEQ ID NO: 1) wherein said polypeptide is a substrate for a tyrosine kinase.

5,610,277

ALCOHOL-FREE WET EXTRACTION OF GLUTEN DOUGH INTO GLIADIN AND GLUTENIN

Sukh Bassi, Atchison, Kans.; Clodualdo C. Maningat, Platte City, Mo.; Ramaswamy Chinnaswamy, Kansas City, Mo.; Darren R. Gray, St. Joseph, Mo., and Li Nie, Kansas City, Mo., assignors to Midwest Grain Products, Atchinson, Kans.

Filed Sep. 11, 1995, Ser. No. 526,078

Int. Cl.[6] C07K *1/30;2/00;14/415*

U.S. Cl. 530—374 **16 Claims**

1. A method of fractionating wheat gluten comprising the steps of:

providing a quantity of wheat gluten;

forming a dispersion of said gluten in an aqueous acidic medium at a first acidic pH level in the presence of a reducing agent operable for breaking disulfide bonds in the gluten protein;

raising the pH of said dispersion to a second level above said first acidic pH level for causing glutenin to precipitate from the dispersion while leaving gliadin suspended in the dispersion; and

separating glutenin and gliadin into respective fractions.

5,610,278

PROCESS FOR PRODUCING A COAGULATION ACTIVE COMPLEX OF FACTOR VIII FRAGMENTS

Ole Nordfang, Hillerød, and Mirella E. Rasmussen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 65,702, May 21, 1993, which is a continuation of Ser. No. 869,885, Apr. 14, 1992, abandoned, which is a continuation of Ser. No. 298,465, Jan. 18, 1989, abandoned, which is a division of Ser. No. 162,323, Feb. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 932,923, Nov. 19, 1986, abandoned. This application Feb. 3, 1995, Ser. No. 383,034

Claims priority, application Denmark, Jun. 24, 1986, 2957/86

Int. Cl.[6] A61K *38/37;* **C07K** *14/745;14/755*

U.S. Cl. 530—383 **1 Claim**

1. An isolated coagulation active product comprising a complex of an N-terminal fragment of Factor VIII with a molecular weight from 92,000 to 210,000 and a C-terminal fragment of Factor VIII with a molecular weight of from 70,000 to 80,000 combined with Mn^{2+} or a combination Mn^{2+} and Ca^{2+}.

5,610,279

HUMAN TNF RECEPTOR

Manfred Brockhaus, Bettingen; Zlatko Dembic, Basel, both of Switzerland; Reiner Gentz, Rheinfelden, Germany; Werner Lesslauer, Basel; Hansruedi Lötscher, Möhlin, both of Switzerland, and Ernst-Jürgen Schlaeger, Efringen-Kirchen, Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 580,013, Sep. 10, 1990, abandoned. This application Jul. 21, 1993, Ser. No. 95,640

Claims priority, application Switzerland, Sep. 12, 1989, 3319/89; Mar. 8, 1990, 746/90; Apr. 20, 1990, 1347/90

Int. Cl.[6] C07K *14/525;16/46*

U.S. Cl. 530—387.3 **6 Claims**

1. A recombinant protein encoded by a polynucleotide which comprises two DNA subsequences, wherein the first subsequence encodes a soluble fragment of the insoluble TNF receptor protein, wherein said insoluble TNF receptor protein has a apparent molecular weight of about 55 kilodaltons as determined on a non-reducing SDS-polyacrylamide gel, and the second subsequence encodes all of the domains of the constant region of a human immunoglobulin heavy chain other than the first domain of said constant region.

5,610,280

MONOCLONAL ANTIBODIES AGAINST MELANOMA

Michael Brandt, Iffeldorf; Josef Endl, Weilheim; Herbert Jungfer, Starnberg, and Winfried Albert, Eberfing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Continuation of Ser. No. 773,796, Oct. 9, 1991, abandoned. This application Mar. 15, 1994, Ser. No. 214,020

Claims priority, application Germany, Oct. 11, 1990, 40 32 312.9; Mar. 6, 1991, 41 07 154.9

Int. Cl.[6] A61K *51/10;* **C07K** *16/00;* **G01N** *33/53;* **C12N** *5/12*

U.S. Cl. 530—387.5 **8 Claims**

1. Human monoclonal antibody 17, produced by the hybridoma cell line ECACC 900900703, and antibody derivatives thereof, which binds the gangliosides GM3 and GD3, and does not bind the gangliosides GM1, GM2, GD1a, GD1b and GD2 in an amount greater than about 5% of the extent to which said antibody binds to gangliosides GM3 and GD3 as determined by immune staining after thin layer chromatographic separation of the gangliosides, said antibody 17 recognizes an antigen on a melanoma which expresses at least gangliosides GM3 and GD3.

5,610,281

ANTIBODIES FOR MODULATING HETEROTYPIC E-CADHERIN INTERACTIONS WITH HUMAN T LYMPHOCYTES

Michael B. Brenner, Sherborn, and Karyn L. Cepek, Brookline, both of Mass., assignors to Brigham & Women's Hospital, Inc., Boston, Mass.

Filed May 3, 1994, Ser. No. 237,919

Int. Cl.[6] C07K *16/18;16/24;16/28;16/00*

U.S. Cl. 530—388.85 **7 Claims**

5. A pharmaceutical composition comprising:

an agent that inhibits adhesion in vivo between a T lymphocyte and a human E-cadherin expressing cell, wherein said agent is a monoclonal antibody that inhibits adhesion between a heterotypic cognate of E-cadherin expressed on a human T lymphocyte and a human E-cadherin expressing cell, and wherein said monoclonal antibody specifically binds to the human E-cadherin, and wherein the heterotypic cognate of E-cadherin is $\alpha^E\beta_7$; and

a pharmaceutically acceptable carrier,

wherein said monoclonal antibody is present in a therapeutically effective amount to treat a mucosal immune response.

5,610,282

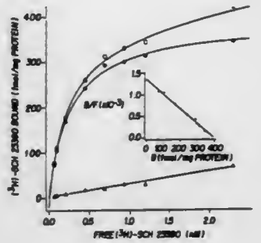
CDNA ENCODING A RAT D_1 DOPAMINE RECEPTOR LINKED TO ADENYLYL CYCLASE ACTIVATION AND EXPRESSION OF THE RECEPTOR PROTEIN IN PLASMID-TRANSFECTED CELL LINES

David R. Sibley, Rockville; Frederick J. Monsma, Baltimore; Lawrence C. Mahan, and Loris D. McVittie, both of Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 29,917, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 548,714, Jul. 6, 1990, abandoned. This application May 19, 1995, Ser. No. 444,734

Int. Cl.[6] C07K *14/705;14/47;* **C12N** *15/86;* **C07H** *21/04*

U.S. Cl. 530—395 **9 Claims**



1. An isolated DNA fragment that encodes a D_1 dopamine receptor having the amino acid sequence set forth in SEQ ID NO:2.

5,610,283

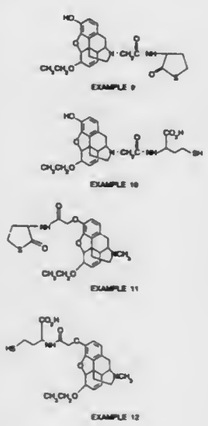
OPIATE DERIVATIVES AND PROTEIN AND POLYPEPTIDE OPIATE DERIVATIVE CONJUGATES AND LABELS

Kenneth F. Buechler, San Diego, Calif., assignor to Biosite Diagnostics Incorporated, San Diego, Calif.

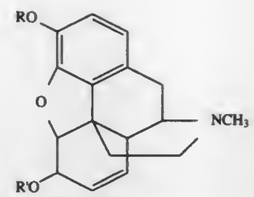
Continuation of Ser. No. 864,107, Apr. 6, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,969

Int. Cl.[6] C07K *17/02;* **C07D** *489/02;* **C07H** *17/00;* **A61K** *39/385*

U.S. Cl. 530—404 **5 Claims**



1. A compound of the formula:

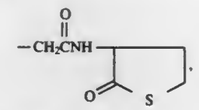


where R' is selected from the group consisting of:

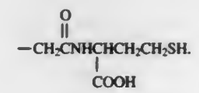
—H, —CH_3,

—CH_2CH_3

where R is a linking group selected from the group consisting of:



and



5,610,284

METHOD OF PURIFICATION OF HUMAN BCDF

Daisuke Ejima; Yutaka Sato; Mayumi Watanabe; Masayo Date, and Yoshiyuki Takahara, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 154,390, Nov. 18, 1993, abandoned, which is a continuation of Ser. No. 938,229, Oct. 26, 1992, abandoned. This application Jul. 15, 1994, Ser. No. 275,663

Claims priority, application Japan, Feb. 26, 1991, 3-115689; Feb. 17, 1992, 4-029525

Int. Cl.[6] C07K *1/14;* **C12N** *15/19*

U.S. Cl. 530—412 **18 Claims**

1. A process for purification of human B-cell differentiation factor (BCDF) comprising

solubilizing human BCDF in a human BCDF cultured broth obtained by culturing a microorganism having a human BCDF gene integrated therein;

contacting the solubilized human BCDF solution with 0.01 mM reduced glutathione and 0.002 mM oxidized glutathione;

adjusting guanidine hydrochloride concentration to 4–7M;

subjecting the resulting solution to gel filtration chromatography; and

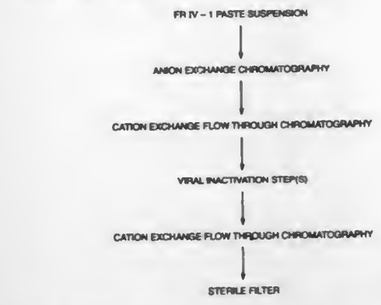
recovering said BCDF.

5,610,285

PURIFICATION OF α-1 PROTEINASE INHIBITOR USING NOVEL CHROMATOGRAPHIC SEPARATION CONDITIONS

Wytold R. Lebing, and Sharon X. Chen, both of Raleigh, N.C., assignors to Bayer Corporation, Berkeley, Calif.

Filed Aug. 24, 1994, Ser. No. 295,119
Int. Cl.[6] C07K *1/16;14/435;* **A61K** *35/14*
U.S. Cl. 530—416 **4 Claims**



1. A method of purifying alpha-1 proteinase inhibitor in an aqueous solution comprising alpha-1 proteinase inhibitor and other proteins comprising the steps of

(A) adjusting the pH, ionic strength, and protein concentration of the aqueous solution so that active alpha-1 proteinase inhibitor does not bind to a strong ion exchange resin but other proteins in the solution do bind; and

(B) passing the solution through the ion exchange resin and collecting a flow-through that contains alpha-1 proteinase inhibitor, wherein steps (A) and (B) are performed more than once and a viral inactivation step is performed on the solution prior to the final step (A).

5,610,286

DNA'S ENCODING NATURAL KILLER CELL ENHANCING FACTOR

Hungyi Shau, Cerritos, and Sidney H. Golub, Los Angeles, both of Calif., assignors to The Regents Of The University Of California, Oakland, Calif.

Continuation-in-part of Ser. No. 232,189, May 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 787,148, Nov. 4, 1991, Pat. No. 5,250,295. This application Aug. 31, 1994, Ser. No. 299,162
Int. Cl.[6] C12N *15/12*
U.S. Cl. 536—23.5 **2 Claims**

1. A recombinant DNA molecule comprising a DNA sequence encoding natural killer cell enhancing factor A as defined in SEQ ID NO: 2.

5,610,287

METHOD FOR IMMOBILIZING NUCLEIC ACID MOLECULES

Theo Nikiforov, San Diego, Calif., and Michael R. Knapp, Baltimore, Md., assignors to Molecular Tool, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 162,397, Dec. 6, 1993, abandoned. This application Nov. 16, 1994, Ser. No. 341,148
Int. Cl.[6] C07H *21/04;* **C12Q** *1/68;* **C12N** *15/00;11/08*
U.S. Cl. 536—24.3 **19 Claims**

1. A method for non-covalently immobilizing a synthetic nucleic acid molecule on a solid support which is a hydrophilic polystyrene solid support containing a hydrophilic group selected from the group consisting of —OH, —C═O, and — COOH, or a glass solid support, said method comprising the steps:

(a) contacting said support with a solution having a pH of from about 6 to about 8, and containing said nucleic acid and (1) a cationic detergent selected from the group consisting of 1-ethyl-3 -(3'-dimethylaminopropyl)-1,3-carbodiimide hydrochloride provided at a concentration of from about 30 mM to about 100 mM, and octyldimethylamine hydrochloride provided at a concentration of from about 50 mM to about 150 mM or (2) NaCl provided at a concentration of from about 50 mM to about 250 mM, to thereby non-covalently immobilize said nucleic acid to said support, wherein:

(i) when said cationic detergent is 1-ethyl-3-(3'-dimethylaminopropyl)carbodiimide- 1,3-hydrochloride, said support is selected from the group consisting of glass or said hydrophilic polystyrene;

(ii) when said cationic detergent is octyldimethylamine hydrochloride, said support is said hydrophilic polystyrene; and

(iii) when said solution contains said NaCl, said support is said hydrophilic polystyrene; and

(b) subsequently washing said solid support with an aqueous solution.

5,610,288

ANTISENSE POLYNUCLEOTIDE INHIBITION OF EPIDERMAL HUMAN GROWTH FACTOR RECEPTOR EXPRESSION

Marvin Rubenstein, Skokie, Ill., assignor to Hekton Institute for Medical Research, Chicago, Ill.

Continuation of Ser. No. 9,596, Jan. 27, 1993, abandoned. This application Feb. 22, 1994, Ser. No. 200,924
Int. Cl.[6] C07H *21/04;* **C12N** *15/00*
U.S. Cl. 536—24.5 **2 Claims**

1. A polynucleotide that is an antisense molecule having the sequence shown in SEQ ID NO:3.

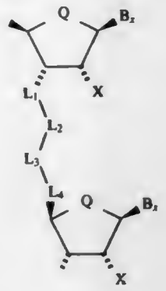
5,610,289

BACKBONE MODIFIED OLIGONUCLEOTIDE ANALOGUES

Phillip D. Cook, Carlsbad; Yogesh S. Sanghvi, San Marcos, both of Calif.; Jean J. Vasseur, and Francoise Debart, both of Montpellier, France, assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and a continuation-in-part of Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Apr. 7, 1994, Ser. No. 150,079
Int. Cl.[6] C07H *21/00;19/00*
U.S. Cl. 536—25.34 **29 Claims**

1. An oligonucleotide analogue in which at least one of the subunits of the analogue have the structure:



wherein

B_X is a variable base;

Q is O;

X is H; OH; C_1 to C_{10} lower alkyl, substituted lower alkyl, alkaryl or aralkyl; F; Cl; Br; CN; CF_3; OCF_3; OCN; O-, S-, or N-alkyl; O-, S-, or N-alkenyl; $SOCH_3$; SO_2CH_3; ONO_2; NO_2; N_3; NH_2; heterocycloalkyl; heterocycloalkaryl; aminoalkylamino; polyalkylamino; or substituted silyl;

L_1, L_2, L_3, and L_4 are selected such that:

i. L_1 and L_4 are, independently, CH_2, C═O, C═S, C-NH_2, C-NHR_3, C-OH, C-SH, C-O-R_1 or C-S-R_4; and

L_2 and L_3 are, independently, CR_1R_2, C═CR_1R_2, C═NR_3, P(O)R_4, P(S)R_4, C═O, C═S, O, S, SO, SO_2, NR_3 or SiR_5R_6; or, together, form part of an alkene, alkyne, aromatic ring, carbocycle or heterocycle; or

ii. L_1, L_2, L_3 and L_4, together, form a -CH═N-NH-CH_2- or -CH_2-O-N═CH- moiety;

R_1 and R_2 are, independently, H; OH; SH; NH_2; C_1 to C_{10} alkyl, substituted alkyl, alkenyl, alkaryl or aralkyl; alkoxy; thioalkoxy; alkylamino; aralkylamino; substituted alkylamino; heterocycloalkyl; heterocycloalkylamino; aminoalkylamino; polyalkylamino; halo; formyl; keto; benzoxy; carboxamido; thiocarboxamido; ester; thioester; carboxamidine; carbamyl; ureido; or guanidino;

R_3 is H, OH, NH_2, lower alkyl, substituted lower alkyl, alkoxy, lower alkenyl, aralkyl, alkylamino, aralkylamino, substituted alkylamino, heterocyclocalkyl, heterocycloalkylamino, aminoalkylamino, or polyalkylamino;

R_4 is OH, SH, NH_2, O-alkyl, S-alkyl, NH-alkyl, O-alkylheterocyclo, S-alkylheterocyclo, N-alkylheterocyclo or a nitrogen-containing heterocycle; and

R_5 and R_6 are, independently, C_1 to C_6 alkyl or alkoxy; provided that:

if L_1 is C═O or C═S then L_2 is not NR_3;

if L_4 is C═O or C═S then L_3 is not NR_3;

if one of L_2 or L_3 is C═O or C═S then the other of L_2 or L_3 is not NR_3;

if L_1 is CH_2 and L_2 is P(O)R_4 and R_4 is OH then L_3 is not O; or if L_1, L_2 and L_4 are CH_2 and X is H or OH then L_3 is not S, SO or SO_2.

5,610,290

DNA PURIFICATION BY SOLID PHASE EXTRACTION USING GLASS FIBER MEMBRANE PREVIOUSLY TREATED WITH TRIFLUOROACETIC ACID, AND THEN WITH FLUORIDE ION, HYDROXIDE ION, OR BCL_3

Daniel L. Woodard; Adriann J. Howard, both of Raleigh, and James A. Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,404, Sep. 27, 1993, Pat. No. 5,438,127. This application May 25, 1995, Ser. No. 450,178
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—25.4 **8 Claims**

1. A modified glass fiber membrane which binds DNA from a suspension containing DNA and permit elution of the DNA from the membrane, wherein said glass fiber membrane is treated first with trifluoroacetic acid, and then with fluoride, NaOH or BCl_3.

5. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with the modified glass fiber membrane of claim 1 under conditions suitable to bind DNA to said membrane;

(b) washing said membrane having bound DNA; and

(c) eluting the DNA from said membrane.

5,610,291

GLASS FIBER MEMBRANES MODIFIED BY TREATMENT WITH $SICL_4$, $ALCL_3$ OR BCL_3 AND WASHING WITH NAOH TO SET AS A DNA ADSORBANT

Daniel L. Woodard; Adriann J. Howard, both of Raleigh, and James A. Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,404, Sep. 27, 1993, Pat. No. 5,438,127. This application May 25, 1995, Ser. No. 452,558
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—25.4 **8 Claims**

1. A modified glass fiber membrane which binds DNA from a suspension containing DNA and permits elution of the DNA from the membrane, wherein said glass fiber membrane is treated first with NaOH, then with $SiCl_4$, BCl_3 or $AlCl_3$ and finally with NaOH.

5. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with the modified glass fiber membrane of claim 1 under conditions suitable to bind DNA to said membrane;

(b) washing said membrane having bound DNA; and

(c) eluting the DNA from said membrane.

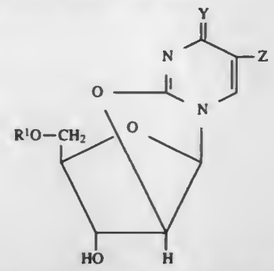
5,610,292

PROCESS FOR PRODUCING 2,2'-O-CYCLONUCLEOSIDES NUCLEOSIDES, AND ANALOGS THEREOF

Khashayar Karimian, Brantford, Canada, assignor to ACIC (Canada) Inc., Brantford, Canada

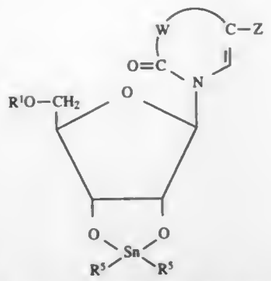
Division of Ser. No. 930,606, Oct. 5, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 313,579
Claims priority, application Canada, Mar. 13, 1990, 2012093; Mar. 13, 1990, 2012094
Int. Cl.[6] C07H *19/06;19/067*
U.S. Cl. 536—55.3 **29 Claims**

1. A process for producing a compound of formula II, or a pharmaceutically acceptable salt thereof



(II)

wherein R^1 is selected from the group consisting of hydrogen, trityl, methoxytrityl, dimethoxytrityl, acetyl, C_2–C_6 alkylacyl, allyl, 2,2-trichloroethyl, phosphates and salts thereof, tosyl and mesyl, Z is selected from the group consisting of hydrogen and methyl, and Y is selected from the group consisting of —NH— or O; which process comprises the step of reacting (i) compound of formula III:



wherein R^5 is a C_1–C_6 alkyl, R^1 and Z have the same meanings as above, and W is selected from the group consisting of —NH—C(O)— and —NH—$C(NH_2)$—, with (ii) an amine selected from the group consisting of pyridine and amines having the formula

$$Q^2Q^3Q^4N$$

whereto Q^2, Q^3 and Q^4 can be the same or different and are selected from the group consisting of a C_1–C_6 alkyl and a C_6–C_9 aryl, in the presence of (iii) a sulphonyl compound having the formula

$$R^6SO_2X$$

wherein R^6 is selected from the group consisting of —CF_3, a C_1–C_6 alkyl and C_6–C_9 aryl, and X is selected from the group consisting of —SO_3CF_3 and a halogen, to produce a compound of formula II.

5,610,293

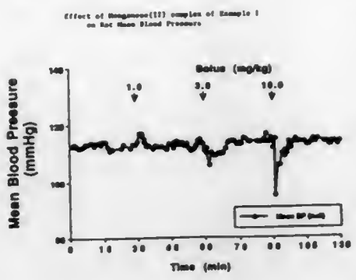
METHODS OF PREPARING MANGANESE COMPLEXES OF NITROGEN-CONTAINING MACROCYCLIC LIGANDS

Dennis P. Riley, Ballwin; Randy H. Weiss, St. Louis; William L. Neuman, Creve Coeur; Anil S. Modak, Maryland Heights; Patrick J. Lennon, Clayton, and Karl W. Aston, Pacific, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 80,732, Jun. 22, 1993, and a continuation of Ser. No. 902,146, Jun. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 829,865, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 732,853, Jul. 19, 1991, abandoned. This application May 16, 1995, Ser. No. 442,455

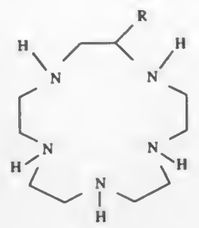
Int. Cl.[6] C07D *259/00;257/00*

U.S. Cl. 540—474 **8 Claims**



1. Method of making a compound represented by the formula

(III)



wherein R is selected from the group consisting of alkyl having 2 to 22 carbon atoms, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, aryl and aralkyl radicals comprising:

a) reducing an amino acid amide to produce the corresponding substituted ethylenediamine;

b) tosylating the diamine to produce the corresponding di-N-tosyl derivative;

c) reacting the di-N-tosyl derivative with a di-O-tosylated tris-N-tosylated triazaalkane diol to produce the corresponding substituted N-pentatosylpentaazacycloalkane;

d) removing the tosyl groups; and

e) recovering the resulting compound.

5,610,294

SUBSTITUTED CYCLIC CARBONYLS AND DERIVATIVES THEREOF USEFUL AS RETROVIRAL PROTEASE INHIBITORS

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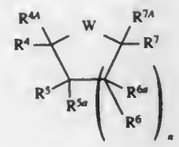
Continuation-in-part of Ser. No. 47,330, Apr. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 23,439, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 953,272, Sep. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 883,944, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 776,491, Oct. 11, 1991, abandoned. This application Feb. 16, 1994, Ser. No. 197,630

Int. Cl.[6] C07D *243/04;* **A61K** *31/55*

U.S. Cl. 540—492 **20 Claims**

1. A compound of the formula (I):

(I)



or a pharmaceutically acceptable salt form thereof wherein:

R^4 and R^7 are independently selected from the following groups:
hydrogen;
C_1–C_8 alkyl substituted with 0–3 R^{11};
C_2–C_8 alkenyl substituted with 0–3 R^{11};
C_2–C_8 alkynyl substituted with 0–3 R^{11};
a C_3–C_{14} carbocyclic ring system substituted with 0–3 R^{11} or 0–3 R^{12};
a heterocyclic ring system selected independently from indolyl, furanyl, pyridyl, thienyl, pyrrolyl, benzothienyl, pyrazolyl, thiazolyl, benzofuranyl, tetrahydroisoquinolinvl, benzotriazolyl, benzimidazolyl, or imidazolyl, said heterocyclic ring system being substituted with 0–2 R^{12}; CO_2R^{13};

R^{4A} and R^{7A} are independently selected from the following groups:
hydrogen;
C_1–C_8 alkyl substituted with 0–6 halogen or 0–3 C_1–C_2 alkoxy; benzyl substituted with 0–6 halogen or 0–3 C_1–C_2 alkoxy; CO_2R^{13};

R^4 and R^{4A} can alternatively join to form a 5–7 membered carbocyclic ring substituted with 0–2 R^{12};

R^7 and R^{7A} can alternatively join to form a 5–7 membered carbocyclic ring substituted with 0–2 R^{12};

n is 1;

R^5 is selected from H; halogen; C_1–C_6 alkyl substituted with 0–3 R^{11}, —$N(R^{20})_2$, —SR^{20}, —OR^{20}, or —N_3;

R^6 is independently selected from: hydrogen, halogen, C_1–C_6 alkyl substituted with 0–3 R^{11}, —$N(R^{20})_2$, —SR^{20}, —OR^{21}, or —N_3;

R^5 and R^6 can alternatively join to form an epoxide or aziridine ring; —OCH_2SCH_2O—; —OC(=O)O—; —OCH_2O—; —OC(=S)O—; —OC(=O)C(=O)O—; —$OC(CH_3)_2O$—; —$OC(CH_2)_3NH_2)(CH_3)O$—; —$OC(OCH_3)(CH_2CH_2CH_3)O$—; —OS(=O)O—; —NHC(=O)NH—; —OC(=O)NH—; —NHC(=O)O—; —$NHCH_2O$—; —OCH_2NH—; —NHC(=S)O—; —OS(=O)NH—; —NHC(=O)C(=O)O—; —OC(=O)C(=O)NH—; —NHC(=O)C(=O)NH—; —$NHC(CH_3)_2O$—; —$OC(CH_3)_2NH$—;

R^{5a} is selected from hydrogen, halogen, C_1–C_6 alkyl, —$N(R^{20})_2$, —SR^{20}, or —OR^{20};

R^{6a} is selected from: hydrogen, halogen, C_1–C_6 alkyl, —$N(R^{20})_2$, —SR^{20} or —OR^{21};

R^5 and R^{5a} can alternatively join to form =O, =S, or a ketal ring;

R^6 and R^{6a} can alternatively join to form =O, =S, or a ketal ring;

R^{20} and R^{21} are independently selected from:
hydrogen;
C_1–C_6 alkyl substituted with 0–3 R^{11};
C_3–C_6 alkoxyalkyl substituted with 0–3 R^{11};
C_1–C_6 alkylcarbonyl substituted with 0–3 R^{11};
C_1–C_6 alkoxycarbonyl substituted with 0–3 R^{11};
C_1–C_6 alkylaminocarbonyl substituted with 0–3 R^{11};
benzoyl substituted with 0–3 R^{12};
phenoxycarbonyl substituted with 0–3 R^{12};
phenylaminocarbonyl substituted with 0–3 R^{12}; or phosphate ester;

R^{11} is selected from one or more of the following:
H, keto, halogen, cyano, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, —CO_2R^{13}, —OC(=O) R^{13}, —OR^{13}, —$S(O)_mR^{13}$, —NHC(=NH)NHR^{13}, —C(=NH)NHR^{13}, —C(=O)$NR^{13}R^{14}$, —$NR^{14}C(=O)R^{13}$, =NOR^{14}, —$NR^{14}C(=O)OR^{14}$, —$OC(=O)NR^{13}R^{14}$, —$NR^{13}C(=O)NR^{13}R^{14}$, —$NR^{14}SO_2NR^{13}R^{14}$, —$NR^{14}SO_2R^{13}$, —$SO_2NR^{13}R^{14}$, —$OP(O)(OR^{13})_2$, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3–C_6 cyclolkoxy, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, pyridylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, azido, or —$C(R^{14})$=$N(OR^{14})$;
1–3 amino acids linked together via amide bonds, said amino acid being linked via the amine or carboxylate terminus;
C_3–C_{10} cycloalkyl substituted with 0–2 R^{12};
C_1–C_4 alkyl substitued with 0–2 R^{12}
aryl (C_1–C_3 alkyl)—, substituted with 0–2 R^{12};
C_2–C_6 alkoxyalkyl-, substituted with 0–2 R^{12};
C_1–C_4 alkylcarbonyloxy substituted with 0–2 R^{12},
C_6–C_{10} arylcarbonyloxy substituted with 0–2 R^{12},
a C_5–C_{14} carbocyclic residue substituted with 0–3 R^{12};
a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–3 R^{12};

R^{11A} is selected from one or more of the following:
H, keto, halogen, cyano, —CH_2N (R^{13A})$R^{(14A)}$, —$N(R^{13A})R^{(14A)}$, —CO_2H, —OC(=O)(C_1 –C_3 alkyl), —OH, C_2–C_6 alkoxyalkyl, —C(=O)NH_2, —OC(=O)NH_2, —NHC(=O)NH_2, —SO_2NH_2, C_1–C_4 alkyl, C_2 –C_4 alkenyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, boronic acid, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —NH_2, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, azido, aryl(C_1–C_3 alkyl), a C_5–C_{14} carbocyclic residue; a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–3 R^{12A};

R^{12} when a substituent on carbon is selected from one or more of the following: phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, C_1–C_4 alkoxy, —CO_2H, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, —OR^{13}, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkylene optionally substituted with —$Si(CH_3)_3$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —$S(O)_mR^{13}$, —$SO_2NR^{13}R^{14}$, —$NHSO_2R^{14}$, —$OCH_2CO_2R^{13}$, 2-(1-morpholino)ethoxy, —$C(R^{14})$=$N(OR^{14})$; or
a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;
or R^{12} may be a 3- or 4- carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6- membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or —$NR^{13}R^{14}$; or, when R^{12} is attached to a saturated carbon atom, it may be =O or =S; or when R^{12} is attached to sulfur it may be =O;

R^{12}, when a substituent on nitrogen is selected from one or more of the following:
phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, —CO_2H, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, —$C(R^{14})$=$N(OR^{14})$;

R^{12A}, when a substituent on carbon, is selected from one or more of the following:
phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, C_1–C_4 alkoxy, —CO_2H, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, —OR^{13}, C_1–C_4 alkyl substituted with —NH_2, —NH_2, —NHMe, C_2–C_6 alkoxyalkyl optionally substituted with —$Si(CH_3)_3$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —$S(O)_mMe$, —SO_2NH_2, —$NHSO_2Me$, —$OCH_2CO_2R^{13}$, 2-(1-morpholino)ethoxy, —C(=NOH)NH_2; or
a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;
or R^{12A} may be a 3- or 4- carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6- membered ring being optionally substituted on

the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or $—NH_2$; or, when R^{12A} is attached to a saturated carbon atom, it may be =O or =S; or when R^{12} is attached to sulfur it may be =O.

R^{12A}, when a substituent on nitrogen, is selected from one or more of the following: phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, $—CH_2NH_2$, $—NH_2$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, $—CO_2H$, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, $—C(=NOH)NH_2$;

R^{13} is selected from:

H;

phenyl substituted with 0–3 R^{11A};

benzyl substituted with 0–3 R^{11A};

C_1–C_6 alkyl substituted with 0–3 R^{11A};

C_2–C_4 alkenyl substituted with 0–3 R^{11A};

C_1–C_6 alkylcarbonyl substituted with 0–3 R^{11A};

C_1–C_6 alkoxycarbonyl substituted with 0–3 R^{11A};

C_1–C_6 alkylaminocarbonyl substituted with 0–3 R^{11A};

C_3–C_6 alkoxyalkyl substituted with 0–3 R^{11A};

R^{14} is hydrogen, hydroxy, C_1–C_6 alkyl substituted with 0–3 groups selected from OH, C_1–C_4 alkoxy, halogen, NH_2, $—NH(C_1$–C_4 alkyl), C_1–C_6 alkoxy, C_2–C_6 alkenyl, phenyl, benzyl

R^{13} and R^{14} can alternatively join to form $—(CH_2)_4—$, $—(CH_2)_5—$, $—CH_2CH_2N(R^{15})CH_2CH_2—$, or $—CH_2CH_2OCH_2CH_2—$;

R^{13A} and R^{14A} are independently selected from: H, C_1–C_6 alkyl;

R^{13A} and R^{14A} can alternatively join to form $—(CH_2)_4—$, $—(CH_2)_5—$, $—CH_2CH_2N(R^{15})CH_2CH_2—$, or $—CH_2CH_2OCH_2CH_2—$;

R^{15} is H or CH_3;

m is 0, 1 or 2;

W is selected from:

$—N(R^{22})C(=Z)N(R^{23})—$;

$—N(R^{22})S(=Z')N(R^{23})—$;

$—N(R^{22})S(=Z')_2N(R^{23})—$;

$—N(R^{22})P(=O)(R^{24a})N(R^{23})—$;

wherein:

Z is O, S, NR^{24};

Z' is O or NR^{24};

R^{22} and R^{23} are independently selected from the following:

hydrogen; $—OR^{22a}$; $—N(R^{22a})(R^{22b})$;

C_1–C_8 alkyl substituted with 0–3 R^{31};

C_2–C_8 alkenyl substituted with 0–3 R^{31};

C_2–C_8 alkynyl substituted with 0–3 R^{31};

a C_3–C_{14} carbocyclic ring system substituted with 0–5 R^{31} or 0–5 R^{32};

a heterocyclic ring system selected independently from pyridinyl, pyrimidinyl, pyrazolyl, imidazolyl, tetrazoyl, triazinyl, pyrazinyl, myridazinyl, oxazolidinyl, and thiazolyl said heterocyclic ring system being substituted with 0–2 R^{32};

R^{22a} and R^{22b} are independently selected from the following:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{31};

C_2–C_8 alkenyl substituted with 0–3 R^{31};

C_2–C_8 alkynyl substituted with 0–3 R^{31};

a C_3–C_{14} carbocyclic ring system substituted with 0–5 R^{31} or 0–5 R^{32};

a heterocyclic ring system selected independently from pyridinyl, furanyl, thienyl, pyrrolyl, thiazolyl, pyrazolyl, imidazolyl, indolyl, benzimidazolyl, 1H-indazolyl, oxazolidinyl, benzotriazolyl, benzisoxazolyl, oxindolyl, benzoxazolinyl, or isatinoyl said heterocyclic ring system being substituted with 0–2 R^{32};

R^{24} is selected from: hydrogen; hydroxy; amino; C_1–C_4 alkyl; C_1–C_4 alkoxy; mono- or di-(C_1–C_6 alkyl)amino; cyano; nitro; benzyloxy; $—NHSO_2$aryl, aryl being optionally substituted with (C_1–C_6)alkyl;

R^{24a} is selected from: hydroxy; amino; C_1–C_4 alkyl; C_1–C_4 alkoxy; mono- or di-(C_1–C_6 alkyl)amino; cyano; nitro; benzyloxy; or phenoxy;

alternatively, R^{22} can join with R^4 or R^{4A} to form a 5- or 6-membered fused heterocyclic ring or carbocyclic ring substituted with 0–2 R^{12}, said heterocyclic ring selected from pyrrolidine, morpholine, thiomorpholine, piperidine, or piperazine; or

alternatively, R^{23} can join with R^7 or R^{7A} to form a 5- or 6-membered fused heterocyclic ring or carbocyclic ring substituted with 0–2 R^{12}, said heterocyclic ring selected from pyrrolidine, morpholine, thiomorpholine, piperidine, or piperazine; or

alternatively, R^{22} or R^{23} can join with R^5 or R^6 to form a 0- to 7-membered bridge to form a carbocyclic or heterocyclic ring, said bridge being substituted with 0–2 R^{12} and said heterocyclic ring being selected from pyrrolidine, morpholine, thiomorpholine, piperidine, or piperazine;

alternatively R^{23} can join with R^{7A} to form a direct bond;

alternatively R^{22} can join with R^{4A} to form a direct bond; R^{31} is selected from one or more of the following:

keto, halogen, cyano, $—CH_2NR^{13}R^{14}$, $—NR^{13}R^{14}$, $—CO_2R^{13}$, $—C(=O)R^{11}$, $—OC(=O)R^{13}$, $—OR^{13}$, C_2–C_6 alkoxyalkyl, $—S(O)_mR^{13}$, $—NHC(=NH)NHR^{13}$, $—C(=NH)NHR^{13}$, $—C(=O)NR^{13}R^{14}$, $—NR^{14}C(=O)R^{13}$, $=NOR^{14}$, $—NR^{14}C(=O)OR^{14}$, $—OC(=O)NR^{13}R^{14}$, $—NR^{13}C(=O)NR^{13}$ R^{14}, $—NR^{13}C(=S)NR^{13}R^{14}$, $—NR^{14}SO_2NR^{13}R^{14}$, $—NR^{14}SO_2R^{13}$, $—SO_2NR^{13}$ R^{14}, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, oxime, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with $—NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, $—OCH_2CO_2R^{13}$, 2-(1-morpholino)ethoxy, azido, $—C(R^{14})=N(OR^{14})$; or

1–3 amino acids, linked together via amide bonds, said amino acid being linked via the amine or carboxylate terminus;

a C_5–C_{14} carbocyclic residue substituted with 0–5 R^{32}; or

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{32};

R^{32}, when a substituent on carbon, is selected from one or more of the following:

phenethyl, phenoxy, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, hydrazide, oxime, boronic acid, C_2–C_6 alkoxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 alkylcarbonyloxy, $—NHSO_2R^{14}$, benzyloxy, halogen, 2-(1-morpholino)ethoxy, $—CO_2R^{13}$, hydroxamic acid, $—CONR^{13}NR^{13}R^{14}$, cyano, sulfonamide, —CHO, C_3–C_6 cycloalkoxy, $—NR^{13}R^{14}$, $—C(R^{14})=N(OR^{14})$, $—NO_2$, $—OR^{13}$, $—NR^{40}R^{41}$, $—SO_mR^{13}$, $—SO_mNR^{13}R^{14}$, $—C(=O)NR^{13}R^{14}$, $—OC(=O)NR^{13}R^{14}$, $—C(=O)R^{11}$, $—OC(=O)R^{11}$, $—OCO_2R^{13}$, phenyl, $—C(=O)NR^{13}—(C_1$–C_4 alkyl$)—NR^{13}R^{14}$, $—C(=O)NR^{40}R^{41}$, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_2–C_4 haloalkenyl, C_1–C_4 haloalkynyl, or

$—C(=O)NR^{13}C(R^{11})_2NR^{13}R^{14}$;

$—C(=O)NR^{13}C(R^{11})_2NR^{13}CO_2R^{13}$;

$—C(=O)NR^{13}—(C_1$–C_4 alkyl$)—NR^{13}CO_2R^{13}$;

$—C(=O)N(R^{13})—(C_1$–C_4 alkyl$)—R^{11}$; or

$—C(=O)C(R^{11})_2NR^{13}R^{14}$;

$—C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$; $—C(=O)—(C_1$–C_4 alkyl$)—NR^{13}R^{14}$;

$—C(=O)—(C_1$–C_4 alkyl$)—NR^{13}CO_2R^{13}$; or

C_1–C_4 alkoxy substituted with 0–4 groups selected from:

R^{11}, C_3–C_6 cycloalkyl, $—CO_2R^{13}$, $—C(=O)NR^{13}R^{14}$, $—NR^{13}R^{14}$ or OH;

C_1–C_4 alkyl substituted with 0–4 groups selected from: R^{11}, $=NR^{14}$, $=NNR^{13}C(=O)NR^{13}R^{14}$, $=NNR^{13}C(=O)OR^{13}$, or $—NR^{13}R^{14}$;

C_2–C_4 alkenyl substituted with 0–4 R^{11};

C_2–C_4 alkynyl substituted with 0–4 R^{11};

a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, substituted with 0–2 R^{12};

or R^{32} may be a 3- or 4- carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6- membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or $—NR^{13}R^{14}$; or, when R^{32} is attached to a saturated carbon , it may be =O, =S, =NOH; or when R^{32} attached to sulfur it may be =O.

R^{32}, when a substituent on nitrogen, is selected from one or more of the following:

phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, $—CH_2NR^{13}R^{14}$, $—NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, $—CO_2H$, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, $—C(R^{14})=N(OR^{14})$;

R^{40} is selected from: H, C_1–C_3 alkyl;

R^{41} is selected from:

$—C(=O)NR^{13}R^{14}$;

$—C(=O)NR^{13}NR^{13}R^{14}$;

$—C(=O)C(R^{11})_2NR^{13}R^{14}$;

$—C(=O)C(R^{11})_2NR^{13}NR^{13}R^{14}$;

$—C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$;

$—C(=O)H$;

$—C(=O)R^{11}$;

$—C(=O)—(C_1$–C_4 alkyl$)—NR^{13}R^{14}$;

$—C(=O)—(C_1$–C_4 alkyl$)—NR^{13}CO_2R^{13}$;

1–3 amino acids linked together via amide bonds, and linked to the N atom via the carboxylate terminus;

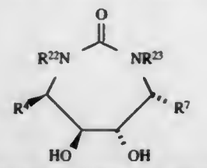
wherein said aryl group is phenyl or naphthyl;

provided that:

R^4, R^{4A}, R^7 and R^{7A} are not all hydrogen;

when R^4 and R^{4A} are hydrogen, R^{22} is not hydrogen.

10. A compound of claim **1** of formula (IIaa):



(IIaa)

or a pharmaceutically acceptable salt form thereof wherein:

R^4 and R^7 are independently selected from: benzyl, methylbenzyl, dimethylbenzyl, ethylbenzyl, fluorobenzyl, pyrrolylmethyl, methoxybenzyl, isobutyl, nitrobenzyl, aminobenzyl, hydroxybenzyl, thienylmethyl, pyridylmethyl, or naphthylmethyl;

R^{22} and R^{23} are independently selected from:

hydrogen, allyl, methyl, ethyl, propyl, cyclopropylmethyl, n-butyl, i-butyl, $CH_2CH=C(CH_3)_2$, pyridinylmethyl, methallyl, n-pentyl, i-pentyl, hexyl, benzyl, isoprenyl, propargyl, picolinyl, methoxyethyl, cyclohexylmethyl, dimethyl-butyl, ethoxyethyl, methyloxazolinylmethyl, naphthylmethyl, methyloxazolinylmethyl, vinyloxyethyl, pentafluorobenzyl, quinolinylmethyl, carboxybenzyl, chloro-thienyl, benzyloxybenzyl, phenylbenzyl, adamantylethyl, cyclopropylmethoxybenzyl, methoxybenzyl, methylbenzyl, ethoxybenzyl, hydroxybenzyl, hydroxymethylbenzyl, aminobenzyl, formylbenzyl, cyanobenzyl, cinnamyl, allyloxybenzyl, fluorobenzyl, difluorobenzyl, chlorobenzyl, chloromethylbenzyl, fluoromethylbenzyl, iodobenzyl, bromobenzyl, cyclobutylmethyl, formaldoximebenzyl, cyclopentylmethyl, nitrobenzyl, $(H_2NC(=O))$-benzyl, carbomethoxybenzyl, carboethoxybenzyl, tetrazolylbenzyl, and dimethylallyl, aminomethylbenzyl, (O-benzyl-formaldoxime) benzyl, (O-methyl-formaldoxime)benzyl, (CH_3O_2CO)-benzyl, $(HOCH_2CH_2N=CH)$-benzyl, N-benzylaminocarbonylbenzyl, N-methylaminobenzyl, N-ethylaminobenzyl, N-ethylaminomethylbenzyl, acetylbenzyl, acetoxybenzyl, N-hydroxylaminobenzyl, phenylmethyl-boronic acid, N-hyroxylaminomethylbenzyl, (hydroxyl)ethylbenzyl, $(CH_3C(=NOH))$-benzyl, $(H_2NNHC(=O))$-benzyl, $(H_2NC(=O)NHN=CH)$-benzyl, $(CH_3ONHC(=O))$-benzyl, $(HONHC(=O))$-benzyl, $(CH_3NHC(=O))$-benzyl, N,N-dimethylaminocarbonylbenzyl, $(HOCH_2CH(OH)CH_2O)$benzyl, hydroxyethoxybenzyl(oxazolidinyl)-benzyl, (hydroxyl)hexyl, hexenyl, (hydroxy)octyl, (hydroxyl)pentyl, (carboxy)pentyl, (carbomethoxy)pentyl, (methylthio)benzyl, (methylsulfonyl) benzyl, N,N-dimethylaminomethylbenzyl, N-methylaminomethylbenzyl, glycylaminobenzyl, N,N-dimethylglycylaminobenzyl, alanylaminobenzyl, (N-phenylmethoxycarbonyl)alanylaminobenzyl, phenylalanylaminobenzyl, (N-phenylmethoxycarbonyl) phenylalanylaminobenzyl, $(CH_3CH_2NHC(=O))$-benzyl, N,N-diethylaminocarbonylbenzyl, N-ethylaminocarbonylbenzyl, N-propylaminocarbonylbenzyl, N,N-diisopropylaminocarbonylbenzyl, N,N-di-n-propylaminocarbonylbenzyl, (hydroxypropynyl)benzyl, (imidazolyl-C(=O))-benzyl, (pyrazolyl-C(=O))-benzyl, (pyridylmethylaminocarbonyl)benzyl, (oxadiazolyl)benzyl, trifluoroacetylbenzyl, (pyrazolyl)benzyl, (H_2NSO_2)-benzyl, dihydroxyethylbenzyl, (MeHNC(=O)NH)-benzyl, $(H_2NC(=O)NH)$-benzyl, (HC(=O)NH)-benzyl, methanesulfonylpentyl, methoxylpentyl, N-formyl-N-methylaminobenzyl, acetylaminobenzyl, propionylbenzyl, butyrylbenzyl, $(CH_3CH_2C(=NOH))$-benzyl, (trifluorohydroxyethyl)benzyl, $(CF_3C(=NOH))$-benzyl, (N-methylglycyl) aminobenzyl, ((4-morpholino)ethyl)aminocarbonylbenzyl, (N,N-dimethylaminoethyl)aminocarbonylbenzyl, (N,N-diethylaminoethyl)aminocarbonylbenzyl, (4-methylpiperazin-1-ylethyl) aminocarbonylbenzyl, (benzyl-NHC(=O)O)benzyl, $(CH_3NHC(=O)O)$benzyl, $(NH_2C(=O)CH_2O)$benzyl, $(NH_2C(=NH))$benzyl, ((N-phenylmethoxycarbonyl)glycylamino)benzyl, (imidazolylmethyl)benzyl, $((CH_3)_3C—C(=O))$benzyl, (N-methyl-N-ethylaminoethyl) aminocarbonylbenzyl, (pyrrolidinylethyl)aminocarbonylbenzyl, (piperidinylethyl) aminocarbonylbenzyl, $(H_2NC(=NOH))$benzyl, $(H_2NC(=NOH))$fluorobenzyl, benzimidazolylmethyl, benzotriazolylmethyl, indazolylmethyl, benzoxazolinylmethyl, benzisoxazolylmethyl, thienylmethyl, furylmethyl, 3-aminoindazolylmethyl, 3-aminobenzoxazolylmethyl, aminopyrazolylbenzyl, imidazolylbepzyl, aminoimidazolylbenzyl.

5,610,295

4-AMINO-2-(HETERO)ARYL-BUTANAMIDES USEFUL AS 5-HT_{1A}-ANTAGONISTS

Ian A. Cliffe, Slough, and Anderson D. Ifill, Oxford, both of England, assignors to John Wyeth & Brother, Ltd., England

PCT No. PCT/GB94/00372, § 371 Date May 24, 1995, § 102(e) Date May 24, 1995, PCT Pub. No. WO94/20481, PCT Pub. Date Sep. 15, 1994

PCT Flied Feb. 25, 1994, Ser. No. 436,410

Claims priority, application United Kingdom, Mar. 6, 1993, 9304632

Int. Cl.[6] C07D *405/06*; A61K *31/55*

U.S. Cl. 540—596 **16 Claims**

1. A compound of formula

$$R^5NR^4(CR_2)_2CHR^3CONR^1R^2 \quad \text{(I)}$$

or a pharmaceutically acceptable salt thereof wherein

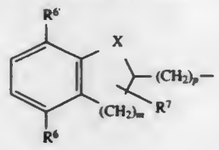
each R is independently hydrogen or C_{1-6} alkyl,

R^1 and R^2 together with the nitrogen atom to which they are attached represent a hexahydroazepino ring which may be optionally substituted by one or more C_{1-6} alkyl, aryl or aryl(C_{1-6})alkyl groups,

R^3 is an aryl or heteroaryl radical,

R^4 is hydrogen or C_{1-6} alkyl,

and R^5 is a group of formula



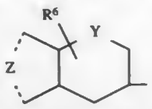
(A)

where X is $—(CH_2)_n—$, $—OCH_2—$ or $—SCH_2—$, m is 0 or 1, n is 1, 2 or 3 and p is 0 or 1 such that (m+p) is 1 and that (m+n) is 1, 2 or 3,

R^6 is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, hydroxy, halogen, trifluoromethyl, (C_{1-6}) alkoxycarbonyl, carboxamido, nitro, cyano, amino, (C_{1-6})alkylamino, di(C_{1-6})alkylamino or (C_{1-6})alkylcarbonyl,

$R^{6'}$ is hydrogen or halogen when X is $—(CH_2)_n—$ and $R^{6'}$ is hydrogen when X is $—OCH_2—$ or $—SCH_2—$,

R^7 is hydrogen or lower alkyl or


(B)

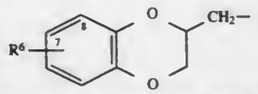
where Y is —O—, —S— or $—CH_2—$,

Z represents a heteroaromatic ring fused on to the non-aromatic ring containing the Y group

and R^6 is as defined above and one or more R^6 groups may be attached to the heteroaromatic ring and/or the non-aromatic ring or

$$R^8—CH_2CH_2 \quad (C)$$

where R^8 is a monocyclic or bicyclic heteroaryl group or


(D)

where R^6 is as defined above and the indicated 7, 8 positions may optionally be fused with a heteroaromatic ring or a further aromatic ring or or

$$R^9OCH_2CHOHCH_2— \quad (E)$$

where R^9 is a mono or bicyclic aryl or bicyclic heteroaryl group or

$$R^9OCH_2CH_2— \quad (F)$$

where R^9 is as defined above.

5,610,296

PROCESS FOR THE PREPARATION OF AMIDINO PHENYL PYRROLIDINE BETA-ALANINE UREA ANALOGS

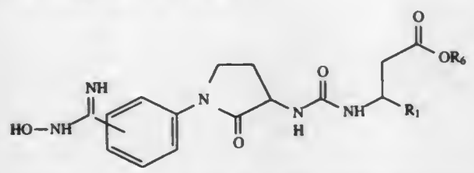
Norman A. Abood, Morton Grove; Daniel L. Flynn, Mundelein; Scott A. Laneman, Vernon Hills; Roger Nosal, Buffalo Grove, and Lori A. Schretzman, Gurnee, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 5, 1994, Ser. No. 349,333

Int. Cl.[6] C07D *207/12*

U.S. Cl. 548—546 **2 Claims**

2. A compound of the formula



wherein R_1 is selected from the group consisting of H, lower alkyl, and aryl; and

wherein R_6 is selected from the group consisting of lower alkyl, aryl, arylalkyl and acyloxymethyl.

5,610,297

PEPTIDES KETOAMIDES

James C. Powers, Atlanta, Ga., assignor to Georgia Tech Research Corp., Atlanta, Ga.

Continuation of Ser. No. 247,081, May 20, 1994, abandoned, which is a continuation of Ser. No. 118,997, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 815,073, Dec. 27, 1991, abandoned. This application Oct. 6, 1995, Ser. No. 539,946

Int. Cl.[6] C07D *265/30*

U.S. Cl. 544—168 **5 Claims**

1. A peptide ketoamide compound of the formula:

$$M_1\text{-}AA_2\text{-}AARES—CO—NH—R_4$$

or a pharmaceutically acceptable salt, wherein

AARES represents AA_1,

M_1 represents H, $NH_2—CO—$, $NH_2—CS—$, $NH_2—SO_2—$, X—NH—CO—, $X_2N—CO—$, X—NH—CS—, $X_2N—CS—$, X—NH—$SO_2—$, $X_2N—SO_2—$, X—CO—, X—CS—, X—$SO_2—$, X—O—CO—, or X—O—CS—;

X is selected from the group consisting of C_{1-10} alkyl, C_{1-10} fluoroalkyl, C_{1-10} alkyl substituted with J, C_{1-10} fluoroalkyl substituted with J, 1-admantyl, 9-fluorenyl, phenyl, phenyl substituted with K, phenyl disubstituted with K, phenyl trisubstituted with K, naphthyl, naphthyl substituted with K, naphthyl disubstituted with K, naphthyl trisubstituted with K, C_{1-10} alkyl with an attached phenyl group, C_{1-10} alkyl with two attached phenyl groups, C_{1-10} alkyl with an attached phenyl group substituted with K, C_{1-10} alkyl with two attached phenyl groups substituted with K, C_{1-10} alkyl with an attached phenoxy group, and C_{1-10} alkyl with an attached phenoxy group substituted with K on the phenoxy group;

J is selected from the group consisting of halogen, COOH, OH, CN, NO_2, NH_2, C_{1-10} alkoxy, C_{1-10} alkylamine, C_{2-12} dialkylamine, C_{1-10} alkyl-O—CO—, C_{1-10} alkyl-O—CO—NH—, and C_{1-10} alkyl-S—;

K is selected from the group consisting of halogen, C_{1-10} alkyl, C_{1-10} perfluoroalkyl, C_{1-10} alkoxy, NO_2, CN, OH, CO_2H, amino, C_{1-10} alkylamino, C_{2-12} dialkylamino, C_1–C_{10} acyl, C_{1-10} alkoxy-CO—, and C_{1-10} alkyl-S—;

AA_2 is a side chain blocked or unblocked amino acid with the L configuration, D configuration, or no chirality at the α-carbon selected from the group consisting of alanine, valine, leucine, isoleucine, proline, methionine, methionine sulfoxide, phenylalanine, tryptophan, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine. histidine, phenylglycine, beta-alanine, norleucine, norvaline, alpha-aminobutyric acid, epsilon-aminocaproic acid, citrulline, hydroxyproline, ornithine, homoarginine, sarcosine, indoline 2-carboxylic acid, 2-azetidinecarboxylic acid, pipecolinic acid (2-piperidine carboxylic acid), O-methylserine, O-ethylserine, S-methylcysteine, S-ethylcysteine, S-benzylcysteine, $NH_2—CH(CH_2CHEt_2)—COOH$, alpha-aminoheptanoic acid, $NH_2—CH(CH_2\text{-}1\text{-}napthyl)\text{-}COOH$, $NH_2CH(CH_2\text{-}2\text{-}naphthyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclohexyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclopentyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclobutyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclopropyl)\text{-}COOH$, trifluoroleucine, and hexafluoroleucine;

AA_1 is a side chain blocked or unblocked amino acid with the L configuration, D configuration, or no chirality at the α-carbon selected from the group consisting of alanine, valine, leucine, isoleucine, proline, methionine, methionine sulfoxide, phenylalanine, tryptophan, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, histidine, phenylglycine, beta-alanine, norleucine, norvaline,. alpha-aminobutyric acid, epsilon-aminocaproic acid, citrulline, hydroxyproline, ornithine, homoarginine, sarcosine, indoline 2-carboxylic acid, 2-azetidinecarboxylic acid, pipecolinic acid (2-piperidine carboxylic acid), O-methylserine, O-ethylserine, S-methylcysteine, S-ethylcysteine, S-benzylcysteine, $NH_2—CH(CH_2CHEt_2)—COOH$, alpha-aminoheptanoic acid, $NH_2—CH(CH_2\text{-}1\text{-}napthyl)\text{-}COOH$, $NH_2CH(CH_2\text{-}2\text{-}napthyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclohexyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclopentyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclobutyl)\text{-}COOH$, $NH_2—CH(CH_2\text{-}cyclopropyl)\text{-}COOH$, trifluoroleucine, trifluoroleucine, and hexafluoroleucine; and

R_4 is selected from the group consisting of C_{3-20} cyclized alkyl with an attached phenyl group, C_{1-20} alkyl with an attached phenyl group substituted with K, C_{1-20} alkyl with an attached phenyl group disubstituted with K, C_{1-20} alkyl with an attached phenyl group trisubstituted with K, C_{3-20} cyclized alkyl with an attached phenyl group substituted with K, C_{1-10} alkyl with a morpholine ring attached through nitrogen to the alkyl, C_{1-10} alkyl with a piperidine ring attached through nitrogen to the alkyl, C_{1-10} alkyl with a pyrrolidine ring attached through nitrogen to the alkyl, C_{1-20} alkyl with an OH group attached to the alkyl, $—CH_2CH_2OCH_2CH_2OH$, C_{1-10} alkyl with an attached 4-pyridyl group, C_{1-10} alkyl with an attached 3-pyridyl group, C_{1-10} alkyl with an attached 2-pyridyl group, $—NH—CH_2CH_2$-(4-hydroxyphenyl), and $—NH—CH_2CH_2$-(3-indolyl).

5,610,298

WATER-SOLUBLE ANTHRAQUINONE COMPOUNDS, PREPARATION THEREOF AND USE THEREOF AS DYES

Uwe Reiher, Hofheim, and Werner H. Russ, Flörsheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

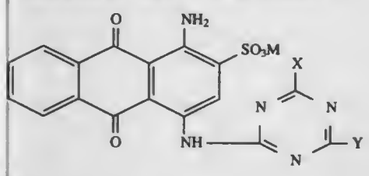
Filed May 15, 1995, Ser. No. 441,052

Claims priority, application Germany, May 17, 1994, 44 17 192.7; Jul. 14, 1994, 44 24 819.9

Int. Cl.[6] C07D *251/54;251/50;251/52*

U.S. Cl. 544—197 **8 Claims**

1. An anthraquinone compound of the formula (1)


(1)

in which:

M is hydrogen or an alkali metal,

X is fluorine, chlorine or a group of the formula (2a) or (2b)

$$—O—R^A \quad (2a)$$

$$—NH—R^B \quad (2b)$$

in which

R^A is alkyl of 1 to 10 carbon atoms, cycloalkyl of 5 to 8 carbon atoms unsubstituted or substituted by 1 or 2 methyl groups, or is alkyl of 2 to 8 carbon atoms which is interrupted by one or two hetero-groups, the hetero-groups selected from the group consistinq of —O—, —NH—, —NH—CO—, —CO—NH—, —CO—, —SO_2—, —NH—SO_2— and —SO_2—NH—, or is benzyl or sulfoalkyl of 1 to 4 carbon atoms, or is phenyl which is substituted by 1 or 2 sulfo or 1 carboxy or both, and

R^B is hydrogen, alkyl of 1 to 10 carbon atoms, cycloalkyl of 5 to 8 carbon atoms unsubstituted or substituted by 1 or 2 methyl groups, or is alkyl of 2 to 8 carbon atoms which is interrupted by one or two hetero-groups, the hetero-groups selected from the group consisting of —O—, —NH—, —NH—CO—, —CO—NH—, —CO—, —SO_2—, —NH—SO_2— and —SO_2—NH—, or is benzyl, sulfoalkyl of 1 to 4 carbon atoms or cyano;

Y is a group of the formula (3)

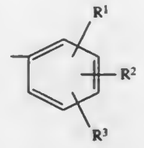
$$—NH—R^o \quad (3)$$

in which

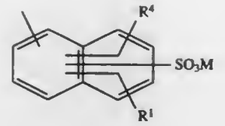
R^o is a group of the formula (4a), (4b), or (4c)

$$—alk—SO_2—Z \quad (4a)$$

(4b)



(4c)



in which

M is as defined above,

Z is vinyl or is ethyl which is substituted in the β-position by a substituent which is eliminated by alkali to form the vinyl group,

alk is alkylene of 2 to 4 carbon atoms,

R^1 is a group of the formula $—SO_2—Z$ in which Z is as defined above,

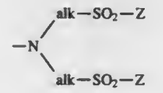
R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine, sulfo or nitro,

R^3 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine, and

R^4 is hydrogen, sulfo or carboxy, or

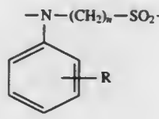
Y is a group of the formula (5a)

(5a)



in which Z and alk are as defined above, or is a group of the formula (5b)

(5b)



in which

Z is as defined above,

n is a number from 1 to 4, and

R is hydrogen or sulfo.

5,610,299

CERTAIN ARYL SUBSTITUTED IMIDAZOPYRAZINONES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Charles Blum, Guilford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

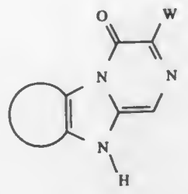
PCT No. PCT/US94/00109, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO94/15937, PCT Pub. Date Jul. 21, 1994

Continuation-in-part of Ser. No. 1,258, Jan. 6, 1993, abandoned. This PCT application Jan. 4, 1994, Ser. No. 495,521

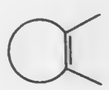
Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—230 **21 Claims**

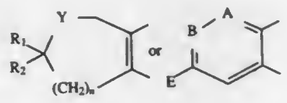
1. A compound of the formula:



and the pharmaceutically acceptable non-toxic salts thereof wherein:



represents:



and

n is 0, 1 or 2;

R_1 and R_2 are the same or different and represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms;

W is phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms;

Y is

N—R_3 where R_3 is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; straight or branched chain lower alkoxy having 1–6 carbon atoms, or phenylalkoxy where the alkoxy is straight or branched chain lower alkoxy having 1–6 carbon atoms; or —COR_4 or —SO_2R_4 where R_4 is straight or branched chain lower alkyl having 1–6 carbon atoms;

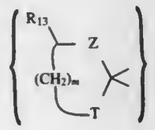
C=O, CR_6OR_5, CR_6COR_5, $CR_6CO_2R_5$, CR_6OCOR_5, and CR_5R_6, where R_5 is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms;

$CR_6CONR_7R_8$ or $CR_6(CH_2)_qNR_7R_8$ where q is 0, 1, or 2, and R_6 and R_7 are the same or different and represent hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms; and R_8 is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or NR_7R_8 is morpholyl, piperidyl, pyrrolidyl, or N-alkyl piperazyl;

$CR_6NR_9CO_2R_{10}$ where R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms, and R_9 and R_{10} are the same or different and represent hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms;

$CR_6C(OH)R_{11}R_{12}$ where R_{11} and R_{12} are the same or different and represent straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, and R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms; or

Y is a group of the formula:



where m is 0, 1, or 2,

R_{13} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms;

Z is methylene, oxygen, NR_{14} or $CHCONR_{14}$ where R_{14} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl or pyridylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

T is methylene or oxygen;

A is CH or N;

B is N or CR_{15} where

R_{15} is hydrogen, halogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms,

—$CONR_{16}R_{17}$, —COR_{16} or —SO_2R_{18} where R_{16} is straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkoxy where the alkoxy is straight or branched chain alkoxy having 1–6 carbon atoms and R_{17} is straight or branched chain lower alkyl having 1–6 carbon atoms; R_{18} is straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

E is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms.

5,610,300

CARBOCYCLIC NUCLEOSIDES CONTAINING BICYCLIC RINGS, OLIGONUCLEOTIDES THEREFROM, PROCESS FOR THEIR PREPARATION, THEIR USE AND INTERMEDIATES

Karl-Heinz Altmann, Basel; René Imwinkelried, Brig-Glis, and Albert Eschenmoser, Küsnacht, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

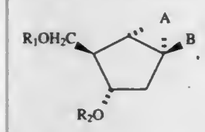
Division of Ser. No. 83,812, Jun. 28, 1993, Pat. No. 5,461,152. This application Jun. 6, 1995, Ser. No. 469,045

Claims priority, application Switzerland, Jul. 1, 1992, 2075/92

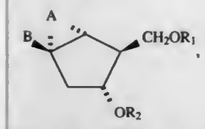
Int. Cl.[6] C07F *9/02*; **C07D** *473/00;239/02*; **A61K** *31/695*

U.S. Cl. 544—244 **16 Claims**

1. A compound of the formula I or Ia or their racemates

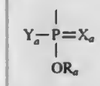


(I)

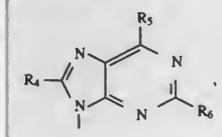


(Ia)

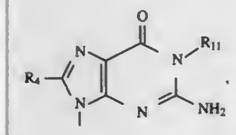
in which A is —CH_2— or —CH_2CH_2—, R_1 is hydrogen or a protective group, R_2 is hydrogen a protective group for alcohols or a radical forming a phosphorous-containing nucleotide bridge group of the formula:



in which Y_a is hydrogen, C_1–C_{12}alkyl, C_6–C_{12}aryl, C_7–C_{20}alkaryl, —OR_b, —SR_b, —NH_2, primary amino, secondary amino, O^-M^+ or S^-M^+; X_a is oxygen or sulfur; R_a is hydrogen, M^+, C_1–C_{12}alkyl, C_2–C_{12}alkenyl or C_6–C_{12}aryl, or the group R_aO— is N-heteroaryl-N-yl having 5 ring members and 1 to 3 N atoms; Rb is hydrogen, C_1–C_{12}alkyl or C_6–C_{12}-aryl; and M^+ is Na^+, K^+, Li^+, NH_4^+ or primary, secondary, tertiary or quaternary ammonium; where alkyl, aryl, aralkyl and alkaryl in Y_a, R_a and R_b are unsubstituted or substituted by alkoxy, alkylthio, halogen, —CN, —NO_2, phenyl, nitrophenyl or halophenyl; and B is pyrimidine radical having formula II or IIe;



(II)



(IIe)

in which R_4 is H, Cl, Br or OH or —O—alkyl having 1 to 12 C atoms, and R_5, R_6 and R_7 independently of one another are H, OH, SH, NH_2, $NHNH_2$, NHOH, NHO alkyl having 1 to 12 C atoms, —N=CH—N(C_1–C_{12}alkyl)$_2$, F, Cl, Br, alkyl or hydroxyalkyl or aminoalkyl or alkoxy or alkylthio having 1 to 12 C atoms, the hydroxyl and amino groups being unsubstituted or substituted by a protective group, phenyl, benzyl, primary amino having 1 to 20 C atoms or secondary amino having 2 to 30 C atoms, and R_{11} is H or C_1–C_4alkyl.

5,610,301

PROCESS FOR THE REGIOSELECTIVE N-ALKYLATION OF QUINAZOLINONES

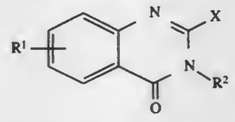
Arthur G. Mohan, Somerville, and Joseph D'Antuono, III, Three Bridges, both of N.J., assignors to American Cyanamid Company, Madison, N.J.

Filed Jul. 1, 1993, Ser. No. 87,625

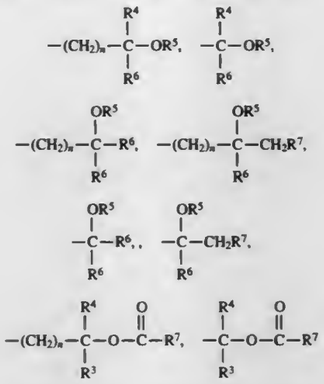
Int. Cl.[6] C07D *239/88;239/92*

U.S. Cl. 544—284 **5 Claims**

1. A process for producing compounds of the formula:



wherein R^1 is selected from moieties of the formula:



where R^3 is selected from H, straight chain lower alkyl of 1 to 4 carbon atoms, pyridine, thiophene, furan, halogen, phenyl and substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms and —NH_2); R^4 is selected from H, straight chain lower alkyl of 1 to 4 carbon atoms, pyridine, thiophene, furan, phenyl and substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms, and —NH_2); provided, however, that

R^3 and R^4 cannot both be H;

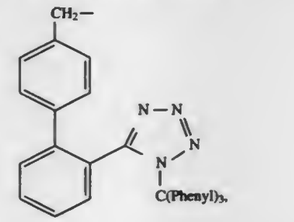
R^5 is selected from H, and straight chain or branched lower alkyl of 1 to 4 carbon atoms;

R^6 is selected from straight chain lower alkyl of 1 to 4 carbon atoms, pyridine, thiophene, furan, phenyl and substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms, and —NH_2);

R^7 is straight or branched lower alkyl of 1 to 4 carbon atoms;

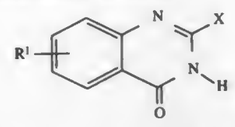
n is an integer from 1 to 3;

R^2 is selected from a moiety of the formula:



benzyl optionally substituted with halogen and cyanophenyl; and X is a straight chain alkyl of 1 to 6 carbon atoms which comprises:

a. reacting a 2-alkyl-5,6,7 or 8-substituted-4(3H)-quinazolinone having the formula:



where R^1 is as defined above with an alkylating agent having the formula: R^2Z where Z is a leaving group and R^2 is as defined above, in the presence of a lithium salt LiY where Y is —OH, —OCH_3 or $(iPr)_2N$—; and

b. recovering the 2-alkyl-3-substituted-5,6,7 or 8-substituted-4 (3H)-quinazolinone.

5,610,302

COMPOSITION INTENDED FOR USE FOR RETARDING HAIR LOSS AND FOR INDUCING AND STIMULATING ITS GROWTH, CONTAINING 2-AMINOPYRIMIDINE 3-OXIDE DERIVATIVES, AND NEW COMPOUNDS DERIVED FROM 2-AMINOPYRIMIDINE 3-OXIDE

Didier Dufetel, Chelles; Francoise Estradier, Paris; Quintino Gaetani, Sevran, and Michel Hocquaux, Paris, all of France, assignors to L'Oreal, Paris, France

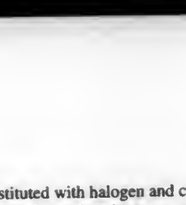
Division of Ser. No. 224,176, Apr. 7, 1994, which is a continuation of Ser. No. 573,578, Aug. 27, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 461,848

Claims priority, application France, Aug. 29, 1989, 89 11352

Int. Cl.[6] C07D *239/22*

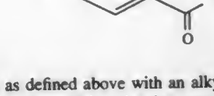
U.S. Cl. 544—320 **2 Claims**

1. Compound of formula:



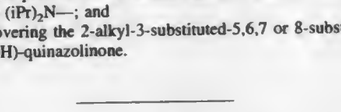
in which:

R is a hydrogen atom or a saturated linear C_1–C_8 alkyl radical or, with the pyrimidine ring, forms a carbon/hydrogen-containing ring, which is spiro on the carbon to which R is attached or is an ortho fusion placed with the adjacent carbon of the pyrimidine ring, of formula:



with n equal to 1, 2 or 3;

R' is a hydrogen atom or one of the following radicals:



in which:

R_5 and R_6 are a C_1–C_4 lower alkyl radical; and

R_7 and R_8 are a hydrogen atom or a C_1–C_4 lower alkyl radical, on condition that they do not simultaneously denote a hydrogen atom;

Y is an oxygen atom or an —$OSO_3^{\ominus}$ group; and

X is:

(i) a group SR_4, in which R_4 is a saturated linear or branched C_1–C_{12} alkyl radical which can be substituted with a halogen atom or a trifluoromethyl radical, a linear C_2–C_{12} alkenyl radical, a C_3–C_{10} cycloalkyl radical, a C_7–C_{12} aralkyl radical or a phenyl radical optionally substituted with one or two groups which, independently of one another, are a halogen atom, a C_1–C_6 alkyl radical, a C_1–C_6 alkoxy radical or a trifluoromethyl radical;

(ii) a group —OR_3 in which R_3 has the same meaning as R_4, on condition that, when Y is an oxygen atom, R an alkyl group and R' denotes a hydrogen atom, R_3 does not denote a C_1–C_4 alkyl radical or a phenyl group optionally substituted with one or two halogen atoms; as well as its cosmetically or pharmaceutically acceptable addition salts with acids.

5,610,303

ARYLAMINO PYRIMIDINE COMPOUND

Tomio Kimura, Niiza; Yoshiaki Kuroki, Ube; Hiroshi Fujiwara, Ube, and Shigeharu Anpeiji, Ube, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

PCT No. PCT/JP93/01412, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/07890, PCT Pub. Date Apr. 14, 1994

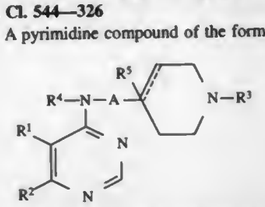
PCT Filed Oct. 1, 1993, Ser. No. 411,838

Claims priority, application Japan, Oct. 5, 1992, 4-266353

Int. Cl.[6] C07D *401/10*

U.S. Cl. 544—326 **21 Claims**

1. A pyrimidine compound of the formula (I):



(I)

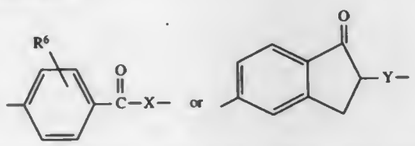
wherein R^1 and R^2 each represent a hydrogen atom, a halogen atom, an amino group, a nitro group, an alkyl group, a lower alkoxy group or a lower alkoxycarbonyl group, or R^1 and R^2 are bonded together to form a C_3–$_6$ alkylene group, and said alkyl group and alkylene group being unsubstituted or substituted by a halogen, hydroxy, a lower alkoxy, a lower alkenyloxy, an aryloxy, an aralkyloxy or an acyloxy.

R^3 represents an aralkyl group or a C_1–C_4 alkyl group substituted by a hetero aromatic ring, the hetero aromatic ring comprising a 5- or 6-membered aromatic beteromonocyclic group having one or two hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, or a fused aromatic group comprising a benzene ring fused with said 5- or 6-membered aromatic heteromonocyclic group, and the aryl portion of said aralkyl group and said C_1–C_4 alkyl group being unsubstituted or substituted by a halogen, amino, alkanoylamino, cyano, nitro, hydroxy, a lower alkyl, a lower alkoxy, an aralkyloxy, an alkylenedioxy, a halogeno-lower alkyl or a halogeno-lower alkoxy,

R^4 represents a hydrogen atom or an acyl group,

R^5 represents a hydrogen atom, a hydroxy group or a lower alkoxy group,

A represents



where R^6 represents a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group,

X represents —CH=, —CH=CH—$(CH_2)_p$—, —CH_2— or —CH_2CH_2—$(CH_2)_p$—,

Y represents =CH—$(CH_2)_p$—, —CH_2—$(CH_2)_p$—, a single bond or a double bond and p represents 0 or 1,

fheight. . . represents a single bond or a double bond, and when fheight. . . represents a double bond or X represents —CH=, or Y represents a double bond, R^5 does not exist, and

a salt thereof.

5,610,304

PYRIMIDINYL OR PYRIDINYL SULFONAMIDE SUBSTITUTED COMPOUNDS

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Hiroyuki Sugumi, Ibaraki; Jun Niijima, Ibaraki; Yoshihiko Kotake, Ibaraki; Toshimi Okada, Ibaraki; Nozomu Koyanagi, Ibaraki; Tatsuo Watanabe, Osaka; Makoto Asada, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Atsumi Iijima, Ibaraki; Takeshi Nagasu, Ibaraki; Kappei Tsukahara, Ibaraki, and Kyosuke Kitoh, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

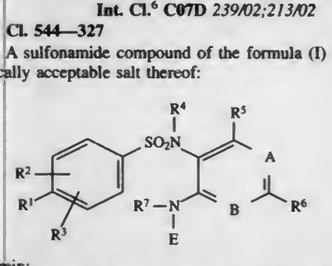
Division of Ser. No. 231,272, Apr. 22, 1994, Pat. No. 5,434,172, which is a division of Ser. No. 85,962, Jun. 30, 1993, Pat. No. 5,332,751, which is a division of Ser. No. 923,345, Jul. 31, 1992, Pat. No. 5,292,758, which is a division of Ser. No. 742,618, Aug. 8, 1991, Pat. No. 5,250,549. This application May 26, 1995, Ser. No. 453,058

Claims priority, application Japan, Aug. 20, 1990, 2-218710; Mar. 5, 1991, 3-38509; May 27, 1991, 3-121041

Int. Cl.[6] C07D *239/02;213/02*

U.S. Cl. 544—327 **9 Claims**

1. A sulfonamide compound of the formula (I) or a pharmacologically acceptable salt thereof:



(I)

wherein:

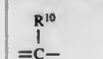
R^1 represents a hydrogen atom, halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, nitro group, phenoxy group, cyano group, acetyl group or amino group which may be protected,

R^2 and R^3 may be the same or different from each other and each represent a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, R^4 and R^7 may be the same or different from each other and each represent a hydrogen atom or a lower alkyl group,

R^5 and R^6 may be the same or different from each other and each represent a hydrogen atom, halogen atom, lower alkoxy group or amino group which may be substituted,

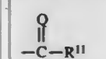
A represents a group of the formula: =N—,

B represents a group of the formula: =N— or

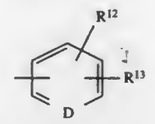


in which R^{10} represents a hydrogen atom or lower alkyl group;

E is selected from the group consisting of (a)



in which Q represents an oxygen atom or a sulfur atom and R^{11} represents a hydrogen atom, lower alkyl group, amino group which may be substituted with a lower alkyl group, lower alkoxy group, 2-thienyl group, 2-furyl group or group of the formula:



wherein D is =N— or =CH— and R^{12} and R^{13} are the same or different from each other and each being a hydrogen atom, halogen atom, nitro group, hydroxyl group which may be protected or lower alkyl group; or (b) an aromatic 6-membered cyclic group which may be substituted with 1 to 3 substituents G which may be the same or different from one another and which cyclic group may have 1 or 2 nitrogen atoms in the ring, wherein G is a halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group which may be protected, carboxyl group which may be esterified or amidated, lower alkylthio group or phenoxy group.

5,610,305

PYRAZOLE-AND PIPERIDINE-CONTAINING COMPOUNDS AND THEIR METAL COMPLEXES AS LIGHT STABILIZERS

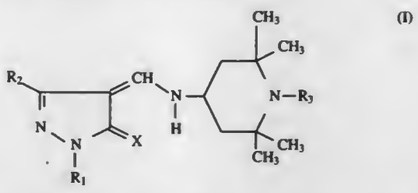
Idel Y. Kvitko, Ashdod, and Jack Azran, Ashkelon, both of Israel, assignors to UV Stab Ltd., Ashkelon, Israel

Filed Nov. 22, 1995, Ser. No. 561,655

Int. Cl.[6] C07D *401/00;* **C07F** *1/08;3/06*

U.S. Cl. 546—6 **20 Claims**

1. Substituted pyrazoles of the formula I,



(I)

where

R_1 and R_2 are identical or different and each denotes hydrogen or alkyl or aryl,

X is oxygen or sulphur, and

R_3 is hydrogen, alkyl, a derivative of carboxyacryloyl or carboxybenzoyl, or a derivative of pyrazole.

5,610,306

PROCESS FOR THE PRODUCTION OF 6,13-DIHYDROQUINACRIDONES AND APPARATUS FOR USE FOR THE PRODUCTION

Hitoshi Maki; Shigeki Kato; Shinichi Azuma; Mikio Hayashi, and Masatoshi Momose, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,969

Claims priority, application Japan, Nov. 19, 1993, 5-290293

Int. Cl.[6] C07D *471/04;* **C09B** *48/00*

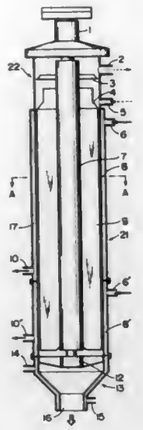
U.S. Cl. 546—49 **9 Claims**

1. A process for the production of a quinacridone pigment, comprising:

providing a vertical cylindrical reactor having a blade that rotates about a vertical axis of the cylindrical reactor, and providing an atmosphere free of oxygen in the cylindrical reactor;

heating the cylindrical reactor so that the temperature of at least a surface of an inner wall of a cylinder of the cylindrical reactor is in the range of from 250° to 400° C.;

introducing (i) a powder of 2,5-di(phenylamino)-3,6-dihydroterephthalic acid di-C_{1-4}-alkyl ester, or (ii) a mixture



in the form of a slurry or paste of 2,5-di(phenylamine)-3,6-dihydroterephthalic acid di-C_{1-4}-alkyl ester and a liquid through a feed port provided in an upper portion of the cylindrical reactor, keeping the powder (i) or the mixture (ii) in substantial contact with the inner wall of the cylindrical reactor so that an intramolecular alcohol-elimination reaction of the 2,5-di(phenylamino)-3,6-dihydroterephthalic acid di-C_{1-4}-alkyl ester takes place to form 6,13-dihydroquinacridone;

taking out the 6,13-dihydroquinacridone through an outlet provided in a lower portion of the cylindrical reactor;

forming a salt of the 6-13-dihydroquinacridone in an alkali solution containing an alkali in an amount of at least 2 mol per mole of the 6,13-dihydroquinacridone, hydrolyzing the salt by reducing the alkali to an amount of less than 2 mol per mole of the 6,13-dihydroquinacridone, to obtain 6-13-dihydroquinacridone particles having a specific surface area of at least 20 m^2/g, and oxidizing the 6-13-dihydroquinacridone particles.

5,610,307

DIRECT ISOLUTION OF OPTICALLY PURE (3S)-1,2,3,4-TETRAHYDROISOQUINOLINE-3-CARBOXYLIC ACID

Robert A. Erickson, DesPlaines, Ill., assignor to The Nutra Sweet Company, Deerfield, Ill.

Filed Mar. 14, 1995, Ser. No. 404,478

Int. Cl.[6] C07D *217/02*

U.S. Cl. 546—147 **6 Claims**

1. A method for the isolation of a substantially pure isomer of (3S)-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid comprising:

a. preparing a crude optically enriched mixture of said isoquinoline derivative through the cyclization of D- or L-phenylalanine in the presence of formaldehyde and hydrochloric acid;

b. adjusting the pH to yield the neutral free acid form;

c. treating said mixture with a dilute acetic acid solution;

d. heating said mixture at increased temperature; and

e. cooling said mixture so as to yield said amino acid powder as a single, isolated isomer.

5,610,308

PROCESS FOR PREPARING INTERMEDIATES FOR THROMBIN INHIBITORS

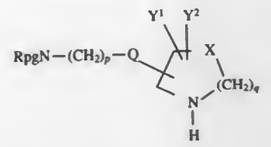
Sharon D. Real, San Diego, Calif., and David R. Kronenthal, Yardley, Pa., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed May 18, 1995, Ser. No. 443,960

Int. Cl.[6] C07D *211/60*

U.S. Cl. 546—208 **16 Claims**

9. A process for preparing a heterocyclic compound of the structure



wherein p is 0, 1 or 2;

Q is a single bond or



;

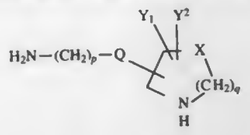
y^1 and y^2 are independently H, lower alkyl or halo;

X is CH_2, —CH=CH—, O, S or NH;

q is 0, 1, 2, 3 or 4 if X is CH_2 or —CH=CH—;

q is 2, 3 or 4 if X is O, S or NH;

and Rpg is an N- protecting group, which comprises providing an unprotected amino compound of the structure



wherein p, Q, Y^1, Y^2, X and q are as defined above, and reacting the unprotected amino compound with an aldehyde at a temperature within the range from about 20° C. to about 120° C., to form the heterocyclic compound.

5,610,309

ELECTROLUMINESCENT DEVICE COMPRISING OXADIAZOLE COMPOUNDS LUMINESCENT MATERIAL, OXADIAZOLE COMPOUNDS FOR THE DEVICE, AND METHOD OF PRODUCING OXADIAZOLE COMPOUNDS

Masafumi Ohta, Susono; Yohta Sakon, Numazu; Toshihiko Takahashi, Numazu; Chihaya Adachi, Numazu, and Kazukiyo Nagai, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

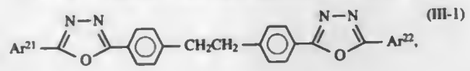
Division of Ser. No. 321,765, Oct. 12, 1994, which is a division of Ser. No. 51,070, Apr. 14, 1993, Pat. No. 5,420,288. This application Jun. 7, 1995, Ser. No. 478,674

Claims priority, application Japan, Apr. 14, 1992, 4-121194; Jun. 9, 1992, 4-174801; Jun. 20, 1992, 4-186051; Jul. 27, 1992, 4-219792; Sep. 17, 1992, 4-273692; Sep. 29, 1992, 4-284041; Apr. 1, 1993, 5-098890

Int. Cl.[6] C07D *413/10*

U.S. Cl. 546—256 **3 Claims**

1. A novel oxadiazole compound represented by formula (III-1):



(III-1)

wherein Ar^{21} and Ar^{22} each is selected from the group consisting of naphthyl group, anthryl group, phenanthryl group, bipbenylyl group and an aromatic heterocyclic group.

5,610,310

CYCLIC LIPID DERIVATIVES AS POTENT PAF ANTAGONISTS

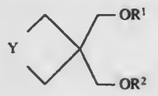
Soon H. Woo; Sung K. Chung; Soo H. Ban; Byoung E. Kim, and Si H. Kim, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd, and Research Institute of Industrial Science & Technology, both of Pohang City, Rep. of Korea

Division of Ser. No. 193,163, Feb. 10, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,612

Int. Cl.[6] C07D *213/20;* **A61K** *31/44*

U.S. Cl. 546—281.7 **8 Claims**

1. A compound of the formula II or pharmaceutically acceptable salts thereof:



II

in which

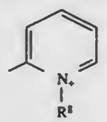
Y represents a divalent group selected from the class consisting of O, S, SO, SO_2 $(CH_2)_m$ wherein m is 0 or an integer of 1 to 5, and NR^a wherein R^a is selected from the group consisting of hydrogen, lower alkyl, lower alkoxycarbonyl, aryl, arylalkyl and acyl;

R^1 represents either an alkyl, alkenyl or alkynyl group, of 10 to 24 carbon atoms or a $CONR^3R^4$ group, wherein R^3 is hydrogen or lower alkyl and R^4 is an alkyl, alkenyl or alkynyl group, of 10 to 24 carbon atoms;

R^2 represents a group having formula $T—(CH_2)_n—V(X)q$, wherein T refers to a simple covalent linkage, or a CO, PO_3, C(O)O, or $CONR^b$ group wherein R^b is hydrogen, lower alkyl or acyl;

n refers to an integer of from 1 to 10;

V refers to the group indicated by the formula



wherein

R^8 represents lower alkyl group;

q is one or zero; and

X represents a pharmaceutically acceptable anion.

5,610,311

REACTION OF METAL SALT OF AN S-SUBSTITUTED N-CYANODITHIOMINOCARBONATE WITH HYDRAZINE OR HYDRAZINE HYDRATE

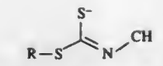
Lyndon K. Marble, Germantown, and Wallace E. Puckett, Bartlett, both of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Continuation of Ser. No. 62,532, May 18, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 425,221

Int. Cl.[6] C07D *249/08*

U.S. Cl. 548—255 **36 Claims**

1. A process comprising the step of contacting a Group 1 or 2 metal salt of the anion of formula I,



I

wherein R—S is any suitable leaving group,

with hydrazine or hydrazine hydrate for a sufficient time to form a Group 1 or 2 metal salt of 3-mercapto-5-amino-(1H)-1,2,4-triazole.

5,610,312

ASYMMETRIC HYDROGENATION OF DIHYDROFUROIMIDAZOLE DERIVATIVES

Martin Eyer, Brig-Glis; Rudolf Fuchs, Sion, and John McGarrity, Visp, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

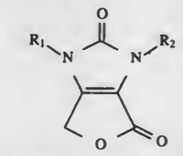
Continuation of Ser. No. 167,362, Dec. 16, 1993, abandoned. This application Jul. 13, 1995, Ser. No. 502,267

Claims priority, application Switzerland, Dec. 18, 1992, 3873/92; Feb. 18, 1993, 498/93

Int. Cl.[6] C07D *491/048;495/04;235/02;403/02;* **B01J** *27/105*

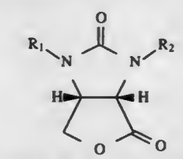
U.S. Cl. 548—303.1 **9 Claims**

1. A process comprising asymmetric hydrogenating a dihydrofuroimidazole derivative of formula:



I

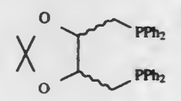
wherein R_1 is a cleavable protective group and R_2 is a hydrogen or a cleavable protective group, with hydrogen in the presence of a homogeneous catalyst to the corresponding diastereomeric tetrahydrofuroimidazole derivative of formula:



II

wherein R_1 and R_2 have the afore-mentioned meanings, the homogeneous catalyst being obtained by reaction of an Rh complex with a chiral phosphine ligand from the group consisting of:

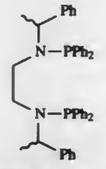
(a)



DIOP III

and

(b)



PNNP IV

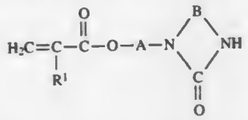
wherein Ph is a phenyl group.

5,610,313
PROCESS FOR THE PREPARATION OF ALKYLIMIDAZOLIDONE (METH) ACRYLATES

Alain Riondel, Forbach; Gilles Herbst, Spicheren, and André Levray, Saint Avold, all of France, assignors to ELF Atochem S.A., Puteaux, France

Filed Nov. 17, 1995, Ser. No. 544,438
Claims priority, application France, Nov. 18, 1994, 94 13848
Int. Cl.[6] C07D *233/32*
U.S. Cl. 548—324.1 **15 Claims**

1. Process for the manufacture of a compound of formula:



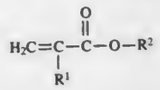
(I)

in which:

R^1 represents hydrogen or methyl; and

A and B each independently represent a straight or branched hydrocarbon chain having from 2 to 5 carbon atoms,

by reaction of at least one (meth)acrylate of formula:



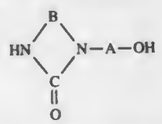
(II)

in which:

R^1 has the abovementioned meaning; and

R^2 represents a C_1–C_4 alkyl group,

with a heterocyclic alcohol of formula:



(III)

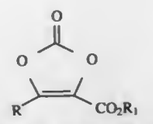
in which A and B have the abovementioned meanings, in the presence of a catalyst consisting essentially of a mixture formed (a) of at least one magnesium alkoxide and (b) of a component chosen from the chelates of calcium with 1,3 -dicarbonyl compounds, dialkyltin oxides, dialkyltin alkoxides and dialkyltin diesters.

5,610,314
PROCESS FOR PREPARING DIOXOLENONE DERIVATIVES USED FOR MAKING PRODRUG ESTERS AND INTERMEDIATES

Peter T. W. Cheng, Lawrenceville; Chong-Oing Sun, East Windsor, and Michael A. Poss, Lawrenceville, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

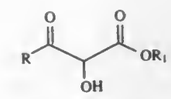
Filed Apr. 3, 1995, Ser. No. 415,799
Int. Cl.[6] C07D *321/00*
U.S. Cl. 549—228 **11 Claims**

1. A process for preparing a dioxolenone derivative of the structure

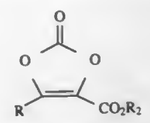


(1)

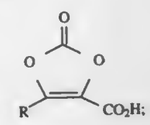
where R is alkyl or aryl, and R_1 is arylalkyl, H or alkyl, which comprises reacting an ester of the structure



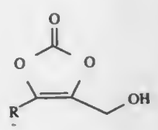
where R and R_1 are as defined above, with an amine base and a cyclizing agent to form a dioxolenone derivative of the structure



where R_2 is arylalkyl or alkyl, and optionally reducing the above dioxolenone derivative to form the dioxolenone acid derivative of the structure

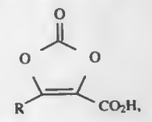


or a process for preparing a dioxolenone derivative of the structure

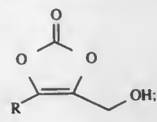


(2)

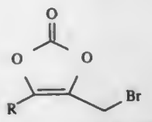
wherein R is alkyl or aryl, which comprises providing a dioxolenone acid derivative of the structure



reacting the above dioxolenone acid derivative with a chlorination agent to form the corresponding acid chloride, reducing the acid chloride while cooling at a temperature within the range from about −78° to about 0° C., to form

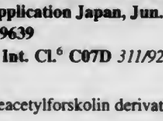


or a process for preparing a dioxolenone derivative of the structure

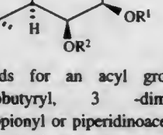


(3)

wherein R is alkyl or aryl, which comprises providing a dioxolenone acid derivative of the structure



reacting the dioxolenone acid derivative with a chlorination agent to form the corresponding acid chloride, reducing the acid chloride while cooling at a temperature within the range from about −78° to about 0° C. to form the dioxolenone derivative



reacting the above dioxolenone derivative with a bromination agent and a dehydrating agent to form

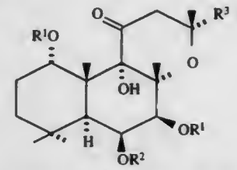


5,610,315
PROCESS FOR THE PREPARATION OF 6,7-DIACYL-7-DEACETYLFORSKOLIN DERIVATIVES

Tochiro Tatee, Tokyo; Akira Shiozawa, Omiya; Hirotaka Yamamoto, Yono; Yuh-ichiro Ichikawa, Tokyo; Aya Ishikawa, Tokyo; Chikara Komuro, Tokyo, and Kazuhisa Narita, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 179,826, Jan. 19, 1994, Pat. No. 5,484,954, which is a division of Ser. No. 71,616, Jun. 4, 1993, Pat. No. 5,302,730, which is a continuation of Ser. No. 624,528, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 212,013, Jun. 27, 1988, abandoned. This application May 16, 1995, Ser. No. 442,403
Claims priority, application Japan, Jun. 29, 1987, 62-159638; Jun. 29, 1987, 62-159639
Int. Cl.[6] C07D *311/92*
U.S. Cl. 549—389 **1 Claim**

1. 1,6,7-triacyl-7-deacetylforskolin derivative represented by the general formula:



(1)

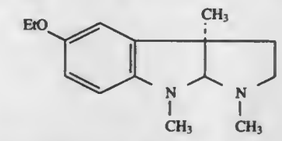
wherein R^1 stands for an acyl group, R^2 stands for 4-dimethylaminobutyryl, 3 -dimethylaminopropionyl, 2-morpholinopropionyl or piperidinoacetyl and R^3 stands for an aliphatic group having 2 to 3 carbon atoms or a cyclopropyl group.

5,610,316
PROCESS FOR THE PREPARATION OF (−)-ESERETHOLE FROM MIXTURES OF (−) AND (+)-ESERETHOLE

Aldo Belli; Giorgio Chiodini, and Stefano Maiorana, all of Milan, Italy, assignors to Laboratorio Chimico Internazionale S.p.A., Milan, Italy

PCT No. PCT/EP93/01908, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/03457, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 20, 1993, Ser. No. 379,536
Claims priority, application Italy, Jul. 30, 1992, MI92A1861
Int. Cl.[6] C07D *209/00*
U.S. Cl. 548—429 **5 Claims**

1. A process for the preparation of (−)-eserethole of formula (I)



having α_D^{20} between −100.3 and −101.2 which comprises the steps

1) reacting a mole of a racemic mixture of (±)-eserethole, or a mixture of (+)- and (−)-eserethole in which the latter enantiomer prevails with 0.5–0.7 mole of a resolution agent, with which (−)-eserethole gives a diastereomer salt less soluble than (+)-eserethole, whereby the salt of said resolution agent and (−)-eserethole is obtained as a solid;

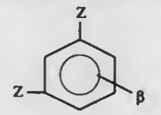
2) dissolving said solid in water, adding alkali, extracting with an organic solvent to obtain an extract and recovering pure (−)-eserethole from said organic extract.

5,610,317
MULTIPLE CHEMICALLY FUNCTIONAL END CAP MONOMERS

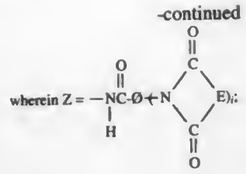
Hyman R. Lubowtiz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Post Falls, Id., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 327,942, Oct. 21, 1994, which is a continuation-in-part of Ser. No. 773,381, Sep. 5, 1985, Ser. No. 137,493, Dec. 23, 1987, Ser. No. 167,656, Mar. 14, 1988, Ser. No. 168,289, Mar. 15, 1988, Ser. No. 176,518, Apr. 1, 1988, Ser. No. 212,404, Jun. 27, 1988, Ser. No. 241,997, Sep. 6, 1988, Pat. No. 5,530,089, Ser. No. 460,396, Jan. 3, 1990, Pat. No. 5,446,120, Ser. No. 619,677, Nov. 29, 1990, Ser. No. 639,051, Jan. 9, 1991, Ser. No. 43,824, Apr. 6, 1993, Pat. No. 5,367,083, Ser. No. 79,999, Jun. 21, 1993, Pat. No. 5,403,666, Ser. No. 159,823, Nov. 30, 1993, Pat. No. 5,455,115, Ser. No. 161,164, Dec. 3, 1993, abandoned, Ser. No. 232,682, Apr. 25, 1994, Pat. No. 5,516,876, Ser. No. 269,297, Jun. 30, 1994, Pat. No. 5,550,204, and Ser. No. 280,866, Jul. 26, 1994, Pat. No. 5,512,676. This application Jun. 5, 1995, Ser. No. 461,803
Int. Cl.[6] C07D *207/456;209/48;209/72*
U.S. Cl. 548—431 **13 Claims**

1. A multiple chemically functional, crosslinking end cap monomer suitable for making processable oligomers that cure to form advanced composites with thermomechanical and thermo-oxidative stability, comprising:



-continued

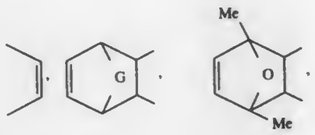


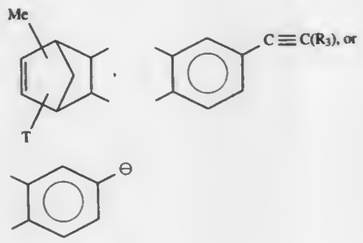
wherein Z = —NC-Ø-(+N E)i;

i=1 or 2;

—Ø=phenylene;

E=an unsaturated organic radical selected from the group consisting of:



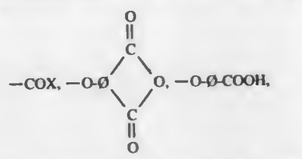


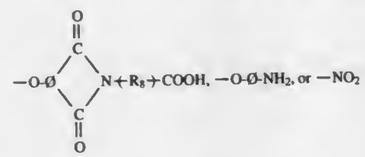
Me=methyl;

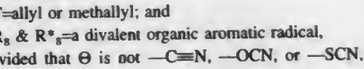
G=—CH_2—, —SO_2—, —CO—, —S—, —O—, —$C(HR_3)$—, or —$C(R_3)_2$—;

R_3 independently any of hydrogen, lower alkyl, lower alkoxy, aryl, or aryloxy;

β=an organic radical selected from the group consisting of:







Θ=—C≡N, —O—C≡N, —S—C≡N, or —CR_3=$C(R_3)_2$;

X=halogen;

T=allyl or methallyl; and

R_8 & R^*_8=a divalent organic aromatic radical,

provided that Θ is not —C≡N, —OCN, or —SCN, when β is —O—R^*_8—OCN.

5,610,318

IMIDOCARBOXYLIC ACID ACTIVATORS AND SULFIMIDOCARBOXYLIC ACID ACTIVATORS PROCESSES FOR THEIR PREPARATION AND THEIR USE

Frank Jaekel; Gerd Reinhardt, both of Kelkheim, and Wolf-Dieter Müller, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

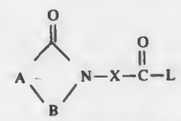
Division of Ser. No. 876,517, Apr. 30, 1992, Pat. No. 5,438,147. This application May 31, 1995, Ser. No. 455,351

Claims priority, application Germany, May 4, 1991, 41 14 583.6

Int. Cl.[6] C07D *207/02*

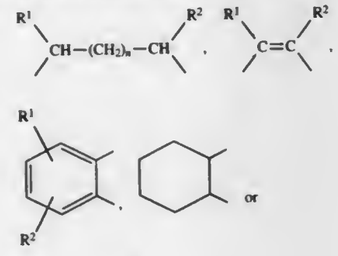
U.S. Cl. 548—479 **19 Claims**

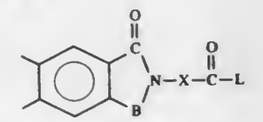
1. A process for the preparation of an imidocarboyxlic acid or sulfimidocarboxylic acid of the formula I



(I)

in which A is a group of the formula





n is the number 0, 1 or 2,

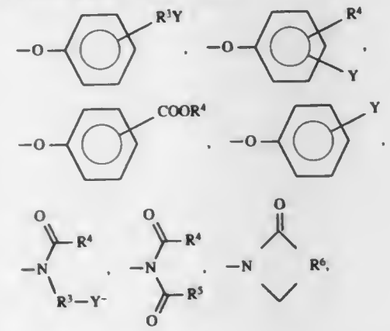
R^1 is hydrogen, chlorine, bromine, C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, aryl, or alkylaryl,

R^2 is hydrogen, chlorine, bromine or a group of the formula —SO_3M, —CO_2M or —OSO_3M,

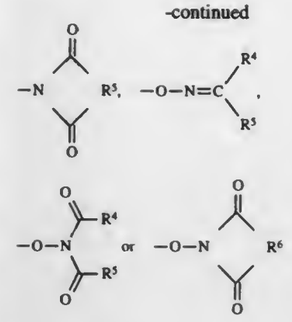
X is C_1–C_{19}-alkylene or arylene

B is a group of the formula C=O or SO_2,

L is a leaving group of the formula



-continued



or a sugar moiety,

R^3 is C_1–C_{19}-alkylene,

R^4 and R^5 are identical or different and are C_1–C_{20}-akyl,

R^6 is C_1–C_{19}-alkylene or C_2–C_{20}-alkenylene,

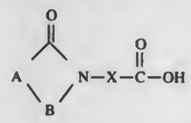
Y is hydrogen, chlorine, bromine or a group of the formula —SO_3M, —CO_2M, —OSO_3M, —$CONH_2$, —$N(R^7)_3Z$ or —$P(R^7)_4Z$,

R^7 is C_1–C_{30}-alkyl,

Z is fluoride, chloride, bromide or iodide and

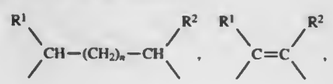
M is hydrogen, an alkali metal or ammonium ion or the equivalent of an alkaline earth metal ion,

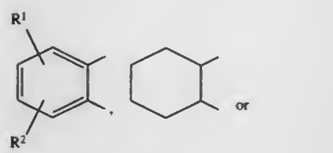
which comprises reacting an imidocarboxylic acid or sulfimidocarboxylic acid of the formula

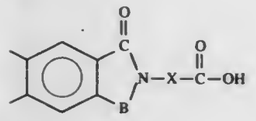


in which

A is a group of the formula







n is the number 0, 1 or 2,

R^1 is hydrogen, chlorine, bromine, C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, phenyl or C_1–C_4 -alkylphenyl,

R^2 is hydrogen, chlorine, bromine or a group of the formula —SO_3M, —CO_2M or —SO_3M,

X is C_1–C_{19}-alkylene or phenylene and

B is a group of the formula C=O or SO_2,

simultaneously with a mixture of a short-chain carboxylic acid arthydride, and a hydroxybenzene compound substituted by a carboxylic acid group or sulfonic acid group, or a salt thereof, in an organic solvent in a molar ratio of 1–5:1–5:1.

5,610,319

COMPOUND USEFUL AS ANTIPROLIFERATIVE AGENTS AND GARFT INHIBITORS

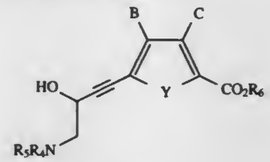
Michael D. Varney, Carlsbad; William H. Romines, San Diego, and Cynthia L. Palmer, La Mesa, all of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Division of Ser. No. 282,293, Jul. 28, 1994, which is a continuation-in-part of Ser. No. 10,861, Jan. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,764

Int. Cl.[6] C07D *333/38;307/54;207/337*

U.S. Cl. 549—71 **12 Claims**

1. A compound of the formula XVI:



XVI

wherein:

Y is oxygen, sulfur or NH;

B is hydrogen or a halogen;

C is hydrogen, a halogen or a substituted or unsubstituted C_1–C_6 alkyl group;

R_6 is a hydrogen or a moiety that forms with the attached CO_2 a readily hydrolyzable ester group; and

R_4 and R_5 are each independently hydrogen or a readily removable nitrogen-protecting group.

5,610,320

SULFONAMIDE PHENYL SUBSTITUTED COMPOUNDS

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Hirovuki Sugumi, Ibaraki; Jun Niijima, Ibaraki; Yoshihiko Kotake, Ibaraki; Toshimi Okada, Ibaraki; Nozomu Koyanagi, Ibaraki; Tatsuo Watanabe, Osaka; Makoto Asada, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Atsumi Iijima, Ibaraki; Takeshi Nagasu, Ibaraki; Kappei Tsukahara, Ibaraki, and Kyosuke Kitoh, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

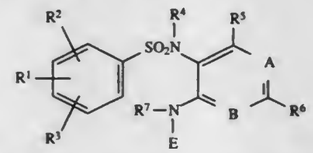
Division of Ser. No. 231,272, Apr. 22, 1994, Pat. No. 5,434,172, which is a division of Ser. No. 85,962, Jun. 30, 1993, Pat. No. 5,332,751, which is a division of Ser. No. 923,345, Jul. 31, 1992, Pat. No. 5,292,758, which is a division of Ser. No. 742,618, Aug. 8, 1991, Pat. No. 5,250,549. This application May 26, 1995, Ser. No. 450,138

Claims priority, application Japan, Aug. 20, 1990, 2-218710; Mar. 5, 1991, 3-038509; May 27, 1991, 3-121041

Int. Cl.[6] C07D *307/02;333/02;* **C07C** *311/15*

U.S. Cl. 549—72 **20 Claims**

1. A sulfonamide compound of the formula (I) or pharmacologically acceptable salts thereof:



(I)

wherein:

R^1 represents a lower alkoxy group, hydroxyl group, phenoxy group, cyano group, acetyl group; R^2 and R^3 may be the same or different from each other and each represent a lower alkoxy group; R^4 and R^7 may be the same or different from each other and each represents a hydrogen atom or a lower alkyl group; R^5 and R^6 may be the same or different from each other and each represents a hydrogen atom, halogen atom, lower alkoxy group, amino group or amino group substituted with a lower alkyl or a phenyl group; A is =CH—; B is

=CH—; and E is selected from the group consisting of

in which Q represents an oxygen atom or a sulfur atom; and R^{11} is selected from the group consisting of a hydrogen atom, a lower alkyl group, an amino group, an amino group substituted with a lower alkyl group, a lower alkoxy group, a 2-thienyl group, a 2-furyl group, a phenyl group and a phenyl group having from 1 to 3 substituents, said substituents being the same or different from one another and selected from the group consisting of a halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, carboxyl group, esterified carboxyl group, amidated carboxyl group, lower alkylthio group and phenoxy group; and (b) a phenyl group or a phenyl group having from 1 to 3 substituents, said substituents being the same or different from one another and selected from the group consisting of a halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, protected hydroxyl group, carboxyl group, esterified carboxyl group, amidated carboxyl group, lower alkylthio group and phenoxy group.

5,610,321

SENSOR FAILURE DETECTION SYSTEM FOR AIR-TO-FUEL RATIO CONTROL SYSTEM

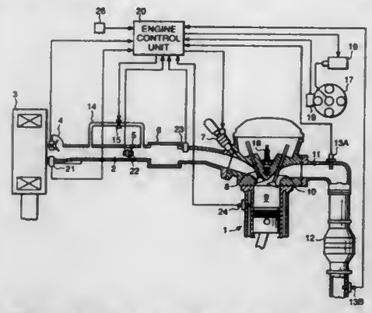
Kazuhiro Shinmoto, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Mar. 24, 1995, Ser. No. 409,987

Claims priority, application Japan, Mar. 25, 1994, 6-055436

Int. Cl.[6] F02D *41/14*

U.S. Cl. 73—23.32 **19 Claims**



1. A failure detection system for an air-to-fuel ratio control system, having an upstream air-to-fuel ratio sensor disposed upstream from a catalytic converter for purifying exhaust gas from an automobile internal combustion engine and a downstream air-to-fuel ratio sensor disposed downstream from the catalytic converter, which executes an air-to-fuel ratio feedback control based on an output from said upstream air-to-fuel ratio sensor so as to bring an air-to-fuel ratio of a fuel mixture as close to a desired air-to-fuel ratio as possible, said failure detection system comprising:

correction value establishing means for establishing a feedback correction value for said air-to-fuel ratio feedback control;

control value correction means for making a correction of said feedback correction value according to an output from said downstream air-to-fuel ratio sensor;

first failure detection means for detecting a corrected feedback correction value above a predetermined value so as to determine that something is wrong with said upstream air-to-fuel ratio sensor;

second failure detection means for detecting a change in an output from said downstream air-to-fuel ratio sensor during execution of said correction of said feedback correction value so as to determine that something is wrong with said downstream air-to-fuel ratio sensor when detecting that said change is less than a predetermined change in a predetermined time interval.

5,610,322

DEVICE FOR PACKING CHROMATOGRAPHY COLUMNS

Bernhard Unger, Niedernhausen, and Rainer Dickhardt, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

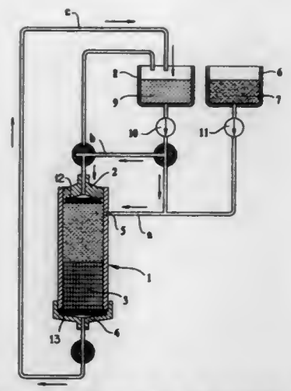
Filed Sep. 13, 1995, Ser. No. 527,459

Claims priority, application Germany, Sep. 15, 1994, 44 32 887.7

Int. Cl.[6] B01D *15/08*; G01N *30/56*; B65D *1/08*

U.S. Cl. 73—23.39 **9 Claims**

1. A method for producing chromatography packing, wherein a liquid packing medium is fed continuously into a chromatography column to be filled with a chromatography material, the chromatography column being closed off at the top by a movable plunger having a passageway formed therethrough and, at the bottom, by a connection piece, and one or more lateral openings being present in the upper part of the chromatography column, supply of said packing medium taking place through the passageway of the plunger and the one or more lateral openings, the chromatography material being fed at a controlled rate, with said packing medium, into the chromatography column via the one or more lateral openings and the packing medium being discharged through an outlet in said connection piece.



5,610,323

METHOD OF TESTING PIPES FOR LEAKAGE

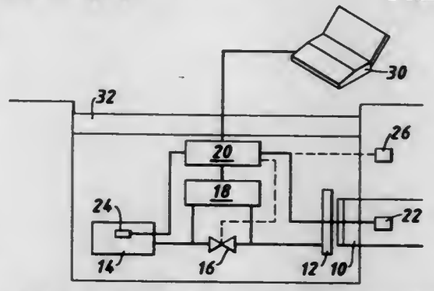
Roger P. Ashworth, Loughborough, England, assignor to British Gas plc, London, England

Filed Mar. 12, 1996, Ser. No. 613,585

Claims priority, application United Kingdom, Mar. 22, 1995, 9505815

Int. Cl.[6] G01M *3/28*

U.S. Cl. 73—40.5 R **2 Claims**



1. A method of testing an isolated plastic pipe for leakage wherein the leakage from the pipe is qualified against a pass/fail leakage criterion by eliminating the effects of temperature change and changes in the physical pipe volume due to viscoelastic behavior of the plastic pipe, the method comprising:

(i) passing air under pressure into the pipe and into a reference chamber connected to the pipe by a valve while recording at intervals of every few seconds the temperature in the reference chamber, the temperature in the pipe or in the ground adjacent the pipe, and the absolute pressure in the reference chamber;

(ii) when a test pressure has been reached closing said valve and repeatedly measuring the differential pressure between the pipe and the reference chamber;

(iii) opening the valve to equalize the pressures in the pipe and the reference chamber;

(iv) repeating steps (ii) and (iii) several times at intervals of less than half an hour; and

(v) using a computer to calculate:

(a) the predicted curve relating the pressure drop in the pipe (owing to creep and leakage owing to an allowable leak) to time;

for each set of differential pressures measured at step (ii):

(b) the rate of change with respect to time of the differential pressure between the pipe and the reference chamber (the measured differential pressure drift rate);
(c) the rate of change with respect to time of the temperature of the pipe or the adjacent ground (the test temperature drift rate);
(d) the rate of change with respect to time of the temperature of the reference chamber (the reference temperature drift rate);
(e) the rates of change with respect to time of the pressure drift rates corresponding to (c) and (d) (the predicted test pressure drift rate and the predicted reference pressure drift rate, respectively);
(f) the difference between the pressure drift rates calculated in step (e) to yield the predicted differential pressure drift rate;
(g) the difference between (b) and (f) to yield the pressure drift rate due to creep and leak only in the pipe, independent of any temperature change in the pipe; and
(vi) comparing the results yielded by step (g) and determining whether or not the results trend is towards crossing a curve representing a creep prediction model at the allowable leak.

5,610,324

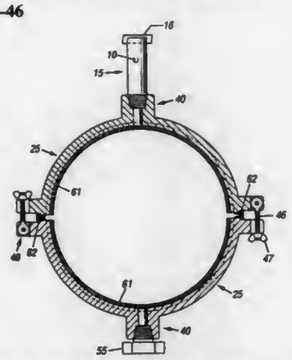
FUGITIVE EMISSIONS INDICATING DEVICE

Rick A. Lawson, Houston, Tex., assignor to Fugitive Emissions Detection Devices, Inc., Spring, Tex.

Continuation-in-part of Ser. No. 148,997, Nov. 8, 1993, abandoned. This application Nov. 17, 1994, Ser. No. 341,419

Int. Cl.[6] G01N *27/04;* **G01M** *3/04;3/28*

U.S. Cl. 73—46 **14 Claims**



1. A system for the detection of fugitive gas and liquid emissions comprising:
a set of enclosures for emissions sites including pipe flange connections for receiving and collecting said fugitive emissions for detection to detectors of the system, wherein the pipe flange connection enclosures encompass the flange connection, said flange connection comprised of two joined pipe flanges with a gasket in the area between the two flanges, said enclosures having an internal channel such that when the enclosure encompasses the pipe flange connection, the channel forms an enclosure around the gasket area between the joined pipe flanges, said pipe flange enclosures having at least one vent or port to provide nonpressure containing enclosures around said gasket areas by relieving any pressure build-up therein; and
a set of detectors for said enclosures, wherein the detectors for the pipe flange connection enclosures are attached such that they are in communication with the enclosed gasket areas.

5,610,325

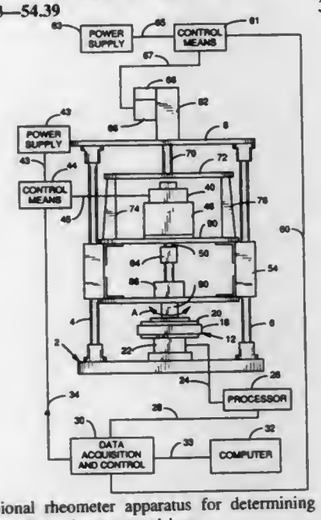
TORSIONAL RHEOMETER FOR GRANULAR MATERIALS SLURRIES AND GAS-SOLID MIXTURES AND RELATED METHODS

Chandrika Rajagopal; Kumbakonam R. Rajagopal, and Rattaya C. Yalamanchili, all of Allison Park, Pa., assignors to Viscoustech, Inc., Pittsburgh, Pa.

Filed Jun. 5, 1995, Ser. No. 464,325

Int. Cl.[6] G01N *11/14*

U.S. Cl. 73—54.39 **34 Claims**



1. Torsional rheometer apparatus for determining rheological properties of a specimen comprising
a stationary plate,
a rotatable plate substantially coaxially mounted with respect to said stationary plate,
said stationary plate and said rotatable plate being structured to receive said specimen therebetween,
motor means for effecting rotation of said rotatable plate,
at least one of said plates having a roughened specimen engaging surface, whereby slippage between said roughened plate surface and said specimen will be resisted, and
piezoelectric transducer means operatively associated with said stationary plate for receiving forces resulting from said rotation of said rotatable plate and emitting responsive signals which provide information regarding axial force and torque from which rheological properties of said specimen may be determined.

5,610,326

NON-DESTRUCTIVE PROCESS FOR CHARACTERIZING THE SURFACE CONDITION OF A PART

Daniel L. L. Leost, Soisy sur Seine, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

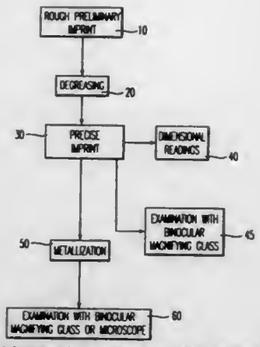
Filed Jun. 28, 1995, Ser. No. 495,395

Claims priority, application France, Jun. 30, 1994, 94 08058

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 **5 Claims**

1. A non-destructive process for characterizing the surface condition of a part, including the steps of:
applying a first elastomeric material in paste form to the surface to be checked and allowing said first elastomeric material to harden to obtain a supporting mold bearing a preliminary imprint of said surface;
casting a second elastomeric material in paste form into said supporting mold to form an impression element, said second elastomeric material having a mean consistency permitting the reproduction of detail with an accuracy of the order of a few tenths of a micron;



applying said impression element to said surface to be checked so as to obtain a final imprint of said surface in said impression element;
holding said impression element in place on said surface for sufficient time for said element to harden; and,
removing said hardened element with said final imprint from said surface.

5,610,327

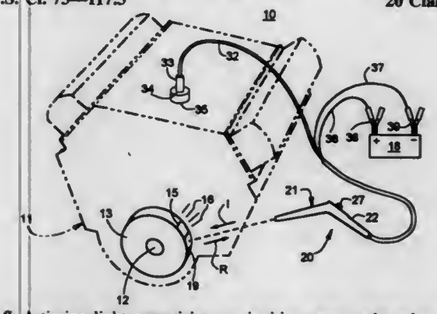
KNOCK SENSOR-TRIGGERED TIMING LIGHT WITH VISIBLE LASER RETRO-REFLECTING CONTROL

Thomas P. Becker; Mark A. Hoferitza, and Matthew M. Crass, all of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Jun. 7, 1995, Ser. No. 486,328

Int. Cl.[6] F02P *17/00*

U.S. Cl. 73—117.3 **20 Claims**



8. A timing light comprising: an ignition sensor adapted to be coupled to an associated engine for sensing ignition events, a first light source, a flash circuit coupled to said ignition sensor and to said first light source for producing a flash of illumination in response to an ignition event, a trigger circuit coupled to said flash circuit for enabling said flash circuit only in the presence of an enable signal, a second light source emitting a beam of light, and a photosensing circuit coupled to said trigger circuit and responsive to a reflected beam of light for generating the enable signal.

5,610,328

MISFIRE DETECTOR FOR 50 MISFIRE RATE

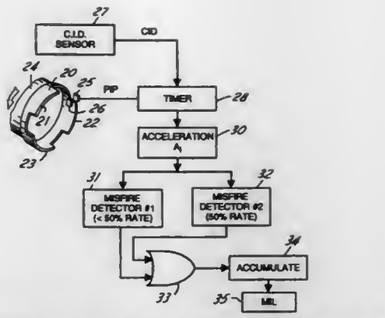
Amit T. Magan, Belleville; Kathleen A. Grant, Farmington Hills, and Dennis C. Krzyske, New Boston, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1995, Ser. No. 511,209

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—117.3 **7 Claims**

1. A misfire detection system for a multicylinder internal combustion engine having a crankshaft, comprising:



a first misfire detector responsive to occurrence of misfires at rates less than 50%, said first misfire detector determining a first deviant acceleration in response to a difference between a raw crankshaft acceleration and a first baseline acceleration, said first baseline acceleration being comprised of a median average of a first predetermined number of samples of said raw crankshaft acceleration, and said first misfire detector detecting a misfire in response to said first deviant acceleration and a first predetermined threshold; and
a second misfire detector responsive to occurrence of misfires at a rate of 50%, said second misfire detector determining a second deviant acceleration in response to a difference between a raw crankshaft acceleration and a second baseline acceleration, said second baseline acceleration being comprised of a median average of a second predetermined number of samples of said raw crankshaft acceleration, and said second misfire detector detecting a misfire in response to said second deviant acceleration and a second predetermined threshold, wherein said second predetermined threshold is not equal to said first predetermined threshold.

5,610,329

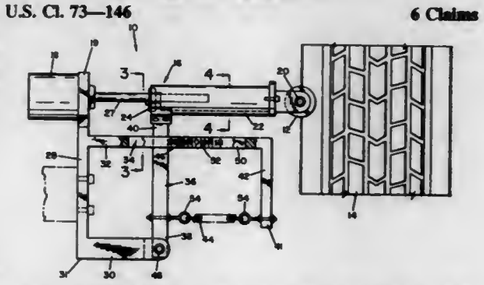
LOW-COST RUNOUT SENSOR WITH HIGH FREQUENCY RESPONSE AND NEGLIGIBLE STICTION IN THE DIRECTION OF TRAVEL

Albert J. Yovichin, North Canton; William F. Dunn, Stow; William R. Dutt, Akron; Richard C. Houck, Clinton; David D. Hyde, Akron; Raouf A. Ridha, Sharon Center, and Harry R. Swanson, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 10, 1995, Ser. No. 402,433

Int. Cl.[6] G01M *17/02*

U.S. Cl. 73—146 **6 Claims**



1. A measuring device comprising a base support arm, a noncontact sensor mounted substantially at a first end of said base support arm, a short first support arm mounted substantially perpendicular to said base support arm substantially at a second end thereof, a second support arm mounted substantially perpendicular to said base support arm and substantially parallel to said first

support arm wherein said second support arm has a slot for receiving therethrough a pivoting arm which is connected to said first support arm at a pivoting end, said pivoting arm having a swinging end on which means are mounted for activating said non-contact sensor, and wherein said second support arm has a spring support arm mounted on an end distal from said base support arm substantially perpendicular to said second support arm and a spring connecting said spring support arm and said pivoting arm said spring tending to hold said pivoting arm at one end of said slot, and wherein said pivoting arm moves in response to changes in dimensions in an object to be measured and said movements are gauged by said sensing device.

5,610,330

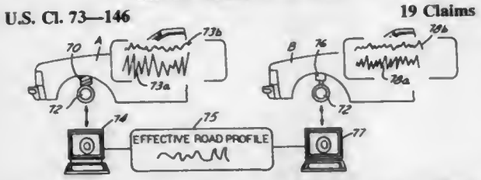
EFFECTIVE ROAD PROFILE CONTROL METHOD FOR A SPINDLE-COUPLED ROAD SIMULATOR

David M. Fricke, Howell; Mark D. Hansen, and Rakan C. Chabaan, both of Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1996, Ser. No. 586,449

Int. Cl.[6] G01M *17/007;7/06*

U.S. Cl. 73—146 **19 Claims**



1. A method for controlling an automotive vehicle spindle-coupled road simulator comprising the steps of:

(a) driving a first vehicle over a road surface;

(b) collecting spindle dynamics data from at least one spindle of said first vehicle;

(c) developing a first tire model for said first vehicle;

(d) estimating a road profile for said road surface based upon said spindle dynamics data and said first tire model;

(e) developing a second tire model for a second vehicle;

(f) coupling said second vehicle to said spindle-coupled simulator; and

(g) generating a set of control signals for driving said spindle-coupled simulator with said second vehicle coupled thereto so that a road response generated by said spindle-coupled simulator is consistent with said road profile.

5,610,331

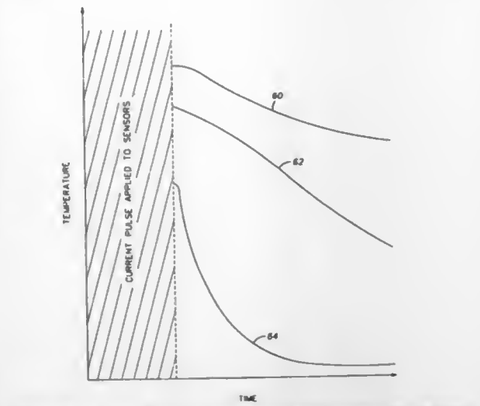
THERMAL IMAGER FOR FLUIDS IN A WELLBORE

Daniel T. Georgi, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jun. 1, 1995, Ser. No. 456,939

Int. Cl.[6] E21B *47/00;47/10;* **G01F** *1/74;* **G01K** *13/00*

U.S. Cl. 73—152.18 **14 Claims**



7. A method of determining a flow regime of fluids in a conduit comprising the steps of:

measuring temperature of said fluids in said conduit at known spaced apart locations within the cross-sectional area of said conduit using a tool having a plurality of temperatures sensors and means for determining a position of each one of said sensors within the cross-section of said conduit;

generating a map of said temperature within the cross-section of said conduit;

applying current pulses to said temperature sensors to momentarily raise the temperature of said sensors;

determining the thermal transient response at each sensor, thereby determining heat transfer properties of fluid in which each one of said temperature sensors is immersed;

generating a map of said heat transfer properties within the cross section of said conduit; and

comparing said thermal transient map and said temperature map with similar maps of known flow regimes of fluids thereby determining said flow regime in said conduit, wherein said maps of known flow regimes are generated from laboratory experiments in a flow loop.

5,610,332

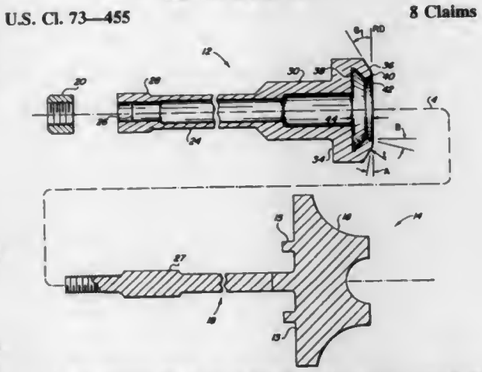
SELF PILOTING BALANCE ARBOR

Gerald E. Tornquist, Tempe, and Paul E. Hruska, Gilbert, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Aug. 14, 1995, Ser. No. 514,593

Int. Cl.[6] G01M *1/02*

U.S. Cl. 73—455 **8 Claims**



1. A self piloting arbor for mounting a gas turbine component having a shaft extending therefrom, and defining an axial direction, comprising:

a cylindrical sleeve for receiving said shaft, said sleeve having an annular flange at one end; and

a conical shaped compliant member extending from said flange to an end portion having an axially facing first flat surface for abutting said component.

5,610,333

SEMICONDUCTOR TYPE GAS RATE SENSOR

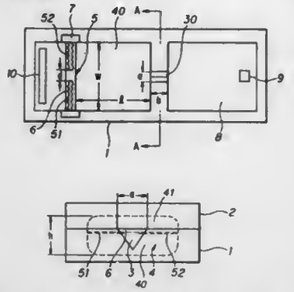
Takashi Hosoi; Atsushi Inaba, and Mizuho Doi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 406,328

Claims priority, application Japan, Mar. 18, 1994, 6-087112

Int. Cl.[6] G01P *9/00*

U.S. Cl. 73—504.06 **14 Claims**



1. A gas rate sensor for detecting an angular velocity acting on a sensor body made of a lower semiconductor substrate and an upper semiconductor substrate, said substrates being coupled with each other and having a nozzle port and a gas path etched therein and having a pair of heat wires, disposed in said gas path said wires being heat-sensitive resistance elements provided in the gas path, the angular velocity being detected by electrically sensing a deflection of a flow of gas injected into the gas path through the nozzle port as a change of resistance in the heat wires wherein the nozzle port is made in the lower semiconductor substrate, said nozzle port having a section of an isosceles triangle whose base side is parallel to a connecting face of lower and upper semiconductor substrates, the nozzle port having a width of 300 to 1000 microns.

5,610,334

MICROGYROMETER

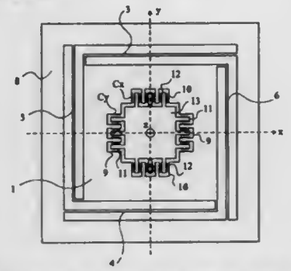
Henri Fima, Malissard, and Sylvie Pedraza Ramos, Valence, both of France, assignors to Sextant Avionique, Meudon-la-Foret Cedex, France

Filed Oct. 16, 1995, Ser. No. 543,716

Claims priority, application France, Oct. 28, 1994, 94 13146

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.12 **6 Claims**



1. A microgyrometer for detecting a rotation about a first direction (z) comprising a plate (1) that is orthogonal to the first direction, suspended to a fixed frame (8) and excited at the resonance frequency of said plate along a second direction (x) perpendicular to the first direction, a rotation about the first direction causing the plate to vibrate about a third direction (y) orthogonal to the first two directions, wherein;

said plate comprises teeth (9, 10) extending respectively along the second and third directions and engaging, without contact, in grooves (11, 12) integral with said frame, and each one of said teeth carries lateral metallizations which constitute capacitors (Cx, Cy) with facing metallizations of said grooves.

5,610,335

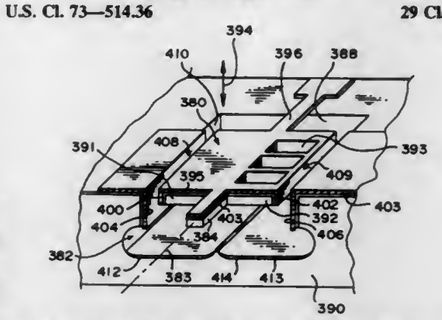
MICROELECTROMECHANICAL LATERAL ACCELEROMETER

Kevin A. Shaw; Scott G. Adams, and Noel C. MacDonald, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.

Continuation-in-part of Ser. No. 67,264, May 26, 1993. This application May 19, 1994, Ser. No. 246,265

Int. Cl.[6] G01P *15/08*

U.S. Cl. 73—514.36 **29 Claims**



1. A microelectromechanical accelerometer fabricated by single mask reactive ion etching comprising:

a single crystal silicon substrate;

a single crystal silicon movable beam element fabricated from said single crystal silicon substrate by a deep vertical silicon reactive ion etch to produce a trench having vertical sidewalls surrounding the beam element and forming a cavity in said substrate, followed by an isotropic dry etch to thereafter release the beam element from the substrate;

a resilient spring integral with said substrate and said beam element and fabricated from said substrate by said reactive ion etch and isotropic dry etch simultaneously with the formation of said movable beam element to support said beam element for relative motion with respect to said substrate, said spring urging said beam element to a rest position with the beam element being movable from its rest position in response to a force to be measured;

a mass on said beam element for providing a selected inertia to said beam element; and

a sensor fabricated in part on said beam element and in part on said substrate for measuring relative motion between said beam element and said substrate in response to said force to be measured.

5,610,336

METHOD FOR ESTIMATING FREQUENCIES OF MACHINE FOUNDATIONS

Mark R. Svinkin, 13821 Cedar Rd. #205, Cleveland, Ohio 44118-2376

Filed Jan. 9, 1995, Ser. No. 370,290

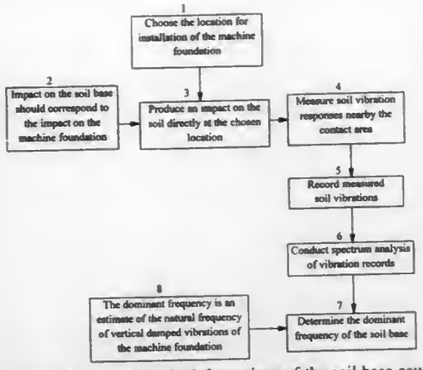
Int. Cl.[6] G01N *3/30*

U.S. Cl. 73—594 **3 Claims**

1. A method for obtaining pre-construction estimates of the natural frequency of damped vibrations for a foundation which will carry machinery with known vertical impact loads, comprising the steps of:

impacting a soil base with a weight, said impacting being conducted at a site for future construction of a foundation to support machinery with known vertical impact loads;

measuring soil vibrations caused by the impacting of the soil base, said measuring conducted near the impaction, but



beyond a zone of plastic deformations of the soil base caused by the impacting step;

recording the vibration responses;

conducting spectrum analyses over the range of vibrations measured and, recorded; and,

determining from the spectrum analyses a dominant natural frequency of the soil base and using the dominant natural frequency as an estimate of the natural frequency of vertical damped vibrations of the foundation.

5,610,337

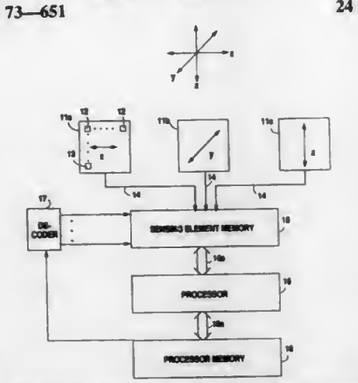
METHOD OF MEASURING THE AMPLITUDE AND FREQUENCY OF AN ACCELERATION

William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 142,548, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 883,616, Apr. 30, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,668

Int. Cl.[6] G01D *21/00*

U.S. Cl. 73—651 **24 Claims**



1. A method of measuring the amplitude and frequency of a rotational acceleration comprising the steps of:

subjecting an array of micro-mechanical sensing elements to a rotational acceleration event, said micro-mechanical sensing elements each comprising a deflectable member and a corresponding contact electrode, said deflectable members of said micro-mechanical sensing elements deflecting to contact said corresponding contact electrodes in response to a rotational acceleration having a predetermined frequency and amplitude;

generating an electrical signal to indicate which of said deflectable members in said array are in contact with said corresponding contact electrodes; and

detecting said electrical signal to determine the frequency and amplitude of said rotational acceleration event.

5,610,338

ROLLING OR TILTING RESPONSIBLE SWITCH

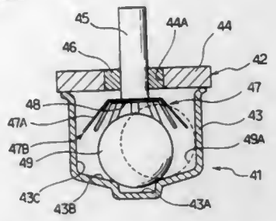
Harunori Kato, Mie-ken; Yasukazu Mizutani, Nagoya; Shigekazu Shibata, Nagoya; Katsuhiro Kimura, Nagoya; Hideki Koseki, Aichi-ken; Mitsuhiro Urano, Toyota, and Masayuki Watanabe, Nagoya, all of Japan, assignors to Ubukata Industries, Nagoya, Japan

Division of Ser. No. 121,522, Sep. 16, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 559,948

Claims priority, application Japan, Sep. 16, 1992, 4-272387; Oct. 29, 1992, 4-316363; Jan. 20, 1993, 5-026308

Int. Cl.[6] G01P *15/135*

U.S. Cl. 73—652 **18 Claims**



1. A rolling or tilting responsive switch comprising:

a) a housing formed from an electrically conductive material and having a bottom and an open end, the housing having in the bottom a central neutral recess and a rolling face around the recess such that the bottom is formed into the shape of a shelf;

b) a header fixed to the housing to close the open end thereof and having a through-aperture in which an electrically conductive terminal pin is fixed in an insulated relation with the header;

c) a contact member formed from an electrically conductive material and fixed to an end of the terminal pin located inside the housing, the contact member having a contact portion disposed concentrically with the terminal pin and a plurality of feather portions each having a predetermined elasticity; and

d) an inertia ball enclosed in the housing to be located at the recess of the housing bottom in a normal attitude thereof in a stationary state by gravity such that the inertia ball is prevented from being brought into contact with the contact member, the rolling face of the bottom of the housing being formed so that the same rises concentrically outwardly from the center of the bottom thereof and so that a gradient thereof is decreased, the inertia ball being prevented from rolling on the rolling face of the housing bottom by the neutral recess thereof until the housing is tilted by a predetermined angle, thereby being disallowed to come into contact with the contact member, the inertia ball being allowed to depart the neutral recess to thereby roll on the rolling face when the housing is tilted above the predetermined angle, so that the inertia ball is brought into contact with the contact member, thereby electrically connecting the contact member to the housing.

5,610,339

METHOD FOR COLLECTING MACHINE VIBRATION DATA

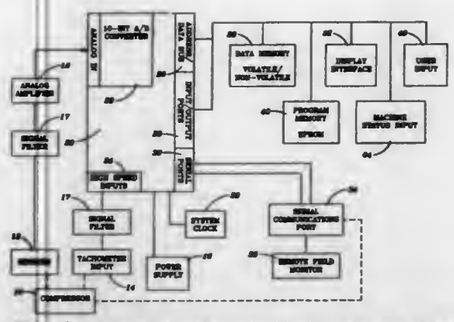
Robert K. Haseley, Mooresville, and Paul A. Kirkpatrick, Charlotte, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 326,410, Oct. 20, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 612,196

Int. Cl.[6] G01H *11/00*

U.S. Cl. 73—660 **10 Claims**

1. A method for predicting and for detecting the condition of a screw compressor having at least one rotative element, the method comprising the following steps:



storing in a memory a predetermined logic routine and at least one predetermined key frequency value of the at least one rotative element of the compressor;

trending, at regular intervals, to determine whether the compressor vibratory condition has changed, said trending comprised of the following steps:

operating the compressor in a predetermined operational state;

sensing the mechanical motion of the at least one rotative element during compressor operation;

converting the mechanical motion of the at least one rotative element into a corresponding electrical signal;

correlating the predetermined operational state of the screw compressor with the corresponding electrical signal;

inputting the corresponding electrical signal to a processor;

processing the corresponding electrical signal into corresponding vibration data of the compressor by utilizing the predetermined logic routine; and

analyzing the corresponding vibration data for trends with the at least one predetermined key frequency value of the at least one rotative element of the compressor and comparing the vibration data with any previously collected vibration data to determine the present condition and predict the future condition of the compressor;

decreasing the length of the regular interval between trending steps if the compressor experiences a negative deviation in the vibratory condition; and

controlling the operation of the compressor in response to the determined present condition and predict the future condition of the compressor by sending a command signal from the processor to the compressor.

5,610,340

INTEGRATED PRESSURE SENSOR WITH REMOTE POWER SOURCE AND REMOTE READ-OUT

William N. Carr, W. Milford, and Subramanyam Chamarti, Passaic, both of N.J., assignors to New Jersey Institute of Technology, Newark, N.J.

Filed Jun. 23, 1995, Ser. No. 494,097

Int. Cl.[6] G01L *9/12*

U.S. Cl. 73—718 **10 Claims**

1. An integrated structure pressure sensor system that is powered by induction and read out by induction, said structure including a circuit comprising:

capacitor means in said circuit and including at least one electrode that is susceptible to induced stress and movement by an external source of pressure;

a transistor in said circuit, including source, drain and gate contacts;

a first inductor in said circuit, connected between said source and drain contacts and arranged to respond to an inductively induced voltage to enable current flow between said source and drain contacts;

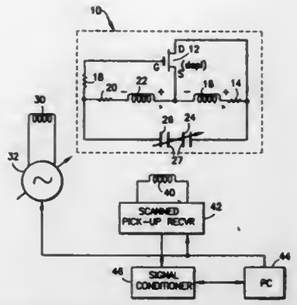
a second inductor in said circuit, having a first terminal coupled to said source contact and a second terminal coupled to both said capacitor means and said gate contact, said second inductor arranged to respond to an inductively induced voltage to bias said transistor for conduction;

said capacitor means, first inductor, transistor and second inductor comprising a resonant oscillation circuit;

said system further comprising:

induction means external to said structure for inducing voltages in said first inductor and said second inductor, said voltages causing said circuit to oscillate at a resonant frequency that is dependent on a pressure level exerted on said capacitor means by said external source of pressure; and

sense means, external to said structure and inductively coupled to said circuit, for sensing said resonant frequency as an indication of said pressure level.



5,610,341

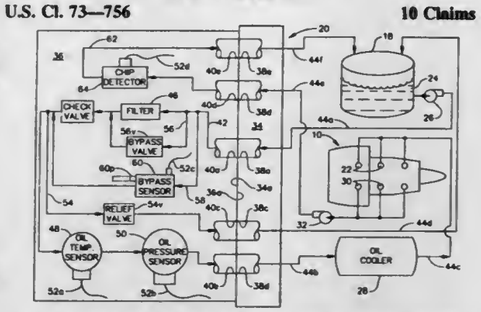
MODULAR OIL MONITOR

Carmine G. Tortora, N. Andover, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 8, 1996, Ser. No. 629,153

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—756 **10 Claims**



1. A modular oil monitor for a gas turbine engine having a bearing supplied with oil from an oil tank and which discharges said supply oil into an oil sump as scavenge oil, comprising:

a mounting pad having a flat seat with a plurality of laterally spaced apart oil inner ports disposed therein and joined in flow communication with said tank and sump;

a service module having a flat base removably fixedly joined to said mounting seat, with said base having a plurality of laterally spaced apart oil outer ports disposed therein and joined in flow communication with respective ones of said inner ports; and wherein

said module further includes a filter circuit disposed in flow communication between first and second ones of said outer ports, said filter circuit including an oil filter removably joined to said module for filtering said supply oil channeled therethrough, and a first sensor removably joined to said module for measuring oil temperature or pressure.

5,610,342
METHOD OF FIXING THE MEASURING TUBES OF A MASS FLOW SENSOR

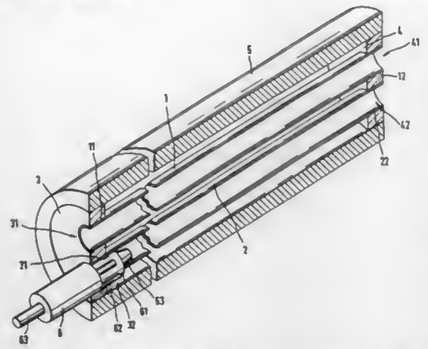
Alfred Wenger, Neftenbach, Switzerland; Gerhard Eckert, Rheinfelden, and Rainer Lorenz, Lörrach, both of Germany, assignors to Endress + Hauser Flowtec AG, Reinach, Switzerland

Filed May 3, 1995, Ser. No. 434,070

Claims priority, application European Pat. Off., Sep. 19, 1994, 94114725

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.354 **6 Claims**



1. A method of fixing ends of two measuring tubes of a Coriolis-type mass flow sensor in bores formed in a first transition piece and in bores formed in a second transition piece and dynamically balancing the two measuring tubes, where the bores define walls having lengths, the method comprising the steps of:

inserting first ends of the two measuring tubes into the bores in the first transition piece;

press-bonding the first ends of the two measuring tubes to the walls defined by the bores in the first transition piece;

inserting second ends of the two measuring tubes into the bores in the second transition piece;

press-bonding the second end of one of the two measuring tubes to the wall defined by one of the bores in the second transition piece; and

dynamically balancing the two measuring tubes by generating a balancing signal representing the dynamic balance of the two measuring tubes and press-bonding the second end of the other of the two measuring tubes to the wall defined by the other bore in the second transition piece until the balancing signal indicates that optimum dynamic balance is achieved.

5,610,343
BALANCE WITH ONE OR SEVERAL WIRE STRAIN GAUGE WEIGHING CELLS

Matthias Eger, Wollbrandshausen; Heinz-Gerhard Köhn, Dransfeld; Werner Schulze, and Christoph Berg, both of Göttingen, all of Germany, assignors to Sartorius AG, Göttingen, Germany

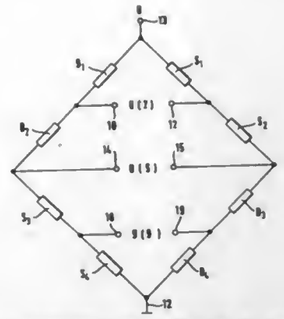
Filed Mar. 27, 1996, Ser. No. 622,421

Claims priority, application Germany, Mar. 28, 1995, 195 11 353.5; Mar. 28, 1995, 195 11 354.3

Int. Cl.[6] G01L *1/00*

U.S. Cl. 73—862.628 **10 Claims**

1. A balance with one or several weighing cells (**1–4**, **31**) with a total of at least eight wire strain gauges (D_1–D_4, S_1–S_4), four of which (D_1–D_4) are expanded under load and four (S_1–S_4) compressed under load, in which the eight wire strain gauges are connected together circularly in series so as to form a single Wheatstone bridge which is supplied with voltage along a diagonal (**12**, **13**) (vertical diagonal) and the output signal is taken off along the other diagonal (**14**, **15**) (horizontal diagonal), characterized in



that a signal is additionally tapped off along the upper horizontal chord (**16**, **17**) and along the lower horizontal chord (**18**, **19**).

5,610,344
ENVIRONMENTAL TEST APPARATUS

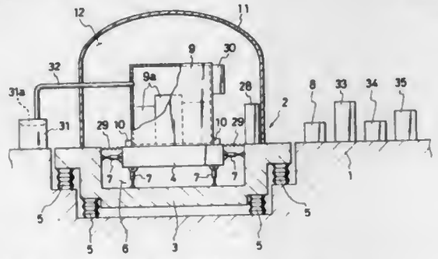
Ichiro Ueda, and Masanori Ishizuka, both of Yokohama, Japan, assignors to Nippon Yusen Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,680, Aug. 31, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,529

Claims priority, application Japan, Sep. 9, 1992, 4-266721

Int. Cl.[6] G01N *17/00*

U.S. Cl. 73—865.6 **11 Claims**



1. An environmental test apparatus

a substrate on which a test specimen is placed;

means for securing the test specimen on the substrate;

a cover disposed on the substrate and having a tightly closed space at the inside thereof for housing the test specimen, wherein the cover includes a series of frames spaced apart from each other, a flexible membrane material covering and connecting each of the frames, and a skirt disposed to the circumferential edge at the lower end of the membrane material, said cover defining a closed specimen-housing space above the substrate, the cover being movable and extensible with respect to said substrate;

the lower end of the skirt being inserted into a sealing groove disposed adjacent to the substrate and filled with a liquid,

a temperature/moisture adjusting means for adjusting the temperature and moisture in said tightly closed space;

a memory means for storing real-life control data sets including a plurality of sets of actual environmental conditions which are recorded simultaneous with an occurrence of said actual environmental conditions;

a control means for controlling said temperature/moisture adjusting means by selecting one of the real life control data sets stored in said memory means; and

data measuring means for measuring and recording various kinds of data from an environmental test;

wherein the substrate comprises a floating foundation supported on a main foundation by way of a damping mechanism and a vibrational stand attached to said floating foundation by way of a vibration mechanism and applied with vibrations from

the vibration mechanism, and the test specimen is placed and secured on said vibrational stand;

said vibration mechanism being controlled by the control means.

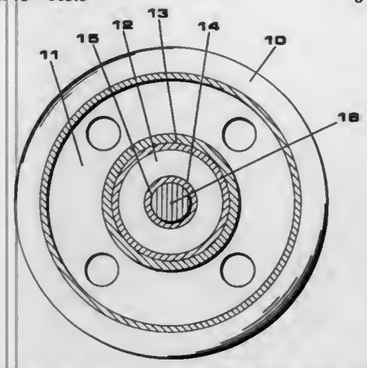
5,610,345
DEVICE FOR DETERMINING THE RADIALL DISPLACEMENT OF A MOTOR VEHICLE RELATIVE TO THE OVERALL DIRECTION-OF-TRACK OF SAME

Marcus L. O'Toole, 7614 E. Fourth St., Scottsdale, Ariz. 85251

Filed Jan. 5, 1996, Ser. No. 583,427

Int. Cl.[6] G01N *19/02*

U.S. Cl. 73—865.8 **8 Claims**



1. A device for determining the radial displacement of a motor vehicle upon a road surface relative to the overall direction-of-track of same, said device comprising:

a. a tire/wheel assembly which is rotatably affixed to one end of a swing arm, the rotational axis of said tire/wheel assembly running substantially parallel to said road surface for the purpose of allowing said tire/wheel assembly to roll freely upon said road surface;

b. a spring-loaded pivot operatively integrated to substantially the opposite end of said swing arm from said tire/wheel assembly, said spring-loaded pivot defining an axis running substantially parallel to said road surface for the purpose of providing a pivot upon which said swing arm is urged to arcuately rotate in order to facilitate contact between said tire/wheel assembly and said road surface;

c. a rotatably free kingpin operatively connected to said swing arm through said spring-loaded pivot, said rotatably free kingpin provided for the purpose of providing a rotational axis for said swing arm, said axis extending essentially in a normal angular relationship with respect to said road surface;

d. a potentiometer operatively synchronized to the rotation of said rotatably free kingpin, said potentiometer provided to convert the rotational displacements of said rotatably free kingpin into an electrical resistive value; and

e. a suitable housing for rotatably securing said rotatably free kingpin therewithin and securing and mechanically referencing said potentiometer to the underportion of said motor vehicle.

5,610,346
APPARATUS FOR STORING AND DROPPING EXPENDABLE BOF SENSORS

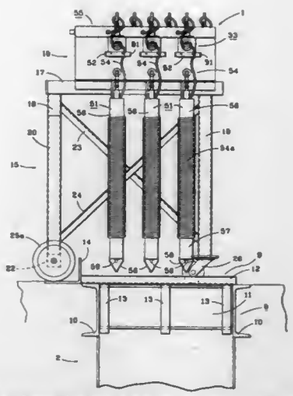
Philip D. Stelts, Center Valley, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 5, 1996, Ser. No. 583,574

Int. Cl.[6] G01K *13/00*

U.S. Cl. 73—866.5 **24 Claims**

1. A sensor dropper for storing and dropping sensors into a BOF (Basic Oxygen Furnace) vessel, comprising;



a) a support frame having a means to move said sensor dropper toward or away from a sensor drop path into said BOF vessel; and

b) a dropper assembly having a housing supported by said moveable support frame including;

i) at least one storage and release mechanism having a sensor support shaft extending from said housing to hold a sensor in a stored position above said sensor drop path, said sensor support shaft having a free end opposite a drive end for rotating said sensor support shaft in a direction to cause said sensor to drop off said free end, and

ii) at least one shear mechanism to receive and sever an electrical cable extending from said sensor, said shear mechanism including a cutter assembly extending from said housing and including outer shear blades and an inner shear blade spaced to receive and sever said electrical cable.

5,610,347
MATERIAL FOR ELECTRIC CONTACTS TAKING SILVER-TIN OXIDE OR SILVER-ZINC OXIDE AS BASIS

Volker Behrens, Bretten; Thomas Honig, Tiefenbronn; Andreas Kraus, Mühlacker; Karl E. Saeger, Pforzheim; Rainer Schmidberger, Markdorf, and Theodor Staneff, Bermatingen, all of Germany, assignors to Doduco GmbH & Co. Dr. Eugen Durrwachter, Pforzheim, Germany

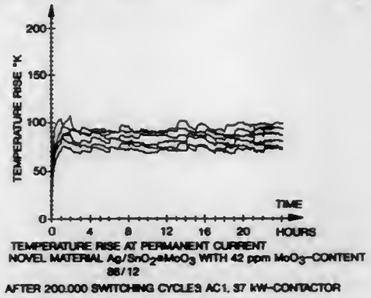
PCT No. PCT/EP93/01453, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO93/26021, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 9, 1993, Ser. No. 356,222

Claims priority, application Germany, Jun. 10, 1992, 42 19 333.8; Apr. 7, 1993, 43 11 399.0

Int. Cl.[6] C22C *5/06*

U.S. Cl. 75—247 **50 Claims**

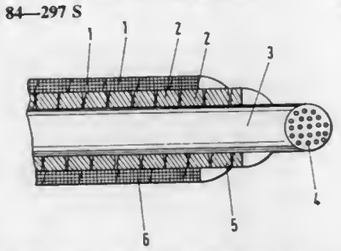


1. All electrical contact material comprising:

a metal component as a major ingredient; and the remainder being

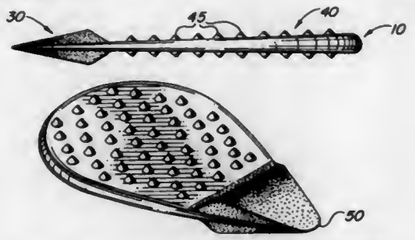
a meal oxide component as a minor ingredient,
said metal component present in the form of a silver matrix, and
said metal oxide component present in the form of the oxide particles and one of an other metal oxide/carbide particles selected from the group consisting of molybdenum, tungsten, antimony, germanium, vanadium, and indium,
said other carbides/oxides comprising up to 40 percent of a weight percentage of said tin oxide in said material,
wherein said silver matrix includes areas of tin oxide and is free of said other oxide/carbide particles, said other oxide/carbide particles confined in a boundary area between said tin-oxide particles and said silver matrix.

5,610,348
CONSTRUCTION OF THE DISCANT STRINGS FOR THE CLASSIC AND THE FLAMENCO GUITAR
Alexander Aladin; Irina M. Aladina, both of Niemetalstrasse 2, D-3402 Dransfeld-Lö wenhagen, and Bernd Schmidt, Am Steimel 16, D-3430 Witzenhausen, all of Germany
Filed Mar. 20, 1992, Ser. No. 854,492
Claims priority, application Germany, Mar. 21, 1991, 41 09 334.8
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—297 S **9 Claims**



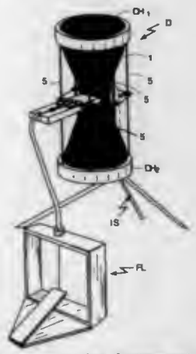
1. A discant string for classic and flamenco guitars, comprising:
a) a polyfilament core formed of a single group of non-twisted with respect to each other continuous synthetic nylon-type filaments;
b) a first layer of metal wire spirally wound in tight contact around and covering said polyfilament core, said metal wire being formed from the group consisting of copper, zinc, brass and bronze; and
c) a second layer of plastic wire spirally wound around and covering said first layer of metal wire.

5,610,349
PICK FOR MUSICAL INSTRUMENTS WITH IMPROVED GRIP
William Fogarty, 22464 Labrador St., Boca Raton, Fla. 33487, and Matthew Fogarty, 4970 Alfresco St., Boca Raton, Fla. 33428-4006
Filed Jul. 5, 1995, Ser. No. 498,187
Int. Cl.[6] G10D *3/16*
U.S. Cl. 84—322 **14 Claims**



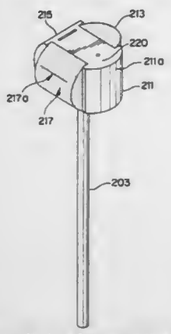
1. A pick for stringed musical instruments, comprising:
a pick body adapted to be grasped between the thumb and forefinger of a player,
said body having a first end, a second end and surrounding sidewalls defining a substantially tear drop shape,
said body further including an upper, exterior surface and a lower, exterior surface,
said surrounding sidewalls further defining an aerodynamic shape for said body in that each of said sidewalls is formed of a height which is congruent, thereby making each of said upper and lower exposed surfaces level, and said height of said sidewalls being greater at said second body end than at said first body end such that said height of said sidewalls between said upper and lower body surfaces is tapered between said ends, from said greater height at said second body end to a smaller height at said first end,
picking means formed on said first end of said body for picking strings of the instrument, said picking means including an enlarged portion extending out of a plane defined by said upper and lower exterior surfaces of said pick body,
said enlarged portion of said picking means having a substantially bullet nosed shape structured and adapted for picking strings of the instrument,
gripping means formed on at least one of said exterior surfaces of said pick body, for providing the player with a firm grip on said pick, and
said gripping means being defined by a plurality of cone shaped members, each of said cone members being arranged with a tip thereof pointing outwardly.

5,610,350
VARIABLE PITCH DRUM
Bradford W. H. Miller, Rte. 1, Box 187, Spencer, W. Va. 25276
Filed May 5, 1993, Ser. No. 57,602
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—413 **11 Claims**



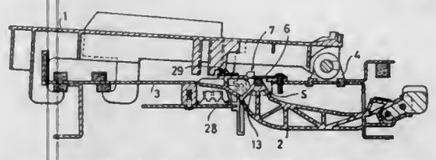
1. A variable pitch percussion instrument comprising a drum body having an open end with an annular edge and an opposing end,
at least one drumhead assembly, including, flexible drumhead material stretched across said annular edge and an annular drumhead mounting ring secured to the perimetrical edges of said flexible drumhead material so that tension can be increased on said flexible drumhead material by pressure between said open end of the drum body and said flexible drumhead material,
a plurality of flexible linear connecting elements, each having a pair of ends, means for securing one end of said pair of ends of each said flexible linear elements circumferentially around said mounting ring and the remaining end of said pair of ends, respectively, to said opposing end of said drum body,
a flexible tuning element located between the ends of said connecting elements, respectively, and arranged to tangentially engage and circumferentially wrap around said connecting elements such that when the area enclosed by said flexible tuning element is varied, said linear connecting elements apply more or less tension on said flexible drumhead material and change the pitch when said flexible drumhead material is vibrated, including a plurality of friction reducing elements, one for each of said flexible linear connecting elements, respectively, said flexible tuning element tangentially engaging all of said friction reducing elements.

5,610,351
MULTI-FACED BEATER FOR DRUMS
Mitsuo Yanagisawa, Yachio, Japan, assignor to Pearl Musical Instrument, Co., Chiba, Japan
Continuation of Ser. No. 397,928, Mar. 3, 1995, abandoned. This application Feb. 29, 1996, Ser. No. 608,938
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—422.1 **17 Claims**



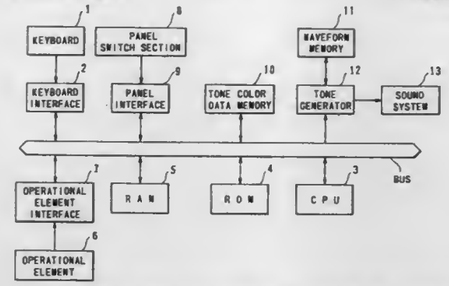
1. A drum engaging device for providing a plurality of drum sounds by varying a striking surface, said device having a plurality of striking surfaces, and a mounting means for orienting said beater head with respect to a drum face, whereby an orientation of said beater head defines an attack sound produced by said beater head striking said drum face,
wherein said plurality of striking surfaces comprises at least two horizontally oriented convex surfaces and at least two vertically aligned convex surfaces defining at least four separate surfaces, said at least two horizontally aligned convex surfaces contacting said drum face along a line, and said at least two vertically aligned convex surfaces contacting said drum face at a point.

5,610,352
MECHANISM FOR ROTATABLY SUPPORTING ROTARY MEMBER OF KEYBOARD
Tsutomu Yamaguchi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan
Filed Nov. 28, 1994, Ser. No. 348,227
Claims priority, application Japan, Nov. 30, 1993, 5-064094 U; Nov. 30, 1993, 5-064096 U
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—435 **12 Claims**



1. A mechanism for rotatably supporting a rotary member of a keyboard of an electronic piano, said mechanism comprising:
a bearing member in which is formed a semicircular recessed portion;
a holding member for holding a rotary shaft of a rotary member, said rotary shaft being fitted into said recessed portion of said bearing member, wherein one end of said holding member is inserted into a groove formed on one side of said bearing member and wherein the other end of said holding member is fixed to the other side of said bearing member. said one side and said other side being positioned with said recessed portion in between.

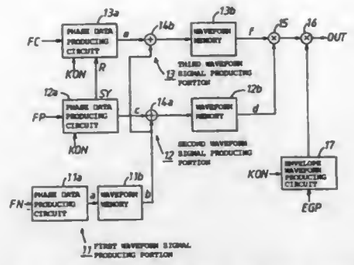
5,610,353
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF LEGATO PERFORMANCE
Kiyoshi Hagino, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Nov. 4, 1993, Ser. No. 147,869
Claims priority, application Japan, Nov. 5, 1992, 4-296199
Int. Cl.[6] G10H *7/00;1/02;5/00*
U.S. Cl. 84—604 **13 Claims**



1. An electronic musical instrument for reading out waveform data from a waveform memory and generating musical tones based on the read out waveform data in response to performance data, said electronic musical instrument comprising:
legato performance detecting means for detecting legato performance based on the performance data;
memory means for storing addresses of waveform data;
address designating means for designating addresses of waveform data which are to be read out from the memory in response to the performance data, said addresses including a normal start address, a legato start address, a loop start address and a loop end address, said addresses being designated in such a manner that an address corresponding to said legato start address is designated when the legato performance is detected by the legato performance detecting means; and
read out means for reading out waveform data from the memory based on the addresses designated by the address designating means.

5,610,354
MUSICAL TONE SIGNAL SYNTHESIZER
Koyama Masahiro, and Nishimoto Tetsuo, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Jan. 11, 1996, Ser. No. 587,835
Claims priority, application Japan, Jan. 12, 1995, 7-003616
Int. Cl.[6] G10H *1/06;7/00*
U.S. Cl. 84—624 **5 Claims**

1. A musical tone signal synthesizer comprising:
first waveform signal producing means for producing a first waveform signal of a frequency defined by first frequency information applied thereto;
second waveform signal producing means for producing a second waveform signal indicative of a windowing function at a cycle defined by second frequency information applied thereto;
third waveform signal producing means arranged to he synchronously controlled by said second waveform producing means



for repeatedly producing a third waveform signal starting from a predetermined phase at each cycle of the second waveform signal at a shorter cycle than that of the second waveform signal;

modulation means for applying the first waveform signal as a modulation signal to said second waveform signal producing means for modulation of the second waveform signal; and

means for multiplying the second and third waveform signals to produce a fourth waveform signal as a musical tone signal.

5,610,355

ELECTRICAL MUSICAL INSTRUMENT USING A TIME INTERVAL DETERMINED BY A LINEAR SCRAPER OPERATOR TO ADJUST MUSICAL PARAMETERS

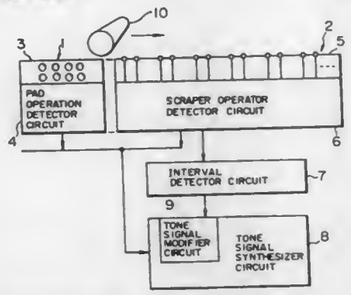
Masahiko Hasebe; Yasushi Kurakake; Junichi Mishima; Yasuhiko Asahi, and Satoshi Uehara, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 1,093, Jan. 6, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,889

Claims priority, application Japan, Jan. 8, 1992, 4-019481; Jan. 8, 1992, 4-019482; Jan. 8, 1992, 4-019483

Int. Cl.[6] G01P *3/00;* **G10H** *5/00*

U.S. Cl. 84—658 **17 Claims**



1. An electronic musical instrument comprising:

operator means having a predetermined operation length in a predetermined operation direction along a linear axis thereof, for detecting at least one of access, contact, and push of an operating member, and generating a plurality of signals to be detected within the range of said operation length, from a plurality of signal sources, each of the signal sources being generally equally spaced apart at a predetermined distance along the linear axis;

time interval means for receiving the signals detected by said operator means and generating a time interval signal representing a time difference between consecutively detect signals from consecutive signal sources to determine a velocity; and

tone signal synthesizing means for generating a tone signal in accordance with said detected signal and said velocity determined from said time interval signal,

wherein the tone signal synthesizing means generates a separate tone signal with a predetermined duration each time said operator means generates said signal to be detected.

5,610,356

KEYBOARD MUSICAL INSTRUMENT HAVING HAMMER STOPPER EXACTLY POSITION AT BLOCKING POSITION

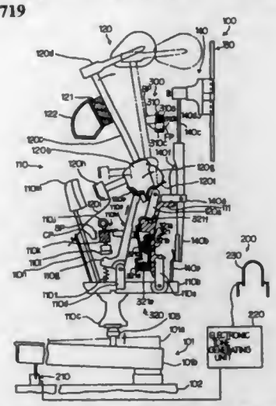
Shinya Koseki, and Kiyoshi Kawamura, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Jul. 18, 1995, Ser. No. 503,527

Claims priority, application Japan, Jul. 25, 1994, 6-172701

Int. Cl.[6] G10C *3/12;5/00;* **G10D** *15/00;* **G10H** *1/34*

U.S. Cl. 84—719 **12 Claims**



1. A keyboard musical instrument having at least an acoustic sound mode for generating acoustic sounds and an electronic sound mode for generating electronic sounds, comprising:

an acoustic piano including

a keyboard having a plurality of turnable keys respectively assigned notes of a scale and selectively depressed by a player in both of said acoustic sound mode and said electronic sound mode,

a plurality of string means for generating said acoustic sounds in said acoustic sound mode,

a plurality of hammer assemblies respectively associated with said plurality of string means and driven for rotation for striking said plurality of string means in said acoustic sound mode, and

a plurality of key action mechanisms functionally connected between said plurality of turnable keys and said plurality of hammer assemblies, respectively, and having respective jacks escaping from said plurality of hammer assemblies when said plurality of keys are depressed by said player;

an electronic sound generating system for generating said electronic sounds having the notes corresponding to the keys depressed by said player in said electronic sound mode; and

a silent system including

a hammer stopper having

an interrupter changed between a free position and a blocking position, said interrupter entering into said free position in said acoustic sound mode so as to allow said plurality of hammer assemblies to strike said plurality of string means, said interrupter entering into said blocking position in said electronic sound mode so as to cause said plurality of hammer assemblies to rebound thereon before a strike at said plurality of string means,

a first actuator means responsive to an instruction of said player so as to change said hammer stopper between said free position and said blocking position, and

a first position controller having a first non-contact sensor operative to detect said interrupter upon an entry into said free position and a second non-contact sensor for detecting said interrupter upon an entry into said blocking position, said first actuator means stopping said interrupter when said first non-contact sensor and said second non-contact sensor report the entry into said free position and the entry into said blocking position.

5,610,357

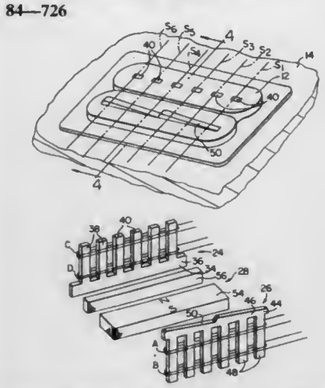
STRINGED MUSICAL INSTRUMENT PICKUP WITH TWO ELECTROMAGNETIC COIL ASSEMBLIES HAVING TOOTHED CORES

Michael Frank-Braun, 147 Rte. 257 South, La Patrie, Quebec, Canada

Filed Oct. 6, 1995, Ser. No. 539,819

Int. Cl.[6] G10H *3/18*

U.S. Cl. 84—726 **7 Claims**



1. An electromagnetic pickup for use with a musical instrument having a plurality of strings, said pickup comprising:

first and second elongate blades of ferromagnetic material arranged respectively in two generally parallel vertical planes, each of said blades having two oppositely facing vertical side faces, an upper portion, a lower portion, and a plurality of vertically extending teeth horizontally spaced from one another and connected to one another by a horizontally extending strip forming at least part of one of said upper and lower portions of the blade,

said teeth of each of said first and second blades being equal in number to the number of strings of the musical instrument with which the pickup is to be used and being spaced from one another in conformity with the spacing of said strings from one another,

a permanent magnet means located between and engaging the lower portions of said first and second blades,

said permanent magnet means being of one magnetic polarity adjacent to said first blade and of the opposite magnetic polarity adjacent said second blade,

a first coil means surrounding the upper portion of said first blade and

a second coil means surrounding said upper portion of said second blade.

5,610,358

APPARATUS AND PROCESS FOR EXPLOSIVES BLOW LOADING

Simon E. Eagar, Beecroft, and Andrew D. Hunter, Toronto, both of Australia, assignors to ICI Australia Operations Proprietary Limited, Australia

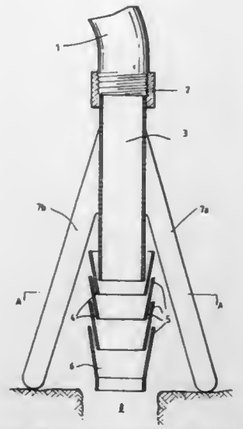
Filed Dec. 4, 1995, Ser. No. 566,861

Claims priority, application Australia, Dec. 2, 1994, PM 9809

Int. Cl.[6] F42B *3/00;4/00*

U.S. Cl. 86—21 **11 Claims**

1. A gas deflecting device for use in the blow loading of emulsion explosives compositions comprising a nozzle which is capable of being removably attached to a blow loading hose, the nozzle comprising at least one vent and at least one vane along its length, said vane being adapted to allow free escape of gas from the nozzle through the vent but inhibit the exit of explosive composition through the vents during blow loading.



5,610,359

METHOD OF GENERATING NON-TOXIC SMOKE

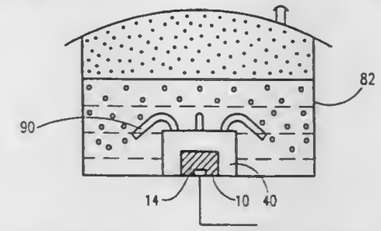
Yechiel Spector, 5 Avner; Esther Jacobson, 16 Shmariahu Levin, both of Tel Aviv; Vida Naishtut, 7/17 Iftah Hagiladi, Kiriat Gat; Michael Vittenberg, 10 Yochanan H'Aroni, and Zohar Beinert, 6/31 Rahavat Hashila, both of Beersheva, all of Israel

Division of Ser. No. 120,497, Sep. 14, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 328,981

Claims priority, application Israel, Feb. 16, 1993, 104758; Jul. 18, 1993, 106382

Int. Cl.[6] F42B *12/48;* **B64D** *1/04;* **A45C** *1/02;* **C09K** *3/30*

U.S. Cl. 89—1.11 **1 Claim**



1. A method of generating nontoxic smoke comprising:

(a) submerging a nontoxic smoke creating device in a liquid coolant while preventing entry of coolant into said device; said device includes a composition which comprises:

(1) a first reactant selected from the group consisting of potassium chlorate, potassium perchlorate, potassium dichromate, cesium nitrate, and potassium nitrate; and

(2) a second reactant serving as a reduction agent;

(b) activating said smoke creating device by reacting said composition comprising said first reactant and said second reactant, to create solid particulate products having a diameter of about one micron or less which create the nontoxic smoke; and

(c) passing said solid particulate products into said coolant through at least one downwardly directed tuyere hydraulically connected at or near the top of said device without any accompanied destruction of said nontoxic smoke creating device.

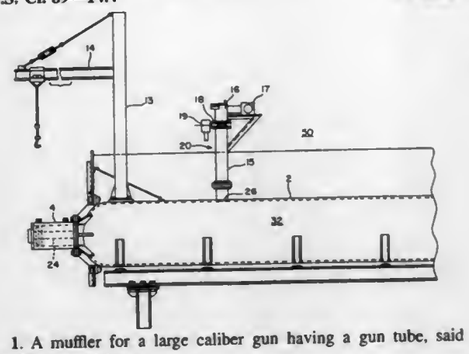
5,610,360
LARGE CALIBER GUN MUFFLER

Raymond P. Kazyaka, and Raymond J. Kazyaka, both of Scotia, N.Y., assignors to Wright Malta Corporation, Ballston Spa, N.Y.

Continuation-in-part of Ser. No. 181,398, Jan. 12, 1994, Pat. No. 5,398,589. This application Mar. 14, 1995, Ser. No. 419,381

Int. Cl.[6] F41A *21/30*

U.S. Cl. 89—14.4 **9 Claims**



1. A muffler for a large caliber gun having a gun tube, said muffler comprising:
   - a transition section fitted around the gun tube and engaging the gun tube for preventing the escape of residual combustion gases caused by a firing of a projectile by the gun;
   - a generally cylindrical main pressure vessel, having a first end attached to said transition section, and defining a main pressure chamber of about 4,000 cubic feet for containing residual combustion gases and attenuating pressure waves;
   - a generally cylindrical extension pressure vessel, disposed in series with and connected to said main pressure vessel, and defining an extension pressure chamber of about 1,000 cubic feet for containing residual combustion gases and attenuating pressure waves; and
   - at least one orifice plate, which is adjustable relative to said pressure vessel, disposed in at least one of said main pressure chamber and said extension pressure chamber for attenuating pressure waves.

5,610,361
PRIMER DETONATION DEVICE AND METHOD

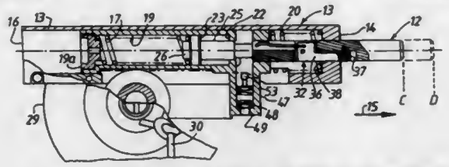
Robert Vernet, Juillan, and Fernand Ortega, Bourges, both of France, assignors to Giat Industries, Versailles Cedex, France

Filed Jun. 9, 1995, Ser. No. 489,166

Claims priority, application France, Jun. 17, 1994, 94 07474

Int. Cl.[6] F41A *19/00*

U.S. Cl. 89—27.13 **20 Claims**



1. A method of rearming a primer detonation device after a misfire occurs, the primer detonation device having a slide block, a rod that actuates a firing pin and a housing that slidingly receives the slide block and the rod, the method comprising:
   - a first step of moving the slide block from a slide block percussion position rearward to a slide block misfire position after the misfire occurs, thereby moving the rod to a rod misfire position; and
   - a second step of moving the slide block forward and locking the slide block to the rod without moving the rod relative to the housing.

5,610,362
AMMUNITION FEED DEVICE AND METHOD

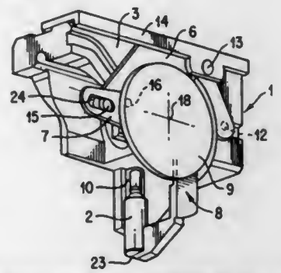
Franck Bouvard, Bourges, France, assignor to Giat Industries, Versailles, France

Filed May 23, 1995, Ser. No. 445,194

Claims priority, application France, May 25, 1994, 94 06306

Int. Cl.[6] F41A *9/00;9/61*

U.S. Cl. 89—33.1 **20 Claims**



1. A mechanism for feeding ammunition in a small arm, the small arm having a barrel having a barrel axis, a breech that moves under recoil of the small arm and a magazine configured to hold at least one round of ammunition, the magazine extending approximately parallel to the barrel axis, said mechanism comprising:
   - a linkage connected to the breech movable to transport the round from the magazine in a direction parallel to the longitudinal axis of the round and approximately perpendicular to the barrel axis;
   - a rotating member connected to said linkage rotatable to rotate the round by approximately 90° such that the round is substantially aligned with the barrel axis; and
   - a magazine follower shaped to receive the round and to rotate with and translate along said rotating member to insert at least a portion of the round in the barrel.

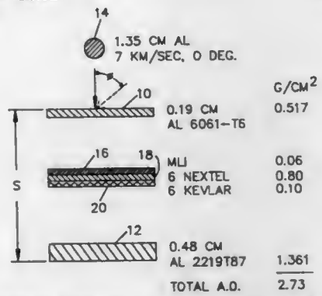
5,610,363
ENHANCED WHIPPLE SHIELD

Jeanne L. Crews, Arcadia; Eric L. Christiansen, Houston, both of Tex.; Joel E. Williamsen; Jennifer R. Robinson, both of Huntsville, Ala., and Angela M. Nolen, Blountsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 15, 1995, Ser. No. 390,455

Int. Cl.[6] F41H *5/04*

U.S. Cl. 89—36.02 **22 Claims**



1. An enhanced hypervelocity Whipple Shield for protecting a wall member from penetration by impact particles having interrelated factors of velocity and critical diameter where a critical diameter is the minimum diameter of a particle which would just penetrate the wall member at a given density and velocity and impact angle, said shield comprising:
   - a wall member and a bumper wall member constructed from a selected metal material and respectively having a wall thickness and spacing from one another for dissipating the energy developed by a high velocity impact of a particle of a selected metal material where the particle has a first critical diameter and velocity and for preventing penetration of the wall member;
   - a flexible barrier blanket disposed intermediate of said bumper wall member and said wall member, said blanket barrier including a ceramic cloth facing said bumper wall member for shocking fragments of a particle penetrating said bumper wall member and having a high strength cloth facing said wall member for retarding the fragments penetrating said ceramic cloth whereby said Whipple Shield can withstand high velocity impact particles of said selected metal material at critical diameters and velocities greater than said first critical diameter and velocity; and wherein the critical diameter and velocity are interrelated for velocities less than $2.7/(\cos\Theta)^{0.5}$ by the following relationship of parameters

$$d_c = 2[t_w(\sigma/40)^{0.5} + 0.37 m_b]/[(\cos\Theta)^{5/3}\delta_p^{0.5} V^{1/3}]$$

where the parameters are defined as follows:

d Particle diameter (cm)
d_c Minimum particle diameter causing failure; i.e., "critical" particle that just results in complete penetration of the shield's rear wall (cm)
δ_p Density (g/cc)
m Areal density (g/cm^2)
Σ Rear wall yield stress (ksi)
t Thickness (cm)
Θ Impact angle measured from surface normal (deg)
V Particle impact velocity (km/sec)

and where the Subscripts are:

b All bumpers and intermediate layers
p Particle
w Rear wall.

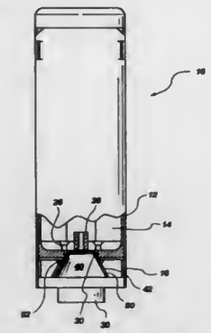
5,610,364
NOZZLE PLUG FOR PLUME ENHANCEMENT IN A KINEMATIC FLARE

David W. Endicott, Jr., Mendon; Ross W. Guymon, Providence, and James R. Kaminska, Honeyville, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Jun. 30, 1995, Ser. No. 497,277

Int. Cl.[6] F42B *12/48;4/04;4/26*

U.S. Cl. 102—334 **27 Claims**



1. An apparatus for enhancing the signature of a flare, the flare including a housing with illuminant disposed within the housing and a nozzle positioned at the aft end of the housing, the flare configured to discharge a plume of combustion gases through the nozzle and along a path extending aftwards of the flare during combustion of the illuminant, comprising;
   - a dispersing block positioned within the path of the plume, the dispersing block configured with a plume-contacting surface positioned at an angle to the path of the plume; and
   - means for positioning the dispersing block within the path of the plume.

5,610,365
CARTRIDGE AMMUNITION HAVING A CASE, AN ARROW PROJECTILE AND AN IGNITER-COATED PROPELLANT

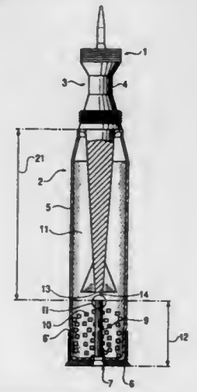
Stefan Thiesen, Willich, Germany, assignor to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Dec. 21, 1995, Ser. No. 576,587

Claims priority, application Germany, Dec. 22, 1994, 44 45 990.4

Int. Cl.[6] F42B *5/18;5/26*

U.S. Cl. 102—431 **6 Claims**



1. A cartridge ammunition comprising
   (a) a case including a case bottom;
   (b) an arrow projectile having a rear length portion extending into said case towards said case bottom;
   (c) a propellant igniter mounted centrally on said case bottom; said propellant igniter including an igniting tube filled with an igniting substance; said igniting tube extending from said case bottom toward said arrow projectile; said igniting tube having a part oriented toward a rear terminus of said rear length portion; said part of said igniting tube being provided with axially and obliquely oriented apertures;
   (d) propellant-powder grains disposed in said case; and
   (e) a coating of igniting substance applied to at least those grains in said case that are located beyond said igniting tube.

5,610,366
HIGH PERFORMANCE THERMOELECTRIC MATERIALS AND METHODS OF PREPARATION

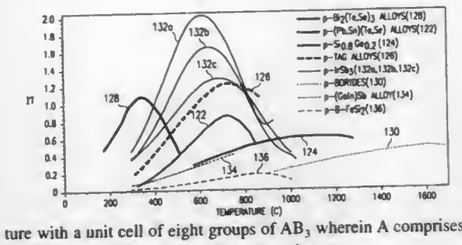
Jean-Pierre Fleurial; Thierry F. Caillat, both of Pasadena, and Alexander Borshchevsky, Santa Monica, all of Calif., assignors to California Institute of Technology, Pasedena, Calif.

Continuation-in-part of Ser. No. 101,901, Aug. 3, 1993. This application Jan. 28, 1994, Ser. No. 189,087

Int. Cl.[6] H01L *35/18*

U.S. Cl. 136—202 **42 Claims**

1. A thermoelectric device having a plurality of thermoelectric elements with at least one of the thermoelectric elements comprising a first material having a skutterudite-type crystal lattice struc-



ture with a unit cell of eight groups of AB_3 wherein A comprises a metal atom and B comprises a non-metal atom.

5,610,367

NON-TOXIC RIM-FIRE PRIMER

Jack A. Erickson; John M. Melberg, both of Andover; Robert L. Kramer, Minneapolis, and John M. Hallis, Buffalo, all of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

Filed Oct. 6, 1995, Ser. No. 539,857

Int. Cl.[6] C06B *35/00*

U.S. Cl. 149—35 **42 Claims**

1. A lead-free rim-fire primer composition for small arms rim-fire cartridges, the active ingredients of which comprise a mixture of:

(a) about 10%–50% by weight of cupric azide;

(b) 0–10% by weight of tetracene;

(c) 10%–45% by weight of nitrocellulose; and

(d) 10%–55% by weight of glass.

5,610,368

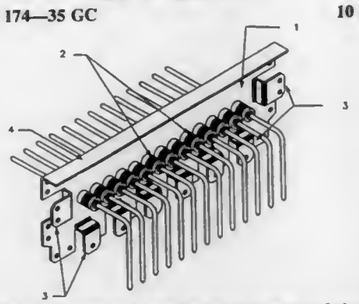
CLIP PLATE BULKHEAD MOUNTING FOR EMI FILTERS

Robert L. Smith, East Springfield, Pa., assignor to Spectrum Control, Inc., Fairview, Pa.

Continuation of Ser. No. 954,160, Sep. 30, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 188,726

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 GC **10 Claims**



1. A bulkhead mounting plate having a plurality of electromagnetic interference (EMI) filter units mounted therein;

said bulkhead mounting plate having a first edge, a second edge, a third edge and a fourth edge;

said bulkhead mounting plate having fingers integrally attached to said first edge, said second edge and said third edge;

said fingers attached to said second edge being first alternate fingers and second alternate fingers;

said second alternate fingers being bent so that a gap is disposed between said first alternate fingers and said second alternate fingers;

said first alternate fingers and said second alternate fingers being adapted to receive and grip inside and outside surfaces of edges of an edge port or notch in a shielding box;

said edges of said edge port or notch in said shielding box being substantially the same thickness as the width of said gap;

said bulkhead mounting plate being stiffened by folding said fourth edge inwardly at a right angle to said bulkhead mounting plate;

said bulkhead mounting plate being perforated with precision mounting holes adapted to be used for a particular application;

said fingers being dimpled to concentrate spring pressure between said fingers and said shielding box to improve the electrical contact and, therefore, the efficiency of said EMI filter units;

predetermined spacing for said mounting holes between said EMI filter units to be mounted on said bulkhead mounting plate for flat ribbon cable terminations and connectors to connect external and internal portions of a circuit through said EMI filter units;

a rib embossed in said bulkhead mounting plate parallel to said EMI filter units thereby increasing resistance to filter and solder joint damage by flexure of said bulkhead mounting plate.

5,610,369

CABLE SPLICE CLOSURE

Raymond C. Foss, Plymouth, United Kingdom, assignor to Bowthorpe PLC, United Kingdom

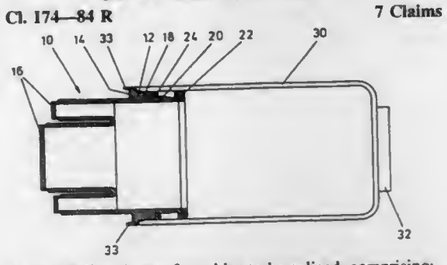
PCT No. PCT/GB93/02256, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/10732, PCT Pub. Date May 11, 1994

PCT Filed Nov. 2, 1993, Ser. No. 433,389

Claims priority, application United Kingdom, Nov. 3, 1992, 9223013

Int. Cl.[6] H02G *15/04;15/08*

U.S. Cl. 174—84 R **7 Claims**



1. A cable splice closure for cables to be spliced, comprising:

a) a first base member having ports receiving the cables to be spliced, and a peripheral surface tapering toward an end of said first base member:

b) an O-ring adapted to be located in a final position on said tapered peripheral surface, and having a peripheral length; and

c) a tubular cover means for sliding axially over said tapered peripheral surface, for engaging said O-ring, and for rolling said O-ring along said tapered peripheral surface,

wherein said cable splice closure is arranged to permit said O-ring to be rolled by said tubular cover means from a non-stressed orientation over said peripheral surface by substantially more than 50%, but less than 100%, of said peripheral length to said final position, such that said O-ring has a natural tendency to rotate forward to said non-stressed orientation, and such that said O-ring exerts a twisting force in a direction urging said tubular cover means onto said first base member.

5,610,370

CLOSURE FOR CABLES

Dieter Fremgen, Wülfrath, and Frank Vock, Dortmund, both of Germany, assignors to Raychem GmbH, Ottobrunn, Germany

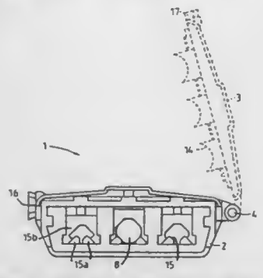
PCT No. PCT/GB94/00024, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/16476, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 6, 1994, Ser. No. 491,847

Claims priority, application Germany, Jan. 7, 1993, 43 00 177.7; United Kingdom, Jul. 8, 1993, 9314160

Int. Cl.[6] H02G *15/113*

U.S. Cl. 174—91 **9 Claims**



1. A closure for a cable joint, the closure having a cable inlet which includes a cable gripper that can provide strain relief to a cable having a center line positioned within the inlet, the cable gripper being adjustable to grip cables of different diameters in such a way that the position of the center line of the cable is substantially independent of cable diameter, the cable gripper comprising at least two first sections and at least one second section, the first and second sections each having a cable gripping surface, which surfaces together approximate to a cylinder within which the gripped cable can be received, in which movement of the second section towards the first sections causes the first sections to move towards one another.

5,610,371

ELECTRICAL CONNECTING DEVICE AND METHOD FOR MAKING SAME

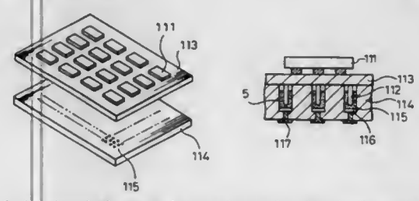
Kaoru Hashimoto; Tatuo Chiyonobu; Kyoichiro Kawano; Koji Watanabe; Masato Wakamura, and Joe Yamaguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 277,992, Jul. 20, 1994. This application Mar. 14, 1995, Ser. No. 403,678

Claims priority, application Japan, Mar. 15, 1994, 6-043445; Sep. 19, 1994, 6-223787; Feb. 27, 1995, 7-038142

Int. Cl.[6] H05K *1/18*

U.S. Cl. 174—262 **12 Claims**



1. An electrical connecting conductor for electrically connecting different terminals, comprising a conductive fluid in which liquid metal and an organic liquid are stirred and a particulate liquid metal is mixed with the organic liquid.

5,610,372

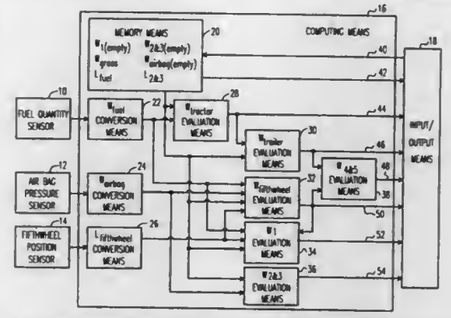
SYSTEM FOR MEASURING TOTAL WEIGHT AND WEIGHT DISTRIBUTION OF A VEHICLE

Darryl H. Phillips, Sallisaw, Okla., and Robert W. Richardson, Chagrin Falls, Ohio, assignors to The Airsport Corp., Sallisaw, Okla.

Filed Mar. 14, 1996, Ser. No. 615,449

Int. Cl.[6] G01G *19/40;19/08;19/10*

U.S. Cl. 177—25.14 **20 Claims**



7. A method for determining the weight distribution on the axles of a motor vehicle and generating values corresponding to the respective axle weights of the motor vehicle, said method comprising the steps of:

(a) generating by first sensing means a first signal value corresponding to the weight resting on the tractor fifth wheel;

(b) generating by second sensing means a second sisal value corresponding to the weight of fuel in the tractor fuel tank;

(c) generating third sensing means, a third signal value corresponding to the longitudinal position of the fifth wheel on the tractor in relation to the center of the front axle of said tractor;

(d) evaluating by a computing means the weight of the tractor trailer combination resting on the front axle of the tractor from said signal values and one or more constant values;

(e) evaluating by computing means the weight resting on the rear axle or axles of the tractor from said signal values and one or more constant values;

(f) evaluating by computing means the weight resting on the axles of the trailer from said signal values and one or more constant values.

5,610,373

WEIGH SCALE AND METHOD FOR CALIBRATING SAME

Delbert B. Graves, Warren; Michael L. Pyle; Victor Rossol, both of Rockford, and Paul R. Buhr, Davis, all of Ill., assignors to Sunbeam Corporation, Fort Lauderdale, Fla.

Continuation of Ser. No. 891,362, May 29, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 94,581

Int. Cl.[6] G01G *19/52;21/08;* **G01L** *25/00*

U.S. Cl. 177—50 **25 Claims**

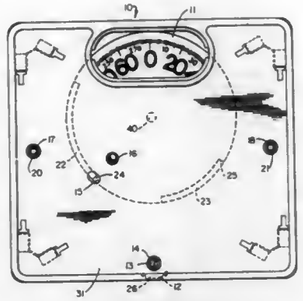
14. A mechanically calibratable scale, the scale comprising:

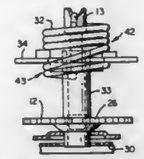
a bottom pan means, a scale mechanism means located between the bottom pan means and an upper housing means, an adjustment means and a dial means;

means for providing access to the dial means and means for providing access to the adjustment means, the means for providing access to the adjustment means enabling mechanical calibration of the scale after assembly of the scale;

the dial means including a first reference means and a second reference means, both reference means being accessible by sensing means through the means for providing access to the dial means, each reference means having a first end portion;

the first end portion of the first reference means being accessible to the sensing means when the dial means reads approximately zero;





the first end portion of the second reference means being accessible to the sensing means when the dial means reads approximately a predetermined calibration weight.

5,610,374

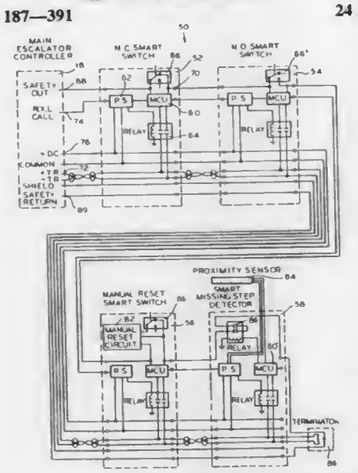
SAFETY STRING POLLING SYSTEM

Anthony S. Boom, Moline, and John M. Bril, Rapid City, both of Ill., assignors to Montgomery Kone Inc., Moline, Ill.

Continuation of Ser. No. 240,913, May 10, 1994, abandoned. This application May 2, 1996, Ser. No. 641,837

Int. Cl.[6] B66B *3/00;1/28*

U.S. Cl. 187—391 **24 Claims**



19. In an escalator or elevator system including a series of remote safety switches series connected in a safety string to a main controller, a system for detecting the operative status of the remote safety switches comprising:

means for causing the main controller to develop a roll call signal which is transferred to a first of the series of remote safety switches;

means in each said remote safety switch for transmitting an operative status reply signal from the remote safety switch to the main controller if the remote safety switch is functional following receipt of the roll call signal by the remote safety switch;

means in each said remote safety switch for developing and transferring the roll call signal to a next of the series of remote safety switches after the reply signal is sent to the main controller.

5,610,375

CIRCUIT BREAKER WITH PIVOTING CONTROL BUTTONS

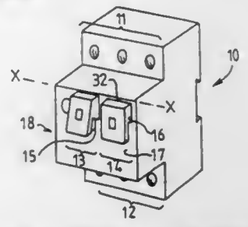
Daniel Sinthomez, Pont de Pagny, France, assignor to Schneider Electric, France

PCT No. PCT/FR93/00387, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO94/24686, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 20, 1993, Ser. No. 356,309

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—50.01 **12 Claims**



1. A circuit breaker comprising a box containing a triggering and resetting mechanism acting on separable contacts for opening and closing at least one electric current path, the box comprising a front wall fitted with passage openings for an ON button and an OFF button, said ON button and OFF button being accessible to an operator from outside of the box and cooperating with a control piece of said mechanism inside the box, each button being mounted in the box so as to be movable between an outward operational position and an inward operational position with respect to the box and having a single pressing side for the operator's finger, each of said buttons being pivotably mounted in said box about a rotating axis by means of two curved arms which extend opposite from a low-displacement end portion of the pressing side, each of said curved arms comprising two opposite faces respectively sliding on a pivot gudgeon coaxial to said rotating axis and on a fixed bearing element, each of said buttons comprising a control arm which extends opposite a high-displacement end portion of the pressing side and which is couple to said mechanism, the curved arms and the gudgeon being arranged so as to create between said inward and outward operational positions, a significant shift in front projection of said high-displacement end portion.

5,610,376

INTERLOCKING STRUCTURE AND DETECTOR FOR SENSING THE POSITION OF AN OPERATING MEMBER IN DETACHABLE ELECTRONIC EQUIPMENT

Katsuhiko Takagi, and Futoshi Ujiie, both of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Mar. 13, 1995, Ser. No. 403,147

Claims priority, application Japan, Mar. 14, 1994, 6-069000; Nov. 18, 1994, 6-309876

Int. Cl.[6] H01H *9/20;* **B60R** *11/02;* **E05B** *73/00;* **H05K** *5/03*

U.S. Cl. 200—50.01 **19 Claims**

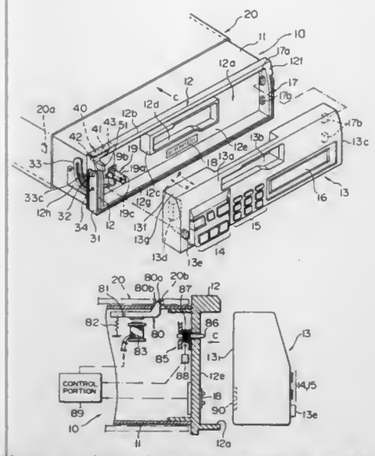
1. A detachable electronic device comprising:

a stationary portion having an opening;

a device body insertable into the opening of the stationary portion;

a control unit removably attached to the device body;

a lock member which is mounted on the device body, the lock member being movable between a locked position and a released position, wherein the lock member engages with the stationary portion when the device body is inserted into the



stationary portion and the lock member is in the locked position, thereby fixedly connecting the device body to the stationary portion;

a lock release mechanism including a lock release member which is movable between first and second positions, wherein the lock release mechanism is connected to the lock member such that the lock member is moved from the locked position to the released position when the lock release member is moved from the first position to the second position; and

a lock release prevention mechanism mounted on the device body, the lock release prevention mechanism including a restraining member which is movable between a third position and a fourth position;

wherein, when the restraining member is in the third position, the restraining member engages the lock release mechanism to prevent movement of the lock release member from the first position to the second position;

wherein, when the restraining member is in the fourth position, the restraining member is separated from the lock release mechanism; and

wherein the restraining member is biased into the third position when the control unit is separated from the device body, and the restraining member is biased into the fourth position when the control unit is attached to the device body.

9. The detachable electronic device according to claim 1,

wherein the lock member includes a retaining surface which engages a stop projection formed on the stationary portion, thereby preventing the device body from being detached from the stationary portion,

wherein the lock release mechanism includes an electro-mechanical device connected to the restraining member, and a detection device for detecting that the control unit is mounted on the device body, the electro-mechanical device being actuated to move the restraining member from the third position to the fourth position when the detection device detects that the control unit is mounted on the device body.

5,610,377

ELECTRIC SWITCH

Winfried Lütte, Climbach, France, assignor to Doduco GmbH+Co., and Eugen Durrwachter, Pforzheim, Germany

PCT No. PCT/EP92/02534, § 371 Date May 6, 1994, § 102(e) Date May 6, 1994, PCT Pub. No. WO93/09554, PCT Pub. Date May 13, 1993

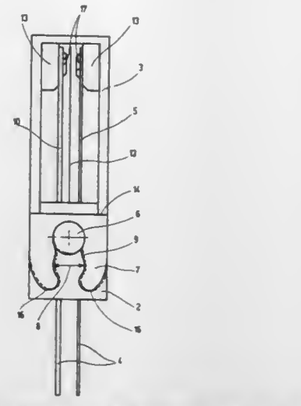
PCT Filed Nov. 5, 1992, Ser. No. 232,279

Claims priority, application Germany, Nov. 7, 1991, 41 36 576.3

Int. Cl.[6] H01H *9/28*

U.S. Cl. 200—50.19 **8 Claims**

1. An electric microswitch comprising:



a base having a top, a bottom, and an interconnecting side, said bottom including a pair of terminals extending downwardly therefrom and being hermetically sealed within said base, said top including a peripheral shoulder, and upwardly projecting first and second contact springs, each of said contact springs integrally formed with said terminals on said base bottom and being substantially centered within said base, each of said contact springs including a contact piece at a respective end thereof, said side of said base including a pair of opposed pins, each of said pins having a like diameter;

a hollow cap having a plurality of stops and an open end that abuttingly receives said shoulder of said base and which includes an opposed pair of elastically deformed extensions that include apertures therein for receiving said pins and attaching said cap to said base,

said cap having a first position wherein said cap is held against said shoulder, and when said cap is pulled upwardly from said shoulder and out of said first position, said cap is placed in a second position wherein said cap can be manipulated in a pivotably rotatble fashion on said pins,

said second position allowing one of said stops within said cap to push against and deflect one of said contact springs against the other contact spring during rotation of said cap, such that said contact pieces make contact during said movement.

5,610,378

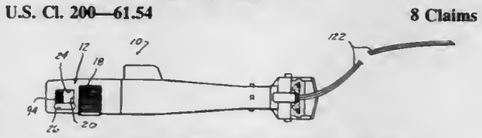
STEERING COLUMN STALK SWITCH APPARATUS

Daniel J. DuRocher, Leonard, and Ellsworth S. Miller, Rochester Hills, both of Mich., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 97,268, Jul. 23, 1993, Pat. No. 5,453,588, which is a continuation of Ser. No. 972,597, Nov. 6, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 533,639

Int. Cl.[6] H01H *3/16*

U.S. Cl. 200—61.54 **8 Claims**



1. A steering column stalk switch apparatus comprising:

a shaft having first and second opposed end portions;

first and second co-axially arranged housing portions independently coaxially rotatable with respect to each other and co-acting to form an elongated substantially closed stalk switch housing;

means for connecting the first end portion of the shaft to the first housing portion for rotation of the shaft with rotation of the first housing portion;

first bearing means, engaged with the shaft and the second housing portion for co-axially and rotatably supporting the shaft within the second housing portion;

a lever pivotally extending from a switch bousing, the lever extending at least partially through the second housing portion and receiving the shaft therethrough.

5,610,379

LIQUID AND GAS IMPENETRABLE SWITCH

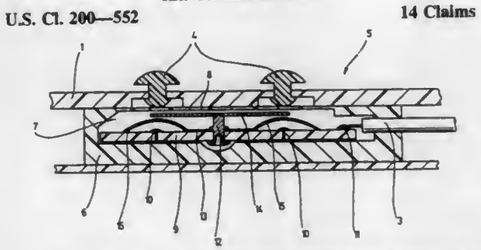
Edwin Muz, Reutlingen, and Dieter Schwarz, Neubulach, both of Germany, assignors to Nicolay Verwaltungs -GmbH, Nagold, Germany

Filed Jan. 31, 1996, Ser. No. 594,585

Claims priority, application Germany, Feb. 4, 1995, 195 03 702.2

Int. Cl.[6] H01H *13/00*

U.S. Cl. 200—552 **14 Claims**



1. A switch which is liquid and gas impenetrable for sterilizable instruments, comprising:

first and second pairs of contacts spaced at a distance from each other, each of said contact pairs having a movable contact and a fixed contact;

an elastically deformable diaphragm covering said movable contacts such that said movable contacts are between said diaphragm and said fixed contacts;

switch operating means for exerting forces on said diaphragm to move said movable contacts into engagement with said fixed contacts; and

a rigid rocker supporting said diaphragm and pivotally mounted relative to said contacts, said movable contacts being entirely located on only one side of said rocker remote from said diaphragm and said switch operating means to prevent simultaneous activation of both of said contact pairs.

5,610,380

TOUCH RESPONSIVE CONTROL PANEL

Mogens Nicolaisen, Pramvej 5, DK-8900, Randers, Denmark

PCT No. PCT/DK93/00034, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/15518, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 28, 1993, Ser. No. 256,859

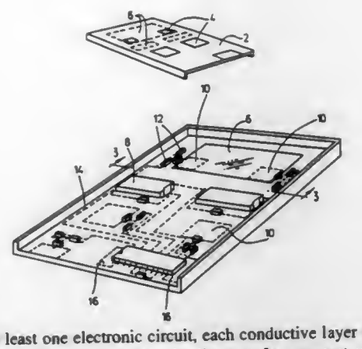
Claims priority, application Denmark, Jan. 28, 1992, 0100/92

Int. Cl.[6] H03K *17/975*

U.S. Cl. 200—600 **21 Claims**

1. A touch sensitive control panel comprising:

a plate having a front side and a back side, the front side having at least one marking identifying at least one touch sensitive area of the plate and a conductive layer disposed on the back side being in registration with each touch sensitive area and, each touch sensitive area when touched by a user completing an operative coupling with the conductive layer in registration therewith and one of a plurality of electrodes of at least one electronic circuit disposed on the back side to cause a selected control signal to be produced by the at least one electronic circuit to which the operative coupling is completed by touching one touch sensitive area of the front side; and wherein



the at least one electronic circuit, each conductive layer and the plurality of electrodes are in direct surface contact with the back side.

5,610,381

COMPRESSION GAS PUFFER TYPE CIRCUIT BREAKER

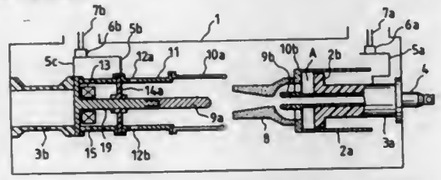
Eisaku Mizufune; Kenichi Natsui; Yukio Kurosawa; Goro Daimon; Yoshihito Asai, all of Hitachi; Katsuichi Kashimura, Takahagi; Osamu Koyanagi, Hitachi, and Kogi Ishikawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 553,754

Claims priority, application Japan, Oct. 28, 1994, 6-264840

Int. Cl.[6] H01H *33/88*

U.S. Cl. 218—57 **9 Claims**



1. A compression gas puffer type circuit breaker comprising:

a ground tank containing an arc extinguishing gas;

a pair of movable and stationary main contacts which are disposed in engagable and disengagable manner in said grounded tank;

a puffer cylinder carrying said movable main contact;

an insulator nozzle carried by said puffer cylinder;

a puffer shaft mechanically connected to said puffer cylinder and mechanically coupled to an external operating mechanism for said puffer cylinder;

a stationary puffer piston disposed within said puffer cylinder so as to constitute a puffer chamber in said puffer cylinder;

a movable arc contact carried at one end of said puffer shaft;

a stationary arc contact which is disposed engagably and disengagably with said movable arc contact through said insulator nozzle;

a cylindrical contact base carrying at one end thereof said stationary main contact for locating in position;

a first conductor means connecting said stationary main contact to a first main bus conductor via said cylindrical contact base;

a second conductor means connecting said stationary arc contact to the first main bus conductor;

a magnetic body surrounding said second conductor means;

an insulator plate secured at the other end of said cylindrical contact base for closing the same while permitting said second conductor means passing therethrough, said insulator plate preventing said magnetic body from being exposed to heated puffer gas generated when said movable and stationary arc contacts are separated;

a plurality of openings formed at the cylinder wall of said cylindrical contact base near said insulator plate for venting the heated puffer gas;

an insulator cylinder for insulatedly supporting said cylindrical contact base via said insulator plate and said stationary arc contact in said grounded tank; and

an intermediate member disposed between said insulator plate and said insulator cylinder and surrounding at least a part of said second conductor means.

5,610,382

AUTOMATIC CASH TRANSACTION APPARATUS HAVING A MAIN BODY AND AN ADDITIONAL UNIT

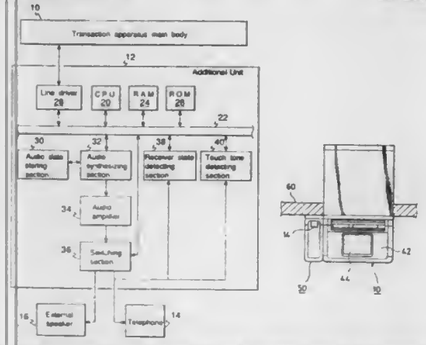
Hidehiko Yamamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 91,202, Jul. 14, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,309

Claims priority, application Japan, Jul. 28, 1992, 4-200829

Int. Cl.[6] G06F *17/60;15/00*

U.S. Cl. 235—379 **18 Claims**



1. An automatic cash transaction apparatus which is constructed by a transaction apparatus main body and an additional unit which is arranged along a side of said transaction apparatus main body, wherein:

said transaction apparatus main body comprises

cash transaction means for executing processes regarding a cash transaction based on a user instruction

first input/output means for displaying a guidance for cash transaction, for inputting information corresponding to the guidance display, and for informing said cash transaction means; and

said additional unit comprises

telephone means for providing an audio sound to the user and for inputting information by the user through a plurality of dial buttons; and

second input/output means for synthesizing audio data of the guidance based on an instruction from said cash transaction means, for generating an audio signal to said telephone means, for detecting information of said plurality of dial buttons depressed by the user in correspondence to said audio guidance, and for notifying the detected information to the cash transaction means.

5,610,383

DEVICE FOR COLLECTING VOTING DATA

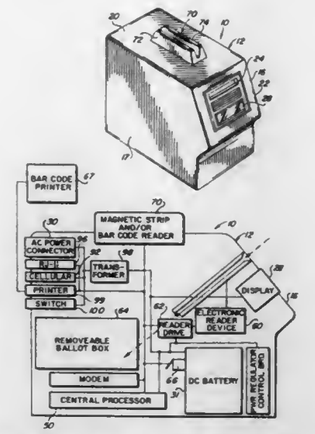
Gregory R. Chumbley, 3801 NE. 207 St., #35, Miami, Fla. 33180

Filed Apr. 26, 1996, Ser. No. 638,238

Int. Cl.[6] G06K *7/00;* **G07C** *13/00*

U.S. Cl. 235—386 **12 Claims**

1. A method of collecting voting data from voters comprising the steps of:



distributing at least one ballot card to each of the voters, the ballot card being of the type adapted to be read by an electronic reader device, wherein the voter completes the ballot card by marking predetermined areas on the card or by punching holes through the ballot card at predetermined locations on the ballot card to cast one or more votes;

accepting completed ones of said ballot cards from the voters;

scanning said ballot cards with an electronic reader device to read voting data therefrom by identifying the location of marks or holes made by the voter and other marks or holes in said ballot cards;

depositing said scanned ballot cards into a ballot card collection box contained within a locked housing;

transmitting said voting data read from each of the ballot cards to a memory means for storage therein;

tallying said voting data;

removing the ballot card collection box from within said housing;

sensing removal of the ballot card collection box from within the housing and simultaneously actuating a bar code printer device;

printing a bar code on an adhesive-backed label, wherein the printed bar code contains a tally of said voting data and which bar code is only readable using a specific decoding program;

affixing said label to said collection box containing said scanned ballot cards;

sealing the collection box closed;

scanning the printed bar code on said label with a bar code scanner device to read said tallied voting data; and

uploading said tallied voting data to a host computer or central station for aggregating and reporting the election results.

5,610,384

MAGNETIC COUPLING CIRCUIT-DRIVING SYSTEM

Yuichi Goto, Hadano, Japan, assignor to Kabushiki Kaisha Toshiba. Kawasaki, Japan

Filed Sep. 28, 1995, Ser. No. 534,939

Claims priority, application Japan, Sep. 30, 1994, 6-236697

Int. Cl.[6] G06K *7/08;7/06*

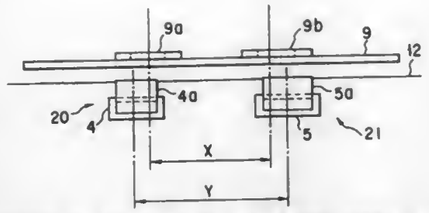
U.S. Cl. 235—435 **12 Claims**

1. A magnetic coupling circuit-driving system comprising:

a magnetic coupling circuit including a first resonance circuit having a first coil, and a second resonance circuit having a second coil and a resonance frequency identical to that of the first resonance circuit;

first and second driving circuits for driving the first and second resonance circuits, respectively; and

switching means for supplying an AC signal of a frequency identical to the resonance frequency, to one of the first and second resonance circuits in accordance with input data;



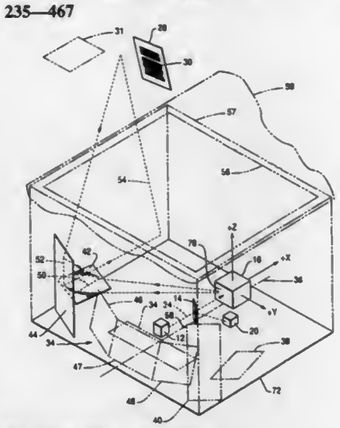
wherein the first and second coils generate magnetic fields having the same intensity each other and different phases.

5,610,385

OPTICAL BAR CODE SCANNER WHICH PRODUCES SUBSTANTIALLY PERPENDICULAR SCAN LINES

Duanfeng He, Ronkonkoma, N.Y., and Donald A. Collins, Jr., Duluth, Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 23, 1995, Ser. No. 392,595
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—467 **2 Claims**



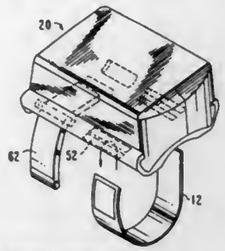
1. A bar code scanner comprising:
a base member having a centerline;
a laser which produces a laser beam;
a top surface having an aperture through which the laser beam travels;
a rotating mirrored spinner which reflects the laser beam and which is located on the centerline;
a first group of pattern mirrors which is centered about the centerline and which produce a group of scan lines that are substantially parallel to the aperture for scanning a bar code label in an orientation substantially parallel to the aperture;
a second group of pattern mirrors on one side of the first group which produces a first scan line that is substantially perpendicular to the aperture for scanning the bar code label in orientations substantially perpendicular to the apeture and substantially parallel to the aperture, including first and second folding pattern mirrors, wherein the laser beam strikes the first folding pattern mirror along a first line of reflection as the mirrored spinner rotates, and wherein the laser beam from the first folding pattern mirror strikes the second folding pattern mirror along a second line of reflection as the mirrored spinner rotates to produce the first scan line;
a third group of pattern mirrors on another side of the first group which produces a second scan line that is substantially perpendicular to the apeture for scanning the bar code label having an orientation substantially perpendicular to the apeture, including third and fourth folding pattern mirrors, wherein the laser beam strikes the third folding pattern mirror along a third line of reflection as the mirrored spinner rotates, and wherein the laser beam from the third folding pattern mirror strikes the fourth folding pattern mirror along a fourth line of reflection as the mirrored spinner rotates to produce the second scan line;
a detector for converting light reflected from the bar code label to electrical signals based upon the intensity of the reflected light; and
a mirror for directing the reflected light from the mirrored spinner to the detector.

5,610,386

PORTABLE OPTICAL SCANNING SYSTEM INCLUDING RING HAVING BREAKAWAY ELEMENT

Alan Ball, Arlington; David Honan, Concord, both of Mass.; Peter Wyatt, Portland, Oreg.; Michael Daley, Plano, Tex., and Philip W. Swift, Port Jefferson, N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Jul. 17, 1995, Ser. No. 502,966
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—472 **27 Claims**



1. An optical scanner, comprising:
(a) a ring having a band arranged to be worn on a finger of a user;
(b) scanner module for directing light at indicia to be read, the scanner module being supported by the finger on which the band is worn; and
(c) breakaway element operatively connected between the band and the scanner module, for releasably mounting and releasing the scanner module from the ring in the event of a force being applied to the module which might otherwise injure the user.

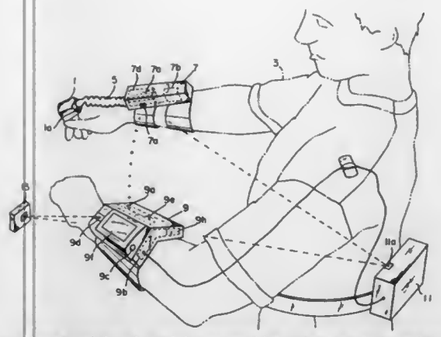
5,610,387

PORTABLE OPTICAL SCANNING SYSTEM WORN BY A USER FOR READING INDICIA OF DIFFERING LIGHT REFLECTIVITY

Simon Bard, Setauket; Brian Viscount, Kings Park; Joseph Katz, Stony Brook; Joseph DeVita, Patchogue; Anthony Fama, Mastic; Paul Poloniewicz, East Setauket; Anthony Bluso, South Setauket, all of N.Y.; Laura Wilson, New Hill, N.C., and Gary G. Little, Montclair, Calif., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 294,845, Aug. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,025, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 884,734, May 15, 1992, abandoned. This application Apr. 24, 1996, Ser. No. 637,011
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—472 **52 Claims**

1. An optical scanning system for reading indicia of differing light reflectivity comprising:
a finger mountable optical scan module including a light emitter for emitting light directed at said indicia and a light detector for detecting the reflection of light from said indicia;
a first peripheral module mountable to an arm or wrist of a user for receiving a first signal corresponding to said detected reflection of light from said optical scan module; and



a second peripheral module mountable to the user and establishing a wireless communication link with said first module for receiving from said first module a second signal corresponding to said first signal.

5,610,388

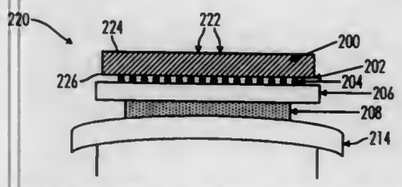
Patent Not Issued For This Number

5,610,389

STABILIZED HYBRID FOCAL PLANE ARRAY STRUCTURE

Rolin K. Asatourian, Fullerton, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 23, 1995, Ser. No. 409,229
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—216 **24 Claims**



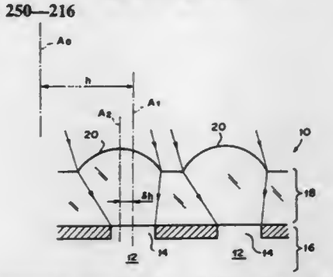
1. A hybrid focal plane array structure for processing radiation comprising:
a detector including
an optical substrate for support of an optically sensitive material, and
an optically sensitive layer for conversion of incoming radiation to electrical charge;
electronic means for receiving the electrical charge generated by the optically sensitive layer;
interconnection means for mechanical, electrical and thermal coupling of the electronic means to the detector, such that the radiation detected by the detector is transmitted as electrical signals through the interconnection means to the electronic means;
cooling means for supporting the electronic means, and for cooling the electronics means and detector; and
isolation means for separating the electronic means from the cooling means, the isolation means being soft, localized, and sufficiently thick such that the electronic means is cooled by the cooling means without experiencing undesirable distortion, and the interconnection means is unaffected by in-plane and out-of-plane stress.

5,610,390

SOLID-STATE IMAGE PICKUP DEVICE HAVING MICROLENSES EACH WITH DISPLACED OPTICAL AXIS

Hitoshi Miyano, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Sep. 12, 1995, Ser. No. 527,329
Claims priority, application Japan, Oct. 3, 1994, 6-238825
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—216 **2 Claims**



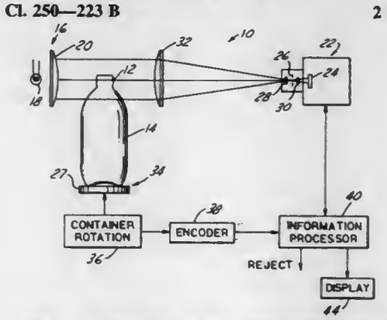
1. A solid-state image pickup device including a solid-state image pickup element which consists of a plurality of constituent pixel elements arranged in a predetermined pattern and a plurality of pixel openings for defining the shape of an opening of each constituent pixel element, and microlenses each of which is disposed immediately in front of each pixel element, the improvement being characterized by that
the optical axis of the microlens is displaced toward the optical axis of an image taking lens system disposed in front of the solid-state image pickup device, in relation to the center axis of the pixel opening by the amount of displacement corresponding to a center distance between the optical axis of the image taking lens system and the center axis of the pixel opening.

5,610,391

OPTICAL INSPECTION OF CONTAINER FINISH DIMENSIONAL PARAMETERS

James A. Ringlien, Maumee, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Aug. 25, 1994, Ser. No. 296,297
Int. Cl.[6] G01N *9/04*
U.S. Cl. 250—223 B **2 Claims**



1. A method of inspecting external dimensional parameters of a transparent container finish that comprises the steps of:
(a) directing collimated light energy onto the exterior of the finish of a transparent container such that a first portion of such light energy travels past the finish exterior while a second portion is incident on the finish exterior and reflected

or refracted by the container finish such that light rays in said second portion are no longer parallel to collimated light rays in said first portion,

(b) focusing through an iris onto a matrix array sensor said first portion of said collimated light energy that travels past the container finish exterior in a direction parallel to an optical axis of said sensor, and thereby excluding from light energy focused onto said sensor said second portion of said collimated light energy that is reflected or refracted by the container finish, such that the exterior profile of the container finish appears at said sensor as a dark image against a light background,

(c) scanning said matrix array sensor to obtain a two-dimensional image of the exterior profile of the container finish, and

(d) determining at least one exterior dimensional parameter of the container finish from said two-dimensional image.

5,610,392

METHOD TO OBSERVE FILM THICKNESS AND/OR REFRACTIVE INDEX BY COLOR DIFFERENCE

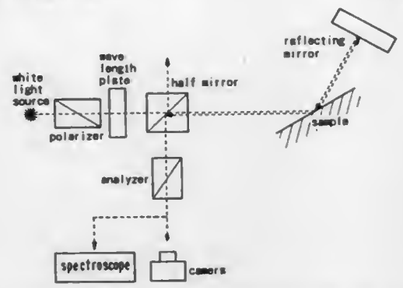
Kuniaki Nagayama, Tokyo, and Eiki Adachi, Ibaraki, both of Japan, assignors to Research Development Corporation of Japan, Saitama, Japan

Continuation of Ser. No. 231,120, Apr. 22, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 537,117

Claims priority, application Japan, Apr. 23, 1993, 5-097794; Jun. 23, 1993, 5-152247

Int. Cl.[6] G01N *21/21*; **G01B** *11/06*; **G01J** *3/50*

U.S. Cl. 250—226 **7 Claims**



1. A method for observing a distribution of at least one of a film thickness and a refractive index along a two-dimensional surface area of an object, the object being one of a solid and a liquid, said method comprising:

irradiating light beams of multiple wavelengths from a white light source onto the two-dimensional surface area of the object to obtain a reflected two-dimensional color image of the two-dimensional surface area of the object such that resultant reflected light beams of multiple wavelengths forming the reflected image of the two-dimensional surface area of the object are colored by partial extinction of a single wavelength of the light beams of multiple wavelengths from the white light source; and,

observing a distribution of at least one of a film thickness and a refractive index along the two-dimensional surface area of the object according to a color distribution of the reflected two-dimensional color image of the two-dimensional surface area of the object.

5,610,393

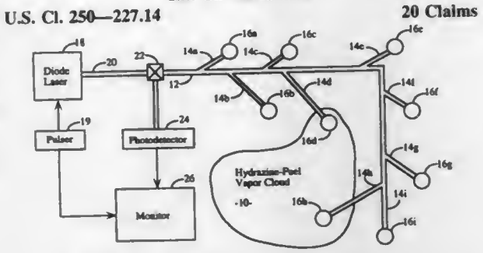
DIODE LASER INTERROGATED FIBER OPTIC REVERSIBLE HYDRAZINE-FUEL SENSOR SYSTEM AND METHOD

Charles M. Klimcak, Hawthorne; Gary L. Loper, Huntington Beach, and Bernardo Jaduszliwer, Santa Monica, all of Calif., assignors to The Aerospace Corporation, El Segundo, Calif.

Filed Jul. 24, 1995, Ser. No. 506,279

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.14 **20 Claims**



Intensity-Based Fiber Optic Reversible Sensor Network

1. A reversible sensor for optical absorption and reflection of an interrogating optical pulse communicated through an optical fiber having an opaque tube and a transparent core, said reversible sensor comprises:

an optical fiber end at a core end of said core of said optical fiber,

an electron charge transfer reagent that forms intermolecular complex with a gas, said intermolecular complex associates during exposure to said gas and complex rapidly dissociates in the absence of said gas, said intermolecular complex association and disassociation is characterized by changing said optical absorption and reflection of said optical pulse causing amplitudinal changes of said optical pulse when reflected back through said optical fiber, and

a medium integrally formed with said core end and for containing said reagent.

5,610,394

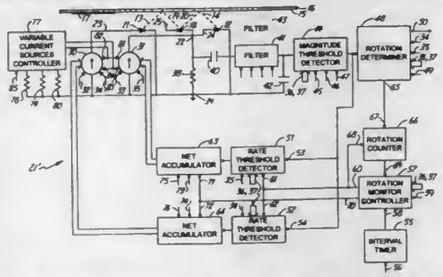
ROTATION MONITOR DISTURBANCE NEUTRALIZATION SYSTEM

Thomas A. Lee, Apple Valley, Minn., assignor to Itron, Inc., Spokane, Wash.

Filed Apr. 29, 1996, Ser. No. 638,794

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.17 **10 Claims**



1. An optical reflectivity sensing system for sensing varying reflectivity to selected electromagnetic radiation of a selected rotating surface having a plurality of surface areas of significantly differing reflectivities on which said selected electromagnetic radiation impinges while automatically countering changes in other conditions occurring in said system including changes in magnitudes of said impinging electromagnetic radiation, said system comprising:

a first electromagnetic radiation source having an input and being capable of emitting said selected electromagnetic radiation toward said plurality of surface areas of said selected rotating surface in response to electrical currents initiated in said input thereof;

an electromagnetic radiation detector having an output and having a detection surface exposed to said plurality of surface areas of said selected rotating surface, said detector being capable of providing signals at said output thereof corresponding to occurrences of said selected electromagnetic radiation being directed thereto that are representative of magnitudes thereof;

a classification threshold detector having an input coupled to said electromagnetic radiation detector output and having an output, said classification threshold detector being capable of providing crossing indications in an output signal provided at said output thereof corresponding to those occurrences in signals provided on said input thereof having magnitudes that are beyond a selected threshold value;

a rotation sensor providing checking interval indications in an output signal provided at an output thereof that at least a selected number of complete rotations of said selected rotating surface occurred during a corresponding checking interval; and

a controlled current generator having a signal input electrically coupled to said classification threshold detector output, a checking input electrically coupled to said rotation sensor output, and a first output electrically coupled to said first electromagnetic radiation source input, said controlled current generator being capable of providing selected values of electrical current at said first output thereof so as to result in tending to oppose changes in rates of said crossing indications occurring during said checking intervals based on selected ones of those said crossing indications having occurred during those said checking intervals for which a said checking interval indication also occurred.

5,610,395

PHOTODETECTOR MODULE WITH A PHOTODIODE ELECTRICALLY CONNECTED DIRECTLY ON TOP OF A PARALLEL PLATE CAPACITOR

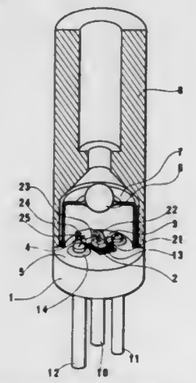
Naoki Nishiyama, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 15, 1995, Ser. No. 439,669

Claims priority, application Japan, May 16, 1994, 6-126973

Int. Cl.[6] H01L *31/02*

U.S. Cl. 250—239 **5 Claims**



1. A photodetector module comprising:

a package having a case pin, a signal output pin and at least one source pin;

a parallel plate capacitor mounted at a central portion of the package;

a photodiode electrically connected to a top of the parallel plate capacitor for receiving optical signals and providing to electric signals responsive thereto;

a preamplifier at a peripheral portion of the package for amplifying the electric signals from the photodiode;

a cap with a lens sealing an upper portion of the package;

a sleeve fitted on the package or on the cap for holding a ferule at an end of an optical fiber; and

wires which connect the capacitor, the preamplifier, the photodiode, the package and the pins of the package.

5,610,396

METHOD FOR DETERMINING THE GAIN FACTOR OF A PHOTOMULTIPLIER

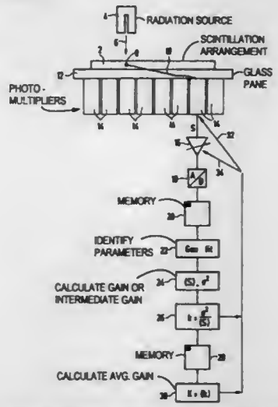
Detlef Mattern, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 9, 1995, Ser. No. 513,009

Claims priority, application Germany, Aug. 12, 1994, 44 28 672.4

Int. Cl.[6] G01D *18/00*; **G01T** *1/208*

U.S. Cl. 250—252.1 **9 Claims**



1. A method for determining the gain factor of a photomultiplier, said photomultiplier being used with a radiation source which emits gamma quanta, a scintillation arrangement which absorbs gamma quanta from said radiation source incident thereon and thereby emits photons, and said photomultiplier being optically coupled to said scintillation arrangement and emitting an electrical signal dependent on photons from said scintillation arrangement incident on said photomultiplier, said method comprising the steps of:

collimating said gamma quanta emitted by said radiation source onto a measuring location on said scintillation arrangement;

registering a plurality of output signals using said photomultiplier corresponding to the collimated gamma quanta, each output signal having an amplitude and said output signals in combination forming a signal amplitude spectrum having a location parameter and a scatter parameter associated therewith;

identifying said location and scatter parameters of said signal amplitude spectrum; and

identifying the gain factor of the photomultiplier, which identifies a dependency between photons incident on said photomultiplier and the amplitude of said output signal, using said location and scatter parameters.

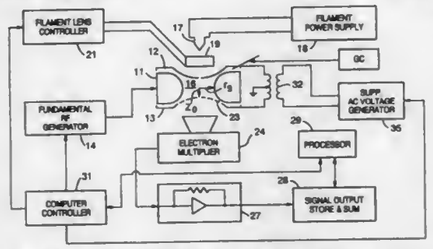
5,610,397
MASS SPECTROMETRY METHOD USING SUPPLEMENTAL AC VOLTAGE SIGNALS

Paul E. Kelley, San Jose, Calif., assignor to Teledyne Electronic Technologies, Mountain View, Calif.

Continuation of Ser. No. 326,062, Oct. 19, 1994, Pat. No. 5,508,516, which is a continuation of Ser. No. 34,170, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 884,455, May 14, 1992, Pat. No. 5,274,233, which is a continuation of Ser. No. 662,191, Feb. 28, 1991, abandoned. This application May 4, 1995, Ser. No. 434,476

Int. Cl.[6] B01D *59/44*; **H01J** *49/00*

U.S. Cl. 250—282 **4 Claims**



1. A mass spectrometry method, including the steps of:

(a) establishing a three-dimensional trapping field capable of storing ions having mass-to-charge ratio within a selected range in a three-dimensional trap volume bounded by a set of electrodes;

(b) generating a signal comprising at least two different frequency components, said signal comprising a sufficient number of said frequency components to be capable of resonating out of the trap volume unwanted ions having mass-to-charge ratios within at least a portion of said range; and

(c) while maintaining the three-dimensional trapping field substantially unchanged, applying the signal to at least one of the electrodes with sufficient amplitude so that the signal resonates out of the trap volume at least two species of unwanted ions having at least two different mass-to-charge ratios within said portion of said range.

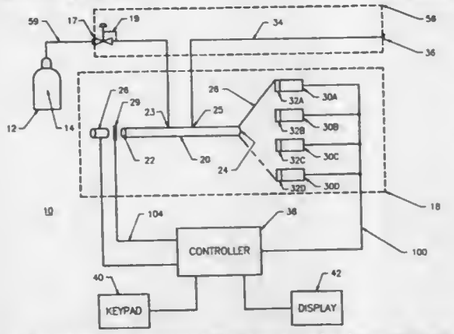
5,610,398
SYSTEM AND METHOD FOR IDENTIFYING AUTOMOTIVE AND COMMERCIAL REFRIGERANTS

J. Douglas Anderson; Stephen A. Morgan, both of West Chester; Chuck W. Montague, Glen Moore, and Richard J. Nyce, Norristown, all of Pa., assignors to Neutronics, Inc., Exton, Pa.

Filed Mar. 9, 1995, Ser. No. 401,205

Int. Cl.[6] G01N *7/00*

U.S. Cl. 250—339.12 **16 Claims**



1. A system for determining the presence of at least two vapors in a refrigerant sample, comprising:

a) an infrared light source;

b) at least two infrared detectors, each sensitive to a different predetermined wavelength range of infrared light, positioned to receive infrared light emitted from said infrared light source and each adapted to output an electrical signal corresponding to:

intensity of infrared light received in each respective predetermined wavelength range;

c) a test area for containing said refrigerant sample and disposed between said infrared light source and said infrared detectors, wherein said infrared light emitted from said infrared light source can pass through said refrigerant sample contained in said test area prior to reception by said infrared detectors;

d) input means for inputting said refrigerant sample into said test area;

e) means for reading said separate electrical signals and determining whether said separate electrical output signals correspond to one or more of said at least two vapors;

f) means for determining an amount of air, if any, in said refrigerant sample,

g) display means for displaying whether said refrigerant sample contains said one or more of said at least two vapors and said amount of air.

9. A method for determining the presence of at least two vapors in a refrigerant sample comprising the steps of:

a) producing a gas absorbed infrared light by illuminating said refrigerant sample with infrared light from an infrared light source;

b) illuminating at least two infrared detectors with said gas absorbed infrared light;

c) determining whether said gas absorbed infrared light is within a predetermined wavelength range and if said gas absorbed infrared light is within a predetermined wavelength range:

i) outputting a signal corresponding to whether said gas absorbed infrared light is within said predetermined wavelength range,

ii) determining whether said vapor is present in said refrigerant sample based on said output signal;

d) determining whether air is present in said refrigerant sample, and

e) displaying whether one or more of said at least two vapors and said air are present in said refrigerant sample.

5,610,399
APPARATUS AND PROCESS FOR THE SPATIALLY RESOLVED OPTICAL DETERMINATION OF DENSITY DISTRIBUTIONS IN BIOLOGICAL TISSUES

Gerhard Müller; Jürgen Beuthan; Olaf Minet, all of Berlin, and Michael Kaschke, Oberkochen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

PCT No. PCT/EP93/03408, § 371 Date Sep. 6, 1994, § 102(e) Date Sep. 6, 1994, PCT Pub. No. WO94/13194, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 4, 1993, Ser. No. 284,507

Claims priority, application Germany, Dec. 9, 1992, 42 41 416.4; Dec. 11, 1992, 42 41 772.4

Int. Cl.[6] G01N *21/49*

U.S. Cl. 250—341.1 **4 Claims**

1. Process for an optical, spatially resolved determination of density distributions in biological tissues, comprising:

a first step of

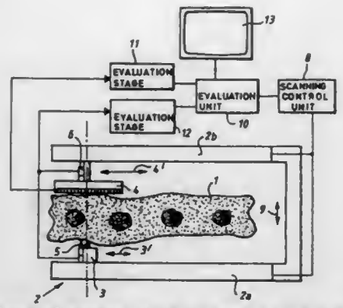
irradiating a biological tissue by directing a locally confined beam of electromagnetic radiation at an incidence position of said tissue,

keeping said incidence position fixed,

determining a thickness of said tissue being irradiated, and

sensing and recording a direcly transmitted radiation component and scattered radiation components in a spatially resolved manner over a defined spatial angle, and

a second step of changing said incidence position and repeating said first step, and



a third step of repeating said second step a number of times to obtain a reconstructive representation of tissue through which said radiation has passed based on spatially resolved recordings of said transmitted and scattered radiation components and said tissue thickness as determined in each repetition of said first step.

5,610,400
SPECTROSCOPIC MEASURING SENSOR FOR THE ANALYSIS OF MEDIUMS

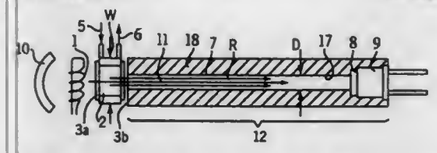
Kurt Weckström, Espoo, Finland, assignor to Instrumentarium Oy, Finland

Filed Mar. 1, 1995, Ser. No. 396,917

Claims priority, application Finland, Mar. 2, 1994, 941001

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—345 **19 Claims**



1. A measuring sensor for the spectroscopic analysis of mediums, said measuring sensor comprising:

a sample chamber (**2**) for a medium to be analyzed, said chamber being provided with at least two radiation transmitting windows (**3***a*, **3***b*) or window sections in window openings included in the chamber;

a radiation source (**1**) for emitting radiation which progresses through the first window (**3***a*), the sample chamber (**2**) and further through the second window (**3***b*);

one or a plurality of detectors (**9**, **9***a*, **9***b*) which is or are optically directed toward said second window or window section;

an optical filter (**8**, **8***a*, **8***b*) between said opening of the second window and each detector; and

a wave tube (**7**; **7***a*, **7***b*) located between the second sample chamber window (**3***b*) or window section and the detector (**9***a*, **9***b*) and comprising an envelope made of a solid material (**18**), provided with radiation transmissive ends (**15**, **16**) and an interior (**11**) having a radiation reflective inner surface (**17**);

wherein said optical filter is an interference filter (**8**, **8***a*, **8***b*) transmissive to a certain wavelength band, wherein said envelope material (**18**) has an index of refraction which exceeds that of the wave tube interior (**11**), and wherein the wave tube has a length (LL) which is at least about five times its mean diameter (D; D1 or D2) for carrying the radiation emitted from the chamber along the wave tube to each detector (**9**, **9***a*, **9***b*), whereby the radiation directed to a detector comprises that which is incident on said interference filter (**8**, **8***a*, **8***b*) at angles of incidence on the filter smaller than 10°.

5,610,401
RADIANT RAY-DETECTOR AND METHOD FOR PRODUCING SAME

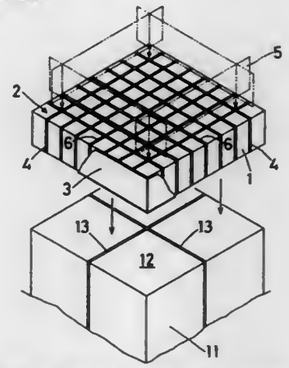
Yoshinori Kuwabara, and Toshihiko Ryuo, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 218,657, Mar. 25, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,726

Claims priority, application Japan, Apr. 5, 1993, 5-078241

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—367 **6 Claims**



1. A radiant ray-detector comprising a plurality of photomultiplier tubes joined to a hexahedron scintillator bundle consisting of a number of hexahedron scintillator chips, the number of such chips being greater than that of the tubes, the chips having a plurality of faces, more than one of said faces being mirror finished and the remainder of the faces being roughened by treatment with abrasive grains, said bundle being formed by joining the roughened faces, the roughness of the faces being controlled by controlling the size of the abrasive grains used for the treatment and the roughness varying so that the transmittance of the bundle increases from the center of the bundle to the periphery thereof.

5,610,402
SCINTILLATION CAMERA

Nobutoku Motomura, and Takashi Ichihara, both of Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1995, Ser. No. 412,016

Claims priority, application Japan, Mar. 30, 1994, 6-060936

Int. Cl.[6] G01T *1/164*

U.S. Cl. 250—369 **18 Claims**



1. A scintillation camera comprising:

a camera body for detecting γ rays radiated from first RI and second RI dosed to a subject, γ rays radiated from said first RI being distributed with each of first and second energy-peaks, γ rays radiated from said second RI being distributed with a third energy-peak close to the second energy-peak;

energy calculation means for calculating an energy of each of the γ rays on the basis of an output from the camera body;

position calculation means for calculating injection positions of each of the γ rays on the basis of an output from the camera body;

first count means for counting a first injection number relating to γ rays having an energy within a first energy window including the first energy-peak and a second injection number relating to γ rays having an energy within a second energy window including the second and third energy-peaks, for every injec-

tion position on the basis of outputs of said energy calculation means and said position calculation means;

second count means for counting a third injection number relating to γ rays having an energy within a third energy window, a fourth injection number relating to γ rays having an energy within a fourth energy window on the basis of outputs of said energy calculation means and said position calculation means, the third energy window and the fourth energy window arranged adjacent respective ends of the first energy window;

third count means for counting a fifth injection number relating to γ rays having an energy within a fifth energy window, and a sixth injection number relating to γ rays having an energy within a sixth energy window on the basis of outputs of said energy calculation means and said position calculation means;

means for obtaining a seventh injection number on the basis of the first injection number, the third injection number and the fourth injection number, said seventh injection number obtained without scatter rays;

means for obtaining an eighth injection number on the basis of the second, fifth and sixth injection numbers, said eighth injection number obtained without scatter rays and without γ rays from said first RI;

first image forming means for forming a first image relating to the first RI on the basis of the seventh injection number and a product of multiplying a predetermined coefficient with the seventh injection number; and

second image forming means for forming a second image relating to the second RI on the basis of subtracting the product of multiplying the predetermined coefficient with the seventh injection number from the eighth injection number.

5,610,403

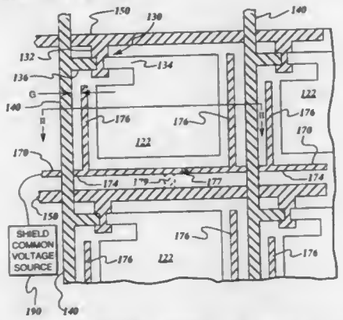
SOLID STATE RADIATION IMAGER WITH GATE ELECTRODE PLANE SHIELD WIRES

Jack D. Kingsley, Grand Junction, Colo., and George E. Possin, Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1995, Ser. No. 523,323

Int. Cl.[6] H01L *31/0224;* **G01T** *1/24*

U.S. Cl. 250—370.09 **12 Claims**



1. A solid state radiation imager for generating images with reduced image artifacts during read-out of the imager and having components disposed in levels above a substrate, comprising:

a plurality of pixels disposed in an imaging array pattern comprising rows and columns, each of said pixels comprising a photosensor coupled to a thin film switching transistor;

a plurality of scan lines disposed at a first level with respect to said substrate along a first axis of said imaging array pattern, each row of pixels in said imaging array pattern having a respective scan line, each of said respective scan lines being coupled to a respective gate electrode in said thin film switching transistors for each pixel disposed along the respective row of pixels in said imaging array pattern;

a plurality of data lines disposed at a second level with respect to said substrate along a second axis of said imaging array pattern, each column of pixels in said imaging array pattern having a corresponding data line, each of said respective data lines being coupled to a respective readout electrode in said thin film switching transistors for each pixel disposed along the respective column of pixels in said imaging array pattern;

a plurality of shield lines disposed at said first level with respect to said substrate and separated from adjacent portions of said data lines by a shield line gap distance, each of said shield lines further comprising respective pixel shielding spurs disposed along said second axis between portions of said pixels and adjacent portions of said data lines.

5,610,404

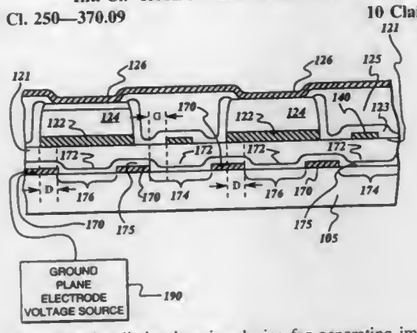
FLAT PANEL IMAGING DEVICE WITH GROUND PLANE ELECTRODE

George E. Possin, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1995, Ser. No. 523,324

Int. Cl.[6] H01L *31/0224;* **G01T** *1/24*

U.S. Cl. 250—370.09 **10 Claims**



1. A flat panel radiation imaging device for generating images with reduced image artifacts during read-out of the imager, the imaging device comprising:

a plurality of pixels disposed on a substrate in an imaging array pattern comprising rows and columns, each of said pixels comprising a respective photosensor coupled to a respective pixel thin film switching transistor;

a plurality of address lines disposed in said imaging array pattern so as enable individually addressing respective ones of said pixels;

a common electrode disposed over said plurality of pixels; and

a ground plane electrode disposed above said substrate and beneath said plurality of pixels and said address lines, said ground plane electrode being electrically isolated from said pixels and said address lines by a ground plane dielectric layer disposed therebetween.

5,610,405

ELECTRONIC DEVICE FOR MEASURING LIGHT PROPERTIES

Takashi Inushima; Rimantas Vaitkus, and Satoshi Teramoto, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory, Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 23, 1994, Ser. No. 216,529

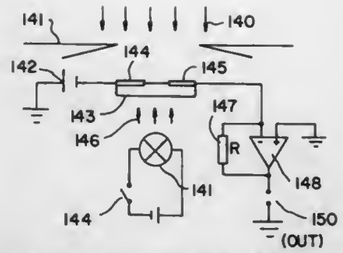
Claims priority, application Japan, Mar. 24, 1993, 5-089115; Mar. 30, 1993, 5-096666; Apr. 2, 1993, 5-100412; May 8, 1993, 5-131378; Feb. 22, 1994, 6-047730

Int. Cl.[6] G01J *1/24;1/42*

U.S. Cl. 250—372 **16 Claims**

1. An electronic device comprising:

a substance comprising a CVD diamond and having photoconductivity, an energy bandgap and a trap level, and



means for reading out information about a first electromagnetic emission irradiated to said substance in accordance with electric resistance of said substance or photocurrent flowing in said substance with a second electromagnetic emission being irradiated to said substance,

wherein said first electromagnetic emission has a photon energy greater than an energy bandgap of said substance, and said second electromagnetic emission has a photon energy smaller than said energy bandgap, and

wherein said information about said first electromagnetic emission irradiated to said substance relates to different wavelengths of said first electromagnetic emission.

5,610,406

CHARGED PARTICLE BEAM EXPOSURE METHOD AND APPARATUS

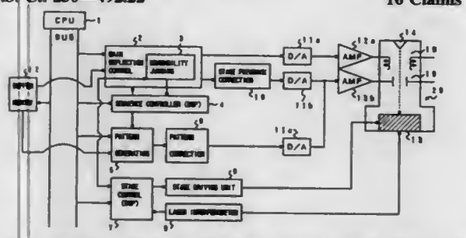
Junichi Kai, Kawasaki, and Mitsuhiro Nakano, Kasugai, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1995, Ser. No. 410,294

Claims priority, application Japan, Mar. 30, 1994, 6-061531

Int. Cl.[6] H01J *37/04*

U.S. Cl. 250—492.22 **16 Claims**



9. A charged particle beam exposure apparatus which carries out an exposure by irradiating a charged particle beam on a substrate placed on a stage while continuously moving the stage and deflecting the charged particle beam by main deflector means and sub deflector means, said charged particle beam exposure apparatus comprising:

first means for calculating stage moving information which describes an optimum expected locus of a stage moving speed with respect to a frame region based on a stage moving speed that enables exposure within each cell region within the frame region, by defining the frame region as being made up of a plurality of cell regions arranged in a moving direction of the stage within a drawable range in which the charged particle beam can be deflected by the main deflector means, the optimum expected locus of the stage moving speed including expected changes in the stage moving speed and the times at which the expected speed changes are expected to occur; and

second means for controlling a deflected position of the charged particle beam caused by the main deflector means by variably controlling the stage moving speed based on said stage moving information.

5,610,407

OPTICAL IMAGE SCANNING APPARATUS DETECTING SHEET SIZE AND DISPLACEMENT

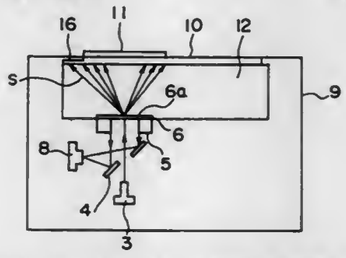
Nobuyuki Baba, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 195,204, Feb. 14, 1994, Pat. No. 5,479,274. This application Jul. 6, 1995, Ser. No. 499,182

Claims priority, application Japan, Feb. 15, 1993, 5-025185

Int. Cl.[6] G01N *21/47;* **H01J** *3/14;* **G02B** *26/08;5/32*

U.S. Cl. 250—559.24 **4 Claims**



1. An image scanning apparatus scanning an image formed on an original sheet placed on a scan table, original sheet information including size and displacement information of said original sheet placed on said scan table being obtained before scanning of said image is performed, said image scanning apparatus comprising:

beam emitting means for emitting a coherent first beam, said beam emitting means being situated at a fixed position with respect to said scan table;

deflecting means for deflecting said first beam so that said first beam traces a predetermined scan line on a plane including a surface of said original sheet, said predetermined scan line being formed on said plane so that a length of a beam path from a beam originating point of said deflecting means to any point on said predetermined scan line is uniform, and an incident angle of said first beam at any point on said surface of said original sheet is uniform; and

beam sensing means for sensing an intensity of a second beam generated by reflection of said first beam at said surface of said original sheet, said second beam being input to said sensing means via said deflecting means,

said original sheet information being obtained in accordance with a detection of a sharp change in said intensity of said second beam received by said sensing means with reference to a scanning position of said first beam.

5,610,408

PROCESS FOR PREPARING LIQUID DIPHENYLMETHANE DIISOCYANATE

Toshiaki Imokawa, Niihama, and Yoshiharu Kato, Ehime-ken, both of Japan, assignors to Sumitoma Bayer Urethane Co., Ltd., Amagasaki, Japan

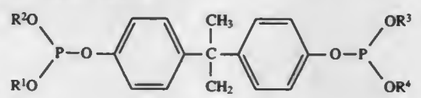
Filed Aug. 28, 1995, Ser. No. 520,545

Claims priority, application Japan, Aug. 30, 1994, 6-243516

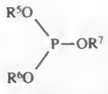
Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—182.2 **1 Claim**

1. A process for preparing liquid diphenylmethane diisocyanate, which comprises adding a phospholine catalyst and a phosphorous acid ester of the formula (I):



or the formula (II)



wherein R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are the same or different, and each represents a C_4–C_{20} alkyl group, to diphenylmethane diisocyanate, stirring the mixture at a temperature of from 60° to 80° C. for a period of from 1 to 10 hours, and adding a deactivating agent to the mixture once the desired degree of carbodiimidization has been reached.

5,610,409

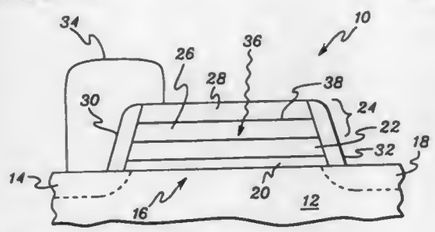
OPTICAL FET WITH DIODE ADJACENT GATE

James M. Leas, South Burlington, Vt., and Jack A. Mandelman, Stormville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 371,916, Jan. 12, 1995, Pat. No. 5,557,114. This application May 6, 1996, Ser. No. 643,675

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—59 **15 Claims**



1. A light-responsive FET, comprising:
a gate;
a light-responsive diode vertically adjacent said gate, said light-responsive diode including a planar junction;
a source self-aligned to said light-responsive diode;
a drain self-aligned to said light-responsive diode;
a channel region between said source and said drain; and
a dielectric layer between said channel region and said gate.

5,610,410

III-V COMPOUND SEMICONDUCTOR DEVICE WITH SCHOTTKY ELECTRODE OF INCREASED BARRIER HEIGHT

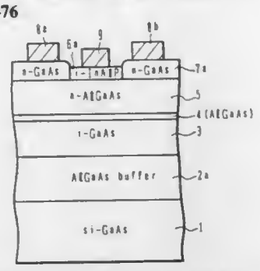
Kenji Imanishi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 3, 1995, Ser. No. 398,519

Claims priority, application Japan, Mar. 18, 1994, 6-048875

Int. Cl.[6] H01L *31/0256*

U.S. Cl. 257—76 **18 Claims**



1. A field effect compound semiconductor device comprising:
a GaAs semiconductor substrate;
a plurality of group III-V compound semiconductor crystal layers formed on said GaAs semiconductor substrate and including an active layer for transferring carriers;
an InAlP layer substantially lattice-matched with GaAs formed at least on a partial surface of said group III-V compound semiconductor crystal layers;
a gate electrode formed on said InAlP layer, forming Schottky contact; and
a pair of source/drain electrodes disposed to interpose therebetween said gate electrode, and forming ohmic contact with said active layer.

5,610,411

SILICON CARBIDE BIPOLAR SEMICONDUCTOR DEVICE WITH BIRDSBEAK ISOLATION STRUCTURE

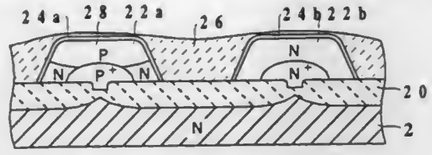
Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 10, 1991, Ser. No. 804,575

Claims priority, application Japan, Sep. 24, 1991, 3-243508

Int. Cl.[6] H01L *29/161;29/73*

U.S. Cl. 257—77 **2 Claims**



1. A bipolar semiconductor device comprising:
a) a silicon substrate having a surface;
b) an insulating layer formed on the entire surface of the substrate, said insulating layer including at least two bird's beak structures wherein a respective end portion of each of the two bird's beak structures are joined together;
c) a plurality of first growth layers of silicon carbide which have a same plane bearing as that of the substrate, each of said plurality of first growth layers being isolated from one another; and
d) a bipolar semiconductor element formed on each of the plurality of first growth layers.

5,610,412

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH DEPLETION LAYER

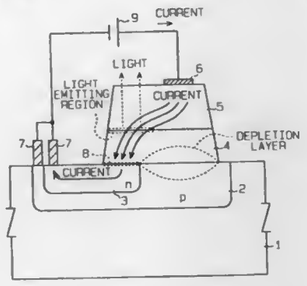
Naomi Awano, Nagoya-city; Hajime Inuzuka, Nishio-city; Masahito Mizukoshi, Nagoya-city, and Shigeki Kudomi, Ampachi-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 19, 1995, Ser. No. 545,224

Claims priority, application Japan, Oct. 19, 1994, 6-253950

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—85 **15 Claims**



1. A semiconductor device comprising:
a semiconductor monocrystalline substrate having a first conductivity type region of a first conductivity type which becomes a current channel forming region;
a first semiconductor layer of said first conductivity type made of a material different from that of said semiconductor monocrystalline substrate and so disposed on said semiconductor monocrystalline substrate as to be in contact with both said first conductivity type region and another region of said semiconductor monocrystalline substrate;
a second semiconductor layer of a second conductivity type made of the same material as said first semiconductor layer and disposed on said first semiconductor layer, said first semiconductor layer and said second semiconductor layer forming an active region for emitting light; and
an electrode disposed on an upper surface of said second semiconductor layer above said other region of said semiconductor monocrystalline substrate where said first conductivity type region is not provided,
wherein a potential for extending a depletion layer toward a side of said first semiconductor layer is applied to said other region of said semiconductor monocrystalline substrate where said first conductivity type region is not provided.

5,610,413

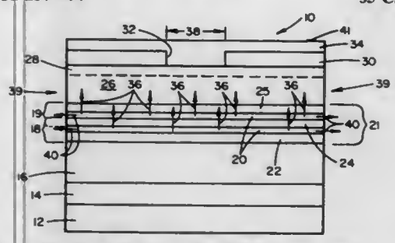
GROUP II-VI COMPOUND SEMICONDUCTOR LIGHT EMITTING DEVICES AND AN OHMIC CONTACT THEREFOR

Yongping Fan; Jung Han, both of West Lafayette, Ind.; Arto V. Nurmikko, Providence, R.I.; Robert L. Gunshor, and Li He, both of West Lafayette, Ind., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 207,327, Mar. 7, 1994, Pat. No. 5,548,137, which is a continuation-in-part of Ser. No. 995,454, Dec. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,088

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—97 **55 Claims**



1. A semiconductor light emitting device comprising:
at least one quantum well region disposed between first and second cladding layers, said first and second cladding layers having a first and second conductivity type respectively, each of said cladding layers being of a first II–VI compound semiconductor material wherein said first conductivity type is n-type and second conductivity type is p-type;
said at least one quantum well region comprising a quantum well layer sandwiched between first and second barrier layers, said first and second barrier layers being of a second II–VI compound semiconductor material, said first cladding layer being lattice matched to said first barrier layer and said second cladding layer being lattice matched to said second barrier layer, said quantum well layer being of a third II–VI compound semiconductor material having the formula $A_xB_{(1-x)}C$ wherein A and B are two different elements from Group II, C is an element from Group VI, and $0<x<1$;
a contact layer of a p-type fourth II–VI compound semiconductor material; and
a graded bandgap p-type II–VI region sandwiched between the second cladding layer and the contact layer.

5,610,414

SEMICONDUCTOR DEVICE

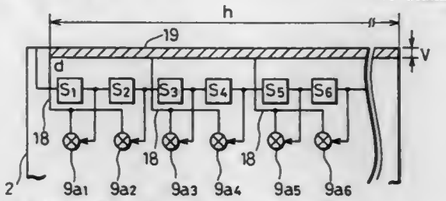
Hiroshi Yoneda, Ikoma; Shigeto Yoshida; Kenichi Katoh, both of Tenri; Yasukuni Yamane, Shiki, and Yutaka Ishii, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1994, Ser. No. 275,676

Claims priority, application Japan, Jul. 28, 1993, 5-186459; Sep. 29, 1993, 5-242259; Oct. 27, 1993, 5-268929

Int. Cl.[6] H01L *29/04;33/00;27/10*

U.S. Cl. 257—99 **75 Claims**



1. A semiconductor device, comprising:
a substrate having formed thereon a matrix portion having a plurality of active device elements formed thereon in a matrix form;
an active device circuit including a semiconductor active device, said active device circuit having a plurality of input terminals, said active device circuit being formed around the matrix portion on said substrate;
an external connection terminal comprising one or more divided pieces arranged substantially parallel to said active device circuit for making an electrical connection with an external circuit aside from said semiconductor device, said external connection terminal being formed on an edge of said substrate; and
an electrically conductive line for making an electrical connection between each input terminal of said active device circuit and said external connection terminal, said electrically conductive line being formed on said substrate, wherein said electrically conductive line is divided into portions comprising a plurality of divided lines whose wiring resistance each has a predetermined value or less.

5,610,415

TURN-OFF SEMICONDUCTOR COMPONENT HAVING AMPHOTERIC PROPERTIES

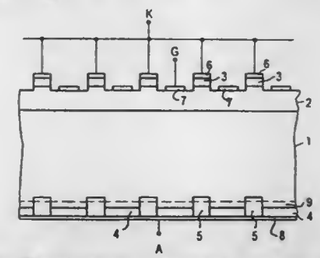
Hans-Joachim Schulze, Ottobrunn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 14, 1995, Ser. No. 528,534

Claims priority, application Germany, Sep. 30, 1994, 44 35 079.1

Int. Cl.[6] H01L *29/74*

U.S. Cl. 257—149 **11 Claims**



1. A turn-off semiconductor component, comprising:
a semiconductor body with at least one first emitter zone of first conductivity type, at least one base zone of second conductivity type adjacent to the first emitter zone, an inner zone of first conductivity type adjacent to the base zone, and at least one second emitter zone of second conductivity type adjacent to the inner zone and that has a given doping concentration of first substances; and

at least the second emitter zone being doped with additional substances that act as dopants of first conductivity type above a normal operating temperature of the semiconductor component, but which do not substantially act as first conductivity dopants at said operating temperature, so that if a locally significant increased current density occurs in current lines at turn-off, a temperature in said current lines, which is higher than the normal operating temperature, will cause said additional substances to act as the first conductivity dopants so as to reduce current flow in said current lines and make turn-off current more uniform overall.

5,610,416

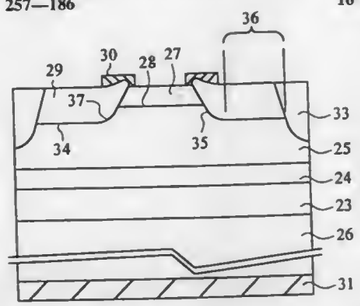
AVALANCHE PHOTODIODE WITH EPITAXIALLY REGROWN GUARD RINGS

Chung-Yi Su, Milpitas; Ghulam Hasnain, Stanford, and James N. Hollenhorst, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo ALto, Calif.

Filed Feb. 16, 1995, Ser. No. 389,375

Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*

U.S. Cl. 257—186 **16 Claims**



1. A semiconductor light detector comprising:

a semiconductor platform of a first conductivity type, the semiconductor platform having a multi-layer structure including a light absorption layer and an avalanche multiplication layer, the avalanche multiplication layer having a first impurity dopant concentration;

a cap layer formed of a semiconductor material of a second conductvity type, the cap layer heing positioned proximate to the avalanche multiplication layer, and defining a first P-N junction;

a mesa structure including the cap layer, the first P-N junction, and an upper portion of the avalanche multiplication layer; and

a guard ring of epitaxal semiconductor material of the second conductivity type, the guard ring of epitaxial semiconductor material being positioned proximate to the avalanche multiplication layer and the mesa structure, and surrounding the first P-N junction, the guard ring of epitaxial semiconductor material having a second impurity dopant concentration, the second impurity dopant concentration being less than the first impurity dopant concentration.

5,610,417

INTEGRATED CIRCUIT WITH VARIABLE PAD PITCH

Bryan C. Doi, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 142,839, Oct. 25, 1993, Pat. No. 5,424,248, which is a continuation of Ser. No. 805,418, Dec. 10, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 415,183

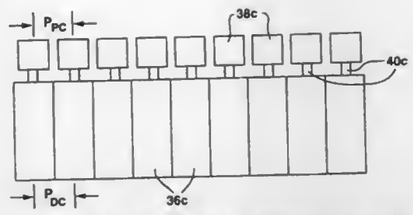
Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—202 **10 Claims**

6. An integrated circuit with four sides comprising:

a semiconductor substrate including active devices formed therein;

a base layer means disposed above said semiconductor substrate for providing a plurality of drivers, said plurality of drivers



comprising four sets of drivers connected with said active devices, each set of said four sets of drivers being arranged at a respective side of said four sides of the integrated circuit, said each set of said four sets of drivers having all of its drivers arranged in a single row, said drivers of said four sets of drivers having a first pitch between adjacent centers of said drivers;

a customization layer means disposed over said base layer means for providing a plurality of bonding pads, said plurality of bonding pads comprising four sets of bonding pads, each set of said four sets of bonding pads being arranged at a respective side of said four sides of the integrated circuit, said each set of said four sets of bonding pads having all of its bonding pads arranged in a single row and thereby each side of said four sides of the integrated circuit having exclusively only one single row of bonding pads arranged thereat, said bonding pads of said four sets of bonding pads having a second pitch between adjacent centers of said bonding pads, wherein said second pitch is greater than said first pitch; and

means for coupling some, but not all, of said drivers to said bonding pads, thereby at least one of said drivers not being coupled to any bonding pad of the integrated circuit.

5,610,418

SEMICONDUCTOR MEMORY DEVICE

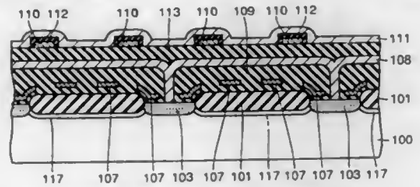
Takahisa Eimori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 468,395

Claims priority, application Japan, Sep. 20, 1994, 6-224996

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—306 **7 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells formed on a major surface of a semiconductor substrate, each having one transistor element and one capacitive element;

a plurality of word lines formed by a first conductive layer on the major surface of said semiconductor substrate with an insulating layer therebetween, arranged parallel to each other and electrically connected to gate electrodes of transistor elements of corresponding said plurality of memory cells; and

a plurality of bit lines formed by a second conductive layer positioned above said first conductive layer on the major surface of said semiconductor substrate, arranged parallel to each other and crossing said word lines, and electrically connected to one of source/drain regions of transistor elements of corresponding said plurality of memory cells; wherein

a storage node constituting one electrode of the capacitive element of each said memory cell is formed by a third conductive layer positioned above said second conductive

layer on the major surface of said semiconductor substrate, electrically connected to the other one of the source/drain regions of the transistor element of the corresponding memory cell, and arranged between adjacent two word lines and crossing over a bit line, with a longer side being parallel to the word lines and a shorter side being parallel to the bit lines.

5,610,419

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH ELEMENTS ISOLATED BY TRENCHES

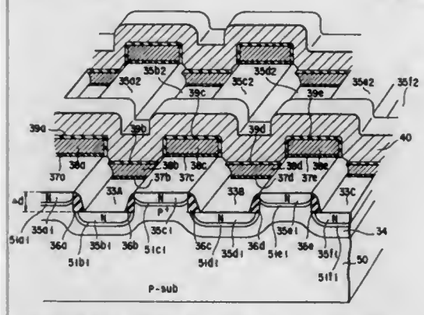
Shinichi Tanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,605

Claims priority, application Japan, Mar. 16, 1994, 6-046115

Int. Cl.[6] H01L *27/108;29/76;29/788*

U.S. Cl. 257—315 **21 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate;

a plurality of trenches formed in parallel at the main surface of said semiconductor substrate;

a plurality of projecting portions formed between said trenches;

a first group of devices each formed at a bottom of a corresponding one of said trenches; and

a second group of devices each formed at a corresponding one of said projecting portions, each of said second group of devices being separated from said first group of devices in a direction of depth of said trenches, thereby insulated from each of said first group of devices.

5,610,420

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

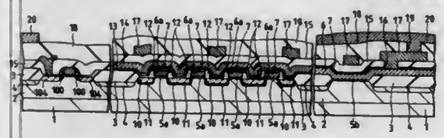
Kenichi Kuroda, Tachikawa; Masaaki Terasawa, Akishima, and Kiyoshi Matsubara, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Division of Ser. No. 98,779, Jul. 29, 1993, Pat. No. 5,432,111. This application Apr. 24, 1995, Ser. No. 427,253

Claims priority, application Japan, Aug. 5, 1992, 4-208337

Int. Cl.[6] H01L *29/788;29/76;29/94;31/062*

U.S. Cl. 257—315 **26 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate having a main surface;

first transfer MISFETs provided at a first region of said main surface and arranged in a first direction,

each of said first transfer MISFETs having a gate electrode formed over said main surface, and a source region and a drain region formed in said substrate;

a first wiring line extending in said first direction and integrally formed with the gate electrodes of said first transfer MISFETs;

memory cells provided at a second region of said main surface and arranged in said first direction and in a second direction perpendicular to said first direction to form a matrix arrangement,

each of said memory cells comprised of a single MISFET and having a first semiconductor region and a second semiconductor region provided in said substrate, and having a channel forming region provided, in said substrate, between said first semiconductor region and said second semiconductor region, and also having a floating gate electrode provided over said main surface and a control gate electrode provided over said floating gate electrode, the floating and control gate electrodes having a width;

a width of the gate electrodes of the first transfer MISFETs being greater than the width of the floating and control gate electrodes of the memory cells;

word lines extending in said first direction and being integrally formed with said control gate electrodes of said memory cells arranged in said first direction;

first data lines extending in said second direction in such a manner that each of said first data lines is electrically connected to both said first semiconductor regions of said memory cells arranged in said second direction and one of said source and said drain regions of one of said first transfer MISFETs;

a first insulating film provided over said first wiring line, said memory cells, said word lines, and said first data lines so as to cover said main surface; and

a second wiring line provided over said first insulating film and extending in said first direction,

said second wiring line being electrically connected to said first wiring line and having a lower resistance than that of said first wiring line,

wherein wiring lines, which are formed of a same layer as said second wiring line and which are electrically connected to said word lines to decrease the wiring resistance of said word lines, are not formed over said second region.

5,610,421

INTEGRATED CIRCUIT WITH EPROM CELLS

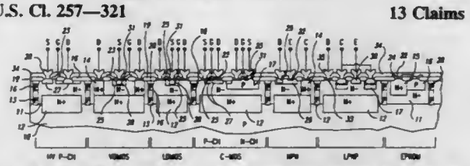
Claudio Contiero, Buccinasco; Tiziana Cavioni, and Stefano Manzini, both of Novara, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Dec. 15, 1994, Ser. No. 358,152

Claims priority, application European Pat. Off., Dec. 15, 1993, 93830505

Int. Cl.[6] H01L *27/06;27/115*

U.S. Cl. 257—321 **13 Claims**



1. A monolithic integrated circuit structure having at least one electrically programmable read-only memory cell, the circuit structure being formed on a chip of semiconductor material having a front surface and including a substrate of the P type and an N– layer overlying the P substrate, the monolithic integrated circuit structure comprising:

a plurality of buried N+ regions disposed between the P substrate and the N– layer;

a plurality of deep N+ regions extending from the front surface into the N– layer and having substantially the same depth and doping concentration profile, a first of said plurality of deep

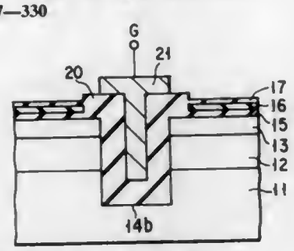
N+ regions extending sufficiently deep to contact one of said plurality of buried N+ regions;
a plurality of P regions extending from the front surface into the N– layer;
a plurality of thin N+ regions providing source and drain regions for MOS transistors and extending from the front surface into at least some of the P regions;
a plurality of thin isolating layers disposed over selected portions of the front surface and adapted to provide gate isolation for MOS transistors;
a plurality of conductive material layers extending over the thin isolating layers and adapted to provide gate electrodes for MOS transistors; and
a plurality of electric connection metallic layers extending across the front surface and being isolated from each other by a layer of an insulating material and being in ohmic contact with selected areas of said deep N+ regions and said thin N+ regions;
the memory cell having:
one of said P regions acting as an active area,
a pair of said thin N+ regions disposed in said active area acting as source and drain N+ regions,
one of said deep N+ regions being positioned as a control electrode, said one of said deep N+ regions having substantially the same depth and doping concentration profile as the other deep N+ regions, and
one of said conductive material layers acting as a floating gate electrode, said floating gate electrode extending over a portion of the active area between the source and drain N+ regions which forms a cell channel, isolated therefrom by one of said thin isolating layers, said floating gate electrode also extending over a selected area of the deep N+ region which forms the control electrode and separated therefrom by one of said thin isolating layers.

5,610,422

SEMICONDUCTOR DEVICE HAVING A BURIED INSULATED GATE

Satoshi Yanagiya; Noboru Matsuda, both of Kawasaki, and Yoshiro Baba, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 3, 1995, Ser. No. 510,654
Claims priority, application Japan, Sep. 29, 1994, 6-235063
Int. Cl.[6] H01L *29/76;31/062*
U.S. Cl. 257—330 **5 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a first semiconductor layer of a second conductivity type formed on a surface of said semiconductor substrate;
a second semiconductor layer of the first conductivity type formed on said first semiconductor layer;
a first electrode layer buried into each of first trenches of a plurality of trenches, with an insulation film interposed therebetween, said plurality of trenches being formed, through said second semiconductor layer and said first semiconductor layer, to such a depth as to reach said semiconductor substrate, and said first trenches corresponding to a device operation region;
a second electrode layer buried into each of second trenches of said plurality of trenches, with an oxide film interposed therebetween, said second trenches corresponding to a wiring region, and said oxide film being thicker than said insulation film; and
a wiring layer formed on said second semiconductor layer with the oxide film interposed therebetween, said wiring layer covering said second electrode layer.

5,610,423

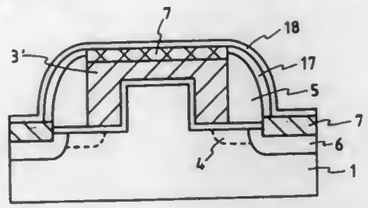
Patent Not Issued For This Number

5,610,424

METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR

Sang H. Park, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Division of Ser. No. 364,166, Dec. 27, 1994, Pat. No. 5,527,725. This application Oct. 23, 1995, Ser. No. 546,737
Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30480
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—344 **8 Claims**



1. A metal oxide semiconductor field effect transistor comprising:
a semiconductor substrate comprising a protruded structure at a predetermined portion of the semiconductor substrate;
a gate oxide film surrounding the protruded structure of the semiconductor substrate;
a polysilicon layer pattern for a gate electrode, the polysilicon layer pattern disposed over the gate oxide film;
lightly doped drain regions formed in the semiconductor substrate at opposite edges of the polysilicon layer pattern, wherein the lightly doped drain regions are not formed in the protruded structure of the semiconductor substrate; and
source and drain regions formed outside the lightly doped drain regions in the semiconductor substrate.

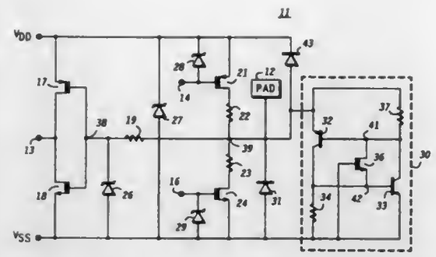
5,610,425

INPUT/OUTPUT ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT FOR AN INTEGRATED CIRCUIT

John H. Quigley, and David F. Mietus, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 6, 1995, Ser. No. 384,047
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—358 **12 Claims**

1. An Electrostatic Discharge (ESD) protection circuit for a pad of an integrated circuit, the ESD circuit comprising:
a Silicon Controlled Rectifier (SCR) comprising:
a first transistor having a first electrode, a control electrode, and a second electrode coupled to the pad wherein said first transistor is a bipolar PNP transistor;
a second transistor having a first electrode coupled to said control electrode of said first transistor, a control electrode



coupled to said first electrode of said first transistor, and second electrode coupled for receiving a first power supply voltage wherein said second transistor is a bipolar NPN transistor;
a first resistor having a first terminal coupled to the pad and a second terminal coupled to said control electrode of said first transistor;
a second resistor having a first terminal coupled to said first electrode of said first transistor and a second terminal coupled for receiving said first power supply voltage;
a third transistor for triggering said SCR having a first electrode coupled to said control electrode of said first transistor, a control electrode coupled for receiving said first power supply voltage, and second electrode coupled to said first electrode of said first transistor wherein said third transistor is disabled by said first power supply voltage, wherein an ESD event breaks-down said third transistor for enabling said SCR, and wherein said third transistor is a Metal Oxide Semiconductor Field Effect Transistor (MOSFET);
an output stage comprising:
a p-channel enhancement MOSFET having a drain, a gate coupled for receiving a first control signal, and a source coupled for receiving a second power supply voltage;
a first resistor having a first terminal coupled to said drain of said p-channel enhancement MOSFET and a second terminal coupled to the pad;
a second resistor having a first terminal coupled to the pad and a second terminal;
a n-channel enhancement MOSFET having a drain coupled to said second terminal of said second resistor, a gate coupled for receiving a second control signal, and a source coupled for receiving said first power supply voltage;
a first zener diode having an anode coupled to said gate of said p-channel enhancement MOSFET and a cathode coupled for receiving said second power supply voltage; and
a second zener diode having an anode coupled for receiving said first power supply voltage and a cathode coupled to said gate of said n-channel enhancement MOSFET.

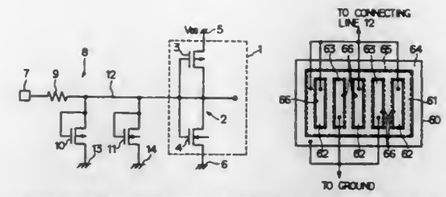
5,610,426

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING EXCELLENT DUAL POLARITY OVERVOLTAGE PROTECTION CHARACTERISTICS

Akiyoshi Asai, Aichi-gun; Kazuhiro Tsuruta, Toyoake, and Takeshi Enya, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1995, Ser. No. 505,819
Claims priority, application Japan, Jul. 21, 1994, 6-169738
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—360 **11 Claims**

1. A semiconductor integrated circuit device comprising:
a semiconductor substrate;
an insulating layer disposed on said semiconductor substrate;
a semiconductor layer disposed on said insulating layer;



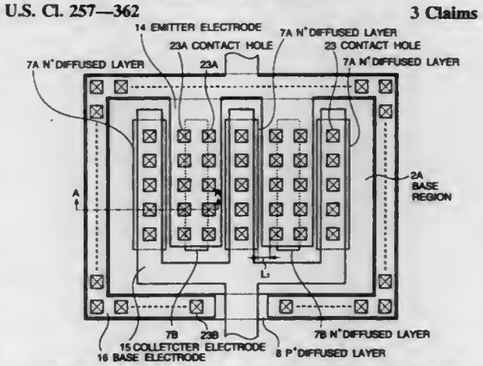
a semiconductor integrated circuit formed on said semiconductor layer, said integrated circuit having a first connection and a second connection;
an external connection terminal connected to said first connection and which provides an external connection; and
a protective circuit which protects said semiconductor integrated circuit from excess positive and negative voltages from said external connection terminal, said protective circuit including
a first conductivity type first impurity diffusion layer in said semiconductor layer, said first impurity diffusion layer being electrically connected to said second connection,
a first conductivity type second impurity diffusion layer, said second impurity diffusion layer being disposed in said semiconductor layer, said second impurity diffusion layer being connected electrically to said first connection,
a gate electrode formed on said channel region via a gate insulating layer, said gate electrode being electrically connected to said first connection, and
a second conductivity type third impurity diffusion layer disposed in said semiconductor layer, said third impurity diffusion layer being connected electrically to said second connection;
wherein said second conductivity type third impurity diffusion layer forms a PN junction with said first conductivity type second impurity diffusion layer via said second conductivity type channel region.

5,610,427

ELECTROSTATIC PROTECTION DEVICE FOR USE IN SEMICONDUCTOR INTEGRATED CIRCUIT

Akira Shida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 636,146
Claims priority, application Japan, Apr. 20, 1995, 7-095456
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—362 **3 Claims**



1. An electrostatic protection device for use in a semiconductor integrated circuit, the device including a base region of a first conductivity type formed at a principal surface of a semiconductor substrate, a plurality of collector regions constituted of a plurality of first diffused regions of a second conductivity type opposite to said first conductivity type, said first diffused regions being formed

on a surface of said base region in the form of a plurality of strips parallel to each other but separate from each other, emitter regions constituted of a second diffused region of said second conductivity type formed in the form of a strip between each pair of adjacent collector regions of said plurality of collector regions and a third diffused region of said second conductivity type formed under a contact hole formed in at least one portion of a boundary region at a side of said second diffused region adjacent to said collector region, said third diffused region being connected to said second diffused region, and a base contact region of said first conductivity having a high impurity concentration formed within said base region so as to substantially surround said collector regions and said emitter regions.

5,610,428

SEMICONDUCTOR INTEGRATED CIRCUIT

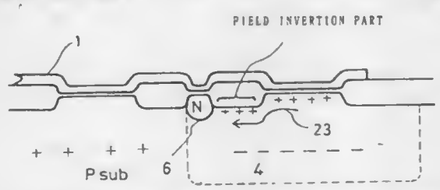
Yukio Suzuki; Haruo Konishi, and Yoshikazu Kojima, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jun. 7, 1995, Ser. No. 476,221

Claims priority, application Japan, Jun. 10, 1994, 6-129256; Apr. 6, 1995, 7-081591

Int. Cl.[6] H01L *29/784;29/78*

U.S. Cl. 257—399 **3 Claims**



1. A semiconductor integrated circuit comprising: a plurality of electrically erasable floating gate type semiconductor non-volatile memory transistors formed in a surface of a semiconductor substrate of a first conductivity type; a semiconductor well region of a second conductivity type; and a program voltage switching transistor comprised of a high voltage structural insulated gate field effect transistor of the first conductivity type provided in the semiconductor well region; wherein a surface portion of the semiconductor substrate between the memory transistors has a field insulation film and a field dope region of the first conductivity type formed beneath the field insulation film and having an impurity concentration higher than an impurity concentration of the semiconductor substrate; and wherein a drain region of the program voltage switching transistor is formed with the same low-concentration impurity profile as that of the field dope region.

5,610,429

DIFFERENTIAL ANALOG TRANSISTORS CONSTRUCTED FROM DIGITAL TRANSISTORS

Harold S. Crafts, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

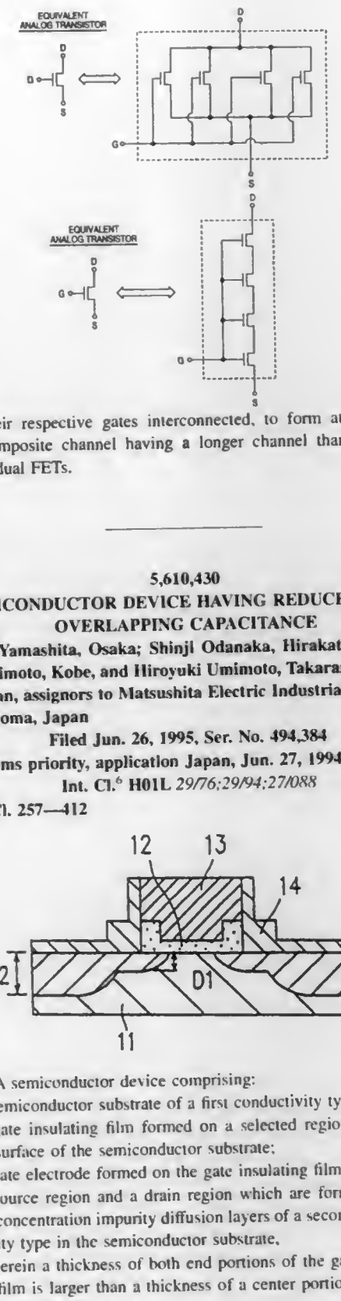
Continuation of Ser. No. 239,166, May 6, 1994, Pat. No. 5,488,249. This application Aug. 22, 1995, Ser. No. 517,641

Int. Cl.[6] H01L *27/105;27/085*

U.S. Cl. 257—401 **6 Claims**

1. An electronic integrated circuit, comprising:

a differential amplifier, including at least four Field-Effect Transistors (FETs) of digital type, at least two of the FETs (i) having their respective channels interconnected hy connecting a drain of one FET to a source of another FET, (ii) and having



their respective gates interconnected, to form at least one composite channel having a longer channel than the individual FETs.

5,610,430

SEMICONDUCTOR DEVICE HAVING REDUCED GATE OVERLAPPING CAPACITANCE

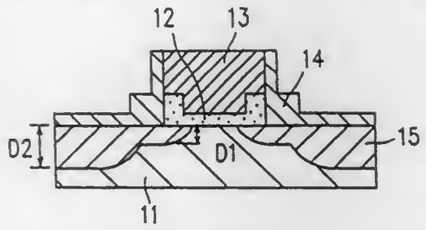
Kyoji Yamashita, Osaka; Shinji Odanaka, Hirakata; Kazumi Kurimoto, Kobe, and Hiroyuki Umimoto, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 26, 1995, Ser. No. 494,384

Claims priority, application Japan, Jun. 27, 1994, 6-144839

Int. Cl.[6] H01L *29/76;29/94;27/088*

U.S. Cl. 257—412 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a gate insulating film formed on a selected region on a main surface of the semiconductor substrate;

a gate electrode formed on the gate insulating film; and

a source region and a drain region which are formed of high-concentration impurity diffusion layers of a second conductivity type in the semiconductor substrate,

wherein a thickness of both end portions of the gate insulating film is larger than a thickness of a center portion of the gate insulating film;

and wherein each of the source region and the drain region includes a first portion located under both end portions of the gate insulating film and a second portion, wherein the first portion has a junction depth that is less than the junction depth of the second portion, and an impurity concentration in the first portion being substantially equal to an impurity concentration in the second portion.

5,610,431

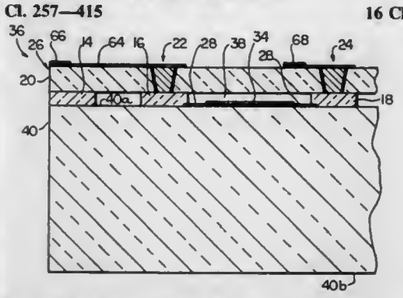
COVERS FOR MICROMECHANICAL SENSORS AND OTHER SEMICONDUCTOR DEVICES

Jacob H. Martin, Wellesley, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed May 12, 1995, Ser. No. 440,528

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—415 **16 Claims**



1. A cover for a micromechanical device comprising:

at least two conductive supports; and

an insulative layer having a top surface and a bottom surface disposed over said at least two conductive supports, said insulative layer having at least one metalized via disposed therethrough to extend from said top insulative layer surface to a respective one of said conductive supports.

5,610,432

SEMICONDUCTOR DEVICE WITH A FAST LATERAL DMOST PROVIDED WITH A HIGH-VOLTAGE SOURCE ELECTRODE

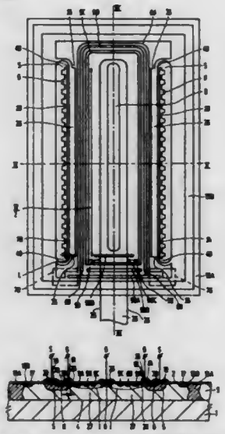
Adrianus W. Ludikhuize, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1994, Ser. No. 323,463

Claims priority, application Belgium, Oct. 14, 1993, 09301086

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—492 **7 Claims**



1. A semiconductor device of the RESURF type with a low-side lateral DMOST (LDMOST), comprising a semiconductor body of predominantly a first conductivity type and a surface region which adjoins a surface, which is of a second conductivity type opposed to the first, and which forms a first p-n junction with the semiconductor body at a side facing away from the surface, which LDMOST comprises a back gate region in the form of a surface zone of the first conductivity type provided in the surface region, with a source region in the form of a surface zone of the second conductivity type in the back gate region, and a channel region defined between the source region and an edge of the back gate region, and a drain region in the form of a surface zone of the second conductivity type situated at a distance from the back gate region, while a separation region of the first conductivity type is provided in the surface region around the LDMOST so as to adjoin the surface and extend towards the semiconductor body, and at least one first breakdown voltage raising zone of the first conductivity type is provided between the drain region and the back gate region and between the drain region and the separation region, which first breakdown voltage raising zone adjoins the surface, this surface being provided with an insulating layer on which a conductor track is provided which is connected to the drain region and which extends over at least one second voltage raising zone and the separation region, characterized in that at least one of the following zones: the zone forming the back gate region and the first breakdown voltage raising zone situated between the back gate and drain regions and situated most closely to the back gate region, is provided with at least one portion projecting towards the other zone at the area of which the distance between the two zones is smaller than in an adjoining portion of these zones, while the first breakdown voltage raising zone has no connection to said at least one second breakdown voltage raising zone over which the conductor track extends, each of said first and second breakdown voltage raising zones separating said drain region from said back gate region.

5,610,433

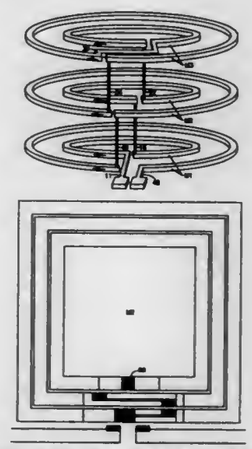
MULTI-TURN, MULTI-LEVEL IC INDUCTOR WITH CROSSOVERS

Richard B. Merrill, Daly City, and Enayet U. Issaq, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 13, 1995, Ser. No. 404,019

Int. Cl.[6] H01F *5/04;* **H05K** *1/16;* **H01L** *27/01*

U.S. Cl. 257—531 **4 Claims**



1. An inductor formed on a substrate using integrated circuit techniques, said inductor comprising:

a first conductive coil and a second conductive coil formed on a first insulating surface, said first conductive coil being substantially formed within the boundaries of said second conductive coil;

a third conductive coil and a forth conductive coil formed on a second insulating surface, said third conductive coil being substantially formed within the boundaries of said fourth conductive coil;

a fifth conductive coil and a sixth conductive coil formed on a third insulating surface, said fifth conductive coil being substantially formed within the boundaries of said sixth conductive coil,

said first conductive coil, said third conductive coil, and said fifth conductive coil being substantially axially aligned, said second conductive coil, said fourth conductive coil, and said sixth conductive coil being substantially axially aligned,

a first end of said first conductive coil being connected to a first end of said third conductive coil, a second end of said third conductive coil being connected to a first end of said fifth conductive coil, a second end of said fifth conductive coil being connected to a first end of said sixth conductive coil, a second end of said sixth conductive coil being connected to a first end of said fourth conductive coil, a second end of said fourth conductive coil being connected to a first end of said second conductive coil,

a second end of said second conductive coil receiving an input current, and a second end of said first conductive coil providing an output current so as to create a series combination of said first conductive coil, said third conductive coil, said fifth conductive coil, said sixth conductive coil, said fourth conductive coil, and second conductive coil,

all connections between conductive coils on different insulating surfaces being made with conductive vias formed through an insulating surface;

a seventh conductive coil formed on said first insulating surface, said first conductive coil and said second conductive coil being substantially formed within the boundaries of said seventh conductive coil;

an eighth conductive coil formed on said second insulting surface, said third conductive coil and said fourth conductive coil being substantially formed within the boundaries of said eighth conductive coil;

a ninth conductive coil formed on said third insulating surface, said fifth conductive coil and said sixth conductive coil being substantially formed within the boundaries of said ninth conductive coil,

said seventh conductive coil, said eighth conductive coil, and said ninth conductive coil being substantially axially aligned,

a first end of said seventh conductive coil being connected to said second end of said second conductive coil, a first end of said eighth conductive coil being connected to a second end of said seventh conductive coil,

a second end of said eighth conductive coil being connected to a first end of said ninth conductive coil, a second end of said ninth conductive coil being connected to receive said input current, said second end of said first conductive coil connected to provide said output current, so as to create a series combination of said first conductive coil, said third conductive coil, said fifth conductive coil, said sixth conductive coil, said fourth conductive coil, said second conductive coil, said seventh conductive coil, said eighth conductive coil, and said ninth conductive coil; and

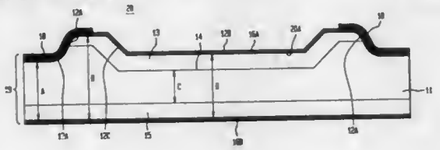
a conductive bridge formed on said second insulating surface connecting said first end of said seventh conductive coil to said second end of said second conductive coil.

5,610,434

MESA SEMICONDUCTOR STRUCTURE

James J. Brogle; Harold P. Davis, both of Cork City; Jean-Michel Guillot, Cloyne, and Michael Korwin-Pawlowski, Cork City, all of Ireland, assignors to General Instrument Corporation of Delaware, Hatboro, Pa.

Filed Nov. 7, 1995, Ser. No. 554,749
Int. Cl.[6] H01L *21/302;29/74*
U.S. Cl. 257—619 **8 Claims**



1. A semiconductive device comprising:

a semiconductive chip that includes a bulk portion of a first conductivity type and a mesa portion on a front portion of the bulk portion;

the mesa portion including a central depressed region of a first thickness and a peripheral portion of a second greater thickness;

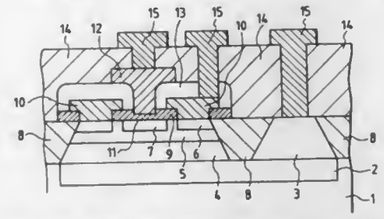
a first diffused layer in the mesa portion that follows essentially the contour of the front surface of the mesa portion and whose edges terminate at the side walls of the mesa portion.

5,610,435

SEMICONDUCTOR DEVICE HAVING AN ELECTRODE WHICH CONTROLS A SURFACE STATE OF THE BASE AREA FOR MINIMIZING A CHANGE OF THE D.C. AMPLIFICATION RATIO

Hidenori Watanabe, Hiratsuka; Junichi Hoshi, Hadano; Yutaka Yuge, Mishima; Akira Okita, Ayase, and Hideshi Kuwabara, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 172,650, Dec. 23, 1993, abandoned. This application Jun. 18, 1996, Ser. No. 668,369
Claims priority, application Japan, Dec. 28, 1992, 4-358741
Int. Cl.[6] H01L *27/00;27/08;29/73*
U.S. Cl. 257—629 **23 Claims**



1. A bipolar structure semiconductor device provided with a control electrode area composed of a semiconductor of a first conductive type and first and second main electrode areas positioned in contact with said control electrode area and composed of a semiconductor of a second conductive type different from said first conductive type, further comprising:

an insulating layer on said control electrode area at least between said control electrode area and said first main electrode area; and

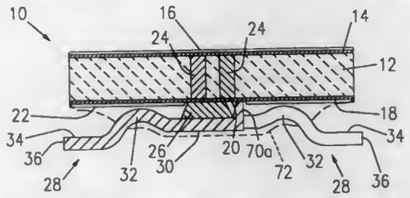
an electrode electrically connected to said control electrode area through said insulating layer to control a surface state of said control electrode area.

5,610,436

SURFACE MOUNT DEVICE WITH COMPENSATION FOR THERMAL EXPANSION EFFECTS

Roger Sponaugle, Logan, and Robert R. Rainey, North Ogden, both of Utah, assignors to Bourns, Inc., Riverside, Calif.

Filed Jun. 7, 1995, Ser. No. 486,033
Int. Cl.[6] H01L *23/495;23/48;23/52;29/40*
U.S. Cl. 257—669 **20 Claims**



1. An electronic device that is attachable to a circuit board, the device comprising:

an insulating substrate having a top surface and a bottom surface;

a plurality of metallized terminal pads on the bottom surface; and

a plurality of leads, each attached to one of the terminal pads, each of the leads comprising:

a first substantially horizontal lead portion attached to one of the terminal pads;

a second substantially horizontal lead portion configured for attachment to the circuit board and terminating in a free end, a substantial part of the length of the second lead portion underlying the bottom surface of the substrate; and

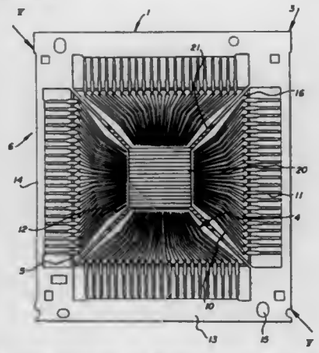
an upwardly curved intermediate lead portion connecting the first and second substantially horizontal portions, the intermediate lead portion including an upwardly-curved hump that underlies and is curved toward the bottom surface of the substrate so as to inhibit the tipping of the substrate relative to the circuit board.

5,610,437

LEAD FRAME FOR INTEGRATED CIRCUITS

Raymond A. Frechette, North Providence, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1994, Ser. No. 249,109
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—670 **12 Claims**



1. A lead frame structure for manufacturing an IC device comprising:

an lead frame base including a plurality of leads, said lead frame base having a die pad aperture and at least one first tie bar portion extending toward said aperture, and

a die pad forming a mounting surface for receiving at least one chip and including at least one second tie bar portion extending from said mounting surface and corresponding to said at least one first tie bar portion, whereby said die pad is affixed to said lead frame base and positioned in said aperture by affixing said at least one second tie bar portion to overlap said corresponding at least one first tie bar portion.

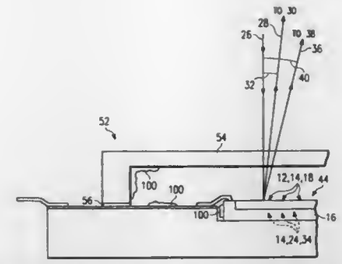
5,610,438

MICRO-MECHANICAL DEVICE WITH NON-EVAPORABLE GETTER

Robert M. Wallace, Dallas, Tex., and Douglas A. Webb, Phoenix, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1995, Ser. No. 401,048
Int. Cl.[6] H01L *23/18*
U.S. Cl. 257—682 **16 Claims**

1. A micro-mechanical device including a first element selectively movable relative to a second element, portions of the elements contacting in one position of the first element, the device comprising:



(a) a deposit of a surface energy-decreasing material on at least that portion of the second element which is engageable by the portion of the first element;

(b) a package enclosing the device; and

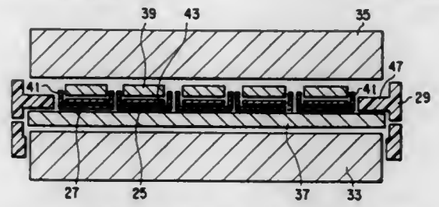
(c) a non-evaporating getter within the package, wherein said non-evaporating getter is an active metal based alloy.

5,610,439

PRESS-CONTACT TYPE SEMICONDUCTOR DEVICES

Michiaki Hiyoshi; Hisayoshi Muramatsu, and Takashi Fujiwara, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1995, Ser. No. 526,320
Claims priority, application Japan, Sep. 15, 1994, 6-246927
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—688 **21 Claims**



1. A press-contact type semiconductor device comprising:

multiple semiconductor substrates;

a chip frame of insulating resin enclosing a periphery of each of the semiconductor substrates so as to increase the voltage rating of each of the semiconductor substrates, said chip frame being adhered to each of said semiconductor substrates so that each of the semiconductor substrates with the adhered chip frame can move as a unit;

a first electrode plate; and

a second electrode plate;

wherein

each of the semiconductor substrates is arranged on a same plane so as to abut against said chip frame and is press-contacted from upper and lower sides by said first electrode plate and said second electrode plate.

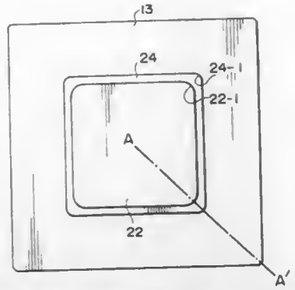
5,610,440

SEMICONDUCTOR DEVIDE HAVING IMPROVED JUNCTION CONSTRUCTION BETWEEN HEAT RADIATION PLATE AND CERAMIC SUBSTRATE

Seiya Isozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 605,896
Claims priority, application Japan, Feb. 23, 1995, 7-034894
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—713 **3 Claims**

1. A semiconductor device comprising a semiconductor chip, a heat radiation plate mounting said semiconductor chip thereon in



order to radiate heat generated by said semiconductor chip and having a plurality of rounded plate corner portions of a first radius, a ceramic substrate for mounting said heat radiation plate, and a metallize pattern formed onto said ceramic substrate for soldering said heat radiation plate onto said ceramic substrate, said metallize pattern having a plurality of rounded pattern corner portions of a second radius, said plurality of rounded pattern corner portions corresponding to said plurality of rounded plate corner portions, respectively, said semiconductor device further comprising a plurality of input/output pin terminals attached to said ceramic substrate for attaching said semiconductor device to a printed wiring board in order to electrically connect said semiconductor chip to said printed wiring board, wherein:

said metallize pattern is larger than said heat radiation plate in area, said first radius being greater than said second radius.

5,610,441

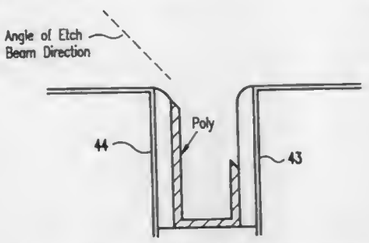
ANGLE DEFINED TRENCH CONDUCTOR FOR A SEMICONDUCTOR DEVICE

Daniel A. Carl, Santa Clara County, Calif.; Donald M. Kenney; Walter E. Mlynko, both of Chittenden County, Vt., and Son V. Nguyen, Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1995, Ser. No. 444,465

Int. Cl.[6] H01L *23/18;23/52*

U.S. Cl. 257—774 **3 Claims**



1. A substrate with densely packed conductors, comprising:

a substrate;

a trench in said substrate including first and second spaced apart sidewalls, said trench having a closed bottom which extends between said first and second spaced apart sidewalls and an open top;

polysilicon positioned within said trench and contacting said first and second sidewalls, said polysilicon having a top edge which is angled to approximate a shadow line that extends from said top of said trench on said first sidewall to an intermediate point on said second sidewall; and

a conductor positioned on said substrate adjacent said trench, said conductor being in contact with said top edge of said polysilicon adjacent said first side wall of said trench.

5,610,442

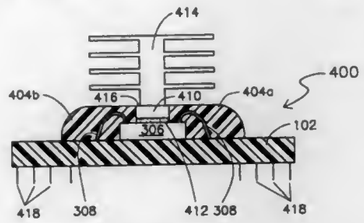
SEMICONDUCTOR DEVICE PACKAGE FABRICATION METHOD AND APPARATUS

Mark R. Schneider, San Jose, and Robert T. Trabucco, Los Altos, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 27, 1995, Ser. No. 412,087

Int. Cl.[6] H01L *23/28;23/10;23/48*

U.S. Cl. 257—787 **26 Claims**



1. An integrated circuit package, comprising:

a printed wiring board having external connections for connection to an external system printed circuit board and internal connection pads connected to the external connections;

a semiconductor device having bond pads inside and near peripheral edges of said semiconductor device and connected to internal circuits of said semiconductor device, the bond pads connected to said printed wiring board internal connection pads;

a planar substrate attached to a face of said semiconductor device and within the perimeter of the bond pads with an insulating adhesive, said planar substrate having substantially the same thermal coefficient of expansion as said semiconductor device; and

encapsulation material coveting the peripheral edges of said planar substrate, exposed surfaces of said semiconductor device, bond pads on said semiconductor device, and internal connection pads on said printed wiring board, wherein an outer face of said planar substrate remains exposed.

5,610,443

METHOD FOR ENCAPSULATING A SEMICONDUCTOR UTILIZING AN EPOXY RESIN AND AN ONIUM SALT COMPOUND

Akihiro Inagaki, and Isao Yamamura, both of Minamiashigara, Japan, assignors to General Instrument of Taiwan, Ltd., Taipei, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,869

Claims priority, application Japan, Sep. 8, 1994, 6-214877

Int. Cl.[6] H01L *23/29*

U.S. Cl. 257—788 **4 Claims**

1. A method of encapsulating a semiconductor, which comprises:

encapsulating a semiconductor in a curable epoxy resin composition comprising:

(A) a liquid epoxy resin or a curable liquid mixture comprising an epoxy resin and a diluent;

(B) an inorganic filler;

(C) an onium salt compound represented by the formula (I) or (II):

(I)

$$\left[R_a^1\text{—Ar—}\underset{\displaystyle R^3}{\overset{\displaystyle R^2}{\underset{|}{\overset{|}{C}}}}\text{—E}^{(+)}R_b^4 \right] .SbF_6^{(-)}$$

-continued

(II)

$$\left[R_a^1\text{—Ar—}\underset{\displaystyle R^3}{\overset{\displaystyle R^2}{\underset{|}{\overset{|}{C}}}}\text{—R}^{5(+)} \right] .SbF_6^{(-)}$$

wherein E represents sulfur, nitrogen or phosphorus; Ar represents an aromatic ring; when a is 2, the R_a^1s are the same or different and represent a substituted or unsubstituted monovalent hydrocarbon group, a hydroxyl group, an alkoxyl group, a nitro group, a cyano group or a halogen atom; R^2 and R^3 each represent a hydrogen atom or a methyl group; the R_b^4s are the same or different and represent a substituted or unsubstituted monovalent hydrocarbon group; R^5 represents a substituted or unsubstituted pyridinium group; a represents an integer of 0 to 2; and b represents 2 when E is sulfur or represents 3 when E is nitrogen or phosphorus; and

(D) an internal releasing agent,

and substantially not containing a hardener, and then molding the above composition.

5,610,444

PROCESS FOR CONTINUOUS MANUFACTURE OF PYROTECHNIC CHARGES CONTAINING A SILICONE BINDER AND COMPOSITIONS CAPABLE OF BEING USED BY THIS PROCESS

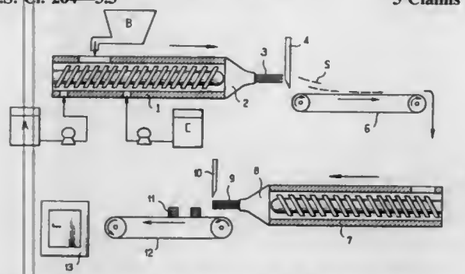
Hervé Austruy, Saint Medard en Jalles; Jean Grignon, Pessac, and Jean-Michel Tauzia, Caychac, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 21, 1995, Ser. No. 576,214

Claims priority, application France, Dec. 22, 1994, 94 15459

Int. Cl.[6] C06B *21/00*

U.S. Cl. 264—3.3 **5 Claims**



1. Process for continuous manufacture, by kneading and extrusion, of pyrotechnic charges consisting essentially of a crosslinkable silicone binder, of an oxidizing filler including ammonium perchlorate and sodium nitrate, and of additives, the said constituents of the charge being introduced continuously into an extruder equipped with an extrusion head at an outlet, wherein the constituents of the said binder are introduced in uncrosslinked form and include at least:

i) a silicone resin of molecular mass which is lower than 20,000 and capable of being crosslinked via hydrosilane groups,

ii) a silicone gum of molecular mass which is higher than 100,000 and capable of being crosslinked via hydrositane groups,

iii) a crosslinking agent which is a hydropolysiloxane,

so as to permit the formation of a homogeneous dough which is shaped by extrusion at a temperature not exceeding 30° in the form of rods of stable geometry, the said rods thus obtained being then cut to the length of the charge and crosslinked at a temperature which is higher than 30° C.

5,610,445

STARTER FOR ENGINE HAVING A RING GEAR

Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo; Masami Niimi, Handa; Masahiro Katoh, Chiryu; Yasuhiro Nagao, Okazaki, and Takeshi Araki, Nishikasugai-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

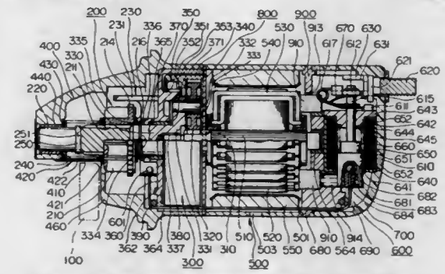
Continuation of Ser. No. 353,987, Dec. 6, 1994, abandoned.

This application Dec. 5, 1995, Ser. No. 567,211

Claims priority, application Japan, Dec. 27, 1993, 5-332955; Sep. 19, 1994, 6-222321

Int. Cl.[6] F02N *11/00*

U.S. Cl. 290—38 R **17 Claims**



1. A starter for an engine having a ring gear, comprising:

a starter motor;

an output shaft driven by the starter motor;

a pinion transmittal member having a pinion gear, engaged with the output shaft by means of a helical spline, which meshes with the ring gear of the engine through the pinion gear; and

a pinion regulating means which regulates the rotation of the pinion transmittal member by abutting the pinion transmittal member such that rotation of the output shaft moves the pinion transmittal member to a ring gear side, wherein if the pinion transmittal member abuts with the ring gear side and is obstructed from advancing, the pinion regulating means bends in the direction of rotation allowing the pinion transmittal member to rotate and further rotation of the output shaft causes the pinion gear to mesh with the ring gear.

5,610,446

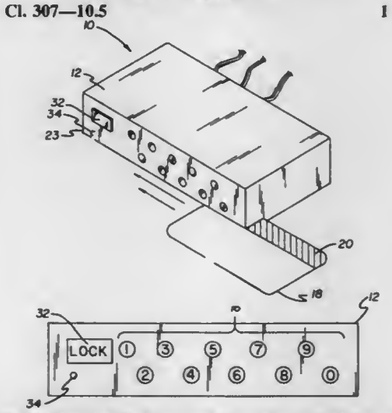
DUAL FUNCTION THEFT PREVENTION SYSTEM

Barry Garber, 1548 Nelmore Blvd., Gilbertsville, Pa. 19525

Filed Dec. 22, 1995, Ser. No. 577,114

Int. Cl.[6] B60R *25/04*

U.S. Cl. 307—10.5 **1 Claim**



1. A dual function theft prevention system comprising, in combination:

a rectangular housing having a top wall, a bottom wall, a front face, a rear face, and a pair of side walls defining an interior

space, the housing adapted to be coupled to a conventional vehicle instrument panel;

a power source comprising a conventional automobile battery;

a plurality of numeric keys situated on the front face of the housing for allowing a driver to enter a four digit numeric code sequence, wherein the keys are staggered so as to allow ease in entering the code sequence;

a card comprising a magnetic strip with a card code sequence present thereon;

a magnetic strip reader comprising a slot horizontally formed on the front face of the housing with a pair of open ends positioned on each of the side walls for receiving the card and further allowing the card to be slid laterally between the open ends, the magnetic strip reader for scanning the code sequence present on the magnetic strip;

an ignition for actuating a conventional vehicle engine upon the receipt of power from the power source;

brake circuitry connected to a conventional anti-lock brake system module for engaging brakes of the vehicle upon the activation thereof and further allowing normal operation of the brake system module upon the deactivation thereof;

a lock key situated on the front face of the housing, the lock key having an activated orientation upon the depression thereof, the lock key including a light emitting diode for signalling when the lock key is in an activated orientation; and

control circuitry situated within the interior space of the housing and coupled to the power source, the numeric keys, the magnetic strip reader, the ignition, the lock key and the brake circuitry, the control circuitry for transmitting power to the ignition and deactivating the brake circuitry upon receipt of a proper four digit numeric code sequence from the numeric keys and further a proper card code sequence from the magnetic strip reader within a predetermined time period, the control circuitry further precluding power from being supplied to the ignition and further activate the brake circuitry upon the activation of the lock key.

5,610,447

WIRE HARNESS AND METHOD OF MANUFACTURING THE SAME

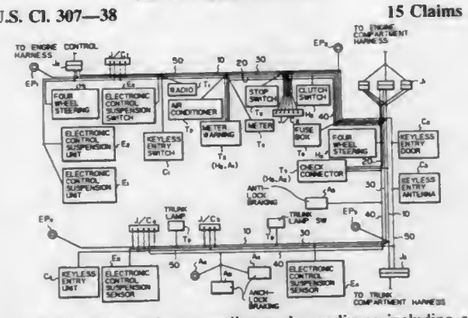
Yasuo Nishikawa; Hiroyuki Nakajima; Hitoshi Iwata; Yoshihiro Kumazawa; Naohito Sawamura; Hiroshi Nakamura; Ichiro Suzuki; Shigeru Kobayashi; Ryuichi Nabeshima; Takao Sakashita, all of Mie-ken; Kazuhiko Okino, Iwate-ken; Kiyoshi Taira, Iwate-ken; Koukichi Takamura, Iwate-ken, and Mitsuyoshi Omaki, Iwate-ken, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie-ken, Japan

Filed Jun. 16, 1993, Ser. No. 77,035

Claims priority, application Japan, Jun. 17, 1992, 4-158196

Int. Cl.[6] H02B *1/04;1/20*

U.S. Cl. 307—38 **15 Claims**



1. A wire harness for an appliance, the appliance including a combination of a normally installed electrical equipment and at least one electrical system selected from a plurality of selectable electrical systems, said wire harness comprising:

a common circuit, and

at least one dedicated circuit selected from a plurality of dedicated circuits configured for respective selectable electrical systems,

wherein said common circuit includes a circuit group of a power source circuit, a grounding circuit and a signal circuit associated with normally installed electrical equipment and each of said dedicated circuits includes a circuit group of a power source circuit, a grounding circuit and a system signal circuit associated with one of the selectable electrical systems, and wherein said common circuit and the dedicated circuits of the selected electrical systems are detachably joined to each other via a branch connector.

5,610,448

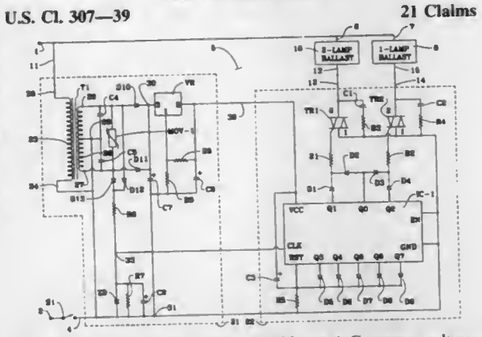
UNIVERSAL SWITCHING DEVICE AND METHOD FOR LIGHTING APPLICATIONS

Donald P. Dattilo, San Diego, Calif., assignor to International Energy Conservation Systems, Inc., Rancho Santa Fe, Calif.

Filed Jul. 25, 1994, Ser. No. 280,339

Int. Cl.[6] H02J *1/00*

U.S. Cl. 307—39 **21 Claims**



1. A universal control circuit operable on A.C. source voltages from 120 vac to 350 vac for use with a serially connected power switch through a single conductor to a plurality of loads, each having a voltage rating equal to said A.C. source voltage within said range of operable voltages, said control circuit comprising;

(a) means for selectively applying and removing electrical power from the A.C. source to said loads in a predetermined pattern of operation, responsive to successive opening and closing of said power switch, said means for selectively applying and removing electrical power including a plurality of gate controlled thyristors;

(b) connection means for coupling said loads in series with said A.C. source through said thyristors;

(c) circuit means for detecting an interruption in said A.C. source voltage and for selectively energizing said loads through said thyristors;

(d) logic circuit means utilizing a digital counter to provide selective activation of said thyristors;

(e) power supply means to convert said A.C. source voltage into a D.C. low voltage sufficient to operate said logic circuit means, said D.C. low voltage being regulated to a constant output voltage over a range of said A.C. source voltages;

(f) reset means to automatically reset said predetermined pattern of operation to its original starting point following application of said A.C. source voltage after first removing said A.C. source voltage for a set period of time; and

(g) diode circuit means connected between said digital counter and said plurality of gate controlled thyristors, said diode circuit means include a plurality of switching diodes that route at least one output of said digital counter to each one of said plurality of gate controlled thyristors.

5,610,449

ELECTRIC POWER UNIT

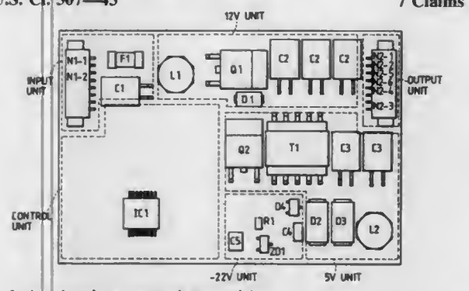
Tadashi Takahashi, Hitachi; Akihiko Kanouda, Hitachinaka; Kazuhiro Takizawa; Tetsunosuke Nakamura, both of Yokohama, and Masami Joraku, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Media Electronics Co., Ltd., Iwate, both of Japan

Filed Aug. 22, 1995, Ser. No. 517,926

Claims priority, application Japan, Aug. 31, 1994, 6-206338

Int. Cl.[6] H02J *3/12*

U.S. Cl. 307—43 **7 Claims**



1. An electric power unit comprising:

an input portion through which a predetermined voltage is applied, a plurality of power circuits for generating a plurality of different voltages from said predetermined voltage applied to said input portion, an output portion for outputting said plurality of different voltages generated in said plurality of power circuits, a control unit having a function to stabilize said plurality of different output voltages and an insulated substrate which supports said input portion, said plurality of power circuits, said output portion and said control unit, and which further has a printed wiring pattern thereon for electrically coupling constituent components and parts of the electric power unit, wherein

each of the components and parts which composes each of said plurality of power circuits is disposed on said substrate in a predetermined respective area corresponding to each of said plurality of different output voltages to be generated.

5,610,450

POWER SUPPLY APPARATUS FOR EFFICIENTLY UTILIZING BATTERY AND ELECTRONIC APPARATUS USING THE POWER SUPPLY

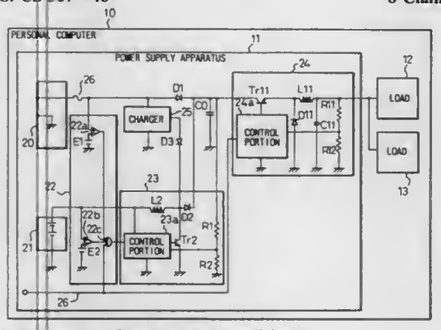
Mituo Saeki; Tsutomu Suzui; Hidekiyo Ozawa, and Hisafumi Mitsui, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 29, 1995, Ser. No. 496,617

Claims priority, application Japan, Nov. 10, 1994, 6-276359

Int. Cl.[6] H02J *1/16*

U.S. Cl. 307—46 **8 Claims**



1. A power supply apparatus, comprising:

a battery;

a booster type DC-DC conversion circuit having an input side thereof connected to said battery, for outputting a constant voltage above an input voltage to an output side thereof when the conversion circuit is operation, and passing the input voltage to the output side thereof when the operation of the conversion circuit is inhibited;

a voltage reduction type DC-DC conversion circuit having an input side thereof connected to the output side of said booster type DC-DC conversion circuit, for generating a constant voltage lower than the input voltage to an output side thereof;

battery voltage detection means for detecting whether the voltage of said battery is above a reference value; and

control means for outputting a signal for inhibiting the operation of said booster type DC-DC conversion circuit when said battery voltage detection means detects that the battery voltage is above said reference value, and a signal for operating said booster type DC-DC conversion circuit when said battery voltage detection means detects that the battery voltage is below said reference value.

5,610,451

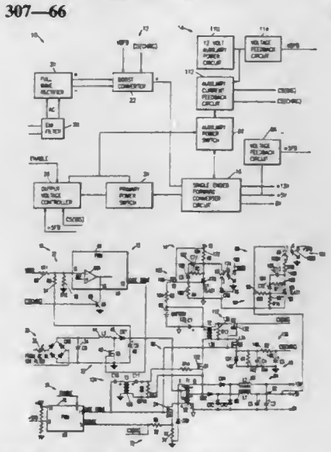
UNINTERRUPTIBLE POWER SUPPLY WITH POWER FACTOR CORRECTION

Neil S. Symonds, Agoura, Calif., assignor to Magnum Power PLC, Livingston, Scotland

Filed Nov. 30, 1995, Ser. No. 565,726

Int. Cl.[6] H02J *7/00*

U.S. Cl. 307—66 **20 Claims**



1. An electrical power supply comprising;

a rectifying circuit coupled to receive AC power and generate a DC voltage signal in response thereto;

a boost converter coupled to receive the DC voltage signal and a first voltage feedback signal and generate a boost voltage signal in response thereto that is controlled to maintain the first voltage feedback signal at a selected magnitude;

a converter circuit coupled to receive the boost voltage signal as a primary input signal, generate a secondary signal in response to the primary input signal, generate the first voltage feedback signal to represent the voltage of the secondary signal and generate at least one regulated output voltage signal as an output;

an output voltage controller coupled to receive the at least one regulated voltage signal and to control the converter circuit to maintain the at least one regulated output voltage signal at a predetermined voltage; and

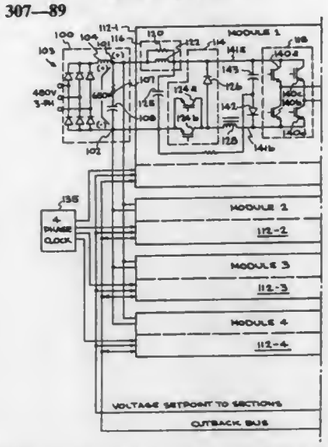
an auxiliary energy source coupled to supply electrical energy to the converter circuit when the rectifying circuit fails to receive AC power.

5,610,452

E-BEAM HIGH VOLTAGE SWITCHING POWER SUPPLY

Daniel W. Shimer, Danville, and Arnold C. Lange, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 867,639, Apr. 13, 1992, Pat. No. 5,418,707.
This application May 22, 1995, Ser. No. 445,827
Int. Cl.[6] H02M *7/537*
U.S. Cl. 307—89 11 Claims



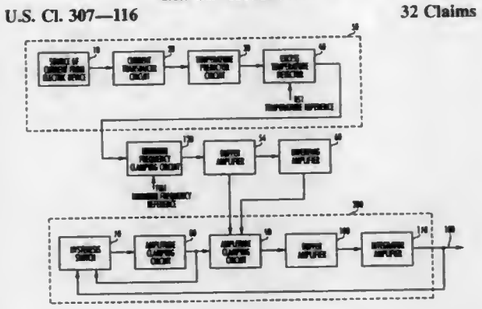
1. A circuit coupled to a voltage source and a current source means, said circuit limiting voltage spikes across two input circuit lines of a voltage spike producing circuit, said circuit comprising:
a capacitor having a first end connected to said first input circuit line, said first lead of said voltage source and a first lead of said current source means;
a resistor having a first end connected to a second end of said capacitor and having a second end connected to a second lead of said voltage source and a second lead of said current source means: and
a diode having an anode connected to said second end of said capacitor and having a cathode connected to said second input circuit line and a third lead of said current source means, wherein excess current flow is from said first input circuit line through said capacitor and diode to said second input circuit line and wherein voltage across the two circuit lines is clamped to approximately the voltage of said voltage source.

5,610,453

PULSEWIDTH MODULATION (PWM) FREQUENCY SLIDER

Enoch P. Smith, Milwaukee, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Mar. 20, 1995, Ser. No. 406,615
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—116 32 Claims



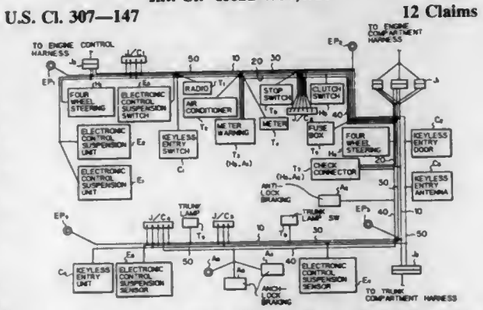
1. A method for controlling the temperature of a switching device for switching a current at a desired frequency to power an electric device, comprising the steps of:
(a) generating a signal representative of a characteristic of said switching device;
(b) predicting a temperature of said switching device based on said signal;
(c) comparing said predicted temperature to a predetermined temperature reference level; and
(d) reducing a switching frequency of said switching device below said desired frequency when said predicted temperature exceeds said predetermined temperature reference level.

5,610,454

WIRE HARNESS PRODUCTION CONTROLLING METHOD

Yasuo Nishikawa; Hiroyuki Nakajima; Hitoshi Iwata; Yoshihiro Kumazawa; Naohito Sawamura; Hiroshi Nakamura; Ichiro Suzuki; Shigeru Kobayashi; Ryuichi Nabeshima; Takao Sakashita, all of Mie-ken; Kazuhiko Okino, Iwate-ken; Kiyoshi Taira, Iwate-ken; Koukichi Takamura, Iwate-ken, and Mitsuyoshi Omaki, Iwate-ken, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie-ken, Japan

Filed Jun. 16, 1993, Ser. No. 77,034
Claims priority, application Japan, Jun. 17, 1992, 4-158243
Int. Cl.[6] H02B *1/04;1/20*
U.S. Cl. 307—147 12 Claims



1. A wire harness production method for the production of wire harnesses to be used in appliances of different models, wherein each of the different models includes a normally installed electrical equipment and at least one optional electrical system selected from a plurality of selectable electrical systems, comprising the steps of:
designing a common circuit which is designed to be installed in each of the appliances regardless of model, and which includes a circuit group of a power source circuit, a grounding circuit and signal circuits associated with the normally installed electrical equipment;
designing a plurality of dedicated circuits each designed to be used with one of the selectable electrical system and each including a circuit group of a power source circuit, a grounding circuit and a system signal circuit associated with one of the selectable electrical systems;
determining the number of the common circuit and the dedicated circuits to be produced by setting the number of common circuits to be produced as equal to the total number of appliances to be produced, and respectively adding up a number of each of the dedicated circuits included in the appliances of the different models to be produced by determining the number of the optional electrical systems selected for the total number of appliances to be produced;
separately manufacturing common circuits in an amount equal to the added up number of common circuits and manufacturing each of the dedicated circuits in an amount equal to the added up number of the respective dedicated circuit;
affixing connectors to said common circuits and to each of said dedicated circuits; and
combining the common circuits with the associated dedicated circuits based on the combination of optional electrical systems selected for each appliance to produce wire harnesses appliances of different models by connecting connectors of said common circuits with respective connectors of the optional electrical systems selected for each appliance.

5,610,455

ELECTRET CONTAINING SYNDIOTACTIC VINYL AROMATIC POLYMER

Richard C. Allen, Mendota Heights; Anthony F. Flannery, Woodbury; Charles R. Kleissler, Hugo, and David B. Redmond, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 29, 1995, Ser. No. 496,356
Int. Cl.[6] G11C *13/02*
U.S. Cl. 307—400 21 Claims

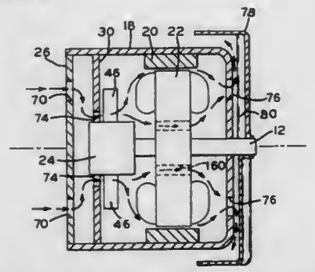
1. An electret, comprising:
a charged dielectric composition;
wherein said composition comprises a syndiotactic vinyl aromatic polymer.

5,610,456

PERMANENT MAGNET DIRECT CURRENT MOTOR

Guillermo Wille, Hendersonville; Donald B. Pedigo, Gallatin, both of Tenn.; Harald E. Blaettner, Fort Wayne, Ind.; Bernd A. Wieland, Gaggenau, Germany, and Eldon R. Cunningham, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 77,513, Jun. 17, 1993, which is a continuation-in-part of Ser. No. 72,579, Jun. 7, 1993, abandoned. This application May 5, 1995, Ser. No. 435,180
Int. Cl.[6] H02K *9/00*
U.S. Cl. 310—58 5 Claims



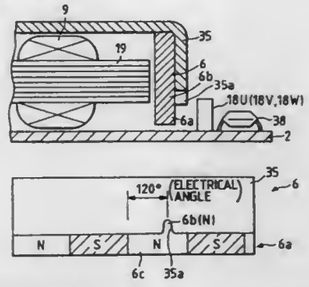
1. An improved cooling system for an electric motor having at least two brushes providing electric current to a rotating commutator, said motor including a motor case having front and rear portions and a plurality of apertures on a front portion of said motor case, a rotating shaft, upon which is fixed said commutator, said shaft having an axis of rotation, a brush plate upon which said at least two brushes are mounted for electrical contact with said commutator, and a front hub fixed on said rotating shaft, said cooling system comprising:
an end shield disposed at said rear portion of said motor case and including a plurality of apertures permitting cooling air to flow into said motor case, said end shield apertures located a radially outward distance from said axis of rotation;
means for defining a brush plate aperture between said commutator and said brush plate, said brush plate aperture extending from said commutator a radially outward distance less than said end shield radially outward distance, said aperture comprising a means for directing cooling air flow from said end shield apertures toward said brushes and commutator; and
means for creating a low pressure region between said front hub and said motor case and thereby withdrawing air from said motor case through said apertures.

5,610,457

BRUSHLESS MOTOR WITH HALL ELEMENTS FOR CONTROLLING DRIVE CIRCUIT AND FOR DETECTING A POSITION OF ROTOR BY USE OF MAGNETIC FLUX VARYING MEANS

Yukinobu Kurita, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Feb. 7, 1995, Ser. No. 385,125
Claims priority, application Japan, Feb. 7, 1994, 6-034108
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—68 B 7 Claims



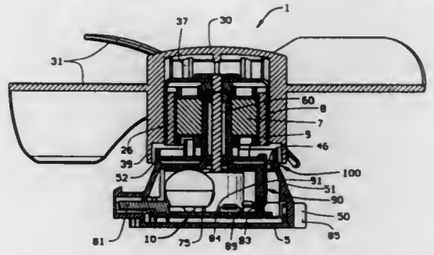
1. A brushless motor comprising:
a rotor casing having a cylindrical wall which defines an opening in said rotor casing, said rotor casing having a magnet secured to an inner surface of said cylindrical wall, said magnet having an exposed portion which is protruded beyond the inner surface of said cylindrical wall so as to be exposed to an outside of said rotor casing;
a stator core having drive coils and confronting said magnet;
Hall elements for detecting a magnetic field of said magnet, said Hall elements being arranged outside the cylindrical wall of said rotor casing so as to confront the exposed portion of said magnet;
a drive circuit for applying drive currents to said drive coils in accordance with output signals of said Hall elements;
magnetic flux varying means provided at a point on the cylindrical wall of said rotor casing for varying a magnetic flux produced by said magnet; and
an index signal processing circuit for generating an index signal indicative of a position of said rotor casing in accordance with an output signal of one of said Hall elements.

5,610,458

ELECTRICAL CONNECTION OF PRINTED CIRCUIT BOARD TO LINE LEADS ON BRUSHLESS PERMANENT MAGNET REFRIGERATION MOTORS

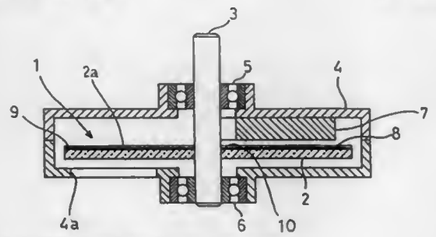
Gerald N. Baker, Florissant, and Arthur E. Woodward, St. Louis County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 11, 1994, Ser. No. 240,629
Int. Cl.[6] H02K *11/00;5/00*
U.S. Cl. 310—68 R 8 Claims



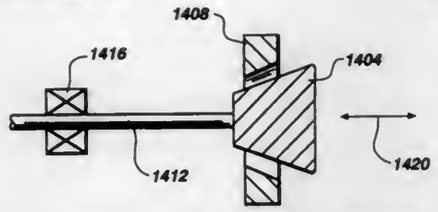
1. A dynamoelectric machine comprising:
a stator assembly;
a rotor assembly associated with said stator assembly and rotatable therewith;
an enclosure defining an interior space, said rotor and stator assembly being mounted in said interior space;
a printed circuit board mounted in said interior space;
a pair of electrical conductors electrically connected to said printed circuit board;
a conductor boss, said conductor boss having an elongated leg with spaced slots generally through an outer end of said leg and having closed ends defining passages transverse of said leg, and channels parallel to said slots and perpendicular to said passages;
a plurality of circuit elements, at least one of said circuit elements physically and electrically connected between said conductors to bridge said conductors and space said conductors by the spacing of said slots in said connector boss, said conductors being mounted in and extending transversely through said slots and being electrically connectable to a source of electrical power.

5,610,459
PHOTOVOLTAIC DRIVE MOTOR
Hirokazu Izawa, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 9, 1994, Ser. No. 301,425
Claims priority, application Japan, Sep. 9, 1993, 5-224262
Int. Cl.[6] H02K *11/00;5/00*
U.S. Cl. 310—68 R **48 Claims**



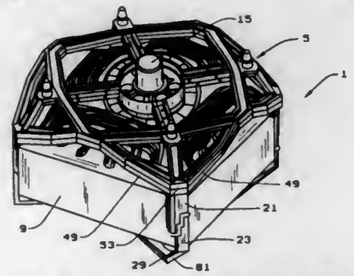
1. A photovoltaic drive motor comprising:
(a) a rotor including:
a printed circuit board;
a plurality of electrical conduction arms spaced apart on a first surface of the printed circuit board, each conduction arm having first and second ends and each electrical conduction arm comprising at least one photovoltaic cell element;
a first short circuit section coupled to the first end of each of the plurality of electrical conduction arms; and
a second short circuit section coupled to the second end of each of the plurality of electrical conduction arms;
(b) mounting means rotatably supporting the rotor and shading a predetermined portion of the first surface of the printed circuit board from light incident on the motor; and
(c) field magnet means positioned opposing the predetermined portion of the printed circuit board to generate magnetic flux in response to an electromotive force in the electrical conduction arms located on the predetermined portion of the printed circuit board, the electromotive force being generated by the photovoltaic cell elements in the electrical conduction arms located on an illuminated portion of the printed circuit board.

5,610,460
MAGNETIC ECCENTRIC MOTION MOTOR
Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos, Inc., Salt Lake City, Utah
Division of Ser. No. 88,178, Jul. 7, 1993, Pat. No. 5,426,336, which is a division of Ser. No. 663,444, Mar. 1, 1991, Pat. No. 5,252,870. This application Jun. 6, 1995, Ser. No. 465,836
Int. Cl.[6] H02K *7/06;1/12;1/22*
U.S. Cl. 310—82 **1 Claim**



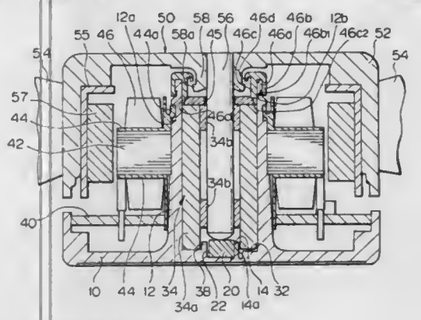
1. An eccentric-motion, variable speed motor comprising
a stator defining a circular, frusto-conically-shaped pathway,
a rotor having a frusto-conical exterior surface area which is mutually compatible with said pathway, said rotor being disposed to roll on the pathway,
a plurality of electromagnets disposed in series adjacent the pathway, said electromagnets being successively energizable to attract the rotor and cause it to roll on the pathway, and
a laterally-flexible drive shaft coupled at one end to the rotor coaxially with the rolling axis of rotation of the rotor to rotate as the rotor rotates, the other end of said drive shaft being disposed in a fixed rotatable position and being moveable longitudinally to thereby move the rotor relative to the stator and vary the surface area of contact of the rotor with the pathway.

5,610,461
MOTOR ENDSHIELDS
L. Ranney Dohogne, Creve Coeur; Robbie F. Johnson, Pasadena Hills, both of Mo., and Michael J. Rosenfeld, Granville, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Feb. 14, 1994, Ser. No. 194,885
Int. Cl.[6] H02K *5/00;5/04*
U.S. Cl. 310—89 **18 Claims**



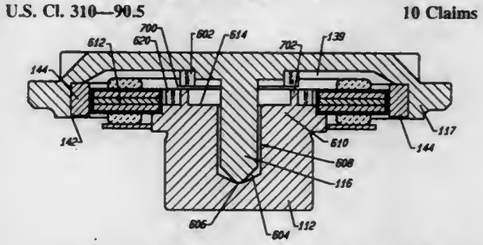
1. In a motor assembly including a first endshield and a second endshield, a wound stator mounted to and between said endshields, a rotor mounted for rotation with respect to said stator, and a shaft extending from said rotor and being journaled in said endshields for rotation with respect to said stator, the rotor having an axis of rotation; the improvement comprising at least one of said end shields being a skeletal end shield comprising a plurality of truss members integral with one another; said truss members defining H-beams and all being made up of rails generally parallel with one another and oriented substantially parallel to the axis of rotation of said rotor, and a web extending between and integral with said rails; said skeletal endshield defining three generally parallel spaced apart planes, said planes being generally perpendicular to the axis of rotation of said rotor shaft.

5,610,462
BRUSHLESS MOTOR
Shuji Takahashi, Yonago, Japan, assignor to Nidec Corporation, Kyoto, Japan
Filed Jun. 20, 1994, Ser. No. 262,766
Claims priority, application Japan, Jun. 22, 1993, 5-176029; Jun. 22, 1993, 5-176030; Aug. 6, 1993, 5-195926
Int. Cl.[6] H02K *7/08;5/16*
U.S. Cl. 310—90 **5 Claims**



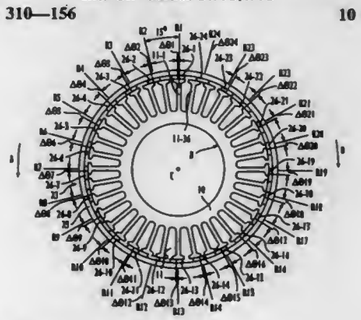
1. A brushless motor comprising:
a rotating shaft;
a bearing holder having a cylindrical shape with a closed bottom;
an oil-impregnated sleeve bearing having a cylindrical shape, said sleeve bearing being fit in said bearing holder and being held by the inner circumferential face of said bearing holder, said radial bearing supporting said rotating shaft in such a manner that said rotating shaft may freely rotate;
a thrust bearing element, said thrust bearing element being held on the bottom of said bearing holder at its central position, said thrust bearing element supporting the end portion of said rotating shaft in the axial direction;
a thrust bearing element holder for receiving and holding said thrust bearing element, said thrust bearing element holder having a cylindrical shape with a closed bottom and being disposed in the center of the bottom of said bearing holder, one end portion of an outer cylindrical layer of said oil-impregnated sleeve bearing being disposed outside the thrust bearing element holder, and an inner space being formed between the inner circumferential face of said end portion of the outer cylindrical layer and said thrust bearing element holder so that said inner space communicates with said outer space through said radial grooves;
a stator being fixed to the outer side of said bearing holder;
a rotor frame being fixed to said rotating shaft; and
a rotor magnet being fixed to said rotor frame such that said rotor magnet is opposed to said stator;
said bearing holder being provided with a plurality of inward protrusions for supporting the outer circumferential face of said radial bearing, said plurality of inward protrusions being disposed on the inner circumferential face of said bearing holder at equal intervals in the circumferential directions;
an outer space being formed between the inner circumferential face of said bearing holder and the outer circumferential face of said radial bearing except for portions at which said plurality of inward protrusions support the radial bearing; and
a radial groove being formed in the bottom of said bearing holder, said radial groove extending from the inner side of said radial bearing to said outer space, whereby air which should be removed from the inside of said radial bearing when said shaft is inserted in the inside of said radial bearing may escape to the outside through said radial groove and said outer space.

5,610,463
PASSIVE MAGNETIC BEARINGS FOR A SPINDLE MOTOR
John C. Dunfield; Kamran Oveyssi, and Gunter K. Heine, all of Aptos, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Division of Ser. No. 201,676, Feb. 25, 1994. This application Jun. 2, 1995, Ser. No. 459,113
Int. Cl.[6] H02K *21/14*
U.S. Cl. 310—90.5 **10 Claims**



1. In a disc drive, an apparatus for journaling a rotor about a stator of a spindle motor comprising:
a pivot, said pivot for pivotally displacing said rotor about said stator;
a raised magnetically permeable flange, said raised flange disposed on a top portion of said stator, said flange substantially annular in shape having an outer radius X;
a first outer annular disc having inner radius greater than X, said outer annular disc comprising a first axially oriented magnetic pole, said outer disc fixably attached to said top portion of said stator and flush with said flange;
a second opposing annular disc, said opposing annular disc comprised of a second axially oriented magnetic pole oriented similarly to said pole of said outer annular disc in the direction facing said outer annular disc, said opposing annular disc fixably attached to said rotor and centrally disposed so as to oppose said flange.

5,610,464
DIRECT CURRENT MOTOR HAVING A DECREASING COGGING TORQUE
Yoshinari Asano, Fukui, and Masami Wada, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 22, 1994, Ser. No. 361,547
Claims priority, application Japan, Dec. 27, 1993, 5-332920
Int. Cl.[6] H02K *21/12;1/12*
U.S. Cl. 310—156 **10 Claims**



1. A direct current motor comprising:

a stator including a stator core, said stator core having Ns pieces of stator teeth; and

a rotor including Nr pieces of magnetic poles, said magnetic poles facing said stator teeth, and each of said magnetic poles being disposed at such angular locations around said rotor that shift by predetermined shift angles from even angle-disposed reference angular positions in circumferential direction, said even angle-disposed reference angular positions being defined by dividing the circumference by even angles around an axis of said rotor;

said shift angles being in a range shown by an expression concerning the least common multiple Nc of said Nr and said Ns;

$-180/Nc \leqq$ shift angles $\leqq +180/Nc$, wherein signs "–" and "+" in said expression show a shift direction of said magnetic poles from said even angle-disposed reference angular positions in the circumferential direction of said rotor, and

thereby, a maximum value of said shift angles in each-other adjacent two magnetic poles is under 360/Nc.

5,610,465

HIGH-FREQUENCY MOTOR

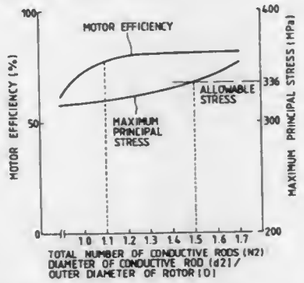
Shinichi Sakamoto, Hitachi, and Masanori Kobayashi, Ibaraki-ken, both of Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,162

Claims priority, application Japan, Jun. 24, 1994, 6-143084

Int. Cl.[6] H02K *17/16*

U.S. Cl. 310—211 **6 Claims**



1. A high-frequency motor comprising a squirrel-cage rotor, said rotor comprising:

an iron core having a plurality of circular slots;

a plurality of conductive rods inserted into said slots; and

short-circuit rings disposed at both ends of said conductive rods, wherein said conductive rods are made of copper, and

a ratio of a product of the number of said conductive rods, and a diameter of each conductive rod to an outer diameter of said rotor is in a range of 1.1 to 1.5 for providing an optimum efficiency without exceeding a safe mechanical stress.

5,610,466

STARTER FOR STARTING AN ENGINE

Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjyo, and Masami Niimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 16, 1995, Ser. No. 390,531

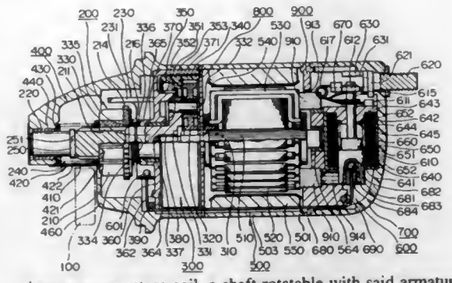
Claims priority, application Japan, Sep. 19, 1994, 6-222324

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—239 **14 Claims**

1. A starter comprising:

a starter motor having a plurality of magnetic poles, an armature core disposed within said magnetic poles and mounting



thereon an armature coil, a shaft rotatable with said armature core, and a commutator formed perpendicularly to said shaft at an axial side of said armature core for supplying electricity to said armature coil;

a magnet switch having a fixed contact and a plunger mounting thereon a movable contact which contacts said fixed contact for energizing said starter motor, said magnet switch being disposed axially adjacent to said commutator; and

a brush device having a plurality of brushes which contact said commutator, biasing means disposed around an outer circumference of said magnet switch to axially overlap with said magnet switch, said biasing means biasing said brushes in a direction generally parallel to said shaft, against said commutator.

5,610,467

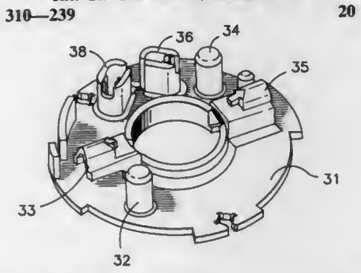
BRUSH HOLDER ASSEMBLY

Kyi-Shin Shiah, Northville, and Anthony Iverson, Monroe, both of Mich., assignors to United Technologies Motor Systems, Inc., Columbus, Miss.

Filed Jun. 30, 1995, Ser. No. 496,994

Int. Cl.[6] H01R *4/10;* **H02K** *11/02*

U.S. Cl. 310—239 **20 Claims**



1. A brush holder for coupling a brush of a motor and a first terminal wire, said brush holder comprising:

a support plate;

a tower for securing the first terminal wire within said support plate to provide strain relief, said tower formed with said support plate and comprising:

a body, comprising:

a number of ribs for securably positioning the first terminal wire within said body;

a multiplicity of support members for securing the first terminal wire within said opening; and

an end for crimping the first terminal wire, said end having a plurality of support members for securably positioning said crimped first terminal wire within a mouth of said end.

10. A brush holder for an electric motor having a commutator, a first and second brush and a first and second terminal wire, said brush holder comprising:

support plate;

a first spring for enabling the first brush to be electrically and mechanically biased with the commutator, and for filtering out eletromagnetic interference, said first spring positioned on a first post formed with said support plate, and a second spring

enabling the second brush to be electrically and mechanically biased with commutator, said second spring positioned on a second post formed with said support plate; and

a first and second tower for respectively securing the first and second terminal wires to provide strain relief, said towers attached with said support plate, each tower of said towers comprising:

a body for securely positioning the respective terminal wire, said body comprising:

a number of ribs for securably positioning the respective terminal wire within said body;

a multiplicity of support members for securing the respective terminal wire within said body; and

a first end for crimping the first terminal wire and a second end for crimping the second wire, said first end having a first plurality of support members for securably positioning said crimped first terminal wire within a first mouth of said first end, and said second end having a second plurality of support members for securably positioning said crimped second terminal wire within a second mouth of said second end.

5,610,468

ULTRASONIC STEP MOTOR

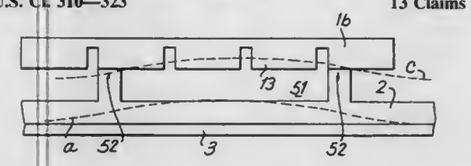
Osamu Miyazawa; Tsuneaki Furukawa, and Jouji Kitahara, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 667,691, Mar. 11, 1991, Pat. No. 5,237,237, Ser. No. 602,444, Oct. 22, 1990, Pat. No. 5,247,220, and Ser. No. 602,576, Oct. 22, 1990, Pat. No. 5,229,678,. This application Feb. 1, 1993, Ser. No. 12,486

Claims priority, application Japan, Jan. 17, 1991, 3-003924; Apr. 3, 1991, 3-070882; May 7, 1991, 3-101260; Aug. 28, 1991, 3-217072

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 **13 Claims**



1. An ultrasonic step motor comprising:

an elastic member having portions selectively displaceable in a first direction;

vibrator means mounted on said elastic member and operatively coupled to said selectively displaceable portions for displacing said portions of said elastic member; and

a second member movable in a second direction substantially orthogonal to said first direction, said second member having a non-uniform rigidity distribution, said elastic member inducing a vibration mode in said second member in a predetermined direction to selectively move said second member in said second direction, said second member being formed as a disk with an axis, said disk being formed with a first cut portion and a second cut portion said second cut portion being opposed to and axially symmetric with said first cut portion.

5,610,469

ELECTRIC LAMP WITH ELLIPSOIDAL SHROUD

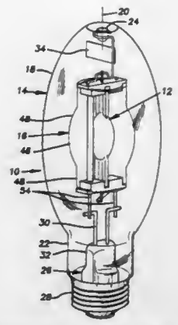
Rolf S. Bergman, Cleveland Heights; James T. Dakin, Shaker Heights, and Thomas G. Parham, Gates Mills, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,123

Int. Cl.[6] H01J *1/02;7/24;61/40;5/16*

U.S. Cl. 313—25 **17 Claims**

1. An electric lamp comprising:



a sealed light-transmissive lamp envelope having an interior space;

a light source capable of generating light within said envelope;

a shroud separate from said light source and in non-sealing communication with said light source and having a reflecting section disposed about said light source, said reflecting section being separated from said light source by a separating space;

a coating disposed on said reflecting section of said shroud for reflecting light having predetermined wavelengths emitted by said light source; and

wherein said reflecting section has an ellipsoidal shape effective for reflecting said light having predetermined wavelengths back substantially toward said light source and wherein said separating space is in fluid communication with said interior space of said envelope, said ellipsoidal shape of said reflecting section having a major longitudinal axis, said ellipsoidal shape being uniform such that if two halves of said ellipsoidal shape are defined by a plane in the middle of the reflecting section, said plane being perpendicular to said axis, said two halves will be mirror images of one another.

5,610,470

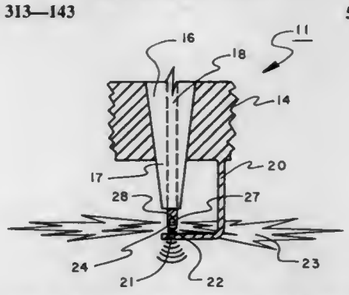
SPARK PLUG FOR AN INTERNAL COMBUSTION ENGINE

David Wofsey, 5287 W. Louisiana Ave., Lakewood, Colo. 80232

Continuation-in-part of Ser. No. 91,153, Jul. 12, 1993. This application Dec. 27, 1994, Ser. No. 364,175

Int. Cl.[6] H01T *13/20*

U.S. Cl. 313—143 **5 Claims**



1. In a spark plug having a first electrode and a second electrode defining a spark gap there between, the improvement comprising:

the first electrode has a face and a surface of said face forms a hole with a bottom said hole having the physical characteristics of an acoustically tuned pipe closed at one end; and,

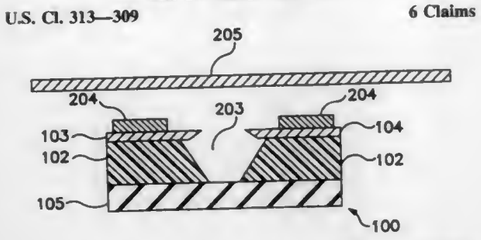
the second electrode includes an inner surface, said inner surface defining a hole passing through the second electrode said hole having the physical characteristics of an acoustically tuned pipe open at both ends.

5,610,471

SINGLE FIELD EMISSION DEVICE

Steve G. Bandy, Sunnyvale; Clifford K. Nishimoto, San Jose; Christopher Webb, Los Alto, and Ross A. LaRue, Milpitas, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 910,957, Jul. 7, 1993, abandoned.
This application Mar. 22, 1995, Ser. No. 409,479
Int. Cl.[6] H01J 1/46;1/62
U.S. Cl. 313—309 6 Claims



1. A field of emission device having improved damage resistance comprising:

a single crystal, thin film gate electrode having no grain boundaries therein; and

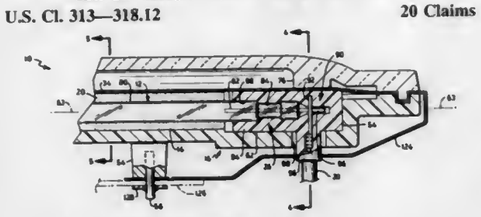
a single crystal, thin film emitter electrode having no grain boundaries therein, and an upwardly angled edge emitter for generating an arcurate electron flow path, wherein said electrons bypass the high field area created between said gate and emitter electrodes, thereby substantially eliminating the production of secondary ions within said high field area and reducing the arcing potential therein.

5,610,472

LAMP ASSEMBLY WITH RESILIENT CONNECTOR FOR LOCATING AND CUSHIONING NEON LAMP

Robert J. Schmitt, Jr., Raymond, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Oct. 25, 1994, Ser. No. 328,635
Int. Cl.[6] H01J 5/48;1/02; H01R 13/52;13/40
U.S. Cl. 313—318.12 20 Claims



1. A lamp assembly comprising:

a lamp housing defining spaced-apart lamp positioning surfaces;

a discharge lamp disposed in said housing, said discharge lamp having a contact pin at each end;

a connector secured to each end of the discharge lamp, each connector comprising a resilient, electrically-insulating boot having a lamp boot portion with a cavity for receiving said contact pin, said cavity having an inside surface that conforms to said discharge lamp, and an electrical conductor connected to said contact pin within said resilient boot for supplying electrical energy to said discharge lamp; and

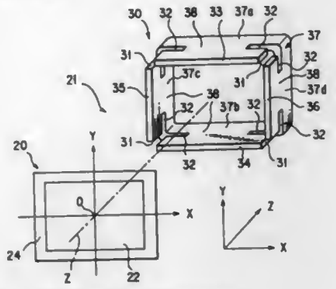
a retainer for retaining each of said resilient boots against said lamp positioning surfaces, whereby said discharge lamp is located by said resilient boot relative to said lamp housing and is cushioned by said resilient boot against shock and vibration.

5,610,473

COLOR CATHODE-RAY TUBE

Masahiro Yokota, Kumagaya; Tadahiro Kojima, and Shuuji Makimoto, both of Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1995, Ser. No. 480,295
Claims priority, application Japan, Sep. 9, 1994, 6-215402; Mar. 24, 1995, 7-065431; Mar. 24, 1995, 7-065432
Int. Cl.[6] H01J 29/80
U.S. Cl. 313—402 15 Claims



1. A color cathode-ray tube comprising:

a face panel;

a phosphor screen formed on an inner surface of the face panel;

an electron gun facing the phosphor screen, the electron gun emitting a plurality of electron beams toward the phosphor screen; and

a mask unit positioned between the face panel and the electron gun,

the mask unit including a shadow mask formed of a substantially rectangular thin plate, the mask unit facing the phosphor screen and having a number of electron beam apertures through which the electron beams pass and a pair of side edge portions facing each other, and a mask frame supporting the shadow mask with tension applied to the shadow mask,

the mask frame comprising a substantially rectangular frame body having a pair of first sidewalls facing each other and a pair of second sidewalls facing each other, each of the pair of first sidewalls including a base section continuous with the second sidewalls, a mask fixing section secured to one of the side edge portions of the shadow mask and separated from the second sidewalls, and a connecting section connecting a longitudinal middle portion of the base section to a longitudinal middle portion of the mask fixing section and having a width in the longitudinal direction of the base section which is smaller than the longitudinal length of the base section.

5,610,474

PICTURE TUBE HAVING CENTERING WASHER AND SPRING FOR JOINING A MASK/FRAME INSIDE A SHIELDING CASE

Heinz Lagger, Wendlingen; Rolf Reidinger, Ebersbach, and Werner Wolffram, Kirchheim/Nabern, all of Germany, assignors to Nokia Technology GmbH, Pforzheim, Germany

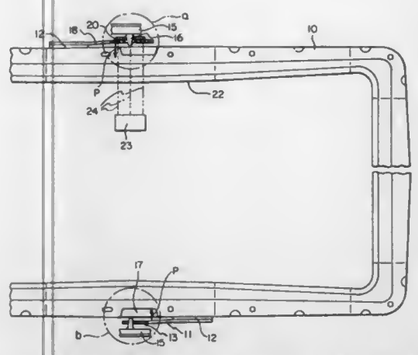
Continuation of Ser. No. 29,449, Mar. 11, 1993, abandoned.
This application Oct. 18, 1994, Ser. No. 324,534
Claims priority, application Germany, Mar. 16, 1992, 42 08 319.2
Int. Cl.[6] H01J 29/07
U.S. Cl. 313—406 9 Claims

1. A combination mask/frame for picture tubes,

with a frame;

with bimetallic retainers that are being welded to the frame;

with three springs, bent downward but running essentially parallel to the frame contour, the fixed ends of which are welded to the bimetallic retainers and the free ends of which have openings whose inside diameter is essentially dimensioned so that when the springs are pressed against the pins set in the



rim of the shielding case, these openings sit on points on the outer contour of the pins that are at a distance from the rim of the shielding case, with a fourth spring, also bent downward and running essentially parallel to the frame contour, the fixed end of which is welded to the bimetallic retainer and the free end of which has an opening larger than the other openings;

with a centering washer that has an opening that corresponds in shape and diameter to the openings of the other three springs and is joined to the side of the spring which faces the rim of the shielding case in such a way that the region of the centering washer that surrounds the opening covers the opening in the spring, characterized in that

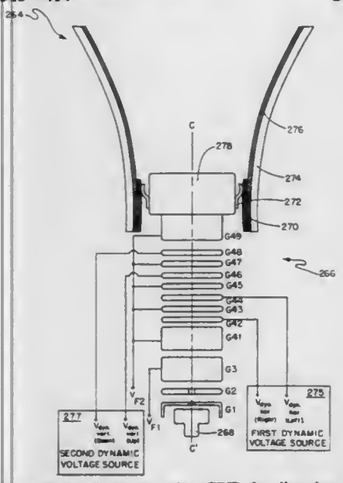
the fourth spring (**18**) has welding grooves (**25**) that pierce the free end, and the welding grooves (**25**) have welding edges (**26**) at the ends of the welding grooves (**25**) for connecting the fourth spring (**18**) to the centering washer (**20**) by laser beams (**24**) that pass through the welding grooves **25**.

5,610,475

DYNAMIC OFF-AXIS DEFOCUSING CORRECTION FOR DEFLECTION LENS CRT

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

Continuation-in-part of Ser. No. 111,566, Aug. 25, 1993, Pat. No. 5,412,277. This application Mar. 28, 1995, Ser. No. 412,268
Int. Cl.[6] H01J 29/70
U.S. Cl. 313—414 26 Claims



14. For use in a cathode ray tube (CRT) for directing a focused electron beam onto a display screen of said CRT, wherein said CRT includes a glass envelope and a magnetic deflection yoke disposed about said glass envelope and forming a beam deflection region for displacing said electron beam across said display screen in a raster-like manner, an electron gun comprising:

a source of energetic electrons;

a first plurality of co-axially aligned, metallic grids maintained at a relatively low voltage and disposed adjacent said source of energetic electrons for forming said energetic electrons into a beam and directing said beam along an axis of the CRT toward the display screen;

a second plurality of grids disposed on said axis intermediate said first plurality of metallic grids and the display screen and adjacent the magnetic deflection yoke, wherein said second plurality of grids are maintained at a relatively high voltage and form a main focus lens with a beam focus region for focusing the electron beam on the display screen, wherein said beam deflection and beam focus regions are coincident and the electron beam is simultaneously magnetically deflected and electrostatically focused, and wherein at least one of said second plurality of grids is disposed on or in close proximity to an inner surface of the CRT's glass envelope; and

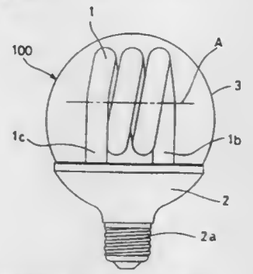
a third plurality of grids disposed on said axis adjacent said second plurality of grids for applying a dynamic non-symmetric electrostatic field to the electron beam, wherein said electrostatic field increases in strength with increasing deflection of the electron beam from said axis for correcting for off-axis defocusing of the electron beam, and wherein each of said third plurality of grids includes a respective beam passing aperture with a first pair of grids having respective beam passing apertures disposed horizontally off-center in opposed directions relative to said axis and a second pair of grids having respective beam passing apertures disposed vertically off-center in opposed directions relative to said axis.

5,610,476

SPIRAL FLUORESCENT TUBE AND METHOD AND DEVICE FOR MANUFACTURING THE SAME

Toshiyoshi Oga, Otsu; Masaru Saito, Osaka, and Shunji Asai, Otsu, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 17, 1995, Ser. No. 405,995
Int. Cl.[6] H01J 1/50;1/62;17/16
U.S. Cl. 313—493 4 Claims



1. A spiral fluorescent tube comprising:

wound parts which are spirally wound m+(½) winds, wherein m represents an integer of two or above;

leg parts which are parallel to each other are disposed at right angles to a center axis of the wound parts and projected in the same direction, wherein the wound parts are parallel to each other and cross the center axis at an angle less than 90 degrees when said wound parts are observed from a top view of said spiral fluorescent tube; and

a gap between adjacent wound parts is ½ or less the diameter of said spiral fluorescent tube.

5,610,477

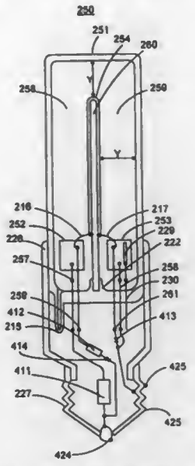
LOW BREAKDOWN VOLTAGE GAS DISCHARGE DEVICE AND METHODS OF MANUFACTURE AND OPERATION

Vladimir V. Ivanov; Uriy I. Danilov, and Michael V. Zakharov, all of Saratov, Russian Federation, assignors to MRA Technology Group, Calif.

Filed Apr. 26, 1994, Ser. No. 233,816

Int. Cl.[6] H01J *17/12;* **H05B** *39/00*

U.S. Cl. 313—573 **30 Claims**



1. A low breakdown voltage gas discharge device comprising in combination:

a. an envelope filled with a discharge medium;

b. two main electrodes hermetically sealed in said envelope and separated by a predetermined distance and defining a direction for an electrical discharge;

c. a supplemental electrode extending at least partially between said main electrodes along said direction of the electrical discharge; and

d. said supplemental electrode having geometrical and electrical parameters satisfying the following equation:

$$S=I_d/C,$$

where S is the surface area of said supplemental electrode and depends on said distance between said main electrodes, I_d is the current flowing in said supplemental electrode during normal glow discharge, and C is a constant characterizing said current I_d, the composition of said supplemental electrode, and the type and pressure of said discharge medium.

5,610,478

METHOD OF CONDITIONING EMITTERS OF A FIELD EMISSION DISPLAY

Yumiko Kato, Mesa, and Ralph Cisneros, Tempe, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 550,057

Int. Cl.[6] G09G *3/00*

U.S. Cl. 315—169.1 **3 Claims**

1. A method of conditioning a field emission device to improve electron emission from a field emission display prior to operation in a normal display mode comprising:

providing a field emission display having a plurality of emitters formed into a plurality of columns and a plurality of rows;

applying a first voltage to a first column in the plurality of columns;

applying a third voltage to an anode of the field emission display wherein the third voltage substantially prevents attraction to the anode by electrons emitted from the emitters prior to the operation in the normal display mode;

applying a second voltage to a gate electrode in a first row of the plurality of rows for a predetermined time and a fourth voltage to other gate electrode in the remaining rows of the plurality of rows, wherein the second voltage stimulates emission of electrons from emitters in the first row and the fourth voltage, which is lower than the second voltage, prevents emission of electrons from emitters in the remaining rows, so that the electrons are attracted to the first row, gate electrode prior to the operation in the normal display mode and

sequentially repeating the last step for each successive row in the plurality of rows.

5,610,479

CIRCUIT ARRANGEMENT FOR OPERATING LOW-PRESSURE DISCHARGE LAMPS

Harald Schmitt, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

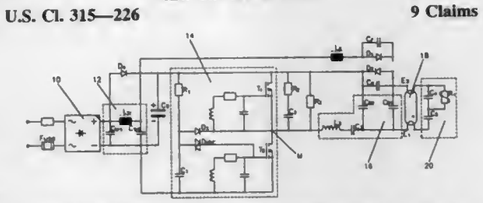
PCT No. PCT/DE93/01079, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/12007, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 381,978

Claims priority, application Germany, Nov. 13, 1992, 42 38 409.5

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—226 **9 Claims**



1. A circuit arrangement for high-frequency operation of one or more low-pressure discharge lamps (**18**) connected to one another in parallel or in series, having

a mains rectifier (**10**);

a radio interference suppression filter (**12**) connected to the mains rectifier (**10**);

an RF inverter (**14**), connected to the direct current output of the mains rectifier (**10**) and having two alternatingly switching transistors (T_1 and T_2) , an inductance (L_K), a trigger circuit, and a center tap (M) between the two transistors (T_1, T_2);

a filter capacitor (C_S) parallel to the switching paths of the two transistors (T_1, T_2) of the RF inverter (**14**);

one or more series resonant circuits (**16**), each assigned to one low-pressure discharge lamp (**18**), comprising a coupling capacitor (C_3), a resonant inductance (L_3), and a resonant capacitance parallel to the lamp;

a series diode circuit comprising first and second diodes (D_1, D_2) connected in direct current forward direction, and defining a center point (W_{11}) therebetween, and having one input connected to said filter capacitor (C_S);

connecting lines for the low-pressure discharge lamp or lamps (**18**), in which a first line of the first electrodes (E_1) of the low-pressure discharge lamp or lamps (**18**) is connected to the center tap (M) via the resonant inductance (L_3), and one further line, connected to each of the second electrode or electrodes (E_2) of the low-pressure discharge lamp or lamps (**18**) is further connected to the positive or negative terminal of the mains rectifier (**10**), via the center point (W_{11}) of the diode series circuit;

characterized in that the resonant capacitance of the series resonant circuit (**16**) assigned to each low-pressure discharge lamp (**18**) is divided into a plurality of resonance capacitors (C_{R1}, C_{R2}), each having one terminal connected together, one (CR_1) of the resonance capacitors (C_{R1}, C_{R2}) is effectively connected across the electrodes of the lamp or lamps, and the other (C_{R2}) Of the capacitors (C_{R1}, C_{R2}) has its other terminal connected directly to the positive or negative terminal of the filter capacitor (C_S).

5,610,480

CONTROL APPARATUS FOR COPYING MACHINE OR THE LIKE

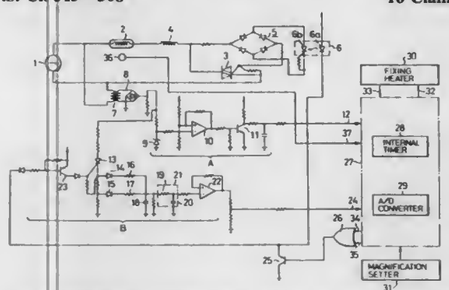
Yoshiaki Takayanagi, Ichikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 164,837, Dec. 9, 1993, which is a continuation of Ser. No. 831,636, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 515,321, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 253,426, Oct. 4, 1988, abandoned, which is a continuation of Ser. No. 33,881, Apr. 2, 1987, abandoned, which is a continuation of Ser. No. 637,789, Aug. 9, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 476,766

Claims priority, application Japan, Aug. 13, 1983, 147291; Aug. 13, 1983, 147300; Aug. 13, 1983, 147301

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—308 **16 Claims**



1. An apparatus for controlling an object to be controlled, said apparatus comprising:

detecting means for detecting a state of the object to be controlled;

first control means responsive to said detecting means for feedback controlling the object to be controlled so that the object to be controlled is set to a predetermined state;

discriminating means for discriminating whether or not there occurs an event which causes a variation in the state of the object to be controlled; and

second control means for controlling the object to be controlled so as to compensate the variation in the state caused by said event before the variation in the state caused by said event is detected by said detecting means.

5,610,481

CATHODE RAY TUBE WITH LOW DYNAMIC CORRECTION VOLTAGE

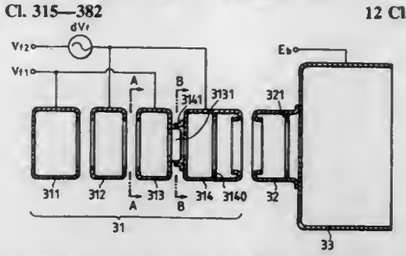
Shoji Shiral, Mobara, and Kenichi Watanabe, Isumi-gun, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,975

Claims priority, application Japan, Jun. 30, 1993, 5-161913

Int. Cl.[6] G09G *1/04;* **H01J** *29/50*

U.S. Cl. 315—382 **12 Claims**



1. A cathode ray tube provided with at least an electron gun having an electron beam generating unit for generating a plurality of electron beams arrayed in a horizontal direction and for controlling said plurality of electron beams and a main lens unit for focusing said plurality of electron beams onto a fluorescent screen, and a deflection yoke for scanning said plurality of electron beams on said fluorescent screen, said main lens unit comprising:

electrode members constituting a first kind of a focusing electrode group adapted to be supplied with a first focusing voltage;

electrode members constituting a second kind of a focusing electrode group adapted to be supplied with a second focusing voltage; and

an accelerating electrode disposed downstream of said first and second kind of focusing electrode groups and adapted to be supplied with an accelerating voltage;

at least two non-axisymmetric electron lenses being formed between one electrode member of said first kind of a focusing electrode group and one electrode member of said second kind of a focusing electrode group, respectively, including

a first non-axisymmetric electron lens for focusing said plurality of electron beams stronger in a horizontal direction than in a vertical direction, and

a second non-axisymmetric electron lens being a multipole lens for focusing said plurality of electron beams stronger in one of the horizontal and vertical directions and diverging said plurality of electron beams in another of the horizontal and vertical directions when said first focusing voltage is higher than said second focusing voltage, and for diverging said plurality of electron beams in said one of the horizontal and vertical directions and focusing said plurality of electron beams in said another of the horizontal and vertical directions when said first focusing voltage is lower than said second focusing voltage, thereby reversing a polarity of said multipole lens,

at least one of said first and second focusing voltages being a voltage of a fixed voltage superposed with a dynamic voltage varying with a deflection amount of said plurality of electron beams; and

a final main lens being formed between said accelerating electrode and one of said electrode members of said first and second kind of focusing electrode groups adjacent to said accelerating electrode for focusing said plurality of electron beams in both the horizontal and vertical directions and for focusing said plurality of electron beams stronger in the horizontal direction than in the vertical direction.

5,610,482

GYROTRON AND METHOD OF IMPROVING ITS EFFICIENCY

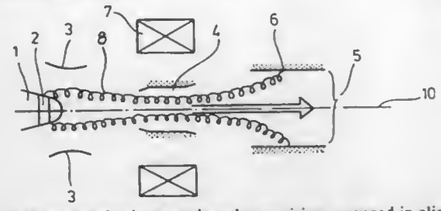
Olgierd Dumbrajs, Espoo, Finland, and Arnold Möbius, Eggenstein-Leo., Germany, assignors to Forschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Mar. 3, 1995, Ser. No. 398,653

Claims priority, application Germany, Oct. 27, 1992, 42 36 149.4

Int. Cl.[6] H01J *25/00*

U.S. Cl. 315—500 **7 Claims**



2. A gyrotron having an axis and comprising, arranged in alignment along its axis, a cathode with an emitter ring, an accelerating anode, a resonator, a collector, an uncoupling conduit and an arrangement extending around said resonator for generating a solenoidal, static axial magnetic field which causes the electrons emitted from said cathode to move along a spiral path and which, in the area of said resonator, imposes on said magnetic field a predetermined wave form, of a local strength such that the electrons passing therethrough along said spiral path have, upon exiting the resonator area, not more than an insignificant transverse velocity component, and said collector being precharged for attracting said electrons.

5,610,483

CONTROL EQUIPMENT FOR ELECTRIC VEHICLE AND CONTROL METHOD THEREOF

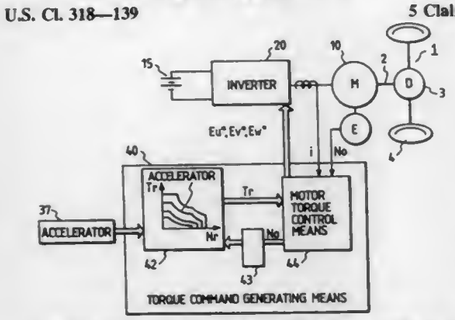
Sanshiro Obara, Naka-gun; Hiroyuki Yamada, Hitachinaka; Nobunori Matsudaira, and Ryoso Masaki, both of Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Mar. 17, 1995, Ser. No. 405,769

Claims priority, application Japan, Mar. 18, 1994, 6-048450

Int. Cl.[6] B60L *15/20*

U.S. Cl. 318—139 **5 Claims**



1. In an electric vehicle comprising a battery, a motor to drive wheels, and a control equipment for controlling a current to said motor, said control equipment comprising:

a motor torque control means for inputting the motor speed No detected by an encoder and the motor current detected by a current sensor, and generating an inverter drive signal to control the torque of said motor, on the basis of a torque command;

a notch filter for eliminating at least one mechanical resonance frequency of the wheel drive system on the basis of the information of the motor speed No;

a torque command generating means for inputting the actuating amount of an accelerator and the motor speed Nr obtained through said notch filter, and generating the torque command.

5,610,484

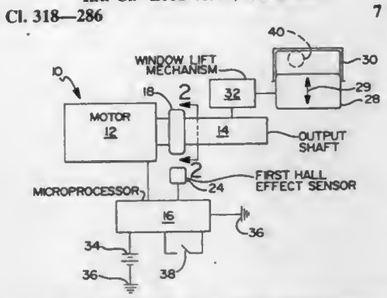
AUTO REVERSE POWER CLOSURE SYSTEM

Elizabeth A. Georgin, Nogent-Sur-Marne, France, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed May 4, 1995, Ser. No. 434,619

Int. Cl.[6] E05F *15/16;* **G05B** *9/02*

U.S. Cl. 318—286 **7 Claims**



1. A power closure system for a motor vehicle comprising:

a closure;

a closure frame defining a seated position of the closure;

an electric motor with an output shaft drivingly connected to the closure;

a first displacement sensor operably generating a signal indicative of output shaft rotation;

a microprocessor including

means for measuring a first time period for the output shaft of the motor to rotate a predetermined amount using signals from the first displacement sensor;

means for measuring a second time period for the output shaft of the motor to rotate the predetermined amount using signals from a second displacement sensor;

means for establishing a reference time for the second time period using the first time period for comparison with the second time period;

means for comparing the second time period to the reference time period; and

means for reversing the motor if the second time period is greater than the reference time period.

5,610,485

METHOD FOR CONTROLLING THE TORQUE OF AN ASYNCHRONOUS MACHINE

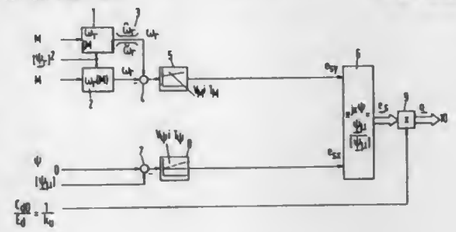
Manfred Depenbrock, and Dieter Maischak, both of Bochum, Germany, assignors to ABB Patent GmbH, Mannheim, Germany

Filed Mar. 23, 1995, Ser. No. 409,136

Claims priority, application Germany, Mar. 23, 1994, 44 09 936.3; Apr. 15, 1994, 44 13 153.4

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—432 **10 Claims**



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1. A method of controlling the torque of a squirrel-cage rotor asynchronous machine supplied by an inverter driven by pulse-width modulation, which comprises:

determining a rotor resistance R_r, a rotor flux space vector $\underline{\Psi}_r$ and a desired torque value M_{des}, and determining a corresponding desired value ω_{rdes} of a rotor angular frequency, in accordance with

$$\omega_{rdes} = \frac{2R_r}{3} \cdot \frac{M_{des}}{|\underline{\Psi}_r|^2}$$

determining an actual torque value M and forming a rotor angular frequency ω_r in accordance with

$$\omega_r = \frac{2R_r}{3} \cdot \frac{M}{|\underline{\Psi}_r|^2}$$

and controlling the torque through a rotor frequency controller and a controller of an absolute value of a total flux in accordance with

$$e_{Sy} = V_M \cdot (\omega_{rdes} - \omega_r) + \frac{1}{\tau_M} \cdot \int(\omega_{rdes} - \omega_r)dt$$

and

$$e_{Sx} = V_\Psi \cdot (\Psi_{des} - |\underline{\Psi}\mu|) + \frac{1}{\tau_\Psi} \cdot \int(\Psi_{des} - |\underline{\Psi}\mu|)dt$$

wherein:

e_{Sy}=stator frequency factor;

e_{Sx}=flux correction factor;

V_M, V_Ψ=P gains of the controllers;

τ_M, τ_Ψ=reset times of the controllers;

Ψ_{des}=desired value of total flux; and

$\underline{\Psi}$=total flux space vector;

forming from the stator frequency factor e_{sy} and the flux correction factor e_{sx} a stator voltage vector, and controlling the torque of the asynchronous machine by setting an output vector $\vec{a}$ of the inverter supplying the machine.

5,610,486

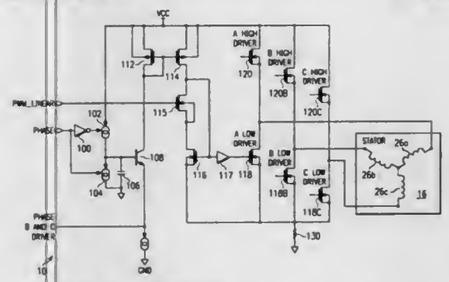
CURRENT MIRROR CIRCUIT USED IN A COIL DRIVER CIRCUIT OF A BRUSHLESS DC MOTOR

Larry B. Li, San Jose, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 28, 1995, Ser. No. 396,424

Int. Cl.[6] H02K *29/04;* **H02P** *1/22*

U.S. Cl. 318—439 **21 Claims**



1. A current mirror comprising:

a first transistor having a conductive path with a first end and a second end and having a first transistor control element connected to the first end of the conductive path;

an amplifier having an input connected to the first transistor control element and the first input of the first transistor, and having an output; and

a second transistor having a conductive path and having a second transistor control element connected to the output of the amplifier so that the current flowing in the conductive path of the first transistor is mirrored in the conductive path of the second transistor.

5,610,487

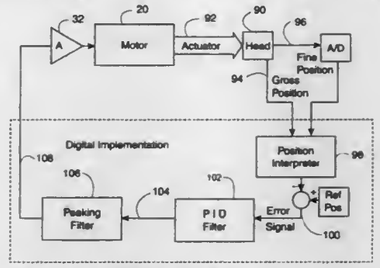
SERVO SYSTEM WITH ONCE PER REVOLUTION REJECTION

Larry G. Hutsell, Longmont, Colo., assignor to Maxtor Corporation, Longmont, Colo.

Filed May 19, 1994, Ser. No. 245,617

Int. Cl.[6] H02P *3/00;* **G11B** *5/55*

U.S. Cl. 318—560 **19 Claims**



1. A data storage apparatus, comprising:

a data storage disk having a plurality of annular data tracks for storing data, said data storage disk rotating about an axis of rotation at a substantially constant frequency of rotation;

transducer means for effecting data transfer between a predetermined track of said data storage disk and an exterior environment;

actuator means, carrying said transducer means, for facilitating radial movement of said transducer means above said data storage disk;

means for determining a present radial position of said transducer means above said data storage disk;

means for generating a signal representative of a difference between said present radial position of said transducer means above said data storage disk and a position of said transducer means where said transducer means is aligned with said predetermined track;

means, coupled to said actuator means, for moving said transducer means to Said position where said transducer means is aligned with said predetermined track; and

means for compensating for a disturbance to said data storage apparatus, which occurs at the frequency of rotation of said data storage disk and affects the present radial position of said transducer, without substantially affecting the stability of said data storage apparatus.

5,610,488

MICRO ROBOT

Osamu Miyazawa, Nagano-ken, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 70,399, Jun. 7, 1993, Pat. No. 5,554,914.

This application Dec. 7, 1995, Ser. No. 568,993

Claims priority, application Japan, Nov. 5, 1991, 3-288764; Mar. 27, 1992, 4-71696; Mar. 27, 1992, 4-71697; Mar. 27, 1992, 4-71698

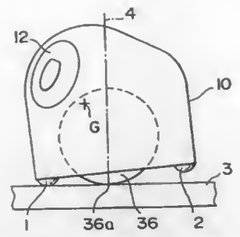
Int. Cl.[6] H02J *17/00*

U.S. Cl. 318—568.11 **13 Claims**

1. A micro robot comprising;

at least two sensors having respective detection regions partly overlapping each other;

at least one pair of driving means being driven independently of each other and having driven points separated from each



other, each driven point defining a vertical axis extending therefrom in a direction perpendicular to a direction of movement;

a control portion which is composed in a form of a thin plate, for controlling said driving means on the basis of outputs of said sensors;

a chargeable power source portion for supplying a power source voltage to said sensors, said driving means and said control portion,

said control portion and said power source portion being arranged in parallel between said pair of driving means, said driving means including an electromagnetic stepping motor having a magnetic rotor, an exciting coil winding wound on a magnetic core, a tabular stator having a circular hole to house said magnetic rotor, a pair of recesses, each being smaller than said magnetic rotor opening into the inside wall of said circular hole at diametrically opposed sites about the center of said circular hole and at a biased angle from a direction of a magnetic flux excited in said circular hole, and a pair of concave portions disposed outside said circular hole; said exciting coil winding being arranged between both ends of said tabular stator, said micro robot further having a center of gravity positioned in approximate alignment with a plane including the vertical axis of said driven points of said pair of driving means and below the highest height among the height of said driving means, said control portion and said power source portion, said microrobot further comprising at least two wheels driven by said driving means, said control portion generating drive pulses for said driving means that are shifted in time with respect to each other.

5,610,489

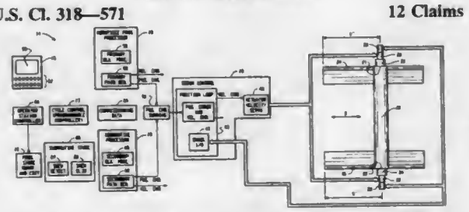
METHOD AND APPARATUS FOR MACHINE CONTROL

Roger L. Hart, Cincinnati, and Rickey L. Busick, Lebanon, both of Ohio, assignors to Trinova Corporation, Maumee, Ohio

Continuation of Ser. No. 296,772, Aug. 26, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,264

Int. Cl.[6] G05B *19/404*

U.S. Cl. 318—571 **12 Claims**



1. Method for reducing relative misalignment between a plurality of driving means for propelling a moveable member linearly transverse to its length, the misalignment being measured parallel to the axis of motion of the moveable member, the method comprising the steps of:

a. determining the magnitude of relative misalignment between the driving means;

b. effecting relative movement of the driving means to reduce the misalignment by an amount determined in accordance with the magnitude of relative misalignment;

wherein position of the driving means is measured by position transducers and the step of determining the magnitude of relative misalignment between the driving means further comprises the step of selecting a procedure for determining the difference between the positions indicated by the transducers according to the types of the transducers.

7. Apparatus for reducing relative misalignment between a plurality of driving means for propelling a moveable member linearly transverse to its length, the misalignment being measured parallel to the axis of motion of the moveable member, the apparatus comprising:

a. means for determining the magnitude of relative misalignment between the driving means;

b. means for effecting relative movement of the driving means to reduce the misalignment by an amount determined in accordance with the magnitude of relative misalignment;

wherein the positions of the driving means are indicated by position transducers and the means for determining the magnitude of relative misalignment between the driving means executes procedures selected according to the type of position transducer associated with the driving means.

5,610,490

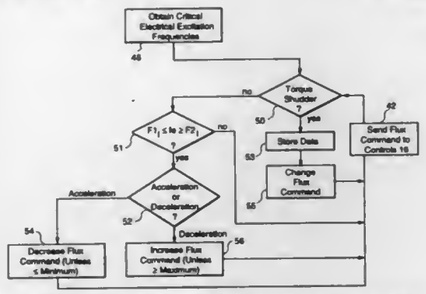
TORQUE SHUDDER PROTECTION DEVICE AND METHOD

Robert D. King, Schenectady, N.Y.; Rik W. A. A. De Doncker, Malvern, Pa., and Paul M. Szczesny, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1995, Ser. No. 548,064

Int. Cl.[6] H02P *5/408*

U.S. Cl. 318—611 **22 Claims**



5. A torque shudder protection device for an induction machine, the device comprising:

a torque shudder detector for determining a critical electrical excitation frequency at which a torque shudder occurs for the induction machine;

a flux adjuster for monitoring the electrical excitation frequency of the induction machine and adjusting a flux command to prevent the monitored electrical excitation frequency from reaching the critical electrical excitation frequency.

15. A method of torque shudder protection for an induction machine, the method comprising the steps of:

determining a critical electrical excitation frequency at which a torque shudder occurs for the induction machine;

monitoring the electrical excitation frequency of the induction machine; and

adjusting a flux command to prevent the monitored electrical excitation frequency from reaching the critical electrical excitation frequency.

20. A method of torque shudder protection for an induction machine, the method comprising the steps of:

determining whether a torque shudder has occurred, and if so, storing the electrical excitation frequency as a critical electrical excitation frequency and adjusting a flux command to remove the torque shudder; and

determining whether a monitored electrical excitation frequency is sufficiently near a critical electrical excitation frequency and, if so, adjusting the flux command to prevent the monitored electrical excitation frequency from reaching the critical electrical excitation frequency.

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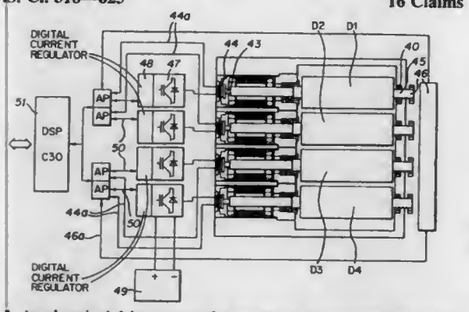
ELECTRICAL DRIVE SYSTEM FOR THE POSITIONING OF ROTATING EQUIPMENT

Fritz R. Gotz, Oberasbach; Heinrich Marz, Feucht; Harald Meis, Burgthann, and Werner Agne, Rothenbach, all of Germany, assignors to Baumuller Nurnberg GmbH, Nurnberg, Germany

Filed Sep. 16, 1994, Ser. No. 307,871

Int. Cl.[6] B41F *13/004;* **G05B** *11/32*

U.S. Cl. 318—625 **16 Claims**



1. An electrical drive system for angularly positioning a plurality of rotating equipment components in a printing machine, the electrical drive system comprising:

a plurality of electric motors each with a rotor designed for rigid and direct coupling to a respective component, including at least one angle encoder which registers an angular motion of the respective component,

a signal processing module connected to the at least one angle encoder to receive actual angle position signals as input and designed to receive setpoint values and to compare the set point values with actual data, and

a plurality of power amplifiers each controlled by the signal processing module and each connected to a respective electric motor for control thereof,

wherein the signal processing module includes a plurality of controllers, each connected to a respective component and its respective power amplifier, that allows simultaneous input of setpoint data for the plurality of components, wherein the plurality of controllers are coupled to one another.

5,610,492

METHOD AND APPARATUS FOR INDUCED POLE STEPPER MOTOR

Mankong H. Leung, and Steven G. Skiver, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Continuation of Ser. No. 334,081, Nov. 4, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 690,465

Int. Cl.[6] H02P *5/28*

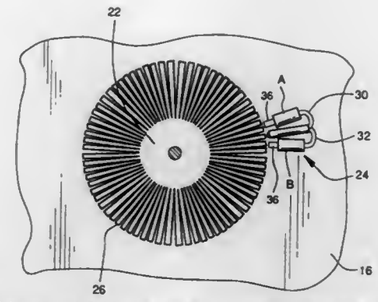
U.S. Cl. 318—701 **16 Claims**

1. In a stepper motor system including a stepper motor having a ferromagnetic rotor with peripheral teeth magnetizable by an external field, and a plurality of ferromagnetic cores adjacent the rotor, each core having a coil, and a drive circuit for exciting the coils to establish external fields, the method of rotating the rotor comprising the steps of:

inducing poles in the rotor by exciting at least some of the coils to establish fields which momentarily magnetize the teeth, and then terminating the coil excitation;

then rotating the rotor by selectively exciting the coils while the tooth magnetization remains to produce a magnetic rotational force on the rotor; and

repeating the inducing and rotating steps for continued rotation.



5,610,493

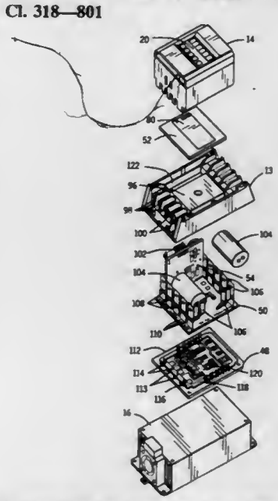
TERMINAL CONFIGURATION FOR A MOTOR CONTROLLER

Christopher J. Wieloch, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 12, 1995, Ser. No. 420,547

Int. Cl.[6] H05K *7/14*

U.S. Cl. 318—801 **14 Claims**



1. A controller for regulating the output characteristics of an electric motor comprising:

a power substrate module including a rectifying circuit for converting alternating current power from a source of electrical power to direct current power and an inverting circuit coupled to the rectifying circuit via a direct current bus, the inverting circuit converting the direct current power to controlled alternating current power to drive the electric motor in response to control signals;

a control circuit board separate from the power substrate module and coupled to the power substrate module via a plurality of conducting pins, the control circuit board being supported on the power substrate module at least partially by the conduct-

ing pins, the control circuit board including a drive circuit for generating the control signals to drive the inverting circuit; and

a plurality of input and output terminal conductors supported on the control circuit board and coupled to the plurality of conducting pins, whereby when the controller is installed between the source and the motor, power is transmitted from the source to the rectifying circuit and from the inverting circuit to the motor via the terminal conductors and the plurality of conducting pins.

5. A controller for driving an alternating current electric motor comprising:

a housing having an inside and an outside;

drive circuitry enclosed within the housing, the drive circuitry including a rectifying circuit for converting alternating current power from a source of alternating current power to direct current power, an inverting circuit coupled to the rectifying circuit for converting the direct current power to controlled alternating current power in response to control signals and a control circuit for generating the control signals to drive the inverting circuit; and

a plurality of terminal conductors extending from the drive circuitry to terminal points outside the housing for coupling to the source of alternating current power and to the motor.

5,610,494

DEVICE FOR RECHARGING THE STORAGE BATTERY OF AN INTRA-AURICULAR PROSTHESIS, AND METHOD FOR MANUFACTURING SAME

Jean-Etienne Grosfilley, Massieux, France, assignor to Audiologie Prothese Innovation A.P.I., Lyons, France

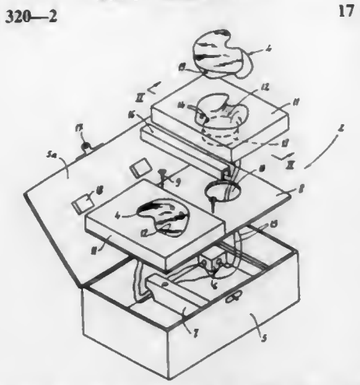
PCT No. PCT/FR93/00249, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/18629, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 12, 1993, Ser. No. 295,865

Claims priority, application France, Mar. 13, 1992, 92 03267

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **17 Claims**



6. An intra-auricular prosthesis for use with a device for recharging a storage battery of the prosthesis, the device including a support having a recess capable of receiving the prosthesis, wherein the recess has a shape corresponding to an external shape of the prosthesis, and the recess has at least one conducting terminal connected to an electric current source and located on a wall of the support defining said recess,

wherein the prosthesis further comprises at least one conducting surface connected to a corresponding terminal of the storage battery, and

wherein said at least one conducting surface is capable of contacting said at least one conducting terminal of the support when the prosthesis engages the recess for receiving said prosthesis.

5,610,495

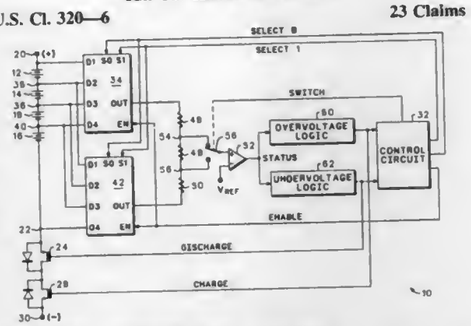
CIRCUIT AND METHOD OF MONITORING BATTERY CELLS

Renwin J. Yee, Chandler; Troy L. Stockstad, Phoenix, and Thomas D. Petty, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 20, 1994, Ser. No. 262,305

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—6 **23 Claims**



5. A battery monitoring circuit, comprising:

first and second multiplexers each having a first input, a second input and a select input, said first input of said first multiplexer being coupled for receiving a first battery voltage, said second input of said first multiplexer being coupled for receiving a second battery voltage, said first input of said second multiplexer being coupled for receiving said second battery voltage, said second input of said second multiplexer being coupled for receiving a third battery voltage, said select inputs being coupled for receiving a select signal that selects between said first and second inputs to sequentially sample said first and second battery voltages;

first, second, and third conduction elements serially coupled between outputs of said first and second multiplexers for developing a first voltage at an interconnection of said first and second conduction elements at a first node and a second voltage at an interconnection of said second and third conduction elements at a second node;

a comparator having first and second inputs, and an output, said second input being coupled for receiving a reference potential, said output providing a status signal indicating status of said first and second battery voltages;

a charging conduction path coupled between first and second power supply conductors for providing said first, second and third battery voltages;

circuit means responsive to said status signal for disabling said charging conduction path upon detecting a predetermined state of said status signal that indicates a fault condition; and

a switching circuit with first and second input terminals and an output terminal, said first input terminal being coupled to said first node, said second input terminal being coupled to said second node, said output terminal being coupled to said first input of said comparator.

22. A method of monitoring serial battery voltages, comprising the steps of:

monitoring first and second battery voltages serially connected in a charging conduction path;

sampling said first battery voltage;

sampling said second battery voltage;

comparing said first battery voltage against a reference potential to determine status of said first battery voltage;

comparing said second battery voltage against said reference potential to determine status of said second battery voltage; and

disabling said charging conduction path through said first and second battery voltages upon detecting a predetermined status of said first or second battery voltages.

5,610,496

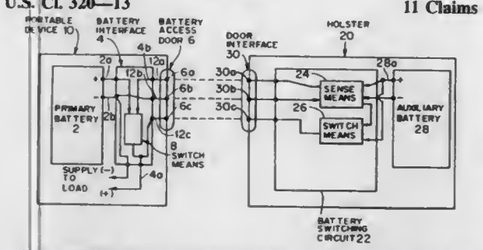
DUAL BATTERY CONTROL SYSTEM

Thomas Hofbauer, Ronkonkoma, and Darren Kropp, East Patchogue, both of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Jun. 30, 1995, Ser. No. 491,339

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—13 **11 Claims**



1. A portable electronic device and holster means for holding said portable electronic device comprising a dual battery control system comprising:

a first battery having a first low voltage signal and a first high voltage signal,

a second battery having a second low voltage signal and a second high voltage signal,

a first switch means for connecting and disconnecting said first battery from an electronic load of said portable electronic device in response to a first control signal for changing the state of said first switch means, wherein said first switch means is in a closed state when said portable electronic device is not in said holster,

a second switch means for connecting and disconnecting said second battery from said electronic load in response to a second control signal for changing the state of said second switch means,

sense means for producing said first and second control signals in response to the terminal voltage of said second battery, and

first and second interface means for providing electrical connection between said portable electronic device and said holster means,

wherein said portable electronic device contains said first switch means, said first battery, and said first interface means, and

wherein said holster means contains said second switch means, said second battery, said sense means and said second interface means, and

wherein said first and second interface means each comprise at least three electrical contacts, said at least three electrical contacts of said first interface means operatively connecting with said at least three electrical contacts of said second interface means when said portable electronic device is placed into said holster means, and

wherein said first and second interface means enable connection of said first low voltage signal of said first battery to said second low voltage signal of said second battery, and

wherein said first and second interface means further enable connection of said second high voltage signal of said second battery, said second high voltage signal emanating from said second switch means when said second switch means is closed, to said electronic load, and

wherein said first and second interface means further enable connection of said first control signal emanating from said sense means to said first switch means.

5,610,497

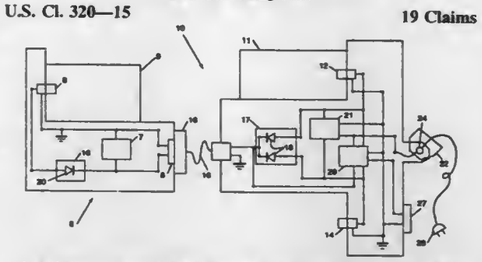
METHOD AND APPARATUS FOR PROVIDING CONTINUOUS POWER TO A BATTERY POWERED DEVICE DURING BATTERY TRANSFER

William J. Croughwell, Durham, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Dec. 1, 1994, Ser. No. 348,055

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—15 **19 Claims**



1. A battery transfer apparatus for providing continuous battery power to a battery powered device, said apparatus comprising:

a housing separate from the battery powered device;

a battery interface in said housing, said battery interface comprising a first connector which receives a charged battery to be installed in the battery powered device and a second connector which receives a nearly discharged battery to be removed from the battery powered device;

an external connector extending from said housing which provides an electrical connection with the battery powered device; and

continuous power transfer means in said housing and electrically connected to said battery interface and said external connector for providing electrical power from the charged battery to the battery powered device while removing the nearly discharged battery from the battery powered device, and for providing electrical power from the nearly discharged battery to the battery powered device while installing the charged battery in the battery powered device.

5,610,498

CIRCUIT AND METHOD FOR CONTROLLING CHARGING OF A BATTERY

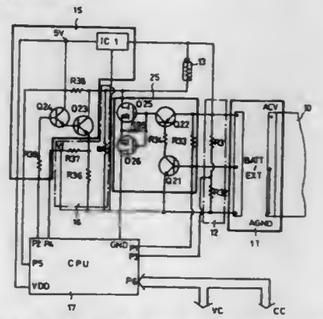
Byung K. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 7, 1994, Ser. No. 350,672

Claims priority, application Rep. of Korea, Dec. 8, 1993, 26924/1993

Int. Cl.[6] H01M *10/44;10/46;10/48*

U.S. Cl. 320—39 **7 Claims**



1. A circuit for controlling charging of a battery, comprising:

adapter connection means for providing a battery/adapter mode signal when an adapter is connected to the adapter connection means;

first voltage output means for outputting first voltages from said battery and said adapter;

ground connection control means for controlling connection of a battery ground terminal and an adapter ground terminal to a ground under control of said battery/adapter mode signal;

battery ground voltage means, which is switched in response to a charge control signal, for outputting output voltages of the battery and the adapter at a first predetermined voltage level and for outputting a battery ground voltage;

second voltage output means for outputting second output voltages at a second predetermined voltage level; and

central processing means outputting the charge control signal for controlling charging of the battery in response to the battery/adapter mode signal and the first and second output voltages of the first and second voltage output means.

6. A method for controlling a charge of a battery, comprising:

a first step for outputting a charge control signal of a low electric potential when a battery/adapter mode signal is a high electric potential, detects a residual voltage, and displaying the residual voltage;

a second step for judging whether a camcorder operation mode is terminated when the battery/adapter mode signal is a low electric potential, outputting charge control signals of a low electric potential if the camcorder operatio mode is judged not terminated, and judging whether an adapter voltage is greater than a predetermined level;

a third step for outputting the charge control signals of the low electric potential when the adapter voltage is greater than the predetermined level and judging whether a battery ground voltage is between 0.1 V and 5.2 V;

a fourth step for outputting the charge control signals of the low electric potential when the battery ground voltage is outside the range of 0.1 V and 5.2 V and judging whether a battery charge voltage is greater than a predetermined level when the battery ground voltage is within 0.1 V and 5.2 V; and

a fifth step for outputting the charge control signals of the low electric potential when the battery charge voltage is greater than the predetermined level in the fourth step and outputting the charge control signals of the high electric potential and returning to an initial state when the battery charge voltage is less than the predetermined level.

5,610,499

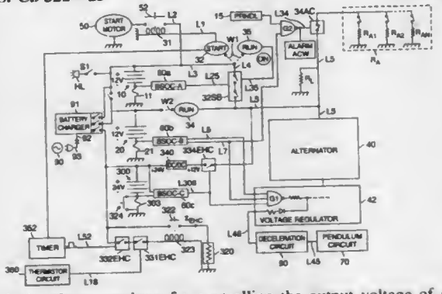
MULTI-BATTERY FUEL SAVING AND EMISSION REDUCTION SYSTEM FOR AUTOMOTIVE VEHICLES

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development, Inc., Grosse Pointe Park, Mich.

Division of Ser. No. 344,470, Nov. 23, 1994, which is a division of Ser. No. 977,921, Nov. 18, 1992, Pat. No. 5,397,991, which is a continuation-in-part of Ser. No. 919,011, Jul. 23, 1992, Pat. No. 5,444,378, which is a continuation-in-part of Ser. No. 607,237, Oct. 31, 1990, Pat. No. 5,179,340, which is a continuation-in-part of Ser. No. 218,539, Jul. 13, 1988, Pat. No. 4,968,941. This application Jun. 6, 1995, Ser. No. 468,938

Int. Cl.[6] H02J *7/14*

U.S. Cl. 322—25 **14 Claims**



1. A voltage regulator for controlling the output voltage of an alternator for a fuel consuming engine comprising:

a pulse modulation circuit having a reference voltage source for providing an output current with a duty cycle selected for maintaining the alternator output voltage regulated at a selected output voltage;

a circuit for changing the duty cycle of the pulse modulation circuit between a first duty cycle associated with the reference voltage source and a second duty cycle, the second duty cycle corresponding to an alternator output voltage lower than the selected regulated output voltage; and

a switch having an on condition whereby the pulse modulation circuit output current is one of the first and second duty cycles, and an off condition whereby the pulse modulation output current is the other of the first and second duty cycles.

5,610,500

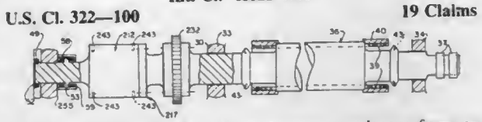
METHOD OF CONVERTING TURBINE DRIVEN GENERATOR INTO A SYNCHRONOUS CONDENSER

Melbourne F. Giberson, 5 Spring Mill La., Haverford, Pa. 19041

Filed May 16, 1994, Ser. No. 242,890

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—100 **19 Claims**



1. A method of making a synchronous condenser from an electric generator driven by a steam turbine, said generator having a generator shaft and said turbine having a turbine shaft axially aligned with said generator shaft, said turbine shaft being connected to said generator shaft when said generator is driven by said turbine, said method comprising disconnecting said generator shaft from said turbine shaft, mounting an extension shaft on an end of said generator shaft coaxially and concentrically with said generator shaft to project axially outwardly from said generator, journaling said extension shaft in a journal bearing mounted against axial and radial movement with respect to the extension shaft, said extension shaft being journaled adjacent its axially outer end, mounting a thrust bearing assembly on said extension shaft, providing on said extension shaft means for balancing said extension shaft and generator shaft, and balancing said extension shaft and generator shaft.

5,610,501

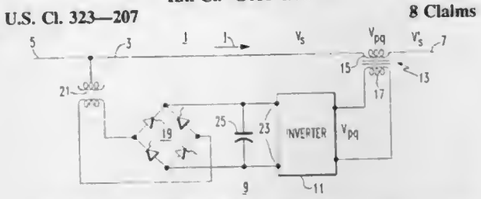
DYNAMIC POWER AND VOLTAGE REGULATOR FOR AN AC TRANSMISSION LINE

Robert J. Nelson, Orlando, and Donald G. Ramey, Maitland, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1995, Ser. No. 380,991

Int. Cl.[6] G05F *1/70*

U.S. Cl. 323—207 **8 Claims**



1. Apparatus for controlling an alternating current transmission system including a transmission line carrying alternating current at a selected transmission line voltage, and fundamental frequency said apparatus comprising:

switching power converter means generating an alternating voltage at said fundamental frequency of said alternating current with a controllable magnitude and a controllable phase angle between −90 electrical degrees and +90 electrical degrees relative to said alternating current to inject adjustable reactive compensation and adjustable positive real power;

means coupling said alternating voltage generated by said switching power converter means into said transmission line to inject said adjustable reactive compensation and adjustable positive real power into said transmission line; and in series with said transmission line voltage; and

rectifier means connected in shunt to said transmission line and to said switching power converter means to provide said positive real power to said switching power converter means.

5,610,502

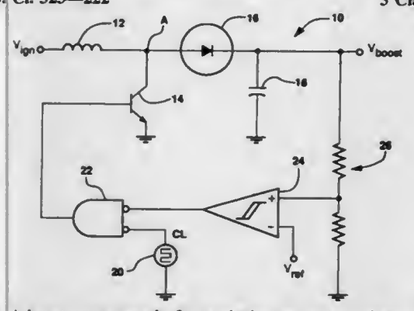
BOOST POWER SUPPLY WITH CLOCK PERIOD COMPENSATION

James C. Tallant, II, Carmel, and Kevin J. Hawes, Greentown, both of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Aug. 24, 1995, Ser. No. 518,733

Int. Cl.[6] G05F *1/46*

U.S. Cl. 323—222 **5 Claims**



1. A boost power supply for producing an output voltage at an output higher than a supply voltage at an input comprising:

an inductor and a diode joined at a node and serially coupled between the input and the output;

a switch connected between the node and ground whereby increasing inductor current flows through the switch when the switch is closed to attain a peak value and then flows through the diode to the output at decreasing values when the switch is open;

clock means for operating the switch to establish the time that the switch is closed; and

means for varying the cycle of the clock means to decrease the closed switch time upon increase in supply voltage, to thereby reduce the peak current value occurring at high supply voltages.

5,610,503

LOW VOLTAGE DC-TO-DC POWER CONVERTER INTEGRATED CIRCUIT AND RELATED METHODS

John K. Fogg, Durham, N.C.; Wayne Utter, and George Dohanich, both of Endicott, N.Y., assignors to Celestica, Inc., Ontario, Canada

Filed May 10, 1995, Ser. No. 438,636

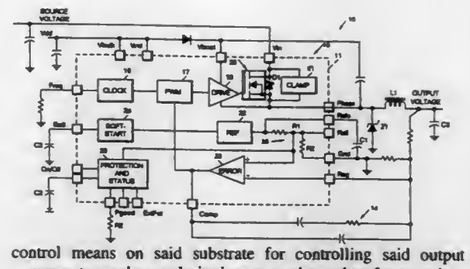
Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—283 **34 Claims**

1. An integrated circuit dc-to-dc step down power converter comprising:

a substrate;

output means on said substrate for generating an output voltage from a source voltage, said output means comprising a plurality of first metal oxide semiconductor field effect transistors (MOSFETs) connected in parallel and collectively defining a gate, a source and a drain, each of said plurality of first MOSFETs comprises an n-channel enhancement-type MOSFET;



control means on said substrate for controlling said output means to produce a desired output voltage therefrom; and

driver means on said substrate and connected between said control means and said output means for operating said output means responsive to said control means, said driver means comprising a bipolar transistor connected to said gate for turning on said plurality of first MOSFETs, and a second MOSFET connected to said gate for turning off said plurality of first MOSFETs.

5,610,504

AUTOMATIC REGULATING CIRCUIT FOR REGULATING TARGET SIGNAL THROUGH BINARY SEARCH

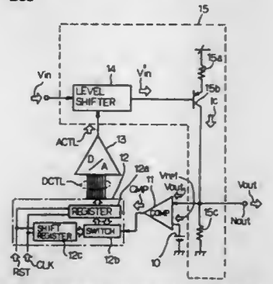
Masami Tsugita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,209

Claims priority, application Japan, Sep. 14, 1994, 6-219336

Int. Cl.[6] G05F *1/445*

U.S. Cl. 323—283 **8 Claims**



1. An automatic regulating circuit for regulating an output signal to a reference value, comprising:

a comparator having a first input node supplied with said reference value and a second input node supplied with said output signal, and generating a comparative signal indicative of either higher or lower than said reference value;

a binary searching unit responsive to said comparative signal so as to change the value of a control signal in such a manner as to converge toward a target value corresponding to said reference value in synchronism with a clock signal,

said binary search unit determining the value of said control signal at nth clock pulse of said clock signal to be an intermediate value between the value of said control signal at (n-1)th clock pulse of said clock signal and the value of said control signal at (n-2)th clock pulse of said clock signal when said comparator changes the comparative signal between a first state indicating said output signal higher than said reference value and a second state indicating said output signal lower than said reference value,

said binary search unit determining the value of said control signal at said nth clock pulse of said clock signal in the present of said comparative signal indicating one of said first state and said second state to be an intermediate value between the value of said control signal at said (n-1) clock pulse of said clock signal in the presence of said comparative signal indicating the other of said first state and said second

state and the latest value of said control signal in the presence of said comparative signal indicating said one of said first state and said second state; and

a shifting unit responsive to said control signal so as to change said output signal.

5,610,505

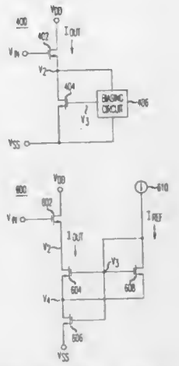
VOLTAGE-TO-CURRENT CONVERTER WITH MOS REFERENCE RESISTOR

Peter S. Bernardson, Emmaus, and Dale H. Nelson, Shillington, both of Pa., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Aug. 31, 1995, Ser. No. 522,188

Int. Cl.[6] G05F *3/04*

U.S. Cl. 323—312 **30 Claims**



1. A voltage-to-current converter, comprising:

a first transistor for receiving a voltage signal and transferring a current signal;

a second MOS transistor for receiving a biasing voltage at a second gate and transferring at least a portion of the current signal between a second drain and a second source; and

a biasing circuit for applying the biasing voltage to the second gate, the biasing voltage being a function of at least a voltage V_{DS} between the second drain and the second source and a threshold voltage V_T of the second transistor, such that the second transistor provides a substantially constant resistance between the second drain and the second source.

5,610,506

VOLTAGE REFERENCE CIRCUIT

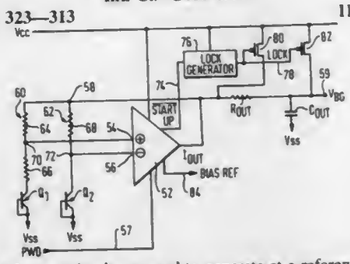
David H. McIntyre, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited

Filed Nov. 15, 1995, Ser. No. 559,034

Claims priority, application United Kingdom, Nov. 15, 1994, 9423033

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **11 Claims**



1. A reference circuit arranged to generate at a reference node a reference voltage which changes during start-up from a power down value to a stable reference value and including:

a lock signal generating circuit for generating a lock signal which is maintained at a first logic level during start-up of the reference circuit and then attains a second logic level; and

a lock transistor having a controllable node connected to receive said lock signal and a controllable path connected between a start-up voltage level and said reference node, said start-up voltage level being at least as high as said stable reference value whereby the reference voltage is held at said start-up voltage level during start-up of the circuit when the lock signal is at the first logic level and attains the stable reference value when the lock signal is at the second logic level.

5,610,507

POWER CONTROL SWITCH

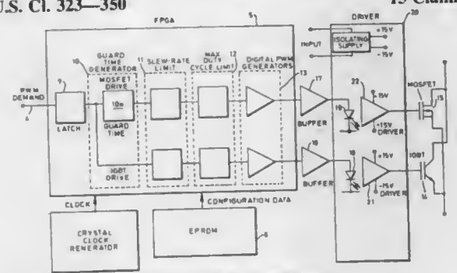
Steven J. Brittan, Hampshire, United Kingdom, assignor to GEC Marconi Ltd., Middlesex, United Kingdom

Filed Apr. 6, 1994, Ser. No. 223,509

Claims priority, application United Kingdom, Apr. 16, 1993, 9307921

Int. Cl.[6] G05F *1/10*

U.S. Cl. 323—350 **15 Claims**



1. A high power control switch comprising:

a power input;

a power output;

a first solid state switching element connected between the power input and the power output;

a second solid state switching element having a high resistance and a fast turn-off time relative to the first switching element connected in parallel with the first switching element between the power input and the power output;

a control signal input; and

switch control means responsive to a control signal applied to said control signal input for variably controlling the relative operation of each switching element, wherein the power transmitted through the power control switch is pulse width modulated and for each pulse the switch control means switches the first and second switching elements "on" at substantially the same time and subsequently turns "off" the first switching element and then turns "off" the second switching element after a guard period.

5,610,508

CIRCUITRY TO MAINTAIN PROPER CURRENT TRANSFORMER OPERATION

Neil A. Kammiller, Lorain, Ohio, assignor to Reltec Corporation, Lorain, Ohio

Filed Jun. 16, 1994, Ser. No. 260,767

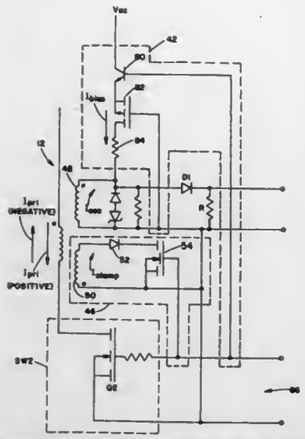
Int. Cl.[6] H01F *38/28;* **H02M** *3/24*

U.S. Cl. 323—358 **16 Claims**

14. A current transformer assembly comprising:

a primary current transformer winding circuit for carrying a primary current in a first direction and a second direction, depending upon a composition of a received power pulse;

a secondary current transformer winding circuit magnetically linked to the primary current transformer winding circuit configured to generate secondary current when the primary current in the first direction is flowing; and



a bias current generator inserted into the secondary current transformer winding circuit, including a first switch connected to a power supply, the first switch constructed to receive a drive pulse and to turn on upon receipt of the drive pulse, a second switch connected to the first switch, to a power supply which causes the second switch to be activated when the primary current is flowing in the second direction, and a resistance connected to the second switch to deliver a bias current to the secondary current transformer winding circuit when the primary current is flowing in the second direction.

5,610,509

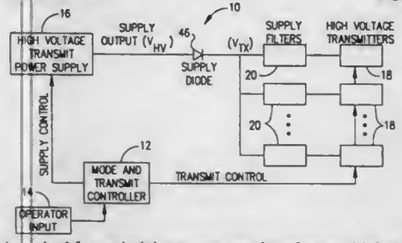
METHOD FOR OPTIMIZING POWER SUPPLY VOLTAGE TO HIGH VOLTAGE TRANSMITTERS

Timothy A. Nustad, Greenfield, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1994, Ser. No. 343,077

Int. Cl.[6] A61B *8/02*

U.S. Cl. 323—234 **4 Claims**



1. A method for optimizing power supply voltage to high voltage transmitters of an ultrasound imaging apparatus for each operating mode of the apparatus, the high voltage transmitters having an output, the method comprising the steps of:

linking the operating mode of the apparatus, the output of the high voltage transmitters, and the high voltage transmitter power supply;

determining when a change in optimum power supply voltage will be desired;

differentiating between an anticipated increase in optimum power supply voltage and an anticipated decrease in optimum power supply voltage; and

coordinating operation of the high voltage transmitter power supply and the high voltage transmitters to react to the determination that an increase in optimum power supply voltage will be desired, before the change in optimum power supply voltage is actually desired.

5,610,510

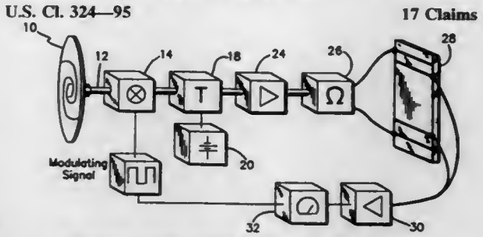
HIGH-TEMPERATURE SUPERCONDUCTING THIN FILM NONBOLOMETRIC MICROWAVE DETECTION SYSTEM AND METHOD

Bradley G. Boone, and Barry E. Grabow, both of Columbia, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 269,176, Jun. 30, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,907

Int. Cl.[6] G01R *23/04*

U.S. Cl. 324—95 **17 Claims**



1. A microwave signal detection system comprising:

an antenna means for coupling the microwave signal in free space to a transmission line;

a means for reducing noise in the microwave signal;

a capacitor means for preventing a bias current from entering the reducing noise means;

a means for preventing the microwave signal from entering a bias current supply;

a means for matching the impedance of the transmission line to a detector;

a granular, high-temperature superconducting thin film for generating an output voltage representative of the microwave signal; and

a means for measuring the output voltage to detect the microwave signal.

5,610,511

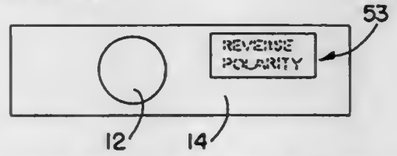
TEMPERATURE RESPONSIVE BATTERY TESTER

Robert Parker, Alamo, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 139,363, Oct. 19, 1993, Pat. No. 5,460,902, which is a continuation-in-part of Ser. No. 58,449, May 7, 1993, Pat. No. 5,389,470. This application Sep. 16, 1994, Ser. No. 307,341

Int. Cl.[6] G01R *19/00;* **G01N** *27/416*

U.S. Cl. 324—106 **8 Claims**



1. A device for measuring the voltage of a voltage source, comprising:

a substrate having a visually transparent portion;

a plurality of temperature responsive displays printed on the visually transparent portion of the substrate;

a plurality of heat generating elements, each of which is thermally coupled to at least one of said temperature responsive displays and is printed on a temperature responsive display;

a reference voltage circuit including a surface mount voltage regulating diode for producing a reference voltage when the voltage regulating diode is in a breakdown state;

a voltage divider network printed on the substrate and including a plurality of printed resistors electrically connected in series for producing a plurality of source voltages as a function of the ratios of the resistances of the printed resistors; and

a plurality of comparator circuits, each for selectively allowing current to flow through at least one of said heat generating elements when the voltage supplied to said comparator circuit by said voltage divider network exceeds the reference voltage, the comparator circuits being embodied in a surface mount device.

5,610,512

CLAMP-ON ELECTRICAL MEASURING DEVICE

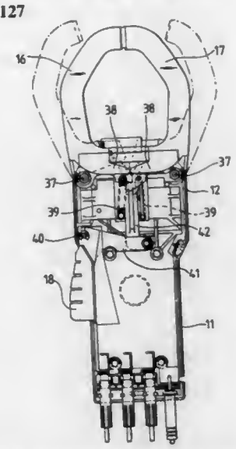
Ahmet Selcuk, Manchester, England, assignor to LEM Heme Limited, Skelmersdale, England

Continuation of Ser. No. 943,545, Sep. 11, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 224,129

Claims priority, application United Kingdom, Sep. 12, 1991, 9119501

Int. Cl.[6] G01R *21/00;19/00*

U.S. Cl. 324—127 **3 Claims**



1. An electrical measuring device, comprising:

a housing;

measuring means attached to said housing, said measuring means disposed to fit around an electrical conductor for the measurement of a property associated with the conductor, said measuring means comprising a pair of jaws, with each jaw being mounted on the housing for movement with respect to the housing, said pair of jaws being configured such that the jaws can move toward and away from each other;

at least one manual operating member for moving the jaws, said operating member being,spaced away from the jaws to reduce a risk that a hand of an operator will come into contact with the conductor;

an intermediate member disposed between said operating member and said jaws, said intermediate member being movable to transmit opening and closing forces between said jaws and said operating member;

a plurality of connection terminals disposed in said housing, said plurality of connection terminals working in conjunction with a selection means for selecting at least one terminal to be accessible, with at least one other terminal inaccessible; and

isolation means to isolate at least one output terminal of said plurality of connection terminals from the measuring means and electrically conductive components of the device, said isolation means thereby avoiding or reducing a risk that high voltages to which the measuring means are exposed will be transmitted to the output terminal.

5,610,513

CROSS COIL METER WITH CORRECTION FOR RESISTANCE VARIATIONS

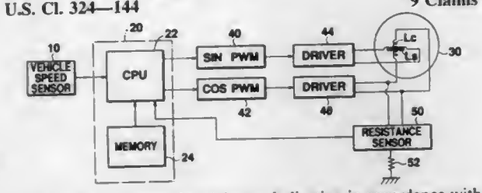
Yoshihiro Ikefuji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 28, 1995, Ser. No. 496,087

Claims priority, application Japan, Jun. 28, 1994, 6-146472; Jun. 28, 1994, 6-146473

Int. Cl.[6] G01R *11/185*

U.S. Cl. 324—144 **9 Claims**



1. A cross coil meter for giving an indication in accordance with an input value by controlling current amounts to cross coils, comprising:

(a) a current command value generator for generating a current command value for supplying currents to the cross coils in accordance with the input value;

(b) a resistance variation detector for detecting variations of resistance values of the cross coils;

(c) a correction coefficient memory for storing correction coefficients for correcting the generated current command value in accordance with the detected resistance variations;

(d) a corrector for correcting the current command value using the correction coefficients stored in the correction coefficient memory; and

(e) a pulse train generator for generating pulse trains in accordance with the corrected current command value, and supplying the pulse trains to the cross coils.

5,610,514

INDUCTIVE SYSTEM FOR MEASURING THE LENGTH OF A SHOCK ABSORBER

Antonius E. T. J. Ramaker, Den Haag, Netherlands, assignor to V.O.F. Hedon Electronic Developments, Delft, Netherlands

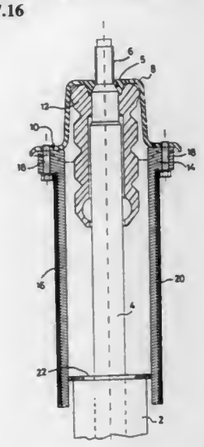
PCT No. PCT/NL94/00040, § 371 Date Aug. 16, 1995, § 102(e) Date Aug. 16, 1995, PCT Pub. No. WO94/19206, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 17, 1994, Ser. No. 505,249

Claims priority, application Netherlands, Feb. 17, 1993, 9300301

Int. Cl.[6] G01B *7/14;* **G01N** *27/72*

U.S. Cl. 324—207.16 **12 Claims**



1. Electric circuit for measuring the length of a shock absorber unit of a vehicle, comprising:

a coil (**20**) with windings which are fitted around the shock absorber unit, of which a casing (**2**) of electrically conducting material connected to a part of the wheel suspension of the vehicle is axially movable relative to the coil (**20**) when there is a change of length of the shock absorber unit as a result of a change in the force absorbed by the wheel suspension;

an oscillator (**34**) connected to the coil (**20**), for exciting the coil (**20**) with an excitation signal of a predetermined frequency; and

processing means (**40**) which are connected to the coil (**20**) and are designed for determining the value of a relation between the voltage across the coil and the current through the coil, which value is a measure of the length of the shock absorber unit, wherein

the oscillator (**34**) is designed for generating an excitation signal with a frequency which is at least so high that the resistive properties of the coil (**20**) and of the casing (**2**) of the shock absorber unit are negligible relative to the inductive properties thereof, the relative magnetic permeability of the electrically conducting material of the casing (**2**) being approximately equal to one; and

the processing means (**40**) are designed for determining the immittance of the coil (**20**) from a direct measurement of the voltage across and the current through the coil (**20**).

5,610,515

EDDY CURRENT TEST METHOD FOR RESIDUAL STRESS IN NON-FERROMAGNETIC METAL OBJECTS

Jack A. Soules, Shaker Heights, Ohio, assignor to Cleveland State University, Cleveland, Ohio

Filed Oct. 10, 1995, Ser. No. 540,496

Int. Cl.[6] G01B *7/24;* **G01N** *27/90;* **G01R** *33/12*

U.S. Cl. 324—209 **11 Claims**

1. A test method to determine residual stress in a non-ferromagnetic metal object which comprises:

(a) contacting the surface of said non-ferromagnetic metal object with a probe device having spaced apart identical test and comparison induction coils suitable for operation in the frequency range from 100 KHz up to about 10 MHz, the probe device being constructed so that only the test induction coil in said probe device physically contacts the surface of the non-ferromagnetic metal object being tested while the comparison induction coil in said probe device remains physically positioned remote therefrom,

(b) the test and comparison induction coils of said probe device providing bridge arms in an alternating current bridge circuit formed in combination with resistor elements exhibiting the same resistance characteristics including a relatively low thermal coefficient value, and with all resistor elements in said bridge circuit being kept isolated at a remote physical location enabling operation in a temperature range varying no more than about 20° C. from the temperature at which the resistance value for the resistor elements is minimum,

(c) energizing the bridge circuit at an operating frequency in the range from about 100 KHz up to about 10 MHz causing self-inductance eddy current flow in both induction coils of said probe device while the test coil in said probe device remains in contact with the surface of said non-ferromagnetic metal object,

(d) balancing the bridge circuit during said operating conditions so as to remain balanced to within less than two parts per million of impedance change over a time period of at least one minute,

(e) displacing the probe device from the surface of said non-ferromagnetic metal object while still maintaining the bridge circuit at the same operating conditions to determine the impedance change attributable thereto,

(f) repeating steps (a) thru (e) with the probe device at the same operating conditions while employing a relatively stress free non-ferromagnetic metal object having the same metallurgical characteristics as the already tested non-ferromagnetic metal object, and

(g) comparing the impedance change obtained upon probe displacement for the individual non-ferromagnetic metal objects for any difference found there-between to an accuracy of at least five parts per million, said difference determining the amount of residual stress existing in the non-ferromagnetic metal object being tested.

5,610,516

PROCESS OF AND DEVICE FOR CHECKING PRESENCE OF METAL IN REFUSE CONTAINER OF REFUSE COLLECTING VEHICLE

Hans-Jürgen Maier, Lembergstrasse 17, D-7400, Tübingen 1, Germany

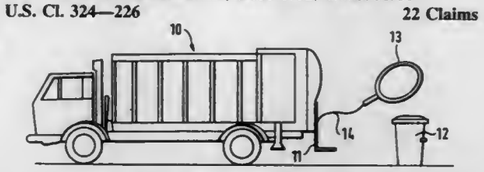
PCT No. PCT/EP93/00763, § 371 Date Oct. 4, 1994, § 102(e) Date Oct. 4, 1994, PCT Pub. No. WO93/19999, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 313,293

Claims priority, application Germany, Jun. 4, 1992, 42 11 545.0

Int. Cl.[6] G01N *27/72;* **B65F** *3/02;* **G01R** *33/00*

U.S. Cl. 324—226 **22 Claims**



1. Process for checking for the presence of metal in refuse contained in a refuse container of a refuse collecting vehicle (**12**), characterized in that refuse is picked up by the refuse collecting vehicle provided with at least one metal detector, the refuse container (**12**) is scanned by the at least one metal detector (**13**, **15**) provided on the refuse collecting vehicle at the pick-up site before being emptied and in that a signal is generated when metal is detected.

5,610,517

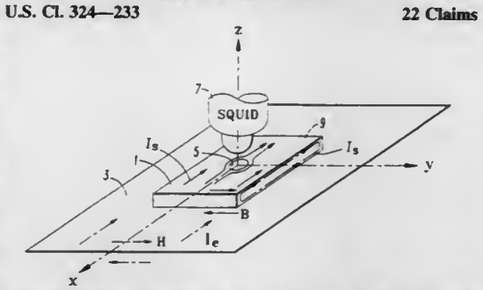
METHOD AND APPARATUS FOR DETECTING FLAWS BELOW THE SURFACE OF AN ELECTRICALLY CONDUCTIVE OBJECT

Yu P. Ma, Nashville, and John P. Wikswo, Jr., Brentwood, both of Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Jun. 7, 1995, Ser. No. 472,558

Int. Cl.[6] G01N *27/90*

U.S. Cl. 324—233 **22 Claims**



12. Apparatus for detecting flaws below a generally smooth surface of an electrically conductive object, comprising:

an induction member carrying a uniformly distributed ac current positioned adjacent said smooth surface of said electrically conductive object to induce a sheet eddy current in said electrically generally conductive object parallel to and extending over said generally smooth surface;

detector means generating a detector signal representative of a component substantially perpendicular to said generally smooth surface of a magnetic field generated by said sheet eddy current in said electrically conductive object in the presence of a flaw; and

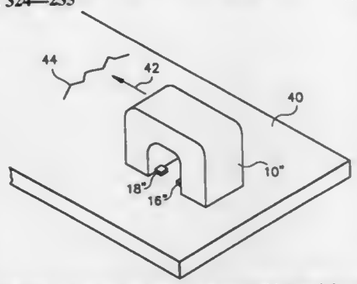
phase sensitive means responsive to said ac current and said detection signal generating an output signal representative of a magnitude of said detection signal at a phase angle with respect to said ac current carried by said induction member selected for detection of a flaw at a selected depth below said generally smooth surface.

5,610,518

METHOD AND APPARATUS FOR DETECTING SMALL MAGNETIZABLE PARTICLES AND FLAWS IN NONMAGNETIC CONDUCTORS

Frederick R. Chamberlain, IV, Vista, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,461
Int. Cl.[6] G01N *27/82*; G01R *33/12*
U.S. Cl. 324—235 **2 Claims**



2. Apparatus for detecting small magnetizable particles comprising:

a permanent horseshoe magnet having first and second coplanar pole faces, said magnet being made of high coercivity material so that its leakage flux is minimal;

first and second Hall sensors located between said first and second pole faces and in a plane that is coplanar with said first and second pole faces of said magnet, said sensors being symmetrically positioned with respect to said first and second pole faces, and having sensitive axes perpendicular to said plane; and

a small metal object to be detected located on the axis of said permanent magnet, in which an induced dipole moment by said magnet is differentially detected by said Hall sensors;

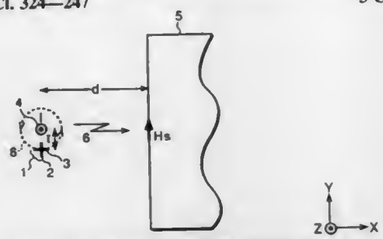
wherein said outputs of said detectors are additive and wherein any signal produced by said sensors due to the earth's magnetic field or fringing fields from said magnet are canceled.

5,610,519

DEVICE AND METHOD FOR MEASURING SPECIFIC ABSORPTION RATE OF ELECTROMAGNETIC WAVES IN MODELS OF HUMAN BODIES

Eiji Hankui, and Takashi Harada, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 19, 1995, Ser. No. 530,027
Claims priority, application Japan, Sep. 21, 1994, 6-226313
Int. Cl.[6] G01R *33/02;33/028*
U.S. Cl. 324—247 **3 Claims**



3. A method for measuring a Specific Absorption Rate (SAR) in a phantom having a surface and being exposed to electromagnetic fields radiating from an antenna, by using a probe structure having a combination of first and second loop probes orthogonal to each other, said method comprising the steps of:

disposing said first and second loop probes such that said second loop probe receives only a magnetic field that has been reflected from the surface of said phantom; and

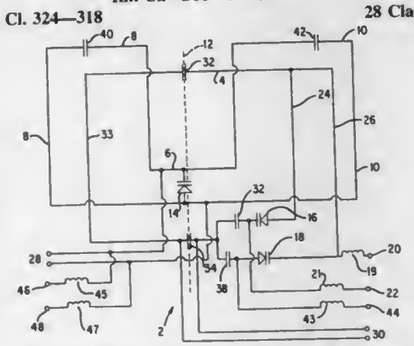
distinguishing a magnetic field radiating from said antenna and the magnetic field that has been reflected from the surface of said phantom thereby correcting said magnetic field that has been reflected.

5,610,520

AUTOMATIC ORTHOGONALITY ADJUSTMENT DEVICE FOR A QUADRATURE SURFACE COIL FOR MAGNETIC RESONANCE IMAGING OR SPECTROSCOPY

George J. Misic, Novelty, Ohio, assignor to Medrad Inc., Pittsburgh, Pa.

Filed Feb. 24, 1994, Ser. No. 201,862
Int. Cl.[6] G01V *3/00;3/14*
U.S. Cl. 324—318 **28 Claims**



1. A tunable magnetic resonance quadrature coil system, comprising:

a first coil;

a second coil disposed with respect to said first coil such that a net magnetization vector of said second coil is at an approximate right angle to a net magnetization vector of said first coil;

first and second variable capacitors contributing a first RF value connected in series with said first coil and a third variable capacitor contributing a second RF value connected in series with said second coil, said variable capacitors operable to change the RF values of said first and second coils; and

a tuner communicating with the first, second and third variable capacitors for automatically tuning the first and second coils, and for automatically optimizing the magnetic field isolation of the first and second coils.

5,610,521

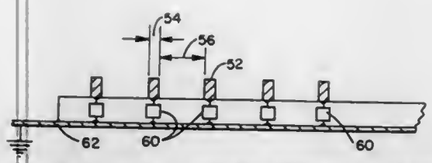
GRADIENT AND RF COIL SYSTEM WITHOUT RF SHIELD

Xueming Zou, Willoughby; John L. Patrick, Chagrin Falls, and Nicholas J. Mastandrea, Bedford Hts., all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Continuation of Ser. No. 922,162, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 919,215, Jul. 24, 1992, Pat. No. 5,280,248. This application Sep. 18, 1995, Ser. No. 529,360
Int. Cl.[6] G01R *33/28*
U.S. Cl. 324—318 **23 Claims**

1. A magnetic resonance imaging apparatus comprising:

a main magnetic field means for generating a main magnetic field through an examination region;



a gradient field coil for generating magnetic field gradients across the examination region;

a gradient field coil power supply for supplying current pulses to the gradient field coil to cause the generation of magnetic field gradient pulses;

a radio frequency coil mounted closely adjacent the gradient coil and the examination region for selectively transmitting radio frequency signals of a preselected frequency into the examination region and receiving radio frequency magnetic resonance signals of substantially the preselected frequency from the examination region, the transmitted radio frequency signals tending to induce radio frequency eddy current loops of the preselected frequency within the gradient field coil, which eddy current loops transmit eddy radio frequency signals of the preselected frequency after the radio frequency coil has stopped transmitting the radio frequency signals into the examination region and while the radio frequency coil is receiving the magnetic resonance signals from the examination region;

the gradient field coil being configured such that eddy current loops of said preselected radio frequency are prevented from being induced in and flowing through the gradient field coil, such that the eddy current loops of the preselected radio frequency are not supported by the gradient field coil to prevent the eddy radio frequency signals from being transmitted by the gradient field coil and received by the radio frequency coil superimposed on the received magnetic resonance signals;

a radio frequency transmitter for selectively transmitting radio frequency signals of said preselected radio frequency to the radio frequency coil;

a radio frequency receiver for receiving and demodulating radio frequency signals of substantially said preselected radio frequency from the radio frequency coil;

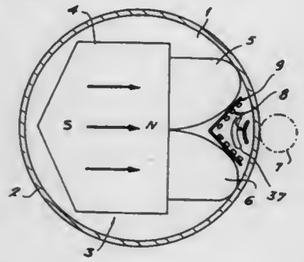
a reconstruction means for reconstructing an image representation from the received and demodulated radio frequency signals.

5,610,522

OPEN MAGNETIC STRUCTURE INCLUDING POLE PIECES FORMING A V-SHAPE THREBETWEEN FOR HIGH HOMOGENEITY IN AN NMR DEVICE

Marcel Locatelli, Montbonnot, and Christian Jeandey, Egreve, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 26, 1994, Ser. No. 312,075
Claims priority, application France, Sep. 30, 1993, 93 11673
Int. Cl.[6] G01R *33/383;33/38*
U.S. Cl. 324—319 **23 Claims**



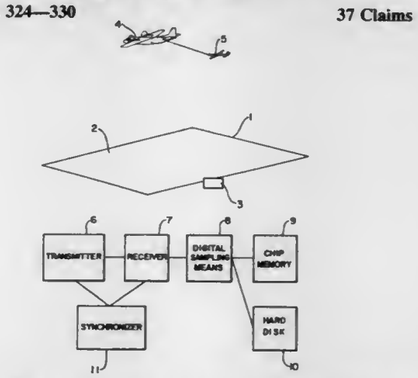
1. Open magnetic structure for producing an intense, stable magnetic field, which is controlled in amplitude and direction in a region adjacent to said structure, having at least one magnetic source (4) for producing said magnetic field, comprising one or more pole pieces (5, 6) associated with the magnetic source and having a shape designed so as to control the magnetic field produced, the said pole piece or pieces for controlling said magnetic field produced having a hollow portion constituting a generally V-shaped space, said region subject to the homogeneous magnetic field being positioned facing the opening of the V.

5,610,523

METHOD AND APPARATUS OF INTERROGATING A VOLUME OF MATERIAL BENEATH THE GROUND INCLUDING AN AIRBORNE VEHICLE WITH A DETECTOR BEING SYNCHRONIZED WITH A GENERATOR IN A GROUND LOOP

Peter J. Elliot, 17 Grandview Avenue, Urrbrae, State of South Australia, Australia

PCT No. PCT/AU92/00166, § 371 Date Oct. 29, 1993, § 102(e) Date Oct. 29, 1993, PCT Pub. No. WO92/19989, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 15, 1992, Ser. No. 146,052
Claims priority, application Australia, May 6, 1991, PK 5976; Aug. 14, 1991, PK 7768; Sep. 6, 1991, PK 8223
Int. Cl.[6] G01V *3/16;3/17*
U.S. Cl. 324—330 **37 Claims**



1. A method of interrogating a volume of material beneath the ground including:

locating a transmitter means to extend over and be supported by a surface area of ground encompassing and beneath which lies the volume of material;

generating with generator means transient electromagnetic pulses within the transmitter means;

flying over the area of ground with an airborne vehicle aboard which is a detector means;

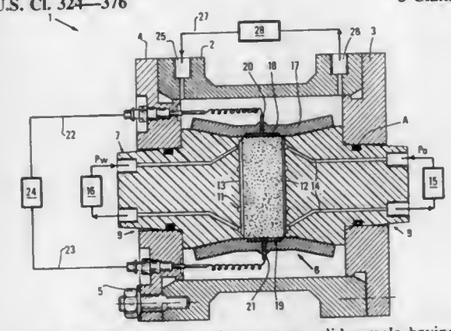
synchronizing the detector means to the generator means;

detecting with the detector means electromagnetic fields resultant of such transient electromagnetic pulses, said electromagnetic fields having a magnitude and temporal characteristics;

forming a received signal dependant upon the magnitude and the temporal characteristics of the detected electromagnetic fields; and

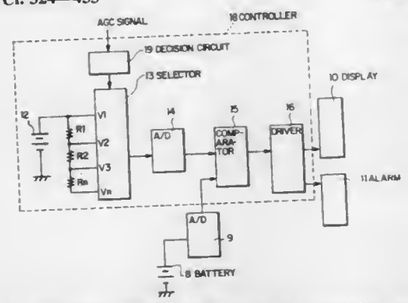
processing the received signal to determine characteristics of the volume of material.

5,610,524
DEVICE FOR PETROPHYSICAL MEASUREMENT AND IMPLEMENTATION METHOD
Daniel Longeron, Sartrouville, and Marc Fleury, La Celle Saint Cloud, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France
Filed Sep. 11, 1995, Ser. No. 526,229
Claims priority, application France, Sep. 9, 1994, 94 10783
Int. Cl.[6] G01V *3/02*
U.S. Cl. 324—376 **8 Claims**



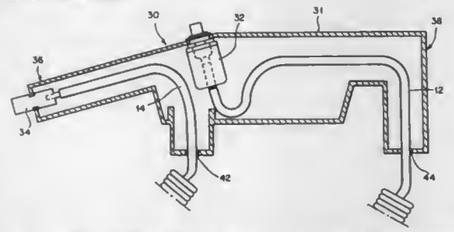
1. A device for producing, in a porous solid sample having a lateral surface and being wettable by at least a first fluid, drainage and soaking phases in order to determine physical parameters of the sample, said device comprising a confinement cell for the sample delimited by a deformable cylindrical sheath having an inner wall, and two opposite end elements; fluid pressure means communicating with opposite ends of the sample through said end elements, for displacing said first fluid and a second fluid through the sample in a first longitudinal direction and in a direction opposite to the first longitudinal direction, respectively; two semi-permeable membranes interposed between the sample and, respectively, the two end elements, the first membrane being wettable with the first fluid, the second membrane being wettable by the second fluid and nonwettable by the first fluid; measuring means for measuring electrical conductivity of the sample; and pressure means for laterally pressing the sheath against the sample; said device further comprising at least one pair of conductive plates connected with said measuring means, said plates being associated with the inner wall of the sheath and being shaped, respectively, to conform to substantial opposite portions of the lateral surface of the sample.

5,610,525
BATTERY CAPACITY DETECTOR
Toshio Yoshida, and Yukihiro Kanno, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 31, 1995, Ser. No. 381,236
Claims priority, application Japan, Jan. 31, 1994, 6-027485
Int. Cl.[6] G01N *27/416;* **G01R** *31/36*
U.S. Cl. 324—433 **9 Claims**



6. A method for controlling a detection of a remaining capacity of a battery, the method comprising the steps of:
detecting a battery voltage of the battery;
varying a reference value in response to a load on said battery;
comparing said battery voltage with said reference value;
transmitting a transmitting signal; and
controlling an output level of the transmitting signal;
wherein, in said step of varying, the output level of the transmitting signal is used as said load on the battery.

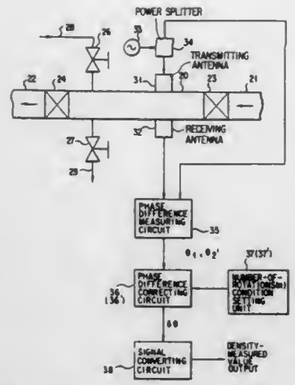
5,610,526
CONTACT HAZARD METER HAVING A HUMAN EQUIVALENT CIRCUIT
Edward E. Aslan, Plainview, N.Y., and Om P. Gandhi, Salt Lake City, Utah, assignors to The Narda Microwave Corp., Hauppauge, N.Y.
Filed Nov. 23, 1992, Ser. No. 980,454
Int. Cl.[6] G01R *27/02;31/08*
U.S. Cl. 324—522 **13 Claims**



5. A contact hazard metering device for measuring electromagnetic currents, which comprises:
a conductive contact placeable against an item for measuring field induced currents carried by the item;
a human equivalent circuit electrically coupled to the conductive contact, the human equivalent circuit providing an impedance approximating the impedance of a human body; and
an electronic circuit coupled to the human equivalent circuit, the electronic circuit measuring the current flowing from the item being monitored through the human equivalent circuit to ground.

5,610,527
PHASE DIFFERENCE MICROWAVE DENSITOMETER AND METHOD WHICH DETECTS A NUMBER OF PHASE ROTATIONS THROUGH A REFERENCE POINT
Seiji Yamaguchi, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
PCT No. PCT/JP94/01138, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO95/02815, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 12, 1994, Ser. No. 392,745
Claims priority, application Japan, Jul. 12, 1993, 5-171576
Int. Cl.[6] G01R *27/32;* **G01N** *22/00*
U.S. Cl. 324—639 **2 Claims**

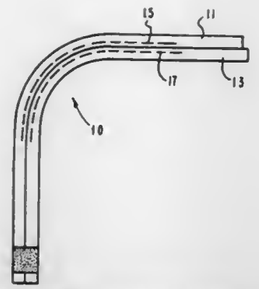
1. A microwave densitometer for measuring a density or concentration of fluid to be measured based on a phase delay of a microwave passed through the fluid, comprising:
a measuring tube through which the fluid flows;
a microwave generator for generating a microwave;
a microwave transmitter for transmitting the microwave supplied from said microwave generator to the fluid flowing in said measuring tube;
a microwave receiver, at an opposite side of the measuring tube as said microwave transmitters for receiving the microwave transmitted from said microwave transmitter through the fluid;
phase difference detecting means for detecting an apparent phase difference $\theta_{2'}$, between the microwave generated by said microwave generator and the microwave received by said microwave receiver when said fluid flows through said measuring tube;
phase difference correcting means for adding the apparent phase difference $\theta_{2'}$ to a product of a number of rotations "n" which



is a number of times the apparent phase difference $\theta_{2'}$ passes through a reference point and an angle of 360°, to obtain a true phase difference θ_2 corresponding to a density or concentration of said fluid, the reference point constituting one angle in a variation range of the apparent phase difference $\theta_{2'}$;
tendency detecting means for continuously detecting a direction in which the apparent phase difference $\theta_{2'}$ is increased or decreased;
means for varying the number of rotations "n" to n=n+1 when the apparent phase difference $\theta_{2'}$ detected by the tendency detecting means is passing through the reference point while increasing;
means for varying the number of rotations "n" to n=n−1 when the apparent phase difference $\theta_{2'}$ detected by the tendency detecting means is passing through the reference point while decreasing;
select means for selecting either of a first mode using the number of rotations "n" immediately before a power supply is turned off upon calculation of the true phase difference θ_2 immediately after the power supply is re-thrown ON and a second mode using the number of rotations "n" of n=0;
manual setting means for manually setting any number of rotations "n" for said phase difference correcting means; and
signal converting means for converting a difference value $\Delta\theta$ into a concentration signal indicating the density or concentration of said fluid, said difference value $\Delta\theta$ indicating a difference between the true phase difference θ_2 and a reference phase difference θ_1 corresponding to a phase difference between the microwave generated by said microwave generator and a microwave received by said microwave receiver when a reference fluid flows in said measuring tube.

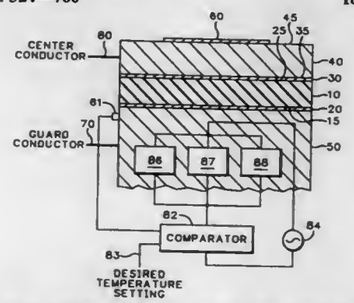
5,610,528
CAPACITIVE BEND SENSOR
James S. Neely, Wappingers Falls, and Phillip J. Restle, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1995, Ser. No. 496,236
Int. Cl.[6] G01B *7/30;* **H01G** *5/14;* **G01R** *27/26*
U.S. Cl. 324—660 **6 Claims**

1. A sensor for measuring bend angle comprising:
a first element having a comb-patterned portion of conducting material;
a second element having a comb-patterned portion of conducting material;
a dielectric material between said comb-patterned portion of said first element and said comb-patterned portion of said second element;
wherein said first element is bonded to said second element such that said comb-patterned portion of said first element slides relative to said comb-patterned portion of said second element when said first and second elements are bent; and



wherein said bend angle is measured according to alignment of said comb-patterned portion of said first element and said comb-patterned portion of said second element.

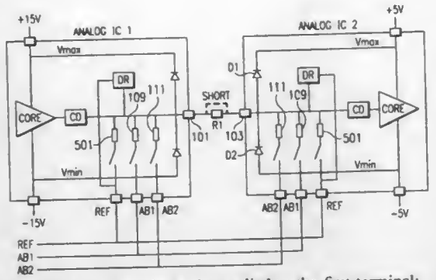
5,610,529
PROBE STATION HAVING CONDUCTIVE COATING ADDED TO THERMAL CHUCK INSULATOR
Randy Schwindt, Portland, Oreg., assignor to Cascade Microtech, Inc., Beaverton, Oreg.
Filed Apr. 28, 1995, Ser. No. 431,104
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—760 **18 Claims**



1. A probe station suitable to reduce the level of noise in measurements comprising:
(a) a support for supporting a test device;
(b) means for controlling the temperature in the vicinity of said test device by sensing said temperature and, in response to said sensing, alternatively raising or lowering said temperature;
(c) a supporting surface for said test device, said supporting surface being mounted upon said support;
(d) at least two layers including an electrically conductive layer adhered to an electrical insulator layer; and
(e) said electrically conductive layer being electrically connected to one of said support and supporting surface and said at least two layers being located between said supporting surface and said support.

5,610,530
ANALOG INTERCONNECT TESTING
Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 329,583, Oct. 26, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,705
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 **5 Claims**

1. A method of evaluating an interconnect structure which carries an analog signal between a first external terminal of a first integrated circuit and a second external terminal of a second integrated circuit, comprising the steps of:



selecting a test stimulus to be applied to the first terminal;

analyzing the interconnect structure to determine an expected voltage that is expected to be produced at the second terminal in response to application of the test stimulus to the first terminal;

selecting a reference voltage which bears a desired relationship to the expected voltage, producing the reference voltage independently of the second integrated circuit, and providing the reference voltage at a reference node in the second integrated circuit;

applying the test stimulus to the first terminal to produce a response voltage at the second terminal; and

comparing the response voltage to the reference voltage.

5,610,531

TESTING METHOD FOR SEMICONDUCTOR CIRCUIT LEVELS

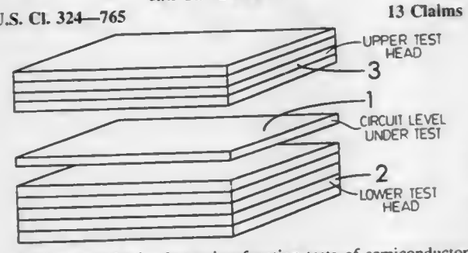
Werner Weber, Munich; Siegmar Koeppe, Laatzen; Helmut Klose, Munich, and Holger Huebner, Baldham, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 6, 1995, Ser. No. 369,391

Claims priority, application Germany, Jan. 11, 1994, 44 00 552.0

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—765 **13 Claims**



1. A method for implementing function tests of semiconductor circuit levels of vertically integrated semiconductor components, comprising the steps of:

providing a circuit level under test of the semiconductor circuit levels;

providing test heads having the same circuits as the stack of circuit levels present over or under the circuit level under test in the finished component, said test heads being produced by vertical connection of respective circuit levels that are provided for the semiconductor component;

simulating with each of said test heads at least a part of the functions of a stack of circuit levels provided over or under the circuit level under test;

providing the test heads with devices for reversibly contacting at locations at a surface of the circuit level under test that are to be electrically connected in a function test;

connecting at least one side of the circuit level under test to at least one test head only during the function test; and

implementing the function test via said connected at least one test head.

5,610,532

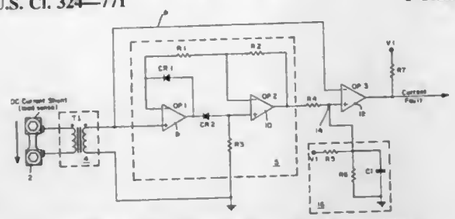
ISOLATED DC FAULT CURRENT SENSOR

Gerald L. Smith, Torrance, Calif., assignor to MAGL Power Inc., Torrance, Calif.

Filed Jul. 31, 1995, Ser. No. 509,325

Int. Cl.[6] G01R *31/00;* **H02H** *3/087*

U.S. Cl. 324—771 **1 Claim**



1. An isolated dc fault current sensor device comprising:

(a) an input signal circuit, comprising a dc current shunt and an isolation transformer, said shunt being connected into the dc feed bus of a solid state power inverter bridge and the output signal of said shunt having both an ac and dc component, the output of said shunt being connected to the primary coil of said isolation transformer; said isolation transformer producing an ac signal with an instantaneous dc component at its secondary coil terminals;

(b) an absolute value detector circuit receiving said ac signal connected to its input positive and ground terminals; said absolute value detector circuit being configured for negative polarity and producing a negative dc ripple voltage signal at its output terminal;

(c) an output signal circuit, comprising a first resistor connected to the negative dc ripple voltage signal output of said absolute value detector circuit, said first resistor functioning as a compensation weight resistor, an integrated digital comparator having its positive input terminal connected to the output of said compensation weight resistor and having its negative input terminal connected to the secondary coil of said isolation transformer, and a second resistor connected to the output of said comparator and to a logic reference voltage, and functioning as a pullup resistor; and

(d) a voltage divider circuit comprising a third resistor supplied by a logic reference voltage, a fourth resistor connected to the third resistor and logic ground, and a capacitor connected in parallel with said fourth resistor; the center point output voltage of said voltage divider circuit being connected to the output of said compensation weight resistor for summing with its negative dc ripple voltage signal and filtering it, providing a trip level voltage signal input to said integrated digital comparator;

said isolation transformer, in the event of a dc fault current occurrence in said dc feed bus, producing a high dc voltage signal coupled on top of the ac signal, which is connected to an input terminal of said integrated digital comparator, said integrated digital comparator, comparing the high dc voltage signal with the trip level voltage at its other input terminal and producing a low signal at its output, indicating a dc current fault.

5,610,533

SWITCHED SUBSTRATE BIAS FOR LOGIC CIRCUITS

Kazutaml Arimoto, and Masaki Tsukude, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Flled Nov. 29, 1994, Ser. No. 350,064

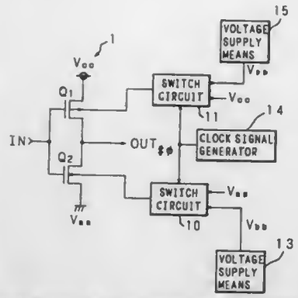
Claims priority, application Japan, Nov. 29, 1993, 5-298084; Apr. 27, 1994, 6-090303

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—33 **15 Claims**

4. A semiconductor circuit, comprising:

a MOS-FET of SOI structure to which a first potential or a second potential is to be supplied as a body bias potential; a voltage supplying means for supplying said first and second potentials; and



a converting means for converting said body bias potential to said first potential or said second potential.

5,610,534

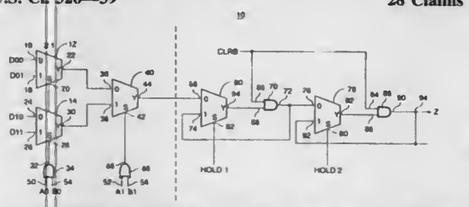
LOGIC MODULE FOR A PROGRAMMABLE LOGIC DEVICE

Douglas C. Galbraith, Fremont; Abbas El Gamal, and Jonathan W. Greene, both of Palo Alto, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 28,789, Mar. 9, 1993, Pat. No. 5,440,245, which is a continuation of Ser. No. 773,353, Oct. 7, 1991, Pat. No. 5,198,705, which is a continuation of Ser. No. 522,232, May 11, 1990, Pat. No. 5,055,718. This application May 18, 1995, Ser. No. 505,830

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **28 Claims**



1. A logic block of a field programmable gate array comprising:

a first Boolean logic gate comprising a first input, a second input and an output;

a first multiplexer comprising a first input, a second input, and an output, and having said output of said first Boolean logic gate as a select input;

a second multiplexer comprising a first input, a second input, and an output;

a second Boolean logic gate comprising a first input, a second input and an output; and

a third multiplexer comprising as a first input said output of said first multiplexer, having as a second input said output of second multiplexer, and having said output of said second Boolean logic gate as a select input.

5,610,535

PROGRAMMABLE TWO-LINE, TWO-PHASE LOGIC ARRAY

Akira Masaki, Musashino; Makoto Kuwata, Hamura; Ryuichi Satomura, and Nobuo Tamba, both of Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 533,990

Claims priority, application Japan, Sep. 28, 1994, 6-258809

Int. Cl.[6] H03K *19/94;7/38*

U.S. Cl. 326—39 **20 Claims**

1. A programmable two-line, two-phase logic array comprising:

said logic array receiving a plurality of input signals each having first and second input lines operating in two phases and an input signal state detection line logically connected to said first and second input lines that forms a third input line corresponding to each of said received input signals;

a plurality of output signals each having a pair of output lines operating in two phases, each of said pair of output lines being logically connected to at least one codeword state detection line and a function output line, the pairs of output lines providing a predetermined two-line, two phase logic function output for said input signals;

each of said input lines crossing said function output lines and said input signal state detection lines crossing said at least one codeword state detection line at programmable connection points; and

a plurality of memory cells each of which is provided at the programmable connection points, said memory cells being programmable to selectively connect or disconnect corresponding ones of said input lines with said function output lines and said input state detection signal lines with said at least one codeword state detection line to generate said predetermined logic function.

5,610,536

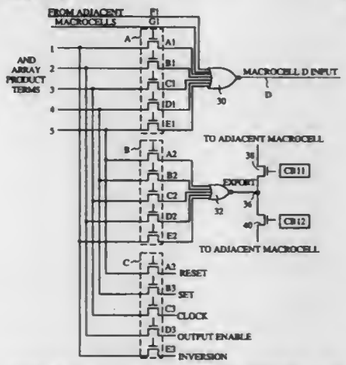
MACROCELL ARCHITECTURE WITH HIGH SPEED PRODUCT TERMS

Sholeh Diba, Los Gatos, and Wei-Yi Ku, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Sep. 26, 1995, Ser. No. 533,889

Int. Cl.[6] H03K *17/00*

U.S. Cl. 326—40 **8 Claims**



1. A circuit in a macrocell of a programmable logic device having an AND array providing a plurality of product terms, the macrocell having a flip-flop, the circuit comprising:

a plurality N of circuit input terminals, each receiving a product term from the AND array;

a first logic gate having at least N input terminals, each programably connected to one of the N circuit input terminals and the first logic gate having a output terminal connected to a data input terminal of the flip-flop; and

a second logic gate having N input terminals, each programably connected to one of the N circuit terminals, and the second

logic gate having an output terminal selectively connected to an adjacent macrocell;

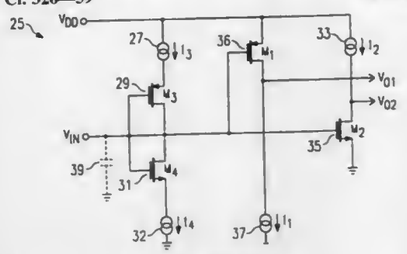
wherein each of the N circuit input terminals is individually programably connectable as a product term in the macrocell.

5,610,537

TRINARY LOGIC INPUT GATE

R. Alan Hastings, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 348,633, Dec. 2, 1994, Pat. No. 5,457,411.
This application Jun. 7, 1995, Ser. No. 472,583
Int. Cl.[6] H03K *19/0948*
U.S. Cl. 326—59 **15 Claims**



1. A trinary input logic gate, comprising:

a voltage input terminal for receiving an input voltage;

a first voltage output terminal;

a second voltage output terminal;

a first output transistor, having a control electrode directly coupled to said voltage input terminal to receive said input voltage, coupling said first voltage output terminal to a first voltage reference when said voltage input terminal voltage applied at said first output transistor control electrode is above a defined high logic voltage threshold or is between a defined midrange low voltage threshold and a defined midrange high voltage threshold; and

a second output transistor having a control electrode also directly coupled to said voltage input terminal to receive said input voltage, coupling said second voltage output terminal to a second voltage reference when said voltage input terminal voltage is between said defined midrange low voltage threshold and said defined midrange high voltage threshold or is below a defined low logic voltage threshold; and

bias circuitry, comprising third and fourth transistors with control electrodes commonly directly coupled to said voltage input terminal, for maintaining said voltage input terminal at a voltage between said defined midrange low and midrange high voltage thresholds when said voltage input terminal is disconnected and allowed to float or is at a midrange voltage between said high and low logic voltage thresholds.

5,610,538

BUFFER APPARATUS HAVING A LOW OUTPUT IMPEDANCE

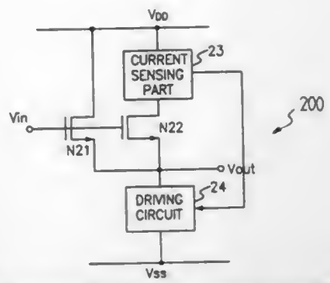
Young H. Kim, Seoul, Rep. of Korea, assignor to Korea Telecommunication Authority, Rep. of Korea

Filed Aug. 17, 1995, Ser. No. 516,149
Claims priority, application Rep. of Korea, Aug. 17, 1994, 1994-20298
Int. Cl.[6] H03K *19/0948;19/01;19/08*
U.S. Cl. 326—87 **7 Claims**

1. A buffer apparatus for an analog circuit, having a low output impedance, the buffer apparatus comprising:

a first transistor having a first terminal coupled to a voltage source, a second terminal coupled to an output terminal of the buffer, and a control terminal which receives an input signal of the buffer;

a second transistor having a first terminal coupled to the output terminal of the buffer and a control terminal which receives the input signal of the buffer;



a current sensing means, which is coupled to a second terminal of the second transistor, for sensing a current of the second transistor and amplifying an input current which flows to the second transistor, wherein the current sensing means includes a single stage feedback amplifier which maintains stability of the analog circuit; and

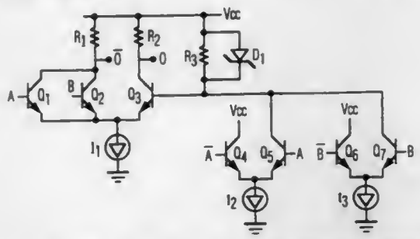
a voltage driving means, which is formed between the output terminal of the buffer and a ground voltage, for decreasing an output voltage of the buffer by passing a current from the output terminal to the ground voltage according to a control signal which is applied to the voltage driving means.

5,610,539

LOGIC FAMILY FOR LOW VOLTAGE HIGH-SPEED APPLICATIONS

Robert A. Blauschild, Los Altos, and Daniel J. Linebarger, Saratoga, both of Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation of Ser. No. 431,399, Apr. 28, 1995, abandoned, which is a continuation of Ser. No. 78,719, Jun. 16, 1993, abandoned. This application Jan. 30, 1996, Ser. No. 594,063
Int. Cl.[6] H03K *19/086;19/013*
U.S. Cl. 326—127 **6 Claims**



1. A circuit for a high speed logic gate structure comprising a multiple input stage having a plurality of transistors connected in parallel, a reference transistor connected to said plurality of transistors, and a plurality of differential pairs of transistors with outputs connected in parallel to provide a signal to the base of said reference transistor to provide differential outputs from the circuit.

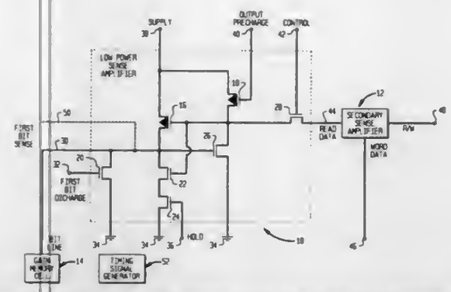
5,610,540

LOW POWER SENSOR AMPLIFIER FOR GAIN MEMORY CELLS

Klaus Althoff, Burlington, Vt.; Wolfgang H. Krautschneider, Hoberthann, Germany, and Klaus J. Lau, Essex Junction, Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 414,090, Mar. 31, 1995, abandoned. This application Apr. 1, 1996, Ser. No. 625,840
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—51 **20 Claims**

1. A sense amplifier, for a gain memory cell operative in a first state for storing a logical 1 and in a second state for storing a



logical 0 wherein the gain memory cell is activated by applying a signal to a control line so that the gain memory cell applies a stored potential to a bit line, the stored potential indicative of a first potential level that corresponds to a stored logical 1 and a second potential level that corresponds to a stored logical 0, comprising:

preliminary discharge means, coupled to the bit line, for discharging the bit line prior to sensing;

actuatable sense amplifier means responsive to an actuation control signal to sense a level on the bit line and provide an output signal, said sense amplifier means coupled to the bit line, said sense amplifier means including feedback means for ensuring a full potential level back to the bit line for each of the first potential level and second potential level, said amplifier means having a first conductive state in response to the first potential level and a second nonconductive state in response to the second potential level on the bit line;

activation means coupled to the control line of the (memory) gain memory cell so that the gain memory cell applies the stored potential level to the bit line and for activating said actuatable amplifier means to sense the bit line;

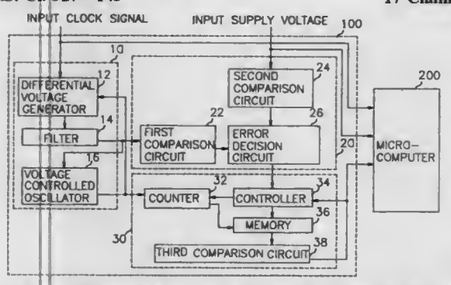
wherein said output signal of said actuatable sense amplifier means is operative in said first state when the gain memory cell contains the stored logical 1 and in said second state when the gain memory cell contains the stored logical 0.

5,610,541

RESET SIGNAL GENERATION METHOD AND APPARATUS FOR USE WITH A MICROCOMPUTER

Tae-Goon Yoon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 499,439
Claims priority, application Rep. of Korea, Aug. 24, 1994, 94-20841
Int. Cl.[6] H03L *7/00*
U.S. Cl. 327—143 **17 Claims**



1. A method, for use with a microcomputer, for detecting at least one of an erroneous input clock signal and an erroneous input supply voltage to the microcomputer and for providing a reliable reset signal to the microcomputer, comprising the steps of:

converting a differential signal representing a phase difference between the input clock signal and a feedback clock signal into a differential voltage and generating a reference clock signal having a number of logic high and logic low states in response to the differential voltage, wherein the feedback clock signal represents a previously generated reference clock signal;

comparing the differential voltage and the input supply voltage with first and second predetermined threshold values, respectively, to detect first and second error signals and generating an error decision signal based on the first and the second error signals;

selectively producing a zero value, a first or a second non-zero counted value in response to the error decision signal: and a counting value state signal denoting a previously provided reset signal; and

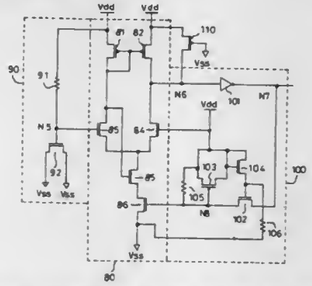
comparing the zero value, the first or second non-zero counted value with a third predetermined threshold value, to thereby provide the reliable reset signal to the microcomputer for the initialization thereof, and provide the counting value state signal.

5,610,542

POWER-UP DETECTION CIRCUIT

Hee-bok Kang, Daejon, and Hyun J. Kim, Kwangju, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 574,005
Claims priority, application Rep. of Korea, Jul. 8, 1995, 20088/1995
Int. Cl.[6] H03L *7/00*
U.S. Cl. 327—143 **11 Claims**



1. A power-up detection circuit for detecting the application of power to the circuit, comprising:

delay means for delaying a power supply voltage for a predetermined delay time;

differential amplifier means for comparing the power supply voltage applied directly thereto and the power supply voltage applied thereto after being delayed by the delay means and outputting a resultant signal; and

differential amplifier control means for enabling the differential amplifier means during the predetermined delay time responsive to the power supply voltage and the output signal from the differential amplifier means, and for disabling the differential amplifier means after the power supply voltage delayed by the delay means rises to a full power supply voltage level.

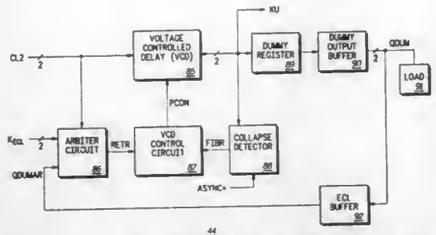
5,610,543

DELAY LOCKED LOOP FOR DETECTING THE PHASE DIFFERENCE OF TWO SIGNALS HAVING DIFFERENT FREQUENCIES

Ray Chang; Stephen T. Flannagan, and Kenneth W. Jones, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 207,517, Mar. 8, 1994, Pat. No. 5,440,515.
This application Apr. 4, 1995, Ser. No. 417,155
Int. Cl.[6] H03L *7/06;* **H03K** *5/13*
U.S. Cl. 327—158 **20 Claims**

1. A delay locked loop circuit, comprising:



an arbiter circuit for comparing an input signal of a first frequency to an output signal of a second frequency, and in response, providing a retard signal in response to receiving an enable signal;

a control circuit for receiving the retard signal, and in response, providing a control voltage, the control voltage having a magnitude relative to a difference between a transition of the input signal and a transition of the output signal;

a voltage controlled delay circuit, coupled to the control circuit, for receiving the control voltage, and in response, adjusting the phase of the output signal with respect to the input signal; and

a collapse detector circuit, the collapse detector circuit having an input terminal coupled to the voltage controlled delay circuit for detecting when the output signal has not transitioned within a predetermined time, wherein the predetermined time is greater than at least one clock cycle of the input signal, and in response to detecting that the output signal has not transitioned within the predetermined time, the collapse detector circuit providing a collapse detector signal to the control circuit for causing the output signal to transition.

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SEMICONDUCTOR INTEGRATED CIRCUIT FREE FROM THROUGH CURRENT DUE TO SOURCE-VOLTAGE DROP

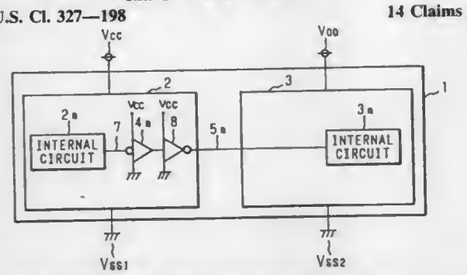
Akihide Aoki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Corporation, Hyogo, both of Japan

Continuation of Ser. No. 293,267, Aug. 19, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,266

Claims priority, application Japan, Oct. 29, 1993, 5-271955

Int. Cl.[6] H03K *17/24;17/16*

U.S. Cl. 327—198 **14 Claims**



1. A semiconductor integrated circuit comprising:

a first terminal and a second terminal for respectively receiving first and second selectively applied power source potentials;

a first power system element group coupled to said first terminal, said first group having a first internal circuit for providing a first signal,

a second power system element group coupled to said second terminal, said second group having at least one circuit element responsive to said first signal for changing between a first and a second operative state, wherein said at least one circuit element is susceptible to an undesirable through current which temporarily lowers the second power source potential when said first selectively applied power source potential is lowered or turned off; and

means coupled between said first internal circuit of said first group and said at least one circuit element of said second group for minimizing said undesirable through currents in said at least one circuit element, wherein said means for minimizing undesirable through currents comprises:

a fixing means arranged in said first power system element group and coupled to said first terminal for fixing a low level of said signal supplied from said first internal circuit to said at least one internal circuit element before said first power source potential is lowered or turned off.

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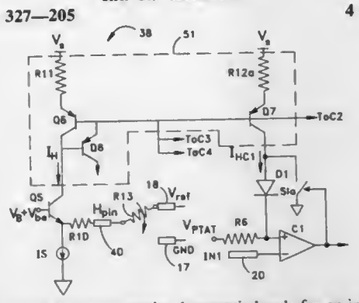
METHOD FOR PROVIDING PROGRAMMABLE HYSTERESIS LEVELS

Andrew Jenkins, San Jose; Peter S. Henry, Fremont, and Gaylin M. Yee, Stanford, all of Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 5, 1995, Ser. No. 462,779

Int. Cl.[6] H03K *5/24*

U.S. Cl. 327—205 **4 Claims**



1. A method for programming hysteresis levels for an integrated circuit (IC), said IC having a sensing circuit for producing an output signal in response to an input signal and a hysteresis circuit for establishing a hysteresis in said output signal, said hysteresis circuit having a programmable hysteresis pin for selecting different hysteresis levels, comprising:

connecting said hysteresis pin to a low reference voltage to select a first preset hysteresis level;

connecting said hysteresis pin to a high reference voltage to select a second preset hysteresis level;

leaving said hysteresis pin unconnected to said low and high reference voltages to select a reference hysteresis level between said first and second preset levels and having a non-zero value; and

connecting said hysteresis pin through a resistor to said low and high reference voltages to select intermediate levels between said first preset and said reference hysteresis levels, and said second preset and said reference hysteresis levels, respectively.

5,610,546

CONTROLLED DELAY CIRCUIT

Pierre Carbou, Vence; Pascal Guignon, Callian Fayence, and Philippe Perney, Nice, all of France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 9, 1993, Ser. No. 164,606

Claims priority, application France, Dec. 9, 1992, 92 14861

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—261 **8 Claims**

1. A signal delay circuit comprising:

at least one delay cell, said at least one delay cell including first and second field-effect transistors, each of said first and second field-effect transistors having a source, a drain, a channel between the source and drain, and a control gate overlying the channel, the first and second field-effect transistors being of opposite channel conductivity types,

the control gates of said first and second field-effect transistors being connected to each other,

the drains of said first and second field-effect transistors being connected to each other,

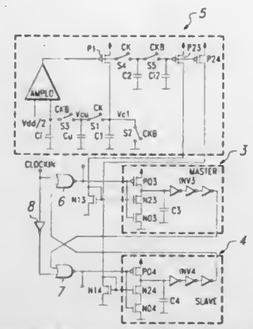
an input terminal connected to a node in the conncetion between the control gates of said first and second field-effect transistors,

a current source having first and second terminals and being connected between the drains of said first and second terminals and field-effect transistors at said first and second terminals,

an inverter having an input and an output, the input of said inverter being connected to one of said first and second terminals of said current source dependent upon whether the delay is to affect the leading edge or trailing edge of the signal to be delayed, and

a capacitor connected between the input of said inverter and ground, said capacitor defining a delay time for the signal to be delayed proportional to the power supply voltage and inversely proportional to the current delivered by said current source; and

a control circuit operably connected to said current source for regulating the current delivered by said current source so as to make the current proportional to the power supply voltage.



1. An electronic circuit for converting input signals into output voltages at output terminals of said electronic circuit having a logarithmic relationship therewith comprising:

a pair of transistors including first and second transistors connected between a first potential and a second potential, said pair of transistors having first current-carrying electrodes connected to each other and coupled to one of the first and second potentials, second current-carrying electrodes coupled to the other of said first and second potentials, and control electrodes coupled to said output terminals of said electronic circuit in order to obtain a potential difference between a voltage from said first current-carrying electrodes to the control electrode of said first transistor and a voltage from said first current-carrying electrodes to the control electrode of said second transistor;

an impedance device having first and second nodes coupled to said second current-carrying electrodes of said transistors; and

voltage generator means coupled between said second current carrying-electrodes and said output terminal of said electronics circuit for receiving said input signals externally supplied thereto, and for causing a certain voltage indicative of a potential difference between the input signals to be generated at said first and second nodes of said impedance device, output terminals of said voltage generator means being respectively connected to the control electrodes of said pair of transistors.

5,610,547

LOGARITHMIC TRANSFORMATION CIRCUITRY FOR USE IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

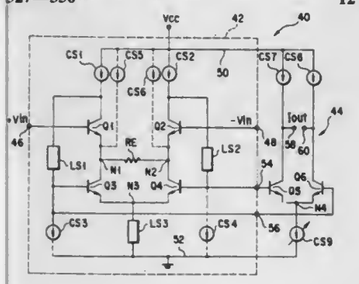
Mikio Koyama, Kawasaki, and Tadashi Arai, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 986,043, Dec. 4, 1992, Pat. No. 5,465,070. This application Jun. 7, 1995, Ser. No. 472,483

Claims priority, application Japan, Dec. 5, 1991, 3-321873; Jul. 21, 1992, 4-194001; Jul. 31, 1992, 4-205486

Int. Cl.[6] G06G *7/12*

U.S. Cl. 327—350 **12 Claims**



5,610,548

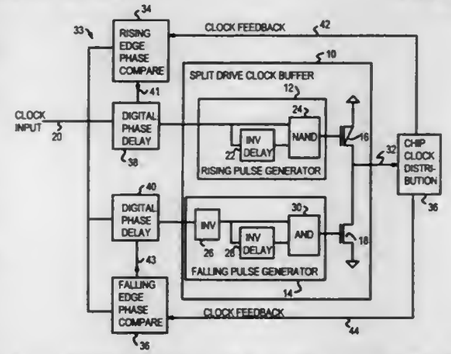
SPLIT DRIVE CLOCK BUFFER

Robert P. Masleid, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,448

Int. Cl.[6] H03K *17/16*

U.S. Cl. 327—374 **5 Claims**



1. A method for generating a clock edge from a clock buffer, the buffer receiving an input clock signal having a rising edge and a falling edge, the buffer including a first and second output transistor for generating an output clock signal, the method comprising the steps of:

(a) detecting the rising edge of the input clock using an inverter delay and a NAND gate;

(b) detecting the falling edge of the input clock using an inverter, an inverter delay, and a AND gate;

(c) activating the first output transistor in response to the rising edge, and then deactivating the first output transistor before the falling edge begins; and

(d) activating the second output transistor in response to the falling edge, and then deactivating the second transistor before the rising edge begins, such that the activation of the first and second transistors do not overlap, thereby increasing edge transition time.

5,610,549
VOLTAGE BOOSTING CIRCUIT OF A SEMICONDUCTOR MEMORY CIRCUIT

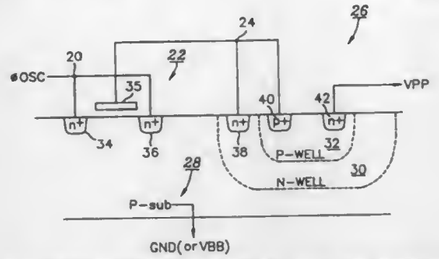
Hoon Choi, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 342,050, Nov. 17, 1994. This application Sep. 15, 1995, Ser. No. 526,499

Claims priority, application Rep. of Korea, Nov. 17, 1993, 24483/1993

Int. Cl.[6] G06F *3/02*

U.S. Cl. 327—536 **2 Claims**



1. A voltage boosting circuit for use in a semiconductor memory device having a pumping capacitor formed by a second impurity type on a substrate of a first impurity type, said voltage boosting circuit comprising a transmission transistor of a bipolar diode, said transmission transistor comprising:

a first well of the second impurity type formed on said substrate;

a second well of the first impurity type formed within said first well;

a first diffusion layer of the second impurity type formed within said first well but not within said second well, said first diffusion layer being connected to a line connected to said pumping capacitor;

a first diffusion layer of the first impurity type formed within said second well and connected to said line; and

a second diffusion layer of the second impurity type formed within said second well and connected to a boosting node;

whereby transmission of voltage across the transmission transistor generates a boosting voltage pumped through said pumping capacitor to said boosting node.

5,610,550
INTERMEDIATE POTENTIAL GENERATOR STABLY PROVIDING AN INTERNAL VOLTAGE PRECISELY HELD AT A PREDETERMINDED INTERMEDIATE POTENTIAL LEVEL WITH REDUCED CURRENT CONSUMPTION

Kiyohiro Furutani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1994, Ser. No. 190,329

Claims priority, application Japan, Jan. 29, 1993, 5-013650

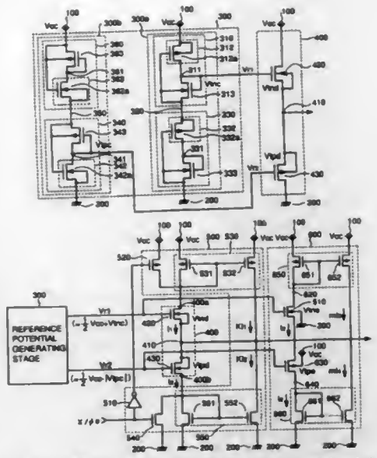
Int. Cl.[6] G05F *3/20;3/16*

U.S. Cl. 327—543 **28 Claims**

1. A device for generating an intermediate potential between a first potential and a second potential, comprising:

first reference potential generating means coupled between a node receiving said first potential and a node receiving said second potential, for generating a first reference potential higher than said intermediate potential, said first reference potential generating means including insulated gate type field effect transistors of a first conductivity type connected in series to each other, and formed to have substantially the same voltage-current characteristics;

second reference potential generating means connected between the node receiving said first potential and the node receiving said second potential, for generating a second reference potential lower than said intermediate potential, said second reference potential generating means including insulated gate



type field effect transistors of a second conductivity type formed to have substantially the same voltage-current characteristics, and connected in series to each other;

a first output driving insulated gate type field effect transistor connected between the node receiving said first potential and an output node, for transmitting said first reference potential to said output node in a source follower manner in which a potential at a source of an insulated gate field effect transistor is represented by a function of a potential at a gate thereof; and

a second output driving insulated gate type field effect transistor connected between said output node and the node receiving said second potential, for transmitting said second reference potential to said output node in the source follower manner, wherein

in a triple-well structure having a first well region of the second conductivity type formed on a surface of a semiconductor substrate of the first conductivity type and a second well region of the first conductivity type formed on a surface of said first well region, one of said first and second field effect transistors is formed in said second well region.

5,610,551
FILTER CIRCUIT

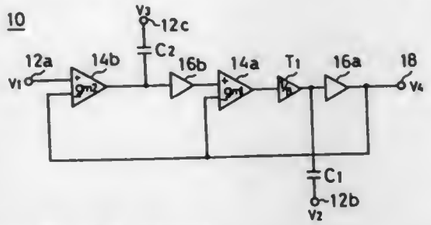
Nobukazu Hosoya, Nara, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 25, 1995, Ser. No. 377,376

Claims priority, application Japan, Jan. 26, 1994, 6-006958

Int. Cl.[6] H03K *5/00;* **H03B** *1/00*

U.S. Cl. 327—552 **8 Claims**



1. A filter circuit, comprising:

first, second and third terminals;

a first integrator having a first input and a second input, said first input and said second input of said first integrator being connected to the first terminal and the third terminal, respectively;

a first current attenuation means which is coupled between an output of the first integrator said third terminal, and attenuates an output current of the first integrator; and

a first capacitor connected between an output of the first current attenuation means and the second terminal,

wherein when input signals are applied from of the first terminal and the second terminal, an output signal is obtained from the third terminal,

wherein said first current attenuation means is a transistor which attenuates the output current by $1/\beta$, whereby β is a current amplification factor of said transistor.

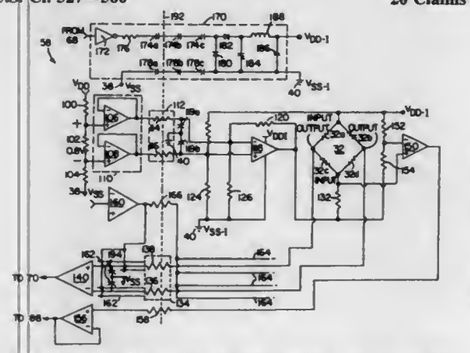
5,610,552
ISOLATION CIRCUITRY FOR TRANSMITTER ELECTRONICS IN PROCESS CONTROL SYSTEM

Morton L. Schlesinger, Bloomington, and Bruce E. Kyro, Savage, both of Minn., assignors to Rosemount, Inc., Eden Prairie, Minn.

Filed Jul. 28, 1995, Ser. No. 508,551

Int. Cl.[6] G06G *7/12*

U.S. Cl. 327—560 **20 Claims**



1. A transmitter for sensing and transmitting a process variable, comprising:

electronic circuitry comprising:

process variable input circuitry for receiving an input related to the process variable; and

output circuitry transmitting the process variable;

a reference level generator generating a reference level;

a sensor having a sensor output related to the sensed process variable;

isolation circuitry coupling the sensor to the electronic circuitry comprising:

a first high impedance buffer connected to the reference level providing a buffered reference; and

a first high impedance isolator coupling the buffered reference to an input of the sensor.

5,610,553
SWITCHING AMPLIFIER WITH IMPEDANCE TRANSFORMATION OUTPUT STAGE

Larry Kirn, 7158 Valley Brook, West Bloomfield, Mich. 48322

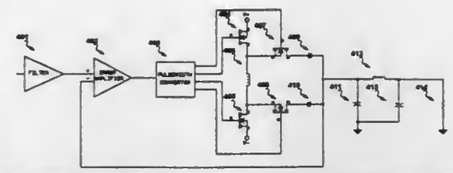
PCT No. PCT/US94/02279, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO94/21036, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 2, 1994, Ser. No. 513,780

Int. Cl.[6] H03F *3/38*

U.S. Cl. 330—10 **20 Claims**

1. A switching amplifier output stage capable of performing a variable-impedance transformation on an input signal and coupling



the output bidirectionally to a load impedance said output stage being adapted for use in conjunction with an external power source and a pulsewidth converter operative to generate pulsewidth-modulated signals representative of said input signal, said output stage comprising:

a reactance;

a first coupling circuit of gated switches controlled by said pulsewidth converter, said first coupling circuit being operative to transfer energy from said power source to said reactance;

a second coupling circuit of gated switches controlled by said pulsewidth converter, said second coupling circuit being operative to transfer energy stored in said reactance to said load impedance.

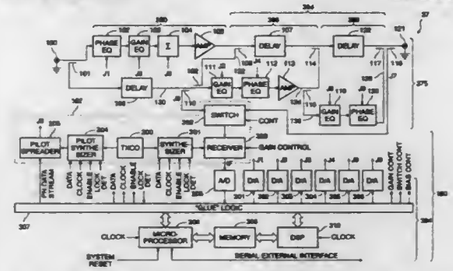
5,610,554
CANCELLATION LOOP, FOR A FEED-FORWARD AMPLIFIER, EMPLOYING AN ADAPTIVE CONTROLLER

Kiomars Anvari, Walnut Creek, Calif., assignor to Aval Communications Inc., Walnut Creek, Calif.

Continuation-in-part of Ser. No. 422,596, Apr. 14, 1995, and a continuation-in-part of Ser. No. 282,132, Jul. 28, 1994, Pat. No. 5,485,120. This application Jul. 14, 1995, Ser. No. 489,539

Int. Cl.[6] H03F *3/66;1/26*

U.S. Cl. 330—52 **24 Claims**



1. In a method for linear amplification of wideband radio frequency energy in a feed-forward amplifier system having at least a main amplifier, a method for correcting distortion in amplification of an information signal, said method comprising the steps of:

injecting variable phase spread spectrum pilot components into a main signal path prior to amplification;

monitoring said amplified spread spectrum pilot components at output of said main signal path after output of said main amplifier to produce a monitored output;

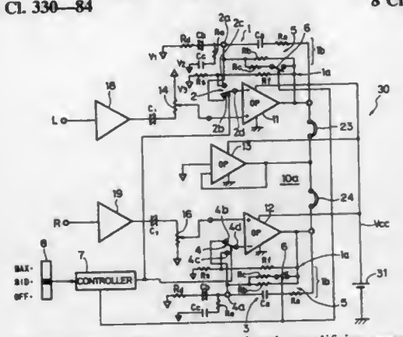
estimating power level of the monitored output to produce analyzed signals;

formulating error correcting signals from said analyzed signals;

adjusting time of pseudo-noise modulation input to said variable phase spread spectrum pilot components using said selected ones of said error correcting signals; and

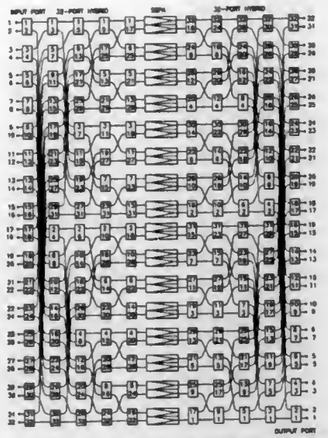
correcting said distortion in amplification of said information signals by means of said error correcting signals applied to a distortion amplifier connected in parallel with said main amplifier.

5,610,555
LOW-VOLTAGE DRIVEN, AUDIO SIGNAL AMPLIFYING APPARATUS AND A PORTABLE ACOUSTIC SYSTEM USING SAID APPARATUS
Hiroyuki Funahashi, and Isao Yamamoto, both of Ukyo-ku, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Aug. 15, 1995, Ser. No. 518,388
Claims priority, application Japan, Aug. 18, 1994, 6-216643
Int. Cl.[6] H03F *1/34;3/68*
U.S. Cl. 330—84 **8 Claims**



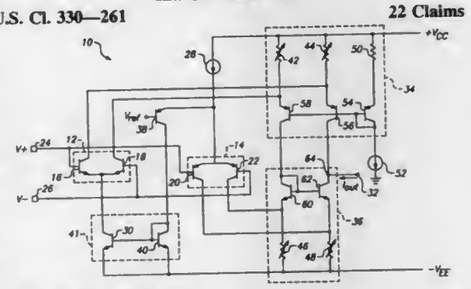
1. A low-voltage driven, audio signal amplifying apparatus which comprises:
output stage amplifiers for receiving the respective outputs of preamplifiers provided in correspondence to the left and right channels in a stereo system;
negative feedback circuits connected respectively to respective outputs of the output stage amplifiers for reducing the amount of low-band negative feedback; and
switch circuits which are turned on to supply respective feedback signals from the respective feedback circuits to respective negative feedback inputs of said output stage amplifiers; wherein
said switch circuits are turned on simultaneously, thereby allowing said output stage amplifiers to perform emphasis on the low-band frequency.

5,610,556
MULTI-PORT AMPLIFIERS WITH SWITCHLESS REDUNDANCY
Michael D. Rubin, Saratoga, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.
Filed Oct. 31, 1995, Ser. No. 550,575
Int. Cl.[6] H03F *3/68*
U.S. Cl. 330—124 D **4 Claims**



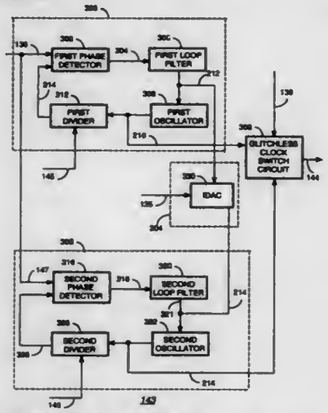
1. A multi-port amplifier system including a redundancy feature comprising:
a plurality of N input ports where N is an even integer,
a plurality of N amplifier devices each including a power supply for providing a power signal for energizing said device;
a first multi-port hybrid coupler tree connected between said N input ports and the inputs of said N amplifier devices, said first multi-port hybrid coupler tree including N/2 groups of multi-port hybrid coupler stages each having N/8 hybrid coupler circuits connected in series between said N input ports and said inputs of said N amplifier devices;
a plurality of N output ports, a second multi-port hybrid coupler tree connected between the outputs of said N amplifier devices and said N output ports, said second multi-port hybrid coupler tree including N/2 groups of multi-port hybrid coupler stages each having N/8 hybrid coupler circuits connected in series between said outputs of said N amplifier devices and said N output ports wherein each input port is connected to a corresponding output port by a separate path through one of said N/8 stages of series connected hybrid circuits of said first tree, a separate one of said N amplifiers devices, and a separate one of said stages of said N/8 hybrid coupler circuits of said second tree wherein said input ports are connected to input signals, and wherein said input signals are connected from said input ports through separate paths of said hybrid coupler circuits of said first tree, separate amplifier devices and said separate paths of hybrid coupler circuits of said second tree to separate output ports,
and wherein the said power signal for an amplifier device within each of said multi-port hybrid coupler trees is unconnected and said amplifier device is off to provide a redundant stand-by replacement amplifier device for power failures.

5,610,557
METHOD AND CIRCUIT FOR TRIMMING AN OPERATIONAL AMPLIFIER HAVING DUAL INPUT STAGES
William B. Jett, Jr., Los Gatos, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.
Filed Jun. 7, 1995, Ser. No. 480,696
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—261 **22 Claims**



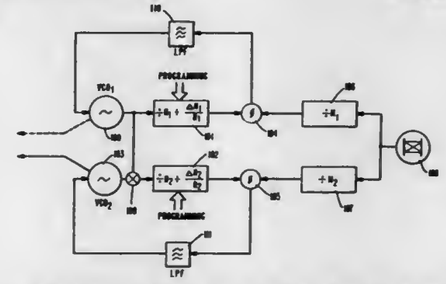
22. A method comprising:
providing an integrated circuit operational amplifier, an input stage of the operational amplifier comprising:
complementary differential amplifiers;
first and second resistive elements coupled to the outputs of the complementary differential amplifiers such that adjusting resistive values of the first and second resistive elements has substantially different effects on the input offset voltages of the complementary differential amplifiers; and
third and fourth resistive elements coupled to outputs of the complementary differential amplifiers such that adjusting resistive values of the third and fourth resistive elements has substantially the same effect on input voltage offsets of the complementary differential amplifiers;
measuring the input offset voltages of each of the complementary differential amplifiers;
adjusting resistive values of at least one of the first and second resistive elements responsive to the input offset voltages of the complementary differential amplifiers being substantially different; and
adjusting resistive values of at least one of the second and third resistive elements responsive to the input offset voltages of the complementary differential amplifiers being substantially non-zero.

5,610,558
CONTROLLED TRACKING OF OSCILLATORS IN A CIRCUIT WITH MULTIPLE FREQUENCY SENSITIVE ELEMENTS
James G. Mittel; Philip L. Johnson, both of Lake Worth, and Raymond L. Barrett, Jr., Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 3, 1995, Ser. No. 552,136
Int. Cl.[6] H03L *7/07;7/16*
U.S. Cl. 331—2 **9 Claims**



1. An oscillator circuit comprising:
a master phase-locked loop (PLL) circuit responsive to a first reference frequency signal, the master PLL circuit comprising:
a first oscillator having an input responsive to an oscillator control signal for generating as output a first clock signal;
a first divider having an input coupled to an output of the first oscillator for dividing a frequency of the first clock signal by a first divide constant and generating as output a first frequency divided signal;
a first phase detector receiving as input the first reference frequency signal and the first frequency divided signal and generating a first phase detector output signal;
a first loop filter coupled to an output of the first phase detector for filtering the first phase detector output signal and for generating as output the oscillator control signal that is coupled to an input of the first oscillator;
a slave PLL circuit responsive to a second reference frequency signal, the slave PLL circuit comprising:
a second oscillator that is substantially identical to the first oscillator and having an input responsive to a tracking control signal for generating as output a second clock signal;
a second divider having an input coupled to an output of the second oscillator for dividing a frequency of the second clock signal by a second divide constant and generating as output a second frequency divided signal;
a second phase detector receiving as input the second reference frequency signal and the second frequency divided signal and generating a second phase detector output signal;
a second loop filter coupled to an output of the second phase detector for filtering the second phase detector output signal and for generating as output a second filtered signal that is coupled to an input of the second oscillator; and
a tracking control circuit coupled to the master PLL circuit and the slave PLL circuit to receive as input the oscillator control signal, and a tracking information signal, to generate the tracking control signal based thereon.

5,610,559
DUAL LOOP FREQUENCY SYNTHESIZER HAVING FRACTIONAL DIVIDERS
Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.
Division of Ser. No. 305,780, Sep. 14, 1994, Pat. No. 5,535,432.
This application Mar. 13, 1996, Ser. No. 614,722
Int. Cl.[6] H03L *7/23*
U.S. Cl. 331—2 **14 Claims**



1. A frequency synthesizer for providing a first output signal programmable over a first frequency band in first frequency steps and a second output signal programmable over a second frequency band in second frequency steps, comprising;
first reference divider means for dividing a reference frequency by a first integer to produce a first comparison frequency;
second reference divider means for dividing said reference frequency by a second integer to produce a second comparison frequency;
first controlled oscillator means for producing a first output frequency and having an input for a first frequency control signal;
first fractional-N divider means for dividing said first output frequency by a first programmable quantity having both a first integer part and a first fractional part to produce a first loop frequency;
first phase and frequency comparator means for comparing said first loop frequency with said first comparison frequency to produce a first error signal;
first loop filter means for processing said first error signal to obtain said first frequency control signal;
second controlled oscillator means for producing a second output frequency and having an input for a second frequency control signal;
mixing means for generating a difference frequency signal having inputs from said first and second controlled oscillator means;
second fractional-N divider means for dividing said difference frequency by a second programmable quantity having a second integer part and a second fractional part to produce a second loop frequency;
second phase and frequency comparator means for comparing said second loop frequency with said second comparison frequency to produce a second error signal;
second loop filter means for processing said second error signal to obtain said second frequency control signal.

5,610,560
OSCILLATOR WITH SWITCHED REACTIVE ELEMENTS

Donald J. Sauer, Allentown; William E. Rodda, Trenton, and Edward R. Campbell, III, Tabernacle, all of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

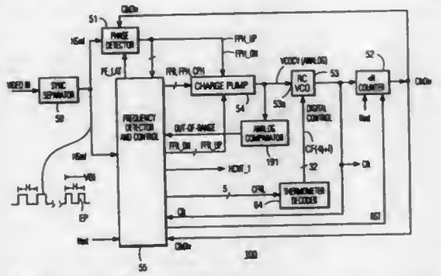
PCT No. PCT/US94/04404, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO94/24767, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 19, 1994, Ser. No. 525,684

Claims priority, application United Kingdom, Apr. 20, 1993, 9308141; Jun. 4, 1993, 9311560

Int. Cl.[6] H03B *5/24;* **H03L** *7/099*

U.S. Cl. 331—8 **21 Claims**



18. An R-C oscillator, comprising:

an amplifier having a controllable gain for generating a part of first and second signals at opposite phases;

a first R-C network responsive to said first signal to produce a third signal at an output of said first R-C network that is phase shifted with respect to said first signal, said first R-C network being coupled to a first switching arrangement that varies in accordance with a switch control signal a selection of phase controlling elements of said first R-C network;

a second R-C network responsive to said second signal for generating a fourth signal that is phase shifted with respect to said second signal, said third and fourth signals being coupled to said amplifier in a positive feedback manner such that a phase of said first signal with respect to that of each of said third and fourth signals is controlled in accordance with said gain of said amplifier; and

means responsive to a reference signal for generating a gain control signal that is coupled to said amplifier for controlling said gain of said amplifier in accordance with cycles of said reference signal.

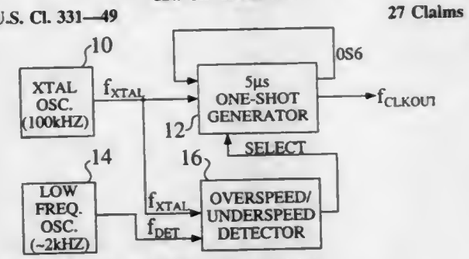
5,610,561
CRYSTAL OSCILLATOR AND BACK-UP CIRCUIT WITH OVERSPEED AND UNDERSPEED DETECTION

Morteza Zarrabian, Mountain View, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Aug. 18, 1995, Ser. No. 516,909

Int. Cl.[6] H03B *1/00*

U.S. Cl. 331—49 **27 Claims**



18. A fail-safe clock generator, comprising:

a crystal oscillator for generating a crystal clock signal;

detecting means coupled to said crystal clock signal for detecting an overspeed failure mode in which the frequency of said crystal clock signal exceeds a prescribed maximum frequency for greater than a predetermined time period and for detecting an underspeed failure mode in which the frequency of said crystal clock signal falls below a prescribed minimum frequency for greater than said predetermined time period, and for generating a back-up mode control signal in response to detection of either said overspeed or underspeed failure mode; and,

means responsive to said crystal clock signal, during a normal mode of operation, for generating an output clock signal, and responsive to said back-up mode control signal, during a back-up mode of operation, for generating said output clock signal.

5,610,562
WAVEGUIDE ABSORBER

Klaus H. Geissler, Backnang; Jürgen Damaschke, Heilbronn, and Dieter Wolk, Winterbach, all of Germany, assignors to Ant Nachrichtentechnik GmbH, Backnang, Germany

PCT No. PCT/DE93/01064, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/11249, PCT Pub. Date May 26, 1994

PCT Filed Nov. 8, 1993, Ser. No. 392,922

Claims priority, application Germany, Nov. 12, 1992, 42 38 136.3

Int. Cl.[6] H01P *1/26;1/22*

U.S. Cl. 333—22 R **2 Claims**

1. A waveguide absorber which has at least one member inserted into a waveguide and composed at least partially of absorber material, wherein the member (**4**) is clamped between waveguide walls (**5**, **6**) by providing that at least one wall region (**5**) resting on the member (**4**) is constructed flexibly, and that a force acting on the flexible wall region (**5**) presses the latter against the member (**4**), also provision is made of a pressure clamp (**8**) which exerts the clamping pressure on the flexible wall region (**5**), rests on the flexible wall region (**5**) and is screwed to a wall region (**6**) of the waveguide (**1**) which is opposite said flexible wall region.

5,610,563
SLOT LINE TO CPW CIRCUIT STRUCTURE

Clifford A. Mohwinkel, San Jose, Calif., assignor to Endgate Corporation, Sunnyvale, Calif.

Division of Ser. No. 400,025, Mar. 6, 1995, which is a continuation-in-part of Ser. No. 313,927, Sep. 26, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,493

Int. Cl.[6] H01P *5/10;5/12*

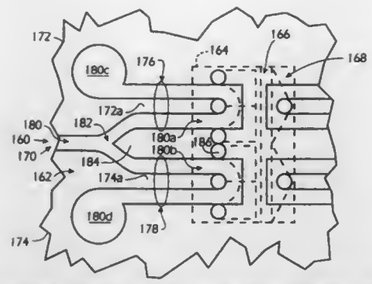
U.S. Cl. 333—128 **2 Claims**

2. An electronic circuit structure comprising:

a substrate;

a first slotline mounted on the substrate and having a first planar slotline conductor and a second planar slotline conductor defining a first slot;

a first coplanar waveguide having first, second and third waveguide signal conductors, with the second and third



waveguide conductors spaced from and positioned on opposite sides of the first waveguide conductor, with the space between the first waveguide conductor and the third waveguide conductor forming a first slot having a first slot width, with the first slotline conductor connected to both the first and third waveguide conductors, and with a first enlarged opening in the first slotline conductor in communication with the first slot and positioned where the first slotline conductor is connected to both the first and third waveguide conductors; and

a second coplanar waveguide in parallel with the first coplanar waveguide, the second coplanar waveguide having a fourth waveguide conductor positioned adjacent to the second waveguide conductor and having a fifth waveguide conductor spaced from the fourth waveguide conductor opposite from the second waveguide conductor, with the space between the fourth waveguide conductor and the fifth waveguide conductor forming a second slot having a second slot width, with the second slotline conductor connected to both the fourth waveguide conductor and the fifth waveguide conductor, and with a second enlarged opening in the second slotline conductor in communication with the second slot positioned where the second slotline conductor is connected to both the fourth and fifth waveguide conductors.

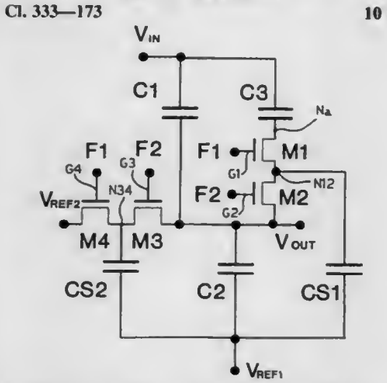
5,610,564
AC INTEGRATED COUPLER WITH PHASE EQUALIZER

Luciano Tomasini, Monza, and Rinaldo Castello, Arcore, both of Italy, assignors to S.G.S. Thomson Microelectronics, S.r.l., Milan, Italy

Filed Oct. 20, 1993, Ser. No. 140,233

Int. Cl.[6] H03H *11/04*

U.S. Cl. 333—173 **10 Claims**



1. An alternating current coupling circuit, comprising:

at least one input terminal and one output terminal;

at least first and second reference terminals for connection to a reference potential;

first and second capacitive elements connected serially together, respectively between the input terminal and the output terminal, and between said output terminal and the first terminal for connection to a reference potential, that it comprises;

a third capacitive element and first and second field-effect transistors being connected in series, through their respective source and drain terminals, with said third capacitive element between the input terminal and the output terminal; and

third and fourth field-effect transistors connected serially together, through their respective source and drain terminals, between the output terminal and the second terminal for connection to a reference potential, the connection nodes between the first and second transistors and between the third and fourth transistors being coupled through capacitive elements to the first terminal for connection to a reference potential, and the gate terminals of said first, second, third and fourth transistors being adapted for connection to a control signal generator with two non-overlapping phases.

5,610,565
COMPOSITE LC DEVICE WITH A GROUND ELECTRODE NOT FORMED ON THE INDUCTOR PARTS

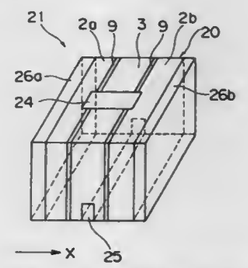
Eiichi Maeda; Katsuhisa Imada; Motoi Nishii, and Yoshihiro Nishinaga, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 2, 1995, Ser. No. 382,577

Claims priority, application Japan, Feb. 2, 1994, 6-11141; May 12, 1994, 6-98764

Int. Cl.[6] H03H *7/04*

U.S. Cl. 333—185 **8 Claims**



1. A composite electronic component comprising:

a sintered body having first and second inductor parts and a capacitor part, said sintered body being a multilayer sintered body having a plurality of sintered body layers; and

a ground electrode on an outer surface of said sintered body and electrically connected to said capacitor part,

said around electrode not being formed on an outer surface of said first and second inductor parts,

said capacitor part having first and second capacitor electrodes,

wherein said sintered body is in the form of a hexahedron having three pairs of opposite surfaces, and said first and second inductor parts having inductor electrodes respectively and said capacitor part being held between said first and second inductor parts, and

said composite electronic component further comprising first and second signal line electrodes being formed on one said pair of surfaces of said sintered body,

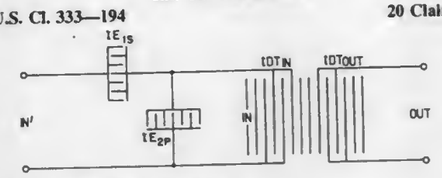
first end portions of said inductor electrodes of said first and second inductor parts being electrically connected to said first and second signal line electrodes, while second end portions of said inductor electrodes of said first and second inductor parts being electrically connected with each other,

said second capacitor electrode of said capacitor part being electrically connected to said second end portions of said inductor electrodes of said first and second inductor parts.

5,610,566
SAW FILTER WITH A COUPLED SAW IMPEDANCE ELEMENT

Dongpei Chen, Neuchatel, Switzerland; Clinton S. Hartmann, Dallas, Tex.; Serguei Kondratiev, Neuchatel, Switzerland; Victor Plessky, Les Geneveys-sur-Coffrane, Switzerland, and Mohammed A. Sharif, Hauterive, Switzerland, assignors to Advanced SAW Products SA, Bevaix, Switzerland

Filed Jul. 26, 1994, Ser. No. 280,607
Claims priority, application United Kingdom, Aug. 4, 1993, 9316142
Int. Cl.[6] H03H *9/64*
U.S. Cl. 333—194 **20 Claims**

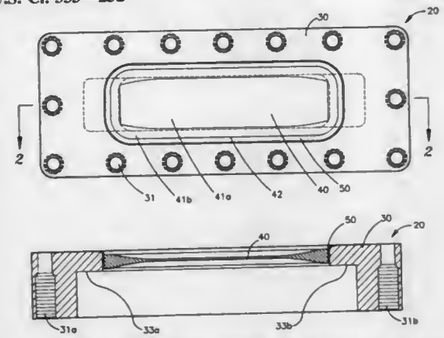


1. A low loss filter comprising:
a filter means having a passband;
a piezoelectric substrate; and
a SAW impedance element supported by said piezoelectric substrate and electrically coupled in series to said filter means, wherein said SAW impedance element has an anti-resonance frequency in a frequency region higher than the passband for the filter means, wherein the low loss filter is a SAW filter.

5,610,567
SUPERCONDUCTING RADIOFREQUENCY WINDOW ASSEMBLY

Harry L. Phillips, Seaford, and Thomas S. Elliott, Yorktown, both of Va., assignors to Southeastern Universities Research Assn., Inc., Newport News, Va.

Filed Apr. 25, 1994, Ser. No. 232,759
Int. Cl.[6] H01P *1/08*
U.S. Cl. 333—252 **4 Claims**

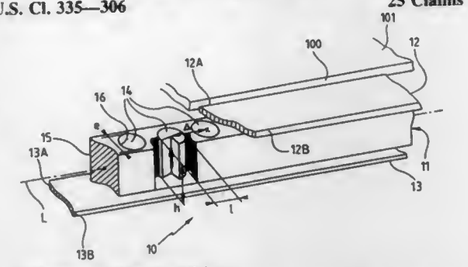


1. A window assembly for transmitting microwave energy to a vacuum cavity, comprising:
(a) a frame of superconducting material;
(b) a ceramic plate disposed within said frame, said plate being transparent to said microwave energy and comprised of aluminum oxide, said ceramic plate having a selected area with a plurality of layers of a plurality of materials disposed therein, a first layer being a layer of superconducting material, as second layer being a diffusion barrier, and a third layer being a bondable layer.
(c) an eyelet of superconducting material sealing said ceramic plate to said frame; and
(d) said window assembly being able to withstand cryogenic temperatures and greater than atmospheric pressure.

5,610,568
CURVED OR STRAIGHT MAGNETIC BAR MADE UP OF SEPARATE MAGNETS

Oliver Marroux, Paris, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

Filed Jul. 26, 1994, Ser. No. 280,500
Claims priority, application France, Sep. 16, 1993, 93 11047
Int. Cl.[6] H01F *7/02*
U.S. Cl. 335—306 **25 Claims**

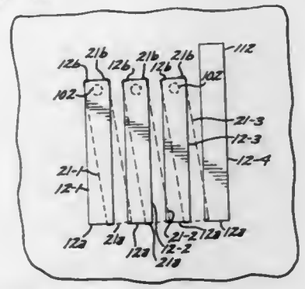


1. A magnetic bar comprising:
a magnetized core defining a median line and having a direction of permanent magnetization transverse to said median line, said magnetized core including a discontinuous succession of separate magnets disposed along said median line so as to provide a gap between each adjacent pair of magnets of said separate magnets, each magnet of said separate magnets having a width in a direction parallel to said median line and a height parallel to said direction of permanent magnetization;
a first polepiece disposed along said magnetized core and transverse to said direction of permanent magnetization; and
a second polepiece substantially parallel and opposite to said first polepiece so as to be disposed along said magnetized core and transverse to said direction of permanent magnetization.

5,610,569
STAGGERED HORIZONTAL INDUCTOR FOR USE WITH MULTILAYER SUBSTRATE

William B. Hwang, Los Angeles, and David M. Lusher, Torrance, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 31, 1996, Ser. No. 599,524
Int. Cl.[6] H01F *27/28*
U.S. Cl. 336—200 **4 Claims**



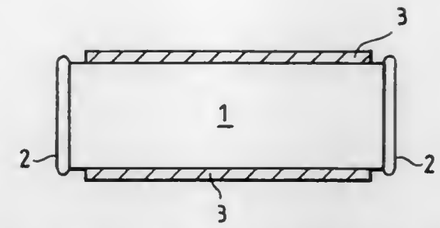
1. An inductor structure comprising:
a plurality of planar co-fired ceramic dielectric insulating layers;
first N parallel elongated conductive strips of predetermined width and predetermined spacing disposed on a first dielectric insulating layer and having gaps therebetween, said first N parallel conductive strips being in a sequence of first through Nth strips and having respective first ends and respective second ends;
second N parallel elongated conductive strips of said predetermined width and said predetermined spacing disposed on a second dielectric insulating layer that overlies said first dielectric insulating layer and having gaps therebetween, said second N parallel conductive strips being in a sequence of first through Nth strips having respective first ends and respective second ends, said second N parallel elongated conductive strips being in a sequence from first through Nth strips, and being at an angle relative to said first N parallel conductive strips with respective first ends of said second N parallel conductive strips vertically overlying respective first ends of said first N parallel conductive strips and with said second ends of said second N parallel conductive strips being horizontally displaced in a predetermined direction from respective second ends of said first N parallel conductive strips such that respective second ends of said first through (N-1)th strips of said second N parallel conductive strips overlie respective gaps between first through Nth strips of said first N parallel conductive strips;
first N-1 parallel strips of said predetermined width and said predetermined spacing disposed on a third dielectric insulating layer that is between said first dielectric insulating layer and said second dielectric insulating layer, said first N-1 parallel conductive strips being in a sequence of first through (N-1)th strips and having respective first ends and respective second ends, and being parallel to said first N parallel conductive strips and vertically aligned with the gaps between said first N parallel conductive strips such that respective second ends of said first N-1 parallel conductive strips vertically underlie respective second ends of first through (N-1)th strips of said second N parallel conductive strips;
second N-1 parallel strips of said predetermined width and said predetermined spacing disposed on a fourth dielectric insulating layer that is between said second dielectric insulating layer and said third dielectric insulating layer, said second N-1 parallel conductive strips being in a sequence from first through (N-1)th strips having respective first ends and respective second ends, and being parallel to said second N parallel conductive strips and vertically aligned with the gaps between said second N parallel conductive strips with respective first ends vertically overlying respective first ends of said first N-1 parallel conductive strips and with respective second ends overlying respective second ends of 2nd through Nth strips of said first N parallel conductive strips;
first via columns respectively interconnecting respective first ends of said first N parallel conductive strips with respective first ends of said second N parallel conductive strips;
second via columns respectively interconnecting respective second ends of the first through (N-1)th strips of said second N parallel conductive strips with respective first ends of said first N-1 parallel conductive strips;
third via columns respectively interconnecting respective first ends of said first N-1 parallel conductive strips with respective first ends of said second N-1 parallel conductive strips;
fourth via columns respectively interconnecting respective second ends of said second N-1 strips with respective second ends of said 2nd through Nth strips of said first N parallel conductive strips.

5,610,570
VOLTAGE NON-LINEAR RESISTOR AND FABRICATING METHOD THEREOF

Seiich Yamada, Juuou-machi; Shigeru Tanaka, Hitachi; Moritaka Syouji, Hitachi; Shigehisa Motowaki, Hitachi; Ken Takahashi, Tokai-mura; Shingo Shirakawa, and Kunihiro Maeda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,793
Claims priority, application Japan, Oct. 28, 1994, 6-264847
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—20 **10 Claims**

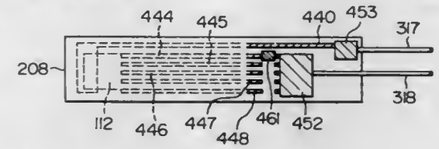
1. A voltage non-linear resistor, comprising a sintered body having ZnO as a major constitution and containing Bi oxide as an additive, wherein a side surface of said sintered body is coated with a high melting-point crystallized glass containing SiO_2, Al_2O_3, ZnO, ZnO_2, BaO, and CaO as essential components, electrodes being formed on both ends of said sintered body.



5,610,571
THERMISTOR TYPE TEMPERATURE SENSOR

Kaoru Kuzuoka, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 112,150, Aug. 26, 1993, Pat. No. 5,410,291. This application Feb. 22, 1995, Ser. No. 392,340
Claims priority, application Japan, Sep. 1, 1992, 4-257343
Int. Cl.[6] H01C *1/012*
U.S. Cl. 338—22 R **8 Claims**

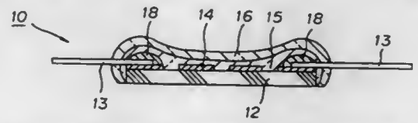


1. A thermistor type temperature sensor comprising:
a substrate made of insulating ceramic;
a thermistor element being mounted on said substrate and having a resistance value which depends on temperature;
a first electrode of one polarity, electrically connected to said thermistor element;
a plurality of second electrodes of the other polarity, electrically connected to said thermistor element; and
a terminal member selectively connected to said second electrodes so as to provide a resistance value between said thermistor element and said terminal member with a desired resistance value.

5,610,572
RESISTOR ELEMENT HAVING A PLURALITY OF GLASS LAYERS

Yasuhito Yajima, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

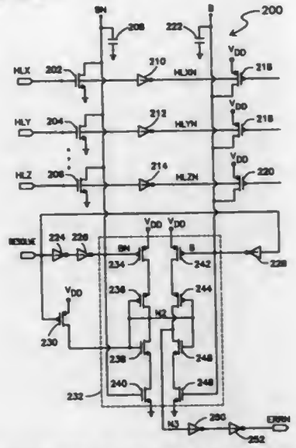
Filed Feb. 23, 1995, Ser. No. 393,360
Claims priority, application Japan, Mar. 24, 1994, 6-053870; Jan. 12, 1995, 7-003013
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—22 R **17 Claims**



1. A resistor element for a thermal flowmeter comprising:
a ceramic substrate;
a platinum film resistor, supported by said substrate, having a positive temperature coefficient of resistance;
a lead means electrically connected to said resistor; and
a protective coating, coated onto said resistor, including a plurality of glass layers having different compositions, said pro-

tective coating including a first glass layer coated onto said resistor, said first glass layer consisting essentially of a glass containing up to 3 percent by mole of a sum of Na_2O and K_2O, a second glass layer coated onto said first glass layer, said second glass layer having a softening point lower than said first glass layer, and an outermost glass layer consisting essentially of a glass for resisting chemicals or a glass for resisting abrasion.

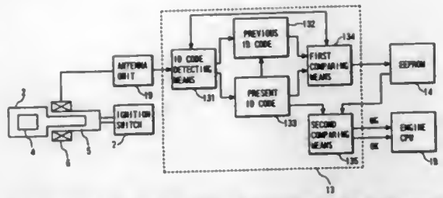
5,610,573
METHOD AND APPARATUS FOR DETECTING ASSERTION OF MULTIPLE SIGNALS
Gordon W. Priebe, Maple Grove, Minn., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Sep. 13, 1995, Ser. No. 527,660
Int. Cl.[6] G06F *7/02*
U.S. Cl. 340—146.2 **17 Claims**



1. A detection system for detecting at least two of a plurality of input signals being asserted simultaneously, comprising:
first and second buffers for asserting a maximum voltage differential between two bit line signals;
an array of voltage modifying devices, each receiving a corresponding one of the input signals for decreasing said voltage differential between said bit line signals when a corresponding input signal is asserted, said array of voltage modifying devices reversing the polarity of said voltage differential when at least two of the input signals are asserted; and
a differential comparator coupled to said bit line signals for detecting said voltage differential between said bit line signals and for asserting an error signal if the polarity is reversed.

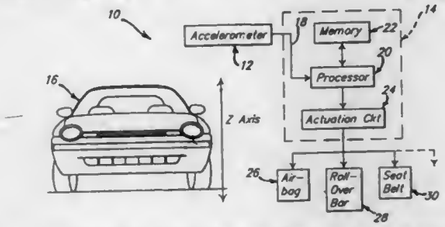
5,610,574
DATA PROCESSING APPARATUS FOR VEHICLE
Eiji Mutoh; Shinichi Kubota, and Susumu Maeda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1995, Ser. No. 464,373
Claims priority, application Japan, Feb. 17, 1995, 7-052106
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **6 Claims**

1. A data processing apparatus for a vehicle comprising nonvolatile memory means, control means for controlling the registration of a reference ID code in said nonvolatile memory means, said apparatus being operative to execute predetermined data processing of a reference ID code that has been registered in said nonvolatile memory means and data subsequently received by said processing apparatus, said control means including monitoring means



for determining whether any ID code is registered in said nonvolatile memory means, means for comparing successive occurrences of first data received from a source external of said data processing apparatus, and means for registering said first data as said reference ID code in said nonvolatile memory means when said comparison means determines that the same first data has been received a predetermined number of times in succession and said monitoring means determines there is no ID code already registered in said nonvolatile memory means.

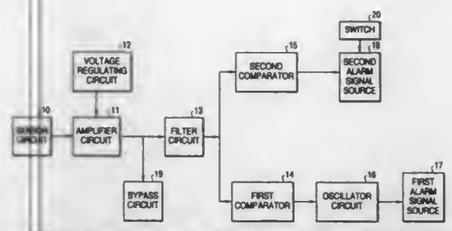
5,610,575
METHOD AND SYSTEM FOR DETECTING VEHICLE ROLL-OVER
Tony Gioutsos, Brighton, Mich., assignor to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.
Filed Aug. 25, 1994, Ser. No. 295,539
Int. Cl.[6] G08B *13/02*
U.S. Cl. 340—429 **6 Claims**



1. A method for detecting roll-over of a vehicle comprising the steps of:
receiving vehicle data from a signal output by an accelerometer, said accelerometer having a sensing axis oriented substantially parallel to a gravitational force;
averaging said vehicle data to filter out noise;
determining whether the averaged vehicle data exceeds a first predetermined threshold value, said first threshold value being representative of a g-force indicative of the vehicle beginning to roll-over;
estimating a slope value representative of a change over time in the averaged data;
determining whether the slope value exceeds a second predetermined threshold value; and
actuating at least one safety device if both said first and second threshold values are exceeded.

5,610,576
CONTROL DEVICE FOR PERMITTING TWO-STAGE OPERATION OF AN ALARM SYSTEM
Simon Su, Kaohsiung Hsien, Taiwan, assignor to Lite-On Automotive Corporation, Kaohsiung, Taiwan
Filed Oct. 24, 1995, Ser. No. 547,407
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—429 **10 Claims**

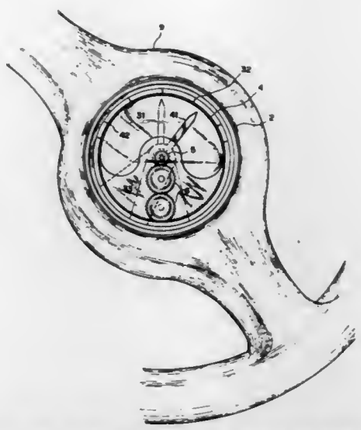
1. A control device for an alarm system, comprising:
a sensor circuit including a shock sensor which generates a sensor signal that varies in accordance with shock experienced thereby;



an amplifier circuit connected electrically to said sensor circuit, said amplifier circuit receiving said sensor signal and providing an amplified output;
a filter circuit connected electrically to said amplifier circuit, said filter circuit receiving said amplified output and providing a filtered signal output;
a first comparator having a reference input which receives a first reference signal, and a test input which is connected electrically to said filter circuit and which receives said filtered signal output, said first comparator generating a first activating signal when said filtered signal output exceeds said first reference signal;
a second comparator having a reference input which receives a second reference signal, and a test input which is connected electrically to said filter circuit and which receives said filtered signal output, said second reference signal being greater than said first reference signal, said second comparator generating a second activating signal when said filtered signal output exceeds said second reference signal;
an oscillator circuit connected electrically to said first comparator, said oscillator circuit generating an intermittent activating signal upon reception of said first activating signal from said first comparator;
a first alarm signal source connected electrically to said oscillator circuit and adapted to be connected electrically to the alarm system, said first alarm signal source presenting a first control signal to the alarm system upon reception of said intermittent activating signal from said oscillator circuit; and
a second alarm signal source connected electrically to said second comparator and adapted to be connected electrically to the alarm system, said second alarm signal source presenting a second control signal to the alarm system upon reception of said second activating signal from said second comparator;
whereby, the alarm system generates a first sound upon reception of said first control signal from said first alarm signal source and a second sound upon reception of said second control signal from said second alarm signal source.

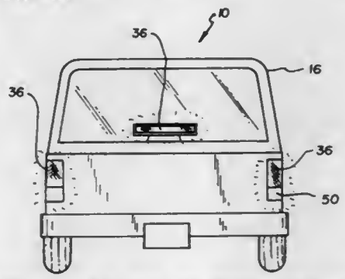
5,610,577
AUTOMOBILE FRONT-WHEEL ORIENTATION AND TURNING-ANGLE INDICATOR
Jin-Lai Hwang, No. 200, Sec. 1, Ming-Sheng North Road, Kuei-San, Taoyuan Hsien, Taiwan
Filed Sep. 6, 1995, Ser. No. 524,375
Int. Cl.[6] G01S *3/56*
U.S. Cl. 340—465 **1 Claim**

1. An automobile front-wheel orientation and turning-angle indicator, comprising:
a housing, being formed as a circular container, and having a dead weight of thicker portion formed at the bottom of the housing, wherein the housing is provided at its center a bearing hole, and two holes are formed at the dead weight beside the bearing hole so that the three holes are aligned diametrically with one another, and a transparent plate being provided at the opening of the housing, where a hole is located at the center of the transparent plate;
a scale disk, being positioned nearby the upper portion of the inside of the housing, wherein upper half part of scale disk is formed with a visual window while the other lower half part of the scale disk is formed as a dead weight, the upper edge of



the visual window is calibrated with appropriate scales and the center of the scale disk with a hole;
an indicator disk, being mounted inside the housing and beneath the scale disk, formed as a disk of circular-lid configuration on which an upward protruded pointer is formed with, and an internal gear being formed around the periphery of the inside of the indicator disk;
a driving gear, being mounted on a spindle and positioned between the indicator disk and the bottom of the housing , the upper portion of the spindle being mounted with a bearing and passing through the hole of the indicator disk, of the scale disk and of the transparent plate, whereas the lower portion of the spindle being mounted with a bearing and passing through the bearing hole of the housing and extended downward for a suitable length;
two idle gears, being individually mounted with axles are positioned in the holes of housing, where the idle gears are positioned between the driving gear and the internal gear of the indicator disk, so that the mounted idle gears are aligned with the driving gear and thereby the rotation of the spindle is sequentially transmitted to the indicator disk; and
a rotating disk, being mounted underneath the housing, where the center of the rotating disk is provided with a hole so as to receive the lower end of the spindle which is connected to the center of the steering wheel for rotation purpose.

5,610,578
VEHICULAR VARIABLE BRAKE LIGHT INTENSITY SYSTEM
Florent J. Gilmore, 17 Starling Dr., Sherwood Park, Alta T8A 0A6, Canada
Filed May 13, 1996, Ser. No. 645,295
Int. Cl.[6] B60Q *1/44*
U.S. Cl. 340—479 **1 Claim**



1. A vehicular variable brake light intensity system comprising, in combination:

a brake pedal potentiometer comprising a brake pedal with a brake arm hingably coupled at an inboard end to a vehicle, a pad fixed to an outboard end thereof, and a frame integrally formed at an intermediate extent of the brake arm, the frame including a top face coupled to the brake arm, a bottom face coupled to the brake arm beneath the top face, and a pair of closed side faces coupled between the top face and bottom face thus defining an interior space with access afforded thereto via a pair of opposite open side faces situated perpendicularly with respect to the direction of motion of the brake arm, the brake pedal potentiometer further including an arcuate rod with a predetermined resistivity coupled at a first end to the vehicle and further situated within the interior space of the frame in axial alignment with the direction of motion of the brake arm, a spring biased contact positioned on an interior surface of one of the closed side faces with the spring biased contact abutting the potentiometer, a guide roller situated on a closed side face opposite the spring biased contact, and another contact connected to the inboard end of the rod, whereby the resistivity between the contacts changes with the motion of the brake arm during braking, wherein a housing is included for protection of the brake pedal potentiometer with an elongated cut out formed on a lower surface thereof for allowing movement of the brake arm therein;

variable voltage regulator means connected to the contacts of the brake pedal potentiometer for producing a ramp voltage at an output thereof which is a function of the resistivity between the contacts;

power amplifier means having a pair of outputs connected to a set of conventional brake lights and an input connected to the output of the variable voltage regulator means for providing power to the brake lights, wherein the power is a function of the ramp voltage of the variable voltage regulator means and the power amplifier means is adapted t6 control the current which is delivered to the brake lights;

peak detecting means including an input coupled to the output of the variable voltage regulator means and an output connected to the power amplifier means for disabling the power amplifier means upon the detection of a predetermined voltage at the input thereof;

oscillator means having an input connected to the output of the peak detecting means for producing a square wave triggering signal at an output thereof upon the detection of the predetermined voltage by the peak detecting means;

monostable multivibrator means having an input connected to the output of the oscillator means, the multivibrator means adapted to produce a smooth pulse at the output thereof as a function of the triggering signal of the oscillator means;

high speed amplifier means having a pair of outputs connected to the brake lights and an input connected to the output of the multivibrator means for intermittently providing power to brake lights, wherein the power is a function of the pulse of the variable voltage regulator means and the high speed amplifier means includes fast switching field effect transistors to ensure that the brake lights have a definite on and off state; and

a plurality of parking lights situated on the vehicle, second power amplifier means having a pair of outputs connected to the parking lights and an input connected to the output of the variable voltage regulator means for providing power to parking lights, wherein the power is a function of the ramp voltage of the variable voltage regulator means, and second high speed amplifier means having a pair of outputs connected to the parking lights and an input connected to the output of the multivibrator means for intermittently providing power to parking lights, wherein the power is a function of the pulse of the multivibrator means;

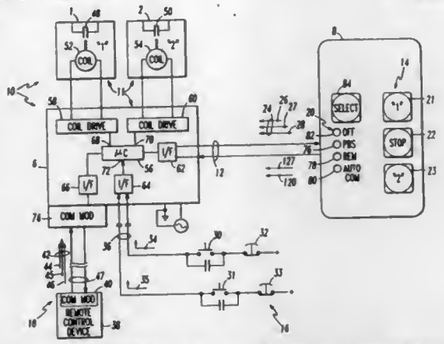
whereby the brake lights and parking lights emit light with an intensity which is a function of the amount of deceleration in a first mode of operation and further intermittently emit light upon the deceleration surpassing a predetermined amount in a second mode of operation.

5,610,579

APPARATUS AND METHOD FOR SELECTING A CONTROL SOURCE FOR AN ELECTRICAL SWITCHING DEVICE

Michael G. Early, Hendersonville, and Pamela S. Combs, Horseshoe, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 14, 1995, Ser. No. 557,889
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—517 **19 Claims**



1. A control apparatus for an electrical switching device including separable contacts, operating means for operating said separable contacts and control means responsive to a plurality of control sources for controlling said operating means, said control apparatus comprising:

plural indicator means each of which corresponds to one of said control sources;

switch means; and

selection means responsive to said switch means for selecting one of said control sources, said selection means including:

means for detecting actuation of said switch means;

means responding to said actuation for sequentially indicating representations of at least some of said control sources on the corresponding ones of said indicator means; and

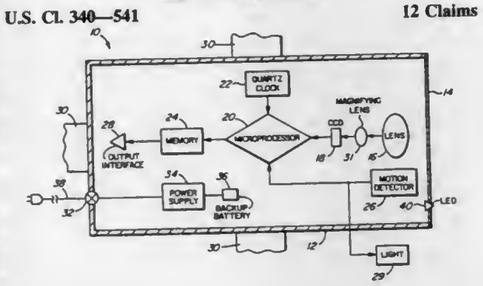
means for detecting de-actuation of said switch means to select one of said control sources the representation of which is indicated on the corresponding one of said indicator means at the time of said de-actuation.

5,610,580

MOTION DETECTION IMAGING DEVICE AND METHOD

Joseph M. Lai, 1922 West 33rd Avenue, Vancouver, British Columbia, Canada

Filed Aug. 4, 1995, Ser. No. 511,435
Int. Cl.[6] G08B *13/18*
U.S. Cl. 340—541 **12 Claims**



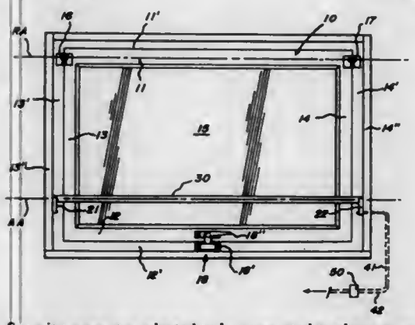
1. A motion detection and imaging device comprising a housing containing a CCD for providing digital image data, a wide-angle lens assembly for focusing an image to be observed on the CCD, a magnifying lens between the wide-angle lens assembly and the CCD and a solid state non-volatile memory for storing said digital image data.

5,610,581

COMBINATION BAR LOCK AND ELECTRICAL ALARM SYSTEM FOR DOORS AND WINDOWS

Merlin E. Keller, 505 Ramsey St., Monticello, Minn. 55362

Filed Jan. 23, 1996, Ser. No. 589,937
Int. Cl.[6] G08B *13/08*
U.S. Cl. 340—547 **15 Claims**



1. Security apparatus adapted to be connected to alarm means of a building system, said apparatus further being adapted for providing two-part security for a window movably positioned in a wall of a building having a window casing and means for rotatably connecting said window to said casing so that said window may be selectively rotated about a rotational axis from a closed position to an open position, said security apparatus comprising:

a) a pair of rod holding brackets mounted, respectively, on said window casing on opposite sides of said window on an axis spaced from and substantially parallel to said rotational axis, each of said brackets having means for receiving and holding the end of a rod;

b) an elongated rod having opposite ends and a length preselected so that said rod may be supported at each of said ends by said receiving and holding means of said brackets;

c) magnet means integrally attached to one of said ends of said rod;

d) magnetically operable switch means attached to one of said brackets; and

e) means for connecting said switch means to said alarm means, said apparatus being further characterized by:

(i) said rod being positioned, when said window is in said closed position, so that said ends thereof are positioned respectively on said brackets and engaging said receiving and holding means and with said magnet means positioned in magnetic proximity with said switch means to thereby cause said switch means to have a first condition;

(ii) said rod, when positioned as aforesaid, preventing said window from being moved from said closed position to said open position; and

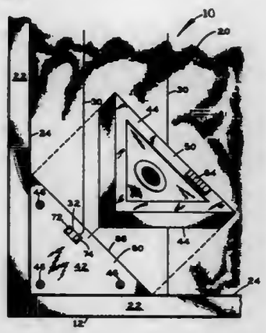
(iii) said rod, when removed from said brackets so that said magnet means is moved away from said switch means, causing a change in condition of said switch means from said first condition to a second condition to thereby actuate said alarm means of said alarm system.

5,610,582

ALARM SCREEN WITH BUILT-IN BATTERY OPERATED SOUNDING UNIT

Richard A. Zahn, Jr., Ft. Lauderdale, and Merle L. Stepp, Coral Springs, both of Fla., assignors to Security Screens, Inc., Hollywood, Fla.

Filed Feb. 13, 1995, Ser. No. 387,318
Int. Cl.[6] G08B *13/08*
U.S. Cl. 340—550 **11 Claims**



1. A self-contained alarm screen apparatus for securing building openings against intruders, comprising:

a screen sheet having a screen peripheral edge,

frame means secured to said screen peripheral edge for providing structural support to said screen sheet,

a conductive detection wire secured across said screen sheet for detecting a breach in said screen sheet,

terminal means for connecting to said detection wire,

alarm elements comprising an electric power source, an alarm sounder, and alarm circuit means for carrying electric power from said power source to said alarm sounder,

and element mounting means for mounting at least one of said alarm elements to said frame means,

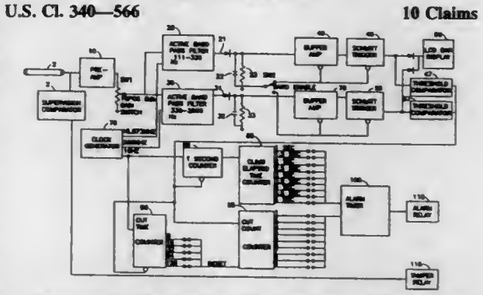
wherein said alarm elements are joined together by a joining structure to form an alarm module, and wherein said element mounting means comprises module mounting means for mounting said module to said frame means, and module connecting means for connecting said module to said module mounting means.

5,610,583

INTRUSION WARNING SYSTEM

Moataz Drebika, Santa Clara, and Glenn A. Brown, Gilroy, both of Calif., assignors to Stellar Systems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 669,430, Mar. 15, 1991, abandoned. This application Sep. 20, 1991, Ser. No. 763,168
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—566 **10 Claims**



1. Apparatus for detecting intrusion of a partition, comprising:

a detector means, attachable to the partition to be protected, for detecting vibrations of the partition and for providing a signal corresponding thereto;

first circuit means for receiving and amplifying said signal from said detector means, said first circuit means including an amplifier for amplifying said signal and a variable gain switch, connected to an output of said amplifier, for selectively adjusting the level of the signal produced by said detector means to a predetermined level;

second circuit means for selection of a predetermined frequency band for the partition being monitored, said second circuit means including band pass filter means, connected to receive an output signal from said variable gain switch, for filtering said output signal from said variable gain switch with at least two different pass bands, AM detector means for detecting the peaks of a filtered output signal from said filter means, and means for selectively causing an output signal from said second circuit means corresponding to an output signal from said AM detector means in only one of said pass bands; and

third circuit means for processing the output signal from said second circuit means to provide an alarm indicating the detection of vibrations representative of an intrusion attempt of the partition.

5,610,584

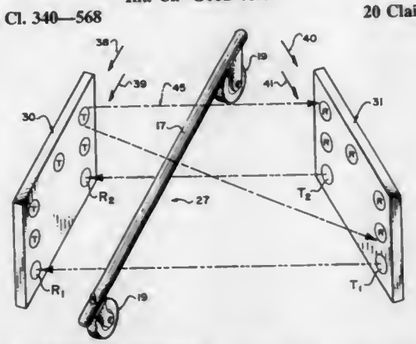
DETECTION OF GOODS ON THE BOTTOM RACK OF A CART

Chester R. Schrade, 5-768 Toronto Street, Winnipeg, Manitoba, Canada

Filed May 2, 1995, Ser. No. 433,192

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **20 Claims**



1. A combination comprising:

a cart for transporting goods including two bottom rails, a plurality of wheels beneath the bottom rails and a bottom rack mounted on the bottom rails for supporting goods thereon;

a check stand comprising a floor, a first and a second wall member each upstanding from the floor and defining between the wall members an alleyway through which persons and carts can pass;

detection means for detecting goods on the bottom rack of a cart as it passes through the alleyway and for providing a signal in response thereto;

and alarm means for indicating to a person at the check stand receipt of a signal from the detection means;

the detection means comprising:

optical transmitter means for transmitting a plurality of beams of light, optical receiver means associated with the transmitter means and responsive to receipt of light from at least one of the beams, the optical transmitter means and optical receiver means being arranged such that said plurality of beams of light are transmitted across the alleyway to said receiver means;

said optical transmitter means and optical receiver means being positioned in a pattern which is shaped and arranged relative to a shape of the cart having goods on the rack so as to be responsive to the shape of the cart having goods on the rack while being not responsive to the shape of a cart having an empty rack and being not responsive to persons;

the optical transmitter means being arranged in a pattern to define a first row of optical transmitter elements containing at least three of the optical transmitter elements which are horizontally spaced longitudinally of the alleyway and at a height relative to the floor which is above the bottom rails and a second row of optical transmitter elements arranged at a height relative to the floor which is below the bottom rails and including at least two optical transmitter elements which are horizontally spaced longitudinally of the alleyway;

the optical receiver means being arranged in a pattern to define a first row of optical receiver elements containing at least three of the optical receiver elements which are horizontally spaced longitudinally of the alleyway and at a height relative to the floor which is above the bottom rails and a second row of optical receiver elements arranged at a height relative to the floor which is below the bottom rails and including at least two optical receiver elements which are horizontally spaced longitudinally of the alleyway;

the beams from the optical transmitter elements of the second row being optically distinguishable one from the other and the optical receiver elements of the second row being responsive only to a beam from a respective one of the transmitter elements of the second row;

and a control circuit responsive to a condition in which none of the optical receiver elements of the first row are receiving a beam from the optical transmitter elements of the first row and in which both of the optical receiver elements of the second row are receiving the respective beam from the respective one of the optical transmitter elements of the second row for actuating the alarm means.

5,610,585

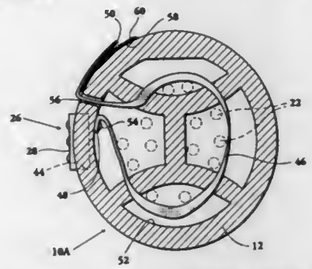
SECURITY SYSTEM FOR PROTECTING AGAINST THEFT OF A GOLF BAG OR GOLF CLUBS THEREFROM

Kendall J. Jobe, 10015 S. Sheridan #312, Tulsa, Okla. 74133

Filed Jan. 18, 1996, Ser. No. 588,346

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **9 Claims**



1. A security system for protecting against theft of a golf bag and/or golf clubs therefrom, the golf bag having an open top and a plurality of golf clubs partially extending out of the open top, comprising:

a shock sensor having a housing, an audio signal generator and means for arming and disarming the sensor;

an elongated strap having an intermediate portion and opposed first and second end portions, said shock sensor housing being attached to the strap intermediate portion, the strap being long enough to loop around a plurality of golf clubs extending out of a golf bag; and

means to releasably secure said opposed first and second end portions of said strap to each other to retain said strap and thereby said shock sensor to said plurality of golf clubs whereby movement of said golf bag or one of said plurality of clubs will cause said audio signal generator to be actuated.

5,610,586

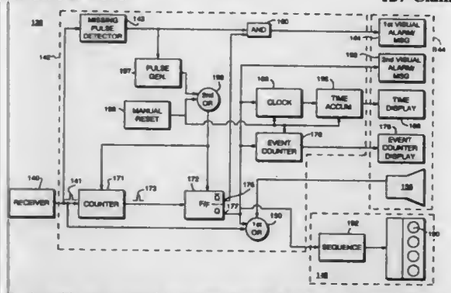
GOLF CART CONTROL AND MONITORING APPARATUS AND SYSTEM

Douglas Zeytoonjian, Boston, Mass.; Frederick Zeytoonjian, Sr., Somers, Conn.; Harold Kramer, Pittsfield, and Paul Allen, North Adams, both of Mass., assignors to Cart Watch, Inc., Enfield, Conn.

Continuation-in-part of Ser. No. 82,030, Jun. 24, 1993, Pat. No. 5,438,319. This application Feb. 16, 1995, Ser. No. 391,416

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—571 **127 Claims**



1. A golf cart control and monitoring apparatus, comprising:

signal transmission means for transmitting a plurality of electromagnetic signals, each signal being representative of a position with respect to each of at least one restricted area of a golf course;

signal receiving and processing means for receiving and processing the electromagnetic signals from said signal transmission means and for providing output signals representative of the location of a golf cart with respect to any one of the at least one restricted area, where at least one of said signal receiving and processing means output signals is representative of a golf cart being located in any one of the at least one restricted area;

event log means, responsive to said signal receiving and processing means output signals, for generating a historical log of at least how long the golf cart was located within any one of the at least one restricted area; and

wherein said signal transmission means includes at least one antenna for radiating the plurality of electromagnetic signals.

5,610,587

THEFT PREVENTIVE APPARATUS HAVING AN ALARM OUTPUT DEVICE

Hiroyuki Fujiuchi; Masaaki Takeshita; Kenji Uchida, all of Osaka; Tsutomu Ida; Hisakazu Okumura, both of Tomioka, and Mitsuhiko Nakajima, Nagano-ken, all of Japan, assignors to Kubota Corporation, Osaka, Japan

PCT No. PCT/JP94/01406, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO95/06923, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 25, 1994, Ser. No. 428,108

Claims priority, application Japan, Aug. 31, 1993, 5-215882; Aug. 31, 1993, 5-215884; Aug. 31, 1993, 5-215885; Aug. 31, 1993, 5-215886; Aug. 31, 1993, 5-215887; Aug. 31, 1993, 5-215888

Int. Cl.[6] G08B *13/06*

U.S. Cl. 340—572 **16 Claims**

1. A theft preventive apparatus comprising:

an attached-state detecting device exposed outside a box for detecting a state of attachment to an object of theft prevention,

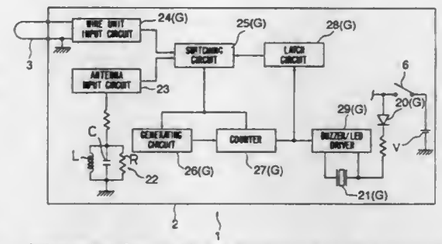
alarm output means mounted in said box for detecting removal of said box from the object of theft prevention based on information from said attached-state detecting device and outputting an alarm at the time of detection of the removal,

a battery mounted in said box for driving said alarm output means, and

a power supply switch for a turning power supply on and off between said battery and said alarm output means;

wherein said attached-state detecting device comprises a mounting member connected to said box, and

said power supply switch is changeable from off state to on state when said mounting member is connected to said box.



5,610,588

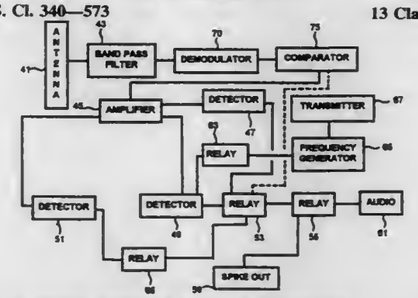
ELECTRONIC CONFINEMENT SYSTEM FOR ANIMALS USING MODULATED RADIO WAVES

Robert G. Yarnall, Jr., and Robert G. Yarnall, Sr., both of Ford Rd., P.O. Box 758, Kimberton, Pa. 19442

Filed Aug. 5, 1994, Ser. No. 286,668

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **13 Claims**



1. An animal confinement arrangement comprising:

a first signal-emitting wire disposed around a confinement area;

a second signal-emitting wire;

home base transmitting means for transmitting a first modulated signal from the first signal-emitting wire and a second modulated signal from the second signal-emitting wire, the first modulated signal having a first signal strength;

receiver means for receiving any of a plurality of modulated signals including the first modulated signal, as a received modulated signal;

demodulator means for demodulating the received modulated signal to produce a demodulated signal having a second signal strength;

comparator means for comparing the demodulated signal to a reference signal to determine if the received modulated signal was transmitted by the home base transmitting means; and

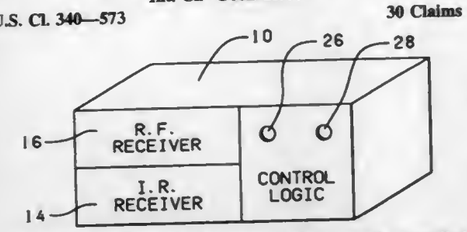
deterrent means, responsive to the second signal strength of the demodulated signal, for producing a deterrent signal which is applied to the animal if the comparator means determines that the received modulated signal was transmitted by the home base transmitting means.

5,610,589

METHOD AND APPARATUS FOR ENFORCING HYGIENE

Bennie R. Evans, 101 W. Lake Dr., Medicine Park, Okla. 73557, and Walter D. Ballew, Midwest City, Okla., assignors to Bennie R. Evans, Medicine Park, Okla.

Filed Feb. 9, 1995, Ser. No. 385,608
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 30 Claims



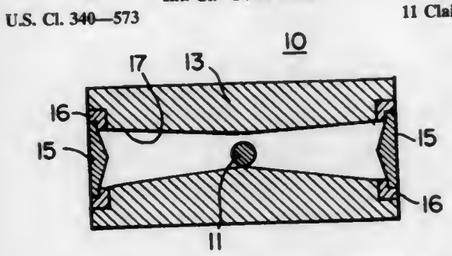
1. A system for encouraging workers in a hygienically controlled area to wash their hands before exiting an associated sanitation area, comprising:
a name tag for each worker;
a clear signaling light on each name tag;
an unsanitary signaling light on each name tag;
means for enabling the unsanitary signaling light on a name tag when the worker wearing the name tag enters the sanitation area; and
means for disabling the unsanitary signaling light to indicate that said worker has likely washed his/her hands with soap and water, and then enabling the clear signaling light on said name plate.

5,610,590

MOTION SENSOR

Mark Johnson, Rensselaer, and Thomas Simkins, Troy, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 443,911, May 18, 1995, Pat. No. 5,523,742, which is a continuation-in-part of Ser. No. 970, Jul. 7, 1995. This application Feb. 2, 1996, Ser. No. 596,396
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 11 Claims



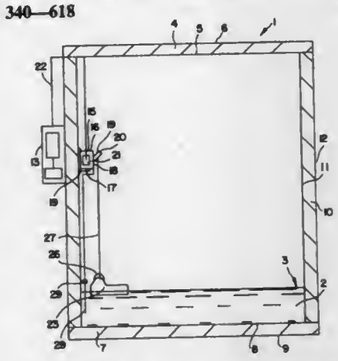
1. A sensor for use with motion detection monitors for patient movement, comprising:
a conductive sphere; and
a cylinder having an interior portion locating said sphere therein, said cylinder being formed hy conductive end plates at the two ends and a conductive inner surface insulated therefrom, said inner surface being tapered to direct said sphere to an at rest condition in contact with either one of said end plates and at least part of said inner surface in any orientation of said sensor;
said sensor including means for passing an electric current between said inner surface and said either one of the end plates through said sphere when said sphere is in contact therewith, whereby movement of said cylinder causes movement of said sphere to provide intermittent contact with said either one of the end plates and said inner surface.

5,610,591

LIQUID LEVEL ALARM SYSTEM

Daniel J. Gallagher, 10466 Greentrail Dr. N., Boyton Beach, Fla. 33436-4412

Filed Dec. 26, 1995, Ser. No. 579,589
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—618 9 Claims



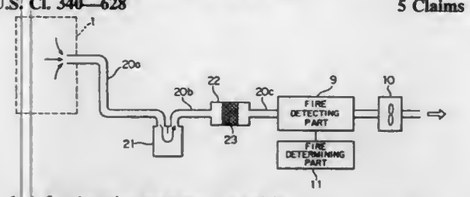
1. An alarm system for use in containers having a top having inner and outer surfaces, a bottom having inner and outer surfaces, and at least one wall having an inner and outer surface, which container contains a liquid having a surface level which fluctuates between a predetermined high point and a predetermined low point; said system comprising:
an alarm means to be positioned outside of the container;
means for positioning a housing on a surface of the container above the predetermined high point of the surface level of the liquid;
a housing having an upper surface, a lower surface, and at least one side surface;
a single-puli switch arm having a distal end and a proximal end and which protrudes through a side surface of the housing, which single-pull switch arm has a raised position and a lowered position;
an activation mechanism contained within said housing, which activation mechanism is in contact with the proximal end of the single-pull switch arm, which activation mechanism contains an open electrical circuit which becomes closed when the single-puli switch arm is pulled down to its lowered position, and when said circuit is closed, said activation mechanism activates said alarm means;
a float suitable for floating on the surface level of the liquid, said float having an inner surface and an outer surface, said float having an axle attached thereto, said axle having a spring reel rotatably mounted thereon, and a line wrapped around the reel, said float being of such weight as to be capable of pulling the single-pull switch arm from the raised position to the lowered position;
an insulated electrical connector between said alarm means and said activation mechanism;
said line being attached to the distal end of the single-pull switch arm.

5,610,592

FIRE DETECTING APPARATUS

Toshiaki Okazaki, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 283,169
Claims priority, application Japan, Aug. 4, 1993, 5-193320
Int. Cl.[6] G08B *17/00*
U.S. Cl. 340—628 5 Claims



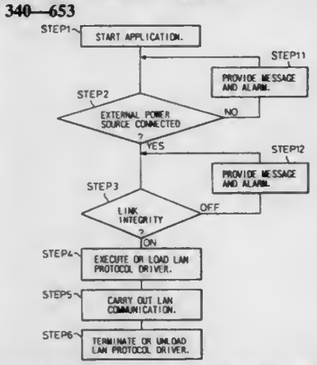
1. A fire detecting apparatus comprising:
a fire detecting part for detecting the presence of a fire in a supervised area by detecting smoke contained in air drawn via an inlet passage from the supervised area;
a first dust recovering part arranged in said inlet passage upstream from said fire detecting part and configured to deflect an air flow within said inlet passage to cause dust particles contained in said air flow to separate from said air flow and drop into a recovery area of said first dust recovering part; and
a second dust recovering part arranged in said inlet passage downstream from said first dust recovering part and upstream from said fire detecting part and having a filter unit for capturing additional dust particles contained in said air flow which have passed through said first dust recovering part.

5,610,593

COMMUNICATION CONTROLLER AND COMMUNICATION CONTROL METHOD

Chiaki Seto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 235,651, Apr. 29, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 594,107
Claims priority, application Japan, Aug. 5, 1993, 5-194793
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—653 20 Claims



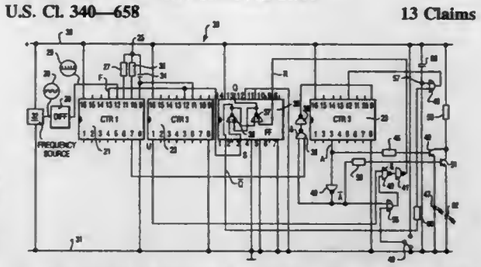
1. A terminal unit for connection to a network, for communicating with a host apparatus connected to the network, comprising:
decision means for determining whether or not the terminal unit is connected to a transmission line of the network and providing a connection signal Upon receiving an acknowledge signal from an apparatus connected to the transmission line; and
communication control means for starting to communicate with the host apparatus in response to the connection signal only if the decision means determines that the terminal unit is connected to the transmission line.

5,610,594

FREQUENCY MONITORING DEVICE

Hans-Martin Baumann, Gutach, and Rolf Müller, Munich, both of Germany, assignors to Papst Licensing GmbH, Spaichingen, Germany

Continuation of Ser. No. 761,886, Nov. 1, 1991, Pat. No. 5,469,148. This application Jun. 7, 1995, Ser. No. 483,177
Claims priority, application WIPO, Mar. 20, 1989, PCT/EP89/00296
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—658 13 Claims



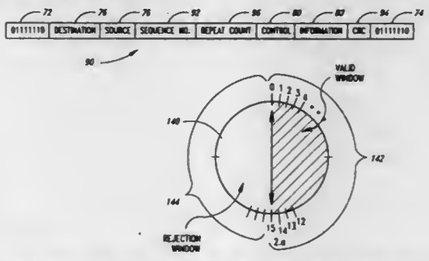
1. A device for monitoring a frequency (f) for relatively long lasting deviations from a desired value (**f0**), comprising:
means for detecting a frequency deviation of a predetermined magnitude and emitting a plurality of deviation signals, each deviation signal being emitted upon a separate occurrence of the detecting of the frequency deviation;
monitoring means including a counter for monitoring the time interval of the recurrence of said deviation signals, said counter starting counting at each deviation signal and having a first preset count or level that is normally not reached between two successive deviation signals but is reached if no further separate deviation signal occurs, the counter emitting a reset signal, if said first preset count or level is reached; and
a second counter starting counting in response to the detecting means upon detecting the first deviation signal and having a second preset count or level representing an alarm time interval, the second counter triggering an alarm signal if the second preset count or level is reached or being reset by said reset signal if the second preset count or level is not reached.

5,610,595

PACKET RADIO COMMUNICATION SYSTEM PROTOCOL

Gary W. Garrabrant, Bellevue; Jay C. Cho, Seattle, and Joseph T. Savarese, Snohomish County, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Continuation of Ser. No. 804,319, Dec. 9, 1991, abandoned. This application Mar. 14, 1995, Ser. No. 404,111
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.52 13 Claims



1. In a data collection environment, a method for controlling a packet communication system including a source station, a destination station and one or more repeater stations adapted to repeat messages from the source station to the destination station comprising the steps of:

at the source station:

(a) composing a plurality of discrete frames that together represent a portion of the message, each frame including:

(1) an address code of the destination station,

(2) an address code of the source station, and

(3) a single sequence index indicating the sequence, relative to other frames produced by the source station, in which the frame was composed at the source station;

(b) transmitting the frames; and at the destination station:

(c) receiving the frames;

(d) reading the sequence index from each received frame;

(e) computing a window of acceptable frame sequence indices at the destination station based upon a previous sequence index for a frame previously received, the previous sequence index being indicative of the frames expected to be received subsequent to the frame previously received, the window including a set of frame sequence indices smaller than a set of all possible frame indices;

(f) comparing the sequence index of the received frame with the frame sequence indices in the set of acceptable frame sequence indices;

(g) processing the received frame if it has a sequence index that matches one of the frame sequence indices in the window of acceptable frame sequence indices;

(h) for each frame received, updating the previous sequence index based upon the sequence index of the received frame, if the sequence index of the received frame matches one of the frame sequence indices in the window of acceptable message sequence indices; and

(i) discarding the received frame if the sequence index of the received frame is not one of the frame sequence indices in the window of acceptable frame sequence indices.

5,610,596

SYSTEM FOR MONITORING AN INDUSTRIAL INSTALLATION

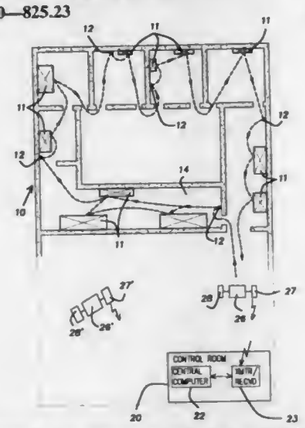
Jean-Louis Petitclerc, Tourlaville, France, assignor to Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

Filed Sep. 27, 1994, Ser. No. 312,607

Claims priority, application France, Oct. 22, 1993, 93 12627

Int. Cl.[6] G21C *17/00*

U.S. Cl. 340—825.23 **6 Claims**



1. A system for monitoring an industrial installation making it possible for at least one operator to perform rounds, said system comprising at least one central terminal associated with a transmission-reception means, identification labels located at different plotting or recording points at predetermined locations within the installation, and at least one portable terminal available to the operator associated with a data transmission-reception means for communicating with the central terminal and a means for reading the labels, wherein said labels comprise electronic labels, whose content can be read and modified by writing, wherein the electronic labels located on automatic equipment to be controlled each contain a base for updated data concerning the characteristics of said equipment and wherein the reading means associated with each portable terminal also permits writing in said electronic labels, each of said electronic labels including a cylindrically-shaped stainless steel capsule having an upper surface, a lower surface, and a peripheral surface, each of said electronic labels also including a battery and a chip each contained within said capsule, said chip installed on a printed microcircuit connected to the two poles of said battery, wherein said electronic labels communicate with said portable terminal by a bidirectional transmission line for information having a first contact on said upper surface of said capsule and a second contact on at least one of said peripheral surface and said bottom surface of said capsule.

5,610,597

MODE DISCRIMINATING DEVICE FOR AN IMAGE SIGNAL PROCESSING SYSTEM

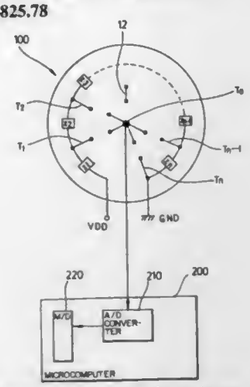
Sang-Beom Hong, Jeju-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 7, 1993, Ser. No. 1,650

Claims priority, application Rep. of Korea, Jan. 7, 1992, 92-92

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.78 **11 Claims**



1. A mode discriminating device for an image signal processing system which has at least two processing system operating modes comprising:

a power source providing a supply voltage;

a cam switch having a connecting element, wherein said cam switch and said connecting element are selectively rotatable to any one of a predetermined number of positions, said connecting element comprising a single connector;

a voltage divider comprising:

an input terminal coupled to said supply voltage;

a plurality of impedance elements coupled to said input terminal for dividing said supply voltage;

a plurality Of connecting taps each disposed between adjacent ones of said impedance elements, said connecting element being rotated so as to selectively connect to a discrete one of said connecting taps and as said connecting element is rotated, to generate a plurality of discrete output voltages that correspond to said connecting taps, each respective output voltage corresponding to said supply voltage divided by a respective predetermined impedance, each said predetermined impedance corresponding to the position of said cam switch and connecting element;

an output terminal receiving said output voltages; and

a microcomputer, for discriminating among the operating modes of the image signal processing system on the basis of the received output voltages.

5,610,598

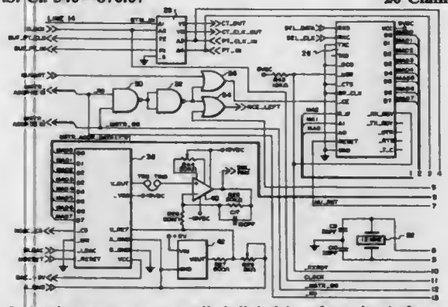
MISSILE TELEMETRY DATA INTERFACE CIRCUIT

Guy R. Buchwitz, Oxnard; Andrew H. Snelgrove, and Paul H. Sailer, both of Ventura, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1996, Ser. No. 619,289

Int. Cl.[6] G08C *19/16*

U.S. Cl. 340—870.07 **20 Claims**



1. A microprocessor controlled digital interface circuit for processing a pulse amplitude modulated telemetry data stream from a missile's telemetry unit, said pulse amplitude modulated telemetry data stream including a pulse amplitude modulated synchronization signal and a plurality of channels of telemetry data, said microprocessor controlled digital interface circuit comprising:

multiplexing means having a data input for receiving said pulse amplitude modulated telemetry data stream, a control signal input, and an output;

first processing means coupled to the control signal input of said multiplexing means, said first processing means supplying first and second control signals to said multiplexing means;

said multiplexing means being enabled by said first and said second control signals allowing said pulse amplitude modulated telemetry data stream to pass through said multiplexing means;

filtering means coupled to the output of said multiplexing means to receive said pulse amplitude modulated telemetry data stream, said filtering means removing a pair of subcarrier channel oscillator frequencies from said pulse amplitude modulated telemetry data stream;

said filtering means including differentiating means for providing an analog derivative signal of said pulse amplitude modulated telemetry data stream;

window comparison means coupled to said differentiating means to receive said analog derivative signal, said window comparison means generating a pulse signal whenever said analog derivative signal exceeds a predetermined voltage window;

clock signal generating means for generating a first clock signal;

pulse amplitude modulated signal processing means coupled to said window comparison means and said clock signal generating means to receive said pulse signal and said first clock signal, said pulse amplitude modulated signal processing means, responsive to said pulse signal and said first clock signal, generating a pulse amplitude modulated clock signal, said pulse amplitude modulated clock signal being synchronized to each of said plurality of channels of telemetry data;

analog to digital conversion means coupled to said filtering means to receive said pulse amplitude modulated telemetry data stream, said analog to digital conversion means converting said pulse amplitude modulated telemetry data stream from an analog form to a digital form;

second processing means coupled to said first processing means, said analog to digital conversion means and said pulse amplitude modulated signal processing means to receive said pulse amplitude modulated telemetry data stream in said digital form and said pulse amplitude modulated clock signal;

said second processing means being adapted to detect said pulse amplitude modulated synchronization signal, said second processing means upon detecting said pulse amplitude modulated synchronization signal sending a first message to said first processing means, said first message indicating to said first processing means that said second processing means detected said pulse amplitude modulated synchronization signal;

said first processing means, upon receiving said first message from said second processing means, sending a second message to said second processing means, said second message commanding said second processing means to initiate processing of said plurality of channels of telemetry data within said pulse amplitude modulated telemetry data stream;

said second processing means, responsive to said second message and said pulse amplitude modulated clock signal processing and scaling each of said plurality of channels of telemetry data;

said second processing means generating an equivalent digital word for each of said plurality of channels of telemetry data processed and scaled by said second processing means.

5,610,599

SYSTEM FOR TRAFFIC SIGNALS FOR ONE-SIDE PASSING

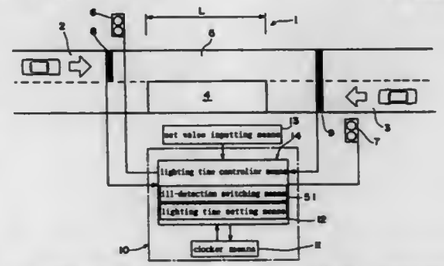
Toshimitsu Nomura; Akira Sato, both of Niigata; Minoru Ishizaki, Kamoshi; Kaoru Takeda, Niigata, and Kazuhiko Yasui, Yachimata, all of Japan, assignors to Nihon Samicon Co. Ltd., Niigata-ken, Japan

Filed Apr. 27, 1995, Ser. No. 430,193

Claims priority, application Japan, Apr. 28, 1994, 6-091775; Oct. 20, 1994, 6-255551

Int. Cl.[6] G08G *1/097*

U.S. Cl. 340—931 **4 Claims**



1. A system for traffic signals for one-side passing, comprising:

two-position signals temporalily provided at both ends of a road reparing section through which vehicles from up lane and down lane alternately pass;

detector means for detection of passage of vehicles which are provided at both ends of the road reparing section, each corresponding to each traffic signal;

a sensitive controller device for control of green or red lighting time and switching of red or green indication of the traffic signals based upon detection signals by the detector means, said sensitive controller being provided for cycled lighting of the traffic signals, said one cycle consisting of green-red, red-red, red-green and red-red lighting in sequence of each traffic signal;

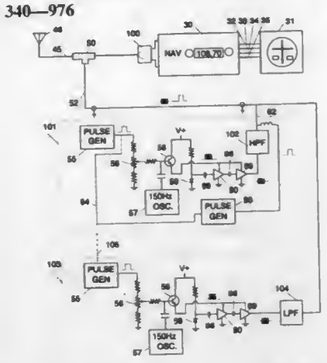
a uniformly red time extension means for extending the uniformly red time by a preset detection time if detection signal is input by the detector means of one traffic signal switching from green to red by the sensitive controller device within the preset detection time after such switching.

5,610,600

OPERATION VERIFICATION SYSTEM AND METHOD FOR NAVIGATIONAL INSTRUMENTS

Robert H. Koenig, 3651 Coats Rd., Burdett, N.Y. 14818

Filed Jun. 7, 1994, Ser. No. 255,189
Int. Cl.[6] G01C *21/00*
U.S. Cl. 340—976 **18 Claims**



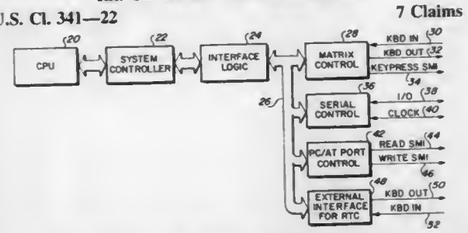
1. A method of enabling an operator to visibly verify the correct operation of a navigation instrument having a display comprising a visible indicator which deflects responsive to control signals from the navigation instrument, the method comprising causing periodic visible momentary deflections of the visible indicator of the display, the visible deflection of the visible indicator indicating correct operation, in which the navigation instrument is a radio receiver of the type which receives a navigation signal on an antenna input and causes the visible indicator of the display to reflect a navigation indication based upon the signal received, the condition of the navigation instrument when it is not receiving a navigational signal being termed its "no-signal condition", and the momentary deflections of the indicator are caused by feeding a periodic radio frequency signal into the radio receiver antenna input.

5,610,601

MULTI-PURPOSES KEYBOARD INTERFACE

Gregg D. Lahti, Chandler; Charles R. Rimpo, Mesa, and Franklyn H. Story, Chandler, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 19, 1995, Ser. No. 532,343
Int. Cl.[6] H03K *17/94;* **H03M** *11/00*
U.S. Cl. 341—22 **7 Claims**



1. A multi-purpose keyboard controller for interfacing different keyboard types with a computer including in combination:

a scanning matrix keyboard control circuit;

a serial keyboard control circuit;

a computer interface logic circuit coupled to said control circuits and programmed to selectively operate one of said control circuits to receive signals from said computer interface logic circuit and to supply signals to said computer interface logic circuit, with the non-selected one of said control circuits being rendered non-responsive and

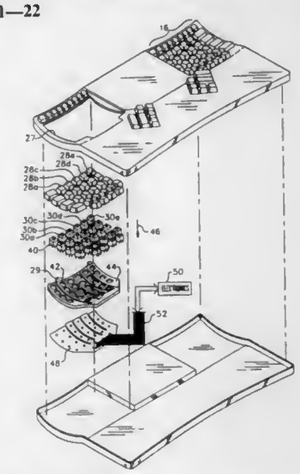
wherein said control circuits produce system management interruption (SMI) signals to said computer interface logic circuit for utilization thereby, irrespective of which control circuit is selectively operated by said logic circuit.

5,610,602

KEYBOARD AND METHOD FOR PRODUCING

William R. Hargreaves, Bellevue, Wash., assignor to Kinesis Corporation, Bothell, Wash.

Continuation of Ser. No. 931,736, Aug. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 548,512
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—22 **33 Claims**



1. A keyboard comprising:

a key-switch support having a first region defining a plurality of holes for engaging and supporting key-switches, said first region being bowl-shaped;

a plurality of key-switches disposed in said holes, each switch having electrical contacts on a bottom surface thereof, to provide a substantially bowl-shaped array of said electrical contacts; and

a circuit board coupled to said contacts, said circuit board being flexible to permit the board to be bent, in a first region of the board, along a first axis and said circuit board having a plurality of slots defining two or more fingers to permit said first region of the board to be shaped in a non-planar configuration along a second, substantially perpendicular axis, substantially in the absence of overlapping of said fingers, wherein at least said first region of the circuit board is substantially bowl-shaped and substantially conformed to the shape of said bowl-shaped array of electrical contacts.

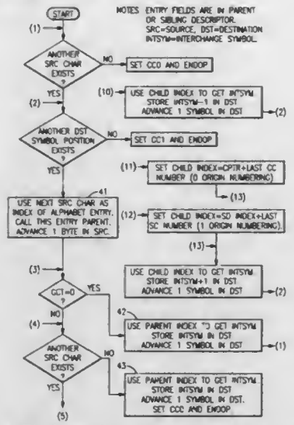
22. A method, as claimed in claim **21**, wherein said step of providing a region of said chassis with a plurality of holes comprises coupling a non-integrally formed plate, having said holes formed therein, to said chassis.

5,610,603

SORT ORDER PRESERVATION METHOD USED WITH A STATIC COMPRESSION DICTIONARY HAVING CONSECUTIVELY NUMBERED CHILDREN OF A PARENT

Kenneth E. Plambeck, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1995, Ser. No. 535,509
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **15 Claims**



1. Using a Ziv-Lempel type compression dictionary having actual child entries in a child list under a parent entry, with each actual child entry representing one or more extension characters that are appended on the right of the extension characters represented by the child entry's ancestors up to a null root entry to form a Ziv-Lempel dictionary string of characters, with the child entry also said to represent that string, a method of compressing data and preserving in the compressed data any sort (collating sequence) ordering of the uncompressed data, comprising the steps of:

placing the actual child entries in their sort (collating sequence) order in the child list, as determined by the extension characters represented by the child entries;

inserting a nonactual child entry, called an epsilon entry, in the child list between adjacent actual child entries that are not adjacent in the collating sequence, where two actual child entries are adjacent in the collating sequence if they both represent the same number of extension characters, they both represent the same extension characters except for their last extension characters, and their last extension characters are adjacent in the collating sequence;

placing an epsilon entry after the last actual child entry in the child list if all of the extension characters represented by the last actual child entry are not the same highest character in the collating sequence;

numbering all non-null entries in the dictionary (all entries except the null root entry) so that the numbers are ordered from low to high the same as the collating sequence order of the entries; and

compressing an input character string by matching it against a dictionary string composed from actual child entries until a last possible match is found and then outputting a code word by means of a method comprising the steps of:

if a match is found on a dictionary entry not having a child entry or when there is not another input character, outputting the number of the entry;

if the next input character(s) is less than (in the collating sequence) the extension character(s) represented by the first child entry of a parent entry, outputting the number of the parent entry;

if the next input character(s) is less than the extension character(s) represented by other than the first child entry of a parent entry, outputting the number of the epsilon entry that immediately precedes said child entry; or

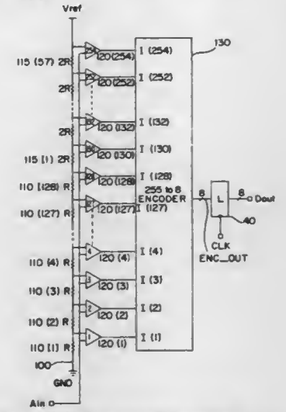
if the next input character(s) is greater than the extension character(s) represented by the last child entry of a parent entry, outputting the number of the epsilon entry that immediately follows said child entry.

5,610,604

ANALOG TO DIGITAL CONVERTER PROVIDING VARYING DIGITAL RESOLUTION

Thomas J. Leacock, Mt. Laurel, N.J., and Robert J. Topper, Hatboro, Pa., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Filed Dec. 7, 1994, Ser. No. 350,953
Int. Cl.[6] H03M *1/36*
U.S. Cl. 341—138 **9 Claims**



1. An analog to digital converter comprising:

means for generating a plurality of first reference voltages related to each other by a first linear relationship and a plurality of second reference voltages related to each other by a second linear relationship, the first linear relationship being different from the second linear relationship;

a plurality of first comparators which compare an analog signal to each one of the plurality of first reference voltages to produce a specified plurality of first comparator signals where a respective one comparator of the plurality of first comparators is provided for each one of the plurality of first reference voltages;

a plurality of second comparators for comparing the analog signal to each one of the plurality of second reference voltages to produce a specified plurality of second comparator signals where a respective one comparator of the plurality of second comparators is provided for each one of the plurality of second reference voltages; and

means for directly converting the specified plurality of first comparator signals and the specified plurality of second comparator signals to a linear digital encoded signal having respectively different quantization resolutions in different parts of its range.

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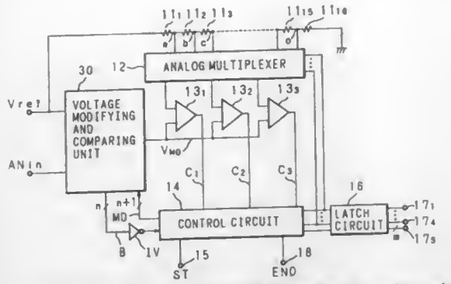
ANALOG/DIGITAL CONVERTING CIRCUIT

Eizo Yamashita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 346,169
Claims priority, application Japan, Dec. 1, 1993, 5-301710
Int. Cl.[6] H03M *1/18*
U.S. Cl. 341—139 **16 Claims**

1. An analog/digital converting circuit for converting an analog input voltage into a digital value based on comparison voltages generated by dividing a reference voltage, comprising:

a voltage modifying and comparing unit which modifies said analog input voltage when said analog input voltage exceeds



said reference voltage to generate a plurality of analog voltages having values different from that of said analog input voltage, and compares each of said analog voltages with said reference voltage to generate a voltage comparison result signal;

a control unit which is supplied with said voltage comparison result signal and outputs to said voltage modifying and comparing unit a voltage select signal indicating selection from said analog voltages based on said voltage comparison result signal, said voltage modifying and comparing unit being responsive to said voltage select signal to output a selected analog voltage; and

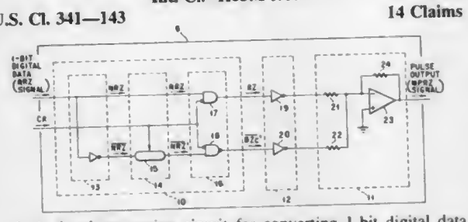
a comparator which is supplied with said selected analog voltage, and compares said selected analog voltage with at least one of said comparison voltages.

5,610,606

1-BIT D/A CONVERSION CIRCUIT

Toshitaka Fukunaga, Kawasaki, and Mitsuru Nagata, Kanagawa-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1994, Ser. No. 277,265
Claims priority, application Japan, Jul. 21, 1993, 5-179506
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **14 Claims**



1. A signal processing circuit for converting 1-bit digital data sampled at a period T to an analog data, comprising:

dividing means for receiving said 1-bit digital data, for outputting a first output to a first signal line and for outputting a second output to a second signal line, a first delay amount of said first signal line being different from a second delay amount of said second signal line;

a first inverter coupled to said second signal line;

a first gate circuit, having an AND gate coupled to said first signal line, for producing a first return-to-zero signal, when said 1-bit digital data represents a level "1", said first return-to-zero signal representing a first level V_L during a predetermined period T1, said first return-to-zero signal representing a second level V_H during a period T-T1, when said 1-bit digital data represents a level "0", said first return-to-zero signal representing said second level V_L during said period T;

second gate circuit, having a NAND gate coupled to said second signal line, for producing a second return-to-zero signal, when said 1-bit digital data represents said level "0", said second return-to-zero signal representing said second level V_L during said predetermined period T1, said second return-to-zero signal representing said first level V_H during said period T-T1, when said 1-bit digital data represents said level "1", said second return-to-zero signal representing said first level V_H during said period T; and

addition means for adding said first and second return-to-zero signals.

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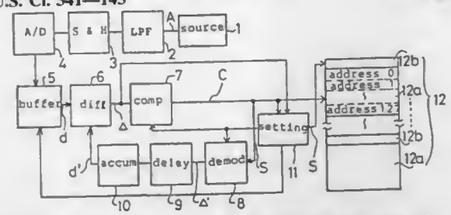
Patent Not Issued For This Number

5,610,608

METHOD OF RECORDING SIGNAL, METHOD OF REPRODUCING SIGNAL, AND METHOD OF RECORDING/REPRODUCING SIGNAL

Kunio Yamada, and Yasuyuki Fukutomi, both of Tokyo, Japan, assignors to Nippon Precision Circuits Inc., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 352,253
Claims priority, application Japan, Dec. 10, 1993, 5-310698
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **19 Claims**



1. A method of recording a signal comprising the steps of:

sampling an analog signal at a given sampling frequency to produce a sampled signal;

converting the sampled signal into digital form to create a first digital signal;

storing the first digital signal in a first storage region whenever a predetermined number of samples are produced;

successively reading the first digital signal from said storage region;

taking a difference between an amplitude signal corresponding to an amplitude of a presently read first digital signal and an amplitude signal corresponding to an amplitude of a previously read first digital signal, to produce a second digital signal;

converting the second digital signal into a third digital signal which is equal essentially to 1/K of the second digital signal;

setting a value of K for each third digital signal obtained from the first digital signals stored in said first storage region, such that the values of the third digital signal lie in a predetermined range; and

storing said third digital signals and data representative of said values of K.

5,610,609

PASSIVE DOPPLER EMITTER CLASSIFICATION AND RANGING SYSTEM UTILIZING A TIME-FREQUENCY CONSTANT

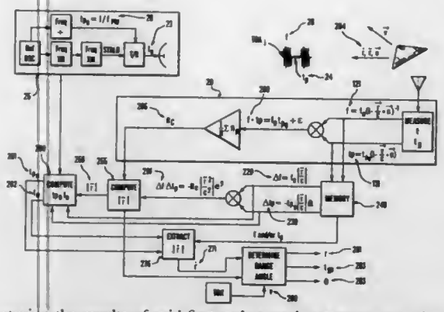
Conrad M. Rose, Dahlgren, Va., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Nov. 8, 1995, Ser. No. 555,233
Int. Cl.[6] G01S *13/72*
U.S. Cl. 342—13 **7 Claims**

1. A method for passively locating a pulse echo radar emitter using Doppler measurement techniques from a moving observer, comprising the steps of:

first, measuring the emitter's pulse carrier frequency (f),

second, measuring emitter pulse time of arrival at the observer (TOA),



storing the results of said first and second measurements of sets of multiple contiguous pulses over a predetermined time period, each set being a dwell,

deriving a fundamental time period (t_p) from said measurements in a dwell,

calculating the differences respectively in the first measurements and the fundamental time period t_p derived from the second measurements between two dwells,

on the basis of said calculated differences estimating the simultaneous frequency and time differences,

multiplying said simultaneous estimates of said differences,

estimating the simultaneous values of frequency and t_p,

multiplying the simultaneous values of frequency and t_p and averaging the results to obtain an estimate of the number of carrier cycles (N_c), which occur in a time interval (t_p) equal to the reciprocal of the emitter's pulse repetition frequency,

measuring, using the product of said calculated differences and N_c, the observer's acceleration along the path of emitter signal direction of arrival (DOA),

computing, using said measured acceleration, the value of t_p at the emitter (t_{po}) and the rest frequency at the emitter (f_o),

using values of t_{po}, f_o and said first and second measurements in the same dwell to compute the observer's velocity along the emitter DOA,

measuring, in a third measurement step, the observer speed (v) at the time said first and second and

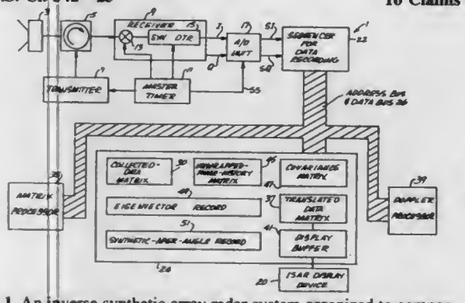
combining v and the acceleration and velocity along the emitter signal DOA to obtain emitter range, relative bearing and time-to-go.

5,610,610

INVERSE SYNTHETIC ARRAY RADAR SYSTEM AND METHOD

Ralph E. Hudson; Howard S. Nussbaum, both of Los Angeles, and Ernest Chen, San Pedro, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed May 18, 1988, Ser. No. 195,555
Int. Cl.[6] G01S *13/90*
U.S. Cl. 342—25 **16 Claims**



1. An inverse synthetic array radar system organized to compensate for non-uniformity in the magnitude of the angular velocity of a rotating target as the target rotates to generate the synthetic-aperture-angle, the system comprising:

transmitter means for transmitting toward the target a sequence of radar pulses during a data collection interval;

receiver means for producing in-phase and quadrature-phase signals based on radar return from the target;

signal converter means for converting the in-phase and quadrature-phase signals to sampled signals;

data recording means for using the sampled data signals to generate a collected-data matrix indexed in each of two dimensions on the basis of regular increments of time;

first data processing means for processing the collected-data matrix to produce a synthetic-aperture-angle record indexed on the basis of regular increments of time;

second data processing means for using the collected-data matrix and the synthetic-aperture-angle record to produce a translated data matrix indexed in a dimension on the basis of uniform increments of synthetic-aperture-angle;

display means; and

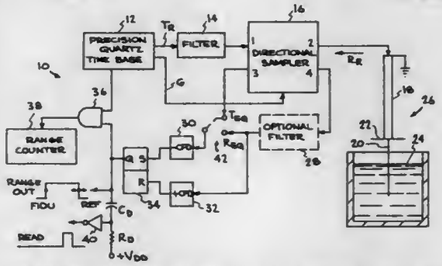
third data processing means for using the translated data matrix to control the display means to generate an image of the rotating target.

5,610,611

HIGH ACCURACY ELECTRONIC MATERIAL LEVEL SENSOR

Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 359,090, Dec. 19, 1994. This application Aug. 3, 1995, Ser. No. 510,980
Int. Cl.[6] G01S *13/00;* **G01F** *23/28*
U.S. Cl. 342—89 **12 Claims**



1. Apparatus for measuring the level of a material, comprising:

a precision time base for generating a real time transmit pulse and a gate pulse;

a directional sampler having a first port for receiving the real time transmit pulse, a second port coupled to the first port for transmitting the real time transmit pulse, a third port coupled to the first port and isolated from the second port, and a fourth port coupled to the second port, the directional sampler being gated by the gate pulse;

a dipstick assembly connected to the second port;

first and second constant fraction discriminators (CFDs) of opposite polarity, the first CFD switchingly connected to the third and fourth ports, the second CFD connected to the fourth port

a set-reset flip-flop connected to the first and second CFDs.

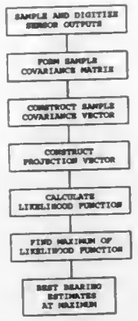
5,610,612

METHOD FOR MAXIMUM LIKELIHOOD ESTIMATIONS OF BEARINGS

John E. Piper, 157 Boca Lagoon Dr., Panama City Beach, Fla. 32408-5101

Continuation-in-part of Ser. No. 206,432, Mar. 7, 1994, Pat. No. 5,495,256. This application Aug. 21, 1995, Ser. No. 517,775
Int. Cl.[6] G01S *13/00*
U.S. Cl. 342—195 **13 Claims**

1. A method of estimating parameters from sensor outputs, said method implementing the steps of:



Bearing estimation via covariance maximum likelihood method.

(a) sampling and digitizing said sensor outputs;
(b) forming a sample covariance matrix from said sampled and digitized outputs of said sensors;
(c) averaging the diagonals of said sample covariance matrix;
(d) averaging diagonals of said sampled covariance matrix for obtaining a sample covariance vector (R_m);
(e) providing a projection vector (P_m) where

$$P_m = 2\sum_{n=1}^{q}\cos(mk_n)$$

$$-2m\sum_{n=1}^{q} b_{nn}\cos(mk_n)$$

$$-2\sum_{n_2=2}^{q}\sum_{n_1=1}^{n_2-1} b_{n_2n_1c_{n_1n_2}}\frac{\sin(p(k_{n_1}-k_{n_2}))}{1-\cos(p(k_{n_1}-k_{n_2}))}(\sin(mk_{n_1})-\sin(mk_{n_2}));$$

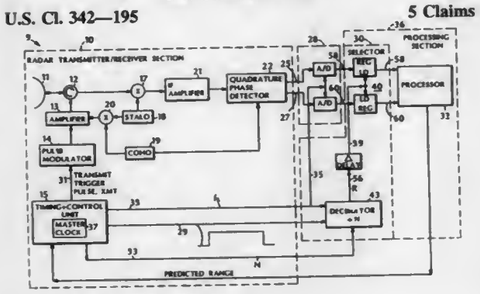
for k_n to be the parameter of the nth source;
(f) computing a likelihood function (L) by multiplying said sample covariance vector with said projection vector;
(g) maximizing said likelihood function with respect to said parameters;
(h) resulting said parameters at said maximum for providing a best estimate of parameters.

5,610,613

ANALOG TO DIGITAL CONVERSION SYSTEM

Robert W. Hazard, Tewksbury; George A. Bouchard, Arlington; Jeffrey E. Carmella, Acton, and Michael P. DeMilia, Lancaster, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 15, 1995, Ser. No. 528,571
Int. Cl.[6] G01S *7/28*
U.S. Cl. 342—195 **5 Claims**



1. A radar system comprising:

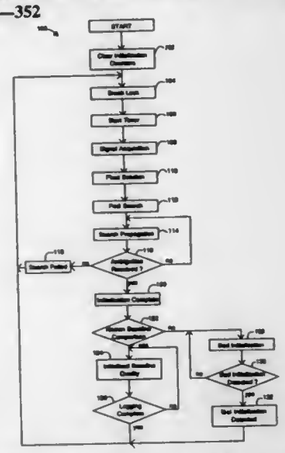
means for processing digitized samples of an analog signal at a selectable rate, R, for changing range cell resolution of the radar system comprising:
a timing generator for producing a train of sampling pulses at a predetermined sampling rate, f_s;
an analog to digital converter for producing a plurality of digitized samples of the analog signal in response to each one of the sampling pulses; and,
a processor to determine a doppler frequency of a received signal in each Nth one of the digitized samples and, a selector for passing to the processor each Nth one of the digitized samples produced by the analog to digital converter, where $N=f_s/R$.

5,610,614

REAL-TIME KINEMATIC INITIALIZATION TEST SYSTEM

Nicholas C. Talbot, Cupertino; Michael T. Allison, Santa Clara, both of Calif., and Peter Griffioen, Clayton, Australia, assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Sep. 13, 1995, Ser. No. 528,506
Int. Cl.[6] H04B *7/185;* **G01S** *5/02;* **G01C** *21/00;* **H04B** *17/00*
U.S. Cl. 342—352 **8 Claims**



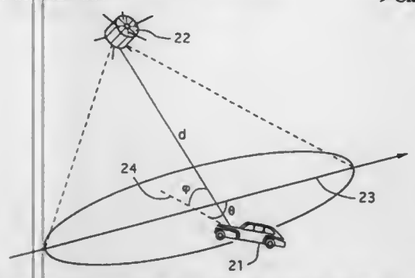
1. A real-time kinematic (RTK) system tester comprising:
an antenna switch for placement between an RTK rover receiver and an associated satellite navigation receiver antenna and having a control input to disconnect said antenna from said rover receiver;
a computer platform connected to control the antenna switch through signals applied to said control input and having a data input port for connection to said rover receiver and for gathering statistical information from said rover receiver related to RTK initialization and carrier phase ambiguity candidate selection, prevalent satellite geometry, the accuracy of ambiguity candidate selection, the ratio of second best to best solution variances of the ambiguity candidates in the list throughout a candidate propagation process, a baseline vector computed, and the root-mean-square (RMS) error of such solutions at the time that an initialization completed; and
computer program means mounted on the computer platform for processing and analyzing said statistical information from said rover receiver and for providing a summary of said RTK initialization conducted by said rover receiver.

5,610,615

METHOD AND DEVICE FOR MOBILE STATION POSITIONING BY MEANS OF A SATELLITE, AND ASSOCIATED TRANSMISSION METHOD

Alain Chiodini, Boulogne, France, assignor to Alcatel Mobile Communication France, Paris, France

Filed Jun. 20, 1995, Ser. No. 492,886
Claims priority, application France, Jun. 21, 1994, 94 07591
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 **9 Claims**



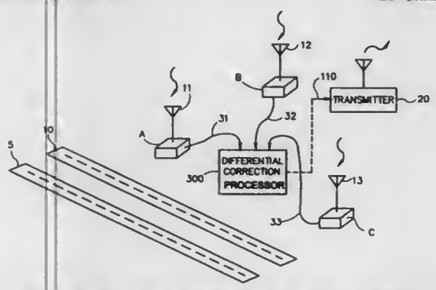
1. Positioning method for a mobile station in the radio coverage area of a satellite, comprising the following steps:
determining the instantaneous distance between said satellite and said mobile station;
calculating the instantaneous elevation angle ϕ of said satellite from said instantaneous distance, the altitude of said satellite and the radius of the Earth;
determining the Doppler shift δ;
calculating the angle θ between the projections onto the surface of the Earth of the track of said satellite and a straight line segment passing through said satellite and said mobile station from said Doppler shift δ and said instantaneous elevation angle ϕ; and
determining the location of said mobile station from said instantaneous distance, said instantaneous elevation angle ϕ and said angle θ.

5,610,616

DIFFERENTIAL GPS GROUND STATION SYSTEM

Lawrence C. Vallot, Shoreview, and Mats A. Brenner, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 294,284, Aug. 23, 1994, abandoned. This application May 6, 1996, Ser. No. 643,495
Int. Cl.[6] H04B *7/185;* **G01S** *5/02;* **G01C** *21/00;* **G06F** *7/70*
U.S. Cl. 342—357 **10 Claims**



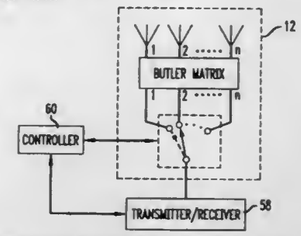
1. A DGPS for use with a plurality of satellites each transmitting information including satellite position (R) and the time of transmission;
a plurality of receivers whose positions (G) are known, the receivers operable to produce pseudo range values (P) indicative of the distance between receiver and satellite based on the transit time of the signal from satellite to the receiver;
range calculation means operable to produce calculated range values (Racal) from the difference between G and R;
differential correction means receiving the Racal and P values to produce differential correction values (C);
averaging means connected to receive the differential correction values and to produce average differential correction values (Cave); and
integrity monitoring means connected to receive only C and Cave and to produce a fault signal if the difference therebetween exceeds a threshold value.

5,610,617

DIRECTIVE BEAM SELECTIVITY FOR HIGH SPEED WIRELESS COMMUNICATION NETWORKS

Michael J. Gans, Monmouth Beach, and Yu S. Yeh, Freehold, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 18, 1995, Ser. No. 503,758
Int. Cl.[6] H01Q *3/22*
U.S. Cl. 342—373 **26 Claims**



18. A multilayered antenna feed network for forming a steerable antenna beam, comprising:
a first layer having a first array of Butler matrices, each having a plurality of first input ports for selectively receiving or providing an RF signal, said first array of Butler matrixes further having a plurality of first output ports and being operable to arrange the phase of said RF signal along a first axis to thereby steer said antenna beam along said first axis;
a second layer facing said first layer, said second layer having a second array of Butler matrices, each having a plurality of second input ports and a plurality of second output ports, each of said second input ports being coupled to at least one of said first output ports such that said second array of Butler matrices is configured to arrange the phase of said RF signal along a second axis orthogonal to said first axis to thereby steer said antenna beam along said second axis, said second output ports being connectable to a plurality of antenna elements arranged in at least a two dimensional array to form said steerable antenna beam.

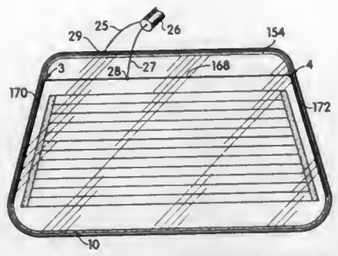
5,610,618

MOTOR VEHICLE ANTENNA SYSTEMS

Andrew Adrian, Ypsilanti; Bruce R. Jones, Romulus, and Robert A. Schuessler, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 20, 1994, Ser. No. 359,485
Int. Cl.[6] H01Q *1/32*
U.S. Cl. 343—713 **15 Claims**

1. A motor vehicle antenna system for receiving electromagnetically radiated signals in the FM radio broadcast frequency band, comprising:
a conformal, substantially rectangular, truncated slot antenna having a horizontal length L equal to one-half a wavelength in the FM broadcast frequency band, and a vertical width dimension substantially less than L, defined in part by a substantially horizontal portion of a conductive periphery of a win-



dow opening of the motor vehicle, and in part by a conductive trace integral with a glazing panel mounted in the window opening, the conductive trace extending said length L from a first side point to an opposite side point substantially parallel the horizontal portion of the conductive periphery, and comprising end means for effectively connecting the first side point and the opposite side point to the conductive periphery; and

electrical lead means for carrying signals from the slot antenna to a radio receiver, having a first conductor connected to the conductive periphery and a second conductor coupled to the slot antenna.

5,610,619

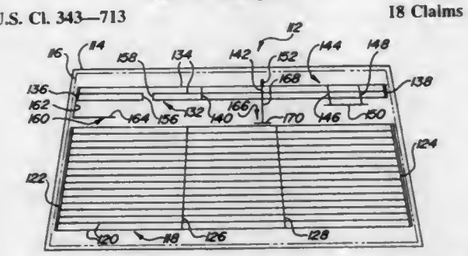
BACKLITE ANTENNA FOR AM/FM AUTOMOBILE RADIO HAVING BROADBAND FM RECEPTION

Imtiaz Zafar, Carmel, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 20, 1995, Ser. No. 560,157

Int. Cl.[6] H01Q *1/32*

U.S. Cl. 343—713 **18 Claims**



1. An antenna system for a vehicle radio of a vehicle, said antenna system comprising:

an antenna grid embedded in a vehicle window of the vehicle, said antenna grid including a plurality of antenna elements that extend substantially across an entire width of the window, said antenna grid further including first and second end bus bars connecting the antenna elements at opposite ends, vertical center elements connecting the antenna elements at a central location, and a tuning grid, said tuning grid including two vertical tuning elements connected to the antenna elements and a tuning stub connected to the vertical tuning elements, wherein the antenna elements are separate elements than heater elements of a heater grid embedded in the vehicle window, said antenna grid further including an L-shaped element connected to the first bus bar and extending between the antenna grid and the heater grid, and a T-shaped element connected to one of the vertical center elements and extending between the antenna grid and the heater grid; and

a matching circuit, said matching circuit being electrically connected to the antenna grid and being responsive to signals received by the antenna elements.

5,610,620

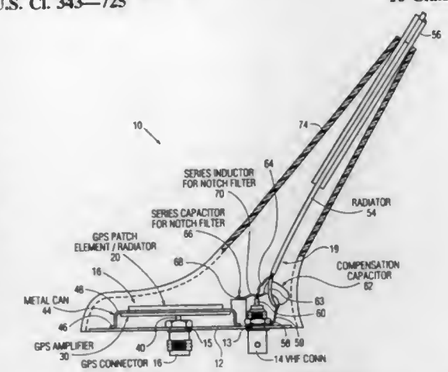
COMBINATION ANTENNA

John Stites; David J. Holloway, and Scott A. Caslow, all of Valencia, Calif., assignors to Comant Industries, Inc., Santa Fe Springs, Calif.

Filed May 19, 1995, Ser. No. 445,250

Int. Cl.[6] H01Q *1/28;5/01*

U.S. Cl. 343—725 **10 Claims**



1. A combination antenna for aircraft comprising,

a substantially flat base plate having a forward portion and a rear portion,

a first antenna assembly mounted above said rear portion of the base plate for transmitting and receiving first signals within a first operational bandwidth having a first center frequency,

a patch antenna assembly mounted above said forward portion of the base plate for receiving second signals within a second operational bandwidth having a second center frequency,

said first operational bandwidth including frequency having a harmonic component frequency that falls within said second operation bandwidth,

said first antenna assembly comprising suppressing means for suppressing, from transmission by said first antenna assembly, signals having a frequency at said harmonic component frequency,

said first antenna assembly comprising a first antenna and said patch antenna assembly comprising a patch antenna, and

said patch antenna being longitudinally spaced from and completely forward of said first antenna.

5,610,621

PANEL DISPLAY CONTROL DEVICE

Shuhei Itoh, and Mitsuhiro Kurata, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 784,776, Oct. 30, 1991, Pat. No. 5,309,168. This application Dec. 28, 1993, Ser. No. 175,195

Claims priority, application Japan, Oct. 31, 1990, 2-295610; Mar. 28, 1991, 3-89845

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—3 **20 Claims**

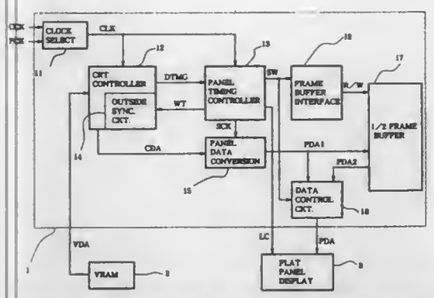
1. A panel display control device for controlling a panel display and for displaying data, the device comprising:

a clock for providing a panel display clock signal;

a CRT controller, responsive to the panel display clock signal and having a register for storing CRT timing data, for providing a display timing signal and display data for the panel display;

a display memory coupled to the CRT controller for storing the display data; and

a panel display controller, separately provided from the CRT controller and responsive to the panel display clock signal, for providing a timing signal to the CRT controller in response to the display timing signal provided by the CRT controller, wherein the timing signal from the panel display controller



causes the CRT controller to pause and maintain a current state of the CRT display controller without changing the stored CRT timing data to thereby delay providing the display data, such that the display data is synchronized with panel display timing.

5,610,622

DISPLAY CONTROL DEVICE

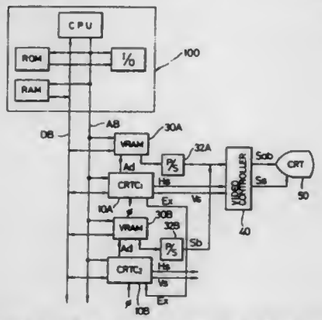
Hiroshi Takeda, Koganei; Shigeaki Yoshida, Sayama, and Koyo Katsura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 749,331, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 454,272, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 144,279, Jan. 15, 1988, Pat. No. 4,904,990, which is a division of Ser. No. 686,594, Dec. 26, 1984, Pat. No. 4,720,708. This application Sep. 20, 1994, Ser. No. 309,413

Claims priority, application Japan, Dec. 26, 1983, 58-243802

Int. Cl.[6] G09G *1/08*

U.S. Cl. 345—13 **84 Claims**



1. A system including memory means for storing image data, a central processing unit and a display system coupled to said memory means and to said central processing unit, wherein said display system displays the image data on a display device as an image display formed of horizontal scanning lines with a preselected timing, said display system comprising:

at least first and second CRT controllers each of which is formed of a semiconductor integrated circuit and which access said memory means to read out the image data from said memory means;

wherein said first CRT controller includes:

(a) a first external terminal, and

(b) timing signal generating means, coupled to said first external terminal, for generating a synchronizing signal;

wherein said second CRT controller includes:

(c) a second external terminal coupled to said first external terminal by coupling means,

(d) counter means, incremented at a rate based on a predetermined timing, for generating a count which is repeated in accordance with a predetermined timing, said counter means being settable to a predetermined value based on said synchronizing signal applied to said first external terminal, and

(e) means, coupled to said second external terminal and to said counter means, for setting the count of said counter means with said predetermined value in accordance with said synchronizing signal from said first external terminal.

5,610,623

METHOD FOR DRIVING GAS DISCHARGE DISPLAY PANEL

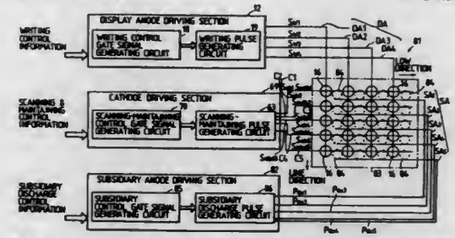
Yoshimichi Takano; Tetsuo Sakai, both of Tokyo; Hiroshi Murakami, Yokohama; Kazuo Takahashi, Osaka; Mutsumi Mimasu, Hikone; Utaro Miyagawa, Osaka; Makoto Takei, Osaka, and Koichi Wani, Osaka, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, and Matsushita Electronics Corporation, Osaka, both of Japan

Division of Ser. No. 54,490, Apr. 30, 1993, Pat. No. 5,572,230. This application May 9, 1995, Ser. No. 437,747

Claims priority, application Japan, Jun. 26, 1992, 4-169283

Int. Cl.[6] G09G *3/28*

U.S. Cl. 345—60 **16 Claims**



9. A method for driving a gas discharge display panel comprising a plurality of display electrode lines arranged side by side, a plurality of scanning electrode lines which are arranged side by side and cross the display electrode lines, a plurality of display cells arranged at intersection spaces between the display electrode lines and the scanning electrode lines, a plurality of subsidiary electrode lines which are arranged side by side between the scanning electrode lines, and a plurality of subsidiary cells which are arranged between the subsidiary electrode lines and the scanning electrode lines and are respectively positioned between the display cells, comprising the steps of:

applying a scanning pulse signal on a specific scanning electrode line selected from the scanning electrode lines according to a piece of scanning information;

applying a writing pulse signal on a specific display electrode lines selected from the display electrode lines in synchronism with the scanning pulse signal according to a piece of writing information to produce writing gas discharge in cooperation with the scanning pulse signal in a specific display cell arranged at an intersection space between the specific display electrode line and the specific scanning electrode line;

applying a subsidiary pulse signal on a specific subsidiary electrode line selected from the subsidiary electrode lines in synchronism with the scanning pulse signal according to a piece of subsidiary discharge information to produce subsidiary gas discharge in cooperation with the scanning pulse signal in a specific subsidiary cell arranged on the specific scanning electrode line; and

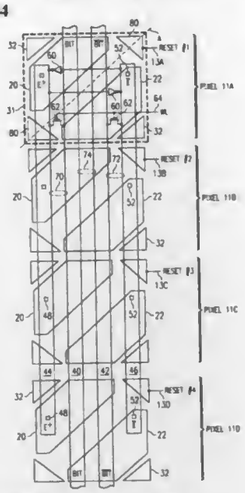
applying a maintaining pulse signal subsequent to the scanning pulse signal on the specific scanning electrode line during only a maintaining period according to a piece of maintaining information to produce maintaining gas discharge subsequent to the writing gas discharge in the specific display cell, the maintaining gas discharge being intermittently produced in synchronism with pulses of the maintaining pulse signal, and each of the pulses of the maintaining pulse signal being not synchronized with the subsidiary pulse signal.

5,610,624

SPATIAL LIGHT MODULATOR WITH REDUCED POSSIBILITY OF AN ON STATE DEFECT

Rohit L. Bhuva, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1994, Ser. No. 346,812
Int. Cl.[6] G09G 3/34
U.S. Cl. 345—84 **16 Claims**



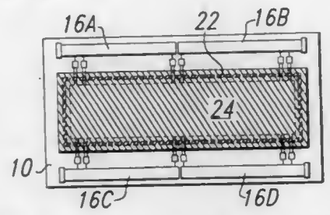
1. A spatial light modulator, comprising:
an array of individual display cells;
a memory cell associated with each said display cell; a plurality of address electrode pairs, one said pair of address electrodes functionally coupled to each said display cell; a pair of data lines extending adjacent one another and coupled to said memory cell; and
a pair of electrode lines separated from one another by said data lines, said electrode lines coupled to said memory cell and coupled to at least one said pair of address electrodes.

5,610,625

MONOLITHIC SPATIAL LIGHT MODULATOR AND MEMORY PACKAGE

Jeffrey B. Sampsell, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 886,077, May 2, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 481,789
Int. Cl.[6] G09G 3/34
U.S. Cl. 345—84 **14 Claims**



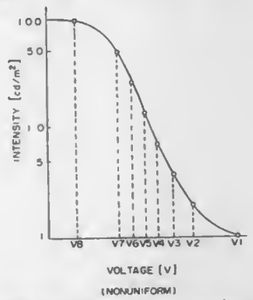
1. A digital micromirror device package comprising:
a. a superstrate;
b. at least one data bus on said superstrate;
c. at least one connector on said superstrate electrically connected to said bus;
d. at least one buffer memory on said superstrate connected to said bus operable to receive data at a first rate from said bus, said buffer memory selected from the group consisting of first-in-first-out memories and video random access memories;
e. a digital micromirror device on said superstrate with addressing circuitry electrically connected to receive data at a second rate from said buffer memories;
f. a ring on said superstrate around said digital micromirror device; and
g. a window on said ring to allow light to pass through from said digital micromirror device, said window spaced apart from said digital micromirror device by said ring, wherein said ring completely surrounds said digital micromirror device and protects said digital micromirror device from contaminants.

5,610,626

MULTIPLE-TONE DISPLAY SYSTEM

Naruhiko Kasai, Fujisawa; Hiroyuki Mano, Chigasaki; Shigeyuki Nishitani, Ebina; Isao Takita, Fujisawa, and Kohji Takahashi, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 18,494, Feb. 17, 1993, Pat. No. 5,495,287. This application Jun. 7, 1995, Ser. No. 486,291
Claims priority, application Japan, Feb. 26, 1992, 4-039203
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—89 **9 Claims**



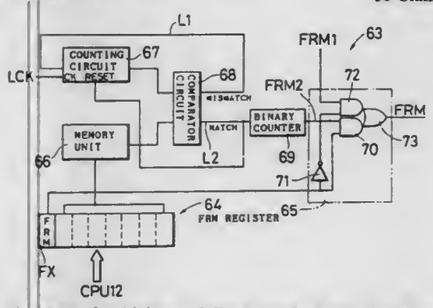
1. In a multiple-tone display system having a liquid crystal display panel with a large number of pixels arrayed thereon in a dot matrix, a method of determining drive voltage levels for driving data lines of the liquid crystal display panel to present multiple-tone representations on the display panel, said method comprising the steps of:
a) driving the data lines of the display panel with a drive voltage;
b) setting the drive voltage to a first level presenting a black representation on the display panel;
c) measuring light on the display panel to obtain for the first drive voltage level a first set of coordinates Y, u', and v' expressive respectively of display intensity and of first and second colors;
d) setting the drive voltage to a second level presenting a white representation on the display panel;
e) measuring light on the display panel to obtain a second set of said coordinates Y, u', and v' for the second drive voltage level;
f) incrementally changing the drive voltage level to values between said first drive voltage level and said second drive voltage level;
g) measuring light on the display panel to obtain additional sets of said coordinates for said values;
h) converting the obtained sets of coordinates into corresponding sets of coordinates L*, u*, and v* as defined in the CIELUV uniform color space;
i) computing distances between pairs of adjacent points defined by said coordinates L*, u*, and v*, each of the distances being a color difference as seen by a human eye;
j) summing the computed, distances to obtain the distance between two end points for said first and second drive voltage levels along a locus of the points defined by said sets of coordinates L*, u*, and v*;
k) dividing the obtained distance by (P−1), where P is the number of tones available on said multiple-tone display system; and
l) determining (P−2) drive voltage levels, other than said first and second drive voltage levels, such that every pair of adjacent points in said CIEjUV uniform color space among points corresponding to said (P−2) drive voltatge levels has a color difference substantially equal to a value obtained in step k).

5,610,627

CLOCKING METHOD AND APPARATUS FOR DISPLAY DEVICE WITH CALCULATION OPERATION

Yoshimitsu Inamori, Nara, and Koichi Oda, Sakai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 742,898, Aug. 8, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,319
Claims priority, application Japan, Aug. 10, 1990, 2-213161; Aug. 10, 1990, 2-213164; Aug. 10, 1990, 2-213166; Aug. 10, 1990, 2-213168; Aug. 10, 1990, 2-213170
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—99 **10 Claims**



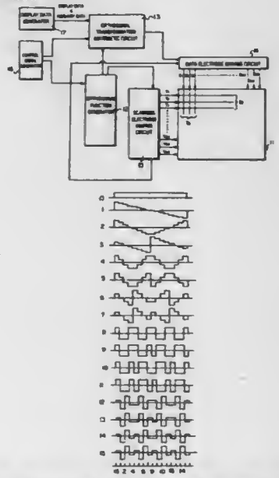
1. Apparatus for driving an LCD electrode matrix, the driving apparatus comprising:
a controller which outputs a display signal for application to the LCD matrix and which outputs an output inversion signal to switch periodically polarity of the display signal, wherein the controller programmably selects between a nominal duration inversion signal and a programmable duration inversion signal as the output inversion signal, the nominal duration inversion signal and the programmable duration inversion signal being of mutually different frequencies, the controller comprising a plurality of settable bits, with one settable bit serving as a signal select bit for programmable selection between the nominal duration inversion signal and the programmable duration inversion signal and others of the settable bits being used to store a value indicative of a cycle of the programmable duration inversion signal;
a cycle determination circuit for using clock pulses input thereto and the value indicative of the programmable duration inversion signal to generate the programmable duration inversion signal; and
a signal selection circuit responsive to the signal select bit for selecting between the nominal duration inversion signal and the programmable duration inversion signal;
wherein the signal selection circuit comprises:
an inverter having an input terminal connected to receive the signal select bit;
a first AND gate, the first AND gate having a first input terminal and a second input terminal, the first input terminal of the first AND gate being connected to receive the signal select bit, the second input terminal of the first AND gate being connected to receive the programmable duration inversion signal;
a second AND gate, the second AND gate having a first input terminal and a second input terminal, the first input terminal of the second AND gate being connected to receive the nominal duration inversion signal, the second input terminal of the second AND gate being connected to an output terminal of the inverter; and
an OR gate, the OR gate having a first input terminal and a second input terminal, the first input terminal of the OR gate being connected to an output terminal of the first AND gate, the second input terminal of the OR gate being connected to an output terminal of the second AND gate, the output inversion signal being outputted at an output terminal of the OR gate.

5,610,628

DRIVING DEVICE FOR A DISPLAY PANEL AND A DRIVING METHOD OF THE SAME

Kunihiko Yamamoto, Kashiba; Kiyohisa Matsui, Yamatokoriyama; Yutaka Ishii, Nara; Norio Yasunishi, Yamatokoriyama; Toshihiro Nakamura, Tenri; Hajime Washio, Hamamatsu, and Koki Taniguchi, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 132,651, Oct. 5, 1993. This application May 22, 1995, Ser. No. 447,246
Claims priority, application Japan, Oct. 7, 1992, 4-268982; Oct. 30, 1992, 4-293529
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—100 **11 Claims**



1. A driving device for driving a matrix type display panel having a first substrate, a second substrate opposed to the first substrate, data electrodes disposed on the first substrate substantially in parallel with a first direction, scanning electrodes disposed substantially in parallel with a second direction on a surface of the second substrate facing to the first substrate, and display dots each provided on a crossing of each of the data electrodes and each of the scanning electrodes, the first direction being vertical to the second direction, numbers of the data electrodes and the scanning electrodes being M and N, respectively:
the driving device comprising:
an orthogonal function generator for generating a series of orthogonal signals indicating L orthogonal function series, wherein L=2ʳ, r being a natural number;
a display data generator for generating N×M display data and N'×M auxiliary data, wherein N'=L−N;
an orthogonal transformation arithmetic circuit for receiving the N×M display data, the N'×M auxiliary data and the L orthogonal signals to generate L×M data signals;

a scanning electrode driving circuit for receiving the orthogonal signals to apply scanning signals corresponding to the orthogonal signals to the scanning electrodes; and

a data electrode driving circuit for receiving the data signals to apply data voltage signals corresponding to the data signals to the data electrodes;

wherein one frame is divided into L unit terms when L≧N, and N' auxiliary scanning electrodes are assumed in each unit term.

5,610,629

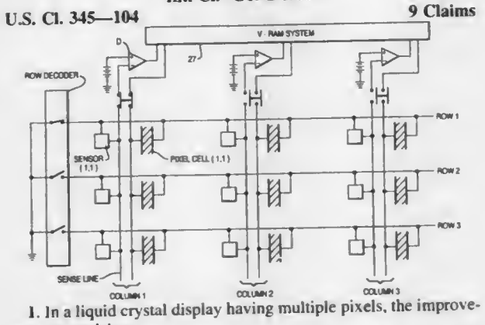
PEN INPUT TO LIQUID CRYSTAL DISPLAY

Peter F. Baur, Augsburg, Germany, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 38,367, Mar. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 805,450, Dec. 6, 1991, Pat. No. 5,243,452. This application Jul. 14, 1994, Ser. No. 275,465

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—104 **9 Claims**



1. In a liquid crystal display having multiple pixels, the improvement comprising:

a plurality of sensor devices, each of said sensor devices being physically positioned adjacent a corresponding one of the pixels and each of said sensor devices being adapted for producing a detectable signal in response to input excitation from a hand-held stylus;

a first plurality of sense lines connected to respective ones of said sensor devices for carrying signals produced by said sensor devices;

a second plurality of pixel energization lines which are distinct from said first plurality of sense lines, said energization lines being connected to respective ones of the pixels; and

a third plurality of excitation lines connected to both said sensor devices and the pixels whereby said sensor devices are independently operable from the pixels.

5,610,630

GRAPHIC DISPLAY CONTROL SYSTEM

Hiroshi Nakamura, and Katsuhiko Nishikawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 62,531, May 18, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,156

Claims priority, application Japan, Nov. 28, 1991, 3-315007; Oct. 8, 1992, 4-269006; Apr. 1, 1993, 5-074914

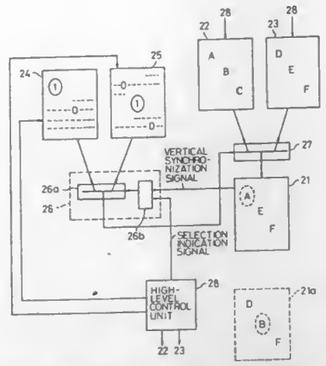
Int. Cl.[6] G09G *5/14*

U.S. Cl. 345—119 **2 Claims**

1. A graphic display control system which performs multi-window display, comprising:

image display means for providing a display screen composed of a plurality of pixels or character sections;

at least two image storage means for storing image information, each of said at least two image storage means having a storage capacity for the display screen of said image display means;



two image-selection-information storage means for storing image-selection information the image-selection information in each image-selection-information storage means selecting one of said at least two image storage means at every pixel or every character section of a portion of the display screen of said image display means;

selection information output means for receiving a selection indication signal, for selecting a first one of said two image-selection-information storage means according to the selection indication signal, and for outputting the image-selection information stored in the first one of said image-selection-information storage means;

control means for writing new image-selection information to a second one of said image-selection-information storage means, and for outputting the selection indication signal to said selection information output means to alternate selection between said two image-selection-information storage means when writing of the new image-selection information is completed; and

image selection output means for selecting one of said at least two image storage means at every pixel or every character section based on the image-selection information outputted by said selection information output means, and for outputting the image information stored in the one of said at least two image storage means to said image display means.

5,610,631

RECONFIGURABLE JOYSTICK CONTROLLER RECALIBRATION

Frank M. Bouton, and Rodney W. Kimmell, both of Beaverton, Oreg., assignors to Thrustmaster, Inc., Hillsboro, Oreg.

Division of Ser. No. 177,625, Jan. 5, 1994, Pat. No. 5,551,701, which is a continuation-in-part of Ser. No. 78,763, Jun. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 2,828, Jan. 7, 1993, Pat. No. 5,396,267, which is a continuation-in-part of Ser. No. 932,501, Aug. 19, 1992, Pat. No. 5,245,300, which is a continuation-in-part of Ser. No. 911,765, Jul. 9, 1992, abandoned. This application Jun. 12, 1996, Ser. No. 662,844

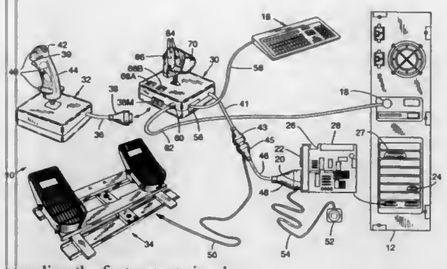
Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—161 **12 Claims**

1. A method of calibrating a controller in a video game/simulator on a personal computer having a calibration mode and a functional mode, the controller including a position-detecting input device and a multiposition switch having a calibration position and at least one functional control position, the method comprising:

setting the controller in the calibration mode;

positioning the position-detecting input device into a first position wherein the position-detecting input device generates a first output signal corresponding to the first position;



sampling the first output signal;

assigning one or more keycodes to the first sampled signal;

positioning the position-detecting input device into a second position wherein the position-detecting input device generates a second output signal corresponding to the second position;

sampling the second output signal;

assigning one or more keycodes to the second sampled signal; and

switching the controller switch to the functional control position to place the controller in a functional mode responsive to the functional control position;

the keycodes assigned to the first sampled signal being transmitted to the personal computer during the functional mode when the position-detecting input device is positioned in the first position, and the keycodes assigned to the second sampled signal being transmitted to the personal computer during the functional mode when the position-detecting input device is positioned in the second position.

5,610,632

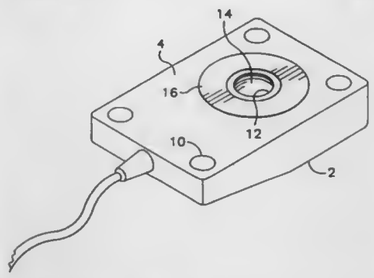
DEVICE FOR SECURING A MOUSE BALL

Robert C. Perry, 5755 SW. Willow La., Lake Oswego, Oreg. 97035-5340

Filed Oct. 20, 1995, Ser. No. 546,227

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **19 Claims**



1. A computer mouse comprising:

a housing having a bottom wall that defines a circular opening,

a retainer plate fitted in the opening and formed with a circular hole concentric with said opening, the retainer plate being attached to the bottom wall of the housing,

a mouse ball in the housing and projecting through the circular hole, the mouse ball being of greater diameter than the circular hole, whereby the mouse ball is held captive in the housing by the retainer plate, and

a seal that defines a circular hole that is concentric with the hole in the retainer plate, the seal being annular and having an inner diameter greater than the diameter of the hole in the retainer plate and less than the diameter of the opening, an outer diameter that is greater than the diameter of the opening, and wherein the seal adheres to both the bottom wall of the housing and the retainer plate, whereby removal of the retainer plate from the opening is resisted.

5,610,633

AGENT FOR MAGNETOGRAPHIC PRINTERS AND USE OF SUCH AN AGENT

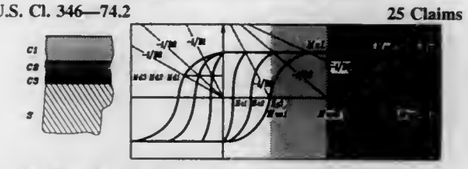
Jean-Jacques Eltgen, Danjoutin, France, assignor to Nipson, Belfort, France

Filed Jul. 20, 1994, Ser. No. 277,743

Claims priority, application France, Jul. 21, 1993, 93 08969

Int. Cl.[6] B41J *2/415;2/385;* **G11B** *9/00*

U.S. Cl. 346—74.2 **25 Claims**



1. An agent for magnetographic printers, comprising:

a plurality (k) of elementary magnetic layers disposed on a soft magnetic substrate, said magnetic layers having relatively hard hysteresis cycles with a defined writing threshold and saturation magnetization, wherein at least one of a coercivity and a thickness of said layers varies as a function of a depth of the layer on said soft magnetic substrate.

5,610,634

RECORDING APPARATUS

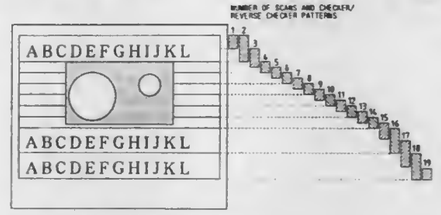
Takayuki Murata, Kawasaki; Hiroshi Fukui, Yokosuka; Shinichi Omo, Yokohama, and Akira Kuronuma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,846

Claims priority, application Japan, Dec. 17, 1992, 4-337397

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—5 **9 Claims**



1. A recording apparatus comprising:

receive means for receiving print data;

store means for storing data received by said receive means;

a recording head for recording an image on a recording medium in accordance with data stored in said store means, said recording head having a plurality of recording elements each for ejecting ink, said recording elements being arranged on said recording head in a predetermined direction;

scanning means for performing a record scan by moving said recording head in a main scan direction different from the predetermined direction;

moving means for relatively moving said recording head and the recording medium in a sub-scan direction different from the main scan direction, after completion of the record scan by said scanning means, the record scan by said scanning means and the relative movement between said recording head and the recording medium by said moving means being alternately repeated, to thereby record an image on the recording medium;

timer means for counting a predetermined time; and

control means for causing said recording head to record a predetermined amount of data, corresponding to an area recorded by one record scan using said plurality of recording elements, when the predetermined amount of data is stored in

said store means, said control means causing said recording head to record data of a smaller amount than the predetermined amount stored in said store means when said timer means counts the predetermined time even before the predetermined amount of data is stored in said store means;

wherein a sub-scan directional width of an area where the data of a smaller amount is recorded is smaller than a sub-scan directional width of an area where the data of the predetermined amount is recorded, and wherein a distance of the relative movement between said recording head and the recording medium by said moving means after performing the record scan of the data of the smaller amount is shorter than that after performing the record scan of the data of the predetermined amount.

5,610,635

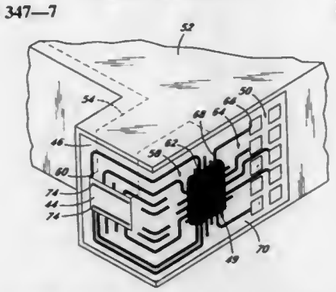
PRINTER INK CARTRIDGE WITH MEMORY STORAGE CAPACITY

Richard A. Murray, and Dan J. Dull, both of San Diego, Calif., assignors to Encad, Inc., San Diego, Calif.

Filed Aug. 9, 1994, Ser. No. 287,907

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—7 **29 Claims**



24. A printer having a platen, a support structure, and print carriage, wherein said support structure supports said print carriage above the platen and said print carriage comprising at least one printer cartridge holders, said printer further comprising:

a printer cartridge mounted in said at least one printer cartridge holder, said printer cartridge including (i) a cartridge body containing ink, (ii) a plurality of ink ejection orifices and (iii) a jet plate comprising a plurality of heating elements, wherein each of said plurality of heating element is associated with one of said ink ejection orifices, said printer cartridge further comprising:

(a) a logic circuit and a plurality of driver circuits, wherein a portion of said logic circuit is connected to each of said plurality of driver circuits for controlling the energization of said driver circuits and each of said plurality of driver circuits is connected to one of said heating elements to energize said heating element for applying a drop of ink, wherein said logic circuit is electrically connected to receive a plurality of bits comprising a word from print electronics external to said cartridge, and wherein said logic circuit actuates a predetermined set of said plurality of driver circuits in response to said word;

(b) a plurality of electrical conductors connecting said jet plate to said plurality of driver circuits;

(c) a memory storage element electrically connected to said logic circuit; and,

(d) a counter electrically connected to said logic circuit, said counter being incremented a predetermined amount by said logic circuit in response to said word, wherein an output of said counter is periodically stored in said memory.

5,610,636

GAP ADJUSTING METHOD AND INK JET RECORDING APPARATUS HAVING GAP ADJUSTING MECHANISM

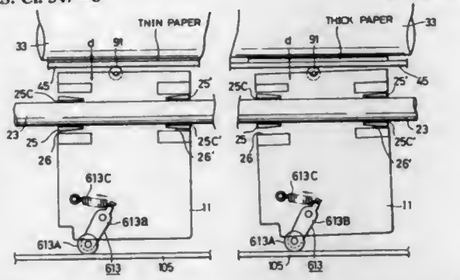
Tadashi Hanabusa; Masanori Kaneko, both of Kawasaki, and Koh Hasegawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 634,767, Dec. 27, 1990, abandoned. This application Apr. 28, 1995, Ser. No. 430,305

Claims priority, application Japan, Dec. 29, 1989, 1-344907; Dec. 29, 1989, 1-344908; Dec. 29, 1989, 1-344909

Int. Cl.[6] B41J *25/308;11/20*

U.S. Cl. 347—8 **20 Claims**



17. A gap adjusting method for adjusting a gap between a recording face of a recording medium and a recording head mounted on a carriage in accordance with a thickness of the recording medium transported to a platen of a recording apparatus, said method comprising the steps of:

providing a recording medium pressure member which presses the recording medium to the platen and varies a position thereof in a direction from and toward the platen in accordance with a change in thickness of the recording medium;

supporting the carriage on a guide shaft extending along the platen through two supporting portions; and

varying the gap between the recording head and the recording face of the recording medium by pivoting the carriage, the carriage pivoting in a plane including the two supporting portions about one of the two supporting portions as a pivot portion.

5,610,637

INK JET RECORDING METHOD

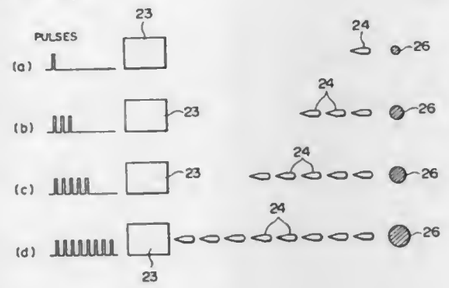
Takuro Sekiya, Yokohama, and Kyuhachiro Iwasaki, Fujisawa, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 127,951

Claims priority, application Japan, Sep. 29, 1992, 4-259521; Feb. 17, 1993, 5-028019; May 7, 1993, 5-106706

Int. Cl.[6] B41J *2/05;2/205*

U.S. Cl. 347—10 **6 Claims**



1. An ink jet recording method for jetting ink droplets from an ink jet recording head to a recording medium and forming a dot image on said recording medium, said ink jet recording head having an ink chamber for storing ink, an ink jetting orifice, an ink path connecting said ink chamber and said ink jetting orifice and a heater element provided in said ink path, said ink jet recording method comprising the steps of:

(a) inputting a set of driving pulses to said heater element so that said heater element is repeatedly activated by the driving pulses, a number of pulses in the set depending on image information supplied from an external unit;

(b) repeatedly generating a bubble in the ink in said ink path in accordance with repeated activation of said heater element; and

(c) separately jetting ink droplets from said ink jetting orifice by repeatedly generating the bubble in the ink, a number of the ink droplets being equal to a number of the driving pulses input as a set to said heater element in step (a), the ink droplets jetted from said ink jetting orifice forming a single dot on said recording medium,

wherein a time interval at which the driving pulses are input to said heater element is equal to or greater than 4T, T being a time period from a time at which the inputting of the pulses to said heater element starts to a time at which the bubble reaches a maximum size, and each one of said ink droplets is a slender pillar so that a length of each one of said ink droplets is at least three times as great as a diameter thereof.

5,610,638

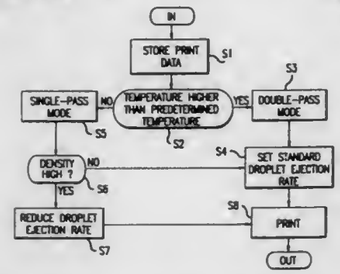
TEMPERATURE SENSITIVE PRINT MODE SELECTION

Thomas P. Courtney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 367,614

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—14 **40 Claims**



1. A method of controlling printing of an image based on stored data of the image by an ink jet printer having a printhead, comprising the steps of:

sensing an internal temperature of the ink jet printer;

determining density of the stored image being printed; and

selecting a printing mode from one of a single pass 100% coverage printing mode and a double pass checkerboard printing mode based on the sensed temperature and the determined density.

5,610,639

IMAGE FORMING APPARATUS WITH A CORRECTION RECORDING CONDITION FEATURE AND RELATED METHOD

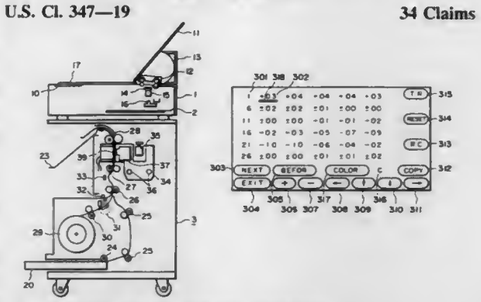
Yoshihiro Takada, Kawasaki; Nobuyuki Watanabe; Kiyohisa Sugishima, both of Yokohama, and Keiju Kuboki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 908,786, Jul. 6, 1992, which is a continuation of Ser. No. 480,041, Feb. 14, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 209,374

Claims priority, application Japan, Feb. 14, 1989, 1-032745; Feb. 14, 1989, 1-032746; Feb. 14, 1989, 1-035351

Int. Cl.[6] B41J *2/21*

U.S. Cl. 347—19 **34 Claims**



1. An image forming apparatus comprising:

(a) an image forming head having a plurality of recording elements arranged with non-uniformity therebetween, said image forming head being drivable by a driving signal so as to form a predetermined pattern image;

(b) correcting means for correcting the non-uniformity between the plurality of recording elements using plural correcting conditions;

(c) display means for numerically displaying the plural correcting conditions for the plurality of recording elements, the plural correcting conditions being displayed simultaneously so that a user of said image forming apparatus can visually compare the plural correcting conditions;

(d) changing means for changing the plural correcting conditions;

(e) control means for controlling the image forming head to form the predetermined pattern image based upon the plural correcting conditions changed by said changing means; and

(f) means for generating a controlling signal for said display means to control said display means to display the plural correcting conditions changed by said changing means.

5,610,640

MAINTENANCE APPARATUS USING TRANSLATION FORCES TO MOVE CAP MEMBER FOR INK JET PRINTHEADS

David G. Anderson, and Alfred J. Claflin, both of Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 10, 1995, Ser. No. 386,783

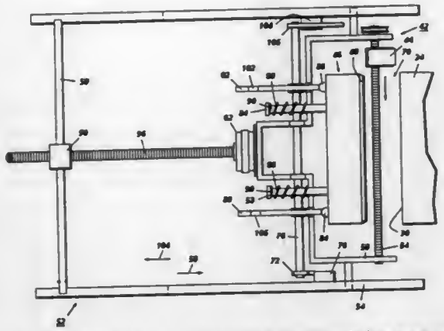
Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—32 **12 Claims**

1. A maintenance apparatus for maintaining an ink jet printhead, comprising:

a maintenance station having a capping member;

a translation apparatus connected to said maintenance station, said translation apparatus generating a translation force to translate said maintenance station along a path, including a lead screw and a motor coupled to said lead screw, said motor moving said lead screw to thereby translate said maintenance station along the path;



a displacement apparatus connected to said translation apparatus and operatively coupled to said capping member, displacing said capping member with respect to said translation apparatus and into proximity with the ink jet printhead for performing a maintenance function, including an actuating mechanism converting said translation force to a displacement force displacing said capping member with respect to said translation apparatus, wherein said actuating mechanism includes an actuating lever in confronting relation with a projecting member, said actuating lever contacting said projecting member during translation of said translation apparatus to cause said capping member to be displaced with respect to said translation apparatus.

5,610,641

COLOR INK JET PRINTING APPARATUS HAVING A WIPER SUITED FOR DIFFERING COLOR INK PROPERTIES

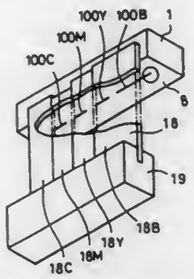
Masaharu Ikado, Suita, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,895

Claims priority, application Japan, Nov. 16, 1993, 5-286764

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **9 Claims**



1. An ink jet apparatus comprising:

an ink jet head having a plurality of ejection openings on a surface thereof for ejecting ink onto a print material,

a cleaning blade supported in a cleaning blade holder for cleaning said surface generating abutting forces, and

moving means for moving said blade relatively in abutting contact with respect to said surface, wherein said cleaning blade is divided into at least three abutting portions, and an end one of said abutting portions projects relative to an inner portion abutted against the end abutting portion and a free-end-portion length of the end abutting portion is larger than that of the inner abutting portion abutted against the end abutting portion.

5,610,642

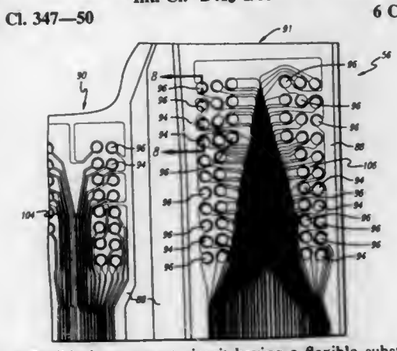
FLEX CIRCUIT WITH MULTIPLE TRACE CONFIGURATIONS AND METHOD OF MANUFACTURE

Gary M. Nobel, San Diego, Calif.; Todd Medin, Vancouver, Wash.; Arthur K. Wilson, San Diego, and Patricia S. Brown, Encinitas, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 55,615, Apr. 30, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 234,909

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—50 **6 Claims**



1. A flexible interconnect circuit having a flexible substrate, a plurality of contacts, and a plurality of conductive traces interconnecting the plurality of contacts on the flexible substrate of the flexible interconnect circuit, comprising:

a first array of contacts and a second array of contacts, each of said arrays located at terminal ends of said substrate; and

at least one trace connecting said arrays such that said trace comprises conductive material connecting at least a first one contact of the first array of contacts to at least one contact of the second array of contacts such that said trace extends from said at least one first one of the contacts of said first array of contacts to a first contact of the second array of contacts at a minimum distance from each other proximate contact, such that each trace has a decreasing width as the trace extends from the first contact of the first array of contacts.

5,610,643

INK JET PRINTING HEAD HAVING A DETACHABLE PRESSURE CHAMBER

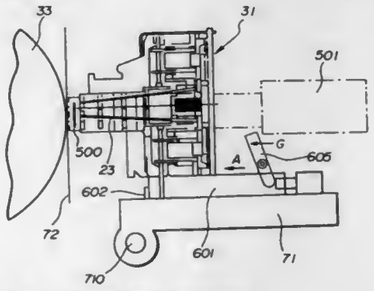
Michinori Kutami, Kawaguchi; Akira Nakazawa, Isehara; Hideyuki Kikuchi, Zama, and Katsunori Yamagishi, Atsugi, all of Japan, assignors to Fujitsu, Ltd., Kawasaki, Japan

Continuation of Ser. No. 838,401, Mar. 10, 1992, abandoned. This application May 19, 1994, Ser. No. 246,478

Claims priority, application Japan, Jul. 10, 1990, 2-180380; Dec. 20, 1990, 2-404414; May 31, 1991, 3-128115; May 23, 1991, 3-117786; May 16, 1991, 3-111263

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—54 **8 Claims**



1. An ink jet printing head, comprising:

a pressure chamber supplied with ink, one wall of said pressure chamber being a vibration plate which is subject to being driven in vibration thereby to increase pressure in said pressure chamber when force is applied to said vibration plate;

a nozzle which communicates with said pressure chamber and through which ink is ejected when the pressure in said pressure chamber is increased;

force applying means for applying force to said vibration plate thereby to drive the vibration plate in vibration and thereby increase the pressure in the pressure chamber so as to eject the ink from said nozzle, at least said pressure chamber being detachably mounted with respect to said force applying means, said force applying means comprising a wire for transferring the force to said vibration plate when displaced in the direction of said vibration plate and a driving part for displacing said wire in the direction of said vibration plate; and

an ink tank which communicates with said pressure chamber and supplies the ink to said pressure chamber, said pressure chamber, said nozzle and said ink tank comprising an integral nozzle part which is detachable with respect to said force applying means,

the wire of the force applying means having first and second pieces which meet during the displacement of the wire, the first piece being coupled to the driving part, the second piece being coupled to the vibration plate, the nozzle part being detachable with respect to the force applying means at a point where the first and second pieces of the wire meet.

5,610,644

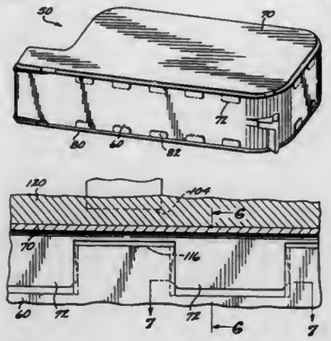
THERMAL INK-JET PEN WITH A PLASTIC/METAL ATTACHMENT FOR THE COVER

Dale D. Timm, Jr., Solana Beach; David W. Swanson, Escondido, both of Calif., and James E. Clark, Albany, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 22, 1992, Ser. No. 994,810

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **41 Claims**



8. A method for attaching a cover to an ink-jet pen frame structure, comprising a sequence of the following steps:

providing an external pen frame structure fabricated of a plastic material, said frame structure comprising a plurality of upright side members, said frame structure having formed therein a plurality of tab mating features defined by said plastic material, said plastic material defining said tab mating features being displaceable, and wherein said mating features include a plurality of slots defined in said upright side members and extending along said side members;

aligning said cover with said frame structure, said cover having a plurality of spaced metal tabs projecting from said surface for engagement with said mating features of said frame structure;

forcing said cover and frame structure together to press fit said tabs into engagement with said mating features of said frame structure such that said tabs become locked into said mating features, and thereby secure said cover onto said frame structure.

5,610,645

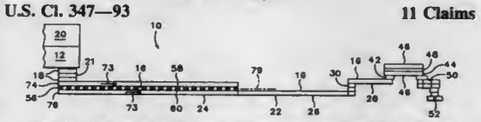
INK JET HEAD WITH CHANNEL FILTER

John S. Moore, Beaverton; Sharon S. Berger, Salem; Ronald F. Burr, Tualatin, all of Oreg.; Jeffrey J. Anderson, Camas, Wash., and Donald B. MacLane, Portland, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 30, 1993, Ser. No. 56,227

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—93 **11 Claims**



1. An ink jet print head having improved particulate filtering and bubble purgability, comprising:

a nozzle having a nozzle diameter ranging from about 0.0015 inches to about 0.0035 inches for ejecting ink onto a print medium, the nozzle further having an inlet side for receiving ink and an outlet side from which the ink is ejected;

an ink supply manifold connected to the nozzle;

an elongated inlet channel having a longitudinal axis, the inlet channel connecting the ink supply manifold and the nozzle such that there is only one inlet channel per nozzle, the inlet channel having an interior that provides an ink flow path between the ink supply manifold and the nozzle;

a pressure chamber in the print head in flow communication with the nozzle such that there is only one pressure chamber per nozzle, the pressure chamber causing ink to eject from the outlet side of the nozzle; and

a particulate removing filter having a major axis positioned within the interior of the elongated inlet channel and oriented substantially parallel to the longitudinal axis, the particulate removing filter having multiple pores each having a pore diameter ranging from about 0.0002 inches to about 0.006 inches and a pore axis oriented substantially transverse to the major axis, the pores taken together having a total pore area and the nozzle having a nozzle opening area such that a ratio of the total pore area to the nozzle opening area is sufficiently large to provide an adequate supply of ink to the nozzle during operation of the print head and is sufficiently small to provide a pressure drop across the filter that is adequate to draw bubbles through the filter during purging of the print head.

5,610,646

IMAGE FORMING APPARATUS HAVING IMPROVED RESOLUTION SWITCHING CAPABILITIES

Yukio Isaka; Yoji Serizawa, both of Yokohama; Akio Noguchi, Ebina; Yukihide Ushio; Seiji Uchiyama, both of Tokyo; Kazuro Yamada, and Makoto Takeuchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 578,443, Sep. 7, 1990. This application Jun. 2, 1995, Ser. No. 458,259

Claims priority, application Japan, Sep. 7, 1989, 1-233661; Sep. 11, 1989, 1-236312; Oct. 26, 1989, 1-277257; Jan. 30, 1990, 2-17882

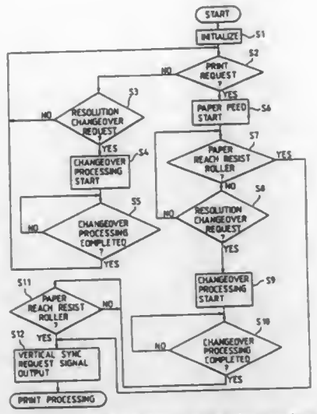
Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—131 **7 Claims**

1. An image forming apparatus comprising:

a light beam generator which generates a light beam which is modulated on the basis of image information;

a rotary polygon mirror which scans the light beam from the light beam generator on a photosensitive drum in order to form an eletrostatic latent image on the photosensitive drum,



said image forming apparatus performing an image forming operation at one of a plurality of rotational speeds of the rotary polygon mirror;

a developing unit which forms a toner image by developing the electrostatic latent image formed on the photosensitive drum;

a transfer unit which transfers the toner image formed on the photosensitive drum onto a recording medium;

a light beam detecting element which detects the light beam scanned by said rotary polygon mirror in a non-latent image forming region in order to obtain a horizontal sync signal;

forcible light emission means for causing the light beam generator to emit the light beam, so that the light beam is detected by the light beam detecting element; and

transfer unit charging means for charging the transfer unit to a second potential during a period when the forcible light emission means is causing the light beam generator to emit the light beam after the rotational speed of the rotary polygon mirror has been changed, wherein the second potential is different than a potential at which the transfer unit is charged when performing a transfer operation.

5,610,647

IMAGE FORMING APPARATUS INCLUDING A PLURAL LASER BEAM SCANNING APPARATUS

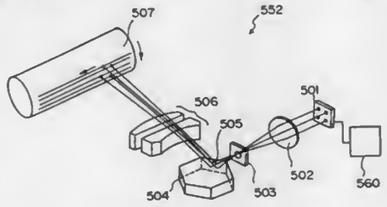
Kyu Takada, Suwa, Japan, assignor to Seigo Epson Corporation, Tokyo-to, Japan

Filed Dec. 18, 1992, Ser. No. 971,908

Claims priority, application Japan, May 14, 1991, 3-109114; May 14, 1991, 3-109115; Feb. 20, 1992, 4-033412; Feb. 28, 1992, 4-033413; Apr. 2, 1992, 4-081044; Apr. 2, 1992, 4-081045; Apr. 2, 1992, 4-081047; Apr. 2, 1992, 4-081048

Int. Cl.[6] G03G *13/04;* **B41J** *2/435;* **G02B** *26/10*

U.S. Cl. 347—137 **6 Claims**



1. An image forming apparatus, comprising:

an image bearing member means (**507**) for forming a static latent image on a surface thereof;

a charging unit means (**551**) for charging the surface of said image bearing member (**507**);

a laser beam scanning unit means (**552**) for scanning the charged surface of the image bearing member means (**507**) with a plurality of laser beams; and

a developing unit means (**553**) for causing a developing agent to adhere on the scanned surface of the image bearing member means (**507**);

wherein the laser beam scanning unit means (**552**) comprises:

a semiconductor laser array means (**501**) having a plurality of light emitting portions for emitting the laser beams;

a collimator lens means (**502**) for collimating the laser beams emitted from the light emitting portions;

a mirror means (**504**) for deflecting the laser beams collimated by the collimator lens means (**502**); and

an aperture stop (**503**) disposed on an optical path between the semiconductor laser array means (**501**) and the mirror means (**504**);

wherein the following relations are satisfied

$$\frac{st}{f} \leqq 0.12\left(\frac{D}{d}\right)^{2.3} + 0.17$$

$$\frac{D}{d} \leqq 2$$

where f is a focal length of the collimator lens means (**502**); s is a distance between a focal point on a mirror side of the collimator lens means (**502**) and the aperture stop (**503**); t is a distance between one of the light emitting portions that is spaced farthest, relative to others of the light emitting portions, from an optical axis of the collimator lens means (**502**) and the optical axis; D is a diameter of the aperture stop (**503**); and d is a diameter of each of the laser beams collimated by the collimator lens means (**502**).

5,610,648

THERMAL PRINTING DEVICE

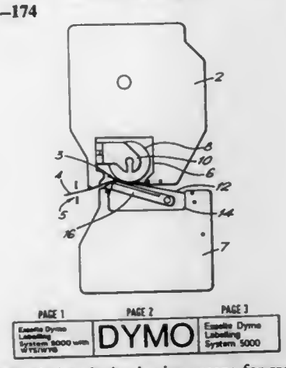
Charles R. Sims, and Michael A. Beadman, both of Herts, United Kingdom, assignors to Esselte N.V., St. Niklaas, Belgium

Filed Jul. 20, 1993, Ser. No. 94,678

Claims priority, application United Kingdom, Jul. 24, 1992, 9215782

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—174 **14 Claims**



1. A thermal printing device having means for receiving a tape holding case housing a supply of an image transfer ribbon capable of printing an image in a particular colour; means for receiving a tape holding case housing a supply of an image receiving tape; a print head having a column of printing elements for printing an image on said image receiving tape column by column; means for moving the image receiving tape through a printing zone in overlap with said image transfer ribbon so that a message can be printed onto the image receiving tape, said image receiving tape moving in a printing direction by one column width between the printing of successive columns; means for determining when a particular portion of the message to be printed has been printed in the particular colour on a first portion of the image receiving tape and for preventing further movement of the image receiving tape while an image transfer ribbon of a different colour is located in overlap with said image receiving tape at a second portion thereof spaced from said first portion; and means for restarting movement of said image receiving tape so as to print a next portion of said message in said different colour on said second portion of said image receiving tape.

5,610,649

COLOR THERMAL PRINTING METHOD

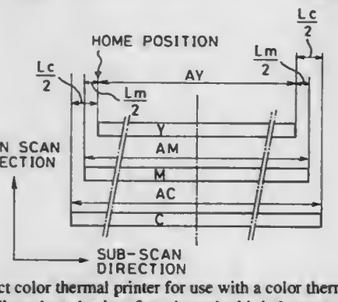
Hideyuki Kokubo, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 26, 1994, Ser. No. 233,745

Claims priority, application Japan, Apr. 26, 1993, 5-099886; Feb. 8, 1994, 6-014672

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—175 **20 Claims**



13. A direct color thermal printer for use with a color thermosensitive recording sheet having first through third thermosensitive coloring layers of first through third colors arranged in order from a surface to a base of the color thermosensitive recording sheet, comprising:

a printing head having a plurality of heating elements arranged in a main scan direction;

driving means for providing relative movement between the color thermosensitive recording sheet and said printing head in a subsidiary scan direction which is perpendicular to the main scan direction; and

control means, coupled to said printing head and said driving means, for determining print start positions for each of the first through third thermosensitive coloring layers in accordance with an expansion/contraction characteristic of the color thermosensitive recording sheet and controlling said printing head and said driving means to heat the color thermosensitive recording sheet to print a full color image in the subsidiary scan direction from the determined print start positions of each of the first through third thermosensitive coloring layers in a frame sequential manner so that centers of respective print areas of the first through third colors coincide with each other.

5,610,650

ELECTRONIC PARTS, THERMAL HEAD, MANUFACTURING METHOD OF THE THERMAL HEAD, AND HEAT SENSITIVE RECORDING APPARATUS

Hiroshi Itoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1993, Ser. No. 165,160

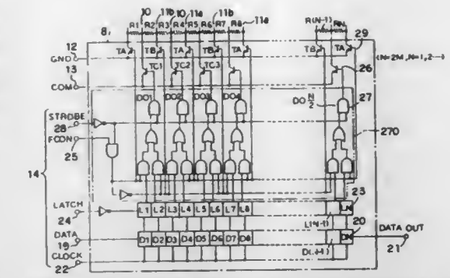
Claims priority, application Japan, Dec. 28, 1992, 4-360042; Apr. 30, 1993, 5-124678

Int. Cl.[6] B41J *2/34*

U.S. Cl. 347—210 **19 Claims**

6. A thermal head comprising:

a plurality of heating resistors connected in series and arranged on an edge portion of a substrate:



a plurality of electrode patterns arranged on said substrate in such a way that every adjacent two of said electrode patterns are connected across each of said heating resistors, said electrode patterns being grouped into a first group electrode patterns and a second group electrode patterns, and in every adjacent two of said electrode patterns, one being one of said first group electrode patterns and the other being one of said second group electrode patterns;

first group switching elements respectively connected to said first group electrode patterns;

second group switching elements respectively connected to said second group electrode patterns;

said second group switching elements including first and second group every other switching elements, each of said first and second group every other switching elements being connected respectively to alternate ones of said second group electrode patterns;

a selecting circuit, connected to said first group switching elements and said second group switching elements, for selecting, in response to selecting data inputted to said selecting circuit, one group or the other group of every other switching elements in said second group switching elements, and for selecting at least one of said first group switching elements, the selected switching elements being driven substantially simultaneously,

whereby at least one of said heating resistors corresponding to said selected switching elements are driven.

5,610,651

IMAGE FORMING APPARATUS WITH FREQUENCY CORRECTOR

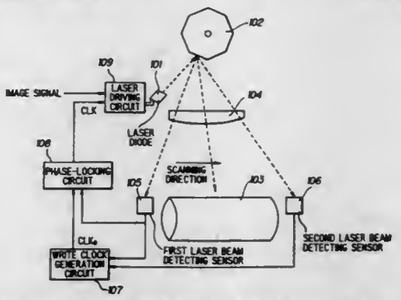
Takeshi Yamakawa, Fujisawa; Takashi Mama; Kenichi Ono, both of Yokohama, and Norio Michiie, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,446

Claims priority, application Japan, May 13, 1993, 5-136744

Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—250 **22 Claims**



1. An image forming apparatus for writing pictorial information into a photo-sensitive body using a laser beam, said image forming apparatus comprising:

a plurality of laser beam detectors, each for detecting a laser beam moving in a main scanning direction;

a measuring apparatus for measuring a scanning time or a number of specified clocks after one of said plurality of laser beam detectors detects a laser beam until another laser beam detector detects a laser beam; and

a write frequency correcter for correcting a write clock frequency by computing a corrected write frequency f1 from a value T1 corresponding to said measured scanning time or said number of specified clocks counted by said measuring apparatus and a function F (T1) for computing a correction factor, using a basic write frequency f0 and said value T1 above as parameters in an equation of f1=f0×F (T1).

5,610,652

ELECTROPHOTOGRAPHIC IMAGE RECORDING APPARATUS

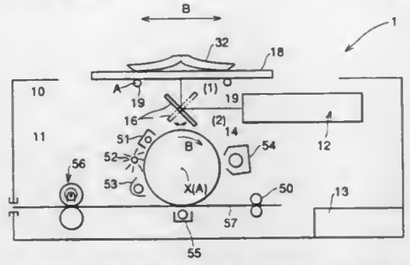
Makoto Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 3, 1994, Ser. No. 253,321

Claims priority, application Japan, Jun. 7, 1993, 5-135559

Int. Cl.[6] B41J *2/47;2/385;* **G01D** *9/00;9/42*

U.S. Cl. 347—256 **18 Claims**



1. An image reading and recording apparatus, for reading an image from an original and for recording a latent image on a photosensitive medium, comprising:

a light scanning portion for scanning a spot light beam in a predetermined scanning direction, the light scanning portion including at least a light source for emitting the spot light beam and a light scanner for receiving the spot light beam and for scanning the spot light beam in the predetermined scanning direction;

an image reading portion for providing an original on a first imaging plane onto which the light beam scanned by the light scanning portion is imaged, and for reading out a plurality of picture elements arranged on the original in a direction corresponding to the predetermined scanning direction, the image reading portion including a detecting member for receiving the spot light beam reflected from the original and producing a series of electrical signals which indicate respective ones of the plurality of picture elements arranged on the original;

an image recording portion for providing a photosensitive medium on a second imaging plane different from the first imaging plane, onto which the light beam scanned by the light scanning portion is imaged, and for forming a plurality of latent picture elements on the photosensitive medium arranged in another direction corresponding to the predetermined scanning direction; and

an optical path switching member for selectively guiding the light beam scanned by the light scanning portion to one of the image recording portion and the image reading portion, wherein the optical path switching member includes:

a reflective member for receiving the light beam scanned by the light scanning portion and for reflecting the light beam; and

an angular position changing member for changing an angular position of the reflective member between a first angular position for reflecting the light beam to the photosensitive medium and a second angular position for reflecting the light beam to the original, wherein the reflective member located on the second angular position guides the light beam reflected from the original back to the light scanner and the light scanner guides the light beam in a direction back to the light source, and a light beam directing member is provided at a position between the light source and the detecting member and the light scanner, the light beam directing member directing the light beam originally emitted from the light source to the light scanner while directing the light beam from the light scanner to the detecting member to be detected by said detecting member.

5,610,653

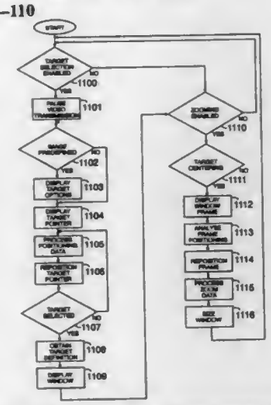
METHOD AND SYSTEM FOR AUTOMATICALLY TRACKING A ZOOMED VIDEO IMAGE

Max Abecassis, 19020 NE. 20 Ave., Miami, Fla. 33179

Continuation-in-part of Ser. No. 2,998, Jan. 11, 1993, Pat. No. 5,434,678, , which is a continuation-in-part of Ser. No. 832,335, Feb. 7, 1992. This application Apr. 24, 1995, Ser. No. 427,250

Int. Cl.[6] H04N *7/18;5/44*

U.S. Cl. 348—110 **14 Claims**



1. A method of playing a provided video comprising the steps of:

enabling a viewer to select a target for magnification from a provided video;

extracting from said video an identification of the selected target;

enabling said viewer to select a magnification for said selected target;

maintaining, by means of said identification, said selected target within a window of said video as said selected target shifts within said video; and

playing said window of said video without altering said video.

5,610,654

AUTOMATIC CAMERA EXPOSURE CONTROL USING VARIABLE EXPOSURE INDEX CCD SENSOR

Kenneth A. Parulski, and James E. McGarvey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

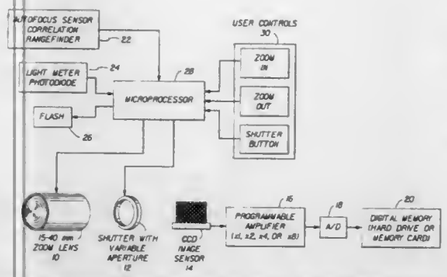
Continuation of Ser. No. 229,939, Apr. 19, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,839

Int. Cl.[6] H04N *5/235;5/238*

U.S. Cl. 348—229 **7 Claims**

1. An electronic camera comprising:

a variable focal length lens that is adjustable to a preferred focal length for imaging scene light onto an electronic image sensor;



a programmable amplifier coupled to an output of the electronic image sensor;

a light sensing means for generating a scene light level signal;

a variable aperture; and

control means for setting the gain of the programmable amplifier for each exposure operation based on both the preferred focal length and the scene light level signal and for setting the variable aperture for each exposure operation based on both the preferred focal length and the scene light level signal.

5,610,655

ELECTRONIC APPARATUS WITH A WATERTIGHT HOUSING

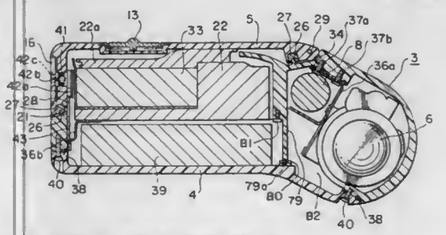
Manabu Wakabayashi, and Kenji Ogiro, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 765,910, Sep. 20, 1991, Pat. No. 5,294,988. This application Sep. 28, 1993, Ser. No. 128,003

Claims priority, application Japan, Sep. 21, 1990, 2-250194; Feb. 7, 1991, 3-016338

Int. Cl.[6] H04N *5/225;7/18*

U.S. Cl. 348—373 **10 Claims**



1. An electronic apparatus comprising:

a watertight housing having first opening defining means for defining a first opening in the housing and second opening defining means for defining a second opening in the first opening of the housing,

a first closure member adapted for movement for covering said first opening defining means,

electronic equipment provided in said housing,

a second closure member provided between said first closure member and said electronic equipment and adapted for movement for covering said second opening defining means,

water sealing means provided between said second closure member and said housing, and

press means provided between said first closure member and said second closure member or between said housing and said second closure member for forcing said second closure member towards said housing with said water sealing means therebetween to establish water tightness therebetween,

wherein said press means comprises said first closure member and a cover holder interposed between said first and said second closure member such that a force, with which said first closure member is closed, acts to press said second closure member against said housing with said cover holder therebetween.

5,610,656

PROTECTIVE HOUSING FOR OPTICAL EQUIPMENT

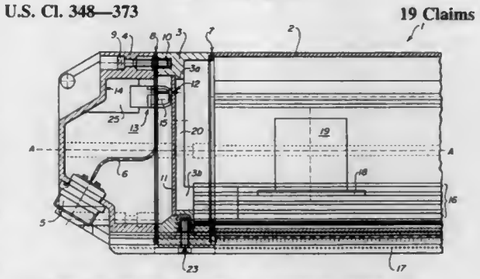
Rainer Bernhardt, Rosbach, Germany, assignor to Videor Technical E. Hartig GmbH, Rodermark, Germany

Filed Feb. 14, 1995, Ser. No. 388,706

Claims priority, application Germany, Feb. 22, 1994, 44 05 626.5

Int. Cl.[6] G02B *7/00*

U.S. Cl. 348—373 **19 Claims**



1. Protective housing for optical equipment, comprising

a frame part,

an equipment carrier fixed to said frame part,

an external housing carrier fixed to said frame part parallel to said equipment carrier,

a tubular housing shell fixed to said frame part over said equipment carrier, and

a rear wall fixed to said frame part opposite from said housing shell.

5,610,657

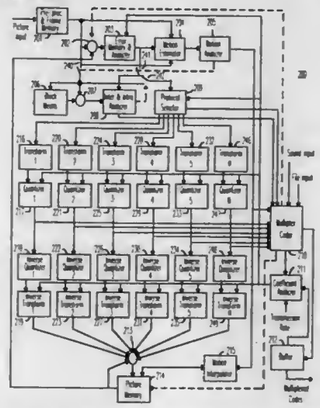
VIDEO COMPRESSION USING AN ITERATIVE ERROR DATA CODING METHOD

Tai Y. Zhang, Berkeley, Calif., assignor to Envistech Inc., Bayside, N.Y.

Filed Sep. 14, 1993, Ser. No. 121,828

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—415 **22 Claims**



18. A method for optimizing the compression of blocks of digital data comprising the steps of:

a) compressing the digital data blocks in a first data path to provide a first compressed signal;

b) evaluating errors in the compressed signal with respect to a predetermined threshold;

c) forming error data blocks corresponding to data blocks with an error evaluated to be larger than the predetermined threshold;

d) compressing said error data blocks in at least one alternate data path to provide a compressed correction signal;

e) combining said first compressed signal and said compressed correction signal to provide a composite compressed signal;

f) performing steps b through e of the method until no data block of the composite compressed signal is evaluated to have an error signal larger than the predetermined threshold.

5,610,658

MOTION VECTOR DETECTION USING HIERARCHICAL CALCULATION

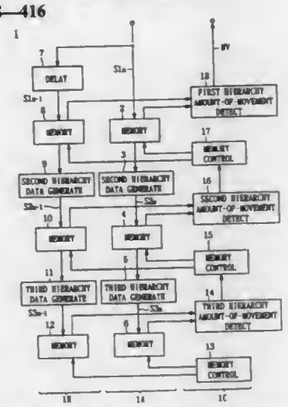
Masashi Uchida; Tetsujiro Kondo; Hideo Nakaya; Takashi Horishi, and Toshihiro Ishizaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,557

Claims priority, application Japan, Jan. 31, 1994, 6-027270; Feb. 7, 1994, 6-034195; Sep. 22, 1994, 6-254760

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—416 **8 Claims**



5. A method for detecting a motion vector between a base image and a reference image, comprising:

a process for outputting a base lower hierarchical image data having a resolution higher than that of said base image;

a process for outputting a base higher hierarchical image data having a resolution lower than that of said base lower hierarchical image data;

a process for outputting a reference lower hierarchical image data having a resolution higher than that of said reference image;

a process for outputting multiplexed reference data multiplexing a reference higher hierarchical image data having a resolution lower than that of said reference lower hierarchical image data, with other reference higher hierarchical image data having a resolution lower than that of said reference lower hierarchical image data and which is different in phase than said reference higher hierarchical image data;

a first process for detecting a motion vector between said base image and said reference image, according to said base higher hierarchical image data and said multiplexed reference data; and

a second process for detecting a motion vector between said base image and said reference image based on the motion vector obtained by said first process for detecting a motion vector, according to said base lower hierarchical image data and said reference lower hierarchical image data.

5,610,659

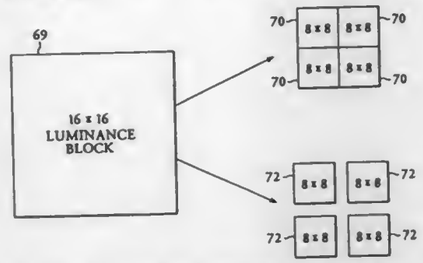
MPEG ENCODER THAT CONCURRENTLY DETERMINES VIDEO DATA ENCODING FORMAT AND RATE CONTROL

Gregory C. Maturi, San Jose; Sho L. Chen, Saratoga; Vivek Bhargava, San Jose; Ren-Yuh Wang, Los Altos, and Richard H. Tom, Cupertino, all of Calif., assignors to FutureTel, Inc., Sunnyvale, Calif.

Filed May 8, 1995, Ser. No. 436,514

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—42 **21 Claims**



1. In a digital video data compression scheme, a method for determining a plurality of encoding conditions for a macroblock of digital video data belonging to a frame of digital video data in one of a sequence of frames of motion video data having an initial frame and at least one subsequent frame, the macroblock consisting of digital video data for a plurality of pels located in a region of the frame of digital video data that is smaller than an entire frame, the method for determining the encoding conditions comprising the steps of:

choosing the macroblock for which the encoding conditions are to be determined;

producing a plurality of differences by subtracting the digital video data for a first pel of a plurality of pairs of pels from the digital video data for a second pel of the plurality of pairs of pels, each of the pels corresponding to a coordinate positioned within an array of coordinates arranged in vertical columns and horizontal rows with the coordinate being defined by an intersection of a vertical column with a horizontal row, the digital video data for one of the pels in each pair of pels belonging to the macroblock;

concurrently stratifying the plurality of differences into a plurality of blocks, each block of differences corresponding to a preestablished set of pels belonging to the macroblock;

calculating, for each of the plurality of blocks, a block mean squared error based upon the block of differences associated therewith;

assigning digital video data encoding conditions to the macroblock, each encoding condition being assigned in accordance with preestablished ranges for the calculated block mean squared errors; and

compressing the macroblock of digital video data in accordance with the assigned encoding conditions.

5,610,660

MULTIPLEXING SYSTEM FOR INSERTING SYNCHRONOUS WORDS TO PICTURE IMAGE CODED DATA

Takashi Hamano; Kiyoshi Sakai, and Kiichi Matsuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

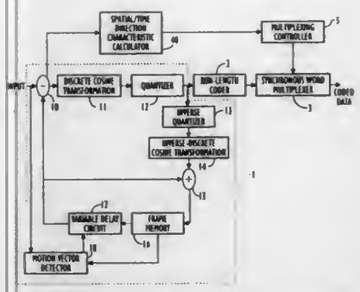
Filed Mar. 15, 1995, Ser. No. 404,245

Claims priority, application Japan, Mar. 16, 1994, 6-072512

Int. Cl.[6] H04N *7/52;7/50*

U.S. Cl. 348—423 **13 Claims**

1. A synchronous word multiplexing system for coded image data comprising:



a first means for inputting and coding a picture image data;

a second means for converting a coded data outputted from the first means to a variable-length coded data;

a third means for dividing the variable-length coded data outputted from the second means into a plurality of coded data and multiplexing a synchronous word to each predetermined divided unit of the coded data;

a fourth means for extracting a localized characteristic of the picture image based on the coded data outputted from the first means; and

a fifth means for generating a timing signal for multiplexing the synchronous word, based on the localized characteristic of the picture image extracted by the fourth means, and controlling a multiplexing timing of synchronous words in the third means.

5,610,661

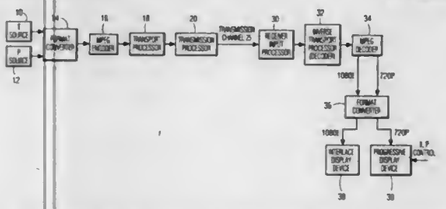
AUTOMATIC IMAGE SCANNING FORMAT CONVERTER WITH SEAMLESS SWITCHING

Bhavesh B. Bhatt, Franklin Park, N.J., assignor to Thomson multimedia S.A., Courbevoie, France

Filed May 19, 1995, Ser. No. 446,092

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—446 **9 Claims**



1. In a system for processing a video signal subject to exhibiting either a first image line scanning format (I) or alternatively a different second image line scanning format (P), apparatus including:

an output processor compatible with a predetermined one of said first or second formats;

an automatic scan format converter responsive to said signals exhibiting either said first or second formats for automatically providing an output signal with a predetermined one of said first or second line scanning formats so as to be compatible with the format requirements of said output processor; and

a switching network associated with said converter for switching between said first and second formats at image frame boundaries substantially without introducing data discontinuities at said frame boundaries.

5,610,662

METHOD AND APPARATUS FOR REDUCING CONVERSION ARTIFACTS

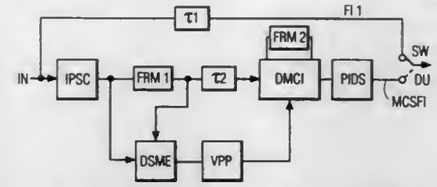
Andrew Hackett, Klingenthal, France, assignor to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Mar. 30, 1995, Ser. No. 415,066

Claims priority, application European Pat. Off., Mar. 30, 1994, 94400729

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—452 **9 Claims**



1. A method for reducing conversion artifacts (DTOO) when originally progressive and to interlace format converted film source images are converted into interlace format pictures of, at least, doubled picture frequency, comprising the steps of:

combining (IFSC) each two received fields (FI1, FI2) of said interlace format converted film source images to recreate the original film source images (OFR);

performing (DSME) a full search block matching with a search block position centered on the current block position(CBP) of an output field (IFI) to be interpolated, whereby the backward half of a motion vector (BHMV) to be determined has a landing point within a backward search window (BSW) of a backward field or frame (BFI) of said recreated film source images and the forward half of said motion vector (FHMV) has a landing point within the forward search window (FSW) of a forward field or frame (FFI) of said recreated film source images; generating (DMCI, PIDS), using said motion vectors, motion compensated fields (MCSFI) of said interlace format video signal (IN); and

inserting (SW) said motion compensated fields (MCSFI) of said interlace format video signal between non-motion compensated fields (OFFI), of a preselected type, of said interlace format video signal.

5,610,663

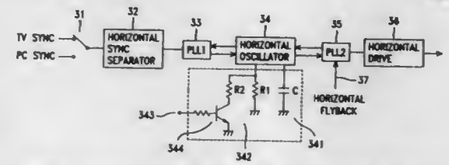
MULTI-FREQUENCY DISPLAYING DEVICE FOR DISPLAYING BOTH TELEVISION AND PERSONAL COMPUTER VIDEO SIGNALS

Liu P. Nan, and Leu J. Hwei, both of Taoyuan, Taiwan, assignors to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed Jan. 17, 1996, Ser. No. 587,620

Int. Cl.[6] H04M *3/27*

U.S. Cl. 348—554 **1 Claim**



1. A displaying device having a displaying screen for displaying TV (television) video signals or PC (personal computer) video signals having PC RGB signals and PC sync signals according to a switch for selecting the TV or PC video signals comprising:

(1) a video signal processing circuit for converting the TV video signals into TV RGB signals and TV sync signals;

(2) a sync circuit for converting the TV sync signals or PC sync signals into vertical and horizontal deflection signals according to the switch; said sync circuit comprising a multi-frequency horizontal oscillator for generating clock signals to

convert the TV sync signals or PC sync signals with different frequencies into the horizontal deflection signals according to the switch; and

(3) a display control circuit for displaying the TV RGB signals or PC RGB signals in synchronization with the vertical and horizontal deflection signals in the display screen according to the switch;

wherein the horizontal oscillator comprises a RC circuit with a variable resistor controlled by the switch to control the oscillation frequency of the horizontal oscillator.

5,610,664

TELETEXT RECEIVER

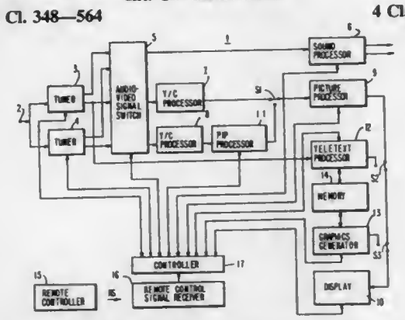
Martin Bobert, Wailblingen, Germany, assignor to Sony Wega Produktions GmbH, Fellbach, Germany

Filed Nov. 1, 1994, Ser. No. 332,774

Claims priority, application European Pat. Off., Mar. 11, 1993, 93117836

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—564 **4 Claims**



1. A teletext receiver comprising:

means for receiving a composite video signal, said composite video signal further including teletext data;

teletext processor means, in communication with said means for receiving, for obtaining from said received composite video signal said teletext data and for generating from said obtained teletext data a plurality of teletext pages;

teletext memory means, in communication with said teletext processor means, for storing said generated plurality of teletext pages; and

display means, in communication with said teletext processor means, operable in a first mode for selectively displaying on the entirety of the display means a teletext page read from said teletext memory means at a first speed and operable in a second mode for simultaneously displaying in one half of said display means a first teletext page in its entirety read from said teletext memory means at a second speed higher than said first speed and in another half of said display means a second teletext page in its entirety read from said teletext memory means at said second speed such that said first teletext page and said second teletext page are displayed adjacent to each other and do not overlap with each other.

5,610,665

INTERACTIVE TELEVISION GRAPHICS INTERFACE

John L. Berman, 485 Quincy Ave., Mountain View, Calif. 94043

Continuation-in-part of Ser. No. 136,562, Oct. 14, 1993. This application Dec. 21, 1994, Ser. No. 360,625

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—564 **17 Claims**

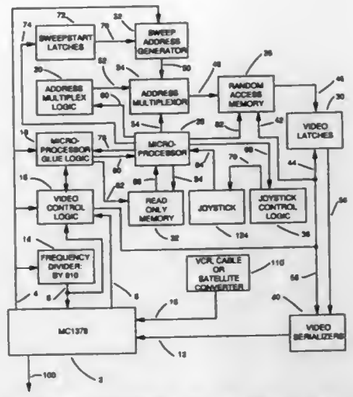
1. An interactive television graphics apparatus comprising:

video input means for receiving a background video signal, said background video signal including at least one graphics control signal for performing one or more of the following functions: selecting a locally generated graphic image overlay component, positioning a graphic image overlay component, and defining a bit map of a graphic image overlay component;

memory means for storing at least one graphic image overlay component, including one or more of: a locally generated graphic image overlay component, and a bit map of a graphic image overlay component received from said video input means; and

processor means, coupled to said video input means and said memory means for receiving said graphics control signals and generating a graphic image as an overlay over said background video in response to received graphics control signals,

wherein said graphics control signals comprise signals for selecting a graphic image stored in said display means.



5,610,666

GAMMA CORRECTING CIRCUIT

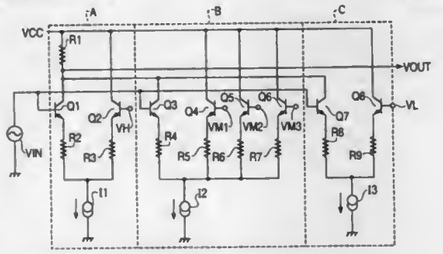
Goro Ueda, and Hiroshi Shiba, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1995, Ser. No. 575,147

Claims priority, application Japan, Dec. 19, 1994, 6-315065

Int. Cl.[6] H04N *5/202*

U.S. Cl. 348—676 **3 Claims**



1. A gamma correcting circuit comprising:

a plurality of differential amplifiers;

said differential amplifiers having respective input terminals for being supplied with a video signal and respective output terminals connected in common;

at least one of said differential amplifiers comprising differential pairs of transistors including transistors whose bases are not connected to the input terminal, emitters are connected to respective resistors, and collectors are connected in common; and

a plurality of individually energizable and de-energizable external reference voltage supplies connected to the bases of said transistors whose bases are not connected to the input terminal.

5,610,667

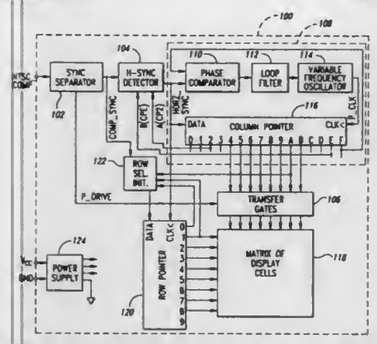
APPARATUS AND METHOD FOR MAINTAINING SYNCHRONISM BETWEEN A PICTURE SIGNAL AND A MATRIX SCANNED ARRAY

Glen E. Hush, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Aug. 24, 1995, Ser. No. 519,139

Int. Cl.[6] H04N *5/66;5/10*

U.S. Cl. 348—796 **26 Claims**



1. A display apparatus for receiving a picture signal having a video component and first and second synchronizing components having respective first and second frequencies comprising:

a matrix of display cells arranged in an array having a plurality of columns and at least one row, the display cells being individually addressable by column signals so as to receive the video component of the picture signal in response thereto;

a first pointer circuit coupled to the matrix of display cells, the first pointer circuit providing the column signals in response to a first clocking signal, including a first pointer signal;

a gate circuit coupled to the first pointer circuit, the gate circuit receiving the first and second synchronizing components of the picture signal and passing the first synchronizing component and a selected portion of the second synchronizing component in response to the first pointer signal; and

a phase locked loop circuit coupled to the first pointer circuit, the phase locked loop circuit receiving the first synchronizing component and the selected portion of the second synchronizing component and producing the first clocking signal to the first pointer circuit in response thereto.

5,610,668

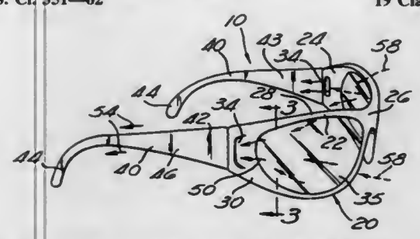
FOG-RESISTANT SUNGLASSES INCORPORATING VENTILATION CHANNELS

Jérôme J. M. Mage, Carlsbad, Calif., assignor to Spy Optic, Inc., Carlsbad, Calif.

Filed Nov. 28, 1995, Ser. No. 565,623

Int. Cl.[6] G02C *11/08;1/00*

U.S. Cl. 351—62 **19 Claims**



1. Fog-resistant eyeglasses positionable upon a wearer's face adjacent the wearer's temples for shielding the wearer's eyes, said eyeglasses comprising:

a frame front which spans across the wearer's face, said frame front including a forward side, an aft side, a pair of middle portions positioned over the wearer's eyes, and a pair of endpiece portions positioned adjacent the wearer's temples, each of said endpiece portions defining an outboard edge;

a pair of lenses attached to respective ones of the middle portions of the frame front and positioned over the wearer's eyes, each of said lenses defining front and back surfaces; and

a pair of apertures disposed within respective ones of the endpiece portions of the frame front, said apertures being forwardly directed and defining ventilation channels for facilitating air flow through the frame front adjacent the lenses;

wherein the ventilation channels defined by the apertures are each sized and configured to create a venturi effect when air flows therethrough which facilitates the circulation of air over the back surfaces of the lenses to resist the fogging thereof.

5,610,669

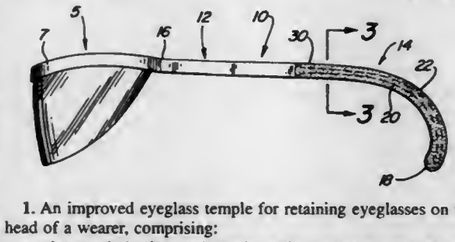
TEMPLE FOR EYEGLASSES EMBODYING AN INTEGRALLY FORMED EAR PIECE

Raymond J. Kuipers, and Dominica R. Kuipers, both of 27312 Via Segundo, Mission Viejo, Calif. 92692

Filed Jul. 10, 1995, Ser. No. 499,860

Int. Cl.[6] G02C *5/14*

U.S. Cl. 351—122 **16 Claims**



1. An improved eyeglass temple for retaining eyeglasses on the head of a wearer, comprising:

an elongated plastic temple having a first end, a second end, and an engaging portion extending from the second end of the temple towards the first end, the engaging portion for engaging the head of the wearer; and

a resilient elastomeric member integrally formed on the engaging portion of the temple to provide a pliable ear piece, the pliable ear piece integrally formed on the engaging portion at such a temperature that the molecular structure of the elastomeric material comprising the ear piece cross-links to the molecular structure of the plastic comprising the temple to integrally bond the ear piece to the temple to prevent the ear piece from detaching from the engaging portion and for preventing the ear piece from moving about on the temple, the pliable ear piece extending along the engaging portion to provide an increased coefficient of friction between the temple and the head and ear of the wearer.

5,610,670

OPTHALMIC LENS HAVING A POSITIVE REFRACTIVE POWER

Yasunori Ueno, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 472,926

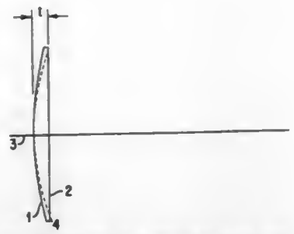
Claims priority, application Japan, Jun. 23, 1994, 6-164533

Int. Cl.[6] G02C *7/02*

U.S. Cl. 351—176 **9 Claims**

1. An aspherical ophthalmic lens having a positive refractive power, an axis of symmetry and a periphery, comprising:

an aspherical front refractive surface having a meridional plane and a sagittal plane that intersects said meridional plane, said sagittal plane having a sagittal plane curvature of ρ_s and said meridional plane having a meridional plane curvature of ρ_m, wherein a curvature difference Z defined as $Z=\rho_m-\rho_s$ decreases over a range from said axis of symmetry to at least



approximately 20 mm in a direction from said axis of symmetry toward said periphery; and

a rear refractive surface.

5,610,671

OPHTHALMIC APPARATUS

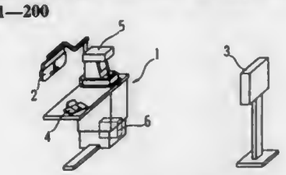
Yoshinobu Hosoi, Gamagori, and Hirohisa Terabe, Toyokawa, both of Japan, assignors to Nidek Co., Ltd., Japan

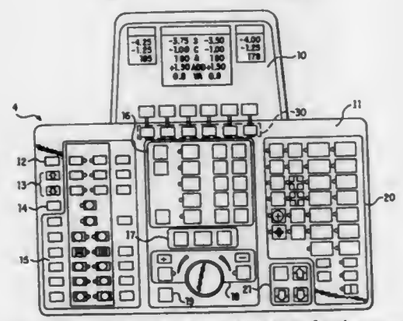
Filed Jan. 25, 1996, Ser. No. 591,798

Claims priority, application Japan, Jan. 31, 1995, 7-036094

Int. Cl.[6] A61B *3/00;3/10;3/02;* **G05B** *19/02*

U.S. Cl. 351—200 **15 Claims**





1. An ophthalmic apparatus for obtaining a refractive corrected-degree based on a refractive power of each of eyes to be examined, the ophthalmic apparatus comprising:

refractive power inspecting means for inspecting the refractive power of said each eye;

program storing means for storing therein a program for measuring completely-corrected degrees of said eyes, adjusting the completely-corrected degrees according to factors for adjusting degrees to be corrected and thereby predicting degrees to be prescribed;

input means for inputting data about the factors for adjusting the degrees to be corrected;

program conducting means for advancing the program stored in said program storing means;

control means for sequentially activating said ophthalmic apparatus in accordance with the program and processing the result of inspection by completely-corrected degree inspecting means and the data input by said input means thereby to predict prescribed degrees; and

display means for displaying the prescribed degrees predicted by said control means.

5,610,672

OPHTHALMIC MEASUREMENT APPARATUS FOR MEASURING BIOLOGICAL PROPERTIES IN THE EYE

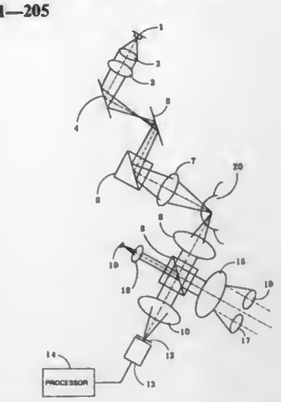
Taisuke Hirono, and Kenkichi Ueda, both of Chofu, Japan, assignors to Kowa Company Ltd., Japan

Filed Dec. 14, 1994, Ser. No. 355,515

Claims priority, application Japan, Dec. 24, 1993, 5-326490

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—205 **33 Claims**



1. An ophthalmic measurement apparatus comprising:

scanning means for spatially scanning the anterior chamber of an eye with a laser beam;

means for receiving reflected, scattered or disturbing light coming from the anterior chamber scanned by the laser beam; and

means for obtaining spatial distribution information on an intensity of the received light and analyzing the spatial distribution information on the intensity of the received light based on a prescribed determination criterion to determine the state of alignment between the apparatus and the eye.

5,610,673

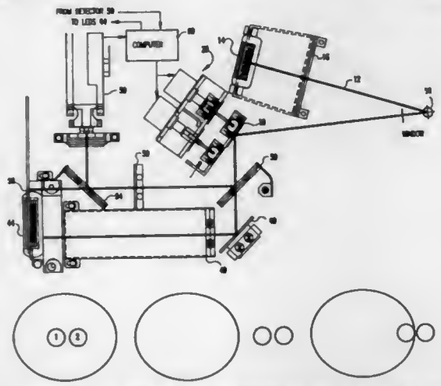
PUPIL DETECTION SYSTEM

Marc D. Rafal; Eric Starin, both of Rockville, and Jeff L. Krichmar, Kensington, all of Md., assignors to Pulse Medical Instruments, Inc., Rockville, Md.

Filed Sep. 14, 1995, Ser. No. 527,889

Int. Cl.[6] A61B *3/14;3/10*

U.S. Cl. 351—210 **14 Claims**



1. An improved pupil detection system for use in an eye tracking system comprising:

first and second spatially separated sources of infrared light;

optics forming images of said first and second sources of infrared light, said images being separated by a predetermined small distance, a combined size of said images being smaller than the smallest that a pupil of the eye ever becomes;

a tracking mirror movable about at least one axis and directing the infrared light toward the pupil of the eye, infrared light passing through the pupil of the eye and falling on the eye's retina where it is back scattered to back light the pupil, and said tracking mirror also reflecting light from the back lighted pupil;

a beam splitter intercepting the light from the back lighted pupil and reflected by said tracking mirror;

a detector positioned to receive light from said beam splitter, said detector having at least two outputs connected to provide a measure of decentering of the infrared light on said detector.

5,610,674

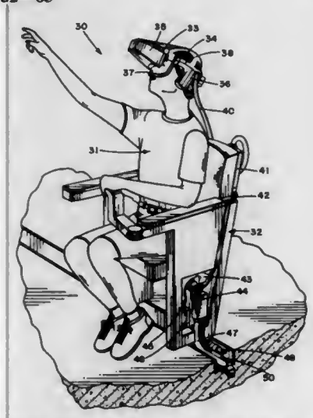
PRECISION FRAGRANCE DISPENSER APPARATUS

David A. Martin, 11422 Willow Gardens Dr., Windermere, Fla. 34786

Filed Jun. 19, 1995, Ser. No. 492,401

Int. Cl.[6] G03B *21/32*

U.S. Cl. 352—85 **20 Claims**



1. A fragrance dispenser for use with synchronized visual images comprising:

a fragrance dispensing generator for generating a fragrance dispersing signal, said fragrance dispensing generator having a breath sensor for sensing a person's breath;

a plurality of fragrance dispensers coupled to said fragrance dispenser generator and each having a fragrance release portion positioned adjacent a person's nose for dispensing a fragrance adjacent the nose responsive to a fragrance dispensing signal from said fragrance dispensing generator;

a source of pressurized gas connected to each fragrance dispenser; and

a gas pressure control mechanism connected between said source of pressurized gas and each of said plurality of fragrance dispensers for controlling the dispersion of a plurality of different fragrances responsive to said fragrance dispensing generator, whereby a fragrance is dispensed adjacent a person's nose.

5,610,675

APPARATUS FOR INSERTING DATE INFORMATION IN CAMERA FILM

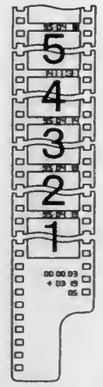
Yoshiyuki Iwamatsu, and Shinichi Endo, both of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed May 23, 1996, Ser. No. 653,757

Claims priority, application Japan, May 24, 1995, 7-125260

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—315 **3 Claims**



1. An apparatus for optically or magnetically inserting date information into given positions located outside exposure regions of a film loaded in a camera, said apparatus comprising:

a date information modification means for making a modification to said date information;

a first storage means for storing unmodified date information;

a second storage means for storing modified date information obtained by making a modification to said date information;

a third storage means for storing a difference between the date information stored in said first storage means and the date information stored in said second storage means;

a fourth storage means for storing information indicative of the number of frames of the film used for photography before said modification; and

a date information insertion means for inserting the information stored in said first storage means into given positions located in the frames and for inserting the information stored in the third and fourth storage means into other given positions located outside the exposure regions of said film.

5,610,676

CAMERA PERMITTING CHANGE-OVER OF PHOTOGRAPHIC IMAGE PLANE FRAME

Isao Nakazawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 371,593, Jan. 12, 1995, abandoned, which is a continuation of Ser. No. 27,380, Mar. 8, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 554,666

Claims priority, application Japan, Mar. 12, 1992, 4-053687

Int. Cl.[6] G03B *19/12*

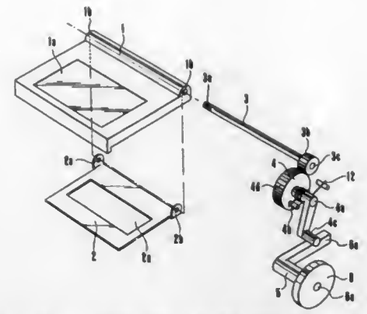
U.S. Cl. 396—355 **21 Claims**

21. A luminous flux blocking apparatus comprising:

luminous flux deflecting means for deflecting luminous flux, said luminous flux deflecting means being capable of changing a deflecting state through its own movement;

light blocking means for blocking at least a part of the luminous flux; and

selecting means for selecting between a first state in which said light blocking means follows a movement of said luminous



flux deflecting means and a second state in which said light blocking means does not follow a movement of said luminous flux deflecting means.

5,610,677

CAMERA

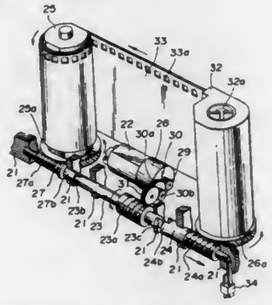
Moriya Katagiri, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 254,961

Claims priority, application Japan, Jun. 8, 1993, 5-137553

Int. Cl.[6] G03B *1/18*

U.S. Cl. 354—173.1 **14 Claims**



1. A camera which feeds a film out from a film patrone by rotating a film wind shaft in said film patrone in a film advance direction, comprising:

a drive source capable of selectively rotating forward and backward;

a fork shaft for rotating said film wind shaft in said patrone by being rotated in engagement with said film wind shaft;

a rotatable spool shaft for taking up said film fed out from said patrone;

a drive shaft rotatable about an axis of rotation being selectively rotated forward and reversely by said drive source, and capable of moving in either direction along the rotational axis;

a first connecting shaft coaxial with said drive shaft movable in the axial direction and rotatable upon engagement with said drive shaft and engaged with said fork shaft through a helical spur gear; and

a second connecting shaft rotatable about its axis and coaxial with said drive shaft and having a helical spur gear engaging said spool shaft to rotate said spool shaft responsive to rotation of said drive shaft.

5,610,678

CAMERA INCLUDING CAMERA BODY AND INDEPENDENT OPTICAL VIEWFINDER

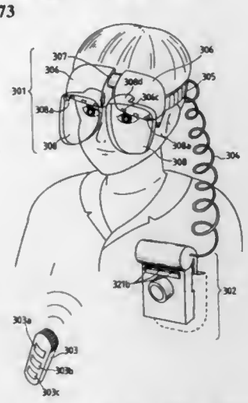
Takayuki Tsubol, Yokohama, and Yasuhiro Toyoda, Ohmiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1994, Ser. No. 365,682

Claims priority, application Japan, Dec. 30, 1993, 5-350359; Dec. 30, 1993, 5-350360

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—373 **36 Claims**



1. An apparatus adapted for use with a camera including a camera body and an independent optical viewfinder, the apparatus comprising:

a following device that drives a photographing field of the camera body to follow a viewfinder field of the optical viewfinder.

5,610,679

METHODS OF FILM WINDING AND LOADING A FILM IN A LENS-FITTED FILM UNIT AND A FILM SUPPLYING SPOOL

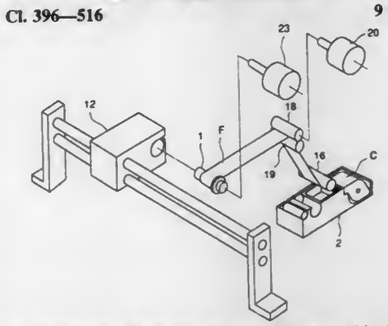
Kazuyoshi Sugano, and Kiyohide Ito, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed May 13, 1996, Ser. No. 645,127

Claims priority, application Japan, May 18, 1995, 7-119885

Int. Cl.[6] G03B *17/26;17/02*

U.S. Cl. 396—516 **9 Claims**



1. A method for loading an unexposed photographic film in a lens-fitted photographic film unit, the method comprising the steps of:

(a) providing a cartridge storing the unexposed film therein, and a film supplying spool having a film winding part around which the film is wound, a portion defining a suction hole for film-attraction formed on the film winding part, and a portion defining a hollow hole for air-suction formed concentrically with the supplying spool;

(b) thrusting out the film from the cartridge;

(c) sucking air from the hollow hole so that the film thrust out from the cartridge is attracted to the suction hole;

(d) winding up the film by a predetermined length to the supplying spool while attracting the film to the suction hole; and

(e) loading the cartridge and the supplying spool in a main body of the lens-fitted photographic film unit.

5,610,680

DISTANCE MEASURING APPARATUS FOR A CAMERA

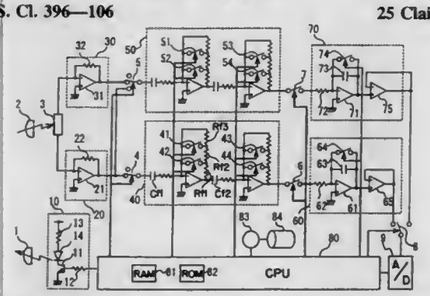
Yoichi Seki; Michio Kawai; Hiroyuki Saito, and Akira Ito, all of Yotsukaido, Japan, assignors to Seiko Precison Inc., Japan

Filed May 24, 1995, Ser. No. 449,816

Claims priority, application Japan, May 24, 1994, 6-109780; May 9, 1995, 7-110727

Int. Cl.[6] G03B *3/00*

U.S. Cl. 396—106 **25 Claims**



1. A distance measuring apparatus for a camera, comprising: light projecting means for projecting a light onto an object to be photographed; light receiving means for receiving light projected by the light projecting means and reflected by the object to be photographed and converting the received light into first and second output signals in accordance with the intensity and direction of the received light; first selecting means for selecting the first output signal; second selecting means for selecting one of the first and second output signals; first signal processing means connected to the first selecting means for processing the first output signal and producing output data including distance measurement data and adjustment data; second signal processing means connected to the second selecting means for processing the output signal selected by the second selecting means and producing output data including distance measurement data and adjustment data; control means for performing a distance measurement operation by controlling the light projecting means to project a light, controlling the first selecting means to select the first output signal and controlling the second selecting means to select the second output signal, such that the first and second signal processing means process the first and second output signals, respectively, to output distance measurement data, and for performing an adjustment operation by controlling the first selecting means to select the first output signal and controlling the second selecting means to select the first output signal, such that the first and second signal processing means each process the first output signal to output adjustment data; a first memory for storing the distance measurement data a second memory for storing the adjustment data; and calculating means for calculating a distance to the object by adjusting the distance measurement data stored in the first memory using the adjustment data stored in the second memory.

5,610,681

OPTICAL EYE-CONTROL APPARATUS

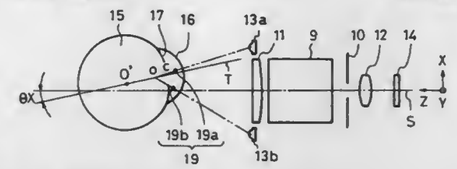
Akihiko Nagano, Ichihara; Akira Yamada, and Yoshiaki Irie, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 248,540, May 24, 1994, abandoned, which is a continuation of Ser. No. 141,614, Oct. 27, 1993, abandoned. This application Aug. 5, 1996, Ser. No. 692,639

Claims priority, application Japan, Oct. 31, 1992, 4-315834

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—51 **14 Claims**



1. An apparatus comprising:

a viewfinder having an ocular lens; irradiation means for irradiating the eye of an observer;

an area type sensing means having a plurality of pixels arranged in a two-dimensional manner and having a set pitch in a sensing direction;

converging optical means for converging light reflected by the eye onto said sensing means, said converging optical means having an image forming magnification; and

means for making a signal denoting the direction of the line of sight of the eye in accordance with an output from said sensing means, wherein

assuming that an effective area of an ejection surface of said ocular lens is S2 and a projection area realized when a light receiving region of said sensing means is projected onto the ejection surface is S1, the following relationship is satisfied:

$$0.5 \leqq S1/S2 \leqq 1,$$

and

assuming that the image forming magnification of an optical system including said ocular lens and said converging optical means is β and the pitch of said pixels of said sensing means is Pitch X, the following relationship is satisfied:

$$\text{Pitch } X/\beta < 0.41 \text{ mm}.$$

5,610,682

PHOTOGRAPHING METHOD AND PHOTOSENSITIVE MATERIAL PRINTING APPARATUS UTILIZING THE SAME

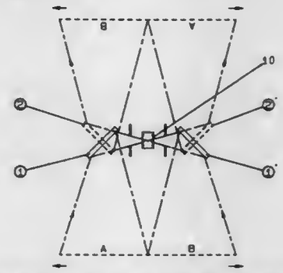
Miyuki Yamashita, Tokyo, Japan, assignor to Hirakawa Kogyo Sha Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1995, Ser. No. 367,860

Claims priority, application Japan, Apr. 20, 1994, 6-104560

Int. Cl.[6] G03B *27/48;27/50;27/70*

U.S. Cl. 355—51 **8 Claims**



1. A photographic method which comprises arranging a convex lens having optical properties symmetrical between the entrance side and the exit side of light in a position above an original such

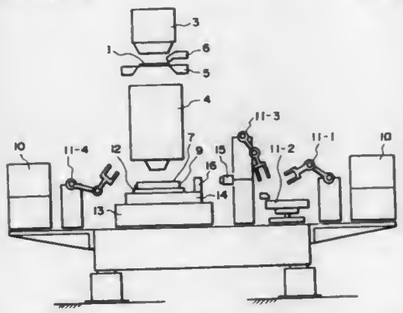
that the center of the lens may lie in the plane which contains the center line dividing the original symmetrically between the left and right halves and is perpendicular to the original; arranging two pairs of mirrors around said lens such that one pair of mirrors ① and ①' may be disposed separately on the left side and the right side of said lens, and that in symmetry with respect to the lens on the front side with respect to the optical axis of the lens, and the other pair of mirrors ② and ②' may be disposed separately on the left side and the right side of said lens, and that in symmetry with respect to the lens on the rear side with respect to the optical axis of the lens, and further the mirrors ① and ②' may be in point symmetry about the center of the lens and that may go for the mirrors ① and ②, too; and inclining said mirrors at angles such that the rays incident on the mirror ①, which are rays reflected from the original by imagewise exposure, may pass through the lens and then be reflected by the mirror ②' and, at the same time the rays incident on the mirror ①' which are rays reflected from the original by imagewise exposure, may pass through the lens and then be reflected by the mirror ②: thereby covering the left half area of the original with the mirror ① and the right half area of the original with the mirror ①', and forming the whole images of the original on the same plane.

5,610,683

IMMERSION TYPE PROJECTION EXPOSURE APPARATUS

Kazuo Takahashi, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 156,707, Nov. 24, 1993, abandoned.
This application Jun. 5, 1995, Ser. No. 464,062
Claims priority, application Japan, Nov. 27, 1992, 4-339510
Int. Cl.[6] G03B *27/42*
U.S. Cl. 355—53 **29 Claims**



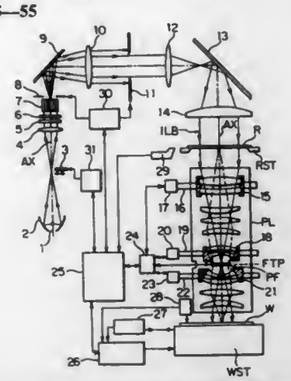
1. A projection exposure apparatus, comprising:
illumination means for illuminating a pattern of an original;
holding means for holding a substrate;
a projection system for projecting an image of the pattern of the original onto the substrate held by said holding means, said projection system including a projection optical system and a plane optical element spaced from said projection optical system and disposed opposite to the surface of the substrate; and
a casing having a filled interspace formed between said optical element and the substrate, wherein said optical element provides an upper cover of said casing, and a portion of an outer wall of said casing is covered by a heat insulating material.

5,610,684

PROJECTION EXPOSURE APPARATUS

Naomasa Shiraishi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 385,876
Claims priority, application Japan, Feb. 17, 1994, 6-020190
Int. Cl.[6] H01L *21/30*
U.S. Cl. 355—55 **22 Claims**



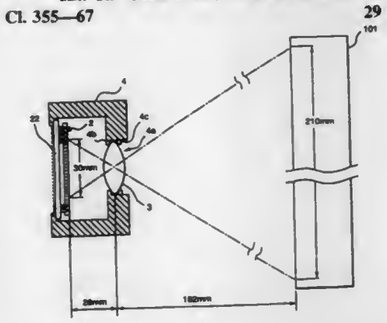
1. A projection exposure apparatus having an illuminating optical system for irradiating a mask having a pattern with illuminating light for exposure, and a projection optical system which is composed of a plurality of optical elements and arranged along an optical axis of said projection optical system to receive light emanating from the pattern of said mask and to project an image of said pattern on a photosensitive substrate with predetermined image-forming characteristics, said projection exposure apparatus comprising:
an optical corrector plate inserting device whereby an optical corrector plate which changes a specific factor in said image-forming characteristics is removably inserted into a space including a Fourier transform plane of said projection optical system; and
an optical element moving device for causing at least one of said optical elements to move relative to the entire projection optical system in accordance with insertion of said optical corrector plate.

5,610,685

LED WRITE APPARATUS AND METHOD FOR MAKING SAME

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1995, Ser. No. 416,286
Claims priority, application Japan, May 20, 1994, 6-106394
Int. Cl.[6] G03B *27/00;27/54;* **B41J** *2/45*
U.S. Cl. 355—67 **29 Claims**



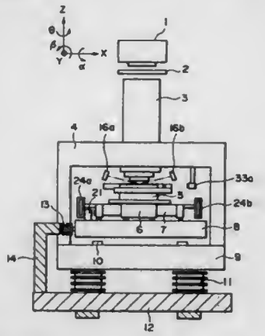
1. A Light Emitting Diode (LED) write apparatus which forms an image on a recording medium by scanning the recording medium while controlling activation of individual LEDs, the apparatus comprising:
an LED head formed by arranging a plurality of LEDs in a row on a substrate having a smaller width than that of the recording medium, the length of each LED in the direction perpendicular to the row direction of the LEDs being longer than the width of each LED in the row direction, and
magnifying/projecting means for magnifying the width of light in a direction along the row LEDs from the LED head to the width of the recording medium, projecting the magnified light onto the recording medium, and reducing the width of light in the perpendicular direction from the LED head to that nearly equal to the width of the light of one LED in the row direction.

5,610,686

EXPOSURE APPARATUS INCLUDING AN ANTIVIBRATION CONTROL SYSTEM

Eiji Osanai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,312
Claims priority, application Japan, Mar. 15, 1994, 6-068960
Int. Cl.[6] H01L *21/30;* **G03B** *27/58*
U.S. Cl. 355—72 **10 Claims**



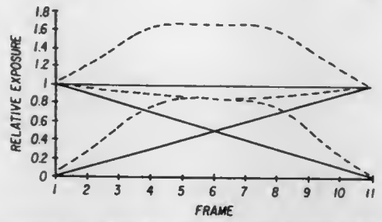
1. An exposure apparatus, comprising:
a projection optical system;
a stage for moving a substrate in a direction intersecting an optical axis of said projection optical system;
a first base for supporting said stage;
a main base for supporting said projection optical system;
static pressure bearing means for supporting, without contact, said first base relative to said main base with respect to a direction of the optical axis of said projection optical system;
a second base;
anti-vibration means for supporting said main base relative to said second base while isolating said main base from vibration of said second base; and
supporting means for supporting said first base relative to said second base with respect to a direction intersecting the optical axis of said projection optical system, wherein any vibration of said first base in a direction intersecting the optical axis of said projection optical system and being attributable to movement of said stage is transmitted through said supporting to said second base.

5,610,687

SYSTEM AND METHOD FOR FADE AND DISSOLVE EXPOSURE PROFILE CONTROL IN A MOTION PICTURE PRINTER

Mitchell J. Bogdanowicz, Spencerport, and Richard C. Sehlin, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1994, Ser. No. 352,010
Int. Cl.[6] G03B *27/72*
U.S. Cl. 355—80 **20 Claims**



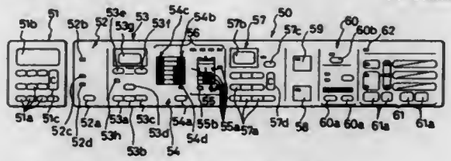
1. A system for fading and dissolving two original color record scenes together on a light sensitive material, the system comprising:
a) a first color record;
b) a second color record;
c) a motion picture printer comprising a light source, a fader slit, a non-uniform filter and an exposing slit; and
d) a light sensitive material onto which the first and second color records can be illuminated by means of the light source;
wherein the non-uniform filter is non-uniform in one direction thereof with respect to its ability to filter light from the light source, said filter being positioned so as to alter the relative intensity and/or spectral characteristics of light trasmitted to the light sensitive material as the fader slit is opened and closed during a fade and dissolve printing process.

5,610,688

IMAGE FORMING APPARATUS HAVING ILLEGAL USE PREVENTION

Kiyoshi Inamoto, Sakai; Masao Miyaza, Osaka, and Yasuhiro Nakai, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1994, Ser. No. 333,348
Claims priority, application Japan, Nov. 5, 1993, 5-276596; Nov. 11, 1993, 5-282822
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—366 **58 Claims**



1. An image forming apparatus comprising:
a memory;
image reading means for reading an image on a document and converting the image into image data;
image printing means for forming an image on a sheet based on the image data;
identification-information input means for inputting operator identification information for identifying an operator;
image processing means for processing the image data for comparison with a specific image;

specific-image judging means for judging whether the image data is the specific image based on an output from said image processing means;

memory controlling means for storing operation status information including at least the operator identification information of an operator who has tried to carry out an image forming process from the specific image in said memory when the image data obtained from the document is judged to be the specific image by said specific-image judging means; and

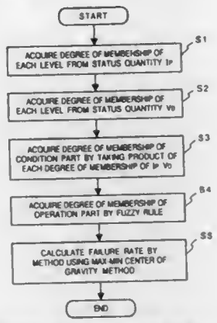
operation controlling means for storing pre-registered operator identification information and controlling said image printing means to form an image that is an exact copy of the image data only when operator identification information inputted by an operator coincides with the pre-registered operator identification information and is not included in the operation status information that has been stored in said memory.

5,610,689

IMAGE FORMING APPARATUS HAVING FAILURE DIAGNOSING FUNCTION

Yuji Kamiya, Yokohama; Atsushi Takeda, and Toru Katsumi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 174,458, Dec. 28, 1993, abandoned.
This application Jan. 25, 1996, Ser. No. 591,109
Claims priority, application Japan, Dec. 28, 1992, 4-361308; Jan. 13, 1993, 5-003915
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—31 **65 Claims**



1. An image forming apparatus comprising:

a corona discharge device for charging a surface of a photoreceptor;

first detecting means for detecting a value of a current supplied to said corona discharge device;

second detecting means for detecting a surface potential of the photoreceptor charged by said corona discharge device;

memory means for storing a membership function regarding the value of the current detected by said first detecting means, a membership function regarding the surface potential detected by said second detecting means, and a membership function regarding a deterioration rate of said corona discharge device; and

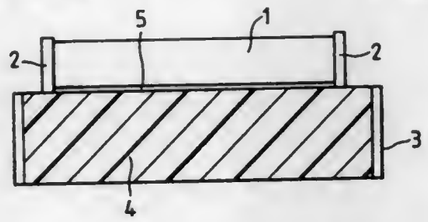
reasoning means for receiving, as status quantities, the value of the current detected by said first detecting means and the surface potential detected by said second detecting means, and for inferring, by fuzzy reasoning, the deterioration rate of said corona discharge device based upon the input status quantities and each of the membership functions stored in said memory means.

5,610,690

ELECTROPHOTOGRAPHIC APPARATUS AND PROCESS CARTRIDGE FEATURING AN ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING A SURFACE LAYER OF LUBRICATIVE FLUORINE-CONTAINING RESIN POWDER

Toshiyuki Yoshihara, Kawasaki; Hideki Anayama; Itaru Yamazaki, both of Yokohama; Hideyuki Ainoya; Hidetoshi Hirano, both of Tokyo, and Mayumi Kimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 293,325, Aug. 22, 1994, abandoned.
This application Mar. 15, 1996, Ser. No. 616,767
Claims priority, application Japan, Aug. 30, 1993, 5-235894
Int. Cl.[6] G03G *5/00*
U.S. Cl. 399—167 **16 Claims**



1. An electrophotographic apparatus comprising an electrophotographic photosensitive member, a charging means, an exposure means, a developing means having a toner feed member, a transfer means, and a cleaning means;

said electrophotographic photosensitive member comprising a surface layer containing a lubricative, fluorine-containing resin powder, wherein said surface layer comprises a photosensitive layer or a protective layer on said photosensitive layer; and

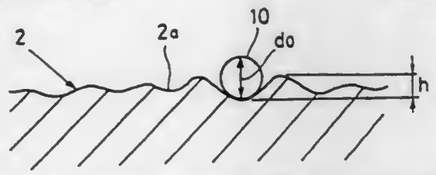
said toner feed member comprising a spacer member coming into contact with the surface layer of said electrophotographic photosensitive member, wherein a peripheral speed of said toner feed member is higher than a peripheral speed of said electrophotographic photosensitive member.

5,610,691

IMAGE FORMING APPARATUS HAVING A CONTACT CHARGING MEMBER AND A CLEANING MEMBER

Sadao Takahashi, Tokyo; Hirohisa Ohtsuka, Kawaguchi, and Takaaki Tawada, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,505
Claims priority, application Japan, Oct. 11, 1994, 6-244999; Oct. 5, 1995, 7-258553
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—176 **7 Claims**



1. An image forming apparatus comprising a contact charging member which contacts a surface of an image carrier member in order to charge the surface of said image carrier member, and a cleaning member which contacts and slides on a surface of said contact charging member in order to clean the surface of said

contact charging member, said image forming apparatus performing a function in such a way that after an electrostatic latent image is produced on said image carrier member which is in a charge state, toner powder is supplied to said image carrier member by developing means in order to visualize the electrostatic latent image and then a visualized image is transferred to a transfer member,

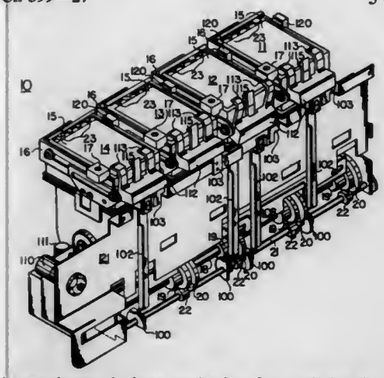
wherein a maximum height of concavities and convexities formed on the surface of said contact charging member is equal to or less than an average particle diameter of the toner powder supplied by said developing means.

5,610,692

TONER HOPPER LOCKOUT MECHANISM

Jeffrey L. Trask, Boise, Id.; Hiroyuki Honda, and Kenji Sato, both of Hachioji, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 14, 1994, Ser. No. 306,049
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—27 **5 Claims**



1. A toner-hopper lockout mechanism for regulating the replenishment of toner in a hopper of an electrographic printing device which comprises:

toner level detector for detecting a low level of toner within the toner hopper:

toner cartridge lockout assembly being attached to the toner hopper, the toner cartridge lockout assembly including:

a lockout member being pivotally attached to the hopper and configured to pivot between a locked out position, at which the engagement of a toner cartridge with the toner hopper is prevented by a portion of the lockout member, and a refill position at which the engagement of a toner cartridge with the toner hopper is permitted;

a follower member having a follower tip being positioned to engage the lockout member; and

a support plate being attached to the bopper and slidably supporting the follower member between an upward locked out position and a downward refill position; and spring bushing attachment means for slidably supporting an upper portion of the follower member but configured to permit the upper portion of the follower member to pull away from the support plate; and

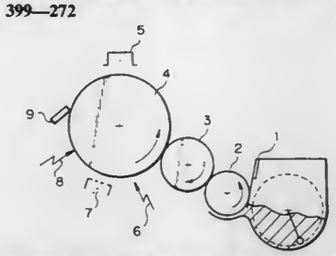
a selector assembly for selectively disengaging and reengaging the toner cartridge lockout assembly, being responsive to the toner level detector and configured to cause the lockout member to interfere with engagement of a toner cartridge with the toner hopper when a low level of toner is not detected in the toner bopper.

5,610,693

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

Toshihiro Sugiyama, Atsugi; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Isehara; Tetsuo Yamanaka, Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,868
Claims priority, application Japan, Oct. 29, 1993, 5-272311
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—272 **35 Claims**



1. A developing device for an image forming apparatus and for developing an electrostatic latent image formed on an image carrier by using single-component type toner, said device comprising:

regulating means for regulating an amount of toner and for charging toner by friction;

first conveying means for conveying the toner regulated and charged by said regulating means and deposited thereon; and

second conveying means for conveying the toner transferred from said first conveying means thereto to the image carrier, and wherein toner is transferred from said first conveying means to said second conveying means by the force of an electric field;

said first conveying means and said second conveying means moving with respect to each other such that toner is carried on said second conveying means at a density higher than the density of toner carried on said first conveying means.

5,610,694

LATENT DEVELOPMENT APPARATUS FOR USE IN ELECTROPHOTOGRAPHIC IMAGING SYSTEM

Ishaiau Lior, Ness Zlona; Amiran Lavon, Bat Yam, and Ehud Chatow, Petach Tikva, all of Israel, assignors to Indigo N.V., SM Veldhoven, Netherlands

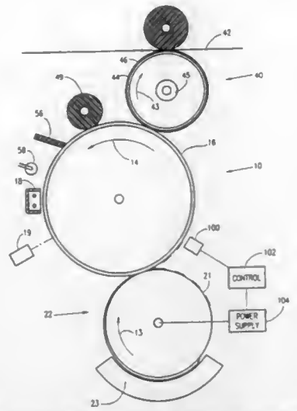
PCT No. PCT/NL93/00010, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/16364, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1993, Ser. No. 464,851
Int. Cl.[6] G03G *15/10*
U.S. Cl. 399—240 **23 Claims**

1. Imaging apparatus comprising:

an image-forming surface having formed thereon a latent electrostatic image, the latent electrostatic image including image regions at a first voltage and background regions at a second voltage;

a developer surface charged to a third voltage intermediate the first and second voltages and having a second surface urged against and adapted for operative engagement with the image-forming surface at a first, development, region, said developer surface capable of having formed thereon a layer of concentrated liquid toner comprising charged toner particles and carrier liquid;

a developer comprising the developer surface, which develops the latent image, wherein the third voltage is such that less



than the total thickness of the layer of concentrated liquid toner is transferred from the developer surface to the image regions of the image-forming surface to form a developed image on the image-forming surface; and

means for transferring the developed image from the image-forming surface to a final substrate.

5,610,695

ROLLER FOR ELECTROPHOTOGRAPHIC DEVELOPMENT APPARATUS

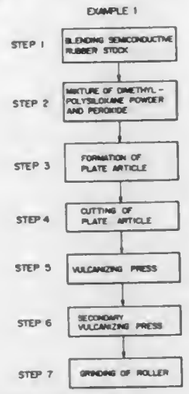
Takao Mizutani; Hirokazu Ando, and Hiroshi Kikuchi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,214

Claims priority, application Japan, Sep. 9, 1994, 6-242238

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—284 **16 Claims**



1. A developer roller. comprising:

(a) a shaft; and

(b) an elastic layer, formed at an outer peripheral surface of the shaft, wherein the elastic layer includes a rubber elastic material containing therein electrically insulating micro-powder distributed substantially uniformly throughout and on the surface of the rubber elastic material, such that a degree of roughness of the outer surface of the elastic layer remains substantially constant as the micro-powder and the rubber elastic material are worn from an outer surface of the elastic layer by friction.

5,610,696

IMAGE FORMING APPARATUS HAVING DEVELOPER CARRYING MEMBER SUPPLIED WITH OSCILLATING VOLTAGE

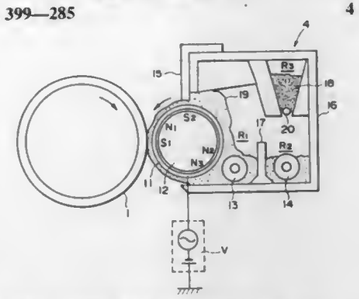
Kazuhisa Kemmochi; Shigeru Ohki, both of Yokohama, and Hiroyuki Suzuki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 214,213, Mar. 17, 1994, Pat. No. 5,424,812. This application Mar. 1, 1995, Ser. No. 396,705

Claims priority, application Japan, Mar. 19, 1993, 5-085403

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—285 **4 Claims**



1. An image forming apparatus comprising:

an image bearing member for bearing an electrostatic image;

a developer carrying member, opposed to said image bearing member, for carrying a developer comprising toner particles and carrier particles;

electric field forming means for forming an intermittently alternating electric field between said image bearing member and said developer carrying member by applying a substantially rectangular developing bias voltage to said developer carrying member, wherein the developing bias voltage has an oscillating portion having a continuous plurality of oscillating voltage levels and has a rest portion having a non-oscillating voltage level.

5,610,697

ELECTROPHOTOGRAPHIC APPARATUS CAPABLE OF PREVENTING IMAGE DETERIORATION ATTRIBUTABLE TO RESIDUAL TONER PARTICLES

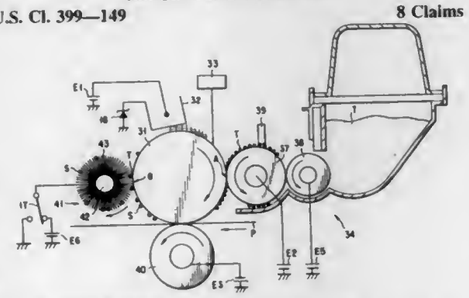
Seiji Arai, Hachioji, Japan, assignor to Kabushiki Kaisha TEC, Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 519,237

Claims priority, application Japan, Aug. 31, 1994, 6-207179; Sep. 16, 1994, 6-222156

Int. Cl.[6] G03G *15/06;21/00*

U.S. Cl. 399—149 **8 Claims**



1. An electrophotographic apparatus comprising:

a photoreceptor formed of a photoconductive material and adapted to be rotated at a time of image formation;

charging means for charging the photoreceptor;

exposure means, situated on a lower-course side of the charging means with respect to a rotating direction of the photoreceptor, for exposing the photoreceptor to form an electrostatic latent image thereon;

developing means, situated on a lower-course side of the exposure means with respect to the rotating direction of the photoreceptor, for causing a nonmagnetic one-component developing agent to adhere to the photoreceptor to thereby develop the electrostatic latent image into a toner image;

transfer means, situated on a lower-course side of the developing means with respect to the rotating direction of the photoreceptor, for transferring the toner image to a recording sheet;

an electrically conductive member situated on a lower-course side of the transfer means with respect to the rotating direction of the photoreceptor and adapted to be in contact with the photoreceptor;

determination means for determining whether or not an image recording region on the photoreceptor on which the electrostatic latent image has been formed is located in the vicinity of the conductive member;

first application means for applying a voltage of a first potential, different from a potential of the image recording region on the photoreceptor, to the conductive member when the determination means determines that the image recording region is located in the vicinity of the conductive member, whereby a residual toner remaining on the photoreceptor after transfer by the transfer means is collected by the conductive member;

second application means for applying a voltage of a second potential, different from the first potential, to the conductive member when the determination means determines that the image recording region is not located in the vicinity of the conductive member, whereby the residual toner collected by the conductive member is discharged onto a non-image recording region on the photoreceptor, charged by the charging means, and then returned to the developing means.

5,610,698

IMAGE FORMING APPARATUS FOR INVERTING AN ORIGINAL TO RECORD BOTH SURFACES ON SEPARATE RECORDING MATERIALS

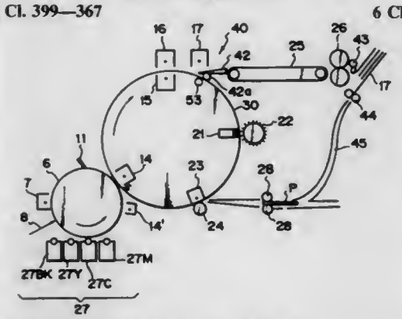
Takeshi Menjo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,812

Claims priority, application Japan, Dec. 22, 1993, 5-345650

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—367 **6 Claims**



1. An image forming apparatus comprising:

a movable recording material carrying member for carrying recording materials thereon, said carrying member being capable of carrying first and second recording materials thereon at the same time;

light irradiating means for irradiating an original;

image forming means for forming images on the recording materials carried on said recording material carrying member at an image forming position in conformity with images of an original irradiated by said light irradiating means, said image forming means being capable of forming images on the recording materials carried to said image forming position a plurality of times by said recording material carrying member; and

inverting means for inverting the original so that both surfaces of the original are irradiated with light by said light irradiating means, whereby an image on the first surface of the original is formed on one surface of said first recording material and an image on the second surface of the original is formed on one surface of said second recording material.

5,610,699

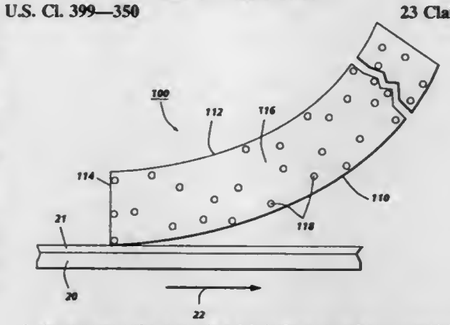
PHOTORECEPTOR CLEANING APPARATUS AND METHOD

Robert C. U. Yu, and Eric J. Schneider, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1994, Ser. No. 274,065

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—350 **23 Claims**



1. An apparatus for removing debris from a surface, comprising:

a cleaning blade including at least an end region contacting the surface to remove debris therefrom; and

an antioxidant for neutralizing oxidizing agents present in the end region of said cleaning blade, wherein said antioxidant comprises a material selected from the group consisting of: 1,3-Diphenylisobenzofuran; 2-tert-Butyl-4-methyl phenol; 2-tert-Butyl-5-methyl phenol; 2-tert-Butyl-6-methyl phenol; 2,6-Di-tert-Butyl-4-methyl phenol; 1,4-Diamino naphthalene; Phenylene diamine; Alpha tecopherol; N-Phenyl-2-naphthylamine; N-tert-Butyl-alpha-phenylnitrone.

5,610,700

IMAGE FORMING APPARATUS INCLUDING A SYSTEM FOR COPYING AN IMAGE ON TWO DIFFERENT SHEET TYPES

Ken Yoshizuka, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 276,790, Jul. 18, 1994, abandoned. This application Jul. 10, 1996, Ser. No. 677,904

Claims priority, application Japan, Jul. 21, 1993, 5-180321

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—45 **19 Claims**

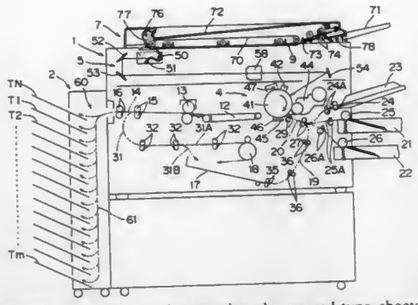
1. An image forming apparatus for forming an image on two types of sheets, comprising:

an input means for inputting a number of sheets on which an image is to be formed;

an image forming means for forming the image on a first-type sheet and for forming the image on at least one second-type sheet, wherein the image is formed on a number of second-type sheets corresponding to the number input by the input means;

a plurality of sheet receiving sections to which the sheets formed with the image are outputted;

a means for outputting the first-type sheet on which the image is formed by the image forming means into a predetermined one of the sheet receiving sections;



a means for sorting and outputting the second-type sheets on which the image is formed by the image forming means into the sheet receiving sections other than the predetermined sheet receiving section; and

a sheet adding means for attaching a third-type sheet onto each first-type sheet outputted into the predetermined sheet receiving section,

wherein, in a single image forming operation sequence, the image forming apparatus thereby produces one set of first-type sheets carrying an image corresponding to an image on an original document set, and at least one set of second-type sheets also carrying the image corresponding to the image on the original document set.

5,610,701

COLOR ELECTROPHOTOGRAPHIC APPARATUS AND IMAGE FORMING UNITS USED THEREIN

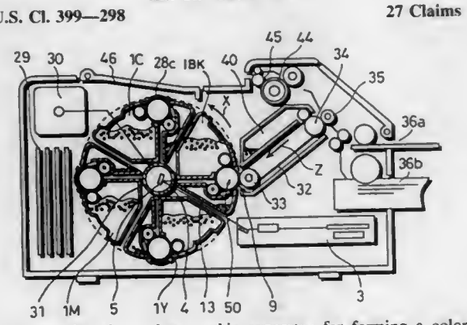
Hiroshi Terada, Ikoma; Hajime Yamamoto, Ibaraki, and Masahiko Nakamura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 18, 1994, Ser. No. 276,704

Claims priority, application Japan, Jul. 20, 1993, 5-178993; Jul. 20, 1993, 5-178998; Jul. 27, 1993, 5-184976; Jul. 28, 1993, 5-186041

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—298 **27 Claims**



1. A color electrophotographic apparatus for forming a color image by superimposing and transferring a plurality of toner images onto a transfer material, each of said toner images having a color different from others, said apparatus comprising:

a plurality of image forming units, each of the plurality of image forming units forming a corresponding one of said plurality of toner images and including a rotating photosensitive member on which a toner image is formed and a developing means which contains a color toner, said plurality of image forming units being so arranged in a form of a cylinder to be rotated around a rotation axis, the cylinder providing a space around the rotation axis;

a transfer means for transferring a toner image formed on said photosensitive member onto a transfer member, a transferring operation of a toner image being performed on a transfer position in said color electrophotographic apparatus;

a light emitting means for emitting a signal light directed towards said rotation axis from outside of said image forming units;

a rotation means for rotating said image forming units around said rotation axis so that said image forming units reach an image forming position in sequence, said image forming position corresponding to said transfer position;

a drive means for rotating said photosensitive member of an image forming unit when the image forming unit is positioned on said image forming position;

a mirror for reflecting said signal light emitted by said light emitting means to lead to said image forming position, said mirror being placed within the space adjacent the rotational axis; and

adjacent ones of said image forming units having a gap therebetween, said gaps extending in radial directions from the rotational axis and aligning with the mirror when the image forming unit is positioned at said image forming position, whereby the arrangement of the image forming units, with a gap between adjacent image forming units providing a light path to the mirror, enables a compact electrophotographic apparatus to be provided.

5,610,702

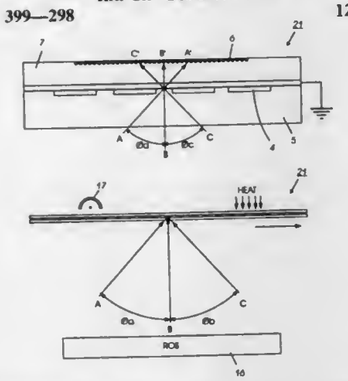
COLOR XEROPRINTING MASTER AND PROCESS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,229

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—298 **12 Claims**



1. An apparatus for producing a color image on a sheet member comprising:

an electrographic master representative of at least two color components of the color image; and

a transfer system for transferring at least two color components of the color image from the electrographic master to a sheet member.

5,610,703

METHOD FOR CONTACTLESS MEASUREMENT OF THREE DIMENSIONAL FLOW VELOCITIES

Markus Raffel, Göttingen; Jürgen Kompenhans, Gleichen, and Hans Höfer, Göttingen, all of Germany, assignors to Deutsche Forschungsanstalt Fur Luft-und Raumfahrt e.V., Bonn, Germany

Filed Jan. 31, 1995, Ser. No. 380,966

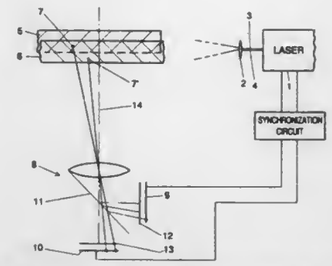
Claims priority, application Germany, Feb. 1, 1994, 44 02 957.8

Int. Cl.[6] G01P *3/36;* **G01F** *1/712*

U.S. Cl. 356—28 **18 Claims**

1. A method for the contactless measurement of three dimensional flow velocities, said method comprising the steps of:

seeding a flow with a plurality of tracer particles;



repeatedly illuminating a plane-like interrogation volume of the seeded flow;

projecting the repeatedly illuminated interrogation volume onto at least one photo sensor in a projection direction for recording pictures of the illuminated interrogation volume; and

determining the three dimensional flow velocities from the pictures of the repeatedly illuminated interrogation volume recorded by the at least one photo sensor;

providing at least two partial volumes positioned parallel to each other with respect to the projection direction of said interrogation volume as a part thereof;

wherein the step of repeatedly illuminating the interrogation volume includes the step of illuminating said partial volumes in such a way that the pictures of said partial volumes are distinguishable from each other; and

wherein the step of determining the three dimensional flow velocities of the flow includes the steps of calculating a local autocorrelation function of a double exposed picture of the same partial volume, calculating a local cross-correlation function between two pictures of said at least two partial volumes, determining the sign of the out-of-plane component of the local flow velocities by using the location of a peak of the local cross-correlation function between the two pictures of said at least two partial volumes, and determining the magnitude of the out-of-plane component of the local flow velocities by using the peak heights of peaks of both local correlation functions.

5,610,704

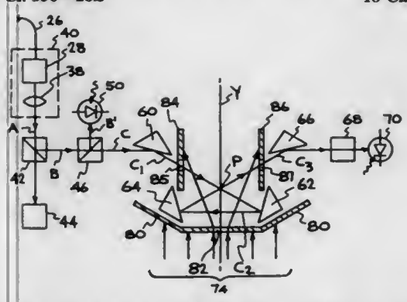
PROBE FOR MEASUREMENT OF VELOCITY AND DENSITY OF VAPOR IN VAPOR PLUME

Leon V. Berzins, Livermore; Bradford A. Bratton, Bethel Island, and Paul W. Fuhrman, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 21, 1994, Ser. No. 345,683

Int. Cl.[6] G01N *21/00;* **G01P** *3/36*

U.S. Cl. 356—28.5 **18 Claims**



14. A probe for use in measuring the velocity, density, temperature, and flow direction of vapor in a vapor plume which comprises:

a) a housing having a central passageway therein for providing a flow of said vapor through said probe from a vapor source to which said housing is adjustably mounted;

b) a light processing means for providing a beam of collimated and polarized light in the probe;

c) beam splitter means for splitting said beam of collimated polarized light into two beams, a reference beam and a main beam;

d) a first photo detector for detecting the energy of said reference beam;

e) first reflective means for diverting the path of said main beam to cross said vapor flow in said probe through said central passageway therein at a first angle of from greater than 0 degrees to less than 90 degrees with respect to a main axis of said central passageway;

f) second reflective means for diverting said path of said main beam at an angle sufficient to cause said main beam path to recross said flow of said vapor in said central passageway in a direction perpendicular to said main axis;

g) third reflective means for diverting the path of said main beam to cause said main beam path to cross said vapor flow in said central passageway for a third time at a second angle, with respect to said main axis, equal to said first angle; and

h) a second photo detector for measuring the energy of said main beam after it has crossed said vapor flow in said central passageway three times.

5,610,705

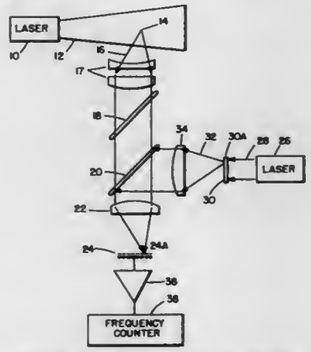
DOPPLER VELOCIMETER

Stephen J. Brosnan, San Pedro, and Hiroshi Komine, Torrance, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 16, 1995, Ser. No. 389,667

Int. Cl.[6] G01P *3/36*

U.S. Cl. 356—28.5 **11 Claims**



1. A two-dimensional image sensing velocimeter system for determining the velocity of an object comprising:

a source of coherent illumination beam of radiation directed onto a moving object wherein said moving object reflects said beam of radiation in the form of a plurality of separate unique simultaneously occurring reflected radiation wavefronts,

means for directing said plurality of simultaneously occurring separate reflected radiation wavefronts onto a radiation sensitive detection means having a plurality of separate radiation sensitive detection elements disposed in a two-dimensional array, each of said plurality of said radiation sensitive detection elements being responsive to a separate unique one of said simultaneously occurring reflected radiation wavefront directed thereon,

a local oscillator source of a plurality of simultaneously occurring separate reference radiation wavefronts, said local oscillator source of wavefronts including a scatter mask for scattering radiation into said plurality of simultaneously occurring separate reference radiation wavefronts,

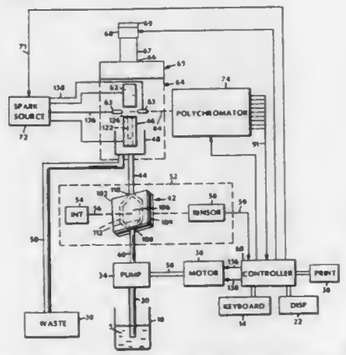
means for directing said plurality of simultaneously occurring separate reference radiation wavefronts onto separate ones of said plurality of radiation sensitive detection elements of said radiation sensitive detection means wherein each of said separate reference radiation wavefronts thereon are mixed coherently with a separate unique reflected radiation matching wavefront to produce a mixed wave that oscillates in time and wherein each of said separate ones of said plurality of radiation sensitive detection means simultaneously generates an electrical output signal representative of said oscillating mixed wave produced by each of said separate unique reflected radiation wavefronts mixed with each of said separate reference radiation wavefronts.

5,610,706

ANALYSIS SYSTEM

Charles E. Carroll, Kingston, N.H.; Garry C. Kunselman, Stow, Mass., and Arthur E. Tobey, Salem, N.H., assignors to Thermo Jarrell Ash Corporation, Franklin, Mass.

Filed Feb. 2, 1994, Ser. No. 191,395
Int. Cl.[6] G01N *21/67;21/35;33/26*
U.S. Cl. 356—70 **33 Claims**



1. An analytical system for analyzing a liquid sample comprising

housing structure,

structure in said housing structure defining a first analysis region having an inlet and an outlet, a FTIR analysis system disposed in sensing relation to said first analysis region,

structure in said housing structure defining a second analysis region having an inlet and an outlet, a polychromator system disposed in sensing relation to said second analysis region,

sample excitation apparatus disposed in said second analysis region, said sample excitation apparatus including a pair of spaced metal electrodes, one of said electrodes having an upper surface in spaced juxtaposition to the other electrode and a through passage connected to said inlet of said second analysis region, said one metal electrode being disposed with said through passage extending to an outlet port in said upper surface, and structure in said upper surface defining a plurality of channels extending away from said outlet port of said through passage for discharge of excess quantities of a liquid sample to be analyzed flowed through said through passage,

structure defining a sample inlet port, structure connecting said sample inlet port to said inlets of said first and second analysis regions,

control structure in said housing structure for flowing a sample to be analyzed from said sample inlet port through said first and second analysis regions, and

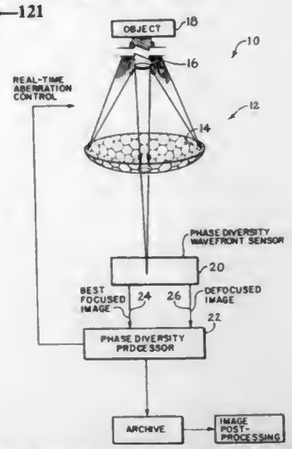
output structure coupled to said first and second analysis regions for providing output data as a function of the outputs of said FTIR system and said polychromator system as a function of the liquid sample flowed through said first and second analysis regions.

5,610,707

WAVEFRONT SENSOR FOR A STARING IMAGER

Alan L. Duncan, Sunnyvale, Calif.; Daniel S. Acton, Riverton, Wyo., and Richard L. Kendrick, Foster City, Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Jul. 7, 1995, Ser. No. 499,325
Int. Cl.[6] G01J *1/20*
U.S. Cl. 356—121 **15 Claims**



1. In a staring imaging system, a wavefront sensor for generating focused and defocused images of an object scene that is being imaged by the imaging system from a single input optical beam impinged thereon, and wherein the focused and defocused images are combinable to estimate wavefront aberrations present in the imaging system, comprising:

a) beamsplitter means for splitting an optical input beam into identical first and second half beam portions and for focusing said first and second half beam portions onto respective first and second adjacent regions of a common focal plane, said optical input beam representing an object scene that is being imaged by the imaging system;

b) defocusing means disposed between said beamsplitter means and said second region of said focal plane for inducing a known field-independent focus error in said second half beam portion; and

c) photodetector means disposed adjacent said first and second regions of said focal plane for converting photon energy associated with said first and second half beam portions into electronic signals representing a best focussed image and a defocused image of the object scene, respectively.

5,610,708

ANALYTICAL SENSOR USING GRATING LIGHT REFLECTION SPECTROSCOPY

Brian Anderson, Renton; Anatol Brodsky, and Lloyd Burgess, both of Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.

Continuation of Ser. No. 279,473, Jul. 22, 1994, Pat. No. 5,502,560. This application Nov. 1, 1995, Ser. No. 551,525
Int. Cl.[6] G01N *21/41*
U.S. Cl. 356—128 **28 Claims**

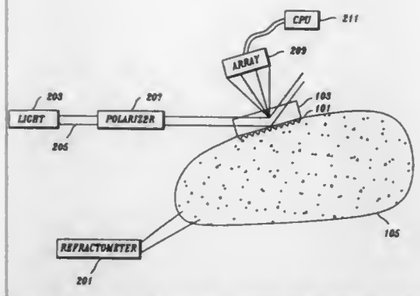
1. An analytical sensor for determining the index of refraction of a liquid or gas, such sensor comprising:

a diffraction grating having a grating period formed on a dielectric and disposed in contact with said liquid or gas;

a polychromatic light source providing polychromatic light incident on said diffraction grating at an angle of incidence and wherein such incident light does not traverse said liquid or gas;

a detector array for capturing a reflection spectrum from said diffraction grating when said light is incident on said diffraction grating, said reflection spectrum including a diffraction order equal to zero; and

a computer for determining said refractive index based upon at least said angle of incidence, said grating period, and said reflection spectrum.

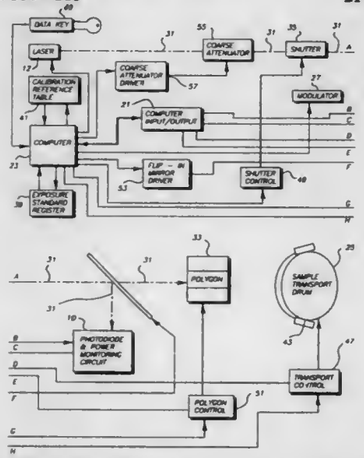


5,610,709

AUTOMATIC RANGING OPTICAL POWER MONITORING SYSTEM

Lee O. Arrington, Hilton, and Chris J. Burak, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1996, Ser. No. 595,709
Int. Cl.[6] G01J *1/42*
U.S. Cl. 356—218 **21 Claims**



1. A gain control system of a current-to-voltage converter responsive to an input current signal for providing an output voltage signal within analog-to-digital conversion upper and lower limits to an analog-to-digital converter for digitizing said output voltage signal comprising:

operational amplifier means having a current input terminal and an analog voltage output terminal and an adjustable resistance feedback network coupled between said current input terminal and said analog voltage output terminal for defining a plurality of gain scales between a maximum gain and a minimum gain depending on the adjusted feedback resistance forming said current-to-voltage converter;

means for establishing an analog-to-digital conversion upper limit voltage level;

means for establishing an analog-to-digital conversion lower limit voltage level;

upper limit comparing means for comparing the output voltage signal of said current-to-voltage converter to said analog-to-digital conversion upper limit voltage level and providing an upper out of limit signal in response thereto;

lower limit comparing means for comparing the analog output voltage signal of said current-to-voltage converter to said analog-to-digital conversion lower limit voltage level and providing a lower out of limit signal in response thereto;

gain scale logic means having a plurality of gain select logic stages for increasing said adjusted feedback resistance in response to an upper out of limit signal and for decreasing said adjusted feedback resistance in response to a lower out of limit signal to an adjusted gain scale between said maximum gain and said minimum gain effecting an output voltage signal level between the analog-to-digital conversion upper and lower limit voltage levels;

means for providing a digitized output signal of said analog output voltage signal from said analog-to-digital converter after said adjusted gain scale is established by said gain scale logic means;

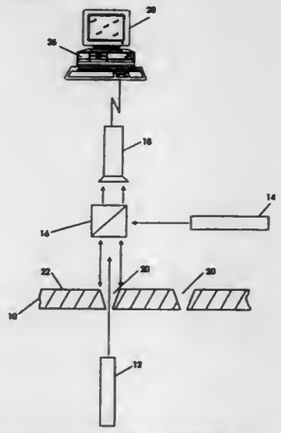
means for storing said adjusted gain scale and said digitized output signal.

5,610,710

DUAL MODE ILLUMINATION SYSTEM FOR OPTICAL INSPECTION

Donald H. Canfield, Vestal; Todd C. Fellows, Endicott; Earle W. Gillis, and Peter J. Yablonsky, both of Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1996, Ser. No. 654,513
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **12 Claims**



1. An optical inspection system, comprising:

a light source for illuminating a product under inspection from a first side thereof;

means for illuminating a second side of and apertures in the product under inspection;

a light sensor for receiving light carrying composite information related to the product under inspection; and

a beam splitter for directing incident light from the means for illuminating to the second side of the product under inspection, and for passing light from the first light source carrying information related to the first side of the product and reflected light from the second side of the product to the light sensor.

5,610,711

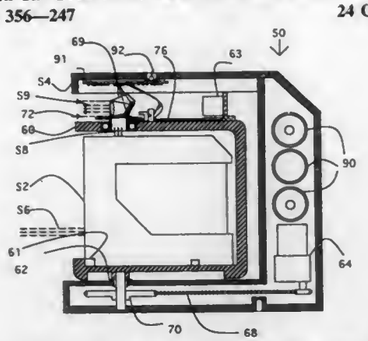
REMOTE POINTING SYSTEM FOR A SELF-LEVELING LASER INSTRUMENT

Joseph F. Rando, Los Altos Hills, Calif., assignor to Levelite Technology Inc., Mountain View, Calif.

Filed Dec. 22, 1995, Ser. No. 576,911

Int. Cl.[6] G01B *11/26;* **G01C** *11/26;5/00;* **F41G** *1/02*

U.S. Cl. 356—247 **24 Claims**



11. A system for use in layout of points or lines using at least one projected laser beam, comprising:

a hand carryable self-leveling laser instrument having an instrument housing and means for projecting at least one substantially horizontal laser beam in spite of a small tilt of the housing,

a remotely controlled turntable unit independent and separate from the laser instrument and having a turntable unit housing, a turntable located in the turntable unit housing, motor means for rotating the turntable relative to the housing, and means for securing the laser instrument on the turntable,

laser scanner means in the turntable unit housing for scanning a beam in a scanned plane near the horizontal beam,

cooperative reflecting means used from a remote position to return reflected light from the scanned plane back toward the turntable unit housing,

optical detection means in the turntable unit housing for receiving said reflected light,

scan angle determining means within the turntable housing, for determining an angle from which the reflected light was returned, relative to the turntable unit housing, including electronic detection means to receive the reflected light and to produce an amplified signal from the reflected light, and electronic determination means for determining the needed turntable rotation to point the horizontal laser beam toward the cooperative reflecting means from which the reflected light originates, and

electronic means for activating said motor means to rotate the turntable to a position of pointing the horizontal laser beam toward the cooperative reflecting means in accordance with said electronic determination means,

whereby an operator can call or page the horizontal laser beam to his location using the cooperative reflecting means.

5,610,712

LASER DIFFRACTION PARTICLE SIZING METHOD USING A MONOMODE OPTICAL FIBER

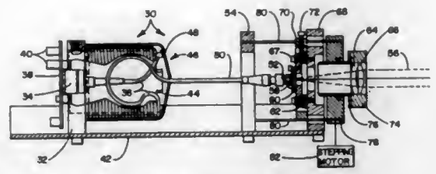
Brian D. Schmitz, Pompano Beach; Steven E. Bott, Pembroke Pines, and William H. Hart, Miami, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Continuation of Ser. No. 73,143, Jun. 4, 1993, abandoned. This application Oct. 9, 1995, Ser. No. 545,424

Int. Cl.[6] G01N *15/02;21/47*

U.S. Cl. 356—335 **5 Claims**

1. A method for determining the respective sizes and size distribution of a plurality of particles disposed in a sample containing



said particles, said method comprising the steps of:

a) providing a laser beam;

b) passing said laser beam through a monomode optical fiber to produce, at one end of said fiber, a point source of light having a high degree of spatial coherence;

c) focusing light emanating from said point source to produce a collimated, diffraction-limited beam of light having a high degree of spatial coherence and a diameter substantially greater than the size of any of said particles;

d) illuminating said particle-containing sample with said diffraction-limited beam thereby producing a plurality of diffracted beams at different diffraction angles relative to the direction of said diffraction-limited beam;

e) focusing the diffracted beams with a lens at the Fourier plane of said lens;

f) simultaneously measuring the intensity of the diffracted beams at different locations in said Fourier plane with a plurality of detectors; and

g) determining the size and particle distribution based on the respective outputs of said detectors.

5,610,713

DEVICE FOR MEASURING THE OPTICAL RANGE OF OPTICAL AND ELECTRONICS SYSTEMS

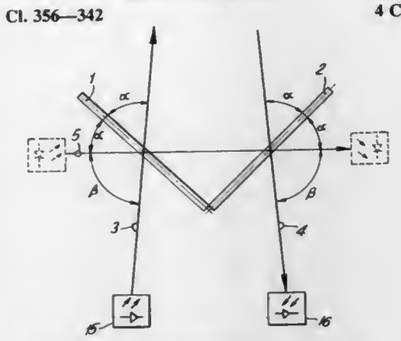
Klaus Heyn, Hamburg, Germany, assignor to Jenoptik AG, Jena, Germany

Filed Jun. 7, 1995, Ser. No. 483,445

Claims priority, application European Pat. Off., May 31, 1995, 95108334

Int. Cl.[6] G01N *21/47*

U.S. Cl. 356—342 **4 Claims**



1. An optical range measurement device comprising:

at least one window including a first section and a second section positioned in angled relationship to said first section;

a first transmitter movable between a first position for producing a first main beam having a path extending through said first section into an outer atmosphere and a second position producing a first reference beam for illuminating said first and second sections; and

a first receiver movable between a first position for receiving said first main beam back scattered by the outer atmospbere and a second position for receiving said first reference beam.

5,610,714

OPTICAL GYROSCOPE

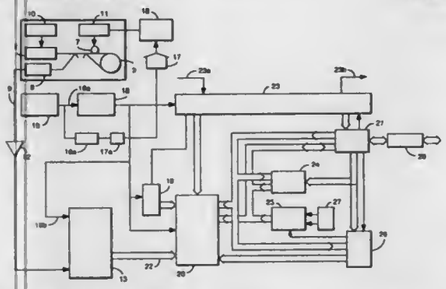
Alan R. Malvern, and Barry V. W. Isaacs, both of Plymouth, Great Britain, assignors to British Aerospace Public Limited Company, Hampshire, Great Britain

Filed May 16, 1996, Ser. No. 648,883

Claims priority, application United Kingdom, May 18, 1995, 9510054

Int. Cl.[6] G01N *21/64*

U.S. Cl. 356—350 **7 Claims**



1. An optical gyroscope, including:

means defining a coil or ring around a sensing axis, around which coil or ring light may propagate in clockwise and counter-clockwise directions

beam input means for inputting a clockwise beam and a counter-clockwise beam of light into the coil or ring to propagate in opposite directions around the coil or ring, a phase modulator for generating and applying a phase modulation at a modulation frequency between the clockwise and counter-clockwise beams,

means for combining the clockwise and counter-clockwise beams after passage around the coil or ring, detector means for detecting the combined clockwise and counter-clockwise beams, and

processing means for monitoring the intensity of the output of the detector means at a plurality of integral multiples of the modulation frequency to determine the rate applied to the gyroscope, which processing means includes an analogue to digital converter for receiving the analogue output of the detector means and providing a digital output data stream which contains integral multiples of the modulation frequency, a data accumulation device for receiving the output data stream, dividing it into a number of time samples and accumulating a succession of time samples over a number of cycles of the modulation frequency to improve the signal to noise ratio of selected integral multiple frequencies in the received data stream, means for synchronising modulation frequency to the analogue to digital converter sampling frequency and to the data accumulation device frequency, and a digital signal processor for receiving data from the data accumulation device, extracting therefrom frequency components at modulation frequency, double modulation frequency and quadruple modulation frequency, and calculating therefrom the rate corrected for phase modulation and amplitude effects.

5,610,715

DISPLACEMENT DETECTING SYSTEM, AN EXPOSE APPARATUS, AND A DEVICE MANUFACTURING METHOD EMPLOYING A SCALE WHOSE DISPLACEMENT IS DETECTED BY A SELECTED DETECTION HEAD

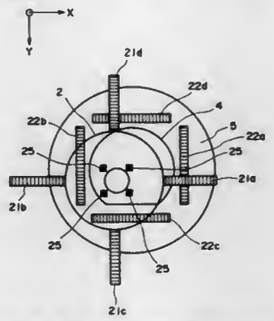
Minoru Yoshii, Tokyo; Kyoichi Miyazaki, and Seiji Takeuchi, both of Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,309

Claims priority, application Japan, Mar. 30, 1994, 6-060662

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **7 Claims**



1. A displacement detecting system, comprising:

a scale provided on a surface of a movable object and having a diffraction grating formed along a predetermined direction;

a bead unit disposed above the surface of the movable object and having a plurality of detection heads, for detecting displacement of said scale in said predetermined direction, said detection heads being disposed along a direction different from said predetermined direction; and

selecting means for selecting at least one detection head out of said detection heads, for detection of a displacement of said scale in said predetermined direction.

5,610,716

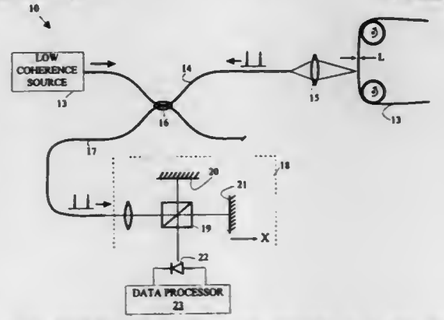
METHOD AND APPARATUS FOR MEASURING FILM THICKNESS UTILIZING THE SLOPE OF THE PHASE OF THE FOURIER TRANSFORM OF AN AUTOCORRELATOR SIGNAL

Wayne V. Sorin, Mountain View; Brian L. Heffner, Los Altos, and Shalini Venkatesh, Santa Clara, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1995, Ser. No. 520,029

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—357 **9 Claims**



1. An apparatus for measuring the thickness of a film, said apparatus comprising:

low coherence source for generating a light signal, said light signal having a functional spectral width greater than 0.1% of its center frequency;

coupling means for directing said light signal at said film and for collecting light reflected from said film to generate a collected light signal;

means for coupling said collected light signal to an interferometer to generate an interference light signal; and

processing means for determining the slope of the phase of the Fourier transform of said interference light signal as a function of frequency.

5,610,717

INTERFEROMETER DELAY LINE WITH AN OPTICAL PAYLOAD SUPPORTED BY AEROSTATIC PADS

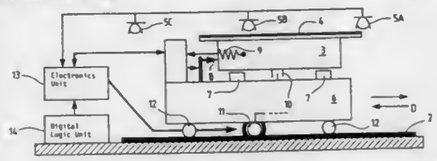
Jean-Marc Leblanc, Peymeinade, and Michel Sghedoni, Auribeau S/Siagne, both of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Filed Apr. 3, 1995, Ser. No. 415,485

Claims priority, application France, Apr. 5, 1994, 94 03974

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—358 **11 Claims**



1. An interferometer delay line including a guide track extending over a distance in a predetermined direction,

a carriage located on said guide track;

an optical payload carried on said carriage and adapted to be displaced along said guide track;

at least one aerostatic pad located between said carriage and said optical payload for supporting said optical payload with respect to said carriage; and

a control device including at least one sensing device adapted to sense the position of an assembly including said optical payload along said guide track, said control device comprising:

at least one graduated rule located fixed with respect to and aligned parallel to said guide track;

a fixed linear succession of optical read heads located with respect to said guide track and communicating with said at least one graduated rule for supplying pulses representative of an increment of displacement of said at least one graduated rule relative to said linear succession of optical read heads, said at least one graduated rule having a length greater than the greatest length between two successive read heads of said linear succession of optical read heads, said at least one graduated rule being carried by said optical payload;

a counter connected with said optical read head for counting said pulses;

a synchronization/switching unit connected to said linear succession of optical read heads and to said counter and adapted to cause said counter to count pulses from said linear succession of optical read heads in succession; and

a first actuator between said carriage and said optical payload for controlling the position of said payload relative to said carriage.

5,610,718

APPARATUS AND METHOD FOR DETECTING A RELATIVE DISPLACEMENT BETWEEN FIRST AND SECOND DIFFRACTION GRATINGS ARRANGED CLOSE TO EACH OTHER WHEREIN SAID GRATINGS HAVE DIFFERENT PITCH SIZES

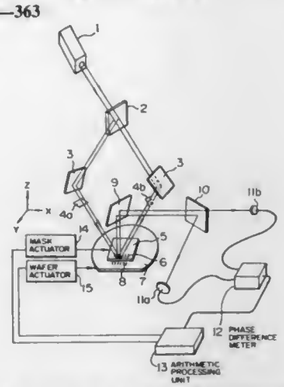
Koichi Sentoku; Takahiro Matsumoto; Noriyuki Nose, all of Atsugi; Minoru Yoshii, Tokyo, and Kenji Saitoh, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 947,928, Sep. 21, 1992, abandoned. This application Aug. 29, 1994, Ser. No. 297,511

Claims priority, application Japan, Sep. 27, 1991, 3-249204; Sep. 27, 1991, 3-249216

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—363 **9 Claims**



1. A device for detecting a relative displacement between first and second diffraction gratings which are arranged close to each other, said device comprising:

a light source emitting light of two different wavelengths and directions of polarization;

an interference optical system, said interference optical system causing the light beams emitted by said light source to split into first, second, third, and fourth light beams, the first light beam having a first wavelength and a first direction of polarization and the second light beam having a second wavelength different from the first wavelength and having the first direction of polarization, said interference optical system causing the first and second light beams to be diffracted by the first diffraction grating so as to generate two diffracted light beams and causing these two diffracted light beams to interfere with each other so as to form a first interference light beam of the first direction of polarization, wherein the third light beam is light of the first wavelength and a second direction of polarization different from the first direction of polarization, wherein the fourth light beam is light of the second wavelength and the second direction of polarization, said interference optical system causing the third light beam and the fourth light beam to be diffracted by the second diffraction grating so as to generate two diffracted light beams and causing the two diffracted rays diffracted by the second diffraction grating to interfere with each other so as to form a second interference light beam of the second direction of polarization, said interference optical system separating the first and second interference light beams from each other on the basis of the difference in their directions of polarization;

a first detector for detecting the first interference light beam to generate a first detection signal;

a second detector for detecting the second interference light beam to generate a second detection signal; and

a signal processing section for detecting the phase difference between the first and second detection signals, and for determining the relative displacement between the first and second diffraction gratings on the basis of the phase difference,

wherein the first and second diffraction gratings comprise groups of linear gratings each arranged at equal intervals, the pitch of the first diffraction grating being different from that of the second diffraction grating, and wherein said interference optical system causes the first and third light beams to impinge upon the first and second diffraction gratings, respectively, from a first direction and causes the second and fourth light beams to impinge upon the first and second diffraction gratings, respectively, from a second direction which is different from the first direction.

5,610,719

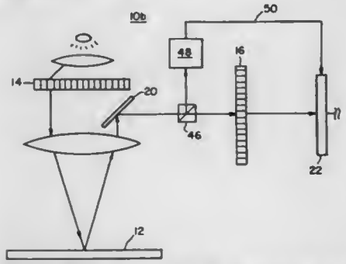
DISPLACEMENT DETECTION SYSTEM

Nicholas Allen, Bedford; Abdu Broudour, West Newton; Sergey Broude, Newton Centre; Eric Chase, Carlisle; Carl Johnson, Tewksbury; Pascal Miller, North Chelmsford; Jay Ormsby, Salem, and Arkady Savikovsky, Brookline, all of Mass., assignors to QC Optics, Inc., Burlington, Mass.

Filed Jul. 10, 1995, Ser. No. 500,433

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—374 **19 Claims**



1. A system for detecting displacement of a surface in a direction normal to the surface, the system comprising;

a first grating;

a second grating;

means for projecting an image of the first grating onto the surface;

means for directing a secondary image of the first grating reflected off the surface onto the second grating;

detector means, responsive to the fringe pattern formed after said secondary image passes through said second grating, for detecting displacement of said surface in a direction normal to the surface; and

means for sensing the reflectivity of the surface proximate the image of the first grating projected onto the surface and for adjusting said detector means to be insensitive to variations in reflectivity of the surface.

5,610,720

BOOK DOCUMENT READING DEVICE HAVING A PAGE TURNING CAPABILITY

Tetsuya Fujioka, Yokohama; Hiroshi Takahashi, Kawasaki; Kazunori Bannai, Tokyo; Kazushige Taguchi, Warabi, and Susumu Shiina, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,458

Claims priority, application Japan, Feb. 24, 1993, 5-035820

Int. Cl.[6] H04N *1/04;* **G03B** *27/32;27/62*

U.S. Cl. 358—296 **4 Claims**

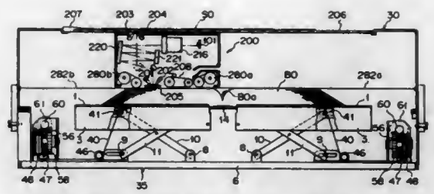
1. A device for reading a book document and turning a page of said book document, comprising:

a document table for setting the book document in a spread position face up;

a scanning unit for reading an image from a surface of the book document;

means for turning a page of said book document; and

means for restricting a movement of said scanning unit in an up-and-down direction with respect to an image-reading direction such that said scanning unit is not movable up-and-down and pressing said document table upward thereby to cause said scanning unit to receive the surface of the book document which is raised by said document table.



5,610,721

IMAGE FORMING APPARATUS FOR FORMING AN IMAGE IN SYNCHRONIZATION WITH A VERTICAL SYNCHRONIZING SIGNAL

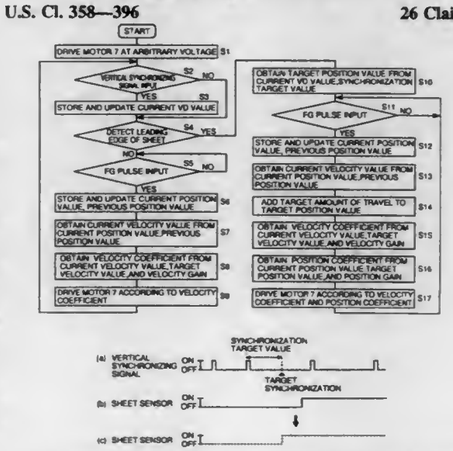
Kaoru Higuchi; Hiroshi Ishii, and Masaya Nagata, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 23, 1995, Ser. No. 494,625

Claims priority, application Japan, Jul. 6, 1994, 6-154612

Int. Cl.[6] H04N *1/21;1/36*

U.S. Cl. 358—396 **26 Claims**



1. An image forming apparatus responsive to a vertical synchronizing signal to move a print sheet for forming a predetermined image, comprising:

convey means for moving said print sheet;

image forming means for forming said predetermined image on said print sheet while said print sheet is moved by said convey means;

detection means for detecting an edge of said print sheet; and

control means for controlling said convey means so that a move position of said print sheet from which said print sheet is to be moved by said convey means during image forming is set to a predetermined position with said vertical synchronizing signal as a reference after an edge of said print sheet is detected by said detection means in moving said print sheet by said convey means.

5,610,722

Patent Not Issued For This Number

5,610,723

INFORMATION SIGNAL PROCESSING APPARATUS

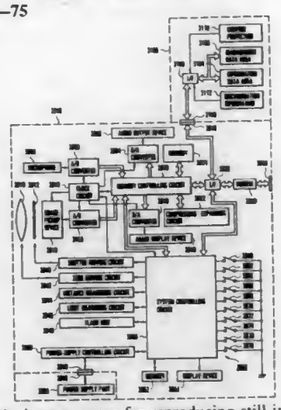
Yoichi Yamagishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,446, Sep. 3, 1993, abandoned. This application Mar. 20, 1996, Ser. No. 619,124

Claims priority, application Japan, Sep. 9, 1992, 4-266596; Sep. 22, 1992, 4-252894; Sep. 22, 1992, 4-252922; Sep. 22, 1992, 4-252923

Int. Cl.[6] H04N 5/76;5/225

U.S. Cl. 386—75 9 Claims



1. A reproducing apparatus for reproducing still image data and audio data from a recording medium on which the still image data and audio data are respectively recorded at different time, comprising:

(A) detecting means for detecting respective recording time at which the still image data and audio data are respectively recorded on said recording medium;

(B) determining means for determining whether the combination of the still image data and audio data recorded in said recording medium is appropriate, in accordance with the difference in the respective recording time at which the still image data and audio data are respectively recorded on said recording medium, said time having been detected by said detecting means; and

(C) reproducing means for reproducing and outputting from said recording medium the still image data and audio data, the combination of which has been determined to be appropriate in said determining means.

5,610,724

IMAGE FORMING SYSTEM

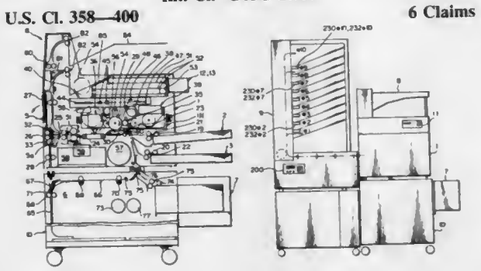
Masaru Kaneko, Yokohama; Shigeru Yamazaki, Tokyo; Akihiko Motegi, Tokyo; Masaki Narita, Tokyo, and Hiroshi Komai, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 490,011

Claims priority, application Japan, Jun. 14, 1994, 6-132276

Int. Cl.[6] G03G 21/00

U.S. Cl. 358—400 6 Claims



1. An image forming system comprising:

a printer;

a mail box comprising a plurality of bins controlled by a command from a host computer via serial communication between said host computer and said printer;

a cover covering one of said bins for personal use;

locking means for locking said cover;

detecting means for determining whether or not a paper is present in any of said bins; and

control means for inhibiting, after said cover has been unlocked, then opened, and then closed, said locking means from locking said cover if said detecting means determines that a paper is left in any of said bins.

5,610,725

COMMUNICATION SYSTEM FOR MANAGING DATA OF RESOURCES OF IMAGE FORMING UNIT

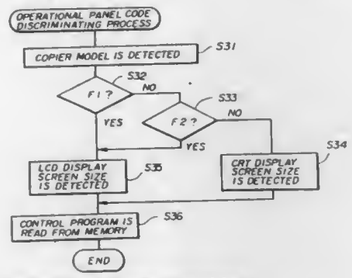
Yasuo Kawada, Kawasaki; Hidenori Sakai, Hiratsuka; Makoto Obu, Yokohama; Katsuhiro Echigo, Asaka; Yasuhiro Kawashima, Tokyo; Hidetoshi Yano, and Fumio Kishi, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 379,018, Jan. 27, 1995, Pat. No. 5,504,590, which is a continuation of Ser. No. 264,160, Jun. 22, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,967

Claims priority, application Japan, Jun. 25, 1993, 5-155697

Int. Cl.[6] H04N 1/00

U.S. Cl. 358—403 13 Claims



1. A communication system, comprising:

a) an image forming unit connected to a communication line through a communication control unit, the image forming unit including:

1) at least one component part;

2) first storage means for storing a control program for controlling the at least one component part; and

3) first control means for transmitting a first code to a management unit via the communication line in response to an update request signal, the first code indicating at least one of a model of the image forming unit and a type of the at least one component part; and

b) the management unit, for managing data of resources of the image forming unit, the management unit being connected to the communication line and including:

1) second storage means for storing a control program of the at least one component part of the image forming unit; and

2) second control means for reading out the control program from the second storage means in accordance with the first code received from the first control means, and for transmitting the control program to the image forming unit via the communication line, so that the control program is stored in the first storage means.

5,610,726

IMAGE PROCESSING SYSTEM

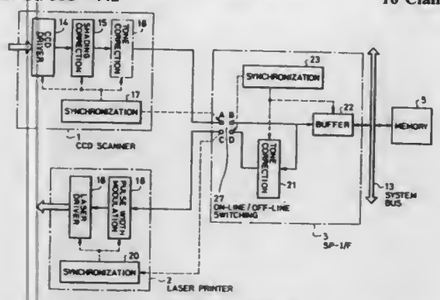
Hiroshi Nonoshita, Yokohama; Kenjiro Cho, Tokyo; Seiji Saito, Yokosuka, and Yasuhisa Shigehara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 235,132, Apr. 28, 1994, Pat. No. 5,453,845, which is a continuation of Ser. No. 754,305, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 401,568, Aug. 29, 1989, abandoned, which is a continuation of Ser. No. 110,783, Oct. 21, 1987, abandoned. This application Jun. 1, 1995, Ser. No. 456,717

Claims priority, application Japan, Oct. 27, 1986, 61-255104; Oct. 27, 1986, 61-255122

Int. Cl.[6] H04N 1/40

U.S. Cl. 358—442 10 Claims



1. An image processing system comprising:

input means for entering information including image information of multivalue digital data into said image processing system;

correction means for correcting the image information entered by said input means,

wherein said correction means compensates for an input-output characteristic of said input means being different from substantially 1;

memory means for storing the corrected image information;

transferring means for transferring image information between said memory means and said correction means,

wherein said correction means is provided between said input means and said transferring means, and

wherein the compensation is effected prior to transfer of said image information.

5,610,727

APPARATUS FOR DETECTING COORDINATES OF CHANGING POINTS IN BINARY IMAGE SIGNALS

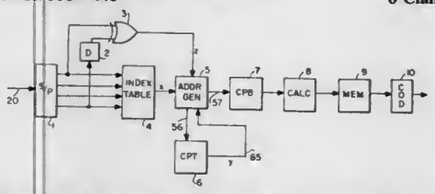
Keiko Kamioka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,265

Claims priority, application Japan, May 24, 1994, 6-132460

Int. Cl.[6] H04N 1/419

U.S. Cl. 358—448 6 Claims



1. An apparatus capable of detecting a coordinate of a point where a value of a binary image signal is changed, comprising:

subdividing means for subdividing the binary image signal into blocks having a constant size, thereby outputting blocks of the binary image signal;

detecting means for comparing a value of the head pixel in one block of said binary image signal with a value of a last pixel in another block located just before said one block, thereby outputting a detection signal for indicating whether or not said head pixel value is coincident with said last pixel value;

a changing-point table having a substorage region for storing therein a set of changing-point coordinates within a block as to each of all bit patterns produceable by said binary image signal blocks, except for a coordinate of a head bit of said bit pattern;

an index table for storage therein an initial address of the substorage region of said changing-point table into which said changing-point coordinate set corresponding to the bit pattern has been stored as to each of all bit patterns produceable by said blocks, and for outputting the initial address when said binary image signal block is supplied from said subdividing means, said initial address corresponding to a bit pattern of said supplied binary image signal block;

changing-point coordinate outputting means for outputting a coordinate value within a block, which indicates that a head pixel is a changing point, as a changing-point coordinate value when the detection signal derived from said detecting means represents "coincidence", and for producing an address used access to said changing-point table based on said initial address derived from said index table, and also for reading a changing-point coordinate set corresponding to the bit pattern of the block supplied to said index table, thereby outputting said read changing-point coordinate set as a coordinate value of a changing point within a block; and

converting means for converting said changing-point coordinate value derived from said changing-point coordinate outputting means into a changing-point coordinate of said binary image signal.

5,610,728

IMAGE RECORDING APPARATUS FOR RECORDING DIFFERENT SIZED IMAGES ON DIFFERENT SIZED RECORDING SHEETS

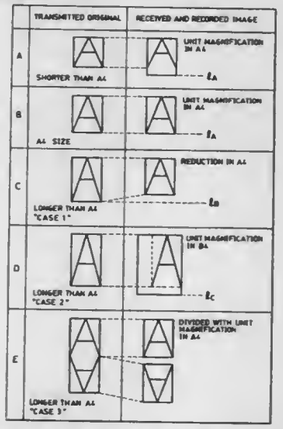
Ikuo Sobue, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 629,573, Dec. 18, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 94,919

Claims priority, application Japan, Jan. 8, 1990, 2-2342

Int. Cl.[6] H04N 1/40

U.S. Cl. 358—449 13 Claims



1. An image recording apparatus for recording images on a plurality of types of recording sheets having different sizes, said image recording apparatus comprising:

receiving means for receiving an image;

storing means for storing the received image;

recording means for recording (i) in a first mode in which the received image is recorded in a reduced form on a recording

sheet of a first size, and (ii) in a second mode in which the received image is recorded in a form which is reduced less than the reduced form of the first mode on a recording sheet of a second size, the second size being larger than the first size;

detecting means for detecting a size of the received image to be recorded; and

control means (i) for comparing the image size detected by said detecting means with a predetermined value, and (ii) for enabling said recording means to record after receiving one page of the received image (a) in the first mode when the image size detected by said detecting means is smaller than the predetermined value, and (b) in the second mode when the image size detected by said detecting means is larger than the predetermined value.

5,610,729

NOISE REDUCTION APPARATUS FOR REDUCING NOISE IN DECODING OF MOVING PICTURE SEQUENCE

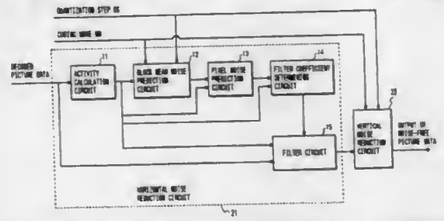
Yasuyuki Nakajima, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Feb. 3, 1995, Ser. No. 382,996

Claims priority, application Japan, Feb. 22, 1994, 6-46562

Int. Cl.[6] H04N *1/38;1/415;1/417*

U.S. Cl. 358—463 **8 Claims**



1. A noise reduction apparatus for reducing noise in decoding of moving picture sequence after decoding thereof, comprising:

activity calculation means for deriving the activity of the decoded picture data for each block;

block mean noise prediction means for predicting mean noise in each block of the decoded picture from a quantization step for that block;

pixel noise prediction means for predicting pixel noise from the predicted block mean noise output by the block mean noise prediction means and block activity and pixel activity derived by the activity calculation means;

means for predicting noise-free original picture from the predicted pixel noise and decoded picture data in that block.

5,610,730

LOW-COST HIGH-RESOLUTION DIGITAL SCANNING CAMERA

Yuri V. Osipchuk, 2013 B Los Trancos, Irvine, Calif. 92715

Filed Aug. 16, 1994, Ser. No. 291,138

Int. Cl.[6] H04N *7/14*

U.S. Cl. 358—494 **9 Claims**

1. A low-cost high-resolution digital scanning camera for obtaining a digital image of objects within a field of view comprising:

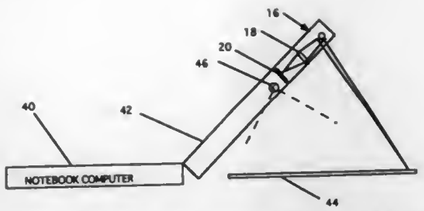
a) a linear CCD image sensor,

b) a mirror,

c) a lens for focusing onto said linear CCD image sensor, light reflected off said mirror from said field of view,

d) a pivot means for pivoting said mirror through a scan angle so as to permit light from all points within said field of view to be focused on said linear CCD image sensor, and

e) a notebook type computer for converting the output of said CCD image sensor into an image of said objects in said field



of view, said notebook type computer comprising a monitor on which are mounted said linear CCD image sensor, said mirror, and said pivot means.

5,610,731

IMAGE SCANNER HAVING CONTACT-TYPE IMAGE SENSOR MOVABLE UNDER AUTOMATIC DOCUMENT FEEDER

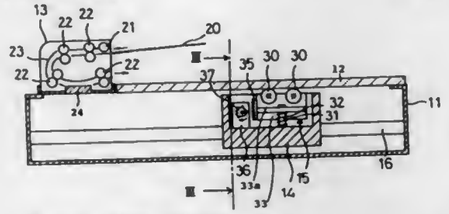
Yoshiya Itoh, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 421,919

Claims priority, application Japan, Apr. 18, 1994, 6-078727; May 31, 1994, 6-118892

Int. Cl.[6] H04N *1/04;* **G03G** *15/28*

U.S. Cl. 358—496 **15 Claims**



1. An image scanner comprising:

a first contact glass on which a first original document is placed, said first contact glass having a first bottom surface opposite to a surface on which said first original document is placed;

an automatic document feeder having a second contact glass through which a second original document fed through the inside of the automatic document feeder is scanned, said automatic document feeder having a second bottom surface opposite to a side on which said second original document is fed, wherein said first bottom surface of said first contact glass and said second bottom surface of said second contact glass lie in the same plane;

an image sensor scanning said first original document while moving under said first contact glass, said image sensor scanning said second original document by moving to a fixed position directly under said second contact glass;

spacer means, provided on said image sensor, maintaining a distance between said image sensor and said first contact glass to be constant by contacting said first bottom surface of said first contact glass when said image sensor is scanning said first original document, said spacer means maintaining a distance between said image sensor and said second contact glass to be constant by contacting said second bottom surface of said second contact glass when said image sensor is scanning said second original document;

pressing means for pressing said image sensor via said spacer means against said first bottom surface of said first contact glass when said image sensor is scanning said first original document, and for pressing said image sensor via said spacer means against said second bottom surface of said second contact glass when said image sensor is scanning said second original document; and

separating means for separating said spacer means from said first bottom surface of said first contact glass when said image

sensor is moved from a position under said first contact glass to said fixed position under said second contact glass, and for separating said spacer means from said second bottom surface of said second contact glass when said image sensor is moved from said fixed position under said second contact glass to a position under said first contact glass.

5,610,732

IMAGE PROCESSING APPARATUS HAVING UNEVENLY GAMUT DIVIDING COLOR-CONVERTING FUNCTION

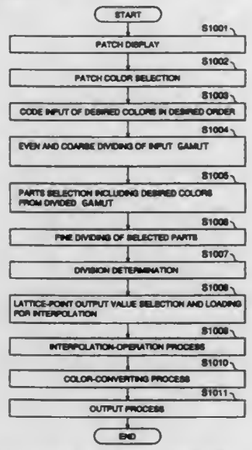
Manabu Komatsu, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 31, 1994, Ser. No. 331,929

Claims priority, application Japan, Oct. 30, 1993, 5-294631

Int. Cl.[6] H04N *1/60*

U.S. Cl. 358—525 **14 Claims**



1. An image processing apparatus comprising:

uneven dividing means for unevenly dividing an input gamut into divisions which have figures similar to one another;

output-value determining means for determining predetermined lattice-point output values relevant to said divisions;

division selecting means for selecting a division among said divisions obtained through said uneven dividing means;

the selected division corresponding to given input color-image data; and

interpolating means for interpolating final output values for said given input color-image data using the lattice-point output values relevant to said division selected through said division selecting means; and

the uneven dividing performed by said uneven dividing means being that eliminating lattice points of which the lattice-point output values are not used in the interpolating performed by said interpolating means.

5,610,733

BEAM-HOMOGENIZER

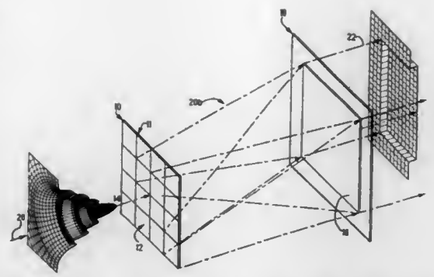
Michael R. Feldman, Charlotte, N.C., and John R. Rowlette, Sr., Hummelstown, Pa., assignors to Digital Optics Corporation, Charlotte, N.C., and The Whitaker Corporation, Wilmington, Del.

Filed Feb. 28, 1994, Ser. No. 203,188

Int. Cl.[6] G03H *1/08*

U.S. Cl. 359—9 **10 Claims**

9. A beam homogenizer system for converting an incident beam having a nonuniform spatial energy distribution into an output



beam having a substantially uniform spatial energy distribution at an output plane spaced from the homogenizer, the homogenizer comprising:

an array of sub-holograms designed with an iterative encoding method such that portions of said incident beam diffracted by several of said sub-holograms overlap at the output plane,

whereby said output beam has a substantially uniform spatial energy distribution that is relatively insensitive to fluctuations in positioning of an input beam for incidence on said homogenizer and to spatial energy distributions within the incident beam.

5,610,734

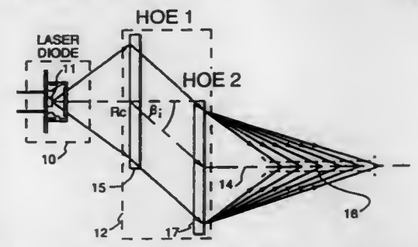
CHROMATIC FOCAL PENCIL BEAM-GENERATING APPARATUS

Abraham Aharoni, Palo Also; Joseph W. Goodman, Los Altos, both of Calif., and Yaakov Amitai, Rehovot, Israel, assignors to Board of Trustees Leland Stanford, Jr. University, Stanford, Calif.

Continuation of Ser. No. 10,817, Jan. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 944,160, Sep. 11, 1992, Pat. No. 5,422,746. This application Feb. 9, 1995, Ser. No. 386,257

Int. Cl.[6] G02B *5/32;5/04;* **G11B** *7/00*

U.S. Cl. 359—16 **7 Claims**



1. A polychromatic focal pencil beam-generating apparatus comprising:

a polychromatic light source for generating a beam of light having a polychromatic spectrum; and

optical means including a first holographic optical element for collecting and collimating said beam of light, and a second holographic optical element antisymmetric to said first holographic optical element for focusing the collimated beam and for correcting lateral chromatic shift caused by said first holographic optical element, the resulting beam having substantial longitudinal chromatic dispersion and forming a pencil beam of light having a wavelength at one end of said polychromatic spectrum focused at a first point that is remote from a second point at which light having a wavelength at the opposite end of said polychromatic spectrum is focused.

5,610,735

LIGHT SCATTERING LIGHT VALVE PROJECTION APPARATUS

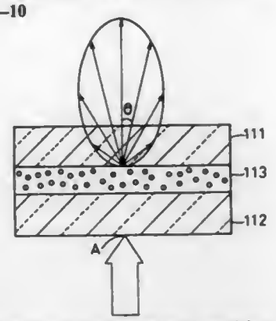
Hideki Ohmae, Suita, and Hiroshi Takahara, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 26, 1994, Ser. No. 249,623

Claims priority, application Japan, Jun. 4, 1993, 5-134409

Int. Cl.[6] G02F *1/1335;1/1333*

U.S. Cl. 349—10 **25 Claims**



1. A light valve projection apparatus comprising:
a light source;
a light valve for forming optical images in response to a change in light scattering conditions in said light valve of light irradiated from said light source;
projection means for projecting said optical images onto a screen; and
a shield for shielding said optical images formed at or near a pupil of said projection means;
said light valve having a Θ_w less than 23°
where Θ_w represents a scatter half angle at which a brightness of light exiting from said light valve when said light valve is in a light scattering state in a direction tilted by Θ degrees with respect to a normal direction of said light valve is half as bright as light exiting in the normal direction of said light valve.

5,610,736

ACTIVE MATRIX TYPE DISPLAY DEVICE IN WHICH ELONGATED ELECTRODES UNDERLIE THE SIGNAL LINES TO FORM CAPACITORS WITH THE PIXEL ELECTRODES AND MANUFACTURING METHOD

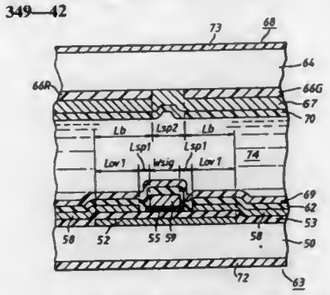
Yoshihiro Asai, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 23, 1994, Ser. No. 363,219

Claims priority, application Japan, Dec. 24, 1993, 5-327291; Dec. 13, 1994, 6-308633

Int. Cl.[6] G02F *1/136;1/1333;1/1343;1/13*

U.S. Cl. 349—42 **23 Claims**



3. An active matrix type display device comprising;
a plurality of scanning lines disposed on an insulating substrate;
a plurality of signal lines disposed on the insulating substrate and crossing the scanning lines;
a gate insulating layer interposed between each of the scanning lines and the signal lines at the crossings thereof;
a plurality of thin film transistors, each having a semiconductor layer disposed on the gate insulating layer;
a plurality of capacity actuation type pixels respectively disposed adjacent the crossings of the scanning lines and the signal lines, wherein each pixel has a pixel electrode electrically coupled with one of the signal lines through one of the thin film transistors;
a plurality of elongated electrodes respectively underlying the signal lines, wherein the elongated electrodes are wider than the signal lines and are overlapped by the signal lines through a dielectric layer composed of the gate insulating layer and the semiconductor layer, the semiconductor layer having opposed side edges located in spaces between corresponding side edges of the signal lines and edges of adjacent pairs of the pixel electrodes; and
a plurality of storage capacitors respectively electrically coupled with the capacity actuation type pixels, wherein each storage capacitor has a first electrode as a part of one of the pixel electrodes and second electrode as a part of one of the elongated electrodes.

5,610,737

THIN FILM TRANSISTOR WITH SOURCE AND DRAIN REGIONS HAVING TWO SEMICONDUCTOR LAYERS, ONE BEING FINE CRYSTALLINE SILICON

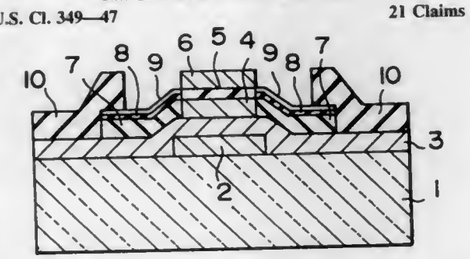
Masahiko Akiyama; Toshiya Kiyota, both of Tokyo, and Yoshimi Ikeda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 6, 1995, Ser. No. 399,026

Claims priority, application Japan, Mar. 7, 1994, 6-035140; Jan. 20, 1995, 7-007246

Int. Cl.[6] G02F *1/136;* **H01L** *29/04*

U.S. Cl. 349—47 **21 Claims**



1. A thin film transistor comprising:
a channel region provided on a substrate with two source regions and two drain regions formed of an amorphous semiconductor layer, one of said two source regions and one of said two drain regions each being positioned on opposite sides of said channel region;
a gate electrode provided above or below said channel region through a gate insulating layer; and
wiring electrodes which contact said source region and said drain region directly or indirectly,
wherein said channel region consists of amorphous silicon, and
said source regions and said drain regions comprise two semiconductor layers, which are an amorphous silicon layer containing fine crystalline silicon on an upper portion and an amorphous silicon layer on a bottom portion.

5,610,738

METHOD FOR MAKING LCD DEVICE IN WHICH GATE INSULATOR OF TFT IS FORMED AFTER THE PIXEL ELECTRODE BUT BEFORE THE VIDEO SIGNAL LINE

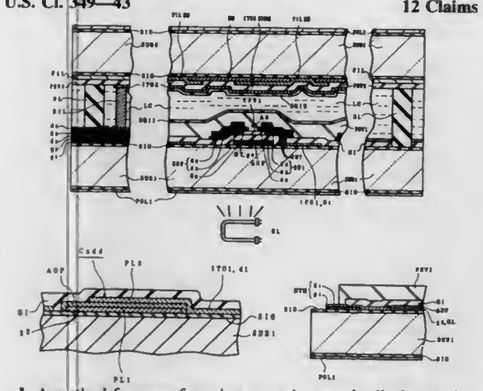
Akira Sasano, Tokyo; Kazuo Shirahashi, Mobara; Yuka Matsukawa, Mobara; Hideaki Taniguchi, Mobara; Hideaki Yamamoto, Tokorozawa, and Haruo Matsumaru, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 156,640, Nov. 24, 1993, Pat. No. 5,402,254, which is a division of Ser. No. 778,562, Oct. 17, 1991, abandoned. This application Mar. 27, 1995, Ser. No. 411,207

Claims priority, application Japan, Oct. 17, 1990, 2-276173; Nov. 29, 1990, 2-325995

Int. Cl.[6] G02F *1/1343;1/1333*

U.S. Cl. 349—43 **12 Claims**



1. A method for manufacturing an active matrix display device comprising the steps of:
(a) forming a first conductive layer serving as a gate electrode of a thin film transistor and as a first electrode of a storage capacitor on an insulating substrate;
(b) forming a first insulating layer of an anodized oxide film on said first conductive layer;
(c) forming a second conductive layer serving as a pixel electrode on the same plane as the gate electrode after the first insulating layer has been formed;
(d) forming a second insulating layer on said first insulating layer and on said pixel electrode;
(e) forming a semiconductor layer having a channel region on said second insulating layer above the gate electrode;
(f) forming a source electrode and a drain electrode provided at laterally opposing ends of said channel region;
(g) forming a second electrode of the storage capacitor;
(h) contacting the source electrode or the drain electrode to said pixel electrode; and
(i) contacting the second electrode of the storage capacitor to said pixel electrode.

5,610,739

LIQUID CRYSTAL DISPLAY UNIT WITH A PLURALITY OF SUBPIXELS

Mitsuhiro Uno, Neyagawa; Yoneharu Takubo, Toyonaka; Katsuhiko Kumagawa; Satoshi Asada, both of Neyagawa, and Naomi Takada, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

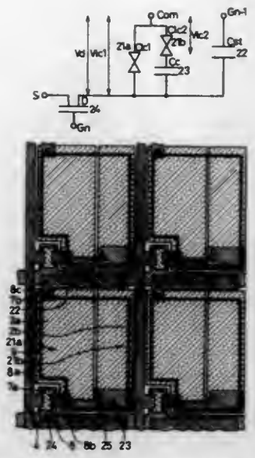
Filed May 25, 1995, Ser. No. 450,622

Claims priority, application Japan, May 31, 1994, 6-118828; Dec. 2, 1994, 6-299595; Dec. 22, 1994, 6-320277; Jan. 30, 1995, 7-012138

Int. Cl.[6] G02F *1/1343;1/136*

U.S. Cl. 349—39 **2 Claims**

1. A liquid crystal display unit comprising:
two insulating substrates;



a liquid crystal layer sandwiched between said two insulating substrates;
a plurality of pixels arranged in a matrix;
at least two subpixels in each pixel;
a thin-film transistor of a reverse staggered structure for driving said subpixels; and
a control capacitor coupled in series with a liquid crystal capacitor of each subpixel at one or more subpixels;
wherein a pair of electrodes forming said control capacitor comprises a conducting pattern, which is formed at the same time as a source electrode and a drain electrode constituting said thin-film transistor, and a subpixel electrode.

5,610,740

COLOR ELECTROOPTICAL DEVICE

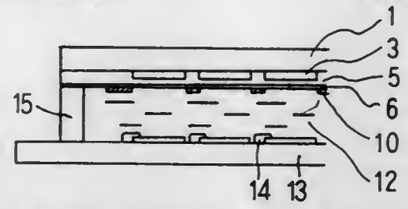
Hitoshi Kamamori; Takakazu Fukuchi; Mitsuru Suginoya, and Koji Iwasa, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Apr. 15, 1992, Ser. No. 869,525

Claims priority, application Japan, Apr. 16, 1991, 3-084284

Int. Cl.[6] G02F *1/1335;1/1333*

U.S. Cl. 349—110 **10 Claims**



1. A color electro-optical device, comprising: an active matrix substrate; a color filter substrate disposed spaced apart a predetermined distance from and facing the active matrix substrate; a plurality of color filters formed on the color filter substrate; a protection film formed on the color filter substrate and on the color filters, the protection film comprising a material capable of adhering to the color filters and a transparent conductive film; a transparent conductive film formed on the protection film; a metal film formed on the transparent conductive film effective for decreasing the resistivity of the transparent conductive film, the metal film

comprising a light blocking film comprised of Cr etched into a grid shape and having a thickness of 1000 angstroms and a sheet resistance value of 50 ohms; a liquid crystal sealed between the active matrix substrate and the color filter substrate; and a plurality of switching elements.

5,610,741

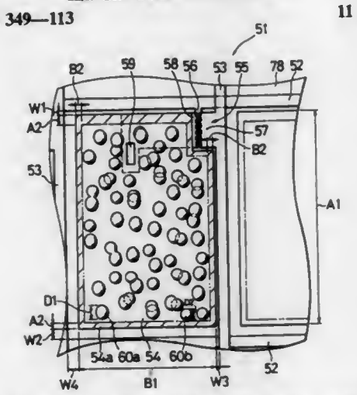
REFLECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE WITH BUMPS ON THE REFLECTOR

Naofumi Kimura, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 265,511, Jun. 24, 1994, Pat. No. 5,408,345. This application Oct. 11, 1994, Ser. No. 321,170

Int. Cl.[6] G02F *1/1335;1/1343*

U.S. Cl. 349—113 **11 Claims**



1. A reflection-type liquid crystal display device comprising:

a liquid crystal layer, and

a pair of substrates,

said liquid crystal layer being interposed between the pair of substrates,

said pair of substrates being disposed opposite to each other,

one of the pair of substrates having a light transmitting electrode on the liquid crystal layer side surface thereof, the substrate being light-transmitting,

the other of the pair of substrates having a reflection electrode on the liquid crystal layer side surface which reflects light entering from the side of the other of the pair of substrates, and

wherein the reflection electrode has a bumpy surface including bumps or dents, and

wherein the reflection electrode is rectangular or nearly rectangular, and the ratio of (i) the dimension of a peripheral portion on each side of the reflection electrode in a direction from the surface edge toward the inside of the reflection electrode to (ii) the dimension of the reflection electrode extending in the same direction is selected to be in the range of 0.3 to 10%,

and wherein the quantity of bumps or dents in the peripheral portions is less than the quantity of bumps or dents in the remaining portion of the reflection electrode,

the ratio of the area excluding bumps or dents in the peripheral portions of the reflection electrode to the entirety of the peripheral portions including bumps or dents being selected to be in the range of 60% to 100%.

5,610,742

LIQUID CRYSTAL DISPLAY ELEMENT, METHODS OF PRODUCING AND STORING THE SAME, AND ELECTRONIC EQUIPMENT ON WHICH THE SAME IS MOUNTED

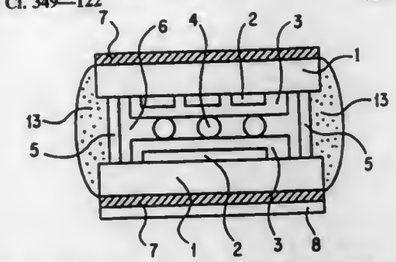
Shoji Hinata; Yoichi Ono; Akira Tsukahara; Hiroyuki Hosogaya; Yoshikatsu Imazeki; Shinji Fujisawa, and Yoko Furukawa, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 922,376, Jul. 31, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,453

Claims priority, application Japan, Aug. 1, 1991, 3-192972; Aug. 1, 1991, 3-192973; Jun. 29, 1992, 4-170335; Jun. 29, 1992, 4-170336; Jun. 29, 1992, 4-170337; Jun. 29, 1992, 4-170338; Jul. 1, 1992, 4-174140

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—122 **33 Claims**



28. A method of producing a liquid crystal display element having a pair of flexible substrates sealed to each other by a sealing member with a plurality of spacers therebetween defining a predetermined space between said substrates and a liquid crystal material located in said space, each of said substrates containing a gas barrier film and an orientating film, said orientating film being in contact with said liquid crystal material, said method including the steps of:

performing a gas barrier treatment on said substrates by sealing edges of said substrates;

storing the sealed liquid crystal display element in a vacuum dryer under reduced pressure after performing the gas barrier treatment on said substrates; and

removing the sealed liquid crystal display element from storage for assembly onto electronic equipment.

5,610,743

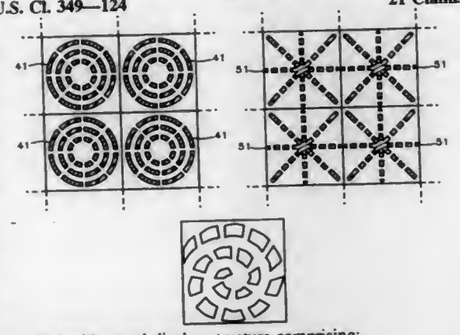
LIQUID CRYSTAL DISPLAY INCLUDING CONCENTRIC SHAPES AND RADIAL SPOKES WHICH HAS AN IMPROVED VIEWING ANGLE

Meng-Jin Tsai, Hsinchu-Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Oct. 30, 1995, Ser. No. 549,866

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—124 **21 Claims**



1. A liquid crystal display structure comprising:

an entrance polarizer;

first and second transparent insulating substrates, each having upper and lower surfaces;

a layer of liquid crystal between said first and second insulating substrates;

first parallel lines, regularly spaced, comprising transparent conductive material, on the lower surface of said insulating substrate;

a first orientation layer on said first parallel lines and said lower surface;

second parallel lines, regularly spaced, comprising transparent conductive material, on the upper surface of said second insulating substrate, orthogonal to said first parallel lines on the lower surface of said first insulating substrate, each area of overlap of parallel lines constituting a pixel of said display;

a second orientation layer on said second parallel lines and said upper surface;

a pattern of concentric annuli in said first orientation layer, one such pattern per pixel area;

a pattern of radial spokes in said second orientation layer, one such pattern per pixel area,

wherein said patterns of concentric annuli and radial spokes comprise broken lines; and

an exit polarizer.

5,610,744

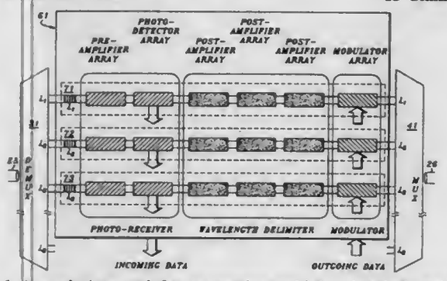
OPTICAL COMMUNICATIONS AND INTERCONNECTION NETWORKS HAVING OPTO-ELECTRONIC SWITCHES AND DIRECT OPTICAL ROUTERS

Steven H. Ho, Urbana, Ill.; Evandro Conforti, Campinas, Brazil, and Sung M. Kang, Champaign, Ill., assignors to Board of Trustees of the University of Illinois

Filed Feb. 16, 1995, Ser. No. 389,897

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—118 **13 Claims**



1. An optical network for propagating multiplexed optical carrier signals modulated by information signals comprising:

a plurality of nodes, each of said nodes being capable of receiving and transmitting the carrier signals, at least one selected node including a demultiplexer, at least one direct optical router, at least one switch, and a multiplexer,

a plurality of optical links connected between selected said nodes, each of said links being capable of propagating the carrier signals transmitted and received from said nodes, and

a controller operatively connected to each of said nodes for controlling the propagation of the carrier signals and the information signals among various nodes throughout the network,

said direct optical router having means for passing a first predetermined carrier signal directly through said selected node from a first predetermined link connected to said node to a second predetermined link connected to said node, said first predetermined carrier signal including a first information signal, said direct optical router further including,

means for selectively erasing said first information signal from said carrier signal in said selected node and passing only said predetermined carrier signal through said selected node,

means for selectively detecting said first information signal before it is erased, and

means for selectively modulating said carrier signal with a second information signal after erasing said first information signal.

5,610,745

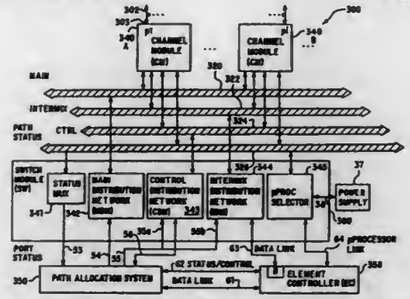
METHOD AND APPARATUS FOR TRACKING BUFFER AVAILABILITY

Dwayne Bennett, Scarborough, Canada, assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Oct. 26, 1995, Ser. No. 548,505

Int. Cl.[6] H04J *14/08;* **H04Q** *11/04*

U.S. Cl. 359—139 **16 Claims**



1. A fibre channel switch apparatus for interconnecting a plurality of devices having node ports (N_ports), comprising:

a plurality of interconnected fabric ports (F_ports), each further comprising:

a plurality of receive buffers for storing frames received from an N_port,

a receive credit counter for counting the number of frames that the N_port is currently allowed to transmit at one time, and

a smart credit counter for counting the number of receive buffers available to receive frames from the N_port,

status/control logic on the F_port for transmitting a receiver ready signal to the N_port when the F_ port is ready to receive another frame, the status/control logic further comprising:

a transmit credit counter located on each N_port for counting the number of frames that the N_port is currently allowed to transmit to the F_port at one time, wherein the transmit credit counter is decremented by one after a frame is transmitted to an F_port and incremented by one upon the receipt of the receiver ready signal.

5,610,746

PROGRAMMABLE SWITCHED DELAY ENCODER

Eliseo R. Ranalli, 211 Berkeley Ave., Irvine, Calif. 92715

Filed Sep. 29, 1995, Ser. No. 536,078

Int. Cl.[6] H04J *14/08;* **H04B** *10/00*

U.S. Cl. 359—140 **20 Claims**

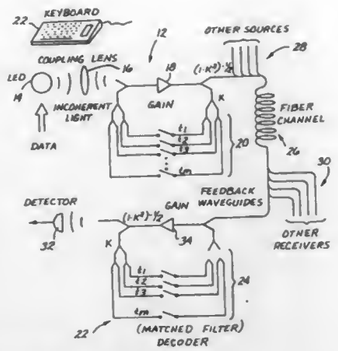
18. An apparatus for communicating information between a sender and a receiver, the apparatus comprising:

(a) a transmitting station, including:

(1) a wide band optical source for emitting light;

(2) a first switched delay encoder for inputting the light, for applying a gain to the inputted light to yield an amplified light, and for applying at least one delay to the inputted light via a feedback path, the feedback path feeding amplified light back to the inputted light, the first switched delay encoder outputting a carrier output which comprises the amplified light as modified by the at least one delay; and

(3) modulating means for modulating the carrier output to define the information to be communicated; and



(b) a receiving station, including:

(1) a second switched delay encoder substantially similar to the first switched delay encoder, the second switched delay encoder inputting the carrier output from the first switched delay encoder and outputting a filtered carrier output; and

(2) a square law detector for generating an electrical signal which is proportional to an average intensity of the filtered carrier output;

(3) means for detecting the encoded information within the electrical signal.

5,610,747

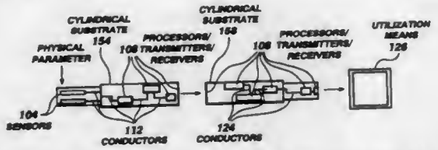
HIGH DENSITY, THREE-DIMENSIONAL, INTERCOUPLED CIRCUIT STRUCTURE

Stephen C. Jacobsen, Salt Lake City, Utah, assignor to Sarcos Group, Salt Lake City, Utah

Continuation of Ser. No. 228,031, Apr. 5, 1994, abandoned, which is a division of Ser. No. 114,132, Aug. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 816,628, Dec. 31, 1991, Pat. No. 5,269,882. This application Nov. 21, 1995, Ser. No. 561,165

Int. Cl.[6] H04B *10/10*

U.S. Cl. 359—145 **9 Claims**



1. A three-dimensional transducer which may be scaled for use in macro and micro applications, yet having a relatively large surface area for the disposition of components on the transducer for a given volume of space, said transducer comprising

a first elongate substrate,

physical parameter sensing means disposed on a surface of the first substrate at one end thereof, for producing a characterizing signal representing a physical parameter to which the sensing means is exposed,

transmitting means disposed on the surface of the first substrate for transmitting information signals in response to received characterizing signals,

conductor means disposed on the first substrate for carrying the characterizing signals to said transmitting means,

a second elongate substrate,

receiving means disposed on a surface of the second substrate, for receiving information signals transmitted by said transmitting means, and for producing electrical signals representing the information signals, and

utilization means coupled to the receiving means for utilizing said electrical signals.

5,610,748

OPTICAL SPACE COMMUNICATION APPARATUS SENDING MAIN SIGNALS AND AN AUXILIARY SIGNAL FOR CONTROLLING THE INTENSITY AT THE RECEIVER

Tetsuo Sakanaka, Sagamihara, and Yasuhiro Takahashi, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

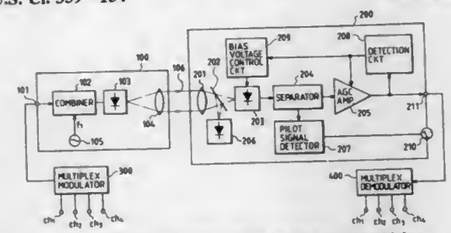
Continuation of Ser. No. 974,988, Nov. 12, 1992, abandoned.

This application Apr. 3, 1995, Ser. No. 415,586

Claims priority, application Japan, Nov. 15, 1991, 3-300701

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—154 **14 Claims**



1. An optical space communication apparatus comprising:

a transmitter having a main signal generator for producing a main signals an auxiliary signal generator for producing an auxiliary signal in a frequency band different from that of said main signal, a combiner for combining said main signal with said auxiliary signal, an electro-optical converter for converting a combined signal of said main signal and said auxiliary signal into a light signal, and a transmission optical system for transmitting said light signal in a light beam; and

a receiver for receiving the light signal in the light beam, said receiver comprising:

(i) a photodetector for detecting a part of the light beam so as to detect a positional deviation of light beam;

(ii) a photo-electric converter for converting the light signal into an electric signal, said photoelectric converter including an avalanche photodiode as a light receiving element;

(iii) a separator for separating the electric signal converted by said photo-electric converter into a main signal and an auxiliary signal;

(iv) an auxiliary signal detector for detecting the auxiliary signal separated by said separator; and

(v) a control circuit for controlling a multiplication factor of said avalanche photodiode using a detection output signal of said auxiliary signal detector.

5,610,749

MICROCOMPUTER CONTROL OPTICAL FIBER TRANSMISSION SYSTEM

Takatoshi Mizoguchi, Gojou, and Kaoru Ozawa, Uda-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1995, Ser. No. 401,210

Claims priority, application Japan, Mar. 9, 1994, 6-038370; Sep. 13, 1994, 6-218673

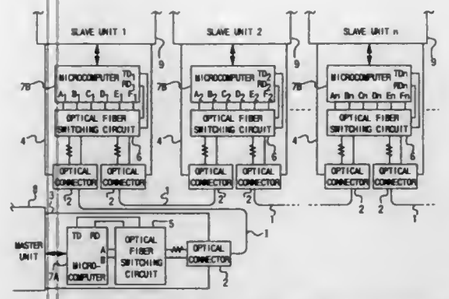
Int. Cl.[6] H04B *10/20*

U.S. Cl. 359—167 **16 Claims**

1. An optical fiber transmission system comprising a master optical signal transmitter-receiver unit, a plurality of slave optical signal transmitter-receiver units, and an optical fiber, said master and slave optical signal transmitter-receiver units being connected in series through said optical fibers, wherein:

(a) said master optical signal transmitter-receiver unit comprises:

an optical connector connected with the optical fiber and having an optical signal receiving means for receiving an optical signal from the optical fiber and converting the optical signal to an electric signal and an optical signal transmitting means for converting an electric signal to an optical signal and outputting the optical signal to the optical



fiber, the signal from the master optical signal transmitter-receiver unit including address data of a designated slave optical signal transmitter-receiver unit for communication with the master optical signal transmitter-receiver unit; and

mode switching means connected with the optical connector for switching an operation mode of the master optical signal transmitter-receiver unit between a receive mode wherein the optical connector receives the optical signal from the optical fiber and a send mode wherein the optical connector transmits the optical signal to the optical fiber,

(b) said slave optical signal transmitter-receiver units each comprise:

a first optical connector connected with the optical fiber which connects the present slave optical signal transmitter-receiver unit with the master optical signal transmitter-receiver unit when the present slave optical signal transmitter-receiver unit is immediately next to the master optical signal transmitter-receiver unit or with the preceding slave optical signal transmitter-receiver unit closer to the master optical signal transmitter-receiver unit when the present slave optical signal transmitter-receiver unit is not immediately next to the master optical signal transmitter-receiver unit, and having an optical signal receiving means for receiving an optical signal from the optical fiber and converting the optical signal to an electric signal and an optical signal transmitting means for converting an electric signal to an optical signal and outputting the optical signal to the optical fiber;

a second optical connector connected with the first optical connector and the optical fiber which connects the present slave optical signal transmitter-receiver unit with the following slave optical signal transmitter-receiver unit farther from the master optical signal transmitter-receiver unit, and having an optical signal receiving means for receiving an optical signal from the optical fiber and converting the optical signal to an electric signal and an optical signal transmitting means for converting an electric signal to an optical signal and outputting the optical signal to the optical fiber;

mode switching means connected with the first and second optical connectors for switching an operation mode of the slave optical signal transmitter-receiver unit between a first mode wherein the optical signal received by the first optical connector is transferred to the second optical connecter after conversion to the electric signal and then outputted to an associated optical fiber from the second optical connector after conversion to the optical signal and a second mode wherein the optical signal received by the second optical connector is transferred to the first optical connecter after conversion to the electric signal and then outputted to the associated optical fiber from the first optical connector after conversion to the optical signal; and

address comparing means for comparing the address data transmitted from the master optical signal transmitter-receiver unit with address data of the present slave optical signal transmitter-receiver unit to decide whether the present slave optical signal transmitter-receiver unit is the designated slave optical signal transmitter-receiver unit,

whereby the present slave optical signal transmitter-receiver unit outputs data of itself toward the master optical signal transmitter-receiver unit or takes in data from the master optical signal transmitter-receiver unit only when the address data coincide with each other.

5,610,750

OPTICAL COMMUNICATIONS TERMINAL

Alexandru F. Popescu, Lisse, and Bernard Furch, Noordwijkerhout, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

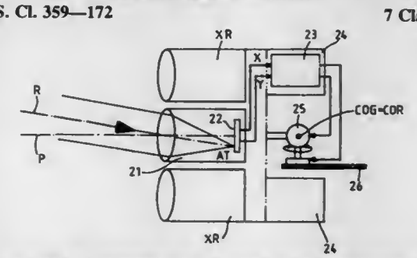
PCT No. PCT/EP92/01218, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/22150, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 982,758

Claims priority, application France, Jun. 4, 1991, 91 06718

Int. Cl.[6] H04B *10/00;7/185*

U.S. Cl. 359—172 **7 Claims**



1. An optical communications terminal of an interstatellite communication system comprising:

a plurality of laser modules, each laser module comprising a laser generator operating at an individual predetermined frequency, and modulating means for modulating a laser beam produced by the laser generator with a data signal,

a base,

a plurality of transceiver modules mounted on the base extending parallel to each other, each transceiver module receiving an optical signal from a respective laser module,

one common signal receiver coupled to receiver ends of said plurality of transceiver modules, and at least one acquisition and tracking module extending parallel to said plurality of transceiver modules, said at least one acquisition and tracking module being mounted on said base and operating at a predetermined frequency, and means on said base connected to said at least one acquisition and tracking module for adjusting aim of said plurality of transceiver modules in concert.

5,610,751

OPTICAL SCANNING DEVICE HAVING A SPHERICAL EXIT WINDOW

Michael N. Sweeney, Lake Orion; Brian L. Tiffany, Rochester Hills; Thomas J. Vettese, West Bloomfield; Mark S. Maiberger, New Baltimore, all of Mich., and John M. Rodgers, Pasadena, Calif., assignors to Speedring Systems, Inc., Rochester Hills, Mich.

Filed Nov. 14, 1995, Ser. No. 557,489

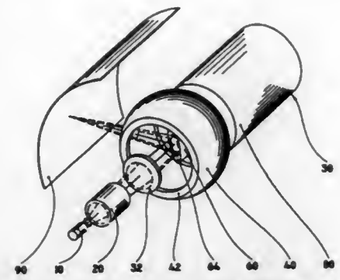
Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—197 **17 Claims**

1. An optical scanning device for reflecting a light beam produced by a laser light source, said optical scanning device comprising:

an entrance window;

a rotatable scan optic having a reflective surface, said reflective surface of said rotatable scan optic positioned adjacent said entrance window such that said light beam successively encounters said entrance window, passes through said



entrance window, encounters said reflective surface of said rotatable scan optic, and is reflected away from said rotatable scan optic;

means for rotating said rotatable scan optic, said rotation means positioned contiguous said rotatable scan optic; and

a spherical exit window surrounding said reflective surface of said rotatable scan optic, said spherical exit window having a center, a top at one end, and a bottom at an opposite end, said top of said spherical exit window being adjacent said entrance window such that said entrance window faces said center of said spherical exit window, said bottom positioned adjacent said rotation means, such that said light beam encounters and passes through said spherical exit window after being reflected away from said rotatable scan optic, said reflective surface of said rotatable scan optic circumscribed by a chamber defined by said entrance window, said rotation means, and said spherical exit window.

5,610,752

OPTICAL READER WITH VIBRATING MIRROR

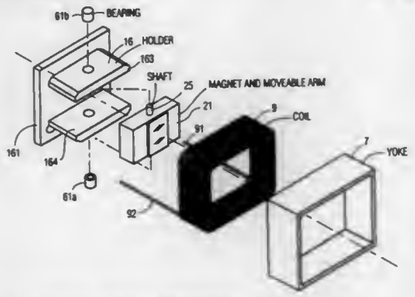
Hiroshi Hayakawa, Urawa, Japan, assignor to Opticon Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 889,603, May 27, 1992, Pat. No. 5,436,753. This application Mar. 16, 1995, Ser. No. 405,538

Claims priority, application Japan, Mar. 17, 1994, 6-087157

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—198 **18 Claims**



1. A scanning device comprising:

a movable arm of length L and width W, having one side on which is fixedly mounted a first reflective surface for receiving a light beam and for projecting the light beam across a target spaced externally from the scanning device; said movable arm being of magnetic material and being pivoted about its center to permit the arm to rotate freely about its center;

stationary, non-moving, components, external to the movable arm, including a driving coil and a fixed yoke;

said driving coil formed of a plurality of turns of wire closely wound about each other and located between the movable arm and said fixed yoke, said driving coil for receiving an electric current for selectively causing movement of said movable arm; and

said fixed yoke being formed of magnetic material, and having sides, with the movable arm located between the sides of the fixed yoke for producing a magnetic circuit coupling the fixed yoke with the movable arm and for establishing an equilibrium position for the movable arm, the magnetic circuit being arranged such that when said movable arm is displaced from its equilibrium position, and in the absence of a current in said driving coil, a restoring torque is present tending to cause the movable arm to oscillate about its equilibrium position.

5,610,753

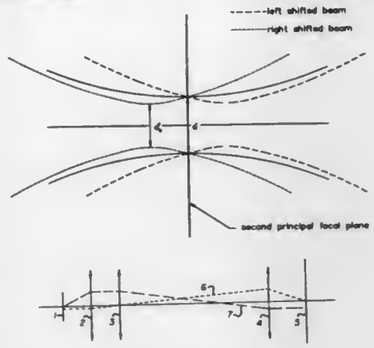
OPTICAL DESIGN OF LASER SCANNER TO REDUCE THERMAL SENSITIVITY

David Kessler, Rochester, and Michael E. Harrigan, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 120,716, Sep. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 806,953, Dec. 12, 1991, abandoned. This application Jun. 26, 1996, Ser. No. 669,760

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—205 **8 Claims**



1. An imaging system comprising:

means defining an image plane;

a light source; and

an optical system located between said light source and said means defining an image plane, said optical system having an optical axis, a first principal focus and a second principal focus,

wherein said means defining an image plane is located at said second principal focus of said optical system, and wherein said optical system creates a Gaussian intensity profile on said image plane whose e^{-2} intensity diameter on said plane is substantially constant even when said light source being imaged by said optical system is shifted by thermal effects along the optical axis.

5,610,754

METHOD AND APPARATUS FOR PHOTOLITHOGRAPHY BY ROTATIONAL SCANNING

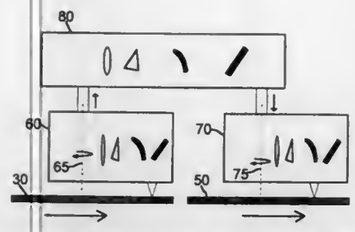
Gregory Gheen; Alice Gheen, and Zhijiang Wang, all of 774 Iroquois Way, Fremont, Calif. 94539

Filed Aug. 9, 1994, Ser. No. 287,903

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—210 **17 Claims**

1. A photolithography device comprising:



an illumination system comprising a light emitting source and a rotating projection unit including lenses and reflectors, whereby light from said emitting source is focused and projected to a pattern plane fed in a predetermined direction;

a rotating imaging system for imaging the illuminated spot of said pattern plane onto a planar recording medium approximately parallel to said pattern plane and fed in a predetermined direction;

whereby the photolithography is completed when each part of said pattern is progressively projected onto said recording medium with the rotation of said projection unit and said imaging system, wherein the scanning traces are circular arcs across the width of said recording medium.

5,610,755

LENS CHANGEABLE IMAGE SCANNER AND LENS POSITION CONTROL DEVICE IN THE SAME

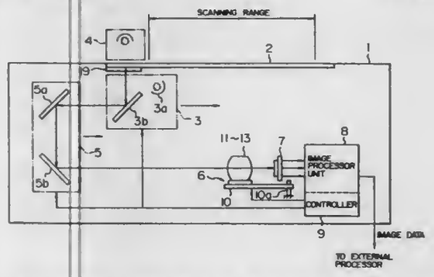
Tadao Ohtsuka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 295,912, Sep. 12, 1994, Pat. No. 5,535,040. This application Feb. 1, 1996, Ser. No. 595,284

Claims priority, application Japan, Jan. 12, 1993, 5-019701; Jan. 12, 1993, 5-019702

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—210 **4 Claims**



1. A lens position control structure in an image scanner in which a plurality of lenses can be used in a change-over manner, the image scanner taking in the image of an object by an image receiving element, the structure comprising a reference pattern provided at a predetermined position at which it is readable through the changed-over lens, and means for detecting the kind of the changed-over lens from image data of said reference pattern read by said image receiving element.

5,610,756

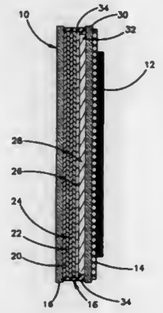
ELECTROCHROMIC MIRROR FOR VEHICLES

Niall R. Lynam; Desmond J. O'Farrell, both of Holland; Kenneth L. Schierbeek, Zeeland, and Michael A. Hansen, West Olive, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 971,676, Nov. 4, 1992, Pat. No. 5,446,576, which is a continuation of Ser. No. 643,186, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,169, Nov. 26, 1990, Pat. No. 5,151,824. This application May 17, 1995, Ser. No. 442,956

Int. Cl.[6] G02F *1/153*

U.S. Cl. 359—267 **31 Claims**



1. An exterior rearview mirror having a manually activated heating system for a vehicle comprising:

an electrochromic reflective element having an electrochromically active area, said electrochromic reflective element including a first glass plate having a front and rear surface, a second glass plate having a front and rear surface, and an electrochromic medium disposed between the rear surface of said first glass plate and the front surface of said second glass plate;

said from surface of said first glass plate being subject to frosting when exposed to an outdoor environment at a temperature of 0° C. or lower;

electrical means to achieve an electrochromic function for supplying a signal to said reflective element in order to establish the reflectance level of said reflective element;

heating means to achieve a defrosting function on a surface of said second glass plate for heating said surface of said second glass plate in order to enhance coloration and bleaching of said electrochromic reflective element during low temperature operation and to defrost said front surface of said first glass plate, wherein said heating means includes one of a positive temperature coefficient material, a metal layer, and a transparent conductor layer;

said heating means being electrically insulated from said electrochromic medium;

manually activated control means for applying energy in the form of direct current from an automobile power system to said heating means wherein said control means includes a defrost initiate means that is manually actuated when frost is present on said front surface of said first glass plate; and

wherein said defrost initiate means applies energy to said heating means independently of said electrical means in a manner that enables independent control over both the defrosting function and the electrochromic function and includes timing means for removing energy from said heating means after a predetermined time following actuation of said defrost initiate means.

5,610,757

THIN FILM ACTUATED MIRROR ARRAY FOR USE IN AN OPTICAL PROJECTION SYSTEM

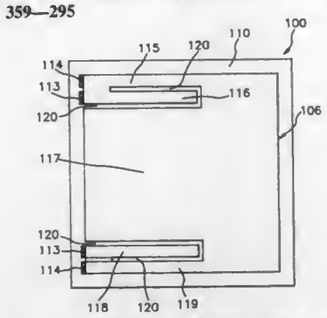
Jeong-Beom Ji, and Dong-Seon Yoon, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 20, 1995, Ser. No. 504,967

Claims priority, application Rep. of Korea, Oct. 31, 1994, 94-28331

Int. Cl.[6] G02B 26/00

U.S. Cl. 359—295 10 Claims



1. An array of M×N thin film actuated mirrors for use in an optical projection system, said array comprising:

a switching matrix including a substrate having a top surface and provided with a first, a second and a third conduction line patterns formed on the top surface, wherein the first and the second conduction line patterns are connected to an outside circuit and are used for carrying an image signal and a driving signal, respectively, and the third conduction line pattern is used for providing the image signal to each of the thin film actuated mirrors;

an array of M×N pairs of supporting members, wherein each of the supporting members is placed on top of the second and the third conduction line patterns; and

an array of M×N actuating structures, each of the actuating structures including a first, a second, a center, a third and a fourth tab portions, each of the tab portions being separated from each other by a gap inbetween, each of the actuating structures further including a reflecting layer, an elastic layer and an electrodisplacive layer, each of the actuating structures still further including a pair of actuators and a pair of gate actuators, each of the actuators and the gate actuators having a proximal and a distal ends, each of the actuators in the pair being located either below the first and the fourth tab portions if each of the gate actuators in the pair is located below the second and the third tab portions, respectively, or below the second and the third tab portions if each of the gate actuators in the pair is located below the first and fourth tab portions, respectively, each of the actuators in the pair and each of the gate actuators in the pair being cantilevered from each of the supporting members by the proximal end thereof, each of the gate actuators being further being provided with an insulating layer attached on bottom thereof at the distal end and a contact layer attached on bottom of the insulating layer, wherein the driving signal provided through the second conduction line pattern is applied to each of the gate actuators, causing the pair of gate actuators to bend downward, thereby forcing the contact layer on each of the gate actuators to come in contact with the first and the third conduction line patterns to thereby allow the image signal from the first conduction line pattern to be transmitted to the third conduction line pattern, and hence to each of the actuators, causing the pair of actuators in each of the actuating structures to tilt, resulting in the center tab portion thereof to tilt while remaining planar, thereby allowing all of the center tab portion to be used to reflect the light beams.

5,610,758

VARIABLE FOCAL POSITION OPTICAL SYSTEM AND LIGHT BEAM SCANNING APPARATUS

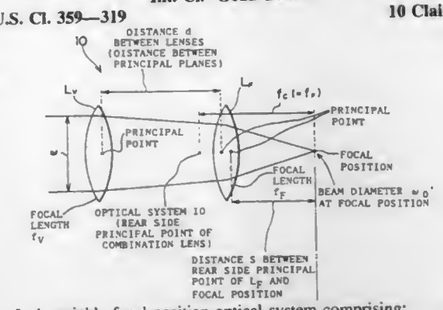
Katsuto Sumi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 15, 1995, Ser. No. 389,211

Claims priority, application Japan, Feb. 15, 1994, 6-018317

Int. Cl.[6] G02B 26/08

U.S. Cl. 359—319 10 Claims



1. A variable focal position optical system comprising:

a variable focal length lens subsystem whose focal length is variable; and

a fixed focal length lens subsystem whose focal length is fixed, said variable focal length lens subsystem and said fixed focal length lens subsystem being arranged such that a distance between a principal point of said variable focal length lens subsystem and a principal point of said fixed focal length lens subsystem is substantially equal to the focal length of said fixed focal length lens subsystem.

5,610,759

COMPACT OPTICAL SOURCE BASED ON THE FREQUENCY DOUBLING OF A LASER

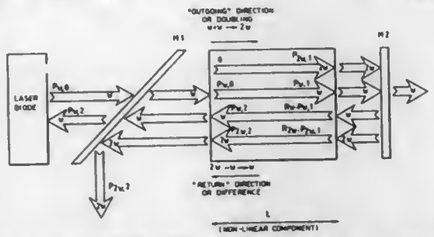
Dominique Delacourt, Clamart, and Michel Papuchon, Villebon, both of France, assignors to Thomson-CSF, Paris, France

Filed Jun. 29, 1995, Ser. No. 496,318

Claims priority, application France, Jul. 5, 1994, 94 08288

Int. Cl.[6] G02F 1/37

U.S. Cl. 359—328 12 Claims



1. A compact optical source comprising a laser device emitting an incident wave in a range of wavelengths λo_i and a non-linear medium (NLM) wherein:

a phase matching condition enabling the cancellation of or compensation for a difference in propagation constant between, firstly, the non-linear polarization created by the incident wave and, secondly, a harmonic wave generated by said polarization, is achieved at the wavelength λo_a belonging to the set of λo_i values, in the medium (NLM);

the optical source also includes two dichroic mirrors M_1 and M_2 placed in such a way that there is the following succession of elements: the laser device, the mirror M_1, the medium (NLM), the mirror M_2, said mirrors M_1 and M_2 being highly transparent at the wavelengths λo_i and highly reflective at the wavelengths $\lambda o_i/2$ so as to reinject a wave at λo_a into the laser and recover, at M_1, a wave at the wavelength $\lambda o_a/2$.

5,610,760

DEVICE FOR RAISING THE FREQUENCY OF ELECTROMAGNETIC RADIATION

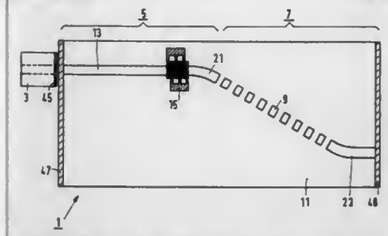
Ronald R. Drenten; Michiel J. Jongerius, and Richard B. J. Droste, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1995, Ser. No. 402,583

Claims priority, application European Pat. Off., Mar. 11, 1994, 94200636

Int. Cl.[6] G02F 1/37

U.S. Cl. 359—332 35 Claims



1. A device for raising the frequency of electromagnetic radiation, comprising a diode laser for generating the radiation, a non-linear optical medium having a first optical waveguide for guiding a fundamental wave of the diode laser radiation while forming a second harmonic wave, and a wavelength stabilizer for stabilizing the wavelength of the fundamental wave, characterized in that the wavelength stabilizer is constituted by a second optical waveguide in a medium comprising a refractive index grating which extends in the longitudinal direction of the second optical waveguide, and an electrode structure by means of which the selection wavelength of the refractive index grating is electrically controllable.

5,610,761

TELESCOPE HAVING MECHANISM FOR AUTOMATICALLY RETURNING OPTICAL SYSTEM TO A REFERENCE DIOPTRIC POWER

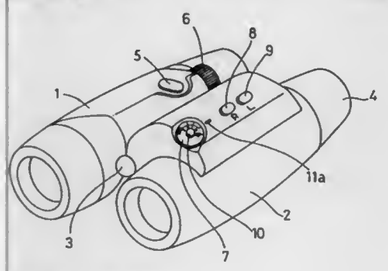
Kenji Ishibashi; Kazuo Kimura, both of Sakai; Iwao Ishida, Higashiosaka, and Kiyoshi Nishitani, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 28, 1994, Ser. No. 365,506

Claims priority, application Japan, Dec. 28, 1993, 5-337330

Int. Cl.[6] G02B 23/00

U.S. Cl. 359—407 13 Claims



1. A telescope comprising:

an optical system;

a dioptric power adjusting mechanism for driving the optical system to adjust a dioptric power;

a driving source which drives the dioptric power adjusting mechanism;

a specifying member which specifies a position of the optical system corresponding to a predetermined reference dioptric power; and

a controller which controls the dioptric power adjusting mechanism so that the optical system is driven to a reference position specified by the specifying member.

5,610,762

APPARATUS AND METHOD OF MAKING REFLEX MOLDS

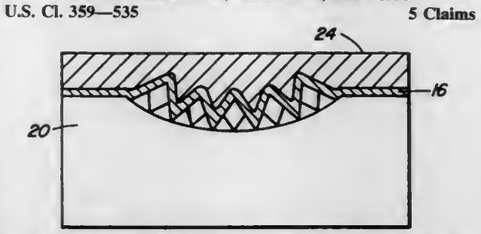
Italo Caroli, Westmount, Canada, assignor to DBM Reflex Enterprises Inc., Montreal, Canada

Filed Apr. 7, 1995, Ser. No. 418,203

Claims priority, application Canada, Apr. 11, 1994, 2120996

Int. Cl.[6] G02B 5/126; B29D 11/00; F21V 5/00

U.S. Cl. 359—535 5 Claims



1. A method of making a reflex mold for use in manufacturing a lens for a light assembly, said method comprising:

providing a flat block assembly of reflex prisms and clamping said prisms in the assembly;

applying a thin layer of metal over the surface of said prisms to make a thin plate of bendable material;

providing a model of curvature relative to a contour of said lens;

clamping said thin, bendable metal plate onto the model to assume a desired configuration; and

applying additional metal, over the back surface of the thin plate of bendable material with sufficient thickness to render the mold suitable to receive deposition of lens material.

5,610,763

ILLUMINATING OPTICAL APPARATUS

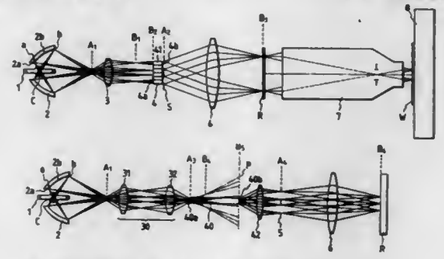
Yuji Kudo, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 139,810, Oct. 22, 1993, abandoned. This application Jun. 24, 1996, Ser. No. 668,829

Claims priority, application Japan, Oct. 22, 1992, 4-284226; May 31, 1993, 5-128641

Int. Cl.[6] G02B 27/10; F21V 29/00;7/04; G03B 27/72

U.S. Cl. 359—619 12 Claims



1. An illumination optical system comprising:

a light source;

a rotationally symmetric reflecting mirror having a first aperture and a second aperture spaced along an optical axis;

a collimating optical system;

an optical integrator; and

a condenser optical system;

wherein said illumination optical system is constructed so that light from said light source is reflected from said reflecting

mirror, emanates from said second aperture and passes through said collimating optical system to be converted into substantially collimated light, thereafter the collimated light enters said optical integrator and passes through said optical integrator to form a plurality of light source images, and thereafter light from said light source images passes through said condenser optical system; and

wherein said collimating optical system forms an image of a reflection region of said reflecting mirror nearest to said first aperture substantially at a position of an incident surface of said optical integrator and forms an image of a reflection region of said reflecting mirror nearest to said second aperture at a position distant from the position of said incident surface in an optical axis direction.

5,610,764

DEVICE FOR IMPROVING THE FIELD OF VISION OF AIRCRAFT THAT DO NOT HAVE A SUFFICIENT TRANSPARENT SURFACE AREA

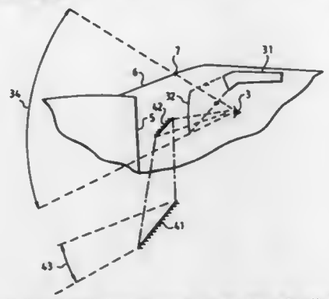
Francois Faivre, St Medard, and Roger Parus, St Remy Les Chevreuse, both of France, assignors to Sextant Avionique, Meudon La Foret, France

Filed May 19, 1995, Ser. No. 444,876

Claims priority, application France, May 27, 1994, 94 06462

Int. Cl.[6] G02B *27/14; G09G 5/00*

U.S. Cl. 359—630 **18 Claims**



1. A device for the improvement of an aircraft pilot's field of vision, comprising a collimator, the collimator projecting an image of the external space in the pilot's field of vision, wherein the collimated image is imposed on both the transparent part of the cockpit of the aircraft enabling direct vision and the non-transparent part of the cockpit, the collimated image coinciding with the real image in the field of direct vision.

5,610,765

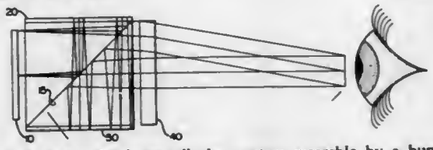
OPTICAL PATH EXTENDER FOR COMPACT IMAGING DISPLAY SYSTEMS

D'Nardo Colucci, Durham, N.C., assignor to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Oct. 17, 1994, Ser. No. 323,848

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—633 **10 Claims**



1. A monocular image display system wearable by a human subject, comprising:

a) at least one image display unit carried by a mounting structure, said image display unit comprising:

i) an image source for emitting polarized light in the form of an image;

ii) a polarizing beam splitter positioned in front of said image source and at an angle thereto, with said polarizing beam splitter having a front surface portion and a back surface portion, and with said beam splitter positioned so that said image is reflected by said front surface portion;

iii) first polarization-rotation and reflecting means facing said polarizing beam splitter front surface portion for projecting said image back through said polarizing beam splitter;

iv) second polarization-rotation and reflecting means facing said polarizing beam splitter back surface portion for projecting said image onto said polarizing beam splitter back surface portion so that said image is reflected thereby;

v) a focusing lens positioned behind said polarizing beam splitter, and with said focusing lens positioned so that said image reflected by said beam splitter back surface portion is projected therethrough; and

b) a frame wearable by a human subject, said frame connected to said image display unit with said frame configured so that, when attached to a human subject, said focusing lens of said image display unit is positioned in front of an eye of said human subject.

5,610,766

ZOOMING LENS SYSTEM

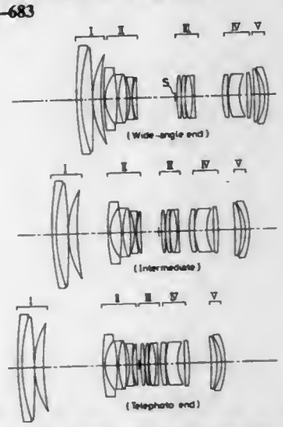
Norihiko Aoki, Hachioji, and Takanori Yamanashi, Kokubunji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 16, 1995, Ser. No. 442,339

Claims priority, application Japan, May 17, 1994, 6-102774

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **9 Claims**



1. A zooming lens system which comprises, in order from the object side, a first lens unit having positive refracting power, a second lens unit having negative refracting power, a third lens unit having positive refracting power, a fourth lens unit having positive refracting power and a fifth lens unit having positive refracting power, with at least said first, third, fourth and fifth lens units being moved toward the object side for zooming from the wide-angle end to the telephoto end, and which conforms to the following conditions:

$$-0.8<f_2/f_W<-0.5 \quad (1)$$

$$-0.7<f_{T12}/f_T<-0.3 \quad (2)$$

where f_2 is the focal length of the second lens unit, f_W is the focal length of the entire system at the wide-angle end, f_{T12} is the composite focal length of the first and second lens units at the telephoto end, and f_T is the focal length of the entire system at the telephoto end.

5,610,767

ZOOM LENS SYSTEM WITH SMALL NUMBERS OF LENSES AND WIDE VIEWING ANGLE

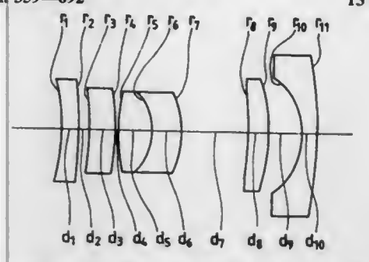
Takayuki Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 41,649

Claims priority, application Japan, Apr. 6, 1992, 4-083599; Jul. 16, 1992, 4-189197

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—692 **13 Claims**



1. A zoom lens system, comprising, in order from the object side:

a positive first lens group and a negative second lens group, said first lens group comprising, in order from the object side, a negative sub-group 1a and a positive sub-group 1b, wherein the focal length of the zoom lens is changed by varying the distance between the first and second lens groups while maintaining constant the distance between said sub-groups 1a and 1b, and

said sub-group 1a comprising, in order from the object side, a negative first lens element having its surface of greater curvature on the surface directed towards the object and a positive second lens element;

wherein said lens system satisfies the following condition:

$$-1.2<f_1/f_{1a1}<-0.3 \quad (3)$$

where f_1 is the focal length of the overall lens system at the wide-angle end, and f_{1a1} is the focal length of the first lens element in sub-group 1a.

5,610,768

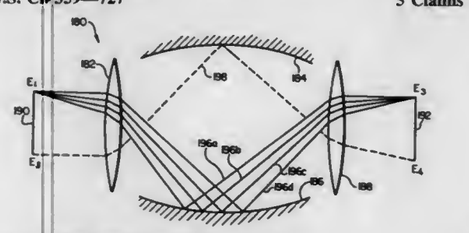
NONIMAGING RADIANT ENERGY DEVICE

Roland Winston, Chicago, Ill., assignor to The Argonne National Laboratory, and The University of Chicago Development Corporation, both of Chicago, Ill.

Division of Ser. No. 115,220, Sep. 19, 1993, Pat. No. 5,557,478, which is a division of Ser. No. 348,056, May 19, 1989, Pat. No. 5,243,459. This application Jun. 6, 1995, Ser. No. 471,730

Int. Cl.[6] G02B *17/00; 21/00*

U.S. Cl. 359—727 **5 Claims**



1. A radiant energy device comprising:

a radiant energy source with an edge;

a first lens positioned to receive radiant energy from said radiant energy source;

an optical element optically coupled to said first lens, said optical element having a nonlinear reflective surface positioned to receive radiant energy from said first lens;

a second lens optically coupled to said optical element whereby radiant energy passing through said first lens impinges upon said nonlinear reflective surface of said optical element and is reflected to said second lens; and

a radiant energy receptor positioned to receive radiant energy from said second lens, said radiant energy receptor having an edge,

said nonlinear reflective surface of said optical element being shaped such that the effective optical distance of a plurality of optical paths between said edge of said radiant energy source and said edge of said radiant energy receptor is substantially constant.

5,610,769

INTERNAL FOCUSING TELEPHOTO LENS SYSTEM

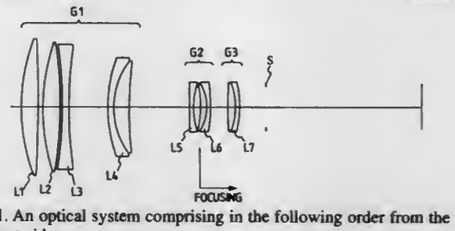
Yoshitomo Shoji, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 492,759

Claims priority, application Japan, Jun. 23, 1994, 6-164531

Int. Cl.[6] G02B *13/02; 9/64*

U.S. Cl. 359—745 **44 Claims**



1. An optical system comprising in the following order from the object side:

a first lens unit having a positive refractive power;

a second lens unit having a negative refractive power, said second lens unit comprising, in the following order from the object side, a front lens group having a negative refractive power and a rear lens group having a negative refractive power; and

a third lens unit having a positive refractive power,

wherein focusing to a short-distance object is attained by moving said second lens unit toward an image side, and said optical system satisfies:

$$2.5<f2R/f2F<5$$

$$0\leqq D2/f\leqq 0.1$$

$$0.15<1/(|\phi 2F|\cdot f)<0.25$$

where

f2F: the focal length of said front lens group in said second lens unit

f2R: the focal length of said rear lens group in said second lens unit

f: the focal length of the entire optical system

ϕ2F: the refractive power of a lens surface, closest to the object side, in said rear lens group in said second lens unit

D2: the on-axis air gap between said front and rear lens groups in said second lens unit.

5,610,770

MAGNIFYING CONTAINER FOR PRINTED MATTER

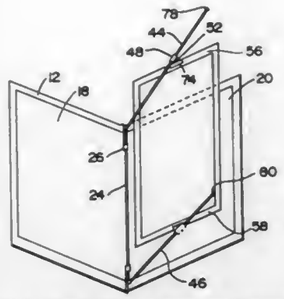
Alfred J. Galiani, 1207 Ina La., McLean, Va. 22102

Division of Ser. No. 124,452, Sep. 22, 1993, Pat. No. 5,471,347. This application Nov. 21, 1995, Ser. No. 561,314

Int. Cl.[6] G02B *27/02*

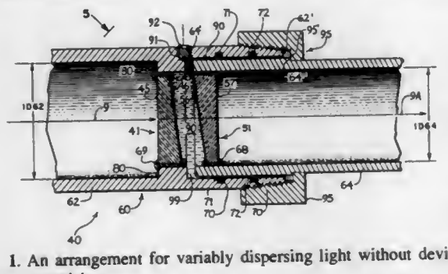
U.S. Cl. 359—807 **14 Claims**

1. A magnification system for selective use to magnify printed matter comprising:



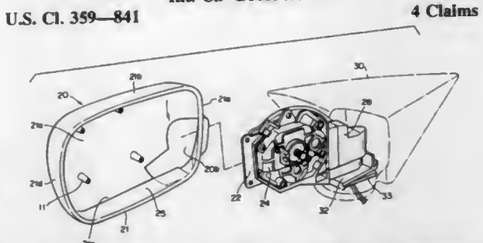
(a) a container adapted for containing and protecting a booklet having printed matter thereon;
(b) a lens;
(c) means for retaining said lens for movement with respect to said container and being positioned for magnification of said printed matter on said booklet; and
means permitting manual positioning of said lens in selectively spaced, generally parallel relation with a selected page of said booklet for magnification of printed matter that is present on said selected page and permitting positioning of said lens between pages of said booklet for protective storage when said lens is not being used.

5,610,771
NON-DEVIATING PRISM WITH CONTINUOUSLY VARIABLE DISPERSION
Robert D. Sigler, Cupertino, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Aug. 1, 1994, Ser. No. 283,561
Int. Cl.[6] G02B *5/04;5/06;27/64*
U.S. Cl. 359—832 **8 Claims**



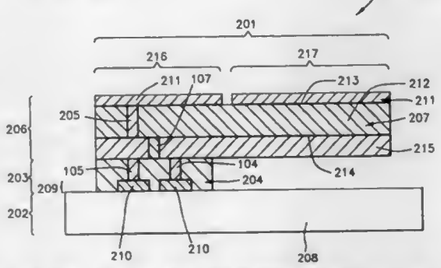
1. An arrangement for variably dispersing light without deviation comprising:
a first prism including first and second aperture regions which are angled with respect to each other at a predetermined prism apex angle, said first prism having a first index of refraction,
a second prism including third and fourth aperture regions which are angled with respect to each other at substantially the same prism apex angle, said second prism having a second index of refraction which substantially matches said first index of refraction, said second prism being axially rotatably mounted with respect to said first prism, and said first and fourth aperture regions facing away from each other and being generally parallel to each other, and
a liquid containment structure for mounting said first and second prisms in alignment along a common optical axis, said liquid containment structure holding a selected liquid between said second and third aperture regions, which substantially refractively matches said first and second prisms and is substantially different in dispersion wherein said liquid containment includes overlapping tubes including an outer tube and an inner tube, the inner tube defining an annular inner edge and said outer tube defining an area of maximal overlap and additionally defining an annular outer edge.

5,610,772
AUTOMOBILE SIDEVIEW MIRROR
Keiji Iizuka, Atsugi, Japan, assignor to Ichikoh Industries Ltd., Tokyo, Japan
Filed Mar. 7, 1994, Ser. No. 206,953
Claims priority, application Japan, Mar. 23, 1993, 5-064036
Int. Cl.[6] B60R *1/06*
U.S. Cl. 359—841 **4 Claims**



4. A sideview mirror assembly for motor vehicles, comprising:
a mirror holder for supporting a mirror, said mirror having an outer configuration;
a support for tiltably supporting the mirror holder;
a mirror housing for retaining said support and said mirror holder, said mirror housing having a rear wall and side walls, a lower edge, a front opening, and a lateral opening, the shape of said front opening substantially corresponding to the outer configuration of said mirror, and at least a portion of said lower edge forming a V-shape such that said lower edge has an inwardly extending portion and an outwardly extending portion, said lower edge further including a horizontally extending portion adjacent to said outwardly extending portion, said inwardly, outwardly, and horizontally extending portions being integrally formed with said mirror housing, and said inwardly, outwardly, and horizontally extending portions defining a region therebetween that is open in the direction of both the rear wall of the mirror housing and to the lateral opening of said mirror housing;
a mechanism for folding said mirror housing;
wherein the lateral opening of said mirror housing is adapted to receive said folding mechanism for installation thereof within the mirror housing.

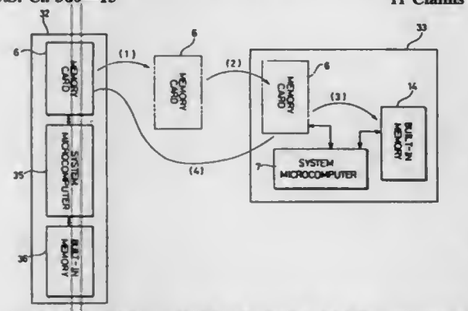
5,610,773
ACTUATED MIRROR ARRAY AND METHOD FOR THE MANUFACTURE THEREOF
Yong-Ki Min, Seoul, Rep. of Korea, assignor to Daewoo Electronic Co. Ltd., Seoul, Rep. of Korea
Filed Apr. 25, 1995, Ser. No. 428,757
Claims priority, application Rep. of Korea, Apr. 30, 1994, 94-9504
Int. Cl.[6] G02B *5/08;* **G03B** *21/28;21/14*
U.S. Cl. 359—850 **18 Claims**



1. An array of M×N thin film actuated mirrors for use in an optical projection system, each of the M×N thin film actuated mirrors capable of causing a deviation in the optical path of an incident light beam, said array comprising:

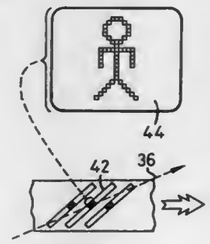
an active matrix including a substrate with an array of M×N pairs of connecting terminals on top of the substrate;
M×N trinities of a first, a second and a third conduits, wherein the first conduit is connected electrically to one of the connecting terminals in each pair thereof, and the second conduit, to the other connecting terminal in the pair;
an array of M×N supporting members, each of the supporting members being provided with the first and the second conduits; and
an array of M×N actuating structures, each of the actuating structures including a first layer made of an electrically conducting and light reflecting material, an electrodisplacive layer having a top and a bottom surfaces, and a second layer made of an electrically conducting material, the first and the second layers being placed on the top and the bottom surfaces of the electrodisplacive layer, respectively, each of the actuating structures being provided with a proximal and a distal ends, the proximal end of each of the actuating structures being secured on top of each of the supporting members, the third conduit being formed between the first and the second layers, the first layer in each of the actuating structures being connected electrically to one of the connecting terminals in the pair through the second and the third conduits and the second layer therein is connected electrically to the other connecting terminal in the pair through the first conduit.

5,610,774
AUDIO SOUND RECORDING/REPRODUCING APPARATUS USING SEMICONDUCTOR MEMORY
Kousou Hayashi, and Tadashi Koike, both of Hiroshima-ken, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 958,899, Oct. 9, 1992, abandoned. This application Mar. 4, 1994, Ser. No. 205,769
Claims priority, application Japan, Oct. 11, 1991, 3-263654
Int. Cl.[6] G11B *5/86*
U.S. Cl. 360—15 **11 Claims**



1. An audio sound recording/reproducing apparatus utilizing a semiconductor memory, wherein
said semiconductor memory includes a plurality of addressable locations forming a first digital storing region for storing document and information data including an instruction related to the document data inserted within said document data, and a plurality of addressable locations forming a second digital storing region for storing digital data corresponding to address locations of said document data and address locations of said instruction in said first storing region and digital identification data corresponding to the information data, wherein said digital data of said second storing region are stored during the time of the storing of the corresponding document and information data of said first storing region, said apparatus further including
reference means for referring to the digital data in said second storing region for positioning data in said first storing region and controlling the recording/reproducing of document and information data in accordance with said digital data.

5,610,775
RECORDING MEDIUM FOR STORING AND AN APPARATUS AND METHOD FOR RECORDING A FREQUENCY SEPARATED VIDEO SIGNAL
James H. Wilkinson, Tadley, and Terence R. Hurley, Newbury, both of United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England
Division of Ser. No. 809,264, Dec. 17, 1991, Pat. No. 5,337,194. This application Apr. 19, 1994, Ser. No. 229,644
Claims priority, application United Kingdom, Jan. 11, 1991, 9100592; Aug. 8, 1991, 9117166
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—24 **5 Claims**

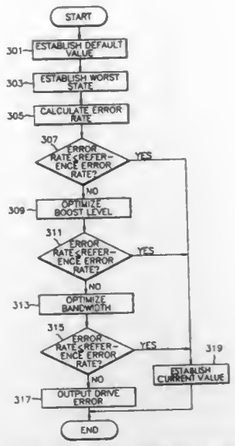


Shuttle

1. An apparatus for recording a frequency separated video signal as slanting tracks on magnetic recording tape, said apparatus comprising
formatting means for arranging said frequency separated video signal into portions corresponding to different frequency components including a substantially dc luminance component which contains the majority of the dc luminance information in said video signal; and
recording means for recording only said substantially dc luminance component at predetermined central locations of said slanting tracks.

5,610,776
METHOD OF OPTIMIZING READ CHANNEL OF DISK DRIVE RECORDING APPARATUS BY USING ERROR RATE
Heung-Min Oh, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Feb. 8, 1995, Ser. No. 386,906
Claims priority, application Rep. of Korea, Apr. 27, 1994, 1994-9013
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—53 **18 Claims**

1. A method for optimizing performance of a read channel in a disk drive recording apparatus having a programmable low-pass filter and control means for controlling operation of said apparatus, said method comprising the steps of:
setting a filtering characteristic of said programmable low-pass filter to a predetermined initial bandwidth value via said control means;
detecting data written on a predetermined track of a disk to calculate a first data detection error rate via said control means, and comparing a reference error rate with said first data detection error rate;
setting said filtering characteristic of said programmable low-pass filter to a bandwidth value indicating a lowest error rate by varying said bandwidth value of said programmable low-pass filter when said first data detection error rate is greater than said reference error rate;
detecting data written on said predetermined track of the disk to calculate a second data detection error rate via said control means, and comparing said reference error rate with said second data detection error rate;



outputting an error state signal indicating that said disk drive recording apparatus is in an error state when said second data detection error rate is greater than said reference error rate; and

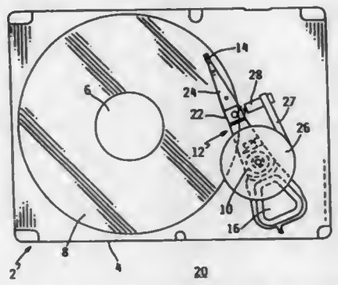
setting a current bandwidth value as a final set value when any one of said first and second data detection error rates is less than or equal to said reference error rate.

5,610,777

METHOD AND APPARATUS FOR WRITING SERVO TRACKS OF A MAGNETIC DISK UNIT WHICH USES A PROBE TO CONTROL THE POSITIONING OF THE HEAD

Hien P. Dang, Nanuet, N.Y.; Takahiro Nakagawa; Yoshiyasu Nakamoto, both of Fujisawa, Japan; Muthuthamby Sri-Jayantha, Ossining, N.Y., and Hiroyuki Suzuki, Fujisawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 233,163, Apr. 24, 1994, abandoned.
This application Feb. 28, 1996, Ser. No. 608,206
Claims priority, application Japan, Apr. 27, 1993, 5-101457
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.03 **15 Claims**



1. A method for writing servo tracks of a disk drive, comprising the steps of:

setting a detecting portion in the vicinity of a head support member of said disk drive in a noncontacting manner;

moving said detecting portion to a first target position within the measurement range of said detecting portion;

detecting a gap between said detecting portion and said head support member;

moving a head of said disk drive so that said gap is at a second predetermined gap distance;

maintaining the gap distance substantially constant to maintain said head at a first predetermined servo track writing position;

moving a head of said disk drive so that said gap is at a second predetermined gap distance;

maintaining the gap distance substantially constant to maintain said head at a second predetermined servo track writing position; and

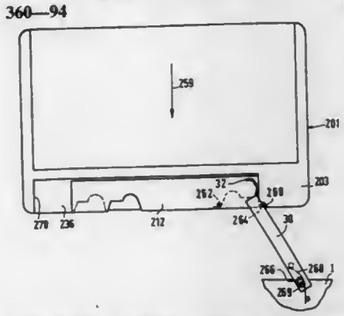
moving said detecting portion to a second target position within the measurement range of said detecting portion when the gap distance with respect to the first target position is nearing the outer limit of the measurement range.

5,610,778

MAGNETIC TAPE APPARATUS WHICH SENSES AND PLAYS DIFFERENT TYPES OF CASSETTE

Norbert C. Vollmann, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 238,140, May 3, 1994, abandoned, which is a continuation of Ser. No. 59,720, May 10, 1993, abandoned, which is a division of Ser. No. 935,150, Aug. 24, 1992, Pat. No. 5,237,479, which is a continuation of Ser. No. 879,705, May 5, 1992, abandoned, which is a continuation of Ser. No. 547,741, Jul. 3, 1990, abandoned. This application Nov. 23, 1994, Ser. No. 344,790
Claims priority, application Netherlands, Jul. 3, 1989, 8901682; Feb. 14, 1990, 9000348
Int. Cl.[6] G11B *15/675*
U.S. Cl. 360—94 **9 Claims**



1. A magnetic-tape apparatus comprising a capstan-pressure-roller combination, two reel drive spindles and a magnetic head for recording and/or reproducing information on a magnetic tape present in a cassette of a first type having two plane parallel main walls interconnected by transverse walls, of which one transverse wall constitutes a cassette front wall having openings for the passage of the magnetic head and the pressure-roller, which cassette further comprises a shutter which is slidable along the cassette front wall in a lateral direction between a closed position in which the openings in the cassette front wall are covered by the shutter and an open position in which the openings are exposed by the shutter, which shutter has a shutter front wall situated near the cassette front wall and extending parallel thereto and which shutter further comprises main portions adjoining the shutter front wall and overlying the main walls of the cassette, which apparatus further comprises actuating means for opening the shutter of the cassette, said actuating means comprising urging means for exerting lateral pressure on the shutter of the cassette to move the shutter laterally along the cassette from the closed position to the open position, characterized in that:

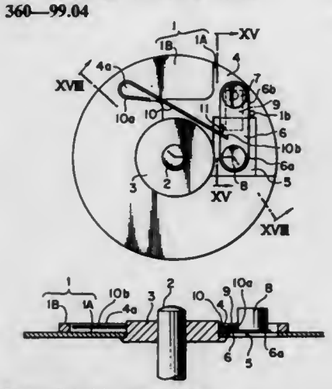
the apparatus further comprises means for cooperating with cassettes of a second type not having a shutter and having a cassette front wall of larger height than the cassettes of the first type with a shutter and in that the actuating means comprise sensing means for sensing the height of the cassette front wall and for moving the actuating means to a position in which cassettes of the second type, having a cassette front wall of larger height than the cassettes of the first type, can be inserted into the apparatus and cooperate freely with said capstan-pressure roller combination, said reel-drive spindles, and said magnetic head.

5,610,779

FLOPPY DISK DRIVE

Jiroh Kawana, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 928,723, Aug. 13, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 253,234
Claims priority, application Japan, Sep. 6, 1991, 3-227219; Sep. 11, 1991, 3-231418; Sep. 11, 1991, 3-231421
Int. Cl.[6] G11B *17/028*
U.S. Cl. 360—99.04 **25 Claims**



16. A floppy disk drive comprising:

a shaft connected to a rotary shaft of a motor;

a first disk fixed on said shaft at a center of said first disk and having a concave portion formed in a surface of said first disk on which a floppy disk is to be mounted and an aperture formed in said concave portion so as to be opened to a back side of the first disk;

a plate swingably mounted on said first disk at a base end portion of said plate by means of a pin provided at said concave portion;

an engaging pin provided at another end portion of said plate so as to project over said surface of said first disk; and

a spring serving to bias said plate radially outwardly of said first disk, said spring being fitted and fixed at a base portion thereof in a spring receiving groove formed in said surface of said first disk on which the floppy disk is to be mounted and said spring being engaged at a forward end portion thereof with said plate.

5,610,780

FLOPPY DISK UNIT

Hiroshi Nishizawa, Hanamaki, Japan, assignor to Matsushital Electric Industrial Co, Ltd., Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 264,909
Claims priority, application Japan, Jun. 30, 1993, 5-162120; Jun. 30, 1993, 5-162121
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.04 **6 Claims**

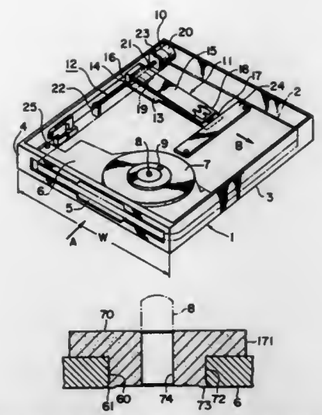
1. A floppy disk unit for rotating a medium loaded thereon to read and write information, comprising:

bearing means for rotatably supporting the medium, said bearing means including a bearing member made of a sintered alloy, said bearing member having an end portion; and

a metal support plate having a through hole formed therein, said end portion of said bearing member being fitted in said through hole and having a band-like projection projected out from one surface of said support plate, said through hole having a large diameter portion larger in diameter than other portions thereof along an opening of said through hole in said one surface so that said large diameter portion provides, between said through hole and said end portion of said bearing member fitted therein, a gap in which said band-like like projection is caulked to fill said gap and to fix said bearing member to said support plate;

wherein said large diameter portion of said through hole is a shear-group portion caused when said through hole is formed by press work; and

wherein said gap has a size that makes said band-like projection after being caulked and said one surface of said support plate substantially flush with each other.

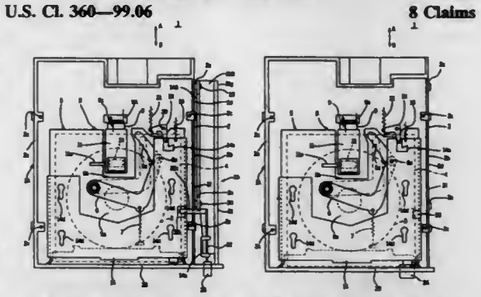


5,610,781

INTERCHANGEABLE EJECT MECHANISM FOR USE WITH VARIOUS DISK DRIVE UNITS

Takashi Watanabe, Ichikawa, Japan, assignor to TEAC Corporation, Japan

Continuation of Ser. No. 60,241, May 11, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,698
Claims priority, application Japan, May 13, 1992, 4-120802
Int. Cl.[6] G11B *17/04*
U.S. Cl. 360—99.06 **8 Claims**



1. A disk drive unit which incorporates a single operation device selected from a plurality of different types of operation devices, each of the plurality of different types of Operation devices being locatable, when used, at a different position with respect to the disk drive unit, said disk drive unit possessing versatility, manufacturing flexibility, and economy and comprising:

a main body;

a loading/ejecting mechanism mounted on said main body for loading a recording disk set at an initial position to a loading position and for returning said recording disk from the loading position to the initial position, said loading/ejecting mechanism being provided with at least first and second coupling elements, each of which selectively couples said loading/ejecting mechanism to a different type of operation

device, a first of said coupling elements being suitable for coupling said loading/ejecting mechanism to a first type of operation device located in a first position with respect to said main body, a second of said coupling elements being suitable for coupling said loading/ejecting mechanism to a second type of operation device located in a second position with respect to said main body which is different than said first position;

a driving mechanism for driving said recording disk set at the loading position by said loading/ejecting mechanism;

a head assembly for recording and/or reproducing information to and/or from said recording disk set at the loading position; and

a single selected operation device comprising one or the other of said first or second types of operation devices, said single selected operation device being located at the respective one of said first or second positions and being coupled to the respective one of said first or second coupling elements for operating said loading/ejecting mechanism so that said recording disk is returned from the loading position to the initial position, the other of said first or second coupling elements not being coupled to an operation device.

5,610,782

FLOPPY DISK DRIVE DEVICE

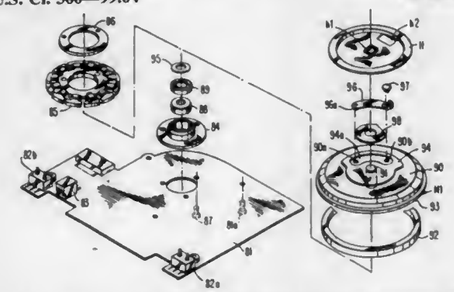
Aruga Tomoe; Hideya Yokouchi, and Kazuyoshi Fujimori, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 335,421, Nov. 7, 1994, Pat. No. 5,469,421, which is a continuation of Ser. No. 915,044, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 474,123, Jul. 5, 1990, abandoned. This application Nov. 17, 1995, Ser. No. 567,340

Claims priority, application Japan, Sep. 5, 1988, 63-221864; Feb. 2, 1989, 1-24647; May 15, 1989, 1-120727; May 15, 1989, 1-120728; Jul. 28, 1989, 1-195871; Jul. 28, 1989, 1-195874; Aug. 29, 1989, 1-222040

Int. Cl.[6] G11B *5/016*

U.S. Cl. 360—99.04 **6 Claims**



1. A computer having floppy disk drive device for recording and reproducing information on a disk in a disk cartridge, the disk having a metal disk hub with a central hole and a drive hole partially offset from the central hole, said floppy disk drive comprising:

a spindle mounted so as to engage the central hole of the disk;

a spindle motor operatively coupled to said spindle, said spindle being rotatable by said spindle motor;

a rotary member fixed to said spindle and rotatable therewith;

a chucking magnet positioned to attract the metal disk hub of the disk toward said rotary member;

a chucking lever having first and second ends pivotally attached to said rotary member at essentially said first end; and

a drive pin mounted at essentially said second end of said chucking lever and positioned for engagement by the drive hole of the disk when aligned therewith, wherein said chucking lever being formed of an elastic material so that said chucking lever may swing within a predetermined angle by the force of said chucking magnet attracting the metal disk hub of the disk to bear against said drive pin when disk chucking is not accomplished.

5,610,783

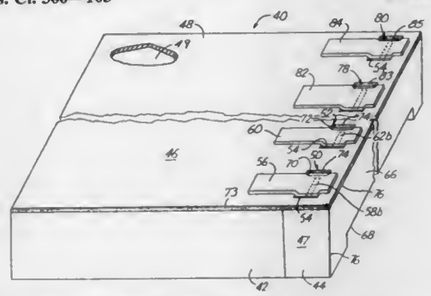
INSULATOR PATTERN FOR THIN FILM HEAD SLIDERS

Kent N. Maffitt, Lake Elmo, and Beat G. Keel, Prior Lake, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 231,399, Apr. 22, 1994, abandoned. This application May 8, 1995, Ser. No. 436,499

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **10 Claims**



1. A thin film magnetic head comprising:

a slider having a conductive substrate and a layer of an insulating material on top of the conductive substrate, wherein the insulating layer is configured such that the insulating layer has a plurality of discrete closed loop edge surfaces wherein each closed loop edge surface is isolated from any other closed loop edge surface of the insulating layer including at least a first closed loop edge surface and a second closed loop edge surface isolated from the first closed loop edge surface, the first and second closed loop edge surfaces defining a first aperture and second aperture, respectively;

a transducer disposed within the slider and having a first and second connecting link extending within the slider with an end of the first connecting link being exposed within the first aperture and an end of the second connecting link being exposed within the second aperture;

a first conductive bond pad extending across the top of the insulating layer and down into the first aperture defined by the first closed loop edge surface, and extending upwardly out of the first aperture and onto the top of the insulating layer so that the first bond pad extends across the top of the insulating layer on opposite sides of the first aperture, the first bond pad being in contact with the first closed loop edge surface and electrically connected to the end of the first connecting link; and

a second conductive bond pad extending across the top of the insulating layer and down into the second aperture defined by the second closed loop edge surface, and extending upwardly out of the second aperture and onto the top of the insulating layer so that the second bond pad extends across the top of the insulating layer on opposite sides of the second aperture, the second bond pad being in contact with the second closed loop edge surface and electrically connected to the end of the second connecting link.

5,610,784

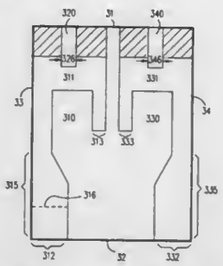
NEGATIVE PRESSURE SLIDER WITH OPTIMIZED LEADING POCKET FOR PROFILE CONTROL

Lee K. Dorius, and Laurence S. Samuelson, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 149,861, Nov. 10, 1993, abandoned. This application May 20, 1996, Ser. No. 650,227

Int. Cl.[6] G11B *5/60;21/21*

U.S. Cl. 360—103 **12 Claims**



1. A negative pressure air bearing slider for use in a disk drive, said slider including a leading edge, a trailing edge, first and second side edges, and an air bearing surface, said air bearing surface further comprising:

first and second TE pockets spaced apart, each defined by a generally U-shaped rail including a cross rail and a pair of side rails extending from said cross rail in the direction of said trailing edge; and

first and second LE pockets spaced apart, each defined by a generally U-shaped rail including a cross-rail and a pair of side rails extending from said cross rail in the direction of said leading edge, wherein said U-shaped rail of each LE pocket abuts a respective one of said U-shaped rails of said TE pockets.

5,610,785

HEAD SUSPENSION ASSEMBLY AND ITS MANUFACTURING METHOD

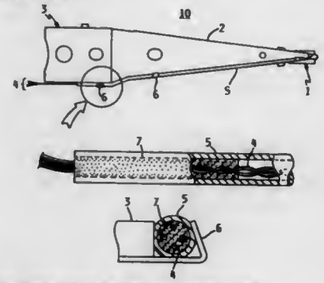
Akihiko Aoyagi; Hiroshi Terashima; Kyoji Igarashi, and Masatoshi Take, all of Fujisawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 275,164, Jul. 14, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,336

Claims priority, application Japan, Jul. 16, 1993, 5-176642

Int. Cl.[6] G11B *21/16;5/48*

U.S. Cl. 360—104 **3 Claims**



3. A head suspension assembly, comprising:

a load beam;

a head/slider assembly arranged on a first end of the load beam;

a mounting plate arranged on a second end of the load beam;

a tube, transparent to light at a curing frequency, extending along the load beam from the head/slider assembly to the mounting plate;

a plurality of covered wires fixed to the head/slider assembly and passing through the tube;

a photo-hardened filler disposed within the tube at a clamping portion of the tube to completely fill a gap between the plurality of covered wires and the clamping portion of the tube, the photo-hardened filler being hardened by exposure to light at the curing frequency; and

a clamp, on the load beam, securely fixing the clamping portion of the tube to the load beam.

5,610,786

MAGNETIC HEAD HAVING CAO-TIO_2-NIO CERAMIC WITH SPECIFIED CAO/TIO_2 RATIO

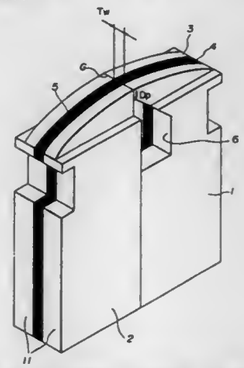
Fusashige Tokutake; Fumio Kurosawa; Takashi Tamura; Kimio Takahashi; Kazuhiro Yagihashi; Yukari Nihei, and Akira Urai, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 494,569

Claims priority, application Japan, Jun. 28, 1994, 6-146036; Aug. 24, 1994, 6-199557; Dec. 29, 1994, 6-340404

Int. Cl.[6] G11B *5/255*

U.S. Cl. 360—122 **6 Claims**



1. A magnetic head comprising magnetic core halves each comprising a magnetic metal film sandwiched between a pair of guard pieces, said magnetic core halves being abutted with end faces of the magnetic metal films facing each other, with a magnetic gap being defined between abutting surfaces of the magnetic metal films, with said guard pieces being formed of a non-magnetic material for a magnetic bead consisting of 15 to 45 mol % CaO, 40 to 80 mol % TiO_2 and 5 to 30 mol % NiO and wherein the molar ratio of CaO/TiO_2 is from about 30/70 to about 50/50.

5,610,787

MAGNETIC TAPE APPARATUS WITH TAPE EDGE GUIDES FOR REDUCED TAPE EDGE WEAR

Norbert Kunze, Ehringshausen, and Dieter Müller, Staufenberg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

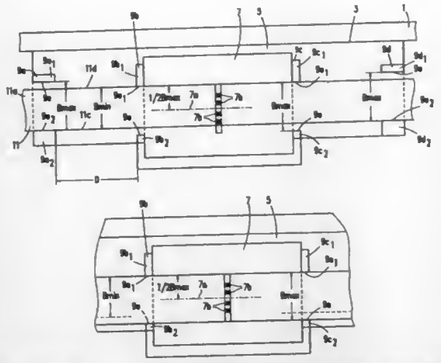
Filed Oct. 28, 1994, Ser. No. 330,646

Claims priority, application Germany, Nov. 5, 1993, 43 37 812.9

Int. Cl.[6] G11B *15/60*

U.S. Cl. 360—130.21 **4 Claims**

1. A magnetic-tape-cassette apparatus comprising a magnetic head having head gaps, and a tape guiding structure arranged at the location of the head and defining a transport path for a magnetic tape having a predetermined range of tape width, wherein the tape guiding structure comprises a first pair of tape-guide elements respectively disposed directly adjacent to and at opposite sides of



the head, and a second pair of tape-guide elements respectively disposed further outward from said first pair and at opposite sides of the head,

each of said tape-guide elements being fork-shaped and having first and second guide limbs which bound said transport path, and

a positioning holder for the magnetic head and all said tape-guide elements being formed as an integral injection-molded part, characterized in that

respective spaces between the guide limbs of each of said tape-guide elements have a dimension equal to the maximum width of the magnetic tape and wherein,

the positions of the guide limbs of said first pair and of said second pair are arranged such that a magnetic tape having a maximum tape width has first and second edges of the tape in contact with the first and second guide limbs of said first pair and a magnetic tape having a minimum tape width bas a first edge of the tape in contact with the first limb of each of said first pair, and a second edge of the tape in contact with the second limb of each of said second pair.

5,610,788

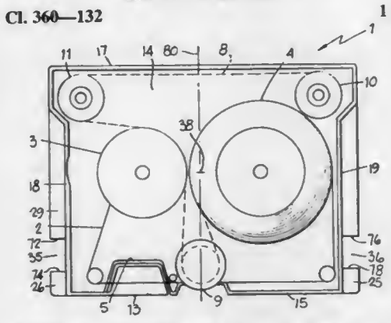
MEDIA CONTAINING CARTRIDGE AND DRIVE THEREFOR EMPLOYING MULTIPLE REGISTRATION POINTS

Gregory A. Standiford; Kevin L. Miller; Michael P. Eland, all of Loveland; Jon R. Dory, Fort Collins; Devin A. Bloom, and Fred O. Stephens, both of Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1995, Ser. No. 405,340

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **1 Claim**



1. A cartridge containing a data storage medium, the cartridge comprising:

a rigid baseplate having a first surface facing an interior of the cartridge, a second surface opposite the first surface, a front edge, and a side edge transverse to the front edge;

a first reference surface on the first surface of the baseplate near the front edge and near the side edge, the first reference surface suitable for contact with a matching reference surface in a drive; and

a second reference surface on the second surface of the baseplate near the side edge and substantially displaced from the front edge, the second reference surface suitable for contact with a matching reference surface in a drive.

5,610,789

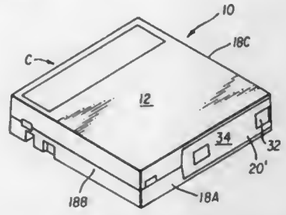
TAPE CARTRIDGE WITH A GATE MEMBER SLIDABLY MOUNTED AN ACCESS DOOR

Stephen H. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1995, Ser. No. 438,227

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **18 Claims**



1. A tape cartridge adapted to contain a strip of data recording media for use in a predetermined tape drive adapted to record and/or playback data on such strip, said cartridge comprising:

(a) wall means defining an enclosure for said strip, said enclosure having an opening through which said strip is accessible from the exterior of said enclosure;

(b) an access door movably mounted on said wall means for movement between a closed position in which said access door overlies said opening and thereby denies access to said strip within said enclosure, and an open position in which said access door is spaced from said opening and thereby enables access to a strip within said cartridge;

(c) door-locking means for selectively locking said door in its closed position, said door-locking means being engagable by door-unlocking structure associated with said predetermined tape drive to enable said door to move towards its open position during loading of said cartridge into said tape drive; and

(d) safety means for normally preventing contact between said door-locking means and said door-unlocking structure during loading of said cartridge into said tape drive, said safety means comprising a gate member slidably mounted on said access door and movably mounted on said cartridge from a first position in which said gate member overlies said door-locking means and blocks contact between said door-locking means and said door-unlocking structure, and a second position in which said gate member is sufficiently displaced from said door-locking member to enable contact between said door-locking member and said door-unlocking structure.

5,610,790

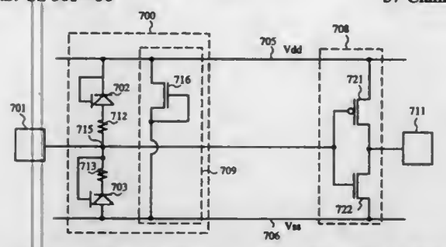
METHOD AND STRUCTURE FOR PROVIDING ESD PROTECTION FOR SILICON ON INSULATOR INTEGRATED CIRCUITS

David R. Staab, San Jose, and Sheau-Suey Li, Cupertino, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jan. 20, 1995, Ser. No. 376,163

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **37 Claims**



1. An electrostatic discharge (ESD) protection circuit for protecting a silicon-on-insulator (SOI) integrated circuit formed over an insulating layer, the ESD protection circuit comprising:

an electrically conductive pad fabricated over the insulating layer;

a first conductor segment fabricated over the insulating layer, the first conductor segment connecting the pad directly to a first node;

a first voltage supply rail fabricated over the insulating layer;

a second voltage supply rail fabricated over the insulating layer;

a first diode fabricated over the insulating layer and connected between the first node and the first voltage supply rail;

a second diode fabricated over the insulating layer and connected between the first node and the second voltage supply rail; and

a cross power supply clamp fabricated over the insulating layer, wherein the cross power supply clamp is connected between the first and second voltage supply rails, wherein the first node of the ESD protection circuit is coupled to a portion of the integrated circuit.

5,610,791

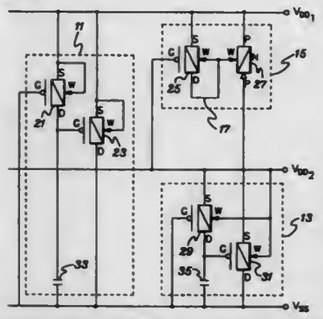
POWER SEQUENCE INDEPENDENT ELECTROSTATIC DISCHARGE PROTECTION CIRCUITS

Steven H. Voldman, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 312,255, Sep. 26, 1994. This application Sep. 6, 1995, Ser. No. 523,976

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **15 Claims**



1. A semiconductor structure for protection against an ESD ("Electrostatic Discharge") impulse in a multiple power supply environment having a first power rail, a second power rail, and a ground, said semiconductor structure comprising an inter-rail ESD protection circuit connected between said first power rail and said second power rail, said inter-rail ESD protection circuit being power sequence independent such that said inter-rail ESD protection circuit prevents power supply current flow between said first power rail and said second power rail, through said inter-rail ESD protection circuit, regardless of power sequencing of said first power rail and said second power rail.

5,610,792

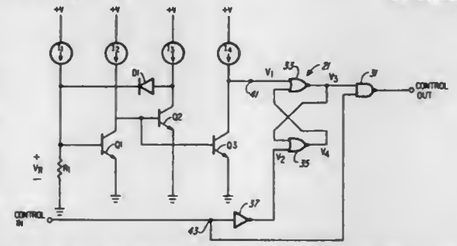
APPARATUS FOR CONTROLLING THE RESET OF A BUS CONNECTED TRANSCEIVER

Thomas R. DeShazo, 215 Kingwood Rd., Frenchtown, N.J. 08825

Continuation of Ser. No. 203,954, Mar. 1, 1994, abandoned. This application Nov. 24, 1995, Ser. No. 562,609

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **16 Claims**



1. A system for disabling a failed element in response to temperature, comprising:

first temperature sensitive means (Q1, Q2, Q3) for producing a temperature control signal (V3) having a first temperature control signal state (V3 low) indicative of a first temperature level (t2) and a second temperature control signal state (V3 high) indicative of a second temperature level (t1);

a Control In logic signal having an enable state (high) and a reset state (low);

a logic means (21, 37) connected to said first temperature sensitive means (Q1, Q2, Q3) and to said Control In logic signal;

said logic means (21, 37) producing a Control Out signal in a first Control Out signal state (high) for disabling said element in response to said temperature control signal in said first temperature control signal state (V3 high);

said logic means (21, 37) producing said Control Out signal in a second Control Out signal state (low) in response to said temperature control signal in said second temperature control signal state (V3 low) and said Control In logic signal changing state through a complete cycle.

5,610,793

NO-MOV PROTECTION CIRCUITRY

Lionel T. V. Luu, Hong Kong, Hong Kong, assignor to Pacusma Co. Ltd., Hong Kong

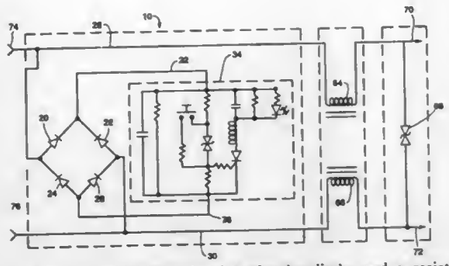
Continuation of Ser. No. 279,168, Jul. 22, 1994, abandoned. This application Jul. 26, 1996, Ser. No. 686,487

Int. Cl.[6] H02H *3/22*

U.S. Cl. 361—111 **7 Claims**

1. A surge protection circuit consisting of three stages and including input terminals for connection to an electrical power supply system and output terminals for coupling to equipment to be protected, said circuit comprising:

a surge dissipation stage comprising a first of said three stages, said surge dissipation stage being coupled to said input terminals including a bidirectional avalanche diode for detecting transient voltage surges, a capacitor coupled across said bidirectional avalanche diode for storing energy from said transient surges, conduction through said capacitor being trig-



gered by said bidirectional avalanche diode, and a resistor coupled across said capacitor for dissipating said energy from said transient surges;

a current limiting stage comprising a second of said three stages, said current limiting stage being coupled between said input terminals and said output terminals on a side of said surge dissipation stage opposite said input terminals, said current limiting stage comprising a plurality of inductors, each of which is coupled in series to a respective conductor from said input terminals for limiting current surges; and

a voltage clamping stage comprising a third of said three stages, said voltage limiting stage following said current limiting stage for clamping the voltage at a predetermined level, said voltage clamping stage comprising a plurality of bidirectional avalanche diodes for clamping the voltage at the predetermined level, said bidirectional avalanche diodes being coupled across respective pairs of said output terminals.

5,610,794

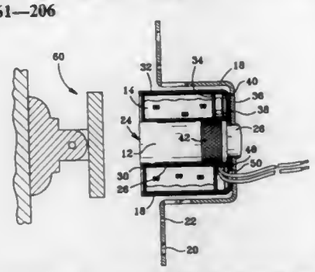
DOOR HOLDER HAVING ELECTROMAGNETIC FLUX GENERATOR AND POWER CONTROL CIRCUIT

William P. Dye, and Paul J. Hoggard, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Division of Ser. No. 222,042, Apr. 4, 1994, Pat. No. 5,555,484. This application Apr. 28, 1995, Ser. No. 430,571

Int. Cl.[6] H01F *7/18*

U.S. Cl. 361—206 **7 Claims**



1. An electromagnetic doorholder for retaining a door in an open position by magnetic interaction between an armature and an electromagnetic flux generator, the flux generator comprising:

a core having a first end for confronting said armature;

a coil of wire surrounding the core, the coil having a first end, a second end, and a fixed outside diameter, the wire forming the coil having a first and second end;

a cup having an inside diameter somewhat greater than the coil outside diameter for receiving the coil, the cup having a rim co-planar with the core first end and a bottom, the core extending from the cup rim to the cup bottom; and

a power control circuit including a resistor circuit for controlling electrical power supplied to the coil, the power control circuit being mounted on a circuit board situated between the coil second end and the cup bottom, the resistor circuit being situated in sufficiently close proximity to the cup bottom for transfer of heat from the resistor circuit to the cup.

5,610,795

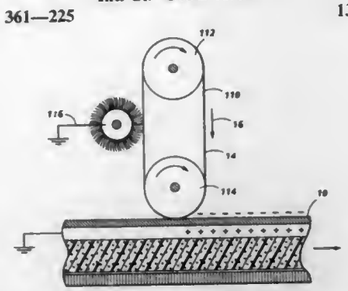
SELF BIASING CHARGING MEMBER

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1994, Ser. No. 283,337

Int. Cl.[6] G03G *15/02*

U.S. Cl. 361—225 **13 Claims**



1. An apparatus for depositing a charge on a surface, comprising.

an endless web including a piezoelectric exterior layer, said endless web having a first portion positioned spaced from said surface and a second portion positioned adjacent to the surface for depositing the charge on the surface in response to said piezoelectric exterior layer being deformed; and

a member, being interior of said endless web, for deforming said piezoelectric exterior layer.

5,610,796

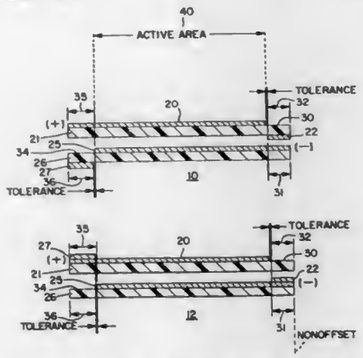
METALLIZED CAPACITOR HAVING INCREASED DIELECTRIC BREAKDOWN VOLTAGE AND METHOD FOR MAKING THE SAME

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Continuation-in-part of Ser. No. 20,344, Feb. 19, 1993, and Ser. No. 127,867, Sep. 28, 1993. This application Feb. 18, 1994, Ser. No. 198,846

Int. Cl.[6] H01G *4/005;4/32;7/00*

U.S. Cl. 361—303 **19 Claims**



1. A metallized wound capacitor having increased dielectric breakdown, said capacitor having an active area, comprising:

first and second elongated dielectric webs each having a first face, a second face and a width;

a first electrode having first and second portions on the first face of the first web, the first electrode having a width less than the width of the first web;

a second electrode having first and second portions on the first face of the second web, the second electrode having a width less than the width of the second web;

the first and second electrodes extend from opposing dielectric web edges leaving respective bare margins along opposing edges on the respective webs, the second portion of the first

electrode opposes the bare margin on the second web and the second portion of the second electrode opposes the bare margin on the first web, each second portion has a width equal to the opposing bare margin less a predetermined tolerance and is thicker than its respective first portion;

first and second additional metallization layers on the second face of respective webs, the first and second additional metallization layers extending into the active area from the opposite edge from which the first and second electrodes extend on the respective first faces, each of said first portions and said first and second additional metallization layers have thicknesses between 5–300 Ohms/square; and

the dielectric webs being arranged in a capacitor roll with the first and second electrodes in superposed relation to each other.

5,610,797

CONTROL PANEL APPARATUS FOR ELECTRONIC DEVICES

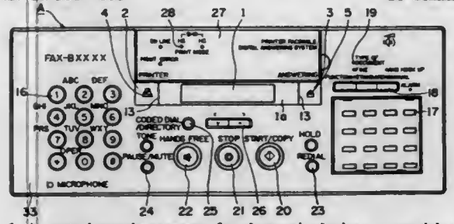
Fumihiko Nakamura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,908

Claims priority, application Japan, Mar. 9, 1994, 6-037460

Int. Cl.[6] G06F *1/16;* **H05K** *5/03*

U.S. Cl. 361—681 **10 Claims**



1. A control panel apparatus for electronic devices, comprising:

a panel cover for covering said control panel;

an electric circuit board disposed in said panel cover;

a control switch mounted on said electric circuit board for operating functions of an electronic device;

a display portion mounted adjacent to said control switch on said electric circuit board, for displaying the functions of the electronic device; and

a display cover fixed on said panel cover, said display cover integrally including a main portion for covering said display portion and a control portion for controlling said control switch, said display cover having a groove at a border portion between said main portion and said control portion so that said control portion is rockably supported relative to said main portion so as to permit control of said control switch.

5,610,798

PERSONAL COMPUTER HOUSING

Edwin P. Lochridge, 452 Ridgewood Rd., Atlanta, Ga. 30307

Filed May 19, 1995, Ser. No. 445,251

Int. Cl.[6] H05K *5/03;* **G06F** *1/16*

U.S. Cl. 361—683 **19 Claims**

1. A personal computer, comprising:

a housing which comprises:

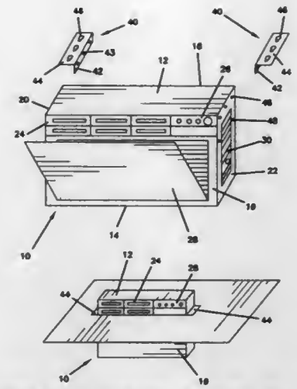
a top;

a bottom;

two opposed major faces extending between the top and the bottom; and

two opposed side faces extending between the top and the bottom and between the two opposed major faces, each of the major faces having an area greater than the area of any of the top, bottom or side faces; and

at least one input/output device disposed on one of the major faces of the housing adjacent the top of the housing, said



input/output device extending from said one of the major faces of the housing in the direction of the other of the major faces of the housing.

5,610,799

POWER MODULE DEVICE

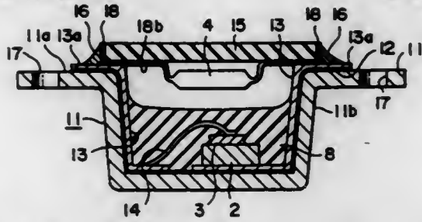
Hazime Kato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 424,003

Claims priority, application Japan, Apr. 21, 1994, 6-083485

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—752 **6 Claims**



1. A power module device comprising:

a metallic substrate having a recessed portion for mounting a power element therein and a flat portion which extends outward from the recessed portion;

a circuit board fixed onto said metallic substrate in such a manner that it covers said recessed portion and having a control element mounted on a surface facing against the bottom surface of said recessed portion; and

an electrical connection means for electrically connecting between said power element and said control element and providing the electrical connection with an outside system;

wherein said metallic substrate and said circuit board constitute a package.

5,610,800

SUBSTRATE MOUNTING OF CIRCUIT COMPONENTS WITH A LOW PROFILE

Michael J. Hundt, Double Oak, and Harry M. Siegel, Hurst, both of Tex., assignors to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

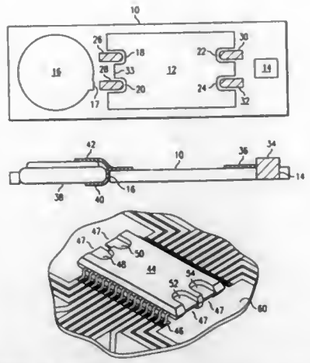
Continuation of Ser. No. 299,200, Aug. 31, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 553,087

Int. Cl.[6] H05K *1/18;* **H01R** *9/00*

U.S. Cl. 361—761 **18 Claims**

1. A system for packaging circuit components, comprising:

a substrate comprising:



a plurality of openings;

first and second contacts extending inwardly from a first side of a first opening and third and fourth contacts extending inwardly from a second side of the first opening;

a first auxiliary component positioned in a second opening in the substrate having first and second terminals mating with the first and second contacts, wherein a lower surface of the first auxiliary component is substantially planar with a lower surface of the substrate; and

a second auxiliary component positioned in a third opening in the substrate having third and fourth terminals mating with the third and fourth contacts of the second side of the first opening, wherein a lower surface of the second auxiliary component is substantially planar with the lower surface of the substrate.

5,610,801

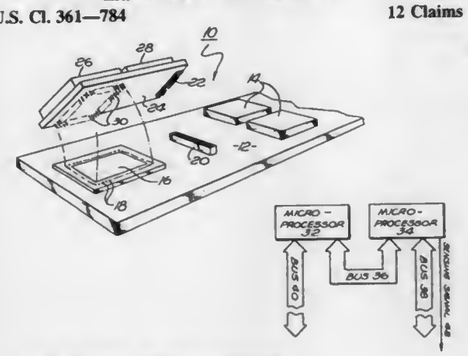
MOTHERBOARD ASSEMBLY WHICH HAS A SINGLE SOCKET THAT CAN ACCEPT A SINGLE INTEGRATED CIRCUIT PACKAGE OR MULTIPLE INTEGRATED CIRCUIT PACKAGES

Glenn Begis, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 407,502, Mar. 20, 1995, abandoned. This application Nov. 15, 1995, Ser. No. 558,337

Int. Cl.[6] H05K *1/11;* **H01R** *29/00*

U.S. Cl. 361—784 **12 Claims**



1. An electronic assembly, comprising:

a motherboard;

a daughterboard;

a first integrated circuit package mounted to said daughterboard, said integrated circuit package having a plurality of external pins;

a socket connector that is mounted and electrically connected to said motherboard and which receives said external pins of said first integrated circuit package to electrically couple said motherboard with said first integrated circuit;

a first connector mounted and electrically connected to said motherboard;

a second connector that is mounted and electrically connected to said daughterboard, and mates with said first connector to electrically couple said daughterboard with said motherboard.

5,610,802

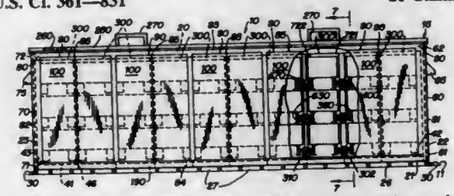
COMPACT ENERGY STORAGE SYSTEM

Phillip A. Eidler, Muskego, and Michael R. Hughes, Port Washington, both of Wis., assignors to ZB B Technologies, Inc., Wauwatosa, Wis.

Filed May 23, 1995, Ser. No. 447,975

Int. Cl.[6] H02B *1/01*

U.S. Cl. 361—831 **20 Claims**



1. A energy storage system capable of being electrically coupled to an electric power transmission system, the energy storage system comprising:

a housing having a floor which is capable of resting on a supporting surface, a roof, and front, rear, and opposed side walls forming a weather protective enclosure, at least one of the walls having a plurality of openings formed therein, and a plurality of access doors, one each mounted within a predetermined number of the openings;

at least one rack located within the housing which is accessible through at least one of the openings and is adapted to hold a plurality of energy storing devices; and

a means for electrically coupling the energy storage devices to the electric power transmission system;

wherein the energy storage system is operable to protect the energy storing devices from environmental agents.

5,610,803

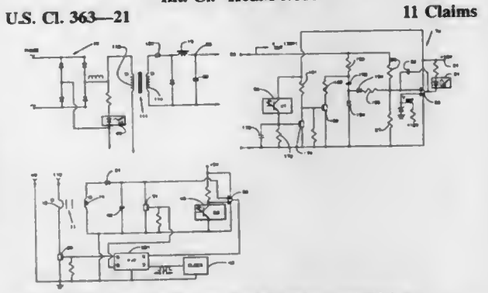
PULSE WIDTH MODULATED POWER SUPPLY THAT REDUCES OVERSHOOT

Randhir S. Malik, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 17, 1994, Ser. No. 324,299

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **11 Claims**



1. A pulse width modulated power supply comprising:

an input transformer having a primary winding, a secondary winding and means for coupling one end of the primary winding to a power source;

a switch connected in series with said primary winding to control power through the primary winding;

an output capacitor coupled to receive current from said secondary winding to develop a DC output voltage;

a differential amplifier having a first input coupled to receive a reference voltage and a second input coupled to receive a voltage based on the output voltage;

a feedback capacitor coupled between an output of said differential amplifier and said second input, said output of said differential amplifier controlling a duty cycle of said switch; and

a third capacitor connected between said secondary winding and said second input to deliver current from said secondary winding to said second input and said feedback capacitor during start up of said power source to reduce said duty cycle during said start up.

5,610,804

POWER SUPPLY WITH DUAL ENERGY TRANSFER CIRCUITS FOR POWER FACTOR CORRECTION

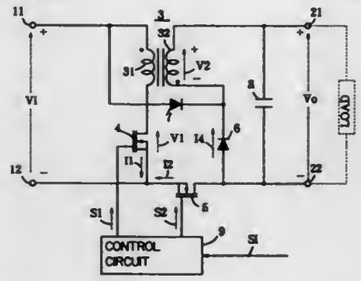
Katsuhiko Shimizu, Sakura, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Jun. 19, 1995, Ser. No. 491,078

Claims priority, application Japan, Jun. 20, 1994, 6-137383

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **13 Claims**



1. A power supply unit comprising;

a first energy transfer circuit, a second energy transfer circuit and a control circuit, in order to transfer electric power from input terminals to output terminals, wherein;

said first energy transfer circuit includes a transformer and a first switching element, with said first switching element connected in series to an input winding of said transformer and said first energy transfer circuit constitutes a circuit for transferring the energy that stores in said transformer while said first switching element is ON, to said output terminals via an output winding of said transformer during a subsequent OFF period,

said second energy transfer circuit includes a second switching element and said output winding of said transformer, with said second switching element and said output winding connected within a circuit loop that runs from one of said input terminals to one of said output terminals and then runs to a load and the other of said output terminals before returning to the other of said input terminals, and said second energy transfer circuit constitutes a circuit for transferring energy from said input terminals to said output terminals via said output winding while said second switching element is ON, and

said control circuit controls the timing with which said first switching element and said second switching element are turned ON and the length of time that they remain ON.

5,610,805

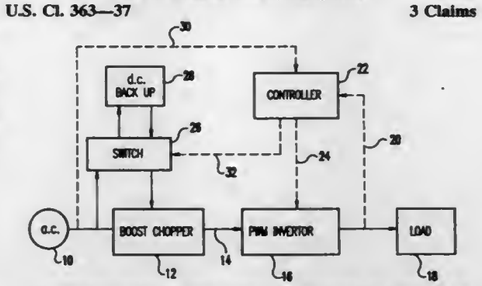
UNINTERRUPTIBLE POWER SUPPLY WITH A BACK-UP BATTERY COUPLED ACROSS THE A.C. INPUT

Suresh C. Gupta, Los Alamitos, Calif., assignor to Cambridge Continuous Power, Irvine, Calif.

Filed Jan. 10, 1995, Ser. No. 370,877

Int. Cl.[6] H02M *5/458;* **H02J** *9/04*

U.S. Cl. 363—37 **3 Claims**



1. An uninterruptible power supply, comprising in combination:

a.c. input means including first and second a.c. input terminals and a.c. output means including first and second a.c. output terminals;

first and second d.c. rails;

boost convertor means for converting an a.c. power input coupled to said a.c. input means to a d.c. voltage between said pair of d.c. rails at a d.c. voltage which is higher than the peak voltage of said a.c. power input;

invertor means for inverting said d.c. voltage between said pair of d.c. rails to an a.c. voltage coupled to said a.c. output means;

said invertor means comprised of four switches configured as a bridge between said pair of d.c. rails;

means providing a common connection among a node between two switches in one arm of said bridge, said second a.c. input terminal, and said second a.c. output terminal;

means coupling a node between two switches in the other arm of the bridge to said first a.c. output terminal;

said convertor means comprised of an energy storage inductor connected to said first a.c. input terminal, a capacitor coupled across said pair of d.c. rails, and said two switches in one arm of said bridge;

a chargeable, d.c. back-up power supply;

means to couple said d.c. back-up power supply between said first and second a.c. input terminals during alternate half cycles of said a.c. power input, said means to couple including a first gate controlled rectifier coupling one terminal of said d.c. back-up power supply to said first a.c. input terminal, and one of said two switches in said one arm of said bridge coupling the other terminal of said d.c. back-up power supply to said second a.c. input terminal.

5,610,806

PULSE WIDTH MODULATION METHOD FOR DRIVING THREE PHASE POWER INVERTER/CONVERTER SWITCHES WITH BALANCED DISCONTINUOUS PHASE COMMANDS

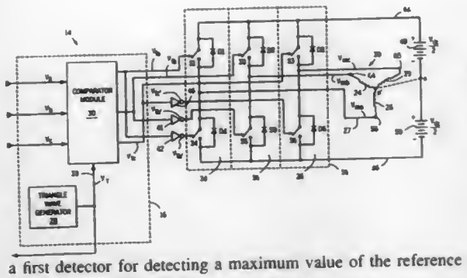
Vladimir Blasko, Grafton, and Vikram Kaura, Cedarburg, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jun. 19, 1995, Ser. No. 491,745

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—41 **14 Claims**

6. A voltage conversion apparatus for use with a pulse width modulator, an inverter, and a signal generator;, the inverter including three legs and providing a triangle carrier signal having a peak magnitude, the signal generator providing three sinusoidal reference signals, the reference signals displaced one from another by a phase angle, one signal associated with each leg, the apparatus comprising:



a first detector for detecting a maximum value of the reference signals for providing a maximum signal;

a second detector for detecting a minimum value of the reference signals for providing a minimum signal;

a first calculator for determining the absolute value of the maximum and minimum signals to produce absolute maximum and absolute minimum signals;

a second calculator for, if the absolute maximum signal is greater than or equal to the absolute minimum signal, mathematically combining the maximum signal with the peak magnitude to produce a modifier signal and, if the absolute maximum signal is less than the absolute minimum signal, mathematically combining the minimum signal with the peak magnitude to produce the modifier signal; and

a summer for adding the modifier signal to the sinusoidal reference signals for providing a plurality of modified reference signals to the inverter, one modified reference signal associated with each leg.

5,610,807

POWER CONVERTING SYSTEM WITH A PLURALITY OF CHARGING CAPACITORS

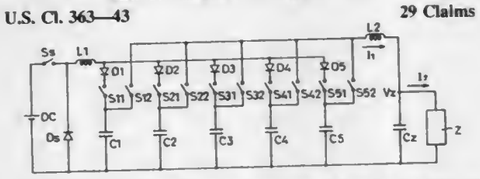
Takashi Kanda; Kazuo Yoshida, and Masahito Ohnishi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,125

Claims priority, application Japan, Oct. 14, 1994, 6-249743; Nov. 25, 1994, 6-290770; Nov. 25, 1994, 6-290771; Nov. 25, 1994, 6-291167

Int. Cl.[6] H02M *1/12;* **H01H** *47/00*

U.S. Cl. 363—43 **29 Claims**



1. A power converting system comprising a load, a plurality of capacitors, a charge section for charging the respective capacitors to render their terminal voltages to be mutually different predetermined voltages, a load-use capacitor acting as a power source for the load, an inductor connected in series to the load-use capacitor, a plurality of switching elements respectively inserted between a series circuit of the load-use capacitor and inductor and the respective capacitors, and a control circuit for controlling the switching elements to vary both end voltages of the load-use capacitor into a pulsating waveform by sequentially connecting the respective capacitors alternatively to the series circuit.

5,610,808

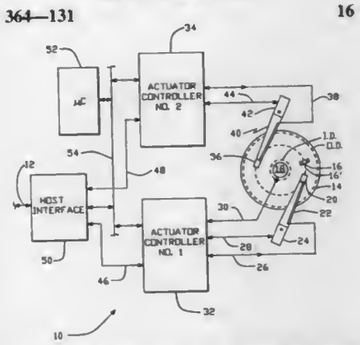
HARD DISK DRIVE CONTROLLER EMPLOYING A PLURALITY OF MICROPROCESSORS

John P. Squires, Boulder; Charles M. Sander; Stanton M. Keeler, botb of Longmont, and Donald W. Clay, Louisville, all of Colo., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 997,898, Dec. 29, 1992, Pat. No. 5,412,666, which is a division of Ser. No. 611,141, Nov. 9, 1990, abandoned. This application Sep. 29, 1994, Ser. No. 315,129

Int. Cl.[6] G05B *15/02*

U.S. Cl. 364—131 **16 Claims**



8. A controller in a hard disk drive system for controlling the transfer of data and control signals between a plurality of host processors and said disk drive system, said disk drive system including storage media, at least one transducer for recording data on and retrieving data from said storage media and an actuator for moving said transducers with respect to said storage media, said controller comprising:

a programmed first microprocessor operating under control of a first operating system stored in a first memory unit associated with said first microprocessor for controlling the recording of data on said storage media and the retrieval of data from said storage media, the positioning of said actuator to locate said transducer at a specified location with respect to said storage media and for maintaining the position of a said transducer at a specified location with respect to said storage media;

a programmed second microprocessor operating under control of a second operating system stored in a second memory unit associated with said second microprocessor for controlling the transfer of data from a requesting host processor of said plurality of host processors to said disk drive system and the transfer of data recovered from said storage media to a requesting host processor of said plurality of host processors and for generating and communicating parameters to said first microprocessor for defining operations to be performed by said first microprocessor wherein said second microprocessor further comprises;

translation means for converting a task received from a requesting host processor of said plurality of host processors into one or more commands for said first processor to carry out said task; and

transfer means for transferring said one or more commands for said task to a third memory unit associated with said first microprocessor; and

where said second microprocessor operates independently of and concurrently with said first microprocessor and said first microprocessor operates independently of and concurrently with said second microprocessor in exercising operations defined by said parameters received from said second microprocessor.

5,610,809

PROGRAMMABLE CONTROLLER AND PROGRAM CAPACITY CHANGING METHOD THEREOF

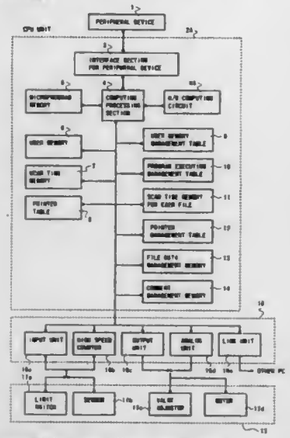
Hideaki Morita, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,191

Claims priority, application Japan, Jan. 11, 1994, 6-001203

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—140 **11 Claims**



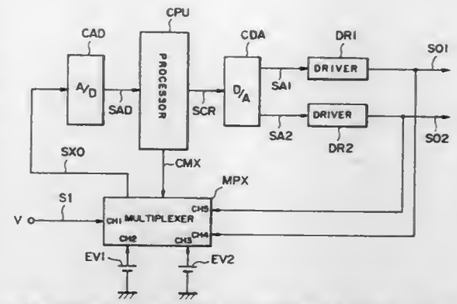
1. A programmable controller comprising:

a user memory in which a plurality of sequence programs for each process or each item to be processed and a plurality of data such as production schedule or processing data are stored as files for execution of automatic programming;

a user memory management means in which data concerning registered data for each file and empty storage area data is stored;

a write means for writing a new file from a peripheral device; and

a capacity changing means responsive to the content of said user memory, for changing a capacity of the files.



second converting means for converting the digital control signal generated by said central processing unit into an analog control signal; and

supplying means for selectively supplying one of the analog input signal, an analog reference signal and a feedback signal to said first converting means;

wherein, prior to outputting the analog control signal on the basis of the analog input signal, said central processing unit causes said supplying means to supply the analog reference signal to said first converting means, recognizes a first error in said first converting means on the basis of the digital signal from said first converting means, causes said supplying means to supply the feedback signal to said first converting means, outputs a digital reference signal to said second converting means so as to generate the feedback signal, and recognizes a second error in said second converting means on the basis of the digital signal from said first converting means and the first error; and

wherein when said apparatus outputs the analog control signal on the basis of the analog input signal, said central processing unit causes said supplying means to supply the analog input signal to said first converting means, and processes the digital signal from said first converting means in accordance with the first error and the second error so as to generate the digital control signal.

5,610,810

APPARATUS FOR CORRECTING ERRORS IN A DIGITAL-TO-ANALOG CONVERTER

Jyoji Nagahira, Tokyo; Koji Suzuki, Yokohama, and Kouki Kuroda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 983,248, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 607,637, Oct. 31, 1990, abandoned, which is a continuation of Ser. No. 185,275, Apr. 18, 1988, abandoned, which is a continuation of Ser. No. 847,517, Apr. 3, 1986, abandoned, which is a continuation of Ser. No. 776,498, Sep. 13, 1985, abandoned, which is a continuation of Ser. No. 412,809, Aug. 30, 1982, abandoned. This application Feb. 15, 1995, Ser. No. 390,284

Claims priority, application Japan, Sep. 6, 1981, 56-140863; Sep. 9, 1981, 56-140862; Sep. 9, 1981, 56-140864; Sep. 9, 1981, 56-140865

Int. Cl.[6] G06F *19/00;* **G05B** *15/02*

U.S. Cl. 364—167.01 **10 Claims**

1. An apparatus for outputting an analog control signal to control a controlled means on the basis of an analog input signal, said apparatus comprising:

first converting means for converting the analog input signal into a digital signal;

a central processing unit for generating a digital control signal on the basis of the digital signal;

5,610,811

SURGICAL INSTRUMENT FILE SYSTEM

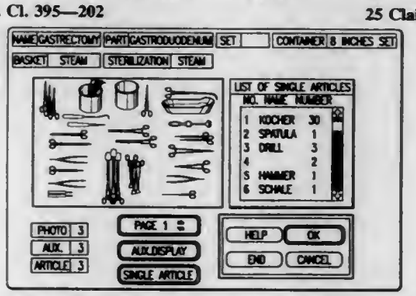
Hiroshi Honda, Funabashi, Japan, assignor to Niti-on Medical Supply Co., Ltd., Chiba-ken, Japan

Continuation-in-part of Ser. No. 146,367, Oct. 28, 1993, abandoned. This application May 22, 1995, Ser. No. 445,487

Claims priority, application Japan, Nov. 9, 1992, 4-322232

Int. Cl.[6] G06F *17/60;* **G09B** *23/28*

U.S. Cl. 395—202 **25 Claims**



1. A surgical instrument assembly system for enhancing the safety of surgical procedures and which can be used by minimally skilled medical personnel for selecting and assembling surgical

instruments to be sterilized and to be used for surgical procedures after being sterilized comprising:

a plurality of surgical instruments each having a readable code;

a reader for reading said codes on the surgical instruments presented to said reader;

a computer for storing data relating to the surgical instruments required for various surgical procedures;

said reader having means operable to input into said computer data relating to the codes read by said reader of the surgical instruments presented to said reader;

first selection means on said computer for selecting a surgical procedure such that said computer displays a list of the names of all of the surgical instruments required for said selected procedure;

second selection means on said computer for selecting the display of a pictorial representative of said surgical instruments on said list;

first indicating means on said computer indicating that the codes of all of the surgical instruments on said list have been read by said reader and inputted into said computer to thereby confirm that the surgical instruments required for the selected procedure have been presented to the reader; and

second indicating means on said computer indicating the type of Sterilization required for the surgical articles on said list;

whereby the safety of the surgical procedure is enhanced in that confirmation that the correct surgical instruments required for the selected surgical procedure has been selected and assembled although the selection and assembly was made by minimally skilled medical personnel.

5,610,812

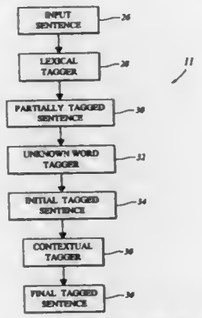
CONTEXTUAL TAGGER UTILIZING DETERMINISTIC FINITE STATE TRANSDUCER

Yves Schabes, and Emmanuel Roche, both of Boston, Mass., assignors to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Filed Jun. 24, 1994, Ser. No. 264,981

Int. Cl.[6] G06F *7/27*

U.S. Cl. 395—759 **9 Claims**



1. A computer system for correcting part of speech tags of words of sentences in a text, comprising:

means for receiving an initially tagged input sentence; and,

a contextual part of speech tagger for correcting part-of-speech tags of the words of said initially tagged input sentence, said tagger including a deterministic finite state transducer for tagging said words in accordance with context and in a single pass.

5,610,813

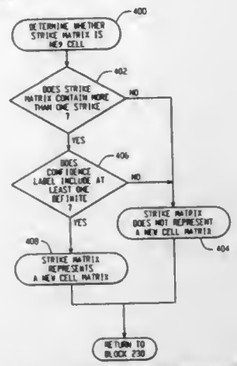
THUNDERSTORM CELL DETECTION AND MAPPING SYSTEM FOR IDENTIFYING AND RANGING THUNDERSTORM CELLS BY CLUSTERING SINGLE STRIKE LIGHTNING OBSERVATIONS

John H. Greenewald, Columbus, and Randolph L. Moses, Worthington, both of Ohio, assignors to B. F. Goodrich FlightSystems, Inc., Akron, Ohio

Filed Oct. 6, 1994, Ser. No. 319,194

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—420 **32 Claims**



1. A thunderstorm cell detection and mapping system, comprising:

means for acquiring lightning strike information relating to locations of respective lightning strikes; and

automated means for identifying and locating active thunderstorm cells including multiple lightning flashes based on said lightning strike information and a predetermined relationship among parameters associated with lightning strikes within a thunderstorm cell.

5,610,814

CONTROL APPARATUS AND METHOD FOR ELECTRIC VEHICLES

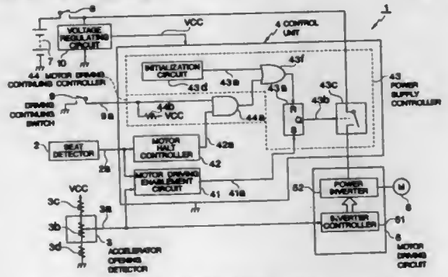
Kouichi Sugioka; Hiroyuki Sinmura; Masao Ogawa; Satoshi Honda; Yoshihiro Nakazawa, and Takaaki Fujii, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 151,172

Claims priority, application Japan, Nov. 12, 1992, 4-327368; Sep. 29, 1993, 5-243049

Int. Cl.[6] B60K *28/04*

U.S. Cl. 364—424.026 **15 Claims**



1. A control apparatus for an electric vehicle comprising:

seat detecting means for verifying that a driver has occupied a seat of the electric vehicle;

accelerator opening detecting means for detecting a position of an accelerator of the electric vehicle;

motor driving enablement means for issuing a motor driving enablement command when said seat detecting means generates a seat detection output indicating that the driver has occupied the seat and said accelerator opening detecting means generates an accelerator detection output indicating that an accelerator opening is equal to a minimum value or smaller than a predetermined value; and

power supply control means for enabling supply of electric power to a motor of the electric vehicle in accordance with said motor driving enablement command.

5,610,815

INTEGRATED VEHICLE POSITIONING AND NAVIGATION SYSTEM, APPARATUS AND METHOD

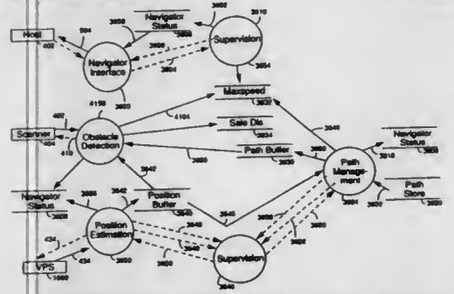
Adam J. Gudat, Edelstein; Walter J. Bradbury; Dana A. Christensen, both of Peoria, all of Ill.; Richard G. Clow, Phoenix, Ariz.; Lonnie J. Devier, Pittsburgh, Pa.; Carl A. Kemner, Peoria Heights, Ill.; Karl W. Kleimenhagen, Peoria, Ill.; Craig L. Koehrsen, Peoria, Ill.; Christos T. Kyrtsos, Peoria, Ill.; Norman K. Lay, Peoria, Ill.; Joel L. Peterson, Peoria, Ill.; Prithvi N. Rao, Pittsburgh, Pa.; Larry E. Schmidt, Peoria, Ill.; James W. Sennott, Bloomington, Ill.; Gary K. Shaffer, Butler, Pa.; Wenfan Shi, Pittsburgh, Pa.; Dong H. Shin, Pittsburgh, Pa.; Sanjiv J. Singh, Pittsburgh, Pa.; Darrell E. Stafford, Dunlap, Ill.; Louis J. Weinbeck, Peoria, Ill.; Jay H. West, Pittsburgh, Pa.; William L. Whittaker, Pittsburgh, Pa., and Baoxin Wu, Pittsburgh, Pa., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US89/05580, § 371 Date Feb. 5, 1990, § 102(e) Date Feb. 5, 1990, PCT Pub. No. WO91/09375, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 11, 1989, Ser. No. 487,980

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—424.027 **12 Claims**



1. A computer-based system for autonomously navigating a vehicle along a predetermined path, the system comprising:

(1) positioning means for determining a location of the vehicle, said positioning means including

(a) a first positioning system to provide a first position estimate of the vehicle based on signals from a satellite-based positioning system,

(b) a motion positioning system to provide a second position estimate of the vehicle, and

(c) a processing system adapted to compute a third position estimate of the vehicle from said first position estimate and said second position estimate;

(2) navigation means for causing the vehicle to track the predetermined path, said navigation means including

(a) first means for retrieving from a table a given posture comprising reference path curvature, maximum velocity, desired heading, and desired vehicle position coordinates of the predetermined path,

(b) second means for determining a reference steering angle from the reference path curvature,

(c) third means for determining a posture error based on said retrieved posture and said third position estimate,

(d) fourth means for determining a desired steering angle from said reference steering angle and said posture error,

(e) fifth means for using said desired steering angle to direct the vehicle toward the predetermined path,

(f) sixth means for determining a commanded speed less than said maximum velocity, and

(g) seventh means for using said commanded speed to control the speed of the vehicle; and

(3) detection means for causing the vehicle to detect and avoid obstacles while tracking the predetermined path.

5,610,816

AUTOMATIC STEERING METHOD AND APPARATUS FOR A NON- RAILED TRANSFER CRANE

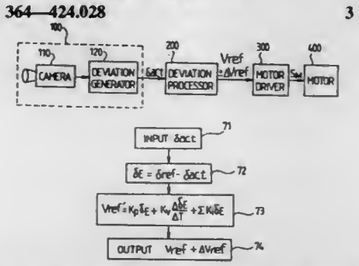
Young Bae Kim, Suwon, Rep. of Korea, assignor to Samsung Heavy Industries, Co., Changwon, Rep. of Korea

Continuation of Ser. No. 119,465, Sep. 10, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 422,646

Claims priority, application Rep. of Korea, Sep. 15, 1992, 9216761

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—424.028 **3 Claims**



1. A method for automatically steering a non-railed transfer crane travelling along a lane indicant, comprising the steps of:

photographing a lane indicant along the crane's travelling direction with a photographing unit having a previously set horizontal center line intersecting with a previously set vertical center line to define a video center point and generating an image signal:

calculating an actual deviation distance between said video center point and the lane indicant; and

generating a motor control signal for controlling the rotation of a motor which drives wheels of the crane so that the crane travels toward minimizing said calculated actual deviation distance wherein said generating step further comprises the sub-steps of

calculating a differential deviation distance δ_E equal to the difference between said calculated actual deviation distance and a reference deviation distance, and

calculating a voltage signal V_{ref}' for controlling said motor so that said differential deviation distance can approach zero, wherein said voltage signal V_{ref}' is calculated with the following equation:

$$V_{ref}' = K_P\delta_E + K_V\frac{\Delta\delta_E}{\Delta T} + \Sigma K_I\delta_E,$$

wherein K_p represents a proportionality constant having units of voltage per differential deviation distance;

K_v represents a differential constant having units of voltage per time variation of differential deviation distance;

K_i represents an integral constant having units of voltage per accumulated values of differential deviation distance; and

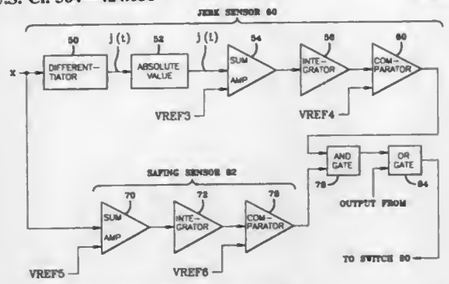
ΔT represents a sampling period having units of time.

5,610,817

PASSENGER RESTRAINT SYSTEM WITH AN ELECTRONIC CRASH SENSOR

Geoffrey L. Mahon, Ridgewood, N.J., and Ralph Hensler, New York, N.Y., assignors to Breed Automotive Technology, Inc., Lakeland, Fla.

Filed Feb. 8, 1993, Ser. No. 14,617
Int. Cl.[6] B60R *21/32*
U.S. Cl. 364—424.056 **7 Claims**



1. A collision detecting system comprising:

a. electronic sensor means mounted on a motor vehicle member for generating an electrical input signal substantially to the acceleration of said vehicle member;

b. first signal processing means for receiving the electrical input signal from said electronic sensor and generating a jerk signal indicative of the jerk of said member, said first signal processing means generating a first trigger signal responsive to a jerk signal of a preselected value, said first signal processing means including:

(i) differentiating means for differentiating said electrical input signal to generate said jerk signal,

(ii) means for generating the magnitude of said jerk signal,

(iii) first summing means for generating a first difference signal dependent on the difference between the magnitude of said jerk signal and a first reference selected independently from said electrical input signal,

(iv) first integrating means for integrating said first difference signal to generate a first integrated signal, said integrating means being constructed such that said first integrated signal never has a negative value, and

(v) first comparator means for comparing said first integrated signal to a second reference selected independently from said electrical input signal;

c. second signal processing means for receiving the electrical input signal from said electronic sensor and generating a signal indicative of a change in acceleration of said member, said second signal processing means generating a second trigger signal responsive to a change in acceleration of said member of a preselected value, said second signal processing means including:

(i) summing means for obtaining a second difference signal between said electrical input signal a third reference signal selected independently from said electrical input signal,

(ii) integrating means for integrating said second difference signal over time to generate a second integrated signal, said integrating means being constructed such that said second integrated signal never has a negative value, and

(iii) comparator means for comparing the second integrated signal with a fourth reference signal selected independently from said electrical input signal: and

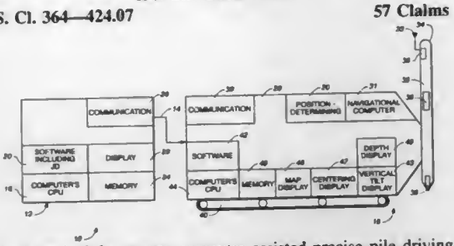
d. triggering means for triggering a passenger protection means in response to either said first trigger signal or said second trigger signal.

5,610,818

REMOTE OPERATED COMPUTER ASSISTED PRECISE PILE DRIVING AND RIG DRILLING SYSTEM

Neil Ackroyd, North Walsham, United Kingdom; Gary S. Chisholm, Christchurch, New Zealand; Robert G. Culling, Christchurch, New Zealand; Brent O'Meagher, Christchurch, New Zealand, and Steve Smith, Sunnyvale, Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 22, 1995, Ser. No. 561,699
Int. Cl.[6] G01B *11/26*
U.S. Cl. 364—424.07 **57 Claims**



1. A method for remote computer assisted precise pile driving and rig drilling, said method employing a base station including a base station computer, and a base station software including a job database (JD); a CAPPDARD system; and a communication link; said CAPPDARD system further comprising a moving platform, a location determination means, a piling rig for performing the rig-drilling and the pile-driving operations, said piling rig further including a mast, a computer attached to said platform, and a receiving-transmitting means, said computer further comprising, a graphical computer map display, a centering computer map display, a verticality tilt display, and a computer memory; said method comprising the steps of:

updating said JD, wherein an updated job database (UJD) is created;

transferring said UJD from said base station to said CAPPDARD system using said communication link;

reading said UJD by said CAPPDARD system;

continuously determining its position locations by said CAPPDARD system;

driving said new piles to said new piles target positions by said CAPPDARD system according to said UJD;

drilling said new rig target positions by said CAPPDARD system according to said UJD;

generating by said CAPPDARD system an As-Placed database (APD) of As-Placed coordinates of said new piles and said new rig target positions; and

sending said APD back to said base station using said communication link.

5,610,819

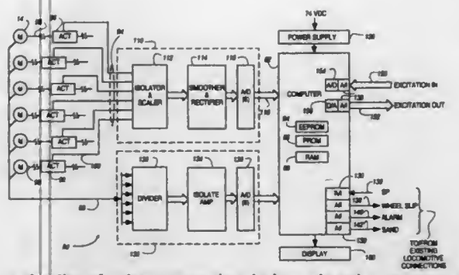
SYSTEM FOR ENHANCING WHEEL TRACTION IN A LOCOMOTIVE BY REAPPLICATION OF EXCITATION USING AN S-SHAPED CURVE

Scott K. Mann, Johnson Creek, Wis., and David L. Durlin, Boise, Id., assignors to G&G Locotronics, Inc., Itasca, Ill.

Filed Oct. 11, 1994, Ser. No. 322,014
Int. Cl.[6] B61C *15/08;* **H02P** *5/50*
U.S. Cl. 364—426.05 **6 Claims**

1. A traction enhancing system for eliminating wheel slip and enhancing wheel traction in a railroad locomotive having a plurality of wheel pairs for engaging a pair of rails, a traction motor operatively associated with each wheel pair, an electrical source responsive to an applied level of electrical excitation and operatively coupled to the traction motors for controlling the power applied to the traction motors, said traction enhancing system comprising:

a plurality of current measuring devices adapted to measure a current drawn by each traction motor;



a plurality of voltage measuring devices adapted to measure a voltage of each traction motor;

a computer for receiving the current and voltage measurements, said computer adapted to detect wheel slip between the wheel pairs and the rails by calculating a change in the current and voltage measured over a predetermined period of time and comparing the current and voltage changes to predetermined values;

said computer calculating a reduction factor and saving the reduction factor in a memory of the computer, the reduction factor corresponding to the change in the current and voltage over the predetermined period of time and representative of the magnitude of the wheel slip;

said computer reducing the applied level of electrical excitation to the electrical source by an amount proportional to said reduction factor to eliminate the wheel slip; and

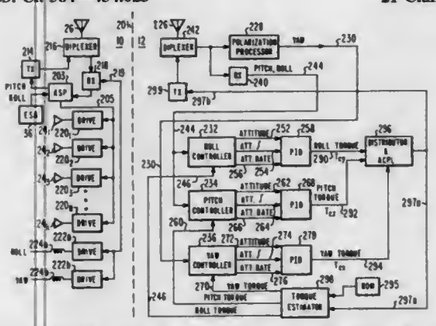
said computer reapplying a level of electrical excitation to the electrical source according to an S-shaped curve so that wheel slip does not reoccur, said S-shaped curve having a first segment such that the level of electrical excitation reapplied is gradually increased, said S-shaped curve having a second segment following the first segment such that the level of electrical excitation reapplied is sharply increased, and said S-shaped curve having a third segment following the second segment such that the level of electrical excitation reapplied is gradually increased until the level of excitation attains a maximum value.

5,610,820

MINIMUM PROPELLANT, ZERO MOMENTUM SPACECRAFT ATTITUDE CONTROL SYSTEM

Uday J. Shankar, Plainsboro; Neil E. Goodzeit, East Windsor, both of N.J., and George E. Schmidt, Jr., Newtown, Pa., assignors to Martin Marietta Corp., East Windsor, N.J.

Filed Mar. 23, 1995, Ser. No. 511,936
Int. Cl.[6] B64G *1/24*
U.S. Cl. 364—434.023 **21 Claims**



1. An attitude control system for a zero-momentum spacecraft which includes a body, for maintaining said body in a particular attitude, said system comprising:

magnetic torquing means mounted on said body, for, when enabled, torquing said body about a particular axis;

thrusters mounted on said body, for, when enabled, producing torque about said particular axis;

a source of attitude command signals representing said particular attitude;

attitude sensing means, for sensing the attitude of said spacecraft body about said particular axis, and for generating attitude-representative signals representing said attitude;

attitude error processing means coupled to said attitude sensing means and to said source of attitude command signals, for determining, during each of a plurality of recurrent control intervals, the amount of torque required about said particular axis for tending to maintain said particular attitude;

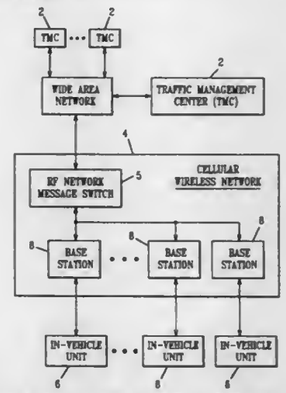
distribution means coupled to said attitude error processing means, to said magnetic torquing means, and to said thrusters, for, during each of said control intervals, energizing said magnetic torquing means in response to said torque required, and for, during each of said recurrent control intervals, if said torque required is greater than the torque which said magnetic torquing means provides, enabling at least one of said thrusters for generating torque representative of the difference between said torque required and the torque which said magnetic torquing means supplies.

5,610,821

OPTIMAL AND STABLE ROUTE PLANNING SYSTEM

Denos C. Gazis, Katonah; Robert S. Jaffe, Shenorock, and William G. Pope, Somers, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Nov. 18, 1994, Ser. No. 341,715
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—444.2 **11 Claims**



1. An optimal route planning system, comprising:

a network of a plurality of fixed computers connected via a wide area network, the network storing a model of a road network specifying the geometry of road segments and traffic characteristics of the road segments;

communication means allowing fixed and wireless communication between the network and mobile in-vehicle computer units, and also fixed communication among the fixed computers of the network;

means provided in each fixed computer in the network for forecasting future occupancy and congestion conditions on the road segments;

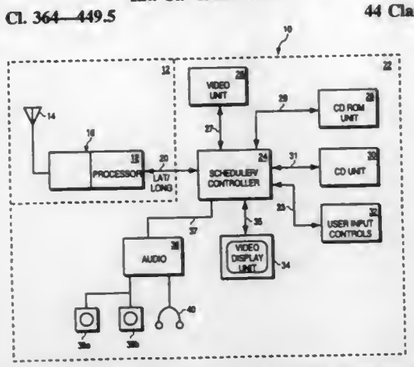
means provided in each fixed computer in the network for computing an optimal route for each vehicle based upon data supplied by the in-vehicle units and based upon the future occupancy and congestion conditions forecasted by the corresponding forecasting means of the corresponding fixed computer; and

means for communicating optimal route information to the in-vehicle units.

5,610,822
POSITION-RELATED MULTI-MEDIA PRESENTATION SYSTEM

Michael D. Murphy, Sunnyvale, Calif., assignor to Trimble Navigation, Ltd., Sunnyvale, Calif.

Filed Mar. 3, 1995, Ser. No. 397,887
Int. Cl.[6] H04N *7/00*
U.S. Cl. 364—449.5 **44 Claims**



1. A position-related multi-media presentation apparatus for a vehicle comprising:

a position determining system attached to a vehicle to be monitored, said position determining system further including;

a signal receiver,

a signal processor coupled to said signal receiver for generating position information from signals received by said signal receiver, and

a multi-media system coupled to said position determining system, said multi-media system further including;

a presentation scheduler/controller for activating the presentation of audio and video information when said vehicle is at a specific location,

at least one video display unit coupled to said presentation scheduler/controller, and

at least one audio output unit coupled to said presentation scheduler/controller;

wherein said vehicle is an aircraft and wherein said video information displayed on said video display means includes simulated views from over the shoulder of the pilot of said aircraft.

5,610,823
METHOD FOR SPINDLE SPEED OPTIMIZATION OF MOTION PROFILE

Raymond D. Gregory, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Dec. 13, 1995, Ser. No. 571,777
Int. Cl.[6] G06F *19/00*; **G06G** *7/64*;*7/66*
U.S. Cl. 364—474.15 **2 Claims**

1. A method of speed optimization of a spindle component of a machine having at least a synchronous component and a spindle component over a motion profile, comprising:

a first step, including:

obtaining motion error values R of the synchronous component over said motion profile wherein each of said motion error values R is a function of frequency;

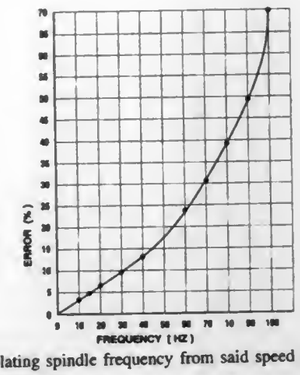
specifying the motion error tolerance for said motion profile according to the requirement of the application;

identifying a plurality of contour portions of the motion profile;

calculating component numbers and component values of the synchronous component over a selected contour portion using a Fast Fourier Transform;

selecting a first speed of the spindle component;

a second step, including:



calculating spindle frequency from said speed of the spindle component;

multiplying said spindle frequency by selected component numbers to obtain tool component frequencies;

calculating said motion error value R for selected tool component frequencies;

multiplying said motion error value R at the frequency defined by the component number and said component value to obtain an error prediction for each component number;

combining said predictions for each component number to obtain a maximum predicted motion error for said contour portion;

comparing said maximum predicted motion error for said contour portion with said motion error tolerance wherein said maximum predicted motion error must be less than said motion error tolerance;

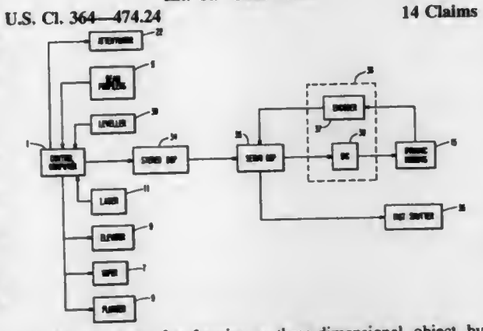
repeating said second step for a second spindle speed;

selecting the greatest spindle speed wherein said maximum predicted motion error remains less than said tolerance.

5,610,824
RAPID AND ACCURATE PRODUCTION OF STEREOLITHOGRAPHIC PARTS

Wayne A. Vinson, Valencia; Frank F. Little, Lakeview; Wolfgang Schwarzinger, Moorpark; Mark A. Lewis, Valencia; Yehoram Uziel, Northridge; Robert T. Pitlak, Westlake Village, and Stuart T. Spence, South Pasadena, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 824,819, Jan. 22, 1992, Pat. No. 5,182,715, which is a continuation of Ser. No. 428,492, Oct. 27, 1989, abandoned. This application Jan. 25, 1993, Ser. No. 9,249
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—474.24 **14 Claims**



1. An apparatus for forming a three-dimensional object by forming successive cross-sectional laminae of said object from a medium capable of solidification upon exposure to radiation, said apparatus comprising:

a container for containing said medium, said medium having a working surface; means for generating a beam of said radiation;

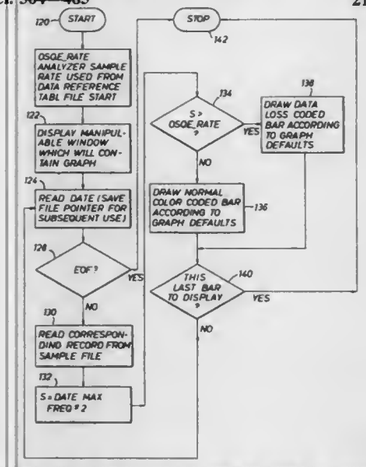
means for directing said beam at said working surface of said medium for forming said successive cross-sectional laminae of said object, said directing means having an optical element; and

means for selectively stopping said beam from reaching said working surface of said medium at regions of said medium that should not be solidified, said stopping means being located approximately in a focal plane of said optical element.

5,610,825
METHOD AND APPARATUS FOR THE DISPLAY OF DIGITIZED ANALOG SIGNAL LOSS

William J. Johnson, 1445 Sedalia Dr., Flower Mound, Tex. 75028; Guillermo Vegatoro, 2100 Grayson Dr. #417, Grapevine, Tex. 76051; Larry M. Lachman, 6304 N. MacArthur Blvd #1019, Irving, Tex. 75039, and David Flores, 1401 Bur Oak Ct., Keller, Tex. 76248

Filed Nov. 8, 1994, Ser. No. 335,949
Int. Cl.[6] H03M *5/10*
U.S. Cl. 364—485 **21 Claims**



1. A method of processing an analog signal in digital form comprising the steps of:

a. sampling an analog signal at a predetermined sampling rate as a digital signal comprising a plurality of data bits;

b. temporarily storing the samples from step a. as digital elements;

c. identifying the maximum frequency within each of the samples from step a.;

d. developing a marker for each of the samples stored in step b., the marker identifying portions of the analog signal that were sampled below the Nyquist rate, indicating loss of the analog signal in the sampling process, or at or above the Nyquist rate, indicating no loss of the analog signal in the sampling process;

e. storing the samples in memory with a marker corresponding to each sample;

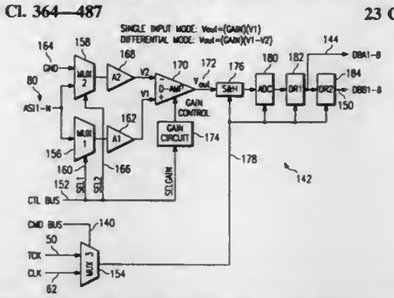
f. displaying the analog signal on a graphical user interface; and

g. presenting a bar graph depicting fidelity of the sampled signal.

5,610,826
ANALOG SIGNAL MONITOR CIRCUIT AND METHOD

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 693,756, Apr. 30, 1991, abandoned. This application May 13, 1994, Ser. No. 242,155
Int. Cl.[6] G01R *31/3163*
U.S. Cl. 364—487 **23 Claims**



1. An analog signal monitoring circuit for non-intrusively monitoring electronic circuitry including an analog circuit, comprising:

input circuitry for receiving a plurality of analog signal inputs from the analog circuit; and

test circuitry associated with said input circuitry for, while the electronic circuitry operates under timing control of a first clock, processing said analog signal inputs in response to predetermined conditions and synchronously with either one of said first clock and a second clock, said test circuitry including translation circuitry associated with said input circuitry for converting said analog signal inputs into digital signal representations of said analog signal inputs, output circuitry associated with said translation circuitry for outputting said digital signal representations, control circuitry for controlling said translation and said output circuitry to operate while said analog circuit is in a functioning mode, and event qualification circuitry connected to said output circuitry for indicating the occurrence of said predetermined conditions and controlling said test circuitry in response to said predetermined conditions.

5,610,827
METHOD OF AND APPARATUS FOR PEAK AMPLITUDE DETECTION

Robert J. Reilly, Janesville, Wis., assignor to SSI Technologies, Inc., Janesville, Wis.

Filed Sep. 2, 1994, Ser. No. 300,341
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—487 **2 Claims**

1. A method comprising the steps of:

(a) generating a periodic waveform which is substantially sinusoidal;

(b) digitizing the periodic waveform to define an array of discrete data points, which array represents "x" and "y" values of points along the periodic waveform;

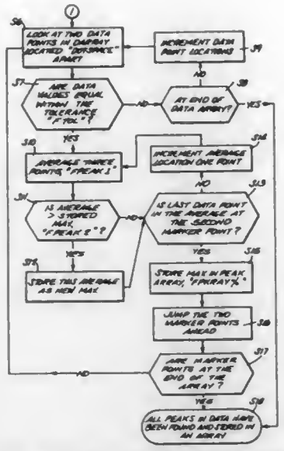
(c) defining two marker points among the data points, which marker points are spaced a first predetermined number of data points apart in the "x" direction;

(d) comparing the "y" values of the marker points selected from the array of data points;

(e) indicating that a peak has been found if the difference of the "y" values of the marker points is less than a predetermined threshold;

(f) sorting points between the marker points to locate the tip of the peak, including

(g) determining the average of a plurality of sequential "y" values and comparing said average with a previously determined average; and



(h) advancing each marker point in the "x" direction by a second predetermined number of data points.

5,610,828

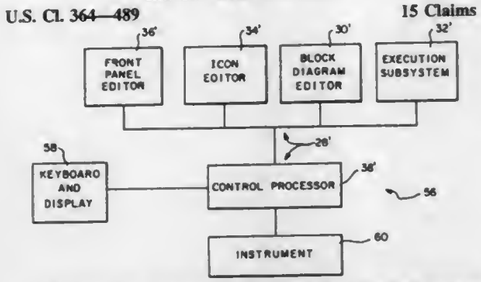
GRAPHICAL SYSTEM FOR MODELLING A PROCESS AND ASSOCIATED METHOD

Jeffrey L. Kodosky; James J. Truchard, both of Austin, Tex., and John E. MacCrisken, Palo Alto, Calif., assignors to National Instruments Corporation, Austin, Tex.

Continuation of Ser. No. 220,673, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 380,329, Jul. 12, 1989, Pat. No. 5,301,336, which is a continuation of Ser. No. 923,127, Oct. 24, 1986, Pat. No. 4,914,568, which is a continuation-in-part of Ser. No. 851,569, Apr. 14, 1986, Pat. No. 4,901,221. This application Jun. 7, 1995, Ser. No. 487,707

Int. Cl.[6] G06F *15/02;3/02*

U.S. Cl. 364—489 **15 Claims**



1. A method for representing data types in a graphical program in a computer system, wherein the computer includes a display screen and a means for executing the graphical program, the method comprising:

displaying on the screen a first variable icon that references data of a first data type;

displaying on the screen a first function icon that performs a first function, wherein said first function icon is adapted to receive data compatible with said first data type;

receiving user input indicating a desire to connect the first variable icon to the first function icon;

determining the data type of data to be transferred between said first variable icon and said first function icon in response to said receiving user input indicating a desire to connect the first variable icon to the first function icon;

displaying on the screen a first wire connecting said first variable icon to said first function icon in response to said receiving user input indicating a desire to connect the first variable icon to the first function icon, wherein said displaying on the screen said first wire displays said first wire having a first thickness in response to said determining the data type of data to be transferred between said first variable icon and said first function icon, wherein said first wire has a first thickness corresponding to the type of said first data type;

displaying on the screen a second variable icon that references data of a second data type, wherein said second data type is different than said first data type;

displaying on the screen a second function icon that performs a second function, wherein said second function icon is adapted to receive data compatible with said second data type;

receiving user input indicating a desire to connect the second variable icon to the second function icon;

determining the data type of data to be transferred between said second variable icon and said second function icon in response to said receiving user input indicating a desire to connect the second variable icon to the second function icon;

displaying on the screen a second wire connecting said second variable icon to said second function icon in response to said receiving user input indicating a desire to connect the second variable icon to the second function icon, wherein said displaying on the screen said second wire displays said second wire having a second thickness in response to said determining the data type of data to be transferred between said second variable icon and said second function icon, wherein said second wire has a second thickness corresponding to the type of said second data type, wherein said second thickness is different than said first thickness.

5,610,829

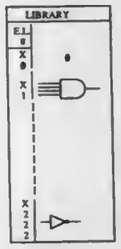
METHOD FOR PROGRAMMING AN FPLD USING A LIBRARY-BASED TECHNOLOGY MAPPING ALGORITHM

Stephen M. Trimberger, San Jose, Calif., assignor to XILINX, Inc., San Jose, Calif.

Division of Ser. No. 345,015, Nov. 23, 1994, Pat. No. 5,521,835, which is a continuation of Ser. No. 858,750, Mar. 27, 1992, abandoned. This application May 15, 1996, Ser. No. 647,527

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **3 Claims**



1. A library for use in programming a logic device, said library comprising:

a set of general logic functions for generating an output signal x as a function of n input signals, each of said general logic functions being convertable to a group of specific logic functions which differ from each other by inversion of an input or output signal, and

each general logic function differing from another general logic function such that one general logic function can not be made the same as another general logic function only by inversion of one or more input or output signals.

5,610,830

AUTOMATIC GENERATION SYSTEM FOR AN ADDITIONAL CIRCUIT PROVIDED IN A LOGIC CIRCUIT DESIGN SUPPORT SYSTEM

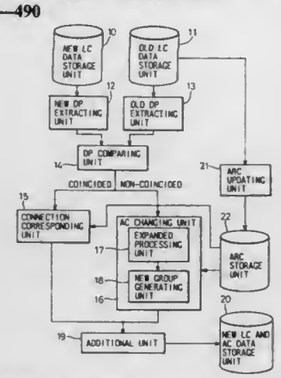
Noriyuki Ito, and Etsuko Mizukami, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 13, 1994, Ser. No. 226,867

Claims priority, application Japan, Jun. 24, 1993, 5-153170

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—490 **6 Claims**



1. An automatic generation system for an additional circuit provided in a logic circuit design support system which provides the additional circuit to a logic circuit after completion of design, said automatic generation system comprising:

new distributing point extracting means for extracting points which distribute signals supplied by the additional circuit, from data of a new logic circuit before the additional circuit is connected;

old distributing point extracting means for extracting points which distribute signals supplied by the additional circuit, from data of an old logic circuit;

distributing point comparing means operatively connected to both said new and old distributing point extracting means for comparing distributing points of the new logic circuit with distributing points of the old logic circuit;

connection point corresponding means operatively connected to said distributing point comparing means for corresponding connections of the additional circuit to the distributing points of the old logic circuit and of connections of the additional circuit to the distributing points of the new logic circuit when the distributing points in the new and old logic circuits coincide;

additional circuit changing means operatively connected to said distributing point comparing means for changing a part of the additional circuit of the old logic circuit to distribute signals to distribution points added in the new logic circuit resulting in a changed additional circuit; and

additional means operatively connected to said connection point corresponding means and said additional circuit changing point means for adding the changed additional circuit to the new logic circuit.

5,610,831

SEMICONDUCTOR ELEMENT LAYOUT METHOD EMPLOYING PROCESS MIGRATION

Nobu Matsumoto, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

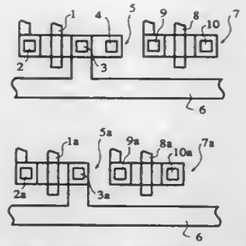
Filed Nov. 4, 1994, Ser. No. 334,064

Claims priority, application Japan, Nov. 5, 1993, 5-276735

Int. Cl.[6] G06F *15/00;* **G03F** *9/00;* **H01L** *21/70*

U.S. Cl. 364—491 **20 Claims**

1. A semiconductor element layout method comprising the steps of:



selectively removing substrate contacts from a first mask layout prepared for integrated circuits according to a first design rule which requires at least a first minimum spacing between the substrate contacts; and

carrying out process migration to convert the first mask layout, from which some of said substrate contacts have been removed, into a second mask layout that follows a second design rule which requires at least a second minimum spacing that is smaller than the first minimum spacing of the first design rule.

5,610,832

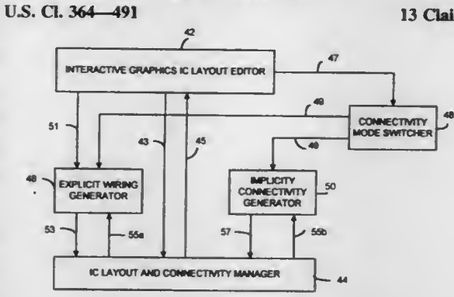
INTEGRATED CIRCUIT DESIGN APPARATUS WITH MULTIPLE CONNECTION MODES

Glenn Wikle, South Orange; Suresh Ramaswamy, Flanders, and Thomas G. Matheson, Brookside, all of N.J., assignors to Mentor Graphics Corporation, Wilsonville, Oreg.

Filed Nov. 22, 1994, Ser. No. 343,757

Int. Cl.[6] G06F *15/60*

U.S. Cl. 364—491 **13 Claims**



1. An integrated circuit design apparatus, comprising:

editing means for entering and modifying in memory circuit elements of an integrated circuit layout;

an implicit connection generator for automatically extracting electrical connections between the circuit elements in the layout, the generator representing the electrical connections by connectivity data, the implicit connection generator for connecting overlapping circuit elements;

an explicit wiring generator for creating electrical connections between the circuit elements in response to user commands, the generator representing the electrical connections by connectivity data, the explicit wiring generator for connecting circuit elements and preserving the connection regardless of whether the circuit elements overlap; and

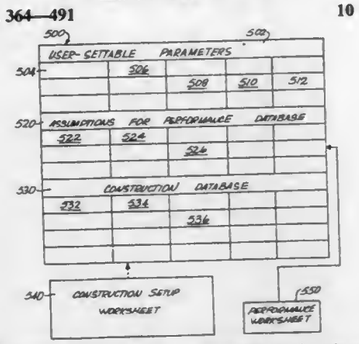
a design database contained in memory for storing connectivity data from the implicit and explicit wire generators as a circuit model of the integrated circuit layout.

5,610,833

COMPUTER-AIDED DESIGN METHODS AND APPARATUS FOR MULTILEVEL INTERCONNECT TECHNOLOGIES

Norman H. Chang, Fremont; Keh-Jeng Chang, Sunnyvale; Keunmyung Lee, Redwood City, and Soo-Young Oh, Fremont, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 892,102, Jun. 2, 1992, abandoned.
This application Sep. 25, 1995, Ser. No. 533,408
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **10 Claims**



1. A computer-aided method of designing semiconductor interconnect layouts, the method comprising the steps of:

(a) generating, by computer means, numerical capacitance values characteristic of a plurality of predefined interconnect geometries of semiconductor circuits;

(b) storing the generated numerical capacitance values and physical descriptions of the predefined interconnect geometries in an electronic database;

(c) defining an electrical performance criterion for a desired semiconductor circuit;

(d) designing an interconnect layout for the desired semiconductor circuit;

(e) selecting from the electronic database, by computer means, interconnect geometries which are more similar to the designed interconnect layout than others of the interconnect geometries;

(f) interpolating, by computer means, from the selected interconnect geometries and their characteristic numerical capacitance values to obtain numerical capacitance values characteristic of the designed interconnect layout; and

(g) determining, by computer means, whether the electrical performance criterion can be met by the designed interconnect layout having the interpolated characteristic numerical capacitance values.

5,610,834

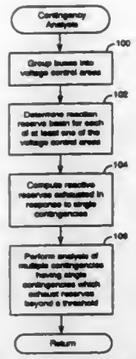
METHOD FOR IMPROVING VOLTAGE STABILITY SECURITY IN A POWER TRANSMISSION SYSTEM

Robert A. Schlueter, Holt, Mich., assignor to Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 235,570, Apr. 29, 1994, abandoned.
This application Feb. 22, 1996, Ser. No. 605,719
Int. Cl.[6] G01R *25/00*
U.S. Cl. 364—492 **25 Claims**

1. A method of enhancing voltage stability in a region of an electric power transmission system having a plurality of buses and a plurality of sources of reactive reserves coupled thereto, the method comprising:

grouping the plurality of buses into a plurality of voltage control areas such that each of the buses within each voltage control area has a similar corresponding reactive power versus voltage relationship;



determining at least one interface between two neighboring voltage control areas which exhibits thereacross a difference in reactive power flow, between a first operating condition and a second operating condition of the power system, that exceeds a reactive flow threshold; and

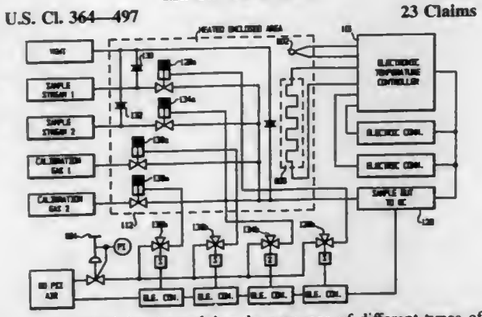
locating at least one enhancement at the at least one interface to improve voltage stability.

5,610,835

METHOD AND APPARATUS FOR CONTINUOUS EMISSIONS MONITORING SYSTEM USING GAS CHROMATOGRAPHY

Luis M. Dominguez; Forrest W. Bowling; William M. Coleman, III, and Bert M. Gordon, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 273,234, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 114,598, Aug. 31, 1993, abandoned. This application Sep. 19, 1995, Ser. No. 530,506
Int. Cl.[6] G01N *30/02*
U.S. Cl. 364—497 **23 Claims**



1. A method for determining the presence of different types of emissions in air in an environment by monitoring the concentration of at least one volatile or semi-volatile compound contained in at least one air stream carrying said at least one volatile or semi-volatile compound, comprising the steps of:

a) calibrating at least one gas chromatograph using at least a first calibration gas;

b) obtaining a sample of said at least one air stream containing said at least one compound;

c) providing said sample of said at least one air stream to said at least one gas chromatograph;

d) operating said at least one gas chromatograph under control of a digital data processor to analyze said sample of said at least one air stream to determine the concentration of said at least one compound in said sample and thereby the presence of different types of emissions in said air; and

e) controlling steps a)–c) using said digital data processor.

5,610,836

PROCESS TO USE MULTIVARIATE SIGNAL RESPONSES TO ANALYZE A SAMPLE

Daniel C. Alsmeyer, and Vincent A. Nicely, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 31, 1996, Ser. No. 594,217
Int. Cl.[6] G01N *33/00*
U.S. Cl. 364—498 **18 Claims**

1. A process for analyzing a sample of unknown constitution by an analytical apparatus utilizing a set of analytical measurements and a set of reference measurements obtained from a set of samples, said process comprising:

subjecting said set of samples to measurement using a first analytical apparatus, thereby obtaining a set of analytical measurements comprising a first set of multivariate signal responses;

adjusting said first set of multivariate signal responses to remove effects of operational variabilities associated with said first analytical apparatus, thereby obtaining a first matrix of adjusted signal responses;

subjecting said set of samples to measurement using a second analytical apparatus, thereby obtaining a set of reference measurements comprising a second set of multivariate signal responses;

adjusting said second set of multivariate signal responses to remove effects of operational variabilities associated with said second analytical apparatus, thereby obtaining a second matrix of adjusted signal responses;

decomposing one of said matrices of adjusted signal responses into a matrix product that comprises a matrix comprising a set of principal factors and a matrix comprising the amounts associated with each of said set of principal factors;

constructing a compressed signal response matrix product that comprises a matrix comprising a subset of said set of principal factors and a matrix comprising the amounts associated with each of the principal factors included in said subset;

computing a projection matrix from the matrix comprising the amounts associated with each of the principal factors included in said subset;

constructing a first normalized matrix product comprising a normalization matrix and the other of said matrices of adjusted signal responses;

constructing a compressed normalized matrix product comprising said projection matrix and said first normalized matrix product;

computing values of said normalization matrix that minimize the difference between said first normalized matrix product and said compressed normalized matrix product, thereby producing an optimal normalization matrix;

constructing a second normalized matrix product comprising said optimal normalization matrix and said one of said matrices of adjusted signal responses;

constructing from said other of said matrices of adjusted signal responses and said second normalized matrix product a calibration useful for analyzing the signal responses obtained from said sample of unknown constitution by said first analytical apparatus; and

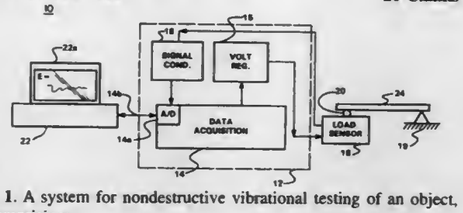
applying said calibration to analyze the signal responses obtained from said sample of unknown constitution by said first analytical apparatus, thereby enabling the constitution of said sample to be accurately determined.

5,610,837

SYSTEM AND METHOD FOR NONDESTRUCTIVE VIBRATIONAL TESTING

Joseph F. Murphy, Madison, Wis., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Apr. 21, 1994, Ser. No. 230,947
Int. Cl.[6] G06G *7/19*
U.S. Cl. 364—508 **20 Claims**



1. A system for nondestructive vibrational testing of an object, comprising:

load sensor means associated with the object and having an input for receiving a voltage input and an output for providing a sensor output, said load sensor means being responsive to said voltage input and to vibration of said object for generating said sensor output;

a hardware system connected to said load sensor means and responsive to said sensor output from said load sensor means for acquiring data relative to vibration of the object;

said hardware system including voltage regulating means connected to the input of said load sensor means for providing a regulated voltage input to said load sensor means;

said hardware system further including signal conditioning means connected to the output of said load sensor means for receiving and conditioning the sensor output from said load sensor means and capable to provide an amplified signal output, analog-to-digital converter means for receiving said amplified signal output from the signal conditioning means for converting said amplified signal output to a total of 1536 data samples in digital form; and

a digital computer system responsive to said data samples, said digital computer system including means for selecting 512 data samples from the 1536 data samples, and analyzing the selected data samples.

5,610,838

COORDINATE INPUT DEVICE FOR CALCULATING A COORDINATE OF AN INPUT POSITION OF AN APPLIED VIBRATION

Masaki Tokioka, Fujisawa; Atsushi Tanaka, Kawasaki; Yuichiro Yoshimura, Kamakura; Ryozo Yanagisawa, Chibaken; Katsuyuki Kobayashi, and Hajime Sato, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1994, Ser. No. 366,919
Claims priority, application Japan, Jan. 12, 1994, 6-001556
Int. Cl.[6] G01M *7/00*
U.S. Cl. 364—508 **4 Claims**

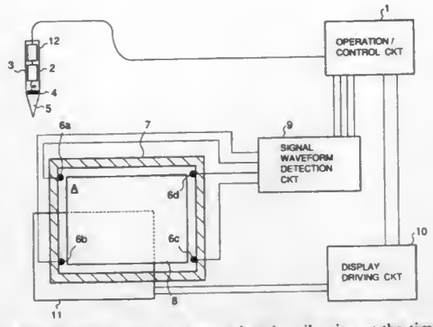
1. A coordinate input device for detecting a vibration applied to a vibration transmitting member and calculating an input position of the vibration based on the detected vibration to produce a coordinate position as an input coordinate, comprising:

detection means for detecting the vibration transmitting through said vibration transmitting member;

measurement means for measuring a time from the generation of the vibration to the detection by said detection means;

control means for controlling a timing to drive said measurement means;

delay means for delaying the drive timing of said measurement means by said control means in accordance with a temperature;



vibration input means for generating the vibration at the timing delayed by said delay means and inputting the vibration to said vibration transmitting member; and

derive means for deriving the coordinate of the input position of the vibration by said vibration input means based on the time measured by said measurement means.

5,610,839

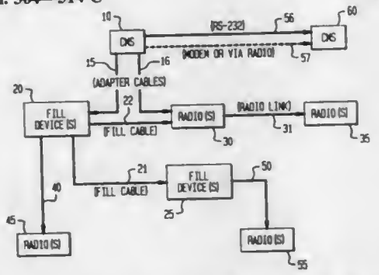
COMMUNICATIONS MANAGEMENT SYSTEM ARCHITECTURE

Dale W. Karolak; Carl L. Shirey; Wesley D. Steiner, and Robert T. Rue, all of Ft. Wayne, Ind., assignors to ITT Corporation, New York, N.Y.

Filed Oct. 7, 1994, Ser. No. 320,499

Int. Cl.[6] G08C *17/00*

U.S. Cl. 364—514 C **23 Claims**



1. A Communications Management System architecture for carrying out planning/management functions for a communications system including a plurality of wireless communications devices arranged into at least one network, said architecture being distributed between a computer processor and a means for loading Communications Information ("CI") developed according to said architecture into said communications devices, and being comprised of:

means for generation and management of frequency assignment for said communications devices;

means for generation and management of security keys associated with said communications devices, wherein said security keys provide a means for encoding and decoding communications among said communications devices;

means for carrying out network planning and management in respect to an arrangement of said communications devices into said at least one network, said means for carrying out network planning and management includes means for establishing and modifying said at least one network;

means for planning and management of a distribution of assets comprising said communications system; and

means for generation and management of said CI.

5,610,840

SIGNAL PROCESSING DEVICE

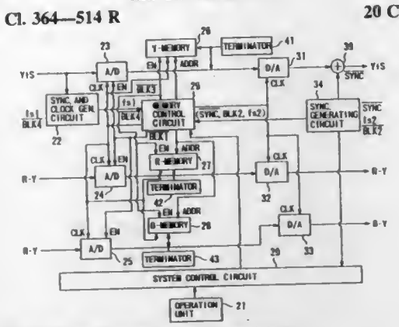
Yasuhiro Yamamoto, and Koichi Sato, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,585

Claims priority, application Japan, Sep. 2, 1993, 5-240276

Int. Cl.[6] H04N *7/15*

U.S. Cl. 364—514 R **20 Claims**



1. A signal processing device, comprising:

a memory in which a digital image signal is stored, said memory being connected to a data bus;

a resistor connected to said data bus; and

means for controlling an operation in which said digital image signal is outputted through said data bus from said memory, said controlling means performing said operation, and stopping said operation so that a blanking period is formed;

said resistor being constructed in such a manner that a pedestal level is outputted from said data bus when said blanking period is formed.

5,610,841

VIDEO SERVER

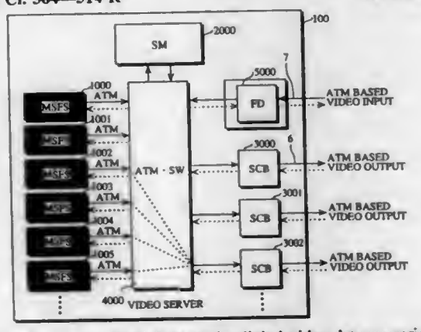
Tsutomu Tanaka, Nishinomiya; Shinzo Doi; Hiroshi Yokota, both of Osaka; Chishio Ueno, Ikoma, and Yukiko Ito, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1994, Ser. No. 316,514

Claims priority, application Japan, Sep. 30, 1993, 5-269995; Jan. 20, 1994, 6-004472; Feb. 10, 1994, 6-016848; Apr. 4, 1994, 6-066063; Apr. 12, 1994, 6-073595; Apr. 27, 1994, 6-089585; Aug. 8, 1994, 6-185955

Int. Cl.[6] H04N *9/79*

U.S. Cl. 364—514 R **86 Claims**



1. A video server which transmits digital video data comprising frame blocks having a predetermined sequence and stored therein to subscriber terminals as per video requests comprising:

a plurality of frame block servers, each including a computer interface unit, an image memory and a readout control unit for the image memory, each image memory storing a plurality of said frame blocks nonconsecutive with respect to said predetermined display sequence, the readout control unit receiving readout requests and in response reading out requested frame blocks from the image memory;

management means for storing management data specifying which frame block server stores which frame block in the image memory;

a plurality of subscriber interfaces for receiving the video requests from the subscriber terminals, and in response sending readout requests to the frame block servers to readout the frame blocks forming requested digital image data in the predetermined sequence while referring to the management data, and for transmitting the frame blocks transmitted from the frame block servers to the subscriber terminals at such timing that ensures continuous play; and

exchange means for interconnecting each block server and each subscriber interface to transfer the frame block servers as per the readout requests to the request-sender interfaces.

5,610,842

METHOD OF ANIMATION PLOTTING OF NC MACHINING PROGRAM

Masaki Seki, Tokyo; Teruyuki Matsumura, Hachioji, and Satoru Shinozaki, Shimodate, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

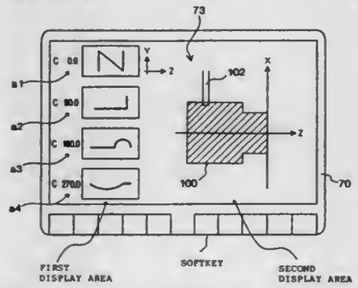
PCT No. PCT/JP93/01182, § 371 Date May 11, 1994, § 102(e) Date May 11, 1994, PCT Pub. No. WO94/07189, PCT Pub. Date May 31, 1994

PCT Filed Aug. 24, 1993, Ser. No. 240,734

Claims priority, application Japan, Sep. 16, 1992, 4-270722

Int. Cl.[6] G06F *15/16;* **G05B** *19/18*

U.S. Cl. 364—551.02 **6 Claims**



5. A method of animation plotting by an NC machining program on a graphic display screen of machining by an NC lathe having a tool displaceable in three axes including a spindle axis, and first and second axes orthogonal to said spindle axis and each other, and a spindle having a number n of Y-axis machining surfaces to be machined, wherein n is an integer greater than or equal to one, said method comprising the steps of:

detecting the presence of Y-axis machining and the number n of Y-axis machining surfaces on the spindle to be machined;

dividing said graphic display screen into a first display area and a second display area for simulating a view of a workpiece projected in a direction of said second axis;

dividing said first display area into n sub-display areas; and

simultaneously displaying a state of movement of said tool relative to said workpiece by simulating respective views within said n sub-display areas and said second display area.

5,610,843

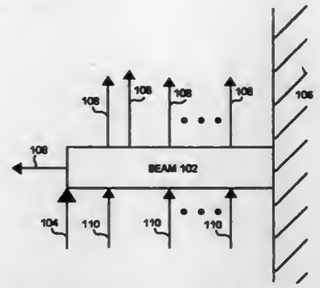
METHODS AND APPARATUSES FOR MULTI INPUT/MULTI OUTPUT CONTROL SYSTEMS

Kenneth C. Chou, San Francisco, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Mar. 1, 1995, Ser. No. 399,695

Int. Cl.[6] G05B *11/58*

U.S. Cl. 364—553 **29 Claims**



1. A method for implementing a controller in a system having a plurality of sensors and a plurality of actuators, comprising:

measuring a transfer function P with said sensors, said measured transfer function P representing a neutralization path in a Q-parameterized version of said controller;

designing a transfer function Q, said designed transfer function Q representing the feed forward path in said Q-parameterized version of said controller; and

sparsifying both said transfer functions P and Q for a given accuracy threshold using wavelet transforms, thereby forming transfer functions Ps and Qs respectively for implementing said controller.

5,610,844

METHOD OF MONITORING THE OPERATION OF A CATALYTIC CONVERTER

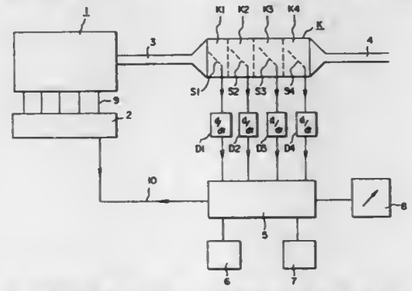
Wolfgang Maus; Helmut Swars, and Rolf Brück, all of Bergisch Gladbach, Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie, Lohmar, Germany

Filed Feb. 17, 1995, Ser. No. 390,676

Claims priority, application Germany, Aug. 17, 1992, 42 27 207.6; Jun. 16, 1993, 43 19 924.0

Int. Cl.[6] F01N *3/20*

U.S. Cl. 364—557 **32 Claims**



1. A method for analyzing a condition of at least one partial volume of a catalytic converter through which a gas mixture flows, which comprises:

triggering a change of at east one of chemical and physical properties of a gas mixture flowing through a catalytic converter at least twice in defined intervals for creating a particu-

lar change pattern differing from all other conceivable operational conditions in an internal combustion engine and being recognizable when observing a reaction of a measured temperature;

measuring a temperature with a sensor at least at one location or in a region within a partial volume of the catalytic converter during the change of the at least one of chemical and physical properties;

selecting the location or the region and a configuration of the sensor in such a manner that a reaction of the measured temperature resulting in the change of properties of the gas mixture is at least approximately representative of a reaction of the temperature in the partial volume;

determining set point values for the respective change in the properties of the gas mixture on the basis of a thermodynamic model while taking physical boundary conditions and properties of the partial volume into account; and

determining and comparing the measured temperature reaction with the set point values.

5,610,845

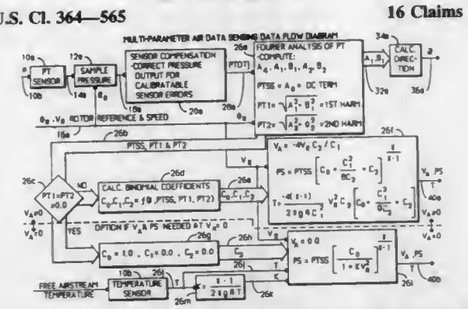
MULTI-PARAMETER AIR DATA SENSING TECHNIQUE

Robert J. Slabinski, Unionville, and Richard C. Filipkowski, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 30, 1994, Ser. No. 298,456

Int. Cl.[6] G01P *3/00*

U.S. Cl. 364—565 **16 Claims**



1. A method of providing an airspeed signal indicative of a velocity of an aircraft relative to an air mass surrounding the aircraft relative to a frame of reference fixed in the aircraft, the aircraft having at least one sensor for providing a sensed pressure signal as a sensed air data parameter that is indicative of pressure at a rotating member and a sensed periodic reference signal indicative of the rotating member periodically passing a reference position relative to the frame of reference, comprising the steps of:

selectively sampling the magnitude of the sensed pressure signal according to the position of the rotating member for each of a plurality of subrevolution intervals, and providing sampled pressure signals having magnitudes indicative of said magnitude of the sensed pressure signal during each of said plurality of subrevolution intervals, as determined with respect to the sensed periodic reference signal;

providing, in response to said sampled pressure signals, multiple order harmonic component pressure signals having magnitudes indicative of multiple order harmonic component representations of the pressure at the rotating member; and

utilizing the multiple order harmonic component pressure signals for determining aircraft velocity, for providing the airspeed signal having a magnitude indicative thereof thereby using only one sensed air data parameter in said method of providing said airspeed signal.

5,610,846

METHOD FOR COORDINATE MEASUREMENT ON WORKPIECES ADJUSTED FOR BENDING OF MEASURING APPARATUS STRUCTURE

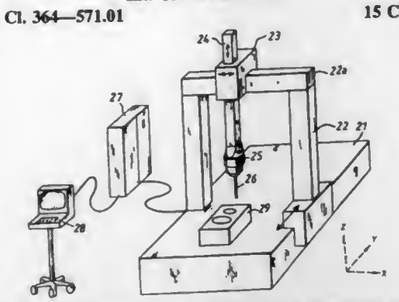
Eugen Trapet, Bortfeld; Uwe Wiegand, Braunschweig; Günter Grupp, Böhmenkirch, and Ralf Bernhardt, Aalen, all of Germany, assignors to Carl Zeiss Stiftung, Heidenheim, Germany

Filed May 30, 1995, Ser. No. 452,803

Claims priority, application Germany, May 27, 1994, 44 18 550.2

Int. Cl.[6] G01B *5/012*

U.S. Cl. 364—571.01 **15 Claims**



1. A method for measuring coordinates on workpieces using a coordinate measuring machine having at least one measuring slide, a certain measuring range and a probe head with a probe fixed to said measuring slide, said method comprising the steps of

establishing parameters characterizing elastic bending behavior of said coordinate measuring machine for several probe positions within said measuring range by determining components of said parameters, said components being dependent on position of said measuring slide and being at least dependent on a measuring force between said probe and workpieces to be measured,

storing said components as correction values (c11, c22), and

performing correction calculations by taking into account said stored correction values in subsequent coordinate measurements on workpieces.

5,610,847

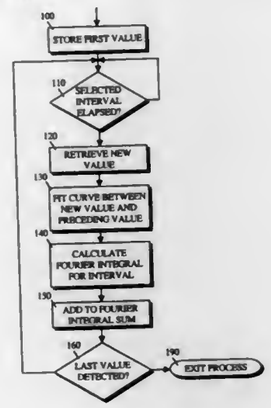
RATIOMETRIC FOURIER ANALYZER

Kenneth S. Kundert, Belmont, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Oct. 28, 1994, Ser. No. 331,186

Int. Cl.[6] G06G *7/19*

U.S. Cl. 364—576 **17 Claims**



1. In a processor-controlled Fourier analyzer comprising a processor, a memory, and an input for receiving an output waveform of an electronic circuit, a processor implemented method for determining without aliasing errors a Fourier coefficient for a selected frequency of the output waveform, the method comprising the steps of:

sampling the output waveform at a first time;

detecting a value of the output waveform at said first time;

selecting a time interval for sampling the output waveform according to a curvature determined from a previous sample of the output waveform;

detecting a value of the output waveform following the selected time interval;

fitting a polynomial in powers of a time variable to the output waveform between adjacent detected values, the polynomial fit providing a plurality of coefficients, each of which is associated with a power of the time variable, for representing the output waveform over a continuous range of the time variable;

forming a product of each coefficient with a Fourier integral of an associated time variable of each coefficient over the selected time interval, at the selected frequency, and summing the products to obtain an amplitude representing a contribution of the selected frequency to the output waveform over the selected interval;

repeating the selecting, detecting a value of the output waveform following the selected time interval, fitting, and forming steps until the output waveform is fully sampled; and

summing the amplitudes for each selected time interval to convert the polynomial representation of the output waveform into a Fourier coefficient representing the amplitude of the selected frequency in the output waveform, said Fourier coefficient having no aliasing errors.

5,610,848

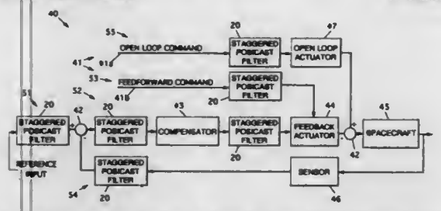
ROBUST RESONANCE REDUCTION USING STAGGERED POSICAST FILTERS

Richard A. Fowell, Culver City, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 13, 1994, Ser. No. 242,582

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.07 **9 Claims**



3. A filter for processing actuator commands provided to an actuator of a satellite system to reduce resonant mode excitation in the satellite system for a mode of variable or uncertain frequency, said filter comprising:

a filter impulse response having a set of equal impulses;

said filter having a predetermined level of resonance reduction over at least the frequency uncertainty range of the mode; and

wherein said filter comprises a plurality of cascaded posicast filters whose delay values are distinct, yet close enough together so that the frequency response between first zeros of the posicast filters provides at least the predetermined level of resonance reduction.

5,610,849

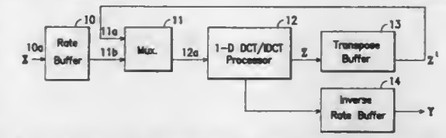
REAL TIME TWO-DIMENSIONAL DISCRETE COSINE TRANSFORM/INVERSE DISCRETE COSINE TRANSFORM CIRCUIT

Po-Chuan Huang, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jun. 23, 1995, Ser. No. 494,598

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—725 **14 Claims**



1. A real time two-dimensional discrete cosine transform (DCT)/inverse discrete cosine transform (IDCT) circuit comprising:

a rate buffer for inputting an N×N data at a first rate and outputting said data at a second rate;

a multiplexer for providing one of a first data path and a second data path for data transmission, wherein said first data path is provided for said data from said rate buffer during a first time period, while during a second time period, said second data path is provided for transposed data;

a one-dimensional (1-D) DCT/IDCT processor for performing 1-D DCT/IDCT of data from said data paths of said multiplexer;

a transpose buffer for transposing data from said 1-D DCT/IDCT processor, wherein said transposed data is generated by said transpose buffer and is stored therein during said first time period; and

an inverse rate buffer for acquiring data from said transpose buffer, during said second time period, at said second rate, and outputting an N×N transformed data at said first rate.

5,610,850

ABSOLUTE DIFFERENCE ACCUMULATOR CIRCUIT

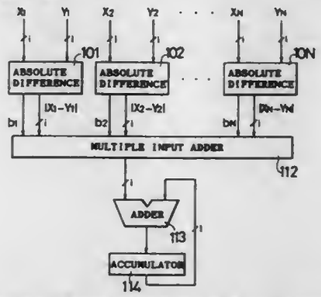
Munehiro Uratani, Yamatokoriyama, and Aoi Kitaura, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 34,407, Mar. 18, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 305,753

Claims priority, application Japan, Jun. 1, 1992, 4-140486

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—769 **12 Claims**



1. An absolute difference accumulation device comprising:

(a) a plurality of absolute difference calculation circuits, each having

(a1) an i-bit subtractor for calculating a difference of two numbers each having i bits, a value of i being a natural number; and

(a2) an i-bit inversion selector, responsive to the difference from the i-bit subtractor, for supplying every difference bit in a case where no borrow is generated by the i-bit subtractor and for inverting every difference bit in a case where borrow is generated;

(b) a multiple input adder circuit, responsive to each absolute difference calculation circuit, for adding together the borrows without inversion thereof and the outputs of the i-bit inversion selectors; and

(c) an accumulator circuit for summing up outputs of the multiple input adder circuit.

5,610,851

Patent Not Issued For This Number

5,610,852

FERROELECTRIC MEMORY AND METHOD FOR CONTROLLING OPERATION OF THE SAME

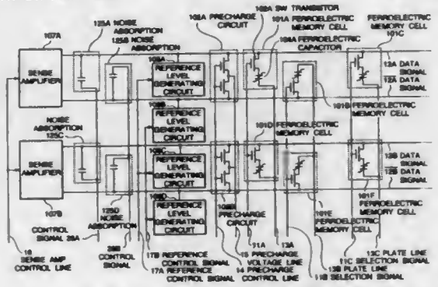
Hiroki Koike; Tohru Kimura; Tetsuya Otsuki, and Masahide Takada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 4, 1996, Ser. No. 582,619

Claims priority, application Japan, Jan. 4, 1995, 7-000063

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **38 Claims**



1. A ferroelectric memory comprising, a plurality of pairs of data signal lines for outputting and receiving data, a plurality of selection signal lines selected in accordance with an address signal, and a plurality of unitary memory cell arrays each arranged along a corresponding one pair of data signal lines of said plurality of pairs of data signal lines, each of said unitary memory cell arrays including:

a plurality of memory cells each including a ferroelectric capacitor having a capacitor dielectric composed of a ferroelectric material and sandwiched between a pair of opposing electrodes, a switching means connected to said ferroelectric capacitor and one of said corresponding pair of data signal lines, and controlled by a corresponding one of said selection signal lines, so that different polarized conditions of said ferroelectric capacitor correspond to different conditions of stored data, respectively, and when a first voltage, which is not zero, is applied between the opposing electrodes of said ferroelectric capacitor, since a current flowing between said ferroelectric capacitor and the corresponding data signal line is different dependently upon the polarized condition of said ferroelectric capacitor, the current is detected or a voltage appearing on the corresponding pair of data signal lines due to the current is detected for the purpose of reading out the stored data;

a means connected to the corresponding one pair of data signal lines, for detecting a current or voltage difference appearing between the corresponding pair of data signal lines; and

a means connected to at least one of the corresponding pair of data signal lines, for absorbing, when data is read out from a memory cell by setting the selection signal line to a sufficient voltage for putting the memory cell in a selected condition, electric charges flowing into the at least one of the corresponding pair of data signal lines, because of factor other than the current caused due to the polarization of the ferroelectric capacitor, whereby a voltage not smaller than the coercive voltage of the ferroelectric capacitor can be applied between the opposing electrodes of the ferroelectric capacitor.

5,610,853

FERROELECTRIC MATERIAL, AND SEMICONDUCTOR MEMORY, OPTICAL RECORDING MEDIUM AND MICRO-DISPLACEMENT CONTROL DEVICE USING THE FERROELECTRIC MATERIAL

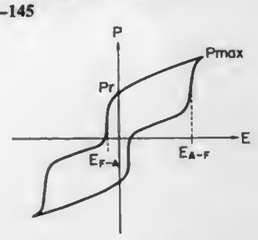
Yoshikazu Akiyama, Yokohama, and Sachiko Kimura, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 168,770, Dec. 16, 1993, Pat. No. 5,555,219. This application Jun. 4, 1996, Ser. No. 660,341

Claims priority, application Japan, Dec. 16, 1992, 4-354494; Mar. 16, 1993, 5-081365; Mar. 26, 1993, 5-092346; Sep. 6, 1993, 5-245949

Int. Cl.[6] H01L *27/10*

U.S. Cl. 365—145 **16 Claims**



1. A ferroelectric material which has hysteresis characteristics in the polarization-electric field relationship thereof, exhibits a mixed state of an antiferroelectric phase and a ferroelectric phase at room temperature, and carries out a structural phase transition from said mixed state to a ferroelectric phase with the application of an electric field thereto, with a phase transition electric field with which an antiferroelectric-to-ferroelectric phase transition is carried out being shifted to a lower electric field with the elevation of the temperature thereof, and a phase transition electric field with which a ferroelectric-to-antiferroelectric phase transition is carried out having a negative value.

5,610,854

SEMICONDUCTOR MEMORY DEVICE AND FABRICATION PROCESS THEREOF

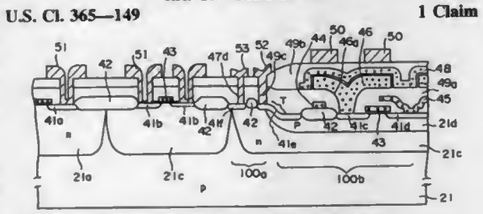
Taiji Ema, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 355,489, Dec. 14, 1994, Pat. No. 5,496,758. This application Nov. 21, 1995, Ser. No. 561,287

Claims priority, application Japan, Mar. 1, 1994, 6-031611

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **1 Claim**



1. A semiconductor memory device, comprising:

a semiconductor substrate defined with a peripheral circuit region for carrying peripheral circuits and a memory cell array region for carrying a memory cell array;

a first well of a first conductivity type formed in said semiconductor substrate in correspondence to said memory cell array region, said first well having a surface at a first level;

a second well of a second, opposite conductivity type formed in said first well, said second well having a surface at a second level lower than said first level, said surface of said second well being separated from said surface of said first well by a stepped boundary;

a memory cell transistor provided on said second well;

a memory cell capacitor provided on the surface of said second well so as to extend in an upward direction therefrom;

an insulating film provided on said memory cell array so as to cover said memory cell transistor and said memory cell capacitor;

a conductive region provided on said semiconductor substrate so as to extend from the surface of said second well to the surface of said first well across said stepped boundary;

a contact hole provided on said insulating film in correspondence to said first well so as to expose said conductive region; and

an electrode filling said contact hole to establish an electrical contact with said conductive region.

5,610,855

MULTI-VALUED SEMICONDUCTOR MEMORY DEVICE

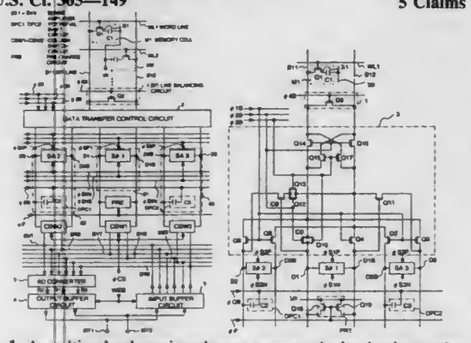
Toshio Komuro, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,574

Claims priority, application Japan, Dec. 26, 1994, 6-322661

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **5 Claims**



1. A multi-valued semiconductor memory device having a plurality of bit-memory units, each of said bit-memory units comprising:

a first and a second bit-lines;

a plurality of memory cells, each of said memory cells having a memory capacitor for storing a charge which generates a differential potential between said first and said second bit-lines and is recharged with potentials of said first and said second bit-lines when a word-line is charged;

at least two sets of means for generating a read-out potential, each of said at least two sets of means for generating a readout potential having a first and a second in-out terminal and a sense amplifier which discriminates a potential difference between said first and said second in-out terminals and turns to logic '1' by charging said first in-out terminal with a potential of a positive sense amplifier activating signal and said second in-out terminals with a potential of a negative sense amplifier activating signal in case said first in-out terminal is at a higher potential than said second in-out terminal, and to logic '0' by charging said first in-out terminal with the potential of said negative sense amplifier activating signal and said second in-out terminal with the potential of said positive sense amplifier activating signal in case said first in-out terminal is at a lower potential than said second in-out terminal when activated by said positive and said negative sense amplifier activating signals, and each except one of said at least two sets of means for generating a read-out potential having a potential shift capacitor for shifting one of potentials of the first and the second in-out terminals of said each except one by a fixed value to lower side when a potential shift control signal is turned to low level;

a data transfer control circuit for connecting each of said first and said second bit-lines to each of the first and the second in-out terminals of each of said at least two sets of means for generating a read-out potential for transferring said differential potential to said at least two sets of means for generating a read-out potential when controlled with transfer control signals, and connecting each of two in-out terminals of the first and the second in-out terminals of said at least two sets of means for generating a read-out potential to each of said first and said second bit-lines for recharging said memory capacitor in accordance with an ensemble of logic of the sense amplifier of each of said at least two sets of means for generating a read-out potential when controlled with said transfer control signals;

an AD converter for generating a set of output data, each of said set of output data corresponding to logic of the sense amplifier of each of said at least two sets of means for generating a readout potential;

an output buffer circuit for outputting parallel binary output data to I/O terminals by converting said set of output data; and

means for buffering and DA converting parallel binary input data from the I/O terminals to a set of input data, each of said set of input data being supplied to the first and the second in-out terminals of each of said at least two sets of means for generating a read-out potential for controlling logic of the sense amplifier of each of said at least two sets of means for generating a read-out potential in accordance with said parallel binary input data.

5,610,856

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

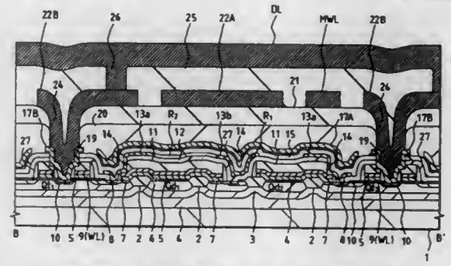
Keiichi Yoshizumi, Kokubunji; Satoru Haga, Akishima; Shuji Ikeda, Koganei, all of Japan; Kiichi Makuta, Dallas, Tex., and Takeshi Fukazawa, Tsukui-machi, Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 610,185

Claims priority, application Japan, Mar. 7, 1995, 7-047365

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—154 **10 Claims**



1. A semiconductor integrated circuit device wherein:

a memory cell of an SRAM is constituted by a flip-flop circuit and two transfer MISFETs arranged at a portion where a word line and a pair of complementary data lines intersect each other;

a metal wiring of a first layer formed above said memory cell constitutes ground voltage lines, pad layers, and a main word line that is arranged at a rate of one line per four memory cells arranged along a first direction parallel to a direction in which said complementary data lines extend;

said complementary data lines are constituted by a metal wiring of a second layer formed above the metal wiring of said first layer;

said complementary data lines and said pad layers are electrically connected together through first connection holes formed in an interlayer insulating film that is formed between

said complementary data lines and said pad layers, and said pad layers and either the source regions or the drain regions of said transfer MISFETs are electrically connected together through second connection holes formed in an insulating film that is formed between said pad layers and said transfer MISFETs; and wherein,

the arrangement of said first and second connection holes in said pad layer connected to one of said complementary data lines and the arrangement of said first and second connection holes in said pad layer connected to the other one of said complementary data lines, are inverted from each other every two memory cells that are arranged along the first direction.

5,610,857

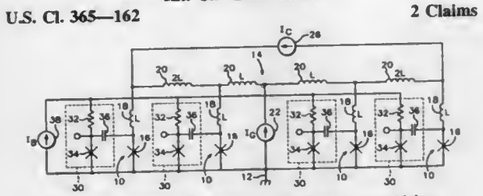
MEMORY ELEMENT WITH MULTIBIT STORAGE

Vallath Nandakumar, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Mar. 25, 1996, Ser. No. 621,857

Int. Cl.[6] G11C *11/44*

U.S. Cl. 365—162 **2 Claims**



1. A memory element for multiple bit storage comprising:

a plurality of Josephson junction devices coupled in parallel between a ground plane and a superconducting line to form a SQUID device, the SQUID device having at least four stable operating modes with a common quiescent point for all the stable operating modes;

a plurality of Josephson sensors capacitively coupled one to each of the plurality of Josephson junction devices and coupled between a source of switchable bias current and the ground plane; and

means for receiving a variable control current and a variable gate current to control the Josephson junction devices in order to write into the memory element by selecting the states for the stable operating modes for the SQUID device and to read the state of the stable operating modes by switching of the Josephson junction devices in response to a read gate current, the switching being sensed by the Josephson sensors.

5,610,858

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 12, 1995, Ser. No. 440,471

Claims priority, application Japan, May 12, 1994, 6-098589

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.05 **19 Claims**

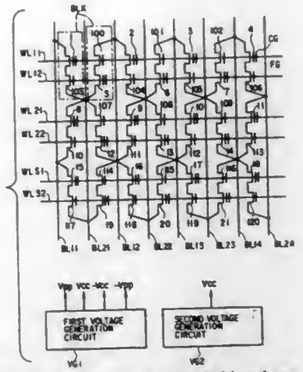
7. A non-volatile semiconductor memory device comprising:

a first row line;

a first memory cell whose threshold voltage is set at a negative or positive value and which is connected at one end to a first column line and selectively driven by said first row line;

a second row line;

a first transistor connected at one end to the other end of said first memory cell, connected at the other end to a second column line and selectively driven by said second row line, for creating a current path for electrically connecting said first column line and said second column line together with said first memory cell when the threshold voltage of said first memory cell is set at a negative value;



a second memory cell whose threshold voltage is set to a negative or positive value and which is connected at one end to said second column line and selectively driven by said second row line; and

a second transistor connected at one end to the other end of said second memory cell, connected at the other end to a third column line and selectively driven by said first row line, for creating a current path for electrically connecting said third column line and said second column line together with said second memory cell when the threshold voltage of said second memory cell is set at a negative value.

5,610,859

SEMICONDUCTOR MEMORY DEVICE

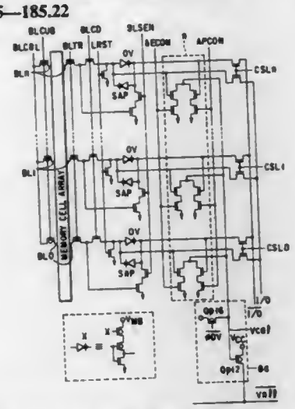
Hiroshi Nakamura, Kawasaki; Junichi Miyamoto; Yoshihisa Iwata, both of Yokohama, and Keniti Imamiya, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,572

Claims priority, application Japan, Mar. 15, 1994, 6-044446; Aug. 19, 1994, 6-218030

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.22 **8 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

a memory cell array having memory cells, each of which stores data, formed in a matrix on said semiconductor substrate, said memory cell array comprising,

a plurality of first nodes, and one or more second nodes;

a plurality of data latch circuits, each of which is arranged at one end of at least one bit line connected to said memory cell array and configured to latch programming data in a plurality of data latch groups;

control means for judging whether all of the latched programming data included in each of said plurality of data latch groups are the same as a first data or not, and respectively changing a first potential of corresponding ones of the plurality of the first nodes according to a corresponding first judging result;

means for detecting potentials of said plurality of said first nodes, and for judging whether all data latched by said plurality of data latch circuits and included in said plurality of latch circuit groups are the same as said first data and for changing a second potential of one or more second nodes according to a corresponding second judging result; and

means for detecting said second potential of said one or more second nodes and for outputting a corresponding third judging result indicative of whether or not all of said programming data latched by said plurality of data latch circuits are the same as said first data.

5,610,860

INTEGRATED CIRCUIT MEMORY WITH COLUMN VOLTAGE HOLDING CIRCUIT

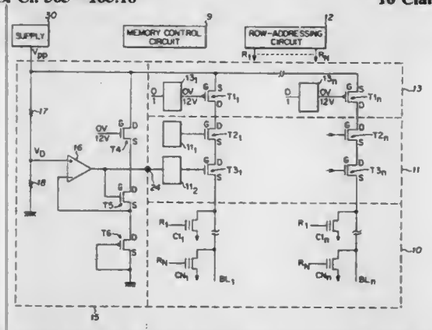
Olivier Rouy, Provence, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Mar. 10, 1995, Ser. No. 402,519

Claims priority, application France, Mar. 31, 1994, 94 03844

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.18 **16 Claims**



1. A non-volatile, electrically erasable programmable integrated circuit memory comprising:

a plurality of memory cells organized in rows and columns;

row-addressing circuits for selecting rows;

column-addressing circuits for applying a voltage to bit lines to select columns;

a programming circuit connected to each bit line for programming of a binary value for programming of a binary value to be recorded; and

a voltage-holding circuit, an output terminal of which is connected to all bit lines to keep the voltage of a bit line at a constant value when the bit line is selected to record a binary value, wherein the voltage-holding circuit includes a differential amplifier that measures the difference between a reference voltage and a line voltage representing the bit line and that outputs a signal reducing the difference between the reference voltage and the line voltage.

5,610,861

FLASH MEMORY DEVICE

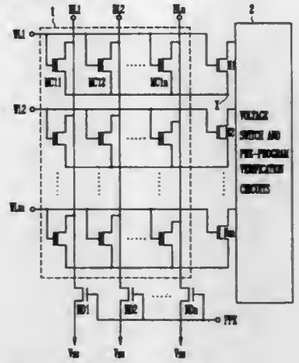
Hyun S. Sim, Kyungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 576,055

Claims priority, application Rep. of Korea, Dec. 27, 1994, 94-37294

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—185.24 **6 Claims**



1. A flash memory device, comprising:

a plurality of bit lines;

a plurality of word lines;

a first switching means for switching a supply of drain voltage for programing and drain voltage for a reading-out based on a signal that is inputted via said each word line;

a plurality of memory cells coupled between said each bit line and said first switching means, wherein said memory cells maintain the program state based on the signal that is inputted via said each word line;

a second switching means coupled between said each bit line and a VSS terminal, wherein said second switching means switch a supply of the VSS power supply based on an enable signal for pre-programing; and

a pre-program verification circuit, coupled to said first switching means, for identifying the state of the program and the erasure based on each drain voltage of the memory cells that are coupled to the selected word line during a program identification operation.

5,610,862

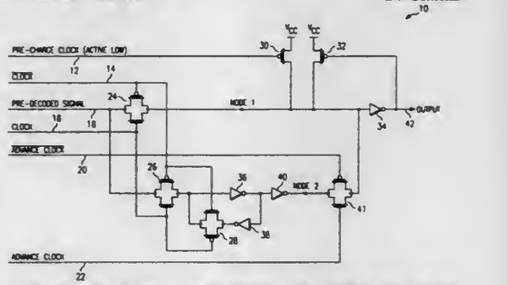
PRE-CHARGED SLAVE LATCH WITH PARALLEL PREVIOUS STATE MEMORY

Thomas A. Teel, Carrollton, Tex., assignor to SGS-Thomson Microelectonics, Inc., Carrollton, Tex.

Continuation of Ser. No. 346,748, Nov. 30, 1994, Pat. No. 5,491,663. This application Oct. 17, 1995, Ser. No. 544,097

Int. Cl.[6] G11C *7/00*

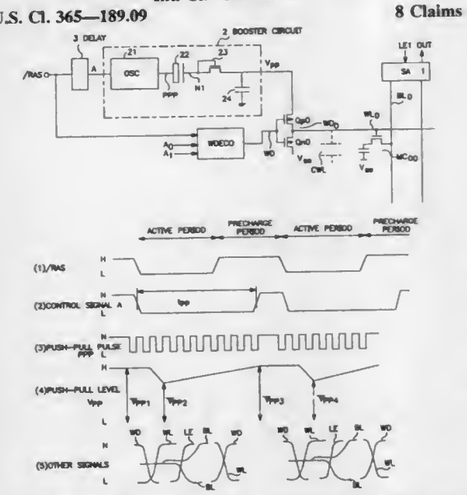
U.S. Cl. 365—189.05 **24 Claims**



1. A method for retaining a previous state of data using a pre-charged data path technique, comprising the steps of:

loading a input signal to a parallel memory element;
allowing a previous state of the input signal to propagate through an address decode path to an output node of the parallel memory element; and
pre-charging an output signal on the output node of the parallel memory element to an inactive state.

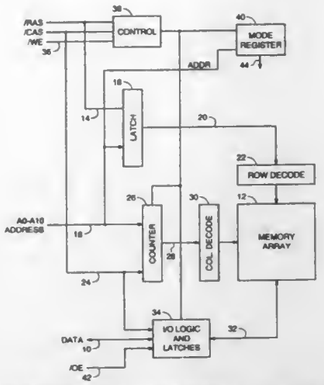
5,610,863
MEMORY DEVICE HAVING A BOOSTER CIRCUIT AND A BOOSTER CIRCUIT CONTROL METHOD
Toyonobu Yamada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed May 31, 1996, Ser. No. 655,915
Claims priority, application Japan, Nov. 29, 1995, 7-310206
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.09 **8 Claims**



1. A memory device, internally employing an active period control signal for controlling an active period and an inactive period for internal operation, comprising:
a plurality of word lines;
a plurality of bit lines;
memory cells provided at intersections of the word lines and the bit lines;
a booster circuit, having an output terminal, for outputting to the output terminal a higher voltage than a power source voltage;
word drivers, connected to each of the word lines, for connecting the output terminal of the booster circuit to a corresponding word line in response to a word selection signals provided during the active period; and
a boosting control signal generation circuit supplying the booster circuit with a boosting control signal to continue a boosting operation of the booster circuit longer than the active period in response to the active period control signal.

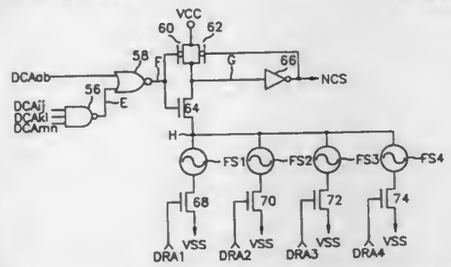
5,610,864
BURST EDO MEMORY DEVICE WITH MAXIMIZED WRITE CYCLE TIMING
Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation-in-part of Ser. No. 370,761, Dec. 23, 1994. This application Feb. 10, 1995, Ser. No. 386,894
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—193 **20 Claims**

1. A memory device adapted to perform a write operation to store data in the memory device, the memory device comprising:



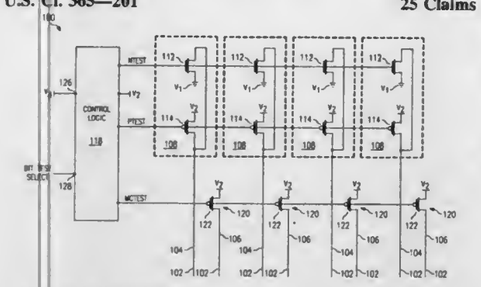
a write operation control circuit adapted to switch control of a write operation between a write command signal and an access cycle signal during a write operation, wherein the write command signal initiates the write operation, and the access cycle signal terminates the write operation.

5,610,865
SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY STRUCTURE
Choong-Sun Shin, Seoul, and Young-Sik Seok, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Japan
Filed Jun. 7, 1995, Ser. No. 480,785
Claims priority, application Rep. of Korea, Jun. 8, 1994, 12846/1994
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **9 Claims**



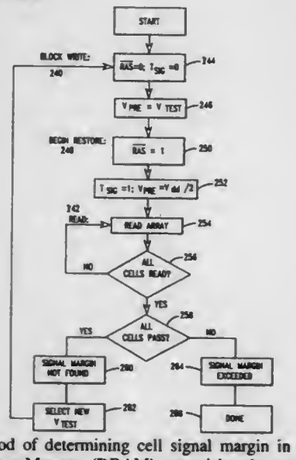
1. A semiconductor memory device with redundancy structure having a normal memory cell array having a plurality of normal memory cells arranged in row and column directions and a redundant memory cell array having a plurality of redundant memory cells, said device comprising;
a redundant column selecting circuit for comparing an externally applied column address signal and a programmed defective column address signal to generate a redundant column selection signal, said redundant column selecting circuit having means for producing said programmed defective column address signal by programming a defective column address corresponding to a defective column;
decoding means for decoding said column address signals and producing a column deeming signal; and
a normal column selecting circuit for receiving said column decoding signal and producing a normal column selection signal, said normal column selecting circuit having means for disabling said normal column selecting circuit and enabling said redundant column selecting circuit when said defective column address is applied.

5,610,866
CIRCUIT STRUCTURE AND METHOD FOR STRESS TESTING OF BIT LINES
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Oct. 31, 1994, Ser. No. 331,699
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—201 **25 Claims**



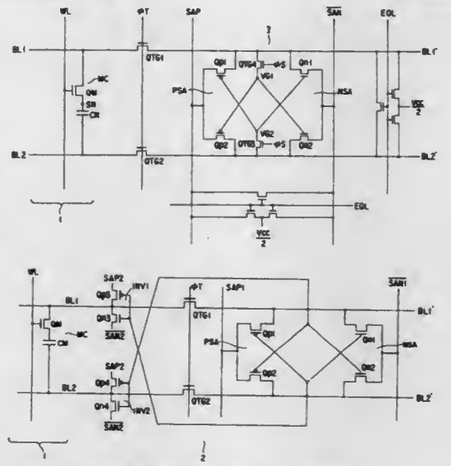
1. A circuit comprising:
a plurality of bit lines arranged in columns, said bit lines being grouped into a first set of bit lines and a second set of bit lines, each bit line in said first set of bit lines being in an alternating position with respect to each bit line in said second set of bit lines;
first switching means for electrically connecting only said first set of bit lines to a first voltage level while simultaneously having said second set of bit lines at a second voltage level different from the first voltage level; and
second switching means for electrically connecting only said second set of bit lines to said second voltage level simultaneously with said first switching means connecting said first set of bit lines to said first voltage level.

5,610,867
DRAM SIGNAL MARGIN TEST METHOD
John K. DeBrosse, Burlington, Vt.; Toshiaki Kirihata, Wappingers Falls, N.Y., and Hing Wong, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 28, 1995, Ser. No. 535,446
Int. Cl.[6] G11C *7/00;29/00*
U.S. Cl. 365—201 **9 Claims**



1. A method of determining cell signal margin in a Dynamic Random Access Memory (DRAM) comprising the steps of:
a) Writing a voltage level into a plurality of memory cells;
b) Reading data from each cell in said plurality of memory cells;
c) Comparing the read data with an expected result; and
d) Reducing said voltage level and repeating steps a)–c) until said read data is different from the expected result.

5,610,868
SEMICONDUCTOR MEMORY DEVICE
Tsuneo Inaba, Ichikawa, and Daisaburo Takashima, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 2, 1996, Ser. No. 581,967
Claims priority, application Japan, Jan. 5, 1995, 7-000296; Jun. 9, 1995, 7-143659
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **15 Claims**

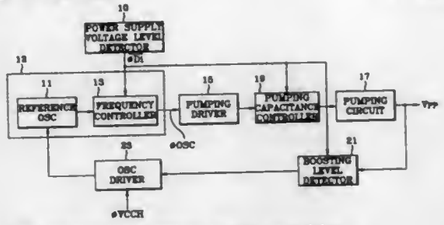


1. A semiconductor memory device comprising:
a plurality of word lines;
a plurality of first bit line pairs disposed in a manner as to intersect the word lines and each having first and second bit lines;
a memory cell array having a plurality of memory cells provided at intersection areas between the plurality of bit line pairs and the plurality of word lines and each consisting of one transistor and one capacitor;
a plurality of second bit line pairs each having a third bit line connected to the first bit line through a first transfer gate and a fourth bit line connected to the second bit line through a second transfer gate; and
flip-flop sense amplifier circuits each disposed between respective paired second bit lines of the plurality of second bit line pairs and each composed of a first p-type transistor and a first n-type transistor whose gates are commonly connected and a second p-type transistor and a second n-type transistor whose gates are commonly connected, respective drains of the first p-type transistor and the first n-type transistor being connected to the third bit line, respective drains of the second p-type transistor and the second n-type transistor being connected to the fourth bit line, respective sources of the first and second p-type transistors being connected to a first sense amplifier drive line, respective sources of the first and second n-type transistors being connected to a second sense amplifier drive line, the respective gates of the first p-type and first n-type transistors being connected to the fourth bit line through a third transfer gate, and the respective gates of the second p-type and second n-type transistors being connected to the third bit line through a fourth transfer gate.

5,610,869
SEMICONDUCTOR MEMORY DEVICE

Seung-Moon Yoo, Suwon; Ejaz ul Haq, Seoul; Yun-Ho Choi, Suwon; Soo-In Cho; Dae-Je Chin, both of Seoul; Nam-Soo Kang, and Seung-Hun Lee, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 68,547, May 28, 1993, Pat. No. 5,446,697.
This application Aug. 7, 1995, Ser. No. 511,815
Claims priority, application Rep. of Korea, Dec. 2, 1992, 1992-23132
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—222 8 Claims

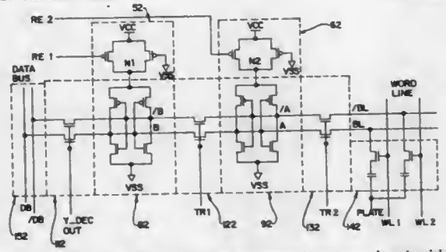


1. A semiconductor memory device comprising:
power supply voltage level detecting means for detecting a plurality of predetermined levels of a power supply voltage to generate a plurality of detecting signals, each corresponding to one of said plurality of predetermined levels;
oscillating means for generating frequency-controlled oscillation pulses in dependence upon the detecting signals; and
refresh controlling means for adjusting a refresh period according to said frequency-controlled oscillating pulses of said oscillating means so that said refresh period is varied according to a variation of the power supply voltage.

5,610,870
CIRCUIT AND METHOD FOR CONTROLLING THE IMPEDANCE OF A SERIAL ACCESS MEMORY

Go-Hee Choi, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Mar. 28, 1996, Ser. No. 624,196
Claims priority, application Rep. of Korea, Mar. 28, 1995, 96-6593
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—226 24 Claims

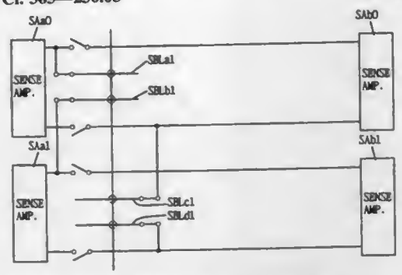


1. A circuit for controlling data transmissions associated with a serial access comprising:
a pair of bit lines for transmitting data, the bit lines being coupled to a memory cell array;
one or more storage registers for storing the data from the bit;
one or more switches connecting each of the registers to a data bus, and wherein the switches are sequentially activated in accordance with selection signals of an address; and
a multi-stage impedance controlling means for controlling an impedance of a power line for said registers during said data transmissions.

5,610,871
SEMICONDUCTOR MEMORY DEVICE HAVING A HIERARCHICAL BIT LINE STRUCTURE WITH REDUCED INTERFERENCE NOISE

Hideto Hidaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,145
Claims priority, application Japan, Nov. 30, 1993, 5-299967; Jun. 21, 1994, 6-138932
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.03 32 Claims



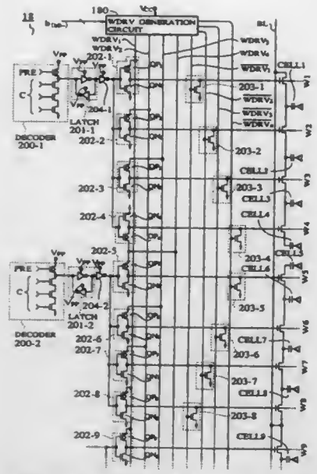
1. A semiconductor memory device, comprising:
a plurality of memory cells arranged in a matrix of rows and columns, said matrix being divided into a plurality of blocks of rows of memory cells;
a plurality of main bit lines arranged corresponding to said columns;
a plurality of sub-bit lines arranged corresponding to said plurality of blocks in each of said columns, each of said plurality of sub-bit lines being connected to memory cells on a corresponding column, said plurality of sub-bit lines being disposed such that adjacent two sub-bit lines in a row direction form a pair, and each said pair of sub-bit line including a first sub-bit line and a second sub-bit line;
block select gate means provided in each of said columns for selectively connecting said sub-bit lines to said main bit lines in response to a block select signal designating a block among said plurality of blocks, said block select gate means including gate means for connecting at least one of said sub-bit lines on a corresponding column to a first main bit and connecting at least another one of said sub-bit lines to a second main bit line in response to said block select signal, said first main bit line and said second main bit line forming a pair; and
a plurality of sense amplifiers provided corresponding to each main bit line pair for corresponding main bit lines, for sensing and amplifying signals on the corresponding first and second main bit lines;
said block select gate means including gates disposed to make connection between said sub-bit lines and said main bit lines such that ways of said connection with respect to adjacent main bit line pairs are different from each other.

5,610,872
MULTI-BANK SYNCHRONOUS MEMORY SYSTEM WITH CASCADE-TYPE MEMORY CELL STRUCTURE

Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,551
Claims priority, application Japan, Feb. 17, 1994, 6-020329
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 32 Claims

1. A synchronous memory system with a cascade-type memory cell structure for receiving address signals for a memory cell to be accessed and reading out of data stored in the memory cell being performed in synchronization with a first clock signal supplied from an external device, the synchronous memory system comprising:
a plurality of bit lines;

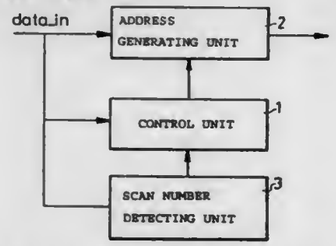


a plurality of memory cells having a cascade-type configuration connected to each of the plurality of bit lines;
a plurality of word lines connected to the plurality of memory cells; and
a row decoder comprising:
a plurality of first decode circuits for receiving a first row address signal and decoding the first row address signal and generating a first drive control signal, each first decode circuit comprising a first PMOS precharging transistor and first NMOS discharging transistors connected in series;
a plurality of word line drive units for receiving the first drive control signal and providing a first drive signal to the plurality of word lines, each first drive unit having a first PMOS transistor and a first NMOS transistor connected in series, an intermediate node between the first PMOS transistor and the first NMOS transistor belonging to one the plurality of word lines; and
a voltage generation circuit for receiving a first voltage and a second row address signal, and generating second drive signals and providing the second drive signals to the first PMOS transistor of each of the plurality of word line drive units according to the second row address signal.

5,610,873
ADDRESS GENERATOR FOR GENERATING A PLURALITY OF ADDRESSES TO BE USED IN ZIG-ZAG SCANNING OF CONTENTS OF MEMORY ARRAY

Chen-Yi Lee, Hsinchu, Taiwan, assignor to National Science Council of R.O.C., Taipei, Taiwan

Filed Mar. 21, 1996, Ser. No. 619,206
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.01 3 Claims

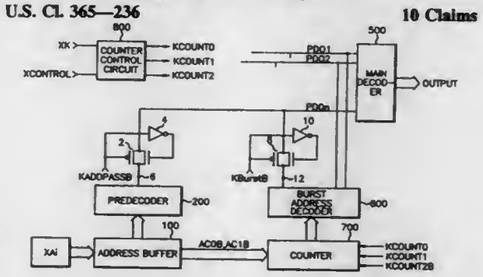


1. An address generator for generating a plurality of addresses to be used in zig-zag scanning of contents of a memory array, said address generator comprising:
a control unit including
a clock,
an up/down counter driven by said clock to generate a varying output,
an increment counter driven by said clock to generate an incrementing output, and
a comparator having a first input terminal connected electrically to said up/down counter to receive said varying output and a second input terminal connected electrically to said increment counter to receive said incrementing output, said comparator comparing said varying output and said incrementing output and generating a comparing output which enables said up/down counter and which resets said increment counter when said varying output is equal to said incrementing output, and which disables said up/down counter when said varying output is not equal to said incrementing output;
an address generating unit including
a first register means for storing an initial address therein,
a second register means capable of storing a plurality of step size values therein, said second register means having a first input connected electrically to said comparator for receiving said comparing output from said comparator, and a second input connected electrically to said up/down counter for receiving a least significant bit of said varying output, said second register means outputting one of said step size values according to combination of said comparing output and said least significant bit of said varying output, and
an adder means, connected electrically to said first and second register means, for generating a new address equal to a sum of said initial address from said first register means and said one of said step size values from said second register means, said new address to be stored in said first register means so as to replace said initial address in said first register means; and
a scan number detecting unit for detecting whether number of addresses generated so far is equal to size of the memory array, said detecting unit being connected electrically to said up/down counter so as to enable said up/down counter to generate said varying output in a first counting direction when the number of addresses generated so far is less than one half of the size of the memory array and so as to enable said up/down counter to generate said varying output in a second counting direction when the number of addresses generated so far is more than one half of the size of the memory array.

5,610,874
FAST BURST-MODE SYNCHRONOUS RANDOM ACCESS MEMORY DEVICE

Hee-Chail Park; Kook-Hwan Kweon, and Jeon-Taek Im, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 7, 1994, Ser. No. 337,186
Claims priority, application Rep. of Korea, Nov. 8, 1993, 23603/1993
Int. Cl.[6] G11C *13/00;7/00*
U.S. Cl. 365—236 10 Claims



1. A memory device having an external address mode of operation and a burst mode of operation, comprising:

a counter control circuit which generates a counter reset signal during an external address mode of operation; and

a counter circuit for generating a counter output during a burst mode of operation, wherein said counter circuit is reset by said counter reset signal.

5,610,875

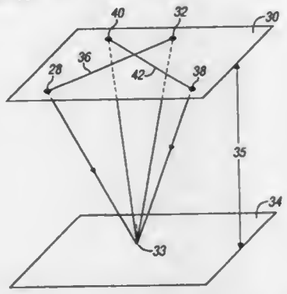
3-D CONVERTED SHEAR WAVE ROTATION WITH LAYER STRIPPING

James E. Gaiser, Littleton, Colo., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 29, 1995, Ser. No. 536,429

Int. Cl.[6] G01V *1/00; 1/36*

U.S. Cl. 367—75 **6 Claims**



5. A method for seismic exploration, comprising:

radiating a compressional wavefield from a first source location;

detecting first and second signal components at a first receiver station spaced-apart from said first source location along a first azimuth, said first and second signal components being representative of fast and slow converted shear-wave energy reflected from a conversion point associated with an acoustic interface beneath a birefringent medium;

radiating a compressional wavefield from a second source location;

detecting third and fourth signal components at a second receiver station spaced-apart from said second source location along a second azimuth substantially perpendicular to said first azimuth, said third and fourth signal components being representative of fast and slow converted shear-wave energy reflected from said conversion point;

programming a computer to create a 2×2 matrix from said first, second, third and fourth signal components, said matrix being characterized by diagonal and off-diagonal terms;

programming said computer to minimize the off-diagonal terms by applying an Alford rotation operator to said matrix to define the natural coordinate frame of the principal axes of birefringence;

programming said computer to measure the time difference between the fast and the slow shear wavefields represented by the diagonal terms of said rotated matrix and applying a corresponding static time shift to one of the source components to isotropize said birefringent medium; and

imaging said acoustic interface.

5,610,876

ACOUSTIC DETERRENT SYSTEM AND METHOD

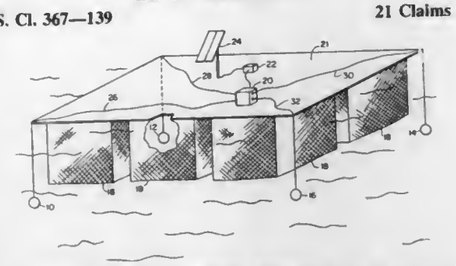
Robert K. Jeffers, Welton, N.H., assignor to Airmar Technology Corporation, Milford, N.H.

PCT No. PCT/US94/02833, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/00016, PCT Pub. Date Jan. 5, 1995

Continuation-in-part of Ser. No. 81,738, Jun. 22, 1993, abandoned. This PCT application Mar. 16, 1994, Ser. No. 564,327

Int. Cl.[6] A01M *29/02*

U.S. Cl. 367—139 **21 Claims**



1. A method of repelling marine mammals from a region of water; characterized in that

the method comprises the steps of:

transmitting a plurality of animal repelling acoustic signals into the region at a sound pressure level low enough to avoid damage to the auditory systems of the marine mammals; and

gradually or incrementally increasing the sound pressure level of successive acoustic signals from a minimum to a maximum level to gradually repel the mammals.

5,610,877

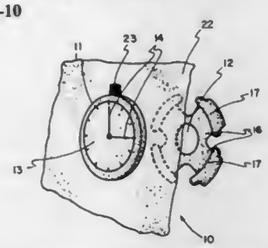
FABRIC ATTACHABLE TIMEPIECE

Kathy S. Adams, 8213 Oak Leaf Ct., Raleigh, N.C. 27615, and Michael J. Knowles, 2861 Sky Dr., Fayetteville, N.C. 28303

Filed Jan. 20, 1995, Ser. No. 375,787

Int. Cl.[6] G04B *37/00*

U.S. Cl. 368—10 **8 Claims**



1. A fabric mountable timepiece which comprises:

a case having a periphery and a timepiece operatively mounted therein, said timepiece having a stem which extends outwardly from the periphery of said case; and

a backing portion formed from a light-weight, flexible material having a memory, said backing portion having at least two outwardly projecting fingers which define a space for receiving the stem of said timepiece; said fingers being provided with case-engaging lips formed on the outer ends thereof to engage said case snugly when a fabric material is disposed between the case and the backing portion.

5,610,878

DESICCATION CAPSULE AND ARTICLE PROVIDED WITH SAID CAPSULE

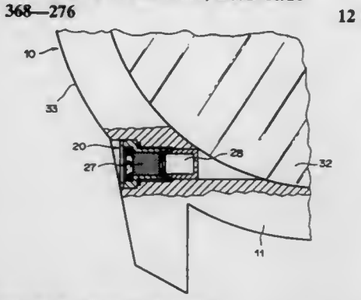
Roland Pretat, Coeuve, and Nadia De Boni, Porrentruy, both of Switzerland, assignors to Pont Saint-Germain SA, Porrentruy, Switzerland

Filed Dec. 6, 1995, Ser. No. 567,906

Claims priority, application European Pat. Off., Dec. 20, 1994, 94810739; May 23, 1995, 95810338

Int. Cl.[6] G04B *37/00;* **B65D** *81/26*

U.S. Cl. 368—276 **12 Claims**



1. A desiccation capsule comprising:

a first compartment, said first compartment being intended to contain a desiccant able to absorb moisture, the said first compartment including a plurality of faces among which is a first face provided with a first opening, the said first compartment being closed on at least one of the said faces by a transparent wall allowing the color of the said dessicant to be seen,

a membrane allowing moisture to flow through but retaining the non-dissolved desiccant, the said membrane obturating the said first opening,

a second compartment linked to the said first compartment by the said first opening, the said second compartment including a second face, said second face being provided with a second opening,

non-permanent fastening means permitting the said capsule to be fastened in a removable way to an article to be protected from moisture.

5,610,879

OPTICAL REPRODUCING DEVICE, OPTICAL REPRODUCING METHOD USING THE SAME, AND OPTICAL RECORD MEDIUM USED IN THE SAME

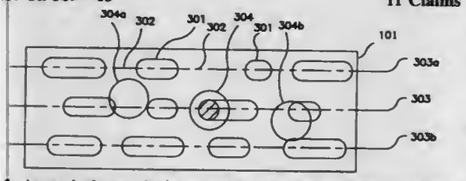
Mitsurou Moriya, Ikoma; Hiromichi Ishibashi, Ibaraki; Takeo Ohta, Nara, and Yasuhiro Sugihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Mar. 7, 1994, Ser. No. 206,752

Claims priority, application Japan, Mar. 5, 1993, 5-044730

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—13 **11 Claims**



1. An optical reproducing method using a record medium comprising a substrate having concave or convex information pits and a thermosensitive material film, formed on the substrate, which is changed from a high reflectance state to a low reflectance state when a temperature thereof exceeds a predetermined temperature T and returns to the high reflectance state when the temperature thereof decreases to the temperature T or less,

wherein a light beam having a predetermined power is irradiated onto the record medium to read information recorded in the record medium, the predetermined power of the light beam being set so that a temperature of the thermosensitive material film on the pits exceeds the temperature T while the pits are irradiated with the light beam and a temperature of the thermosensitive material film on flat portions between the pits is maintained at the temperature T or less while the flat portions between the pits are irradiated with the light beam.

5,610,880

OPTICAL DISC SYSTEM AND OPTICAL DISK THEREFOR

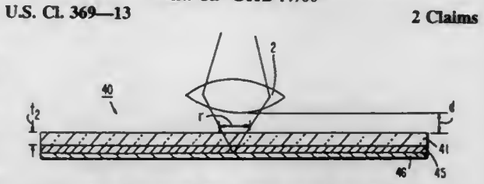
Tetsu Watanabe, and Yoshio Aoki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 499,331, Jul. 6, 1995, which is a continuation-in-part of Ser. No. 383,351, Feb. 3, 1995, Pat. No. 5,533,001, which is a division of Ser. No. 277,357, Jul. 19, 1994, Pat. No. 5,392,263, which is a continuation of Ser. No. 761,874, Sep. 13, 1991, abandoned. This application Jul. 17, 1996, Ser. No. 683,557

Claims priority, application Japan, Jan. 31, 1990, 2-21210

Int. Cl.[6] G11B *17/00*

U.S. Cl. 369—13 **2 Claims**



1. An optical recording and reproducing apparatus using an optical recording medium having a light-transmitting cover layer for transmitting a light beam and a recording layer provided on one surface of the light-transmitting cover layer, said apparatus comprising:

a light source for generating a light beam; and

an objective lens for converging the light beam radiated from said light source on the recording layer through the light-transmitting cover layer,

wherein said apparatus is characterized in that a minimum diameter (2 ω0) of the convergent light beam when the light beam is converged by said objective lens is represented by:

$$2\,\omega 0 = 0.82\,\lambda / NA$$

wherein NA is the numerical aperture of said objective lens and is 0.6 and λ is the wavelength of the light beam generated from said light source and falls within a range of 635 to 650 nm.

5,610,881

METHOD FOR PREVENTING AUDIO DATA ON A SCRATCHED PORTION OF A COMPACT DISC FROM BEING REPRODUCED IN A COMPACT DISC PLAYER

Sang J. Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

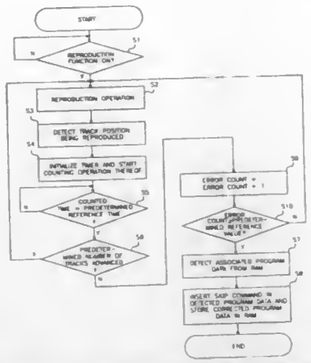
Filed May 17, 1996, Ser. No. 649,442

Claims priority, application Rep. of Korea, Jul. 25, 1995, 95-22149

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **6 Claims**

5. A method for preventing audio data on a scratched portion of a compact disc from being reproduced by a compact disc player, wherein said compact disc has audio and associated program data recorded thereon and said audio data is recorded in tracks and said compact disc player has a random access memory for storing the program data, a timer, and a microcomputer responsive to said program data, said method comprising the steps of:



setting a reference track position of the compact disc corresponding to audio data being reproduced;

determining whether a predetermined number of tracks has been advanced from said reference track position during reproduction of the audio data;

incrementing an error count when during said determining step, the predetermined number of tracks has not been advanced from said reference track position;

comparing said incremented error count with a predetermined reference value;

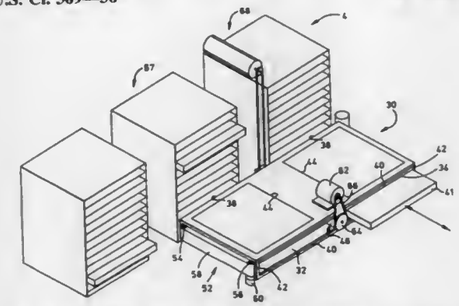
inserting a skip command in program data associated with the reference track position to correct the associated program data when during said error count comparing step, the incremented error count is equal to said predetermined reference value.

5,610,882

EXTENDABLE DATA STORAGE LIBRARY EMPLOYING DOUBLE GRIPPER PICKER MECHANISM

Chi H. Dang, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 148,135, Nov. 3, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 484,689
Int. Cl.[6] G11B *17/22;15/68*
U.S. Cl. 369—36 **30 Claims**



1. An automated data storage library, comprising:

a plurality of storage cell magazines formed from a plurality of storage cells for holding storage media cartridges therein, each magazine having a vertical orientation with storage cells thereof capable of holding the storage media cartridges in a vertical stack;

said storage cell magazines being arranged in three rows of magazines as seen in a horizontal plane including a central magazine row and a pair of lateral magazine rows arranged on first and second sides of said central magazine row;

a plurality of double cartridge pickers wherein each double cartridge picker comprises:

a first cartridge picker and a second cartridge picker, each of the first and second cartridge pickers including a cartridge chamber and a gripper located therein; and

the cartridge chambers of the first and second cartridge pickers being joined at a common axis for accessing along a common plane and being in communication with respect to one another along said common plane so that a cartridge will be passed by gravity between the cartridge chambers of the first and second cartridge pickers when the common plane is vertically oriented;

a plurality of the first cartridge pickers positioned along said central magazine row between each successive pair of storage cell magazines of said central magazine row, each first cartridge picker being capable of accessing the storage cells of each storage cell magazine in a respective successive pair of storage cell magazines and for transporting storage media cartridges therebetween;

a plurality of the second cartridge pickers positioned along said lateral magazine rows between alternating pairs of storage cell magazines of said lateral magazine rows, each second cartridge picker being capable of accessing the storage cells of each storage cell magazine in a respective alternating pair of storage cell magazines and for transporting storage media cartridges therebetween; and

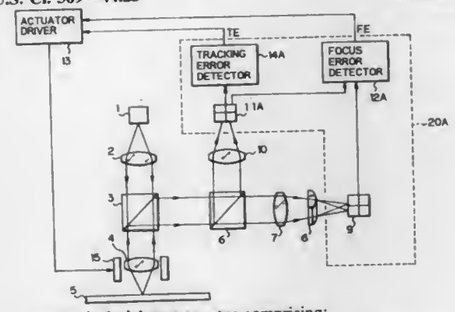
means supporting each double cartridge picker for rotation about its common axis so that its common plane can alternately rotate 90° to translate one of the storage media cartridges between its cartridge chambers and rotate 180° from a first horizontal position to a second horizontal position to invert said storage media cartridge.

5,610,883

OPTICAL PICKUP APPARATUS HAVING MEANS TO ELIMINATE CROSSTALK IN A FOCUS ERROR SIGNAL

Naoharu Yanagawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 121,888, Sep. 17, 1993, abandoned.
This application Nov. 13, 1995, Ser. No. 558,927
Claims priority, application Japan, Sep. 30, 1992, 4-262126
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.23 **4 Claims**



1. An optical pickup apparatus comprising:

a light source for generating a single read beam;

an optical system for separating, from said read beam, a reflected beam that is said read beam reflected at a recording medium;

a beam splitter for separating said reflected beam into a first non-astimatic beam and a second non-astigmatic beam;

a first photosensor for receiving said first non-astigmatic beam;

a cylindrical lens for converting said second non-astigmatic beam to an astigmatic beam;

a second photosensor for receiving said astigmatic beam;

a tracking error detector for producing a difference between outputs of those elements of said first photosensor which are aligned perpendicular to a track direction, as said tracking error signal;

synthesizing means for synthesizing outputs of the individual elements of said first photosensor through a predetermined operation, thereby obtaining a crosstalk component; and

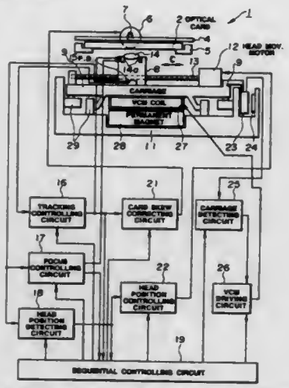
a focus error detector for adding said crosstalk component to a difference between outputs of those elements of said second photosensor which are arranged on respective diagonal lines, yielding said focus error signal.

5,610,884

OPTICAL INFORMATION REPRODUCING APPARATUS FOR DETECTING TRACK CROSSING DIRECTION AND TRACK CROSSING NUMBER FROM REFLECTED LIGHT EXTENDING OVER A PLURALITY OF TRACKS

Masaharu Yanagidate, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 878,980, May 6, 1992, abandoned.
This application Dec. 21, 1994, Ser. No. 361,160
Claims priority, application Japan, May 9, 1991, 3-104381
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.28 **22 Claims**



1. An optical information reproducing apparatus comprising:

an optical head having light irradiating means for irradiating a light beam through an optical system on an optical information recording medium wherein a plurality of tracks are provided parallel with each other so as to produce a beam spot illuminating said plurality of tracks and a light detecting means for detecting signals recorded in at least two different ones of said plurality of tracks by detecting light reflected from said optical information recording medium, said light detecting means producing an output;

light quantity detecting means receiving the output of said light detecting means, for detecting a total quantity of light reflected from a range extending over said plurality of tracks and producing an output for said light detecting means;

detecting means of a crossing track number and a crossing direction receiving the output of said light quantity detecting means, for detecting a number of crossing tracks where said beam spot crosses and a crossing direction where said beam spot crosses based on said output of said light quantity detecting means; and

moving means for moving said beam spot in a track crossing direction crossing at least one track in accordance with the output from said detecting means of a crossing track number and a crossing direction;

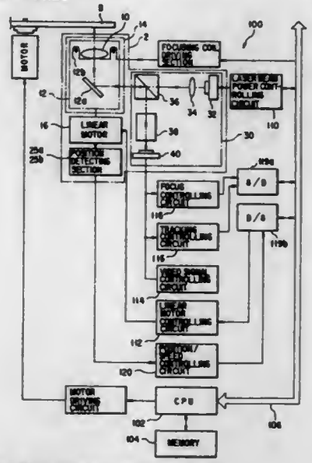
wherein said light detecting means, said light quantity detecting means and said detecting means of a crossing track number and a crossing direction form a detecting arrangement which enables improved detection of signals from a plurality of tracks accurately despite the presence of dust or scratches at any one of said plurality of tracks.

5,610,885

LINEAR DRIVE MECHANISM FOR USE IN AN OPTICAL DISK DEVICE

Naomasa Takahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1995, Ser. No. 527,895
Claims priority, application Japan, Sep. 19, 1994, 6-222308
Int. Cl.[6] G11B *7/085*
U.S. Cl. 369—44.28 **19 Claims**



1. A linear drive mechanism comprising:

an objective lens for focusing light on a recording surface of an optical disk;

a lens actuator for movably holding said objective lens in a direction perpendicular to said recording surface;

a slide base for movably holding said lens actuator to be parallel to said recording surface;

driving coils, placed at a predetermined position of said slide base, for providing propulsive force for moving said slide base;

guide rails for guiding said slide base when said slide base is moved to be parallel to said recording surface;

sliding members, fixed to a predetermined position between said slide base and said guide rails, for reducing friction between said slide base and said guide rails;

linear scales, provided at a predetermined range in connection with an area where said slide base is movable to be along said guide rails, for outputting a signal corresponding to a present position of said slide base;

a coil current supplying circuit for supplying a driving current to said drive coils;

position sensors, provided at a predetermined position of said slide base, for detecting the present position of said slide base in connection with said linear scales;

frictional force estimating circuit for estimating level of frictional force generated between said guide rails and said moving members based on the present position of said slide base detected by said position sensors, a level of the driving current supplied to said drive coils from said coil current supply current, and a speed at which said slide base is moved; and

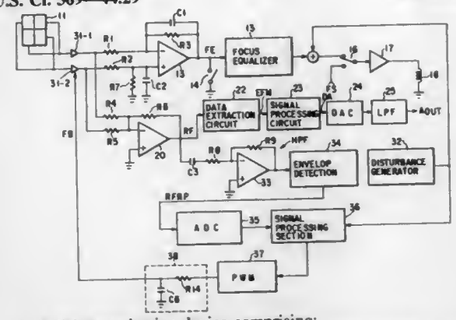
a drive current compensation circuit for compensating for the level of the drive current supplied to said drive coils from said coil current supply circuit so as to cancel the level of the frictional force estimated by said frictional force estimating circuit.

5,610,886

FOCUS BALANCE AUTOMATIC ADJUSTING DEVICE AND AUTOMATIC ADJUSTING METHOD

Yasuhiro Hayashi, Yokohama, and Hiroshi Shimada, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 196,384, Feb. 15, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 579,035
Claims priority, application Japan, Feb. 15, 1993, 5-047119
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.29 **26 Claims**



1. A disk reproduction device comprising:
pickup means for optically reading information recorded on a disk;
servo control means for controlling the focus position in said pickup means;
control signal creation means for creating a first control signal used for controlling a focus position of said pickup means based on the information read from said disk, said control signal creation means having a loop ON/OFF switch for closing and opening a focus servo loop;
disturbance signal generation means for generating a disturbance signal having first and second levels;
adder means for adding the first control signal and the disturbance signal together and outputting the result of addition to said servo control means;
level detection means for detecting, in response to said disturbance signal generated in said disturbance signal generation means, first and second amplitude levels of a data signal read from said disk by said pickup means, said level detection means being supplied with the disturbance signal while said focus servo loop is kept closed by turning on said loop ON/OF switch, said level detection mean detecting the first amplitude level of the data signal when the disturbance signal is set at the first level and detecting a second amplitude level of the data signal when the disturbance signal is set at the second level; and
difference signal creation means for creating a second control signal corresponding to a difference between the first and second amplitude levels and outputting the second control signal to said control signal creation means;
wherein said control signal creation means creates the first control signal in response to the second control signal.

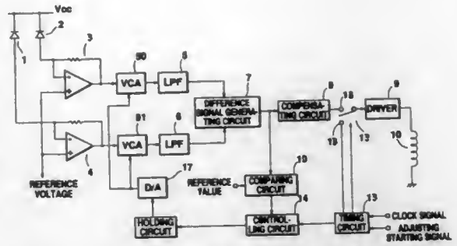
5,610,887

ERROR CORRECTING APPARATUS WITH ERROR CORECTING SIGNAL HOLDING FUNCTION

Masashi Arai, and Akira Tsukihashi, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 21, 1994, Ser. No. 342,529
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.35 **8 Claims**

1. An error correcting apparatus for correcting an error by driving a load in accordance with an error signal generated from a difference between a plurality of input signals, said apparatus comprising:



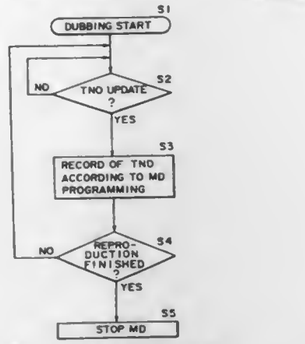
(a) amplifying means for amplifying each of the input signals with a variable amplifying rate;
(b) difference signal generating means connected to said amplifying means for outputting a difference signal from the amplified input signals;
(c) comparing means connected to said difference signal generating means for comparing the difference signal to a reference signal to output a first error signal;
(d) controlling means connected to said comparing means for outputting a controlling signal for varying the amplifying rate of said amplifying means in accordance with the first error signal; and
(e) holding means connected to said controlling means for holding the controlling signal.

5,610,888

OPTICAL DISC DUBBING APPARATUS HAVING AUTOMATIC TRACK NUMBER ASSIGNMENT

Satoshi Hiranuma, Urawa, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Division of Ser. No. 153,903, Nov. 17, 1993. This application Jul. 8, 1994, Ser. No. 271,894
Claims priority, application Japan, Nov. 19, 1992, 4-333571
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—47 **4 Claims**



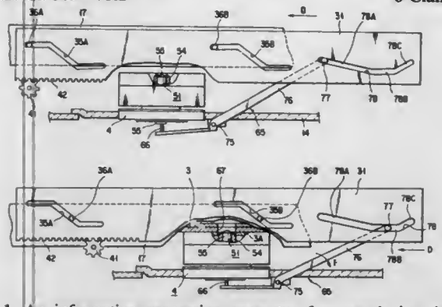
1. An optical disc dubbing apparatus comprising:
an optical disc record apparatus having a signal input terminal;
a recording medium reproducing apparatus having a voice signal output terminal, said voice signal output terminal being connected to said signal input terminal so that said optical disc record apparatus receives the voice signal output from said recording medium reproducing apparatus;
a first microcomputer for controlling said recording medium reproducing apparatus to reproduce music programs in the order of recording positions; and
a second microcomputer provided in said optical disc record apparatus wherein said second microcomputer controls said optical disc record apparatus, designates reproduction numbers of the received musical programs to be recorded for a selected reproduction order of the optical disc in said recording medium reproducing apparatus after recording, assigns record track numbers corresponding to said reproduction numbers, stores said record track numbers in a RAM, and records said record track numbers stored in said RAM into a TOC area of the optical disc.

5,610,889

INFORMATION PROCESSING APPARATUS

Masaru Ishii, Kamakura, and Koichi Nagai, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 215,577, Mar. 22, 1994, Pat. No. 5,500,843. This application Nov. 17, 1995, Ser. No. 560,369
Claims priority, application Japan, May 26, 1993, 5-124446
Int. Cl.[6] G11B *33/02*
U.S. Cl. 369—75.2 **6 Claims**



1. An information processing apparatus for reproducing data from a disk-shaped optical information recording medium having a center portion, the apparatus comprising:
means for supporting the recording medium, the supporting means including a bearing surface on which the recording medium is to be placed;
means having a rotating shaft portion, for rotating the recording medium placed on the bearing surface, the rotating shaft portion including a cylindrical first shaft having an upper end flush with the bearing surface;
means for positioning the recording medium on the bearing surface, the positioning means including a second shaft which has an upper end portion and is arranged in the first shaft to be movable between a first position in which the upper end portion of the second shaft projects from the upper end of the first shaft to engage the center portion of the recording medium and a second position in which the upper end portion of the second shaft is recessed in the first shaft;
first moving means for moving the recording medium between a third position in which the recording medium is placed on the bearing surface and a fourth position in which the recording medium is away from the bearing surface; and
second moving means for moving the positioning means from the second position to the first position in interlock with the movement of the recording medium from the fourth position to the third position.

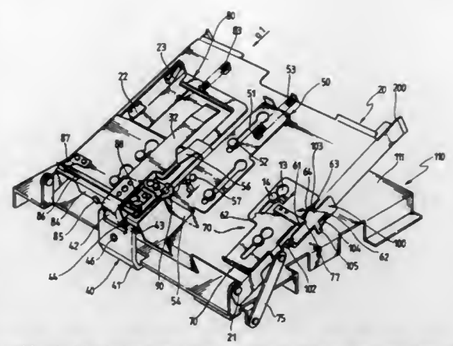
5,610,890

CARTRIDGE INSERTING/EXTRACTING APPARATUS FOR A MAGNETOOPTICAL DISK PLAYER

Jae-Yong Eum, Suwon, and Seung-Min Kim, Seoul, both of Rep. of Korea, assignors to Samsug Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 6, 1994, Ser. No. 354,717
Claims priority, application Rep. of Korea, Dec. 6, 1993, 93-26600; Dec. 6, 1993, 93-26601
Int. Cl.[6] G11B *17/04;33/02*
U.S. Cl. 369—77.2 **4 Claims**

1. A cartridge inserting/extracting apparatus for a disk player, the disk player comprising a cartridge holder which receives a disk cartridge that has a fixing groove formed on one side thereof, said



cartridge holder being rotated to load the disk cartridge onto a deck of the disk player, and extracting means being installed on the cartridge holder and being moved in a first direction as a disk is inserted into the cartridge holder, said extracting means being movable in a second direction to extract a disk from said cartridge holder, said apparatus comprising:
a locking releasing plate slidably installed on the cartridge holder;
a link coupling said lock releasing plate to the deck to cause the locking releasing plate to slide with respect to the cartridge holder in response to rotation of the cartridge holder;
a resilient plate spring disposed on said locking releasing plate, said plate spring having a first sloped surface and a first perpendicular surface formed thereon;
a locking lever rotatably installed on the cartridge holder and having a suspending portion formed thereon which is received in the fixing groove of the disk cartridge when the disk cartridge is inserted into the cartridge holder and the locking lever is in a locked position, and a locking lever protrusion formed on said locking lever, said locking lever protrusion having a second sloped surface and a second perpendicular surface; and
an elastic biasing member for biasing the locking lever in a first rotational direction toward the locked position;
wherein said locking releasing plate is moved in a first linear direction as said cartridge holder is rotated to a loaded position so that said first perpendicular surface slides along said second sloped surface as said plate spring is bent away from said locking lever to thereby allow said locking lever to remain in the locked position and wherein said locking releasing plate is moved in a second linear direction as said cartridge holder is rotated to an unloaded position so that said first sloped surface slides along said second perpendicular surface to thereby rotate said locking lever away from the locked position to allow the extracting means to extract the disk cartridge from the cartridge holder.

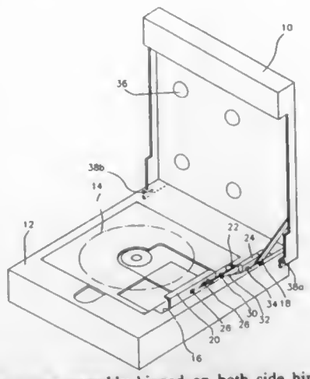
5,610,891

MINIDISC PLAYER HAVING IMPROVED SHUTTER ACTUATING MECHANISM OF DISC CARTRIDGE

Youngsuk Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 20, 1994, Ser. No. 360,059
Claims priority, application Rep. of Korea, Dec. 24, 1993, 93-29438
Int. Cl.[6] G11B *33/02*
U.S. Cl. 369—77.2 **5 Claims**

1. A minidisc player of a top loading type, comprising:
a housing for receiving a minidisc cartridge with a shutter, said housing having a guiding groove formed longitudinally along one side therein, wherein said guiding groove has a front portion directed inwards in said housing and a rear portion directed outwards in said housing and said front and rear portions communicate with each other to form a path having a curved portion;



a housing cover rotatably hinged on both side hinges of said housing and for opening and closing said housing; and

a shutter actuating mechanism placed in said guiding groove and connected to said housing cover, said shutter actuating mechanism to be movable along said guiding groove responsive to the opening and the closing of said cover so as to open and close the shutter of the minidisc cartridge, said shutter actuating mechanism has:

a body having a same depth as that of said guiding groove and connected to said housing cover;

a shutter actuating piece extended along a lengthwise direction of said guiding groove, one end of said shutter actuating piece being connected to said body; and

an elastic member on a front portion of an outer surface of said body facing the housing outwardly, wherein said elastic member is contacted against said guiding groove so as to press said shutter actuating mechanism toward said shutter.

5,610,892

SHUTTER FOR PREVENTING DOUBLE INSERTION AND DISC PLAYER HAVING THE SAME

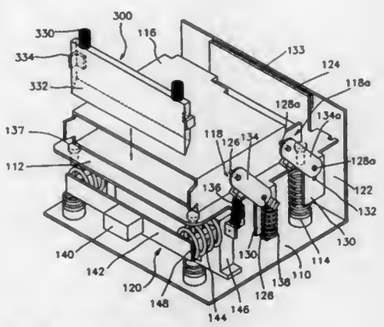
Youngsuk Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,629

Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30153

Int. Cl.[6] G11B *33/02;17/04;17/035*

U.S. Cl. 369—77.2 **4 Claims**



1. A disc player comprising:

a housing;

a base plate provided on a bottom of the housing;

a deck provided with a spindle assembly disposed above the base plate;

a disc tray, which is provided above the deck for carrying a disc cartridge, into which the disc cartridge is inserted from a disc cartridge insertion opening of the housing;

disc cartridge loading members each having an operating piece wherein its first upper portion is connected to a side of the disc tray and its first lower portion is connected to a side of the deck, and its first lower portion has a guide projection and a portion of said deck corresponding to the first lower portion of said operating piece is provided with a vertical elongated groove into which the guide projection is slidably inserted, a first elastic member having an elastic force wherein a first end thereof is connected to a second upper portion of the operating piece and a second end thereof is connected to the deck to generate a first elastic force in an opposite direction of an insertion of the disc cartridge, and a second elastic member wherein a first end thereof is connected to a second lower portion of the operating piece and a second end thereof is connected to the deck to generate a second elastic force in a lower direction, said second elastic member mounting a disc on the top of the deck by the second elastic force when the disc is inserted;

an ejecting member for ejecting the disc cartridge in the disc tray;

elastic members of which each of first ends is located above the disc cartridge insertion opening on an inside wall of the housing to generate an elastic force in a lower direction;

a shutter plate which is provided below the elastic members on the inside wall of the housing, wherein an upper edge of the shutter plate is connected to the other ends of the elastic members in order to open and shut in the vertical direction elastically, and the shutter plate has a shape of which a bottom side is inclined in such a way that the length of an inside wall of the shutter plate is shorter than that of an outside wall of the shutter plate so that the shutter plate can be pushed upward by an end of the disc cartridge when ejecting the disc cartridge; and

guide pieces which are provided at side edges of the shutter plate for guiding the shutter plate in the vertical direction without the shutter plate being separated from the housing.

5,610,893

INFORMATION RECORDING AND REPRODUCING APPARATUS FOR COPYING INFORMATION FROM EXCHANGEABLE MASTER RECORDING MEDIUM TO A PLURALITY OF OTHER EXCHANGEABLE RECORDING MEDIA

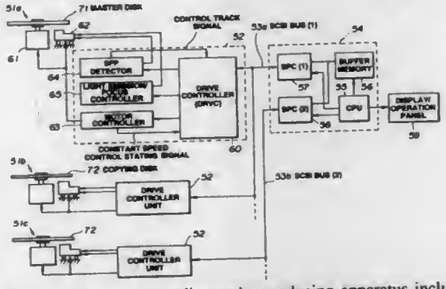
Takumi Soga, and Kunio Yamamiya, both of Sagamihara, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,713

Claims priority, application Japan, Jun. 2, 1994, 6-121565; Jul. 8, 1994, 6-157542; Oct. 25, 1994, 6-260021

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—84 **14 Claims**



1. An information recording and reproducing apparatus including a master medium reproducing means for reading information from a master medium, and a plurality of copying-medium recording means for writing information read from said master medium simultaneously onto a plurality of copying media thereby copying information from said master medium to said plurality of copying media, said apparatus including copying operation controlling means, said copying operation controlling means comprising:

error detection means for detecting occurrence of an error during a copying process; and

medium ejection control means which, at the end of a copying process, ejects a copying medium or media on which information has been copied successfully without an error from said copying-medium recording means while leaving a copying medium or media which encountered an error during the copying process in said copying-medium recording means.

5,610,894

OPTICAL INFORMATION REPRODUCING APPARATUS AND RECORDING MEDIUM

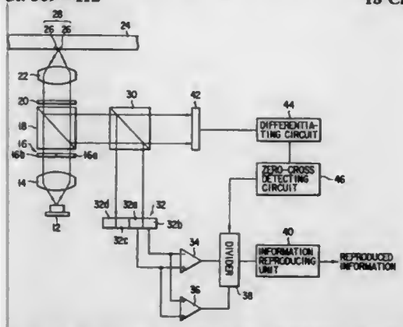
Chiaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 832,741, Feb. 7, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 186,249

Claims priority, application Japan, Feb. 25, 1991, 3-053303; May 15, 1991, 3-110530; Jan. 13, 1992, 4-004190

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **18 Claims**



1. An optical information reproducing apparatus for optically reproducing information recorded as a distance between two optically detectable marks constituting each of a number of mark sets provided along a track of a recording medium, said optical apparatus comprising:

a light source for emitting a reproducing light beam;

radiating means for simultaneously radiating the reproducing light beam onto the two marks constituting each mark set;

phase difference providing means for providing a predetermined phase difference between light beams which, based on said reproducing light beam, are reflected from or pass through the two marks constituting each mark set; and

information reproducing means for receiving from the mark set the reproducing beam that includes diffraction pattern generated by the two marks due to the predetermined phase difference caused by said phase difference providing means, and for reproducing information from the reproducing beam.

5,610,895

OPTICAL HEAD HAVING LIGHT BLOCKING MEANS POSITIONED IN FRONT OF A DETECTOR FOR SUPER-RESOLUTION DETECTION

Haruhiko Izumi, and Kyoko Miyabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

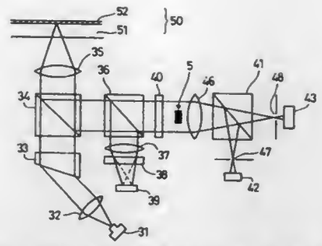
Continuation of Ser. No. 224,047, Apr. 7, 1994. This application Feb. 21, 1996, Ser. No. 604,362

Claims priority, application Japan, Jun. 21, 1993, 5-149489

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **10 Claims**

1. An optical head comprising:



a lens system forming light reflected from an optical disk into parallel

a focal error and tracking error detection system detecting focal error and tracking error based on said parallel rays;

an optical reproduced signal detection system detecting a reproduced signal reproduced from said optical disk based on said parallel rays;

light blocking means for blocking, out of said parallel rays, a portion of said parallel rays including at least a central portion in a light amplitude distribution in a cross-section of said parallel rays supplied to said optical reproduced signal detection system; and

suppression means for suppressing effects of subsidiary maximums relatively introduced in a light amplitude distribution of a light spot which is converged by said optical reproduced signal detection system with respect to a reproduced waveform of said reproduced signal by blocking said central portion of said parallel rays.

5,610,896

OPTICAL RECORDING SYSTEM USING A GAS LASER CAPABLE OF OSCILLATING IN A SINGLE LONGITUDINAL MODE

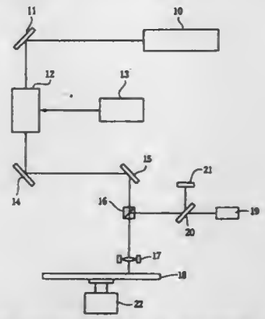
Manabu Mochizuki, Yamanashi-ken, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,293

Claims priority, application Japan, Aug. 11, 1994, 6-210391

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—121 **6 Claims**



1. An optical recording system for recording a signal on a recording medium, the system comprising:

a gas laser having an optical resonator, for emitting a laser beam and said gas laser having a Fresnel number in a range of 4.0–5.5;

an optical modulator for modulating the laser beam in accordance with the signal to be recorded;

an optical system for focusing the modulated laser beam on the recording medium so as to record the signal,

wherein the optical resonator has optical means for selecting a single wavelength so that the gas laser oscillates the laser beam in a signal longitudinal mode, and

wherein the signal to be recorded includes a signal having a frequency lower than two megahertz.

5,610,897

OPTICAL INFORMATION REPRODUCING APPARATUS

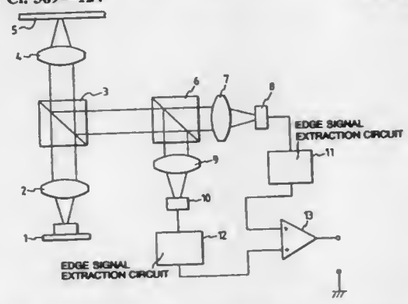
Masakuni Yamamoto, Yamato; Susumu Matsumura, Kawaguchi; Hiroaki Hoshi, Yokohama, and Eiji Yamaguchi, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,323, Aug. 30, 1993, abandoned. This application Dec. 11, 1995, Ser. No. 570,251

Claims priority, application Japan, Aug. 31, 1992, 4-253586; Sep. 10, 1992, 4-266897; Sep. 11, 1992, 4-267928; Sep. 11, 1992, 4-267929; Sep. 25, 1992, 4-279272

Int. Cl.[6] G01B *11/02*

U.S. Cl. 369—124 **28 Claims**



1. An optical information reproducing apparatus for reproducing information recorded, on a recording medium, such that the phase of a light reflected from a region other than a micro region which is an information pit is different from the phase of a light reflected from the micro region, said apparatus comprising:

irradiating means for irradiating the recording medium with a light spot;

dividing means for dividing a light beam via the recording medium into a first light beam and a second light beam;

converging means for converging the first and second light beams;

first detection means for detecting the first light beam converged by said converging means, said first detection means detecting a leading edge of the information pit in a scanning direction of the light spot;

second detection means for detecting the second light beam converged by said converging means, said second detection means detecting a trailing edge of the information pit in the scanning direction of the light spot, each of said first and second detection means comprising photodetectors for detecting the first and second light beams, respectively, and said first and second detection means being positioned on opposite sides of an optical axis in the scanning direction of the light spot; and

information reproducing means for reproducing information by synthesizing output signals from said first and second detection means.

5,610,898

INFORMATION RECORDING/REPRODUCING METHOD FOR RECORDING AND/OR REPRODUCING INFORMATION ON INFORMATION RECORDING CARRIER BY USE OF PROBE ELECTRODE

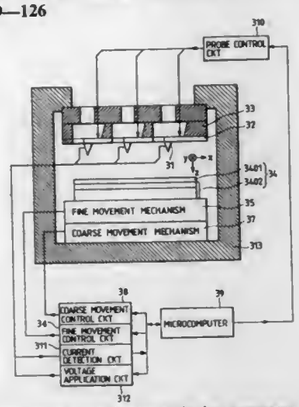
Kiyoshi Takimoto, Isehara; Toshihiko Miyazaki, Hiratsuka; Kunihiro Sakai, Isehara, and Ryo Kuroda, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 381,289, Jan. 31, 1995, Pat. No. 5,461,605, which is a continuation of Ser. No. 913,342, Jul. 15, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,862

Claims priority, application Japan, Jul. 17, 1991, 3-176794; Aug. 2, 1991, 3-194124; Aug. 2, 1991, 3-194126; Aug. 2, 1991, 3-194127; Jan. 22, 1992, 4-9282

Int. Cl.[6] G01B *7/02*; **G11B** *9/02*

U.S. Cl. 369—126 **6 Claims**



1. An information recording/reproducing apparatus for effecting, through a plurality of probe electrodes, at least one of recording of information on and reproducing information from an information recording medium, said apparatus comprising:

a plurality of probe electrodes for at least one of recording and reproducing information;

support means for integrally supporting said plurality of probe electrodes in parallel facing the recording medium;

adjusting means for adjusting a spacing between the recording medium and said support means;

displacing means for independently displacing each of said plurality of probe electrodes so as to independently adjust a spacing between the recording medium and a tip of each probe electrode; and

control means for controlling said displacing means such that all spacings between the recording medium and said respective probe electrode tips are made equivalent, and for controlling said adjusting means such that, upon the control of said displacing means, an average of displacement amounts of said plurality of probe electrodes is substantially zero.

5,610,899

OPTICAL HEAD MOVING SECTION OF OPTICAL DISK DRIVE

Tadashi Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 124,390, Sep. 20, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 523,849

Claims priority, application Japan, Sep. 22, 1992, 4-252421

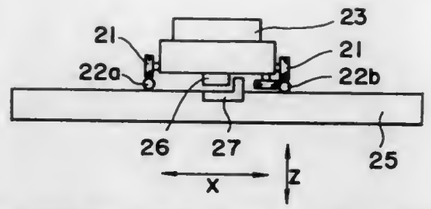
Int. Cl.[6] G11B *17/00*

U.S. Cl. 369—249 **4 Claims**

1. An optical disk drive comprising:

a spindle motor (**18**) which is fixed on a base (**15**, **25**), said spindle motor supporting and rotating a disk medium (**19**);

a moving section (**13**, **23**) which carries thereon an optical head member for reading/writing/erasing data on said disk medium;



five rolling members (**11**, **21**) which are carried by said moving section, each of said five rolling members having a cylindrical outer surface;

a pair of rails (**12***a*, **12***b*; **22***a*, **22***b*) which are fixed on said base and which carry said rolling members for moving said moving section to any target position of said disk medium;

a ferromagnetic member (**17**, **27**) which is fixed on said base; and

a permanent magnet (**16**, **26**) which is fixed to an undersurface of said moving section and which faces said ferromagnetic member within a predetermined space relative to said ferromagnetic member wherein a magnetic attracting force between said permanent magnet and said ferromagnetic member holds said moving section against said pair of rails.

5,610,900

CENTERING DEVICE OF AN OPTICAL DISC PLAYER

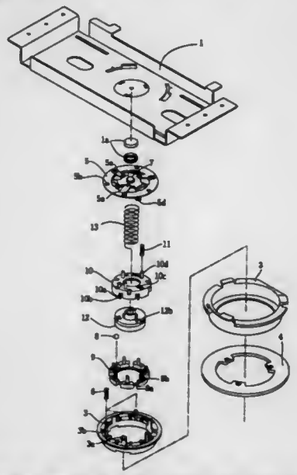
Masakazu Yamashita; Shigeharu Furusawa; Masao Abe; Tomohiro Mizuno, and Hidekatsu Miyasaka, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 19, 1995, Ser. No. 445,134

Claims priority, application Japan, May 19, 1994, 6-129727

Int. Cl.[6] G11B *17/028*

U.S. Cl. 369—271 **7 Claims**



1. A centering device of a disc player having upper clamping device provided on an annular clamper holder, a lower clamping device for clamping a double-sided disc in cooperation with the upper clamping device, a spindle shaft provided in a center of the lower clamping device, and a turntable secured to the spindle shaft for mounting the disc thereon so as to rotate the disc, said device comprising:

an annular holder axially movably provided in the upper clamping device, and having a diameter smaller than a center hole of the disc;

a plurality of centering members radially movably mounted on the annular holder;

resilient means for preventing the centering members from moving outwardly;

a hub axially movably provided inside the annular holder having pushing means for outwardly pushing the centering members;

driving means provided in the upper clamping device for downwardly moving the hub;

supporting means for supporting the centering members when the hub is downwardly moved: and

the supporting means being arranged such that centering members pushed by the pushing means causes the centering members to engage with an inside wall of the center hole of the disc mounted on the turntable at a substantially central position with respect to the thickness of the double-sided disc when the hub is downwardly moved by the driving means for clamping the disc, whereby the disc is centered.

5,610,901

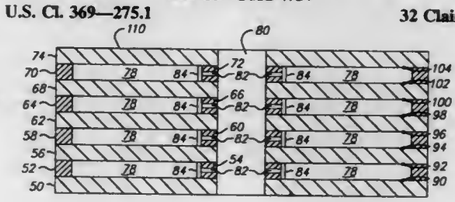
MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 425,015, Apr. 18, 1995, abandoned, which is a division of Ser. No. 378,690, Jan. 26, 1995, Pat. No. 5,513,170, which is a division of Ser. No. 188,613, Jan. 26, 1994, Pat. No. 5,410,530, which is a division of Ser. No. 79,483, Jun. 18, 1993, Pat. No. 5,381,401, which is a division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,262. This application Aug. 1, 1996, Ser. No. 695,178

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.1 **32 Claims**



1. An optical data storage medium containing multiple data storage layers comprising:

a plurality of support members, at least one of which is transmissive of electromagnetic radiation;

a plurality of data layers on the plurality of support members, each data layer having data recorded in a substantially circular pattern, some of the recorded data on at least one of the data layers representing the quantity of data layers contained in the multiple data layer medium; and

a connecting device for connecting the plurality of members together such that the data layers are in a spaced apart relationship.

5,610,902

ADAPTER CARTRIDGE AND CADDY COMBINATION FOR HUBLESS OPTICAL DISK

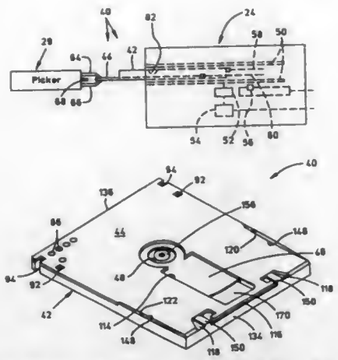
Edwin R. Childers, and Michael Henry, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 450,750, May 25, 1995, abandoned. This application Jul. 12, 1996, Ser. No. 679,165

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—289 **26 Claims**

1. A cartridge for a hubless disk which can be moved by a laterally moving shutter arm in a disk drive for transporting the



disk within the drive and projecting the disk from the drive, the disk having a circular periphery with a central opening, the cartridge comprising:

an adapter cartridge having top and bottom surfaces bounded by leading and trailing edges and a pair of side edges, the bottom surface of the adapter cartridge having a recess for receiving the disk the adapter cartridge being adapted for permanent employment in the disk drive;

a caddy having top and bottom surfaces which are bounded by leading and trailing edges and a pair of side edges, the top surface of the caddy having a recess for receiving the disk the caddy being adapted for employment in and removal from the disk drive;

the caddy and the adapter cartridge being slidable with respect to one another upon engagement when their recesses generally face one another;

the caddy and the adapter cartridge providing an enclosure for the disk when their recesses face each other in an opposite relationship with the recesses providing the disk with freedom of vertical movement between a downward resting position on a bottom of the recess of the caddy and a suspended position between bottoms of the recesses;

the adapter cartridge and the caddy having positioning means for mating the caddy with the adapter cartridge in a closed position with respect to one another with the recesses facing each other in said opposite relationship so that the recesses provide said enclosure for the disk and for guiding the caddy for slidable movement with respect to the adapter cartridge in a first direction toward the trailing edge of the adapter cartridge and for slidable movement with respect to the adapter cartridge in a second direction toward the leading edge of the adapter cartridge until stopped at said closed position;

the leading edges of the adapter cartridge and the caddy being adjacent with respect to one another;

the bottom surface of the adapter cartridge having another recess which is adjacent the leading edge of the adapter cartridge so as to provide the leading edge with a reduced height leading edge portion and a full height leading edge portion; and

the leading edge of the caddy being spaced above the reduced height leading edge portion when the caddy is mated with the adapter cartridge in said closed position,

whereby said shutter arm engages the leading edge of the adapter cartridge along the full height leading edge portion to push both the adapter cartridge and the caddy in said first direction and then disengages the leading edge of the adapter cartridge along the reduced height leading edge portion to engage only the leading edge of the caddy to slide the caddy further in said first direction while the adapter cartridge remains stationary to facilitate removal of the caddy from the adapter cartridge and the disk drive.

5,610,903

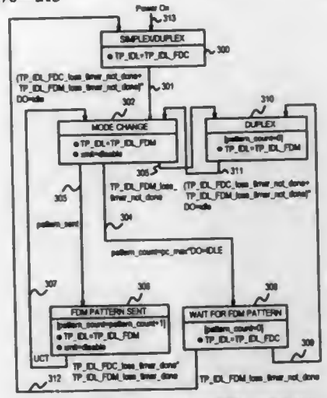
AUTO NEGOTIATION SYSTEM FOR A COMMUNICATIONS NETWORK

Ian S. Crayford, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 161,707, Dec. 3, 1993, Pat. No. 5,432,775. This application Jun. 7, 1995, Ser. No. 485,891

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—213 **21 Claims**



FULL DUPLEX TRANSMIT LINK INTEGRITY STATE DIAGRAM

1. A method for determining whether there are enhanced capabilities between a first and second station within a communications network; the method comprising the steps of:

providing a first specified pattern of link test pulses from a first station, the first specified pattern indicating that the station has enhanced capabilities;

receiving the first specified pattern of link test pulses at a second station; the second station then entering an enhanced mode; and

providing a second specified pattern of link test pulses to the first station from the second station, the second specified pattern having a pattern different from the first specified pattern, the first station then entering the enhanced mode.

5,610,904

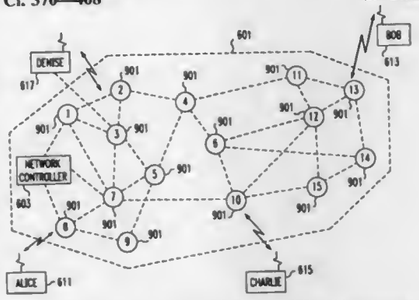
PACKET-BASED TELECOMMUNICATIONS NETWORK

Kai Y. Eng, Middletown; Mark J. Karol, Fair Haven, and Malathi Veeraraghavan, Atlantic Highlands, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 28, 1995, Ser. No. 412,400

Int. Cl.[6] H04L *12/44;12/56*

U.S. Cl. 370—408 **29 Claims**



1. A packet-based telecommunications network comprising:

a plurality of packet switches;

a plurality of simplex communication links that connect said packet switches in a plurality of different elemental networks, each different elemental network providing access to a destination from a subset of said plurality of packet switches, each different elemental network having the topology of a sink tree with a root, and such that at least one of said packet switches is the root for at least two of said different elemental networks; and

a network controller for managing the flow of packets through said packet-based telecommunications network by changing the number of different elemental networks.

5,610,905

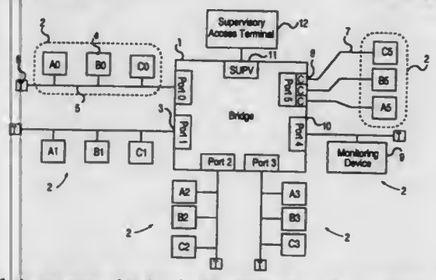
COMMUNICATION APPARATUS AND METHODS

Manohar Murthy, Milpitas; John E. Wakerly, and Arthur I. Laursen, both of Mountain View, all of Calif., assignors to Alantec Corporation, San Jose, Calif.

Division of Ser. No. 93,397, Jul. 19, 1993, Pat. No. 5,515,376. This application Dec. 13, 1994, Ser. No. 358,211

Int. Cl.[6] H04L *12/46;12/26*

U.S. Cl. 370—401 **53 Claims**



1. An apparatus for allowing a plurality of units to communicate with each other, the apparatus comprising:

a plurality of ports for connection to the units and to one or more network segments each of which is accessible to a network monitor; and

first means for transmitting packets of information to one or more of the ports, wherein each packet of information comprises forwarding information to be used in determining the packet destination,

wherein the first means comprises means for transmitting each of one or more packets: (1) to one or more ports determined from the packet destination if the packet destination includes a unit other than the apparatus; and, in addition, (2) to one or more monitoring ports, wherein each monitoring port is one of the plurality of ports and wherein each monitoring port allows connection to a network segment accessible to a network monitor.

5,610,906

SPREAD-SPECTRUM CHANGEABLE BASE STATION

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

Filed Jun. 29, 1994, Ser. No. 268,186

Int. Cl.[6] H04B *7/216*

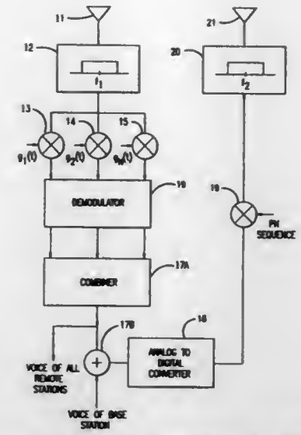
U.S. Cl. 370—261 **7 Claims**

1. A spread-spectrum system having a plurality of spread-spectrum units, with each spread-spectrum unit of said plurality of spread-spectrum units capable of operating as a base station and as a remote station, each spread-spectrum unit of said plurality of spread-spectrum units comprising:

a base subunit including,

means for receiving at a first frequency a plurality of spread-spectrum signals transmitted from the plurality of spread-spectrum units, respectively;

means for despreading the plurality of spread-spectrum signals as a plurality of despread-spread-spectrum signals, respectively;



means for demodulating the plurality of despread-spread-spectrum signals, to generate a plurality of demodulated signals, respectively;

means for combining the plurality of demodulated signals, and a local signal, as a combined signal;

means for converting the combined signal to a base-data signal;

means for spread-spectrum processing the base-data signal;

means for transmitting at a second frequency the spread-spectrum-processed-base-data signal as a base-spread-spectrum signal; and

a remote subunit, including,

means for receiving at the second frequency the base-spread-spectrum signal;

means for despreading the base-spread-spectrum signal as a despread-base-spread-spectrum signal;

means for demodulating the despread-base-spread-spectrum signal as a base-analog signal;

means for converting a remote-analog signal to a remote-data signal;

means for spread-spectrum processing the remote-data signal; and

means for transmitting at the first frequency the spread-spectrum-processed-remote-data signal as one of the plurality of spread-spectrum signals.

5,610,907

ULTRAFAST TIME HOPPING CDMA-RF COMMUNICATIONS: CODE-AS-CARRIER, MULTICHANNEL OPERATION, HIGH DATA RATE OPERATION AND DATA RATE ON DEMAND

Terence W. Barrett, 1453 Beulah Rd., Vienna, Va. 22182

Filed Jul. 29, 1994, Ser. No. 282,290

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—342 **10 Claims**

1. An ultrashort pulse time hopping code-division-multiple-access (CDMA) RF communications system in the time frequency domain, comprising:

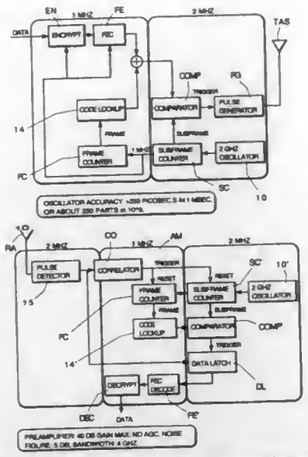
transmitter means, said transmitter means including:

a) means for generating a short duration pulse in the picosecond to nano-second range and means for controlling said means for generating,

b) coding means connected to said means for controlling for varying the time position of each said short duration pulse in frames of pulses in orthogonal superframes of ultrafast time hopping code division multiple access format,

c) precise oscillator-clock means for controlling such timing,

d) encoding modems for transforming information, voice and data signals into pulse position modulation form,



e) antenna means connected to said means for generating for receiving and broadcasting said short duration pulse as a coded broadcast signal,

receiver means, said receiver means including:

a) antenna means for receiving said coded broadcast signal, and

b) homodyne receiver means for receiving and decoding said coded broadcast signal.

5,610,908

DIGITAL SIGNAL TRANSMISSION SYSTEM USING FREQUENCY DIVISION MULTIPLEX

Peter Shelswell, Horley, and Mark Charles D. Maddocks, Redhill, both of United Kingdom, assignors to British Broadcasting Corporation, London, United Kingdom

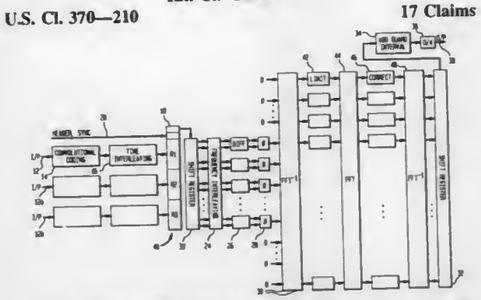
PCT No. PCT/GB93/01884, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/06231, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 6, 1993, Ser. No. 392,875

Claims priority, application United Kingdom, Sep. 7, 1992, 9218874

Int. Cl.[6] H04L *5/06*

U.S. Cl. 370—210 **17 Claims**



1. A method of transmitting a digital data stream on a many-carrier frequency-division-multiplex signal, comprising the steps of:

modulating a plurality of carriers with respective bits of the digital data by a modulation method which carries the information in the phase or amplitude of the individual carriers to provide a plurality of first modulated signals;

reversibly transforming the first modulated signals from the frequency domain to the time domain to provide first time domain signals;

limiting the first time domain signal to limit their amplitude or power to provide limited time domain signals;

inversely transforming the limited time domain signals into a plurality of second modulated signals in the frequency domain;

adjusting the phase and/or amplitude of some of the second modulating signals to provide a plurality of adjusted signals; and

transforming the adjusted signals from the frequency domain to the time domain to provide second time domain signals for transmission.

5,610,909

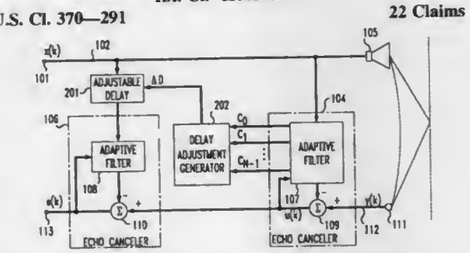
MULTISTAGE ECHO CANCELER INCLUDING TIME VARIATION COMPENSATION

David G. Shaw, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 31, 1995, Ser. No. 455,385

Int. Cl.[6] H04B *3/20*

U.S. Cl. 370—291 **22 Claims**



1. An acoustic echo canceler arrangement comprising:

a receive path;

a transmit path;

first echo canceler means, connected between the receive path and the transmit path, and having a first impulse response synthesis capability for generating a first error signal and for canceling echo signals in the transmit path;

delay means, having an input and an output, the input being connected to the receive path for delaying incoming signals on the receive path; and

at least second echo canceler means, having a second impulse response synthesis capability comparatively shorter than said first impulse response synthesis capability of said first echo canceler means, connected in series with said delay means and to the transmit path, said series connection of said delay means and said at least second echo canceler means being connected in parallel with said first echo canceler means between the receive path and the transmit path, said at least second echo canceler means being supplied with said first error signal and being adaptive to operate simultaneously with but independent of said first echo canceler means for further canceling echo signals in said transmit path, said delay means providing a delay for positioning the second impulse response synthesis capability of said at least second echo canceler means in time relative to said first impulse response synthesis capability of said first echo canceler means.

5,610,910

ACCESS TO TELECOMMUNICATIONS NETWORKS IN MULTI-SERVICE ENVIRONMENT

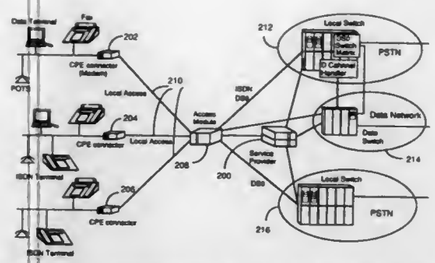
Mihal Focsaneanu, Nepean; Richard P. Skillen, Mississauga, and Frederick C. Livermore, Sittsville, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1995, Ser. No. 516,269

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—351 **68 Claims**

1. A method of interfacing one or more CPEs and communications networks which encompass one or more PSTN, data networks, wireless networks, satellite networks, CATV, ATM net-



works and other communications networks, through local access to form a universal services network comprising steps of:

extracting information content from traffic to determine requested services of said traffic at the local access between the one or more CPEs and the communications networks;

prior to interfacing, determining one or more appropriate networks among the communications networks or one or more appropriate CPEs, both of which support the requested services, according to the requested services; and

routing the traffic directly either to the one or more appropriate networks among said one or more PSTN, data networks, wireless networks, satellite networks, CATV, ATM networks and other communications networks or to the one or more appropriate CPEs to complete interfacing between said appropriate CPEs and appropriate service providers and/or network resources.

5,610,911

METHOD AND DEVICE FOR CHANNEL SELECTION

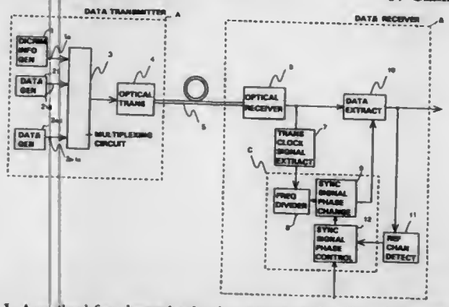
Hajime Ishikawa, and Tetsuyuki Suzaki, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 28, 1994, Ser. No. 314,047

Claims priority, application Japan, Sep. 28, 1993, 5-240980

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—503 **17 Claims**



1. A method for channel selection among a plurality of channels, wherein at least one of said plurality of channels is a reference channel and at least one of said plurality of channels is a data channel, said reference channel including discrimination information which distinguishes said reference channel from said data channel, said method comprising the steps of:

(a) generating a transmission signal by time division multiplexing bit by bit said plurality of channels and transmitting said transmission signal;

(b) detecting from said transmitted transmission signal, a temporal location of said reference channel based on said discrimination information; and selecting an arbitrary channel based on a relative time difference between said temporal location of said reference channel and a temporal location of said arbitrary channel;

generating a synchronization signal according to a transmission speed of said data channel, wherein said synchronization signal includes a phase with respect to said reference channel;

changing said phase of said synchronization signal to a reference phase synchronized with said reference channel; and

shifting said reference phase a number of time slots corresponding to said relative time difference to change said reference phase of said synchronization signal to a phase synchronized with said arbitrary channel.

5,610,912

SWITCHING IN A TELECOMMUNICATIONS SERVICE NODE

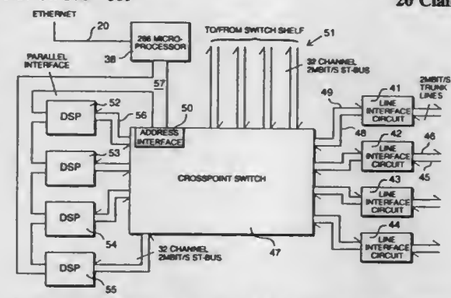
John G. Johnston, Ipswich, England, assignor to British Telecommunications public limited company, London, England

Filed Sep. 22, 1994, Ser. No. 310,023

Claims priority, application European Pat. Off., Aug. 1, 1994, 94305681

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—359 **20 Claims**



1. A service node switching apparatus for routing channels within a service node, comprising a switching matrix and a plurality of line interface means, wherein each of said line interface means includes:

a cross-point switch, a first type of processing means and a second type of processing means, wherein;

said first type of processing means is connected to said cross-point switch by a first type of interface means,

said second type of processing means is connected to said cross-point switch by a second type of interface means, and

said cross-point switch includes a first set of ports for coupling to a plurality Of communications lines, a second set of ports coupled to said first type of processing means via said first type of interface means and further includes means for facilitating a communication between said first type of interface means and said second type of interface means.

5,610,913

SWITCHING EQUIPMENT FOR PERFORMING A SWITCHING OPERATION FOR A HIGH-SPEED PACKET IN BROADBAND INTEGRATED SERVICES DIGITAL NETWORK

Hiroshi Tomonaga; Naoki Matsuoka; Miwako Watanabe; Satoshi Kuroyanagi; Yutaka Ezaki; Akira Hakata; Ryuichi Takechi, and Masaaki Kawai, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1995, Ser. No. 401,032

Claims priority, application Japan, Mar. 17, 1994, 6-047437; Dec. 15, 1994, 6-311413

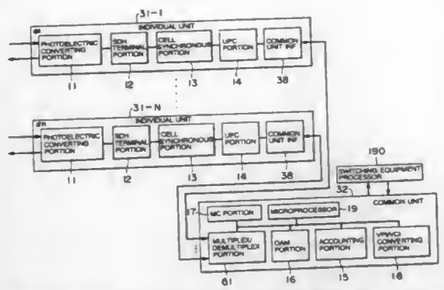
Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—219 **38 Claims**

1. Switching equipment for performing a switching process of a fixed length cell consisting of data and a cell header, said switching equipment comprising:

a line interface for accommodating a plurality of lines and, at the same time, processing cells from each line;

said line interface including:



individual units, respectively connected to the plurality of lines accommodated therein, for individually processing the cells; and

a common unit, connected to said individual units, for batch-processing the cells processed by said individual units,

said common unit including:

a cell multiplex portion for multiplexing a cell sent from each of said individual units;

a monitoring cell portion for measuring at least one of a cell error characteristic, a cell loss characteristic and a cell delay characteristic by using a monitoring cell;

an alarm transfer cell management portion for managing an alarm transfer cell; and

a header converting portion for converting a virtual path identifier and a virtual channel identifier which are written to a cell header into an output destination virtual path identifier and an output destination virtual channel identifier.

5,610,914

SHARED BUFFER MEMORY SWITCH FOR AN ATM SWITCHING SYSTEM AND ITS BROADCASTING CONTROL METHOD

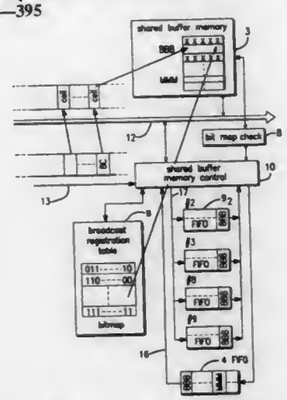
Kenji Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,706

Claims priority, application Japan, May 24, 1994, 6-132468

Int. Cl.[6] H04L *12/56;12/50*

U.S. Cl. 370—395 **5 Claims**



1. A shared buffer memory switch used for an ATM (Asynchronous Transfer Mode) switching system including a cell multiplexer for multiplexing and outputting incoming cells from a plurality of input ports onto a time division multiplex data bus, a shared buffer memory for storing the cells on said time division multiplex data bus, and a cell demultiplexer for demultiplexing and distributing the cells having been output onto said time division multiplex data bus from said shared buffer memory to a plurality of output ports, said shared buffer memory switch comprising:

a first address pointer queue of a first-in-first-out memory for storing addresses of idle area in said shared buffer memory;

a plurality of second address pointer queues of a first-in-first-out memory, one of said plurality of second address pointer queues being provided for each of said output ports for storing an address of a storage area in said shared buffer memory in which contents of the cell to be output to the corresponding output port are stored;

a broadcast registration table which stores broadcasting destination information corresponding to a routing information of each of broadcasting cells; and

a shared buffer memory control for reading a broadcasting destination information from said broadcast registration table corresponding to the routing information of the broadcasting cell when a cell being processed is a broadcasting cell,

for reading an address of said shared buffer memory from said first address pointer queue, for writing said address into all said second address pointer queues corresponding to output ports which are indicated by said broadcasting destination information, for writing contents of said broadcasting cell with said broadcasting destination information into an area of said shared buffer memory indicated by said address in a writing cycle,

for reading an address from one of said second address pointer queues corresponding to a routing information being processed, and for reading contents of said broadcasting cell with said broadcasting destination information from said shared buffer memory in said address, for copying and outputting said broadcasting cell to said time division multiplex data bus in a reading cycle,

for resetting information of destination, corresponding to an output port currently being processed, from said broadcasting destination information, and for writing said broadcasting cell again into the same address in said shared buffer memory with said broadcasting destination information when at least one destination is contained in said broadcasting destination information.

5,610,915

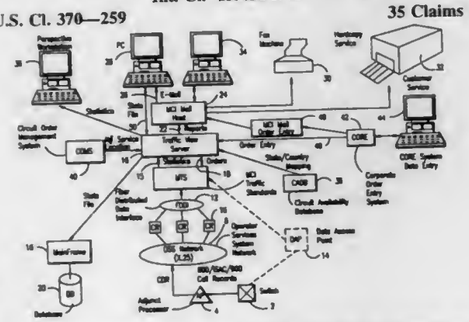
SYSTEM AND METHOD THEREFOR OF VIEWING CALL TRAFFIC OF A TELECOMMUNICATIONS NETWORK

Isaac Elliott, Colorado Springs, Colo.; Jim Finucane, Bernardsville, N.J.; Louis Gottlieb, Colorado Springs, Colo.; Daniel L. O'Reilly, Colorado Springs, Colo., and Gary E. Johnson, Colorado Springs, Colo., assignors to MCI Communications Corporation, Washington, D.C.

Continuation of Ser. No. 351,211, Nov. 30, 1994, abandoned. This application Mar. 17, 1995, Ser. No. 405,988

Int. Cl.[6] H04M *3/42*

U.S. Cl. 370—259 **35 Claims**



1. In a telecommunications network, a system for reporting call detail statistics of special service calls, comprising:

at least one switching means for routing said calls;

processor means for determining the call details of said calls routed through said switching means;

database means for periodically collecting and storing as records the call details from said processor means for calls of at least one particular subscriber;

processing server means communicatively connected to said database means for receiving requests from said subscriber;

wherein in response to a request from said subscriber, said processing server means provides at predetermined intervals to said subscriber at least one report detailing statistics representative of said records of calls of said subscriber stored in said database means.

5,610,916

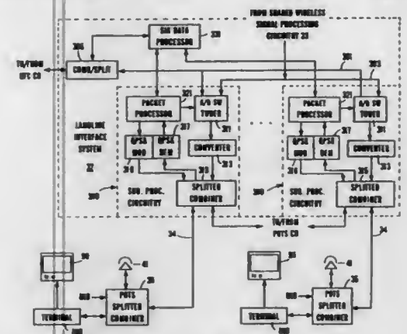
SHARED RECEIVING SYSTEMS UTILIZING TELEPHONE CABLES AS VIDEO DROPS

Bruce Kostreski, Wheaton, Md., and Kamran Sistanizadeh, Arlington, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 405,558, Mar. 16, 1995. This application May 16, 1995, Ser. No. 441,977

Int. Cl.[6] H04N *7/173*

U.S. Cl. 370—487 **36 Claims**



1. A communication system comprising:

a channel selector for selectively receiving one channel from a plurality of available channels, wherein a digital transport stream containing digitized information relating to a plurality of programs is modulated into each of the available channels, said channel selector outputting a modulated signal containing the digital transport stream for the selectively received channel;

a combiner for frequency division multiplexing the modulated signal together with telephone signals for transport over a telephone loop;

a splitter located at a living unit for demultiplexing signals received over the telephone loop to separate out the modulated signal and to supply the telephone signals to a telephone device in the living unit;

a terminal receiving the modulated signal from the splitter, said terminal comprising:

(a) a demodulator for demodulating the modulated signal to acquire the digital transport stream therefrom, and

(b) a digital signal processor for processing a portion of the acquired digital transport stream associated with a selected program to present information relating to the selected program; and

a processor responsive to signals from an upstream control channel on the telephone loop for controlling the selective reception by the channel selector.

5,610,917

LAYER 2 PROTOCOL FOR THE RANDOM ACCESS CHANNEL AND THE ACCESS RESPONSE CHANNEL

John Diachina, Research Triangle Park, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 47,452, Apr. 19, 1993. This application Jun. 7, 1995, Ser. No. 477,574

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—469 **22 Claims**



1. A method for transmitting messages between mobile stations and a cellular switching system using multiple layer 2 frames, each carried within a channel burst, and providing a message delimiting capability within any specific layer 2 frame, comprising the steps of:

dividing said specific frame into a plurality of fields;

identifying a type of frame in a frame type field;

placing information from two distinct messages in at least one data field;

identifying the end of a first message and the beginning of a second message in an end of message field when said first message does not occupy the entire data field; and

transmitting said frame.

5,610,918

METHOD AND APPARATUS FOR EXCHANGING VARIABLE LENGTH FRAMES BY FIXED LENGTH CELL HANDLING EXCHANGE

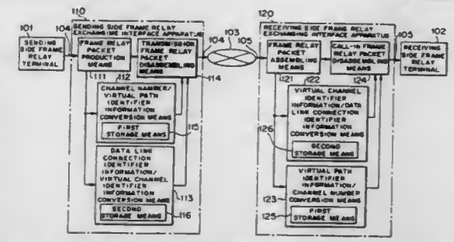
Toshiyuki Kamo, and Yoshihiro Watanabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 31, 1994, Ser. No. 189,961

Claims priority, application Japan, Jun. 8, 1993, 5-137828

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—395 **38 Claims**



1. A variable length frame exchanging method by a fixed length cell handling exchange which handles fixed length cells each including a first logic channel information, a logic path information and a data section and to which a terminal adapted for a data communication using a variable length frame including a second logic channel information is connected by a transmission line having at least one channel, the method comprising the steps of:

disassembling the variable length frame transmitted from said terminal into fixed length cells;

translating the second logic channel information in the variable length frame into the first logic channel information and the logic path information for the fixed length cells; and

providing the first logic channel information and the logic path information obtained in said translating step for the fixed length cells obtained in said disassembling step and inputting the fixed length cells with the first logic channel information and the logic path information to said exchange.

5,610,919

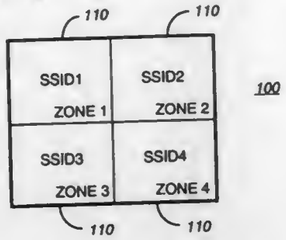
NETWORK IDENTIFICATION INFORMATION PLACEMENT ARCHITECTURE FOR MESSAGING SYSTEM HAVING ROAMING CAPABILITY

David F. Willard, Plantation; Eric T. Eaton, Lake Worth, and Barbara D. Laflin, Ocean Ridge, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 378,136, Jan. 24, 1995. This application Mar. 30, 1995, Ser. No. 413,642

Int. Cl.[6] H04Q *7/08*

U.S. Cl. 370—336 **16 Claims**



1. A method for communicating messages to a plurality of addressable receivers, the method comprising steps of:

dividing a network into a plurality of service areas, each service area comprising at least one zone;

assigning to each network a network roaming identifier which comprises at least a network identifier and a service area identifier such that the network identifier is common throughout a network, the service area identifier for identifying a service area within a network;

storing in at least one receiver subscribed for receiving messages in at least one particular network a network roaming identifier associated with the at least one particular network;

generating a signal for transmission in each zone, the signal including at least one network roaming identifier corresponding to a network that includes a service area corresponding to that zone, the signal comprising a plurality of consecutive time cycles, each time cycle comprising a plurality of consecutive time slots, the network roaming identifier being located in an ordered time slot based on an algebraic relationship between a transmission frequency of the signal, an order of a time cycle, and a binary representation of at least a portion of the network roaming identifier; and

transmitting the signal in each zone.

5,610,920

COUPLING OF VOICE AND COMPUTER RESOURCES OVER NETWORKS

Michael J. Doll, Rosemount; Donald J. Kleven, Bloomington, and Joseph Pobiel, Eden Prairie, all of Minn., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Mar. 20, 1996, Ser. No. 619,899

Int. Cl.[6] H04J *3/26*

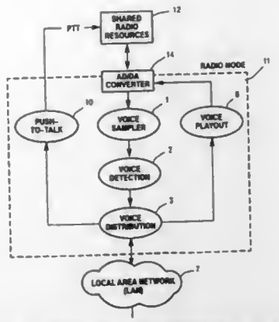
U.S. Cl. 370—389 **1 Claim**

1. A system for exchanging voice messages over a network comprising,

(a) at least one first analog voice signal transmitting and receiving means for transmitting voice signals and for receiving voice signals to be re-transmitted,

(b) at least one second analog voice signal transmitting and receiving means for transmitting voice signals and for receiving voice signals,

(c) network means coupled for transmitting packets originating at said first analog voice signal transmitting and receiving means to selected ones of said second analog voice signal transmitting means and for transmitting packets originating at said second analog voice signal transmitting and receiving means to selected ones of said first analog voice transmitting



and receiving means for re-transmission to others of said second analog voice signal transmitting and receiving means,

(d) first communication node means coupled to said network means and to said at least one first analog voice signal transmitting and receiving means comprising,

(1) first sampling means coupled to said first analog voice signal transmitting and receiving means for sampling said analog voice signals transmitted from each of said first analog voice signal transmitting means on a periodic basis,

(2) first analog-to-digital converter means coupled to said first node means for converting said sampled analog voice signals to digital signals and comprising,

(3) second sampling means coupled to said first analog-to-digital converter means for sampling said digital signals on a periodic basis and for packetizing said sampled digital signals,

(4) first verification and assignment means coupled to said second sampling means for verifying that said packetized sampled digital signals from said second sampling means meet predefined criteria and for assigning sequence tags and headers to said packets,

(5) first distribution means coupled to said verification and assigning means and to said network means for sending said packets to said network means which meet said predefined criteria and for receiving packets from said network means,

(6) first digital-to-analog converter means coupled to said network means and to said first analog voice transmitting and receiving means for receiving and converting said packets sent from said network means to analog voice signals for re-transmission,

(e) second node means coupled to said network means and individually to each of said second at least one analog voice signal transmitting and receiving means each of which comprises:

(1) second analog-to-digital converter means coupled to said associated second analog voice signal transmitting and receiving means for converting analog voice signals to digital signals,

(2) third sampling means coupled to said second analog-to-digital converter means for sampling said digital signals on a periodic basis,

(3) second verification and assigning means coupled to said third sampling means for verifying that said packetized digital signals from said third sampling means meet predefined criteria and for assigning sequence tags and headers to said packets,

(4) second distribution means coupled to said verification and assigning means and to said network for transmitting said packets to said network means which meet said predefined criteria and for receiving packets from said network means,

(5) second digital-to-analog conversion means coupled to said network means and said second analog voice signal transmitting and receiving means, distribution means for receiving and converting said packets sent from said network means to said second analog voice signal transmitting and receiving means to analog voice signals,

(f) a plurality of voice communication means coupled to the output of said second digital-to-analog convertor means which comprises voice generating means for generating voice outputs.

5,610,921

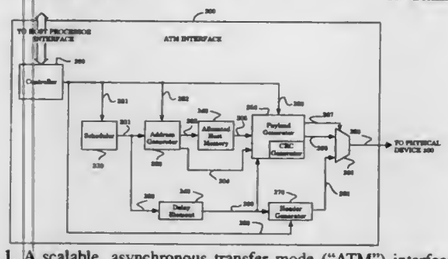
SCALABLE ARCHITECTURE FOR ASYNCHRONOUS TRANSFER MODE SEGMENTATION AND REASSEMBLY

Soeren S. Christensen, Santa Clara, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Aug. 31, 1995, Ser. No. 522,432

Int. Cl.[6] H04L *12/28;12/56*

U.S. Cl. 370—395 **19 Claims**



1. A scalable, asynchronous transfer mode ("ATM") interface, comprising:

an addressing element including

a scheduler configured to initiate generation of an ATM cell, and

an address generator coupled to said scheduler, said address generator is configured to receive at least one channel number from said scheduler, and to translate said at least one channel number into at least one memory address;

a memory element accessible by said addressing element, said memory element is configured to contain at least one datagram corresponding to said at least one memory address;

a cell generating element coupled to said memory element, said cell generating element is configured to receive said at least one datagram and to produce said ATM cell including a header and a payload including said at least one datagram; and

a controlling element coupled to said scheduler and address generator of said addressing element and said cell generating element, said controlling element is configured to control the operations of said addressing element and said cell generating element.

5,610,922

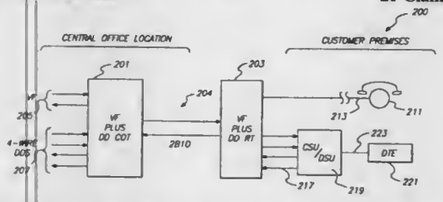
VOICE PLUS 4-WIRE DDS MULTIPLEXER

Nicholas A. Balatoni, Santa Clara, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 20, 1995, Ser. No. 408,610

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—468 **21 Claims**



11. Apparatus for transferring signals from a voice channel and a digital data service channel from a telephone company location to a customer premises, said apparatus comprising:

an analog telephone signal source and a 4-wire DDS signal source at a telephone company location; and

a central office circuit converting said analog telephone signal into a first binary signal, converting said 4-wire DDS signal into a second binary signal, combining said first binary signal and said second binary signal to a higher rate binary signal, converting said higher rate binary signal into a digital signal format, and transferring said digital signal to a customer premises over a single twisted pair telephone line.

5,610,923

METHOD AND DEVICE FOR FINDING SPURIOUS MAINTENANCE MESSAGES

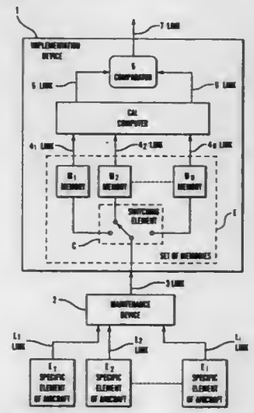
Christian Callay, Levignac, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jan. 25, 1995, Ser. No. 377,609

Claims priority, application France, Feb. 1, 1994, 94 01062

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.1 **5 Claims**



1. A method for determining whether a maintenance message generated, during an operating cycle of a system, by a maintenance device monitoring said system, is representative of a real fault in said system or whether this maintenance message is spurious, wherein, at the end of said operating cycle, the method comprising the steps of:

(a) determining a long-term occurrence rate of said maintenance message, on the basis of the results of a number N of preceding cycles, the occurrence rate corresponding to the average probability of occurrence, that is, to say of generation, of said maintenance message in the course of a cycle, said long-term occurrence rate being equal to the ratio between the number of occurrences of said maintenance message during the N cycles considered and the number of N cycles;

(b) determining a short-term occurrence rate of said maintenance message, at the most on the basis of the results of the last N cycles, and wherein said short-term occurrence rate Tc is calculated on the basis of the relation:

$$Tc = \sum_{n=1}^{n=k} Pn$$

in which k represents the number of occurrences of the maintenance message during the last N cycles and Pn is defined on the basis of df(n) which represents, for an occurrence n, the number of cycles since the preceding occurrence n−1;

(c) comparing said short-term occurrence rate with said long-term occurrence rate; and

(d) deducing therefrom:

(i) if the short-term occurrence rate is higher than the long-term occurrence rate, that said maintenance message is representative of a real fault in the system; and

(ii) otherwise, that said maintenance message is spurious.

5,610,924

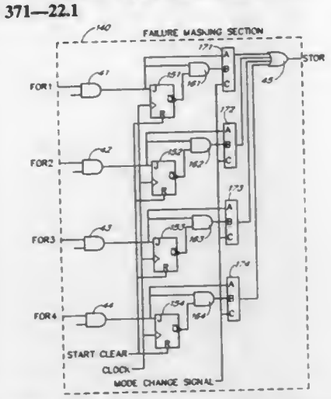
Patent Not Issued For This Number

5,610,925

FAILURE ANALYZER FOR SEMICONDUCTOR TESTER

Koji Takahashi, Tokyo, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 410,818
Int. Cl.[6] G01R *31/28*; G06F *11/00*
U.S. Cl. 371—22.1 5 Claims



1. A failure analyzer for a semiconductor tester for simultaneously measuring a plurality of semiconductor devices, comprising:

a plurality of comparators connected to corresponding semiconductor devices to be tested (DUT) to receive output signals from said semiconductor devices, each of said comparators generating a fail signal when the output signal from said DUT disagrees with an expected signal;

a fail memory connected to outputs of said plurality of comparators to store fail information of said DUT;

a plurality of fail receiving circuits for receiving said fail signals from said comparators, each of said fail receiving circuits counting the number of said fail signal from corresponding one of said comparators and generating a counted signal when the number of said fail signal reaches a predetermined value;

a plurality of inhibit circuits connected to said fail receiving circuits to inhibit said fail signals received after said counted signal from affecting said fail memory; and

an OR-gate for combining output signals from said plurality of inhibit circuits to generate an overall fail signal; and

a fail memory controller connected to said fail memory and said OR-gate to enable said fail memory when receiving said overall fail signal from said OR-gate.

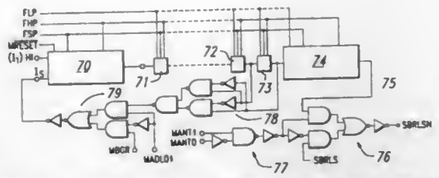
5,610,926

METHOD & CIRCUIT FOR TESTING IC LOGIC CIRCUITS

Arthur Marris, Gunnersbury Park, Great Britain, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 201,608, Feb. 25, 1994, abandoned.
This application Sep. 26, 1995, Ser. No. 534,086
Claims priority, application United Kingdom, Feb. 25, 1993, 9303758
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 6 Claims

1. A method of testing an IC logic chip having storage elements configurable as part of a scan path, without applying an external test data signal, comprising the steps of:



(a) providing a feedback from elements in the scan path to a previous element in the scan path to internally produce a pseudo random binary testing sequence for an internal test data signal input of the scan path;

(b) applying a scan clock to reconfigure the elements into the scan path; and

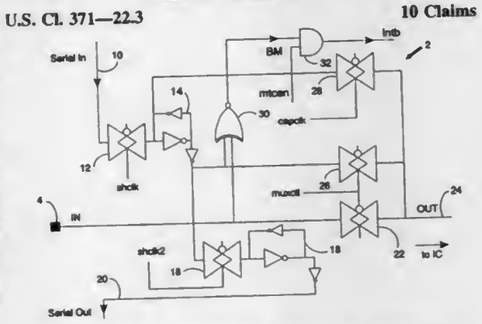
(c) monitoring an output of the scan path to assess the response of the IC logic chip to the internal test data signal.

5,610,927

INTEGRATED CIRCUIT CONTROL

Simon A. Segars, Cambridge, United Kingdom, assignor to Advanced Risc Machines Limited, Cambridge, United Kingdom

Continuation of Ser. No. 303,538, Sep. 9, 1994, abandoned.
This application Jun. 20, 1996, Ser. No. 667,330
Claims priority, application United Kingdom, Apr. 12, 1994, 9407192
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 10 Claims



1. Apparatus for processing data, wherein said apparatus has a hardware test mode and a system mode of non-hardware testing operation, said apparatus comprising:

(i) an integrated circuit;

(ii) a plurality of serially connected test cells, each test cell being coupled to a respective point within said integrated circuit and being operable in said hardware test mode to exchange a signal value with said point, and at least one of said test cells being operable to store a predetermined constant signal value at least partially defining an exception condition during said system mode;

(iii) a plurality of transmission devices for serially transferring signal values through said plurality of test cells; and

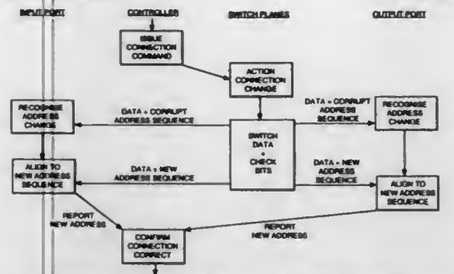
(iv) a first circuit for logically combining said predetermined signal value stored within said at least one of said test cells with a signal value generated by said integrated circuit at a point coupled to said at least one of said test cells to detect said exception condition and to generate an exception signal for triggering exception processing operation of said integrated circuit while remaining in said system mode.

5,610,928

DATA VERIFICATION METHOD

Thomas S. Maddern, and James K. Saunders, both of Dorset, United Kingdom, assignors to GPT Limited, United Kingdom

Continuation of Ser. No. 242,771, May 16, 1994, abandoned.
This application Jul. 1, 1996, Ser. No. 674,331
Claims priority, application United Kingdom, May 28, 1993, 9311106
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.1 4 Claims



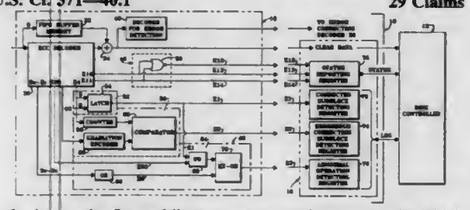
1. A method of verifying data carried in switched bytes by a telecommunications switch fabric, comprising the steps of: grouping the bytes carried by a telecommunications switch fabric into data frames, inserting check data into each data frame in respect of data from a frame transmitted earlier than the current frame and subsequently verifying the data of the current frame using the check data for the current frame when that check data is received with a subsequent frame.

5,610,929

MULTIBYTE ERROR CORRECTING SYSTEM

Kazuhisa Yamamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Dec. 15, 1994, Ser. No. 356,159
Claims priority, application Japan, Mar. 11, 1994, 040696; Jul. 29, 1994, 6-177367
Int. Cl.[6] G11C *29/00*; H03M *13/00*
U.S. Cl. 371—40.1 29 Claims



1. An on-the-fly multibyte error correcting system in which check bytes and syndromes are formed by a generator polynomial such that symbols of a codeword are constructed by elements of a Galois field GF (2^m), which is defined by an arbitrary natural number (m), and that roots α^a, α^{a+1}, . . . , α^{a+2n-1} (α denotes a primitive element of said Galois field; (a) is an arbitrary natural number and satisfies $a+2n-1 \leqq 2^m-1$; and (n) is a constant indicative of the maximum number of correctable error bytes) are possessed as solutions, and which corrects up to (n) byte errors in said codeword by processing (2n) syndrome bytes, comprising:

an error correction code decoder for deciding coefficients β_0 to β_{t-1} (where, $t \leqq n$, t denotes a variable indicative of the number of error bytes generated) of an error location polynomial from said syndrome bytes each time said codeword is inputted, thereafter for deciding an error byte location and an error byte correction value synchronously with a data transfer, and for correcting the errors while continuously transferring a byte stream of said codeword;

a status reporting section for reading, by a control processor, status information indicative of any one of a state having no error, a state having correctable errors, and a state having uncorrectable errors at the time of a reading operation decided by said error correction code decoder, thereby enabling said status information to be reported to an upper controller just after user data of one record was read from a memory medium; and

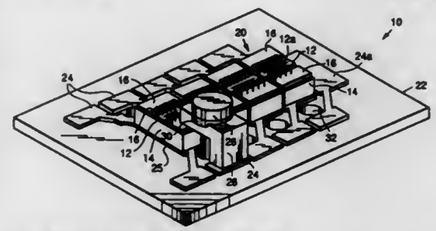
a correcting state detecting section for detecting a corrected code, an error correction code, or an abnormal correcting operation on a codeword unit basis from the operating state of said error correction code decoder.

5,610,930

VOLTAGE ADDING DIODE LASER ARRAY

Steven H. Macomber, Newtown, and Patricia A. Lee, Brookfield, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 2, 1995, Ser. No. 397,589
Int. Cl.[6] H01S *3/025*
U.S. Cl. 372—36 20 Claims



1. An array of diode lasers, comprising:

a substrate having a plurality of electrically conductive surface areas; and

a plurality of diode laser subassemblies individual ones of which are conductively coupled to one of said plurality of surface areas each of said diode laser subassemblies comprising a diode laser that is conductively coupled to and mounted upon a first surface of an electrically conductive body, said electrically conductive body having a second opposite surface that is electrically coupled to and mounted upon one of said electrically conductive areas,

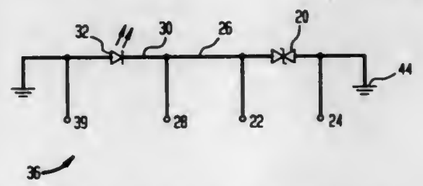
wherein said substrate further includes a plurality of electrical conductors for connecting together said diode lasers in series.

5,610,931

TRANSIENT PROTECTION CIRCUIT

Sun-Yuan Huang, Blandon, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 11, 1995, Ser. No. 570,738
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 15 Claims



1. A protection circuit for protecting a laser diode from electrical transients, the laser diode having an anode coupled to a first electric potential and a cathode coupled to a drive potential and being powered by a drive current, comprising:

voltage-responsive resistance means electrically coupled to the cathode at the drive potential and to electrical ground, wherein the drive current substantially bypasses the resistance means during normal operation of the laser diode.

5,610,932

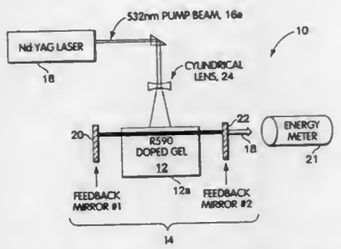
SOLID STATE DYE LASER HOST

William J. Kessler, Groton, Mass.; Steven J. Davis, Londonderry, N.H.; Daniel R. Ferguson, Melrose, and Evan R. Pugh, Lexington, both of Mass., assignors to Physical Sciences, Inc., Andover, Mass.

Filed Jan. 25, 1995, Ser. No. 377,656

Int. Cl.[6] H01S *3/14*

U.S. Cl. 372—39 **22 Claims**



1. A solid state dye laser host, comprising a substantially solid polyacrylamide gelatin doped with a laser dye.

5,610,933

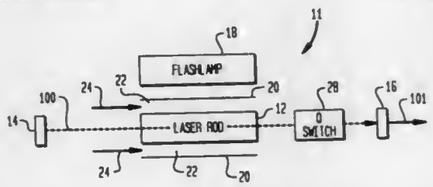
FLASHLAMP-PUMPED HO:TM:CR:LUAG LASER

Mahendra G. Jani, 7050 E. Sunrise Dr., Apt. 1202, Tucson, Ariz. 85750; Norman P. Barnes, 103 Stone Lake Ct., Yorketown, Va. 23693; Keith E. Murray, P.O. Box 438, White Marsh, Va. 23183, and Milan R. Kokta, 1906 SE. 331st Ave., Washougal, Wash. 98671

Filed Jan. 29, 1996, Ser. No. 592,791

Int. Cl.[6] H01S *3/16*

U.S. Cl. 372—41 **8 Claims**



1. A solid-state laser, comprising:

a laser cavity defined by reflective elements aligned on a common axis to form a reflective path therebetween;

a laser crystal disposed in said laser cavity along said common axis, said laser crystal having a LuAG host material doped with a concentration of about 0.35% Ho ions, about 5.57% Tm ions, and between about 1.01% and about 1.5% Cr ions; and

a broadband energizing source disposed transversely to said laser crystal for energizing said Ho ions, said Tm ions and said Cr ions.

5,610,934

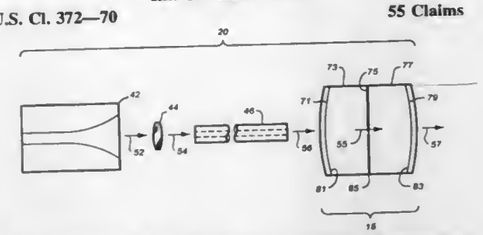
MINIATURIZED INTRACAVITY FREQUENCY-DOUBLED BLUE LASER

Joseph H. Zarrabi, Malden, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 13, 1995, Ser. No. 543,087

Int. Cl.[6] H01S *3/091*

U.S. Cl. 372—70 **55 Claims**



1. A miniaturized laser producing output radiation of wavelength λ_2, comprising:

a pump source providing pump radiation of wavelength λ_1 at least at a minimum pump power level P; and

a laser cavity comprising: a neodymium-doped yttrium orthoaluminate ($Nd:YAlO_3$) gain medium of thickness L comprising an input facet, said gain medium disposed proximate said pump source such that a beam of said pump radiation comprising a cross-sectional area of A_P is incident upon said input facet, said gain medium operating to convert said beam of pump radiation into a fundamental radiation of wavelength $2\lambda_2$ comprising a laser mode cross-sectional area of A_L; and a nonlinear crystal of thickness L_N disposed proximate said gain medium such that said nonlinear crystal acts as a frequency doubler to convert said fundamental radiation into said output radiation, wherein said pump power level P is defined by

$$\left(2.3\times10^{2}\,\frac{\text{watt}}{\text{cm}^2}\right)\frac{(A_P^2+A_L^2)}{1-\exp(-20L\ \text{cm}^{-1})}\ .$$

5,610,935

METHOD FOR MANUFACTURING A BASE ANODE FOR A METALLURGICAL VESSEL

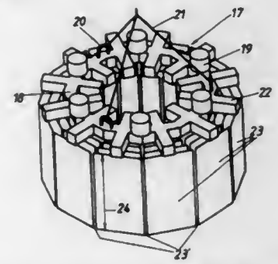
Heinrich Auberger, Walding, Austria, assignor to Voest-Alpine Industrieanlagenbau GmbH, Austria

Filed Sep. 1, 1994, Ser. No. 299,535

Claims priority, application Austria, Sep. 6, 1993, 1792/93

Int. Cl.[6] F27D *1/00*

U.S. Cl. 373—72 **20 Claims**



1. Method for manufacturing a base anode having a plurality of adjacently arranged metal elements for a metallurgical vessel, the method comprising the steps of:

introducing refractory material into intermediate spaces between respective metal elements; and

compressing the refractory material by means of vibration.

5,610,936

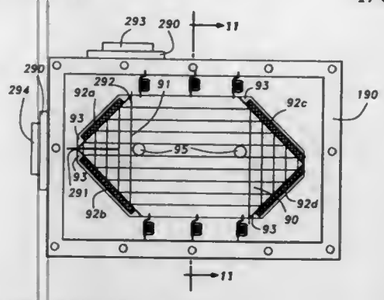
EXTENDED MULTIPLY FOLDED OPTICAL PATHS

Armando Cantoni, Huntsville, Ala., assignor to Technology Development Corporation, Huntsville, Ala.

Filed Sep. 28, 1995, Ser. No. 534,947

Int. Cl.[6] H01S *3/081*

U.S. Cl. 372—93 **17 Claims**



1. An optical apparatus comprising:

(a) an active medium supporting laser action within a polygonal optical cavity;

(b) a plurality of mirrors disposed to form the polygonal optical cavity including at least four mirrors forming at least two oblique pairs of mirrors;

(c) means for guiding optical radiation generated within the optical cavity into each of the mirrors forming a multiply folded optical path; and

(d) at least one insert block having a plurality of linear waveguides channels disposed between oblique pairs of mirrors to form an extended optical cavity.

5,610,937

REGULATION METHOD FOR A DC ARC FURNACE

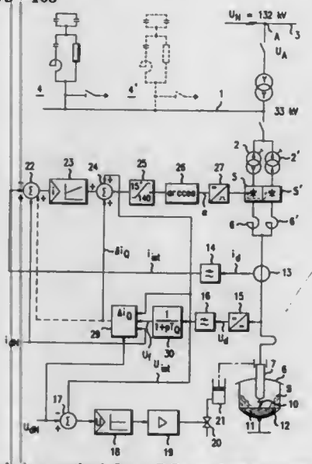
Osvin Gaupp, Baden, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Nov. 29, 1994, Ser. No. 350,997

Claims priority, application Germany, Dec. 22, 1993, 43 43 899.7

Int. Cl.[6] H05B *7/144*

U.S. Cl. 373—108 **12 Claims**



1. A regulation method for a DC arc furnace, comprising the steps of:

a) controlling arc current density as a function of a required current density and

b) as a function of an arc voltage; and

c) regulating said arc current density by supplying a control variable Δi_Q based on reactive power of the DC arc furnace to a triggering angle limiter for at least one rectifier, where:

$$\Delta i_Q = k_q \cdot i_{dN} \cdot \{<(1-U_f^2)/(1-U_{ist}^2/U_{dN}^2)>^{0.5}-1\}$$

and where: k_q=a factor which can be predetermined, i_{dN}=the required current density of the arc furnace, $U_f=1/(1+p\cdot T_Q)$, p=complex frequency, T_Q=reactive power time constant, U_{ist}=a filtered arc voltage, and U_{dN}=a required DC voltage of the arc furnace.

5,610,938

SPREAD SPECTRUM COMMUNICATION SYSTEM HAVING A MINIMIZED BIT ERROR RATE

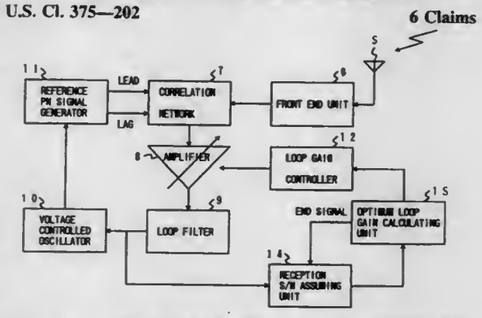
Harumi Kokaji, Hino, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,366

Claims priority, application Japan, Dec. 22, 1993, 5-324233

Int. Cl.[6] H04L *27/30;* **H04B** *15/00;* **H04K** *1/00*

U.S. Cl. 375—202 **6 Claims**



1. A clock rate modulation spread spectrum communicatioo system having a transmitter and a receiver, the transmitter modulating a clock signal of a pseudonoise signal according to an information signal, the receiver having a delay locked loop for tracking a synchronization, the receiver demodulating the information signal received from the transmitter by using tracking control signals of the delay locked loop, said clock rate modulation spread spectrum communication system comprising:

calculating means for calculating a sum of a plurality of phase errors generated by different causes; and

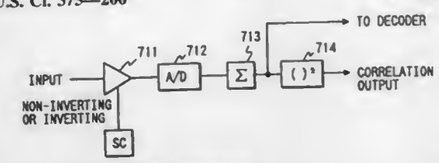
controlling means for controlling said receiver and/or said transmitter in accordance with the sum calculated by said calculating means so that a bit error rate in said receiver is minimized; and

wherein said delay locked loop comprises an nΔ delay locked loop, and said controlling means controls said receiver and/or transmitter by varying at least one of parameters used in said receiver and transmitter so that a ratio r of a sum of a steady-state phase error and a tracking error to a linear region of a phase comparison characteristic of the delay locked loop falls within a predetermined range, said parameters including a loop gain K and a linear region nΔ of the phase comparison characteristic of the delay locked loop, a modulatioo index β, a transmission rate fm, a transmission power P and a chip width Δ.

5,610,939
SIGNAL PROCESSING CIRCUIT FOR SPREAD SPECTRUM COMMUNICATIONS

Kenichi Takahashi; Minako Takeishi, both of Kawasaki, and Hiroshi Onishi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 197,592, Feb. 17, 1994, Pat. No. 5,488,629. This application Oct. 31, 1995, Ser. No. 551,111
Claims priority, application Japan, Feb. 17, 1993, 5-27711; Feb. 24, 1993, 5-35099; Aug. 3, 1993, 5-192167; Oct. 4, 1993, 5-247911
Int. Cl.[6] H04K *1/00*
U.S. Cl. 375—206 **10 Claims**



1. A digital correlator comprising:

non-inverting-or-inverting amplifier for receiving a signal obtained by a direct sequence type spread spectrum communication, for converting the received signal into a baseband signal and for inverting or not inverting a polarity of the received signal according to a polarity of a spreading code signal;

an analog-to-digital converter for perfonming an analog-to-digital conversion on an output of the non-inverting-or-inverting amplifier;

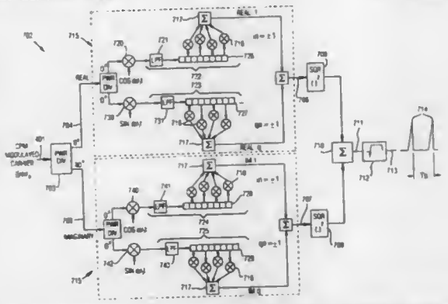
an integrator for integrating a digital signal obtained as a result of the analog-to-digital conversion performed by the analog-to-digital converter; and

a squaring device for calculating a square of an output of the integrator and for outputting data representing a correlation according to the calculated square of the output of the integrator.

5,610,940
METHOD AND APPARATUS FOR NONCOHERENT RECEPTION AND CORRELATION OF A CONTINOUS PHASE MODULATED SIGNAL

Randolph L. Durrant, Colorado Springs, and Mark Burbach, Peyton, both of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 304,091, Sep. 9, 1994. This application Jun. 7, 1995, Ser. No. 480,668
Int. Cl.[6] H04B *1/707*; **H04L** *27/14*
U.S. Cl. 375—208 **14 Claims**



3. An apparatus for despreading a received continuous phase modulated spread spectrum signal comprising:

a power divider for dividing a received spread spectrum signal into a real signal and an imaginary signal,

a real CPM correlator for correlating said real signal and generating a real correlation signal,

an imaginary CPM correlator for correlating said imaginary signal and generating an imaginary correlation signal,

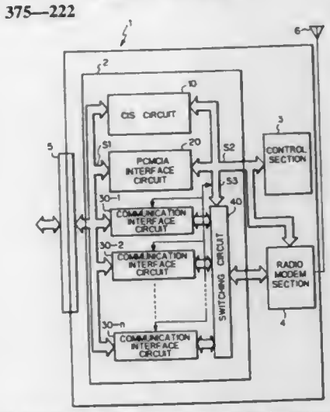
wherein at least one of said real CPM correlator and said imaginary CPM correlator comprises an I demodulator and a Q demodulator, and

means for combining said real correlation signal and said imaginary correlation signal.

5,610,941
IC CARD RADIO MODEM

Masahiko Tanaka, and Kohei Nishiyama, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 11, 1995, Ser. No. 513,725
Claims priority, application Japan, Aug. 12, 1994, 6-211839
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 **3 Claims**



1. A radio modem for allowing data to be interchanged between remote data terminals, comprising:

an interface section connected to a first data terminal, and comprising a plurality of communication interface circuits each having particular communication access conditions; a CIS circuit playing the role of an attribute memory storing data representative of attributes of said plurality of communication interface circuits; and a PCMCIA interface circuit for storing an index number indicative of one of said plurality of communication interface circuits matching said first data terminal in specifications;

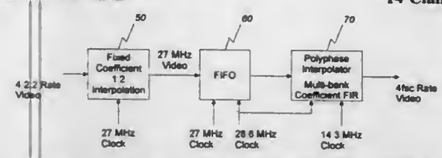
a radio modem section selectively connectable to any one of said plurality of communication interface circuits, and for selectively modulating or demodulating data to be interchanged between said first data terminal and a second data terminal; and

a control section for selecting one of said plurality of communication interface circuits matching said first data terminal in communication access condition, and for connecting said one communication interface circuit to said radio modem section, said control section connecting, when said index number is written to said PCMCIA interface circuit, said one communication interface circuit designated by said index number to said radio modem section.

5,610,942
DIGITAL SIGNAL TRANSCODER AND METHOD OF TRANSCODING A DIGITAL SIGNAL

Keping Chen, 2561 Scarth Court, Mississauga, Ontario, Canada, and Richard A. Kupnicki, 21 Eveningside Road, Markham, Ontario, Canada

Filed Mar. 7, 1995, Ser. No. 399,525
Int. Cl.[6] H04N *7/01*; **H03M** *7/00*
U.S. Cl. 375—242 **14 Claims**



1. A transcoder for converting a digital input signal having a first sampling rate to a digital output signal having a target sampling rate, comprising:

means for oversampling the input signal to produce an oversampled signal having a second sampling rate which is an integer multiple of the first sampling rate in order to facilitate increased transition bandwidth in further processing;

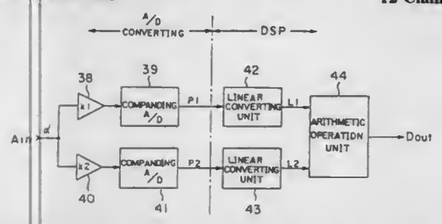
means for converting the second sampling rate to produce an oversampled output signal having a third sampling rate which is an integer multiple of the target sampling rate, wherein the second sampling rate is not an integer multiple of the third sampling rate and the third sampling rate is not an integer multiple of the second sampling rate; and

means for filtering and decimating the oversampled output signal to reduce unwanted signal bands and to produce a transcoded signal at the target sampling rate.

5,610,943
SIGNAL PROCESSING APPARATUS

Mitsuo Kakuishi, and Tsuyoshi Ueshima, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 55,767, May 3, 1993, abandoned, which is a continuation of Ser. No. 455,319, Feb. 8, 1990, abandoned. This application May 8, 1995, Ser. No. 436,928
Claims priority, application Japan, Jun. 8, 1988, 63-140692; Jul. 25, 1988, 63-183487
Int. Cl.[6] H04B *14/02*; **H03H** *17/02*
U.S. Cl. 375—243 **12 Claims**



7. A signal processing apparatus for converting an analog input line signal to a digital output line signal, comprising:

first amplifying means for amplifying the analog input line signal by k1 where k1 is a real number greater than one to produce a first amplified output;

second amplifying means for amplifying the analog input line signal by k2, where k2 is a real number satisfying k2×k1=1, to produce a second amplified output;

first companding A/D converting means for converting the first amplified output to a first companding pulse code modulation code;

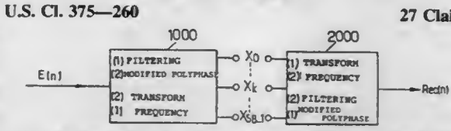
second companding A/D converting means for converting the second amplified output from said second amplifying means to a second companding pulse code modulation code;

arithmetic operating means for arithmetically determining an average value of the first and second companding pulse code modulation codes to provide the digital output line signal.

5,610,944
PROCESS AND DEVICE FOR SEGMENTATION INTO SUB-BANDS AND FOR RECONSTRUCTION OF A DIGITAL SIGNAL, AND CORRESPONDING DEVICE

Joël Mau, and Patrice Soyer, both of Rennes, France, assignors to France Telecom, and Telediffusion De France, both of Paris, France

Filed Oct. 29, 1993, Ser. No. 143,369
Claims priority, application France, Oct. 29, 1992, 92 12930
Int. Cl.[6] H04K *1/10*
U.S. Cl. 375—260 **27 Claims**



1. A device for sub-band segmentation of a digital input signal into sub-band signals, X_k, where k designates the rank of each of said sub-band signals, said input digital signal comprising a sequence of digital samples E(n) where n designates a current index of said digital samples and said device comprising a plurality SB of parallel paths each receiving said digital samples E(n) where SB designates a given number of said plurality of parallel paths, wherein for a series of sample blocks formed of a same given number SB of digital samples, said device comprises:

prefiltering means for prefiltering the digital input signal, said prefiltering comprising a modified polyphase filtering applied to each sample block and said prefiltering means comprising a low-pass filter, with a symmetric and an antisymmetric component each modulated by a periodic function, for providing digital sub-band filtering of each of said sample blocks so as to produce components of prefiltered signals, and

means for processing by inverse frequency transform of dimension SB of said components of prefiltered signals so as to produce said sub-band signal X_k.

5,610,945
SYSTEM FOR IDENTIFYING COMMUNICATION SEQUENCES TRANSMITTED ACROSS MULTIPLE CARRIERS BY EXAMINING BIT STREAMS FOR SEQUENCES OF VALID WORDS

Thomas A. Gregg, Highland; Joseph M. Hoke, Millerton, and Kulwant M. Pandey, Lagrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

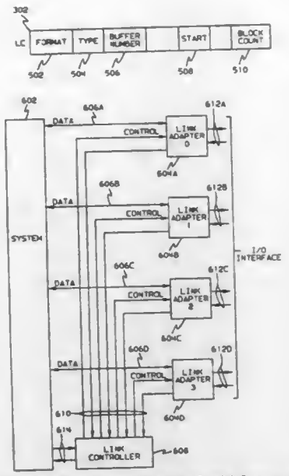
Continuation of Ser. No. 147,702, Nov. 4, 1993. This application Jun. 7, 1995, Ser. No. 477,927
Int. Cl.[6] H04L *29/04*
U.S. Cl. 375—260 **26 Claims**

23. A communication system for transmitting and receiving data frames to and from a computer system, said communication system comprising:

multiple transceivers for transmitting to and for receiving data frames from an I/O link interface, each of said multiple transceivers being coupled to a link controller and being coupled over a bi-directional bus to said computer system;

means for examining bit streams received from a link for multiple carriers, said means for examining bit streams including:

an inbound state machine for detecting, for each individual carrier of said multiple carriers, received sequences of valid words that comprise alternate communications sequences including an idle sequence, a continuous sequence, and a frame, upon determining that the alternate communication sequence comprises said frame, said inbound state machine



examining a link-control word of said frame to determine a frame having at least one information field and a frame not having at least one information field;

a buffer state machine for controlling, for each individual carrier of said multiple carriers, one or more receive buffers in said multiple transceivers to store the at least one information field from said frame having at least one information field; and

a link controller which controls, for the multiple carriers, the state of all of the one or more receive buffers and gathers the information fields from the multiple receive buffers.

5,610,946

RADIO COMMUNICATION APPARATUS

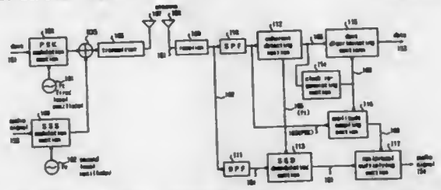
Kiyoshi Tanaka, and Ping Huang, both of Chiba, Japan, assignors to Uniden Corporation, Chiba, Japan

Filed Jan. 26, 1995, Ser. No. 378,337

Claims priority, application Japan, Nov. 22, 1994, 6-288368

Int. Cl.[6] H04J *9/00;* **H04L** *27/06;27/32*

U.S. Cl. 375—269 **16 Claims**



15. Method of radio communication using a combination of a first frequency signal modulated according to a first information signal and a second frequency signal modulated according to a second information signal, comprising the steps of:

receiving said combination to detect said first frequency signal and said second frequency signal,

demodulating said received first frequency signal to extract a carrier and to detect said first information signal,

processing said received second frequency signal, together with said carrier, to generate an intermediate signal representing said second information signal, and

processing said received first frequency signal, together with said intermediate signal, to detect said second information signal.

5,610,947

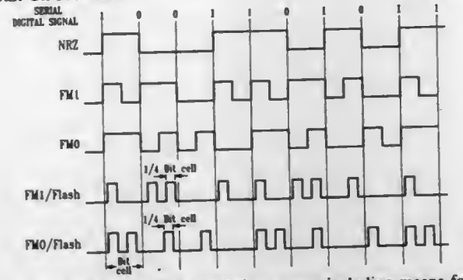
IR FM MODEM WITH FLASH MODULATION

Peruvemba S. Balasubramanian, Chappaqua; Nathan J. Lee, New City, and Scott D. Lekuch, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,332

Int. Cl.[6] H04L *27/10;* **H04B** *10/00*

U.S. Cl. 375—282 **28 Claims**



1. In a Biphase or FM modulation system including means for FM encoding a digital input signal by producing an FM encoded output signal comprising HIGH levels and LOW levels, having lengths of no less than half a bit cell period and no more than one bit cell period, indicative of transitions in said digital input signal, the improvement comprising:

means, responsive to said FM encoded output signal, for Flash modulating said FM encoded output signal by producing pulses of less than half a bit cell width in accordance with the levels of said FM encoded output signal in each half bit cell period, said means for Flash modulating comprising:

counter means, responsive to the receipt of a HIGH level of said FM encoded output signal, for outputting count pulses including a first count pulse and a fifth count pulse;

first means, responsive to the first count pulse from said counter means, for outputting a pulse signal; and

second means, responsive to the fifth count pulse, for ceasing said pulse signal output by said first means.

5,610,948

DIGITAL DEMODULATION APPARATUS

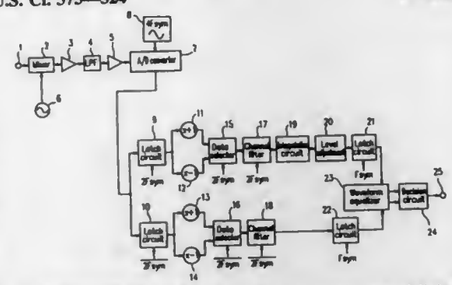
Kunio Ninomiya, Osaka, and Seiji Sakashita, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 23, 1995, Ser. No. 447,889

Claims priority, application Japan, May 25, 1994, 6-111243

Int. Cl.[6] H04L *27/14*

U.S. Cl. 375—324 **6 Claims**



1. A demodulation apparatus for quadrature detection of digitally modulated waves, comprising:

frequency conversion means for multiplying an input digitally modulated wave signal by a local oscillating signal from a local oscillator, and for outputting a modulated wave output in which a center frequency of the digitally modulated wave

signal is substantially equal to a symbol frequency of the digitally modulated wave signal;

filter means for removing a higher-frequency component included in the modulated wave output;

means for generating a clock having a frequency which is four times as high as the symbol frequency;

analog-to-digital conversion means for outputting interleaved I and Q digital data by sampling an output from the filter means at the clock having the frequency which is four times as high as the symbol frequency;

means for splitting the digital data from the analog-to-digital conversion means into I data and Q data and for outputting the I and Q data;

multiplying means for multiplying the I data and the Q data by coefficients of "+1" and "−1", respectively, and for outputting the multiplied I data and the multiplied Q data;

switching means for selectively outputting the multiplied I data and the multiplied Q data;

digital channel filter means for receiving the multiplied I data and the multiplied Q data, and for performing spectrum shaping for the received I and Q data;

interpolation means for generating and outputting an interpolation signal for one of output signals from the digital channel filter means, the output signals respectively corresponding to the I data and the Q data;

level adjustment means for controlling an amplitude level value of the generated interpolation signal; and

timing control means for allowing a timing of an output signal from the level adjustment means to be matched with a timing of the other output signal of the digital channel filter means.

5,610,949

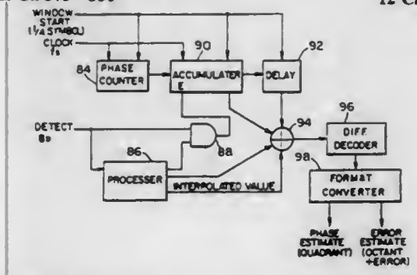
PHASE DETECTOR AND A METHOD DETERMINING THE PHASE OF RECEIVED PSK SYMBOLS

James E. Petranovich, Encinitas, Calif., assignor to Pacific Communication Sciences, Inc., San Diego, Calif.

Continuation of Ser. No. 999,210, Dec. 31, 1992, Pat. No. 5,376,894. This application Aug. 11, 1994, Ser. No. 289,061

Int. Cl.[6] H04L *27/22*

U.S. Cl. 375—330 **12 Claims**



1. A phase detector for use in a receiver of a digital communications system, said receiver being capable of receiving a phase shift keyed (PSK) signal representing a sequence of transmitted symbols and converting the PSK signal so received into digital data comprising digital samples, the phase detector comprising:

an instantaneous phase decoder having an input of said digital data, said instantaneous phase detector determining if a transition between consecutive digital samples has occurred such that one of 1) one digital sample has a value associated with a high level and a subsequent digital sample has a value associated with a low level, and 2) one digital sample has a value associated with said low level and a subsequent digital sample has a value associated with said high level, and providing a decoded output representative of each said transitions;

an instantaneous phase estimator having an input coupled to said instantaneous phase decoder to receive said decoded output, said instantaneous phase estimator generating average phase estimates based on said transitions and providing an output of said average phase estimates, wherein each of the symbols is a associated with one of a set of known phases and each phase estimate is associated with a symbol of the received PSK signal; and

a format converter operatively interfaced with said output of said instantaneous phase estimator, said format converter identifying, for each phase estimate, one of the known phases associated therewith and providing a first binary representation related to the known phase so identified and providing a second binary representation indicative of a difference between said identified known phase and said phase estimate.

5,610,950

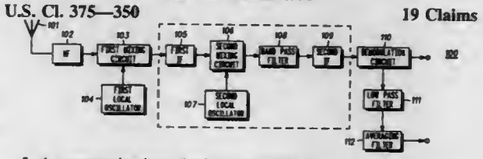
COMMUNICATION DEVICE WITH REDUCED SENSITIVITY TO IN-CHANNEL INTERFERENCE

Krzysztof M. Duch, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 331,428

Int. Cl.[6] H04B *1/10*

U.S. Cl. 375—350 **19 Claims**



1. A communications device comprising:

a front end for receiving a modulated signal comprising frequencies f_0 and f_1 transmitted over a communication channel, said modulated signal comprising unwanted distortion components exhibiting spikes at a repetition frequency, T, where $T=1/(f_1-f_0)$;

a demodulator circuit, coupled to the front end, for demodulating the frequencies f_0 and f_1 to generate a demodulated signal; and

an averaging filter comprising a delay line having a plurality of taps having equal weights, coupled to the demodulator circuit, for filtering the demodulated signal and averaging the demodulated signal over the period T to remove the unwanted distortion component therefrom, thereby operating as a digital integrator.

5,610,951

EFFICIENT ATM CELL SYNCHRONIZATION

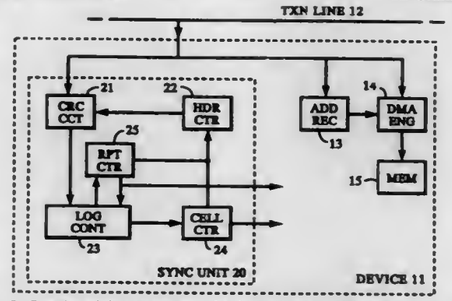
Peter L. Higginson, Herts, and Anthony N. Berent, Hampshire, both of United Kingdom, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 4, 1993, Ser. No. 73,220

Claims priority, application United Kingdom, Jun. 23, 1992, 9213273

Int. Cl.[6] H04L *7/06*

U.S. Cl. 375—364 **12 Claims**



1. Synchronizing apparatus for identifying cell boundaries in a stream of data signals received from a transmission line, each cell

starting with a header including a CRC, each cell having a cell length, each header having a header length, the apparatus comprising:

a single CRC check circuit and timing means which select, for testing by the CRC check circuit, non-overlapping but substantially contiguous blocks of signals, each block has a block length greater than the header length, with the blocks being chosen at a spacing which is effectively coprime with the cell length;

means for sending a match signal identifying a cell header to a control unit in response to said CRC check circuit computing from the blocks of signals a value matching a predetermined CRC value; and,

means for said control unit to verify synchronization with the stream of data signals in response to said match signal.

5,610,952

SYNCHRONIZATION SIGNAL GENERATING DEVICE

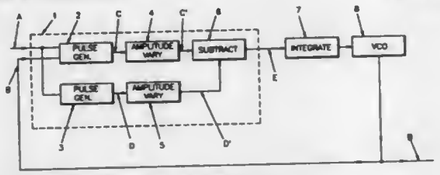
Ken Yamanaka, and Hiroaki Ugawa, both of Hyogo, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 17, 1995, Ser. No. 559,915

Claims priority, application Japan, Nov. 25, 1994, 6-315568

Int. Cl.[6] H04L *7/00;25/36*

U.S. Cl. 375—371 **6 Claims**



1. A phase detector, comprising:

first means for providing a first input signal;

second means for providing a second input signal;

first pulse generating means connected to said first means and second means, for generating a first pulse having a width corresponding to a phase difference between said first input signal and said second input signal, upon occurrence of an edge of said first input signal;

second pulse generating means coupled to said first means or said second means for generating a second pulse having a substantially constant time duration, upon occurrence of an edge of said first input signal or said second input signal;

variation means coupled to said first pulse generating means and second pulse generating means for varying an amplitude or direct current component of one or both of said first pulse and said second pulse and providing a pair of output signals corresponding to said first pulse and second pulse after said varying; and

means for combining said pair of output signals of said variation means to derive a phase comparison signal.

5,610,953

ASYNCHRONOUS LOW LATENCY DATA RECOVERY APPARATUS AND METHOD

Robert Betts, Vestal, and Howard T. Olnowich, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

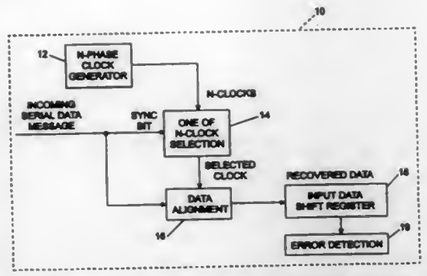
Continuation of Ser. No. 89,056, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 659,199, Feb. 22, 1991, abandoned. This application Mar. 21, 1995, Ser. No. 407,928

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—373 **13 Claims**

1. An apparatus for receiving a data message input to the apparatus parallel data inputs having a synchronization bit and a message portion, the apparatus comprising:

receiving means for receiving the data message;



a clock generator for generating a plurality of phase shifted clocks;

a clock selector coupled to said receiving means and to said clock generator for receiving the synchronization bit and the plurality of clocks, and for selecting and outputting one of the plurality of clocks as a selected clock;

a data alignment circuit coupled to both the clock selector and to the receiving means for receiving the message portion and the selected clock, for aligning the message portion with the selected clock directly and unbuffered as it arrives to the apparatus, and for sending the message portion;

a synchronization means for generating the selected clock from the parallel data inputs and synchronization bit, stripping the synchronization bit from the data message, and activating the selected clock to data alignment circuit within one clock time of the input of the synchronization bit to the receiving means; and

an input circuit coupled to the data alignment circuit for receiving and storing the message portion, and for sending the message portion to an attached receiving device.

5,610,954

CLOCK REPRODUCTION CIRCUIT AND ELEMENTS USED IN THE SAME

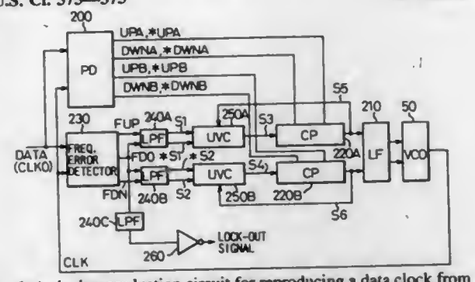
Takumi Miyashita, and Nobuaki Tomesakai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 10, 1995, Ser. No. 401,793

Claims priority, application Japan, Mar. 11, 1994, 6-041054; Mar. 17, 1994, 6-047145; Sep. 14, 1994, 6-220385; Dec. 1, 1994, 6-329597; Jan. 10, 1995, 7-002232

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—375 **32 Claims**



1. A clock reproduction circuit for reproducing a data clock from a data signal which is modulated by said data clock, comprising:

a voltage controlled oscillator generating a VCO clock;

a phase detector outputting a phase difference signal relating to a phase difference between said data signal and said VCO clock at each transition edge of said data signal;

a frequency error detection circuit-detecting a frequency difference between said data clock and said VCO clock by detecting and holding phases of said VCO clock at transition edges of said data signal and by detecting changes of said phases of said VCO clock, and outputting a frequency error signal relating to said detected frequency difference;

a charge pump whose output signal is controlled by said phase difference signal and said frequency error signal; and

a loop filter generating a loop signal by deleting the high frequency components from said output signal of said charge pump and outputs said loop signal to said voltage controlled oscillator.

5,610,955

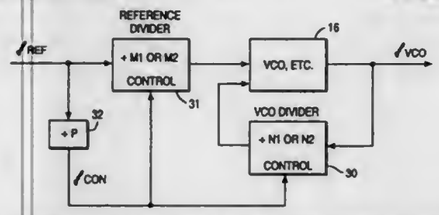
CIRCUIT FOR GENERATING A SPREAD SPECTRUM CLOCK

Christopher J. Bland, San Jose, Calif., assignor to Microclock, Inc., San Jose, Calif.

Filed Nov. 28, 1995, Ser. No. 563,327

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **10 Claims**



1. A phase-locked loop circuit having an input terminal receiving a first signal at a reference frequency and an output terminal transmitting a second signal at an output frequency, said circuit comprising

a first divider connected to said input terminal for generating an output signal at said reference frequency divided by a first variable integer M;

a second divider connected to said output terminal for generating an output signal at said output frequency divided by second variable integer N;

a circuit for supplying a reference voltage;

a voltage-controlled oscillator having an output node connected to said output terminal and an input node connected to said reference voltage circuit;

a phase detector having first and second input nodes, said first input node connected to an output node of said first divider, said second input node connected to an output node of said second divider, said phase detector generating an output signal indicative of a difference between said first and second divider output signals;

a charge pump connected to said phase detector and to a loop filter, said charge pump responsive to said phase detector output signal for varying said reference voltage of said reference voltage circuit so that voltage from said voltage-controlled oscillator varies; and

means for periodically varying said first variable integer M and said second variable integer N;

whereby said output frequency varies between two predetermined frequencies.

5,610,956

FAST REACTOR CORE

Tsugio Yokoyama, Yokohama, and Takeshi Shimizu, Kisarazu, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 8, 1994, Ser. No. 302,414

Claims priority, application Japan, Sep. 8, 1993, 5-222932

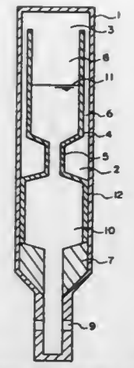
Int. Cl.[6] G21C *7/00*

U.S. Cl. 376—172 **13 Claims**

1. A fast reactor core, comprising:

a plurality of fuel assemblies each loaded with a fissionable material; and

a plurality of gas sealed assemblies disposed between the fuel assemblies, each gas sealed assembly including



an outer sheath forming a gas plenum containing a sealing gas at a top portion of the outer sheath and having coolant flow-in holes at a bottom portion of the outer sheath;

an inner cylindrical member located in the outer sheath, a bottom portion of the inner cylindrical member contacting an inner wall of the outer sheath and a top portion of the inner cylindrical member spaced from the inner wall of the outer sheath to form a gas space containing sealing gas between the top portion of the inner cylindrical member and the inner wall of the outer sheath;

the inner cylindrical member containing sealing gas and coolant;

the sealing gas in the inner cylindrical member being in communication with the sealing gas in the gas plenum, which is in communication with the sealing gas in the gas space;

the coolant in the inner cylindrical member being in communication with coolant outside of the gas sealed assembly via the flow-in holes, the level of coolant in the inner cylindrical member varying depending on pressure of the sealing gas in the inner cylindrical member and pressure at the flow-in holes.

5,610,957

REACTOR CORE COOLANT FLOW RATE CONTROL SYSTEM FOR A BWR TYPE NUCLEAR POWER PLANT

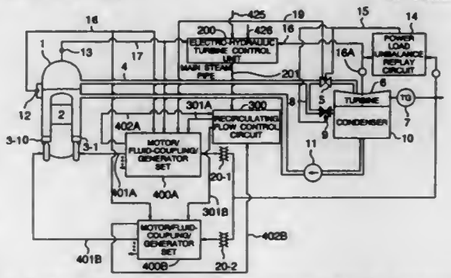
Naoshi Tanikawa; Tetsuya Miyakawa; Hitoshi Sakuma; Toichi Shida, and Kimiko Isono, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki-ken, both of Japan

Filed Jul. 28, 1995, Ser. No. 506,963

Claims priority, application Japan, Jul. 31, 1994, 6-197430; Mar. 3, 1995, 7-070791

Int. Cl.[6] G21C *7/32*

U.S. Cl. 376—210 **28 Claims**



1. A reactor core coolant flow rate control system for a boiling water reactor type nuclear power plant in which electric power is

generated by a turbine-driven generator driven by a steam turbine rotating under the work of a main steam generated from a cooling water recirculated through a boiling water reactor, comprising:

internal pump driving means comprised of an electric motor driven by utilizing an electric power generated by said turbine-driven generator, a fluid coupling for transmitting an output torque of said electric motor, and a variable-frequency generator whose rotation number is changed in accordance with the torque transmitted by way of said fluid coupling;

a plurality of internal pumps for recirculating said cooling water, said internal pumps being electrically connected in parallel to said variable-frequency generator of said internal pump driving means and driven by an electric output power of said variable-frequency generator supplied to said internal pumps in parallel, and said internal pumps having a rotation number which changes in dependence on the rotation number of said variable-frequency generator.

5,610,958

REACTOR CIRCULATING PUMP SYSTEM

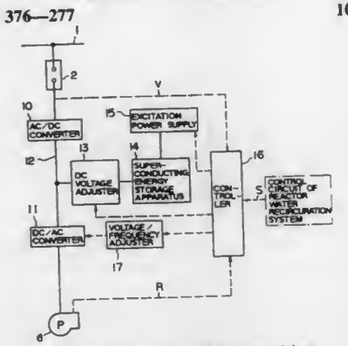
Kunio Shimano, Yokosuka; Youichi Nakamura, Fujisawa; Osamu Ozaki, Tokyo, and Iwao Ohshima, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 17, 1995, Ser. No. 544,168

Claims priority, application Japan, Oct. 18, 1994, 6-251683

Int. Cl.[6] G21C *15/18;15/243*

U.S. Cl. 376—277 **10 Claims**



1. A reactor circulating pump system comprising:

a pump unit for circulating a coolant in a reactor; and

a power supply means operatively connected to the pump unit for driving the pump unit,

said power supply means comprising:

an AC/DC converter and a DC/AC converter provided with an AC voltage/frequency adjuster connected in series between an in-plant AC bus and the pump unit;

a DC voltage adjuster operatively connected to the input side of the AC/DC converter;

a superconducting energy storage means operatively connected to the DC voltage adjuster;

an excitation power supply means disposed in operative association with the superconducting energy storage means; and

a control means operatively connected to said pump unit, said DC voltage adjuster and said excitation power supply means and adapted to change an AC voltage supplied to the pump unit with a ratio of AC voltage and frequency kept constant in accordance with an information indicating accident thereby for controlling a pump delivery rate to have a predetermined value while holding an output voltage from the superconducting energy storage means at a predetermined value.

5,610,959

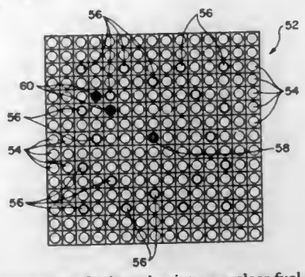
HAFNIUM DOPED REPLACEMENT ROD FOR NUCLEAR FUEL RECONSTITUTION

Mark W. Fecteau, Export, and James W. Miller, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 27, 1994, Ser. No. 364,170

Int. Cl.[6] G21C *3/00*

U.S. Cl. 376—419 **21 Claims**



1. A replacement rod for insertion into a nuclear fuel assembly to replace a fuel rod containing a neutron absorbing, fissile fuel, the replacement rod comprising Hafnium sufficient to substantially replace the neutron absorption capacity of the fuel rod, and a second material, wherein the Hafnium is fabricated into a cylindrically-shaped rodlet and the second material is fabricated into an annulus around the rodlet.

5,610,960

FUEL SPACER AND FUEL ASSEMBLY

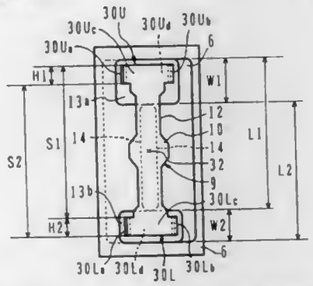
Kensuke Tokunaga, Takahagi; Yasuhiro Aizawa, Hitachi; Junjiro Nakajima, Hitachi; Masana Sasaki, Hitachi; Masayoshi Ajima, Hitachi, and Masafumi Imai, Hitachiohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 519,099

Claims priority, application Japao, Aug. 25, 1994, 6-200904

Int. Cl.[6] G21C *3/34*

U.S. Cl. 376—441 **23 Claims**



1. A fuel spacer comprising a plurality of cylindrical members to which fuel elements are respectively inserted, and a plurality of loop-like spring members held by said cylindrical members for resiliently supporting the fuel elements positioned in the respective pairs of adjacent cylindrical members, said plurality of cylindrical members each including a spring support portion inserted to said loop-like spring member for supporting said loop-like spring member and first and second opening areas formed respectively above and below said spring support portion, said plurality of loop-like spring members each comprising a pair of leaf spring portions and first and second coupling portions for coupling said pair of leaf spring portions at two upper and lower points, wherein:

the distance from the upper end of said first opening area to the upper end of said second opening area in the axial direction of said fuel elements is substantially equal to the distance from the upper end of said first coupling portion to the upper end of said second coupling portion in the axial direction of said fuel elements, and the distance from the lower end of said first opening area to the lower end of said second opening area in the axial direction of said fuel elements has a different value from the distance from the lower end of said first coupling portion to the lower end of said second coupling portion in the axial direction of said fuel elements.

5,610,961

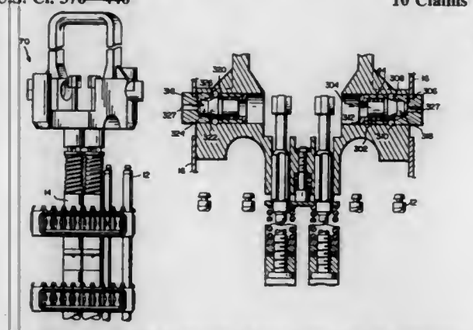
FUEL ASSEMBLY STRUCTURE USING CHANNEL FOR LOAD SUPPORT

Thomas G. Dunlap, Wilmington; Richard A. Proebstle, Wrightsville Beach; Robert B. Elkins, and Christian D. Frederickson, both of Wilmington, all of N.C., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 542,382, Oct. 12, 1995. This application Dec. 5, 1995, Ser. No. 567,152

Int. Cl.[6] G21C *3/322*

U.S. Cl. 376—446 **10 Claims**



1. A fuel assembly for a nuclear reactor vessel, the fuel assembly comprising:

a plurality of fuel rods;

at least one coolant rod;

a channel surrounding said plurality of fuel rods and said at least one coolant rod;

a lower tie plate supporting said plurality of fuel rods and said at least one coolant rod, said lower tie plate being supported by said channel such that said channel carries a primary load of said fuel assembly:

a handle assembly disposed inside said channel and receiving said at least one coolant rod; and

connecting structure releasably connecting said handle assembly and said channel.

5,610,962

CONSTRUCTION OF NUCLEAR POWER PLANTS ON DEEP ROCK OVERLAIN BY WEAK SOIL DEPOSITS

Enrique R. Solorzano, San Jose; Perng-Fei Gou, Saratoga; Thomas S. Higa, San Jose, and Harold E. Townsend, Campbell, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,189

Int. Cl.[6] G21C *13/024*

U.S. Cl. 376—461 **20 Claims**

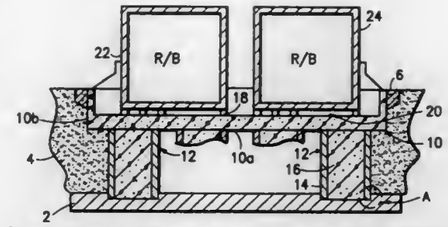
11. A nuclear power generation complex constructed on a stratum of rock overlain by soil deposits, comprising:

a concrete slab supported above said soil deposits by a plurality of pedestals, each of said pedestals being seated on said rock stratum and comprising a caisson filled with concrete;

a first plurality of seismic isolators mounted on said slab;

a first building supported only by said first plurality of seismic isolators;

a second plurality of seismic isolators mounted on said floor of said slab; and



a second building supported only by said second plurality of seismic isolators,

wherein said first and second buildings have a predetermined spacing therebetween.

5,610,963

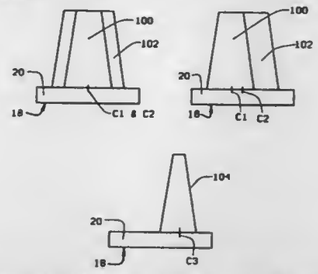
METHODS AND SYSTEMS FOR DETERMINING THE Z-AXIS PROFILE OF A DETECTOR IN A CT SYSTEM

Jiang Hsieh, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Feb. 6, 1996, Ser. No. 597,167

Int. Cl.[6] G21K *5/10*

U.S. Cl. 378—7 **16 Claims**



1. A method for determining the z-axis profile of a detector cell in a computed tomography system, the computed tomography system including an x-ray source for projecting an x-ray beam toward the detector cell, and a pre-patient collimator for restricting the x-ray beam, the detector cell configured to generate a detector cell signal representative of the beam characteristics of an x-ray beam impinging thereon, said method comprising the steps of:

acquiring a first detector cell signal from the detector cell when a first x-ray beam having a first centroid impinges thereon;

acquiring a second detector cell signal from the detector cell when a second x-ray beam having a second centroid impinges thereon; and

generating a composite detector cell signal from the first and second detector cell signals, the composite detector cell signal representative of a third detector cell signal expected when a third x-ray beam having a third centroid impinges on the detector cell.

5,610,964

METHOD FOR IMAGE RECONSTRUCTION IN A COMPUTED TOMOGRAPHY APPARATUS

Thomas Flohr, Uehlfeld, and Stefan Schaller, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

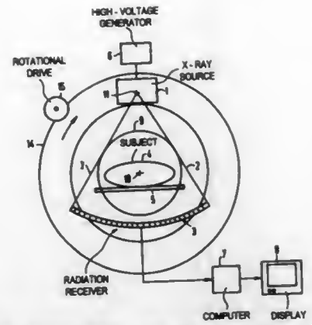
Filed Jul. 16, 1996, Ser. No. 682,023

Claims priority, application Germany, Aug. 1, 1995, 19528261.2

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **1 Claim**

1. A method for obtaining an image of a subject in a computed tomography apparatus comprising the steps of:



irradiating a subject with x-rays from a plurality of projections p_k at respective projection angles θ_l;

detecting said x-rays, attenuated by said subject, in a radiation detector having N detector channels to obtain data $f(p_k, \theta_l)$;

supplying said data $f(p_k, \theta_l)$ from the detector to a computer in a parallel beam geometry so that $\Delta\tan\theta$=const in an angle region [−45°, 45°] or $\Delta\cot\theta$= const in an angle region [45°, 135°], and $p_k=(k-0.5+a_m)a$ (a is a sampling grid and a_m is an alignment factor);

reconstructing a sectional image of said subject by the following steps:

one-dimensionally Fast Fourier transforming $f(p_k, \theta_l)$ relative to p_k, with $N_{FFT} \geqq 2N$ values to obtain $\hat{f}_l(m\Delta\rho)$;

multiplying $\hat{f}_l(m\Delta\rho)$ by the Fourier transform of a convolution Kernel $\hat{L}_c(m\Delta\rho)$ and by a phase factor $\exp(-2\pi im\Delta\rho(x_z \cos\theta_l + y_z \sin\theta_l))$, which defines the position of the center of the sectional image to obtain frequency values on a polar grid;

conducting a Fast Fourier transformation of length N_{FFT} of said frequency values on a polar grid back into the spatial domain to obtain a plurality of convoluted, centered projections $f'_c(p_q, \theta_l)$;

limiting each convoluted, centered projection $f'_c(p_q, \theta_l)$to

$$N_l = \text{int}\left(\frac{2D_B\cos\theta_l}{a} + 1\right)$$

values for $-45° \leqq \theta_l \leqq 45°$ or to

$$N_l = \text{int}\left(\frac{2D_B\sin\theta_l}{a} + 1\right)$$

values for $45° < \theta_l \leqq 135°$ to obtain a plurality of bounded projections $f'_c(p_q, \theta_l)$;

one-dimensionally chirp-z transforming each bounded projection $f'_c(p_q, \theta_l)$ to a grid

$$\Delta\rho_F{}^l = \frac{1}{2D_B\cos\theta_l}, \text{ wherein } \Delta\rho_x = \frac{1}{2D_B} = \text{const},$$

for $-45° \leqq \theta_l \leqq 45°$ or

$$\Delta\rho_F{}^l = \frac{1}{2D_B\sin\theta_l}, \text{ i.e. } \Delta\rho_y = \frac{1}{2D_B} = \text{const},$$

for $45° < \theta_l \leqq 135°$, whereby the number of points is dependent on the size of the represented image segment and on the maximum frequency of reconstruction to obtain projections $\hat{F}_l(s\Delta\rho_F{}^l)$ by the Fourier transform of a smoothing Kernel $\hat{L}_s(s\Delta\rho_F{}^l)$;

calculating first and second sub-images respectively for the angle regions [−45°, 45°] and [45°, 135°];

calculating said first sub-image by, for each frequency values $s\Delta\rho_x$ in the p_x direction, interpolating said values with $\hat{T}(\rho_y)$ in the ρ_y direction, using the gridding method on the basis of N_P frequency support points in an s-dependent grid $\Delta\rho_y{}^{LG}(s)$, to $2N_{Pix}$ values in a grid

$$\Delta\rho_y = \frac{1}{2D_B}$$

(N_{Pix}) is a number of pixels in one column of the sectional image) rearranging aliasing components, and Fourier transforming the $2N_{Pix}{\cdot}2N_{Pix}$ frequency values in the spatial domain and correcting inner $N_{Pix}{\cdot}N_{Pix}$ pixels in the y direction by multiplication with 1/T(y);

calculating said second sub-image by, for each frequency value $s\Delta\rho_y$ in the ρ_y direction, interpolating said values with $\hat{T}(\rho_x)$ in the ρ_x direction, using the gridding method on the basis of N_P frequency support points in an s-dependent grid $\Delta\rho_x{}^{LG}(s)$, to $2N_{Pix}$ values in a grid

$$\Delta\rho_x = \frac{1}{2D_B}$$

(N_{Pix} is a number of pixels in one column of the sectional image) rearranging aliasing components, and Fourier transforming the $2N_{Pix}{\cdot}2N_{Pix}$ frequency values in the spatial domain and correcting inner $N_{Pix}{\cdot}N_{Pix}$ pixels in the x direction by multiplication with 1/T(x); and

adding said first and second sub-images.

5,610,965

EXPOSURE METHOD

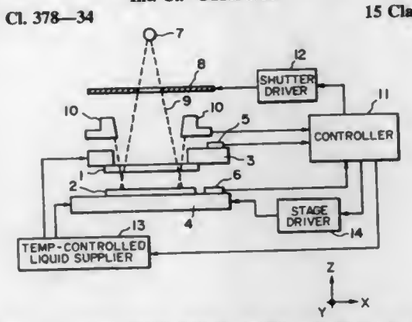
Makiko Mori, Atsugi; Kunitaka Ozawa, Isehara; Koji Uda, Yokohama; Isamu Shimoda, Zama; Sbunichi Uzawa, Tokyo, and Eiji Sakamoto, Sagamihara, all of Japan, assignors to Canon Kabusñiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 946,788, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 676,469, Mar. 2, 1991, abandoned, which is a continuation of Ser. No. 405,187, Sep. 11, 1989, abandoned. This application Feb. 17, 1994, Ser. No. 197,569

Claims priority, application Japan, Sep. 13, 1988, 63-22738

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **15 Claims**



1. An exposure method wherein a mask pattern is projected sequentially onto a plurality of shot areas of a wafer by irradiating the mask pattern with exposure energy including at least one of ultraviolet rays and X-rays, said method comprising the steps of:

(a) detecting a state of alignment between the mask and the wafer;

(b) obtaining information relating to heat accumulation of at least one of the mask and the wafer caused by the exposure energy irradiation, based on the detection of the state of alignment;

(c) discriminating whether exposure to the exposure energy irradiation is permissible on the basis of the information obtained in step (b) and on a tolerance predetermined in accordance with characteristics of at least one of the mask and wafer being used;

(d) controlling, on the basis of the discrimination in step (c), a timing at which the exposure is started and a timing at which the exposure is interrupted;

(e) obtaining an integrated amount of exposure of the shot area being exposed;

(f) when the integrated amount obtained in step (e) is lower than a predetermined level, repeating the exposure until the predetermined level is reached; and

(g) executing steps (b)–(f) for the plurality of shot areas.

5,610,966

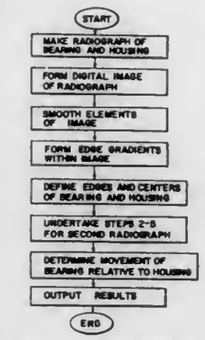
METHOD AND DEVICE FOR LINEAR WEAR ANALYSIS

John M. Martell, Hinsdale, and Sunjay Berdia, Chicago, both of Ill., assignors to Argonne National Laboratories/ University of Chicago Development Corp., Chicago, Ill.

Filed Feb. 15, 1995, Ser. No. 388,698

Int. Cl.[6] G01N *23/04*

U.S. Cl. 378—58 **17 Claims**



1. A method for determining the wear of a liner separating a rotatable bearing from a generally spherical housing, comprising the steps of:

(a) digitizing into an image made up of a plurality of elements, a first radiograph of at least a portion of the liner, bearing and housing;

(b) smoothing at least a portion of elements making up the image;

(c) directionally accenting the elements to highlight a first edge gradient of the bearing and a second edge gradient of the housing;

(d) defining at least a portion of an edge of the bearing by fitting a first arc among the accented elements and defining a center of the bearing;

(e) defining at least a portion of an edge fitting by an arc by fitting a second arc among the accented elements and defining a center of the housing;

(f) determining a first vector from the center of the housing to the center of the bearing;

(g) undertaking steps (a)–(f) for a second radiograph, taken after the first radiograph, to determine a second vector from the center of housing to a center of a bearing on the second radiograph;

(h) mapping the first vector and the second vector together and determining a wear vector from the first vector to the second vector.

2. A method of non-invasively determining the wear in a liner disposed between a femur component and an acetabular component of a hip arthroplasty, comprising the steps of:

(a) obtaining a digitized radiographic image of the hip arthroplasty containing an image of the femur component and an image of the acetabular component;

(b) smoothing at least a portion of elements making up the radiographic image;

(c) defining edges of the femur component image and the acetabular component image, the defining step including forming an edge gradient for the femur component image and an edge gradient for the acetabular component image and fitting an arc within each of the edge gradients, the arcs representing the edges of the femur component image and the acetabular component images,

(d) determining centers of the femur component image and the acetabular component image and the distance separating the centers;

(e) determining the location and length of the shortest distance between the edge of the femur component image and the acetabular component image; and

(f) determining an original thickness of the liner.

5,610,967

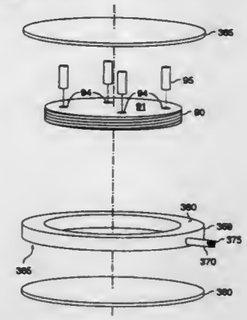
X-RAY GRID ASSEMBLY

Jack W. Moorman, Los Gatos; Brian Skillicorn, Saratoga; John W. Wilent, deceased, late of Aptos, and Alan C. Abel, San Jose, all of Calif., assignors to Cardiac Mariners, Incorporated, Los Gatos, Calif.

Continuation of Ser. No. 386,861, Feb. 10, 1995, which is a continuation-in-part of Ser. No. 375,501, Jan. 17, 1995, abandoned, and Ser. No. 342,641, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 8,455, Jan. 25, 1993, abandoned, said Ser. No. 375,501is a continuation of Ser. No. 42,742, Apr. 5, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,740

Int. Cl.[6] G21K *1/10*

U.S. Cl. 378—154 **24 Claims**



1. An x-ray grid assembly comprising

a plurality of x-ray absorbent sheets, each comprising a plurality of x-ray transmissive areas arranged in a regular pattern;

said plurality of x-ray absorbent sheets arranged one atop the other to form a substantially planar stack; said x-ray transmissive areas of each sheet aligned with the x-ray transmissive areas of the immediately adjacent sheets to form an x-ray transmissive passage through said stack; an axis of each of said x-ray transmissive passages forming an angle ranging from 40° to 90° with the plane of said stack and substantially converging at a single spot;

a first endplate and a second endplate each comprised of an x-ray transmissive material; said first endplate arranged adjacent a first surface of said stack and said second endplate arranged adjacent a second surface of said stack;

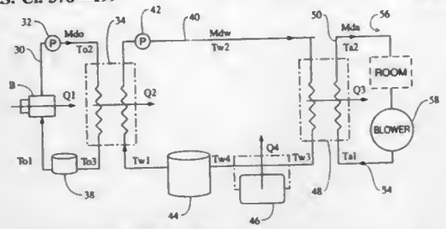
a target and a coolant chamber wherein said coolant chamber disposed between said first endplate and said target and said target is comprised of a target support and an x-ray emitting layer.

5,610,968

HIGH CAPACITY COOLING SYSTEM FOR CT GANTRY

Joseph S. Deucher, Lyndhurst; Anton Z. Zupancic, Kirtland, and Nancy A. Udovic, Wickliffe, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Mar. 17, 1995, Ser. No. 406,131
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—199 **20 Claims**



1. A CT scanner comprising:

a patient receiving region defined within a stationary gantry;

an x-ray tube mounted on a rotating frame for rotation about the patient receiving region, the x-ray tube having an x-ray window through which x-rays are transmitted across the patient receiving region;

a radiation detector for detecting x-rays which have traversed the patient receiving region and generating signals indicative of the radiation detected;

an image reconstruction processor for reconstructing an image representation from the signals generated by the radiation detector;

a first heat exchanger mounted on the rotating frame for transferring heat from a first cooling fluid to a second cooling fluid;

a first closed cooling fluid loop for conveying the first cooling fluid in a closed loop between the x-ray tube and the first heat exchanger;

a second heat exchanger mounted around a periphery of the rotating frame for transferring heat from the second cooling fluid to air;

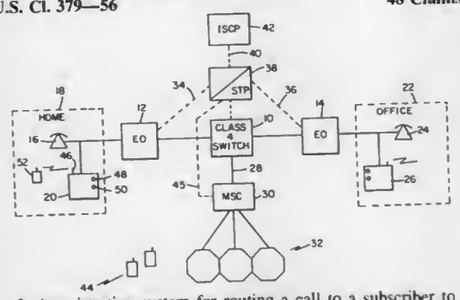
a second cooling fluid loop mounted on the rotating frame for conveying the second cooling fluid in a closed loop between the first and second heat exchangers.

5,610,969

PERSONAL COMMUNICATION SERVICE REGISTRATION SYSTEM AND METHOD

James F. McHenry, Doylestown, Pa., and Robert D. Farris, Sterling, Va., assignors to Bell Atlantic Mobile Systems, Inc., Bedminster, N.J.

Filed Dec. 23, 1994, Ser. No. 363,040
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 379—56 **48 Claims**



1. A registration system for routing a call to a subscriber to a personal telephone number service in an integrated wired and wireless communications network, comprising:

a central office switching system connected to communication lines connected to subscriber premise terminals including at least one service switching point for selectively providing switched communications between the communication lines;

a mobile switching center connected to the central office switching system arranged for selectively providing wireless communications between said central office switching system and wireless mobile communications units by using control data conveyed to at least one service switching point through a service transfer point;

a network controller arranged for selectively providing control data to effect land line communications, and arranged separately from the central office switching system and the mobile switching center, said network controller being connected to both said mobile switching center and at least one service switching point through at least one service transfer point arranged to convey control data to effect communications, said network controller storing preprogrammed call processing data associated with subscribers who are associated with the communication lines connected to consumer premise terminals connected to the central office switching system and said mobile switching center and who are also associated a mobile communication unit, said network controller having additional storage capacity;

a first adjunct registration device which is portable associated with each of said subscribers, which registration device includes a low power transceiver programmed to respond to receipt of a predetermined wireless signal;

a second adjunct registration device associated with the consumer premise terminals associated with said subscribers, said second adjunct registration devices including low power transceivers programmed to periodically transmit a predetermined wireless signal associated with at least one of said first adjunct registration devices to cause said first registration device transceiver to respond, said second adjunct registration device responsive to receiving said response causing the conveyance of a signal to at least one of said service switching points, whereby said service switching point originates a signal to said network controller to cause storage of registration of the subscriber associated with said first adjunct registration device.

5,610,970

TELEPHONE SYSTEM WITH SCHEDULED HANDLING OF CALLS

Robert M. Fuller, Redmond; Frederick A. Epler, Issaquah, and Maxwell E. Manowski, Enumclaw, all of Wash., assignors to AccessLine Technologies, Inc., Bellevue, Wash.

Division of Ser. No. 249,453, May 26, 1994, which is a division of Ser. No. 480,242, Feb. 15, 1990, Pat. No. 5,375,161, which is a continuation-in-part of Ser. No. 439,601, Nov. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 841,931, Mar. 20, 1986, Pat. No. 4,893,335, which is a continuation-in-part of Ser. No. 650,821, Sep. 14, 1984, abandoned. This application Dec. 9, 1994, Ser. No. 353,081
Int. Cl.[6] H04Q *7/14*
U.S. Cl. 379—57 **73 Claims**

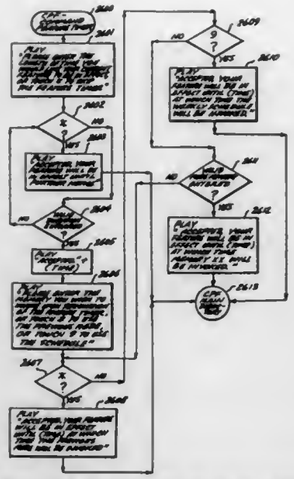
1. A control system for connection to a telephone network, said control system receiving and processing a telephone call from a caller to a user, wherein said telephone call is to a telephone number normally accessible via a Public Switched Telephone Network (PSTN), said control system receiving said telephone call with no need for said caller to provide a special access code, the control system comprising:

input/output means for connection to telephone network lines to input and output telephone calls;

switch control means for controlling at least one switch to connect a call on one line to a different line;

memory means for controllably storing and recalling electronic signals and

electronic processing means for accessing said memory means and switching control means to direct the flow of input and output calls, said electronic processing means including means for:



a) processing calls to the system directed to a specific user in a selected one of at least three distinct modes, one such mode being call forwarding in which case the processing means proceeds with functions b) through d), another such mode being branch routing in which case the processing means proceeds with functions e) and f), an yet another such mode being a schedule mode in which case the processing means performs function g),

b) recalling from said memory means a forwarding number for said user,

c) implementing a call to said forwarding number,

d) switching the caller's call to said forwarding number,

e) responding an incoming call to a specific user by transmitting to the caller a signal indicating that said incoming call can be branched to any of a plurality of options responsive to the caller transmitting an appropriate command corresponding to the desired branch, and

f) responsive to the caller transmitting said command, proceeding with functions b)–d) to forward said call, and

g) responding to a sequence of schedule command modes and corresponding times for each such command mode to appropriately automatically change to the commanded modes at the commanded times.

5,610,971

DUAL KEYPAD TELEPHONE HANDSET FOR MOBILE COMMUNICATIONS

Karl D. Vandivier, Kokomo, Ind., assignor to Delco Electronics Corporaiton, Kokomo, Ind.

Filed Dec. 19, 1994, Ser. No. 359,175
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—58 **4 Claims**

1. A telephone having a base and a handset coupled to the base for alternative use as a hand-held instrument and as a hands-free instrument comprising:

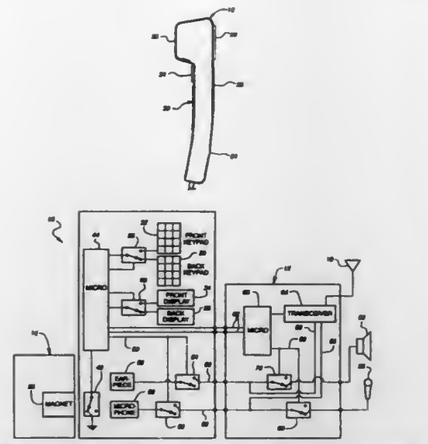
a cradle for holding the handset during standby intervals and during hands-free operation;

the handset having a back which faces outwardly when the handset is installed on the cradle and a front which faces the cradle;

the back of the handset including a back keypad and a back display for hands-free phone operation;

the front of the handset including a front keypad and front display for hand-held operation;

a proximity switch on the handset and a switch operator on the cradle for operating the switch between a hand-held state and a hands-free state when the handset is removed from and returned to the cradle respectively; and



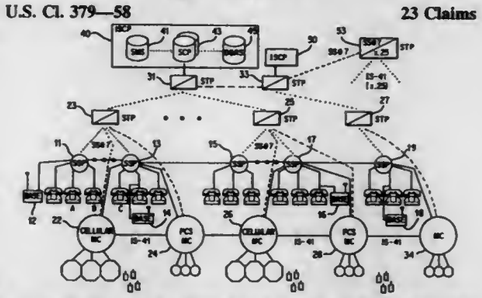
a controller responsive to the switch and coupled to the back and front keypads for enabling only the back keypad and back display when the switch is in the hands-free state and enabling only the front keypad and front display when the switch is in the hand-held state.

5,610,972

PERSONAL COMMUNICATIONS SERVICE USING WIRELINE/WIRELESS INTEGRATION

Mark J. Emery, Herndon, Va.; Brenda N. Tucker, Mitchellville, and Laurie D. Schwartz, Garrett Park, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Division of Ser. No. 229,891, Apr. 19, 1994, Pat. No. 5,469,496, which is a division of Ser. No. 845,924, Mar. 5, 1992, Pat. No. 5,353,331. This application Jun. 5, 1995, Ser. No. 463,409
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 379—58 **23 Claims**



1. A method for providing special service features associated with a land line telephone system to a mobile telephone user, comprising the steps of:

automatically registering a wireless handset with one of a plurality of radio-link controllers;

sending a predetermined number identifying said wireless handset from said one radio-link controller to a service controller contained within a land line telephone system in response to the registration of the wireless handset; and

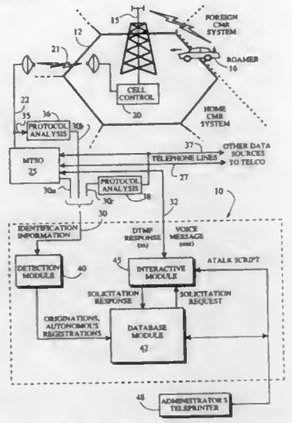
downloading data regarding said wireless handset from said service controller to said one radio-link controller in response to said service controller receiving said predetermined number, wherein the downloaded data comprises data regarding special service features associated with said wireless handset.

5,610,973

INTERACTIVE ROAMER CONTACT SYSTEM FOR CELLULAR MOBILE RADIOTELEPHONE NETWORK

Edward I. Comer, Marietta, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Jan. 28, 1991, Ser. No. 647,719
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—59 **38 Claims**



1. In a home cellular mobile radiotelephone system, an apparatus for detecting and contacting a roamer cellular mobile radiotelephone (CMR) from a foreign cellular mobile radiotelephone system, comprising:

roamer detection means for detecting autonomous registration of said roamer CMR in said first cellular mobile radiotelephone system and for providing identifying information comprising at least a mobile telephone number of said roamer CMR;

a computer database for storing the mobile telephone numbers of detected roamer CMRs in association with status information, said status information indicating whether detected roamer CMRs have never been solicited;

searching means responsive to said identifying information for searching said computer database and determining whether said roamer CMR has never been solicited;

solicitation request generating means responsive to a determination by said searching and determining means that said roamer CMR has never been solicited for generating a solicitation request; and

interactive solicitation means responsive to said solicitation request for providing an interactive solicitation of said roamer CMR.

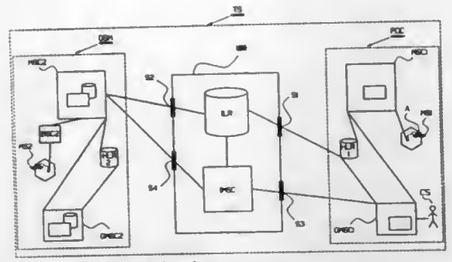
5,610,974

METHOD AND ARRANGEMENT FOR HANDLING A MOBILE TELEPHONE SUBSCRIBER ADMINISTERED IN DIFFERENT MOBILE TELEPHONE NETWORKS WITH A COMMON CALL NUMBER

Jörgen Lantto, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 5, 1995, Ser. No. 417,023
Claims priority, application Sweden, Apr. 5, 1994, 9401131-9
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 379—59 **38 Claims**

1. A roaming arrangement in a telecommunications system for handling a mobile telephone subscriber, wherein the system includes a home network that is a first standardized type of mobile telephone network and at least one guest network that is a second standardized type of mobile telephone network, and the mobile telephone subscriber has a call number which is common to both the home network and the guest network, the roaming arrangement comprising:



means for handling signals;

at least one home interface towards the home network, wherein the home interface is arranged to receive signals from the home network and to transmit signals to the home network, the signals having a format that is the same as a signal format that occurs in the home network;

at least one guest interface towards the guest network, wherein the guest interface is arranged to receive signals from the guest network and to transmit signals to the guest network, the signals having a format that is the same as a signal format that occurs in the guess network,

wherein the home network and the guest network each include a home register and a local switching center;

the signal handling means includes a roaming register which is connected to the home network via a first signalling interface in the home interface;

the first signalling interface is located between the home register in the home network and the roaming register, is also connected to the guest network via a second signalling interface in the guest interface, and is of a same type as a standardized interface between the home register and the local switching center in the home network; and

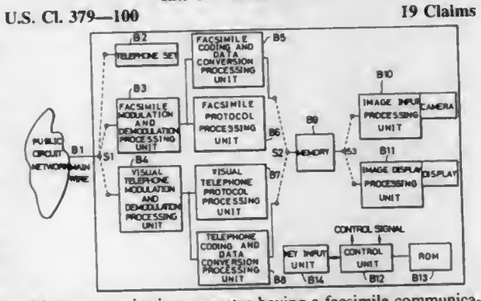
the second signalling interface is located between the local switching center in the guest network and the roaming register and is of a same type as a standardized interface between the local switching center and the home register in the guest network.

5,610,975

VISUAL TELEPHONE APPARATUS

Shinji Tsuchida, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 973,532, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 679,134, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 396,647, Aug. 22, 1989, abandoned. This application Jul. 18, 1994, Ser. No. 276,507
Claims priority, application Japan, Aug. 26, 1988, 63-210657
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—100 **19 Claims**



16. A communication apparatus having a facsimile communication function and a visual telephone communication function, comprising:

processing means for deciding whether a destination station is a facsimile or a visual telephone apparatus and performing a protocol exchange with the destination station;

indicating means for indicating a type of the destination station decided by said processing means;

conversion means for performing conversion on communication data in accordance with the type of the destination station based on a processing result by said processing means; and

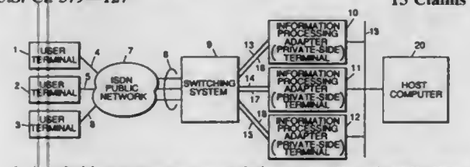
instruction means for instructing to start transmission of the communication data converted by said conversion means.

5,610,976

DUAL CHANNEL ISDN TERMINAL CALL IDENTIFICATION AND SWITCHING SYSTEM

Toshihiro Uota, Funabashi; Jiro Nakabayashi, Urawa; Tsuneaki Iwano, Tokyo; Hirotaka Nakano, Musashino, and Osamu Nakamura, Hanno, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Nippon Telegraph & Telephone Corp., Tokyo, both of Japan

Filed Apr. 25, 1995, Ser. No. 428,891
Claims priority, application Japan, Apr. 28, 1994, 6-091782
Int. Cl.[6] H04M *3/02*
U.S. Cl. 379—127 **13 Claims**



1. A switching system accommodating a plurality of public lines of an Integrated Services Digital Network (ISDN) at a public line side and a plurality of terminals of the ISDN at a private line side, comprising:

identifying means for identifying a calling terminal issuing a first channel call and issuing a second channel call, both issued at the public line side of the ISDN; and

connecting means for automatically connecting the identified calling terminal at the public line side of the ISDN to a private-side ISDN terminal without the calling terminal calling a private line number of a private ISDN terminal and upon, after issuance of the second channel call, the identifying means identifying the calling terminal as being the same calling terminal from which the first channel call was made, based upon common information obtained at the issuance of each of the first channel call and the second channel call.

5,610,977

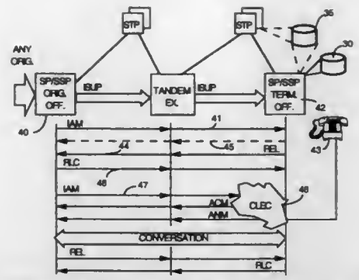
NUMBER PORTABILITY USING ISUP MESSAGE OPTION

L. Lloyd Williams, and R. William Carkner, both of Kanata, Canada, assignors to Stentor Resource Centre, Inc., Canada

Filed Dec. 27, 1995, Ser. No. 579,305
Claims priority, application Canada, Dec. 21, 1995, 2165857
Int. Cl.[6] H04M *3/42;7/00;* **H04J** *3/12*
U.S. Cl. 379—207 **13 Claims**

1. In a telephone network having a number of telephone switching offices equipped with SSPs (Service Switching Points) operating with IN (Intelligent Network) application software, and a remotely located SCP (Service Control Point) adapted to receive, when required, SS7 (Signalling System 7) messages from the SSPs to translate a dialled number to enable the routing of call on the telephone network, a method of providing number portability for the treatment of calls from a calling party to a specific number of a called party, comprising the steps of:

a) receiving digits dialled by said calling party at an exchange serving said calling party;



b) establishing a call path from said exchange serving said calling party to a terminating office associated with the dialled digits;

c) receiving an Initial Address Message (IAM) at said terminating office and determining whether said call is directed to a portable number;

d) launching a query to a database, if said call is directed to a portable number to obtain a routing option to enable said call to be routed to said called party;

e) creating at said terminating office, a modified Integrated Services Digital Network (ISDN) User Part (ISUP) message containing an indication that the called party number is a portable number and incorporating a new routing option, if said call is directed to a portable number;

f) determining whether an intermediate switching office along the signalling path is capable of supporting number portability, if said exchange serving said calling party is unable to support number portability;

g) sending said modified ISUP message from said terminating office to said intermediate switching office along said call path, if said exchange is unable to service the call;

h) receiving said routing option at said intermediate switching office; and

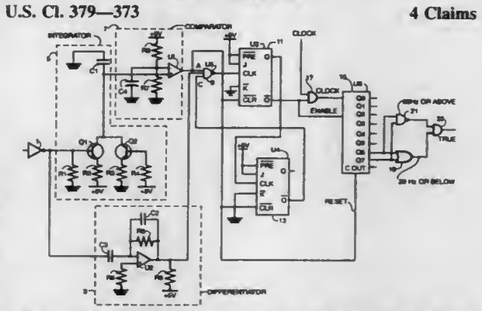
i) creating a new IAM to enable the call to reach the called party.

5,610,978

RING DISCRIMINATOR

Valentin Purits, Thornhill, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed Dec. 30, 1994, Ser. No. 366,911
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—373 **4 Claims**



1. A ring discriminator comprising means for receiving an input ringing signal, a counter, means for applying clock pulses to the counter, means for enabling the counter to count clock pulses from a cycle of ringing current, and means for determining a clock pulse count on the counter to distinguish a frequency characteristic of the ringing signal, the cycle of ringing current being a first cycle in a ring burst, the counter enabling means being comprised of a differentiator for differentiating leading edges of the input ringing signal, an integrator for generating a ring burst envelope pulse for the duration of each ring burst of the input ringing signal, a NAND gate for receiving the differentiated leading edges and the ring

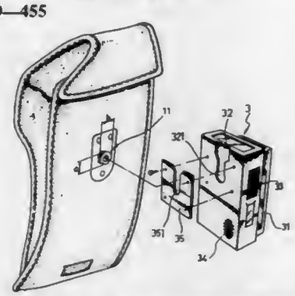
burst envelope pulse, means for generating an enable pulse beginning at every second differentiated leading edge and ending at every alternate following differentiated leading edge, means for inhibiting the enable pulse generating means from the end of a first enable pulse and means for applying a resulting single enable pulse to the counter.

5,610,979

MOBILE PHONE HOLDER HAVING SECURITY AND CHARGING FUNCTION

Wen-chung Yu, 1F, 34, Alley 4, Lane 48 Pibua Str. Sanchung, Taipei, Taiwan

Filed Sep. 19, 1995, Ser. No. 530,584
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—455 **3 Claims**



1. A mobile phone holder having security and charging functions comprising a leather bag, a signal transmitting circuit and a signal receiver, characterized in that

said leather bag is adapted for receiving a mobile phone and is provided with a connection button, a pair of electrical conductors being provided within said bag and having terminals adapted to contact with positive and negative terminals of a battery of said mobile phone;

said transmitting circuit being provided on said bag, said transmitting circuit being connected to said electrical conductors to be powered by said battery of said mobile phone; and

said signal receiver being adapted to receive signals from said transmitting circuit when the transmitting circuit is powered by said battery, said signal receiver being provided with a clip for attaching said receiver on a belt, a receptacle being provided at a front portion of the receiver for connection with said button, a controlling switch being provided on said receiver, a beeper being provided on said receiver and being eleotrically connected to the signal receiver so as to be actuated when the signal receiver ceases to receive signals from said transmitting circuit.

5,610,980

METHOD AND APPARATUS FOR RE-INITIALIZING A PROCESSING DEVICE AND A STORAGE DEVICE

William C. Johnson, Los Angeles, Calif., and Charles C. McMullen, Colorado Springs, Colo., assignors to ETA Technologies Corporation, Los Angeles, Calif.

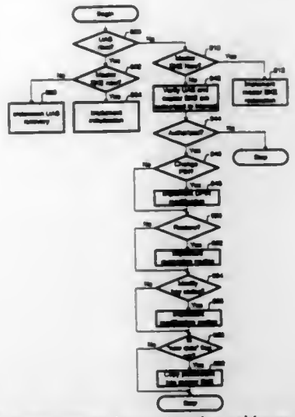
Filed Feb. 13, 1995, Ser. No. 388,277
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **39 Claims**

1. In a system comprising an initialized processing device having a master key code stored therein, and an initialized storage device having a set of processed parameters stored thereon, a method for re-initializing the processing device and the storage device, comprising the steps of:

retrieving said master key code from the processing device;

processing said processed parameters using said master key code to derive a set of de-processed parameters;

receiving a new dynamic personal identification number (DPIN) from a user;



generating a new master key code using said new DPIN;

processing said de-processed parameters using said new master key code to derive a second set of processed parameters;

storing said second set of processed parameters onto the storage device to re-initialize the storage device;

generating a new processing device key code using said new DPIN; processing said set of de-processed parameters using said new processing device key code to derive a third set of processed parameters; and

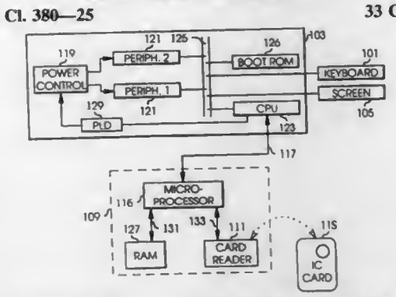
storing said third set of processed parameters into the processing device to re-initialize the processing device.

5,610,981

PREBOOT PROTECTION FOR A DATA SECURITY SYSTEM WITH ANTI-INTRUSION CAPABILITY

David M. Mooney, Eden Prairie; Joseph A. Kimlinger, Willernie, and David E. Wood, Minnetonka, all of Minn., assignors to Integrated Technologies Of America, Inc., Hopkins, Minn.

Continuation-in-part of Ser. No. 204,618, Mar. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 893,670, Jun. 4, 1992, Pat. No. 5,327,597. This application Feb. 28, 1995, Ser. No. 395,627
Int. Cl.[6] H04K *1/00;* **H04L** *9/00*
U.S. Cl. 380—25 **33 Claims**



1. A method of operating a computer having a central processing unit, the central processing unit executing a boot program to initialize the computer, the method comprising the steps of:

a) prior to completion of the boot program, acquiring control of the central processing unit;

b) loading a verification program;

c) upon attempted access by a user, verifying that the user is authorized using the verification program; and

d) controlling access to the computer by monitoring system calls.

5,610,982

COMPACT CERTIFICATION WITH THRESHOLD SIGNATURES

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Filed May 15, 1996, Ser. No. 649,905
Int. Cl.[6] H04L *9/00;9/30*
U.S. Cl. 380—25 **36 Claims**

1. A method of certifying data, comprising the steps of:

(a) a subgroup of authorities each contributing a partial digital signature of the data, the partial digital signature being a component used to compute a combined signature, wherein the subgroup includes some, but not all, of the authorities configured to apply a partial signature to the data;

(b) issuing a certificate for the data if the combined signature is valid; and

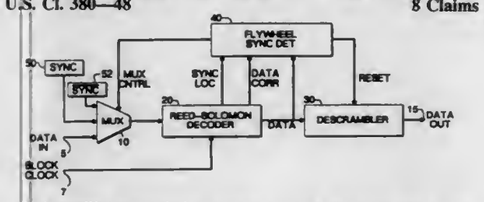
(c) storing accountability information that renders the subgroup of authorities accountable for the data that the subgroup of authorities contribute to certify.

5,610,983

APPARATUS FOR DETECTING A SYNCHRONIZATION COMPONENT IN A SATELLITE TRANSMISSION SYSTEM RECEIVER

John S. Stewart, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 30, 1994, Ser. No. 315,516
Int. Cl.[6] H04L *9/00;* **H03M** *13/00;* **H04N** *7/12*
U.S. Cl. 380—48 **8 Claims**



1. A satellite transmission system receiver, for receiving a composite signal including a data component and a synchronization (sync) component including successive words in the composite signal having a predetermined value, the receiver comprising:

a signal processor, responsive to the received data component, and requiring a periodic sync signal in synchronism with the sync component;

a source of a clock signal in synchronism with the sync component and aligned in time with the words in the sync component;

a sync signal generator for producing the periodic sync signal, comprising:

a counter, having a reset signal input terminal coupled to a sync component detector, a clock input terminal responsive to the clock signal, and a count signal output terminal, wherein the counter recycles at the repetition rate of the sync signal; and

a comparator, coupled to the count signal output terminal, for generating the sync signal when the count signal equals a predetermined value; and

the sync component detector, responsive to the sync component, for synchronizing the sync signal generator to the received sync component comprising:

an error detection and correction decoder, responsive to the composite signal, having a data output terminal and a data correct output terminal producing a signal indicating that data at the data output terminal is corrected data;

a comparator, coupled to the data output terminal of the error detection and correction decoder, having an output terminal producing a signal indicating that the word at the data output terminal of the error detection and correction decoder has the predetermined sync word value; and

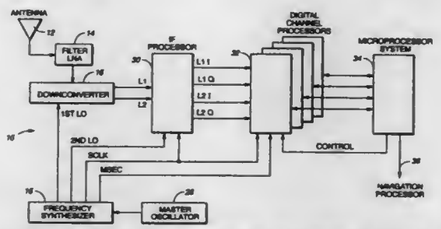
a logic gate having a first input terminal coupled to the data correct output terminal of the error detection and correction decoder, a second input terminal coupled to the output terminal of the comparator, a third input terminal responsive to the clock signal and an output terminal coupled to the reset input terminal of the counter.

5,610,984

OPTIMAL L2 TRACKING IN A SPS RECEIVER UNDER ENCRYPTION WITHOUT KNOWLEDGE OF ENCRYPTION TIMING CHARACTERISTICS

Gary R. Lennen, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 22, 1995, Ser. No. 526,885
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **88 Claims**



1. A system for optimal correlation processing of L1 and L2 signals received from a SPS satellite by a SPS RECEIVER, said system comprising:

a RECEIVING MEANS for receiving a known C/A code modulated on L1 carrier frequency, for receiving an unknown Y code modulated on L1 carrier frequency signal, and for receiving an unknown Y code modulated on L2 carrier frequency signal from at least one satellite; wherein said received L1, and L2 signals contain propagation noise; and wherein said Y code comprises a known P code and an unknown W code; and

at least one DIGITAL CHANNEL PROCESSING MEANS for:

(1) locally generating replica of said C/A code modulated on L1 carrier frequency signal;

(2) locally generating replica of said P code modulated on L1 carrier frequency signal, wherein said locally generated replica of L1 signal does not contain propagation noise;

(3) locally generating replica of said P code modulated on L2 carrier frequency signal, wherein said locally generated replica of L2 signal does not contain propagation noise;

(4) extracting of an estimate of said Y code from said L1 signal, and from said L2 signal, wherein said estimate signals contain propagation noise;

(5) correlating a locally generated replica of C/A code with the received L1 code for obtaining an estimate of L1 group delay (L1 pseudo-range) and L1 carrier phase;

(6) removing said P code from said locally extracted estimate of said L1 Y code to obtain a locally extracted estimate of said L1 W code;

(7) removing said P code from said locally extracted estimate of said L2 Y code to obtain a locally extracted estimate of said L2 W code;

(8) filtering estimate of said L1 W code by a DIGITAL FILTER 1 with filter characteristics substantially similar to the W code frequency spectrum with no requirement for the filter characteristics to have any knowledge of the secret W code timing characteristics;

(9) filtering estimate of said L2 W code by a DIGITAL FILTER 2 with filter characteristics substantially similar to the W code frequency spectrum with no requirement for the filter characteristics to have any knowledge of the secret W code timing characteristics; and

10) multiplying said filtered estimates of said L1 W-code with said filtered early, late, and punctual estimates of L2 W-code and integrating the result over a time period greater than a

millisecond to ensure that the resulting correlated signal has a sufficient power for closing the L2-code and L2-carrier tracking loops.

5,610,985

DIGITAL 3-CHANNEL TRANSMISSION OF LEFT AND RIGHT STEREO SIGNALS AND A CENTER SIGNAL

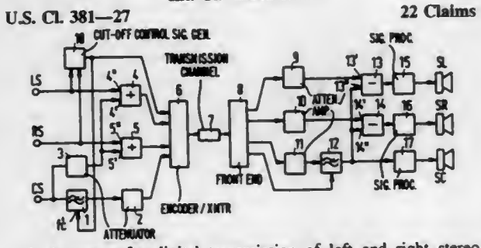
Warner R. T. Ten Kate, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1994, Ser. No. 184,323

Claims priority, application European Pat. Off., Jan. 22, 1993, 93200156

Int. Cl.[6] H04S *3/00*

U.S. Cl. 381—27 **22 Claims**



1. A system for digital transmission of left and right stereo signals and a center signal through left and right stereo channels and an auxiliary channel, respectively, characterized in that said system comprises:

means for providing a left and right stereo signal and a center signal;

left and right stereo transmission channels and an auxiliary transmission channel;

means for separating said center signal into a first and a second centerpart signal, a frequency spectrum of said first centerpart signal being located in a frequency range of the center signal below a cut-off frequency, and a frequency spectrum of said second centerpart signal being located above said cut-off frequency, said cut-off frequency being determined by a transmission capacity of the auxiliary transmission channel;

first means for transmitting the first centerpart signal through the auxiliary transmission channel;

means for combining the second centerpart signal with the left and right stereo signals into, respectively, left/center and right/center signals;

second means for transmitting said left/center signal and said right/center signal through said left and right stereo transmission channels, respectively;

a receiver coupled to said left and right stereo transmission channels and said auxiliary transmission channel for receiving said first centerpart signal; said left/center signal and said right/center signal, said receiver comprising:

means for subtracting said first centerpart signal from said received left/center signal and said right/center signal thereby forming a left signal and a right signal;

a left speaker unit and a right speaker unit coupled to said subtracting means for reproduction of the left and right signals; and

a center speaker unit coupled to receive said first centerpart signal for reproduction of the first centerpart signal.

5,610,986

LINEAR-MATRIX AUDIO-IMAGING SYSTEM AND IMAGE ANALYZER

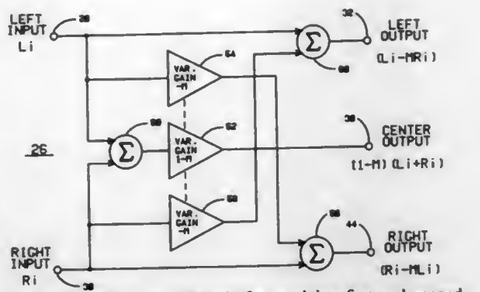
Michael T. Miles, 1826 S. Third St., Niles, Mich. 49120

Filed Mar. 7, 1994, Ser. No. 206,767

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—27 **38 Claims**

1. An audio-imaging system comprising:



first and second input channels for receiving first and second channel audio input signals;

first, second, and third output channels for producing first, second, and third audio output signals as a function of signals applied to said first and second input channels; wherein said signal on said first, second, and third output channels are respectively a function of L–MR, R–Ml and (1–M)(L+R) where:

L: is the level of said signal applied to said first input,

R: is the level of said signal applied to said second input, and

M: is the value said parameter and said parameter is nonzero and

a circuit that produces signals on each of said first, second, and third output channels as a function of a combination of said signals applied to said first and second input channels and said parameter, said parameter being common to said first, second, and third output signals, said parameter being adjustable by one of a user adjustment and an automatic adjustment in order to vary the width of the audio image produced by said signals to compensate for composition mixing of a program source applied to said input channels.

5,610,987

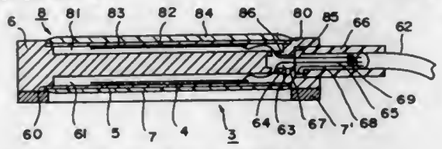
ACTIVE NOISE CONTROL STETHOSCOPE

Thomas R. Harley, Oxford, Miss., assignor to University of Mississippi, University, Miss.

Division of Ser. No. 106,607, Aug. 16, 1993. This application Mar. 12, 1996, Ser. No. 615,166

Int. Cl.[6] A61B *7/04;* **H04R** *3/00;25/00*

U.S. Cl. 381—67 **3 Claims**



1. An electronic stethoscope, comprising:

sensor means, including a piezoceramic transflexural actuator made up of a thin layer of piezoelectric material bonded to a thin conductive metal disc, for detecting sound exclusively from a patient and converting said sound to an electrical signal, said sensor means having an impedance which substantially matches that of a surface of the patient's body contacted by the sensor means and which is substantially different than that of air,

wherein said conductive metal disc is bonded to a conductive metal cylindrical housing which closes any direct path by which airborne noise can reach the piezoelectric element, said housing including a first cylindrical cavity to which is attached the perimeter of the circular piezoceramic device and a second cylindrical cavity which allows the sensor to be displaced back and forth, and

further comprising a waterproof insulating coating which covers the piezoceramic transflexural actuator for broadening a resonance frequency of the sensor means.

5,610,988

HEARING AID SET

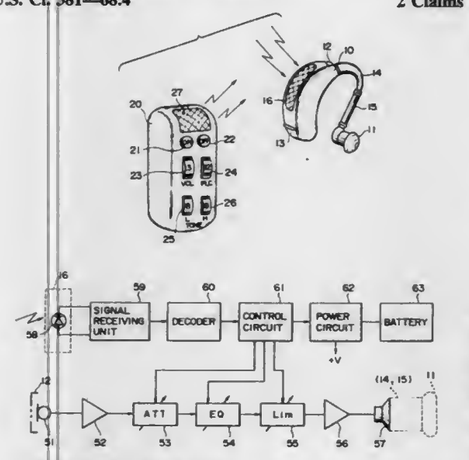
Katsunobu Miyahara, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 293,184, Aug. 19, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,287

Claims priority, application Japan, Sep. 8, 1993, 5-246112

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.4 **2 Claims**



1. A hearing aid set comprising:

a hearing aid comprising:

a microphone for receiving sound signals and providing electric output signals representative thereof,

variable-gain means for varying characteristics and level of the output signals from the microphone,

a speaker unit that receives an output signal from the variable-gain means,

receiving means for receiving control signals, and

gain control means for varying the gain of the variable-gain means;

said variable gain means including a level adjusting unit, including an attenuator, for adjusting the level of the output signals from the microphone to be applied to the speaker unit; a frequency characteristic adjusting unit, including an equalizer, for adjusting the frequency characteristics of the output signals of the microphone to be applied to the speaker unit; and a sound volume adjusting unit, including a limiter, for adjusting the volume of sounds to be generated by the speaker unit, and

a non-programmable controller for controlling the hearing aid, comprising:

operating means including at least one manually manipulable movable member for setting the gain of the variable gain means, wherein the operating means comprises a plurality of operating devices, and the indicating means comprise indicators that indicate that gain of the variable-gain means set by operating the operating devices of the operating means

output means which outputs the control signals to the receiving means with input signals from the operating means, and

analog type indicating means for visually indicating the gain of the variable-gain means specified by the input signals from the operating means, said indicating means comprising at least one fixed visible indicia which is associated with said at least one manually manipulable movable member and which visibly indicates a magnitude of at least one parameter which determines the gain of the variable gain means.

5,610,989

COIL ASSEMBLIES

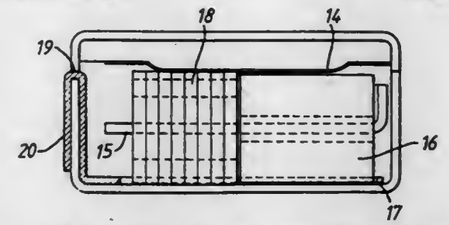
Richard J. Salvage, Burgess Hill; Steven J. Harrington, Steyning, and Derek W. Powell, Burgess Hill, all of United Kingdom, assignors to Knowles Electronics Co., Burgess Hill, United Kingdom

Continuation of Ser. No. 861,791, Jun. 15, 1992, abandoned. This application Dec. 20, 1994, Ser. No. 360,179

Claims priority, application United Kingdom, Dec. 21, 1989, 8928899

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—69 **5 Claims**



1. A coil assembly for a hearing aid transducer having a reed, the assembly comprising a fine wire formerless coil for receiving the reed, the coil having an elongated coil body defining a generally circumferential side surface and opposed end surfaces and a set of leads extending from the body and a flexible carrier constituted by a flexi-circuit incorporating electrical paths extending from a first set of terminals to a second set of terminals, the coil body being directly mounted to a planer portion of said flexi-circuit on the side surface of said coil body by means of an adhesive on the carrier and said leads being electrically connected to the first set of terminals, wherein the coil assembly is dimensioned for mounting within the bearing aid transducer.

5,610,990

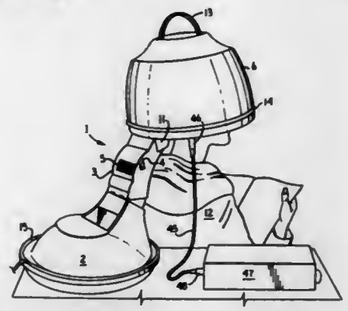
HAIR DRYER WITH INTEGRAL STEREO AUDIO SYSTEM

Blaise M. Wooderson, and Lewis A. Mendelson, both of Industrial Airport, Kans., assignors to Helen of Troy Limited, Barbados

Continuation-in-part of Ser. No. 361,734, Dec. 22, 1994, Pat. No. 5,531,032. This application Feb. 28, 1995, Ser. No. 395,712

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—90 **7 Claims**



1. A soft bonnet style hair dryer, comprising:

a. a collapsible soft bonnet sized to accommodate the head of a user, said bonnet comprising:

i. an outer shell which is relatively impervious to air; and

ii. an inner liner which is perforated to allow the passage of air therethrough;

b. a hair dryer mechanism selectively communicating heated air to said bonnet between said outer shell and said inner liner;

c. a first and a second audio speaker integrally mounted within said soft bonnet, said first and second audio speakers being positioned between said outer shell and said inner liner and each including an air deflecting means which seals off the first speaker from heated air circulating between said outer shell and said inner liner, each of said air deflecting means including a seam connecting said outer shell to said inner liner, said first and second speakers being positioned such that they direct sound through said inner liner to respective ears of said user such than audio information can be conveyed to the user while his or her hair is being dried;

d. an audio connector mounted on said bonnet; and

e. audio cabling connecting said audio connector to said first and second speakers in a stereophonic relationship, at least a portion of said cabling positioned between said outer shell covering and said inner liner.

5,610,991

NOISE REDUCTION SYSTEM AND DEVICE, AND A MOBILE RADIO STATION

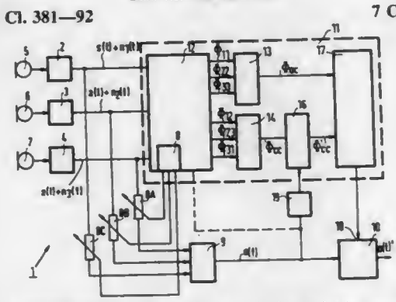
Cornelis P. Janse, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1994, Ser. No. 350,357

Claims priority, application European Pat. Off., Dec. 6, 1993, 93203421

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—92 **7 Claims**



1. A noise reduction system (**1**) for reducing noise in a combined speech signal (a(t)), comprising:

sampling means (**2**, **3**, **4**) for sampling a plurality of speech signals disturbed by additive noise ($n_1(t)$, $n_2(t)$, $n_3(t)$), recorded by respective microphones (**5**, **6**, **7**) being spaced apart from each other;

an adaptive filter (**10**) of which an input is coupled to adding means (**9**) for adding the speech signals, and of which an output provides a noise corrected combined speech signal (a(t)'); and

signal processing means (**11**) determining combined auto and cross power spectra (Φ_{aa}, Φ_{ca}) from auto and cross power spectra (Φ_{11}, Φ_{22}, Φ_{33}, Φ_{12}, Φ_{23}, Φ_{31}) determined from transformed samples of the speech signals (s(t)+n_1(t), s(t)+n_2(t), s(t)+n_3(t)), and being arranged for providing coefficients, which are derived from the combined auto and cross power spectra on a speech signal segment basis, to coefficient inputs (**18**) of the filter (**10**),

said signal processing means (**11**) determining the combined cross power spectrum (Φ_{ca}) during speech segments and speech pause segments,

said system comprising storage means for determining an estimate of the combined cross power spectrum (Φ_{ca}) for speech pause segments, and

said signal processing means (**11**) further determining a corrected combined cross power spectrum (Φ_{ca}') by subtracting the stored estimate from the combined cross power spectrum (Φ_{ca}) determined during the speech segment.

5,610,992

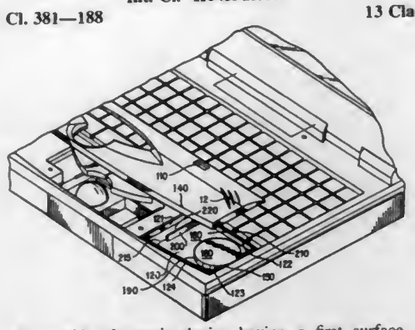
PORTABLE ELECTRONIC DEVICE HAVING A PORTED SPEAKER ENCLOSURE

Scott N. Hickman, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 17, 1995, Ser. No. 405,677

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—188 **13 Claims**



1. A portable electronic device having a first surface, said portable electronic device comprising:

a ported speaker enclosure, said ported speaker enclose comprising:

a speaker having a front portion and a back portion, said front portion of said speaker forming a first seal with said first surface of said portable electronic device, said back portion of said speaker forming a second seal with a second surface of said ported speaker enclosure;

an acoustic insulator disposed between said first surface of said portable electronic device and said second surface of said ported speaker enclosure wherein a first chamber portion is formed on one side of said acoustic insulator and a second chamber portion is formed on the other side of said acoustic insulator, said acoustic insulator having a gap that allows sound to travel from said first chamber portion to said second chamber portion;

said first chamber portion having a first chamber area;

said second chamber portion having a second chamber cross sectional area and a second chamber length;

a first aperture in said first surface of said portable electronic device to allow sound waves to emit from the front portion of said speaker;

a second aperture in said first surface of said portable electronic device to allow sound waves to emit from the back portion of said speaker through said first chamber portion and said second chamber portion;

said sound waves from said front portion of said speaker and said sound waves from said back portion of said speaker being substantially in phase with each other when emitted from the first and second apertures.

5,610,993

METHOD OF CO-CENTERING TWO IMAGES USING HISTOGRAMS OF DENSITY CHANGE

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 727,957, Jul. 10, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,501

Claims priority, application Japan, Jul. 12, 1990, 2-184777

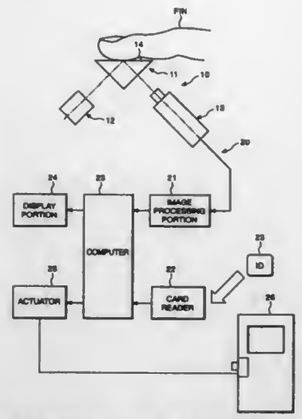
Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—124 **4 Claims**

1. An image positioning method for co-centering and verifying two images including ridges with each other, comprising the steps of:

receiving an input image portion to be examined corresponding to a fingerprint;

processing pixels of said input image portion to be examined, by:



calculating a density value of each pixel of said image portion to be examined;

calculating changes of density value, along first and second directions, between pixels of said image portion to be examined which have a predetermined distance therebetween;

using said changes in density value to obtain a histogram of density change along said first and second directions of said image portion to be examined; and

defining a maximum rate-of-change point of each said histogram along said first and second directions, respectively, as characteristic points of the image portion to be examined;

processing pixels of a reference image portion to be examined, by:

calculating a density value of each pixel of said reference image portion;

calculating changes of density value, along said first and second directions, between pixels of said reference image portion which have said predetermined distance therebetween;

using said changes in density value to obtain a histogram of density change along said first and second directions of said reference image portion; and

defining a maximum rate-of-change point of each said histogram along said first and second directions, respectively, as characteristic points of the reference image portion;

moving said image portion to be examined relative to said reference image until said characteristic points of said reference image portion and image portion to be examined coincide with each other, to co-center the images;

recognizing said image portions as co-centered when said characteristic points coincide with each other;

comparing said histograms of said image portion and said reference image portion with each other;

recognizing said image portions as matching when said histograms correspond to each other within a predetermined amount; and

outputting a verification signal when said histograms correspond to each other within a predetermined amount

wherein said calculating changes in density value step for said image portion and said reference image portion includes the steps of:

determining partial differentials of density data for each said density value;

determining minimal partial differential of density data from said partial differentials for each said density value; and

determining said first and second directions according to said minimal partial differentials.

5,610,994

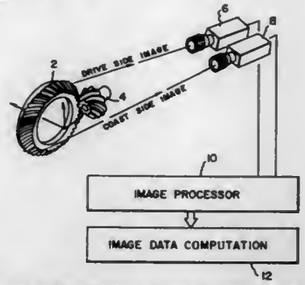
DIGITAL IMAGING OF TOOTH CONTACT PATTERN

Hermann J. Stadtfeld, Rochester, and John W. Swanger, Jr., Fairport, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed May 3, 1995, Ser. No. 433,582

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—152 **9 Claims**



1. A method of determining a contact pattern representative of contact patterns on successive gear teeth, said method comprising:

providing a first digital image comprising one of (1) the drive side tooth surfaces comprising contact patterns of a plurality of successive gear teeth or (2) the coast side tooth surfaces comprising contact patterns of a plurality of successive gear teeth,

providing a second digital image comprising one of (1) respective drive side theoretically correct tooth surfaces of said plurality of successive gear teeth or (2) respective coast side theoretically correct tooth surfaces of said plurality of successive gear teeth,

representing each theoretically correct tooth surface by a matrix grid comprising a plurality of grid elements,

superimposing said drive side or coast side theoretically correct tooth surfaces on respective said first digital image tooth surfaces to congruently match said first image tooth surfaces to the respective theoretically correct tooth surfaces,

identifying grid elements of each theoretically correct tooth surface which contain at least a portion of said contact pattern image,

providing a consolidation matrix grid comprising said plurality of grid elements,

identifying grid elements in said consolidation matrix corresponding to respective identified grid elements in each of said theoretically correct matrix grids, the identified grid elements in said consolidation matrix representing a consolidated contact image for said plurality of successive gear teeth.

5,610,995

METHOD AND APPARATUS FOR COMPRESSING IMAGES CONTAINING OPTICAL SYMBOLS

Joe Zheng, Brookfield, Conn., and Wenhua Li, Mt. Prospect, Ill., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Jun. 6, 1995, Ser. No. 467,093

Int. Cl.[6] G06K *9/18*

U.S. Cl. 382—183 **9 Claims**

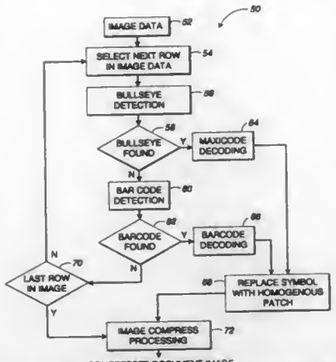
1. A method for image data compression of an image including a decodable symbol therein, comprising the steps of:

a) storing a digital signal corresponding to an image as image data;

b) recognizing the presence of said decodable symbol as a symbol portion of said image data, said symbol portion being a space having an outer peripheral boundary;

c) decoding said symbol portion of said image data portion to determine the content and location of said symbol;

d) storing said symbol content and location data;



e) replacing said symbol portion of said image data by filling said symbol portion space within said outer peripheral boundary with a more easily compressible homogeneous image data portion; and

f) compressing said image data as modified in step "e" and also compressing said symbol and location data.

5,610,996

METHOD AND APPARATUS FOR ARC SEGMENTATION IN HANDWRITING RECOGNITION

Marlin J. Eller, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 10,497, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 685,528, Apr. 15, 1991, abandoned. This application Jul. 13, 1994, Ser. No. 274,354

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—187 **4 Claims**



1. A computer-implemented method of recognizing a handwritten character comprising the steps of:

inputting into a computer a plurality of data points representing the handwritten character, the data points corresponding to X-Y coordinate points in a path traveled by a handwriting instrument as the character is written, the handwritten character including a first arc having first and second end points;

detecting a change in direction of curvature of the first arc from a clockwise direction to a counterclockwise direction, the change of direction of curvature indicating an inflection point, wherein the detecting step includes:

selecting a first vector heading into a first data point of the plurality of data points of the first arc;

selecting a second vector heading out of the first data point and into a second data point of the plurality of data points of the first arc;

selecting a third vector heading out of the second data point;

computing a first angle between the first and second vectors, the first angle having a positive or negative sign depending on whether the first angle is clockwise or counterclockwise;

computing a second angle between the second and third vectors, the second angle having a positive or negative sign depending on whether the second angle is clockwise or counterclockwise;

determining whether the second angle exceeds a predetermined turning point threshold value;

if the second angle exceeds the turning point threshold value, then segmenting the first arc into second and third arcs at the second data point;

if the second angle does not exceed the turning point threshold value, then determining whether the second angle is opposite in sign to the first angle; and

if the second angle is opposite in sign to the first angle, then segmenting the arcs into the second and third arcs at the second data point, the second data point being the inflection point;

segmenting the first arc into second and third arcs at the inflection point, the inflection point becoming an end point in each of the second and third arcs;

determining a representative set of coordinate points for a selected one of the arcs of the handwritten character, the representative set having fewer coordinate points than the selected arc;

comparing the representative set to arcs in a plurality of reference characters; and

outputting a representation of a reference character based on a result obtained in the comparing step.

5,610,997

IMAGE PROCESSING METHOD AND APPARATUS

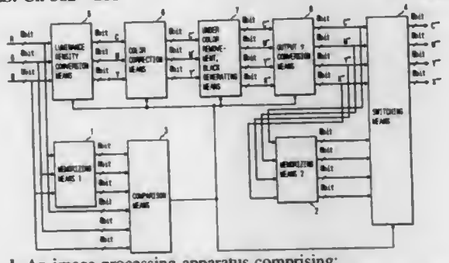
Takatoshi Ohta, Yokohama, and Nobuo Ohnuma, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 97,047, Jul. 27, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 426,633

Claims priority, application Japan, Jul. 28, 1992, 4-201397; Jul. 31, 1992, 4-205415

Int. Cl.[6] G06K *9/68;* **G03F** *3/08*

U.S. Cl. 382—218 **16 Claims**



1. An image processing apparatus comprising:

input means for inputting data in units of pixels of an image;

first memorizing means for storing a first input data corresponding to a single said pixel input by said input means;

processing means for performing a predetermined process utilizing said input data, and outputting a processed data;

second memorizing means for storing said processed data corresponding to said first input data;

comparison means for comparing a second input data corresponding to a pixel different from said pixel with said first input data stored in said first memorizing means at one time, said comparison means having an output indicative of a result of said comparing; and

controlling means for controlling an output of said apparatus according to said output from said comparison means such that when said second input data differs from said first input data, the predetermined process is performed upon said second input data and said second input data is stored in said first memorizing means and processed data corresponding to said second input data is stored in said second memorizing means, and when said second input data does not differ from said input data, the data stored in said second memorizing means are output.

5,610,998

APPARATUS FOR EFFECTING A/D CONVERSION ON IMAGE SIGNAL

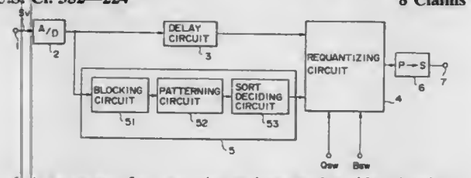
Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 260,373

Claims priority, application Japan, Jun. 17, 1993, 5-171124

Int. Cl.[6] H04N *1/417;1/415;1/40;* **G06K** *9/36*

U.S. Cl. 382—224 **8 Claims**



6. An apparatus for converting an input analog video signal to a digital code, comprising:

an A/D converter for converting the input analog video signal into a first quantization code having a first number of bits;

class sorting means for receiving said first quantization code from said A/D converter and for detecting a characteristic of a plurality of pixels including a pixel to be marked, based on said first quantization code corresponding to said pixel to be marked and said first quantization code corresponding to each of said plurality of pixels provided near the periphery of said pixel to be marked and for determining a class corresponding to said pixel to be marked from a plurality of predetermined classes, based on said characteristic; and

quantizing means for receiving said first quantization code produced from said A/D converter, the class determined by said class sorting means, an image-quality switching signal which designates an image quality characteristic of an image, and a bit switching signal which designates a number of bits, and for adaptively converting said first quantization code of said pixel to be marked into a second quantization code based on said class determined by said class sorting means and said image-quality switching signal and having a second number of bits smaller than the first number of bits based on said bit switching signal.

5,610,999

IMAGE PROCESSING APPARATUS AND METHOD THAT ADDS CORRECTION SIGNAL TO AVERAGE DENSITY AND DIGITIZES ACCORDINGLY

Yuichi Bannai, Koganei; Kunihiro Yamamoto, Machida, and Hidefumi Osawa, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

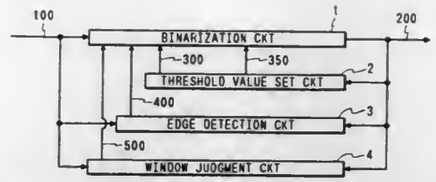
Continuation of Ser. No. 13,662, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 731,471, Jul. 17, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 266,665

Claims priority, application Japan, Jul. 20, 1990, 2-190828; Oct. 19, 1990, 2-279172; Dec. 19, 1990, 2-403851; Dec. 19, 1990, 2-403852

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—272 **20 Claims**

1. An image processing apparatus that inputs image data representing an image, binarization processes the input image data and visibly outputs a reproduction image based on obtained binary data, said apparatus comprising:



input means for sequentially inputting image data of an object pixel to be binary-digitized;

a calculator for calculating an average density, based on plural binarized data positioned around the object pixel;

a threshold value setter for summing a predetermined correction signal and the average density calculated by said calculator, thereby setting a threshold value, the predetermined correction signal being a signal which varies every time the pixel to be binary-digitized varies;

binarization means for effecting binary digitization according to the threshold value set by said threshold value setter; and

output means for visibly outputting the reproduction image by turning on/off dots based on the binary data from said binarization means,

wherein said threshold value setter sums a dither signal or a random number and the average density such that any texture pattern is not generated in the reproduction image output by said output means.

5,611,000

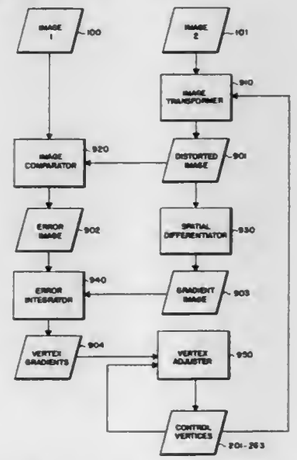
SPLINE-BASED IMAGE REGISTRATION

Richard S. Szeliski, Arlington, and James M. Coughlan, Somerville, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 200,060, Feb. 22, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,357

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—294 **25 Claims**



1. A method for extracting motion information from a sequence of images, comprising the steps of:

storing a first image in a memory as a first set of light intensity values;

storing a second image in said memory as a second set of light intensity values;

storing a spline control grid in said memory as a dam structure, said spline control grid having a plurality of control vertices at predetermined locations with respect to said second image;

transforming said second image to a derived image by a spline function in cooperation with the spline control grid, said spline control grid being a data structure stored said memory, the locations of said control vertices parametrizing said spline function;

comparing said first image to said derived image;

displacing, in response to there being a difference between said first image and said derived image, the locations of said control vertices to minimize the difference between said first and derived images; and

repeating said transforming, comparing, and displacing steps until the difference between said first image and said second image is less than a desired amount, the locations of control vertices stored in said memory characterizing the motion information of said first image and said second image.

5,611,001

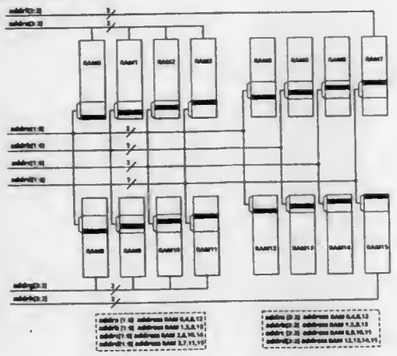
ADDRESS REDUCTION SCHEME IMPLEMENTING ROTATION ALGORITHM

Vinod Kadakia, Rancho Palos Verdes, and Christine Kang, Los Angeles, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,343

Int. Cl.[6] G06T *3/60*

U.S. Cl. 382—297 **2 Claims**



1. A circuit for transferring a data block of $2^{(n+m)}$ by $2^{(n+m)}$ bits into or out of memory devices along diagonal lines with said data block transfer taking place 2^n bits at a time, comprising:

2^n memory devices, numbered i=0 to 2^{n-1}, each memory device having n+2m address lines and containing $2^{(n+m)}$ bits of data, said 2^n memory devices partitioned into subgroups of 2^k memory devices each, wherein the address lines of all the memory devices in each subgroup share n−k address lines which are not shared by any other memory devices in any other subgroups, the ith memory devices of all subgroups share k address lines not shared by any other memory devices, and all memory devices share 2m address lines with the total number of address lines being $(n-k)2^{(n-k)}+k2^k+2m$.

5,611,002

METHOD AND APPARATUS FOR MANIPULATING AN INPUT SIGNAL TO FORM AN OUTPUT SIGNAL HAVING A DIFFERENT LENGTH

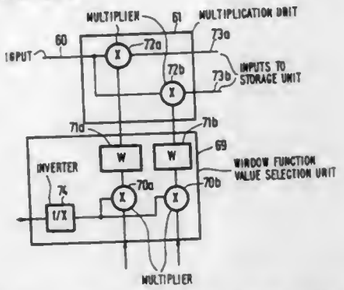
Leonardus L. M. Vogten; Chang X. Ma, both of Eindhoven, Netherlands; Werner D. E. Verhelst, Brussels, Belgium, and Josephus H. Eggen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 3, 1992, Ser. No. 924,726

Claims priority, application European Pat. Off., Aug. 9, 1991, 91202044; Feb. 24, 1992, 92200521

Int. Cl.[6] G10L *9/00;5/02*

U.S. Cl. 395—2.76 **15 Claims**



11. An apparatus for manipulating an input signal having a specific length to from an output signal, the apparatus comprising:

positioning means for positioning a chain of successive overlapping time windows with respect to the input signal;

incrementing means for determining a position with respect to the input signal with which each of the windows, except for the first window in the chain, is to be positioned by said positioning means by incrementing from a corresponding position of a preceding window in the chain positioned with respect to the input signal by a time interval which is substantially equal to a principal period of periodicity for a portion of the input signal with respect to which the window will be positioned;

segmenting means for deriving a plurality of segment signals from the input signal and the windows, each of the segment signals being derived by weighting the input signal as a function of position in a corresponding one of the windows; and

synthesizing means for synthesizing the output signal so that it has a predetermined length which differs from the specific length of the input signal by chained superposition of a sequence of the segment signals, the sequence being derived from the segment signals by performing at least one of repeating and suppressing one or more of the segment signals.

5,611,003

ELECTRO-OPTICAL SEMICODUCTOR MODULATOR, AND AN OPTICAL LINK INCLUDING THE MODULATOR

Dominique Lesterlin, Vitry sur Seine; Jérôme Langanay, Montrouge, and Jean-Guy Provost, Longpont sur Orge, all of France, assignors to Alcatel N.V., Bh Rijswijk, Netherlands

Filed Mar. 10, 1995, Ser. No. 401,676

Claims priority, application France, Mar. 11, 1994, 94 02858

Int. Cl.[6] G02F *1/015*

U.S. Cl. 385—3 **7 Claims**

1. An electro-optical semiconductor modulator including a light guide (2) that includes two successive segments (SA, SD), each of which applies both attenuation and a phase shift to a light wave (12), each of the two segments being provided with control electrodes (EA, EM; ED, EM) connected to a control generator (4); each of the two segments having:

an attenuation response to electricity (dCA/dV1) equal to the derivative of the mean absorption coefficient (CA) of the segment with respect to a control voltage (V1) that caused a variation in the coefficient; and

a phase-shift response to electricity (dϕ/dV2) equal to the derivative of a phase-shift angle (ϕ) with respect to a control voltage (V2);

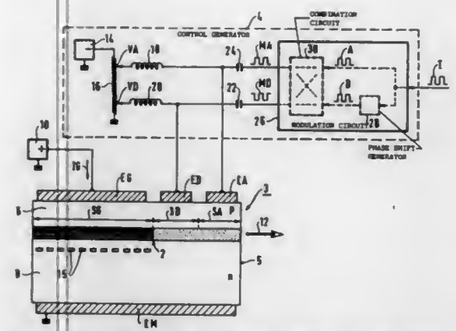
the relationship between the attenuation response to electricity and the phase-shift response to electricity being expressed by a "phase-amplitude coupling" factor α defined by the following equation:

$$\frac{d\phi}{dt} = \frac{\alpha}{2} \frac{1}{CA} \frac{dCA}{dt}$$

where t represents time, and CA represents the mean absorption coefficient;

the coupling factor being smaller in an "attenuation" one of the segments (SA) than in a "phase-shift" one of the segments (SD);

said modulator being characterized in that the two segments (SA, SD) have the same structure, and in that, to obtain a smaller coupling factor in the attenuation segment (SA) than in the phase-shift segment (SD), the control generator (4) supplies different DC components (VA, VD) to the respective electrodes of the two segments.



5,611,004

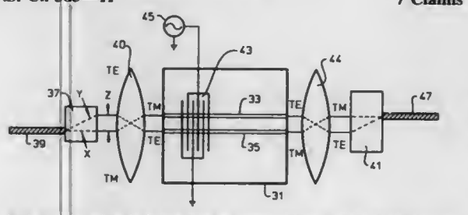
MICROPHOTONIC POLARIZATION INDEPENDENT ACOUSTO OPTICAL TUNABLE FILTER AND RECEIVER

Kok-Wai Chang, Sunnyvale, and Lewis B. Aronson, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 30, 1996, Ser. No. 594,074

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—11 **7 Claims**



1. A polarization independent acousto-optical tunable filter comprising:

a first walk-off crystal receiving an incoming beam of randomly polarized light and separating the randomly polarized light into a first polarized light beam and a second polarized light beam wherein the first light beam and the second light beam are orthogonal to each other and separated by a separation distance;

a dual acousto-optical tunable filter, the dual acousto-optical tunable filter comprising a base of acousto-optic material comprising a first waveguide and a second waveguide separated by the separation distance and adapted to receive the first light beam and the second light beam, a first transducer responsive to an electrical signal to induce an acoustic wave in the base, the acoustic wave operable to change the polarization mode of any light propagating through the base and having a frequency within an optical frequency band defined by the frequency of the acoustic wave and the optical properties of the base but not to change the polarization mode of any light having a frequency outside the optical frequency band, and providing a first filtered light beam and a second filtered light beam;

a first lens placed between the first walk-off crystal and the dual acousto-optical tunable filter for focusing the first light beam and the second light beam before being received by the dual acousto-optical tunable filter;

a second walk-off crystal receiving the first filtered light beam and the second filtered light beam from the dual acousto-optical tunable filter wherein light of the first filtered light beam and the second filtered light beam within the optical frequency band are combined at a second walk-off crystal output; and

a second lens placed between the dual acousto-optical tunable filter and the second walk-off crystal for focusing the first filtered light beam and the second filtered light beam before being received by the second walk-off crystal.

5,611,005

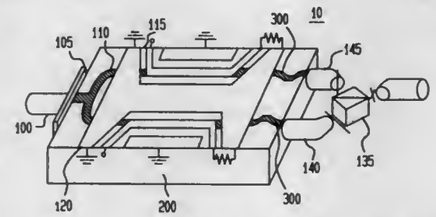
HIGH-SPEED POLARIZATION SCRAMBLER WITH ADJUSTABLE CHIRP

Fred L. Heismann, Tinton Falls, N.J., and Robert W. Smith, Allentown, Pa., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Apr. 26, 1996, Ser. No. 638,423

Int. Cl.[6] G02B *6/00;* **G01B** *9/02*

U.S. Cl. 385—11 **18 Claims**



1. A high-speed polarization scrambler for modulating the phase and the state of polarization of a polarization signal, comprising:

input signal means;

an optical splitter means to split the input signal into at least a first and a second input signal branches;

at least a first and a second optic phase modulators connected to the first and second input signal branches, respectively; and

an optical polarization combiner connected to an output of the first and secood phase modulators, wherein the combiner combines said outputs of the first and second phase modulators in two mutually orthogonal polarization states;

wherein the first and second phase modulators independently modulate the optical phases of the input signals in said first and second input signal branches.

5,611,006

HYBRID TYPE INTEGRATED OPTICAL DEVICE HAVING DOUBLE-LAYERED SUBSTRATE

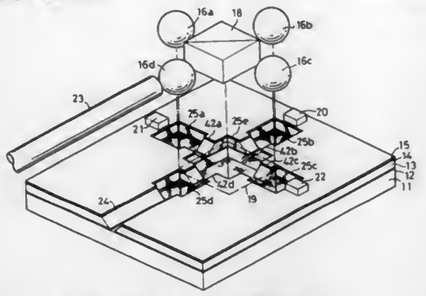
Haruhiko Tabuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 15, 1994, Ser. No. 275,309

Claims priority, application Japan, Aug. 31, 1993, 5-216633

Int. Cl.[6] H01L *27/13*; **G02B** *6/10*

U.S. Cl. 385—14 **19 Claims**



1. An integrated optical device comprising:

a support substrate having a first upper surface;

an optical system disposed on said support substrate including means for collimating an inputted light beam to produce a collimated light beam having a predetermined maximum beam radius and defining a plurality of optical axes along which said collimated light beam is transmitted, said optical axes being parallel to and at a first height above said first upper surface, and said first height being larger than said maximum beam radius of said collimated light beam;

an upper layer formed on said first upper surface and formed of a material which is selectively removable with respect to said substrate, and having a second upper surface at a second height larger than said beam radius and smaller than said first height and an opening formed in said upper layer accommodating said optical system therewithin;

a first optical component mounted on said second upper surface, and an optical axis aligned with an optical axis of said optical system so as to be optically connected with said optical system; and

a second optical component mounted on said second upper layer with an optical axis aligned with an optical axis of said optical system so as to be optically connected with said optical system;

wherein the difference between said first height and said second height is smaller than said maximum beam radius, such that part of said collimated light beam passes under said second upper surface;

and wherein said upper layer is removed where said beam is transmitted, so as to prevent shielding of said beam.

5,611,007

ASYMMETRIC INTEGRATED OPTICAL MACH-ZEHNDER INTERFEROMETER

Barbara Wolf, Kronau, and Norbert Fabricius, Hockenheim, both of Germany, assignors to IOT Integrierte Optil GmbH, Jena, Germany

Filed Aug. 3, 1995, Ser. No. 510,845

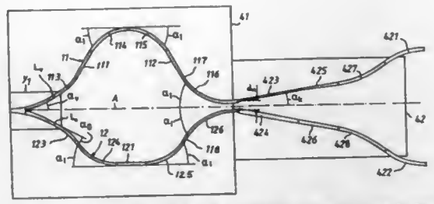
Claims priority, application Germany, Aug. 3, 1994, 44 27 523.4

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **11 Claims**

11. A multiplexer/demultiplexer comprising:

an integrated optical Mach-Zehnder interferometer including: first and second waveguide arms; said first waveguide arm including a first plurality of arcuate segments and a plurality of straight segments; said second waveguide arm including a second plurality of arcuate segments and at least one straight segment; each of said arcuate segments of said second plurality being a mirror image of a corresponding one of said arcuate segments of said first plurality of arcuate segments; and, said straight segment of said second waveguide arm having a length less than the total length of said straight segments of said first waveguide arm;



said first and second waveguide arms defining an output;

a contactless (2×2) coupler connected to said output;

said contactless (2×2) coupler being asymmetrical;

one of said arcuate segments of said first waveguide arm being an end segment thereof and defining a first end face;

one of said arcuate segments of said second waveguide arm being an end segment thereof and defining a second end face;

said first and second end faces conjointly defining said output;

said end segments being symmetrical with respect to each other and having the same propagation constant;

said contactless (2×2) coupler having two adiabatic waveguide segments abutting corresponding ones of said end faces;

said waveguide segments having respective propagation constants different from each other; and,

said waveguide segments being arranged so as to diverge away from each other.

5,611,008

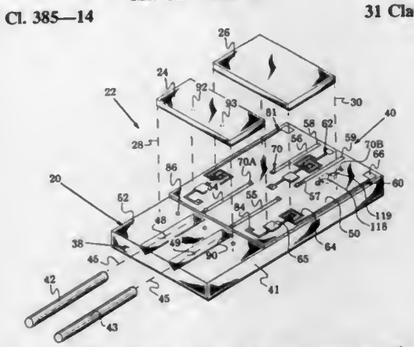
SUBSTRATE SYSTEM FOR OPTOELECTRONIC/MICROWAVE CIRCUITS

Daniel Yap, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 26, 1996, Ser. No. 591,854

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **31 Claims**



1. A substrate system for carrying and interconnecting an optoelectronic/microwave circuit with the aid of a plurality of solder bumps, said optoelectronic/microwave circuit including an optical fiber, an optoelectronic integrated circuit which has an optical port and a plurality of bonding pads, and a microwave integrated circuit which has a plurality of bonding pads, said microwave integrated circuit adapted for communication with said optoelectronic integrated circuit through a first microwave signal and adapted for communication externally from said optoelectronic/microwave circuit through a second microwave signal, said substrate system comprising:

a substrate;

a groove formed in said substrate;

a dielectric layer positioned over at least a portion of said substrate;

a plurality of microwave transmission members carried on said dielectric layer and configured to carry microwave signals;

a plurality of first bonding pads formed on said dielectric layer; and

a plurality of second bonding pads formed on said dielectric layer;

wherein:

said groove is configured to receive said fiber;

said first bonding pads are positioned to align with said bonding pads of said optoelectronic integrated circuit and configured to be connected to said bonding pads of said optoelectronic integrated circuit with a plurality of said solder bumps;

said second bonding pads are positioned to align with said bonding pads of said microwave integrated circuit and configured to be connected to said bonding pads of said microwave integrated circuit with a plurality of said solder bumps;

said groove and said first bonding pads are arranged to optically align said optical fiber and said optical port; and

one of said microwave transmission members is arranged to couple said first microwave signal between said optoelectronic integrated circuit and said microwave integrated circuit.

5,611,009

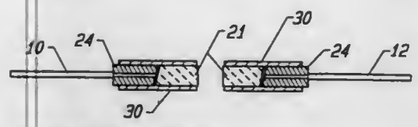
1 X N ELECTROMECHANICAL OPTICAL SWITCH

Jing-Jong Pan, San Jose, Calif., assignor to E-Tek Dynamics, Inc., San Jose, Calif.

Continuation of Ser. No. 307,114, Sep. 16, 1994, Pat. No. 5,479,541, which is a continuation of Ser. No. 74,765, Jun. 10, 1993, Pat. No. 5,359,683. This application Aug. 9, 1995, Ser. No. 512,752

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—22 **15 Claims**



1. An optical switch comprising:

a first optical fiber having a longitudinal axis and an end surface;

a first collimating lens having a longitudinal axis coincident with the longitudinal axis of the first optical fiber and a surface adjacent to the end surface of the first optical fiber;

a drive mechanism which supports the first collimating lens and which changes an angular orientation of the first collimating lens about an axis of rotation, the axis of rotation being at an angle to the longitudinal axis of the first optical fiber so that the longitudinal axis of the first collimating lens is radially oriented relative to the axis of rotation;

a plurality of N second collimating lenses, each second collimating lens having a longitudinal axis and a surface, the axes of the second collimating lenses being arranged radially about the axis of rotation so that the longitudinal axis of each second collimating lens is parallel to the longitudinal axis of the first collimating lens when the first collimating lens is adjacent to that second collimating lens, coupling of the first and second collimating lenses being sensitive to angular misalignment and insensitive to displacement misalignment therebetween; and

a plurality of N optical fibers, each having a longitudinal axis coincident with an optical axis of an associated second collimating lens and an end surface adjacent to the surface of the associated second collimating lens.

5,611,010

GUIDE PIN INSERTION MEMBER FOR INSERTING GUIDE PINS INTO AN OPTICAL FIBER CONNECTOR

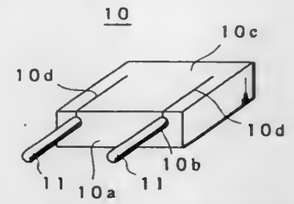
Masato Shiino, Tokyo; Mikio Tsutsumi, and Shijl Nagasawa, both of Mito, all of Japan, assignors to The Furukawa Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Aug. 10, 1995, Ser. No. 513,446

Claims priority, application Japan, Aug. 18, 1994, 6-194323; Mar. 1, 1995, 7-042060

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—53 **14 Claims**



1. A pin insertion member for inserting guide pins into pin holes of an optical fiber connector, comprising:

a retaining portion for holding at least two guide pins such that one-end portions of said at least two guide pins project from said retaining portion, said retaining portion including retaining holes for holding other-end portions of said at least two guide pins with a predetermined space therebetween in a widthwise direction;

said pin insertion member having a plurality of slits between said retaining holes and an outer surface of said retaining portion, whereby said at least two guide pins are adapted to be insertable at a stroke into corresponding pin boles of an optical fiber connector.

5,611,011

ALIGNMENT PIECE FOR A CONNECTOR FOR OPTICAL CONDUCTORS AND METHOD USING SAME

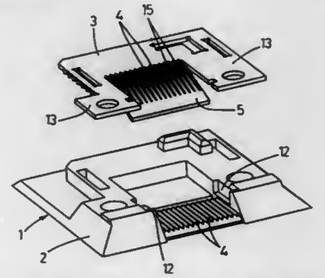
Danny Morlion, St. Amandsberg; Luc Jonckheere, Dilbeek, and Jan P. K. Van Koetsem, Zwijndrecht, all of Belgium, assignors to Framatome Connectors International, Paris, France

Filed Sep. 6, 1995, Ser. No. 524,383

Claims priority, application Netherlands, Sep. 8, 1994, 9401458

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—59 **4 Claims**



1. Alignment piece for a connector for one group of optical conductors, comprising a support plate, a guiding plate manufactured with very high accuracy and one or more alignment channels for the conductors, said alignment channels each having an entrance end for the corresponding conductor at a lower level in the support plate and an exit end for the corresponding conductor at a higher level, the exit ends of the alignment channels being

formed in the guiding plate, and a positioning element, wherein the guiding plate is provided with a positioning means for holding the positioning element at a predetermined location with respect to the exit ends of the alignment channels, said positioning element having a supporting area engaging the conductors between the entrance and exit ends of the alignment channels and determining, together with the exit ends of the alignment channels, an angle of inclination of the conductors in the alignment piece between the entrance and exit ends of the alignment channels.

3. Method for applying optical conductors in an alignment piece, comprising the step of providing an alignment piece for a connector one group of optical conductors, the alignment piece comprising a support plate, a guiding plate manufactured with very high accuracy, one or more alignment channels for the conductors, said alignment channels each having a entrance end for the corresponding conductor at a lower level in the support plate and an exit end for the corresponding conductor at a higher level, the exit ends of the alignment channels being formed in the guiding plate, and a positioning element, wherein the guiding plate is provided with a positioning means for holding the positioning element at a predetermined location with respect to the exit ends of the alignment channels, said positioning element having a supporting area engaging the conductors between the entrance and exit ends of the alignment channels and determining together with the exit ends of the alignment channels, an angle of inclination of the conductors in the alignment piece between the entrance and exit ends of the alignment channels, wherein each conductor is shifted into one of the alignment channels from said entrance end until a free end of the conductor projects from said exit end and above a surface of the guiding plate, wherein after applying the conductors the positioning element is mounted in the alignment piece in a hollow space of the support plate, wherein said positioning element is held at a predetermined location with respect to the exit ends of the alignment channels by positioning means of the guiding plate, wherein the positioning element engages the conductors with a supporting area between the entrance and exit ends of the alignment channels, wherein the exit ends of the alignment channels and the supporting area of the positioning element determine the angle of inclination of the conductors in the alignment piece.

5,611,012

OPTICAL FIBER PLUG-TYPE CONNECTOR

Thomas Kuchenbecker, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

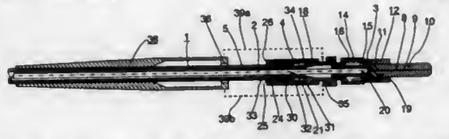
PCT No. PCT/DE94/01004, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO95/07479, PCT Pub. Date Mar. 16, 1995

PCT Filed Aug. 25, 1994, Ser. No. 602,783

Claims priority, application Germany, Sep. 8, 1993, 43 30 941.0

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—86 **8 Claims**



1. A plug-type connector for one end of a fiber-optic cable, which cable includes at least one optical fiber surrounded by a fiber sheath, a strand-type strain-relief element and a cable sheath, said plug-type connector comprising:

a ferrule with a central longitudinal bore for receiving an unsheathed end of the optical fiber;

a ferrule-holder for receiving a rear region of said ferrule;

a casing in which said ferrule-holder is mounted, said ferrule holder being axially movable in said casing against a restoring force, said ferrule-holder and said casing each including central openings through which the optical fiber and the fiber sheath are movable into the cable sheath; and

means for fastening an end of the strain-relief element to the casing, including a receiving space in said casing into which the end of the strain-relief element can be introduced and immobilized by adhesive bonding and/or sealing, said receiving space being separated in a liquid-tight manner from the central opening in said casing.

5,611,013

OPTICAL MINIATURE CAPSULE

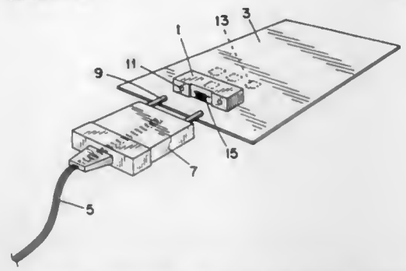
Peter L. Curzio, Älvajö , Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 14, 1995, Ser. No. 490,508

Claims priority, application Sweden, Jun. 14, 1994, 9402082

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—89 **15 Claims**



1. An optical component capsule for coupling to an optical connection, the capsule comprising:

a first surface that is accessible when the capsule is mounted;

at least one optoelectronic component mounted on the first surface of the capsule, having at least one optical exterior coupling surface for coupling to a wave guide for light or an optical fiber, electrical connections, and guides for receiving a means for guiding, wherein the guides are arranged in or at the capsule and include axes extending into a plane of the first surface of the capsule, and

a recess or depression in the first surface of the capsule, the recess or depression having a bottom surface,

wherein the component is mounted on the bottom of the recess or depression so that all portions of the component are located below or behind the level of the non-recessed or non-depressed portion of the first surface, and when pushing a connector having a flat front coupling surface, the coupling surface will only mechanically contact the non-recessed or non-depressed portion of the surface with a substantially small distance remaining between the coupling surface and the nearest portions of the component.

5,611,014

OPTOELECTRONIC DEVICE CONNECTING TECHNIQUES

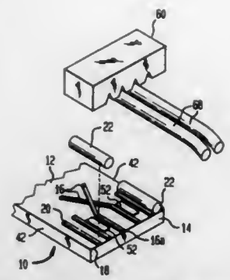
Nagesh R. Basavanhally, Hamilton Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 7, 1994, Ser. No. 349,151

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—90 **7 Claims**

1. An optoelectronic connector assembly comprising a first mounting board having first and second grooves formed in a first surface thereof, said grooves being in parallel, side by side relationship with one-another, said first groove containing an end of an optical fiber, a second mounting board containing a waveguide on a second surface thereof, said waveguide having an extending length portion, a rail mounted on and directly secured to said second surface and spaced from said waveguide, said rail comprising a length of an optical fiber having a circular cross-section and being disposed parallel to said extending length portion of said waveguide, and said first mounting board being mounted on said



second mounting board and being, within a plane perpendicular to said first and second surfaces, laterally centered with respect to said second mounting board by means of said rail being seated within said second groove.

5,611,015

APPARATUS AND METHOD OF SPLICING POLARIZATION-MAINTAINING OPTICAL FIBERS

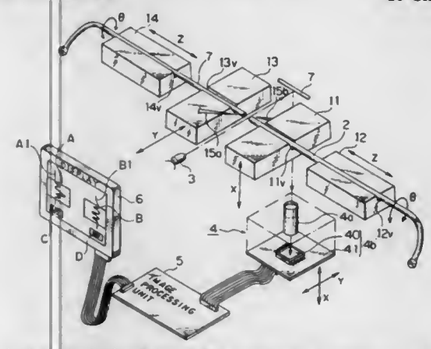
Yuzo Tokumaru, and Mikio Kobayashi, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1995, Ser. No. 542,302

Claims priority, application Japan, Oct. 13, 1994, 6-247853

Int. Cl.[6] G02B *6/255*

U.S. Cl. 385—98 **10 Claims**



1. A method of splicing a first polarization-maintaining optical fiber having a core and stress applying members and a second polarization-maintaining optical fiber having a core and stress applying members, comprising:

(a) arranging the first and second polarization-maintaining optical fibers such that end faces thereof oppose each other;

(b) irradiating light from a side of the first and second polarization-maintaining optical fibers;

(c) sensing a first transmitted optical image transmitted through the first polarization-maintaining optical fiber and a second transmitted optical image transmitted through the second polarization-maintaining optical fiber with a television camera, the first transmitted optical image having first, second, and third luminance peaks, and the second transmitted optical image having fourth, fifth, and sixth luminance peaks;

(d) obtaining positions of the first, second, third, fourth, fifth, and sixth luminance peaks based on a luminance signal of the first transmitted optical image output from said television camera;

(e) displaying a first value calculated from the positions of the first, second, and third luminance peaks on a display;

(f) displaying a second value calculated from the positions of the fourth, fifth, and sixth luminance peaks on said display;

(g) moving the first and second polarization-maintaining optical fibers such that the first and second values displayed on said display are equal; and

(h) splicing the first and second polarization-maintaining optical fibers with each other after the step (g).

5,611,016

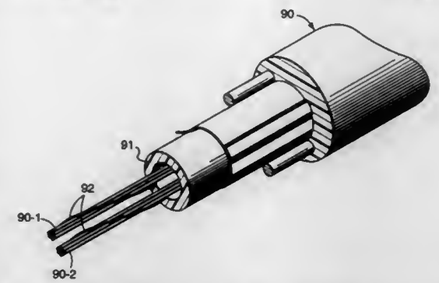
DISPERSION-BALANCED OPTICAL CABLE

Robert E. Fangmann, Lilburn; Arthur F. Judy, and James J. Refi, both of Atlanta, all of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1996, Ser. No. 660,639

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 **23 Claims**



1. A dispersion-balanced optical cable comprising one or more optical fibers of a first type and one or more optical fibers of a second type, both types of optical fiber being suitable for transmitting optical signals at a source wavelength λ_s,

CHARACTERIZED IN THAT:

the first type of optical fiber has positive chromatic dispersion, the average of the absolute magnitudes of the dispersions of the positive dispersion fibers exceeding 0.8 ps/nm.km at λ_s; and

the second type of optical fiber has negative chromatic dispersion, the average of the absolute magnitudes of the dispersions of the negative dispersion fibers exceeding 0.8 ps/nm.km at λ_s.

5,611,017

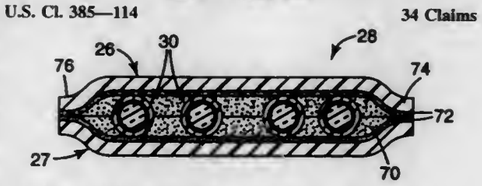
FIBER OPTIC RIBBON CABLE WITH PRE-INSTALLED LOCATIONS FOR SUBSEQUENT CONNECTORIZATION

Nicholas A. Lee; Barbara A. DeBaun, both of Woodbury; Gordon D. Henson, Lake Elmo; Scott A. Igl, St. Paul, and Terry L. Smith, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 456,571, Jun. 1, 1995, Pat. No. 5,574,817. This application Oct. 18, 1995, Ser. No. 544,611

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—114 **34 Claims**



1. A fiber optic ribbon cable comprising:

a pair of adhesive tape layers, wherein each adhesive tape layer comprises an adhesive surface and has first and second ends;

at least one optical fiber arranged in a generally longitudinal orientation between the pair of tape layers and in contact with the adhesive surfaces thereof; and

at least one release element disposed between one of the adhesive tape layers and the at least one optical fiber to form a release location between the first and second ends.

5,611,018

SYSTEM FOR CONTROLLING VOICE SPEED OF AN INPUT SIGNAL

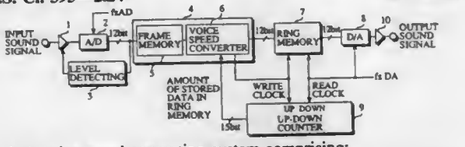
Hiroshi Tanaka; Masayuki Iida; Masanori Miyatake, all of Yawata; Shozo Sugishita, Hirakata, and Teruo Hoshi, Otashi, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 14, 1994, Ser. No. 305,607

Claims priority, application Japan, Sep. 18, 1993, 5-255040; Oct. 19, 1993, 5-286051; Oct. 19, 1993, 5-286052; Oct. 22, 1993, 5-265001; Nov. 17, 1993, 5-312580; May 24, 1994, 6-109873; May 24, 1994, 6-109874; May 24, 1994, 6-109876

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.24 **28 Claims**



1. A voice speed converting system comprising:

setting means for setting a set factor for a reproduction speed;

voice speed conversion processing means for subjecting an input sound signal to voice speed conversion processing;

a ring memory to which an output of the voice speed conversion processing means is written;

reading means for reading out data from the ring memory at predetermined speed; and

stored data amount calculating means for calculating an amount of stored data in the ring memory on the basis of a write signal and a read signal for the ring memory,

the voice speed conversion processing means including

section judging means for judging which of a voice section and a silence section corresponds to the input sound signal, and

signal processing means for subjecting the input sound signal to compression and expansion processing according to the set factor of the reproduction speed or deletion processing, in response to an output of the section judging means and an output of the stored data amount calculating means, and

the signal processing means including

means for deleting the input sound signal until the ring memory enters a state immediately before underflow when the ring memory enters a state immediately before overflow.

5,611,019

METHOD AND AN APPARATUS FOR SPEECH DETECTION FOR DETERMINING WHETHER AN INPUT SIGNAL IS SPEECH OR NONSPEECH

Yoshihisa Nakatoh, Neyagawa, and Takeshi Norimatsu, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 19, 1994, Ser. No. 246,346

Claims priority, application Japan, May 19, 1993, 5-116980

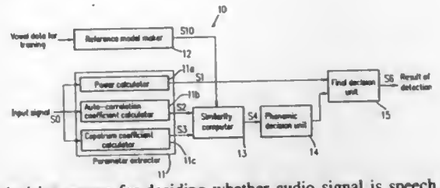
Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.42 **56 Claims**

1. An apparatus for speech detection comprising:

reference model making means for extracting a plurality of parameters for a speech detection from training data, and making a reference model based on parameters;

parameter extracting means for extracting the plurality of parameters from each frame of an input audio signal; and



decision means for deciding whether audio signal is speech or not, by comparing the parameters extracted from the input audio signal will the reference model, wherein

the reference model making means makes a respective reference model for each phoneme, and

the decision means comprises:

similarity computing means for comparing the parameters extracted from each frame of the input audio signal with the reference model, and computing a similarity of the frame with respect of the reference model;

phoneme decision means for deciding a respective phoneme for each frame of the input audio signal based on the similarity computed for each phoneme; and

final decision means for deciding whether a specific period of the input audio signal including a plurality of frames is speech or not based on the result of the phoneme decision for the plurality of frames.

5,611,020

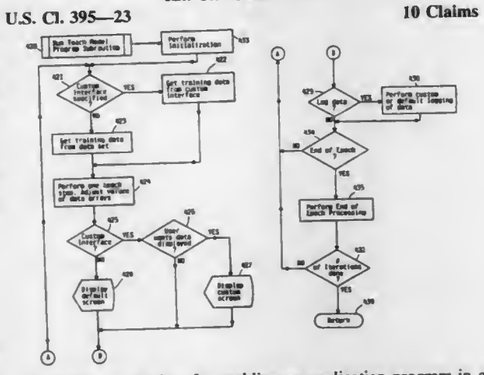
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 459,061

Int. Cl.[6] G03F *15/18*

U.S. Cl. 395—23 **10 Claims**



1. A program product for enabling an application program in a computer system to run one of a plurality of defined neural network models, thereby becoming a neural network having an input for data and an output for a result, comprising:

a recording medium containing instructions capable of being executed on the computer system;

means, recorded on the recording medium, for creating a neural network data structure in memory of the computer system, wherein the neural network data structure defines a structure and organization of a plurality of data arrays in the memory, wherein the plurality of data arrays have data types and an order within the neural network data structure, wherein the neural network data structure is common and genetic to all of the plurality of defined neural network models, and wherein

the plurality of data arrays have data values specific to a selected one of said plurality of defined neural network models;

means, recorded on the recording medium, for teaching said neural network by presenting training data at said input of said neural network and repeatedly adjusting the values of said plurality of data arrays until said result at said output is within tolerance of a correct result; and

means, recorded on the recording medium, for running said neural network by presenting actual data at said input and retrieving the result from said output of said neural network.

5,611,021

MULTIPLE PULSE SERIES GENERATING DEVICE AND METHOD APPLICABLE TO RANDOM PULSE SERIES GENERATING APPARATUS

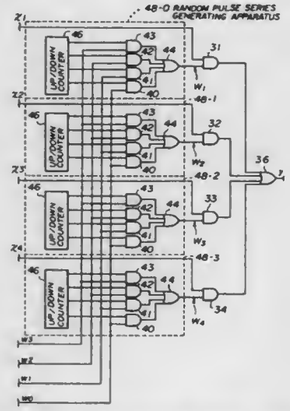
Yukio Kadowaki, Nara, and Akemi Nagatani, Amagasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 17,376, Feb. 12, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 430,689

Claims priority, application Japan, Feb. 14, 1992, 4-027908

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **2 Claims**



1. A multiple pulse series generating apparatus, comprising:

a) receiving means for receiving a plurality of input pulse series of arbitrary shape, each input pulse series having an arbitrary number of pulses;

b) pulse series converting means, responsive to the receiving means, for converting the plurality of input pulse series into a plurality of output pulse series, wherein the arbitrary number of pulses in the input pulse series and pulses of the plurality of output pulse series are at a first level or a second level, and wherein the pulse series converting means includes:

1) first arranging means for arranging the plurality of input pulse series into a first arbitrary sequence of input pulse series, the first arbitrary sequence including:

(1) a first input pulse series; and

(2) a later input pulse series other than the first input pulse series; and

2) second arranging means for arranging the first arbitrary sequence of input pulse series into a second sequence of output pulse series as the plurality of output pulse series, wherein:

2A) the second sequence of output pulse series includes:

(1) a first output pulse series; and

(2) a later output pulse series other than the first output pulse series; and

2B) the second arranging means includes:

aa) means for determining the first output pulse series in the second sequence as being the first input pulse series in the first sequence;

bb) means for determining that a pulse of the later output pulse series in the second sequence has the first level only when both:

i) a corresponding pulse in the later input pulse series is at the first level; and

ii) a corresponding pulse in the first input pulse series is at the second level; and

cc) means for determining the second sequence of output pulse series as constituting a first output pulse series through an n-th output pulse series having a respective first number of pulses through an n-th number of pulses during a predetermined time period so that the plurality of output pulse series are described by a respective first pulse density through an n-th pulse density, wherein each of the first number through the n-th number is different from all other numbers of the first number through the n-th number so that the first pulse density through the n-th pulse density are mutually different; and

c) output means, responsive to the pulse series converting means, for outputting the plurality of output pulse series.

5,611,022

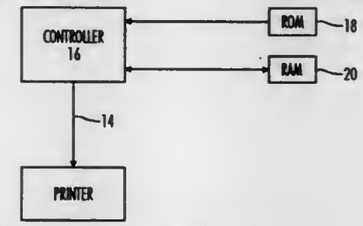
COLOR IMAGING

James Estrada, Pasadena, and Said Zandian, Agoura, both of Calif., assignors to Dataproducts Corporation, Simi Valley, Calif.

Filed Jul. 7, 1993, Ser. No. 88,463

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—109 **13 Claims**



13. A method for processing image data dependent upon at least one predetermined error diffusion kernel to provide display data for an image display device, wherein the image data corresponds to a desired color image formed of plural picture elements (pels) in each of a plurality of channels and includes data corresponding to the desired level of enhancement of each pel in the desired image for each of the plural channels, the method comprising the steps of:

calculating bi-level pel enhancement data corresponding to the image data for each channel; and

transferring the bi-level enhancement data to the image display device;

wherein the step of calculating comprises the steps of:

processing each pel in first and second adjacent lines of pels to produce bi-level pel enhancement data for each pel in each channel, wherein the at least one error diffusion kernel comprises a matrix of error distribution values, and wherein the direction of processing of pels in the first line is opposite to the direction of processing of pels in the second line;

calculating the bi-level pel enhancement data for the pels of the first line according to the matrix of error distribution values;

reversing the matrix of error distribution values from which the bi-level pel enhancement data is calculated for the pels of the first line; and

calculating the bi-level pel enhancement data for the pels of the second line according to the reversed matrix of error distribution values.

5,611,023
APPARATUS AND METHOD FOR PROCESSING TWO-TONE IMAGE DATA SO AS TO SMOOTH AND MAGNIFY IMAGE

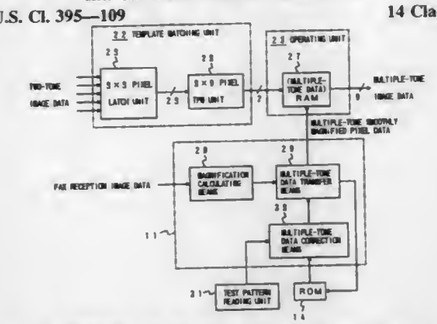
Yoshiaki Hanyu, Souka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 115,148, Sep. 2, 1993. This application Jan. 27, 1995, Ser. No. 379,945

Claims priority, application Japan, Sep. 2, 1992, 4-234593; Feb. 1, 1994, 6-010563; Feb. 2, 1994, 6-010792

Int. Cl.[6] G06T *3/00;5/00;* **H04N** *1/387*

U.S. Cl. 395—109 **14 Claims**



1. An apparatus for processing two-tone image data so as to magnify a relevant image and smooth a boundary line between a zone consisting of first-tone pixels of two-tone pixels constituting said relevant image and a zone consisting of second-tone pixels of said two-tone pixels,

said apparatus comprising:

means which, for each two-tone pixel of said two-tone pixels, determines a template pattern, from among a plurality of template patterns, as matching a pixel arrangement comprising pixels located around said each two-tone pixel; and

means for converting said each two-tone pixel into either a single multiple-tone pixel or a plurality of multiple-tone pixels, said means using a result of the determination performed by said means for the converting.

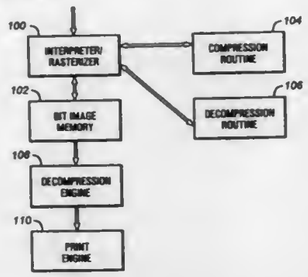
5,611,024
DATA COMPRESSION OF BIT MAP IMAGES

Scott O. Campbell, Spring; Greg Adams, Tomball, and Jeffrey M. Braaten, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Aug. 28, 1992, Ser. No. 937,504

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—114 **7 Claims**



1. A method of storing a bit image in a memory of a laser printer that contains the memory, an interpreter/rasterizer, and a print engine, the method comprising:

receiving a stream of page description language codes into the printer;

converting said page description language codes into a bit image by interpreting the page description language codes in the interpreter/rasterizer;

compressing said bit image into a compressed bit image whereby storage of said compressed bit image requires less memory space than storage of the bit image, yet said compressed bit image retains all of the information contained in the bit image whereby an identical copy of said bit image is extractable from said compressed bit image, the step of compressing the bit image further comprising the steps of:

initially compressing portions of the bit image using a first compression algorithm;

after said compressing using said first compression algorithm, determining if said compressed bit image that said

first compression algorithm yields has a compression ratio above a predetermined limit; and

if determined that said compressed bit image that said first compression algorithm yielded does not have a compression ratio greater than said predetermined limit, compressing said portions of the bit image using a second compression algorithm, wherein said second compression algorithm is computationally more complex than said first compression algorithm but said compressed portions of the bit image yielded by said second compression algorithm is smaller than said compressed bit image yielded by said first compression algorithm;

storing said compressed bit image into a specified portion of the memory;

decompressing said compressed bit image whereby said decompressed bit image is identical to the bit image that was initially compressed; and

sending said decompressed bit image to the print engine.

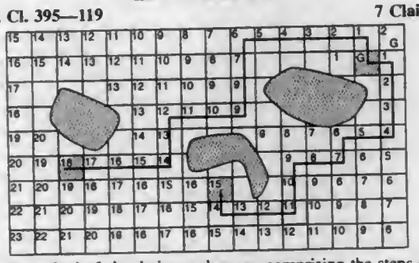
5,611,025
VIRTUAL INTERNAL CAVITY INSPECTION SYSTEM

William E. Lorensen, Ballston Lake, N.Y.; Ferenc A. Jolesz, and Ron Kikinis, both of Brookline, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1994, Ser. No. 344,445

Int. Cl.[6] A61B *8/13*

U.S. Cl. 395—119 **7 Claims**



1. A method of simulating endoscopy comprising the steps of:

a) acquiring image information of internal structures of a subject;

b) creating a three-dimensional (3D) surface model of the image information;

c) selecting a start viewpoint in an internal cavity;

d) selecting a goal viewpoint in the internal cavity;

e) calculating a viewpoint path around obstacles linking the start point and the goal point by:

i. calculating a distance, passing around obstacles as a wavefront would travel, from each voxel of the surface model to the goal viewpoint,

ii. labeling each voxel with its calculated distance,

iii. setting a voxel containing the start point as the current voxel,

iv. adding the current voxel to the viewpoint path,

v. determining a voxel adjacent the current voxel having the lowest labeled distance value,

vi. setting the voxel with the lowest labeled distance value to the current voxel, and

vii. repeating steps "iv"–"vi" until a voxel containing the goal viewpoint is reached;

f) creating a plurality of internal images having viewpoints along the viewpoint path; and

g) displaying the images in sequential fashion according to position along the viewpoint path thereby simulating endoscopy.

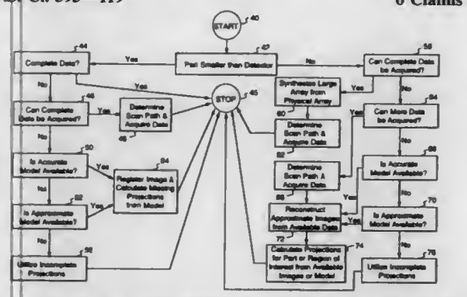
5,611,026
COMBINING A PRIORI DATA WITH PARTIAL SCAN DATA TO PROJECT THREE DIMENSIONAL IMAGING OF ARBITRARY OBJECTS WITH COMPUTERIZED TOMOGRAPHY

Jeffrey W. Eberhard, and Kristina H. V. Hedengren, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 994,240, Dec. 21, 1992, abandoned. This application Jul. 10, 1995, Ser. No. 500,387

Int. Cl.[6] A61B *6/03*

U.S. Cl. 395—119 **6 Claims**



1. A method of three-dimensional computerized tomography imaging of at least a region of interest of an object subject to imaging energy, the method comprising the steps of:

applying imaging energy from a source to the object;

moving the source relative to the object in a first scan path covering a full circle, the first scan path generating an incomplete initial data set wherein some planes passing through the object are able to intersect a projection of the imaging energy from the source along the first scan path in at least one location and some planes passing through the object are unable to intersect a projection of the imaging energy from the source along the first scan path in at least one location;

acquiring the incomplete, initial data set relative to the region of interest from the first scan path by using an area detector to sense the imaging energy;

obtaining a supplemental data set of image information that is at least partially representative of the region of interest, said obtaining step is performed by using a first portion of data from a first portion of said incomplete initial data set corresponding to an approximate image of a first part of said region of interest, using a second portion of data from a second portion of said incomplete initial data set corresponding to an approximate image of a second part of said region of interest, and using the first and second portions of data to determine said supplemental data set, said obtaining step further performed by acquiring first adjacent data corresponding to an approximate image of a first adjacent region adjacent to said region of interest and acquiring second adjacent data corresponding to an approximate image of a second adjacent region adjacent to said region of interest;

combining the supplemental data set with the incomplete initial data set to provide a complete combined data set wherein every plane passing through the object is able to intersect a projection of the imaging energy from the source along the first scan path in at least one location, said combining step correcting projections at the edges of the region of interest to remove portions from the first and second adjacent regions; and

displaying an image of at least the region of interest of the object based upon said combined data set.

5,611,027
IMAGE ENHANCEMENT WITH MASK HAVING FUZZY EDGES

Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 925,340, Aug. 4, 1992, Pat. No. 5,319,742. This application Jan. 24, 1994, Ser. No. 185,636

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—131 **10 Claims**



1. A computer program product on a computer memory executable by a computer for altering an image according to an image effect which is limited by a mask comprising:

means for mapping the mask to assign mask pixels to a reduced set of regions to create a mapped mask, the mask pixels correspond to collocated image pixels from the image, a first and a second color palette being respectively assigned to an unmasked and masked region;

means for applying the image effect to the first palette to produce an altered first palette; and

means for displaying the image wherein colors for image pixels corresponding to the masked and unmasked regions of the mapped mask are chosen from the second and altered first palettes respectively.

5,611,028
IMAGE PROCESSING METHOD AND SYSTEM FOR COLORING AN IMAGE WITH GROUPS OF COLORS WHICH PRODUCE A DESIRED IMPRESSION

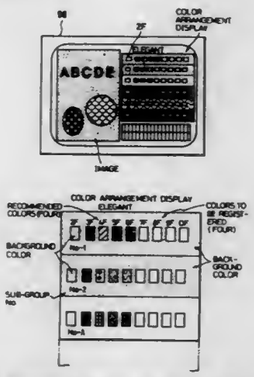
Souhei Shibasaki; Yukio Sawano; Hiroto Nagashima; Kyuichi Fujisawa; Koichi Sugiyama, and Shuichi Aratsu, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and Alps Electric Co., Ltd., Tokyo, both of Japan

Filed May 18, 1994, Ser. No. 245,539

Claims priority, application Japan, May 18, 1993, 5-139004

Int. Cl.[6] G09G *1/28*

U.S. Cl. 395—131 **7 Claims**



1. An image processing method of coloring an image displayed on display means, comprising the steps of:

storing in a memory plural color groups, each including plural colors and giving an individually different mental effect or impression;

selecting a color group from said plural color groups;

displaying colors included in the thus selected color group on said display means together with the image, wherein each

color group includes plural color sub-groups each containing matched colors from which desired colors may be selectively used;

displaying the colors contained in each of said sub-groups as a sequence on said display means, such that a set of displayed sequences shows the colors contained in each of said sub-groups as corresponding to colors contained in other sub-groups;

coloring the image by designating a particular color or colors in one color sub-group; and

coloring the image with corresponding color or colors contained in the sequence of any other color sub-group by selecting said other sub-group.

5,611,029

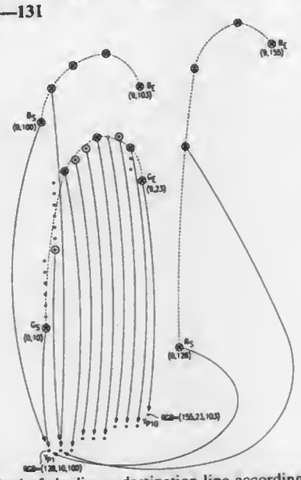
RUN SLICE LINE DRAW ENGINE WITH NON-LINEAR SHADING CAPABILITIES

John J. Watters, Spring, and Giang H. Dao, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 381,104, Jan. 31, 1995. This application Apr. 13, 1995, Ser. No. 422,326

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—131 **24 Claims**



1. A method of shading a destination line according to a desired non-linear function, wherein the destination line includes a first endpoint of a first color and a second endpoint of a second color and wherein said first color of the first endpoint and said second color of the second endpoint are composed of one or more color components, comprising the steps of:

generating information for defining the locations of points of the destination line;

for each color component of said first color of the first endpoint and said second color of the second endpoint, generating a shading polyline having a plurality of linear segments, said shading polyline defined responsive to the desired non-linear function for the color component and having a first polyline endpoint having an associated value corresponding to the respective color component of said first color of the first endpoint and a second polyline endpoint having an associated value corresponding to the respective color component of said second color of the second endpoint;

for each linear segment of said shading polyline, generating information for defining locations of points in the linear segment; and

for each linear segment of each shading polyline, mapping the points of said destination line to respective points of each linear segment to determine a value for the component color for the points along said destination line.

5,611,030

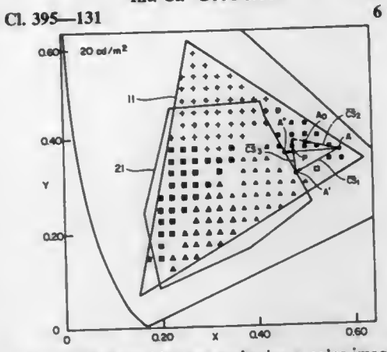
SUBJECTIVELY PLEASING COLOR GAMUT MAPPING IN A COLOR COMPUTER GRAPHICS SYSTEM

Michael Stokes, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 305,960, Sep. 16, 1994, abandoned. This application Mar. 28, 1996, Ser. No. 623,594

Int. Cl.[6] G06T *5/00*

U.S. Cl. 395—131 **6 Claims**



1. In a computer graphics system having a color image source device and a color image destination device having non-coincident color gamuts such that a plurality of colors within a color gamut of the source device are out-of-gamut colors outside a color gamut of the destination device, a method of mapping source device colors to destination device colors using a programmed computer, comprising the steps of:

a) storing in machine-readable form a correspondence between computer colors, including colors within the color gamut of the source device and colors within the color gamut of the destination device, and perceived color names, said correspondence between computer colors and perceived color names being based on psychophysical experimentation;

b) using said correspondence, associating a color name with an out-of-gamut color;

c) mapping said out-of-gamut color to a first in-gamut color within the color gamut of the destination device;

d) using said correspondence, associating a color name with said first in-gamut color; and

e) if the color name associated with the out-of-gamut color and the color name associated with the first in-gamut color are different, automatically remapping under program control said out-of-gamut color to a different in-gamut color within the color gamut of the destination device.

5,611,031

GRAPHICAL USER INTERFACE FOR MODIFYING OBJECT CHARACTERISTICS USING COUPON OBJECTS

Andrew J. Hertzfeld, Palo Alto; William D. Atkinson, Portola Valley, and Susan D. Kare, San Francisco, all of Calif., assignors to General Magic, Inc., Sunnyvale, Calif.

Filed Apr. 29, 1994, Ser. No. 236,728

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—133 **35 Claims**

26. A system comprising:

a computer operating in an object-oriented environment;

a memory coupled to the computer;

a first object and a second object stored within the memory of the computer, the first and second objects each having a characteristic, the characteristic of the first object having a particular value;

a coupon object stored within the memory and which represents the particular value of the characteristic;

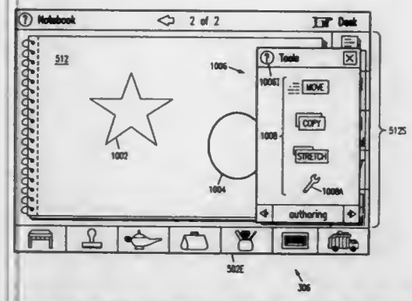
a display screen, operatively coupled to the memory, which can display a representation of the coupon object;

a user interface, operatively coupled to the display screen, for dragging, in response to commands issued by the user, the representation of the coupon object across the display screen and for dropping, in response to commands issued by the user, the representation of the coupon object over the second object;

means, operatively coupled to the memory, for altering the characteristic of the second object to the particular value; and

a tinker window, displayed in the display screen and stored in the memory, which includes one or more coupon objects stored in the memory and displayed in the display screen, each of which represents a corresponding value of a respective characteristic of the first object, the tinker window for holding and accessing characteristics that are associated with the first object;

wherein the one or more coupon objects include the coupon object.



5,611,032

NUMERICAL CONTROL UNIT TO SPECIFY MOVEMENT ZONE OF MOVING PART

Syuji Matsuura, Kodaira, and Kouji Yamamuro, Oshino-mura, both of Japan, assignors to Fanuc Ltd., Japan

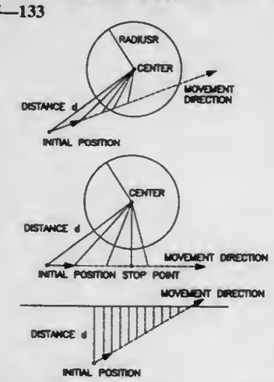
PCT No. PCT/JP94/00931, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO94/29777, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 8, 1994, Ser. No. 379,657

Claims priority, application Japan, Jun. 11, 1993, 5-165065

Int. Cl.[6] G06T *3/00*

U.S. Cl. 395—133 **2 Claims**



1. A method for setting a movement zone within which movement of a numerically controlled moveable machine part is permitted, comprising the steps of:

inputting data indicating a straight line and/or a circle forming a boundary shape of a movement zone;

inputting data indicating which one of two planes divided by said straight line or said circle includes said movement zone, thereby determining said movement zone;

judging whether or not a present position of a moveable machine part lies within said determined movement zone;

judging whether or not an interpolated position of said moveable machine part lies within said determined movement zone;

executing a movement of said moveable machine part when both said present position and said interpolated position of said moveable machine part lie within said determined movement zone; and

executing said movement of said movable machine part to said straight line or said circle when said present position lies within said movement zone but said interpolated position does not lie within said movement zone.

5,611,033

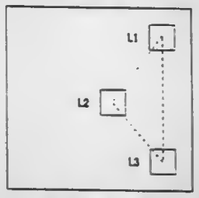
APPARATUS AND METHOD FOR AUTOMERGING IMAGES BY MATCHING FEATURES AND ALIGNING IMAGES

Dominique Pitteloud; Peter Phillips, both of Palo Alto, Calif., and Jean-Paul H. Martin, Oakton, Va., assignors to Logitech, Inc., Freemont, Calif.

Continuation of Ser. No. 805,448, Dec. 10, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,372

Int. Cl.[6] G06T *3/00*

U.S. Cl. 395—135 **22 Claims**



1. A method for automatically merging first and second images stored on a computer system, said first and second images each having an overlap portion overlapping the other image, the method comprising:

(a) comparing pixel values of a plurality of regions to pixel values of adjacent regions;

(b) determining an amount of uncorrelation of each region compared to said adjacent regions;

(c) identifying as a first feature at least one of said regions having a higher amount of uncorrelation than at least one other region;

(d) matching a corresponding feature in the second image to said first feature in the first image;

(e) determining a difference in alignment of the two features; and

(f) merging the two images into a single image by aligning the two images in accordance with the difference in alignment of the two features such that a single one of said two features remains in said single image.

5,611,034

METHOD FOR MAKING A GRAPH BY SELECTING ONE OF A PLURALITY OF GRAPH FORMS THAT BEST FIT A USER'S DATA FORMAT

Masaru Makita, Yachiyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,707

Claims priority, application Japan, Feb. 27, 1991, 3-032851; Feb. 26, 1992, 4-039744

Int. Cl.[6] G06T *11/00*

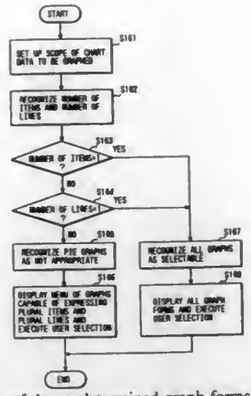
U.S. Cl. 395—140 **13 Claims**

1. A method of making a graph on a form selected from a plurality of predetermined graph forms, comprising the steps of:

preparing data in a table format in a table;

determining whether or not each of the predetermined graph forms is able to be used for representing prepared data in the table on a graph;

simultaneously displaying identifiers for the plurality of predetermined graph forms as candidates for a selection by a user, except for those which were determined not able to be used;



selecting one of the predetermined graph forms according to an identifier selected by the user from among the displayed identifiers; and

making a graph on the selected graph form based on the prepared data.

5,611,035

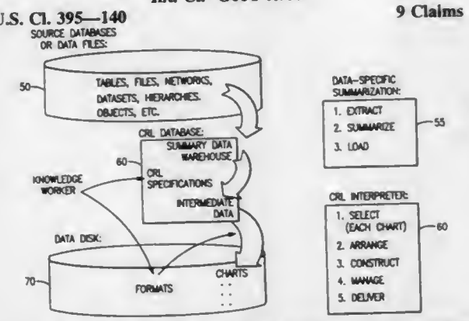
RELATIONAL DATA BASE SYSTEM FOR CONVENIENTLY CONSTRUCTING GRAPHICAL IMAGES

Kevin W. Hall, Highland, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1992, Ser. No. 961,749

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—140 **9 Claims**



1. A method for operating a computer system to generate multiple-component graphical data structures, said method comprising the steps of:

specifying within said computer system at least one graphical data structure description, and a corresponding set of at least one graphical data structure attributes associated with said graphical data structure description, thus establishing a graphical data structure list;

specifying within said computer system at least one graphical data structure description template which is associated with a corresponding component description template and which is further associated with a corresponding relative position indicium, thus establishing a component list;

specifying within said computer system at least one graphical data structure description template which is associated with a component description template and which is further associated with a corresponding magnitude value, thus establishing an indicia list; and

for at least one entry in said graphical data structure list, generating within said computer system a graphical data structure which includes a graphical element whose size is determined by at least one of said magnitude values as specified in said indicia list, and whose position is determined by relative position indicia from said component list, said graphical data structure being constructed from said set of graphical data structure attributes for combinations of matches between a graphical data structure description from the graphical data structure list and graphical data structure description templates from the component and indicia lists, and matches between component description templates from the component and indicia lists.

5,611,036

APPARATUS AND METHOD FOR DEFINING THE FORM AND ATTRIBUTES OF AN OBJECT IN AN IMAGE

Andrew L. Berend, Cambridge; Mark J. Williams, Huntingdon Cambs., and Michael Brocklehurst, Cambridge, all of United Kingdom, assignors to Cambridge Animation Systems Limited, Great Britain

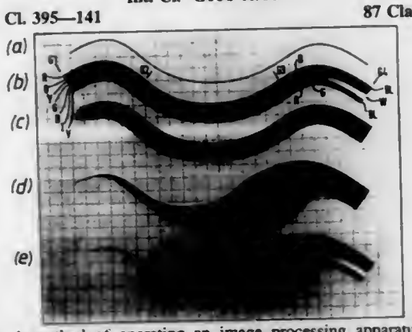
Continuation of Ser. No. 800,227, Nov. 29, 1991, abandoned.

This application Sep. 23, 1994, Ser. No. 311,398

Claims priority, application United Kingdom, Nov. 30, 1990, 9026120; Jan. 11, 1991, 9100632; Jan. 31, 1991, 9102125; May 21, 1991, 9110945; Aug. 12, 1991, 9117409

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—141 **87 Claims**



1. A method of operating an image processing apparatus to generate image data defining an object, said object being defined by a general path and at least one attribute, said method comprising the steps of:

generating path data defining said path of said object;

generating under user control attribute data defining a value of said at least one attribute of said object at specified attribute points, each of said attribute points having a position relative to said path; and

varying the position of a desired one of said attribute points under user control without changing said path.

5,611,037

METHOD AND APPARATUS FOR GENERATING IMAGE

Tetsuya Hayashi, Hanno, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,521

Claims priority, application Japan, Mar. 22, 1994, 6-075353; Mar. 22, 1994, 6-075354; Mar. 22, 1994, 6-075355; Mar. 22, 1994, 6-075356

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—142 **36 Claims**

36. An apparatus for generating a face image comprising:

first storage means for storing a plurality of closed curved line data which define a plurality of closed curved lines on a predetermined plane each representing a part of the face image and for storing a plurality of color data each corresponding to a different one of said plurality of closed curved lines and representing a color of a corresponding part of the face image;

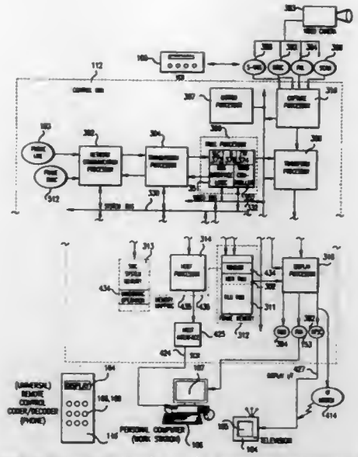
second storage means for storing all coordinates of an image object on said predetermined plane, said coordinates referred to as dot coordinates and for storing color data each assigned to a different one of said dot coordinates;



drawing means for computing coordinates of each closed curved line on said predetermined plane based on said stored closed curved line data to thereby draw said plurality of closed curved lines;

color determining means for determining color of each coordinate on said predetermined plane such that (a) if the coordinate is included in an area enclosed by one of said drawn closed curved lines and locates outside of an area enclosed by any other of said drawn closed curved lines and outside of said image object, color thereof is determined by stored color data corresponding to said one of said drawn closed curved lines, (b) if the coordinate is one of said dot coordinates and locates outside of an area enclosed by any of said drawn closed curved lines, color thereof is determined by stored color data assigned to said one of said dot coordinates, (c) if the coordinate is included in an overlapped area in common with a plurality of said drawn closed curved lines, referred to as overlapping closed curved lines, and locates outside of said image object, color thereof is determined by stored color data corresponding to a selected one of said overlapping closed curved lines, and (d) if the coordinate is one of said dot coordinates and is included in an area enclosed by at least one of said drawn closed curved line, referred to as overlapping closed curved line(s), color thereof is determined by a one selected from among stored color data assigned to said one of said dot coordinates and stored color data corresponding to said overlapping closed curved line(s); and

painting means for painting each coordinate on said predetermined plane with said determined color.



processor means connected to said input/output device for processing video and audio information supplied to, or received from said input/output device, said processor means including means for recognizing and processing a plurality of mutually incompatible video and audio coding algorithms for information received from, or supplied to said telecommunications network;

reconfiguration means connected to said processor means for standardizing and reconfiguring the video and audio information according to a selective internal file format which is universally compatible with any coding algorithms received from, or supplied to the telecommunication network, said reconfiguration means further performing scalable internal data reformatting among incompatibly received or transmitted video and audio information; and

interface devices for direct communication between said controller and the video and audio information production devices, said interface devices receiving information transmitted by the video and audio information production devices and transmitting information from said controller to the video and audio information production devices, including the encoded video and audio information which are universally compatible with the video coding algorithms produced by said reconfiguration means.

5,611,038

AUDIO/VIDEO TRANSCEIVER PROVIDED WITH A DEVICE FOR RECONFIGURATION OF INCOMPATIBLY RECEIVED OR TRANSMITTED VIDEO AND AUDIO INFORMATION

Venson M. Shaw, and Steven M. Shaw, both of 111 Reldyes Ave., Leonia, N.J. 07605

Continuation of Ser. No. 686,773, Apr. 17, 1991, abandoned.

This application Aug. 29, 1994, Ser. No. 297,409

Int. Cl.[6] G06T *1/20*

U.S. Cl. 395—806 **18 Claims**

1. A controller for operating a plurality of video and audio information production devices, based upon video and audio information supplied to, or received from a telecommunications network provided with a plurality of network equipment, comprising:

an input/output device for receiving and transmitting video and audio information to and from the telecommunications network on a real time basis, said input/output device continuously monitoring run-time status and condition changes of said telecommunications network and dynamically controlling and adjusting on a real time basis corresponding network bandwidth utilization by said video and audio information prior to immediately transmitting all of said video and audio information to said telecommunications network;

5,611,039

INFORMATION PROCESSING APPARATUS AND METHOD FOR COMBINING DIFFERENT MEDIA TO HAVE COINCIDING REPRODUCTION TIMES

Kunio Nobori; Yoshiyasu Kado, both of Kadoma, and Masamichi Nakagawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

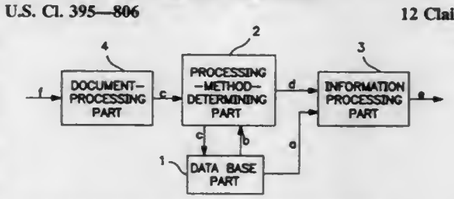
Continuation of Ser. No. 159,287, Nov. 30, 1993, abandoned.

This application Jan. 18, 1996, Ser. No. 591,223

Claims priority, application Japan, Nov. 30, 1992, 4-320247

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—806 **12 Claims**



1. An information processing apparatus comprising:

database means for storing a plurality of data signals wherein each one of said plurality of data signals is from a different kind of media and wherein each one of said plurality of data signals has corresponding attribute characteristics including

a) type of said one of said plurality of data signals,

b) reproduction time of said one of said plurality of data signals, and

c) a data value indicating whether interruption of said one of said plurality of data is permitted or not permitted,

wherein the attribute characteristics of said one of said plurality of data correspond to s respective reference signal,

processing-method-determining means responsive to input reference signals, for retrieving from the database means, said attribute characteristics corresponding claim to said input reference signals and for combining said retrieved attribute characteristics to determine a processing method from a plurality of processing methods,

means for retrieving data signals of said different kind of media from said database means, the retrieved data signals corresponding to the retrieved attribute characteristics, and

information processing means, in response to said determined processing method, for

a. combining the retrieved data signals,

b. varying a reproduction time for the retrieved data signals corresponding to the retrieved attribute characteristics, and

c. interrupting the retrieved data signals corresponding to the retrieved attribute characteristics only when interruption is permitted,

wherein a multimedia representation is produced including each one of said plurality of data signals corresponding to said retrieved attribute characteristics and wherein said plurality of data signals corresponding to said retrieved attribute characteristics have substantially the same reproduction times.

5,611,040

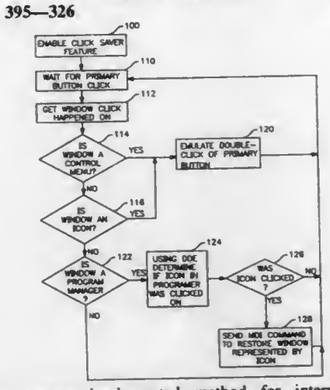
METHOD AND SYSTEM FOR ACTIVATING DOUBLE CLICK APPLICATIONS WITH A SINGLE CLICK

Timothy T. Brewer, Bellevue; Daniel S. Hoeger, Woodinville; Lora K. McCambridge, Bellevue; Teresa L. Kelsey, Seattle; Anthony R. Claflin, Bellevue; Kenneth R. Robertson, Redmond, and Michael W. Van Flandern, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Apr. 5, 1995, Ser. No. 417,078

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—326 **16 Claims**



1. A computer-implemented method for interpreting data received from a mouse to minimize the need for clicking the mouse when using a graphical user interface which includes a plurality of window types, the plurality of window types includes a subset of windows designed to be activated only by a double click, the method comprising the steps of:

receiving a single click;

determining if the single click occurred on the subset window type;

sending a double click signal, if the window is the subset window type, to activate the window.

5,611,041

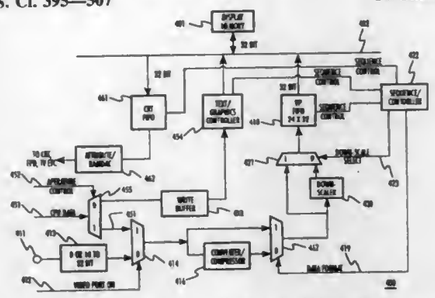
MEMORY BANDWIDTH OPTIMIZATION

Vlad Bril, Campbell; Alexander Eglit, San Carlos, and Sagar W. Kenkare, Fremont, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Dec. 19, 1994, Ser. No. 359,315

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—507 **14 Claims**



1. A memory controller apparatus for processing data and reducing an effect of non-aligned page misses during page mode memory access, comprising:

an input port for receiving data;

an input FIFO coupled to said input port for receiving and storing said data;

a memory coupled to said input FIFO for receiving said data from at least said input FIFO and for storing said data;

an output FIFO coupled to said memory and a control means for retrieving and storing at least a portion of said data;

an output port, coupled to said output FIFO for receiving and outputting said at least a portion of said data from said output FIFO; and

said control means, coupled to said input FIFO and said memory, for controlling page mode access to said memory in at least input cycles,

wherein said control means controls said input FIFO to transfer data in a first predetermined number of memory cycles from said input FIFO to said memory during an input cycle,

said control means monitors said memory cycles during said input cycle to detect a non-aligned memory cycle and interrupts an input cycle if a non-aligned memory cycle is detected,

said control means further controls said output FIFO to transfer data during a second predetermined number of memory cycles from said memory to said output FIFO during an output cycle,

said control means monitors said memory cycles during said output cycle to detect a non-aligned memory cycle and shortens a subsequent input cycle if a non-aligned memory cycle is detected, and

said control means shortens a subsequent input cycle by reducing said first predetermined number of memory cycles in a subsequent input cycle.

5,611,042

DATA ERROR DETECTION AND CORRECTION FOR A SHARED SRAM

Angela L. Lordi, 2043 Fort Bevon Rd., Harleysville, Pa. 19438

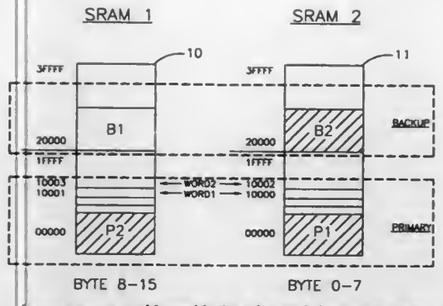
Filed Oct. 10, 1995, Ser. No. 541,989

Int. Cl.[6] G01R *31/28;* **G11C** *29/00;* **G06F** *11/00*

U.S. Cl. 395—182.04 **5 Claims**

1. An apparatus for correcting errors in information read from a memory unit, comprising:

a) a first and second memory, each of said first memory and said second memory being divided into a lower memory and an upper memory such that the lower memory stores primary information and the upper memory stores backup information, the upper memory addressable locations of the first memory being corresponding relative addressable locations of the lower memory addressable locations of the second memory, the primary information and the backup information stored in a corresponding relative addressable location being the same;



b) a processor, operatively connected to said first and second memory, for commanding a read of information stored in said memory unit, the read being a simultaneous read of the primary information stored in the lower memory of the first and second memories and the corresponding backup information stored in the upper memory of the said first and second memories;

c) memory select logic, operatively connected to said first and second memories, for generating address information to cause the lower memory of the first memories to be read and to cause a corresponding relative addressable location of the upper memory of the second memory to be read, such that the primary information and the corresponding backup information are read;

d) a multiplexer, having a first set and a second set of input ports and further having a first set of output ports, the one set of output ports coupled to said first processor, and wherein the primary information read from the lower memory of the first and second memories and the backup information read from the upper memory of the first and second memories are coupled to the first and second input ports of the multiplexer, and

e) select logic, operatively connected to said multiplexer, and further operatively connected to said first memory and to said second memory, the first and second memory indicating via the respective first and second error signal if an error is detected on the information just read from the first and second memory, respectively, the select logic determines whether the data in the first and second memory contains the primary or the backup information and generates a select signal to select the set of input ports containing the primary data when no error is indicated in the primary copy thereby selecting the primary information to be coupled to the first processor, and to select the other set of input ports containing the backup data when an error is indicated in the primary copy and no error is indicated in the backup copy thereby selecting the backup information to be coupled to the first processor, which is the correct information.

5,611,043

DEBUGGER SYSTEM AND METHOD FOR CONTROLLING CHILD PROCESSES

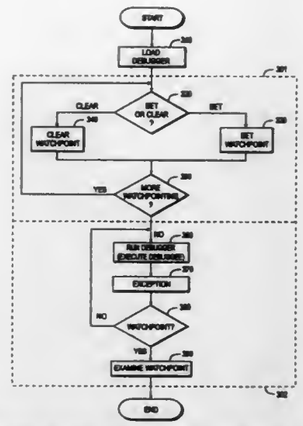
Lindsay W. Even, Campbell, and Jonathan B. Rosenberg, Scotts Valley, both of Calif., assignors to Borland International, Inc., Scotts Vallay, Calif.

Filed Mar. 18, 1994, Ser. No. 210,337

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.14 **29 Claims**

1. In a system for executing a program on a computer, said computer comprising memory for storing said program and having a memory access protection mechanism for allowing and disallowing access to regions of memory, an improved method for stopping execution of the program upon access of a particular data member of the program which is of interest to a user, the method comprising:



(a) loading said program into said memory for execution by the computer, wherein the particular data member is stored in a particular region of said memory to which access is allowed;

(b) receiving a request from the user for setting a watchpoint for the particular data member, said watchpoint request instructing the computer to stop execution of the program upon attempted access to the particular region of memory storing said particular data member;

(c) in response to said watchpoint, storing a memory address and size for indicating where the particular region of memory stores said particular data member and setting an associated protection state which specifies that said memory access protection mechanism is to disallow an attempt to access the particular region of memory storing the particular data member;

(d) executing the program until an attempt is made to access the particular region of memory;

(e) upon an attempt to access the particular region of memory, determining from said stored memory address and size whether said attempt to access is an attempt to access said particular data member of the watchpoint; and

(f) if said attempt to access is an attempt to access said particular data member of the watchpoint, stopping execution of the program.

5,611,044

SYSTEM AND METHOD FOR CROSS-TRIGGERING A SOFTWARE LOGIC ANALYZER AND A HARDWARE ANALYZER

Bruce A. Lundeby, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 146,332, Nov. 1, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,651

Int. Cl.[6] G06F *11/00*

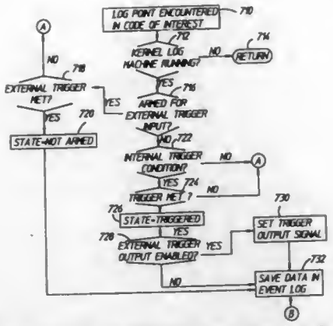
U.S. Cl. 395—183.14 **14 Claims**

1. A software logic analyzer for aiding an end-user in the analysis of software problems occurring in a software process residing in a computer system, the analyzer comprising:

an event log;

a kernel log machine, the kernel log machine collects at least one predetermined log point located within the software process, the kernel log machine places said at least one predetermined log point in the event log;

a kernel log machine interface, connected to the kernel log machine, the interface provides the end-user a capability to control the kernel log machine;



decoding means for transforming the event log from a first format to a second format; and

a cross-trigger port having first and second ends, the first end connected to the kernel log machine, the second end connected to an external analyzer.

5,611,045

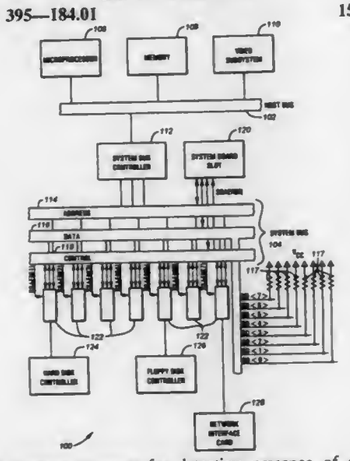
DETECTING THE PRESENCE OF A DEVICE ON A COMPUTER SYSTEM BUS BY MEASURING THE RESPONSE TIME OF DATA SIGNALS ON THE BUS, AND MAXIMIZING SYSTEM PERFORMANCE BASED ON THAT RESPONSE TIME

Barry S. Basile, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 29, 1993, Ser. No. 145,339

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—184.01 **15 Claims**



6. A computer system for detecting presence of devices at certain addresses, comprising:

a system bus including address, data, and control lines;

a microprocessor for executing a read operation, said microprocessor coupled to said system bus;

a means for measuring a response time of the data lines on said system bus to the read operation, including

means for driving a portion of the data lines to a first predetermined value during a first portion of the read operation;

means for monitoring the portion of the data lines during a second portion of the read operation, said means for monitoring detecting when the value on the data lines has changed from the first predetermined value; and

a timer coupled to said system bus and said means for monitoring, said timer starting at or after a start of the read operation and said timer stopping responsive to said means for monitoring detecting when the value on the portion of the data lines has changed from the first predetermined value.

5,611,046

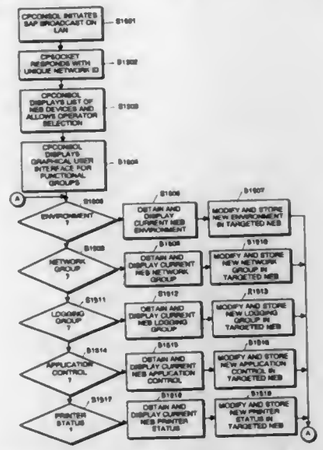
METHOD AND APPARATUS FOR INTERFACING A PERIPHERAL TO A LOCAL AREA NETWORK

William C. Russell, Laguna Hills; Andrew J. Kraslavsky, Rancho Santa Margarita; Robert D. Wadsworth, Costa Mesa; Lorraine F. Barrett, Yorba Linda; George A. Kalwitz, Costa Mesa; Tony K. Ip, Lake Forest, and Walter D. Kuver, Laguna Hills, all of Calif., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,369

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.1 **30 Claims**



26. A networked printer comprising:

a printer for rendering print information, said printer having a connector connected to a bi-directional interface for receiving print information and for providing status information, the status information including information as to whether the printer is ready as well as information concerning physical configuration of the printer; and

an interactive network interface board connected to the printer via the connector connected to the bi-directional interface, for receiving print information from a local area network (LAN), for sending the print information to the printer over the bi-directional interface, for making printer status inquiries over the bi-directional interface, for receiving the status information from the printer over the bi-directional interface, and for reporting the status information to the LAN.

5,611,047

INFORMATION DELIVERY METHOD AND APPARATUS FOR SUCCESSIVELY TRANSFERRING INFORMATION EVEN IF THE STORAGE UNIT HAS INSUFFICIENT SPACE FOR STORING INFORMATION FROM AN UPSTREAM APPARATUS

Kenji Wakamiya, and Osamu Saito, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

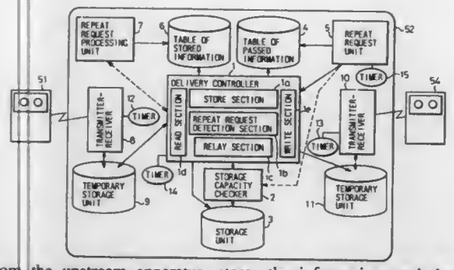
Filed Jul. 29, 1994, Ser. No. 281,669

Claims priority, application Japan, Nov. 19, 1993, 5-314493

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.01 **19 Claims**

1. A method of successively delivering information from an upstream information delivery apparatus to the downstream information delivery apparatus where an apparatus receives information



from the upstream apparatus, stores the information, and then transfers the information to the downstream apparatus, comprising the following steps:

receiving information from the upstream apparatus;

checking whether or not a storage unit has free space to store the received information;

storing the received information in the storage unit when the storage unit has free space;

recording the identification data of the received information that has not been stored in the storage unit into a table of passed information when the storage unit has insufficient space;.

transferring the received information to the downstream apparatus even if the received information is not stored in the storage unit; and

sending a repeat request message for information whose identification data is recorded in the table to the upstream apparatus when free Space is available in the storage unit.

5,611,048

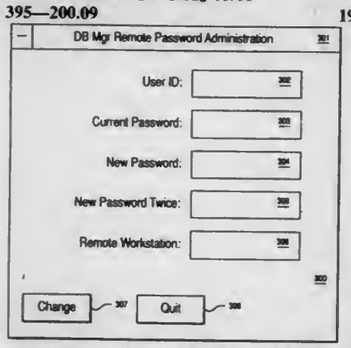
REMOTE PASSWORD ADMINISTRATION FOR A COMPUTER NETWORK AMONG A PLURALITY OF NODES SENDING A PASSWORD UPDATE MESSAGE TO ALL NODES AND UPDATING ON AUTHORIZED NODES

Dwayne C. Jacobs, Austin, and James A. Wangler, Cedar Park, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 969,672, Oct. 30, 1992, abandoned. This application May 9, 1994, Ser. No. 240,291

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.09 **19 Claims**



1. In a computer network having a plurality of nodes with one or more computer systems coupled to a node, a method of administering a password in a first and second type of security system, the first and second security systems having incompatible security procedures comprising the steps of:

transmitting a password update message from a first computer system equipped with the first type of security system to a second computer system over the network according to the procedure of the first type of security system;

receiving the password update message at the second computer system equipped with the first type of security system;

determining authorized computer systems in the network to which the user is authorized access, the authorized computer systems including a third computer system equipped with the second type of security system;

transmitting the password update message to the authorized computer systems, wherein the password update message is transmitted to the third computer system according to the procedure of the second type of security system;

updating password tables in the first types of and second security systems at the second and third computer systems with the password update message; and

transmitting a password status message to the first computer system to indicate that the password tables in the first and second security systems were updated at the second and third computer systems.

5,611,049

SYSTEM FOR ACCESSING DISTRIBUTED DATA CACHE CHANNEL AT EACH NETWORK NODE TO PASS REQUESTS AND DATA

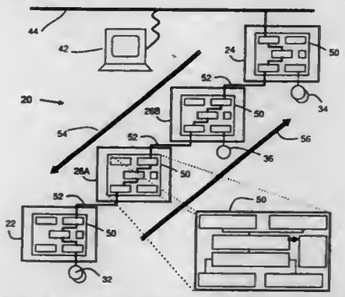
William M. Pitts, 780 Mora Dr., Los Altos, Calif. 94024

PCT No. PCT/US92/04939, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/24890, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 3, 1992, Ser. No. 343,477

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—200.09 **30 Claims**



1. In a network of digital computers that includes a first plurality of Network Distributed Cache ("NDC") sites, each NDC site including an NDC that has an NDC buffer, a method for projecting images of a stored dataset from an NDC server terminator site into a second plurality of NDC client terminator sites in response to requests to concurrently access such stored dataset transmitted from a third plurality of client sites respectively to the second plurality of NDC client terminator sites, the method comprising the steps of:

(a) the NDC receiving the request to access data in the stored dataset;

(b) the NDC checking the NDC buffer at this NDC site to determine if a projected image of data requested from the stored dataset is already present there;

(c) if the NDC buffer of this NDC site does not contain a projected image of all data requested from the stored dataset, and if the NDC site receiving the request is not the NDC server terminator site for the stored dataset, the NDC of this NDC site transmitting a request for data from this NDC site downstream to another NDC site closer to the NDC server terminator site for the stored dataset than the present NDC site;

(d) if the NDC buffer of this NDC site does not contain a projected image of all data requested from the stored dataset, and if the NDC site receiving the request is the NDC server terminator site for the stored dataset, the NDC of the NDC server terminator site accessing the stored dataset to project an image of the requested data into the NDC buffer of the NDC server terminator site;

(e) repeating the steps (a) through (d) until the NDC buffer of the downstream NDC site receiving the request contains a projected image of all requested data;

(f) each successive NDC site, having obtained a projected image of all the requested data, returning the requested data upstream to the NDC site from which the NDC site received the request until the requested data arrives at the NDC client terminator site, each NDC site that returns data upstream to the requesting NDC site retaining a copy of the returned data that the returning NDC site may subsequently transmit to an NDC site other than the NDC site to which the returning NDC site first returned the data, whereby images of the stored dataset may be projected concurrently from a single NDC site into the second plurality of NDC client terminator sites; and

(g) the NDC client terminator site, upon receiving the requested data, returning the requested data to the client site that requested access to the stored dataset.

5,611,050

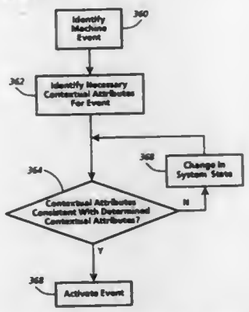
METHOD FOR SELECTIVELY PERFORMING EVENT ON COMPUTER CONTROLLED DEVICE WHOSE LOCATION AND ALLOWABLE OPERATION IS CONSISTENT WITH THE CONTEXTUAL AND LOCATIONAL ATTRIBUTES OF THE EVENT

Marvin M. Theimer, Mountain View; Michael J. Spreitzer, Tracy; Mark D. Weiser, Palo Alto; Richard J. Goldstein, San Francisco; Scott A. Elrod, Redwood City; Daniel C. Swinehart; William N. Schilit, both of Palo Alto; Robert T. Krivacic, San Jose, and Roy Want, Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 161,968, Dec. 3, 1993, Pat. No. 5,555,376. This application Jun. 7, 1995, Ser. No. 474,279

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.09 **5 Claims**



1. A method for selectively triggering events of a computer controlled device based on the context of a system, the system including the computer controlled device, and further including mobile users, mobile and fixed computer controlled devices, the system having a multiplicity of allowable operations, each computer controlled device having an allowable operation, the system having computing resources for registering and responding to requests for events, the method comprising the steps of:

registering a request for a particular event of a computer controlled device;

identifying contextual attributes of the system for said particular computing event;

determining location and identities of mobile users and mobile or fixed computer controlled devices in the system whose allowable operation is consistent with the particular computing event;

perceiving said contextual attributes for said particular computing event; and

performing said particular computing event on a one of the computer controlled devices whose location and allowable operation is consistent with the particular event and the contextual and locational attributes of the particular computing event.

5,611,051

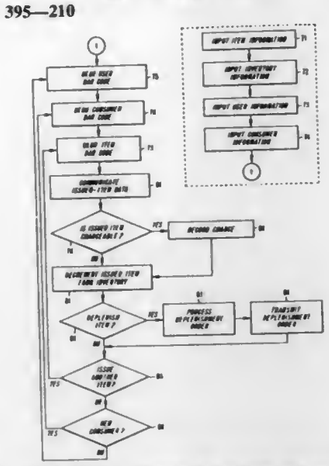
POINT OF SUPPLY USE DISTRIBUTION PROCESS AND APPARATUS

Thomas Pirelli, Buffalo Grove, Ill., assignor to Enterprise Systems, Inc., Wheeling, Ill.

Continuation of Ser. No. 155,175, Nov. 22, 1993. This application Jun. 6, 1995, Ser. No. 468,134

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—210 **12 Claims**



10. A method, using a computer and at least one workstation, for monitoring and maintaining an inventory of an item, comprising the steps of:

defining, by a user, a maximum days inventory value, a safety stock days value and a review time days value for the item;

inputting to the computer, by a user, the maximum days inventory value, the safety stock days value and the review time days value;

calculating, by the computer, an average daily usage value, a lead time days value, an on-hand quantity, and an open order quantity for the item;

adding, by the computer, the maximum days inventory value and the lead time days value to generate a first sum;

multiplying, by the computer, the first sum and the average daily usage value to generate a product;

adding by the computer, the on-hand quantity and the open order quantity to generate a second sum;

subtracting, by the computer, the second sum from the product to generate a quantity representing a Dynamic Order quantity for the item;

generating a replenishment order or purchasing the Dynamic Order Quantity of the item; and

transmitting the replenishment order to a vendor.

5,611,052

LENDER DIRECT CREDIT EVALUATION AND LOAN PROCESSING SYSTEM

Diana R. Dykstra, Herald, and Patricia M. Wade, Meadow Vista, both of Calif., assignors to The Golden 1 Credit Union, Sacramento, Calif.

Filed Nov. 1, 1993, Ser. No. 146,692

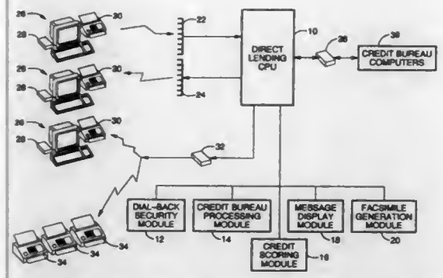
Int. Cl.[6] G06F *17/60;* **G06G** *7/52*

U.S. Cl. 395—238 **16 Claims**

1. A computer based credit evaluation and loan application processing apparatus, comprising:

(a) a central processing unit;

(b) remote access terminal means for accessing said central processing unit, for entering loan application information pertaining to a potential borrower, for selecting a lender, for transmitting said loan application information to said central



processing unit, and for receiving a loan approval status pertaining to said potential borrower from said central processing unit;

(c) credit bureau processing module means associated with said central processing unit for transmitting an information request to a credit bureau associated with said selected lender, and for receiving a credit report from said credit bureau pertaining to said potential borrower;

(d) credit scoring module means associated with said central processing unit for selecting a credit scoring model associated with said selected lender, for inputting loan application information into said credit scoring model and determining a first stage numerical credit score, for inputting credit report information into said credit scoring model and determining a second stage numerical score, and for determining a loan approval status for said potential borrower by comparing said loan application information and the numerical sum of said first and second stage credit scores with a loan matrix associated with said lender; and,

(e) means associated with said central processing unit for generating a lender port based on said loan approval status and transmitting said lender report to a remote receiving unit for displaying said lender report.

5,611,053

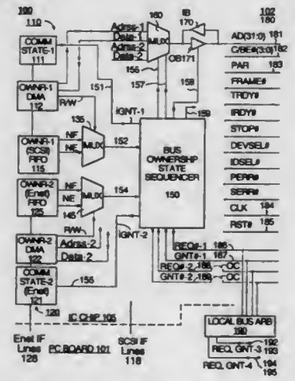
APPARATUS AND METHOD FOR INTEGRATING BUS MASTER OWNERSHIP OF LOCAL BUS LOAD BY PLURAL DATA TRANSCEIVERS

Chih-Siung Wu, Saratoga, and Chun-Jen Kuo, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 21, 1994, Ser. No. 184,295

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—280 **26 Claims**



1. An integrated circuit comprising:

(a) a first plurality of interface terminals for connecting to an external local bus, the external local bus having associated therewith a prespecified maximum total load that may be present on the external local bus at a given time, said maximum total load defining a maximum data signal propagation time for the external local bus;

(b) a second plurality of interface terminals for connecting to a first external communications channel;

(c) a third plurality of interface terminals for connecting to a second external communications channel;

(d) local bus interface means connected to the first plurality of interface terminals for interfacing with the corresponding local bus and applying a predefined load to the local bus, said predefined load being substantially less than the prespecified maximum total load of the external local bus so as to enable attachment of at least two other loads, each similar to said predefined load, to the external local bus while maintaining a total load on the external local bus that does not exceed the prespecified maximum total load;

(e) multiplexing means, operatively coupled to the local bus interface means, and to the first communications channel by way of said second plurality of interface terminals, and to the second communications channel by way of said third plurality of interface terminals, for selectively routing signals between the local bus interface means and a selected one of the first and second communications channels; and

(f) interface ownership designating means, operatively coupled to the multiplexing means, for designating one of the first and second communications channels as a current-owner of the local bus interface means and for controlling the multiplexing means to route signals between the local bus interface means and the designated current-owner of the local bus interface means.

5,611,054

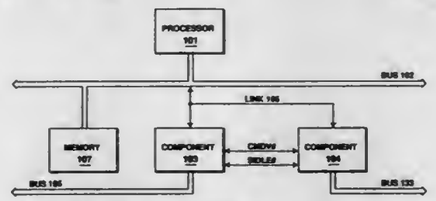
METHOD AND APPARATUS FOR DECODING AND RECODING OF ADDRESSES

David D. Lent, Placerville, and Daniel J. Dunn, Roseville, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 210,346, Mar. 18, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,405

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **9 Claims**



1. A computer system comprising:

a bus for transferring information;

a processor coupled to the bus, the processor issuing a cycle on the bus which includes address, data, and command signals, the address signals being in a first format;

a first component coupled to the bus, the first component comprising a plurality of functional unit blocks, the address signals of the first format comprising a portion indicating a destination block from the plurality of functional unit blocks;

a second component coupled to the bus for receiving the cycle, the second component having a decoder which transforms the address signals in the first format into a second format, the address signals of the second format not comprising the portion indicating the destination block, the second component also having a transceiver for sending the address in the first or second format, data, and command signals to the first component as a series of information packets;

wherein when the series of information packets includes a format signal, the address signals are not in the first format, but are in the second format, and wherein an encoded select signal is included with the address signals in the second format indicating the destination block selected from the

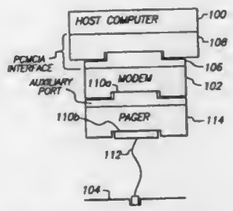
plurality of functional unit blocks in the first component wherein an individual bit of the encoded select signal corresponds to the destination block, such that information transfer is effectuated directly to the destination block.

5,611,055

METHOD AND APPARATUS FOR IMPLEMENTING A PCMCIA AUXILIARY PORT CONNECTOR FOR SELECTIVELY COMMUNICATING WITH PERIPHERAL DEVICES

Baldev Krishan; Baljeet Singh, and Harihara Moorthy, all of Fremont, Calif., assignors to Novalink Technologies, Fremont, Calif.

Filed Sep. 27, 1994, Ser. No. 313,414
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—281 **23 Claims**



1. Circuitry for a host computer to selectively communicate with at least two peripheral devices via an expansion slot, the circuitry comprising:

a first peripheral device adapted for coupling to the expansion slot, the first peripheral device including:

circuitry for performing a first peripheral task; interface circuitry coupling the first peripheral device to the host computer for transferring data therebetween;

an auxiliary port having a DATA_FROM_HOST line, a DATA_TO_HOST line, and a CONTROL line;

a data path coupling the interface circuitry to the DATA_FROM_HOST line, so that data transmitted by the host computer through the interface circuitry is serially transmitted on the DATA_FROM_HOST line; and

switching circuitry coupled to the interface circuitry, to the circuitry for performing a first peripheral task, and to the DATA_TO_HOST and CONTROL lines, the switching circuitry responsive to a control signal asserted on the CONTROL line, and selectively changeable between a first state wherein the circuitry for performing a first peripheral task is connected to the interface circuitry and the DATA_TO_HOST line is disconnected from the interface circuitry, and a second state wherein the circuitry for performing a first peripheral task is disconnected from the interface circuitry and the DATA_TO_HOST line is connected to the interface circuitry; and

a second peripheral device coupled to the auxiliary port of the first peripheral device, the second peripheral device including:

circuitry for performing a second peripheral task; and

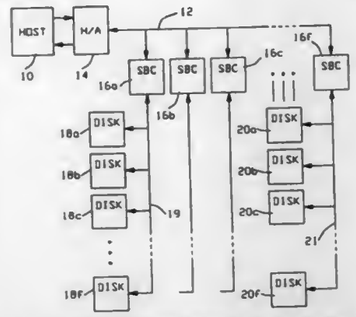
control circuitry coupled to the circuitry for performing a second peripheral task and to the DATA_TO_HOST, DATA_FROM_HOST, and CONTROL lines, so that the control circuitry asserts a control signal on the CONTROL line responsive to a first predetermined data sequence on the DATA_FROM_HOST line, and removes the control signal from the CONTROL line responsive to a second data sequence on the DATA_FROM_HOST line.

5,611,056

METHOD FOR CONTROLLING THE EXPANSION OF CONNECTIONS TO A SCSI BUS

Glenn T. Hotchkin, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 299,707, Aug. 31, 1994. This application Dec. 4, 1995, Ser. No. 566,479
Int. Cl.[6] G06F *13/00;13/28*
U.S. Cl. 395—281 **3 Claims**



3. In a peripheral storage subsystem having a bridge controller for expanding to a maximum allowable number of disk drives connected to a SCSI channel, said bridge controller including a microprocessor coupled to a DMA bus, a buffer memory having control inputs coupled to said DMA bus, a first bus controller coupled between said SCSI channel and said buffer memory and a second bus controller coupled between said buffer memory and said disk drives, a method operating in said microprocessor and said bus controllers executing a program for controlling data flow in said bridge controller comprising the steps of:

a. receiving a disk drive identifier and a command from said SCSI channel in said first bus controller;

b. initializing queue pointers in said microprocessor in response to said disk drive identifier and said command;

c. determining type of said command and setting flags and pointers in said microprocessor in response thereto;

d. when said command is a write operation, transferring a write block of data from said SCSI channel and storing said write block of data in said buffer memory;

e. disconnecting said bridge controller from said SCSI channel after said write block of data has been stored in said memory;

f. in said second bus controller, selecting a disk drive derived from said disk drive identifier to receive said write block of data by sending message and command bytes derived from said command to said disk drive;

g. in said second bus controller, transferring said write block of data from said memory to said disk drive selected in step e above;

h. disconnecting said bridge controller from said disk drive after status and message bytes are received from said disk drive;

i. reconnecting said bridge controller to said SCSI channel after transfer of said write block of data has been completed;

j. disconnecting from said SCSI channel after sending status and message bytes to said SCSI channel;

k. clearing queue flags and performing cleanup operations in said bridge controller;

l. when said command is a read data operation, in said second bus controller, selecting a disk drive derived from said disk drive identifier and sending message and command bytes derived from said command to said disk drive;

m. transferring a read block of data from said disk drive and storing said read block of data in said buffer memory;

n. disconnecting said bridge controller from said disk drive after status and message bytes are received;

o. re-selecting said SCSI channel for receiving said read block of data by sending message bytes to said SCSI channel;

p. transferring said read block of data from said buffer memory to said SCSI channel in said first bus controller;

q. disconnecting from said SCSI channel after sending said status message bytes to said SCSI channel; and,

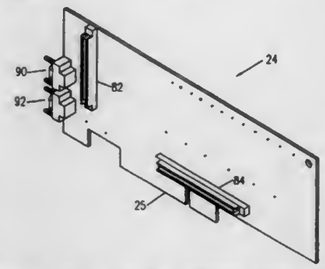
r. clearing queue flags and performing cleanup operations in said bridge controller.

5,611,057

COMPUTER SYSTEM MODULAR ADD-IN DAUGHTER CARD FOR AN ADAPTER CARD WHICH ALSO FUNCTIONS AS AN INDEPENDENT ADD-IN CARD

Victor K. Pecone, Austin; Russell C. Smith, Pflugerville, and Jay R. Lory, Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation-in-part of Ser. No. 351,848, Dec. 8, 1994, and Ser. No. 319,207, Oct. 6, 1994. This application Jan. 20, 1995, Ser. No. 376,312
Int. Cl.[6] H01R *23/00*
U.S. Cl. 395—282 **21 Claims**



9. A daughter card for use in a computer system comprising:

one or more SCSI controllers providing signals for one or more SCSI channels;

one or more SCSI connectors coupled to said one or more SCSI controllers, wherein said one or more SCSI connectors are each adapted for coupling to one or more SCSI devices in the computer system;

one or more adapter card connectors for coupling to a SCSI adapter card, wherein when said daughter card is mounted to said SCSI adapter card said daughter card provides additional functionality to said SCSI adapter card;

an edge connector for insertion in a bus connector slot of a computer system when the daughter card is used as a standalone card; and

wherein said daughter card is mountable to a SCSI adapter card and wherein said daughter card can also function as a standalone card to provide modular and upgradable expansion options.

5,611,058

SYSTEM AND METHOD FOR TRANSFERRING INFORMATION BETWEEN MULTIPLE BUSES

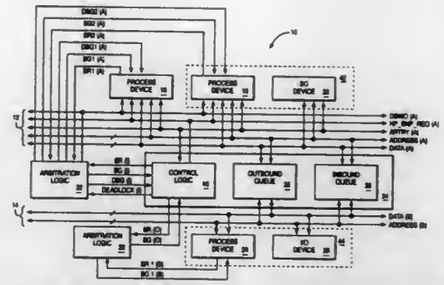
Charles R. Moore; John S. Muhich, and Robert J. Reese, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 11,041, Jan. 29, 1993, abandoned. This application Mar. 20, 1996, Ser. No. 619,100
Int. Cl.[6] G06F *13/14;13/18;13/38*
U.S. Cl. 395—309 **23 Claims**

1. A system for transferring information between multiple buses, comprising:

a first bus for transferring information between a plurality of first bus devices by completing multiple data phases in response to respective associated address phases, said data phases being ordered for completion in an order of said respective associated address phases;

a second bus for transferring information between a plurality of second bus devices; and



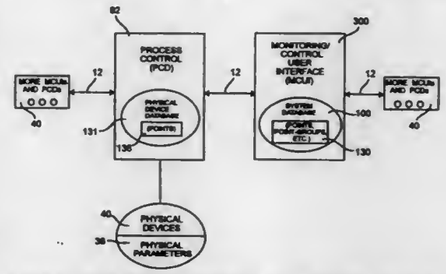
logic means coupled to said first and second buses for transferring information between said first and second buses and for enabling an action of a first bus device in response to a condition in which a second bus device waits for said action while said first bus device waits for a separate action on said second bus, wherein said action includes completing a particular one of said data phases before a preceding one of said ordered data phases, said preceding data phase being deferred by said first bus device pending said separate action.

5,611,059

PRELINKED PARAMETER CONFIGURATION, AUTOMATIC GRAPHICAL LINKING, AND DISTRIBUTED DATABASE CONFIGURATION FOR DEVICES WITHIN AN AUTOMATED MONITORING/CONTROL SYSTEM

Allen D. Benton, Dublin; Leon J. Hochstedler, Worthington; Kevin A. Hughes; Paul H. Knapke, both of Columbus; Michael J. Monteiro, Westerville; Christopher J. Protopapas, Columbus; Fred Van Eijk; Frank J. Donnelly, both of Dublin; A. Donald Hale, Jr.; Keith E. Sarbaugh, both of Hilliard, and Winthrop G. Worcester, Powell, all of Ohio, assignors to Square D Company, Palatine, Ill.

Filed Sep. 2, 1994, Ser. No. 300,419
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—326 **7 Claims**



1. For a control structure comprising a controller, and a plurality of physical device coupled to the controller, a user interface coupled to the controller, the system comprising:

a system database adapted to include a set of graphical symbols to represent the physical devices, the representations including status conditions of the physical devices;

means for creating the system database through the use of the user interface;

a set of points to be used within the system database, the points being adapted to represent the physical device and adapted to be accessible from the system database;

a set of pointgroups within the system database, adapted to represent multi-parameter physical devices and adapted for

accessibility from the system database, said muti-parameter physical devices automatically being linked to the points within the pointgroups upon each pointgroup having at least one point linked to the pointgroup, and each point within a pointgroup representing one of the physical parameters of the physical device, the means for creating the system database including means for creating the representations;

wherein the controller is adapted to control and monitor the physical device using the representations of the physical device;

wherein the user interface is adapted for displaying the representations of status conditions of the physical device; and

wherein the creating means is adapted for using the pointgroups to create the system database and the pointgroups allow a user to decrease the amount of time spent on creating points for the physical devices.

5,611,060

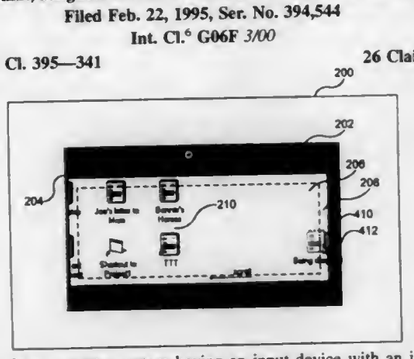
AUTO-SCROLLING DURING A DRAG AND DROP OPERATION

Joseph D. Belfiore, Redmond; Christopher J. Guzak, Kirkland; Christopher E. Graham; Stephen M. Madigan, both of Redmond; Tandy W. Trower, II, Woodinville; Randall L. Kerr, Redmond, and Adrian M. Wyard, Kirkland, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Feb. 22, 1995, Ser. No. 394,544

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—341 **26 Claims**



1. In a computer system having an input device with an input device indicator for performing a drag and drop operation, a video display and a computer program for displaying a window on the video display, the input device indicator reflecting movement of the input device on the video display, wherein the input device performs the drag and drop operation by selecting a screen object on the video display, dragging the selected screen object across the video display to a destination, and dropping the selected screen object at the destination, the input device indicator having a speed associated with dragging the selected screen object, the window having contents and a scroll region, the scroll region for determining when to scroll the contents of the window, a method for displaying the contents of the window comprising the steps of:

under the control of the computer program,

determining a location of the input device indicator on the video display when the input device is performing a drag and drop operation;

determining the speed of the input device indicator when the location of the input device indicator is within the scroll region; and

scrolling the contents of the window in response to the input device indicator being within the scroll region and the speed being below a predefined value.

5,611,061

METHOD AND PROCESSOR FOR RELIABLY PROCESSING INTERRUPT DEMANDS IN A PIPELINE PROCESSOR

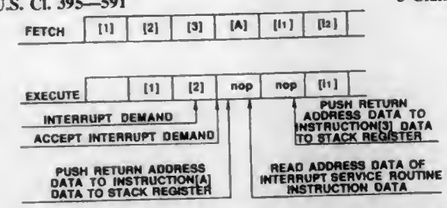
Hiroyuki Yasuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 706,936, May 29, 1991, abandoned. This application Nov. 24, 1993, Ser. No. 158,190

Claims priority, application Japan, Jun. 1, 1990, 2-143883

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—591 **5 Claims**



2. A method for handling interrupt demands in a pipeline processor which operates in sequential cycles, comprising the steps of:

during a first cycle, executing a first instruction, fetching a second instruction and receiving an interrupt demand;

after the first cycle, accepting the interrupt demand;

during a second cycle, fetching a third instruction and pushing return address data of the third instruction in a stack register;

during a third cycle, fetching a first interrupt service routine instruction and pushing return address data of the second instruction in a stack register;

during the fourth cycle to the (n+4)th cycle, fetching interrupt service routine instruction from a second interrupt service routine instruction to an nth interrupt service routine instruction, and executing interrupt service routine instructions, from the first interrupt routine instruction to the nth interrupt routine instruction (where n is the number of interrupt routine instructions in the interrupt routine);

during the (n+5)th cycle, popping the return address data of the second instruction from the stack register;

during the (n+6)th cycle, fetching the second instruction and popping the return address data of the third instruction from the stack register; and

during the (n+7)th cycle, executing the second instruction and fetching the third instruction;

wherein the first instruction is a jump command and the third instruction is a command specified by the jump command.

5,611,062

SPECIALIZED MILLICODE INSTRUCTION FOR STRING OPERATIONS

Charles F. Webb, Poughkeepsie; Mark S. Farrell, Pleasant Valley; Christopher R. Conklin, Kingston, and Wen H. Li, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

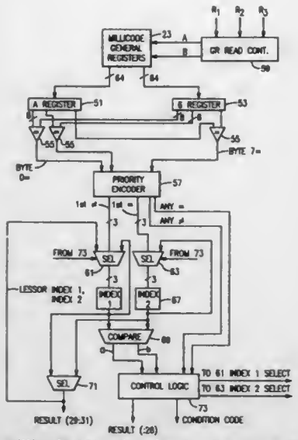
Filed Mar. 31, 1995, Ser. No. 414,961

Int. Cl.[6] G06F *7/04*

U.S. Cl. 395—376 **12 Claims**

12. In a pipelined computer processor, which executes a relatively simple instruction set in a hardware controlled execution unit and executes a relatively complex instruction set in a millimode architected state with a millicode sequence of simple instructions in said hardware controlled execution unit, a method of operation including the steps of:

storing a first millicode instruction to copy a low-order byte from a first millicode general register into each byte position of a millicode general register pair that includes said first millicode general register pair, said first millicode instruction including a first field specifying a first millicode general register, a second field that specifies a second millicode general register, a field that specifies a byte in said first millicode general register to be placed in even byte positions in said



second millicode general register and also specifies a byte in said second millicode general register to be placed in odd byte positions in said second millicode general register; and

fetching and executing said first millicode instruction;

storing a second millicode instruction to compare two operands on a basis of equality of their respective corresponding byte-by-byte values and to indicate by means of a condition code where corresponding bytes of the two operands are equal,

said second millicode instruction including a first field specifying a millicode general register in which is stored a first operand of said two operands to be compared, and a second field specifying a millicode general register in which is stored a second operand of said two operands to be compared;

fetching and executing said second millicode instruction, including comparing respective corresponding bytes of said first operand and said second operand on a byte-by-byte basis, and setting a condition code to indicate an initial byte of said first operand and said second operand found equal as a result of said comparing step;

storing a third millicode instruction to compare two operands on a basis of inequality of their respective corresponding byte-by-byte values and to indicate by means of a condition code where corresponding bytes of the two operands are not equal;

said third millicode instruction including a first field specifying a millicode general register in which is stored a first operand of said two operands to be compared, and a second field specifying a millicode general register in which is stored a second operand of said two operands to be compared;

fetching and executing said third millicode instruction, including comparing respective corresponding bytes of said first operand and said second operand on a byte-by-byte basis, and setting a condition code to indicate an initial byte of said first operand and said second operand found not equal as a result of said comparing step.

5,611,063

METHOD FOR EXECUTING SPECULATIVE LOAD INSTRUCTIONS IN HIGH-PERFORMANCE PROCESSORS

Albert J. Loper, Cedar Park; Soummya Mallick, and Michael Putrino, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

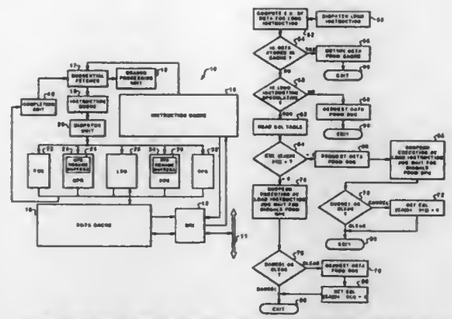
Filed Feb. 6, 1996, Ser. No. 597,647

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—381 **11 Claims**

1. A method for selectively executing speculative load instructions within a processor, said method comprising the steps of:

reading a bit, in an enable speculative load table, associated with a speculative load instruction to determine a state thereof, in response to an encountering of said speculative load instruction, wherein data for said speculative load instruction is not stored in a data cache;



in response to a determination that said associated bit is in a first state, requesting said data for said speculative load instruction utilizing a system bus and suspending execution of said speculative load instruction pending control signals from a branch processing unit;

in response to a determination that said associated bit is in a second state, suspending execution of said speculative load instruction pending said control signals from said branch processing unit;

setting said associated bit in said enable speculative load table to said first state in response to an execution of said speculative load instruction based on said control signals;

setting said associated bit in said enable speculative load table to said second state in response to a non-execution of said speculative load instruction based on said control signals, wherein the possibility of displacing useful data in said data cache due to wrongful execution of said speculative load instruction is avoided.

5,611,064

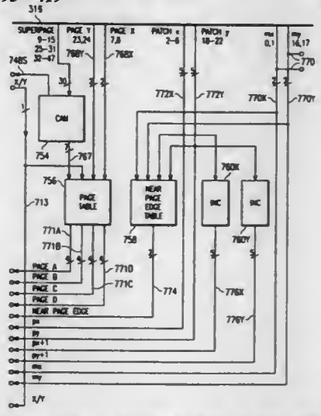
VIRTUAL MEMORY SYSTEM

Andrew P. Maund, Northolt, United Kingdom; John W. Neave, Los Altos, Calif.; Neil F. Trevett, Kingston-upon-Thames, United Kingdom; Simon J. Moore, and Malcolm E. Wilson, both of Byfleet, United Kingdom, assignors to 3Dlabs Ltd., Surrey, United Kingdom

Filed Feb. 1, 1993, Ser. No. 34,838

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—419 **20 Claims**



1. A memory system for storing an array of data-elements which form in a virtual memory space contiguous aligned pages of

contiguous aligned patches of contiguous data-elements, comprising:

a first memory for storing the data array;

a second memory for storing part of the data array;

means for transferring data-elements page-by-page between the first and second memories such that contiguous pages of the data-elements in the virtual memory address space are not necessarily stored contiguously in the address space of the second memory; and

means for addressing the second memory to access in parallel a patch of data-elements which is not necessarily such an aligned patch, the addressing means including page edge means for determining whether the patch to be accessed includes data-elements in different pages in the second memory, and means to modify the addresses to the second memory in response to such a determination.

5,611,065

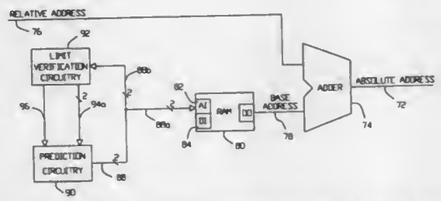
ADDRESS PREDICTION FOR RELATIVE-TO-ABSOLUTE ADDRESSING

Merwin H. Alferness, New Brighton; Joseph P. Kerzman, Spring Lake Park, and John Z. Nguyen, Roseville, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 14, 1994, Ser. No. 306,085

Int. Cl.[6] G06F *12/00;12/02;9/26;9/34*

U.S. Cl. 395—421.1 **10 Claims**



1. An address prediction apparatus for use in a system which generates absolute addresses for address a system memory by adding a relative address specified in a program instruction to a predicted one of a plurality of available base addresses, and the system further having a memory device to store the plurality of available base addresses, the address prediction apparatus comprising:

prediction means, coupled to an address input port of the memory device, for predicting a base address stored within the memory device, and for generating a first address corresponding to said base address to access said base address from the memory device;

verification means, coupled to said prediction means, for receiving said first address, and for receiving the relative address and generating in response thereto a second address corresponding to an actual base address which the relative address designates, and for providing said second address and a prediction error notification to said prediction means upon determining that said first address and said second address are unequal; and

prediction correction means, coupled to said verification means and coupled to said prediction means, for receiving said second address and said prediction error notification, and for causing said prediction means to store said second address and to provide said second address to the memory device to access said actual base address.

5,611,066

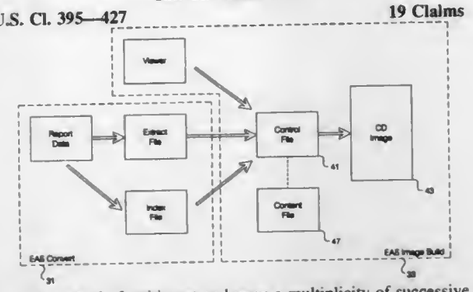
SYSTEM FOR CREATING RELATED SETS VIA ONCE CACHING COMMON FILE WITH EACH UNIQUE CONTROL FILE ASSOCIATED WITHIN THE SET TO CREATE A UNIQUE RECORD IMAGE

Richard V. Keele, San Diego; Cathleen M. Morin, Temecula; Michael C. Goodsell, Chula Vista, and Robert Neverisky, San Diego, all of Calif., assignors to Data/Ware Development, Inc., San Diego, Calif.

Filed Feb. 28, 1994, Ser. No. 203,997

Int. Cl.[6] G06F *1/02*

U.S. Cl. 395—427 **19 Claims**



1. A method of writing at and upon a multiplicity of successive times a multiplicity of recordable medium, each such medium being initially undifferentiated and unidentifiable one medium to the next save only for a unique permanent serial number marking that is visually detectable, with information that is related so as to produce a plurality of related sets of recordable and recorded medium where each set has a plurality of members that are related to each other as well as to corresponding members of other sets, the method comprising:

first-transmitting at times from a computer to a writer of recordable medium a relatively larger data file called a common data file, each data file to be written in common onto a plurality of corresponding members that are within a plurality of sets of the recordable medium, each of which sets contains a plurality of related members, wherein each different common data file as is associated with the corresponding members of all sets of the recordable medium is communicated only once;

second-transmitting at times from the computer to the writer a relatively smaller data file called a control file, each control file being uniquely associated with an individual one of the multiplicity of the recordable medium;

first-receiving in the writer each common data file first-transmitted from the computer; and

caching each common data file first-received for a time period until all corresponding members of each of the plurality of sets of the recordable medium have been written, at which time another, subsequent, common data file is first-received and cached;

second-receiving in the writer each unique control file second-transmitted from the computer;

reading, in a serial-number reader, the visually detectable unique permanent serial number marking that is upon a particular one of the multiplicity of recordable medium next to be recorded;

combining in a writer of recordable media each such (1) control file with (2) a cached common data file and with (3) at least any two or more of (3a) the read permanent serial number of the next one of the multiplicity of recordable medium next to be recorded (3b) a name of the information written upon the multiplicity of recorded media or medium, (3c) a designated recipient of the multiplicity if recorded media or medium when such are to be distributed, (3d) a packing list of all related recorded media or medium likewise to be so distributed when any such are, and (3e) an authenticating production number that is separated from the read permanent serial number, all to create a single unique record image; and

recording with the writer of the recordable medium each individual one of the multiplicity of the recordable medium with a corresponding individually unique record image, first corresponding members of each of the plurality of sets of the multiplicity of recordable medium being recorded before second corresponding members of each of the plurality of sets and so on until all of the members of all of the plurality of sets of the multiplicity of recordable medium have been recorded;

wherein a data communication bandwidth from the computer to the writer of the recordable medium is conserved because the relatively larger common data file that is written to corresponding members of each of the plurality of sets of the multiplicity of the recordable medium is communicated from the computer to the writer only but once, and the each mechanism so employed is similarly conserved in that it is minimally occupied in receiving data from the computer;

wherein the recording with the writer of the recordable medium now records a redundant serial number, equal to the permanent serial number, upon each one of the multiplicity of recordable medium;

wherein the unique permanent serial number marking that was, and that remains, visually detectable on each one of the multiplicity of recordable medium is also recorded as a redundant serial number on the same recordable and recorded medium;

wherein the each redundant recorded serial number may subsequently be read by a machine means for reading information recorded on the recordable and recorded medium, which machine means need not, cannot, and does not optically detect the permanent serial number.

5,611,067

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING MEANS FOR SELECTIVE TRANSFER OF MEMORY BLOCK CONTENTS AND FOR CHAINING TOGETHER UNUSED MEMORY BLOCKS

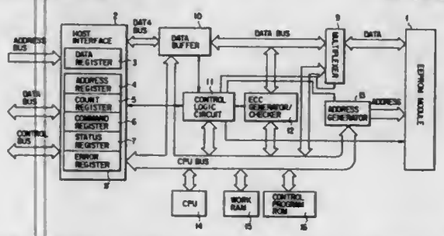
Yutaka Okamoto, Kawasaki, and Yoshiyuki Tanaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1993, Ser. No. 38,837

Claims priority, application Japan, Mar. 31, 1992, 4-077940

Int. Cl.[6] G06F *12/00;* **G11C** *16/00*

U.S. Cl. 395—430 **21 Claims**



16. A memory system including a nonvolatile semiconductor memory device, comprising:

memory means having an array of memory cells divided into a plurality of blocks including unused blocks, said unused blocks comprising erased blocks, which are physically erased, and non-erased blocks, which are logically erased but are not physically erased;

erasing means for discriminating said erased blocks of said unused blocks from said non-erased blocks of said unused blocks and erasing data stored in said non-erased blocks; and

control means for writing data to said unused blocks on the basis of an order in which said unused blocks are arranged.

5,611,068

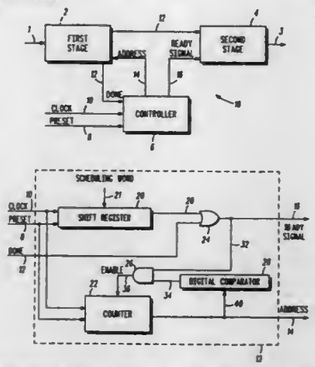
APPARATUS AND METHOD FOR CONTROLLING PIPELINED DATA TRANSFER SCHEME BETWEEN STAGES EMPLOYING SHIFT REGISTER AND ASSOCIATED ADDRESSING MECHANISM

Philip B. Glangarra, Mansfield, Mass., and Earl F. Carlow, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1994, Ser. No. 364,889

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—436 **14 Claims**



9. In a computing device having a first stage and a second stage, an integrated circuit for controlling a transfer of data between the first stage and the second stage, the integrated circuit comprising:

a shift register for storing a scheduling word having a plurality of bits, the shift register sequentially providing each of the plurality of bits as an output thereof;

an or-gate, responsive to the output of the shift register and a first signal from the first stage, for generating a second signal by performing a logical or operation which utilizes the first signal and the output of the shift register;

a counter for generating a sequence of datum addresses in response to the second signal, the counter providing each of the sequence of datum addresses to the first stage, wherein a datum is transferred from the first stage to the second stage in response to each of the sequence of datum addresses;

wherein if the second signal is one, the counter increments a current address having a maximum value, and then provides the current address to the first stage as a next in the sequence of datum addresses, otherwise the counter holds the current address; and

comparison means, for determining whether the current address is equal to the maximum value, if so, the comparison means preventing the counter from incrementing the current address.

5,611,069

DISK ARRAY APPARATUS WHICH PREDICTS ERRORS USING MIRROR DISKS THAT CAN BE ACCESSED IN PARALLEL

Tatsuo Matoba, Kawasaki-shi, Japan, assignor to Fujitsu Limited, Japan

Filed Jul. 12, 1994, Ser. No. 273,887

Claims priority, application Japan, Nov. 5, 1993, 5-276317

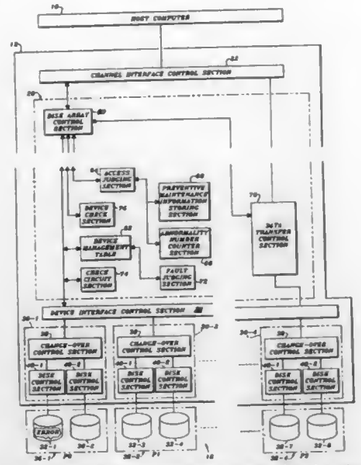
Int. Cl.[6] G06F *13/10;7/00*

U.S. Cl. 395—441 **28 Claims**

1. A disk array apparatus comprising:

disk array means in which a plurality of mirror disk means, each having a set of two disk units for storing same data, are arranged so that they can be accessed in parallel,

control means for striping write data from a host computer, and thereafter writing said stripe data into said disk array means in parallel and for synthesizing data read out in parallel from said disk array means and transferring said synthesized data to a host computer:



a memory table for managing states of said plurality of disk units;

check circuit means for executing an access to said disk array means;

access judging means for judging whether an abnormality has occurred in said check circuit means or not;

abnormality number counting means for counting a number of abnormalities judged by said access judging means; and

fault judging means for deciding a device fault when the number of abnormalities counted by said abnormality number counting means is equal to or larger than a predetermined threshold value and for registering fault information in a device management table means;

wherein said control means executes processes to said disk array means with reference to said memory table when there is an access request from said host computer.

5,611,070

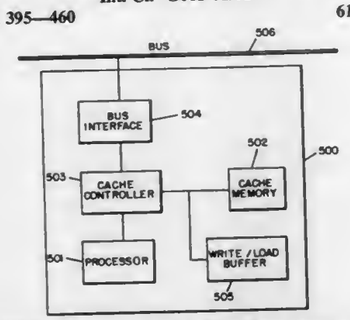
METHODS AND APPARATUS FOR PERFORMING A WRITE/LOAD CACHE PROTOCOL

Philip Heidelberger, 24 Lakeview Ave. W., Peekskill, N.Y. 10566, and Harold S. Stone, 50 Cross Ridge Rd., Chappaqua, N.Y. 10514

Continuation of Ser. No. 521,776, May 10, 1990, abandoned. This application Oct. 13, 1993, Ser. No. 149,139

Int. Cl.[6] G06F *12/12*

U.S. Cl. 395—460 **61 Claims**



1. Apparatus for implementing a Write/Load protocol in a data processing system, wherein said system includes a remote processor and remote cache memory means associated with said remote processor and coupled to a communications bus via cache controller means and a local means which is external to said remote processor and capable of sending a Write/Load instruction that includes a data item to said remote cache memory means on said communications bus, comprising:

(a) means for updating said remote cache memory means in response to the appearance on said communications bus of a Write/Load instruction sent by said local means whenever the data item included with the Write/Load instruction is stored in said remote cache memory means; and

(b) means for loading said data item included with said Write/Load instruction into said remote cache memory means without any involvement by said remote processor whenever said data item appearing on said communications bus is not stored in said remote cache memory means.

5,611,071

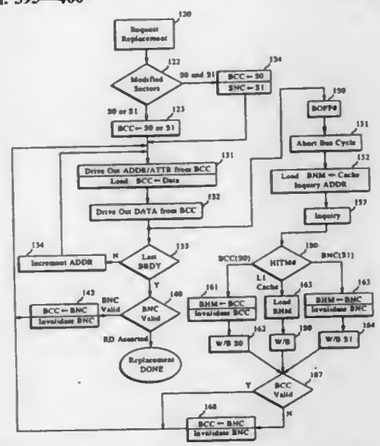
SPLIT REPLACEMENT CYCLES FOR SECTORED CACHE LINES IN A 64-BIT MICROPROCESSOR INTERFACED TO A 32-BIT BUS ARCHITECTURE

Marvin W. Martinez, Jr., Plano, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Apr. 19, 1995, Ser. No. 425,939

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—460 **20 Claims**



1. A 64/32 computer system including a 64-bit x86 microprocessor, system logic, and system memory, intercoupled by a 32-bit x86 bus architecture which does not support pipelined bus cycles, the microprocessor including an internal L1 cache with two sectors per cache line such that a cache line replacement request involving both sectors is performed as a split replacement cycle with a separate burst write cycle for each sector, the computer system comprising:

(a) a bus interface unit (BIU) in the microprocessor interfaced to the 32-bit bus architecture to implement bus cycles in response to bus cycle requests, the BIU being adaptable to interface to a 64-bit bus architecture that supports pipelined bus cycles;

(b) the BIU includes (i) BCC logic for staging a current bus cycle, and (ii) BNC logic for staging a pipelined bus cycle in applications with a 64 bit bus architecture; and

(c) in response to a cache line replacement request in which both sectors of a cache line will be written back to the system memory, the BIU implements a split replacement cycle by (i) staging a first sector in the BCC logic, and staging a second sector in the BNC logic, and (ii) running a first burst write cycle to transfer the first sector staged in the BCC logic, and then running a second burst write cycle to transfer the second sector staged in the BNC logic.

5,611,072

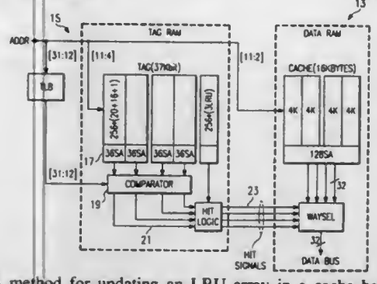
CACHE WITH AN EXTENDED SINGLE CYCLE READ/WRITE SYSTEM AND METHOD

Hiep Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 136,638, Oct. 12, 1993, abandoned. This application Jun. 6, 1996, Ser. No. 660,017

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—463 **4 Claims**



1. A method for updating an LRU array in a cache having a RAM, said LRU array having a self-timing signal for the read operation of said LRU array, in conjunction with a cache RAM read cycle, comprising the steps of:

beginning a cache RAM read cycle;

determining whether a hit condition exists with respect to a tag associated with said LRU array, and generating said self-timing signal if said hit condition exists;

beginning an LRU write operation with respect to said LRU array in response to said self-timing signal and in said cache RAM read cycle, said LRU write operation including the steps of

providing a write signal to said LRU array, and

pre-charging said LRU array; and

extending said LRU write operation for a time sufficient for said precharging of said LRU bit line to complete.

5,611,073

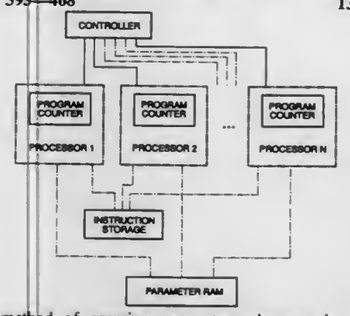
METHOD OF ENSURING PARAMETER COHERENCY IN A MULTI-PROCESSOR SYSTEM

Sandesh Malpure, Novi, Mich., and Raymond B. Reed, Noblesville, Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Feb. 9, 1995, Ser. No. 386,041

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—468 **13 Claims**



1. A method of ensuring parameter coherency in a multiprocessor system in which given processor includes a program counter storing an address of an instruction to be executed, and first and second instructions which are consecutively executed to respectively update first and second parameters, the first and second parameters being non-coherent for a period between the execution of the first and second instructions, the method comprising the steps of:

setting a flag bit to indicate when an address corresponding to the second instruction is stored in the program counter;

reading the first parameter;

reading the flag bit;

if the flag bit indicates the address corresponding to the second instruction is not stored in the program counter, reading the second parameter; and

accepting the first and second parameters as coherent.

5,611,074

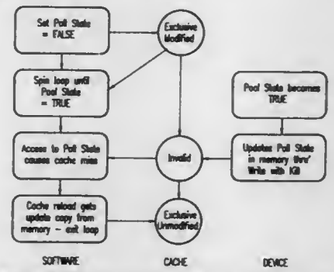
EFFICIENT POLLING TECHNIQUE USING CACHE COHERENT PROTOCOL

Joseph C. Kantz, Beaver, Pa.; Abraham Mammen, Poughkeepsie, N.Y., and Susan D. Wright, Durham, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,879

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—473 **5 Claims**



1. An efficient polling technique in a computer system comprising a processor having a local cache, said processor being connected to a device attached to an input/output bus, said polling technique comprising the steps of:

assigning a shared cache line in the local cache for shared use by the processor and the device;

passing an address of the shared cache line to the device by software running on the processor;

storing by the device the address of the shared cache line in a register space of the device;

setting a flag in the shared cache line in the local cache by the software running on the processor to initiate a polling loop between the processor and the cache upon dispatching a task to be performed by the device, the polling loop between the processor and the cache being independent of the input/output bus;

upon completion of the dispatched task by the device, clearing the flag in the shared cache line by the device; and

terminating the polling loop between the processor and the cache by the software upon detecting that the flag in the shared cache line has been cleared.

5,611,075

BUS ARCHITECTURE FOR DIGITAL SIGNAL PROCESSOR ALLOWING TIME MULTIPLEXED ACCESS TO MEMORY BANKS

Douglas Garde, Dover, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 317,891, Oct. 4, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 681,905

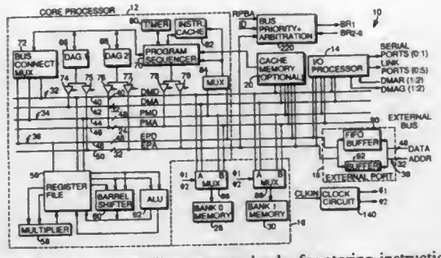
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—480 **5 Claims**

1. A digital signal processor, comprising:

a core processor for performing digital signal computations;

an I/O processor for controlling external access to and from the digital signal processor;



first and second pipeline memory banks for storing instructions and data for the digital signal computations;

a first bus and a second bus interconnecting said core processor and said first and second pipeline memory banks, said first bus interconnecting said I/O processor and said first and second pipeline memory banks;

an external port bus interconnecting said core processor and said I/O processor;

an external port circuit for interconnecting said external port bus to an external bus, said external bus providing interconnection to an external device, whereby said I/O processor communicates with said external device on said external port bus without interfering with access by said core processor to said first and second pipeline memory banks on said first bus and said second bus;

a clock circuit for generating a first clock phase and a second clock phase in response to a clock signal; and

means for coupling said core processor to one of said pipeline memory banks on said first bus during said second clock phase and for coupling said I/O processor to one of said pipeline memory banks on said first bus during said first clock phase, whereby said core processor and said I/O processor access said first and second pipeline memory banks on said first bus during different clock phases of a clock cycle.

5,611,076

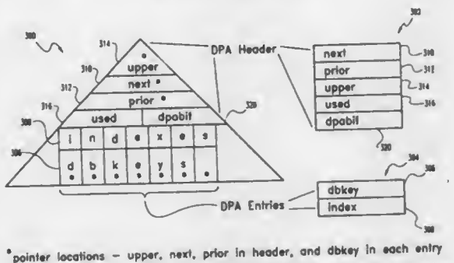
MULTI-MODEL DATABASE MANAGEMENT SYSTEM ENGINE FOR DATABASES HAVING COMPLEX DATA MODELS

Kevin Durflinger, Lafayette; Jon D. Reid, West Lafayette, and Kim M. Logan, Lafayette, all of Ind., assignors to Micro Data Base Systems, Inc., West Lafayette, Ind.

Filed Sep. 21, 1994, Ser. No. 309,909

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **52 Claims**



1. A computer database management system for storing, retrieving and modifying data objects stored in a database, said database management system comprising:

a number of application processes, each of said application processes including:

a user accessible external application; and

one of a multiplicity of application program interfaces for translating complex input data from said external application into a predefined intermediate data format and for translating said predefined intermediate data format into complex output data for said external application;

a schema coupled to said number of application processes, said schema defining a number of predetermined data models for translating said predefined intermediate data format into a predetermined data model format and for translating said predetermined data model format into said intermediate data format; and

a database server including storage means for storing and retrieving the data objects in and from the database, said server storing and retrieving the data objects according to said predetermined data model format,

said predetermined data model format including:

a plurality of owner records each having associated therewith at least some data;

a plurality of member records each having associated therewith at least some data, wherein set relationships exist between certain ones of said owner records and said member records, each of said owner records of any of said set relationships being linked directly to a corresponding member record when only said corresponding member record exists in said set relationship, and each of said member records of any of said set relationships being linked directly to a corresponding owner record when only said corresponding owner record exists in said set relationship; and

a plurality of dynamic pointer arrays for linking each of said member records of any of said set relationships to a corresponding owner record when a multiplicity of member records exist in said set relationship, and for linking each of said owner records of any of said set relationships to a corresponding member record when a multiplicity of owner records exist in said set relationship.

5,611,077

PROCESSING APPARATUS FOR COLOR PHOTOGRAPHIC MATERIAL

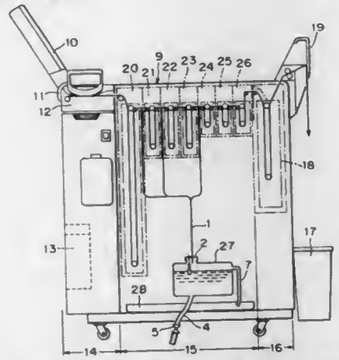
Takatoshi Ishikawa, Minami-ashigara, and Fumio Mogi, Kanagawa-ken, both of Japan, assignors to Fuji Photo FIlm Co., Ltd., Minami-ashigara, Japan

Filed May 15, 1995, Ser. No. 441,306

Claims priority, application Japan, May 16, 1994, 6-101258

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—630 **15 Claims**



1. A processing apparatus for color photographic photosensitive materials which comprises (a) processing tanks comprising a color developing tank, a desilvering tank, a washing tank and/or a stabilizing tank, (b) means for replenishing respective processing tanks, (c) means for controlling an amount of replenishing color

developing solution to be charged into the color developing tank such that an amount of overflow liquid from the color developing tank is at most 400 ml per m^2 of the processed color photographic photosensitive materials, (d) one storage tank for collecting overflow liquids from all of the processing tanks, (e) means for introducing all overflow liquids from the processing tanks into the storage tank, and (f) means for measuring an amount of processed color photographic photosensitive materials.

5,611,078

METHOD AND APPARATUS FOR INDEPENDENTLY RESETTING PROCESSORS AND CACHE CONTROLLERS IN MULTIPLE PROCESSOR SYSTEMS

David A. Miller, Houston; Kenneth A. Jansen, Spring; Paul R. Culley, Cypress; Mark Taylor, and Javier F. Izquierdo, both of Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 152,241, Nov. 12, 1993, Pat. No. 5,465,360, which is a continuation of Ser. No. 15,314, Feb. 9, 1993, abandoned, which is a continuation of Ser. No. 431,653, Nov. 3, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 480,874

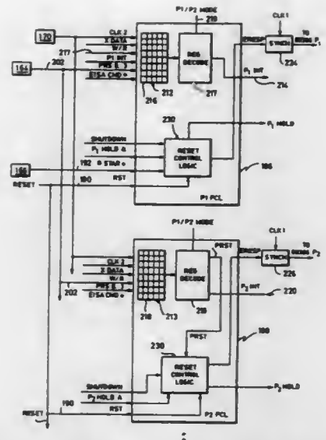
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—653 **8 Claims**

1. A computer system comprising:

a system bus for transmitting program instructions and data;

a primary processor connected to said system bus for controlling said system bus and for executing program instructions;



at least one secondary processor connected to said system bus for controlling said system bus and for executing program instructions;

means for resetting all of said primary and secondary processors;

means for detecting a primary processor reset initiation signal;

means responsive to said primary processor reset initiation signal for placing said primary processor in a bold state; and

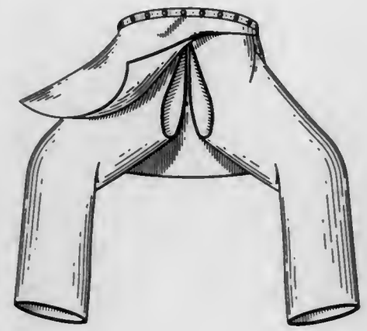
means for resetting only said primary processor after said primary processor has been placed in said hold state.

OL
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997
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DESIGNS

MARCH 11, 1997

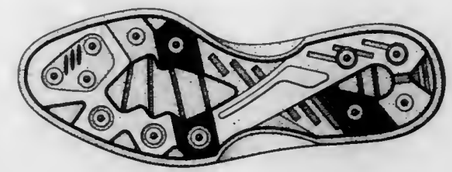
378,317
COMBINATION SKIRT AND TROUSERS
Patricia A. Wike, 907 Floral Dr., Tyrone, Pa. 16686
Continuation-in-part of Ser. No. 32,028, Dec. 12, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 49,572
Term of patent 14 years
U.S. Cl. D2—742



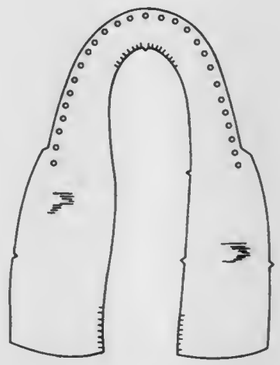
378,318
SOLE
Stanley James, Ludlam Close, England, assignor to R. Griggs Group Limited, Wellingborough, England
Filed Jan. 26, 1996, Ser. No. 49,470
Term of patent 14 years
U.S. Cl. D2—953



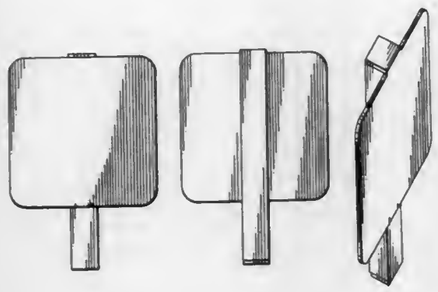
378,319
SOLE FOR GOLF SHOES
Akihiro Miyauchi, Osaka, Japan, assignor to Mizuno Corporation, Osaka-Fu, Japan
Filed Jun. 26, 1995, Ser. No. 40,768
Term of patent 14 years
U.S. Cl. D2—960



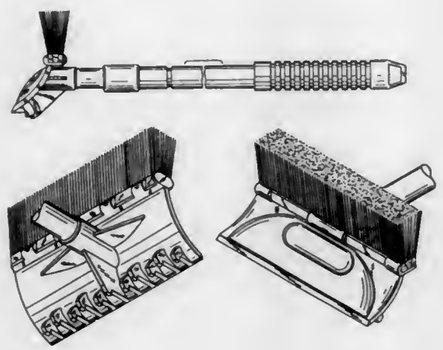
378,320
MOCCASIN VAMP
Michael H. Ganon, Columbus, Ohio, assignor to Sara Lee Corporation, Winston-Salem, N.C.
Filed Apr. 18, 1996, Ser. No. 53,243
Term of patent 14 years
U.S. Cl. D2—974



378,321
FAN
Charles F. Fry, Jr., 4941 Winwood Way, Orlando, Fla. 32819
Filed Nov. 6, 1995, Ser. No. 46,059
Term of patent 14 years
U.S. Cl. D3—1



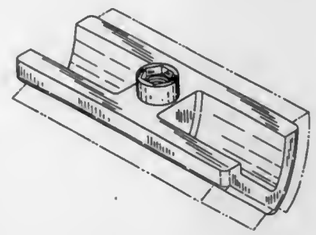
378,322
EXTENDABLE HANDLE ICE SCRAPER AND SNOW BRUSH COMBINATION
Michael W. K. Young, Flushing, N.Y., assignor to Injectron Corporation, Plainfield, N.J.
Filed Dec. 29, 1994, Ser. No. 32,846
Term of patent 14 years
U.S. Cl. D4—118



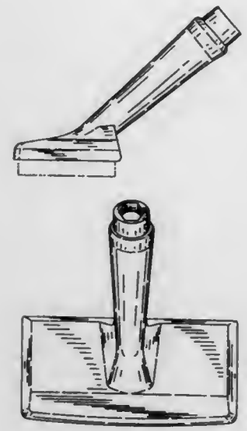
378,323
PAINTBRUSH
Terry Lee, A, 11/FL, Block A, Pacific View 38 Taitam Road, Tai Tam, Hong Kong
Filed Sep. 10, 1995, Ser. No. 42,456
The portion of the term of this patent subsequent to Oct. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—135



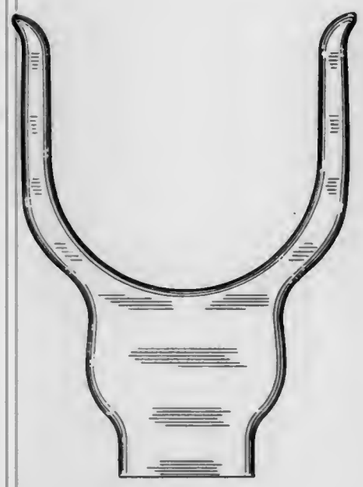
378,324
ANGLED BRUSH BLOCK
Steven C. Tennant, Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Feb. 26, 1996, Ser. No. 50,736
Term of patent 14 years
U.S. Cl. D4—138



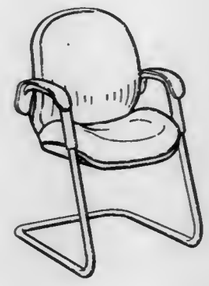
378,325
DECK BRUSH HANDLE
William P. Camp, Jr., Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Feb. 1, 1996, Ser. No. 49,862
Term of patent 14 years
U.S. Cl. D4—138



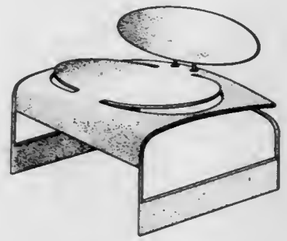
378,326
HAT RACK
John D. Goodner, 1836 Santa Fe St., Oakley, Calif. 94561
Filed May 31, 1995, Ser. No. 39,592
Term of patent 14 years
U.S. Cl. D6—320



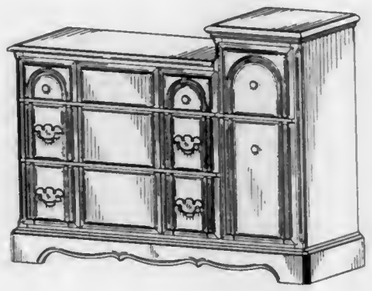
378,327
CHAIR
Jocelyn Beaulieu, Newmarket, Canada, assignor to Global Upholstery Company, Toronto, Canada
Filed Jun. 27, 1995, Ser. No. 40,782
Claims priority, application Canada, Apr. 18, 1995, 1995-0828
Term of patent 14 years
U.S. Cl. D6—372



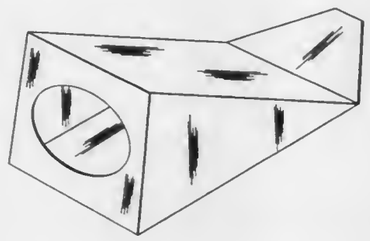
378,328
CHAIR
Alfonso E. Albaisa, San Diego, Calif., assignor to Manuel C. Turchan, Dearborn, Mich.
Filed Sep. 12, 1995, Ser. No. 43,759
Term of patent 14 years
U.S. Cl. D6—380



378,329
DRESSER
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Sep. 12, 1995, Ser. No. 43,848
Term of patent 14 years
U.S. Cl. D6—439



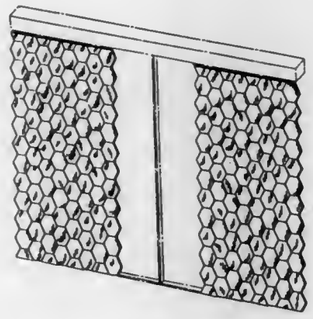
378,330
TISSUE BOX
Violetta Spaseska, 1 Whittle Place, Stirling, Western Australia, Australia
Filed Apr. 6, 1995, Ser. No. 38,151
Claims priority, application Australia, Oct. 14, 1994, 3424/1994
Term of patent 14 years
U.S. Cl. D6—518



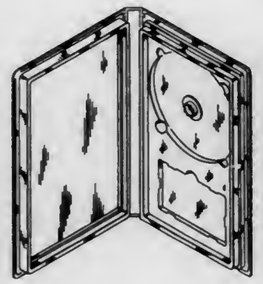
378,331
STORAGE RACK FOR GOLF EQUIPMENT
Thomas R. Allendorph, 1600 Ironwood Dr., Mt. Prospect, Ill. 60056
Division of Ser. No. 44,663, Sep. 28, 1995. This application Apr. 15, 1996, Ser. No. 53,157
Term of patent 14 years
U.S. Cl. D6—552



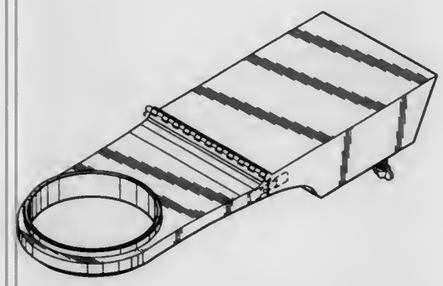
378,332
WINDOW DRESSING
Helen Simoni, 205 Titusville Rd., Poughkeepsie, N.Y. 12603
Filed Mar. 13, 1991, Ser. No. 669,301
Term of patent 14 years
U.S. Cl. D6—577



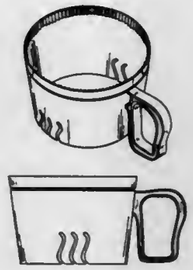
378,333
COMPACT DISK AND BUSINESS CARD HOLDER
Stephen W. Anderson, Palm Desert, Calif., assignor to Cold Call Cowboy Productions, Inc., Palm Desert, Calif.
Filed Aug. 29, 1995, Ser. No. 43,213
Term of patent 14 years
U.S. Cl. D6—632



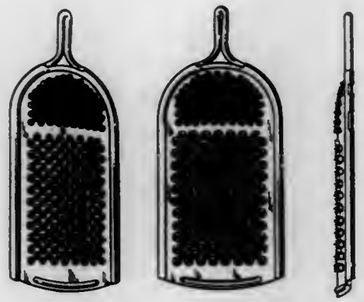
378,334
FOLDING PORTABLE CUP HOLDER
Scott M. Legere, 7421 120th Ave. North, Largo, Fla. 34643
Filed Apr. 4, 1996, Ser. No. 52,693
Term of patent 14 years
U.S. Cl. D7—620



378,335
PAPER CUP HOLDER
Jon C. Liebling, P.O. Box 1198, Bodega Bay, Calif. 94923, and David S. Dolberg, 1322 Santa Fe Ave., Berkeley, Calif. 94702
Filed Mar. 18, 1996, Ser. No. 51,732
Term of patent 14 years
U.S. Cl. D7—622



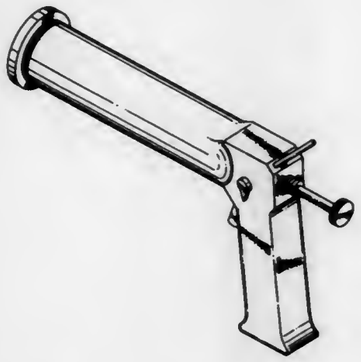
378,336
GRATER
Gianpietro Pedrini, Brescia, Italy, assignor to Pedrini P.P.L. S.p.A., Concesio, Italy
Filed Sep. 8, 1995, Ser. No. 46,556
Claims priority, application WIPO, Mar. 13, 1995, DM/032400
Term of patent 14 years
U.S. Cl. D7—678



378,337
TELESCOPING MAGNET
Mark F. Reynolds; Aaron E. Fader, both of Langley, and Burton L. Lefebvre, Surrey, all of Canada, assignors to Carica, Inc., Surrey, Canada
Filed Jun. 1, 1995, Ser. No. 39,630
Term of patent 14 years
U.S. Cl. D8—14



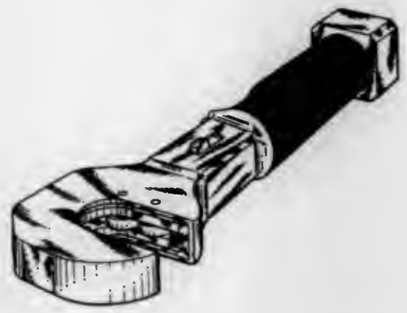
378,338
ELECTRIC POWERED CAULKING GUN
Riccardo Acciville, and Frank Acciville, both of 5370 Elm Street, Niagara Falls, Ontario, Canada
Filed Feb. 24, 1995, Ser. No. 35,339
Term of patent 14 years
U.S. Cl. D8—14.1



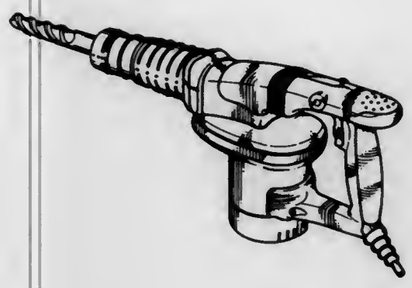
378,339
ELLIPTICAL DRIVE STUD
Lowell B. Whitley, Arlington, Tex., assignor to Stanley Mechanics Tools, Carrollton, Tex.
Filed Jun. 1, 1995, Ser. No. 39,645
Term of patent 14 years
U.S. Cl. D8—25



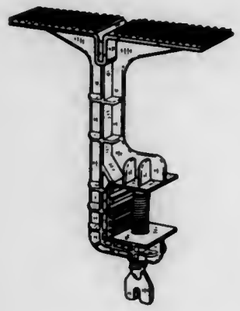
378,340
TUBING CUTTER
David L. Harter, 1000 Hill St., P.O. Box 1357, Jacksonville, Oreg. 97530
Filed Sep. 26, 1995, Ser. No. 44,555
Term of patent 14 years
U.S. Cl. D8—60



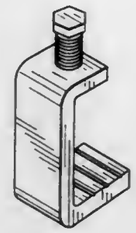
378,341
HAMMER DRILL
Dong H. Kim, Seo-ku, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 28, 1995, Ser. No. 43,189
Claims priority, application Rep. of Korea, Feb. 28, 1995, 3410/1995
Term of patent 14 years
U.S. Cl. D8—69



378,342
SKI REPAIR SUPPORT
Peter W. Stuart, 2181 E. Arbor La., Salt Lake City, Utah 84117, and Henry M. Armantrout, 1765 E. Hubbard Ave., Salt Lake City, Utah 84108
Filed Sep. 12, 1995, Ser. No. 43,852
Term of patent 14 years
U.S. Cl. D8—72



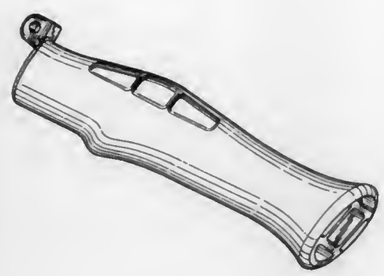
378,343
HIGH-PERFORMANCE "C" CLAMP
Richard J. Macor, Stewartsville, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Jan. 16, 1996, Ser. No. 49,095
Term of patent 14 years
U.S. Cl. D8—73



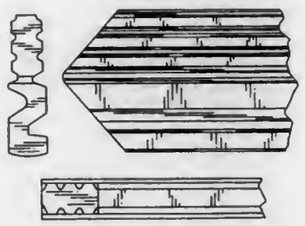
378,344
SET OF HAMMER PARTS
Tracy M. Kroenung, 211 E. Pinzon St., Tuscola, Ill. 61953
Filed May 4, 1994, Ser. No. 22,408
Term of patent 14 years
U.S. Cl. D8—75



378,345
HAND GRIP FOR FASTENER DRIVING TOOL
Ronald Austin, Hazelcrest, Ill., and Edward R. Brandt, Dyer, Ind., assignors to Duo-Fast Corporation, Franklin Park, Ill.
Filed Jun. 16, 1995, Ser. No. 40,416
Term of patent 14 years
U.S. Cl. D8—107



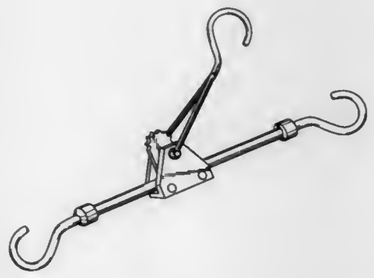
378,346
PORTION OF A KEY BLADE BLANK
Joanne M. Aston, Wolverhampton, England, assignor to Yale Security Inc., Monroe, N.C.
Filed Jan. 19, 1996, Ser. No. 49,181
Term of patent 14 years
U.S. Cl. D8—347



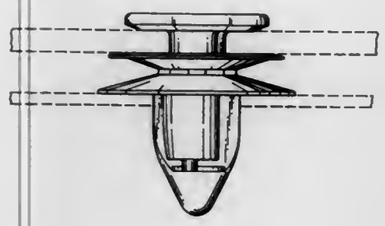
378,347
STICKER
David J. Bain, 163 Grenadier Crescent, Thornhill, Ontario, Canada
Filed Nov. 29, 1994, Ser. No. 31,907
Term of patent 14 years
U.S. Cl. D8—354



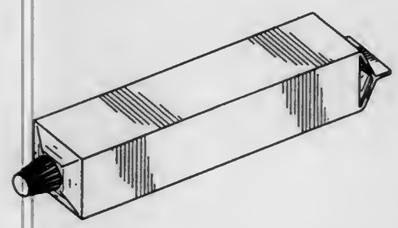
378,348
ADJUSTABLE LENGTH SHOCK CORD
Donald R. Marx, 229 Ellsworth Dr., Newark, Del. 19711
Filed Jun. 15, 1995, Ser. No. 40,324
Term of patent 14 years
U.S. Cl. D8—355



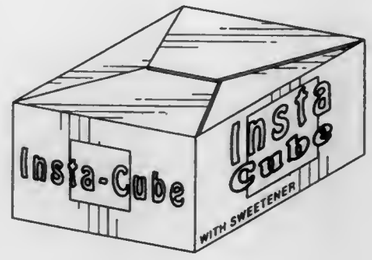
378,349
PANEL FASTENER
Kazuo Saito, Yokohama, and Masaharu Shibao, Matsudo, both of Japan, assignors to Nifco Inc., Yokohama, Japan
Filed Aug. 7, 1995, Ser. No. 42,315
Claims priority, application Japan, Feb. 8, 1995, 7-2885
Term of patent 14 years
U.S. Cl. D8—382



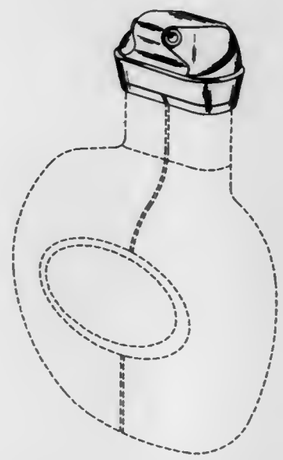
378,350
TOOTHPASTE TUBE
Hans Halm, Herne, Germany, assignor to Lingner + Fischer GmbH, Baden, Germany
Filed May 20, 1991, Ser. No. 702,677
Claims priority, application United Kingdom, Nov. 22, 1990, 2011229
Term of patent 14 years
U.S. Cl. D9—302



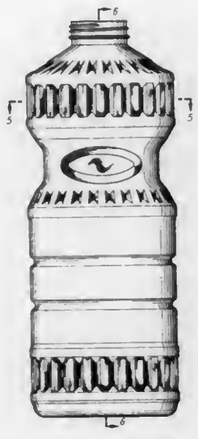
378,351
INSTANT FOOD CUBE PACKAGE
Harold Norton, 3570 Ruckersville Rd., and Alton Smith, 1562 Lexington Hwy., both of, Elberton, Ga. 30635
Filed Jan. 26, 1996, Ser. No. 49,479
Term of patent 14 years
U.S. Cl. D9—432



378,352
POURER
Michael Paton, Royston, and Jonathan Hogwood, Thetford, both of England, assignors to IDV Operations Ireland Limited, Dublin, Ireland
Filed Aug. 18, 1994, Ser. No. 27,415
Claims priority, application Ireland, Feb. 18, 1994, 56/94
Term of patent 14 years
U.S. Cl. D9—447



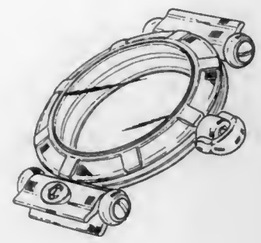
378,353
BOTTLE
Sahin Emre, 13633 Kings Canyon, Fontana, Calif. 92336, and Bernhard A. J. Wassink, 2231 N. Laural Way, Upland, Calif. 91786
Filed Oct. 25, 1995, Ser. No. 47,051
Term of patent 14 years
U.S. Cl. D9—542



378,354
PERFUME BOTTLE
Hubert Varlet, Paris, France, assignor to Verreries Pochet et du Courval, Paris Cedex, France
Filed Apr. 25, 1995, Ser. No. 37,945
Claims priority, application France, Oct. 25, 1994, 945-875
Term of patent 14 years
U.S. Cl. D9—544



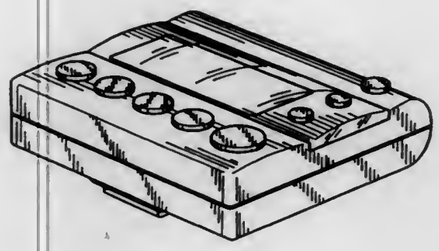
378,355
WRISTWATCH CASE
Philippe Charriol, 66 Black's Link, Hong Kong, Hong Kong
Filed Oct. 25, 1995, Ser. No. 45,632
Claims priority, application WIPO, May 4, 1995, DM/032939
Term of patent 14 years
U.S. Cl. D10—30



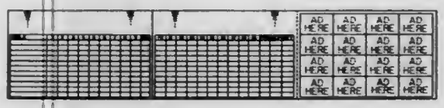
378,356
WRIST WATCH
Tang C. Kin, Shatin, Hong Kong, assignor to Advance Watch Company, Ltd., Southfield, Mich.
Filed Apr. 1, 1996, Ser. No. 52,481
Term of patent 14 years
U.S. Cl. D10—32



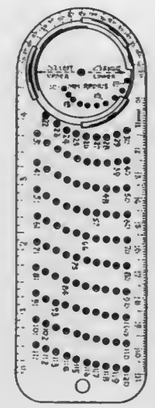
378,357
TIMER
Raymond Chan, Kowloon, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda
Filed May 8, 1996, Ser. No. 54,190
Claims priority, application United Kingdom, Nov. 17, 1995, 2052048
Term of patent 14 years
U.S. Cl. D10—40



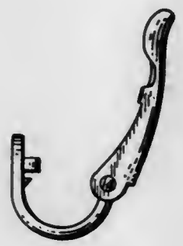
378,358
GOLF SCORECARD HAVING A SEPARABLE ADVERTISING PANEL
Aaron Campbell, Las Vegas, Nev., assignor to Turf Rhino, Inc., Las Vegas, Nev.
Filed Mar. 4, 1996, Ser. No. 51,105
Term of patent 14 years
U.S. Cl. D10—46.1



378,359
COMPASS
J. Bruce Stoneberg, LaGrange, Ill., assignor to Safe-T Products, Inc., LaGrange, Ill.
Filed Mar. 28, 1996, Ser. No. 52,377
Term of patent 14 years
U.S. Cl. D10—68



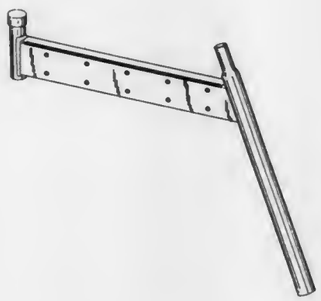
378,360
EARRING CLIP
Robert A. Montaquila, 39 Hamden Rd., Cranston, R.I. 02920
Filed Feb. 20, 1996, Ser. No. 50,485
Term of patent 14 years
U.S. Cl. D11—88



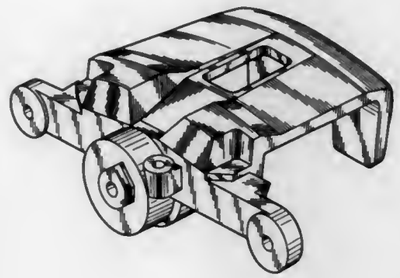
378,361
TOMBSTONE NOVELTY SCULPTURE
Donald Shaw, Toronto, and Carman Buonito, Markham, both of Canada, assignors to Integrated Plastics Limited, Agincourt, Canada
Filed Jan. 5, 1996, Ser. No. 48,623
Claims priority, application Canada, Sep. 8, 1995, 1995-2002
Term of patent 14 years
U.S. Cl. D11—121



378,362
COMBINED SEAT POST AND EXTENSION
Phillip E. Schlangen, and Raymond J. Buresch, both of Minneapolis, Minn., assignors to Hydro-Bikes, Inc., Minneapolis, Minn.
Filed Jul. 3, 1995, Ser. No. 41,395
Term of patent 14 years
U.S. Cl. D12—119



378,363
CALIPER BRAKE HOUSING
Jung H. Sin, Taegu, Rep. of Korea, assignor to Daewoo Automotive Component, Ltd., Kyung Sang Buk Do, Rep. of Korea
Filed Aug. 18, 1995, Ser. No. 42,840
Term of patent 14 years
U.S. Cl. D12—180



378,364
WHEEL GUARD
Van Clifton, 10940 Old Country Line Rd., Bonaqua, Tenn. 37025
Filed Dec. 1, 1995, Ser. No. 47,368
Term of patent 14 years
U.S. Cl. D12—213



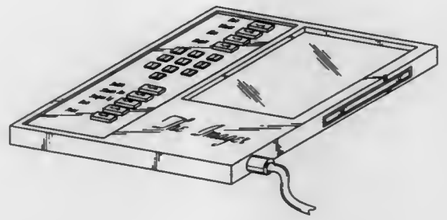
378,365
WINDSHIELD WIPER UNIT
Michael E. Fitzgerald, Walkerton; James P. Witek, Michigan City; John Clark, Elkhart, and William A. Powell, Michigan City, all of Ind., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 11, 1994, Ser. No. 27,061
Term of patent 14 years
U.S. Cl. D12—219



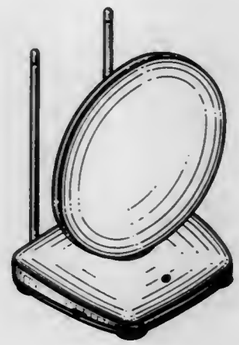
378,366
BATTERY HOUSING FOR A PORTABLE TELEPHONE
Albert L. Nagele, Wilmette; Brian J. Hassemer, Gurnee; Leonid Soren, Lincolnwood, and Timothy P. McCormick, Gurnee, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 9,661, Jun. 16, 1993, abandoned. This application Apr. 21, 1994, Ser. No. 21,625
Term of patent 14 years
U.S. Cl. D13—103



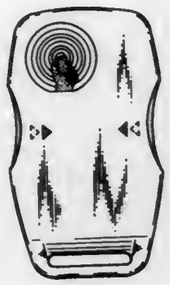
378,367
ADJUSTABLE ELECTRONIC SEWING PATTERN
Janet Adams, 4059 Thunder Heights La., Middleburg, Fla. 32068
Filed Oct. 30, 1995, Ser. No. 45,789
Term of patent 14 years
U.S. Cl. D14—100



378,368
LOW POWER TRANSMITTER AND RECEIVER
William T. McGreevy, Babylon, N.Y., assignor to Recoton Corporation, Long Island City, N.Y.
Continuation-in-part of Ser. No. 1,641, Nov. 18, 1992, Pat. No. Des. 347,219. This application May 19, 1994, Ser. No. 23,183
Term of patent 14 years
U.S. Cl. D14—137



378,369
WIRELESS COMMUNICATOR
George E. Behike, Victor, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.
Filed Dec. 19, 1995, Ser. No. 48,083
Term of patent 14 years
U.S. Cl. D14—137



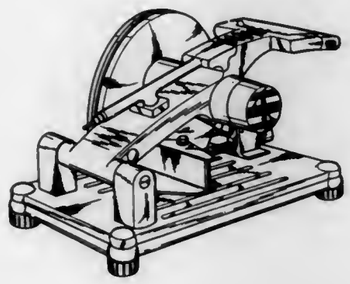
378,370
COMBINED RADIO AND CASSETTE PLAYER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Oct. 10, 1995, Ser. No. 45,136
Term of patent 14 years
U.S. Cl. D14—162



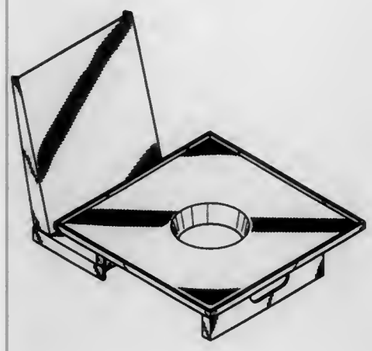
378,371
RADIO
Ronnie C. W. Mak, Kowloon, Hong Kong, assignor to Sanny Electronics Limited, Kowloon, Hong Kong
Filed Apr. 10, 1996, Ser. No. 52,862
Term of patent 14 years
U.S. Cl. D14—194



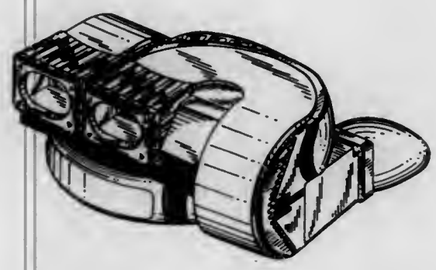
378,372
CUTTER BY GRINDING
Dong H. Kim, Inchun-si, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 28, 1995, Ser. No. 43,150
Claims priority, application Rep. of Korea, Feb. 28, 1995, 3411/1995; Feb. 28, 1995, 3412/1995
Term of patent 14 years
U.S. Cl. D15—125



378,373
FLOWER POT WRAPPING PLEAT FORMING FIXTURE
Michael A. Morris, Menlo Park, Calif., assignor to Trans Global Products, Inc., Redwood City, Calif.
Continuation-in-part of Ser. No. 40,183, Jun. 12, 1995, Pat. No. Des. 372,486. This application Jan. 29, 1996, Ser. No. 49,686
Term of patent 14 years
U.S. Cl. D15—135



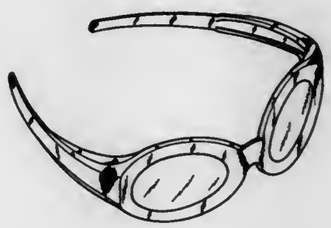
378,374
BINOCULARS
Jason Lee, Montclair, N.J., and Arthur Becker, New York, N.Y., assignors to Bnox, Inc., New York, N.Y.
Filed May 2, 1996, Ser. No. 53,975
Term of patent 14 years
U.S. Cl. D16—133



378,375
EYEGLASSES
Kai-Mou Tsai, 4/F., No. 1, Lane 135, Tao-Hsiang Rd., Peitou Dist., Taipei City, China
Filed May 14, 1996, Ser. No. 54,411
Term of patent 14 years
U.S. Cl. D16—326



378,376
EYEGLASSES
Kai-Mou Tsai, 4/F., No. 1, Lane 135, Tao-Hsiang Rd., Peitou Dist., Taipei City, Taiwan
Filed May 14, 1996, Ser. No. 54,418
Term of patent 14 years
U.S. Cl. D16—327



378,377
ELECTRONIC LABEL PRINTER
Tomoshige Komatsu, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1995, Ser. No. 48,295
Term of patent 14 years
U.S. Cl. D18—19



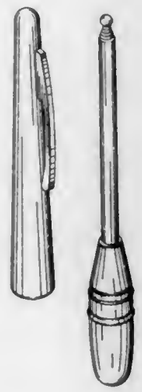
378,378
COMPUTER PRINTER
Tooru Nakazawa, and Mugio Kawasaki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 22, 1995, Ser. No. 44,360
Claims priority, application Japan, Mar. 23, 1995, 7-7800
Term of patent 14 years
U.S. Cl. D18—54



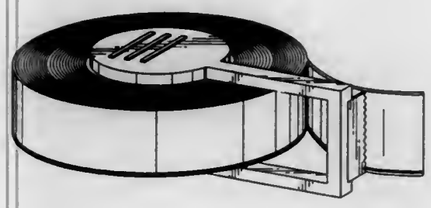
378,379
POCKETED REUSABLE COVER LETTER
Derek A. Casari, 15477 Dickens St., Sherman Oaks, Calif. 91403
Filed Jul. 21, 1994, Ser. No. 26,169
Term of patent 14 years
U.S. Cl. D19—1



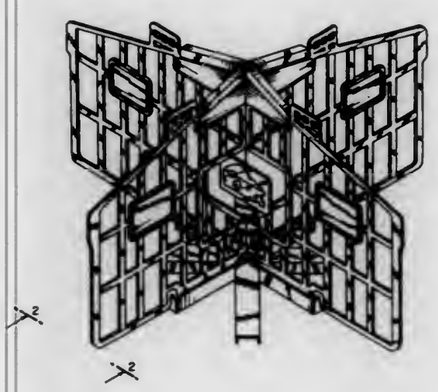
378,380
COMBINED POINTER AND COVER
Robert A. Mackin, 1033 Lake Point, Flagstaff, Ariz. 86004
Filed Oct. 26, 1995, Ser. No. 45,693
Term of patent 14 years
U.S. Cl. D19—59



378,381
COMBINED HIGHLIGHTER TAPE AND DISPENSER THEREFOR
Wietse ten Boden, 5 Clyde Pl., Kings Park, N.Y. 11754
Filed Feb. 12, 1996, Ser. No. 50,253
Term of patent 14 years
U.S. Cl. D19—69



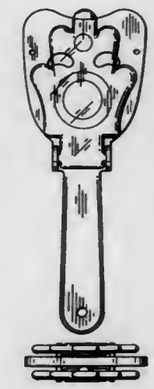
378,382
TOY GAME
Steven Ellman, 1672 E. 7th St., Brooklyn, N.Y. 11230; Fredric Ellman, 30 Fairview Ave., Tarrytown, N.Y. 10591, and Julius Ellman, 1672 E. 7th St., Brooklyn, N.Y. 11230
Filed Sep. 22, 1994, Ser. No. 28,788
Term of patent 14 years
U.S. Cl. D21—1



378,383
LOTTERY NUMBER SELECTOR
Merwin Jarrell, 1012 Schiefers Branch Rd., Herman, Mo. 65041
Filed Feb. 5, 1996, Ser. No. 49,932
Term of patent 14 years
U.S. Cl. D21—39



378,384
NOISEMAKER
Lloyd Gilbert, Jr., Broken Arrow, and Mark S. Hanna, Tulsa, both of Okla., assignors to Michael B. Fine, Tulsa, Okla.
Division of Ser. No. 10,985, Jul. 21, 1993, Pat. No. Des. 369,388. This application Dec. 29, 1995, Ser. No. 48,492
Term of patent 14 years
U.S. Cl. D21—64



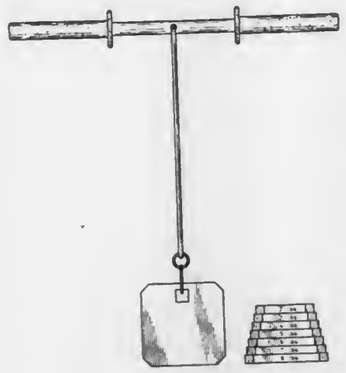
378,385
DOLL WITH BACKPACK, LOCK AND KEY
Jean M. Siewertson, 134 S. Orchard St., Watertown, N.Y. 13601
Filed Jan. 29, 1996, Ser. No. 49,690
Term of patent 14 years
U.S. Cl. D21—171



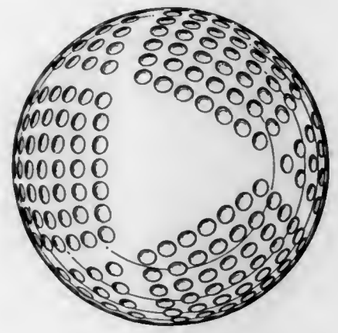
378,387
EXERCISE DEVICE
James B. Easley, Minneapolis, and Thomas G. Tupper, Eden Prairie, both of Minn., assignors to Fitness Master, Inc., Waconia, Minn.
Filed Dec. 4, 1995, Ser. No. 47,449
Term of patent 14 years
U.S. Cl. D21—195



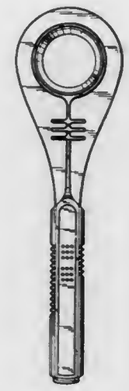
378,386
PORTABLE UPPER TORSO BODY BUILDING DEVICE
Harvey W. Brubaker, 2841 W. La Morada Ave., Rialto, Calif. 92377
Filed Mar. 19, 1996, Ser. No. 51,818
Term of patent 14 years
U.S. Cl. D21—191



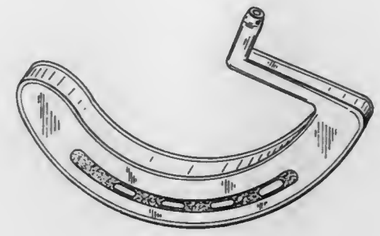
378,388
DIMPLED GAMES BALL
Catherine Watson, Wakefield, England, assignor to Dunlop Limited, London, England
Filed Jul. 26, 1995, Ser. No. 41,902
Claims priority, application United Kingdom, Feb. 17, 1995, 2045357
Term of patent 14 years
U.S. Cl. D21—205



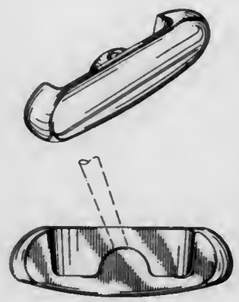
378,389
BALL PADDLE
Alexander Manu, Toronto, Canada, assignor to The Axis Group Inc., Toronto, Canada
Filed Oct. 27, 1995, Ser. No. 45,732
Term of patent 14 years
U.S. Cl. D21—213



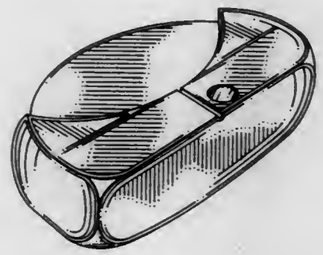
378,391
GOLF CLUB PUTTER HEAD
Charles Giebel, Avondale, Ariz., assignor to Noble Golf Company
Filed Dec. 19, 1995, Ser. No. 48,055
Term of patent 14 years
U.S. Cl. D21—218



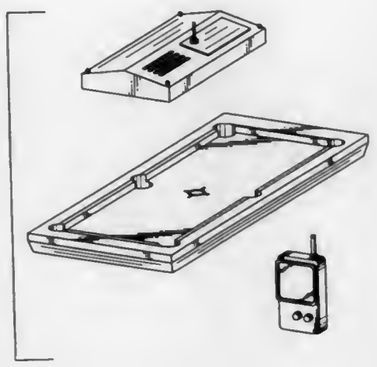
378,390
GOLF CLUB HEAD
Roger R. Shumway, 15073 W. Fairmount, Goodyear, Ariz. 85338
Filed Dec. 26, 1995, Ser. No. 48,342
Term of patent 14 years
U.S. Cl. D21—217



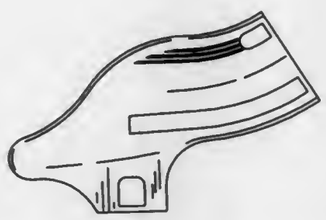
378,392
GOLF CLUB HEAD
Roger R. Shumway, 15073 W. Fairmount, Goodyear, Ariz. 85338
Filed Dec. 26, 1995, Ser. No. 48,348
Term of patent 14 years
U.S. Cl. D21—219



378,393
BILLIARD TABLE AIMING SYSTEM
Bryan Marshall, and William E. Marshall, both of R.R. 2, Box 239, Greentown, Pa. 18426
Filed Apr. 16, 1996, Ser. No. 53,059
Term of patent 14 years
U.S. Cl. D21—232



378,394
COMPONENT OF PLAYGROUND SLIDE
Steven G. King, Long Lake, Minn., assignor to Landscape Structures Inc., Delano, Minn.
Division of Ser. No. 23,883, Jun. 2, 1994, Pat. No. Des. 371,414. This application Jun. 13, 1995, Ser. No. 40,214
Term of patent 14 years
U.S. Cl. D21—244



378,395
SLIDE
Lesley A. Olson, 61 Whipple Rd., Esmood, R.I. 02917
Filed Jan. 11, 1996, Ser. No. 48,857
Term of patent 14 years
U.S. Cl. D21—244



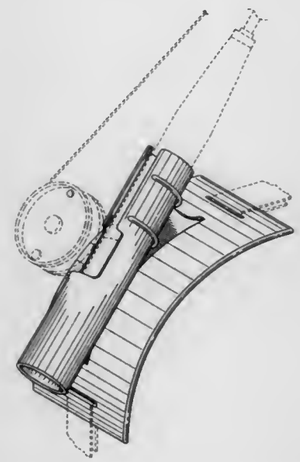
378,396
FISHING LEADER HOLDER
Ray A. Sandberg, and Thomas C. Massey, both of 5309 Lake Alice Rd. SE., Fall City, Wash. 98024
Filed Mar. 19, 1996, Ser. No. 51,813
Term of patent 14 years
U.S. Cl. D22—134



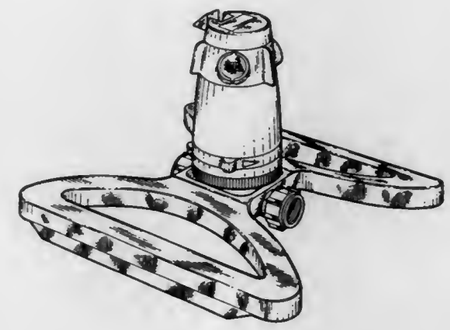
378,397
PROTECTIVE BOOT FOR A FISHING REEL
Nicholas Hydreos, Jr., 1105 Melrose Ave. #201, Glendale, Calif. 91205
Filed Oct. 24, 1994, Ser. No. 30,235
Term of patent 14 years
U.S. Cl. D22—139



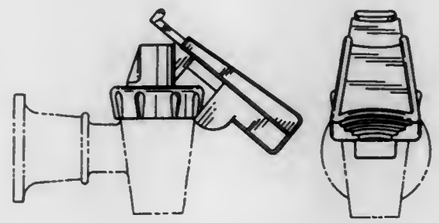
378,398
FLY ROD HOLDER
L. Darryl Osburn, 112 Freeze La., Hamilton, Mont. 59840
Filed Oct. 11, 1995, Ser. No. 45,160
Term of patent 14 years
U.S. Cl. D22—147



378,399
ROTARY SPRINKLER
Sergio G. Simonetti, Westport, Conn., and Howard W. Andrews, Winchester, Va., assignors to Melnor Inc., Winchester, Va.
Filed Nov. 30, 1995, Ser. No. 47,276
Term of patent 14 years
U.S. Cl. D23—214



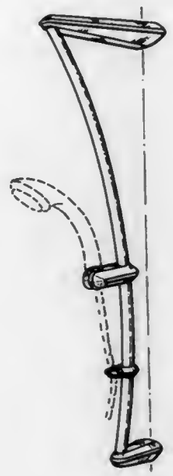
378,400
FAUCET VALVE WITH SAFETY HANDLE
Raymond P. Kowalics, Solon, Ohio, assignor to The Meyer Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 306,029, Sep. 14, 1994, Pat. No. 5,449,144. This application Jun. 20, 1995, Ser. No. 40,505
Term of patent 14 years
U.S. Cl. D23—238



378,401
WALL BAR FOR HAND SHOWER

Horst G. Neufeld, Velbert, and Michael Stein, Wuppertal, both of Germany, assignors to Hans Grohe GmbH & Co. KG, Germany

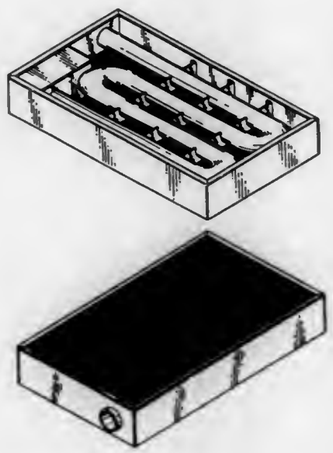
Filed Sep. 26, 1995, Ser. No. 44,570
Claims priority, application Germany, Mar. 27, 1995, M 9502843.9
Term of patent 14 years
U.S. Cl. D23—304



378,402
RADIANT SPACE HEATER FOR RESIDENTIAL USE

Farshid Ahmady, Rochester Hills, and Srinivas C. Duvvuri, Sterling Heights, both of Mich., assignors to Solaronics, Inc., Rochester, Mich.

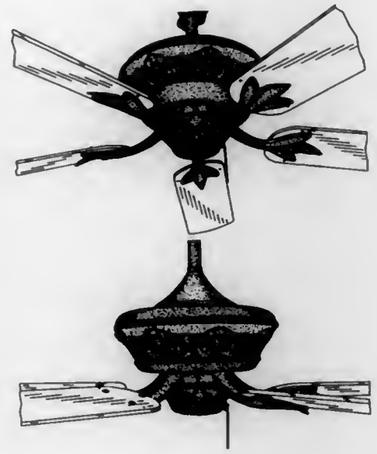
Filed Mar. 4, 1996, Ser. No. 51,164
Term of patent 14 years
U.S. Cl. D23—330



378,403
CEILING FAN

Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

Filed Mar. 22, 1995, Ser. No. 36,553
Term of patent 14 years
U.S. Cl. D23—377



378,404
CEILING FAN

Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

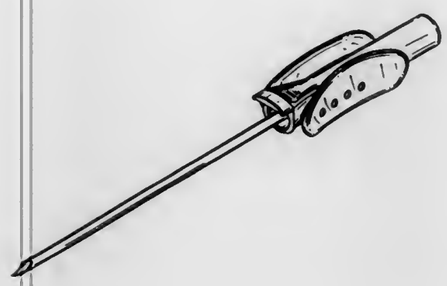
Continuation of Ser. No. 9,829, Jun. 22, 1993, abandoned.
This application May 3, 1995, Ser. No. 38,316
Term of patent 14 years
U.S. Cl. D23—377



378,405
NEEDLE INSERTER

Kenneth C. Musgrave; Timothy J. Erskine, and Glade H. Howell, all of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

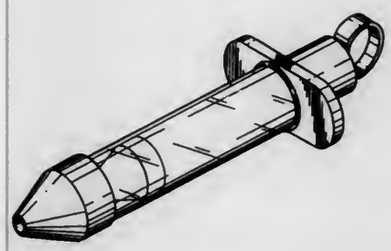
Filed Feb. 29, 1996, Ser. No. 50,895
Term of patent 14 years
U.S. Cl. D24—112



378,406
EAR PLUG SYRINGE

Mona R. Kugler, Rte. 4, Box 4861, Palestine, Tex. 75801

Filed Jul. 31, 1995, Ser. No. 42,043
Term of patent 14 years
U.S. Cl. D24—114



378,407
INFANT TRAINING PANTS

Patricia A. Bunton, 205 G Highland Blvd., New Castle, Del. 19720

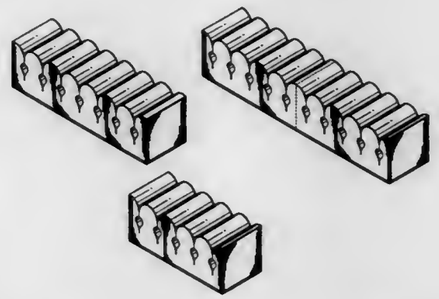
Filed Jun. 9, 1995, Ser. No. 40,089
Term of patent 14 years
U.S. Cl. D24—126



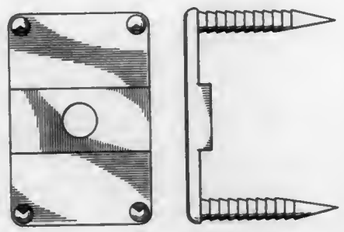
378,408
CORD AND TUBE ORGANIZER

Patricia L. Pyeatt, Fort Worth, and Troy J. Mullens, Jr., Richland Hills, both of Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed May 31, 1995, Ser. No. 39,619
Term of patent 14 years
U.S. Cl. D24—128



378,409
SPINAL FIXATION STAPLE
Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291
Division of Ser. No. 20,624, Mar. 28, 1994, Pat. No. Des. 364,462. This application Oct. 30, 1995, Ser. No. 45,779
Term of patent 14 years
U.S. Cl. D24—145



378,410
STUD GUN END
Vladimir Reil, 30524 Ganado Dr., Rancho Palos Verdes, Calif. 90274
Filed Mar. 26, 1996, Ser. No. 52,200
Term of patent 14 years
U.S. Cl. D24—146



378,411
COMBINED HYGIENIC TONGUE SCRAPER AND CLEANER
Marco Taoatao, 1356 Opechee Way, Glendale, Calif. 91208
Filed Mar. 19, 1996, Ser. No. 51,817
Term of patent 14 years
U.S. Cl. D24—147



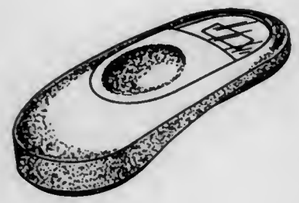
378,412
DENTAL HAND-PIECE
Jean-Marie Badoz, Pontarlier, and Jean-Paul Jacoulet, Besancon, both of France, assignors to Micro Mega International Manufactures, Besancon, France
Filed Feb. 16, 1995, Ser. No. 35,226
Term of patent 14 years
U.S. Cl. D24—152



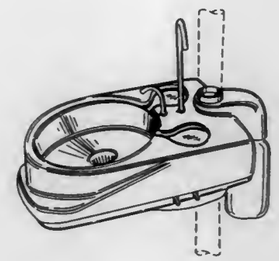
378,413
FEMORAL HIP STEM PROSTHESIS
Leda C. Hewka, Norristown, Pa., assignor to Joint Medical Products Corporation, Stamford, Conn.
Filed Jun. 17, 1994, Ser. No. 24,842
Term of patent 14 years
U.S. Cl. D24—155



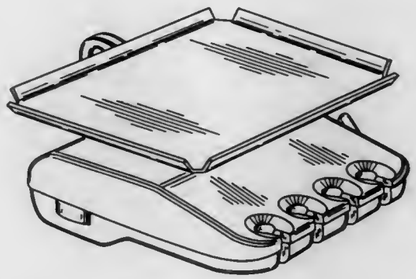
378,414
COMBINED PULSE RATE MEASUREMENT AND DISPLAY DEVICE
David Allen, Lawrence; Chris A. Valentine, Roeland Park, and Warren R. Stevens, Overland Park, all of Kans., assignors to Pivot International, Lenexa, Kans.
Filed Aug. 1, 1995, Ser. No. 42,096
Term of patent 14 years
U.S. Cl. D24—165



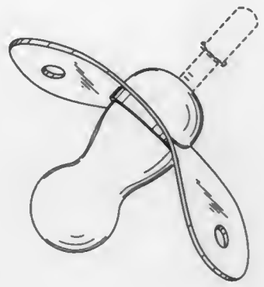
378,415
CUSPIDOR
Shawn R. Irwin, Newberg, and Carl G. Nordstrom, Lake Oswego, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Sep. 27, 1995, Ser. No. 44,608
Term of patent 14 years
U.S. Cl. D24—177



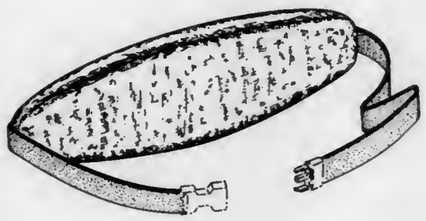
378,416
DENTAL CONTROL UNIT
Pierre M. LaPlante, Newberg; Carl G. Nordstrom, Lake Oswego, and George K. Austin, Jr., Newberg, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Sep. 27, 1995, Ser. No. 44,744
Term of patent 14 years
U.S. Cl. D24—177



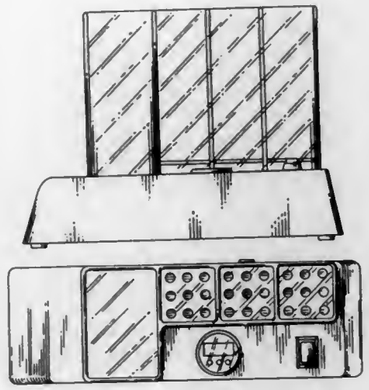
378,417
PACIFIER MEDICINE DISPENSER
Gus Panagakos, and Judy Panagakos, both of 5 Union St., Inkerman, Pa. 18640
Filed Mar. 1, 1996, Ser. No. 51,061
Term of patent 14 years
U.S. Cl. D24—194



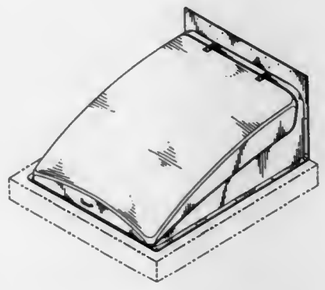
378,418
PORTABLE CORDLESS BATTERY-OPERATED MASSAGER
Victoria P. Bowker, 818 S. Marengo, #210, Pasadena, Calif. 91106, and William C. Tauber, 17200 Burbank Blvd., #354, Encino, Calif. 91316
Filed Oct. 17, 1995, Ser. No. 45,342
Term of patent 14 years
U.S. Cl. D24—215



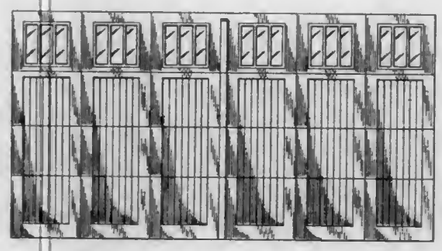
378,419
SONIC TOOTHBRUSH CLEANER
Ronald D. Eccker, 10769 Woodside Ave., Santee, Calif. 92071
Filed Apr. 10, 1995, Ser. No. 37,309
Term of patent 14 years
U.S. Cl. D24—217



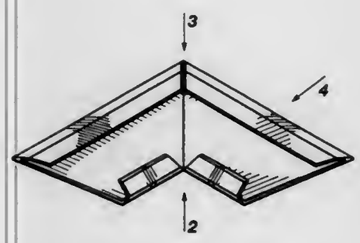
378,420
BULKHEAD DOOR
Warren B. Holby, Jr., Portsmouth, R.I., assignor to Palmer River Products, Inc., Bristol, R.I.
Filed Jan. 3, 1995, Ser. No. 32,997
Term of patent 14 years
U.S. Cl. D25—48



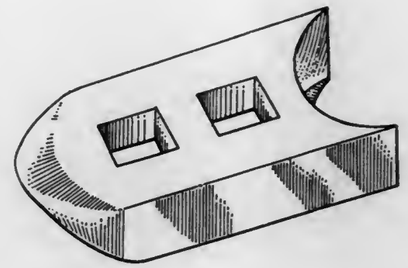
378,421
DOOR
Kent H. Forsland, International Market Square, 275 Market Square, Minneapolis, Minn. 55405
Filed Jun. 14, 1995, Ser. No. 40,278
Term of patent 14 years
U.S. Cl. D25—48



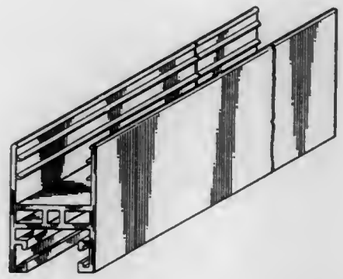
378,422
CORNER JOINER PIECE
Ian T. Howe, 19 Ryan Rd., Pakenham Victoria, Australia
Filed Jun. 22, 1993, Ser. No. 9,841
Claims priority, application Australia, Dec. 22, 1992, 3750/92
Term of patent 14 years
U.S. Cl. D25—102



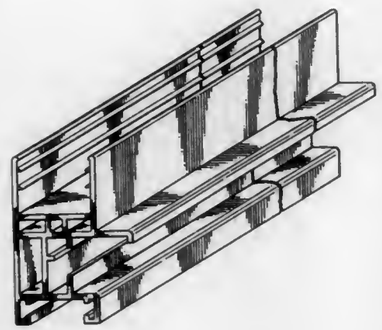
378,423
INTERLOCKING BRICK
James M. Henry, 1915 Primo La., McEwen, Tenn. 37101
Filed Jul. 12, 1995, Ser. No. 41,853
Term of patent 14 years
U.S. Cl. D25—116



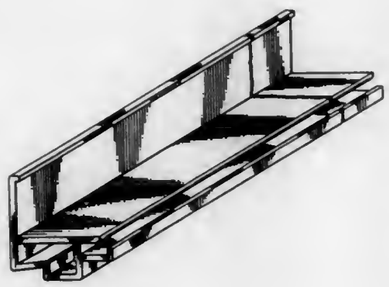
378,424
SASH
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,393
Term of patent 14 years
U.S. Cl. D25—122



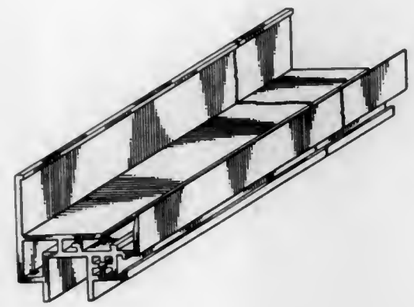
378,425
PULL RAIL
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,392
Term of patent 14 years
U.S. Cl. D25—124



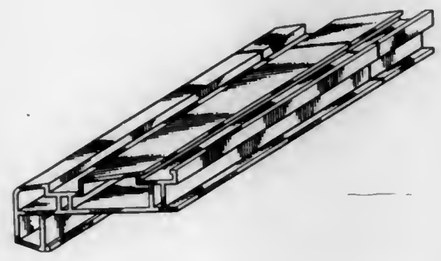
378,426
SASH
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,394
Term of patent 14 years
U.S. Cl. D25—124



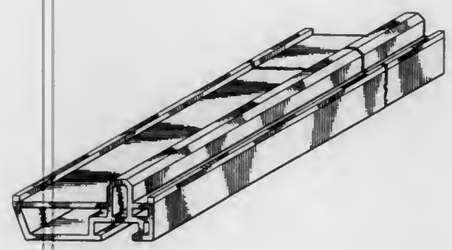
378,427
MULLION
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,395
Term of patent 14 years
U.S. Cl. D25—124



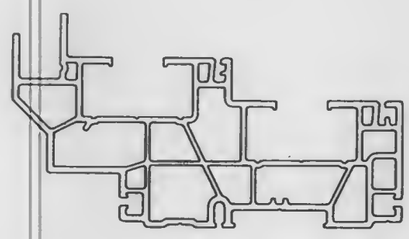
378,428
DOOR FRAME
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,397
Term of patent 14 years
U.S. Cl. D25—124



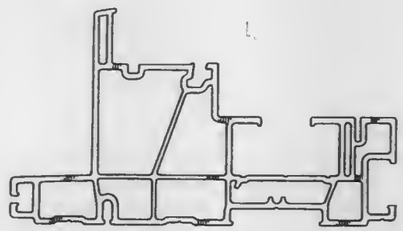
378,429
LOCKING FRAME
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,401
Term of patent 14 years
U.S. Cl. D25—124



378,430
SLIDER WINDOW FRAME COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 20, 1996, Ser. No. 51,957
Claims priority, application Canada, Sep. 22, 1995, 1995-2135
Term of patent 14 years
U.S. Cl. D25—125



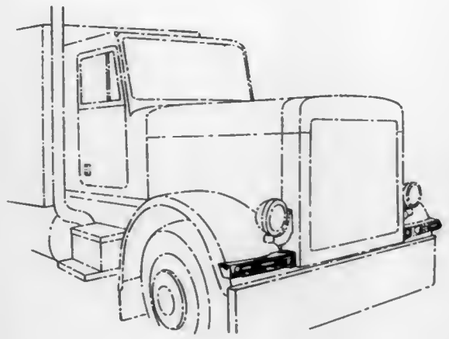
378,431
COMBINED HORIZONTAL AND VERTICAL WINDOW FRAME COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 21, 1996, Ser. No. 52,043
Claims priority, application Canada, Sep. 22, 1995, 1995-2140
Term of patent 14 years
U.S. Cl. D25—125



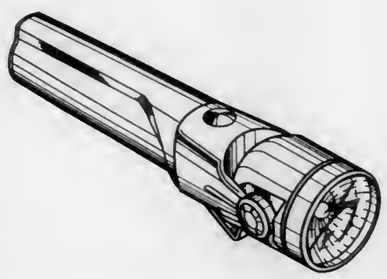
378,432
HANDRAIL WITH A BRAILLE INSERT
Coco Raynes, 314 Dartmouth St., Boston, Mass. 02116
Filed Oct. 24, 1995, Ser. No. 45,568
Term of patent 14 years
U.S. Cl. D25—164



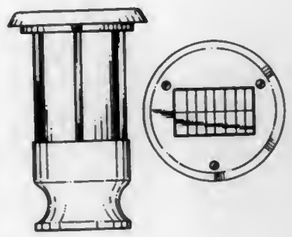
378,433
TURN SIGNAL ASSEMBLY
Jerry Jeffries, 23358 Los Pocitos, Laguna Hills, Calif. 92653
Filed Dec. 6, 1995, Ser. No. 47,517
Term of patent 14 years
U.S. Cl. D26—28



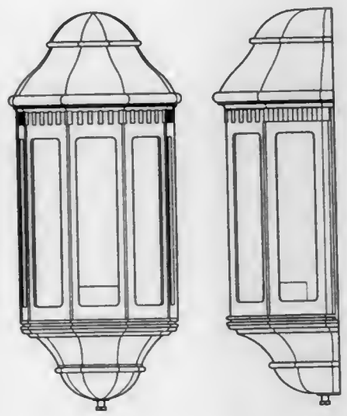
378,434
FLASHLIGHT
Tor H. Petterson, Rancho Palos Verdes, Calif., and Jean T. McGregor, Algonquin, Ill., assignors to Rayovac Corporation, Madison, Wis.
Filed Dec. 21, 1995, Ser. No. 48,172
Term of patent 14 years
U.S. Cl. D26—44



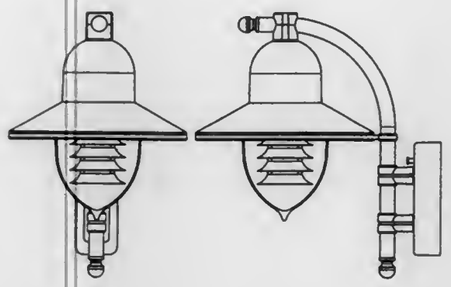
378,435
SOLAR POWERED PERPETUAL CANDLE LIGHT
Edmund J. Trombley, P.O. Box 367, Joyce Rd., Mineville, N.Y. 12956-0367
Filed Jul. 10, 1995, Ser. No. 41,265
Term of patent 14 years
U.S. Cl. D26—68



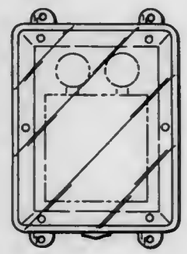
378,436
OUTDOOR LAMP
Angelo Tognu', Lumezzane S. Apollonio, Italy, assignor to Garden Light S.R.L., Brescia, Italy
Filed Sep. 6, 1995, Ser. No. 43,540
Claims priority, application Italy, May 2, 1995, MI95O0244
Term of patent 14 years
U.S. Cl. D26—85



378,437
OUTDOOR LAMP
Angelo Tognú, Lumezzane S. Appollonio, Italy, assignor to Garden Light S.R.L., Brescia, Italy
Filed Sep. 6, 1995, Ser. No. 43,528
Claims priority, application Italy, May 2, 1995, MI9500244
Term of patent 14 years
U.S. Cl. D26—92



378,438
WATER–PROOF, VENTED HOUSING FOR AN EMERGENCY LIGHT UNIT
Fred C. Sliney, 8611 Somerset La., Germantown, Tenn. 38138
Filed May 1, 1995, Ser. No. 38,488
Term of patent 14 years
U.S. Cl. D26—119



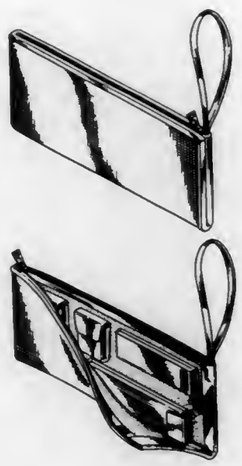
378,439
LIGHT SUPPORT STAKE
Lonnie F. Gary, Lake Ransom Canyon; Don Blevins, and Steven K. Hargrove, both of Lubbock, all of Tex., assignors to Industrial Molding Corporation, Lubbock, Tex.
Filed Nov. 21, 1995, Ser. No. 46,931
Term of patent 14 years
U.S. Cl. D26—138



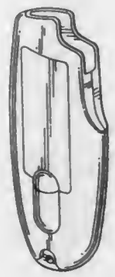
378,440
ADJUSTABLE LIGHTER HOLDER
Shannon J. Collette, 2032 Midvale Ave., Los Angeles, Calif. 90025
Filed Jun. 23, 1995, Ser. No. 40,703
Term of patent 14 years
U.S. Cl. D27—142



378,441
TOBACCO POUCH
Karl J. Bazile, 9741 Washington Loop, Apt. B, Fort Drum, N.Y. 13603
Filed Jan. 31, 1996, Ser. No. 49,791
Term of patent 14 years
U.S. Cl. D27—185



378,442
LIGHTER CASE
Makoto Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1995, Ser. No. 35,772
Term of patent 14 years
U.S. Cl. D27—186



378,443
CAPPED ASSEMBLY OF HAIR ROLLERS
Del M. Little, 4110 Reka Dr., #N-5, Anchorage, Ak. 99508
Filed Oct. 3, 1994, Ser. No. 29,319
Term of patent 14 years
U.S. Cl. D28—37



378,444
NAIL FILE
Charles W. Atkinson, 109 N. Elmwood, Traverse City, Mich. 49684
Filed Dec. 14, 1993, Ser. No. 16,391
Term of patent 14 years
U.S. Cl. D28—59



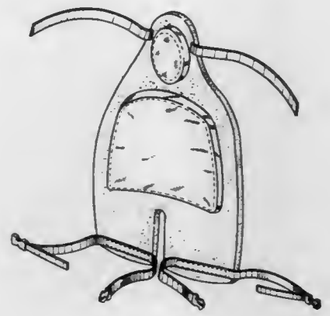
378,445
BODY RUBBING BRUSH
John DePinto, 47 Locust Ave., Larchmont, N.Y. 10538
Filed Jun. 30, 1995, Ser. No. 40,987
Term of patent 14 years
U.S. Cl. D28—63



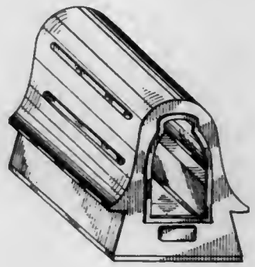
378,446
PRISMATIC LIGHT TRANSPARENT TOOTHPICK
Robert S. Lutzker, 10 Woodstone Ct., South Huntington, N.Y. 11743
Filed Mar. 3, 1992, Ser. No. 844,847
Term of patent 14 years
U.S. Cl. D28—64



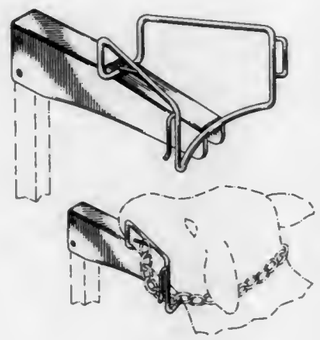
378,447
BODY PROTECTOR FOR SKATEBOARDERS
Richard L. Riley, 126 W. Electric—#8, La Habra, Calif. 90631
Filed Nov. 9, 1995, Ser. No. 46,250
Term of patent 14 years
U.S. Cl. D29—100



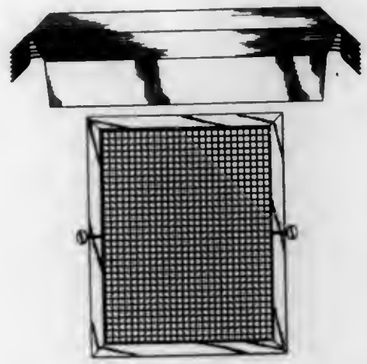
378,448
SADDLE TOTE
Robin Billings, P.O. Box 148, Columbia, N.J. 07832
Filed Apr. 23, 1996, Ser. No. 53,623
Term of patent 14 years
U.S. Cl. D30—143



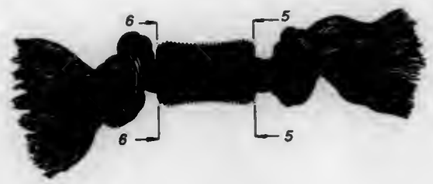
378,449
HEAD RESTRAINT FOR SMALL LIVESTOCK
Roy H. Hunt, 2361 10th St. West, Woodland Hills, Calif. 93560
Continuation of Ser. No. 20,390, Mar. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 3,458, Jan. 12, 1993, Pat. No. 5,329,882. This application Sep. 8, 1995, Ser. No. 43,649
Term of patent 14 years
U.S. Cl. D30—151



378,451
COMBINED SCREEN LINER AND LITTER PAN
Earl R. Schmidt, R.R. 1, Box 86K, Weilston, Okla. 74881
Filed Sep. 18, 1995, Ser. No. 44,112
Term of patent 14 years
U.S. Cl. D30—161



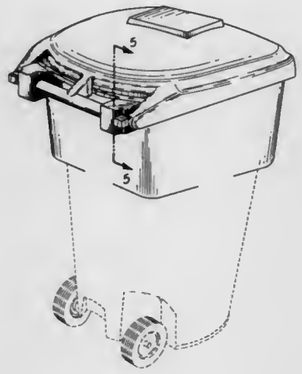
378,450
CHEW TOY FOR DOGS
Anthony O'Rourke, Malibu; Charles Byrne, Mammoth Lakes, and Michael Morgan, Los Angeles, all of Calif., assignors to Booda Products, Inc., Gardena, Calif.
Filed Jun. 23, 1993, Ser. No. 9,904
Term of patent 14 years
U.S. Cl. D30—160



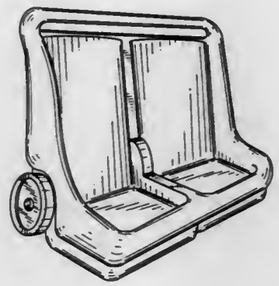
378,452
VACUUM CLEANER
Bernd Köhler, Hanau-Steinheim, and Franz A. Stützer, Offenbach am Main, both of Germany, assignors to Rowenta-Werke GmbH, Offenbach, Germany
Filed Nov. 16, 1995, Ser. No. 46,487
Claims priority, application Germany, May 24, 1995, M95 04 284.9
Term of patent 14 years
U.S. Cl. D32—21



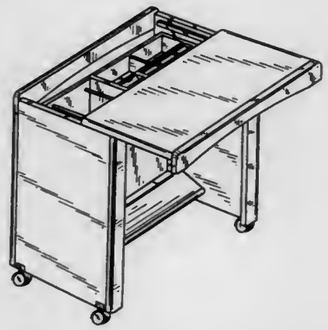
378,453
COMBINED LID, HINGE AND UPPER PORTION OF A REFUSE CONTAINER
Gorden J. Sanden, Jr., Huntington Beach, Calif., assignor to Roto Industries, Inc., Anaheim Hills, Calif.
Division of Ser. No. 996,314, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 765,049, Sep. 24, 1991, Pat. No. 5,217,136. This application Aug. 1, 1994, Ser. No. 26,602
Term of patent 14 years
U.S. Cl. D34—10



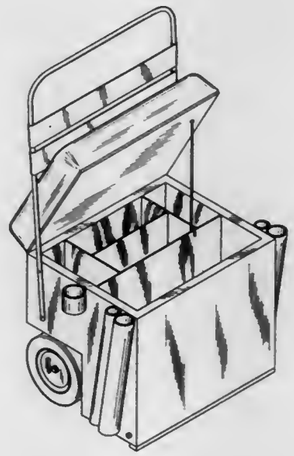
378,455
WHEELED CART FOR SUPPORTING MULTIPLE ARTICLES
Alan E. Wilson, 2562 Meinert Rd., Wexford, Pa. 15090
Filed Jan. 26, 1996, Ser. No. 49,468
Term of patent 14 years
U.S. Cl. D34—24



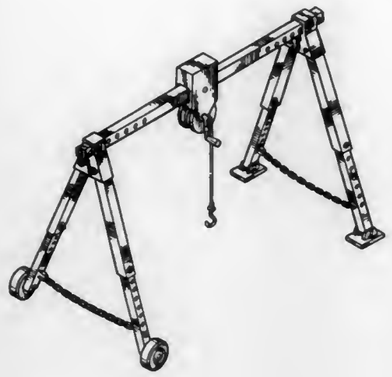
378,454
LAPTOP COMPUTER CART
Joseph E. Miller, Naples, Fla.; James M. Holler, Jamestown, N.Y., and James G. Fiala, Wayland, Mass., assignors to Bush Industries, Inc., Jamestown, N.Y.
Filed Jan. 26, 1996, Ser. No. 49,501
Term of patent 14 years
U.S. Cl. D34—21



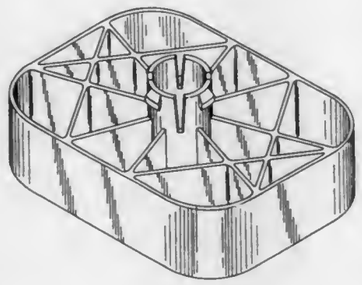
378,456
FISHERMAN'S CADDY
Donald L. Speicher, 604 Oak Rd., Raleigh, N.C. 27603-2710
Filed Apr. 26, 1996, Ser. No. 53,711
Term of patent 14 years
U.S. Cl. D34—25



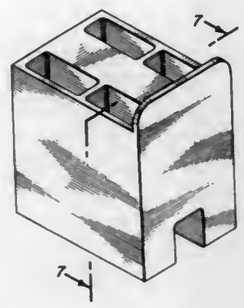
378,457
PORTABLE LIFT
Vernon H. Page, 15792 SW. 46th Clr., Ocala, Fla. 34473
Filed Aug. 11, 1995, Ser. No. 42,504
Term of patent 14 years
U.S. Cl. D34—28



378,458
CONNECTOR FOR A PALLET ASSEMBLY
Brandon L. Pigott, Wilmette; Schuyler F. Pigott, Arlington Heights; Peter S. Pigott, Wilmette, and Maurice J. Pigott, Winnetka, all of Ill., assignors to Nucon Corporation, Deerfield, Ill.
Continuation-in-part of Ser. No. 351,894, Dec. 8, 1994, which is a continuation-in-part of Ser. No. 15,696, Nov. 24, 1993, Pat. No. Des. 354,606, which is a continuation-in-part of Ser. No. 12,508, Sep. 2, 1993, Pat. No. Des. 347,511, which is a continuation-in-part of Ser. No. 7,302, Apr. 21, 1993, Pat. No. Des. 346,681, which is a continuation-in-part of Ser. No. 961,396, Oct. 15, 1992, Pat. No. 5,343,814, which is a continuation-in-part of Ser. No. 644,928, Jan. 23, 1991, Pat. No. 5,197,395, which is a continuation-in-part of Ser. No. 230,025, Aug. 9, 1988, Pat. No. 4,843,976. This application Jan. 17, 1995, Ser. No. 33,574
Term of patent 14 years
U.S. Cl. D34—38



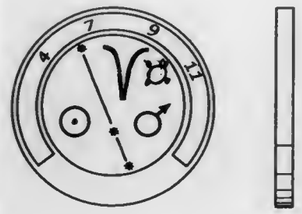
378,459
COMBINED MATERIAL SUPPORT AND LIFTING BLOCK
James Hansen, Bakersfield, Calif., assignor to Robert Miller, Bakersfield, Calif.
Filed Jul. 13, 1995, Ser. No. 41,410
Term of patent 14 years
U.S. Cl. D34—38



378,460
CONTAINER
Pieter J. Hendrikse, 93 Johnson St., Moregloed, Pietersburg 0699 Transvaal, South Africa
Filed Jan. 22, 1993, Ser. No. 4,021
Claims priority, application South Africa, Jul. 22, 1992, 92/0739
Term of patent 14 years
U.S. Cl. D34—39



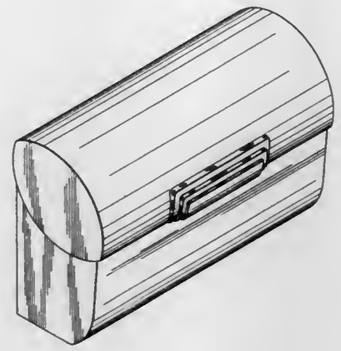
378,461
TALISMAN
Susanna Monosov, 98 Glenmanor Way, Thornhill, Ontario, Canada
Filed Nov. 29, 1995, Ser. No. 47,212
Term of patent 14 years
U.S. Cl. D99—25



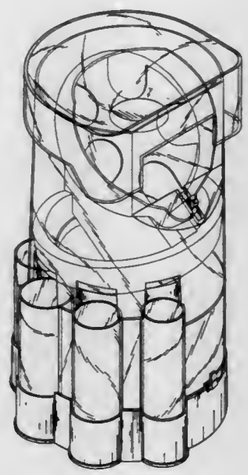
378,462
MAILBOX POST WITH SUPPORT ARM
Ronald D. Erwin, Peachtree City, and Marvin R. Whitley, Norcross, both of Ga., assignors to Erwin Industries, Inc., Peachtree City, Ga.
Filed Sep. 1, 1995, Ser. No. 43,333
Term of patent 14 years
U.S. Cl. D99—32



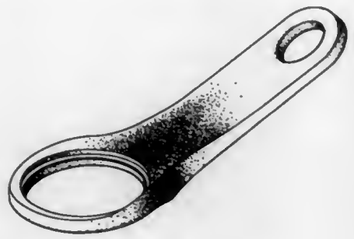
378,463
MAIL BOX
Tucker Willis, and Amy Wingrove, both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Continuation of Ser. No. 15,053, Nov. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 39,921
Term of patent 14 years
U.S. Cl. D99—33



378,464
COIN BANK
Jerzy Perkitny, 28115 Osborn, Bay Village, Ohio 44140
Filed Sep. 16, 1994, Ser. No. 28,531
Term of patent 14 years
U.S. Cl. D99—34



378,465
FOB FOR ELECTRONIC TOKEN
Nicholas M. G. Fekete, Richardson; Elaine J. Gattenby, Allen, and Michael L. Bolan, Dallas, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.
Filed Dec. 1, 1994, Ser. No. 31,611
Term of patent 14 years
U.S. Cl. D99—34



378,466
CASHIER'S ORGANIZER
Rebeckah L. Virgil, 23 Harts Ave., Roosevelt, N.Y. 11575-2222
Filed May 25, 1995, Ser. No. 39,256
Term of patent 14 years
U.S. Cl. D99—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Vernay et Fils Sarl: *See*—
Vernay, Rene J., 5,608,954, Cl. 28-162.000.
AB Elektronik GmbH: *See*—
Apel, Peter; Hauschopp, Marion; and Wilczek, Klaus, 5,609,184, Cl. 137-554.000.
AB Volvo: *See*—
Håkansson, Nils-Olof, 5,609,133, Cl. 123-321.000.
ABB Management AG: *See*—
Althaus, Rolf, 5,609,017, Cl. 60-39.060.
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Smith, Enoch P., 5,610,453, Cl. 307-116.000.
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Alt, Helmut G.; Palackal, Syriac J.; Patsidis, Konstantinos; Welch, M. Bruce; Geerts, Rolf L.; Hsieh, Eric T.; McDaniel, Max P.; Hawley, Gil R.; Smith, Paul D.; Janzen, Jay; and Schmid, Michael, to Phillips Petroleum Company. Unbridged metallocenes of 9-substituted fluorenyl compounds and use thereof. 5,610,247, Cl. 526-160.000.

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Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,610,120, Cl. 504-191.000.
Mohan, Arthur G.; and D'Antuono, Joseph, III, 5,610,301, Cl. 544-284.000.
Tsou, Hwei-Ru, 5,609,867, Cl. 424-78.360.

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Baudy, Reinhardt B.; Nelson, James A.; and Kanzelberger, Mira A., 5,610,164, Cl. 514-304.000.
Cliffe, Ian A.; Mansell, Howard L.; Ward, Terence J.; Nelson, James A.; Shah, Uresb S.; and Kanzelberger, Mira A., 5,610,154, Cl. 514-216.000.

American Piledriving Equipment, Inc.: *See—*
White, John L., 5,609,380, Cl. 294-104.000.

American Recreation Products, Inc.: *See—*
O'Shea, Timothy, 5,609,279, Cl. 224-160.000.

American Roller Company: *See—*
Hyllberg, Bruce E., 5,609,553, Cl. 492-53.000.

Amersham Life Science, Inc.: *See—*
Fuller, Carl W.; Szasz, Joseph; Robb, Frank T.; Borges, Kimberly M.; and Davis, Maria, 5,610,066, Cl. 435-320.100.

Amgen Inc.: *See—*
Nakahata, Tatsutoshi, 5,610,056, Cl. 435-378.000.

Amidon, William D. Portable fence panel. 5,609,327, Cl. 256-24.000.

Amin, Himshweta R.: *See—*
Saxena, Rajiv; Boldt, John R.; Campbell, Samuel, III; Amin, Himsbweta R.; and Robinson, William O., 5,609,550, Cl. 477-166.000.

Amitai, Yaakov: *See—*
Aharoni, Abraham; Goodman, Joseph W.; and Amitai, Yaakov, 5,610,734, Cl. 359-16.000.

Ammermann, Eberhard: *See—*
Wingert, Horst; Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Lorenz, Gisela; and Ammermann, Eberhard, 5,610,191, Cl. 514-599.000.

Amoco Corporation: *See—*
Mieville, Rodney L.; Dictor, Ronald A.; Hirschberg, Eugene H.; Robinson, Lawrence C.; Washecheck, Don M.; and Renner, Terrence A., 5,609,832, Cl. 422-173.000.

An, Hyun-Jun, to Samsung Electronics Co., Ltd. Microwave oven and method of controlling the operation thereof. 5,609,786, Cl. 219-702.000.

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Garde, Douglas, 5,611,075, Cl. 395-480.000.
Jenkins, Andrew; Henry, Peter S.; and Yee, Gaylin M., 5,610,545, Cl. 327-205.000.

Anani, Anaba A.: *See—*
Zhang, Jinshan; and Anani, Anaba A., 5,609,844, Cl. 423-449.600.

Anayama, Hideki: *See—*
Yoshihara, Toshiyuki; Anayama, Hideki; Yamazaki, Itaru; Ainoya, Hideyuki; Hirano, Hidetoshi; and Kimura, Mayumi, 5,610,690, Cl. 399-167.000.

Ancra International Corporation: *See—*
Moradians, Edward, 5,609,240, Cl. 198-782.000.

Anderheggen, Wolfgang: *See—*
Reinehr, Ulrich; Türck, Günter; Sehm, Tilo; Anderheggen, Wolfgang; Herbertz, Toni; and Antolini, Gino, 5,610,229, Cl. 524-589.000.

Andersen, Kim L.: *See—*
Pedersen, Erik H.; and Andersen, Kim L., 5,609,482, Cl. 433-18.000.

Andersen, Verner E., to Molnlycke AB. Method and arrangement for mutually bonding moving material webs, and absorbent articles that include material layers mutually bonded in accordance with the method. 5,609,702, Cl. 156-73.100.

Anderson, Brian; Brodsky, Anatol; and Burgess, Lloyd, to University of Washington. Analytical sensor using grating light reflection spectroscopy. 5,610,708, Cl. 356-128.000.

Anderson, David G.; and Claflin, Alfred J., to Xerox Corporation. Maintenance apparatus using translation forces to move cap member for ink jet printheads. 5,610,640, Cl. 347-32.000.

Anderson, J. Douglas; Morgan, Stephen A.; Montague, Chuck W.; and Nyce, Richard J., to Neutronics, Inc. System and method for identifying automotive and commercial refrigerants. 5,610,398, Cl. 250-339.120.

Anderson, Jeffrey J.: *See—*
Moore, John S.; Berger, Sharon S.; Burr, Ronald F.; Anderson, Jeffrey J.; and MacLane, Donald B., 5,610,645, Cl. 347-93.000.

Anderson, Kim: *See—*
Rühl, Andreas; Rentzel, Gert; McGehee, Patrick; Charamko, Serguei; and Anderson, Kim, 5,609,833, Cl. 422-173.000.

Anderson, Lowell M.: *See—*
Brownfield, Jerry A.; Anderson, Lowell M.; and Eberly, Steven C., 5,609,232, Cl. 192-84.900.

Anderson, Lowell R.: *See—*
Liu, Kou-Chang; Anderson, Lowell R.; Hardy, Eugene E.; and Reuven, Yakir, 5,609,865, Cl. 424-78.240.

Anderson, Marc A.; and Chu, Lixin, to Wisconsin Alumni Research Foundation. Porous ceramic material. 5,610,109, Cl. 501-80.000.

Anderson, M. Neil: *See—*
Brumfield, David L.; Anderson, M. Neil; and Luque, Eduardo R., 5,609,592, Cl. 606-61.000.

Anderson, Richard T.: *See—*
Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., 5,609,778, Cl. 219-121.690.

Anderson, Robert C. Sod cutting edger and trencher. 5,609,213, Cl. 172-17.000.

Anderson, Scott R.; Tham, Chin T.; Padula, Joseph A.; Williams, Owen R.; Houle, Jesse S.; Besler, David A.; and Ramsey, William D., Jr., to Shell Oil Company. Automated refueling system. 5,609,190, Cl. 141-59.000.

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Ando, Hirokazu: *See—*
Mizutani, Takao; Ando, Hirokazu; and Kikuchi, Hiroshi, 5,610,695, Cl. 399-284.000.

Ando, Jitsuhiko: *See—*
Ueno, Takeshi; Oshima, Katsuyuki; Asajima, Mikio; Yamauchi, Mineo; Imoto, Kazunobu; Takahara, Hidetake; and Ando, Jitsuhiko, 5,610,119, Cl. 503-227.000.

Andre Vernay Teintures, S.A.: *See—*
Vernay, Rene J., 5,608,954, Cl. 28-162.000.

Andrews, Brian, to University of Alberta. Anterior floor-reaction type ankle-foot orthosis. 5,609,568, Cl. 602-28.000.

Anpeiji, Shigeharu: *See—*
Kimura, Tomio; Kuroki, Yoshiaki; Fujiwara, Hiroshi; and Anpeiji, Shigeharu, 5,610,303, Cl. 544-326.000.

Ant Nachrichtentechnik GmbH: *See—*
Geissler, Klaus H.; Damaschke, Jürgen; and Wolk, Dieter, 5,610,562, Cl. 333-22.00R.

Anthes, Jeanne: *See—*
Anthes, Peter S.; and Anthes, Jeanne, 5,609,012, Cl. 56-400.010.

Anthes, Peter S.; and Anthes, Jeanne. Raking apparatus worn on a hand. 5,609,012, Cl. 56-400.010.

Anthon, Royce A. Brazing rod for depositing diamond coating metal substrate using gas or electric brazing techniques. 5,609,286, Cl. 228-56.300.

Antkowiak, Thomas A.; and Hall, James E., to Bridgestone/Firestone, Inc. Lithium amino magnesiate polymerization initiators and elastomers having reduced hysteresis. 5,610,227, Cl. 524-572.000.

Antkowiak, Thomas A.: *See—*
Lawson, David F.; Antkowiak, Thomas A.; Hall, James E.; and Stayer, Mark L., Jr., 5,610,228, Cl. 524-573.000.
Lawson, David F.; Antkowiak, Thomas A.; Hall, James E.; Stayer, Mark L., Jr.; and Schreffler, John R., 5,610,237, Cl. 525-280.000.

Antolini, Gino: *See—*
Reinehr, Ulrich; Türck, Günter; Sehm, Tilo; Anderheggen, Wolfgang; Herbertz, Toni; and Antolini, Gino, 5,610,229, Cl. 524-589.000.

Antunez, Bruce A. Consistent delivery flush and fill system for a tank. 5,608,924, Cl. 4-391.000.

Anvari, Kiomars, to Aval Communications Inc. Cancellation loop, for a feed-forward amplifier, employing an adaptive controller. 5,610,554, Cl. 330-52.000.

Aoai, Toshiaki: *See—*
Sato, Kenichiro; Kawabe, Yasumasa; Aoai, Toshiaki; and Sakaguchi, Shinji, 5,609,982, Cl. 430-192.000.

Aoki, Akihide, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Semiconductor Software Corporation. Semiconductor integrated circuit free from through current due to source-voltage drop. 5,610,544, Cl. 327-198.000.

Aoki, Minoru; Nakada, Minoru; Yazawa, Yuichi; Izu, Gen'ichi; and Terada, Takashi, to Nippon Kayaku Kabushiki Kaisha. Etoposide preparations. 5,609,882, Cl. 424-451.000.

Aoki, Norihiko; and Yamanashi, Takanori, to Olympus Optical Co., Ltd. Zooming lens system. 5,610,766, Cl. 359-683.000.

Aoki, Takashi; Kanda, Masahiro; Matsuda, Takahiro; and Katsuta, Keisuke, to Honda Giken Kogyo Kabushiki Kaisha. Clutch operational control apparatus. 5,609,543, Cl. 477-45.000.

Aoki, Yoshio: *See—*
Watanabe, Tetsu; and Aoki, Yoshio, 5,610,880, Cl. 369-13.000.

Aokura, Isamu; Yamanishi, Hitoshi; Ohnishi, Youichi; and Ikeda, Tanejiro, to Matsushita Electric Industrial Co., Ltd. Sputtering apparatus. 5,609,739, Cl. 204-298.190.

Aoyagi, Akihiko; Terashima, Hiroshi; Igarashi, Kyoji; and Take, Masatoshi, to International Business Machines Corporation. Head suspension assembly and its manufacturing method. 5,610,785, Cl. 360-104.000.

Apel, Peter; Hauschopp, Marion; and Wilczek, Klaus, to AB Elektronik GmbH. Regulating device. 5,609,184, Cl. 137-554.000.

Aphton Corporation: *See—*
Gevas, Philip C.; Karr, Stephen L.; Grimes, Stephen; and Littenberg, Richard L., 5,609,870, Cl. 424-184.100.

Apple Computer, Inc.: *See—*
Stokes, Michael, 5,611,030, Cl. 395-131.000.

Appleton, Arthur J. Release mechanism for cans. 5,609,247, Cl. 206-150.000.

Applied Materials, Inc.: *See—*
Xu, Zheng; and Chen, Fusen, 5,610,103, Cl. 437-225.000.

Apunevich, Alexandr I.; and Titarenko, Evgeny I., to Adamas AT AG. Electric-arc plasma steam torch. 5,609,777, Cl. 219-121.480.

Aquamaster-Rauma Ltd.: *See—*
Eronen, Harri K., 5,609,120, Cl. 114-253.000.

Arai, Masashi; and Tsukihashi, Akira, to Sanyo Electric Co., Ltd. Error correcting apparatus with error corecting signal holding function. 5,610,887, Cl. 369-44.350.

Arai, Seiji, to Kabushiki Kaisha TEC. Electrophotographic apparatus capable of preventing image deterioration attributable to residual toner particles. 5,610,697, Cl. 399-149.000.

Arai, Tadashi: *See—*
Koyama, Mikio; and Arai, Tadashi, 5,610,547, Cl. 327-350.000.

Arai, Tsutomu: *See—*
Okamoto, Yasuhiro; and Arai, Tsutomu, 5,609,997, Cl. 430-399.000.

Arai, Tsuyoshi, to Nissei Plastic Industrial Co., Ltd. Clamping method of injection and compression molding machine. 5,609,801, Cl. 264-40.500.

Arai, Yasuyuki: *See—*
Yamazaki, Shunpei; Kadono, Masaya; Itoh, Kenji; Takayama, Toru; Arai, Yasuyuki; and Ishida, Noriya, 5,609,774, Cl. 216-69.000.

Araki, Takeshi: *See—*
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katoh, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.

Araki, Yasuaki: *See—*
Takasawa, Toru; and Araki, Yasuaki, 5,609,427, Cl. 400-304.000.

Aranyi, Ernie: *See—*
Kolesa, Michael S.; Aranyi, Ernie; and Kappel, Gary S., 5,609,601, Cl. 606-170.000.

Aratsu, Shuichi: *See—*
Shibasaki, Souhei; Sawano, Yukio; Nagashima, Hiroto; Fujisawa, Kyuichi; Sugiyama, Koichi; and Aratsu, Shuichi, 5,611,028, Cl. 395-131.000.

Archer, Stephen T., to Ventritex, Inc. Apparatus and method for inducing fibrillation. 5,609,618, Cl. 607-74.000.

ARCO Chemical Technology, L.P.: *See—*
Yang, Lau S.; and Klang, Jeffrey A., 5,610,205, Cl. 522-102.000.
de Simone, Valérie; and Courveille, Gérard, 5,610,207, Cl. 523-218.000.

Aresu, Pietro: *See—*
Pascale, Carmine; and Aresu, Pietro, 5,609,717, Cl. 156-556.000.

Argiropoulos, John G. Mini-wall parapet for roof edging or coping. 5,608,993, Cl. 52-96.000.

Argonne National Laboratories/University of Chicago Development Corp.: *See—*
Martell, John M.; and Berdia, Sunjay, 5,610,966, Cl. 378-58.000.

Argonne National Laboratory, The: *See—*
Winston, Roland, 5,610,768, Cl. 359-727.000.

Arimatsu, Seiji: *See—*
Hase, Takakazu; Arimatsu, Seiji; and Kimoto, Koichi, 5,609,993, Cl. 430-302.000.

Arimoto, Kazutami; and Tsukude, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Switched substrate bias for logic circuits. 5,610,533, Cl. 326-33.000.

Arjo Wiggins S.A.: *See—*
Perrin, Claude; and Caulet, Pierre, 5,609,966, Cl. 428-535.000.

Arlton, David J.: *See—*
Arlton, Paul E.; and Arlton, David J., 5,609,312, Cl. 244-17.110.

Arlton, Paul E.; and Arlton, David J. Model helicopter. 5,609,312, Cl. 244-17.110.

Aronson, Lewis B.: *See—*
Chang, Kok-Wai; and Aronson, Lewis B., 5,611,004, Cl. 385-11.000.

Arora, Rikhit: *See—*
Foster, Robert F.; Hillman, Joseph T.; and Arora, Rikhit, 5,610,106, Cl. 437-245.000.

Arrhythmia Research Technology, Inc.: *See—*
Chan, Eric K. Y., 5,609,158, Cl. 128-705.000.

Arrington, Lee O.; and Burak, Chris J., to Eastman Kodak Company. Automatic ranging optical power monitoring system. 5,610,709, Cl. 356-218.000.

Aruga, Kazuhisa: *See—*
Ito, Yoshikazu; and Aruga, Kazuhisa, 5,609,426, Cl. 400-279.000.

Asada, Makoto: *See—*
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.

Asada, Satoshi: *See—*
Uno, Mitsuhiro; Takubo, Yoneharu; Kumagawa, Katsuhiko; Asada, Satoshi; and Takada, Naomi, 5,610,739, Cl. 349-39.000.

Asahi Foods Co., Ltd.: *See—*
Koh, Hen-Sik; and Hayama, Ichizo, 5,609,904, Cl. 426-565.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ito, Takayuki, 5,610,767, Cl. 359-692.000.
Yamamoto, Yasuhiro; and Sato, Koichi, 5,610,840, Cl. 364-514.00R.

Asahi, Yasuhiko: *See—*
Hasebe, Masahiko; Kurakake, Yasushi; Mishima, Junichi; Asahi, Yasuhiko; and Uehara, Satoshi, 5,610,355, Cl. 84-658.000.

Asai, Akiyoshi; Tsuruta, Kazuhiro; and Enya, Takeshi, to Nippondenso Co., Ltd. Semiconductor integrated circuit device having excellent dual polarity overvoltage protection characteristics. 5,610,426, Cl. 257-360.000.

Asai, Masahito, to Sharp Kabushiki Kaisha. Solar cell and a method of manufacturing thereof. 5,609,694, Cl. 136-255.000.

Asai, Shunji: *See—*
Oga, Toshiyoshi; Saito, Masaru; and Asai, Shunji, 5,610,476, Cl. 313-493.000.

Asai, Yoshihiro, to Kabushiki Kaisha Toshiba. Active matrix type display device in which elongated electrodes underlie the signal lines to form capacitors with the pixel electrodes and manufacturing method. 5,610,736, Cl. 349-42.000.

Asai, Yoshihito: *See—*
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.

Asajima, Mikio: *See—*
Ueno, Takeshi; Oshima, Katsuyuki; Asajima, Mikio; Yamauchi, Mineo; Imoto, Kazunobu; Takahara, Hidetake; and Ando, Jitsuhiko, 5,610,119, Cl. 503-227.000.

Asano, Kiyoshi; Koyama, Arata; Takumi, Nobusuke; Takatori, Shigeru; Tamura, Kouichi; and Suita, Tokuo, to Ishihara Sangyo Kaisha, Ltd. Cobalt-containing magnetic iron oxide and process for producing the same. 5,609,789, Cl. 252-62.560.

Asano, Yoshinari; and Wada, Masami, to Matsushita Electric Industrial Co., Ltd. Direct current motor having a decreasing cogging torque. 5,610,464, Cl. 310-156.000.

Asatourian, Rolin K., to Rockwell International Corporation. Stabilized hybrid focal plane array structure. 5,610,389, Cl. 250-216.000.

Ashby, Alan M.; and Laird, Lindsay, to Howmedica International. Prosthetic patello femoral joint assembly. 5,609,644, Cl. 623-20.000.

Ashworth, Roger P., to British Gas plc. Method of testing pipes for leakage. 5,610,323, Cl. 73-40.50R.

Aslan, Edward E.; and Gandhi, Om P., to Narda Microwave Corp., The. Contact hazard meter having a human equivalent circuit. 5,610,526, Cl. 324-522.000.

Asou, Yoshio; Matsumoto, Takumi; and Yoshimura, Shinichi, to SMC Corporation. Sealing rings for spool valves. 5,609,343, Cl. 277-152.000.

Asplund, Pamela C.: *See—*
Guerrero, Angel A.; Klepacky, Thomas C.; and Asplund, Pamela C., 5,609,854, Cl. 424-59.000.

Asselineau, Lionel: *See—*
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AST Holding, Ltd.: *See—*
Neff, Craig A., 5,609,687, Cl. 118-641.000.

Aston, Karl W.: *See—*
Riley, Dennis P.; Weiss, Randy H.; Neuman, William L.; Modak, Anil S.; Lennon, Patrick J.; and Aston, Karl W., 5,610,293, Cl. 540-474.000.

AT&T Global Information Solutions Company: *See—*
Crafts, Harold S., 5,610,429, Cl. 257-401.000.

Atkinson, William D.: *See—*
Hertzfeld, Andrew J.; Atkinson, William D.; and Kare, Susan D., 5,611,031, Cl. 395-133.000.

Atlantic Richfield Company: *See—*
Shaw, Grover P., 5,609,241, Cl. 198-806.000.

Auberger, Heinrich, to Voest-Alpine Industrieanlagenbau GmbH. Method for manufacturing a base anode for a metallurgical vessel. 5,610,935, Cl. 373-72.000.

Aubermann, Tibor, to Salpomec OY. Track laying machine for renewing rails. 5,609,106, Cl. 104-5.000.

Audi, AG: *See—*
Kreis, Gundolf, 5,609,004, Cl. 52-655.100.

Audiologie Prothese Innovation A.P.I.: *See—*
Grosfilley, Jean-Etienne, 5,610,494, Cl. 320-2.000.

Auger, François A.; Rouabbia, Mahmoud; Lafleur, Louis; and Germain, Lucie, to Université Laval. Chimeric sheets of epithelial cells. 5,610,007, Cl. 435-1.100.

Aumann, Hans. Inserted pocket of a waterproof garment. 5,608,916, Cl. 2-247.000.

Aumueller, Alexander: *See—*
Holderbaum, Martin; Aumueller, Alexander; and Trauth, Hubert, 5,610,210, Cl. 524-99.000.

Austin, Curtiss M.: *See—*
Kelly, Thomas J.; Austin, Curtiss M.; and Allen, Robert E., 5,609,698, Cl. 148-671.000.

Austruy, Hervé; Grignon, Jean; and Tauzia, Jean-Michel, to Societe Nationale des Poudres et Explosifs. Process for continuous manufacture of pyrotechnic charges containing a silicone binder and compositions capable of being used by this process. 5,610,444, Cl. 264-3.300.

AUTOGENICS: *See—*
Love, Charles S.; Dahl, Terrance J.; Hudak, Phillip J.; and Lemp, Steven K., 5,609,600, Cl. 606-167.000.

Automotive Products, plc: *See—*
Spooner, John; Young, Alastair J.; and Chippendale, John P., 5,609,073, Cl. 74-650.000.

Automotive Systems Laboratory, Inc.: *See—*
Gioutsos, Tony, 5,610,575, Cl. 340-429.000.

AUTOPAL s.r.o., Novy Jicin: *See—*
Cejnek, Milan, 5,609,406, Cl. 362-61.000.

Autoroll Machine Corporation: *See—*
Rapp, Chris P., 5,609,102, Cl. 101-127.100.

Aval Communications Inc.: *See—*
Anvari, Kiomars, 5,610,554, Cl. 330-52.000.

Avery Dennison Corporation: *See—*
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Avon Products, Inc.: *See—*
Mazzola, Bernard V.; and Montalbano, Gary, 5,609,430, Cl. 401-87.000.

Awano, Naomi; Inuzuka, Hajime; Mizukoshi, Masahito; and Kudomi, Shigeki, to Nippondenso Co., Ltd. Semiconductor light emitting device with depletion layer. 5,610,412, Cl. 257-85.000.

Ayuta, Masanori; Nakayama, Koichi; and Hiratsuka, Katsuo, to Singer Company N.V., The. Buttonhole closing device for lockstitch bar tacking sewing machine. 5,609,115, Cl. 112-70.000.

Azema, Olivier; and Bougoin, Michel, to Ceramiques & Composites S.A. Sintered SiC shaped articles and mechanical packings comprised thereof. 5,610,110, Cl. 501-88.000.

Azran, Jack: *See—*
Kvitko, Idel Y.; and Azran, Jack, 5,610,305, Cl. 546-6.000.

Azuma, Shinichi: *See—*
Maki, Hitoshi; Kato, Shigeki; Azuma, Shinichi; Hayashi, Mikio; and Momose, Masatoshi, 5,610,306, Cl. 546-49.000.

B. F. Goodrich Company, The: *See—*
Bazshushtari, Afshin; and Morris, Edward L., Jr., 5,609,707, Cl. 156-148.000.
Rauckhorst, Richard L., III; and Leffel, Kevin L., 5,609,314, Cl. 244-134.00A.
Swank, John P., 5,608,967, Cl. 29-888.045.

B. F. Goodrich FlightSystems, Inc.: *See—*
Greenewald, John H.; and Moses, Randolph L., 5,610,813, Cl. 364-420.000.

Baba, Fumiaki: *See—*
Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, 5,610,219, Cl. 524-413.000.

Baba, Nobuyuki, to Ricoh Company, Ltd. Optical image scanning apparatus detecting sheet size and displacement. 5,610,407, Cl. 250-559.240.

Baba, Syuji: *See—*
Momoda, Kayo; and Baba, Syuji, 5,610,132, Cl. 510-506.000.

Baba, Yoshiro: *See—*
Yanagiya, Satoshi; Matsuda, Noboru; and Baba, Yoshiro, 5,610,422, Cl. 257-330.000.

Bäckman, Kaj: *See—*
Ahnger, Anders; Storholm, Stefan; and Bäckman, Kaj, 5,609,029, Cl. 60-618.000.

Bagchi, Pranab: *See—*
Ross, Robert J.; Bagchi, Pranab; and Connelly, Richard W., 5,610,002, Cl. 430-54.600.

Baggot, Breffni X., to Otis Elevator Company. Elevator door sill. 5,609,224, Cl. 187-313.000.

Bahl, Chander; Galvin, James P.; and Egan, Richard L., to Ortho Pharmaceutical Corporation. In home oral fluid sample collection device and package for mailing of such device. 5,609,160, Cl. 128-771.000.

Bailey, Glen F.: *See—*
Tura, Ronald E.; and Bailey, Glen F., 5,609,161, Cl. 128-777.000.

Bailey, Richard A.: *See—*
Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,610,099, Cl. 437-192.000.

Bajzek, Thomas J.: *See—*
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,609,820, Cl. 422-23.000.

Baker, Gerald N.; and Woodward, Arthur E., to Emerson Electric Co. Electrical connection of printed circuit board to line leads on brushless permanent magnet refrigeration motors. 5,610,458, Cl. 310-68.00R.

Baker Hughes Incorporated: *See—*
Hennig, Gregory E.; and Pape, Gary J., 5,609,178, Cl. 137-10.000.

Balasubramanian, Peruvemba S.; Lee, Nathan J.; and Lekuch, Scott D., to International Business Machines Corporation. IR FM modem with flash modulation. 5,610,947, Cl. 375-282.000.

Balatoni, Nicholas A., to Raychem Corporation. Voice plus 4-wire DDS multiplexer. 5,610,922, Cl. 370-468.000.

Balk, Hermann: *See—*
Joest, Rolf H.; Geus, Hans G.; Balk, Hermann; Kunze, Bernd; and Schulz, Herbert, 5,609,808, Cl. 264-210.700.

Ball, Alan; Honan, David; Wyatt, Peter; Daley, Michael; and Swift, Philip W., to Symbol Technologies, Inc. Portable optical scanning system including ring having breakaway element. 5,610,386, Cl. 235-472.000.

Ballew, Walter D.: *See—*
Evans, Bennie R.; and Ballew, Walter D., 5,610,589, Cl. 340-573.000.

Bambury, Ronald E.; and Seelye, David E., to Bausch & Lomb Incorporated. Vinyl carbonate and vinyl carbamate contact lens material monomers. 5,610,252, Cl. 526-279.000.

Ban, Soo H.: *See—*
Woo, Soon H.; Chung, Sung K.; Ban, Soo H.; Kim, Byoung E.; and Kim, Si H., 5,610,310, Cl. 546-281.700.

Bando Chemical Industries, Ltd.: *See—*
Tachibana, Hiroyuki; Kasada, Mitumori; and Ohno, Kimichika, 5,609,541, Cl. 474-205.000.

Bandy, Steve G.; Nishimoto, Clifford K.; Webb, Christopher; and LaRue, Ross A., to Varian Associates, Inc. Single field emission device. 5,610,471, Cl. 313-309.000.

Bange, Donna W.: *See—*
Benedict, Harold W.; Zimny, Diana D.; and Bange, Donna W., 5,609,706, Cl. 156-137.000.

Banholzer, Rolf; Bauer, Rudolf; and Reichl, Richard, to Boehringer Ingelheim GmbH. Esters of thienyl carboxylic acids and amino alcohols and their quaternization products. 5,610,163, Cl. 514-291.000.

Bannai, Kazunori: *See—*
Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; Taguchi, Kazushige; and Shiina, Susumu, 5,610,720, Cl. 358-296.000.

Bannai, Kiyoshi: *See—*
Mizushima, Yutaka; Bannai, Kiyoshi; and Nakayana, Shigeru, 5,610,182, Cl. 514-530.000.

Bannai, Yuichi; Yamamoto, Kunihiro; and Osawa, Hidefumi, to Canon Kabushiki Kaisha. Image processing apparatus and method that adds correction signal to average density and digitizes accordingly. 5,610,999, Cl. 382-272.000.

Bantu, Nageshwer R.; Brunsvold, William R.; Hefferon, George J.; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic C., to International Business Machines, Corporation. Acid scavengers for use in chemically amplified photoresists. 5,609,989, Cl. 430-270.100.

Bard, Simon; Viscount, Brian; Katz, Joseph; DeVita, Joseph; Fama, Anthony; Poloniewicz, Paul; Biuso, Anthony; Wilson, Laura; and Little, Gary G., to Symbol Technologies, Inc. Portable optical scanning system worn by a user for reading indicia of differing light reflectivity. 5,610,387, Cl. 235-472.000.

Barford, Eric D.; Clark, Peter J.; Marshall, John; and Jeffrey, Daniel J., to Jeyes Group Limited. Lavatory cleansing compositions. 5,610,126, Cl. 510-191.000.

Barnes, Arthur H.: *See—*
Spurgeon, Cecil R.; and Barnes, Arthur H., 5,608,986, Cl. 43-43.130.

Barnes, Casper W.: *See—*
Voss, Gregory I.; Butterfield, Robert D.; Baura, Gail D.; and Barnes, Casper W., 5,609,576, Cl. 604-67.000.

Barnes, Norman P.: *See—*
Jani, Mahendra G.; Barnes, Norman P.; Murray, Keith E.; and Kokta, Milan R., 5,610,933, Cl. 372-41.000.

Baroid Technology, Inc.: *See—*
Liao, Andrew, 5,609,438, Cl. 405-117.000.

Barre-Sinoussi, Francoise: *See—*
Montagnier, Luc; Krust, Bernard; Chamaret, Solange; Clavel, Francois; Chermann, Jean-Claude; and Barre-Sinoussi, Francoise, 5,610,035, Cl. 435-70.210.

Barrett, Larry J.; and Barrett, Nancy B. Child's toilet seat assembly for use with an adult-sized toilet. 5,608,921, Cl. 4-239.000.

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Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Barrett, Nancy B.: *See—*
Barrett, Larry J.; and Barrett, Nancy B., 5,608,921, Cl. 4-239.000.

Barrett, Raymond L., Jr.: *See—*
Mittel, James G.; Johnson, Philip L.; and Barrett, Raymond L., Jr., 5,610,558, Cl. 331-2.000.

Barrett, Terence W. Ultrafast time hopping CDMA-RF communications: code-as-carrier, multichannel operation, high data rate operation and data rate on demand. 5,610,907, Cl. 370-342.000.

Barry, Clifton E., III; and Yuan, Ying, to United States of America, Health and Human Services. Anti-mycobacterial compositions and their use for the treatment of tuberculosis and related diseases. 5,610,198, Cl. 514-712.000.

Barthel, Herbert: *See—*
Funk, Enno; Egerter, Norbert; Schreyer, Sabine; Achenbach, Frank; and Barthel, Herbert, 5,610,218, Cl. 524-413.000.

Barton, Hugh. No-till disk opening system and method. 5,609,114, Cl. 111-167.000.

Barton, Marjorie, executrix: *See—*
von Trebra, Robert J.; Smith, Gerald A.; Hensel, Roy E.; Barton, Oliver A., deceased, 5,609,945, Cl. 428-209.000.

Barton, Oliver A., deceased (by Marjorie Barton, executrix): *See—*
von Trebra, Robert J.; Smith, Gerald A.; Hensel, Roy E.; Barton, Oliver A., deceased, 5,609,945, Cl. 428-209.000.

Bartosiewicz, Henry J.: *See—*
Marshall, Gordon A.; Abela, Rene P.; and Bartosiewicz, Henry J., 5,609,397, Cl. 299-67.000.

Basavanhally, Nagesh R., to Lucent Technologies Inc. Optoelectronic device connecting techniques. 5,611,014, Cl. 385-90.000.

Baschenis, Bruno. Bottle brush assembly. 5,608,938, Cl. 15-68.000.

BASF Aktiengesellschaft: *See—*
Braune, Peter, 5,610,231, Cl. 524-779.000.
Holderbaum, Martin; Aumueller, Alexander; and Trauth, Hubert, 5,610,210, Cl. 524-99.000.
Wingert, Horst; Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Lorenz, Gisela; and Ammermann, Eberhard, 5,610,191, Cl. 514-599.000.

BASF Corporation: *See—*
DePue, Jeffrey S.; and Menovcik, Gregory G., 5,610,224, Cl. 524-538.000.

Basile, Barry S., to Compaq Computer Corporation. Detecting the presence of a device on a computer system bus by measuring the response time of data signals on the bus, and maximizing system performance based on that response time. 5,611,045, Cl. 395-184.010.

Bassi, Sukh; Maningat, Clodualdo C.; Chinnaswamy, Rangaswamy; Gray, Darren R.; and Nie, Li, to Midwest Grain Products. Alcohol-free wet extraction of gluten dough into gliadin and glutenin. 5,610,277, Cl. 530-374.000.

Bates, Robert K.: *See—*
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., 5,609,738, Cl. 204-279.000.

Batson, Brett W.; and Broussard, Byron K., to Compressor Controls Corporation. Method and apparatus for overspeed prevention using open-loop response. 5,609,465, Cl. 415-1.000.

Battery Engineering, Inc.: *See—*
Sun, Luying, 5,609,974, Cl. 429-192.000.

Battifora, Hector A., to City of Hope. Internal control for immunocytochemistry assay. 5,610,022, Cl. 435-7.230.

Baudrihaye, Marc: *See—*
Wantier, Henri; Mathieu, Fabienne; Baudrihaye, Marc; and Delacroix, Dominique, 5,609,886, Cl. 424-497.000.

Baudy, Reinhardt B.; Nelson, James A.; and Kanzelberger, Mira A., to American Home Products Corporation. (Thiophen-2-yl)-piperidin or tetrahydropyridin azabicyclocarboxamides. 5,610,164, Cl. 514-304.000.

Bauer, Jean-Michel, to Le Carbone Lorraine. Process for fast manufacturing of carbonaceous products. 5,609,815, Cl. 264-414.000.

Bauer, Rudolf: *See—*
Banholzer, Rolf; Bauer, Rudolf; and Reichl, Richard, 5,610,163, Cl. 514-291.000.

Baum, Scott A.: *See—*
Behnke, Janica S.; Baum, Scott A.; and Abba, Rodney L., 5,609,269, Cl. 221-48.000.

Baumann, Erich: *See—*
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.

Baumann, Hans-Martin; and Müller, Rolf, to Papst Licensing GmbH. Frequency monitoring device. 5,610,594, Cl. 340-658.000.

Baumuller Nurnberg GmbH: *See—*
Gotz, Fritz R.; Marz, Heinrich; Meis, Harald; and Agne, Werner, 5,610,491, Cl. 318-625.000.

Baur, Peter F., to NCR Corporation. Pen input to liquid crystal display. 5,610,629, Cl. 345-104.000.

Baura, Gail D.: *See—*
Voss, Gregory I.; Butterfield, Robert D.; Baura, Gail D.; and Barnes, Casper W., 5,609,576, Cl. 604-67.000.

Bausch & Lomb Incorporated: *See—*
Bambury, Ronald E.; and Seelye, David E., 5,610,252, Cl. 526-279.000.
Lai, Yu-Chin, 5,610,204, Cl. 522-44.000.

Baxter, David E.: *See—*
Brown, Robert L.; Miller, William H.; and Baxter, David E., 5,609,275, Cl. 222-413.000.

Baxter International Inc.: *See—*
Quijano, R. C.; and Nashef, Aws, 5,609,626, Cl. 623-1.000.

Bayer AG: *See—*
Groth, Torsten; Joentgen, Winfried; Müller, Nikolaus; and Liesenfelder, Ulrich, 5,610,255, Cl. 526-304.000.
Wood, Louis L.; and Calton, Gary J., 5,610,267, Cl. 528-363.000.

Bayer Aktiengesellschaft: *See—*
Fischer, Reiner; Bretschneider, Thomas; Krüger, Bernd-Wieland; Santel, Hans-Joachim; Dollinger, Markus; Wachendorff-Neumann, Ulrike; and Erdelen, Christoph, 5,610,122, Cl. 504-251.000.
Hetzel, Hartmut; Grenner, Dieter; Ebner, Wolfgang; and Biskup, Klaus, 5,609,735, Cl. 203-52.000.
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.
Schmalstieg, Lutz; Pedain, Josef; and Mertes, Harald, 5,610,260, Cl. 528-49.000.

Bayer Corporation: *See—*
Chu, Amy H.; Chu, Wei-Sen; and Cooper, Howard A., 5,610,073, Cl. 436-98.000.
Lebing, Wytold R.; and Chen, Sharon X., 5,610,285, Cl. 530-416.000.
Mason, James P., 5,610,223, Cl. 524-504.000.
von Trebra, Robert J.; Smith, Gerald A.; Hensel, Roy E.; Barton, Oliver A., deceased, 5,609,945, Cl. 428-209.000.

Bayer Faser GmbH: *See—*
Reinehr, Ulrich; Türck, Günter; Sehm, Tilo; Anderheggen, Wolfgang; Herbertz, Toni; and Antolini, Gino, 5,610,229, Cl. 524-589.000.

Bayer, Herbert: *See—*
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Bazshushtari, Afshin; and Morris, Edward L., Jr., to B. F. Goodrich Company, The. Carbon fiber reinforced carbon/carbon composite and method of its manufacture. 5,609,707, Cl. 156-148.000.

Beadman, Michael A.: *See—*
Sims, Charles R.; and Beadman, Michael A., 5,610,648, Cl. 347-174.000.

Beall, Howard D.: *See—*
Sloan, Kenneth B.; and Beall, Howard D., 5,610,160, Cl. 514-274.000.

Bear, Clayton: *See—*
Peterson, Robert A.; Evenson, Robert S.; and Bear, Clayton, 5,609,342, Cl. 277-81.00R.

Beard, David M. Surgical shield for orthopedic surgery. 5,609,163, Cl. 128-846.000.

Beatty, Gerald F.: *See—*
Lauer, Barry A.; Beatty, Gerald F.; Larson, Ann M. R.; and Blotzer, Richard J., 5,609,696, Cl. 148-111.000.

Bechtel Group, Inc.: *See—*
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., 5,609,738, Cl. 204-279.000.

Beck, Erhard; and Otto, Albrecht, to ITT Automotive Europe GmbH. Valve. 5,609,182, Cl. 137-539.000.

Becker, Thomas P.; Hoferitza, Mark A.; and Crass, Matthew M., to Snap-on Technologies, Inc. Knock sensor-triggered timing light with visible laser retro-reflecting control. 5,610,327, Cl. 73-117.300.

Beckerman, Joseph W.: *See—*
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,609,219, Cl. 180-248.000.

Becton Dickinson and Company: *See—*
Khan, Mohammed A.; and Moellmer, John F., 5,609,866, Cl. 424-78.250.
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,610,290, Cl. 536-25.400.
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,610,291, Cl. 536-25.400.

Becwar, Michael R.; and Blush, Thomas D., to Westvaco Corporation. Method for production of coniferous isogenic cell lines. 5,610,051, Cl. 435-422.000.

Bedel, Reinhard: *See—*
Kotowski, Stephan; Bedel, Reinhard; and Busse, Bernd, 5,609,748, Cl. 205-734.000.

Bedorf, Norbert: *See—*
Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

Beekley Corporation: *See—*
Russell, Donald G.; and Maxim, Rosemary S., 5,609,827, Cl. 422-102.000.

Beesch, DiAnn J.; Enck, Duane J.; and Dieb, Janet, to Motorola, Inc. Method and apparatus for attachment of edge connector to substrate. 5,609,490, Cl. 439-79.000.

Begis, Glenn, to Intel Corporation. Motherboard assembly which has a single socket that can accept a single integrated circuit package or multiple integrated circuit packages. 5,610,801, Cl. 361-784.000.

Behnke, Janica S.; Baum, Scott A.; and Abba, Rodney L., to Kimberly-Clark Corporation. Rolled tissue products containing discrete overlapped tissue sheets. 5,609,269, Cl. 221-48.000.

Behrens, Volker; Honig, Thomas; Kraus, Andreas; Saeger, Karl E.; Schmidberger, Rainer; and Staneff, Theodor, to Doduco GmbH & Co. Dr. Eugen Durrwachter. Material for electric contacts taking silver-tin oxide or silver-zinc oxide as basis. 5,610,347, Cl. 75-247.000.

Behrens, Wolfgang. Plant growth system for the enhancement of the environment. 5,608,989, Cl. 47-65.900.

Behringwerke Aktiengesellschaft: *See—*
Pauly, Hans E.; and Schwarz, Herbert, 5,610,026, Cl. 435-28.000.

Beihl, Roland: *See—*
Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., 5,609,272, Cl. 222-147.000.

Beinert, Zohar: *See—*
Spector, Yechiel; Jacobson, Esther; Naishtut, Vida; Vittenberg, Michael; and Beinert, Zohar, 5,610,359, Cl. 89-1.110.

Belfiore, Joseph D.; Guzak, Christopher J.; Graham, Christopher E.; Madigan, Stephen M.; Trower, Tandy W., II; Kerr, Randall L.; and Wyard, Adrian M., to Microsoft Corporation. Auto-scrolling during a drag and drop operation. 5,611,060, Cl. 395-341.000.

Belinka, Benjamin A., Jr.; Coughlin, Daniel J.; Alvarez, Vernon L.; and Wood, Richard, to Cytogen Corporation. Treatment methods using metal-binding targeted polypeptide constructs. 5,609,847, Cl. 424-1.690.

Bell Atlantic Mobile Systems, Inc.: *See—*
McHenry, James F.; and Farris, Robert D., 5,610,969, Cl. 379-56.000.

Bell Atlantic Network Services, Inc.: *See—*
Emery, Mark J.; Tucker, Brenda N.; and Schwartz, Laurie D., 5,610,972, Cl. 379-58.000.
Kostreski, Bruce; and Sistanizadeh, Kamran, 5,610,916, Cl. 370-487.000.

Bell, Cynthia S.; and Neff, Lynn K., to Eastman Kodak Company. Film image display apparatus and method. 5,609,403, Cl. 353-26.00A.

Bellehumeur, Alex R. Toe activated braking system for inline roller skates. 5,609,346, Cl. 280-11.200.

Belli, Aldo; Chiodini, Giorgio; and Maiorana, Stefano, to Laboratorio Chimico Internazionale S.p.A. Process for the preparation of (−)-eserethole from mixtures of (−) and (+)-eserethole. 5,610,316, Cl. 548-429.000.

BellSouth Corporation: *See—*
Comer, Edward I., 5,610,973, Cl. 379-59.000.

Beloit Technologies, Inc.: *See—*
Clarke-Pounder, Ian J. H.; and Young, Douglas L. G., 5,609,729, Cl. 162-380.000.

Benderly, David, to NFB of New York, Inc. Decorative article with engraved image. 5,609,043, Cl. 63-23.000.

Benedict, Harold W.; Zimny, Diana D.; and Bange, Donna W., to Minnesota Mining and Manufacturing Company. Method of preparation of a coated abrasive belt with an endless, seamless backing. 5,609,706, Cl. 156-137.000.

Benett, William J.; Krulevitch, Peter A.; Lee, Abraham P.; Northrup, Milton A.; and Folta, James A., to University of California, Regents of the. Miniature plastic gripper and fabrication method. 5,609,608, Cl. 606-205.000.

Bennani, Fatima Z.; le Greneur, Soizic; Simonot, Christian; and Meyer, Dominique, to Guerbet S A. Compounds which can be used in contrast products for radiography. 5,609,851, Cl. 424-9.454.

Bennett, Dwayne, to Hewlett-Packard Co. Method and apparatus for tracking buffer availability. 5,610,745, Cl. 359-139.000.

Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., to Square D Company. Prelinked parameter configuration, automatic graphical linking, and distributed database configuration for devices within an automated monitoring/control system. 5,611,059, Cl. 395-326.000.

Benveniste, Raoul E.: *See—*
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.

Beratan, Howard R.: *See—*
Summerfelt, Scott R.; Beratan, Howard R.; and Tsu, Robert, 5,609,927, Cl. 427-553.000.

Béraudier, Daniel; and Douhéret, Jean-Yves, to Framatome. Method and apparatus for broaching opening in a plate. 5,609,450, Cl. 409-244.000.

Berdia, Sunjay: *See—*
Martell, John M.; and Berdia, Sunjay, 5,610,966, Cl. 378-58.000.

Berend, Andrew L.; Williams, Mark J.; and Brocklehurst, Michael, to Cambridge Animation Systems Limited. Apparatus and method for defining the form and attributes of an object in an image. 5,611,036, Cl. 395-141.000.

Berent, Anthony N.: *See—*
Higginson, Peter L.; and Berent, Anthony N., 5,610,951, Cl. 375-364.000.

Berg, Christoph: *See—*
Eger, Matthias; Köhn, Heinz-Gerhard; Schulze, Werner; and Berg, Christoph, 5,610,343, Cl. 73-862.628.

Berg, Thomas R., to Standard Research and Design Corporation. Frame brace integral cross brace support bracket. 5,609,109, Cl. 105-206.100.

Berger, Arthur C.: *See—*
Geddes, Daniel J.; Rigotti, Kathy; Bunker, Linda L.; Berger, Arthur C.; Maynard, Patrick L.; Patterson, Robert; and Hollenberg, David H., 5,609,901, Cl. 426-394.000.

Berger, Sharon S.: *See—*
Moore, John S.; Berger, Sharon S.; Burr, Ronald F.; Anderson, Jeffrey J.; and MacLane, Donald B., 5,610,645, Cl. 347-93.000.

Bergerson, Lee D.; and Stonich, Ivan L., to TRW Vehicle Safety Systems Inc. Inflation fluid container and initiator with press-fit fluid seal. 5,609,361, Cl. 280-741.000.

Bergman, Leo M., to American Color Company. Paint solvent with glycol ether, oxidizing oil, propylene glycol or propylene carbonate, and NMP or isoalkane. 5,609,678, Cl. 106-311.000.

Bergman, Mark; Aiger, Dror; Levit, Dan; and Tepper, Ron, to MedSim, Ltd. Medical reproduction system. 5,609,485, Cl. 434-262.000.

Bergman, Rolf S.; Dakin, James T.; and Parham, Thomas G., to General Electric Company. Electric lamp with ellipsoidal shroud. 5,610,469, Cl. 313-25.000.

Bergwerksverband GmbH: *See—*
Giertz, Hans J.; Eisenhut, Werner; Huhn, Friedrich; and Hammermann, Hans J., 5,609,731, Cl. 201-35.000.

Beritashvili, David R.; Myakishev, Maxim V.; Ershov, Gennady M.; Georgiev, George P.; and Kapanadze, George I. Centrifugal method and apparatus for isolating a substance from a mixture of substances in a sample liquid. 5,610,074, Cl. 436-177.000.

Berkshire, Gary L.: *See—*
Rennecker, David B.; Hisrich, Timothy B.; and Berkshire, Gary L., 5,608,946, Cl. 15-339.000.

Berman, John L. Interactive television graphics interface. 5,610,665, Cl. 348-564.000.

Bernardson, Peter S.; and Nelson, Dale H., to Lucent Technologies, Inc. Voltage-to-current converter with MOS reference resistor. 5,610,505, Cl. 323-312.000.

Bernhard Rustige GmbH & Co. Kommanditgesellschaft: *See—*
Kempter, Werner, 5,609,831, Cl. 422-135.000.

Bernhardt, Rainer, to Videor Technical E. Hartig GmbH. Protective housing for optical equipment. 5,610,656, Cl. 348-373.000.

Bernhardt, Ralf: *See—*
Trapet, Eugen; Wiegand, Uwe; Grupp, Günter; and Bernhardt, Ralf, 5,610,846, Cl. 364-571.010.

Berriman, Lester P.; Zabsky, John M.; Davis, James W.; and Hylton, William M., to Kleenair Systems, Inc. Engine NOx reduction. 5,609,026, Cl. 60-286.000.

Berzins, Klavs: *See—*

Ahlborg, Niklas; Berzins, Klavs; and Perlmann, Peter, 5,609,872, Cl. 424-185.200.

Berzins, Leon V.; Bratton, Bradford A.; and Fuhrman, Paul W., to United States of America, Energy. Probe for measurement of velocity and density of vapor in vapor plume. 5,610,704, Cl. 356-28.500.

Besler, David A.: *See—*
Anderson, Scott R.; Tham, Chin T.; Padula, Joseph A.; Williams, Owen R.; Houle, Jesse S.; Besler, David A.; and Ramsey, William D., Jr., 5,609,190, Cl. 141-59.000.
Anderson, Scott R.; Houle, Jesse S.; Besler, David A.; and Loen, Andrew E., 5,609,192, Cl. 141-208.000.

Bessho, Yasuyuki: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., to International Business Machines Corporation. Multiple data surface optical data storage system. 5,610,901, Cl. 369-275.100.

Beta Fluid Systems, L.L.C.: *See—*
Dunlevy, F. Paul, 5,609,027, Cl. 60-396.000.

Bethlehem Steel Corporation: *See—*
Stelts, Philip D., 5,610,346, Cl. 73-866.500.

Betts, Robert; and Olnowich, Howard T., to International Business Machines Corporation. Asynchronous low latency data recovery apparatus and method. 5,610,953, Cl. 375-373.000.

Betz, William R.; and Desorcie, James L., to Supelco, Inc. Nucleophilic bodies bonded to siloxane and use thereof for separations from sample matrices. 5,609,756, Cl. 210-198.200.

Beuthan, Jürgen: *See—*
Müller, Gerhard; Beuthan, Jürgen; Minet, Olaf; and Kaschke, Michael, 5,610,399, Cl. 250-341.100.

Bevacqua, Andrew J.: *See—*
Cohen, Isaac D.; Bevacqua, Andrew J.; Toma, Daniela; and Lahanas, Konstantinos M., 5,610,199, Cl. 514-721.000.

Bhargava, Vivek: *See—*
Maturi, Gregory C.; Chen, Sho L.; Bhargava, Vivek; Wang, Ren-Yuh; and Tom, Richard H., 5,610,659, Cl. 348-42.000.

Bhatt, Bhavesh B., to Thomson multimedia S.A. Automatic image scanning format converter with seamless switching. 5,610,661, Cl. 348-446.000.

Bhuva, Rohit L., to Texas Instruments Incorporated. Spatial light modulator with reduced possibility of an on state defect. 5,610,624, Cl. 345-84.000.

Bickel, Martin: *See—*
Weidmann, Klaus; Bickel, Martin; and Günzler-Pukall, Volkmar, 5,610,172, Cl. 514-350.000.

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Kime, Geofrey G.; and Chapman, Carl D., 5,609,713, Cl. 156-304.200.

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O'Bear, Raymond E.; Colin, Bruno; Tegeler, G. R.; and Staples, John L., 5,609,828, Cl. 422-102.000.

Biomaterials Universe Inc.: *See—*
Ikada, Yoshito; Gen, Shokyu; Kubota, Takao; and Kyotani, Ikuo, 5,609,881, Cl. 424-425.000.

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Board of Trustees Leland Stanford, Jr. University: *See—*
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Somerville, Christopher R.; Nawrath, Christiane; and Poirier, Yves, 5,610,041, Cl. 435-135.000.

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Jackson, John; Gucker, Mark J.; and Smith, Mark H., 5,609,020, Cl. 60-226.200.
Lubowtiz, Hyman R.; and Sheppard, Clyde H., 5,610,317, Cl. 548-431.000.

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Bohr, Amy E.: *See—*
Fields, Thomas R.; Bohr, Amy E.; McCoy, Kendalyn R.; and Forszen, Lawrence C., 5,608,969, Cl. 29-895.300.
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Meybeck, Alain; Bonte, Frédéric; and Redziniak, Gérard, 5,609,873, Cl. 424-195.100.

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Boots Company PLC, The: *See—*
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Borden, Rex M. Solar-actuated fluid window shutter. 5,608,995, Cl. 52-171.300.

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Boschetti, Egisto; Girot, Pierre; and Guerrier, Luc P., to HemaSure, Inc. Porous support for the removal of small exogenous molecules from biological fluids. 5,609,763, Cl. 210-502.100.

Bosman, Hubertus J. M.: *See—*
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Botten, Ronald S.; DeCamp, Larry R.; Stoick, Calla K.; and Ellingson, Eric D., to Hollister Incorporated. Wafer having adhesive skin barrier layer. 5,609,585, Cl. 604-332.000.

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Bougoin, Michel: *See—*
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Bouton, Frank M.; and Kimmell, Rodney W., to Thrustmaster, Inc. Reconfigurable joystick controller recalibration. 5,610,631, Cl. 345-161.000.

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Boyd, Jim K. Candle snuffer. 5,609,480, Cl. 431-144.000.

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BP Chemicals Limited: *See—*
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Braune, Peter, to BASF Aktiengesellschaft. Preparation of thermoplastic polyesters. 5,610,231, Cl. 524-779.000.

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Brenner, Mats A.: *See*—
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Brenner, Michael B.; and Cepek, Karyn L., to Brigham & Women's Hospital, Inc. Antibodies for modulating heterotypic E-cadherin interactions with human T lymphocytes. 5,610,281, Cl. 530-388.850.

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Brewer, James D.; and Davidovich, Alan A., to Caterpillar Inc. Cable actuator assembly. 5,609,065, Cl. 74-528.000.

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Bridgestone Corporation: *See*—
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Brittan, Steven J., to GEC Marconi Ltd. Power control switch. 5,610,507, Cl. 323-350.000.

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Brooks Automation, Inc.: *See*—
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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

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Soules, Jack A., 5,610,515, Cl. 324-209.000.

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Clinard, Ralph L., Jr.: *See—*
Loziuk, Lawrence A.; Bucholtz, Brian C.; and Clinard, Ralph L., Jr., 5,609,328, Cl. 267-136.000.

Clinton, Eric L.: *See—*
Cullen, Michael J.; Dona, Alan R.; Clinton, Eric L.; and Hardy, Larry A., 5,609,126, Cl. 123-90.150.

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Zimmerman, Eric; Rosa, Jim; Love, Steve; and DiMuzio, Catherine, 5,609,770, Cl. 210-739.000.

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Dominguez, Luis M.; Bowling, Forrest W.; Coleman, William M., III; and Gordon, Bert M., 5,610,835, Cl. 364-497.000.

Colgate-Palmolive Co.: *See—*
Erilli, Rita; Gomes, Gilbert S.; Repinec, Stephen T., Jr.; and Kern, Ronald, 5,610,127, Cl. 510-235.000.
Polefka, Thomas G.; Ramachandran, Pallassana; Steltenkamp, Robert J.; Connors, Thomas F.; and Kinscherf, Kevin M., 5,610,194, Cl. 514-617.000.
Thomas, Barbara J.; Loth, Myriam; Connors, Thomas F.; and Mondin, Myriam, 5,610,130, Cl. 510-383.000.

Colin, Bruno: *See—*
O'Bear, Raymond E.; Colin, Bruno; Tegeler, G. R.; and Staples, John L., 5,609,828, Cl. 422-102.000.

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Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,609,659, Cl. 65-29.110.

Collins, Michael J., Jr.: *See—*
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.

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Stites, John; Holloway, David J.; and Caslow, Scott A., 5,610,620, Cl. 343-725.000.
Combs, Pamela S.: *See*—
Early, Michael G.; and Combs, Pamela S., 5,610,579, Cl. 340-517.000.
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Lucas, Walter P.; and Hsu, Raymond, 5,609,829, Cl. 422-110.000.
Comer, Edward I., to BellSouth Corporation. Interactive roamer contact system for cellular mobile radiotelephone network. 5,610,973, Cl. 379-59.000.
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Adnet, Jean M.; Donnet, Louis; Brossard, Philippe; and Bourges, Jacques, 5,609,745, Cl. 205-43.000.
Locatelli, Marcel; and Jeandey, Christian, 5,610,522, Cl. 324-319.000.
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Moinard, Philippe; and Millet, Yvon, 5,609,697, Cl. 148-519.000.
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Robert, Pierre; and Spitz, Roger, 5,610,114, Cl. 502-115.000.
Compagnie Generale des Etablissements Michelin - Michelin & CIE: *See*—
Finck, Francois; Follanfant, Jacques; and Vernet, Yves, 5,609,805, Cl. 264-134.000.
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Adnet, Jean M.; Donnet, Louis; Brossard, Philippe; and Bourges, Jacques, 5,609,745, Cl. 205-43.000.
Petitclerc, Jean-Louis, 5,610,596, Cl. 340-825.230.
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Marco, Ana M. R.; De Mora, Baltasar R. C.; and Diaz, Carlos S., 5,609,905, Cl. 426-629.000.
Compaq Computer Corporation: *See*—
Basile, Barry S., 5,611,045, Cl. 395-184.010.
Campbell, Scott O.; Adams, Greg; and Braaten, Jeffrey M., 5,611,024, Cl. 395-114.000.
Miller, David A.; Jansen, Kenneth A.; Culley, Paul R.; Taylor, Mark; and Izquierdo, Javier F., 5,611,078, Cl. 395-653.000.
Watters, John J.; and Dao, Giang H., 5,611,029, Cl. 395-131.000.
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Batson, Brett W.; and Broussard, Byron K., 5,609,465, Cl. 415-1.000.
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Ohno, Yugo; Shoji, Shunichi; and Kitahara, Atsushi, 5,609,525, Cl. 463-43.000.
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Schierloh, David M.; and Eyring, Kurt S., 5,609,005, Cl. 52-699.000.
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Conforti, Evandro: *See*—
Ho, Steven H.; Conforti, Evandro; and Kang, Sung M., 5,610,744, Cl. 359-118.000.
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Webb, Charles F.; Farrell, Mark S.; Conklin, Christopher R.; and Li, Wen H., 5,611,062, Cl. 395-376.000.
Conmed Corporation: *See*—
Sandock, Paul, 5,609,573, Cl. 604-22.000.
Connelly, Richard W.: *See*—
Ross, Robert J.; Bagchi, Pranab; and Connelly, Richard W., 5,610,002, Cl. 430-54.600.
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Connor, Daniel S.: *See*—
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Connors, Thomas F.: *See*—
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Weitzel, Hans-Peter; Weber-Koegl, Susanne; and Chatzinerantzis, Sotirios, 5,610,258, Cl. 528-25.000.
Contico International, Inc.: *See*—
Foster, Donald D.; Laffey, Martin S.; and Zurcher, John A., 5,609,299, Cl. 239-304.000.
Contiero, Claudio; Cavioni, Tiziana; and Manzini, Stefano, to SGS-Thomson Microelectronics S.r.l. Integrated circuit with EPROM cells. 5,610,421, Cl. 257-321.000.
Contigiani, Frank. Lighting systems for christmas trees. 5,609,412, Cl. 362-249.000.
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Cook, Phillip D.; Sanghvi, Yogesh S.; Vasseur, Jean J.; and Debart, Francoise, to Isis Pharmaceuticals, Inc. Backbone modified oligonucleotide analogues. 5,610,289, Cl. 536-25.340.
Cooley, June E.; and Mack, Anna H., to Kolor Kollar, Inc. Fastenable bag closure. 5,608,949, Cl. 24-30.50R.
Cooper, Arnold R.: *See*—
Hoag, Scott T.; and Cooper, Arnold R., 5,609,331, Cl. 267-154.000.
Cooper Cameron Corporation: *See*—
Lenhart, Kenneth J.; and Stream, Tom D., 5,609,467, Cl. 415-142.000.
Cooper, Howard A.: *See*—
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Loftus, Stephen C.; and Cope, Andrew C., 5,609,254, Cl. 206-506.000.
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Plicchi, Gianni; Corbucci, Giorgio; and Garberoglio, Bruno, 5,609,612, Cl. 607-17.000.
Cornell Research Foundation: *See*—
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Cornell Research Foundation, Inc.: *See*—
Lee, Keun H.; Won, Chee Y.; and Chu, Chih-Chang, 5,610,241, Cl. 525-411.000.
Corning Incorporated: *See*—
Danielson, Paul S.; Hultman, Sheryl L.; and Wolcott, Christine C., 5,610,107, Cl. 501-54.000.
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Cothern, Billy; Ramsey, Joseph A.; and Stapler, Clifford L., to Uni-Temp Refrigeration, Inc. Method and apparatus for freezing large blocks of a liquid or slurry. 5,609,035, Cl. 62-73.000.
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Coughlan, James M.: *See*—
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Coughlin, Daniel J.: *See*—
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Crass, Matthew M.: *See*—
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Lichtenberg, Bruce A., 5,609,461, Cl. 414-426.000.
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Tanaka, Hiroshi; Doi, Nobuaki; Omori, Masashi; and Ishikawa, Hiroaki, 5,608,974, Cl. 34-78.000.

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Meyer, George G.; Meyer, Stephen J.; Polan, George S.; and Dolan, Kevin, 5,609,211, Cl. 169-37.000.

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Illston, Trevor J.; Doleman, Paul A.; Butler, Edwin G.; Marquis, Peter M.; Ponton, Clive B.; Piramoon, Reza; and Gilbert, Mark J., 5,609,741, Cl. 204-471.000.

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Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Donner, Edward O.; and Zumbrunnen, Michael L., to International Business Machines Corporation. Process for manufacture of spring contact elements and assembly thereof. 5,608,966, Cl. 29-884.000.

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Walsh, Sean P.; and Douglass, Nelson H., 5,609,806, Cl. 264-136.000.

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Béraudier, Daniel; and Douhéret, Jean-Yves, 5,609,450, Cl. 409-244.000.

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DeKoven, Benjamin M.; Perettie, Donald J.; Schmidt, Donald L.; and Vedula, Murali, 5,609,943, Cl. 428-195.000.

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Camilletti, Robert C.; Saadat, Irfan; and Thomas, Michael, 5,609,925, Cl. 427-503.000.
Lee, Chi-Long; and Yeh, Ming-Hsiung, 5,609,555, Cl. 493-210.000.

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Hauf, Roland; and Groeger, Klaus, 5,609,129, Cl. 123-193.500.
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Mueller, Robert; and Wuest, Johannes, 5,609,422, Cl. 384-278.000.

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Draper, Kenneth G., to Ribozyme Pharmaceuticals, Inc. Enzymatic RNA molecule targeted against Hepatitis C virus. 5,610,054, Cl. 435-363.000.

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Draper, Michael W., to Eli Lilly and Company. Methods of use for inhibiting bone loss and lowering serum cholesterol. 5,610,168, Cl. 514-333.000.

Drayer, Lonnie R.: *See*—
Chandler, Michael A.; DeWille, Normanella T.; Mazer, Terrence B.; Ragan, Robert J.; Snowden, Gregory A.; Geraghty, Maureen E.; Johnson, Catherine D.; and Drayer, Lonnie R., 5,609,897, Cl. 426-73.000.

Drebika, Moataz; and Brown, Glenn A., to Stellar Systems, Inc. Intrusion warning system. 5,610,583, Cl. 340-566.000.

Drenten, Ronald R.; Jongerius, Michiel J.; and Droste, Richard B. J., to U.S. Philips Corporation. Device for raising the frequency of electromagnetic radiation. 5,610,760, Cl. 359-332.000.

Dressel, Donald. Snowboard bindings with release apparatus. 5,609,347, Cl. 280-14.200.

Droste, Richard B. J.: *See*—
Drenten, Ronald R.; Jongerius, Michiel J.; and Droste, Richard B. J., 5,610,760, Cl. 359-332.000.

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Meijer, Egbert W.; Bosman, Hubertus J. M.; Vandenbooren, Franciscus H. A. M. J.; De Brabander-Van Den Berg, Ellen M. M.; Castelijns, Anna M. C. F.; De Man, Hendrikus C. J.; Reintjens, Rafael W. E. G.; Stoelwinder, Christiaan J. C.; and Nijenhuis, Atze J., 5,610,268, Cl. 528-363.000.

Du Pont de Nemours, E. I., and Company: *See*—
Buckmaster, Marlin D.; and Randa, Stuart K., 5,610,203, Cl. 521-85.000.
Hou, Anchi, 5,609,984, Cl. 430-256.000.
Kasari, Akira; Ikushima, Satoshi; Isozaki, Osamu; Matsumoto, Naoji; and Nordstrom, John D., 5,609,960, Cl. 428-413.000.
Spelthann, Heinz H., 5,610,234, Cl. 525-64.000.

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Kitteridge, John M.; Matthews, Andrew E.; and Watkiss, Philip J., 5,609,987, Cl. 430-265.000.

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Lam, Patrick Y.; Jadhav, Prabhakar K.; Eyermann, Charles J.; Hodge, Carl N.; De Lucca, George V.; and Rodgers, James D., 5,610,294, Cl. 540-492.000.

Duan, Youlu; Stammler, Sonja; Rhein, Scott; and Lindquist, Lowell, to H.B. Fuller Licensing & Financing, Inc. Aqueous non-gelling, anionic polyurethane dispersions and process for their manufacture. 5,610,232, Cl. 524-840.000.

Dubief, Claude; Cauwet, Daniele; and Millequant, Jean M., to L'Oreal. Composition and process using silicone thiols for the color of dyed keratinous fibres. 5,609,856, Cl. 424-70.100.

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DuBois, Thomas D.: *See*—
Bobbio, Stephen M.; DuBois, Thomas D.; Tranjan, Farid M.; Lucey, George K., Jr.; Geis, James D.; Lipscomb, Robert F.; and Piekarski, Timothy, 5,609,290, Cl. 228-206.000.

Dubroeuco, Marie-Christine: *See*—
Capet, Marc; Cotrel, Claude; Guyon, Claude; Joannic, Michel; Manfre, Franco; Roussel, Gérard; Dubroeuco, Marie-Christine; Cheve, Michel; and Dutruc-Rosset, Gilles, 5,610,144, Cl. 514-19.000.

Duch, Krzysztof M., to Motorola, Inc. Communication device with reduced sensitivity to in-channel interference. 5,610,950, Cl. 375-350.000.

Ducklow, Diane K.: *See*—
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,609,219, Cl. 180-248.000.

Duckworth, Donald L. Portable continual mixer. 5,609,416, Cl. 366-34.000.

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Landis, Timothy J.; Fields, Kyle D.; Dudley, James P.; and Perry, Scott M., 5,608,917, Cl. 2-418.000.

Dufetel, Didier; Estradier, Francoise; Gaetani, Quintino; and Hocquaux, Michel, to L'Oreal. Composition intended for use for retarding hair loss and for inducing and stimulating its growth, containing 2-aminopyrimidine 3-oxide derivatives, and new compounds derived from 2-aminopyrimidine 3-oxide. 5,610,302, Cl. 544-320.000.

Duke University: *See*—
Machemer, Robert; Hickingbotham, Dyson; and Dodge, Brian, 5,609,602, Cl. 606-171.000.

Dull, Dan J.: *See*—
Murray, Richard A.; and Dull, Dan J., 5,610,635, Cl. 347-7.000.

Dumbrajs, Olgierd; and Möbius, Arnold, to Forschungszentrum Karlsruhe GmbH. Gyrotron and method of improving its efficiency. 5,610,482, Cl. 315-500.000.

Dumoulin, Charles L.; and Darrow, Robert D., to General Electric Company. Magnetic resonance (MR) angiography using a toroidal polarizing magnet and a low-field imaging magnet. 5,609,153, Cl. 128-653.200.

Duncan, Alan L.; Acton, Daniel S.; and Kendrick, Richard L., to Lockheed Missiles & Space Co., Inc. Wavefront sensor for a staring imager. 5,610,707, Cl. 356-121.000.

Dunfield, John C.; Oveyssi, Kamran; and Heine, Gunter K., to Seagate Technology, Inc. Passive magnetic bearings for a spindle motor. 5,610,463, Cl. 310-90.500.

Dunlap & Codding, P.C.: *See*—
Harrison, William E., Jr., 5,609,283, Cl. 224-678.000.

Dunlap, Thomas G.; Proebstle, Richard A.; Elkins, Robert B.; and Frederickson, Christian D., to General Electric Company. Fuel assembly structure using channel for load support. 5,610,961, Cl. 376-446.000.

Dunlevy, F. Paul, to Beta Fluid Systems, L.L.C. Refueling device with constant-speed auxiliary drive. 5,609,027, Cl. 60-396.000.

Dunn, Daniel J.: *See*—
Lent, David D.; and Dunn, Daniel J., 5,611,054, Cl. 395-280.000.

Dunn, Paul M.: *See*—
Lüers, Georg; Sobottka, Richard; and Dunn, Paul M., 5,609,679, Cl. 106-491.000.

Dunn, William F.: *See*—
Yovichin, Albert J.; Dunn, William F.; Dutt, William R.; Houck, Richard C.; Hyde, David D.; Ridha, Raouf A.; and Swanson, Harry R., 5,610,329, Cl. 73-146.000.

DuPont, Eddy: *See*—
Fouquet, Jean-Michel; Duval, Benoit; and DuPont, Eddy, 5,609,364, Cl. 280-777.000.

DuPont (U.K.) Ltd.: *See*—
Matthews, Andrew E.; Murray, David E.; Gates, Allen P.; Wade, John R.; Pratt, Michael J.; and King, William A., 5,609,980, Cl. 430-138.000.

Durden, Phillip R., to James River Corporation of Virginia. Method and apparatus for transferring a web from a forming wire to a transferring felt in a paper making machine. 5,609,728, Cl. 162-205.000.

Durflinger, Kevin; Reid, Jon D.; and Logan, Kim M., to Micro Data Base Systems, Inc. Multi-model database management system engine for databases having complex data models. 5,611,076, Cl. 395-613.000.

Durlin, David L.: *See*—
Mann, Scott K.; and Durlin, David L., 5,610,819, Cl. 364-426.050.

DuRocher, Daniel J.; and Miller, Ellsworth S., to ITT Corporation. Steering column stalk switch apparatus. 5,610,378, Cl. 200-61.540.

Durrant, Randolph L.; and Burbach, Mark, to Omnipoint Corporation. Method and apparatus for noncoherent reception and correlation of a continous phase modulated signal. 5,610,940, Cl. 375-208.000.

Durrwachter, Eugen: *See*—
Lütte, Winfried, 5,610,377, Cl. 200-50.190.

Düsing, Josef, to Kaltenbach & Voigt GmbH & Co. Straight motorized handpiece, in particular for medical purposes, preferably for a medical or dental laboratory. 5,609,445, Cl. 408-124.000.

Dutruc-Rosset, Gilles: *See*—
Capet, Marc; Cotrel, Claude; Guyon, Claude; Joannic, Michel; Manfre, Franco; Roussel, Gérard; Dubroeuco, Marie-Christine; Cheve, Michel; and Dutruc-Rosset, Gilles, 5,610,144, Cl. 514-19.000.

Dutt, William R.: *See*—
Yovichin, Albert J.; Dunn, William F.; Dutt, William R.; Houck, Richard C.; Hyde, David D.; Ridha, Raouf A.; and Swanson, Harry R., 5,610,329, Cl. 73-146.000.

Duval, Benoit: *See*—
Fouquet, Jean-Michel; Duval, Benoit; and DuPont, Eddy, 5,609,364, Cl. 280-777.000.

Dye, William P.; and Hoggard, Paul J., to Von Duprin, Inc. Door holder having electromagnetic flux generator and power control circuit. 5,610,794, Cl. 361-206.000.

Dye, William P.: *See*—
Mader, Gerald E.; Dye, William P.; and Prucinsky, Matthew S., 5,609,371, Cl. 292-164.000.

Dykstra, Diana R.; and Wade, Patricia M., to Golden 1 Credit Union, The. Lender direct credit evaluation and loan processing system. 5,611,052, Cl. 395-238.000.

Dyrud, James F.; Elstran, Gerald V.; and Olson, Paul E., to Minnesota Mining and Manufacturing Company. Method of forming an earplug containment device. 5,609,164, Cl. 128-864.000.

Dziegielewski, Thomas: *See*—
Jurik, Mirjana; Dziegielewski, Thomas; and Grzybowski, Thomas, 5,609,423, Cl. 384-518.000.

E.I. Du Pont de Nemours and Company: *See*—
Ma, Sheau-Hwa; Hertler, Walter R.; and Simmons, Howard E., III, 5,609,914, Cl. 427-264.000.

E-Tek Dynamics, Inc.: *See*—
Pan, Jing-Jong, 5,611,009, Cl. 385-22.000.

Eagar, Simon E.; and Hunter, Andrew D., to ICI Australia Operations Proprietary Limited. Apparatus and process for explosives blow loading. 5,610,358, Cl. 86-21.000.

Eagle Co., Ltd.: *See*—
Inoue, Haruo, 5,609,524, Cl. 463-20.000.

Early, Michael G.; and Combs, Pamela S., to Eaton Corporation. Apparatus and method for selecting a control source for an electrical switching device. 5,610,579, Cl. 340-517.000.

Eason, Jimmy: *See*—
Britzke, Robert W.; Eason, Jimmy; and Fang, Zhigang, 5,609,447, Cl. 408-230.000.

Eastern Michigan University: *See*—
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; and Zhang, Suru, 5,610,263, Cl. 528-272.000.

Eastman Chemical Company: *See*—
Alsmeyer, Daniel C.; and Nicely, Vincent A., 5,610,836, Cl. 364-498.000.
Sharma, Mahendra K., 5,610,233, Cl. 525-54.210.

Eastman Kodak Company: *See*—
Arrington, Lee O.; and Burak, Chris J., 5,610,709, Cl. 356-218.000.
Bell, Cynthia S.; and Neff, Lynn K., 5,609,403, Cl. 353-26.00A.
Bogdanowicz, Mitchell J.; and Sehlin, Richard C., 5,610,687, Cl. 355-80.000.
Chamberlain, Frederick R., IV, 5,610,518, Cl. 324-235.000.
Clarke, Andrew, 5,609,923, Cl. 427-458.000.
Giorgianni, Edward J.; Mittelstaedt, Brian E.; Rivera, Jose E.; Simon, Richard A.; Smith, Teresa A.; and Sutton, James E., 5,609,978, Cl. 430-30.000.
Keelan, Brian W.; and Pagano, Daniel M., 5,609,404, Cl. 353-101.000.
Kessler, David; and Harrigan, Michael E., 5,610,753, Cl. 359-205.000.
Lussier, Barbara B., 5,610,003, Cl. 430-555.000.
Miller, Stephen H., 5,610,789, Cl. 360-132.000.
Parulski, Kenneth A.; and McGarvey, James E., 5,610,654, Cl. 348-229.000.
Ross, Robert J.; Bagchi, Pranab; and Connelly, Richard W., 5,610,002, Cl. 430-54.600.
Tang, Ping W.; Cowan, Stanley W.; Decker, David J.; and Mungal, Terrence C., 5,609,996, Cl. 430-386.000.
Texter, John; Sharma, Ravi; and Czekai, David A., 5,609,998, Cl. 430-449.000.
Vishwakarma, Lal C.; Yau, Hwei-Ling; and Chen, Tienteh, 5,610,000, Cl. 430-512.000.

Eastwood, Gregg, to JK Molds, Inc. Probe assembly for injection molding apparatus. 5,609,893, Cl. 425-549.000.

Eaton Corporation: *See*—
Early, Michael G.; and Combs, Pamela S., 5,610,579, Cl. 340-517.000.
Reynolds, Joseph D., 5,609,062, Cl. 74-325.000.

Eaton, Eric T.: *See*—
Willard, David F.; Eaton, Eric T.; and Laflin, Barbara D., 5,610,919, Cl. 370-336.000.

Eberhard, Jeffrey W.; and Hedengren, Kristina H. V., to General Electric Company. Combining a priori data with partial scan data to project three dimensional imaging of arbitrary objects with computerized tomography. 5,611,026, Cl. 395-119.000.

Eberlein, Wolfgang; Mihm, Gerhard; Engel, Wolfhard; Rudolf, Klaus; Doods, Henri; Ziegler, Harald; and Entzeroth, Michael, to Dr. Karl Thomae GmbH. Condensed diazepinones, processes for preparing them and agents containing these compounds for treating diseases of the central nervous system and for promoting cerebral blood circulation. 5,610,155, Cl. 514-220.000.

Eberly, Steven C.: *See*—
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Ebner, Wolfgang: *See*—
Hetzel, Hartmut; Grenner, Dieter; Ebner, Wolfgang; and Biskup, Klaus, 5,609,735, Cl. 203-52.000.

Echigo, Katsuhiro: *See*—
Kawada, Yasuo; Sakai, Hidenori; Obu, Makoto; Echigo, Katsuhiro; Kawashima, Yasuhiro; Yano, Hidetoshi; and Kishi, Fumio, 5,610,725, Cl. 358-403.000.

Eckenhoff, James B.: *See*—
Rivera, David L.; Merrill, Sonya; Eckenhoff, James B.; Wright, Jeremy C.; and Osborne, James L., 5,609,885, Cl. 424-473.000.

Eckert, Gerhard: *See*—
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Eclairage Contraste: *See*—
Lecluze, Michel, 5,609,413, Cl. 362-364.000.

Ecolab Inc.: *See*—
Ferguson, Mark A., 5,609,174, Cl. 134-180.000.

Eden, Todd R.: *See*—
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Edgar, Albert D., to International Business Machines Corporation. Image enhancement with mask having fuzzy edges. 5,611,027, Cl. 395-131.000.

Effie Technologies,: *See*—
Kennedy, Thomas P.; and Schiffman, Howard, 5,609,567, Cl. 602-5.000.

Egan, Richard L.: *See*—
Bahl, Chander; Galvin, James P.; and Egan, Richard L., 5,609,160, Cl. 128-771.000.

Eger, Matthias; Köhn, Heinz-Gerhard; Schulze, Werner; and Berg, Christoph, to Sartorius AG. Balance with one or several wire strain gauge weighing cells. 5,610,343, Cl. 73-862.628.

Egerter, Norbert: *See—*
Funk, Enno; Egerter, Norbert; Schreyer, Sabine; Achenbach, Frank; and Barthel, Herbert, 5,610,218, Cl. 524-413.000.

Eggen, Josephus H.: *See—*
Vogten, Leonardus L. M.; Ma, Chang X.; Verhelst, Werner D. E.; and Eggen, Josephus H., 5,611,002, Cl. 395-2.760.

Eglit, Alexander: *See—*
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Ehrenfeld, Elizabeth; Fricker, Colin; and Townsend, David E., to Idexx Laboratories, Inc. Medium for detecting target microbes in a sample. 5,610,029, Cl. 435-34.000.

Eichner, Vincent T. Integrated refacing system for suspended ceilings. 5,609,007, Cl. 52-747.100.

Eicken, Ulrich: *See—*
Birnbrich, Paul; Eicken, Ulrich; Fischer, Herbert; Klamann, Joerg-Dieter; and Schieferstein, Ludwig, 5,610,242, Cl. 525-444.500.

Eidler, Phillip A.; and Hughes, Michael R., to ZB B Technologies, Inc. Compact energy storage system. 5,610,802, Cl. 361-831.000.

Eiermann, Dankwart, to Wankel Rotary GmbH. Compressor with a hypotrochoidal design having a fluid delivery which is not solely dependent on a drive RPM. 5,609,475, Cl. 417-294.000.

Eimori, Takahisa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 5,610,418, Cl. 257-306.000.

Eisai Co., Ltd.: *See—*
Matsui, Makoto; and Yamamoto, Hisashi, 5,610,113, Cl. 502-84.000.
Shimizu, Katsumi; and Honda, Washiro, 5,609,819, Cl. 422-3.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.

Eisenberg, Peter M.: *See—*
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Eisenhut, Werner: *See—*
Giertz, Hans J.; Eisenhut, Werner; Huhn, Friedrich; and Hammermann, Hans J., 5,609,731, Cl. 201-35.000.

Eisenmann, Erhard T. Method for regeneration of electroless nickel plating solution. 5,609,767, Cl. 210-665.000.

Ejima, Daisuke; Sato, Yutaka; Watanabe, Mayumi; Date, Masayo; and Takahara, Yoshiyuki, to Ajinomoto Co., Inc. Method of purification of human BCDF. 5,610,284, Cl. 530-412.000.

Ekern, Ronald J.; and Messing, Terry G., to Rayovac Corporation. Reduced environmental hazard leclanche cell having improved performance. 5,609,973, Cl. 429-166.000.

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Lavene, Bernard, 5,610,796, Cl. 361-303.000.

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Rogers, Wesley A., 5,610,499, Cl. 322-25.000.

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Butler, Joseph H., Jr., 5,609,530, Cl. 473-237.000.

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Encad, Inc.: *See—*
Murray, Richard A.; and Dull, Dan J., 5,610,635, Cl. 347-7.000.

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Endorecherche Inc.: *See—*
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Ensci Inc.: *See—*
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Pirelli, Thomas, 5,611,051, Cl. 395-210.000.

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Gross, Leon S., 5,609,121, Cl. 116-28.00R.

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Envistech Inc.: *See—*
Zhang, Tai Y., 5,610,657, Cl. 348-415.000.

Enya, Takeshi: *See—*
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Panescu, Dorin; Whayne, James G.; and Swanson, David K., 5,609,157, Cl. 128-697.000.

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Buckmiller, Daniel K.; Erickson, David W.; Olsen, Douglas G.; and Philpot, Randall J., 5,609,349, Cl. 280-280.000.

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Dent, Paul W., 5,610,559, Cl. 331-2.000.
Diachina, John, 5,610,917, Cl. 370-469.000.

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Schmoll, Wolfgang; and Wissmann, Siegfried, 5,609,045, Cl. 66-121.000.

Eronen, Harri K., to Aquamaster-Rauma Ltd. Traction arrangement for a tug boat. 5,609,120, Cl. 114-253.000.

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Esaki, Kouji: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,609,809, Cl. 264-210.700.

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Altmann, Karl-Heinz; Imwinkelried, René; and Eschenmoser, Albert, 5,610,300, Cl. 544-244.000.

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Sims, Charles R.; and Beadman, Michael A., 5,610,648, Cl. 347-174.000.

Esser, Richard J., to S. C. Johnson & Son, Inc. Crosslinkable surface coatings. 5,609,965, Cl. 428-522.000.

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Cohen, Isaac D.; Bevacqua, Andrew J.; Toma, Daniela; and Lahanas, Konstantinos M., 5,610,199, Cl. 514-721.000.

Estrada, James; and Zandian, Said, to Dataproducts Corporation. Color imaging. 5,611,022, Cl. 395-109.000.

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Johnson, William C.; and McMullen, Charles C., 5,610,980, Cl. 380-4.000.

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Ethicon, Inc.: *See—*
Grant, Richard L.; Lang, Michael; Churchill, Philip J.; and Lawrence, W. Thompson, 5,609,285, Cl. 227-179.100.
Marshall, Paul; and Miksza, Anthony S., 5,609,605, Cl. 606-191.000.

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Johnson, Chris E.; Carls, Thomas A.; and Evans, David L., 5,609,641, Cl. 623-20.000.

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Evans, Larry R.: *See—*
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Matsuoka, Yoshihiro, 5,609,231, Cl. 192-3.290.

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Pompei, Francesco, 5,609,619, Cl. 607-104.000.

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Möller, Reinfried, 5,609,061, Cl. 74-120.000.

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Sparks, Tracy S.; and Faigle, Ernst M., 5,609,362, Cl. 280-741.000.

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Patil, Damodar R.; and Fanta, George F., 5,609,817, Cl. 264-564.000.

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Farrar, Simon; and Taylor, Neil, to International Computers Limited. Printed circuit manufacture. 5,609,746, Cl. 205-125.000.

Farrell, Mark S.: *See—*
Webb, Charles F.; Farrell, Mark S.; Conklin, Christopher R.; and Li, Wen H., 5,611,062, Cl. 395-376.000.

Farrell, Roberta L.; Hadar, Yitzhak; Wendler, Philip A.; and Zimmerman, Wendy, to Sandoz Ltd. Fungi for pitch reduction and their preparation. 5,609,724, Cl. 162-72.000.

Farris, Robert D.: *See—*
McHenry, James F.; and Farris, Robert D., 5,610,969, Cl. 379-56.000.

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Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,609,593, Cl. 606-61.000.
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Fearnot, Neal E.; Kozma, Thomas G.; Ragheb, Anthony O.; and Voorhees, William D., to MED Institute, Inc. Coated implantable medical device. 5,609,629, Cl. 623-1.000.

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Feigel, Hans-Jorg; Neumann, Ulrich; and Schiel, Lothar, to ITT Automotive Europe GmbH. Hydraulic braking system with slip control. 5,609,399, Cl. 303-113.400.

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Canfield, Donald H.; Fellows, Todd C.; Gillis, Earle W.; and Yablonsky, Peter J., 5,610,710, Cl. 356-237.000.

Felsenfeld, Gary: *See—*
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Kessler, William J.; Davis, Steven J.; Ferguson, Daniel R.; and Pugh, Evan R., 5,610,932, Cl. 372-39.000.

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Festo KG: *See—*
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Landis, Timothy J.; Fields, Kyle D.; Dudley, James P.; and Perry, Scott M., 5,608,917, Cl. 2-418.000.

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Findeisen, Kurt: *See—*
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.

Finelli, Thomas A., to Chrysler Corporation. Passenger side air bag with tether. 5,609,363, Cl. 280-743.200.

Finucane, Jim: *See—*
Elliott, Isaac; Finucane, Jim; Gottlieb, Louis; O'Reilly, Daniel L.; and Johnson, Gary E., 5,610,915, Cl. 370-259.000.

Fiori, Denise E.; and Quinn, Richard J., to Cytec Technology Corp. Emulsifiable compositions, curable emulsions thereof and uses of such curable emulsions. 5,609,916, Cl. 427-388.400.

Firestone, Bruce A.; and Dickason, Matthew A., to Allergan, Inc. Barrier packaging and materials therefor. 5,609,273, Cl. 222-215.000.

Fischer & Krecke GmbH & Co.: *See—*
Rostalski, Fred; Obermeier, Diethard; Steinweg, Ewald; Kolbe, Wilfried; and Schirrich, Klaus, 5,609,556, Cl. 493-226.000.

Fischer, Artur, to fischerwerke, Artur Fischer GmbH & Co AG. Expansible plug for anchoring in a drilled hole having an undercut. 5,609,453, Cl. 411-54.000.

Fischer, Herbert: *See—*
Birnbrich, Paul; Eicken, Ulrich; Fischer, Herbert; Klamann, Joerg-Dieter; and Schieferstein, Ludwig, 5,610,242, Cl. 525-444.500.

Fischer Pharmaceuticals Ltd.: *See—*
Hadas, Nira, 5,609,875, Cl. 424-195.100.

Fischer, Reiner; Bretschneider, Thomas; Krüger, Bernd-Wieland; Santel, Hans-Joachim; Dollinger, Markus; Wachendorff-Neumann, Ulrike; and Erdelen, Christoph, to Bayer Aktiengesellschaft. 3-aryl-4-hydroxy-delta3-dihydrofuranone derivatives. 5,610,122, Cl. 504-251.000.

fischerwerke, Artur Fischer GmbH & Co AG: *See—*
Fischer, Artur, 5,609,453, Cl. 411-54.000.

Fischler, Richard. Self-contained vehicle refrigeration unit. 5,609,037, Cl. 62-239.000.

Fisher, David E.; Holland, John M.; and Kennedy, Kenneth F., to Cybermotion, Inc. Mobile base having leg assemblies with two wheels. 5,609,216, Cl. 180-24.030.

Fitzgibbon, Kay E.: *See—*
Donoghue, Scott J.; Fitzgibbon, Kay E.; France, Paul A. R. G.; Hall, Robin G.; Wilkinson, Carole P. D.; York, David W.; and Schmitt, John C., 5,610,131, Cl. 510-444.000.

Flainox S.R.L.: *See—*
Bozzo, Lino, 5,608,955, Cl. 28-167.000.

Flannagan, Stephen T.: *See—*
Chang, Ray; Flannagan, Stephen T.; and Jones, Kenneth W., 5,610,543, Cl. 327-158.000.

Flannery, Anthony F.: *See—*
Allen, Richard C.; Flannery, Anthony F.; Kleissler, Charles R.; and Redmond, David B., 5,610,455, Cl. 307-400.000.

Flavigny, Jean-Pierre, to FACOM. Locking pliers. 5,609,080, Cl. 81-368.000.

Fleissner, Gerold, to Fleissner GmbH & Co., KG. Device for continuous treatment of textile material or the like. 5,609,046, Cl. 68-5.00D.

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Fleissner, Gerold, 5,609,046, Cl. 68-5.00D.

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Kischka, Karl-Heinz; and Flemming, Ernst, 5,609,168, Cl. 132-204.000.

Fletcher, Harry; and Locke, Merrel J., to Lawson Mardon Wheaton Inc. Single dose medicament dispenser assembly. 5,609,581, Cl. 604-212.000.

Fleurial, Jean-Pierre; Caillat, Thierry F.; and Borshchevsky, Alexander, to California Institute of Technology. High performance thermoelectric materials and methods of preparation. 5,610,366, Cl. 136-202.000.

Fleury, Marc: *See—*
Longeron, Daniel; and Fleury, Marc, 5,610,524, Cl. 324-376.000.

Flisram, Dennis G.: *See—*
Holmes, Terry L.; Skaar, Gary R.; Gundlach, Larry C.; and Flisram, Dennis G., 5,609,512, Cl. 451-48.000.

Flohr, Thomas; and Schaller, Stefan, to Siemens Aktiengesellschaft. Method for image reconstruction in a computed tomography apparatus. 5,610,964, Cl. 378-15.000.

Flores, David: *See—*
Johnson, William J.; Vegatoro, Guillermo; Lachman, Larry M.; and Flores, David, 5,610,825, Cl. 364-485.000.

Floyd, April. Fire resistant house cover. 5,608,992, Cl. 52-3.000.

Flynn, Daniel L.: *See—*
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,610,296, Cl. 548-546.000.

Focsaneanu, Mihai; Skillen, Richard P.; and Livermore, Frederick C., to Northern Telecom Limited. Access to telecommunications networks in multi-service environment. 5,610,910, Cl. 370-351.000.

Fogarty, Matthew: *See—*
Fogarty, William; and Fogarty, Matthew, 5,610,349, Cl. 84-322.000.

Fogarty, William; and Fogarty, Matthew. Pick for musical instruments with improved grip. 5,610,349, Cl. 84-322.000.

Fogg, John K.; Utter, Wayne; and Dohanich, George, to Celestica, Inc. Low voltage DC-to-DC power converter integrated circuit and related methods. 5,610,503, Cl. 323-283.000.

Fogle, Ronald L.; and Huggins, Orville C., to Monarch Marking Systems, Inc. Method of using and operating a printer. 5,609,429, Cl. 400-692.000.

Foley, Mark: *See—*
Israel, Gary E.; Knapp, John; and Foley, Mark, 5,609,903, Cl. 426-500.000.

Follanfant, Jacques: *See—*
Finck, Francois; Follanfant, Jacques; and Vernet, Yves, 5,609,805, Cl. 264-134.000.

Folta, James A.: *See—*
Benett, William J.; Krulevitch, Peter A.; Lee, Abraham P.; Northrup, Milton A.; and Folta, James A., 5,609,608, Cl. 606-205.000.

Fonon Technology Limited: *See—*
Kondratenko, Vladimir S., 5,609,284, Cl. 225-1.000.

Fontenot, J. Darrell: *See—*
Montelaro, Ronald C.; and Fontenot, J. Darrell, 5,609,876, Cl. 424-207.100.

Forche, Edgar: *See—*
Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

Ford Motor Company: *See—*
Adrian, Andrew; Jones, Bruce R.; and Schuessler, Robert A., 5,610,618, Cl. 343-713.000.
Cullen, Michael J.; Dona, Alan R.; Clinton, Eric L.; and Hardy, Larry A., 5,609,126, Cl. 123-90.150.
Daniel, Roger P.; Patel, Praful; Lim, George G.; and Chou, Clifford C., 5,609,385, Cl. 296-188.000.
Fricke, David M.; Hansen, Mark D.; and Chabaan, Rakan C., 5,610,330, Cl. 73-146.000.
Hedderly, Gregory T.; Tyus, Lisa A.; and Brown, Leonard M., 5,609,063, Cl. 74-492.000.
Hoag, Scott T.; and Cooper, Arnold R., 5,609,331, Cl. 267-154.000.
Holka, Thomas C., 5,609,365, Cl. 280-777.000.
Lequis, Rolf; Adams, Gerd; and Deidewig, Hartmut, 5,609,072, Cl. 74-606.00R.
Ma, Thomas T., 5,609,021, Cl. 60-274.000.
Magan, Amit T.; Grant, Kathleen A.; and Krzyske, Dennis C., 5,610,328, Cl. 73-117.300.
Seizew, Alex R.; and King, Lamar L., II, 5,609,144, Cl. 123-568.000.
Watson, Jon R., 5,609,353, Cl. 280-707.000.

Forgesham Limited: *See—*
Saurwein, Albert C., 5,609,477, Cl. 417-567.000.

Forray, Carlos C.: *See—*
Craig, Douglas A.; Forray, Carlos C.; Gluchowski, Charles; and Branchek, Theresa A., 5,610,174, Cl. 514-401.000.

Forschungszentrum Karlsruhe GmbH: *See—*
Dumbrajs, Olgierd; and Möbius, Arnold, 5,610,482, Cl. 315-500.000.

Forszen, Lawrence C.: *See—*
Fields, Thomas R.; Bohr, Amy E.; McCoy, Kendalyn R.; and Forszen, Lawrence C., 5,608,969, Cl. 29-895.300.
Fields, Thomas R.; Bohr, Amy E.; McCoy, Kendalyn R.; and Forszen, Lawrence C., 5,609,944, Cl. 428-207.000.

Foss, Raymond C., to Bowthorpe PLC. Cable splice closure. 5,610,369, Cl. 174-84.00R.

Foster, Clark B.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,609,577, Cl. 604-110.000.

Foster, Donald D.; Laffey, Martin S.; and Zurcher, John A., to Contico International, Inc. Bottle adapter for dual piston trigger sprayer. 5,609,299, Cl. 239-304.000.

Foster, Robert F.; Hillman, Joseph T.; and Arora, Rikhit, to Sony Corporation; and Materials Research Corporation. Plasma enhanced chemical vapor deposition of titanium nitride using ammonia. 5,610,106, Cl. 437-245.000.

Foundation for Promotion of Ion Engineering, The: *See—*
Kokubo, Tadashi, 5,609,633, Cl. 623-16.000.

Founds, Henry W.; Yamin, Michael A.; Bucala, Richard J.; and Cerami, Anthony, to Alteon Inc. Method for detecting hemoglobin advanced glycosylation endproducts. 5,610,076, Cl. 436-518.000.

Fouquet, Jean-Michel; Duval, Benoit; and DuPont, Eddy, to NACAM. Energy-absorbing device, particularly for automobile vehicle steering columns. 5,609,364, Cl. 280-777.000.

Fowell, Richard A., to Hughes Aircraft Company. Robust resonance reduction using staggered posicast filters. 5,610,848, Cl. 364-724.070.

Fox, James G.: *See—*
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.

Fox, Jeffrey R.: *See—*
Ringwald, Jeffrey J.; and Fox, Jeffrey R., 5,609,523, Cl. 460-119.000.

Framatome: *See—*
Béraudier, Daniel; and Douhéret, Jean-Yves, 5,609,450, Cl. 409-244.000.

Framatome Connectors International: *See—*
Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., 5,611,011, Cl. 385-59.000.

France Bed Co., Ltd.: *See—*
Hasegawa, Takashi, 5,608,932, Cl. 5-611.000.

France, Paul A. R. G.: *See—*
Donoghue, Scott J.; Fitzgibbon, Kay E.; France, Paul A. R. G.; Hall, Robin G.; Wilkinson, Carole P. D.; York, David W.; and Schmitt, John C., 5,610,131, Cl. 510-444.000.

France Telecom: *See—*
Mau, Joël; and Soyer, Patrice, 5,610,944, Cl. 375-260.000.

Francis, Arthur W., Jr.: *See—*
Kobayashi, Hisashi; Ding, Maynard G.; and Francis, Arthur W., Jr., 5,609,662, Cl. 65-135.100.

Francis, Gaylord L.; Johnson, Ronald E.; Tick, Paul A.; and Wu, Lung-Ming, to Corning Incorporated. Method of reducing water sensitivity of phosphate glass particles. 5,609,660, Cl. 65-30.100.

Franck, John: *See—*
Rohrbough, John; and Franck, John, 5,609,248, Cl. 206-216.000.

Frank-Braun, Michael. Stringed musical instrument pickup with two electromagnetic coil assemblies having toothed cores. 5,610,357, Cl. 84-726.000.

Frankel, Richard W.: *See—*
Seigneur, Robert L.; and Frankel, Richard W., 5,608,937, Cl. 14-69.500.

Franz, Andreas. Filter medium and process for making same. 5,609,761, Cl. 210-493.100.

Fraquelli, Roberto G.: *See—*
Meyer, Kevin L.; and Fraquelli, Roberto G., 5,609,112, Cl. 108-153.000.

Frasier, Christine M.; Muskat, James C.; and Teague, Charles J., to Allison Advanced Development Company, Inc.; and Allison Engine Company, Inc. Multiproperty rotor disk and method of manufacture. 5,609,471, Cl. 416-204.00A.

Frechette, Raymond A., to Texas Instruments Incorporated. Lead frame for integrated circuits. 5,610,437, Cl. 257-670.000.

Frederickson, Christian D.: *See—*
Dunlap, Thomas G.; Proebstle, Richard A.; Elkins, Robert B.; and Frederickson, Christian D., 5,610,961, Cl. 376-446.000.

Fredricks, Brent: *See—*
Nyhuis, Robert; Fredricks, Brent; and Ryckeghem, Martin Van, 5,608,960, Cl. 29-434.000.

Freedenberg, Candace J. F.; Cobb, Joshua M.; and Ziemins, Uldis A., to International Business Machines, Corporation. Laser system. 5,609,780, Cl. 219-121.730.

Freeman, Rick L.: *See—*
Kilmer, Dan L.; and Freeman, Rick L., 5,609,496, Cl. 439-271.000.

Frei, Jörg; and Stanek, Jaroslav, to Ciba-Geigy Corporation. Ornithine decarboxylase inhibiting branched aminooxy amino alkane derivatives. 5,610,195, Cl. 514-645.000.

Fremgen, Dieter; and Vock, Frank, to Raychem GmbH. Closure for cables. 5,610,370, Cl. 174-91.000.

Fresco, Andre. Articulated backpack apparatus. 5,609,278, Cl. 224-153.000.

Freskos, John N.: *See—*
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,610,190, Cl. 514-595.000.

Fricke, David M.; Hansen, Mark D.; and Chabaan, Rakan C., to Ford Motor Company. Effective road profile control method for a spindle-coupled road simulator. 5,610,330, Cl. 73-146.000.

Fricker, Colin: *See—*

Ehrenfeld, Elizabeth; Fricker, Colin; and Townsend, David E., 5,610,029, Cl. 435-34.000.

Friedli, Floyd: *See—*
Manning, Monna M.; Allardice, Andrea S.; and Friedli, Floyd, 5,610,187, Cl. 514-552.000.

Frischer, Marc E.; and Paul, John H., to University of South Florida. Genetically modified vibrio. 5,610,028, Cl. 435-29.000.

Fritzberg, Alan R.: *See—*
Wilbur, D. Scott; and Fritzberg, Alan R., 5,609,848, Cl. 424-1.850.

Fritze, Torsten: *See—*
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.

Froeschke, Reinhard, to Santrade Ltd. Apparatus for producing granular material including a belt formed of elastically joined links. 5,609,887, Cl. 425-6.000.

Frontec Incorporated: *See—*
Fukui, Hirofumi; Miyazaki, Masanori; Aihara, Masami; Iwasaki, Chisato; Fukuda, Koichi; and Kasama, Yasuhiko, 5,609,737, Cl. 204-192.120.

Fu, Shou-Kuan: *See—*
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; and Zhang, Suru, 5,610,263, Cl. 528-272.000.

Fuchs, Rudolf: *See—*
Eyer, Martin; Fuchs, Rudolf; and McGarrity, John, 5,610,312, Cl. 548-303.100.

Fuerstenau, Charles; Konegen, Herbert; Hildebrandt, Wolfgang; and Seigert, Peter, to GKN Automotive AG. Constant velocity universal joint having an improved cage design. 5,609,527, Cl. 464-145.000.

Fugitive Emissions Detection Devices, Inc.: *See—*
Lawson, Rick A., 5,610,324, Cl. 73-46.000.

Fuhrman, Paul W.: *See—*
Berzins, Leon V.; Bratton, Bradford A.; and Fuhrman, Paul W., 5,610,704, Cl. 356-28.500.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Obukata, Masahiro; and Nakadate, Masaaki, 5,609,472, Cl. 416-223.00R.

Fuji Oil Company, Limited: *See—*
Hokuyo, Kosuke; Hayashi, Miho; Yamaguchi, Sbuichi; and Izumi, Tsugio, 5,609,906, Cl. 426-660.000.

Fuji Oozx, Inc.: *See—*
Hirose, Masahito, 5,609,128, Cl. 123-90.510.

Fuji Photo Film Co., Ltd.: *See—*
Aida, Shunichi; Matsumoto, Keisuke; Watanabe, Toshiyuki; and Warishi, Koji, 5,609,999, Cl. 430-505.000.
Fujiwara, Morio; and Ohgiyama, Takashi, 5,609,810, Cl. 264-219.000.
Ishikawa, Takatoshi; and Mogi, Fumio, 5,611,077, Cl. 396-630.000.
Kawakami, Hiroshi; and Nishigaki, Junji, 5,610,005, Cl. 430-574.000.
Kawamura, Koichi; Sato, Kenichiro; and Sakaguchi, Shinji, 5,609,983, Cl. 430-193.000.
Kokubo, Hideyuki, 5,610,649, Cl. 347-175.000.
Okamoto, Yasuhiro; and Arai, Tsutomu, 5,609,997, Cl. 430-399.000.
Sato, Kenichiro; Kawabe, Yasumasa; Aoai, Toshiaki; and Sakaguchi, Shinji, 5,609,982, Cl. 430-192.000.
Shibasaki, Souhei; Sawano, Yukio; Nagashima, Hiroto; Fujisawa, Kyuichi; Sugiyama, Koichi; and Aratsu, Shuichi, 5,611,028, Cl. 395-131.000.
Shimizu, Osamu, 5,608,964, Cl. 29-603.140.
Sorori, Tadahiro; Okamoto, Yasuo; Kondo, Syunichi; and Kurita, Hiromichi, 5,609,992, Cl. 430-281.100.
Sumi, Katsuto, 5,610,758, Cl. 359-319.000.
Tanaka, Hirohisa, 5,609,377, Cl. 294-65.000.
Yokokawa, Takuya; and Koide, Tomoyuki, 5,610,006, Cl. 430-604.000.

Fuji Photo Optical Co., Ltd.: *See—*
Miyano, Hitoshi, 5,610,390, Cl. 250-216.000.

Fujii, Hiroshi: *See—*
Miyashita, Masahiko; Miyazawa, Tatsuyuki; Fujii, Hiroshi; and Kitano, Yoshihiro, 5,609,486, Cl. 434-307.00A.

Fujii, Masaki: *See—*
Yamashita, Tetsuhiro; Hirai, Koji; and Fujii, Masaki, 5,609,218, Cl. 180-197.000.

Fujii, Takaaki: *See—*
Sugioka, Kouichi; Sinmura, Hiroyuki; Ogawa, Masao; Honda, Satoshi; Nakazawa, Yoshihiro; and Fujii, Takaaki, 5,610,814, Cl. 364-424.026.

Fujii, Yutaka: *See—*
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Fujikin Incorporated: *See—*
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.

Fujimori, Kazuyoshi: *See—*
Tomoe, Aruga; Yokouchi, Hideya; and Fujimori, Kazuyoshi, 5,610,782, Cl. 360-99.040.

Fujimura, Tetsuya: *See—*
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Fujino, Michio: *See—*
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.

Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; Taguchi, Kazushige; and Shiina, Susumu, to Ricoh Company, Ltd. Book document reading device having a page turning capability. 5,610,720, Cl. 358-296.000.

Fujisawa, Kyuichi: *See—*
Shibasaki, Souhei; Sawano, Yukio; Nagashima, Hiroto; Fujisawa, Kyuichi; Sugiyama, Koichi; and Aratsu, Shuichi, 5,611,028, Cl. 395-131.000.

Fujisawa, Shinji: *See—*
Hinata, Shoji; Ono, Yoichi; Tsukahara, Akira; Hosogaya, Hiroyuki; Imazeki, Yoshikatsu; Fujisawa, Shinji; and Furukawa, Yoko, 5,610,742, Cl. 349-122.000.

Fujishiro, Felix: *See—*
Vines, Landon B.; Koenigseder, Sigmund A.; Cain, John L.; Lee, Chang-Ou; and Fujishiro, Felix, 5,610,105, Cl. 437-235.000.

Fujita, Atsuko; Matsui, Shuichi; Onji, Yuichi; Ushioda, Makoto; and Goto, Yasuyuki, to Chisso Corporation. Diene derivative. 5,609,791, Cl. 252-299.630.

Fujita, Kenjiro: *See—*
Usuki, Katsutoshi; Fujita, Kenjiro; and Hatta, Katsuhiro, 5,609,549, Cl. 477-125.000.

Fujita, Koichi: *See—*
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.

Fujita, Yoshihisa; Mizuno, Takahide; Nishio, Hiroyuki; Uto, Kunibaru; and Ishida, Kazutoshi, to Mitsuboshi Belting Ltd. Toothed conveying belt. 5,609,243, Cl. 198-847.000.

Fujitsu Limited: *See—*
Ema, Taiji, 5,610,854, Cl. 365-149.000.
Hamano, Takashi; Sakai, Kiyoshi; and Matsuda, Kiichi, 5,610,660, Cl. 348-423.000.
Hashimoto, Kaoru; Chiyonobu, Tatuo; Kawano, Kyoichiro; Watanabe, Koji; Wakamura, Masato; and Yamaguchi, Joe, 5,610,371, Cl. 174-262.000.
Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, 5,609,688, Cl. 118-715.000.
Imanishi, Kenji, 5,610,410, Cl. 257-76.000.
Ito, Noriyuki; and Mizukami, Etsuko, 5,610,830, Cl. 364-490.000.
Izumi, Haruhiko; and Miyabe, Kyoko, 5,610,895, Cl. 369-112.000.
Kai, Junichi; and Nakano, Mitsuhiro, 5,610,406, Cl. 250-492.220.
Kakuishi, Mitsuo; and Ueshima, Tsuyoshi, 5,610,943, Cl. 375-243.000.
Kamo, Toshiyuki; and Watanabe, Yoshihiro, 5,610,918, Cl. 370-395.000.
Kutami, Michinori; Nakazawa, Akira; Kikuchi, Hideyuki; and Yamagishi, Katsunori, 5,610,643, Cl. 347-54.000.
Matoba, Tatsuo, 5,611,069, Cl. 395-441.000.
Miyashita, Takumi; and Tomesakai, Nobuaki, 5,610,954, Cl. 375-375.000.
Murakami, Yoji, 5,610,080, Cl. 437-8.000.
Nakamura, Hiroshi; and Nishikawa, Katsuhiko, 5,610,630, Cl. 345-119.000.
Saeki, Mituo; Suzui, Tsutomu; Ozawa, Hidekiyo; and Mitsui, Hisafumi, 5,610,450, Cl. 307-46.000.
Seto, Chiaki, 5,610,593, Cl. 340-653.000.
Tabuchi, Haruhiko, 5,611,006, Cl. 385-14.000.
Tomonaga, Hiroshi; Matsuoka, Naoki; Watanabe, Miwako; Kuroyanagi, Satoshi; Ezaki, Yutaka; Hakata, Akira; Takechi, Ryuichi; and Kawai, Masaaki, 5,610,913, Cl. 370-219.000.
Tsukune, Atsuhiro; Suzuki, Kiyokatsu; Matsuura, Katsuyoshi; Mieno, Fumitake; and Yamanishi, Hirokazu, 5,609,721, Cl. 156-646.100.
Wakamiya, Kenji; and Saito, Osamu, 5,611,047, Cl. 395-200.010.
Yamada, Toyonobu, 5,610,863, Cl. 365-189.090.
Yamamoto, Hidehiko, 5,610,382, Cl. 235-379.000.
Yamamoto, Kazuhisa, 5,610,929, Cl. 371-40.100.

Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, to Kubota Corporation. Theft preventive apparatus having an alarm output device. 5,610,587, Cl. 340-572.000.

Fujiura, Ryuji: *See—*
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,609,800, Cl. 264-29.600.

Fujiwara, Hiroshi: *See—*
Kimura, Tomio; Kuroki, Yoshiaki; Fujiwara, Hiroshi; and Anpeiji, Shigeharu, 5,610,303, Cl. 544-326.000.

Fujiwara, Morio; and Ohgiyama, Takashi, to Fuji Photo Film Co., Ltd. Method of molding cases used in information detection hole system and apparatus therefor. 5,609,810, Cl. 264-219.000.

Fujiwara, Takashi: *See—*
Hiyoshi, Michiaki; Muramatsu, Hisayoshi; and Fujiwara, Takashi, 5,610,439, Cl. 257-688.000.

Fujiwara, Toru; Tsubakiji, Tadashi; and Tsuchiya, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Exhaust gas purification apparatus for internal combustion engine. 5,609,024, Cl. 60-284.000.

Fukaya, Haruhiko: *See—*
Abe, Takashi; Fukaya, Haruhiko; Hayashi, Eiji; and Hayakawa, Yoshio, 5,609,787, Cl. 252-3.000.

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Fukui, Hirofumi; Miyazaki, Masanori; Aihara, Masami; Iwasaki, Chisato; Fukuda, Koichi; and Kasama, Yasuhiko, 5,609,737, Cl. 204-192.120.

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Ueda, Katsunori; Fukui, Toyoaki; and Yoshikawa, Satoshi, 5,609,139, Cl. 123-492.000.

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Fukuta, Yukihiro: *See—*
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Yamada, Kunio; and Fukutomi, Yasuyuki, 5,610,608, Cl. 341-143.000.

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Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; and Nishiyama, Tadaaki, 5,610,226, Cl. 524-559.000.

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Nishino, Satoru; Abe, Koichi; Fukuyama, Takeo; and Minamizawa, Hidehito, 5,609,949, Cl. 428-217.000.

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Fuller, Carl W.; Szasz, Joseph; Robb, Frank T.; Borges, Kimberly M.; and Davis, Maria, to Amersham Life Science, Inc. Nucleic acid modifying proteins from *Pyrococcus furiosus*. 5,610,066, Cl. 435-320.100.

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Sasae, Taiichiro; Nishida, Tomio; Uekita, Masakazu; and Funahashi, Takashi, 5,609,558, Cl. 588-257.000.

Funk, Enno; Egerter, Norbert; Schreyer, Sabine; Achenbach, Frank; and Barthel, Herbert, to Wacker-Chemie GmbH. Organopolysiloxane compositions which are stabilized to heat and can be crosslinked to give elastomers. 5,610,218, Cl. 524-413.000.

Furch, Bernard: *See—*
Popescu, Alexandru F.; and Furch, Bernard, 5,610,750, Cl. 359-172.000.

Furet, Pascal: *See—*
Bühlmayer, Peter; and Furet, Pascal, 5,610,153, Cl. 514-211.000.

Furui, Hiroyasu: *See—*
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.

Furukawa Co., Ltd.: *See—*
Shima, Masao; Yaoita, Katsuhiko; Nagahara, Masaharu; and Kametani, Hiroshi, 5,609,799, Cl. 264-12.000.

Furukawa Electric Co., Ltd., The: *See—*
Shiino, Masato; Tsutsumi, Mikio; and Nagasawa, Shiji, 5,611,010, Cl. 385-53.000.

Furukawa, Tsuneaki: *See—*
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, 5,610,468, Cl. 310-323.000.

Furukawa, Yoko: *See—*
Hinata, Shoji; Ono, Yoichi; Tsukahara, Akira; Hosogaya, Hiroyuki; Imazeki, Yoshikatsu; Fujisawa, Shinji; and Furukawa, Yoko, 5,610,742, Cl. 349-122.000.

Furusawa, Koutarou: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Furusawa, Shigeharu: *See—*
Yamashita, Masakazu; Furusawa, Shigeharu; Abe, Masao; Mizuno, Tomohiro; and Miyasaka, Hidekatsu, 5,610,900, Cl. 369-271.000.

Furusawa, Takeshi: *See—*
Moriyama, Shigeo; Kawamura, Yoshio; Homma, Yoshio; Kusukawa, Kikuo; and Furusawa, Takeshi, 5,609,511, Cl. 451-5.000.

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Furuya, Masayuki; and Michioka, Hirofumi, to Nissan Motor Co., Ltd. Lockup clutch control responsive to degraded ATF fluid condition. 5,609,552, Cl. 477-174.000.

FutureTel, Inc.: *See—*
Maturi, Gregory C.; Chen, Sho L.; Bhargava, Vivek; Wang, Ren-Yuh; and Tom, Richard H., 5,610,659, Cl. 348-42.000.

Fux, Charly, to Interplastic SA. Apparatus suitable for providing directly by means of calendering an excellent anchorage between a fabric and its plastic coating material. 5,609,685, Cl. 118-60.000.

G.B. Boucherie N.V.: *See—*
Boucherie, Bart G., 5,609,890, Cl. 425-120.000.

G. D. Searle & Co.: *See—*
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,610,296, Cl. 548-546.000.
Desai, Subhash, 5,609,884, Cl. 424-468.000.
Grabner, Roy W.; Landis, Bryan H.; Wang, Ping T.; Prunier, Michael L.; and Scaros, Mike G., 5,610,039, Cl. 435-125.000.
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,610,190, Cl. 514-595.000.

G&G Locotronics, Inc.: *See—*
Mann, Scott K.; and Durlin, David L., 5,610,819, Cl. 364-426.050.

Gaertner, Ernst M.: *See—*
Pazdirek, Jiri; and Gaertner, Ernst M., 5,609,433, Cl. 403-140.000.

Gaetani, Quintino: *See—*
Dufetel, Didier; Estradier, Francoise; Gaetani, Quintino; and Hocquaux, Michel, 5,610,302, Cl. 544-320.000.

Gagen, Geoffrey S.: *See—*
Luke, Donald A.; and Gagen, Geoffrey S., 5,609,123, Cl. 119-173.000.

Gaggar, Satish K.: *See—*
Hiromoto, Yasuyuki; Gaggar, Satish K.; and Kuruganti, Vijaya K., 5,610,235, Cl. 525-71.000.

Gaggero, James M.: *See—*
Munson, Derrill; Lew, Chel W.; Gaggero, James M.; and Branly, Keith, 5,609,880, Cl. 424-410.000.

GAIA Research: *See—*
Garcia, Rodrigo A.; and Gho, Joseph G., 5,609,892, Cl. 425-311.000.

Gaiser, James E., to Western Atlas International, Inc. 3-D converted shear wave rotation with layer stripping. 5,610,875, Cl. 367-75.000.

Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., to Actel Corporation. Logic module for a programmable logic device. 5,610,534, Cl. 326-39.000.

Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., to Olin Corporation. Apparatus and method for suppressing a fire. 5,609,210, Cl. 169-26.000.

Galecki, Steven M.: *See—*
Skebe, Gerard G.; and Galecki, Steven M., 5,610,079, Cl. 437-6.000.

Galiani, Alfred J. Magnifying container for printed matter. 5,610,770, Cl. 359-807.000.

Galipeault, Claude J.; and Staab, Lawrence E., to Fiber Fuel International, Inc. Particulate waste wood fuel, method for making particulate waste wood fuel, and a method for producing energy with particulate waste wood fuel. 5,609,113, Cl. 110-347.000.

Gallagher, Daniel J. Liquid level alarm system. 5,610,591, Cl. 340-618.000.

Gallentine, Bill. Tire puncture repair apparatus. 5,609,715, Cl. 156-394.100.

Galley, Edward; and Fardell, Nicola A., to Boots Company PLC, The. Sunscreen with coated microfine particles. 5,609,852, Cl. 424-59.000.

Galumbeck, Michael H., to ReGain, Inc. Wheelchair. 5,609,348, Cl. 280-250.100.

Galun, Eithan: *See—*
Blum, Hubert E.; Liang, Tsanyang; Galun, Eithan; and Wands, Jack R., 5,610,050, Cl. 435-238.000.

Galvin, James P.: *See—*
Bahl, Chander; Galvin, James P.; and Egan, Richard L., 5,609,160, Cl. 128-771.000.

Gammill, Ronald B.: *See—*
Bisaha, Sharon N.; and Gammill, Ronald B., 5,610,158, Cl. 514-230.200.

Gancy, Alan B. Springlike couplings of flexible walls of inflatable body supports. 5,608,931, Cl. 5-712.000.

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Garber, Barry. Dual function theft prevention system. 5,610,446, Cl. 307-10.500.
Garber, Robert G.: *See—*
Schiavo, John J.; and Garber, Robert G., 5,609,757, Cl. 210-232.000.
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Plicchi, Gianni; Corbucci, Giorgio; and Garberoglio, Bruno, 5,609,612, Cl. 607-17.000.
Garcia, Rodrigo A.; and Gho, Joseph G., to GAIA Research. Apparatus for the production of encapsulated foaming concentrates. 5,609,892, Cl. 425-311.000.
Garde, Douglas, to Analog Devices, Inc. Bus architecture for digital signal processor allowing time multiplexed access to memory banks. 5,611,075, Cl. 395-480.000.
Gardopee, George J.; Clapis, Paul J.; Prusak, Joseph P.; and Poultney, Sherman K., to Integrated Process Equipment Corp. Method for co-registering semiconductor wafers undergoing work in one or more blind process modules. 5,610,102, Cl. 437-225.000.
Garrabrant, Gary W.; Cho, Jay C.; and Savarese, Joseph T., to Intermec Corporation. Packet radio communication system protocol. 5,610,595, Cl. 340-825.520.
Gates, Allen P.: *See—*
Matthews, Andrew E.; Murray, David E.; Gates, Allen P.; Wade, John R.; Pratt, Michael J.; and King, William A., 5,609,980, Cl. 430-138.000.
Gates Corporation, The: *See—*
Yarnell, Larry; and South, Bobbie E., 5,610,217, Cl. 524-397.000.
Gates, Elliot C. Golf training apparatus. 5,609,531, Cl. 473-256.000.
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White, Gregory R.; Gatewood, Bryan S.; Wilson, Mark L.; Griffen, Peter J.; Kleine, Richard E.; and Webber, Larry R., 5,609,548, Cl. 477-124.000.
Gauger, W. Kennedy: *See—*
Kelley, Robert L.; Hill, Andy H.; Srivastava, Vipul J.; Gauger, W. Kennedy; and Kilbane, John J., II, 5,610,065, Cl. 435-264.000.
Gaupp, Osvin, to ABB Management AG. Regulation method for a DC arc furnace. 5,610,937, Cl. 373-108.000.
Gazis, Denos C.; Jaffe, Robert S.; and Pope, William G., to IBM Corporation. Optimal and stable route planning system. 5,610,821, Cl. 364-444.200.
GC Corporation: *See—*
Ikada, Yoshito; Gen, Shokyu; Kubota, Takao; and Kyotani, Ikuo, 5,609,881, Cl. 424-425.000.
Gebhardt, William J.; Thome, James P.; and Hildenbrandt, Leslie C., to Distancecaddy Company, L.L.C., The. Informational/training video system. 5,609,534, Cl. 473-409.000.
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Brittan, Steven J., 5,610,507, Cl. 323-350.000.
Geddes, Daniel J.; Rigotti, Kathy; Bunker, Linda L.; Berger, Arthur C.; Maynard, Patrick L.; Patterson, Robert; and Hollenberg, David H., to James River Corporation. Method of using a perforated package. 5,609,901, Cl. 426-394.000.
Geerts, Rolf L.: *See—*
Alt, Helmut G.; Palackal, Syriac J.; Patsidis, Konstantinos; Welch, M. Bruce; Geerts, Rolf L.; Hsieh, Eric T.; McDaniel, Max P.; Hawley, Gil R.; Smith, Paul D.; Janzen, Jay; and Schmid, Michael, 5,610,247, Cl. 526-160.000.
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Geissler, Klaus H.; Damaschke, Jürgen; and Wolk, Dieter, to Ant Nachrichtentechnik GmbH. Waveguide absorber. 5,610,562, Cl. 333-22.00R.
Gen, Shokyu: *See—*
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GenCorp Inc.: *See—*
Brown, Robert L.; Miller, William H.; and Baxter, David E., 5,609,275, Cl. 222-413.000.
Genentech, Inc.: *See—*
Clark, Ross G.; Jin, Hongkui; Paoni, Nicholas F.; and Yang, Renhui, 5,610,134, Cl. 514-2.000.
General Electric Company: *See—*
Bergman, Rolf S.; Dakin, James T.; and Parham, Thomas G., 5,610,469, Cl. 313-25.000.
Cella, James A.; and Burnell, Timothy B., 5,610,259, Cl. 528-34.000.
Crow, John M.; Kelley, James G.; and Rockstroh, Todd J., 5,609,779, Cl. 219-121.710.
Dumoulin, Charles L.; and Darrow, Robert D., 5,609,153, Cl. 128-653.200.
Dunlap, Thomas G.; Proebstle, Richard A.; Elkins, Robert B.; and Frederickson, Christian D., 5,610,961, Cl. 376-446.000.
Eberhard, Jeffrey W.; and Hedengren, Kristina H. V., 5,611,026, Cl. 395-119.000.
Hiromoto, Yasuyuki; Gaggar, Satish K.; and Kuruganti, Vijaya K., 5,610,235, Cl. 525-71.000.
Hsieh, Jiang, 5,610,963, Cl. 378-7.000.
Inaba, Koichi; Uchida, Kensuke; and Kolberg, Raymond F., 5,609,940, Cl. 428-156.000.
Kelly, Thomas J.; Austin, Curtiss M.; and Allen, Robert E., 5,609,698, Cl. 148-671.000.
King, Robert D.; De Doncker, Rik W. A. A.; and Szczesny, Paul M., 5,610,490, Cl. 318-611.000.
Kingsley, Jack D.; and Possin, George E., 5,610,403, Cl. 250-370.090.
Korman, Charles S.; Jacobs, Israel S.; Mallick, John A.; and Roshen, Waseem A., 5,609,946, Cl. 428-209.000.
Lorensen, William E.; Jolesz, Ferenc A.; and Kikinis, Ron, 5,611,025, Cl. 395-119.000.
Nustad, Timothy A., 5,610,509, Cl. 323-234.000.
Possin, George E., 5,610,404, Cl. 250-370.090.
Solorzano, Enrique R.; Gou, Perng-Fei; Higa, Thomas S.; and Townsend, Harold E., 5,610,962, Cl. 376-461.000.
Sumpter, Chris A.; and Ward, Brian J., 5,610,213, Cl. 524-267.000.
Tortora, Carmine G., 5,610,341, Cl. 73-756.000.
Wille, Guillermo; Pedigo, Donald B.; Blaettner, Harald E.; Wieland, Bernd A.; and Cunningham, Eldon R., 5,610,456, Cl. 310-58.000.
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Blum, Hubert E.; Liang, Tsanyang; Galun, Eithan; and Wands, Jack R., 5,610,050, Cl. 435-238.000.
Burgeson, Robert E.; and Wagman, David W., 5,610,031, Cl. 435-69.100.
Quertermous, Thomas; Runge, Marschall S.; and Haber, Edgar, 5,609,869, Cl. 424-133.100.
General Instrument Corporation of Delaware: *See—*
Brogle, James J.; Davis, Harold P.; Guillot, Jean-Michel; and Korwin-Pawlowski, Michael, 5,610,434, Cl. 257-619.000.
General Instrument of Taiwan, Ltd.: *See—*
Inagaki, Akihiro; and Yamamura, Isao, 5,610,443, Cl. 257-788.000.
General Magic, Inc.: *See—*
Hertzfeld, Andrew J.; Atkinson, William D.; and Kare, Susan D., 5,611,031, Cl. 395-133.000.
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Cho, Byong K., 5,609,022, Cl. 60-274.000.
Johnston, Gary L.; Zehnder, James W., II; Kruckemeyer, William C.; Oliver, Michael L.; and Longhouse, Richard E., 5,609,401, Cl. 303-155.000.
Genesis, An Environmental Corp.: *See—*
Magidson, Stanley I., 5,609,732, Cl. 202-83.000.
Gentsch, Susanne: *See—*
Harttig, Herbert; Gentsch, Susanne; Schmidt, Elmar; and Schuessler, Rudolf, 5,609,823, Cl. 422-66.000.
Gentz, Reiner: *See—*
Brockhaus, Manfred; Dembic, Zlatko; Gentz, Reiner; Lesslauer, Werner; Lötscher, Hansruedi; and Schlaeger, Ernst-Jürgen, 5,610,279, Cl. 530-387.300.
Georg Fischer Giessereianlagen AG: *See—*
Kruse, Ernst O.; and Renner, Christian, 5,609,198, Cl. 164-150.100.
Georges, Michael K.: *See—*
Veregin, Richard P. N.; Kazmaier, Peter M.; Georges, Michael K.; and Hamer, Gordon K., 5,610,250, Cl. 526-219.300.
Georgi, Daniel T., to Western Atlas International, Inc. Thermal imager for fluids in a wellbore. 5,610,331, Cl. 73-152.180.
Georgia Tech Research Corp.: *See—*
Lackey, W. Jack; and Hanigofsky, John A., 5,609,912, Cl. 427-212.000.
Powers, James C., 5,610,297, Cl. 544-168.000.
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Beritashvili, David R.; Myakishev, Maxim V.; Ershov, Gennady M.; Georgiev, George P.; and Kapanadze, George I., 5,610,074, Cl. 436-177.000.
Georgin, Elizabeth A., to ITT Automotive Electrical Systems, Inc. Auto reverse power closure system. 5,610,484, Cl. 318-286.000.
Geraghty, Maureen E.: *See—*
Chandler, Michael A.; DeWille, Normanella T.; Mazer, Terrence B.; Ragan, Robert J.; Snowden, Gregory A.; Geraghty, Maureen E.; Johnson, Catherine D.; and Drayer, Lonnie R., 5,609,897, Cl. 426-73.000.
Gerard, Jean Louis: *See—*
Le Deit, Gerard; and Gerard, Jean Louis, 5,609,228, Cl. 188-73.350.
Gerber Garment Technology, Inc.: *See—*
Kuchta, Richard, 5,609,082, Cl. 83-13.000.
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Germain, Lucie: *See—*
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Gerry, Mark E.: *See—*
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Gerry, Todd M.; and Gerry, Mark E. Handle and handle accessory for hand carried articles. 5,609,175, Cl. 135-16.000.
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Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.
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Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.
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Seeber, Alfred, 5,609,056, Cl. 72-446.000.
Gheen, Alice: *See—*
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Gho, Joseph G.: *See—*
Garcia, Rodrigo A.; and Gho, Joseph G., 5,609,892, Cl. 425-311.000.
Giangarra, Philip B.; and Carlow, Earl F., to Motorola, Inc. Apparatus and method for controlling pipelined data transfer scheme between stages employing shift register and associated addressing mechanism. 5,611,068, Cl. 395-436.000.
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Vernet, Robert; and Ortega, Fernand, 5,610,361, Cl. 89-27.130.
Giberson, Melbourne F. Method of converting turbine driven generator into a synchronous condenser. 5,610,500, Cl. 322-100.000.
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Gilbert, Mark J.: *See—*
Illston, Trevor J.; Doleman, Paul A.; Butler, Edwin G.; Marquis, Peter M.; Ponton, Clive B.; Piramoon, Reza; and Gilbert, Mark J., 5,609,741, Cl. 204-471.000.
Gill, Paul E. Spill clean-up process. 5,609,668, Cl. 71-9.000.
Gillette Company, The: *See—*
Neamtu, Nicolae, 5,609,075, Cl. 76-104.100.
Gillis, Earle W.: *See—*
Canfield, Donald H.; Fellows, Todd C.; Gillis, Earle W.; and Yablonsky, Peter J., 5,610,710, Cl. 356-237.000.
Gilman, Thomas H.: *See—*
DiPalma, Joseph; King, David R.; Gilman, Thomas H.; Couture-Dorschner, Laurie; Stilp, Timothy S.; and Finch, Valerie V., 5,609,588, Cl. 604-369.000.
Gilmore, Florent J. Vehicular variable brake light intensity system. 5,610,578, Cl. 340-479.000.
Giorgianni, Edward J.; Mittelstaedt, Brian E.; Rivera, Jose E.; Simon, Richard A.; Smith, Teresa A.; and Sutton, James E., to Eastman Kodak Company. Method for producing an electronic image from a photographic element. 5,609,978, Cl. 430-30.000.
Gioutsos, Tony, to Automotive Systems Laboratory, Inc. Method and system for detecting vehicle roll-over. 5,610,575, Cl. 340-429.000.
Girot, Pierre: *See—*
Boschetti, Egisto; Girot, Pierre; and Guerrier, Luc P., 5,609,763, Cl. 210-502.100.
Gist-brocades, n.v.: *See—*
Smeets, Jan W. H.; De Pater, Robertus M.; and Lambers, Johannes W. J., 5,610,040, Cl. 435-129.000.
van Ooyen, Albert J. J.; DeGraaff, Leendert H.; van den Broeck, Henriette C.; and Visser, Jacob, 5,610,046, Cl. 435-200.000.
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GKN Automotive AG: *See—*
Fuerstenau, Charles; Konegen, Herbert; Hildebrandt, Wolfgang; and Seigert, Peter, 5,609,527, Cl. 464-145.000.
Gladigow, Herbert; and Schaetzing, Wolfgang, to Texas Instruments Incorporated. Fuel atomization device. 5,609,297, Cl. 239-135.000.
Glass Ultra Micro Trading Company: *See—*
Persson, Algy, 5,609,083, Cl. 83-14.000.
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Gnadt, James J.; and Wright, David A., 5,609,058, Cl. 73-162.000.
Stadtfeld, Hermann J.; and Swanger, John W., Jr., 5,610,994, Cl. 382-152.000.
Glock, Robert D.: *See—*
Joens, Lynn A.; and Glock, Robert D., 5,610,059, Cl. 435-252.100.
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Craig, Douglas A.; Forray, Carlos C.; Gluchowski, Charles; and Branchek, Theresa A., 5,610,174, Cl. 514-401.000.
Glyco-Metall-Werke, Glyco B.V. & Co. KG: *See—*
Schulze-Eyssing, Heinz; and Mundil, Erhardt, 5,609,421, Cl. 384-125.000.
Glynn Company, Inc.: *See—*
Glynn, Ira J.; and Pohl, Karl-Heinz, 5,609,317, Cl. 248-206.500.
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Goade, Ron E., Sr., to SSI Photo I.D. Data card security display packaging. 5,609,253, Cl. 206-460.000.
Gobert, Roger: *See—*
Moreau, Raymond; Gobert, Roger; and Jeanvoine, Pierre, 5,609,661, Cl. 65-135.100.
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Goicoechea, George; Hudson, John; and Mialhe, Claude, to Boston Scientific Technology, Inc. Method for delivering a bifurcated endoluminal prosthesis. 5,609,627, Cl. 623-1.000.
Golby, John: *See—*
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.
Golden 1 Credit Union, The: *See—*
Dykstra, Diana R.; and Wade, Patricia M., 5,611,052, Cl. 395-238.000.
Goldenberg, Milton D., to Immunomedics, Inc. Radiolabelled antibody cytotoxic therapy of infectious or autoimmune disease. 5,609,846, Cl. 424-1.410.
Goldstar Co., Ltd.: *See—*
Jo, Jun W., 5,610,090, Cl. 437-39.000.
Kwon, Chul H.; Hong, Hyung-Ki; Kim, Sung T.; Lee, Kyu C.; Yun, Dong H.; Shin, Hyun W.; and Park, Hyeon S., 5,609,096, Cl. 99-468.000.
Oh, Byung K., 5,610,498, Cl. 320-39.000.
Goldstar Electron Co., Ltd.: *See—*
Lee, Jun Seok, 5,609,994, Cl. 430-323.000.
Goldstein, Richard J.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,611,050, Cl. 395-200.090.
Goloff, C. Nickolas: *See—*
Endsley, John C.; Goloff, C. Nickolas; Guse, William F., Jr.; and Reilly, Joseph P., 5,609,221, Cl. 180-414.000.
Golub, Sidney H.: *See—*
Shau, Hungyi; and Golub, Sidney H., 5,610,286, Cl. 536-23.500.
Gomes, Gilbert S.: *See—*
Erilli, Rita; Gomes, Gilbert S.; Repinec, Stephen T., Jr.; and Kern, Ronald, 5,610,127, Cl. 510-235.000.
Gonda, Matthew A.: *See—*
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.
Goodfellow, Val S.; Whalley, Eric T.; and Wincott, Francine E., to Cortech, Inc. Bradykinin receptor antagonists with neurokinin receptor blocking activity. 5,610,140, Cl. 514-15.000.
Goodman, Joseph W.: *See—*
Aharoni, Abraham; Goodman, Joseph W.; and Amitai, Yaakov, 5,610,734, Cl. 359-16.000.
Goodsell, Michael C.: *See—*
Keele, Richard V.; Morin, Cathleen M.; Goodsell, Michael C.; and Neverisky, Robert, 5,611,066, Cl. 395-427.000.
Goodyear Tire & Rubber Company, The: *See—*
Hutchins, Thomas G.; and Terreau, Herbert L., 5,609,242, Cl. 198-847.000.
Muller, Pascale F. J.; and Rouviere, Fabienne, 5,609,917, Cl. 427-391.000.
Sandstrom, Paul H.; and Wideman, Lawson G., 5,610,216, Cl. 524-381.000.
Yovichin, Albert J.; Dunn, William F.; Dutt, William R.; Houck, Richard C.; Hyde, David D.; Ridha, Raouf A.; and Swanson, Harry R., 5,610,329, Cl. 73-146.000.
Goodzeit, Neil E.: *See—*
Shankar, Uday J.; Goodzeit, Neil E.; and Schmidt, George E., Jr., 5,610,820, Cl. 364-434.023.
Gord, John C.: *See—*
Schulman, Joseph H.; Gord, John C.; Strojnik, Primoz; and Whitmoyer, David I., 5,609,616, Cl. 607-56.000.

Gordon, Bert M.: *See—*
Dominguez, Luis M.; Bowling, Forrest W.; Coleman, William M., III; and Gordon, Bert M., 5,610,835, Cl. 364-497.000.

Gordon, Evan A., to Hoover Company, The. Vacuum cleaner with dirt detection. 5,608,944, Cl. 15-319.000.

Gorelick, Peter L.: *See—*
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.

Goto, Kiyoshi: *See—*
Taniguchi, Tetsuya; Goto, Kiyoshi; Akiyama, Takeo; Hosoi, Miyuki; Masuda, Tetsuya; and Mochizuku, Hideaki, 5,609,985, Cl. 430-259.000.

Goto, Masahito: *See—*
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.

Goto, Takenori: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Goto, Yasuyuki: *See—*
Fujita, Atsuko; Matsui, Shuichi; Onji, Yuichi; Ushioda, Makoto; and Goto, Yasuyuki, 5,609,791, Cl. 252-299.630.

Goto, Yuichi, to Kabushiki Kaisha Toshiba. Magnetic coupling circuit-driving system. 5,610,384, Cl. 235-435.000.

Gottlieb, Louis: *See—*
Elliott, Isaac; Finucane, Jim; Gottlieb, Louis; O'Reilly, Daniel L.; and Johnson, Gary E., 5,610,915, Cl. 370-259.000.

Gotz, Fritz R.; Marz, Heinrich; Meis, Harald; and Agne, Werner, to Baumuller Nurnberg GmbH. Electrical drive system for the positioning of rotating equipment. 5,610,491, Cl. 318-625.000.

Gou, Perng-Fei: *See—*
Solorzano, Enrique R.; Gou, Perng-Fei; Higa, Thomas S.; and Townsend, Harold E., 5,610,962, Cl. 376-461.000.

Govoni, Gabriele; Rinaldi, Roberto; and Penzo, Giuseppe, to Montell North America Inc.; and Montell Technology Company BV. Process for the gas phase polymerization of alpha-olefins. 5,610,244, Cl. 526-65.000.

GPT Limited: *See—*
Maddern, Thomas S.; and Saunders, James K., 5,610,928, Cl. 371-37.100.

Grabner, Roy W.; Landis, Bryan H.; Wang, Ping T.; Prunier, Michael L.; and Scaros, Mike G., to G. D. Searle & Co. Process for producing N-substituted-1-deoxynojirimycin. 5,610,039, Cl. 435-125.000.

Grabow, Barry E.: *See—*
Boone, Bradley G.; and Grabow, Barry E., 5,610,510, Cl. 324-95.000.

Graham, Christopher E.: *See—*
Belfiore, Joseph D.; Guzak, Christopher J.; Graham, Christopher E.; Madigan, Stephen M.; Trower, Tandy W., II; Kerr, Randall L.; and Wyard, Adrian M., 5,611,060, Cl. 395-341.000.

Granier, François: *See—*
Billy, Jean; and Granier, François, 5,609,040, Cl. 62-622.000.

Grant, Kathleen A.: *See—*
Magan, Amit T.; Grant, Kathleen A.; and Krzyske, Dennis C., 5,610,328, Cl. 73-117.300.

Grant, Richard L.; Lang, Michael; Churchill, Philip J.; and Lawrence, W. Thompson, to Ethicon, Inc. Surgical anastomosis stapling instrument with flexible support shaft and anvil adjusting mechanism. 5,609,285, Cl. 227-179.100.

Grantz, Helmut: *See—*
Schmid, Peter; Schreiber, Siegfried; and Grantz, Helmut, 5,609,382, Cl. 296-37.800.

Graseby Medical Limited: *See—*
Larson, Stella D.; Mickelson, Anne F.; and Eisenberg, Peter M., 5,609,575, Cl. 604-65.000.

Graves, Delbert B.; Pyle, Michael L.; Rossol, Victor; and Buhr, Paul R., to Sunbeam Corporation. Weigh scale and method for calibrating same. 5,610,373, Cl. 177-50.000.

Gray, Charles L., Jr.; and Hellman, Karl H., to United States of America, Environmental Protection Agency. Multi-stage combustion engine. 5,609,131, Cl. 123-299.000.

Gray, Darren R.: *See—*
Bassi, Sukh; Maningat, Clodualdo C.; Chinnaswamy, Rangaswamy; Gray, Darren R.; and Nie, Li, 5,610,277, Cl. 530-374.000.

Greatbatch, Keith J., to S. C. Johnson & Son, Inc. Adjustable spray dispensing closure for containers. 5,609,276, Cl. 222-520.000.

Greefkes, Johannes; and den Hartog, Adrianus J., to Hoogovens Staal, B.V. Method and apparatus for treating a flow of gas containing oxidized sulphur compounds. 5,609,841, Cl. 423-243.010.

Green Cross Corporation, The: *See—*
Iwao, Toru; Hirai, Kenichi; Kondoh, Nobuo; Yamanouchi, Koichi; and Yokoyama, Kazumasa, 5,610,169, Cl. 514-334.000.
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, 5,610,036, Cl. 435-71.100.

Green, Dennis E.; and Collier, Harry, to Green, Dennis E. Cooling cartridge for plastic drinking bottles. 5,609,039, Cl. 62-475.300.

Green Track Inc.: *See—*
Richards, Denis C., 5,609,295, Cl. 238-84.000.

Greene, Jonathan W.: *See—*
Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., 5,610,534, Cl. 326-39.000.

Greene, Keith R.: *See—*
Keith, Robert D. F.; Greene, Keith R.; Ifeachor, Emmanuel C.; and Westgate, Jennifer, 5,609,156, Cl. 128-670.000.

Greenewald, John H.; and Moses, Randolph L., to B. F. Goodrich FlightSystems, Inc. Thunderstorm cell detection and mapping system for identifying and ranging thunderstorm cells by clustering single strike lightning observations. 5,610,813, Cl. 364-420.000.

Greer, David E.: *See—*
Cassity, Terry A.; Greer, David E.; Buchanan, Jeffrey J.; Ledbetter, Steve M.; and Van Camp, Jonathan H., 5,609,245, Cl. 200-283.000.

Gregg, Thomas A.; Hoke, Joseph M.; and Pandey, Kulwant M., to International Business Machines Corporation. System for identifying communication sequences transmitted across multiple carriers by examining bit streams for sequences of valid words. 5,610,945, Cl. 375-260.000.

Gregory, Raymond D., to Coburn Optical Industries, Inc. Method for spindle speed optimization of motion profile. 5,610,823, Cl. 364-474.150.

Grenner, Dieter: *See—*
Hetzel, Hartmut; Grenner, Dieter; Ebner, Wolfgang; and Biskup, Klaus, 5,609,735, Cl. 203-52.000.

Griffen, Peter J.: *See—*
White, Gregory R.; Gatewood, Bryan S.; Wilson, Mark L.; Griffen, Peter J.; Kleine, Richard E.; and Webber, Larry R., 5,609,548, Cl. 477-124.000.

Griffioen, Peter: *See—*
Talbot, Nicholas C.; Allison, Michael T.; and Griffioen, Peter, 5,610,614, Cl. 342-352.000.

Grignon, Jean: *See—*
Austruy, Hervé; Grignon, Jean; and Tauzia, Jean-Michel, 5,610,444, Cl. 264-3.300.

Grimberg, Aurélie; DeClerck, Gérard; Rabillier, Jean-Marc; and Soumarmon, Raymond, to Chemoxal S.A. Process for the treatment of an article and a new aqueous hydrogen peroxide solution. 5,609,821, Cl. 422-28.000.

Grimes, Stephen: *See—*
Gevas, Philip C.; Karr, Stephen L.; Grimes, Stephen; and Littenberg, Richard L., 5,609,870, Cl. 424-184.100.

Groeger, Klaus: *See—*
Hauf, Roland; and Groeger, Klaus, 5,609,129, Cl. 123-193.500.

Grollier, Jean-François; and Hansenne-Richoux, Isabelle, to L'Oreal. Cosmetic or pharmaceutical composition for the treatment of hair and of the scalp. 5,610,201, Cl. 514-773.000.

Gromotka, Gabriel, to Southco, Inc. Lever latch. 5,609,373, Cl. 292-229.000.

Gronbjerg, Ib. Machine for cutting a paper web into sheets with simultaneous cutting of a transverse strip. 5,609,084, Cl. 83-100.000.

Grooters, Tom E.: *See—*
Szabo, George; Grooters, Tom E.; and Cheney, Craig, 5,609,370, Cl. 285-319.000.

Grosfilley, Jean-Etienne, to Audiologie Prothese Innovation A.P.I. Device for recharging the storage battery of an intra-auricular prosthesis, and method for manufacturing same. 5,610,494, Cl. 320-2.000.

Gross, Leon S., to Enterprises, Inc. Device for marking a vehicle. 5,609,121, Cl. 116-28.00R.

Groth, Torsten; Joentgen, Winfried; Müller, Nikolaus; and Liesenfelder, Ulrich, to Bayer AG. Process for preparing polysuccinimide and polyaspartic acid. 5,610,255, Cl. 526-304.000.

Gruhle, Wolf-Dieter; Sigg, Peter; Deiss, Harald; Schwab, Manfred; and Danz, Wolfgang, to ZF Friedrichshafen AB. Process for controlling and regulating the load take-up in an automatic gearbox. 5,609,068, Cl. 74-336.00R.

Grupp, Günter: *See—*
Trapet, Eugen; Wiegand, Uwe; Grupp, Günter; and Bernhardt, Ralf, 5,610,846, Cl. 364-571.010.

Gruppo Lepetit S.p.A.: *See—*
Stella, Sergio; Montanini, Nicoletta; LeMonnier, Francis J.; Colombo, Luigi; Selva, Enrico; and Denaro, Maurizio, 5,610,143, Cl. 514-18.000.

Grzybowski, Thomas: *See—*
Jurik, Mirjana; Dziegielewski, Thomas; and Grzybowski, Thomas, 5,609,423, Cl. 384-518.000.

Guaciaro, Michael A.: *See—*
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,610,120, Cl. 504-191.000.

Gucker, Mark J.: *See—*
Jackson, John; Gucker, Mark J.; and Smith, Mark H., 5,609,020, Cl. 60-226.200.

Gudat, Adam J.; Bradbury, Walter J.; Christensen, Dana A.; Clow, Richard G.; Devier, Lonnie J.; Kemner, Carl A.; Kleimenhagen, Karl W.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Rao, Prithvi N.; Schmidt, Larry E.; Sennott, James W.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Singh, Sanjiv J.; Stafford, Darrell E.; Weinbeck, Louis J.; West, Jay H.; Whittaker, William L.; and Wu, Baoxin, to Caterpillar Inc. Integrated vehicle positioning and navigation system, apparatus and method. 5,610,815, Cl. 364-424.027.

Gudibande, Satyanarayana R.; and Kenten, John H., to Igen, Inc. Method for conducting a polymerase chain reaction using an improved electrochemiluminescent label. 5,610,017, Cl. 435-6.000.

Guerbet S A.: *See—*
Bennani, Fatima Z.; le Greneur, Soizic; Simonot, Christian; and Meyer, Dominique, 5,609,851, Cl. 424-9.454.

Guerrero, Angel A.; Klepacky, Thomas C.; and Asplund, Pamela C., to Elizabeth Arden Company, Division of Conopco, Inc. Thickened and stabilized cosmetic emulsion compositions. 5,609,854, Cl. 424-59.000.

Guerrier, Luc P.: *See—*
Boschetti, Egisto; Girot, Pierre; and Guerrier, Luc P., 5,609,763, Cl. 210-502.100.

Gueyne, Jean; and Seguin, Marie-Christine. Insecticide composition of rotenone microspheres. 5,609,878, Cl. 424-408.000.

Guignon, Pascal: *See—*
Carbou, Pierre; Guignon, Pascal; and Perney, Philippe, 5,610,546, Cl. 327-261.000.

Guillot, Jean-Michel: *See—*
Brogle, James J.; Davis, Harold P.; Guillot, Jean-Michel; and Korwin-Pawlowski, Michael, 5,610,434, Cl. 257-619.000.

Gunawardena, Ramesh M.: *See—*
Lemke, Ronald D.; Gunawardena, Ramesh M.; and Weit, James G., 5,609,095, Cl. 99-468.000.

Gundlach, Larry C.: *See—*
Holmes, Terry L.; Skaar, Gary R.; Gundlach, Larry C.; and Flisram, Dennis G., 5,609,512, Cl. 451-48.000.

Gunshor, Robert L.: *See—*
Fan, Yongping; Han, Jung; Nurmikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,610,413, Cl. 257-97.000.

Gunze Limited: *See—*
Ohshima, Hiroshi; and Hashimoto, Satoshi, 5,609,609, Cl. 606-231.000.

Günzler, Volkmar: *See—*
Henke, Stephan; Brocks, Dietrich; and Günzler, Volkmar, 5,610,146, Cl. 514-19.000.

Günzler-Pukall, Volkmar: *See—*
Weidmann, Klaus; Bickel, Martin; and Günzler-Pukall, Volkmar, 5,610,172, Cl. 514-350.000.

Gupta, Suresh C., to Cambridge Continuous Power. Uninterruptible power supply with a back-up battery coupled across the a.c. input. 5,610,805, Cl. 363-37.000.

Guracar, Ismayil M., to Acuson Corporation. Energy weighted parameter spatial/temporal filter. 5,609,155, Cl. 128-661.090.

Guse, William F., Jr.: *See—*
Endsley, John C.; Goloff, C. Nickolas; Guse, William F., Jr.; and Reilly, Joseph P., 5,609,221, Cl. 180-414.000.

Guthrie, John: *See—*
Kneafsey, Brendan; Guthrie, John; and Melody, David P., 5,610,251, Cl. 526-264.000.

Guymon, Ross W.: *See—*
Endicott, David W., Jr.; Guymon, Ross W.; and Kaminska, James R., 5,610,364, Cl. 102-334.000.

Guyon, Claude: *See—*
Capet, Marc; Cotrel, Claude; Guyon, Claude; Joannic, Michel; Manfre, Franco; Roussel, Gérard; Dubroeuco, Marie-Christine; Cheve, Michel; and Dutruc-Rosset, Gilles, 5,610,144, Cl. 514-19.000.

Guzak, Christopher J.: *See—*
Belfiore, Joseph D.; Guzak, Christopher J.; Graham, Christopher E.; Madigan, Stephen M.; Trower, Tandy W., II; Kerr, Randall L.; and Wyard, Adrian M., 5,611,060, Cl. 395-341.000.

H.B. Fuller Licensing & Financing, Inc.: *See—*
Duan, Youlu; Stammler, Sonja; Rhein, Scott; and Lindquist, Lowell, 5,610,232, Cl. 524-840.000.

H. D. Hudson Manufacturing Company: *See—*
Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., 5,609,272, Cl. 222-147.000.

H.E.R.C. Products Incorporated: *See—*
Johnson, James R.; Colahan, Jerry J.; and Eden, Todd R., 5,609,692, Cl. 134-3.000.

H-Tech, Inc.: *See—*
Booth, Walter; and Levin, Alan R., 5,609,185, Cl. 137-556.000.

Ha, Chau T.; and Lamanna, William M., to Imation Corp. Optical recording disk having a sealcoat layer. 5,609,990, Cl. 430-270.110.

Haag, Gottlob: *See—*
Rembold, Helmut; Haag, Gottlob; Britsch, Heinz; Stutzenberger, Heinz; and Mueller, Uwe, 5,609,137, Cl. 123-382.000.

Haber, Edgar: *See—*
Quertermous, Thomas; Runge, Marschall S.; and Haber, Edgar, 5,609,869, Cl. 424-133.100.

Haber, Terry M.; Smedley, William H.; and Foster, Clark B. Automatically locking hypodermic needle hiding shield for a dose metering syringe. 5,609,577, Cl. 604-110.000.

Haberkorn, Robert W.; and Lanigan, John J. Adjustable drum and keg quilt. 5,609,265, Cl. 220-421.000.

Hachisuka, Kimio; Noguchi, Hiroyuki; and Momose, Tomoaki, to Honda Giken Kogyo Kabushiki Kaisha. Device for forming wave winding, and jigs for forming and holding wave winding. 5,609,187, Cl. 140-92.200.

Hackett, Andrew, to Thomson Consumer Electronics S.A. Method and apparatus for reducing conversion artifacts. 5,610,662, Cl. 348-452.000.

Hackleman, David E., to Hewlett-Packard Company. Method for forming thermal-ink heater array using rectifying material. 5,609,910, Cl. 427-102.000.

Hadar, Yitzhak: *See—*
Farrell, Roberta L.; Hadar, Yitzhak; Wendler, Philip A.; and Zimmerman, Wendy, 5,609,724, Cl. 162-72.000.

Hadas, Nira, to Fischer Pharmaceuticals Ltd. Skin whitening composition. 5,609,875, Cl. 424-195.100.

Haga, Satoru: *See—*
Yoshizumi, Keiichi; Haga, Satoru; Ikeda, Shuji; Makuta, Kiichi; and Fukazawa, Takeshi, 5,610,856, Cl. 365-154.000.

Hagino, Kiyoshi, to Yamaha Corporation. Electronic musical instrument capable of legato performance. 5,610,353, Cl. 84-604.000.

Hagiwara, Masaki: *See—*
Yamada, Atsushi; Okuda, Tadayuki; Hagiwara, Masaki; and Yoshida, Yoshihide, 5,609,652, Cl. 29-882.000.

Hagmann, Peter: *See—*
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.

Håkansson, Nils-Olof, to AB Volvo. Exhaust valve mechanism in an internal combustion engine. 5,609,133, Cl. 123-321.000.

Hakata, Akira: *See—*
Tomonaga, Hiroshi; Matsuoka, Naoki; Watanabe, Miwako; Kuroyanagi, Satoshi; Ezaki, Yutaka; Hakata, Akira; Takechi, Ryuichi; and Kawai, Masaaki, 5,610,913, Cl. 370-219.000.

Hakki, A-Hamid I.; and Hakky, Said I. Collapsible catheter. 5,609,583, Cl. 604-282.000.

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Hale, A. Donald, Jr.: *See—*
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Halimi, Edward M. Self-chilling beverage container and parts therefor. 5,609,038, Cl. 62-294.000.

Halkier, Torben: *See—*
Schülein, Martin; Halkier, Torben; Heldt-Hansen, Hans P.; Dalbøge, Henrik; and Pedersen, Lars S., 5,610,048, Cl. 435-209.000.

Hall, James E.: *See—*
Antkowiak, Thomas A.; and Hall, James E., 5,610,227, Cl. 524-572.000.
Lawson, David F.; Antkowiak, Thomas A.; Hall, James E.; and Stayer, Mark L., Jr., 5,610,228, Cl. 524-573.000.
Lawson, David F.; Antkowiak, Thomas A.; Hall, James E.; Stayer, Mark L., Jr.; and Schreffler, John R., 5,610,237, Cl. 525-280.000.

Hall, Kevin W., to International Business Machines Corporation. Relational data base system for conveniently constructing graphical images. 5,611,035, Cl. 395-140.000.

Hall, Robin G.: *See—*
Donoghue, Scott J.; Fitzgibbon, Kay E.; France, Paul A. R. G.; Hall, Robin G.; Wilkinson, Carole P. D.; York, David W.; and Schmitt, John C., 5,610,131, Cl. 510-444.000.

Hall Surgical Div. of Zimmer Inc.: *See—*
Linden, Harry A., 5,609,603, Cl. 606-177.000.

Halliburton Company: *See—*
Dewprashad, Brahmadeo; and Weaver, Jimmie D., 5,609,207, Cl. 166-276.000.

Hallis, John M.: *See—*
Erickson, Jack A.; Melberg, John M.; Kramer, Robert L.; and Hallis, John M., 5,610,367, Cl. 149-35.000.

Hallman, Robert W.; Hong, Suck-Ju; and Shimazu, Ken-ichi, to Sun Chemical Corporation. Waterless presensitized printing plate comprising four layers and method of making thereof. 5,609,981, Cl. 430-166.000.

Halox Technologies Corporation: *See—*
Sampson, Richard L.; and Sampson, Allison H., 5,609,742, Cl. 204-536.000.

Halpern, Otto: *See—*
Vogel, Emanuel; Mueller, Martin; Halpern, Otto; and Cross, Alexander D., 5,610,175, Cl. 514-410.000.

Hamada, Kouki; Mizusawa, Minoru; and Koga, Minoru, to Ishikawajima-Harima Heavy Industries Co., Ltd. Plate reformer. 5,609,834, Cl. 422-196.000.

Hamada, Shun-ichi; Uchiyama, Akira; and Shimizu, Shizuo, to Mitsui Petrochemical Industries, Ltd. Process for preparing thermoplastic elastomer laminates. 5,609,703, Cl. 156-79.000.

Hamaguchi, Maki; Yamamoto, Tetsuya; Suzuki, Tetsuo; Yamamuro, Hideki; and Chosokabe, Hiroshi, to Kabushiki Kaisha Kobe Seiko Sho. Carbon substrate and production thereof. 5,609,959, Cl. 428-408.000.

Hamaji, Yukio: *See—*
Okabe, Shinsei; Nakaya, Shunsuke; Hamaji, Yukio; and Yabuuchi, Masami, 5,609,911, Cl. 427-212.000.

Hamano, Takashi; Sakai, Kiyoshi; and Matsuda, Kiichi, to Fujitsu Limited. Multiplexing system for inserting synchronous words to picture image coded data. 5,610,660, Cl. 348-423.000.

Hamazaki, Youzi: *See—*
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.

Hamer, Gordon K.: *See—*
Veregin, Richard P. N.; Kazmaier, Peter M.; Georges, Michael K.; and Hamer, Gordon K., 5,610,250, Cl. 526-219.300.

Hamilton, Harriet W.: *See—*
Doherty, Annette M.; Hamilton, Harriet W.; Kaltenbronn, James S.; and Quin, John, III, 5,610,177, Cl. 514-419.000.

Hammer, Richard H.; and Bodor, Nicholas S., to University of Florida. Anticholinergic compounds, compositions and methods of treatment. 5,610,188, Cl. 514-538.000.

Hammerling, Ulrich, Buck, Jochen; Derguini, Fadila; and Nakanishi, Koji, to Sloan-Kettering Institute for Cancer Research; and Trustees of Columbia University in the City of New York, The. Anhydroretinol and derivatives thereof as antagonists of immune responses and inhibitors of cancer cell growth. 5,610,200, Cl. 514-763.000.

Hammermann, Hans J.: *See*—
Giertz, Hans J.; Eisenhut, Werner; Huhn, Friedrich; and Hammermann, Hans J., 5,609,731, Cl. 201-35.000.

Hampshire Advisory and Technical Services Limited: *See*—
Wilson, Michael; and Monro, Philip, 5,610,070, Cl. 436-63.000.

Hampshire Paper Corp.: *See*—
Stepanek, Michael J., 5,609,933, Cl. 428-40.100.

Han, Jung: *See*—
Fan, Yongping; Han, Jung; Nurmikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,610,413, Cl. 257-97.000.

Hanabusa, Tadashi; Kaneko, Masanori; and Hasegawa, Koh, to Canon Kabushiki Kaisha. Gap adjusting method and ink jet recording apparatus having gap adjusting mechanism. 5,610,636, Cl. 347-8.000.

Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, to N.H.K Builder Co., Ltd. Bed having mat support rolls rotated to move a mat for blood circulation of a person lying on the mat. 5,608,933, Cl. 5-612.000.

Hanagan, Michael W. Method of making a motorcycle seat. 5,608,957, Cl. 29-91.100.

Hanaoka, Kouji; Igawa, Katsutoshi; Taguchi, Seiji; Matsui, Takashi; and Sorimachi, Kenichi, to Kawasaki Steel Corporation. Method of charging coal into chamber furnace-type coke oven and apparatus therefor. 5,609,458, Cl. 414-173.000.

Hance, Robert B.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Hanigofsky, John A.: *See*—
Lackey, W. Jack; and Hanigofsky, John A., 5,609,912, Cl. 427-212.000.

Hankui, Eiji; and Harada, Takashi, to NEC Corporation. Device and method for measuring specific absorption rate of electromagnetic waves in models of human bodies. 5,610,519, Cl. 324-247.000.

Hanna, Marie R.: *See*—
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,610,133, Cl. 512-20.000.

Hansa Metallwerke AG: *See*—
Oberdörfer, Hans, 5,609,188, Cl. 137-625.400.

Hansen, Mark D.: *See*—
Fricke, David M.; Hansen, Mark D.; and Chabaan, Rakan C., 5,610,330, Cl. 73-146.000.

Hansen, Michael A.: *See*—
Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., 5,610,756, Cl. 359-267.000.

Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Fibrous product for binding particles. 5,609,727, Cl. 162-184.000.

Hansenne, Isabelle, to L'Oreal. Photoprotective/cosmetic compositions comprising synergistic admixture of sunscreen compounds. 5,609,853, Cl. 424-59.000.

Hansenne-Richoux, Isabelle: *See*—
Grollier, Jean-François; and Hansenne-Richoux, Isabelle, 5,610,201, Cl. 514-773.000.

Hanson, David B., to Western Atlas, Incorporated. Plant fiber grain-spacer for abrasive bonds. 5,609,656, Cl. 51-298.000.

Hanyu, Yoshiaki, to Ricoh Company, Ltd. Apparatus and method for processing two-tone image data so as to smooth and magnify image. 5,611,023, Cl. 395-109.000.

Haq, Ejaz ul: *See*—
Yoo, Seung-Moon; Haq, Ejaz ul; Choi, Yun-Ho; Cho, Soo-In; Chin, Dae-Je; Kang, Nam-Soo; and Lee, Seung-Hun, 5,610,869, Cl. 365-222.000.

Harada, Nobuyuki: *See*—
Dairoku, Yorimichi; Nagasuna, Kinya; Masuda, Yoshihiko; Harada, Nobuyuki; Motono, Yoshihiro; and Ishizaki, Kunihiko, 5,610,208, Cl. 525-384.000.

Harada, Takashi: *See*—
Hankui, Eiji; and Harada, Takashi, 5,610,519, Cl. 324-247.000.

Harada, Yutaka: *See*—
Sato, Haruhiko; and Harada, Yutaka, 5,610,269, Cl. 528-499.000.

Hardy, Eugene E.: *See*—
Liu, Kou-Chang; Anderson, Lowell R.; Hardy, Eugene E.; and Reuven, Yakir, 5,609,865, Cl. 424-78.240.

Hardy, Larry A.: *See*—
Cullen, Michael J.; Dona, Alan R.; Clinton, Eric L.; and Hardy, Larry A., 5,609,126, Cl. 123-90.150.

Hargreaves, William R., to Kinesis Corporation. Keyboard and method for producing. 5,610,602, Cl. 341-22.000.

Harley-Davidson Motor Company: *See*—
Swenson, Dale, 5,609,069, Cl. 74-563.000.

Harley, Thomas R., to University of Mississippi. Active noise control stethoscope. 5,610,987, Cl. 381-67.000.

Harms, Jürgen: *See*—
Biedermann, Lutz; and Harms, Jürgen, 5,609,637, Cl. 623-17.000.

Harrelson, Glen R., to Riverwood International Corporation. Beverage cup carrier. 5,609,379, Cl. 294-87.200.

Harrigan, Michael E.: *See*—
Kessler, David; and Harrigan, Michael E., 5,610,753, Cl. 359-205.000.

Harrington, Philip M.: *See*—
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,610,120, Cl. 504-191.000.

Harrington, Steven J.: *See*—
Salvage, Richard J.; Harrington, Steven J.; and Powell, Derek W., 5,610,989, Cl. 381-69.000.

Harris Corporation: *See*—
Vulih, Salomon; Briggs, George R.; and Housten, Thomas D., 5,610,093, Cl. 437-51.000.

Harris, Paul J.; and Kerrigan, Frank, to Boots Company PLC, The. Therapeutic agents. 5,610,161, Cl. 514-278.000.

Harris, Randall L., to Riverwood International Corporation. Wrap-around carrier with partial end panels. 5,609,251, Cl. 206-434.000.

Harrison, David C., to Zomeworks Corporation. Integral roof cooling container. 5,609,200, Cl. 165-104.190.

Harrison, William E., Jr., to Dunlap & Codding, P.C. Utility belt for painters and methods. 5,609,283, Cl. 224-678.000.

Hart, Roger L.; and Busick, Rickey L., to Trinova Corporation. Method and apparatus for machine control. 5,610,489, Cl. 318-571.000.

Hart, Stephen: *See*—
Bowers, Peter; and Hart, Stephen, 5,609,378, Cl. 294-82.190.

Hart, William H.: *See*—
Schmitz, Brian D.; Bott, Steven E.; and Hart, William H., 5,610,712, Cl. 356-335.000.

Hartman, Dawn: *See*—
Knapp, Alfred Z., 5,609,179, Cl. 137-68.160.

Hartmann, Clinton S.: *See*—
Chen, Dongpei; Hartmann, Clinton S.; Kondratiev, Serguei; Plessky, Victor; and Sharif, Mohammed A., 5,610,566, Cl. 333-194.000.

Harttig, Herbert; Gentsch, Susanne; Schmidt, Elmar; and Schuessler, Rudolf, to Boehringer Mannheim GmbH. System for the analysis of sample liquids. 5,609,823, Cl. 422-66.000.

Hartwig, Heath L.: *See*—
Thom, Kelsey C., Jr.; and Hartwig, Heath L., 5,609,308, Cl. 241-301.000.

Hase, Takakazu; Arimatsu, Seiji; and Kimoto, Koichi, to Nippon Paint Co., Ltd. Process for producing lithographic printing plate, photosensitive plate and aqueous ink composition therefor. 5,609,993, Cl. 430-302.000.

Hasebe, Masahiko; Kurakake, Yasushi; Mishima, Junichi; Asahi, Yasuhiko; and Uehara, Satoshi, to Yamaha Corporation. Electrical musical instrument using a time interval determined by a linear scraper operator to adjust musical parameters. 5,610,355, Cl. 84-658.000.

Hasegawa, Etuo: *See*—
Nagasawa, Toshiya; Hasegawa, Etuo; and Kakehashi, Nobuharu, 5,609,036, Cl. 62-198.000.

Hasegawa, Koh: *See*—
Hanabusa, Tadashi; Kaneko, Masanori; and Hasegawa, Koh, 5,610,636, Cl. 347-8.000.

Hasegawa, Masaki; Bito, Yasuhiko; Ito, Shuji; Murata, Toshihide; and Toyoguchi, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Positive electrode for non-aqueous electrolyte lithium secondary battery and method of manufacturing the same. 5,609,975, Cl. 429-217.000.

Hasegawa, Masaki: *See*—
Kobayashi, Tadashi; Pushpalal, Game K. D.; and Hasegawa, Masaki, 5,609,680, Cl. 106-696.000.

Hasegawa, Masatsune; Oya, Toshikazu; Hashimoto, Takashi; and Ezaki, Hironori, to CCI Co., Ltd. Corrosion preventiveness evaluation system for coolant. 5,609,740, Cl. 204-400.000.

Hasegawa, Nobutoshi; Hirota, Yoshio; Nagase, Sumio; Fukuta, Hisato; and Tani, Makoto, to Honda Giken Kogyo Kabushiki Kaisha and Kabushiki Kaisha Honda Express. Returnable framework structure. 5,609,111, Cl. 108-55.100.

Hasegawa, Takashi, to France Bed Co., Ltd. Articulated bed apparatus. 5,608,932, Cl. 5-611.000.

Haseley, Robert K.; and Kirkpatrick, Paul A., to Ingersoll-Rand Company. Method for collecting machine vibration data. 5,610,339, Cl. 73-660.000.

Hashida, Koichi, to Sumitomo Electric Industries, Ltd. Three position solenoid controlled valve. 5,609,400, Cl. 303-119.200.

Hashimoto, Kaoru; Chiyonobu, Tatuo; Kawano, Kyoichiro; Watanabe, Koji; Wakamura, Masato; and Yamaguchi, Joe, to Fujitsu Limited. Electrical connecting device and method for making same. 5,610,371, Cl. 174-262.000.

Hashimoto, Koji: *See*—
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.

Hashimoto, Ryoichi, to K.K. Joban Engineering. Socket mechanism having flexible coupling therein used with vertical type powered bolt/nut driving apparatus. 5,609,079, Cl. 81-177.750.

Hashimoto, Satoshi: *See*—
Ohshima, Hiroshi; and Hashimoto, Satoshi, 5,609,609, Cl. 606-231.000.

Hashimoto, Takashi: *See*—

Hasegawa, Masatsune; Oya, Toshikazu; Hashimoto, Takashi; and Ezaki, Hironori, 5,609,740, Cl. 204-400.000.

Hashimoto, Takeshi: *See*—
Sakumoto, Yukinori; Hashimoto, Takeshi; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,609,956, Cl. 428-352.000.

Hasnain, Ghulam: *See*—
Su, Chung-Yi; Hasnain, Ghulam; and Hollenhorst, James N., 5,610,416, Cl. 257-186.000.

Hassell, Clayton. Device for lifting and holding cabinets. 5,609,332, Cl. 269-16.000.

Hastings, R. Alan, to Texas Instruments Incorporated. Trinary logic input gate. 5,610,537, Cl. 326-59.000.

Hatke, Wilfried; and Osan, Frank, to Hoechst Aktiengesellschaft. Cycloolefin polymers. 5,610,253, Cl. 526-281.000.

Hatta, Katsuhiro: *See*—
Usuki, Katsutoshi; Fujita, Kenjiro; and Hatta, Katsuhiro, 5,609,549, Cl. 477-125.000.

Hattass, Rainer; and Weidmann, Brigitte, to Rockwell International GmbH. Wind deflector for a sliding roof for a vehicle. 5,609,388, Cl. 296-217.000.

Hattass, Rainer: *See*—
Stallfort, Klaus; Hattass, Rainer; and Federmann, Dieter, 5,609,387, Cl. 296-214.000.

Hauf, Roland; and Groeger, Klaus, to Dr. Ing. H.C.F. Porsche AG. Cylinder head arrangement of an internal-combustion engine. 5,609,129, Cl. 123-193.500.

Hauner, Friedrich; and Zehndbauer, Alfons, to Rieter Ingolstadt Spinnereimaschinenbau AG. Compression rod having rectangular shape. 5,608,948, Cl. 19-288.000.

Hauschopp, Marion: *See*—
Apel, Peter; Hauschopp, Marion; and Wilczek, Klaus, 5,609,184, Cl. 137-554.000.

Hawes, Kevin J.: *See*—
Tallant, James C., II; and Hawes, Kevin J., 5,610,502, Cl. 323-222.000.

Hawiuk, Andrea S. Apparatus for illustrating and determining quantity of hair pigment concentrate to achieve desired hair colour. 5,609,484, Cl. 434-94.000.

Hawkins, Michael E.: *See*—
Price, Howard C.; Lin, Steve T.; Hawkins, Michael E.; and Parr, Jack E., 5,609,638, Cl. 623-18.000.

Hawley, Gil R.: *See*—
Alt, Helmut G.; Palackal, Syriac J.; Patsidis, Konstantinos; Welch, M. Bruce; Geerts, Rolf L.; Hsieh, Eric T.; McDaniel, Max P.; Hawley, Gil R.; Smith, Paul D.; Janzen, Jay; and Schmid, Michael, 5,610,247, Cl. 526-160.000.

Haworth, Inc.: *See*—
Meyer, Kevin L.; and Fraquelli, Roberto G., 5,609,112, Cl. 108-153.000.

Hayakashi, Bunji: *See*—
Imamura, Toshihide; Kadotani, Kanichi; Hayakashi, Bunji; Imaizumi, Hisaakira; Shakushi, Tetsuo; Matsumoto, Toshihiko; and Watanabe, Genichiro, 5,609,296, Cl. 239-43.000.

Hayakawa, Hiroshi, to Opticon Inc. Optical reader with vibrating mirror. 5,610,752, Cl. 359-198.000.

Hayakawa, Yoshio: *See*—
Abe, Takashi; Fukaya, Haruhiko; Hayashi, Eiji; and Hayakawa, Yoshio, 5,609,787, Cl. 252-3.000.

Hayama, Ichizo: *See*—
Koh, Hen-Sik; and Hayama, Ichizo, 5,609,904, Cl. 426-565.000.

Hayama, Masaaki; Mohri, Noboru; and Nakao, Keiichi, to Matsushita Electric Industrial Co., Ltd. Method for fabricating an electronic part by intaglio printing. 5,609,704, Cl. 156-89.000.

Hayashi, Eiji: *See*—
Abe, Takashi; Fukaya, Haruhiko; Hayashi, Eiji; and Hayakawa, Yoshio, 5,609,787, Cl. 252-3.000.

Hayashi, Kousou; and Koike, Tadashi, to Sharp Kabushiki Kaisha. Audio sound recording/reproducing apparatus using semiconductor memory. 5,610,774, Cl. 360-15.000.

Hayashi, Kyohei: *See*—
Iwaya, Masaki; and Hayashi, Kyohei, 5,610,111, Cl. 501-136.000.

Hayashi, Masaharu: *See*—
Tanaka, Yasuyuki; Hioki, Yuichi; Hayashi, Masaharu; Ichikawa, Naoya; and Sakaki, Toshiaki, 5,610,212, Cl. 524-156.000.

Hayashi, Miho: *See*—
Hokuyo, Kosuke; Hayashi, Miho; Yamaguchi, Shuichi; and Izumi, Tsugio, 5,609,906, Cl. 426-660.000.

Hayashi, Mikio: *See*—
Maki, Hitoshi; Kato, Shigeki; Azuma, Shinichi; Hayashi, Mikio; and Momose, Masatoshi, 5,610,306, Cl. 546-49.000.

Hayashi, Narutohsi: *See*—
Yamamoto, Setsuko; Ogino, Kazuya; Hayashi, Narutohsi; and Omura, Takashi, 5,609,796, Cl. 252-585.000.

Hayashi, Nobuhiko: *See*—
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Hayashi, Nobuyuki: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katob, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.

Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,610,466, Cl. 310-239.000.

Hayashi, Saburou; Shiraki, Keita; and Yamamoto, Takafumi, to Tokai Rubber Industries, Ltd. Conductive roll. 5,609,554, Cl. 492-56.000.

Hayashi, Satoru: *See*—
Inoue, Fujio; Izumi, Masamitsu; and Hayashi, Satoru, 5,610,170, Cl. 514-340.000.

Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, to Fujitsu Ltd. Apparatus for producing semiconductor device. 5,609,688, Cl. 118-715.000.

Hayashi, Tetsuya, to Casio Computer Co., Ltd. Method and apparatus for generating image. 5,611,037, Cl. 395-142.000.

Hayashi, Yasuhiro; and Shimada, Hiroshi, to Kabushiki Kaisha Toshiba. Focus balance automatic adjusting device and automatic adjusting method. 5,610,886, Cl. 369-44.290.

Hayward Iron & Metal: *See*—
Pinkney, William J., 5,609,324, Cl. 251-292.000.

Hazard, Robert W.; Bouchard, George A.; Carmella, Jeffrey E.; and DeMilia, Michael P., to Raytheon Company. Analog to digital conversion system. 5,610,613, Cl. 342-195.000.

He, Duanfeng; and Collins, Donald A., Jr., to NCR Corporation. Optical bar code scanner which produces substantially perpendicular scan lines. 5,610,385, Cl. 235-467.000.

He, Li: *See*—
Fan, Yongping; Han, Jung; Nurmikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,610,413, Cl. 257-97.000.

Heater, Kenneth J.: *See*—
McCurdy, Richard J.; Heater, Kenneth J.; Parsons, Alice B.; and Robbins, J. David, 5,609,924, Cl. 427-475.000.

Hechtenberg, Kurt-Volker; Bosch, Dieter; and Hermeking, Hajo, to Deutsche Aerospace AG. Device for modeling or simulating the sense of touch in a surgical instrument. 5,609,607, Cl. 606-205.000.

Hedderly, Gregory T.; Tyus, Lisa A.; and Brown, Leonard M., to Ford Motor Company. Steering column support for a collapsible steering column. 5,609,063, Cl. 74-492.000.

Hedengren, Kristina H. V.: *See*—
Eberhard, Jeffrey W.; and Hedengren, Kristina H. V., 5,611,026, Cl. 395-119.000.

Hefferon, George J.: *See*—
Bantu, Nageshwer R.; Brunsvold, William R.; Hefferon, George J.; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic C., 5,609,989, Cl. 430-270.100.

Heffner, Brian L.: *See*—
Sorin, Wayne V.; Heffner, Brian L.; and Venkatesh, Shalini, 5,610,716, Cl. 356-357.000.

Heidelberger Druckmaschinen AG: *See*—
Stephan, Günter; and Szeidl, Michael, 5,609,103, Cl. 101-230.000.

Heidelberger, Philip; and Stone, Harold S. Methods and apparatus for performing a write/load cache protocol. 5,611,070, Cl. 395-460.000.

Heim, Robert R.: *See*—
Siegel, Larry D.; and Heim, Robert R., 5,609,306, Cl. 239-591.000.

Heimstaedt, Russell A.: *See*—
Buckberg, Gerald D.; Heimstaedt, Russell A.; and Taylor, John M., 5,609,571, Cl. 604-4.000.

Heine, Gunter K.: *See*—
Dunfield, John C.; Oveyssi, Kamran; and Heine, Gunter K., 5,610,463, Cl. 310-90.500.

Heintz, Robert M.: *See*—
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,610,190, Cl. 514-595.000.

Heismann, Fred L.; and Smith, Robert W., to Lucent Technologies, Inc. High-speed polarization scrambler with adjustable chirp. 5,611,005, Cl. 385-11.000.

Heitmann, Walter, to Heraeus Quarzglas GmbH. Process of producing preforms for silica glass optical waveguides while flowing gas through a tubular substrate. 5,609,666, Cl. 65-421.000.

Hekton Institute for Medical Research: *See*—
Rubenstein, Marvin, 5,610,288, Cl. 536-24.500.

Held, Jeffrey S.: *See*—
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,609,820, Cl. 422-23.000.

Heldt-Hansen, Hans P.: *See*—
Schüllein, Martin; Halkier, Torben; Heldt-Hansen, Hans P.; Dalbøge, Henrik; and Pedersen, Lars S., 5,610,048, Cl. 435-209.000.

Helen of Troy Limited: *See*—
Wooderson, Blaise M.; and Mendelson, Lewis A., 5,610,990, Cl. 381-90.000.

Hellman, Karl H.: *See*—
Gray, Charles L., Jr.; and Hellman, Karl H., 5,609,131, Cl. 123-299.000.

Hellman, Robert R., Jr.; Wechsler, Nadia; and Wechsler, Ephraim, to Wechsler, Nadia; and Wechsler, Ephraim. Garment steaming device with safety nozzle. 5,609,047, Cl. 68-222.000.

HemaSure, Inc.: *See*—
Boschetti, Egisto; Girot, Pierre; and Guerrier, Luc P., 5,609,763, Cl. 210-502.100.

Hempel, Eugene O., to Texas Instruments Incorporated. Method for performing chemical mechanical polish (CMP) of a wafer. 5,609,719, Cl. 156-636.100.

Hendrick, Kendall B.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Henein, Hani: *See*—
Yuan, Ding; Henein, Hani; and Fallavollita, John A., 5,609,919, Cl. 427-421.000.

Henke, Stephan; Brocks, Dietrich; and Günzler, Volkmar, to Hoechst Aktiengesellschaft. 2,3-disubstituted isoxazolidines, a process for their preparation, agents containing them, and their use. 5,610,146, Cl. 514-19.000.

Henkel Corporation: *See*—
Rodriguez, José M.; Cook, Anthony B.; and Howell, Gail M., 5,609,722, Cl. 162-5.000.
Topping, Joseph C.; and Neeb, William M., 5,609,191, Cl. 141-198.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Birnbrich, Paul; Eicken, Ulrich; Fischer, Herbert; Klamann, Joerg-Dieter; and Schieferstein, Ludwig, 5,610,242, Cl. 525-444.500.
Hensen, Hermann; Stuhrmann, Dagmar; Ponsati Obiols, Oriol; and Prat Queralt, Esther, 5,609,167, Cl. 132-202.000.
Knuebel, Georg; Hoeffkes, Horst; Neuhaus, Winifried; Lieske, Edgar, deceased, 5,609,650, Cl. 8-423.000.

Hennig, Gregory E.; and Pape, Gary J., to Baker Hughes Incorporated. Pressure-actuated valve and method. 5,609,178, Cl. 137-10.000.

Henry, Michael: *See*—
Childers, Edwin R.; and Henry, Michael, 5,610,902, Cl. 369-289.000.

Henry, Peter S.: *See*—
Jenkins, Andrew; Henry, Peter S.; and Yee, Gaylin M., 5,610,545, Cl. 327-205.000.

Hensel, Roy E.: *See*—
von Trebra, Robert J.; Smith, Gerald A.; Hensel, Roy E.; Barton, Oliver A., deceased, 5,609,945, Cl. 428-209.000.

Hensen, Helmuth: *See*—
Raasch, Hans; and Hensen, Helmuth, 5,609,015, Cl. 57-302.000.

Hensen, Hermann; Stuhrmann, Dagmar; Ponsati Obiols, Oriol; and Prat Queralt, Esther, to Henkel Kommanditgesellschaft auf Aktien. Acidic hair care preparations. 5,609,167, Cl. 132-202.000.

Hensler, David L., to Hydra Tech, Inc. Pivotable boom rest and latch. 5,609,261, Cl. 212-292.000.

Hensler, Ralph: *See*—
Mahon, Geoffrey L.; and Hensler, Ralph, 5,610,817, Cl. 364-424.056.

Henson, Gordon D.: *See*—
Lee, Nicholas A.; DeBaun, Barbara A.; Henson, Gordon D.; Igl, Scott A.; and Smith, Terry L., 5,611,017, Cl. 385-114.000.

Heraeus Elektroden GmbH: *See*—
Kotowski, Stephan; Bedel, Reinhard; and Busse, Bernd, 5,609,748, Cl. 205-734.000.

Heraeus Quarzglas GmbH: *See*—
Heitmann, Walter, 5,609,666, Cl. 65-421.000.
Werdecker, Waltraud; Gerhardt, Rolf; and Krock, Wolfgang, 5,610,116, Cl. 502-232.000.

Heras, Fermin: *See*—
Hohler, Melissa M.; and Heras, Fermin, 5,609,093, Cl. 99-408.000.

Herbertz, Toni: *See*—
Reinehr, Ulrich; Türck, Günter; Sehm, Tilo; Anderheggen, Wolfgang; Herbertz, Toni; and Antolini, Gino, 5,610,229, Cl. 524-589.000.

Herbig, Scott M.; and Smith, Kelly L., to Pfizer Inc. PH-triggered osmotic bursting delivery devices. 5,609,590, Cl. 604-892.100.

Herbrechtsmeier, Peter: *See*—
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.

Herbst, Gilles: *See*—
Riondel, Alain; Herbst, Gilles; and Levray, André, 5,610,313, Cl. 548-324.100.

Herman Miller, Inc.: *See*—
Nyhuis, Robert; Fredricks, Brent; and Ryckeghem, Martin Van, 5,608,960, Cl. 29-434.000.

Hermeking, Hajo: *See*—
Hechtenberg, Kurt-Volker; Bosch, Dieter; and Hermeking, Hajo, 5,609,607, Cl. 606-205.000.

Herstek, Jozef; and Janek, Bartolomej. Transmission means for transmitting a rotary movement. 5,609,539, Cl. 475-168.000.

Hertler, Walter R.: *See*—
Ma, Sheau-Hwa; Hertler, Walter R.; and Simmons, Howard E., III, 5,609,914, Cl. 427-264.000.

Hertzfeld, Andrew J.; Atkinson, William D.; and Kare, Susan D., to General Magic, Inc. Graphical user interface for modifying object characteristics using coupon objects. 5,611,031, Cl. 395-133.000.

Hestia Technologies, Inc.: *See*—
Weber, Patrick O., 5,609,889, Cl. 425-116.000.

Hetzel, Hartmut; Grenner, Dieter; Ebner, Wolfgang; and Biskup, Klaus, to Bayer Aktiengesellschaft. Process and a device for separating a solid residue from its solution in a stirred bed of material. 5,609,735, Cl. 203-52.000.

Hewlett-Packard Co.: *See*—
Bennett, Dwayne, 5,610,745, Cl. 359-139.000.
Bickford, Joel D.; and Botka, Julius K., 5,609,489, Cl. 439-72.000.
Brown, Roger A.; Lauw, Hiang; and Johnson, Loren E., 5,609,674, Cl. 106-22.00R.
Chang, Kok-Wai; and Aronson, Lewis B., 5,611,004, Cl. 385-11.000.
Chang, Norman H.; Chang, Keh-Jeng; Lee, Keunmyung; and Oh, Soo-Young, 5,610,833, Cl. 364-491.000.
Hackleman, David E., 5,609,910, Cl. 427-102.000.
Hickman, Scott N., 5,610,992, Cl. 381-188.000.
Lundeby, Bruce A., 5,611,044, Cl. 395-183.140.
Nobel, Gary M.; Medin, Todd; Wilson, Arthur K.; and Brown, Patricia S., 5,610,642, Cl. 347-50.000.
Sorin, Wayne V.; Heffner, Brian L.; and Venkatesh, Shalini, 5,610,716, Cl. 356-357.000.
Standiford, Gregory A.; Miller, Kevin L.; Eland, Michael P.; Dory, Jon R.; Bloom, Devin A.; and Stephens, Fred O., 5,610,788, Cl. 360-132.000.
Su, Chung-Yi; Hasnain, Ghulam; and Hollenhorst, James N., 5,610,416, Cl. 257-186.000.
Timm, Dale D., Jr.; Swanson, David W.; and Clark, James E., 5,610,644, Cl. 347-87.000.
Trask, Jeffrey L.; Honda, Hiroyuki; and Sato, Kenji, 5,610,692, Cl. 399-27.000.
Yamanaka, Ken; and Ugawa, Hiroaki, 5,610,952, Cl. 375-371.000.

Heyn, Klaus, to Jenoptik AG. Device for measuring the optical range of optical and electronics systems. 5,610,713, Cl. 356-342.000.

Hibino, Hiroki: *See*—
Suzuki, Akira; Hibino, Hiroki; Nagayama, Yoshikatsu; and Nakamura, Motokazu, 5,609,563, Cl. 600-118.000.

Hickingbotham, Dyson: *See*—
Machemer, Robert; Hickingbotham, Dyson; and Dodge, Brian, 5,609,602, Cl. 606-171.000.

Hickman, Scott N., to Hewlett-Packard Company. Portable electronic device having a ported speaker enclosure. 5,610,992, Cl. 381-188.000.

Hidaka, Hideto, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having a hierarchical bit line structure with reduced interference noise. 5,610,871, Cl. 365-230.030.

Hidaka, Tomoya; Sato, Shinichi; Sato, Hiroyasu; and Takashina, Yutaka, to Nippon Soda Co., Ltd. Composition for color development comprising 4-hydroxy-4'-isopropoxydiphenylsulfone, and a wet method for grinding and a dispersible solution for applying the same. 5,609,672, Cl. 106-21.00R.

Higa, Thomas S.: *See*—
Solorzano, Enrique R.; Gou, Perng-Fei; Higa, Thomas S.; and Townsend, Harold E., 5,610,962, Cl. 376-461.000.

Higginson, Peter L.; and Berent, Anthony N., to Digital Equipment Corporation. Efficient ATM cell synchronization. 5,610,951, Cl. 375-364.000.

Higuchi, Kaoru; Ishii, Hiroshi; and Nagata, Masaya, to Sharp Kabushiki Kaisha. Image forming apparatus for forming an image in synchronization with a vertical synchronizing signal. 5,610,721, Cl. 358-396.000.

Hikata, Takeshi: *See*—
Sato, Kenichi; Hikata, Takeshi; and Ueyama, Munetsugu, 5,610,123, Cl. 505-433.000.

Hildebrandt, Wolfgang: *See*—
Fuerstenau, Charles; Konegen, Herbert; Hildebrandt, Wolfgang; and Seigert, Peter, 5,609,527, Cl. 464-145.000.

Hildenbrandt, Leslie C.: *See*—
Gebhardt, William J.; Thome, James P.; and Hildenbrandt, Leslie C., 5,609,534, Cl. 473-409.000.

Hill, Andy H.: *See*—
Kelley, Robert L.; Hill, Andy H.; Srivastava, Vipul J.; Gauger, W. Kennedy; and Kilbane, John J., II, 5,610,065, Cl. 435-264.000.

Hillman, Joseph T.: *See*—
Foster, Robert F.; Hillman, Joseph T.; and Arora, Rikhit, 5,610,106, Cl. 437-245.000.

Hills, David B.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Himes, Glenn R.; Spence, Bridget A.; Hoxmeier, Ronald J.; and Chin, Steven S., to Shell Oil Company. Dissimilar arm asymmetric radial or star block copolymers for adhesives and sealants. 5,610,238, Cl. 525-314.000.

Himuro, Yasuo, to Bridgestone Corporation. Pneumatic radial tires including a fork-shaped groove. 5,609,699, Cl. 152-209.00R.

Hinata, Shoji; Ono, Yoichi; Tsukahara, Akira; Hosogaya, Hiroyuki; Imazeki, Yoshikatsu; Fujisawa, Shinji; and Furukawa, Yoko, to Seiko Epson Corporation. Liquid crystal display element, methods of producing and storing the same, and electronic equipment on which the same is mounted. 5,610,742, Cl. 349-122.000.

Hioki, Yuichi: *See*—
Tanaka, Yasuyuki; Hioki, Yuichi; Hayashi, Masaharu; Ichikawa, Naoya; and Sakaki, Toshiaki, 5,610,212, Cl. 524-156.000.

Hirai, Kenichi: *See*—
Iwao, Toru; Hirai, Kenichi; Kondoh, Nobuo; Yamanouchi, Koichi; and Yokoyama, Kazumasa, 5,610,169, Cl. 514-334.000.

Hirai, Koji: *See*—
Yamashita, Tetsuhiro; Hirai, Koji; and Fujii, Masaki, 5,609,218, Cl. 180-197.000.

Hirakawa Kogyo Sha Co., Ltd.: *See*—
Yamashita, Miyuki, 5,610,682, Cl. 355-51.000.

Hirano, Hidetoshi: *See*—
Yoshihara, Toshiyuki; Anayama, Hideki; Yamazaki, Itaru; Ainoya, Hideyuki; Hirano, Hidetoshi; and Kimura, Mayumi, 5,610,690, Cl. 399-167.000.

Hiranuma, Satoshi, to Kabushiki Kaisha Kenwood. Optical disc dubbing apparatus having automatic track number assignment. 5,610,888, Cl. 369-47.000.

Hirao, Katsumi: *See*—
Itoh, Masanori; Kiyose, Atsunobu; and Hirao, Katsumi, 5,609,677, Cl. 106-168.010.

Hiratsuka, Katsuo: *See*—
Ayuta, Masanori; Nakayama, Koichi; and Hiratsuka, Katsuo, 5,609,115, Cl. 112-70.000.

Hiromoto, Yasuyuki; Gaggar, Satish K.; and Kuruganti, Vijaya K., to General Electric Company. High gloss graft copolymer blend containing emulsion graft copolymer and bulk graft copolymer. 5,610,235, Cl. 525-71.000.

Hirono, Kazuhisa: *See*—
Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.

Hirono, Taisuke; and Ueda, Kenkichi, to Kowa Company Ltd. Ophthalmic measurement apparatus for measuring biological properties in the eye. 5,610,672, Cl. 351-205.000.

Hiroro, Nishida: *See*—
Soga, Gazuo; Kim, Hyun-joon; Lee, Sang-kyun; Jung, Min-chul; Son, Byung-hee; Thosiya, Wuozmi; Thakhasi, Irai; and Hiroro, Nishida, 5,610,115, Cl. 502-152.000.

Hirose, Masahito, to Fuji Oozx, Inc. Tappet in an internal combustion engine and a method of manufacturing it. 5,609,128, Cl. 123-90.510.

Hirose, Minoru: *See*—
Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, 5,609,688, Cl. 118-715.000.

Hirota, Toshiaki: *See*—
Katoh, Akira; Kitagawa, Hiroshi; and Hirota, Toshiaki, 5,609,023, Cl. 60-276.000.

Hirota, Yoshio: *See*—
Hasegawa, Nobutoshi; Hirota, Yoshio; Nagase, Sumio; Fukuta, Hisato; and Tani, Makoto, 5,609,111, Cl. 108-55.100.

Hirschberg, Eugene H.: *See*—
Mieville, Rodney L.; Dictor, Ronald A.; Hirschberg, Eugene H.; Robinson, Lawrence C.; Washecheck, Don M.; and Renner, Terrence A., 5,609,832, Cl. 422-173.000.

Hishiyama, Toru: *See*—
Moriya, Yukio; Koyanagi, Satoru; Fujimura, Tetsuya; Nagahama, Masayuki; Yamazaki, Kazuyuki; and Hishiyama, Toru, 5,609,220, Cl. 180-253.000.

Hisrich, Timothy B.: *See*—
Rennecker, David B.; Hisrich, Timothy B.; and Berkshire, Gary L., 5,608,946, Cl. 15-339.000.

Hitachi Automotive Engineering Co., Ltd.: *See*—
Obara, Sanshiro; Yamada, Hiroyuki; Matsudaira, Nobunori; and Masaki, Ryoso, 5,610,483, Cl. 318-139.000.

Hitachi Engineering Co., Ltd.: *See*—
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, 5,610,957, Cl. 376-210.000.

Hitachi Koki Company Limited: *See*—
Sakamoto, Shinichi; and Kobayashi, Masanori, 5,610,465, Cl. 310-211.000.

Hitachi, Ltd.: *See*—
Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, 5,610,089, Cl. 437-34.000.
Kasai, Naruhiko; Mano, Hiroyuki; Nishitani, Shigeyuki; Takita, Isao; and Takahashi, Kohji, 5,610,626, Cl. 345-89.000.
Kuroda, Kenichi; Terasawa, Masaaki; and Matsubara, Kiyoshi, 5,610,420, Cl. 257-315.000.
Masaki, Akira; Kuwata, Makoto; Satomura, Ryuichi; and Tamba, Nobuo, 5,610,535, Cl. 326-39.000.
Minowa, Toshimichi; Ohsuga, Minoru; Kashiwaya, Mineo; and Sasaki, Yasushi, 5,609,132, Cl. 123-306.000.
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.
Moriyama, Shigeo; Kawamura, Yoshio; Homma, Yoshio; Kusukawa, Kikuo; and Furusawa, Takeshi, 5,609,511, Cl. 451-5.000.
Obara, Sanshiro; Yamada, Hiroyuki; Matsudaira, Nobunori; and Masaki, Ryoso, 5,610,483, Cl. 318-139.000.
Sasano, Akira; Shirahashi, Kazuo; Matsukawa, Yuka; Taniguchi, Hideaki; Yamamoto, Hideaki; and Matsumaru, Haruo, 5,610,738, Cl. 349-43.000.
Shirai, Shoji; and Watanabe, Kenichi, 5,610,481, Cl. 315-382.000.
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.
Takeda, Hiroshi; Yoshida, Shigeaki; and Katsura, Koyo, 5,610,622, Cl. 345-13.000.
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, 5,610,957, Cl. 376-210.000.
Tokunaga, Kensuke; Aizawa, Yasuhiro; Nakajima, Junjiro; Sasaki, Masana; Ajima, Masayoshi; and Imai, Masafumi, 5,610,960, Cl. 376-441.000.
Usui, Mitsuru; and Watanabe, Tetsuya, 5,609,773, Cl. 216-20.000.
Wakabayashi, Manabu; and Ogiro, Kenji, 5,610,655, Cl. 348-373.000.
Yamada, Hiroshi; Negishi, Tadanobu; and Honda, Yoshitsugu, 5,609,016, Cl. 60-39.020.
Yamada, Seiich; Tanaka, Shigeru; Syouji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; and Maeda, Kunihiro, 5,610,570, Cl. 338-20.000.
Yoshizumi, Keiichi; Haga, Satoru; Ikeda, Shuji; Makuta, Kiichi; and Fukazawa, Takeshi, 5,610,856, Cl. 365-154.000.

Hitachi Media Electronics Co., Ltd.: *See*—
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.

Hitachi ULSI Engineering Corp.: *See*—
Yoshizumi, Keiichi; Haga, Satoru; Ikeda, Shuji; Makuta, Kiichi; and Fukazawa, Takeshi, 5,610,856, Cl. 365-154.000.

Hitachi VLSI Engineering Corporation: *See*—
Kuroda, Kenichi; Terasawa, Masaaki; and Matsubara, Kiyoshi, 5,610,420, Cl. 257-315.000.

Hiyoshi, Michiaki; Muramatsu, Hisayoshi; and Fujiwara, Takashi, to Kabushiki Kaisha Toshiba. Press-contact type semiconductor devices. 5,610,439, Cl. 257-688.000.

Ho, Steven H.; Conforti, Evandro; and Kang, Sung M., to University of Illinois, Board of Trustees of the. Optical communications and interconnection networks having opto-electronic switches and direct optical routers. 5,610,744, Cl. 359-118.000.

Hoag, Scott T.; and Cooper, Arnold R., to Ford Motor Company. Torsion spring adjustment apparatus. 5,609,331, Cl. 267-154.000.

Hoback, James E.: *See*—
Sawyer, Thomas E.; and Hoback, James E., 5,608,978, Cl. 40-308.000.

Hobart Corporation: *See*—
Hohler, Melissa M.; and Heras, Fermin, 5,609,093, Cl. 99-408.000.

Hochstedler, Leon J.: *See*—
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Hocquaux, Michel: *See*—
Dufetel, Didier; Estradier, Francoise; Gaetani, Quintino; and Hocquaux, Michel, 5,610,302, Cl. 544-320.000.

Hodge, Carl N.: *See*—
Lam, Patrick Y.; Jadhav, Prabhakar K.; Eyermann, Charles J.; Hodge, Carl N.; De Lucca, George V.; and Rodgers, James D., 5,610,294, Cl. 540-492.000.

Hodges, Michael J.; and Horton, Darren, to Detexomat Machinery Limited. Hosiery line closer and loader assembly. 5,609,118, Cl. 112-470.150.

Hoechst Aktiengesellschaft: *See*—
Glombik, Heiner; Enhsen, Alfons; Kramer, Werner; and Wess, Günther, 5,610,151, Cl. 514-172.000.
Hatke, Wilfried; and Osan, Frank, 5,610,253, Cl. 526-281.000.
Henke, Stephan; Brocks, Dietrich; and Günzler, Volkmar, 5,610,146, Cl. 514-19.000.
Jaekel, Frank; Reinhardt, Gerd; and Müller, Wolf-Dieter, 5,610,318, Cl. 548-479.000.
Reiher, Uwe; and Russ, Werner H., 5,610,298, Cl. 544-197.000.
Unger, Bernhard; and Dickhardt, Rainer, 5,610,322, Cl. 73-23.390.
Weidmann, Klaus; Bickel, Martin; and Günzler-Pukall, Volkmar, 5,610,172, Cl. 514-350.000.
von der Eltz, Andreas, 5,609,676, Cl. 106-166.010.

Hoeffkes, Horst: *See*—
Knuebel, Georg; Hoeffkes, Horst; Neuhaus, Winifried; Lieske, Edgar, deceased, 5,609,650, Cl. 8-423.000.

Hoeger, Daniel S.: *See*—
Brewer, Timothy T.; Hoeger, Daniel S.; McCambridge, Lora K.; Kelsey, Teresa L.; Claflin, Anthony R.; Robertson, Kenneth R.; and Van Flandern, Michael W., 5,611,040, Cl. 395-326.000.

Hoey, Michael F.: *See*—
Mulier, Peter M. J.; and Hoey, Michael F., 5,609,151, Cl. 128-642.000.

Hofbauer, Thomas; and Kropp, Darren, to Symbol Technologies, Inc. Dual battery control system. 5,610,496, Cl. 320-13.000.

Höfer, Hans: *See*—
Raffel, Markus; Kompenhans, Jürgen; and Höfer, Hans, 5,610,703, Cl. 356-28.000.

Hoferitza, Mark A.: *See*—
Becker, Thomas P.; Hoferitza, Mark A.; and Crass, Matthew M., 5,610,327, Cl. 73-117.300.

Hoffman-La Roche Inc.: *See*—
Brockhaus, Manfred; Dembic, Zlatko; Geotz, Reiner; Lesslauer, Werner; Löescher, Hansruedi; and Schlaeger, Ernst-Jürgen, 5,610,279, Cl. 530-387.300.

Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., to Ciba-Geigy Corporation; and Gesellschaft fur Biotechnologische Forschung mbH. Thiangazole, its preparation, compositions and use thereof. 5,610,038, Cl. 435-118.000.

Hogen-Esch, Thieo; and Zagala, Angela, to University of Southern California, The. Block copolymers and a novel method for preparing (co)polymers having a narrow molecular weight distribution by metal-free anionic polymerization in the presence of a phosphonium cation. 5,610,248, Cl. 526-193.000.

Hoggard, Paul J.: *See*—
Dye, William P.; and Hoggard, Paul J., 5,610,794, Cl. 361-206.000.

Hogt, Andreas H.; Talma, Auke G.; de Block, Rudolf F.; and Datta, Rabindra N., to Akzo Nobel NV. Anti-reversion coagents for rubber vulcanization. 5,610,240, Cl. 525-332.600.

Hohler, Melissa M.; and Heras, Fermin, to Hobart Corporation. Pasta cooker. 5,609,093, Cl. 99-408.000.

Hoke, Joseph M.: *See*—
Gregg, Thomas A.; Hoke, Joseph M.; and Pandey, Kulwant M., 5,610,945, Cl. 375-260.000.

Hokuyo, Kosuke; Hayashi, Miho; Yamaguchi, Shuichi; and Izumi, Tsugio, to Fuji Oil Company, Limited. Anti-blooming composition, and laurin fat and chocolate containing the same. 5,609,906, Cl. 426-660.000.

Holderbaum, Martin; Aumueller, Alexander; and Trauth, Hubert, to BASF Aktiengesellschaft. Aminovinylphosphonic ester stabilizers for organic material. 5,610,210, Cl. 524-99.000.

Holka, Thomas C., to Ford Motor Company. Energy absorbing apparatus for a motor vehicle. 5,609,365, Cl. 280-777.000.

Holl, Roland: *See*—
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Cheng, Lee-Ming; Choy, Conrad; and Lee, George, 5,609,493, Cl. 439-157.000.
McHugh, Robert G., 5,609,495, Cl. 439-268.000.
Tan, Haw-Chan; Ma, Frank C.; and Lai, Chin T., 5,609,499, Cl. 439-445.000.

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Aoki, Takashi; Kanda, Masahiro; Matsuda, Takahiro; and Katsuta, Keisuke, 5,609,543, Cl. 477-45.000.
Hachisuka, Kimio; Noguchi, Hiroyuki; and Momose, Tomoaki, 5,609,187, Cl. 140-92.200.
Hosoi, Takashi; Inaba, Atsushi; and Doi, Mizuho, 5,610,333, Cl. 73-504.060.
Kamei, Takahiro; and Sekiguchi, Yoshitaka, 5,609,366, Cl. 280-788.000.
Katoh, Akira; Kitagawa, Hiroshi; and Hirota, Toshiaki, 5,609,023, Cl. 60-276.000.
Mutoh, Eiji; Kubota, Shinichi; and Maeda, Susumu, 5,610,574, Cl. 340-426.000.
Ogawa, Ken; and Nishida, Toshiyuki, 5,609,135, Cl. 123-325.000.
Sawae, Shinichi; Koshiro, Akihiko; Odaka, Kouiti; and Ogino, Teruaki, 5,609,374, Cl. 293-102.000.
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Vallot, Lawrence C.; and Brenner, Mats A., 5,610,616, Cl. 342-357.000.

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Crouser, Darwin S.; Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Wareham, Richard A.; and Vincent, Conway, 5,608,945, Cl. 15-328.000.
Gordon, Evan A., 5,608,944, Cl. 15-319.000.
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Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, 5,610,587, Cl. 340-572.000.
Ide, Daisuke: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.
Idei, Kouji: *See—*
Ogawa, Susumu; Senoh, Hideaki; and Idei, Kouji, 5,609,964, Cl. 428-520.000.
Ideta, Eiji: *See—*
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.
Idexx Laboratories, Inc.: *See—*
Ehrenfeld, Elizabeth; Fricker, Colin; and Townsend, David E., 5,610,029, Cl. 435-34.000.
Idland, Carsten. Container opener. 5,609,076, Cl. 81-3.570.
Ido, Yoichi; and Kohno, Yasushi, to Yazaki Corporation. Curing vessel in a gel-coated seed processing device. 5,609,684, Cl. 118-13.000.
Ifeachor, Emmanuel C.: *See—*
Keith, Robert D. F.; Greene, Keith R.; Ifeachor, Emmanuel C.; and Westgate, Jennifer, 5,609,156, Cl. 128-670.000.
Ifill, Anderson D.: *See—*
Cliffe, Ian A.; and Ifill, Anderson D., 5,610,295, Cl. 540-596.000.
Igarashi, Kyoji: *See—*
Aoyagi, Akihiko; Terashima, Hiroshi; Igarashi, Kyoji; and Take, Masatoshi, 5,610,785, Cl. 360-104.000.
Igawa, Katsutoshi: *See—*
Hanaoka, Kouji; Igawa, Katsutoshi; Taguchi, Seiji; Matsui, Takashi; and Sorimachi, Kenichi, 5,609,458, Cl. 414-173.000.
Igen, Inc.: *See—*
Gudibande, Satyanarayana R.; and Kenten, John H., 5,610,017, Cl. 435-6.000.
Igl, Scott A.: *See—*
Lee, Nicholas A.; DeBaun, Barbara A.; Henson, Gordon D.; Igl, Scott A.; and Smith, Terry L., 5,611,017, Cl. 385-114.000.
Iida, Masayuki: *See—*
Tanaka, Hiroshi; Iida, Masayuki; Miyatake, Masanori; Sugishita, Shozo; and Hoshi, Teruo, 5,611,018, Cl. 395-2.240.
Iijima, Atsumi: *See—*
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.
Iijima, Masaki: *See—*
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,609,840, Cl. 423-228.000.
Iizaka, Hitoshi; Sano, Masahito; and Matsumoto, Yasuo, to Kabushiki Kaisha TEC. Checkout system with automatic registration of articles by bar code or physical feature recognition. 5,609,223, Cl. 186-61.000.
Iizuka, Keiji, to Ichikoh Industries Ltd. Automobile sideview mirror. 5,610,772, Cl. 359-841.000.
Ikada, Yoshito; Gen, Shokyu; Kubota, Takao; and Kyotani, Ikuo, to GC Corporation; and Biomaterials Universe Inc. Bio-degradable/absorbable barrier membrane. 5,609,881, Cl. 424-425.000.
Ikado, Masaharu, to Canon Kabushiki Kaisha. Color ink jet printing apparatus having a wiper suited for differing color ink properties. 5,610,641, Cl. 347-33.000.
Ikeda, Kiyoshi: *See—*
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; and Nishiyama, Tadaaki, 5,610,226, Cl. 524-559.000.
Ikeda, Nobukazu: *See—*
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.
Ikeda, Shuji: *See—*
Yoshizumi, Keiichi; Haga, Satoru; Ikeda, Shuji; Makuta, Kiichi; and Fukazawa, Takeshi, 5,610,856, Cl. 365-154.000.
Ikeda, Tanejiro: *See—*
Aokura, Isamu; Yamanishi, Hitoshi; Ohnishi, Youichi; and Ikeda, Tanejiro, 5,609,739, Cl. 204-298.190.
Ikeda, Yoshimi: *See—*
Akiyama, Masahiko; Kiyota, Toshiya; and Ikeda, Yoshimi, 5,610,737, Cl. 349-47.000.
Ikefuji, Yoshihiro, to Rohm Co., Ltd. Cross coil meter with correction for resistance variations. 5,610,513, Cl. 324-144.000.
Ikegami, Takatoshi: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.
Ikenaga, Takao: *See—*
Sakurai, Akio; Mizuta, Tamotsu; Okada, Yasuhide; Nakano, Hiroshi; Ikenaga, Takao; Shin, Osamu; and Ikenaga, Yuuji, 5,609,747, Cl. 205-246.000.

Ikenaga, Yuuji: *See—*
Sakurai, Akio; Mizuta, Tamotsu; Okada, Yasuhide; Nakano, Hiroshi; Ikenaga, Takao; Shin, Osamu; and Ikenaga, Yuuji, 5,609,747, Cl. 205-246.000.
Ikushima, Satoshi: *See—*
Kasan, Akira; Ikushima, Satoshi; Isozaki, Osamu; Matsumoto, Naoji; and Nordstrom, John D., 5,609,960, Cl. 428-413.000.
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.
Illston, Trevor J.; Doleman, Paul A.; Butler, Edwin G.; Marquis, Peter M.; Ponton, Clive B.; Piramoon, Reza; and Gilbert, Mark J., to Rolls-Royce plc. Method of manufacturing a composite material. 5,609,741, Cl. 204-471.000.
Im, Jeon-Taek: *See—*
Park, Hee-Chail; Kweon, Kook-Hwan; and Im, Jeon-Taek, 5,610,874, Cl. 365-236.000.
Imada, Katsuhisa: *See—*
Maeda, Eiichi; Imada, Katsuhisa; Nishii, Motoi; and Nishinaga, Yoshihiro, 5,610,565, Cl. 333-185.000.
Imai, Masafumi: *See—*
Tokunaga, Kensuke; Aizawa, Yasuhiro; Nakajima, Junjiro; Sasaki, Masana; Ajima, Masayoshi; and Imai, Masafumi, 5,610,960, Cl. 376-441.000.
Imaizumi, Hisaakira: *See—*
Imamura, Toshihide; Kadotani, Kanichi; Hayakashi, Bunji; Imaizumi, Hisaakira; Shakushi, Tetsuo; Matsumoto, Toshihiko; and Watanabe, Genichiro, 5,609,296, Cl. 239-43.000.
Imamiya, Keniti: *See—*
Nakamura, Hiroshi; Miyamoto, Junichi; Iwata, Yoshihisa; and Imamiya, Keniti, 5,610,859, Cl. 365-185.220.
Imamura, Toshihide; Kadotani, Kanichi; Hayakashi, Bunji; Imaizumi, Hisaakira; Shakushi, Tetsuo; Matsumoto, Toshihiko; and Watanabe, Genichiro, to Komatsu, Ltd. Water feed device for humidification and air conditioning apparatus incorporating the same. 5,609,296, Cl. 239-43.000.
Imanaka, Hideyuki: *See—*
Kitayama, Koji; and Imanaka, Hideyuki, 5,609,526, Cl. 464-68.000.
Imanishi, Kenji, to Fujitsu Limited. III-V compound semiconductor device with Schottky electrode of increased barrier height. 5,610,410, Cl. 257-76.000.
Imation Corp.: *See—*
Ha, Chau T.; and Lamanna, William M., 5,609,990, Cl. 430-270.110.
Imazeki, Yoshikatsu: *See—*
Hinata, Shoji; Ono, Yoichi; Tsukahara, Akira; Hosogaya, Hiroyuki; Imazeki, Yoshikatsu; Fujisawa, Shinji; and Furukawa, Yoko, 5,610,742, Cl. 349-122.000.
Immuno Aktiengesellschaft: *See—*
Seelich, Thomas, 5,610,147, Cl. 514-21.000.
Immunomedics, Inc.: *See—*
Goldenberg, Milton D., 5,609,846, Cl. 424-1.410.
Imokawa, Toshiaki; and Kato, Yoshiharu, to Sumitoma Bayer Urethane Co., Ltd. Process for preparing liquid diphenylmethane diisocyanate. 5,610,408, Cl. 252-182.200.
Imoto, Kazunobu: *See—*
Ueno, Takeshi; Oshima, Katsuyuki; Asajima, Mikio; Yamauchi, Mineo; Imoto, Kazunobu; Takahara, Hidetake; and Ando, Jitsuhiko, 5,610,119, Cl. 503-227.000.
Imoto, Nobumasa: *See—*
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Imperial Chemical Industries PLC: *See—*
Mills, Paul D. A.; Siddiqui, Junaid A.; and Rakos, Karl, 5,610,222, Cl. 524-493.000.
Impra, Inc.: *See—*
Kalis, Robert W., 5,609,624, Cl. 623-1.000.
Imrie, William P.: *See—*
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., 5,609,738, Cl. 204-279.000.
Imwinkelried, René: *See—*
Altmann, Karl-Heinz; Imwinkelried, René; and Eschenmoser, Albert, 5,610,300, Cl. 544-244.000.
In.Tec. International Environment Technology S.r.L.: *See—*
Celi, Antonio M., 5,609,764, Cl. 210-511.000.
Inaba, Atsushi: *See—*
Hosoi, Takashi; Inaba, Atsushi; and Doi, Mizuho, 5,610,333, Cl. 73-504.060.
Inaba, Koichi; Uchida, Kensuke; and Kolberg, Raymond F., to General Electric Company. Polymer panel with a sealing membrane for mechanical and electrical connections. 5,609,940, Cl. 428-156.000.
Inaba, Tsuneo; and Takashima, Daisaburo, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,610,868, Cl. 365-205.000.
Inada, Tadahiro: *See—*
Kato, Tadashi; Noguchi, Takeshi; and Inada, Tadahiro, 5,610,256, Cl. 526-318.400.
Inagaki, Akihiro; and Yamamura, Isao, to General Instrument of Taiwan, Ltd. Method for encapsulating a semiconductor utilizing an epoxy resin and an onium salt compound. 5,610,443, Cl. 257-788.000.
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, to Kagome Co., Ltd.; and Japan Steel Works, Ltd., The. Method for continuous roasting of food materials. 5,609,902, Cl. 426-466.000.
Inamori, Yoshimitsu; and Oda, Koichi, to Sharp Kabushiki Kaisha. Clocking method and apparatus for display device with calculation operation. 5,610,627, Cl. 345-99.000.
Inamoto, Kiyoshi; Miyaza, Masao; and Nakai, Yasuhiro, to Sharp Kabushiki Kaisha. Image forming apparatus having illegal use prevention. 5,610,688, Cl. 399-366.000.
Indiana University Foundation: *See—*
Surzycki, Stefan J.; Kityama, Masahito; and Togasaki, Robert K., 5,610,010, Cl. 435-6.000.
Indigo N.V.: *See—*
Lior, Ishaiau; Lavon, Amiran; and Chatow, Ehud, 5,610,694, Cl. 399-240.000.
Ingersoll-Rand Company: *See—*
Haseley, Robert K.; and Kirkpatrick, Paul A., 5,610,339, Cl. 73-660.000.
Sell, Leslie J., 5,609,229, Cl. 188-77.00R.
Innova Pure Water Inc.: *See—*
Nohren, John E., Jr.; Reid, Henry C.; Nohren, Joseph H.; Smith, John T.; and Huggins, Donald G., Jr., 5,609,759, Cl. 210-266.000.
Innovative Cleaning Concepts, Inc.: *See—*
Carroll, Matthew B., 5,609,431, Cl. 401-201.000.
Inomata, Tsuyoshi: *See—*
Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, 5,609,688, Cl. 118-715.000.
Inoue, Fujio; Izumi, Masamitsu; and Hayashi, Satoru, to Otsuka Pharmaceutical Factory, Inc. Package form for bicarbonate-containing powdery pharmaceutical compositions and a method of stabilizing the compositions. 5,610,170, Cl. 514-340.000.
Inoue, Haruo, to Eagle Co., Ltd. Slot machine. 5,609,524, Cl. 463-20.000.
Inoue, Hiroshi: *See—*
Matsunaga, Takashi; Nishimura, Toshihiro; and Inoue, Hiroshi, 5,609,930, Cl. 428-35.200.
Inoue, Kunitoshi: *See—*
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, 5,609,345, Cl. 277-180.000.
Inoue, Seiji: *See—*
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,609,203, Cl. 165-153.000.
Inoue, Soichi: *See—*
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.
Inoue, Takashi: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,609,809, Cl. 264-210.700.
Institut Francais du Petrole: *See—*
Longeron, Daniel; and Fleury, Marc, 5,610,524, Cl. 324-376.000.
Streicher, Christian; and Asselineau, Lionel, 5,609,734, Cl. 203-39.000.
Institut Pasteur Centre National de la Recherche Scientific: *See—*
Montagnier, Luc; Krust, Bernard; Chamaret, Solange; Clavel, Francois; Chermann, Jean-Claude; and Barre-Sinoussi, Francoise, 5,610,035, Cl. 435-70.210.
Institute of Gas Technology: *See—*
Kelley, Robert L.; Hill, Andy H.; Srivastava, Vipul J.; Gauger, W. Kennedy; and Kilbane, John J., II, 5,610,065, Cl. 435-264.000.
Instrumentarium Oy: *See—*
Weckström, Kurt, 5,610,400, Cl. 250-345.000.
Integrated Process Equipment Corp.: *See—*
Gardopee, George J.; Clapis, Paul J.; Prusak, Joseph P.; and Poultney, Sherman K., 5,610,102, Cl. 437-225.000.
Integrated Technologies Of America, Inc.: *See—*
Mooney, David M.; Kimlinger, Joseph A.; and Wood, David E., 5,610,981, Cl. 380-25.000.
Intel Corporation: *See—*
Begis, Glenn, 5,610,801, Cl. 361-784.000.
Lent, David D.; and Dunn, Daniel J., 5,611,054, Cl. 395-280.000.
InterDigital Technology Corporation: *See—*
Schilling, Donald L., 5,610,906, Cl. 370-261.000.
Intermec Corporation: *See—*
Garrabrant, Gary W.; Cho, Jay C.; and Savarese, Joseph T., 5,610,595, Cl. 340-825.520.
Intermedics, Inc.: *See—*
Sanders, Richard S.; Paul, Patrick J.; and Prutchi, David, 5,609,615, Cl. 607-36.000.
Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, 5,609,614, Cl. 607-29.000.
Vinciguerra, John D., 5,609,645, Cl. 623-20.000.
Woodson, Drury; Lee, Michael; Vandegriff, Joseph; Alt, Eckhard; and Stotts, Lawrence J., 5,609,613, Cl. 607-19.000.
International Business Machines Corporation: *See—*
Addison, Danny H.; Hufford, George, III; McCray, Charles M.; Schultz, Kevin L.; and Turner, Craig W., 5,609,086, Cl. 83-440.000.
Anderson, Timothy M.; Chrysler, Gregory M.; and Simons, Robert E., 5,609,201, Cl. 165-80.300.
Anderson, Timothy M.; Chrysler, Gregory M.; and Simons, Robert E., 5,609,202, Cl. 165-80.300.

Aoyagi, Akihiko; Terashima, Hiroshi; Igarashi, Kyoji; and Take, Masatoshi, 5,610,785, Cl. 360-104.000.
Balasubramanian, Peruvemba S.; Lee, Nathan J.; and Lekuch, Scott D., 5,610,947, Cl. 375-282.000.
Bantu, Nageshwer R.; Brunsvold, William R.; Hefferon, George J.; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic C., 5,609,989, Cl. 430-270.100.
Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,610,901, Cl. 369-275.100.
Betts, Robert; and Olnowich, Howard T., 5,610,953, Cl. 375-373.000.
Bigus, Joseph P., 5,611,020, Cl. 395-23.000.
Canfield, Donald H.; Fellows, Todd C.; Gillis, Earle W.; and Yablonsky, Peter J., 5,610,710, Cl. 356-237.000.
Carl, Daniel A.; Kenney, Donald M.; Mlynko, Walter E.; and Nguyen, Son V., 5,610,441, Cl. 257-774.000.
Childers, Edwin R.; and Henry, Michael, 5,610,902, Cl. 369-289.000.
Dang, Chi H., 5,610,882, Cl. 369-36.000.
Dang, Hien P.; Nakagawa, Takahiro; Nakamoto, Yoshiyasu; Sri-Jayantha, Muthuthamby; and Suzuki, Hiroyuki, 5,610,777, Cl. 360-77.030.
Daubenspeck, Timothy H.; Holmes, Steven J.; and Ference, Thomas G., 5,609,772, Cl. 216-14.000.
DeBrosse, John K.; Kirihata, Toshiaki; and Wong, Hing, 5,610,867, Cl. 365-201.000.
Donner, Edward O.; and Zumbrunnen, Michael L., 5,608,966, Cl. 29-884.000.
Dorius, Lee K.; and Samuelson, Laurence S., 5,610,784, Cl. 360-103.000.
Edgar, Albert D., 5,611,027, Cl. 395-131.000.
Freedenberg, Candace J. F.; Cobb, Joshua M.; and Ziemins, Uldis A., 5,609,780, Cl. 219-121.730.
Gregg, Thomas A.; Hoke, Joseph M.; and Pandey, Kulwant M., 5,610,945, Cl. 375-260.000.
Hall, Kevin W., 5,611,035, Cl. 395-140.000.
Jacobs, Dwayne C.; and Wangler, James A., 5,611,048, Cl. 395-200.090.
Kantz, Joseph C.; Mammen, Abraham; and Wright, Susan D., 5,611,074, Cl. 395-473.000.
Kohn, Harold, 5,609,292, Cl. 228-246.000.
Leas, James M.; and Mandelman, Jack A., 5,610,409, Cl. 257-59.000.
Lofaro, Michael F., 5,609,517, Cl. 451-529.000.
Loper, Albert J.; Mallick, Soummya; and Putrino, Michael, 5,611,063, Cl. 395-381.000.
Malik, Randhir S., 5,610,803, Cl. 363-21.000.
Masleid, Robert P., 5,610,548, Cl. 327-374.000.
Moore, Charles R.; Muhich, John S.; and Reese, Robert J., 5,611,058, Cl. 395-309.000.
Neely, James S.; and Restle, Phillip J., 5,610,528, Cl. 324-660.000.
Plambeck, Kenneth E., 5,610,603, Cl. 341-51.000.
Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., 5,609,778, Cl. 219-121.690.
Voldman, Steven H., 5,610,791, Cl. 361-56.000.
Webb, Charles F.; Farrell, Mark S.; Conklin, Christopher R.; and Li, Wen H., 5,611,062, Cl. 395-376.000.
Zenharusern, Frederic; and Wickramasinghe, Hemantha K., 5,609,744, Cl. 204-606.000.

International Computers Limited: *See—*
Farrar, Simon; and Taylor, Neil, 5,609,746, Cl. 205-125.000.

International Energy Conservation Systems, Inc.: *See—*
Dattilo, Donald P., 5,610,448, Cl. 307-39.000.

International Flavors & Fragrances Inc.: *See—*
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,610,133, Cl. 512-20.000.

International Paper Company: *See—*
Smith, Albert H., 5,610,118, Cl. 503-214.000.

International Remote Imaging Systems, Inc.: *See—*
Pelmulder, John P., 5,609,771, Cl. 210-800.000.

Interplastic SA: *See—*
Fux, Charly, 5,609,685, Cl. 118-60.000.

Inui, Shiro: *See—*
Tanaka, Takashi; Sato, Yuzuru; Iwane, Hiroshi; and Inui, Shiro, 5,609,790, Cl. 252-299.610.

Inushima, Takashi; Vaitkus, Rimantas; and Teramoto, Satoshi, to Semiconductor Energy Laboratory, Co., Ltd. Electronic device for measuring light properties. 5,610,405, Cl. 250-372.000.

Inuzuka, Hajime: *See—*
Awano, Naomi; Inuzuka, Hajime; Mizukoshi, Masahito; and Kudomi, Shigeki, 5,610,412, Cl. 257-85.000.

Inventio AG: *See—*
Lamb, Miles P.; and Capuano, Louis, 5,609,225, Cl. 187-406.000.

IOT Integrierte Optil GmbH: *See—*
Wolf, Barbara; and Fabricius, Norbert, 5,611,007, Cl. 385-14.000.

Ip, Tony K.: *See—*
Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Irie, Yoshiaki: *See—*
Nagano, Akihiko; Yamada, Akira; and Irie, Yoshiaki, 5,610,681, Cl. 396-51.000.

Irschik, Herbert: *See—*
Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

Isaacs, Barry V. W.: *See—*
Malvern, Alan R.; and Isaacs, Barry V. W., 5,610,714, Cl. 356-350.000.

Isaka, Yukio; Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Uchiyama, Seiji; Yamada, Kazuro; and Takeuchi, Makoto, to Canon Kabushiki Kaisha. Image forming apparatus having improved resolution switching capabilities. 5,610,646, Cl. 347-131.000.

Ishibashi, Hiromichi: *See—*
Moriya, Mitsurou; Ishibashi, Hiromichi; Ohta, Takeo; and Sugihara, Yasuhiro, 5,610,879, Cl. 369-13.000.

Ishibashi, Kenji; Kimura, Kazuo; Ishida, Iwao; and Nishitani, Kiyoshi, to Minolta Co., Ltd. Telescope having mechanism for automatically returning optical system to a reference dioptric power. 5,610,761, Cl. 359-407.000.

Ishida, Iwao: *See—*
Ishibashi, Kenji; Kimura, Kazuo; Ishida, Iwao; and Nishitani, Kiyoshi, 5,610,761, Cl. 359-407.000.

Ishida, Kazutoshi: *See—*
Fujita, Yoshihisa; Mizuno, Takahide; Nishio, Hiroyuki; Uto, Kuniharu; and Ishida, Kazutoshi, 5,609,243, Cl. 198-847.000.

Ishida, Noriya: *See—*
Yamazaki, Shunpei; Kadono, Masaya; Itoh, Kenji; Takayama, Toru; Arai, Yasuyuki; and Ishida, Noriya, 5,609,774, Cl. 216-69.000.

Ishida, Yutaka: *See—*
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, 5,610,036, Cl. 435-71.100.

Ishihara, Masamichi: *See—*
Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, 5,610,089, Cl. 437-34.000.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Asano, Kiyoshi; Koyama, Arata; Takumi, Nobusuke; Takatori, Shigeru; Tamura, Kouichi; and Suita, Tokuo, 5,609,789, Cl. 252-62.560.

Ishihara, Takahiro: *See—*
Maki, Atsushi; Toshima, Toshio; and Ishihara, Takahiro, 5,609,368, Cl. 285-12.000.

Ishii, Hiroshi: *See—*
Higuchi, Kaoru; Ishii, Hiroshi; and Nagata, Masaya, 5,610,721, Cl. 358-396.000.

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Ishii, Naoki: *See—*
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.

Ishii, Yutaka: *See—*
Yamamoto, Kunihiko; Matsui, Kiyohisa; Ishii, Yutaka; Yasunishi, Norio; Nakamura, Toshihiro; Washio, Hajime; and Taniguchi, Koki, 5,610,628, Cl. 345-100.000.
Yoneda, Hiroshi; Yoshida, Shigeto; Katoh, Kenichi; Yamane, Yasukuni; and Ishii, Yutaka, 5,610,414, Cl. 257-99.000.

Ishikawa, Aya: *See—*
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, 5,610,315, Cl. 549-389.000.

Ishikawa, Hajime; and Suzaki, Tetsuyuki, to NEC Corporation. Method and device for channel selection. 5,610,911, Cl. 370-503.000.

Ishikawa, Hiroaki: *See—*
Tanaka, Hiroshi; Doi, Nobuaki; Omori, Masashi; and Ishikawa, Hiroaki, 5,608,974, Cl. 34-78.000.

Ishikawa, Kogi: *See—*
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.

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Ishikawa, Toru: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See—*
Hamada, Kouki; Mizusawa, Minoru; and Koga, Minoru, 5,609,834, Cl. 422-196.000.

Ishimoto, Zenichi: *See—*
Stubenfoll, Leonard; and Ishimoto, Zenichi, 5,609,510, Cl. 446-456.000.

Ishitobi, Ken, to Showa Denko K.K. Composition for texturing magnetic disk. 5,609,657, Cl. 51-309.000.

Ishizaka, Toshihiro: *See—*
Uchida, Masashi; Kondo, Tetsujiro; Nakaya, Hideo; Horishi, Takashi; and Ishizaka, Toshihiro, 5,610,658, Cl. 348-416.000.

Ishizaki, Kunihiko: *See—*
Dairoku, Yorimichi; Nagasuna, Kinya; Masuda, Yoshihiko; Harada, Nobuyuki; Motono, Yoshihiro; and Ishizaki, Kunihiko, 5,610,208, Cl. 525-384.000.

Ishizaki, Minoru: *See—*
Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, 5,610,599, Cl. 340-931.000.

Ishizuka, Masanori: *See—*
Ueda, Ichiro; and Ishizuka, Masanori, 5,610,344, Cl. 73-865.600.

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Shorter, Simon C.; Ferry, Bernadette L.; Starkey, Phyllis M.; Sargent, Ian L.; and Redman, Christopher W. G., 5,610,058, Cl. 435-332.000.

Isis Pharmaceuticals, Inc.: *See—*
Cook, Phillip D.; Sanghvi, Yogesh S.; Vasseur, Jean J.; and Debart, Francoise, 5,610,289, Cl. 536-25.340.

Isono, Kimiko: *See—*
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, 5,610,957, Cl. 376-210.000.

Isozaki, Osamu: *See—*
Kasan, Akira; Ikushima, Satoshi; Isozaki, Osamu; Matsumoto, Naoji; and Nordstrom, John D., 5,609,960, Cl. 428-413.000.
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.

Isozaki, Seiya, to NEC Corporation. Semiconductor devide having improved junction construction between heat radiation plate and ceramic substrate. 5,610,440, Cl. 257-713.000.

Isozumi, Shuzo: *See—*
Kusumoto, Keiichi; Konishi, Keiichi; Isozumi, Shuzo; and Morishita, Akira, 5,609,542, Cl. 475-331.000.

ISP Investments Inc.: *See—*
Liu, Kou-Chang; Anderson, Lowell R.; Hardy, Eugene E.; and Reuven, Yakir, 5,609,865, Cl. 424-78.240.

Israel, Gary E.; Knapp, John; and Foley, Mark, to Pepperidge Farm, Incorporated. Process for forming extruded multi-strand products. 5,609,903, Cl. 426-500.000.

Issaq, Enayet U.: *See—*
Merrill, Richard B.; and Issaq, Enayet U., 5,610,433, Cl. 257-531.000.

Itagaki, Masaaki: *See—*
Satake, Shinobu; Yahata, Tadao; Shigefuji, Takashi; Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, 5,609,186, Cl. 138-97.000.

Itano, Andrea: *See—*
Chang, Yio-Fu; Wong, James R.; Itano, Andrea; Mejza, Stephen J.; and Walker, Leslie, 5,610,042, Cl. 435-172.300.

Ito, Akira: *See—*
Seki, Yoichi; Kawai, Michio; Saito, Hiroyuki; and Ito, Akira, 5,610,680, Cl. 396-106.000.

Ito, Kiyohide: *See—*
Sugano, Kazuyoshi; and Ito, Kiyohide, 5,610,679, Cl. 396-516.000.

Ito, Noriyuki; and Mizukami, Etsuko, to Fujitsu Limited. Automatic generation system for an additional circuit provided in a logic circuit design support system. 5,610,830, Cl. 364-490.000.

Ito, Shinichi: *See—*
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.

Ito, Shuji: *See—*
Hasegawa, Masaki; Bito, Yasuhiko; Ito, Shuji; Murata, Toshihide; and Toyoguchi, Yoshinori, 5,609,975, Cl. 429-217.000.

Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system with small numbers of lenses and wide viewing angle. 5,610,767, Cl. 359-692.000.

Ito, Yoshikazu; and Aruga, Kazuhisa, to Seiko Epson Corporation. Printing apparatus and a control method therefor. 5,609,426, Cl. 400-279.000.

Ito, Yukiko: *See—*
Tanaka, Tsutomu; Doi, Shinzo; Yokota, Hiroshi; Ueno, Chishio; and Ito, Yukiko, 5,610,841, Cl. 364-514.00R.

Itoh, Hiroshi; to Mitsubishi Denki Kabushiki Kaisha. Electronic parts, thermal head, manufacturing method of the thermal head, and heat sensitive recording apparatus. 5,610,650, Cl. 347-210.000.

Itoh, Kenji: *See—*
Yamazaki, Shunpei; Kadono, Masaya; Itoh, Kenji; Takayama, Toru; Arai, Yasuyuki; and Ishida, Noriya, 5,609,774, Cl. 216-69.000.

Itoh, Masanori; Kiyose, Atsunobu; and Hirao, Katsumi, to Daicel Chemical Industries, Ltd. Biodegradable cellulose ester composition and article. 5,609,677, Cl. 106-168.010.

Itoh, Shuhei; and Kurata, Mitsuhiro, to Yamaha Corporation. Panel display control device. 5,610,621, Cl. 345-3.000.

Itoh, Takashi; Kosaki, Yukio; Chonan, Takeshi; Matsuda, Takashi; Kanno, Yasuharu; Wakabayashi, Masao; and Nakamura, Makoto, to N.E. Chemcat Corporation; and Sumitomo Metal Mining Co., Ltd. No, removal catalyst and method of purifying exhaust gas by using the same. 5,609,839, Cl. 423-213.200.

Itoh, Yoshiya, to Ricoh Company, Ltd. Image scanner having contact-type image sensor movable under automatic document feeder. 5,610,731, Cl. 358-496.000.

Itron, Inc.: *See—*
Lee, Thomas A., 5,610,394, Cl. 250-231.170.

ITT Automotive Electrical Systems, Inc.: *See—*
Georgin, Elizabeth A., 5,610,484, Cl. 318-286.000.

ITT Automotive Europe GmbH: *See—*
Beck, Erhard; and Otto, Albrecht, 5,609,182, Cl. 137-539.000.
Feigel, Hans-Jorg; Neumann, Ulrich; and Schiel, Lothar, 5,609,399, Cl. 303-113.400.
Scholl, Wolfgang, 5,609,329, Cl. 267-141.000.

ITT Corporation: *See—*
DuRocher, Daniel J.; and Miller, Ellsworth S., 5,610,378, Cl. 200-61.540.
Karolak, Dale W.; Shirey, Carl L.; Steiner, Wesley D.; and Rue, Robert T., 5,610,839, Cl. 364-514.00C.
Muzslay, Steven Z., 5,609,498, Cl. 439-352.000.
Szabo, George; Grooters, Tom E.; and Cheney, Craig, 5,609,370, Cl. 285-319.000.

IVAC Medical Systems, Inc.: *See—*
Voss, Gregory I.; Butterfield, Robert D.; Baura, Gail D.; and Barnes, Casper W., 5,609,576, Cl. 604-67.000.

Ivanov, Vladimir V.; Danilov, Uriy I.; and Zakharov, Michael V., to MRA Technology Group. Low breakdown voltage gas discharge device and methods of manufacture and operation. 5,610,477, Cl. 313-573.000.

Iver, Morton. Portable cabana. 5,609,177, Cl. 135-130.000.

Iverson, Anthony: *See—*
Shiah, Kyi-Shin; and Iverson, Anthony, 5,610,467, Cl. 310-239.000.

Iwahashi, Hiroshi, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device and method of manufacturing the same. 5,610,858, Cl. 365-185.050.

Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, to Hitachi, Ltd. Method of fabrication of semiconductor integrated circuit device. 5,610,089, Cl. 437-34.000.

Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, to Kabushiki Kaisha Toshiba. Reflection phase shifting mask and method of forming a pattern using the same. 5,609,977, Cl. 430-5.000.

Iwamatsu, Yoshiyuki; and Endo, Shinichi, to Seiko Precision Inc. Apparatus for inserting date information in camera film. 5,610,675, Cl. 396-315.000.

Iwane, Hiroshi: *See—*
Tanaka, Takashi; Sato, Yuzuru; Iwane, Hiroshi; and Inui, Shiro, 5,609,790, Cl. 252-299.610.

Iwano, Tsuneaki: *See—*
Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, 5,610,976, Cl. 379-127.000.

Iwao, Toru; Hirai, Kenichi; Kondoh, Nobuo; Yamanouchi, Koichi; and Yokoyama, Kazumasa, to Green Cross Corporation, The. Pharmaceutical Composition containing slightly water-soluble drug. 5,610,169, Cl. 514-334.000.

Iwasa, Koji: *See—*
Kamamori, Hitoshi; Fukuchi, Takakazu; Suginoya, Mitsuru; and Iwasa, Koji, 5,610,740, Cl. 349-110.000.

Iwasaki, Chisato: *See—*
Fukui, Hirofumi; Miyazaki, Masanori; Aihara, Masami; Iwasaki, Chisato; Fukuda, Koichi; and Kasama, Yasuhiko, 5,609,737, Cl. 204-192.120.

Iwasaki, Kyuhachiro: *See—*
Sekiya, Takuro; and Iwasaki, Kyuhachiro, 5,610,637, Cl. 347-10.000.

Iwata, Hitoshi: *See—*
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Iwata, Yoshihisa: *See—*
Nakamura, Hiroshi; Miyamoto, Junichi; Iwata, Yoshihisa; and Imamiya, Keniti, 5,610,859, Cl. 365-185.220.

Iwaya, Masaki; and Hayashi, Kyohei, to NGK Spark Plug Co., Ltd. Ceramic composition for thermistor. 5,610,111, Cl. 501-136.000.

Iwaya, Yoshimi: *See—*
Mochizuki, Nobuaki; and Iwaya, Yoshimi, 5,609,537, Cl. 475-144.000.

Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, to Toyota Jidosha Kabushiki Kaisha; and Nippon Soken Inc. Activation control system for vehicular air bags. 5,609,358, Cl. 280-735.000.

Izawa, Hirokazu, to Kabushiki Kaisha Toshiba. Photovoltaic drive motor. 5,610,459, Cl. 310-68.00R.

Izquierdo, Javier F.: *See—*
Miller, David A.; Jansen, Kenneth A.; Culley, Paul R.; Taylor, Mark; and Izquierdo, Javier F., 5,611,078, Cl. 395-653.000.

Izu, Gen'ichi: *See—*
Aoki, Minoru; Nakada, Minoru; Yazawa, Yuichi; Izu, Gen'ichi; and Terada, Takashi, 5,609,882, Cl. 424-451.000.

Izumi, Haruhiko; and Miyabe, Kyoko, to Fujitsu Limited. Optical head having light blocking means positioned in front of a detector for super-resolution detection. 5,610,895, Cl. 369-112.000.

Izumi, Masamitsu: *See—*
Inoue, Fujio; Izumi, Masamitsu; and Hayashi, Satoru, 5,610,170, Cl. 514-340.000.

Izumi, Tsugio: *See—*
Hokuyo, Kosuke; Hayashi, Miho; Yamaguchi, Shuichi; and Izumi, Tsugio, 5,609,906, Cl. 426-660.000.

Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Solder material, junctioning method, junction material, and semiconductor device. 5,609,287, Cl. 228-123.100.

Izuta, Tadao, to Yamaha Corporation. Western style bow. 5,609,146, Cl. 124-23.100.
J.M. Voith GmbH: *See*—
Sollinger, Hans-Peter, 5,609,726, Cl. 162-125.000.
J P M Chauvat S.A.: *See*—
Ponelle, Viviane, 5,609,372, Cl. 292-200.000.
Jablonski, Gregory A.: *See*—
Del Rossi, Kenneth J.; Jablonski, Gregory A.; and Marler, David O., 5,609,752, Cl. 208-144.000.
Jackson, John; Gucker, Mark J.; and Smith, Mark H., to Boeing Company, The. Thrust reverser synchronization shaft lock. 5,609,020, Cl. 60-226.200.
Jacobs, Dwayne C.; and Wangler, James A., to International Business Machines Corporation. Remote password administration for a computer network among a plurality of nodes sending a password update message to all nodes and updating on authorized nodes. 5,611,048, Cl. 395-200.090.
Jacobs, Howard S., to Novo Nordisk A/S. Process for treating infertility and an agent for use in the process. 5,610,138, Cl. 514-12.000.
Jacobs, Israel S.: *See*—
Korman, Charles S.; Jacobs, Israel S.; Mallick, John A.; and Rosben, Waseem A., 5,609,946, Cl. 428-209.000.
Jacobs, Paul F.: *See*—
Allison, Joseph W.; Smalley, Dennis R.; Hull, Charles W.; and Jacobs, Paul F., 5,609,813, Cl. 264-401.000.
Jacobsen, Stephen C.; and Davis, Clark C., to Sarcos, Inc. Magnetic eccentric motion motor. 5,610,460, Cl. 310-82.000.
Jacobsen, Stephen C., to Sarcos Group. High density, three-dimensional, intercoupled circuit structure. 5,610,747, Cl. 359-145.000.
Jacobson, Bruce S.: *See*—
Schnitzer, Jan E.; and Jacobson, Bruce S., 5,610,008, Cl. 435-4.000.
Jacobson, Esther: *See*—
Spector, Yechiel; Jacobson, Esther; Naishtut, Vida; Vittenberg, Michael; and Beinert, Zohar, 5,610,359, Cl. 89-1.110.
Jadhav, Prabhakar K.: *See*—
Lam, Patrick Y.; Jadhav, Prabhakar K.; Eyermann, Charles J.; Hodge, Carl N.; De Lucca, George V.; and Rodgers, James D., 5,610,294, Cl. 540-492.000.
Jaduszliwer, Bernardo: *See*—
Klimcak, Charles M.; Loper, Gary L.; and Jaduszliwer, Bernardo, 5,610,393, Cl. 250-227.140.
Jaeckels, Norman J.; and Mesun, Randy O., to Kohler Co. Pump operated plumbing fixture. 5,608,923, Cl. 4-325.000.
Jaekel, Frank; Reinhardt, Gerd; and Müller, Wolf-Dieter, to Hoechst Aktiengesellschaft. Imidocarboxylic acid activators and sulfimidocarboxylic acid activators processes for their preparation and their use. 5,610,318, Cl. 548-479.000.
Jaffe, Robert S.: *See*—
Gazis, Denos C.; Jaffe, Robert S.; and Pope, William G., 5,610,821, Cl. 364-444.200.
Jaguar Co., Ltd.: *See*—
Suzuki, Yoshikazu, 5,609,117, Cl. 112-288.000.
James River Corporation: *See*—
Geddes, Daniel J.; Rigotti, Kathy; Bunker, Linda L.; Berger, Arthur C.; Maynard, Patrick L.; Patterson, Robert; and Hollenberg, David H., 5,609,901, Cl. 426-394.000.
James River Corporation of Virginia: *See*—
Durden, Phillip R., 5,609,728, Cl. 162-205.000.
Janek, Bartolomej: *See*—
Herstek, Jozef; and Janek, Bartolomej, 5,609,539, Cl. 475-168.000.
Jani, Mahendra G.; Barnes, Norman P.; Murray, Keith E.; and Kokta, Milan R. Flashlamp-pumped Ho:Tm:Cr:LuAG laser. 5,610,933, Cl. 372-41.000.
Janse, Cornelis P., to U.S. Philips Corporation. Noise reduction system and device, and a mobile radio station. 5,610,991, Cl. 381-92.000.
Jansen, Kenneth A.: *See*—
Miller, David A.; Jansen, Kenneth A.; Culley, Paul R.; Taylor, Mark; and Izquierdo, Javier F., 5,611,078, Cl. 395-653.000.
Jansen, Rolf: *See*—
Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.
Janssen Pharmaceutica N.V.: *See*—
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,610,157, Cl. 514-224.200.
Janzen, Jay: *See*—
Alt, Helmut G.; Palackal, Syriac J.; Patsidis, Konstantinos; Welch, M. Bruce; Geerts, Rolf L.; Hsieh, Eric T.; McDaniel, Max P.; Hawley, Gil R.; Smith, Paul D.; Janzen, Jay; and Schmid, Michael, 5,610,247, Cl. 526-160.000.
Japan Aviation Electronics Industry, Limited: *See*—
Sato, Kazuomi; Kume, Toshihiro; Ichimura, Yoshiaki; and Takahashi, Takuya, 5,609,492, Cl. 439-136.000.
Japan Hydrazine Co., Ltd.: *See*—
Kiyono, Shigeo, 5,610,209, Cl. 523-428.000.
Japan I.D. Tech. Inc.: *See*—
Yoshida, Hirokazu, 5,609,479, Cl. 418-153.000.
Japan Steel Works, Ltd., The: *See*—
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Miyamoto, Hidetoshi; Shiraki, Shinji; Yumoto, Yoshiji; and Miura, Takao, 5,609,988, Cl. 430-270.100.
Jason Incorporated: *See*—
Warner, Rueben B.; and Tyler, James B., 5,609,398, Cl. 300-21.000.
Jeandey, Christian: *See*—
Locatelli, Marcel; and Jeandey, Christian, 5,610,522, Cl. 324-319.000.
Jeanvoine, Pierre: *See*—
Moreau, Raymond; Gobert, Roger; and Jeanvoine, Pierre, 5,609,661, Cl. 65-135.100.
Jeffers, Robert K., to Airmar Technology Corporation. Acoustic deterrent system and method. 5,610,876, Cl. 367-139.000.
Jeffrey, Daniel J.: *See*—
Barford, Eric D.; Clark, Peter J.; Marshall, John; and Jeffrey, Daniel J., 5,610,126, Cl. 510-191.000.
Jenckel, Clause, Executor: *See*—
Knuebel, Georg; Hoeffkes, Horst; Neuhaus, Winifried; Lieske, Edgar, deceased, 5,609,650, Cl. 8-423.000.
Jeng, Yen-Ming. Helmet making process. 5,609,802, Cl. 264-46.500.
Jenkins, Andrew; Henry, Peter S.; and Yee, Gaylin M., to Analog Devices, Inc. Method for providing programmable hysteresis levels. 5,610,545, Cl. 327-205.000.
Jenoptik AG: *See*—
Heyn, Klaus, 5,610,713, Cl. 356-342.000.
Jermo, Olli A., to Tamfelt Corp. Method for manufacturing an endless reinforced elastomeric press belt. 5,609,811, Cl. 264-255.000.
Jerry, Glen A.; Kistler, Stephan F.; Lam, Joseph H.; and Stenstrom, Scott D., to Minnesota Mining and Manufacturing Company. Flexible adjustable smoothing blade. 5,609,686, Cl. 118-123.000.
Jett, William B., Jr., to Linear Technology Corporation. Method and circuit for trimming an operational amplifier having dual input stages. 5,610,557, Cl. 330-261.000.
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Barford, Eric D.; Clark, Peter J.; Marshall, John; and Jeffrey, Daniel J., 5,610,126, Cl. 510-191.000.
Ji, Jeong-Beom; and Yoon, Dong-Seon, to Daewoo Electronics Co., Ltd. Thin film actuated mirror array for use in an optical projection system. 5,610,757, Cl. 359-295.000.
Jidosha Kiki Co., Ltd.: *See*—
Horikoshi, Satoru, 5,609,087, Cl. 91-376.00R.
Jimmie, Edward J. Divers safety flag. 5,609,122, Cl. 116-173.000.
Jin, Hongkui: *See*—
Clark, Ross G.; Jin, Hongkui; Paoni, Nicholas F.; and Yang, Renhui, 5,610,134, Cl. 514-2.000.
Jing, Wen: *See*—
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; and Zhang, Suru, 5,610,263, Cl. 528-272.000.
Jinno, Keishi: *See*—
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JK Molds, Inc.: *See*—
Eastwood, Gregg, 5,609,893, Cl. 425-549.000.
Jo, Jun W., to Goldstar Co., Ltd. Method of making a FET having a recessed gate structure. 5,610,090, Cl. 437-39.000.
Joannic, Michel: *See*—
Capet, Marc; Cotrel, Claude; Guyon, Claude; Joannic, Michel; Manfre, Franco; Roussel, Gérard; Dubroeuco, Marie-Christine; Cheve, Michel; and Dutruc-Rosset, Gilles, 5,610,144, Cl. 514-19.000.
Jobe, Kendall J. Security system for protecting against theft of a golf bag or golf clubs therefrom. 5,610,585, Cl. 340-568.000.
Joe W. & Dorothy Dorsett Brown Foundation: *See*—
O'Boyle, Matthew, 5,609,606, Cl. 606-194.000.
Joe/Art, Inc.: *See*—
Spurgeon, Cecil R.; and Barnes, Arthur H., 5,608,986, Cl. 43-43.130.
Joens, Lynn A.; and Glock, Robert D., to University of Arizona. Etiological agent for porcine enteritis. 5,610,059, Cl. 435-252.100.
Joentgen, Winfried: *See*—
Groth, Torsten; Joentgen, Winfried; Müller, Nikolaus; and Liesenfelder, Ulrich, 5,610,255, Cl. 526-304.000.
Joest, Rolf H.; Geus, Hans G.; Balk, Hermann; Kunze, Bernd; and Schulz, Herbert, to Reifenhauser GmbH & Co. Maschinenfabrik. Method of making a fleece or mat of thermoplastic polymer filaments. 5,609,808, Cl. 264-210.700.
Joh. & Ernst Link GmbH & Co. KG: *See*—
Link, Hans-Jörg; and Scburer, Werner, 5,609,446, Cl. 408-224.000.
Johansen, Wolfgang: *See*—
Thom, Heinz; Neumann, Alfred; Johansen, Wolfgang; and Zier, Peter, 5,609,381, Cl. 294-119.100.
John Wyeth & Brother, Ltd.: *See*—
Cliffe, Ian A.; Mansell, Howard L.; Ward, Terence J.; Nelson, James A.; Shah, Uresh S.; and Kanzelberger, Mira A., 5,610,154, Cl. 514-216.000.
Cliffe, Ian A.; and Ifill, Anderson D., 5,610,295, Cl. 540-596.000.
Johns Hopkins University, The: *See*—
Boone, Bradley G.; and Grabow, Barry E., 5,610,510, Cl. 324-95.000.
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Colleran, Dennis P.; Sommerich, Robert E.; and Ochoa, Jorge A., 5,609,643, Cl. 623-20.000.
Johnson, Carl: *See*—
Allen, Nicholas; Broudour, Abdu; Broude, Sergey; Chase, Eric; Johnson, Carl; Miller, Pascal; Ormsby, Jay; and Savikovsky, Arkady, 5,610,719, Cl. 356-374.000.
Johnson, Catherine D.: *See*—

Chandler, Michael A.; DeWille, Normanella T.; Mazer, Terrence B.; Ragan, Robert J.; Snowden, Gregory A.; Geraghty, Maureen E.; Johnson, Catherine D.; and Drayer, Lonnie R., 5,609,897, Cl. 426-73.000.
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Johnson, Chris E.; Vendrely, Tim; Whiteside, Leo A.; Carls, Thomas A.; Steele, John; and Naraghian, Khosrow, to Smith & Nephew Richards Inc. Tibial trial prosthesis and bone preparation system. 5,609,642, Cl. 623-20.000.
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Johnson, James R.; Colahan, Jerry J.; and Eden, Todd R., to Chlor Rid International, Inc.; and H.E.R.C. Products Incorporated. Method of removing chloride ion or a compound thereof from a surface contaminated therewith. 5,609,692, Cl. 134-3.000.
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Johnson, Kelly B.; and Hussey, Brett, to Morton International, Inc. Pintle controlled orifice inflator. 5,609,359, Cl. 280-736.000.
Johnson, Loren E.: *See*—
Brown, Roger A.; Lauw, Hiang; and Johnson, Loren E., 5,609,674, Cl. 106-22.00R.
Johnson, Malcolm L.; and Lee, Jimmy J., to Phillips Petroleum Company. Corrosion-resistant storage tank for runoff liquids. 5,609,267, Cl. 220-751.000.
Johnson, Mark; and Simkins, Thomas, to United States of America, Army. Motion sensor. 5,610,590, Cl. 340-573.000.
Johnson, Michael V. Multi-message sign. 5,608,979, Cl. 40-491.000.
Johnson, Philip L.: *See*—
Mittel, James G.; Johnson, Philip L.; and Barrett, Raymond L., Jr., 5,610,558, Cl. 331-2.000.
Johnson, Robbie F.: *See*—
Dohogne, L. Ranney; Johnson, Robbie F.; and Rosenfeld, Michael J., 5,610,461, Cl. 310-89.000.
Johnson, Ronald E.: *See*—
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Johnson, William C.; and McMullen, Charles C., to ETA Technologies Corporation. Method and apparatus for re-initializing a processing device and a storage device. 5,610,980, Cl. 380-4.000.
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Joki, Mark A., to Timken Corporation, The. Locking nut. 5,609,456, Cl. 411-433.000.
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Lorensen, William E.; Jolesz, Ferenc A.; and Kikinis, Ron, 5,611,025, Cl. 395-119.000.
Jonckheere, Luc: *See*—
Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., 5,611,011, Cl. 385-59.000.
Jones, Bruce R.: *See*—
Adrian, Andrew; Jones, Bruce R.; and Schuessler, Robert A., 5,610,618, Cl. 343-713.000.
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; and Zhang, Suru, to Eastern Michigan University. Water thinned polymeric vehicle for coating compositions with low amounts of volatile oragnic compounds. 5,610,263, Cl. 528-272.000.
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Chang, Ray; Flannagan, Stephen T.; and Jones, Kenneth W., 5,610,543, Cl. 327-158.000.
Jones, Leighton, to Rolls-Royce plc. Combustor assembly. 5,609,031, Cl. 60-753.000.
Jones, William K.: *See*—
Rueger, David C.; Jones, William K.; Tucker, Ronald F.; Oppermann, Hermann; Ozkaynak, Engin; and Sampath, Kuber T., 5,610,021, Cl. 435-7.200.
Jongerius, Michiel J.: *See*—
Dronten, Ronald R.; Jongerius, Michiel J.; and Droste, Richard B. J., 5,610,760, Cl. 359-332.000.
Joraku, Masami: *See*—
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.
Jou, Yuh-Chiou. Coupling structure. 5,609,436, Cl. 403-400.000.
Jouty, Chris G. Modular construction system. 5,609,003, Cl. 52-585.100.
JTJ Systems, Inc.: *See*—
Krieger, Joseph P., 5,609,769, Cl. 210-704.000.
Judy, Arthur F.: *See*—
Fangmann, Robert E.; Judy, Arthur F.; and Refi, James J., 5,611,016, Cl. 385-100.000.
Jullien, Henri: *See*—
Delaunay, Didier; Jullien, Henri; More, Claude; Outifa, Lhoussain; Delmotte, Michel; and Maestrali, Bernard, 5,609,891, Cl. 425-174.80E.
Juneja, Prem S.: *See*—
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Jung, Min-chul: *See*—
Soga, Gazuo; Kim, Hyun-joon; Lee, Sang-kyun; Jung, Min-chul; Son, Byung-hee; Thosiya, Wuozmi; Thakhasi, Irai; and Hiroro, Nishida, 5,610,115, Cl. 502-152.000.
Jungfer, Herbert: *See*—
Brandt, Michael; Endl, Josef; Jungfer, Herbert; and Albert, Winfried, 5,610,280, Cl. 530-387.500.
Junino, Alex; Vandenbossche, Jean J.; Richard, Herve; and Cotteret, Jean, to L'Oreal. Tinctorial composition for keratinous fibers containing oxidation dye precursors and couplers derived from 4-hydroxyindole, and dyeing method using them. 5,609,649, Cl. 8-409.000.
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Jurik, Mirjana; Dziegielewski, Thomas; and Grzybowski, Thomas, to Chrysler Corporation. Lower bearing assembly including bearing wedge. 5,609,423, Cl. 384-518.000.
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Hashimoto, Ryoichi, 5,609,079, Cl. 81-177.750.
Kaali, Steven G., to Worldwide Optical Trocar Licensing Corporation. Visually directed trocar and method. 5,609,562, Cl. 600-114.000.
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Maruta, Kazuhiko; Kubota, Michio; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,610,047, Cl. 435-201.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
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Kabushiki Kaisha Kenwood: *See*—
Hiranuma, Satoshi, 5,610,888, Cl. 369-47.000.
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Hamaguchi, Maki; Yamamoto, Tetsuya; Suzuki, Tetsuo; Yamamuro, Hideki; and Chosokabe, Hiroshi, 5,609,959, Cl. 428-408.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Matsushita, Shigenori; Yamamoto, Shigeru; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,609,547, Cl. 477-110.000.
Moriya, Yukio; Koyanagi, Satoru; Fujimura, Tetsuya; Nagahama, Masayuki; Yamazaki, Kazuyuki; and Hishiyama, Toru, 5,609,220, Cl. 180-253.000.
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Yamamoto, Takeyuki; Sugimoto, Yasuyuki; Wakagi, Itaru; Murakata, Shinichi; and Murata, Yasuzo, 5,609,432, Cl. 401-209.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Kurita, Yukinobu, 5,610,457, Cl. 310-68.00B.
Kabushiki Kaisha Shimomura Seisakusho: *See*—
Shimomura, Taizo, 5,609,443, Cl. 408-1.00R.
Kabushiki Kaisha TEC: *See*—
Arai, Seiji, 5,610,697, Cl. 399-149.000.
Iizaka, Hitoshi; Sano, Masahito; and Matsumoto, Yasuo, 5,609,223, Cl. 186-61.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Amano, Hiroatsu, 5,609,357, Cl. 280-734.000.
Kabushiki Kaisha Toshiba: *See*—
Akiyama, Masahiko; Kiyota, Toshiya; and Ikeda, Yoshimi, 5,610,737, Cl. 349-47.000.
Asai, Yoshihiro, 5,610,736, Cl. 349-42.000.
Fukunaga, Toshitaka; and Nagata, Mitsuru, 5,610,606, Cl. 341-143.000.
Goto, Yuichi, 5,610,384, Cl. 235-435.000.
Hayashi, Yasuhiro; and Shimada, Hiroshi, 5,610,886, Cl. 369-44.290.
Hiyoshi, Michiaki; Muramatsu, Hisayoshi; and Fujiwara, Takashi, 5,610,439, Cl. 257-688.000.
Inaba, Tsuneo; and Takashima, Daisaburo, 5,610,868, Cl. 365-205.000.
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Iwahashi, Hiroshi, 5,610,858, Cl. 365-185.050.
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.
Izawa, Hirokazu, 5,610,459, Cl. 310-68.00R.
Koyama, Mikio; and Arai, Tadashi, 5,610,547, Cl. 327-350.000.
Matsumoto, Nobu, 5,610,831, Cl. 364-491.000.
Mitwalsky, Alexander; and Okumura, Katsuya, 5,609,148, Cl. 125-16.010.
Motomura, Nobutoku; and Ichihara, Takashi, 5,610,402, Cl. 250-369.000.
Nakamura, Hiroshi; Miyamoto, Junichi; Iwata, Yoshihisa; and Imamiya, Keniti, 5,610,859, Cl. 365-185.220.
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Shimano, Kunio; Nakamura, Youichi; Ozaki, Osamu; and Ohshima, Iwao, 5,610,958, Cl. 376-277.000.
Takahashi, Naomasa, 5,610,885, Cl. 369-44.280.
Tanaka, Shinichi, 5,610,419, Cl. 257-315.000.
Toda, Haruki, 5,610,872, Cl. 365-230.060.
Yamaguchi, Seiji, 5,610,527, Cl. 324-639.000.
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Yokota, Masabiro; Kojima, Tadahiro; and Makimoto, Shuuji, 5,610,473, Cl. 313-402.000.
Yokoyama, Tsugio; and Shimizu, Takeshi, 5,610,956, Cl. 376-172.000.

Kabushiki Kaisha Yakult Honsha: *See*—
Kaji, Nobuo; Mizusawa, Susumu; Sahashi, Masayuki; and Tsuchida, Takako, 5,609,898, Cl. 426-74.000.

Kadakia, Vinod; and Kang, Christine, to Xerox Corporation. Address reduction scheme implementing rotation algorithm. 5,611,001, Cl. 382-297.000.

Kado, Yoshiyasu: *See*—
Nobori, Kunio; Kado, Yoshiyasu; and Nakagawa, Masamichi, 5,611,039, Cl. 395-806.000.

Kadono, Masaya: *See*—
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Kadotani, Kanichi: *See*—
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Kadowaki, Yukio; and Nagatani, Akemi, to Ricoh Company, Ltd. Multiple pulse series generating device and method applicable to random pulse series generating apparatus. 5,611,021, Cl. 395-27.000.

Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, to Mitsubishi Denki Kabushiki Kaisha. Machining head and laser machining apparatus. 5,609,781, Cl. 219-121.840.

Kagamida, Takeshi: *See*—
Yasunaga, Masaaki; and Kagamida, Takeshi, 5,609,514, Cl. 451-65.000.

Kageyama, Masao; Suga, Toyohiko; Motosugi, Kenzo; and Nakajima, Hiroshi, to Unitika Ltd. Producing a high content of acetate kinase using *bacillus stearothermophilus*. 5,610,045, Cl. 435-194.000.

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Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.

Kai, Junichi; and Nakano, Mitsuhiro, to Fujitsu Limited. Charged particle beam exposure method and apparatus. 5,610,406, Cl. 250-492.220.

Kainec, Edward J. Fishing line accessory release device. 5,608,985, Cl. 43-43.100.

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Kajino, Takayoshi: *See*—
Tabata, Yoshiko; Kajino, Takayoshi; and Kure, Naohisa, 5,609,860, Cl. 424-70.500.

Kajjam, Ashok: *See*—
Mitchell, Randall M.; Kajjam, Ashok; and Stahl, Alan L., 5,609,067, Cl. 74-336.00R.

Kakehashi, Nobuharu: *See*—
Nagasawa, Toshiya; Hasegawa, Etuo; and Kakehashi, Nobuharu, 5,609,036, Cl. 62-198.000.

Kakuda, Nobuyuki; and Nishido, Noriyuki, to Makita Corporation. Pneumatic tool. 5,609,028, Cl. 60-407.000.

Kakuishi, Mitsuo; and Ueshima, Tsuyoshi, to Fujitsu Limited. Signal processing apparatus. 5,610,943, Cl. 375-243.000.

Kälberer, Hartmut; and Pfaff, Hans-Georg, to Cerasiv GmbH, Innovatives Keramik-Engineering. Spherical hip joint socket. 5,609,647, Cl. 623-22.000.

Kalis, Robert W., to Impra, Inc. Reinforced vascular graft and method of making same. 5,609,624, Cl. 623-1.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Düsing, Josef, 5,609,445, Cl. 408-124.000.

Kaltenbronn, James S.: *See*—
Doherty, Annette M.; Hamilton, Harriet W.; Kaltenbronn, James S.; and Quin, John, III, 5,610,177, Cl. 514-419.000.

Kalwitz, George A.: *See*—
Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Kamamori, Hitoshi; Fukuchi, Takakazu; Suginoya, Mitsuru; and Iwasa, Koji, to Seiko Instruments Inc. Color electrooptical device. 5,610,740, Cl. 349-110.000.

Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., to Allelix Biopharmaceutical Inc., AMPA-binding human GluR1 receptors. 5,610,032, Cl. 435-69.100.

Kamei, Ryosuke: *See*—
Uda, Hitoshi; Takahashi, Tetsuya; Kamei, Ryosuke; and Sano, Takeshi, 5,609,888, Cl. 425-66.000.

Kamei, Takahiro; and Sekiguchi, Yoshitaka, to Honda Giken Kogyo Kabushiki Kaisha. Wheel suspension system mount assembly. 5,609,366, Cl. 280-788.000.

Kamei, Toshikazu; Takeuchi, Hidetoshi; and Suzuki, Makoto, to Tonen Chemical Corporation. Laminated non-woven fabric filtering medium and method for producing same. 5,609,947, Cl. 428-212.000.

Kametani, Hiroshi: *See*—
Shima, Masao; Yaoita, Katsuhiko; Nagahara, Masaharu; and Kametani, Hiroshi, 5,609,799, Cl. 264-12.000.

Kaminska, James R.: *See*—
Endicott, David W., Jr.; Guymon, Ross W.; and Kaminska, James R., 5,610,364, Cl. 102-334.000.

Kamioka, Keiko, to NEC Corporation. Apparatus for detecting coordinates of changing points in binary image signals. 5,610,727, Cl. 358-448.000.

Kamiya, Yuji; Takeda, Atsushi; and Katsumi, Toru, to Canon Kabushiki Kaisha. Image forming apparatus having failure diagnosing function. 5,610,689, Cl. 399-31.000.

Kammiller, Neil A., to Reltec Corporation. Circuitry to maintain proper current transformer operation. 5,610,508, Cl. 323-358.000.

Kamo, Toshiyuki; and Watanabe, Yoshihiro, to Fujitsu Limited. Method and apparatus for exchanging variable length frames by fixed length cell handling exchange. 5,610,918, Cl. 370-395.000.

Kampl, Reinhard; and Six, Walter, to Lenzing Aktiengesellschaft. Flame-retardant non-woven textile article and method of making. 5,609,950, Cl. 428-219.000.

Kanaoka, Masaru: *See*—
Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, 5,609,781, Cl. 219-121.840.

Kanda, Katsunobu: *See*—
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Kanda, Kazumi: *See*—
Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.

Kanda, Masahiro: *See*—
Aoki, Takashi; Kanda, Masahiro; Matsuda, Takahiro; and Katsuta, Keisuke, 5,609,543, Cl. 477-45.000.

Kanda, Takashi; Yoshida, Kazuo; and Ohnishi, Masahito, to Matsushita Electric Works, Ltd. Power converting system with a plurality of charging capacitors. 5,610,807, Cl. 363-43.000.

Kandel, Gillray L.; and Schroeder, John, to Rensselaer Polytechnic Institute. Method and apparatus for noninvasive determination of a disease state of a human eye. 5,609,159, Cl. 128-745.000.

Kandros, Michael A.: *See*—
Cherry, Hitesh; Kandros, Michael A.; and Nardone, Daniel V., 5,609,504, Cl. 439-783.000.

Kane, Daniel E.: *See*—
Van Worley, Kevin L.; Kane, Daniel E.; Ewing, Joseph H., Jr.; and Van Suetendael, Arthur J., IV, 5,609,469, Cl. 415-173.100.

Kaneda, Akihiro; Yokota, Koichi; and Nakamura, Masao, to Bridgestone Bekaert Steel Cord Co., Ltd. Steel cords for the reinforcement of rubber articles. 5,609,013, Cl. 57-200.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Sasae, Taiichiro; Nishida, Tomio; Uekita, Masakazu; and Funahashi, Takashi, 5,609,558, Cl. 588-257.000.

Kaneko, Masanori: *See*—
Hanabusa, Tadashi; Kaneko, Masanori; and Hasegawa, Koh, 5,610,636, Cl. 347-8.000.

Kaneko, Masaru; Yamazaki, Shigeru; Motegi, Akihiko; Narita, Masaki; and Komai, Hiroshi, to Ricoh Company, Ltd. Image forming system. 5,610,724, Cl. 358-400.000.

Kanewske, William J., III: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Kang, Christine: *See*—
Kadakia, Vinod; and Kang, Christine, 5,611,001, Cl. 382-297.000.

Kang, Hee-bok; and Kim, Hyun J., to LG Semicon Co., Ltd. Power-up detection circuit. 5,610,542, Cl. 327-143.000.

Kang, Nam-Soo: *See*—
Yoo, Seung-Moon; Haq, Ejaz ul; Choi, Yun-Ho; Cho, Soo-In; Chin, Dae-Je; Kang, Nam-Soo; and Lee, Seung-Hun, 5,610,869, Cl. 365-222.000.

Kang, Sung M.: *See*—
Ho, Steven H.; Conforti, Evandro; and Kang, Sung M., 5,610,744, Cl. 359-118.000.

Kanno, Tatsuya: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; and Kuwana, Takaaki, 5,610,262, Cl. 528-196.000.

Kanno, Yasuharu: *See*—
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Kanno, Yukihiro: *See*—
Yoshida, Toshio; and Kanno, Yukihiro, 5,610,525, Cl. 324-433.000.

Kanouda, Akihiko: *See*—
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.

Kansai Electric Power Co., Inc., The: *See*—
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,609,840, Cl. 423-228.000.

Kansai Paint Co., Ltd.: *See*—
Ogawa, Tetsuo, 5,610,249, Cl. 526-193.000.
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo;, and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.

Kantz, Joseph C.; Mammen, Abraham; and Wright, Susan D., to International Business Machines Corporation. Efficient polling technique using cache coherent protocol. 5,611,074, Cl. 395-473.000.

Kanzelberger, Mira A.: *See*—
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Cliffe, Ian A.; Mansell, Howard L.; Ward, Terence J.; Nelson, James A.; Shah, Uresh S.; and Kanzelberger, Mira A., 5,610,154, Cl. 514-216.000.

Kao Corporation: *See*—
Tabata, Yoshiko; Kajino, Takayoshi; and Kure, Naohisa, 5,609,860, Cl. 424-70.500.
Tanaka, Yasuyuki; Hioki, Yuichi; Hayashi, Masaharu; Ichikawa, Naoya; and Sakaki, Toshiaki, 5,610,212, Cl. 524-156.000.

Kapanadze, George I.: *See*—
Beritashvili, David R.; Myakishev, Maxim V.; Ershov, Gennady M.; Georgiev, George P.; and Kapanadze, George I., 5,610,074, Cl. 436-177.000.

Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., to LocalMed, Inc. Intravascular catheter with infusion array. 5,609,574, Cl. 604-53.000.

Kappel, Gary S.: *See*—
Kolesa, Michael S.; Aranyi, Ernie; and Kappel, Gary S., 5,609,601, Cl. 606-170.000.

Karam, Ronald E.: *See*—
Cox, James R.; and Karam, Ronald E., 5,609,792, Cl. 252-301.40F.

Kare, Susan D.: *See*—
Hertzfeld, Andrew J.; Atkinson, William D.; and Kare, Susan D., 5,611,031, Cl. 395-133.000.

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Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, 5,609,287, Cl. 228-123.100.

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Kautz, Randall W.: *See*—
Briguglio, James J.; Keil, Charles R.; Tara, Vinai M.; Reardon, Edward J., Jr.; and Kautz, Randall W., 5,609,991, Cl. 430-281.100.

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Kawai, Michio: *See*—
Seki, Yoichi; Kawai, Michio; Saito, Hiroyuki; and Ito, Akira, 5,610,680, Cl. 396-106.000.

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Kawana, Jiroh, to Matsushita Electric Industrial Co., Ltd. Floppy disk drive. 5,610,779, Cl. 360-99.040.
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Kawano, Kenji: *See*—
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Kawano, Kyoichiro: *See*—
Hashimoto, Kaoru; Chiyonobu, Tatuo; Kawano, Kyoichiro; Watanabe, Koji; Wakamura, Masato; and Yamaguchi, Joe, 5,610,371, Cl. 174-262.000.
Kawasaki, Masaaki: *See*—
Sagane, Toshihiro; Tsutsui, Toshiyuki; Kawasaki, Masaaki; Okada, Keiji; Tojo, Tetsuo; and Tanizaki, Tatsuya, 5,610,254, Cl. 526-282.000.
Kawasaki Steel Corporation: *See*—
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Matsunami, Hiromi, 5,609,967, Cl. 428-601.000.
Kazmaier, Peter M.: *See*—
Veregin, Richard P. N.; Kazmaier, Peter M.; Georges, Michael K.; and Hamer, Gordon K., 5,610,250, Cl. 526-219.300.
Kazyaka, Raymond J.: *See*—
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Keelan, Brian W.; and Pagano, Daniel M., to Eastman Kodak Company. Apparatus and related method for correcting slide warpage in a slide projector. 5,609,404, Cl. 353-101.000.
Keele, Richard V.; Morin, Cathleen M.; Goodsell, Michael C.; and Neverisky, Robert, to Data/Ware Development, Inc. System for creating related sets via once caching common file with each unique control file associated within the set to create a unique record image. 5,611,066, Cl. 395-427.000.
Keeler, Stanton M.: *See*—
Squires, John P.; Sander, Charles M.; Keeler, Stanton M.; and Clay, Donald W., 5,610,808, Cl. 364-131.000.
Keenan, Brian A.: *See*—
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Keesler, Daren. Headcover. 5,608,914, Cl. 2-207.000.
Kehaty, Israel: *See*—
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Kehoe, Robert P. Compact golf driving range net. 5,609,528, Cl. 473-157.000.
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Sasao, Isamu, 5,609,304, Cl. 239-585.400.
Keil, Charles R.: *See*—
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Keller, Wilhelm A.; and Wilson, Richard J., to Keller, Wilhelm A. Mixer and multiple component dispensing device assembly and method for the aligned connection of the mixer to the multiple component dispensing device. 5,609,271, Cl. 222-145.600.
Kelley, Daniel W. Lotto ticket holder. 5,609,319, Cl. 248-316.700.
Kelley, James G.: *See*—
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Kelley, Paul E., to Teledyne Electronic Technologies. Mass spectrometry method using supplemental AC voltage signals. 5,610,397, Cl. 250-282.000.
Kelley, Robert L.; Hill, Andy H.; Srivastava, Vipul J.; Gauger, W. Kennedy; and Kilbane, John J., II, to Institute of Gas Technology. Integrated chemical/biological treatment of organic waste. 5,610,065, Cl. 435-264.000.
Kelley, Scott A.: *See*—
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Kelly, Thomas J.; Austin, Curtiss M.; and Allen, Robert E., to General Electric Company. Processing of gamma titanium-aluminide alloy using a heat treatment prior to deformation processing. 5,609,698, Cl. 148-671.000.
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Kemmochi, Kazuhisa; Ohki, Shigeru; and Suzuki, Hiroyuki, to Canon Kabushiki Kaisha. Image forming apparatus having developer carrying member supplied with oscillating voltage. 5,610,696, Cl. 399-285.000.
Kemner, Carl A.: *See*—
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Kendrick, Richard L.: *See*—
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Kenkare, Sagar W.: *See*—
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Kennedy, Kenneth F.: *See*—
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Kennedy, Mark T.: *See*—
North, William E.; and Kennedy, Mark T., 5,609,466, Cl. 415-115.000.
Kennedy, Thomas P.; and Schiffman, Howard, to Effie Technologies,. Disposable traction splint. 5,609,567, Cl. 602-5.000.
Kenney, Donald M.: *See*—
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Kenten, John H.: *See*—
Gudibande, Satyanarayana R.; and Kenten, John H., 5,610,017, Cl. 435-6.000.
Kenyon, George L.: *See*—
Cohen, Fred E.; McKerrow, James H.; Ring, Christine S.; Rosenthal, Philip J.; Kenyon, George L.; and Li, Zhe, 5,610,192, Cl. 514-614.000.
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Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., 5,609,574, Cl. 604-53.000.
Kern, Ronald: *See*—
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Kesseli, James B.; and Norster, Eric R., to Northern Research & Engineering Corp. Gas turbine apparatus. 5,609,655, Cl. 48-180.100.
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Keung, Mark K. Bacterium useful in the removal of sulphur black dye from a substrate. 5,610,064, Cl. 435-262.000.
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Khachaturian, Jon E. Method and apparatus for the offshore installation of multi-ton prefabricated deck packages on partially submerged offshore jacket foundations. 5,609,441, Cl. 405-204.000.
Khan, Mohammed A.; and Moellmer, John F., to Becton Dickinson and Company. Radiation sterilizable antimicrobial ointment and process to manufacture. 5,609,866, Cl. 424-78.250.
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Longoria, Jose; and Chininis, Stephen P., 5,609,389, Cl. 297-37.000.
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Kim, Jong-Hee, to Hyundai Heavy Industries Co., Ltd. Shielding gas pre-flow time control system for gas metal arc welder. 5,609,782, Cl. 219-132.000.
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Chang, Jae W.; and Kim, Joon W., 5,609,172, Cl. 134-57.000.
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Kim, Tae S.: *See*—
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Kim, Young Bae, to Samsung Heavy Industries, Co. Automatic steering method and apparatus for a non- railed transfer crane. 5,610,816, Cl. 364-424.028.
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DiPalma, Joseph; King, David R.; Gilman, Thomas H.; Couture-Dorschner, Laurie; Stilp, Timothy S.; and Finch, Valerie V., 5,609,588, Cl. 604-369.000.
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Kimoto, Koichi: *See*—
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Kimura, Mayumi: *See*—
Yoshihara, Toshiyuki; Anayama, Hideki; Yamazaki, Itaru; Ainoya, Hideyuki; Hirano, Hidetoshi; and Kimura, Mayumi, 5,610,690, Cl. 399-167.000.
Kimura, Naofumi, to Sharp Kabushiki Kaisha. Reflection type liquid crystal display device with bumps on the reflector. 5,610,741, Cl. 349-113.000.
Kimura, Sachiko: *See*—
Akiyama, Yoshikazu; and Kimura, Sachiko, 5,610,853, Cl. 365-145.000.
Kimura, Tohru: *See*—
Koike, Hiroki; Kimura, Tohru; Otsuki, Tetsuya; and Takada, Masahide, 5,610,852, Cl. 365-145.000.
Kimura, Tomio; Kuroki, Yoshiaki; Fujiwara, Hiroshi; and Anpeiji, Shigeharu, to Ube Industries, Ltd. Arylamino pyrimidine compound. 5,610,303, Cl. 544-326.000.
Kinesis Corporation: *See*—
Hargreaves, William R., 5,610,602, Cl. 341-22.000.
King, David R.: *See*—
DiPalma, Joseph; King, David R.; Gilman, Thomas H.; Couture-Dorschner, Laurie; Stilp, Timothy S.; and Finch, Valerie V., 5,609,588, Cl. 604-369.000.
King, Lamar L., II: *See*—
Seizew, Alex R.; and King, Lamar L., II, 5,609,144, Cl. 123-568.000.
King, Robert D.; de Doncker, Rik W. A. A.; and Szczesny, Paul M., to General Electric Company. Torque shudder protection device and method. 5,610,490, Cl. 318-611.000.
King, William A.: *See*—
Matthews, Andrew E.; Murray, David E.; Gates, Allen P.; Wade, John R.; Pratt, Michael J.; and King, William A., 5,609,980, Cl. 430-138.000.
Kingsley, Jack D.; and Possin, George E., to General Electric Company. Solid state radiation imager with gate electrode plane shield wires. 5,610,403, Cl. 250-370.090.
Kinscherf, Kevin M.: *See*—
Polefka, Thomas G.; Ramachandran, Pallassana; Steltenkamp, Robert J.; Connors, Thomas F.; and Kinscherf, Kevin M., 5,610,194, Cl. 514-617.000.
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, to Zexel Corporation. Laminated heat exchanger. 5,609,203, Cl. 165-153.000.
Kirihara, Shuitsu: *See*—
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.
Kirihata, Toshiaki: *See*—
DeBrosse, John K.; Kirihata, Toshiaki; and Wong, Hing, 5,610,867, Cl. 365-201.000.
Kirkpatrick, Paul A.: *See*—
Haseley, Robert K.; and Kirkpatrick, Paul A., 5,610,339, Cl. 73-660.000.
Kirn, Larry. Switching amplifier with impedance transformation output stage. 5,610,553, Cl. 330-10.000.
Kischka, Karl-Heinz; and Flemming, Ernst, to Wella Aktiengesellschaft. Hair treatment composition and method of using same. 5,609,168, Cl. 132-204.000.
Kishi, Fumio: *See*—
Kawada, Yasuo; Sakai, Hidenori; Obu, Makoto; Echigo, Katsuhiro; Kawashima, Yasuhiro; Yano, Hidetoshi; and Kishi, Fumio, 5,610,725, Cl. 358-403.000.
Kistler, Stephan F.: *See*—
Jerry, Glen A.; Kistler, Stephan F.; Lam, Joseph H.; and Stenstrom, Scott D., 5,609,686, Cl. 118-123.000.
Kitagawa, Hiroshi: *See*—
Katoh, Akira; Kitagawa, Hiroshi; and Hirota, Toshiaki, 5,609,023, Cl. 60-276.000.
Kitahara, Atsushi: *See*—
Ohno, Yugo; Shoji, Shunichi; and Kitahara, Atsushi, 5,609,525, Cl. 463-43.000.
Kitahara, Jouji: *See*—
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, 5,610,468, Cl. 310-323.000.
Kitano, Yoshihiro: *See*—
Miyashita, Masahiko; Miyazawa, Tatsuyuki; Fujii, Hiroshi; and Kitano, Yoshihiro, 5,609,486, Cl. 434-307.00A.
Kitaura, Aoi: *See*—
Uratani, Munehiro; and Kitaura, Aoi, 5,610,850, Cl. 364-769.000.
Kitayama, Koji; and Imanaka, Hideyuki, to Daikin Clutch Corporation. Damper disc assembly. 5,609,526, Cl. 464-68.000.
Kitoh, Kyosuke: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.
Kitteridge, John M.; Matthews, Andrew E.; and Watkiss, Philip J., to Du Pont (U.K.) Limited. Improvements in or relating to printing plates. 5,609,987, Cl. 430-265.000.
Kityama, Masahito: *See*—
Surzycki, Stefan J.; Kityama, Masahito; and Togasaki, Robert K., 5,610,010, Cl. 435-6.000.
Kiyono, Shigeo, to Japan Hydrazine Co., Ltd. Heat-resistant epoxy resin composition having excellent stability at normal temperature and curing agent for epoxy resin. 5,610,209, Cl. 523-428.000.
Kiyose, Atsunobu: *See*—
Itoh, Masanori; Kiyose, Atsunobu; and Hirao, Katsumi, 5,609,677, Cl. 106-168.010.
Kiyota, Toshiya: *See*—
Akiyama, Masahiko; Kiyota, Toshiya; and Ikeda, Yoshimi, 5,610,737, Cl. 349-47.000.

Klamann, Joerg-Dieter: *See*—
Birnbrich, Paul; Eicken, Ulrich; Fischer, Herbert; Klamann, Joerg-Dieter; and Schieferstein, Ludwig, 5,610,242, Cl. 525-444.500.

Klang, Jeffrey A.: *See*—
Yang, Lau S.; and Klang, Jeffrey A., 5,610,205, Cl. 522-102.000.

Kleenair Systems, Inc.: *See*—
Berriman, Lester P.; Zabsky, John M.; Davis, James W.; and Hylton, William M., 5,609,026, Cl. 60-286.000.

Kleimenhagen, Karl W.: *See*—
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Knapp, Alfred Z., to Hartman, Dawn. Automatic shut-off valve. 5,609,179, Cl. 137-68.160.

Knapp, John: *See*—
Israel, Gary E.; Knapp, John; and Foley, Mark, 5,609,903, Cl. 426-500.000.

Knapp, Michael R.: *See*—
Nikiforov, Theo; and Knapp, Michael R., 5,610,287, Cl. 536-24.300.

Kneafsey, Brendan; Guthrie, John; and Melody, David P., to Loctite (Ireland) Limited. Polymerisable compositions using air-activated latent initiator system of hydrogenated pyridine compound and acid. 5,610,251, Cl. 526-264.000.

Knowles Electronics Co.: *See*—
Salvage, Richard J.; Harrington, Steven J.; and Powell, Derek W., 5,610,989, Cl. 381-69.000.

Knowles, Jonathan K.C.: *See*—
Nyyssönen, Eini; Keränen, Sirkka; Penttilä, Merja; Takkinen, Kristiina; and Knowles, Jonathan K.C., 5,610,034, Cl. 435-69.600.

Knowles, Michael J.: *See*—
Adams, Kathy S.; and Knowles, Michael J., 5,610,877, Cl. 368-10.000.

Knowlton, Christopher M.; Strickland, Timothy A.; and O'Hara, Robert J., to Windsor Industries, Inc. Floor cleaning apparatus with pre-filter. 5,608,947, Cl. 15-340.400.

Knuebel, Georg; Hoeffkes, Horst; Neuhaus, Winifried; Lieske, Edgar, deceased (by Clause Jenckel, Executor), to Henkel Kommanditgesellschaft auf Aktien. Dyeing of keratin fibres with indolines using metal salts as catalysts. 5,609,650, Cl. 8-423.000.

Kobayashi, Haruhito; Ohta, Yoshinobu; and Nakahira, Shigeharu, to Sumitomo Wiring Systems, Ltd. Method of supplying parts and supplying device. 5,609,463, Cl. 414-675.000.

Kobayashi, Hisashi, to Praxair Technology, Inc. Direct-fired stratified atmosphere furnace system. 5,609,481, Cl. 432-22.000.

Kobayashi, Hisashi; Ding, Maynard G.; and Francis, Arthur W., Jr., to Praxair Technology, Inc. Method for processing niter-containing glassmaking materials. 5,609,662, Cl. 65-135.100.

Kobayashi, Junji, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus having a tape tension control device. 5,609,310, Cl. 242-334.600.

Kobayashi, Katsuyuki: *See*—
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuichiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, 5,610,838, Cl. 364-508.000.

Kobayashi, Kazunari: *See*—
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.

Kobayashi, Masanori: *See*—
Sakamoto, Shinichi; and Kobayashi, Masanori, 5,610,465, Cl. 310-211.000.

Kobayashi, Mikio: *See*—
Tokumaru, Yuzo; and Kobayashi, Mikio, 5,611,015, Cl. 385-98.000.

Kobayashi, Shigeru: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Kobayashi, Shinji: *See*—
Matono, Naoto; Noguchi, Hitoshi; Yamamoto, Tomomi; Kobayashi, Shinji; and Nakata, Masahiro, 5,609,971, Cl. 428-692.000.

Kobayashi, Tadashi; Pushpalal, Game K. D.; and Hasegawa, Masaki, to Maeta Concrete Industry Ltd. Cement, cement products, molding material, a concrete member and a method of producing the same. 5,609,680, Cl. 106-696.000.

Koch, Richard C., to View 'N Store, Inc. Photograph display and storage tray system. 5,609,252, Cl. 206-455.000.

Kodosky, Jeffrey L.; Truchard, James J.; and MacCrisken, John E., to National Instruments Corporation. Graphical system for modelling a process and associated method. 5,610,828, Cl. 364-489.000.

Koehrsen, Craig L.: *See*—
Gudat, Adam J.; Bradbury, Walter J.; Christensen, Dana A.; Clow, Richard G.; Devier, Lonnie J.; Kemner, Carl A.; Kleimenhagen, Karl W.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Rao, Prithvi N.; Schmidt, Larry E.; Sennott, James W.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Singh, Sanjiv J.; Stafford, Darrell E.; Weinbeck, Louis J.; West, Jay H.; Whittaker, William L.; and Wu, Baoxin, 5,610,815, Cl. 364-424.027.

Koenig, Robert H. Operation verification system and method for navigational instruments. 5,610,600, Cl. 340-976.000.

Koenigseder, Sigmund A.: *See*—
Vines, Landon B.; Koenigseder, Sigmund A.; Cain, John L.; Lee, Chang-Ou; and Fujishiro, Felix, 5,610,105, Cl. 437-235.000.

Koeppe, Siegmar: *See*—
Weber, Werner; Koeppe, Siegmar; Klose, Helmut; and Huebner, Holger, 5,610,531, Cl. 324-765.000.

Koga, Minoru: *See*—
Hamada, Kouki; Mizusawa, Minoru; and Koga, Minoru, 5,609,834, Cl. 422-196.000.

Koh, Hen-Sik; and Hayama, Ichizo, to Asahi Foods Co., Ltd. Whipping cream compositions possessing a lowered fat content and improved acid resistance and freeze resistance, and process for producing the same. 5,609,904, Cl. 426-565.000.

Kohler Co.: *See*—
Jaeckels, Norman J.; and Mesun, Randy O., 5,608,923, Cl. 4-325.000.
Lowry, Scott R.; Bonnell, Thomas A.; and Giese, Robert C., 5,608,927, Cl. 4-615.000.

Kohler, Ernst; Sabrowski, Bernd; and Altenhofen, Ulrich, to Wurttembergische Filztuchfabrik D. Geschmay GmbH. Drying screen for paper making machine. 5,609,936, Cl. 428-107.000.

Kohn, Harold, to International Business Machines Corporation. Manufacturing circuit boards using a pick and place machine. 5,609,292, Cl. 228-246.000.

Köhn, Heinz-Gerhard: *See*—
Eger, Matthias; Köhn, Heinz-Gerhard; Schulze, Werner; and Berg, Christoph, 5,610,343, Cl. 73-862.628.

Kohno, Yasushi: *See*—
Ido, Yoichi; and Kohno, Yasushi, 5,609,684, Cl. 118-13.000.

Kohrs, Douglas W.; Yuan, Hansen A.; and Stassen, David W., to Spine-Tech, Inc. Spinal implant. 5,609,636, Cl. 623-17.000.

Koide, Tomoyuki: *See*—
Yokokawa, Takuya; and Koide, Tomoyuki, 5,610,006, Cl. 430-604.000.

Koike, Hiroki; Kimura, Tohru; Otsuki, Tetsuya; and Takada, Masahide, to NEC Corporation. Ferroelectric memory and method for controlling operation of the same. 5,610,852, Cl. 365-145.000.

Koike, Huji, to Royal Industries Co., Ltd. Sewing machine including cloth presser lever lifting. 5,609,116, Cl. 112-169.000.

Koike, Tadashi: *See*—
Hayashi, Kousou; and Koike, Tadashi, 5,610,774, Cl. 360-15.000.

Koito Manufacturing Co., Ltd.: *See*—
Yamada, Atsushi; Okuda, Tadayuki; Hagiwara, Masaki; and Yoshida, Yoshihide, 5,609,652, Cl. 29-882.000.
Yanagihara, Hirokazu; and Takezawa, Shirou, 5,609,407, Cl. 362-61.000.

Koivula, Markku; and Lukkaroinen, Ahti, to KCI Konecranes International Corporation. Apparatus and procedure for the mounting of a journal box. 5,608,971, Cl. 29-898.070.

Kojima, Kiyoshi; and Takahashi, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method for producing alloy powder of the R_2T_{17} system, a method for producing magnetic powder of the $R_2T_{17}N_x$ system, and a high pressure heat-treatment apparatus. 5,609,695, Cl. 148-104.000.

Kojima, Masami; and Kato, Naohito, to Nippondenso Co., Ltd. Internal combustion engine ignition system. 5,609,145, Cl. 123-634.000.

Kojima, Tadahiro: *See*—
Yokota, Masahiro; Kojima, Tadahiro; and Makimoto, Shuuji, 5,610,473, Cl. 313-402.000.

Kojima, Takashi: *See*—
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,609,800, Cl. 264-29.600.

Kojima, Yoshikazu: *See*—
Suzuki, Yukio; Konishi, Haruo; and Kojima, Yoshikazu, 5,610,428, Cl. 257-399.000.

Kokaji, Harumi, to Ricoh Company, Ltd. Spread spectrum communication system having a minimized bit error rate. 5,610,938, Cl. 375-202.000.

Kokta, Milan R.: *See*—
Jani, Mahendra G.; Barnes, Norman P.; Murray, Keith E.; and Kokta, Milan R., 5,610,933, Cl. 372-41.000.

Kokubo, Hideyuki, to Fuji Photo Film Co., Ltd. Color thermal printing method. 5,610,649, Cl. 347-175.000.

Kokubo, Tadashi, to Foundation for Promotion of Ion Engineering, The. Titanium-based bone-bonding composites having inverted concentration gradients of alkali and titanium ions in a surface layer. 5,609,633, Cl. 623-16.000.

Kokubu Indusrial Co., Ltd.: *See*—
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Nakajima, Yasuyuki, 5,610,729, Cl. 358-463.000.

Kolb, Eric S.; and Mehta, Parag G., to Polaroid Corporation. Electroluminescent device with polymeric charge injection layer. 5,609,970, Cl. 428-690.000.

Kolbe, Wilfried: *See*—
Rostalski, Fred; Obermeier, Diethard; Steinweg, Ewald; Kolbe, Wilfried; and Schirrich, Klaus, 5,609,556, Cl. 493-226.000.

Kolberg, Raymond F.: *See*—
Inaba, Koichi; Uchida, Kensuke; and Kolberg, Raymond F., 5,609,940, Cl. 428-156.000.

Kolesa, Michael S.; Aranyi, Ernie; and Kappel, Gary S., to United States Surgical Corporation. Endoscopic surgical apparatus with rotation lock. 5,609,601, Cl. 606-170.000.

Kolor Kollar, Inc.: *See*—
Cooley, June E.; and Mack, Anna H., 5,608,949, Cl. 24-30.50R.

Koltz, Irving M.: *See*—
Burtch, Ronald P.; and Koltz, Irving M., 5,608,977, Cl. 40-124.150.

Komai, Hiroshi: *See*—
Kaneko, Masaru; Yamazaki, Shigeru; Motegi, Akihiko; Narita, Masaki; and Komai, Hiroshi, 5,610,724, Cl. 358-400.000.

Komatsu, Ltd.: *See*—
Imamura, Toshihide; Kadotani, Kanichi; Hayakashi, Bunji; Imaizumi, Hisaakira; Shakushi, Tetsuo; Matsumoto, Toshihiko; and Watanabe, Genichiro, 5,609,296, Cl. 239-43.000.

Komatsu, Manabu, to Ricoh Company, Ltd. Image processing apparatus having unevenly gamut dividing color-converting function. 5,610,732, Cl. 358-525.000.

Komatsubara, Satoru: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.

Komine, Hiroshi: *See*—
Brosnan, Stephen J.; and Komine, Hiroshi, 5,610,705, Cl. 356-28.500.

Kompenhans, Jürgen: *See*—
Raffel, Markus; Kompenhans, Jürgen; and Höfer, Hans, 5,610,703, Cl. 356-28.000.

Komuro, Chikara: *See*—
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, 5,610,315, Cl. 549-389.000.

Komuro, Hirokazu; Noguchi, Hiromichi; and Mori, Takahiro, to Canon Kabushiki Kaisha. High molecular weight compound having a monomer chain forming a homopolymer rubber and a photopolymerizable resin composition containing the same. 5,610,206, Cl. 522-121.000.

Komuro, Toshio, to NEC Corporation. Multi-valued semiconductor memory device. 5,610,855, Cl. 365-149.000.

Kondo, Syunichi: *See*—
Sorori, Tadahiro; Okamoto, Yasuo; Kondo, Syunichi; and Kurita, Hiromichi, 5,609,992, Cl. 430-281.100.

Kondo, Tetsujiro, to Sony Corporation. Apparatus for effecting A/D conversion on image signal. 5,610,998, Cl. 382-224.000.

Kondo, Tetsujiro: *See*—
Uchida, Masashi; Kondo, Tetsujiro; Nakaya, Hideo; Horishi, Takashi; and Ishizaka, Toshihiro, 5,610,658, Cl. 348-416.000.

Kondoh, Nobuo: *See*—
Iwao, Toru; Hirai, Kenichi; Kondoh, Nobuo; Yamanouchi, Koichi; and Yokoyama, Kazumasa, 5,610,169, Cl. 514-334.000.

Kondratenko, Vladimir S., to Fonon Technology Limited. Method of splitting non-metallic materials. 5,609,284, Cl. 225-1.000.

Kondratiev, Serguei: *See*—
Chen, Dongpei; Hartmann, Clinton S.; Kondratiev, Serguei; Plessky, Victor; and Sharif, Mohammed A., 5,610,566, Cl. 333-194.000.

Konegen, Herbert: *See*—
Fuerstenau, Charles; Konegen, Herbert; Hildebrandt, Wolfgang; and Seigert, Peter, 5,609,527, Cl. 464-145.000.

Konica Corporation: *See*—
Sugano, Kazuyoshi; and Ito, Kiyohide, 5,610,679, Cl. 396-516.000.
Tanaka, Shigeo, 5,610,004, Cl. 430-569.000.
Taniguchi, Tetsuya; Goto, Kiyoshi; Akiyama, Takeo; Hosoi, Miyuki; Masuda, Tetsuya; and Mochizuku, Hideaki, 5,609,985, Cl. 430-259.000.

Konishi, Haruo: *See*—
Suzuki, Yukio; Konishi, Haruo; and Kojima, Yoshikazu, 5,610,428, Cl. 257-399.000.

Konishi, Keiichi: *See*—
Kusumoto, Keiichi; Konishi, Keiichi; Isozumi, Shuzo; and Morishita, Akira, 5,609,542, Cl. 475-331.000.

Konishi, Nobuo; and Sekiguchi, Kenji, to Tokyo Electron Limited. Apparatus for removing process liquid. 5,608,943, Cl. 15-302.000.

Konrad, Gregory A.: *See*—
Nonweiler, Mark A.; Konrad, Gregory F.; and Wiatrowski, Dennis A., 5,610,215, Cl. 524-376.000.

Konrad, Gregory F.: *See*—
Nonweiler, Mark A.; Konrad, Gregory F.; and Wiatrowski, Dennis A., 5,610,215, Cl. 524-376.000.

Koppel AG: *See*—
Leidinger, Gustav, 5,609,089, Cl. 91-516.000.

Korea Telecommunication Authority: *See*—
Kim, Young H., 5,610,538, Cl. 326-87.000.

Korman, Charles S.; Jacobs, Israel S.; Mallick, John A.; and Roshen, Waseem A., to General Electric Company. High frequency, high density, low profile, magnetic circuit components. 5,609,946, Cl. 428-209.000.

Korwin-Pawlowski, Michael: *See*—
Brogle, James J.; Davis, Harold P.; Guillot, Jean-Michel; and Korwin-Pawlowski, Michael, 5,610,434, Cl. 257-619.000.

Kosaki, Yukio: *See*—
Itoh, Takashi; Kosaki, Yukio; Chonan, Takeshi; Matsuda, Takashi; Kanno, Yasuharu; Wakabayashi, Masao; and Nakamura, Makoto, 5,609,839, Cl. 423-213.200.

Koseki, Hideki: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,610,338, Cl. 73-652.000.

Koseki, Shinya; and Kawamura, Kiyoshi, to Yamaha Corporation. Keyboard musical instrument having hammer stopper exactly position at blocking position. 5,610,356, Cl. 84-719.000.

Koshiro, Akihiko: *See*—
Sawae, Shinichi; Koshiro, Akihiko; Odaka, Kouiti; and Ogino, Teruaki, 5,609,374, Cl. 293-102.000.

Kostreski, Bruce; and Sistanizadeh, Kamran, to Bell Atlantic Network Services, Inc. Shared receiving systems utilizing telephone cables as video drops. 5,610,916, Cl. 370-487.000.

Kotake, Yoshihiko: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.

Kotoh, Satoru: *See*—
Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, 5,609,781, Cl. 219-121.840.

Kotowski, Stephan; Bedel, Reinhard; and Busse, Bernd, to Heraeus Elektroden GmbH. Anode for cathodic protection against corrosion. 5,609,748, Cl. 205-734.000.

Koukourakis, Nicholas: *See*—
Crouser, Darwin S.; Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Wareham, Richard A.; and Vincent, Conway, 5,608,945, Cl. 15-328.000.

Kowa Company Ltd.: *See*—
Hirono, Taisuke; and Ueda, Kenkichi, 5,610,672, Cl. 351-205.000.

Koyama, Arata: *See*—
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Koyanagi, Osamu: *See*—
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.

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Moriya, Yukio; Koyanagi, Satoru; Fujimura, Tetsuya; Nagahama, Masayuki; Yamazaki, Kazuyuki; and Hishiyama, Toru, 5,609,220, Cl. 180-253.000.

Kozma, Thomas G.: *See*—
Fearnot, Neal E.; Kozma, Thomas G.; Ragheb, Anthony O.; and Voorhees, William D., 5,609,629, Cl. 623-1.000.

Kraft Foods, Inc.: *See*—
Holmes, Terry L.; Skaar, Gary R.; Gundlach, Larry C.; and Flisram, Dennis G., 5,609,512, Cl. 451-48.000.

Kraler, Franz. Roller blind system. 5,609,196, Cl. 160-271.000.

Kramer, Claus; Verhagen, Armin-Maria; Trachte, Dietrich; and Keuper, Gerhard, to Robert Bosch GmbH. Fuel supply system for an internal combustion engine. 5,609,140, Cl. 123-497.000.

Kramer, Harold: *See*—
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Kramer, Robert L.: *See*—
Erickson, Jack A.; Melberg, John M.; Kramer, Robert L.; and Hallis, John M., 5,610,367, Cl. 149-35.000.

Kramer, Werner: *See*—
Glombik, Heiner; Enhsen, Alfons; Kramer, Werner; and Wess, Günther, 5,610,151, Cl. 514-172.000.

Kraslavsky, Andrew J.: *See*—
Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Kraus, Andreas: *See*—
Behrens, Volker; Honig, Thomas; Kraus, Andreas; Saeger, Karl E.; Schmidberger, Rainer; and Staneff, Theodor, 5,610,347, Cl. 75-247.000.

Krautschneider, Wolfgang H.: *See*—
Althoff, Klaus; Krautschneider, Wolfgang H.; and Lau, Klaus J., 5,610,540, Cl. 327-51.000.

Kreis, Gundolf, to Audi, AG. End part for a vehicle longitudinal beam. 5,609,004, Cl. 52-655.100.

Kremminger, Peter: *See*—
Undheim, Kjell; Solbakken, Magne; Agner, Erik; Kremminger, Peter; and Lange, Meinolf, 5,610,141, Cl. 514-15.000.

Kretzschmar, Otto: *See*—
Borghorst, Sharla; Baumann, Erich; Golby, John; Hagmann, Peter; Herbrechtsmeier, Peter; Kretzschmar, Otto; Seiferling, Bernhard; De Lucchi, Michele; Fritze, Torsten; and Cubo, Masahiko, 5,609,246, Cl. 206-5.100.

Krichmar, Jeff L.: *See*—
Rafal, Marc D.; Starin, Eric; and Krichmar, Jeff L., 5,610,673, Cl. 351-210.000.

Krieger, Joseph P., to JTJ Systems, Inc. Water treatment methods. 5,609,769, Cl. 210-704.000.

Krishan, Baldev; Singh, Baljeet; and Moorthy, Harihara, to Novalink Technologies. Method and apparatus for implementing a PCMCIA auxiliary port connector for selectively communicating with peripheral devices. 5,611,055, Cl. 395-281.000.

Krivacic, Robert T.: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,611,050, Cl. 395-200.090.

Krivak, Thomas G.: *See*—
Waddell, Walter H.; Evans, Larry R.; and Krivak, Thomas G., 5,610,221, Cl. 524-492.000.

Krock, Wolfgang: *See*—
Werdecker, Waltraud; Gerhardt, Rolf; and Krock, Wolfgang, 5,610,116, Cl. 502-232.000.

Kronenthal, David R.: *See*—
Real, Sharon D.; and Kronenthal, David R., 5,610,308, Cl. 546-208.000.

Kropp, Darren: *See*—
Hofbauer, Thomas; and Kropp, Darren, 5,610,496, Cl. 320-13.000.

Kruckemeyer, William C.: *See*—
Johnston, Gary L.; Zehnder, James W., II; Kruckemeyer, William C.; Oliver, Michael L.; and Longhouse, Richard E., 5,609,401, Cl. 303-155.000.

Krüger, Bernd-Wieland: *See*—
Fischer, Reiner; Bretschneider, Thomas; Krüger, Bernd-Wieland; Santel, Hans-Joachim; Dollinger, Markus; Wachendorff-Neumann, Ulrike; and Erdelen, Christoph, 5,610,122, Cl. 504-251.000.

Kruger, Petrus B.: *See*—
Liebenberg, Roelof W.; Kruger, Petrus B.; Bouic, Patrick J. D.; and De Vos Albrecht, Carl F., 5,609,874, Cl. 424-195.100.

Krulevitch, Peter A.: *See*—
Benett, William J.; Krulevitch, Peter A.; Lee, Abraham P.; Northrup, Milton A.; and Folta, James A., 5,609,608, Cl. 606-205.000.

Krupp Fordertechnik GmbH: *See*—
Abel, Burkhard; Birkenfeld, Gerhard; Lücking, Manfred; Vogt, Ulrich P.; and Zimek, Dieter, 5,609,460, Cl. 414-334.000.

Kruse, Ernst O.; and Renner, Christian, to Georg Fischer Giessereianlagen AG. Apparatus for measuring the properties of mold materials. 5,609,198, Cl. 164-150.100.

Krust, Bernard: *See*—
Montagnier, Luc; Krust, Bernard; Chamaret, Solange; Clavel, Francois; Chermann, Jean-Claude; and Barre-Sinoussi, Francoise, 5,610,035, Cl. 435-70.210.

Krütten, Victor. Drinking aid device for elderly people, patients and the like. 5,609,582, Cl. 604-247.000.

Krzyske, Dennis C.: *See*—
Magan, Amit T.; Grant, Kathleen A.; and Krzyske, Dennis C., 5,610,328, Cl. 73-117.300.

Ku, Wei-Yi: *See*—
Diba, Sholeh; and Ku, Wei-Yi, 5,610,536, Cl. 326-40.000.

Kuboki, Keiju: *See*—
Takada, Yoshihiro; Watanabe, Nobuyuki; Sugishima, Kiyohisa; and Kuboki, Keiju, 5,610,639, Cl. 347-19.000.

Kubota Corporation: *See*—
Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, 5,610,587, Cl. 340-572.000.
Maki, Atsushi; Toshima, Toshio; and Ishihara, Takahiro, 5,609,368, Cl. 285-12.000.

Kubota, Michio: *See*—
Maruta, Kazuhiko; Kubota, Michio; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,610,047, Cl. 435-201.000.

Kubota, Shinichi: *See*—
Mutoh, Eiji; Kubota, Shinichi; and Maeda, Susumu, 5,610,574, Cl. 340-426.000.

Kubota, Takao: *See*—
Ikada, Yoshito; Gen, Shokyu; Kubota, Takao; and Kyotani, Ikuo, 5,609,881, Cl. 424-425.000.

Kubouchi, Kenji: *See*—
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, 5,609,345, Cl. 277-180.000.

Kuchenbecker, Thomas, to Siemens Aktiengesellschaft. Optical fiber plug-type connector. 5,611,012, Cl. 385-86.000.

Kuchta, Richard, to Gerber Garment Technology, Inc. Lubrication aid for treating cutting blade and sharpener. 5,609,082, Cl. 83-13.000.

Kudo, Yuji, to Nikon Corporation. Illuminating optical apparatus. 5,610,763, Cl. 359-619.000.

Kudomi, Shigeki: *See*—
Awano, Naomi; Inuzuka, Hajime; Mizukoshi, Masahito; and Kudomi, Shigeki, 5,610,412, Cl. 257-85.000.

Kuhn, John B.; Kettler, Daniel J.; and Stricker, David K., to Deere & Company. Rotating mower baffle mechanism. 5,609,011, Cl. 56-17.500.

Kuipers, Dominica R.: *See*—
Kuipers, Raymond J.; and Kuipers, Dominica R., 5,610,669, Cl. 351-122.000.

Kuipers, Raymond J.; and Kuipers, Dominica R. Temple for eyeglasses embodying an integrally formed ear piece. 5,610,669, Cl. 351-122.000.

Kumagawa, Katsuhiko: *See*—
Uno, Mitsuhiro; Takubo, Yoneharu; Kumagawa, Katsuhiko; Asada, Satoshi; and Takada, Naomi, 5,610,739, Cl. 349-39.000.

Kumazawa, Kazuhiko: *See*—
Wada, Yukihisa; Naito, Shinobu; and Kumazawa, Kazuhiko, 5,609,807, Cl. 264-177.110.

Kumazawa, Yoshihiro: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Sbigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Kume, Toshihiro: *See*—
Sato, Kazuomi; Kume, Toshihiro; Ichimura, Yoshiaki; and Takahashi, Takuya, 5,609,492, Cl. 439-136.000.

Kundert, Kenneth S., to Cadence Design Systems, Inc. Ratiometric fourier analyzer. 5,610,847, Cl. 364-576.000.

Kung, Hank F., to University of Pennsylvania, The Trustees of the. Serotonin ($5\text{-}HT_{1A}$) receptor ligands and imaging agents. 5,609,849, Cl. 424-185.000.

Kunselman, Garry C.: *See*—
Carroll, Charles E.; Kunselman, Garry C.; and Tobey, Arthur E., 5,610,706, Cl. 356-70.000.

Kunze, Bernd: *See*—
Joest, Rolf H.; Geus, Hans G.; Balk, Hermann; Kunze, Bernd; and Schulz, Herbert, 5,609,808, Cl. 264-210.700.

Kunze, Brigitte: *See*—

Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

Kunze, Norbert; and Müller, Dieter, to U.S. Philips Corporation. Magnetic tape apparatus with tape edge guides for reduced tape edge wear. 5,610,787, Cl. 360-130.210.

Kuo, Chun-Jen: *See*—
Wu, Chih-Siung; and Kuo, Chun-Jen, 5,611,053, Cl. 395-280.000.

Kuo, Fu-Chin. Lipstick molding mold cleaning apparatus. 5,609,171, Cl. 134-56.00R.

Kupnicki, Richard A.: *See*—
Chen, Keping; and Kupnicki, Richard A., 5,610,942, Cl. 375-242.000.

Kurakake, Yasushi: *See*—
Hasebe, Masahiko; Kurakake, Yasushi; Mishima, Junichi; Asahi, Yasuhiko; and Uehara, Satoshi, 5,610,355, Cl. 84-658.000.

Kurata, Mitsuhiro: *See*—
Itoh, Shubei; and Kurata, Mitsuhiro, 5,610,621, Cl. 345-3.000.

Kure, Naohisa: *See*—
Tabata, Yoshiko; Kajino, Takayoshi; and Kure, Naohisa, 5,609,860, Cl. 424-70.500.

Kurimoto, Kazumi: *See*—
Yamashita, Kyoji; Odanaka, Shinji; Kurimoto, Kazumi; and Umimoto, Hiroyuki, 5,610,430, Cl. 257-412.000.

Kurino, Hiroyuki; and Miyai, Yoichi, to Texas Instruments Inc. Method for concurrently forming holes for interconnection between different conductive layers and a substrate element or circuit element close to the substrate surface. 5,610,100, Cl. 437-195.000.

Kurita, Hiromichi: *See*—
Sorori, Tadahiro; Okamoto, Yasuo; Kondo, Syunichi; and Kurita, Hiromichi, 5,609,992, Cl. 430-281.100.

Kurita, Naoto: *See*—
Mita, Hideo; Misawa, Hideo; Kurita, Naoto; and Kanda, Katsunobu, 5,609,034, Cl. 62-6.000.

Kurita, Yukinobu, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Brushless motor with hall elements for controlling drive circuit and for detecting a position of rotor by use of magnetic flux varying means. 5,610,457, Cl. 310-68.00B.

Kuroda, Kenichi; Terasawa, Masaaki; and Matsubara, Kiyoshi, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corporation. Semiconductor integrated circuit device and method of manufacturing the same. 5,610,420, Cl. 257-315.000.

Kuroda, Kouki: *See*—
Nagahira, Jyoji; Suzuki, Koji; and Kuroda, Kouki, 5,610,810, Cl. 364-167.010.

Kuroda, Ryo: *See*—
Takimoto, Kiyoshi; Miyazaki, Toshihiko; Sakai, Kunihiro; and Kuroda, Ryo, 5,610,898, Cl. 369-126.000.

Kuroki, Yoshiaki: *See*—
Kimura, Tomio; Kuroki, Yoshiaki; Fujiwara, Hiroshi; and Anpeiji, Shigeharu, 5,610,303, Cl. 544-326.000.

Kuronuma, Akira: *See*—
Murata, Takayuki; Fukui, Hiroshi; Omo, Shinichi; and Kuronuma, Akira, 5,610,634, Cl. 347-5.000.

Kurosawa, Fumio: *See*—
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, 5,610,786, Cl. 360-122.000.

Kurosawa, Yukio: *See*—
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.

Kuroyanagi, Satoshi: *See*—
Tomonaga, Hiroshi; Matsuoka, Naoki; Watanabe, Miwako; Kuroyanagi, Satoshi; Ezaki, Yutaka; Hakata, Akira; Takechi, Ryuichi; and Kawai, Masaaki, 5,610,913, Cl. 370-219.000.

Kuruganti, Vijaya K.: *See*—
Hiromoto, Yasuyuki; Gaggar, Satish K.; and Kuruganti, Vijaya K., 5,610,235, Cl. 525-71.000.

Kusukawa, Kikuo: *See*—
Moriyama, Shigeo; Kawamura, Yoshio; Homma, Yoshio; Kusukawa, Kikuo; and Furusawa, Takeshi, 5,609,511, Cl. 451-5.000.

Kusumoto, Keiichi; Konishi, Keiichi; Isozumi, Shuzo; and Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Planetary gear speed reducer and machining method for planetary gear supporting pin for the same. 5,609,542, Cl. 475-331.000.

Kutami, Michinori; Nakazawa, Akira; Kikuchi, Hideyuki; and Yamagishi, Katsunori, to Fujitsu, Ltd. Ink jet printing head having a detachable pressure chamber. 5,610,643, Cl. 347-54.000.

Kuver, Walter D.: *See*—
Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Kuwabara, Hideshi: *See*—
Watanabe, Hidenori; Hoshi, Junichi; Yuge, Yutaka; Okita, Akira; and Kuwabara, Hideshi, 5,610,435, Cl. 257-629.000.

Kuwabara, Yoshinori; and Ryuo, Toshihiko, to Shin-Etsu Chemical Co., Ltd. Radiant ray-detector and method for producing same. 5,610,401, Cl. 250-367.000.

Kuwana, Takaaki: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; and Kuwana, Takaaki, 5,610,262, Cl. 528-196.000.

Kuwata, Makoto: *See*—
Masaki, Akira; Kuwata, Makoto; Satomura, Ryuichi; and Tamba, Nobuo, 5,610,535, Cl. 326-39.000.

Kuzuoka, Kaoru, to Nippondenso Co., Ltd. Thermistor type temperature sensor. 5,610,571, Cl. 338-22.00R.

Kvitko, Idel Y.; and Azran, Jack, to UV Stab Ltd. Pyrazole-and piperidine-containing compounds and their metal complexes as light stabilizers. 5,610,305, Cl. 546-6.000.

Kweon, Kook-Hwan: *See*—
Park, Hee-Chail; Kweon, Kook-Hwan; and Im, Jeon-Taek, 5,610,874, Cl. 365-236.000.

Kwiatkowski, Edward J.; and Swaim, David G., to Vital Signs, Inc. Injection holder for a plungerless syringe and combination plungerless syringe and injection holder. 5,609,580, Cl. 604-212.000.

Kwon, Chul H.; Hong, Hyung-Ki; Kim, Sung T.; Lee, Kyu C.; Yun, Dong H.; Shin, Hyun W.; and Park, Hyeon S., to Goldstar Co., Ltd. Vegetable freshness keeping device having a sensor. 5,609,096, Cl. 99-468.000.

Kyle, Donald J.: *See*—
Mavunkel, Babu J.; Lu, Zhijian; and Kyle, Donald J., 5,610,142, Cl. 514-16.000.

Kyle, James H., to Pompanette, Inc. Removable light limiting blind assembly. 5,608,990, Cl. 49-38.000.

Kyotani, Ikuo: *See*—
Ikada, Yoshito; Gen, Shokyu; Kubota, Takao; and Kyotani, Ikuo, 5,609,881, Cl. 424-425.000.

Kyro, Bruce E.: *See*—
Schlesinger, Morton L.; and Kyro, Bruce E., 5,610,552, Cl. 327-560.000.

Kyrtsos, Christos T.: *See*—
Gudat, Adam J.; Bradbury, Walter J.; Christensen, Dana A.; Clow, Richard G.; Devier, Lonnie J.; Kemner, Carl A.; Kleimenhagen, Karl W.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Rao, Prithvi N.; Schmidt, Larry E.; Sennott, James W.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Singh, Sanjiv J.; Stafford, Darrell E.; Weinbeck, Louis J.; West, Jay H.; Whittaker, William L.; and Wu, Baoxin, 5,610,815, Cl. 364-424.027.

L.A.P. Innovations, Inc.: *See*—
Panyon, Larry A., Jr., 5,608,940, Cl. 15-105.000.

La Chemise Lacoste: *See*—
Lacoste, René, 5,608,913, Cl. 2-115.000.

Labitzke, Ekkehard: *See*—
Thoma, Wulf; and Labitzke, Ekkehard, 5,609,816, Cl. 264-517.000.

Laboratorio Chimico Internazionale S.p.A.: *See*—
Belli, Aldo; Chiodini, Giorgio; and Maiorana, Stefano, 5,610,316, Cl. 548-429.000.

Labrie, Fernand, to Endorecherche Inc. Method of treatment of androgen-related diseases. 5,610,150, Cl. 514-170.000.

Lachman, Larry M.: *See*—
Johnson, William J.; Vegatoro, Guillermo; Lachman, Larry M.; and Flores, David, 5,610,825, Cl. 364-485.000.

Lackey, W. Jack; and Hanigofsky, John A., to Georgia Tech Research Corp. Ceramic fabric forming method. 5,609,912, Cl. 427-212.000.

Lacoste, René, to La Chemise Lacoste. Upper body garments having elastic gussets. 5,608,913, Cl. 2-115.000.

Laffey, Martin S.: *See*—
Foster, Donald D.; Laffey, Martin S.; and Zurcher, John A., 5,609,299, Cl. 239-304.000.

Lafleur, Louis: *See*—
Auger, François A.; Rouabhia, Mahmoud; Lafleur, Louis; and Germain, Lucie, 5,610,007, Cl. 435-1.100.

Laflin, Barbara D.: *See*—
Willard, David F.; Eaton, Eric T.; and Laflin, Barbara D., 5,610,919, Cl. 370-336.000.

Lagger, Heinz; Reidinger, Rolf; and Wolffram, Werner, to Nokia Technology GmbH. Picture tube having centering washer and spring for joining a mask/frame inside a shielding case. 5,610,474, Cl. 313-406.000.

Lago, Rudolph M.; Marler, David O.; and McCullen, Sharon B., to Mobil Oil Corporation. Method for modifying a catalyst. 5,610,112, Cl. 502-63.000.

Lagocki, Peter A.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Witter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Lagrange, Alain: *See*—
Richard, Hervé; Leduc, Madeleine; and Lagrange, Alain, 5,610,257, Cl. 528-15.000.

Lahanas, Konstantinos M.: *See*—
Cohen, Isaac D.; Bevacqua, Andrew J.; Toma, Daniela; and Lahanas, Konstantinos M., 5,610,199, Cl. 514-721.000.

Lahti, Gregg D.; Rimpo, Charles R.; and Story, Franklyn H., to VLSI Technology, Inc. Multi-purposes keyboard interface. 5,610,601, Cl. 341-22.000.

Lai, Chin T.: *See*—

Tan, Haw-Chan; Ma, Frank C.; and Lai, Chin T., 5,609,499, Cl. 439-445.000.
Lai, Joseph M. Motion detection imaging device and method. 5,610,580, Cl. 340-541.000.
Lai, Yu-Chin, to Bausch & Lomb Incorporated. Method of curing methacrylate-based compositions. 5,610,204, Cl. 522-44.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Billy, Jean; and Granier, François, 5,609,040, Cl. 62-622.000.
Laird, Lindsay: *See—*
Ashby, Alan M.; and Laird, Lindsay, 5,609,644, Cl. 623-20.000.
Lam, Joseph H.: *See—*
Jerry, Glen A.; Kistler, Stephan F.; Lam, Joseph H.; and Stenstrom, Scott D., 5,609,686, Cl. 118-123.000.
Lam, Patrick Y.; Jadhav, Prabhakar K.; Eyermann, Charles J.; Hodge, Carl N.; De Lucca, George V.; and Rodgers, James D., to Du Pont Merck Pharmaceutical Company, The. Substituted cyclic carbonyls and derivatives thereof useful as retroviral protease inhibitors. 5,610,294, Cl. 540-492.000.
Lam Research Corporation: *See—*
Lenz, Eric H.; and Dawson, Keith E., 5,609,720, Cl. 156-643.100.
Lam, Stephen T.; Torkewitz, Nancy R.; Nautiyal, Chandra S.; and Dion, Patrice. Microorganisms with mannopine catabolizing ability. 5,610,044, Cl. 435-172.300.
Lamanna, William M.: *See—*
Ha, Chau T.; and Lamanna, William M., 5,609,990, Cl. 430-270.110.
Lamb, Miles P.; and Capuano, Louis, to Inventio AG. Compensation guidance system. 5,609,225, Cl. 187-406.000.
Lambers, Johannes W. J.: *See—*
Smeets, Jan W. H.; De Pater, Robertus M.; and Lambers, Johannes W. J., 5,610,040, Cl. 435-129.000.
Lambert, Frank H., to Wallace, Stuart. Flexible thimble type finger protector. 5,609,165, Cl. 128-879.000.
LaMed, Inc.: *See—*
Lamont, William D., 5,609,570, Cl. 602-65.000.
Lami, Massimo: *See—*
Marchionna, Mario; and Lami, Massimo, 5,610,202, Cl. 518-700.000.
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Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., 5,609,574, Cl. 604-53.000.

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Doll, Michael J.; Kleven, Donald J.; and Pobiel, Joseph, 5,610,920, Cl. 370-389.000.

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Duncan, Alan L.; Acton, Daniel S.; and Kendrick, Richard L., 5,610,707, Cl. 356-121.000.
Sigler, Robert D., 5,610,771, Cl. 359-832.000.

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Kneafsey, Brendan; Guthrie, John; and Melody, David P., 5,610,251, Cl. 526-264.000.

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Longoria, Jose; and Chininis, Stephen P., to Kids II, Inc. Collapsible booster seat. 5,609,389, Cl. 297-37.000.

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Eyer, Martin; Fuchs, Rudolf; and McGarrity, John, 5,610,312, Cl. 548-303.100.

Looker, Robert; and McLennan, Richard, to Satron, Inc. Cargo track fitting. 5,609,452, Cl. 410-105.000.

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Lordi, Angela L. Data error detection and correction for a shared SRAM. 5,611,042, Cl. 395-182.040.

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Dufetel, Didier; Estradier, Francoise; Gaetani, Quintino; and Hocquaux, Michel, 5,610,302, Cl. 544-320.000.
Grollier, Jean-François; and Hansenne-Richoux, Isabelle, 5,610,201, Cl. 514-773.000.
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Junino, Alex; Vandenbossche, Jean J.; Richard, Herve; and Cotteret, Jean, 5,609,649, Cl. 8-409.000.
Richard, Hervé; Leduc, Madeleine; and Lagrange, Alain, 5,610,257, Cl. 528-15.000.

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Pecone, Victor K.; Smith, Russell C.; and Lory, Jay R., 5,611,057, Cl. 395-282.000.

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Lötscher, Hansruedi: *See—*
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Loziuk, Lawrence A.; Bucholtz, Brian C.; and Clinard, Ralph L., Jr., to Vectra Technologies, Inc. Pipe restraint. 5,609,328, Cl. 267-136.000.

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Priebe, Gordon W., 5,610,573, Cl. 340-146.200.
Schneider, Mark R.; and Trabucco, Robert T., 5,610,442, Cl. 257-787.000.

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Lauer, Barry A.; Beatty, Gerald F.; Larson, Ann M. R.; and Blotzer, Richard J., 5,609,696, Cl. 148-111.000.

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Mavunkel, Babu J.; Lu, Zhijian; and Kyle, Donald J., 5,610,142, Cl. 514-16.000.

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Lucas, Joseph, Jr. Railroad track assembly and method. 5,609,294, Cl. 238-9.000.

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Basavanhally, Nagesh R., 5,611,014, Cl. 385-90.000.
Bernardson, Peter S.; and Nelson, Dale H., 5,610,505, Cl. 323-312.000.
Bruce, Allan J.; and DiGiovanni, David J., 5,609,665, Cl. 65-379.000.
Eng, Kai Y.; Karol, Mark J.; and Veeraraghavan, Malathi, 5,610,904, Cl. 370-408.000.
Fangmann, Robert E.; Judy, Arthur F.; and Refi, James J., 5,611,016, Cl. 385-100.000.
Gans, Michael J.; and Yeh, Yu S., 5,610,617, Cl. 342-373.000.
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Luke, Donald A.; and Gagen, Geoffrey S., to Allied Colloids Limited. Animal litter compositions and processes for making them. 5,609,123, Cl. 119-173.000.

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Lundeby, Bruce A., to Hewlett-Packard Company. System and method for cross-triggering a software logic analyzer and a hardware analyzer. 5,611,044, Cl. 395-183.140.

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Lürssen, Klaus: *See—*
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.

Lusher, David M.: *See—*
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Lussier, Barbara B., to Eastman Kodak Company. Two-equivalent magenta photographic couplers with activity-modifying ballasting groups. 5,610,003, Cl. 430-555.000.

Lütte, Winfried, to Doduco GmbH+Co.; and Durrwachter, Eugen. Electric switch. 5,610,377, Cl. 200-50.190.

Luu, Lionel T. V., to Pacusma Co. Ltd. No-MOV protection circuitry. 5,610,793, Cl. 361-111.000.

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Meybeck, Alain; Bonte, Frédéric; and Redziniak, Gérard, 5,609,873, Cl. 424-195.100.

Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., to Donnelly Corporation. Electrochromic mirror for vehicles. 5,610,756, Cl. 359-267.000.

Ma, Chang X.: *See—*
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Ma, Frank C.: *See—*
Tan, Haw-Chan; Ma, Frank C.; and Lai, Chin T., 5,609,499, Cl. 439-445.000.

Ma, Sheau-Hwa; Hertler, Walter R.; and Simmons, Howard E., III, to E.I. Du Pont de Nemours and Company. Method for preparing high resolution polyimide images using non-photosensitive layers of poly(amic acid) or salts thereof. 5,609,914, Cl. 427-264.000.

Ma, Thomas T., to Ford Motor Company. Operation of an internal combustion engine. 5,609,021, Cl. 60-274.000.

Ma, Yu P.; and Wikswo, John P., Jr., to Vanderbilt University. Method and apparatus for detecting flaws below the surface of an electrically conductive object. 5,610,517, Cl. 324-233.000.

MacCoss, Malcolm; and Mills, Sander G., to Merck & Co., Inc. N-acylpiperidine tachykinin antagonists. 5,610,165, Cl. 514-315.000.

MacCrisken, John E.: *See—*
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Machemer, Robert; Hickingbotham, Dyson; and Dodge, Brian, to Duke University. Oscillatory coupling for surgical instruments and methods of imparting oscillatory motion thereto. 5,609,602, Cl. 606-171.000.

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Schwarzli, Josef W., 5,609,235, Cl. 194-320.000.

Mack, Anna H.: *See—*
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Macomber, Steven H.; and Lee, Patricia A., to Hughes Aircraft Company. Voltage adding diode laser array. 5,610,930, Cl. 372-36.000.
Maddern, Thomas S.; and Saunders, James K., to GPT Limited. Data verification method. 5,610,928, Cl. 371-37.100.
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Mader, Gerald E.; Dye, William P.; and Prucinsky, Matthew S., to Von Duprin, Inc. Push pad trigger release exit device with infinite deadlocking. 5,609,371, Cl. 292-164.000.
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Maeda, Eiichi; Imada, Katsuhisa; Nisbii, Motoi; and Nishinaga, Yoshihiro, to Murata Manufacturing Co., Ltd. Composite LC device with a ground electrode not formed on the inductor parts. 5,610,565, Cl. 333-185.000.
Maeda, Kunihiro: *See—*
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Maeta Concrete Industry Ltd.: *See—*
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Maffitt, Kent N.; and Keel, Beat G., to Seagate Technology, Inc. Insulator pattern for thin film head sliders. 5,610,783, Cl. 360-103.000.
Magan, Amit T.; Grant, Kathleen A.; and Krzyske, Dennis C., to Ford Motor Company. Misfire detector for 50% misfire rate. 5,610,328, Cl. 73-117.300.
Mage, Jérôme J. M., to Spy Optic, Inc. Fog-resistant sunglasses incorporating ventilation channels. 5,610,668, Cl. 351-62.000.
Maged, Jeffrey M. Method for dilating respiratory passages. 5,609,150, Cl. 128-201.180.
Mager, Herbert; and Aeby, Johann, to Wella Aktiengesellschaft. Oxidation hair dye composition made from a creamy hair dye-containing carrier and a preparation containing an oxidizing agent and polymer and method for oxidative dyeing of hair. 5,609,651, Cl. 8-435.000.
Magidson, Stanley I., to Genesis, An Environmental Corp. Distilling apparatus. 5,609,732, Cl. 202-83.000.
MAGL Power Inc.: *See—*
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Magnum Power PLC: *See—*
Symonds, Neil S., 5,610,451, Cl. 307-66.000.
Mahan, Lawrence C.: *See—*
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Mahon, Geoffrey L.; and Hensler, Ralph, to Breed Automotive Technology, Inc. Passenger restraint system with an electronic crash sensor. 5,610,817, Cl. 364-424.056.
Mahoney, Paul C. Board game. 5,609,339, Cl. 273-255.000.
Mahowich, Alexander E. Vertical log building and method for constructing the same. 5,608,997, Cl. 52-233.000.
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Maihofer, Willi, to Nordpunkt AG. Method and apparatus for the sterilization of refuse, in particular hospital refuse. 5,609,830, Cl. 422-112.000.
Maiorana, Stefano: *See—*
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Maki, Hitoshi; Kato, Shigeki; Azuma, Shinichi; Hayashi, Mikio; and Momose, Masatoshi, to Toyo Ink Manufacturing Co., Ltd. Process for the production of 6,13-dihydroquinacridones and apparatus for use for the production. 5,610,306, Cl. 546-49.000.
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Malpure, Sandesh; and Reed, Raymond B., to Delco Electronics Corp. Method of ensuring parameter coherency in a multi-processor system. 5,611,073, Cl. 395-468.000.
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Malvern, Alan R.; and Isaacs, Barry V. W., to British Aerospace Public Limited Company. Optical gyroscope. 5,610,714, Cl. 356-350.000.
Mama, Takashi: *See—*
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Mann, Scott K.; and Durlin, David L., to G&G Locotronics, Inc. System for enhancing wheel traction in a locomotive by reapplication of excitation using an S-shaped curve. 5,610,819, Cl. 364-426.050.
Manning, Monna M.; Allardice, Andrea S.; and Friedli, Floyd, to Witco Corporation. Biodegradable quaternary hair and skin conditioners. 5,610,187, Cl. 514-552.000.
Manning, Troy A., to Micron Technology, Inc. Burst EDO memory device with maximized write cycle timing. 5,610,864, Cl. 365-193.000.
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Parulski, Kenneth A.; and McGarvey, James E., 5,610,654, Cl. 348-229.000.

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Rühl, Andreas; Rentzel, Gert; McGehee, Patrick; Charamko, Serguei; and Anderson, Kim, 5,609,833, Cl. 422-173.000.

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Holmes, Martin E.; Painter, Paige M.; and McGrath, Mark J., 5,609,500, Cl. 439-540.100.

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Elliott, Isaac; Finucane, Jim; Gottlieb, Louis; O'Reilly, Daniel L.; and Johnson, Gary E., 5,610,915, Cl. 370-259.000.

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McKechnie UK Ltd.: *See*—
Loftus, Stephen C.; and Cope, Andrew C., 5,609,254, Cl. 206-506.000.

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Cohen, Fred E.; McKerrow, James H.; Ring, Christine S.; Rosenthal, Philip J.; Kenyon, George L.; and Li, Zhe, 5,610,192, Cl. 514-614.000.

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Johnson, William C.; and McMullen, Charles C., 5,610,980, Cl. 380-4.000.

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McCorkle, Donald E., Jr., 5,609,451, Cl. 410-90.000.

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Sibley, David R.; Monsma, Frederick J.; Mahan, Lawrence C.; and McVittie, Loris D., 5,610,282, Cl. 530-395.000.

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Fearnot, Neal E.; Kozma, Thomas G.; Ragheb, Anthony O.; and Voorhees, William D., 5,609,629, Cl. 623-1.000.

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Shen, Li; and Fanger, Michael W., 5,610,057, Cl. 435-334.000.

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Nobel, Gary M.; Medin, Todd; Wilson, Arthur K.; and Brown, Patricia S., 5,610,642, Cl. 347-50.000.

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Bergman, Mark; Aiger, Dror; Levit, Dan; and Tepper, Ron, 5,609,485, Cl. 434-262.000.

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Bonner, Matthew D., 5,609,621, Cl. 607-122.000.
Elgas, Roger J., 5,609,632, Cl. 623-12.000.
Mulier, Peter M. J.; and Hoey, Michael F., 5,609,151, Cl. 128-642.000.

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Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,609,850, Cl. 424-9.500.

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Kolb, Eric S.; and Mehta, Parag G., 5,609,970, Cl. 428-690.000.

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Gotz, Fritz R.; Marz, Heinrich; Meis, Harald; and Agne, Werner, 5,610,491, Cl. 318-625.000.

Meiwes, Johannes: *See*—
Schellenberg, Gerhard; and Meiwes, Johannes, 5,609,143, Cl. 123-568.000.

Mejza, Stephen J.: *See*—
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Melanson, Charles J. Belt-mounted receptacles and tote tray therefor. 5,609,282, Cl. 224-576.000.

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Erickson, Jack A.; Melberg, John M.; Kramer, Robert L.; and Hallis, John M., 5,610,367, Cl. 149-35.000.

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Drs, Josef F.; Melbye, Tom; Tjugum, Odd M.; and Valenti, Salvatore, 5,609,681, Cl. 106-802.000.

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Kneafsey, Brendan; Guthrie, John; and Melody, David P., 5,610,251, Cl. 526-264.000.

Menard, Richard. Modern toothbrush holder. 5,609,259, Cl. 211-66.000.

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Wikle, Glenn; Ramaswamy, Suresh; and Matheson, Thomas G., 5,610,832, Cl. 364-491.000.

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Schmid, Peter; Schreiber, Siegfried; and Grantz, Helmut, 5,609,382, Cl. 296-37.800.
Schmidt, Erwin; Schneider, Eberhard; and Lamsbach, Siegfried, 5,609,134, Cl. 123-322.000.

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MacCoss, Malcolm; and Mills, Sander G., 5,610,165, Cl. 514-315.000.
Witzel, Bruce E.; Rasmusson, Gary H.; Tolman, Richard L.; and Yang, Shu Shu, 5,610,162, Cl. 514-284.000.

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Moseley, Jonathan D.; Swain, Christopher J.; and Williams, Brian J., 5,610,159, Cl. 514-236.200.
Owens, Andrew P.; and Williams, Brian J., 5,610,183, Cl. 514-539.000.

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Bitonti, Alan J., 5,610,171, Cl. 514-340.000.

Merriam, Richard A.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

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Mertes, Harald: *See*—
Schmalstieg, Lutz; Pedain, Josef; and Mertes, Harald, 5,610,260, Cl. 528-49.000.

Mery, Jean Claude, to AlliedSignal Europe Services Techniques. Brake application device with plates, balls and a centering cage. 5,609,227, Cl. 188-72.700.

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Fawer, Alfward, 5,609,783, Cl. 219-137.0WM.

Messing, Terry G.: *See*—
Ekern, Ronald J.; and Messing, Terry G., 5,609,973, Cl. 429-166.000.

Mesun, Randy O.: *See*—
Jaeckels, Norman J.; and Mesun, Randy O., 5,608,923, Cl. 4-325.000.

Meybeck, Alain; Bonte, Frédéric; and Redziniak, Gérard, to LVMH Recherche. Use of an ecdysteroid for the preparation of cosmetic or dermatological compositions intended, in particular, for strengthening the water barrier function of the skin or for the preparation of a skin cell culture medium, as well as to the compositions. 5,609,873, Cl. 424-195.100.

Meyer, Dominique: *See*—
Bennani, Fatima Z.; le Greneur, Soizic; Simonot, Christian; and Meyer, Dominique, 5,609,851, Cl. 424-9.454.

Meyer, Frank. Fly and insect trap. 5,608,987, Cl. 43-113.000.

Meyer, George G.; Meyer, Stephen J.; Polan, George S.; and Dolan, Kevin, to Central Sprinkler Company. Extended coverage automatic ceiling sprinkler. 5,609,211, Cl. 169-37.000.

Meyer, Glenn A.; and Mazer, Terrence B., to Abbott Laboratories. Prolamine coatings for taste masking. 5,609,909, Cl. 427-2.140.

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Meyer, Reid M.: *See*—
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Meyer, Stephen J.: *See*—
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Micali, Silvio. Compact certification with threshold signatures. 5,610,982, Cl. 380-25.000.

Michael, J. Gabriel; and Litwin, Allen. Oral administration of therapeutic proteins for treatment of infectious disease. 5,609,871, Cl. 424-184.100.

Michel, Donald H.: *See*—
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Michelson, Gary K. Lordotic interbody spinal fusion implants. 5,609,635, Cl. 623-17.000.

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Schlueter, Robert A., 5,610,834, Cl. 364-492.000.

Michiie, Norio: *See*—
Yamakawa, Takeshi; Mama, Takashi; Ono, Kenichi; and Michiie, Norio, 5,610,651, Cl. 347-250.000.

Michioka, Hirofumi: *See*—
Furuya, Masayuki; and Michioka, Hirofumi, 5,609,552, Cl. 477-174.000.

Mickelson, Anne F.: *See*—
Larson, Stella D.; Mickelson, Anne F.; and Eisenberg, Peter M., 5,609,575, Cl. 604-65.000.

Micro Data Base Systems, Inc.: *See*—
Durflinger, Kevin; Reid, Jon D.; and Logan, Kim M., 5,611,076, Cl. 395-613.000.

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Munson, Derrill; Lew, Chel W.; Gaggero, James M.; and Branly, Keith, 5,609,880, Cl. 424-410.000.

Micro-Med, Inc.: *See*—
Miller, Frederick N., 5,610,027, Cl. 435-29.000.

Microclock, Inc.: *See*—
Bland, Christopher J., 5,610,955, Cl. 375-376.000.

Micron Display Technology, Inc.: *See*—
Hush, Glen E., 5,610,667, Cl. 348-796.000.

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Akram, Salman; Shirley, Paul; and Rericha, William, 5,609,995, Cl. 430-327.000.
Lardinais, Robert J.; and Malmin, Leo L., 5,609,376, Cl. 294-27.100.
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Meikle, Scott G., 5,609,718, Cl. 156-626.100.

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Kilmer, Dan L.; and Freeman, Rick L., 5,609,496, Cl. 439-271.000.

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Belfiore, Joseph D.; Guzak, Christopher J.; Graham, Christopher E.; Madigan, Stephen M.; Trower, Tandy W., II; Kerr, Randall L.; and Wyard, Adrian M., 5,611,060, Cl. 395-341.000.
Brewer, Timothy T.; Hoeger, Daniel S.; McCambridge, Lora K.; Kelsey, Teresa L.; Claflin, Anthony R.; Robertson, Kenneth R.; and Van Flandern, Michael W., 5,611,040, Cl. 395-326.000.
Eller, Marlin J., 5,610,996, Cl. 382-187.000.

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Mieno, Fumitake: *See*—
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Quigley, John H.; and Mietus, David F., 5,610,425, Cl. 257-358.000.

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Mikel, Steven A.: *See*—
Nogle, Thomas D.; Mikel, Steven A.; and Martin, Berthold, 5,609,538, Cl. 475-159.000.

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Marshall, Paul; and Miksza, Anthony S., 5,609,605, Cl. 606-191.000.

Miles, Michael T. Linear-matrix audio-imaging system and image analyzer. 5,610,986, Cl. 381-27.000.

Milkhaus Laboratory, Inc.: *See*—
McMichael, John, 5,610,136, Cl. 514-8.000.

Millequant, Jean M.: *See*—
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Miller, Alan L.: *See*—
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,609,219, Cl. 180-248.000.

Miller, Bradford W. H. Variable pitch drum. 5,610,350, Cl. 84-413.000.

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Miller, Ellsworth S.: *See*—
DuRocher, Daniel J.; and Miller, Ellsworth S., 5,610,378, Cl. 200-61.540.

Miller, Frederick N., to Micro-Med, Inc. Microphoto lysis-anlaysis process to measure cell characteristics. 5,610,027, Cl. 435-29.000.

Miller, James W.: *See*—
Fecteau, Mark W.; and Miller, James W., 5,610,959, Cl. 376-419.000.

Miller, Kevin L.: *See*—
Standiford, Gregory A.; Miller, Kevin L.; Eland, Michael P.; Dory, Jon R.; Bloom, Devin A.; and Stephens, Fred O., 5,610,788, Cl. 360-132.000.

Miller, Pascal: *See*—
Allen, Nicholas; Broudour, Abdu; Broude, Sergey; Chase, Eric; Johnson, Carl; Miller, Pascal; Ormsby, Jay; and Savikovsky, Arkady, 5,610,719, Cl. 356-374.000.

Miller, Ray R. Method of bonding laminates using pregelatinized starch. 5,609,711, Cl. 156-292.000.

Miller, Stephen H., to Eastman Kodak Company. Tape cartridge with a gate member slidably mounted an access door. 5,610,789, Cl. 360-132.000.

Miller, William H.: *See*—
Brown, Robert L.; Miller, William H.; and Baxter, David E., 5,609,275, Cl. 222-413.000.

Millet, Yvon: *See*—
Moinard, Philippe; and Millet, Yvon, 5,609,697, Cl. 148-519.000.

Milliken Research Corporation: *See*—
Soderberg, Roger H.; and Chekan, Michael J., 5,609,701, Cl. 152-543.000.

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Mills, Sander G.: *See*—
MacCoss, Malcolm; and Mills, Sander G., 5,610,165, Cl. 514-315.000.

Mimasu, Mutsumi: *See*—
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.

Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, to Kansai Electric Power Co., Inc., The; and Mitsubishi Jukogyo Kabushiki Kaisha. Method for the removal of hydrogen sulfide present in gases. 5,609,840, Cl. 423-228.000.

Min, Yong-Ki, to Daewoo Electronic Co. Ltd. Actuated mirror array and method for the manufacture thereof. 5,610,773, Cl. 359-850.000.

Minamisawa, Isamu: *See*—
Shimooka, Takeshi; Minamisawa, Isamu; Sunouchi, Kosaku; and Takahashi, Michitake, 5,609,730, Cl. 201-1.000.

Minamizawa, Hidehito: *See*—
Nishino, Satoru; Abe, Koichi; Fukuyama, Takeo; and Minamizawa, Hidehito, 5,609,949, Cl. 428-217.000.

Minet, Olaf: *See*—
Müller, Gerhard; Beuthan, Jürgen; Minet, Olaf; and Kaschke, Michael, 5,610,399, Cl. 250-341.100.

Minigrip, Inc.: *See*—
Palmisano, Andrew J., 5,609,420, Cl. 383-203.000.

Minnesota Mining and Manufacturing: *See*—
Feduzi, Rino; Soncini, Cristina; Celada, Antonella; Selvaggio, Salvatore; and Zullo, Ivo, 5,609,986, Cl. 430-264.000.

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Allen, Richard C.; Flannery, Anthony F.; Kleissler, Charles R.; and Redmond, David B., 5,610,455, Cl. 307-400.000.
Benedict, Harold W.; Zimny, Diana D.; and Bange, Donna W., 5,609,706, Cl. 156-137.000.
Charbonneau, Jack W., 5,609,710, Cl. 156-276.000.
Clatanoff, William J.; Morrison, Eric D.; and Somasiri, Nanayakkara L. D., 5,609,969, Cl. 428-632.000.
David, Moses M.; and Schwarz, Theodore A., 5,609,948, Cl. 428-216.000.
Dynud, James F.; Elstran, Gerald V.; and Olson, Paul E., 5,609,164, Cl. 128-864.000.
Goetz, Richard J.; Pohl, Daniel P.; and Brown, Mary L., 5,609,932, Cl. 428-36.910.
Jerry, Glen A.; Kistler, Stephan F.; Lam, Joseph H.; and Stenstrom, Scott D., 5,609,686, Cl. 118-123.000.
Lee, Nicholas A.; DeBaun, Barbara A.; Henson, Gordon D.; Igl, Scott A.; and Smith, Terry L., 5,611,017, Cl. 385-114.000.
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Minohara, Atushi: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.

Minolta Co., Ltd.: *See*—
Ishibashi, Kenji; Kimura, Kazuo; Ishida, Iwao; and Nishitani, Kiyoshi, 5,610,761, Cl. 359-407.000.

Minowa, Toshimichi; Ohsuga, Minoru; Kashiwaya, Mineo; and Sasaki, Yasushi, to Hitachi, Ltd. Control apparatus and method for an internal combustion engine. 5,609,132, Cl. 123-306.000.

Minster Machine Company, The: *See*—
Burns, Bradley A.; and Watercutter, Brian A., 5,609,099, Cl. 100-257.000.

Misawa, Hideo: *See*—
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Mishima, Junichi: *See*—
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Mitaka Kohki Co., Ltd.: *See*—
Nakamura, Katsushige, 5,609,565, Cl. 600-229.000.

Mitani, Tetsuo: *See*—
Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, 5,610,219, Cl. 524-413.000

Mitchell, James E.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

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Mitchell, Robert M.: *See*—
Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., 5,609,210, Cl. 169-26.000.

Mitel Corporation: *See*—
Purits, Valentin, 5,610,978, Cl. 379-373.000.

Mitsubishi Chemical Corporation: *See*—
Takimoto, Hiroshi; Sano, Hideo; and Yamada, Masahiro, 5,609,673, Cl. 106-22.00K.
Taniguchi, Tetsuya; Goto, Kiyoshi; Akiyama, Takeo; Hosoi, Miyuki; Masuda, Tetsuya; and Mochizuku, Hideaki, 5,609,985, Cl. 430-259.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Aoki, Akihide, 5,610,544, Cl. 327-198.000.
Arimoto, Kazutami; and Tsukude, Masaki, 5,610,533, Cl. 326-33.000.
Eimori, Takahisa, 5,610,418, Cl. 257-306.000.
Fujiwara, Toru; Tsubakiji, Tadashi; and Tsuchiya, Kenichi, 5,609,024, Cl. 60-284.000.
Furutani, Kiyohiro, 5,610,550, Cl. 327-543.000.
Hidaka, Hideto, 5,610,871, Cl. 365-230.030.
Itoh, Hiroshi, 5,610,650, Cl. 347-210.000.
Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, 5,609,287, Cl. 228-123.100.
Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, 5,609,781, Cl. 219-121.840.
Kato, Hazime, 5,610,799, Cl. 361-752.000.
Kusumoto, Keiichi; Konishi, Keiichi; Isozumi, Shuzo; and Morishita, Akira, 5,609,542, Cl. 475-331.000.
Morita, Hideaki, 5,610,809, Cl. 364-140.000.
Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, 5,610,219, Cl. 524-413.000.
Tanaka, Hiroshi; Doi, Nobuaki; Omori, Masashi; and Ishikawa, Hiroaki, 5,608,974, Cl. 34-78.000.
Tanaka, Naoya; Fukumoto, Hiroshi; Fukazawa, Keiichi; and Tanaka, Mitsuaki, 5,609,428, Cl. 400-579.000.
Yamashita, Eizo, 5,610,605, Cl. 341-139.000.

Mitsubishi Electric Information Technology Center America, Inc.: *See*—
Schabes, Yves; and Roche, Emmanuel, 5,610,812, Cl. 395-759.000.

Mitsubishi Electric Semiconductor Software Corporation: *See*—
Aoki, Akihide, 5,610,544, Cl. 327-198.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,609,800, Cl. 264-29.600.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Ueda, Katsunori; Fukui, Toyoaki; and Yoshikawa, Satoshi, 5,609,139, Cl. 123-492.000.
Usuki, Katsutoshi; Fujita, Kenjiro; and Hatta, Katsuhiro, 5,609,549, Cl. 477-125.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,609,840, Cl. 423-228.000.

Mitsubishi Paper Mills Limited: *See*—
Ogawa, Susumu; Senoh, Hideaki; and Idei, Kouji, 5,609,964, Cl. 428-520.000.

Mitsuboshi Belting Ltd.: *See*—
Fujita, Yoshihisa; Mizuno, Takahide; Nishio, Hiroyuki; Uto, Kuniharu; and Ishida, Kazutoshi, 5,609,243, Cl. 198-847.000.

Mitsui, Hisafumi: *See*—
Saeki, Mituo; Suzui, Tsutomu; Ozawa, Hidekiyo; and Mitsui, Hisafumi, 5,610,450, Cl. 307-46.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Hamada, Shun-ichi; Uchiyama, Akira; and Shimizu, Shizuo, 5,609,703, Cl. 156-79.000.
Matsunaga, Takashi; Nishimura, Toshihiro; and Inoue, Hiroshi, 5,609,930, Cl. 428-35.200.
Sagane, Toshihiro; Tsutsui, Toshiyuki; Kawasaki, Masaaki; Okada, Keiji; Tojo, Tetsuo; and Tanizaki, Tatsuya, 5,610,254, Cl. 526-282.000.

Mitsuoka, Shigeaki: *See*—
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,609,840, Cl. 423-228.000.

Mitsusada, Kazumichi: *See*—
Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, 5,610,089, Cl. 437-34.000.

Mittel, James G.; Johnson, Philip L.; and Barrett, Raymond L., Jr., to Motorola, Inc. Controlled tracking of oscillators in a circuit with multiple frequency sensitive elements. 5,610,558, Cl. 331-2.000.
Mittelstaedt, Brian E.: *See—*
Giorgianni, Edward J.; Mittelstaedt, Brian E.; Rivera, Jose E.; Simon, Richard A.; Smith, Teresa A.; and Sutton, James E., 5,609,978, Cl. 430-30.000.
Mitwalsky, Alexander; and Okumura, Katsuya, to Siemens Aktiengesellschaft; and Kabushiki Kaisha Toshiba. Method and apparatus for dicing semiconductor wafers. 5,609,148, Cl. 125-16.010.
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, to Nippon Gasket Co., Ltd. Metal gasket with stepped intermediate plate. 5,609,345, Cl. 277-180.000.
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, to Green Cross Corporation, The. Mutant AOX2 promoter, microorganism carrying same, method of preparation thereof and production of heterologous protein using such microorganism. 5,610,036, Cl. 435-71.100.
Miura, Takao: *See—*
Miyamoto, Hidetoshi; Shiraki, Shinji; Yumoto, Yoshiji; and Miura, Takao, 5,609,988, Cl. 430-270.100.
Miwa, Naoto: *See—*
Fukaya, Tomoji; and Miwa, Naoto, 5,609,825, Cl. 422-90.000.
Miyabe, Kyoko: *See—*
Izumi, Haruhiko; and Miyabe, Kyoko, 5,610,895, Cl. 369-112.000.
Miyagawa, Utaro: *See—*
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.
Miyahara, Katsunobu, to Sony Corporation. Hearing aid set. 5,610,988, Cl. 381-68.400.
Miyahara, Yoshiki: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,609,809, Cl. 264-210.700.
Miyai, Yoichi: *See—*
Kurino, Hiroyuki; and Miyai, Yoichi, 5,610,100, Cl. 437-195.000.
Miyakawa, Tetsuya: *See—*
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, 5,610,957, Cl. 376-210.000.
Miyake, Teruaki: *See—*
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.
Miyake, Toshio: *See—*
Maruta, Kazuhiko; Kubota, Michio; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,610,047, Cl. 435-201.000.
Miyamoto, Hidetoshi; Shiraki, Shinji; Yumoto, Yoshiji; and Miura, Takao, to Japan Synthetic Rubber Co., Ltd. Radiation sensitive resin composition. 5,609,988, Cl. 430-270.100.
Miyamoto, Junichi: *See—*
Nakamura, Hiroshi; Miyamoto, Junichi; Iwata, Yoshihisa; and Imamiya, Keniti, 5,610,859, Cl. 365-185.220.
Miyano, Hitoshi, to Fuji Photo Optical Co., Ltd. Solid-state image pickup device having microlenses each with displaced optical axis. 5,610,390, Cl. 250-216.000.
Miyasaka, Akihiro: *See—*
Kato, Kenji; and Miyasaka, Akihiro, 5,609,818, Cl. 420-62.000.
Miyasaka, Hidekatsu: *See—*
Yamashita, Masakazu; Furusawa, Shigeharu; Abe, Masao; Mizuno, Tomohiro; and Miyasaka, Hidekatsu, 5,610,900, Cl. 369-271.000.
Miyashita, Akihiro: *See—*
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Miyashita, Masahiko; Miyazawa, Tatsuyuki; Fujii, Hiroshi; and Kitano, Yoshihiro, to Pioneer Electronic Corporation. Karaoke reproducing apparatus. 5,609,486, Cl. 434-307.00A.
Miyashita, Takumi; and Tomesakai, Nobuaki, to Fujitsu Limited. Clock reproduction circuit and elements used in the same. 5,610,954, Cl. 375-375.000.
Miyatake, Masanori: *See—*
Tanaka, Hiroshi; Iida, Masayuki; Miyatake, Masanori; Sugishita, Shozo; and Hoshi, Teruo, 5,611,018, Cl. 395-2.240.
Miyaza, Masao: *See—*
Inamoto, Kiyoshi; Miyaza, Masao; and Nakai, Yasuhiro, 5,610,688, Cl. 399-366.000.
Miyazaki, Hideya: *See—*
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.
Miyazaki, Kyoichi: *See—*
Yoshii, Minoru; Miyazaki, Kyoichi; and Takeuchi, Seiji, 5,610,715, Cl. 356-356.000.
Miyazaki, Masanori: *See—*
Fukui, Hirofumi; Miyazaki, Masanori; Aihara, Masami; Iwasaki, Chisato; Fukuda, Koichi; and Kasama, Yasuhiko, 5,609,737, Cl. 204-192.120.
Miyazaki, Toshihiko: *See—*
Takimoto, Kiyoshi; Miyazaki, Toshihiko; Sakai, Kunihiro; and Kuroda, Ryo, 5,610,898, Cl. 369-126.000.
Miyazawa, Kazuyuki: *See—*
Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, 5,610,089, Cl. 437-34.000.
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, to Seiko Epson Corporation. Ultrasonic step motor. 5,610,468, Cl. 310-323.000.
Miyazawa, Osamu, to Seiko Epson Corporation. Micro robot. 5,610,488, Cl. 318-568.110.
Miyazawa, Tatsuyuki: *See—*
Miyashita, Masahiko; Miyazawa, Tatsuyuki; Fujii, Hiroshi; and Kitano, Yoshihiro, 5,609,486, Cl. 434-307.00A.
Miyoshi, Tatsuya: *See—*
Yoshimi, Naoto; Watanabe, Toyofumi; Yamashita, Masaaki; Ookuma, Toshiyuki; and Miyoshi, Tatsuya, 5,609,968, Cl. 428-623.000.
Mizoguchi, Takatoshi; and Ozawa, Kaoru, to Sharp Kabushiki Kaisha. Microcomputer control optical fiber transmission system. 5,610,749, Cl. 359-167.000.
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, to Hitachi, Ltd. Compression gas puffer type circuit breaker. 5,610,381, Cl. 218-57.000.
Mizukami, Etsuko: *See—*
Ito, Noriyuki; and Mizukami, Etsuko, 5,610,830, Cl. 364-490.000.
Mizukoshi, Masahito: *See—*
Awano, Naomi; Inuzuka, Hajime; Mizukoshi, Masahito; and Kudomi, Shigeki, 5,610,412, Cl. 257-85.000.
Mizuno, Takahide: *See—*
Fujita, Yoshihisa; Mizuno, Takahide; Nishio, Hiroyuki; Uto, Kuniharu; and Ishida, Kazutoshi, 5,609,243, Cl. 198-847.000.
Mizuno, Tomohiro: *See—*
Yamashita, Masakazu; Furusawa, Shigeharu; Abe, Masao; Mizuno, Tomohiro; and Miyasaka, Hidekatsu, 5,610,900, Cl. 369-271.000.
Mizusawa, Minoru: *See—*
Hamada, Kouki; Mizusawa, Minoru; and Koga, Minoru, 5,609,834, Cl. 422-196.000.
Mizusawa, Susumu: *See—*
Kaji, Nobuo; Mizusawa, Susumu; Sahashi, Masayuki; and Tsuchida, Takako, 5,609,898, Cl. 426-74.000.
Mizushima, Yutaka; Bannai, Kiyoshi; and Nakayana, Shigeru, to Teijin, Limited; Taisho Pharmaceutical Co., Ltd.; and Mizushima, Yutaka. Pharmaceutical composition for the therapy of cerebral thrombosis. 5,610,182, Cl. 514-530.000.
Mizuta, Tamotsu: *See—*
Sakurai, Akio; Mizuta, Tamotsu; Okada, Yasuhide; Nakano, Hiroshi; Ikenaga, Takao; Shin, Osamu; and Ikenaga, Yuuji, 5,609,747, Cl. 205-246.000.
Mizutani, Takao; Ando, Hirokazu; and Kikuchi, Hiroshi, to Oki Electric Industry Co., Ltd. Roller for electrophotographic development apparatus. 5,610,695, Cl. 399-284.000.
Mizutani, Yasukazu: *See—*
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,610,338, Cl. 73-652.000.
Mlynko, Walter E.: *See—*
Carl, Daniel A.; Kenney, Donald M.; Mlynko, Walter E.; and Nguyen, Son V., 5,610,441, Cl. 257-774.000.
Mobil Oil Corporation: *See—*
Cimini, Ronald J.; Marler, David O.; McCarthy, Stephen J.; McVeigh, Harry A.; and Teitman, Gerald J., 5,609,845, Cl. 423-648.100.
Del Rossi, Kenneth J.; Jablonski, Gregory A.; and Marler, David O., 5,609,752, Cl. 208-144.000.
Lago, Rudolph M.; Marler, David O.; and McCullen, Sharon B., 5,610,112, Cl. 502-63.000.
Le, Quang N.; and Thomson, Robert T., 5,609,654, Cl. 44-449.000.
Shu, Paul, 5,609,209, Cl. 166-295.000.
Möbius, Arnold: *See—*
Dumbrajs, Olgierd; and Möbius, Arnold, 5,610,482, Cl. 315-500.000.
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, to Mitsubishi Gas Chemical Company, Inc. Process for producing high-density and high-strength carbon artifacts showing a fine mosaic texture of optical anisotropy. 5,609,800, Cl. 264-29.600.
Mochida Pharmaceutical Co., Ltd.: *See—*
Sato, Naofumi; and Shirakawa, Kamon, 5,610,016, Cl. 435-6.000.
Yamauchi, Tadakazu; and Terasawa, Hideyuki, 5,609,749, Cl. 205-777.500.
Mochizuki, Manabu, to Pioneer Electronic Corporation. Optical recording system using a gas laser capable of oscillating in a single longitudinal mode. 5,610,896, Cl. 369-121.000.
Mochizuki, Nobuaki; and Iwaya, Yoshimi, to Nissan Motor Co., Ltd. Planetary gear automatic transmission. 5,609,537, Cl. 475-144.000.
Mochizuku, Hideaki: *See—*
Taniguchi, Tetsuya; Goto, Kiyoshi; Akiyama, Takeo; Hosoi, Miyuki; Masuda, Tetsuya; and Mochizuku, Hideaki, 5,609,985, Cl. 430-259.000.
Modak, Anil S.: *See—*

Riley, Dennis P.; Weiss, Randy H.; Neuman, William L.; Modak, Anil S.; Lennon, Patrick J.; and Aston, Karl W., 5,610,293, Cl. 540-474.000.
Moellmer, John F.: *See—*
Khan, Mohammed A.; and Moellmer, John F., 5,609,866, Cl. 424-78.250.
Moffitt, John M.; and Youngers, Stephen A., to Case Corporation. Lift boom assembly for a loader machine. 5,609,464, Cl. 414-685.000.
Mogi, Fumio: *See—*
Ishikawa, Takatoshi; and Mogi, Fumio, 5,611,077, Cl. 396-630.000.
Mohan, Arthur G.; and D'Antuono, Joseph, III, to American Cyanamid Company. Process for the regioselective n-alkylation of quinazolinones. 5,610,301, Cl. 544-284.000.
Mohri, Noboru: *See—*
Hayama, Masaaki; Mohri, Noboru; and Nakao, Keiichi, 5,609,704, Cl. 156-89.000.
Mohwinkel, Clifford A., to Endgate Corporation. Slot line to CPW circuit structure. 5,610,563, Cl. 333-128.000.
Moinard, Philippe; and Millet, Yvon, to Compagnie Europeene du Zirconium Cezus. Process for the production of a tubular zircaloy 2 blank internally clad with zirconium and suitable for ultrasound monitoring of the zirconium thickness. 5,609,697, Cl. 148-519.000.
Molecular Tool, Inc.: *See—*
Nikiforov, Theo; and Knapp, Michael R., 5,610,287, Cl. 536-24.300.
Möller, Reinfried, to Expert Maschinenbau GmbH. Turntable with stepping drive. 5,609,061, Cl. 74-120.000.
Molnlycke AB: *See—*
Andersen, Verner E., 5,609,702, Cl. 156-73.100.
Momoda, Kayo; and Baba, Syuji, to Tokuyama Corporation. Cleaning agent for removing fats and oils from metal surfaces. 5,610,132, Cl. 510-506.000.
Momose, Masatoshi: *See—*
Maki, Hitoshi; Kato, Shigeki; Azuma, Shinichi; Hayashi, Mikio; and Momose, Masatoshi, 5,610,306, Cl. 546-49.000.
Momose, Tomoaki: *See—*
Hachisuka, Kimio; Noguchi, Hiroyuki; and Momose, Tomoaki, 5,609,187, Cl. 140-92.200.
Monarch Knitting Machinery Corp.: *See—*
Tacy, Elizabeth K., 5,609,044, Cl. 66-115.000.
Monarch Marking Systems, Inc.: *See—*
Fogle, Ronald L.; and Huggins, Orville C., 5,609,429, Cl. 400-692.000.
Mondin, Myriam: *See—*
Thomas, Barbara J.; Loth, Myriam; Connors, Thomas F.; and Mondin, Myriam, 5,610,130, Cl. 510-383.000.
Monfort, Inc.: *See—*
Stewart, James M., 5,609,520, Cl. 452-131.000.
Monro, Philip: *See—*
Wilson, Michael; and Monro, Philip, 5,610,070, Cl. 436-63.000.
Monsanto Company: *See—*
Riley, Dennis P.; Weiss, Randy H.; Neuman, William L.; Modak, Anil S.; Lennon, Patrick J.; and Aston, Karl W., 5,610,293, Cl. 540-474.000.
Monsma, Frederick J.: *See—*
Sibley, David R.; Monsma, Frederick J.; Mahan, Lawrence C.; and McVittie, Loris D., 5,610,282, Cl. 530-395.000.
Montagnier, Luc; Krust, Bernard; Chamaret, Solange; Clavel, Francois; Chermann, Jean-Claude; and Barre-Sinoussi, Francoise, to Institut Pasteur Centre National de la Recherche Scientific. Methods for the preparation of hybridomas producing lymphadenopathy-associated virus (LAV) GP110-specific monoclonal antibodies and methods for the purification of GP110 employing said monoclonal antibodies. 5,610,035, Cl. 435-70.210.
Montague, Chuck W.: *See—*
Anderson, J. Douglas; Morgan, Stephen A.; Montague, Chuck W.; and Nyce, Richard J., 5,610,398, Cl. 250-339.120.
Montalbano, Gary: *See—*
Mazzola, Bernard V.; and Montalbano, Gary, 5,609,430, Cl. 401-87.000.
Montanini, Nicoletta: *See—*
Stella, Sergio; Montanini, Nicoletta; LeMonnier, Francis J.; Colombo, Luigi; Selva, Enrico; and Denaro, Maurizio, 5,610,143, Cl. 514-18.000.
Monteiro, Michael J.: *See—*
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.
Montelaro, Ronald C.; and Fontenot, J. Darrell, to Commonwealth System of Higher Education, University of Pittsburgh of the. Peptide vaccines and associated methods for protection against feline leukemia virus. 5,609,876, Cl. 424-207.100.
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Alkyl-substituted-C1-C3 alkoxy-C6-cycloaliphatic compounds, organoleptic uses thereof and processes for preparing same. 5,610,133, Cl. 512-20.000.
Montell North America Inc.: *See—*
Govoni, Gabriele; Rinaldi, Roberto; and Penzo, Giuseppe, 5,610,244, Cl. 526-65.000.
Montell Technology Company BV: *See—*
Govoni, Gabriele; Rinaldi, Roberto; and Penzo, Giuseppe, 5,610,244, Cl. 526-65.000.
Montgomery, H. DuBose: *See—*
Laufer, Michael D.; and Montgomery, H. DuBose, 5,609,598, Cl. 606-142.000.
Montgomery Kone Inc.: *See—*
Boom, Anthony S.; and Bril, John M., 5,610,374, Cl. 187-391.000.
Mooney, David M.; Kimlinger, Joseph A.; and Wood, David E., to Integrated Technologies Of America, Inc. Preboot protection for a data security system with anti-intrusion capability. 5,610,981, Cl. 380-25.000.
Moore Business Forms, Inc.: *See—*
Parker, Rebecca L., 5,609,335, Cl. 271-302.000.
Moore, Charles R.; Muhich, John S.; and Reese, Robert J., to International Business Machines Corporation. System and method for transferring information between multiple buses. 5,611,058, Cl. 395-309.000.
Moore, John S.; Berger, Sharon S.; Burr, Ronald F.; Anderson, Jeffrey J.; and MacLane, Donald B., to Tektronix, Inc. Ink jet head with channel filter. 5,610,645, Cl. 347-93.000.
Moore, Larry W.: *See—*
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.
Moore, Samuel B.; Turner, Edwin T.; and Leuck, James F., to Burlington Chemical Co., Inc. Liquid alkali system for fiber reactive dyeing. 5,609,180, Cl. 137-101.190.
Moore, Simon J.: *See—*
Maund, Andrew P.; Neave, John W.; Trevett, Neil F.; Moore, Simon J.; and Wilson, Malcolm E., 5,611,064, Cl. 395-419.000.
Moorman, Jack W.; Skillicorn, Brian; Wilent, John W., deceased (by Virginia B. Wilent, heiress); and Abel, Alan C., to Cardiac Mariners, Incorporated. X-ray grid assembly. 5,610,967, Cl. 378-154.000.
Moorthy, Harihara: *See—*
Krishan, Baldev; Singh, Baljeet; and Moorthy, Harihara, 5,611,055, Cl. 395-281.000.
Moradians, Edward, to Ancra International Corporation. Convertible roller assembly for loading cargo in vehicle. 5,609,240, Cl. 198-782.000.
More, Claude: *See—*
Delaunay, Didier; Jullien, Henri; More, Claude; Outifa, Lhoussain; Delmotte, Michel; and Maestrali, Bernard, 5,609,891, Cl. 425-174.80E.
Moreau, Raymond; Gobert, Roger; and Jeanvoine, Pierre, to Saint-Gobain Vitrage. Channel for the transfer and conditioning of molten glass. 5,609,661, Cl. 65-135.100.
Morgan, Stephen A.: *See—*
Anderson, J. Douglas; Morgan, Stephen A.; Montague, Chuck W.; and Nyce, Richard J., 5,610,398, Cl. 250-339.120.
Morgan, William E., to Acushnet Company. Method of restoring used golf ball. 5,609,535, Cl. 473-409.000.
Mori, Makiko; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; Uzawa, Shunichi; and Sakamoto, Eiji, to Canon Kabushiki Kaisha. Exposure method. 5,610,965, Cl. 378-34.000.
Mori, Takahiro: *See—*
Komuro, Hirokazu; Noguchi, Hiromichi; and Mori, Takahiro, 5,610,206, Cl. 522-121.000.
Morikawa, Michio: *See—*
Ueno, Sadao; and Morikawa, Michio, 5,609,094, Cl. 99-450.200.
Morin, Cathleen M.: *See—*
Keele, Richard V.; Morin, Cathleen M.; Goodsell, Michael C.; and Neverisky, Robert, 5,611,066, Cl. 395-427.000.
Morinaga, Norihiko: *See—*
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Morishita, Akira: *See—*
Kusumoto, Keiichi; Konishi, Keiichi; Isozumi, Shuzo; and Morishita, Akira, 5,609,542, Cl. 475-331.000.
Morita, Hideaki, to Mitsubishi Denki Kabushiki Kaisha. Programmable controller and program capacity changing method thereof. 5,610,809, Cl. 364-140.000.
Morita, Shigeru: *See—*
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.
Moriya, Mitsurou; Ishibashi, Hiromichi; Ohta, Takeo; and Sugihara, Yasuhiro, to Matsushita Electric Industrial Co. Ltd. Optical reproducing device, optical reproducing method using the same, and optical record medium used in the same. 5,610,879, Cl. 369-13.000.
Moriya, Yukio; Koyanagi, Satoru; Fujimura, Tetsuya; Nagahama, Masayuki; Yamazaki, Kazuyuki; and Hishiyama, Toru, to Kabushiki Kaisha Komatsu Seisakusho. Operation control system for traveling vehicle. 5,609,220, Cl. 180-253.000.
Moriyama, Shigeo; Kawamura, Yoshio; Homma, Yoshio; Kusukawa, Kikuo; and Furusawa, Takeshi, to Hitachi, Ltd. Polishing method. 5,609,511, Cl. 451-5.000.
Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., to Framatome Connectors International. Alignment piece for a connector for optical conductors and method using same. 5,611,011, Cl. 385-59.000.
Morris, Edward L., Jr.: *See—*
Bazshushtari, Afshin; and Morris, Edward L., Jr., 5,609,707, Cl. 156-148.000.

Morrison, Eric D.: *See*—
Clatanoff, William J.; Morrison, Eric D.; and Somasiri, Nanayakkara L. D., 5,609,969, Cl. 428-632.000.
Morse, John B.: *See*—
Silveira, Frank S.; and Morse, John B., 5,609,334, Cl. 271-188.000.
Morse, Lawrence: *See*—
Horbacewicz, Theodore; and Morse, Lawrence, 5,609,222, Cl. 182-203.000.
Morton International, Inc.: *See*—
Briguglio, James J.; Keil, Charles R.; Tara, Vinai M.; Reardon, Edward J., Jr.; and Kautz, Randall W., 5,609,991, Cl. 430-281.100.
Johnson, Kelly B.; and Hussey, Brett, 5,609,359, Cl. 280-736.000.
Lauritzen, Donald R.; and Smith, Bradley W., 5,609,354, Cl. 280-728.200.
Mossi, G. Dean, 5,609,356, Cl. 280-731.000.
Vietti, David E.; Potts, Keith B.; and Leone, Kimberley A., 5,610,243, Cl. 525-523.000.
Moseley, Jonathan D.; Swain, Christopher J.; and Williams, Brian J., to Merck Sharp & Dohme Limited. N-oxides of morpholine derivatives and their use as therapeutic agents. 5,610,159, Cl. 514-236.200.
Moser, Robert E., to Blair Industries Incorporated. Book-style cassette holder with stay-flat spine portion. 5,609,250, Cl. 206-387.130.
Moses, Randolph L.: *See*—
Greenewald, John H.; and Moses, Randolph L., 5,610,813, Cl. 364-420.000.
Mosher, Walter W., Jr., to Precision Dynamics Corporation. Apparatus for manufacturing and dispensing identification bracelets. 5,609,716, Cl. 156-522.000.
Mossi, G. Dean, to Morton International, Inc. Cylindrical air bag module assembly. 5,609,356, Cl. 280-731.000.
Mostaert, Erik; Mariën, August; and Van Damme, Marc, to Agfa-Gevaert N. V. Primed resin film. 5,610,001, Cl. 430-533.000.
Motegi, Akihiko: *See*—
Kaneko, Masaru; Yamazaki, Shigeru; Motegi, Akihiko; Narita, Masaki; and Komai, Hiroshi, 5,610,724, Cl. 358-400.000.
Motomura, Nobutoku; and Ichihara, Takashi, to Kabushiki Kaisha Toshiba. Scintillation camera. 5,610,402, Cl. 250-369.000.
Motono, Yoshihiro: *See*—
Dairoku, Yorimichi; Nagasuna, Kinya; Masuda, Yoshihiko; Harada, Nobuyuki; Motono, Yoshihiro; and Ishizaki, Kunihiko, 5,610,208, Cl. 525-384.000.
Motorola: *See*—
Kato, Yumiko; and Cisneros, Ralph, 5,610,478, Cl. 315-169.100.
Motorola, Inc.: *See*—
Beesch, DiAnn J.; Enck, Duane J.; and Dieb, Janet, 5,609,490, Cl. 439-79.000.
Chang, Ray; Flannagan, Stephen T.; and Jones, Kenneth W., 5,610,543, Cl. 327-158.000.
Duch, Krzysztof M., 5,610,950, Cl. 375-350.000.
Giangarra, Philip B.; and Carlow, Earl F., 5,611,068, Cl. 395-436.000.
Holmes, Martin E.; Painter, Paige M.; and McGrath, Mark J., 5,609,500, Cl. 439-540.100.
Mittel, James G.; Johnson, Philip L.; and Barrett, Raymond L., Jr., 5,610,558, Cl. 331-2.000.
Quigley, John H.; and Mietus, David F., 5,610,425, Cl. 257-358.000.
Willard, David F.; Eaton, Eric T.; and Laflin, Barbara D., 5,610,919, Cl. 370-336.000.
Yee, Renwin J.; Stockstad, Troy L.; and Petty, Thomas D., 5,610,495, Cl. 320-6.000.
Zhang, Jinshan; and Anani, Anaba A., 5,609,844, Cl. 423-449.600.
Motosugi, Kenzo: *See*—
Kageyama, Masao; Suga, Toyohiko; Motosugi, Kenzo; and Nakajima, Hiroshi, 5,610,045, Cl. 435-194.000.
Motowaki, Shigehisa: *See*—
Yamada, Seiich; Tanaka, Shigeru; Syouji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; and Maeda, Kunihiro, 5,610,570, Cl. 338-20.000.
Mount Shamrock Pty Ltd.: *See*—
Owen, Reginald J., 5,608,970, Cl. 29-897.310.
Mourine, Vladimir I.: *See*—
Tsybulevski, Albert M.; Mourine, Vladimir I.; Plee, Dominique; and Mayolet, Francis, 5,609,842, Cl. 423-244.110.
MRA Technology Group: *See*—
Ivanov, Vladimir V.; Danilov, Uriy I.; and Zakharov, Michael V., 5,610,477, Cl. 313-573.000.
MSP Corporation: *See*—
Liu, Benjamin Y. H.; and Sun, James J. J., 5,609,798, Cl. 261-78.200.
Mueller, Marc B.; and Marean, Karl J. Process for separating and/or recovering hydrocarbon oils from water using biodegradable absorbent sponges. 5,609,768, Cl. 210-691.000.
Mueller, Martin: *See*—
Vogel, Emanuel; Mueller, Martin; Halpern, Otto; and Cross, Alexander D., 5,610,175, Cl. 514-410.000.
Mueller, Richard A.: *See*—
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,610,190, Cl. 514-595.000.
Mueller, Robert; and Wuest, Johannes, to Dr. Ing.h.c.F Porsche AG. Crankshaft bearing. 5,609,422, Cl. 384-278.000.
Mueller, Uwe: *See*—
Rembold, Helmut; Haag, Gottlob; Britsch, Heinz; Stutzenberger, Heinz; and Mueller, Uwe, 5,609,137, Cl. 123-382.000.
Muhich, John S.: *See*—
Moore, Charles R.; Muhich, John S.; and Reese, Robert J., 5,611,058, Cl. 395-309.000.
Muka, Richard S., to Brooks Automation, Inc. Door drive mechanisms for substrate carrier and load lock. 5,609,459, Cl. 414-217.000.
Mulier, Peter M. J.; and Hoey, Michael F., to Medtronic, Inc. Method for R-F ablation. 5,609,151, Cl. 128-642.000.
Müller, Dieter: *See*—
Kunze, Norbert; and Müller, Dieter, 5,610,787, Cl. 36C-130.210.
Müller, Gerhard; Beuthan, Jürgen; Minet, Olaf; and Kaschke, Michael, to Carl-Zeiss-Stiftung. Apparatus and process for the spatially resolved optical determination of density distributions in biological tissues. 5,610,399, Cl. 250-341.100.
Müller, Klaus-Helmut: *See*—
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.
Müller, Nikolaus: *See*—
Groth, Torsten; Joentgen, Winfried; Müller, Nikolaus; and Liesenfelder, Ulrich, 5,610,255, Cl. 526-304.000.
Muller, Pascale F. J.; and Rouviere, Fabienne, to Goodyear Tire & Rubber Company, The. Latex for high performance masking tape. 5,609,917, Cl. 427-391.000.
Müller, Peter: *See*—
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.
Müller, Rolf: *See*—
Baumann, Hans-Martin; and Müller, Rolf, 5,610,594, Cl. 340-658.000.
Müller, Wolf-Dieter: *See*—
Jaekel, Frank; Reinhardt, Gerd; and Müller, Wolf-Dieter, 5,610,318, Cl. 548-479.000.
Müller-Berghaus, Gert; Pötzsch, Bernd; and Seelig, Christoph, to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. Method for the determination of lupus anticoagulant antibodies that cause thrombosis. 5,610,024, Cl. 435-13.000.
Mundil, Erhardt: *See*—
Schulze-Eyssing, Heinz; and Mundil, Erhardt, 5,609,421, Cl. 384-125.000.
Mungal, Terrence C.: *See*—
Tang, Ping W.; Cowan, Stanley W.; Decker, David J.; and Mungal, Terrence C., 5,609,996, Cl. 430-386.000.
Munson, Derrill; Lew, Chel W.; Gaggero, James M.; and Branly, Keith, to Micro Flo Company. Bait with corn germ. 5,609,880, Cl. 424-410.000.
Murai, Toru: *See*—
Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, 5,609,781, Cl. 219-121.840.
Murakami, Eisaku: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.
Murakami, Hiroshi: *See*—
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.
Murakami, Koji: *See*—
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, 5,610,036, Cl. 435-71.100.
Murakami, Yoji, to Fujitsu Ltd. Method for producing semiconductor device having a body with a carrier ring connected thereto. 5,610,080, Cl. 437-8.000.
Murakata, Shinichi: *See*—
Yamamoto, Takeyuki; Sugimoto, Yasuyuki; Wakagi, Itaru; Murakata, Shinichi; and Murata, Yasuzo, 5,609,432, Cl. 401-209.000.
Muramatsu, Hisayoshi: *See*—
Hiyoshi, Michiaki; Muramatsu, Hisayoshi; and Fujiwara, Takashi, 5,610,439, Cl. 257-688.000.
Murata, Akira: *See*—
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Murata Manufacturing Co., Ltd.: *See*—
Maeda, Eiichi; Imada, Katsuhisa; Nishii, Motoi; and Nishinaga, Yoshihiro, 5,610,565, Cl. 333-185.000.
Okabe, Shinsei; Nakaya, Shunsuke; Hamaji, Yukio; and Yabuuchi, Masami, 5,609,911, Cl. 427-212.000.
Murata, Takayuki; Fukui, Hiroshi; Omo, Shinichi; and Kuronuma, Akira, to Canon Kabushiki Kaisha. Recording apparatus. 5,610,634, Cl. 347-5.000.
Murata, Toshihide: *See*—
Hasegawa, Masaki; Bito, Yasuhiko; Ito, Shuji; Murata, Toshihide; and Toyoguchi, Yoshinori, 5,609,975, Cl. 429-217.000.
Murata, Yasuzo: *See*—
Yamamoto, Takeyuki; Sugimoto, Yasuyuki; Wakagi, Itaru; Murakata, Shinichi; and Murata, Yasuzo, 5,609,432, Cl. 401-209.000.
Muro Corporation: *See*—
Takumi, Akira, 5,609,712, Cl. 156-298.000.

Murphy, Joseph F., to Sonoco Products Company. System and method for nondestructive vibrational testing. 5,610,837, Cl. 364-508.000.
Murphy, Michael D., to Trimble Navigation, Ltd. Position-related multimedia presentation system. 5,610,822, Cl. 364-449.500.
Murray, David E.: *See*—
Matthews, Andrew E.; Murray, David E.; Gates, Allen P.; Wade, John R.; Pratt, Michael J.; and King, William A., 5,609,980, Cl. 430-138.000.
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., to Bechtel Group, Inc. Electrode cap with integral tank cover for acid mist collection. 5,609,738, Cl. 204-279.000.
Murray, Keith E.: *See*—
Jani, Mahendra G.; Barnes, Norman P.; Murray, Keith E.; and Kokta, Milan R., 5,610,933, Cl. 372-41.000.
Murray, Richard A.; and Dull, Dan J., to Encad, Inc. Printer ink cartridge with memory storage capacity. 5,610,635, Cl. 347-7.000.
Murthy, Manohar; Wakerly, John E.; and Laursen, Arthur I., to Alantec Corporation. Communication apparatus and methods. 5,610,905, Cl. 370-401.000.
Muskat, James C.: *See*—
Frasier, Christine M.; Muskat, James C.; and Teague, Charles J., 5,609,471, Cl. 416-204.00A.
Mutoh, Eiji; Kubota, Shinichi; and Maeda, Susumu, to Honda Giken Kogyo Kabushiki Kaisha. Data processing apparatus for vehicle. 5,610,574, Cl. 340-426.000.
Mutschler, Jan, to Robert Bosch GmbH. Pressure regulating device for a fuel delivery system. 5,609,138, Cl. 123-463.000.
Muz, Edwin; and Schwarz, Dieter, to Nicolay Verwaltungs -GmbH. Liquid and gas impenetrable switch. 5,610,379, Cl. 200-552.000.
Muzslay, Steven Z., to ITT Corporation. Secure connector system. 5,609,498, Cl. 439-352.000.
Myakishev, Maxim V.: *See*—
Beritashvili, David R.; Myakishev, Maxim V.; Ershov, Gennady M.; Georgiev, George P.; and Kapanadze, George I., 5,610,074, Cl. 436-177.000.
Myles, Timothy G. Method, apparatus, and composition for treating insects. 5,609,879, Cl. 424-410.000.
Myss, Caroline M.: *See*—
Shealy, C. Norman; Liss, Saul; Myss, Caroline M.; and Cady, Roger K., 5,609,617, Cl. 607-68.000.
N.E. Chemcat Corporation: *See*—
Itoh, Takashi; Kosaki, Yukio; Chonan, Takeshi; Matsuda, Takashi; Kanno, Yasuharu; Wakabayashi, Masao; and Nakamura, Makoto, 5,609,839, Cl. 423-213.200.
N.H.K Builder Co., Ltd.: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Nabeshima, Ryuichi: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.
NACAM: *See*—
Fouquet, Jean-Michel; Duval, Benoit; and DuPont, Eddy, 5,609,364, Cl. 280-777.000.
Nagahama, Masayuki: *See*—
Moriya, Yukio; Koyanagi, Satoru; Fujimura, Tetsuya; Nagahama, Masayuki; Yamazaki, Kazuyuki; and Hishiyama, Toru, 5,609,220, Cl. 180-253.000.
Nagahara, Masaharu: *See*—
Shima, Masao; Yaoita, Katsuhiko; Nagahara, Masaharu; and Kametani, Hiroshi, 5,609,799, Cl. 264-12.000.
Nagahira, Jyoji; Suzuki, Koji; and Kuroda, Kouki, to Canon Kabushiki Kaisha. Apparatus for correcting errors in a digital-to-analog converter. 5,610,810, Cl. 364-167.010.
Nagai, Kazukiyo: *See*—
Ohta, Masafumi; Sakon, Yohta; Takahashi, Toshihiko; Adachi, Chihaya; and Nagai, Kazukiyo, 5,610,309, Cl. 546-256.000.
Nagai, Koichi: *See*—
Ishii, Masaru; and Nagai, Koichi, 5,610,889, Cl. 369-75.200.
Nagai, Kunio: *See*—
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.
Nagai, Mitsuo: *See*—
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.
Nagano, Akihiko; Yamada, Akira; and Irie, Yoshiaki, to Canon Kabushiki Kaisha. Optical eye-control apparatus. 5,610,681, Cl. 396-51.000.
Nagao, Yasuhiro: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katoh, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.
Nagasawa, Shiji: *See*—
Shiino, Masato; Tsutsumi, Mikio; and Nagasawa, Shiji, 5,611,010, Cl. 385-53.000.
Nagasawa, Toshiya; Hasegawa, Etuo; and Kakehashi, Nobuharu, to Nippondenso Co., Ltd. Evaporator for cooling apparatus. 5,609,036, Cl. 62-198.000.
Nagasawa, Toshiyuki, to Orient Chemical Industries, Ltd. Water-based pigment ink and process for producing the same. 5,609,671, Cl. 106-20.00R.
Nagase, Sumio: *See*—
Hasegawa, Nobutoshi; Hirota, Yoshio; Nagase, Sumio; Fukuta, Hisato; and Tani, Makoto, 5,609,111, Cl. 108-55.100.
Nagashima, Hiroto: *See*—
Shibasaki, Souhei; Sawano, Yukio; Nagashima, Hiroto; Fujisawa, Kyuichi; Sugiyama, Koichi; and Aratsu, Shuichi, 5,611,028, Cl. 395-131.000.
Nagasu, Takeshi: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.
Nagasuna, Kinya: *See*—
Dairoku, Yorimichi; Nagasuna, Kinya; Masuda, Yoshihiko; Harada, Nobuyuki; Motono, Yoshihiro; and Ishizaki, Kunihiko, 5,610,208, Cl. 525-384.000.
Nagata, Masaya: *See*—
Higuchi, Kaoru; Ishii, Hiroshi; and Nagata, Masaya, 5,610,721, Cl. 358-396.000.
Nagata, Mitsuru: *See*—
Fukunaga, Toshitaka; and Nagata, Mitsuru, 5,610,606, Cl. 341-143.000.
Nagatani, Akemi: *See*—
Kadowaki, Yukio; and Nagatani, Akemi, 5,611,021, Cl. 395-27.000.
Nagayama, Kuniaki; and Adachi, Eiki, to Research Development Corporation of Japan. Method to observe film thickness and/or refractive index by color difference. 5,610,392, Cl. 250-226.000.
Nagayama, Yoshikatsu: *See*—
Suzuki, Akira; Hibino, Hiroki; Nagayama, Yoshikatsu; and Nakamura, Motokazu, 5,609,563, Cl. 600-118.000.
Naishtut, Vida: *See*—
Spector, Yechiel; Jacobson, Esther; Naishtut, Vida; Vittenberg, Michael; and Beinert, Zohar, 5,610,359, Cl. 89-1.110.
Naito, Shinobu: *See*—
Wada, Yukihisa; Naito, Shinobu; and Kumazawa, Kazuhiko, 5,609,807, Cl. 264-177.110.
Nakabayashi, Jiro: *See*—
Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, 5,610,976, Cl. 379-127.000.
Nakada, Minoru: *See*—
Aoki, Minoru; Nakada, Minoru; Yazawa, Yuichi; Izu, Gen'ichi; and Terada, Takashi, 5,609,882, Cl. 424-451.000.
Nakadate, Masaaki: *See*—
Obukata, Masahiro; and Nakadate, Masaaki, 5,609,472, Cl. 416-223.00R.
Nakagawa, Masamichi: *See*—
Nobori, Kunio; Kado, Yoshiyasu; and Nakagawa, Masamichi, 5,611,039, Cl. 395-806.000.
Nakagawa, Norihisa: *See*—
Matsuoka, Hiroki; and Nakagawa, Norihisa, 5,609,141, Cl. 123-520.000.
Nakagawa, Sachiko: *See*—
Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.
Nakagawa, Takahiro: *See*—
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Nakagawa, Takehiro: *See*—
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Nakagawa, Yukimitsu: *See*—
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, 5,610,036, Cl. 435-71.100.
Nakahata, Akimasa: *See*—
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.
Nakahata, Tatsutoshi, to Amgen Inc.; and Tosoh Corporation. Use of stem cell factor interleukin-6 and soluble interleukin-6 receptor to induce the development of hematopoietic stem cells. 5,610,056, Cl. 435-378.000.
Nakahigashi, Sachiyo: *See*—

Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.

Nakahira, Shigeharu: *See—*
Kobayashi, Haruhito; Ohta, Yoshinobu; and Nakahira, Shigeharu, 5,609,463, Cl. 414-675.000.

Nakai, Yasuhiro: *See—*
Inamoto, Kiyoshi; Miyaza, Masao; and Nakai, Yasuhiro, 5,610,688, Cl. 399-366.000.

Nakajima, Hiroshi: *See—*
Kageyama, Masao; Suga, Toyohiko; Motosugi, Kenzo; and Nakajima, Hiroshi, 5,610,045, Cl. 435-194.000.

Nakajima, Hiroyuki: *See—*
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Nakajima, Junjiro: *See—*
Tokunaga, Kensuke; Aizawa, Yasuhiro; Nakajima, Junjiro; Sasaki, Masana; Ajima, Masayoshi; and Imai, Masafumi, 5,610,960, Cl. 376-441.000.

Nakajima, Mitsuhiko: *See—*
Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, 5,610,587, Cl. 340-572.000.

Nakajima, Yasuyuki, to Kokusai Denshin Denwa Kabushiki Kaisha. Noise reduction apparatus for reducing noise in decoding of moving picture sequence. 5,610,729, Cl. 358-463.000.

Nakamoto, Yoshiyasu: *See—*
Dang, Hien P.; Nakagawa, Takahiro; Nakamoto, Yoshiyasu; Srijayantha, Muthuthamby; and Suzuki, Hiroyuki, 5,610,777, Cl. 360-77.030.

Nakamura, Fumihiko, to Canon Kabushiki Kaisha. Control panel apparatus for electronic devices. 5,610,797, Cl. 361-681.000.

Nakamura, Hiroshi; and Nishikawa, Katsuhiko, to Fujitsu Limited. Graphic display control system. 5,610,630, Cl. 345-119.000.

Nakamura, Hiroshi; Miyamoto, Junichi; Iwata, Yoshihisa; and Imamiya, Keniti, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,610,859, Cl. 365-185.220.

Nakamura, Hiroshi: *See—*
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Nakamura, Katsushige, to Mitaka Kohki Co., Ltd. Articulated tool-holding arm. 5,609,565, Cl. 600-229.000.

Nakamura, Kazuo: *See—*
Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, 5,610,219, Cl. 524-413.000.

Nakamura, Makoto: *See—*
Itoh, Takashi; Kosaki, Yukio; Chonan, Takeshi; Matsuda, Takashi; Kanno, Yasuharu; Wakabayashi, Masao; and Nakamura, Makoto, 5,609,839, Cl. 423-213.200.

Nakamura, Masahiko: *See—*
Terada, Hiroshi; Yamamoto, Hajime; and Nakamura, Masahiko, 5,610,701, Cl. 399-298.000.

Nakamura, Masao: *See—*
Kaneda, Akihiro; Yokota, Koichi; and Nakamura, Masao, 5,609,013, Cl. 57-200.000.

Nakamura, Michiko: *See—*
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.

Nakamura, Motokazu: *See—*
Suzuki, Akira; Hibino, Hiroki; Nagayama, Yoshikatsu; and Nakamura, Motokazu, 5,609,563, Cl. 600-118.000.

Nakamura, Osamu: *See—*
Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, 5,610,976, Cl. 379-127.000.

Nakamura, Tetsunosuke: *See—*
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.

Nakamura, Toshihiro: *See—*
Yamamoto, Kunihiko; Matsui, Kiyohisa; Ishii, Yutaka; Yasunishi, Norio; Nakamura, Toshihiro; Washio, Hajime; and Taniguchi, Koki, 5,610,628, Cl. 345-100.000.

Nakamura, Yasushi: *See—*
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,609,564, Cl. 600-200.000.

Nakamura, Youichi: *See—*
Shimano, Kunio; Nakamura, Youichi; Ozaki, Osamu; and Ohshima, Iwao, 5,610,958, Cl. 376-277.000.

Nakanishi, Koji: *See—*
Hammerling, Ulrich; Buck, Jochen; Derguini, Fadila; and Nakanishi, Koji, 5,610,200, Cl. 514-763.000.

Nakano, Hiroshi: *See—*
Sakurai, Akio; Mizuta, Tamotsu; Okada, Yasuhide; Nakano, Hiroshi; Ikenaga, Takao; Shin, Osamu; and Ikenaga, Yuuji, 5,609,747, Cl. 205-246.000.

Nakano, Hirotaka: *See—*
Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, 5,610,976, Cl. 379-127.000.

Nakano, Mitsuhiro: *See—*
Kai, Junichi; and Nakano, Mitsuhiro, 5,610,406, Cl. 250-492.220.

Nakao, Keiichi: *See—*
Hayama, Masaaki; Mohri, Noboru; and Nakao, Keiichi, 5,609,704, Cl. 156-89.000.

Nakashima, Toshihide: *See—*
Torii, Yoshinari; and Nakashima, Toshihide, 5,609,546, Cl. 477-108.000.

Nakata, Atsuo: *See—*
Saito, Atsusi; Shinagawa, Hideo; and Nakata, Atsuo, 5,610,067, Cl. 435-320.100.

Nakata, Kazushi: *See—*
Matsushita, Shigenori; Yamamoto, Shigeru; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,609,547, Cl. 477-110.000.

Nakata, Kazuya: *See—*
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, 5,609,345, Cl. 277-180.000.

Nakata, Masahiro: *See—*
Matono, Naoto; Noguchi, Hitoshi; Yamamoto, Tomomi; Kobayashi, Shinji; and Nakata, Masahiro, 5,609,971, Cl. 428-692.000.

Nakatoh, Yoshihisa; and Norimatsu, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method and an apparatus for speech detection for determining whether an input signal is speech or nonspeech. 5,611,019, Cl. 395-2.420.

Nakaya, Hideo: *See—*
Uchida, Masashi; Kondo, Tetsujiro; Nakaya, Hideo; Horishi, Takashi; and Ishizaka, Toshihiro, 5,610,658, Cl. 348-416.000.

Nakaya, Shunsuke: *See—*
Okabe, Shinsei; Nakaya, Shunsuke; Hamaji, Yukio; and Yabuuchi, Masami, 5,609,911, Cl. 427-212.000.

Nakayama, Ichiro: *See—*
Watanabe, Syouzou; Suzuki, Masaki; Nakayama, Ichiro; and Okumura, Tomohiro, 5,609,690, Cl. 118-723.00E.

Nakayama, Koichi: *See—*
Ayuta, Masanori; Nakayama, Koichi; and Hiratsuka, Katsuo, 5,609,115, Cl. 112-70.000.

Nakayana, Shigeru: *See—*
Mizushima, Yutaka; Bannai, Kiyoshi; and Nakayana, Shigeru, 5,610,182, Cl. 514-530.000.

Nakazato, Shinsaku; and Yokoyama, Toshiyuki, to Yoshino Kogyosho Co., Ltd. Refilling container having flexible shoulder portion movable between subsided and extended positions. 5,609,266, Cl. 220-703.000.

Nakazawa, Akira: *See—*
Kutami, Michinori; Nakazawa, Akira; Kikuchi, Hideyuki; and Yamagishi, Katsunori, 5,610,643, Cl. 347-54.000.

Nakazawa, Isao, to Canon Kabushiki Kaisha. Camera permitting change-over of photographic image plane frame. 5,610,676, Cl. 396-355.000.

Nakazawa, Yoshihiro: *See—*
Sugioka, Kouichi; Sinmura, Hiroyuki; Ogawa, Masao; Honda, Satoshi; Nakazawa, Yoshihiro; and Fujii, Takaaki, 5,610,814, Cl. 364-424.026.

Nalco Chemical Company: *See—*
Stuart, Christine M.; Rogers, Deborah M.; Van Camp, James R.; and Sowinski, Michael P., 5,610,068, Cl. 436-6.000.

Nalewajek, David: *See—*
Zyhowski, Gary J.; Nalewajek, David; and Stachura, Leonard M., 5,610,128, Cl. 510-288.000.

Namatame, Masaaki: *See—*
Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, 5,609,287, Cl. 228-123.100.

Nan, Liu P.; and Hwei, Leu J., to Acer Peripherals, Inc. Multi-frequency displaying device for displaying both television and personal computer video signals. 5,610,663, Cl. 348-554.000.

Nandakumar, Vallath, to Tektronix, Inc. Memory element with multibit storage. 5,610,857, Cl. 365-162.000.

Nappholz, Tibor, to Telectronics Pacing Systems, Inc. Dual chamber pacemaker with automatic adaptation for intrinsic atrial events. 5,609,610, Cl. 607-9.000.

Nara, Seiko: *See—*
Kato, Yoshiei; Nara, Seiko; and Sorimachi, Kenichi, 5,609,199, Cl. 164-473.000.

Naraghian, Khosrow: *See—*
Johnson, Chris E.; Vendrely, Tim; Whiteside, Leo A.; Carls, Thomas A.; Steele, John; and Naraghian, Khosrow, 5,609,642, Cl. 623-20.000.

Narda Microwave Corp., The: *See—*
Aslan, Edward E.; and Gandhi, Om P., 5,610,526, Cl. 324-522.000.

Nardone, Daniel V.: *See—*
Cherry, Hitesh; Kandros, Michael A.; and Nardone, Daniel V., 5,609,504, Cl. 439-783.000.

Narita, Kazuhisa: *See—*
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, 5,610,315, Cl. 549-389.000.

Narita, Masaki: *See—*
Kaneko, Masaru; Yamazaki, Shigeru; Motegi, Akihiko; Narita, Masaki; and Komai, Hiroshi, 5,610,724, Cl. 358-400.000.

Narumi, Manabu: *See—*
Yoshida, Takeo; and Narumi, Manabu, 5,610,230, Cl. 524-730.000.

Nashef, Aws: *See—*
Quijano, R. C.; and Nashef, Aws, 5,609,626, Cl. 623-1.000.

Nat, Pieter J.; de Booys, Jacob L.; and Schoonhoven, Johannes W. F. M., to Akzo Nobel NV. Boron-containing catalyst. 5,609,750, Cl. 208-122.000.

Natan, Michael, to Penn State Research Foundation, The. Self-assembled metal colloid monolayers. 5,609,907, Cl. 427-2.120.

National Instruments Corporation: *See—*
Kodosky, Jeffrey L.; Truchard, James J.; and MacCrisken, John E., 5,610,828, Cl. 364-489.000.

National Science Council: *See—*
Huang, Wen C.; Lei, Tan F.; and Lee, Chung L., 5,610,098, Cl. 437-176.000.

National Science Council of R.O.C.: *See—*
Lee, Chen-Yi, 5,610,873, Cl. 365-230.010.

National Semiconductor Corporation: *See—*
Camilletti, Robert C.; Saadat, Irfan; and Thomas, Michael, 5,609,925, Cl. 427-503.000.
Merrill, Richard B.; and Issaq, Enayet U., 5,610,433, Cl. 257-531.000.

National Shelter Products, Inc.: *See—*
Cahill, John W., 5,609,383, Cl. 296-39.100.

National Starch and Chemical Investment Holding Corporation: *See—*
Chandran, Rama S.; Leblanc, Jean-Pierre; Leighton, John C.; and Martino, Gary T., 5,609,857, Cl. 424-70.100.
Farwaha, Rajeev; Phan, Lien; and Currie, William, 5,610,225, Cl. 524-558.000.

Natsui, Kenichi: *See—*
Mizufune, Eisaku; Natsui, Kenichi; Kurosawa, Yukio; Daimon, Goro; Asai, Yoshihito; Kashimura, Katsuichi; Koyanagi, Osamu; and Ishikawa, Kogi, 5,610,381, Cl. 218-57.000.

Nautiyal, Chandra S.: *See—*
Lam, Stephen T.; Torkewitz, Nancy R.; Nautiyal, Chandra S.; and Dion, Patrice, 5,610,044, Cl. 435-172.300.

Nawrath, Christiane: *See—*
Somerville, Christopher R.; Nawrath, Christiane; and Poirier, Yves, 5,610,041, Cl. 435-135.000.

NCR Corporation: *See—*
Baur, Peter F., 5,610,629, Cl. 345-104.000.
He, Duanfeng; and Collins, Donald A., Jr., 5,610,385, Cl. 235-467.000.

Neamtu, Nicolae, to Gillette Company, The. Razor blade manufacture. 5,609,075, Cl. 76-104.100.

Neave, John W.: *See—*
Maund, Andrew P.; Neave, John W.; Trevett, Neil F.; Moore, Simon J.; and Wilson, Malcolm E., 5,611,064, Cl. 395-419.000.

NEC Corporation: *See—*
Hankui, Eiji; and Harada, Takashi, 5,610,519, Cl. 324-247.000.
Ishikawa, Hajime; and Suzaki, Tetsuyuki, 5,610,911, Cl. 370-503.000.
Isozaki, Seiya, 5,610,440, Cl. 257-713.000.
Kamioka, Keiko, 5,610,727, Cl. 358-448.000.
Koike, Hiroki; Kimura, Tohru; Otsuki, Tetsuya; and Takada, Masahide, 5,610,852, Cl. 365-145.000.
Komoro, Toshio, 5,610,855, Cl. 365-149.000.
Koyama, Kuniaki, 5,610,101, Cl. 437-195.000.
Nomura, Tadashi, 5,610,899, Cl. 369-249.000.
Shida, Akira, 5,610,427, Cl. 257-362.000.
Tanaka, Masahiko; and Nishiyama, Kohei, 5,610,941, Cl. 375-222.000.
Tasaka, Kazuhiro, 5,610,092, Cl. 437-48.000.
Tsugita, Masami, 5,610,504, Cl. 323-283.000.
Ueda, Goro; and Shiba, Hiroshi, 5,610,666, Cl. 348-676.000.
Yamada, Kenji, 5,610,914, Cl. 370-395.000.
Yamamori, Shuki, 5,609,691, Cl. 118-723.00E.
Yoshida, Toshio; and Kanno, Yukihiro, 5,610,525, Cl. 324-433.000.

NEC Mobile Communications, Ltd.: *See—*
Ohno, Yugo; Shoji, Shunichi; and Kitahara, Atsushi, 5,609,525, Cl. 463-43.000.

Neeb, William M.: *See—*
Topping, Joseph C.; and Neeb, William M., 5,609,191, Cl. 141-198.000.

Neely, James S.; and Restle, Phillip J., to International Business Machines Corporation. Capacitive bend sensor. 5,610,528, Cl. 324-660.000.

Nees, Michael R.: *See—*
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., 5,609,738, Cl. 204-279.000.

Neff, Craig A., to AST Holding, Ltd. Nozzle for coupling electromagnetic energy and heatable composition. 5,609,687, Cl. 118-641.000.

Neff, Lynn K.: *See—*
Bell, Cynthia S.; and Neff, Lynn K., 5,609,403, Cl. 353-26.00A.

Negishi, Tadanobu: *See—*
Yamada, Hiroshi; Negishi, Tadanobu; and Honda, Yoshitsugu, 5,609,016, Cl. 60-39.020.

Nelson, Dale H.: *See—*
Bernardson, Peter S.; and Nelson, Dale H., 5,610,505, Cl. 323-312.000.

Nelson, James A.: *See—*
Baudy, Reinhardt B.; Nelson, James A.; and Kanzelberger, Mira A., 5,610,164, Cl. 514-304.000.
Cliffe, Ian A.; Mansell, Howard L.; Ward, Terence J.; Nelson, James A.; Shah, Uresh S.; and Kanzelberger, Mira A., 5,610,154, Cl. 514-216.000.

Nelson, Robert J.; and Ramey, Donald G., to Westinghouse Electric Corporation. Dynamic power and voltage regulator for an ac transmission line. 5,610,501, Cl. 323-207.000.

Nelson, William E., to Texas Instruments Incorporated. Method of measuring the amplitude and frequency of an acceleration. 5,610,337, Cl. 73-651.000.

NeoRx Corporation: *See—*
Wilbur, D. Scott; and Fritzberg, Alan R., 5,609,848, Cl. 424-1.850.

Ness, Valmer H.: *See—*
Murray, James A.; Nees, Michael R.; Imrie, William P.; Rayner, Christopher C.; Pfalzgraff, Chris L.; Bates, Robert K.; Ness, Valmer H.; and Cox, Terrance J., 5,609,738, Cl. 204-279.000.

Neuhaus, Winifried: *See—*
Knuebel, Georg; Hoeffkes, Horst; Neuhaus, Winifried; Lieske, Edgar, deceased, 5,609,650, Cl. 8-423.000.

Neukam, Helmut, to P.E.E.M. Förderanlagen Gesellschaft m.b.H. Roller conveying device. 5,609,236, Cl. 198-370.100.

Neuman, Thomas H.; and Chastain, Richard W., to Tg Soda Ash, Inc. Equilibrium production of sodium carbonate from sodium bicarbonate. 5,609,838, Cl. 423-206.100.

Neuman, William L.: *See—*
Riley, Dennis P.; Weiss, Randy H.; Neuman, William L.; Modak, Anil S.; Lennon, Patrick J.; and Aston, Karl W., 5,610,293, Cl. 540-474.000.

Neumann, Alfred: *See—*
Thom, Heinz; Neumann, Alfred; Johansen, Wolfgang; and Zier, Peter, 5,609,381, Cl. 294-119.100.

Neumann, Barry R., to Transcom Gas Technologies Pty Ltd. Non-return valve. 5,609,130, Cl. 123-267.000.

Neumann, Ulrich: *See—*
Feigel, Hans-Jorg; Neumann, Ulrich; and Schiel, Lothar, 5,609,399, Cl. 303-113.400.

Neurogen Corporation: *See—*
Blum, Charles; and Hutchison, Alan, 5,610,299, Cl. 544-230.000.

Neutronics, Inc.: *See—*
Anderson, J. Douglas; Morgan, Stephen A.; Montague, Chuck W.; and Nyce, Richard J., 5,610,398, Cl. 250-339.120.

Neverisky, Robert: *See—*
Keele, Richard V.; Morin, Cathleen M.; Goodsell, Michael C.; and Neverisky, Robert, 5,611,066, Cl. 395-427.000.

New Jersey Institute of Technology: *See—*
Carr, William N.; and Chamarti, Subramanyam, 5,610,340, Cl. 73-718.000.

New Venture Gear, Inc.: *See—*
Brissenden, James S.; and Zalewski, John D., 5,609,540, Cl. 475-202.000.

Newnan, Brian D. Coffee bean roaster with visual display column. 5,609,097, Cl. 99-470.000.

NFB of New York, Inc.: *See—*
Benderly, David, 5,609,043, Cl. 63-23.000.

NGK Insulators, Ltd.: *See—*
Wada, Yukihisa; Naito, Shinobu; and Kumazawa, Kazuhiko, 5,609,807, Cl. 264-177.110.
Yajima, Yasuhito, 5,610,572, Cl. 338-22.00R.

NGK Spark Plug Co., Ltd.: *See—*
Iwaya, Masaki; and Hayashi, Kyohei, 5,610,111, Cl. 501-136.000.

Nguyen, Can; and Liska, Timothy J., to Emhart Glass Machinery Investments Inc. Glass or plastic container manufacturing system. 5,609,663, Cl. 65-160.000.

Nguyen, Can: *See—*
Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,609,659, Cl. 65-29.110.

Nguyen, Chanh: *See—*
Liu, Takyiu; Nguyen, Chanh; and Matloubian, Mehran, 5,610,086, Cl. 437-31.000.

Nguyen, John Z.: *See—*
Alferness, Merwin H.; Kerzman, Joseph P.; and Nguyen, John Z., 5,611,065, Cl. 395-421.100.

Nguyen, Son V.: *See—*
Carl, Daniel A.; Kenney, Donald M.; Mlynko, Walter E.; and Nguyen, Son V., 5,610,441, Cl. 257-774.000.

NIC Autotec, Inc.: *See—*
Nomura, Ryoichi, 5,609,435, Cl. 403-387.000.

Nicely, Vincent A.: *See—*
Alsmeyer, Daniel C.; and Nicely, Vincent A., 5,610,836, Cl. 364-498.000.

Nichias Corporation: *See—*
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.

Nichols, Sally S. Washable scrubbing mop head and kit. 5,609,255, Cl. 206-576.000.

Nicolaisen, Mogens. Touch responsive control panel. 5,610,380, Cl. 200-600.000.

Nicolay Verwaltungs -GmbH: *See—*

Muz, Edwin; and Schwarz, Dieter, 5,610,379, Cl. 200-552.000.

Nidec Corporation: *See—*
Takahashi, Shuji, 5,610,462, Cl. 310-90.000.

Nidek Co., Ltd.: *See—*
Hosoi, Yoshinobu; and Terabe, Hirohisa, 5,610,671, Cl. 351-200.000.

Nie, Li: *See—*
Bassi, Sukh; Maningat, Clodualdo C.; Chinnaswamy, Rangaswamy; Gray, Darren R.; and Nie, Li, 5,610,277, Cl. 530-374.000.

Nielsen, Henrik, to ABB Management AG. Apparatus for operating a gas turbine in a simple cycle and in a cycle combined with a steam turbine. 5,609,019, Cl. 60-39.182.

Niese, Michael W., to Robbins, Inc. Anchored/resilient hardwood floor system. 5,609,000, Cl. 52-480.000.

Nihei, Yukari: *See—*
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, 5,610,786, Cl. 360-122.000.

Nihon Samicon Co. Ltd.: *See—*
Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, 5,610,599, Cl. 340-931.000.

Niijima, Jun: *See—*
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.

Niimi, Masami: *See—*
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katoh, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,610,466, Cl. 310-239.000.

Nijenhuis, Atze J.: *See—*
Meijer, Egbert W.; Bosman, Hubertus J. M.; Vandenbooren, Franciscus H. A. M. J.; De Brabander-Van Den Berg, Ellen M. M.; Castelijns, Anna M. C. F.; De Man, Hendrikus C. J.; Reintjens, Rafael W. E. G.; Stoelwinder, Christiaan J. C.; and Nijenhuis, Atze J., 5,610,268, Cl. 528-363.000.

Nikiforov, Theo; and Knapp, Michael R., to Molecular Tool, Inc. Method for immobilizing nucleic acid molecules. 5,610,287, Cl. 536-24.300.

Nikon Corporation: *See—*
Kudo, Yuji, 5,610,763, Cl. 359-619.000.
Shiraishi, Naomasa, 5,610,684, Cl. 355-55.000.
Shoji, Yoshitomo, 5,610,769, Cl. 359-745.000.
Ueno, Yasunori, 5,610,670, Cl. 351-176.000.

Ninomiya, Kunio; and Sakashita, Seiji, to Matsushita Electric Industrial Co., Ltd. Digital demodulation apparatus. 5,610,948, Cl. 375-324.000.

Ninomiya, Masahito, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling an electrically operated cooling fan used for an engine cooling device. 5,609,125, Cl. 123-41.120.

Nippon Gasket Co., Ltd.: *See—*
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, 5,609,345, Cl. 277-180.000.

Nippon Hoso Kyokai: *See—*
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Aoki, Minoru; Nakada, Minoru; Yazawa, Yuichi; Izu, Gen'ichi; and Terada, Takashi, 5,609,882, Cl. 424-451.000.
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, 5,610,315, Cl. 549-389.000.

Nippon Paint Co., Ltd.: *See—*
Hase, Takakazu; Arimatsu, Seiji; and Kimoto, Koichi, 5,609,993, Cl. 430-302.000.
Sato, Haruhiko; and Harada, Yutaka, 5,610,269, Cl. 528-499.000.

Nippon Paper Industries Co., Ltd.: *See—*
Abe, Tsuyoshi; and Nomoto, Akira, 5,609,098, Cl. 100-331.000.

Nippon Planning Co., Ltd.: *See—*
Tamura, Masanobu, 5,609,953, Cl. 428-316.600.

Nippon Precision Circuits Inc.: *See—*
Yamada, Kunio; and Fukutomi, Yasuyuki, 5,610,608, Cl. 341-143.000.

Nippon Shokubai Co., Ltd.: *See—*
Dairoku, Yorimichi; Nagasuna, Kinya; Masuda, Yoshihiko; Harada, Nobuyuki; Motono, Yoshihiro; and Ishizaki, Kunihiko, 5,610,208, Cl. 525-384.000.

Nippon Soda Co., Ltd.: *See—*
Hidaka, Tomoya; Sato, Shinichi; Sato, Hiroyasu; and Takashina, Yutaka, 5,609,672, Cl. 106-21.00R.

Nippon Soken Inc.: *See—*
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.

Nippon Steel Corporation: *See—*
Kato, Kenji; and Miyasaka, Akihiro, 5,609,818, Cl. 420-62.000.
Ogawa, Shigeru; and Shiraishi, Toshiyuki, 5,609,054, Cl. 72-14.100.
Ohtsuka, Tadao, 5,610,755, Cl. 359-210.000.

Nippon Telegraph and Telephone Corporation: *See—*
Matsumoto, Morihiko; Ichino, Toshihiro; and Nishi, Shiro, 5,609,795, Cl. 252-500.000.
Shiino, Masato; Tsutsumi, Mikio; and Nagasawa, Shiji, 5,611,010, Cl. 385-53.000.
Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, 5,610,976, Cl. 379-127.000.

Nippon Yusen Kaisha: *See—*
Ueda, Ichiro; and Ishizuka, Masanori, 5,610,344, Cl. 73-865.600.

Nippondenso Co., Ltd.: *See—*
Asai, Akiyoshi; Tsuruta, Kazuhiro; and Enya, Takeshi, 5,610,426, Cl. 257-360.000.
Awano, Naomi; Inuzuka, Hajime; Mizukoshi, Masahito; and Kudomi, Shigeki, 5,610,412, Cl. 257-85.000.
Fukaya, Tomoji; and Miwa, Naoto, 5,609,825, Cl. 422-90.000.
Honda, Toshiya; and Torii, Yoshinari, 5,609,217, Cl. 180-170.000.
Kojima, Masami; and Kato, Naohito, 5,609,145, Cl. 123-634.000.
Kuzuoka, Kaoru, 5,610,571, Cl. 338-22.00R.
Nagasawa, Toshiya; Hasegawa, Etuo; and Kakehashi, Nobuharu, 5,609,036, Cl. 62-198.000.
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katoh, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,610,466, Cl. 310-239.000.
Torii, Yoshinari; and Nakashima, Toshihide, 5,609,546, Cl. 477-108.000.

Nipson: *See—*
Eltgen, Jean-Jacques, 5,610,633, Cl. 346-74.200.

Nishi, Shiro: *See—*
Matsumoto, Morihiko; Ichino, Toshihiro; and Nishi, Shiro, 5,609,795, Cl. 252-500.000.

Nishida, Tomio: *See—*
Sasae, Taiichiro; Nishida, Tomio; Uekita, Masakazu; and Funahashi, Takashi, 5,609,558, Cl. 588-257.000.

Nishida, Toshiyuki: *See—*
Ogawa, Ken; and Nishida, Toshiyuki, 5,609,135, Cl. 123-325.000.

Nishido, Noriyuki: *See—*
Kakuda, Nobuyuki; and Nishido, Noriyuki, 5,609,028, Cl. 60-407.000.

Nishigaki, Junji: *See—*
Kawakami, Hiroshi; and Nishigaki, Junji, 5,610,005, Cl. 430-574.000.

Nishigaya, Takeshi: *See—*
Sakumoto, Yukinori; Hashimoto, Takeshi; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,609,956, Cl. 428-352.000.

Nishiguchi, Shigeo: *See—*
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.

Nishii, Motoi: *See—*
Maeda, Eiichi; Imada, Katsuhisa; Nishii, Motoi; and Nishinaga, Yoshihiro, 5,610,565, Cl. 333-185.000.

Nishikawa, Katsuhiko: *See—*
Nakamura, Hiroshi; and Nishikawa, Katsuhiko, 5,610,630, Cl. 345-119.000.

Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, to Sumitomo Wiring Systems, Ltd. Wire harness and method of manufacturing the same. 5,610,447, Cl. 307-38.000.

Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, to Sumitomo Wiring Systems, Ltd. Wire harness production controlling method. 5,610,454, Cl. 307-147.000.

Nishimoto, Clifford K.: *See—*
Bandy, Steve G.; Nishimoto, Clifford K.; Webb, Christopher; and LaRue, Ross A., 5,610,471, Cl. 313-309.000.

Nishimura, Shigetaka: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,609,809, Cl. 264-210.700.

Nishimura, Toshihiro: *See—*
Matsunaga, Takashi; Nishimura, Toshihiro; and Inoue, Hiroshi, 5,609,930, Cl. 428-35.200.

Nishinaga, Yoshihiro: *See—*
Maeda, Eiichi; Imada, Katsuhisa; Nishii, Motoi; and Nishinaga, Yoshihiro, 5,610,565, Cl. 333-185.000.

Nishinaka, Yoshirou: *See—*
Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, 5,609,287, Cl. 228-123.100.

Nishino, Koji: *See—*
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.

Nishino, Satoru; Abe, Koichi; Fukuyama, Takeo; and Minamizawa, Hidehito, to Toray Industries. Biaxially oriented polyester film. 5,609,949, Cl. 428-217.000.

Nishio, Hiroyuki: *See—*
Fujita, Yoshihisa; Mizuno, Takahide; Nishio, Hiroyuki; Uto, Kuniharu; and Ishida, Kazutoshi, 5,609,243, Cl. 198-847.000.

Nishio, Mayumi: *See—*
Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.

Nishishita, Kunihiko: *See—*
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,609,203, Cl. 165-153.000.

Nishita, Satoru: *See—*
Matsushita, Shigenori; Yamamoto, Shigeru; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,609,547, Cl. 477-110.000.

Nishitani, Kiyoshi: *See—*
Ishibashi, Kenji; Kimura, Kazuo; Ishida, Iwao; and Nishitani, Kiyoshi, 5,610,761, Cl. 359-407.000.

Nishitani, Shigeyuki: *See—*
Kasai, Naruhiko; Mano, Hiroyuki; Nishitani, Shigeyuki; Takita, Isao; and Takahashi, Kohji, 5,610,626, Cl. 345-89.000.

Nishiyama, Kohei: *See—*
Tanaka, Masahiko; and Nishiyama, Kohei, 5,610,941, Cl. 375-222.000.

Nishiyama, Naoki, to Sumitomo Electric Industries, Ltd. Photodetector module with a photodiode electrically connected directly on top of a parallel plate capacitor. 5,610,395, Cl. 250-239.000.

Nishiyama, Tadaaki: *See—*
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; and Nishiyama, Tadaaki, 5,610,226, Cl. 524-559.000.

Nishizawa, Hiroshi, to Matsushital Electric Industrial Co, Ltd. Floppy disk unit. 5,610,780, Cl. 360-99.040.

Nissan Motor Co., Ltd.: *See—*
Furuya, Masayuki; and Michioka, Hirofumi, 5,609,552, Cl. 477-174.000.
Mochizuki, Nobuaki; and Iwaya, Yoshimi, 5,609,537, Cl. 475-144.000.
Sakai, Hiromasa, 5,609,551, Cl. 477-168.000.

Nissei Plastic Industrial Co., Ltd.: *See—*
Arai, Tsuyoshi, 5,609,801, Cl. 264-40.500.

Nit-on Medical Supply Co., Ltd.: *See—*
Honda, Hiroshi, 5,610,811, Cl. 395-202.000.

Nitto Denko Corporation: *See—*
Aizawa, Kaoru; and Kawanishi, Michirou, 5,609,954, Cl. 428-317.500.

NKK Corporation: *See—*
Yoshimi, Naoto; Watanabe, Toyofumi; Yamashita, Masaaki; Ookuma, Toshiyuki; and Miyoshi, Tatsuya, 5,609,968, Cl. 428-623.000.

Nobel, Gary M.; Medin, Todd; Wilson, Arthur K.; and Brown, Patricia S., to Hewlett-Packard Company. Flex circuit with multiple trace configurations and method of manufacture. 5,610,642, Cl. 347-50.000.

Nobori, Kunio; Kado, Yoshiyasu; and Nakagawa, Masamichi, to Matsushita Electric Industrial Co., Ltd. Information processing apparatus and method for combining different media to have coinciding reproduction times. 5,611,039, Cl. 395-806.000.

Nogle, Thomas D.; Mikel, Steven A.; and Martin, Berthold, to Chrysler Corporation. Lubricating device for a planetary gear unit. 5,609,538, Cl. 475-159.000.

Noguchi, Akio: *See—*
Isaka, Yukio; Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Uchiyama, Seiji; Yamada, Kazuro; and Takeuchi, Makoto, 5,610,646, Cl. 347-131.000.

Noguchi, Hiromichi: *See—*
Komuro, Hirokazu; Noguchi, Hiromichi; and Mori, Takahiro, 5,610,206, Cl. 522-121.000.

Noguchi, Hiroyuki: *See—*
Hachisuka, Kimio; Noguchi, Hiroyuki; and Momose, Tomoaki, 5,609,187, Cl. 140-92.200.

Noguchi, Hitoshi: *See—*
Matono, Naoto; Noguchi, Hitoshi; Yamamoto, Tomomi; Kobayashi, Shinji; and Nakata, Masahiro, 5,609,971, Cl. 428-692.000.

Noguchi, Takeshi: *See—*
Kato, Tadashi; Noguchi, Takeshi; and Inada, Tadahiro, 5,610,256, Cl. 526-318.400.

Noguchi, Toshio, to Noguchi, Toshio; Yamaguchi, Yasushi; Colleague Iowa, Inc.; and Colleague Agencies, Inc. File with gripping devices. 5,608,950, Cl. 24-67.300.

Nohmi Bosai Ltd.: *See—*
Okazaki, Toshiaki, 5,610,592, Cl. 340-628.000.

Nohren, John E., Jr.; Reid, Henry C.; Nohren, Joseph H.; Smith, John T.; and Huggins, Donald G., Jr., to Innova Pure Water Inc. Bottle filter cap. 5,609,759, Cl. 210-266.000.

Nohren, Joseph H.: *See—*
Nohren, John E., Jr.; Reid, Henry C.; Nohren, Joseph H.; Smith, John T.; and Huggins, Donald G., Jr., 5,609,759, Cl. 210-266.000.

Nokia Technology GmbH: *See—*
Lagger, Heinz; Reidinger, Rolf; and Wolffram, Werner, 5,610,474, Cl. 313-406.000.

Nolen, Angela M.: *See—*
Crews, Jeanne L.; Christiansen, Eric L.; Williamsen, Joel E.; Robinson, Jennifer R.; and Nolen, Angela M., 5,610,363, Cl. 89-36.020.

Nomoto, Akira: *See—*
Abe, Tsuyoshi; and Nomoto, Akira, 5,609,098, Cl. 100-331.000.

Nomura, Kiyoshi, to Yamaichi Co., Ltd. Flexible resin filled cushion permitting drainage. 5,608,936, Cl. 5-645.000.

Nomura, Ryoichi, to NIC Autotec, Inc. Connectors for frame bars with T-shaped grooves. 5,609,435, Cl. 403-387.000.

Nomura, Tadashi, to NEC Corporation. Optical head moving section of optical disk drive. 5,610,899, Cl. 369-249.000.

Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, to Nihon Samicon Co. Ltd. System for traffic signals for one-side passing. 5,610,599, Cl. 340-931.000.

Nonoshita, Hiroshi; Cho, Kenjiro; Saito, Seiji; and Shigehara, Yasuhisa, to Canon Kabushiki Kaisha. Image processing system. 5,610,726, Cl. 358-442.000.

Nonweiler, Mark A.; Konrad, Gregory F.; and Wiatrowski, Dennis A., to Konrad, Gregory A. Aqueous emulsion-based coating compositions. 5,610,215, Cl. 524-376.000.

Noplis, Edward J. Centrifugal control assembly for camshaft advance and retardation and suppression of cyclical vibration. 5,609,127, Cl. 123-90.170.

Nordfang, Ole; and Rasmussen, Mirella E., to Novo Nordisk A/S. Process for producing a coagulation active complex of factor VIII fragments. 5,610,278, Cl. 530-383.000.

Nordfang, Ole: *See—*
Rasmussen, Poul B.; and Nordfang, Ole, 5,610,033, Cl. 435-69.100.

Nordpunkt AG: *See—*
Maihofer, Willi, 5,609,830, Cl. 422-112.000.

Nordstrom, John D.: *See—*
Kasari, Akira; Ikushima, Satoshi; Isozaki, Osamu; Matsumoto, Naoji; and Nordstrom, John D., 5,609,960, Cl. 428-413.000.

Norimatsu, Takeshi: *See—*
Nakatoh, Yoshihisa; and Norimatsu, Takeshi, 5,611,019, Cl. 395-2.420.

Noritake, Masaki; and Yuasa, Shigeki, to Tokuyama Corporation. Inorganic composition. 5,609,675, Cl. 106-35.000.

Norsk Hydro a.s: *See—*
Wendelbo, Rune, 5,609,843, Cl. 423-306.000.

Norster, Eric R.: *See—*
Kesseli, James B.; and Norster, Eric R., 5,609,655, Cl. 48-180.100.

North, William E.; and Kennedy, Mark T., to Westinghouse Electric Corporation. Gas turbine vane with a cooled inner shroud. 5,609,466, Cl. 415-115.000.

Northeastern University: *See—*
Giese, Roger W.; Abdel-Baky, Samy; and Xu, Linxiao, 5,610,020, Cl. 435-7.100.

Northern Research & Engineering Corp.: *See—*
Kesseli, James B.; and Norster, Eric R., 5,609,655, Cl. 48-180.100.

Northern Telecom Limited: *See—*
Focsaneanu, Mihai; Skillen, Richard P.; and Livermore, Frederick C., 5,610,910, Cl. 370-351.000.

Northrop Grumman Corporation: *See—*
Brosnan, Stephen J.; and Komine, Hiroshi, 5,610,705, Cl. 356-28.500.

Northrup, Milton A.: *See—*
Benett, William J.; Krulevitch, Peter A.; Lee, Abraham P.; Northrup, Milton A.; and Folta, James A., 5,609,608, Cl. 606-205.000.

Norton, M. Brent: *See—*
Watts, Stephen P.; and Norton, M. Brent, 5,609,391, Cl. 297-127.000.

Nosal, Roger: *See—*
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,610,296, Cl. 548-546.000.

Nosco, Dennis L.: *See—*
Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,609,850, Cl. 424-9.500.

Nose, Noriyuki: *See—*
Sentoku, Koichi; Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; and Saitoh, Kenji, 5,610,718, Cl. 356-363.000.

Novalink Technologies: *See—*
Krishan, Baldev; Singh, Baljeet; and Moorthy, Harihara, 5,611,055, Cl. 395-281.000.

Novapax Kunststofftechnik Steiner GmbH & Co. KG: *See—*
Li, Yan, 5,609,776, Cl. 219-76.140.

Novo Nordisk A/S: *See—*
Jacobs, Howard S., 5,610,138, Cl. 514-12.000.
Nordfang, Ole; and Rasmussen, Mirella E., 5,610,278, Cl. 530-383.000.
Rasmussen, Poul B.; and Nordfang, Ole, 5,610,033, Cl. 435-69.100.
Schülein, Martin; Halkier, Torben; Heldt-Hansen, Hans P.; Dalbøge, Henrik; and Pedersen, Lars S., 5,610,048, Cl. 435-209.000.

Nozaki, Koji: *See—*
Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, 5,609,688, Cl. 118-715.000.

Nuijten, Peter: *See—*
Field, Richard E.; Nuijten, Peter; and Rushton, Neil, 5,609,646, Cl. 623-22.000.

Nurmikko, Arto V.: *See—*
Fan, Yongping; Han, Jung; Nurmikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,610,413, Cl. 257-97.000.

Nussbaum, Howard S.: *See—*
Hudson, Ralph E.; Nussbaum, Howard S.; and Chen, Ernest, 5,610,610, Cl. 342-25.000.

Nustad, Timothy A., to General Electric Company. Method for optimizing power supply voltage to high voltage transmitters. 5,610,509, Cl. 323-234.000.

Nutra Sweet Company, The: *See—*
Erickson, Robert A., 5,610,307, Cl. 546-147.000.

Nutt, Stephen L.: *See*—
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,610,032, Cl. 435-69.100.
Nyce, Richard J.: *See*—
Anderson, J. Douglas; Morgan, Stephen A.; Montague, Chuck W.; and Nyce, Richard J., 5,610,398, Cl. 250-339.120.
Nycomed Imaging AS: *See*—
Undheim, Kjell; Solbakken, Magne; Agner, Erik; Kremminger, Peter; and Lange, Meinolf, 5,610,141, Cl. 514-15.000.
Nyhuis, Robert; Fredricks, Brent; and Ryckeghem, Martin Van, to Herman Miller, Inc. Apparatus and method for mounting a support column to a chair base and tilt control housing. 5,608,960, Cl. 29-434.000.
Nyyssönen, Eini; Keränen, Sirkka; Penttilä, Merja; Takkinen, Kristiina; and Knowles, Jonathan K.C., to Alko Group Ltd. Immunoglobulin production by trichoderma. 5,610,034, Cl. 435-69.600.
O&K Orenstein: *See*—
Leidinger, Gustav, 5,609,089, Cl. 91-516.000.
Obara, Sanshiro; Yamada, Hiroyuki; Matsudaira, Nobunori; and Masaki, Ryoso, to Hitachi Ltd.; and Hitachi Automotive Engineering Co., Ltd. Control equipment for electric vehicle and control method thereof. 5,610,483, Cl. 318-139.000.
Obara, Tadashi: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Obara, Tamio; and Matsumaru, Kazuo, to Tokyo Rope Manufacturing Co., Ltd. Rubber reinforcing steel cord. 5,609,014, Cl. 57-212.000.
O'Bear, Raymond E.; Colin, Bruno; Tegeler, G. R.; and Staples, John L., to bio Mérieux Vitek, Inc. Sample card. 5,609,828, Cl. 422-102.000.
Oberdorf, Klaus: *See*—
Wingert, Horst; Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Lorenz, Gisela; and Ammermann, Eberhard, 5,610,191, Cl. 514-599.000.
Oberdörfer, Hans, to Hansa Metallwerke AG. Sanitary mixer tap. 5,609,188, Cl. 137-625.400.
Obermeier, Diethard: *See*—
Rostalski, Fred; Obermeier, Diethard; Steinweg, Ewald; Kolbe, Wilfried; and Schirrich, Klaus, 5,609,556, Cl. 493-226.000.
Obermiller, Margaret A.: *See*—
Whiteside, George D.; Rosenthal, Richard A.; and Obermiller, Margaret A., 5,609,714, Cl. 156-387.000.
O'Boyle, Matthew, to Joe W. & Dorothy Dorsett Brown Foundation. Ultrasonic angioplasty balloon catheter. 5,609,606, Cl. 606-194.000.
Obu, Makoto: *See*—
Kawada, Yasuo; Sakai, Hidenori; Obu, Makoto; Echigo, Katsuhiro; Kawashima, Yasuhiro; Yano, Hidetoshi; and Kishi, Fumio, 5,610,725, Cl. 358-403.000.
Obukata, Masahiro; and Nakadate, Masaaki, to Fuji Jukogyo Kabushiki Kaisha. Rotor blade for a rotary-wing aircraft. 5,609,472, Cl. 416-223.00R.
Ochoa, Jorge A.: *See*—
Colleran, Dennis P.; Sommerich, Robert E.; and Ochoa, Jorge A., 5,609,643, Cl. 623-20.000.
O'Connor, Kevin N.: *See*—
Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,609,659, Cl. 65-29.110.
Oda, Koichi: *See*—
Inamori, Yoshimitsu; and Oda, Koichi, 5,610,627, Cl. 345-99.000.
Odaka, Kouiti: *See*—
Sawae, Shinichi; Koshiro, Akihiko; Odaka, Kouiti; and Ogino, Teruaki, 5,609,374, Cl. 293-102.000.
Odanaka, Shinji: *See*—
Yamashita, Kyoji; Odanaka, Shinji; Kurimoto, Kazumi; and Umimoto, Hiroyuki, 5,610,430, Cl. 257-412.000.
Oehy, Jürg; Bider, Kurt; and Schoch, Martin, to Sulzer Medizinaltechnik AG. Acetabular cup assembly. 5,609,648, Cl. 623-22.000.
O'Farrell, Desmond J.: *See*—
Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., 5,610,756, Cl. 359-267.000.
Offenhartz, Colin O'D., to Exu-Dry Wound Care Products, Inc. Dressing for axilla and upper torso. 5,609,569, Cl. 602-61.000.
Oga, Toshiyoshi; Saito, Masaru; and Asai, Shunji, to Matsushita Electronics Corporation. Spiral fluorescent tube and method and device for manufacturing the same. 5,610,476, Cl. 313-493.000.
Ogawa, Ken; and Nishida, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines. 5,609,135, Cl. 123-325.000.
Ogawa, Masao: *See*—
Sugioka, Kouichi; Sinmura, Hiroyuki; Ogawa, Masao; Honda, Satoshi; Nakazawa, Yoshihiro; and Fujii, Takaaki, 5,610,814, Cl. 364-424.026.
Ogawa, Mototsugu: *See*—
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Ogawa, Shigeru; and Shiraishi, Toshiyuki, to Nippon Steel Corporation. Rolling mill for flat products. 5,609,054, Cl. 72-14.100.
Ogawa, Shuji: *See*—
Kaga, Kunihiko; Kotoh, Satoru; Ogawa, Shuji; Kanaoka, Masaru; and Murai, Toru, 5,609,781, Cl. 219-121.840.
Ogawa, Susumu; Senoh, Hideaki; and Idei, Kouji, to Mitsubishi Paper Mills Limited. Ink jet recording sheet and method for producing same. 5,609,964, Cl. 428-520.000.
Ogawa, Tetsuo, to Kansai Paint Co., Ltd. Process for production of styrene or styrene derivative polymer of narrow molecular weight distrubition. 5,610,249, Cl. 526-193.000.
Ogino, Kazuya: *See*—
Yamamoto, Setsuko; Ogino, Kazuya; Hayashi, Narutohsi; and Omura, Takashi, 5,609,796, Cl. 252-585.000.
Ogino, Teruaki: *See*—
Sawae, Shinichi; Koshiro, Akihiko; Odaka, Kouiti; and Ogino, Teruaki, 5,609,374, Cl. 293-102.000.
Ogiro, Kenji: *See*—
Wakabayashi, Manabu; and Ogiro, Kenji, 5,610,655, Cl. 348-373.000.
Oh, Byung K., to Goldstar Co., Ltd. Circuit and method for controlling charging of a battery. 5,610,498, Cl. 320-39.000.
Oh, Chul S., to Shin A Sports Co., Ltd. Fly reel drag direction changer with a ratchet mechanism. 5,609,309, Cl. 242-282.000.
Oh, Eui Y., to LG Electronics Inc. Method for fabricating thin film transistor using back light exposure. 5,610,082, Cl. 437-21.000.
Oh, Heung-Min, to SamSung Electronics Co., Ltd. Method of optimizing read channel of disk drive recording apparatus by using error rate. 5,610,776, Cl. 360-53.000.
Oh, Soo-Young: *See*—
Chang, Norman H.; Chang, Keh-Jeng; Lee, Keunmyung; and Oh, Soo-Young, 5,610,833, Cl. 364-491.000.
Oh, Young S.; Juneja, Prem S.; and Connor, Daniel S., to Procter & Gamble Company, The. Gel stick antiperspirant compositions. 5,609,855, Cl. 424-65.000.
O'Hara, Robert J.: *See*—
Knowlton, Christopher M.; Strickland, Timothy A.; and O'Hara, Robert J., 5,608,947, Cl. 15-340.400.
Ohgiyama, Takashi: *See*—
Fujiwara, Morio; and Ohgiyama, Takashi, 5,609,810, Cl. 264-219.000.
Ohki, Shigeru: *See*—
Kemmochi, Kazuhisa; Ohki, Shigeru; and Suzuki, Hiroyuki, 5,610,696, Cl. 399-285.000.
Ohmae, Hideki; and Takahara, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Light scattering light valve projection apparatus. 5,610,735, Cl. 349-10.000.
Ohmi, Masanori: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; Katoh, Masahiro; Nagao, Yasuhiro; and Araki, Takeshi, 5,610,445, Cl. 290-38.00R.
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,610,466, Cl. 310-239.000.
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, to Fujikin Incorporated. Tightening device. 5,609,077, Cl. 81-57.130.
Ohnishi, Masahito: *See*—
Kanda, Takashi; Yoshida, Kazuo; and Ohnishi, Masahito, 5,610,807, Cl. 363-43.000.
Ohnishi, Youichi: *See*—
Aokura, Isamu; Yamanishi, Hitoshi; Ohnishi, Youichi; and Ikeda, Tanejiro, 5,609,739, Cl. 204-298.190.
Ohno, Kimichika: *See*—
Tachibana, Hiroyuki; Kasada, Mitumori; and Ohno, Kimichika, 5,609,541, Cl. 474-205.000.
Ohno, Tohru, to Tokyo Buhin Kogyo Co., Ltd. Gear pump. 5,609,474, Cl. 417-288.000.
Ohno, Yoshikazu: *See*—
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.
Ohno, Yugo; Shoji, Shunichi; and Kitahara, Atsushi, to NEC Mobile Communications, Ltd.; Comsys Corporation; and Sega Enterprises, Ltd. Video game data reception apparatus. 5,609,525, Cl. 463-43.000.
Ohnuma, Nobuo: *See*—
Ohta, Takatoshi; and Ohnuma, Nobuo, 5,610,997, Cl. 382-218.000.
Ohshima, Hiroshi; and Hashimoto, Satoshi, to Gunze Limited. Surgical suture and method for preparation thereof. 5,609,609, Cl. 606-231.000.
Ohshima, Iwao: *See*—
Shimano, Kunio; Nakamura, Youichi; Ozaki, Osamu; and Ohshima, Iwao, 5,610,958, Cl. 376-277.000.
Ohsuga, Minoru: *See*—
Minowa, Toshimichi; Ohsuga, Minoru; Kashiwaya, Mineo; and Sasaki, Yasushi, 5,609,132, Cl. 123-306.000.
Ohta, Masafumi; Sakon, Yohta; Takahashi, Toshihiko; Adachi, Chihaya; and Nagai, Kazukiyo, to Ricoh Company, Ltd. Electroluminescent device comprising oxadiazole compounds luminescent material, oxadiazole compounds for the device, and method of producing oxadiazole compounds. 5,610,309, Cl. 546-256.000.
Ohta, Michio; and Kato, Nobuo, to Seikagaku Corporation. Antimicrobial compositions and pharmaceutical preparations thereof. 5,610,139. Cl. 514-13.000.
Ohta, Takatoshi; and Ohnuma, Nobuo, to Canon Kabushiki Kaisha. Image processing method and apparatus. 5,610,997, Cl. 382-218.000.
Ohta, Takeo: *See*—
Moriya, Mitsurou; Ishibashi, Hiromichi; Ohta, Takeo; and Sugihara, Yasuhiro, 5,610,879, Cl. 369-13.000.
Ohta, Tsutomu: *See*—

Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, 5,610,219, Cl. 524-413.000.
Ohta, Yoshinobu: *See*—
Kobayashi, Haruhito; Ohta, Yoshinobu; and Nakahira, Shigeharu, 5,609,463, Cl. 414-675.000.
Ohtsuka, Hirohisa: *See*—
Takahashi, Sadao; Ohtsuka, Hirohisa; and Tawada, Takaaki, 5,610,691, Cl. 399-176.000.
Ohtsuka, Tadao, to Nippon Steel Corporation. Lens changeable image scanner and lens position control device in the same. 5,610,755, Cl. 359-210.000.
Oi, Hideyuki: *See*—
Miura, Masami; Ishida, Yutaka; Oi, Hideyuki; Murakami, Koji; Nakagawa, Yukimitsu; and Kawabe, Haruhide, 5,610,036, Cl. 435-71.100.
Oikarinen, Juhani I.: *See*—
Wu, Chiu H.; Oikarinen, Juhani I.; Powrie, William D.; and Tykkaelae, Hannu K., 5,609,293, Cl. 229-3.50R.
Okabe, Shinsei; Nakaya, Shunsuke; Hamaji, Yukio; and Yabuuchi, Masami, to Murata Manufacturing Co., Ltd. Production of ceramic material powder. 5,609,911, Cl. 427-212.000.
Okada, Keiji: *See*—
Sagane, Toshihiro; Tsutsui, Toshiyuki; Kawasaki, Masaaki; Okada, Keiji; Tojo, Tetsuo; and Tanizaki, Tatsuya, 5,610,254, Cl. 526-282.000.
Okada, Toshimi: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.
Okada, Yasuhide: *See*—
Sakurai, Akio; Mizuta, Tamotsu; Okada, Yasuhide; Nakano, Hiroshi; Ikenaga, Takao; Shin, Osamu; and Ikenaga, Yuuji, 5,609,747, Cl. 205-246.000.
Okada, Yukihito: *See*—
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.
Okamoto, Kenichi: *See*—
Yamaguchi, Noboru; and Okamoto, Kenichi, 5,609,494, Cl. 439-157.000.
Okamoto, Yasuhiro; and Arai, Tsutomu, to Fuji Photo Film Co., Ltd. Silver halide photographic material and a processing method for that material. 5,609,997, Cl. 430-399.000.
Okamoto, Yasuo: *See*—
Sorori, Tadahiro; Okamoto, Yasuo; Kondo, Syunichi; and Kurita, Hiromichi, 5,609,992, Cl. 430-281.100.
Okamoto, Yutaka; and Tanaka, Yoshiyuki, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device having means for selective transfer of memory block contents and for chaining together unused memory blocks. 5,611,067, Cl. 395-430.000.
Okazaki, Toshiaki, to Nohmi Bosai Ltd. Fire detecting apparatus. 5,610,592, Cl. 340-628.000.
Oki Electric Industry Co., Ltd.: *See*—
Mizutani, Takao; Ando, Hirokazu; and Kikuchi, Hiroshi, 5,610,695, Cl. 399-284.000.
Okino, Kazuhiko: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.
Okita, Akira: *See*—
Watanabe, Hidenori; Hoshi, Junichi; Yuge, Yutaka; Okita, Akira; and Kuwabara, Hideshi, 5,610,435, Cl. 257-629.000.
Okuda, Sadanao; and Watanabe, Hideo, to Riso Kagaku Corporation. Emulsion ink for stencil printing. 5,609,670, Cl. 106-20.00R.
Okuda, Tadayuki: *See*—
Yamada, Atsushi; Okuda, Tadayuki; Hagiwara, Masaki; and Yoshida, Yoshihide, 5,609,652, Cl. 29-882.000.
Okumura, Hisakazu: *See*—
Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, 5,610,587, Cl. 340-572.000.
Okumura, Katsuya: *See*—
Mitwalsky, Alexander; and Okumura, Katsuya, 5,609,148, Cl. 125-16.010.
Okumura, Tomohiro: *See*—
Watanabe, Syouzou; Suzuki, Masaki; Nakayama, Ichiro; and Okumura, Tomohiro, 5,609,690, Cl. 118-723.00E.
Okumura, Yasumasa: *See*—
Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.
Okuyama, Kazunori: *See*—
Hayashi, Tetsuya; Okuyama, Kazunori; Inomata, Tsuyoshi; Nozaki, Koji; and Hirose, Minoru, 5,609,688, Cl. 118-715.000.
Okuyama, Kousuke: *See*—
Iwai, Hidetoshi; Mitsusada, Kazumichi; Ishihara, Masamichi; Matsumoto, Tetsuro; Miyazawa, Kazuyuki; Katto, Hisao; and Okuyama, Kousuke, 5,610,089, Cl. 437-34.000.
Oleksak, Carl M.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.
Olin Corporation: *See*—
Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., 5,609,210, Cl. 169-26.000.
Oliver, Bill N.; and Manno, Peter, to Sea Quest, Inc. Diver's face mask with offset purge valve. 5,608,920, Cl. 2-428.000.
Oliver, Michael L.: *See*—
Johnston, Gary L.; Zehnder, James W., II; Kruckemeyer, William C.; Oliver, Michael L.; and Longhouse, Richard E., 5,609,401, Cl. 303-155.000.
Olnowich, Howard T.: *See*—
Betts, Robert; and Olnowich, Howard T., 5,610,953, Cl. 375-373.000.
Olsen, Douglas G.: *See*—
Buckmiller, Daniel K.; Erickson, David W.; Olsen, Douglas G.; and Philpot, Randall J., 5,609,349, Cl. 280-280.000.
Olson, Dudley T., to Owens-Brockway Glass Container Inc. Guide ring for I. S. glass forming machine. 5,609,664, Cl. 65-361.000.
Olson, James R., to Deknatel Technology Corporation, Inc. Method for increasing the rate of absorption of polycaprolactone. 5,610,214, Cl. 524-311.000.
Olson, Paul E.: *See*—
Dynd, James F.; Elstran, Gerald V.; and Olson, Paul E., 5,609,164, Cl. 128-864.000.
Olympus Optical Co., Ltd.: *See*—
Aoki, Norihiko; and Yamanashi, Takanori, 5,610,766, Cl. 359-683.000.
Ichikawa, Yoshito; Takemoto, Satoshi; and Tanikawa, Kouji, 5,609,560, Cl. 600-101.000.
Katagiri, Moriya, 5,610,677, Cl. 354-173.100.
Sato, Chiaki, 5,610,894, Cl. 369-112.000.
Soga, Takumi; and Yamamiya, Kunio, 5,610,893, Cl. 369-84.000.
Suzuki, Akira; Hibino, Hiroki; Nagayama, Yoshikatsu; and Nakamura, Motokazu, 5,609,563, Cl. 600-118.000.
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Yanagidate, Masaharu, 5,610,884, Cl. 369-44.280.
Omaki, Mitsuyoshi: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.
O'Meagher, Brent: *See*—
Ackroyd, Neil; Chisholm, Gary S.; Culling, Robert G.; O'Meagher, Brent; and Smith, Steve, 5,610,818, Cl. 364-424.070.
Omnipoint Corporation: *See*—
Durrant, Randolph L.; and Burbach, Mark, 5,610,940, Cl. 375-208.000.
Omo, Shinichi: *See*—
Murata, Takayuki; Fukui, Hiroshi; Omo, Shinichi; and Kuronuma, Akira, 5,610,634, Cl. 347-5.000.
Omori, Masashi: *See*—
Tanaka, Hiroshi; Doi, Nobuaki; Omori, Masashi; and Ishikawa, Hiroaki, 5,608,974, Cl. 34-78.000.
Omron Corporation: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,609,564, Cl. 600-200.000.
Omura, Takashi: *See*—
Yamamoto, Setsuko; Ogino, Kazuya; Hayashi, Narutohsi; and Omura, Takashi, 5,609,796, Cl. 252-585.000.
Onishi, Hiroshi: *See*—
Takahashi, Kenichi; Takeishi, Minako; and Onishi, Hiroshi, 5,610,939, Cl. 375-206.000.
Onji, Yuichi: *See*—
Fujita, Atsuko; Matsui, Shuichi; Onji, Yuichi; Ushioda, Makoto; and Goto, Yasuyuki, 5,609,791, Cl. 252-299.630.

Ono, Kenichi: *See*—
Yamakawa, Takeshi; Mama, Takashi; Ono, Kenichi; and Michiie, Norio, 5,610,651, Cl. 347-250.000.
Ono, Yoichi: *See*—
Hinata, Shoji; Ono, Yoichi; Tsukahara, Akira; Hosogaya, Hiroyuki; Imazeki, Yoshikatsu; Fujisawa, Shinji; and Furukawa, Yoko, 5,610,742, Cl. 349-122.000.
Ontogen Corporation: *See*—
Cargill, John; and Maiefski, Romaine R., 5,609,826, Cl. 422-99.000.
Oohara, Setsuo; and Shudo, Tadashi, to Dainippon Screen Mfg. Co., Ltd. Apparatus for manufacturing plate for gravure. 5,609,448, Cl. 409-80.000.
Ookuma, Toshiyuki: *See*—
Yoshimi, Naoto; Watanabe, Toyofumi; Yamashita, Masaaki; Ookuma, Toshiyuki; and Miyoshi, Tatsuya, 5,609,968, Cl. 428-623.000.
OP-D-OP, Inc.: *See*—
Landis, Timothy J.; Fields, Kyle D.; Dudley, James P.; and Perry, Scott M., 5,608,917, Cl. 2-418.000.
Oppelt, Ralph; and Vester, Markus, to Siemens Aktiengesellschaft. Duplexer including a variable capacitance diode for an ultrasound imaging system. 5,609,154, Cl. 128-661.010.
Oppermann, Günter: *See*—
Link, Karl; Oppermann, Günter; and Wagner, Utz, 5,609,194, Cl. 141-331.000.
Oppermann, Hermann: *See*—
Rueger, David C.; Jones, William K.; Tucker, Ronald F.; Oppermann, Hermann; Ozkaynak, Engin; and Sampath, Kuber T., 5,610,021, Cl. 435-7.200.
Opticon Inc.: *See*—
Hayakawa, Hiroshi, 5,610,752, Cl. 359-198.000.
O'Reilly, Daniel L.: *See*—
Elliott, Isaac; Finucane, Jim; Gottlieb, Louis; O'Reilly, Daniel L.; and Johnson, Gary E., 5,610,915, Cl. 370-259.000.
Orient Chemical Industries, Ltd.: *See*—
Nagasawa, Toshiyuki, 5,609,671, Cl. 106-20.00R.
Ormsby, Jay: *See*—
Allen, Nicholas; Broudour, Abdu; Broude, Sergey; Chase, Eric; Johnson, Carl; Miller, Pascal; Ormsby, Jay; and Savikovsky, Arkady, 5,610,719, Cl. 356-374.000.
Ortega, Fernand: *See*—
Vernet, Robert; and Ortega, Fernand, 5,610,361, Cl. 89-27.130.
Ortho Pharmaceutical Corporation: *See*—
Bahl, Chander; Galvin, James P.; and Egan, Richard L., 5,609,160, Cl. 128-771.000.
Osan, Frank: *See*—
Hatke, Wilfried; and Osan, Frank, 5,610,253, Cl. 526-281.000.
Osanai, Akinori, to Toyota Jidosha Kabushiki Kaisha. Fuel-vapor treatment method and apparatus for internal combustion engine. 5,609,142, Cl. 123-520.000.
Osanai, Eiji, to Canon Kabushiki Kaisha. Exposure apparatus including an antivibration control system. 5,610,686, Cl. 355-72.000.
Osawa, Hidefumi: *See*—
Bannai, Yuichi; Yamamoto, Kunihiro; and Osawa, Hidefumi, 5,610,999, Cl. 382-272.000.
Osborne, James L.: *See*—
Rivera, David L.; Merrill, Sonya; Eckenhoff, James B.; Wright, Jeremy C.; and Osborne, James L., 5,609,885, Cl. 424-473.000.
OSCA, Inc.: *See*—
Rebardi, Wade; and Michel, Donald H., 5,609,204, Cl. 166-51.000.
O'Shea, Timothy, to American Recreation Products, Inc. Child carrier. 5,609,279, Cl. 224-160.000.
Oshibuchi, Hidenori: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Oshima, Katsuyuki: *See*—
Ueno, Takeshi; Oshima, Katsuyuki; Asajima, Mikio; Yamauchi, Mineo; Imoto, Kazunobu; Takahara, Hidetake; and Ando, Jitsuhiko, 5,610,119, Cl. 503-227.000.
Oshino, Yasuhiro: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; and Kuwana, Takaaki, 5,610,262, Cl. 528-196.000.
Osipchuk, Yuri V. Low-cost high-resolution digital scanning camera. 5,610,730, Cl. 358-494.000.
Osram Sylvania Inc.: *See*—
Cox, James R.; and Karam, Ronald E., 5,609,792, Cl. 252-301.40F.
Schmitt, Robert J., Jr., 5,610,472, Cl. 313-318.120.
Ota, Hiroyuki: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,609,564, Cl. 600-200.000.
Otis Elevator Company: *See*—
Baggot, Breffni X., 5,609,224, Cl. 187-313.000.
O'Toole, Marcus L. Device for determining the radiall displacement of a motor vehicle relative to the overall direction-of-track of same. 5,610,345, Cl. 73-865.800.
Otsuka Pharmaceutical Factory, Inc.: *See*—
Inoue, Fujio; Izumi, Masamitsu; and Hayashi, Satoru, 5,610,170, Cl. 514-340.000.
Otsuki, Tetsuya: *See*—
Koike, Hiroki; Kimura, Tohru; Otsuki, Tetsuya; and Takada, Masahide, 5,610,852, Cl. 365-145.000.
Ott, Franz: *See*—
Watzke, Eckhart; Kloss, Thomas; Brix, Peter; and Ott, Franz, 5,610,108, Cl. 501-59.000.
Otte, Doyle D. Apparatus for mixing and circulating chemicals and fluids. 5,609,417, Cl. 366-137.000.
Otto, Albrecht: *See*—
Beck, Erhard; and Otto, Albrecht, 5,609,182, Cl. 137-539.000.
Otto Bock Orthopadische Industrie Besitz-und-Verwaltungs-Kommanditgesellschaft: *See*—
Blumentritt, Siegmar; Brendel, Thomas; Sawatzki, Steffen; and van de Veen, Paul G., 5,609,162, Cl. 128-782.000.
Ouhadi, Trazollah, to Advanced Elastomer Systems, L.P. Method to adhere thermoplastic elastomer blends to polyester substrates. 5,609,962, Cl. 428-480.000.
Outifa, Lhoussain: *See*—
Delaunay, Didier; Jullien, Henri; More, Claude; Outifa, Lhoussain; Delmotte, Michel; and Maestrali, Bernard, 5,609,891, Cl. 425-174.80E.
Oveyssi, Kamran: *See*—
Dunfield, John C.; Oveyssi, Kamran; and Heine, Gunter K., 5,610,463, Cl. 310-90.500.
Owen, Reginald J., to Mount Shamrock Pty Ltd. Quick release truss clamp and method. 5,608,970, Cl. 29-897.310.
Owens, Andrew P.; and Williams, Brian J., to Merck, Sharp & Dohme Ltd. Phenylglycine derivatives pharmaceutical compositions containing them and their use in therapy. 5,610,183, Cl. 514-539.000.
Owens-Brockway Glass Container Inc.: *See*—
Olson, Dudley T., 5,609,664, Cl. 65-361.000.
Ringlien, James A., 5,610,391, Cl. 250-223.00B.
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Pompei, Francesco, to Exergen Corporation. Method and apparatus for heating bodies. 5,609,619, Cl. 607-104.000.
Ponelle, Viviane, to J P M Chauvat S.A. Push-pull lock operating device. 5,609,372, Cl. 292-200.000.
Ponsati Obiols, Oriol: *See—*
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Ponton, Clive B.: *See—*
Illston, Trevor J.; Doleman, Paul A.; Butler, Edwin G.; Marquis, Peter M.; Ponton, Clive B.; Piramoon, Reza; and Gilbert, Mark J., 5,609,741, Cl. 204-471.000.
Poole, Donald R.: *See—*
Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., 5,609,210, Cl. 169-26.000.
Pope, William G.: *See—*
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Popescu, Alexandru F.; and Furch, Bernard, to Agence Spatiale Europeenne. Optical communications terminal. 5,610,750, Cl. 359-172.000.
Porter, Philip: *See—*
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Porter, Stephen P.: *See—*
Ligon, James T., Sr.; and Porter, Stephen P., 5,609,394, Cl. 297-284.400.
Porter, Virginia M. Wheelchair with bed pan. 5,608,925, Cl. 4-480.000.
Poss, Michael A.: *See—*
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Possin, George E., to General Electric Company. Flat panel imaging device with ground plane electrode. 5,610,404, Cl. 250-370.090.
Possin, George E.: *See—*
Kingsley, Jack D.; and Possin, George E., 5,610,403, Cl. 250-370.090.
Potts, Keith B.: *See—*
Vietti, David E.; Potts, Keith B.; and Leone, Kimberley A., 5,610,243, Cl. 525-523.000.
Pötzsch, Bernd: *See—*
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Poultney, Sherman K.: *See—*
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Powder Systems Limited: *See—*
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Powell, Darrel: *See—*
Schwemberger, Richard F.; Powell, Darrel; Stephens, Randy R.; and Privitera, Salvatore, 5,609,604, Cl. 606-185.000.
Powell, Derek W.: *See—*
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Powers, James C., to Georgia Tech Research Corp. Peptides ketoamides. 5,610,297, Cl. 544-168.000.
Powrie, William D.: *See—*
Wu, Chiu H.; Oikarinen, Juhani I.; Powrie, William D.; and Tykkaelae, Hannu K., 5,609,293, Cl. 229-3.50R.
PPG Industries, Inc.: *See—*
Waddell, Walter H.; Evans, Larry R.; and Krivak, Thomas G., 5,610,221, Cl. 524-492.000.
Prat Queralt, Esther: *See—*
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Praxair Technology, Inc.: *See—*
Kobayashi, Hisashi, 5,609,481, Cl. 432-22.000.
Kobayashi, Hisashi; Ding, Maynard G.; and Francis, Arthur W., Jr., 5,609,662, Cl. 65-135.100.
Prazmowski, B. Donald. Biofilter. 5,609,753, Cl. 210-150.000.
Precision Dynamics Corporation: *See—*
Mosher, Walter W., Jr., 5,609,716, Cl. 156-522.000.
Precision Etchings & Findings, Inc.: *See—*
Boccanfuso, Ronald J., 5,609,289, Cl. 228-173.600.
Premiere Products: *See—*
Watts, Stephen P.; and Norton, M. Brent, 5,609,391, Cl. 297-127.000.
Pretat, Roland; and De Boni, Nadia, to Pont Saint-Germain SA. Desiccation capsule and article provided with said capsule. 5,610,878, Cl. 368-276.000.
Price, Howard C.; Lin, Steve T.; Hawkins, Michael E.; and Parr, Jack E., to Zimmer, Inc. Reinforced polyethylene for articular surfaces. 5,609,638, Cl. 623-18.000.
Priebe, Gordon W., to LSI Logic Corporation. Method and apparatus for detecting assertion of multiple signals. 5,610,573, Cl. 340-146.200.
Prins, Johan F. Diamond doping. 5,609,926, Cl. 427-523.000.
Pritchard, Martyn C.: *See—*
Horwell, David C.; Howson, William; Pritchard, Martyn C.; and Raphy, Jennifer, 5,610,145, Cl. 514-19.000.
Horwell, David C.; Howson, William; and Pritchard, Martyn C., 5,610,176, Cl. 514-414.000.
Privitera, Salvatore: *See—*
Schwemberger, Richard F.; Powell, Darrel; Stephens, Randy R.; and Privitera, Salvatore, 5,609,604, Cl. 606-185.000.
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Page, Stuart; and Probert, Paul L., 5,609,957, Cl. 428-372.000.
Procter & Gamble Company, The: *See—*
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Oh, Young S.; Juneja, Prem S.; and Connor, Daniel S., 5,609,855, Cl. 424-65.000.
Roe, Donald C., 5,609,587, Cl. 604-360.000.
Van Phan, Dean, 5,609,725, Cl. 162-117.000.
Proctor & Gamble Company, The: *See—*
McCorquodale, Finlay; and Busch, Alfred, 5,610,129, Cl. 510-320.000.
Product Services Co.: *See—*
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Proebstle, Richard A.: *See—*
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Provost, Jean-Guy: *See—*
Lesterlin, Dominique; Langanay, Jérôme; and Provost, Jean-Guy, 5,611,003, Cl. 385-3.000.
Prucinsky, Matthew S.: *See—*
Mader, Gerald E.; Dye, William P.; and Prucinsky, Matthew S., 5,609,371, Cl. 292-164.000.
Prunier, Michael L.: *See—*
Grabner, Roy W.; Landis, Bryan H.; Wang, Ping T.; Prunier, Michael L.; and Scaros, Mike G., 5,610,039, Cl. 435-125.000.
Prusak, Joseph P.: *See—*
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Prutchi, David: *See—*
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Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, 5,609,614, Cl. 607-29.000.
Puckett, Wallace E.: *See—*
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Pugh, Evan R.: *See—*
Kessler, William J.; Davis, Steven J.; Ferguson, Daniel R.; and Pugh, Evan R., 5,610,932, Cl. 372-39.000.
Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., to International Business Machines Corporation. Process for high contrast marking on surfaces using lasers. 5,609,778, Cl. 219-121.690.
Pulse Medical Instruments, Inc.: *See—*
Rafal, Marc D.; Starin, Eric; and Krichmar, Jeff L., 5,610,673, Cl. 351-210.000.
Pupovic, Milenko. The apparatus for treatment, physical therapy, rehabilitation, recreation and training of spine and other human body parts. 5,609,566, Cl. 601-23.000.
Purits, Valentin, to Mitel Corporation. Ring discriminator. 5,610,978, Cl. 379-373.000.
Pushpalal, Game K. D.: *See—*
Kobayashi, Tadashi; Pushpalal, Game K. D.; and Hasegawa, Masaki, 5,609,680, Cl. 106-696.000.
Putrino, Michael: *See—*
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Pyle, Michael L.: *See—*
Graves, Delbert B.; Pyle, Michael L.; Rossol, Victor; and Buhr, Paul R., 5,610,373, Cl. 177-50.000.
Pyter, Richard A.: *See—*
Al-Razzak, Laman A.; Marsh, Kennan C.; and Pyter, Richard A., 5,610,193, Cl. 514-616.000.
QC Optics, Inc.: *See—*
Allen, Nicholas; Broudour, Abdu; Broude, Sergey; Chase, Eric; Johnson, Carl; Miller, Pascal; Ormsby, Jay; and Savikovsky, Arkady, 5,610,719, Cl. 356-374.000.
Quantum Chemical Corporation: *See—*
Buehler, Charles K.; and Masino, Albert P., 5,610,246, Cl. 526-119.000.
Quertermous, Thomas; Runge, Marschall S.; and Haber, Edgar, to General Hospital Corporation, The. Hybrid immunoglobulin-thrombolytic enzyme molecules which specifically bind a thrombus, and methods of their production and use. 5,609,869, Cl. 424-133.100.

Quiachon, Dinah B.: *See—*
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Quigley, John H.; and Mietus, David F., to Motorola, Inc. Input/output electrostatic discharge protection circuit for an integrated circuit. 5,610,425, Cl. 257-358.000.

Quijano, R. C.; and Nashef, Aws, to Baxter International Inc. Stent devices and support/restrictor assemblies for use in conjunction with prosthetic vascular grafts. 5,609,626, Cl. 623-1.000.

Quin, John, III: *See—*
Doherty, Annette M.; Hamilton, Harriet W.; Kaltenbronn, James S.; and Quin, John, III, 5,610,177, Cl. 514-419.000.

Quinn, Richard J.: *See—*
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Dominguez, Luis M.; Bowling, Forrest W.; Coleman, William M., III; and Gordon, Bert M., 5,610,835, Cl. 364-497.000.

Raasch, Hans; and Hensen, Helmuth, to W. Schlafhorst AG & Co. Apparatus for cleaning a rotor revolving in the rotor housing of an open-end spinning unit. 5,609,015, Cl. 57-302.000.

Rabillier, Jean-Marc: *See—*
Grimberg, Aurélie; DeClerck, Gérard; Rabillier, Jean-Marc; and Soumarmon, Raymond, 5,609,821, Cl. 422-28.000.

Rafal, Marc D.; Starin, Eric; and Krichmar, Jeff L., to Pulse Medical Instruments, Inc. Pupil detection system. 5,610,673, Cl. 351-210.000.

Raffel, Markus; Kompenhans, Jürgen; and Höfer, Hans, to Deutsche Forschungsanstalt Fur Luft-und Raumfahrt e.V. Method for contactless measurement of three dimensional flow velocities. 5,610,703, Cl. 356-28.000.

Ragan, Robert J.: *See—*
Chandler, Michael A.; DeWille, Normanella T.; Mazer, Terrence B.; Ragan, Robert J.; Snowden, Gregory A.; Geraghty, Maureen E.; Johnson, Catherine D.; and Drayer, Lonnie R., 5,609,897, Cl. 426-73.000.

Ragheb, Anthony O.: *See—*
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Rainey, Robert R.: *See—*
Sponaugle, Roger; and Rainey, Robert R., 5,610,436, Cl. 257-669.000.

Rajagopal, Chandrika; Rajagopal, Kumbakonam R.; and Yalamanchili, Rattaya C., to Viscoustech, Inc. Torsional rheometer for granular materials slurries and gas-solid mixtures and related methods. 5,610,325, Cl. 73-54.390.

Rajagopal, Kumbakonam R.: *See—*
Rajagopal, Chandrika; Rajagopal, Kumbakonam R.; and Yalamanchili, Rattaya C., 5,610,325, Cl. 73-54.390.

Rakos, Karl: *See—*
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Ralph, James D.: *See—*
Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,609,593, Cl. 606-61.000.
Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,609,594, Cl. 606-61.000.

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Ramachandran, Pallassana: *See—*
Polefka, Thomas G.; Ramachandran, Pallassana; Steltenkamp, Robert J.; Connors, Thomas F.; and Kinscherf, Kevin M., 5,610,194, Cl. 514-617.000.

Ramaker, Antonius E. T. J., to V.O.F. Hedon Electronic Developments. Inductive system for measuring the length of a shock absorber. 5,610,514, Cl. 324-207.160.

Ramaswamy, Suresh: *See—*
Wikle, Glenn; Ramaswamy, Suresh; and Matheson, Thomas G., 5,610,832, Cl. 364-491.000.

Ramey, Donald G.: *See—*
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Ramsey, Joseph A.: *See—*
Cothern, Billy; Ramsey, Joseph A.; and Stapler, Clifford L., 5,609,035, Cl. 62-73.000.

Ramsey, William D., Jr.: *See—*
Anderson, Scott R.; Tham, Chin T.; Padula, Joseph A.; Williams, Owen R.; Houle, Jesse S.; Besler, David A.; and Ramsey, William D., Jr., 5,609,190, Cl. 141-59.000.

Ramtron International Corporation: *See—*
Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,610,099, Cl. 437-192.000.

Ranalli, Eliseo R. Programmable switched delay encoder. 5,610,746, Cl. 359-140.000.

Randa, Stuart K.: *See—*
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Rando, Joseph F., to Levelite Technology Inc. Remote pointing system for a self-leveling laser instrument. 5,610,711, Cl. 356-247.000.

Rao, Prithvi N.: *See—*
Gudat, Adam J.; Bradbury, Walter J.; Christensen, Dana A.; Clow, Richard G.; Devier, Lonnie J.; Kemner, Carl A.; Kleimenhagen, Karl W.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Rao, Prithvi N.; Schmidt, Larry E.; Sennott, James W.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Singh, Sanjiv J.; Stafford, Darrell E.; Weinbeck, Louis J.; West, Jay H.; Whittaker, William L.; and Wu, Baoxin, 5,610,815, Cl. 364-424.027.

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Rasmussen, Mirella E.: *See—*
Nordfang, Ole; and Rasmussen, Mirella E., 5,610,278, Cl. 530-383.000.

Rasmussen, Poul B.; and Nordfang, Ole, to Novo Nordisk A/S. Method of producing proteins with FVIII activity and/or FVIII derivatives. 5,610,033, Cl. 435-69.100.

Rasmusson, Gary H.: *See—*
Witzel, Bruce E.; Rasmusson, Gary H.; Tolman, Richard L.; and Yang, Shu Shu, 5,610,162, Cl. 514-284.000.

Rathbone, Thomas; and Keenan, Brian A., to BOC Group plc, The. Air separation. 5,609,041, Cl. 62-646.000.

Rathbun Family Real Estate Group: *See—*
Rathbun, W. John, 5,609,894, Cl. 425-556.000.

Rathbun, W. John, to Rathbun Family Real Estate Group. Injection molding apparatus for producing plastic lids. 5,609,894, Cl. 425-556.000.

Rauckhorst, Richard L., III; and Leffel, Kevin L., to B. F. Goodrich Company, The. Skin for a deicer. 5,609,314, Cl. 244-134.00A.

Rautaruukki Oy: *See—*
Sallinen, Johannes; and Mäntylä, Pekka, 5,609,785, Cl. 219-388.000.

Ray, Hemen, to United States of America, Navy. Panel having cross-corrugated sandwich construction. 5,609,942, Cl. 428-182.000.

Raychem Corporation: *See—*
Balatoni, Nicholas A., 5,610,922, Cl. 370-468.000.
McMills, Corey; Mattis, John; Ross, John A.; and Sampson, Jeff, 5,609,501, Cl. 439-578.000.

Raychem GmbH: *See—*
Fremgen, Dieter; and Vock, Frank, 5,610,370, Cl. 174-91.000.

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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

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Rayovac Corporation: *See—*
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Raytheon Company: *See—*
Hazard, Robert W.; Bouchard, George A.; Carmella, Jeffrey E.; and DeMilia, Michael P., 5,610,613, Cl. 342-195.000.

RCA Thomson Licensing Corporation: *See—*
Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, 5,610,560, Cl. 331-8.000.

Real, Sharon D.; and Kronenthal, David R., to Bristol-Myers Squibb Company. Process for preparing intermediates for thrombin inhibitors. 5,610,308, Cl. 546-208.000.

Reardon, Edward J., Jr.: *See—*
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Rebardi, Wade; and Michel, Donald H., to OSCA, Inc. Isolation system and gravel pack assembly. 5,609,204, Cl. 166-51.000.

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Redmond, David B.: *See—*
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Redziniak, Gérard: *See—*
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Reed, Kathryn L.: *See—*
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ReGain, Inc.: *See—*
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Regents Of The University Of California, The: *See—*
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Reichenbach, Hans: *See—*
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Reichl, Richard: *See—*
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Reid, Jon D.: *See—*
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Reiher, Uwe; and Russ, Werner H., to Hoechst Aktiengesellschaft. Water-soluble anthraquinone compounds, preparation thereof and use thereof as dyes. 5,610,298, Cl. 544-197.000.

Reilly, Joseph P.: *See—*
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Reilly, Robert J., to SSI Technologies, Inc. Method of and apparatus for peak amplitude detection. 5,610,827, Cl. 364-487.000.

Reimer, Arnald E. Boat loader and carrier. 5,609,462, Cl. 414-462.000.

Reinehr, Ulrich; Türck, Günter; Sehm, Tilo; Anderbeggen, Wolfgang; Herbertz, Toni; and Antolini, Gino, to Bayer Faser GmbH. Process for adjusting the viscosity of highly concentrated elastane solutions for the dry spinning or wet spinning of elastane fibres. 5,610,229, Cl. 524-589.000.

Reinhardt, Gerd: *See—*
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Reinstad, Dennis O., to Research Products Corporation. Frame for attachment to air filters. 5,609,937, Cl. 428-122.000.

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Reitech Corporation: *See—*
Reiter, John P., 5,609,244, Cl. 200-43.110.

Reiter, John P., to Reitech Corporation. Interlock device. 5,609,244, Cl. 200-43.110.

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Reltec Corporation: *See—*
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Rembold, Helmut; Haag, Gottlob; Britsch, Heinz; Stutzenberger, Heinz; and Mueller, Uwe, to Robert Bosch GmbH. Fuel injection apparatus for a two-stroke internal combustion engine. 5,609,137, Cl. 123-382.000.

Rennecker, David B.; Hisrich, Timothy B.; and Berkshire, Gary L., to Hoover Company, The. Control cable and wiring arrangement for a vaccum cleaner. 5,608,946, Cl. 15-339.000.

Renner, Christian: *See—*
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Akram, Salman; Shirley, Paul; and Rericha, William, 5,609,995, Cl. 430-327.000.

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Wood, William F., 5,610,196, Cl. 514-675.000.

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Nagayama, Kuniaki; and Adachi, Eiki, 5,610,392, Cl. 250-226.000.

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Burrows, Cynthia J.; and Hsieh, Hsing-Pang, 5,610,149, Cl. 514-169.000.

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Woo, Soon H.; Chung, Sung K.; Ban, Soo H.; Kim, Byoung E.; and Kim, Si H., 5,610,310, Cl. 546-281.700.

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Lawson, Terence M., 5,609,979, Cl. 430-109.000.

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Draper, Kenneth G., 5,610,054, Cl. 435-363.000.
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Akiyama, Yoshikazu; and Kimura, Sachiko, 5,610,853, Cl. 365-145.000.
Baba, Nobuyuki, 5,610,407, Cl. 250-559.240.
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Kadowaki, Yukio; and Nagatani, Akemi, 5,611,021, Cl. 395-27.000.
Kaneko, Masaru; Yamazaki, Shigeru; Motegi, Akihiko; Narita, Masaki; and Komai, Hiroshi, 5,610,724, Cl. 358-400.000.
Kawada, Yasuo; Sakai, Hidenori; Obu, Makoto; Echigo, Katsuhiro; Kawashima, Yasuhiro; Yano, Hidetoshi; and Kishi, Fumio, 5,610,725, Cl. 358-403.000.
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Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.
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Geddes, Daniel J.; Rigotti, Kathy; Bunker, Linda L.; Berger, Arthur C.; Maynard, Patrick L.; Patterson, Robert; and Hollenberg, David H., 5,609,901, Cl. 426-394.000.

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Govoni, Gabriele; Rinaldi, Roberto; and Penzo, Giuseppe, 5,610,244, Cl. 526-65.000.

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Okuda, Sadanao; and Watanabe, Hideo, 5,609,670, Cl. 106-20.00R.
Oyama, Koichi; and Sasaki, Kuninori, 5,609,101, Cl. 101-116.000.

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Harrelson, Glen R., 5,609,379, Cl. 294-87.200.
Harris, Randall L., 5,609,251, Cl. 206-434.000.
Reuteler, Urs, 5,609,008, Cl. 53-398.000.

Rives, Claude, to Valeo Vision. Lighting or signalling device for a motor vehicle, the devie including a miniature bulb. 5,609,410, Cl. 362-226.000.

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Niese, Michael W., 5,609,000, Cl. 52-480.000.

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Kramer, Claus; Verhagen, Armio-Maria; Trachte, Dietrich; and Keuper, Gerhard, 5,609,140, Cl. 123-497.000.
Mutschler, Jan, 5,609,138, Cl. 123-463.000.
Rembold, Helmut; Haag, Gottlob; Britsch, Heinz; Stutzenberger, Heinz; and Mueller, Uwe, 5,609,137, Cl. 123-382.000.
Schellenberg, Gerhard; and Meiwes, Johannes, 5,609,143, Cl. 123-568.000.

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Brewer, Timothy T.; Hoeger, Daniel S.; McCambridge, Lora K.; Kelsey, Teresa L.; Claflin, Anthony R.; Robertson, Kenneth R.; and Van Flandern, Michael W., 5,611,040, Cl. 395-326.000.

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Crews, Jeanne L.; Christiansen, Eric L.; Williamsen, Joel E.; Robinson, Jennifer R.; and Nolen, Angela M., 5,610,363, Cl. 89-36.020.

Robinson, Lawrence C.: *See*—
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Rockwell International Corporation: *See*—
Asatourian, Rolin K., 5,610,389, Cl. 250-216.000.

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Hattass, Rainer; and Weidmann, Brigitte, 5,609,388, Cl. 296-217.000.
Stallfort, Klaus; Hattass, Rainer; and Federmann, Dieter, 5,609,387, Cl. 296-214.000.

Rodda, William E.: *See*—
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Stuart, Christine M.; Rogers, Deborah M.; Van Camp, James R.; and Sowinski, Michael P., 5,610,068, Cl. 436-6.000.

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Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., 5,609,824, Cl. 422-83.000.

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Funahashi, Hiroyuki; and Yamamoto, Isao, 5,610,555, Cl. 330-84.000.
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Rohrbough, John; and Franck, John, to F. H. Faulding & Co. Limited. Multi-part package. 5,609,248, Cl. 206-216.000.

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Rosa, Jim: *See*—
Zimmerman, Eric; Rosa, Jim; Love, Steve; and DiMuzio, Catherine, 5,609,770, Cl. 210-739.000.

Rose, Conrad M., to Litton Systems, Inc. Passive doppler emitter classification and ranging system utilizing a time-frequency constant. 5,610,609, Cl. 342-13.000.

Rosemount, Inc.: *See*—
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Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,610,901, Cl. 369-275.100.

Rosenberg, Jonathan B.: *See*—
Even, Lindsay W.; and Rosenberg, Jonathan B., 5,611,043, Cl. 395-183.140.

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Dohogne, L. Ranney; Johnson, Robbie F.; and Rosenfeld, Michael J., 5,610,461, Cl. 310-89.000.

Rosenthal, Philip J.: *See*—

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Whiteside, George D.; Rosenthal, Richard A.; and Obermiller, Margaret A., 5,609,714, Cl. 156-387.000.

Roshen, Waseem A.: *See*—
Korman, Charles S.; Jacobs, Israel S.; Mallick, John A.; and Roshen, Waseem A., 5,609,946, Cl. 428-209.000.

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Rota, Fabio, to Satrind s.r.l. Shredding apparatus with rotating rollers equipped with non-perforated curved plates coaxial with the rollers. 5,609,307, Cl. 241-73.000.

Roth, Edward S. Interproximal toothbrush and method of use thereof. 5,609,170, Cl. 132-329.000.

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Auger, François A.; Rouabhia, Mahmoud; Lafleur, Louis; and Germain, Lucie, 5,610,007, Cl. 435-1.100.

Roussel, Gérard: *See*—
Capet, Marc; Cotrel, Claude; Guyon, Claude; Joannic, Michel; Manfre, Franco; Roussel, Gérard; Dubroeuco, Marie-Christine; Cheve, Michel; and Dutruc-Rosset, Gilles, 5,610,144, Cl. 514-19.000.

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Rouy, Olivier, to SGS-Thomson Microelectronics S.A. Integrated circuit memory with column voltage holding circuit. 5,610,860, Cl. 365-185.180.

Rowell, Roger M.: *See*—
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Feldman, Michael R.; and Rowlette, John R., Sr., 5,610,733, Cl. 359-9.000.

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Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,610,901, Cl. 369-275.100.

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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

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Quertermous, Thomas; Runge, Marschall S.; and Haber, Edgar, 5,609,869, Cl. 424-133.100.

Rushton, Neil: *See*—
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Russ, Werner H.: *See*—
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Esser, Richard J., 5,609,965, Cl. 428-522.000.
Greatbatch, Keith J., 5,609,276, Cl. 222-520.000.

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Kohler, Ernst; Sabrowski, Bernd; and Altenhofen, Ulrich, 5,609,936, Cl. 428-107.000.

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Moreau, Raymond; Gobert, Roger; and Jeanvoine, Pierre, 5,609,661, Cl. 65-135.100.

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Saito, Hiroyuki: *See*—
Seki, Yoichi; Kawai, Michio; Saito, Hiroyuki; and Ito, Akira, 5,610,680, Cl. 396-106.000.

Saito, Katsuyuki: *See*—
Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.

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Oga, Toshiyoshi; Saito, Masaru; and Asai, Shunji, 5,610,476, Cl. 313-493.000.

Saito, Osamu: *See*—
Wakamiya, Keoji; and Saito, Osamu, 5,611,047, Cl. 395-200.010.

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Nonoshita, Hiroshi; Cho, Kenjiro; Saito, Seiji; and Shigehara, Yasuhisa, 5,610,726, Cl. 358-442.000.

Saitoh, Hiroshi: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.

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Sentoku, Koichi; Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; and Saitoh, Kenji, 5,610,718, Cl. 356-363.000.

Sakaguchi, Shinji: *See*—
Kawamura, Koichi; Sato, Kenichiro; and Sakaguchi, Shinji, 5,609,983, Cl. 430-193.000.

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Sakaguchi, Shunnichi: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.

Sakai, Hidenori: *See*—
Kawada, Yasuo; Sakai, Hidenori; Obu, Makoto; Echigo, Katsuhiro; Kawashima, Yasuhiro; Yano, Hidetoshi; and Kishi, Fumio, 5,610,725, Cl. 358-403.000.

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Hamano, Takashi; Sakai, Kiyoshi; and Matsuda, Kiichi, 5,610,660, Cl. 348-423.000.

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Takimoto, Kiyoshi; Miyazaki, Toshihiko; Sakai, Kunihiro; and Kuroda, Ryo, 5,610,898, Cl. 369-126.000.

Sakai, Tetsuo: *See*—
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.

Sakaki, Toshiaki: *See*—
Tanaka, Yasuyuki; Hioki, Yuichi; Hayashi, Masaharu; Ichikawa, Naoya; and Sakaki, Toshiaki, 5,610,212, Cl. 524-156.000.

Sakamoto, Eiji: *See*—
Mori, Makiko; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; Uzawa, Shunichi; and Sakamoto, Eiji, 5,610,965, Cl. 378-34.000.

Sakamoto, Hitoshi: *See*—
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,609,800, Cl. 264-29.600.

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Sakanaka, Tetsuo; and Takahashi, Yasuhiro, to Canon Kabushiki Kaisha. Optical space communication apparatus sending main signals and an auxiliary signal for controlling the intensity at the receiver. 5,610,748, Cl. 359-154.000.

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Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
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Sakon, Yohta: *See*—
Ohta, Masafumi; Sakon, Yohta; Takahashi, Toshihiko; Adachi, Chihaya; and Nagai, Kazukiyo, 5,610,309, Cl. 546-256.000.

Sakuma, Hitoshi: *See*—
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, 5,610,957, Cl. 376-210.000.

Sakumoto, Yukinori; Hashimoto, Takeshi; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, to Tomoegawa Paper Co., Ltd. Adhesive tape for electronic parts and liquid adhesive. 5,609,956, Cl. 428-352.000.

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Sato, Wataru; Sakurada, Masahiro; Tomohiko, Ohta; and Kemmochi, Katsuhiko, 5,609,682, Cl. 117-2.000.

Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, to Brother Kogyo Kabushiki Kaisha. Tape-shaped label producing device having input instructing messages. 5,609,424, Cl. 400-61.000.

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Salpomec OY: *See*—
Aubermann, Tibor, 5,609,106, Cl. 104-5.000.

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Salvaggio, Frank, to Western State Import Company, Inc. Helmet strap stabilizer clip. 5,608,918, Cl. 2-421.000.

Sampath, Kuber T.: *See*—
Rueger, David C.; Jones, William K.; Tucker, Ronald F.; Oppermann, Hermann; Ozkaynak, Engin; and Sampath, Kuber T., 5,610,021, Cl. 435-7.200.

Sampsell, Jeffrey B., to Texas Instruments Incorporated. Monolithic spatial light modulator and memory package. 5,610,625, Cl. 345-84.000.

Sampson, Allison H.: *See*—
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Sampson, Jeff: *See*—
McMills, Corey; Mattis, John; Ross, John A.; and Sampson, Jeff, 5,609,501, Cl. 439-578.000.

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Eum, Jae-Yong; and Kim, Seung-Min, 5,610,890, Cl. 369-77.200.

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An, Hyun-Jun, 5,609,786, Cl. 219-702.000.
Choi, Hoon, 5,610,549, Cl. 327-536.000.
Hong, Sang-Beom, 5,610,597, Cl. 340-825.780.
Kim, Ki M.; and Lee, Sung T., 5,609,476, Cl. 417-447.000.
Oh, Heung-Min, 5,610,776, Cl. 360-53.000.
Park, Hee-Chail; Kweon, Kook-Hwan; and Im, Jeon-Taek, 5,610,874, Cl. 365-236.000.
Park, Sang J., 5,610,881, Cl. 369-32.000.
Shin, Choong-Sun; and Seok, Young-Sik, 5,610,865, Cl. 365-200.000.
Yoo, Seung-Moon; Haq, Ejaz ul; Choi, Yun-Ho; Cho, Soo-In; Chin, Dae-Je; Kang, Nam-Soo; and Lee, Seung-Hun, 5,610,869, Cl. 365-222.000.

Samsung General Chemicals Co., Ltd.: *See*—
Soga, Gazuo; Kim, Hyun-joon; Lee, Sang-kyun; Jung, Min-chul; Son, Byung-hee; Thosiya, Wuozmi; Thakhasi, Irai; and Hiroro, Nishida, 5,610,115, Cl. 502-152.000.

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Kim, Young Bae, 5,610,816, Cl. 364-424.028.

Samuelson, Laurence S.: *See*—
Dorius, Lee K.; and Samuelson, Laurence S., 5,610,784, Cl. 360-103.000.

Sander, Charles M.: *See*—
Squires, John P.; Sander, Charles M.; Keeler, Stanton M.; and Clay, Donald W., 5,610,808, Cl. 364-131.000.

Sanders, Richard S.; Paul, Patrick J.; and Prutchi, David, to Intermedics, Inc. Implantable cardiac stimulation device with warning system and conductive suture point. 5,609,615, Cl. 607-36.000.

Sandock, Paul, to Conmed Corporation. Electrosurgical suction/irrigation instrument. 5,609,573, Cl. 604-22.000.

Sandoz Ltd.: *See*—
Drs, Josef F.; Melbye, Tom; Tjugum, Odd M.; and Valenti, Salvatore, 5,609,681, Cl. 106-802.000.
Farrell, Roberta L.; Hadar, Yitzhak; Wendler, Philip A.; and Zimmerman, Wendy, 5,609,724, Cl. 162-72.000.

Sandstrom, Paul H.; and Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Silica reinforced rubber composition and tire with tread thereof. 5,610,216, Cl. 524-381.000.

Sanghvi, Yogesh S.: *See*—
Cook, Phillip D.; Sanghvi, Yogesh S.; Vasseur, Jean J.; and Debart, Francoise, 5,610,289, Cl. 536-25.340.

Sano, Hideo: *See*—
Takimoto, Hiroshi; Sano, Hideo; and Yamada, Masahiro, 5,609,673, Cl. 106-22.00K.

Sano, Masahito: *See*—
Iizaka, Hitoshi; Sano, Masahito; and Matsumoto, Yasuo, 5,609,223, Cl. 186-61.000.

Sano, Takeshi: *See*—
Uda, Hitoshi; Takahashi, Tetsuya; Kamei, Ryosuke; and Sano, Takeshi, 5,609,888, Cl. 425-66.000.

Sano, Yoshihiko: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,609,564, Cl. 600-200.000.

Santa's Best: *See*—
Protz, William F., Jr., 5,609,415, Cl. 362-396.000.

Santel, Hans-Joachim: *See*—
Fischer, Reiner; Bretschneider, Thomas; Krüger, Bernd-Wieland; Santel, Hans-Joachim; Dollinger, Markus; Wachendorff-Neumann, Ulrike; and Erdelen, Christoph, 5,610,122, Cl. 504-251.000.
Riebel, Hans-Jochem; Gesing, Ernst R. F.; Müller, Klaus-Helmut; Müller, Peter; Findeisen, Kurt; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,610,121, Cl. 504-230.000.

Santrade Ltd.: *See*—
Froeschke, Reinhard, 5,609,887, Cl. 425-6.000.

Sanyo Electric Co., Ltd.: *See*—
Arai, Masashi; and Tsukihashi, Akira, 5,610,887, Cl. 369-44.350.
Hosoya, Nobukazu, 5,610,551, Cl. 327-552.000.
Matono, Naoto; Noguchi, Hitoshi; Yamamoto, Tomomi; Kobayashi, Shinji; and Nakata, Masahiro, 5,609,971, Cl. 428-692.000.
Tanaka, Hiroshi; Iida, Masayuki; Miyatake, Masanori; Sugishita, Shozo; and Hoshi, Teruo, 5,611,018, Cl. 395-2.240.
Ueda, Takao; and Takizawa, Yoshihisa, 5,609,976, Cl. 429-254.000.
Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.

Sarbaugh, Keith E.: *See*—
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Sarcos Group: *See*—

Jacobsen, Stephen C., 5,610,747, Cl. 359-145.000.

Sarcos, Inc.: *See*—
Jacobsen, Stephen C.; and Davis, Clark C., 5,610,460, Cl. 310-82.000.

Sargent, Ian L.: *See*—
Shorter, Simon C.; Ferry, Bernadette L.; Starkey, Phyllis M.; Sargent, Ian L.; and Redman, Christopher W. G., 5,610,058, Cl. 435-332.000.

Sartor, Mario: *See*—
Marega, Antonello; and Sartor, Mario, 5,608,976, Cl. 36-10.000.

Sartorius AG: *See*—
Eger, Matthias; Köhn, Heinz-Gerhard; Schulze, Werner; and Berg, Christoph, 5,610,343, Cl. 73-862.628.

Sasae, Taiichiro; Nishida, Tomio; Uekita, Masakazu; and Funahashi, Takashi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha; and En-Tech Research Institute, Inc. Waste-treating material. 5,609,558, Cl. 588-257.000.

Sasagawa, Tatsuru; and Fujii, Yutaka, to Toray Research Center, Inc. Electrophoresis fractionator. 5,609,743, Cl. 204-600.000.

Sasaki, Kuninori: *See*—
Oyama, Koichi; and Sasaki, Kuninori, 5,609,101, Cl. 101-116.000.

Sasaki, Masana: *See*—
Tokunaga, Kensuke; Aizawa, Yasuhiro; Nakajima, Junjiro; Sasaki, Masana; Ajima, Masayoshi; and Imai, Masafumi, 5,610,960, Cl. 376-441.000.

Sasaki, Yasushi: *See*—
Minowa, Toshimichi; Ohsuga, Minoru; Kashiwaya, Mineo; and Sasaki, Yasushi, 5,609,132, Cl. 123-306.000.

Sasano, Akira; Shirahashi, Kazuo; Matsukawa, Yuka; Taniguchi, Hideaki; Yamamoto, Hideaki; and Matsumaru, Haruo, to Hitachi, Ltd. Method for making LCD device in which gate insulator of TFT is formed after the pixel electrode but before the video signal line. 5,610,738, Cl. 349-43.000.

Sasao, Isamu, to Keihin Seiki Manufacturing Co., Ltd. Electromagnetic type fuel injection valve. 5,609,304, Cl. 239-585.400.

Sasse, Florenz: *See*—
Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

Satake, Shinobu; Yahata, Tadao; Shigefuji, Takashi; Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, to Tokyo Gas Co., Ltd. Methods of lining the internal surface of a pipe. 5,609,186, Cl. 138-97.000.

Sato, Akira: *See*—
Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, 5,610,599, Cl. 340-931.000.

Sato, Chiaki, to Olympus Optical Co., Ltd. Optical information reproducing apparatus and recording medium. 5,610,894, Cl. 369-112.000.

Sato, Hajime: *See*—
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuichiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, 5,610,838, Cl. 364-508.000.

Sato, Haruhiko; and Harada, Yutaka, to Nippon Paint Company, Ltd. Process for manufacturing thermosetting resin particles. 5,610,269, Cl. 528-499.000.

Sato, Hiroyasu: *See*—
Hidaka, Tomoya; Sato, Shinichi; Sato, Hiroyasu; and Takashina, Yutaka, 5,609,672, Cl. 106-21.00R.

Sato, Hiroyuki: *See*—
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.

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Kawamura, Koichi; Sato, Kenichiro; and Sakaguchi, Shinji, 5,609,983, Cl. 430-193.000.

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Trask, Jeffrey L.; Honda, Hiroyuki; and Sato, Kenji, 5,610,692, Cl. 399-27.000.

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Yamamoto, Yasuhiro; and Sato, Koichi, 5,610,840, Cl. 364-514.00R.

Sato, Naofumi; and Shirakawa, Kamon, to Mochida Pharmaceutical Co., Ltd. Method for measuring adenyl group-containing substances using heteropoly-acid. 5,610,016, Cl. 435-6.000.

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Sato, Wataru; Sakurada, Masahiro; Tomohiko, Ohta; and Kemmochi, Katsuhiko, to Shin-Etsu Handotai Co., Ltd.; and Shin-Etsu Quartz Co., Ltd. Method for the preparation of silicon single crystal. 5,609,682, Cl. 117-2.000.

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Ejima, Daisuke; Sato, Yutaka; Watanabe, Mayumi; Date, Masayo; and Takahara, Yoshiyuki, 5,610,284, Cl. 530-412.000.

Sato, Yuzuru: *See*—
Tanaka, Takashi; Sato, Yuzuru; Iwane, Hiroshi; and Inui, Shiro, 5,609,790, Cl. 252-299.610.

Satomura, Ryuichi: *See*—
Masaki, Akira; Kuwata, Makoto; Satomura, Ryuichi; and Tamba, Nobuo, 5,610,535, Cl. 326-39.000.

Satrind s.r.l.: *See*—
Rota, Fabio, 5,609,307, Cl. 241-73.000.

Satron, Inc.: *See*—
Looker, Robert; and McLennan, Richard, 5,609,452, Cl. 410-105.000.

Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, to RCA Thomson Licensing Corporation. Oscillator with switched reactive elements. 5,610,560, Cl. 331-8.000.

Saunders, James K.: *See*—
Maddern, Thomas S.; and Saunders, James K., 5,610,928, Cl. 371-37.100.

Saurwein, Albert C., to Forgesharp Limited. Inlet/outlet valve arrangement for a fluid pressure intensifying apparatus. 5,609,477, Cl. 417-567.000.

Sauter, Erich W., to Warner-Lambert Company. Encapsulation method. 5,609,010, Cl. 53-467.000.

Sauter, Hubert: *See*—
Wingert, Horst; Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Lorenz, Gisela; and Ammermann, Eberhard, 5,610.191, Cl. 514-599.000.

Savage, Chester: *See*—
Stricklin, Douglas K.; and Savage, Chester, 5,609,195, Cl. 141-346.000.

Savarese, Joseph T.: *See*—
Garrabrant, Gary W.; Cho, Jay C.; and Savarese, Joseph T., 5,610,595, Cl. 340-825.520.

Savikovsky, Arkady: *See*—
Allen, Nicholas; Broudour, Abdu; Broude, Sergey; Chase, Eric; Johnson, Carl; Miller, Pascal; Ormsby, Jay; and Savikovsky, Arkady, 5,610,719, Cl. 356-374.000.

Sawada, Akihiro: *See*—
Sakuragi, Shoji; Ueno, Hideo; Yamada, Shiro; Nishio, Mayumi; Hirono, Kazuhisa; Kanda, Kazumi; Nakahigashi, Sachiyo; Nakagawa, Sachiko; and Sawada, Akihiro, 5,609,424, Cl. 400-61.000.

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Sawamura, Naohito: *See*—
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.

Sawano, Yukio: *See*—
Shibasaki, Souhei; Sawano, Yukio; Nagashima, Hiroto; Fujisawa, Kyuichi; Sugiyama, Koichi; and Aratsu, Shuichi, 5,611,028, Cl. 395-131.000.

Sawatzki, Steffen: *See*—
Bhmmentritt, Siegmar; Brendel, Thomas; Sawatzki, Steffen; and van de Veen, Paul G., 5,609,162, Cl. 128-782.000.

Sawyer, Thomas E.; and Hoback, James E., to T.V. Fanfare Publications, Inc. Display card holder. 5,608,978, Cl. 40-308.000.

Saxena, Rajiv; Boldt, John R.; Campbell, Samuel, III; Amin, Himshweta R.; and Robinson, William O., to Chrysler Corporation. Method for diagnosing a torque converter's lock-up mechanism. 5,609,550, Cl. 477-166.000.

Scandura, Anthony M.: *See*—
Pellegrino, Anthony J.; Stoller, Milton; DeFreitas, Kenneth F.; Camarra, David D.; Scandura, Anthony M.; Schutz, Richard F.; and Storm, Jeffrey R., 5,609,152, Cl. 128-653.100.

Scapa Group PLC: *See*—
Delavallade, Jean-Luc L., 5,609,931, Cl. 428-36.100.

Scaros, Mike G.: *See*—
Grabner, Roy W.; Landis, Bryan H.; Wang, Ping T.; Prunier, Michael L.; and Scaros, Mike G., 5,610,039, Cl. 435-125.000.

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Schwindt, Randy, to Cascade Microtech, Inc. Probe station having conductive coating added to thermal chuck insulator. 5,610,529, Cl. 324-760.000.

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Dunfield, John C.; Oveyssi, Kamran; and Heine, Gunter K., 5,610,463, Cl. 310-90.500.
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Segars, Simon A., to Advanced Risc Machines Limited. Integrated circuit control. 5,610,927, Cl. 371-22.300.

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Tanaka, Takashi; Sato, Yuzuru; Iwane, Hiroshi; and Inui, Shiro, 5,609,790, Cl. 252-299.610.
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Kimura, Naofumi, 5,610,741, Cl. 349-113.000.
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Sato, Wataru; Sakurada, Masahiro; Tomohiko, Ohta; and Kemmochi, Katsuhiko, 5,609,682, Cl. 117-2.000.

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Kuchenbecker, Thomas, 5,611,012, Cl. 385-86.000.
Mattern, Detlef, 5,610,396, Cl. 250-252.100.
Mitwalsky, Alexander; and Okumura, Katsuya, 5,609,148, Cl. 125-16.010.
Oppelt, Ralph; and Vester, Markus, 5,609,154, Cl. 128-661.010.
Schulze, Hans-Joachim, 5,610,415, Cl. 257-149.000.
Weber, Werner; Koeppe, Siegmar; Klose, Helmut; and Huebner, Holger, 5,610,531, Cl. 324-765.000.

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Stein, Inc.: *See—*
Lemke, Ronald D.; Gunawardena, Ramesh M.; and Weit, James G., 5,609,095, Cl. 99-468.000.
Steiner, Wesley D.: *See—*
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Steinmetz, Heinrich: *See—*
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Rostalski, Fred; Obermeier, Diethard; Steinweg, Ewald; Kolbe, Wilfried; and Schirrich, Klaus, 5,609,556, Cl. 493-226.000.
Stella, Sergio; Montanini, Nicoletta; LeMonnier, Francis J.; Colombo, Luigi; Selva, Enrico; and Denaro, Maurizio, to Gruppo Lepetit S.p.A. Antibiotics GE 37468 A, B and C. 5,610,143, Cl. 514-18.000.
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Stenstrom, Scott D.: *See—*
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Sternheimer, Arthur; and Delia, Anthony, to Block Drug Company Inc. Drain cleaner dispenser. 5,609,189, Cl. 141-1.000.
Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., to Ramtron International Corporation. Process for fabricating transistors using composite nitride structure. 5,610,099, Cl. 437-192.000.
Stewart, James M., to Monfort, Inc. Apparatus and method for injecting compressed gas to separate meat. 5,609,520, Cl. 452-131.000.
Stewart, John S., to Thomson Consumer Electronics, Inc. Apparatus for detecting a synchronization component in a satellite transmission system receiver. 5,610,983, Cl. 380-48.000.
Stigson, Tomas, to Lear Seating Corporation. Integrated child seat. 5,609,392, Cl. 297-237.000.
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Stilp, Timothy S.: *See—*
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Stites, John; Holloway, David J.; and Caslow, Scott A., to Comant Industries, Inc. Combination antenna. 5,610,620, Cl. 343-725.000.
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Stockton, Elmer A., to UNC Artex, Inc. Gear box housing face repair. 5,608,958, Cl. 29-402.110.
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Stokes, Michael, to Apple Computer, Inc. Subjectively pleasing color gamut mapping in a color computer graphics system. 5,611,030, Cl. 395-131.000.
Stoll, Kurt, to Festo KG. Fluid power advancing unit. 5,609,091, Cl. 92-110.000.
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Strickland, Timothy A.: *See—*
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Stuart, Christine M.; Rogers, Deborah M.; Van Camp, James R.; and Sowinski, Michael P., to Nalco Chemical Company. Field method for determining if adequate corrosion inhibition has been applied to thermally processed cans. 5,610,068, Cl. 436-6.000.
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Su, Simon, to Lite-On Automotive Corporation. Control device for permitting two-stage operation of an alarm system. 5,610,576, Cl. 340-429.000.
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Sulzer Medizinaltechnik AG: *See—*
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Sumitoma Bayer Urethane Co., Ltd.: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Sumitomo Wiring Systems, Ltd.: *See—*
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Nagahira, Jyoji; Suzuki, Koji; and Kuroda, Kouki, 5,610,810, Cl. 364-167.010.
Suzuki, Kunio, to Rikagaku Kenkyusho. Anti-obesity agent 4-cholesten-3-one. 5,610,152, Cl. 514-177.000.
Suzuki, Makoto, to Brother Kogyo Kabushiki Kaisha. Electrophotographic image recording apparatus. 5,610,652, Cl. 347-256.000.
Suzuki, Makoto: *See—*
Kamei, Toshikazu; Takeuchi, Hidetoshi; and Suzuki, Makoto, 5,609,947, Cl. 428-212.000.
Suzuki, Masaki: *See—*
Watanabe, Syouzou; Suzuki, Masaki; Nakayama, Ichiro; and Okumura, Tomohiro, 5,609,690, Cl. 118-723.00E.
Suzuki, Tetsuo: *See—*
Hamaguchi, Maki; Yamamoto, Tetsuya; Suzuki, Tetsuo; Yamamuro, Hideki; and Chosokabe, Hiroshi, 5,609,959, Cl. 428-408.000.
Suzuki, Yoshikazu, to Jaguar Co., Ltd. Thread cutter for sewing machine. 5,609,117, Cl. 112-288.000.
Suzuki, Yukio; Konishi, Haruo; and Kojima, Yoshikazu, to Seiko Instruments Inc. Semiconductor integrated circuit. 5,610,428, Cl. 257-399.000.
Svinkin, Mark R. Method for estimating frequencies of machine foundations. 5,610,336, Cl. 73-594.000.
Swaim, David G.: *See—*
Kwiatkowski, Edward J.; and Swaim, David G., 5,609,580, Cl. 604-212.000.
Swain, Christopher J.: *See—*
Moseley, Jonathan D.; Swain, Christopher J.; and Williams, Brian J., 5,610,159, Cl. 514-236.200.
Swanger, John W., Jr.: *See—*
Stadtfeld, Hermann J.; and Swanger, John W., Jr., 5,610,994, Cl. 382-152.000.
Swank, John P., to B. F. Goodrich Company, The. Method of making piston for an aircraft brake with honeycomb insulated piston head. 5,608,967, Cl. 29-888.045.
Swanson, David K.: *See—*
Panescu, Dorin; Whayne, James G.; and Swanson, David K., 5,609,157, Cl. 128-697.000.
Swanson, David W.: *See—*
Timm, Dale D., Jr.; Swanson, David W.; and Clark, James E., 5,610,644, Cl. 347-87.000.
Swanson, Harry R.: *See—*
Yovichin, Albert J.; Dunn, William F.; Dutt, William R.; Houck, Richard C.; Hyde, David D.; Ridha, Raouf A.; and Swanson, Harry R., 5,610,329, Cl. 73-146.000.
Swars, Helmut: *See—*
Maus, Wolfgang; Swars, Helmut; Brück, Rolf; and Humpolik, Bohumil, 5,608,968, Cl. 29-890.000.
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Sweeney, Michael N.; Tiffany, Brian L.; Vettese, Thomas J.; Maiberger, Mark S.; and Rodgers, John M., to Speedring Systems, Inc. Optical scanning device having a spherical exit window. 5,610,751, Cl. 359-197.000.
Swenson, Dale, to Harley-Davidson Motor Company. Foot pedal assembly. 5,609,069, Cl. 74-563.000.
Swift, Philip W.: *See—*
Ball, Alan; Honan, David; Wyatt, Peter; Daley, Michael; and Swift, Philip W., 5,610,386, Cl. 235-472.000.
Swinbanks, Malcolm A., to MAS Research Limited. Vibration cancellation device. 5,609,230, Cl. 188-267.000.
Swinehart, Daniel C.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,611,050, Cl. 395-200.090.
Sydansk, Robert D., to Marathon Oil Company. pH dependent process for retarding the gelation rate of a polymer gel utilized to reduce permeability in or near a subterranean hydrocarbon-bearing formation. 5,609,208, Cl. 166-295.000.
Symbios Logic Inc.: *See—*
Crafts, Harold S., 5,610,429, Cl. 257-401.000.
Symbol Technologies, Inc.: *See—*
Ball, Alan; Honan, David; Wyatt, Peter; Daley, Michael; and Swift, Philip W., 5,610,386, Cl. 235-472.000.
Bard, Simon; Viscount, Brian; Katz, Joseph; DeVita, Joseph; Fama, Anthony; Poloniewicz, Paul; Biuso, Anthony; Wilson, Laura; and Little, Gary G., 5,610,387, Cl. 235-472.000.
Hofbauer, Thomas; and Kropp, Darren, 5,610,496, Cl. 320-13.000.
Symonds, Neil S., to Magnum Power PLC. Uninterruptible power supply with power factor correction. 5,610,451, Cl. 307-66.000.
Synaptic Pharmaceutical Corporation: *See—*
Craig, Douglas A.; Forray, Carlos C.; Gluchowski, Charles; and Branchek, Theresa A., 5,610,174, Cl. 514-401.000.
Syouji, Moritaka: *See—*
Yamada, Seiich; Tanaka, Shigeru; Syouji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; and Maeda, Kunihiro, 5,610,570, Cl. 338-20.000.
Szabo, George; Grooters, Tom E.; and Cheney, Craig, to ITT Corporation. Positive latch quick connector. 5,609,370, Cl. 285-319.000.
Szasz, Joseph: *See—*
Fuller, Carl W.; Szasz, Joseph; Robb, Frank T.; Borges, Kimberly M.; and Davis, Maria, 5,610,066, Cl. 435-320.100.
Szczesny, Paul M.: *See—*
King, Robert D.; De Doncker, Rik W. A. A.; and Szczesny, Paul M., 5,610,490, Cl. 318-611.000.
Szeidl, Michael: *See—*
Stephan, Günter; and Szeidl, Michael, 5,609,103, Cl. 101-230.000.
Szeliski, Richard S.; and Coughlan, James M., to Digital Equipment Corporation. Spline-based image registration. 5,611,000, Cl. 382-294.000.
Szwartz, Henry S. Combination damper and chimney cap apparatus. 5,609,522, Cl. 454-7.000.
T.V. Fanfare Publications, Inc.: *See—*
Sawyer, Thomas E.; and Hoback, James E., 5,608,978, Cl. 40-308.000.
Tabata, Yoshiko; Kajino, Takayoshi; and Kure, Naohisa, to Kao Corporation. Curly hair-straightening composition. 5,609,860, Cl. 424-70.500.
Tabuchi, Haruhiko, to Fujitsu Limited. Hybrid type integrated optical device having double-layered substrate. 5,611,006, Cl. 385-14.000.
Tachi-S Co., Ltd.: *See—*
Seki, Kenichi, 5,608,956, Cl. 29-91.000.
Tachibana, Hiroyuki; Kasada, Mitumori; and Ohno, Kimichika, to Bando Chemical Industries, Ltd. Synchronous belt using rubberized facing fabric. 5,609,541, Cl. 474-205.000.
Tacy, Elizabeth K., to Monarch Knitting Machinery Corp. Durable knitting machine cylinder assembly and method of making same. 5,609,044, Cl. 66-115.000.
Taguchi, Kazushige: *See—*
Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; Taguchi, Kazushige; and Shiina, Susumu, 5,610,720, Cl. 358-296.000.
Taguchi, Seiji: *See—*
Hanaoka, Kouji; Igawa, Katsutoshi; Taguchi, Seiji; Matsui, Takashi; and Sorimachi, Kenichi, 5,609,458, Cl. 414-173.000.
Taira, Kiyoshi: *See—*
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Mizushima, Yutaka; Bannai, Kiyoshi; and Nakayana, Shigeru, 5,610,182, Cl. 514-530.000.
Taiwan Semiconductor Manufacturing Company Ltd.: *See—*
Hsu, Ching-Hsiang; Wong, Shyh-Chyi; Liang, Mong-Song; and Chung, Steve S., 5,610,087, Cl. 437-32.000.
Ping, King-Ho; and Lee, Jin-Yuan, 5,610,081, Cl. 437-8.000.
Tajiri, Atushi: *See—*
Yodosbi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, 5,610,096, Cl. 437-129.000.
Takach, Stephen J. Anti-choke device. 5,609,149, Cl. 128-200.240.
Takach, Thomas G. Hand-held reciprocating device with an improved tool guide system. 5,609,515, Cl. 451-344.000.
Takada, Kazukuni: *See—*
Miura, Masahiko; Akutsu, Tadayoshi; Takada, Kazukuni; Inoue, Kunitoshi; Kubouchi, Kenji; Shinpo, Yoshikazu; and Nakata, Kazuya, 5,609,345, Cl. 277-180.000.
Takada, Kyu, to Seigo Epson Corporation. An image forming apparatus including a plural laser beam scanning apparatus. 5,610,647, Cl. 347-137.000.
Takada, Masahide: *See—*
Koike, Hiroki; Kimura, Tohru; Otsuki, Tetsuya; and Takada, Masahide, 5,610,852, Cl. 365-145.000.
Takada, Naomi: *See—*
Uno, Mitsuhiro; Takubo, Yoneharu; Kumagawa, Katsuhiko; Asada, Satoshi; and Takada, Naomi, 5,610,739, Cl. 349-39.000.
Takada, Yoshihiro; Watanabe, Nobuyuki; Sugishima, Kiyohisa; and Kuboki, Keiju, to Canon Kabushiki Kaisha. Image forming apparatus with a correction recording condition feature and related method. 5,610,639, Cl. 347-19.000.
Takafuji, Hirosuke, to Seiko Industrial Corporation. Height-adjustable folding chair. 5,609,390, Cl. 297-55.000.
Takagi, Katsuhiko; and Ujiie, Futoshi, to Alpine Electronics, Inc. Interlocking structure and detector for sensing the position of an operating member in detachable electronic equipment. 5,610,376, Cl. 200-50.010.
Takahara, Hidetake: *See—*
Ueno, Takeshi; Oshima, Katsuyuki; Asajima, Mikio; Yamauchi, Mineo; Imoto, Kazunobu; Takahara, Hidetake; and Ando, Jitsuhiko, 5,610,119, Cl. 503-227.000.
Takahara, Hiroshi: *See—*

Ohmae, Hideki; and Takahara, Hiroshi, 5,610,735, Cl. 349-10.000.
Takahara, Yoshiyuki: *See*—
Ejima, Daisuke; Sato, Yutaka; Watanabe, Mayumi; Date, Masayo; and Takahara, Yoshiyuki, 5,610,284, Cl. 530-412.000.
Takahashi, Akio; Abe, Yoshio; and Takaishi, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Structure of frame connecting portion in vehicle. 5,609,386, Cl. 296-204.000.
Takahashi, Hiroshi: *See*—
Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; Taguchi, Kazushige; and Shiina, Susumu, 5,610,720, Cl. 358-296.000.
Takahashi, Kazuo, to Canon Kabushiki Kaisha. Immersion type projection exposure apparatus. 5,610,683, Cl. 355-53.000.
Takahashi, Kazuo: *See*—
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.
Takahashi, Ken: *See*—
Yamada, Seiich; Tanaka, Shigeru; Syouji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; and Maeda, Kunihiro, 5,610,570, Cl. 338-20.000.
Takahashi, Kenichi; Takeishi, Minako; and Onishi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Signal processing circuit for spread spectrum communications. 5,610,939, Cl. 375-206.000.
Takahashi, Kimio: *See*—
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, 5,610,786, Cl. 360-122.000.
Takahashi, Kohji: *See*—
Kasai, Naruhiko; Mano, Hiroyuki; Nishitani, Shigeyuki; Takita, Isao; and Takahashi, Kohji, 5,610,626, Cl. 345-89.000.
Takahashi, Koji, to Advantest Corporation. Failure analyzer for semiconductor tester. 5,610,925, Cl. 371-22.100.
Takahashi, Michitake: *See*—
Shimooka, Takeshi; Minamisawa, Isamu; Sunouchi, Kosaku; and Takahashi, Michitake, 5,609,730, Cl. 201-1.000.
Takahashi, Naomasa, to Kabushiki Kaisha Toshiba. Linear drive mechanism for use in an optical disk device. 5,610,885, Cl. 369-44.280.
Takahashi, Sadao; Ohtsuka, Hirohisa; and Tawada, Takaaki, to Ricoh Company, Ltd. Image forming apparatus having a contact charging member and a cleaning member. 5,610,691, Cl. 399-176.000.
Takahashi, Shuji, to Nidec Corporation. Brushless motor. 5,610,462, Cl. 310-90.000.
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, to Hitachi, Ltd.; and Hitachi Media Electronics Co., Ltd. Electric power unit. 5,610,449, Cl. 307-43.000.
Takahashi, Takeshi: *See*—
Kojima, Kiyoshi; and Takahashi, Takeshi, 5,609,695, Cl. 148-104.000.
Takahashi, Takuya: *See*—
Sato, Kazuomi; Kume, Toshihiro; Ichimura, Yoshiaki; and Takahashi, Takuya, 5,609,492, Cl. 439-136.000.
Takahashi, Tetsuya: *See*—
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Takahashi, Toshihiko: *See*—
Ohta, Masafumi; Sakon, Yohta; Takahashi, Toshihiko; Adachi, Chihaya; and Nagai, Kazukiyo, 5,610,309, Cl. 546-256.000.
Takahashi, Yasuhiro; Amano, Tadashi; and Shirota, Yoshihiro, to Shin-Etsu Chemical Co., Ltd. Polymerization method producing vinyl chloride polymer. 5,610,245, Cl. 526-88.000.
Takahashi, Yasuhiro: *See*—
Sakanaka, Tetsuo; and Takahashi, Yasuhiro, 5,610,748, Cl. 359-154.000.
Takaishi, Hideaki: *See*—
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Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,447, Cl. 307-38.000.
Nishikawa, Yasuo; Nakajima, Hiroyuki; Iwata, Hitoshi; Kumazawa, Yoshihiro; Sawamura, Naohito; Nakamura, Hiroshi; Suzuki, Ichiro; Kobayashi, Shigeru; Nabeshima, Ryuichi; Sakashita, Takao; Okino, Kazuhiko; Taira, Kiyoshi; Takamura, Koukichi; and Omaki, Mitsuyoshi, 5,610,454, Cl. 307-147.000.
Takano, Yoichi, to Sony Corporation. Optical molding process. 5,609,814, Cl. 264-401.000.
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, to Nippon Hoso Kyokai; and Matsushita Electronics Corporation. Method for driving gas discharge display panel. 5,610,623, Cl. 345-60.000.
Takasawa, Toru; and Araki, Yasuaki, to Dainippon Screen Mfg. Co., Ltd. Kerning method and a typographic apparatus utilizing same. 5,609,427, Cl. 400-304.000.
Takashima, Daisaburo: *See*—
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Takashina, Yutaka: *See*—
Hidaka, Tomoya; Sato, Shinichi; Sato, Hiroyasu; and Takashina, Yutaka, 5,609,672, Cl. 106-21.00R.
Takasu, Hidemi, to Rohm Co., Ltd. Silicon carbide bipolar semiconductor device with birdsbeak isolation structure. 5,610,411, Cl. 257-77.000.
Takasugi, Sigeyuki: *See*—
Hanada, Hideto; Obara, Tadashi; Takasugi, Sigeyuki; Imoto, Nobumasa; Nakamura, Michiko; Minohara, Atushi; Morinaga, Norihiko; Oshibuchi, Hidenori; Sakaguchi, Shunnichi; and Hoshino, Mitukane, 5,608,933, Cl. 5-612.000.
Takatani, Shiro; Mitani, Tetsuo; Baba, Fumiaki; Ohta, Tsutomu; and Nakamura, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Resin compound for molding precision parts, and sleeve and ferrule produced therefrom. 5,610,219, Cl. 524-413.000.
Takatori, Shigeru: *See*—
Asano, Kiyoshi; Koyama, Arata; Takumi, Nobusuke; Takatori, Shigeru; Tamura, Kouichi; and Suita, Tokuo, 5,609,789, Cl. 252-62.560.
Takayama, Toru: *See*—
Yamazaki, Shunpei; Kadono, Masaya; Itoh, Kenji; Takayama, Toru; Arai, Yasuyuki; and Ishida, Noriya, 5,609,774, Cl. 216-69.000.
Takayanagi, Yoshiaki, to Canon Kabushiki Kaisha. Control apparatus for copying machine or the like. 5,610,480, Cl. 315-308.000.
Take, Masatoshi: *See*—
Aoyagi, Akihiko; Terashima, Hiroshi; Igarashi, Kyoji; and Take, Masatoshi, 5,610,785, Cl. 360-104.000.
Takechi, Ryuichi: *See*—
Tomonaga, Hiroshi; Matsuoka, Naoki; Watanabe, Miwako; Kuroyanagi, Satoshi; Ezaki, Yutaka; Hakata, Akira; Takechi, Ryuichi; and Kawai, Masaaki, 5,610,913, Cl. 370-219.000.
Takeda, Atsushi: *See*—
Kamiya, Yuji; Takeda, Atsushi; and Katsumi, Toru, 5,610,689, Cl. 399-31.000.
Takeda, Hiroshi; Yoshida, Shigeaki; and Katsura, Koyo, to Hitachi, Ltd. Display control device. 5,610,622, Cl. 345-13.000.
Takeda, Kaoru: *See*—
Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, 5,610,599, Cl. 340-931.000.
Takei, Makoto: *See*—
Takano, Yoshimichi; Sakai, Tetsuo; Murakami, Hiroshi; Takahashi, Kazuo; Mimasu, Mutsumi; Miyagawa, Utaro; Takei, Makoto; and Wani, Koichi, 5,610,623, Cl. 345-60.000.
Takeishi, Minako: *See*—
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Takemoto, Satoshi: *See*—
Ichikawa, Yoshito; Takemoto, Satoshi; and Tanikawa, Kouji, 5,609,560, Cl. 600-101.000.
Takemura, Hiroo; and Yamada, Hajime, to Honda Giken Kogyo Kabushiki Kaisha. Air cleaner for a vehicle. 5,609,658, Cl. 55-385.300.
Takenaka, Eiji: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.
Takeshita, Masaaki: *See*—
Fujiuchi, Hiroyuki; Takeshita, Masaaki; Uchida, Kenji; Ida, Tsutomu; Okumura, Hisakazu; and Nakajima, Mitsuhiko, 5,610,587, Cl. 340-572.000.
Takeuchi, Hidetoshi: *See*—
Kamei, Toshikazu; Takeuchi, Hidetoshi; and Suzuki, Makoto, 5,609,947, Cl. 428-212.000.
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Isaka, Yukio; Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Uchiyama, Seiji; Yamada, Kazuro; and Takeuchi, Makoto, 5,610,646, Cl. 347-131.000.
Takeuchi, Seiji: *See*—
Yoshii, Minoru; Miyazaki, Kyoichi; and Takeuchi, Seiji, 5,610,715, Cl. 356-356.000.
Takeuchi, Toshio: *See*—
Izuta, Goro; Abe, Shunichi; Nishinaka, Yoshirou; Fukutome, Katsuyuki; Ueda, Naoto; Takeuchi, Toshio; Kashiba, Yoshihiro; and Namatame, Masaaki, 5,609,287, Cl. 228-123.100.
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Yanagihara, Hirokazu; and Takezawa, Shirou, 5,609,407, Cl. 362-61.000.
Takimoto, Hiroshi; Sano, Hideo; and Yamada, Masahiro, to Mitsubishi Chemical Corporation. Recording liquid. 5,609,673, Cl. 106-22.00K.
Takimoto, Kiyoshi; Miyazaki, Toshihiko; Sakai, Kunihiro; and Kuroda, Ryo, to Canon Kabushiki Kaisha. Information recording/reproducing method for recording and/or reproducing information on information recording carrier by use of probe electrode. 5,610,898, Cl. 369-126.000.
Takita, Isao: *See*—
Kasai, Naruhiko; Mano, Hiroyuki; Nishitani, Shigeyuki; Takita, Isao; and Takahashi, Kohji, 5,610,626, Cl. 345-89.000.
Takizawa, Kazuhiro: *See*—
Takahashi, Tadashi; Kanouda, Akihiko; Takizawa, Kazuhiro; Nakamura, Tetsunosuke; and Joraku, Masami, 5,610,449, Cl. 307-43.000.
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Ueda, Takao; and Takizawa, Yoshihisa, 5,609,976, Cl. 429-254.000.
Takkinen, Kristiina: *See*—
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Takubo Kogyosho Co., Ltd.: *See*—
Takubo, Yoshiichi, 5,609,895, Cl. 426-28.000.
Takubo, Yoneharu: *See*—

Uno, Mitsuhiro; Takubo, Yoneharu; Kumagawa, Katsuhiko; Asada, Satoshi; and Takada, Naomi, 5,610,739, Cl. 349-39.000.
Takubo, Yoshiichi, to Takubo Kogyosho Co., Ltd. Method for producing half-hulled rice milk. 5,609,895, Cl. 426-28.000.
Takumi, Akira, to Muro Corporation. Method of manufacturing screw holder for continuous screwdriver. 5,609,712, Cl. 156-298.000.
Takumi, Nobusuke: *See*—
Asano, Kiyoshi; Koyama, Arata; Takumi, Nobusuke; Takatori, Shigeru; Tamura, Kouichi; and Suita, Tokuo, 5,609,789, Cl. 252-62.560.
Talbot, Nicholas C.; Allison, Michael T.; and Griffioen, Peter, to Trimble Navigation Limited. Real-time kinematic initialization test system. 5,610,614, Cl. 342-352.000.
Tallant, James C., II; and Hawes, Kevin J., to Delco Electronics Corp. Boost power supply with clock period compensation. 5,610,502, Cl. 323-222.000.
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., to G. D. Searle & Co. Retroviral protease inhibitors. 5,610,190, Cl. 514-595.000.
Talma, Auke G.: *See*—
Hogt, Andreas H.; Talma, Auke G.; de Block, Rudolf F.; and Datta, Rabindra N., 5,610,240, Cl. 525-332.600.
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, to Yumex Corporation; Nichias Corporation; and Kokubu Indusrial Co., Ltd. Spiral gasket having a centering spring. 5,609,344, Cl. 277-157.000.
Tamba, Nobuo: *See*—
Masaki, Akira; Kuwata, Makoto; Satomura, Ryuichi; and Tamba, Nobuo, 5,610,535, Cl. 326-39.000.
Tamfelt Corp.: *See*—
Jermo, Olli A., 5,609,811, Cl. 264-255.000.
Tamura, Kouichi: *See*—
Asano, Kiyoshi; Koyama, Arata; Takumi, Nobusuke; Takatori, Shigeru; Tamura, Kouichi; and Suita, Tokuo, 5,609,789, Cl. 252-62.560.
Tamura, Masanobu, to Nippon Planning Co., Ltd. Plastic molded articles having resin fibers dispersed therein. 5,609,953, Cl. 428-316.600.
Tamura, Takashi: *See*—
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, 5,610,786, Cl. 360-122.000.
Tan, Haw-Chan; Ma, Frank C.; and Lai, Chin T., to Hon Hai Precision Ind. Co., Ltd. Cable connector assembly with reinforcement structure. 5,609,499, Cl. 439-445.000.
Tan, Loon-Seng, to United States of America, Air Force. Armomatic polyimides derived from 2-(N-benzoylimino)-4,4-diaminobiphenyl. 5,610,265, Cl. 528-353.000.
Tanaka, Atsushi: *See*—
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuichiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, 5,610,838, Cl. 364-508.000.
Tanaka, Hirohisa, to Fuji Photo Film Co., Ltd. Vacuum chuck apparatus. 5,609,377, Cl. 294-65.000.
Tanaka, Hiroshi; Doi, Nobuaki; Omori, Masashi; and Ishikawa, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha; and Ryoden Semiconductor System Engineering Corporation. Steam drying apparatus, cleaning apparatus incorporating the same, and steam drying process. 5,608,974, Cl. 34-78.000.
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, to Unitika Ltd. Method of manufacturing biodegradable nonwoven fabrics. 5,609,809, Cl. 264-210.700.
Tanaka, Hiroshi; Iida, Masayuki; Miyatake, Masanori; Sugishita, Shozo; and Hoshi, Teruo, to Sanyo Electric Co., Ltd. System for controlling voice speed of an input signal. 5,611,018, Cl. 395-2.240.
Tanaka, Kiyoshi; and Huang, Ping, to Uniden Corporation. Radio communication apparatus. 5,610,946, Cl. 375-269.000.
Tanaka, Kouichi: *See*—
Yoshikawa, Yuji; Tanaka, Kouichi; Yamamoto, Kenji; and Yamaya, Masaaki, 5,609,958, Cl. 428-402.000.
Tanaka, Masahiko; and Nishiyama, Kohei, to NEC Corporation. IC card radio modem. 5,610,941, Cl. 375-222.000.
Tanaka, Mitsuaki: *See*—
Tanaka, Naoya; Fukumoto, Hiroshi; Fukazawa, Keiichi; and Tanaka, Mitsuaki, 5,609,428, Cl. 400-579.000.
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Tanaka, Satoshi: *See*—
Iwamatsu, Takayuki; Kawano, Kenji; Miyazaki, Hideya; Ito, Shinichi; Inoue, Soichi; Sato, Hiroyuki; Tanaka, Satoshi; and Hashimoto, Koji, 5,609,977, Cl. 430-5.000.
Tanaka, Shigeo, to Konica Corporation. Method of manufacturing silver halide photographic emulsions. 5,610,004, Cl. 430-569.000.
Tanaka, Shigeru: *See*—
Yamada, Seiich; Tanaka, Shigeru; Syouji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; and Maeda, Kunihiro, 5,610,570, Cl. 338-20.000.
Tanaka, Shinichi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device with elements isolated by trenches. 5,610,419, Cl. 257-315.000.
Tanaka, Takashi; Sato, Yuzuru; Iwane, Hiroshi; and Inui, Shiro, to Seiko Epson Corporation. Liquid crystal compositions. 5,609,790, Cl. 252-299.610.
Tanaka, Tsutomu; Doi, Shinzo; Yokota, Hiroshi; Ueno, Chishio; and Ito, Yukiko, to Matsushita Electric Industrial Co., Ltd. Video server. 5,610,841, Cl. 364-514.00R.
Tanaka, Yasuyuki; Hioki, Yuichi; Hayashi, Masaharu; Ichikawa, Naoya; and Sakaki, Toshiaki, to Kao Corporation; and Sumitomo Rubber Industries, Ltd. Means for mechanically stabilizing deproteinized natural rubber latex. 5,610,212, Cl. 524-156.000.
Tanaka, Yoshiaki: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.
Tanaka, Yoshiyuki: *See*—
Okamoto, Yutaka; and Tanaka, Yoshiyuki, 5,611,067, Cl. 395-430.000.
Tang, Ping W.; Cowan, Stanley W.; Decker, David J.; and Mungal, Terrence C., to Eastman Kodak Company. Photographic emulsion layer containing pyrazoloazole coupler exhibiting improved dye light fade. 5,609,996, Cl. 430-386.000.
Tani, Makoto: *See*—
Hasegawa, Nobutoshi; Hirota, Yoshio; Nagase, Sumio; Fukuta, Hisato; and Tani, Makoto, 5,609,111, Cl. 108-55.100.
Taniguchi, Hideaki: *See*—
Sasano, Akira; Shirahashi, Kazuo; Matsukawa, Yuka; Taniguchi, Hideaki; Yamamoto, Hideaki; and Matsumaru, Haruo, 5,610,738, Cl. 349-43.000.
Taniguchi, Koki: *See*—
Yamamoto, Kunihiko; Matsui, Kiyohisa; Ishii, Yutaka; Yasunishi, Norio; Nakamura, Toshihiro; Washio, Hajime; and Taniguchi, Koki, 5,610,628, Cl. 345-100.000.
Taniguchi, Tetsuya; Goto, Kiyoshi; Akiyama, Takeo; Hosoi, Miyuki; Masuda, Tetsuya; and Mochizuku, Hideaki, to Konica Corporation; and Mitsubishi Chemical Corporation. Color image-formable material and process for preparing the same. 5,609,985, Cl. 430-259.000.
Tanikawa, Kouji: *See*—
Ichikawa, Yoshito; Takemoto, Satoshi; and Tanikawa, Kouji, 5,609,560, Cl. 600-101.000.
Tanikawa, Naoshi; Miyakawa, Tetsuya; Sakuma, Hitoshi; Shida, Toichi; and Isono, Kimiko, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Reactor core coolant flow rate control system for a BWR type nuclear power plant. 5,610,957, Cl. 376-210.000.
Tanizaki, Tatsuya: *See*—
Sagane, Toshihiro; Tsutsui, Toshiyuki; Kawasaki, Masaaki; Okada, Keiji; Tojo, Tetsuo; and Tanizaki, Tatsuya, 5,610,254, Cl. 526-282.000.
Tara, Vinai M.: *See*—
Briguglio, James J.; Keil, Charles R.; Tara, Vinai M.; Reardon, Edward J., Jr.; and Kautz, Randall W., 5,609,991, Cl. 430-281.100.
Targetti, Paolo, to Targetti Sankey S.p.A. Device for orienting a lighting apparatus such as, in particular but not exclusively, an encased lamp, suited for both manual and motorised adjustment. 5,609,408, Cl. 362-66.000.
Targetti Sankey S.p.A.: *See*—
Targetti, Paolo, 5,609,408, Cl. 362-66.000.
Tasaka, Kazuhiro, to NEC Corporation. Method for fabricating large capacity NAND type ROM with short memory cell gate length. 5,610,092, Cl. 437-48.000.
Tashjian, Jerry J. Adjustable hockey stick. 5,609,336, Cl. 473-560.000.
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuh-ichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, to Nippon Kayaku Kabushiki Kaisha. Process for the preparation of 6,7-diacyl-7-deacetylforskolin derivatives. 5,610,315, Cl. 549-389.000.
Tauzia, Jean-Michel: *See*—
Austruy, Hervé; Grignon, Jean; and Tauzia, Jean-Michel, 5,610,444, Cl. 264-3.300.
Tawada, Takaaki: *See*—
Takahashi, Sadao; Ohtsuka, Hirohisa; and Tawada, Takaaki, 5,610,691, Cl. 399-176.000.
Tayi, Apparao: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.
Taylor, Grahame N., to Exxon Chemical Patents, Inc. Demulsifier for water-in-oil emulsions, and method of use. 5,609,794, Cl. 252-341.000.
Taylor, John M.: *See*—
Buckberg, Gerald D.; Heimstaedt, Russell A.; and Taylor, John M., 5,609,571, Cl. 604-4.000.
Taylor, Mark: *See*—
Miller, David A.; Jansen, Kenneth A.; Culley, Paul R.; Taylor, Mark; and Izquierdo, Javier F., 5,611,078, Cl. 395-653.000.
Taylor, Neil: *See*—
Farrar, Simon; and Taylor, Neil, 5,609,746, Cl. 205-125.000.
Taylor, Thomas C.: *See*—
Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,610,099, Cl. 437-192.000.
TDK Corporation: *See*—

Shimizu, Katsuhiko, 5,610,804, Cl. 363-21.000.
Te, Tan Y. Paper pallet with an immproved configuration. 5,609,557, Cl. 493-344.000.
TEAC Corporation: *See—*
Watanabe, Takashi, 5,610,781, Cl. 360-99.060.
Teague, Charles J.: *See—*
Frasier, Christine M.; Muskat, James C.; and Teague, Charles J., 5,609,471, Cl. 416-204.00A.
Technology Development Corporation: *See—*
Cantoni, Armando, 5,610,936, Cl. 372-93.000.
Tecnica Spa: *See—*
Marega, Antonello; and Sartor, Mario, 5,608,976, Cl. 36-10.000.
Teel, Thomas A., to SGS-Thomson Microelectonics, Inc. Pre-charged slave latch with parallel previous state memory. 5,610,862, Cl. 365-189.050.
Tegeler, G. R.: *See—*
O'Bear, Raymond E.; Colin, Bruno; Tegeler, G. R.; and Staples, John L., 5,609,828, Cl. 422-102.000.
Teijin, Limited: *See—*
Mizushima, Yutaka; Bannai, Kiyoshi; and Nakayana, Shigeru, 5,610,182, Cl. 514-530.000.
Teitman, Gerald J.: *See—*
Cimini, Ronald J.; Marler, David O.; McCarthy, Stephen J.; McVeigh, Harry A.; and Teitman, Gerald J., 5,609,845, Cl. 423-648.100.
Tektronix, Inc.: *See—*
Moore, John S.; Berger, Sharon S.; Burr, Ronald F.; Anderson, Jeffrey J.; and MacLane, Donald B., 5,610,645, Cl. 347-93.000.
Nandakumar, Vallath, 5,610,857, Cl. 365-162.000.
Telectronics Pacing Systems, Inc.: *See—*
Nappholtz, Tibor, 5,609,610, Cl. 607-9.000.
Telediffusion De France: *See—*
Mau, Joël; and Soyer, Patrice, 5,610,944, Cl. 375-260.000.
Teledyne Electronic Technologies: *See—*
Kelley, Paul E., 5,610,397, Cl. 250-282.000.
Telefonaktiebolaget LM Ericsson: *See—*
Curzio, Peter L., 5,611,013, Cl. 385-89.000.
Lantto, Jörgen, 5,610,974, Cl. 379-59.000.
Ten Kate, Warner R. T., to U.S. Philips Corporation. Digital 3-channel transmission of left and right stereo signals and a center signal. 5,610,985, Cl. 381-27.000.
Tepper, Ron: *See—*
Bergman, Mark; Aiger, Dror; Levit, Dan; and Tepper, Ron, 5,609,485, Cl. 434-262.000.
Terabe, Hirohisa: *See—*
Hosoi, Yoshinobu; and Terabe, Hirohisa, 5,610,671, Cl. 351-200.000.
Terada, Hiroshi; Yamamoto, Hajime; and Nakamura, Masahiko, to Matsushita Electric Industrial Co., Ltd. Color electrophotographic apparatus and image forming units used therein. 5,610,701, Cl. 399-298.000.
Terada, Takashi: *See—*
Aoki, Minoru; Nakada, Minoru; Yazawa, Yuichi; Izu, Gen'ichi; and Terada, Takashi, 5,609,882, Cl. 424-451.000.
Teramoto, Satoshi: *See—*
Inushima, Takashi; Vaitkus, Rimantas; and Teramoto, Satoshi, 5,610,405, Cl. 250-372.000.
Terasawa, Hideyuki: *See—*
Yamauchi, Tadakazu; and Terasawa, Hideyuki, 5,609,749, Cl. 205-777.500.
Terasawa, Masaaki: *See—*
Kuroda, Kenichi; Terasawa, Masaaki; and Matsubara, Kiyoshi, 5,610,420, Cl. 257-315.000.
Terashima, Hiroshi: *See—*
Aoyagi, Akihiko; Terashima, Hiroshi; Igarashi, Kyoji; and Take, Masatoshi, 5,610,785, Cl. 360-104.000.
Termine, Biagio: *See—*
Sola, Cesare; Termine, Biagio; and Seminara, Massimo, 5,609,545, Cl. 477-78.000.
Terreau, Herbert L.: *See—*
Hutchins, Thomas G.; and Terreau, Herbert L., 5,609,242, Cl. 198-847.000.
Tessler, Christopher L.: *See—*
Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., 5,609,778, Cl. 219-121.690.
Tetsuo, Nishimoto: *See—*
Masahiro, Koyama; and Tetsuo, Nishimoto, 5,610,354, Cl. 84-624.000.
Teva Pharmaceutical Industries Ltd.: *See—*
Wantier, Henri; Mathieu, Fabienne; Baudrihaye, Marc; and Delacroix, Dominique, 5,609,886, Cl. 424-497.000.
Texas Instruments Incorporated: *See—*
Bhuva, Rohit L., 5,610,624, Cl. 345-84.000.
Carbou, Pierre; Guignon, Pascal; and Perney, Philippe, 5,610,546, Cl. 327-261.000.
Frechette, Raymond A., 5,610,437, Cl. 257-670.000.
Gladigow, Herbert; and Schaetzing, Wolfgang, 5,609,297, Cl. 239-135.000.
Hastings, R. Alan, 5,610,537, Cl. 326-59.000.
Hempel, Eugene O., 5,609,719, Cl. 156-636.100.
Kurino, Hiroyuki; and Miyai, Yoichi, 5,610,100, Cl. 437-195.000.
Marris, Arthur, 5,610,926, Cl. 371-22.300.
Nelson, William E., 5,610,337, Cl. 73-651.000.
Sampsell, Jeffrey B., 5,610,625, Cl. 345-84.000.
Summerfelt, Scott R.; Beratan, Howard R.; and Tsu, Robert, 5,609,927, Cl. 427-553.000.
Tran, Hiep, 5,611,072, Cl. 395-463.000.
Wallace, Robert M.; and Webb, Douglas A., 5,610,438, Cl. 257-682.000.
Whetsel, Lee D., 5,610,530, Cl. 324-763.000.
Whetsel, Lee D., 5,610,826, Cl. 364-487.000.
Yuan, Han-Tzong; Kim, Tae S.; and Plumton, Donald L., 5,610,085, Cl. 437-29.000.
Texter, John; Sharma, Ravi; and Czekai, David A., to Eastman Kodak Company. Process for dispersing concentrated aqueous slurries. 5,609,998, Cl. 430-449.000.
Tg Soda Ash, Inc.: *See—*
Neuman, Thomas H.; and Chastain, Richard W., 5,609,838, Cl. 423-206.100.
Thakhasi, Irai: *See—*
Soga, Gazuo; Kim, Hyun-joon; Lee, Sang-kyun; Jung, Min-chul; Son, Byung-hee; Thosiya, Wuozmi; Thakhasi, Irai; and Hiroro, Nishida, 5,610,115, Cl. 502-152.000.
Tham, Chin T.: *See—*
Anderson, Scott R.; Tham, Chin T.; Padula, Joseph A.; Williams, Owen R.; Houle, Jesse S.; Besler, David A.; and Ramsey, William D., Jr., 5,609,190, Cl. 141-59.000.
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, to Xerox Corporation. Method for selectively performing event on computer controlled device whose location and allowable operation is consistent with the contextual and locational attributes of the event. 5,611,050, Cl. 395-200.090.
Theodor Groz & Söhne: *See—*
Schmoll, Wolfgang; and Wissmann, Siegfried, 5,609,045, Cl. 66-121.000.
Thermo Jarrell Ash Corporation: *See—*
Carroll, Charles E.; Kunselman, Garry C.; and Tobey, Arthur E., 5,610,706, Cl. 356-70.000.
Thermo King Corporation: *See—*
Brownfield, Jerry A.; Anderson, Lowell M.; and Eberly, Steven C., 5,609,232, Cl. 192-84.900.
Thermotrex Corporation: *See—*
Pellegrino, Anthony J.; Stoller, Milton; DeFreitas, Kenneth F.; Camarra, David D.; Scandura, Anthony M.; Schutz, Richard F.; and Storm, Jeffrey R., 5,609,152, Cl. 128-653.100.
Thiesen, Stefan, to Rheinmetall Industrie GmbH. Cartridge ammunition having a case, an arrow projectile and an igniter-coated propellant. 5,610,365, Cl. 102-431.000.
Thiokol Corporation: *See—*
Endicott, David W., Jr.; Guymon, Ross W.; and Kaminska, James R., 5,610,364, Cl. 102-334.000.
Thom, Heinz; Neumann, Alfred; Johansen, Wolfgang; and Zier, Peter, to Licentia Patent-Verwaltungs-GmbH. Parallel gripper having a force measuring arrangement. 5,609,381, Cl. 294-119.100.
Thom, Kelsey C., Jr.; and Hartwig, Heath L., to California Pellet Mill Company. Fine adjustment/quick acting manual actuator for roller mill feed gates. 5,609,308, Cl. 241-301.000.
Thoma, Wulf; and Labitzke, Ekkehard, to Schaeffler Teppichboden GmbH. Process and device for preparing a molding. 5,609,816, Cl. 264-517.000.
Thomas, Barbara J.; Loth, Myriam; Connors, Thomas F.; and Mondin, Myriam, to Colgate-Palmolive Company. Microemulsion all-purpose liquid cleaning compositions with insect repellent. 5,610,130, Cl. 510-383.000.
Thomas, Michael: *See—*
Camilletti, Robert C.; Saadat, Irfan; and Thomas, Michael, 5,609,925, Cl. 427-503.000.
Thome, James P.: *See—*
Gebhardt, William J.; Thome, James P.; and Hildenbrandt, Leslie C., 5,609,534, Cl. 473-409.000.
Thompson, James D.; and Draper, Kenneth G., to Ribozyme Pharmaceuticals Inc. Enzymatic RNA with activity to ras. 5,610,052, Cl. 435-366.000.
Thompson, Richard J.: *See—*
Faigle, Ernst M.; Sparks, Tracy S.; and Thompson, Richard J., 5,609,360, Cl. 280-740.000.
Thompson, Sean: *See—*
Kaschmitter, James L.; Martucci, Frank L.; Mayer, Steven T.; Souh, Jung H.; and Thompson, Sean, 5,609,972, Cl. 429-56.000.
Thomsen, Peter K. Process for documenting the production of a dental cast object. 5,609,483, Cl. 433-202.100.
Thomson Consumer Electronics, Inc.: *See—*
Stewart, John S., 5,610,983, Cl. 380-48.000.
Thomson Consumer Electronics S.A.: *See—*
Hackett, Andrew, 5,610,662, Cl. 348-452.000.
Thomson-CSF: *See—*
Delacourt, Dominique; and Papuchon, Michel, 5,610,759, Cl. 359-328.000.
Thomson multimedia S.A.: *See—*
Bhatt, Bhavesh B., 5,610,661, Cl. 348-446.000.
Thomson, Robert T.: *See—*
Le, Quang N.; and Thomson, Robert T., 5,609,654, Cl. 44-449.000.
Thosiya, Wuozmi: *See—*
Soga, Gazuo; Kim, Hyun-joon; Lee, Sang-kyun; Jung, Min-chul; Son, Byung-hee; Thosiya, Wuozmi; Thakhasi, Irai; and Hiroro, Nishida, 5,610,115, Cl. 502-152.000.
Thrustmaster, Inc.: *See—*
Bouton, Frank M.; and Kimmell, Rodney W., 5,610,631, Cl. 345-161.000.

Thumma, Mark R., to Whitaker Corporation, The. Contact retention system. 5,609,502, Cl. 439-747.000.
Thyssen Aufzuege GmbH: *See—*
Schlecker, Helmut, 5,609,239, Cl. 198-680.000.
Tick, Paul A.: *See—*
Francis, Gaylord L.; Johnson, Ronald E.; Tick, Paul A.; and Wu, Lung-Ming, 5,609,660, Cl. 65-30.100.
Tiffany, Brian L.: *See—*
Sweeney, Michael N.; Tiffany, Brian L.; Vettese, Thomas J.; Maiberger, Mark S.; and Rodgers, John M., 5,610,751, Cl. 359-197.000.
Tigliev, George S. Suspension system for surgical microscope. 5,609,316, Cl. 248-123.110.
Timken Corporation, The: *See—*
Joki, Mark A., 5,609,456, Cl. 411-433.000.
Timm, Dale D., Jr.; Swanson, David W.; and Clark, James E., to Hewlett-Packard Company. Thermal ink-jet pen with a plastic/metal attachment for the cover. 5,610,644, Cl. 347-87.000.
Tirch, Stephen J., III: *See—*
Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., 5,609,778, Cl. 219-121.690.
Titarenko, Evgeny I.: *See—*
Apunevich, Alexandr I.; and Titarenko, Evgeny I., 5,609,777, Cl. 219-121.480.
Tjugum, Odd M.: *See—*
Drs, Josef F.; Melbye, Tom; Tjugum, Odd M.; and Valenti, Salvatore, 5,609,681, Cl. 106-802.000.
Tjurin, Vladimir M.: *See—*
Solovjeva, Galina A.; Tjurin, Vladimir M.; and Solntsev, Stanislav S., 5,609,961, Cl. 428-469.000.
Tobey, Arthur E.: *See—*
Carroll, Charles E.; Kunselman, Garry C.; and Tobey, Arthur E., 5,610,706, Cl. 356-70.000.
Toda, Haruki, to Kabushiki Kaisha Toshiba. Multi-bank synchronous memory system with cascade-type memory cell structure. 5,610,872, Cl. 365-230.060.
Togasaki, Robert K.: *See—*
Surzycki, Stefan J.; Kityama, Masahito; and Togasaki, Robert K., 5,610,010, Cl. 435-6.000.
Tojo, Tetsuo: *See—*
Sagane, Toshihiro; Tsutsui, Toshiyuki; Kawasaki, Masaaki; Okada, Keiji; Tojo, Tetsuo; and Tanizaki, Tatsuya, 5,610,254, Cl. 526-282.000.
Tokai Rubber Industries, Ltd.: *See—*
Hayashi, Saburou; Shiraki, Keita; and Yamamoto, Takafumi, 5,609,554, Cl. 492-56.000.
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuichiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, to Canon Kabushiki Kaisha. Coordinate input device for calculating a coordinate of an input position of an applied vibration. 5,610,838, Cl. 364-508.000.
Tokugawa, Yoshinori: *See—*
Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.
Tokumaru, Yuzo; and Kobayashi, Mikio, to Sumitomo Electric Industries, Ltd. Apparatus and method of splicing polarization-maintaining optical fibers. 5,611,015, Cl. 385-98.000.
Tokunaga, Kensuke; Aizawa, Yasuhiro; Nakajima, Junjiro; Sasaki, Masana; Ajima, Masayoshi; and Imai, Masafumi, to Hitachi, Ltd. Fuel spacer and fuel assembly. 5,610,960, Cl. 376-441.000.
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, to Sony Corporation. Magnetic head having Cao-TiO_2-NiO ceramic with specified CaO/TiO_2 ratio. 5,610,786, Cl. 360-122.000.
Tokuyama Corporation: *See—*
Momoda, Kayo; and Baba, Syuji, 5,610,132, Cl. 510-506.000.
Noritake, Masaki; and Yuasa, Shigeki, 5,609,675, Cl. 106-35.000.
Tokyo Buhin Kogyo Co., Ltd.: *See—*
Ohno, Tohru, 5,609,474, Cl. 417-288.000.
Tokyo Electron Limited: *See—*
Kato, Susumu; and Yamaguchi, Hirofumi, 5,609,689, Cl. 118-719.000.
Konishi, Nobuo; and Sekiguchi, Kenji, 5,608,943, Cl. 15-302.000.
Tokyo Gas Co., Ltd.: *See—*
Satake, Shinobu; Yahata, Tadao; Shigefuji, Takashi; Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, 5,609,186, Cl. 138-97.000.
Tokyo Rope Manufacturing Co., Ltd.: *See—*
Obara, Tamio; and Matsumaru, Kazuo, 5,609,014, Cl. 57-212.000.
Tokyo Seimitsu Co., Ltd.: *See—*
Yasunaga, Masaaki; and Kagamida, Takeshi, 5,609,514, Cl. 451-65.000.
Tolman, Richard L.: *See—*
Witzel, Bruce E.; Rasmusson, Gary H.; Tolman, Richard L.; and Yang, Shu Shu, 5,610,162, Cl. 514-284.000.
Tom, Richard H.: *See—*
Maturi, Gregory C.; Chen, Sho L.; Bhargava, Vivek; Wang, Ren-Yuh; and Tom, Richard H., 5,610,659, Cl. 348-42.000.
Toma, Daniela: *See—*
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Tomasini, Luciano; and Castello, Rinaldo, to S.G.S. Thomson Microelectronics, S.r.l. AC integrated coupler with phase equalizer. 5,610,564, Cl. 333-173.000.
Tomesakai, Nobuaki: *See—*
Miyashita, Takumi; and Tomesakai, Nobuaki, 5,610,954, Cl. 375-375.000.
Tomoe, Aruga; Yokouchi, Hideya; and Fujimori, Kazuyoshi, to Seiko Epson Corporation. Floppy disk drive device. 5,610,782, Cl. 360-99.040.
Tomoegawa Paper Co., Ltd.: *See—*
Sakumoto, Yukinori; Hashimoto, Takeshi; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,609,956, Cl. 428-352.000.
Tomohiko, Ohta: *See—*
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Leacock, Thomas J.; and Topper, Robert J., 5,610,604, Cl. 341-138.000.
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Yamagata, Seiichi; and Honda, Hidenobu, 5,609,935, Cl. 428-89.000.
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Sasagawa, Tatsuru; and Fujii, Yutaka, 5,609,743, Cl. 204-600.000.
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Honda, Toshiya; and Torii, Yoshinari, 5,609,217, Cl. 180-170.000.
Torkewitz, Nancy R.: *See—*
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Laurent, Daniel; and Torres Castellano, Miguel, 5,609,705, Cl. 156-117.000.
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Dooley, Colette T.; and Houghten, Richard A., 5,610,271, Cl. 530-328.000.
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Ehrenfeld, Elizabeth; Fricker, Colin; and Townsend, David E., 5,610,029, Cl. 435-34.000.
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Townsend, Ray T. Method and means of skinning ham chunks. 5,609,519, Cl. 452-127.000.
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Maki, Hitoshi; Kato, Shigeki; Azuma, Shinichi; Hayashi, Mikio; and Momose, Masatoshi, 5,610,306, Cl. 546-49.000.
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Satake, Shinobu; Yahata, Tadao; Shigefuji, Takashi; Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, 5,609,186, Cl. 138-97.000.
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Abe, Shinichi, 5,609,025, Cl. 60-285.000.
Iyoda, Motomi; Ohno, Yoshikazu; Fujita, Koichi; Ishii, Naoki; Matsuhashi, Toshiaki; and Okada, Yukihito, 5,609,358, Cl. 280-735.000.
Matsuoka, Hiroki; and Nakagawa, Norihisa, 5,609,141, Cl. 123-520.000.
Ninomiya, Masahito, 5,609,125, Cl. 123-41.120.
Osanai, Akinori, 5,609,142, Cl. 123-520.000.
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Hsu, Sheng-Sheuan, 5,609,536, Cl. 474-160.000.

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Kramer, Claus; Verhagen, Armin-Maria; Trachte, Dietrich; and Keuper, Gerhard, 5,609,140, Cl. 123-497.000.

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Bobbio, Stephen M.; DuBois, Thomas D.; Tranjan, Farid M.; Lucey, George K., Jr.; Geis, James D.; Lipscomb, Robert F.; and Piekarski, Timothy, 5,609,290, Cl. 228-206.000.

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Neumann, Barry R., 5,609,130, Cl. 123-267.000.

Trapet, Eugen; Wiegand, Uwe; Grupp, Günter; and Bernhardt, Ralf, to Carl Zeiss Stiftung. Method for coordinate measurement on workpieces adjusted for bending of measuring apparatus structure. 5,610,846, Cl. 364-571.010.

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Maund, Andrew P.; Neave, John W.; Trevett, Neil F.; Moore, Simon J.; and Wilson, Malcolm E., 5,611,064, Cl. 395-419.000.

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Fuller, B. Shannon; Ellis, W. Dale; and Rowell, Roger M., 5,609,915, Cl. 427-297.000.

Trimberger, Stephen M., to XILINX, Inc. Method for programming an FPLD using a library-based technology mapping algorithm. 5,610,829, Cl. 364-489.000.

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Ackroyd, Neil; Chisholm, Gary S.; Culling, Robert G.; O'Meagher, Brent; and Smith, Steve, 5,610,818, Cl. 364-424.070.
Lennen, Gary R., 5,610,984, Cl. 380-49.000.
Murphy, Michael D., 5,610,822, Cl. 364-449.500.
Talbot, Nicholas C.; Allison, Michael T.; and Griffioen, Peter, 5,610,614, Cl. 342-352.000.

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Hart, Roger L.; and Busick, Rickey L., 5,610,489, Cl. 318-571.000.

Trout, Stanley D., to Rieke Corporation. Tamper evident, child-resistant closure. 5,609,262, Cl. 215-219.000.

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Belfiore, Joseph D.; Guzak, Christopher J.; Graham, Christopher E.; Madigan, Stephen M.; Trower, Tandy W., II; Kerr, Randall L.; and Wyard, Adrian M., 5,611,060, Cl. 395-341.000.

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Höfle, Gerhard; Bedorf, Norbert; Forche, Edgar; Gerth, Klaus; Irschik, Herbert; Jansen, Rolf; Kunze, Brigitte; Reichenbach, Hans; Sasse, Florenz; Steinmetz, Heinrich; Trowitzsch-Kienast, Wolfram; and Pachlatko, Johannes P., 5,610,038, Cl. 435-118.000.

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Hammerling, Ulrich; Buck, Jochen; Derguini, Fadila; and Nakanishi, Koji, 5,610,200, Cl. 514-763.000.

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Bergerson, Lee D.; and Stonich, Ivan L., 5,609,361, Cl. 280-741.000.
Faigle, Ernst M.; Sparks, Tracy S.; and Thompson, Richard J., 5,609,360, Cl. 280-740.000.
Loxton, Steven R.; and Czarnecki, Donald P., 5,609,396, Cl. 297-473.000.
Smydra, Andrew J.; Cherry, Rodger M.; and Kelley, Scott A., 5,609,355, Cl. 280-728.300.
Sparks, Tracy S.; and Faigle, Ernst M., 5,609,362, Cl. 280-741.000.

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Kaji, Nobuo; Mizusawa, Susumu; Sahashi, Masayuki; and Tsuchida, Takako, 5,609,898, Cl. 426-74.000.

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Fujiwara, Toru; Tsubakiji, Tadashi; and Tsuchiya, Kenichi, 5,609,024, Cl. 60-284.000.

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Inakuma, Takahiro; Furui, Hiroyasu; Tokugawa, Yoshinori; Tsuda, Fumiaki; Nagai, Mitsuo; and Kirihara, Shuitsu, 5,609,902, Cl. 426-466.000.

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Arimoto, Kazutami; and Tsukude, Masaki, 5,610,533, Cl. 326-33.000.

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Rueger, David C.; Jones, William K.; Tucker, Ronald F.; Oppermann, Hermann; Ozkaynak, Engin; and Sampath, Kuber T., 5,610,021, Cl. 435-7.200.

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Pulaski, Doris P.; Anderson, Richard T.; Tessler, Christopher L.; Tirch, Stephen J., III; and Tudryn, Dawn J., 5,609,778, Cl. 219-121.690.

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Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.

Tura, Ronald E.; and Bailey, Glen F. Orofacial myographic measurement method. 5,609,161, Cl. 128-777.000.

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Turner, Craig W.: *See—*
Addison, Danny H.; Hufford, George, III; McCray, Charles M.; Schultz, Kevin L.; and Turner, Craig W., 5,609,086, Cl. 83-440.000.

Turner, Edwin T.: *See—*
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Wu, Chiu H.; Oikarinen, Juhani I.; Powrie, William D.; and Tykkaelae, Hannu K., 5,609,293, Cl. 229-3.50R.

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Warner, Rueben B.; and Tyler, James B., 5,609,398, Cl. 300-21.000.

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Tyus, Lisa A.: *See—*
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UAB Research Foundation, The: *See—*
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Ube Industries, Ltd.: *See—*
Kimura, Tomio; Kuroki, Yoshiaki; Fujiwara, Hiroshi; and Anpeiji, Shigeharu, 5,610,303, Cl. 544-326.000.

Ubukata Industries: *See—*

Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,610,338, Cl. 73-652.000.

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Udovic, Nancy A.: *See—*
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Uekita, Masakazu: *See—*
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Kakuishi, Mitsuo; and Ueshima, Tsuyoshi, 5,610,943, Cl. 375-243.000.

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Stockton, Elmer A., 5,608,958, Cl. 29-402.110.

Undheim, Kjell; Solbakken, Magne; Agner, Erik; Kremminger, Peter; and Lange, Meinolf, to Nycomed Imaging AS. Double chain peptide compounds having bemoregulatory activity. 5,610,141, Cl. 514-15.000.

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Uniden Corporation: *See—*
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Davis, Paul J.; and Porter, Philip, 5,610,077, Cl. 436-518.000.

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Agriculture: *See—*
Patil, Damodar R.; and Fanta, George F., 5,609,817, Cl. 264-564.000.
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Dotrong, My; Dotrong, Minhhoa; and Evers, Robert C., 5,610,261, Cl. 528-184.000.
Tan, Loon-Seng, 5,610,265, Cl. 528-353.000.
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Black, Patrick B., 5,609,418, Cl. 374-159.000.
Johnson, Mark; and Simkins, Thomas, 5,610,590, Cl. 340-573.000.
Energy: *See—*
Berzins, Leon V.; Bratton, Bradford A.; and Fuhrman, Paul W., 5,610,704, Cl. 356-28.500.
Shimer, Daniel W.; and Lange, Arnold C., 5,610,452, Cl. 307-89.000.
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Gray, Charles L., Jr.; and Hellman, Karl H., 5,609,131, Cl. 123-299.000.
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Barry, Clifton E., III; and Yuan, Ying, 5,610,198, Cl. 514-712.000.
Chung, Jay H.; and Felsenfeld, Gary, 5,610,053, Cl. 435-172.300.
Di Fiore, Pier P.; and Fazioli, Francesca, 5,610,018, Cl. 435-7.100.
Sibley, David R.; Monsma, Frederick J.; Mahan, Lawrence C.; and McVittie, Loris D., 5,610,282, Cl. 530-395.000.
Stanwell, Caroline; Yuspa, Stuart H.; and Burke, Terrence R., Jr., 5,610,185, Cl. 514-544.000.
Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Gorelick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, 5,610,060, Cl. 435-252.100.
Webber, Mukta M.; and Rhim, Johng S., 5,610,043, Cl. 435-172.300.
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Buchwitz, Guy R.; Snelgrove, Andrew H.; and Sailer, Paul H., 5,610,598, Cl. 340-870.070.
Canaday, Michael M., 5,608,981, Cl. 42-25.000.
Ray, Hemen, 5,609,942, Cl. 428-182.000.

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Drenten, Ronald R.; Jongerius, Michiel J.; and Droste, Richard B. J., 5,610,760, Cl. 359-332.000.
Janse, Cornelis P., 5,610,991, Cl. 381-92.000.
Kunze, Norbert; and Müller, Dieter, 5,610,787, Cl. 360-130.210.
Ludikhuize, Adrianus W., 5,610,432, Cl. 257-492.000.
Ten Kate, Warner R. T., 5,610,985, Cl. 381-27.000.
Vogten, Leonardus L. M.; Ma, Chang X.; Verhelst, Werner D. E.; and Eggen, Josephus H., 5,611,002, Cl. 395-2.760.
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Solo de Zaldivar, Jose, 5,610,084, Cl. 437-24.000.

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Colligan, Francis D.; and Ross, Donald C., 5,608,962, Cl. 29-517.000.
Kolesa, Michael S.; Aranyi, Ernie; and Kappel, Gary S., 5,609,601, Cl. 606-170.000.

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Shiah, Kyi-Shin; and Iverson, Anthony, 5,610,467, Cl. 310-239.000.

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Kageyama, Masao; Suga, Toyohiko; Motosugi, Kenzo; and Nakajima, Hiroshi, 5,610,045, Cl. 435-194.000.
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,609,809, Cl. 264-210.700.

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Seigneur, Robert L.; and Frankel, Richard W., 5,608,937, Cl. 14-69.500.

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Gitzhofer, François; Bouyer, Etienne; and Boulos, Maher I., 5,609,921, Cl. 427-446.000.

Université Laval: *See—*
Auger, François A.; Rouabhia, Mahmoud; Lafleur, Louis; and Germain, Lucie, 5,610,007, Cl. 435-1.100.

University College London: *See—*
Brown, Robert, 5,610,148, Cl. 514-21.000.

University of Alberta: *See—*
Andrews, Brian, 5,609,568, Cl. 602-28.000.

University of Arizona: *See—*
Joens, Lynn A.; and Glock, Robert D., 5,610,059, Cl. 435-252.100.

University of British Columbia, The: *See—*
Wu, Chiu H.; Oikarinen, Juhani I.; Powrie, William D.; and Tykkaelae, Hannu K., 5,609,293, Cl. 229-3.50R.

University of California, Regents of the: *See—*
Benett, William J.; Krulevitch, Peter A.; Lee, Abraham P.; Northrup, Milton A.; and Folta, James A., 5,609,608, Cl. 606-205.000.
Cohen, Fred E.; McKerrow, James H.; Ring, Christine S.; Rosenthal, Philip J.; Kenyon, George L.; and Li, Zhe, 5,610,192, Cl. 514-614.000.
McEwan, Thomas E., 5,609,059, Cl. 73-290.00R.
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Schnitzer, Jan E.; and Jacobson, Bruce S., 5,610,008, Cl. 435-4.000.

University of Chicago Development Corporation, The: *See—*
Winston, Roland, 5,610,768, Cl. 359-727.000.

University of Florida: *See—*
Hammer, Richard H.; and Bodor, Nicholas S., 5,610,188, Cl. 514-538.000.

University of Illinois, Board of Trustees of the: *See—*
Ho, Steven H.; Conforti, Evandro; and Kang, Sung M., 5,610,744, Cl. 359-118.000.

University of Mississippi: *See—*
Harley, Thomas K., 5,610,987, Cl. 381-67.000.

University of Missouri, Curators of the: *See—*
Smith, Daniel S.; and Walker, John C., 5,610,063, Cl. 435-254.230.

University of North Carolina at Chapel Hill, The: *See—*
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University of North Carolina at Charlotte, The: *See—*
Bobbio, Stephen M.; DuBois, Thomas D.; Tranjan, Farid M.; Lucey, George K., Jr.; Geis, James D.; Lipscomb, Robert F.; and Piekarski, Timothy, 5,609,290, Cl. 228-206.000.

University of Pennsylvania, The Trustees of the: *See—*
Kung, Hank F., 5,609,849, Cl. 424-185.000.

University of Plymouth: *See—*
Keith, Robert D. F.; Greene, Keith R.; Ifeachor, Emmanuel C.; and Westgate, Jennifer, 5,609,156, Cl. 128-670.000.

University of South Florida: *See—*
Frischer, Marc E.; and Paul, John H., 5,610,028, Cl. 435-29.000.

University of Southern California, The: *See—*
Hogen-Esch, Thieo; and Zagala, Angela, 5,610,248, Cl. 526-193.000.

University of Washington: *See—*
Anderson, Brian; Brodsky, Anatol; and Burgess, Lloyd, 5,610,708, Cl. 356-128.000.

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Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.

Uota, Toshihiro; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakano, Hirotaka; and Nakamura, Osamu, to Sharp Kabushiki Kaisha; and Nippon Telegraph & Telephone Corp. Dual channel ISDN terminal call identification and switching system. 5,610,976, Cl. 379-127.000.

Upjohn Company, The: *See—*
Bisaha, Sharon N.; and Gammill, Ronald B., 5,610,158, Cl. 514-230.200.

Urai, Akira: *See—*
Tokutake, Fusashige; Kurosawa, Fumio; Tamura, Takashi; Takahashi, Kimio; Yagihashi, Kazuhiro; Nihei, Yukari; and Urai, Akira, 5,610,786, Cl. 360-122.000.

Urano, Mitsuhiro: *See—*
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,610,338, Cl. 73-652.000.

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Urza, Inaky J., to Siemens Power Corporation. Method and system for in-line detection of moisture in uranium-containing powders. 5,609,057, Cl. 73-73.000.

Ushio, Yukihide: *See—*
Isaka, Yukio; Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Uchiyama, Seiji; Yamada, Kazuro; and Takeuchi, Makoto, 5,610,646, Cl. 347-131.000.

Ushioda, Makoto: *See—*
Fujita, Atsuko; Matsui, Shuichi; Onji, Yuichi; Ushioda, Makoto; and Goto, Yasuyuki, 5,609,791, Cl. 252-299.630.

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Kvitko, Idel Y.; and Azran, Jack, 5,610,305, Cl. 546-6.000.

Uzawa, Shunichi: *See—*
Mori, Makiko; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; Uzawa, Shunichi; and Sakamoto, Eiji, 5,610,965, Cl. 378-34.000.

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V.O.F. Hedon Electronic Developments: *See—*
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Drs, Josef F.; Melbye, Tom; Tjugum, Odd M.; and Valenti, Salvatore, 5,609,681, Cl. 106-802.000.

Valentine, William; and Valentine, William K., to Advanced Technology Pharmaceuticals Corporation. Compressed tablet transitory lubricant system. 5,609,883, Cl. 424-464.000.

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Valentine, William; and Valentine, William K., 5,609,883, Cl. 424-464.000.

Valeo: *See—*
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Valeo Vision: *See—*
Rives, Claude, 5,609,410, Cl. 362-226.000.

Vallot, Lawrence C.; and Brenner, Mats A., to Honeywell Inc. Differential GPS ground station system. 5,610,616, Cl. 342-357.000.

Valmet Corporation: *See—*
Karlstedt, Bertel; and Pettersson, Henrik, 5,608,973, Cl. 34-60.000.

Valsecchi, Giovanni, to Black & Decker Inc. Drilling device with an extension arm. 5,609,444, Cl. 408-79.000.

Van Camp, James R.: *See—*
Stuart, Christine M.; Rogers, Deborah M.; Van Camp, James R.; and Sowinski, Michael P., 5,610,068, Cl. 436-6.000.

Van Camp, Jonathan H.: *See—*
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Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., to Janssen Pharmaceutica N.V. N-(3-hydroxy-4-piperidinyl) (dihydrobenzofuran, dihydro-2H-benzopyran or dihydrobenzo-dioxin) carboxamide derivatives. 5,610,157, Cl. 514-224.200.

Van Damme, Marc: *See—*
Mostaert, Erik; Mariën, August; and Van Damme, Marc, 5,610,001, Cl. 430-533.000.

Vandegriff, Joseph: *See—*
Woodson, Drury; Lee, Michael; Vandegriff, Joseph; Alt, Eckhard; and Stotts, Lawrence J., 5,609,613, Cl. 607-19.000.

Vandenbooren, Franciscus H. A. M. J.: *See—*
Meijer, Egbert W.; Bosman, Hubertus J. M.; Vandenbooren, Franciscus H. A. M. J.; De Brabander-Van Den E rg, Ellen M. M.; Castelijns, Anna M. C. F.; De Man, Hendrikus C. J.; Reintjens, Rafael W. E. G.; Stoelwinder, Christiaan J. C.; and Nijenhuis, Atze J., 5,610,268, Cl. 528-363.000.

Vandenbossche, Jean J.: *See—*
Junino, Alex; Vandenbossche, Jean J.; Richard, Herve; and Cotteret, Jean, 5,609,649, Cl. 8-409.000.

van den Broeck, Henriette C.: *See—*
van Ooyen, Albert J. J.; DeGraaff, Leendert H.; van den Broeck, Henriette C.; and Visser, Jacob, 5,610,046, Cl. 435-200.000.

Van den Eynde, Benoit; and Boon-Falleur, Thierry, to Ludwig Institute for Cancer Research. Method for diagnosing a disorder by determining expression of gage tumor rejection antigen precursors. 5,610,013, Cl. 435-6.000.

Van den Keybus, Frans M. A.: *See—*
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,610,157, Cl. 514-224.200.

Vanderbilt University: *See—*
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van de Veen, Paul G.: *See—*
Blumentritt, Siegmar; Brendel, Thomas; Sawatzki, Steffen; and van de Veen, Paul G., 5,609,162, Cl. 128-782.000.

Vandivier, Karl D., to Delco Electronics Corporaiton. Dual keypad telephone handset for mobile communications. 5,610,971, Cl. 379-58.000.

Van Eijk, Fred: *See—*
Benton, Allen D.; Hochstedler, Leon J.; Hughes, Kevin A.; Knapke, Paul H.; Monteiro, Michael J.; Protopapas, Christopher J.; Van Eijk, Fred; Donnelly, Frank J.; Hale, A. Donald, Jr.; Sarbaugh, Keith E.; and Worcester, Winthrop G., 5,611,059, Cl. 395-326.000.

Van Flandern, Michael W.: *See—*
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Van Koetsem, Jan P. K.: *See—*
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van Ooyen, Albert J. J.; DeGraaff, Leendert H.; van den Broeck, Henriette C.; and Visser, Jacob, to Gist-brocades, N.V. Cloning and expression of xylanase B. 5,610,046, Cl. 435-200.000.

Van Phan, Dean, to Procter & Gamble Company, The. Multi-region paper structures having a transition region interconnecting relatively thinner regions disposed at different elevations, and apparatus and process for making the same. 5,609,725, Cl. 162-117.000.

Van Suetendael, Arthur J., IV: *See—*
Worley, Kevin L.; Kane, Daniel E.; Ewing, Joseph H., Jr.; and Van Suetendael, Arthur J., IV, 5,609,469, Cl. 415-173.100.

Varian Associates, Inc.: *See—*
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Varney, Michael D.; Romines, William H.; and Palmer, Cynthia L., to Agouron Pharmaceuticals, Inc. Compound useful as antiproliferative agents and GARFT inhibitors. 5,610,319, Cl. 549-71.000.

Vasseur, Jean J.: *See—*
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Vaughan, Craig W.: *See—*
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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Vazquez, Michael L.: *See—*
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Vecht, Uri: *See—*
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Vectra Technologies, Inc.: *See—*
Loziuk, Lawrence A.; Bucholtz, Brian C.; and Clinard, Ralph L., Jr., 5,609,328, Cl. 267-136.000.

Vedula, Murali: *See—*
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Veeraraghavan, Malathi: *See—*
Eng, Kai Y.; Karol, Mark J.; and Veeraraghavan, Malathi, 5,610,904, Cl. 370-408.000.

Vegatoro, Guillermo: *See—*
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Vela, Vanja: *See—*
Šušković , Božidar; Vela, Vanja; and Bunčić , Mira, 5,610,181, Cl. 514-471.000.

Venaas, Norman B., to Schlumberger Industries, Inc. Unidirectional register for electricity meter. 5,609,074, Cl. 74-810.100.

Vendrely, Tim: *See—*
Johnson, Chris E.; Vendrely, Tim; Whiteside, Leo A.; Carls, Thomas A.; Steele, John; and Naraghian, Khosrow, 5,609,642, Cl. 623-20.000.

Venkatesan, Aranapakam M.: *See—*
Albright, Jay D.; and Venkatesan, Aranapakam M., 5,610,156, Cl. 514-220.000.

Venkatesh, Shalini: *See—*
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Ventritex, Inc.: *See—*
Archer, Stephen T., 5,609,618, Cl. 607-74.000.
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Veregin, Richard P. N.; Kazmaier, Peter M.; Georges, Michael K.; and Hamer, Gordon K., to Xerox Corporation. Polymerization processes. 5,610,250, Cl. 526-219.300.

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Verhelst, Werner D. E.: *See—*
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Vermaak, Ruben H. Agricultural machine. 5,609,214, Cl. 172-311.000.

Vermillion, James H. Snow board insert with hexagonal base. 5,609,351, Cl. 280-611.000.

Vernay, Rene J., to A. Vernay et Fils Sarl; and Andre Vernay Teintures, S.A. Pile fabric manufacturing process and resulting fabrics. 5,608,954, Cl. 28-162.000.

Vernet, Robert; and Ortega, Fernand, to Giat Industries. Primer detonation device and method. 5,610,361, Cl. 89-27.130.

Vernet, Yves: *See—*
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Vezzoli, Annibale: *See—*
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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Videor Technical E. Hartig GmbH: *See—*
Bernhardt, Rainer, 5,610,656, Cl. 348-373.000.

Vietti, David E.; Potts, Keith B.; and Leone, Kimberley A., to Morton International, Inc. Polysulfide-epoxy thermoplastic elastomers. 5,610,243, Cl. 525-523.000.

View 'N Store, Inc.: *See—*
Koch, Richard C., 5,609,252, Cl. 206-455.000.

Vilandré, M. Gilles. Oil recovering apparatus integrated with temperature controlled elements. 5,609,755, Cl. 210-179.000.

Villata, Gino, to Valeo. Hydraulically actuated motor vehicle clutch of the pull to release type. 5,609,233, Cl. 192-91.00A.

Vincent, Conway: *See—*
Crouser, Darwin S.; Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Wareham, Richard A.; and Vincent, Conway, 5,608,945, Cl. 15-328.000.

Vincent S.r.l.: *See—*
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Vinciguerra, John D., to Intermedics, Inc. Knee revision prosthesis with shims. 5,609,645, Cl. 623-20.000.

Vines, Landon B.; Koenigseder, Sigmund A.; Cain, John L.; Lee, Chang-Ou; and Fujishiro, Felix, to VLSI Technology, Inc. Densification in an intermetal dielectric film. 5,610,105, Cl. 437-235.000.

Vinson, Wayne A.; Little, Frank F.; Schwarzinger, Wolfgang; Lewis, Mark A.; Uziel, Yehoram; Pitlak, Robert T.; and Spence, Stuart T., to 3D Systems, Inc. Rapid and accurate production of stereolithographic parts. 5,610,824, Cl. 364-474.240.

Viola, David P.; and Blake, Lawrence S., to Agfa Division, Bayer Corporation. Support for a self-propelled linear motion drive apparatus. 5,609,107, Cl. 105-77.000.

Virginia Commonwealth University: *See—*
Fariss, Marc W., 5,610,180, Cl. 514-458.000.

Virostat (NA) NVQ: *See—*
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Viscount, Brian: *See—*
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Viscoustech, Inc.: *See—*
Rajagopal, Chandrika; Rajagopal, Kumbakonam R.; and Yalamanchili, Rattaya C., 5,610,325, Cl. 73-54.390.

Vishwakarma, Lal C.; Yau, Hwei-Ling; and Chen, Tienteh, to Eastman Kodak Company. 2'-hydroxyphenyl benzotriazole based UV absorbing polymers and photographic elements containing them. 5,610,000, Cl. 430-512.000.

Visser, Jacob: *See—*
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Vital Signs, Inc.: *See—*
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Vittenberg, Michael: *See—*

Spector, Yechiel; Jacobson, Esther; Naishtut, Vida; Vittenberg, Michael; and Beinert, Zohar, 5,610,359, Cl. 89-1.110.

Vivacqua, Raymond: *See*—
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VLSI Technology, Inc.: *See*—
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Lahti, Gregg D.; Rimpo, Charles R.; and Story, Franklyn H., 5,610,601, Cl. 341-22.000.
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Vniigaz: *See*—
Tsybulevski, Albert M.; Mourine, Vladimir I.; Plee, Dominique; and Mayolet, Francis, 5,609,842, Cl. 423-244.110.

VNUS Medical Technologies, Inc.: *See*—
Laufer, Michael D.; and Montgomery, H. DuBose, 5,609,598, Cl. 606-142.000.

Vock, Frank: *See*—
Fremgen, Dieter; and Vock, Frank, 5,610,370, Cl. 174-91.000.

Voest-Alpine Industrieanlagenbau GmbH: *See*—
Auberger, Heinrich, 5,610,935, Cl. 373-72.000.

Vogel, Emanuel; Mueller, Martin; Halpern, Otto; and Cross, Alexander D., to Cytopharm, Inc. 9-Substituted porphycenes. 5,610,175, Cl. 514-410.000.

Vogt, Ulrich P.: *See*—
Abel, Burkhard; Birkenfeld, Gerhard; Lücking, Manfred; Vogt, Ulrich P.; and Zimek, Dieter, 5,609,460, Cl. 414-334.000.

Vogten, Leonardus L. M.; Ma, Chang X.; Verhelst, Werner D. E.; and Eggen, Josephus H., to U.S. Philips Corporation. Method and apparatus for manipulating an input signal to form an output signal having a different length. 5,611,002, Cl. 395-2.760.

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Riepenhausen, Bernd, 5,609,920, Cl. 427-428.000.

Voldman, Steven H., to International Business Machines Corporation. Power sequence independent electrostatic discharge protection circuits. 5,610,791, Cl. 361-56.000.

Vollmann, Norbert C., to U.S. Philips Corporation. Magnetic tape apparatus which senses and plays different types of cassette. 5,610,778, Cl. 360-94.000.

Von Duprin, Inc.: *See*—
Dye, William P.; and Hoggard, Paul J., 5,610,794, Cl. 361-206.000.
Mader, Gerald E.; Dye, William P.; and Prucinsky, Matthew S., 5,609,371, Cl. 292-164.000.

von der Eltz, Andreas, to Hoechst Aktiengesellschaft. Recycling of dyed cellulosic waste. 5,609,676, Cl. 106-166.010.

von Trebra, Robert J.; Smith, Gerald A.; Hensel, Roy E.; Barton, Oliver A., deceased (by Marjorie Barton, executrix), to Bayer Corporation. Partially translucent white film having metallized surface. 5,609,945, Cl. 428-209.000.

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Fearnot, Neal E.; Kozma, Thomas G.; Ragheb, Anthony O.; and Voorhees, William D., 5,609,629, Cl. 623-1.000.

Vortec Corporation: *See*—
Webb, Richard, 5,609,305, Cl. 239-590.300.

Voss, Gregory I.; Butterfield, Robert D.; Baura, Gail D.; and Barnes, Casper W., to IVAC Medical Systems, Inc. Fluid flow impedance monitoring system. 5,609,576, Cl. 604-67.000.

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Vulih, Salomon; Briggs, George R.; and Housten, Thomas D., to Harris Corporation. Method of manufacturing a programmable hybrid balance network. 5,610,093, Cl. 437-51.000.

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Soukup, Thomas M.; and Staley, Richard A., 5,609,622, Cl. 607-122.000.

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Lüers, Georg; Sobottka, Richard; and Dunn, Paul M., 5,609,679, Cl. 106-491.000.
Rühl, Andreas; Rentzel, Gert; McGehee, Patrick; Charamko, Serguei; and Anderson, Kim, 5,609,833, Cl. 422-173.000.

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Raasch, Hans; and Hensen, Helmuth, 5,609,015, Cl. 57-302.000.

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Fischer, Reiner; Bretschneider, Thomas; Krüger, Bernd-Wieland; Santel, Hans-Joachim; Dollinger, Markus; Wachendorff-Neumann, Ulrike; and Erdelen, Christoph, 5,610,122, Cl. 504-251.000.

Wacker-Chemie GmbH: *See*—
Funk, Enno; Egerter, Norbert; Schreyer, Sabine; Achenbach, Frank; and Barthel, Herbert, 5,610,218, Cl. 524-413.000.

Wada, Masami: *See*—
Asano, Yoshinari; and Wada, Masami, 5,610,464, Cl. 310-156.000.

Wada, Yukihisa; Naito, Shinobu; and Kumazawa, Kazuhiko, to NGK Insulators, Ltd. Production of ceramic structural bodies. 5,609,807, Cl. 264-177.110.

Waddell, Walter H.; Evans, Larry R.; and Krivak, Thomas G., to PPG Industries, Inc. Tire tread composition comprising highly reinforcing reinforced amorphous precipitated silica. 5,610,221, Cl. 524-492.000.

Wade, John R.: *See*—
Matthews, Andrew E.; Murray, David E.; Gates, Allen P.; Wade, John R.; Pratt, Michael J.; and King, William A., 5,609,980, Cl. 430-138.000.

Wade, Patricia M.: *See*—
Dykstra, Diana R.; and Wade, Patricia M., 5,611,052, Cl. 395-238.000.

Wadsworth, Robert D.: *See*—
Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; Barrett, Lorraine F.; Kalwitz, George A.; Ip, Tony K.; and Kuver, Walter D., 5,611,046, Cl. 395-200.100.

Wagman, David W.: *See*—
Burgeson, Robert E.; and Wagman, David W., 5,610,031, Cl. 435-69.100.

Wagner, Utz: *See*—
Link, Karl; Oppermann, Günter; and Wagner, Utz, 5,609,194, Cl. 141-331.000.

Waite, Timothy P.: *See*—
Walker, Robert S.; and Waite, Timothy P., 5,609,234, Cl. 194-317.000.

Wakabayashi, Manabu; and Ogiro, Kenji, to Hitachi, Ltd. Electronic apparatus with a watertight housing. 5,610,655, Cl. 348-373.000.

Wakabayashi, Masao: *See*—
Itoh, Takashi; Kosaki, Yukio; Chonan, Takeshi; Matsuda, Takashi; Kanno, Yasuharu; Wakabayashi, Masao; and Nakamura, Makoto, 5,609,839, Cl. 423-213.200.

Wakagi, Itaru: *See*—
Yamamoto, Takeyuki; Sugimoto, Yasuyuki; Wakagi, Itaru; Murakata, Shinichi; and Murata, Yasuzo, 5,609,432, Cl. 401-209.000.

Wakamiya, Kenji; and Saito, Osamu, to Fujitsu Ltd. Information delivery method and apparatus for successively transferring information even if the storage unit has insufficient space for storing information from an upstream apparatus. 5,611,047, Cl. 395-200.010.

Wakamura, Masato: *See*—
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Wakerly, John E.: *See*—
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Waldhauser, Steve; and Wulff, Richard F., to Castex Incorporated. Motor and driver mount diaphragm burnisher. 5,608,939, Cl. 15-98.000.

Walker, Alvin M. Device for removing artificial fingernails. 5,609,166, Cl. 132-73.000.

Walker, David W., to Pharmacia Biotech, Inc. Dried biological reagent pill dispenser with vibrating mechanism. 5,609,270, Cl. 221-202.000.

Walker, Donny R.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Walker, Edna S.: *See*—
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Walker, Leslie: *See*—
Chang, Yin-Fu; Wong, James R.; Itano, Andrea; Mejza, Stephen J.; and Walker, Leslie, 5,610,042, Cl. 435-172.300.

Walker, Peter S. Prosthesis for knee replacement. 5,609,639, Cl. 623-20.000.

Walker, Robert S.; and Waite, Timothy P. Coin validator. 5,609,234, Cl. 194-317.000.

Wall, Robert G., to Chevron Chemical Company. Para-xylene selective reforming/aromatization. 5,609,751, Cl. 208-133.000.

Wallace, Robert M.; and Webb, Douglas A., to Texas Instruments Incorporated. Micro-mechanical device with non-evaporable getter. 5,610,438, Cl. 257-682.000.

Wallace, Stuart: *See*—
Lambert, Frank H., 5,609,165, Cl. 128-879.000.

Walsh, Sean P.; and Douglass, Nelson H., to Reichhold Chemicals, Inc. Method of making prepreg. 5,609,806, Cl. 264-136.000.

Wands, Jack R.: *See*—
Blum, Hubert E.; Liang, Tsanyang; Galun, Eithan; and Wands, Jack R., 5,610,050, Cl. 435-238.000.

Wang, Ping T.: *See*—
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Wang, Ren-Yuh: *See*—
Maturi, Gregory C.; Chen, Sho L.; Bhargava, Vivek; Wang, Ren-Yuh; and Tom, Richard H., 5,610,659, Cl. 348-42.000.

Wang, Su S., to Alpha-1 Biomedicals, Inc. Solid phase process for synthesizing thymosin α_1 . 5,610,272, Cl. 530-334.000.

Wang, Wen-Ching. Inflatable article with an illuminating device. 5,609,411, Cl. 362-234.000.

Wang, Wen-Mu. Faucet of a sink. 5,608,928, Cl. 4-678.000.

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Wangler, James A.: *See*—
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Wani, Koichi: *See*—
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Wankel Rotary GmbH: *See*—
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Want, Roy: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,611,050, Cl. 395-200.090.

Wantier, Henri; Mathieu, Fabienne; Baudrihaye, Marc; and Delacroix, Dominique, to Teva Pharmaceutical Industries Ltd. Microspheres for the controlled release of water-soluble substances and process for preparing them. 5,609,886, Cl. 424-497.000.

Ward, Brian J.: *See*—
Sumpter, Chris A.; and Ward, Brian J., 5,610,213, Cl. 524-267.000.

Ward, Jerrold M.; Fox, James G.; Collins, Michael J., Jr.; Goretick, Peter L.; Benveniste, Raoul E.; Tully, Joseph G.; Gonda, Matthew A.; Paster, Bruce J.; and Dewhirst, Floyd E., III, to United States of America, Health and Human Services. Isolated *Helicobacter hepaticus* . 5,610,060, Cl. 435-252.100.

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Wareham, Richard A.: *See*—
Crouser, Darwin S.; Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Wareham, Richard A.; and Vincent, Conway, 5,608,945, Cl. 15-328.000.

Warfield, Christopher A. Ground supported head rest. 5,608,935, Cl. 5-639.000.

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Aida, Shunichi; Matsumoto, Keisuke; Watanabe, Toshiyuki; and Warishi, Koji, 5,609,999, Cl. 430-505.000.

Warman International Limited: *See*—
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Warner-Lambert Company: *See*—
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Horwell, David C.; Howson, William; Pritchard, Martyn C.; and Raphy, Jennifer, 5,610,145, Cl. 514-19.000.
Horwell, David C.; Howson, William; and Pritchard, Martyn C., 5,610,176, Cl. 514-414.000.
Sauter, Erich W., 5,609,010, Cl. 53-467.000.

Warner, Rueben B.; and Tyler, James B., to Jason Incorporated. Twisted stem abrading tool and method of making. 5,609,398, Cl. 300-21.000.

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Ahnger, Anders; Storholm, Stefan; and Bäckman, Kaj, 5,609,029, Cl. 60-618.000.

Washecheck, Don M.: *See*—
Mieville, Rodney L.; Dictor, Ronald A.; Hirschberg, Eugene H.; Robinson, Lawrence C.; Washecheck, Don M.; and Renner, Terrence A., 5,609,832, Cl. 422-173.000.

Washio, Hajime: *See*—
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Watanabe, Genichiro: *See*—
Imamura, Toshihide; Kadotani, Kanichi; Hayakashi, Bunji; Imaizumi, Hisaakira; Shakushi, Tetsuo; Matsumoto, Toshihiko; and Watanabe, Genichiro, 5,609,296, Cl. 239-43.000.

Watanabe, Hidenori; Hoshi, Junichi; Yuge, Yutaka; Okita, Akira; and Kuwabara, Hideshi, to Canon Kabushiki Kaisha. Semiconductor device having an electrode which controls a surface state of the base area for minimizing a change of the D.C. amplification ratio. 5,610,435, Cl. 257-629.000.

Watanabe, Hideo: *See*—
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Watanabe, Kenichi: *See*—
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Watanabe, Koji: *See*—
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Watanabe, Masayuki: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,610,338, Cl. 73-652.000.

Watanabe, Mayumi: *See*—
Ejima, Daisuke; Sato, Yutaka; Watanabe, Mayumi; Date, Masayo; and Takahara, Yoshiyuki, 5,610,284, Cl. 530-412.000.

Watanabe, Miwako: *See*—
Tomonaga, Hiroshi; Matsuoka, Naoki; Watanabe, Miwako; Kuroyanagi, Satoshi; Ezaki, Yutaka; Hakata, Akira; Takechi, Ryuichi; and Kawai, Masaaki, 5,610,913, Cl. 370-219.000.

Watanabe, Nobuyuki: *See*—
Takada, Yoshihiro; Watanabe, Nobuyuki; Sugishima, Kiyohisa; and Kuboki, Keiju, 5,610,639, Cl. 347-19.000.

Watanabe, Shinichi; Yamaguchi, Julie; Desai, Suresh M.; and Devare, Sushil G., to Abbott Laboratories. Mammalian expression systems for hepatitis C virus envelope genes. 5,610,009, Cl. 435-5.000.

Watanabe, Syouzou; Suzuki, Masaki; Nakayama, Ichiro; and Okumura, Tomohiro, to Matsushita Electric Industrial Co., Ltd. Vacuum plasma processing apparatus and method. 5,609,690, Cl. 118-723.00E.

Watanabe, Takashi, to TEAC Corporation. Interchangeable eject mechanism for use with various disk drive units. 5,610,781, Cl. 360-99.060.

Watanabe, Tatsuo: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.

Watanabe, Tetsu; and Aoki, Yoshio, to Sony Corporation. Optical disc system and optical disk therefor. 5,610,880, Cl. 369-13.000.

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Watercutter, Brian A.: *See*—
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Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.

Watkiss, Philip J.: *See*—
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Watson, Jon R., to Ford Motor Company. Method and apparatus for varying the stiffness of a suspension bushing. 5,609,353, Cl. 280-707.000.

Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., to Borg-Warner Automotive, Inc. On demand vehicle drive system. 5,609,219, Cl. 180-248.000.

Watters, John J.; and Dao, Giang H., to Compaq Computer Corporation. Run slice line draw engine with non-linear shading capabilities. 5,611,029, Cl. 395-131.000.

Watts Stephen P.; and Norton, M. Brent, to Premiere Products. Convertible bench/table container apparatus. 5,609,391, Cl. 297-127.000.

Watzke, Eckhart; Kloss, Thomas; Brix, Peter; and Ott, Franz, to Schott Glaswerke. Reducing melt borosilicate glass having improved UV transmission properties and water resistance and methods of use. 5,610,108, Cl. 501-59.000.

Weaver, Jimmie D.: *See*—
Dewprashad, Brahmadeo; and Weaver, Jimmie D., 5,609,207, Cl. 166-276.000.

Webb, Charles F.; Farrell, Mark S.; Conklin, Christopher R.; and Li, Wen H., to International Business Machines Corporation. Specialized millicode instruction for string operations. 5,611,062, Cl. 395-376.000.

Webb, Christopher: *See*—
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Webb, Douglas A.: *See*—
Wallace, Robert M.; and Webb, Douglas A., 5,610,438, Cl. 257-682.000.

Webb, Richard, to Vortec Corporation. Apparatus for providing an air curtain. 5,609,305, Cl. 239-590.300.

Webber, Larry R.: *See*—
White, Gregory R.; Gatewood, Bryan S.; Wilson, Mark L.; Griffen, Peter J.; Kleine, Richard E.; and Webber, Larry R., 5,609,548, Cl. 477-124.000.

Webber, Mukta M.; and Rhim, Johng S., to United States of America, Health and Human Services. Human prostatic cell lines immortalized by adenovirus 12-simian virus 40 (AD12/SV40) hybrid virus. 5,610,043, Cl. 435-172.300.

Weber, David P.: *See*—

Carey, Glen A.; and Weber, David P., 5,609,822, Cl. 422-63.000.
Weber, Patrick O., to Hestia Technologies, Inc. Apparatus for encapsulating electronic packages. 5,609,889, Cl. 425-116.000.
Weber, Werner; Koeppe, Siegmar; Klose, Helmut; and Huebner, Holger, to Siemens Aktiengesellschaft. Testing method for semiconductor circuit levels. 5,610,531, Cl. 324-765.000.
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Wechsler, Ephraim: *See—*
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Wechsler, Nadia: *See—*
Hellman, Robert R., Jr.; Wechsler, Nadia; and Wechsler, Ephraim, 5,609,047, Cl. 68-222.000.
Weckström, Kurt, to Instrumentarium Oy. Spectroscopic measuring sensor for the analysis of mediums. 5,610,400, Cl. 250-345.000.
Weder, Donald E.; Straeter, Joseph G.; and Fantz, Paul, to Southpac Trust International, Inc. Single station covering and fastening system. 5,609,009, Cl. 53-399.000.
Weeks, Casey M. Combination walking stick and blind. 5,609,176, Cl. 135-96.000.
Wei, Che-Chia: *See—*
Chan, Láp; Sundaresan, Ravis H.; and Wei, Che-Chia, 5,610,083, Cl. 437-21.000.
Weidmann, Brigitte: *See—*
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Weidmann, Klaus; Bickel, Martin; and Günzler-Pukall, Volkmar, to Hoechst Aktiengesellschaft. Sulfonamidocarbonylpyridine-2-carboxamides and pyridine-n-oxides which are useful as pharmaceuticals. 5,610,172, Cl. 514-350.000.
Weinbeck, Louis J.: *See—*
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Weinbrenner, Richard L.: *See—*
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Weiser, Mark D.: *See—*
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Weiss, Randy H.: *See—*
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Weiss, Richard A.: *See—*
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Weiss, Richard J., to Solender, Arthur Michael; Solender, Stephen Lawrence; and Solender, Elsie. Sensored composite structure. 5,609,952, Cl. 428-298.100.
Weit, James G.: *See—*
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Weitzel, Hans-Peter; Weber-Koegl, Susanne; and Chatzinerantzis, Sotirios, to Consortium für elektrochemische Industrie GmbH. Crosslinkable nematic polyorganosiloxanes. 5,610,258, Cl. 528-25.000.
Weitzner, Howard B. Device for female patients to prevent involuntary loss of urine. 5,609,559, Cl. 600-29.000.
Welch, James W., to CB Worldwide Inc. Process for manufacturing dog chew toys of tire sidewalls. 5,609,913, Cl. 427-242.000.
Welch, M. Bruce: *See—*
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Yagi, Shuichi: *See—*
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Yagihashi, Kazuhiro: *See—*
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Yamada, Hisashi: *See—*
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Yamada, Kazuro: *See—*
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Yamagishi, Yoichi, to Canon Kabushiki Kaisha. Information signal processing apparatus. 5,610,723, Cl. 386-75.000.

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Yamaguchi, Sachio, deceased; Nakahata, Akimasa; Ikushima, Satoshi; Okumura, Yasumasa; Aida, Haruhiko; Nishiguchi, Shigeo; and Isozaki, Osamu, 5,609,918, Cl. 427-407.100.

Yamaguchi, Eiji: *See—*
Yamamoto, Masakuni; Matsumura, Susumu; Hoshi, Hiroaki; and Yamaguchi, Eiji, 5,610,897, Cl. 369-124.000.

Yamaguchi, Hirofumi: *See—*
Kato, Susumu; and Yamaguchi, Hirofumi, 5,609,689, Cl. 118-719.000.

Yamaguchi, Joe: *See—*
Hashimoto, Kaoru; Chiyonobu, Tatuo; Kawano, Kyoichiro; Watanabe, Koji; Wakamura, Masato; and Yamaguchi, Joe, 5,610,371, Cl. 174-262.000.

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Hokuyo, Kosuke; Hayashi, Miho; Yamaguchi, Shuichi; and Izumi, Tsugio, 5,609,906, Cl. 426-660.000.

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Noguchi, Toshio, 5,608,950, Cl. 24-67.300.

Yamaha Corporation: *See—*
Hagino, Kiyoshi, 5,610,353, Cl. 84-604.000.
Hasebe, Masahiko; Kurakake, Yasushi; Mishima, Junichi; Asahi, Yasuhiko; and Uehara, Satoshi, 5,610,355, Cl. 84-658.000.
Itoh, Shuhei; and Kurata, Mitsuhiro, 5,610,621, Cl. 345-3.000.
Izuta, Tadao, 5,609,146, Cl. 124-23.100.
Koseki, Shinya; and Kawamura, Kiyoshi, 5,610,356, Cl. 84-719.000.
Masahiro, Koyama; and Tetsuo, Nishimoto, 5,610,354, Cl. 84-624.000.

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Nomura, Kiyoshi, 5,608,936, Cl. 5-645.000.

Yamaji, Michio: *See—*
Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.

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Soga, Takumi; and Yamamiya, Kunio, 5,610,893, Cl. 369-84.000.

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Yamamoto, Hajime: *See—*
Terada, Hiroshi; Yamamoto, Hajime; and Nakamura, Masahiko, 5,610,701, Cl. 399-298.000.

Yamamoto, Hideaki: *See—*
Sasano, Akira; Shirahashi, Kazuo; Matsukawa, Yuka; Taniguchi, Hideaki; Yamamoto, Hideaki; and Matsumaru, Haruo, 5,610,738, Cl. 349-43.000.

Yamamoto, Hidehiko, to Fujitsu Limited. Automatic cash transaction apparatus having a main body and an additional unit. 5,610,382, Cl. 235-379.000.

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Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; Ishikawa, Aya; Komuro, Chikara; and Narita, Kazuhisa, 5,610,315, Cl. 549-389.000.

Yamamoto, Hisashi: *See—*
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Yamamoto, Isao: *See—*
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Yamamoto, Kazuhisa, to Fujitsu Limited. Multibyte error correcting system. 5,610,929, Cl. 371-40.100.

Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; and Nishiyama, Tadaaki, to Sumitomo Chemical Company, Limited. (Meth)acrylate copolymer and its elastomer compositions. 5,610,226, Cl. 524-559.000.

Yamamoto, Kenji: *See—*
Yoshikawa, Yuji; Tanaka, Kouichi; Yamamoto, Kenji; and Yamaya, Masaaki, 5,609,958, Cl. 428-402.000.

Yamamoto, Kunihiko; Matsui, Kiyohisa; Ishii, Yutaka; Yasunishi, Norio; Nakamura, Toshihiro; Washio, Hajime; and Taniguchi, Koki, to Sharp Kabushiki Kaisha. Driving device for a display panel and a driving method of the same. 5,610,628, Cl. 345-100.000.

Yamamoto, Kunihiro: *See—*
Bannai, Yuichi; Yamamoto, Kunihiro; and Osawa, Hidefumi, 5,610,999, Cl. 382-272.000.

Yamamoto, Makoto, to Yozan Inc. Method of co-centering two images using histograms of density change. 5,610,993, Cl. 382-124.000.

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Yamamoto, Setsuko; Ogino, Kazuya; Hayashi, Narutohsi; and Omura, Takashi, to Sumitomo Chemical Company, Limited. Dye containing polarizing film. 5,609,796, Cl. 252-585.000.

Yamamoto, Shigeru: *See—*
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Yamamoto, Takeyuki; Sugimoto, Yasuyuki; Wakagi, Itaru; Murakata, Shinichi; and Murata, Yasuzo, to Kabushiki Kaisha Pilot. Ballpoint pen containing an aqueous ink composition. 5,609,432, Cl. 401-209.000.

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Hamaguchi, Maki; Yamamoto, Tetsuya; Suzuki, Tetsuo; Yamamuro, Hideki; and Chosokabe, Hiroshi, 5,609,959, Cl. 428-408.000.

Yamamoto, Tomomi: *See—*
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Yamamoto, Toshiaki, to Research Triangle Institute. Methods and apparatus for controlling toxic compounds using catalysis-assisted non-thermal plasma. 5,609,736, Cl. 204-164.000.

Yamamoto, Yasuhiro; and Sato, Koichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Signal processing device. 5,610,840, Cl. 364-514.00R.

Yamamura, Isao: *See—*
Inagaki, Akihiro; and Yamamura, Isao, 5,610,443, Cl. 257-788.000.

Yamamuro, Hideki: *See—*
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Yamamuro, Kouji: *See—*
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Yamanaka, Ken; and Ugawa, Hiroaki, to Hewlett-Packard Company. Synchronization signal generating device. 5,610,952, Cl. 375-371.000.

Yamanaka, Tetsuo: *See—*
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.

Yamanashi, Fumiyoshi: *See—*
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Yamanashi, Takanori: *See—*
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Yamane, Yasukuni: *See—*
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Yamanishi, Hirokazu: *See—*
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Yamanouchi, Koichi: *See—*
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Yamashita, Eizo, to Mitsubishi Denki Kabushiki Kaisha. Analog/digital converting circuit. 5,610,605, Cl. 341-139.000.

Yamashita, Kyoji; Odanaka, Shinji; Kurimoto, Kazumi; and Umimoto, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Semiconductor device having reduced gate overlapping capacitance. 5,610,430, Cl. 257-412.000.

Yamashita, Masaaki: *See—*
Yoshimi, Naoto; Watanabe, Toyofumi; Yamashita, Masaaki; Ookuma, Toshiyuki; and Miyoshi, Tatsuya, 5,609,968, Cl. 428-623.000.

Yamashita, Masakazu; Furusawa, Shigeharu; Abe, Masao; Mizuno, Tomohiro; and Miyasaka, Hidekatsu, to Pioneer Electronic Corporation. Centering device of an optical disc player. 5,610,900, Cl. 369-271.000.

Yamashita, Miyuki, to Hirakawa Kogyo Sha Co., Ltd. Photographing method and photosensitive material printing apparatus utilizing the same. 5,610,682, Cl. 355-51.000.

Yamashita, Senji. Flexible form member and method of forming through hole by means of the form member. 5,608,991, Cl. 52-2.170.

Yamashita, Shinji: *See—*

Uehara, Masao; Saito, Katsuyuki; Goto, Masahito; Yamashita, Shinji; Uchikubo, Akinobu; Miyashita, Akihiro; Nakagawa, Takehiro; Kobayashi, Kazunari; Murata, Akira; Ogawa, Mototsugu; and Yamaguchi, Seiji, 5,609,561, Cl. 600-112.000.
Yamashita, Tetsuhiro; Hirai, Koji; and Fujii, Masaki, to Mazda Motor Corporation. Traction control system for vehicles. 5,609,218, Cl. 180-197.000.
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Yamauchi, Mineo: *See*—
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Yamazaki, Shigeru: *See*—
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Yamazaki, Shunpei; Kadono, Masaya; Itoh, Kenji; Takayama, Toru; Arai, Yasuyuki; and Ishida, Noriya, to Semiconductor Energy Laboratory Co., Inc. Apparatus for microwave processing in a magnetic field. 5,609,774, Cl. 216-69.000.
Yamin, Michael A.: *See*—
Founds, Henry W.; Yamin, Michael A.; Bucala, Richard J.; and Cerami, Anthony, 5,610,076, Cl. 436-518.000.
Yanagawa, Naoharu, to Pioneer Electronic Corporation. Optical pickup apparatus having means to eliminate crosstalk in a focus error signal. 5,610,883, Cl. 369-44.230.
Yanagidate, Masaharu, to Olympus Optical Co., Ltd. Optical information reproducing apparatus for detecting track crossing direction and track crossing number from reflected light extending over a plurality of tracks. 5,610,884, Cl. 369-44.280.
Yanagihara, Hirokazu; and Takezawa, Shirou, to Koito Manufacturing Co., Ltd. Vehicular lamps, and apparatus and method for molding the same. 5,609,407, Cl. 362-61.000.
Yanagisawa, Mitsuo, to Pearl Musical Instrument, Co. Multi-faced beater for drums. 5,610,351, Cl. 84-422.100.
Yanagisawa, Ryozo: *See*—
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuicbiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, 5,610,838, Cl. 364-508.000.
Yanagiya, Satoshi; Matsuda, Noboru; and Baba, Yoshiro, to Kabushiki Kaisha Toshiba. Semiconductor device having a buried insulated gate. 5,610,422, Cl. 257-330.000.
Yang, Dominic C.: *See*—
Bantu, Nageshwer R.; Brunsvold, William R.; Hefferon, George J.; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic C., 5,609,989, Cl. 430-270.100.
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Yang, Lau S.; and Klang, Jeffrey A., to ARCO Chemical Technology, L.P. Process for making a polyetherester by insertion of a carboxylic acid into a polyether. 5,610,205, Cl. 522-102.000.
Yang, Renhui: *See*—
Clark, Ross G.; Jin, Hongkui; Paoni, Nicholas F.; and Yang, Renhui, 5,610,134, Cl. 514-2.000.
Yang, Shu Shu: *See*—
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Yang, Tsung-Hsun. High-torsion ratchet mechanism assembly for a ratchet screwdriver. 5,609,078, Cl. 81-63.100.
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Yap, Daniel, to Hughes Aircraft Company. Substrate system for optoelectronic/microwave circuits. 5,611,008, Cl. 385-14.000.
Yap, Loo T., to BOC Group, Inc., The. Incinerator for incinerating halogenated organic compounds. 5,609,104, Cl. 110-235.000.
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Yarnall, Robert G., Jr.; and Yarnall, Robert G., Sr., 5,610,588, Cl. 340-573.000.
Yarnell, Larry; and South, Bobbie E., to Gates Corporation, The. Ethylene-alpha-olefin belting. 5,610,217, Cl. 524-397.000.
Yasuda, Hiroyuki, to Sony Corporation. Method and processor for reliably processing interrupt demands in a pipeline processor. 5,611,061, Cl. 395-591.000.
Yasui, Kazuhiko: *See*—
Nomura, Toshimitsu; Sato, Akira; Ishizaki, Minoru; Takeda, Kaoru; and Yasui, Kazuhiko, 5,610,599, Cl. 340-931.000.
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Ohmi, Tadahiro; Ikeda, Nobukazu; Dohi, Ryosuke; Nagai, Kunio; Ideta, Eiji; Nishino, Koji; Yamaji, Michio; Shinohara, Tsutomu; and Yasumoto, Naofumi, 5,609,077, Cl. 81-57.130.
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Yasunishi, Norio: *See*—
Yamamoto, Kunihiko; Matsui, Kiyohisa; Ishii, Yutaka; Yasunishi, Norio; Nakamura, Toshihiro; Washio, Hajime; and Taniguchi, Koki, 5,610,628, Cl. 345-100.000.
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Yedlin, Monte A.; and Yedlin, Mary M. Decorative ornament and method of making same. 5,609,928, Cl. 428-5.000.
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Yeh, Ching-Lin. Method of making embroidery. 5,609,119, Cl. 112-475.230.
Yeh, Ming-Hsiung: *See*—
Lee, Chi-Long; and Yeh, Ming-Hsiung, 5,609,555, Cl. 493-210.000.
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Yodoshi, Keiichi; Ibaraki, Akira; Shono, Masayuki; Honda, Shoji; Ikegami, Takatoshi; Hayashi, Nobuhiko; Furusawa, Koutarou; Tajiri, Atushi; Ishikawa, Toru; Matsukawa, Kenichi; Miyake, Teruaki; Goto, Takenori; Matsumoto, Mitsuaki; Ide, Daisuke; and Bessho, Yasuyuki, to Sanyo Electric Co., Ltd. Semiconductor laser with a self sustained pulsation. 5,610,096, Cl. 437-129.000.
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Tanaka, Tsutomu; Doi, Shinzo; Yokota, Hiroshi; Ueno, Chishio; and Ito, Yukiko, 5,610,841, Cl. 364-514.00R.
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Yokota, Koichi: *See*—
Kaneda, Akihiro; Yokota, Koichi; and Nakamura, Masao, 5,609,013, Cl. 57-200.000.
Yokota, Masahiro; Kojima, Tadahiro; and Makimoto, Shuuji, to Kabushiki Kaisha Toshiba. Color cathode-ray tube. 5,610,473, Cl. 313-402.000.
Yokouchi, Hideya: *See*—
Tomoe, Aruga; Yokouchi, Hideya; and Fujimori, Kazuyoshi, 5,610,782, Cl. 360-99.040.
Yokoyama, Kazumasa: *See*—
Iwao, Toru; Hirai, Kenichi; Kondoh, Nobuo; Yamanouchi, Koichi; and Yokoyama, Kazumasa, 5,610,169, Cl. 514-334.000.
Yokoyama, Thomas W.: *See*—
Cai, Rubing; and Yokoyama, Thomas W., 5,609,963, Cl. 428-515.000.
Yokoyama, Toshiyuki: *See*—
Nakazato, Shinsaku; and Yokoyama, Toshiyuki, 5,609,266, Cl. 220-703.000.
Yokoyama, Tsugio; and Shimizu, Takeshi, to Kabushiki Kaisha Toshiba. Fast reactor core. 5,610,956, Cl. 376-172.000.
Yoneda, Hiroshi; Yoshida, Shigeto; Katoh, Kenichi; Yamane, Yasukuni; and Ishii, Yutaka, to Sharp Kabushiki Kaisha. Semiconductor device. 5,610,414, Cl. 257-99.000.
Yonehara, Takao: *See*—
Ozaki, Masaharu; and Yonehara, Takao, 5,610,094, Cl. 437-62.000.
Yoo, Seung-Moon; Haq, Ejaz ul; Choi, Yun-Ho; Cho, Soo-In; Chin, Dae-Je; Kang, Nam-Soo; and Lee, Seung-Hun, to Samsung Electronics Co., Ltd. Semiconductor memory device. 5,610,869, Cl. 365-222.000.
Yoon, Dong-Seon: *See*—
Ji, Jeong-Beom; and Yoon, Dong-Seon, 5,610,757, Cl. 359-295.000.

Yoon, Tae-Goon, to Daewoo Electronics Co., Ltd. Reset signal generation method and apparatus for use with a microcomputer. 5,610,541, Cl. 327-143.000.
York, David W.: *See*—
Donoghue, Scott J.; Fitzgibbon, Kay E.; France, Paul A. R. G.; Hall, Robin G.; Wilkinson, Carole P. D.; York, David W.; and Schmitt, John C., 5,610,131, Cl. 510-444.000.
Yoshida, Hirokazu, to Japan I.D. Tech. Inc. Forced compression type pump. 5,609,479, Cl. 418-153.000.
Yoshida, Kazuo: *See*—
Kanda, Takashi; Yoshida, Kazuo; and Ohnishi, Masahito, 5,610,807, Cl. 363-43.000.
Yoshida, Shigeaki: *See*—
Takeda, Hiroshi; Yoshida, Shigeaki; and Katsura, Koyo, 5,610,622, Cl. 345-13.000.
Yoshida, Shigeto: *See*—
Yoneda, Hiroshi; Yoshida, Shigeto; Katoh, Kenichi; Yamane, Yasukuni; and Ishii, Yutaka, 5,610,414, Cl. 257-99.000.
Yoshida, Takeo; and Narumi, Manabu, to Shin-Etsu Chemical Co., Ltd. Liquid silicone rubber compositions. 5,610,230, Cl. 524-730.000.
Yoshida, Toshio; and Kanno, Yukihiro, to NEC Corporation. Battery capacity detector. 5,610,525, Cl. 324-433.000.
Yoshida, Yoshihide: *See*—
Yamada, Atsushi; Okuda, Tadayuki; Hagiwara, Masaki; and Yoshida, Yoshihide, 5,609,652, Cl. 29-882.000.
Yoshihara, Toshiyuki; Anayama, Hideki; Yamazaki, Itaru; Ainoya, Hideyuki; Hirano, Hidetoshi; and Kimura, Mayumi, to Canon Kabushiki Kaisha. Electrophotographic apparatus and process cartridge featuring an electrophotographic photosensitive member having a surface layer of lubricative fluorine-containing resin powder. 5,610,690, Cl. 399-167.000.
Yoshii, Minoru; Miyazaki, Kyoichi; and Takeuchi, Seiji, to Canon Kabushiki Kaisha. Displacement detecting system, an expose apparatus, and a device manufacturing method employing a scale whose displacement is detected by a selected detection head. 5,610,715, Cl. 356-356.000.
Yoshii, Minoru: *See*—
Semoku, Koichi; Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; and Saitoh, Kenji, 5,610,718, Cl. 356-363.000.
Yoshikawa, Satoshi: *See*—
Ueda, Katsunori; Fukui, Toyoaki; and Yoshikawa, Satoshi, 5,609,139, Cl. 123-492.000.
Yoshikawa, Yuji; Tanaka, Kouichi; Yamamoto, Kenji; and Yamaya, Masaaki, to Shin-Etsu Chemical Co., Ltd. Coating agents for electrophotography carriers and electrophotography carrier particles. 5,609,958, Cl. 428-402.000.
Yoshimatsu, Kentaro: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,610,320, Cl. 549-72.000.
Yoshimi, Naoto; Watanabe, Toyofumi; Yamashita, Masaaki; Ookuma, Toshiyuki; and Miyoshi, Tatsuya, to NKK Corporation. Weldable colored steel sheet. 5,609,968, Cl. 428-623.000.
Yoshimura, Shinichi: *See*—
Asou, Yoshio; Matsumoto, Takumi; and Yoshimura, Shinichi, 5,609,343, Cl. 277-152.000.
Yoshimura, Yuichiro: *See*—
Tokioka, Masaki; Tanaka, Atsushi; Yoshimura, Yuichiro; Yanagisawa, Ryozo; Kobayashi, Katsuyuki; and Sato, Hajime, 5,610,838, Cl. 364-508.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, to Eisai Co., Ltd. Pyrimidinyl or pyridinyl sulfonamide substituted compounds. 5,610,304, Cl. 544-327.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hirovuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, to Eisai Co., Ltd. Sulfonamide phenyl substituted compounds. 5,610,320, Cl. 549-72.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Nakazato, Shinsaku; and Yokoyama, Toshiyuki, 5,609,266, Cl. 220-703.000.
Yoshizuka, Ken, to Mita Industrial Co., Ltd. Image forming apparatus including a system for copying an image on two different sheet types. 5,610,700, Cl. 399-45.000.
Yoshizumi, Keiichi; Haga, Satoru; Ikeda, Shuji; Makuta, Kiichi; and Fukazawa, Takeshi, to Hitachi, Ltd.; and Hitachi ULSI Engineering Corp. Semiconductor integrated circuit device. 5,610,856, Cl. 365-154.000.
Yost, David A.: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,610,069, Cl. 436-49.000.
Young, Alastair J.: *See*—
Spooner, John; Young, Alastair J.; and Chippendale, John P., 5,609,073, Cl. 74-650.000.
Young, Douglas L. G.: *See*—
Clarke-Pounder, Ian J. H.; and Young, Douglas L. G., 5,609,729, Cl. 162-380.000.
Young, Richard H., Sr.: *See*—
Hansen, Michael R.; and Young, Richard H., Sr., 5,609,727, Cl. 162-184.000.
Youngers, Stephen A.: *See*—
Moffitt, John M.; and Youngers, Stephen A., 5,609,464, Cl. 414-685.000.
Yovichin, Albert J.; Dunn, William F.; Dutt, William R.; Houck, Richard C.; Hyde, David D.; Ridha, Raouf A.; and Swanson, Harry R., to Goodyear Tire & Rubber Company, The. Low-cost runout sensor with high frequency response and negligible stiction in the direction of travel. 5,610,329, Cl. 73-146.000.
Yozan Inc.: *See*—
Yamamoto, Makoto, 5,610,993, Cl. 382-124.000.
Yu, Chien H. Automobile steering wheel locking device. 5,609,050, Cl. 70-209.000.
Yu, Robert C. U.; and Schneider, Eric J., to Xerox Corporation. Photoreceptor cleaning apparatus and method. 5,610,699, Cl. 399-350.000.
Yu, Wen-chung. Mobile phone holder having security and charging function. 5,610,979, Cl. 379-455.000.
Yuan, Ding; Henein, Hani; and Fallavollita, John A., to Altamat Inc. Method for producing droplets. 5,609,919, Cl. 427-421.000.
Yuan, Hansen A.: *See*—
Kohrs, Douglas W.; Yuan, Hansen A.; and Stassen, David W., 5,609,636, Cl. 623-17.000.
Yuan, Han-Tzong; Kim, Tae S.; and Plumton, Donald L., to Texas Instruments Incorporated. Method of making a vertical FET using epitaxial overgrowth. 5,610,085, Cl. 437-29.000.
Yuan, Ying: *See*—
Barry, Clifton E., III; and Yuan, Ying, 5,610,198, Cl. 514-712.000.
Yuasa, Kazuhiro: *See*—
Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,610,693, Cl. 399-272.000.
Yuasa, Shigeki: *See*—
Noritake, Masaki; and Yuasa, Shigeki, 5,609,675, Cl. 106-35.000.
Yuge, Yutaka: *See*—
Watanabe, Hidenori; Hoshi, Junichi; Yuge, Yutaka; Okita, Akira; and Kuwabara, Hideshi, 5,610,435, Cl. 257-629.000.
Yumex Corporatioo: *See*—
Tamaoki, Kenji; Shimamoto, Hideaki; Kawada, Masaki; Morita, Shigeru; Fujino, Michio; and Hamazaki, Youzi, 5,609,344, Cl. 277-157.000.
Yumoto, Yoshiji: *See*—
Miyamoto, Hidetoshi; Shiraki, Shinji; Yumoto, Yoshiji; and Miura, Takao, 5,609,988, Cl. 430-270.100.
Yun, Dong H.: *See*—
Kwon, Chol H.; Hong, Hyung-Ki; Kim, Sung T.; Lee, Kyu C.; Yun, Dong H.; Shin, Hyun W.; and Park, Hyeon S., 5,609,096, Cl. 99-468.000.
Yuspa, Stuart H.: *See*—
Stanwell, Caroline; Yuspa, Stuart H.; and Burke, Terrence R., Jr., 5,610,185, Cl. 514-544.000.
Zabsky, John M.: *See*—
Berriman, Lester P.; Zabsky, John M.; Davis, James W.; and Hylton, William M., 5,609,026, Cl. 60-286.000.
Zadini, Filiberto P.; and Zadini, Giorgio. Intravaginal expandable member for prevention of vaginal bleeding. 5,609,586, Cl. 604-358.000.
Zadini, Giorgio: *See*—
Zadini, Filiberto P.; and Zadini, Giorgio, 5,609,586, Cl. 604-358.000.
Zafar, Imtiaz, to Delco Electronics Corporation. Backlite antenna for AM/FM automobile radio having broadband FM reception. 5,610,619, Cl. 343-713.000.
Zagala, Angela: *See*—
Hogen-Esch, Thieo; and Zagala, Angela, 5,610,248, Cl. 526-193.000.
Zahn, Richard A., Jr.; and Stepp, Merle L., to Security Screens, Inc. Alarm screen with built-in battery operated sounding unit. 5,610,582, Cl. 340-550.000.
Zakharov, Michael V.: *See*—
Ivanov, Vladimir V.; Danilov, Uriy I.; and Zakharov, Michael V., 5,610,477, Cl. 313-573.000.
Zalewski, John D.: *See*—
Brissenden, James S.; and Zalewski, John D., 5,609,540, Cl. 475-202.000.
Zandian, Said: *See*—
Estrada, James; and Zandian, Said, 5,611,022, Cl. 395-109.000.

Zarrabi, Joseph H., to Polaroid Corporation. Miniaturized intracavity frequency-doubled blue laser. 5,610,934, Cl. 372-70.000.
Zarrabian, Morteza, to Ventritex, Inc. Crystal oscillator and back-up circuit with overspeed and underspeed detection. 5,610,561, Cl. 331-49.000.
ZB B Technologies, Inc.: *See*—
Eidler, Phillip A.; and Hughes, Michael R., 5,610,802, Cl. 361-831.000.
Zedel: *See*—
Petzl, Paul; and Maurice, Alain, 5,608,953, Cl. 24-573.500.
Zeeck, Axel; Bindseil, Kai U.; and Boddien, Claudia, to Ciba-Geigy Corporation. Macrolides and the use thereof. 5,610,178, Cl. 514-450.000.
Zehndbauer, Alfons: *See*—
Hauner, Friedrich; and Zehndbauer, Alfons, 5,608,948, Cl. 19-288.000.
Zehnder, James W., II: *See*—
Johnston, Gary L.; Zehnder, James W., II; Kruckemeyer, William C.; Oliver, Michael L.; and Longhouse, Richard E., 5,609,401, Cl. 303-155.000.
Zeilinger, Michael S.: *See*—
Meacham, Patrick E.; Zeilinger, Michael S.; Meacham, Clifford B.; and Huffstutler, M. Conrad, Jr., 5,609,110, Cl. 105-355.000.
Zelin, Michael P.: *See*—
Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., 5,609,824, Cl. 422-83.000.
Zenharusern, Frederic; and Wickramasinghe, Hemantha K., to International Business Machines Corporation. Assembly suitable for identifying a code sequence of a biomolecule in a gel embodiment. 5,609,744, Cl. 204-606.000.
Zexel Corporation: *See*—
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,609,203, Cl. 165-153.000.
Zeytoonjian, Douglas; Zeytoonjian, Frederick, Sr.; Kramer, Harold; and Allen, Paul, to Cart Watch, Inc. Golf cart control and monitoring apparatus and system. 5,610,586, Cl. 340-571.000.
Zeytoonjian, Frederick, Sr.: *See*—
Zeytoonjian, Douglas; Zeytoonjian, Frederick, Sr.; Kramer, Harold; and Allen, Paul, 5,610,586, Cl. 340-571.000.
ZF Friedrichshafen AB: *See*—
Gruhle, Wolf-Dieter; Sigg, Peter; Deiss, Harald; Schwab, Manfred; and Danz, Wolfgang, 5,609,068, Cl. 74-336.00R.
Zhang, Jinshan; and Anani, Anaba A., to Motorola, Inc. Carbon electrode materials for electrochemical cells and method of making same. 5,609,844, Cl. 423-449.600.
Zhang, Shu huai: *See*—
Matsushita, Shigenori; Yamamoto, Shigeru; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,609,547, Cl. 477-110.000.
Zhang, Suru: *See*—
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; and Zhang, Suru, 5,610,263, Cl. 528-272.000.
Zhang, Tai Y., to Envistech Inc. Video compression using an iterative error data coding method. 5,610,657, Cl. 348-415.000.
Zheng, Joe; and Li, Wenhua, to United Parcel Service of America, Inc. Method and apparatus for compressing images containing optical symbols. 5,610,995, Cl. 382-183.000.
Ziegler, Harald: *See*—
Eberlein, Wolfgang; Mihm, Gerhard; Engel, Wolfhard; Rudolf, Klaus; Doods, Henri; Ziegler, Harald; and Entzeroth, Michael, 5,610,155, Cl. 514-220.000.
Ziemins, Uldis A.: *See*—
Freedenberg, Candace J. F.; Cobb, Joshua M.; and Ziemins, Uldis A., 5,609,780, Cl. 219-121.730.
Zier, Peter: *See*—
Thom, Heinz; Neumann, Alfred; Johansen, Wolfgang; and Zier, Peter, 5,609,381, Cl. 294-119.100.
Zimek, Dieter: *See*—
Abel, Burkhard; Birkenfeld, Gerhard; Lücking, Manfred; Vogt, Ulrich P.; and Zimek, Dieter, 5,609,460, Cl. 414-334.000.
Zimmer, Inc.: *See*—
Price, Howard C.; Lin, Steve T.; Hawkins, Michael E.; and Parr, Jack E., 5,609,638, Cl. 623-18.000.
Zimmerman, Amy C., to Chesebrough-Ponds USA Co., Division of Conopco, Inc. Rheopectic cosmetic cleanser. 5,610,125, Cl. 510-123.000.
Zimmerman, Eric; Rosa, Jim; Love, Steve; and DiMuzio, Catherine, to COBE Laboratories, Inc. Graphical operator machine interface and method for information entry and selection in a dialysis machine. 5,609,770, Cl. 210-739.000.
Zimmerman, Wendy: *See*—
Farrell, Roberta L.; Hadar, Yitzhak; Wendler, Philip A.; and Zimmerman, Wendy, 5,609,724, Cl. 162-72.000.
Zimny, Diana D.: *See*—
Benedict, Harold W.; Zimny, Diana D.; and Bange, Donna W., 5,609,706, Cl. 156-137.000.
Zirngibl, Martin, to Lucent Technologies Inc. Monolithically integrated circuits having dielectrically isolated, electrically controlled optical devices and process for fabricating the same. 5,610,095, Cl. 437-129.000.
Zomeworks Corporation: *See*—
Harrison, David C., 5,609,200, Cl. 165-104.190.
Zou, Xueming; Patrick, John L.; and Mastandrea, Nicholas J., to Picker International, Inc. Gradient and RF coil system without RF shield. 5,610,521, Cl. 324-318.000.
Zullo, Ivo: *See*—
Feduzi, Rino; Soncini, Cristina; Celada, Antonella; Selvaggio, Salvatore; and Zullo, Ivo, 5,609,986, Cl. 430-264.000.
Zumbrunnen, Michael L.: *See*—
Donner, Edward O.; and Zumbrunnen, Michael L., 5,608,966, Cl. 29-884.000.
Zupancic, Anton Z.: *See*—
Deucher, Joseph S.; Zupancic, Anton Z.; and Udovic, Nancy A., 5,610,968, Cl. 378-199.000.
Zurcher, John A.: *See*—
Foster, Donald D.; Laffey, Martin S.; and Zurcher, John A., 5,609,299, Cl. 239-304.000.
Zyhowski, Gary J.; Nalewajek, David; and Stachura, Leonard M., to Allied-Signal Inc. Surfactants and drying and drycleaning compositions which utilize said surfactants. 5,610,128, Cl. 510-288.000.
ZymoGenetics, Inc.: *See*—
Day, Joseph R.; Albers, John J.; Lofton-Day, Catherine E.; and Adolphson, Janet L., 5,610,019, Cl. 435-7.100.
1994 Weyer Family Limited Partnership: *See*—
Weyer, Paul P., 5,609,090, Cl. 92-5.00R.
3D Systems, Inc.: *See*—
Allison, Joseph W.; Smalley, Dennis R.; Hull, Charles W.; and Jacobs, Paul F., 5,609,813, Cl. 264-401.000.
Childers, Craig M.; and Hull, Charles W., 5,609,812, Cl. 264-401.000.
Vinson, Wayne A.; Little, Frank F.; Schwarzinger, Wolfgang; Lewis, Mark A.; Uziel, Yehoram; Pitlak, Robert T.; and Spence, Stuart T., 5,610,824, Cl. 364-474.240.
3Dlabs Ltd.: *See*—
Maund, Andrew P.; Neave, John W.; Trevett, Neil F.; Moore, Simon J.; and Wilson, Malcolm E., 5,611,064, Cl. 395-419.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Thomas M.: *See*—
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., Re. 35,473, Cl. 417-347.000.
Atherton, Richard T.: *See*—
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., Re. 35,473, Cl. 417-347.000.
Cremonesi, Alessandro: *See*—
Frigerio, Giulio; and Cremonesi, Alessandro, Re. 35,472, Cl. 341-156.000.
Crow, Harry K.: *See*—
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., Re. 35,473, Cl. 417-347.000.
Dow Corning Corporation: *See*—
Woodard, John T.; and Metevia, Virgil L., Re. 35,474, Cl. 424-448.000.
Fehn, Berthold A.: *See*—
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., Re. 35,473, Cl. 417-347.000.
Frigerio, Giulio; and Cremonesi, Alessandro, to SGS-Thomson Microelectronics, S.r.l. High speed analog-to-digital converter using cells with back-to-back capacitors for both rough and fine approximation. Re. 35,472, Cl. 341-156.000.
Fuji Electric Co., Ltd.: *See*—
Kuroda, Masami; Nakamura, Youichi; and Furusho, Noboru, Re. 35,475, Cl. 430-59.000.
Furusho, Noboru: *See*—
Kuroda, Masami; Nakamura, Youichi; and Furusho, Noboru, Re. 35,475, Cl. 430-59.000.
Kuroda, Masami; Nakamura, Youichi; and Furusho, Noboru, to Fuji Electric Co., Ltd. Photosensitive member for electrophotography with thiophene containing moiety on charge transport compound. Re. 35,475, Cl. 430-59.000.
Langston Corporation, The: *See*—
Weishew, Joseph J., Re. 35,471, Cl. 101-208.000.
Levy, Sidney, to Raychem Corporation. Electrical connector block. Re. 35,476, Cl. 439-411.000.
Metevia, Virgil L.: *See*—
Woodard, John T.; and Metevia, Virgil L., Re. 35,474, Cl. 424-448.000.
Nakamura, Youichi: *See*—
Kuroda, Masami; Nakamura, Youichi; and Furusho, Noboru, Re. 35,475, Cl. 430-59.000.
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., to Schwing America, Inc. Sludge flow measuring system. Re. 35,473, Cl. 417-347.000.
Raychem Corporation: *See*—
Levy, Sidney, Re. 35,476, Cl. 439-411.000.
Schwing America, Inc.: *See*—
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., Re. 35,473, Cl. 417-347.000.
SGS-Thomson Microelectronics, S.r.l.: *See*—
Frigerio, Giulio; and Cremonesi, Alessandro, Re. 35,472, Cl. 341-156.000.
Weishew, Joseph J., to Langston Corporation, The. Seal for fountain chambered doctor blade for a flexographic printing press. Re. 35,471, Cl. 101-208.000.
Woodard, John T.; and Metevia, Virgil L., to Dow Corning Corporation. Transdermal drug delivery devices with amine-resistant silicone adhesives. Re. 35,474, Cl. 424-448.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

ABB Flakt, Inc.: *See*—
Gehri, Dennis C.; Adams, Richard L.; and Phelan, John H., B1 4,197,278, Cl. 423-243.080.
Adams, Richard L.: *See*—
Gehri, Dennis C.; Adams, Richard L.; and Phelan, John H., B1 4,197,278, Cl. 423-243.080.
Alcon Laboratories, Inc.: *See*—
El Hage, Sami G., B1 4,978,213, Cl. 351-212.000.
Carr, Gary B. Dental retro-filling preparation tool and method. B1 5,094,617, Cl. 433-119.000.
Clayton, Richard A. Air operated toy gun. B1 5,186,156, Cl. 124-59.000.
El Hage, Sami G., to Alcon Laboratories, Inc. Apparatus for determining the contour of the cornea of a human eye. B1 4,978,213, Cl. 351-212.000.
Gehri, Dennis C.; Adams, Richard L.; and Phelan, John H., to ABB Flakt, Inc. Sequential removal of sulfer oxides from hot gases. B1 4,197,278, Cl. 423-243.080.
Mitsubishi Chemical Corporation: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Otsuka, Shigenori; and Nozomi, Mamoru, B1 4,725,519, Cl. 430-58.000.
Murayama, Tetsuo: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Otsuka, Shigenori; and Nozomi, Mamoru, B1 4,725,519, Cl. 430-58.000.
Nagano, Masashi, to Shimano Inc. Crank axle unit for a bicycle. B1 5,243,879, Cl. 74-594.200.
Nozomi, Mamoru: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Otsuka, Shigenori; and Nozomi, Mamoru, B1 4,725,519, Cl. 430-58.000.
Ono, Hitoshi: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Otsuka, Shigenori; and Nozomi, Mamoru, B1 4,725,519, Cl. 430-58.000.
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CLASSIFICATION OF PATENTS

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CLASS 208

122 5,609,750
133 5,609,751
144 5,609,752

CLASS 209

5 5,609,256

CLASS 210

150 5,609,753
151 5,609,754
179 5,609,755
198.2 5,609,756
232 5,609,757
244 5,609,758
266 5,609,759
416.1 5,609,760
493.1 5,609,761
500.24 5,609,762
502.1 5,609,763
511 5,609,764
638 5,609,765
662 5,609,766
665 5,609,767
691 5,609,768
704 5,609,769
739 5,609,770
800 5,609,771

CLASS 211

13 5,609,257
40 5,609,258
66 5,609,259

CLASS 212

279 5,609,260
292 5,609,261

CLASS 215

219 5,609,262
252 5,609,263

CLASS 216

14 5,609,772
20 5,609,773
69 5,609,774
77 5,609,775

CLASS 218

57 5,610,381

CLASS 219

76.14 5,609,776
121.48 5,609,777
121.69 5,609,778
121.71 5,609,779
121.73 5,609,780
121.84 5,609,781
132 5,609,782
137 WM 5,609,783
385 5,609,784
388 5,609,785
702 5,609,786

CLASS 220

203.13 5,609,264
421 5,609,265
703 5,609,266
751 5,609,267

CLASS 221

2 5,609,268
48 5,609,269
202 5,609,270

CLASS 222

145.6 5,609,271
147 5,609,272
215 5,609,273
262 5,609,274
413 5,609,275
520 5,609,276

CLASS 224

148.3 5,609,277
153 5,609,278
160 5,609,279
163 5,609,280
5,609,281
576 5,609,282
678 5,609,283

CLASS 225

1 5,609,284

CLASS 227

179.1 5,609,285

CLASS 228

56.3 5,609,286
123.1 5,609,287
157 5,609,288
173.6 5,609,289
206 5,609,290
212 5,609,291
246 5,609,292

CLASS 229

3.5 R 5,609,293

CLASS 235

379 5,610,382
386 5,610,383
435 5,610,384
467 5,610,385
472 5,610,386
5,610,387

CLASS 238

9 5,609,294
84 5,609,295

CLASS 239

43 5,609,296
135 5,609,297
289 5,609,298
304 5,609,299
332 5,609,300
423 5,609,301
526 5,609,302
542 5,609,303
585.4 5,609,304
590.3 5,609,305
591 5,609,306

CLASS 241

73 5,609,307
301 5,609,308

CLASS 242

282 5,609,309
334.6 5,609,310
405.1 5,609,311

CLASS 244

17.11 5,609,312
54 5,609,313
134 A 5,609,314
163 5,609,315

CLASS 248

123.11 5,609,316
206.5 5,609,317
311.2 5,609,318
316.7 5,609,319
329 5,609,320
534 5,609,321
558 5,609,322

CLASS 249

193 5,609,323

CLASS 250

216 5,610,389
5,610,390
223 B 5,610,391
226 5,610,392
227.14 5,610,393
231.17 5,610,394
239 5,610,395
252.1 5,610,396
282 5,610,397
339.12 5,610,398
341.1 5,610,399
345 5,610,400
367 5,610,401
369 5,610,402
370.09 5,610,403
5,610,404
372 5,610,405
492.22 5,610,406
559.24 5,610,407

CLASS 251

292 5,609,324

CLASS 252

3 5,609,787
62.54 5,609,788
62.56 5,609,789
182.2 5,610,408
299.61 5,609,790
299.63 5,609,791
301.4 F 5,609,792
301.4 S 5,609,793
341 5,609,794
500 5,609,795
585 5,609,796
589 5,609,797

CLASS 254

132 5,609,325

CLASS 256

12.5 5,609,326
24 5,609,327

CLASS 257

59 5,610,409
76 5,610,410
77 5,610,411
85 5,610,412
97 5,610,413
99 5,610,414
149 5,610,415
186 5,610,416
202 5,610,417
306 5,610,418
315 5,610,419
5,610,420
321 5,610,421
330 5,610,422
344 5,610,424
358 5,610,425
360 5,610,426
362 5,610,427
399 5,610,428
401 5,610,429
412 5,610,430
415 5,610,431
492 5,610,432
531 5,610,433
619 5,610,434
629 5,610,435
669 5,610,436
670 5,610,437
682 5,610,438
688 5,610,439
713 5,610,440
774 5,610,441
787 5,610,442
788 5,610,443

CLASS 261

78.2 5,609,798

CLASS 264

3.3 5,610,444
12 5,609,799
29.6 5,609,800
40.5 5,609,801
46.5 5,609,802
46.6 5,609,803
56 5,609,804
134 5,609,805
136 5,609,806
177.11 5,609,807
210.7 5,609,808
5,609,809
219 5,609,810
255 5,609,811
401 5,609,812
5,609,813
5,609,814
414 5,609,815
517 5,609,816
564 5,609,817

CLASS 267

136 5,609,328
141 5,609,329
154 5,609,331

CLASS 269

16 5,609,332

CLASS 270

58.09 5,609,333

CLASS 271

188 5,609,334
302 5,609,335

CLASS 273

138.2 5,609,337
156 5,609,338
255 5,609,339
448 5,609,340
5,609,341

CLASS 277

81 R 5,609,342
152 5,609,343
157 5,609,344
180 5,609,345

CLASS 280

11.2 5,609,346
14.2 5,609,347
250.1 5,609,348
280 5,609,349
476.1 5,609,350
611 5,609,351
689 5,609,352
707 5,609,353
728.2 5,609,354
728.3 5,609,355
731 5,609,356
734 5,609,357
735 5,609,358
736 5,609,359
740 5,609,360
741 5,609,361
5,609,362
743.2 5,609,363
777 5,609,364
5,609,365
788 5,609,366
808 5,609,367

CLASS 285

12 5,609,368
93 5,609,369
319 5,609,370

CLASS 290

38 R 5,610,445

CLASS 292

164 5,609,371
200 5,609,372
229 5,609,373

CLASS 293

102 5,609,374

CLASS 294

25 5,609,375
27.1 5,609,376
65 5,609,377
82.19 5,609,378
87.2 5,609,379
104 5,609,380
119.1 5,609,381

CLASS 296

37.8 5,609,382
39.1 5,609,383
180.4 5,609,384
188 5,609,385
204 5,609,386
214 5,609,387
217 5,609,388

CLASS 297

37 5,609,389
55 5,609,390
127 5,609,391
237 5,609,392
256.13 5,609,393
284.4 5,609,394
452.55 5,609,395
473 5,609,396

CLASS 299

67 5,609,397

CLASS 300

21 5,609,398

CLASS 303

113.4 5,609,399
119.2 5,609,400
155 5,609,401

CLASS 307

10.5 5,610,446
38 5,610,447
39 5,610,448
43 5,610,449
46 5,610,450
66 5,610,451
89 5,610,452
116 5,610,453
147 5,610,454
400 5,610,455

CLASS 310

58 5,610,456
68 B 5,610,457
68 R 5,610,458
5,610,459
82 5,610,460
89 5,610,461
90 5,610,462
90.5 5,610,463
156 5,610,464
211 5,610,465
239 5,610,466
5,610,467
323 5,610,468

CLASS 312

265.4 5,609,402

CLASS 313

25 5,610,469
143 5,610,470
309 5,610,471
318.12 5,610,472
402 5,610,473
406 5,610,474
414 5,610,475
493 5,610,476
573 5,610,477

CLASS 315

169.1 5,610,478
226 5,610,479
308 5,610,480
382 5,610,481
500 5,610,482

CLASS 318

139 5,610,483
286 5,610,484
432 5,610,485
439 5,610,486
560 5,610,487
568.11 5,610,488
571 5,610,489
611 5,610,490
625 5,610,491
701 5,610,492
801 5,610,493

CLASS 320

2 5,610,494
6 5,610,495
13 5,610,496
15 5,610,497
39 5,610,498

CLASS 322

25 5,610,499
100 5,610,500

CLASS 323

207 5,610,501
222 5,610,502
234 5,610,509
283 5,610,503
5,610,504
312 5,610,505
313 5,610,506
350 5,610,507
358 5,610,508

CLASS 324

95 5,610,510
106 5,610,511
127 5,610,512
144 5,610,513

207.16 5,610,514
209 5,610,515
226 5,610,516
233 5,610,517
235 5,610,518
247 5,610,519
318 5,610,520
5,610,521
319 5,610,522
330 5,610,523
376 5,610,524
433 5,610,525
522 5,610,526
639 5,610,527
660 5,610,528
760 5,610,529
763 5,610,530
765 5,610,531
771 5,610,532

CLASS 326

33 5,610,533
39 5,610,534
5,610,535
40 5,610,536
59 5,610,537
87 5,610,538
127 5,610,539

CLASS 327

51 5,610,540
143 5,610,541
5,610,542
158 5,610,543
198 5,610,544
205 5,610,545
261 5,610,546
350 5,610,547
374 5,610,548
536 5,610,549
543 5,610,550
552 5,610,551
560 5,610,552

CLASS 330

10 5,610,553
52 5,610,554
84 5,610,555
124 D 5,610,556
261 5,610,557

CLASS 331

2 5,610,558
5,610,559
8 5,610,560
49 5,610,561

CLASS 333

22 R 5,610,562
128 5,610,563
173 5,610,564
185 5,610,565
194 5,610,566
252 5,610,567

CLASS 335

306 5,610,568

CLASS 336

200 5,610,569

CLASS 338

20 5,610,570
22 R 5,610,571
5,610,572

CLASS 340

146.2 5,610,573
426 5,610,574
429 5,610,575
5,610,576
465 5,610,577
479 5,610,578
517 5,610,579
541 5,610,580
547 5,610,581
550 5,610,582
566 5,610,583
568 5,610,584
5,610,585
571 5,610,586
572 5,610,587
573 5,610,588
5,610,589
5,610,590
618 5,610,591
628 5,610,592
653 5,610,593
658 5,610,594
825.23 5,610,596
825.52 5,610,595
825.78 5,610,597
870.07 5,610,598
931 5,610,599
976 5,610,600

CLASS 341

22 5,610,601
5,610,602
51 5,610,603
138 5,610,604
139 5,610,605
143 5,610,606
5,610,608
156 Re.35,472

CLASS 342

13 5,610,609
25 5,610,610
89 5,610,611
195 5,610,612
5,610,613
352 5,610,614
357 5,610,615
5,610,616
373 5,610,617

CLASS 343

713 5,610,618
5,610,619
725 5,610,620

CLASS 345

3 5,610,621
13 5,610,622
60 5,610,623
84 5,610,624
5,610,625
89 5,610,626
99 5,610,627
100 5,610,628
104 5,610,629
119 5,610,630
161 5,610,631
163 5,610,632

CLASS 346

74.2 5,610,633

CLASS 347

5 5,610,634
7 5,610,635
8 5,610,636
10 5,610,637
14 5,610,638
19 5,610,639
32 5,610,640
33 5,610,641
50 5,610,642
54 5,610,643
87 5,610,644
93 5,610,645
131 5,610,646
137 5,610,647
174 5,610,648
175 5,610,649
210 5,610,650
250 5,610,651
256 5,610,652

CLASS 348

42 5,610,659
110 5,610,653
229 5,610,654
373 5,610,655
5,610,656
415 5,610,657
416 5,610,658
423 5,610,660
446 5,610,661
452 5,610,662
554 5,610,663
564 5,610,664
5,610,665
676 5,610,666
796 5,610,667

CLASS 349

10 5,610,735
39 5,610,739
42 5,610,736
43 5,610,738
47 5,610,737
110 5,610,740
113 5,610,741
122 5,610,742
124 5,610,743

CLASS 351

62 5,610,668
122 5,610,669
176 5,610,670
200 5,610,671
205 5,610,672
210 5,610,673
212 B1 4,978,213

CLASS 352

85 5,610,674

CLASS 353

26 A 5,609,403
101 5,609,404
122 5,609,405

CLASS 354

173.1 5,610,677

CLASS 355

51 5,610,682
53 5,610,683
55 5,610,684
67 5,610,685
72 5,610,686
80 5,610,687

CLASS 356

28 5,610,703
28.5 5,610,704
5,610,705
70 5,610,706
121 5,610,707
128 5,610,708
218 5,610,709
237 5,610,710
247 5,610,711
335 5,610,712
342 5,610,713
350 5,610,714
356 5,610,715
357 5,610,716
358 5,610,717
363 5,610,718
374 5,610,719

CLASS 358

296 5,610,720
396 5,610,721
400 5,610,724
403 5,610,725
442 5,610,726
448 5,610,727
449 5,610,728
463 5,610,729
494 5,610,730
496 5,610,731
525 5,610,732

CLASS 359

9 5,610,733
16 5,610,734
118 5,610,744
139 5,610,745
140 5,610,746
145 5,610,747
154 5,610,748
167 5,610,749
172 5,610,750
197 5,610,751
198 5,610,752
205 5,610,753
210 5,610,754
5,610,755
267 5,610,756
295 5,610,757
319 5,610,758
328 5,610,759
332 5,610,760
407 5,610,761
535 5,610,762
619 5,610,763
630 5,610,764
633 5,610,765
683 5,610,766
692 5,610,767
727 5,610,768
745 5,610,769
807 5,610,770
832 5,610,771
841 5,610,772
850 5,610,773

CLASS 360

15 5,610,774
24 5,610,775
53 5,610,776
77.03 5,610,777
94 5,610,778
99.04 5,610,779
5,610,780
5,610,782
99.06 5,610,781
103 5,610,783
5,610,784
104 5,610,785
122 5,610,786
130.21 5,610,787
132 5,610,788
5,610,789

CLASS 361

56 5,610,790
5,610,791
103 5,610,792
111 5,610,793
206 5,610,794
225 5,610,795
303 5,610,796
681 5,610,797
683 5,610,798
752 5,610,799
761 5,610,800
784 5,610,801
831 5,610,802

CLASS 362

61 5,609,406
5,609,407
66 5,609,408
101 5,609,409
226 5,609,410
234 5,609,411
249 5,609,412
364 5,609,413
366 5,609,414
396 5,609,415

CLASS 363

21 5,610,803
5,610,804
37 5,610,805
41 5,610,806
43 5,610,807

CLASS 364

131 5,610,808
140 5,610,809
167.01 5,610,810
420 5,610,813
424.026 5,610,814
424.027 5,610,815
424.028 5,610,816
424.056 5,610,817
424.07 5,610,818
426.05 5,610,819
434.023 5,610,820
444.2 5,610,821
449.5 5,610,822
474.15 5,610,823
474.24 5,610,824
485 5,610,825
487 5,610,826
5,610,827
489 5,610,828
5,610,829
490 5,610,830
491 5,610,831
5,610,832
5,610,833
492 5,610,834
497 5,610,835
498 5,610,836
508 5,610,837
5,610,838
514 C 5,610,839
514 R 5,610,840
5,610,841
551.02 5,610,842
553 5,610,843
557 5,610,844
565 5,610,845
571.01 5,610,846
576 5,610,847
724.07 5,610,848
725 5,610,849
769 5,610,850

CLASS 365

145 5,610,852
5,610,853
149 5,610,854
5,610,855
154 5,610,856
162 5,610,857
185.05 5,610,858
185.18 5,610,860
185.22 5,610,859
185.24 5,610,861
189.05 5,610,862
189.09 5,610,863
193 5,610,864
200 5,610,865
201 5,610,866
5,610,867
205 5,610,868
222 5,610,869
226 5,610,870
230.01 5,610,873
230.03 5,610,871
230.06 5,610,872
236 5,610,874

CLASS 366

34 5,609,416
137 5,609,417

CLASS 367

75 5,610,875
139 5,610,876

CLASS 368

10 5,610,877
276 5,610,878

CLASS 369

13 5,610,879
5,610,880
32 5,610,881
36 5,610,882
44.23 5,610,883
44.28 5,610,884
5,610,885
44.29 5,610,886
44.35 5,610,887
47 5,610,888
75.2 5,610,889
77.2 5,610,890
5,610,891
5,610,892
84 5,610,893
112 5,610,894
5,610,895
121 5,610,896
124 5,610,897
126 5,610,898
249 5,610,899
271 5,610,900
275.1 5,610,901
289 5,610,902

CLASS 370

210 5,610,908
213 5,610,903
219 5,610,913
259 5,610,915
261 5,610,906
291 5,610,909
336 5,610,919
342 5,610,907
351 5,610,910
359 5,610,912
389 5,610,920
395 5,610,914
5,610,918
5,610,921
401 5,610,905
408 5,610,904
468 5,610,922
469 5,610,917
487 5,610,916
503 5,610,911

CLASS 371

5.1 5,610,923
22.1 5,610,925
22.3 5,610,926
5,610,927
37.1 5,610,928
40.1 5,610,929

CLASS 372

36 5,610,930
38 5,610,931
39 5,610,932
41 5,610,933
70 5,610,934
93 5,610,936

CLASS 373

72 5,610,935
108 5,610,937

CLASS 374

159 5,609,418

CLASS 375

202 5,610,938
206 5,610,939
208 5,610,940
222 5,610,941
242 5,610,942
243 5,610,943
260 5,610,944
5,610,945
269 5,610,946
282 5,610,947
324 5,610,948
330 5,610,949
350 5,610,950
364 5,610,951
371 5,610,952
373 5,610,953
375 5,610,954
376 5,610,955

CLASS 376

172 5,610,956
210 5,610,957
277 5,610,958
419 5,610,959
441 5,610,960
446 5,610,961
461 5,610,962

CLASS 378

7 5,610,963
15 5,610,964
34 5,610,965
58 5,610,966
154 5,610,967
199 5,610,968

CLASS 379

56 5,610,969
57 5,610,970
58 5,610,971
5,610,972
59 5,610,973
5,610,974
100 5,610,975
127 5,610,976
207 5,610,977
373 5,610,978
455 5,610,979

CLASS 380

4 5,610,980
25 5,610,981
5,610,982
48 5,610,983
49 5,610,984

CLASS 381

27 5,610,985
5,610,986
67 5,610,987
68.4 5,610,988
69 5,610,989
90 5,610,990
92 5,610,991
188 5,610,992

CLASS 382

124 5,610,993
152 5,610,994
183 5,610,995
187 5,610,996
218 5,610,997
224 5,610,998
272 5,610,999
294 5,611,000
297 5,611,001

CLASS 383

33 5,609,419
203 5,609,420

CLASS 384

125 5,609,421
278 5,609,422
518 5,609,423

CLASS 385

3 5,611,003
11 5,611,004
5,611,005
14 5,611,006
5,611,007
5,611,008
22 5,611,009
53 5,611,010
59 5,611,011
86 5,611,012
89 5,611,013
90 5,611,014
98 5,611,015
100 5,611,016
114 5,611,017

CLASS 386

75 5,610,723

CLASS 395

2.24 5,611,018
2.42 5,611,019
2.76 5,611,002
23 5,611,020
27 5,611,021
109 5,611,022
5,611,023
114 5,611,024
119 5,611,025
5,611,026
131 5,611,027
5,611,028
5,611,029
5,611,030
133 5,611,031

5,611,032
135 5,611,033
140 5,611,034
5,611,035
141 5,611,036
142 5,611,037
182.04 5,611,042
183.14 5,611,043
5,611,044
184.01 5,611,045
200.01 5,611,047
200.09 5,611,048
5,611,049
5,611,050
200.1 5,611,046
202 5,610,811
210 5,611,051
238 5,611,052
280 5,611,053
5,611,054
281 5,611,055
5,611,056
282 5,611,057
309 5,611,058
326 5,611,040
5,611,059
341 5,611,060
376 5,611,062
381 5,611,063
419 5,611,064
421.1 5,611,065
427 5,611,066
430 5,611,067
436 5,611,068
441 5,611,069
460 5,611,070
5,611,071
463 5,611,072
468 5,611,073
473 5,611,074
480 5,611,075
507 5,611,041
591 5,611,061
613 5,611,076
653 5,611,078
759 5,610,812
806 5,611,038
5,611,039

CLASS 396

51 5,610,681
106 5,610,680
315 5,610,675
355 5,610,676
373 5,610,678
516 5,610,679
630 5,611,077

CLASS 399

27 5,610,692
31 5,610,689
45 5,610,700
149 5,610,697
167 5,610,690
176 5,610,691
240 5,610,694
272 5,610,693
284 5,610,695
285 5,610,696
298 5,610,701
5,610,702
350 5,610,699
366 5,610,688
367 5,610,698

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61 5,609,424
120.01 5,609,425
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124 5,609,445
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105 5,609,452

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55.5 5,609,478
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207.1 5,609,876
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410 5,609,879
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451 5,609,882
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120 5,609,890
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302 5,609,994
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		5,610,936	5,609,301	5,609,826	5,610,451		5,610,833		5,609,934
04	:	5,608,940	5,609,325	5,609,836	5,610,452		5,610,843		5,610,052
		5,608,994	5,609,337	5,609,864	5,610,463		5,610,847		5,610,054
		5,609,051	5,609,346	5,609,885	5,610,471		5,610,848		5,610,099
		5,609,248	5,609,361	5,609,889	5,610,486		5,610,901		5,610,140
		5,609,488	5,609,378	5,609,893	5,610,511		5,610,903		5,610,217
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		5,609,624	5,609,419	5,609,928	5,610,532		5,610,921		5,610,429
		5,609,692	5,609,437	5,609,938	5,610,534		5,610,922		5,610,470
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		5,610,345	5,609,489	5,609,972	5,610,554		5,610,967		5,610,875
		5,610,425	5,609,493	5,609,991	5,610,556		5,610,980		5,610,915
		5,610,478	5,609,496	5,610,008	5,610,557		5,610,984		5,610,940
		5,610,495	5,609,498	5,610,022	5,610,561		5,611,001		5,611,044
		5,610,601	5,609,499	5,610,041	5,610,563		5,611,004	09 :	5,608,962
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		5,610,902	5,609,509	5,610,083	5,610,583		5,611,009		5,609,082
		5,610,933	5,609,564	5,610,086	5,610,598		5,611,022		5,609,152
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		5,608,920	5,609,586	5,610,175	5,610,635		5,611,043		5,609,659
		5,608,924	5,609,598	5,610,184	5,610,642		5,611,046		5,609,827
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		5,609,052	5,609,632	5,610,287	5,610,707		5,611,066	10 :	5,610,205
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41 : 378,340
378,415
378,416
42 : 378,317
378,393
378,413
378,417
378,455
44 : 378,360

378,466
378,456
47 : 378,364
378,423
378,438
48 : 378,339
378,406
378,408
378,439
378,463
378,465
49 : 378,342
378,405
53 : 378,396
55 : 378,329

PLANT PATENTS

06 : 9,824
9,825
25 : 9,821
42 : 9,822

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Vol. 1196 Number 3

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March 18, 1997



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UNITED STATES PATENT AND TRADEMARK OFFICE
March 18, 1997 Volume 1196 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on March 15, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,293,646 through 5,295,266
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 13, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,907,295 through 4,908,876
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 11, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,574,396 through 4,575,870
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED January 8, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,379	06/808,635	03/24/87
(4,492,313)	(06/614,860)	(01/08/85)
Re. 32,604	06/793,579	02/16/88
(4,492,920)	(06/275,977)	(01/08/85)
Re. 33,132	06/940,721	12/19/89
(4,492,597)	(06/379,944)	(01/08/85)
Re. 33,134	07/004,181	12/26/89
(4,492,161)	(06/307,537)	(01/08/85)
Re. 33,271	06/805,825	07/24/90
(4,492,579)	(06/487,839)	(01/08/85)
Re. 33,576	07/384,146	04/23/91
(4,795,013)	(07/040,507)	(01/03/89)
Re. 33,744	07/417,046	11/19/91
(4,492,004)	(06/446,503)	(01/08/85)
Re. 34,024	07/635,942	08/11/92
(4,795,035)	(06/901,744)	(01/03/89)
Re. 34,235	07/614,036	04/27/93
(4,492,381)	(06/631,748)	(01/08/85)
4,491,994	06/520,472	01/08/85
4,492,001	06/427,579	01/08/85
4,492,002	06/487,503	01/08/85
4,492,021	06/408,573	01/08/85
4,492,026	06/421,404	01/08/85
4,492,028	06/441,671	01/08/85
4,492,029	06/490,666	01/08/85
4,492,037	06/558,903	01/08/85
4,492,052	06/464,679	01/08/85
4,492,057	06/413,119	01/08/85
4,492,064	06/329,843	01/08/85
4,492,066	06/465,249	01/08/85
4,492,078	06/540,186	01/08/85
4,492,085	06/406,124	01/08/85
4,492,089	06/531,054	01/08/85
4,492,100	06/281,704	01/08/85
4,492,102	06/445,393	01/08/85
4,492,110	06/499,825	01/08/85
4,492,117	06/439,581	01/08/85
4,492,122	06/394,990	01/08/85
4,492,123	06/364,099	01/08/85
4,492,126	06/378,509	01/08/85
4,492,127	06/437,730	01/08/85
4,492,142	06/382,309	01/08/85
4,492,145	06/500,533	01/08/85
4,492,155	06/480,273	01/08/85
4,492,157	06/473,418	01/08/85
4,492,158	06/473,831	01/08/85
4,492,159	06/473,842	01/08/85
4,492,160	06/473,843	01/08/85
4,492,164	06/469,537	01/08/85
4,492,167	06/496,256	01/08/85
4,492,184	06/541,530	01/08/85

Patent Number	Serial Number	Issue Date
4,492,193	06/281,517	01/08/85
4,492,194	06/560,154	01/08/85
4,492,200	06/494,446	01/08/85
4,492,201	06/491,704	01/08/85
4,492,205	06/434,181	01/08/85
4,492,211	06/409,226	01/08/85
4,492,212	06/406,203	01/08/85
4,492,220	06/441,703	01/08/85
4,492,230	06/395,309	01/08/85
4,492,235	06/347,988	01/08/85
4,492,245	06/416,738	01/08/85
4,492,250	06/486,914	01/08/85
4,492,256	06/393,635	01/08/85
4,492,272	06/358,121	01/08/85
4,492,284	06/411,025	01/08/85
4,492,289	06/319,713	01/08/85
4,492,291	06/347,378	01/08/85
4,492,308	06/571,642	01/08/85
4,492,311	06/293,729	01/08/85
4,492,312	06/393,985	01/08/85
4,492,320	06/416,305	01/08/85
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4,492,415	06/354,501	01/08/85
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4,492,431	06/374,680	01/08/85
4,492,436	06/455,003	01/08/85
4,492,438	06/350,242	01/08/85
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4,492,686	06/433,874	01/08/85
4,492,687	06/550,082	01/08/85
4,492,695	06/484,611	01/08/85
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4,492,712	06/542,704	01/08/85
4,492,714	06/469,900	01/08/85
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Patent Number	Serial Number	Issue Date
5,177,742	07/759,696	01/05/93
5,177,744	07/577,352	01/05/93
5,177,759	07/530,600	01/05/93
5,177,775	07/669,465	01/05/93
5,177,784	07/613,168	01/05/93
5,177,798	07/752,298	01/05/93

Reissue Application Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,381,811, Re. S.N. 08/755,778, Nov. 22, 1996, Cl. 134/167R FURNACE CLEANING APPARATUS, Thomas B Boisture, Owner of Record: *C. H. Heist Corp., Baytown, Texas,* Attorney or Agent: Marc L. Delflache, Ex. Gp.: 3405

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,366,318, Reexam. No. 90/004,537, Feb. 3, 1997, Cl. 405/036, SUMP ASSEMBLY, Rodney E. Brancher, Owner of Record: *Environ Products, Inc., Lionville, Pa.,* Attorney or Agent: None, Ex. Gp.: 3506, Requester: David H. Voorhees, Merek & Voorhees, Alexandria, Va.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
December 9, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
108,905	71/089,761	03/07/1916
108,917	71/090,034	03/07/1916
108,932	71/082,251	03/07/1916
108,953	71/091,025	03/07/1916
332,867	71/362,574	03/03/1936
332,869	71/359,693	03/03/1936
332,884	71/371,074	03/03/1936
332,885	71/371,072	03/03/1936
332,887	71/371,054	03/03/1936
332,888	71/371,033	03/03/1936
332,898	71/369,222	03/03/1936
332,920	71/365,914	03/03/1936
332,921	71/366,164	03/03/1936
332,925	71/366,816	03/03/1936
332,938	71/363,998	03/03/1936
332,948	71/370,636	03/03/1936
332,949	71/370,697	03/03/1936
622,481	71/685,104	03/06/1956
622,496	71/653,564	03/06/1956
622,506	71/675,195	03/06/1956
622,508	71/683,426	03/06/1956
622,509	71/683,613	03/06/1956
622,511	71/678,490	03/06/1956
622,518	71/684,564	03/06/1956
622,529	71/682,275	03/06/1956
622,534	71/693,577	03/06/1956
622,536	71/687,916	03/06/1956
622,538	71/689,712	03/06/1956
622,539	71/690,104	03/06/1956
622,547	71/668,189	03/06/1956
622,548	71/679,528	03/06/1956
622,549	71/679,529	03/06/1956
622,555	71/688,482	03/06/1956
622,558	71/692,967	03/06/1956
622,560	71/619,321	03/06/1956
622,562	71/673,724	03/06/1956
622,564	71/678,067	03/06/1956
622,574	71/689,410	03/06/1956
622,583	71/693,244	03/06/1956
622,590	71/678,939	03/06/1956
622,591	71/682,469	03/06/1956
622,593	71/687,573	03/06/1956
622,594	71/687,574	03/06/1956
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622,596	71/687,581	03/06/1956
622,597	71/687,591	03/06/1956
622,599	71/690,007	03/06/1956
622,607	71/682,956	03/06/1956
622,631	71/690,891	03/06/1956
622,633	71/691,113	03/06/1956
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622,666	71/694,738	03/06/1956
622,667	71/694,752	03/06/1956
622,668	71/694,755	03/06/1956
622,679	71/685,881	03/06/1956
622,682	71/690,207	03/06/1956
622,686	71/690,649	03/06/1956
622,691	71/691,472	03/06/1956
622,697	71/688,063	03/06/1956
622,698	71/690,932	03/06/1956
622,699	71/691,545	03/06/1956
622,700	71/691,684	03/06/1956
622,708	71/669,117	03/06/1956
622,713	71/678,671	03/06/1956
622,723	71/687,655	03/06/1956
622,729	71/682,179	03/06/1956
622,730	71/682,180	03/06/1956
622,739	71/684,530	03/06/1956
622,742	71/686,301	03/06/1956
622,743	71/672,653	03/06/1956
622,745	71/682,872	03/06/1956
622,751	71/687,782	03/06/1956
622,757	71/674,792	03/06/1956
622,762	71/678,095	03/06/1956
622,764	71/684,267	03/06/1956
622,769	71/684,780	03/06/1956
622,785	71/579,126	03/06/1956
622,788	71/674,386	03/06/1956
622,791	71/676,103	03/06/1956
622,816	71/692,630	03/06/1956
622,818	71/661,195	03/06/1956
622,820	71/672,536	03/06/1956
622,827	71/680,852	03/06/1956
622,829	71/685,819	03/06/1956
622,837	71/670,609	03/06/1956
622,843	71/665,923	03/06/1956
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1,034,561	73/024,008	03/02/1976
1,034,562	73/033,919	03/02/1976
1,034,563	73/034,246	03/02/1976
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1,034,576	73/048,822	03/02/1976
1,034,578	73/052,041	03/02/1976
1,034,579	73/052,246	03/02/1976
1,034,582	73/058,690	03/02/1976
1,034,583	73/058,743	03/02/1976
1,034,587	73/061,065	03/02/1976
1,034,589	73/033,749	03/02/1976
1,034,592	73/006,410	03/02/1976
1,034,594	73/014,841	03/02/1976
1,034,598	73/041,739	03/02/1976
1,034,600	73/042,018	03/02/1976
1,034,602	73/048,243	03/02/1976
1,034,607	73/051,261	03/02/1976
1,034,610	73/053,535	03/02/1976
1,034,611	73/054,134	03/02/1976
1,034,612	73/054,136	03/02/1976
1,034,613	73/054,917	03/02/1976
1,034,616	73/058,545	03/02/1976
1,034,617	73/012,515	03/02/1976
1,034,619	73/024,422	03/02/1976
1,034,623	73/026,372	03/02/1976
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1,034,626	73/040,210	03/02/1976
1,034,627	73/037,774	03/02/1976
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1,034,644	73/029,464	03/02/1976
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1,034,648	73/017,469	03/02/1976
1,034,652	73/048,247	03/02/1976
1,034,656	73/053,559	03/02/1976
1,034,657	73/053,604	03/02/1976
1,034,658	73/054,237	03/02/1976
1,034,663	73/014,574	03/02/1976
1,034,664	73/017,373	03/02/1976
1,034,665	73/020,611	03/02/1976
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1,034,667	73/027,388	03/02/1976
1,034,669	73/031,535	03/02/1976
1,034,670	73/031,615	03/02/1976
1,034,675	73/034,773	03/02/1976
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1,034,680	73/037,179	03/02/1976
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1,034,708	73/057,329	03/02/1976
1,034,709	73/060,037	03/02/1976
1,034,711	73/060,462	03/02/1976
1,034,713	73/061,002	03/02/1976
1,034,714	73/061,064	03/02/1976
1,034,718	73/061,905	03/02/1976
1,034,723	73/026,064	03/02/1976
1,034,725	73/030,702	03/02/1976
1,034,728	73/039,149	03/02/1976
1,034,729	73/039,150	03/02/1976
1,034,730	73/041,309	03/02/1976
1,034,731	73/042,090	03/02/1976
1,034,732	73/042,111	03/02/1976
1,034,738	73/026,409	03/02/1976
1,034,747	73/053,286	03/02/1976
1,034,748	73/056,073	03/02/1976
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1,034,753	73/024,065	03/02/1976
1,034,756	73/045,564	03/02/1976
1,034,758	73/054,936	03/02/1976
1,034,761	73/055,132	03/02/1976
1,034,763	73/055,553	03/02/1976
1,034,764	73/055,554	03/02/1976
1,034,766	73/056,147	03/02/1976
1,034,772	73/056,911	03/02/1976
1,034,774	73/011,444	03/02/1976
1,034,776	73/042,105	03/02/1976
1,034,782	73/036,479	03/02/1976
1,034,787	73/042,195	03/02/1976
1,034,793	73/024,247	03/02/1976
1,034,794	73/024,248	03/02/1976
1,034,796	73/055,292	03/02/1976
1,034,797	73/012,132	03/02/1976
1,034,801	73/028,769	03/02/1976
1,034,802	73/030,309	03/02/1976
1,034,806	73/032,261	03/02/1976
1,034,807	73/032,305	03/02/1976
1,034,808	73/032,488	03/02/1976
1,034,814	73/043,100	03/02/1976
1,034,821	73/048,239	03/02/1976
1,034,823	73/049,132	03/02/1976
1,034,824	73/049,938	03/02/1976
1,034,826	73/053,502	03/02/1976
1,034,827	73/055,287	03/02/1976
1,034,828	73/024,291	03/02/1976
1,034,830	73/046,835	03/02/1976
1,034,834	73/054,807	03/02/1976
1,034,835	73/054,837	03/02/1976
1,034,841	73/055,669	03/02/1976
1,034,842	73/056,011	03/02/1976
1,034,844	73/034,416	03/02/1976
1,034,852	73/041,076	03/02/1976
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1,034,856	73/049,047	03/02/1976
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1,034,863	73/038,026	03/02/1976
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1,034,875	73/028,363	03/02/1976
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1,034,898	73/043,099	03/02/1976
1,034,900	73/047,667	03/02/1976
1,034,904	73/019,018	03/02/1976
1,034,910	73/027,231	03/02/1976
1,034,911	73/030,796	03/02/1976
1,034,915	73/036,849	03/02/1976
1,034,921	73/047,331	03/02/1976
1,034,923	73/049,137	03/02/1976
1,034,925	73/049,814	03/02/1976
1,034,926	73/050,363	03/02/1976
1,034,930	73/052,046	03/02/1976
1,034,932	73/052,465	03/02/1976
1,034,933	73/052,835	03/02/1976
1,034,934	73/052,836	03/02/1976
1,034,936	73/052,916	03/02/1976
1,034,939	73/052,919	03/02/1976
1,034,941	73/052,921	03/02/1976
1,034,942	73/052,922	03/02/1976
1,034,943	73/052,923	03/02/1976
1,034,947	73/022,045	03/02/1976
1,034,948	73/026,430	03/02/1976
1,034,951	73/031,114	03/02/1976
1,034,952	73/031,459	03/02/1976
1,034,955	73/040,757	03/02/1976
1,034,957	73/043,725	03/02/1976
1,034,958	73/050,470	03/02/1976
1,034,961	73/053,403	03/02/1976
1,034,962	73/013,256	03/02/1976
1,034,963	73/019,245	03/02/1976
1,034,964	73/033,393	03/02/1976
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1,034,977	73/040,628	03/02/1976
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Reg. Number	Serial Number	Reg. Date
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1,034,981	73/033,566	03/02/1976
1,034,984	73/052,976	03/02/1976
1,034,985	73/053,921	03/02/1976
1,034,989	73/061,763	03/02/1976
1,034,991	73/061,859	03/02/1976
1,034,992	73/061,860	03/02/1976
1,034,994	73/014,855	03/02/1976
1,034,998	73/037,662	03/02/1976
1,034,999	73/037,761	03/02/1976
1,035,001	73/014,579	03/02/1976
1,035,002	73/031,720	03/02/1976
1,035,003	73/041,249	03/02/1976
1,035,004	73/041,836	03/02/1976
1,035,005	73/047,248	03/02/1976
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1,035,008	73/011,657	03/02/1976
1,035,009	73/019,844	03/02/1976
1,035,010	73/032,235	03/02/1976
1,035,016	73/044,698	03/02/1976
1,035,020	73/050,410	03/02/1976
1,035,022	73/056,227	03/02/1976
1,035,024	73/019,548	03/02/1976
1,035,026	73/049,845	03/02/1976
1,035,028	73/011,166	03/02/1976
1,035,029	73/036,378	03/02/1976
1,035,032	73/005,915	03/02/1976
1,035,035	73/038,662	03/02/1976
1,035,038	73/048,417	03/02/1976
1,035,043	73/055,326	03/02/1976
1,035,045	73/000,555	03/02/1976
1,035,046	73/002,582	03/02/1976
1,035,047	73/006,698	03/02/1976
1,035,048	73/010,892	03/02/1976
1,035,053	73/034,528	03/02/1976
1,035,063	73/050,142	03/02/1976
1,035,065	73/050,753	03/02/1976
1,035,068	72/452,177	03/02/1976
1,035,070	72/432,073	03/02/1976
1,035,073	72/380,976	03/02/1976
1,035,076	72/454,757	03/02/1976
1,035,077	72/316,027	03/02/1976
1,035,078	72/411,791	03/02/1976
1,035,079	72/459,440	03/02/1976
1,035,080	72/317,574	03/02/1976
1,035,087	72/446,904	03/02/1976
1,035,088	72/467,099	03/02/1976
1,035,091	72/447,536	03/02/1976
1,035,099	73/018,424	03/02/1976
1,035,102	73/038,920	03/02/1976
1,035,103	73/026,805	03/02/1976
1,035,105	73/026,952	03/02/1976
1,035,106	73/064,097	03/02/1976
1,035,107	73/064,098	03/02/1976
1,035,108	73/064,099	03/02/1976
1,035,113	72/463,518	03/02/1976
1,035,115	72/453,830	03/02/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Pioneer Maclea, Inc., Baltimore, Md., Reg. No. 883,153, for the mark "HOBBYWOODS", Canc. No. 25,752.

Albert C. Constantine, Orlando, Fla., Reg. No. 798,190, for the mark "MARYLAND FRIED CHICKEN AND DESIGN", Canc. No. 25,732.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of January 1997:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	6
Patent Application-As-Filed, Regular	17	16
Patent Related File Wrapper	25	43
Patent Copy	10	6
Patent Assignments	10	10
Trademark Application-As-Filed, Expedited	7	8
Trademark Application-As-Filed, Regular	17	17
Trademark Related File Wrapper	25	24
Trademark Assignments	10	11
Trademark Registration, Expedited	5	7
Trademark Registration, Regular	14	12

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders.

Delivery of any specific copy will vary based on the availability of microfilm products and/or file accessibility. Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area).

February 6, 1997 WESLEY H. GEWEHR
Administrator for Information
Dissemination

Notice of Change in Procedures for Recording Inventors' Names

The Patent and Trademark Office (PTO) has received a number of complaints from the public regarding improper truncation of inventors' names as printed on the Letters Patent. Changes on the printed patent currently require the filing and processing of certificates of correction. In an effort to address these complaints, the PTO has decided to change the method of recording and printing inventors' names on the Letters Patent. This change in the manner in which inventors' names will be printed on the Letters Patent is not to be confused with an actual change in an inventors' name as it appears on the oath or declaration, which requires correction by way of a petition under 37 CFR 1.182 (see MPEP 605.04(c)).

Accordingly, the PTO printing contractor will be instructed to print inventors' names on the Letters Patent exactly as the names are typed on the oath or declaration. For example, an oath or declaration with a printed inventor's name of Jonathan Hohenhauser Smithfield Williams, Jr., and a signature which is legible as Jonathan H. S. Williams, Jr., would have the Letters Patent printed with Jonathan Hohenhauser Smithfield Williams, Jr. as the inventor.

In order to have the PTO's records parallel as much as possible the above-noted changes, effective immediately, Application Processing Division will begin to enter into PALM (the PTO's computerized database) each inventor's name as printed or typed in the oath or declaration. Since the relevant fields in the PALM system for inventors' given names and last name are each limited to 25 characters, the example given above would be entered into the PALM system as Jonathan Hohenhauser Smit Williams, Jr. This PALM entry would be reflected on the filing receipt mailed to applicants. While the name 'Smithfield' would be truncated in the PALM system to 'Smit' as a result of the 25 character limitation, the printed patent will contain the full name as indicated above.

There is a time lag between the PTO printing contractor's receipt of an application to be issued as a patent and the patent's actual issue date. Therefor, patents issued on or after June 17, 1997, will contain the inventors' full names exactly as they are printed on the oath or declaration.

In all applications filed on or after April 18, 1997, applicants are cautioned to give their full names in the oath or declaration exactly as they would like them to be printed on the Letters Patent. In applications filed before April 18, 1997, if applicants do not desire to have their full names printed on the Letters Patent as they are printed or typed in the oath or declaration (at least one given name must be typed or printed in full), they must either: (1) request correction at the time of payment of the issue fee; or (2) if the issue fee has been paid prior to April 18, 1997, request correction, as soon as possible, by writing to Box Issue Fee, Assistant Commissioner for Patents, Washington, D.C. 20231. The requested correction will be made if sufficient time remains for the PTO to complete technical preparation of the text to be printed on the Letters Patent.

February 13, 1997

EDWARD R. KAZENSKE
Deputy Assistant Commissioner for Patents

Errata

"All reference to Patent No. 5,570,799 to Nichol Farside of Pennsylvania for EASY-OPEN CLOSURE AND CONTAINER appearing in the Official Gazette of November 5, 1996 should be deleted since no patent was granted."

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37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/183,278	Jan. 14, 1994	Burkhard Katz	Multi-Image Compositing
08/186,390	Jan. 21, 1994	Patrick J. Loll Daniel Picot	Crystalline Prostaglandin H_2 Synthase
08/453,179	May 30, 1995	Kurt Matthew Hoffmeister	Tire Tread Pitch Bands
08/454,716	May 31, 1995	William O'Neill	System For Radiologically Scanning The Spine For Measuring Bone Density
08/476,546	June 6, 1995	Donald Paul Springer John S. Flaherty	Method And Apparatus For Cutting Rigid Materials, Particularly During Rescue Operations
08/477,364	June 7, 1995	Michael P. Vitek	Compositions And Methods For Advanced Gylcosylation Endproduct-Mediated Modulation of Amyloidosis
08/477,485	June 7, 1995	Robert T. Dooley	System For Organizing And Outputting Representations Of Business Elements Associated With An Enterprise
08/493,756	June 22, 1995	Ronald J. Easton	Aqueous Coating Composition
08/506,687	July 25, 1995	Maximillian R. Seidl	Single Sheet Feeder
08/511,264	Aug. 4, 1995	Maximillian R. Seidl	Process And Device To Form A Stack Of Grouped Pieced Of Material

08/512,971	Aug. 9, 1995	Thomas B. Johnson	Electromagnetic Actuator
08/515,963	Aug. 16, 1995	Edgar Zuckschwert	Integrated Driving System For Signal-Processing Devices
08/519,489	Aug. 25, 1995	Lee E. Nelson	Load Cell And Load Cell Beam Assembly Endproduct-Mediated Moduation Of Amyloidosis
08/531/147	Sept. 18, 1995	Maximillian R. Seidl	Process And Apparatus For Imprinting Of A Substrate Through Hot Stamping
08/537,340	July 24, 1995	Francois Brandy Jean Marie Pierret	Voltage Reference Circuit With Programmable Thermal Coefficient
08/551,877	Oct. 16, 1995	Nicholas Swales	Electronic Article Surveillance System
08/552,650	Nov. 3, 1995	Jerome Duc	Translumal Implantation Or Extraction Device
08/553,006	Nov. 3, 1995	Pamela B. Yost	High-Level Expression And Efficient Recovery Of Ubiquitin Fusion Proteins From Escherichia Coli
08/558,320	Nov. 15, 1995	Ronald L. Mathews Ramon C. Watt Frank J. Stark	Specimen Packaging System And Method Having Internal Shock Absorbing Body
08/571,346	Dec. 12, 1995	Alan Novy	Animal Feeding Nipple
08/581,852	Jan. 2, 1996	Zvi Har'El	Analytical Development And Verification Of Control-Intensive Finite State Machines
08/594,907	Jan. 31, 1996	Mark Imus	Multi-Chamber Continuous Sputter Coating System
08/605,415	Feb. 22, 1996	Lewis W. Fleischmann	Suction-Operated Linear Traction Drive For Underwater Handling Of Towed Arrays
08/606,051	Feb. 23, 1996	Arthur Curtis Hagan	Method And Apparatus For Joining Carpet And Plastic
08/614,304	March 12, 1996	Lawrence Cihanek	Point-of-Sale Merchandiser
08/622,817	March 27, 1996	Gary VanAmeyde	Apparatus For Repairing A Pipeline And Method For Using Same
08/624,844	March 25, 1996	Edward S.A. Zyszkowski	Systems For Analyzing And Computing Data Items
08/631,214	April 12, 1996	Thomas G. Lavine	Electrodeless EKG Sensor Sheet
08/642,691	May 3, 1996	Anthony D.T. Gorton	Coating Composition, Method Of Using It And Article Coated With Same
08/643,509	May 6, 1996	Ghassan Assi	For System And Method Of Automatic Call Barring In A Radio Telecommunications Network
08/670,648	June 26, 1996	James C. Hammar	Wafer Holder With Spindle Assembly And Wafer Holder Actuator
08/692, 567	Aug. 6, 1996	David C. Campbell	Insulating Oil Leak Containment
08/695,476	Aug. 12, 1996	Thomas R. Johnson	Trocar Flapper Valve

08/703,563	Aug. 26, 1996	Brian N. Fall	Deadlock Resolution Methods And Apparatus For Interfacing Concurrent And Asynchronous Buses
08/710,632	Sept. 18, 1996	Douglas L. Smith	Stable Bias Current Circuit For Operational Amplifier
08/724,581	Sept. 30, 1996	Gene W. Brown	Bead-Lock High Pressure Filter Utilizing A Stamped Metal
08/730,858	Oct. 18, 1996	Ynjiun P. Wang	Apparatus And Method For Processing A Machine Readable Document With Embedded Machine Instructions

Certificates of Correction For Week of March 18, 1997

				5,550,359	5,558,313	5,568,222	5,578,564
				5,550,674	5,558,320	5,568,287	5,578,594
				5,550,857	5,558,597	5,568,291	5,578,627
B1 4,974,949	5,407,813	5,502,388	5,535,382	5,552,096	5,558,603	5,568,293	5,578,785
B1 5,196,270	5,412,358	5,503,192	5,535,387	5,552,237	5,559,151	5,568,311	5,578,954
P. 09,628	5,417,187	5,503,878	5,535,945	5,552,777	5,559,207	5,568,486	5,579,066
D. 369,818	5,419,385	5,505,145	5,536,046	5,552,802	5,559,367	5,568,803	5,579,222
D. 374,066	5,424,127	5,507,005	5,537,083	5,552,803	5,559,704	5,569,024	5,579,624
D. 374,682	5,424,400	5,507,505	5,537,412	5,552,836	5,560,025	5,569,523	5,580,302
D. 374,787	5,425,408	5,507,917	5,538,847	5,552,858	5,560,496	5,569,889	5,580,304
D. 376,055	5,426,673	5,507,983	5,539,538	5,552,872	5,560,726	5,570,164	5,580,726
4,296,506	5,429,856	5,508,747	5,540,346	5,553,305	5,560,943	5,570,226	5,580,853
4,642,506	5,432,577	5,509,410	5,540,831	5,553,492	5,560,974	5,570,277	5,581,423
4,771,384	5,432,584	5,511,464	5,540,979	5,553,994	5,561,317	5,570,361	5,581,673
4,988,603	5,434,534	5,511,693	5,541,760	5,554,090	5,561,613	5,570,471	5,581,785
5,059,335	5,436,162	5,512,155	5,541,765	5,554,115	5,561,822	5,570,824	5,582,300
5,065,175	5,453,169	5,512,694	5,542,108	5,554,139	5,561,965	5,571,107	5,582,576
5,082,529	5,455,947	5,514,110	5,542,192	5,554,453	5,562,703	5,571,539	5,582,958
5,089,387	5,456,893	5,515,240	5,543,295	5,554,486	5,562,887	5,571,698	5,583,521
5,097,382	5,459,061	5,516,819	5,543,326	5,554,595	5,562,946	5,571,835	5,583,968
5,175,266	5,465,006	5,518,034	5,543,653	5,554,631	5,563,472	5,571,932	5,584,572
5,178,448	5,469,468	5,518,786	5,543,787	5,554,643	5,563,697	5,572,199	5,584,714
5,269,223	5,469,983	5,519,134	5,543,899	5,554,757	5,563,713	5,573,754	5,584,975
5,273,735	5,470,993	5,519,530	5,544,079	5,554,761	5,563,733	5,574,066	5,585,072
5,276,112	5,472,783	5,522,918	5,544,285	5,554,783	5,563,863	5,574,269	5,585,172
5,276,475	5,478,811	5,523,406	5,544,563	5,555,107	5,563,892	5,574,361	5,585,591
5,289,079	5,479,681	5,524,815	5,545,605	5,555,236	5,564,027	5,574,577	5,586,220
5,291,241	5,480,095	5,525,462	5,545,642	5,556,128	5,564,353	5,574,582	5,586,640
5,293,252	5,481,095	5,526,016	5,545,845	5,556,139	5,564,672	5,575,114	5,587,668
5,307,656	5,485,547	5,527,024	5,545,965	5,556,514	5,565,489	5,575,502	5,588,007
5,316,544	5,485,947	5,527,787	5,546,108	5,556,615	5,565,580	5,575,544	5,588,464
5,335,675	5,486,410	5,529,871	5,546,374	5,557,097	5,566,178	5,576,087	5,589,238
5,340,649	5,486,950	5,530,314	5,546,584	5,557,353	5,566,372	5,576,215	5,589,533
5,341,800	5,488,047	5,531,460	5,547,845	5,557,357	5,566,597	5,576,255	5,589,582
5,358,093	5,493,319	5,531,951	5,547,860	5,557,369	5,566,755	5,576,366	5,589,745
5,361,779	5,493,408	5,532,653	5,547,955	5,557,383	5,566,756	5,576,798	5,590,114
5,369,948	5,494,912	5,532,665	5,548,308	5,557,396	5,566,777	5,577,229	5,590,305
5,377,806	5,495,730	5,534,441	5,548,331	5,557,407	5,567,511	5,577,426	5,590,973
5,387,777	5,498,105	5,534,531	5,548,751	5,557,466	5,567,519	5,577,632	5,591,113
5,397,963	5,498,964	5,534,550	5,548,962	5,557,655	5,567,820	5,578,202	5,591,697
5,405,832	5,501,438	5,535,267	5,549,017	5,557,937	5,568,098	5,578,526	5,593,596

ERRATUM

In the Official Gazette notice entitled "Training for Public Users Automated Patent System for the Desktop Workstation" appearing at 1195 OG 45 (March 11, 1997), the telephone number listed for further information should have been printed as 703-308-3040.

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 20-24, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-22	EX	74/541,654	Merrilat Industries, Inc.	2(e)(4) (surname)	Refusal Affirmed		"PEMBERTON" [furniture cabinets, and drawers and doors therefor]		No
1-24	EX	74/606,076	MSI Crane & Equipment Co., Inc.	2(e)(2); Sec. 6 disclaimer requirement (as to word "SYSTEMS")	Refusal Reversed		"HOUSTON SYSTEMS MARINE PRODUCTS" [crane systems comprising cranes, rig skidding, leveling jacks, motion compensators, line-up stations, conveyors, power units and controls therefor, all sold as a unit]		No
1-24	EX (R)	74/368,375	Good News Communications, Inc.	whether the matter asserted for registration is generic; if not, whether the mark is registrable under Section 2(f)	Request for Reconsideration Denied [Refusal Affirmed (on both grounds)]		"MOVIEGUIDE" [books, magazines and teaching materials on the subject of rating movies and videos in accordance with a Biblical world view]		No
1-24	EX	74/362,978	Quotron Systems, Inc.	whether the term applicant seeks to register has been used as a service mark for the services cited in the registration	Refusal Affirmed		"ULTRACHART" [computerized financial information services in the field of data regarding all types of financial intruments and markets, indices and statistics relating thereto]		No
1-24	EX	74/166,615	American National Can Co.	de jure functionality of a product configuration; Sec. 2(f) distinctiveness of product configuration	Refusal Affirmed (on both grounds)		a can configuration that includes thirty flutes of equal width extending substantially the length of the sidewall of the can body [metal beverage containers]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
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Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
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Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
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Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
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Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/25/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/10/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/20/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/17/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/03/95
ELECTRICAL EXAMINING GROUPS		
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COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/09/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/19/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/16/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/23/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/23/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/19/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/31/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/30/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/06/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/22/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	12/13/96	—0—
Renewals (All Classes)	11/14/96	—0—
Section 12(c) Publications (All Classes)	07/26/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,596,446 (3157th)

LIQUID CRYSTAL DEVICES WITH PARTICULAR CHOLESTRIC PITCH-CELL THICKNESS RATIO

Colin M. Waters, and Edward P. Raynes, both of Malvern, England, assignors to The Secretary of State for Her Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

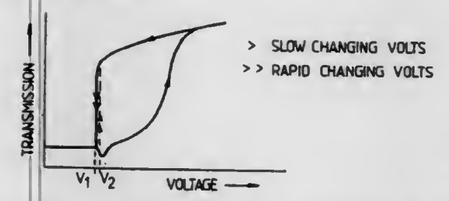
Reexamination Request No. 90/004,198, Apr. 2, 1996.

Reexamination Certificate for Patent 4,596,446, issued Jun. 24, 1986, Ser. No. 505,176, Jun. 17, 1983.

Claims priority, application United Kingdom, Jun. 29, 1982, 8218821

Int. Cl.[6] G02F *1/133;1/141;1/13*

U.S. Cl. 359—55



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

New claims **14–31** are added and determined to be patentable.

1. A liquid crystal display device comprising:

a layer of positive dielectric anistropy cholesteric liquid crystal material of natural pitch p and thickness d less than 20 μm contained between two parallel spaced cell walls, electrode structures on both cell walls arranged to form a plurality of addressable elements, a surface treatment on both cells wall in contact with the liquid crystal material to align liquid crystal molecules in a tilted homogeneous structure,

said surface alignment being matched to said cholesteric material to provide a progressive molecular twist of greater than π and less than 2π radians across said layer with a uniform tilt direction, the ratio of layer thickness d divided by pitch p laying between 0.5 and 1.0, said device further comprising means for selectively absorbing transmitted light depending on the molecular orientation of the liquid crystal material, two sets of driver circuits and a controlling logic circuit for repetitively applying voltage from a voltage source to the electrode structures in a multiplexed sequence, wherein

each of said addressed elements may be switched directly between a light transmissive state and a nontransmissive state with a sharp transmission/voltage characteristic without substantial hysteresis.

B1 4,714,339 (3158th)

THREE AND FIVE AXIS LASER TRACKING SYSTEMS

Kam C. Lau, Gaithersburg, and Robert J. Hocken, Barnesville, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

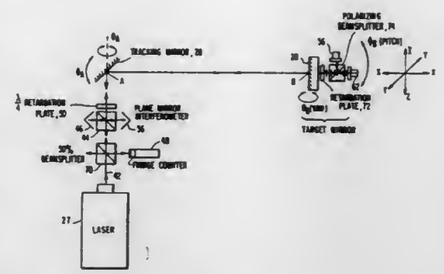
Reexamination Request No. 90/004,178, Mar. 12, 1996.

Reexamination Certificate for Patent 4,714,339, issued Dec. 22, 1987, Ser. No. 834,728, Feb. 28, 1996.

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—4.09

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



The patentability of claims **1–15** is confirmed.

7. A laser tracking system, comprising:

a laser light source associated with a tracking point

(A) for producing a beam of coherent light; a first rotatable planar reflector (**28**) associated with said tracking point for reflecting said beam from said laser light source into a first beam;

a retroreflector (**120**) associated with a target point

(B) for reflecting a beam incident thereupon into a second beam anti-parallel to said incident beam, said tracking point and said target point being separated by a separation;

control means for controlling said first reflector to direct said first beam to said retroreflector at said target point, said control means controlling said first reflector to rotate in at least two degrees of freedom, said control means including means (**128**) associated with said tracking point for determining the planar position of a light beam falling there-upon and receiving said second beam;

angular measuring means for measuring said at least two degrees of freedom; and

interferometric means (**124,48**) associated with said tracking point for measuring said separation by interfering said light beam from said laser light source before it is reflected by said first reflector.

B1 5,097,753 (3159th)

STEAM COOKING UTENSIL

Stuart Naft, Stratford, Conn., assignor to Black & Decker, Inc., Newark, Del.

Reexamination Request No. 90/004,159, Mar. 1, 1996.

Reexamination Certificate for Patent 5,097,753, issued Mar. 24, 1992, Ser. No. 712,816, Jun. 10, 1991.

Int. Cl.[6] A47J *27/04*

U.S. Cl. 99—341

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A steam cooking utensil comprising:

a base;

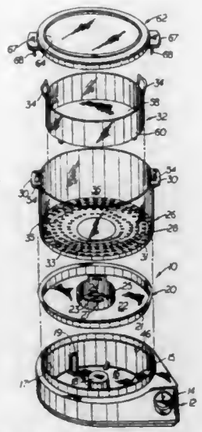
a boiling liquid reservoir defined by the base;

a heater mounted in the base to heat liquid contained in the boiling liquid reservoir;

a drip ring supported in said base above said liquid reservoir and including an imperforate surface and an opening axially aligned with said heater;

a drip ring supported in said base above said liquid reservoir and including an imperforate surface and an opening axially aligned with said heater;

a cooking bowl supported by said base and including a bottom tray having an imperforate surface axially aligned with the



opening in the drip ring and the heater and a food support surface extending radially outwardly from said imperforate surface, said food support surface being defined by a plurality of alternating hill-like ridges and valley-like channels extending radially outwardly in concentrically spaced rings, said food support surface including a plurality of vent holes for enabling steam generated in said reservoir to flow into said cooking bowl, said vent holes formed in the valley-like channels and the hill-like ridges maintain food supported by said bottom tray in spaced relation to said vent holes; and

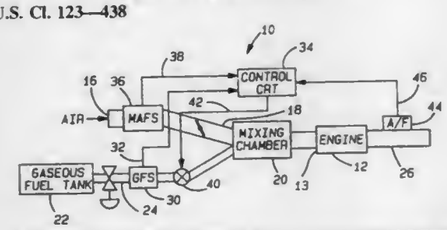
a lid for closing the open end of said cooking bowl.

B1 5,353,765 (3160th)

FUEL MANAGEMENT SYSTEM FOR A GASEOUS FUEL INTERNAL COMBUSTION ENGINE

George Saikalis, West Bloomfield, and Masatoshi Sugiura, Novi, both of Mich., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Reexamination Request No. 90/003,890, Jun. 26, 1995.
Reexamination Certificate for Patent 5,353,765, issued Oct. 11, 1994, Ser. No. 58,373, May 10, 1993.
Int. Cl.[6] F02M *7/00;21/04*
U.S. Cl. 123—438



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **3**, **7**, **8** and **10** are determined to be patentable as amended.

Claims **2**, **4–6**, **9** and **11–15**, dependent on an amended claim, are determined to be patentable.

New claims **16–24** are added and determined to be patentable.

1. For use in conjunction with an internal combustion engine having an air intake, a source of gaseous fuel, an internal combustion chamber, fuel flow means for fluidly connecting said gaseous fuel souce to said combustion chamber, air flow means for fluidly connecting said air intake to the combustion chamber, said gas and said air forming a combustible charge for the combustion chamber and valve means in said fuel flow means for variably controlling the rate of flow of fuel through said fuel flow means, a fuel management system comprising:

means for measuring the mass of gas flow through said fuel flow means and for generating a fuel output signal representative thereof;

means for measuring the mass of air flow through said air flow means and for generating an air output signal representative thereof;

means for measuring the air/fuel ratio of the combustible charge and for generating a measured air/fuel ratio signal representative thereof;

control circuit means responsive to said fuel output signal and said air output signal for calculating an air/fuel ratio, [for comparing] *said control circuit means further responsive to said measured air/fuel ratio signal, so as to compare* said calculated air/fuel ratio with a target air/fuel ratio *corresponding to said measured air/fuel ratio signal* and for generating an output signal to the valve means to actuate the valve means *based on said calculated air/fuel ratio* so that said calculated air/fuel ratio approximates said target air/fuel ratio *within a predetermined tolerance; and*

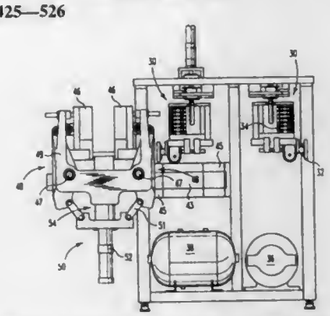
means for adjusting said calculated air/fuel ratio signal to compensate by a compensation factor for differences between said measured air/fuel ratio signal and said calculated air/fuel ratio signal when said differences exceed said tolerance.

B1 5,516,274 (3161st)

STRETCH BLOW MOLDING MACHINE WITH MOVABLE BLOW MOLD ASSEMBLY

Lynn R. Maggert, Arcanum, Ohio, assignor to Electra Form, Inc., Vandalia, Ohio

Reexamination Request No. 90/004,321, Aug. 2, 1996.
Reexamination Certificate for Patent 5,516,274, issued May 14, 1996, Ser. No. 310,970, Sep. 23, 1994.
Int. Cl.[6] B29C *45/77*
U.S. Cl. 425—526



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** and **10** is confirmed.

1. A blow molding machine configured to receive plastic parisons and output blow molded containers, the blow molding machine comprising

a support frame having a trackway,

a parison conveyor attached to the support frame,

a blow mold assembly positionable at an operating position within the support frame to receive parisons from the parison conveyor, and

a track mounted frame movably supported by the trackway, the track mounted frame configured to support the blow mold assembly as the blow mold assembly is moved outward from an operating position within the support frame to a service position adjacent to the support framed with outward movement of the blow mold assembly permitting access for servicing of the blow mold assembly outside the support frame.

REISSUES

MARCH 18, 1997

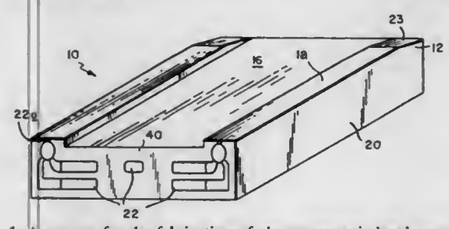
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,477

THIN FILM HEAD SLIDER FABRICATION PROCESS

Keith R. Hussinger, Westboro, and Michael L. Mallary, Berlin, both of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Original No. 5,095,613, dated Mar. 17, 1992, Ser. No. 546,176, Jun. 29, 1990. Application for reissue Nov. 16, 1994, Ser. No. 346,821
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.07 **22 Claims**



1. A process for the fabrication of electromagnetic head assemblies from a bar on a first surface of which a plurality of electromagnetic devices are provided as a single row and with like orientation, the bar being integral along a second surface with an adjacent substrate portion, which fabrication process comprises the steps of:

anchoring the [first surface] *substrate portion* to a fixture,

while the [bar] *substrate portion* is anchored [along the first surface], forming head assemblies along *a third surface of* the bar, *the third surface being opposed to the second surface;* and

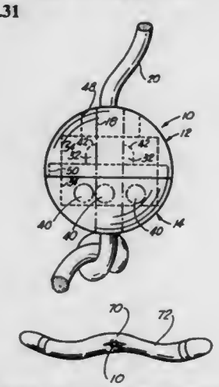
separating the individual head assemblies.

Re. 35,478

RATTLING FISH LURE

Michael W. Crihfield, Tioga, La., assignor to Woodie's Cajun Lures, Inc., Tioga, La.

Original No. 4,995,189, dated Feb. 26, 1991, Ser. No. 445,003, Dec. 4, 1989. Continuation of Ser. No. 19,750, Feb. 19, 1993, abandoned. Application for reissue Jan. 9, 1995, Ser. No. 370,564
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.31 **19 Claims**



16. A rattling fishing lure apparatus comprising:

a) a non-rattling lure member; and

b) a rattling member, positioned within said non-rattling lure member, said rattling member comprising:

i) a partially hollow cap member;

ii) a plurality of small spheres;

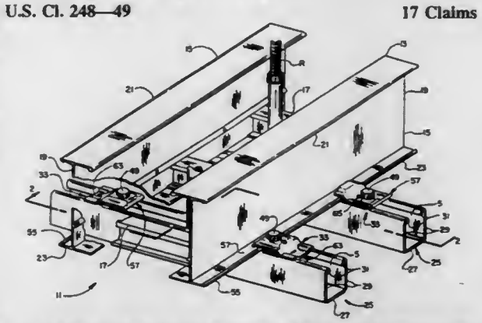
iii) a partially hollow base member, said base member having chamber means therein for containing said small spheres for making sound waves in water attractive to fish, said base member and said cap member being force fitted together to form a partially hollow sphere which contains said small spheres therein for producing sound waves in water attractive to fish, said base member having sleeve means therein for receipt of a fishing line.

Re. 35,479

CABLE TRAY HOLD-DOWN DEVICE

Martin L. Witherbee, Edwardsville, and Eric R. Rinderer, Highland, both of Ill., assignors to B-Line Systems, Inc., Highland, Ill.

Original No. 5,372,341, dated Dec. 13, 1994, Ser. No. 132,751, Oct. 6, 1993. Application for reissue Jun. 28, 1995, Ser. No. 495,379
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—49 **17 Claims**



1. A hold-down device for holding a cable tray on a support, said support being of the type having opposing side walls terminating in edges defining a slot therebetween, and said cable tray being of the type having a pair of generally parallel rails with flanges extending lengthwise of the rails adapted to bear on said support with the flanges overlying said slot and extending generally transversely with respect to the slot, said hold-down device comprising

a rigid, generally rectangular member having opposite side edges, opposite side margins adjacent respective side edges, and opposite end portions, said rigid member being adapted to be placed on said support in a position in which said opposite side margins of the rigid member bear on the edges of the support with the rigid member overlying the slot adjacent a flange of said cable tray,

a fastener opening in [one] *an* end portion of the rigid member,

a threaded fastener insertable inwardly through said fastener opening and through the slot of the support for threaded engagement with a complementary threaded opening associated with the support, the arrangement being such that rotation of the fastener is adapted to fixedly secure the rigid member to the support,

said rigid member being selectively securable to the support by said fastener either in a clamping position in which one end portion of the rigid member overlies said flange of the cable tray and is adapted for clamping engagement with said flange of the cable tray thereby to hold the rail in fixed position with respect to the support, or in a non-clamping position in which the opposite end portion of the rigid member overlies said flange of the cable tray but is not adapted for clamping engagement with said flange thereby to permit lengthwise

thermal expansion and contraction of the rail while still holding the rail on the support,

a first anti-spin structure on said [one] *opposite* l end portion of the rigid member configured to project inwardly into the slot and to engage the support at opposite sides of the slot when the rigid member is in its said clamping position thereby to prevent rotation of the rigid member relative to the support as the threaded fastener is rotated to secure the rigid member in its said clamping position, and

a second anti-spin structure on said [opposite] *one* end portion of the rigid member configured to project inwardly into the slot and to engage the support at opposite sides of the slot when the rigid member is in its said non-clamping position thereby to prevent rotation of the rigid member relative to the support as the threaded fastener is rotated to secure the rigid member in its said non-clamping position.

Re. 35,480

HARDWARE BASED INTERFACE FOR MODE SWITCHING TO ACCESS MEMORY ABOVE ONE MEGABYTE

David J. DeLisle, Spring; Saifuddin Fakhruddin, Tomball; Lloyd Gauthier, Austin, all of Tex., and Robert A. Kohtz, Cedar Rapids, Iowa, assignors to Zenith Data Systems Corporation, Sacramento, Calif.

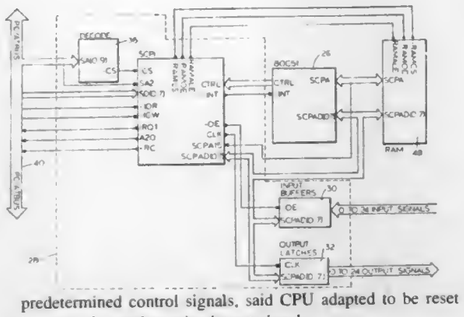
Original No. 5,283,889, dated Feb. 1, 1994, Ser. No. 31,029, Mar. 11, 1993. Continuation of Ser. No. 735,619, Jul. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 459,055, Dec. 29, 1989, abandoned. Application for reissue Oct. 4, 1994, Ser. No. 317,757

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—500 **6 Claims**

1. A computer system comprising:

a central processing unit (CPU) for processing data adapted to be coupled to one or more peripheral devices by way of a predetermined keyboard interface, said CPU having at least two modes of operation including a real mode of operation for accessing memory up to one megabyte, [said mode of] *and a protected mode for* accessing memory above one megabyte, said mode of operation adapted to be selected by one or more



predetermined control signals, said CPU adapted to be reset by way of a predetermined reset signal;

a memory for storing data, said memory having a preselected number of addressable storage locations larger than one megabyte, said storage locations being selectable by at least twenty-one address lines A0–A20, said memory and said CPU connected to a common bus;

means for enabling said A20 address line for memory accesses over one megabyte in response to a hardware based Gate A20 control signal;

a system control processor [(SCF)] *SCP* for communicating with said CPU and adapted to generate the reset signal for resetting said CPU under predetermined conditions; and

interfacing means interconnected between said CPU and said SCP for interfacing said CPU and said SCP for controlling communication between said CPU and said SCP and for emulating said predetermined keyboard interface, said interfacing means including predetermined hardware for enabling switching the mode of operation of said CPU from said real mode of operation to said protected mode of operation and for generating the hardware based Gate A20 signal for enabling said CPU to access memory above one megabyte by automatically enabling said A20 address line in response to said hardware based Gate A20 control signal, said interfacing means further including means for enabling either said SCP or said CPU to generate said reset signal.

PLANT PATENTS

GRANTED MARCH 18, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,827

ASIAN PEAR TREE NAMED 'ASIO 2'

Joel S. Spira; Ruth R. Spira, both of Coopersburg; Eugene S. Konno, Germansville, and Neil J. Vincent, Quakertown, all of Pa., assignors to Subarashii Kudamono Co., Inc., Coopersburg, Pa.

Filed Sep. 19, 1995, Ser. No. 531,183

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct cultivar of Asian Pear, substantially as illustrated and described, which:

(a) forms attractive early mid-season large to extra large substantially round fruit having a golden brown russet surface with prominent lenticels and a rich sweet flavor,

(b) forms a large tree having a vigorous well-branched and spreading growth habit, and

(c) forms generally elliptical dark green leaves with moderate venation.

9,828

ASIAN PEAR TREE NAMED "ASIO 3"

Joel S. Spira; Ruth R. Spira, both of Coopersburg; Eugene S. Konno, Germansville, and Neil J. Vincent, Quakertown, all of Pa., assignors to Subarashii Kudamono Co., Inc., Coopersburg, Pa.

Filed Sep. 19, 1995, Ser. No. 531,184

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct cultivar of Asian Pear, substantially as illustrated and described, which:

(a) forms attractive late mid-season extra large substantially round fruit having a dark brown russet surface with tan lenticels and a semi-sweet mild flavor,

(b) forms a medium-sized tree having a well-branched and an open spreading growth habit, and

(c) forms generally ovate medium green leaves with pinnate venation and a cuspidate apex.

9,829

CHRYSANTHEMUM PLANT NAMED 'SUNNY TIME'

Peter Wain, Hants, United Kingdom, assignor to Cleangro Ltd., Chicester, United Kingdom

Filed Apr. 4, 1996, Ser. No. 627,498

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Sunny Time, as illustrated and described.

9,830

CHRYSANTHEMUM PLANT NAMED 'SUNNY FARGO'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,659

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Sunny Fargo, as described and illustrated.

9,831

POINSETTIA PLANT NAMED 'PINK SAILS'

William Leighfield, Brownsville, Canada, assignor to Fernlea Flowers, Ltd., Canada

Filed Sep. 26, 1995, Ser. No. 534,028

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.3 **1 Claim**

1. A new and distinct variety of poinsettia plant as herein shown and described, particularly characterized by its brilliant Ruby Red and Carmine bracts against a background of dark green foliage, its strong, fixed stems, its long lasting keeping qualities in the home, its excellent resistance to fade, vigorous growth habits and its branch and bract production.

9,832

FICUS VARIETY NAMED 'BUSHY KING'

Wim van der Knaap, De Kwakel, Netherlands, assignor to K. and W. v.d. Knapp, Netherlands

Filed Oct. 30, 1995, Ser. No. 550,016

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.9 **1 Claim**

1. A new and distinct cultivar of *Ficus benjamina* plant named 'Busby King', substantially as illustrated and described, particularly characterized by short internode spacing and bushy, compact growth habit.

ERRATA–CONTINUED

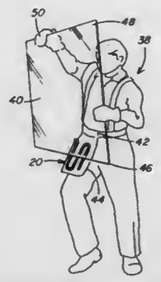
For CLASS	See PATENT NO.
358–497	5,612,791
358–500	5,612,792
358–500	5,612,793
358–505	5,612,794
358–518	5,612,795
358–527	5,612,796
379–156	5,612,970
361–790	5,613,033

PATENTS

GRANTED MARCH 18, 1997

GENERAL AND MECHANICAL

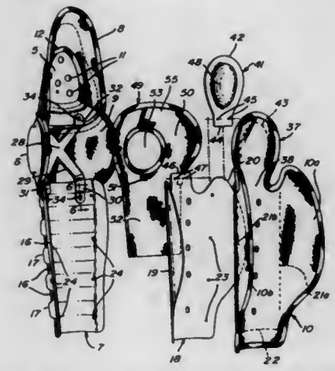
5,611,079
FRICTIONAL SUPPORT PAD AND UTILITY BELT
Thomas D. Bain, III, Chillicothe, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 27, 1995, Ser. No. 429,994
Int. Cl.[6] A41D *13/04*
U.S. Cl. 2—455 **4 Claims**



1. A method of supporting an article in an elevated position comprising the steps of:
providing a pad, the pad comprising a substrate made of a cut resistant material, the substrate sized to cover only portion of one leg of an individual between the knee and waist of the individual defined as the upper leg portion, the substrate having an outer surface defined as a first surface and an opposite outer surface defined as a second surface with a frictional material adhered to the first surface;
securing the pad to the waist of the individual with the second surface of the substrate overlaying and facing the upper leg portion of the individual;
maintaining an article in an elevated position while supporting the article on the frictional material, and
moving the article from a first position to a second position while practicing the maintaining step.

5,611,080
LIMB PROTECTOR
Leif Skottheim, Malung, Sweden, assignor to Jofa AB, Malung, Sweden
Filed Mar. 23, 1994, Ser. No. 216,653
Claims priority, application Canada, Apr. 2, 1993, 2093264
Int. Cl.[6] A41D *13/00;13/08*
U.S. Cl. 2—16 **28 Claims**

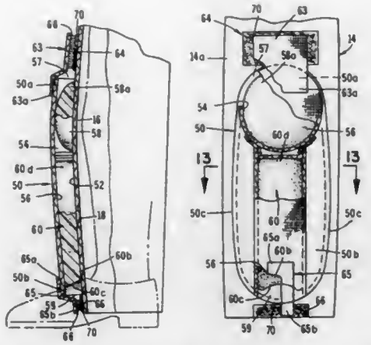
1. A leg protector for protecting a person's shin, knee and thigh,



said leg protector being of the type arranged to at least partially encircle a person's leg, said leg protection system comprising an inner knee cap guard means comprising a resilient pad element for bearing on a person's knee cap,
a leg guard, said leg guard comprising
a shin guard means,
an outer knee joint guard means, and
a thigh guard means,
said shin guard means comprising a rigid outer shell element overlying a resilient shin pad element,
said outer knee joint guard means comprising a rigid outer shell element,
said thigh guard means comprising a rigid outer shell element overlying a resilient thigh pad element,
said outer knee joint guard means being in overlying relationship to said inner knee cap guard means,
said outer knee joint guard means, when the leg of the person is straight, being in overlapping relation to said shin and thigh guard means,
means for attaching the resilient pad element of said shin guard means to the rigid outer shell element of said shin guard means,
means for attaching the resilient pad element of said thigh guard means to the rigid outer shell element of said thigh guard means,
spacing means for spacing apart the inner knee cap guard means from the outer knee joint guard means such that a buffer pocket is defined therebetween, said spacing means comprising a peripheral portion of said inner knee cap guard means, said peripheral portion being configured relative to said outer knee joint guard means, said shin guard means and said thigh guard means such that said inner knee cap guard means nests in said outer knee joint guard means,
first articulation connection means for articulately connecting said outer knee joint guard means to said shin guard means and to said thigh guard means such that said outer knee joint guard means is pivotably moveable, relative to said shin guard means, in response to bending movement of the leg about the knee and said thigh guard means is pivotably moveable, relative to said outer knee joint guard means, in response to bending movement of the leg about the knee, and
second articulation connection means for articulately connecting said inner knee cap guard means to said shin guard means such that said inner knee cap guard means is pivotably moveable, relative to said shin guard means, in response to bending movement of the leg about the knee,
wherein said first articulation connection means comprises first flexible strap means for connecting said outer knee joint guard means to said shin guard means and second flexible strap means for connecting said outer knee joint guard means to said thigh guard means and
wherein said inner knee cap guard means includes a rigid outer shell element overlying the resilient pad element of said inner knee cap guard means, and said leg protector includes means for attaching the resilient pad element of said inner knee cap guard to the rigid shell element of said inner knee cap guard means, the rigid shell element of said inner knee cap means being disposed between said outer knee joint guard means and the resilient pad element of said inner knee guard means.

5,611,081
WORK PANTS WITH KNEE AND SHIN PROTECTORS
Al Torres, 2047 Montrose Ave., Montrose, Calif. 91020
Filed Jul. 17, 1995, Ser. No. 503,397
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—23 **13 Claims**

1. A pair of work pants comprising:
(a) a pair of interconnected leg portions, each leg portion comprising a front panel having a knee covering portion and a shin covering portion;

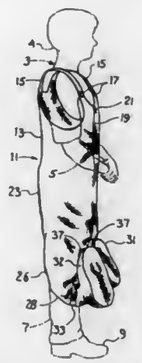


(b) a protective layer connected to said front panel of each leg, each said protective layer having an upper edge located above said knee covering portion, a lower edge located below said shin covering portion and opposite edge portions, said opposite edge portions of said protective layer being interconnected with said front panels of each of said leg portions in a manner to define pockets having an upper opening and a lower opening;

(c) closure means for releasably closing said upper and lower openings; and

(d) a padding mounted within each said pocket, said padding including a knee covering portion of a first width having an upper edge disposed proximate said upper edge of said protective layer and a shin covering portion of a second lesser width having a lower edge disposed proximate said lower edge of said protective layer.

5,611,082
THERMALLY INSULATED GARMENT WITH DISPLACEABLE FEET-ENCLOSING SECTIONS
Garland E. Bull, Rte. 2, Box 1630, Dardanelle, Ark. 72834
Filed Jun. 27, 1996, Ser. No. 671,631
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—79 **20 Claims**



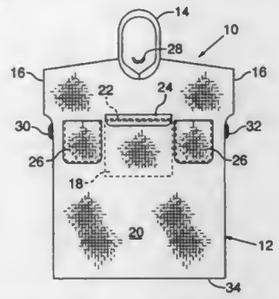
1. An insulating garment for at least the lower body having a legs and feet-enclosing portion, said garment comprising;

a waist and hips covering first garment section formed of thermally insulating flexible fabric;

at least one thigh, knee, calf and foot covering elongated second garment section formed of thermally insulating flexible fabric and having a bottom extremity section forwardly extending and shaped to accommodate the shoes and feet of a wearer; said second garment section having a reclosable opening extending from near said bottom extremity section upwardly to at least about a midpoint of said second garment section, said opening being located to allow said bottom extremity section to be drawn forward from a toe end of the wearer's foot and shoe while the heel end of said foot and shoe passes through said opening; and fasteners located on an upper portion of said second garment section and at said bottom extremity section for securing said bottom extremity section out of proximity to the foot of the wearer;

whereby pedestrian movement is allowed without hindrance from or wear causing action on said bottom extremity section.

5,611,083
CHANGING ROBE
Barbara A. Arnold, Modesto, CA
Filed Aug. 25, 1995, Ser. No. 519,462
Int. Cl.[6] A41D *3/08*
U.S. Cl. 2—84 **10 Claims**



1. A changing robe for sheltering and affording a user privacy for the changing of clothing while wearing the robe, comprising:

a large robe body which fits loosely on the user, configured to extend around the front and back of the user and of a length sufficient to extend down and cover at least part of the legs of the user, the robe body having a top, a front, a back, interior and an exterior,

a pair of sleeves for the arms of the user, the sleeves being sufficiently short and having sufficiently large sleeve openings to allow the user to conveniently withdraw the arms through the sleeves and into the interior of the robe body, and

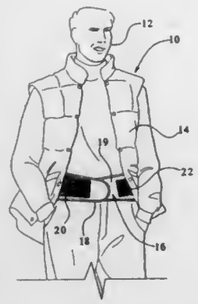
a large pocket at the front of the robe body, sufficiently large to contain clothing, with an access opening of the pocket on a front panel at the interior of the robe body to facilitate access by the user from inside the changing robe.

5,611,084
JACKET WITH INTEGRAL BACK SUPPORT
Jeffrey R. Garry, Sioux Falls, S. Dak., and Gary Luskey, Fort Worth, Tex., assignors to Raven Industries, Inc., Sioux Falls, S. Dak.
Continuation of Ser. No. 203,264, Feb. 28, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 496,859
Int. Cl.[6] A41D *1/00*
U.S. Cl. 2—93 **10 Claims**

1. A garment for a person comprising:

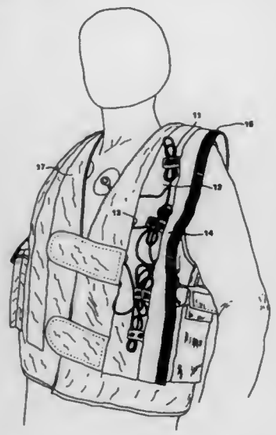
an outer garment layer surrounding a substantial portion of a person's upper torso and having a closeable front seam; and

an encircling back supporting belt having a substantial width for 360° around the torso for abdominal support connected to said outer garment layer, said back supporting belt having means for providing bending rigidity in a direction along the person's spine, said means including spaced apart flexible plate members, said belt having tightening straps engageable at a front side of the person's upper torso and completely concealed by said outer garment layer upon closure of said front seam; and



said belt having an overlapping front region engageable by respective mating surface fastener regions applied between overlapping ends of the belt, and said belt end straps being independently closed with respect to said front seam of said outer garment layer such that said front seam of said outer garment layer can remain open with the overlapping front region of the belt being engaged.

5,611,085
GARMENT FOR HOLDING AN ELECTROCARDIOGRAPHIC MONITORING UNIT AND CABLES
Verner Rasmussen, Skovalleen 14, DK-2880 Bagsbaerd, Denmark
PCT No. PCT/DK93/00353, § 371 Date Jun. 16, 1995, § 102(e) Date Jun. 16, 1995, PCT Pub. No. WO94/09655, PCT Pub. Date May 11, 1994
PCT Filed Nov. 2, 1993, Ser. No. 424,432
Claims priority, application Denmark, Nov. 2, 1992, 1334/92
Int. Cl.[6] A41D *1/04;13/12*
U.S. Cl. 2—102 **10 Claims**



1. A portable measuring unit holding garment for use on a person whose cardiographic measurement needs to be registered, wherein the measuring unit includes electrodes to be secured in contact with the skin of the person, a portable monitor having cables with terminals for attachment to the electrodes, said garment comprising:

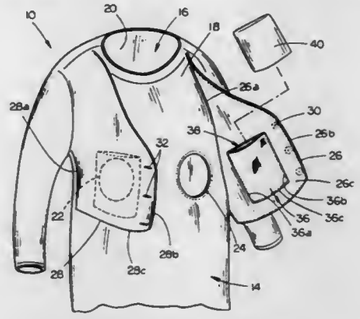
a sleeveless jacket with armholes forming first and second front portions, a first pocket at the first front portion outside positioned substantially below an armhole for placement of a first monitor;

means for closing said first and second front portions;

a plurality of fixation means on an outside area of said first front portion; and

a plurality of slits in said first front portion, each of said slits for passing a monitor cable from the front portion outside to the inside.

5,611,086
NURSING GARMENT
Kathleen R. Eggen, 620 Shorewood La., Waterloo, Nebr. 68069
Filed May 6, 1996, Ser. No. 643,329
Int. Cl.[6] A41B *1/00;* **A41D** *1/20;1/22*
U.S. Cl. 2—104 **12 Claims**



1. A garment for nursing mothers, comprising:

a vest for clothing an upper torso of a nursing mother, the vest having right and left selectively connectable flaps arranged to cover right and left breasts, respectively, of a wearer when the flaps are connected;

each of said flaps having a region thereon formed of an air permeable, liquid impermeable material, each said region extending vertically and horizontally a distance to cover the wearer's breast which is adjacent the flap; each of said vest flaps being formed of fabric;

each of said flaps having a cover sheet attached to a rearward surface thereof, interposed between the flap and the wearer, each said cover sheet extending across the vertical and horizontal extent of said region;

each said region of the flaps including a sheet of liquid impermeable, air permeable material attached to the fabric of the vest flaps;

each said cover sheet formed of a fluid permeable material and extending the length and width of said liquid impermeable, air permeable sheets;

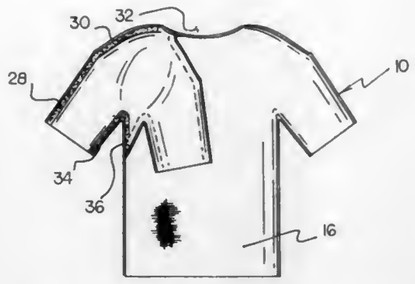
the sheets having a length and width less than the length and width of the flaps; and

a pad interposed between each cover sheet and adjacent region, each said pad formed of a liquid absorbent material.

5,611,087
SEPARABLE GARMENT
Lola Adkins, 1050 E. 224 St., Bronx, N.Y. 10466
Filed Aug. 31, 1995, Ser. No. 522,074
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—114 **1 Claim**

1. A separable garment comprising:

a front garment panel positionable over an anterior portion of a human being and a rear garment panel positionable over a posterior portion of the human body, the front garment panel comprises a front torso web shaped so as to coextensively cover a torso portion of a human body, a front right arm web extending from a first lateral side of the front torso web, and a front left arm web extending from a second lateral side of the front torso web, and further wherein the rear garment



panel comprises a rear torso web shaped so as to coextensively cover a torso portion of the human body, a rear right arm web extending from a first lateral side of the rear torso web, and a rear left arm web extending from a second lateral side of the rear torso web, the front and rear torso webs being shaped so as to cooperatively define a neck aperture directed therethrough to permit passage of a neck of a human body through the upper end of the garment, an outer arm securing means extending along an outer longitudinal edge of the front and rear left arm webs, a shoulder securing means secured to upper edges of the front and rear torso webs, an inner arm securing means extending along an inner longitudinal edge of the front and rear right arm webs and along the inner longitudinal edges of the front and rear left arm webs, torso securing means extending along respectively opposed sides of both the front and rear torso webs each of said outer arms, shoulder, inner arm and torso securing means for removably coupling the torso webs together, the front garment panel comprises a front pelvis web shaped so as to coextensively cover a pelvis portion of a human body, a pair of spaced elongated front leg webs extending from the front pelvis web and shaped so as to cover anterior portions of human legs of the human body, the rear garment panel comprises a rear pelvis web shaped so as to cover a posterior portion of a human pelvis, a pair of spaced and elongated rear leg webs projecting from the rear pelvis web and shaped so as to cover posterior portions of the human legs of the human body, lateral securing means extending along respectively opposed outer longitudinal edges of the front and rear garment panels, the lateral securing means extending along respectively opposed sides of the front and rear pelvis webs and continues along outer longitudinal edges of the front and rear legs webs, interior edge securing means extending along interior longitudinal edges of each of the front and rear leg webs, each of said lateral and interior edge securing means for removably coupling the pelvis webs together.

5,611,088

METHOD AND DEVICE FOR DISINFECTING A TOILET BOWL

Amy C. Almon, 410 Waverly Dr., Augusta, Ga. 30909

Filed Feb. 28, 1992, Ser. No. 843,027

Int. Cl.[6] E03D *9/02*; **C01B** *15/01*

U.S. Cl. 4—222 **18 Claims**

1. A flush toilet, comprising

a bowl having an opening for receiving waste materials and an inlet and an outlet;

a tank mounted to said bowl, said tank dimensioned for holding a quantity of water, said tank having an inlet and an outlet, said tank in communication with said inlet of said bowl; and

means for electrochemically reducing a portion of said water in said tank to hydrogen peroxide so that said bowl will be disinfected when said hydrogen peroxide enters said bowl through said outlet of said tank.

5,611,089

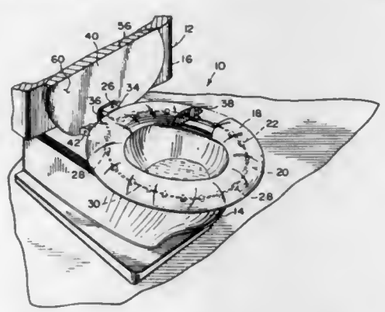
APPARATUS FOR PROVIDING LIGHT TO A TOILET SEAT AND COVER

Kent J. Cretors, 1136 N. Detroit St., Xenia, Ohio 45385

Filed Jul. 26, 1995, Ser. No. 507,760

Int. Cl.[6] A47K *13/30*

U.S. Cl. 4—234 **1 Claim**



1. A lighting device for a toilet bowl and tank unit, comprising:

a) a toilet seat having an annular configuration and being hinged at a rear portion thereof to the toilet bowl, said seat being constructed of transparent material;

b) a light source comprising a plurality of light emitting diodes spaced apart around said annular seat and embedded within said toilet seat and means carried embedded in said transparent toilet seat for electrically connecting said light emitting diodes together in series; said means connecting said diodes to a power pack, said power pack carried by said seat at a rear end thereof between said annular portion and the point at which said seat is hinged, for supplying electric current to said light source, said power pack including a manually accessible switch;

d) a toilet seat cover hinged at a rear end thereof to said toilet bowl, a recess formed in a surface of said toilet seat cover facing said seat, a housing mounted in said recess, said housing containing a lamp with a battery and a switch connected thereto for radiating light in an area about said toilet seat cover when said toilet seat cover is in an upright position against the tank, said radiating light functioning as a night light.

5,611,090

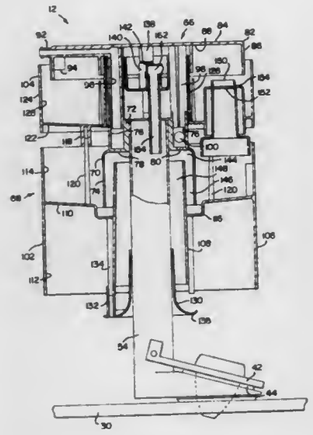
TOILET FLUSH CONTROL ASSEMBLY AND METHODS

Dwight N. Johnson, Carlsbad, Calif., assignor to Hunter Industries Incorporated, San Marcos, Calif.

Continuation of Ser. No. 333,070, Nov. 1, 1994, Pat. No. 5,517,701, which is a continuation of Ser. No. 224,648, Apr. 7, 1994, Pat. No. 5,392,470. This application Jul. 11, 1995, Ser. No. 500,702

Int. Cl.[6] E03D *5/00*

U.S. Cl. 4—345 **2 Claims**



1. An assembly for providing a consistent predetermined volume of trap reseal water flow in a toilet system including a toilet fixture with a trap and a fill valve providing a flow of trap reseal water, said assembly comprising:

a reseal water chamber having a top;

a conduit for providing trap reseal water from the fill valve to said chamber;

a flow path from said chamber to the toilet fixture trap, said flow path including a siphon having an inlet in said reseal water chamber and an elevate region; and

said elevated region being disposed near and below said top of said chamber at a level corresponding to the predetermined trap reseal water volume;

said chamber having an overflow weir disposed at an elevation below said elevated region of said siphon for releasing water from said chamber and means for closing said weir to permit the level of water in said chamber to reach said elevated region.

5,611,091

TOILET TRIP LEVER ARM WITH INTEGRAL ENERGY ABSORBING MEMBER

Robert M. Jensen, East Brunswick, N.J., assignor to American Standard Inc., Piscataway, N.J.

Filed Apr. 17, 1995, Ser. No. 423,592

Int. Cl.[6] E03D *5/00*

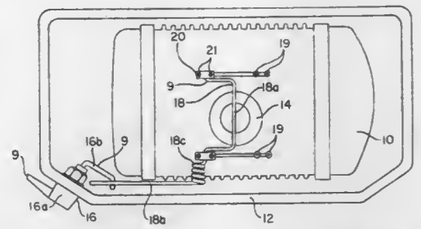
U.S. Cl. 4—405 **7 Claims**

1. A toilet trip lever mechanism for use with a pressure flush toilet including a tank and a button member coupled to said tank comprising:

an energy absorbing member;

a flush actuation member coupled to said energy absorbing member; and

a coupling means coupling said energy absorbing member to said tank, said energy absorbing member contiguous with said button member, said energy absorbing member including a U-shaped section, a coil section, and a hook section, said U-shaped section traversing said button member and said hook section linked to said flush actuation mechanism.



5,611,092

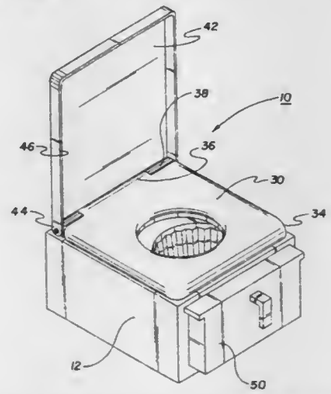
CHILD'S TOILET WITH A DISPOSABLE LINER

Patricia Van Dusen, 2210 10A Street, Coaldale AB, Canada

Filed Aug. 21, 1995, Ser. No. 517,370

Int. Cl.[6] A47K *11/06*

U.S. Cl. 4—484 **1 Claim**



1. A child's toilet with a disposable liner for allowing a child's bowel movement to be disposed of in a sanitary manner comprising, in combination:

a main housing having a generally rectangular configuration, the main housing having a hollow interior, a top wall, a bottom wall, a front wall, a back wall, and two side walls, the top wall having a circular hole formed therethrough, the front wall having a rectangular hole formed therethrough extending into the hollow interior;

an interior lid hingedly secured to a distal end of the top wall of the main housing, the interior lid having a circular bole formed therethrough corresponding with the circular bole in the top wall when the interior lid is in a closed configuration, the interior lid having contoured outer edges;

an exterior lid hingedly secured to the distal end of the top wall of the main housing, the exterior lid having a lip extending downwardly from an outer periphery thereof, the exterior lid adapted for removably coupling over the interior lid in the closed configuration;

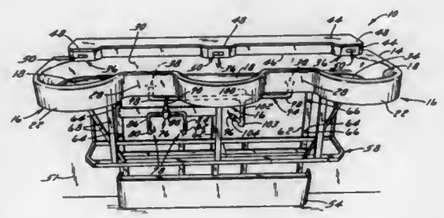
a sliding bin having a top wall, a bottom wall, a front wall, a back wall, and two side walls, the top wall having a circular chamber formed therein, the front wall having an L-shaped handle secured thereto, the sliding bin adapted for removable securement through the rectangular hole in the front wall of the main housing within the hollow interior thereof with the circular chamber in vertical alignment with the circular hole formed through the top wall of the main housing and the circular hole in the interior lid;

a liquid permeable disposable liner having an open top, a closed bottom, and expanding side walls, the liquid permeable disposable liner adapted for removable coupling within the circular chamber of the sliding bin, so as to have its open top in vertical alignment with said circular holes, said liner being strong enough to withstand liquid permeation therethrough and still be capable of retaining solid waste therein.

5,611,093
MULTI-LAVATORY SYSTEM

Thomas G. Barnum, Fox Point; Phillip B. York, Thiensville; Thomas R. Eberhardy, and John M. Gagas, both of Milwaukee, all of Wis., assignors to Bradley Corporation, Menomonee Falls, Wis.

Continuation of Ser. No. 324,165, Oct. 14, 1994, abandoned, which is a continuation of Ser. No. 63,278, May 18, 1993, Pat. No. 5,369,818. This application Mar. 7, 1996, Ser. No. 610,807
Int. Cl.[6] E03C *1/048*
U.S. Cl. 4—624 **15 Claims**



1. A preassembled multi-lavatory system designed to be mounted along a wall and above a floor, the multi-lavatory system being configured for connection between a single fluid supply line and a single drainage line, comprising:

a base;

a generally unitary lavatory subassembly mounted on the base, comprised of at least two lavatory stations and a fluid flow channel extending therebetween, the fluid flow channel including a drain, each lavatory station including a sink region, each sink region being sloped so fluid entering therein flows towards the fluid flow channel, the sink regions and fluid flow channel being defined at least in part by a back wall and a front contoured wall, the front contoured wall including a front surface having at least two outwardly extending sections, each outwardly extending section defining the front of one sink region, and at least one connecting section extending between the outwardly extending sections and defining the front of the fluid flow channel, wherein the distance between the back wall and the connecting section is less than the maximum distances between the back wall and each outwardly extending section;

a shelf mounted over the generally unitary lavatory subassembly, the shelf including at least two outwardly extending portions and at least one connecting portion between the outwardly extending portions, each outwardly extending portion corresponding to one of the sink regions, wherein the distance between the back wall and the connecting portion is less than the maximum distances between the back wall and each outwardly extending portion;

a plurality of faucet mechanisms, each faucet mechanism supported by one of the outwardly extending portions and in communication with one of the lavatory stations; and

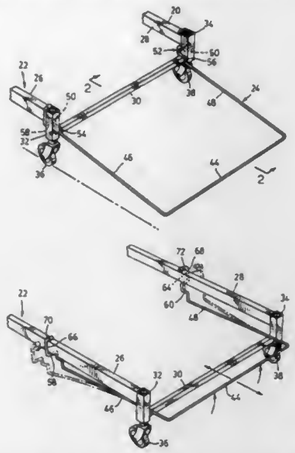
a fluid supply network in fluid communication with the single fluid supply line and the plurality of faucet mechanisms.

5,611,094
WALL STOP FOR A BED

Everett A. D'Entremont, Burlington, Canada, assignor to M.C. Healthcare Products Inc., Beamsville, Canada

Filed Aug. 24, 1995, Ser. No. 519,004
Int. Cl.[6] A47C *21/00*
U.S. Cl. 5—424 **9 Claims**

1. A spacer for use with an institutional bed to locate the bed



relative to a wall, the bed having a pair of horizontal side members, transverse members extending between the side members adjacent ends of the side members, the spacer comprising:

a transverse piece having ends;

a pair of parallel side pieces extending from the respective ends of the transverse piece;

a pair of end structures attached one to each of the side pieces remote from the transverse piece, each of the end structures having an upright load transfer element attached one to each of the side pieces for engagement with the transverse member of the bed, and a stabilizer spaced from and coupled to the load transfer element for engagement with the respective ones of the side members of the bed;

the spacer being proportioned to hold the bed away from the wall such that any loading resulting from engaging the wall will be resisted by the load transfer elements and the stabilizers; and

each of the end structures having a U-shaped portion including the stabilizer, the U-shaped portion having a central part extending vertically with the stabilizer attached to one end of the central part, and a guide attached to the other end of the central part, the U-shaped portions being proportioned to fit loosely on the side members whereby the spacer can be stored by lifting the transverse end piece to disengage the load transfer elements and sliding the U-shaped portions along the side members until the transverse piece is adjacent the transverse member of the bed.

5,611,095
MULTI-FUNCTION BABY WRAP

Dena Schneider, P.O. Box 1926, Lynnwood, Wash. 98046

Filed Dec. 12, 1995, Ser. No. 571,003
Int. Cl.[6] A47G *9/00*; A41B *13/06*; A41D *15/04*
U.S. Cl. 5—482 **30 Claims**

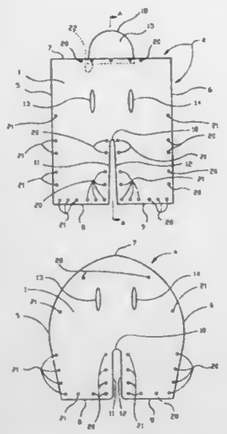
1. A multi-function baby wrap, comprising:

(a) A flexible member having front and back sides and a contiguous edge comprising at least

an upper segment,

first and second outer segments,

a first lower segment extending from the first outer segment to a point no more than one half the distance from the first outer segment to the second outer segment,



a second lower segment extending from the second outer segment to a point no more than one half the distance from the second outer segment to the first outer segment,

an apex located between the first and second lower segments and the upper segment, and further located between the first outer segment to the second outer segment,

a first inner segment extending from the first lower segment to the apex, and

a second inner segment extending from the second lower segment to the apex,

(b) a plurality of temporary fastening means permanently affixed to the flexible member, each having a first part which can be engaged and disengaged from a second part, and arranged as follows:

one or more first parts affixed adjacent to the first inner segment, and a like number of second parts affixed adjacent to the second inner segment, spaced so as to allow engagement of each first part with its respective second part so that the first inner segment to becomes temporarily attached to the second inner segment,

one or more second parts affixed to the first outer segment and a like number of first parts affixed to the second outer segment, spaced so as to allow the first outer segment to be temporarily attached to the first inner segment and the second outer segment to be temporarily attached to the second inner segment, and

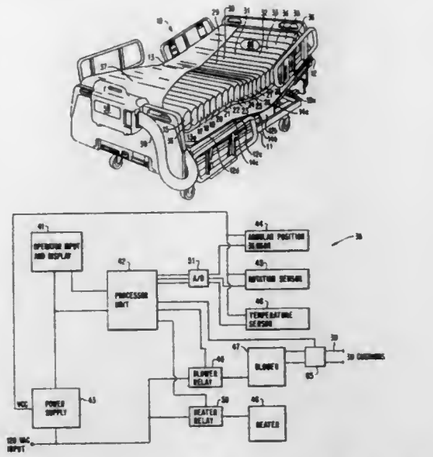
one or more first parts and a like number of second parts affixed adjacent to the first lower segment, and one or more first parts and a like number of second parts affixed adjacent to the second lower segment, all being spaced so that when the first outer segment is temporarily attached to the first inner segment, and the second outer segment is temporarily attached to the second inner segment, the first parts and second parts on the first lower segment engage each other to close the first lower segment against itself, and the first parts and second parts on the second lower segment engage each other to close the second lower segment against itself.

5,611,096
POSITIONAL FEEDBACK SYSTEM FOR MEDICAL MATTRESS SYSTEMS

Alan L. Bartlett, New Braunfels, and Randall L. Ohman, San Antonio, both of Tex., assignors to Kinetic Concepts, Inc., San Antonio, Tex.

Filed May 9, 1994, Ser. No. 241,075
Int. Cl.[6] A61G *7/04*
U.S. Cl. 5—617 **19 Claims**

1. An apparatus for determining the angular position of a patient lying on a flexible mattress with respect to the direction of gravitational force:



a patient support including a flexible mattress, the mattress having a surface oriented relative to a patient supporting layer of the mattress;

an angle sensor having output responsive to changes in said angle sensor's position relative to the direction of gravitational force, said sensor being mounted to said surface of said mattress; and

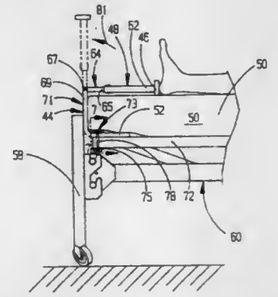
means for measuring the angle of said sensor in response to the output of said sensor.

5,611,097
FOOT STOP FOR BEDS

Dan Dumke, Rte. 2, Box 118, Markesan, Wis. 53946

Filed Aug. 17, 1995, Ser. No. 516,378
Int. Cl.[6] A47C *20/00;20/12;21/00*
U.S. Cl. 5—651 **3 Claims**

1. A foot stop for beds comprising:



a. a plate for placing on a bed mattress; and

b. bar means joined to the plate for contacting the foot portion of a bed frame to enable a person in the bed to push with his feet against the plate and thereby resist the tendency of the person to slide toward the foot of the bed, wherein:

i. the plate has a predetermined length, front and back surfaces, and top and bottom edges; and

ii. the bar means comprises:

a plurality of tubes joined to and extending from the back surface of the plate, each tube defining a plurality of holes therethrough;

a plurality of rods having respective first ends that are slidable within respective tubes and respective second ends;

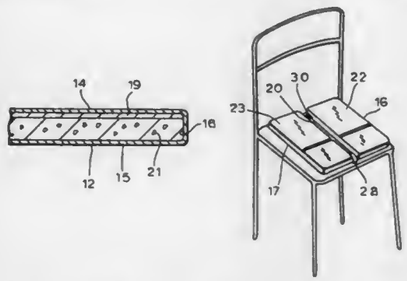
a plurality of L-shaped pieces having respective first legs that are pivotally connected to the second ends of associated rods and respective second legs for wrapping around and under the mattress;

a pin associated with each tube for inserting through selected aligned holes in the tube and corresponding rod, and

clamp means for clamping the second legs of the L-shaped pieces to the bed frame,

so that the distance of the plate from the foot of the bed is variable and the foot stop remains with the mattress when the foot of the mattress is tilted.

5,611,098
COMBINATION STUDENTS ORGANIZER, SEAT CUSHION AND LAP DESK
John Skibik, 644 Amsterdam Ave. #1A, New York, N.Y. 10025
Filed Feb. 3, 1995, Ser. No. 383,067
Int. Cl.[6] A47C *20/02*; **A47B** *23/00*
U.S. Cl. 5—653 **7 Claims**



3. A combination students portfolio type organizer, seat cushion and lap desk comprising a folder having first and second cover members hingedly joined together along a spine, each cover member comprising a board member having an uncushioned outer surface providing a firm writing support and an inner surface covered by a layer of cushioning, and means on the cushioning layer for retaining writing materials thereon, whereby the cover members can be pivoted between a closed, writing materials containing position in which the layers of cushioning are adjacent each other and an open, seat cushion forming position in which the cover members are unfolded into coplanar relation for engagement of the outer surface with a body support with the cushioning uppermost.

5,611,099
HANDS AND ARMS CLEANING APPARATUS
Philip C. Kelly, 290 New Hermitage Rd., Rome, Ga. 30161
Filed Feb. 2, 1996, Ser. No. 595,651
Int. Cl.[6] A46B *13/06*
U.S. Cl. 15—21.1 **4 Claims**

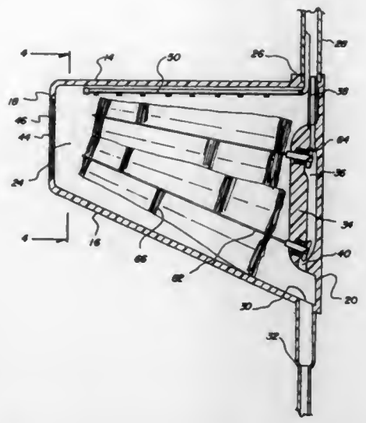
2. A hands and arms cleaning apparatus comprising:

a housing having an upper surface, a lower surface, a front surface, a rear surface, two side surfaces, and a hollow interior, the housing receiving a water supply line therein and having a water drain secured thereto;

a pair of hand receiving holes disposed within the front surface of the housing;

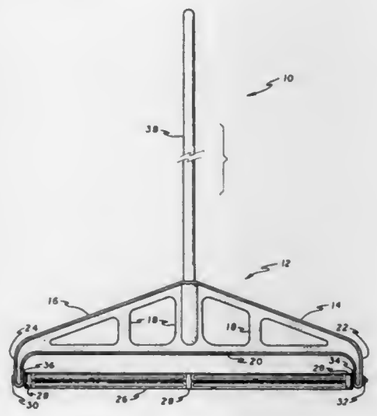
a plurality of water sprayers secured to an interior of the upper surface of the housing, the sprayers disposed above the pair of hand receiving holes, the plurality of water sprayers each coupled with the water supply line;

a plurality of elongated brushing members positioned within the hollow interior of the housing, each of the brushing members having a rotation means wherein the housing has an interior



housing secured to an interior of the rear surface, the interior housing having a water channel extending therethrough, the water channel having an upper end coupled with the water supply line, the water channel having a lower end coupled with the water drain.

5,611,100
PAINT ROLLER
Ilan Zigelboim, and Virginia B. Hagan, both of 4955 NW. 82nd Ter., Lauderhill, Fla. 33351
Continuation-in-part of Ser. No. 415,451, Apr. 3, 1995, Pat. No. 5,509,165, and a continuation-in-part of Ser. No. 037,008, Apr. 3, 1995, Pat. No. Des. 369,027, and a continuation-in-part of Ser. No. 049,835, Feb. 1, 1996, Pat. No. Des. 376,911. This application Mar. 26, 1996, Ser. No. 622,107
Int. Cl.[6] B05C *17/02*
U.S. Cl. 15—230.11 **13 Claims**



1. A paint roller comprising:

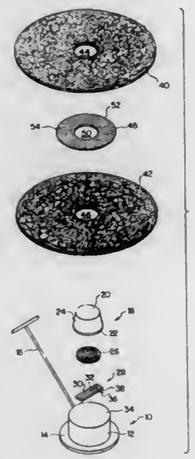
a triangular frame having two legs of identical length and a hypotenuse, the area between said hypotenuse and said legs being substantially open, said frame including at least one support member extending from said hypotenuse to said legs, said at least one support member including a central support member having an opening for receiving an extension pole; and

a cylinder assembly having first and second sides at opposite ends thereof;

said frame supporting said cylinder assembly on both sides of said cylinder assembly, said hypotenuse of said frame being parallel to said cylinder assembly, and said at least one support member being perpendicular to said cylinder assembly;

said frame including a rod which is removably inserted through said frame and said cylinder assembly for facilitating the removal of said cylinder assembly.

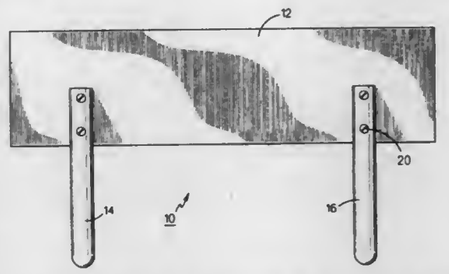
5,611,101
FLOOR POLISHING PAD ASSEMBLY
James M. Rones, Acworth, Ga., assignor to Americo, Acworth, Ga.
Filed Oct. 30, 1995, Ser. No. 550,374
Int. Cl.[6] A47L *11/16*
U.S. Cl. 15—230.17 **2 Claims**



1. An interchangeable floor polishing pad assembly comprising two disk shaped floor polishing pads of fibrous material having substantially identical external diameters and an intermediate connecting disk having a smaller diameter and a plurality of hook-like members protruding from opposite surfaces thereof and detachably engaging the fibrous material of each floor polishing pad, whereby the floor polishing pads may be revised to provide four floor polishing surfaces;

wherein each pad and the connecting member are provided with central openings having identical diameters and further comprising a truncated, conical mandrel adapted to be mounted on a flat surface, said mandrel having an upper surface with a first diameter and a base member having a second diameter larger than said first diameter wherein said second diameter is substantially equal to the diameter of the opening in each pad and said connecting member to accurately align and facilitate assembly of said pads with said connecting member.

5,611,102
METHOD AND APPARATUS FOR APPLYING VISCOUS MATERIALS TO CURVED SURFACES
Michael A. Lesinsky, 178 Alexander Dr., Bridgeport, Conn. 06606; Kenneth A. Lesinsky, Jr., 26 Wildwood Ave., Milford, Conn. 06460; Jonathan V. Lesinsky, deceased, late of Milford, Conn., and by Kenneth A. Lesinsky, Sr., executor, 40 Boylston St., Milford, Conn. 06460
Filed Aug. 15, 1995, Ser. No. 515,127
Int. Cl.[6] B05C *17/10*
U.S. Cl. 15—235.5 **8 Claims**

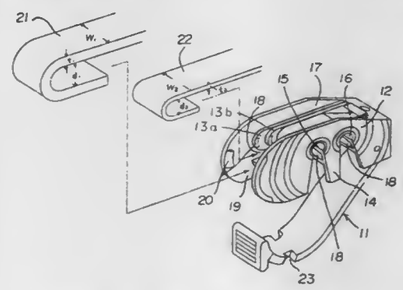


1. A tool for applying a viscous material to a curved surface, comprising:

(a) a tin, flexible, generally rectilinear, planar blade having a top edge and a bottom edge and first and second side edges; and

(b) first and second elongated handles depending from said bottom edge of said blade, said first and second handles being attached to said blade near said first and second side edges, respectively, and configured to be manually grasped by a user of said tool to enable said user to bend said planar blade.

5,611,103
WINDSHIELD WIPER FRAME CONNECTOR WHICH ACCOMODATES DIFFERENT SIZE WIPER ARMS
Albert Lee, 232 Margate Rd., Timonium, Md. 21093
Continuation-in-part of Ser. No. 118,663, Sep. 10, 1993, abandoned, and a continuation-in-part of Ser. No. 180,387, Jan. 12, 1994, abandoned. This application Nov. 8, 1994, Ser. No. 337,837
Int. Cl.[6] B60S *1/40*
U.S. Cl. 15—250.32 **11 Claims**



1. A windshield wiper frame connector for connecting a wiper blade unit to a wiper arm, comprising:

an elongated body member defining a longitudinal axis thereabout, said body member having a pair of opposing sidewalls, each of said sidewalls having a front wing portion as an extension of said sidewalls, said front wing portions defining opposing inner surfaces;

a first slot disposed in a lower portion of said body member for rotatably receiving a transverse pin of a wiper blade unit;

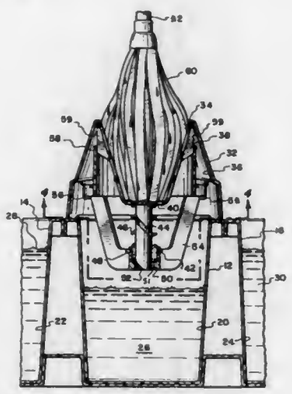
a second slot disposed in said lower portion of said body member adjacent to said first slot for rotatably receiving a pin of a pin type wiper arm;
a first pair of opposing raised portions disposed on said opposing inner surfaces of said front wing portions of the sidewalls;
a first pair of stoppers disposed on said opposing inner surfaces of said front wing portions;
a second pair of stoppers disposed on said first pair of raised portions;
an upper jam portion disposed on a top portion of said body member for tightly and smoothly receiving a hook type wiper member;
a lower space disposed in a lower portion of an interior of said body member for tightly receiving outer surfaces of a hook type wiper arm;
means for locking said hook type wiper arm to said windshield wiper frame connector, said means for locking including a clip member having a substantially straight portion and a substantially curved neck portion, said substantially straight portion being pivotally connected to said pair of opposing sidewalls for movement between an open position and a closed position, said substantially curved neck portion engaging said first pair of stoppers to thereby retain said clip member in said closed position and thereby locking said hook type wiper arm to said windshield wiper frame connector; and
means for receiving a bayonet type wiper arm disposed in an upper and rear portion of said body member.

5,611,104

MOP HEAD WRINGER TO BE USED WITH A BUCKET

Robert A. DeMars, 5000 N. Parkway Calabasas, Suite 233, Calabasas, Calif. 91302

Filed May 24, 1996, Ser. No. 652,983
Int. Cl.[6] A47L *13/142;13/58*
U.S. Cl. 15—263 **11 Claims**



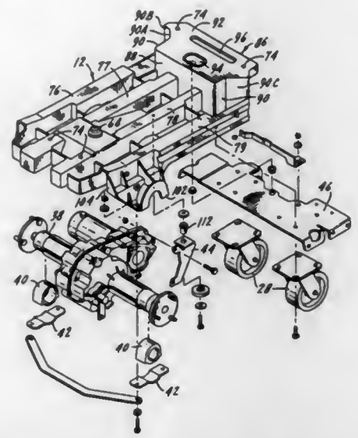
1. A mop head wringer to be used with a bucket comprising:
a supporting frame having a through hole, a pin mounted on said supporting frame, said pin protruding into said through hole;
a shaft mounted within said through hole, said shaft having a spiral groove, said pin riding within said spiral groove; and
a screen basket fixed to said shaft, said screen basket being movable between an at-rest position and a wringing position, a spring connected between said screen basket and said supporting frame, said spring exerting a continuous bias tending to locate said screen basket in said at-rest position, whereby upon insertion of the mop head within said screen basket said screen basket is moved to said wringing position while rotating of said screen basket exerting a wringing force against the mop head causing removal of excess moisture from the mop head.

5,611,105

TORSIONALLY FLEXIBLE FRAME STRUCTURE

Michael L. Biehert, Crystal, and Robert A. Geyer, Champlin, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Jan. 13, 1995, Ser. No. 372,512
Int. Cl.[6] A47L *11/29;11/292*
U.S. Cl. 15—320 **5 Claims**



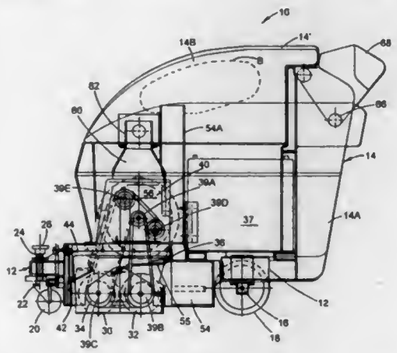
1. A floor scrubber having a resilient plastic frame and a mating resilient plastic receiving tank set upon and attached to that frame, a plurality of wheels supporting the frame, all of said wheels being attached to the underside of said frame and all of which contact a supporting surface, the frame and tank being structurally stiffened longitudinally to transfer the weight of the floor scrubber to the wheels, the frame and tank being less stiff torsionally, whereby the frame and tank may twist to allow the wheels to conform to irregularities in the supporting surface and maintain all four wheels in contact with the surface at all times, even in high and low areas.

5,611,106

CARPET MAINTAINER

Richard F. Wulff, Maple Plain, Minn., assignor to Castex Incorporated, Holland, Mich.

Filed Jan. 19, 1996, Ser. No. 588,623
Int. Cl.[6] A47L *5/05*
U.S. Cl. 15—320 **10 Claims**



1. A carpet maintainer comprising:
a mobile support having power drive means for advancing said support over an underlying carpet surface, and having an underside, a forward end and a rearward end;

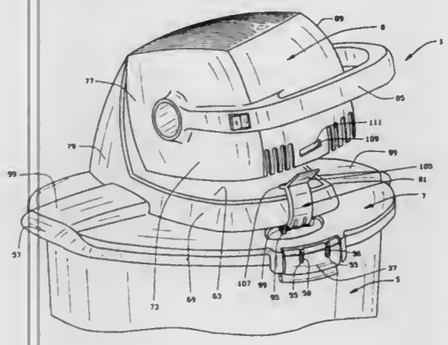
a housing on said support;
a cleaning solvent vessel supported by said support;
a discharge spray bar at said support underside and associated with said vessel for discharging cleaning solvent from said vessel onto an underlying carpet surface;
a pair of powered, counter-rotational, elongated brushes at said underside, adjacent each other, and transverse to said support;
said spray bar being forward of said brushes for ejecting cleaning solution on a carpet followed by brush scrubbing and carpet pile tip pick-up;
a hopper adjacent said brushes to retain heavier debris;
a suction fan in said housing;
an air and dirt conducting conduit extending from said hopper toward said suction fan; and
means for mounting a collector bag between said hopper and said suction fan so that dirt and dust swept up by said brushes can be deposited into said hopper or drawn by said fan into said collector bag.

5,611,107

LATCHING MECHANISMS FOR WET/DRY UTILITY VACUUM CLEANER WITH DETACHABLE BLOWER

Mark J. Tomasiak, O'Fallon; Jeffrey L. Young, St. Peters, and Stuart V. Holsten, O'Fallon, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 332,591, Oct. 31, 1994. This application Apr. 4, 1996, Ser. No. 627,471
Int. Cl.[6] A47L *5/36*
U.S. Cl. 15—327.2 **23 Claims**



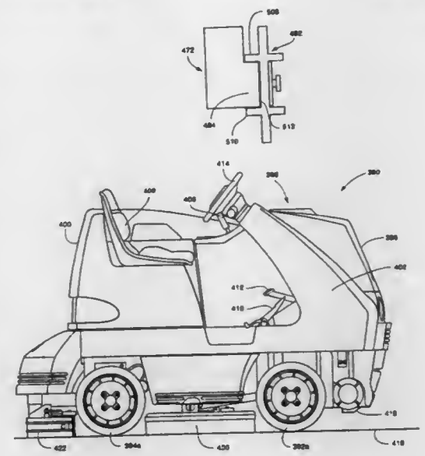
1. A wet/dry utility vacuum cleaner including:
a vacuum cleaner drum having a bottom wall, a sidewall and an enlarged rim surrounding an open upper end;
a lid detachably mounted to the enlarged rim and extending across the open upper end of the vacuum cleaner drum;
a motor powered blower detachably mounted to said lid;
said lid including a releasable blower latch for releasably securing the blower to the lid and a releasable lid latch for releasably securing the lid to the drum;
said releasable blower latch and said releasable lid latch both being laterally deformable to facilitate engagement within complementary blower and lid latch supporting structure provided in said lid;
said releasable blower latch and said releasable lid latch when mounted in said complementary blower and lid latch supporting structure capable of being moved into a disengaged or engaged position relative to said blower and lid; and
structural reinforcing means provided on each one of said releasable blower latch and releasable lid latch or said lid to restrict lateral deformation of said releasable blower latch and releasable lid latch when in engaged position relative to said blower and lid.

5,611,108

FLOOR CLEANING APPARATUS WITH SLIDABLE FLAP

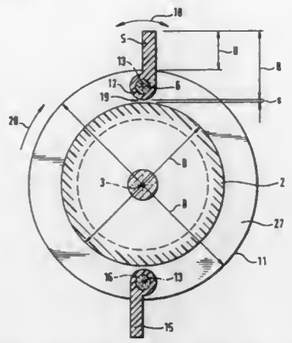
Christopher M. Knowlton, Pinehurst; Timothy A. Strickland, Raeford, both of N.C., and Robert J. O'Hara, Castle Rock, Colo., assignors to Windsor Industries, Inc., Englewood, Colo.

Continuation of Ser. No. 233,014, Apr. 25, 1994, Pat. No. 5,485,653. This application May 30, 1995, Ser. No. 454,413
Int. Cl.[6] B08B *5/04*
U.S. Cl. 15—340.4 **16 Claims**



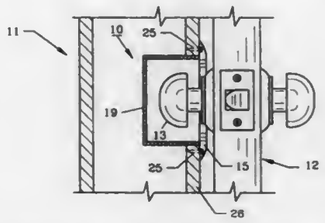
1. An apparatus for cleaning a surface comprising:
a frame;
means, operatively attached to said frame, for cleaning a surface;
at least three wheels for moving said frame and said means for cleaning over a surface; and
means for steering at least one of said at least three wheels;
wherein said means for cleaning includes a flap and means for mounting said flap to said frame;
wherein said flap includes an upper edge having a first thickness and a lower edge having a second thickness that is less than said first thickness;
wherein, when said flap is in use, said lower edge is disposed adjacent to the surface and said upper edge is displaced from said surface;
wherein said means for mounting includes a longitudinally extending slot for holding said flap, said slot having an upper portion for holding said upper edge of said flap and a lower portion for holding a first portion of said lower edge of said flap but incapable of accommodating said upper edge of said flap, said lower portion extending from said upper portion to an opening through which a second portion of said lower edge of said flap extends towards said surface;
wherein said upper portion of said longitudinally extending slot includes a first channel for holding said upper edge of said flap that is located at a first distance from the surface, and a second channel for holding said upper edge of said flap that is separate from said first channel and located at a second distance from the surface that is less than said first distance, wherein said second channel permits a flap that is held by said first channel and whose lower edge has been worn away from the surface to be moved so that the lower edge can be brought closer to the surface;
wherein said means for mounting includes a groove adjoining said lower portion of said longitudinally extending slot that is incapable, in combination with said lower portion of said longitudinally extending slot, of accommodating said upper edge of said flap;
wherein said flap can be slidably inserted into and slidably removed from said longitudinally extending slot.

5,611,109
CLEANING ROLLER FOR THE SUCTION HEAD OF A VACUUM CLEANING DEVICE
Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland
Filed Feb. 20, 1996, Ser. No. 603,431
Claims priority, application Germany, Feb. 20, 1995, 195 05 787
Int. Cl.[6] A47L *5/10*
U.S. Cl. 15—386 **20 Claims**



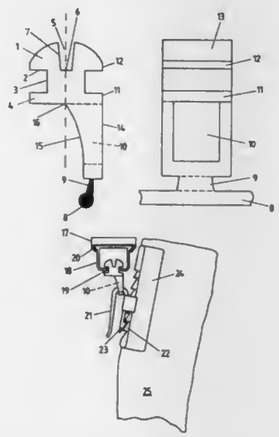
1. A cleaning roller for a suction head, said cleaning roller comprising:
a substantially cylindrical base body with a cylindrical mantle surface, said base body driven in rotation about an axis of rotation;
support members connected to said base body and projecting radially past said cylindrical mantle surface;
at least one elongate wiper blade comprising a shaft, said at least one wiper blade fastened with said shaft to said support members so as to extend parallel to said axis of rotation;
said at least one wiper blade in a working position projecting from said base body in the radial direction;
said at least one wiper blade pivotable about a pivot axis defined by said shaft out of said working position; and
said at least one wiper blade comprised of an elastic material.

5,611,110
WALL INSERT AND METHOD
Allison H. Smith, Jr., 5334 Groomtown Rd., Greensboro, N.C. 27407
Continuation of Ser. No. 407,333, Mar. 20, 1995. This application Jul. 31, 1996, Ser. No. 690,026
Int. Cl.[6] B65D *55/00;* **E05F** *5/02*
U.S. Cl. 16—2.1 **9 Claims**



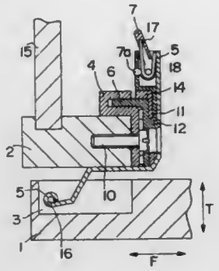
1. A wall insert in combination with a door having a protruding knob, said wall insert for allowing said door knob to enter a recessed opening in a wall, said wall insert comprising: a face plate, a receptacle, a rear receptacle wall, said rear receptacle wall attached to said receptacle, said receptacle attached to said face plate, said face plate defining an opening to allow passage through said face plate into said receptacle, said opening and said receptacle sized greater in width than the width of said door knob to allow said door knob to freely pass through said receptacle without contact therewith, said face plate for mounting on the surface of said wall, said receptacle extending interiorly of said wall farther than the distance said door knob protrudes from said door, whereby said door knob will not contact said rear receptacle wall.

5,611,111
CURTAIN RAIL GLIDER
Henrikus W. F. Bosgoed, Schalkhaar, Netherlands, assignor to Forest Group Nederland B.V., El Deventer, Netherlands
Continuation of Ser. No. 216,012, Mar. 21, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,273
Claims priority, application Netherlands, Mar. 24, 1993, 9300531
Int. Cl.[6] A47H *13/12*
U.S. Cl. 16—93 D **8 Claims**

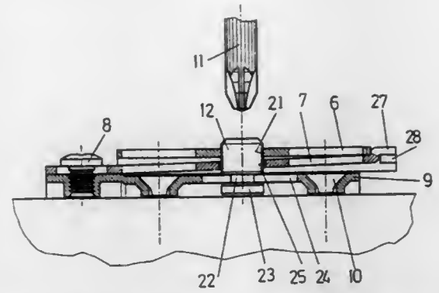


1. Glider for hanging a curtain (**25**) on a longitudinal curtain rail (**18**) which defines a width direction for the glider, comprising:
a head portion (**1**) having a bottom surface (**2**) with a first width,
below the head portion a connecting portion (**3**) with a second width smaller than the first width,
underneath the connecting portion a bottom portion (**4**) with a third width greater than the second width of the connecting portion, but not exceeding the first width of the head portion,
a slit provided in the middle of the head portion which has a trapezium-shaped profile and which has a lowermost surface, the lowermost surface being parallel to the bottom surface of the head portion and substantially aligned with the bottom surface of the head portion corresponding with the rail,
wherein the connecting portion is located in the width direction centrally of the head portion and the bottom portion so that the glider is longitudinally and symmetrically in the width direction received on the rail with bottom surface (**2**) engaging the rail, and
the bottom portion being provided with an eye (**10**) forming a closed loop, in which a curtain hook attached to a curtain can be inserted, characterized in that the eye, in the width direction, is located on one side of the third width of the bottom portion.

5,611,112
MOUNTING PLATE ASSEMBLY FOR A HINGE FOR MOUNTING A DOOR ON A FRAME OF AN ARTICLE OF FURNITURE
Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Sep. 6, 1995, Ser. No. 523,915
Claims priority, application Austria, Sep. 6, 1994, 1705/94
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—237 **11 Claims**



1. A mounting plate assembly of a hinge for mounting a furniture door to a furniture frame, said assembly comprising:
a mounting plate to be mounted on the frame by a screw;
a first intermediate member mounted on said mounting plate by a first clamping screw for longitudinal movement relative to said mounting plate in a first direction to be horizontal and to be parallel to the plane of the door when the door is mounted on the frame and in a closed position relative thereto;
said mounting plate including a guide member to be abutted against an inner side of the frame, and said first intermediate member including an arm guided by said guide member for movement relative thereto in said first direction;
a hinge arm pivotally connected to a hinge casing to be mounted on the door;
a second intermediate member mounted on said hinge arm by a second clamping screw for longitudinal movement of said hinge arm relative to said second intermediate member in a second direction to be horizontal and to be perpendicular to the plane of the door when the door is mounted on the frame and in the closed position relative thereto; and
said second intermediate member being removably interlockably mountable on said first intermediate member.



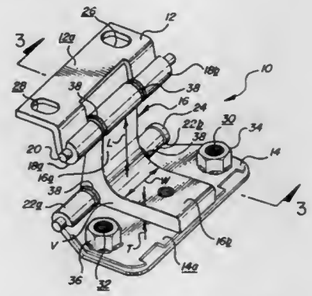
may be articulated with respect to each other, said articulation axis extending perpendicular to said hinge axis; and
a gap-adjusting screw mounted on said base plate and threadedly engaged with one of said hinge arm and said intermediate plate, such that turning of said gap-adjusting screw causes articulation of said one of said hinge arm and said intermediate plate about said articulation axis relative to the other of said hinge arm and said intermediate plate.

5,611,113
FRAME HINGE WITH PERPENDICULAR HINGE AND ARTICULATION AXES
Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Nov. 16, 1995, Ser. No. 558,477
Claims priority, application Austria, Nov. 17, 1994, 2127/94
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—246 **30 Claims**

1. A frame hinge comprising:
a base plate to be mounted on a furniture frame;
an intermediate plate secured to said base plate by a securing screw;
a hinge pot to be mounted on a door leaf;
a hinge arm connected to said hinge pot by at least one pivot pin forming a hinge axis about which said hinge pot and the door leaf are pivotable between open and closed positions relative to said hinge arm and the furniture frame;
said intermediate plate having at least one projection extending into a slot in said hinge arm, thereby defining an articulation axis about which said hinge arm and said intermediate plate

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5,611,114
HIGH STRENGTH, DUAL ACTION HINGE
Vincent Wood, Jr., and Vincent Wood, Sr., both of 4920 Kebbe Dr., Sterling Heights, Mich. 48310
Filed Jun. 5, 1995, Ser. No. 461,533
Int. Cl.[6] E05D *3/06*
U.S. Cl. 16—366 **15 Claims**



1. A dual action, high strength, hinge comprising:
a first hinge plate and a second hinge plate, each hinge plate comprising a generally planar attachment portion and a cylindrical barrel portion defining a passageway therethrough;
a monolithic, formed metal, support member configured as a generally L-shaped body having a first leg with a first cylindrical bore defined therethrough proximate a free end thereof, and a second leg joined to said first leg in an angular relationship therewith so as to define a vertex, said support member further including a second cylindrical bore defined therethrough proximate said vertex and an integral stop portion defined thereon proximate said vertex;
a first hinge pin disposed so as to pass through the passageway defined by the barrel of said first hinge plate and through said first bore so as to hingedly attach the first hinge plate to the first leg; and
a second hinge pin disposed so as to pass through the passageway defined by the barrel of the second hinge plate and through said second bore so as to hingedly attach the second hinge plate to the support member;
wherein, said stop portion is configured to engage the second hinge plate as said second hinge plate is pivoted upon said second hinge pin.

5,611,115

SLIVER-DELIVERY MACHINE AND A SLIVER COILER

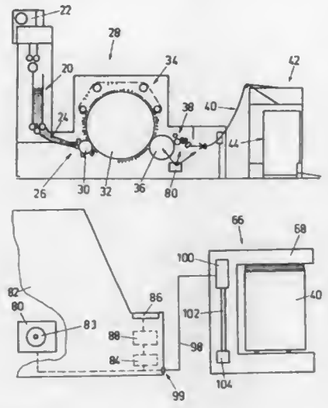
Jurg Faas, Dinhard, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Feb. 22, 1995, Ser. No. 392,039

Claims priority, application Switzerland, Mar. 9, 1994, 00691/94

Int. Cl.[6] D01G *15/62;* **B65H** *54/80;54/74*

U.S. Cl. 19—98 **12 Claims**



1. In combination

a card including sliver-delivery elements and a first drive for driving said elements, said drive having at least one frequency-controlled A.C. motor;

a sliver coiler for receiving sliver from said card and a second drive for driving said coiler, said second drive including at least one frequency-controlled motor; and

a frequency converter connected in common to said first drive and said second drive for supplying power thereto, said frequency converter having an output frequency defining the synchronous speed of said motor of said first drive and said motor of said second drive to drive said coiler in synchronism with said card with a consequent absence of significant draft variations in the sliver delivered therebetween.

5,611,116

FIBER BATT FEEDING APPARATUS FOR A FIBER PROCESSING MACHINE

Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Division of Ser. No. 172,158, Dec. 23, 1993, Pat. No. 5,479,679. This application May 25, 1995, Ser. No. 450,314

Claims priority, application Germany, Dec. 23, 1992, 42 43 833.0; Oct. 6, 1993, 43 34 035.0

Int. Cl.[6] D01G *15/40*

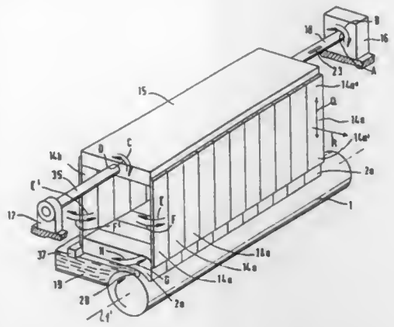
U.S. Cl. 19—105 **20 Claims**

1. An apparatus for feeding a fiber batt to a fiber processing machine, comprising

(a) a rotatably supported feed roll having a rotary axis;

(b) a feed table formed of a plurality of separately movable feed table segments arranged in a series along said feed roll; each feed table segment having a face portion cooperating with said feed roll and defining therewith a nip through which the fiber batt passes in an advancing direction;

(c) a plurality of springs each having a first zone of securement and a second zone of securement spaced from the first zone of securement; said springs being affixed at said first zone of securement to said feed table segments to form integral components therewith; each spring being relatively hard as viewed in a first direction and being relatively soft as viewed in a second direction; said first direction extending from said first zone of securement to said second zone of securement and being perpendicular to said rotary axis and said second direction being perpendicular to said first direction and to said rotary axis;



(d) an elongated holding element extending spaced from, and generally parallel to said feed roll; each said spring being affixed at said second zone of securement to said holding element, whereby said holding element resiliently supports said feed table segments by said springs; said feed table segments being individually movable away from said feed roll against a force of respective said springs in response to thickness variations in the fiber batt as the fiber batt passes through said nip;

(e) supporting means for rotatably supporting said holding element; said feed table segments imparting torques on said holding element through said respective springs as a function of movements of said feed table segments; said holding element being rotated by said torques to an extent representing a sum of said torques; and

(f) sensor means connected to said holding element for generating a signal as a function of rotary displacements of said holding element.

5,611,117

SPINNING PLANT MACHINE WITH ATTACHMENT FOR CAN TRANSPORTING CARRIAGE

Hauner Friedrich, and Wagner Manfred, both of Ingolstadt, Germany, assignors to Rieter Ingolstadt, Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Oct. 7, 1994, Ser. No. 319,869

Claims priority, application Germany, Oct. 29, 1993, 43 37 115.9

Int. Cl.[6] D01G *21/00;* **B65G** *3/00*

U.S. Cl. 19—159 A **7 Claims**

1. A spinning mill machine for the production and transfer of fiber silver into spinning cans, said machine comprising:

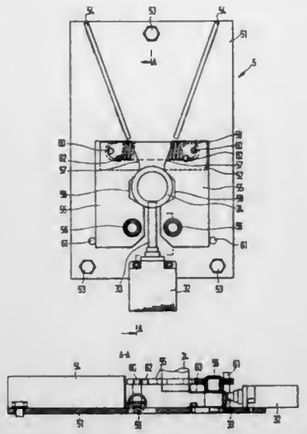
an automatic can replacement device configured to push full cans out of said machine into a can conveying carriage;

a centering device configured to center a can conveying carriage at said machine at a receiving location wherein said automatic can replacement device is able to convey full cans to the can conveying carriage;

a signal transmitter operably disposed at said receiving location to sense the presence of a can conveying carriage at said receiving position;

an automatically releasable locking device configured to hold the can conveying carriage at said receiving position; and

wherein said centering device, said signal transmitter, and said locking device are configured as a single assembly disposed directly adjacent said automatic can replacement device of said machine, and wherein said locking device automatically releases said conveying carriage upon said carriage being filled with spinning cans.



5,611,118

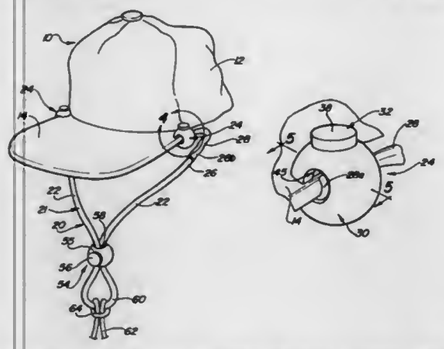
VISORED HEADWEAR RETAINING DEVICE

E. Bruce Bibbee, 2281 Baird Rd., Fostoria, Ohio 44830

Filed Dec. 8, 1995, Ser. No. 570,005

Int. Cl.[6] A41F *1/00;* **F16G** *11/00*

U.S. Cl. 24—298 **18 Claims**



1. A device for retaining a visored cap upon a wearer's head, comprising: a strap member having opposite free ends;

a pair of clamp members each having a housing with a cavity and an opening formed therein, a pin member slidable in said cavity and having an opening formed therein and a biasing means in said cavity for biasing said pin member, said pin member opening having a first engagement surface, said housing opening having a second engagement surface and said biasing means biasing said first engagement surface toward said second engagement surface, said opening in said pin member including a central aperture portion extending generally perpendicular to a longitudinal axis of said pin member and a slotted portion extending radially from said central aperture to a side surface of said pin member, said first engagement surface being formed in said slotted portion; and

an adjustment member for selectively and adjustably engaging a portion of said strap member whereby when pressure is applied to said pin members against said biasing means to move said first and second engagement surfaces of each said clamp member away from one another and align said pin member opening with said housing opening in each said clamp member, one of said free ends of said strap member and a portion of a visor of a cap can be inserted into said housing opening and said pin member opening of an associated one of said clamp members, and when said pressure is removed from said pin members, said free ends of said strap member and the portions of the visor are releasably attached together and said adjustment member can be moved along said strap member to selectively vary a distance between said adjustment member and said free ends of said strap member to accommodate a head of a wearer of the cap.

5,611,119

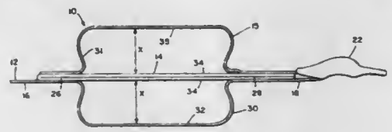
STRAP TENSIONING SYSTEM

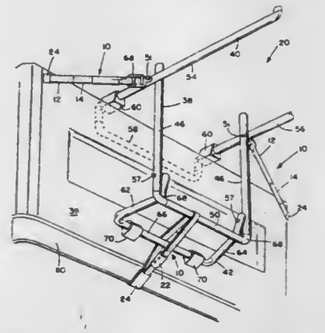
Alexander R. Allen, 29 Devens St., Concord, Mass. 01742

Continuation of Ser. No. 238,781, May 5, 1994, abandoned, which is a continuation of Ser. No. 90,616, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 801,439, Dec. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,465

Int. Cl.[6] B60R *9/00*

U.S. Cl. 24—301 **17 Claims**





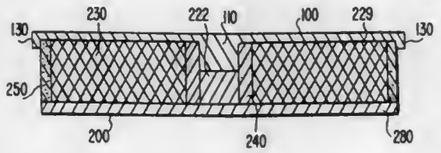
1. An apparatus for securing a carrier for carrying one or more bicycles on a motor vehicle, said apparatus comprising a strap means for securing said carrier to the motor vehicle, said strap means including a first strap, a second strap, and a tension means, each said first and second strap having a first end and a second end, said tension means having relaxed and stretched states, said tension means having a first length when in said relaxed state and a second length when in said stretched state, said second length being greater than said first length, said tension means being fixably connected to said first strap intermediate said first end and said second end, said tension means being fixably connected to said second strap at said first end and said second end of said second strap, said interconnected first strap, second strap, and tension means forming an integral structure, said tension means being connected to said first and second straps such the length of each of said straps between the ends of said tension means is greater than the length of said tension mean when said tension means is in its relaxed state, said second strap having a length substantially equal to the length of said first strap between the ends of said tension means, a pair of loops being formed in said first and second straps between the ends of said tension means, the length of said first strap, said second strap, and said tension means being substantially identical when said tension means is in said stretched state, said first strap and said second strap being under substantially the same amount of tension when said tension means is in said stretched state, said tension means maintaining tension in said strap means

when the tension in said strap means is reduced due to jarring of the carrier, said tension means providing a substantially continuous range of tension in said strap means, the distance between adjacent surfaces of said tension means and said loops providing a continuous visual indication of the tension in said strap means, said adjacent surfaces being separated when said strap means is relaxed and juxtaposed in substantially surface-to-surface contact when said strap means is in tension.

5,611,120
MAGNETIC LATCH

Robert G. Riceman, West Caldwell, N.J., and Mitchell A. Medina, New York, N.Y., assignors to International Patent Holdings Ltd., Hamilton, Bermuda

Continuation of Ser. No. 971,609, Nov. 6, 1992, Pat. No. 5,448,806, which is a continuation-in-part of Ser. No. 944,711, Sep. 11, 1992, Pat. No. 5,251,362, which is a continuation of Ser. No. 705,036, May 24, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 422,253
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—303 **24 Claims**



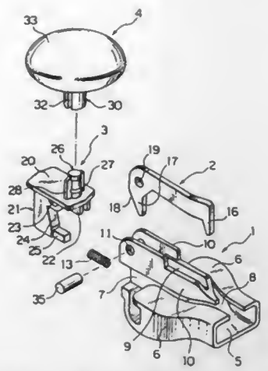
1. A magnetic latch, comprising:
a first member including magnetically attractable material; and
a second member including:
a magnet to attract said first member, said magnet defining a cavity;
a substantially rigid, non-magnetic member arranged inside of said cavity, and acting as a means for enhancing the magnetic attraction between said first and second members,
said first member being matingly engagable with said second member, and
said first and second members including means for preventing the lateral movement of the first member relative to the second member when said first and second members are latched together.

5,611,121
AUTOMATIC LOCK SLIDER FOR CONCEALED SLIDE FASTENER

Mitsuru Akeno, and Nobuhiro Ichikawa, both of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan

Filed May 20, 1996, Ser. No. 650,601
Claims priority, application Japan, May 19, 1995, 7-121455
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—423 **18 Claims**

1. An automatic lock slider for a concealed slide fastener, comprising:
(a) a slider body having a fastener-element guide post anti a fastener-element guide channel;
(b) a locking lever pivotally mounted on said guide post and having at one end a locking pawl;
(c) a spring mounted in said guide post and urging said locking pawl of said locking lever so as to normally project into said guide channel;
(d) a pivoting release member pivotally mounted on said guide post and operatively connected with said locking lever, said pivoting release member being pivotally movable between a locking position in which said locking pawl projects into said guide channel and a release position in which said locking pawl is retracted from said guide channel; and

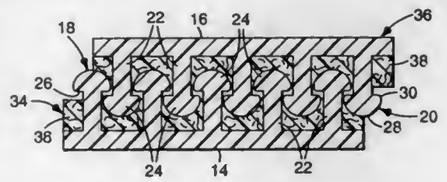


(e) a knob attached to an upper surface of said pivoting release member for pulling said pivoting release member, in an opening direction of the slide fastener, from said locking position to said release position against the resilience of said spring.

5,611,122
INTERENGAGING FASTENER HAVING REDUCED NOISE GENERATION

Shinji Torigoe; Akira Ito, both of Sagamihara, and Shinichi Tominaga, Fuchu, all of Japan, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Jul. 19, 1994, Ser. No. 277,198
Claims priority, application Japan, Jul. 28, 1993, 5-185895
Int. Cl.[6] A44B *17/00*
U.S. Cl. 24—442 **13 Claims**



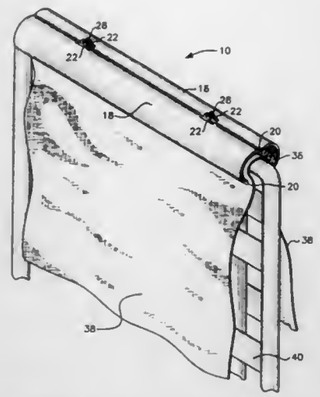
1. An interengaging fastener member, comprising:
a) a base;
b) a plurality of headed elements arranged on said base in a predetermined spaced relationship, said base and said headed elements being integrally molded from a polymeric material, each of said headed elements including
i) a stem projecting from said base, and
ii) a head connected to an end of said stem, said head of each headed element including a generally flat surface adjacent to said stem and extending radially outward from a periphery of said stem, and a curved surface bulging out with an apex and arranged at an opposite side of said generally flat surface from said stem; and
c) means for reducing noise located on said heads due to relative movement between said fastener member and a second, like fastener member interengaged with said fastener member.

5,611,123
TOWEL HOLDER

Darin Prizzi, 8416 Mantanzas Rd., Fort Myers, Fla. 33912

Filed Jun. 19, 1995, Ser. No. 491,820
Int. Cl.[6] A47H *13/00*
U.S. Cl. 24—459 **7 Claims**

1. In combination a releasable tube holder and a longitudinal support comprising,

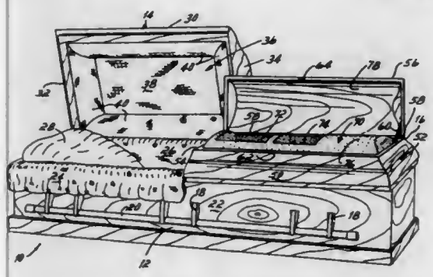


said tubular holder having a circular plastic tube about 15 to 18 inches in length split lengthwise longitudinally into substantially mirror image straight halves forming two opposed clamping members joined together at straight across split edges, each clamping member provided with two separated handle members positioned on one side of the clamping member and opposite the other two separated handle members of the other clamping member, said oppositely positioned handle members being hingedly connected by tensioned metal spring mechanisms to activate opening and closing of the opposed clamping members and split edges which engage and are secured to the support by applying and removing pressure on the oppositely positioned handle-members.

5,611,124
CASKET HAVING MEMORABILIA COMPARTMENT

John P. Biondo, Batesville, Ind.; Dennis C. Laphan; Donald R. Maier, both of Cincinnati, Ohio; William F. Neth, and Charles F. Winburn, both of Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed May 10, 1995, Ser. No. 438,441
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—2 **58 Claims**

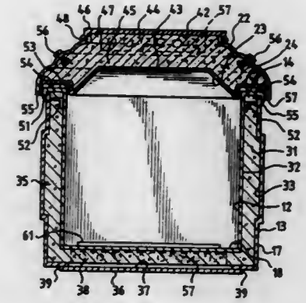


1. A casket having a memorabilia compartment comprising:
a shell having an interior therein;
a cap pivoted to said shell and movable to and between a closed position obstructing viewing of at least a portion of said shell interior and an open position permitting viewing of said at least a portion of said shell interior; and
an openable and closable memorabilia compartment forming a part of said cap;
said cap and memorabilia compartment being so constructed and arranged such that opening said memorabilia compartment when said cap is in said closed position, as when placing mementos in said memorabilia compartment, does not permit viewing of said at least a portion of said shell interior.

5,611,125
CONCRETE FILLED CONTAINER BURIAL VAULT

Robert Williams, 649 Kathleen Dr., Schereville, Ind. 46375; Robert B. Williams, 11221 W. 80th Ct., St. John, Ind. 46373, and Gary J. Williams, 5100 Industrial Hwy., Gary, Ind. 46406

Filed Aug. 31, 1995, Ser. No. 522,197
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—3 **10 Claims**



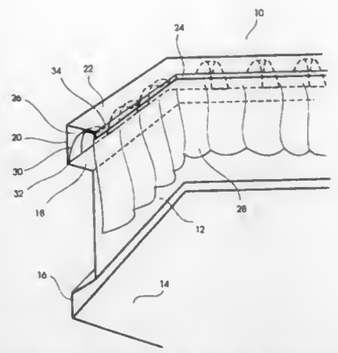
1. A vault comprising:
a container with a container wall, the container wall having a containing wall portion, an exposed wall portion, and a brim where the containing wall portion joins the exposed wall portion, the container wall baring flow of matter through the exposed wall portion and through the containing wall portion;
a chamber wholly enclosed by a chamber wall, the chamber wall having an inner wall portion continuous with the container containing wall portion, and the chamber wall having an outer wall portion continuous with the container exposed wall portion;
an inner fenestrated spacer attached to the chamber inner wall portion wall and extending toward the chamber outer wall portion and an outer fenestrated spacer attached to the chamber outer wall portion and extending toward the chamber inner wall portion; and
concrete filling the chamber and passing through the fenestrated spacer so that the concrete is linked to the container wall and so that the container has the strength of the concrete; wherein a portion of the container exposed wall portion is a cover sealing an opening to the chamber through which the concrete was poured, a cover fenestrated spacer being attached to the cover and extending into the chamber to link the cover to the concrete.

5,611,126
CASKET AND FABRIC RETAINER MEMBERS THEREFOR

Robert H. Relly, 4851 Wolfe Rd., Richmond, Ind. 47374

Filed Sep. 8, 1995, Ser. No. 525,306
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—19 **10 Claims**

1. A burial casket, comprising:
a housing having a pocket surface portion;
a piece of decorative fabric contacting said pocket surface portion; and
a resilient flexible retainer member having a first end, a second end and a longitudinal section therebetween, bendably seated within the pocket surface and in a manner such that said piece of fabric is frictionally held between said first end of said retainer member and said pocket surface portion, wherein said



retainer member further has at least one transverse ribon said longitudinal section thereof to aid in insertion of said retainer member into said pocket surface portion.

5,611,127

PROCESS FOR THE MANUFACTURE OF TEXTILE STRUCTURES SUITABLE FOR USE IN TEXTILE PROSTHESES

Leonardo Ceriani, Busto Arsizio, and Gioachino Bona, Torino, both of Italy, assignors to Sorin Biomedica Cardio S.p.A., Turin, Italy

Continuation of Ser. No. 101,362, Aug. 3, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,199
Claims priority, application Italy, Aug. 6, 1992, TO92A0686
Int. Cl.[6] C08G *79/02;* **A61F** *2/06;* **D04B** *21/00*
U.S. Cl. 28—167 **16 Claims**

1. A process for producing a dense, low porosity, mechanically tough textile prothesis comprising

(a) knitting a first textile structure having at least two yarns wherein at least one yarn is a heat-shrinkable yarn, obtained by drawing substantially without the application of heat and knitted in a double-needle overlap tricot structure (German: Koper Trikot) for acting as a foundation yarn, and at least one other yarn is a substantially heat-stable yarn for serving as an effect yarn and being formed into projecting effect loops, wherein the heat-stable yarn is fed with an overfeed ratio to the first yarn of about 1.1 to about 1.5, and,

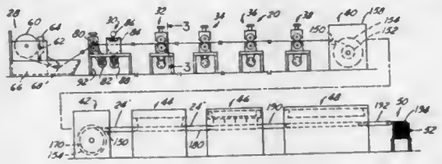
(b) heat treating the resulting first textile structure by immersion in a hot liquid shrinking the heat-shrinkable yarn therein, to thereby produce a second textile structure for use in a textile prothesis.

5,611,128

BATTERY GRIDS, METHOD AND APPARATUS

John O. Wirtz, Port Huron, Mich., assignor to Wirtz Manufacturing Co., Inc., Port Huron, Mich.

Filed Apr. 28, 1995, Ser. No. 430,224
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—2 **41 Claims**



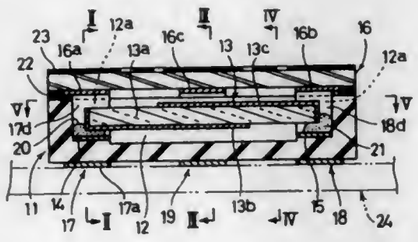
1. A method of making a positive grid for a positive plate of a lead-acid battery comprising, continuous casting of molten lead in an elongate web having a plurality of successive grid blanks having a substantially uniform thickness and a plurality of spaced apart and interconnected wires having interstices between them, cold working the grid blanks of the continuous cast web to reduce the thickness of the cast web at least 3:1, and cutting positive grids from the cold worked web to provide positive grids having substantially increased corrosion resistance in use in positive plates in a lead-acid battery and increased tensile strength after age hardening for at least 30 days compared to as continuous cast grids.

5,611,129

METHOD OF MAKING A PACKAGED PIEZOELECTRIC OSCILLATOR

Hisaya Yoshimoto; Shigeru Kambara, and Ikuo Matsumoto, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 293,922, Aug. 22, 1994, Pat. No. 5,506,463. This application Jun. 6, 1995, Ser. No. 470,038
Claims priority, application Japan, Aug. 23, 1993, 5-208075; Mar. 29, 1994, 6-059202; Mar. 29, 1994, 6-059203; Mar. 29, 1994, 6-059204; Mar. 29, 1994, 6-059205; Mar. 29, 1994, 6-059206; Mar. 30, 1994, 6-060587; Mar. 31, 1994, 6-062536
Int. Cl.[6] H01L *41/22*
U.S. Cl. 29—25.35 **7 Claims**



1. A method of making packaged piezoelectric oscillators comprising the steps of:

preparing a resinous master package plate formed with a plurality of upwardly open housing grooves, each of the housing grooves being flanked by at least first and second pairs of through-holes penetrating the master package plate, the first and second pairs of through-holes being located at positons corresponding to both ends of said each housing groove, said each housing groove having an intermediate wider width portion, each end of the housing groove being provided with a pair of end positioning walls projecting toward each other for providing a narrower width portion between the pair of end positioning walls;

forming first and second lead electrodes extending on upper and lower surfaces of the master package plate transversely of said each housing groove respectively at the first and second pairs of through-holes, the first and second lead electrodes further extending respectively within the first and second pairs of through-holes, the first and second lead electrodes further extending into said each housing groove;

forming oscillator electrodes on a bottom surface of said each housing groove respectively at both ends thereof in electrical conduction with the first and second lead electrodes;

mounting a piezoelectric element in said each housing groove in electrical conduction with the respective oscillator electrodes;

attaching a master lid plate to the master package plate to close said each housing groove; and

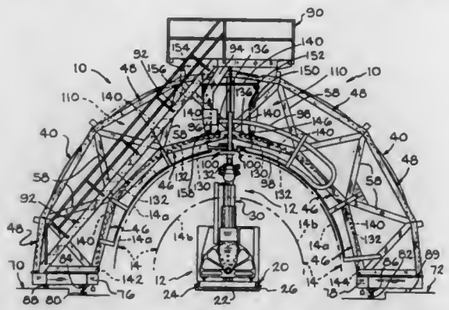
cutting the master package plate together with the attached master lid plate to provide a plurality of packaged piezoelectric oscillators.

5,611,130

MULTI-POSITION ROTARY HEAD APPARATUS

Thomas H. Rummell, Cheektowaga; Jeffrey P. Weaver, E. Amherst; Robert T. Flaig, Holland, and Thomas E. Burns, Tonawanda, all of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Filed Jun. 28, 1993, Ser. No. 84,353
Int. Cl.[6] B23Q *5/54;* **B23C** *1/12;* **B21J** *15/02;* **B23B** *11/00*
U.S. Cl. 29—34 B **18 Claims**



1. Apparatus for positioning tooling with respect to a curvilinear workpiece having a longitudinal axis comprising:

a) head means for supporting a plurality of tools at spaced locations around a central axis wherein each of said tools has an operational axis disposed substantially parallel to said central axis;

b) means for moving said head means along a path substantially parallel to the longitudinal axis of said workpiece;

c) means for moving said head means along a path corresponding to the curvature of said workpiece and in a plane disposed substantially perpendicular to said workpiece longitudinal axis;

d) means for moving said head means along a path substantially perpendicular to the longitudinal axis of said workpiece;

e) means for moving said head means along a path toward and away from said workpiece;

f) means for rotating said head means about said central axis to position selected ones of said tools at a location where the tool operational axis is in alignment with a work axis of said workpiece so that said tool can operate on said workpiece;

g) means for pivoting said head means about a first axis substantially perpendicular to said central axis and substantially perpendicular to said longitudinal axis of said workpiece; and

h) means for pivoting said head means about a second axis substantially perpendicular to said central axis and substantially parallel to said longitudinal axis of said workpiece.

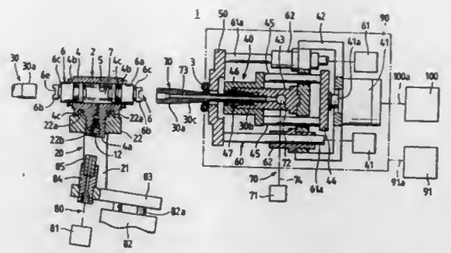
5,611,131

AUTOMATIC BOOT MOUNTING APPARATUS

Yoichi Iijima, Nagano, Japan, assignor to Nissin Kogyo Co., Ltd., Nagano, Japan

Division of Ser. No. 242,876, May 16, 1994, Pat. No. 5,457,865. This application Jun. 7, 1995, Ser. No. 473,924
Claims priority, application Japan, Jul. 23, 1993, 5-183017
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—235 **8 Claims**

1. An automatic boot mounting apparatus for mounting a boot on a cylinder, said cylinder having a cylinder body including a cylinder hole and a first annular groove formed on an end of an outer surface thereof, and a piston accommodated in said cylinder hole of said cylinder body, said piston including a protruded end portion and a second annular groove formed on an outer surface of said protruded end portion, and said boot including a large-diameter sealing portion for being fitted in said first annular groove and a small-diameter sealing portion for being fitted in said second annular groove; said automatic boot mounting apparatus comprising:



an inserter including a large-diameter shaft portion which is equal in diameter to said protruded end portion of said piston, a small-diameter shaft portion which is smaller in diameter than said small-diameter sealing portion of said boot, a tapered shaft portion interconnecting said large-diameter shaft portion and said small-diameter shaft portion, and an air passageway extending axially through said shaft portions;

a slide mechanism for moving each of said inserter and said boot along a central axis of said cylinder body and toward said cylinder body, said slide mechanism including a guide plate axially movable relative to said inserter for moving said boot along a length of said inserter;

first air supplying means for supplying air through said air passageway into a space between said piston and said boot, to fit said large-diameter sealing portion in said first annular groove by inflating said boot outwardly; and

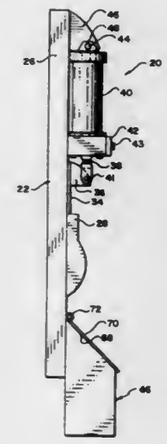
second air supplying means for supplying air into said cylinder hole, to fit said small-diameter sealing portion in said second annular groove by pushing said piston outwardly from said cylinder body.

5,611,132

CHIPPER KNIFE BABBITT REMOVAL TOOL

Fernand Lacoste, 208 Fotheringham Avenue, P.O. Box 372, Atikokan, Ontario, Canada

Continuation of Ser. No. 316,449, Oct. 3, 1994, abandoned. This application May 13, 1996, Ser. No. 645,032
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—239 **5 Claims**



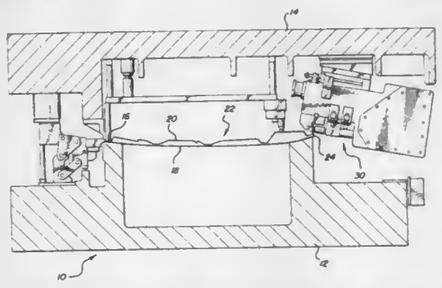
1. A tool for removing a block of babbitt metal from a chipper knife, said tool comprising:

a channel comprising two spaced apart rails and having an open front side;

knife support means extending at least partially across the open front side of the channel, between the rails for supporting the

chipper knife with the block of babbitt material in the channel and for limiting movement of the knife along the channel;
a blade slidable along the channel for engaging the block of babbitt metal therein, the blade being spaced rearwardly from the knife support means; and
a cylinder secured to the channel and to the blade, the cylinder being actuable to drive the blade along the channel to impact on the block of babbitt metal.

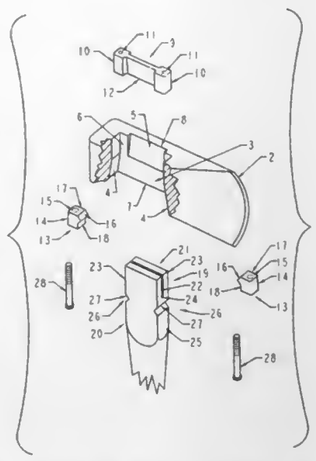
5,611,133
METHOD OF FORMING A CLOSURE PANEL WITH HEMMED AND NON-HEMMINGLY JOINED PERIPHERAL PORTIONS
James B. Toeniskoetter, Troy, Mich., assignor to TESCO Engineering, Inc., Auburn Hills, Mich.
Filed Aug. 15, 1995, Ser. No. 515,457
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—509 **3 Claims**



1. A method for forming a vehicle closure panel assembly from outer and inner metal preformed panels disposed between lower and upper dies, the method including the steps of:
nesting said inner panel and said outer panel into said lower die;
locating said panels relative to said lower die;
moving said dies toward each other;
clamping said panels in said lower die;
prehemming corners of said outer panel;
prehemming a portion of the periphery of said outer panel;
final hemming a portion of a periphery of said inner and outer panels together; and characterized by the step of:
non-hemmingly jointing a non-hemmed portion of the periphery of said panels as the assembly is clamped between said dies.

5,611,134
MECHANICAL SAFETY WEDGELOCK AND METHOD OF ASSEMBLY WITH A TOOL HANDLE
Randy L. Dixon, 454 W. Oak St., Shelley, Id. 83774
Continuation-in-part of Ser. No. 409,146, Mar. 23, 1995, abandoned. This application May 29, 1996, Ser. No. 664,930
Int. Cl.[6] B23P *11/02*
U.S. Cl. 29—525.11 **8 Claims**

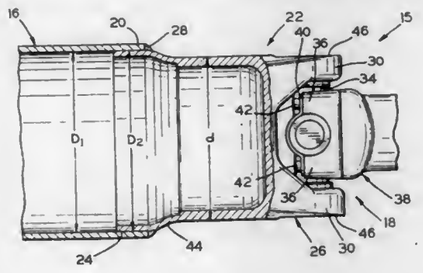
6. A method for connecting a tool to a handle comprising:
providing a tool with an eye of a first cross section, said eye including a plurality of wedge bar sloping surfaces in one end thereof, and a plurality of lock wedge sloping surfaces in an opposite end thereof;
providing a handle including an end of a second cross section complementary to said first cross section with a plurality of vertical slots therein dividing said end into a plurality of connected segments, and a plurality of notches formed about the perimeter of said end and disposed below said vertical slots;
providing a wedge bar comprising a plurality of bosses connected by a tapered wedge structure, each of said bosses including a longitudinal threaded through hole;



providing a plurality of tapered lock wedges, each lock wedge including a longitudinal through hole and a protrusion extending from one side of said lock wedge which is shaped to mate with a corresponding notch in said handle;
providing a plurality of threaded fasteners;
inserting each of said lock wedges within a corresponding notch in said handle;
inserting said handle and said inserted lock wedges within said eye of said tool such that each of said lock wedges are adjacent a corresponding lock wedge sloping surface;
inserting said tapered wedge structure of said wedge bar into said eye of said tool and within said vertical slots of said handle between said connected segments;
inserting each of said fasteners through the through hole of a corresponding lock wedge and through said eye of said tool and into engagement with the threaded through hole of a corresponding boss of said wedge bar; and
tightening said threaded fasteners, such that said wedge bar is drawn toward said lock wedges, forcing each of said connected segments of said handle against a corresponding wedge bar sloping surface of said eye, and forcing each of said lock wedges against a corresponding lock wedges sloping surface of said eye.

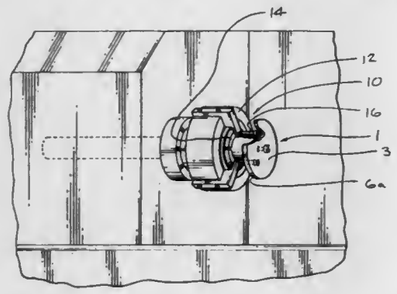
5,611,135
METHOD OF MAKING A TUBE YOKE FOR DRIVE LINE ASSEMBLY
Douglas E. Breese, Northwood, Ohio, assignor to Dana Corporation, Toledo, Ohio
Filed Mar. 21, 1995, Ser. No. 407,812
Int. Cl.[6] B22D *11/128;* **F16D** *3/26;3/40*
U.S. Cl. 29—527.6 **20 Claims**

1. A method of making a tube yoke for a drive line assembly, the



tube yoke having a tube seat at one end for mating with a driveshaft tube and lug ears at the other end for connecting with a universal joint assembly, the method comprising the steps of:
(a) forming a body of metal into a net shape body of the tube yoke having a tube seat at one end and lug ears at the other end;
(b) subsequent to said step (a), subjecting the net shape body to a forming operation to form the tube seat into its final pre-assembly form and shape without machining of the tube seat and machining the lug ears to enable connection with the universal joint assembly; and
(c) subsequent to said step (b), securing the tube seat of the tube yoke to the driveshaft tube to form the drive line assembly.

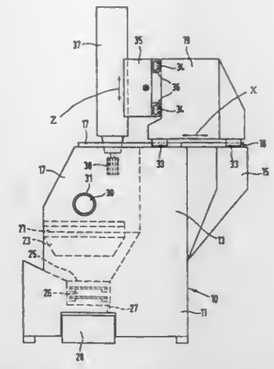
5,611,136
METHOD OF MANUFACTURING FLANGED SHAFTS
Timothy A. LeBlanc, Livonia, Mich., assignor to Machine Tool & Gear, Inc., Fenton, Mich.
Continuation of Ser. No. 279,520, Jul. 25, 1994, Pat. No. 5,448,820. This application May 22, 1995, Ser. No. 447,102
Int. Cl.[6] B23P *13/04*
U.S. Cl. 29—558 **36 Claims**



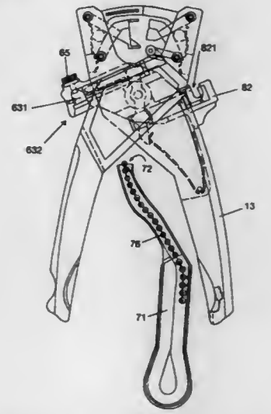
1. A method for manufacturing a flanged shaft from a forging having a shaft, a shaft end, and a flange having an inboard side, a perimeter and an outboard side, using a lathe, the method comprising:
first finishing at least the outboard side of the flange of the forging in the lathe; and
second finishing the remainder of the forging into a flanged shaft while referencing the forging off the outboard side of the flange.

5,611,137
MACHINE TOOL, MORE PARTICULARLY FOR DRILLING AND MILLING
Hans-Dieter Braun, Frittlingen, Germany, assignor to Maschinenfabrik Berthold Hermle AG, Gosheim, Germany
Filed Oct. 27, 1995, Ser. No. 549,238
Claims priority, application Germany, Nov. 19, 1994, 44 41 253.3
Int. Cl.[6] B23C *1/06*
U.S. Cl. 29—560 **22 Claims**

1. A machine tool for drilling and milling, comprising a machine bed, guide rails mounted on said bed, a power driven longitudinal slide adapted to run horizontally on said rails on said bed, a machining head, and a rotary drive device forming part of said head for at least one tool, said head being adapted to be power moved on the longitudinal slide in at least one further direction of movement, wherein the machine bed possesses two spaced lateral walls defining an intermediate space between them, which is designed in the form of a machining zone adapted to accommodate at least one work holding means, on the two lateral walls two parallel guide rails for the longitudinal slide are arranged, a third guide rail is arranged which is approximately half way between the two other guide rails with an offset in the longitudinal direction, and the longitudinal slide is guided using three guide elements on the three guide rails, the power drive being at or adjacent to the central guide rail.



5,611,138
PLIER-SHAPED TOOL TO DRILL A PARTIALLY FREE END REGION OF A STRANDED VEIN OF AN INSULATED CONDUCTOR
Josef Krampe, An der Vogelrute 32, D-59387, Ascheberg, Germany
Filed Apr. 19, 1995, Ser. No. 424,899
Claims priority, application Germany, Apr. 20, 1994, 44 13 748.6
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—564.4 **15 Claims**



1. A pliers-like tool for twisting a partly stripped end of a multiple-strand core of an insulated conductor, comprising: jaws having free ends and a space between said jaws; projections extending out of each free end of each jaw and toward the other jaw into said space between said jaws;
said projections following an arc described by opening and closing said jaws;
said projections being non-coplanar for leaving a space between said projections;
one of said projections being long enough to overlap the other of said projections to a limited extent when said jaws are separated;
and

surfaces on said projections demarcating said space between said projections and being high-friction surfaces.

5,611,139

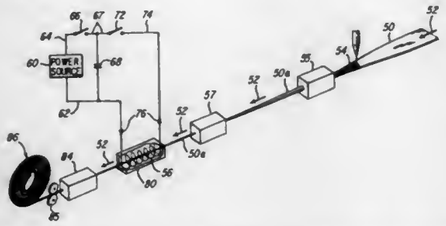
STRUCTURE AND METHOD FOR COMPACTION OF POWDER-LIKE MATERIALS

Bhanumathi Chelluri, Dublin; John P. Barber, Kettering, and Duane C. Newman, London, all of Ohio, assignors to IAP Research, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 834,148, Feb. 10, 1992, Pat. No. 5,405,574. This application Apr. 6, 1995, Ser. No. 417,919

Int. Cl.[6] B23P *19/00;* **C21D** *1/04*

U.S. Cl. 29—744 **14 Claims**



1. A structure for producing a dense body using a powder material, comprising:

a retainer for retaining the powder material,

an electrically conductive pressure member movable toward the powder material which is retained by the retainer,

an electrically conductive driver positioned adjacent the electrically conductive pressure member,

an electrical energy supply source to energize the electrically conductive driver for energization of the electrically conductive driver to apply electromagnetic pressure to the electrically conductive pressure member without direct electrical contact to drive the electrically conductive pressure member to compress the particulate material to produce said dense body.

5,611,140

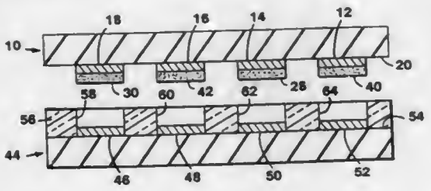
METHOD OF FORMING ELECTRICALLY CONDUCTIVE POLYMER INTERCONNECTS ON ELECTRICAL SUBSTRATES

Frank W. Kulesza, Winchester, Mass., and Richard H. Estes, Hollis, N.H., assignors to Epoxy Technology, Inc., Billerica, Mass.

Division of Ser. No. 107,498, Aug. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 810,513, Dec. 19, 1991, Pat. No. 5,237,130, which is a division of Ser. No. 452,191, Dec. 18, 1989, Pat. No. 5,074,942. This application Feb. 10, 1995, Ser. No. 387,024

Int. Cl.[6] H05K *3/30*

U.S. Cl. 29—832 **2 Claims**



1. A method of electrically connecting conductive contact pads of a first substrate to conductive contact pads of a second substrate, comprising the steps of:

stencilling conductive polymer bumps onto the contact pads of one of the substrates;

positioning the contact pads of the first substrate in alignment with the contact pads of the second substrate and with the conductive bumps being disposed between the aligned contact pads; and

electrically connecting the contacts of the first substrate to the electrical contacts of the second substrate through the conductive bumps.

5,611,141

APPARATUS AND METHOD FOR WIRE CRIMPING

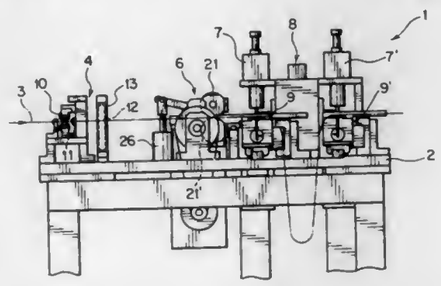
Kazuhiko Takada, and Sanae Kato, both of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,712

Claims priority, application Japan, Dec. 7, 1993, 5-306472; Dec. 7, 1993, 5-306473; Dec. 8, 1993, 5-307857; Dec. 8, 1993, 5-307858

Int. Cl.[6] H01R *43/04*

U.S. Cl. 29—861 **15 Claims**



6. A wire crimping method comprising the steps of:

passing a single wire in between a pair of openable/closable wire guides between a pair of crimping cylinders in opposition to wire crimping blades of a pair of crimping cylinders arranged in parallel in a direction of feeding a wire by wire-length setting rollers;

on a pair of first and second moving tables having connector containers opposite to the wire crimping blades and being shiftable in a direction horizontally orthogonal to the wire, crimping the front end of the wire to a crimping connector on the first moving table at a forward position of wire feeding;

opening said pair of wire guides and also driving said wire-length setting rollers to droop the wire between said pair of moving tables so that the wire is extended to have a required length; and

crimping the stem of the wire to the connector on the second moving table at a backward position of wire feeding.

5,611,142

METHOD OF MAKING ELECTRICAL CONNECTORS

Antonius M. Kies, Oisterwijk, Netherlands, assignor to Erico International Corporation, Solon, Ohio

Filed Jun. 6, 1995, Ser. No. 467,185

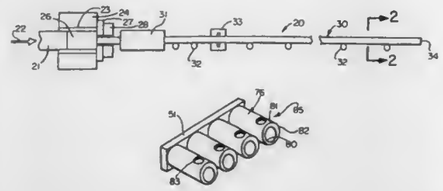
Int. Cl.[6] H01R *43/16*

U.S. Cl. 29—874 **15 Claims**

1. A method of making an electrical connector comprising the steps of:

extruding a rectangular-in-section conductive metallic extrudate having spaced slots along one long side extending almost to the opposite long side to form projections extending from said opposite long side;

transversely cutting the extrudate to form a rectangular stock finger block of conductive metal so that said slots form



substantially square posts projecting from the unslotted opposite long side of the finger block;

placing a number of said blocks on a machining center pallet;

machining said blocks to form said square posts into round posts; and

forming and tapping a transverse screw hole in each post to facilitate the clamping of a conductor to said respective posts.

5,611,143

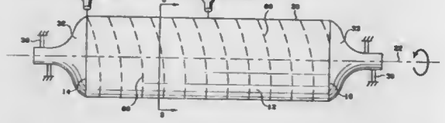
PROCESS FOR MAKING CHILLED IRON ROLLS

Edwin X. Graf, Menasha, Wis., assignor to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Oct. 21, 1994, Ser. No. 327,316

Int. Cl.[6] B21D *39/02*

U.S. Cl. 29—895.3 **17 Claims**



1. A process for forming a chilled iron roll for use in a calender comprising the steps of:

providing an unfinished roll having a longitudinal axis and a radial periphery, wherein the unfinished roll includes a core volume forming said radial periphery and extending radially inward therefrom, and wherein said core volume comprises a first metal microstructure having a first hardness;

melting an outer radial region of said core volume having said first metal microstructure;

cooling the melted core volume outer radial region in a manner whereby said core volume outer radial region solidifies into a second metal microstructure, wherein said second metal microstructure comprises a second hardness greater than said first hardness; and

smoothing the solidified core volume outer radial region to provide a smooth surface,

the melting step comprising providing a first electrode and a second electrode electrically circuited with a source of alternating current, and wherein sequential electrical arcs are passed between said core volume outer radial region and said first and second electrodes in alternating directions to melt the core volume outer radial region.

5,611,144

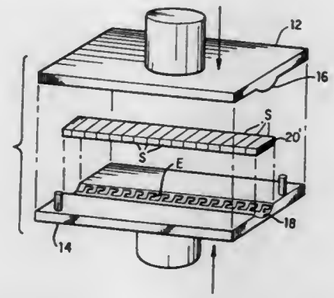
METHOD OF MANUFACTURING UNIQUE JEWELRY AND ARTICLE FORMED THEREFROM

Michael Gusky, Fort Lauderdale, Fla., assignor to Aurafin Corporation, Sunrise, Fla.

Filed May 31, 1996, Ser. No. 657,758

Int. Cl.[6] B21L *17/00*

U.S. Cl. 29—896.411 **1 Claim**



1. A method of manufacturing decorative chain, comprising the steps of:

providing a length of woven wire fabric having a length and width corresponding to the chain to be created;

passing a series of independent hollow link segments over said fabric, said link segments being arranged in end-to-end abutting relationship to form a preformed flexible chain;

placing the preformed chain between die members of a press, wherein at least an upper working surface of one of said die members is provided with indentation means for creating an embossed pattern on at least one surface of said link segments;

bringing working surfaces of said die members into contact with said link segments and subjecting the preformed chain to a pressing force for a predetermined duration to cause the link segments to deform into a configuration corresponding to the contour of said working surfaces of said die members, including causing at least one surface of at least some of said link segments to have an embossed pattern disposed therein.

5,611,145

DRY-SHAVING APPARATUS

Matthias Wetzel, Zeiselstrasse 23, W-6000, Frankfurt 1, Germany; Terence G. Royle, 21 Foxcote, Wokingham, Berkshire, Great Britain, and Raymond G. Parsonage, 40 Highway Road, Maidenhead, Berkshire, Great Britain

PCT No. PCT/EP92/02960, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/12916, PCT Pub. Date Jul. 8, 1993

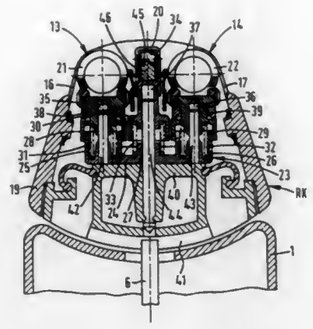
PCT Filed Dec. 10, 1992, Ser. No. 244,977

Claims priority, application United Kingdom, Dec. 20, 1991, 9127092; Dec. 20, 1991, 9127102

Int. Cl.[6] B26B *19/04*

U.S. Cl. 30—43.92 **37 Claims**

1. Dry-shaving apparatus comprising a housing, a drive provided in said housing, and at least two parallel shaving units operated by said drive, each of said at least two parallel shaving units having a respective outer cutter, an inner cutter and at least one biasing element, wherein the biasing elements of the shaving units have differing characteristics such that the force-displacement characteristic of one of said shaving units differs from that of another of said shaving units which characteristic is such that under the effect of a



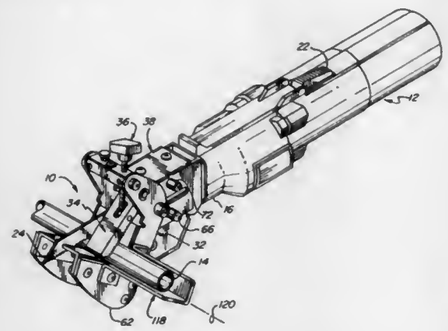
force applied externally to the shaving units during shaving, said one of the shaving units moves relative to said another of said shaving units.

5,611,146

CLAMPING DEVICE FOR USE WITH A HAND-HELD TOOL

Lucien C. Ducret, 9 Tod's Driftway, Old Greenwich, Conn. 06870

Filed Oct. 25, 1995, Ser. No. 548,279
Int. Cl.[6] B26D *7/02*
U.S. Cl. 30—92 **19 Claims**



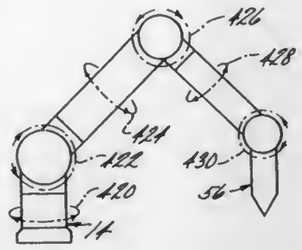
1. A work piece positioning device comprising:
a work piece receiving member comprising at least two receiving surfaces positioned relative to each other so as to receive and hold a work piece positioned thereon, and having a longitudinal axis;
an adjustable clamping member pivotally mounted to the work piece receiving member about a pivotal axis positioned substantially parallel to the longitudinal axis of the work piece receiving member;
an adjuster, movable between an operable and a non-operable position, operably connected to the clamping member for tightening the clamping member so as to facilitate positioning of the work piece; and
a handle removably attached to the work piece receiving member, the handle having a longitudinal axis, the longitudinal axis of the handle being substantially coaxial with the longitudinal axis of the work piece receiving member.

5,611,147

THREE DIMENSIONAL COORDINATE MEASURING APPARATUS

Simon Raab, Longwood, Fla., assignor to Faro Technologies, Inc., Lake Mary, Fla.

Continuation-in-part of Ser. No. 21,949, Feb. 23, 1993, Pat. No. 5,402,582. This application Mar. 3, 1995, Ser. No. 398,592
Int. Cl.[6] G01B *7/03*
U.S. Cl. 33—503 **88 Claims**



1. A three dimensional coordinate measuring system comprising:
a movable arm having opposed first and second ends, said arm including a plurality of joints with each joint corresponding to a degree of freedom such that said arm is movable within a selected volume, each of said joints comprising a rotational transfer housing for housing a position transducer, said transducer producing a position signal, said housing including a set of preloaded duplex beatings, said preload being determined by a specific grinding of the inner and outer races such that upon loading during installation, a fixed amount of preload is applied to the assembly;
a support base attached to said first end of said movable arm;
a probe attached to said second end of said movable arm; and
an electronic circuit for receiving said position signals from said transducer and providing a digital coordinate corresponding to the position and orientation of said probe in a selected volume.

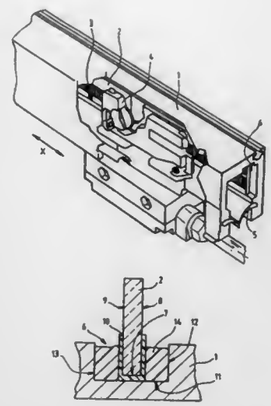
5,611,148

LOW VIBRATION FASTENING OF A SCALE TO A CARRIER OF A POSITION MEASURING ARRANGEMENT

Alfred Affa, Stein/Traun, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Mar. 2, 1995, Ser. No. 396,830
Claims priority, application Germany, Mar. 2, 1994, 44 06 797.6
Int. Cl.[6] G01B *11/04*
U.S. Cl. 33—702 **29 Claims**

1. Position measuring arrangement having a measurement embodiment which is scanned by a scanning arrangement for the determination of position measurement values comprising:
a carrier body having a groove extending therein in a measuring direction, the groove slidably receiving the measurement embodiment therein wherein at least one gap exists between the measurement embodiment and an interior wall of the groove;
a sealing compound which hardens relatively solidly filling any gap between the measurement embodiment and the interior walls of the groove to clamp the measurement embodiment in the groove; and
a separating layer positioned between the sealing compound and a surface of the measurement embodiment, the separating



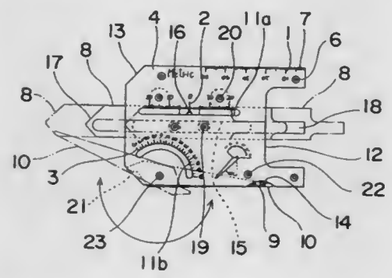
layer allowing thermal length changes of the measurement embodiment to occur substantially independently of the carrier body in the measuring direction.

5,611,149

GAGE FOR USE IN WELDING

Yoshinori Fujiwara, Matsudo, Japan, assignor to Fuji Tool Co., Ltd., Chiba-ken, Japan

Filed Aug. 30, 1995, Ser. No. 521,471
Claims priority, application Japan, Sep. 12, 1994, 6-012372
Int. Cl.[6] G01B *5/00*
U.S. Cl. 33—833 **17 Claims**



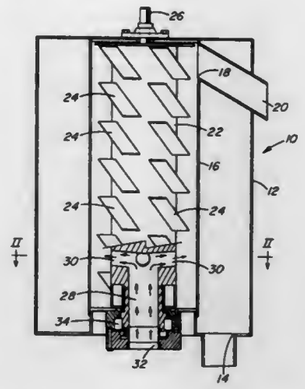
1. A gage for use in welding comprising:
a gage body including a front gage plate and a back gage plate disposed in parallel facing relation to said front gage plate with a gap formed therebetween, said front gage plate having slide metric graduations formed on an outer surface thereof so as to extend in a prescribed direction, whereas said back gage plate has slide inch graduations formed on an outer surface thereof and disposed at positions corresponding to the positions of said metric graduations of said front gage plate; and
a slide scale disposed slidably along said slide graduations between said front gage plate and said back gage plate, said slide scale including scale pointer means provided thereon for pointing to said slide graduations,
wherein each of said gage plates includes an elongated opening extending along said slide graduations, and said scale pointer means is visible through said elongated opening.

5,611,150

CENTRIFUGAL PELLET DRYER

Robert G. Yore, Jr., Midland, Mich., assignor to The Conair Group, Inc., Pittsburgh, Pa.

Filed May 23, 1996, Ser. No. 652,300
Int. Cl.[6] F26B *17/24*
U.S. Cl. 34—58 **10 Claims**



1. In a centrifugal pellet dryer having an outer housing, a generally cylindrical mesh member disposed vertically within said outer housing, said mesh member permitting water to pass through it but preventing the passage of pellets through it, a vertically disposed rotor with lifters affixed thereto for rotating axially within said generally cylindrical mesh member to direct pellets upwardly to a pellet exit port in said mesh member, and a water removal port in said outer housing, the improvement comprising:
said rotor having a hollow interior portion;
radially extending passages within said rotor connecting said rotor hollow interior portion to a space between said rotor and said mesh member;
said rotor being utilized to introduce a slurry of water and pellets into said space between said rotor and said mesh member through said rotor hollow interior portion and said radially extending passages.

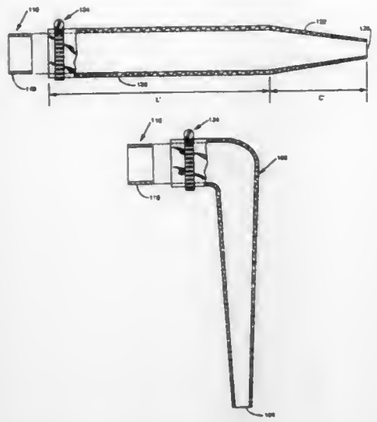
5,611,151

STRIP COOLING, HEATING, WIPING OR DRYING APPARATUS AND ASSOCIATED METHOD

William L. Jacob, Pittsburgh, Pa., assignor to Busch Co., Pittsburgh, Pa.

Filed Jun. 10, 1994, Ser. No. 259,750
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—395 **23 Claims**

1. Apparatus for supplying treatment gas comprising
gas handling means having a body portion for receipt and discharge of said gas,
said gas handling means having a plurality of elongated nozzles for discharging said gas from said gas handling means,
said nozzles being flexible so as to assume a substantially rigid projecting position when gas is flowing through said nozzles and a collapsed or partially collapsed position when said gas is not flowing therethrough,
said flexible nozzles having an inlet portion and an outlet portion,
said inlet portion being of larger cross-sectional area than said outlet portion,



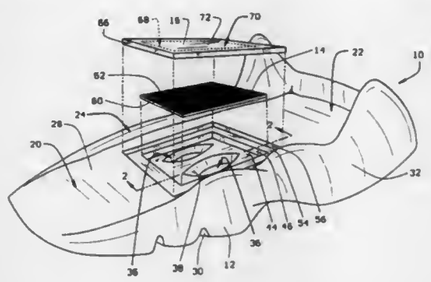
said inlet portions being generally cylindrical, and said outlet portions being generally conical.

5,611,152

SHOE SOLE CONSTRUCTION CONTAINING A COMPOSITE PLATE

Daniel J. Richard, Rye, N.H., and Joseph R. Frazier, Jr., Mansfield, Mass., assignors to Converse Inc., North Reading, Mass.

Continuation of Ser. No. 397,406, Mar. 2, 1995, abandoned. This application May 20, 1996, Ser. No. 650,588
Int. Cl.[6] A43B *13/12;13/28*
U.S. Cl. 36—28 **28 Claims**



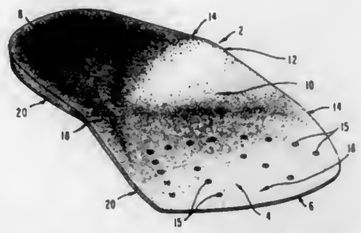
1. A shoe sole construction comprising:
a shoe sole having opposite top and bottom surfaces and a peripheral sidewall extending completely around the shoe sole and defining a periphery of the shoe sole;
at least one aperture extending through the shoe sole between the top and bottom surfaces, said peripheral sidewall completely surrounding the aperture;
a support plate positioned on the shoe sole and over the aperture such that the support plate completely covers the aperture, the support plate having a peripheral edge that surrounds the support plate; and
a pad positioned on the shoe sole covering over the support plate, the pad having a peripheral edge that is at least as large as the support plate but is smaller than the periphery of the shoe sole;
the shoe sole being configured so that the support plate is open to atmosphere via the aperture.

5,611,153

INSOLE FOR HEEL PAIN RELIEF

Randall K. Fisher, Germantown, and Donald B. Thompson, Memphis, both of Tenn., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 241,948, May 12, 1994, abandoned. This application Feb. 17, 1995, Ser. No. 390,159
Int. Cl.[6] A43B *13/38;7/14*
U.S. Cl. 36—43 **21 Claims**



1. A removable insole for relieving bottom-of-heel pain and/or arch pain associated with bottom-of-heel pain comprising:
a flexible, shock-absorbing, compressible material having a front portion with a forward edge, a cupped heel portion and a broad, raised arch portion having a maximum height at the medial edge of said insole; wherein
said front portion tapers downward from said raised arch portion toward a first minimum thickness on a line positioned behind the metatarsal heads of a foot when the insole is in place in a shoe;
said cupped heel portion is posted medially from about 1 to about 4 degrees so that the medial bottom side of said cupped portion is thicker than the lateral bottom side of said cupped portion;
said insole has a substantially upright wall portion which extends arcuately around said cupped heel portion, wherein starting at the heel end, said wall portion gradually slopes inward on the medial side to a point approximately one-third across the width of the insole, and continues forward while reducing in height along said medial edge to undercut said arch portion and allow a close fit of the undercut arch portion with the arch portion of a shoe, wherein on the lateral side of said insole, said upright wall portion reduces in height from said cupped heel portion to said first minimum thickness in the front portion;
said broad, raised arch portion gradually slopes downward from said maximum point to said first minimum thickness located on a line behind the metatarsal heads, to a second minimum thickness located at about 55 to about 90 percent across the width of said insole from said maximum, raised arch portion and to a third minimum thickness located within said cupped heel portion, wherein said cupped heel portion is thicker than said front portion.

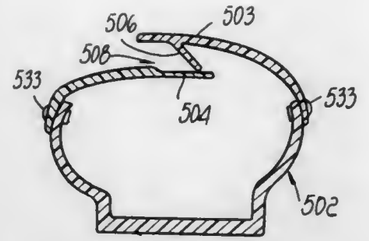
5,611,154

WATERTIGHT SKI BOOT

Faustino Lucchetta, Treviso, and Silvano Barbisan, Covolo di Piave, both of Italy, assignors to Nordica S.p.A., Trevignano, Italy

Continuation of Ser. No. 198,740, Feb. 18, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,717
Claims priority, application Italy, Mar. 17, 1993, TY93A0028
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—50.5 **19 Claims**

1. Improved watertight ski boot structure comprising;
a shell having an inside;
a first flap connected to said shell and defining a first lateral edge;
a first external lateral surface defined by said first flap and facing away from said inside of said shell;



a first internal lateral surface defined by said first flap and facing said inside of said shell;
a second flap connected to said shell, said first flap overlapping said second flap and defining a second lateral edge;
a second external lateral surface defined by said second flap and facing away from said inside of said shell and towards said first internal lateral surface of said first flap;
a second internal lateral surface defined by said second flap and facing away from said first internal lateral surface towards said inside of said shell, and;
an elastically deformable tab connected to one flap among said first flap and said second flap, said elastically deformable tab having a free outward edge being unconnected to another flap among said first flap and said second flap, said elastically deformable tab being connected to said one flap such that said tab is folded with respect to said one flap to form a fold line between said tab and said one flap and such that said tab has an extension which forms a first angle with respect to an extension of said one flap when said first and second flaps are relatively mutually spaced in an open position, the extensions of said one flap and said tab in the open position intersecting at said fold line and said first angle being formed between said extensions in the open position with a vertex of said first angle lying essentially on said fold line, and said tab being elastically deformable such that when said first and second flaps are relatively mutually closed in a closed position said tab assumes a bent position relative to a position said tab assumed in said open position by being bent along said fold line so as to form a second angle between an extension of said one flap and an extension of said tab in the closed position, the extensions of said one flap and said tab in the closed position intersecting at said fold line and said second angle being formed between said extensions in the closed position with a vertex of said second angle lying essentially on said fold line, wherein said second angle is different than said first angle and wherein said tab has a rigidity sufficient to keep said free outward edge in contact with the appropriate surface of the other flap to which the tab is unconnected in the open position of the flaps, in order to maintain sealing when the flaps are in said open position.

5,611,155

ELASTOMETRIC CONNECTING MEANS FOR FOOTWEAR

Roger J. Brown; Erik O. Giese, both of Aspen, and Michael D. Racosky, Boulder, all of Colo., assignors to Comfort Products, Ltd., Aspen, Colo.

Filed Jul. 5, 1994, Ser. No. 270,853
Int. Cl.[6] A43B *5/04;5/16*
U.S. Cl. 36—118.2 **21 Claims**

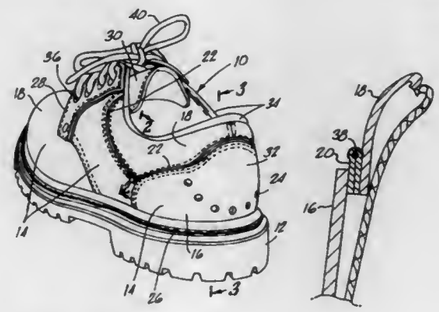
1. The improvement in a boot having a first shoe shaped shell member with a heel, middle and front portion for receiving and supporting an individual's foot along at least the bottom, sides and top front portions of the foot, a second member having a section overlapping the shell member with a surface of said second member facing a surface of said shell member, said second member extending upwardly from the shell member for covering a portion of the individual's leg and being pivotally connected to the shell member for pivoting movement thereon in response to pivoting of the individual's leg relative to the individual's foot; and attaching means for pivotally attaching the second member to the shell member; the improvement wherein said attaching means includes:
a) an elastomeric material disposed between said shell member and the overlapping section of said second member, said elastomeric material having opposite sides, with a first side facing said surface of said shell member and a second side facing said surface of said second member;
b) connecting means for connecting said first side of said elastomeric material to said shell and said second side to said second member for movement of said first and second sides of the elastomeric material relative to each other in a direction extending along said surfaces of said shell member and said second member; and
c) said elastomeric material including physical characteristics permitting said first and second sides thereof to rotate and shift laterally at the same time with respect to each other during pivoting of said second member on said shell member and said first and second sides of said elastomeric material are connected, respectively, to the surfaces of said shell and second member so as to define a floating pivot axis for said pivoting.

5,611,156

REFLECTIVE SHOE

Chang H. Chiu, 16912 Gothard St., Unit 1, Huntington Beach, Calif. 92647

Filed Apr. 21, 1995, Ser. No. 426,574
Int. Cl.[6] A43B *23/00*
U.S. Cl. 36—137 **2 Claims**



1. A shoe comprising:
(a) a sole;
(b) sides attached to the sole, wherein the sides are comprised of a covering layer and an underlying layer, and wherein the covering layer at least partially overlaps the underlying layer; and

(c) a reflective material layer having at least one surface with reflective characteristics:

wherein the reflective material layer is disposed between the covering and the underlying layers in such a way that the reflective material layer is at least partially visible from an external perspective;

wherein the reflective material layer is wrapped around a wire, and wherein the wire is disposed along an edge of the shoe.

5,611,157

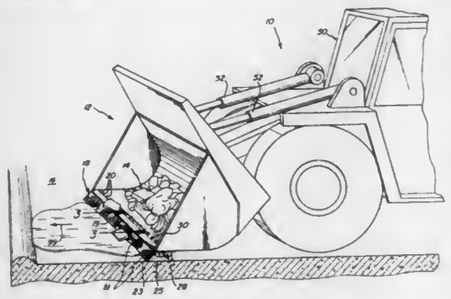
WEAR PAD ASSEMBLY

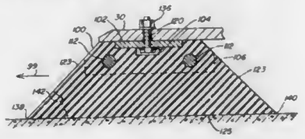
Thomas Ferreira, Fairhaven, Mass., assignor to F & B Enterprises, Inc., New Bedford, Mass.

Continuation-in-part of Ser. No. 132,135, Oct. 5, 1993, Pat. No. 5,471,770. This application Sep. 20, 1995, Ser. No. 530,836

Int. Cl.[6] E02F *9/28*

U.S. Cl. 37—449 **20 Claims**





1. A wear pad apparatus for use with a large machine operated device which is used to pick up or push material from a surface and is operated in a first direction, the wear pad apparatus to be coupled to the device, the wear pad apparatus comprising:

a plurality of similar abradable sections sandwiched in a nonrotational manner along an axis which is transverse to the first direction, the plurality of abradable sections forming a wear pad having a pair of edges which may be selectively arranged whereby either edge may function as a lead edge in the first direction; and

a frame for securing the plurality of abradable sections together and to the device.

5,611,158

ASSEMBLY FOR COUPLING AN IMPLEMENT TO AN OPERATING ARM OF A MACHINE IN VARIOUS ANGULAR POSITIONS

Samuel S. Pratt, Bedford; Dan Shaffer, Duncansville; Tim A. Davis, Berlin; Ashley Heiple, Alum Bank, all of Pa., and Peter N. Lalos, Gaithersburg, Md., assignors to Rockland, Inc., Bedford, Pa.

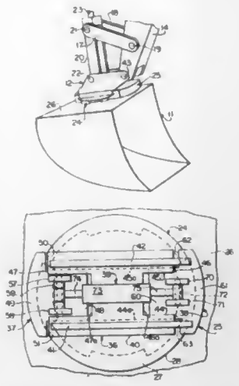
Filed May 17, 1995, Ser. No. 443,151

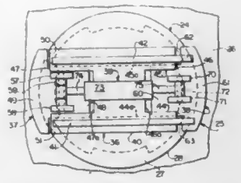
Int. Cl.[6] E02F *3/96*

U.S. Cl. 37—468 **15 Claims**

1. An assembly for coupling an implement to an operating arm of a machine comprising:

a first coupling component fixedly mountable on said implement, having a plurality of sets of opposed abutment surfaces spaced circumferentially relative to a given axis thereof and





disposed substantially radially relative to said axis, and an axially spaced abutment surface; and

a second coupling component disposable in mating relation with said first coupling component, having means for detachably connecting to said operating arm, at least one locking member disposable between a first position received between a selected set of said circumferentially spaced, opposed abutment surfaces and said axially spaced abutment surface, when said components are disposed in said mating relation, and a second position clear of said abutment surfaces, and means for selectively displacing said locking member between said first and second positions.

5,611,159

METHOD AND APPARATUS FOR FEEDING LAUNDRY ARTICLES TO A LAUNDRY PROCESSING APPARATUS

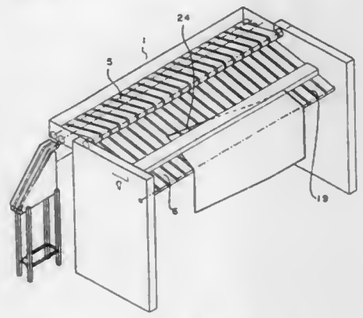
Jørn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Søn A/S, Rønne, Denmark

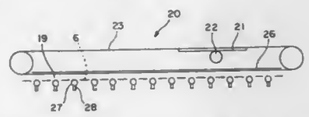
Filed Apr. 27, 1995. Ser. No. 432,424

Claims priority, application Denmark, Apr. 28, 1994, 0492/94

Int. Cl.[6] D06F *67/04*; **B65G** *47/22*

U.S. Cl. 38—143 **9 Claims**





1. A method for feeding a substantially flat laundry article to a laundry processing apparatus comprising feeding the article along a substantially flat face of a conveyor in a feeding direction with a rear edge of the article stretched flat across the conveyor face and past a straight line extending at a predetermined angle with respect to the direction of feed, aligning the rear edge of the article with said straight line as the rear edge passes said line to align the article with respect to the feeding direction and thereafter laterally displacing the entire laundry article on the conveyor face in a direction transverse to the feeding direction after the laundry article has been aligned to position the article laterally on the conveyor face.

5,611,160

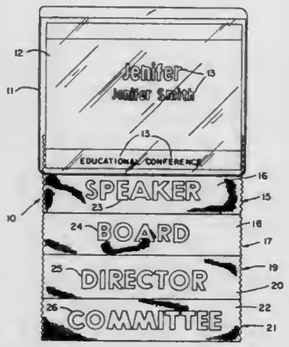
STACKABLE RIBBONS FOR IDENTIFICATION BADGES AND KIT THEREFOR

Nicholas J. Topitzes, 1750 Camelot Dr., Madison, Wis. 53705

Filed Apr. 21, 1993, Ser. No. 51,458

Int. Cl.[6] A44C *3/00*

U.S. Cl. 40—1.6 **5 Claims**



1. A ribbon display badge unit comprising:

(a) a display badge base having a front side and a back side and a clasp for attaching the badge base to an item of clothing of a wearer; and

(b) a stackage ribbon attached to the back side of the base, the stackable ribbon comprising a ribbon of flexible material having a front face with an upper portion and a lower portion and a back face and having a long horizontal dimension and a vertical dimension which is shorter than the long horizontal dimension, at least one word formed on the lower portion of the front face and extending horizontally such that the word can be read when the long dimension of the stackable ribbon is oriented horizontally, a layer of pressure sensitive adhesive formed in a strip on the upper portion of the front face of the stackable ribbon, the stackable ribbon attached by the layer of adhesive to the back side of the base so that the base covers the upper portion of the front face of the stackable ribbon including the layer of adhesive but exposes the word formed on the stackable ribbon so that the word is oriented horizontally when the badge base is attached to an item of clothing of a wearer, wherein the stackable ribbon attached to the back side of the base is a first stackable ribbon having a first color, and a second stackable ribbon of a different color than the first color of the first stackable ribbon and comprising a ribbon of flexible material having a front face with an upper portion and a lower portion, a back face having an upper portion and a lower portion, a long horizontal dimension and a vertical dimension which is shorter than the long horizontal dimension, at least one word formed on the lower portion of the front face of the second stackable ribbon and extending horizontally such that the word on the second stackable ribbon can be read when the long dimension is oriented horizontally, and a layer of pressure sensitive adhesive formed in a strip on the upper portion of the front face of the second stackable ribbon, the second stackable ribbon attached to the lower portion of the back face of the first stackable ribbon by the adhesive layer on the front face of the second stackable ribbon.

5,611,161

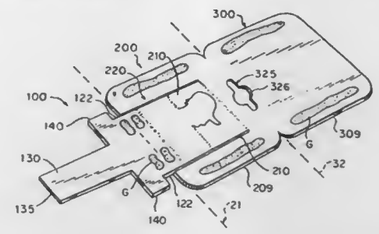
TRANSVERSE-FOLD POP-UP DEVICE, AND BLANK AND METHOD THEREFOR

Andrew Murphy, Baltimore, Md., assignor to Ottenheimer Publishers, Inc., Baltimore, Md.

Filed Mar. 16, 1995, Ser. No. 405,184

Int. Cl.[6] G09F *1/00*

U.S. Cl. 40—124.08 **19 Claims**



1. A device for pop-up display use by a user, comprising:

a sheet of folded material including

a slider first section having a first section length,

a cover second section having a second section length and a second section width, and

a base third section having a third section length and a third section width;

a first fold line over which, in a first sense of rotation, the first section is folded onto the second section;

a second fold line over which, in a second sense of rotation, the third section is folded onto the second section;

the first section including an elongate tongue having a tongue width less than the second section width and including a tab end distal the first fold line for grasping by the user;

a pull-slot, having a pull-slot width equal to or greater than the tongue width and less than the second section width, the tongue being disposed therethrough;

a plurality of parallel cuts extending perpendicularly to the first fold line at least part-way through the second section, outermost ones of the cuts being separated by a cut width less than the second section width;

at least one crease in the second section, the crease extending transversely between adjacent ones of the cuts; and

means for fastening the third section to the second section proximal respective edges of the third section and the second section;

whereby when the tab end is pulled from the pull-slot by the user pop-up portions of the second section containing the crease pop up.

5,611,162

APPARATUS FOR FORMATION OF VISUAL SENSE EFFECT AND METHOD FOR FORMATION OF VISUAL SENSE EFFECT

Masanori Idesawa, Saitama-ken, Japan, assignor to Rikagaku Kenkyusho, Saitama-ken, Japan

PCT No. PCT/JP93/01307, § 371 Date Jul. 26, 1994, § 102(e) Date Jul. 26, 1994, PCT Pub. No. WO94/07232, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 14, 1993, Ser. No. 232,158

Claims priority, application Japan, Sep. 14, 1992, 4-245304; Jan. 28, 1993, 5-012212

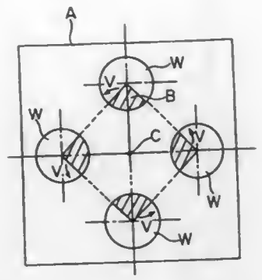
Int. Cl.[6] G09F *19/00*

U.S. Cl. 40—435 **16 Claims**

1. An apparatus for the formation of a visual sense effect, comprising:

a first object having at least one window disposed around an axis of rotation; and

a second object comprising a single polygonal shape having a closed periphery defined by an edge so disposed as to show at



least a part of said edge of said closed periphery of said single polygonal shape through each said at least one window of said first object;

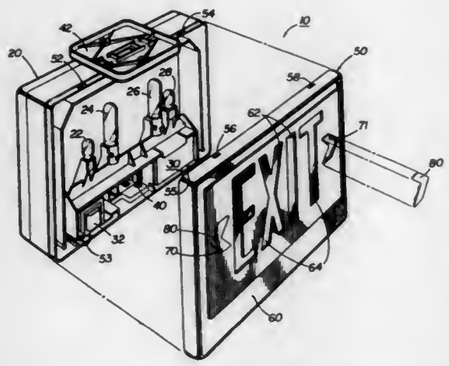
wherein said first object and said second object are rotatable relative to each other round said axis of rotation.

5,611,163

DIRECTION INDICATOR COVERS FOR EMERGENCY LIGHTING SYSTEMS

Stephen T. Smith, Conyers, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.

Filed Oct. 21, 1994, Ser. No. 327,487
Int. Cl.[6] G09F *13/04*
U.S. Cl. 40—570 **22 Claims**



1. An illuminated exit sign for providing guidance to the egress of a building, the exit sign comprising:

a. a housing;

b. at least one lamp within the housing;

c. a cover removably attached to the housing and which defines a front surface facing outwardly from the sign and a reverse surface and comprising:

i. means for forming a message;

ii. a plurality of chevron-shaped apertures, each having a perimeter, at least two of which are located on the front surface of the cover and adjacent the message, each of which comprises:

(a) a first and second section that join to form a chevron shape; and

(b) when viewed in cross section, an aperture bevel extending from the front surface at least partially to the reverse surface to form an edge for capturing portions of an insert; and

d. a detachable insert, for covering one of the chevron-shaped apertures, comprising:

i. a chevron-shaped baseplate, sized substantially the same as at least one of the chevron-shaped apertures, containing an anterior surface and a posterior surface and featuring two wings, each of which has a centroid and a leading edge and a trailing edge;

ii. a bevel, extending at least partially from the anterior surface to the posterior surface of the baseplate and surrounding the baseplate and corresponding in orientation to the aperture bevel; and

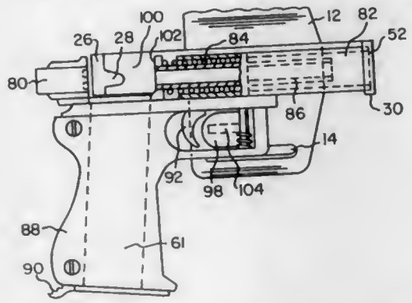
iii. for each wing, at least three identical tabs dispersed about each wing, each of which when viewed in cross section alike extend from the bevel to a protrusion, and then back to the posterior side of the baseplate, thus forming a groove in which the edge of the aperture may be captured in a manner to allow the tabs securing the wing to the cover to occupy at least two non-adjacent quadrants about the centroid of each wing, the tabs forming a plurality of retention axes, each retention axis extending between a portion of one tab and a portion of another tab, the tabs thereby adapted to resist removal of the insert from the cover.

5,611,164

SECURITY AND DEPLOYMENT ASSEMBLY

John N. Rasslas, 1001 N.W. 12th Ter., Pompano Beach, Fla. 33069

Filed Jun. 5, 1995, Ser. No. 463,997
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—70.11 **22 Claims**



1. A locking assembly for a portable firearm having a barrel, a grip, a sliding element, a recoil spring and a muzzle, said sliding element defining a chamber, said locking assembly comprising:

a support member;

an action arm extending from a first end of said support member, said action arm carrying a lug, said lug receivable in the chamber of said firearm;

a muzzle retainer arm extending from a second end of said support member;

said action arm and lug and said muzzle retainer arm captively retaining the firearm between said chamber and said muzzle, said recoil spring exerting oppositely directed forces on said retainer arm and said action arm to secure the firearm when mounted in the locking assembly.

5,611,165

HUNTING SCENT HOLDER

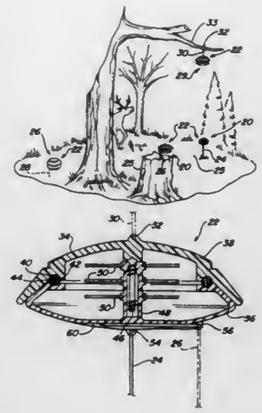
Roger N. Blaha, 5725 Berry, Westland, Mich. 48185

Filed Jan. 24, 1995, Ser. No. 377,464
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—1 **20 Claims**

1. A holder for holding scents utilized in attracting animals comprising:

a pod portion for holding a scent carrying material, said pod portion incorporating two halves that are movable relative to each other between an enclosed position wherein the interior of the pod is sealed preventing dissipation of the scent material, and to a use position wherein said two halves are spaced from each other such that the scent can escape the pod; and

a stand member for positioning said pod a distance above the ground, said stand member being configured to be inserted into the ground, and being capable of supporting said pod a distance above the ground, said stand also allows said pod to be supported a distance above the ground, and is bendable such that said stand also allows the pod to be supported on a tree by being reconfigured such that it could be hooked onto a tree to support said pod.

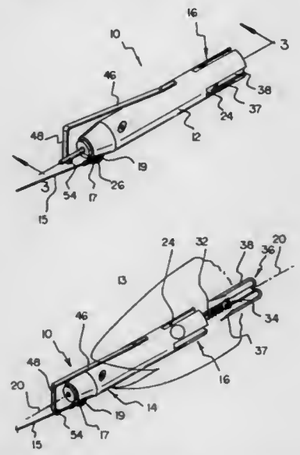


5,611,166

FISHING LURE APPARATUS

David R. Day, 8856 W. Shebel Rd., Michigan City, Ind. 46360

Filed Feb. 9, 1995, Ser. No. 385,962
Int. Cl.[6] A01K *83/02*
U.S. Cl. 43—35 **4 Claims**



1. A fishing lure apparatus, comprising:

a housing which includes a front portion, a rear portion, and an interior channel extending from said front portion to said rear portion and located along a longitudinal axis, wherein said rear portion has an outer width and includes a predetermined number of slots,

a shaft assembly extending through and supported by said interior channel, said shaft assembly including a front shaft portion and a rear shaft portion, said shaft assembly including a spring-contacting portion, said shaft assembly including a locking portion, said shaft assembly adapted for being located in said interior channel in either a locked position or an unlocked position,

a hook assembly which includes a predetermined number of hooks, wherein said predetermined number of slots is equal to said predetermined number of hooks, wherein said hook assembly has an outer width, wherein said outer width of said hook assembly is less than said width of said rear portion of said housing, whereby said hook assembly is protected by said rear portion of said housing when said hook assembly is in a protected mode in which tip portions said hooks are retained within said slots,

a spring assembly, supported by said housing, in contact with said spring-contacting portion of said shaft assembly, such that, when said spring-contacting portion is moved along said longitudinal axis toward said front portion of said housing such that said shaft assembly is in the locked position, said spring assembly stores potential energy, and

a trigger assembly connected to said housing, wherein said trigger assembly includes a fish-strike-receiving portion and an unlocking portion connected to said fish-strike-receiving portion, wherein said unlocking portion is adapted to release said shaft assembly from the locked position to permit said shaft assembly to return to the unlocked position,

wherein said trigger assembly includes:

a fish-strike-receiving portion in a form of a resilient strip spring having a rear end connected to said housing and having a front end extending beyond said front portion of said housing, and

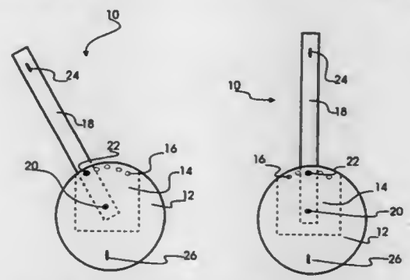
an unlocking portion connected to said front end of said fish-strike-receiving portion for engaging said locking portion of said shaft assembly when said shaft assembly is in the locked position.

5,611,167

MULTIDIRECTIONAL DEEP SEA FISHING CANNONBALL

Kris B. Mills, 11836 Chaney Dr., Rapid City, Mich. 49676

Filed Oct. 4, 1994, Ser. No. 317,357
Int. Cl.[6] A01K *91/08*
U.S. Cl. 43—43.13 **21 Claims**



1. A multidirectional cannonball weight, comprising:

a body having a centroid, a slot formed in said body defining a plurality of slot walls, and a first axis extending through said centroid and through a center of said slot, said body being solid, non-buoyant mass of substantially homogeneous material;

a skag having a longitudinal axis extending along a length of said skag;

pivot means for pivotally coupling a proximal end of said skag to said body within said slot, with said skag protruding from said slot of said body and said longitudinal axis of said skag extending in one of a plurality of angular positions including parallel to said first axis, and varying in angular orientation relative to said first axis as said skag is pivoted around said pivot means; and

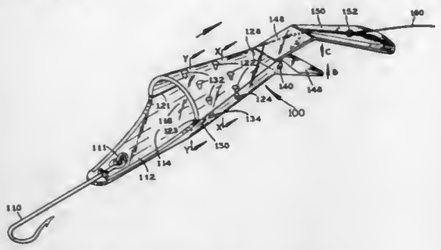
locking means for fixing said skag at a selected one of said plurality of angular positions.

5,611,168

FISHING LURE WITH TEETH AND BODY CLOSURE

Benjamin I. Schultz, and Leslie A. Thomas, both of 3706 N. Ocean Blvd., Suite 352, Ft. Lauderdale, Fla. 33308

Filed Nov. 22, 1995, Ser. No. 561,798
Int. Cl.[6] A01K *83/06*
U.S. Cl. 43—44.6 **16 Claims**



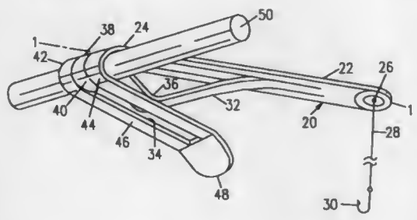
1. A fishing lure for securing bait comprising:
an elongated upper jaw having a front end and a rear end;
an elongated lower jaw having a front end and a rear end;
a pivotal connection hinge between the front end of the upper jaw and the front end of the lower jaw;
a first row of teeth on an interior surface of the upper jaw;
a second row of teeth affixed to an interior surface of the lower jaw, the first row of teeth facing the second row of teeth, wherein bait fish are secured between the first row of teeth and the second row of teeth; and
a hook connected to the rear end of the lower jaw;
a top half wall attached to the upper jaw forward of the first row of teeth; and
a bottom half wall attached to the lower jaw forward of the second row of teeth, wherein closing the upper jaw to the lower jaw enables the top half wall to cause a closure against the bottom half wall for keeping water from washing the bait out.

5,611,169

LONGLINE SNAP

James E. Mayer, Juneau, Ak. 99803

Filed Feb. 14, 1995, Ser. No. 388,400
Int. Cl.[6] A01K *79/00*
U.S. Cl. 43—44.84 **6 Claims**



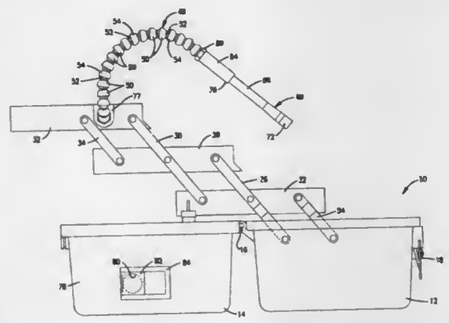
1. A snap for attaching a device to an elongated line, the snap having,
at a handle portion, means to attach the device, and at a securing portion, clamping structure configured to temporarily enclose the line within a line enclosing portion of the snap,
the snap comprising a first, a second and a third leg, the first and second legs extending longitudinally from the handle portion of the snap in a substantially parallel manner, in the same plane and having substantially the same configuration, and the third leg extending longitudinally from the handle portion in a space between the first and second legs,
the legs cooperating to grasp the line in the space formed between the first and second leg acting together and the third leg, said space constituting the line enclosing portion,
the line being inserted into the line enclosing portion by pressing the line against an entrance camming surface in the third leg and an entry portion formed on the first and second leg and being removed from the space by pressing the line against an exit camming surface in the third leg, said exit camming surface constituting the third leg portion of the line enclosing portion,
the clip being formed from a single piece of an initially planar material having a length and a width, the legs being integral at the handle portion of the clip and extending along the length of the material in the same plane,
the first and second leg being bent at a point spaced from the handle portion of the clip to form a rounded enclosure, the first and second leg having a second bend at a point spaced along the material further from the handle portion of the clip than the rounded enclosure, said second bend being formed in a direction opposite to the direction of the bend forming the rounded enclosure, to create a support plate acting as an entry guide for the line,
the third leg being displaced from the plane of the first and second leg, in a region adjacent to the handle portion of the clip, the displacement of the third leg being toward the second bend in the first and second leg such that the third leg passes between the first and second leg and intersects the plane of the first and second leg in the region between the rounded enclosure and the second bend therein, the third leg having a knee shaped bend at said intersection of the third leg with the first and second leg, said knee shaped bend causing the third leg to additionally pass between the first and second leg at a point between the first portion of the clip and the rounded enclosure in the first and second leg, the third leg having a rounded bend therein coinciding with and corresponding to the bend forming the rounded enclosure in the first and second leg.

5,611,170

TACKLE BOX HAVING BUILT IN LIGHT

John P. McGuff, 4909 W. 77th St., Prairie Village, Kans. 66208, and William Bray, 7118 W. 85th St., Overland Park, Kans. 66212

Filed Apr. 20, 1995, Ser. No. 425,410
Int. Cl.[6] A01K *97/00;97/06*
U.S. Cl. 43—57.1 **16 Claims**



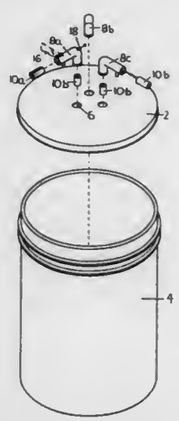
1. In a fishing tackle box having a box structure which includes a body, a lid for the body having open and closed positions and at least one storage tray enclosed in the body and lid in the closed position of the lid, the improvement comprising:
a light operable to emit light when energized;
an elongate flexible arm connected with said box structure at one end and with said light at the other end to mount the light to the box structure, said arm having a storage position wherein said arm and light are stored within said box structure when the lid is in the closed position and said arm being extensible out of the box structure when the lid is in the open position to support the light at a plurality of selected positions and orientations; and
a window opening in said box structure aligned with said light in the storage position of said arm to allow the light to be energized for emitting light through said opening when the lid is in the closed position.

5,611,171

MULTIPLE-CATCH MOUSE TRAP

Michael D. Hershey, P.O. Box 55, 15221 Plymouth, Thompsonville, Mich. 49683

Filed Feb. 26, 1996, Ser. No. 605,847
Int. Cl.[6] A01M *23/08*
U.S. Cl. 43—66 **4 Claims**



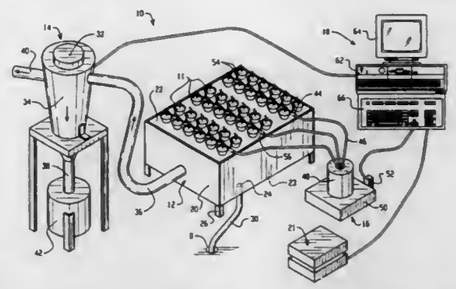
1. A device for trapping a multiplicity of live mice comprising:
a horizontally positioned lid, adapted for use with vertically aligned container means of sufficient depth to retain mice, said lid having at least one hole suitable for the insertion of at least one hollow, elbow shaped aperture tube enabling the passage of said mice into said container means;
at least one hollow, elbow shaped aperture tube having an inside diameter, and each of said at least one aperture tube inserted in a respective one of said at least one hole;
a one way passage device comprising a cotter key, horizontally, vertically, and laterally guided by two guide posts and a guide slot in one of said at least one aperture tube, said cotter key being pivotally suspended between said guide posts and through said guide slot, said cotter key being limited in its pivotal motion by said guide slot, said cotter key diametrically disposed in said one of said at least one aperture tube;
a bait compartment attached to said one of said at least one aperture tube, so as to lure said mice past said one way passage device; and,
at least one reduction ring adapted to decrease the inside diameter of one of said at least one aperture tube.

5,611,172

APPARATUS FOR THE TREATMENT OF LIVE PLANTS

Thomas F. Dugan, Perry; Daniel R. Rupnow, Wickliffe, and Brian J. Sroub, Shaker Heights, all of Ohio, assignors to Agripak, Inc., Pepper Pike, Ohio

Continuation of Ser. No. 957,618, Oct. 6, 1992, abandoned. This application Jan. 6, 1995, Ser. No. 369,306
Int. Cl.[6] A01G *31/00*
U.S. Cl. 47—1.01 **2 Claims**



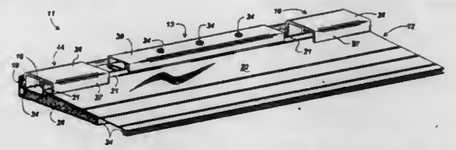
1. An apparatus for the preparation of a live plant for packaging, the live plant including roots, a stem, and foliage, the roots of the live plant being surrounded by rooting medium, the rooting medium containing fluid, the rooting medium and the roots of the live plant being maintained within a container, the container having a runoff opening therein, said apparatus comprising:
a substantially sealed pressure vessel for receiving at least one container having rooting medium and roots of a live plant maintained therein; and
a vacuum system connected to said substantially sealed pressure vessel for drawing air through the rooting medium in the container and through said substantially sealed pressure vessel and removing a predetermined amount of fluid from the rooting medium in the container via the container runoff opening, wherein said vacuum system further comprises a particulate separator for removing particulate from the air being drawing through the rooting medium in the container and through said substantially sealed pressure vessel.

5,611,173

CONTINUOUS SIDELIGHT SILL WITH ADAPTABLE THRESHOLD CAPS AND REMOVABLE PAINT SHIELD

J. Charles Headrick, Cumming; Robert T. Ellingson, Social Circle, and Michael M. Tull, Roswell, all of Ga., assignors to Headrick Manufacturing Co., Inc., Cumming, Ga.

Continuation-in-part of Ser. No. 243,259, May 16, 1994, which is a continuation-in-part of Ser. No. 160,975, Dec. 3, 1993, which is a continuation-in-part of Ser. No. 5,621, Mar. 8, 1993. This application Jul. 18, 1994, Ser. No. 276,720
Int. Cl.[6] E06B *1/70*
U.S. Cl. 49—468 **5 Claims**



1. A threshold and door sill assembly with removable protective cover for installation in an entryway of a building structure, said threshold and door sill assembly comprising an elongated body sized to span the entryway and having an upper surface, said upper surface of said elongated body including a sill portion and a threshold cap positioned to underlie a closed door mounted in said entryway, said threshold and door sill assembly further comprising a protective cover for covering and protecting the upper surface of

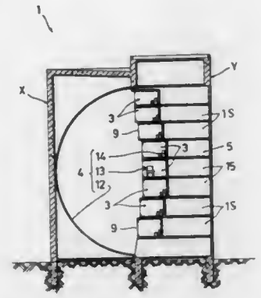
said elongated body, said protective cover being configured to conform substantially to the shape of said upper surface of said elongated body and including a tongue projecting inwardly from said protective cover and being positioned to be received in a selected crevice of said elongated body for releasably securing said protective cover to said elongated body until it is desired to remove said protective cover to expose said upper surface of said elongated body.

5,611,174

DOME THEATER

Masahiko Hayashi, 12-22, Tsurumaki 3-chome, Setagaya-ku, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,556
Claims priority, application Japan, Jun. 24, 1994, 6-176222; Oct. 24, 1994, 6-295486
Int. Cl.[6] E04H *3/12*
U.S. Cl. 52—8 **11 Claims**



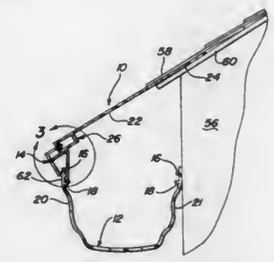
1. A dome theater comprising:
compartments arranged horizontally and vertically in an array, each compartment having a front side with a window;
a domed image producing system having a substantially hemispherical display surface;
said substantially hemispherical display surface being disposed in front of the windows of the compartments such that a plane tangent to a center thereof is substantially vertical to allow spectators in the compartments to view an image through the windows; and
said compartments having back sides, opposite said windows, with passages therein for access to the compartments.

5,611,175

GUTTER-SCREEN CONNECTING CLIP

Ronald L. Sweers, 6165 E. Atherton Rd., Burton, Mich. 48519

Filed Apr. 10, 1996, Ser. No. 630,586
Int. Cl.[6] E04D *13/068*
U.S. Cl. 52—12 **3 Claims**



1. In combination with a longitudinally extending rain gutter having an upwardly extending outer wall with at least one rib on an upper portion of an inwardly facing surface of said outer wall and a guard screen connecting roof boards to said gutter, said gutter having a front lip, a connecting clip comprising:
a longitudinally extending, downwardly opening channel having an outer leg member terminating in a first inwardly projecting flange and an inner leg having a second inwardly and upwardly extending flange;
wherein the channel of said connecting clip is snapped over the upwardly extending outer wall of said gutter with said first flange engaging an outer surface of said outer wall and said second flange engaging a lower surface of said rib;
said connecting clip having a third flange extending inwardly from said channel and terminating in a tang engaging a connecting flange of said guard screen.

5,611,176

ANTENNA SUPPORT STRUCTURE

Robert P. Juengert, 32 Jarmy La., Manahawkin, N.J. 08050, and Edward Weingart, 15 Whispering Hills Dr., Annandale, N.J. 08801

Continuation of Ser. No. 205,596, Mar. 2, 1994, abandoned, and a continuation-in-part of Ser. No. 1,036, Nov. 2, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,161
Int. Cl.[6] F04H *12/00*
U.S. Cl. 52—40 **11 Claims**



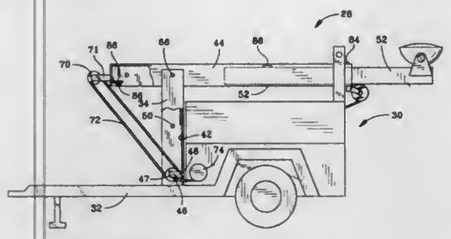
1. An antenna support structure, comprising
a frame including an elongated hollow pole extending from a base end to a top end and a plurality of pipe assemblies connected to said pole, each of said pipe assemblies including a series of nonmetallic pipe segments connected to one another beginning with a first pipe segment connected to said pole and ending with an nth pipe segment defining at least one free end of said pipe assembly, each one of said pipe segments having a diameter, said diameter of each one of said pipe segments in said series decreasing from said diameter of said first pipe segment to said diameter of said nth pipe segment,
means for connecting said base end of said pole to the ground,
a layer of a coating material applied over said frame and textured to resemble tree bark, said coated frame defining a tree trunk and a plurality of tree limbs and tree branches,
a plurality of foliage assemblies connected to said tree limbs and tree branches, each of said foliage assemblies including a nonmetallic stem and a multiplicity of strips of a nonmetallic material joined to said stem, and
mounting means for mounting a plurality of antennas to said pole proximate said top end, said mounting means including a first series of brackets for mounting ones of said plurality of antennas at a spaced distance from said pole and a second series of brackets for mounting others of said plurality of antennas to said pole at a distance greater than said spaced distance, said mounting means being adapted to mount said plurality of antennas to said pole so that said plurality of antennas are substantially obscured by said plurality of tree limbs and tree branches and said plurality of foliage assemblies.

5,611,177

PORTABLE TOWER WITH TOWER MEMBER POSITION DETECTION SYSTEM

Dale R. Herbstritt, Clemmons, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 18, 1995, Ser. No. 529,701
Int. Cl.[6] E04H *12/34*
U.S. Cl. 52—111 **20 Claims**



1. A tower comprising:
a) a fixed tower member, fixed to a tower frame;
b) at least one movable tower member, movable relative to said fixed tower member;
c) movable tower member drive means for moving said at least one movable tower member when power is supplied to said drive means; and
d) a movable tower member position detection system for detecting when the tower is in a predetermined required position, said detection system comprising:
1) a position detection switch mounted on said fixed tower member and electrically connected to said movable tower member drive means; and
2) an actuator mounted along the length of one of the at least one movable tower members so that when the one of the at least one movable tower members is moved by the drive means to the predetermined required position relative to said fixed tower member, the actuator is located proximate the position detection switch and thereby causes the switch to open terminating the supply of power to the movable tower member drive means and as a result, movement of each of the at least one movable tower members is terminated so that each of the at least one movable tower members is located in the predetermined required position relative to the fixed tower member.

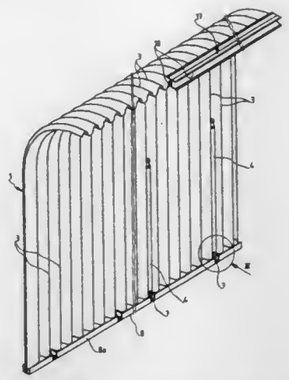
5,611,178

DEVICE FORMING AN UNDERGROUND SHELTER FOR THE PROTECTION OF PERSONS AND METHOD FOR MAKING SAME

Henri Aubert, La Seyne Sur Mer, France, assignor to Constructions Industrielles de la Mediterranee - CNIM, Paris, France

Filed Apr. 7, 1995, Ser. No. 418,742
Claims priority, application France, Aug. 4, 1994, 94 04206
Int. Cl.[6] E04H *15/00*
U.S. Cl. 52—169.6 **19 Claims**

4. A device forming an underground shelter for the protection of at least one person, said device comprising:
substantially identical first and second rigid panels assembled together into a tunnel-like configuration, each of said panels having a bottom portion and a top portion;
first mechanical means fixed to said top portion of each of said panels, said first mechanical means of said first and second panels interfitting said top portions of said second and first panels, respectively; and
second mechanical means fixed to said bottom portion of said panels for providing a rigid connection between said bottom portions of both panels, said second mechanical means comprising at least two elements forming cross-members with the same length, said elements each having first and second ends, said first ends of said elements pivotally connected to the bottom portion of one said panels and said second ends removably fastened to the bottom portion of the other panel, wherein
each cross-member element is movable in a plane perpendicular to that of the panel to which it is pivotally connected from an operative position wherein its second end is removably fastened to the bottom portion of the panel to which it is not pivotally connected, to an inoperative position wherein it rests vertically against the panel to which it remains pivotally connected when said first and second panels are separated.

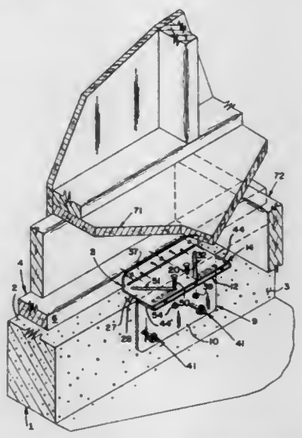


5,611,179

ADJUSTABLE FOUNDATION PLATE

William F. Leek, Anaheim, Calif., assignor to Simpson Strong-Tie Company, Inc., Pleasanton, Calif.

Filed Feb. 12, 1996, Ser. No. 601,426
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—293.3 **9 Claims**



1. An adjustable foundation-to-frame member connection comprising:
a. a foundation, having an upper surface, and a side surface;

b. a frame member, having an upper side, an inside edge, and a lower side, resting on the upper surface of the foundation;

c. an adjustable foundation plate connector including,

1. a foundation attachment member having a foundation attachment base which is formed with foundation attachment opening means and which is formed for substantial registration with said side surface of said foundation, said foundation attachment member having guide means, and a generally planar attachment flange integrally connected to said foundation attachment base, said generally planar attachment flange having a top surface, and an elongated opening means,

2. a held-holding fastener means releasably received by said elongated opening means, said held-holding fastener means having a fastener axis, a distal-end threaded shank portion, a shank formed with a head, and a head-end shank portion formed with two similarly dimensioned pairs of opposing sides,

3. a frame attachment member having a generally planar attachment base, said generally planar attachment base having an attachment base lateral axis, an attachment base longitudinal axis, and a bottom surface, a portion of said bottom surface of said generally planar attachment base is in registration with said top surface of said generally planar attachment flange, with said guide means of said foundation attachment member substantially aligning said frame attachment member with said foundation attachment member and preventing substantial displacement of said generally planar attachment base in relation to said generally planar attachment flange along said attachment base lateral axis, said generally planar attachment base is also formed with a staircase opening means, said staircase opening means formed from a series of interconnected similar stations, one of said similar stations releasably receiving said held-holding fastener means in close registration along a portion of both of said pairs of opposing sides of said head-end shank portion such that substantial rotational, lateral and longitudinal displacement between said held-holding fastener means and said frame attachment member is prevented, said staircase opening means formed to substantially correspond in length and position along said attachment base lateral axis to the length and position of said elongated opening means along said attachment base lateral axis when said frame attachment member is received by said guide means such that wherever said held-holding fastener means are received by said staircase opening means along said attachment base lateral axis said held-holding fastener means are also received by said elongated opening means along said attachment base lateral axis, said staircase opening means having a staircase axis positioned at a selected angle to said attachment base longitudinal axis such that said stations occur at closely-spaced, selected positions along said attachment base longitudinal axis, allowing for an adjustable connection of said foundation attachment member to said frame attachment member that accommodates differences in the spatial relation between said side surface of said foundation and said inside edge of said frame member, said frame attachment member also having a frame attachment flange which is integrally connected to said generally planar attachment base and disposed for registration with said inside edge of said frame member and which is formed with frame member attachment opening means,

4. and a holding means releasably connected to said distal-end threaded shank portion of said held-holding fastener means, said holding means and said head of said held-holding fastener means formed to prevent said held-holding fastener means from passing through both said elongated opening means and said staircase opening means when said held-holding fastener means is received thereby, and said holding means and said head of said held-holding fastener means also preventing movement of said frame attachment member and said foundation attachment member along said fastener axis;

d. frame fastener means that are received in close registration by said frame member attachment opening means and secure said frame attachment member to said frame member; and

e. foundation fastener means that are received in close registration by said foundation attachment opening means and secure said foundation attachment member to said foundation.

5,611,180

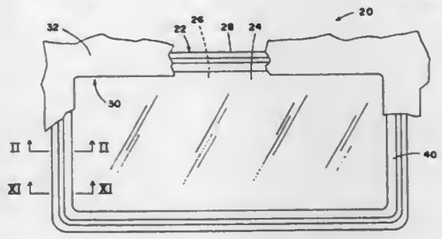
METHOD OF MAKING A VEHICLE WINDOW ASSEMBLY

Raj K. Agrawal, and Doug Crank, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 146,731, Oct. 29, 1993, Pat. No. 5,440,849, which is a continuation of Ser. No. 897,764, Jun. 12, 1992, Pat. No. 5,331,784. This application Jun. 5, 1995, Ser. No. 460,841

Int. Cl.[6] E04B *1/62*

U.S. Cl. 52—393 **56 Claims**



1. A method for manufacturing a vehicle window assembly comprising the steps of:

extruding a gasket into a predetermined pattern to define a preformed gasket;

locating said preformed gasket in a retaining fixture having an upper surface, at least a portion of said gasket having a positive relief with respect to said upper surface of said fixture;

preparing at least one surface of a window panel having a frit layer adapted to engage said gasket including priming said surface with an adhesion promoting primer composition; and

bonding said gasket to said prepared surface of said window panel by pressing window said panel and gasket into intimate contact with each other to form said panel assembly.

5,611,181

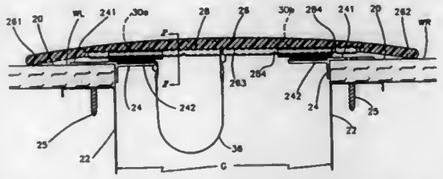
SEISMIC EXPANSION JOINT COVER

Thomas A. Shreiner, Picture Rocks, and Roger W. Barr, Williamsport, both of Pa., assignors to Construction Specialties, Inc., Cranford, N.J.

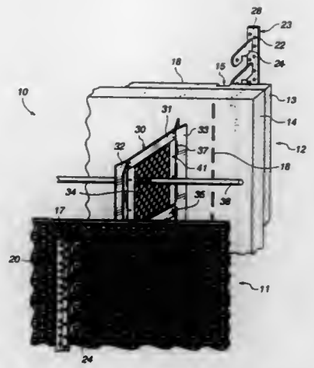
Filed Nov. 14, 1994, Ser. No. 340,036

Int. Cl.[6] E04B *1/68*

U.S. Cl. 52—396.04 **45 Claims**



1. An expansion joint cover installation comprising first and second building members having an expansion gap between them, a first retainer attached to the first building member adjacent the expansion gap, a second retainer attached to the second building member adjacent the expansion gap, an elongated cover having a longitudinal axis, an internal face, an external face and side edges, the cover spanning the expansion gap and overlying at least a portion of the first retainer and at least a portion of the second retainer, at least two first releasable fasteners joining the cover to the first retainer, the first fasteners being spaced apart lengthwise of the cover, at least one slide track attached to the internal face of the cover and extending perpendicular to the longitudinal axis and being positioned to overlie the second retainer, a movable slider received in the slide track for movement along the track, and a second releasable fastener joining the slider to the second retainer.



5,611,182

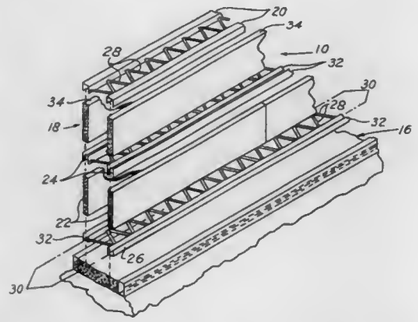
WALL FORM SYSTEM AND APPARATUS

Gerald T. Spude, 6628 Westslope La., Oconto, Wis. 54153

Filed Jun. 2, 1994, Ser. No. 252,918

Int. Cl.[6] E04B *2/86*

U.S. Cl. 52—426 **13 Claims**



1. A wall system for forming a wall on a footing, comprising:

a plurality of U-shaped elongated members coupled at sides of said U-shaped elongated members by integral substantially rigid links;

a plurality of substantially parallel elongated and planar wall panels laterally spaced by insertion of bottom edges of said wall panels into said U-shaped elongated members;

upper edges of said wall panels inserted into bottom portions of a plurality of H-shaped elongated members coupled at sides of said H-shaped elongated members by integral substantially rigid links;

additional wall panels having bottom edges inserted into top portions of said plurality of H-shaped elongated members; and

upper edges of said additional wall panels inserted into top cap members comprising inverted substantially U-shaped elongated structures extending along substantially the entire length of said wall panels, said top cap members being coupled by integral substantially rigid links, said links leaving sufficient open space between said top cap members to allow liquid building material for the wall to be poured between said top cap members.

5,611,183

WALL FORM STRUCTURE AND METHODS FOR THEIR MANUFACTURE

Chin T. Kim, 3323 Pearl St., Santa Monica, Calif. 90405

Filed Jun. 7, 1995, Ser. No. 473,440

Int. Cl.[6] E04B *2/86;2/30*

U.S. Cl. 52—426 **28 Claims**

1. A wall form structure comprising:

a first prefabricated wall having a plurality of openings;

a second prefabricated wall having a plurality of openings;

a first column member coupled to the first prefabricated wall;

a second column member coupled to the second prefabricated wall,

the first and second column member each comprising a planar stem member and a plurality of connectors, the planar stem member extending along the respective prefabricated wall, the connectors secured to and extending substantially perpendicular from the planar stem member, wherein the connectors are sized and arranged to fit the corresponding openings in the respective first and second prefabricated walls and are sufficiently long to protrude through the prefabricated wall; and

at least one connecting member having a first receiving member, a second receiving member and a coupling member, the second receiving member coupled to the first receiving member by the coupling member, wherein the first receiving member is secured to the first prefabricated wall by engaging the connectors of the first column member through the openings of the first prefabricated wall, and the second receiving member is secured to the second prefabricated wall by engaging the connectors of the second column member through the openings of the second prefabricated wall.

5,611,184

COVERING PANEL

André Felix, Route de Berne 25, CH - 1010 Lausanne, and Laurent Felix, Chemin des Combes 45, CH - 1802 Corseaux, both of Switzerland

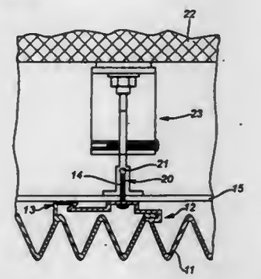
PCT No. PCT/CH94/00246, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO95/18900, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 30, 1994, Ser. No. 507,392

Claims priority, application France, Jan. 3, 1994, 94 00070

Int. Cl.[6] E04F *13/12;* **E04C** *2/08*

U.S. Cl. 52—506.05 **11 Claims**



1. A facade comprising a plurality of juxtaposed interconnected cladding members (11) wherein the plurality of cladding members (11) comprise a plurality of female cladding members and a plurality of male cladding members, wherein the plurality of jux-

taposed interconnected cladding members (**11**) cover a desired object by connecting the plurality of juxtaposed interconnected cladding members (**11**) to the desired object by means of a supporting structure, wherein the supporting structure comprises a plurality of support members (**20**) and a plurality of brackets (**23**), the plurality of support members (**20**) having a flanged end and a straight end, the flanged end of the support members (**20**) including a threaded channel (**21***a*), wherein the threaded channel (**21***a*) abuts the female cladding member and a screw (**14**) is inserted with the head of the screw (**14**) against the female cladding member, the straight end of the female cladding member being held in the bracket (**23**) where the bracket (**23**) is fast with the desired object.

5,611,185

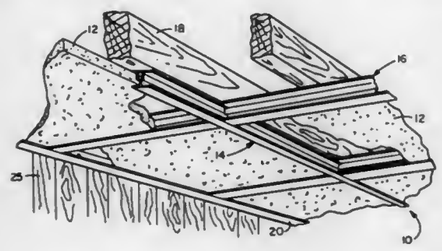
SURFACE MOUNTED GRID SYSTEM AND PROCESS OF INSTALLATION

Steve C. Wilz, Appleton, Wis., assignor to Thomas B. Van Wyk, and Linda M. Van Wyk, both of Appleton, Wis.

Filed Apr. 19, 1995, Ser. No. 424,129

Int. Cl.[6] E04B *9/00*

U.S. Cl. 52—506.07 **21 Claims**



1. A surface mounted grid system for use in association with a substructure and for supporting an array of tile panels, which comprises: (a) a plurality of main runners and cross-runners adaptable for spaced, horizontal disposition; (b) said main runners adaptable for attachment to said substructure, and including (i) a crosspiece having a horizontally oriented surface provided with a plurality of spaced notches and (ii) a downwardly depending member terminating with a horizontally disposed flange; (c) said cross-runners arranged substantially perpendicular to said main runners, and having a horizontally disposed flange arranged in a common plane with said flange of said main runner; (d) said flange of said main runners and said flange of said cross-runners disposed to support tile panels in a common plane; and (e) said cross-runners including connecting means for insertion in said notches upon said perpendicular arrangement, said connecting means including a horizontally oriented surface for mating with said surface of said crosspiece and disposed for overlapping engagement with said crosspiece thereby supporting said cross-runner and preventing undesired disengagement therebetween.

5,611,186

LAMINATED ROOFING SHINGLE

Casimir P. Weaver, Northport, Ala., assignor to Elk Corporation of Dallas, Dallas, Tex.

Continuation-in-part of Ser. No. 189,796, Feb. 1, 1994, Pat. No. 5,369,929. This application Nov. 30, 1994, Ser. No. 347,032

Int. Cl.[6] E04D *1/28*

U.S. Cl. 52—557 **25 Claims**

1. A shingle having an exposed weather surface comprising:

at least one portion of the weather surface having a relatively uniform color-value;

an adjacent portion of the weather surface having a color-value gradation from light to dark formed in part by a plurality of horizontal striations with each striation having a different color-value as compared to an adjacent striation to create the appearance of depth on the weather surface;

a transition stripe disposed between each pair of adjacent striations to provide a portion of the color-value gradation and each transition stripe having a color-value comprising a mixture of the respective colors associated with the horizontal striations disposed on either side of each transition stripe, the color-value gradation of said horizontal striations having an enhanced difference between light to dark color-values and said transition striped providing a gradual change in color-value between the respective horizontal striations; and

the color-value gradation comprises the plurality of horizontal striations and the associated transition stripes each having a selected contrast to establish the desired gradation in color-value.

5,611,187

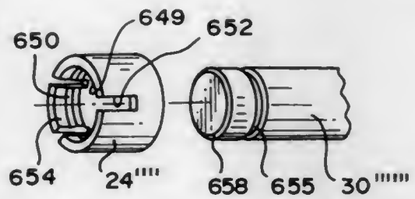
CONSTRUCTION SYSTEM

Richard H. Jones, 2709 Fleming St., Alexandria, Va. 22306-1625

Continuation-in-part of Ser. No. 203,572, Mar. 1, 1994, Pat. No. 5,430,989. This application Apr. 7, 1995, Ser. No. 418,429

Int. Cl.[6] E04C *3/02*

U.S. Cl. 52—646 **13 Claims**



1. A construction system for making latticework structures comprising:

a plurality of connectors, each of said connectors including a base portion, having opposing faces and at least first, second and third side portions, and a plurality of attaching elements, said plurality of attaching elements including a first attaching element mounted on the first side portion of said base portion and a second attaching element mounted on the second side portion of said base portion, said first and second attaching elements respectively including first and second receiving openings each of which has an associated longitudinal axis, the longitudinal axis of said first receiving opening intersecting the longitudinal axis of said second receiving opening at a predetermined angle;

a plurality of rods, each of said rods including first and second longitudinally spaced end portions, a first group of said plurality of connectors being interconnected by aligning the first receiving opening of a first connector of said first group of connectors with the second receiving opening of another connector of said first group of connectors and inserting the first end portion of a respective one of said plurality of rods within the aligned receiving openings to interconnect the first group of connectors, wherein a plurality of groups of said plurality of connectors are interconnectable, in a manner commensurate with said first group of connectors, at respective longitudinally spaced end portions of respective ones of said plurality of rods so as to collectively form an open latticework structure; and

means for retaining the first end portion of said respective one of said plurality of rods within said aligned receiving openings, wherein said means for retaining comprises an annular flange of said first attaching element that projects radially inwardly into said first receiving opening and the first end portion of said one of said plurality of rods is formed with an annular groove at a position spaced from a terminal end of said first end portion, said annular flange being receivable within said annular groove.

5,611,188

Patent Not Issued For This Number

5,611,189

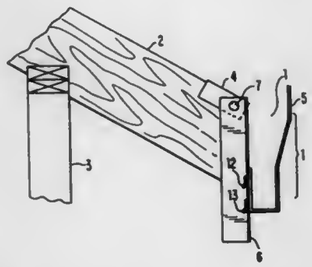
APPARATUS FOR HANGING FASCIA BOARD

Randy J. Fleck, 95 S. 132 St., Chandler, Ariz. 85225

Filed Jan. 20, 1995, Ser. No. 375,991

Int. Cl.[6] B25B *11/02*

U.S. Cl. 52—702 **15 Claims**



1. A hanger for holding and supporting an object adjacent a structure to which said object is to be attached, said hanger comprising:

saddle means for attaching said hanger to said structure, said saddle means being formed of bracket means adapted for attachment to said structure and pivot means pivotally connected to said bracket means;

holder means connected to said saddle means for holding and supporting said object; and

adjustment means for adjusting the position of said holder means with respect to said saddle means, said adjustment being in a generally vertical direction.

5,611,190

METAL ROD AND A METHOD FOR MANUFACTURING SAME

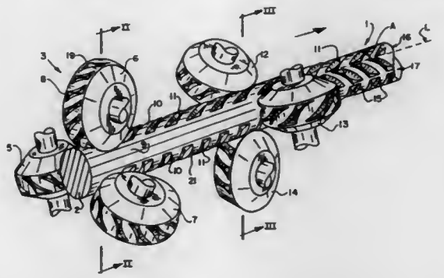
Jacobus L. Van Merksteijn, Veldmolen 10, NL-7491 GN, Delden, Netherlands

Continuation of Ser. No. 164,196, Dec. 8, 1993, abandoned. This application Oct. 2, 1995, Ser. No. 537,406

Claims priority, application Netherlands, Dec. 9, 1992, 9202127

Int. Cl.[6] E04C *3/30*

U.S. Cl. 52—740.3 **10 Claims**



1. A metal rod comprising:

a substantially round cross section having at least six rows of ribs arranged on a peripheral surface of said rod;

said ribs of each row defining parallel planes which are at an oblique angle to said substantially round cross section; and

at least one recess disposed between adjacent ribs in each said row of ribs,

wherein said recess in alternating rows of ribs is substantially concave having a concave profile in a plane parallel to said parallel planes of said ribs of said alternating rows, whereby said peripheral surface of said rod includes a bottom surface of said recess having said concave profile and wherein each said recess includes two opposed curved side surfaces extending down from said adjacent ribs to define said concave profile.

5,611,191

CIGARETTE PACKING MACHINE

Thomas W. Bailey; Michael J. Cahill, both of Coventry; Stanley V. Starkey, London, and Robert H. Taylor, High Wycombe, all of England, assignors to Molins PLC, Milton Keynes, England

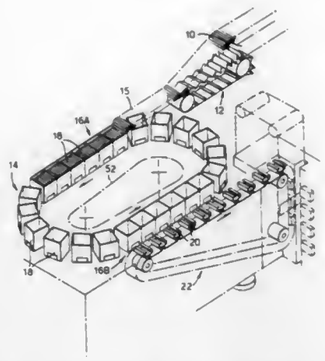
Filed Feb. 13, 1995, Ser. No. 387,559

Claims priority, application United Kingdom, Jun. 25, 1994, 9412801

Int. Cl.[6] B65B *19/04*

U.S. Cl. 53—148 **14 Claims**

1. A cigarette packing machine comprising a series of individual hoppers, first conveyor means for conveying said hoppers on a first endless path, means for delivering cigarettes to successive hoppers as they pass a delivery position in a first part of said first path, said first part of said first path downstream of said delivery position being substantially straight and said delivering means upstream of said delivery position defining a delivery path which is aligned with said first part of said first path whereby cigarettes are delivered to and continue on said first part of said first path without any turning about an axis transverse to the cigarette, means for delivering at least one row of cigarettes from successive hoppers along a second part of said first path, said second part of said first path being substantially straight and parallel to said first part of said first path, said first and second parts lying on opposite sides of said first path, and second conveyor means conveying a series of receiving members along a second endless path, said second path having a first portion which is parallel with and adjacent said second part of said first path along with said at least one row of cigarettes is



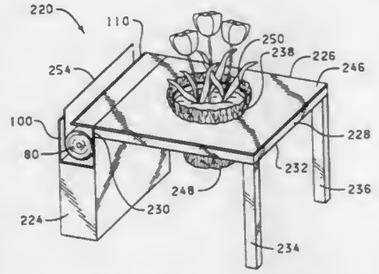
progressively transferred from successive hoppers to successive receiving members, and means for transferring said at least one row of cigarettes from successive receiving members along a second portion of said second path, which second portion is remote from said first path.

5,611,192

APPARATUS FOR DISPENSING AND WRAPPING A SHEET OF MATERIAL ABOUT A FLOWER POT OR FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Filed Jun. 7, 1995, Ser. No. 473,913
Int. Cl.[6] B65B *11/00*
U.S. Cl. 53—221 **6 Claims**



1. An apparatus for wrapping various sized flower pots, the apparatus comprising:

a roll of sheet material;

dispenser means for holding the roll of sheet material and for separating a sheet of material from the roll of sheet material; and

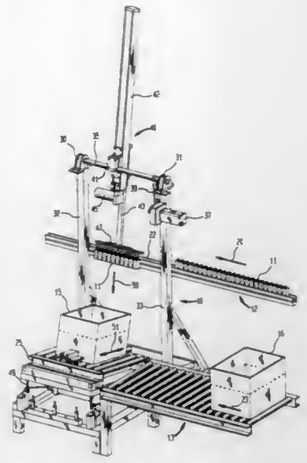
a plurality of jigs detachably and interchangeably connectable to the dispenser means, each jig having an upper surface, a lower surface, and a jig opening extending through the upper surface and the lower surface, the jig opening of each jig sized to receive a portion of a flower pot and the jig opening of each jig sized differently than the jig openings of the other jigs such that the plurality of jigs accommodate various sized flower pots, the upper surface of each of the jigs sized to support the sheet of material separated from the roll of sheet material over the jig opening of the jig so that with one of the jigs connected to the dispenser means, at least a portion of one of the flower pots can be disposed on the sheet of material and inserted into the jig opening of the jig connected to the dispenser means with the sheet of material positioned between the flower pot and the jig thereby causing the jig to form the sheet of material about the flower pot.

5,611,193

TWO-AXIS ARTICLE LOADER/UNLOADER

Philip J. Farrelly, Short Hills, N.J., assignor to Hudson Control Group, Inc., Springfield, N.J.

Filed Jan. 31, 1995, Ser. No. 381,532
Int. Cl.[6] B65B *5/10;21/12;35/36*
U.S. Cl. 53—475 **14 Claims**



10. A method of loading articles into a container, the method comprising the steps of:

first moving a gripper arrangement along a first linear path toward an article on a first conveyor;

engaging the article with the gripper;

withdrawing the article from the first conveyor in a direction that is substantially orthogonal away from the first conveyor;

conveying the container along a second conveyor at a first predetermined orientation with respect to the horizontal to a loading station;

receiving the container at the loading station at the first predetermined orientation with respect to the horizontal;

actuating a tilting arrangement at the loading station whereby the received container is tilted to a second predetermined orientation with respect to the horizontal;

second moving the gripper with the article engaged therewith along an arcuate path;

third moving the gripper with the article engaged therewith along a second path toward the tilted container on the second conveyor, the second path being substantially orthogonal to the second predetermined orientation with respect to the horizontal of the container; and

releasing the article in the container.

5,611,194

TUCK ROLLER WITH IMPROVED WEB TENSION CONTROL

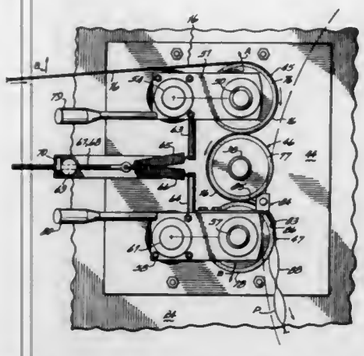
Martin M. Wildmoser, Florence, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.

Filed Nov. 14, 1994, Ser. No. 338,839
Int. Cl.[6] B65B *43/12;43/04*
U.S. Cl. 53—562 **13 Claims**

1. Tuck roll apparatus for a pouch filling machine having a filler wheel for filling a web of open-end pouches, said tuck roll apparatus comprising:

a drive roller defining a pouch web path extending about 180 degrees around said drive roller;

a backup roller oriented for pressing a web of open-ended pouches against said drive roll and defining a pouch web path extending more than about 180 degrees around said backup roller;



said backup roller defining a web nip with said drive roller;

a tuck roller for pressing said web against said drive roll at a wrap angle and for carrying said web to said filler wheel;

said tuck roller defining a second web nip with said drive roller;

a clutch for applying a torque to said drive roller for driving said drive roller at a speed to drive said web, said torque being in excess of that required to drive said web at said speed for applying a tension to said web; and

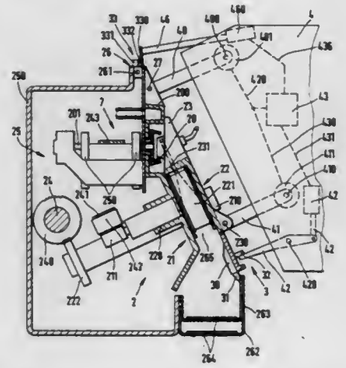
wherein the drive roller, backup roller and tuck roller drive the pouch web at a predetermined tension without slippage between said pouch web and said rollers.

5,611,195

DEVICE AND PROCESS FOR MAINTENANCE OF SPINNING DEVICES

Kurt Lovas, Bohmfeld; Bernd Bahlmann, Schrobenhausen; Hans Landwehrkamp, Lenting, and Edmund Schuller, Ingolstadt, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Jun. 6, 1995, Ser. No. 467,042
Claims priority, application Germany, Mar. 8, 1995, 195 08 095.5
Int. Cl.[6] D01H *7/46;7/92*
U.S. Cl. 57—264 **40 Claims**



1. A method for maintaining at least one spinning machine having a plurality of spinning stations, each spinning station comprising plurality of spinning components and including one or more removable components employed in spinning yarn from a fiber sliver, said method comprising the steps of:

automatically positioning a maintenance unit proximate the spinning stations for removing spinning components from spinning stations and replacing removed spinning components with replacement spinning components;

removing a spinning component via the maintenance unit from a spinning station for servicing;

replacing the removed spinning component via the maintenance unit with a replacement spinning component carried by the maintenance unit;

transferring the removed spinning component, via the maintenance unit, to a remote servicing station and servicing the removed spinning component; and

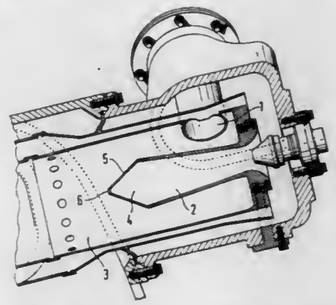
installing, via the maintenance unit, the removed spinning component as a replacement spinning component at a spinning station at which a spinning component has been removed.

5,611,196

FUEL/AIR MIXING DEVICE FOR GAS TURBINE COMBUSTOR

Andrew J. W. Wilson, Kongsberg, Norway, assignor to Ulstein Turbine AS, Norway

Filed Sep. 25, 1995, Ser. No. 533,651
Claims priority, application Norway, Oct. 14, 1994, 943918
Int. Cl.[6] F02C *7/00*
U.S. Cl. 60—39.11 **6 Claims**



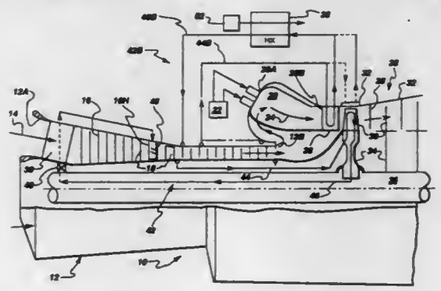
1. A fuel/air mixing device for combustion chambers in gas turbines comprising a primary venturi and a secondary venturi a flametube which surrounds the secondary venturi, said primary venturei mounted tangentially to said flametube, said secondary venturi having a free end and a conical end piece with perforated walls, said conical end piece formed on the free end of the secondary venturi.

5,611,197

CLOSED-CIRCUIT AIR COOLED TURBINE

Ronald S. Bunker, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1995, Ser. No. 551,870
Int. Cl.[6] F02C *7/18*
U.S. Cl. 60—39.75 **4 Claims**



1. A gas turbine engine comprising:

a compressor having an inlet for receiving air, stator vanes and rotor blades arranged in a plurality of stages for sequentially compressing said air, and an outlet for discharging said compressed air at maximum pressure;

a combustor disposed in flow communication with said compressor outlet for receiving said compressed outlet air;

means for mixing fuel with said compressed outlet air for undergoing combustion in said combustor and generating combustion gases therein;

a turbine disposed in flow communication with said combustor for receiving said combustion gases, and including stator vanes and rotor blades arranged in at least one stage for expanding said combustion gases to extract energy therefrom, said turbine blades being disposed radially within an annular shroud and extending radially outwardly from a rotor disk, said rotor disk being fixedly joined to said compressor;

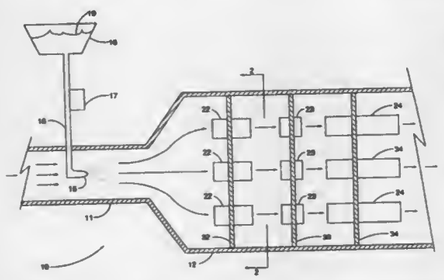
a cooling air closed-circuit having an extraction line disposed in flow communication from an extraction stage of said compressor, for bleeding therefrom air at an extraction pressure, to a cooled component including one of said turbine vanes, blades, and shroud for internal cooling thereof, and having also a return line for returning spent cooling air from said cooled component to an injection stage of said compressor disposed upstream of said extraction stage, with said extraction stage having a greater pressure than that of said injection stage for driving said cooling air through said circuit and returning said spent cooling air into said compressor to rejoin said compressed air flowable therethrough;

said cooled component joined to said cooling circuit is hollow and includes at least one local cooling circuit without film cooling holes joined thereto for preventing discharge of said cooling air directly into said turbine;

a heat exchanger disposed in flow communication with said return line; and

means for channeling a cooling fluid through said heat exchanger for cooling said spent cooling air prior to return to said compressor.

5,611,198
SERIES COMBINATION CATALYTIC CONVERTER
William H. Lane, Chillicothe; Daniel J. Learned; Randy N. Peterson, both of Peoria; Aaron L. Smith, and Scott T. White, both of East Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Aug. 16, 1994, Ser. No. 291,213
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—299 **19 Claims**



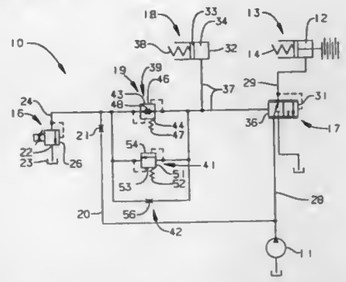
1. In an exhaust purification system for an internal combustion engine in which hydrocarbons are injected into the exhaust stream downstream of the engine, the improvement comprising:

a deNOx catalytic converter positioned in the exhaust stream;

an oxidation catalytic converter positioned in the exhaust stream downstream of said deNOx catalytic converter; and

a nitrogen compound reducing catalytic converter having substrates coated with a catalyst that promotes reduction of nitrogen containing compounds present in the exhaust downstream of said deNOx catalytic converter, said nitrogen compound reducing catalytic converter located between said deNOx catalytic converter and said oxidation catalytic converter.

5,611,199
TWO STAGE ELECTROHYDRAULIC PRESSURE CONTROL VALVE
Steven C. Bray, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 13, 1995, Ser. No. 572,253
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—404 **12 Claims**



1. A two stage electrohydraulic pressure control valve comprising:

a force controlled main stage having first and second ends and an output port connected to the first end;

an energy storage device having a storage chamber connected to the second end of the main stage; and

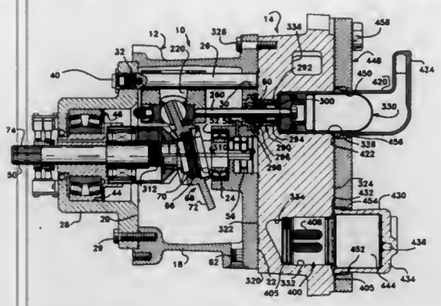
a shutdown valve mechanism connected to the storage chamber and having flow control means for blocking fluid flow from the storage chamber when fluid passing through the flow control means exceeds a predetermined flow rate, and flow restricting means for restricting fluid flow from the storage chamber; and

a solenoid controlled pilot stage connected to the shutdown valve mechanism.

5,611,200
LINEAR HYDRAULIC ACTUATOR WITH ADJUSTABLE OUTPUT SPEED
Patrick R. Moenkhaus, Mounds View, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 28, 1993, Ser. No. 98,147
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—477 **3 Claims**

1. A linear actuator of the type having a housing, a hydraulic cylinder mounted in the housing and in which slides a piston having a connecting rod providing the actuator output, a motor mounted in the housing, a reservoir in the housing and containing a supply of hydraulic fluid, and a pump driven by the motor and having a pumping chamber having an intake port in flow communication with the reservoir and an outlet port in flow communication with the cylinder, wherein the improvement comprises a manually adjustable diverter valve in flow communication with the outlet port and the reservoir, for diverting pressurized hydraulic fluid from the outlet port to the reservoir, wherein the reservoir has a wall and wherein the pump is immersed in the hydraulic fluid in the reservoir, and wherein the diverter valve has a seat in flow communication with the pumping chamber, and a valve element, said valve element including a portion thereof facing the pumping chamber, and said valve element further including an adjustment shaft penetrating the reservoir wall, by which the valve is accessible for adjustment from outside the reservoir.

5,611,201
STIRLING ENGINE
William H. Houtman, Ann Arbor, Mich., assignor to Stirling Thermal Motors, Inc., Ann Arbor, Mich.
Filed Sep. 29, 1995, Ser. No. 536,996
Int. Cl.[6] F01B *29/10*
U.S. Cl. 60—517 **15 Claims**



1. A Stirling engine comprising:

a drivecase,

a cylinder block defining a plurality of mutually parallel cylinder bores and cooler bores, and said block defining a block mating surface perpendicular to said cylinder bores and said cooler bores with said cylinder bores and said cooler bores opening on said block mating surface, said drivecase and said cylinder block being affixed together,

a driveshaft journalled for rotation within said drivecase,

a plurality of pistons positioned within said cylinder bores and reciprocatable therein,

mechanical coupling means for coupling said driveshaft and said pistons such that reciprocation of said pistons is converted to rotation of said driveshaft,

tubular cylinder extensions cooperating with said cylinder bores to receive said pistons, said extensions defining an enclosed end and an opened end,

a plurality of regenerator housings defining an enclosed end and an opened end,

a plurality of regenerators mounted within said regenerator housings,

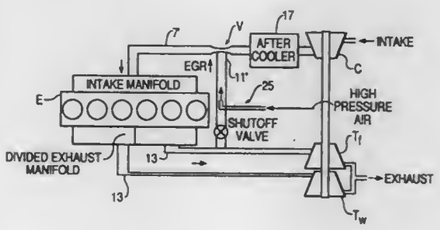
a heater assembly having flow passages for a working fluid causing said working fluid to gain heat, said heater assembly connected to said cylinder extension enclosed ends and said regenerator housing enclosed ends, and

a generally flat retainer plate having a plurality of cylinder extension bores corresponding to and aligned with said cylinder bores and having a plurality of regenerator housing bores corresponding to and aligned with said cooler bores, said retainer plate mounted to said cylinder block mating surface thereby clamping said cylinder extensions to said block mating surface in alignment with said cylinder bores and clamping said regenerator housings to said block mating surface in alignment with said cooler bores.

5,611,202
TURBOCHARGED INTERNAL COMBUSTION ENGINE
Siegfried Sumser, Stuttgart; Erwin Schmidt, Baltmannsweiler, and Herbert Schillings, Gerlingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Mar. 31, 1995, Ser. No. 414,587
Claims priority, application Germany, May 11, 1994, 44 16 572.2
Int. Cl.[6] F02B *37/007;* **F02M** *25/07*
U.S. Cl. 60—605.2 **5 Claims**

1. A turbocharged internal combustion engine including at least first and second exhaust gas turbochargers arranged in parallel, each comprising a turbine with an inlet end and an outlet end and a compressor with a pressure side and a suction side, said internal combustion engine having an air intake with an air supply conduit having first sections leading to said compressors and second sections extending from the pressure side of each compressor to an engine intake, said engine having an exhaust with an exhaust conduit connected to the inlet end of each of said turbines, the turbine of said second exhaust gas turbocharger including a control arrangement for controlling the flow of exhaust gases therethrough, and an exhaust gas recirculation conduit extending between said exhaust conduit and said first section of the air supply conduit of said second exhaust gas turbocharger so that the exhaust gas recirculated through said recirculation conduit can be compressed by said second exhaust gas turbocharger, said first section of said air supply conduit of said second turbocharger including a check valve and said recirculation conduit being connected to said exhaust conduit upstream of the turbine of said second exhaust gas turbocharger and to said air supply conduit downstream of said check valve.

5,611,203
EJECTOR PUMP ENHANCED HIGH PRESSURE EGR SYSTEM
Gregory H. Henderson, and Van Sudhakar, both of Columbus, Ind., assignors to Cummins Engine Company, Inc.
Division of Ser. No. 354,622, Dec. 12, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,148
Int. Cl.[6] F02M *25/07*
U.S. Cl. 60—605.2 **8 Claims**



1. An exhaust gas recirculation system for an internal combustion engine by which a portion of exhaust gases produced by the engine is recirculated from an exhaust line of the engine into an intake line of the engine, said exhaust gas recirculation system comprising an exhaust gas recirculation line connecting the exhaust line of the engine to the intake line of the engine, a pressure differential means for drawing a secondary flow from said recirculation line into a primary flow in said intake line, and an ejector connected to a source of high pressure air, said ejector having a discharge end disposed in said recirculation line.

5,611,204

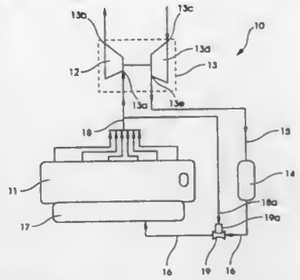
EGR AND BLOW-BY FLOW SYSTEM FOR HIGHLY TURBOCHARGED DIESEL ENGINES

Rod Radovanovic; A. S. Ghuman; Gregory H. Henderson, and Angela R. May, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 404,059, Mar. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 152,453, Nov. 12, 1993, abandoned. This application Jun. 27, 1996, Ser. No. 671,072

Int. Cl.[6] F02M *25/07*

U.S. Cl. 60—605.2 6 Claims



1. In combination:

a turbocharged diesel engine assembly including a diesel engine, a turbocharger, an engine gas flow line from said diesel engine for routing engine gas out of said diesel engine, and a fresh charge air flow line from said turbocharger to said diesel engine so as to deliver fresh charge air from said turbocharger to said diesel engine;

a venturi conduit placed in said fresh charge air flow line between said turbocharger and said engine, said venturi conduit having a throat area and defining a flow path therethrough for said fresh charge air; and

a control valve attached to said throat area and having a passageway therethrough and being disposed in flow communication with the flow path through said venturi conduit, said passageway intersecting said flow path at a location which coincides with said throat area, said passageway being connected in flow communication with said engine gas flow line whereby engine gas exiting from said diesel engine and flowing through said engine gas flow line is able to be blended with fresh charge air due to a low static pressure created by said venturi, the introduction of engine gas into said venturi conduit being controlled by said control valve.

5,611,205

APPARATUS FOR IGNITING A PROPELLANT CHARGE IN A TOOL

David L. Remerowski, and Terry A. Boothby, both of Cincinnati, Ohio, assignors to Sencorp, Newport, Ky.

Filed Jun. 5, 1995, Ser. No. 465,283

Int. Cl.[6] B25C *1/14*

U.S. Cl. 60—634 16 Claims

1. A propellant tool for driving an object, comprising:

a) a body;

b) a combustion chamber within the body;

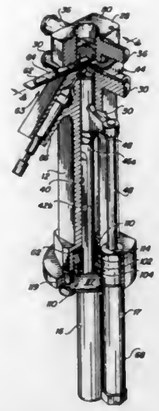
c) means for positioning a caseless propellant charge which has been introduced into said combustion chamber in a predetermined fixed location within said combustion chamber;

d) a cylinder;

e) means for driving an object, said driving means slidably contained within said cylinder;

f) means for igniting the propellant charge; and

g) an orifice plate interposed between the combustion chamber and the cylinder, the orifice plate containing a plurality of orifices for providing fluid communication between the combustion chamber and the cylinder, whereby upon ignition of



the caseless propellant charge, said orifices substantially restrict unignited solid components of the propellant charge from entering the cylinder, the caseless propellant charge is formed of a combustible material having fibers of an average predetermined length, and wherein each of the orifices has a diameter approximately one-third of the average predetermined length of the fibers.

5,611,206

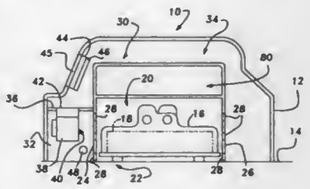
BUTTER STORING AND CONDITIONING DEVICE

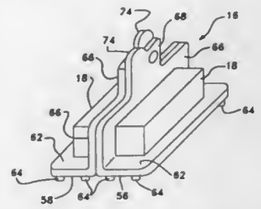
Charles L. Sargent, 3774 Cracker Way, Bonita Springs, Fla. 33923

Filed Feb. 12, 1996, Ser. No. 599,782

Int. Cl.[6] F25B *21/02;* B65D *21/02;* A47G *19/00*

U.S. Cl. 62—3.6 17 Claims





1. A device for maintaining a stick of butter set upon a counter or table top surface at a desired temperature comprising:

a housing forming a butter chamber having an open bottom of a size sufficiently large for the stick of butter to be received into said butter chamber by placement of said housing over the stick of butter with the top surface closing the open bottom of said butter chamber whereby the stick of butter is enclosed within said butter chamber;

temperature means for cooling the air within said butter chamber to cool the stick of butter; and

thermostat means coupled to said temperature means for controlling the operation of said temperature means to cool the air within said butter chamber depending upon the air temperature within said housing in order to maintain a predetermined air temperature within said butter chamber.

5,611,207

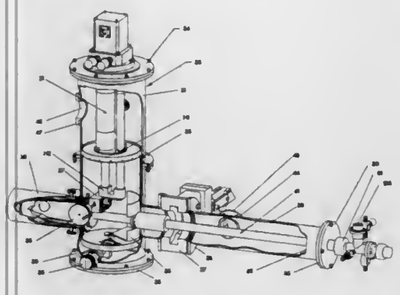
CRYOGENIC INTERFACE FOR PERPENDICULAR LOADING OF INDEPENDENT MEASUREMENT INSERTS

John Hess, 518 N. Plumer Ave., Tucson, Ariz. 85719

Filed Jun. 29, 1995, Ser. No. 496,428

Int. Cl.[6] F25B *19/00*

U.S. Cl. 62—51.1 10 Claims



1. A system for non intrusively loading or unloading an independent measurement insert into or out of the vacuum of a cryogenic interface in a direction perpendicular to the thermal gradient of a cryogenic cooling source, the system being provided with:

(a) an independent measurement insert,

(b) a cryogenic cooling source,

(c) heat stations thermally secured to cooling stages of the said cryogenic cooling source where the coldest stage of said cryogenic cooling source is designated as the cold stage,

(d) a vacuum chamber enclosing a common vacuum space which serves to thermally insulate said heat stations,

(e) a heat switch anchored to said cold stage heat station of said cryogenic cooling source for establishing a variable thermal contact between said independent measurement insert and the said cold stage heat station,

(f) an enveloping radiation shield thermally anchored to one of said heat stations at a temperature intermediate to the temperature of said cold stage and ambient temperature said enveloping radiation shield posessing an opening which enables access of said perpendicularly loaded independent measurement insert to said heat switch,

(g a rotating shutter which rotates about the cylindrical axis of said radiation shield which when in closed position acts so as to thermally shield said cold stage of said cooling source from radiation sourced at temperatures higher than the temperature of said cold stage and and which also enables a thermal contact means between said radiation shield and said insert for the purpose of precooling said insert and when said shutter is partially open and said insert is in loaded position, said shutter engages intermediate stage thermal anchor of said insert so as to locate absorb heat from and support said insert in such a manner that the thermal contact established by means of said heat switch with said base flange may be finely tuned,

(h) an air lock chamber which may be partioned from the main vacuum space by means of a vacuum valve and which enables the perpendicula loading of said independent measurement insert into said common vacuum space without degradation of the insulating vacuum.

5,611,208

MODIFIED CRYOGENIC DIFFUSION PUMP

Johann L. Hemmerich, Oxford, and Paul Milverton, Harwell, both of United Kingdom, assignors to European Atomic Energy Community, Luxembourg

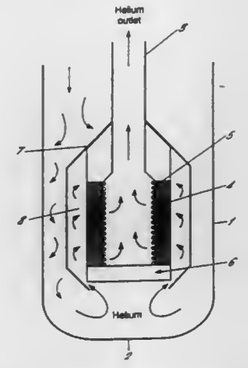
PCT No. PCT/EP94/01637, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/28314, PCT Pub. Date Dec. 8, 1994

PCT Filed May 13, 1994, Ser. No. 545,578

Claims priority, application United Kingdom, May 20, 1993, 93104651

Int. Cl.[6] B01D *8/00*

U.S. Cl. 62—55.5 16 Claims



1. An apparatus for pumping mixtures of gases including helium at cryogenic temperatures comprising an elongated body (1) of a material capable of withstanding cryogenic temperatures and of sustaining an axial temperature gradient in use, said body having an inlet for the gas mixture and an outlet (3) for pumping helium, characterised in that said outlet (3) is fitted with a porous barrier (4) through which helium must pass to exit the apparatus said porous barrier (4) having a heating means (5) disposed at its outlet side.

5,611,209

DEHUMIDIFIER

Yoshinari Ogasawara, Gifu-ken, and Fumio Kawato, Kasugai, both of Japan, assignors to CKD Corporation, Komaki, Japan

Filed Nov. 28, 1995, Ser. No. 563,574

Int. Cl.[6] F25D *17/06;* F25B *47/00*

U.S. Cl. 62—93 28 Claims

1. A gas dehumidifier having a gas passage to convey gas supplied from an external source, a first heat exchanger defined along a portion of said gas passage, and a refrigerant passage that conveys refrigerant and passes through said first heat exchanger, wherein heat exchange takes place in said first heat exchanger between gas passing through said gas passage and refrigerant flowing through said refrigerant passage to cool and dehumidify said gas, said dehumidifier comprising:

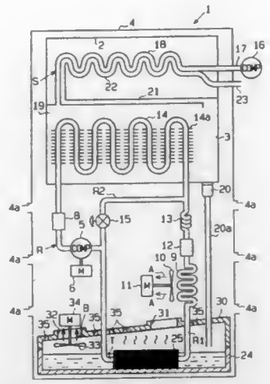
collecting means located beneath said first heat exchanger for collecting water separated from said gas during dehumidification;

vaporizing means for vaporizing water collected in said collecting means;

a housing accommodating said gas passage and said refrigerant passage, said housing having a bottom portion and an upper portion;

a cooling chamber enclosing said first heat exchanger, said cooling chamber being located at the upper portion of said housing and having outer walls and a bottom surface; and

wherein said collecting means includes:



a drainage container located at the bottom portion of said housing and having an opening with an area larger than the bottom surface of said cooling chamber; and

a water passage connecting said cooling chamber with said container, wherein water separated from said gas during dehumidification is drained from said cooling chamber into said container by way of said water passage.

5,611,210

FLUOROIODOCARBON BLENDS AS CFC AND HALON REPLACEMENTS

Jonathan S. Nimitz, Albuquerque, N.M., and Lance H. Lankford, Newcastle, Calif., assignors to Ikon Corporation, Carson City, Nev.

Filed Mar. 5, 1993, Ser. No. 27,227
Int. Cl.[6] F25B *1/00*; C09K *5/00*
U.S. Cl. 62—114 **20 Claims**

1. A method for providing refrigeration, comprising the steps of:

(a) providing a refrigerating amount of a refrigerant composition in a cooling system, and

(b) operating the cooling system,

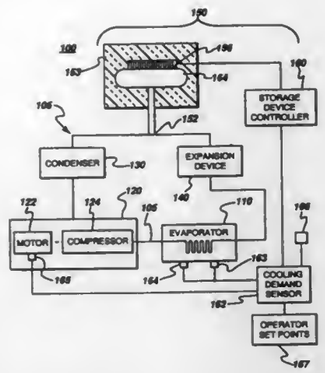
the refrigerant composition comprising a blend of at least one fluoroiodocarbon of the formula $C_aH_bBr_cCl_dF_eI_fN_gO_h$, wherein a is between and including 1 and 8, b is between and including 0 and 2, c, d, g and h are each between and including 0 and 1, e is between and including 1 and 17, and f is between and including 1 and 2, with at least one additive, the blend comprising 5 to 75 tool percent of the fluoroiodocarbon and 25 to 95 mol percent of the additive, the composition being nonflammable and electrically nonconductive, the fluoroiodocarbon having an ozone depletion potential less than 0.02 and a global warming potential less than that of chlorofluorocarbons, and the additive being nonreactive with the fluoroiodocarbon and not adversely affecting said properties of the fluoroiodocarbon.

5,611,211

REFIRGERATION SYSTEM WITH ELECTRICALLY CONTROLLED REFRIGERANT STORAGE DEVICE

Walter Whipple, III, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,763
Int. Cl.[6] F25B *45/00*
U.S. Cl. 62—149 **13 Claims**



1. A refrigeration system having enhanced energy efficiency, comprising:

a refrigerant compressor disposed in an operating loop of said refrigeration system, said compressor having a drive motor;

a condenser coupled to said compressor to receive compressed refrigerant therefrom;

an evaporator coupled to said condenser to receive condensed and compressed refrigerant therefrom, said evaporator being further coupled to said compressor; and

an electrically controlled refrigerant storage device coupled to said refrigerant system at a connection point so as to selectively receive refrigerant from and dispense refrigerant to said operating loop of said refrigeration system, said connection point of said refrigerant storage device being disposed to receive said condensed and compressed refrigerant passing from said condenser;

said electrically controlled refrigerant storage device comprising:

a storage vessel;

a refrigerant storage device electronic controller, said controller further comprising a cooling demand sensor coupled to a plurality of temperature sensors disposed on said evaporator so as to provide respective temperature signals corresponding to the temperature of fluid flowing across said evaporator, said storage device electronic controller being coupled to said means for displacing refrigerant to provide a control signal thereto responsive to a sensed fluid-flow temperature differential across said evaporator and to a sensed compressor drive motor electrical load so as to control the mass of refrigerant stored in said storage vessel in correspondence with the sensed fluid flow temperature differential across said evaporator and the sensed compressor drive motor electrical load, the mass of refrigerant stored in said storage vessel corresponding to a pressure differential between the refrigerant in said vessel and the refrigerant at the connection point in said refrigeration system; and

a thermal input control element thermally coupled to said vessel and electrically coupled to said storage device electronic controller;

whereby the refrigerant charge in said operating loop is adjusted in correspondence and with the sensed fluid flow temperature differential across the evaporator and the sensed compressor drive motor electrical load so as to maintain the compressor drive motor loaded for optimal efficiency to meet the cooling demand.

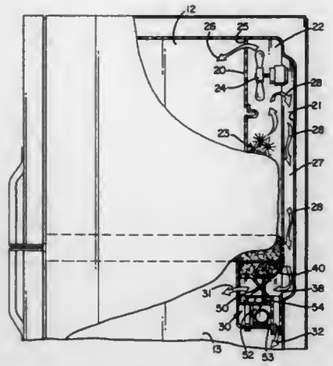
5,611,212

REFRIGERATOR DUAL AIR FLOW CONTROL MECHANISM

Kenton J. Graviss, Louisville, and Jeffery D. Hunt, Shelbyville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 11, 1996, Ser. No. 585,155
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—187 **14 Claims**

10. In a refrigerator having a freezer compartment mounted above a fresh food compartment and with an evaporator positioned



in the freezer compartment, a control mechanism for simultaneously supplying refrigerated air to the fresh food compartment in two separate air streams, comprising:

a housing mounted in the upper rear portion of said fresh food compartment said housing having an inlet conduit connected to receive refrigerated air from said evaporator; a first outlet conduit to direct air generally horizontally into the upper portion of said fresh food compartment and a second outlet conduit to direct air generally downward into the rear portion of said fresh food compartment;

said housing further having a first valve seat interconnecting said inlet conduit and said first outlet conduit and a second valve seat interconnecting said inlet conduit and said second outlet conduit;

a unitary valve member pivotally mounted in said housing for movement between a closed condition engaging both said first and second valve seats to block air flow from said inlet conduit to both said first and second outlet conduits and an open condition out of engagement with both said first and second valve seats to permit air flow from said inlet conduit to both said outlet conduits; and

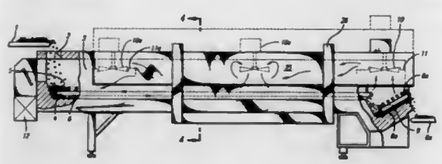
temperature responsive mechanism adapted to sense the temperature in said fresh food compartment and to control the condition of said valve member in response to the sensed temperature.

5,611,213

CRYOGENIC FREEZING SYSTEM FOR RUBBER CRUMBS AND OTHER MATERIALS

Ivan Rasovich, Sun Valley, Calif., assignor to Koach Engineering & Mfg. Inc., Sun Valley, Calif.

Filed Nov. 3, 1995, Ser. No. 552,626
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—374 **13 Claims**



1. In a cryogenic freezing system, the combination of:

a cooling tunnel having a tunnel inlet end, a tunnel outlet end, and a floor therebetween,

said tunnel inlet end including an access opening for crumb material deposited in said tunnel;

a tank for a liquid cryogenic material and having a tank inlet end, a tank outlet end, and a floor therebetween;

a first conveyor for moving crumb material along said tunnel floor from said tunnel inlet end to said tunnel outlet end for depositing crumb material into said tank, with said first conveyor positioned above said tunnel floor so that the crumb material rests directly on said tunnel floor;

a second conveyor for moving crumb material along said tank floor from said tank inlet end to said tank outlet end, with said second conveyor positioned above said tank floor so that the crumb material rests directly on said tank floor; and

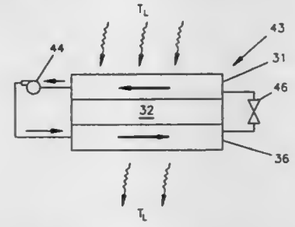
means for moving cryogenic material vapor from said tank through said tunnel from said tank outlet end toward said tank inlet end.

5,611,214

MICROCOMPONENT SHEET ARCHITECTURE

Robert S. Wegeng; M. Kevin Drost, and Carolyn E. McDonald, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Jul. 29, 1994, Ser. No. 282,663
Int. Cl.[6] F25B *1/00*; F28F *7/00*
U.S. Cl. 62—498 **15 Claims**



1. A microcomponent sheet architecture, comprising:

(a) a first laminate having a first plurality of microcomponents; attached to

(b) a second laminate having a second plurality of microcomponents;

(c) wherein said first laminate rejects heat and said second laminate receives heat;

said first and second laminates attached to opposite sides of an insulating laminate forming a microcomponent thermal assembly.

5,611,215

RECEIVER DRIER

Kiyoaki Saito, Yokohama; Takuji Furuta, Kawasaki, and Moriyoshi Endo, Tokyo, all of Japan, assignors to Fujikoki Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,591
Claims priority, application Japan, Jun. 1, 1994, 6-120163
Int. Cl.[6] F25B *39/04*; F16L *21/00*
U.S. Cl. 62—509 **10 Claims**

1. A receiver drier comprising:

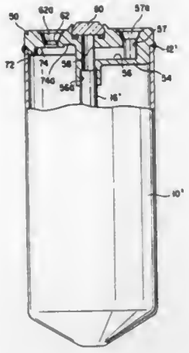
a case having an open end and a closed end;

a liquid refrigerant suction pipe arranged in an inner space of the case, and having one end located near to the open end of the case and an opposite end located at an inner portion of the case; and

a cover member fixed to the open end of the case to close the open end, and being provided with a liquid refrigerant inlet hole located at a position independent of the one end of the suction pipe and introducing a refrigerant into the inner space of the case,

a liquid refrigerant outlet hole located at a position independent of the inlet hole and the one end of the suction pipe, and

a connecting passage formed in a first portion of the cover member, said passage connecting the refrigerant outlet hole with the one end of the suction pipe and leading the refrigerant from the suction pipe to a location outside of the case,



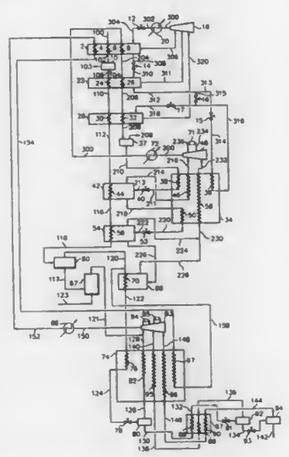
the cover member being thinned at a second portion thereof other than said first portion.

5,611,216

METHOD OF LOAD DISTRIBUTION IN A CASCADED REFRIGERATION PROCESS

William R. Low, 1000 Grandview Rd.; Donald L. Andress, 306 Stoneridge, and Clarence G. Houser, 1803 SE. Harned Dr., all of Bartlesville, Okla. 74006

Filed Dec. 20, 1995, Ser. No. 575,436
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—612 22 Claims



1. In a cascaded refrigeration process, the improvement comprising a process for transferring compressor loads from a driver in a first refrigerant cycle containing a higher boiling point refrigerant to a driver in a second refrigerant cycle containing a lower boiling point refrigerant comprising:

(a) contacting a controlled amount of the higher boiling point refrigerant liquid in the first refrigeration cycle via an indirect heat transfer means with the lower boiling point refrigerant vapor in a second refrigeration cycle thereby producing a cooled refrigerant liquid and a heated refrigerant vapor;

(b) flashing said subcooled refrigerant liquid thereby making available additional refrigerative cooling to the first refrigerant cycle; and

(c) returning said heated refrigerant vapor to the compressor in the second refrigeration cycle.

5,611,217

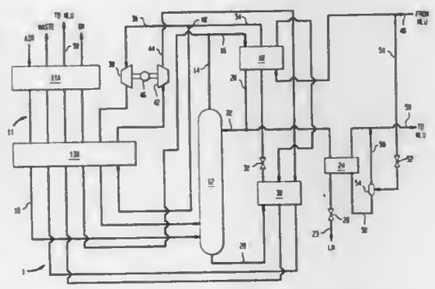
Patent Not Issued For This Number

5,611,218

NITROGEN GENERATION METHOD AND APPARATUS

Joseph P. Naumovitz, Lebanon, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Dec. 18, 1995, Ser. No. 573,838
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—646 8 Claims



1. A method of producing nitrogen, said method comprising:

cooling compressed, purified feed air to a temperature suitable for its rectification;

introducing said compressed, purified feed air into a distillation column to produce a nitrogen rich tower overhead of high purity and oxygen-rich liquid as column bottoms;

condensing at least part of a nitrogen-rich stream composed of said nitrogen-rich tower overhead and introducing part of the resulting condensate into said distillation column as reflux;

forming a nitrogen product stream from a remaining part of the resulting condensate;

compressing a recycle stream, cooling said recycle stream to said temperature and introducing said recycle stream into said distillation column to increase recovery of said nitrogen product;

expanding a refrigerant stream with the performance of work to form a primary refrigerant stream and indirectly exchanging heat between said primary refrigerant stream and said compressed and purified air and said recycle stream;

applying an amount of said work to said compression of said recycle stream;

vaporizing and then reliquefying a supplemental refrigerant stream;

said supplemental refrigerant stream being at least partly vaporized by indirectly exchanging heat with said at least part of said nitrogen-rich stream, thereby to help effect said condensation of said part of said nitrogen-rich stream; and

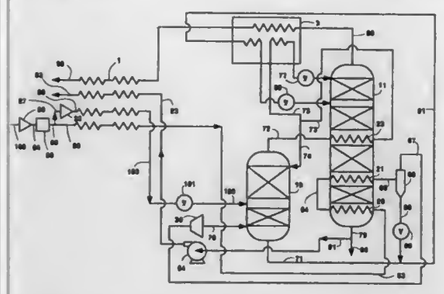
prior to said reliquefaction of said supplemental refrigerant stream, indirectly exchanging heat between said supplemental refrigerant stream and said compressed and purified air and said recycle stream to increase said amount of said work able to be applied to said compression, over that obtainable had said supplemental refrigeration not been added, thereby to increase compression and to further increase recovery of said nitrogen product.

5,611,219

AIR BOILING CRYOGENIC RECTIFICATION SYSTEM WITH STAGED FEED AIR CONDENSATION

Dante P. Bonaquist, Grand Island, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 19, 1996, Ser. No. 618,380
Int. Cl.[6] F25B *3/00*
U.S. Cl. 62—646 10 Claims



1. A method for producing lower purity oxygen by the cryogenic rectification of feed air employing a higher pressure column and a lower pressure column comprising:

(A) providing a first portion of the feed air into the higher pressure column;

(B) partially condensing a second portion of the feed air by indirect heat exchange with lower pressure column bottom liquid to produce a first vapor air portion;

(C) partially condensing the first vapor air portion by indirect heat exchange with liquid within the lower pressure column above the heat exchange with the bottom liquid to produce a second vapor air portion and oxygen-enriched liquid air;

(D) passing the second vapor air portion into the higher pressure column and passing oxygen-enriched liquid air into at least one of the higher pressure and lower pressure columns;

(E) producing oxygen-enriched fluid and nitrogen-enriched fluid by cryogenic rectification within the higher pressure column and passing oxygen-enriched fluid and nitrogen-enriched fluid from the higher pressure column into the lower pressure column; and

(F) producing lower purity oxygen by cryogenic rectification within the lower pressure column and recovering lower purity oxygen from the lower pressure column.

5,611,220

Patent Not Issued For This Number

5,611,221

DOUBLE ACTION AGITATOR ASSEMBLY

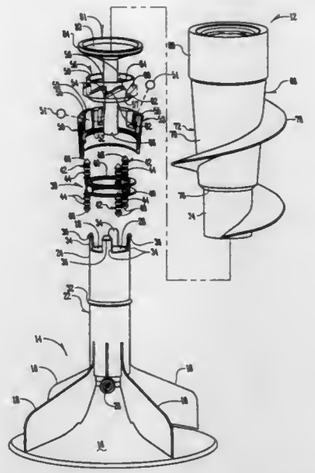
Curtis J. Tremel, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Filed Nov. 28, 1995, Ser. No. 563,670
Int. Cl.[6] D06F *17/08*
U.S. Cl. 68—133 16 Claims

1. An agitator assembly for a fabric washer comprising:

an agitator body comprising an elongated agitator barrel having first and second opposite agitator barrel ends and an outer agitator barrel surface, said agitator body further comprising a plurality of vanes circumferentially spaced apart from one another and extending radially outwardly from said outer agitator barrel surface adjacent said first agitator barrel end;

an auger tube having an inner auger tube surface forming an elongated auger tube bore extending through said auger tube and having an outer auger tube surface containing a helical auger flighting thereon;



said second end of said agitator barrel being telescopically received within said auger tube bore;

a bearing assembly between said outer agitator barrel surface and said inner auger tube surface and holding said inner auger tube surface free from contact with said outer agitator barrel surface while at the same time permitting relative rotational movement between said auger tube and said agitator body about an agitator axis.

5,611,222

REDUCING WORKPIECE THICKNESS

Clive Preece, Durham; John E. L. Simmons, Edinburgh; David C. Reedman, Wartnaby, and Sterghios Topis, Tyne and Wear, all of United Kingdom, assignors to British United Shoe Machinery Ltd., England

PCT No. PCT/GB93/02364, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/12671, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 17, 1993, Ser. No. 433,439
Claims priority, application United Kingdom, Nov. 20, 1992, 9224347
Int. Cl.[6] C14B *1/02*
U.S. Cl. 69—9 9 Claims

1. Apparatus for the treatment of a sheet material workpiece to reduce the thickness of a selected region thereof, comprising:

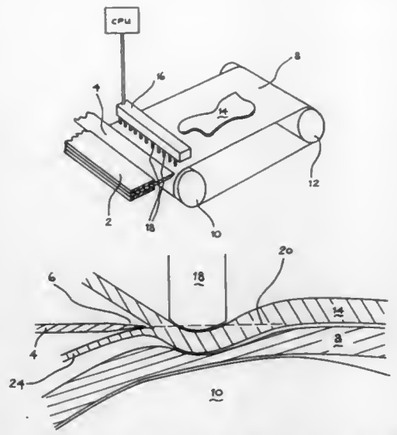
a band knife (**4**) having a blade portion (**6**) extending in a cutting plane (**20**);

workpiece feeding means (**8**,**10**,**12**) for supporting a workpiece (**14**) to be treated, said feed means being arranged to feed said workpiece past the band knife in a workpiece feed direction, said blade portion extending transversely of the workpiece feed direction;

a plurality of pressure-applying elements (**18**) extending in at least one row, immediately in advance of the knife and transversely of the workpiece feed direction, each element being independently movable between an extended condition, where it applies pressure to a section of a workpiece region to cause said section to be deformed in relation to the cutting plane and a retracted position where it does not apply such pressure;

actuator means (**16**) for effecting movement of each pressure-applying element (**18**) into and out of its extended condition; and,

control means for controlling the operation of the actuator means whereby combinations of elements can be caused to be successively located in their extended condition in timed relation with the operation of the workpiece feeding means;



characterised in that the workpiece feeding means (**8**, **10**, **12**) comprises a workpiece support (**8**) configured to yield under pressure applied by the elements (**18**) to vary the relationship between said workpiece region supported thereby and the cutting plane, and thus the cutting blade portion (**6**), to be varied.

5,611,223

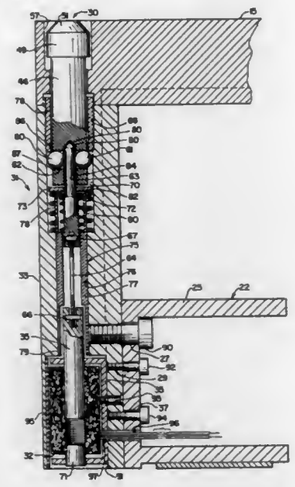
FAST ACCESS ELECTRONIC LOCKING SYSTEM AND METHOD OF USING SAME

Joseph C. Spitzer, San Diego, Calif., assignor to Mardesich Enterprises, Inc., San Diego, Calif.

Continuation of Ser. No. 206,974, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 781,011, Oct. 18, 1991, Pat. No. 5,299,436, which is a continuation-in-part of Ser. No. 492,737, Mar. 13, 1990, Pat. No. 5,085,395. This application May 19, 1995, Ser. No. 444,712

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—58 **13 Claims**



1. A security apparatus for attaching a unit to be protected to a supporting surface, comprising:

frame means including an upstanding pivot leg and an upstanding housing leg for securing the unit to the supporting surface, said frame means having elongated openable means for permitting the unit to be received therein or removed therefrom by an authorized user;

said openable means including a bar having a locking end securable to said housing leg and a pivoting end pivotally mounted to said pivot leg of said frame means for surrounding a portion of the unit, wherein said bar is pivoted to an opened position for receiving or removing the unit into or out of said frame means and to a closed position for securing the unit within said frame means;

said openable means further including a mounting pin, having a top portion, said pin being disposed near said bar pivoting end to facilitate pivotal movement of said bar about said pivot leg;

locking means for securing said bar in said closed position to help prevent the unit from being removed from said frame means by an unauthorized user;

said locking means including a removable locking pin, having a locking pin imperforate top portion and a lower shaft portion, said shaft portion being held releasably to prevent pivotal motion of said bar;

said locking pin imperforate top portion being complementary shaped and substantially similar in appearance to said mounting pin top portion to conceal the true function of said locking pin for security purposes;

said imperforate top portion further helping to prevent a tool from withdrawing said locking pin from said recess opening in said locking end of said locking bar when said locking pin is held releasably within said recess opening;

said locking means further including pin retaining means for securing releasably said shaft within said locking means to hold said bar in said closed position;

said upstanding housing leg having a cavity therein for confining and concealing substantially said locking means from view and for receiving said shaft portion of said locking pin to permit only the top portion thereof to be exposed to view so that an unauthorized person would not be aware that the locking pin can be removed to unlock said openable means;

means for controlling said retaining means to free said shaft therefrom for permitting the removal of said shaft from said cavity and the pivoting of said bar to said opened position;

said locking bar having means defining an opening for receiving completely said top portion of said locking pin to prevent said locking pin from being removed from the opening when the locking pin is retained in a locked position by said pin retaining means;

said locking bar further having means defining a small smooth shaft receiving opening in communication with said top receiving recess opening to receive said lower shaft portion of said locking pin to enable said shaft portion to extend into said cavity; and

means for urging said locking pin axially outwardly out of said cavity to back said locking pin at least partially out of said upper recess opening in said bar to permit said locking pin to be completely withdrawn from said cavity manually by an authorized user without the aid of a tool, to free said locking bar to permit said locking pin to be moved pivotally about said pivoting end.

5,611,224

HANDLE OPERABLE ROTARY LATCH AND LOCK

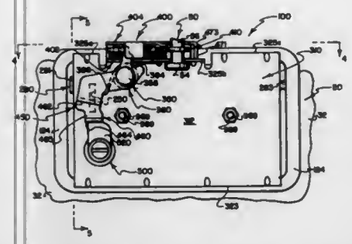
Lee S. Weinerman, Medina, and Scott A. Arthurs, Brunswick, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 510,470, Aug. 2, 1995, Pat. No. 5,564,295, and a continuation of Ser. No. 145,691, Oct. 29, 1993, Pat. No. 5,439,260. This application Dec. 22, 1995, Ser. No. 577,720

Int. Cl.[6] E05C *3/26*

U.S. Cl. 70—208 **40 Claims**

1. A flush-mountable, handle-operable rotary latch for mounting on a closure for releasably retaining the closure in a closed position by latchingly engaging a suitably configured strike formation that is located within relatively close proximity to the rotary latch when the closure is in its closed position, comprising:



a) flush-mountable front assembly means for mounting as a first modular assembly on a closure adjacent a mounting opening that is formed through a front wall of the closure, including:

i) first housing means including a pan-shaped housing for mounting on the closure adjacent the mounting opening, including a one-piece housing that defines:

A) mounting flange means for defining a front wall of the pan-shaped housing, including a mounting flange that is configured 1) to extend perimetrically about the closure's mounting opening, 2) to closely overlie portions of a front surface of the closure's front wall that extend perimetrically about the mounting opening, and 3) to be clamped toward engagement with said portions of the closure's front surface to substantially flush-mount the pan-shaped housing on the closure;

B) side walls and a back wall that cooperate to define a forwardly-facing recess, 1) with the side walls being configured to extend forwardly and rearwardly through the closure's mounting opening when the mounting flange closely overlies said portions of the closure's front surface, 2) the side walls having front portions that join smoothly with and being perimetrically surrounded by the mounting flange, 3) the side walls having rear portions that join smoothly with portions of the back wall, 4) with said portions of the back wall being configured to extend substantially parallel to the front wall of the pan-shaped housing, 5) with said portions of the back wall having a front surface that faces forwardly into the recess and a rearwardly-facing back surface on the opposite side thereof, and 6) with a main back wall opening formed through said portions of the back wall;

ii) handle means including an operating handle that is at least partially nested within the recess, and that is connected to the first housing means for movement relative to the pan-shaped housing between a non-operated position and an operated position; and,

iii) projection means connected to the handle and extending rearwardly through the opening formed in the back wall for being moved by movement of the handle 1) such that, when the handle is in the non-operated position, the projection means is caused by its connection to the handle to be in a first position, such that, 2) when the handle is moved from the non-operated position to the operated position, the projection means is caused by such movement to move from the first position to a second position, and such that, 3) when the handle is moved from the operated position to the non-operated position, the projection means is caused by such movement to move from the second position to the first position;

b) rear assembly means for mounting as a second modular assembly on the closure, for being connected to the front assembly means to clampingly draw the mounting flange toward engagement with said portions of the closure's front surface to securely mount the rotary latch on the closure, including:

i) mounting bracket means including a mounting bracket having a rear wall for overlying at least a portion of the back surface of the back wall of the pan-shaped housing, for bridging at least a portion of the closure's mounting opening at a location behind the back surface of the closure's front wall, for being fastener-connected to the front assembly means, and for defining back-surface engaging means for being clamped toward engagement with the back surface of the closure's front wall when the mounting flange of the first housing means is being clamped toward engagement with said portions of the closure's front surface;

ii) said mounting bracket means having a projection receiving opening formed therethrough through which said projection means extends when said back-surface engaging means is fastener-connected to the front assembly means, with said projection receiving opening having a first end and an opposed second end, and with said projection receiving opening further being configured such that, 1) when said projection means is in said first position, a rearwardly projecting part of said projection means is located near said first end, and such that, 2) when said projection means is in said second position, the rearwardly projecting part of said projection means is located near said second end;

iii) rotary means including second housing means rigidly connected to the mounting bracket means, with the second housing means including:

A) an elongate, generally rectangular first housing side plate having opposed end regions near opposite ends of the length thereof, and defining a first U-shaped notch located near one of the opposed end regions of the first housing side plate;

B) an elongate, generally rectangular second housing side plate having opposed end regions near opposite ends of the length thereof, and defining a second U-shaped notch located near one of the opposed end regions of the second housing side plate, with the second U-shaped notch being substantially aligned with the first U-shaped notch;

C) spacer means for extending transversely between, for rigidly connecting with, and for maintaining a substantially parallel relationship between the first and second housing side plates, with the spacer means including a first spacer that extends along a first transverse axis that intersects each of the first and second housing side plates at a location that is relatively near to the other end regions thereof, and with the spacer means also including a second spacer that extends along a second transverse axis that intersects each of the first and second housing side plates at a location that is substantially mid-way between the opposite ends thereof;

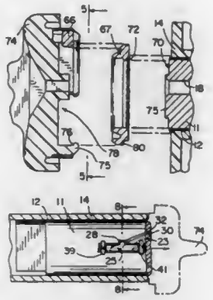
iv) with the rotary means additionally including a rotary jaw and a rotary pawl that extend substantially within a common plane located between the first and second housing side plates, with the rotary jaw being connected to the second spacer and being rotatable through a limited range of angular movement about the second transverse axis between latched and unlatched positions but being spring-biased toward its unlatched position, with the rotary pawl being connected to the first spacer and being movable relative to the housing about the first transverse axis between jaw-retaining and jaw-releasing positions to selectively release and retain the rotary jaw in its latched position but being spring-biased to move the rotary pawl toward its jaw-retaining position as the rotary jaw moves to its latched position, with an operating arm being provided for moving the rotary pawl to release the rotary jaw from its latched position, with the rotary jaw defining a third U-shaped notch that is configured to cooperate with the first and second U-shaped notches to concurrently receive and to latchingly retain within the confines of the first, second and third U-shaped notches a suitably configured strike formation when the rotary latch latchingly engages the strike formation, and with a selected one of the first and second housing side plates being strengthened and enhanced in rigidity by the close proximity presence of a transversely extending flange that is formed integrally with said selected housing side plate; and,

v) with the operating arm of the rotary means being pivotally connected to the mounting bracket means, with a designated part of the operating arm extending into engagement with said rearwardly projecting part of the projection means

for being moved by the rearwardly projecting part of the projection means to effect movement of the rotary pawl to release the rotary jaw from being retained in its latched position in response to movement of the operating handle away from its non-operated position toward its operated position to thereby release the striker from being concurrently received within and latchingly retained within the confines of the first, second and third U-shaped notches; and,

c) fastener means for connecting and clamping toward each other the housing means and the mounting bracket means to thereby clamp the back-surface engaging means of the mounting bracket toward a position of engagement with the back surface of the closure's front wall, and to clamp the mounting flange of the pan-shaped housing toward a position of engagement with said portions of the closure's front surface.

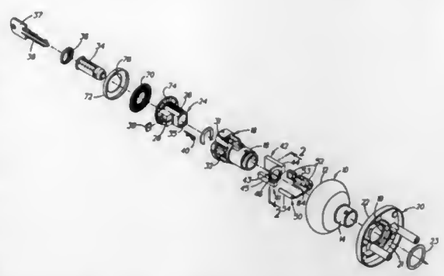
5,611,225
BREAKAWAY CYLINDER HEAD
Dennis E. Resch, Menomonee Falls, and David C. Janssen, Milwaukee, both of Wis., assignors to Strattec Security Corporation, Milwaukee, Wis.
Filed Apr. 18, 1995, Ser. No. 424,721
Int. Cl.[6] E05B *15/16*
U.S. Cl. 70—422 **27 Claims**



1. A mechanical lock comprising:
a cylinder rotatably supported within a sleeve, the cylinder defining an external cylindrical surface, a longitudinal axis and a keyway disposed along the axis for slidably receiving a key therein;
said cylinder comprising a cylinder head extending from and molded as a part of a first end of the cylinder, the cylinder head including a head portion and a frangible ring portion interconnecting the head portion to the first end of the cylinder, the frangible ring portion fracturing in response to a predetermined rotational force on the head portion; and
a support rib extending from the frangible ring along the first end of the cylinder, the support rib integral with the cylinder and the frangible ring, and determining the predetermined force required to fracture the frangible ring.

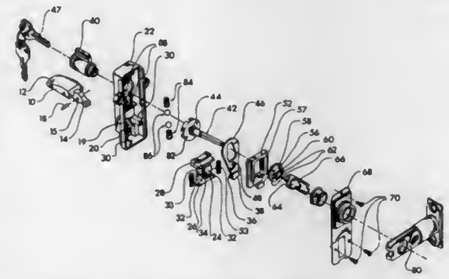
5,611,226
LOCKSET
Joseph J. Fata, Moreno Valley, Calif., assignor to Emhart Inc., Newark, Del.
Division of Ser. No. 554,070, Nov. 6, 1995. This application Jun. 25, 1996, Ser. No. 671,024
Int. Cl.[6] E05B *15/08*
U.S. Cl. 70—454 **3 Claims**

1. A lock assembly comprising an exterior operator assembly including
a locking cylinder including a cylinder body,



an insert for receiving said cylinder body, said insert including at one end a first pair of 180° related pockets and a second pair of 180° related pockets and including at the other end a shank portion, and
a lighting system including
a housing having first and second chambers interconnected by a portion having a hole therein sized to receive said insert shank portion, said first and second chambers being selectively configured so that when said insert shank portion is inserted into said hole said first and second chambers can be located in one pocket of each of said pairs of pockets,
light source means in said first chamber, and
power supply means in said second chamber.

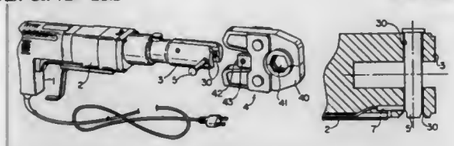
5,611,227
HANDLESET WITH THUMB PIECE AND RACK
Paul G. Solovieff, Tustin, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jun. 27, 1996, Ser. No. 673,776
Int. Cl.[6] E05B *55/06*
U.S. Cl. 70—472 **4 Claims**



1. A handleset for operating a latch assembly comprising
a half round spindle,
a cylinder lock having a key operated cylinder assembly,
a round spindle connected to said cylinder assembly for rotation with a key,
a pinion mounted for rotation on said round spindle,
said pinion and said half round spindle including interconnecting means so that rotation of said pinion will rotate said half round spindle,
a rack having teeth engaged with said pinion,
a connector displaceable between down and up positions,
a pivotal thumb piece having a lever for displacing said connector from said down position to said up position,
said connector having an arcuate slot,
a locking arm having
an arcuate flange for location in said arcuate slot,
a projection, and
a central opening,
said round spindle including an actuator at a location selected so that said actuator will be located within said opening,

said actuator and said opening being selectively configured so that turning the key from a neutral orientation to a lock open position will result in said actuator rotating said locking arm from a first position whereat said arcuate flange is at one end of said arcuate slot to a second position whereat said arcuate flange is at the other end of said arcuate slot, and
said rack including a bumper at the bottom thereof and said locking arm having a pad selectively configured so that when said locking arm is at said neutral position said locking arm can move vertically relative to said rack so that pivoting the thumb piece will not rotate said half round spindle and so that when said locking arm is at said lock open position vertical upward movement of said locking arm will move said rack vertically so that pivoting the thumb piece will rotate said half round spindle.

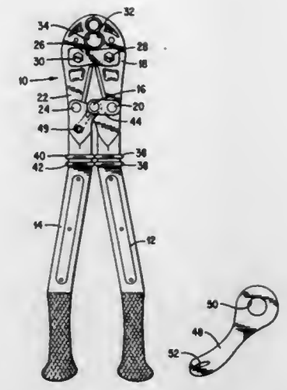
5,611,228
PRESSING TOOL
Paul Dummermuth, Zunzgen, Switzerland, assignor to Pamag AG, Flums, Switzerland
Filed Nov. 13, 1995, Ser. No. 556,496
Claims priority, application Switzerland, Nov. 16, 1994, 03432/94
Int. Cl.[6] B21D *55/00*
U.S. Cl. 72—21.2 **8 Claims**



1. A pressing tool for coupling elements comprising:
a pressing tool housing have a length;
a forked receiver disposed at one end of said pressing tool housing, said forked receiver having a bore disposed perpendicular to the lengthwise direction of said housing;
a clamping claw having a bore disposed perpendicular to the lengthwise direction of said housing;
a connecting pin interchangeably securing said clamping claw to said forked receiver by being removeably inserted into said clamping claw bore and said forked receiver bore;
a drive motor; and
a monitoring element disposed in said forked receiver, said monitoring element detecting the position of said connecting pin, said monitoring element enabling said drive motor when said connecting pin is correctly positioned within said forked receiver bore and disabling said drive motor when incorrectly positioned within said forked receiver bore.

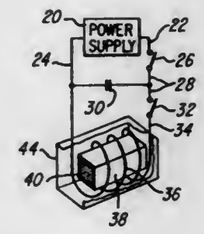
5,611,229
ABUSE INDICATOR FOR EXCESSIVE HANDLE LOADING
Christopher G. Chadbourne, Nashua; Gary E. Schrader, Londonderry, and Mark W. Blake, Wilton, all of N.H., assignors to Burndy Corporation, Norwalk, Conn.
Filed Feb. 13, 1995, Ser. No. 387,456
Int. Cl.[6] H01R *43/042*
U.S. Cl. 72—31.01 **8 Claims**

1. A crimping tool comprising:
a) a pair of handles,
b) a mechanical linkage located intermediate said handles and connecting same to allow pivotal movement therebetween,
c) a working head connected at one end to said mechanical linkage,
d) said working head consisting of a pair of pivotally connected jaws,
e) a first die formed in one of said jaws and a second die formed in the other one of said jaws,



f) said handles, when pivoted away from one another, causing said mechanical linkage to force said jaws apart, and
g) said handles, when pivoted toward one another, causing said mechanical linkage to bring said jaws together so that said dies are in alignment and are subjected to compressive forces,
h) said handles being formed of a composite polymer plastic,
i) the invention being characterized by an indicator link encased within at least one of said plastic handles,
j) said indicator link being formed of an extensible material that will elongate in response to excessive tensile forces being applied to said handle.

5,611,230
STRUCTURE AND METHOD FOR COMPACTION OF POWDER-LIKE MATERIALS
Bhanumathi Chelluri, Dublin, and John P. Barber, Kettering, both of Ohio, assignors to IAP Research, Inc., Dayton, Ohio
Division of Ser. No. 834,148, Feb. 10, 1992, Pat. No. 5,405,574. This application Jan. 3, 1995, Ser. No. 368,301
Int. Cl.[6] B21D *26/02*; **B23P** *17/04*
U.S. Cl. 72—56 **5 Claims**



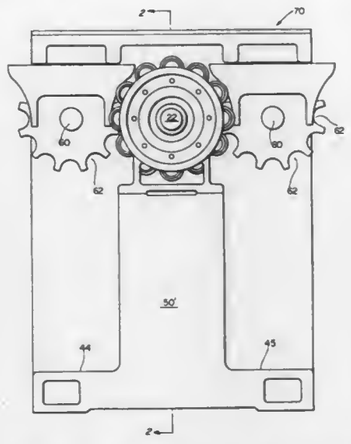
1. A structure for producing a high density body, comprising an electrically conductive container having a given dimension, said electrically conductive container being capable of receiving the body of particulate material having a given density, an electrically conductive coil surrounding the electrically conductive container, an electrical supply source for providing electrical energy through the electrically conductive coil, said electrically conductive container being separated from said electrical supply source, whereby electromagnetic pressure is applied to the electrically conductive container and the dimension of the electrically conductive container is changed so that the body of particulate material within the electrically conductive container is compressed and the density of the body of particulate material is increased to produce said high density body in the absence of direct contact between said conductor and said supply source.

5,611,231

MODULAR BASE CAN PROCESSING EQUIPMENT

Clifford R. Marritt, 328 Beechcliff Ct., Winston-Salem, N.C. 27104; Harold J. Marshall, 217 Valleywood Dr., Forest, Va. 24551, and Terry Babbitt, 109 Oakmont Ct., Lynchburg, Va. 24503

Filed Apr. 20, 1995, Ser. No. 426,122
Int. Cl.[6] B21D *37/02*
U.S. Cl. 72—94 **18 Claims**



1. A modular base for supporting can processing equipment wherein said modular base includes a plurality of modules with each module having:

a headstock support portion, said headstock support portion supporting a first end of a drive shaft and driving means for driving said drive shaft, and said headstock support portion being subdivided into a gearbox portion, wherein said gearbox portion provides clearance and support for said first end of said drive shaft, a vacuum chamber, and pressurized air passageways;

a tailstock support portion, wherein said tailstock support portion supports a second end of said drive shaft, and wherein said tailstock support portion is subdivided into a mounting portion and a connecting portion, said connecting portion having a transverse interface surface for interconnection with said headstock support portion wherein said transverse interface surface and said headstock support portion have matching patterns of holes for alignment and connection of said connecting portion to said headstock support portion.

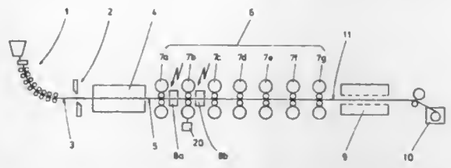
5,611,232

METHOD AND ARRANGEMENT FOR MANUFACTURING HOT ROLLED STEEL STRIP FROM CONTINUOUSLY CAST INPUT STOCK

Wolfgang Rohde, Dormagen, and Günter Kneppe, Hilchenbach, both of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Jan. 27, 1995, Ser. No. 380,098
Claims priority, application Germany, Jan. 27, 1994, 44 02 402.9
Int. Cl.[6] B21B *1/46;13/22*
U.S. Cl. 72—202 **7 Claims**

1. A method of manufacturing hot rolled steel strip from continuously cast strip-like input stock in successive work steps, the method comprising adjusting the input stock at the solidification to hot rolling temperature and introducing the input stock into a multiple-stand rolling mill for rolling into finished strip, the rolling



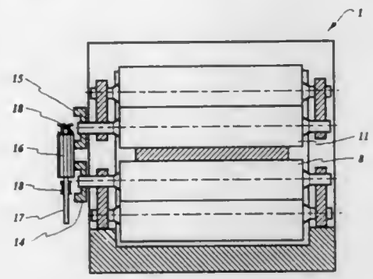
mill including at least a first roll stand and a second roll stand and additional roll stands downstream of the second roll stand, wherein the input stock reaches the first roll stand with an initial pass temperature further comprising heating the steel strip at least between the first roll stand and the second roll stand to the initial pass temperature and heating as necessary the steel strip following one or more of the additional roll stands, and carrying out a synchronous operation of the first roll stand and the second roll stand, further comprising controlling the synchronous operation in a loop-free manner by means of a minimum pull control.

5,611,233

TRANSMISSION UNIT FOR DRIVING TWO SHAFTS LYING ESSENTIALLY PARALLEL

Augustinus F. H. Basstein, Prinsenbeek, Netherlands, assignor to Crown Gear, B.V., Rotterdam, Netherlands

PCT No. PCT/NL93/00123, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO94/00705, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 8, 1993, Ser. No. 351,431
Claims priority, application Netherlands, Jun. 19, 1992, 9201082
Int. Cl.[6] B21B *35/14*
U.S. Cl. 72—249 **8 Claims**



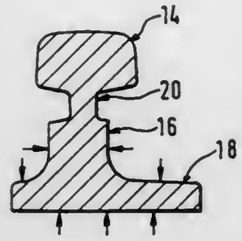
6. A transmission unit for driving two parallel driven shafts each bearing a roll, the rolls defining a gap for passing through a material to be treated, each of said driven shafts rotating about its longitudinal axis, at least one of said driven shafts being movable at a right angle to its longitudinal axis for adjusting the size of the gap, wherein said transmission includes one cylindrical pinion with continuous toothing, and said driven shafts are each provided with a crown wheel which meshes with said cylindrical pinion, said cylindrical pinion having a rotation axis which lies in a plane that intersects at right angles the longitudinal axes of said driven shafts and in a parallel plane which is parallel to the axes of said two parallel driven shafts, said at least one movable driven shaft being movable only in the direction of the rotation axis of the cylindrical pinion.

5,611,234

PROCESS FOR MODIFYING THE SECTION OF A RAILWAY RAIL AND RAIL THUS OBTAINED

Jean-Pierre Allegrucci, Schifflange, Luxembourg, and Gérard Testart, Andresy, France, assignors to KIHN, Grand Duchy, Luxembourg

Filed Jan. 30, 1995, Ser. No. 380,028
Claims priority, application Luxembourg, Feb. 15, 1994, 88458
Int. Cl.[6] B21D *31/00*
U.S. Cl. 72—377 **9 Claims**



1. Process for modifying a section of a railway rail comprising a flange, a web and a head, by increasing a height of the rail to a detriment of a thickness of the web and of the flange, the process comprising the steps of:

machining an upper part of the web below the head to reduce a thickness of the upper part of the web;

directing heat to only a lower part of the web, and the flange of the rail; and

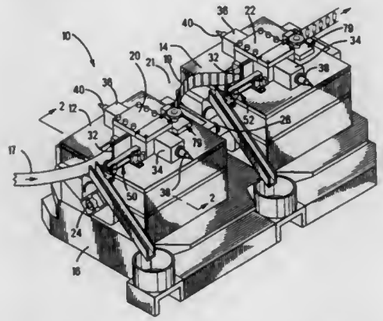
deforming heated portions of the rail to increase the height of the rail.

5,611,235

POWER DISTRIBUTION MECHANISM IN A STAMPING AND FORMING MACHINE AND METHOD

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 186,344, Jan. 25, 1994, abandoned. This application Jan. 27, 1995, Ser. No. 379,053
Int. Cl.[6] B21D *43/05*
U.S. Cl. 72—405.06 **11 Claims**



1. In a machine having first and second spaced apart stamping and forming modules for concurrently performing stamping and forming operations on a single continuous strip of stock which passes through first and second mutually aligned slots in said first and second stamping and forming modules, respectively, and between said two modules along an arcuate path during feeding thereof, each said module including:

a drive shaft;

two opposing ram assemblies which undergo reciprocating movement toward and away from each other including tooling attached thereto for engaging said strip of stock and performing said operations thereon;

first and second actuator levers, each coupled to a respective one of said two ram assemblies, and being coupled to said drive shaft by first and second couplings for effecting said reciprocating movement of each said respective ram assembly;

a feed mechanism coupled to and driven by said drive shaft of its respective module for intermittently advancing said strip of stock within said respective module in timed relationship with said reciprocating movement of said two ram assemblies, and independent of advancement of said strip of stock within the other of said first and second modules,

wherein said first and second modules have their respective drive shafts selectively rotationally coupled together at a desired relative angle so that said first and second couplings of said first module are at a first angular position and said first and second couplings of said second module are at a second angular position different from said first angular position,

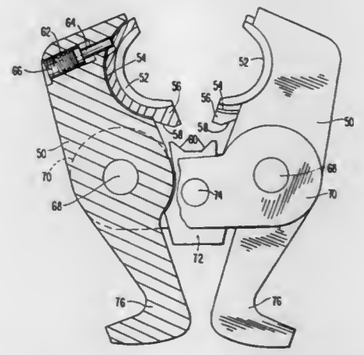
so that during operation, said first module has at least partially completed its said stamping and forming operation prior to said second module beginning its respective stamping and forming operation.

5,611,236

CRIMPING TOOL WITH MEANS TO KEEP JAWS PARALLEL

Donald R. Grunwald, Bethlehem, Pa., assignor to Victaulic Company of America, Easton, Pa.

Filed Jul. 28, 1995, Ser. No. 509,019
Int. Cl.[6] B21D *9/08*
U.S. Cl. 72—409.01 **5 Claims**



1. A tool for crimping a compression sleeve employed in a compression coupling, including:

a support;

two support arms pivoted for arcuate movement about said support;

a crimping jaw slidably mounted on each said support arm for rotary sliding movement about an axis transverse to the longitudinal axis of said each said support arm;

a camming member on each said crimping jaw; means biasing said respective crimping jaws for rotation relative to the associated said support arm to a determined position relative to said support arm; and,

a camming surface carried by said support; a ramp cam on each said camming member engageable in face engagement with said camming surface, said ramp cam being operative to rotate the associated said crimping jaw relative to the associated said support arm, to maintain end faces of the respective said crimping jaws in parallelism with each other during a crimping operation.

5,611,237

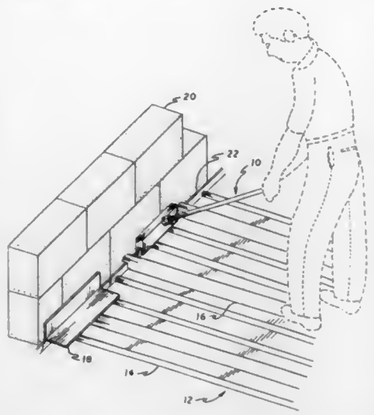
BENDING TOOL

Robert G. Harper, 48719 Morris Rd., Hammond, La. 70401

Filed Oct. 10, 1995, Ser. No. 540,465

Int. Cl.[6] B21D *1/12*

U.S. Cl. 72—458 **4 Claims**



1. A tool for bending the ends of metal roofing material having support ribs positioned along said material comprising:

a parallelepiped unitary base having an upper portion having a rectangular cross section and a lower portion, said lower portion having two parallel flanges, each said flange having a height, length, and depth, said flanges being separated and forming a channel having parallel side walls, the height of said flanges being equal to the height of said support ribs and

an elongated handle attached to said base at an acute angle to a vertical plane which bisects said channel.

5,611,238

APPARATUS AND METHOD FOR AUTOMATIC CHARGING OF A MACHINE FOR CHARACTERIZING MECHANICAL AND/OR GEOMETRICAL PROPERTIES OF STAPLE FIBER SAMPLES

Jochen Bader, Schwabmünchen; August Schneider, Grossaitingen, and Erwin Stolarski, Wollishausen, all of Germany, assignors to Hoechst Trevira GmbH & Co. KG

Filed Oct. 13, 1995, Ser. No. 543,123

Claims priority, application Germany, Oct. 17, 1994, 44 37 026.1

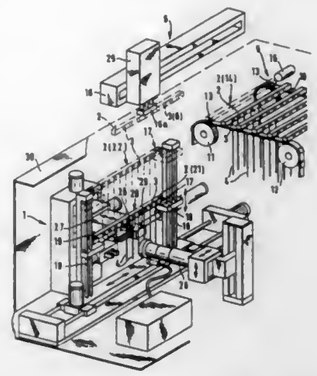
Int. Cl.[6] G01L *5/04*

U.S. Cl. 73—160 **22 Claims**

1. Apparatus for the automatic charging of a machine for characterizing mechanical and/or geometrical properties of staple fiber samples, comprising the following elements:

A) a plurality of clamping strips which each comprise a plurality of clamps for receiving fiber samples,

B) at least one reservoir means for the clamping strips, and



C) a transporter whereby the clamping strips or individual fiber samples are automatically brought from the reservoir means into the machine.

5,611,239

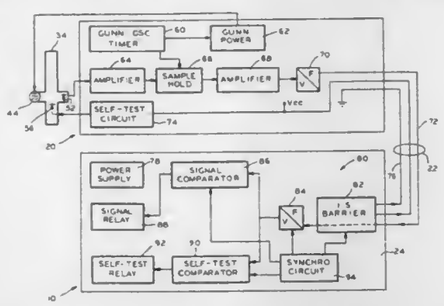
MICROWAVE POINT INSTRUMENT WITH SELF-TEST CIRCUIT

Leonid Klinshteyn, Buffalo Grove, Ill., assignor to Magnetrol International Inc., Downers Grove, Ill.

Filed Sep. 21, 1994, Ser. No. 309,927

Int. Cl.[6] G01F *23/20;* **G01R** *27/06*

U.S. Cl. 73—290 V **14 Claims**



1. A microwave point level instrument adapted to detect level or change of products in a storage vessel, comprising:

a microwave transducer periodically developing a pulse of microwave energy;

a microwave bridge driven by the transducer for receiving pulses of microwave energy, the bridge including tunable reference means receiving a portion of each pulse of microwave energy to be altered by a variable impedance tuning circuit, measurement means for receiving another portion of each pulse of microwave energy to be altered by dielectric properties of a product at a process seal installed in a storage vessel, in use, and a detector means for developing a microwave signal responsive to imbalance in the bridge between the microwave energy altered by the tuning means and the microwave energy altered by the dielectric properties of the product;

sensing means coupled to the bridge detector means for developing an electrical signal responsive to the microwave signal representing said imbalance;

a self-test circuit operatively associated with said bridge for automatically varying impedance in said bridge to simulate effects of a change of dielectric properties of a product at the process seal; and

an output circuit including means operatively driven by said sensing means for indicating the determined imbalance.

5,611,240

LEVEL DETECTOR

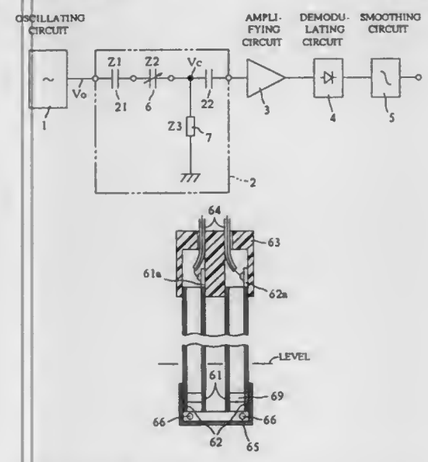
Chikazi Yamaguchi, Handa, Japan, assignor to Toyota Tsusho Corporation, Nagoya; Beam Electronics Company Limited, Handa, and Toyotsu S.K. Company Limited, Ichinomiya, all of Japan

Continuation-in-part of Ser. No. 42,108, Apr. 2, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 328,571

Claims priority, application Japan, Apr. 3, 1992, 4-081982; Apr. 3, 1992, 4-081983

Int. Cl.[6] G01F *23/26;* **G01R** *27/26*

U.S. Cl. 73—304 C **16 Claims**



1. A level detector, comprising:

a level detecting capacitor for placement in a container of dielectric fluid wherein the level of the dielectric fluid is to be detected, said level detecting capacitor including a pair of substantially coextensive electrodes, the electrodes being separated by a predetermined distance;

an impedance element connected in series with said level detecting capacitor;

an oscillating circuit means for applying an alternating voltage having a constant angular frequency to said level detecting capacitor by way of said impedance element so as to provide signal voltages; and

an amplifying circuit means for substantially linearly amplifying voltage drops at said impedance element so as to output a signal corresponding to the level of said dielectric fluid,

wherein said level detecting capacitor includes an outer cylinder and an inner cylinder disposed concentrically with respect to the outer cylinder, the outer cylinder constituting an external electrode to which said alternating voltage is supplied from said oscillating circuit means, and the inner cylinder being hollow and concentrically disposed inside the outer cylinder, said inner cylinder constituting an inner electrode from which signal voltages are transmitted to said amplifying circuit means;

said level detecting capacitor further comprising a top cap and a bottom cap disposed at opposite longitudinal ends of said level detecting capacitor, said bottom cap having at least one hole for restricting the flow of fluid into and out of said level detecting capacitor to thereby operate as a mechanical low-pass filter, said top cap being substantially cup-shaped and arranged so as to snugly receive one of said opposite longitudinal ends of said outer cylinder, said top cap further comprising a centrally disposed projection which is partially received in said inner cylinder so as to secure said inner cylinder at said predetermined distance from the outer cylinder.

5,611,241

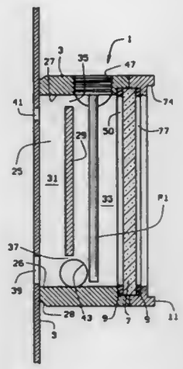
INTEGRAL WELDED SIGHT GLASS FOR BOILERS

Sam W. Henry, Ogden, and Myron Jensen, Harrisville, both of Utah, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 30, 1994, Ser. No. 315,966

Int. Cl.[6] G01F *23/02*

U.S. Cl. 73—323 **25 Claims**



1. In combination, a liquid vessel and a sight glass assembly, the liquid vessel including a wall having at least one opening through it and the sight glass assembly being secured to the wall of the vessel; said sight glass assembly including:

a body having a plurality of surfaces which together define a chamber, said plurality of surfaces including a back surface and a front surface; said back surface having an opening formed therein in fluid communication with said at least one vessel opening to place said chamber in fluid communication with said vessel; said front surface defining an opening;

a baffle in said chamber, said baffle dividing said chamber into a back chamber adjacent said back surface and a front chamber spaced from said back surface, said baffle including at least one port extending through said baffle to place said front chamber in fluid communication with said back chamber and hence the interior of said vessel, said at least one baffle port being at least partly aligned with said at least one vessel opening;

a glass positioned over said front surface opening to close said front surface opening; and

a cover for said body, said cover fitting over said glass to secure said glass to said body.

5,611,242

CLUTCH UNIT ARRANGEMENT IN A TRACTOR POWER TAKE-OFF

Dante Santachiara, Campagnola Emilia, Italy, assignor to Landini S.p.A., Reggio Emilia, Italy

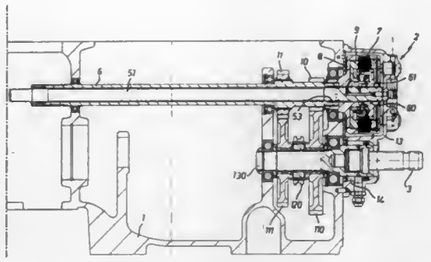
Filed Oct. 27, 1994, Ser. No. 329,829

Claims priority, application Italy, Nov. 2, 1993, RE930078 U

Int. Cl.[6] F16H *1/00*

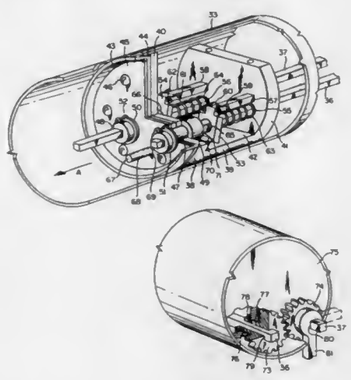
U.S. Cl. 74—15.63 **10 Claims**

1. A clutch unit for a main power take-off for use behind the rear wheel axle of an agricultural tractor comprising a casing having forward and rearward portions disposed within said casing a rotatably mounted input shaft having a front end aligned with and connected to an external engine drive shaft at the forward portion of said casing, said input shaft disposed inside of a rotatably mounted hollow coaxial output shaft, a rear end of said input shaft



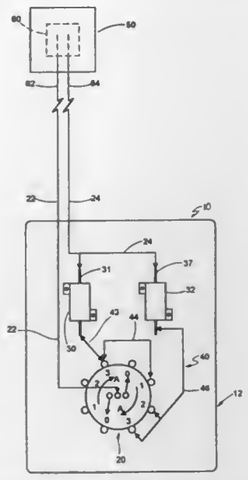
extending beyond a rear end of said output shaft into a clutch assembly operably connecting said input and output shafts at the rearward portion of said casing, said output shaft driving a rotatably mounted main power take-off shaft through a change-speed gear unit.

5,611,243
PISTON ADVANCE MECHANISM FOR AUTOMATIC TAPER
Donald M. MacMillan, 3296 Rockhill Place, Clearbrook, BC, Canada
Filed May 9, 1994, Ser. No. 239,959
Int. Cl.[6] F16H *29/08;* **B44C** *7/02;* **B67D** *5/46*
U.S. Cl. 74—119 **2 Claims**



1. In an automatic taper having a piston, a mechanism for advancing said piston in said automatic taper, said taper further comprising a head assembly having a roller assembly and a cylinder assembly having a cylinder, said cylinder having a length, said piston being part of a piston assembly movable in said cylinder, said mechanism comprising first and second rods supported in said cylinder and extending lengthwise in said cylinder and through said piston assembly, means for reciprocating said rods lengthwise in said cylinder, toward and away from said head assembly, said means for reciprocating being driven by said roller assembly, said piston assembly further comprising clutch means which are mechanically disengagable and automatically engage to connect said piston assembly to said first and second rods when said rods are moving toward said head assembly, said mechanism further comprising means for mechanically disengaging said clutches when said piston assembly is advanced close to said head assembly and further mechanical means for disengaging said clutches such that said piston assembly is free to move through said length of said cylinder.

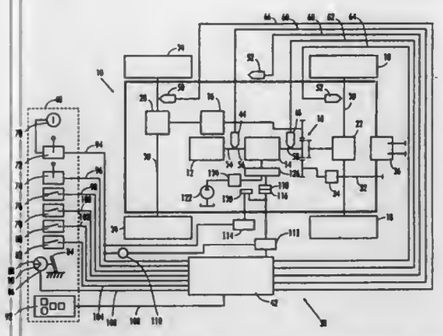
5,611,244
ELECTRONIC PRESSURE MODIFIER
Larry Schaffer, 5905 Magnolia La., Lakeland, Fla. 33809
Continuation-in-part of Ser. No. 51,977, Apr. 26, 1993, Pat. No. 5,467,644. This application Sep. 8, 1995, Ser. No. 526,111
Int. Cl.[6] F16H *61/00*
U.S. Cl. 74—335 **3 Claims**



1. An apparatus for modifying the pressure of an electronically pressure controlled automatic transmission which includes an electronic pressure controlled (EPC) solenoid having a pair of leads comprising:
(a) first and second leads connected in parallel to the leads of said EPC solenoid;
(b) first and second resistors of differing resistance connected in parallel to one of said leads; and,
(c) a switch connected to the other of said leads for selectively connecting said leads through at least one of said resistors, said switch being movable between a plurality of positions to thereby change the resistance wherein the transmission pressure changes.

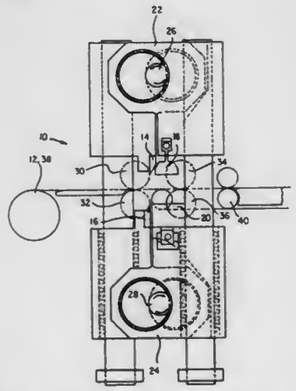
5,611,245
METHOD AND APPARATUS FOR CONTROLLING A POWER TRANSMISSION TO MATCH VEHICLE GROUND SPEED
Kevin D. McKee, Naperville, Ill., assignor to Case Corporation, Racine, Wis.
Filed Sep. 8, 1995, Ser. No. 526,051
Int. Cl.[6] B60K *41/22*
U.S. Cl. 74—336 R **24 Claims**

1. A control system for a transmission in a vehicle including an engine and driven wheels, the transmission being coupled between the engine and the driven wheels and including a plurality of gears and associated clutches, the clutches being engageable in predetermined combinations by an actuating circuit to define transmission gear ratios between an output speed of the engine and an output speed of the transmission, the control system comprising:
a speed ratio monitoring circuit including first and second sensors for sensing parameters indicative of vehicle ground speed and of engine output speed, respectively;
a gear ratio command circuit including an operator movable input device for commanding a desired gear ratio, the command circuit generating a command gear signal representative of a gear ratio commanded via the input device;
a memory circuit coupled to the gear ratio command circuit for storing the command gear signal; and



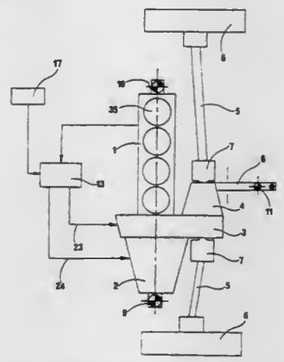
a control circuit coupled to the speed ratio monitoring circuit and to the memory circuit, the control circuit engaging the commanded gear ratio prior to an operator-induced disengaging event, generating a speed ratio signal representative of a ratio between the vehicle ground speed and the engine output speed, comparing the speed ratio signal to predetermined gear ratios, identifying a ground-speed-matched gear ratio based upon the speed ratio represented by the speed ratio signal, comparing the ground-speed-matched gear ratio to the commanded gear ratio and, after an operator-induced re-engaging event, selecting either the ground-speed-matched gear ratio or the commanded gear ratio based upon a predetermined relationship therebetween, and generating control signals for engaging clutches corresponding to the selected gear ratio and applying the control signals to the actuating circuit to engage the selected gear ratio.

5,611,246
VARIABLE ANGULAR VELOCITY COUPLING FOR RECIPROCATING DEVICES
Michael Long, Rochester, and James A. White, Conesus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 107,749, Aug. 20, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 415,867
Int. Cl.[6] F16H *35/02*
U.S. Cl. 74—393 **4 Claims**



1. Apparatus for providing a variable angular velocity coupling between an input shaft and an output shaft, comprising:
a fixed frame;
a first bearing for mounting the input shaft for rotation relative to the fixed frame;
a second bearing for mounting the output shaft for rotation relative to the fixed frame;
a pair of conjugate cams mounted to the fixed frame, concentric with the input shaft;
a first cam follower pivotably supported by the input shaft for engaging a first of the cams;
a second cam follower pivotably supported by the input shaft for engaging a second of the cams;
a first link extended between the first and second cam followers to cause the followers to move in tandem in response to rotation of the input shaft relative to the cams;
a radially extended output arm supported by the output shaft; and
a second link extended between at least one of the cam followers and the output arm to rotate the output shaft in response to rotation of the input shaft,
the cams having profiles to cause a relative angular displacement between the input and output shafts, thereby creating a sinusoidally varying angular velocity of the output shaft over a portion of each revolution in response to a constant angular velocity of the input shaft.

5,611,247
GEARBOX ACTUATING DEVICE
Dominique Crasset, 4 Square Van Gogh, Soisy Sous Montmorency, France
PCT No. PCT/FR94/00276, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO94/21485, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 15, 1994, Ser. No. 522,373
Claims priority, application France, Mar. 18, 1993, 93 03131
Int. Cl.[6] B60K *20/00*
U.S. Cl. 74—473 R **6 Claims**



1. A device for actuating the gearbox (2) associated with an engine (1), comprising:
control means (17) for controlling coupling means;
a gearbox actuating member (21, 24);
a first shaft (14) driven in rotation by the engine;
a second shaft (15) designed to drive the gearbox actuating member;
coupling means (16) for coupling the second shaft to the first shaft under the action of the control means; and
uncoupling and return means (18–20) for uncoupling the second shaft from the first shaft after the second shaft has rotated through a predetermined angle, and returning the second shaft to its initial position after it has been uncoupled from the first shaft;
wherein it furthermore comprises:
means (21, 29, 23) for actuating a clutch which is located between the engine and the gearbox, these means being designed to be driven by the second shaft;
means (35; 36; 37–39) for determining the angle through which the engine is rocked with respect to a nominal operating position; and

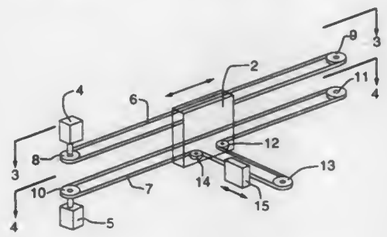
means (**39**) for opposing the engagement of said clutch by its actuating means when the angle of rocking is greater than a predetermined angle.

5,611,248

TWO-AXIS ROBOT

Kenneth J. Peltier, Waterloo, Canada, assignor to ATS Automation Tooling Systems Inc., Cambridge, Canada

Filed Jun. 2, 1995, Ser. No. 458,255
Int. Cl.[6] B25J *5/00*
U.S. Cl. 74—490.09 **2 Claims**



1. A two-axis robot comprising:

a first rail extending in one direction, having a first slide mounted thereon, said first slide being slidable along said first rail;

a second rail extending away from said first rail and having one end secured to said first slide;

first and second motors mounted in fixed positions relative to said first rail, said motors driving first and second drive means respectively, each said drive means being selected from the group consisting of a belt, a cable, and a chain;

said first drive means being attached to said first slide, thence routed around a first pulley at a first location along said first rail, thence around a second pulley at a second location spaced from said first location, and thence back to said first slide, whereby said first slide may be moved between said first and second locations by operation of said first motor;

said second drive means being routed from a third pulley at a third location along said first rail, thence around a fourth pulley at a fourth location spaced from said third location, thence around a fifth pulley mounted on said first slide, thence out said second rail and around a sixth pulley mounted on said second rail, thence back towards said first rail and around a seventh pulley mounted on said first slide, and thence back to and around said third pulley;

a second slide, slidably mounted on said second rail for movement therealong, secured directly to said second drive belt means between said sixth pulley and one of said pulleys on said first slide; and

control means for controlling and coordinating said first and second motors to produce movement of said first slide along said first rail by operation of said

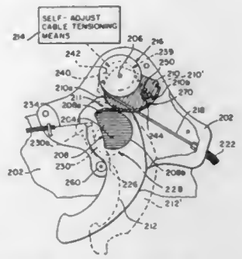
first motor, and to produce movement of said second slide along said second rail by operation of said second motor in coordination with said first motor.

5,611,249

MOTION AMPLIFYING MECHANISM INCLUDING LOBE CAM AND FLEXIBLE BELT MEANS

Randal J. Perisho, and Harold L. Carlson, both of Moberly, Mo., assignors to Dura Automotive Systems, Inc., Troy, Mich.

Division of Ser. No. 215,027, Mar. 21, 1994, Pat. No. 5,477,746. This application Dec. 6, 1995, Ser. No. 568,366
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—512 **11 Claims**



1. Motion amplifying means, comprising:

(a) a mounting bracket (**202**);

(b) an operating lever (**212**) pivotally connected with said mounting bracket for pivotal movement about a first pivot axis (**204**) between first and second positions relative to said mounting bracket;

(c) an output member pivotally connected with said bracket for pivotal movement about a second pivot axis (**206**), said output member being adapted for connection with a longitudinally-displaceable load member (**218**);

(d) motion amplifying means (**211**) for connecting together said operating lever and said output member to produce in response to pivotal movement of said operating lever through a given first angle in the direction from said first position toward said second position a corresponding pivotal movement of said output member through a greater second angle relative to said mounting bracket in a first direction, said motion amplifying means including:

(1) a pair of lobe cam members (**208,210**) having cooperating cam surfaces; and

(2) a flexible belt (**270**) connecting together said cam members, said flexible belt member extending between said cam surfaces and being connected at opposite ends with said cams, respectively; and

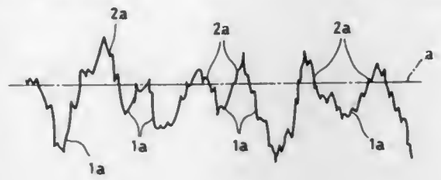
(e) means (**228**) for releasably locking said operating lever in said second position.

5,611,250

ROLLING/SLIDING PART

Hiroshi Narai; Satoshi Kadokawa, both of Fujisawa; Yasuyuki Shimazaki, Annaka, and Hiroshi Iwasa, Fujisawa, all of Japan, assignors to NSK, Ltd., Tokyo, Japan

Continuation of Ser. No. 93,742, Jul. 20, 1993, abandoned. This application Jun. 20, 1995, Ser. No. 493,215
Claims priority, application Japan, Jul. 23, 1992, 4-216562; Oct. 21, 1992, 4-305848
Int. Cl.[6] F16H *53/06*
U.S. Cl. 74—569 **3 Claims**



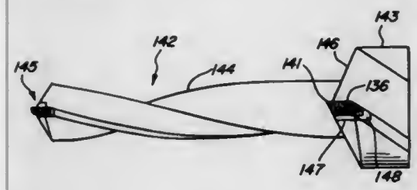
1. A rolling/sliding part for use in rolling/sliding contact with another part, having a surface which is formed with continuous minute irregularities of concavities and convexities thereon and controlled such that when a reference plane is positioned so that the concavities have a projected area which occupies 80% of the reference plane, the convexities projecting above the reference plane have respective equivalent roundness diameters of up to 15 μm; and a surface portion up to 50 μm in depth having a maximum compressive residual stress of 50 to 110 kgf/mm^2, a hardness of Hv 830 to 960, and a residual austenite content of at least 7% by volume.

5,611,251

SINTERED DIAMOND DRILL BITS AND METHOD OF MAKING

Ichiro Katayama, Ohmori Sanno Homes 501, 3-31-21 Sanno, Ohta-ku, Tokyo 143, Japan

Division of Ser. No. 85,078, Jul. 2, 1993. This application May 1, 1995, Ser. No. 432,282
Int. Cl.[6] B23B *27/20*
U.S. Cl. 76—108.6 **5 Claims**



1. A method for making inserts for cutting tools comprising;

a. fabricating a generally slab-shaped matrix of brazable material,

b. forming in the upper wall surface of said matrix at least on depression,

c. filling said depression with grains of a refractory meterial selected from the group consisting of diamond and cubic boron nitride,

d. subjecting said matrix to heat and pressure sufficient to cause grains of said refractory material to fuse to one another and to adjacent walls of said depression, thereby forming a polycrystalline body, and

e. cutting said matrix to form at least one insert having a region of polycrystalline material imbedded in said matrix, at least a portion of said polycrystalline material being exposed, said cut being made into said matrix along a line parallel to the plan view shape of said depression and oblique to said upper wall surface of said matrix.

5,611,252

HOLDING DEVICE FOR CUTTING AN OPHTHALMIC LENS

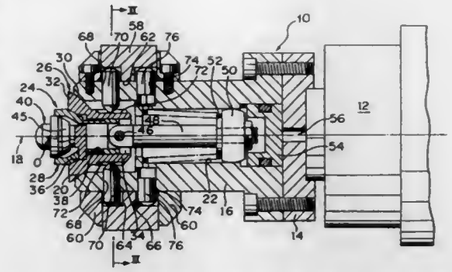
Kenshiro Hattori, and Hiroyuki Oyama, both of Seki, Japan, assignors to Menicon Co., Ltd., Nagoya, Japan

Division of Ser. No. 255,974, Jun. 8, 1994, Pat. No. 5,520,078. This application Feb. 15, 1996, Ser. No. 602,026
Claims priority, application Japan, Jun. 8, 1993, 5-163961
Int. Cl.[6] B23B *31/00;5/40*
U.S. Cl. 82—165 **16 Claims**

1. A holding device for cutting an ophthalmic lens, which holds a lens workpiece rotatable around a center axis of cutting, the holding device comprising:

a lens holding member having a spherical sliding surface,

a support member having a spherical receiving surface by which the spherical sliding surface of the lens holding member is slidably supported on the spherical receiving surface,



fixing means for adjustably positioning the lens holding member with respect to the support member;

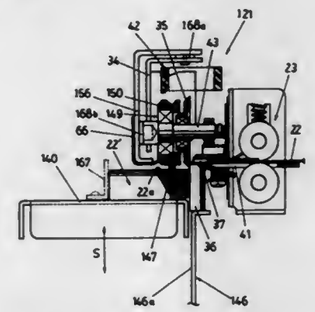
a jig having a spherical surface on which a lens workpiece is mounted during a cutting operation, said jig being held by said lens holding member such that a spherical center of the spherical surface of said jig coincides with a spherical center of said spherical sliding surface wherein the lens bolding member includes a sliding collar and a collet chuck, said spherical sliding surface is disposed on said sliding collar and said collet chuck is axially movable with respect to said sliding collar.

5,611,253

CUTTING DEVICE

Daisuke Saito, Tokyo-to, and Hideaki Matsuda, Miyagi-ken, both of Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi-ken, Japan

Filed Sep. 7, 1994, Ser. No. 301,962
Claims priority, application Japan, Sep. 7, 1993, 5-222418; Oct. 7, 1993, 5-251417
Int. Cl.[6] B26D *5/00*
U.S. Cl. 83—383 **4 Claims**



1. A cutting device comprising:

at least a pair of a moving disc cutter and a fixed cutter which extends in a cutting direction, wherein the moving disc cutter moves along an edge of the fixed cutter extending in the cuffing direction when the moving disc cutter is brought into contact with the fixed cutter, thereby cutting a continuous medium which is interposed between the moving disc cutter and the fixed cutter;

a presser member for pressing and fixing the continuous medium to be cut at a portion close to a cutting position where the continuous medium is cut by the moving cutter and the fixed cutter;

presser member moving means for retracting the presser member to a standby position where the presser member is retracted from a surface of the continuous medium when the medium is fed to the cutting position and for moving the presser member in a direction perpendicular to the surface of the continuous medium to a position where the continuous

medium is pressed and fixed when the continuous medium is fed to the cutting position to be cut there; and

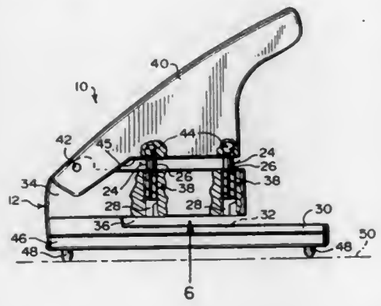
a separation guide member which advances between the presser member and the medium to separate the presser member from the medium so that the continuous medium does not contact the presser member when the moving disc cutter is not performing a cutting operation, and guides the continuous medium in a feeding direction when the continuous medium is fed to the cutting position to be cut by the moving disc cutter and the fixed cutter, and which retracts interlocking with a cutting operation of the moving disc cutter to release a separation of the presser member from the continuous medium when the continuous medium is fed to the cutting position to be cut.

5,611,254

MULTIPLE HOLE PATTERN PAPER PUNCH APPARATUS

Douglas V. Rall, 74-991 Velie Way, Suite 1, Palm Desert, Calif. 92260

Filed Dec. 1, 1994, Ser. No. 347,690
Int. Cl.[6] B26F *1/02*
U.S. Cl. 83—467.1 **3 Claims**



1. A multiple hole pattern paper punch apparatus for punching holes simultaneously at specific location points into a sheet, so as to form corner pockets in said sheet which will receive and maintain corners of a flat article retained thereto comprising:

a) base plate means having a plurality of apertures at specific location points corresponding to the corners of said flat article to be retained;

b) guide housing means attached at one end to said base plate forming a gap with a lateral sheet abutment between said housing and said base plate, means for insertion of a sheet therein in which holes in a predetermined pattern are to be punched corresponding to the corners of said flat article;

c) a plurality of hole punch bits mounted within said guide housing and aligned with said apertures in said base plate means, each of said hole punch bits consisting of an elongated shank portion and a cutting tip end designed to cut out a piece of said sheet having a specific geometric configuration;

d) handle means hinged at one end to said guide housing means having mounted in a bottom surface thereof a plurality of press members aligned with all of said hole punch bits so that when said handle means is pressed down said press members to drive all of said hole punch bits out through said base plate means through said gap to punch holes simultaneously at said specific location points through said sheet; and

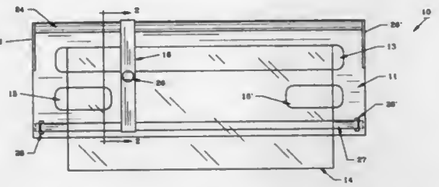
e) at least one said plurality of punch bits being spaced further from said abutment than another of said plurality of punch bits and said base plate means having at least three different apertures at at least three different distances from said abutment.

5,611,255

FOOD FILM CUTTER ASSEMBLY

David J. Evans, Haymarket, Va., assignor to Marketing & Distribution Services, Inc., Browns Summit, N.C.

Filed May 15, 1995, Ser. No. 441,087
Int. Cl.[6] B26D *1/04*
U.S. Cl. 83—614 **16 Claims**



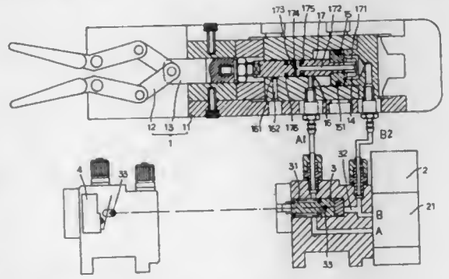
1. A cutter assembly comprising: a planar base, said planar base defining a first slot and a second slot, a cutter arm, said arm slidably attached to said base, a rotatable cutting wheel, an anvil, said anvil positioned in said first slot and said second slot, said anvil slidable within said first slot and said second slot axially of said cutting wheel, said blade supported within said arm for cutting objects disposed between said base and said arm by sliding said arm along said base.

5,611,256

DIFFERENTIAL PRESSURE DETECTING SYSTEM

Chang S. Chung, 11F, No. 37-1, Alley 57, Lane 38, Yeong Yueh Street, Lu Jou Hsiang, Taipei Hsien, Taiwan

Filed Dec. 5, 1995, Ser. No. 567,593
Int. Cl.[6] F01B *25/26;31/12;* **F15B** *15/22*
U.S. Cl. 91—1 **15 Claims**



1. A differential pressure detecting system including:

an air supply,

an electromagnetic valve for choosing a first air supplying hole or a second air supplying hole,

a mechanical arm which is provided with a clamp and a housing,

a movable link while in said housing for effecting "opening" or "closing" of said clamp,

a piston room provided closely behind said housing for moving of a piston,

a first inlet and a second inlet in said piston room, by air supplying of said first inlet or said second inlet, said piston being able of moving backward or forward,

said system is characterized in that, in said housing of said mechanical arm:

a passage is provided at the rear of said link of said clamp, a valve body is provided in said passage and is movable therein;

the front part of said valve body is connected with said link, while the rear part of said valve body is provided axially with an air way, yet a through hole extending radially outwardly is provided on the end of said air way, said rear part of said valve body is connected with said piston and extended through said piston to allow communication between said passage and said piston room;

from the vicinity of the central position of said passage of said housing, a discharge port communicating with the atmosphere is extended outwardly;

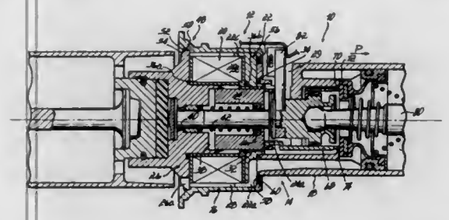
said first air supplying hole is connected with said first inlet, and said second air supplying hole is connected with said second inlet and a cylinder, so that said piston can be moved leftward or rightward in said piston room by air flow supplied by said first air supplying hole or said second air supplying hole, the air flow also renders said valve body to move in said passage for activating said link to "open" or "close" said clamp.

5,611,257

PNEUMATIC BRAKE BOOSTER AND PROCESS FOR MANUFACTURING SAME

Rüdiger Eick, Pfaffenheck, Germany, assignor to Lucas Industries Public Limited Company, United Kingdom

Filed Jun. 7, 1995, Ser. No. 476,733
Claims priority, application Germany, Jun. 23, 1994, 44 22 027.8
Int. Cl.[6] B60T *13/57;* **B23P** *13/00*
U.S. Cl. 91—367 **19 Claims**



1. A pneumatic brake booster, comprising:

a booster housing part including a vacuum chamber and a working chamber separated therefrom by a movable wall, and

a valve body part (**14**) including a control valve assembly (**10**) and an electromagnet assembly (**12**), wherein

the control valve assembly (**12**) can be actuated both by an actuation rod (**80**) as well as by the electromagnet assembly (**12**), in order to make connections between the vacuum chamber and the working chamber, or between the working chamber and the ambient atmosphere,

the valve body part (**14**) comprises several separate portions (**16**, **18**),

characterized in that

at least the first portion (**16**) of the valve body part (**14**) is:

coupled with the booster housing part,

at least partially designed as a magnetic return of the electromagnet assembly (**12**), and

coupled with the second portion (**18**) of the valve body part (**14**).

15. A method for manufacturing a pneumatic brake booster, comprising the following steps:

providing a first portion of a valve body part,

providing a second portion of a valve body part,

forming a first coupling element at the first portion,

forming a second coupling element at the second portion, which is adapted to cooperate with the first coupling element, and

coupling the first portion of the valve body part with the second portion of the valve body part, characterized in that

the first coupling element and the second coupling element are formed so as to define an inwardly or outwardly, respectively, angled collar at one end of the first and second portion of the valve body part,

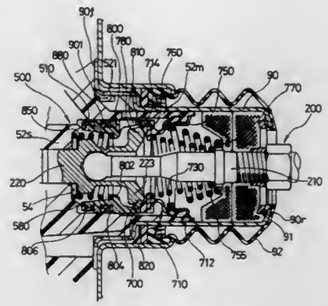
the first portion of the valve body part and the second portion of the valve body part are so designed with respect to their dimensions that they can be slided one into the other, with the inwardly angled collar and the outwardly angled collar engaging each other and forming a stop.

5,611,258

VACUUM BOOSTER

Akira Matuo, and Takeshi Kaneko, both of Yokohama, Japan, assignors to Nabco Limited, Kobe, Japan

Filed Mar. 8, 1996, Ser. No. 610,609
Claims priority, application Japan, Mar. 25, 1995, 7-091732
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—376 R **10 Claims**



1. In a vacuum booster comprising a casing including a forward wall and a rearward wall axially separated with each other and having a cavity therein, a servo piston disposed within said casing and including a cylindrical hub portion along an axis and a pressure receiving portion extending from said hub portion in a direction perpendicular to the axis, said cavity being divided by said servo piston so as to define a vacuum chamber located on the side of said forward wall and a pressure-variable chamber located on the side of said rearward wall, an input member axially extending through said rearward wall, an external end portion of said input member located outside said casing being subjected to an operating force and an internal end portion, whose end portion is located within said casing, being inserted into an internal bore of said hub portion, an output member axially extending through said forward wall being faced with the internal end portion of said input member, and a control valve unit including a vacuum valve for allowing and cutting off a communication between said vacuum chamber and said pressure-variable chamber and an atmospheric air valve for cutting off and allowing a communication between said pressure-variable chamber and the atmospheric air, in response to motion of said input member in the axial direction,

said vacuum booster having the following features with respect to said atmospheric air valve and said vacuum valve of said control valve unit:

(A) valve bodies of said atmospheric air valve and said vacuum valve are formed of separated members, respectively,

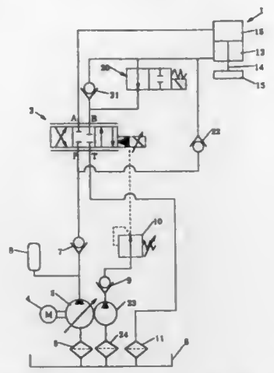
(B) said atmospheric air valve comprises said atmospheric air valve body which is supported at one end portion thereof by an inner periphery side of the internal bore in said hub portion of said servo piston and which is subjected at the other end to a spring force directing from said input member side towards said output member side, and an atmospheric air valve seat disposed on an inner end portion of said input member,

(C) a cylindrical inner member is air-tightly and slidably fitted in the internal bore of said bub member,

(D) said vacuum valve comprises said vacuum valve body disposed on a front end of said inner member and a vacuum valve seat disposed on the internal bore side of said hub member, and

(E) said inner member is under the effect of a spring force directing from said output member side towards said input member side and a rear end thereof is in abutment with said atmospheric air valve body of said atmospheric air valve.

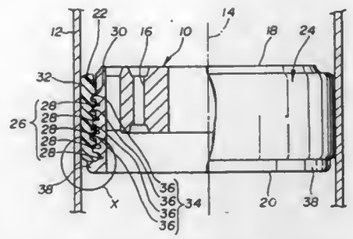
5,611,259
HYDRAULIC CIRCUIT FOR DRIVING A RAM OF HYDRAULIC PRESS
Takeshi Nagata, Aichi, Japan, assignor to Nisshinbo Industries, Inc., Tokyo, Japan
Filed Oct. 6, 1995, Ser. No. 539,528
Claims priority, application Japan, Oct. 25, 1994, 6-285896
Int. Cl.[6] F15B *15/17;11/04*
U.S. Cl. 91—415 **3 Claims**



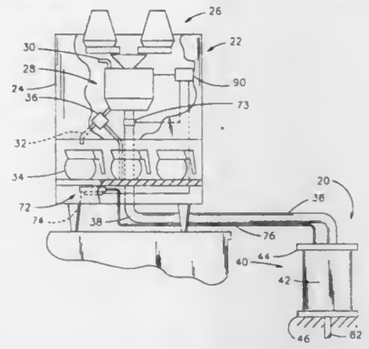
1. A hydraulic circuit for driving a ram of hydraulic press comprising:
a main hydraulic circuit for connecting with a hydraulic cylinder for driving the ram of the hydraulic press and a hydraulic pump for supplying hydraulic oil to the hydraulic cylinder;
a servo valve for controlling the supply of the hydraulic oil;
a hydraulic circuit directional control valve for opening and shutting a hydraulic line to which a rod side chamber of the hydraulic cylinder and the servo valve are connected, the rod side chamber is connected with the ram such that the hydraulic oil flows into the main hydraulic circuit at the rod side chamber;
a hydraulic differential line being arranged in parallel with the hydraulic line to which a hydraulic circuit directional control valve is provided;
a check valve being provided in the hydraulic differential line; whereby;
constituting a hydraulic differential circuit by shutting the hydraulic circuit directional control valve when operating the ram with high speed;
opening said hydraulic circuit directional control valve when operating said ram with a heavy load.

5,611,260
PISTON RING MOUNT STRUCTURE
Issei Kanari, and Munehiro Awataguchi, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan
Continuation of Ser. No. 271,739, Jul. 7, 1994, abandoned.
This application Jul. 15, 1996, Ser. No. 679,804
Int. Cl.[6] F16J *9/00*
U.S. Cl. 92—248 **12 Claims**

1. A piston head assembly for a reciprocal movement within a cylinder along an axis of the cylinder, comprising:
a piston including a first and a second axially spaced end wall, with respect to said axis, and a peripheral side wall extending between and interconnecting said first and second axially spaced end walls; and
a piston ring including a sleeve portion and a teeth portion integral with said sleeve portion,
said peripheral side wall of said piston including a section recessed to receive said teeth portion of said piston ring,
said peripheral side wall of said piston including a projecting section projecting radially, with respect to the axis, and outwardly, by a predetermined distance, with respect to said recessed section, said projecting section being disposed between said recessed section and said first end wall and in abutting engagement with an axial end of said sleeve portion of said piston ring;
wherein a distance between said first end wall and said recessed section is less than the distance between said second end wall and said recessed section,
wherein said sleeve portion includes an inner peripheral surface,
wherein said teeth portion includes teeth projecting radially inward, with respect to the axis, from said inner peripheral surface, and
wherein said peripheral side wall is free of a projecting section proximate said second axially spaced end wall.

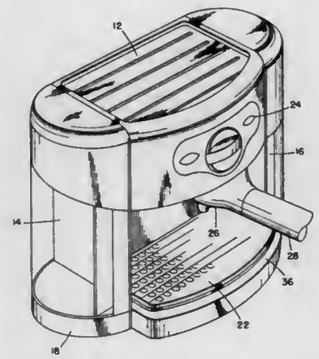


5,611,261
GROUNDS DISPOSAL DEVICE
Randy D. Pope, Edinburg, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Aug. 10, 1995, Ser. No. 513,221
Int. Cl.[6] A47J *31/06;31/00*
U.S. Cl. 99—289 R **14 Claims**



1. A spent beverage brewing substance disposal device for use with a beverage brewing apparatus, said beverage brewing apparatus having a brewing device for producing a brewed beverage from a beverage brewing substance, a drain conduit in communication with said brewing device for removing a slurry of moist beverage brewing substance from said beverage brewing device, said disposal device comprising:
a housing having a delivery port communicating with said drain conduit for receiving said slurry therethrough;
a foraminous structure having a first side and a second side, said foraminous structure being retained in said housing and positioned for receiving said slurry from said delivery port on said first side;
a drain positioned in relation to said second side of said foraminous structure for collecting and draining liquid passing through said foraminous structure; and
pressurizing apparatus operatively connected to said housing for increasing the air pressure in said housing for promoting separation of liquid from said slurry disposed on said first side of said foraminous structure, said liquid draining from said foraminous structure and collecting in said drain.

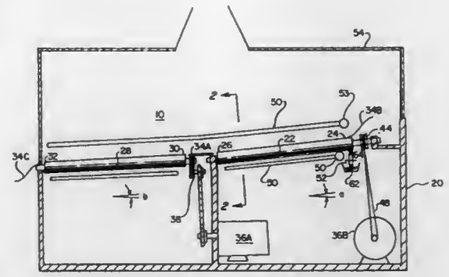
5,611,262
CAPPUCCINO MAKER
Leandro P. Rizzuto, Greenwich; Theodore B. Mulle, New Milford, both of Conn., and Asik Braginsky, Forest Hills, N.Y., assignors to Conair Corporation, Stamford, Conn.
Filed Jun. 24, 1996, Ser. No. 669,581
Int. Cl.[6] A47J *31/40*
U.S. Cl. 99—294 **15 Claims**



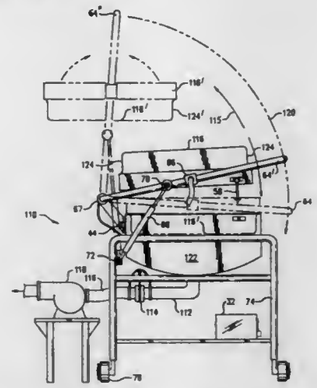
1. In a cappuccino maker comprising a housing, a steam source, means for making coffee using water from said steam source, a coffee dispensing spout for dispensing said coffee, a means for making frothed milk and a milk dispensing spout for dispensing said frothed milk, said milk dispensing spout and said coffee dispensing spout capable of dispensing milk and coffee over a container-receiving location, thus permitting milk and coffee to be dispensed into a container without having to move the container, an improvement comprising:
a milk receptacle having a valve means; and
a first base for the milk receptacle having means for engaging the valve means and a raised lip for receiving the milk receptacle or, in an absence of said receptacle, a cleaning fluid, said lip forming a reservoir on said first base.

5,611,263
APPARATUS FOR STABILIZING THE SURFACE OF A FOOD PRODUCT
Frank F. Huang, 4332 La Cadena Cir., Yorba Linda, Calif. 92686
Continuation of Ser. No. 460,350, Jun. 2, 1995, abandoned.
This application Jul. 11, 1996, Ser. No. 678,120
Int. Cl.[6] A23L *1/025*
U.S. Cl. 99—339 **20 Claims**

1. An apparatus for stabilizing the surface of a spherical food product comprising:
a frame;
a first set of cylindrical rollers in the frame of a size and spaced from each other a sufficient distances so as to support said food product, but also to permit the application of direct flame to the entire surface of said food product from the space between said rollers and underneath said food product as well as concurrently on the top and sides of said food product, the first set having at least two rollers, each roller having a first end and a second end, and the first set being inclined such that the first end is sufficiently higher than the second end so as to permit said food product to roll down said rollers from said first end to said second end;
means for rotating the rollers; and
means for surface treating the food article including a pluraltiy of direct flame applicators so positioned that said flames will impinge directly onto the entire surface of said food product while said food product rolls down said rollers.



5,611,264
DUTCH OVEN TYPE COOKING VESSEL WITH COMBINATION COOKING SURFACE
Loye E. Studer, 385 Lake Levise Dr., Tacoma, Wash. 98498
Filed May 26, 1995, Ser. No. 451,299
Int. Cl.[6] A47J *37/00*
U.S. Cl. 99—340 **7 Claims**



1. An apparatus for heating foods, liquids, or slurries, said apparatus comprising:
(a) a lower frame portion,
(b) a lower pan portion, said pan portion supported by said lower frame portion,
(c) an upper frame portion, said upper frame portion pivotally supported from said lower pan portion, and
(d) a lid portion,
(i) said lid portion pivotally affixed to said upper frame portion, and
(ii) said lid portion including a top portion and a grille portion,
(e) said upper frame portion further comprising
(i) a left end, said left end further comprising a first pivot means, and
(ii) a right end, said right further comprising a second pivot means,
(f) wherein said first and second pivot means allow said lid portion to be rotated one hundred eighty degrees when said upper frame portion has been raised from
(i) a closed, fitting position, wherein said lid is in place on said bottom portion,

(ii) to an extended, open position, wherein said frame is sufficiently upward so that said lid portion may be rotated so as to convert said lid portion to a grille portion, and

(g) wherein said grille portion is upwardly exposed when said lid portion has been rotated the said approximate one hundred eighty degrees, and

(h) wherein said lid portion is shaped such that said portion may be lowered into and nested in said bottom portion when said upper frame portion has been returned to the resting position.

5,611,265

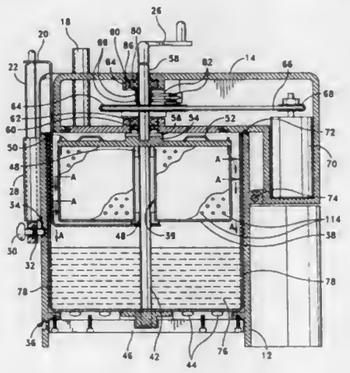
COMBINATION CHARBROILER AND FRYER WITH SPINNING FOOD BASKET

Fernando F. Ronci, 61 Reservoir Rd., Lincoln, R.I. 02865, and Alan P. Pepin, 21 Great Cedar Swamp Rd., Rehoboth, Mass. 02769

Filed Sep. 13, 1996, Ser. No. 713,836

Int. Cl.[6] A47J *37/10;37/12*

U.S. Cl. 99—353 **14 Claims**



1. A fryer food cooking apparatus, comprising:

a container having a closed bottom, an open top and an inner wall surface;

a container cover affixed to said container capable of sealingly covering and enclosing said container;

a volume of cooking liquid disposed in said container;

a centering rod mounted to said bottom of said container and emanating upwardly toward said open top;

a food basket having a aperture therethrough; said food basket being slidably mounted to said centering rod via said aperture; said basket being movable between a lower cooking position and an upper spinning position;

a basket cover residing over said food basket;

a first drive coupling connected to said basket cover;

a drive shaft connected to said container cover;

an electric motor having a supply of electric current coupled to said drive shaft to rotate said drive shaft;

a second drive coupling connected to said drive shaft; said second drive shaft being engagable with said first drive shaft when said basket is in an upper spinning position;

whereby operation of said motor rotates said drive shaft to rotate said food basket when said basket is in it upper spinning position to remove excess cooking liquid from food residing in said food basket.

5,611,266

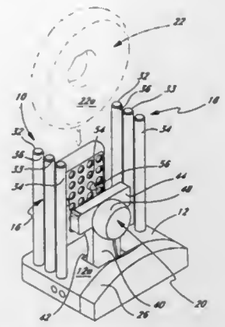
TOOL FOR CUTTING BREAD AND BAGELS

Milo M. Kensrue, Irvine, Calif., assignor to Bagel Trap, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 294,376, Aug. 23, 1994, which is a continuation-in-part of Ser. No. 33,899, Mar. 19, 1993, Pat. No. 5,361,666. This application Jul. 10, 1996, Ser. No. 680,588

Int. Cl.[6] A21C *15/04;* **B26D** *3/30;* **B26F** *3/02;3/08*

U.S. Cl. 99—537 **11 Claims**



1. A tool used to cut bread and bagels, including

an elongated base having a first end at which bagels are cut and a second end at which bread is cut,

an upright support between said first and second ends removably mounted to the base and having opposed lateral sides and opposed face walls,

a plurality of knife blade guide members attached to the base opposite each other,

a first set of said guide members positioned near the first end of the base near one of the opposed sides of the upright support and spaced apart to provide a first cutting zone having a width at least as wide as the width of the bagel to allow a bagel to be positioned between said first set of guide members with a side of the bagel next to one of the face walls,

a second set of said guide members positioned near the second end of the base near the other of the opposed sides of the upright support and spaced apart to provide a second cutting zone having a width at least as wide as the width of the bread to allow the bread to be positioned between said second set guide members with a side of the bread next to the other of the face walls,

said guide members each including a pair of space apart slits that extend from about the top surface of the base in a straight line at substantially a right angle to the top surface and terminate in an access opening for the blade of the knife, said pairs of slits in each guide member being in registration so that a knife blade may be placed into two directly opposed slits, one slit in each of the guide members, and manually forced through a bagel and bread in the first and second cutting zones, slicing the bagel and bagel positioned between the guides members from edge to edge, and

positioning elements interactive with the upright support to vary the distances between the one face wall that is next to the first cutting zone and the slits to enable the bagel to be sliced into segments of different thicknesses, said positioning elements interacting with the upright support by removal of said support and reversing the position of said support by remounting in a reverse orientation so that the positions of the face walls are reversed, with the one face wall that is next to the cutting zone changing its position and the other face wall being moved next to the cutting zone.

5,611,267

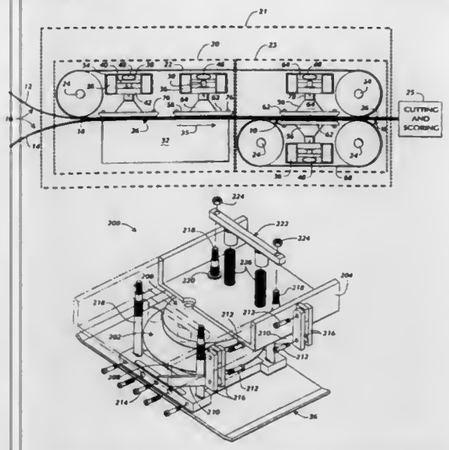
APPARATUS AND METHOD FOR APPLYING VARIABLE PRESSURE TO A SURFACE IN CORRUGATED PAPERBOARD MANUFACTURING

David M. Lauderbaugh, Roswell, Ga., assignor to Corrugated Gear & Services, Inc., Alpharetta, Ga.

Continuation-in-part of Ser. No. 125,647, Sep. 22, 1993, Pat. No. 5,526,739. This application Dec. 6, 1995, Ser. No. 567,948

Int. Cl.[6] B30B *5/02;15/34*

U.S. Cl. 100—38 **21 Claims**



1. A device for providing variable pressure to a moving surface comprising:

a frame;

a conveyor for moving a surface relative to said frame, said frame positioned proximate to the moving surface;

a plurality of pressure applicators mounted on the frame for applying pressure to said moving surface, the pressure applicators forming a row of pressure applicators substantially transverse to the direction of movement of the moving surface;

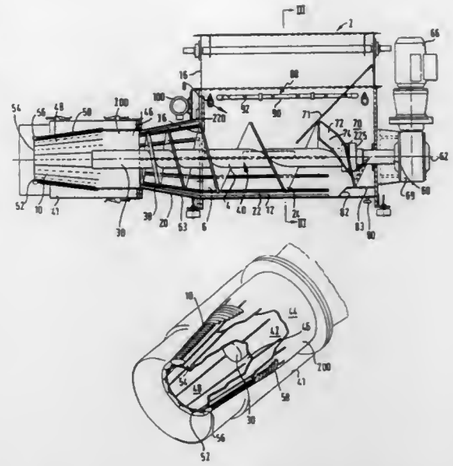
each pressure applicator comprising,

at least one foot mounted in movable relation to the frame,

a pressure device for biasing the foot away from the moving surface, and

a variable pressure source for variably biasing the foot against the biasing force of the pressure device to move the foot away from the frame and toward the moving surface; and

a control device for varying the pressure supplied by each variable pressure source.



screw conveyor means at least in part longitudinally disposed within said passageway for conveying material through said passageway at least in a downstream direction toward said outlet end, said conveyor means and said passage means cooperating to compact material passing through said passageway; and

nozzle means disposed downstream of said passage means for defining a duct which is in communication with said outlet end of said passageway to allow the material passing through said passageway to exit said outlet end of said passageway and enter said duct defined by said nozzle means, at least a portion of said duct enlarging in response to increasing pressure and contracting in response to decreasing pressure exerted by the material during conveyance through said duct, said nozzle comprising:

inner and outer members, each of said members being coaxially disposed about said longitudinal axis adjacent said outlet end of said passage means and including a plurality of longitudinally extending fingers which terminate at free ends thereof, said fingers of each of members being at least in part radially movable with respect to said axis and arranged such that each pair of adjacent fingers defines a gap therebetween when said nozzle means is in a first position and such that said fingers move relative to one another as said duct enlarges or contracts, said inner member being arranged within said outer member such that said fingers of said members cooperate to define said duct.

5,611,268

COMPACTOR WITH EXPANDING AND CONTRACTING NOZZLE

Robin Hamilton, Greenbanks, Long Lane, Dalbury Lees, Derby, United Kingdom

PCT No. PCT/GB93/01995, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/07688, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 23, 1993, Ser. No. 406,870

Claims priority, application United Kingdom, Sep. 26, 1992, 9220382; Mar. 29, 1993, 9306462

Int. Cl.[6] B30B *15/14;3/00*

U.S. Cl. 100—50 **19 Claims**

1. A compacting apparatus for compacting material passing therethrough, the material exerting pressure on said apparatus during compaction, said apparatus comprising:

passage means for defining a passageway through which a material to be compacted may be conveyed, said passageway having a longitudinal axis and an outlet end;

5,611,269

CONTINUOUSLY OPERATING PRESS FOR THE PRODUCTION OF PARTICLE BOARDS, FIBER BOARDS OR SIMILAR WOOD BOARDS AND PLASTIC BOARDS

Friedrich B. Bielfeldt, Pähl, Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Germany

Filed Feb. 21, 1995, Ser. No. 390,979

Claims priority, application Germany, Feb. 19, 1994, 44 05 343.6

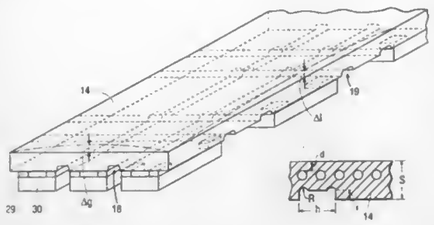
Int. Cl.[6] B30B *15/34;5/06*

U.S. Cl. 100—311 **17 Claims**

1. A press/heating platen for a continuously operating press in the production of pressed boards, said press/heating platen comprising:

fluted grooves formed longitudinal to a pressing zone and between rows of actuators of the continuously operating press; and

honeycombed grooves formed transverse to the pressing zone between the actuator rows



wherein a depth of said fluted and said honeycombed grooves is about 25% of a thickness of said press/heating platen;

wherein a width of said fluted and said honeycombed grooves is approximately equal to said thickness of said press/heating platen; and

a compound curve in said fluted and said honeycombed grooves is approximately 50–100% of said depth of said fluted and said honeycombed grooves.

5,611,270

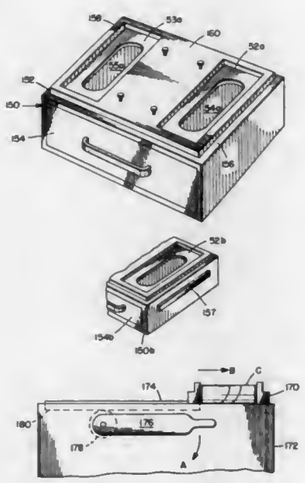
RECYCLING CENTER WITH PORTABLE TABLE TOP RECYCLING RECEPTACLE

John Harrington, 5118 Hialeah, Houston, Tex. 77092

Division of Ser. No. 27,922, Mar. 8, 1993, which is a continuation of Ser. No. 737,330, Jul. 29, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,040

Int. Cl.[6] B30B *9/32*

U.S. Cl. 100—102 **4 Claims**



1. A table top recycling receptacle comprising:

a housing having a top surface;

a manually operated can crusher connected on said top surface of said housing;

means for removably storing cans inside said housing, wherein said housing is suitably sized and shaped to be placed on top of a table top or counter top for using said can crusher and;

means for removably mounting the housing to a frame of a recycling center to locate the can crusher at a top surface of the recycling center for operable use at the top surface of the recycling center and, wherein the table top recycling receptacle is removable from the recycling center and can be placed on a table top or counter top for also using said can crusher.

5,611,271

PRESS WITH A WINDOW-TYPE TENSION FRAME

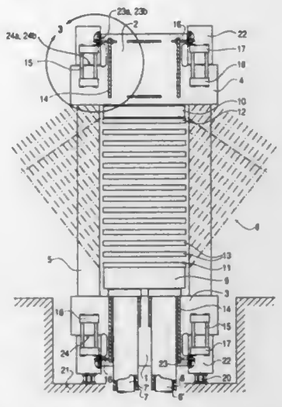
Friedrich B. Bielfeldt, Pähl, Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Germany

Filed Jan. 20, 1995, Ser. No. 375,827

Claims priority, application Germany, Mar. 10, 1994, 44 08 101.4

Int. Cl.[6] B30B *7/02*

U.S. Cl. 100—199 **9 Claims**



1. A press with at least one tier for the manufacture of wood-product boards and plastic boards, said press comprising:

a lower crosshead and an upper crosshead, each crosshead provided with four force-receiving corner areas which are joined to two lateral tension shackles;

a lower and upper press cross member disposed on each of the lower crosshead and the upper crosshead, respectively;

pressing plates mounted on the lower and upper press cross members;

hydraulic jack pressure devices provided in the lower crosshead for raising and lowering the pressing plates mounted on the lower press cross member;

wherein first and second clamping surfaces provided on each end of the two lateral tension shackles are interlockingly joined to each of the four force-receiving corner areas of the two crossheads by first tension bolts and second tension bolts to form a united clamping frame.

5,611,272

ROTARY EMBOSSING MACHINE

Armin Steuer, Am Waldrand 30, D-71111 Waldenbuch, Germany

Filed Dec. 7, 1995, Ser. No. 568,818

Claims priority, application Germany, Dec. 24, 1994, 9420707 U

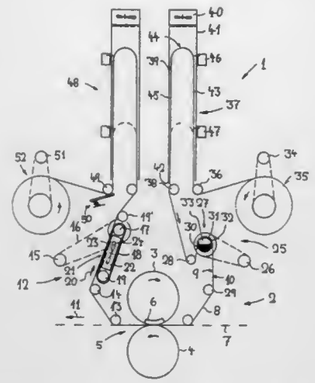
Int. Cl.[6] B31F *1/07*

U.S. Cl. 101—23 **17 Claims**

1. Rotary embossing machine comprising:

an embossing mechanism including an embossing cylinder and an impression cylinder, the impression cylinder positioned adjacent to the embossing cylinder such that an embossing gap is formed between the embossing cylinder and the impression cylinder;

a conveying mechanism for conveying an embossing foil web through the embossing gap in a conveying direction, the conveying mechanism having foil conveying means for producing, during an embossing interval, a movement of the embossing foil web with a speed identical to the speed of a material layer to be embossed, the foil conveying means comprising a pull device positioned downstream of the embossing gap, the pull device having a slip drive for the



embossing foil web, and the foil conveying means further comprising a controllable foil supply device positioned upstream of the embossing gap and cooperating with the pull device.

5,611,273

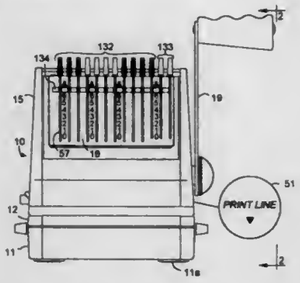
CHECK WRITING MACHINE

Robert P. Koper, Bensenville, and Howard R. Konieczka, Chicago, both of Ill., assignors to The Paymaster Corporation, Chicago, Ill.

Filed Dec. 30, 1994, Ser. No. 367,001

Int. Cl.[6] B41J *1/32*

U.S. Cl. 101—93.21 **20 Claims**



1. A check writer for imprinting commercial checks, personal checks, money orders, and other negotiable instruments, including in combination:

a frame means, having a printing line therein;

a housing engageable with said frame means;

a plurality of type segment members with each member having a set of printing characters defining a single currency field on the peripheral printing face thereof, wherein said printing characters on selected ones of said type segment members are offset and include punctuation on said printing face, with each member thereof being supported by said frame means and each printing face having a uniform width and length of dimension and, with each of said type segment members being selectively moveable to locate said printing characters on said printing line;

a prefix plate holder assembly associated with said frame means, said holder assembly structurally arranged to receive and position a prefix plate member adjacent to said printing characters on said plurality of type segment members located on said printing line;

an inked ribbon and ribbon support means associated with said frame means for supporting said inked ribbon adjacent to said printing characters disposed on said printing line;

platen means supported by said frame and structurally arranged for cooperation with said printing characters disposed on said printing line;

actuating means supported by said frame means, said actuating means being moveable from an at rest non-printing position to a printing position for effecting the printing operation; and

linkage means operatively coupled to said actuating means and structurally arranged and coupled to said platen means for moving said platen means from an at rest position to a printing position to provide pressure contact between the negotiable instrument and said printing characters on said type segment members located on said printing line when said actuating means is in the printing position and for moving said platen means to its normal at rest position in the return movement of said actuating means to its at rest non-printing position.

5,611,274

APPARATUS FOR SCREEN PRINTING OF VISCOUS MATERIALS

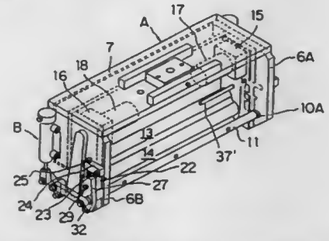
Okie Tani, Tokyo, Japan, assignor to Tani Denkikogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 243,809, May 17, 1994, Pat. No. 5,452,655. This application Jul. 5, 1995, Ser. No. 498,442

Claims priority, application Japan, May 19, 1993, 5-153064

Int. Cl.[6] B41L *13/02*

U.S. Cl. 101—123 **17 Claims**



1. A screen printing apparatus for printing a viscous material onto a surface of a board through a screen having openings therein and an upper surface, the apparatus comprising:

a viscous material dispenser having a housing having a chamber, an elongated bottom aperture, a rear wall and a pair of transversely spaced side walls each having a surface-contacting planar portion;

a pair of transversely spaced supporting rail members each having a planar upper surface for supporting said screen from below and for bearing said dispenser at the surface-contacting planar portions of the side walls of said housing, through the intermediary of the screen supported on the planar upper surfaces of said supporting rail members, during printing;

said bottom aperture communicating with said chamber to dispense the viscous material contained therein onto the tipper surface of said screen;

a pair of blades including a leading blade and a trailing blade and depending from said housing on substantially opposite sides of said bottom aperture so as to be in contact with the upper surface of said screen;

said rear wall of said housing including a fixed tipper wall section and a height-adjustable lower wall section height-adjustably connected thereto;

said trailing blade serving as a squeegee blade and fixed to the height-adjustable lower wall section of said rear wall so as to be selectively raised and lowered therewith within a predetermined range of height; and

manually operable height-adjustable means mounted on said housing and drivingly connected to said height-adjustable lower wall section so as to be capable of selectively raising and lowering said lower wall section with said trailing blade, whereby the contacting pressure of the lower end of said

trailing blade to be applied against the tipper surface of said screen can be adjusted as desired.

5,611,275

WIDTH ADJUSTING DEVICE AND METHOD FOR A PAPER WEB

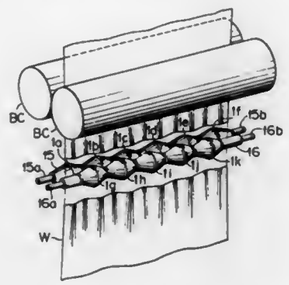
Takashi Iijima, Tokosuka, and Hideo Ohta, Tokyo, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Division of Ser. No. 291,470, Aug. 17, 1994, Pat. No. 5,487,335, which is a continuation of Ser. No. 889,906, May 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,130

Claims priority, application Japan, Dec. 26, 1991, 3-357580

Int. Cl.[6] B41F *5/06*

U.S. Cl. 101—181 **19 Claims**



1. A printing apparatus through which a dampened paper web travels, said printing apparatus comprising:

first and second printing sections which each print an image on said dampened paper web as said dampened paper web travels through said first and second printing sections; and

means for variably changing a width of said dampened paper web by forming said dampened paper web into a wavy surface so that said image formed on said dampened paper web at said first printing section and said image formed on said dampened paper web at said second printing section are properly aligned with each other, said changing means extending across an entire width of the paper web and being disposed between said first and second printing sections;

wherein said changing means includes first and second contact devices disposed at opposite first and second surfaces of said dampened paper web such that said dampened paper web travels between said first and second contact devices, said first and second contact devices respectively comprise first and second knaggy rollers, said first and second knaggy rollers respectively having a plurality of first and second contact members disposed thereon for rotation about same respective first and second shafts;

wherein each of said first and second knaggy rollers comprises a convex contact surface and a plurality of pairs of frustroconical members, each of said frustroconical members including a large end, and a small end; said convex contact surface being formed by placing the large end of one frustroconical member adjacent to the large end of another frustroconical member; and

wherein said convex surfaces serve as said contact members.

5,611,276

SUCTION-TYPE GRIPPERS FOR A SHEET TRANSFER DRUM

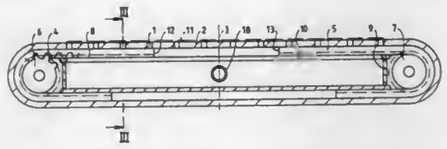
Rudi Haupenthal, Epfenbach, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 10, 1994, Ser. No. 240,920

Claims priority, application Germany, May 10, 1993, 43 15 511.1

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **1 Claim**



1. In combination with a sheet transfer drum of a rotary printing machine at which sheets with a sheet width are transferred, a suction device comprising:

a suction-air box;

a sheet-supporting surface disposed above said suction box, said sheet-supporting surface having a multiplicity of suction-air openings formed therein disposed along a region thereof to be covered by at least one sheet edge and communicating with said suction-air box;

two toothed-belt pulleys disposed laterally of said sheet-supporting surface;

two toothed-belt sections each wound around and meshing with a respective one of said pulleys and being displaceable relative to one another by selectively rotating a respective one of said two toothed-belt pulleys; and

a guide surface supporting said toothed-belt sections above said suction box, said guide surface having a longitudinal slot formed therein across an entire sheet width;

said toothed-belt sections forming means for selectively closing a portion of said longitudinal slot and sealing selected ones of said suction-air openings.

5,611,277

SHEET-CONVEYING DRUM FOR PRINTING MACHINES

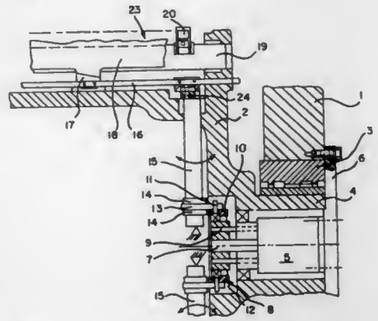
Harald Bayer, Rodgau, and Klemens Kemmerer, Seligenstadt, both of Germany, assignors to MAN Roland Druckmaschinen AG

Filed Sep. 18, 1995, Ser. No. 529,515

Claims priority, application Germany, Sep. 23, 1994, 44 33 999.2

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **11 Claims**



1. A sheet-conveying drum for conveying sheets of different thickness between two units of a printing machine having opposing side frames wherein said drum is rotatably supported by a pair of journals each of which are mounted in a bearing in one of said opposing side frames, said drum comprising, in combination,

a plurality of gripper bridges arranged substantially circumferentially symmetrically on the surface of said drum,

each of said gripper bridges including a gripper shaft, grippers, and gripper impact strips, wherein said gripper impact strips are adjustable substantially radially relative to said drum,

positioning means having an operating end associated with each of said gripper impact strips for causing said gripper impact strips to be moved in the radial direction relative to said drum when said positioning means is actuated, and

adjusting means including a gear coupling associated with each of said positioning means for actuating said positioning means, and

drive means disposed in one of said journals for selectively operating said adjusting means through said gear coupling to actuate said positioning means.

5,611,278

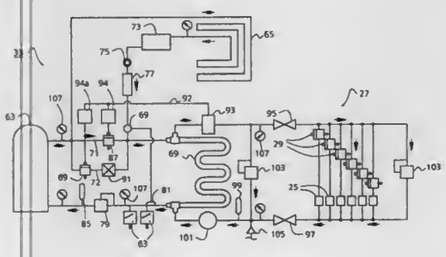
TEMPERATURE CONTROLLED SYSTEM FOR PRINTING PRESS

Steve M. Garner, Arlington, and Max W. Hess, N. Richland Hills, both of Tex., assignors to Sun Graphic Technologies, Inc., Fort Worth, Tex.

Continuation of Ser. No. 369,293, Jan. 6, 1995, abandoned, which is a continuation of Ser. No. 14,717, Feb. 8, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,902

Int. Cl.[6] B41F *31/00*

U.S. Cl. 101—349 **7 Claims**



1. A system for controlling the temperature of ink in a printing press, comprising:

a) an ink roller having a circulation path therein, said ink roller being part of an ink path leading to a printing cylinder of said printing press;

b) a circulation system connected to said circulation path of said ink roller, said circulation system having a valve to regulate the amount of fluid flowing into said ink roller;

c) a refrigeration and heating system comprising a compressor, a condenser, an expansion valve, and a heat exchanger, said compressor having a compressor input and a compressor output, said condenser having a condenser input and a condenser output, said heat exchanger having a heat exchanger input and a heat exchanger output, said condenser input being connected with said compressor output, said expansion valve being connected with said condenser output and also with said heat exchanger input, said heat exchanger output being connected to said compressor input, said heat exchanger being thermally coupled to a portion of said circulation system, said refrigeration and heating system further comprising a bypass conduit connected to said compressor output and to said heat exchanger input so as to bypass said condenser and said expansion valve, said bypass conduit having a bypass valve for opening and closing said bypass conduit so as to control the temperature of fluid flowing into the ink roller.

5,611,279

PROCESS OF PRODUCING A PRINTING PLATE FOR A STAMP

Yoichi Ando; Fumitoshi Nakamura, both of Sagamihara; Haruhito Shiraishi, Yokohama; Hajime Toda, Machida; Susumu Suzuki, Fujioka; Koichi Hirano, Yokohama, and Hisami Tamano, Machida, all of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

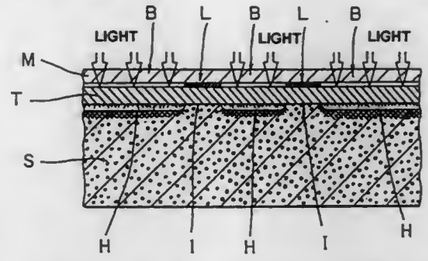
PCT No. PCT/JP94/01640, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/01640, PCT Pub. Date Sep. 30, 1994

PCT Filed Sep. 30, 1994, Ser. No. 454,252

Claims priority, application Japan, Oct. 2, 1993, 5-269685; Dec. 28, 1993, 5-350719; Feb. 18, 1994, 6-021467; Jun. 27, 1994, 6-145031

Int. Cl.[6] B41K *1/50*

U.S. Cl. 101—401.1 **22 Claims**



1. A process for producing a printing plate for a stamp comprising the steps of:

fitting a manuscript having characters, patterns and the like displayed by applied areas of recording material and non-applied areas of recording material, over a stamp-piece made of an elastic resin having open cells therein and capable of absorbing stamp ink, with a heat-generating plate containing a heat-generating material which will be elevated in temperature when exposed to light, interposed between said manuscript and said stamp-piece;

irradiating the manuscript with light so as to cause light passing through said non-applied areas of recording material to increase the temperature of the heat-generating material at corresponding sites to the non-applied areas of recording material whereby the surface part of a stamp-piece at corresponding sites to the temperature-elevated portions of the heat-generating material is fused with the heat to confine pores, forming non-oozing areas of stamp ink; and

causing said applied areas of recording material to block light so as to inhibit temperature rise of the heat-generating material in corresponding places to said applied areas of recording material, whereby open cells are maintained to be open in the corresponding surface part of said stamp-piece to a temperature-rise inhibited portions in the heat-generating material, forming oozing areas of stamp ink.

5,611,280

MOUNTING ARRANGEMENT OF THE BARS SUPPORTING THE GRIPPERS IN MAP-MAKING OR SECURITY-PAPER PRINTING MACHINES

Dante Orlandini, Novegro Segrate, Italy, assignor to Ormag S.P.A., Milan, Italy

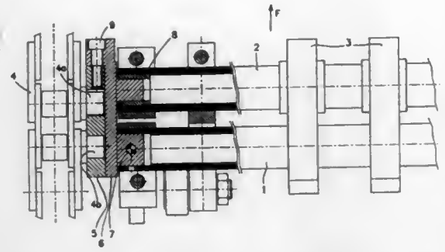
Filed Jan. 10, 1995, Ser. No. 370,974

Claims priority, application Italy, Jan. 26, 1994, MI94A0119

Int. Cl.[6] B41F *1/30*

U.S. Cl. 101—409 **9 Claims**

1. Mounting arrangement in a map-making or security-paper printing machine comprising a pair of parallel tubular rods, two transport chains, means slidably supporting said transport chains for movement lengthwise of said chains with one chain at each end of said rods, two pins fixed to each chain and projecting in the



direction of the other chain, an intermediate support carried by said two pins of each chain, each intermediate support comprising two elements removably secured together and disengageable from each other by relative movement lengthwise of said chains, one said element of each intermediate support receiving said pins on said chains, the other element of each intermediate support being connected to adjacent ends of both said rods.

5,611,281

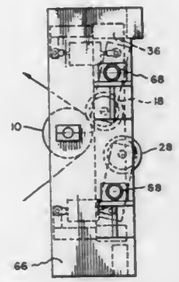
SYSTEM FOR CLEANING PARTICLES FROM A SURFACE

Frank C. Corrado; James W. Fischer, both of Rochester; Gary R. Larsen, Webster, and Ronald W. Sweet, Conesus, all of N.Y., assignors to Serater LLC, Livonia, N.Y.

Filed May 8, 1995, Ser. No. 439,063

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—425 **24 Claims**



1. A system for cleaning particles from a substrate having a first surface, comprising a contact cleaning roller rotatably mounted on a first frame, said roller having an axis of rotation and a cylindrical outer surface defining a cleaning surface contactable with said first substrate surface, said first frame being pivotable to place said roller into contacting relationship with said substrate surface to enable said roller to roll along said first substrate surface at a first velocity with a force between said respective surfaces to transfer said particles from said first substrate surface to said cleaning surface, said first frame also being translatable at a second velocity to displace said contact cleaning roller along said axis of rotation while rolling along said first substrate surface, the ratio of said second velocity to said first velocity being less than about 0.01.

5,611,282

METHOD AND APPARATUS FOR OPERATING MULTIPLE PASSENGER CARRYING TRAMS SIMULTANEOUSLY IN BOTH DIRECTIONS IN A SINGLE DEDICATED LANE TRANSIT SYSTEM

John D. Alt, 9 State Cir., Annapolis, Md. 21401

Filed Sep. 5, 1995, Ser. No. 523,159

Int. Cl.[6] B61J *3/00*

U.S. Cl. 104—88.06 **10 Claims**



1. A passenger carrying tram system comprising:

a plurality of trams operating along a single dedicated lane;

end stop-boarding areas located at opposite ends of the system;

a plurality of intermediate stop-boarding areas located along said dedicated lane and intermediate said end stop-boarding areas;

a plurality of by-pass lanes located at said intermediate stop-boarding areas;

a plurality of sensors to sense the location of said trams along said dedicated lane; and

a processor signalling said trams in response to said sensors;

wherein said processor signals at least one of said trams moving in a first direction and at least one other said tram moving in a second opposite direction to arrive at a common intermediate stop-boarding area at substantially the same time, such that after passengers embark and debark from said one and other trams, said one tram will continue along said dedicated lane in said first direction while said other tram will continue along said by-pass lane in said second direction without said one tram and said other tram stopping to wait for a clear path along the dedicated lane.

5,611,283

INSERTION AND GUIDANCE OF A PIPE TRAVELLING VEHICLE IN THE PIPE

Michael Cotton, West Yorkshire, and Kevin M. Horan, Leeds, both of Great Britain, assignors to British Gas plc, London, Great Britain

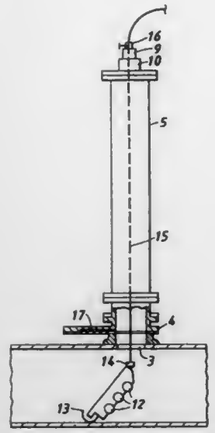
Filed Sep. 5, 1995, Ser. No. 523,249

Claims priority, application United Kingdom, Sep. 9, 1994, 94-18161; Apr. 11, 1995, 95-07547

Int. Cl.[6] B61B *13/10*

U.S. Cl. 104—138.2 **8 Claims**

1. A device for movements in a required direction along the interior of a pipe, comprising a body having wheels which are drivable by a motor and a guard which is secured to the body, the arrangement being such that, in use, the body and the guard are suspended and lowered by a flexible cable through a hole bored in the wall of the pipe, with the guard in the lowermost position, the shape of the guard and the weight distribution of the body are such that when the guard comes into contact with the internal wall of the pipe as a result of the body and the guard being lowered through a hole bored in the wall of the pipe the device tilts so as to be positioned on its wheels facing in the required direction.



5,611,284

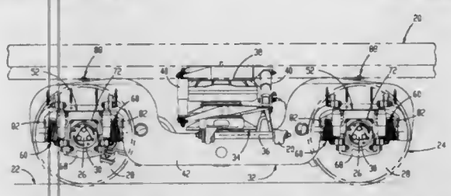
RAIL TRUCK SUSPENSION AND JOURNAL HOUSING RETENTION ASSEMBLY

Sam D. Smith, Effingham; Michael A. Peitsch, Atchison, both of Kans., and Richard D. Curtis, Munster, Ind., assignors to Atchison Casting Corporation, Atchison, Kans.

Filed Jan. 19, 1996, Ser. No. 588,043

Int. Cl.[6] B61F *5/30*

U.S. Cl. 105—220 **18 Claims**



1. A railtruck apparatus for supporting a railcar body on two longitudinally spaced wheel and axle sets, wherein each wheel and axle set includes an axle presenting opposed ends, a pair of laterally spaced wheels secured to the axle, a pair of laterally spaced journals, and a pair of bearings supported on the journals, the apparatus comprising:

a frame including two longitudinally extending side frame members and a transom connecting the side frame members together, each side frame member defining a pair of longitudinally spaced cradles, the cradles of each side frame member being aligned longitudinally with the cradles of the other side frame member;

four bearing housings, each received in one of the cradles of the frame and including a top wall, two longitudinally spaced side walls depending from the top wall, and an open bottom having a predetermined size adapted for receipt over one of the journal bearings;

a bottom cap attached to each bearing housing between the side walls to close the open bottom upon assembly of the apparatus and the wheel and axle sets, the bottom caps being removable to permit the wheel and axle sets to be removed from the apparatus;

a primary suspension means positioned between each bearing housing and the frame for supporting the frame on the bearing housing; and

a retention means for retaining each bearing housing on the frame, and for retaining the primary suspension means in position between the frame and the bearing housing, when the frame is raised relative to the bearing housing so that when the wheel and axle sets are removed from the apparatus, the bearing housings and the primary suspension means are retained on the frame.

5,611,285

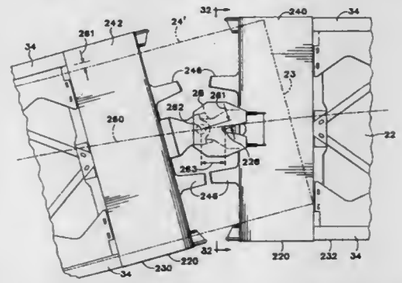
MULTIPURPOSE RAILRAOD WELL CAR

Gregory J. Saxton, Portland, Oreg., assignor to Gunderson, Inc., Portland, Oreg.

Continuation of Ser. No. 379,204, Jan. 27, 1995, abandoned, which is a continuation-in-part of Ser. No. 158,260, Nov. 23, 1993, Pat. No. 5,423,269, which is a continuation-in-part of Ser. No. 982,289, Nov. 24, 1992, Pat. No. 5,279,230. This application Feb. 14, 1996, Ser. No. 601,651

Int. Cl.[6] B61D *3/00*

U.S. Cl. 105—355 **22 Claims**



1. A multi-unit railway freight car for carrying, optionally, intermodal cargo containers or highway freight trailers including road wheels, or both, comprising:

(a) at least two interconnected car units each having a pair of opposite ends, at least one of said opposite ends of each of a first car unit and a second car unit of said at least two inter-connected car units being an articulated connector end and said articulated connector end of said first car unit being connected to said articulated connector end of said second car unit;

(b) a plurality of wheeled trucks supporting said multi-unit railway freight car, at least one of said trucks being a shared truck supporting a pair of respective articulated connector ends of said at least two interconnected car units;

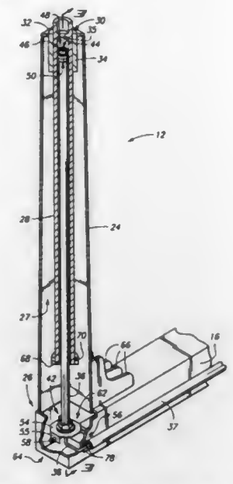
(c) a trailer hitch, carried on the articulated connector end of said first car unit, said trailer hitch having a first height;

(d) a cargo well included in the second car unit, said cargo well being proximate the articulated connector end of said second car unit, said articulated connector end of said second car unit being free from upward projections and including only structure of lesser height than said first height between said cargo well and said articulated connector end of said first car unit;

(e) a trailer road wheel-supporting floor structure in said cargo well for supporting road wheels of a freight trailer while said trailer hitch supports a kingpin of said freight trailer; and

(f) cargo container support structure located within said cargo well for supporting a cargo container substantially as long as said cargo well.

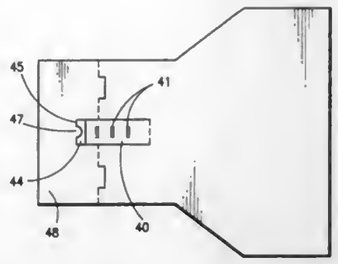
5,611,286
REMOTELY EXTENDIBLE BUNK STAKE FOR LOGGING VEHICLE
John Llermann, HCR-01, Box 222, Naples, Id. 83847-9704
Filed Dec. 13, 1995, Ser. No. 571,357
Int. Cl.[6] B61D *49/00*
U.S. Cl. 105—389 **19 Claims**



1. An extendible bunk stake mounted on a logging vehicle, comprising:
a tubular support member having an internal cavity, an outlet port communicating with the cavity, a fluid delivery port for transferring working fluid, and a fluid seal, the support member constructed and arranged to mount the stake to a bed of the vehicle;
an extension member having at least a portion slidably received within the internal cavity of the tubular support member and movable between extended and retracted positions relative to the tubular support member, a piston being formed from the extension member such that the extension member, the fluid seal, and the piston cooperate to define an expansible working chamber, the extension member being slidably received in sealing engagement with the fluid seal of the support member; and
a source of working fluid configured in fluid communication with the expansible working chamber via the fluid delivery port, the source being constructed and arranged to selectively transfer a working fluid between the working chamber and the source, the extension member being movable in response to such fluid transfer.

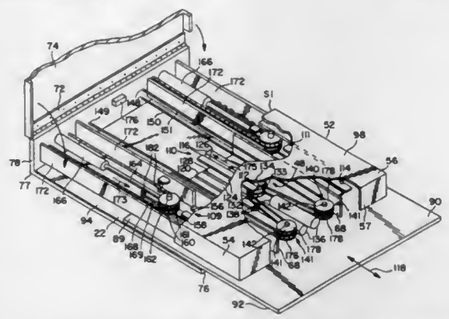
5,611,287
LEVELLING DEVICE
Steven M. Begley, 1684 Dillon Rd., Maple Glen, Pa. 19002
Filed Dec. 27, 1994, Ser. No. 360,918
Int. Cl.[6] A47B *23/00;* **B60R** *7/04*
U.S. Cl. 108—44 **8 Claims**

1. A levelling device for converting an automobile seat into a flat horizontal surface, consisting of a single sheet of foldable material consisting of:
(a) a straight rear edge;
(b) a straight from edge;
(c) two side edges, each of said side edges being configured in the form of a stretched "Z";
(d) a primary scored line located parallel to said rear edge and extending from one of said side edges to the other of said side edges, such that said scored line can be folded downward to form a support leg;



(e) at least one die cut contiguous to said primary scored line, such that said die cut is folded upward to form a back stop tab; and
(f) a locking mechanism in the form of a die cut finger comprising a secondary scored line located parallel to said rear edge and further from said rear edge than said primary scored line, a primary die cut which is parallel to said rear edge and between said rear edge and said primary scored line, two secondary die cuts perpendicular to said secondary scored line and extending from said secondary scored line to said primary die cut, said locking mechanism being formed by pressing downwardly to form a die cut finger, wherein said finger is used to keep said support leg in a secure position.

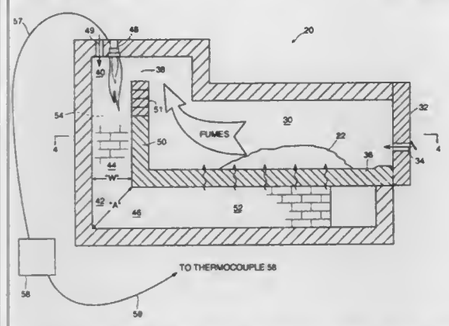
5,611,288
MODULAR TRANSPORT SYSTEM FOR AN AUTOMATIC TELLER MACHINE
Ernest R. Dallman, 9200 Fanchon Dr., Zionsville, Ind. 46077, and Franklin W. Wehr, Indianapolis, Ind., assignors to Ernest R. Dallman, Zionsville, Ind.
Continuation of Ser. No. 121,790, Sep. 15, 1993, Pat. No. 5,440,999, which is a continuation-in-part of Ser. No. 954,001, Sep. 29, 1992, Pat. No. 5,299,511, which is a continuation-in-part of Ser. No. 892,758, Jun. 3, 1992, abandoned. This application Jul. 11, 1995, Ser. No. 501,189
Int. Cl.[6] E05G *1/00*
U.S. Cl. 109—50 **12 Claims**



1. An apparatus for moving an ATM relative to a wall between a retracted position and an extended position, the apparatus comprising:
a base;
a support for holding the ATM;
a cable fixedly secured at both ends and with one end fixedly secured to the support;
said cable extended in a first straight line from one of its fixed ends, wrapped about a rotating pulley from whence the cable extends in a straight line directly to its other fixed end and wherein the cable only has its direction changed once as it is wrapped about the rotating pulley; and

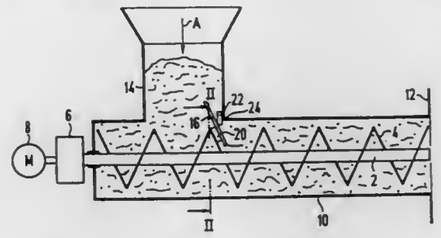
a drive mechanism coupled to the base and to the cable, the drive mechanism when activated in a first direction causing the cable to move around the rotating pulley so as to move the end of the cable fixedly secured to the support closer to the pulley to move the ATM between its retracted position and its extended position.

5,611,289
GASIFIER FOR BIOMASS WASTE AND RELATED VOLATILE SOLIDS
David Brookes, 109A Lakeshore Rd. E., Mississauga, Ontario, Canada
Filed Mar. 28, 1995, Ser. No. 413,980
Int. Cl.[6] F23G *1/00*
U.S. Cl. 110—194 **12 Claims**



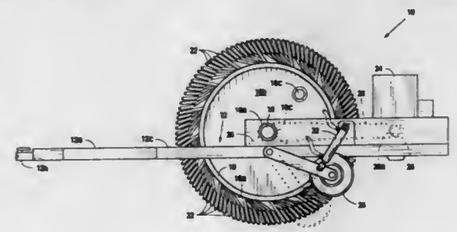
1. A gasifier for use in gasifying biomass waste and related volatile solids, said gasifier comprising:
a primary chamber shaped and dimensioned to receive therein waste material to be gasified and including a door member to permit selective access to said primary chamber;
a fume transfer vent disposed near the top of said primary chamber, said fume transfer vent being in fluid communication with said primary chamber, to permit the escape of fumes from said primary chamber;
a mixing chamber in fluid communication with said fume transfer vent to accept said fumes from said primary chamber;
an afterburner chamber in fluid communication with said mixing chamber;
a burner member situated in said gasifier so as to produce a heating flame within a first vertically disposed portion of said afterburner chamber, which flame causes the additional full oxidization of the constituents of said fumes so as to oxidize or resolve said constituents, said burner member having a fuel inlet and an air inlet to permit the supply of fuel and oxygen gas, respectively, to said burner member, and control means to control the supply of fuel and oxygen to said burner member;
wherein said afterburner chamber is shaped and dimensioned to permit said heating flame to oxidize substantially all of the constituents of said fumes;
a partitioning wall disposed between said mixing chamber and said primary chamber, wherein said partitioning wall defines the bottom limit of said transfer vent and wherein said partitioning wall and said frame transfer vent are together positioned and dimensioned to preclude said heating flame from entering said primary chamber and to also preclude the radiation from said heating flame from directly entering said primary chamber;
a heat transfer chamber in fluid communication with said afterburner chamber, wherein the heat from the full oxidization of said fumes causes heating of said heat transfer chamber;
wherein said primary chamber has a heat conductive floor and is superimposed on said heat transfer chamber with said heat conductive floor being disposed in separating relation therebetween so as to permit conductive and convective heating of said primary chamber;
an exhaust vent in fluid communication with said heat transfer chamber for venting said fumes into said ambient surroundings.

5,611,290
WASTE CONVEYOR
Herbert Tratz, Ottensoos; Karl May, Bad Vilbel; Hartmut Herm, Dreieich, and Karlheinz Unverzagt, Seligenstadt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 6, 1996, Ser. No. 597,243
Claims priority, application Germany, Aug. 6, 1993, 43 26 483.2
Int. Cl.[6] F23G *5/02;* **F23K** *3/14*
U.S. Cl. 110—222 **8 Claims**



1. A waste conveyor, comprising:
a conveyor channel l aving a longitudinal direction and a portion;
a feed shaft connected to said conveyor channel;
a worm being disposed in the longitudinal direction of said conveyor channel, said worm having a shaft with an axis and having a portion with an edge;
a first metal cutter being disposed at said edge of said portion of said worm, being curved relative to the axis of said shaft and having a given radius of curvature; and
a second metal cutter being disposed at said portion of said conveyor channel, being curved relative to the axis of said shaft and having a radius of curvature being greater than said given radius of curvature;
said two metal cutters being disposed side by side and approximately concentric to said shaft, at a predetermined rotary position of said worm.

5,611,291
AERATOR AND SEEDER FOR UNTILLED PASTURE LAND
Gary E. Pogue, Kenedy, Tex., assignor to Pogue Seed Co., Inc., Kenedy, Tex.
Filed Apr. 3, 1996, Ser. No. 627,030
Int. Cl.[6] A01C *7/08*
U.S. Cl. 111—14 **10 Claims**



1. A seeder for untilled pasture land comprising, in combination:

an articulated frame having two laterally spaced longitudinal beams having forward and rear ends

two angularly converging beams respectively connected to said forward ends of said longitudinal beams to form a vertex portion forwardly of the forward ends of said longitudinal beams;

ball means for connecting said vertex portion to a tractor for universal pivotal movement relative to the tractor;

a cylindrical drum having closed end portions and stub shafts projecting out of each said end portion of said drum in coaxial relation thereto;

bearing means on each of said laterally spaced longitudinal beams for respectively journaling said stub shafts for rotation about a horizontal axis perpendicular to said laterally spaced longitudinal beams;

a seed planter mounted on said laterally spaced longitudinal beams in parallel relationship to said cylindrical drum and rearwardly thereof;

said seed planter having a rotatable seed dispensing mechanism for discharging pasture type seeds along the full length of said planter;

a plurality of outwardly projecting prongs on the exterior of said cylindrical drum constructed and arranged to penetrate, aerate and agitate the soil by rotation of said cylindrical drum as said articulated frame is pulled over the soil by a tractor to effect rotation of said cylindrical drum about its axis; and

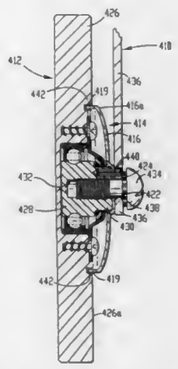
means on one of said stub shaft portions for driving said rotatable seed dispensing mechanism by the rotation of said cylindrical drum for spreading pasture seed over the broken soil produced by said outwardly projecting prongs.

5,611,292

SEED FIRMING WHEEL ASSEMBLY WITH BEARING CAP

Stanley R. Clark, Hesston, and Michael J. Dresher, Canton, both of Kans., assignors to Great Plains Manufacturing, Incorporated, Assaria, Kans.

Filed Jul. 17, 1995, Ser. No. 503,093
Int. Cl.[6] B60B *27/02;* **A01C** *5/06*
U.S. Cl. 111—189 **14 Claims**



1. In an opener having a seed firming wheel assembly for pressing seeds into the bottom of a trench formed by the opener, the improvement comprising:

a support member;

a firming wheel;

structure rotatably attaching the wheel to the member for rotation of the wheel as it moves through the trench,

said structure including a bearing assembly and a retainer for retaining the bearing assembly to the firming wheel,

said retainer being fixed to the wheel for rotational movement therewith; and

a cap covering said bearing assembly and said retainer, and disposed between the wheel and the member for protecting the assembly,

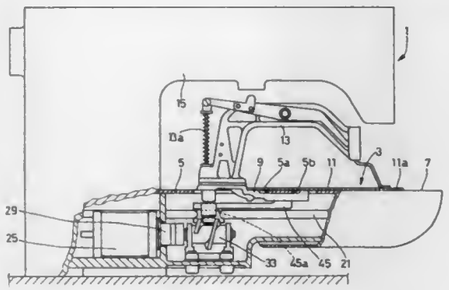
said support member being operable to hold the cap against rotation with the wheel.

5,611,293

SEWING MACHINE

Hiroyuki Mitsui, Kasugai; Shiro Oya, Nagoya; Etuzo Nomura, Kasugai; Yuji Tagawa, Nagoya, and Yoichi Kurahashi, Owariasahi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 5, 1995, Ser. No. 523,139
Claims priority, application Japan, Sep. 20, 1994, 6-225036
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.18 **18 Claims**



1. A sewing machine comprising:

a needle holding device which holds a sewing needle;

a sheet holding device which holds at least one work sheet; and

a moving device which moves said sheet holding device relative to said needle holding device,

said moving device including

a drive source which produces a drive force,

at least one cylindrical cam which is connected to said drive source and is rotatable about an axis line by being driven by the drive source, said cylindrical cam having a pair of opposite spiral cam surfaces formed on an outer circumferential surface thereof, and

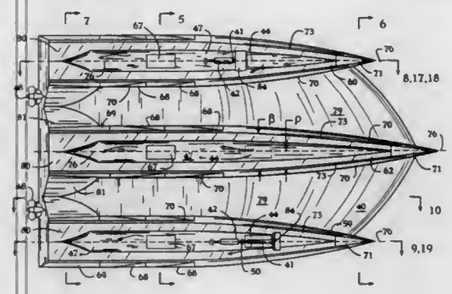
at least one cam follower which is connected to said sheet holding device and is engaged with said spiral cam surfaces of said cylindrical cam such that said cam follower is movable along the cam surfaces and is substantially immovable in directions perpendicular to the cam surfaces, said cam follower being moved in a drive-force transmitting direction substantially parallel to said axis line of the cylindrical cam when the cam is rotated by said drive source, so that the cam follower transmits the drive force of the drive source to the sheet holding device.

5,611,294

MULTIHULLED AIR CUSHIONED MARINE VEHICLE

Donald E. Burg, Miami, Fla., assignor to Paulette Renee Burg, Miami, Fla.

Continuation-in-part of Ser. No. 737,403, Nov. 1, 1976, abandoned, Ser. No. 818,303, Jul. 25, 1977, Pat. No. 4,165,703, Ser. No. 69,771, Aug. 27, 1979, abandoned, Ser. No. 207,789, Nov. 17, 1980, abandoned, Ser. No. 269,908, Jun. 3, 1981, Pat. No. 4,392,445, Ser. No. 289,769, Aug. 3, 1981, abandoned, Ser. No. 343,289, Jan. 27, 1982, abandoned, Ser. No. 458,738, Jan. 17, 1983, abandoned, Ser. No. 465,670, Feb. 10, 1983, abandoned, Ser. No. 584,728, Feb. 29, 1984, Pat. No. 4,587,918, Ser. No. 844,529, Mar. 27, 1986, Pat. No. 4,735,164, Ser. No. 862,300, May 12, 1986, Pat. No. 4,739,719, Ser. No. 183,588, Apr. 19, 1988, Pat. No. 4,890,564, Ser. No. 458,575, Dec. 29, 1989, Pat. No. 5,000,107, Ser. No. 653,724, Feb. 11, 1991, abandoned, Ser. No. 728,887, Jul. 10, 1991, Pat. No. 5,176,095, Ser. No. 871,387, Apr. 21, 1992, abandoned, Ser. No. 151,253, Nov. 12, 1993, Pat. No. 5,415,120, Ser. No. 283,647, Aug. 1, 1994, abandoned, and Ser. No. 347,859, Dec. 1, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,876
Int. Cl.[6] B63B *1/12*
U.S. Cl. 114—61 **45 Claims**



1. In an improved marine vehicle including a propulsion system and with multiple hulls where said multiple hulls are in mechanical communication, the improvement comprising:

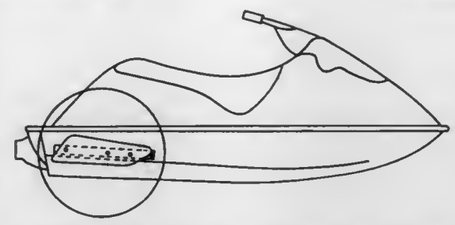
port and starboard sidehulls with each sidehull comprising an open bottomed recess that is artificially pressurized with gas from at least one gas pressurization means to thereby form a weight supporting gas cushion when said marine vehicle is waterborne with boundaries of said recess at least partially defined by water contacting substantially rigid sidekeels and a recess aft seal and where, as seen in a calm sea surface water-line with the gas cushions pressurized and the marine vehicle waterborne and moving forward at high speed, the sidehulls are separated by a water clearing wetdeck and are individually substantially boat shaped with narrow bows forward that then diverge, by way of the water contacting substantially rigid sidekeels, and with said sidekeels transforming to more parallel sections over their aft portions and wherein an average total divergence angle of the water contacting sidekeels of said sidehull recess, as measured from the narrow bow to where the sidekeels become more parallel over their aft portions, is on average less than twenty-two degrees and where each of said sidekeels diverges on average over a minimum of one third of its water contacting length going aft from the narrow bow forward to where the sidekeels become more parallel over their aft portions.

5,611,295

ANTI-SPIN/TURNING ENHANCER FOR PERSONAL WATERCRAFT

Lloyd J. Stables, 3799 N. Ridge Rd., Port Clinton, Ohio 43452

Filed Sep. 29, 1995, Ser. No. 536,003
Int. Cl.[6] B63B *39/06*
U.S. Cl. 114—126 **6 Claims**



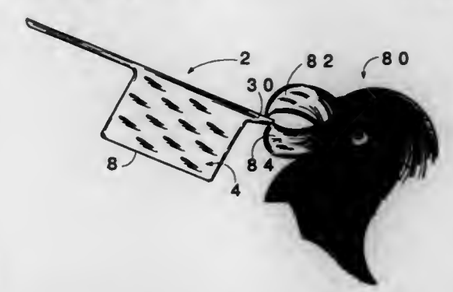
1. An anti-spin and steering enhancement devise for jet powered personal watercraft compromising of a pair of wedge shaped outer plates extending below the rear left and right edges of the hull and a pair of spacers between the outer plates and the hull and a means for fastening said plates securely to the hull.

5,611,296

PSITTACINE FEEDING DEVICES AND METHOD

Cherane Trajere, 530 Acacia Rd., Vero Beach, Fla. 32983

Filed May 15, 1995, Ser. No. 441,532
Int. Cl.[6] A01K *39/00*
U.S. Cl. 119—51.01 **5 Claims**



1. A device for feeding psittacines comprising a handled vessel and a cover:

said vessel having:

an orthogonal base defined by back, front and opposed side peripheral edges,

a back wall, a front wall and two opposed sidewalls, all of equal heights, upstanding integrally from said back, front and opposed side peripheral edges respectively, each said sidewall including an unattached upper end,

a vessel top opening defined by said upper ends of said four sidewalls that substantially mimics the area of said base, and

a spout extending integrally and laterally from said front sidewall,

said spout being defined by:

a concave base that extends integrally and laterally while sloping upwardly from said front sidewall, and

a truncated triangular top opening having a first angled side portion, a second angled side portion and a front lip portion,

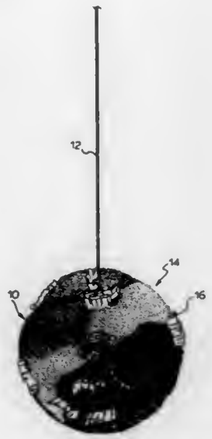
said cover comprising a top surface and sidewalls depending therefrom:

said top surface being defined by:

a back peripheral edge, a first side peripheral edge having a first forward end and a second side peripheral edge

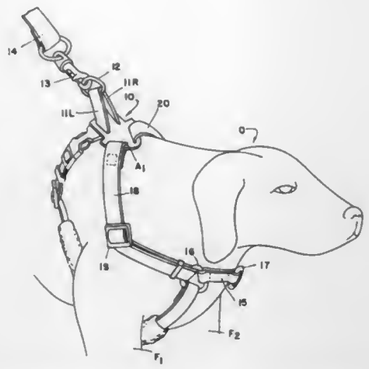
having a second forward end, which edges substantially mimic said back and side peripheral edges of said base,
a first forward peripheral edge that terminates at a first inner end and projects from said first forward end normally of said first side peripheral edge and has a length less than the length of said front peripheral edge of said base,
a second forward peripheral edge that terminates at a second inner end and projects from said second forward end normally of said second side peripheral edge and has a length equal to the length of said first forward peripheral edge,
a first angled peripheral edge having a length less than the length of said first angled side portion and that terminates at a first front end,
a second angled peripheral edge having a length equal to the length of said first angled peripheral edge and that terminates at a second front end, and
a spout peripheral edge that connects said first front end to said second front end.

5,611,297
POMPON FOR CAT TOY
Frank M. Veloce, 5987 Ochonski Rd., Orono, Ontario, Canada
Filed Nov. 21, 1994, Ser. No. 342,589
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—708 **6 Claims**



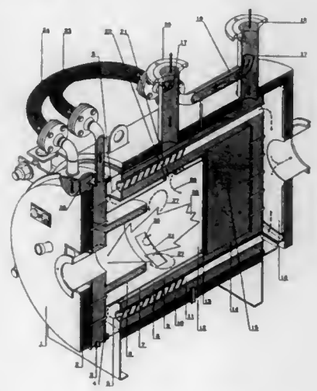
1. A toy comprising a mass of soft fibrous material and a plurality of sheets of flexible material interspersed within and through said mass and which crinkles or rustles when touched.

5,611,298
CONTROLLABLE DOG HARNESS AND LEASH ASSEMBLY
Joseph S. Sporn, 274 W. 86th St., New York, N.Y. 10024
Continuation-in-part of Ser. No. 222,034, Apr. 4, 1994, Pat. No. 5,485,810, which is a continuation of Ser. No. 194,720, Feb. 10, 1994, Pat. No. 5,359,964, which is a continuation-in-part of Ser. No. 23,638, Feb. 26, 1993, Pat. No. 5,329,885. This application Jun. 30, 1995, Ser. No. 497,081
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—792 **9 Claims**



1. A dog harness and leash assembly for controlling a dog, comprising:
A. a shoulder junction adapted to overlie the shoulder of the dog intermediate its right and left forelegs each having a crotch leading to a sensitive pit, said shoulder junction having a pair of slide openings;
B. a chest junction adapted to lie adjacent the chest of the dog intermediate the foreleg crotches;
C. a pair of harness straps extending from the shoulder junction to the chest junction on opposite sides of the dog to conform the harness to the dog;
D. a leash-linking strap having a fold defining left and right sections which are threaded through the pair of slide openings in the shoulder junction and pass through the right and left foreleg crotches to terminate at said chest junction, the fold in said strap being provided with a link that is coupled to said leash whereby when the leash is strained, the strap section ride up the crotches to engage the sensitive pits to apply pressure thereto inducing the dog to slow down or come to a halt.

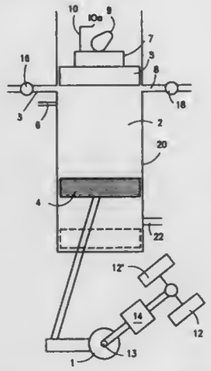
5,611,299
BOILER WITH REDUCED NOX EMISSION
Zeljko Varga, Meljski dol 17, 62000 Maribor, and Peter Novak, Pod Kostanjl 8, 61000 Ljubljana, both of Slovenia
Filed Sep. 13, 1994, Ser. No. 305,693
Int. Cl.[6] F23M *7/04*
U.S. Cl. 122—498 **7 Claims**



1. An oil or gas burning boiler, comprising:
an exterior housing;
a water-cooled fire chamber within said exterior housing having a rear face wall;

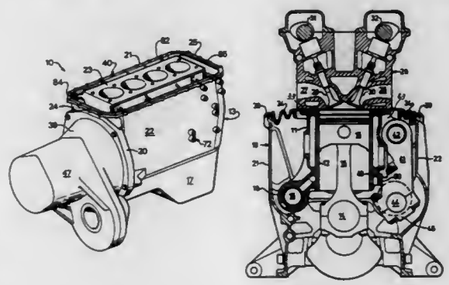
a door on said exterior housing, said door, when closed forming a front face wall of said fire chamber, said door being cooled by water circulating therein and having an opening therethrough for an oil or gas burner producing a flame;
a cylindrical insert having an opening therethrough, said insert surrounding the door opening and being secured to an inside of said door to project into said fire chamber so that the insert opening is essentially aligned with the door opening, said insert being cooled by the water circulating through said door and reducing a cross-sectional area of said fire chamber available for the flame over a portion of the length of said fire chamber; and
a water-cooled partition located in a rear portion of said fire chamber in front of the rear face wall for dividing the flame.

5,611,300
FLOATING PISTON, PISTON-VALVE ENGINE
Charles L. Gray, Jr., Pinckney, Mich., assignor to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.
Filed Oct. 11, 1995, Ser. No. 540,771
Int. Cl.[6] F02B *75/04;75/36*
U.S. Cl. 123—48 A **12 Claims**



1. A drive train for powering drive wheels of a vehicle, said drive train comprising:
a power cylinder and a power piston mounted in said power cylinder for reciprocating motion therein;
drive means for translating the reciprocating motion of said power piston into rotation of a crankshaft;
means for transmitting the rotation of said crankshaft to the drive wheels;
a combustion chamber defined within said power cylinder at one side of said power piston;
fuel feed means for feeding fuel into said combustion chamber;
an intake valve for admitting air into said combustion chamber during an intake stroke of said power piston to form a combustion mixture in combination with the fuel fed to said combustion chamber;
an exhaust valve for allowing, during an exhaust stroke of said power piston, expulsion from said combustion chamber of exhaust gases formed by combustion of the combustion mixture;
a floating piston at least partially closing said combustion chamber opposite said power piston, said floating piston being mounted for reciprocating motion relative to said combustion chamber; and
intake and exhaust ports separately formed in said power cylinder in communication, respectively, with said intake and exhaust valves, said floating piston uncovering said input port during a first portion of the intake stroke and uncovering said exhaust port during said exhaust stroke, said floating piston moving in tandem with said power piston during a second portion of said intake stroke into a position closing said intake port; and
wherein said reciprocating motion of said power piston includes a compression stroke in which the admitted air is compressed from a first volume V_1 to a second volume V_2, thereby defining a compression ratio V_1/V_2, and a power stroke produced by the combustion wherein the volume of gas within said combustion expands from V_2 to a volume V_3, thereby defining an expansion ratio V_3/V_2, said expansion ratio significantly exceeding said compression ratio.

5,611,301
STRUCTURAL ENCLOSURE OF COMBUSTION ENGINES FOR THE PURPOSE OF REDUCING ENGINE NOISE
Per Gillbrand, Mariefred, and Lars Bergsten, Järna, both of Sweden, assignors to Saab Automobile Aktiebolag, Sweden
PCT No. PCT/SE94/00497, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/28345, PCT Pub. Date Dec. 8, 1994
PCT Filed May 26, 1994, Ser. No. 556,918
Claims priority, application Sweden, May 28, 1993, 9301814
Int. Cl.[6] F02B *23/00*
U.S. Cl. 123—48 C **16 Claims**



1. A combustion engine comprising:
a cylinder section shaped to define combustion engine cylinders with combustion chambers in the cylinders; the cylinder section including an upper end; the cylinder section being comprised of a light metal alloy;
a cylinder head generally at the upper end of the cylinder section;
a crankcase section including lateral walls surrounding the cylinder section, the lateral walls being spaced from the cylinder section to define an intermediate air gap between the cylinder section and the lateral walls of the crankcase section, the lateral walls of the crankcase section exteoding up toward the cylinder head; the crankcase section being made of a material of a density which exceeds the density of the material of the cylinder section by a factor of at least 2.6;
the cylinder section having a lower portion away from the cylinder head, and means securing the lower portion of the cylinder section to the crankcase section.

5,611,302

TWO CYCLE INTERNAL COMBUSTION ENGINE WITH UNIDIRECTIONAL FLOW SCAVENGING

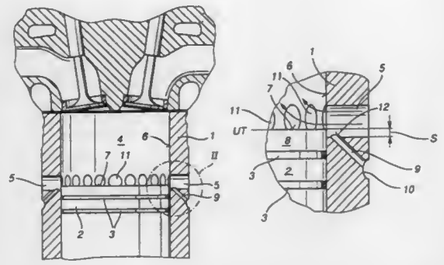
Frank Duvinage, Kirchheim, and Markus Paule, Korb, both of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Jun. 24, 1996, Ser. No. 669,233

Claims priority, application Germany, Jun. 30, 1995, 195 23 928.8

Int. Cl.[6] F01M *1/00*

U.S. Cl. 123—65 VC **5 Claims**



1. A two cycle internal combustion engine with uni-directional flow scavenging, comprising: a piston disposed in a cylinder so as to be movable therein between a top dead center position and a bottom dead center position and defining, in said cylinder above said piston, a combustion chamber, said piston having a top edge and, adjacent thereto, a top land, and said cylinder having inlet passages for supplying fresh gas to said combustion chamber and an oil circulating system for the lubrication of the piston to facilitate movement thereof in said cylinder between said top and bottom dead center positions, said inlet passages having bottom walls and being so arranged that said bottom walls are disposed below the piston top edge when said piston is in its bottom dead center position so that part of the piston top land is directly exposed to the fresh air entering said combustion chamber through said inlet passages, and oil discharge passages extending through said cylinder wall and having at one end an oil collection opening in said inlet passage and being, at the opposite end, in communication with the oil circulating system for the removal of oil wiped off the cylinder wall and collected in said inlet passages.

5,611,303

VALVE OPERATING APPARATUS OF INTERNAL COMBUSTION ENGINE

Takashi Izuo, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Jan. 11, 1996, Ser. No. 584,032

Claims priority, application Japan, Jan. 11, 1995, 7-002893

Int. Cl.[6] F01L *9/04*

U.S. Cl. 123—90.11 **8 Claims**

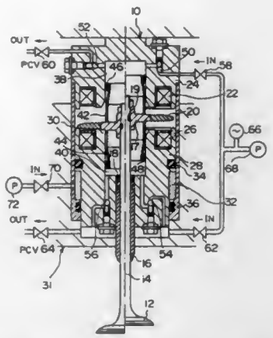
1. A valve operating apparatus which operates a valve element of an internal combustion engine comprising:

a biasing unit which applies a biasing force to the valve element so that the valve element is held at a neutral position;

a first solenoid coil which generates an electromagnetic force to move the valve element in a valve-closing direction;

a second solenoid coil which generates an electromagnetic force to move the valve element in a valve-opening direction;

a stroke-length modifying unit which changes a position of said second solenoid coil relative to said first solenoid coil in an axial direction of the valve element in accordance with an operating condition of the engine so that a length of a stroke of the valve element is modified; and



a neutral-position modifying unit which changes said neutral position of the valve element to a new neutral position in accordance with the operating condition of the engine.

5,611,304

VALVE TIMING CONTROL MECHANISM FOR INTERNAL COMBUSTION ENGINE

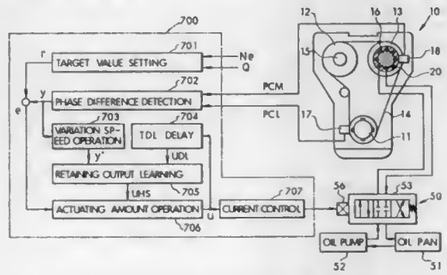
Masaaki Shinojima, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 406,105, Mar. 16, 1995, abandoned. This application May 16, 1996, Ser. No. 648,865

Claims priority, application Japan, Mar. 31, 1994, 6-063701

Int. Cl.[6] F01L *1/34*

U.S. Cl. 123—90.15 **14 Claims**



1. A valve timing control mechanism for an internal combustion engine comprising:

transmission means for transmitting revolutions of a crankshaft of an internal combustion engine to a cam shaft on which a cam is disposed in order to open and close at least one of an intake valve and an exhaust valve of said engine;

rotational phase adjusting means interposed in said transmission means and for adjusting a rotational phase between said crankshaft and said cam shaft;

a crank angle sensor disposed on said crankshaft and detecting a rotational angle thereof;

a cam angle sensor disposed on said cam shaft and detecting a rotational angle thereof;

rotational phase difference detection means for detecting an actual relative rotational phase difference between said crankshaft and said cam shaft based on detected outputs of said sensors;

actuating amount operation means calculating an actuating amount of said rotational phase adjusting means to make said detected rotational phase difference equal to a target value; and

learning means for learning, based on said actuating amount thus calculated and a variation speed representative of a rate of change of said relative rotational phase difference between said crankshaft and said cam shaft, a learned value which is

an actuating amount of said rotational phase adjusting means required for retaining said relative rotational phase difference at a constant level of relative rotational phase difference, said actuating amount operation means calculating and determining said actuating amount of said rotational phase adjusting means at each occasion based on a difference between said detected rotational phase difference the target value and said learned value.

5,611,305

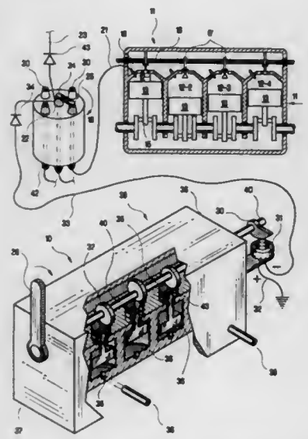
METHOD AND APPARATUS FOR STARTING AN INTERNAL COMBUSTION ENGINE

Robert L. Faye, 12342 Winfree St., Chester, Va. 23831

Filed Apr. 1, 1996, Ser. No. 625,868

Int. Cl.[6] F02N *9/02*

U.S. Cl. 123—179.5 **8 Claims**



1. A method for starting an internal combustion engine having a multiplicity of cylinders equipped with a reciprocating piston and igniter adapted to fire when said piston is in its power stroke position, fuel supply means, a crankshaft driven by synchronized successive movements of said pistons, a timing system interactive with said crankshaft, an electrical system, and a distributor having a center input terminal that receives a continuous current through a feed wire from said electrical system, said distributor serving to produce an electrical output pulse and route said pulse to the igniter means of the single cylinder designated by said timing system to be momentarily in its power stroke position, said method comprising:

a) injecting liquid fuel into all cylinders,

b) producing an electrical input pulse by manually generated means, and

c) routing said input pulse to the single cylinder in the power stroke position, said routing being achieved by causing said input pulse to enter the center terminal of said distributor through an intervening first diode.

5,611,306

INTERNAL COMBUSTION ENGINE VALVE

Yuji Takano, Chigasaki, Japan, assignor to Fuji Oozx Inc., Fujisawa, Japan

Filed Aug. 8, 1995, Ser. No. 512,392

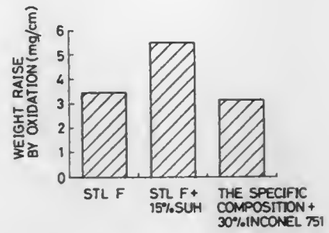
Int. Cl.[6] F01L *3/04*

U.S. Cl. 123—188.3 **7 Claims**

1. An internal combustion engine valve having a body, a head with a head surface, and a contact surface disposed on said head surface, said valve being constructed from a nickel-chromium super beat resistant alloy;

wherein said contact surface is diluted with a super heat resistant cobalt based alloy;

wherein a dilution of the cobalt based alloy into the head surface at welding formation is adjusted to be 25 to 35 weight percent.



5,611,307

INTERNAL COMBUSTION ENGINE IGNITION DEVICE

Harry C. Watson, Eltham, Australia, assignor to The University of Melbourne, Parkville, Australia

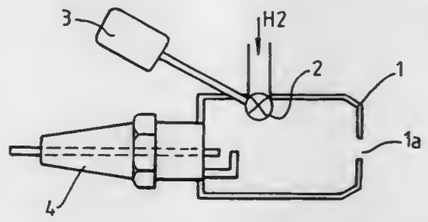
PCT No. PCT/AU92/00552, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO93/08385, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 14, 1992, Ser. No. 256,360

Claims priority, application Australia, Oct. 14, 1991, PK8881

Int. Cl.[6] F02B *19/18*

U.S. Cl. 123—254 **12 Claims**



1. An ignition device for association with an internal combustion engine having a combustion chamber of predetermined clearance volume, comprising a small pre-chamber having a volume of 0.5 or less than 2% of the clearance volume, said pre-chamber having at least one outlet orifice opening into the combustion chamber, means for creating a rapidly combustible hydrogen-rich mixture of about 1.2 to 7 times stoichiometric in said pre-chamber, and means for igniting the combustible mixture in the pre-chamber,

said pre-chamber and said at least one orifice being dimensioned to have a dimensionless throat parameter $\beta =$

$$\frac{\text{area of throat} \times \text{bore of combustion cylinder}}{\text{pre-chamber volume}}$$

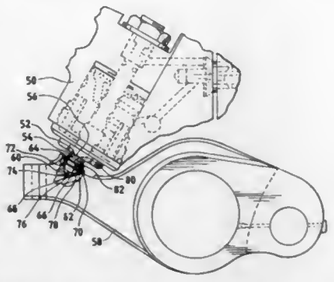
within the range of 0.3 to 0.8, thereby causing an ignition jet to issue from said at least one orifice into the combustion chamber so as to promote efficient combustion within the internal combustion engine.

5,611,308

APPARATUS FOR INTERCONNECTING AN ACTUATOR AND AN EXHAUST VALVE OPENING MEMBER

David E. Hackett, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 6, 1996, Ser. No. 595,968
Int. Cl.[6] F02D *13/04*
U.S. Cl. 123—321 **13 Claims**



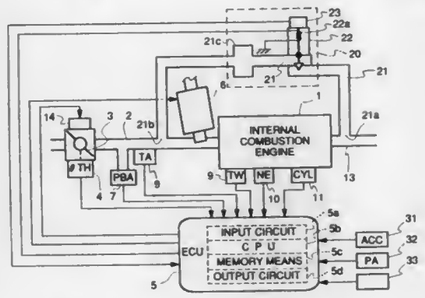
1. Apparatus for interconnecting an actuator and a pivotable exhaust valve opening member, comprising:
a recess in the exhaust valve opening member;
a bearing member disposed in the recess and capable of swiveling therein and including an engagement surface; and
a plunger carried by the actuator and movable into contact with the engagement surface.

5,611,309

THROTTLE VALVE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Katsuhiro Kumagai; Tetsuya Ono; Akira Katoh, and Kenichiro Ishii, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 560,988
Claims priority, application Japan, Nov. 22, 1994, 6-312458
Int. Cl.[6] F02D *9/02*
U.S. Cl. 123—399 **7 Claims**



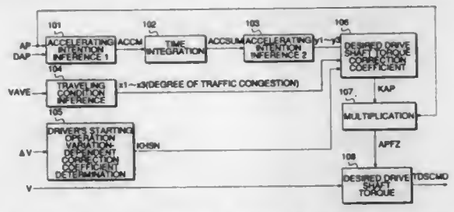
1. A throttle valve control system for an internal combustion engine installed in a vehicle, said engine having an intake passage, and a throttle valve arranged in said intake passage, comprising:
desired throttle valve opening-calculating means for calculating a desired opening of said throttle valve according to rotational speed of said engine and required torque of said engine, said required torque being calculated according to operating conditions of said engine and operating conditions of said vehicle;
throttle valve opening-detecting means for detecting an actual opening of said throttle valve;
control means for electrically controlling said throttle valve such that said detected actual opening of said throttle valve becomes equal to said desired opening of said throttle valve;
intake pressure-detecting means for detecting actual intake pressure within said intake passage;
desired intake pressure-calculating means for calculating desired intake pressure within said intake passage according to said rotational speed of said engine and said required torque of said engine; and
correcting means for comparing said desired intake pressure with said detected actual intake pressure and for correcting said desired opening of said throttle valve, based on results of said comparison.

5,611,310

DRIVING FORCE-CALCULATING SYSTEM AND CONTROL SYSTEM INCORPORATING SAME FOR AUTOMOTIVE VEHICLES

Shigetaka Kuroda; Hisashi Igarashi; Akira Katoh, and Kenichiro Ishii, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1996, Ser. No. 583,745
Claims priority, application Japan, Jan. 18, 1995, 7-023427
Int. Cl.[6] F02D *7/00*
U.S. Cl. 123—399 **20 Claims**



1. A driving force-calculating system for calculating a desired driving force required by an automotive vehicle depending on operating conditions of said vehicle, comprising:
vehicle speed change-calculating means for calculating an amount of change in speed of said automotive vehicle assumed during acceleration of said automotive vehicle;
parameter-calculating means for calculating a kinetic energy parameter representative of kinetic energy of said automotive vehicle from an output from said vehicle speed change-calculating means;
maximal value-calculating means for calculating a maximal value of an output from said parameter-calculating means within a predetermined time period;
maximal value-averaging means for calculating an average value of said maximal value calculated by said maximal value-calculating means;
correction coefficient-calculating means for calculating a correction coefficient based on said average value calculated by said maximal value-averaging means; and
desired driving force-calculating means for calculating said desired driving force required by said automotive vehicle by the use of said correction coefficient calculated by said correction coefficient-calculating means.

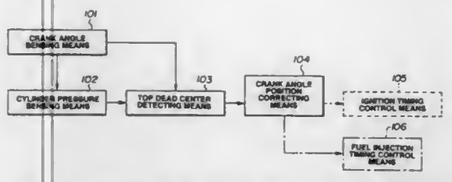
5,611,311

CRANK ANGLE SENSING SYSTEM

Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jul. 10, 1995, Ser. No. 500,358
Claims priority, application Japan, Jul. 11, 1994, 6-158509
Int. Cl.[6] F02P *5/15;7/06*
U.S. Cl. 123—414 **14 Claims**

1. A crank angle sensing system for an internal combustion engine, said sensing system comprising:
a crank angle sensing means for producing a reference angle signal at every predetermined reference crank angle position



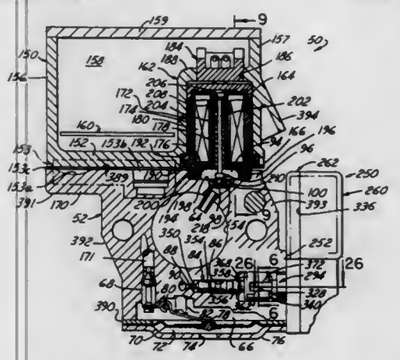
of each cylinder of the engine, and a unit angle signal at intervals of a unit crank angle, so that an actual crank angle position of each cylinder of the engine can be determined by counting a number of occurrences of said unit angle signals after occurrence of said reference signal;
a cylinder pressure sensing means for sensing a cylinder pressure inside at least one cylinder of the engine, and producing a cylinder pressure signal representing the cylinder pressure;
a top dead center detecting means for receiving said reference angle signal and said unit angle signal from said crank angle sensing means and said cylinder pressure signal from said cylinder pressure sensing means, and detecting a top dead center by finding a maximum pressure providing crank angle position which is a crank angle position at which the cylinder pressure becomes maximum in a non-combustion condition; and
a crank angle position correcting means for comparing a crank angle phase difference between the top dead center determined by said top dead center detecting means and the reference crank angle position determined by said crank angle sensing means, with a predetermined standard value, and correcting the crank angle position sensed by the crank angle sensing means by using a deviation of the crank angle phase difference from the standard value,
wherein said rod dead center detecting means includes a fuel-cut forcing means for putting said engine in said non-combustion condition to detect said top dead center by cutting off a fuel supply to the engine.

5,611,312

CARBURETOR AND METHOD AND APPARATUS FOR CONTROLLING AIR/FUEL RATIO OF SAME

Mark S. Swanson, Cass City, and Eric L. King, Deford, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Feb. 7, 1995, Ser. No. 384,860
Int. Cl.[6] F02M *1/02;7/20*
U.S. Cl. 123—436 **45 Claims**



1. A manually and semi-automatic electrically controlled carburetor having a heat conductive metal body with a mixing passage extending axially and centrally therethrough and opening at opposed end faces of said body, a manually controlled throttle valve disposed in said mixing passage and movable between closed low idle and an wide open throttle positions, a liquid fuel metering chamber, a main fuel nozzle communicating with said metering chamber and said mixing passage upstream of said throttle valve when in said idle position, a manually controlled choke valve disposed in said mixing passage upstream of said main fuel nozzle and movable between a closed cold start and wide open positions, said body having top and bottom generally flat sides disposed generally parallel with one another on opposite sides of said mixing passage, said fuel metering chamber being disposed at said body bottom side and having a diaphragm and an air chamber cover plate associated therewith, electrically adjustable fuel valve means disposed in said body for controlling flow of fuel from said metering chamber to said main fuel nozzle, a heat conductive metal control box housing mounted on said body over said body top side, said housing having a bottom wall juxtaposed to said body top side and housing side wall means upstanding from said housing bottom wall and defining therewith an interior electronic control component compartment, said compartment containing electronic control circuits and associated electronic components operably adapted to actuate said fuel valve means in response an engine operating parameter sensing signal to thereby automatically adjust the air/fuel ratio (A/F) of an engine operably associated with said carburetor, and engine pressure pulse operated diaphragm fuel pump means including flap valve gasket means mounted between said housing bottom wall and said body top side and associated pump fuel feeding passages and pump diaphragm chamber means disposed in both said housing bottom wall and in said body adjacent said body top side such that pump fuel flow through said pump means to said metering chamber is in heat exchange relationship with said housing component compartment and said mixing passage via said housing bottom wall and said body.

4. Method of adjusting the air/fuel ratio (A/F) of an i.c. engine provided with a carburetor having an electrically adjustable A/F control system and manually controlled mechanical choke and throttle valve control system and associated main nozzle and idle fuel circuits by means of an electronic detector and control unit to which current is supplied by an ignition magnet or generator and which comprises a tachometer, data processing means, an electronic memory, and a control unit for adjusting said ratio, the first derivative of the speed of revolution being used as a parameter for the adjustment, and the adjustment is performed after a period of time during which the speed of the engine has been generally constant, and that generally constant speed is detected by calculating the average value of said derivative, such that the speed of revolution of the engine is considered to be generally constant when said average value is approximately zero and wherein the air/fuel ratio is adjusted stepwise or successively when the engine is operating under load, until said first derivative (speed variations) has reached a predetermined level, or a break point of lean adjustment is detected, said method comprising the steps of:
(a) preventing motion of the choke valve from wide open position anywhere when the throttle valve is positioned between approximately fast idle to wide open positions, and
(b) shutting off fuel flow to the idle circuit when the throttle valve is positioned beyond fast idle to full open positions.

6. A carburetor having a mixing passage, a throttle valve disposed in said mixing passage and movable between a low idle position and an wide open throttle position, a liquid fuel metering chamber, a main fuel nozzle communicating with said metering chamber and said mixing passage upstream of said throttle valve, at least one idle fuel port communicating with said mixing passage downstream of said throttle valve, means for controlling said carburetor adapted when in operable association with an internal combustion engine to automatically adjust the air/fuel ratio (A/F) thereof to a preferred value, said control means comprising electronic control circuit means and valve means for adjusting the A/F by controlling flow to said main fuel nozzle in response to an actuating signal output of said control circuit means, and idle fuel port shut-off means operably connected to said throttle valve to close fuel supply to said idle port in response to initial movement of said throttle valve from fast idle position toward wide open position and vice versa, and wherein said adjustment valve means comprises a poppet valve actuated by a solenoid to move between an open position allowing total fuel flow to said main fuel nozzle of said carburetor from said metering chamber, and a closed position interrupting said total flow to change the A/F to a leaner mixture for a short period of time.

5,611,313

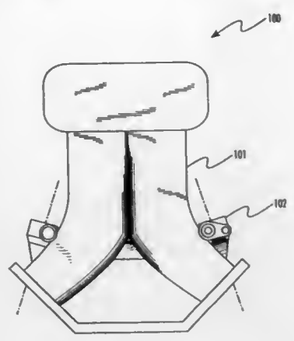
PROCESS FOR MOLDING A FUEL RAIL ASSEMBLY

Timothy A. Asbcraft, Dover, Ohio, assignor to Handy & Harman Automotive Group, Ind., Auburn Hills, Mich.

Division of Ser. No. 413,984, Mar. 15, 1995. This application Dec. 13, 1995, Ser. No. 571,425

Int. Cl.[6] F02M *41/00*

U.S. Cl. 123—456 **6 Claims**



1. A manifold having an integrally formed fuel rail comprising:
a main manifold body;
a fuel rail embedded in and extending around said main manifold body; and
at least one injector pocket communicating with said fuel rail for connecting with fuel injectors, said injector pocket having a substantially accurate finish,
wherein said fuel rail and said injector pocket are integrally formed with said main manifold body and said injector pockets are in a die lock situation relative to said main manifold body.

5,611,314

CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

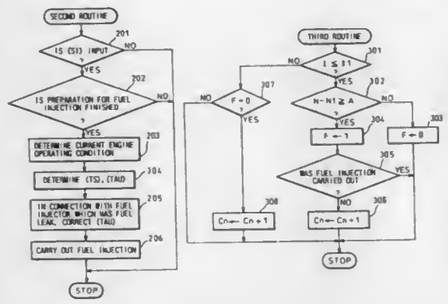
Naobide Fuwa; Hiroshi Tanaka; Shigeki Miyashita; Hiroaki Nibei, all of Susono, and Tadashi Fukuyama, deceased, late of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 25, 1995, Ser. No. 548,116

Claims priority, application Japan, Oct. 26, 1994, 6-262854; Sep. 20, 1995, 7-241702

Int. Cl.[6] F02D *41/06;* **F02M** *65/00*

U.S. Cl. 123—491 **12 Claims**



1. A control device of an internal combustion engine comprising:
a fuel injector provided for each cylinder;
ignition means for starting ignition in each cylinder simultaneously with a start of the engine cranking;
detection means for detecting combustion in each cylinder when the engine is started; and
determination means for determining that the fuel injector of a cylinder in which ignition is carried out before fuel injection by said ignition means has a fuel leak when said detection means detects combustion in said cylinder.

5,611,315

FUEL SUPPLY AMOUNT CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

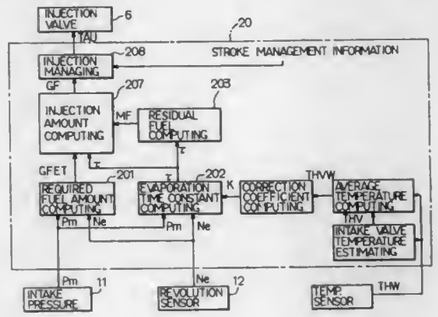
Hisayo Dohta, Kariya, and Katsuhiko Kawai, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 6, 1995, Ser. No. 540,186

Claims priority, application Japan, Oct. 24, 1994, 6-284258; Aug. 3, 1995, 7-198250

Int. Cl.[6] F02D *41/10;41/12*

U.S. Cl. 123—492 **11 Claims**



1. A fuel supply amount control apparatus for internal combustion engine, comprising:
a fuel injection valve for injecting fuel into an intake system of the internal combustion engine;
required fuel amount computing means for computing a required fuel amount according to operating conditions of the internal combustion engine;
evaporation time constant computing means for computing an evaporation time constant indicating changes over time of a fuel amount introduced into a cylinder from the intake system after injection of fuel by the fuel injection valve based on a reference evaporation time constant relative to a predetermined reference engine rotational speed and a reference engine load and on engine rotational speed and engine load at a time of evaporation time constant computing;
residual fuel amount computing means for computing a fuel amount remaining in the intake system using the evaporation time constant computed by the evaporation time constant computing means; and
fuel injection amount computing means for computing a fuel amount injected from the fuel injection valve, based on a required fuel amount computed by required fuel amount computing means and the residual fuel amount computed by the residual fuel amount computing means.

5,611,316

GAS FUEL SUPPLY MECHANISM FOR GAS COMBUSTION ENGINE

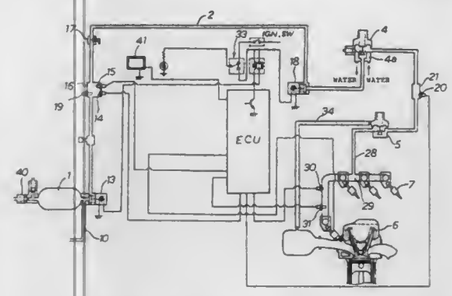
Yoshikazu Oshima; Atsushi Kato; Mitsuru Ikeo; Toshiyuki Nishida; Kazuhiro Ueda; Katsunori Nakamura; Ryuichi Noseyama; Kenichiro Ishibashi, and Shigeru Aoki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,442

Claims priority, application Japan, Dec. 28, 1993, 5-351888; Dec. 28, 1993, 5-351889; Dec. 28, 1993, 5-351890; Dec. 28, 1993, 5-351891

Int. Cl.[6] F02D *41/22;19/02;* **F02M** *21/02*

U.S. Cl. 123—494 **22 Claims**



1. A fuel supply mechanism for a gas combustion engine, comprising:
a gas combustion engine;
a tank filled with a gas fuel;
a fuel injector having a fuel injection valve mounted on said gas combustion engine;
a pipe for supplying the gas fuel from said tank to said fuel injector;
a regulator means disposed in said pipe for regulating the pressure of the gas fuel in said pipe;
gas fuel cutoff means in said pipe for cutting off the gas fuel flowing through said pipe including cutoff valves disposed in portions of said pipe which are immediately downstream of said tank and upstream of said regulator means;
gas fuel state detecting means for detecting a state of the gas fuel including a gas pressure sensor disposed in said pipe for detecting a pressure of said gas fuel, said gas pressure sensor comprising gas pressure sensors disposed in portions of said pipe which are downstream and upstream of said regulator means; and
control means responsive to a detected signal from said gas fuel state detecting means for controlling said gas fuel cutoff means and said fuel injection valve said control means comprising means responsive to detected signals from said gas pressure sensors for controlling said cutoff valves and said fuel injection valve.

5,611,317

OPEN NOZZLE FUEL INJECTOR HAVING DRIVE TRAIN WEAR COMPENSATION

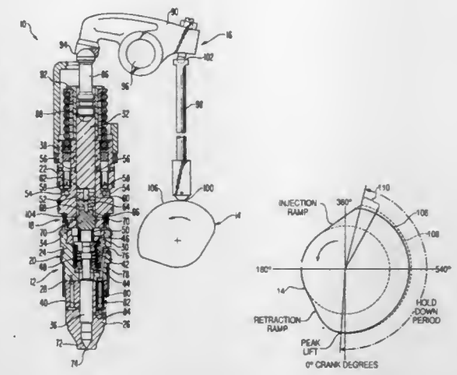
Lester L. Peters; Julius P. Perr, and Yul J. Tarr, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 9, 1995, Ser. No. 513,201

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—501 **20 Claims**

1. A cam-operated open nozzle fuel injector for injecting fuel into a combustion chamber of an internal combustion engine, comprising:
an injector body containing a central bore and an injector orifice at an inner end of the injector body;
a reciprocating plunger assembly including an outer plunger and an inner plunger mounted within the central bore and a variable volume timing chamber located between said outer plunger and the inner end of the injector body;
a cam means operatively connected to said reciprocating plunger assembly for imparting inward movement to said inner and outer plungers, said cam means including a hold down cam portion for maintaining said inner plunger in an innermost position against the inner end of said injector body to define a hold down period, wherein said hold down cam portion operates to move said outer plunger inwardly toward said inner plunger throughout a substantial portion of said hold down period.



5,611,318

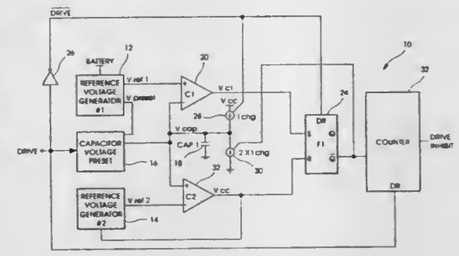
AUTOMOTIVE IGNITION SYSTEM LOCKUP PROTECTION CIRCUIT

Scott B. Kesler, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed May 30, 1995, Ser. No. 454,480

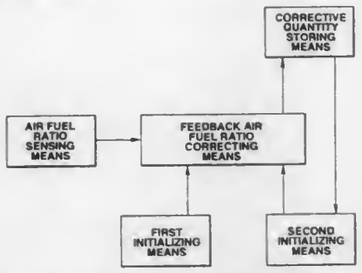
Int. Cl.[6] F02P *11/00*

U.S. Cl. 123—630 **24 Claims**



1. An ignition system protection circuit comprising:
a first circuit responsive to a variable level power input voltage to provide a first reference signal varying as a function of said variable level power input voltage;
a second circuit providing a fixed second reference signal greater than said first reference signal;
a third circuit responsive to an ignition coil energizing signal, said first reference signal and said second reference signal to provide a periodic clock signal having a frequency dependent upon the difference between said second reference signal and said first reference signal; and
a fourth circuit responsive to a number of said clock signals to provide an ignition coil deenergizing signal.

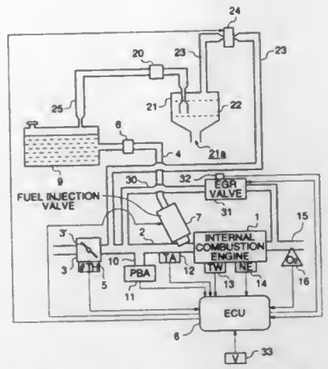
5,611,319
AIR FUEL RATIO CONTROL SYSTEM FOR ENGINE WITH FUEL VAPOR RECOVERY SYSTEM
Kenichi Machida, Isesaki, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan
Filed Mar. 22, 1996, Ser. No. 620,300
Claims priority, application Japan, Mar. 24, 1995, 7-66304
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—680 **5 Claims**



1. An air fuel ratio control system comprising:
a fuel vapor recovery system comprising an adsorbing means for adsorbing fuel vapor in a fuel tank and a purging means for purging and sucking the fuel vapor from the adsorbing means into an engine intake system of an engine together with fresh air by using an intake negative pressure of the engine;
an air fuel ratio sensing means for sensing an air fuel ratio of an intake air fuel mixture for the engine;
a feedback air fuel ratio correcting means for determining a feedback air fuel ratio corrective quantity to correct a fuel supply quantity to the engine so as to reduce a deviation of the air fuel ratio sensed by the air fuel ratio sensing means from a desired air fuel ratio;
a corrective quantity storing means for storing the feedback corrective quantity, said storing means including a means which, if a cutoff request to cut off the fuel vapor is generated during an operation for purging and sucking the fuel vapor, stores the feedback corrective quantity immediately before the generation of the cutoff request;
a first initializing means for producing a step change of the feedback corrective quantity to a predetermined first initial value when the cutoff request is generated; and
a second initializing means for producing a step change of the feedback corrective quantity to a second initial value when the operation for purging and sucking the fuel vapor is resumed, said second initial value being determined in accordance with the feedback air fuel ratio corrective quantity stored in the corrective quantity storing means.

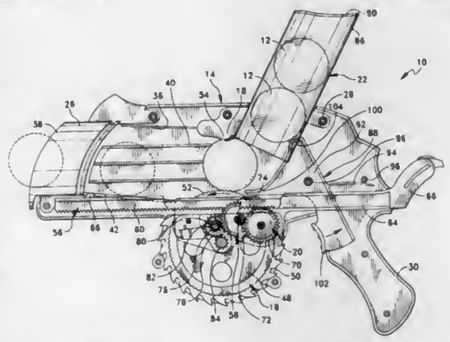
5,611,320
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Fumio Hara; Akira Fujimura; Yoshihisa Hara, and Masahiro Sakanushi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 526,563, Sep. 12, 1995, Pat. No. 5,546,922, which is a division of Ser. No. 187,469, Jan. 28, 1994, Pat. No. 5,469,833. This application May 28, 1996, Ser. No. 654,388
Claims priority, application Japan, Feb. 1, 1993, 5-36094
Int. Cl.[6] F02D *41/14*; F02M *25/08*
U.S. Cl. 123—698 **4 Claims**

1. In a control system for an internal combustion engine having an intake passage, a fuel tank, a canister for adsorbing evaporative fuel generated from said fuel tank, and a purging passage connecting said canister and said intake passage for allowing said evaporative fuel to be purged therethrough into said intake passage, said control system including a purge control valve arranged in said purging passage for controlling a flow rate of said evaporative fuel



purged through said purging passage into said intake passage, fuel injection valves for controlling an amount of fuel to be supplied to said engine by injection, operating condition-detecting means for detecting operating conditions of said engine, air-fuel ratio-detecting means for detecting an air-fuel ratio of an air-fuel mixture supplied to said engine, air-fuel ratio correction coefficient-calculating means for calculating an air-fuel ratio correction coefficient based said air-fuel ratio of said air-fuel mixture detected by said air-fuel ratio-detecting means, evaporative fuel concentration-dependent correction coefficient-setting means for setting an evaporative fuel concentration-dependent correction coefficient dependent on concentration of said evaporative fuel purged into said intake passage, based on said air-fuel ratio correction coefficient, purging flow rate-controlling means for controlling said purge control valve depending on said operating conditions of said engine, and fuel injection amount-controlling means for controlling said fuel injection valves based on said air-fuel ratio correction coefficient and said evaporative fuel concentration-dependent correction coefficient,
the improvement wherein said evaporative fuel concentration-dependent correction coefficient-setting means updates said evaporative fuel concentration-dependent correction coefficient depending on a direction of change of said air-fuel ratio correction coefficient when said purge control valve is operative.

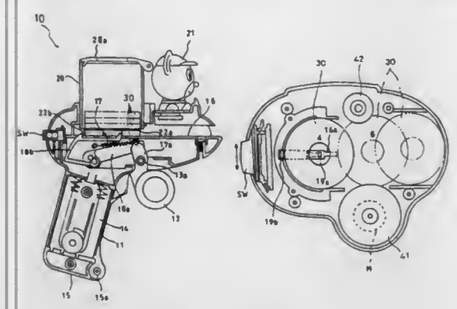
5,611,321
BALL LAUNCHING DEVICE
Michael G. Hoeting, and Sean T. Mullaney, both of Cincinnati, Ohio, assignors to Bang Zoom Design, Inc., Cincinnati, Ohio
Filed May 18, 1995, Ser. No. 464,004
Int. Cl.[6] F41B *4/00*
U.S. Cl. 124—6 **9 Claims**



1. A ball launching device for launching a spherical soft, foam ball, said ball having a diameter, said device comprising:

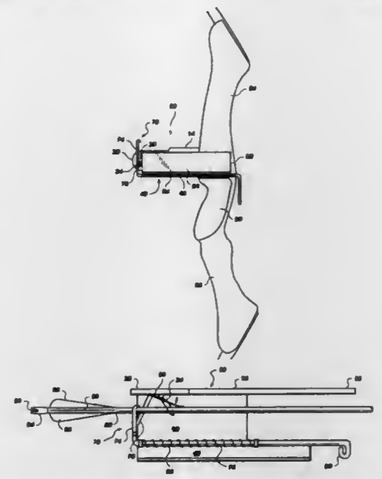
a. a launcher body having an elongated launching passage therein, said passage having a cross-sectional dimension which is slightly greater than said ball diameter and terminating in an open muzzle end;
b. a launching wheel having a circumferential gripping surface thereon which extends slightly into said passage;
c. restriction means for restricting said passage, said restriction means extending into said passage at a location which is substantially opposite from said launching wheel and terminating in an inner end which is spaced from the gripping surface of said launching wheel by a distance which is slightly less than said ball diameter;
d. manually operable rack gear means for rotating said launching wheel in a direction such that the portion of said gripping surface which extends into the launching passage travels in a launching direction which extends toward the muzzle end of said launching passage;
e. means for feeding said ball to said passage so that when said launching wheel is rotating in said launching direction, said ball is accelerated by said launching wheel as it passes between said launching wheel and said restriction means and said ball is thereby launched from said passage through said muzzle end.

5,611,322
DISC DISCHARGING TOY
Tatsuya Matsuzaki, and Hisashi Ishida, both of Tokyo, Japan, assignors to Toybox Corporation, Tokyo, Japan
Continuation of Ser. No. 342,022, Nov. 16, 1994, Pat. No. 5,471,967. This application Nov. 29, 1995, Ser. No. 565,651
Claims priority, application Japan, Mar. 18, 1994, 6-3770
Int. Cl.[6] F41B *4/00*
U.S. Cl. 124—6 **11 Claims**



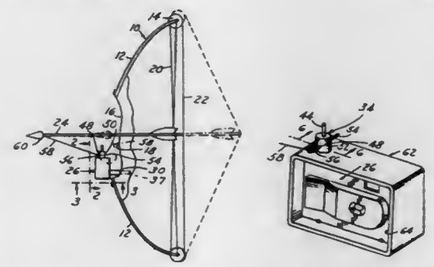
1. A disc discharging toy comprising:
a plate having an upper longitudinal surface and two opposite lateral sides, a forward portion and a rearward portion;
means for holding a plurality of discs in a vertical stack on the upper longitudinal surface at the rearward portion of the plate;
a first drive roller driven by an electric motor and being positioned on one side of the plate, the drive roller cooperating with a non-driven element to impart a discharging force to each disc; and
means for feeding a lower-most one of the discs into engagement with the first drive roller and the non-driven element, thereby discharging each disc from the forward portion of the plate.

5,611,323
ARROW RETENTION DEVICE
Richard Townley, Box 957, Gunnison, Utah 84634
Filed Oct. 10, 1995, Ser. No. 541,329
Int. Cl.[6] F41B *5/22*
U.S. Cl. 124—44.5 **20 Claims**



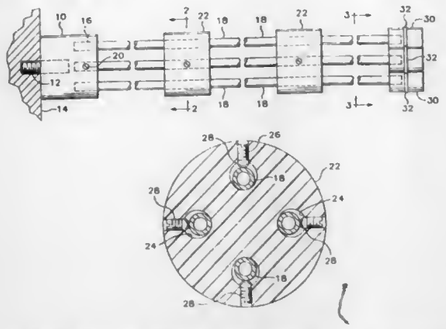
13. An arrow retainer/guide for attachment to a bow laced with a string, the retainer/guide comprising:
guide means extending rearwardly from the bow toward the string for channeling the arrow;
holding means disposed along the guide means for selectively holding the arrow within the guide means, the holding means being movable between an open position and a closed position in which the holding means holds the arrow within the guide means, the holding means comprising a biasing means for biasing the holding means into the closed position; and
release means disposed adjacent the bow and in communication with the holding means for overcoming the biasing means and moving the holding means into the open position.

5,611,324
CAMERA ACTUATING ARCHERY APPARATUS
Steven D. Kursinsky, 220 W. Walker, Sandusky, Mich. 48471
Filed Sep. 28, 1995, Ser. No. 535,948
Int. Cl.[6] F41B *5/14*
U.S. Cl. 124—86 **17 Claims**



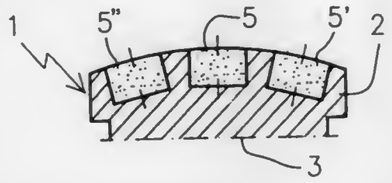
11. A camera actuating archery apparatus for a camera and an archery bow including a riser, a bow string, and an arrow having a forward tip thereon, said apparatus comprising a camera connector between said camera and said riser, and a camera actuator operatively connected between said camera and said forward tip of said arrow.

5,611,325
ARCHERY BOW STABILIZER
Donald S. Kudlacek, 3412 Oak St., Longview, Wash. 98632
Filed Mar. 27, 1996, Ser. No. 622,966
Int. Cl.[6] F41B *5/20*
U.S. Cl. 124—89 **6 Claims**



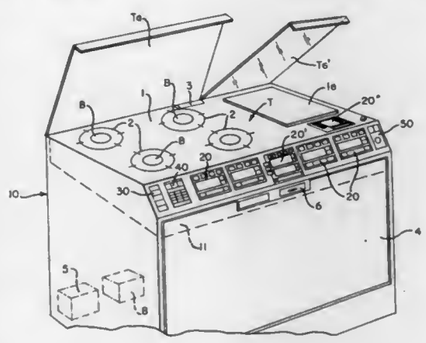
1. An archery bow stabilizer, comprising:
a) a base member configured for attachment to an archery bow handle,
b) at least three elongated stabilizer rods each having an inner end and an outer end,
c) anchor means on the base member securing the inner ends of the stabilizer rods thereto with the rods extending forwardly therefrom substantially parallel to and spaced apart circumferentially from each other,
d) at least one vibration dampener adjustment member having openings therethrough matching the number and circumferential spacing of said stabilizer rods and a diameter larger than the diameter of said stabilizer rods freely receiving said rods therethrough, and
e) resilient securing means on the vibration dampener adjustment member extending into each of said openings and resiliently engaging and securing said adjustment member to said stabilizer rods intermediate the inner and outer ends of said rods.

5,611,326
DIAMOND-SET INSERT CARRIER TOOL FOR AUTOMATIC AND MANUAL MACHINES OF DRESSING, SMOOTHING AND POLISHING TYPE FOR THE STONE, CERAMIC AND TILE INDUSTRIES
Marco Caspani, and Italo Garavaldi, both of Reggio Emilia, Italy, assignors to S.E.A. Utensili Diamantati S.p.A., Cadelbosco Sopra, Italy
Filed Jun. 22, 1995, Ser. No. 493,828
Claims priority, application Italy, Jun. 29, 1994, MI94A1350
Int. Cl.[6] B28D *1/00*
U.S. Cl. 125—39 **5 Claims**



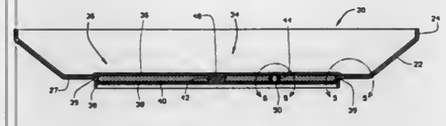
1. A diamond-set insert carrier tool for dressing, chamfering, smoothing or polishing machines, comprising a supporting body of a thermoplastic material having the following physical and mechanical characteristics:
Rockwell harness: 50–130 scale R;
Ultimate elongation: 4–300%;
Modulus of elasticity in tension: 3500–35,000 kg/cm^2;
Modulus of elasticity in bending: 5000–80,000 kg/cm^2;
Breaking strength at 23° C.:
under tension 150–950 kg/cm^2;
Breaking strength at 23° C.:
under compression 180–1800 kg/cm^2; and
Breaking strength at 23° C.:
under bending 120–2100 kg/cm^2;
in an active surface of which there are provided cavities able to receive diamond-set abrasive inserts and retain them substantially flush with said active surface by an interference-fit of between 0.1 and 0.3 mm.

5,611,327
AUTOMATIC CONTROL STOVE
Fabio L. Teixeira Filho, Rua Honorato Faustino, 164, Sao Paulo - SP, Brazil, and Marcio D. L. Andreoni, Rua Tomé Raposo 70, Sao Paulo - SP, Brazil
PCT No. PCT/BR93/00003, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/14350, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 21, 1993, Ser. No. 256,690
Claims priority, application Brazil, Jan. 21, 1992, 9200168
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—39 R **19 Claims**



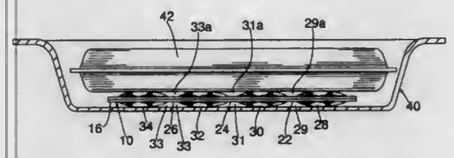
1. An automatic stove comprising:
at least one burner including a surface on which a cooking implement is to be placed;
a computer for controlling operation of said at least one burner based on a cooking control program including at least one of burner operation time and burner heat quantity out-put;
a transmitter/receiver system uniquely coded for the stove including a first part at said stove and a second part at a movable source including at least one of an implement or user of the stove providing interactive communication for the system part; and
enabling means at the stove to recognize presence of an authorized second part uniquely coded to said first part of said transmitter/receiver system of the stove in proximity of the stove and in response thereto for actuating said computer to enable actuation and control of the said at least one burner in accordance with the cooking control program therefor.

5,611,328
HEAT RETENTIVE FOOD SERVICE BASE
Michael B. McDermott, Washington, Mo., assignor to Seco Products Corporation, Washington, Mo.
Filed Sep. 19, 1995, Ser. No. 530,004
Int. Cl.[6] A47G *23/04*
U.S. Cl. 126—246 **18 Claims**



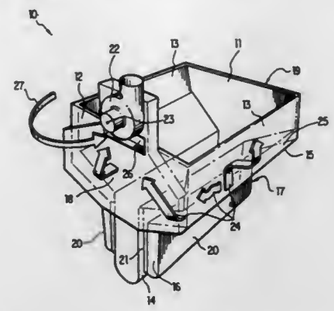
1. A food service base comprising:
a plastic dish sized and configured to receive a plate, said dish including a first bottom wall adapted to be adjacent a bottom of the plate and an annular radially outwardly projecting wall upwardly extending from an upper surface of said first bottom wall;
a core of a magnetic material susceptible to heating by induction heating, said core disposed adjacent a lower surface of said first bottom wall; and
a second bottom wall integrally formed with said dish and surrounding said core.

5,611,329
FLAMELESS HEATER AND METHOD OF MAKING SAME
Marc Lamensdorf, Mt. Sinai, N.Y., assignor to Truetech, Inc., Riverhead, N.Y.
Filed Aug. 4, 1995, Ser. No. 511,561
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263.07 **20 Claims**



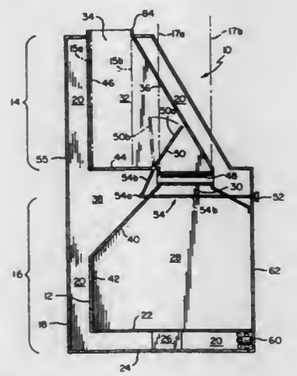
1. A flameless heater, comprising:
a) a first sheet of relatively flexible polymer which is gas and water permeable;
b) a second sheet of relatively flexible polymer which is gas and water permeable, said first and second sheets being bonded to each other so as to form a plurality of pockets;
c) a powder mixture of chemicals which react exothermically in the presence of water, said powder mixture being substantially evenly distributed among and contained within said pockets, wherein
said pockets filled with said powder mixture define intervening channels between said pockets,
when water contacts said heater, the water permeates said pockets, wets said powder mixture, and initiates an exothermic reaction in each of said pockets,
said exothermic reactions generate a gaseous byproduct which at least partially inflates said pockets rendering said heater relatively rigid, and
said gaseous byproducts exit said pockets through said first and second gas permeable sheets and said gaseous byproducts are directed away from said pockets by said channels.

5,611,330
INDUCED DRAFT FRYER
John M. Corliss, Arlington, and Robert Rounds, III, Cambridge, both of Mass., assignors to Gas Research Institute, Chicago, Ill.
Filed Apr. 5, 1995, Ser. No. 416,632
Int. Cl.[6] A47J *27/00*
U.S. Cl. 126—391 **13 Claims**



1. A fluid heating apparatus comprising:
a fluid container;
a fluid container housing wall disposed around a portion of said fluid container, forming at least one combustion gas chamber between said fluid container and said fluid container housing wall, said at least one combustion gas chamber having a combustion air inlet opening and a combustion product gas exhaust opening;
burner means for combustion of a fuel/air mixture, forming a combustion product gas in said at least one combustion gas chamber;
guide means for guiding said combustion product gas in beat transfer communication with said fluid container; and
blower means for inducing a subatmospheric pressure condition in said at least one combustion gas chamber, said blower means disposed downstream of said combustion product gas exhaust opening and in communication with said combustion product gas exhaust opening.

5,611,331
FIREPLACE
Harry J. Phillips, 3622 Brandon St., Columbus, Ohio 43224
Continuation-in-part of Ser. No. 321,905, Jan. 30, 1995, abandoned. This application Mar. 15, 1996, Ser. No. 616,447
Int. Cl.[6] F24B *1//189*
U.S. Cl. 126—539 **17 Claims**



1. A fireplace comprising:

an inner jacket having walls defining an inner jacket volume, said inner jacket including an upper portion and a lower portion;

an outer jacket having walls positioned relative to said inner jacket so as to define an air circulation path between said inner jacket and said outer jacket;

an inner jacket floor portion and an outer jacket floor portion spaced apart so as to form a double floor portion;

a clean out shaft provided in said double floor portion including a clean out shaft cover plate, a cover plate control arm assembly, and an exterior cover plate control knob;

a fire box defined by said lower portion of said inner jacket and including a fire box exhaust opening;

a smoke chamber defined by said upper portion of said inner jacket and including a smoke chamber exhaust opening and an inclined smoke chamber convection wall extending from said fire box exhaust opening to said smoke chamber exhaust opening;

a baffle portion formed in said inner jacket and including an inclined baffle convection wall extending from a rear wall of said fire box to said fire box exhaust opening and a back draft blocking wall extending from a rear wall of said smoke chamber to said fire box exhaust opening;

a heated air output duct in communication with said air circulation path and extending across said fire box exhaust opening;

a damper plate positioned relative to said fire box exhaust opening and coupled to a external damper handle and control arm so as to extend across said fire box exhaust opening in a closed position, to extend upwardly from said back draft blocking wall in an open position, and to lie outside of a downward projection of said smoke chamber exhaust opening in the open and closed positions;

an outside air input vent provided in a rear wall of said outer jacket in communication with said fire box and coupled to an outside air vent handle and control arm so as to permit opening and closing of said outside air vent from the exterior of said fireplace;

at least one fan positioned to circulate air from the exterior of the fireplace through said air circulation path and back to the exterior of the fireplace through said heated air output duct;

two fire box doors positioned to form a front wall of the fire box, at least one of said doors including a door opening knob wherein said at least one door includes a latching assembly adapted to fix the doors in a closed position and adapted to permit opening of the doors by sliding the door opening knob in an upward direction; and,

a draft control including a series of input air holes provided in a front wall of said fire box and a slidable input air hole valve lever coupled to an air hole cover plate wherein a selectable amount of air is permitted to pass into the fire box by sliding said valve lever.

5,611,332

AEROSOL INHALATION DEVICE CONTAINING A RAIN-OFF CHAMBER

Michael Bono, 882 Black Rd., Collegeville, Pa. 19426

Filed Mar. 22, 1995, Ser. No. 409,259

Int. Cl.[6] A61M *16/00*

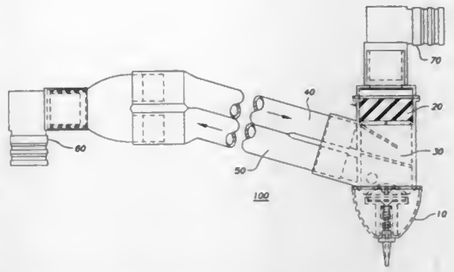
U.S. Cl. 128—200.18 **20 Claims**

1. An aerosol inhalation device for delivering an aerosol mist to a patient, comprising:

a nebulizer for generating an aerosol containing droplets of a first liquid;

a first conduit connected to said nebulizer for providing passage of said aerosol to said patient;

a second conduit for providing passage of a gaseous medium exhaled from said patient, said gaseous medium containing exhaled droplets of said first liquid;



an exhaust port located proximally from said second conduit; and

a rain-off cheer located between said exhaust port and said second conduit, said rain-off chamber having a liquid contact surface therein for collecting a portion of said exhaled droplets and returning them to said nebulizer.

5,611,333

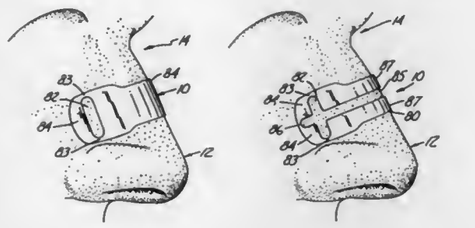
DILATOR WITH PEEL FORCE REDUCING STRUCTURE

Bruce C. Johnson, St. Paul, Minn., assignor to Creative Integration & Design, Inc., St. Paul, Minn.

Filed Dec. 15, 1995, Ser. No. 574,450

Int. Cl.[6] A61M *29/00;15/00;* **A61F** *5/08;* **A62B** *7/00*

U.S. Cl. 128—200.24 **18 Claims**



1. A dilator capable of introducing separating stresses in anatomical outer wall tissues, said dilator comprising:

a truss having a pair of spaced-apart end surfaces terminated by end edges at opposite ends of said truss and having means for generating restoring forces including at least a first resilient band of selected thickness in said truss extending between said end edges such that, if said spaced-apart end surfaces are forced toward one another from initial positions to thereby substantially reduce direct spacing therebetween by a spacing reduction force external to said truss, restoring forces result in said truss which tend to restore said direct spacing between said end surfaces with such restoring forces being due to at least said first resilient band, and further having means for reducing said restoring forces at a selected location in said first resilient band comprising a separation at said selected location between selected portions of said first resilient band with said separation surrounded by a corresponding separation edge thereabout intersecting at least a first surface of said first resilient band; and

engagement means adhered to said end surfaces adapted for engaging exposed surfaces of outer wall tissues and for remaining so engaged against said restoring forces.

5,611,334

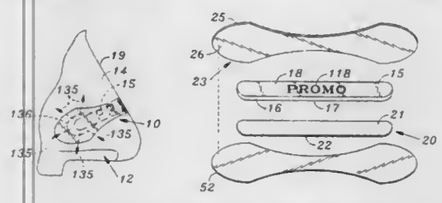
NOSE DILATOR DEVICE

Jerome D. Muchin, 320 Comstock Ave., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 521,631, Aug. 31, 1995, Pat. No. 5,553,605, which is a continuation-in-part of Ser. No. 499,636, Jul. 7, 1995, Pat. No. 5,546,929. This application Dec. 28, 1995, Ser. No. 580,127

Int. Cl.[6] A61M *15/00;16/00;* **A62B** *7/00;9/00*

U.S. Cl. 128—200.24 **26 Claims**



1. A nasal dilator for preventing outer wall tissue of nasal passages of a human nose from drawing in during breathing, comprising:

a spring member for bridging a human nose, the spring member having an outer edge and opposite flat surfaces and being for extending over a bridge of the nose;

a substantially transparent flexible pad having a surface area and peripheral edge, the pad being for engaging the spring member and wherein the surface perimeter area includes an adhesive for adhering to skin of the nose; and

an adhesive between the spring member and the pad, the spring member adhering to the pad and the surface of the spring being visible through the pad, such that when the spring member is located over the bridge of the nose, the opposite flat surfaces of the spring member extend over the bridge of the nose and at least partly beyond the bridge on both sides of the bridge, the surface perimeter area of the pad adheres to the skin of the nose, and wherein, in use, the spring member is for location between the pad and the nose.

5,611,335

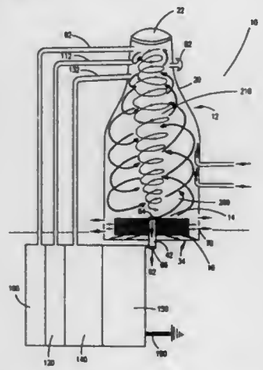
HIGH-FREQUENCY FAN VENTILATOR

Imad R. Makhoul, P.O. Box 201, Judieda Village, Israel, and Saleem N. Geriys, P.O. Box 113, Kfar-Yasif, Israel

Filed Jun. 6, 1995, Ser. No. 471,246

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.24 **38 Claims**



1. A ventilator, comprising:

a ventilation chamber having containment walls, a base and a ventilation port for directing gases to and from a patient;

a fan, disposed at the base of the ventilation chamber, the fan having a shaft for holding fan arms, the shaft of the fan having a lumen through the length thereof, the lumen connecting the inside of the ventilation chamber to outside air and providing a port for exhaled gases; and

a fan rotator, coupled to the fan, for rotating the fan at a selectable velocity, the rotation of the fan providing positive and negative helical waves for inspiration and expiration.

5,611,336

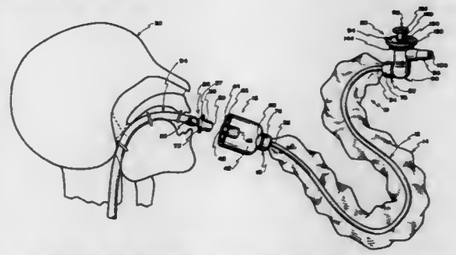
SINGLE USE MEDICAL ASPIRATING DEVICE AND METHOD

Larry Page, Salt Lake City, and Darrel Palmer, Sandy, both of Utah, assignors to Ballard Medical Products, Inc., Draper, Utah

Continuation of Ser. No. 61,131, May 13, 1993, abandoned, which is a continuation of Ser. No. 730,743, Jul. 16, 1991, Pat. No. 5,277,177, which is a division of Ser. No. 679,703, Apr. 3, 1991, abandoned, which is a division of Ser. No. 484,589, Feb. 23, 1990, abandoned, which is a division of Ser. No. 28,805, Mar. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 917,886, Oct. 14, 1986, abandoned, and Ser. No. 916,341, Oct. 7, 1986, Pat. No. 4,696,296, which is a division of Ser. No. 767,400, Aug. 20, 1985, Pat. No. 4,683,539, which is a division of Ser. No. 633,570, Jul. 23, 1984, Pat. No. 4,569,344. This application Mar. 30, 1995, Ser. No. 413,749

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.16 **5 Claims**



1. A device for aspirating secretions from a medical patient's lungs comprising:

a suction catheter tube having a distal end;

a fitting means for defining a sbell with a hollow interior that is continuously open to atmosphere, and that is sized and shaped to receive a patiens's expired air even when coughing, said fitting means comprising means for gripping and sealing the distal end of said catheter tube such that the distal end of the catheter tube is sealed from the hollow interior of said shell until the distal end of the catheter is forcibly and slidably pushed through the gripping and sealing means for placement through the firing means into a patient's lungs.

5,611,337

PULSOXIMETRY EAR SENSOR

Anton Bukta, Sindelfingen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

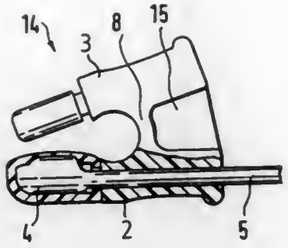
Filed Apr. 28, 1995, Ser. No. 430,734

Claims priority, application Germany, Jul. 6, 1994, 44 23 597.6

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **13 Claims**

1. Pulsoximetry ear sensor structure comprising a one-piece, elastic plastic support for a sensor element, the support including a pair of legs that are normally urged toward each other and selectively spread apart, the legs being interconnected to each other by an elastically deformable web extending in a longitudinal direction generally between the legs, the web having a surface and at least



one elastically deformable rib extending in the web longitudinal direction and projecting from the web surface.

5,611,338

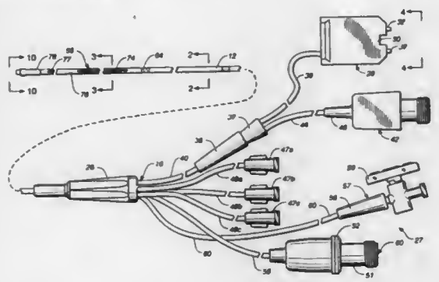
MULTI-PURPOSE MULTI-PARAMETER CARDIAC CATHETER

David A. Gallup, Hayward; John M. Sperinde, Saratoga; William A. Ambrisco, Hayward; Timothy J. Hughes, Palo Alto; Anthony J. Pantages, Los Altos; Jeffrey A. Sarge, San Jose, and Scott T. Tsuchitani, San Francisco, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 914,279, Jul. 16, 1992, Pat. No. 5,435,308. This application Sep. 29, 1994, Ser. No. 315,033

Int. Cl.[6] A61B *5/028*

U.S. Cl. 128—634 **18 Claims**



1. A multi-lumen multi-purpose cardiac catheter comprising a multi-lumen main body portion, a plurality of extension tubes, each connected to a respective lumen of the multi-lumen catheter and a manifold providing an interface between the main body portion of the catheter and the extension tubes, said catheter comprising:

at least one lumen for holding and supporting fiber optic filaments;

at least one lumen for receiving thermal element connectors;

at least one lumen for receiving a device for temperature measurement;

at least one lumen associated with a balloon mounted at a distal end of the catheter for assisting in placement of the catheter in a patient;

a fiber optic apparatus associated with the catheter including optical filaments disposed in the fiber optic lumen and extending the working length of the main body portion of the catheter, and into a fiber optic coupler associated with the catheter;

temperature measurement apparatus mounted at the distal end of the catheter, wiring extending the working length of the catheter and into a housing associated with the catheter;

a necked down portion of the main body portion of the catheter disposed near the distal end of the catheter and an external thermal element disposed in the necked down portion of the catheter, at least one of the lumens of the catheter substantially compressed at said necked down portion, to enable the remaining lumens to maintain a constant size for the entire working length of the catheter through said necked down portion and to the distal end thereof;

connectors extending from the thermal element along the working length of the catheter to be connected to a thermal element housing at a proximal end of the catheter; and

catheter positioning apparatus comprising a balloon mounted at the distal end of the catheter, a balloon lumen extending from the balloon along the working length of the main body portion of the catheter to a device providing access to the balloon;

wherein the thermal element apparatus is operative with an external apparatus to provide a measurement of continuous cardiac output and the fiber optic elements are cooperative with external apparatus for providing a measurement of oxygen concentration in blood (SVO_2).

5,611,339

PRINTED ELECTRODE FOR BIOLOGICAL USE

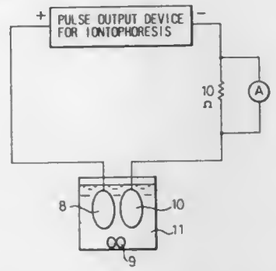
Keiichiro Okabe, and Toyoji Hibi, both of Tokyo, Japan, assignors to Kabushiki Kaisya Advance, Tokyo, and Hisamitsu Pharmaceutical Co., Inc., Tosu, both of Japan

Filed Feb. 14, 1995, Ser. No. 389,333

Claims priority, application Japan, Feb. 16, 1994, 6-040580

Int. Cl.[6] G01N *27/30*

U.S. Cl. 128—639 **10 Claims**



1. A printed electrode for biological use comprising a support having thereon a printed ink paste or binder containing (a) a microgranule of at least one hydrophilic substance selected from the group consisting of hydrophilic polymers and water soluble substances; and (b) a microgranule of at least one electroconductive substance,

wherein the microgranule of hydrophilic polymers or water soluble substances increases the dissolution thereof due to permeation of water, and wherein inclusion of water increases the microgranule of the electroconductive substance's effective surface areas.

5,611,340

APPARATUS AND METHODS FOR MAGNETIC RESONANCE (MR) ANGIOGRAPHY USING HYDROGEN POLARIZED AT LOW TEMPERATURES

Steven P. Souza, Williamstown, Mass., and Charles L. Dumoulin, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,571

Int. Cl.[6] A61B *5/055*

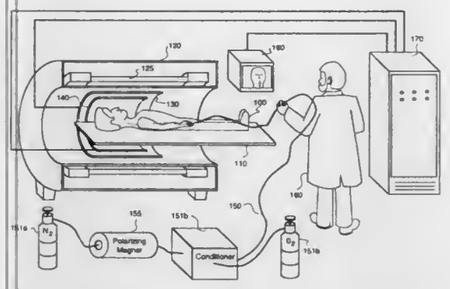
U.S. Cl. 128—653.2 **3 Claims**

1. A magnetic resonance (MR) imaging system for obtaining vessel-selective MR angiographic images from a subject comprising:

a) an imaging magnet for applying a substantially uniform magnetic field over said subject;

b) a hydrogen supply;

c) an oxygen supply;



d) a cryogenic cooling means for receiving and cooling a selected portion of hydrogen from the hydrogen supply;

e) a high-field polarizing magnet for polarizing the cooled hydrogen;

f) a chemical reaction means for combining the polarized hydrogen with oxygen from the oxygen supply to form polarized water;

g) a physiologic conditioner means for heating the polarized water substantially to a temperature suitable for injection into said subject, and for adding solutes to create a polarized contrast fluid having a chemical composition suitable for injection into said subject;

h) a catheter for routing the polarized contrast fluid from the physiologic conditioner means into said subject;

i) an RF transmitter means for transmitting RF energy into said subject of a selected duration, amplitude and frequency to cause nutation of the contrast fluid and other tissue within said subject;

j) a gradient means for varying the amplitude of the magnetic field in at least one spatial dimension over time;

k) an RF receive coil for detecting a set of MR response signals from the contrast fluid and other tissue within said subject;

l) a receiver means coupled to the RF receive coil for receiving the detected MR response signals;

m) a calculation means for calculating an image from the detected MR response signals;

n) a controller means connected to the RF transmitter means, the receiver means, the calculation means and the gradient means, for activating the RF transmitter means, the receiver means, the calculation means and the gradient means each according to a predetermined MR pulse sequence; and

o) a display means connected to the calculation means for displaying the calculated image to an operator.

5,611,341

EXTERNAL TRIGGER IMAGING METHOD AND APPARATUS IN MAGNETIC RESONANCE INSPECTION APPARATUS

Toshiaki Aritomi; Tuyosi Shudo; Syouji Kondou, and Kazuo Suzuki, all of Katsuta, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 741,596, Aug. 7, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 180,801

Claims priority, application Japan, Aug. 7, 1990, 2-208635

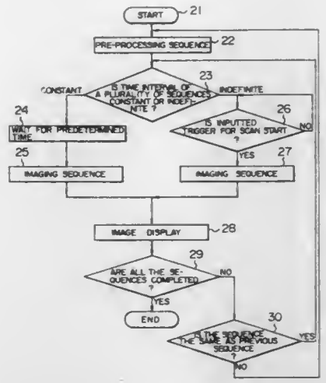
Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 **19 Claims**

1. An MRI method comprising the steps of:

(a) collectively inputting imaging control data including at least an imaging portion of a subject for at least one imaging sequence of a plurality of imaging sequences, the kind of sequences, a time interval between the sequences and the number of times of repetition of the sequences;

(b) executing a pre-processing sequence corresponding to the imaging sequence set to be first executed;



(c) checking whether said time interval until the start of the imaging sequence to be next executed is set to a definite value; and

(d) starting the imaging sequence by an external trigger when said time interval is not set to the definite value, and starting the imaging sequence after the passage of time of said definite value when said time interval is set to said definite value, said imaging sequence including a step of measuring a magnetic resonance signal by applying an RF signal and gradient magnetic fields.

5,611,342

METHOD OF COMPUTER TOMOGRAPHY IMAGING THE GASTROINTESTINAL TRACT AND SURROUNDING UPPER ABDOMINAL TISSUES AND ORGANS USING AN ORALLY ADMINISTERED LOW DENSITY CONTRAST MEDIUM

Kenneth J. Widder, Rancho Santa Fe, Calif., assignor to Molecular Biosystems, Inc., San Diego, Calif.

Continuation of Ser. No. 196,965, Feb. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,648

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—654 **18 Claims**

1. A method of computerized tomography (CT) imaging of upper gastrointestinal tract and upper abdominal organs of a subject comprising:

a) introducing a low density CT contrast agent solution of a biocompatible material into the subject's stomach, said solution being essentially free of entrapped gas and being a true solution of said biocompatible material;

b) allowing said true solution to:

i) substantially fill and distend the subject's stomach;

ii) displace any heterogeneous contents therefrom; and

iii) remain in the stomach longer than an equal volume of water;

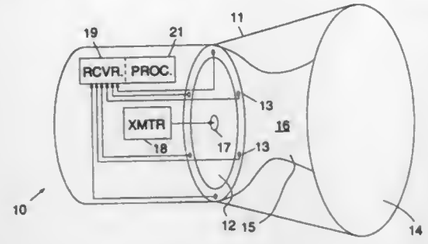
c) applying an x-ray beam to the upper abdominal organs while said solution is present in the upper gastrointestinal tract, said x-ray beam passing through the solution and being differentially absorbed by said tissue and said organs; and

d) forming a CT image from said beam unobscured by any heterogeneous gastrointestinal contents.

5,611,343
HIGH RESOLUTION THREE-DIMENSIONAL ULTRASOUND IMAGING

Dennis L. Wilson, Palo Alto, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Apr. 5, 1995, Ser. No. 417,090
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.09 **11 Claims**



1. A synthetic aperture ultrasound imaging system for generating a high resolution, three-dimensional image of an object, said system comprising:

a housing;

a rotatable disk disposed at one end of the housing that has an aperture disposed in its center and that secures a plurality of ultrasonic transducers around the periphery thereof, and wherein the disk and transducers are rotatable about an axis of the disk and form a synthetic aperture when rotated;

a flexible member disposed at a second end of the housing distal from the rotatable disk through which ultrasonic energy may be transmitted and received;

a fluid filled cavity disposed in the housing between the rotatable disk and the flexible member, and wherein the plurality of rotatable ultrasonic transducers are immersed in the fluid of the fluid filled cavity;

an ultrasonic transmitter coupled to the aperture for transmitting ultrasonic energy by way of the aperture, fluid filled cavity and flexible member; and

a receiver and processor coupled to the plurality of rotatable ultrasonic transducers for sequentially processing reflected ultrasonic energy received by the plurality of rotatable ultrasonic transducers to produce a high resolution, three-dimensional image of the object.

5,611,344
MICROENCAPSULATED FLUORINATED GASES FOR USE AS IMAGING AGENTS

Howard Bernstein, Cambridge; Julie A. Straub, Winchester; Henry T. Brush, Somerville, and Richard E. Wing, Cambridge, all of Mass., assignors to Acusphere, Inc., Cambridge, Mass.

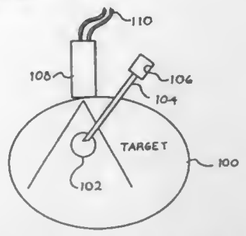
Filed Mar. 5, 1996, Ser. No. 611,248
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.02 **16 Claims**

1. A method for enhancing ultrasonic imaging comprising enhancing the echogenicity of a synthetic polymeric microparticle comprising air by incorporating therein a fluorinated gas in place of the air in an amount effective to image the microparticle after administration to a patient.

5,611,345
MEDICAL INSTRUMENT WITH IMPROVED ULTRASONIC VISIBILITY

John F. Hibbeln, 4433 Washington St., Downers Grove, Ill. 60513

Filed Apr. 24, 1995, Ser. No. 427,741
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.05 **10 Claims**



1. A method of monitoring the location of a percutaneous positioned needle comprising:

a) providing a percutaneously positioned needle, the needle comprising a body and a distal tip wherein the needle body comprises a non-circular cross-section and, a planar surface;

b) directing an incident beam of energy at the planar surface of the needle body such that the incident beam of energy is reflected; and

c) receiving and monitoring the reflected beam.

5,611,346
METHOD OF INTERFERENCE-TOLERANT TRANSMISSION OF HEARTBEAT SIGNALS

Ilkka Heikkilä, and Arto Pietilä, both of Oulu, Finland, assignors to Polar Electro OY, Kempele, Finland

PCT No. PCT/FI94/00353, § 371 Date Apr. 14, 1995, § 102(e) Date Apr. 14, 1995, PCT Pub. No. WO95/05578, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 15, 1994, Ser. No. 416,792
Claims priority, application Finland, Aug. 16, 1993, 933612
Int. Cl.[6] A61B *5/04;5/0402*
U.S. Cl. 128—696 **12 Claims**



8. Method of interference-tolerant heartbeat measurement, said method comprising the steps of:

(a) measuring a person's heartbeat signal at a suitable part of said person's body;

(b) forming first and second groups of pulses corresponding to at least first and second measurements of said heartbeat signal, each of said groups of pulses including:

(i) a first pulse, said first pulse being a break pulse;

(ii) a second pulse, said second pulse being a measuring pulse, said second pulse following a first time interval after said first pulse, said first time interval being fixed;

(iii) a third pulse, said third pulse being both a measuring pulse and an identification pulse, said third pulse following a second time interval after said second pulse, said second time interval being variable and being proportional to a heartbeat rate corresponding to said person's measured heartbeat signal; and

(iv) a fourth pulse, said fourth pulse being an identification pulse, said fourth pulse following a third time interval after said third pulse, said third time interval being fixed and being equal to a specific time interval preselected for identification of a transmitter-receiver pair including a transmitter and a receiver;

(c) transmitting said first and second groups of pulses from said transmitter to said receiver by telemetric transmission, said first and second groups of pulses being separated by a fourth time interval, said fourth time interval being proportional to said heartbeat rate corresponding to said person's measured heartbeat signal;

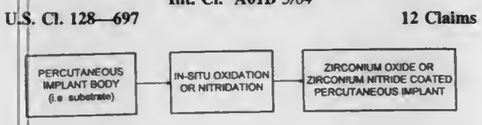
(d) receiving said first and second groups of pulses in said receiver; and

(e) identifying said first and second groups of pulses as emanating from said transmitter by means of sensing said third time interval between said third and fourth pulses of each of said first and second groups of pulses.

5,611,347
ZIRCONIUM OXIDE AND ZIRCONIUM NITRIDE COATED PERCUTANEOUS DEVICES

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew, Inc., Memphis, Tenn.

Division of Ser. No. 112,587, Aug. 26, 1993, Pat. No. 5,496,359, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 28, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Jun. 6, 1995, Ser. No. 467,629
Int. Cl.[6] A01B *5/04*
U.S. Cl. 128—697 **12 Claims**



1. A percutaneous implant that penetrates the skin of a living body and thereby protrudes from the body, the implant comprising:

(a) a low elastic modulus, metallic implant body for penetrating skin tissue of a patient, said implant body having a first end for insertion into said patient, a second end for remaining outside of said patient, and a section therebetween for extending into the patient, said first end, second end and section therebetween having surfaces; and

(b) a corrosion-resistant, biocompatible, hemocompatible, durable, stable coating at least partially covering the surfaces of the implant body first end and section therebetween, said coating selected from the group consisting of zirconium oxides, ranging in color from blue to black, and zirconium nitrides, ranging in color from yellow to orange.

5,611,348
METHOD OF MEASURING GAS EXCHANGES AND METABOLISM

Pekka Meriläinen, Helsinki, Finland, assignor to Instrumentarium Corp., Finland

Filed Sep. 23, 1994, Ser. No. 310,953
Claims priority, application Finland, Sep. 24, 1993, 934211
Int. Cl.[6] A61B *5/097*
U.S. Cl. 128—719 **11 Claims**

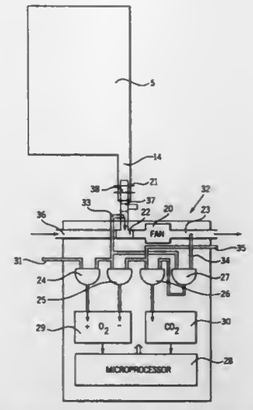
1. A method for measuring a desired property of the respiratory gas of a patient, said method comprising the steps of:

collecting gas expired by the patient into a gas tight, closable container;

closing the container after the expired gas has been collected;

connecting the container to a measuring device and thereafter opening the container;

creating a low pressure in the measuring device in fluid communication with the container and with ambient air;



sucking the collected expired gas out of the container into the device as a continuous stream of gas with the low pressure;

sucking ambient air into the device as a continuous stream of ambient air with the low pressure;

mixing all of the continuous stream of collected expired gas from the container with the continuous stream of ambient air as the gas and air are sucked into the device and forming a unidirectional gas stream from the gas-air mixture which continuously flows through the device;

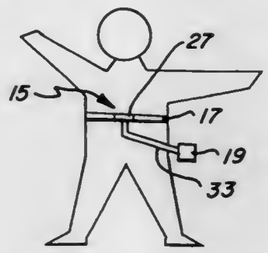
ascertaining a selected property of at least one of the expired gas and the gas stream; and

measuring, from the foregoing ascertainment, the desired property of the respiratory gas of the patient.

5,611,349
RESPIRATION MONITOR WITH SIMPLIFIED BREATH DETECTOR

Michael E. Halleck, Longmont, and Donald N. James, Estes Park, both of Colo., assignors to I Am Fine, Inc., Bethesda, Md.

Continuation of Ser. No. 51,975, Apr. 26, 1993, abandoned. This application May 11, 1995, Ser. No. 439,505
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—721 **18 Claims**



1. A breath detector for connection with monitoring means including pressure sensing means for monitoring changes in capacity of said detector, said detector comprising:

at least a first hollow tube having a fluid channel defined between first and second ends of said tube, said fluid channel normally having a substantially constant diameter from said first end to said second end and providing said capacity, said tube having an outlet from said channel and having flexibility sufficient to respond, by deformation of said tube, to breathing of a subject when secured adjacent to the subject's torso and resiliency sufficient to regain its original shape after deformation without other structural aid;

securing means for securing said tube adjacent to the subject's torso; and

connecting means for connecting said outlet of said tube with the pressure sensing means of the monitoring means.

5,611,350

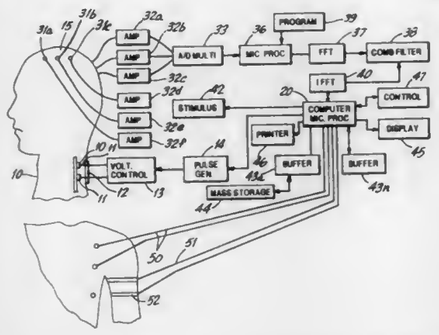
METHOD AND APPARATUS FOR FACILITATING RECOVERY OF PATIENTS IN DEEP COMA

Michael S. John, 1010 Orienta Ave., Mamaroneck, N.Y. 10543

Filed Feb. 8, 1996, Ser. No. 598,376

Int. Cl.[6] A61N *1/36*

U.S. Cl. 128—731 **15 Claims**



1. A method for treatment of deep coma of a patient, including the steps of:

(a) surgically attaching an electrode to a cranial nerve of the patient, the electrode having electrical leads connected thereto;

(b) generating a selected pulse train of electrical pulses and applying the pulse train through the electrical leads to the electrode;

(c) deriving the patient's brain waves, after the application of the pulse train, using EEG electrodes removably secured to the patient's scalp;

(d) amplifying and analyzing in a computer system, the derived brain waves by comparison against a reference;

(e) based on the brain wave analysis, either continuing, discontinuing or changing the selected pulse train; and

(f) stopping the application of the pulse train if the patient's vital signs decline into a dangerous range.

5,611,351

METHOD AND APPARATUS FOR MEASURING BODY FAT

Tomio Sato, Tokyo; Hitoshi Sato, Tsurugashima; Koji Oguma, Fujisawa, and Yoshinori Fukuda, Tokyo, all of Japan, assignors to Tanita Corporation, Tokyo, Japan

Division of Ser. No. 224,087, Apr. 6, 1994, Pat. No. 5,415,176, which is a continuation-in-part of Ser. No. 948,606, Sep. 23, 1992, abandoned. This application Feb. 22, 1995, Ser. No. 392,429

Claims priority, application Japan, Nov. 29, 1991, 3-339377

Int. Cl.[6] A61B *5/05*

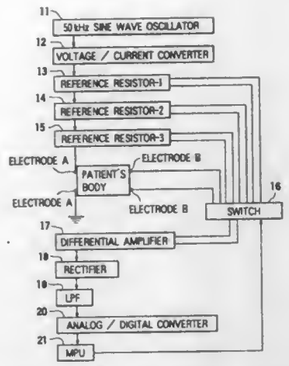
U.S. Cl. 128—734 **2 Claims**

1. A method of measuring impedance of a patient's body comprising the steps of:

connecting a plurality of reference resistors each having a known resistance in series with said patient's body;

supplying an electric current into a current path through said plurality of reference resistors and said patient's body;

measuring voltage drops across any of said reference resistors and/or measuring voltage drops across any groups of adjacent



said reference resistors, and measuring a voltage drop due to said patient's body by momentarily and successively switching over a voltage drop measuring device for each of said voltage drops;

obtaining a correlation formula between said known resistances of said reference resistors and impedance of said patient's body, based on measured values of said voltage drops; and

determining the impedance of said patient's body by using the measured value of the voltage drop due to said patient's body and said obtained correlation formula.

5,611,352

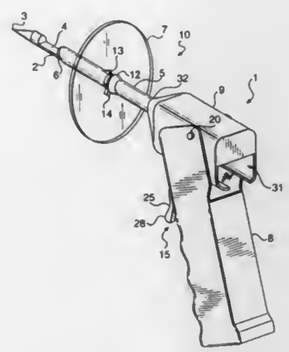
CERVICAL BIOPSY DEVICE

Myles S. Kobren; Staci L. Kobren, both of 18 The Grasslands, Woodbury, N.Y. 11797, and Joseph C. Segen, 1 Hawthorne La., Manhasset, N.Y. 11030

Filed Sep. 14, 1995, Ser. No. 528,249

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—751 **12 Claims**



1. A biopsy device for extracting tissue, the device comprising:

a handle;

a stylet attached to the handle and having a sharp tip extending outward therefrom for insertion into tissue, the stylet including a cradle in an outer surface between the tip and the handle for receiving tissue;

a sheath surrounding a portion of the stylet and movable with respect thereto, the sheath having a cutting edge for cutting tissue and filling the cradle with a tissue sample;

means for moving the sheath across the cradle; and

a transparent barrier means positioned on the sheath and moveable therewith for limiting movement of the stylet and the sheath into tissue.

5,611,353

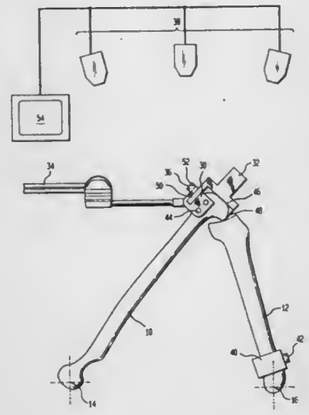
METHOD AND APPARATUS FOR LOCATING FUNCTIONAL STRUCTURES OF THE LOWER LEG DURING KNEE SURGERY

Mark N. Dance; Aldo T. Salvestrao, and Geoffrey F. Auchinleck, all of Vancouver, Canada, assignors to Osteonics Corp., Allendale, N.J.

Continuation of Ser. No. 449,574, May 24, 1995, abandoned, which is a continuation of Ser. No. 81,028, Jun. 21, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 585,601

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—782 **11 Claims**



1. A method of intra-operatively locating the functional center of the hip for knee joint arthroplasty comprising the steps of:

(a) locating and marking a point on the femur of a patient;

(b) holding the acetabulum of the patient relatively fixed so that displacement of the head of the femur is resisted;

(c) repeating a minimum of three times the steps of:

(i) rotating the femur to a discrete location; and,

(ii) measuring a change in position of the marked point on the femur occurring to reach the discrete location; and

(d) using the measured position changes to locate the center of an imaginary sphere, the surface of which includes all of the discrete locations, whereby said sphere center substantially corresponds to the center of the hip.

5,611,354

CARDIAC PROTECTION DEVICE

Neville Alleyne, 9687 Claiborne Sq., La Jolla, Calif. 92037

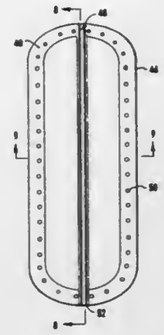
Continuation of Ser. No. 152,433, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 975,106, Nov. 12, 1992, abandoned. This application May 12, 1995, Ser. No. 440,363

Int. Cl.[6] A61F *5/37;13/00*

U.S. Cl. 128—846 **18 Claims**

1. A biocompatible cardiac protection device to minimize the postoperative formation of adhesions between the heart and the sternum, comprising:

a pliable shield having an anterior and a posterior face and attachment means positioned along the periphery of the



shield, wherein the shield extends in a longitudinal length direction and in a transverse width direction, such that the length of the shield is greater than the width.

5,611,355

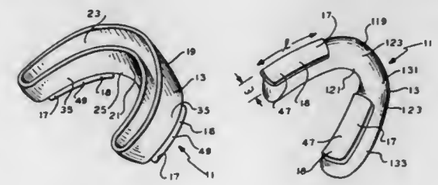
SNORING AND SLEEP APNEA DEVICE

Kenneth L. Hilsen, 55 North Ave., Fort Lee, N.J. 07024

Continuation of Ser. No. 75,801, Jun. 14, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 416,431

Int. Cl.[6] A61F *5/56*

U.S. Cl. 128—848 **12 Claims**



1. A device which can be molded to fit a particular user for preventing interference with normal breathing during sleeping comprising:

a substantially U-shaped upper mounting means having a front face, a rear face, and upper and lower surface portions, said, upper surface portions adapted to be engaged with the upper dentitions of said user;

a substantially U-shaped lower mounting means having a front face, a rear face, and upper and lower surface portions, said lower surface portions adapted to be engaged with lower dentitions of said user; and

releasable fastening means affixed to said lower and upper surface portions of said upper and lower mounting means, respectively,

wherein said releasable fastening means are formed of a plurality of interconnecting members,

comprising a plurality of interlocking fastening members.

5,611,356

SURGICAL DRAPES HAVING TAPE ATTACHMENT STRIPS

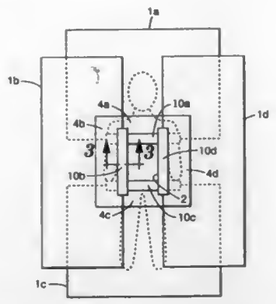
Robert J. Rothrum, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 273,500, Jul. 11, 1994. This application Feb. 12, 1996, Ser. No. 600,391

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—849 **16 Claims**

1. A universal surgical drape kit, comprising:



a plurality of surgical drape panels each having a top surface and a bottom surface; and

a plurality of tape attachment strips comprising a backing, an adhesive layer covering one side of the backing, and a liner, wherein at least two of the surgical drape panels comprise a tape attachment strip adhesively attached to the top surface and along at least a portion of one edge of the drape panels, wherein a second portion of the tape attachment strips overhangs the drape panels and is covered with the liner, and wherein the drape kit, when assembled against a patient to provide a drape with a fenestration, comprises tape attachment strips that overlap at the corners of the fenestration, thereby providing a leak free seal between the patient and the top surface of the drape along the corners and edges of the fenestration.

5,611,357

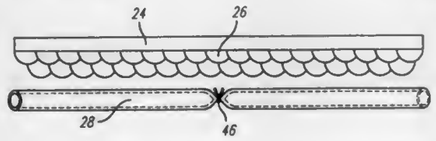
METHOD AND APPARATUS FOR TREATING VARICOSE VEINS

William D. Suval, 15201 Eleventh St., Suite 300, Victorville, Calif. 92392

Filed Feb. 9, 1995, Ser. No. 385,794

Int. Cl.[6] A61B *19/00;17/08*

U.S. Cl. 128—898 **9 Claims**



1. A minimally invasive method for treating a varicose vein, comprising the steps of:

ligating the junction between said vein and deep veins of the patient's leg;

opening at least one small incision through a skin layer adjacent to a varicose region of said vein;

at least partially obstructing said vein through said at least one small incision; and

closing said at least one small incision.

5,611,358

METHOD AND APPARATUS FOR TREATING VARICOSE VEINS

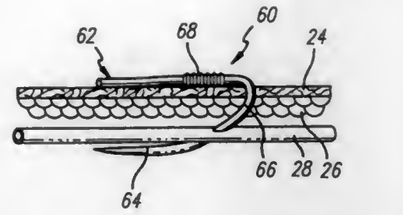
William D. Suval, 15201 Eleventh St. Suite 300, Victorville, Calif. 92392

Filed Sep. 8, 1995, Ser. No. 525,843

Int. Cl.[6] A61B *19/00;17/08*

U.S. Cl. 128—898 **6 Claims**

1. A minimally invasive method for treating a varicose vein, comprising the steps of:



ligating the junction between said vein and deep veins of the patient's leg;

piercing through a skin layer adjacent to a varicose region of said vein with a sterile closure such that at least a portion of said sterile closure remains external to the skin layer;

at least partially obstructing said vein with said sterile closure to promote scarring of said vein; and

removing said sterile closure after a sufficient amount of scarring of said vein has occurred, such that said vein is permanently closed.

5,611,359

PREDRYING APPARATUS FOR A FILTER CIGARETTE MANUFACTURING SYSTEM

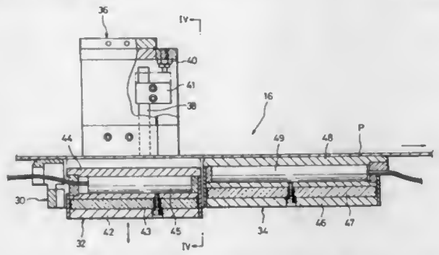
Shinji Ogura, and Tatsuya Hasegawa, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 408,865

Claims priority, application Japan, Mar. 31, 1994, 6-063706

Int. Cl.[6] A24C *5/26;5/47*

U.S. Cl. 131—88 **29 Claims**



1. A predrying apparatus for heating tip paper traveling along a tip paper transport path of a filter attachment machine of a filter cigarette manufacturing system to preliminarily dry paste applied to the tip paper, the apparatus comprising:

detecting means for detecting at least one first parameter value which affects predried state of the paste;

heating means for heating a predetermined surface of the tip paper; and

heat control means for changing a degree to which the tip paper is heated by said heating means, in accordance with the detected value of said at least one first parameter, a rate at which the degree of heating the tip paper is promoted being reduced with an increase in the promoting rate during promotion of the heating degree.

5,611,360

SMOKING ARTICLE

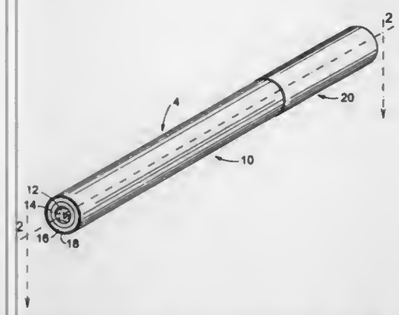
Jiunn-Yann Tang, Louisville, Ky., assignor to Brown & Williamson Tobacco Corp., Louisville, Ky.

Continuation of Ser. No. 69,126, May 28, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 284,251

Int. Cl.[6] A24F *1/22*

U.S. Cl. 131—194 **28 Claims**

1. A cigarette-type smoking article consisting of:



a smoking section defined by a longitudinally extending porous charcoal fuel tube circumscribing a longitudinally extending porous ceramic insulating tube, said porous ceramic insulating tube circumscribing a longitudinally extending core of a porous aerosol-generating composition; and,

a mouthpiece attached at one end of the smoking section of said smoking article.

5,611,361

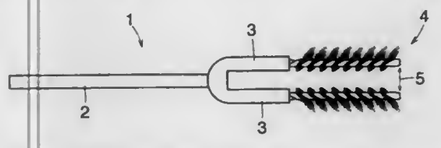
MASCARA APPLICATION SYSTEM

Erlinda D. Leone, Chestnut Ridge, N.Y., assignor to Revlon Consumer Products Corporation, New York, N.Y.

Filed Jun. 14, 1995, Ser. No. 490,324

Int. Cl.[6] A45D *40/26*

U.S. Cl. 132—218 **18 Claims**



1. A device for applying mascara to the eyelashes comprising, in combination:

a) a wand having at one end thereof a single stem and at the other end a plurality of stationary tines

b) a plurality of applicator members corresponding to the number of tines, wherein one applicator member is affixed to each tine and the distance between the applicator members on adjacent tines is 0.10 to 0.50 inch.

5,611,362

MIRRORED COSMETIC CONTAINER

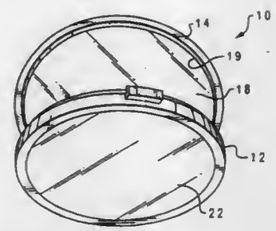
Christina M. Duncan, P.O. Box 595217, Dallas, Tex. 75359, and Marie B. Duncan, 7148 E. Mockingbird La., Dallas, Tex. 75214

Filed Feb. 24, 1995, Ser. No. 393,811

Int. Cl.[6] A45D *42/02*

U.S. Cl. 132—301 **1 Claim**

1. A hand held cosmetic container having a top cover and a bottom cover which are hinged together for movement between open and closed positions of said cosmetic container, said bottom cover defining a cosmetic compartment for containing cosmetics, said top cover including a magnifying mirror secured to an interior portion of said top cover and facing said bottom cover in a closed position of said cosmetic container, said magnifying mirror being viewable by a person using said cosmetic container while held in a person's hand in an open position of said cosmetic container, and a plain mirror secured to an outside portion of said bottom cover and facing outwardly from said bottom cover whereby, in an open position of said cosmetic container, a person using said cosmetic container may view said magnifying mirror while applying cosmetics to one's face and said cosmetic container may be oriented by said person while held in said person's hand such that said person may view the plain mirror on said bottom cover while said cosmetic container is in a closed position of said top cover with respect to said bottom cover.



5,611,363

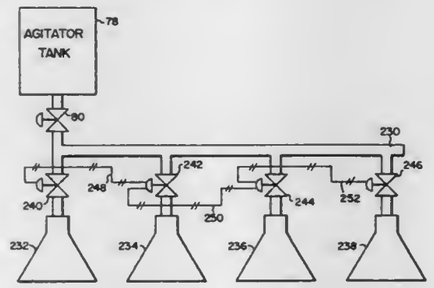
OIL SPILL CLEANER

Willis R. Campbell, Olathe; Forrest L. Robinson, Mission, both of Kans.; Bruce A. Perry, Fenton, Mo., and Dan Schwiefert, Overland, Kans., assignors to Separation Oil Services, Inc., Mission, Kans.

Division of Ser. No. 454,610, May 31, 1995, which is a division of Ser. No. 226,754, Apr. 12, 1994, Pat. No. 5,423,340, which is a division of Ser. No. 880,141, May 7, 1992, Pat. No. 5,316,029. This application Jun. 11, 1996, Ser. No. 661,430

Int. Cl.[6] B08B *13/00*

U.S. Cl. 134—110 **2 Claims**



1. A system for cleaning oil spills on earth which may include sand which comprises:

an agitator tank having an inlet and an outlet;

an oil/water mixture source;

means to connect said oil/water source to said agitator tank;

a fluid manifold connected to the outlet of said agitator tank;

said manifold having multiple outlets;

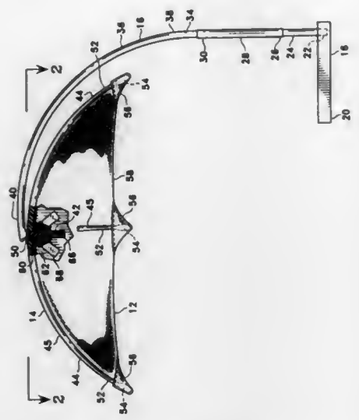
a centrifugal separator for each said outlet;

means to connect each outlet to one separator;

a control valve in one of said outlets, said control valve having a character of limiting the maximum flow of fluid therethrough to its associated separator and having the ability to generate a first output signal upon reaching a selected flow capacity; and

a second control valve limiting the flow therethrough and of a character to open when it receives said first output signal.

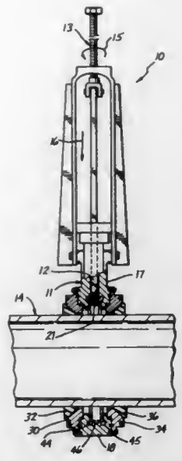
5,611,364
PORTABLE SHADE UMBRELLA
John G. Woods, and Maribeth Woods, both of 3933 Benton Blvd., Kansas City, Mo. 64130
Filed Aug. 29, 1995, Ser. No. 520,490
Int. Cl.[6] A45B *11/00*
U.S. Cl. 135—21 **10 Claims**



1. A portable shade umbrella comprising:
a. a base having a supporting pole threadably attached thereto, said supporting pole having a vertical portion and an upper curved portion terminating in an upper end, wherein said base further comprises a U-shaped base having a threaded pole receiving aperture in a bottom portion of said U-shape of said base;
b. a downwardly depending stud fixed to said upper end of said curved portion of said supporting pole;
c. a rib member assembly comprising a plurality of pairs of ribs, with said rib member assembly connected to an underlying superposed canopy; and
d. means for securing said canopy to said ribs members to form a canopy and rib assembly and means for attaching said canopy and rib member assembly to said stud.

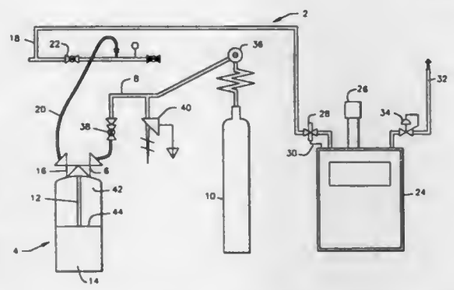
5,611,365
VALVE INSERTION METHOD AND ASSEMBLY FOR INSERTING A VALVE IN A LINE
Jeffrey L. Maichel, International Flow Technologies, Inc., 30230 Los Alamos Rd., Murrieta, Calif. 92563
Filed Feb. 22, 1996, Ser. No. 603,884
Int. Cl.[6] F16K *43/00;3/02;3/30*
U.S. Cl. 137—15 **14 Claims**

1. A method for inserting a valve in a line, comprising:
providing a valve assembly having a valve body that includes two sections adapted to be assembled together over an existing pipe and a gate that includes a portion adapted to cut through the pipe as the gate is advanced from an open position of the gate to a closed position of the gate;
installing the valve assembly on the existing pipe with the gate in the open position; and
moving the gate to the closed position to thereby cut through the pipe;
wherein the valve body is adapted to be rotated on the pipe as the gate is advanced to the closed position;
wherein the gate includes at least one protrusion adapted to cut through the pipe as the gate is advanced toward the closed position while the valve body is rotated on the pipe; and



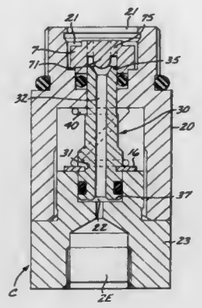
wherein the step of moving the gate toward the closed position includes rotating the valve body on the pipe while advancing the gate toward the closed position so that the protrusion cuts through the pipe.

5,611,366
METHOD AND APPARATUS FOR PRODUCING A VAPORIZED FUEL STREAM
Geoffrey K. Creffield, Chessington; Ian F. Chapman, Alton; Janice C. Aitken, Kingston; Mark Cole, Banstead, all of England; George R. White, III, North Plainfield, and Harbhajan S. Nayar, New Providence, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.
Filed Jun. 19, 1995, Ser. No. 492,278
Int. Cl.[6] G05D *7/06*
U.S. Cl. 137—209 **7 Claims**



1. A process for producing a vaporized fuel stream comprising:
a) injecting an inert gas into a pressurized container containing a liquified gaseous fuel at a pressure sufficient to generate a stream of liquid fuel and at a rate such that the temperature in said container remains generally constant when said fuel is removed;
b) removing the stream of fuel from said container; and
c) transforming the fuel stream into a vaporized fuel stream.

5,611,367
IN-LINE VALVE FOR A MASTER CYLINDER
Choi Jae Young, Seoul, Rep. of Korea, assignor to Mando Machinery Corporation, Rep. of Korea
Filed Dec. 27, 1995, Ser. No. 579,006
Claims priority, application Rep. of Korea, Dec. 27, 1994, 1994-36426
Int. Cl.[6] G05D *16/10*
U.S. Cl. 137—505.25 **2 Claims**

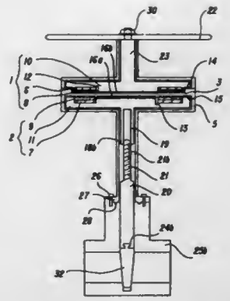


1. An in-line valve of a master cylinder comprising:
a body having a first port communicating with an outlet of a master cylinder and a second port communicating with an oil passage;
a piston arranged slidably in said body, said piston having an internal passage intercommunicating with said first and second port;
a popper valve placed adjacent to said first port and being in contact with said internal passage of said piston;
a resilient means arranged around said piston for separating said piston and said popper valve;
said resilient means constructed of a single piece having first and second parallel portions, said first parallel portion having first and second ends, said second parallel portion having first and second ends, and a slanted portion in which said first end of said first parallel portion connects with said second end of said second parallel portion, said first and second parallel portions and said slanted portion having coaligned openings formed therein for guiding said piston.

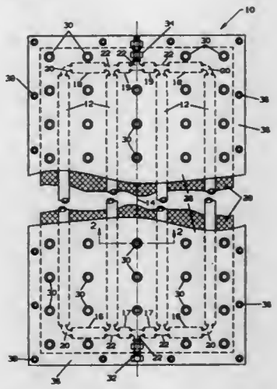
5,611,368
VALVE HAVING MAGNETIC FORCE TRANSMISSION APPARATUS
Sung-Tai Hwang; Jong-Hyeun Choi; Tae-Joon Kim; Yun-Dong Choi, all of Daejeon-Si, and Byung-Real Jo, Seoul, all of Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-Si, Rep. of Korea
Filed May 2, 1995, Ser. No. 432,625
Claims priority, application Rep. of Korea, May 2, 1994, 94-9630; Apr. 11, 1995, 95-8372
Int. Cl.[6] F16K *37/00;31/11*
U.S. Cl. 137—553 **20 Claims**

1. A valve having a magnetic force transmission apparatus, comprising:
a closed body for sealingly enclosing internal components and a rotation shaft of said valve, said internal components, said rotation shaft, and said closed body being configured to interrupt leakage of fluid from said valve and maintain airtightness;
a separation plate separating an internal cavity of said closed body into a first chamber and a second chamber;
a pair of permanent magnet plates opposingly disposed with respect to each other, with a first permanent magnet plate of said pair of permanent magnet plates being disposed in said first chamber, and a second permanent magnet plate of said pair of permanent magnet plates being disposed in said second chamber, said first and second permanent magnet plates being separated by said separation plate, said pair of permanent magnet plates allowing said valve to open/close, each of said pair of permanent magnet plates comprising a yoke and at least one permanent magnet piece, said pair of permanent magnet plates being disposed to provide a magnetic force relative to each other, said pair of permanent magnetic plates transmitting rotating power to each other and to said internal components using the magnetic force thereof, to open/close the valve; and
rotation means for imparting rotation to said first magnetic plate, whereby a rotation of said first magnetic plate is transmitted to said second magnetic plate by the magnetic force thereof, thereby opening and closing the valve by movement of the internal components.

11. A valve having a magnetic force transmission apparatus as claimed in claim 1, further comprising an opening/closing confirming device for externally determining whether a valve member in which a stem moves up and down is opened or closed.



5,611,369
CONCRETE HYDRATION SYSTEM
Reynold R. Hamann, Jr., 61 Holliston Ave., Portsmouth, R.I. 02871
Filed Jan. 30, 1995, Ser. No. 380,494
Int. Cl.[6] C04B *41/00;* **B05D** *1/28*
U.S. Cl. 137—561 A **19 Claims**



1. A unit particularly adapted for use in hydrating concrete comprising a plurality of spaced, pervious soaker tubes extending parallel to a longitudinal axis from a first end to a second end, a manifold tube extending generally perpendicular to the longitudinal axis disposed at each of the first and second ends and being in fluid receiving communication with each of the plurality of soaker tubes, a water supply coupling means attached to the manifold

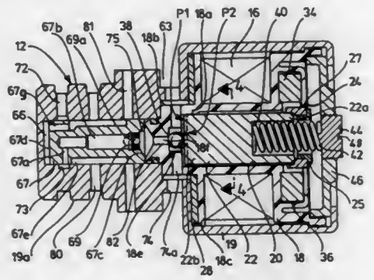
tubes at one of the first and second ends, an upper layer of impervious material disposed over the soaker tubes and manifold tubes and a lower layer of pervious material disposed under the soaker tubes and the manifold tubes, the upper and lower layers being attached to one another capturing the soaker tubes and manifold tubes therebetween.

5,611,370

PROPORTIONAL VARIABLE FORCE SOLENOID CONTROL VALVE AND TRANSMISSION FLUID CONTROL DEVICE

Hamid Najmolhoda, Grandville, Mich., assignor to Saturn Electronics & Engineering, Inc., Auburn Hills, Mich.

Filed Nov. 10, 1994, Ser. No. 337,613
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—625.61 **25 Claims**



1. A proportional variable force solenoid valve for controlling the pressure of a pressurized fluid in a fluid control system in proportion to the current level of an electrical input signal, comprising a movable valve for controlling the pressure of pressurized fluid in said fluid control system, a solenoid for controlling movement of the movable valve, said solenoid comprising a spring biased armature, an electromagnetic coil for generating a variable electromagnetic field and means for generating a permanent magnetic field with which said variable electromagnetic field interacts to move said spring biased armature between first and second fluid pressure control positions, and a common housing in which said valve and said solenoid are disposed, said common housing comprising a substantially non-magnetic material having little, if any, magnetic permeability and having a housing wall disposed about an outer periphery of said coil without an intervening magnetically permeable housing between said housing wall and said outer periphery of said coil.

5,611,371

SHIFT/REGULATING VALVE FOR CONTROLLING AN HYDRODYNAMIC TORQUE CONVERTER FOR AN AUTOMATIC TRANSMISSION

Hans-Peter Wirtz, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1996, Ser. No. 629,156
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—625.64 **8 Claims**

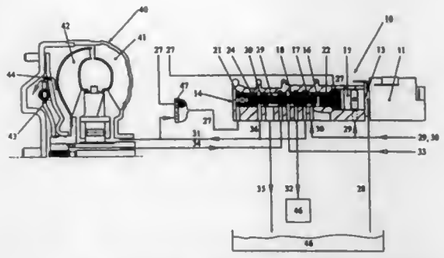
1. A shift/regulating valve for controlling an hydrodynamic torque converter for an automatic transmission, comprising:

a shifting component;

a valve body defining a control pressure chamber for a fluid medium having an end facing the shifting component, an end remote from the shifting component, and a guide bore extending from the control pressure chamber to the end remote from the shifting component;

a spool disposed slidably in the guide bore and having at least one control groove thereon;

a control pressure outlet from the control pressure chamber;



a first pressure connection to the control pressure chamber;

a second pressure connection connecting at least one working chamber with at least one outlet;

a resilient element for biasing the spool toward the shifting component, wherein a second pressure connection is connected to an outlet through a control groove;

a control member located in the control pressure chamber, having a first end remote from the shifting component projecting into the guide bore, and a longitudinal bore connecting the control pressure chamber to a regulating pressure chamber bounded by the spool and the control member; and

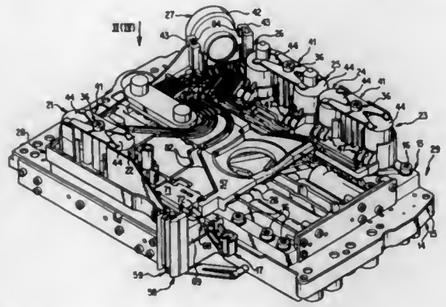
a pressure connection terminating in the end of the control pressure chamber remote from the shifting component.

5,611,372

ARRANGEMENT OF SOLENOID VALVES, A CENTRAL PLUG AND A PRINTED CIRCUIT BOARD ON A CONTROL HOUSING OF AN AUTOMATIC SHIFT DEVICE OF A TOOTHED-WHEEL VARIABLE-SPEED GEARBOX

Ludwig Bauer, Stuttgart; Jürgen Semler, Alfdorf; Martin Krohn, Weinstadt, and Franz Schlitzer, Hagen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, and Leopold Kostal GmbH & Co. KG, Luedenscheid, both of Germany

Filed Dec. 27, 1994, Ser. No. 364,210
Claims priority, application Germany, Dec. 24, 1993, 43 44 584.5
Int. Cl.[6] F16K *31/02*
U.S. Cl. 137—884 **20 Claims**



1. In an arrangement of electrically drivable solenoid valves having solenoid valve housings, a central plug and a printed circuit board on a control housing having housing support faces and a reference plane, in which arrangement the printed circuit board is aligned essentially parallel and valve axes of the solenoid valves are aligned perpendicular with respect to the reference plane, and further in which the housing support faces which support the solenoid valves and the printed circuit board lie in each case in housing planes parallel to the reference plane, and are provided on an upper side of the control housing in an installation position,

wherein the printed circuit board is fixed in position with respect to the control housing both in a direction parallel to the reference plane and in a direction perpendicular to the reference plane and pointing away from the control housing via attachments having corresponding bearing faces in relation to the housing support faces of the control housing, and

wherein the solenoid valves are fixed in position with respect to the control housing in a direction parallel to the reference plane via a positively engaging seating of a valve housing base which is coaxial to the valve axis in a corresponding receptacle and in a direction perpendicular to the reference plane and pointing away from the control housing via retainers, said retainers engaging in each case on a corresponding counteracting face of the solenoid valve housing of a solenoid valve, and a socket of the central plug being secured in a receptacle which is fixed in position with respect to the control housing,

the improvement comprising:

through-holes in the printed circuit board for both the solenoid valves and the receptacle for the socket of the central plug,

wherein the retainers are anchored on the printed circuit board and on said corresponding counteracting faces of the associated solenoid valve housing at a side opposite the control housing, and

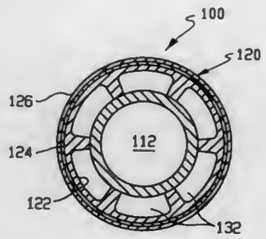
wherein the support faces which support the printed circuit board adjacent an axis of the respective retainer are disposed together with the support faces which support the solenoid valves of the control housing.

5,611,373

LAMINATED FUEL LINE AND CONNECTOR

Timothy A. Ashcraft, Dover, Ohio, assignor to Handy & Harman Automotive Group, Inc., Dover, Ohio

Filed Apr. 27, 1995, Ser. No. 430,038
Int. Cl.[6] F16L *9/18*
U.S. Cl. 138—113 **20 Claims**



1. A fuel line comprising:

a tubular inner layer of a petroleum resistant material having a central bore forming an inner passageway for fluid;

a vapor barrier layer comprising at least one of a metal coated polyethylene terephthalate polyvinyl fluoride or a metal coated polyethylene terephthalate polyvinyl difluoride concentrically formed around said inner layer; and

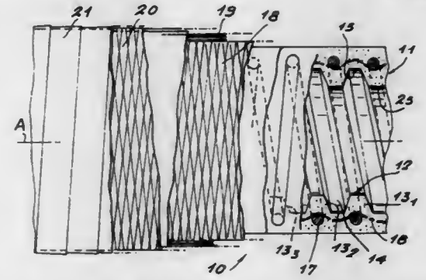
an outer layer concentrically formed around said barrier layer, wherein said barrier layer minimizes permeation of fuel components to said outer layer to minimize escape of fuel components into the environment.

5,611,374

THERMALLY INSULATING PIPE LAGGING AND METHOD OF MANUFACTURE

Philippe Blin, Monts, and Daniel Mahin, Savonnieres, both of France, assignors to Hutchinson, Paris, France

PCT No. PCT/FR94/00348, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/23238, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 29, 1994, Ser. No. 338,612
Claims priority, application France, Mar. 30, 1993, 93 03657
Int. Cl.[6] F16L *7/14*
U.S. Cl. 138—149 **10 Claims**



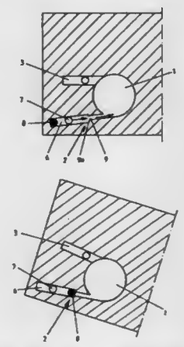
1. Thermally insulating pipe lagging of the type comprising a tube designed to come into contact with a pipe to be insulated and which is shaped on its inside surface to have a helical groove that forms a coil between adjacent turns of said groove, said coil being filled with air or gas when the lagging is in place surrounding said pipe, wherein said tube is constituted by a compact and flexible elastomer type material and said tube includes a fine textile grid or support cloth of the type having considerable bi-elastic deformation or having great deformability in two orthogonal directions, and reinforcement in the form of a helical winding.

5,611,375

ARRANGEMENT FOR OVERFILL PROTECTION OF A CONTAINER FOR ANAESTHETIC LIQUID

Jukka Kankkunen, and Erkki Heinonen, both of Helsinki, Finland, assignors to Instrumentarium Corp., Finland

Filed Jan. 18, 1995, Ser. No. 373,979
Claims priority, application Finland, Jan. 24, 1994, 940340
Int. Cl.[6] A61M *16/18;* **B67D** *5/34*
U.S. Cl. 141—18 **12 Claims**

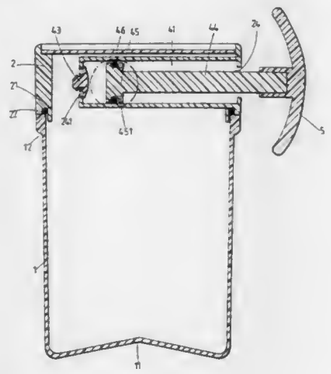


1. An arrangement for overfill protection of a container for anaesthetic liquid, comprising a liquid conduit for supplying anaesthetic liquid to a container for vaporization or withdrawing anaesthetic liquid from the container, and a gas conduit for withdrawing a volume of gas equivalent to the filling of anaesthetic liquid from the container or respectively supplying a volume of gas equivalent

to the withdrawal of anaesthetic liquid to the container, the liquid conduit from a feed point for anaesthetic liquid to the container comprising an inclined duct portion having an inlet through which the anaesthetic liquid is passed to the inclined duct portion and an outlet through which the anaesthetic liquid is passed out from the duct portion and further to the container, and said arrangement further comprising a body which is positioned in the inclined duct portion such that said body can move in the inclined duct portion from a first position to a second position and vice versa, depending on the inclined position of the container, said body being adapted to move into the first position when the container is tilted more than the angle of inclination of the inclined duct portion and adapted to move into the second position when the container is not tilted more than the angle of inclination of the inclined duct portion, wherein the body prevents the flow of anaesthetic liquid through the liquid conduit into the container when the body is in the first position and the body permits the flow of anaesthetic liquid through the liquid conduit into the container when the body is in the second position;

wherein further the angle of inclination is in the range of 5° to 20°.

5,611,376
VACUUM CONTAINER
Shiao-Cheng Chuang, No. 143, Chung Yi Rd., Tao Yuan, Taiwan
Filed May 16, 1995, Ser. No. 442,093
Int. Cl.[6] B65B *51/16*
U.S. Cl. 141—65 **3 Claims**



1. A vacuum container comprising:

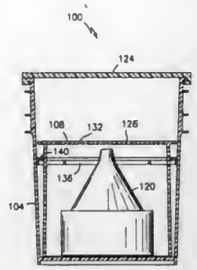
a) a housing including a dosed bottom side and an upwardly extending annular wall terminating in a flange defining a top opening;

b) a cover including a top wall and a downwardly extending annular side wall terminating in a bottom edge provided with an annular groove, a sealing ring disposed within the annular groove, the cover being engageable on the housing to dispose the sealing ring in sealing engagement with the flange of the housing and define an enclosed spaced therebetween;

c) a recess formed in the top wall of the cover adjacent the side wall, the recess including a bottom wall provided with a vent means formed therein and a valve means disposed within the recess for opening and closing the vent means; and

d) an opening formed in the side wall of the cover, and an elongate pump means extending inwardly of the opening and disposed within the enclosed space for drawing air from the enclosed space.

5,611,377
FUEL FILTER DRAINER
John R. Maguire, 181 Old Wendell Rd., Northfield, Mass. 01360
Filed Jun. 30, 1995, Ser. No. 496,923
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—98 **17 Claims**



1. A device for facilitating the draining of fluid from at least one filter, the device comprising:

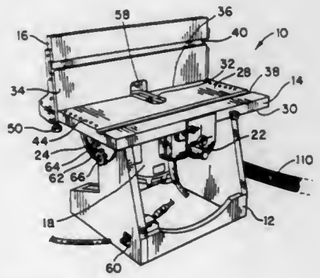
a. a bucket having a closed bottom, an open top and at least one side wall, the bucket being operable to hold fluid;

b. a basket disposed at least partially within the bucket, the basket having a lower surface with at least one perforation formed therein, the lower surface being operable to hold the at least one filter thereon, whereby when the at least one filter is disposed on the lower surface, any fluid in the filter drains through the at least one perforation and is collected at the closed bottom of the bucket;

c. means for holding the basket at least partially within the bucket, the means for holding the basket being operable to support a bottom surface of the basket to thereby hold the basket in a predetermined position with respect to the bucket; and

d. a funnel adapted to be disposed within the bucket during storage of the device.

5,611,378
TILTING ROUTER TABLE
Kenneth M. Brazell, Phoenix, Ariz., assignor to Ryobi North America, Easley, S.C.
Filed Jan. 19, 1996, Ser. No. 588,900
Int. Cl.[6] B27C *5/00*
U.S. Cl. 144—135.2 **17 Claims**



17. A router table comprising:

a base;

a primary table pivotally attached to the base and shiftable between a generally horizontal position and a generally vertical position, said primary table having a generally planar support surface and an opposed surface and a slot extending therebetween, said primary table forming a plurality of alignment holes thereon;

a fence affixable perpendicularly with respect to the primary table, said fence having a generally planar support surface, which collectively with the primary support surface would support a workpiece, the workpiece being movable along a longitudinal axis parallel to the primary table and the fence, said fence including a plurality of pins extending therefrom for selective engagement within said alignment holes for shiftably positioning said fence transversely with respect to said primary table;

a router mounting plate shiftably attached to the opposed surface of the primary table adjacent the slot extending therethrough, said mounting plate being adapted to receive a router having a router axis generally perpendicular to the primary table support surface and having an aperture formed through the support surface aligned with the slot extending through the primary table to enable a rotary cutting tool mounted in the router to extend beyond the primary table support surface to engage a workpiece;

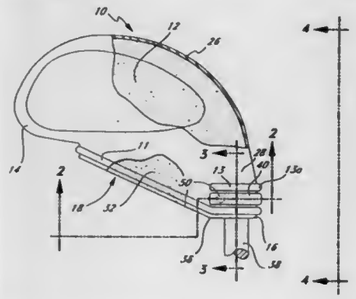
a vacuum tube positioned adjacent said slot near said opposed surface of said primary table;

a locking mechanism removably securing said fence with respect to said primary table;

an adjustment mechanism cooperating with the router mounting plate and the primary table enabling the user to transversely vary the position of the router mounting plate relative to the primary table thereby enabling the location of the rotary cutter to be varied with respect to the workpiece; and

a tilting mechanism enabling a table subassembly including the primary table, fence, router mounting plate, adjustment mechanism, and the router to be pivoted relative to the base and locked in at least two positions, a primary position where the primary table is generally horizontal and the router axis is oriented vertically and a secondary position where both the fence and the router axis are generally horizontal.

5,611,379
ENLARGED IRON COVER
David Hoyt, 1136 W. 135th St., Gardena, Calif. 90247, and Gary T. Aldcroft, 3717 California Ave., Long Beach, Calif. 90807
Filed May 4, 1995, Ser. No. 434,517
Int. Cl.[6] A63B *57/00;* **B65D** *65/08*
U.S. Cl. 150—160 **6 Claims**

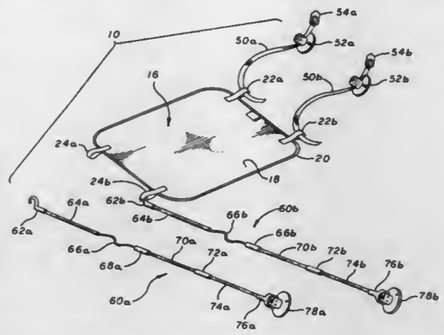


1. A head cover for an iron golf club which has a head connected to a shaft by a hosel member, said head cover including

an enlarged cover section which fits over the head of irons of different sizes, said cover section having an internal cavity with an enlarged open mouth through which the head passes upon placing the cover section over said head and a protector section which covers at least partially the hosel member when the head is received within the cavity, said protector section having at least one opening therethrough, and

means defining a clip connected to said covet section near the open mouth for expanding with the shaft of the iron golf club as the shaft is pushed into the cavity and for then retracting to hold the shaft when the head is received within the cavity, said means defining a clip having at least one element extending inwardly of said cover section through said opening.

5,611,380
COLLAPSIBLE SUNSHADE AWNING
Richard Landy, Castaic, Calif., assignor to Auto-Shade, L.L.C., Moorpark, Calif.
Filed Nov. 30, 1995, Ser. No. 565,218
Int. Cl.[6] E04F *10/02*
U.S. Cl. 160—76 **11 Claims**



1. A collapsible awning for temporary attachment to a structure comprising:

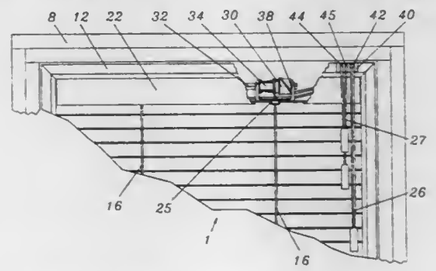
a flexible frame forming at least one collapsible closed loop;

a flexible sheet disposed upon the frame to define a central region;

at least one fastener detachably coupled to a first portion of the sheet such that the first portion is detachably attached to the structure; and,

at least one rod with a first end detachably coupled to a second portion of the sheet, wherein the first end of the rod includes a hook, and a second end coupled to a second fastener detachably attached to a second surface such that the sheet can provide a covering.

5,611,381
WINDOW HAVING A BLIND BETWEEN TWO PANES OF GLASS
Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.
Filed Nov. 8, 1995, Ser. No. 555,133
Int. Cl.[6] E06B *3/32*
U.S. Cl. 160—107 **18 Claims**

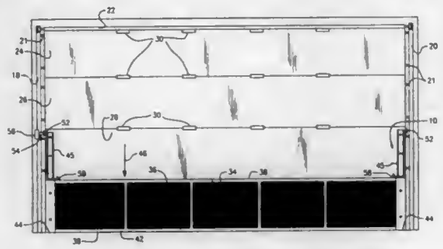


1. A double pane window comprised of

a. a window frame;

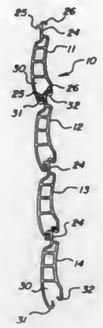
b. an exterior pane of glass attached to the window frame;
c. an interior window panel comprised of a pane of glass seated in a housing, the housing having a top edge which has a slot cut therein, the interior window panel being mounted within the window frame;
d. a cord guide positioned within the slot in the housing, the cord guide having a top which is flush with the top edge of the housing and further having at least one lift cord slot and at least one tilt cord slot; and
e. a blind positioned between the exterior pane of glass and the interior window panel, the blind having at least one lift cord which passes through the lift cord slot and at least one tilt cord which passes through the tilt cord slot.

5,611,382
GARAGE DOOR SCREEN ASSEMBLY
Carl Sferra, 4608 Weybridge, Sarasota, Fla. 34235
Filed Sep. 12, 1995, Ser. No. 527,074
Int. Cl.[6] E06B *3/48*
U.S. Cl. 160—113 **17 Claims**



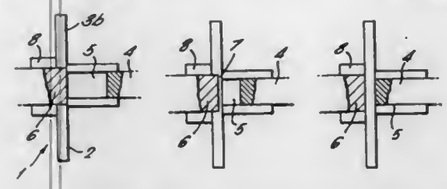
1. A retractable screen assembly in combination with a standard garage door that is selectively raised and lowered to open and close a garage, said assembly comprising:
a screen panel that extends across an inside surface of the garage door;
means for slidably mounting said screen panel to the inside surface of the garage door such that said panel is alternatable between a retracted condition wherein said panel is held in substantially parallel juxtaposition against the garage door, with at least a majority of said panel positioned substantially above a bottom edge of the garage door, and an extended condition wherein said panel depends from the lower edge of the garage door and engages a floor of the garage when the garage door is raised;
means for releasably locking said panel in said retracted condition to permit the garage door to be raised with said panel in said retracted condition, said means for locking being selectively released to permit said panel to slide into said extended condition when the garage door is raised;
means for automatically raising the garage door; and
means for deactivating said means for raising to stop the garage door in a predetermined position, said means for deactivating including switch means for alternating between a first state in which said mean for raising are activated and a second state in which said means for raising are deactivated, and switch actuator means attached to the garage door for engaging said switch means and alternating said switch means from said first state to said second state to deactivate said means for raising when the garage door is in said predetermined raised position.

5,611,383
REINFORCED ROLL-UP SHUTTER
Robert E. Hoffman, 5618 Riviera Dr., Coral Gables, Fla. 33146
Continuation of Ser. No. 283,353, Aug. 1, 1994, abandoned.
This application Apr. 5, 1996, Ser. No. 630,938
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 **4 Claims**



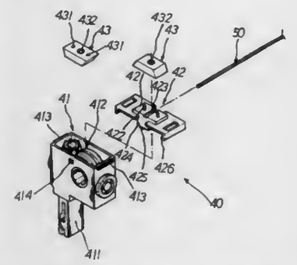
1. In a roll-up type shutter comprising numerous horizontally elongated substantially identical slats which are normally arranged in edge-to-edge relationship and are pivotally connected together along their adjacent edges for arranging the shutter either in an open condition, in which the slats are arranged generally co-planar for covering a building opening, or for rolling the shutter slats around a common axis for uncovering said opening, the improvement comprising:
each slat having an elongated, generally flattened body portion having a forward face and a rear face and an upper and a lower elongated edge portion;
the upper edge portion being formed with a flange, said flange being bifurcated to form a pair of oppositely extending, downwardly and outwardly bent hooks, each hook having a curve portion and an end portion extending from said curve portion providing an overall inverted U-shape so that the U of opposite hooks is substantially the same size, so that one hook is generally arranged at the forward face and the other hook is generally arranged at the rear face of the slat and the hook which engages the rear face positioned above the hook which engages the forward face;
the lower edge portion having a downwardly opening groove whose side walls terminate in inwardly and upwardly curved edge parts which form a pair of upwardly bent, spaced apart, interior channels, each curved edge part having a curve portion and an end portion extending from said curve portion wherein said channel adjacent said forward face being deeper than the other channel;
and with the pair of hooks on the upper edge of each slat normally engaging the edge parts of the corresponding pair of channels in the lower edge of the next adjacent slat such that said curve portion of each hook engaging its respective end portion of said curved part and said hook end portion extending into said curve portion of said curved edge part for suspending one slat beneath another and for providing a pivotal connection between the adjacent slats;
and with the adjacent slats arranged to pivot around the engaged hook and channel located at the forward face while the hook, which is engaged normally in the channel located at the rear face, may move generally outwardly of its respective channel when the adjacent slats pivot;
and the engaged hooks and channels of the slats forming the shutter, providing reinforcing strips along the width of the open shutter to resist penetration of the shutter by a forcefully applied article impacted against the shutter.

5,611,384
DISPLAY SYSTEM
Wallace T. Carter, 118 Holiday Hills Dr., Wilmington, N.C. 28409
Filed Aug. 28, 1995, Ser. No. 520,177
Int. Cl.[6] A47G *5/00*
U.S. Cl. 160—135 **24 Claims**



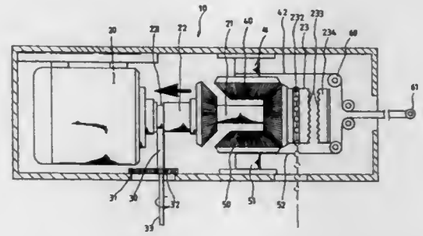
1. A substantially tubular end panel adapted for utilization with an associated display panel comprising a sheet of resilient material defined by upper and lower edge portions and opposite side edge portions, first and second cooperative securing means for securing said side edge portions together in substantially overlapped relationship thereby transforming said sheet into a tubular end panel, said first securing means being disposed along a first of said side edge portions, and said second securing means being disposed inboard of a free edge of a second of said side edge portions.

5,611,385
DISTANCE ADJUSTING STRUCTURE FOR A VERTICAL BLIND
Peyson Hsu, Changhua Hsien, Taiwan, assignor to Ching Feng Blinds Ind., Co., Ltd., Changhua Hsien, Taiwan
Filed Jan. 29, 1996, Ser. No. 593,052
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—173 **1 Claim**



1. A distance adjusting structure for a vertical blind, comprising a pulley seat and a distance adjusting cord, the pulley seat being composed of a seat body, a top cover and a pressing block, a slat clip being disposed under the seat body for clipping a slat, an ohm set being disposed in the seat body, said distance adjusting structure being characterized in that:
two latch ribs are disposed on outer faces of upper ends of front and rear walls of the seat body and two hooking holes are formed on upper sections of left and right walls of the seat body, the top cover being disposed with two projecting blocks on a middle section of a top face, which define a cord groove, a post being disposed on each projecting block, a stopper block being disposed under a middle section of a bottom face of the top cover, a rib hook being disposed under the stopper block and protruding therefrom, two downward extending right angle latch hooks being formed at two ends of the top cover, the pressing block being formed with a central adhesive filling hole and two sockets on a bottom face beside the filling hole, whereby when assembled, the top cover is pressed onto the seat body with the latch hooks of the top cover latched by the latch ribs of the seat body and the rib hook of the stopper block of the top cover is locked in the hooking holes of the seat body and then each top cover together with the seat body is positioned under the distance adjusting cord by a desired distance from the other with the cord placed in the cord groove of the top cover, the pressing block being associated with the top cover with the posts inserted into the sockets of the pressing block so that the bottom face of the pressing block abuts against the cord, an adhesive being filled into the filling hole of the pressing block so as to securely fix the cord, a desired number of seat bodies, top covers and pressing blocks being disposed on the distance adjusting cord at desired intervals, spacing between spread pulley seats being predetermined and fixed according to the width of the slat prior to assembly so as to be applicable to various specifications of slats.

5,611,386
ELECTRIC WINDOW BLIND
Ming S. Wang, No. 5, Eli-herng Lane, 1 Lane, dashin Rd., Puuyan hsian, Changhua county, Taiwan
Filed Dec. 12, 1995, Ser. No. 571,313
Int. Cl.[6] A47H *5/00*
U.S. Cl. 160—344 **4 Claims**



1. An electric window blind, which comprises a blind body a transmission set having a motor provided with two rotary wheels mounted on a shaft of said motor, one of said rotary wheels provided with an action rod fastened thereto, said action rod provided at a bottom end thereof with a threaded portion engageable with a gear mounted on a rod, another one of said rotary wheels having a plurality of holes provided respectively therein with a plurality of balls, said another one of said rotary wheels further having retaining teeth at an end adjacent to an arresting block, said transmission set further having two transmission wheels mounted between said two rotary wheels such that said two transmission wheels are linked respectively with a cord winding wheel on which a cord is wound, with an end of said cord being located adjacent an idle wheel via a plurality of idle wheels; wherein said two rotary wheels are actuated by said motor to rotate such that one of said two rotary wheels actuates said transmission wheels which in turn actuate said cord winding wheels; and wherein said rod is actuated manually to cause said gear to turn so as to enable said action rod to bring about a displacement of said motor and to bring about the engagement of one of said rotary wheels with said transmission wheels so as to actuate said cord winding wheels, thereby resulting in the movement of said blind body by a cord wound on said cord winding wheel.

5,611,387
MOULDING DEVICE

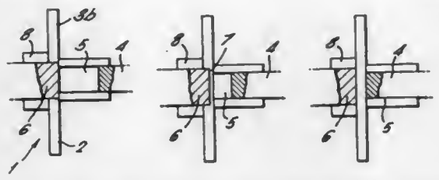
Geoffrey A. Chadwick, Winchester, United Kingdom, assignor to Hi-Tec Metals Limited, Hampshire, United Kingdom

PCT No. PCT/GB92/01350, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/02271, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 23, 1992, Ser. No. 374,547

Int. Cl.[6] B22D *27/09;17/08*

U.S. Cl. 164—113 **17 Claims**



1. A moulding device comprising a moulding block (1) defining a moulding cavity (2) therein, a chamber (5) connected to the cavity (2) in which a piston (4) is slidable and the chamber (5) having a mouth where the chamber is connected to the moulding cavity, characterised in that a closing means (6) is provided between the chamber (5) and the cavity (2), the closing means being moveable from a first position, in which the mouth of the chamber (5) is sealed to allow the chamber to be charged with a molten substance whilst the piston (4) is in a retracted position, to one or more further positions which allow the molten substance to be injected directly into the cavity (2) when the piston (4) is activated, characterised in that the closing means (6) is moveable to a second position spaced at a small distance from the mouth of the chamber (5) to define a narrow orifice (7) such that a fine spray or jet or film of molten substance is forced through the orifice and is deposited on the inner surface of the cavity (2) when the piston is activated.

5,611,388
METHOD OF AND APPARATUS FOR LOW-PRESSURE CASTING

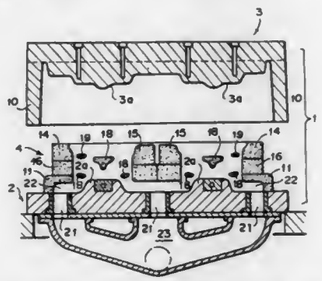
Hirofumi Fukuoka; Junzou Fujiya; Yoshiaki Uena, and Akihiro Nakano, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Aug. 31, 1994, Ser. No. 298,611

Claims priority, application Japan, Sep. 2, 1993, 5-218422; Mar. 24, 1994, 6-053760

Int. Cl.[6] B22D *18/04;33/04*

U.S. Cl. 164—119 **23 Claims**



1. A low-pressure casting apparatus provided with a casting mold which can be opened and closed and is closed to form therein a cavity having a top wall, a bottom wall and a side wall, which is filled with molten metal to form a cast product, comprising an upper mold of metal, a lower mold of metal and a sand mold which is disposed between the upper and lower molds and a limiting member formed integrally with said upper mold for limiting the space between the upper and lower molds and surrounding said sand mold when the cast product is being formed wherein said upper molds forms a top wall of the cavity, said lower mold forms a lower wall of the cavity and said sand mold forms all walls of said cavity except said upper and lower walls formed by said upper and lower molds.

4. A low-pressure casting method for casting a product comprising the steps of

preparing a casting mold comprising an upper metal mold, a lower metal mold and a sand mold which is disposed between the upper and lower metal molds thereby forming a cavity,

forming at least a portion of a top wall of the cavity by said upper metal mold, at least a portion of a bottom wall of the cavity by said lower metal mold and all remaining walls of the cavity by said sand mold,

filling the cavity with molten metal, and

opening the casting mold after the molten metal is solidified.

5,611,389
PROCEDURE FOR THE FABRICATION OF CRYSTALLINE BLADES

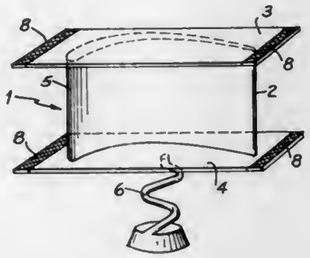
Martial G. Alessandri, La Ville Du Bois, and Jean-Marc Theret, Evry, both of France, assignors to Societe Nationale d'Etude et de Construction de Moterus D'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Dec. 30, 1981, Ser. No. 340,465

Claims priority, application France, Dec. 30, 1980, 80 27789

Int. Cl.[6] B22D *25/00*

U.S. Cl. 164—122.2 **9 Claims**



1. In the method of fabricating, in a shell mold, a monocrystalline cast blade with a cubic structure and comprised of an airfoil form (12) enclosed by two symmetrical shoulders (13, 14) perpendicular to the generatrices (12*a* and 12*b*) of the airfoil form, the method being one in which the molten metal is poured into the mold at its upper part, resulting in controlled solidification, the front of which progresses vertically from the bottom up, a single grain of crystal being selected by a selection device (16) located in the lower part of the mold, and at the outlet of which is found a single grain with a predetermined orientation and [001] direction that merges with the vertical; the improvement comprising the fact that the shells of the mold are arranged such that the shoulders (13, 14) are oriented in a plane parallel to the [001] direction of the monocrystal selected and by the fact that the generatrices (12*a* and 12*b*) of the airfoil form (12) are parallel to one of the horizontal directions [010] and [100] of the monocrystal selected by the grain selection device (16), and by the fact that an outlet (17) of the grain selection device (16) is caused to empty between the two shoulders (13, 14) into a juntion (22) connecting the selection device (16) to the lower ends (13*b*, 14*b*) of the shoulders (13, 14), and by the fact that the molten metal is poured into the mold at the level of the upper ends (13, 14) of the shoulders (13, 14).

5,611,390
CONTINUOUS-CASTING CRYSTALLISER WITH INCREASED HEAT EXCHANGE AND METHOD TO INCREASE THE HEAT EXCHANGE IN A CONTINUOUS-CASTING CRYSTALLISER

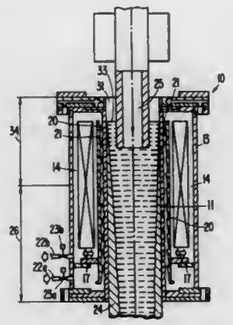
Giampietro Benedetti, Campoformido; Milorad Pavlicevic, Udine; Gianni Gensini, S.Stefano di Buia, and Alfredo Poloni, Redipuglia, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jun. 6, 1995, Ser. No. 470,454

Claims priority, application Italy, Jun. 6, 1994, UD94A0096; Feb. 6, 1995, UD95A0014

Int. Cl.[6] B22D *11/04;11/22*

U.S. Cl. 164—485 **22 Claims**



1. Method to increase heat exchange in the cooling and removal of heat from at least one sidewall of a crystalliser employed in the continuous casting of billets, blooms or slabs, comprising:

circulating cooling fluid through cooling chambers provided externally to the crystalliser, the cooling chambers containing intermediate walls creating circulating channels for the cooling fluid between the sidewalls of the crystalliser and the intermediate walls;

controlling at least one of (a) a transverse width or span of passage of at least one of the circulation channels and (b) a conformation of at least one interior wall of the at least one circulation channel; and

controlling the pressure of the cooling fluid in the at least one circulation channel to provide a turbulent flow of the cooling fluid in the at least one circulation channel to increase the coefficient of heat exchange to a value greater than 40,000 W/m^2K.

6. Mold for the continuous casting of billets, blooms or slabs, comprising:

a crystalliser having sidewalls within which the billets, blooms or slabs are cast, the sidewalls having a thickness of 4–15 mm;

a box-shaped structure provided externally to the crystalliser, whereby cooling chambers in which a cooling fluid flows are provided between the box-shaped structure and the sidewalls of the crystalliser;

intermediate walls provided in the cooling chambers adjacent the sidewalls of the crystalliser, thereby providing circulation channels for the cooling fluid between the sidewalls and the intermediate walls, wherein at least one interior wall of each circulation channel includes disturbing elements to disturb the flow of the cooling fluid therein to create a turbulent flow therein;

circulation means for circulating the cooling fluid in the cooling chambers and for controlling the pressure of the cooling fluid in the circulation channels to achieve a turbulent flow therein.

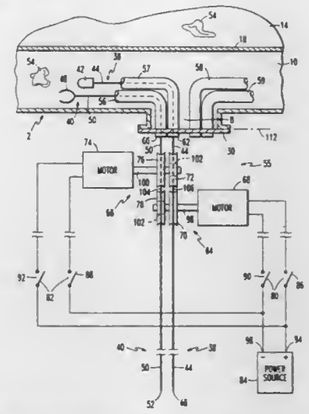
5,611,391
POWERED GUIDE TUBES

Edward J. Hyp, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1994, Ser. No. 286,489

Int. Cl.[6] F28F *27/00*

U.S. Cl. 165—11.2 **16 Claims**



1. An apparatus for use with a search device and a retrieval device in a heat exchanger having an annular region and a tube sheet, each of said search device and said retrieval device having a cable for positioning a corresponding one of said search device and said retrieval device within said heat exchanger, said apparatus comprising:

guide means for guiding said search device and said retrieval device through the annular region and onto the tube sheet of said heat exchanger;

first drive means for driving the cable of said search device, in order to position said search device within said heat exchanger; and

second drive means for independently driving the cable of said retrieval device, in order to independently position said search device and said retrieval device within said heat exchanger.

5,611,392
POWER FLUID HEATING SYSTEM

Edward L. Malecek, Delano, and Charles H. Ramberg, Dayton, both of Minn., assignors to Arctic Fox Heaters, Inc., Delano, Minn.

Continuation-in-part of Ser. No. 846,752, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 666,233, Mar. 8, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 12,278

Int. Cl.[6] F02M *31/00*

U.S. Cl. 165—47 **54 Claims**

45. A heating system for power fluid entering a prime mover, the heating system comprising:

a) holding means for holding the power fluid;

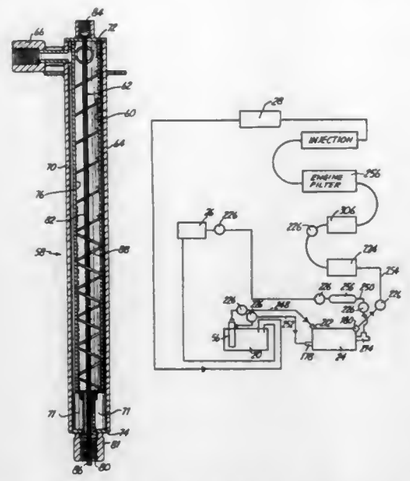
b) power fluid heating means for heating the power fluid, the power fluid heating means comprising:

i) first power fluid pickup means for drawing power fluid from the holding means and directing power fluid toward the prime mover;

ii) second power fluid pickup means for drawing power fluid from the holding means and directing power fluid away from the power fluid heating means; and

iii) heat exchanger means for heating the power fluid in the first and second power fluid pickup means, the heat exchanger means including a heat conductive portion containing a heatable fluid; and

c) means for performing an auxiliary function, the means for performing an auxiliary function being operatively coupled



with the power fluid heating means to receive power fluid from the second power fluid pickup means and to perform an auxiliary function using the power fluid.

5,611,393

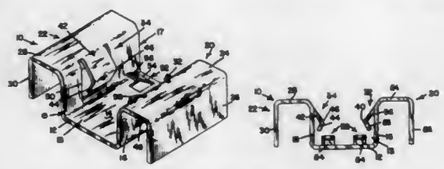
CLAMPING HEAT SINK

Osvaldo M. Vasconcelos, Milton, and Vincent Campanella, Wakefield, both of Mass., assignors to Wakefield Engineering, Inc., Wakefield, Mass.

Filed Feb. 23, 1996, Ser. No. 609,770

Int. Cl.[6] F28F *7/00*; H01L *23/02*

U.S. Cl. 165—80.3 **16 Claims**



1. A clamping heat sink of thermally conductive material for releasable attachment to an electronic component having a bottom surface and a pair of opposite side surfaces, said clamping heat sink comprising:

(a) a horizontal base wall having a first side and a second side which is parallel to and opposite from said first side,

(b) a first vertical side wall which extends upwardly from the first side of said base, said first vertical side wall having an upper end,

(c) a second vertical side wall which extends upwardly from the second side of said base, said second vertical side wall having an upper end, said first and second vertical side walls defining with said base, a generally rectangular channel for receiving an electrical component;

(d) a first resiliently deflectable L-shaped clamping element which is connected to the upper end of said first vertical, said first L-shaped clamping element having an upper portion which extends downwardly from the top of said first vertical wall toward said second vertical wall to a lower end which extends downwardly from the lower end of said upper portion toward said first vertical wall, said lower portion forming a juncture with the lower end of said upper portion; and

(e) a second resiliently deflectable L-shaped clamping element which is connected to the upper end of said second vertical wall, said second L-shaped clamping element having an upper portion which extends downwardly from the top of said second vertical wall and into said channel toward said first vertical wall to a lower end and a lower portion which extends downwardly from the lower end of said second portion toward said second vertical wall, the lower portion of said second L-shaped clamping element forming a juncture with the upper portion of said second L-shaped clamping element.

5,611,394

ROLL CHARGED WITH HEAT TRANSFER MEDIUM

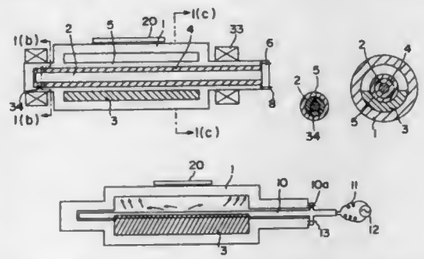
Keiji Mizuta; Ritsuo Hashimoto; Yasuyoshi Takeoka, all of Hiroshima; Akira Kishida, and Harumasa Muramoto, both of Chiba, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, and Kawasaki Steel Corporation, Hyogo-ken, both of Japan

Division of Ser. No. 797,076, Nov. 25, 1991. This application Jun. 6, 1995, Ser. No. 470,826

Claims priority, application Japan, Nov. 27, 1990, 2-123515; Nov. 27, 1990, 2-321036

Int. Cl.[6] F28D *11/02*

U.S. Cl. 165—89 **11 Claims**



1. A roll charged with a heat transfer medium, comprising:

a hollow roll body comprising an outer cylindrical wall, an inner cylindrical wall, a closed space defined between said inner cylindrical wall and said outer cylindrical wall, and a hollow portion defined by said inner cylindrical wall extending axially along said hollow roll body inside said inner cylindrical wall;

a removable cover on said hollow roll body that closes said hollow portion;

a heat transfer medium charged inside said closed space;

a rod-shaped heater extending axially inside said hollow portion; and

a metal filled in said hollow portion around said rod-shaped heater between said rod-shaped heater and said inner cylindrical wall, said metal having a melting point such that said metal is capable of being melted by said rod-shaped heater.

5,611,395

FIN FOR HEAT EXCHANGER

Jong K. Kang, Seoul; Sang H. Jeong, Kyungsangnam-do; Kam K. Lee; Tae W. Kang, both of Busan-si, and Jeom Y. Yun, Kyungki-do, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 12, 1995, Ser. No. 542,407

Claims priority, application Rep. of Korea, Feb. 22, 1995, 3432/1995

Int. Cl.[6] F28D *1/04*; F28F *1/32*

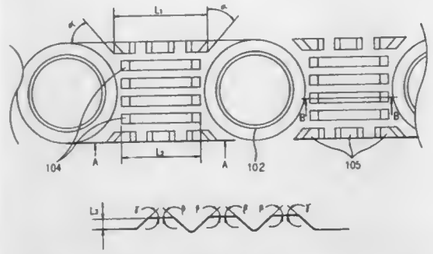
U.S. Cl. 165—151 **3 Claims**

1. A fin for a heat exchanger comprising: tubes through which thermal fluid flows:

fins into which said tubes are inserted vertically;

first and second rectangular slits disposed on said fins sequentially from a central line connecting the centers of said tubes, the height of said slits being 0.7–0.9 mm and both ends of said slits forming the sectional angle of 35°–42° to the plane of the fins and both ends of said slits being in parallel with an air incoming direction; and

a third slit having a predetermined plane angle at its outer end adjacent to said tubes in order to reduce vortex flow produced at the rear end of the tubes, the height of said slit being 0.7–0.9 mm, the outer ends of said third slit forming the sectional angle of 35°–42° to the plane of the fins and the sectional angle of the inner end of said third slit being 27°–35° to the plane of the fins.



5,611,396

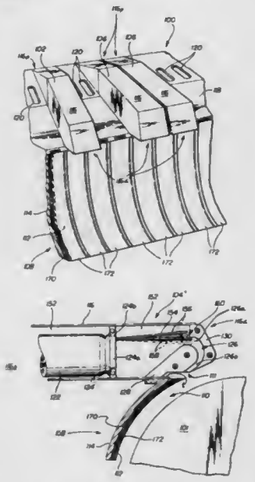
METHOD AND APPARATUS FOR THROTTLE VALVE CONTROL OF A CALENDER ROLL ACTUATOR

Gordon K. Reed, Bexley, Ohio, assignor to ABB Industrial Systems, Inc., Columbus, Ohio

Filed Aug. 19, 1994, Ser. No. 293,396

Int. Cl.[6] B60H *1/00*

U.S. Cl. 165—300 **23 Claims**



1. An actuator for controlling one longitudinal zone of a calender roll, said actuator being connected between a pressurized air plenum and said one longitudinal zone which is to be controlled by said actuator which comprises:

an air conducting housing having a proximal end connected to and in communication with said plenum for receiving air from said plenum and a distal end for discharging air from an air outlet of said housing at said one longitudinal zone;

a heater connected within said housing for passing air from said proximal end of said housing toward said distal end of said housing; and

a valve connected within said housing for controlling the volume of air discharged at said one longitudinal zone in response to air temperature being discharged.

5,611,397

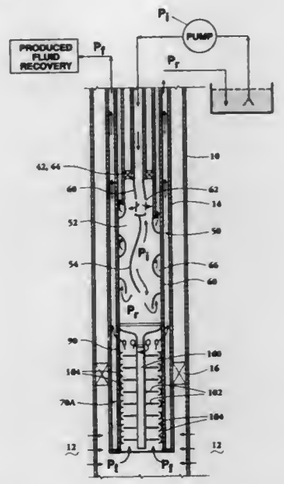
REVERSE MOINEAU MOTOR AND CENTRIFUGAL PUMP ASSEMBLY FOR PRODUCING FLUIDS FROM A WELL

Steven M. Wood, 4904 E. 113th, Tulsa, Okla. 74137

Continuation-in-part of Ser. No. 194,835, Feb. 14, 1994, Pat. No. 5,417,281. This application May 22, 1995, Ser. No. 447,122

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—68 **9 Claims**



1. A downhole pump apparatus for producing fluids from a formation within a well bore to the surface, said apparatus comprising:

progressive cavity motor means having a fixed rotor relative to a stator within a rotatable motor-pump housing wherein said motor-pump housing is rotated by separately passing power fluid under pressure into said cavity; and

a pump having a rotor axially spaced from said housing, said rotatable motor-pump housing connected to said rotor, said pump being in communication with said formation fluids to pump said fluids.

5,611,398

TWO-PIECE DRILLING FLANGE

Rex E. Duhn, and William D. Chapman, both of Bakersfield, Calif., assignors to Duhn Industries, Bakersfield, Calif.

Filed Sep. 26, 1995, Ser. No. 534,127

Int. Cl.[6] E21B *33/04*

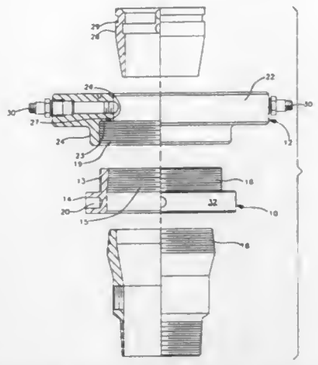
U.S. Cl. 166—75.11 **16 Claims**

1. A two-piece drilling flange comprising: an annular flange-bushing piece comprising:

an internal thread matching the external thread on a conventional casing head, the casing head having an end face, and

an external thread having a lower breakaway torque than the internal thread; and a drilling-flange piece comprising:

an internal thread matching the external thread, and



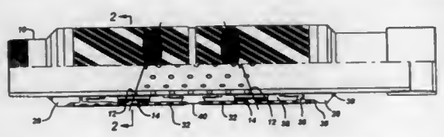
a circumferential elastomeric seal facing in the axial direction of the internal thread and having a diameter smaller than the inside diameter of the flange-bushing piece for sealing against the end of a casing head.

5,611,399

SCREEN AND METHOD OF MANUFACTURING

Bennett M. Richard, Kingwood; Elmer R. Peterson, The Woodlands, both of Tex., and Brian J. Horton, St. Martinville, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 13, 1995, Ser. No. 555,945
Int. Cl.[6] E21B *43/08*
U.S. Cl. 166—230 **28 Claims**



1. A screen assembly for downhole use, comprising:
a coarse screen;
a fine screen overlying said coarse screen;
said fine screen comprises a longitudinal joint, said joint sealed without using welding techniques; and
at least one end cap sealingly secured over said fine screen without the use of welding techniques.

22. A screen assembly for downhole use, comprising;
a coarse screen;
a fine screen overlying said coarse screen;
at least one end cap sealingly secured over said fine screen without the use of welding techniques; and
said end cap is secured over said fine screen by deformation resulting from an applied force.

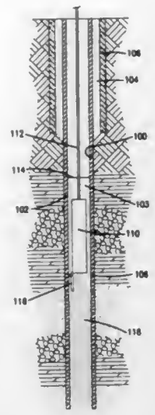
5,611,400

DRILL HOLE PLUGGING CAPSULE

Melvyn C. James, 1714 Bryan Stock Trail, Casper, Wyo. 82609, and Maurice L. James, 14 Cotton Wood La., Littleton, Colo. 80121

Filed May 3, 1995, Ser. No. 433,034
Int. Cl.[6] E21B *33/13*
U.S. Cl. 166—293 **17 Claims**

1. A capsule for plugging a drill hole having an opening at a surface and an inner diameter; said capsule comprising:
a liquid soluble exterior cylindrical wall formed about a longitudinal axis and having upper and lower ends, said wall forming an interior chamber extending along a length thereof;



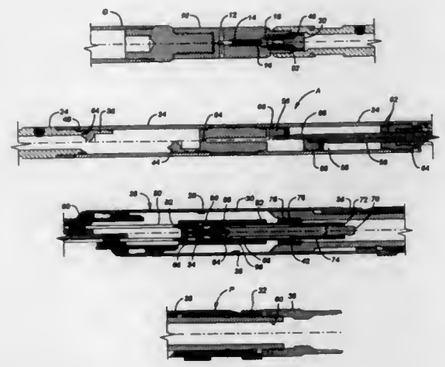
a plurality of coarse ground bentonite chips packed within the cylindrical wall and substantially filling said interior chamber; and
end caps closing said upper and lower ends of said cylindrical wall, said wall including at least one slot cut therein and extending along a length of said wall.

5,611,401

ONE-TRIP CONVEYING METHOD FOR PACKER/PLUG AND PERFORATING GUN

William D. Myers, Jr., Houston, Tex.; Kare-Jonny Haugvalstad, Stavanger, Norway; Robert K. Bethel, Houston, Tex.; Kelly D. Ireland, The Woodlands, Tex., and Timothy W. Sampson, Spring, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 11, 1995, Ser. No. 501,199
Int. Cl.[6] E21B *23/04*
U.S. Cl. 166—297 **19 Claims**



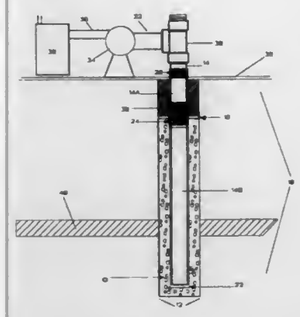
1. A one-trip well completion method, comprising:
running in a packer, a setting tool, and a perforating gun into the wellbore together on tubing;
pressurizing an annular space around said tubing to actuate said setting tool;
setting the packer with said setting tool;
releasing the setting tool from the packer;
positioning the perforating gun;
setting off the gun with applied pressure in said tubing; and
removing the gun.

5,611,402

METHOD OF IN-SITU REMEDIATION OF VOLATILE CONTAMINANTS FROM SOILS AND/OR ROCK

Robert H. Welsh, 345 Wellington Way, Springboro, Ohio 45066

Filed Oct. 18, 1994, Ser. No. 324,673
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—369 **6 Claims**



1. A process for removing volatile contaminants from soils and/or rock in an unsaturated or vadose zone, including those soils and/or rock adjacent a water table comprising the steps of:
delineating an area of contamination;
providing a solid sidewall conduit, the conduit having a closed end; establishing a borehole into the vadose zone and into at least a top of a capillary fringe of the water table;
providing holes in the conduit to create an unperforated section and a perforated section which, when the conduit is placed into the borehole, the perforated section has a position corresponding to the area of contamination; placing the conduit within the borehole such that an annular zone is formed between the borehole wall and the conduit, the perforated section covered with a sleeve in a zone to allow fluids and/or vapors to flow from adjacent soil into the perforated section of the conduit while filtering solids from entering the perforated section of the conduit, the conduit having its upper end connected to a vacuum source;
filling the borehole to a point above an upper end of the perforated section of the conduit with a porous fill material;
placing a seal material plug into the borehole;
pouring a nonporous, air-impermeable mixture into the borehole on top of the seal material plug to seal the borehole from atmospheric air;
placing a plastic sheeting seal on the ground surface to prevent atmospheric air from beyond the borehole from entering the ground and migrating toward the perforated section of the conduit;
applying a vacuum to an upper end of the unperforated section of the conduit sufficient to induce contaminant air, vapors and liquids to flow from the vadose zone into the perforated section of the conduit; and
removing contaminant air, vapors, and liquids.

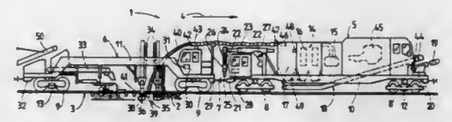
5,611,403

MACHINE FOR SUCKING UP RAIL BALLAST

Josef Theurer, Vienna; Friedrich Oellerer, Linz, and Herbert Wörgötter, Gallneukirchen, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria

PCT No. PCT/AT94/00001, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO94/17245, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 5, 1994, Ser. No. 313,211
Claims priority, application Austria, Jan. 29, 1993, 152/93
Int. Cl.[6] E01B *27/00*
U.S. Cl. 171—16 **11 Claims**

1. A machine for treating a ballast bed underneath a track comprising sleepers, which comprises



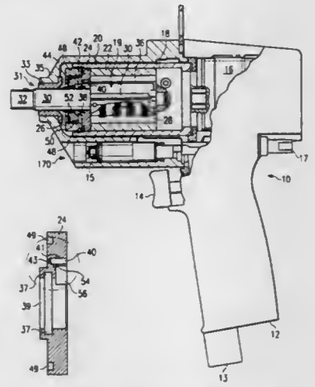
(a) a machine frame means extending in a longitudinal direction and supported on the track by undercarriages,
(b) a suction unit mounted on the machine frame means, the suction unit comprising
(1) a vertically and laterally adjustable suction pipe having a suction opening for aspirating crushed rock from the ballast bed,
(c) a first drive means for vertically and laterally adjusting the suction pipe,
(d) a clearing apparatus comprising
(1) an endless, revolving clearing chain for removing crushed rock from the ballast bed underneath the track, the clearing chain being mounted on the machine frame means at a distance from the suction opening in the longitudinal direction, and
(e) a second drive means operable independently from the first drive means for laterally adjusting the clearing chain.

5,611,404

HYDRAULIC IMPULSE TOOL WITH ENHANCED FLUID SEAL

Paul A. Biek, Houston, and Albert J. Kachich, Katy, both of Tex., assignors to GPX Corp., Las Vegas, Nev.

Filed Sep. 28, 1995, Ser. No. 535,919
Int. Cl.[6] B25B *19/00*
U.S. Cl. 173—1 **13 Claims**



11. A method for manufacturing an impulse unit comprising the steps of:
forming a fluid chamber that includes a base cap, a cage coupled to the base cap, and a pressure plate with a spindle-receiving aperture formed therethrough;
disposing a spindle within the fluid chamber such that a portion of the spindle extends through the aperture in the pressure plate and the portion of the spindle is coupled to the base cap of the fluid chamber;
coupling an impulse generator to the spindle within the fluid chamber;
placing a resilient seal on the pressure plate adjacent the spindle to form a substantially leakproof seal between the spindle and the pressure plate;
forming an accumulator reservoir with a pressure regulating means; and
forming a primary passageway through the pressure plate to place the fluid chamber in restricted fluid communication with

the accumulator reservoir to minimize pressure peaks being transmitted from the fluid chamber to the accumulator reservoir while allowing adjustment of the fluid in response to volumetric changes.

5,611,405

TURNING SPEED CONTROL SYSTEM FOR USE IN A TRACK-LAYING VEHICLE

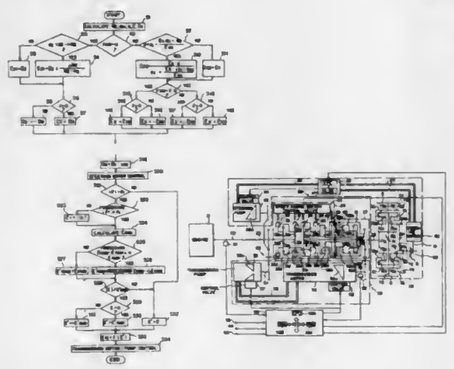
Tsutomu Ishino; Ryoichi Maruyama, and Hideki Yamada, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 268,932, Jun. 30, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,098

Claims priority, application Japan, Jul. 14, 1993, 5-174376; Jun. 2, 1994, 6-121497

Int. Cl.[6] B62D *11/02*

U.S. Cl. 180—6.44 **9 Claims**



1. A turning speed control system for use in a track-laying vehicle comprising:

(a) driving means for driving crawler belts provided at both sides of the vehicle at the same time in the same direction, thereby selectively driving the vehicle in one of a forward direction and a backward direction;

(b) a steering motor for driving the crawler belts such that a relative travel difference is caused between the crawler belts, thereby turning the vehicle to the right or left, said steering motor having a maximum steering motor revolution speed;

(c) steering instructing means which can be displaced from a neutral position by operation and which instructs, according to the displacement direction and displacement distance of the steering instructing means, a turning direction and a turning radius for the vehicle, the turning radius decreasing proportionately as the displacement distance increases;

(d) displacement detector means for detecting the displacement of the steering instructing means; and

(e) control means for controlling the turning radius of the vehicle by increasing the revolution speed of the steering motor according to the increasing displacement of the steering instructing means detected by the displacement detector means such that the crawler belts are driven with an increasing relative travel difference therebetween until the displacement distance of the steering instructing means exceeds a displacement distance corresponding to the maximum steering motor revolution speed, said control means proportionately reducing the vehicle speed at which the vehicle is driven in one of said forward and backward directions when the displacement distance of the steering instructing means exceeds the displacement distance corresponding to the maximum steering motor revolution speed while maintaining the steering motor at the maximum revolution speed until the steering instructing means returns to said displacement distance corresponding to the maximum steering motor revolution speed.

5,611,406

AUTOMATIC GUIDING AND TRACKING DEVICE

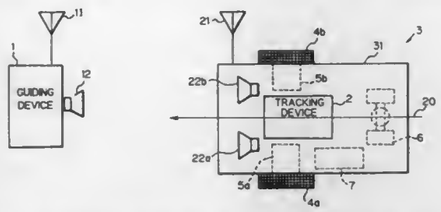
Kouichi Matsuzaki, and Setsuo Yamagishi, both of Tokyo, Japan, assignors to Nikko Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,837

Claims priority, application Japan, Sep. 16, 1994, 6-222131

Int. Cl.[6] B62D *6/00*

U.S. Cl. 180—167 **3 Claims**



1. An automatic guiding and tracking device comprising a guiding device movable to a desired position and a tracking device for tracking the movement of said guiding device;

wherein said guiding device comprises,

(a) ultrasonic signal transmitting means for transmitting an ultrasonic signal as a guiding signal for guiding said tracking device, and

(b) timing signal transmitting means for transmitting a timing signal of said guiding signal;

wherein said tracking device comprises,

(a) timing signal receiving means for receiving said timing signal,

(b) first ultrasonic signal receiving means for receiving said ultrasonic signal,

(c) second ultrasonic signal receiving means spaced apart from said first ultrasonic signal receiving means by a predetermined distance for receiving said ultrasonic signal,

(d) a clock generating circuit for generating a reference clock of a predetermined frequency,

(e) a counting means for counting said reference clock based on said timing signal received from said timing signal transmitting means, a first ultrasonic signal received by said first ultrasonic signal receiving means and a second ultrasonic signal received by said second ultrasonic signal receiving means, and

(f) control means for detecting a distance and a direction to said guiding device from said tracking device based on the counting of said counting means and said predetermined distance so as to control a running direction and a speed of a vehicle having said tracking device mounted thereon.

5,611,407

DRIVING FORCE DISTRIBUTION CONTROL SYSTEM FOR FOUR WHEEL DRIVE VEHICLE

Katsumi Maehara, Yokosuka, and Hiroshi Ohkuma, Yokohama, both of Japan, assignors to NABCO Limited, Kobe, Japan

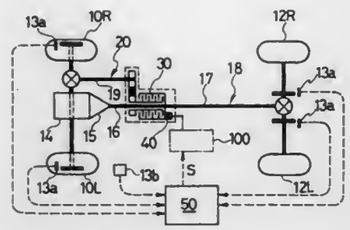
Filed Dec. 6, 1994, Ser. No. 349,974

Claims priority, application Japan, Dec. 14, 1993, 5-342582; Nov. 12, 1994, 6-303213

Int. Cl.[6] B60K *17/35*

U.S. Cl. 180—249 **12 Claims**

1. A driving force distribution control system for a four wheel drive vehicle comprising a variable torque clutch device located on a driving force transmission path leading from an engine to front or rear wheels, an operating cylinder to which a hydraulic pressure is supplied so that a gain of an engagement force of said variable torque clutch device can be controlled, a hydraulic pressure supply device for supplying a hydraulic pressure to said operating cylinder in accordance with a command from outside, wherein said hydraulic pressure supply device includes a motor, rotation of which is



controlled upon receipt of a command from outside, and a hydraulic pressure producing cylinder device for producing a hydraulic pressure by a stroke motion thereof in accordance with rotation of said motor, said hydraulic pressure producing cylinder device being in connection with said operating cylinder and a remaining pressure valve located between said hydraulic pressure producing cylinder device and said operating cylinder and adapted to maintain a predetermined pressure on the side of said operating cylinder when the pressure in said hydraulic pressure producing cylinder is released.

5,611,408

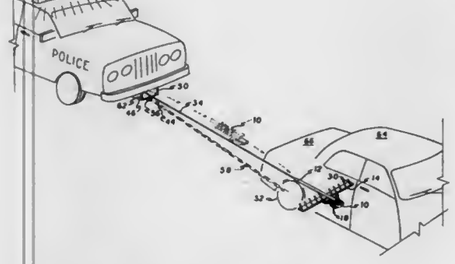
VEHICLE DISABLING DEVICE

Saleem A. Abukhader, 6401 Warner Ave., Apt. 572, Huntington Beach, Calif. 92647

Filed Apr. 7, 1995, Ser. No. 418,477

Int. Cl.[6] B60R *25/00*

U.S. Cl. 180—287 **14 Claims**



1. A vehicle disabling device comprising:

an elongated central body having a forward end and a rear end;

an elongated first arm and an elongated second arm, each of said arms having a first end and a second end, said first end of said first arm and said first end of said second arm being connected pivotally to said body at said forward end; and

a plurality of spikes disposed along said arms, wherein said spikes are sharp and hollow, whereby puncture of a tire by said spikes allows free passage of air between regions inside the tire and regions outside the tire.

5,611,409

EXHAUST MUFFLER FOR SMALL INTERNAL COMBUSTION ENGINE

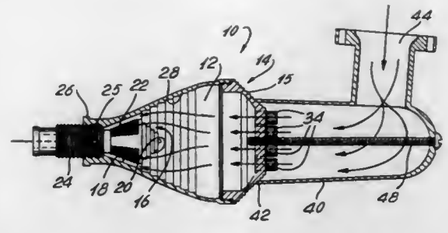
Michel Arseneau, 769 rang St. Marie, St. Timothée, Québec, Canada

Filed May 9, 1995, Ser. No. 437,665

Int. Cl.[6] F01N *7/08*

U.S. Cl. 181—228 **20 Claims**

1. An exhaust muffler for a small engine producing exhaust gas, said muffler comprising:



an expansion chamber through which exhaust gas flows, said chamber having an inlet for receiving exhaust gas from said engine, said chamber having opposite said inlet an output end of reduced cross-section; and

a tail pipe head member mounted at said output end of said chamber, said head member having:

a front end provided inside said chamber for deflecting an exhaust gas pressure wave passing through said chamber;

a side portion provided inside said chamber and being separated from an inner side wall of said chamber, said side portion being shaped to provide a substantially annular exhaust gas passage between said chamber side wall and said side portion, said passage having a reduced cross-section for restricting exhaust gas flow; and

a flow regulating conduit for communicating exhaust gas from said side portion to an outside of said muffler, whereby exhaust gas flow through said expansion chamber, said passage and said flow regulating conduit of said tail pipe head member is substantially in-line.

5,611,410

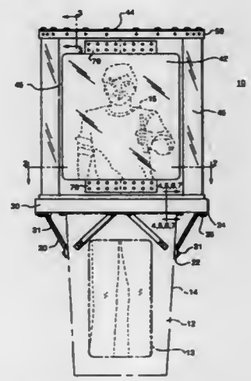
AERIAL PLATFORM ENCLOSURE APPARATUS

Paul D. Baillargeon, 103 Horse Corner Rd., Chichester, N.H. 03234

Filed Jul. 11, 1995, Ser. No. 500,704

Int. Cl.[6] B66F *11/04*

U.S. Cl. 182—129 **8 Claims**



1. An enclosure apparatus for an aerial bucket comprising:

a substantially circular base having a base wall channel, a base window channel, an opening centered therein;

a substantially circular top having a top wall channel, a top window channel and a substantially transparent roof;

a cylindrical wall that is substantially transparent, said wall fixed within said top wall channel of said circular top and rotatably slidably disposed within said base wall channel of said base, said wall further having a window opening having a width;

a cylindrical window also substantially transparent, having substantially the same radius of curvature of said wall, said

window dimensioned to correspond to said window opening in said wall, said window rotatably slidably disposed between said top window channel of said top and said base window channel of said base such that said window opening within said wall can be selectively opened up to the full width of said window opening by a user sliding said window;

attachment means for rigidly but removably attaching said base to said bucket;

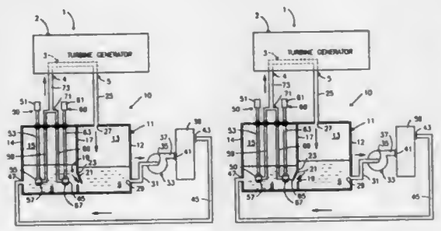
wherein the user can rotate said wall to place said window opening in any desired position, said position being independent of the position of said bucket.

5,611,411

TURBINE LUBRICATION OIL FILTRATION SAFEGUARD SYSTEM

William P. Reilly, III, Dunnellon, Fla., assignor to Florida Power Corporation, St. Petersburg, Fla.

Filed May 10, 1996, Ser. No. 644,345
Int. Cl.[6] F01M *1/18*
U.S. Cl. 184—6.4 **9 Claims**



1. In a lubrication system for supplying lubricant to a turbine generator, the improvement comprising:

a) a sump having a first chamber and a second chamber;

b) a first inlet port in said first chamber receiving lubricant from said generator;

c) a first outlet port in said first chamber supplying lubricant to a second inlet port in said second chamber via a filter;

d) said first and second chambers being separated by a partition wall having an opening therethrough; and

e) a two-way valve in said opening that senses differential pressure based upon differences in respective levels of lubricant in said first and second chambers and opens in a direction causing flow of lubricant in a direction from a chamber having a higher level of lubricant into a chamber having a lower level of lubricant.

9. A lubrication system for supplying lubricant to a machine, comprising:

a) a sump having a first chamber and a second chamber;

b) a first inlet port in said first chamber receiving lubricant from said machine;

c) a first outlet port in said first chamber supplying lubricant to a second inlet port in said second chamber via a filter;

d) said first and second chambers being separated by a partition wall having an opening therethrough;

e) a two-way valve in said opening that senses differential pressure based upon differences in respective levels of lubricant in said first and second chambers and opens in a direction causing flow of lubricant in a direction from a chamber having a higher level of lubricant into a chamber having a lower level of lubricant;

f) a first pump between said first outlet port and said second inlet port;

g) multiple pumps in said second chamber that pumps lubricant to said machine; and

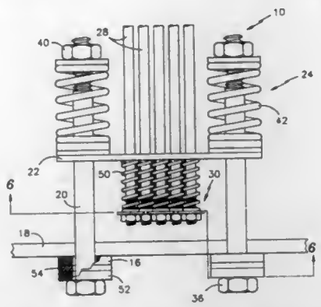
h) said first pump having a higher flow capacity than said multiple pump.

5,611,412

ELEVATOR CAR HITCH

Young S. Yoo, and Joseph C. Walker, both of Avon, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 7, 1995, Ser. No. 499,289
Int. Cl.[6] B66B *7/10*
U.S. Cl. 187—412 **13 Claims**



1. In an elevator system having a plurality of ropes disposed within a plurality of grooved recesses in a drive sheave, each of said grooved recesses being bisected by first planes, said first planes being in parallel, a hitch assembly for suspending an elevator car from said ropes, said hitch assembly comprising:

(a) a mounting plate attaching to said elevator car;

(b) a hitch plate, said hitch plate having a plurality of thimble rod openings, each of said thimble rod openings being bisected by second planes, each of said second planes corresponding and being substantially coplanar with each of said first planes, said hitch plate having an undersurface;

(c) a vibration isolation assembly for attaching said hitch plate to said mounting plate, said vibration isolation high and low frequency assembly isolating vibrations transmitted to said elevator car from said ropes; and

(d) a rope tension equalization assembly for attaching said ropes to said hitch plate, said rope tension equalization assembly facilitating the equalization of tensions among said ropes, said rope tension equalization assembly comprising

a plurality of thimble rods attached to said ropes, said thimble rods extending through said thimble rod openings in said hitch plate, said thimble rods being sized so as to be free of contact with said hitch plate in said thimble rod openings, each of said thimble rods being connected to a respective thimble rod spring means which bears against said undersurface of said hitch plate.

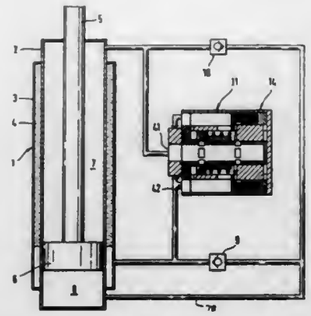
5,611,413

CONTROLLABLE VALVE ARRANGEMENT FOR CONTROLLABLE TWO-TUBE VIBRATION ABSORBERS

Hans-Joerg Feigel, Rosbach, Germany, assignor to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP92/02022, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/05315, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 2, 1992, Ser. No. 196,114
Claims priority, application Germany, Sep. 6, 1991, 41 29 581.1
Int. Cl.[6] B60G *17/08;* **F16F** *9/50*
U.S. Cl. 188—299 **31 Claims**

1. A controllable valve arrangement in a controllable two-tube vibration absorber having a power cylinder whose interior space is subdivided into a first power chamber and a second power chamber by means of a slidable piston, and having a balancing chamber partly filled with oil, said valve arrangement, comprising: a first valve body which is actuatable by an electromechanical transducer, said valve body being prestressed by means of a first spring, said first valve body influencing a hydraulic connection through which a unidirectional flow is passed which exists between said first



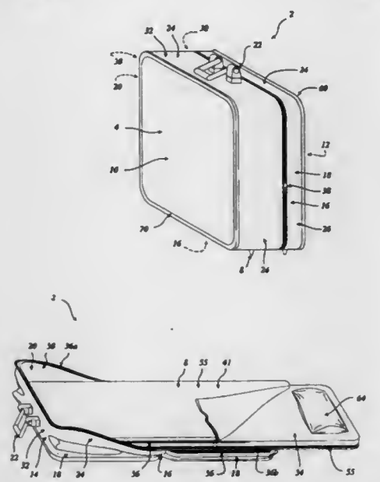
power chamber, on one hand, and said second power chamber jointly with said balancing chamber, on the other hand in a traction stage, the unidirectional flow existing between said first power chamber jointly with said second power chamber on one hand, and said balancing chamber, on the other hand in a thrust stage, said first valve body being pressure-balanced such that a first range of volumetric flow rate in said first valve body performs a restricting function which depends on the actuation of said electromechanical transducer; and a second valve body that is pressure-unbalanced such that in a second range of volumetric flow rate said second valve body influences a second hydraulic connection through which a unidirectional flow is passed which exists between said first power chamber, on one hand, and said second power chamber jointly with said balancing chamber, on the other hand, in the traction stage, the unidirectional flow existing between said second power chamber jointly with said first power chamber, on one hand, and said balancing chamber, on the other hand in the thrust stage, said second valve body performing a pressure-limiting function that depends on the actuation of said electromechanical transducer.

5,611,414

SELF-CONTAINED FOLDING PORTABLE BED

Jeffrey R. Walker, P.O. Box 143, Ballinafad, Ontario, Canada

Filed Apr. 14, 1995, Ser. No. 421,784
Int. Cl.[6] A47C *17/82;19/22*
U.S. Cl. 190—2 **10 Claims**



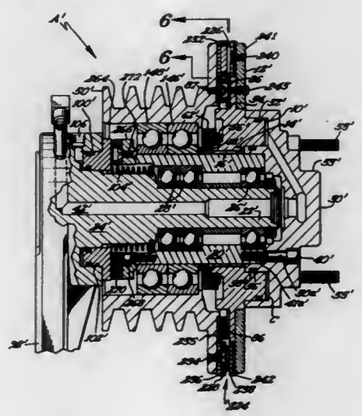
1. A portable bed in a suitcase, comprising: a casing that may be opened and closed and a cushioning assembly containable within said casing; said cushioning assembly extensible from a first, stored portion within said casing to a second extended position for supporting a reposing body; said cushioning assembly detachably joined to said casing, and extending over said casing in said second extended portion.

5,611,415

ROTATIONAL CONTROL APPARATUS

John B. Davis, Tonka Bay, and Robert C. Bredt, Edina, both of Minn., assignors to Horton, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 201,783, Feb. 25, 1994. This application Jun. 6, 1994, Ser. No. 254,290
Int. Cl.[6] F16D *67/04;29/00;27/01;25/0635*
U.S. Cl. 192—18 A **23 Claims**

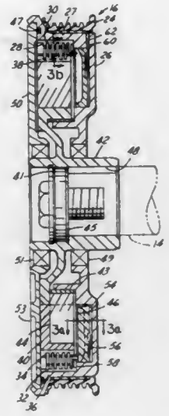


1. Rotational control apparatus comprising, in combination: a rotatable input; an output rotatable relative to the input, with each of the input and output including a friction engaging surface rotatably fixed thereto; means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in an engaged condition and for disengaging the friction engaging surfaces of the input and output in a disengaged condition; and an eddy current drive including permanent magnets and a ring of magnetic material, with the permanent magnets being rotatably fixed to one of the input and the output and the ring of magnetic material being rotatably fixed to the other of the input and the output, with the output being driven either with the input when the friction engaging surfaces are in the engaged condition or at a rotational speed less than the input when the friction engaging surfaces are in the disengaged condition by the eddy current drive and without separate controls for the eddy current drive whereby the output is driven with the rotational speed of the output being controlled by and dependent upon the condition of the friction engaging surfaces; wherein the output includes a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted on a shaft, with the input being rotatable relative to the hub and to the shaft, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub and a second position with the first, friction disc portion being rotatably independent from the input.

5,611,416
SPEED LIMITING ACCESSORY DRIVE AND CRANKSHAFT DAMPER

Alvin H. Berger, Brownstown; Roy E. Diehl, Northville, and Anthony Verduce, Riverview, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1995, Ser. No. 578,113
Int. Cl.[6] F16D *35/00;43/284;* F16F *15/26*
U.S. Cl. 192—58.42 20 Claims



1. A speed limiting accessory drive and crankshaft damper, adapted to be rotationally driven by a crankshaft of an engine and drive engine accessories, which limits the maximum speed at which the accessories are driven and is adapted to dampen predetermined vibrations in the crankshaft, the speed limiting accessory drive and crankshaft damper comprising:

a hub member adapted to be rotationally fixed to the crankshaft;

a housing mounted about and rotatable relative to the hub, the housing including a cavity;

a pulley member mounted on and rotationally fixed relative to the housing;

a damper mass mounted within the cavity, and a plurality of damper springs elastically coupling the damper mass to the hub;

a wet clutch assembly, mounted radially outward within the housing cavity, including a plurality of friction discs and a plurality of separator plates interleaved with the friction discs, with the friction discs being rotationally fixed relative to the damper mass and the separator plates being rotationally fixed relative to the housing;

a front cover mounted to the housing for sealing the cavity in the housing;

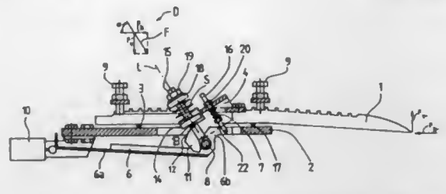
biasing means, located in the cavity and rotationally fixed relative to the housing, for exerting a first force on the clutch assembly to press the separator plates into contact with the friction discs; and

fluid, filling the cavity in the housing, whereby the pulley member will be driven at crankshaft speed for low crankshaft rotational speeds, and the fluid will exert a second force on the biasing means opposite the first force to allow clutch slip at a maximum pulley rotational speed for high crankshaft rotational speeds.

5,611,417
APPARATUS FOR STOPPING A PASSENGER CONVEYOR

Andrzej Stawniak, Brünnerstr, and Robert Ulrich, Bruckneudorf, both of Austria, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Apr. 17, 1996, Ser. No. 633,424
Claims priority, application Switzerland, Apr. 24, 1995, 01162/95
Int. Cl.[6] B66B *29/06*
U.S. Cl. 198—323 20 Claims



1. An apparatus for stopping a people conveyor, the people conveyor having a comb plate for supporting people slidably mounted on a carrier plate for relative movement between the comb plate and the carrier plate in a generally horizontal direction and a generally vertical direction, comprising:

a trigger spring means having means for pivotally mounting on a people conveyor carrier plate for applying a trigger force to a comb plate for supporting people slidably mounted on the carrier plate for movement relative to the carrier plate in a generally horizontal direction and a generally vertical direction;

a trigger force magnitude adjusting means connected to said trigger spring means for selectively adjusting a magnitude of said trigger force;

an abutment means for attachment to the comb plate;

a trigger force component ratio adjustment means coupling said trigger spring means to said abutment means for selectively adjusting a ratio of an horizontal force component to a vertical force component of said trigger force; and

a switching lever for pivotal mounting on the carrier plate and being connected to said abutment means whereby when said trigger spring means is pivotally mounted on the carrier plate, said abutment means is attached to the comb plate and said switching lever is positioned adjacent a safety switch mounted on the carrier plate for controlling movement of the people conveyor and a force is applied to the comb plate which applied force overcomes at least one of said vertical component and said horizontal component of said trigger force, the comb plate moves relative to the carrier plate to rotate said switching lever into actuating contact with the safety switch to actuate the safety switch for stopping the people conveyor.

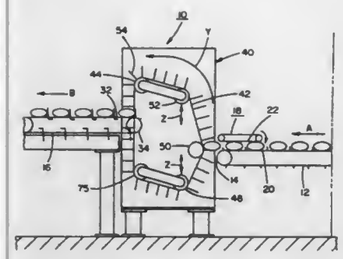
5,611,418
APPARATUS FOR INTERFACING INDEXING AND CONTINUOUS MOTION MACHINES AND METHOD OF UTILIZING APPARATUS

Thomas J. Helmstetter, 145 Middlesex Ave., Piscataway, N.J. 08854

Continuation of Ser. No. 127,537, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 857,217, Mar. 25, 1992, Pat. No. 5,271,489. This application Oct. 12, 1995, Ser. No. 542,426
Int. Cl.[6] B65G *1/00*
U.S. Cl. 198—347.1 13 Claims

1. An apparatus for converting an indexing motion of advance for a sequence of intermittently supplied articles of manufacture into a continuous motion of advance; said apparatus comprising:

(a) at least one indexing conveyor for receiving and transporting said intermittently supplied articles towards a discharge end of said conveyor;



(b) at least one receiving conveyor advancing in a continuous motion for continually transporting said articles to at least one workstation communicating with a discharge end of said conveyor;

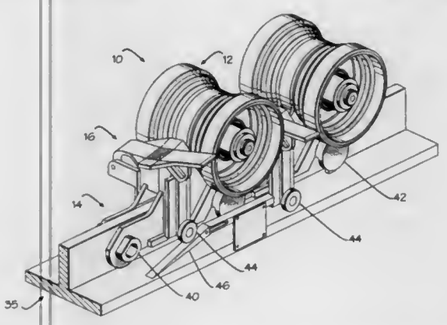
(c) at least one interfacing means operatively connected between said indexing conveyor and said continuous motion conveyor receiving said intermittently advanced articles from said indexing conveyor and converting the rate of advance of said articles towards said receiving conveyor to produce a uniform and continuous flow of said articles; and

(d) article-spacing means operatively connected to said indexing conveyor for transferring said articles from the discharge end of said indexing conveyor to said interfacing means at a higher rate of speed than the advance of said articles on said indexing conveyor.

5,611,419
MONORAIL CONVEYOR SYSTEM

Everett LaVars, Pomona, Calif., assignor to Sunkist Growers, Inc., Ontario, Canada

Filed Jan. 24, 1995, Ser. No. 377,567
Int. Cl.[6] B65G *47/38*
U.S. Cl. 198—370.04 90 Claims



17. A conveyor element comprising: a body, said body comprising:

a rigid axis,

a first body structure rigidly attached to said axis, and

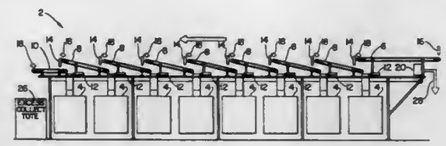
a second body structure rigidly attached to said axis, wherein the respective shapes of said first and second body structures are in mating relationship; and

a spool supported by said axis and rotatable thereabout, wherein said spool comprises a plurality of spool elements, each of said spool elements independently rotatable about said rigid axis.

5,611,420
DOUGH-HANDLING MACHINE

John P. Heim, Sewell, N.J., and John Carmichael, Etiwanda, Calif., assignors to J & J Snack Foods Corp., Pennsauken, N.J.

Filed Jul. 27, 1995, Ser. No. 508,050
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—371.2 21 Claims



1. An apparatus for the prioritized distribution of dough logs into the hoppers of a plurality of successive dough-handling machines comprising:

an input conveyor, having an upstream end and a downstream end;

a plurality of distribution conveyors placed in succession to one another along a conveying path and capable of transversely carrying dough logs downstream thereon in a first direction along said conveying path, each of said distribution conveyors having an upstream end and a downstream end, said downstream end of each of said distribution conveyors overlapping an upstream end of a successive one of said distribution conveyors;

an output conveyor having an upstream end and a downstream end;

said input conveyor placed upstream from the succession of said distribution conveyors with its downstream end overlapping the upstream end of a first one of said distribution conveyors;

said output conveyor placed downstream from the succession of said distribution conveyors with its upstream end being overlapped by a last one of said distribution conveyors;

sensor means associated with each of said input conveyor, said distribution conveyors, and said output conveyor, for detecting dough logs transported thereon;

programmable controller means for controlling the operation of each of said input conveyor, said distribution conveyors, and said output conveyor based on information received from said sensor means; and

each of said distribution conveyors and said output conveyors being configured to reverse its conveying direction from said first direction to an opposite second direction upon command from said programmable controller, thereby permitting said conveyors to discharge at their upstream end, dough traveling on said conveying path, to a production line associated with each of said distribution conveyors and output conveyor.

5,611,421
METHOD OF INSTALLING MULTIPLE-LIFT CONVEYOR SYSTEM

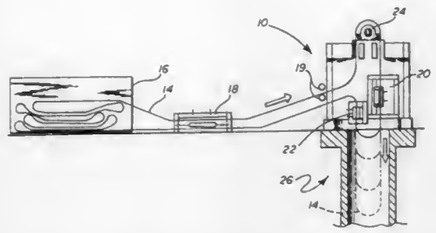
Lawrence S. Crewdson, and Donald A. Shaw, both of Milwaukee, Wis., assignors to Lake Shore Mining Company, Inc., Milwaukee, Wis.

Filed Feb. 14, 1995, Ser. No. 388,322
Int. Cl.[6] B65G *15/24*
U.S. Cl. 198—607 16 Claims

1. A method of installing a multiple lift, vertical conveyor system in a conveyor shaft, comprising the steps of:

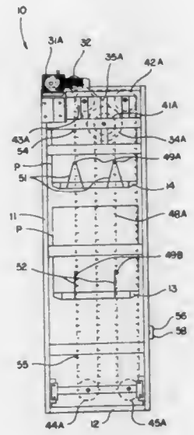
erecting a framework for the vertical conveyor system;

installing a first belt for operation on the framework;



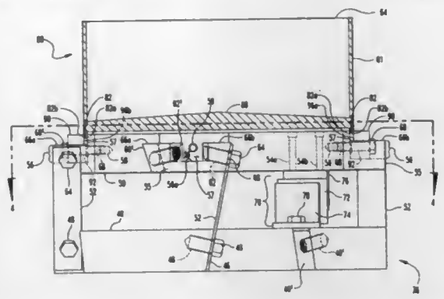
feeding a second belt into position for installation on the framework by advancing the second belt on the first belt; and
installing the second belt for operation on the framework.

5,611,422
MATERIALS CARRYING APPARATUS
Jorma O. Harkonen, Matthews, N.C., assignor to Fab-Tech Industries, Inc., Charlotte, N.C.
Filed Mar. 1, 1995, Ser. No. 397,432
Int. Cl.[6] B65G *1/10*
U.S. Cl. 198—681 **11 Claims**



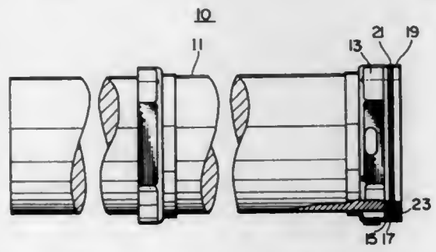
1. A materials carrying apparatus, comprising:
(a) a frame;
(b) a first carrier supported within said frame for carrying materials thereon, and located in an access position for access to and use of the materials by a user;
(c) a second carrier supported for vertically reciprocating movement within said frame on opposing first and second attached support hooks, and located in a storage position for carrying materials thereon, the storage position being vertically spaced apart from said access position;
(d) elevator means comprising first and second opposing, endless traveling chains operatively connected to said frame for vertically moving said second carrier from the storage position into the access position when the materials of said first carrier have been exhausted, and said first and second traveling chains including cooperating inwardly-projecting support pins for detachably engaging respective first and second hooks of said second carrier, whereby the support pins of said traveling chains automatically disengage from the hooks of said second carrier as said second carrier moves vertically from the storage position into the access position.

5,611,423
CLAMP NUT ARRANGEMENT FOR MOUNTING A FEEDER BOWL TO A VIBRATORY DRIVE UNIT
S. Neal Graham, 12997 Fawns Ridge, Fishers, Ind. 46038
Filed Apr. 20, 1995, Ser. No. 425,908
Int. Cl.[6] B65G *27/02*
U.S. Cl. 198—757 **29 Claims**



1. A vibratory drive unit for cooperative engagement with a parts feeder bowl having a bottom wall and an outside wall connected thereto, the bottom wall having a flange extending therefrom, the vibratory drive unit comprising:
a base member;
a top member positioned above said base member and configured to support the flange of the parts feeder bowl thereon;
a plurality of drive springs connected between said base member and said top member, each of said drive springs being attached to said top member at a spring pad location;
a plurality of clamps clamping the flange of the parts feeder bowl to said top member, each of said clamps having a mass centered substantially level with said spring pads; and
means for vibrating said top member relative to said base member.

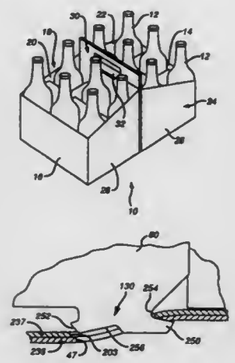
5,611,424
CONTAINER FUSE FOR ENHANCED SURVIVABILITY
Frank Sniezek, Westfield; Eugene M. Ivankoe, Chatham, and Steve Ruffini, Budd Lake, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 11, 1996, Ser. No. 687,101
Int. Cl.[6] B65D *45/00*
U.S. Cl. 206—3 **9 Claims**



1. A sealed metal ammunition container for holding at least one round of ammunition, comprising:
a metal ammunition container body sized to hold said aunmunition, said body having an opening at one end thereof;
a bottom flange fixedly attached to said container body at said one end, said bottom flange having an opening therein sufficiently large to vent pressure from igniting ammunition contained therein;

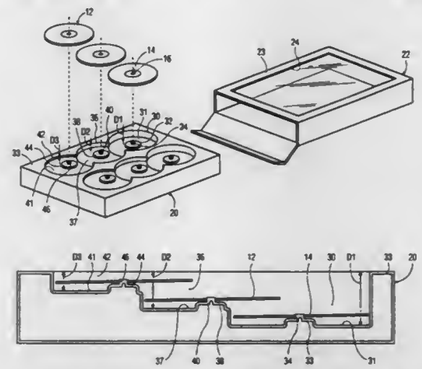
a top flange for attachment to said bottom flange, said top flange having an opening therein sufficiently large to vent pressure from igniting ammunition contained in said container;
a fuse formed from a material having a melting point below the ignition temperature of said ammunition, said fuse being positioned between said top flange and said bottom flange to form a meltable closure at said open end of said body, said fuse for limiting the conflagration caused by an ammunition fire;
a flange gasket positioned between said top flange and said fuse to form a hermetic seal when compressed upon closure thereof; and
securing means for securing said top flange, fuse and gasket to said bottom flange to form said hermetic seal.

5,611,425
LOCK FOR BASKET SYTLE CARRIER
John M. Holley, Jr., Lawrenceville, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jul. 28, 1995, Ser. No. 508,412
Int. Cl.[6] B65D *5/48*
U.S. Cl. 206—144 **8 Claims**



1. A carrier for a plurality of objects arranged in at least two rows, the carrier comprising:
substantially vertical parallel first and second side walls;
substantially parallel first and second end walls interconnecting said side walls;
a medial panel extending between and connected to said first and second end walls, said medial panel defining a lower edge and being disposed between and substantially parallel to said first and second side walls;
a primary bottom wall connected and extending between lower portions of said first and second side walls and underlying said medial panel; and
a lock for maintaining the carrier in an erect condition, the lock comprising:
a lock body connected to a lower edge of said medial panel and depending downwardly therefrom, said lock body defining first and second side edges;
a first retention tab disposed along said first side edge of said lock body spaced from said medial panel, and a second retention tab disposed along said second side edge of said lock body spaced from said medial panel, whereby said first and second retention tabs define a retention width for said lock extending between the outermost portions of said first and second retention tabs, and a throat for said lock body having a throat width extending between said first and second edges between said retention tabs and said medial panel; and
said primary bottom wall defining a locking aperture therein for cooperative engagement with said lock when said carrier is in an erected condition, said aperture being in vertical alignment with said lower edge of said medial panel, and having a length along said alignment which is less than said retention width and greater than said throat width.

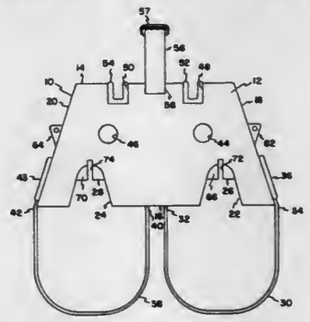
5,611,426
PACKAGING ASSEMBLY FOR COMPACT DISCS
Ian R. Warfield, Crystal, Minn., assignor to Point Group Corporation, Minneapolis, Minn.
Filed Oct. 12, 1995, Ser. No. 542,423
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **19 Claims**



7. A device for retaining a plurality of compact discs of the type having a peripheral edge, a blank center region and a useable region disposed between the peripheral edge and the blank center region on a first side, said device comprising:
a support structure having a top surface;
a plurality of depressions disposed in said top surface, wherein each of said plurality of depressions is sized to accept a compact disc therein; and
retaining means disposed in each of said plurality of depressions for selectively retaining said plurality of compact discs in said plurality of depressions, whereby each of said plurality of compact discs overlaps an adjacent one.

5,611,427
CARRIER FOR IN-LINE SKATES AND ICE SKATES
David W. Bigham, 3906 Willmatt Hill, Minnetonka, Minn. 55305
Filed Jan. 22, 1996, Ser. No. 589,412
Int. Cl.[6] B65D *71/00;63/18*
U.S. Cl. 206—315.1 **14 Claims**

1. An apparatus for carrying in-line skates, the in-line skates



having blades, the blades including at least two adjacent wheels, the apparatus comprising:

a base member having a front, back, and bottom, the base member defining first and second slots each open to the bottom and extending from the front to the back, the first and second slots each being sized to receive the blade of an in-line skate so that the base member is substantially perpendicular to the in-line skate blades; and

first and second straps operably connected to the base member, the first strap being configured to extend across the first slot and secure an in-line skate blade into the first slot, the second strap being configured to extend across the second slot and secure an in-line skate blade into the second slot.

5,611,428

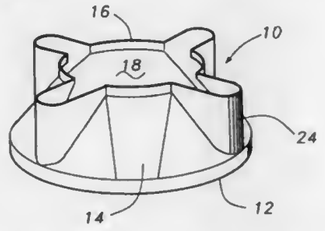
ANGIOGRAPHY GUIDE WIRE CONTAINER

Kirk Banerian, 7105 Glenburnie, Clarkston, Mich. 48346

Filed Jun. 6, 1995, Ser. No. 470,937

Int. Cl.[6] B65D *83/10; A61B 5/00*

U.S. Cl. 206—364 **31 Claims**



1. A guide wire container used in angiographic procedures, said container comprising:

a base having an interior surface, said interior surface having a central portion and an outer portion surrounding said central portion,

at least one side wall extending both upwardly and inwardly from said base, each said side wall having an upper edge, said upper edge of each said side wall forming an opening, said opening dimensioned to receive and remove therethrough a guide wire provided in a coiled arrangement wherein a cross-sectional area of said opening is smaller than a cross-sectional area of said base.

20. In combination with an elongated, flexible medical device, a container for storing said device, said container comprising:

a base having an interior surface, said interior surface having a central portion and an outer portion surrounding said central portion,

at least one side wall extending both upwardly and inwardly from said base, each said side wall having an upper edge, said upper edge of said side wall forming an opening, said opening dimensioned to receive and remove therethrough said medical device provided in a coiled arrangement, wherein a cross-sectional area of said opening is smaller than a cross-sectional area of said base.

5,611,429

MEDICAL SYRINGE DISPOSAL

Paul B. Phillips, P.O. Box 273510, Tampa, Fla. 33688-3510

Filed Apr. 5, 1995, Ser. No. 416,642

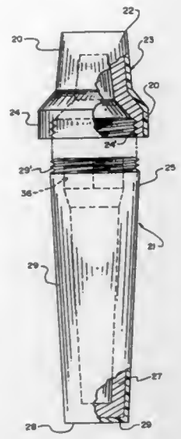
Int. Cl.[6] B65D *83/10*

U.S. Cl. 206—365 **6 Claims**

1. A syringe-disposal container, comprising

a two-piece leakproof inner container including an upper tubular piece closed at its top end but open at its bottom end to accommodate a syringe piston and flared laterally outward at its open bottom end to accommodate a syringe barrel finger grip, and a lower tubular piece closed at its bottom end but open at its top end to accommodate a syringe barrel and flared laterally outward at its open top end to accommodate the finger grip, with respective flared open ends being adapted to be assembled together into press-fit sealing relationship about such finger grip; and

a two-piece outer radiation-shielding container including an upper tubular piece closed at its top end and open at its bottom tubular end to accommodate the upper piece of the inner container, a lower tubular piece closed at its bottom end and open at its top end to accommodate the lower end of the inner container, the top surface of the lower tubular piece being recessed to accommodate the laterally flared press-fit ends of the inner container when the top and bottom pieces of the outer container are assembled together about the outwardly flared inner container.



5,611,430
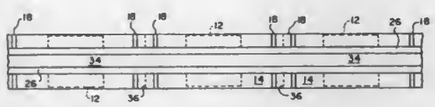
ADHESIVE-STRIPED BANDOLEER PACKAGING

Jeffrey A. Albrecht, Silver Lake, and Hector L. Vega, Oak Creek, both of Wis., assignors to American Creative Packaging, Oak Creek, Wis.

Filed May 15, 1995, Ser. No. 440,663

Int. Cl.[6] B65D *85/67*

U.S. Cl. 206—390 **20 Claims**



1. Adhesive-striped bandoleer packaging comprising:

a series of articles encased in a sleeve and separated by closed portions of said sleeve;

an adhesive stripe located along said sleeve;

a release liner covering said adhesive;

perforations formed through both said closed portions of the sleeve and said release liner; and

a reinforcer located along said release liner for supporting perforated lengths of said release liner after removal from said sleeve.

5,611,431

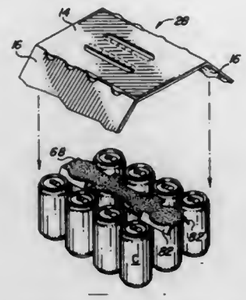
WRAP-AROUND CARRIER FOR PACKAGING THREE ROWS OF ARTICLES

Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 1, 1995, Ser. No. 566,237

Int. Cl.[6] B65D *65/24*

U.S. Cl. 206—434 **14 Claims**



1. A package comprised of a wrap-around carrier containing a plurality of adjacent rows of articles, each article having an upper portion which includes an outwardly projecting flange, comprising:

opposite side panels connected to a top panel and to a bottom panel, the top panel having outer and inner surfaces, opposite end edges and a handle;

a reinforcement panel having substantial portions thereof adhered to the inner surface of the top panel;

the reinforcement panel including a pair of oppositely spaced support panels adjacent each of the end edges of the top panel;

each support panel having spaced end portions which are foldably connected to the reinforcement panel and an intermediate portion which is spaced from the reinforcement panel; and

the spaced intermediate portion having an upper edge adjacent the underside of the flange of one said article associated therewith;

whereby said upper edge engages the underside of the flange of the associated article upon lifting the package by the handle of the carrier to thereby assist in supporting said associated articles.

8. A package comprised of a wrap-around carrier containing three rows of containers, each row including two end containers and at least one interior container, each container being substantially circular in cross-section and having an upper portion which includes an inwardly tapered portion terminating in an outwardly projecting flange, comprising:

opposite side panels connected to a top panel and a bottom panel, the top panel having outer and inner surfaces, opposite end edges and a handle;

a reinforcement strip adhered to the inner surface of the top panel and overlying the middle row of containers;

the reinforcement strip including a pair of oppositely spaced support panels adjacent each of the end edges of the top panel;

each support panel being connected to the reinforcement strip by a fold line which is interrupted by a slot through which a portion of the flange of an associated said end container of the middle row extends; and

each slot having an edge adjacent the underside of the flange of the associated end container;

whereby said slot edge of each support panel engages the underside of the flange of the associated end container upon lifting the package by the handle of the carrier to thereby assist in supporting said associated end containers.

5,611,432

MODEL VEHICLE AND TRADING CARD PACKAGING SYSTEM

Robert E. Dods, Burr Ridge, Ill., assignor to Racing Champions, Inc., Glen Ellyn, Ill.

Filed Aug. 18, 1995, Ser. No. 516,955

Int. Cl.[6] B65D *75/00*

U.S. Cl. 206—459.5 **12 Claims**



1. A package system, comprising:

a model vehicle bearing a predetermined serial number corresponding to one of a sequence of numbers in a limited range;

a trading card bearing said serial number;

a package for retaining said model vehicle and said trading card, said package including a substantially rigid sheet disposed adjacent said model vehicle and said trading card; and

a display stand having a platform for removably supporting said model vehicle, wherein said display stand also bears said serial number.

7. A package system, comprising:

a model vehicle bearing a predetermined serial number corresponding to one of a sequence of numbers in a limited range;

a trading card bearing said serial number;

a display stand beating said serial number and including a platform for removably supporting said model vehicle, an upwardly extending portion for holding said trading card in an upright position adjacent said platform; and

a package for retaining said model vehicle and said trading card, said package including a substantially rigid sheet disposed adjacent said model vehicle and said trading card.

5,611,433

MEDICAL SPECIMEN SLIDE MAILER WITH IMPROVED SPECIMEN PROTECTION

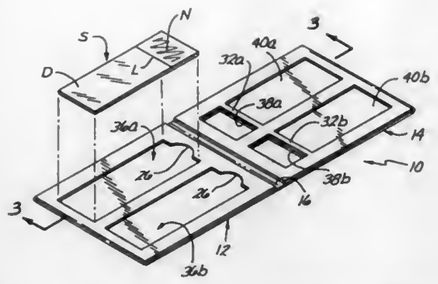
Abner Levy, 325 N. Oakhurst Dr., P4, Beverly Hills, Calif. 90210

Filed May 29, 1996, Ser. No. 654,550

Int. Cl.[6] B65D *75/14*

U.S. Cl. 206—569 **13 Claims**

1. A mailer for medical specimen slides comprising: a sheet of relatively stiff material cut, scored and folded to make a base and a cover joined along a hinge line for movement between an open and a closed position, said base including a double thickness of said sheet material, one thickness in said base being cut to define a slide holding well sized to closely receive a medical specimen slide, said cover also having a double thickness including an inner thickness and an outer thickness of said sheet material, one thickness in said cover being cut to define a clearance recess overlying said holding



well in said closed position, said recess being sized and shaped to avoid contact of said cover with a specimen bearing portion of said specimen slide, and means for restraining said slide in said holding well and out of said recess in said closed position.

5,611,434

ROTOR FOR A SCREEN GRADER

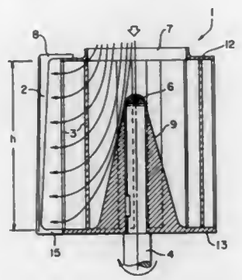
Gerhard Veh, Hochstadt, and Jurgen Oerter, Heidenheim, both of Germany, assignors to Voith Sulzer Stoffaufbereitung GmbH, Ravensburg, Germany

Filed Jan. 17, 1995, Ser. No. 373,551

Claims priority, application Germany, Jan. 18, 1994, 44 01 305.1

Int. Cl.[6] B07B *1/20*

U.S. Cl. 209—273 **13 Claims**



1. A rotor for a screen grader of the type having a rotationally symmetric screen basket with a screening profile for grading a suspension and a shaft having a rotor axis, said rotor comprising:

a rotor hub rotatably mounted on the shaft;

a plurality of impulse elements disposed within and proximal to the rotationally symmetric screen basket, wherein each impulse element is connected to the rotor hub, wherein each impulse element has a height corresponding to the height of the screen basket, and wherein rotation of the impulse elements within the screen basket generates pulses for grading the suspension; and

a plurality of rearward curving blade elements connected to the rotor hub and having outer blade edges which are disposed radially within and spaced apart from said impulse elements, wherein each blade has a height corresponding to the height of the screen basket, the design and mutual coordination of said blade elements forming a pump impeller for achieving a uniform radial flow of the suspension across the height of the screen.

5,611,435

APPARATUS FOR SORTING CONSTITUENTS OF A MIXTURE

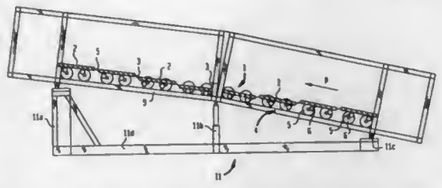
Reinhard Göschl, Seebenstein, Austria, assignor to Technisches Büro Ing. Reinhard Göschl, Seebenstein, Austria

Continuation of Ser. No. 304,649, Sep. 12, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 625,677

Claims priority, application Austria, Mar. 12, 1993, 494/93

Int. Cl.[6] B07B *13/00*

U.S. Cl. 209—481 **6 Claims**



1. Apparatus for separating constituents of a mixture, comprising:

a feed inlet for supplying a mixture;

a vibratory table defined by a longitudinal axis and extending at an inclination underneath said feed inlet for separating the mixture into various fractions on the basis of density and/or grain size, said vibratory table being subdivided transversely to the longitudinal axis into single table sections arranged in succession in direction of the longitudinal axis at a distance from each other;

drive means for moving said table sections of said vibratory table in such a manner that successive table sections are driven at a phase shift from one another to separate lighter constituents of the mixture from heavier constituents of the mixture by bouncing the lighter constituents upwardly to discharge the lighter constituents from an upper end of the vibratory table and discharging the heavier constituents from a lower end of the vibratory table; and

transition means secured to opposing ends of successive tables sections for preventing an escape of constituents during advance by said table sections.

5,611,436

PC CARD CONVEYANCE AND TESTING APPARATUS

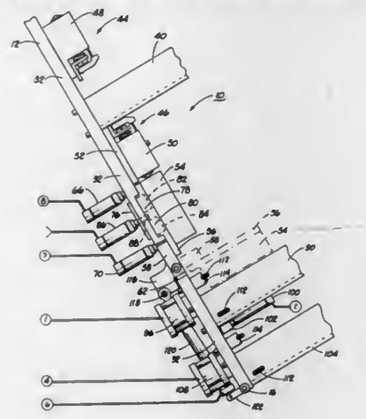
Harrel D. Ashby, 11913 Rosemeade Ct., Oklahoma City, Okla. 73162

Filed Jul. 13, 1995, Ser. No. 501,773

Int. Cl.[6] B07C *5/344*

U.S. Cl. 209—573 **13 Claims**

1. Apparatus for handling PC card units during testing procedures, comprising:



a chassis plate supported at an incline, said chassis plate being milled out to form a slideway along the length thereof for slidably receiving PC cards to be tested;

means for releasing said PC cards into said slideway with plug edges facing transversely to said slideway;

a test box disposed across said chassis plate and including a PC card test receptacle on a first side, a generally central slideway sector receiving a card thereon, and a transversely slidable catch plate and drive assembly normally disposed on the second side;

a fluid actuator connected between the test box first side and said driver assembly and actuatable to draw said driver assembly and catch plate transversely to capture said PC card in said slideway sector and carry the card further transversely into testing pin connection in said card test receptacle;

means for reversing actuation of said fluid actuator to disconnect the card pin connections and return the card to the slideway to proceed downward therein; and

deposit means disposed on said slideway to classify tested PC card units into valid tested units and rejected units.

5,611,437

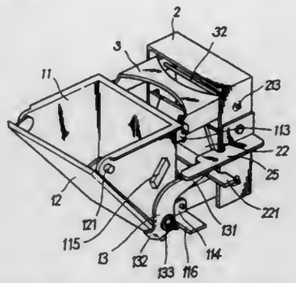
AUTOMATICALLY OPENABLE AND CLOSABLE HOPPER SET FOR A FRUIT WEIGHING AND SORTING MACHINE

Masahiro Okada, Chiriyu, Japan, assignor to Sea-Chang Ting, Hsi, Chih Chen, Taiwan, and Shigeo Nakata, Toyokawa, Japan

Filed Apr. 19, 1995, Ser. No. 423,467

Int. Cl.[6] B07C *5/16;* **G01G** *19/00*

U.S. Cl. 209—592 **1 Claim**



1. An automatically openable and closable hopper set for a fruit weighing and sorting machine, comprising; a hopper for carrying a fruit therein to be sorted by weight; a support frame fixed to a fixing base of said fruit weighing and sorting machine and disposed in front of said hopper to pivotally connect said hopper via two connecting members by means of a pivot shaft; said hopper being provided with a door pivotally connected to an upper edge thereof such that said door forms a downwardly and inwardly inclined surface of said hopper; two laterally and outwardly extending scale plates on said hopper for supporting said hopper on a continuous track of said fruit weighing and sorting machine to slide thereon; an arm member located at a lateral side of the hopper having a link portion normally stopped by a stopping plate attached to one side of said support frame so that a hook portion of said arm member opposite to said link portion retains said door to said hopper to close same; wherein, when said hopper carries a fruit fed into it by a feeding machine disposed above said weighing and sorting machine at a beginning point of said track and slides on said track with said two scale plates contacting with said track, said hopper shall pass by a series of weighing devices which are set to different values, that when said fruit in said hopper is heavier than one of said set values of one of said weighing devices passed by said hopper, said scale plates depress a scale rod extending from said weighing device where no track is provided to support said hopper, causing said hopper to pivotally tilt down relative to said support frame, said arm member shifts following the tilting of said hopper and causes said link portion thereof to disengage from said stopping plate which in turn causes said hook portion of said arm member to disengage from said door and release the latter from said hopper, allowing said fruit in said hopper to fall out and down into a collection box, said opened door automatically closes said hopper again when said hopper keeps moving on said track to a first point where said hopper turns and descends vertically with said door located at a position above said hopper and closing same, and said hook portion of said arm member automatically retains said closed door to said hopper when said hopper moves to a second point on said tracks where said hopper turns and slides horizontally in an upside down position until said hopper moves back to said beginning point of said track.

5,611,438

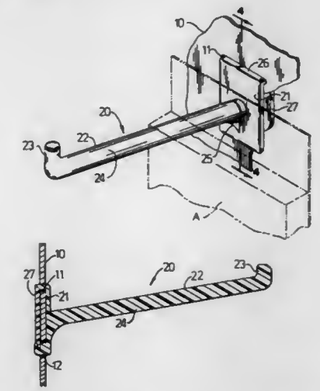
PRODUCT DISPLAY AND DISPLAY HOOK FOR USE IN SAME

Robert G. Dye, Weehauken, N.J., assignor to Chesapeake Display & Packaging Company, Winston-Salem, N.C.

Filed Aug. 7, 1995, Ser. No. 512,116

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—57.1 **20 Claims**



1. A display hook for use in a point-of-purchase display of the type having a support panel containing a horizontal slot therethrough and an opening at a predetermined distance from said slot for mounting said display hook thereto comprising: a front plate having a front face and a rear face; a product support member having a shank extending outwardly from said front face of said front plate; a connecting member for connecting said front plate to a rear plate; said connecting member extending rearwardly from said rear face of said front plate and adapted to extend through said slot; a hinge along which one edge of said rear plate is pivotally secured to one side and the other side of said hinge being secured to an edge of said rear plate; and a closure element for securing the opposite edge of said rear plate through said opening to said front plate.

5,611,439

SHOCK-RESISTANT GUN RACK

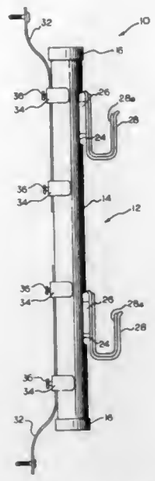
Terrell L. Scott, P.O. Box 354, Harkers Island, N.C. 28531

Filed Apr. 5, 1996, Ser. No. 628,854

Int. Cl.[6] A47F *7/00;* **B60R** *7/14*

U.S. Cl. 211—64 **18 Claims**

1. A shock-resistant gun rack for supporting a gun and moving vertically up and down in response to shocks or impacts, comprising: a frame; a gun holder movably mounted on the frame and movable vertically up and down with respect to the frame; the gun holder including a gun support structure that moves vertically up



and down and extends underneath the gun and supports the gun from its bottom; and at least one spring operatively connected to the gun holder and the gun support structure thereof, the spring operative to bias the gun support structure that extends underneath the gun towards an upper position but yieldable in response to a shock or impact to allow the gun supporting structure and the gun carried thereby to move downwardly with respect to the frame so as to soften the impact, and wherein after moving downwardly the gun support structure is moved upwardly by the biasing action of the spring.

5,611,440

SALES RACK FOR KITCHEN UTENSILS

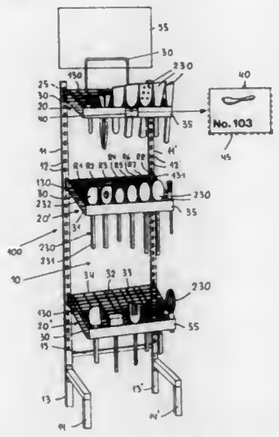
Jens P. Møller, Ryslinge, Denmark, assignor to Ryslinge Traevarer APS, Ryslinge, Denmark

Filed May 16, 1995, Ser. No. 441,834

Claims priority, application Germany, May 17, 1994, 94 08 087 U

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—70.7 **17 Claims**



1. A sales rack for kitchen utensils having stem-like handles, the sales rack comprising a vertical rear wall, a plurality of superposed horizontal accommodation means each having a front and a rear, the horizontal accommodation means being arranged at a distance from each other for accommodating the kitchen utensils and being attached to the rear wall, each horizontal accommodation means comprising two interconnected square or rectangular support plates of identical construction, each support plate having a plurality of perforations arranged consecutively and disposed juxtaposedly in the form of insertion apertures for the kitchen utensils, a facing strip attached to the front of each horizontal accommodation means for connecting the two support plates of each horizontal accommodation means, each facing strip carrying a number of type identification signs, wherein the number of type identification signs corresponds to a number of rows formed by the consecutively arranged perforations.

5,611,441

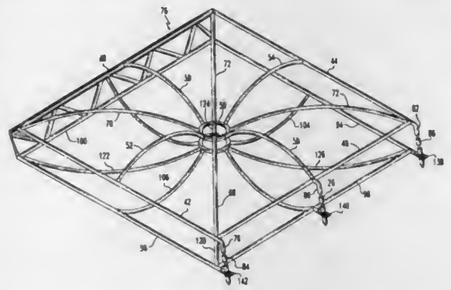
DEVICE FOR HOUSING THROW PILLOWS DURING WASHING

Kimberly A. Bartko, 1245 Five Pines Rd., North Huntington, Pa. 15642

Filed Aug. 18, 1994, Ser. No. 292,279

Int. Cl.[6] A47F *5/14*

U.S. Cl. 211—181 **15 Claims**



1. A device for housing a pillow during washing in a washing machine or dish washer comprising:

(a) a lower generally concave housing member having front and rear ends;

(b) an upper generally concave housing member having front and rear ends and being superimposed over said lower housing member such that the front end of said upper housing member engages the front end of said lower housing member and the rear end of said upper housing member engages the rear end of the lower housing member and such that a pillow housing space is formed between said upper housing member and lower housing member and the rear end of the upper housing member and the rear end of the lower housing member are pivotally attached to one another to allow the upper housing member to pivot in a vertical arc relative to the lower housing member;

(c) means for disengaging the front end of the upper housing member from the front end of the lower housing member so as to allow access to the interior pillow housing space and the means for disengaging the front end of the upper housing member from the front end of the lower housing member is a clamping means which when disengaged allows the upper housing means to be upwardly pivoted in said vertical arc to allow access to the interior pillow housing space; and

(d) central pillow retaining means extending into the interior pillow housing space, said pillow retaining means comprising a projection extending downwardly into the interior pillow housing space from the upper housing member and a central support member extending upwardly into the interior pillow housing space from the lower housing member toward the central support member of the upper housing member and said projections cooperate to define means for gripping the pillow retained in the interior pillow retaining space.

5,611,442

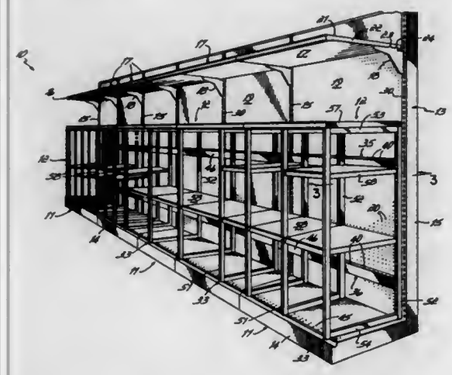
GONDOLA RACK MODULAR STACKING SYSTEM

John D. Howard, Temple, Ga., assignor to L&P Property Management Company, Chicago, Ill.

Continuation of Ser. No. 235,295, Apr. 29, 1994, Pat. No. 5,477,971. This application Dec. 22, 1995, Ser. No. 577,207

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—187 **23 Claims**



1. A stocking system comprising:

a plurality of vertical standards spaced a horizontal distance apart in a vertical plane and upstanding from a horizontal base surface and fixed relative thereto;

at least two rails including an upper rail and a lower rail, each rail being connectable, when extending horizontally to at least one two of the standards, each rail having structure defining a plurality of frame member connectors thereon;

a plurality of at least three generally rectangular vertical upright frame members, each having vertical load supporting front and back supports and horizontal top and bottom supports, each frame member configured to be rigidly connected at a selected one of the plurality of frame member connectors to the rails in a vertical orientation perpendicular to the vertical plane and horizontal surface each of the frame members also having a plurality of vertically spaced shelf rests on the front and back supports thereof to support shelves in selected one of a plurality of vertical shelf positions thereon;

a plurality of rectangular shelves configured to engage the rests of the front and back supports of at least two different combinations of two of the frame members connected to the rails at respective pairs of the connection positions that are spaced apart a distance corresponding to the widths of the respective shelves connected thereto, to support the shelves at the fronts and backs at both sides thereof between pairs of frame members differently spaced along the rail; and

the upright frame members each having an anchor connector on at least one of the supports spaced horizontally from the vertical plane to maintain the bottom of the frame vertical in alignment with the top thereof and to maintain the member generally perpendicular to the vertical plane.

5,611,443

CHILD-RESISTANT CLOSURES FOR CONTAINERS

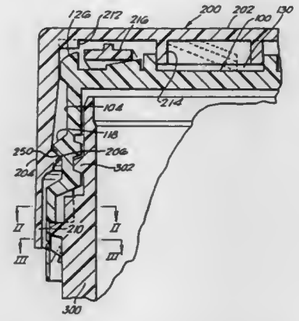
Roger M. King, Latimer, United Kingdom, assignor to Beeson and Sons Limited, Rickmansworth, United Kingdom

Filed Jun. 5, 1995, Ser. No. 463,215

Claims priority, application United Kingdom, Feb. 24, 1995, 9503810

Int. Cl.[6] B65D *50/04*

U.S. Cl. 215—220 **27 Claims**



1. A closure for threaded engagement in child-proof fashion on a threaded neck of a container, said closure comprising:

an inner closure part carrying an internal screw thread for screw threaded engagement with an external screw thread on the neck of a container;

an outer closure part at least partially enclosing the inner closure part;

co-operating retaining projections on the inner and outer closure parts for retaining the inner closure part within the outer closure part, and for permitting limited axial movement of the inner closure part within the outer closure part;

a first set of castellations on the inner closure part;

a second set of castellations on the outer closure part arranged to inter-engage the first set of castellations on the inner closure part when the outer closure part is moved axially towards the inner closure part to permit full bidirectional torque to be transmitted from the outer closure part to the inner closure part when said first and second sets of castellations are engaged;

a set of resilient blades extending from a first of the inner and outer closure parts towards a second of the inner and outer closure parts, the set of resilient blades bearing against the said second of the inner and outer closure parts to urge the outer closure part axially in a direction away from the inner closure part such that the first and second sets of castellations are normally held out of interengagement;

each one of said set of resilient blades having a remote end and comprising an abutment surface at the remote end;

said second of the inner and outer closure parts comprising a set of ratchet projections, each one of the set of ratchet projections comprising a stop surface and a ramp surface, the stop surface being substantially radial and being constructed and arranged to engage the abutment surface of one of the resilient blades when the outer closure part is rotated in a screwing-down direction to apply the closure to said neck, thereby to permit full torque to be transmitted to the inner closure part when the closure is being screwed down;

each of the ramp surfaces of said set of ratchet projections being constructed and arranged to cam one of the set of resilient blades over said set of ratchet projection when the outer closure part is rotated in an unscrewing direction so that the resilient blades can slip relative to the set of ratchet projections if the outer closure part is rotated in the unscrewing direction without the first and second sets of castellations being in inter-engagement; and

wherein the set of castellations on one or both of the inner and outer closure parts are chamfered or rounded such that the height of the castellations decreases from the center of the castellations to the radially outer edges of the castellations, whereby accidental engagement of the first and second sets of castellations is substantially avoided when a bending moment is applied between the inner and outer closure parts.

5,611,444

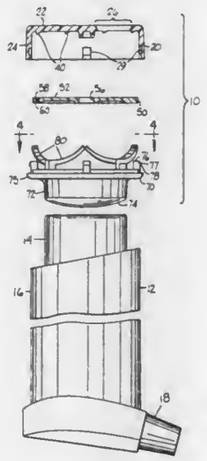
INDICATOR DEVICE RESPONSIVE TO AXIAL FORCE

Gage L. Garby, and Jeffrey T. Ballas, both of Boulder, Colo., assignors to Senetics, Inc., Boulder, Colo.

Division of Ser. No. 125,365, Sep. 22, 1993, Pat. No. 5,421,482, which is a continuation-in-part of Ser. No. 109,401, Aug. 19, 1993, Pat. No. 5,299,701, which is a continuation-in-part of Ser. No. 641,759, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 306,485, Feb. 3, 1989, Pat. No. 5,009,338. This application Mar. 29, 1995, Ser. No. 412,359

Int. Cl.[6] B65D *55/02*

U.S. Cl. 215—230 **10 Claims**



1. An indicator device, comprising: an outer cover; an indicator engaged with the outer cover; and a rotation mechanism engaged with the outer cover and indicator to translate a non-rotative force on the outer cover into a rotation of the indicator relative to the outer cover; one of the outer cover and indicator having an indicia and the other of the outer cover and indicator having an indicia selector to select said indicia such that the indicia selector moves relative to the indicia when the indicator rotates relative to the outer cover; wherein said rotation mechanism includes a first set of teeth and a second set of teeth separated from the first set of teeth by a space, and a tab dispensed in said space whereby said non-rotative force applied to the outer cover causes the tab to slide along the first set of teeth to rotate the indicator wheel relative to the outer cover and a release of the non-rotative force applied to said outer cover causes the tab to slide along the second set of teeth to further rotate the indicator wheel relative to the outer cover.

5,611,445

LID FOR CONTAINER

Takashi Kano, Yamagata, and Seizo Rai, Yashio, both of Japan, assignors to Mect Corporation, Tokyo, Japan

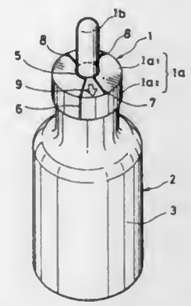
PCT No. PCT/JP94/00094, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/18088, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 25, 1994, Ser. No. 500,876

Claims priority, application Japan, Feb. 5, 1993, 5-017746

Int. Cl.[6] B65D *41/62*

U.S. Cl. 215—249 **4 Claims**



1. A lid for a container, characterized in that said lid has a main body portion and a projected portion integrally projected from a substantially central portion of an upper surface of said main body portion, whereby an opening portion of the container and a seal plug for blocking the opening portion are covered by said lid, said lid including: a first breakable portion, annularly provided around a portion of a circumference of a base portion of said projected portion thereby dividing said circumference into said first breakable portion and a remaining portion wherein said first breakable portion is formed such that when said projected portion is bent towards said remaining portion, said projected portion detaches from said first breakable portion while remaining attached to said remaining portion; a second breakable portion provided from one end of said first breakable portion through the upper surface of said main body portion to a bottom end of an outer peripheral surface of said main body portion; a third breakable portion provided from another end of said first breakable portion to a end of an outer periphery of the upper surface of said main body portion; at least one more breakable portion provided from an intermediate point of said first breakable portion to the end of the outer periphery of the upper surface of said main body portion; a display mark for indicating a bending direction of said projected portion; and said lid for the container is integrally formed of a single material.

5,611,446

TAMPER INDICATING PACKAGE

Keith W. Ingram, Holland, Ohio, and Daniel J. Crowley, Jr., Delton, Mich., assignors to Owens-Illinois Closure Inc., Toledo, Ohio

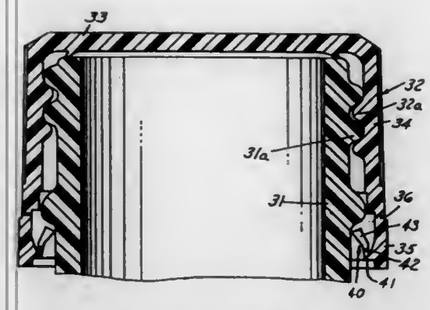
Continuation of Ser. No. 239,141, May 6, 1994, Pat. No. 5,462,184, which is a continuation of Ser. No. 987,035, Dec. 7, 1992, Pat. No. 5,310,069, which is a division of Ser. No. 822,001, Jan. 16, 1992, Pat. No. 5,219,507, which is a divisIon of Ser. No. 386,391, Jul. 27, 1989, Pat. No. 5,090,788. This application Sep. 28, 1995, Ser. No. 535,803

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[6] B65D *41/34*

U.S. Cl. 215—252 **18 Claims**

1. A tamper indicating package comprising
a container having a neck with a threaded finish,
an annular bead on said neck,
a plastic closure which includes a base wall and a depending peripheral skirt having threads interengaging the threads of said container, and



a tamper indicating band attached to said skirt by one or more weakened portions defining a line of severing, and
an annular flange extending axially upwardly and inwardly from said tamper indicating band toward said base wall of said closure,
said flange comprising a first continuous annular flange portion connected to an inner surface of said tamper indicating band by a hinge spaced radially inwardly from said inner surface of the band, and said flange being bent intermediate its ends such that a second portion extends inwardly at a greater angle to the axis of the closure than said first continuous flange portion, the free end of said second portion engaging beneath said bead on said container when said closure is threaded onto said container,
said second portion comprising a plurality of circumferentially spaced segment portions separated by narrow slots extending axially upwardly and inwardly from the continuous annular flange portion,
said band having an inner surface engaged by said first continuous flange portion when the closure is being removed to cause the flange to bend along the bend therein,
said segment portions comprising the major portion of the second flange portion.

5,611,447

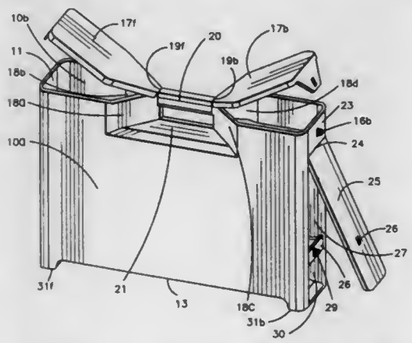
CONTAINER FOR MATERIALS USED WITH A CHARCOAL DEPENDENT COOKER

William G. Tye, 23 Sunset St., Satellite Beach, Fla. 32937

Filed Dec. 19, 1994, Ser. No. 358,960

Int. Cl.[6] B65D *88/00*

U.S. Cl. 220—2 **1 Claim**



1. A container for transportation and storage of charcoal and outdoor cooking materials, said container comprising:
a) a first side wall and a second side wall, a front wall intermediate an end of the first side wall and second side wall, a rear wall substantially parallel said front wall intermediate an opposite end of the first side wall and second side wall, a bottom wall attached to the side walls and front and rear walls forming a bottom of the container;
b) said first side wall, second side wall, front wall, and rear wall forming a first top opening and a second top opening lying in a single plane;
c) a top wall extending from said first side wall to said second side wall and intermediate said first and second top opening;
d) a handle mounted to the container adjacent said first top opening and said second top opening, said handle having parallel upper and lower surfaces extending parallel to said top opening plane, with said lower surface vertically spaced above the top wall to allow a users hand to grip around the handle;
e) a first partition, mounted in the container above, and substantially parallel the bottom of the container, forming a lower compartment and an upper main compartment with said first top opening in communication with the upper main compartment;
f) a second partition, mounted in the container toward the rear wall, and parallel to said rear wall, forming a side compartment adjacent the upper main compartment;
g) a door and latch means, mounted to said rear wall, for access to said side compartment and said lower compartment;
h) a third partition mounted in the container above and parallel the bottom partition, forming a top compartment in communication with the second top opening;
i) a first cover hingedly mounted over said first top opening and a second cover hingedly mounted over said second top opening; and
j) a notch means formed in the bottom wall toward said rear wall for grasping the container and tilting the same to empty the contents from the main compartment.

5,611,448

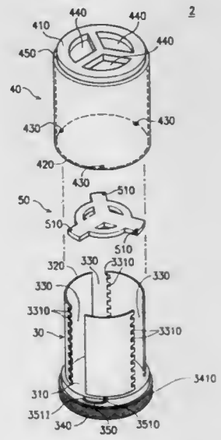
WAFER CONTAINER

Fu-Liang Chen, Hsinchu Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 25, 1995, Ser. No. 533,661

Int. Cl.[6] B65D *85/00*

U.S. Cl. 220—4.27 **17 Claims**



1. A wafer container for containing IC wafers comprising:
a wafer-containing member of substantially cylindrical shape having a sidewall, a closed end and an open end, the sidewall having a diameter suitable for containing the IC wafers, said sidewall having at least two longitudinal slots formed therein parallel to a longitudinal axis of said wafer container, said at least two longitudinal slots each having a plurality of securing notches formed along a length thereof;

a wafer-protecting and securing member of a substantially cylindrical shape having a closed end and an open end and a diameter suitable for receiving the cylindrical body of the wafer containing member,

said wafer-protecting and securing member and said wafer-containing member each having securing structure constructed and arranged to permit said wafer-protecting and securing member to be removably secured to said wafer-containing member when the cylindrical body of said wafer-containing member is received within said wafer-protecting and securing member; and

a wafer-confinement member comprising a flat plat having radially extending spokes, each of said radially extending spokes having a securing slot formed in a side thereof and adapted to engage a selected one of said plurality of securing notches formed along one of said at least two longitudinal slots.

5,611,449

FOLDABLE CONTAINER

Thor Pedersen, Åsgårdane, N-3550 Gol, Norway

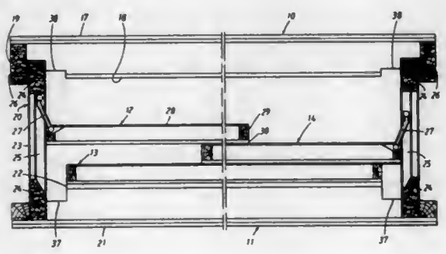
PCT No. PCT/SE93/00387, § 371 Date Nov. 9, 1994, § 102(e) Date Nov. 9, 1994, PCT Pub. No. WO93/23315, PCT Pub. Date Nov. 25, 1993

PCT Filed May 4, 1993, Ser. No. 335,852

Claims priority, application Sweden, May 11, 1992, 9201471

Int. Cl.[6] B65D *21/00*

U.S. Cl. 220—6 **10 Claims**



1. A foldable container comprising:

a substantially planar floor, the floor having an upper surface, a lower surface and side edges between the upper and lower surfaces;

a frame member extending transversely away from the floor along the side edges of the floor;

a roof;

at least two substantially planar side walls;

at least one link member connecting each of the side walls to the frame, each link having a first end pivotally connected to a side wall and a second end pivotally connected to the frame, the link also being slidably connected to at least one of the side wall and the frame so as to allow the link to move linearly relative to said at least one of the side wall and the frame;

whereby the pivotal and slidable connections of the side wall to the frame via the link allows the side wall to be moved from a collapsed position wherein the side wall is substantially parallel with the floor to an upright position wherein the side wall is substantially transverse to the floor and aligned with the frame; and

the pivotal and slidable connections further allowing the side walls to move in a linear direction with respect to the frame when the side wall is aligned with the frame so that the side wall can be moved into a position whereby the frame provides side support to the walls when the walls are in the upright position.

5,611,450

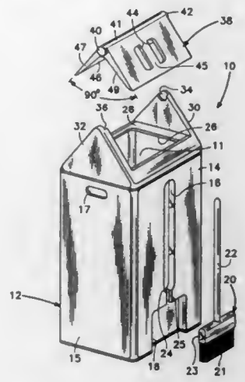
TRASH RECEPTACLE WITH BUILT-IN DUSTPAN AND BROOM

Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367

Filed May 13, 1996, Ser. No. 645,293

Int. Cl.[6] B65D *90/00*

U.S. Cl. 220—334 **5 Claims**



1. A trash receptacle with built-in dustpan and broom comprising:

a trash receptacle housing having an internal chamber adapted to receive trash, an access opening formed in said housing providing access into said internal chamber, a lid mounted on said housing about said access opening, said lid including a dustpan, said dustpan closing said access opening when at rest, said dustpan being pivotally movable to a deflected position to provide access through said access opening into said internal chamber, said dustpan having an exterior surface and an interior surface, said dustpan being composed of a lower leg and an upper leg connected together at an apex, said dustpan being removable from said lid and turned upside down and when placed against a supporting surface movement of loose debris onto said interior surface of said lower leg is permitted, said upper leg extending from said lower leg at approximately ninety degrees which positions said upper leg to function as a backstop for debris as it is swept onto said lower leg.

5,611,451

DISPOSAL CONTAINER WITH LOCKING CLOSURE AND INDICATOR TO PROVIDE VISUAL INDICATION OF LOCKING OF CLOSURE

Donald J. Mosior, Lake Geneva, Wis., and Edward C. Hay, Crystal Lake, Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Continuation-in-part of Ser. No. 131,652, Oct. 5, 1993, Pat. No. 5,507,408. This application Aug. 31, 1995, Ser. No. 522,134

Int. Cl.[6] B65D *43/20*

U.S. Cl. 220—346 **20 Claims**

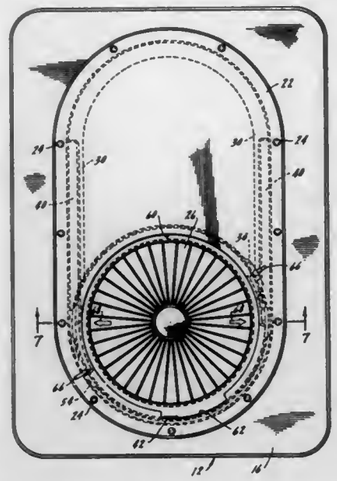
1. A cover for a container, comprising

a. a lid, said lid including means for attachment of said lid to a container body,

b. an access aperture in said lid,

c. a closure shaped to overlay said access aperture,

d. means for positioning said closure in an operative position at a first elevation relative to said lid with said lid being translatable at said first elevation from a temporarily closed orientation over said access aperture to an opened orientation such that at least a portion of said access aperture is expected to permit passage through said access aperture.



e. means for facilitating depressing of said closure at said access aperture from said first elevation to a second elevation relative to said lid, and

f. means at said second elevation and visible only when said closure is at said second elevation to provide a visual indication when said closure is located at said second elevation.

5,611,452

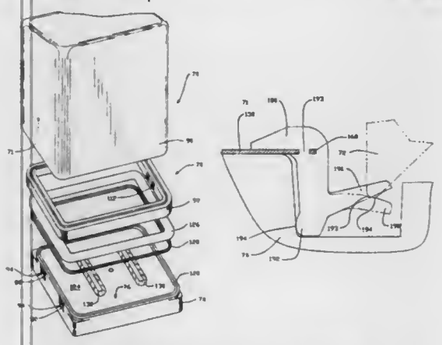
SEALABLE TRANSPORTABLE CONTAINER HAVING IMPROVED LINER

Anthony C. Bonora, Menlo Park; Robert P. Wartenbergh, Woodside; Sudhir Jain, Fremont, and Mark R. Davis, Mountain View, all of Calif., assignors to Asyst Technologies, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 865,297, Apr. 18, 1992, Pat. No. 5,469,963. This application Jan. 14, 1994, Ser. No. 182,490

Int. Cl.[6] B65D *85/30*

U.S. Cl. 220—378 **32 Claims**



1. A sealable, transportable container, comprising:

a box having a first sealing surface and an interior region;

a box door having an interior surface;

a liner provided on the interior surface of said box door; and

a compressible sealing material, said sealing material being separate from and attached to said liner so that moving said box door to a sealing positioo with respect to said box causes said sealing material to form a seal with the first sealing surface to isolate the interior region from ambient atmospheric conditions, said sealing material being of one piece construction.

5,611,453

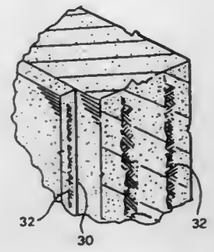
VESSEL FORMED OF POLYMERIC COMPOSITE MATERIALS

Ian F. Schwartz, 26 Loch Avenue, Parktown, Johannesburg, and Mark A. Stone, 5 Langley Levy Street, Montgomery Park, Johannesburg, both of South Africa

Filed Sep. 13, 1994, Ser. No. 305,373

Int. Cl.[6] B65D *90/04*

U.S. Cl. 220—453 **11 Claims**



1. A vessel for containing or conveying a fluid comprising, a wall having at least an inner layer adapted to be adjacent to or in contact with the fluid and an outer layer, each layer being comprised of a matrix of polymeric material, the polymeric materials of the inner and outer layers being differently constituted, the two layers being bonded together, the polymeric material of the inner layer having a coefficient of shrinkage during curing which is less than the coefficient of shrinkage of the polymeric material in the outer layer so that the inner layer of the wall has a post-curing residual compressive stress induced therein by the outer layer.

5,611,454

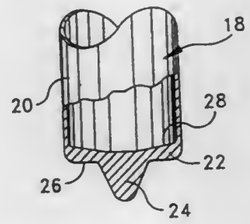
EXTRUDED METAL TUBES

Joe L. Abbott, Cumberland, R.I., assignor to Enviro Pac International, Llc., Lincoln, R.I.

Division of Ser. No. 65,943, May 21, 1993, Pat. No. 5,377,518. This application Oct. 24, 1994, Ser. No. 328,082

Int. Cl.[6] B65D *7/42*

U.S. Cl. 220—604 **16 Claims**



1. A closed ended, metal tube having an integral projection extending therefrom formed by impact extrusion, comprising:

a tubular side wall having an inner surface and an outer surface, said tubular side wall extending parallel to a centrally located longitudinal axis;

a closed end wall unitarily formed with said tubular side wall and having a central portion and a peripheral portion, said central portion having a substantially flat inner surface, said peripheral portion having a conical inner surface merging with and extending from said substantially flat inner surface of said central portion outwardly relative to said longitudinal axis and angled backwardly toward said tubular side wall relative to a plane perpendicular to said longitudinal axis to merge with said inner surface of said tubular side wall; and

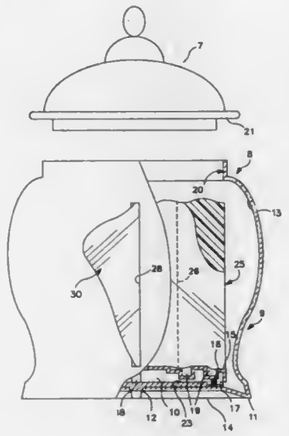
a solid projection unitarily formed with said closed end wall and extending along said longitudinal axis from said central portion of said closed end wall and outwardly of said tubular sidewall.

5,611,455

DISPENSER AND METHOD OF DISPENSING INDIVIDUAL SHEETS FROM CONTINUOUS BULK MATERIAL

Wilma McCreary, HC73-Box 864, Hwy 11 S,, Barbourville, Ky. 40906-9518

Filed Jun. 23, 1995, Ser. No. 494,646
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—45 **10 Claims**



1. A dispenser for a roll of sheet material having tear lines separating the individual sheets which are detachable successively from the roll by a snap force applied to the free end of the roll comprising

a free standing container having a critical mass into which the roll is inserted,

an opening through which a free end of the roll is pulled from the container,

the container having a mass physically connected through the roll creating an inertial force on the free end and opposing the snap force beyond the opening by an amount sufficient to separate the individual sheets at the tear lines once they are past the opening,

said roll comprising a series of plastic trash bags continuously wrapped from the center outwardly without a core having a mass initially of about two pounds,

said dispenser having a bottom and vertical side walls,

a turntable supported on the bottom providing an upper rotatable surface onto which the roll of plastic bags is placed supported vertically on the turntable which upper surface cooperates with the roll in adding the inertia of the roll to the dispenser,

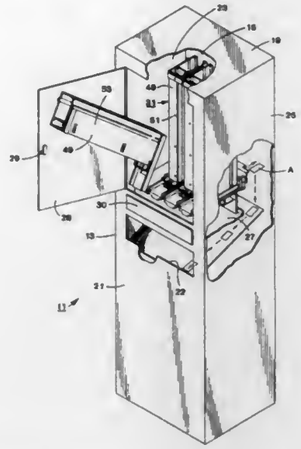
said opening being in the side wall of the dispenser through which the running end of the roll is pulled, the opening being shaped to constrict the running end of the roll behind each tear line.

5,611,456

APPARATUS FOR DISPENSING TICKETS, CARDS AND THE LIKE

Kazmier J. Kasper, Hopkinton, Mass., assignor to Algonquin Industries Inc., Bellingham, Mass.

Filed Jan. 24, 1995, Ser. No. 377,182
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—154 **10 Claims**



1. Apparatus for dispensing articles such as tickets, cards and the like comprising:

a. a cabinet having a front and a back,

b. an article dispensing module inside said cabinet, said article dispensing module including at least one article dispensing assembly and support plate, each article dispensing assembly comprising:

i. a base,

ii. a frame for enclosing a plurality of articles to be dispensed in a stack,

iii. a hinge for hingedly mounting said frame onto said support plate for movement from a vertical position to a non-vertical position,

iv. a gate for receiving articles from said frame and allowing only one article at a time to pass through,

v. a transport mechanism underneath said frame for transporting articles form said frame to said gate, said transport mechanism comprising a toothed blade, a rack and pinion, a reversible motor, a first slider element slidably mounted on said base and a second slider element slidably mounted on said base, said toothed blade being pivotally mounted on said first slider element, said rack being fixedly mounted on said second slider element, said toothed blade being pivotally mounted to said second slider element by a linkage and said reversible motor being fixedly mounted on said base, and

vi. a locking mechanism for locking the frame in a vertical position.

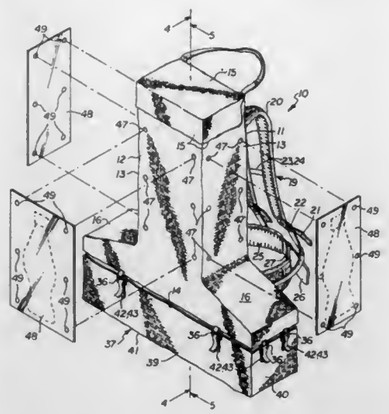
5,611,457

BACKPACK DISPENSING SYSTEM FOR BEVERAGE CONTAINERS

William O. Ash, Jr., 2537 S. Gessner, No. 216, Houston, Tex. 77063

Filed Mar. 23, 1995, Ser. No. 409,741
Int. Cl.[6] A45C *15/00*
U.S. Cl. 221—185 **19 Claims**

1. A backpack to be worn on the back of a person for transporting and dispensing containers of a beverage comprising:



a backpack having an adjustable shoulder harness adapted to receive two shoulders of a person and having a back wall, front wall, opposed side walls, and a bottom wall formed of thermally insulating material defining at least one generally rectangular storage compartment configured to hold a plurality of generally cylindrical cans or bottles of a beverage in a vertically descendable disposition;

an opening at a top end of said backpack for placing said cans or bottles into said at least one storage compartment;

at least one access opening disposed at a lower end of said backpack through which a lowermost one of said cans or bottles may pass; and

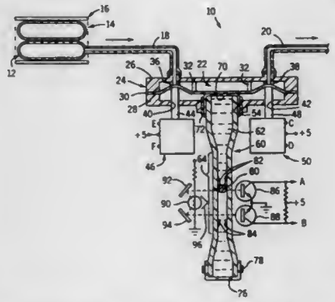
support means disposed at a lower end of said backpack adjacent said at least one access opening, said support means extending laterally outward from a central compartment to define laterally opposed side portions with configured to support a lowermost one of said cans or bottles laterally outward from a side of said at least one generally rectangular storage compartment in a position accessible to a hand of the person wearing said backpack for the manual removal of said lowermost one of said cans or bottles.

5,611,458

LIQUID FLOW MONITORING AND CONTROL SYSTEM

John E. Ogden; Kent D. Abrahamson; Peter L. Bryant; Thomas P. Joyce, all of Libertyville, and John S. Ziegler, Arlington Heights, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 5, 1995, Ser. No. 435,357
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 **20 Claims**



1. A method for controlling the dispensing of a primary liquid from a pressurized source of said primary liquid, said method comprising the steps of:

(A) opening an inlet valve for admitting said primary liquid into a primary chamber having a movable, primary element which is moved away from a first position against a biasing force by the source pressure of said primary liquid;

(B) closing said inlet valve in response to said primary element moving to an extended position away from said first position whereby the difference between the first position and the extended position defines a volume of primary liquid which can be dispensed;

(C) opening an outlet valve communicating with said chamber to dispense at least some of said volume of said primary liquid under the biasing force of said primary element which moves backward to said first position; and

(D) determining when said primary element has moved back to a selected retracted position away from said extended position and closing said outlet valve in response thereto.

16. Apparatus for controlling the dispensing of a primary liquid from a pressurized source of said primary liquid, said apparatus comprising:

a primary chamber and an inlet valve for admitting said primary liquid into said primary chamber, said primary chamber having a primary element which is biased toward a first position but is movable away from said first position when subjected to the source pressure of said primary liquid;

control means for determining when said primary element has moved away from said first position to an extended position and closing said inlet valve in response thereto whereby the difference between the first position and the extended position defines a volume of primary liquid which can be dispensed;

an outlet valve communicating with said primary chamber and openable to dispense at least some of said volume of said primary liquid under the biasing force of said primary element which moves back toward said first position; and

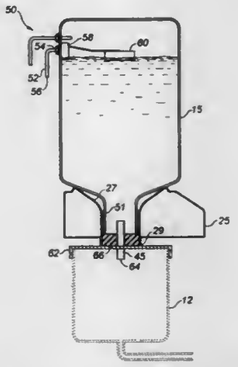
control means for determining when said primary element has returned to a selected retracted position and closing said outlet valve in response thereto.

5,611,459

METHOD OF CONVERTING AN INVERTED BOTTLE WATER DISPENSING SYSTEM FOR USE WITH AN AUTOMATIC BOTTLE REFILL SYSTEM

Nowell Hinch, 11249-127 Street, Edmonton, Alberta, Canada, assignor to Eaucool Canada Inc., Calgary, and Nowell Hinch, Edmonton, both of Canada

Filed Jul. 12, 1995, Ser. No. 501,367
Int. Cl.[6] B67D *5/08*
U.S. Cl. 222—67 **6 Claims**



5. A method of converting an inverted bottle water dispensing system having an open topped cooling reservoir, a funnel shaped mounting adaptor for receiving an inverted bottle water dispenser disposed on top of the reservoir, a removable sealing diaphragm positioned within the reservoir immediately below the funnel

shaped mounting adaptor, and an air conduit extending from the mounting adaptor through the removable sealing diaphragm and into the reservoir; for use with an automatic bottle refill mechanism in which a conduit is connected to the inverted water bottle and connected to a float valve positioned within the inverted water bottle, the conduit being connected to a pressurized water service, the method comprising the steps of:

removing from within the reservoir the removable sealing diaphragm and the air conduit;

permanently securing with adhesive across the open top of the cooling reservoir a rigid closure cap having an integrally formed mounting adaptor, the rigid closure cap having a single access opening extending through the mounting adaptor; and

permanently securing with adhesive a neck of an inverted water bottle to the mounting adaptor, such that liquid in the inverted water bottle passes through the access opening in the rigid closure cap into the cooling reservoir.

5,611,460

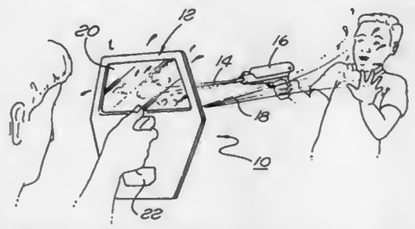
WATER SHIELD WITH INTEGRAL SQUIRTING DEVICE

Elliot Rudell, 1619 Gramercy Ave., Torrance, Calif. 90501

Filed Dec. 15, 1995, Ser. No. 573,369

Int. Cl.[6] B67D *5/10*

U.S. Cl. 222—78 **15 Claims**



1. A fluid emitting toy, comprising:

a shield which has a first surface and a second surface;

a handle attached to said second surface of said shield;

a nozzle attached to said first surface of said shield;

a pump coupled to said nozzle; and,

a fluid reservoir coupled to said pump.

5,611,461

INK CONTAINER

Hidemi Kubota, Komae, and Torachika Osada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 414,588, Apr. 3, 1995, abandoned, which is a continuation of Ser. No. 31,308, Mar. 15, 1993, abandoned. This application Apr. 4, 1996, Ser. No. 627,334

Claims priority, application Japan, Mar. 13, 1992, 4-054902; Mar. 13, 1992, 4-054903; Dec. 9, 1992, 4-329293

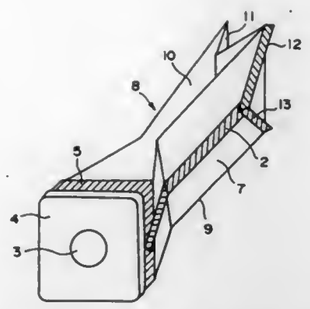
Int. Cl.[6] G01D *15/16*

U.S. Cl. 222—105 **9 Claims**

1. An ink container for containing ink to be supplied to an ink jet recording head for ejecting ink in accordance with recording signals, said ink container comprising:

an outer casing having a polygonal cross-section; and

a flexible bag, disposed in said outer casing, having the same polygonal cross-section as said casing when said bag is filled with ink, said flexible bag having an opening at a first end thereof and a bottom portion opposed to said opening, said bag being deformable to reduce a volume thereof with consumption of the ink therefrom, wherein said bag is formed from a sheet material and includes seams in opposite sides of said bag, said seams including a first seam extending in a first direction from said opening to said bottom portion and a second seam extending in a second direction that crosses the first direction, and said bag has continuous folds in other opposite sides thereof and in a bottom side thereof, said folds being adapted to fold inwardly of said bag with resistance provided by said seams.



5,611,462

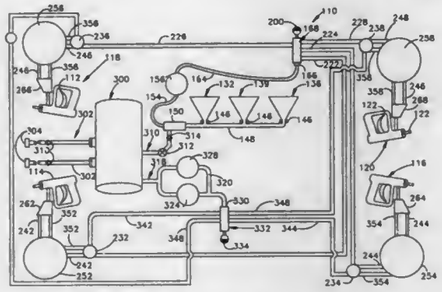
AIRCRAFT CLEANING APPARATUS AND MIXING VALVE THEREFOR

Jeffrey C. Barkes, Jonesboro, Ga., assignor to Pure Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 188,100, Jan. 28, 1994, Pat. No. 5,477,884. This application Feb. 22, 1995, Ser. No. 392,098

Int. Cl.[6] B67D *5/60;* **F16K** *11/02*

U.S. Cl. 222—134 **36 Claims**



1. A portable cleaning device for dispensing at least a first cleaning fluid and a second cleaning fluid comprising

(a) at least two user controllable fluid dispensing devices;

(b) a frame means;

(c) a first fluid reservoir means supported by the frame means for holding the first cleaning fluid;

(d) a first pump means for pumping first cleaning fluid from the first fluid reservoir means;

(e) a first manifold means for receiving the first cleaning fluid from the first pump means, the first manifold means including at least one entry port, and at least two exit ports;

(f) a first line set means for delivering the first cleaning fluid from the exit ports of the first manifold means to each of the at least two user controllable fluid dispensing devices;

(g) a second fluid reservoir means for holding the second cleaning fluid;

(h) a second pump means for pumping the second cleaning fluid from the second fluid reservoir means;

(i) a second manifold means for receiving the second cleaning fluid from the second pump means, the second manifold means including at least one entry port and at least two exit ports;

(j) a second line set means for delivering the second cleaning fluid from the exit ports of the second manifold means to each of the two user controllable fluid dispensing devices;

wherein the at least two user controllable dispensing devices include a mixing valve means for receiving at least one line from each of the first and second line sets, and permitting the user to controllably adjust the relative volumes of the first and second cleaning fluids dispensed by the controllable dispensing devices.

5,611,463

DOUBLE DISPENSER FOR FLUID PRODUCTS

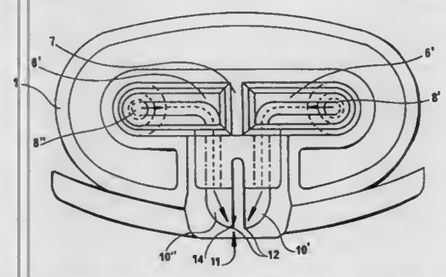
Bernard Favre, Chevilly-Larue, France, assignor to Lir France, S.A., Chevilly-Larue, France

Filed Jul. 12, 1995, Ser. No. 501,314

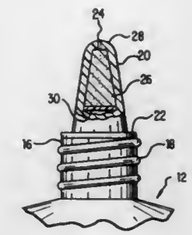
Claims priority, application France, Jul. 12, 1994, 94 08610

Int. Cl.[6] B67D *5/42*

U.S. Cl. 222—137 **4 Claims**



1. In a double dispenser for fluid products, comprising, in a single casing (**1**), two chambers (**2**) filled with different fluids and each closed by a pump (**3**) provided with a valve, the two valves being actuated by a single pusher (**5**), said pusher (**5**) being provided with a chamber into which open outlets of the two valves, said chamber being divided by a wall (**7**) so as to form two separated chambers (**6', 6"**) into which open respectively the outputs of the two valves, said wall (**7**) comprising two outlet openings (**8', 8"**) respectively connected to said separate chambers (**6', 6"**), said outlet openings (**8', 8"**) opening into cavities (**10', 10"**) of a dispensing nose (**11**) of elastically deformable material, said dispensing nose (**11**) comprising an outlet slot (**12**) sealingly closed by two lips (**13**) arranged to spread under the pressure of the mixed fluid arriving respectively in the cavities (**10', 10"**) during depression of the pusher (**5**); the improvement wherein the dispensing nose (**11**) comprises an intermediate partition (**14**) separating the cavities (**10', 10"**).



whereby said weak preservative inhibits microbial growth in said tip media, while said strong preservative inhibits microbial growth in said composition or inhibits degradation of an active agent contained in said composition.

5,611,465

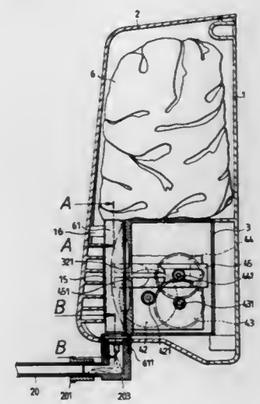
AUTOMATIC TOILET BOWL CLEANER

Kuo-Chou Lee, No. 93, Shang-Jen Street, Noan Noan, Keelung City; Tsang-Chang Hwang, 3F, No. 30, Alley 31, Lane 49, Sec. 4, Chung King N. Rd., and Aling Shu, No. 5, Lane 157, Yen Ping South Rd., both of Taipei, all of Taiwan

Filed Mar. 20, 1995, Ser. No. 407,362

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—214 **2 Claims**



5,611,464

CONTAINER FOR PRESERVING MEDIA IN THE TIP OF A SOLUTION DISPENSER

Fu-Pao Tsao, Lawrenceville; Stephen M. Martin, Roswell; Harold Shlevin, Marietta, and Thomas E. Rowe, Roswell, all of Ga., assignors to CIBA Geigy Corporation, Tarrytown, N.Y.

Filed May 30, 1995, Ser. No. 449,476

Int. Cl.[6] B67D *5/58*

U.S. Cl. 222—189.06 **13 Claims**

1. A container including a preserved composition, comprising:

(a) a container defining a reservoir and including a dispensing tip through which a composition may be dispensed; and

(b) a composition including:

(1) a strong preservative, and

(2) a weak preservative;

wherein said dispensing tip includes a media which will inactivate or remove said strong preservative from said composition when said composition passes through said dispensing tip without completely removing said weak preservative,

1. An automatic toilet bowl cleaner comprising:

a) a soap dispenser including a base, a housing connected to the base for movement between open and closed positions, a holding base mounted to the base and containing a driver means, a soap storage bag disposed within the housing and including a flexible feeding tube engageable by the driver means for dispensing soap therefrom;

b) a timer means disposed within the holding base for activating the driver means at predetermined intervals of time, the timer means including a timer, a circuit means and means for adjusting the predetermined time intervals for activating the driver means; and

c) a guided flow tube having first and second ends, an L-shaped coupling connecting the first end of the flow tube to the flexible feeding tube for receiving soap therefrom and the second end for connection to a water supply line of a toilet bowl, whereby soap dispensed from the flexible feeding tube through the flow tube is mixed with the water from the water supply line to clean the toilet bowl.

5,611,466

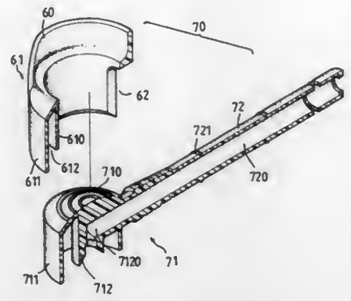
RELEASING UNIT FOR A CONTAINER

Chung J. Hsiao, No. 88-16, Hsin-Chuang Village, Hsin-Chuang Lane, Lung-Chin Hsiang, Talchung Hsien, Taiwan

Filed Oct. 10, 1995, Ser. No. 540,480

Int. Cl.[6] B65D *83/20*

U.S. Cl. 222—402.13 **2 Claims**



1. A releasing assembly for a container, said container has a releasing valve extending upwardly from a top of said container and a flange extending upwardly from said top of said container to enclose said releasing valve, said releasing assembly comprising:

a cap being a tubular element and having a skirt portion composed of an inner wall and an outer wall, said inner wall and said outer wall connected together on a respective top thereof so as to define a groove therebetween for receiving said flange of said container therein, said cap having a slot defined in said skirt portion and said slot extending through said inner wall and said outer wall;

a nozzle assembly including a nozzle portion and a hose portion, said nozzle portion having a top, a side wall extending downwardly from a periphery of said top and a first tube extending downwardly from said top, said first tube having an inverted L-shaped passage defined therein, said hose portion extending integrally from said side wall and having a first passage defined longitudinally therein and said first passage communicating with said inverted L-shaped passage, said first tube engaged to said releasing valve of said container and said hose portion extending through said recess defined in said skirt portion of said cap.

5,611,467

INVERTIBLE PRESSURIZED FLUID DISPENSER WITH GUIDED FLUID INLET MEMBER

Karl K. Peng, 1414 Son Center Rd., Apt. 422, Mayfield Heights, Ohio 44124

Filed May 7, 1996, Ser. No. 643,891

Int. Cl.[6] B65D *83/14*; **B67D** *5/60*

U.S. Cl. 222—464.4 **27 Claims**

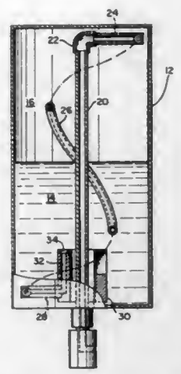
11. A fluid dispensing apparatus, comprising:

a container for holding a volume of fluid;

a valve connected with one end of the container;

a rigid rod positioned within the container and having a conduit therein connected in fluid communication with the valve;

a shuttle member translatably mounted on the rod, the shuttle member having a fluid inlet formed therein; and



fluid transmission means for transmitting fluid from the inlet to the conduit in the rod.

5,611,468

FOLDING DEVICE FOR AN AUTOMATIC SEWING MACHINE

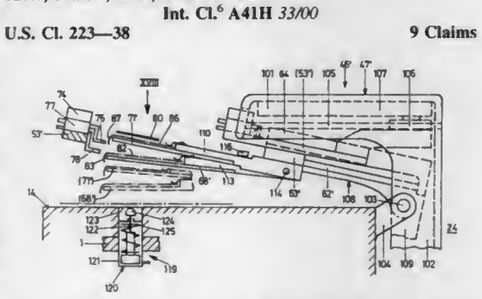
Wolfram Schulze, Bielefeld, Germany; John Couch, Stone Mountain, Ga.; Wolfgang Grosser, Bielefeld, and Herbert Zielinski, Spenge, both of Germany, assignors to Durkopp Adler Aktiengesellschaft, Germany

Filed May 9, 1996, Ser. No. 647,239

Claims priority, application Germany, May 24, 1995, 195 19 027.0; Mar. 7, 1996, 196 08 779.1

Int. Cl.[6] A41H *33/00*

U.S. Cl. 223—38 **9 Claims**



1. A folding device for an automatic sewing machine, comprising

a workpiece-receiving plate (**14**) for a lower workpiece (**81**);

an upper sword (**71**, **71'**), mounted on a sword support, for receiving an upper workpiece (**86**);

an outer frame (**53**, **53'**) mounted on an outer-frame support and having folding modules (**74**) for folding the upper workpiece (**86**) about outer edges (**88** to **91**) of the sword (**71**, **71'**);

the sword (**71**, **71'**) being movable, by the motion of the sword support, between a lower working position adjacent to the workpiece-receiving plate (**14**) and an upper working position above the workpiece-receiving plate (**14**); and

the outer frame (**53**, **53'**) being movable, by the motion of its support, into a lower working position adjacent to the workpiece-receiving plate (**14**) and at least into a working position that corresponds to the upper working position of the sword (**71**, **71'**); and

the sword (**71**, **71'**) being movable from its working position into a retracted position in which it is withdrawn from the upper workpiece (**86**),

wherein a lower sword (**68**, **68'**) for receiving an intermediate workpiece (**82**) is disposed between the upper sword (**71**, **71'**) and the workpiece-receiving plate (**14**), and is movable into a lower working position on the workpiece-receiving plate (**14**)

and an upper working position above the workpiece-receiving plate (**14**) and under the upper sword (**71**, **71'**),

wherein the lower sword (**68**, **68'**) is movable into a retracted position in which it is withdrawn from the intermediate workpiece (**82**),

wherein the upper sword (**71**, **71'**) and the lower sword (**68**, **68'**) are movable relative to each other into a position adjacent to each other and into a position spaced from each other, and

wherein folding modules (**77**) allocated to the lower sword (**68**, **68'**) are mounted on the outer frame (**53**, **53'**).

5,611,469

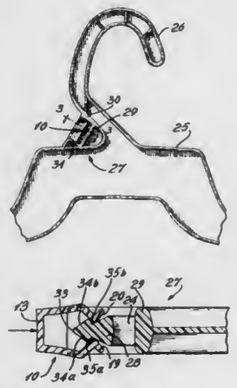
HANGER WITH IDENTIFICATION CLIP

Stanley Eiley, Mount Royal, and Marc Tremblay, Pierrefonds, both of Canada, assignors to E.R.A. Display Co. Ltd., St. Laurent, Canada

Filed Apr. 27, 1995, Ser. No. 429,651

Int. Cl.[6] A47G *25/14*

U.S. Cl. 223—85 **3 Claims**



1. A garment hanger having a body and a hook adapted to receive an identification ciip, said hanger comprising:

a clip holder having a retaining pin and a flange fixedly connected between end members formed between said book and said body, said retaining pin being disposed parallel and spaced apart of the flange to form a gap therebetween, said retaining pin further comprises a pair of sides which diverge from a pointed nose to a ridge located on each side of said retaining pin to define the gap with the flange; and

a clip having means to display garment information, said clip being adapted to mate with said clip holder between said end members, said clip having side walls and a bight portion at one end forming said display means and a clip opening at the other end, said clip opening being formed by said side walls converging inwardly, each to define an apex, and diverging end walls extending from the apex to form a mouth, the apex of each side wall forming a retaining nip adapted to fit in said gap, between the ridges and said flange, such that when said clip is inserted on said clip holder, said clip opening and divergent end walls are adjacent said flange and within the confines of the gap to prevent removal of said clip from said clip holder.

5,611,470

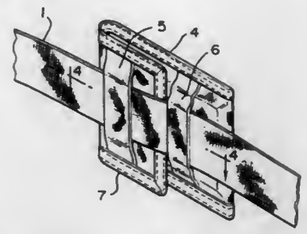
TAMPER RESISTANT POUCH FOR CHILD SECURITY DEVICE

Pamela S. Vias, and Steven J. Vias, both of P.O. Box 672061, Marietta, Ga. 30067

Filed Mar. 1, 1995, Ser. No. 396,743

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—240 **9 Claims**



1. A tamper resistant pouch for carrying an article, said pouch attachable to a belt or strap and comprising:

an article receiving means;

a closure flap having a first and second end, said closure flap retaining said article and said first end integral with said article receiving means;

a first loop on an outer surface of said article receiving means;

a second loop on an outer surface of said closure flap means, and

wherein said first and second loops become aligned during closure of said closure flap and said belt or strap is threaded therethrough thereby restricting opening of said closure flap and preventing removal of said article.

5,611,471

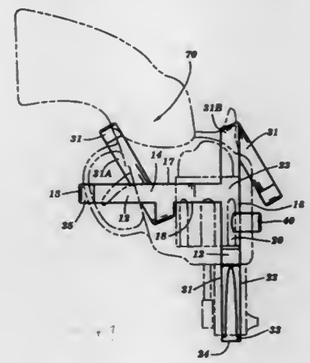
GUN HOLSTER

Thomas French, 21 Manor Blvd., Troy, N.Y. 12180

Filed Aug. 28, 1995, Ser. No. 519,767

Int. Cl.[6] F41C *33/02*

U.S. Cl. 224—243 **10 Claims**



1. A holster having a unitary frame for a hand gun having a cylinder, the unitary frame comprising:

a main frame portion adapted to engage with one side of the hand gun;

a means, extending from the main frame, for mounting the unitary frame;

a cylinder locking arm extending from the main frame portion, the cylinder locking arm including a means for engaging the gun when it is properly holstered so that the gun cannot be fired; and

gun supporting means extending from the main frame portion,

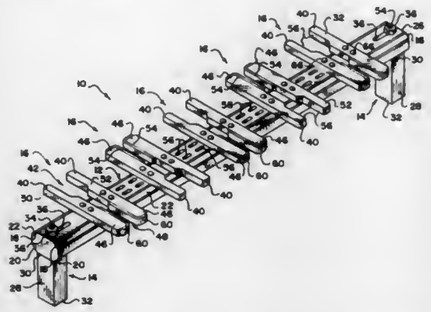
wherein the gun supporting means comprises a barrel supporting arm extending from a bottom side of the main frame portion.

5,611,472

BICYCLE RACK FOR PICK-UP TRUCKS

Frank Miller, 150 Spatuck Road, East St. Paul, Manitoba, Canada

Filed Sep. 25, 1995, Ser. No. 533,392
Int. Cl.[6] B60R *7/00;9/00*
U.S. Cl. 224—403 **17 Claims**



1. A bicycle rack for use with a truck having a cargo box with substantially parallel side walls and a bicycle having a frame and a wheel mounted on front bicycle forks, said bicycle rack comprising:

a cross member adapted to extend between the side walls of the cargo box;

fixing means arranged at each end of the cross member for fixing the cross member to respective side walls of the cargo box;

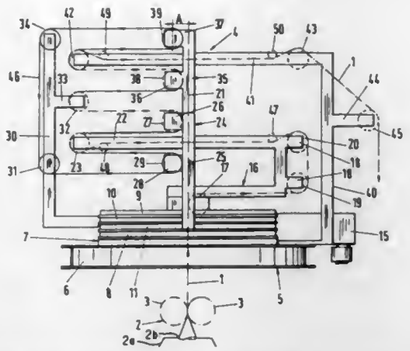
support means mounted on the cross member defining at least one first slot extending to one side of the cross member for receiving a portion of the wheel mounted on the forks of said bicycle, and defining at least one second slot extending to an opposite side of the cross member for receiving a portion of the frame of said bicycle, and wherein the first slot comprises a first pair of forks extending outwards from the cross member, and wherein the second slot comprises a second pair of forks extending outwards from the cross member opposite and aligned with said first pair of forks.

5,611,473

APPARATUS FOR CONVEYING COLLAPSED, CONTINUOUS PLASTIC FILMS

Klaus Reinhold, Kroenerstrasse 3, D-49525 Lengerich i.W.; Gerd Ratz, Lienen, both of Germany, and Jean-Jacques Labaig, Bernay, France, assignors to Klaus Reinhold, Lengerich, Germany

Filed Apr. 6, 1995, Ser. No. 417,634
Claims priority, application Germany, Apr. 8, 1994, 9405848 U
Int. Cl.[6] B65H *20/00;23/32*
U.S. Cl. 226—170 **43 Claims**



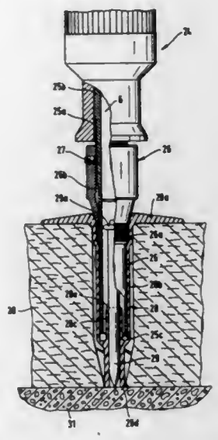
1. Apparatus for conveying continuous collapsed film comprising a guidance means adapted to receive said continuous collapsed film, said guidance means comprising at least one guide roller and a first turning bar for guiding said film, said at least one guide roller changing the direction of the film 180 degrees, said first turning bar changing the direction of the film 180 degrees, conveyor belt means having a conveyor belt which travels the same speed as said film, said conveyor belt and said film looping over said first turning bar in superimposed relationship with said conveyor belt being between said first turning bar and said film such that said conveyor belt carries said film during said looping over said first turning bar, rotatable means on which said guidance means and said conveyor belt means are mounted for rotating said guidance means and said conveyor belt means about an axis of rotation, said rotatable means comprising first holder means rotatable about said axis, said at least one guide roller being mounted on said first holder means, said rotatable means comprising second holder means rotatable about said axis, said first turning bar being mounted on said second holder means, and a second turning bar on said second holder means, said conveyor belt passing over said second turning bar.

5,611,474

ATTACHMENT MEMBER SETTING TOOL

Josef Schmidle, Göfis, and Dimitrios Stefanoudakis, Vienna, both of Austria, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Division of Ser. No. 257,250, Jun. 8, 1994. This application May 18, 1995, Ser. No. 443,797
Int. Cl.[6] B25C *1/14*
U.S. Cl. 227—10 **4 Claims**



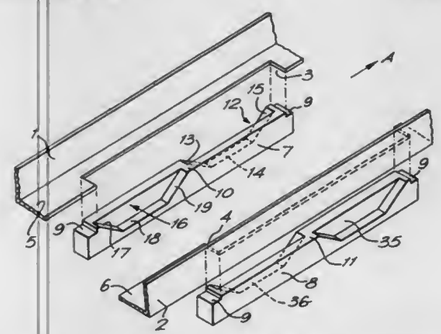
1. An explosive powder charge operated setting tool in combination with for driving an axially extending fastening element and an axially extending attachment member receiving said fastening element, the setting tool comprising a housing (**1**) having a front end and a rear end spaced apart in a driving direction of the setting tool, an axially displaceable piston (**6**) mounted in said housing and displaceable from the front end thereof, a receiving region (**24**) in the front end of said housing, and an axially extending guide tube (**15, 25**) having a first end secured in the receiving region in the front end of said setting tool and a second end spaced axially from the first end outwardly from the front end of said setting tool and located within the attachment member, said guide tube having an axially extending outer surface and inner surface, means forming an axially extending contact surface located on and encircling said outer surface of said guide tube between and spaced axially from the first and second ends thereof and being in frictional contact with the attachment member, and said means forming said contact surface extending axially for a part of the axial length of said guide tube (**15, 25**) and extending radially outwardly from the outside surface of said guide tube.

5,611,475

SOLDERING APPARATUS

Ah T. Sim, Singapore, Singapore, assignor to Sun Industrial Coatings Private Ltd., Jurong, Singapore

Continuation-in-part of Ser. No. 357,633, May 24, 1989, abandoned, which is a continuation of Ser. No. 72,037, Jul. 10, 1987, abandoned. This application Feb. 21, 1991, Ser. No. 658,691
Claims priority, application United Kingdom, Jul. 11, 1986, 8616939
Int. Cl.[6] H05K *3/34;* **B23K** *37/047*
U.S. Cl. 228—40 **9 Claims**



1. Apparatus for applying a coating of solder to downwardly extending leads of electronic components comprising:

a) solder bath containing molten solder with a level surface;

b) track means including laterally spaced apart guide tracks;

c) carrier means removably supporting the electronic components thereon such that leads of the electronic components extend downwardly, the carrier means having a first follower on a leading portion of the carrier for movably supporting a leading portion of the carrier on the guide tracks, a second follower on a trailing portion of the carrier longitudinally spaced from the first follower for movably supporting a trailing portion of the carrier on the guide tracks, the first and second followers being laterally offset from each other;

d) blocks releasably attached to the guide tracks adjacent to the solder bath and defining

i) a first profiled region for guiding the first follower towards and away from the level surface of the solder bath as the carrier moves along the track means; and,

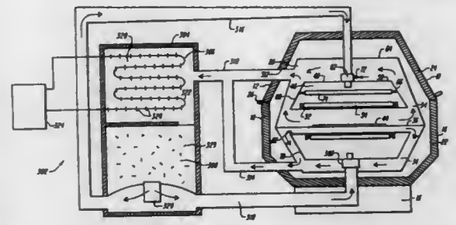
ii) a second profiled region longitudinally spaced from the first profiled region for simultaneously guiding the second follower towards and away the level surface of the solder bath as the carrier moves along the track means, the first and second profiled regions being laterally offset from each other such that the first follower bypasses the second profiled region and the second follower bypasses the first profiled region, the longitudinal spacing between the first and second profiled regions being substantially the same as the longitudinal spacing between the first and second followers such that the carrier maintains its orientation as it moves towards and away from the level surface of the solder bath.

5,611,476

SOLDER REFLOW CONVECTION FURNACE EMPLOYING FLUX HANDLING AND GAS DENSIFICATION SYSTEMS

Martin I. Soderlund, Westborough; Francis C. Nutter, Methuen, both of Mass.; Robert P. Couilliard, Plaistow, N.H.; Pierre J. LeMieux, Andover, and Arthur Waugh, Winchester, both of Mass., assignors to BTU International, No. Billerica, Mass.

Filed Jan. 18, 1996, Ser. No. 588,101
Int. Cl.[6] B23K *3/00*
U.S. Cl. 228—42 **54 Claims**



1. A solder reflow convection furnace comprising:

a furnace housing having a gas flow path therethrough;

a process heating area located in said furnace housing on said flow path for receiving product having reflowable solder thereon;

a heating assembly to heat gas on said flow path to a temperature above a solder reflowing temperature, said heating assembly located in said furnace housing on said flow path upstream of said process heating area to direct heated gas to the product received in said process heating area to cause reflow of solder; and

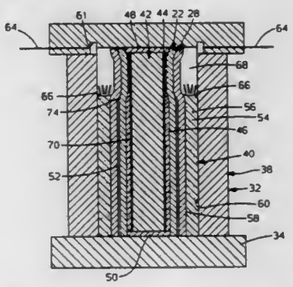
a flux collection assembly located on said gas flow path downstream of said process heating area to collect condensed flux, said flux collection assembly comprising a cooling element maintained below a flux condensation temperature and disposed to contact heated gas flowing on said flow path, whereby vaporized flux contacts said cooling element and condenses on said cooling element.

5,611,477

SHOT SLEEVE AND METHOD OF MAKING

Yucong Wang, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

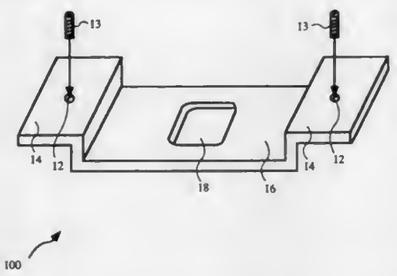
Filed Apr. 3, 1995, Ser. No. 415,398
Int. Cl.[6] B23K *20/08*
U.S. Cl. 228—107 **25 Claims**



1. A method of making a multi-layered shot sleeve for an horizontal, pressure casting machine, said shot sleeve comprising a highly thermally conductive tube having an inside surface comprising a wear-resistant and erosion-resistant cermet, said method comprising the steps of:

a. positioning a mass of cermet precursor particles contiguous said inside surface of said tube, said precursor particles comprising a mixture of ceramic and metal particles;
b. locating said tube and precursor particles in a chamber of a container including a forming surface therein;
c. filling said chamber with an explosive material along the length of said tube on the side of said tube opposite said forming surface; and
d. progressively burning said explosive material along the length of said tube so as to create a high pressure front which moves progressively along said length tracking said burning to deform said tube and said particles against said forming surface as said pressure front travels said length and to progressively interatomically bond said particles to each other and to said tube.

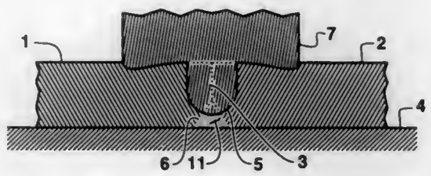
5,611,478
LEAD FRAME CLAMP FOR ULTRASONIC BONDING
Chainarong Asanasavest, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 11, 1996, Ser. No. 613,022
Int. Cl.[6] H01L *21/607*
U.S. Cl. 228—110.1 **16 Claims**



1. A lead frame clamp for holding a lead frame while a selected lead of the lead frame is being coupled to an associated trace on a substrate, the lead frame clamp comprising:
a lead tip clamp member for holding a first portion of the lead frame, including a first segment of the selected lead;
a lead arm clamp member for holding a second portion of the lead frame, including a second segment of the selected lead, the first segment of the selected lead being spaced apart from the second segment of the selected lead such that an exposed bonding area of the selected lead is positioned between the first and second segments of the selected lead;
a fastener arrangement for attaching the lead arm clamp to a support member; and
whereby during bonding of the selected lead to its associated trace, a bonding tool tip may be positioned over the exposed bonding area to facilitate coupling the selected lead to its associated trace in the exposed bonding area.

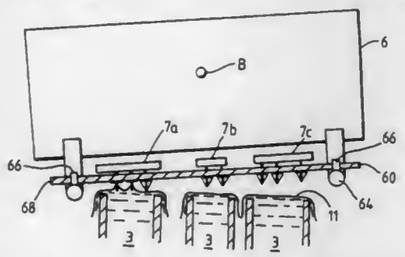
5,611,479
FRICTION STIR WELDING TOTAL PENETRATION TECHNIQUE
Charles D. Rosen, Huntington Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Feb. 20, 1996, Ser. No. 602,522
Int. Cl.[6] B23K *20/12*
U.S. Cl. 228—112.1 **4 Claims**

1. A method for ensuring complete penetration of friction stir welds comprising:
obtaining a first plate having a faying surface, a top surface and a bottom surface,



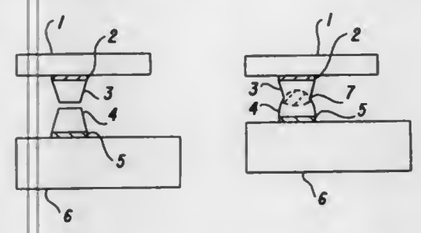
chamfering the first plate along the bottom of the plate at the faying surface,
obtaining a second plate having a faying surface, a top surface and a bottom surface,
placing the faying surfaces together,
placing the first and second plates bottom surface on a back up plate,
inserting a friction stir welding tool having a rotating pin into the first and second plates at the faying surfaces, the pin depth extending through the plate to the chamfer at the bottom of the plate,
translating the friction stir welding tool along the length of the faying surface to frictionally stir and plasticize the plate material thus welding the two plates together wherein, plasticized material enters and fills the volume created by the chamfer at the bottom of the plate resulting in a complete penetration weld of the plates.

5,611,480
SOLDERING PROCESS
Alexander J. Cinglio, Great Dunmow; Michael Tombs, Leigh-on-Sea, and Neil Squire, Chelmsford, all of England, assignors to Pillarhouse International Limited, Essex, United Kingdom
Continuation-in-part of Ser. No. 25,585, Mar. 3, 1993, Pat. No. 5,370,297. This application Oct. 3, 1994, Ser. No. 317,249
Claims priority, application United Kingdom, Mar. 3, 1992, 9204525
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—180.1 **19 Claims**



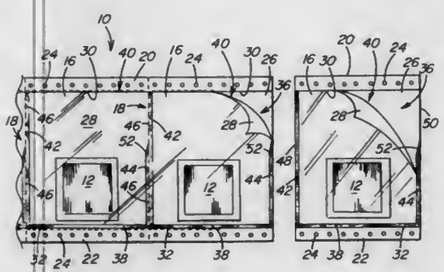
8. A dip soldering process for soldering the leads of electrical components to a basically flat printed circuit board, said process comprising the steps of:
(a) providing a bath of molten solder and a basically flat printed circuit board, said circuit board having electrical component leads extending through said circuit board;
(b) lowering said circuit board towards said bath to wet said electrical component leads into said bath;
(c) rotating said circuit board about a horizontal axis so that at least some of said electrical component leads at a leading edge of said circuit board emerge from said bath before all of said electrical leads emerge from said bath; and,
(d) simultaneously raising said circuit board such that the trailing edge of said circuit board will horizontally sweep across the surface of said bath as said circuit board is lifted upwardly out of said bath so that the electrical component leads nearest to the trailing edge are the last electrical component leads to leave said bath.

5,611,481
INTEGRATED ELECTRONIC DEVICE HAVING FLIP-CHIP CONNECTION WITH CIRCUIT BOARD AND FABRICATION METHOD THEREOF
Toshiya Akamatsu; Kazuaki Karasawa; Teru Nakanishi, and Kozo Shimizu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 19, 1995, Ser. No. 504,080
Claims priority, application Japan, Jul. 20, 1994, 6-168385
Int. Cl.[6] H01L *21/58*
U.S. Cl. 228—180.22 **12 Claims**



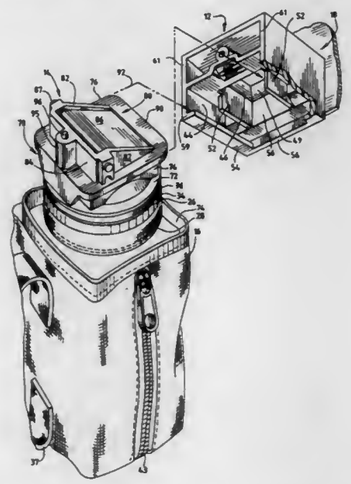
1. A method for fabricating an integrated electronic device having an electric connection between a first electrode of a first substrate and a second electrode of a second substrate comprising the steps of:
forming a first bump made of a first metal component on the first electrode, a surface of the first electrode having repellency against melt of the first metal component;
forming a second bump made of a second metal component on the second electrode opposite to the first bump in a position; and
forming a connection part made of an eutectic alloy consisting of the first metal component and the second metal component between the first bump and the second bump so as to make an electric connection between the first electrode and the second electrode.

5,611,482
CONTINUOUS FEED STORAGE ENVELOPES
Ralph R. Gaetano, 7033 Dumbarton Pl., Bethel Park, Pa. 15102
Filed May 23, 1994, Ser. No. 247,578
Int. Cl.[6] B65D *27/10*
U.S. Cl. 229—69 **13 Claims**



1. Continuous storage envelopes comprising,
a plurality of storage envelopes connected to each other in end to end relation to form a series of connected envelopes where each storage envelope includes a pair of overlying layers of flexible sheet material including a base layer and a seal flap,
said base layer and said seal flap each having a generally rectangular configuration,
said base layer having a perimeter edge defined by a top edge, a bottom edge, a first side edge, and a second side edge,
said first and second side edges of each storage envelope being releasably connected to said second and first side edges respectively of adjacent envelopes,
said seal flap having a perimeter edge corresponding in configuration to said base layer perimeter edge,
said seal flap perimeter edge connected to said base layer first side edge by a line of glue extending from said top edge to said bottom edge at said first side edge,
said seal flap perimeter edge connected to said base layer first and second side edges and said bottom edge to form a pocket closed on three sides and open along said base layer top edge,
a line of glue for adhering said seal flap to said base layer at said second side edge,
said glue line having a selected width extending upwardly from said base layer bottom edge a preselected distance spaced from said base layer top edge so that a portion of said base layer second side edge adjacent to said base layer top edge is free of glue,
a series of perforations extending through said overlying layers to form a tear line extending above said glue line for releasably connecting said seal flap to said base layer at said second side edge above said glue line to form said pocket,
said pocket closed on three sides in a first mode of operation, and
said seal flap separates from said base layer in a second mode of operation along said tear line above said glue line on said second side edge to form said pocket open across said base layer top edge and downwardly on said base layer second side edge to said glue line to increase the size of the opening into said pocket to enhance access thereto.

5,611,483
COIN AND CURRENCY RECEPTACLE ASSEMBLY FOR MONEY OPERATED MACHINES
Michael J. Sciortino, Arlington Heights, Ill., assignor to Glenview Security Systems, Glenview, Ill.
Filed Oct. 11, 1994, Ser. No. 321,221
Int. Cl.[6] G07B *15/00*
U.S. Cl. 232—15 **12 Claims**



1. A money receptacle assembly for a money operated machine comprising:
a) a unitary molded funnel unit having an upper open end and a lower open discharge end adapted to be anchored on the interior of the machine in position to receive the coins through said upper open end which were inserted into the machine to activate the same;

b) a unitary molded receptacle unit adapted to be removably assembled inside the funnel unit in position to receive the coins passing into the funnel unit and discharged through the lower open end of the funnel member unit;

c) said receptacle unit including a storage container suspended therefrom in position to receive the coins discharged through said lower discharge end of the funnel unit;

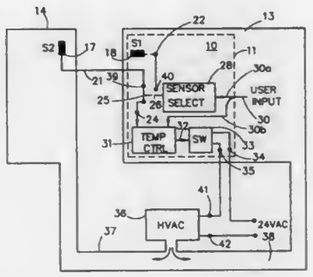
d) said funnel unit having internal ledge means opening to a lateral face of the funnel unit and said receptacle unit having complementary wall means adapted to be inserted into the funnel through said opening in a linear movement and engaged along said ledge means for assembly of the receptacle unit with the funnel unit.

5,611,484

THERMOSTAT WITH SELECTABLE TEMPERATURE SENSOR INPUTS

Daniel T. Uhrich, Mayer, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 17, 1993, Ser. No. 168,345
Int. Cl.[6] F25B *41/00;* F23N *5/20*
U.S. Cl. 236—46 R **11 Claims**



1. In a thermostat having: a switch having a control terminal and a pair of power terminals, and electrically making a connection between the power terminals responsive to presence of a demand signal at the control terminal; and a control circuit having a sensor signal input terminal and an output terminal providing the demand signal to the switch's control terminal responsive to presence of a signal level within a selectable range at the sensor signal input terminal, an improvement comprising:

a) at least first and second temperature sensors each providing a sensor signal representative of the temperature ambient thereto;

b) a sensor selection means receiving i) each sensor signal, and ii) a control input signal having at least two values, each of said values designating a different sensor signal, for providing the one of said sensor signals designated by the control input signal to the sensor signal input terminal of the control circuit; and

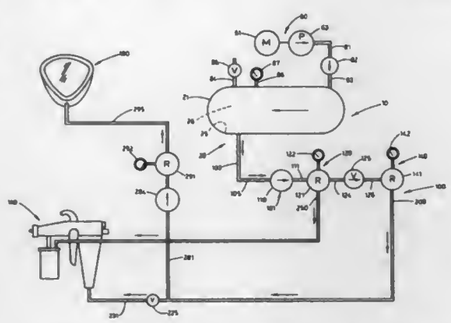
c) a countdown timer having an input element providing a time interval value, said timer recording the time interval value, altering the time interval value at a preselected rate, and changing the control input signal provided to the control circuit responsive to the contents of the countdown timer reaching a predetermined value.

5,611,485

METHOD AND APPARATUS FOR DISPENSING A SUBSTANCE

Robert G. Davis, Atascadero, Calif., assignor to William W. Gibbs, Atascadero, Calif.

Filed Aug. 12, 1994, Ser. No. 289,376
Int. Cl.[6] B05B *7/28*
U.S. Cl. 239—8 **5 Claims**



1. A method for applying paint to a surface to be painted, the method comprising the steps of:

A. placing said paint, in a flowable condition, in the interior of a container adapted to be pressurized;

B. establishing a first passage through which said paint is to be passed and released onto said surface to be painted and communicating with the paint in the interior of said container through an opening;

C. establishing a second passage communicating with said interior of the container;

D. forcing gas under the pressure along said first passage to pressurize said paint within the interior of the container through the second passage and to apply a negative pressure to the paint in said container through said opening;

E. establishing a source of said pressurized gas within a reservoir using a rotary vane compressor;

F. individually releasing pressurized gas along first and second conduits individually communicating respectively with said first and second passages and wherein the second conduit is smaller in diameter than the first conduit, said first conduit is of more durable construction than the second conduit and the second conduit is extended substantially axially within the first conduit to protect the second conduit from wear during practice of the method; and

G. individually regulating the pressures of said pressurized gases released along said first and second conduits so that the pressure of said pressurized gas passing along the second conduit is greater than the pressure of said pressurized gas passing along the first conduit whereby the paint flows from the interior of the container, along said first passage and is released onto said surface to be painted.

5,611,486

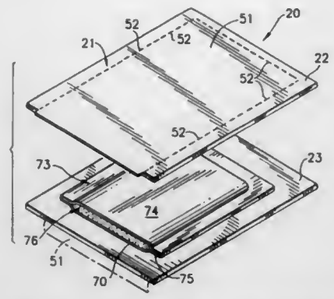
AIR FRESHENING AND/OR DEODORIZING SYSTEM

Leonard Paul, 13 Stuart Dr., Bloomfield, Conn. 06002

Continuation-in-part of Ser. No. 333,027, Nov. 1, 1994, Pat. No. 5,556,030, which is a continuation-in-part of Ser. No. 163,338, Dec. 6, 1993, Pat. No. 5,372,303. This application Apr. 6, 1995, Ser. No. 418,079
Int. Cl.[6] A61L *9/12*
U.S. Cl. 239—56 **10 Claims**

1. An air freshening and/or deodorizing system for providing controlled, long-term absorption of odors from ambient air, said system comprising

A. a container formed from two independent, multi-layered, flexible sheets and incorporating a sealed holding zone;



B. odor absorbing material contained within the holding zone and comprising at least one selected from the group consisting of activated charcoal or active carbon, zeolites, baking soda, silica gel, silica molecular sieves, activated alumina, kieselguhr, fullers earth, and clay minerals;

C. a first microporous/permeable membrane layer mounted in the container and positioned between the odor absorbing material and one of said multi-layered flexible sheets for preventing dispersion of the odor absorbing material;

D. a second microporous/permeable membrane layer positioned in juxtaposed spaced relationship with the first membrane layer, with the odor absorbing material sandwiched therebetween; and

E. a portal zone

a. formed in the container in a normally sealed configuration to prevent the transfer of ambient air into the holding zone until desired, and

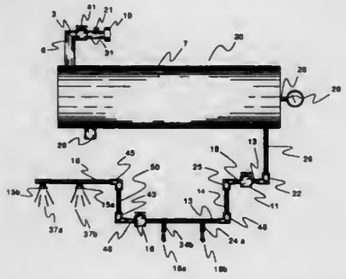
b. controllably openable to enable the ambient air to enter the holding zone and pass through the permeable membrane to the odor absorbing material.

5,611,487

BOAT TRAILER FRESH WATER WASH DOWN APPARATUS

John A. Hood, 944 Montrose Blvd. N., St. Petersburg, (Pinellas County), Fla. 33703

Filed Jan. 27, 1995, Ser. No. 379,257
Int. Cl.[6] B08B *3/04;* B05B *9/04*
U.S. Cl. 239—172 **1 Claim**



1. A boat trailer fresh water wash down apparatus comprising:

an accumulator tank to provide a means to store pressurized water and air;

a pair of inlet pipes connected to each other at one end to form a bend, one end of the connected inlet pipes attaching to said accumulator tank to provide a filling path;

a sbutoff valve attached to another end of said inlet pipes and attached to a fill pipe to provide a means to fill an accumulator tank;

said fill pipe having at an end thereof a fresh water hose attachment fitting for attachment of a common garden hose, said fill pipe further having a first pressure relief valve mounted at a location proximate to a center of the fill pipe to provide a means to relieve pressure in the fill pipe;

a pressure gage and gage mount located on said accumulator tank proximate to one end to provide a means to measure pressure in the accumulator tank;

a second pressure relief valve mounted to said accumulator tank located proximate to one end to provide a means to relieve over-pressure of the accumulator tank;

a first outflow pipe attached at one end proximate to an end of said accumulator tank opposite said inlet pipes and attached at another end to a first coupler which couples said first outflow pipe to a second outflow pipe at an angle;

said second outflow pipe has a first outflow valve connected to it to provide a means to control water outflow rate;

a third outflow pipe connects to said first outflow valve and to a second coupler;

a fourth outflow pipe connects to said second coupler and to a third coupler;

a fifth outflow pipe connects to said third coupler and to a second outflow valve and provides for mounting of first and second water spray heads;

said first and second spray heads provide a means to deliver water to small critical areas on a trailer;

said second outflow valve also has a sixth outflow pipe connected to it and provides water flow control to third and fourth spray heads;

said sixth outflow pipe connects to a fourth coupler;

a seventh outflow pipe connects between the fourth coupler and a fifth coupler;

an eighth outflow pipe connects to said fifth coupler and has an opposite end capped off and provides mounting for said third and fourth spray beads which provide a means to deliver water over a large area of a trailer for general rinse down;

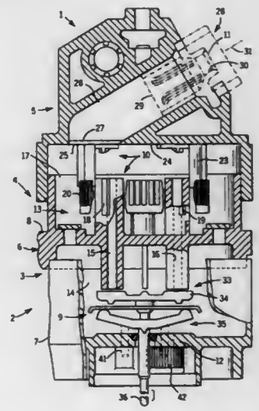
all of said couplers provide a means to adjust all the outflow pipes to accommodate various trailer configurations.

5,611,488

SPRINKLER, PARTICULARLY FOR WATERING VEGETATION

Hans Frölich, Bernstadt, Germany, assignor to Gardena Kress & Kastner GmbH, Ulm, Germany

Filed Aug. 23, 1994, Ser. No. 294,309
Claims priority, application Germany, Sep. 2, 1993, 43 29 616.5
Int. Cl.[6] B05B *3/16*
U.S. Cl. 239—242 **11 Claims**



1. A sprinkler for irrigation, said sprinkler having an outlet for delivering to an irrigation field at least one fluid jet flowing from a jet beginning at said outlet, said jet traveling a median throw

distance from said outlet to a median point in an area of irrigation, said sprinkler comprising:

at least one sprinkler head (**2**) having a sprinkler head body, a fluid inlet (**12**) for receiving the fluid from a supply of pressurized fluid at a flow volume per time unit, a fluid outlet (**11**), and between said fluid inlet (**12**) and said fluid outlet (**11**), a fluid guide (**13**) for guiding at least one fluid flow stream, said fluid flow stream flowing in at least one flow direction, and

control means (**10**) for varying the median throw distance of said jet substantially independently of the supply pressure at said fluid inlet (**12**), said control means (**10**) having at least one reversing means (**33**, **34**) upstream of said fluid outlet (**11**) for cycling back and forth between a first operational position and a second operational position, wherein said control means (**10**) are provided for modifying the fluid flow upstream of the fluid outlet (**11**) to vary the median throw distance of said jet, thereby providing at least two different median throw distances, wherein said control means (**10**) includes means for modifying the fluid flow substantially independently of the fluid volume discharged per time unit from said fluid outlet (**11**) to switch between the different median throw distances.

5,611,489

ACTUATING SYSTEM FOR A VARIABLE AREA EXHAUST NOZZLE

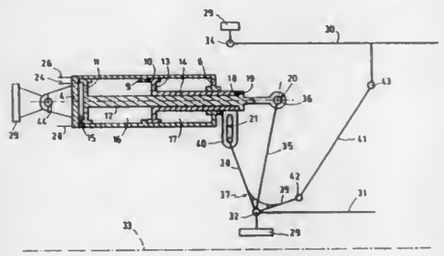
Yves R. J. Berneuil, Paris; Christian W. B. Bettremieux, Le Mee sur Seine; Daniel G. A. Kettler, Chartrettes; Michel M. A. A. Lechevalier, Mormant; Xavier J. Pasquali, Le Mee sur Seine, and Jean-Marie N. Pincemin, Crosne, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed May 18, 1993, Ser. No. 62,757

Claims priority, application France, May 20, 1992, 92 06102

Int. Cl.[6] F02K *1/12*

U.S. Cl. 239—265.41 **10 Claims**



1. A pressurized fluid cylinder comprising:

a) a case having first and second ends, and defining an inner volume bounded by an inner side surface, a first end surface and a second end surface;

b) first and second stops extending into the inner volume between the first and second end surfaces;

c) a first piston slidably located within the inner volume so as to move between the first end surface and the first stop, the first piston having a first piston rod extending from one side thereof such that the first piston rod extends exteriorly of the case through the second end;

d) a second piston slidably located within the inner volume so as to move between the second stop and the second end surface, the second piston having a second piston extending from one side thereof with a distal end, such that the second piston rod extends exteriorly of the case through the second end coaxially with the first piston rod;

e) third stop means defined by the first piston rod adapted to contact the distal end of the second piston rod;

f) a first fluid chamber defined between the first piston and the first end surface;

g) a second fluid chamber defined between the first and second pistons; and,

h) a third fluid chamber defined between the second piston and the second end surface; whereby the pistons are movable such that the cylinder has: a first configuration wherein the first piston contacts the first end surface, the distal end of the second piston rod contacts the third stop and the second piston contacts the second stop; a second configuration wherein the first piston contacts the first stop, the distal end of the second piston rod contacts the third stop and the second piston is displaced from the second end surface; and a third configuration wherein the first piston contacts the first stop and the second piston contacts the second stop.

5,611,490

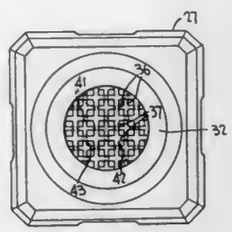
FOAMER ASSEMBLY FOR FLUID DISPENSER

Jacques J. Barriac, Claremont, and Adonis Spathias, Corona, both of Calif., assignors to Calmar Inc., City of Industry, Calif.

Filed Dec. 19, 1994, Ser. No. 358,938

Int. Cl.[6] B05B *1/02*

U.S. Cl. 239—333 **12 Claims**



1. A foamer nozzle assembly mounted at a discharge end of a fluid dispenser, comprising, a cylinder having a smooth inner wall defining a first turbulence zone coaxial with a discharge orifice located in an end wall at said discharge end through which a conical spray is discharged in a downstream direction into said cylinder for generating foam as spray particles deflect upon impact against said smooth inner wall to mix with air in said chamber to create bubbles of foam, foam enhancement means comprising a first set of intersecting strands and a second set of intersecting strands located in said cylinder for further generating foam as the spray particles pass through said means, said first set of said strands lying in a first plane and mutually intersecting to define a mesh screen of rectangular openings having a size of about 15 to 60 opening per linear inch, said second set of said strands lying in a second plane parallel to and spaced from said first plane in said downstream direction, said second set of strands mutually intersecting to define a mesh screen of rectangular openings having a size of about 15 to 60 openings per linear inch, said mesh screens being relatively offset in at least one direction perpendicular to said inner wall to define a combined mesh screen of rectangular openings having a size greater than 15 to 60 openings per linear inch in said one direction, and to establish second and third turbulence zones as the flow direction of the spray particles is deflected when passing through said first set and as the flow direction of the spray particles is further deflected when passing through said second set.

5,611,491

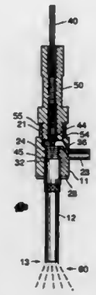
MODULAR CO_2 JET SPRAY DEVICE

Charles W. Bowers, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 27, 1995, Ser. No. 395,124

Int. Cl.[6] B05B *1/30*

U.S. Cl. 239—582.1 **5 Claims**



1. A modular jet spray device for producing a spray of carbon dioxide snow for cleaning submicron sized particles and molecular films, said device comprising:

a valve body having first and second ends and a gas input for receiving a CO_2 cleaning agent and having a generally circular cross section and a hole extending axially therethrough, and wherein the valve body comprises:

a first relatively large internally threaded coupling adjacent one end to which the sleeve assembly is secured;

an orifice disposed through a wall of the valve body that provides an inlet for the CO_2 cleaning agent;

a second relatively small diameter internally threaded coupling adjacent the center of the valve body that mates with the jet spray nozzle;

a hole adjacent the other end of the valve body that is larger in diameter than the second threaded coupling; and

a compression seal disposed at the end of the valve body that seals the nozzle to the valve body;

a jet spray nozzle removably secured to the first end of the valve body and comprising an inlet orifice and an output orifice;

a sleeve assembly removably secured to the second end of the valve body;

a needle assembly removably secured to the sleeve assembly and having a needle that inserts into the inlet orifice of the nozzle;

a micrometer removably secured to the sleeve assembly distal from the valve body and coupled to the needle assembly for adjusting the position of the needle relative to the inlet orifice of the jet spray nozzle; and

a CO_2 gas source coupled to the gas input of the valve body.

5,611,492

REFUSE TIRE GRINDER/SEPARATOR

James R. Hunt, Tucker, and Jerry L. Hunt, Rossville, both of Ga., assignors to Hunt Industries Inc., Tucker, Ga.

Filed May 1, 1995, Ser. No. 431,769

Int. Cl.[6] B02C *19/00;19/12*

U.S. Cl. 241—23 **5 Claims**

1. A method for recovering rubber crumb from refuse tire



portions comprising the steps of:

a) presoftening said refuse tire portions with an essential oil;

b) abrading the presoftened tire portions with a tapered auger;

c) magnetically separating magnetic portions from the abraded tire portions;

d) subjecting the separated rubber portions to microwave energy under a vacuum and at a temperature between about 50° to 100° C. whereby volatile oils are removed; and then

e) recovering the rubber product.

5,611,493

SYSTEM AND METHOD FOR DISPOSING WASTE

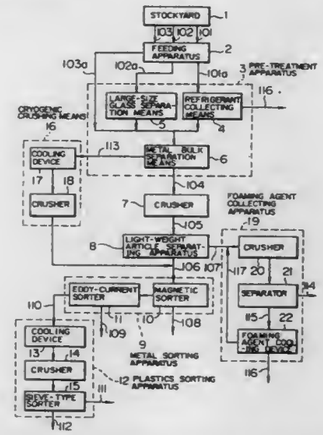
Masakatsu Hayashi, Ushiku; Yoshiyuki Takamura, Kudamatsu; Tsutomu Hasegawa, Niiza; Hideharu Mori, and Tatsuji Katoh, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 85,092, Jul. 2, 1993, Pat. No. 5,431,347, which is a continuation-in-part of Ser. No. 56,937, May 5, 1993, Pat. No. 5,301,881, which is a continuation of Ser. No. 984,492, Dec. 2, 1992, abandoned. This application May 26, 1995, Ser. No. 453,062

Claims priority, application Japan, Dec. 2, 1991, 3-317643; Jan. 29, 1993, 5-013385

Int. Cl.[6] B02C *21/00*

U.S. Cl. 241—23 **8 Claims**



1. A system for disposing waste articles of at least first, second, third and fourth types, said first type of waste articles being refrigerators including metal bulks containing refrigerant, plastic elements of a foamed plastic material containing foaming agent and other metallic and/or plastic pieces, said second type of waste articles being television receivers including elements of glass and other components of metallic, plastic and/or wooden materials which form frames of the television receivers, said third type of waste articles being laundry machines including metal bulks, metallic or plastic elements and other components, said fourth type of waste articles being air conditioners including metal bulks containing refrigerant and other metallic and/or plastic material, said system comprising:

refrigerant collecting means;

large-size glass separation means;

first feeding means for feeding said first and fourth types of waste articles to said refrigerant collecting means;

second feeding means for feeding said second type of waste articles to said large-size glass separation means;

said refrigerant collecting means being operative to extract and collect refrigerant from said metal bulks containing said refrigerant;

said large-size glass separation means being operative to separate large-size glass elements from said other components;

metal bulk separation means;

first transfer means for transferring to said metal bulk separation means said first and fourth types of waste articles from which said refrigerant has been extracted;

second transfer means for transferring to said metal bulk separation means said second type of waste articles from which said large-size glass elements have been separated;

third feeding means for feeding said third type of waste articles to said metal bulk separation means;

said metal bulk separation means being operative to separate metal bulks of at least said first, third and fourth types of waste articles from the other waste components of said waste articles;

means for crushing said metal bulks and said other waste components into fragments and for separating fragments of light-weight materials from the other waste fragments;

means for collecting said foaming agent from said fragments of said light-weight materials; and

means for sorting said other waste fragments into metallic fragments and plastic fragments.

5,611,494

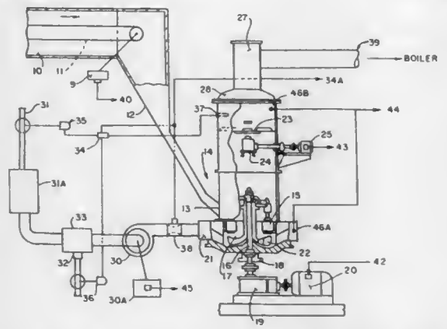
ISOLATED INTELLIGENT AND INTERRELATED CONTROL SYSTEM WITH MANUAL SUBSTITUTION

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Jun. 30, 1995, Ser. No. 491,355

Int. Cl.[6] B02C *19/00;25/00*

U.S. Cl. 241—27 **4 Claims**



3. For use in conjunction with a system of automatic multiple stand alone and interrelated controls associated with fuel grinding and particle sizing supply to a boiler emitting a fuel demand signal, a method of monitoring the stand alone controls while the system is in operation, said method comprising:

a) providing the multiple controls with monitoring screens for visually displaying the operation of such controls in response to the boiler fuel demand;

b) manually interrupting the automatic response of any control that displays a malfunction;

c) converting the malfunctioning control to a manual response in the system; and

d) replacing a malfunctioning control so as to return to automatic response.

5,611,495

ROTARY SHREDDING APPARATUS WITH ANTI-JAM MEANS

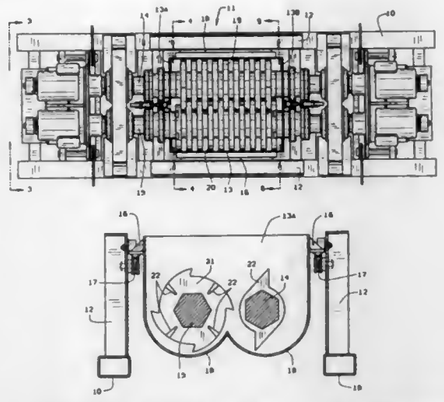
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Nov. 6, 1995, Ser. No. 554,269

Int. Cl.[6] B02C *4/08*

U.S. Cl. 241—73 **8 Claims**

1. Rotary shredding apparatus for the conversion of waste material into a shredded size adaptable for reuse in the manufacture of useful products, the shredding apparatus comprising:



a) a frame having spaced apart wall structure to define a space therebetween;

b) a material shredding cage disposed in the space between said wall structure; said cage having an open top and opposite side and end walls;

c) a pair of shafts in side-by-side parallel relation operably mounted in said apparatus to extend through said opposite end walls of said cage;

d) a series of shredding discs on said parallel shafts in positions for shredding waste material introduced to said cage open top upon said pair of shafts in said cage;

e) shredded material sizing grate surfaces positioned beneath said pair of shafts to be carried by said end walls and said side walls in position to release the shredded material from said cage; and

f) an oscillating actuator connected to said opposite end walls of said cage for imparting an oscillatory movement to said side and end walls of said cage relative to said pair of shafts for distributing the waste material over said pair of shafts for reduction of such waste sufficient to pass through said grate.

5,611,496

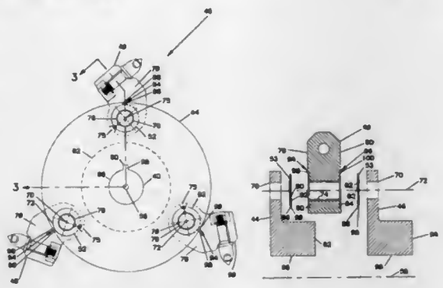
HAMMERMILL HAVING SEALED HAMMERS

Jeff A. Fleenor, Pella, Iowa, assignor to Vermeer Manufacturing Corporation, Pella, Iowa

Filed Apr. 25, 1995, Ser. No. 428,528

Int. Cl.[6] B02C *13/04*

U.S. Cl. 241—166 **9 Claims**



9. A hammermill comprising:

a main shaft rotatable about a main axis passing longitudinally through the main shaft;

a plurality of substantially parallel plates connected to the main shaft and spaced longitudinally along the main axis;

a plurality of free swinging hammers pivotally mounted between the plates on pivot shafts aligned parallel to and spaced from the main axis, the hammers including opposing first and second sides that face the plates, the first and second sides defining slots that open toward the plates and extend radially outward from the pivot shafts, the first and second sides of the hammers also including cutting edges that extend along opposite sides of the slots and are located directly adjacent the plates, wherein as the hammers pivot about the pivot shafts, the cutting edges cooperate with the plates to cut material that becomes wrapped about the pivot shafts.

5,611,497

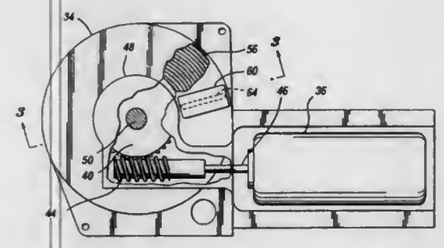
ACTIVE TENSION REDUCER FOR THE SEAT BELT OF A SAFETY RESTRAINT SYSTEM

Dagoberto Krambeck, Troy, and Monte G. Watson, Ferndale, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 24, 1995, Ser. No. 506,221

Int. Cl.[6] B60R *22/44*

U.S. Cl. 242—375.1 **14 Claims**



1. A seat belt retractor having an active tension reducer, the retractor comprising:

a frame rotatably supporting a spool and a seat belt receivable on the spool, the spool biased by a spiral spring producing a nominal spring force sufficient to rewind all of the seat belt if same is fully extended from the spool;

a housing fixedly attached to the frame of the retractor adjacent one end of the spool;

a spring cap rotatably disposed in said housing concentric with said one end of the spool;

the spiral spring connected between the spool and the periphery of said spring cap, said spiral spring biasing said spool to rotate in a first direction winding the seat belt on the spool;

a manually activated switch having an open state and a closed state;

tension remover means responsive to a change in state of the switch indicative of the seat belt being placed about an occupant, for rotating said spring cap in said first direction to unwind the spiral spring a predetermined number of turns to reduce the spring force from its nominal value thereby reducing the tension applied to the shoulder of the occupant and responsive to another change in state of the switch, indicative that the seat belt is being removed from about the occupant for rotating said spring cap in a second direction opposite said first direction by said predetermined number of turns to restore said spring force to its nominal value permitting the seat belt to be fully rewound.

5,611,498

SEAT BELT RETRACTOR WITH AUXILIARY SHAFT LOAD LIMITING

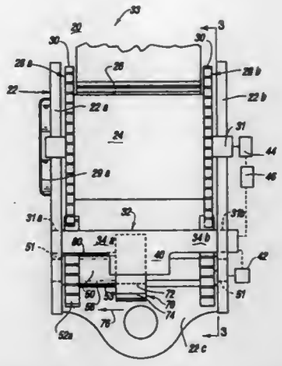
Harold J. Miller, III, Troy, and Niels Dybro, Utica, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 11, 1995, Ser. No. 514,073

Int. Cl.[6] B60R *22/28*

U.S. Cl. 242—379.1 **10 Claims**

1. A seat belt retractor comprising



seat belt webbing and a spool for storing the webbing thereon, the spool rotationally mounted on a frame;

a rewind spring for rewinding or retracting the webbing;

at least one drive member rotatable with the spool;

an auxiliary shaft including a least one driven member thereon operatively linked with the at least one drive member;

a first movable member mounted to rotate with and slide along the auxiliary shaft;

first lock means for preventing the rotation of the first movable member while permitting the first movable member to slide relative to the auxiliary shaft;

first energy absorbing means mounted about the auxiliary shaft and in selective contact with the first movable member for generating when deformed by the first movable member a reaction force on the spool to oppose any protraction of the webbing during an emergency.

5,611,499

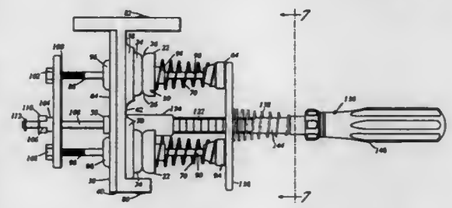
YARN TENSIONING DEVICE

David L. Stokes, Calhoun, Ga., and Michael R. Walker, Southern Pines, N.C., assignors to Epic Enterprises, Inc., Southern Pines, N.C.

Filed Dec. 28, 1995, Ser. No. 580,135

Int. Cl.[6] B65H *59/22*

U.S. Cl. 242—419.4 **20 Claims**



1. A system for tensioning yarn, said system comprising:

bracket having a front side and a back side;

three pair of disks carried by said front side of said bracket, each pair of disks of said three pairs of disks having a first disk and an opposing second disk;

three posts extending from said front side of said bracket through to said back side of said bracket, said each pair of disks having one post of said three posts extending therethrough;

three springs applying biases to said three pairs of disks so that said first disk and said second disk of said each pair of disks are urged together, said each pair of disks having one spring of said three springs applying said bias thereto;

three holders carried by said three posts, each holder of said three holders engaging one spring of said three springs so that

said biases of said three springs are adjustable by the movement of said three holders and said three posts relative to said front side of said bracket;

means carried by said three posts for coupling said three posts together, so that the movement of said coupling means relative to said back side of said bracket changes said biases applied by said three springs; and

means connected to said coupling means for moving said coupling means relative to said bracket, said moving means extending through said bracket to said front side so that from said front side of said bracket, said biases of said three springs may be changed when said moving means moves said coupling means.

5,611,500

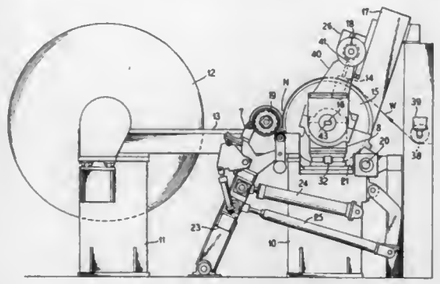
REEL WOUND ROLL LOAD SENSING ARRANGEMENT

Philip W. Smith, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 196,888, Feb. 15, 1994, abandoned, which is a continuation of Ser. No. 889,882, May 29, 1992, abandoned. This application Sep. 14, 1995, Ser. No. 528,186

Int. Cl.[6] B65H *18/14;18/26*

U.S. Cl. 242—541.4 **2 Claims**



1. A paper web reeling apparatus, including a pair of primary arms for receiving a core and a driven support drum having a surface and an axis of rotation for supporting the traveling paper web when the core is held in the primary arms and brought into nipping engagement with the support drum with the web therebetween to wind the web into a wound web roll on the core, the combination comprising:

the pair of primary arms are mounted co-axially with the support drum to rotate substantially co-axially with the support drum and to extend substantially radially of the axis of rotation;

nip force control means operatively associated with the primary arms for receiving and holding a core in movable adjustably biased nipping engagement with the support drum, the core being substantially arcuately movable about an upper segmental portion of the support drum surface to commence the winding of the web onto the core to form a partially wound web roll thereon;

first pressure sensing means operatively associated with the primary arms and nip force control means for sensing the weight of the core and any frictional force of the nip force control means in movement away from the support drum when the nip load between the core and support drum is adjusted to a desired level initially when the fresh core is positioned in the primary arms substantially vertically above the support drum, as well as any frictional force by the nip force control means as it moves to accommodate an increasing diameter of the wound web roll, said first pressure sensing means providing a first signal indicative of such core weight and frictional force as the web is wound on the core and the diameter of the wound web roll increases;

second pressure sensing means associated with the support drum for only measuring any horizontal force on the support drum including any horizontal component of a radial force of the core or partially wound web roll against the support drum and providing a second signal indicative of the horizontal nip force against the support drum;

angle position indicator means for measuring the angular position of the newly started core about the support drum axis of rotation and relative to the support drum surface, and for providing a third signal indicative of such position;

signal processor means for receiving the first, second and third signals, and for introducing the signals as data into a program in a central processor and for providing a first control signal determined by the program to the nip force control means to control the nip pressure between the core, the web roll wound thereon, and the support drum according to the program as the partially wound web roll is moved by the pair of primary arms about an upper segment of the support drum such that the paper web is supported on a segment of the support drum surface while being held by the nip force control means;

web tension measuring means disposed to measure the web tension of the on-coming paper web upstream of the web supported on the support drum, said web tension measuring means including a load cell for providing a fourth signal as a function of web tension;

said signal processor means receiving the fourth signal and comparing it with the second signal to provide a second control signal indicative of the net reaction force on the support drum due to the horizontal force component of the partially wound web roll against the support drum less the horizontal force component of the tension force of the on-coming web;

whereby the nip force control means controls the nip load between the web roll being wound and the support drum as a function of the first and second control signals.

5,611,501

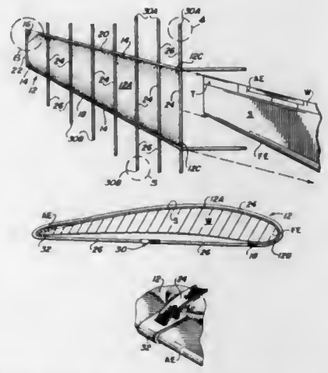
AIRCRAFT WING PROTECTIVE COVER SYSTEM

William R. Crandley, P.O. Box 3514, Pagosa Springs, Colo. 81147

Filed Mar. 24, 1995, Ser. No. 410,110

Int. Cl.[6] B64F *1/00*

U.S. Cl. 244—1 R **18 Claims**



1. An aircraft wing protective cover system for securing on a wing of an aircraft to cover and protect the aircraft wing, said system comprising:

(a) a cover sheet having a perimeter and being made of a flexible, tear-resistant, moisture-proof material, said cover sheet having a main portion adapted to extend over a top surface of a wing of an aircraft and a front marginal portion extending forwardly from the main portion and adapted to extend around and under a forward edge of the aircraft wing;

(b) a plurality of elongated perimeter strips made of a flexible inelastic material and attached to and extending along said perimeter of said cover sheet;

(c) a plurality of elongated cross strips made of a flexible inelastic material and attached to said cover sheet, said cross strips being spaced apart from one another and extending between the forward edge and an aft edge of the wing and attached to said perimeter strips such that said perimeter strips and cross strips together reinforce said cover sheet so as to prevent stretching and tearing of said material thereof;

(d) means for connecting said cover sheet to the aircraft wing; and

(e) a plurality of attachment clips each separate from said cover sheet and attached to one of said cross strips, each of said attachment clips being shaped to extend around and engage with the aft edge of the aircraft wing to anchor an aft edge of said cover sheet at the aft edge of the aircraft wing so as to prevent said cover sheet from sliding forward on the aircraft wing.

5,611,502

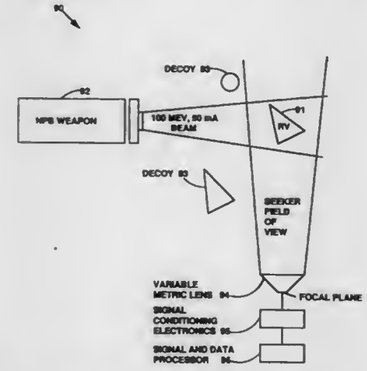
INTERCEPTOR SEEKER/DISCRIMINATOR USING INFRARED/GAMMA SENSOR FUSION

George R. Edlin, Huntsville; J. Michael Madewell, Madison; Randy D. Buff, Huntsville, and W. Welman Gebhart, Decatur, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 23, 1995, Ser. No. 548,400

Int. Cl.[6] F41H *11/00;* **F42B** *15/00;* **H01S** *1/00*

U.S. Cl. 244—3.16 **6 Claims**



1. An interceptor seeker and discriminator using infrared and gamma sensors and having the capability of fusing together gamma signatures with infrared information based on tracking signals to allow the interceptor to home in on and destroy a reentry vehicle target containing a nuclear warhead, said infrared and gamma sensors being effective at short distances of about 5 to 10 kilometers and at long distances of more than 100 kilometers, said shorter distance being accomplished without the use of any activation methods and whereas said longer distances being accomplished with activation in order to provide sufficient gamma signal required by a gamma sensor, said interceptor seeker and discriminator employing infrared and gamma sensors comprising:

(i) an interceptor equipped with a variable metric crystals gamma-ray seeker discriminator and infrared sensors for performing the tracking functions of a reentry vehicle target, said variable metric crystal gamma-ray seeker capable of receiving gamma-rays resulting from fission gammas emitted by a reentry vehicle target containing a nuclear warhead so as to identify a reentry vehicle target among decoys in proximity of said reentry vehicle target;

(ii) an infrared sensor for tracking an identified reentry vehicle target, said infrared sensor provided with a variable metric crystal lens selected from a variable metric crystal lens consisting of variable metric crystals whereby the variation in the crystal lattice spacing is obtained by a thermal gradient and a variable metric crystals whereby the variation in the crystal lattice spacing is obtained by a change in its composition, said infrared sensor performing the tracking function;

(iii) signal conditioning electronics means for processing gamma-rays received from a field-of view of a few arc seconds and focused onto detectors of less than one millimeter by said interceptor; and,

(iv) signal and data processing means to provide handover coordinates to an infrared sensor which serves to track a reentry vehicle target and to provide information for said interceptor to intercept of a reentry vehicle target containing a nuclear warhead.

5,611,503

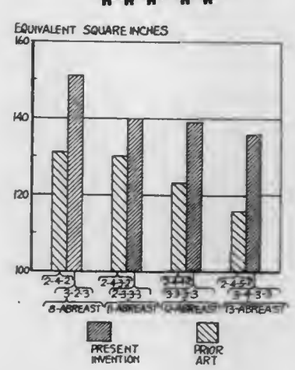
OPTIMAL AIRPLANE PASSENGER SEATING CONFIGURATIONS AND METHODS THEREFOR

Robert K. Brauer, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 13, 1993, Ser. No. 135,704

Int. Cl.[6] B61D *33/00;* **B64D** *11/06*

U.S. Cl. 244—118.6 **23 Claims**



1. A process for optimizing passenger seating configurations within an airplane having more than one aisle positioned therein, comprising:

(a) identifying the row configurations that can be reasonably accommodated by said airplane;

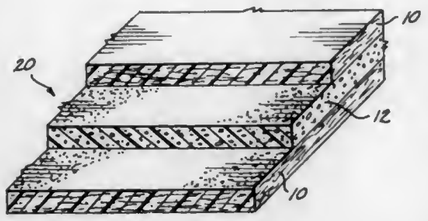
(b) determining the level of comfort enjoyed by passengers seated in different seating environments within said airplane created by adjacent empty seats, occupied seats, sidewalls, and aisles (environment comfort level);

(c) determining the frequency of occurrence of possible load factor increments;

(d) calculating the average passenger comfort level in said row configurations, using said environment comfort levels, weighted by the portion of passengers that would be seated in each of said seating environments at each said load factor increment, each said load factor increment being weighted by the frequency of occurrence of said load factor increment, and;

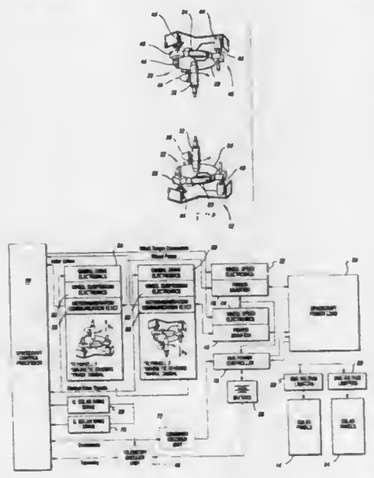
(e) installing seats in said airplane in accordance with the seating configuration shown by step (d) to provide the highest average passenger comfort level.

5,611,504
SEMI-RIGID, LIGHT WEIGHT FIBER GLASS/POLYMIDE FOAM SANDWICH BLANKET INSULATION
Barbara L. Haynes, Seattle; Susana S. Ng, Bothell; Paul M. Serati, Everett; Oktay Yesil, Kent; Eugene A. Jackson, Renton, and Samuel M. Lawrence, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 223,618, Apr. 6, 1994, Pat. No. 5,431,990.
This application Jan. 24, 1995, Ser. No. 378,048
Int. Cl.[6] B64C *1/00*
U.S. Cl. 244—119 1 Claim



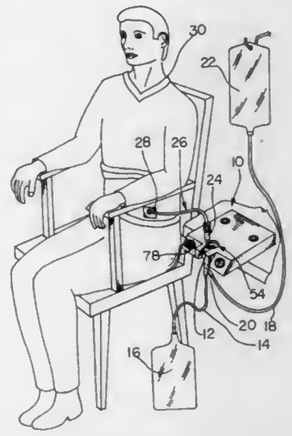
1. In combination:
an insulation blanket attached between structural frames of an aircraft;
said insulation blanket having a semi-rigid skeleton with porous cavities for supporting outer layers of fiber glass a predetermined distance from the aircraft inner skin thereby preventing the insulation blanket from contacting the inner skin.

5,611,505
SPACECRAFT ENERGY STORAGE, ATTITUDE STEERING AND MOMENTUM MANAGEMENT SYSTEM
John W. Smay, Redondo Beach, Calif., assignor to Hughes Electronics, Los Angeles, Calif.
Filed Nov. 18, 1994, Ser. No. 342,061
Int. Cl.[6] B64G *1/28*
U.S. Cl. 244—165 13 Claims



1. An energy storage and retrieval system for a spacecraft having a body and a pitch axis, the system comprising:
a first flywheel disposed within the body and reversibly rotatable about a first spin axis substantially co-aligned with the pitch axis, wherein rotation of said first flywheel produces a first momentum directed along the first spin axis;
a second flywheel disposed within the body and reversibly rotatable about a second spin axis substantially co-aligned with the pitch axis, wherein rotation of said second flywheel produces a second momentum directed along the second spin axis so as to produce a non-zero net momentum; and
a processor in communication with the first and second flywheels for controlling alignment of the first and second spin axes, direction of rotation of said first and second flywheels, and a rotational speed of said first and second flywheels so as to increase the rotational speed of at least one of said first and second flywheels to store energy, said processor also operative to decrease the rotational speed of at least one of said first and second flywheels to retrieve energy.

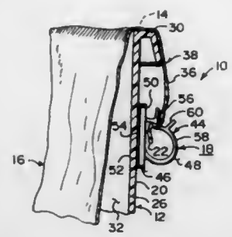
5,611,506
DIALYSIS ASSIST DEVICE
Maria Berger; Nancy Page, and Sharon L. Mroz, all of 710 Park Pl., Mishawaka, Ind. 46545
Filed Jul. 25, 1995, Ser. No. 507,658
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—65 12 Claims



1. Dialysis assist device to facilitate connection of tubing with a catheter implanted in a dialysis patient for transferring dialysis fluid to and from said catheter, the catheter and the tubing having cooperating releasable connecting means, said dialysis assist device comprising a tray, securing means for releasably securing said tray against movement relative to a support surface, said tray including an aperture extending through said tray for receiving said tubing during dialysis, and attaching means for attaching the connecting means of the tubing to said tray for connection with the connecting means of the catheter.

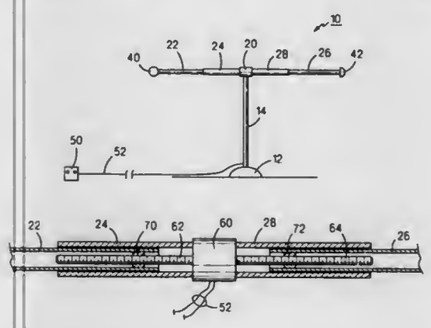
5,611,507
SECURE BAG HOLDING DEVICE
Jimmy R. Smith, 4439 Trout Valley Dr., Memphis, Tenn. 38141
Filed May 15, 1995, Ser. No. 441,364
Int. Cl.[6] B65B *67/04*
U.S. Cl. 248—99 1 Claim

1. A secure bag holding device comprising:
a) a container of strong durable plastic material having an open top to receive an inserted and removable bag and an upstanding outer wall; and
b) means on an exterior surface of said outer wall below the open top for anchoring a free edge of a bag of thin flexible plastic material in a releasable manner permitting a person to readily locate and release the free edge of the bag after it is



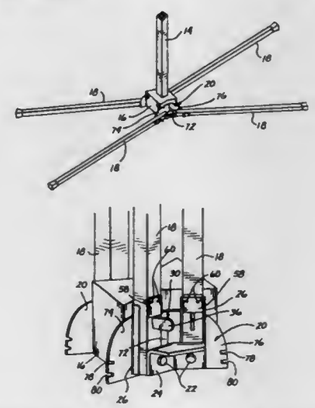
filled with articles, said anchoring means comprising a plurality of clamp members disposed on the outer surface of said upstanding wall about and below the open top, each clamp member comprising a base plate, an adhesive layer on an inner surface of said base plate to secure said base plate to said outer surface, and clip means on the outer surface of said base plate to retain a portion of the free edge of said bag, said clip means including an L-shaped stationary arm extending from the outer surface of said base plate and having a free end, a curved movable arm extending from the outer surface of said base plate and having a release tab on said arm, said stationary arm overlapping and contacting the free end of said movable arm, said movable arm being biased to maintain said contact, said release tab being manually manipulated to separate the two arms by pushing said free end toward said base plate to permit said portion of the free edge of said bag to be inserted to be retained by said clip means or separate the two arms to release portion of the free edge of said bag when being trapped by said clip means.

5,611,508
HORIZONTALLY ADJUSTABLE MICROPHONE SUPPORT
Albert Palmero, Middlefield, Conn., assignor to Tri-tech, Inc., Waterbury, Conn.
Filed Mar. 3, 1995, Ser. No. 398,094
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—123.2 2 Claims



1. A horizontally adjustable microphone support, comprising:
(a) vertical support means;
(b) a generally horizontal cross member attached to said vertical support means, said horizontal cross member including first and second telescoping tube pairs, each having an inner tube and an outer tube, extending from opposite sides of said vertical support means;
(c) a microphone and a counterweight attached to said horizontal cross member on said opposite sides of said vertical support means; and
(d) means to simultaneously move said microphone and said counterweight selectively inwardly toward or outwardly away from said vertical support means so as to prevent said microphone support from tipping over;
wherein:
(e) proximal ends of said inner tubes of said first and second telescoping tube pairs are attached to an electric motor mounted in a housing disposed at a distal end of said vertical support means;
(f) said electric motor includes a threaded, double-ended shaft having a righthand threaded first shaft section extending from a first end of said electric motor and a lefthand threaded second shaft section extending from a second end of said electric motor, with said first shaft section disposed coaxially in said first telescoping tube pair and said second shaft section disposed coaxially in said second telescoping tube pair;
(g) a first thread follower is attached to an inner wall of said inner tube of said first telescoping tube pair and surrounds and engages said first shaft section to cause said inner tube of said first telescoping tube pair to move axially within said outer tube of said first telescoping tube pair as said first shaft section rotates; and
(h) a second thread follower is attached to an inner wall of said inner tube of said second telescoping tube pair and surrounds and engages said second shaft section to cause said inner tube of said second telescoping tube pair to move axially within said outer tube of said second telescoping tube pair as said second shaft section rotates;
whereby, rotation of said electric motor in a first direction will cause simultaneous outward movement of said inner tubes of said first and second telescoping tube pairs and rotation of said electric motor in a second direction will cause simultaneous inward movement of said inner tubes of said first and second telescoping tube pairs.

5,611,509
QUICK RELEASE MECHANISM FOR A DISPLAY STAND
Jack H. Kulp, San Juan Capistrano, Calif., and John D. McKenney, Arroyo Seco, N.M., assignors to Traffix Devices, Inc., San Clemente
Filed Nov. 22, 1994, Ser. No. 343,342
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—188.7 26 Claims



1. An apparatus comprising a member, a structure, and a quick release mechanism, and having a lower portion for supporting the apparatus and an upper portion for supporting an object, said apparatus comprising:
a slot in said member, said member slot having a lower surface;
a slot in said structure, said structure slot having an upper portion which is open; and
a latch member adapted to extend axially through said member and structure slots, such that a proximal portion of the latch

member extends proximally of said member slot and a distal portion of the latch member extends distally into said structure slot, the latch member pivotably resting on said member slot lower surface;

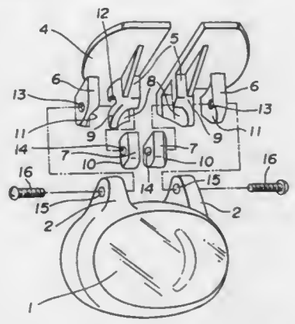
whereby when said latch member proximal portion is depressed, the latch member pivots about the lower surface of said member slot sufficiently that the latch member distal portion swings upwardly through the open top end of the structure slot, thereby disengaging from the structure slot and releasing said member so that it may pivot relative to said structure.

5,611,510

DEVICE FOR FITTING UP AN AUXILIARY LAMP

Teruaki Yamamoto, Tokyo, Japan, assignor to PIAA Corporation, Tokyo, Japan

Filed Feb. 10, 1995, Ser. No. 386,497
Int. Cl.[6] A47G *1/17*
U.S. Cl. 248—205.3 **1 Claim**



1. A device for fitting up an auxiliary lamp, comprising:

an auxiliary lamp body containing a fog lamp or other kind of auxiliary lamp;

a pair of brackets opposite to each other, and projecting from one side of the lamp body;

a support plate having one side surface fitted adhesively at a suitable position by an adhesive layer; and

a pair of pivot members projecting from another side surface of said support plate and loosely fitted between the brackets,

each of said pivot members being interposed between a washer member and a nut member,

said pivot members each having inner and outer arcuate surfaces,

said washers having inner arcuate surfaces which match said pivot member outer arcuate surfaces, said nut members having outer arcuate surfaces which match said pivot member inner arcuate surfaces, said pivot members having horizontally elongate recesses, said washers having through holes, said nut members having tapped holes, said brackets having center through holes, and a pair of bolts for engaging each of said pivot member recesses, said washer holes, said nut member holes, and said bracket holes.

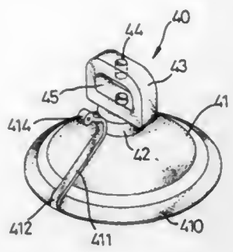
5,611,511

SUCKER STRUCTURE

Chun-yi Lee, Yungkang, Taiwan, assignor to Chien-shish Wu, Chiayi Hsien, Taiwan

Filed Dec. 14, 1995, Ser. No. 572,853
Int. Cl.[6] A45D *42/14*
U.S. Cl. 248—205.8 **3 Claims**

1. A sucker structure comprising a disk body having a rim portion, a supporting base formed on an upper portion of said disk body, a flexible snapping member fixedly mounted on an upper portion of said supporting base, and a drawing strip having a first end portion fixedly attached to said rim portion of said disk body and a second end portion disposed adjacent to said flexible snapping member wherein said flexible snapping member and said supporting base are integrally joined.

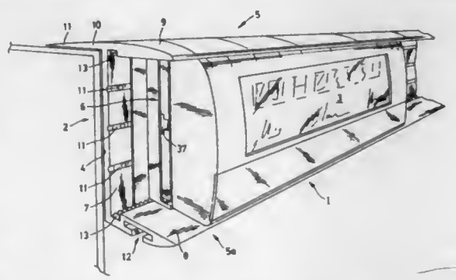


5,611,512

DEVICE FOR FIXING AN ELECTRONIC DISPLAY HOUSING

Claude Cholet, La Frette-Sur-Seine, France, assignor to Sitour Electronic Systems (S.E.S), France

PCT No. PCT/FR94/00688, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO94/29832, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 10, 1994, Ser. No. 387,902
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—220.22 **9 Claims**



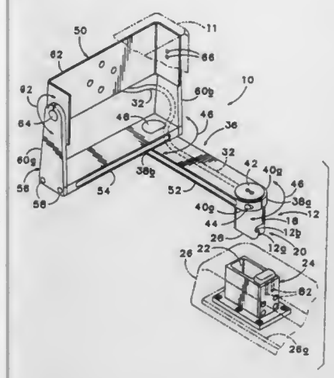
1. A device for fixing at least one electronic module housing (**1**) for displaying information relating to goods exposed in a shop, and in particular in a retail shop, the device comprising a rail (**5***a*) designed to receive the housing (**1**) and an intermediate part (**6**) which carries at least one resilient locking member (**21**) having at least one projection designed to co-operate with a groove presented by the rail (**5**) for the purposing of holding said housing (**1**) relative to said rail (**5***a*), the housing (**1**) and said intermediate part (**6**) presenting complementary means (**35**) for fixing said housing (**1**) on said intermediate part (**6**), the device being characterized in that the locking element (**21**) has a catch (**30**) designed to co-operate with a complementary projection on the intermediate part (**6**) to hold said locking element (**21**) in a retracted position against resilient urging thereof, the complementary projection (**25**) then being disengaged relative to the groove (**13**) of the rail with which it co-operates, the intermediate part (**6**) having a resilient branch (**32**) which, while the housing (**1**) and the intermediate part (**6**) are being installed on the rail (**5***a*), is urged back by the web (**7**) of said rail coming into contact with the catch (**30**), so as to disengage the catch from the complementary projection with which it cooperates, the locking element (**21**) then resiliently urging the projection into the groove of the rail (**5***a*).

5,611,513

ARTICULABLE PROJECTING PLUG

John B. Rosen, 87580 Cherry Ridge Rd., Eugene, Oreg. 97402

Continuation of Ser. No. 173,799, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 829,728, Jan. 31, 1992, Pat. No. 5,271,590. This application Apr. 22, 1996, Ser. No. 636,172
Int. Cl.[6] F16B *17/00*
U.S. Cl. 248—222.11 **23 Claims**



19. An articulable plug apparatus for use in supporting an electronic device via a frame-mounted receptacle formed in a generally horizontal surface and having an electrical signal port, the apparatus comprising:

an elongate conductor structure having first and second ends, the first end of the conductor structure being connectable with the electronic device;

joining structure configured for releasable joinder with the receptacle in a generally vertical motion to establish a load-bearing structural support for the apparatus, the second end of the conductor structure being fixed relative to the joining structure so that joinder of the joining structure with the receptacle will simultaneously result in electrical connection between the second end of the conductor structure and the electrical signal port;

elongate projecting structure terminating with first and second ends, the first end of the projecting structure being operatively connected to the joining structure and adapted to extend from the joining structures to the electronic device; and

a pivot adapted to be disposed between the receptacle and the electronic device and operatively connected to the projecting structure so that the projecting structure is articulable in a pivot plane to allow relative positioning between the electronic device and the frame.

5,611,514

ADJUSTABLE PIPE PIER

James Oliver, and Evon L. Oliver, both of 1990-D McCulloch Blvd. #110, Lake Havasu City, Ariz. 86403

Filed Jul. 13, 1995, Ser. No. 502,133
Int. Cl.[6] E04G *25/00*
U.S. Cl. 248—357 **18 Claims**

1. A pier for supporting an object at a desired height above a vertical support member having a top end and a side wall; said pier comprising:

a platform supported by the top end of the vertical support member; said platform including:

a bottom including:

a plurality of receptacles; each said receptacle for receiving the top end of the vertical support member for supporting said platform thereon; each said receptacle including:

a wall for bearing against the side wall of the vertical support member such that said platform cannot move horizontally relative to the top end of the vertical support member; and

a top connected to and supported by said bottom of said platform; said top including:

a slope defining a slanted plane; and

gripping means for gripping a wedge; and

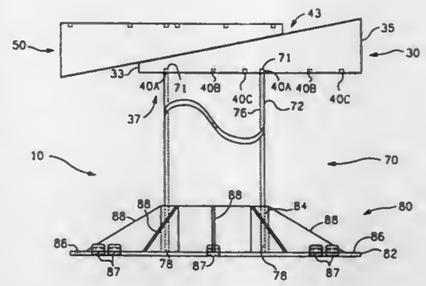
a wedge including:

a top defining a horizontal plane for supporting the object; and

a bottom connected to and supporting said top of said wedge; said bottom of said wedge including:

a slant defining a plane parallel to and supported by said slope, said slant being upwardly slidable on said slope such that the height of said top of said wedge is variable; and

gripping means for gripping interaction with said gripping means of said platform for preventing said slant from sliding down said slope.

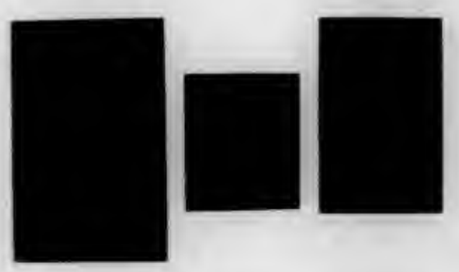


5,611,515

BLADDER NECK SUSPENSION PROCEDURE

Theodore V. Benderev, San Juan Capistrano; Neil H. Naves, and Mark J. Legome, both of Mission Viejo, all of Calif., assignors to Boston Scientic Corporation, Natick, Mass.

Continuation-in-part of Ser. No. 862,847, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 801,747, Mar. 12, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,739
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 **11 Claims**



1. A method of suspending a bladder neck comprising the steps of:

securing a suture to a bone anchor;

positioning said anchor in a bone without exposing said bone by way of an open surgical procedure; and

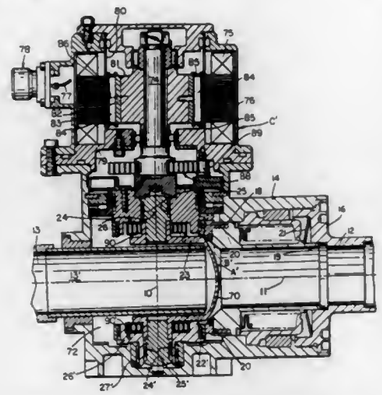
suspending said bladder neck with said suture.

5,611,516

ROTARY BALL VALVE WITH RETRACTING SEAT

Robert H. Reinicke, Mission Viejo, Calif.; Joseph M. Cardin, Sparta, and Arnold Dalene, Ringwood, both of N.J., assignors to Marotta Scientific Control, Inc., Montville, N.J.

Filed Mar. 27, 1995, Ser. No. 411,338
Int. Cl.[6] F16K *3/22*
U.S. Cl. 251—77 **7 Claims**



1. A rotary-ball and poppet-action valve comprising:

(a) a valve body having inlet and outlet ports on a first axis of fluid flow;

(b) a spherical ball-valve member interposed between said ports and supported by said body for rotary displaceability about a body-fixed axis that is on a diameter of the geometric sphere of said valve member, wherein said fixed axis and said first axis intersect at the center of said geometric sphere;

(c) said spherical ball-valve member being a shell which is a truncated portion of a sphere and having inner and outer spherical surfaces, one of said ports having a cylindrical bore extending axially within said geometric sphere and into axially adjacent clearance relation with said inner surface, the other of said ports having a cylindrical bore extending axially outside said geometric sphere and into axially adjacent clearance relation with said outer surface, the truncated portion of said sphere being of such angular extent about the body-fixed axis as to span both of said bores when in the valve-closing position of said shell;

(d) one of said ports, including an annular valve-seat member defining the cylindrical bore of said one port and guided for axial displaceability in and out of shell-engaging closure of the adjacent one of said axially adjacent clearances; and

(e) actuating means for axially displacing said annular valve-seat member in coordination with rotation of said ball such that said seat member is in circumferentially continuous engagement with said shell only when said shell is in its valve-closing angular position.

5,611,517

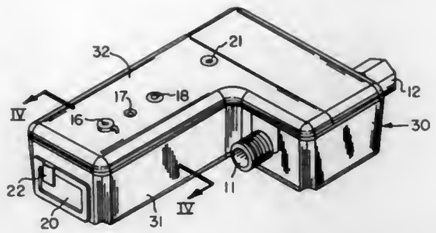
CONTROL UNIT FOR AUTOMATIC FAUCET

Robert E. Saadi; Brian N. Creager; Allen R. Becker, all of Erie, Pa., and Stephen R. Kovey, Glen Ellyn, Ill., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Apr. 20, 1995, Ser. No. 425,841
Int. Cl.[6] E03D *5/10*
U.S. Cl. 251—129.04 **13 Claims**

1. A tamper-resistant control unit for an automatic faucet having a transmitter and a receiver mounted therein for detecting the presence of objects near the automatic faucet, said control unit comprising:

a solenoid-activated valve assembly having inlet and outlet conduits extending therefrom, said solenoid-activated valve assembly having a solenoid-activated valve and a solenoid;



an electronic circuit mounted on a circuit board for communicating electrically with the transmitter and the receiver and for energizing the solenoid when an object is in the vicinity of the faucet;

a battery pack for supplying direct current to the electronic circuit, the transmitter and the solenoid;

a case having separate compartments therein for receiving the solenoid-activated valve assembly, and the circuit board and battery pack, respectively;

said case comprised of a unitary box portion and a lid;

said box portion having a dividing wall therein to define and separate a solenoid-activated valve compartment from a sealed electric compartment;

means to mount the circuit board within the electric compartment;

means for passing control wires from the solenoid-activated valve compartment to the electric compartment while maintaining the seal therebetween; and

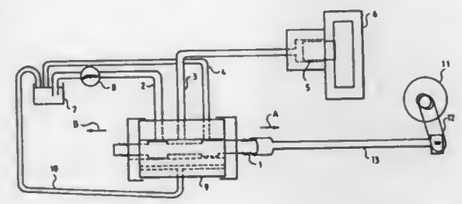
sealing means between the lid and the box portion for sealing the electric compartment, said battery pack arranged to slide into and out of the electric compartment without removal of the lid.

5,611,518

CONTROL DEVICE FOR A HYDRAULIC SLIDE VALVE

Christian Menard, Villennes S/Seine, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 15, 1995, Ser. No. 490,711
Claims priority, application France, Jun. 21, 1994, 94 07571
Int. Cl.[6] F16K *31/04*
U.S. Cl. 251—129.04 **9 Claims**



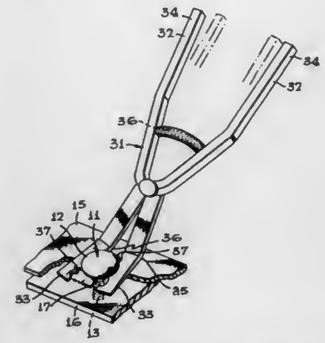
1. A device for the control of a hydraulic slide valve, the hydraulic slide valve being put into motion by a motor and a draw-back spring, wherein said device comprises means to control the direction of rotation of the motor as a function of positional error of said motor, the means to control the direction of rotation being controlled by a signal given by a correction circuit providing a transfer function (K(s)) proportional to a jet effect acting on the slide valve, the jet effect simulating the action of a draw-back spring with non-linear stiffness.

5,611,519

FASTENER REMOVING TOOL

Rodolfo Garcia, 6144 Ensign Ave., North Hollywood, Calif. 91606

Filed Jun. 6, 1995, Ser. No. 467,957
Int. Cl.[6] B25C *11/00*
U.S. Cl. 254—22 **8 Claims**



1. A pliers-like prying tool for removing a fastener having a bead and a depending stem releasably anchored below an adjacent surface, said tool comprising:

two members pivotably connected to define a pair of opposed jaws with their associated handles and an intermediate fulcrum; said jaws having tapered, generally coplanar top and bottom surfaces for wedging insertion between the head of a fastener and an adjacent underlying surface and for applying prying force against the head of the fastener in response to leverage applied to the handles, and having confronting side faces; and

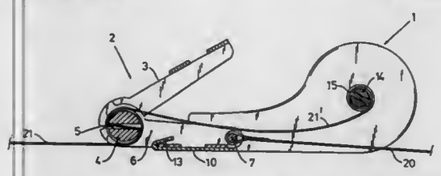
an arcuate groove formed in the side face of one of the jaws, said groove being elongated lengthwise of the jaws and disposed normal to the top surface of the jaw, whereby said groove grips an arcuate region of a segment of the stem of a fastener seated in said groove in response to grasping force applied to the handles and thereby effectively immobilizes the segment of the stem with respect to the head of the fastener.

5,611,520

STRAP COLLECTOR

Sven-Erik Söderström, Enköping, Sweden, assignor to Alvin C. Collins, Colorado Springs, Colo.

PCT No. PCT/SE93/00222, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/18937, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 15, 1993, Ser. No. 302,817
Claims priority, application Sweden, Mar. 16, 1992, 9200801
Int. Cl.[6] B25B *25/00;* **B65H** *75/28;18/10;* **B61D** *45/00*
U.S. Cl. 254—218 **6 Claims**



1. A strap collector (**1**) attached to a cargo tightener (**2**) having an arm (**6**) extending in a longitudinal direction and having a transversely positioned crossbar, and a lever (**3**) which is pivotally journalled in said arm (**6**) by a shaft (**4**), said shaft having a slit (**5**) for introducing one end of a first strap (**21**), the shaft being operable for co-rotational movement with the lever upon tightening said first strap, the arm (**6**) having a free end which includes a first aperture and a second aperture extending through said arm (**6**), said first aperture being aligned with said second aperture for receipt of a bolt (**7**) for attachment of a second strap (**20**) of fixed length, said strap collector (**1**) comprising:

a magazine comprising a first side wall (**8**) and a second opposing side wall (**9**) connected together by a bottom portion (**10**), said bottom portion having a folded flap (**13**) extending therefrom, a first hole extending through said first side wall and a second hole extending through said second opposing side wall, said first hole being aligned with said second hole for receipt of said bolt (**7**) for securing said strap collector to said cargo tightener, and

a pivoting element (**14**, **16**) attached to said magazine and rotatable for winding and storage of a non-active portion (**21'**) of said first strap (**21**) when said strap collector is in use,

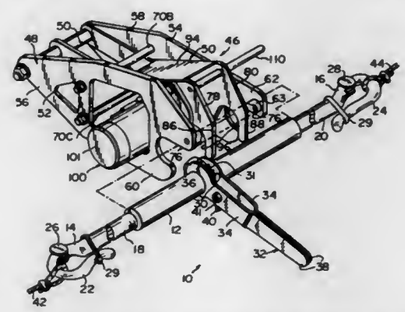
whereby when said strap collector is attached to said cargo tightener said folded flap (**13**) will be in engagement with the transversely positioned crossbar of said arm (**6**) and said bolt (**7**) will extend through said first bole and said second hole for attaching said strap collector to said cargo tightener such that the bottom portion (**10**) will extend adjacent to and in the longitudinal direction of the arm (**6**) to permit said second strap (**20**) to operate independently of the strap collector and to permit the non-active portion (**21'**) of the first strap (**21**) to be stored in the magazine without being affected by any load applied by the cargo tightener upon securing cargo.

5,611,521

POWER DRIVE FOR CABLE TIGHTENER

Donald D. Grover, and Frank W. Randle, both of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Feb. 29, 1996, Ser. No. 608,821
Int. Cl.[6] B25B *25/00*
U.S. Cl. 254—235 **12 Claims**



1. A power drive for an elongated cable tightener having an elongated sleeve and a driven gear wheel supported on the sleeve, the drive comprising:

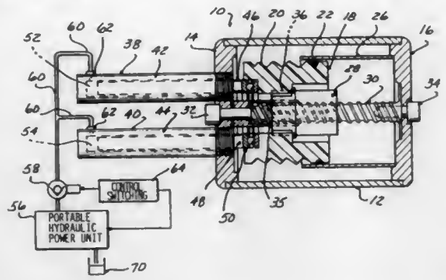
an outer frame having connected, and laterally spaced, elongated first and second outer side members, each outer side member having first and second ends, the second ends defining aligned outer notches opening longitudinally outward;

an inner frame disposed between the first and second outer side members and supported thereby for movement between engaged and open positions, the inner frame having connected and laterally spaced first and second inner side members, each inner side member having first and second ends, the second ends defining aligned inner notches opening laterally outward of the side members, wherein when the inner frame is in the engaged position the inner notches are aligned with the outer notches whereby the sleeve may be disposed in both the inner and outer notches;

a drive gear carried by one of the inner and outer frames and engageable with the driven gear to rotate the driven gear; and

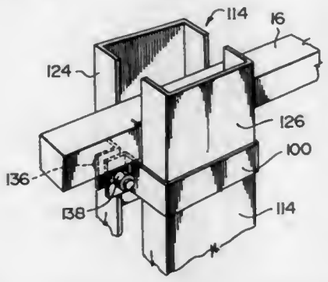
an actuator coupled to the drive gear for rotating the drive gear.

5,611,522
HYDRAULICALLY ACTUATED PORTABLE HOIST
James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.
Filed Apr. 1, 1996, Ser. No. 627,248
Int. Cl.[6] B66D *1/10*; F01B *3/00*
U.S. Cl. 254—331 6 Claims



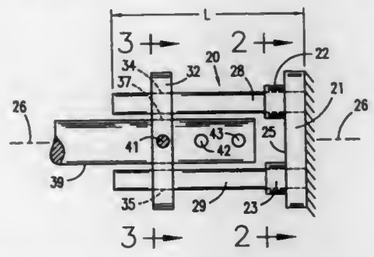
1. A hoist comprising:
a housing;
a ball screw shaft fixed extending axially through said housing;
a ball nut revolvably received on said ball screw shaft;
a spool drum fixed to said ball nut and having a helical external groove formed thereon;
a load cable attached to said spool drum so as to be wrapped into and out of said groove upon rotation of said spool drum in either direction, said load cable having a free end passing out of said housing for attachment to a load;
a pair of hydraulic cylinders mounted to one end of said housing, each having a cylinder rod extending into said housing and drivingly engaging one end of said spool drum at diametrically opposite locations thereon, an opposite end of each of said rods defining a pressure chamber in a respective hydraulic cylinder; and
means for selectively pressurizing each of said pressure chambers to cause each rod to extend axially to force said spool drum to be moved axially causing rotation thereof on said ball screw shaft so as to cause said load cable to wrapped thereon and an attached load to be thereby raised.

5,611,523
FENCE SYSTEM
Harvey E. Parisien, Kingston, Canada, assignor to Alcuf Inc., Kingston, Canada
Continuation-in-part of Ser. No. 273,984, Jul. 12, 1994, Pat. No. 5,496,016. This application Nov. 27, 1995, Ser. No. 563,064
Claims priority, application Canada, Jul. 19, 1993, 2100853
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—68 1 Claim



1. A fence system including a plurality of vertical posts supporting top and bottom rails, each of said posts comprising:
a pair of members, each member having side walls and an interconnecting wall defining a channel, said channels of said members being mutually opposed and said members having lower ends which are to be secured in a concrete base; and
a connector extending around the pair of members of the post comprising a pair of U-shaped members, an end portion of each end of each U-shaped member having an aperture for bolts whereby said bolts received in the apertures of the U-shaped members urge the U-shaped members together, and the connector urges pair of members toward each other and moves the side walls of the members of the post into engagement with the rails which extend between the members of the post and the rails rest directly on the connector so as to be supported thereon.

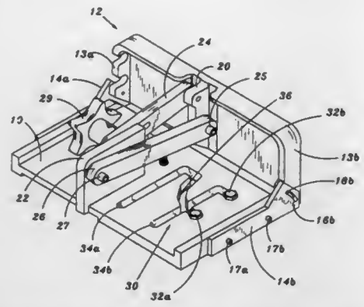
5,611,524
ADJUSTABLE ELASTOMER BIAS DEVICE USING BENDABLE RESILIENT RODS
James R. Gordon, Benton, Ill., assignor to Gordon Research & Development, Inc., Pinckneyville, Ill.
Filed Jun. 1, 1995, Ser. No. 458,042
Int. Cl.[6] F16F *1/14*
U.S. Cl. 267—154 16 Claims



1. An adjustable elastomer bias device comprising:
a rigid, fixed base member having N base receptacles, N being an integer larger than one;
N elongated organic elastomer rods each having a predetermined length of at least L and a predetermined cross sectional area, one end of each elastomer rod being firmly mounted in each base receptacle with the rods projecting from the base member in a preselected direction;
an index member having at least N rod guide passages therethrough, each rod passage through the index member having a cross-sectional area larger than the cross sectional area of the elastomer rod that passes therethrough so that the index member is movable longitudinally along the elastomer rods;
and anchor means for anchoring the index member at any one of a plurality of different displacements, in the preselected direction, from the base member.

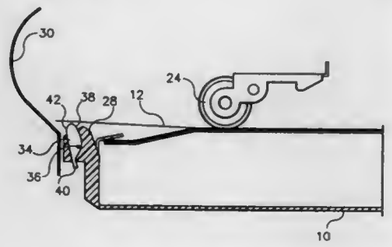
5,611,525
COMBINATION FENCE AND TABLE FOR POWER TOOL
Walter M. Bishop, McMinnville, Tenn., assignor to DeVlieg-Bullard, Inc., Rockford, Ill.
Filed Sep. 7, 1994, Ser. No. 301,858
Int. Cl.[6] B23Q *3/00*
U.S. Cl. 269—303 11 Claims

1. An apparatus for use as a fence and as a table with a power tool used for working on a workpiece, comprising:
a, base;
a plate adapted to be positioned substantially perpendicular to said base;
means for connecting said plate and said base;
means for joining said base to the power tool, including a first placement bolt and a second placement bolt; and



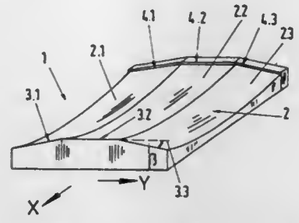
means for moving said base from a first position with respect to the power tool to a second position with respect to the power tool, said second position of said base being in the same plane as said first position of said base and said second position being rotated about 90° from said first position;
wherein said base is movable linearly across the width of the power tool while maintaining said first placement bolt and said second placement bolt in constant positions with respect to the power tool.

5,611,526
CUT SHEET TRAY HAVING A WEIGHTED PIVOTING JAM PREVENTION MEMBER
David J. Cornell, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 1, 1996, Ser. No. 595,059
Int. Cl.[6] B65H *5/22*
U.S. Cl. 271—3.01 4 Claims



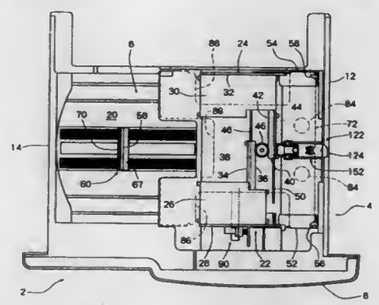
1. Imaging apparatus having a sheet path and a supply for receiving a stacked plurality of cut sheets for feeding, one at a time from the supply along the sheet path; said imaging apparatus comprising:
means for at least partially returning a cut sheet to the supply past an edge of any other cut sheets remaining in the supply;
a member having a first position covering the edge of said any other cut sheets and a second position removed from the edge of said any other cut sheets, whereby to not interfere with sheets being fed from the stack; and
an abutment surface located on the member such that a force applied to the abutment surface is operative to move the member between said positions, the abutment surface being located along the sheet path whereby the member is moved between said positions by the force of a cut sheet moving along the path.

5,611,527
DEVICE FOR DISPENSING A SHEETLIKE OBJECT FROM A STACK
Werner Wüthrich, Gümligen, Switzerland, assignor to Ascom Autelca AG, Gumligen, Switzerland
Filed Apr. 4, 1995, Ser. No. 416,352
Claims priority, application Switzerland, May 4, 1994, 1402/94
Int. Cl.[6] B65H *3/60*
U.S. Cl. 271—133 12 Claims



1. A device for dispensing a sheetlike object from a stack comprising a storage compartment (**13**) for the stack and an object removal unit on a lower side of the storage compartment (**13**) including a conveying element (**1**; **18**) movable perpendicularly to the stack in a dispensing direction (x), wherein said conveying element (**1**; **18**) has a supporting surface (**2**; **2.1**, **2.2**, **2.3**) shaped in a manner of at least one of the group consisting of concave in the dispensing direction (x) and convex in a transverse direction (y) which is orthogonal to the dispensing direction (x).

5,611,528
IMAGE-FORMING MACHINE EQUIPPED WITH A CASSETTE FOR FEEDING SHEET MATERIALS
Toshiyuki Nakamura, and Toshio Hori, both of Osaka, Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan
Filed Jan. 11, 1995, Ser. No. 371,154
Claims priority, application Japan, Jan. 14, 1994, 6-002359
Int. Cl.[6] B65H *1/04*; *1/12*
U.S. Cl. 271—164 5 Claims



1. An image-forming machine comprising a housing and a cassette for feeding sheet materials which is loaded in said housing so as to move in the back-and-forth direction between an acting position and a drawn position that is forwardly drawn from said acting position in said housing, wherein
said cassette for feeding sheet materials includes a container body, a front width restriction means and a rear width restriction means which are so disposed in said container body as to move in the back-and-forth direction, said front width restriction means has a bottom wall with a rearwardly extended portion and an upright restriction wall that upwardly extends from the bottom wall, said rear width restriction means has a bottom wall with a forwardly extended portion and an upright

restriction wall that upwardly extends from the bottom wall, said container body has a rotary pinion gear that is disposed between said extended portion of said front width restriction means and said extended portion of said rear width restriction means that extend in parallel with each other, and racks that are brought into engagement with said pinion gear are engraved in said extended portion of said front width restriction means and in said extended portion of said rear width restriction means, characterized in that said image-forming machine further comprises

a locking mechanism which includes a locking member and a first resilient urging means that are disposed in said container body of said cassette for feeding sheet materials and a forcing means disposed in said housing, and in that said locking member is disposed to move between a locking position at which it is brought into engagement with either said extended portion of said front width restriction means or said extended portion of said rear width restriction means and a release position at which it is liberated from both said extended portion of said front width restriction means and said extended portion of said rear width restriction means, said first resilient urging means resiliently urges said locking member to the release position, and when said cassette for feeding sheet materials is rearwardly moved from said drawn position toward said acting position beyond a predetermined position, said forcing means acts upon said locking member to force said locking member to said locking position, overcoming said first resilient urging means.

5,611,529

DEVICE FOR STREAM FEEDING SHEETS ONTO A STACK

Hans-Peter Richarz; Dirk Lünenschloss, both of Langenfeld, and Bernd Wüstenhagen, Wesel, all of Germany, assignors to VITS Maschinenbau GmbH, Langenfeld, Germany

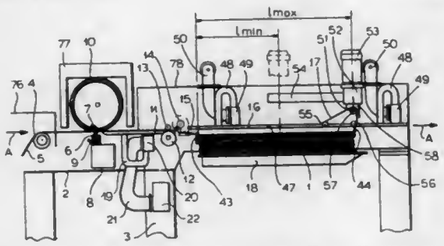
PCT No. PCT/EP94/01134, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/25384, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 13, 1994, Ser. No. 530,201

Claims priority, application Germany, May 5, 1993, 43 14 756.9; May 5, 1993, 9306740 U

Int. Cl.[6] B65H *29/68*

U.S. Cl. 271—183 **11 Claims**



1. A device for stream feeding sheets onto a stack, comprising:

first conveying means for transporting in a travel direction an end of a web which is cut transversely to form a succession of sheets and then feeding said sheets in a conveying plane along a path, each of said sheets being formed with a respective leading and trailing end;

second conveying means downstream from and spaced from said first conveying means for further transporting said succession of sheets along said path;

deflecting means along said path and between said first and second conveying means for deflecting the trailing end of a respective sheet below said conveying plane before the trailing end of the respective sheet is received by said second conveying means;

stacking means along said path and under said conveying plane for receiving and piling up said sheets, said second conveying means being provided with a pair of suspension rails extending over said stacking means and spaced apart transversely thereto; and

braking means provided on a downstream end of said stacking means extending upwardly therefrom for reducing a speed at which said sheets are guided along said suspension rails, said braking means including a plurality of closed loop braking belts between pairs of suspension rails and slidable along said path and delivering each of said successive sheets onto said stacking means.

5,611,530

DEVICE FOR THE DELIVERY OF PRINTED PRODUCTS OUT OF A FAN

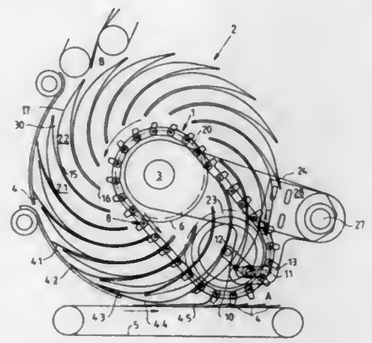
Alain Maresse, Neufvy sur Aronde; Philippe Robin, Carmoisy, and Didier Romanyszyn, Montataire, all of France, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris Inc., Dover, N.H.

Filed Apr. 14, 1995, Ser. No. 422,392

Claims priority, application France, Nov. 15, 1994, 94 04512

Int. Cl.[6] B65H *29/20*

U.S. Cl. 271—315 **9 Claims**



1. A device for delivering printed products to thereby form a shingled product stream, comprising:

a drive shaft;

at least one rotatable fan arrangement mounted on said drive shaft, said fan arrangement comprising fan blades in spaced relation to one another, said fan blades forming fan pockets;

at least one endless chain rotating with said fan arrangement, said chain comprising equally spaced individual chain links, said chain links comprising projections arranged between said fan blades, said projections touching and guiding a front edge of said products when said products are in said fan pockets; and

a first chain wheel, said fan blades being connected to said first chain wheel by an adjusting device;

wherein said chain links, during rotational movement of said fan blades, change a position of said products in said pockets of said fan arrangement.

5,611,531

PRO PITCHING DEVICE

Jim Skerlan, 1 Skyline Drive, Dundas, Ontario, Canada

Filed Jun. 21, 1996, Ser. No. 667,392

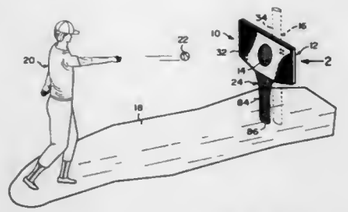
Int. Cl.[6] A63B *69/00*

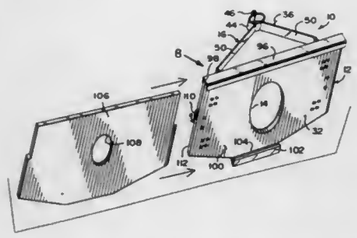
U.S. Cl. 473—454 **18 Claims**

1. A practice target device comprising:

a) a backboard target having a bull's-eye central aperture;

b) means for elevating said backboard target in an adjustable vertical position above the ground, so that a person can stand





at a distance away from said backboard target and throw a ball towards said backboard target and into said bull's-eye central aperture;

c) means for stopping the ball after entering said bull's-eye central aperture and allow the ball to fall gently to the ground;

d) a diamond shaped brace member; and

e) means for attaching said diamond shaped brace member to a rear surface of said backboard target, to add additional strength to said backboard target.

5,611,532

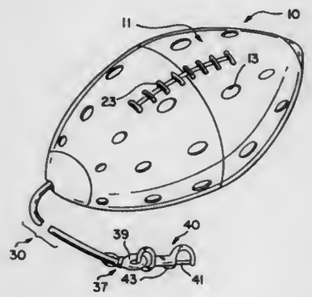
TETHERED FOOTBALL WITH RESILIENT END CAPS

Charles P. Forrest, Sr., Mobile, Ala., assignor to Charles P. Forrest, Jr., and Reginald E. Forrest, Jr., both of Mobile, Ala.

Filed Apr. 10, 1996, Ser. No. 630,491

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—576 **9 Claims**



1. A tethered football comprising:

a) a hollow football body having flat ends and a plurality of holes through said body;

b) a resilient end cap shaped like a tip of an oblate spheroidal football mounted over each flat end of said body;

c) one of said end caps having an opening therethrough aligned with an opening in a flat end of said body to which said one of said end caps is attached;

d) an elastic tether having a first end and a second end, said first end extending through said openings and being secured within said body, said second end comprising means for fastening said tether to a desired object.

5,611,533

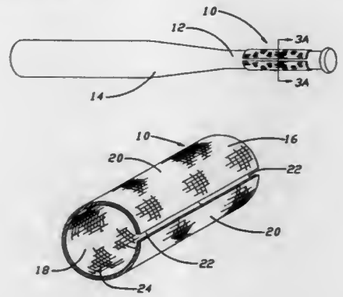
GRIPPING SLEEVE APPARATUS AND METHOD OF USING THE SAME

John P. Williams, 18547 County La., Lansing, Ill. 60438

Continuation of Ser. No. 243,478, May 16, 1994, abandoned. This application Oct. 2, 1995, Ser. No. 537,411

Int. Cl.[6] A63B *59/06*

U.S. Cl. 473—568 **25 Claims**



1. A gripping sleeve adapted to fit a sports implement handle for enhancing a hand grip of a shank portion comprising:

an elongate resiliently flexible hollow cylindrical tube member with a cylindrical shape formed independent of the shank portion in which said tube member is slidable along said shank portion with said cylindrical tube in engagement with said shank portion, having interior and exterior wall surfaces, in which the interior wall surface is for engaging the shank portion of the handle; and

an abrasive surface disposed on the interior wall surface of said tube member in which said flexible hollow cylindrical tube member engaged to said shank portion flexes toward said shank portion and said abrasive surface engages said shank portion with the application of a gripping force to said cylindrical tube member resisting said tube member from sliding upon said shank portion and in which said cylindrical tube member flexes away from said shank portion and is slidable along said shank portion with a release of said gripping force.

5,611,534

METAL SUBSTANCE DETECTION SYSTEM FOR DETECTING THE PRESENCE POSITION OF A METAL SUBSTANCE

Takatoshi Takemoto; Kazunari Kawashima, both of Tokyo, and Shigeru Handa, Hachioji, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP93/00491, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/21495, PCT Pub. Date Oct. 28, 1995

PCT Filed Apr. 16, 1993, Ser. No. 307,784

Claims priority, application Japan, Apr. 16, 1992, 4-096801; Apr. 17, 1992, 4-098237; Apr. 17, 1992, 4-098238

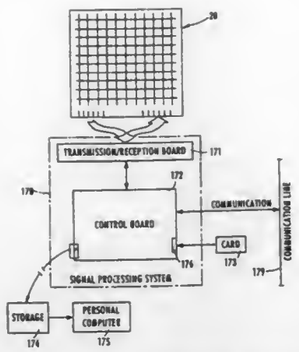
Int. Cl.[6] A63F *7/02*

U.S. Cl. 273—121 B **34 Claims**

1. A metal substance detection system comprising a matrix sensor having a detection area spreading like a plane and a signal processing system for driving the matrix sensor for detecting presence of a metal substance and a position thereof,

said matrix sensor having a transmission line group consisting of parallel lines, a reception line group consisting of parallel lines, and a board for supporting the transmission and reception line groups, the transmission line group and the reception line group crossing each other with crossing portions of the transmission and reception lines being arranged in a matrix on the board, wherein the improvement comprises:

said signal processing system comprising:



a transmission circuit for scanning the transmission lines in sequence and sending a signal current to the transmission lines;

a reception circuit for scanning the reception lines in sequence and reading reception signals of the reception lines in sequence; and

a signal processor for controlling operation of said transmission circuit and said reception circuit and receiving a reception signal from said reception circuit for detecting presence or absence of a metal substance and a position at which the metal substance is sensed,

said signal processor comprising:

an A/D converter for converting the reception signals input from the reception circuit into digital data;

a memory for storing the reception signals converted into the digital data in relation to intersections; and

an information processor for reading the reception signals stored in said memory for detecting presence or absence of a metal substance and a presence position thereof,

said memory being a dual port RAM (random access memory) into which data are written from said A/D converter independently of read operation and from which data are read from said information processor independently of the write operation.

5,611,535

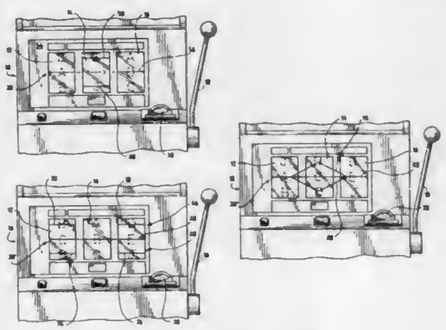
GAMING MACHINE HAVING COMPOUND WIN LINE

Dominic Tiberio, Las Vegas, Nev., assignor to Bally Gaming International, Inc., Las Vegas, Nev.

Filed Feb. 17, 1995, Ser. No. 390,199

Int. Cl.[6] G07F *17/34*

U.S. Cl. 273—143 R **17 Claims**



1. A gaming machine, comprising:

a plurality of symbol-bearing reels;

a game outcome display area; and

a win line defining a single winning game outcome positioned on said display area relative to said reels so that when said reels are stationary, at least one symbol that forms a part of a winning game outcome from each reel is visually associated with said win line to indicate a winning game outcome, wherein said win line includes at least two indicating portions so that at least two symbols that form a part of a winning game outcome from one of said reels are visually associated with said win line to indicate the winning game outcome wherein the required number of symbols on said win line is at least one greater that the number of reels.

5,611,536

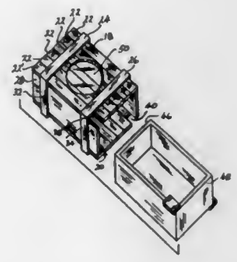
PUZZLE BOX

David A. Foreshew, 306 Hwy 144 West, Chelmsford, Canada

Filed Aug. 24, 1995, Ser. No. 518,803

Int. Cl.[6] A63F *9/08*

U.S. Cl. 273—153 S **12 Claims**



1. A puzzle box comprising an outer sleeve having a closed end and an open end and a drawer slidably housed within the sleeve, the drawer being retained within the sleeve by friction between respective parts of the drawer and the sleeve, the drawer having an interior end and an exterior end such that the drawer is fully inserted into the sleeve, the interior end abuts the closed end of the sleeve and the exterior end closes off said open end of the sleeve, the sleeve having indents in its edge adjacent said open end, the drawer having complementary protrusions fitting into the indents and completing said edge of the sleeve, and means obscuring a joint between each protrusion and the corresponding indent such that the protrusions appear to be parts of the sleeve, the complementary protrusions providing means whereby the drawer can be grasped and pulled to overcome the friction and withdraw the drawer from the sleeve.

5,611,537

BOARD GAME APPARATUS

Rodney B. Burtt, Tring House, 130 High Street, Hadleigh, Ipswich, Suffolk, IP7 5EL, United Kingdom

Filed Apr. 17, 1996, Ser. No. 633,568

Int. Cl.[6] A63F *3/00*

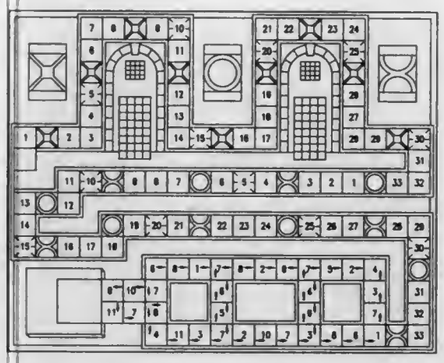
U.S. Cl. 273—249 **12 Claims**

1. Board game apparatus comprising a board, which board comprises a first sector and a second sector,

the first sector comprising a first path of locations, at least some of said locations are sequentially numbered and other locations relate to game instructions;

the second sector comprising a network of paths comprising further locations, which locations relate to the gaining of assets,

which apparatus further comprises a first pack of cards relating to assets associated with said numbered locations, a second pack of cards giving game instructions, a third pack of cards relating to the assets to be gained in said second sector, player markers, at least one die, and a fourth pack of cards relating to a winning set of assets.



5,611,538

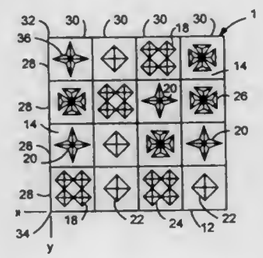
ALIGNMENT BOARD GAME APPARATUS AND METHOD

Andrzej Ehrenfeucht, Boulder, Colo., assignor to Aristoplay, Ltd., Ann Arbor, Mich.

Filed May 9, 1995, Ser. No. 437,699

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—271 **10 Claims**



1. A method of playing a game between first and second players, comprising the steps of:

providing first and second square matrix grid game boards, each containing a square grid playing area defined by a plurality of grid units existing in a plurality of horizontal, vertical, and diagonal rows, each of said boards containing an identical set of grid unit identification symbols, with the symbols on said first board being arranged in locations different from the symbols on said second board, and

providing first and second sets of visually distinguishable game playing pieces to be placed on said grid units, each of said grid units being capable of containing one of said game playing pieces thereon so as to at least partially cover said grid unit;

providing a set of each of said game pieces to each of said players; and

each player placing two of said game pieces, one each onto the same grid unit identification symbol of each board in alternating fashion until one of said players has covered an entire row of said grid units on one of said boards to determine the winner of the game.

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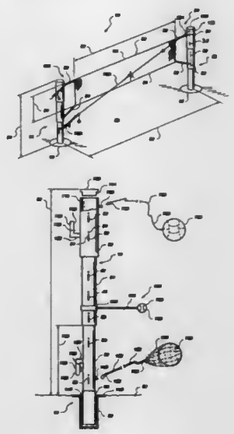
POLE SPORT COURT

Scott R. Watterson; William C. Lay, both of Logan, Utah; John Frodsham, Mexico City, Mexico; John C. Heath, and William T. Dalebout, both of Logan, Utah, assignors to Icon Health & Fitness, Inc., Logan, Utah

Filed Feb. 1, 1995, Ser. No. 382,340

Int. Cl.[6] A63B *61/02;63/04;69/00*

U.S. Cl. 473—197 **54 Claims**



1. A game system comprising:

a first upright positioned to extend upwardly from a support surface, said first upright having a length and a plurality of net-securing structures associated therewith and spaced apart along said length;

a second upright positioned to extend upwardly from a support surface, said second upright having a length and a plurality of net-securing structures associated therewith and spaced apart along said length;

a game net having right securing means for connection to a first selected of said plurality of net-securing structures of said first upright at a first position along the length thereof for use as a net in a first game and to a second selected of said plurality of net-securing structures of said first upright at a second position along the length thereof for use as a net in a second game, said game net having left securing means for connection to a first selected of said plurality of net-securing structures of said second upright at a first position along the length thereof for use as a net in a first game and to a second selected of said plurality of net-securing structures of said second upright at a second position along the length of said second upright for use as a net in said second game;

a first base securable to a support surface and a second base securable to a support surface wherein said first base is a receptacle sized to snugly and removably receive said first upright and wherein said second base is a receptacle sized to snugly and removably receive said second upright;

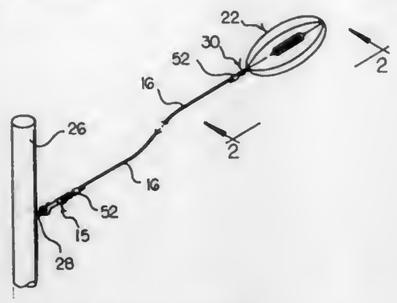
said first base has a flange attached to said first receptacle and means for securing said first flange to a support surface wherein said first receptacle is positioned through and into said support surface;

said second base has a flange attached to said second receptacle and means for securing said second flange to a support surface wherein said second receptacle is positioned through and into said support surface;

a first cap snugly and removably positioned alternately into said first receptacle to cover the upper end thereof and into the first upright to cover the upper end thereof; and

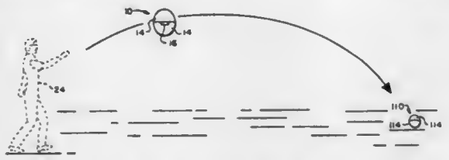
a second cap snugly and removably positionable alternately into said first receptacle to cover the upper end thereof and into the first upright to cover the upper end thereof.

5,611,540
TETHERED BALL APPARATUS
Sean P. Williams, and James J. Williams, both of 15775 Hocking Blvd., Brookpark, Ohio 44142
Filed Feb. 9, 1996, Ser. No. 599,166
Int. Cl.[6] A63B *43/00*
U.S. Cl. 473—429 **1 Claim**



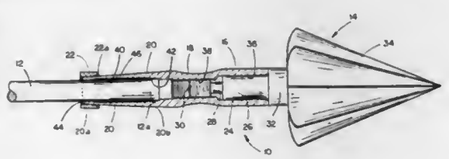
1. A tethered ball apparatus, comprising:
an attachment assembly;
a swivel assembly connected to said attachment assembly;
an elastic cord connected to said swivel assembly;
a cord receiver which includes an externally threaded screw portion, the elastic cord being connected to the threaded screw portion;
a ball assembly including a football having two pointed ends, the football including an exterior jacket portion, an inflated internal tube portion within the exterior jacket portion, and an internally threaded hollow cylindrical anchor having external threads and an exterior locking flange, the external threads being threadably engaged directly to the exterior jacket portion of the football at one of said pointed ends;
wherein said externally threaded screw portion of said cord receiver is screwed into said internally threaded hollow cylindrical anchor.

5,611,541
METHOD OF PLAYING A BALL GAME
Robert Paino, 469 Highland Ave., Walden, Mass. 02148
Filed Aug. 24, 1995, Ser. No. 518,663
Int. Cl.[6] A63B *43/04;37/08*
U.S. Cl. 273—317 **3 Claims**



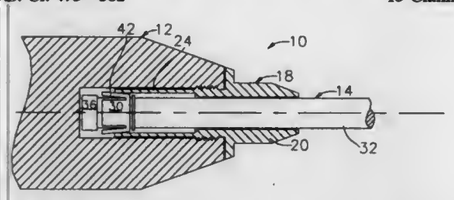
1. A method of playing a bocci-like ball game comprising:
selecting a first player to manually propel a deformable and collapsible object ball some arbitrary distance from him or herself;
manually propelling said object ball, wherein said player attempts to throw, roll, or otherwise manually propel said object ball to a location which said player believes to be outside an opponent player's capability to reach by said opponent player's manual propulsion of a game ball;
manually propelling a plurality of deformable and collapsible game balls toward said object ball, so that said game ball comes to rest at a location as close as possible to said object ball, wherein said first player and said opponent player each possess an equal number of game balls out of the plurality of game balls; whereby whichever player, the first player or the opponent player who successfully lands his or her game ball in closest proximity to said object ball forces said other player to manually propel their game balls in an attempt to be in closer proximity to said object ball;
attempting to land said deformable and collapsible game ball atop said deformable and collapsible object ball whereby a number of points are scored;
attempting to hit said deformable and collapsible object ball with one of said deformable and collapsible game balls to place at least one of that player's game balls in closer proximity to said object ball than the other player; and
scoring points after all game balls are exhausted; wherein a specific number of points are awarded for the player who has placed their game ball atop the object ball if any such player exists, for the player who places their game ball in contact with the object ball if any such player exists, and for the player who has placed at least one of their game balls closest to the object ball.

5,611,542
OUTSERT FOR ARROWS
Thomas A. Saunders, 1424 Vinton St., Omaha, Nebr. 68108
Filed Aug. 27, 1996, Ser. No. 703,443
Int. Cl.[6] F42B *6/04*
U.S. Cl. 473—578 **24 Claims**



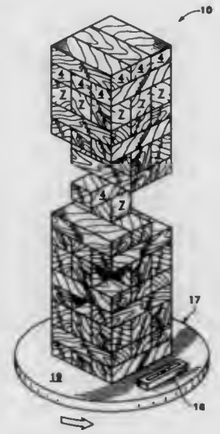
12. In combination:
an arrow shaft having a generally cylindrical outer surface, forward and rearward ends, and a longitudinal axis;
an attachment for the forward end of the shaft;
an outsert for connecting the attachment in coaxial alignment with the longitudinal axis of the shaft, said outsert including:
an elongated tubular member having a forward section, central section and rearward section;
said rearward section having a cylindrical rearward bore therein extending forwardly from a rearward end of the outsert and having a diameter greater than the outer diameter of the shaft forward end;
said rearward section having a tapered bore extending forwardly from a forward end of the rearward bore, said tapered bore decreasing in diameter from a rearward end to a forward end, the diameter of the tapered bore rearward end being greater than the shaft outer diameter, and the tapered bore forward end having a diameter for an interference fit with the shaft forward end at a first annular surface of contact;
said rearward section having a tapered outer surface decreasing in diameter from a forward end to the outsert rearward end; and
said rearward section having a crimped portion with an inner surface having a diameter for an interference fit with the arrow shaft outer surface to form a second annular surface of contact spaced rearwardly of the first annular surface of contact.

5,611,543
NO BOUNCE DART WITH ROTATABLE BARREL
Walter E. Bottelsen, 945 W. McCoy La., Santa Maria, Calif. 93455
Filed May 16, 1995, Ser. No. 442,493
Int. Cl.[6] A63B *15/02*
U.S. Cl. 473—582 **13 Claims**



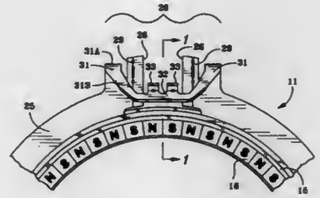
1. A dart comprising:
a dart barrel having an axial bore at its forward end;
an insert mounted at the forward end of the barrel, said insert having an annular sleeve, having a forward end, a rearward end, an inner surface, and an outer surface, said annular sleeve extending rearwardly into the bore;
a point having a shaft extending through the insert and into the bore, said point afforded slidable lengthwise movement between an extended position and a retracted position;
means for frictionably retarding the entire range of slidable movement of the point from its extended position to its retracted position; and
means for allowing the barrel to rotate freely about the point shaft.

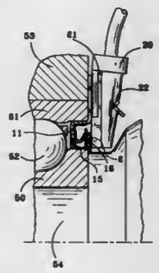
5,611,544
STACKING BRICK TOWER GAME
Robert K. Grebler, Santa Monica; Paul Eveloff, San Anselmo, and James E. Sheftel, Santa Monica, all of Calif., assignors to Pokonobe Associates, Larkspur, Calif.
Filed Nov. 27, 1995, Ser. No. 562,671
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—447 **19 Claims**



1. A stacking brick tower game, comprising:
a primary horizontal layer of exactly n primary bricks;
a secondary horizontal layer of greater than n bricks on top of said primary layer; and
a plurality of additional horizontal layers,
wherein:
n is at least 3;
the aggregate surface area of the top surfaces of all the primary bricks in said primary horizontal layer is at least as great as the aggregate surface area of the top surfaces of all the secondary bricks in said secondary horizontal layer;
each of the primary bricks has a rectangular horizontal cross section defined by a predetermined length and a predetermined first width equal to or less than said predetermined length divided by n; and
at least one of the bricks in the secondary layer is a square brick having a square horizontal cross section defined by a predetermined second width equal to or less than said predetermined first width and having a fixed relationship to said predetermined first width.

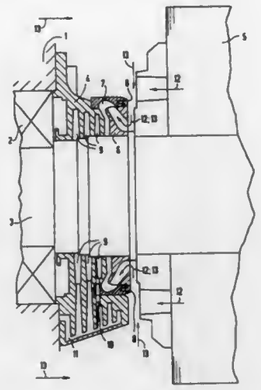
5,611,545
BEARING SEAL WITH INTEGRAL ENCODER, EQUIPPED WITH AN INFORMATION SENSOR
Christophe Nicot, Annecy, France, assignor to The Torrington Company, Torrington, Conn.
Filed Jun. 1, 1995, Ser. No. 456,998
Claims priority, application France, Feb. 3, 1995, 95 01261
Int. Cl.[6] F16J *15/32;* **F16C** *33/76*
U.S. Cl. 277—2 **5 Claims**





1. A seal with integral encoder equipped with an information sensor, for use with rolling element bearings comprising:
first and second reinforcements to which the sensor and encoder are fastened, respectively, said first and second reinforcements each having a cylindrical mounting surface, said first reinforcement being radially extended by a support surface and by means for positioning and retaining the sensor with respect to the encoder, wherein the cylindrical mounting surface of said first reinforcement is radially extended by an annular support surface and said support surface extends locally forming a guide that positions the sensor and an elastic means defined by two bent elastic legs connected by a locking segment for retaining the sensor element in said guide; and
a packing with sealing lips in contact with the two reinforcements.

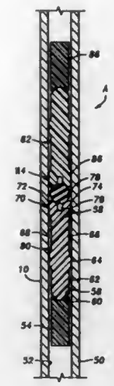
5,611,546
LABYRINTH SEAL HAVING A PRESSURE INDUCING FAN MEANS
Christoph Steinberg, Oberasbach, and Bernd Preusse, Stein, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany
Filed May 17, 1995, Ser. No. 444,078
Claims priority, application Germany, May 17, 1994, 44 17 239.7
Int. Cl.[6] F16J *15/447*
U.S. Cl. 277—3 **6 Claims**



1. A shaft sealing system for an oil-lubricated shaft bearing in a stationary, externally closed housing filled with liquid vapor, such that a rotating shaft projecting into the housing is mounted in the shaft bearing, wherein the housing is externally sealed by a sealing arrangement, the shaft sealing system comprising:
a counterpressure fan generating a dynamic pressure directed against the sealing arrangement and held non-rotatably on the rotating shaft on a side of the sealing arrangement facing away from the housing, wherein the counterpressure fan is in front of the sealing arrangement and outside of the housing; and
a flow channel of the sealing arrangement, the flow channel corresponding to the counterpressure fan;
wherein the sealing arrangement is arranged in a stationary manner relative to the rotating shaft.

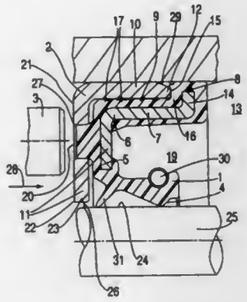
5,611,547
ELONGATED SEAL ASSEMBLY FOR SEALING WELL TUBING-TO LINER ANNULUS
John L. Baugh, Houston, and Anthony C. Machala, Willis, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.
Continuation of Ser. No. 147,992, Nov. 4, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 585,545
Int. Cl.[6] F16J *15/28*
U.S. Cl. 277—121 **19 Claims**

1. A high-pressure, tubing-to-liner annulus seal system for fluids in a well, comprising:
a mandrel forming a part of the tubing;
a seal on said mandrel comprising an elongated annular unitary nonmetallic body, said body formed having at least one set of opposed nonmetallic wings defining an opening therebetween, said wings selectively movable toward each other making said opening smaller in order to facilitate initial insertion of said body into the annulus, said wings in conjunction with said body having sufficient rigidity during insertion into fluids in the well with said opening oriented in the direction of said insertion to resist a fluid force which would otherwise create movement of said wings away from each other which would



increase the size of said opening, said resistance facilitating proper orientation of said wings in the annulus; and
said wings, upon run-in and before application of a differential fluid pressure, form an interference fit in said annulus, said wings mounted on at least one end of said body.

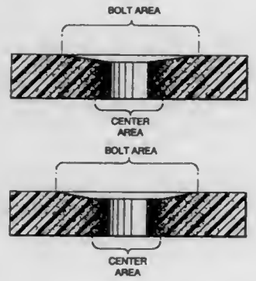
5,611,548
SEALING ARRANGEMENT
Ulrich Dahlhaus, Edingen-Neckarshausen, Germany, assignor to Firma Carl Freudenberg, Germany
Filed Sep. 26, 1995, Ser. No. 533,976
Claims priority, application Germany, Oct. 31, 1994, 44 38 947.7
Int. Cl.[6] F16J *9/06;* **G01B** *7/30*
U.S. Cl. 277—152 **22 Claims**



1. A sealing arrangement for a structural element comprising:
a radial shaft seal, said radial shaft seal comprising at least one dynamically stressed sealing lip made of an elastomeric material, said radial shaft seal further comprising an essentially L-shaped reinforcement ring, said reinforcement ring comprising axially and radially extending limbs, said dynamically stressed sealing lip being affixed to said radially extending limb of said reinforcement ring, said axially extending limb of said reinforcement ring being joined to a statically stressed seal, said axially extending limb being surrounded at least radially by an extrusion coating of elastomeric material; and
a sensor ring used for inductive detecting of angular motion relative to a sensor, said sensor ring having an axial projection, said axial projection at least partially surrounding said extrusion coating with radial prestressing, said radial shaft seal and said sensor ring being capable of preassembly so as

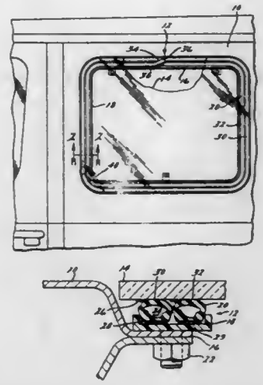
to allow said radial shaft seal and said sensor ring to be separated from one another as needed without being damaged, a radial projection of said sensor ring comprising uniformly-spaced portions of different inductance arranged in a circumferential direction.

5,611,549
GASKET STRUCTURE WITH TAPERED BOLT AREA DENSIFICATION
John S. Forry, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Dec. 26, 1995, Ser. No. 579,593
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—180 **8 Claims**



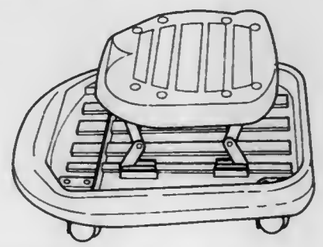
8. A gasket comprising a compressible gasket sheet material having at least one bolt area which has an aperture for a bolt to be placed in, wherein further the bolt area has a center area around and abutting the aperture and further has an area outside of and around the center area and which abuts the center area, wherein the center area has a substantially uniform porosity and the bolt area outside of the center has a porosity gradient wherein the porosity of the center area is lower than any porosity in the gradient, further providing that the porosity of the gradient goes from low at all points nearest the center area and gets higher moving away from the center area to its highest point at the end of the bolt area, wherein the bolt area outside of the center area is at least about 2 millimeters wide, the porosity gradient ending where the bolt area terminates, wherein further the porosity gradient was made by a process which comprises the steps of providing the compressible gasket sheet material with at least one aperture in the bolt area for a bolt to be placed in, and pressing the compressible gasket sheet material in the bolt area, wherein the bolt area has the compressible gasket sheet material around the aperture, wherein further the pressing is done with a means for pressing which puts substantially uniform pressure on the compressible gasket sheet material in the bolt area around the aperture and extending to all points of the center area, and which further places a pressure gradient on all portions of the bolt area outside of the center area, wherein further the pressure gradient has heavier pressure in the bolt area around and abutting the center area, and further puts lighter pressure on the gasket in the bolt areas away from the center area so that the pressure tapers off to substantially zero, wherein the pressure goes from heavier to lighter in a gradient which extends at least about 2 millimeters beyond the center area before the pressure on the gasket reaches substantially zero, wherein said gradient is in a direction going directly away from the aperture.

5,611,550
VEHICLE WINDOW SEAL ASSEMBLY ADAPTED FOR ROBOTICS APPLICATION
John Belser, Northville, Mich., assignor to The Standard Products Company, Cleveland, Ohio
Filed Jun. 15, 1995, Ser. No. 490,676
Int. Cl.[6] F16J *15/02;15/12*
U.S. Cl. 277—184 **6 Claims**



1. A seal assembly for installation between a flange on a vehicle and a window for sealing a perimeter of the window against the vehicle comprising:
an elongated support channel extending proximate with said window perimeter of the vehicle; and
an elongated continuous tubular sealing member secured within said channel and extending around said channel at least twice in overlapping relation with itself to provide an inner seal and an outer seal with a transition portion therebetween, said elongated continuous tubular sealing member having a first and second end each positioned proximate to and abutting said transition portion.

5,611,551
COLLAPSIBLE WORKING CHAIR WITH A TOOL STORAGE CHAMBER
Jin-Chuang Lin, P. O. Box 82-144, Taipei, Taiwan
Filed Sep. 18, 1995, Ser. No. 529,858
Int. Cl.[6] B62B *11/00*
U.S. Cl. 280—32.5 **1 Claim**

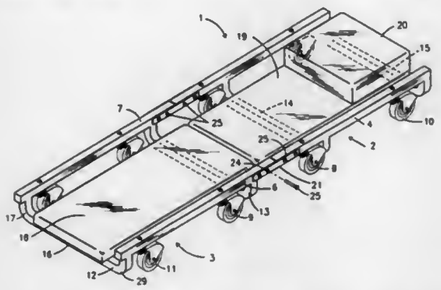


1. A collapsible working chair comprising:
a flat base equipped with swivel wheels for moving on the ground, said flat base comprising a recessed top side divided by a partition plate into a front open chamber for keeping tools and tool accessories, and a rear open chamber for receiving a seat, two pairs of mounts symmetrically fixedly mounted in said rear open chamber;
a seat supported on said flat base; and two pairs of folding collapsible supports connected between said mounts of said

flat base and said seat, and set between an extended working position to support said seat above said flat base and a collapsed position to receive said seat within said rear open chamber of said flat base;

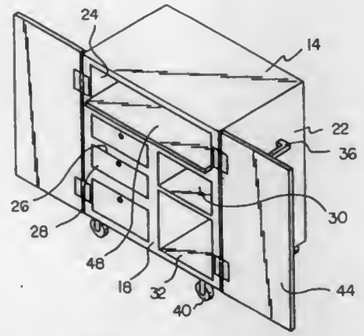
wherein each folding collapsible support is comprised of a channeled upper coupling block fixedly secured to said seat by screws and having two female coupling portions bilaterally disposed at one end, a channeled bottom coupling block fixedly secured to one mount of said base by screws and having two female coupling portions bilaterally disposed at one end, an upper link having a top end pivoted to said channeled upper coupling block, and a bottom end, the top end and bottom end of said upper link each having two male coupling portions at two opposite sides, the male coupling portions of the top end of said upper link being for engagement with the female coupling portions of said channeled upper coupling block, and a lower link having a top end pivoted to the bottom end of said upper link and a bottom end pivoted to said channeled bottom coupling block, the top end of said lower link having two female coupling portions at two opposite sides for engagement with the male coupling portions of the bottom end of said upper link, the bottom end of said lower link having two male coupling portions at two opposite sides for engagement with the female coupling portions of said channeled bottom coupling block, the male coupling portions of said upper link being respectively engaged with the female coupling portions of said channeled upper coupling block and the female coupling portions of said lower link, and the male coupling portions of said lower link being engaged with the female coupling portions of said channeled lower coupling block when each folding collapsible support is set in the working position, each of said upper and lower links being channel shaped with opposed parallel wall portions interconnected by a transverse wall, said transverse wall of each lower link having an upper edge in abutting engagement with a lower portion of a respective upper link, for locking said upper and lower links in the extended position, when the collapsible supports are pivoted into their working position.

5,611,552
FOLDABLE CREEPER
Joseph J. Miles, and Joseph B. Miles, both of Okeechobee, Fla., assignors to Mechanic Accessories, Inc., Okeechobee, Fla.
Filed Sep. 11, 1995, Ser. No. 526,409
Int. Cl.[6] B25H *5/00*
U.S. Cl. 280—32.6 **21 Claims**



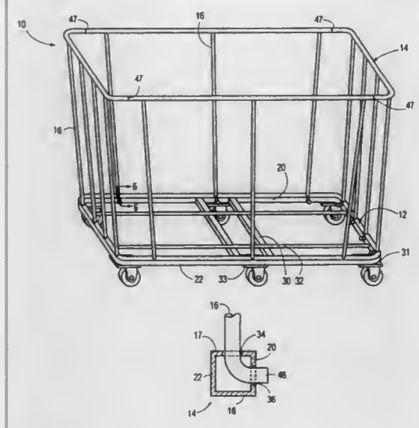
1. A foldable creeper for supporting a person, said creeper having a top side, a bottom side, left and right sides, and head and foot ends, said creeper articulated along a line which extends transversely along the approximate longitudinal centerline for movement between an open position and a folded storage position, and comprising:
(a) articulating joints;
(b) a framework comprising longitudinal and transverse frame members,
said longitudinal frame members extending lengthwise along said left and right sides of the creeper, said longitudinal frame members articulated via said articulating joints at a line which extends transversely along the approximate longitudinal centerline to define in said longitudinal frame members head end longitudinal frame member segments and foot end longitudinal frame member segments,
said transverse frame members rigidly connecting left and right longitudinal frame members, said transverse frame members including a central lower segment for supporting a support panel, said central lower segment of said transverse member oriented from one-half to four inches below said longitudinal frame members when said creeper is in the open position;
(c) support panels having top sides and bottom sides and connected to said transverse frame members; and
(d) casters connected to said frame members for supporting said frame members above the ground when said creeper is in the open position, wherein said articulating joints are constructed to permit said creeper to be folded between a first closed position, a second closed position, and an open position intermediate set first closed position and second closed position, wherein said first closed position is one wherein said top sides of said support panels face each other, and said second position is one wherein said bottom sides of said support panels face each other when said creeper is in the folded position.

5,611,553
ELECTRONIC GAME STORAGE CART
Frederick Schoeman, and Francina A. Schoeman, both of 805 Atkins Ct., Cumming, Ga. 30131
Filed May 12, 1995, Ser. No. 440,487
Int. Cl.[6] B32B *3/00*
U.S. Cl. 280—47.35 **2 Claims**



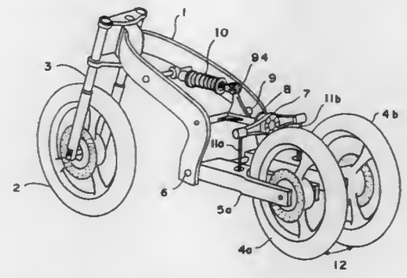
1. An electronic game storage cart for storing games and game cartridges comprising, in combination:
a cabinet having a top end, a bottom end, a front wall, a rear wall, and two side walls, the front wall having a first rectangular opening therein, the front wall having a plurality of rectangular openings therein disposed beneath the first rectangular opening, the plurality of rectangular openings having drawers removably coupled therein, the front wall having an upper storage bin and a lower storage bin formed therein, the rear wall having a plurality of holes formed therethrough extending inwardly of the first rectangular opening in the front wall, the two side walls each having a handle secured thereto, one of the two side walls having a remote control holder secured thereto, the bottom end having four casters secured to each of four corners thereof;
a pair of doors hingedly secured to the front wall of the cabinet, the pair of doors serving to cover the front wall of the cabinet;
a sliding shelf slidably coupled to a lower surface within the first rectangular opening of the cabinet, the sliding shelf comprising a U-shaped bracket secured to the lower surface of the first rectangular opening, the sliding shelf having a securement portion secured thereto slidably engaging the U-shaped bracket for the sliding in and out of the sliding shelf;
a plurality of retractable reels secured to the rear wall of the cabinet, one of the retractable reels being adapted for use with an AC power cord, one or more of the other retractable reels being adapted for game remote control units.

5,611,554
CART
Donald Eckloff, Cranford, N.J., assignor to Star Metal Products, Inc., Clark, N.J.
Filed Apr. 26, 1995, Ser. No. 429,734
Int. Cl.[6] B62B *3/00*
U.S. Cl. 280—79.2 **7 Claims**



1. A cart comprising:
a continuous tubular metal top frame member,
a plurality of resilient metal rods spaced from each other and connected to and depending from said top frame member for supporting said top frame member,
a base assembly comprising a continuous tubular metal bottom frame member, bottom portions of said rods being engaged by and supported by said bottom frame member, and
wheel means connected to an underside of said base assembly for supporting the base assembly, and
wherein said bottom frame member is generally rectangular with two end portions and two side portions, and
said bottom frame member comprises a box tubular construction with top and bottom walls and interior and exterior side walls, and
wherein said top walls include a plurality of openings which receive and engage upstanding portions of said plurality of rods, and
wherein said rod bottom portions comprise L-shaped extremities such that horizontal ends of said bottom portions extended toward said interior side walls of said bottom frame member, and said interior side walls include openings through which said horizontal ends extend.

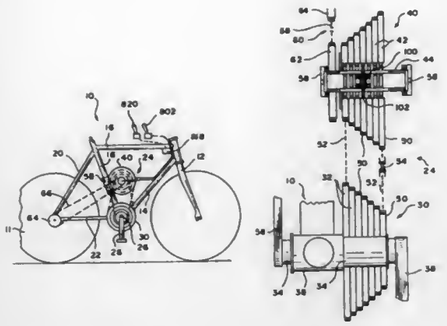
5,611,555
ARTICULATED BALANCER WITH AN OSCILLATING AXLE AND HAVING LOCKING POSSIBILITIES
Carlos C. Vidal, Martinez de la Rosa 12, 18002 Granada, Spain
Filed Jan. 3, 1994, Ser. No. 177,082
Claims priority, application Spain, Jan. 4, 1993, 9300004
Int. Cl.[6] B60G *5/00*
U.S. Cl. 280—113 **5 Claims**



1. A three wheeled vehicle, comprising:
a frame:
a front wheel mounted to a fork telescopically extending from the front of said frame;
a first rear wheel mounted to a first swinging fork having a ball joint;
a second rear wheel mounted to a second swinging fork having a ball joint;
a transversal axle extending from said frame for movably fastening said first and second swinging forks at the respective front parts thereof so that said swinging forks each are allowed an independent oscillating movement;
a balancer having two ends, said balancer being positioned in a plane that is parallel to said swinging forks, said balancer being fixed at its midsection by another axle so that said balancer is freely rotatable at any direction;
ball joints housed at each of said two ends of said balancer;
a first rod for connecting the ball joint of said first swinging fork to one of the ball joints of said balancer;
a second rod for connecting the ball joint of said second swinging fork to the other of the ball joints of said balancer;
an assembly having its front portion coupled to said frame in such a way that its rear portion can oscillate in an up-and-down fashion; and
a locking mechanism coupled to said assembly and working cooperatively with said balancer for braking the rotation of said balancer at appropriate times so as to provide static balance and safety margins for said vehicle at potentially dangerous situations.

5,611,556
SPEED CHANGE MECHANISM
Robert P. Davidow, 2814 Lee Oaks Pl., #102, Falls Church, Va. 22046
Filed May 8, 1995, Ser. No. 436,971
Int. Cl.[6] F16H *3/08*
U.S. Cl. 280—236 **17 Claims**

1. A speed change mechanism capable of effecting speed changes during both kinetic and static conditions comprising:
a bicycle frame, said bicycle frame having a front wheel and a rear wheel connected thereto;
a driving gearset comprising a plurality of driving gears fixedly secured to a drive shaft;
a driven gearset comprising a plurality of driven gears rotatably mounted around an exterior surface of a driven hub, and disposed laterally along a central axis of said hub;
wherein said shaft of said driving gearset and said driven hub of said driven gearset are retained in position along parallel axes,



and wherein each of said plurality of driven gears has a different one of said plurality of driving gears associated therewith;

said associated driven gears and driving gears forming a plurality of gear pairs;

a plurality of gear pair chains, each of said plurality of gear pairs being operatively coupled by an associated one of said plurality of gear pair chains;

said driving gears and said driven gears making up said gear pairs being so constructed and arranged to provide a different input to output drive ratio for each of said plurality of gear pairs;

a traveler disposed in an interior of said driven hub, said traveler having means for engaging a selected driven gear to rotationally couple said selected driven gear to said driven hub, said traveler and said hub being so constructed and arranged to allow said traveler to move laterally within said hub to engage each of said driven gears;

said driven gear engaging means being so constructed and arranged to engage only one driven gear of said plurality of driven gears at a time;

at least one cable operatively coupled to said traveler for moving said traveler laterally within said hub;

a shifter mechanism coupled to said cable for selectively applying and releasing tensile forces on said cable;

a power input mechanism for applying power to and rotating said driving gears; and

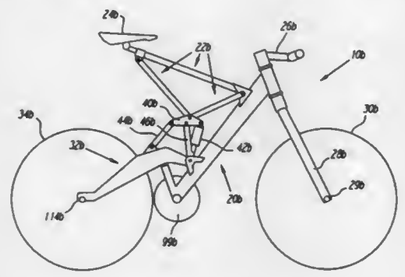
a power output member operatively coupled to said driven hub and rotatable therewith.

5,611,557

BICYCLE SUSPENSION SYSTEM

Mark S. Farris, 209 Willoway, and Michael A. Harrison, 1405 Warm Springs Rd., both of Ketchum, Id. 83340

Filed May 2, 1994, Ser. No. 236,464
Int. Cl.[6] B62K *25/28*
U.S. Cl. 280—275 **10 Claims**



1. A bicycle suspension system comprising

a main frame capable of receiving a handle bar and a front fork, said front fork being capable of receiving a front wheel,

a pedal assembly attached to said main frame for manual rotation by a rider, said pedal assembly capable of providing rotational energy to a rear wheel thereby propelling a bicycle forward,

a seat frame capable of receiving a seat and being pivotally coupled to said main frame,

a swing arm capable of receiving the rear wheel and being pivotally coupled to said main frame, and

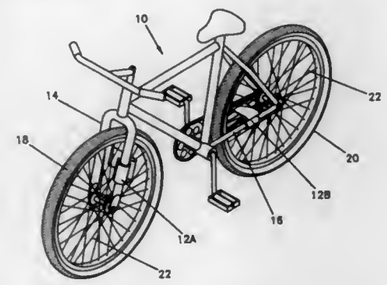
only one shock absorber, said shock absorber being positioned relative to said seat frame and said swing arm adapted to provide a stiffer suspension when a rider is in a standing position which would generate an upward force on said swing arm to thereby cause said swing arm to pivot about said main frame in a manner so as to exert a first compression force on said shock absorber, and a softer suspension when a rider is in a sitting position which would generate said upward force on said swing arm and would further generate a downward force on said seat frame to thereby cause said seat frame to pivot about said main frame in a manner so as to exert a second compression force on said shock absorber.

5,611,558

SOUND PRODUCING ACCESSORY FOR BICYCLES

Rein S. Randmae, Fort Salonga, N.Y., assignor to Carole Paar, Huntington, N.Y.

Filed Jul. 17, 1995, Ser. No. 503,310
Int. Cl.[6] A63H *5/00*
U.S. Cl. 280—288.4 **20 Claims**



1. A sound producing accessory for bicycles having spoked wheels comprising a strip of flexible material much greater in width than its thickness formed into a shape having:

(a) a substantially flat region which in cooperation with the spokes of the wheel produces a slapping or rumbling sound,

(b) a semi-tubular region adjacent and directly joined to said flat region, said semi-tubular region having an opening at an area of its circumference,

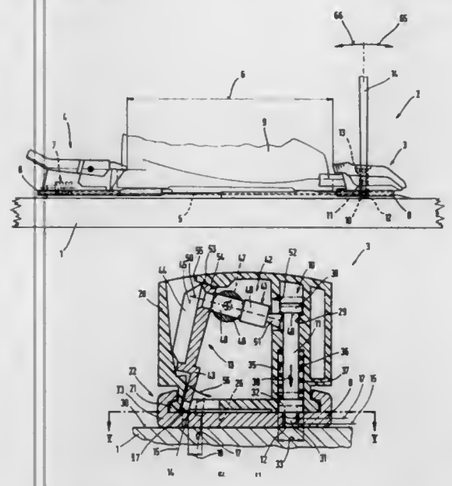
(c) said semi-tubular region having a liner on the inner surface thereof, said liner providing fastening means, whereby said sound producing accessory may be attached to a frame element of the bicycle, such that said flat region lies in a direct path of the wheel spokes.

5,611,559

BINDING UNIT BETWEEN A BOOT AND AN ITEM OF SPORTS EQUIPMENT

Max Luitz, Blaichach-Bihlerdorf, and Hans Frick, Wiggensbach, both of Germany, assignors to Varpat Patentverwertungs AG, Littau, Switzerland

Filed Jul. 1, 1994, Ser. No. 270,147
Claims priority, application Austria, Jul. 5, 1993, 1321/93
Int. Cl.[6] A63C *9/22*
U.S. Cl. 280—617 **26 Claims**



1. A binding unit for attaching a boot to an item of sports equipment, which comprises

(a) a front jaw,

(b) a rear jaw,

(c) a guide arrangement for connection to a surface of the item of sports equipment, the guide arrangement comprising

(1) a longitudinal guide track for the front and rear jaws enabling the front and rear jaws to be adjusted in a longitudinal direction,

(d) a longitudinally adjustable connecting element connecting the front and rear jaws for common adjustment of the front and rear jaws along the longitudinal guide track,

(e) a locking device for retaining one of the jaws in a predetermined position relative to the item of sports equipment in the longitudinal direction, the locking device being adjustable between a retaining position, an intermediate position and an inoperative position,

(f) an adjusting device comprising a movable setting member,

(1) the setting member being in adjusting connection with the locking device for adjusting the locking device in a respective one of said positions, and

(2) the movable setting member being arranged to receive an actuating member applying moving pressure on the setting member,

(g) a housing for the locking and adjusting devices,

(1) the setting member including a pivot plate mounted on the housing, and

(2) the adjusting device comprising a cardan pivot device about which the pivot plate may be moved with respect to the housing, and

(h) latching elements spaced apart in the longitudinal direction and affixable to the item of sports equipment, and the movable setting member of the adjusting device being

(1) selectively engageable with the latching elements and

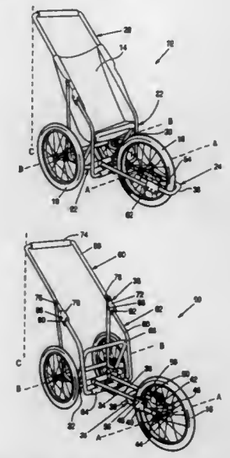
(2) movable under the moving pressure by a first adjusting distance between two of said latching elements and by a second, additional adjusting distance to a position to adjust the locking device in the inoperative position.

5,611,560

CONVERTIBLE STROLLER

David M. Thimmig, 213 N. Catherine Ave., LaGrange, Ill. 60525

Filed Feb. 21, 1995, Ser. No. 392,382
Int. Cl.[6] B62B *7/06*
U.S. Cl. 280—642 **20 Claims**



1. A convertible child stroller comprising:

a frame assembly including a base frame assembly, a front wheel support assembly connected to said base frame assembly, and a handle assembly connected to and extending rearward of said base frame assembly;

a child carrier mounted to said frame assembly;

a front wheel rotatably connected to said front wheel support assembly about a front axis;

at least two rear wheels rotatably connected to said base frame assembly along a rear axis, said front and rear axes being parallel and spaced apart from each other such that a wheelbase length is defined by the distance between said front axis and said rear axis; and

wherein said frame assembly is adjustable into first and second un-collapsed operable positions, said first operable position having a first wheelbase length and a first stroller length, and said second operable position having a second relatively longer wheelbase length and a second relatively longer stroller length wherein said front wheel extends forward of said base frame assembly.

5,611,561

FISHING CART SYSTEM

William J. Dale, II, 115 Thames Place NW., Ft. Walton Beach, Fla. 32548

Filed Jul. 12, 1995, Ser. No. 501,612
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—652 **5 Claims**

1. A fishing cart system comprising:

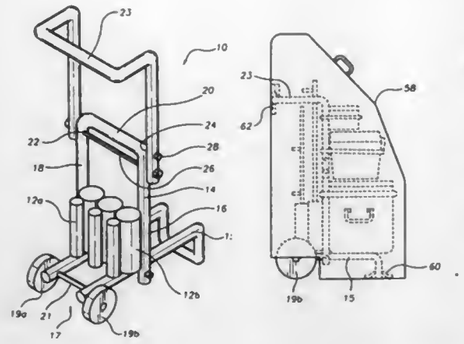
a collapsible cart including:

a U-shaped central support member,

a plurality of fishing rod and reel storage tubes secured to said central support member,

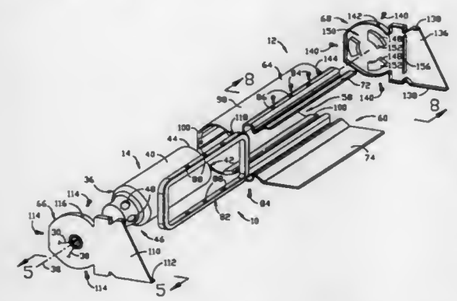
a fishing equipment support structure, pivotally connected to said central support member, having a wheel assembly comprising first and second wheel members connected together with an elongated axle, and

a handle assembly, pivotally connected to said central support member in a manner to allow said handle assembly to pivot within a plane about one-hundred-eighty (180°) degrees with respect to said central support member; and



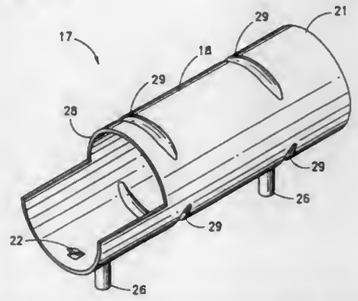
a cover, securable to said fishing equipment support structure and said handle assembly of said collapsible cart while said collapsible cart is disposed within a compartment formed within said cover utilizing first and second cover securing assemblies, each of said first and second cover securing assemblies having a portion thereof secured to an interior wall of said cover, said cover including first and second wheel slots formed therethrough in registration with said wheels when said cover is secured to said fishing equipment support structure and said handle assembly in a manner to allow said wheel members to function.

5,611,562
INFLATABLE RESTRAINT MODULE WITH INFLATOR CLAMPING REACTION CANISTER
Scott A. Kelley, Algonac; Mark M. Klozik, Shelby Township, and Andrew J. Smydra, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Nov. 2, 1995, Ser. No. 551,996
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **17 Claims**



1. Apparatus for helping to protect a vehicle occupant, said apparatus comprising:
inflatable protection means for, when inflated, helping to protect the vehicle occupant;
inflator means for providing inflation fluid to inflate said protection means, said inflator means having a housing; and
a reaction canister assembly having an axis, and comprising a first member having open axial ends, and second and third members each adapted to mate with a respective one of said open ends of said first member;
said first member of said reaction canister assembly having axially extending wall means for clamping said housing of said inflator means along an axial extent to prevent movement of said inflator means relative to said reaction canister assembly.

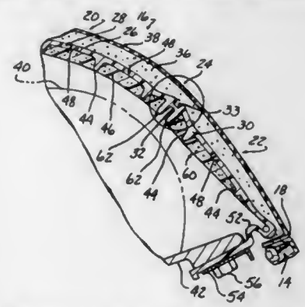
5,611,563
AIRBAG INFLATOR ATTACHMENT WITH SNAP-IN SLEEVE
Brent K. Olson, Clearfield; J. Kirk Storey, Farmington; David J. Green, Brigham City; Davin G. Saderholm, Salt Lake City; S. Mark Bunker, North Ogden, and Daniel G. Mibert, Clearfield, all of Utah, assignors to Morton International, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 583,438, Jan. 5, 1996, abandoned. This application May 8, 1996, Ser. No. 643,450
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **33 Claims**



1. An inflator attachment for mounting an airbag inflator including an elongated sidewall and at least one stop extending transversely outwardly with respect to the sidewall, the inflator attachment comprising:
a sleeve sized and shaped to receive and support the sidewall of the airbag inflator and butt against the stop of the airbag inflator, the sleeve having at least one inwardly projecting grip sized and adapted to allow passage of the sidewall of the airbag inflator into the sleeve and to engage the airbag inflator so that the airbag inflator, once inserted into the sleeve, is retained within the sleeve by the at least one inwardly projecting grip and a butting engagement between the sleeve and the stop of the airbag inflator; and
at least one mount extending outwardly from the sleeve for securing the inflator attachment and airbag inflator within an airbag module.

5,611,564
METHOD AND TREATMENT FOR FORMING AN AIR BAG DEPLOYMENT OPENING IN LEATHER COVERED TRIM
David J. Bauer, West Bloomfield, Mich., assignor to Tip Engineering Group, Inc., Farmington Hills, Mich.
Filed Aug. 18, 1993, Ser. No. 109,122
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **6 Claims**

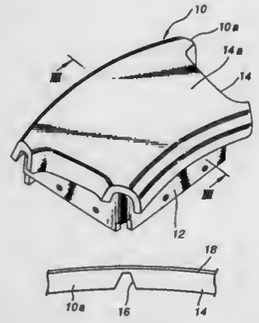
1. In a closure for covering an air bag deployment opening



formed in an interior trim piece of an automotive vehicle, said closure including:

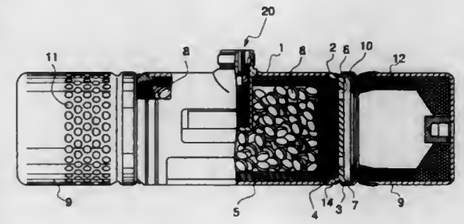
a substrate member fit into said opening in said trim piece, said member defining a deployment door panel;
hinging means attaching one side of said door panel to said trim piece and other sides of said door panel closely adjacent but unattached to portions of said trim piece adjacent said opening;
a decorative covering skin comprised of a leather layer smoothly and uninterruptedly overlying said door panel and extending across said adjacent trim piece;
an uninterrupted foam plastic layer lying beneath said leather covering layer and atop said door panel, extending across said other sides and over said adjacent trim structure, completely filling a space therebetween;
characterized by a pretreatment for said leather covering layer, said leather covering layer partially saturated from the inside with a hardening agent in a strip area extending to overlie said other sides of said door panel and said closely adjacent trim piece.

5,611,565
AIRBAG STORING CASING
Kazuo Inaba, Fuji; Tatsuo Hamanaka, Ichihara, and Mitsuyo Maeda, Yokohama, all of Japan, assignors to Nihon Plast Co., Ltd., Fuji; Sumitomo Chemical Co., Ltd., and Tanabe Chemical Industrial Inc., both of Osaka, all of Japan
Filed May 24, 1996, Ser. No. 653,647
Claims priority, application Japan, May 30, 1995, 7-131827
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **7 Claims**



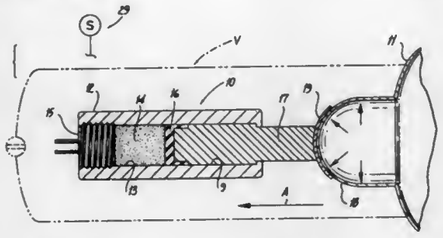
1. A casing for storing an airbag for an airbag restraint system, comprising:
a main body formed of a material comprising:
(a) a thermoplastic elastomer composition in an amount of 100 parts by weight, said thermoplastic elastomer composition being prepared by a process including mixing 10 to 50 parts by weight of a polyolefin resin with 100 parts by weight of an olefin copolymer rubber to obtain a mixture, dynamically heat-treating said mixture in the presence of an organic peroxide, and then adding 5 to 50 parts by weight of a mineral oil relative to 100 parts by weight of the dynamically heat-treated mixture, said olefin copolymer rubber having a Mooney viscosity (ML_{1+4}, 100° C.) ranging from 50 to 100, and
(b) a random copolymer resin in an amount of 20 to 50 parts by weight, containing propylene and at least one kind of 1-olefin other than propylene and having a Melt Flow Rate (230° C.) ranging from 30 to 100; and
a paint coated on a surface of said main body, comprising a resin component including chlorinated polyolefin resin, a modifier including alcohol-modified silicone and polyhydric alcobol, and a hardener including a mixture of an addition product of hexamethylene diisocyanate and polyester polyol, and hexamethylene diisocyanate.

5,611,566
GAS GENERATOR FOR A SAFETY SYSTEM FOR PROTECTING OCCUPANTS IN MOTOR VEHICLES
Josef V. Simon, Olching; Thomas Liebl, Neubiberg; Hermann Bauer, Chieming; Ludwig Oswald, Schamach b. Grafing, and Robert Schmucker, Riemerling, all of Germany, assignors to Temic Bayern-Chemie Airbag GmbH, Aschau, Germany
Continuation-in-part of Ser. No. 109,330, Aug. 19, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,471
Claims priority, application Germany, Aug. 20, 1992, 42 27 547.4
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—736 **16 Claims**



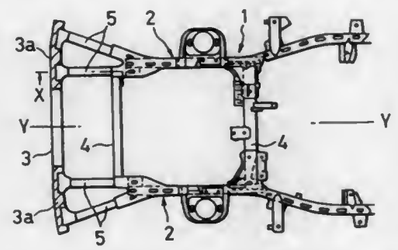
1. Gas generator for a safety system for the protection of occupants of motor vehicles, comprising:
a cylindrical housing, defining a combustion chamber housing having one end and an opposite another end, said one end being an open end;
a cylindrical housing end cap for connection to said open end of said cylindrical housing, said end cap including an inwardly directed flange extending into said combustion chamber and an outwardly directed apron extending away from said combustion chamber, said end cap including combustion chamber discharge openings defining an axial direction of flow;
an igniter extending into said cylindrical housing to provide an igniter portion with an igniter discharge opening within said cylindrical housing, said igniter portion facing said combustion chamber discharge openings with said discharge openings being axially spaced from said igniter portion with respect to an axial direction of said cylindrical housing;
gas generating solid propellant positioned within said combustion chamber, said gas generating solid propelle to being provided in the form of a plurality of gas generating pellets; and
volume-equalizing means including end cap volume-equalizing means for contacting said propellant in said axial flow direction—along a principle axis of said housing—and annular volume-equalizing means for coaxially surrounding said propellant around said axial flow direction and extending over an entire inner circumferential surface of said cylindrical housing between said igniter and said discharge openings, said annular volume equalizing means being provided between said cylindrical housing and said gas generating solid propellant to define an annular flow passage between said cylindrical housing and said gas generating solid propellant, said annular flow passage being substantially coaxial to said axial flow direction and extending to said end cap volume-equalizing means whereby flow from said annular flow passage passes through said end cap volume-equalizing means to said discharge openings;
said end cap comprising a shaped spherical segment defining flow direction means for directing combustion gas from said combustion chamber radially inwardly as combustion gas passes from said combustion chamber to a discharge chamber, said inwardly directed flange extending into said combustion chamber adjacent to said peripheral volume-equalizing means and adjacent to said end cap volume-equalizing means and said flange contacting inner surface of said cylindrical housing.

5,611,567
NON-EXPLOSIVE LINEAR RELEASE DEVICE
Edward S. Hoo, Stanhope, N.J., assignor to Cartridge Actuated Devices, Inc., Fairfield, N.J.
Filed Dec. 18, 1995, Ser. No. 572,899
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **5 Claims**



1. A linear non-explosive pyrotechnic device for use in combination with a pressure container for releasing gas from an exit end of the pressure container in which the gas is contained under a pressure to offer resistance of predetermined psi sufficient to open a seal enclosing the exit end of the container, said device comprising a hollow cylindrical body having a bore extending along a center axis from a proximal end of said body to a distal end of said body, a pyrotechnic contained within said bore adjacent said proximal end, said pyrotechnic comprising a powder positioned and compressed to offer linear resistance along said center axis of predetermined psi in excess of the pressure under which the gas in the container is contained, a ram extending along said center axis and abutting said pyrotechnic with a proximal end, said ram extending past said distal end of said cylindrical body to a distal end, said distal end of said ram comprising means for abutting the seal enclosing the exit end of the container and for maintaining pressure against the seal derived from the abutment of said ram against said pyrotechnic, means for igniting said pyrotechnic, said pyrotechnic comprising means for diminishing in volume when ignited, said ram being slidable in said hollow cylindrical body and comprising means for moving toward said proximal end of said cylindrical body under force of the pressure in the container when said pyrotechnic is ignited and diminished in volume, and means directing the gas from the container axially with respect to said body.

5,611,568
FRAME STRUCTURE OF VEHICLE BODY
Toshio Masuda, Tochigi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 13, 1995, Ser. No. 557,728
Claims priority, application Japan, Dec. 15, 1994, 6-333360
Int. Cl.[6] B62D *7/22*
U.S. Cl. 280—784 **23 Claims**

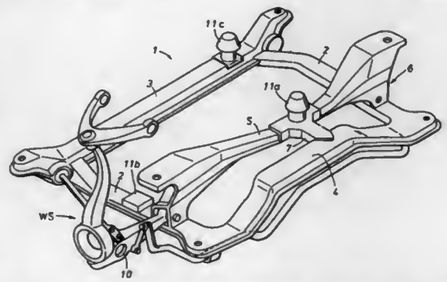


1. A front frame structure of a vehicle having, a side member longitudinally provided on the left and right sides of said vehicle respectively, a plurality of cross members transversely connected with each said side member, and a front bumper covering a frontmost portion of said front frame structure absorbing an impact in an event of collision, comprising:

a front cross member interposed between said front bumper and each said side member at a front end thereof for effectively absorbing said impact by a buckling deformation of said front cross member; and

an aluminum foam contained in each said side member.

5,611,569
VEHICLE SUBFRAME ASSEMBLY
Yoshitaka Sekiguchi, and Takahiro Kamei, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 26, 1995, Ser. No. 533,779
Claims priority, application Japan, Sep. 29, 1994, 6-259542
Int. Cl.[6] B62D *7/22*
U.S. Cl. 280—788 **9 Claims**



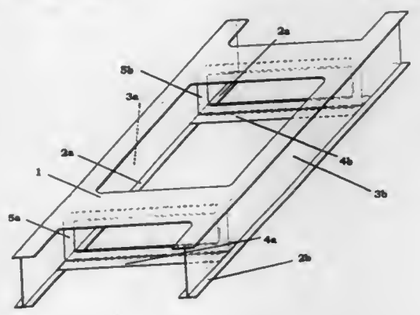
1. A vehicle subframe for attachment to a vehicle body, and supports at least part of a wheel suspension system, comprising:

a pair of longitudinal members extending in parallel with each other along a longitudinal direction of said vehicle body; and

at least one lateral member extending across said longitudinal members;

one of said at least one lateral member being joined at its opposite ends to said longitudinal members by a pair of leg sections, each of said pair of leg sections having a bearing portion for pivotally supporting an inner end of a lower arm of said wheel suspension system between said leg sections adjacent said lateral member.

5,611,570
UNIBEAM TRAILER CHASSIS
Roberto R. Garcia, Kent, Wash., assignor to Panderra Enterprises Inc., Tacoma, Wash.
Filed Apr. 17, 1995, Ser. No. 423,744
Int. Cl.[6] B62D *63/06*
U.S. Cl. 280—789 **8 Claims**



1. A flexible lightweight unibeam maximum weight container chassis capable of carrying loads of about 40,000 pounds to about 99,000 pounds, said maximum weight container chassis having a gross weight of about 3,500 pounds to about 13,000 pounds, and said maximum weight combiner chassis comprising:

at least two longitudinal unbeam member and at least two lateral unibeam members each of which members being joined the one to the other by a single contiguous uniflange, wherein

said at least two longitudinal unibeam members each comprise a longitudinal web, a longitudinal flange, and the uniflange, said at least two lateral unibeam members each comprise a lateral web, a lateral flange, and the uniflange, and

the single contiguous uniflange being fastened in a perpendicular orientation to each of the longitudinal and lateral webs, and the longitudinal and lateral flanges being fastened in a perpendicular orientation to each of the longitudinal and lateral webs respectively; and

said maximum weight container chassis further comprising a neck member, a mid-section member, and a rear member wherein each member comprises said uniflange, said longitudinal webs and said lateral webs said maximum weight container chassis rear member further comprising

a lateral axle web fastened to the uniflange, one of the longitudinal webs, and to each of two supporting lateral axle flanges, wherein each of the two supporting lateral axle flanges is fastened in turn to the longitudinal flanges and the longitudinal webs; and,

a plurality of axle spring hangers for mounting axle springs to hold a plurality of axles;

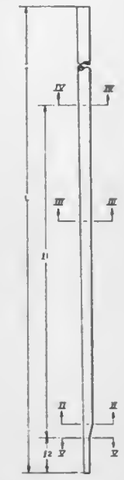
said maximum weight container chassis further comprising an overall length of about 20 to about 48 feet and 2 to 5 axles; and,

wherein the lateral flange and the longitudinal flange of said maximum weight container chassis each comprise a width of about 4 inches and the longitudinal webs comprise a depth of about 12 inches to about 20 inches; and,

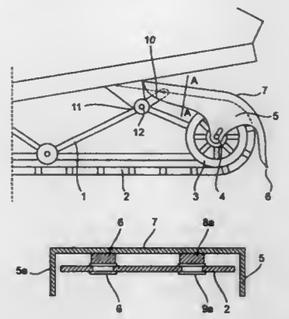
wherein the longitudinal and lateral webs comprise about 3/16-inch thick to about ½-inch thick sleek said steel being selected from among 50K steel, 70K steel, 50K Corten steel, and 90K/TI steel.

5,611,571
POLE SHAFT FOR A CROSS-COUNTRY SKI POLE
Taisto Manninen; Markku Ripatti, and Pauli Jaatinen, all of Mantyharju, Finland, assignors to Exel Oy, Mantyharju, Finland
PCT No. PCT/FI94/00050, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/17874, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 3, 1994, Ser. No. 501,083
Claims priority, application Finland, Feb. 3, 1993, 930467
Int. Cl.[6] A63B *53/12*
U.S. Cl. 280—819 **8 Claims**

1. A pole shaft for a cross-country ski pole, said shaft consisting of resin-bound fiber layers which provide walls surrounding a continuous cavity of the shaft, the shaft including a section of its length having a droplet shape cross-section, characterized in that the cross-section, which is substantially circular or oval at the top end of the shaft, gradually changes from the mid-section of the shaft downwards into a droplet shape, and in the lower section of the shaft, at least over approximately ⅓ of the length of the shaft, the length of the droplet shape in relation to its width increases while the cross-sectional area diminishes.



5,611,572
SPLASH GUARD FOR A TRACKED VEHICLE
Hannu Alava, FIN-99870 Inari, Finland
PCT No. PCT/FI93/00108, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/18957, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 22, 1993, Ser. No. 307,694
Claims priority, application Finland, Mar. 23, 1992, 921 241
Int. Cl.[6] B62D *55/08*
U.S. Cl. 280—847 **5 Claims**



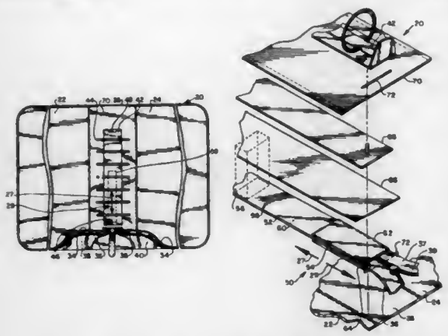
1. A splash guard for a tracked vehicle, the tracked vehicle comprising a track unit which comprises a frame, a track wheel, and a track, the splash guard being placed in an immediate vicinity of the track and attached to the track unit by means of a support, the splash guard comprising on a side facing the track, two slide rails extending in a direction parallel to a direction of movement of the track, and the track being fitted to slide against the slide rails as the splash guard touches the track due to up and down motions of the track unit during travel.

5,611,573

RETRACTOR FOR BINDERS AND METHOD OF USE

Frederick B. Lobel, 13080 Mindanao Way, #78, Marina del Rey, Calif. 90292, and Alexander Dolmatsky, 11333 Dona Pegita Dr., Studio City, Calif. 91609

Filed Jun. 30, 1995, Ser. No. 496,949
Int. Cl.[6] B42D 3/18
U.S. Cl. 281—29 11 Claims



1. A retractor for use in a binder having two cover members foldably connected by a spine member and having a split gusset carrying a slide fastener, the split gusset having an extending portion having a first side and an opposite second side, said retractor comprising:

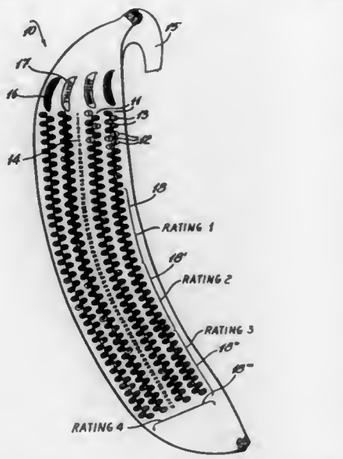
an elastic member having a first end and an opposite second end, said first end connected to the extending portion, and said second end fixedly positioned along the spine member so that the extending portion is retractably drawn inwardly along the spine member as the binder is closed, and stretchably moves outwardly along the spine member as the binder is opened.

5,611,574

GOLF SCORECARD WITH AUTOMATIC TOTALING SYSTEM

Pierre Desjardins, 870 Montée Sainte-Thérèse, Bellefeuille, Québec, Canada

Filed Mar. 6, 1995, Ser. No. 398,541
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—49 12 Claims



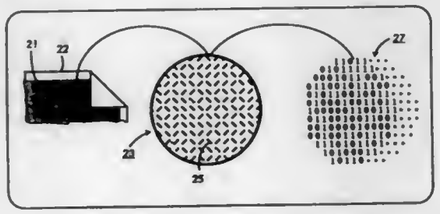
1. A golf scorecard for keeping score of the game of golf and progressively totaling a player's score without the need of a writing instrument, said scorecard comprising at least one series of consecutive numbers printed thereon along a predetermined pattern and representative of a consecutive score of a player, each of said numbers of said consecutive score being concealed by a formation made of a coating of opaque material adherable to said scorecard and capable of being removed by scraping same to reveal a number thereunder; when in use, a user scrapes only those formation indicative of a score made on each consecutive hole of a golf game by adding consecutive formations which are concealed from the last scraped formation until said concealed formations total his score of a particular hole, said numbers identified under said formation which are scraped to reveal his cumulative score each time a concealed formation is scraped at each successive hole of the game of golf.

5,611,575

DISTRIBUTED STATE FLAGS OR OTHER UNORDERED INFORMATION FOR EMBEDDED DATA BLOCKS

Glen W. Petrie, Los Gatos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 367,981
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—67 8 Claims



1. A two dimensional embedded data block for storing machine readable information on a recording medium; said embedded data block comprising a synchronization frame including at least on embedded data character for encoding a flag; said flag having one state when said embedded data block contains an optional special processing codeword and a second state in the absence of such a codeword; said special processing codeword being reserved for encoding custom instructions for processing said embedded data block.

5,611,576

FEMALE COUPLING ELEMENT FOR HAEMODIALYSIS MEDICAL EQUIPMENT

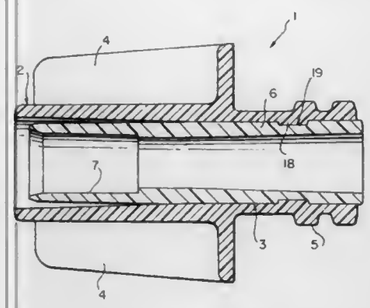
Ernesto Guala, Turin, Italy, assignor to Industrie Borla SpA, Turin, Italy

Filed Nov. 24, 1995, Ser. No. 562,452
Int. Cl.[6] F16L 35/00
U.S. Cl. 285—38 2 Claims

1. A female coupling element of the Luer-Lock type for haemodialysis medical equipment, comprising an outer tubular body made of a first relatively rigid thermoplastic material and having an outer surface formed with a handgrip and a threaded portion, and an inner cylindrical surface;

an inner sleeve made of a second relatively soft thermoplastic material and having an outer cylindrical surface which is coaxially and closely fitted within said inner cylindrical surface of said outer tubular body, and an inner conical surface defining a Luer connector for connection to a male coupling element;

and mutually retaining means integrally formed in said inner and outer cylindrical surfaces, respectively, for axially retaining said inner sleeve within said outer tubular body, while allowing said inner sleeve and said outer tubular body to be freely rotatable relative to each other.

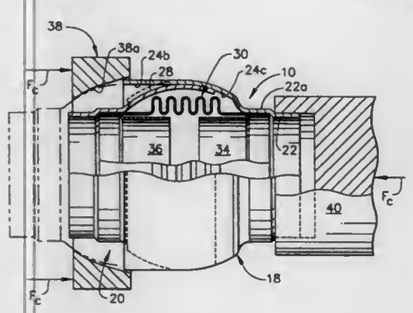


5,611,577

BELLOWS SEALED BALL JOINT AND METHOD OF FORMING

Mark K. Meyer, Centerville; Michael R. Storage, Beavercreek, and John R. Robison, Jamestown, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1994, Ser. No. 362,376
Int. Cl.[6] F16L 27/00
U.S. Cl. 285—261 16 Claims



1. A ball joint comprising:

a one-piece tubular outer shroud having at a proximal end thereof an integral first sleeve for being fixedly joined to a first conduit, and at a distal end thereof an integral, spherical, and concave annulus defining a one-piece socket;

a one-piece tubular inner shroud having at a proximal end thereof an internal second sleeve for being fixedly joined to a second conduit, and at a distal end thereof an integral, spherical, and convex annulus defining a smooth ball being complementary with said socket and disposed in butting, slidable contact therewith for joining together said outer and inner shrouds while allowing pivoting movement therebetween; and

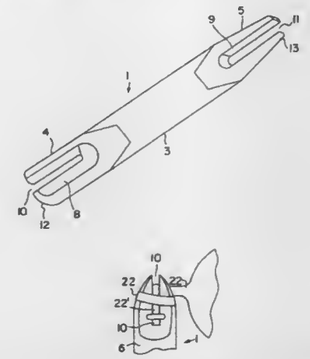
a tubular bellows disposed coaxially inside said ball and socket, and including a first end sealingly joined to said outer shroud adjacent to said first sleeve, and a second, opposite end sealingly joined to said inner shroud adjacent to said second sleeve, with said bellows providing a flexible seal between said outer and inner shrouds for preventing leakage of fluid flow therethrough into said cooperating ball and socket while allowing pivotal movement therebetween.

5,611,578

TOOL FOR TYING KNOTS IN BALLOONS

Henry R. Angelico, Sr.; Henry R. Angelico, Jr., and Brian A. Angelico, all of 306 Oak Track Radial, Ocala, Fla. 34472

Filed Jan. 18, 1996, Ser. No. 588,264
Int. Cl.[6] D03J 3/00
U.S. Cl. 289—17 5 Claims



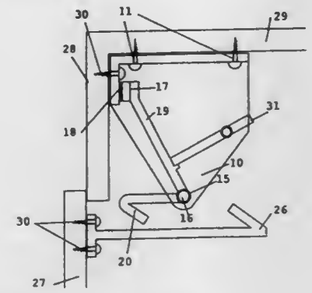
1. A tool for tying knots in the necks of inflatable objects having bodies and necks, which tool is made of a lubricating plastic, and which tool comprises an elongated member having two side surfaces, opposing tapered ends having distal ends, a top surface, a bottom surface, a recessed area in the top surface of each tapered end, wherein the distal ends of the tapered ends have raised edges on the top surfaces partially enclosing the recessed area, and a receiving slit in each recessed area, wherein one recessed area is shallower and narrower than the opposing recessed area, one receiving slit is narrower than the opposing receiving slit, and wherein the two side surfaces and the bottom surface of each tapered end contains protrusions.

5,611,579

EARTHQUAKE ACTIVATED SAFETY LATCH

Arthur Kreitenberg, 12216 Shetland La., Los Angeles, Calif. 90049

Filed Jul. 11, 1994, Ser. No. 272,801
Int. Cl.[6] E05C 19/10
U.S. Cl. 292—130 24 Claims



1. A door latching device comprising

(a) a housing,

(b) an engaging element,

(c) a movable latch pivotally mounted with said housing about a pivot location, and

(d) means for limiting latch motion over a range, the means being adjustable to multiple different positions over the range such that the amount of permissible latch movement is variable to be a selected amount in the range, such that there is a

different amount of travel possible by the latch between a first position of non-engagement and a position of engagement with the engaging element, the first position of non-engagement being different for different positions of the limiting means and wherein the means for limiting the latch in the removed position engages the latch to normally remain retracted from the engaging element under the principle of unstable equilibrium wherein the center of gravity of the latch in an unlatched position is located in a position relatively closely vertically aligned with the pivot location.

5,611,580

RELEASE MECHANISM FOR FUEL FILLER DOOR

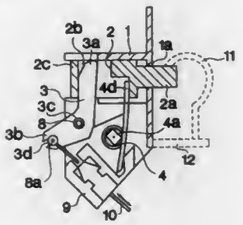
Suk J. Choi, Haewundae-Gu, Rep. of Korea, assignor to Hyundai Motor Company, Ulsan, Rep. of Korea

Filed Jan. 9, 1995, Ser. No. 370,103

Claims priority, application Rep. of Korea, Aug. 23, 1994, 94-21258

Int. Cl.[6] C05C *1/12*

U.S. Cl. 292—164 **11 Claims**



1. A release mechanism for a fuel filler door, comprising:

an outer casing member having a substantially longitudinal opening formed therein, the outer casing member having a first end and an opposing second end;

a piston member slidably positioned within the longitudinal opening of said outer casing member, said piston member including a piston portion, an insert groove and first and second opposing inner end surfaces disposed within said insert groove;

a pivotally movable lever having a first arm extending into the insert groove of said piston member and a second arm selectively actuable by a release cable; and

means, positioned substantially parallel to said pivotally movable lever, for normally biasing said piston member such that the piston portion is extended through the second end of the longitudinal opening of said outer casing member unless the first arm of said pivotally movable lever acts on the first inner end surface of said piston member; and

means for actuating said pivotally movable lever.

5,611,581

LATCH ASSEMBLY

Thomas J. Ghostley, Anaheim, Calif., assignor to Emhart Inc., Newark, Del.

Filed Mar. 13, 1995, Ser. No. 402,671

Int. Cl.[6] E05C *1/12*

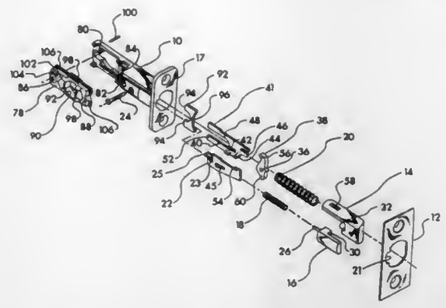
U.S. Cl. 292—165 **4 Claims**

1. A latch assembly comprising:

a latch bolt head including an axially extending internal bore supporting a stop and an axially extending slot with a rear end,

a deadlatch bolt including a stop having front and bottom surfaces,

a casing for supporting said latch bolt head for axial displacement between dead,bolt and retracted positions and for supporting said deadlatch bolt for axial displacement, relative to



said latch bolt head, from a forward position, whereat said deadlatch bolt stop front surface engages said latch bolt head stop, to a rearward position,

a transversely extending pivot post secured to said casing,

a latch dog pivotally supported at one end by said pivot post and having a stop portion at the other end,

a latch cam pivotally, centrally supported by said pivot post and including

an upper portion on one side of said pivot post received by and engaging the rear end of said axially extending slot, and

a lower portion, and

a retracting member axially displaceable between retracted and advanced positions and including

a transversely extending cam actuator for engaging said lower cam portion so that forward movement of said retracting member will result in said cam actuator pivoting said latch cam counterclockwise to retract said latch bolt head from said deadbolt position to said retracted position, and

a transversely extending release finger,

said latch dog including a release finger slot for receiving said release finger, said release finger slot being selectively configured so that

said latch dog can rotate upwardly from a first position whereat said latch dog stop portion engages said deadlatch bolt stop bottom surface when said deadlatch bolt is at said forward position to a second higher position when said deadlatch bolt is at said rearward position whereat rearward displacement of said latch bolt head will bring said latch bolt head stop into engagement with said latch dog stop portion, and

as said retracting member is displaced from said retracted position to said advanced position, when said deadlatch bolt is at said rearward position, said latch dog will be pivoted downwardly from said higher position to a position permitting the displacement of said latch bolt from said deadbolt position to said retracted position.

5,611,582

IMPACT RESISTANT ARMATURE

George Frolov, Farmington; John E. Walsh, III, Bristol, and James C. Wobbles, Middlebury, all of Conn., assignors to Harrow Products, Inc., Grand Rapids, Mich.

Filed Mar. 28, 1996, Ser. No. 623,367

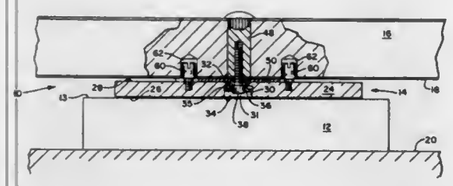
Int. Cl.[6] E05C *17/56*

U.S. Cl. 292—251.5 **15 Claims**

1. An armature assembly for an electromagnetic door lock, said armature assembly comprising:

an armature plate having an attractive face for attractive engagement to an electromagnet and an opposite rear face, said armature plate defining a stepped mounting bore through said rear face, said mounting bore defining an impact shoulder between said attractive face and said rear face;

a mounting assembly having an expanded head portion locatable in said bore, said head portion engageable against said shoul-



der and a reduced shank portion extending from said head portion, said shank portion extendable through said rear face;

anchor means for anchoring said shank portion to a door;

a spring having first and second spring end portions, each said spring end portion defining a spring end opening, said spring end openings having a diameter, said spring further defining a spring intermediate portion between said spring end portions, said shank portion extendable through an opening in said spring intermediate portion to support said spring against said door;

pin means at each said spring end opening for mounting said spring ends to said armature plate, each said pin means comprising a head having a greater diameter than the diameter of said corresponding spring end opening and a reduced pin shank portion extending from said pin head through said spring end opening and fixed to said armature plate at said rear face, said armature plate being supportable in a first position wherein said impact shoulder and said head portion define an initial gap, said armature plate further being movable to a second position wherein said mounting assembly head portion engages said impact shoulder, said spring biasing said armature plate to said first position.

5,611,583

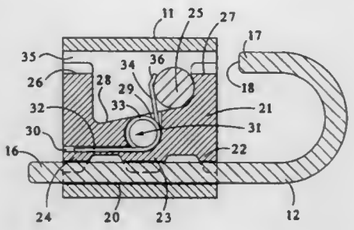
CABLE LOCK AND SEAL WITH COILED SPRING

Jerry Bystry, Orland, Ind., and Alan Becker, Edon, Ohio, assignors to Brammall, Inc., Angola, Ind.

Filed Nov. 16, 1995, Ser. No. 558,728

Int. Cl.[6] B65D *33/34*

U.S. Cl. 292—307 R **2 Claims**



1. A cable lock and seal device comprising, a body member, a cable with one fixed end attached to said body member, an inner member fixedly mounted within said body member and an opening defined by said body member and said inner member, an inclined ramp formed on said inner member, a disc movably mounted on said ramp, a coiled spring, said coiled spring including a substantially circular portion received in a second opening formed in said inner member, said second opening intersecting said ramp at a location substantially midway along said ramp, said coiled spring further including a substantially straight end extending outwardly of said second opening which engages said disc so as to bias it up said inclined ramp, and the second end of said cable insertable into said opening so as to push said disc down said ramp.

5,611,584

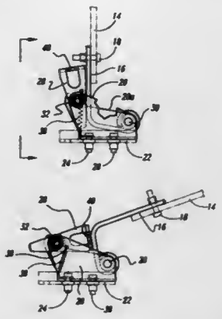
AUTOMATIC POSITIVE HOOD SAFETY LOCK

Ludi Giese, Redmond, and Randell J. Lettau, North Bend, both of Wash., assignors to Paccar Inc, Bellevue, Wash.

Filed Jun. 30, 1994, Ser. No. 269,168

Int. Cl.[6] E05C *17/44*

U.S. Cl. 292—338 **7 Claims**



1. An apparatus tier automatically locking a hood of a vehicle in a position which allows access to an engine comprising:

a support bracket fixed to said vehicle;

a hood hinge secured to said hood and said vehicle allowing relative motion between said hood and said vehicle along a path of movement from a closed position to an open position to allow access to the engine; and

a swing arm pivotally coupled to said support bracket and located to pivot into a position in the path of movement of the hood which blocks said relative motion between the hood and the vehicle to block said hood against returning to a closed position when said hood is opened to provide access to said engine.

5,611,585

VACUUM LIFTING PLATE

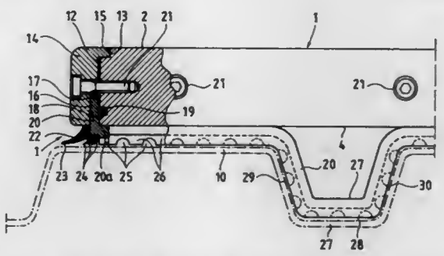
Paul Lingen, Grefratherstrasse 42, D-47669 Wachtendonk/Wankum, Germany

Filed Jan. 23, 1995, Ser. No. 377,119

Claims priority, application Germany, Jan. 22, 1994, 44 01 870.3

Int. Cl.[6] B66C *1/02*

U.S. Cl. 294—64.1 **6 Claims**



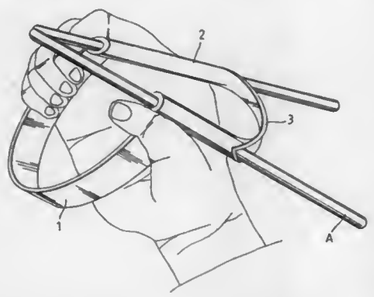
1. A vacuum lifting apparatus for lifting, lowering and moving workpieces having varying surface contours, said vacuum lifting apparatus comprising:

a base plate defining a top surface, a bottom surface and sides, said base plate including conduit means for supplying vacuum to said bottom surface thereof,

suspension means connected to said top surface of said base plate for connecting said base plate to a support apparatus, and

a plurality of interchangeable sealing ledges removably attached to the sides of said base plate, said sealing ledges each comprising a circumferential contoured gasket-sealing carrier which projects beyond said bottom surface of said base plate, said contoured carrier including openings between gasket sections thereof, and a profiled gasket lip located outwardly of said gasket sections, said sealing ledges contacting contoured surfaces of corresponding workpieces to be attached to said base plate by application of suction through said conduit means.

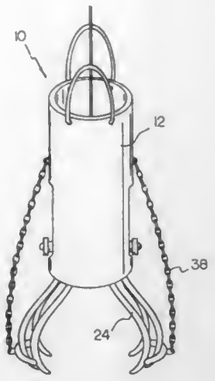
5,611,586
DEVICE FOR HELPING A DISABLED PERSON USE CHOPSTICKS
Sue-May Kang, 7F., No. 276, Ming-Te Rd., Taipei, Taiwan
Filed Dec. 18, 1995, Ser. No. 574,149
Int. Cl.[6] A47G *21/10;* **A47J** *43/28*
U.S. Cl. 294—99.2 **1 Claim**



1. A device for helping a disabled person use chopsticks, comprising:
a) a first sleeve and a second sleeve, each sleeve having a longitudinal hole therethrough for snugly receiving one stick of a pair of chopsticks;
b) a connecting element horizontally connected between said first sleeve and said second sleeve;
c) an operating frame having two opposite ends respectively connected to said first sleeve and said second sleeve, said operating frame being adapted for compression by the hand of a user to move said sleeves relative to each other, thereby causing the chopsticks to act against each other for raising food to the mouth of the user; and
d) a tapered guide member having one side secured to said first sleeve and an opposite curved side for engagement by said second sleeve to maintain said second sleeve in position when said operating frame is compressed.

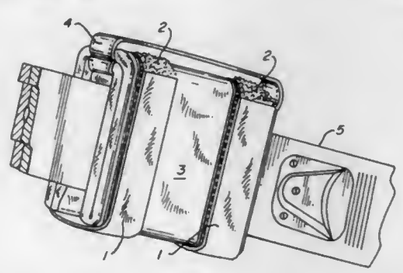
5,611,587
PORTABLE CLAW DEVICE
Tom Brown, 708 S. Helena St., Anaheim, Calif. 92805
Filed Nov. 17, 1995, Ser. No. 559,918
Int. Cl.[6] B66C *1/28*
U.S. Cl. 294—106 **5 Claims**

2. A portable claw device comprising:
a cylindrical housing having a pair of diametrically opposed vertical slots formed therein, the cylindrical housing having a pair of inverted U-shaped handles secured to an open upper end thereof;



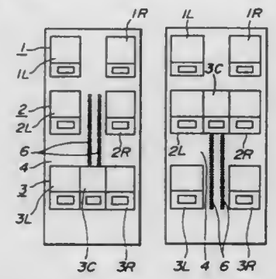
a pair of gripping claws coupled together by a cross bar, the cross bar slidably received within the pair of diametrically opposed vertical slots of the cylindrical housing, the cross bar having a vertical support bar extending upwardly from a central portion thereof.

5,611,588
PADDED SKI CARRIER
Kenneth G. Mencel, Bridgeport, Conn., assignor to Ski-Eze Products International, Inc., Bridgeport, Conn.
Filed Jun. 16, 1995, Ser. No. 491,093
Int. Cl.[6] A63C *11/02*
U.S. Cl. 294—149 **3 Claims**



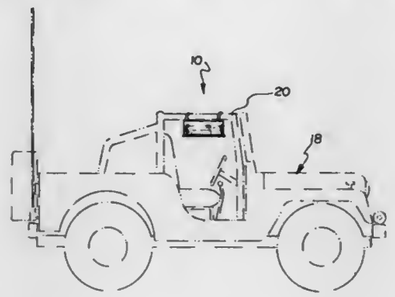
1. A padded ski carrier facilitating the portage of skis in either of two positions in a comfortable and effortless manner comprising:
a rectangularly shaped carrier body,
said body including an elongated rectangularly shaped fabric disposed in overlying relationship to define an exterior surface and an interior surface of said carrier body,
said overlying exterior and interior surfaces having contiguously disposed longitudinally and transverse edge portions to define a pocket therebetween,
a resilient pad substantially co-extensive in shape with said interior and exterior surfaces disposed within said pocket,
a sewn seam for securing together the contiguous edges of said overlying surfaces to confine said resilient pad within said pocket,
a first pair of spaced apart straps connected to a transverse edge of said carrier body at one end thereof and extending outwardly therefrom,
a second pair of spaced apart complementary straps connected to the exterior surface of said carrier body opposite said first paid of straps,
said carrier body adapted to be reversely folded about a pair of skis disposed in back to back relationship at a point intermediate the length of the skis, whereby said carrier body is firmly secured about said skis by wrapping said first pair of straps about said reversely folded carrier body and in overlying relationship with said second pair of complementary straps,
said first and second pair of straps having complementary hook and pile surfaces capable of maintaining said straps securely fastened to one another.

5,611,589
SEAT ARRANGEMENT FOR MOTOR VEHICLE
Masanobu Fujii, Yourou; Tomoki Matsubara, Ueda; Mitsuru Tanaka, and Naoki Sugihara, both of Oogaki, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Dec. 7, 1994, Ser. No. 350,893
Claims priority, application Japan, Feb. 3, 1994, 6-031894
Int. Cl.[6] B60N *2/06*
U.S. Cl. 296—64 **9 Claims**



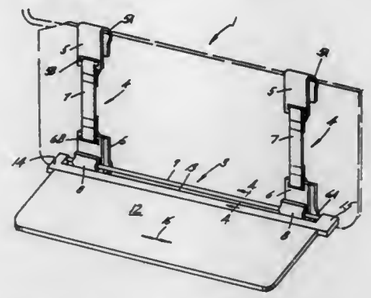
1. A seat arrangement for a motor vehicle having a vehicle floor, the seat arrangement comprising:
first, second, and third groups of seats arranged lengthwise in order on said vehicle floor, each of said second and third groups of seats including left and right side seats arranged abreast with a center space defined therebetween;
a railway structure extending longitudinally between the center space of said second group of seats and that of said third group of seats; and
a center seat slidably mounted on said railway structure, so that the center seat is movable between a front position where the center seat is positioned between the side seats of the second group of seats and a rear position where the center seat is positioned between the side seats of the third group of seats.

5,611,590
REMOVABLE SIDE SUN VISOR ASSEMBLY
Jose Filgueiras, 9606 SW. 2nd La., Miami, Fla. 33174
Filed Mar. 14, 1996, Ser. No. 616,159
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.5 **8 Claims**



1. A new and improved removable side sun visor assembly for use in association with a sport utility vehicle including horizontal roll bars, the apparatus comprising, in combination:
a visor cover fabricated of NYLON and formed in a planar generally rectangular configuration with a front surface, a rear surface, two side edges, a closed upper edge and a open lower edge, the visor cover including two buckles affixed adjacent to the upper edge thereof;
a plurality of large, medium and small storage pockets being fabricated of NYLON and stitched adjacent to the lower edge of the rear surface of the visor cover, each pocket including an elastic band affixed at its upper extent, each large storage pocket having approximately seventy percent of the height and twenty percent of the width of the visor cover, each medium storage pocket having approximately fifty percent of the height and ten percent of the width of the visor cover, each small storage pocket having approximately fifty percent of the height and seven percent of the width of the visor cover, the pockets enabling a user to store various sized items within the visor cover;
two adjustable securing straps, each strap being fabricated of synthetic materials and formed in an elongated planar rectangular configuration, each strap having an inboard end, and outboard end, a front side and a rear side, the inboard end of each strap being positioned through a buckle and stitched to the front side of the visor cover, the rear side of the inboard end of each securing strap including female hook and loop fasteners affixed thereto, the front side of the outboard end of each securing strap including male hook and loop fasteners affixed thereto, in an operative orientation each securing strap being positioned around a horizontal roll bar and adjustably coupled through a buckle, the straps being tightened around the roll bar with the male and female hook and loop materials being coupled together; and
a retractable sun visor fabricated of tinted plastic and formed in a generally rectangular configuration, the sun visor including an upper extent and a lower extent and having a slightly smaller height and width than the visor cover, the retractable sun visor being slidably positioned within the visor cover, the upper extent of the retractable sun visor having two side tabs extending therefrom, the side tabs permitting coupling of the retractable sun visor within the visor cover, the lower extent of the retractable sun visor including a gripping handle formed in a generally rectangular configuration and positioned perpendicularly to the plane of the visor cover, the gripping handle enabling a user to pull sun visor downwardly through the open lower edge of the visor cover.

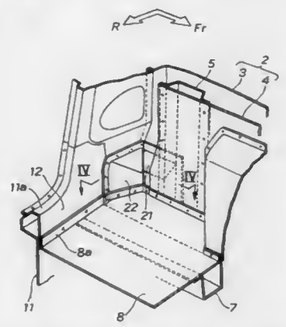
5,611,591
SUPPLEMENTAL SUN VISOR
Daphne E. Van Devender, 4155 Fuller St., Eugene, Oreg. 97402
Filed Oct. 10, 1995, Ser. No. 541,733
Int. Cl.[6] B60J *3/00*
U.S. Cl. 296—97.6 **3 Claims**



1. An auxiliary sun visor for attachment to a permanent visor of a vehicle, the auxiliary sun visor including:

sets of U-shaped clips for engagement with opposite edges of the permanent visor,
elastic straps for urging the clips of each set toward one another and into engagement with the permanent visor,
a hinge member integral with one clip of each of said sets of U-shaped clips,
a glare shield of elongate shape,
a hinge pin carried by said glare shield and extending substantially a length of the glare shield, and
an elastomeric sleeve about said hinge pin,
said hinge member on said one clip of each of said sets being in biased engagement with said elastomeric sleeve on said hinge pin and preventing undesired rotation of the hinge pin and the glare shield when subjected to vibration and loads encountered during travel of the vehicle,
said sets of U-shaped clips being of extruded material.

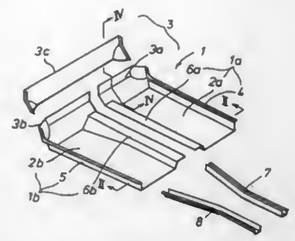
5,611,592
AUTOMOBILE REAR BODY STRUCTURE
Kazuo Satou; Tomoyuki Inoue, and Yoshiaki Hino, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Oct. 18, 1995, Ser. No. 544,760
Claims priority, application Japan, Oct. 19, 1994, 6-253652
Int. Cl.[6] B62D *25/08*
U.S. Cl. 296—203 **36 Claims**



17. A rear body structure of an automobile, comprising: a side panel forming a side surface of the automobile; a rear panel connected to the side panel and forming a rear surface of the automobile; a first reinforcing member disposed on an inside surface of the side panel proximate a rear end thereof and extending in a substantially vertical direction; a second reinforcing member connected to a rear portion of the first reinforcing member and extending in a rearward direction of the automobile; and a corner member connecting a rear portion of the second reinforcing member to an inner end of the rear panel.

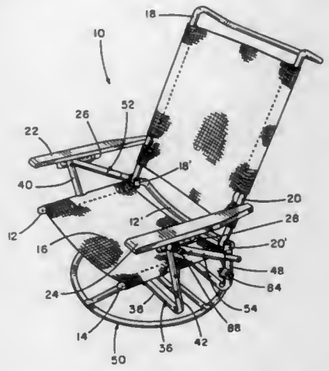
5,611,593
AUTOMOTIVE FLOOR PANEL ASSEMBLY
Masami Fukagawa; Hidenori Matsumoto; Eisei Higuchi, and Masuyuki Kakizaki, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1995, Ser. No. 404,614
Claims priority, application Japan, Mar. 16, 1994, 6-72703; Mar. 16, 1994, 6-72704
Int. Cl.[6] B62D *25/20*
U.S. Cl. 296—204 **9 Claims**

1. An automotive floor panel assembly, wherein:
said floor panel assembly is stamp formed into a prescribed shape from at least one piece of sheet metal blank which consists of a first panel section made of sheet metal stock of a first thickness, and a second panel section made of sheet metal



stock of a second thickness which are butt welded to each other along opposing edges thereof.

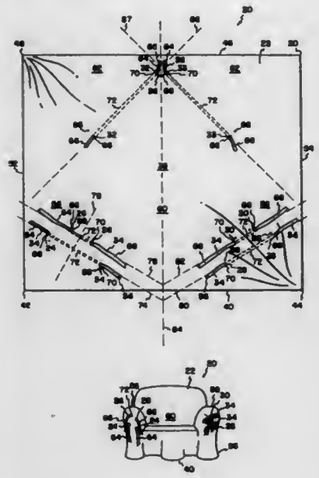
5,611,594
PORTABLE FOLDING CHAIR
Robert Findlay, 790 Grove St., Glencoe, Ill. 60022
Filed Apr. 13, 1995, Ser. No. 421,546
Int. Cl.[6] A47C *4/00*
U.S. Cl. 297—28 **24 Claims**



1. In a portable foldable chair comprising a seat, a seat-back structure, a supporting structure for supporting said seat on a surface, and arm-rest means also supported by said supporting structure, said arm-rest means comprising a pair of arms connected to said seat-back structure and a pair of adjustment-brackets mounted to the undersurfaces of said pair of arms by which said seat-back structure may be angularly adjusted, one said adjustment bracket for one said arm; said supporting structure comprising a front, U-shaped tubular assembly, a rear, U-shaped tubular assembly, and a pair of telescoping members, each said telescoping member being associated with one side of each front and rear U-shaped tubular assemblies; each said telescoping member comprising an upper end operatively associated with one said adjustment bracket for providing structural support and for allowing the chair to be folded and a lower end pivotally connected by means of a pivot pin to a respective portion of said supporting structure at an elevation lower than said adjustment bracket so that said telescoping member extends at an angle when the chair is erected; each said telescoping member comprising an outer telescoping tube and an inner telescoping tube slidable in said outer telescoping tube, one of said outer and inner telescoping tubes being an upper one, and the other of said outer and inner telescoping tubes being a lower one, said outer and inner tubes forming an annular gap therebetween, wherein the improvement comprises:
said outer telescoping tube of each said telescoping member being the upper one and having said upper end operatively associated with a respective said adjustment bracket, and said inner telescoping tube of each said telescoping member being the lower one and having said lower end pivotally connected to a respective said portion of said rear, U-shaped tubular

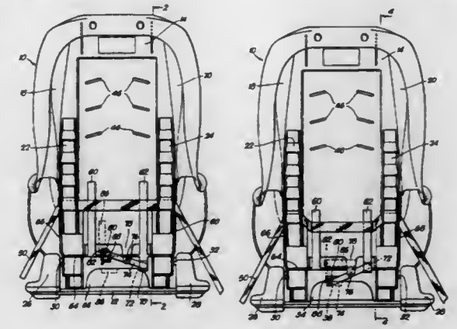
assembly, whereby sand and other particles entering into the interior of the telescoping member will fall out therefrom through the annular gap between the inner and outer telescoping tubes.

5,611,595
FURNITURE COVER
Janet L. Gatehouse, Minnetrista, Minn., assignor to Fingerhut Corporation, Minnetonka, Minn.
Filed Jul. 7, 1995, Ser. No. 499,662
Int. Cl.[6] A47C *31/00*
U.S. Cl. 297—228.12 **3 Claims**



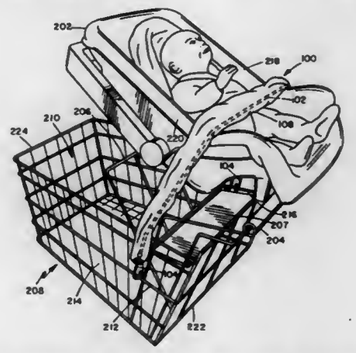
1. A furniture cover comprising:
a generally rectangular sheet of flexible material sized to cover a piece of stuffed furniture;
the sheet having a top side and a bottom side and including first and second front corners and first and second back corners;
the sheet further including first and second hole pairs having holes extending from the top side to the bottom side and positioned generally proximate to the first front corner, third and fourth hole pairs having holes extending from the top side to the bottom side and positioned generally proximate to the second front corner, a fifth hole pair having holes extending from the top side to the bottom side and positioned generally proximate to the first back corner, and a sixth hole pair having holes extending from the top side to the bottom side and positioned generally proximate to the second back corner;
wherein the first hole pair is positioned below the second hole pair, and the third hole pair is positioned below the fourth hole pair;
wherein the sheet includes a front edge extending between the first and second front corners, a back edge extending between the first and second back corners, a first side edge extending between the first front corner and the first back corner, and a second side edge extending between the second front corner and the second back corner;
wherein the first hole pair is aligned along a first line forming oblique angle with respect to the first side edge and the front edge, the second hole pair is aligned along a second line generally parallel to the first line, the third hole pair is aligned along a third line forming oblique angles with respect to the second side edge and the front edge, and the fourth hole pair is aligned along a fourth line generally parallel to the third line; and
a plurality of ties for looping through the hole pairs.

5,611,596
CHILD SAFETY SEAT
Geoffrey W. Barley, Salisbury; David W. Burleigh, Bognor Regis; Shaun Carine, Andover; Andrew P. Beaumont, Basingstoke, all of England, and Hermann Wetter, Ulm, Germany, assignors to Britax-Excelsior Limited, Hampshire, England
Filed Feb. 6, 1996, Ser. No. 605,271
Claims priority, application United Kingdom, Feb. 18, 1995, 9503222
Int. Cl.[6] A47C *1/08*; A47D *1/10*
U.S. Cl. 297—256.13 **29 Claims**



1. A child safety seat for use in a vehicle comprising:
a seat body having a seat portion and a backrest portion,
a child restraint for an occupant of the seat secured to the seat,
guide means on the seat having strap abutment surfaces defining a strap path for a strap of a vehicle seat belt to secure the seat to a vehicle seat, and
strap deflecting means mounted on the seat for movement relative to said guide means between a first position clear of said strap path and a second position in which said strap deflecting means abuts against a strap following said strap path to deflect such strap from said strap path and thereby to tighten such strap.

5,611,597
CHILD SAFETY SECURING APPARATUS AND METHOD
Brett E. Lanz, 9705 Kenora La., Spring Valley, Calif. 91977
Filed Sep. 6, 1994, Ser. No. 301,557
Int. Cl.[6] A47D *1/10*
U.S. Cl. 297—256.17 **14 Claims**



1. In combination, a shopping cart and child securing system,
the shopping cart having a main basket having a forward end, opposite sides, a rear end, a handle at the rear end for pushing the cart, and a seating compartment for a child at the rear end

of the cart, the seating compartment defining a seating area for a child having an upwardly facing, open end;

the child securing system comprising a child seat having a bottom portion, a back portion extending at an angle to said bottom portion for supporting a child's back, and opposite sides, the child seat being placed over the upwardly facing, open end of the shopping cart seating compartment; and

a strap extending transversely across the child seat and the seating compartment, the strap having opposite first and second ends;

a first fastener at the first end of the strap attached to one side of the shopping cart adjacent the seating compartment; and

a second fastener at the second end of the strap attached to the opposite side of the shopping cart.

5,611,598

CHAIR HAVING BACK SHELL WITH SELECTIVE STIFFENING

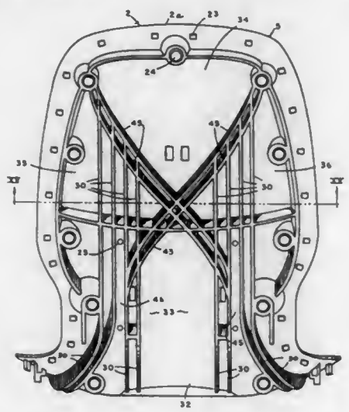
Glenn A. Knoblock, Kentwood, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 252,666, May 31, 1994, Pat. No. 5,487,591, which is a continuation of Ser. No. 797,717, Nov. 25, 1991, Pat. No. 5,333,934, which is a continuation of Ser. No. 738,808, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 850,528, Apr. 10, 1986, Pat. No. 5,050,931.

This application Jan. 26, 1996, Ser. No. 592,067

Int. Cl.[6] A47C *3/12*

U.S. Cl. 297—452.14 **18 Claims**



1. A chair comprising:

a base;

a seat supported on said base;

a back support pivotally supported on said base;

a control operatively connecting said base and said back support, and selectively controlling rearward tilting of said back support;

a cushion assembly shaped to support the back of a user thereon;

a shell construction connecting said cushion assembly with said back support, said shell construction comprising:

a semi-rigid, resiliently flexible sheet, having forward and rearward surfaces forming a back portion shaped to support a back area of an adult user thereon with the cushion assembly being on the forward surface of the shell construction, said sheet having a substantially flat planar shape, a generally continuous thickness and extending substantially continuously in a plane, so that the forward surface of said sheet defines a substantially uninterrupted planar portion; and

a plurality of laterally spaced apart first ribs formed integrally with said sheet on the rearward side thereof, and extending generally vertically along at least a portion of said sheet to stiffen the sheet in a vertical plane for firm support of at least the upper area of the back of the seated user, yet dimensioned to permit at least the upper area of said back portion to flex in a horizontal plane for improved freedom of movement to the upper back area of the seated user; and

a plurality of second ribs formed integrally on the rearward surface of said sheet, and extending across the central area of said back portion in a generally X-shaped pattern and intersecting at least one of said first ribs to control horizontal flexing of the upper area of said back portion.

5,611,599

VEHICLE SEAT HINGES

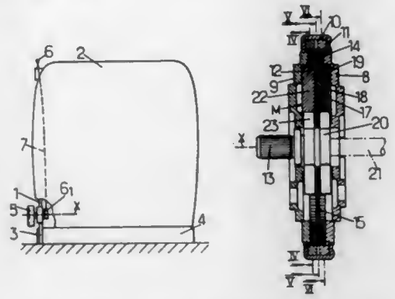
François Baloche, and Yann Reubeuze, both of Flers, France, assignors to Bertrand Faure France, France

Filed Jul. 18, 1995, Ser. No. 503,892

Claims priority, application France, Jul. 22, 1994, 94 09109

Int. Cl.[6] B60N *2/20*

U.S. Cl. 297—367 **7 Claims**



1. A seat hinge for a vehicle seat, comprising:

a first cheek plate for fixing to a framework of a seat back;

a second cheek plate for fixing to a framework of a seat proper and co-operating with the first cheek plate to define a housing;

a ring having a first set of inside teeth and secured to the first cheek plate inside the housing and having a ring axis coinciding with the hinge axis;

a first control member accessible to a user of the seat; and

a first mechanism inside the housing, controllable by said first control member, and co-operating with the first set of teeth of the ring to transform rotation of said first control member into angular displacements of the first cheek plate and of the seat back and into commands enabling and disabling such angular displacements, the toothed ring being rotatively mounted relative to the first cheek plate, said hinge further including a second mechanism inside the housing, cooperating with the toothed ring and the first cheek plate in reversible manner, said second mechanism including:

at least one locking member displaceable between a locked position wherein said locking member couples the toothed ring and the first cheek plate with respect to their angular displacements about the hinge axis of rotation, and an unlocked position wherein said locking member enables angular displacements of the first cheek plate relative to the toothed ring about the ring axis,

elastic means for urging the locking member towards said locked position,

a second control member easily accessible from behind the seat back for displacing said locking member into said unlocked position,

two abutments angularly fixed relative to the toothed ring and to the first cheek plate respectively, and defining, by mutual angular engagement, a predetermined angular position of the first cheek plate relative to the toothed ring, said abutments enabling only angular displacement of the first cheek plate in a first angular direction starting from said predetermined relative angular position and preventing angular displacement of said first cheek plate in a second, opposite angular direction starting from said pre-determined relative angular position, and

means cooperating with said locking member when the first cheek plate is not in said predetermined relative angular position, for maintaining said locking member in said unlocked position.

5,611,600

CATCH HOOK FOR THE RELEASABLE LOCKING OF THE BACKREST CONNECTED WITH THE SEAT PART OF A VEHICLE SEAT SUCH THAT THE BACKREST CAN SWIVEL FORWARD

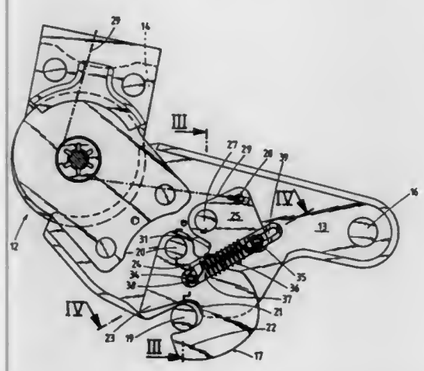
Hans-Walter Busch, Hilden, and Joerg Naibach, Remscheid, both of Germany, assignors to Keiper Recaro GmbH & Co., Remscheid, Germany

Filed May 8, 1995, Ser. No. 438,070

Claims priority, application Germany, May 19, 1994, 44 17 491.8

Int. Cl.[6] B60N *2/08*

U.S. Cl. 297—378.12 **10 Claims**



1. A catch hook for the releasable locking of a backrest which is connected with a seat part of a vehicle seat such that it can swivel forward, comprising:

an articulated fitting;

said catch hook being supported in a swivelably articulated manner at an articulated part of said articulated fitting which includes an adjusting and locking arrangement for adjusting the inclination of the backrest;

said articulated part being connected with the seat part so as to be swivelable;

said catch hook having a hook jaw engaging around a stop for the articulated part in the locking position, said stop being fixed to the seat part;

a retaining lever for securing the locking position in a releasable manner, said lever acting on said catch hook and being supported at the articulated part so as to be swivelable;

said catch hook having a control cam forming an upper side of the hook jaw and projecting beyond a finger of said catch hook;

said catch hook being connected with the retaining lever by a force accumulator which acts on said lever so as to press said catch hook and lever against one another;

an operable releasing member being articulated at the retaining lever; and

a safety coupling element separate from said force accumulator and connecting said catch hook and said retaining lever to one another.

5,611,601

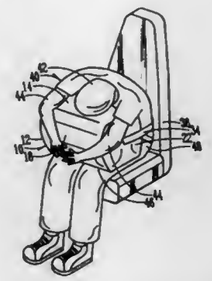
METHOD AND MEANS FOR FACILITATING REST FOR A PERSON IN A SITTING POSITION

Bruce E. Cowgur, Rochester, Ill., assignor to Brex, Inc., West Des Moines, Iowa

Filed Apr. 14, 1994, Ser. No. 227,722

Int. Cl.[6] A47C *1/10*

U.S. Cl. 297—393 **1 Claim**



1. A method of facilitating the rest and sleep of a sitting person, comprising,

unfolding an assembled folded flexible compartment having an air valve, and having a rectangular configuration, including a top,

having the person blow air into said compartment through said air valve to inflate said compartment so that the vertical height of said compartment will span the distance between the person's lap and a horizontal plane passing through the underarms of the user,

securing said compartment to the waist of said person,

causing the person to lean forwardly to rest the person's head and arms on the top of said compartment between the head and the arms, and the lap of said person, to bind the inflated compartment between the persons head and lap,

allowing the person to rest for a period of time,

band then deflating said compartment, and folding the same into a compact size for storage.

5,611,602

SEATS FOR SWINGS

David F. Brady, West Yorkshire, Great Britain, assignor to Sutcliffe Leisure Limited, West Yorkshire, United Kingdom

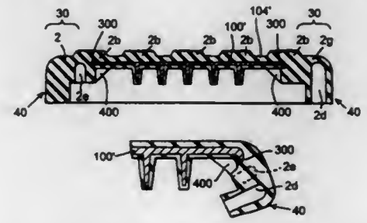
PCT No. PCT/GB93/01049, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/24195, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 335,882

Claims priority, application United Kingdom, May 29, 1992, 9211377

Int. Cl.[6] A47C *7/02*

U.S. Cl. 297—452.23 **28 Claims**

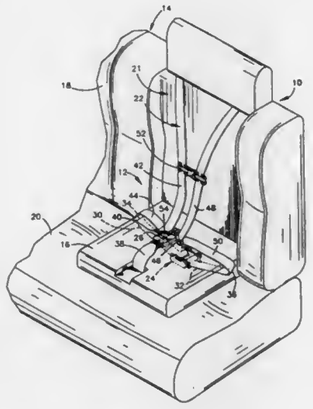


20. A seat for a child's swing, the seat comprising:

a plate-like member to bear a weight of a user sitting on the seat, said plate-like member having sufficient mass to be substantially rigid;

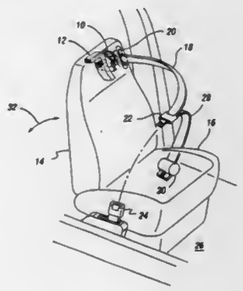
resilient polymeric material secured to the plate-like member, said plate-like member and resilient polymeric material defining an inertial mass to be decelerated in an impact;
a border of said resilient polymeric material extending around said plate-like member;
a peripheral dependent skirt surrounding the plate-like member, said skirt being formed by said border of said resilient polymeric material;
a hinge-like portion formed by a web of said resilient polymeric material within said border connecting said resilient polymeric material at said plate-like member with said peripheral dependent skirt;
said plate-like member in a region of the hinge-like portion configured to provide room for the peripheral dependent skirt to hinge beneath the plate-like member; and
said skirt and hinge-like portion adapted to deform inwardly against a reaction force generated by the inertial mass of said substantially rigid plate-like member and resilient polymeric material secured thereto in an impact between an edge of the seat adjacent the hinge-like portion and an object.

5,611,603
SEAT BELT RETRACTOR
Mark F. Gray, Attica, and Robert A. Frantz, Bloomfield Hills, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed May 24, 1994, Ser. No. 248,518
Int. Cl.[6] B60R *21/00*
U.S. Cl. 297—476 **38 Claims**



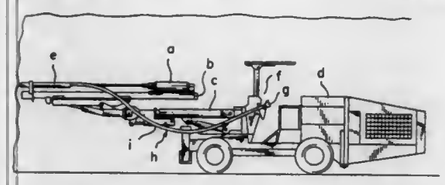
22. Apparatus comprising:
a first spool having means for supporting a first wound length of seat belt webbing on said first spool;
means for supporting said first spool for winding and unwinding rotation;
a second spool having means for supporting a second wound length of seat belt webbing on said second spool;
means for supporting said second spool for winding and unwinding rotation; and
cinch means for blocking unwinding rotation of said spools, said cinch means blocking unwinding rotation of said first spool in response to a first amount of rotation of said spools which includes a predetermined amount of unwinding rotation of said second spool, said cinch means blocking unwinding rotation of said second spool in response to a second amount of rotation of said spools which includes a predetermined amount of unwinding rotation of said first spool;
said first amount of rotation of said spools including initial unwinding rotation of said first spool, followed by said predetermined amount of unwinding rotation of said second spool, and further followed by subsequent unwinding rotation of said first spool;
said cinch means including a movable locking pawl having an initial position, an intermediate position, and a locked position in which said pawl blocks unwinding rotation of said first spool, said cinch means moving said pawl from said initial position to said intermediate position in response to said initial unwinding rotation of said first spool, said cinch means further moving said pawl from said intermediate position to said locked position in response to said subsequent unwinding rotation of said first spool;
said cinch means further including spring means for biasing said pawl toward said locked position, link means for bolding said pawl in said initial position prior to said initial unwinding rotation of said first spool and for releasing said pawl for movement to said intermediate position in response to said initial unwinding rotation of said first spool, and clutch means for holding said pawl in said intermediate position during said predetermined amount of unwinding rotation of said second spool and for releasing said pawl for movement to said locked position in response to said subsequent unwinding rotation of said first spool.

5,611,604
SAFETY RESTRAINT SYSTEM HAVING A VARIABLE ANGLE WEB GUIDE OPENING
Rudy V. Thomas, Sterling Heights, and Philip H. Goniea, Romulus, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Nov. 14, 1995, Ser. No. 557,443
Int. Cl.[6] B60R *22/00*
U.S. Cl. 297—478 **10 Claims**



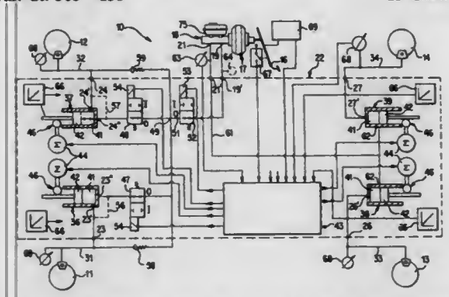
1. A retractor system in communication with a shoulder webbing of a safety restraint system, said retractor system being mounted in an automotive vehicle and comprising:
a shoulder webbing retractor pivotably mounted to a structural member of the vehicle, said retractor pivotable about a horizontal axis transverse to the longitudinal axis of the vehicle and having a spool, on which the shoulder webbing is wound, disposed normal to said horizontal axis; and
an acceleration sensor operatively connected to the shoulder webbing retractor and inhibiting the extraction of the shoulder webbing from said spool in response to an acceleration having a value greater than a predetermined value.

5,611,605
METHOD APPARATUS AND CARTRIDGE FOR NON-EXPLOSIVE ROCK FRAGMENTATION
Donald E. McCarthy, 9 Village Ct., Littleton, Colo. 80123
Filed Sep. 15, 1995, Ser. No. 529,063
Int. Cl.[6] E21C *37/14*
U.S. Cl. 299—13 **34 Claims**



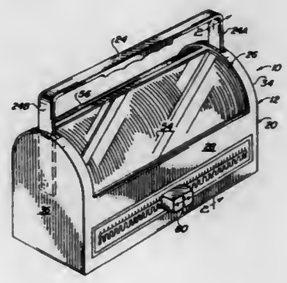
1. A non-explosive rock breaking method, comprising the following steps:
drilling a hole into a rock;
positioning a charging system in proximity to the hole;
inserting a propellant cartridge within the charging system, the propellant cartridge containing a propellant and means for igniting the propellant;
forcing the propellant cartridge through the charging system and into the hole;
igniting the propellant.

5,611,606
VEHICLE BRAKE-PRESSURE CONTROL DEVICE
Joachim Nell, Ostfildern; Torsten Fritzsching, Ludwigsburg, and Werner Kruse, Schorndorf, all of Germany, assignors to Mercedes-Benz AG, Germany
Filed Oct. 20, 1994, Ser. No. 326,283
Claims priority, application Germany, Oct. 20, 1993, 43 35 769.5
Int. Cl.[6] B60T *8/42*
U.S. Cl. 303—155 **15 Claims**



1. A brake-pressure control device for a road vehicle equipped with individual front and rear wheel brakes, and at least one of anti-lock control, electronically controlled brake-force distribution and drive-slip control, comprising an electronic control unit having stored data characteristic of vehicle deceleration in relation to brake pedal travel; a hydraulic multi-circuit brake system operatively associated with the electric control unit and having a driver-actuatable brake unit for brake-pressure generation and operatively connected brake-pressure regulating members configured as hydraulic regulating cylinders with electromotively drivable pistons therein configured to be activatable by output signals from the electronic control unit and position transmitters for recording a position of each of the pistons and transmitting signals representative of the piston position to the electronic control unit to (i) control brake-pressure generation in the individual wheel brakes of the road vehicle with of driver-controlled braking, (ii) obtain, independently of the driver-controlled braking, a brake pressure loading of the individual wheel brake of a driven vehicle wheel tending to spin for the drive-slip control, (iii) effect the driver-controlled braking, an automatic control of front-axle/rear-axle brake force distribution and (iv) control, during the anti-lock control on the individual wheels, brake-pressure reduction and brake-pressure rebuild-up phases,
wherein the pistons of selected individual brake-pressure regulating members having a basic position from which occurs a pressure build-up stroke of the respective piston up to the maximum brake-pressure level and, starting from which level, a pressure-reduction stroke down to full pressure relief, and inlet valves operatively associated with the electronic control unit so as to selectively connect and disconnect the individual wheel brakes directly to a pressure outlet of the brake unit, wherein
a) the selected individual brake pressure regulating members are the brake-pressure regulating members for at least the front-wheel brakes,
b) the brake-pressure regulating members for rear-wheel brakes of the road vehicle are configured such that the basic position of the pistons thereof corresponds to the largest volume of the outlet-pressure spaces of the brake-pressure regulation members in braking not subjected to the anti-lock control, and to provide brake-pressure generation and shut off relative to the brake unit of the brake system, and
c) at least one sensor configured to supply an output signal to the electronic control unit to determine an expected value of vehicle deceleration based upon the stored data in the electronic control unit with driver-controlled braking, and
wherein the electronic control unit is configured to provide comparative processing of the signals characteristic of the piston positions of the brake-pressure regulating members of the front-wheel brakes with the output signal characteristic of the expected vehicle deceleration value, the electronic control unit is further configured to generate activating signals for the drives of the brake-pressure regulating members of the front-wheel brakes to cause the pistons to move into a position assigned to the expected vehicle deceleration value based upon the stored data, and also to generate activating signals for the brake-pressure build-up operation of the brake-pressure regulating members of the rear-wheel brakes.

5,611,607
ELECTRONIC LIBRARIAN AND FILING SYSTEM AND METHOD
Patricia A. Kuzara; James H. Kuzara, and Stephen A. Kuzara, all of Sheridan, Wyo., assignors to ELF Technologies Corporation, Sheridan, Wyo.
Continuation-in-part of Ser. No. 330,713, Oct. 28, 1994. This application Oct. 25, 1995, Ser. No. 548,028
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—9.14 **14 Claims**



1. A system for filing, storing and retrieving thin disc-shaped articles, said system comprising:
(a) an article storage unit having an elongated receptacle defining an interior cavity and an opening leading into said interior cavity, said article storage unit also having means for storing

thin disc-shaped articles in a plurality of successive side-by-side spaced unique locations in said interior cavity of said elongated receptacle;

(b) an article locator mechanism disposed in said article storage unit and having a first portion stationarily aligned with said unique locations and a second portion movable relative to said first portion and said unique locations aligned therewith to a selected one of said locations and adapted to indicate said selected unique location; and

(c) an article retrieval mechanism disposed in said article storage unit and being movable with said second portion of said article locator mechanism, said article retrieval mechanism being actuatable to at least partially remove a selected one of the articles from said selected unique location in said article storage unit so that the selected article can subsequently be fully removed from said article storage unit;

(d) said means for storing the articles including

(i) support means disposed in said interior cavity of said receptacle extending along and adjacent to said opening and between and mounted at opposite ends of said receptacle, and

(ii) a plurality of storage and retrieval arms disposed in said interior cavity and being equal in number to the number of articles stored in said interior cavity of said receptacle, said arms being mounted to said support means and positioned in side-by-side relationship to one another and in alignment with said unique locations so as to undergo pivotal movement, in response to actuation of said retrieval mechanism, along an arcuate path from a lowered position in which the articles are disposed within said interior cavity adjacent to said opening to a raised position in which the articles partially extend from said interior cavity through said opening.

5,611,608

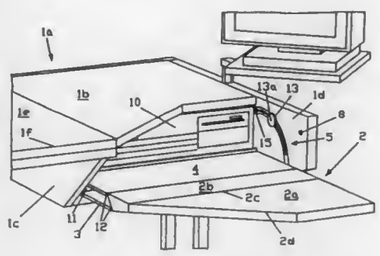
COMPUTER-OFFICE DESK

Mark Clausen, R.R. 2, Box 196, Wild Rose, Wis. 54984

Continuation-in-part of Ser. No. 957,995, Oct. 6, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 327,430

Int. Cl.[6] A47B *81/00*

U.S. Cl. 312—223.3 **14 Claims**



14. A computer-office desk for accommodating computer equipment, said computer-office desk comprising:

(a) a desk top having a fixed section and a separable section, said desk top lying in a desk top plane, said desk top having a generally linear frontal edge and said separable section having an open position and a closed position, said separable section in said closed position being co-planar with and contiguous to said fixed section, said separable section having a frontal edge and said fixed section having a frontal edge where said fixed section frontal edge and said separable section frontal edge are contiguous segments of said desk top frontal edge when said separable section is in said closed position;

(b) at least one horizontal piece;

(c) a hinge means interconnecting said horizontal piece and said separable section, said hinge means having a rotational axis that is parallel to said frontal edge, where said separable section can be rotated about said hinge means between said closed position and said open position such that in the open position said separable section provides a working surface, said working surface extending at least partially in front of said frontal edge of said desk top, said working surface being on a plane generally parallel to and below said fixed section, said working surface having an operating edge such that a line on said desk top plane which approximately coincides with a projection of said operating edge on said desk top plane forms an obtuse to generally right angle with said frontal edge of said desk top whereby both said desk top and said working surface can be easily accessed by an operator seated at said computer-office desk;

(d) an equipment compartment located under said desk top and positioned so that when said separable section is in the open position said equipment compartment is accessible from above said desk top of said computer-office desk and when said separable section is in the closed position said equipment compartment is inaccessible.

5,611,609

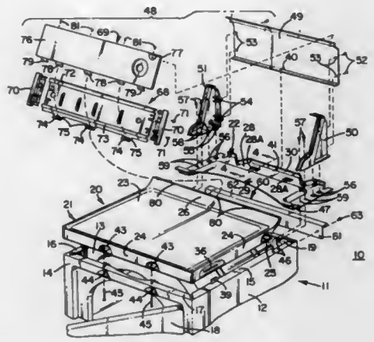
APPLIANCE HOUSING ASSEMBLY

Jonathan M. Katz; Scott A. Calvert; Nasser Hosseinpour, and William E. Nuttall, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1995, Ser. No. 416,058

Int. Cl.[6] A47B *47/00*

U.S. Cl. 312—263 **8 Claims**



1. An appliance housing assembly including:

spaced apart side panels joined by a front panel, each of said side and front panels having a top ledge;

a cover including a front cover member having a rear portion and a rear cover member having a front portion;

said front and rear cover members being mounted on said top ledges of said side and front panels with said rear portion of said front cover member and said front portion of said rear cover member overlapping;

a control housing including an assembly of an elongated rear wall with lateral ends joined to a pair of spaced apart end caps; each of said end caps being mounted on said rear cover member and extending rearward from said rear portion of said front cover member and said rear wall extending across the rear portion of said rear cover member; and

said control housing also including a control panel assembly mounted on said rear portion of said front cover member and attached to said rear wall and end cap assembly.

5,611,610

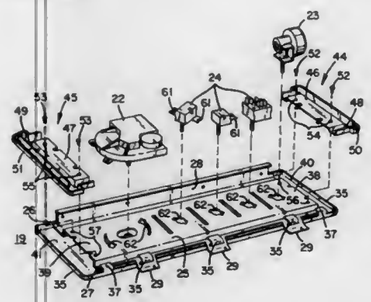
CONTROL HOUSING

Jonathan M. Katz; Scott A. Calvert, and Kevin S. Laundroche, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1995, Ser. No. 416,174

Int. Cl.[6] A47B *47/00*

U.S. Cl. 312—263 **15 Claims**



1. A control housing including:

a rear wall having spaced apart ends and a pair of end caps engaging said ends of said rear wall and extending forward thereof;

a control panel assembly extending between said end caps forward of said rear wall; said panel assembly including a cover plate having an elongated, generally rectangular planar body with spaced apart ends and a control mounting plate having an elongated, generally rectangular planar body with spaced apart ends; said cover plate and said mounting plate being assembled in a juxtaposed overlying relationship; and

said control panel assembly also including a pair of bridging members, each of said bridging members having a central web overlying and mounted to said control mounting plate planar body and bridging between and engaging corresponding ends of said cover plate and said mounting plate;

each of said bridging members having a shape selected from a number of predetermined different shapes adapted to provide said control housing with a distinctive visual appearance.

5,611,611

REAR PROJECTION TYPE DISPLAY SYSTEM

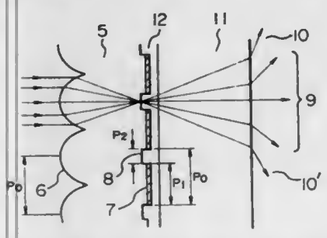
Masanori Ogino, Yokohama; Yoshiaki Iwahara, Yokosuka; Shoji Kuroda, Odawara; Shuichi Sakamoto, Yokohama; Takashi Itoh, Hiratsuka, and Makoto Kamiya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,253

Claims priority, application Japan, Oct. 5, 1994, 6-241037; Oct. 26, 1994, 6-262205

Int. Cl.[6] G03B *21/60*

U.S. Cl. 353—74 **9 Claims**



1. A rear projection type display system comprising:

original image forming means;

projection lens means; and

transmissive type screen means,

said transmissive type screen means comprising at least a Fresnel sheet disposed on the light input side and a lenticular sheet disposed on the light output side,

wherein said lenticular sheet is formed with a vertical-stripe lenticular lens surface on the light input side, said lenticular lens surface diverging light in the horizontal direction, a light intercepting convex part of said lenticular sheet is printed with black stripes on the light output side, and the width of each black stripe is set to 60% or more of an array pitch of said lenticular lens surface,

and said transmissive type screen means further comprising transparent reinforcing plate means and transparent connective means,

wherein said connective means integrally connects said reinforcing plate means to a light transmissive concave part of said lenticular sheet on the light output side while removing any air layer, and the total thickness of said lenticular sheet and said reinforcing plate means is set to a width satisfying a self-weight buckling prevention condition.

5,611,612

VEHICULAR LAMP HAVING WATERPROOF COVER

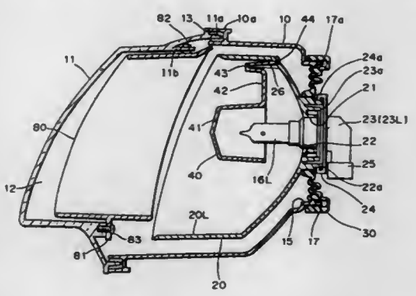
Masataka Choji, and Naoshi Kawamura, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,464

Claims priority, application Japan, Mar. 9, 1994, 6-064413

Int. Cl.[6] B60Q *1/00*

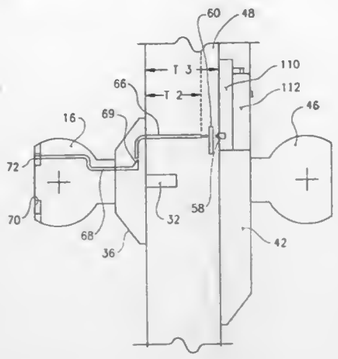
U.S. Cl. 362—61 **9 Claims**



1. In a vehicular lamp having a waterproof cover and in which a reflector is contained within a lamp body, the lamp body including an opening into which a bulb socket supported by the reflector is inserted, and the waterproof cover waterproofing said opening, the improvement wherein

a wall is formed along a circumferential edge of said opening, an inner portion of the waterproof cover is in close contact with a circumferential surface of at least one of the reflector and the bulb socket, and an outer portion of the waterproof cover comprises an inner part and an outer part connected to each other by a connection part, wherein at least a portion of said wall is sandwiched between said inner part and said outer part, and a first engaging part protrudes from an inner surface of said wall, said first engaging part engaging a second engaging part protruding from said inner part of the outer portion of the waterproof cover to secure the outer portion to said wall.

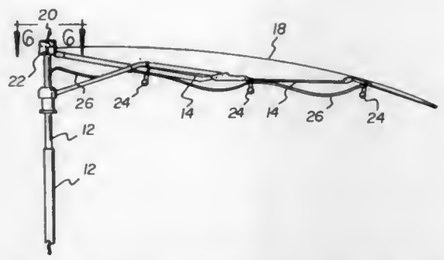
5,611,613
REMOTELY OPERATED DOOR LOCK LIGHT
Gary R. Bergen, Yorba Linda, and George E. Maffey, Dana Point, both of Calif., assignors to Embart, Inc., Newark, Del.
Filed Aug. 11, 1995, Ser. No. 514,511
Int. Cl.[6] E05B *17/10*
U.S. Cl. 362—100 **3 Claims**



1. A key operated door lock assembly comprising
an operator assembly rotatable from a door unlatched to a door latched position including,
an operator, and
a plug in said operator having a key receiving opening,
a support assembly for said operator assembly secured to the door including
a light source operable for a predetermined period of time, and
a first light pipe having a first end for receiving light from said light source and a second light transmitting end,
means for remotely operating said light source for a period of time selected so that a person can insert a key into the key receiving opening and rotate the operator assembly from the door latched position to the door unlatched position,
said operator assembly further including
a second light pipe having an exposed light transmitting portion and a light receiving portion, and
means for supporting said second light pipe so that
said second light pipe light transmitting portion is adjacent said key receiving opening,
said second light pipe light receiving portion will be proximate said first light pipe light transmitting end when said operator is at the door latched position so that light from said light source will illuminate said key receiving opening, and
said second light pipe light receiving portion will be remote from the light transmitted from said first light pipe transmitting end when said operator is at said door unlatched position.

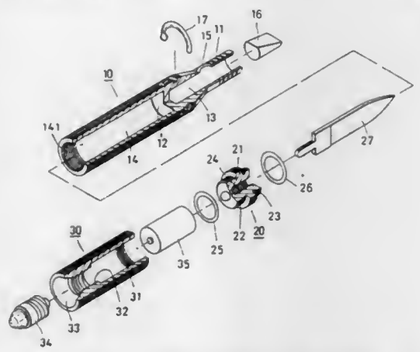
5,611,614
LIGHT CONTAINING UMBRELLA APPARATUS
Robert E. Morgan, 1116 Wagon Ridge Rd., Raleigh, N.C. 27614
Filed Aug. 13, 1996, Ser. No. 689,506
Int. Cl.[6] A45B *3/02*
U.S. Cl. 362—102 **9 Claims**

1. A light containing umbrella apparatus, comprising:
a handle assembly,
a canopy assembly connected to said handle assembly, wherein said canopy assembly includes an outside portion and an underside portion,
an electrical power supply supported by said handle assembly,



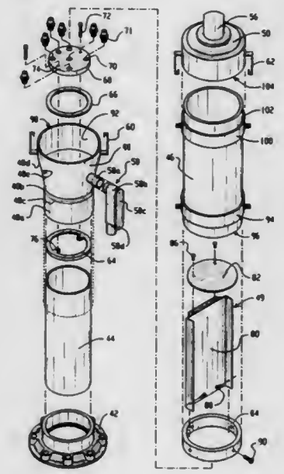
an outside illumination source supported by said handle assembly and located outside said canopy assembly, wherein said outside illumination source is powered by said electrical power supply,
an underside illumination source supported by said canopy assembly and located on said underside portion of said canopy assembly, wherein said underside illumination source is powered by said electrical power supply, and
an illumination selector switch assembly supported by said handle assembly and connected between said electrical power supply and said outside illumination source and said underside illumination source.

5,611,615
MULTI-PURPOSE MOUNTAIN CLIMBING TOOL
Siang-Guey Jang, No. 78, Jen-Sing Road, Da-Li, Taichung, Taiwan
Filed May 6, 1996, Ser. No. 643,566
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—119 **1 Claim**



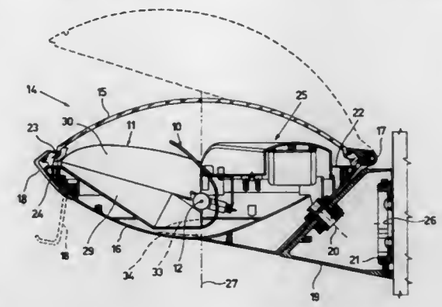
1. A multipurpose mountain climbing tool comprising:
a first main member of a metal material and provided at one end thereof with a small diametric portion of a hollow construction, said first main member further provided at a midsegment thereof with a first receiving cell, a second receiving cell and a partition separating said first receiving cell from said second receiving cell, said small diametric portion provided therein with a triangular cut, said first receiving cell provided at one end thereof with a whistling piece, said second receiving cell provided at one end thereof with a first female threaded portion, said first main member further provided at said midsegment therof with a thermometer and a compass;
a second main member of a metal material and provided at a midsegment thereof with a protruded ring portion, said second main member further provided respectively at a front segment thereof and at a rear segment thereof with a first male threaded portion and a second male threaded portion engageable with said first female threaded portion of said first main member, said second main member furthers provided at one end thereof with a second female threaded portion of an appropriate depth and extending in the direction of an axis of said second main member, said protruded ring portion provided respectively at a front side thereof and a rear side thereof with an O ring, said second female threaded portion intended for use in fastening a knife in said second receiving cell of said first main member; and
a third main member of a metal material and provided therein with a third female threaded portion, a fourth female threaded portion and a mouth in which a light bulb is received, said third main member further provided in a rear segment thereof with a battery.

5,611,616
ELECTRICAL CONTROLS ENCLOSURE
William D. Chandler, Ashland, Ohio, assignor to Chandler Systems, Inc., Ashland, Ohio
Filed Jan. 27, 1995, Ser. No. 379,713
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—154 **14 Claims**



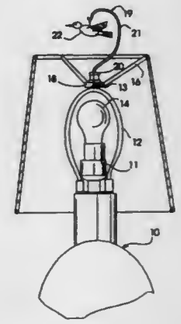
1. An electrical enclosure, comprising:
(i) a component enclosure for containing electrical components;
(ii) a wiring conduit connected to said component enclosure; and
(ii) a sealing device for providing an air and watertight seal between an interior of said component enclosure and an interior of said wiring conduit, said sealing device comprising (a) a seal plate having at least one hole therein for accommodating at least one wire, and (b) at least one gripping device for securing said at least one wire within said at least one hole, wherein said at least one hole is provided with threads, and said at least one gripping device is rotated within said threads in opposite directions, respectively, to tighten and loosen said at least one wire within said at least one hole, and wherein said component enclosure and said wiring conduit are made of a non-metallic tubing material.

5,611,617
LOW-PROFILE AND HOMOGENEOUS-BEAM LIGHTING APPARATUS
Fabio Reggiani, Milan, Italy, assignor to Reggiani, S.p.A. Illuminazione, Milan, Italy
Filed Mar. 23, 1995, Ser. No. 408,824
Claims priority, application Italy, Apr. 1, 1994, MI94A0638
Int. Cl.[6] F21V *7/12*
U.S. Cl. 362—300 **24 Claims**



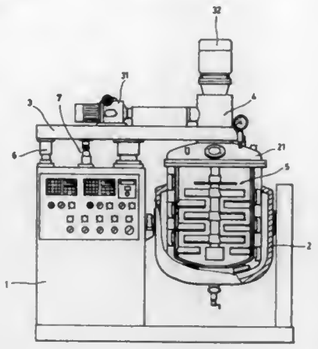
1. A lighting apparatus comprising an elongate light source and light reflecting surfaces receiving light directly from the source and reflecting light to an environment surrounding the apparatus, said surfaces including a first light reflecting surface distributing light at least partly over a second light-reflecting surface, and characterized in that the first surface reflects the light rays striking thereon substantially towards regions of the second surface which receive rays of light directly from the source at an angle of incidence not greater than 20°.

5,611,618
SUSPENDED ORNAMENT FOR LAMP FINIAL
Gerald F. Sawyer, 2826 Tree Top Rd., Dacula, Ga. 30211
Filed Apr. 28, 1995, Ser. No. 431,533
Int. Cl.[6] F21V *17/00*
U.S. Cl. 362—417 **10 Claims**



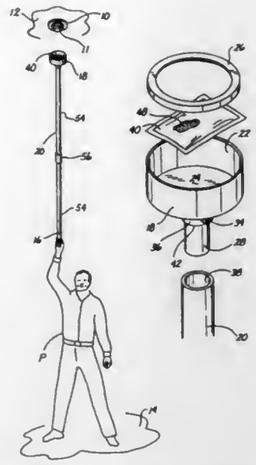
1. A finial, for a lamp shade having a washer centrally thereof for supporting the lamp shade, the washer being received on a stud extending from a harp for a lamp, said finial comprising a finial base threadedly receivable on said stud for holding said washer to said harp, a bail carried by said finial base and extending upwardly from said finial base, said bail including supporting means disposed substantially above said finial base, and an ornament suspended from said supporting means, said ornament being disposed between said finial base and said supporting means.

5,611,619
MIXING MACHINE
Feng-Lien Shen, San-Chung, Taiwan, assignor to Li Yuan Machine Industrial Co., Ltd., Taipei Hsien, Taiwan
Filed Jun. 27, 1996, Ser. No. 671,238
Int. Cl.[6] B01F *7/18;7/32*
U.S. Cl. 366—296 **1 Claim**



1. A mixing machine comprising a machine base, a borizontal suspension arm horizontally suspending above said machine base, a lifting mechanism connected between said machine base and said horizontal suspension arm and trolled to move said horizontal suspension arm vertically relative to said machine base, a transmission mechanism mounted on said horizontal suspension arm, a mixing container suspended from said horizontal suspension arm, a container cover fastened to said horizontal suspension arm and adapted for covering on said mixing container, and a mixing blade unit suspending in said mixing container and coupled to the transmission mechanism, wherein: said transmission mechanism comprises a horizontal motor and a vertical motor respectively mounted on said horizontal suspension arm, a vertical center spindle having a top end coupled to said vertical motor and a bottom end suspending in said mixing container, a horizontal transmission shaft having one end coupled to said horizontal motor and an opposite end fixedly mounted with a drive bevel gear, a first sleeve mounted around said vertical center spindle and turned on its own axis by said horizontal transmission shaft, said first sleeve having a top end fixedly mounted with a driven bevel gear meshed with said drive bevel gear, and a second sleeve mounted around said first sleeve and turned by said horizontal transmission shaft on its own axis in one direction reversed to the turning direction of said first sleeve, said second sleeve having a top end fixedly mounted with a driven bevel gear meshed with said drive bevel gear; said mixing blade unit comprises a mixing head fixedly fastened to the bottom end of said vertical center spindle, a first mixing blade assembly mounted around said first sleeve, and a second mixing blade assembly coupled to said second sleeve around said first mixing blade assembly.

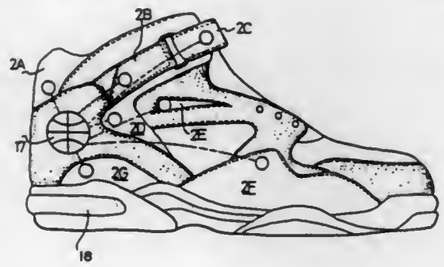
5,611,620
METHOD AND APPARATUS FOR TESTING HEAT DETECTORS
James C. Wantz, Mesa, Ariz., assignor to Leon Cooper, Malibu, Calif.
Filed Dec. 29, 1994, Ser. No. 365,933
Int. Cl.[6] G08B *29/00;* **G01K** *15/00*
U.S. Cl. 374—1 **14 Claims**



1. A method for testing heat detectors mounted at an elevated location above a ground surface, comprising the steps of:
providing a package containing a composition formulated to react exothermically but non-flammably so as to sustain a temperature sufficient to activate the heat detectors under test for a period of at least a few minutes upon exposure to ambient air;
exposing the contents of the package to ambient air to initiate the exothermic reaction; and
elevating the package into contact with or close proximity to each heat detector.

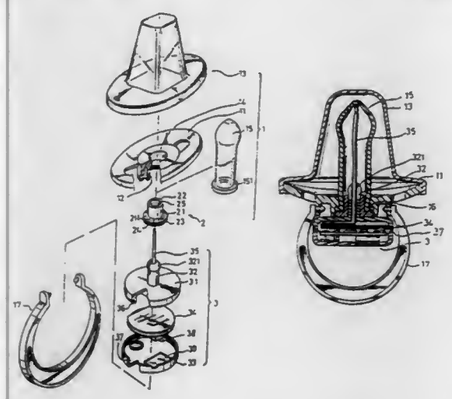
5. Apparatus for testing heat detectors mounted at an elevated location above a ground surface, comprising:
an initially air tight package containing a composition formulated to react exothermically but non-flammably so as to sustain a temperature sufficient to activate the heat detectors under test for a period of at least a few minutes upon exposure to ambient air, said air tight package being adapted to be opened for initiating exothermic reaction of said composition; and
an extension having a handle end and a holder for receiving said package at an opposite end, said extension being of sufficient length for reaching the heat detector while being held by an operator standing on the ground surface under the detector.

5,611,621
SHOE WITH AN EL LIGHT STRIP
Tseng-Lu Chien, 8th Fl.-6, No. 9, San Min Rd., Taipei, Taiwan
Continuation of Ser. No. 226,330, Apr. 12, 1994, abandoned. This application Mar. 23, 1995, Ser. No. 409,925
Int. Cl.[6] A43B *23/00*
U.S. Cl. 362—84 **11 Claims**



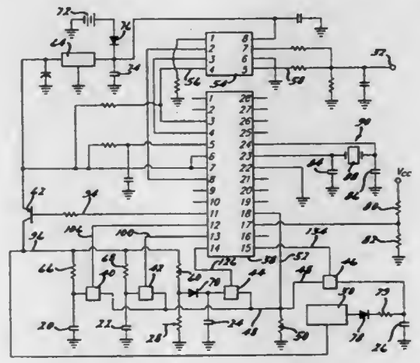
1. In a shoe, comprising:
a shoe bottom;
an soft upper shoe surface connected to the shoe bottom;
a lighting arrangement; and
a DC power supply;
the improvement comprising:
an EL strip;
means including a DC-AC converter connected to the DC power supply for converting direct current supplied by the DC power supply into an alternating current having a frequency capable of activating the EL strip;
a function interface connected between the DC-AC converter and the EL strip;
a switch for controllably disconnecting the EL strip from the power supply;
means for enclosing the DC power supply, the DC-AC converter, the function interface, and the switch within the shoe bottom; and
means for attaching the EL strip to the soft upper surface of the shoe.

5,611,622
PACIFIER AND THERMOMETER ASSEMBLY
Mac Wang, 4F., No.8, Alley 4, Lane 131, Chang An St., Lu Chou Shiang, Taipei Hsien, Taiwan
Filed Feb. 23, 1996, Ser. No. 606,442
Int. Cl.[6] G01K *13/00;* **A61B** *5/00;* **A61J** *17/00*
U.S. Cl. 374—151 **4 Claims**



1. A pacifier and thermometer assembly comprising a pacifier and a thermometer detachably connected to said pacifier, wherein said pacifier comprises:
a base plate having a hole formed therethrough, a shoulder portion inside the hole of said base plate, and an inner thread around one end of the hole of said base plate;
a nipple inserted through the hole of said base plate, the nipple having an outward flange at one end abutting the shoulder portion of said base plate; and
a locating member fastened to said base plate to secure said nipple to said base plate, said locating member comprising a circular bottom plate having an outer thread around the periphery threaded into the inner thread of said base plate, means located on top of said circular bottom plate for maintaining said nipple in close contact with one side of said base plate, a center hole formed through said circular bottom plate for receiving said thermometer, and a stub tube extending upwardly from said circular bottom plate around the center hole of said locating member and fitted into the hole of said base plate.

5,611,623
APPARATUS FOR COLLECTING LIQUID TEMPERATURE DATA FROM A FUEL TANK
John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Division of Ser. No. 185,336, Jan. 24, 1994. This application Jun. 6, 1995, Ser. No. 468,100
Int. Cl.[6] G01K *7/24*
U.S. Cl. 374—170 **2 Claims**



1. An apparatus for collecting temperature data from a tank containing fluid in a vehicle having a multiplexed data bus system, comprising:
thermal sensitive resistive means, immersed in said fluid, for providing a resistance dependent upon the temperature of said fluid;
capacitive storage means, charged by said thermal sensitive resistive means, for storing a charge indicative of the temperature of said fluid;
discharge resistive means, in communication with said capacitive storage means, for providing a discharge path for said charge;
reference value means for providing a reference voltage value;
gating means, in communication with said capacitive storage means and said discharge resistive means, for controlling the discharge path between said capacitive storage means and said discharge resistive means;
clock means for providing a clock cycle signal; and
processing means, in communication with said discharge resistive means, said clock means, said gating means and said reference value means, for controlling said gating means to selectively furnish said discharge path, for monitoring the instant value of the voltage of said discharge resistive means, for comparing said instant voltage value to said reference voltage value, for receiving and counting the number of clock cycles for which a predetermined relationship exists between said instant voltage value and said reference voltage value, and for determining the absolute temperature of said fluid based upon said count.

5,611,624

DEVICE AND METHOD FOR DIGITALLY MEASURING A VOLTAGE VARYING WITHIN A GIVEN RANGE, AND USES THEREOF

Jean-Marc Tornare, Toulouse, France, assignor to Siemens Aktiengesellschaft, Munich, Germany

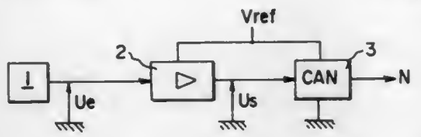
PCT No. PCT/EP94/00297, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/18445, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 2, 1994, Ser. No. 448,550

Claims priority, application France, Feb. 10, 1993, 93 01468

Int. Cl.[6] G01K *7/02*; **F02D** *41/24*

U.S. Cl. 374—179 **9 Claims**



1. A method of digitally measuring an analog voltage which varies within a predetermined voltage range defined between a lower voltage and an upper voltage, the method which comprises:

supplying an analog/digital converter with a reference voltage;

amplifying a voltage to be measured with a gain proportional to a ratio between the reference voltage and a breadth of a voltage range within which the voltage to be measured varies;

amplifying the reference voltage with a gain proportional to the ratio between a lower voltage of the voltage range and the breadth of the voltage range;

forming a difference between amplified voltages obtained in the foregoing amplifying steps, and supplying the difference as an input signal to an analog input of the analog/digital converter; and

converting the analog signal received at the analog input to a digital signal in the analog/digital converter, and issuing the digital signal as a measurement result at an output of the analog/digital converter.

5,611,625

MULTIPURPOSE BAG

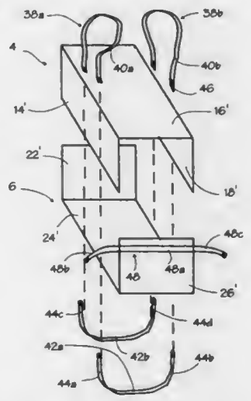
Michel L. Legendre, 57 Michaud, Gatineau, Québec, Canada

Filed Sep. 27, 1995, Ser. No. 534,412

Claims priority, application Canada, Dec. 28, 1994, 2139143

Int. Cl.[6] B65D *30/10*

U.S. Cl. 383—4 **9 Claims**



1. A multipurpose bag comprising:

a top section convertible to a first mattress comprising spaced apart first and second parallel fold lines defining a first, second and third top area, said second top area being disposed between said first and third top area, said first top area having substantially the same size and shape as said third top area, said top section includes a first perimeter;

a bottom section convertible to a chair or a second mattress comprising spaced apart third and fourth parallel fold lines defining a first, second and third bottom area, said third bottom area having an upper end, said second bottom area being disposed between said first and third bottom area, said first bottom area having substantially the same size and shape as said third bottom area, said bottom section includes a second perimeter;

fastening means disposed along the first and second perimeters for fastening said top section to said bottom section so as to form a bag;

strap means including removable handle portions for carrying said bag and strap portions disposed on said second bottom area; and

a side strap disposed on the upper end of said third bottom area for connecting to said strap means so as to retain said third bottom area in a generally perpendicular position relative to said first and second bottom areas to form a chair, said side strap and strap means being sufficiently strong and disposed in such a manner as to prevent said chair from folding when in use.

5,611,626

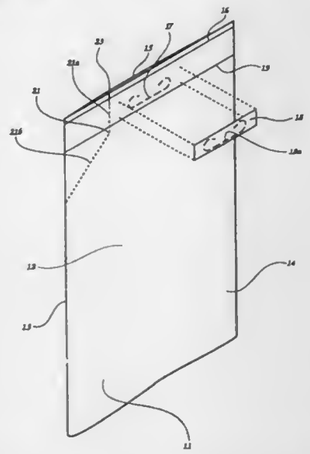
BAG WITH REENFORCED HANDLE AND RESEALABLE POUR SPOUT OPENING

Charles J. Warr, High Point, N.C., assignor to Rex-Rosenlew International Incorporated, Thomasville, N.C.

Continuation of Ser. No. 509,831, Aug. 1, 1995, Pat. No. 5,558,438, which is a continuation-in-part of Ser. No. 500,173, Jul. 10, 1995. This application Mar. 26, 1996, Ser. No. 621,575

Int. Cl.[6] B65D *33/08;33/20*

U.S. Cl. 383—10 **8 Claims**



1. In a bag including first and second walls having joined first and second opposed side edges, an end edge, at least one seal line spaced from the end edge and extending laterally from one side edge to the other for sealing closed the end of the bag, a die cut opening defining a handle in the first and second walls adjacent to the end edge for receiving a hand therethrough, and a plurality of spaced-apart perforations formed in both of the first and second walls, the perforations defining a tear line for being torn in a progressively tearing motion to form an opening in the bag from which the contents of the bag can be poured, the improvement comprising handle reenforcement and resealing means, and comprising; a strip of sheet material secured by a pressure sensitive adhesive to at least one of the first or second walls of the bag and positioned in reenforcing relation to the die cut handle for providing reinforcement to the handle when the bag is being carried by the handle, said strip being removable from its reenforcing position on the handle and repositioned over the pour spout opening in the bag and secured in place by the pressure sensitive adhesive for sealing the opening in the bag to retain remaining contents therein.

5,611,627

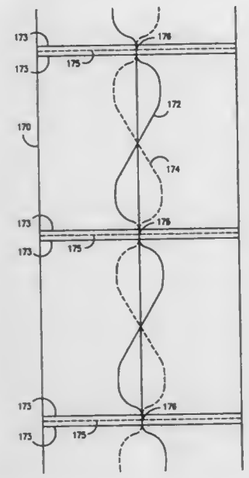
EASY OPEN THERMOPLASTIC BAG

William P. Belias, and Edward A. Vaquero, both of Fairport, N.Y., assignors to Tenneco Packaging, Evanston, Ill.

Continuation-in-part of Ser. No. 392,645, Feb. 23, 1995. This application Jun. 7, 1995, Ser. No. 478,122

Int. Cl.[6] B65D *33/16*

U.S. Cl. 383—37 **1 Claim**



1. A plurality of thermoplastic bags wound into a continuous roll, said bags comprising a first layer and a second layer, said first and second layers joined along a pair of opposing sides and a bottom bridging said sides so as to form an open mouth, said first and second layers including respective leading edges opposing said bottom and bridging said sides, said leading edges of said respective layers being profiled such that when the bag is in lay flat condition, at least one portion of said first layer does not overlap with said second layer and at least one portion of said second layer does not overlap with said first layer, said leading edges of said respective layers including respective linear regions located near said opposing sides and oriented generally perpendicular to said opposing sides, said first and second layers being in continuously overlapping relationship along said linear regions, said opposing sides including a heat seal line generally parallel to each of the opposing sides, said heat seal lines extending along the entire length of the sides and terminating at a point within the linear regions of the leading edges of said bags, said opposing sides further including a perforated line extending along the sides of the bags for separating them from said continuous roll.

5,611,628

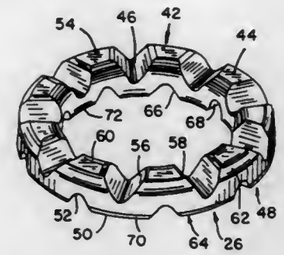
SELF-ADJUSTING BEARING

Douglas J. Brouwer, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Division of Ser. No. 300,027, Sep. 2, 1994, Pat. No. 5,531,524. This application Dec. 28, 1995, Ser. No. 580,221

Int. Cl.[6] F16C *17/04*

U.S. Cl. 384—220 **10 Claims**



1. A bearing positionable around a shaft that is rotatable in a coaxial sleeve such that the bearing mediates between a lateral surface that rotates with the shaft and another surface with respect to which the lateral surface is in relative movement, the bearing comprising a generally ring-shaped member having:

an upper undulating surface with a first set of axially extending peaks and valleys, and

a lower undulating surface with a second set of axially extending peaks and valleys;

the generally ring-shaped member having an adjustable top-to-bottom height;

wherein the bearing is sufficiently flexible such that its height can be changed in response to axially exerted force and wherein at least one peak is a plateau that forms a bearing surface, said at least one peak being in the form of a truncated pyramid.

5,611,629

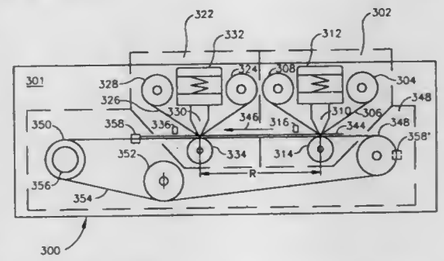
MULTIPLE PRINT HEAD NONIMPACT PRINTING APPARATUS

Suresh C. Paranjpe, 2105 Ridge Pointe Dr., Lake Oswego, Oreg. 97034

Continuation of Ser. No. 57,538, May 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 47,144, Apr. 12, 1993, which is a continuation-in-part of Ser. No. 39,871, Mar. 30, 1993, Pat. No. 5,445,463. This application Sep. 2, 1994, Ser. No. 300,698

Int. Cl.[6] B41J *3/54*

U.S. Cl. 400—82 **7 Claims**



1. A printer comprising:

a first multi-color elongate ribbon installed in the printer;

a second multi-color elongate ribbon installed in the printer;

the first and second elongate ribbons each bearing on a surface thereof two or more panels of transfer material adapted to transfer an image onto a substrate;

first and second print heads each disposed in cooperation with a corresponding one of the first and second ribbons, respectively, for selectively transferring an image onto the substrate;

means for applying a first application of energy from the first print head to the first ribbon transfer material according to a first predetermined set of operating parameters for transferring an image from the first ribbon to the substrate; and

means for applying a second application of energy from the second print head to the second ribbon transfer material according to a second predetermined set of operating parameters for transferring an image from the second ribbon to the substrate;

wherein the first ribbon transfer material comprises, in combination, an ink, means for releasing the ink, and means for adhering the ink to the substrate in a thermal transfer process; and

the second ribbon transfer material comprises a dye diffusion type of transfer material different from the first transfer material for transferring the image to the substrate using a sublimation transfer process so that two different types of ribbons are available on demand for printing in a single non-impact printer.

5,611,630

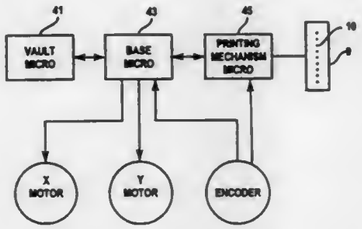
METHOD AND APPARATUS FOR SECURELY PRINTING A POSTAL INDICIA IMAGE HAVING A DIFFERENT DOT DENSITY IN TWO DIMENSIONS THEREOF

Donald T. Dolan, Ridgefield; Beth A. Jennings, Bridgeport; Charles F. Murphy, III, Milford, and Claude Zeller, Monroe, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1995, Ser. No. 579,503

Int. Cl.[6] B41J *2/36*

U.S. Cl. 400—120.09 **9 Claims**



1. A method for printing a postal indicia with a printhead having a single row of nozzles comprising the steps of:

A. printing via the single row of nozzles a first dot-matrix ink pattern of the postal indicia; and

B. printing via the single row of nozzles a second dot-matrix ink pattern of a portion of the postal indicia in overlapping relationship to the first dot-matrix ink pattern such that a combination of the first and second dot-matrix ink patterns results in a combined dot-matrix pattern of the postal indicia having a first dot density along its length and a second dot density along its height, the first and second dot densities being different from each other but sufficient in combination to permit detection of the combined dot-matrix ink pattern by a facer/canceler machine.

5,611,631

IMPACT PRINTER WITH REDUCED ELECTROCORROSION USING ZENER DIODE FOR STATIC DISCHARGE

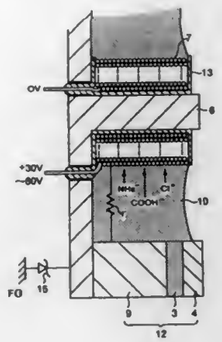
Noboru Ooishi; Hirokazu Andou; Toshiro Suemune, and Mitsuru Kishimoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,751

Claims priority, application Japan, Apr. 15, 1994, 6-102017

Int. Cl.[6] B41J *2/235*

U.S. Cl. 400—124.11 **3 Claims**



1. An impact printer, comprising:

a print head having:

a head frame including a permanent magnet for generating magnetic flux;

a demagnetizing coil for having a coil voltage selectively applied thereto to generate counter-magnetic flux for canceling out the magnetic flux from the permanent magnet, the demagnetizing coil generating heat during operation thereof; and

a filling compound disposed between the demagnetizing coil and the head frame, the filling compound mechanically supporting the demagnetizing coil and dissipating the heat generated by the demagnetizing coil, the filling compound presenting a resistance between the head frame and the demagnetizing coil, the coil voltage causing a leakage current from the demagnetizing coil across the filling compound to the head frame, the leakage current comprising a flow of filling compound ions;

a printer chassis acting as an electrical frame ground; and

a Zener diode coupled in series between the head frame and the chassis, the Zener diode operating in breakdown and non-breakdown modes defined by a reverse breakdown voltage higher than the coil voltage such that the Zener diode normally operates in the non-breakdown mode, the Zener diode permitting a non-breakdown reverse current to flow when in the non-breakdown mode, the non-breakdown reverse current having a maximum value not exceeding one microampere, the maximum value of the non-breakdown reverse current limiting the leakage current from the demagnetizing coil across the filling compound to the head frame, wherein the leakage current is reduced as compared with the leakage current when the head frame is grounded to the chassis.

5,611,632

RECORDING APPARATUS HAVING BIASED RECORDING MEANS

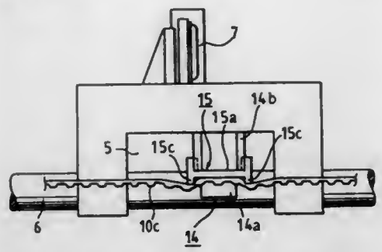
Soichi Hiramatsu, and Tetsuo Suzuki, both of Yokobama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 68,608, May 27, 1993, abandoned, which is a continuation of Ser. No. 654,192, Feb. 12, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 428,798

Claims priority, application Japan, Feb. 13, 1990, 2-29717; Feb. 13, 1990, 2-29718

Int. Cl.[6] B41J *19/20*

U.S. Cl. 400—335 **22 Claims**



1. An apparatus having a carriage for moving along a sheet member and holding a head member, said apparatus comprising:

a guide member for guiding said carriage along and adjacent to the sheet member;

drive force transmitting means for transmitting a driving force to said carriage for moving said carriage along said guide member; and

fixing means for fixing said carriage to said drive force transmitting means, said fixing means biasing said drive force transmitting means in a direction away from said carriage so that said carriage is biased in a direction toward the sheet member, wherein said fixing means includes a fixing member and a transmitting means sustaining member for securing said drive force transmitting means in said fixing member and said fixing member includes a plurality of depending legs for biasing said drive force transmitting means in the direction away from said carriage wherein said fixing member and said sustaining member are separate elements capable of being attached and detached.

5,611,633

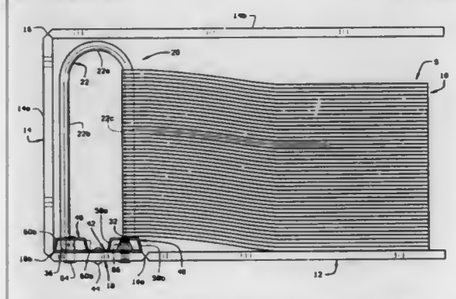
RING BINDER ASSEMBLY

Paul Whaley, 208 Aldergate, Bonne Terre, Mo. 63126

Filed Jun. 27, 1996, Ser. No. 671,063

Int. Cl.[6] B42F *3/00*

U.S. Cl. 402—60 **20 Claims**



1. A binder for use in storing sheets of paper having punched holes in them comprising:

first and second end leafs respectively forming outer covers of the binder;

a center plate positioned intermediate said respective end leafs for one side of each of said end leafs to flexibly attache to a side of said center plate for sheets of paper and other hole punched material to be stored in said binder between said end leafs;

ring means for holding sheets of paper and movable from a first and closed position to a second and open position in which sheets of paper are inserted into or removed from said binder by moving the holes punched in the paper relative to an end of said ring means exposed when said ring means is in its open position;

first channel means to which one end of said ring means is attached, said first channel means being movable relative to said center plate to move said ring means to the open position;

second channel means in which said exposed end of said ring means is covered when said ring means is in the closed position, said first channel means also being movable relative to said second channel means; and,

locking means for locking said ring means in the closed position, said exposed end of said ring means being secured in a locked position by said locking means when said ring means is in its closed position thereby to secure the paper in the binder.

5,611,634

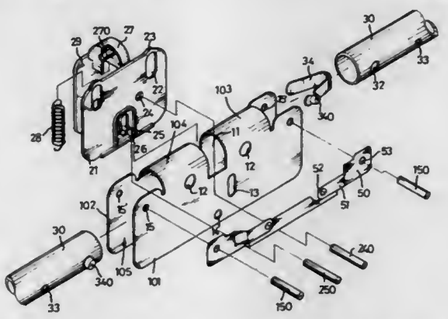
PIVOTAL DEVICE FOR A PLAYPEN

Kun Wang, No. 51, Lane 31, Sec. 2, Changping Rd., Taichung, Taiwan

Filed Jan. 11, 1996, Ser. No. 584,078

Int. Cl.[6] A47D *7/00*

U.S. Cl. 403—102 **4 Claims**



1. A pivotal device for a playpen comprising at least three pairs of siderails, each pair of said siderails pivotally connected by said pivotal device, each of said siderails having a first end connecting to a column of said playpen and a second end pivotally connected to said pivotal device which comprises:

a connector composed of a first plate and a second plate, an upper edge of each one of said first and said second plates being connected by a first bridging element and a second bridging element connected therebetween so as to define a passage between said first and said second plates beneath said first and said second bridging elements, a cutaway defined between said first and said second bridging elements, each of said first plate and said second plate having a first hole defined in each one of two ends thereof, a first elongated slot and a second hole defined in each of said first and said second plates between said two first holes wherein said second hole is located below said first elongated slot, a third hole defined in each of said first and said second bridging elements and located on a side corresponding to said first plate;

said second end of each of said siderails having two fourth holes defined diametrically opposite therein and a fifth hole defined in the siderail, a resilient element received in each of said siderails and having a first protrusion extending through said fifth hole;

a locking member mounted to said connector and having a front plate and a rear plate between which a cap element connects, said front plate having two oval holes and a sixth hole respectively defined therein, a second elongated slot defined in said front plate wherein a tongue extends from an inner periphery defining said second elongated slot and said tongue having an enlarged portion formed at a distal end thereof, a rod disposed to said cap element; and

said second end of each of said siderails is pivotally received in one of two ends of said connector by securely extending a first pin through said first hole of said first plate, said fourth holes of said siderail and said first hole of said second plate, said first protrusion extending through said corresponding fifth hole of said siderail, said third hole of said connector and said oval hole of said locking member, a second pin securely extending through said sixth hole of said front plate and said two first elongated slots of said connector, a third pin securely extending through said second elongated slot of said locking member and said two second holes of said connector wherein a spring is connected between said rod and said third pin.

5,611,635

BALL JOINT

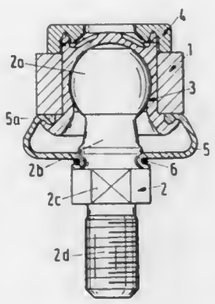
Hans-Joachim Schütt, Berheim; Lothar Broszat, Monheim; Theo Heep, Krefeld, and Wolfgang Prickler, Kaarst, all of Germany, assignors to TRW Fahrwerksysteme GmbH & Co. KG, Dusseldorf, Germany

Filed Sep. 15, 1995, Ser. No. 529,142

Claims priority, application Germany, Sep. 22, 1994, 44 33 762.0

Int. Cl.[6] F16C *11/06*

U.S. Cl. 403—141 **12 Claims**



1. Ball joint comprising a housing (**1**) provided with a cylindrical receptacle opening (**1***a*) and a gudgeon (**2**) arranged in a ball socket (**3**) made of plastic such that it is able to rotate and pivot within a limited range, wherein the outer surface (**3***b*) of said ball socket that corresponds with the inner diameter of the receptacle opening (**1***a*) is, after the assembly process, fixed in the radial direction and secured in the axial direction by means of annular shoulders (**3***c*, **4***a*), one of which (**3***c*) is situated on an annular flange that surrounds the opening (**3***a*) of the ball socket (**3**) on the side of the gudgeon, characterized by the fact that the annular shoulder (**4***a*) that cooperates with the upper side of the housing (**1**) is arranged on a ring (**4**) forming, before the assembly process, a separate member which is, after the assembly process, connected with the ball socket (**3**) forming a unit with said ball socket.

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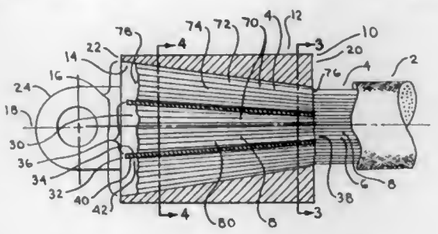
TENSION MEMBER TERMINATION WITH SEGMENTED POTTING SOCKET AND CENTRAL PASSAGE

John F. Flory, 4 Tower La., Morristown, N.J. 07960

Continuation-in-part of Ser. No. 90,771, Jul. 13, 1993, Pat. No. 5,415,490. This application May 10, 1995, Ser. No. 438,354

Int. Cl.[6] F16G *11/00*

U.S. Cl. 403—269 **16 Claims**



1. A termination for a tension member comprising:

a socket barrel,

a cavity peripheral wall forming a major cavity within said barrel,

said major cavity being substantially symmetrical about a principal cavity axis,

a sleeve within said major cavity,

an interior peripheral wall within said sleeve,

said interior peripheral wall forming a central passage in said sleeve,

said central passage being substantially symmetrical about a principal sleeve axis,

at least one component of said tension member extending into said central passage,

an exterior peripheral wall on said sleeve,

a plurality of plates attached to said sleeve exterior peripheral wall,

said plates extending outward from said sleeve exterior peripheral wall,

said plates substantially extending to said cavity peripheral wall,

said plates positioning said principal sleeve axis substantially along said principal cavity axis,

said plates substantially dividing said major cavity into a plurality of minor cavity segments,

a plurality of broomed out elements of said tension member extending into each of said minor cavity segments,

resinous material inserted into said minor cavity segments and forming a mixture with said tension member elements,

wherein said mixture of tension member elements and resinous material forms plugs within said minor cavity elements when said resinous material becomes hard.

5,611,637

FURNITURE FITTING

Klaus Brüstle; Emanuel Netzer, both of Höchst, and Edgar Huber, Hard, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Aug. 21, 1995, Ser. No. 518,604

Claims priority, application Austria, Aug. 26, 1994, 1644/94

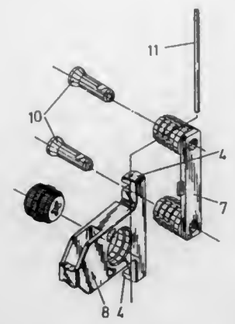
Int. Cl.[6] F16B *2/04*

U.S. Cl. 402—297 **10 Claims**

1. A furniture fitting for connecting parts of an article of furniture, said fitting comprising:

at least one dowel to be inserted into a hole in one furniture part;

an expansion member positioned within said dowel, said expansion member having an expansion surface and being movable axially relative to said dowel between a relaxed position enabling said dowel to be inserted into the hole and an expanded position, whereat said expansion surface expands said dowel, enabling said dowel to be locked in the hole; and



a holding member to be connected to another furniture part, said holding member being connected to an end of said expansion member by a shaft for pivotable movement about said shaft, said holding member having a cam surface for abutment with a surface fixed relative to said dowel, such that pivotal movement of said holding member causes said cam surface to abut said surface fixed relative to said dowel and said holding member to move said expansion member axially of said dowel to move to or from said expanded position thereof.

5,611,638

CONNECTING DEVICE FOR SELECTIVELY CONNECTING A PATIENT SUPPORT MEANS WITH THE SUPPORT COLUMN OF AN OPERATING TABLE

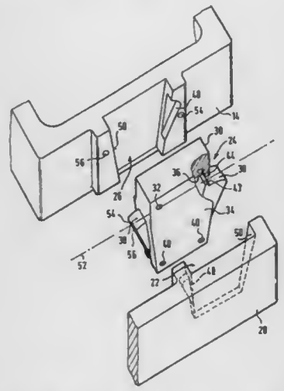
Holger Dörr, Rastatt, and Hermann Kieferle, Gaggenau, both of Germany, assignors to Stierlen-Maquet AG, Rastatt, Germany

Filed Jun. 28, 1995, Ser. No. 496,082

Claims priority, application Germany, Jul. 4, 1994, 44 23 374.4

Int. Cl.[6] A47C *19/00*

U.S. Cl. 403—327 **2 Claims**



1. A connecting device for selectively connecting a patient support means (**18**) with a support column (**10**) of an operating table or a transport carriage (**16**), including at least two pin shaped connecting elements (**24**) adapted for fastening to the patient support means (**18**), which connecting elements are insertable into pin receivers in the column and carriage, each of the connecting elements (**24**) having at least two latching elements (**38**) which are so movably supported as to be adjustable between a latching position and an unlatching position, and wherein through relative movement between the transport carriage (**16**) and the support column (**10**) resulting in the transfer of the patient support means from the column (**10**) to the transport carriage (**16**), or the reverse, each connecting element is received at the same time in a column pin receiver (**26**) and a carriage pin receiver (**22**), each pin receiver (**26**, **22**) further having a detent recess (**46**) for receiving one of the latching elements (**38**) in its latching position and also having a control surface (**50**) associated with the other latching element (**38**) which control surface (**50**) upon reception of the connecting element (**22**) by the receiver transfers this other latching element (**38**) to its unlatched position, and wherein when a connecting element is received at the same time by two receivers each latching element (**38**) of the so received connecting element (**24**) has associated with it a detent recess (**48**) of one of said two receivers (**26**,**22**) (column, carriage) and the control surface (**50**) of the other of said two receivers (**22**,**26**) (carriage, column), characterized in that associated with each of the latching elements (**38**) is a sensor (**54**,**56**) for detecting the latching position of the associated latch element (**38**), each of the sensors includes a Hall-detector (**54**,**56**) which is arranged in the column pin receiver (**26**) and which is associated with a magnet arranged in one of the latching elements (**38**), the latching elements (**38**) are formed as pawls pivotally supported in the connecting element, each of which pawls has two sections of which one section is adapted to be received in the detent recess of a pin receiver (**26**,**22**) of the support column (**10**) or of the support carriage (**16**) and the other section of which is adapted to engage the control surface (**50**) of the pin receiver (**22**,**26**) of the other component (**16**,**10**), transport carriage, support column, and in that in the carriage pin receiver (**22**) between the point (**64**) at the detent recess (**48**) which lies opposite to the magnet **60** in the pawl (**38**) in the latching position of the pawl (**38**), and the point (**66**) which the Hall detector (**56**) lies opposite to upon latching of the pawl (**38**), a magnetic field transmitting device (**32**) is arranged.

5,611,639

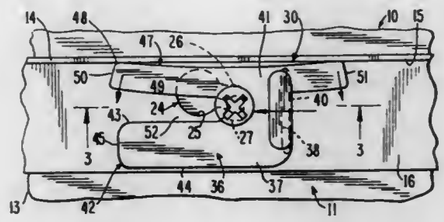
LOCKING FASTENER CONSTRUCTION

Nat Levenberg, 2 Windsor Pl., Lynbrook, N.Y. 11510

Filed Nov. 13, 1995, Ser. No. 558,623

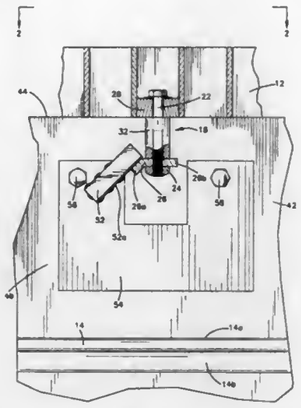
Int. Cl.[6] F16B *5/06*

U.S. Cl. 403—397 **2 Claims**



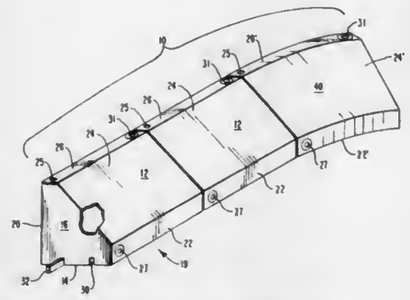
1. In combination, an improved locking fastener and a pair of separable structural members, the structural members including a base member having an abutting surface and an abutable member including a main wall perpendicular to said abutting surface and including a laterally extending flange, said flange having a surface adapted to abut said abutting surface on said base member; said locking fastener including at least one beaded shank projecting from said abutting surface, said laterally extending flange having at least one opening engageable with said beaded shank, said opening including a slotted portion corresponding in width to the diameter of said shank and extending in a direction perpendicular to the plane of said wall; said fastener comprising a resilient clip element slidably engageable with said headed shank and said main wall to maintain said shank in engagement with said slotted portion; said clip element including a resilient leg slidably engaging a surface of said main wall, and a second relatively non-resilient leg, said resilient and non-resilient legs forming a channel selectively gripping said shank.

5,611,640
METHOD AND APPARATUS FOR ANCHORING A UTILITY GRATE COVER
Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126
Continuation of Ser. No. 250,272, May 27, 1994. This application Aug. 22, 1995, Ser. No. 517,656
Int. Cl.[6] E02D *29/14*
U.S. Cl. 404—4 **12 Claims**



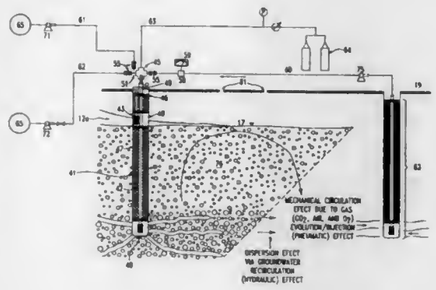
1. A frame insert for raising the level of a drainage grate cover with respect to a catch basin frame comprising:
a top surface for engaging and supporting a drainage rate cover;
a bottom surface for engaging a top surface of a rim of the catch basin frame, the rim having an angled surface below the top surface of the rim;
an inner wall located between said top and bottom surfaces defining a drainage opening; and
a lug projecting from said inner wall into said drainage opening, said lug having a planar lower surface extending at an angle that is approximately the same as an angle that the angled surface extends with respect to the top surface of the rim, said lug being adapted to have its lower surface engaged by a lock connected to the grate cover.

5,611,641
CROWD CONTROL BARRIER SYSTEM
Marc E. Christensen, 364 N. Main St., #2, Salt Lake City, Utah 84103
Continuation-in-part of Ser. No. 278,495, Jul. 20, 1994, Pat. No. 5,452,963. This application Sep. 26, 1995, Ser. No. 533,738
Int. Cl.[6] E01F *13/02*
U.S. Cl. 404—6 **23 Claims**



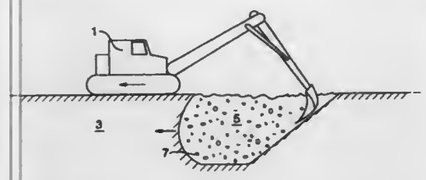
10. A crowd control barrier system comprising:
(a) a portable, reusable container made from a resiliently deformable material and having an interior surface defining a cavity therein, the container further having an exterior surface defining an opening in communication with the cavity to enable the cavity to be filled with a ballast material, the container further comprising a bottom, opposing sides, opposing ends, and a top;
(b) means for coupling adjacent ends of a pair of individual containers, the coupling means comprising:
(i) an elongated slot recessed within the bottom of the container and extending through one of the ends;
(ii) an elongated member configured to be received within the elongated slot so as to project out of one of the containers, the elongated member also being so sized and configured that as the ballast material is filled into the cavity, the resiliently deformable material of the cavity deforms, clamping the elongated member within the elongated slot.

5,611,642
REMEDIATION APPARATUS AND METHOD FOR ORGANIC CONTAMINATION IN SOIL AND GROUNDWATER
James T. Wilson, 61 Malibu Dr., Eatontown, N.J. 07724
Division of Ser. No. 371,225, Jan. 11, 1995, Pat. No. 5,525,008. This application Nov. 13, 1995, Ser. No. 556,278
Int. Cl.[6] E02D *3/00;* **E21B** *43/04*
U.S. Cl. 405—128 **2 Claims**



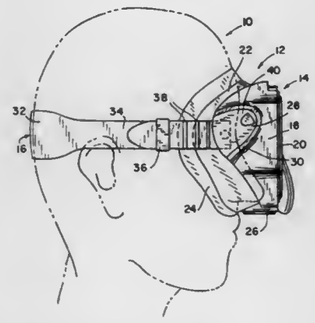
1. An injector assembly for the in-situ treatment and remediation of a contaminated underground area that contains chemical contaminants, the assembly comprising:
a cylindrical casing placed within a borehole made within the Earth and in axial alignment with said borehole such that a void exists between said casing and said borehole;
an injector mixing head having an internal central cavity and one or more ports in communication with said central cavity and one or more outlets in communication with said central cavity, said injector mixing head being attached to topmost portion of said casing at said outlet of said mixing head;
a screen assembly attached to bottommost portion of said casing such that a second void exists between said screen assembly and said bottom-most portion of said borehole;
a gravel packing placed within said borehole and contacting said screen assembly and said borehole up to and including the height of said screen assembly;
a sealing element placed within said borehole above said screen assembly which contacts said casing and said borehole thereby effectively sealing the bottommost portion of the borehole;
a grout packing placed within the borehole above said sealing element, said grout contacting said casing and said borehole for a length of said casing and said borehole above said sealing element thereby sealing the borehole above said sealing element.

5,611,643
PROCESS FOR THE CONSTRUCTION OF TRENCHES
Gilbert R. Tallard, Pelham, N.Y., assignor to Envirotrench, Pelham, N.Y.
Filed Aug. 10, 1995, Ser. No. 513,548
Int. Cl.[6] E02D *17/12;* **F16L** *57/00*
U.S. Cl. 405—157 **5 Claims**



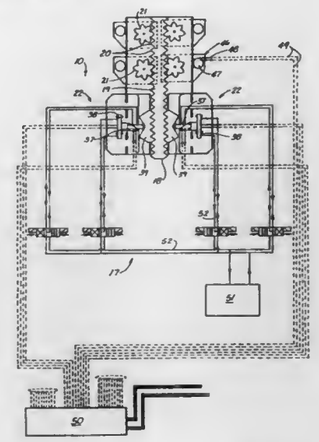
1. In the process for the construction of trenches in ground containing water and/or gas wherein a trench is dug in said ground, support media is introduced in said trench to support the walls formed by the trenching, vapor or water conduit means are placed in the trench and the trench with this support media is back-filled with particular material to dispose and remove the support media from the trench, the improvement comprising employing as said support media a hydrated cross linked acrylic polymer.

5,611,644
BUCKLE FOR A DIVING MASK
James R. Lutz, Round Lake Beach, Ill., assignor to Johnson Worldwide Associates, Sturtevant, Wis.
Filed Nov. 9, 1995, Ser. No. 552,499
Int. Cl.[6] B63C *11/02*
U.S. Cl. 405—186 **16 Claims**



1. A diving mask assembly comprising:
a mask including:
a frame;
a lens mounted in the frame;
a skirt mounted to the frame; and
a strap retainer mounted to the frame, the strap retainer having a buckle plate pivotably mounted to the frame for pivotable motion about a first axis and a swivel mechanism pivotably mounted between the frame and the buckle plate for pivotable motion about a second axis, the second axis being generally transverse to the first axis; and
a mask strap adjustably engaged with the swivel mechanism, wherein the buckle plate cooperates with the swivel mechanism and is selectively pivoted to permit adjustment of the mask strap.

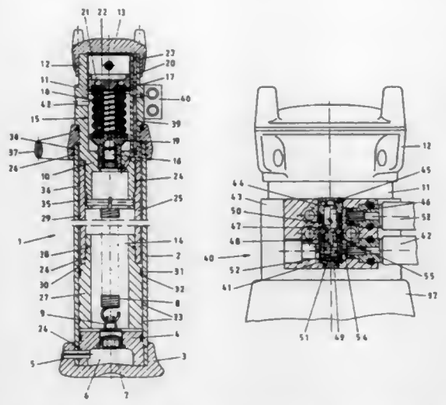
5,611,645
OFFSHORE JACK-UP RIG LOCKING SYSTEM
John Breeden, 810 N. Beach Blvd., Bay St. Louis, Miss. 39520
Division of Ser. No. 254,121, Jun. 6, 1994, Pat. No. 5,486,069. This application Oct. 11, 1995, Ser. No. 541,162
Int. Cl.[6] E02B *17/00;17/06*
U.S. Cl. 405—196 **14 Claims**



1. A method for fixation the legs of a jack-up unit to the hull of a jack-up unit wherein each leg has a chord rack with teeth engaged by a jack tower having rotary element that elevates and lowers the legs relative to the hull comprising:
a) lowering the legs to engage the sea bottom;
b) preloading the legs to storm load conditions;
c) dumping the preload;
d) elevating the hull to an operating position;
e) forming a connection between the teeth of each leg chord rack and its jack tower rotary element with a remote and automatic fixation unit that enables the user to form the connection without any local visual assistance; and
f) using the rotational position of the rotary element to define the position of the leg chord rack teeth relative to the pinion gear teeth.

5,611,646
SUPPORT PROP WITH INTEGRATED PRESSURE LIMITING VALVE AND NAILED PIPES
Richard Voss, Schwerte, Germany, assignor to Richard Voss Grubenausbau GmbH, Schwerte, Germany
PCT No. PCT/DE94/00792, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO95/02748, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 9, 1994, Ser. No. 403,838
Claims priority, application Germany, Jul. 14, 1993, 43 23 462.3
Int. Cl.[6] E21D *15/44*
U.S. Cl. 405—290 **13 Claims**

1. A support prop for underground mining comprising telescopic external and internal props, a crown head connected to the internal prop, a collar ring and a sole plate also connected to the internal prop, a pressure limiting valve integrated into the head, a filling and drawing valve positioned on the internal prop, wherein the external prop, the sole plate, the internal prop and the crown head are nailed, a piston movable within the external prop, the internal



prop and the piston having a corresponding screw thread, and wherein the filling and drawing valve is a first pilot controlled check valve with two setting gun connections.

5,611,647

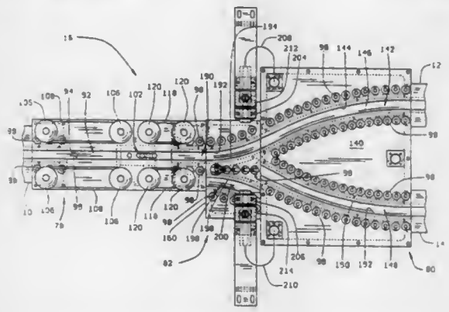
DIVERTER FOR BOTTLE AIR CONVEYOR

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Inc., Fenton, Mo.

Filed Aug. 17, 1994, Ser. No. 292,079

Int. Cl.[6] B65G *51/02*

U.S. Cl. 406—88 **28 Claims**



1. A conveyor for conveying containers, each container having a body, the conveyor comprising:

an input conveyor having a length extending in a downstream direction;

at least two separate output conveyors each having a length extending in the downstream direction; and

a diverter positioned between the input conveyor and the output conveyors, the diverter being selectively moveable for conveying the containers from the input conveyor to the output conveyors and selectively directing the containers from the input conveyor to one of the output conveyors, the diverter having at least two laterally spaced support surfaces configured to support the containers as the containers are conveyed along the diverter, the support surfaces defining a directional slot, the support surfaces and the directional slot all remaining fixed relative to one another while the diverter is moved.

5,611,648

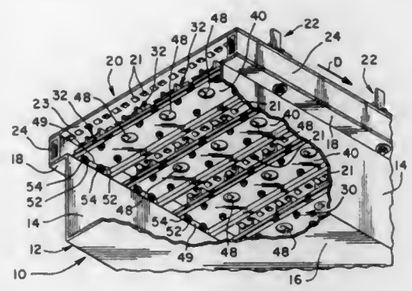
AIR CONVEYING SUPPORT STRUCTURE FOR CONVEYING ARTICLES ALONG AN AIR CONVEYOR

Ronald A. Lenhart, Lakewood, Colo., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jan. 26, 1996, Ser. No. 592,216

Int. Cl.[6] B65G *51/03*

U.S. Cl. 406—88 **15 Claims**



1. An air conveying device support structure for conveying articles from an upstream location to a downstream location, said air conveying device support structure comprising:

a deck plate having an upper surface, with a plurality of louvers therethrough, along which the articles are conveyed and an underside;

a plurality of upper support members selectively spaced laterally from each other across said underside of said deck plate and having a length extending longitudinally therealong, each of said upper support members having side walls defining a passageway extending a length therethrough, each said passageway communicating with said underside of said deck plate; and

a plurality of lower support members attached to said plurality of upper support members and selectively spaced longitudinally along said underside of said deck plate and extending laterally thereacross, each of said lower support members including at least one opening which communicates with said underside of said deck plate;

wherein said upper support members are between said deck plate and said lower support members.

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ELEMENTS FACED WITH SUPERHARD MATERIAL

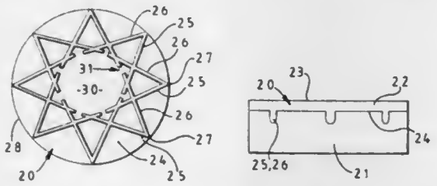
Terry R. Matthias, Longlevens, England, assignor to Camco Drilling Group Limited, Stonehouse, England

Filed Jun. 16, 1995, Ser. No. 491,537

Claims priority, application United Kingdom, Jun. 18, 1994, 9412247

Int. Cl.[6] B23B *27/14*

U.S. Cl. 407—118 **12 Claims**



1. A preform element including a facing table of superhard material having a front face, a periphery, and a rear surface bonded to a substrate which is less hard than the superhard material, the rear surface of the facing table being formed with an array of elongate ribs which project from the facing table into the substrate, the array comprising a plurality of pairs of ribs spaced substantially equally apart around the facing table, the ribs of each pair being arranged in a generally V-shape formation with the apex of the V-shape located adjacent the periphery of the facing table so that the ribs diverge as they extend inwardly away from said periphery, and wherein each rib of a pair of diverging ribs meets and joins a rib of an adjacent pair of diverging ribs.

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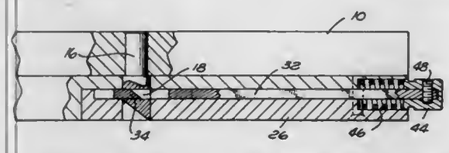
TOOLING PLATE MOUNTING ASSEMBLY WITH INTERLOCKING PINS

Richard W. Perkins, Van Nuys, and Bradley L. Read, Los Angeles, both of Calif., assignors to Laurence/Wayne, Van Nuys, Calif.

Filed Aug. 16, 1995, Ser. No. 515,622

Int. Cl.[6] B23Q *3/00*

U.S. Cl. 408—87 **8 Claims**



1. A tool plate mounting system for a tooling plate, comprising:

a pin that extends from the tooling plate;

a base plate which has a mounting aperture that receives said pin;

an armature that moves relative to said base plate, said armature engages and captures said pin when said pin is inserted into said mounting aperture of said base plate to secure the tooling plate to said base plate; and,

a button that can be depressed to disengage said armature from said pin so that the tooling plate can be separated from said base plate.

5,611,651

BORING TOOL

Manfred Wohlhaupter, Neuffen; Harold Gähr, Frickenhausen; Peter Maar, Frickenhausen, and Rolf Wohlhaupter-Hermann, Frickenhausen, all of Germany, assignors to Wohlhaupter GmbH, Frickenhausen, Germany

PCT No. PCT/EP93/03277, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO94/13420, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 23, 1993, Ser. No. 436,352

Claims priority, application Germany, Dec. 14, 1992, 42 42 063.6

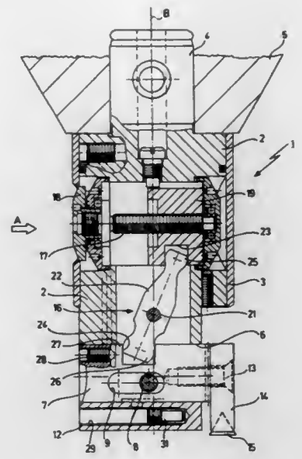
Int. Cl.[6] B23B *3/24*

U.S. Cl. 408—153 **6 Claims**

1. Boring tool comprising a tool body adapted to be clamped into a rotatingly driven spindle and rotating with said spindle, a tool slide displaceable in a guide means in the tool body transversely to its axis of rotation, a cutting plate interchangeably attached to the tool slide for removing material, a micrometer screw for adjusting the tool slide in its guide means, said micrometer screw being mounted in the tool body transversely to its axis of rotation so as to be rotatable and axially non-displaceable, and adjustable counterbalancing masses for balancing the boring tool in relation to its axis of rotation, characterized in that

A) the micrometer screw (**17**) is mounted in the tool body (**2**) at a distance above the tool slide (**7**), leaving a space (**16**) free and drives a drive slide (**19**) displaceable in the tool body (**2**) transversely to its axis of rotation (B);

B) a two-armed transfer lever (**22**) is pivotally mounted in the space (**16**) between said drive and tool slides (**19** and **7**, respectively), said lever engaging with one arm on the drive slide (**19**) and with its other arm on the tool slide (**7**) such that



when the drive slide (**19**) is displaced by the micrometer screw (**17**) the tool slide (**7**) is entrained in the opposite direction to the drive slide (**19**) in accordance with the leverage ratio of the transfer lever (**22**); and

C) the drive slide (**19**) forms at the same time the adjustable counterbalancing mass, wherein this mass, on the one hand, and the mass of the tool slide (**7**), including cutting plate (**15**), on the other hand, are determined such that the entire arrangement of drive and tool slides (**7**, **19**) is always balanced in relation to the axis of rotation (B) during their movement in opposite directions.

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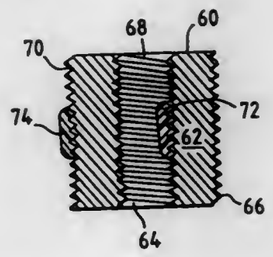
RESIN COATED FASTENER AND APPARATUS AND METHOD FOR MANUFACTURE OF SAME

Richard J. Duffy, Shelby Township, and Eugene D. Sessa, Mt. Clemens, both of Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Division of Ser. No. 188,065, Jan. 26, 1994, Pat. No. 5,511,510. This application Jan. 25, 1996, Ser. No. 591,713

Int. Cl.[6] F16B *37/12;39/34*

U.S. Cl. 411—178 **1 Claim**



1. A reusable prevailing torque, self-locking fastener comprising:

a fastener body having an internal cylindrical surface and an external cylindrical surface;

a first set of continuous, unmodified threads disposed on said internal cylindrical surface;

a second set of continuous, unmodified threads disposed on said external cylindrical surface;

a first patch of resilient thermoplastic resin material adheringly applied to said first set of threads by spraying a stream of

powdered resin onto said first set of threads that have been preheated to a temperature above the melting point of said resin; and

a second patch of resilient thermoplastic resin material adheringly applied to said second set of threads by spraying a stream of powdered resin onto said second set of threads that have been preheated to a temperature above the melting point of said resin.

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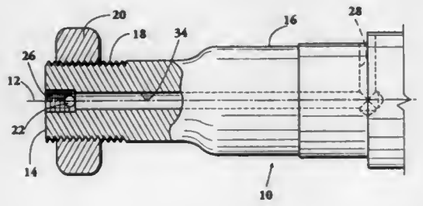
SPINDLE HAVING LUBRICATION AND NUT RETENTION MEANS

Elwood B. Smith, II, Shawnee, and Leonard R. Bailey, Seminole, both of Okla., assignors to Al-Ko Kober Corporation, Shawnee, Okla.

Filed Feb. 6, 1995, Ser. No. 383,780

Int. Cl.[6] F16B *23/00*

U.S. Cl. 411—395 **8 Claims**



1. A spindle system providing lubrication to a lubricated area and for retaining a nut comprising:

a spindle having an axis, an outer end, an area having lubrication spaced from said outer end and having a threaded area adjacent said outer end, the lubricated area being configured to receive a bearing thereon;

a first lubricant passageway formed in the spindle, the first passageway being at least substantially co-axial with said spindle axis, a first end of the first lubricant passageway communicating with said spindle outer end and adaptable to receive a grease fitting therein and a second end terminating adjacent said spindle lubricated area;

a second lubricant passageway formed in said spindle intersecting at an angle said first lubricant passageway and communicating said first lubricant passageway with said spindle lubricated area;

a key opening through said spindle adjacent to but spaced from said outer end, the key opening radially intersecting said spindle axis and said first lubricant passageway, said first lubricant passageway being of greater diameter than said key opening; and

a nut retainer received in said key opening functionable to retain a nut on said spindle threaded portion, the diameter of the nut retainer being substantially equal to said key opening whereby the nut retainer fits snugly in said key opening whereby grease may be inserted into said first lubricant passageway at said spindle outer end to flow past said nut retainer in said key opening as the lubricant flows to said second lubricant passageway, said nut retainer at least substantially preventing the flow of lubricant through said key opening.

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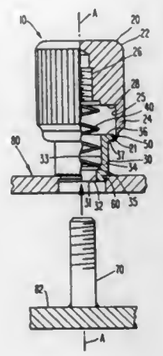
CAPTIVE NUT

Albert J. Frattarola, Swarthmore, and Kevin P. Lavalley, Parkside, both of Pa., assignors to Southco, Inc., Concordville, Pa.

Filed Aug. 2, 1995, Ser. No. 510,543

Int. Cl.[6] F16B *37/08*

U.S. Cl. 411—432 **23 Claims**



1. A captive nut comprising:

a. a knob, rotatable and moveable axially about a central longitudinal axis of said knob, comprising:

i. an internally threaded longitudinal hole extending at least partially through said central longitudinal axis of said knob;

ii. means to facilitate rotation;

b. a substantially hollow ferrule comprising a first end and a second end, said first end having a panel attachment means for attachment of said ferrule to a panel; and

c. a knob captivation means wherein said knob is slidably and rotatably attached to said second end of said ferrule such that when said nut is in a fully retracted position, said knob cativation means prevents said ferrule and said knob from separating.

5,611,655

VACUUM PROCESS APPARATUS AND VACUUM PROCESSING METHOD

Yosbio Fukasawa, Kofu; Shozo Hosoda, Yamanashi-ken; Tatsuya Nakagome, Yamanashi-ken; Takashi Tozawa, Yamanashi-ken; Koji Suzuki, Yamanashi-ken; Yasumasa Ishihara, Kofu; Minoru Aoyagi, and Mahito Kajihara, both of Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Continuation of Ser. No. 231,169, Apr. 22, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,805

Claims priority, application Japan, Apr. 23, 1993, 5-120502; Oct. 22, 1993, 5-287543; Oct. 22, 1993, 5-287544; Oct. 22, 1993, 5-287545

Int. Cl.[6] B65G *49/07*

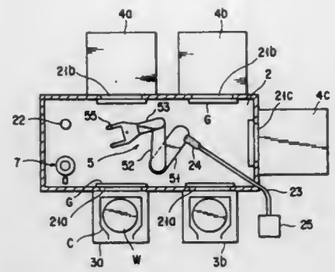
U.S. Cl. 414—217 **13 Claims**

1. A vacuum process apparatus comprising:

a convey chamber having a plurality of loading/unloading ports and an airtight structure kept in a vacuum when a target object is conveyed;

at least one preliminary vacuum chamber connected to said convey chamber through one of said plurality of loading/unloading ports;

a plurality of vacuum process chambers each connected to said convey chamber through a respective one of said plurality of loading/unloading ports and each having a vacuum process mechanism;



a plurality of opening/closing means for opening/closing said plurality of loading/unloading ports;

convey means, arranged in said convey chamber and having a multi-joint arm member, for conveying the target object between said convey chamber and said vacuum process chambers, and between said convey chamber and said preliminary chamber;

a plurality of first support frames for independently supporting said plurality of vacuum process chambers;

a second support frame, arranged independently of said first support frames, for supporting said convey chamber; and

a base on which said first support frames and said second support frame are mounted.

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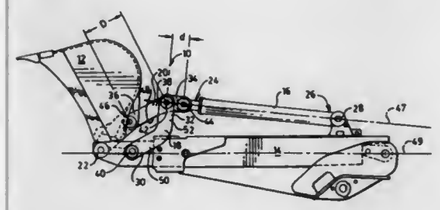
LINKAGE ARRANGEMENT FOR A WORK IMPLEMENT

James G. Davis, Knightdale; Jeffrey A. Deneve, and James A. Joy, both of Clayton, all of N.C., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1995, Ser. No. 522,473

Int. Cl.[6] B66C *23/00*

U.S. Cl. 414—694 **7 Claims**



1. A linkage arrangement for guiding and manipulating a work implement of a work machine, comprising:

a work implement adapted to perform a work function;

a structural beam for pivotably supporting said work implement;

a fluid cylinder having first and second end portions, said second end portion being connected to said structural beam;

a guide link having first and second end portions with said first end portion pivotably connected to said structural beam; and

a implement link having first and second end portions and a middle portion, said first end portion being pivotably connected to said first end portion of said fluid cylinder, said second end portion being pivotably connected to said work implement, and said middle portion being pivotably connected to said second end portion of said guide link.

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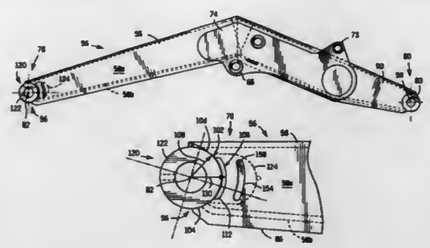
REINFORCED LOADER ARM ASSEMBLY

Robert T. Peterson, Gladstone, Ill., assignor to Case Corporation, Racine, Wis.

Filed Mar. 13, 1995, Ser. No. 402,902

Int. Cl.[6] B21D *11/00*

U.S. Cl. 414—722 **18 Claims**



1. A loader arm assembly configured to rotate about an axis defined by a pivot pin, the axis being substantially normal to the loader arm, the loader arm assembly comprising:

a loader arm having a first end and a second end, the first end having a cavity including a cavity perimeter, wherein the loader arm includes substantially parallel first and second side portions and a central portion joining the first and second side portions, the first and second side portions being substantially normal to the axis; and

a pivot tube assembly including a pivot tube having an inner bore configured to engage the pivot pin for rotation about the axis, the pivot tube further having an outer perimeter, a portion of the outer perimeter fixedly engaging the cavity perimeter, the pivot tube assembly further including one or more plates extending from the pivot tube between the first and second side portions and in fixed engagement with at least one of the first and second side portions of the loader arm.

5,611,658

METHOD AND APPARATUS FOR DESTACKING SHEET METAL MEMBERS

Bengt Olofsson; Jimmy Olsson; Milan Remen, all of Olofström, and Kenneth Gullberg, Ryd, all of Sweden, assignors to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE93/00333, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995, PCT Pub. No. WO93/23321, PCT Pub. Date Nov. 25, 1993

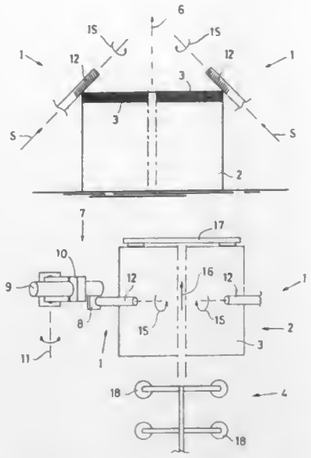
PCT Filed Apr. 16, 1993, Ser. No. 335,803

Claims priority, application Sweden, May 13, 1992, 9201507

Int. Cl.[6] B21D *43/24*

U.S. Cl. 414—797.3 **19 Claims**

1. An apparatus for destacking, or separating, sheet or panel-shaped, substantially planar objects such as sheet metal members which form a stack, comprising at least one separator device engaging the stack and presenting to the stack a number of engagement members which, seen from the stack, are movable in a feeding direction forming art angle with a normal to the plane of the object to be separated and apparatus for turning the separator device to apply a force in the feeding direction, the separator



device, with a portion engaging the stack, movable towards and away from the stack and yieldably biased against an edge portion of an object to be separated.

5,611,659

METHOD AND A DEVICE FOR REDUCING THE GAP BETWEEN A STATIC PART AND A MOVABLE PART

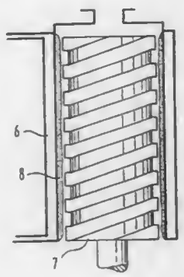
Paul Dinner, West Missisauga, Canada, assignor to Europäische Atomgemeinschaft (Euratom), Plateau du Kirchberg, Luxembourg

Filed Jun. 5, 1995, Ser. No. 465,642

Claims priority, application Luxembourg, Dec. 3, 1992, 88194

Int. Cl.[6] F01D *1/36*

U.S. Cl. 415—90 **6 Claims**



1. A device for reducing a gap between a static part and a movable part in an installation which is to be operated at cryo temperature, said device comprising:

a static part;

a movable part defining a gap between said static part and said movable part;

a cryo coolant channel having a coolant fluid disposed therein, said channel being disposed in one of said static part and said movable part, said channel being disposed adjacent to said gap; and

means for injecting a gas into said gap, said gas being condensable and having a liquid-solid conversion temperature above the temperature of the coolant fluid.

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COMPOUND VACUUM PUMPS

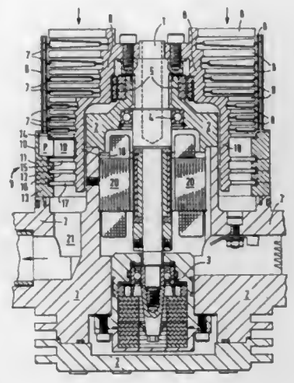
David C. Wong, Wisborough Green, and Nigel P. Schofield, Horsham, both of England, assignors to The BOC Group plc, Windlesham Surrey, England

Continuation of Ser. No. 302,561, Sep. 8, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 538,999

Claims priority, application United Kingdom, Sep. 10, 1993, 9318801

Int. Cl.[6] F04D *19/04*

U.S. Cl. 415—90 **4 Claims**



1. A hybrid vacuum pump comprising;

an inlet end;

an outlet end;

a turbomolecular stage positioned at said inlet end and comprising a bladed stator formed from an array of stationary blades and a rotor formed from a further array of blades arranged for rotation at high speed between the stator blades; and

a molecular drag stage positioned at the outlet end and comprising at least three discs arranged for rotation within a channeled stator, with a minimal clearance between circumferential edges of the discs and the channeled stator, a flow passageway linking the turbomolecular stage with annular channels, said annular channels defined between the channeled stator and opposing faces of the at least three discs and each of said annular channels defined between each of said discs said channeled stator projecting into said annular channels to effect seals between said at least three discs, and means for deflecting gas being pumped from the annular channels during rotation of the discs.

5,611,661

GAS TURBINE ENGINE WITH BEARING CHAMBERS AND BARRIER AIR CHAMBERS

John Jenkinson, Bristol, Great Britain, assignor to BMW Rolls-Royce GmbH, Munich, Germany

PCT No. PCT/EP94/00854, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO94/23184, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 18, 1994, Ser. No. 530,175

Claims priority, application United Kingdom, Apr. 1, 1993, 9306890

Int. Cl.[6] F01D *25/18*

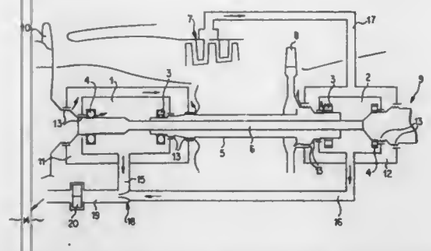
U.S. Cl. 415—112 **3 Claims**

1. A gas turbine engine having at least one of a low-pressure compressor and fan and a high-pressure compressor, comprising:

a compressor bearing chamber supplied with oil;

a turbine bearing chamber supplied with oil;

a compressor barrier air chamber surrounding the compressing bearing chamber;



a turbine barrier air chamber surrounding the turbine bearing chamber;

a first barrier air flow supplied from one of the low-pressure compressor and fan to said compressor barrier air chamber;

a second barrier air flow supplied by the high-pressure compressor to said turbine barrier air chamber;

labyrinth seals sealingly arranged between the compressor bearing chamber and the compressor barrier air chamber and between the turbine bearing chamber and the turbine barrier air chamber, respective ones of said barrier flows passing through respective labyrinth seals at least partially into associated bearing chambers; and

an ejector, wherein said first barrier air flow emerging from said compressing bearing chamber is mixed in said ejector with the second barrier air flow emerging from said turbine bearing chamber.

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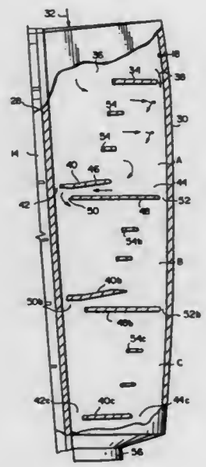
IMPINGEMENT COOLING FOR TURBINE STATOR VANE TRAILING EDGE

Francisco J. Cunha, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Aug. 1, 1995, Ser. No. 509,918

Int. Cl.[6] F04D *29/38*

U.S. Cl. 415—115 **16 Claims**



1. A stator vane of a nozzle for a turbine comprising:

an airfoil-shaped stator vane body having a plurality of generally radially extending internal cavities for flowing a cooling medium and including a cavity along a trailing edge of said vane body defined in part by opposed vane walls converging toward one another in an axial direction toward said trailing edge;

a radially outer inlet to said trailing edge cavity and a radially inner outlet therefrom for flowing a cooling medium through said trailing edge cavity;

a first guide vane in said cavity between opposed walls thereof and defining radially inwardly directed forward and aft openings between opposite ends of said guide vane and end walls of said trailing edge cavity, respectively;

a second guide vane in said cavity between opposed walls thereof defining radially inwardly directed forward and aft openings between opposite ends of said second guide vane and end walls of said trailing edge cavity, respectively, and lying radially inwardly of said first guide vane to prevent a majority of flow of cooling medium passing through the forward opening of said first guide vane from passing directly radially inwardly past said second guide vane;

a third guide vane in said cavity between opposed walls thereof defining radially inwardly directed forward and aft openings between opposite ends of said third guide vane and end walls of said cavity, respectively, and lying radially inwardly of said second guide vane at a location to prevent the majority of flow of cooling medium passing through the aft opening of said second guide vane from passing directly radially inwardly past said third guide vane; and

at least one guide vane radially intermediate said first and second guide vanes for directing flow of cooling medium towards said trailing edge along a convergent path for cooling the trailing edge;

said second and third guide vanes being located for receiving spent cooling medium for mixing with bypass flow through the forward opening of said second guide vane and combined flow through the forward opening of the third guide vane and for flow through the aft opening of said third guide vane;

whereby the cooling medium flow is directed toward said trailing edge for impingement cooling thereof and away from said trailing edge as the cooling medium flows from said inlet to said outlet.

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GEARED MULTISHAFT TURBOCOMPRESSOR AND GEARED MULTISHAFT RADIAL EXPANDER

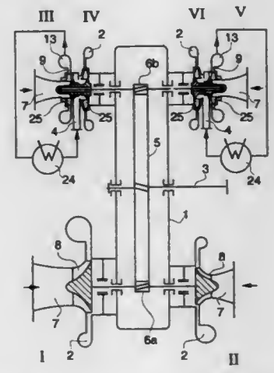
Joachim Kotzur, Oberhausen, Germany, assignor to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed May 9, 1995, Ser. No. 437,402

Claims priority, application Germany, May 10, 1994, 44 16 497.1

Int. Cl.[6] F03B *11/02*

U.S. Cl. 415—122.1 **11 Claims**



1. A multistage geared multishaft turbocompressor comprising: a first shaft with impellers of low pressure stages and a second shaft with impellers of high pressure stages; drive means for driving said shafts one of directly via a central gear and indirectly via pinion

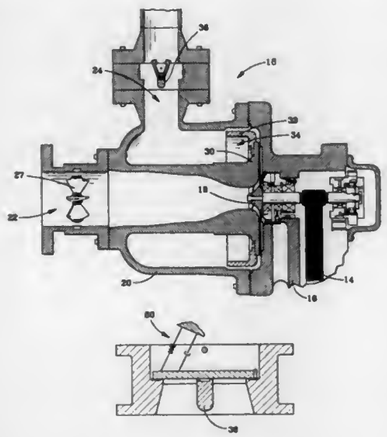
shafts on the circumference of the central gear, said first shaft being arranged in parallel to said second shaft, said high pressure stages comprising a plurality of impellers arranged in a same direction of flow from an inlet nozzle at an end of said second shaft in a direction of a central gearbox case, one behind the other, via an intermediary of a disk diffuser, to provide a first high pressure stage and a next high pressure stage, said next stage including an outlet housing; an intermediate outlet housing joining said disk diffuser said intermediate outlet housing being a spiral housing; an intercooler connected to said intermediate outlet housing; and an intermediate inlet connected to said intercooler and connected to said next stage of said high pressure stages, said intermediate housing being a spiral housing.

5,611,664

APPARATUS TO ACHIEVE PASSIVE DAMPING OF FLOW DISTURBANCES IN A CENTRIFUGAL COMPRESSOR TO CONTROL COMPRESSOR SURGE

Ronald L. Haugen, Mayfield, Ky., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 238,994, May 6, 1994. This application May 30, 1995, Ser. No. 453,545
Int. Cl.[6] F04D *27/00*
U.S. Cl. 415—146 **2 Claims**



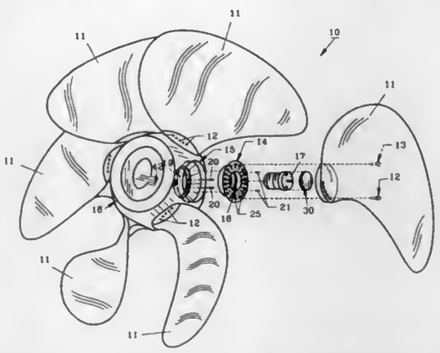
1. An apparatus for achieving passive damping of flow disturbances in a centrifugal compressor to control centrifugal compressor surge, the apparatus comprising:
a centrifugal compressor for compressing a low pressure fluid, the centrifugal compressor having an impeller, an inlet which communicates with an atmosphere and a discharge through which compressed air is supplied to a compressed air system;
a fluid flow control connected with the inlet for controlling the flow of a low pressure fluid to the compressor;
a check valve connected with the discharge for preventing high pressure fluid from back flowing to the compressor the check valve having a first valve plate, a second valve plate and a hinge member connecting the first and second valve plates;
a vane diffuser assembly fluidly communicating with the impeller, the vane diffuser assembly forming an annular shaped plenum which communicates with a high static pressure fluid; and
means for damping low amplitude flow disturbances of the compressible fluid, the damping means comprising the check valve first and second valve plates which are directly connected to passive elements to form a spring-mass-damper system to dampen low amplitude flow disturbances of the compressible fluid.

5,611,665

MARINE PROPELLER AND METHOD

Bruce A. Angel, 9035 Mount Carmel Rd., Stokesdale, N.C. 27357

Filed Sep. 21, 1995, Ser. No. 531,387
Int. Cl.[6] B63H *3/12*
U.S. Cl. 416—1 **18 Claims**



8. A marine propeller comprising: a hub, a plurality of propeller blades, a plurality of blade disks, each of said blade disks affixed to said hub for releasably securing one of said propeller blades, said blade disks each defining a series of apertures, said apertures arranged in a circular pattern, said apertures spaced apart by a first angular amount, said blade disks each defining a series of top pin holes, said top pin holes arranged in a circular pattern, said top pin holes spaced apart by a first angular amount, said blade disks each defining a series of bottom pin holes, said bottom pin holes arranged in a circular pattern, said bottom pin holes spaced apart by a second angular amount, said first angular amount different from said second angular amount, means to secure one each of said propeller blades to one each of said blade disks, said propeller blade securing means for selective reception in one of said apertures, and a plurality of pins, said pins for positioning in said top pin holes.

16. A method of adjusting a propeller having a removable blade, said blade having an adjustable pitch, said propeller having a blade disk attached to a central hub, said blade disk having a plurality of apertures, said apertures arranged in a circular pattern, said apertures spaced apart by a first angular amount, said blade disk having a plurality of bottom pin holes, said bottom pin holes arranged in a circular pattern, said bottom pin holes spaced apart by a second angular amount, said first angular amount different from said second angular amount, the method comprising the steps of:
(a) rotating the blade disk in a first direction by said first angular amount relative to the hub,
(b) affixing the rotated blade disk to the hub,
(c) rotating the blade relative to the blade disk in an opposite direction by said second angular amount for a net pitch change of the propeller blade equal to the difference between said first angular amount and said second angular amount.

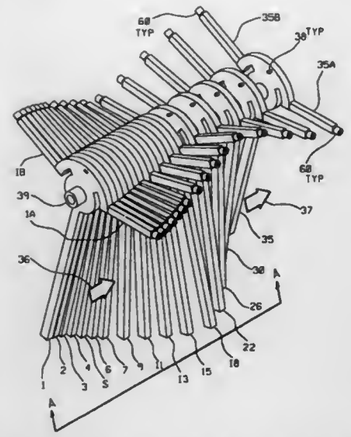
5,611,666

FLUID FORCING DEVICE

Ching Y. Au, P.O. 31205, Greenwich, Conn. 06831-0905, and Lawrence Au, 1321 N. Rolfe St., Arlington, Va. 22209-3007

Filed Apr. 2, 1996, Ser. No. 626,566
Int. Cl.[6] B63H *1/37*
U.S. Cl. 416—82 **4 Claims**

1. A fluid forcing device comprising:
a central axle;
a multiplicity of rotatable elements fitting snugly together, each element rotating around the central axle, each element having a pin protruding in front and a curved slot of preset length in back, the pins and slots cooperating to limit movement of



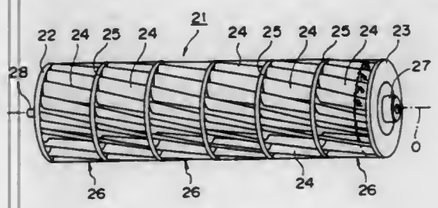
adjacent elements, each element having two radial arms terminating in a roller, and each element having a long downward pointing vertical part that is immersed in a fluid;
two sets of multiple wedges, each wedge having a curved edge to provide a surface for several of said rollers to bank against so that one wedge of one set will cause one group of arms and thereby also the immersed vertical parts materially attached to them to form the apex of a wave while one wedge of the second set will cause another group of arms and thereby also the immersed vertical parts materially attached to them to form the trough of the same wave;
a rigid mechanical connection between the first rotatable element and the last rotatable element to maintain the alignment of the above said wedges relative to the first and last rotatable elements;
two spring strips to force the above said rollers to bank against the wedges;
two sets of guiding tracks, one set for each said set of wedges, to guide the movement of the wedges and to locate the wedges and thereby the apex and trough of the wave;
two drive systems, one drive system for each said set of wedges, to move and to synchronize the position of the wedges which, in turn, move the wave as a whole;
a tray to support the central axle, drive systems, and tracks;
means to power the movement of the drive systems.

5,611,667

TRANSVERSE FAN

Akira Nagamori; Satoru Konno; Hirohumi Horino, and Yoichiro Kobayashi, all of Fuji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 365,132
Claims priority, application Japan, Aug. 9, 1994, 6-187574
Int. Cl.[6] F04D *29/28*
U.S. Cl. 416—178 **8 Claims**



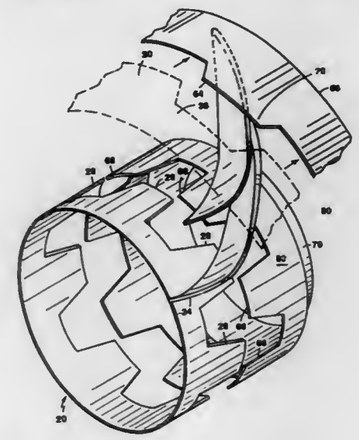
1. A transverse fan comprising:
a pair of disk-shaped end plates;
a plurality of blades extending between said pair of disk-shaped end plates and mounted therebetween in an arrangement along circumferential directions thereof with a central axis of said transverse fan being a center of the circumferential arrangement;
a partition disposed between said pair of disk-shaped plates at an intermediate portion of said plurality of blades;
said plurality of blades being inclined at a predetermined angle with respect to said central axis of said transverse fan and mounted with unequal mounting pitches along said circumferential directions of each of said pair of disk-shaped end plates;
said partition comprising at least one disk-shaped partition plate; and
said transverse fan comprising a plurality of multi-bladed impeller units disposed between said pair of disk-shaped end plates, said multi-bladed impeller units being integrally and coaxially stacked;
wherein each of said impeller units comprises a single disk-shaped partition plate of said at least one disk-shaped partition plate, said single disk-shaped partition plate having a surface on which blades of said plurality of blades are integrally molded, said blades being disposed along a circumferential direction thereof at unequal pitches and inclined at predetermined angles with respect to said central axis such that said blades extend along an axial direction of said transverse fan.

5,611,668

MULTI-PART INJECTION-MOLDED PLASTIC FAN

Martin G. Yapp, Needham, Mass., and Richard L. Matsu, Plymouth, Mich., assignors to Bosch Automotive Motor Systems, Inc., Waltham, Mass.

Filed Jun. 16, 1995, Ser. No. 491,248
Int. Cl.[6] F04D *29/32*
U.S. Cl. 416—189 **20 Claims**



1. A plastic fan comprising the following parts:
(a) an integral injection molded first fan part comprising a first hub and a first set of blades extending outwardly from the first hub to a first band; and
(b) an integral injection molded second fan part comprising a second hub and a second set of blades extending outwardly from the second hub to a second band;
the first fan part and the second fan part being co-operatively sized and shaped to be assembled into a single operable fan which includes: (i) a hub comprising the first hub and the second hub; (ii) blades of the first set of blades and the second set of blades; and (iii) a circumferential fan band comprising the first fan band and the second fan band, the circumferential fan band connecting the tips of the fan blades.

5,611,669

TURBINES WITH PLATFORMS BETWEEN STAGES

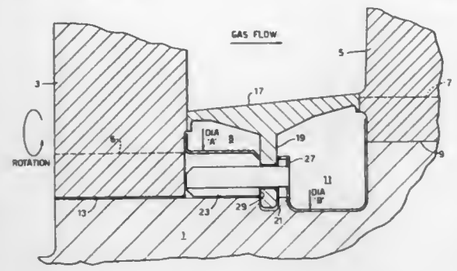
Eric E. Royle, Wigston, United Kingdom, assignor to European Gas Turbines Limited, United Kingdom

Filed Sep. 27, 1995, Ser. No. 534,562

Claims priority, application United Kingdom, Sep. 27, 1994, 9419544

Int. Cl.[6] F01D *11/00*

U.S. Cl. 416—193 A **7 Claims**



1. A turbine for a working fluid, comprising:

a rotor rotatable about an axis and having a periphery;

a plurality of stages of blades mounted on the rotor, each blade having a root of dovetail cross-section mounted in a complementary groove extending approximately axially in the periphery of the rotor, the rotor periphery in a recess between at least some adjacent blade stages having a stepped profile that includes a high level section and a low level section, the dovetail groove having an extension extending into the high level section, the low level section providing axial and radial clearance for a cutting tool to access the dovetail groove;

a circumferentially extending series of bridge pieces between said adjacent blade stages and providing an inner boundary to a flow path of the working fluid, each said bridge piece having a platform surface providing said inner boundary and a circumferentially extending wall section supporting said platform surface and located in a circumferential groove in the high level section of the rotor periphery;

at least one key for each bridge piece and having a cross-section at least partially conforming to said dovetail groove and lying within the extension of said dovetail groove in said high level section, said wall section having a hole through which said key extends, said key engaging said hole for preventing radial and circumferential movement of the respective bridge piece, and said wall section engaging said circumferential groove for preventing axial movement of the respective bridge piece.

5,611,670

BLADE FOR GAS TURBINE

Akira Yoshinari, Katsuta; Hideki Tamaki, Hitachi; Tosiaki Saito, Katsuta; Mitsuru Kobayashi, Hitachiota; Katsumi Iijima; Katsuo Wada, both of Hitachi; Kimio Kano, and Hiroyuki Matsuzaki, both of Sendai, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Tohoku Electric Power Co., Inc., Miyagi-ken, both of Japan

Filed Jul. 27, 1994, Ser. No. 280,992

Claims priority, application Japan, Aug. 6, 1993, 5-195795

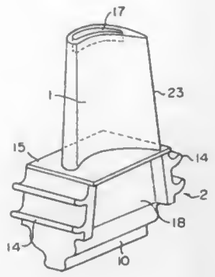
Int. Cl.[6] F01D *5/14*

U.S. Cl. 416—241 R **13 Claims**

1. A blade for a gas turbine, which is formed of an integral casting and comprises a blade portion, a platform having a flat portion connected to said blade portion, a shank portion connected to said platform and comprising two opposite sides, projection fins on said two sides of said shank portion, and a dovetail connected to said shank portion, wherein

said blade portion comprises a root portion which is connected to said platform, and wherein said blade portion and its root portion, said platform and an adjoining part of said shank portion are of a continuous single crystal structure, and wherein

the rest of the blade is of unidirectionally solidified columnar grains structure.



5,611,671

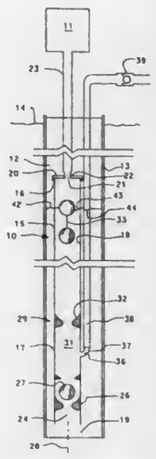
PUMPING SYSTEM FOR GROUNDWATER SAMPLING

Ralph N. Tripp, Jr., P.O. Box 364, Westfield, N.J. 07091-0364

Filed Apr. 26, 1996, Ser. No. 638,191

Int. Cl.[6] F04B *1/06*

U.S. Cl. 417—126 **10 Claims**



1. A pump assembly for the accurate transfer of water to an above ground elevation comprising:

a) a tubular housing elongated upon a center axis and bounded by interior and exterior cylindrical surfaces and upper and lower extremities,

b) a gas inlet port disposed in said upper extremity, and a gas conduit communicating between said gas inlet port and an above-ground location,

c) a water inlet port disposed in said lower extremity, and a first check valve communicating with said water inlet port and permitting entrance of water upwardly into said housing,

d) a second check valve disposed within said housing above said first check valve in a manner to divide said housing into an upper, actuating chamber bounded by said upper extremity and second check valve, and a lower, sample accumulating chamber bounded by said first and second check valves, said second check valve comprised of a seat member attached to the interior surface of said housing, and a floating member,

e) a sampling port located within said lower chamber and communicating with a water-conveying conduit that extends to an above-ground location, and

f) a third check valve disposed within said water-conveying conduit in a manner to permit upward flow but not downward flow of water within said water-conveying conduit.

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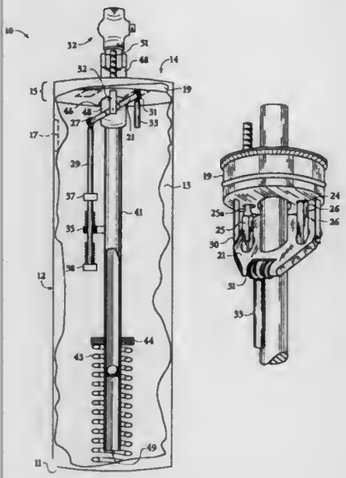
PUMPING CHAMBER MOVEMENT ACTIVATED DOWNHOLE PNEUMATIC PUMP

D. Bruce Modesitt, San Carlos, Calif., assignor to Transnational Instruments, Inc., San Carlos, Calif.

Continuation-in-part of Ser. No. 157,689, Nov. 24, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 470,674

Int. Cl.[6] F04F *1/06*

U.S. Cl. 417—131 **14 Claims**



1. A pneumatic pump for fluid comprising:

a housing having an opening, a bottom wall opposite to said opening, and a sidewall extending between said opening and said bottom wall, said housing including a sealable fluid entry aperture;

a pipe communicating between an interior and an exterior of said housing, with said housing movably attached to said pipe for axial displacement therewith, said pipe allowing flow to the exterior of the housing in response to gas pressure on fluid in the housing; and

a switchable valve control having a seesaw member and a pod, said pod fitting into said opening and including a plurality of valve seats, with said seesaw member having two ends supporting a plurality of valve elements with said housing connecting to one end of said seesaw member to actuate said seesaw member in response to a level of fluid in said housing, with said plurality of valve seats defining at least one fluid inlet port and at least one fluid outlet port, wherein said valve elements are positioned to alternatingly seal said inlet and outlet ports in relation to the axial displacement of said housing allowing both fluid to ingress through said sealable fluid entry aperture and fluid to egress through said pipe.

5,611,673

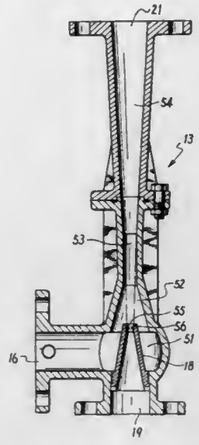
VACUUM JET PUMP FOR RECOVERING A MIXED FLUID OF GAS AND LIQUID CONDENSATES FROM STEAM-USING APPARATUS

Akihiko Agata, Isahaya, Japan, assignor to Shin-El Kabushiki Kaisha, Isahaya, Japan

Continuation of Ser. No. 277,210, Jul. 19, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 624,752

Int. Cl.[6] F04F *5/44*

U.S. Cl. 417—198 **3 Claims**



1. A condensate recovering vacuum pump comprising: a condensate tank for collecting and temporarily holding a condensate, a circulating pump for supplying the collected condensate from the condensate tank to a feedwater nozzle of a jet pump, and a jet pump that creates a negative pressure at a port through which the condensate is taken in by injecting the feedwater, sucking the condensate through a condensate inlet port connected to a steam trap of a steam-using apparatus, and delivering the condensate together with the feedwater through a discharge port into the condensate tank, the condensate inlet port receiving a mixed fluid of gas and liquid containing leaked steam, residual air, and the condensate, wherein the jet pump comprises: a vacuum chamber into which the condensate inlet port opens; a convergent cylindrical segment opening into the vacuum chamber with a cross-sectional area thereof becoming smaller with a distance therefrom; a throat segment concentrieally adjoining the convergent cylindrical segment and having a substantially uniform cross-sectional area; and a divergent segment adjoining the throat segment and flaring with a distance therefrom; the nozzle having an orifice at a tip thereof that protrudes slightly into the convergent cylindrical segment from a vacuum chamber side, with an inside wall of the tip of the nozzle conically flaring so that an imaginary extension therefrom contacts an internal surface of the throat segment adjacent to a rear end of said throat segment such that feedwater expelled from the feedwater nozzle creates a fluid seal.

5,611,674

CAPACITY MODULATED SCROLL MACHINE

Mark Bass, Sidney; Roy J. Doepker, Lima; Jean-Luc M. Caillat, Dayton, and Wayne R. Warner, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

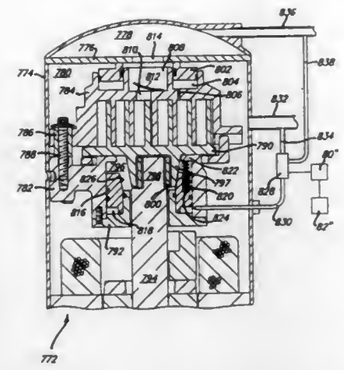
Filed Jun. 7, 1995, Ser. No. 479,025

Int. Cl.[6] F01C *1/04;* **F04B** *49/00*

U.S. Cl. 417—220 **31 Claims**

1. A scroll-type machine comprising:

a first scroll member having an end plate and a first spiral wrap upstanding therefrom;



a second scroll member having an end plate and a second spiral wrap upstanding therefrom, said first and second scroll members being positioned with said first and second spiral wraps interleaved with each other;

a fixed support structure for supporting said first and second scroll members for relative orbital movement therebetween whereby said first and second spiral wraps define sealed moving fluid pockets which progressively decrease in size as they move from a radially outer position to a radially inner position;

a power source;

a drive shaft for transmitting power from said power source to said first scroll member;

a coupling for connecting said drive shaft to said first scroll member whereby said power source may operate to effect said relative orbital movement between said first and second scroll members,

a device selectively actuable to effect relative radial movement between said first and second scrolls to thereby form a leakage path between said moving fluid pockets while said power source continues to operate whereby the capacity of said compressor may be modulated, said device being remote from and independent of said coupling connecting said power source to said first scroll.

5,611,675

SWASH PLATE COMPRESSOR WITH START UP FLOW RESTRICTIVE INLET SPOOL VALVE

Kazuhide Uchida, Hamamatsu; Mikio Matsuda; Mitsuo Inagaki, both of Okazaki, and Takeshi Sakai, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 31, 1995, Ser. No. 450,587

Claims priority, application Japan, May 31, 1994, 6-117823

Int. Cl.[6] F04B *7/00*

U.S. Cl. 417—270 **12 Claims**

1. A swash plate compressor for compressing a gas, said swash plate compressor comprising:

a piston axially slidably inserted into a cylinder bore to form a piston chamber;

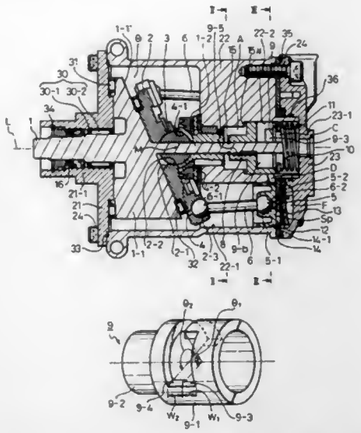
a swash plate fixedly connected to a rotating shaft so as to be rotatable therewith, said swash plate cooperating with said piston so that rotating movement of said swash plate causes said piston to be axially reciprocated in said cylinder bore;

a swash plate chamber storing said swash plate;

an intake chamber for receiving gas to be compressed;

an intake port connecting said intake chamber with said piston chamber;

a pressure responsive reciprocating spool valve connected in rotation with said rotating shaft between said intake chamber and said swash plate chamber, said spool valve being axially slidable with respect to said rotating shaft, said spool valve including:



a fractional stroke recess for allowing said intake port to communicate with said intake chamber for only a fraction of an intake stroke of said piston, and

a full stroke recess for allowing said intake port to communicate with said intake chamber for a full intake stroke of said piston;

spring means for urging said spool valve toward a reduced compression position wherein said fractional stroke recess and not said full stroke recess allows said intake port to communicate with said intake chamber; and

a discharge port to discharge said gas when said piston is moved in a discharge direction.

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MICROPUMP

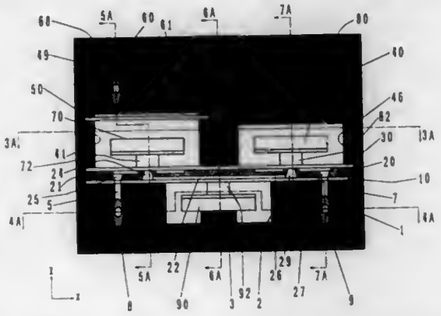
Takeharu Ooumi, Toyota; Yoshihiro Naruse; Takahiro Yamada, both of Ichikawa; Kinji Tsukahara, Seki; Mitsuhiro Ando, Toyohashi, and Katsuya Tsuchimoto, Anjou, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 27, 1995, Ser. No. 507,836

Claims priority, application Japan, Jul. 27, 1994, 6-175811

Int. Cl.[6] F04B *43/04*

U.S. Cl. 417—322 **10 Claims**



1. A micropump including an input port, an output port, a fluid channel space located between the input and the output port, a first oscillating member for opening or closing a communication between the fluid channel space and the input port, a second oscillating member for opening or closing a communication between the fluid channel space and the output port, and at least one third oscillating member for reducing/enlarging the fluid channel space;

characterized by pressure correcting means located outside the fluid channel space for applying a pressure, which is substantially equal to a fluid pressure at the input port, to a space in which the first oscillating member oscillates.

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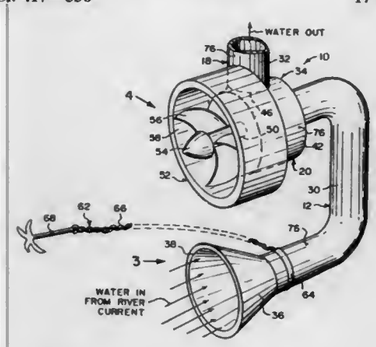
RIVER PUMP DEVICE

Eqdam Y. Salama, Box 136, Jeddah 21411, Saudi Arabia

Filed Jan. 11, 1996, Ser. No. 584,100

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—336 **17 Claims**



1. A river pump device comprising:

a) a first conduit immersed in a river to receive water from the river;

b) a fixed second conduit to carry the water away from the river;

c) means immersed in the river and operable by the kinetic force of the water flowing in the river, for moving the water out of said first conduit into said second conduit; and

d) an irrigation tube transversely coupled to a distal end of said second conduit, said irrigation tube having a plurality of small holes therealong to supply the water onto dry land, so that vegetation will thrive; wherein said first conduit is a hooked intake pipe coupled to and extending below said water moving means, said intake pipe comprising a distal free end having a wide mouth intake nozzle facing into the direction of the flowing water.

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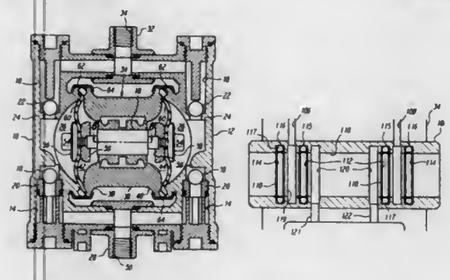
SHAFT SEAL ARRANGEMENT FOR AIR DRIVEN DIAPHRAGM PUMPING SYSTEMS

Wilfred D. Pascual, Baldwin Park, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Apr. 20, 1995, Ser. No. 425,650

Int. Cl.[6] F04B *17/00;53/00*

U.S. Cl. 417—393 **2 Claims**



1. An air driven diaphragm pump comprising a diaphragm;

a bushing having a passageway therethrough and annular channels within the passageway;

a control valve;

a passage between the valve and a first of the channels;

a vent passage extending from a second of the channels to atmosphere;

a shaft fixed to the diaphragm and including a cylindrical portion slidably extending through the passageway, extending across and longitudinally outwardly of the first and second channels throughout the full stroke of the diaphragm and having axial slots mutually angularly spaced, of mutually common axial placement and extent and selectively extending between the first and second channels;

annular seals in a third and a fourth of the channels, the third and fourth channels being to either side of the first channel with the fourth channel being between the first and second channels, the annular seals each including an elastomeric annular portion and a PTFE cylindrical portion attached to the inner periphery of the elastomeric annular portion fully about the outside cylindrical surface of the PTFE cylindrical portion, the inside cylindrical surface of the PTFE cylindrical portion being in contact with the surface of the shaft to form a seal thereabout, the passageway in the bushing having a larger diameter between the first and fourth channels to provide relief between the shaft and the bushing between the first and fourth channels.

5,611,679

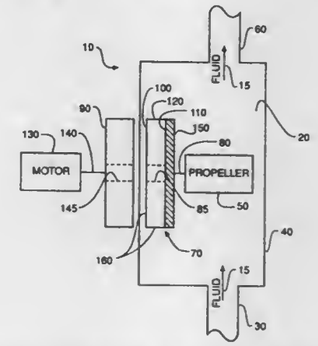
CORROSION-RESISTANT PUMP

Syamal K. Ghosh, Rochester; Edward P. Furlani, Lancaster, and Paul A. Lysiak, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1996, Ser. No. 636,079

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—420 **7 Claims**



1. A corrosion-resistant pump for propelling a fluid therethrough, the pump comprising:

(a) means for creating a rotating magnetic field;

(b) a container, placed adjacent said magnetic field means, for preventing the fluid contained therein from contacting said magnetic field means;

(c) a first magnet disposed within said container and magnetically interacting with said magnetic field means which interaction, in turn, causes said first magnet to rotate simultaneously with rotation of the magnetic field from said magnetic field means;

wherein said first magnet includes a ceramic magnetic coating on its first portion and is attached to a ceramic magnet on its second portion for preventing corrosion of the magnet and enhancing magnetic flux with said magnetic field means; and

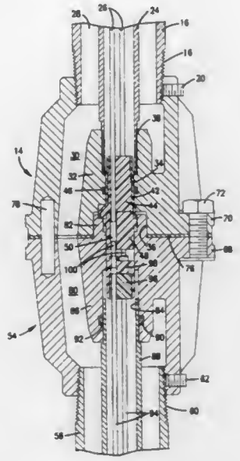
(d) a propeller disposed within said container and attached to and simultaneously rotating with said first magnet for propelling the fluid through said container.

5,611,680

SPOOL ASSEMBLY FOR FIELD ADJUSTABLE COLUMN LENGTH PUMP SYSTEMS

Dorsey D. Small, Port Byron, Ill., and Diane E. Aitken, Bettendorf, Iowa, assignors to The Marley Company, Mission, Kans.

Filed Dec. 18, 1995, Ser. No. 572,871
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—422 1 Claim



1. In a pumping installation having an electrically powered submersible pump for pumping gasoline, a distribution head for receiving the gasoline, a discharge head connected with the distribution head by a fluid conduit providing a gasoline flow path, a gland member in the discharge head having a lower face presenting a cavity, an electrical tube extending through said fluid conduit to said gland member, electrical wiring extending through said tube, and an electrical connector element projecting into said cavity and providing an electrical connection to said wiring, the improvement comprising:

a spool assembly including a head spool and a base spool, said spool assembly having a pipe connecting said spools and providing a gasoline flow path from the base spool to the head spool;

means for detachably connecting said head spool to said discharge head, said detachable connecting means including an alignment pin engaging the discharge head and head spool to establish a predetermined rotative alignment therebetween;

a gland in said head spool presenting a projecting boss closely fitting in said cavity;

an electrical conduit extending through said pipe to said gland;

plural electrical conductors extending through said electrical conduit;

an electrical connector on said gland having means for electrical connection with said electrical connector element to establish electrical connection between said wiring and said electrical conductors;

means for sealing said gland and gland member together to isolate said electrical conduit and said electrical tube from the gasoline in said pipe and flow conduit; and

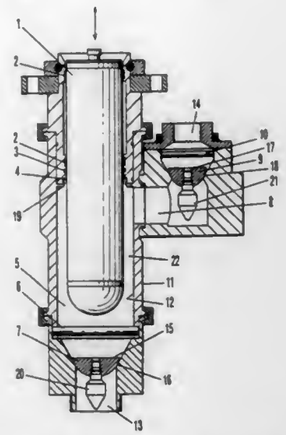
means for detachably mounting said pump on said base spool with the pump electrically connected with said conductors to receive electrical power therefrom and with the gasoline pumped by said pump delivered to said pipe.

5,611,681

RECIPROCATING ROD TYPE PUMP FOR SHEAR SENSITIVE MATERIAL

David G. Everitt, Solihull, Great Britain, assignor to Hydrair Limited, England

Filed Apr. 6, 1995, Ser. No. 417,757
Int. Cl.[6] F04B *15/02*
U.S. Cl. 417—569 13 Claims



1. A reciprocating rod type pump for pumping shear sensitive material, comprising a housing having an internal displacement chamber, and a displacement rod reciprocable within the displacement chamber, the displacement rod having a longitudinal axis, the displacement chamber having an aperture through which the displacement rod is reciprocated, the aperture being sealed with respect to the displacement chamber by the displacement rod and an annular seal surrounding the displacement rod, which annular seal faces and forms a direct potion of the displacement chamber, the displacement chamber also having an inlet opposite the aperture, and an outlet substantially radially disposed to the longitudinal axis of the displacement rod and in close proximity to the annular seal, wherein the outlet has an outlet valve for opening and closing the outlet, the outlet valve having a longitudinal axis, the inlet having an inlet valve for opening and closing the inlet, the longitudinal axis of the outlet valve being substantially parallel to the longitudinal axis of the displacement rod and an exit of the pump from to the outlet valve being in the longitudinal axis of the outlet valve.

5,611,682

LOW-NO_x STAGED COMBUSTION DEVICE FOR CONTROLLED RADIATIVE HEATING IN HIGH TEMPERATURE FURNACES

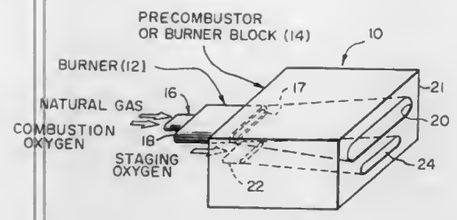
Aleksandar G. Slavejkov, Allentown; Thomas M. Gosling, Bethlehem, and Robert E. Knorr, Jr., Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 5, 1995, Ser. No. 523,988
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 20 Claims

1. A staged oxy-fuel burner for producing a generally flat luminous flame comprising in combination:

a housing having a first end and a flame end, said housing having a cross-sectional shape with a width and height of different dimension;

a fuel conduit having a first end and a nozzle end disposed in spaced relation to and generally concentrically within said housing said fuel conduit having a cross-sectional shape complementary to that of said housing thus defining a passage between said fuel conduit and said housing, said fuel nozzle



having a width to height ratio of between 2 and 60, said nozzle end of said fuel conduit and said flame end of said housing adapted for positioning relative to each other along a longitudinal axis of said housing;

means to introduce fuel into said fuel conduit and an oxidizer into said passage between said fuel conduit and said housing, said fuel and oxygen exiting said nozzle end of said fuel conduit to produce a flame; and

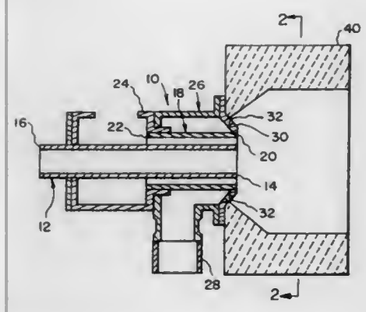
staging means to divert a portion of the total volume of oxidizer for efficient combustion from said passage between said fuel conduit and said housing, said staging means including a nozzle to introduce said diverted portion of said oxidizer beneath and coextensive with said flame, whereby when said burner is operated with a portion of said oxidizer introduced beneath said flame a fuel rich flame overlying a highly radiative fuel lean flame is produced.

5,611,683

METHOD AND APPARATUS FOR REDUCING NOX PRODUCTION DURING AIR-OXYGEN-FUEL COMBUSTION

Charles E. Baukal, Jr., Harleysville; Aleksandar G. Slavejkov, Allentown, and Louis W. Monroig, Myerstown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 4, 1995, Ser. No. 511,211
Int. Cl.[6] F23M *3/04*
U.S. Cl. 431—10 10 Claims



1. A method for reducing nitrogen oxide production during the combustion of an air-oxygen-fuel mixture comprising the steps of:

creating an oxygen-fuel post or nozzle mix flame at an exit end of a fuel supply conduit surrounded by an exit end of an oxygen supply conduit;

surrounding said oxygen-fuel flame with air said air supplied around said flame as a plurality of streams surrounding said flame at an angle to a center line of said flame of about 450; and

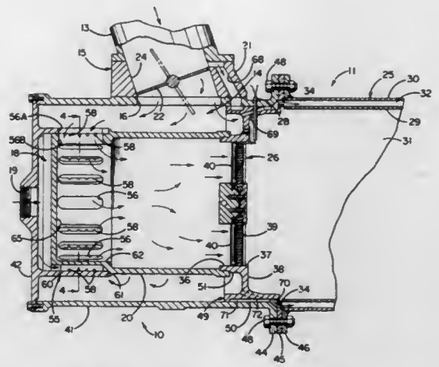
maintaining combustion with a total oxygen to fuel ratio of between about 1.5 and about 2.6.

5,611,684

FUEL-AIR MIXING UNIT

Lyle S. Spielman, Rockford, Ill., assignor to Eclipse, Inc., Rockford, Ill.

Filed Apr. 10, 1995, Ser. No. 419,140
Int. Cl.[6] F23D *3/14*
U.S. Cl. 431—353 9 Claims



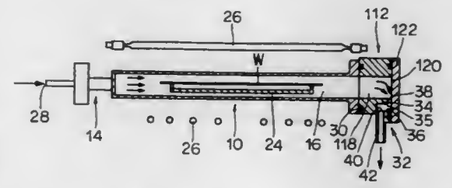
1. A mixing unit for supplying a fuel-air mixture to a burner, said mixing unit comprising a housing having fuel passage means adapted to receive a supply of gaseous fuel, having air passage means adapted to receive a supply of combustion air, and having means forming a manifold for mixing the fuel and air to supply the fuel-air mixture for combustion, said manifold having a plurality of air ports of elongated shape formed therein and establishing communication from said air passage means so as to permit combustion air to flow from said air passage means through said air ports, said manifold further having a plurality of internal cavities alternating with said air ports and having a plurality of fuel ports connecting said air ports with adjacent ones of said cavities, said cavities communicating with said fuel passage means such that fuel flows from said fuel ports and initially mixes with the combustion air as the combustion air flows through said air ports.

5,611,685

SUBSTRATE HEAT TREATMENT APPARATUS

Toshihiro Nakajima; Takatoshi Chiba; Kiyofumi Nishii, and Toru Sato, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 25, 1995, Ser. No. 450,758
Claims priority, application Japan, May 30, 1994, 6-142362
Int. Cl.[6] F27B *5/04*
U.S. Cl. 432—205 17 Claims



1. A substrate heat treatment apparatus including a heat treatment furnace having at least two side end faces, a flat configuration as a whole, and a cavity in which a substrate is accommodated,

said heat treatment furnace comprising a gas supply unit for supplying a gas into said cavity at one of said two side end faces, an opening for communication between said cavity and the outside world and a gas exhaust unit in the vicinity of said opening for discharging gas from said cavity at the other of

said two side end faces, and a cover for shutting said opening in an open/close manner,

said gas exhaust unit comprises an exhaust chamber formed on said other side end face along said opening, with a partition wall between said opening and said partition wall,

wherein an exhaust port in communication with the outside world is formed in said exhaust chamber,

wherein said partition wall is formed so that at least a portion of an edge thereof is displaced closer to said one side end face from said other side end face, whereby a vent passage is formed extending in a direction of a width of said cavity between an inside surface of said cover and the edge of said partition wall when said opening is shut.

5,611,686

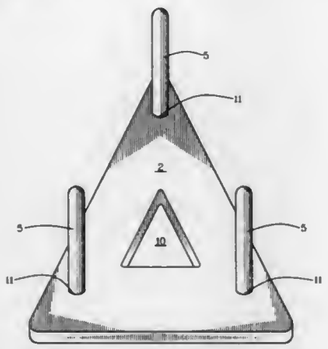
PIN STABILIZER FOR DENTAL MODEL

Tyrone A. Silva, 5851 Holmberg Rd., Apt. 2923, Parkland, Fla. 33067

Filed Mar. 17, 1995, Ser. No. 406,164

Int. Cl.[6] A61C *19/00;11/00*

U.S. Cl. 433—74 **13 Claims**



1. A pin stabilizer for dental models comprising:

a plurality of positioning pins extended perpendicularly from an articulator base plate of a dental articulator;

a plurality of positioning sleeves in a dental model;

one each of the positioning sleeves being sized, shaped and positioned in the dental model to receive one each of the plurality of positioning pins with designed snugness; and

wherein the articulator base plate is generally triangular with a generally triangular orifice having internal walls at designed distances inward from outside edges of the articulator base plate.

5,611,687

ORAL HYGIENE DELIVERY SYSTEM

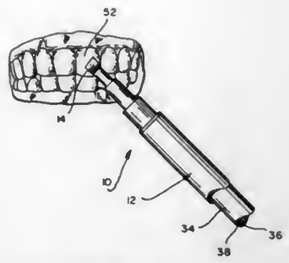
Eugene C. Wagner, Elmsford, N.Y., assignor to Dental Concepts Inc., Elmsford, N.Y.

Filed Nov. 6, 1995, Ser. No. 554,408

Int. Cl.[6] A61C *5/00*

U.S. Cl. 433—80 **17 Claims**

1. A delivery system for a flowable oral hygiene preparation, the system comprising a housing, the housing including a bore carrying a supply of flowable oral hygiene preparation, the preparation including a peroxide compound active ingredient, the housing further including means for dispensing the oral hygiene preparation within an oral cavity, the means for dispensing being fixed to the housing and being in communication with the bore, the means for dispensing including an applicator tip for depositing a quantity of the peroxide compound active ingredient on a surface within the oral cavity in response to contact between the applicator tip and the surface, the means for dispensing including means for facilitating



flow of the peroxide compound active ingredient from the bore to the applicator tip, the means for facilitating flow including means for drawing the oral hygiene preparation to the applicator tip by capillary action.

5,611,688

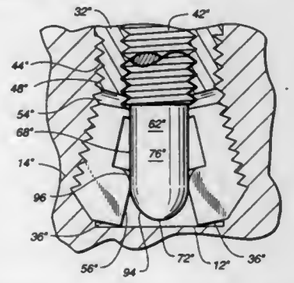
EXPANDING DENTAL IMPLANT AND METHOD FOR ITS USE

Frederick N. Hanosh, 6756 Rancho Oaks Rd., Magalia, Calif. 94954

Continuation-in-part of Ser. No. 242,258, May 13, 1994, Pat. No. 5,489,210. This application May 11, 1995, Ser. No. 439,367

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 **15 Claims**



1. An expandable dental implant which may be secured within a bore formed into bone of a patient's jaw that is adapted for receiving and supporting a dental prosthesis, said expandable dental implant comprising:

an elongated, hollow, tubular barrel having both an attachment end, to which a dental prosthesis may be attached, and an insertion end, which enters furthest into a bore formed into bone of a patient's jaw; said barrel having both an interior surface and an exterior surface which respectively extend from the attachment end of said barrel to the insertion end; said barrel having threads formed both on the interior surface and on the exterior surface of said barrel; the threads formed on the exterior surface of said barrel permitting said barrel to be screwed into a bore formed into bone of a patient's jaw; said barrel being pierced about the insertion end thereof by a plurality of radial slits spaced circumferentially around said barrel; the slits passing completely through said barrel from the exterior surface to the interior surface, and extending a distance along said barrel from the insertion end toward the attachment end; the interior surface of said barrel at the insertion end having a smaller diameter than that of the interior surface of said barrel at the attachment end; and

an expander screw adapted for insertion into said barrel through the attachment end thereof; said expander screw having an outer surface that is shaped to engage and mate with the threads formed on the interior surface of said barrel; said expander screw having an end surface, which upon advancement of said expander screw along said barrel from the attachment end toward the insertion end thereof, collides with the interior surface of said barrel near the insertion end thereof; the end surface of said expander screw and the interior surface of said barrel near the insertion end thereof each constituting a colliding surface respectively of said expander screw and of said barrel; one of the colliding surfaces of said mated expander screw and barrel being formed with a shape that generally-converges from the attachment end of said barrel toward the insertion end thereof; whereby, after said barrel has been screwed into a bore formed into bone of a patient's jaw, advancement of the expander screw from the attachment end toward the insertion end of said barrel causes the insertion end of said barrel to expand outward into and to penetrate the surrounding bone, and causes the expander screw to substantially fill a void resulting from expansion of the insertion end of the barrel into the surrounding bone.

5,611,689

POSITIONING DEVICE FOR CONNECTING A PROSTHESIS TO A BODY IMPLANT

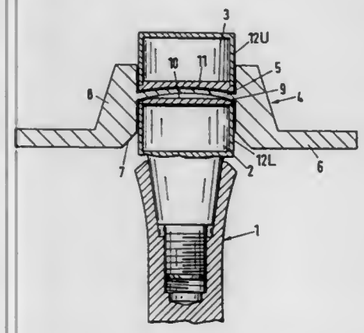
Hartmut Stemmann, Kollaustr. 6, 2000 Hamburg 54, Germany

Division of Ser. No. 75,290, Jun. 11, 1993, Pat. No. 5,421,722. This application Mar. 20, 1995, Ser. No. 406,592

Claims priority, application Germany, Jun. 12, 1992, 9207951 U

Int. Cl.[6] A61C *13/22*

U.S. Cl. 433—189 **15 Claims**



1. A positioning element for positioning a prosthesis relative to an implant for a human body, the positioning element having a sleeve-shaped portion forming first and second compartments aligned along an axis for receiving respective connector portions of a prosthesis and an implant, said compartments being separated by a partition wall and opening in opposite axial directions, said partition wall being recessed in its entirety with respect to open ends of both of said compartments, said positioning element further including a flange structure extending outwardly from said sleeve-shaped portion in a direction oriented transversely relative to said axis, wherein said positioning element is formed of a soft silicone material.

5,611,690

METHOD AND APPARATUS FOR SPRAYED DELIVERY OF TOOTH BLEACHING AGENT

Georgene Summers, and Mitchell A. Rothstein, both of New York, N.Y., assignors to E. Mishan & Sons, Inc., New York, N.Y.

Filed Apr. 2, 1996, Ser. No. 631,604

Int. Cl.[6] A61C *5/04*

U.S. Cl. 433—215 **14 Claims**

1. A method for whitening teeth, comprising:

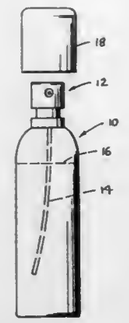
storing a liquid composition containing a tooth whitening bleach and a breath freshener in a portable spraying container having a spraying mechanism with a blunt actuator button for spraying the composition out of the container;

exposing surfaces of the teeth by opening the mouth and exposing the teeth of a person whose teeth are to be whitened;

activating the spraying mechanism by pressing the actuator button to spray the composition out of the container;

directing the sprayed composition onto the exposed surfaces of the teeth;

allowing the composition to remain on the teeth for a selected short period of time; and thereafter expectorating the composition.



5,611,691

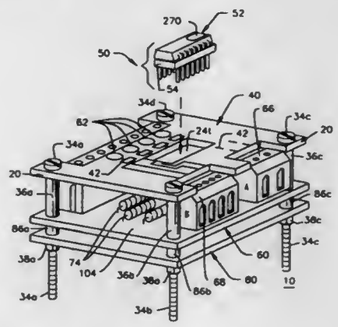
MODULAR CONSTRUCTION KIT USING ELECTRONIC CONTROL MODULES

Bernard Poulain, Nice, France, assignor to Serge A. Atlan, Nice, France

Filed Jan. 17, 1995, Ser. No. 373,363

Int. Cl.[6] G09B *9/00*

U.S. Cl. 434—224 **6 Claims**



1. A kit for controlling mechanical and electrical components, comprising:

a) a plurality of function modules, wherein each function module includes a circuit board having one or more terminal connectors and one or more supports for receiving integrated circuits; a module cover having a plurality of openings for receiving said terminal connectors and for receiving said supports for said integrated circuits; and a ground plate connected to said circuit board;

b) a plurality of integrated circuits for connection to said supports in said function modules;

c) a switch module (102) having one or more control switches and one or more terminal connectors for connection to said plurality of function modules; and

d) a testing module (101) for testing circuit wiring of said function modules and including a probe and one more electrical connectors.

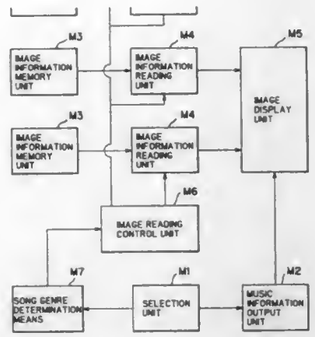
5,611,692
SLIP-ON APPARATUS FOR TEACHING HOW TO TIE LACES AND OTHER KNOTS
Mary A. Gehrdes, 403 Edgemere Dr., Annapolis, Md. 21403
Filed Sep. 18, 1995, Ser. No. 529,651
Int. Cl.[6] G09B *19/24*
U.S. Cl. 434—260 **5 Claims**



1. A training aid for slipping over a foot to demonstrate proper laced shoe tying techniques, said training aid comprising:
(a) a sleeve comprising a first sleeve portion comprising a first edge and a second opposing edge, a second sleeve portion comprising a first edge and a second opposing edge, and an elastic sleeve portion connecting said first portion first edge to said second portion first edge;
(b) lace means for drawing said second edge of said first portion to said second edge of said second portion; and
wherein said sleeve further comprises means adjacent each of said first portion second edge and said second portion second edge for receiving said lace means;
whereby the training aid may be positioned over a user's foot and the user may draw said first portion second edge to said second portion second edge to provide the same feeling to the user as would be encountered in tying a real laced shoe.

5,611,693
IMAGE KARAOKE DEVICE
Norio Chaya; Hiroshi Nishikawa; Koichi Hayashi, all of Nagoya; Hiroyuki Takada, Aichi-ken; Yasutada Aoyama, Inazawa; Yasuhiro Funahashi, and Osamu Nishimura, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, and Xing, Inc., both of Nagoya, Japan
Filed Jun. 21, 1994, Ser. No. 262,832
Claims priority, application Japan, Jun. 22, 1993, 5-150866; Jan. 26, 1994, 6-007070; Jan. 31, 1994, 6-009438
Int. Cl.[6] G09B *5/08;* **G10H** *1/38*
U.S. Cl. 434—307 A **24 Claims**

1. An image karaoke device for reproducing music of a song desired to be sung and for displaying an image in synchronization with the music, the image karaoke device comprising:
music information storing means for storing information on music of a plurality of songs;
song selecting means for selecting a song desired to be sung from the plurality of songs, the music information of which are stored in the music information storing means;



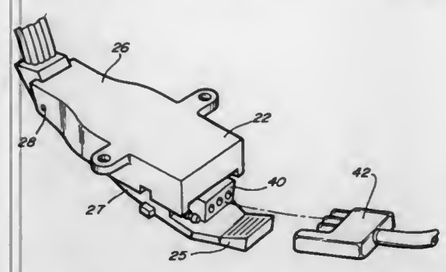
music reproducing means for reproducing music of the song selected by the song selection means based on the information stored in the music information storing means;
image storing means for storing a plurality of image unit groups corresponding to a plurality of image genres representative of a plurality of image contents, each image unit group being constructed from a plurality of image units with their image contents being of the corresponding image genre;
song genre determining means for determining a song genre of the song selected by the song selecting means, the song genre indicating at least one of the plurality of image genres appropriate for the song;
random selecting means for randomly selecting several image units one after another from at least one image unit group of the at least one image genre indicated by the determined song genre, to thereby produce a series of image units; and
displaying means for displaying the series of image units, in synchronization with the music reproduced by the music reproducing means.

5,611,694
INTERACTIVE TALKING PICTURE MACHINE
Eric Bromley, 4 Watson Dr., West Simsbury, Conn. 06092
Continuation of Ser. No. 74,775, Jun. 9, 1993, Pat. No. 5,474,457. This application Jun. 6, 1995, Ser. No. 469,100
Int. Cl.[6] G09B *5/06*
U.S. Cl. 434—311 **20 Claims**



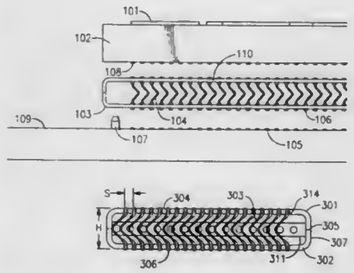
16. An electronic talking picture machine comprising:
housing means having a viewing portion;
display means positionable in said housing means and having discrete information encoded thereon, said discrete encoded information comprising a bar code, said display means including a plurality of spaced frames with said discrete encoded information being associated with each frame and a selected frame being sequentially movable for viewing in said viewing portion of said housing means, said display means comprising a roll of flexible material with said spaced frames and encoded information selectively depicted on said roll, said discrete encoded information representing audible information corresponding to a plurality of frames;
electronic sensor means in said housing means for reading said encoded information from said display means, said electronic sensor means comprising bar code sensor means; and
control means for integrating said encoded information received from said electronic sensor means.

5,611,695
ENCLOSED TRAILER TOW CONNECTOR WITH REAR LOCKING WEDGE WIRE RETAINER
Daniel L. Bentley, Brownstown, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Nov. 22, 1994, Ser. No. 343,176
Int. Cl.[6] H01R *33/00*
U.S. Cl. 439—35 **20 Claims**



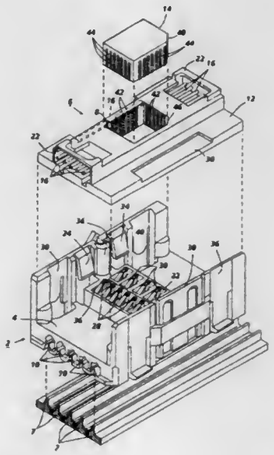
1. An electrical connector for a towed vehicle comprising:
a base to be secured to a towing vehicle;
a moving plate fixed to said base;
electrical connections fixed to one of said base and said moving plate, said moving plate being movable relative to said base from a stowed position to an access position, said electrical connections being protected and enclosed by the combination of said moving plate and said base when in said stowed position, and being exposed when in said access position; and
one of said base and said moving plate having walls, abutting surfaces on the other for forming an enclosed chamber in said stowed position to protect and enclose said electrical connection.

5,611,696
HIGH DENSITY AND HIGH CURRENT CAPACITY PAD-TO-PAD CONNECTOR COMPRISING OF SPRING CONNECTOR ELEMENTS (SCE)
Edward O. Donner, Poughkeepsie, N.Y., and Michael L. Zumbrunnen, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 14, 1994, Ser. No. 355,564
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—66 **20 Claims**



1. A connector assembly for interconnecting two electrical circuit components, arranged opposite each other, said assembly comprising:
a retainer having two open ends and holes formed through opposite surfaces;
a multiplicity of spring contact elements having opposite ends positioned in said opposite holes in said retainer extending beyond said retainer with sufficient length to engage said electrical circuit components, each of said spring contact elements being a single unit of spring metal having electrical conductivity;
an independent row separator supported in said retainer between adjacent rows of said spring contact elements, the row separator physically unconnected to any spring contact element, the row separator enabling unrestrained movement of contacts located at opposite ends of any spring contact element, and the row separator being made of electrically insulating material having low noise generation when contacted by any spring contact element.

5,611,697
CONNECTOR MODULE WITH MOLDED UPPER SECTION INCLUDING MOLDED SOCKET, SOCKET PINS, AND POSITIONING ELEMENTS
David W. Rall, Webster, and Timothy M. Minerd, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 16, 1995, Ser. No. 515,780
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—71 **20 Claims**



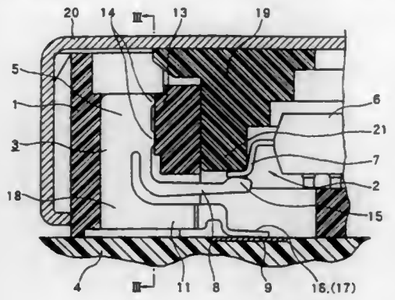
1. An input/output connector module for connecting at least one of an input device and an output device to a multi-wire bus, the bus carrying signals for controlling input and output devices, the module comprising:
a first stage having means for electrically connecting the first stage directly to the multi-wire bus, and
a second stage supported on the first stage and having an IC chip mounted thereon, the second stage being a single molded element including
a set of molded pins, the set of molded pins including applied conductive coatings for electrically connecting the input and output devices to the IC chip,
a molded socket for receiving said IC chip, the molded socket including applied conductive traces for electrically connecting the multi-wire bus to the IC chip, and
molded positioning elements for locating the second stage with respect to the first stage in both the horizontal and vertical directions, the second stage including a molded substrate having a molded positioning cavity for locating the second stage with respect to the first stage in the horizontal direction and the surface of the substrate including cut out portions for locating the second stage with respect to the first stage in the vertical direction, the second stage being adapted for connecting the multi-wire bus to the IC chip for conveying the signals between the multi-wire bus and the input and output devices.

5,611,698

SURFACE MOUNTING IC SOCKET

Toshiyasu Ito, Togane, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 301,008
Claims priority, application Japan, Sep. 6, 1993, 5-245913
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—72 10 Claims



1. An IC socket for use in connecting an IC having IC leads to a wiring board having a wiring pattern, said IC socket comprising:

a socket frame having an IC receiving section defined in a center portion thereof, a plurality of vertical contact-receiving slots being formed in said socket frame outwardly of said IC receiving section;

a plurality of contacts respectively mounted in said contact-receiving slots;

wherein each of said contact-receiving slots is elongated in an inward-to-outward direction, which extends from a center of said socket frame toward an outer periphery of said socket frame, so as to extend between a slot inner wall and a slot outer wall wherein said slot outer wall is spaced outwardly of said slot inner wall;

wherein said contacts are spaced apart from one another in side-by-side relation in a side-by-side direction;

wherein each of said contacts includes a press-in portion mounted in an upper portion of a respective one of said contact-receiving slots, a press-in force receiving portion mounted in a lower portion of the respective one of said contact-receiving slots, a contacting arm extending from said press-in portion inwardly toward said IC receiving section and terminating in an IC lead contacting portion, and a surface mounting arm extending from said press-in force receiving portion inwardly toward said IC receiving section and terminating in a soldering portion;

wherein said press-in portion of each of said contacts is constituted by a plate-shaped portion having opposing vertical planar plate surfaces which face in said side-by-side direction such that the vertical planar plate surfaces of adjacent pairs of said press-in portions confront each other in said side-by-side direction;

wherein said press-in portions extend in said inward-to-outward direction between said slot inner walls and said slot outer walls so as to abut against said slot inner walls and said slot outer walls, respectively; and

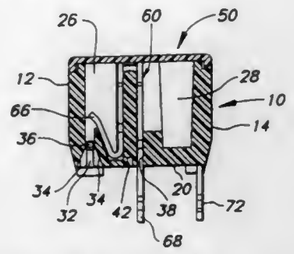
wherein said contacting arm of each of said contacts includes a substantially vertical portion extending downwardly from a respective one of said press-in portions, and a substantially horizontal portion extending from said substantially vertical portion inwardly toward said IC receiving section for directly contacting one of the IC leads.

5,611,699

TAPE-CARRIER-TYPE ELECTRICAL CONNECTOR AND METHOD OF MANUFACTURING SAME

Junichi Tanigawa, Kawasaki, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 13, 1994, Ser. No. 354,703
Claims priority, application Japan, Dec. 29, 1993, 5-075067 U; May 19, 1994, 6-129782
Int. Cl.[6] H01B 9/09
U.S. Cl. 439—78 12 Claims



1. An electrical connector, comprising:

a housing having a top surface, a bottom surface and contact chambers therein, the contact chambers having openings along the bottom surface; and

contacts disposed in said housing and having connection sections and termination posts, the termination posts extend from the bottom surface of said housing in two rows, one row being along a center line of the bottom and the other row being along one side of the bottom and parallel to the center line, the connection sections being disposed in the contact chambers for receiving matable contacts therein, the openings being disposed along the bottom surface of said housing in a row along another side of the bottom surface;

said contacts having linking sections connecting the termination posts to the connection sections, alternate ones of said contacts have short linking sections and the termination posts extend from the bottom surface along the center row, other alternate ones of said contacts have long linking sections with the posts thereof being disposed in the row along the side of the bottom surfacer whereby the posts are staggered from each other;

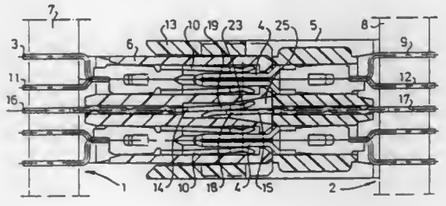
the posts being receivable in through holes in a circuit board and the openings being in alignment with an opening in the circuit board.

5,611,700

CONNECTOR HAVING PLATE-TYPE INTERNAL SHIELDING

Niranjan K. Mitra, Eindhoven, Netherlands, assignor to Berg Technology, Inc., Reno, Nev.

PCT No. PCT/NL93/00022, § 371 Date Sep. 6, 1994, § 102(e) Date Sep. 6, 1994, PCT Pub. No. WO93/15533, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 22, 1993, Ser. No. 256,753
Int. Cl.[6] H01R 13/652
U.S. Cl. 439—101 18 Claims



1. Electrical connector assembly, comprising a plug connector and a socket connector mating therewith, which plug connector and socket connector can be pushed into one another, which plug connector is provided with at least two rows of terminal connections comprising at least one of at least one row of male terminal pins and at least one row of female terminal connections which are accommodated in a first plastic housing, and which socket connector is provided with at least two rows of terminal connections comprising the other of said at least one row of male terminal pins and at least oen row of female terminal connections which are accommodated in a second plastic housing, and said socket connector comprising the other of said at least one row of male terminal pins and at least one row of female terminal connections, one male terminal pin always being in electrically conducting contact with a female terminal connection when the plug connector and socket connector are pushed into one another, the plug connector being provided with at least one electrically conducting first shielding member arranged between said rows of terminal connections in the plug connector and being rigidly accommodated in the first housing and comprising at least one resilient contact element, the socket connector being provided with at least one conducting second shielding member arranged between said rows of terminal connections in the socket connector and being rigidly accommodated in the second housing and comprising at least one resilient contact element, which first shielding member and second shielding member make electrically conducting contact with one another when the plug connector and the socket connector have been pushed into one another, each said contact element of each said first shielding member within the plug connector being a resilient, flat contact element and each said contact element of the second shielding member within the socket connector being a resilient, flat contact element, whereby when the socket connector and the plug connector are connected to each other each contact element of the first shielding member is slid along at least one contact element of the second shielding member such that said each other contact element of said first shielding member and said at least one contact element of said second shielding member deflect from each other in opposite directions and are maintained in electrical contact by spring action of said contact elements of said first and second shielding members in a non-gripping manner.

5,611,701

COLLAPSIBLE PRONG PLUG DEVICE FOR BATTERY CHARGER

Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.

Continuation of Ser. No. 201,247, Feb. 24, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,443
Int. Cl.[6] H01R 13/44
U.S. Cl. 439—131 9 Claims

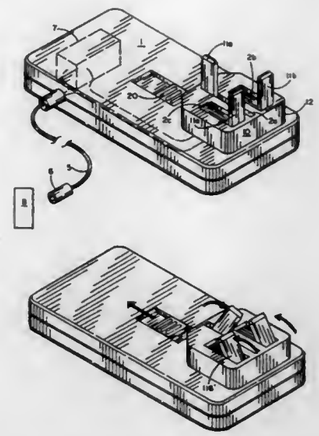
I. A collapsible prong plug device comprising

a casing,

an electrical plug with a first and a second prong rotatably mounted in said casing, said first and said second prong rotatable between a collapsed and an extended position, relative to said casing, the direction of rotation of said first prong being opposite to the direction of rotation of said second prong,

a securing means mechanically connected to said casing and designed to engage said second prong to maintain said second prong in said extended position, and

a release means mechanically connected to said casing and designed to engage said second prong and release it from said securing means,



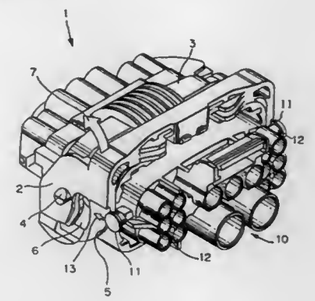
whereby the second prong is maintained in the extended position until and unless a user releases the release means.

5,611,702

LEVER CONNECTOR

Kenichi Okamoto, and Naoto Taguchi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,370
Claims priority, application Japan, Dec. 28, 1993, 5-350672
Int. Cl.[6] H01R 13/62
U.S. Cl. 439—157 2 Claims



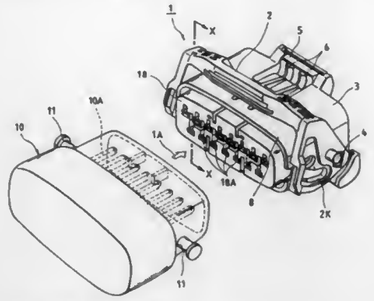
1. A lever connector assembly comprising:

a first connector having a retaining lever being pivotable about pivots arranged on both lateral sides thereof, rail portions being arranged on a front surface of the retaining lever, each rail portion having a surface of curvature; and

a second connector having fixing shafts on both lateral sides thereof so as to be projected in an outward lateral direction, wherein said fixing shafts have recessed shaft portions for abutting said rail portions and pivoting said retaining lever;

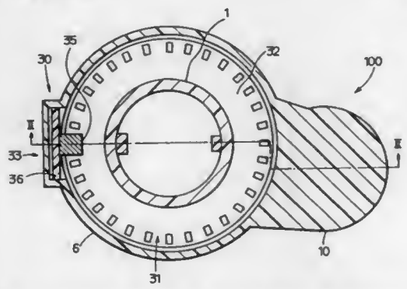
wherein when the second connector is inserted into the first connector having the retaining lever, said recessed shaft portions of the fixing shafts are abutted against and bias the rial portions to provide resisting forces, and each surface of curvature is designed so that the resisting forces pivot the retaining lever at all positions of the retaining lever relative to the recessed shaft portions.

5,611,703
LEVER-TYPE CONNECTOR
Kenichi Okamoto, and Naoto Taguchi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Sep. 6, 1995, Ser. No. 522,819
Claims priority, application Japan, Sep. 6, 1994, 6-212874
Int. Cl.[6] H01R 13/62
U.S. Cl. 439—157 5 Claims



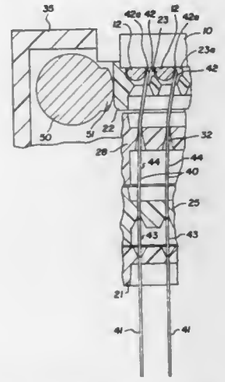
1. A connector, comprising:
a first connector having engagement shafts on opposite sides thereof;
a second connector having support shafts on opposite sides thereof;
a retaining lever pivotably disposed about said support shafts on said second connector, said retaining lever including fitting grooves for receiving said engagement shafts, respectively;
a lock portion formed on a front surface of said retaining lever directed in a direction of pivotal movement of said retaining lever; and
a lock arm formed on said second connector, said lock arm having a retaining piece for engaging with said lock portion, holding the retaining lever in a provisionally-fitted condition when the first connector and the second connector are not completely fitted, and holding the retaining lever in a completely-fitted condition when the first connector and the second connector are completely fitted,
wherein at least one of said retaining piece and said lock arm is elastically deformable.

5,611,704
ELECTRICAL CONNECTOR
Tsutomu Kamizono, and Tetsuya Takafuji, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 14, 1995, Ser. No. 421,964
Claims priority, application Japan, Apr. 26, 1994, 6-088196
Int. Cl.[6] H01R 35/04
U.S. Cl. 439—164 5 Claims



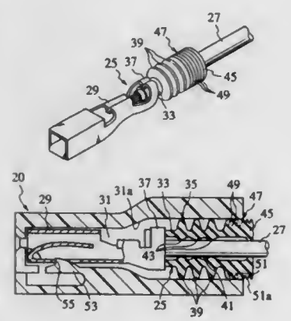
1. An electrical connector having a flexible cable housed in a case, wherein one end of the flexible cable is attached to a rotating member and the other end is attached to a fixed member, and said cable is wound around said rotating member and said fixed member to form loose windings of a plurality of turns, comprising:
a rotation support member installed at a predetermined position between said fixed member and said case so that the rotation support member can rotate and contact said flexible cable which is wound around a perimeter thereof several times;
an elastic member connecting said rotation support member and said fixed member, and generating a returning force responsive to a rotation of said rotation support member;
cable codes formed on said flexible cable and indicating a rotation angle of said rotating member;
a cable path formed in said case and for allowing said flexible cable to pass therealong; and
detection means, installed in said cable path, for detecting said cable codes and generating a signal related thereto;
wherein when said flexible cable around said rotating member is tightened or loosened due to the rotation of said rotating member, said rotation support member rotates according to the tightening or loosening of the cable, and, when said cable is loosened after being tightened onto said rotating member, said rotation support member rotates by the returning force generated from said elastic member, and said flexible cable is wound onto a perimeter of said rotation support member.

5,611,705
MOUNTING APPARATUS FOR BALL GRID ARRAY DEVICE
Wayne K. Pfaff, 309 Steeplechase, Irving, Tex. 75062
Continuation-in-part of Ser. No. 258,348, Jun. 10, 1994, Pat. No. 5,419,710. This application Feb. 1, 1995, Ser. No. 382,487
Int. Cl.[6] H01R 11/22
U.S. Cl. 439—266 22 Claims



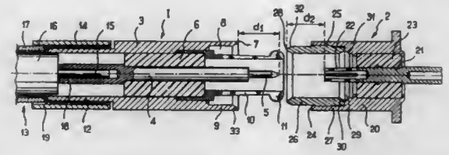
1. Apparatus for mounting a ball grid array device comprising:
(a) a support member having a support face with a plurality of windows therein arranged in a pattern to correspond with and receive terminal balls depending from one face of a ball grid array device when said ball grid array device is positioned on the support face of said support member;
(b) a base member;
(c) a bending plate having apertures therein substantially corresponding with said windows positioned between said base member and said support member and adapted for lateral movement with respect to said support member;
(d) a plurality of elongated contact members anchored in said base member, each having an interconnection end and a free end portion disposed on opposite sides of a central section with said central section projecting through an aperture in said bending plate and said free end portion positioned in a window in said support member; and
(e) a cam adapted to move the position of said bending plate laterally with respect to said support member and thereby urge said free end portions into contact with said terminal balls between the centerline thereof and the face from which they depend.

5,611,706
RUBBER WATERPROOF PLUG
Toshihiko Makita, and Akira Maeda, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Mar. 1, 1995, Ser. No. 396,603
Claims priority, application Japan, Mar. 4, 1994, 6-034487; Sep. 7, 1994, 6-213654
Int. Cl.[6] H01R 13/52
U.S. Cl. 439—275 5 Claims



1. A combination of a connector housing having a rear end surface and an opening through the rear end surface, the opening having an inner wall forming a terminal accommodation chamber, a terminal having a wire attached thereto and inserted into the opening from the rear end surface of the housing, said wire having an outer circumference, and a rubber waterproof plug fitted to the outer circumference of the wire and inserted into the terminal accommodation chamber together with the terminal from a rear end of the connector housing to seal a gap between the wire and an inner wall of the terminal accommodation chamber, said rubber waterproof plug comprising:
a clamp connection portion formed at a front end portion of the rubber waterproof plug and clamped with a front end of the wire by the terminal;
a plurality of annular gill-shaped projections formed at a rear end portion of the rubber waterproof plug to have a diameter and a pitch between adjacent annular gill-shaped projections such that at least some of said annular gill-shaped projections are deformed axially to sealingly bear against one another when said rubber waterproof plug is inserted into said opening, an axial length of said annular gill-shaped projections being determined so as to be flush with or project outside the rear end surface of the connector housing irrespective of the clamped position of the clamp connection portion of the rubber waterproof plug relative to the terminal; and
a plurality of inner and outer annular lip portions formed between said clamp connection portion and said annular gill-shaped projections so as to be brought into contact with the outer circumference of the wire and the inner wall of the terminal accommodation chamber, respectively, said annular lip portions having a pitch greater than the pitch of said annular gill-shaped projections and being compressed primarily radially rather than axially.

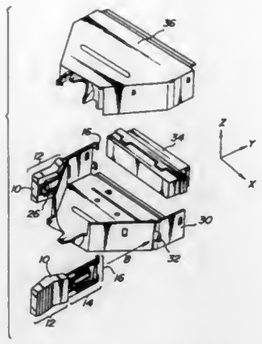
5,611,707
MICROMINIATURE COAXIAL CONNECTOR WHICH LOCKS BY SNAP-FASTENING
Christophe Meynier, Saint Egreve, France, assignor to Radiall, Rosny-Sous-Bois, France
Filed Jan. 11, 1995, Ser. No. 371,507
Claims priority, application France, Jan. 13, 1994, 94 00312
Int. Cl.[6] H01R 13/627
U.S. Cl. 439—353 5 Claims



1. A microminiature coaxial connector which locks by snap-fastening, said microminiature coaxial connector including two complementary electrical connector elements,
each of said electrical connector elements comprising: a hollow cylindrical body forming an exterior earthing contact, said body having a forward end and an interior wall,
each of said connector elements further having, starting from said forward end, a cavity into which there penetrates a central contact, said central contact having an end,
said two connector elements respectively having male and female central contacts, retained in the body via an insulating material,
a first of the connector elements including, inside its body, an elastic socket surrounding its central contact and extending beyond the forward end of the body, said socket having a free end and including, close to its free end, substantially in line with the end of the central contact which it surrounds, a peripheral bead extending outwardly from said elastic socket and being able to engage in a groove formed in the interior wall of the body of a second of the connector elements, when said first connector element is inserted into said second connector element,
wherein the second connector element includes a cylindrical skirt forcibly fitted into a cavity of said body of said second connector element, said skirt having an interior wall and an end and said skirt extending beyond the forward end of said second connector element body,
the end of said skirt being at a distance (d2) from the end of the central contact of the said second connector element substantially equal to the distance (d1) between the end of the body of the first connector element and the end of the central contact housed within said second connector element body, and wherein said skirt includes a tapered surface in a region of a rear end of its interior wall.

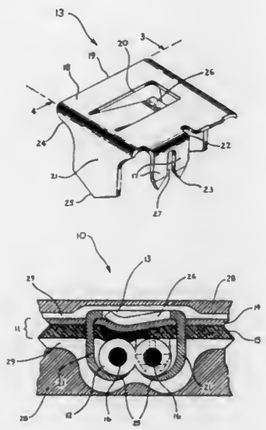
5,611,708
ELECTRIC CONNECTOR
Yasuyuki Mizunuma, and Katsuhiro Nozawa, both of Tokyo, Japan, assignors to DDK Ltd., Japan
Filed Jul. 12, 1995, Ser. No. 501,607
Int. Cl.[6] H01R 13/73
U.S. Cl. 439—358 6 Claims

1. An electrical connector comprising, a locking member, said locking member including at one end having an anchoring part shaped for hooking a mating connector, an engagement part to be secured to a projection provided on a side of a shell enclosing a main connector body, a knob portion having a leaf spring formed at the other end of the locking member, said engagement part being positioned between said anchoring part and said knob portion, said engagement part having a width and including a protrusion formed thereon proximate the center of the width of the engagement part adjacent to said knob portion, and two plate pieces positioned on respective opposite sides of said protrusion, each of said plate pieces having a free end in a form of a resilient cantilever extend-



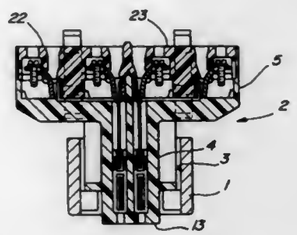
ing toward said protrusion, the protrusion having a width, a spacing between the free ends of said two plate pieces being less than the width of said protrusion, said free ends of said two plate pieces being generally L-shaped and said protrusion being generally trapezoid shaped, and wherein said protrusion and said free ends of said two plate pieces are arranged so that an opening formed therebetween is U-shaped and has a size enabling said projection of said shell to be fitted in said opening without play.

5,611,709
METHOD AND ASSEMBLY OF MEMBER AND TERMINAL
Michael J. McAnulty, Longmont, Colo., assignor to ValleyLab Inc, Boulder, Colo.
Filed Aug. 10, 1995, Ser. No. 513,287
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—422 **17 Claims**



1. An assembly of a member and terminal comprising;
a flexible conductive member;
an insulated wire carrying one or more conductors therethrough;
an insulation piercing terminal, for both:
extending through the flexible conductive member,
and compressively holding the flexible conductive member against the insulated wire;
a piercing member on the insulation piercing terminal extending through the flexible conductive member and into the insulated wire to engage the wire by piercing the insulation thereof for providing an electrically conductive connection with one or more conductors therein, and
one or more securing tabs on the insulation piercing terminal wherein the one or more securing tabs extending through the flexible conductive member for retaining and compressively engaging against the insulated wire to hold the insulated wire against the flexible conductive member.

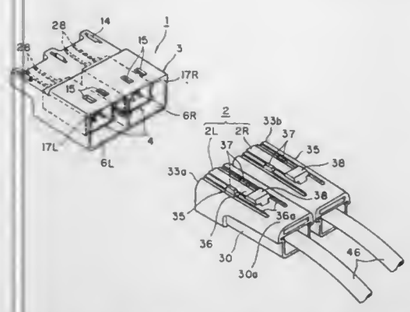
5,611,710
MULTI-POLE PLUG INSERT
Wolfgang Essrich, Hilden, Germany, assignor to HTS Elektrotechnik GmbH, Neunkirchen-Seelscheid, Germany
PCT No. PCT/EP94/00404, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/18725, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 12, 1994, Ser. No. 318,829
Claims priority, application Germany, Feb. 13, 1993, 9302091 U
Int. Cl.[6] H02R *31/08*
U.S. Cl. 439—513 **23 Claims**



1. A multi-pole plug insert comprising:
an insulative housing including a first part of said housing provided with a first number of electrical contact inserts;
a second part of said housing provided with a second multiple number of electrical connecting contacts relative to the first number, and adjoining sets of said second multiple number of electrical connecting contacts being separated from one another by insulative material of said housing second part, with each electrical contact insert in the first part being permanently conductingly connected to said multiple number of electrical connecting contacts in the second part and the second part including at least one aperture in the insulative material between each two adjoining sets of multiple members of electrical connecting contacts, each of which is permanently conductingly connected to a contact insert in the first part, said at least one aperture adapted to clamp a contact bridge which establishes a conducting connection between the two adjoining sets of multiple numbers of electrical connecting contacts with all electrical connecting contacts remaining accessible.

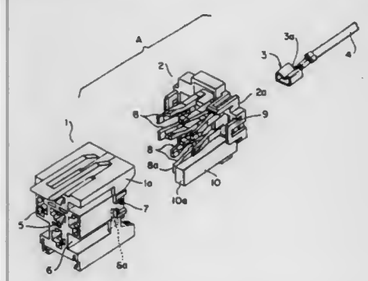
5,611,711
ELECTRICAL CONNECTOR ASSEMBLY
Masao Okada, and Kensaku Sato, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Aug. 9, 1995, Ser. No. 512,758
Claims priority, application Japan, Sep. 9, 1994, 6-240856
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—608 **10 Claims**

1. An electrical connector assembly comprising a first connector and a second connector;
said first connector comprising:
a first metallic housing;
a first terminal unit comprising an insulating block, a first terminal supported by said insulating block, and a first shield jacket provided over said insulating block and said first terminal;



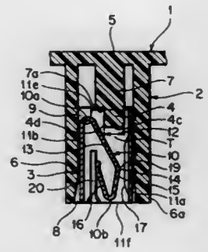
said first terminal unit provided within said first metallic housing such that said first shield jacket is electrically connected to said first housing; and
said second connector comprising:
a second housing of a synthetic resin; and
a second terminal unit comprising a second insulation block, a second terminal supported by said second insulation block, and a second shield jacket provided over said second insulation block and said second terminal; and
said second terminal unit provided in said second housing, wherein said second terminal unit comprises a metallic shield cover provided over an exposed portion of said second shield jacket.

5,611,712
CONNECTOR WITH TERMINAL STOPPER ATTACHED AND METHOD FOR INSERTING AND STOPPING TERMINAL FITTINGS USING SAME
Kazuhiro Morishita, and Hiraji Takase, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jun. 17, 1994, Ser. No. 262,312
Claims priority, application Japan, Jun. 18, 1993, 5-147484
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—752 **9 Claims**



1. A connector comprising:
a connector housing having a plurality of terminal accommodating chambers for respectively receiving a plurality of terminals;
a terminal stopper including a plurality of flexible terminal retaining arms extending in a forward direction which are respectively receivable in said terminal accommodating chambers for retaining the terminals therein, said terminal stopper being engageable with said connector housing and moveable in said forward direction from a provisional position to a final position, wherein said terminals are insertable into said terminal accommodating chambers when said terminal stopper is in said provisional position and wherein said retaining arms engage and retain said terminals when said terminal stopper is in said final position; locking means for locking said terminal stopper to said connector housing; and
guide means, separate from said locking means, for guiding said terminal stopper with respect to said connector housing so as to, attendantly, guide said retaining arms into the respective terminal accommodating chambers, said guide means including a substantially rigid guide bar having a predetermined cross-sectional shape protruding from said terminal stopper in said forward direction which is received in a cavity in said connector housing, said cavity having substantially the same cross-sectional shape as said predetermined cross-sectional shape of said guide bar to establish a close fit therebetween.

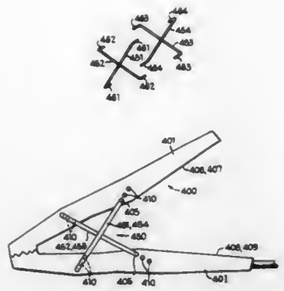
5,611,713
WRONG INSERTION PREVENTION STRUCTURE FOR A TERMINAL
Kunihiko Takeuchi, Kosai, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Aug. 29, 1995, Ser. No. 520,670
Claims priority, application Japan, Aug. 30, 1994, 6-205156
Int. Cl.[6] H01R *13/42*
U.S. Cl. 439—752.5 **4 Claims**



1. A wrong insertion prevention structure for a terminal for leading a terminal formed with a first peripheral wall of a substantially rectangular tube and having a resilient contacting portion therein into a corresponding terminal accommodating section formed in an electrical junction box,
wherein said terminal accommodating section further comprises;
a second peripheral wall,
a stopping wall formed within said second peripheral wall, and
an interfering projection integrally and protrudingly formed on the lowermost end of said stopping wall directing downward,
wherein said interfering projection enters into a space between said resilient contacting portion and said first peripheral wall when the terminal is properly inserted, and abuts against said resilient contacting portion when the terminal is not inserted properly.

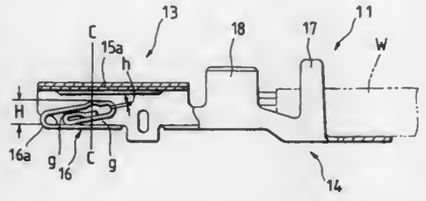
5,611,714
WIRE FLEX PIVOT
Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Jun. 7, 1995, Ser. No. 483,713
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—759 **30 Claims**

1. A flexural pivot joint joining two members for pivotal movement about a pivot axis, said pivot joint comprising two pairs of resilient spring wire sections spaced apart along the pivot axis, each wire section being coupled to both of the members and having a longitudinal axis, the wire sections of each pair being disposed in cross-arrangement with respect to each other and being



deflectable from their respective longitudinal axes to accommodate pivoting of the members from an at-rest condition about the pivot axis.

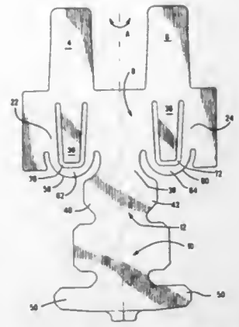
5,611,715
ELECTRIC CONNECTING DEVICE
Masakuni Samejima, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Dec. 27, 1994, Ser. No. 364,273
Claims priority, application Japan, Dec. 27, 1993, 5-347128
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—850 **3 Claims**



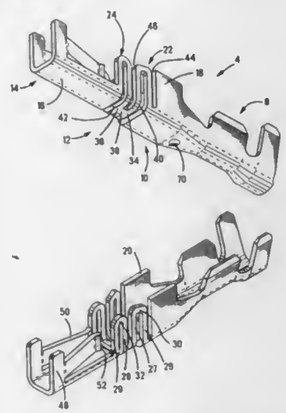
1. An electric connecting terminal comprising:
a base member; and
a multilayer resilient connecting portion for resiliently contacting a male terminal to be inserted in the electric connecting terminal, wherein the resilient connecting portion comprises a portion of the base member that is folded back over itself at least three times to form at least three layers for regulating a maximum displacement of the resilient connecting portion in accordance with a thickness of the base member at the resilient connecting portion and gaps formed between each layer of the resilient connecting portion.

5,611,716
ELECTRICAL CONTACT HAVING IMPROVED SECONDARY LOCKING SURFACES
Bernhard Egenolf, Dreieich, Germany, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 27, 1995, Ser. No. 411,004
Claims priority, application United Kingdom, Apr. 7, 1994, 9406929
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—857 **14 Claims**

1. An electrical contact that is receivable in a connector housing for interconnection with a complementary terminal, the contact comprising:
contact arms to engage the complementary terminal;
a central portion of box-like structure having a base and opposing side walls which include a rearwardly and outwardly extended cantilevered locking lance that is defined by a U-shaped opening, the side walls further including a portion rearward of the locking lance, where the contact arms extend from a forward end of the central portions;
a conductor engaging portion for engaging an electrical conductor; and
a transition section including upwardly folded side walls having an upper edge, where the transition section interconnects the central portion and the conductor engaging portion;
where the contact further includes three secondary locking areas selectively receiving a secondary locking member of the housing to retain the contact therein, the secondary locking areas including bearing surfaces formed by inwardly folding the portion of each side wall rearward of the U-shaped opening such that two areas are symmetrically disposed on opposite sides of the transition section and the third area is located above the upper edges of the upwardly folded walls of the transition section.

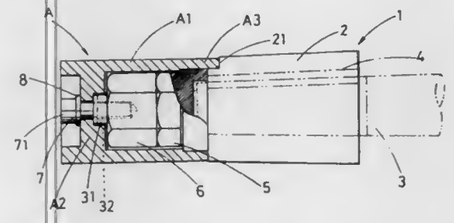


5,611,717
MINIATURE ANTI-FRETTING RECEPTACLE TERMINAL
Jean C. Joly, Osny, France, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 21, 1995, Ser. No. 426,544
Claims priority, application France, Apr. 22, 1994, 94 04870
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—857 **9 Claims**



1. A terminal for mating with a complementary terminal inserted in the longitudinal direction, the terminal comprising an inner contact body having a contact section, a longitudinally resilient spring section, a base section and a conductor connection section, where the spring section and base section are positioned intermediate the contact section and connection section, characterized in that the inner contact body has a U-shape formed by a bottom wall and opposed side walls extending from lateral edges thereof, where the longitudinally resilient spring section comprises, in each side wall, resilient beams separated by spring slots and attached together via bridge portions, the beams and bridge portions comprised in the side walls and resiliently bendable substantially in the planes of the side walls.

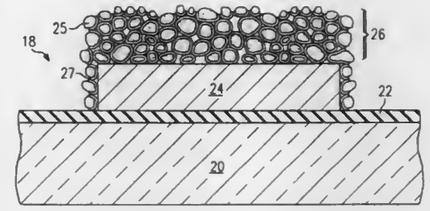
5,611,718
AUXILIARY PROPELLING DEVICE
Shigeki Nishiyama, Mie, Japan, assignor to Mikado Propeller Co., Ltd., Nabari, Japan
Filed Aug. 23, 1995, Ser. No. 518,302
Claims priority, application Japan, Aug. 23, 1994, 6-198641
Int. Cl.[6] B63H *5/07*
U.S. Cl. 440—49 **12 Claims**



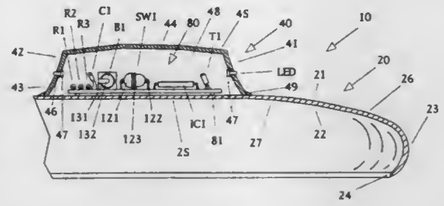
1. An auxiliary propeller device to be attached to an existing propeller system including a propeller shaft, a propeller including a propeller boss mounted on the shaft and a tightening nut threaded on the shaft and maintaining the propeller boss thereon, said auxiliary propeller device comprising:
a cylindrical auxiliary propeller boss member having an interior divided into axially spaced first and second interior portions by an integral internal partition of said boss member, said boss member being fittable over the tightening nut and an end of the propeller shaft with said first interior portion forming means for accommodating therein the tightening nut;
an auxiliary tightening member at least partially accommodated in said second interior portion, said auxiliary tightening member defining means cooperable with the end of the shaft for forcing said internal partition in a direction to press against the tightening nut; and
said boss member having at a front end thereof at least one convex portion forming means for, when said auxiliary tightening member forces said internal partition in said direction, cooperating with a complementary concave portion of the propeller boss to fix said boss member to the propeller boss rotationally relative thereto and to prevent relative rotational displacement therebetween upon rotation of the propeller shaft.

5,611,719
METHOD FOR IMPROVING FLAT PANEL DISPLAY ANODE PLATE PHOSPHOR EFFICIENCY
Kenneth G. Vickers, Whitesboro; Leigh A. Files, Dallas; Chi-Cheong Shen, Richardson, and Bruce E. Gnade, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 6, 1995, Ser. No. 498,992
Int. Cl.[6] H01J *9/227*
U.S. Cl. 445—24 **16 Claims**

1. A method of fabricating an anode plate for use in a field emission display device, said method comprising the steps of:
providing a transparent substrate;
depositing a layer of a transparent, electrically conductive material on a surface of said substrate;
applying particles of luminescent material on said conductive layer; and
removing an outer portion of at least some of said particles of said luminescent material.

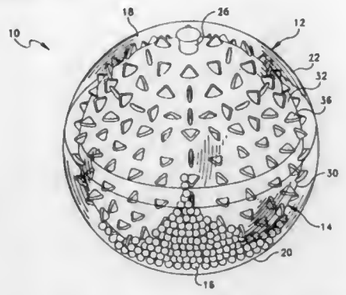


5,611,720
FLYING DISC TOY WITH LIGHTING SYSTEM
John Vandermaas, Calgary, Canada, assignor to Alien Warper, Inc., Calgary, Canada
Filed Feb. 20, 1996, Ser. No. 604,010
Int. Cl.[6] A63B *65/10*
U.S. Cl. 446—47 **7 Claims**



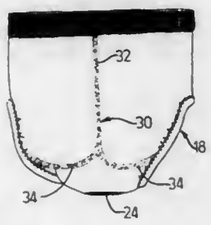
1. A flying disc toy, comprising:
(a) a substantially disc shaped body terminating at its periphery in a downwardly extending rim, the body and the rim defining a substantially convex upper surface and a substantially concave lower surface;
(b) chemiluminescent means, carried by the body of the disc, for providing illumination;
(c) a raised center section, supported by the upper surface of the body, the center section providing an annular sidewall and a roof, and together with the upper surface of the body, defining an interior cavity that is waterproof;
(d) a plurality of LEDs, mounted at spaced intervals about the annular sidewall of the raised center section; and
(e) a circuit board, housed in the interior cavity, comprising:
(a) switch means for making and breaking electrical contact in response to the movement of the flying disc toy;
(b) circuit means for providing a first output signal, upon receipt of an input signal resulting from the closure of the switch means, causing the LEDs to light, and for providing a second output signal, causing the LEDs to turn off a timed period after the receipt of the first input signal;
(c) time selection means, attached to the circuit means, for determining the period of time between the first output signal and the second output signal;
(d) transistor means, connected to the circuit means and to a plurality of LEDs, for receiving the first and second output signals from the circuit means, and for upon receipt of the first signal causing the LEDs to turn on, and for, upon receipt of the second signal, causing the LEDs to turn off; and
(e) a battery, carried by a battery holder, connected to the circuit means.

5,611,721
SOUND PRODUCING DEVICE
Michael G. Hoeting, 783 Delta Ave., Cincinnati, Ohio 45226, and Sean Mullaney, 4328 Hays Ave., Cincinnati, Ohio 45223
Continuation of Ser. No. 276,367, Jul. 18, 1994, Pat. No. 5,476,408. This application Dec. 18, 1995, Ser. No. 573,674
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—419 **5 Claims**



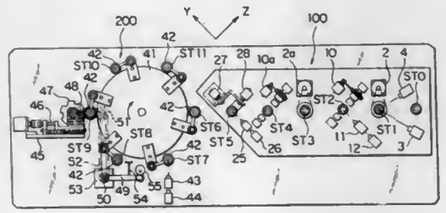
1. A sound producing device comprising an outer shell having a continuous inner surface;
an inner member contained within said outer shell, said inner member having a continuous outer surface thereon which is of substantially the same configuration as said outer shell but of slightly smaller dimensions than said outer shell, the outer surface of said inner member being in closely inwardly spaced relation to the inner surface of said outer shell so that the inner surface of said outer shell and the outer surface of said inner member cooperate to define an enclosed open area therebetween;
a plurality of discrete relatively hard sound particles in said open area, said sound particles being dimensioned to loosely travel in said open area when said device is moved; and
a plurality of projections on at least one of said inner member and said outer shell extending into said open area for redirecting said sound particles as they travel in said open area; said projections being closely spaced in an array extending around substantially the entire outer surface of said inner member.

5,611,722
PANTY HAVING KNIT-IN BUTTOCK LIFT AND SEPARATION
Harold G. Osborne, Boomer, N.C., assignor to Alba-Waldensian, Inc., Valdese, N.C.
Filed Feb. 3, 1995, Ser. No. 382,864
Int. Cl.[6] A41C *1/00;* **A41B** *9/00*
U.S. Cl. 450—99 **20 Claims**



1. A panty for lifting and separating the cheeks of a wearer's buttocks comprising:
a front panel adapted to cover a front portion of a wearer's body between the waist and juncture of the thighs;
a knitted rear panel connected to said front panel along first and second rear panel sides and a crotch region, said rear panel adapted to cover a portion of a wearer's buttocks and said front and rear panels defining first and second leg openings;
said rear panel including an integrally knit support panel having a greater resistance to stretch than the remainder of the rear panel, said support panel comprising a substantially anchor-shaped region of the rear panel extending vertically through the center of the rear panel and curving around toward and along a portion of said first and second leg openings, thereby conforming to those regions of a wearer's body corresponding to the areas between and beneath a wearer's buttock cheeks.

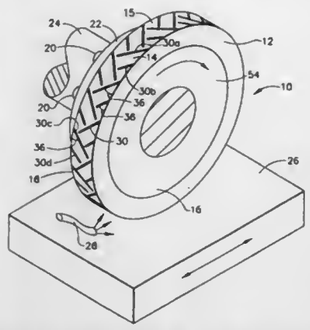
5,611,723
APPARATUS FOR MODIFYING ATTITUDE OF GOLF BALL HAVING BURRS FORMED THEREON AND DEBURRING MACHINE EMPLOYING THE SAME
Shiro Mitoma, and Kazuya Shirolwa, both of Osaka, Japan, assignors to Hinode Engineering Co., Ltd., Japan
Filed Jun. 26, 1995, Ser. No. 494,542
Claims priority, application Japan, Feb. 24, 1995, 7-036723
Int. Cl.[6] B24B *49/00;51/00*
U.S. Cl. 451—6 **17 Claims**



1. An apparatus for modifying the attitude of a golf ball having burrs formed thereon, comprising:
rotating means for rotating, one time, a golf ball, which has burrs formed on the equator thereof, around an axis that passes through the center of the golf ball while holding the golf ball;
photographing means for photographing the golf ball rotated one time by said rotating means;
calculating means for recognizing the position of the equator having burrs formed thereon in accordance with image data of the golf ball obtained by said photographing means and for calculating the quantity of rotation required to modify the equator into a predetermined direction; and
modifying means that rotates the golf ball by the quantity of rotation calculated by said calculating means to modify the attitude of the golf ball.

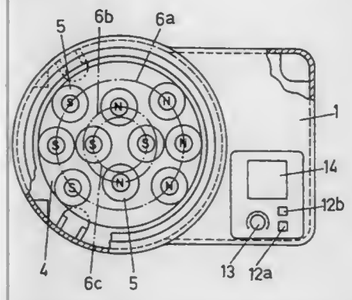
5,611,724
GRINDING WHEEL HAVING DEAD END GROOVES AND METHOD FOR GRINDING THEREWITH
Willem T. deGraaff, Albuquerque, N.M., assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 1, 1995, Ser. No. 564,689
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—53 **3 Claims**

3. A method for grinding comprising
(a) providing a grinding wheel having an abrasive circumference, a central axis and having a plurality of dead end grooves extending form the sides of the wheel at an angle of between 30° to 80° form the sides of the wheel, wherein each of said dead end grooves has a leading end and a trailing end wherein the leading end is open and extends from a side of the circumference of the wheel to the trailing end which terminates intermediate the circumference,
(b) providing a coolant in contact with said circumference,



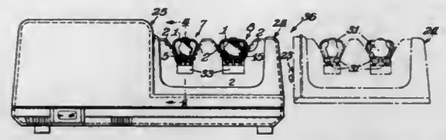
(c) grinding a superalloy workplace to make a cut therein, said grinding involving rotating the wheel about said central axis in a direction so that the open circumferential leading ends of the dead end grooves lead to the dead end trailing ends in the cutting engagement with the workpiece to trap the coolant inside the grooves in contact with the workpiece preventing the coolant from escaping the contacting grooves until the groove has been rotated past the workpiece.

5,611,725
MAGNETIC BARRELL FINISHING MACHINE
Takahiro Imahashi, Kokubunji, Japan, assignor to Imahashi Mfg. Co., Ltd., Tokyo, Japan
Filed May 9, 1995, Ser. No. 437,587
Claims priority, application Japan, Aug. 12, 1994, 6-190717
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—104 **15 Claims**



1. An arrangement in a magnetic barrel finishing machine, comprising:
a rotator made of a magnetic material;
a plurality of permanent magnets rigidly mounted on said rotator; and
a container for containing workpieces to be finished and an abrasive medium comprising a magnetic material;
wherein said container is located above said rotator such that a gap is between said container and said rotator;
wherein said plurality of permanent magnets are disposed along three concentric circles around the center of said rotator, including an outermost concentric circle, an intermediate concentric circle and an innermost concentric circle, such that three N poles and three S poles are directed in the same direction and disposed at substantially equal intervals along said outermost concentric circle so as to be substantially symmetrical relative to the center of said rotator, two N poles are directed in the same direction and disposed along said intermediate concentric circle so as to be substantially symmetrical relative to the center of said rotator, and two S poles are directed in the same direction and disposed along said innermost concentric circle so as to be substantially symmetrical relative to the center of said rotator.

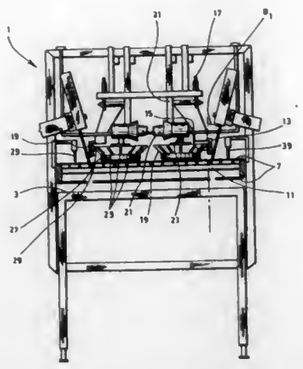
5,611,726
HIGH SPEED PRECISION SHARPENING APPARATUS
Daniel D. Friel, Greenville, and Robert P. Bigliano, Wilmington, both of Del., assignors to Edgecraft Corporation, Avondale, Pa.
Filed Apr. 28, 1995, Ser. No. 431,497
Int. Cl.[6] B24B *9/00*
U.S. Cl. 451—177 **46 Claims**



1. A sharpener for blades with an elongated cutting edge and with facets adjacent to each side of the cutting edge, comprising at least one disk having an exposed abrasive coated surface, said disk being mounted on a shaft for rotation about a horizontal axis to move said abrasive coated surface across and away from the cutting edge when the blade is moved into contact with said surface, a blade guide surface juxtaposed said disk, said blade guide surface being at a predetermined vertical angle relative to a vertical line normal to said axis of rotation of said disk, said blade guide surface being in a plane which intersects said abrasive coated surface to function as an angular guide for the blade when the blade is placed against said blade guide surface to dispose the blade in contact with said abrasive coated surface, an edge guide disposed at said disk, said edge guide providing a location of contact with the blade as the blade is moved into contact with said abrasive coated surface, said location of contact being forward of said abrasive coated surface, and said edge guide having an exposed surface for said location of contact which is made of a non-abrasive material capable of having a groove formed therein to receive the cutting edge and both of the facets of the blade with the groove in and across said edge guide to provide a guide track for the blade edge to cooperate with said angular guide as the blade is moved across said rotating abrasive coated surface to properly dispose the blade against said abrasive coated surface.

5,611,727
MIDDLE SPLITTER
Yvon Dufour; Jean-Guy Roy, both of St-Anselme, and Patrick Fauret, Outremont, all of Canada, assignors to G.-E. Leblanc Inc., St-Anselme, Canada
Filed Nov. 8, 1995, Ser. No. 555,189
Int. Cl.[6] A22B *5/20*
U.S. Cl. 452—153 **18 Claims**

1. In a machine hereinafter called "middle splitter" for use to process one half of a carcass of an animal, hereinafter called "middle", in such a manner as to split said middle into two parts, said middle having a shoulder-adjacent end and including half of the animal's spine, said middle splitter comprising:
a work table having a longitudinal axis
a conveyor belt extending over said work table to move said carcass longitudinally in a forward motion with the shoulder-adjacent end of said middle positioned forwardly, said conveyor belt being longitudinally slotted;
a circular saw lying in a plane substantially perpendicular to the conveyor belt and parallel to said longitudinal axis, said saw extending in the slot of the conveyor belt and being positioned in such a manner as to cut the middle laid on said conveyor belt when said middle moves forwards;
a guide extending in a plane parallel to said longitudinal axis slightly above the conveyor belt to hold the middle flat against said conveyor belt while said middle is cut by said saw;



a driving wheel extending in a plane parallel to the conveyor belt near the circular saw, said wheel being rotatably mounted on a shaft perpendicular to said conveyor belt and having peripheral corrugations to engage the middle adjacent the spine that is part thereof, said wheel then pulling said middle toward the circular saw and pushing the spine toward the adjacent guide;

a motor for driving said wheel into rotation; and

pressure-exerting means for pushing the wheel towards the guide in a direction transverse to said longitudinal axis so that said wheel exerts a pressure onto the spine to straighten it up while the middle is cut;

the improvement comprising:

first and second proximity switches mounted at a given distance upstream of the circular saw, said switches being operatively connected to said pressure-exerting means in such a manner as to vary the pressure exerted onto the spine while the middle moves forward relative to the saw, the first switch sending a signal to said pressure exerting means to apply a smaller pressure to said middle when the same starts engaging the saw, the second switch sending another signal to said pressure-exerting means to apply a greater pressure to the middle while said middle further moves past the saw,

whereby, in use, any part of the animal's shoulder blade that would inadvertently remain in the middle will not be pushed towards the circular saw while the shoulder-adjacent end of the middle is cut as said greater pressure will be applied to the middle in order to straighten the spine only when said shoulder-adjacent end in which said part of the animal's shoulder blade may be present has been cut.

5,611,728

DUST FILTER WHICH IS SURROUNDED BY A FRAME

Klaus Arold, Sindelfingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 14, 1995, Ser. No. 502,869

Claims priority, application Germany, Jul. 14, 1994, 44 24 793.1

Int. Cl.[6] B60H *3/06*

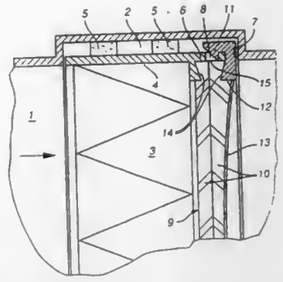
U.S. Cl. 454—158 **11 Claims**

1. A filter arrangement which can be exchangeably inserted in a motor vehicle heating or air-conditioning system air duct, comprising:

a dust filter assembly composed of a dust filter housed in a dust filter frame, said dust filter frame having an integrally formed frame end section which protrudes beyond the dust filter at an air outlet end of the dust filter,

an absorption filter assembly composed of an absorption filter, composed of at least one mat supported in a retaining frame,

wherein said frame end section has latching openings, and



wherein said retaining frame has latching hooks resiliently engageable in the latching openings to hold the absorption filter assembly in position with respect to the dust filter assembly.

5,611,729

SYSTEM FOR DISPLAYING THE OUTPUT OF A GAME OF CHANCE IN A DIFFERENT FORMAT

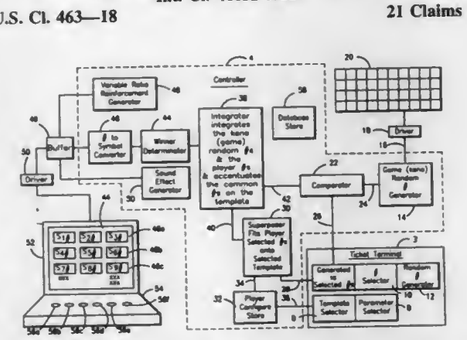
Paul M. Schumacher, Columbus, Nebr., and Robert D. Rizzi, Plantation, Fla., assignors to Community Lottery Systems, Inc., Columbus, Nebr.

Continuation of Ser. No. 147,317, Nov. 5, 1993, abandoned.

This application Jan. 10, 1995, Ser. No. 370,983

Int. Cl.[6] A63F *9/22*

U.S. Cl. 463—18 **21 Claims**



1. System for displaying the output generated from a game of chance comprising:

terminal means to provide a player the option to choose from among a plurality of display formats a particular format to display said output of said game;

computing means for integrating said output from said game to said particular format as an integrated formatted output; and

means for displaying said integrated formatted output as an integrated formatted display which is different from the output usually associated with said game.

5,611,730

PROGRESSIVE GAMING SYSTEM TAILORED FOR USE IN MULTIPLE REMOTE SITES: APPARATUS AND METHOD

Steven A. Weiss, Las Vegas, Nev., assignor to Casino Data Systems, Las Vegas, Nev.

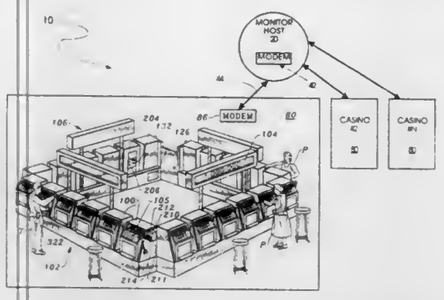
Filed Apr. 25, 1995, Ser. No. 428,920

Int. Cl.[6] A63B *71/06*

U.S. Cl. 463—20 **31 Claims**

1. A progressive gaming system comprising in combination:

a host site including a host computer;



a plurality of remote gaming sites each including a plurality of gaming machines;

means for acquiring gaming machine generated signals including a funds-in signal from each said gaming machine at each said remote gaming site;

said acquiring means includes a plurality of microcontroller assemblies, and includes a plurality of interface assemblies and means for coupling at least one said interface assembly to at least one said gaming machine;

wherein said means for coupling said interface assembly to said gaming machine includes a soft lockout circuit; and

means for exchanging data including said gaming machine generated signals between said acquiring means and said host computer whereby said plurality of gaming machines at each said remote gaming site contribute to and compete for at least one progressive jackpot.

5,611,731

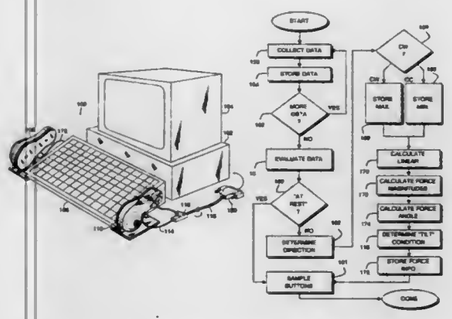
VIDEO PINBALL MACHINE CONTROLLER HAVING AN OPTICAL ACCELEROMETER FOR DETECTING SLIDE AND TILT

Frank M. Bouton, Beaverton, and Stephen T. Kaminsky, Salem, both of Oreg., assignors to Thrustmaster, Inc., Hillsboro, Oreg.

Filed Sep. 8, 1995, Ser. No. 525,904

Int. Cl.[6] A63F *7/24*

U.S. Cl. 463—37 **48 Claims**



1. A video pinball machine controller for use with a personal computer, the controller comprising:

a base;

a handle mounted on the base;

an accelerometer mounted on the controller along a first axis that produces a signal proportional to an amount of force applied to the handle transversely to the first axis; and

means coupled to the accelerometer for transmitting the signal to the personal computer.

5,611,732

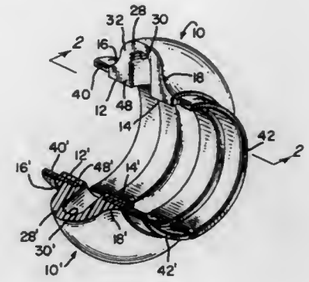
FLEXIBLE COUPLING WITH END STRESS RELIEF STRUCTURE

Suresh S. Tirumalai, Chambersburg, Pa., assignor to TB Wood's Incorporated, Chambersburg, Pa.

Filed Aug. 7, 1995, Ser. No. 512,137

Int. Cl.[6] F16D *3/58*

U.S. Cl. 464—80 **4 Claims**



1. An annular coupling for joining adjacent ends of two shafts that are approximately aligned on a central axis comprising:

at least two members in the form of sectors of an annulus, each member comprising;

a flexible center having two axially separated radially extending portions and two circumferential ends, the two axially separated radially extending portions being interconnected by an axially extending outer wall; and

a metal shoe bonded to each of said two axially separated radially extending portions, each metal shoe having two circumferential ends, each of said two circumferential ends of each metal shoe having an axially extending cut-out at least partially embedded in an axially separated radially extending portion, the cut-outs being located to provide said metal shoe bonded to each of said two axially separated radially extending portions and having two circumferential ends with each circumferential end having an axially extending portion approximately in-line with the corresponding circumferential end of the flexible center and an axially extending portion circumferentially spaced from the corresponding circumferential end of the flexible center.

5,611,733

DRIVESHAFT WITH PLUNGING PART

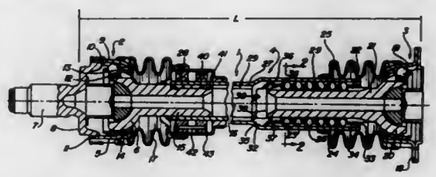
Werner Jacob, Frankfurt; Manfred Niederhöfner, Hanau, and Jürgen E. Heyne, Saarbrucken, all of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Germany

Filed May 31, 1995, Ser. No. 456,177

Claims priority, application Germany, Jun. 3, 1994, 44 19 373.4

Int. Cl.[6] F16C *3/03*

U.S. Cl. 464—140 **19 Claims**



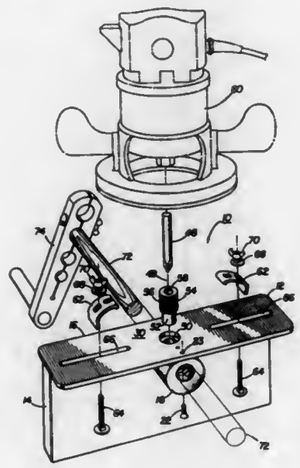
1. A driveshaft for use in a driveline for driving the wheels of a motor vehicle, comprising:

two constant velocity joints each having a first joint part with connecting means to establish a connection with a driving or driven part of a driveline, each constant velocity joint having

a second joint part with said two constant velocity joints being connected to one another by a connecting shaft, and said two constant velocity joints being designed as constant velocity fixed joints enabling only angular movements between their first and second joint parts;

means for enabling changes in the distance between the connecting means, said means for enabling change including a plunging journal and plunging portion, said plunging journal is fast with one of the two second joint parts and having a longitudinal axis identical to that of the associated second joint part, said plunging journal, in its outer face, including a plurality of circumferentially distributed first running grooves extending parallel to the longitudinal axis, said connecting shaft is provided in the form of a tube including said plunging portion which is movably entered by the plunging journal, having a cross-section of the plunging portion is corrugated, with an outer corrugation peak and an outer corrugation valley alternating on the outer circumference and said bore of the plunging portion including second running grooves which are positioned opposite the first running grooves of the plunging journal and extend parallel to the longitudinal axis and said second running grooves being arranged in an outer corrugation peak, and after each first and second running grooves, one of each forming a pair, receive a plurality of rolling contact members arranged one behind the other along said running grooves.

5,611,734
APPARATUS FOR PRODUCING WOODEN THREADS
Jerrold R. Beall, 541 Swans Rd., NE., Newark, Ohio 43055
Filed Sep. 13, 1995, Ser. No. 527,523
Int. Cl.[6] B21H *3/02*; B27C *5/00*
U.S. Cl. 470—59 **7 Claims**



2. Apparatus for threading wooden dowels having a diameter utilizing an electric router and a rotating cutter, the apparatus comprising:

(a) a base having an aperture through which the cutter may protrude,

(b) a means for removably fixing the router on the base so that the cutter protrudes through the aperture in the base,

(c) threader insert affixed to the base, the insert comprising a generally cylindrical section of stable material machined to have:

(i) a flat exterior surface for positioning parallel to the router base,

(ii) a longitudinal bore through which the dowels pass during threading, the longitudinal bore having:

(1) a first smooth portion slightly larger in diameter than the diameter of the dowels to be threaded, and

(2) a second portion machined to form an internal spiral thread having a crest and having a desired pitch, shape and depth,

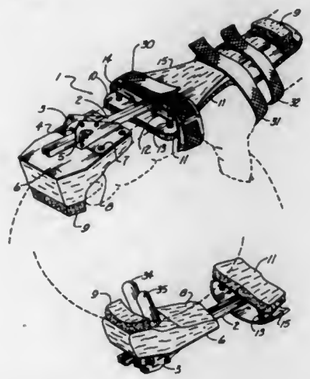
(iii) a first transverse bore that penetrates the flat surface normal to that surface and is coaxial with the projected location of the crest of the thread in the first transverse bore,

(iv) a screw hole penetrating the flat surface and coaxial with a second transverse bore for providing access to a screw inserted through the screw hole from within the longitudinal bore,

(v) a recess in the flat surface for receiving a locating structure protruding from the apparatus,

(d) a protrusion from one of the base and the insert and a recess in the other of the insert or base for receiving the protrusion so that the insert may be removed and replaced or other inserts may be affixed to the base in a position established by cooperation between the protrusion and the recess.

5,611,735
BOWLING BALL SHOT STABILIZER FOR WRIST AND FINGER
Richard W. Jackson, R.R. 1, Box 63, Derby, Iowa 50068
Filed Nov. 6, 1995, Ser. No. 554,339
Int. Cl.[6] A63B *69/00*; A61F *5/04*
U.S. Cl. 473—60 **8 Claims**



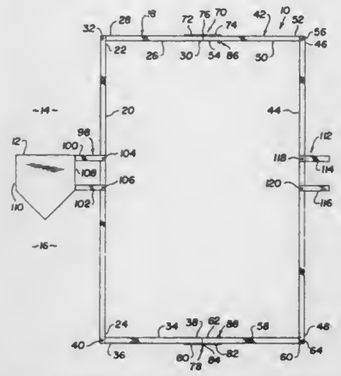
1. A bowling apparatus comprising:

a) a first support comprising a pad, said pad comprising a finger pad having opposed surfaces with one surface in contact with the first support and the other surface adapted to cover at least a portion of the back of at least one finger of a bowler, and a ball pad extending from said finger pad other surface and adapted to contact a bowling ball;

b) a second support adapted to cover at least a wrist of a hand of a bowler;

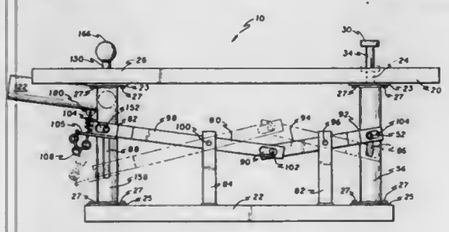
c) an adjustable support comprising one end connected to said first support and another end pivotally connected to said second support.

5,611,736
APPARATUS AND DEVICE USED IN MARKING A BATTER'S BOX
James H. Anglea, Arlington, Tex., assignor to Anglea Turf Concepts, Inc., Arlington, Tex.
Filed Jun. 7, 1995, Ser. No. 479,005
Int. Cl.[6] A63D *5/04*
U.S. Cl. 473—415 **10 Claims**



1. A collapsible device used in marking a batter's box near a home plate on a playing surface of a baseball field, comprising: first and second frame halves, each frame half including an elongated side with first and second ends, a first arm with an inwardly disposed end pivotally connected to the first end of the elongated side and an outwardly disposable end that is movable between an extended position and a closed position that is located against the elongated side, and a second arm with an inwardly disposed end pivotally connected to the second end of the elongated side and an outwardly disposable end that is movable between an extended position and a closed position that is located against the elongated side; first hinge means for pivotally connecting the outwardly disposable end of the first arm of said first frame half to the outwardly disposable end of the first arm of said second frame half; and second hinge means for pivotally connecting the outwardly disposable end of the second arm of said first frame half to the outwardly disposable end of the second arm of said second frame half such that said first and second frame halves are movable between marking and collapsed positions.

5,611,737
GOLF TRAINING DEVICE
Timothy P. Rau, R.D. #2, Coatesville, Pa. 19320, and Galen F. Byler, 2441 Noble Rd., Kirkwood, Pa. 17536
Filed Jun. 28, 1995, Ser. No. 496,150
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—137 **19 Claims**



1. A golf training device comprising:

a substantially flat rectangular bottom base;

a substantially flat rectangular top base having a first circular opening, a second circular opening and a top surface;

a golf ball hopper having a plurality of sides and a bottom and a circular hole formed in said bottom of said golf ball hopper,

a chute having a circular cross section and an interior and connected to said golf ball hopper at said circular hole;

a compressible ball restraining mechanism fixedly mounted within said chute, said compressible ball restraining mechanism including

a casing fixedly mounted in and projecting into said chute,

a compressible spring loaded restraining rod fixedly attached within said casing having a bottom and a top, said top of said restraining rod projecting into said interior of said chute

a linking means connecting said bottom of said compressible spring loaded restraining rod to one of said levers of said lever system;

a first silo having a first piston pin projecting therefrom and a second silo having a second piston pin projecting therefrom, each silo being hollow and each having a wall, a top end, a bottom end and a pair of narrow slots cut into said wall for receiving said first piston pin and said second piston pin, respectively, said first silo penetrating said first circular opening in said top base and said second silo penetrating said second circular opening in said top base;

an attachment means for fixedly mounting said first and second silos to said top and bottom bases;

a depressible pedal process having a rod, said rod having a pedal fixedly mounted thereto, said pedal projecting outward from said top base, said depressible pedal process being movable between a first position when said depressible pedal process is at rest and a second position when said depressible pedal process is depressed, said depressible pedal process being housed within said first silo;

means for moving said depressible pedal process from said second position to said first position;

a height adjustment means through which said rod penetrates and which is housed within said first silo;

a tee fixedly mounted to a depressible teeing process which is housed within said second silo and which is movable between a first position and second position, said first position being relatively higher than said second position, whereby when said depressible teeing process is moved to said second position, said tee may receive a golf ball released from said chute by said compressible ball restraining device;

a ball centering means; and

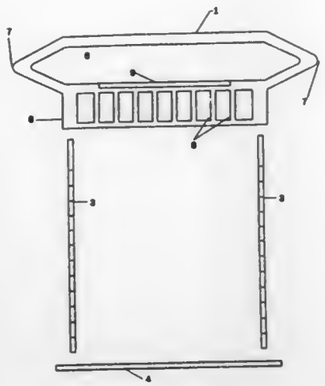
a lever system having a plurality of levers and a plurality of fulcrums connecting said pedal process to said depressible teeing process and connected to said compressible ball restraining device.

5,611,738
GOLF STANCE ALIGNMENT DEVICE
Thomas R. Lundquist, 15 Dingee Rd., South Salem, N.Y. 10590
Continuation-in-part of Ser. No. 399,520, Mar. 7, 1995, Pat. No. 5,492,328. This application Feb. 16, 1996, Ser. No. 602,459
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—218 **5 Claims**

1. A golf swing alignment device for aligning a golfer's left foot and right foot with respect to an intended flight path of a golf ball, said device comprising:

a substantially flat main body having a ball placement calibration means for calibrating a position of the ball in the golfer's stance in a direction parallel to the intended flight path, oppositely located tapered ends defining a line collinear with the intended flight path, and a cutout space for placing the golf ball; and

calibrated left and right legs detachably mounted to the main body so that the left leg projects from a leftmost portion of the ball placement calibration means perpendicular to the intended flight path and the right leg projects from a rightmost portion of the ball placement calibration means perpendicular to the intended flight path, the left and right legs together



defining a space in which the golfer places his feet when addressing the golf ball and each leg having calibrating indicia spaced in equal units of length, wherein:

when the golfer desires to effect a straight golf shot, the golfer places each of his left foot and right foot at corresponding collinear left and right leg indicia when addressing the ball;

when the golfer desires to effect a draw (fade for a left-handed golfer) of the golf ball, the golfer places his right foot in alignment with one of the right leg indicia closer to his body than the left leg indicia at which he is placing his left foot; and

when the golfer desires to fade (draw for a left-handed golfer) the golf ball, the golfer positions his left foot at a position corresponding to a left leg indicia closer to his body than the right leg indicia at which he is placing his right foot.

5,611,739

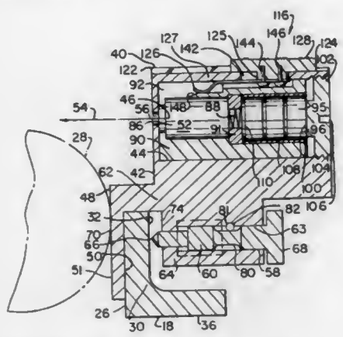
GOLF CLUB PUTTER WITH LASER AIMING SYSTEM

William P. Carney, 4 High Ridge La., Oyster Bay, N.Y. 11771

Filed Oct. 16, 1995, Ser. No. 543,442

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—220 **12 Claims**



1. A laser aiming apparatus for use by a golfer to practice putting, said apparatus comprising:

a putter including a shaft having a putter head affixed at a first end of said shaft and a grip affixed at a second end of said shaft;

said head having a transversely extending generally planar front face for striking a golf ball and a generally planar rear portion formed substantially parallel to said front face and spaced apart therefrom;

a laser housing having an upper and a lower portion;

said lower portion defining at least one mounting tab including a generally planar alignment surface adapted to engage said front face of said putter head;

said upper portion including a bore formed therein such that the axis of said bore is perpendicular to said alignment surface;

a laser module mounted in said bore adapted to project a laser beam through an opening in said bore such that said laser beam is coincident with the axis of said bore;

at least one clamping means affixed to said laser housing; and

said clamping means being positioned into biased contact with said rear portion of said head for removably affixing said laser housing to said head such that said head is clamped between said alignment surface and said clamping means so that said laser beam is emitted substantially perpendicular to said front face of said head.

5,611,740

GOLF CLUB

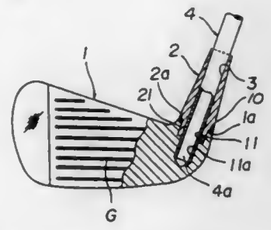
Itsushi Nagamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

Filed Jan. 31, 1996, Ser. No. 594,147

Claims priority, application Japan, Feb. 13, 1995, 7-046684

Int. Cl.[6] A63B *53/02*

U.S. Cl. 473—305 **2 Claims**



1. A golf club comprising:

a shaft;

a head provided at one end of said shaft, said head being provided with an engagement hole formed in a base end portion of a heel side of said head, said head being formed from a material selected from the group consisting of a soft iron, carbon steel (Be—Cu), and stainless steel SuS); and

a hosel provided at said one end of said shaft so that an engagement part formed at one end of said hosel is fitted in said engagement hole of said head, said hosel being formed from a material which is different from said material used for said head and selected from the group consisting of titanium (Ti), and a titanium alloy, having a low specific gravity and a high strength.

5,611,741

HOLLOW, LARGE, METALLIC, GOLF CLUB HEAD

Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

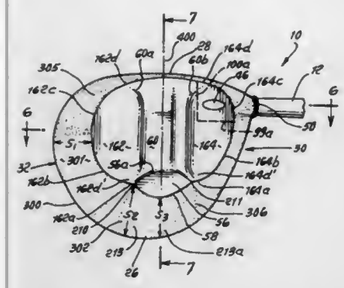
Continuation of Ser. No. 263,970, Jun. 29, 1994, Pat. No. 5,460,376, which is a continuation-in-part of Ser. No. 173,389, Jan. 6, 1994, Pat. No. 5,480,152, which is a continuation-in-part of Ser. No. 29,553, Mar. 11, 1993, Pat. No. 5,301,945, which is a continuation of Ser. No. 819,379, Jan. 15, 1992, Pat. No. 5,240,252, which is a continuation-in-part of Ser. No. 791,322, Nov. 14, 1991, Pat. No. 5,180,166, which is a continuation of Ser. No. 595,963, Oct. 16, 1990, Pat. No. 5,067,715.

This application Oct. 19, 1995, Ser. No. 545,215

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—328 **54 Claims**

1. A golf club head having toe and heel portions, a rear wall, a front wall defining a ball-striking face, and top and bottom walls,



said bottom wall characterized as having a medial ridge, and as forming two shallow recesses, one recess between the ridge and the heel portion, and the other recess between the ridge and the toe portion, said recesses spaced rearwardly from said front wall, the one recess extending toward said heel portion, and the other recess extending toward the toe portion, said recesses being located in substantially mirror imaged positions with respect to a forwardly extending vertical plane bisecting said ridge, the head, when viewed toward said bottom wall, presenting a peripheral outline which, at the toe and rear of the head, has substantial spacing from said other recess, said medial ridge being a downwardly facing medial ridge spaced below the levels of said recesses, said ridge having rearwardly elongated length at substantially the same elevation and being downwardly convex in a toe-to-heel direction along said length thereof to define ridge side walls extending proximate said recesses, said ridge diverging endwise.

5,611,742

WOOD-TYPE GOLF CLUB HEAD

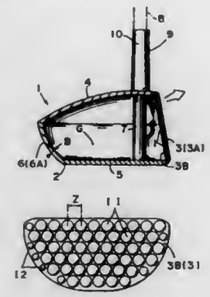
Kenji Kobayashi, Tsubame, Japan, assignor to Kabushiki Kaisha Endo Seisakusho, Tsubame, Japan

Filed Oct. 2, 1995, Ser. No. 537,387

Claims priority, application Japan, Aug. 4, 1995, 7-199916

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—345 **6 Claims**



1. A wood-type golf club head formed by integrally joining a plurality of metallic shells including a face shell, having a face at a front side and a shaft mounting portion at one side, comprising:

a plurality of cavities formed in a back surface of said face shell, each of said cavities being formed by forging, having a uniform semispherical concave portion which has a circular-shaped plan view, each having a depth relatively less than its width to form a relatively shallow cavity structure,

wherein said plural cavities comprise multi-stage ranks which are each offset by half a pitch respectively.

5,611,743

DEVICE FOR GUIDING STEEL BELT ALONG AXIS OF PRESS

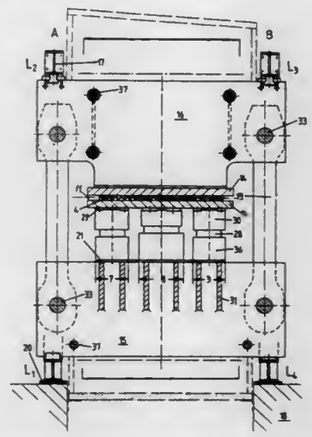
Friedrich B. Bielfeldt, Pähl, Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Germany

Filed Mar. 10, 1995, Ser. No. 402,237

Claims priority, application Germany, Mar. 10, 1994, 44 08 099.9

Int. Cl.[6] F16H *7/18*

U.S. Cl. 474—101 **10 Claims**



1. A measuring and control device for guiding a steel belt along a longitudinal axis of a continuously operating press for the production of particle boards, fiber boards or similar wood boards and plastic boards, comprising:

flexible, endless steel belts which transmit pressing pressure and pull materials to be pressed through the press, are guided via driving drums and reversing drums around an upper and a lower press beam and are supported with an adjustable press nip against heating platens on press beams via rolling supporting elements which revolve along with the steel belts and are guided with their axes transverse to the running direction of the belt;

pressure cylinder-piston arrangements for altering axes of the driving drum and the reversing drum, whenever control pulses from path sensors disposed to the side of the steel belts reach the control device;

a measuring column respectively anchored in a foundation on an end face of the continuously operating press, at both longitudinal sides, at a spacing from two side plates of the continuously operating press; and

path sensors disposed on each measuring column for measuring a spacing from four corner points of the end face of the continuously operating press and feeding the spacing as an additional control variable into a control circuit and automatic control system of the control device for the adjustment of course of the steel belt, whenever the spacing at the corner points differs from a thermal zero point.

5,611,744

BICYCLE CRANK DRIVEN CHAIN WHEEL ASSEMBLY

Naichang Shen, Chengdu, China, assignor to Sichuan Xinxin Mechanical Engineering Co., Ltd., Chengdu, China

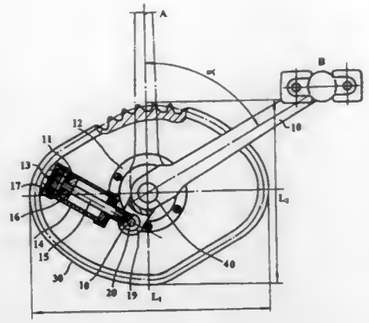
Filed Feb. 20, 1995, Ser. No. 391,669

Claims priority, application China, Feb. 22, 1994, 94227207.2

Int. Cl.[6] B62M *3/06*

U.S. Cl. 474—141 **2 Claims**

1. A bicycle crank driven chain wheel assembly comprising:



a chain wheel having a central boss which defines a rotation axis of the chain wheel and teeth formed on and along the periphery of the chain wheel, wherein the teeth define an imaginary, symmetric, closed pitch curve, said curve comprises a first portion and a second portion wherein the first portion comprises a force saving section and a speed increasing section and the second portion comprises a force saving section and a speed increasing section wherein the force savings section comprises a first curve, a second curve connected to one end of the first curve and a straight line portion connected to the second curve, said straight line portion connected tangentially to one end of the respective speed increasing section and said first, and second curve and straight line portion being along the periphery of the chain wheel and the minimum distance, r_1, from the periphery of the chain ring of the first curve to the rotation axis of the chain wheel being greater than or equal to the maximum distance, r_2, from the periphery of the chain ring of the second curve to the rotation axis of the chain ring, and wherein the chain wheel has a long axis, L_1, defined by a connecting line of two points which are respectively in the opposed speed increasing sections and each point connected by the line which defines the maximum distance from the chain ring periphery to the rotation axis of the chain wheel and a short axis, L_2, defined by a connecting line of two points which are respectively in the opposed first curves of the force savings section and each of said points define the minimum distance, r_1, from the respective first curve to the rotation axis of the chain wheel and wherein the long axis, L_1, and the short axis L_2, being defined by a relationship in lengths of L_1 to L_2 in a range of ratios of approximately from about 1.20 to 1 to approximately 1.35 to 1, and the chain wheel is arranged in a sequence of sections comprising the force saving section, speed increasing section, force saving section and speed increasing section wherein the last speed increasing section is next to the first force saving section to form the closed pitch curve, the distances from every point on the closed pitch curve of the force saving section and the speed increasing section to the rotation axis of the chain wheel being continuously variable with variation along the pitch curve and the minimum distance, r_3, from each position along the pitch curve in the speed increasing section to the rotation axis of the chain wheel being greater than, or equal to the maximum distance, r_4, from each position along the pitch curve of the force saving section to the rotation axis of the chain wheel;

a crank having a crank shaft fixed on the crank for rotatably driving the chain wheel and

means for mounting the crank shaft in the central boss of the chain wheel in a manner that the crank can rotate within a predetermined range of angles, α, defined by the short axis L_2 of the chain wheel and the longitudinal central axis of the crank in the rotation direction of the chain wheel and a mechanism for limiting a range of the angle α with respect to the chain wheel in accordance with the amount of force exerted on the crank shaft; wherein the mechanism for adjusting the angle α comprises a cylinder fixed on the chain wheel, a piston received in the cylinder, a compression spring located in the cylinder for biasing the piston and a piston rod connected at one end to the piston, the other end of the piston rod being hinged with the chain wheel and a hinge bearing fixed on the crank shaft through a hinge pin, so that the crank can swing with respect to the chain wheel under the resultant action of the torque exerted on the crank shaft by both an external force and the compression spring.

5,611,745

TOOTHED POWER TRANSMISSION BELT

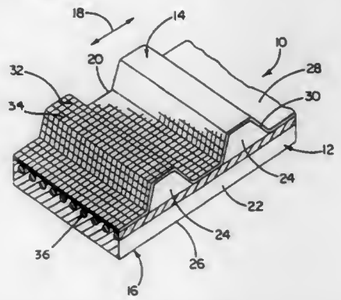
Kuniharu Uto, Suma-ku; Yoshihisa Fujita, Nishi-ku, and Takahide Mizuno, Hyogo-ku, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Jul. 24, 1995, Ser. No. 506,220

Claims priority, application Japan, Jul. 26, 1994, 6-194831

Int. Cl.[6] F16G *1/04*

U.S. Cl. 474—205 **22 Claims**



1. A power transmission belt comprising:

a body having an inside and an outside, a length, and a plurality of teeth on at least one of the inside and outside of the belt body and spaced in a lengthwise direction; and

a load carrying cord embedded in the belt body and extending lengthwise of the belt body,

wherein the load carrying cord comprises a first plurality of monofilament aramid fibers each having a denier of 0.5 to 2.0 and bundled to define a combined diameter of 0.10 to 0.20 mm.

5,611,746

VEHICLE DRIVETRAIN COUPLING

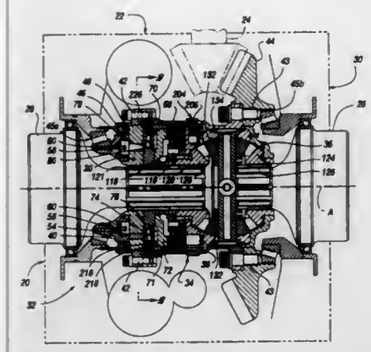
Theodore E. Shaffer, Santa Barbara, Calif., assignor to Asha Corporation, Santa Barbara, Calif.

Filed Jun. 28, 1995, Ser. No. 496,250

Int. Cl.[6] F16H *48/26*

U.S. Cl. 475—88 **20 Claims**

1. A coupling for use with a vehicle drivetrain to rotatively couple a pair of rotary members about a rotational axis, the coupling comprising: a casing of hollow construction that is rotatively driven about the rotational axis; a bevel type planetary gear set located within the casing and having a pair of bevel side gears respectively connected to the pair of rotary members as well as having a carrier that is rotatable with the casing and has bevel planet gears meshed with the side gears connected to both rotary members; a clutch that is actuatable to connect the casing and one of the rotary members; the planetary gear set upon transfer of torque from the rotating casing through the planetary gear set to the pair of rotary members forcing the side gears thereof away from each other to actuate the clutch and connect the pair of rotary members for torque transfer therebetween at a level that increases with increased torque transfer from the rotating casing to the rotary members; and a lock for selectively preventing the planetary gear set from forcing the side gears thereof away from each other to actuate the clutch such that the extent of the torque transfer from the rotating casing to the pair of rotary members does not affect torque transfer between the pair of rotary members.



5,611,747

WOBBLE-HINGED METAL FITTING FOR AN ADJUSTABLE MOTOR VEHICLE SEAT

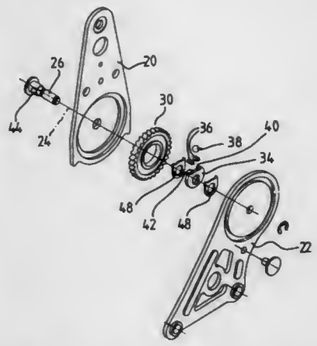
Heinz Bauer; Burckhard Becker, and Ernst-Reiner Frohnhaus, all of D-Solingen, Germany, assignors to C. Rob. Hammerstein GmbH & Co. KG, Solingen, Germany

Filed Jan. 16, 1996, Ser. No. 586,213

Claims priority, application Germany, Jan. 13, 1995, 195 00 914.2

Int. Cl.[6] F16H *1/32*

U.S. Cl. 475—162 **16 Claims**



1. A wobble-hinged metal fitting for an adjustable motor vehicle seat, said fitting comprising at least two hinged brackets connected together by at least one carrier, an eccentric and a shaft running therethrough, each hinged bracket containing a gear, each gear containing an internal gear and an external gear positioned within and in engagement with said internal gear, said external gear having a diameter of the crown circle which is at least one depth of a tooth smaller than the diameter of the root circle of said matching internal gear, said eccentric being positioned next to one of said gears and turnably connected to said shaft for pressuring said gears to grip each other, said eccentric having an eccentricity adjusted to the difference between the diameter of the root circle and the diameter of the crown circle, said eccentric including means-for compensating play in said seat, said compensating means including an eccentric part having a receiving inlet, at least one rolling body, at least two jamming planes positioned next to said rolling body, and at least one spring positioned near said rolling body, each jamming plane running in the opposite direction of the other jamming plane, said rolling body and said jamming planes being positioned together at said receiving inlet, said spring elastically pressuring said rolling body such that one side of said rolling body comes in contact with said matching jamming plane and the other side of said rolling body comes in contact with said matching gear, said carrier being positioned next to said eccentric and turnably connected to said shaft such that when said rolling body is in a locked position, an initial turning movement of said shaft results in releasing said locked rolling body before said eccentric starts to turn.

5,611,748

CONTROL APPARATUS FOR VEHICLE WITH CONTINUOUSLY VARIABLE TRANSMISSION

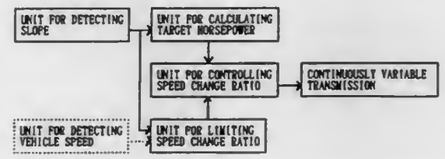
Masuo Kashiwabara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jun. 7, 1995, Ser. No. 481,629

Claims priority, application Japan, Jun. 9, 1994, 6-127520

Int. Cl.[6] B60K *41/14*

U.S. Cl. 477—47 **6 Claims**



4. The control apparatus for a vehicle having a continuously variable transmission between an engine and a drive shaft, comprising:

slope detecting means for detecting a value related to the slope of a road:

target horsepower calculating means for calculating a target horsepower to be produced by the vehicle according to at least the slope-related value;

speed change ratio control means for controlling the speed change ratio of the continuously variable transmission, to attain the target horsepower;

vehicle speed detecting means for detecting a value related to a vehicle speed; and

speed change ratio limiting means for limiting a high-speed-side upper limit on the speed change ratio of the continuously variable transmission according to the slope-related value and vehicle-speed-related value.

5,611,749

ELECTRONIC AND HYDRAULIC CONTROL SYSTEM OF A 4-SPEED AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLE AND METHOD FOR CONTROLLING HYDRAULIC PRESSURE

Jaeduk Jang, and Taekyun Kim, both of Kyungki-do, Rep. of Korea, assignors to Hyundai Motor Company, Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 499,061

Claims priority, application Rep. of Korea, Jul. 7, 1994, 94-16312; Jul. 7, 1994, 94-16314

Int. Cl.[6] F16H *59/70*

U.S. Cl. 477—65 **9 Claims**

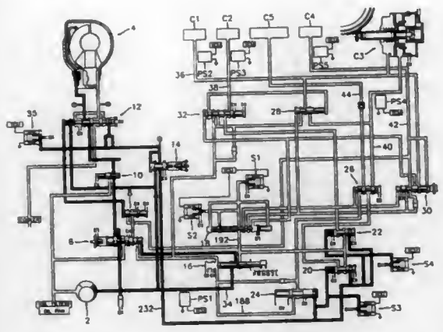
1. An electronic and hydraulic control system for an automatic transmission, comprising:

a hydraulic pump for pressurizing fluid;

a torque converter for transmitting power to the transmission;

a pressure regulating valve connected to the hydraulic pump for varying line hydraulic pressure according to an operation of a damper clutch control solenoid valve, the damper clutch control solenoid valve being controlled according to a duty ratio by a transmission control unit;

a high-low pressure valve for varying line hydraulic pressure of the pressure regulator valve by using hydraulic pressure fed from an end clutch, the high-low pressure valve being con-



trolled by a duty operation of the damper clutch control solenoid valve at third and fourth speeds of a drive "D" range;

a reducing valve connected to the hydraulic pump for reducing hydraulic pressure to be lower than line hydraulic pressure;

a manual valve operated by a shift select lever for feeding pressure from the pump to selectively a drive pressure line at the drive "D" range and a reverse pressure line at a reverse "R" range;

a shift control valve connected to the drive pressure line for feeding drive pressure to each of a first and second two pressure control valves by an operation of two shift control solenoid valves which are ON/OFF controlled by the transmission control unit;

a rear clutch exhaust valve for feeding pressure from the drive pressure line to a rear clutch at first, second, and third speeds of the drive "D" range;

the first pressure control valve controlled by a first pressure control solenoid valve for feeding drive pressure from the drive pressure line to first, second, and third friction members;

the second pressure control valve controlled by a second pressure control solenoid valve according to a duty ratio in order to feed hydraulic pressure during shifting the shift select lever from a neutral "N" range to the drive "D" range, a gear shifting from a fourth speed to the third speed, and a gear skip shifting from the fourth speed to the second speed;

a first-to-second speed shift valve for feeding hydraulic pressure to third and fifth friction members in accordance with second speed line hydraulic pressure;

an end clutch valve for feeding hydraulic pressure to a fourth friction member in accordance with second speed line hydraulic pressure; and

a second-to-third/fourth-to-third speed shift valve controlled by third and fourth speed line hydraulic pressures.

5,611,750

SLIP CONTROL APPARATUS FOR MOTOR VEHICLE LOCK-UP CLUTCH

Katsumi Kono, Toyota; Shinya Nakamura, Owariasahi, and Atsushi Honda, Susono, all of Japan, assignors to Toyoda Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 18, 1995, Ser. No. 503,617

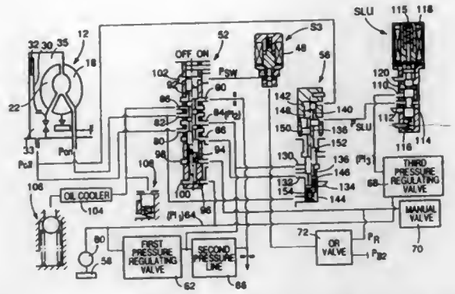
Claims priority, application Japan, Jul. 20, 1994, 6-167981; Jul. 13, 1995, 7-177353

Int. Cl.[6] F16H *61/14*

U.S. Cl. 477—65 **18 Claims**

1. An apparatus for controlling an amount of slip of a lock-up clutch disposed between a pump impeller and a turbine impeller of a fluid-filled power transmitting device of a motor vehicle, said lock-up clutch including a piston operated by a pressure difference between hydraulic pressures in two oil chambers formed on opposite sides of the piston, said apparatus comprising:

slip control means for effecting a slip control operation according to a slip control output to control the amount of slip of said lock-up clutch while a running condition of the vehicle is



in a predetermined slip control area, such that an actual slip speed of the lock-up clutch coincides with a target slip speed determined depending upon said running condition, said slip control output consisting of a duty ratio determined on the basis of a difference between said actual slip speed and said target slip speed; and

output oscillating means operable during said slip control operation of said slip control means, for oscillating said duty ratio of said slip control means at a predetermined frequency, to oscillate said pressure difference.

5,611,751

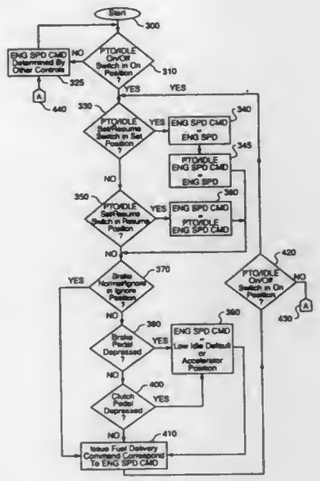
ENGINE SPEED CONTROL AND METHOD FOR OPERATING SAME

Kevin D. Ehrenhardt, Eureka; Gregory S. Gauger, Pekin; Prasad V. Parupalli, Peoria, and Thomas R. Sandborg, Mapleton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 26, 1995, Ser. No. 533,974

Int. Cl.[6] B60K *41/02;41/04;* **F16H** *37/00*

U.S. Cl. 477—73 **15 Claims**



1. An apparatus for controlling a vehicle engine, said engine being connected to a power-take-off, said apparatus comprising:

an electronic controller;

a PTO on/off switch connected to said electronic controller and having an on position and an off position;

a brake/clutch ignore switch having an ignore position and a normal position and being connected to said electronic controller;

a brake pedal sensor connected to said electronic controller and producing a brake engaged signal;

a clutch pedal sensor connected to said electronic controller and producing a clutch engaged signal;

memory means connected to said electronic controller;

a driver circuit connected to said electronic controller and connected to a fuel injector;

a PTO set/resume switch having a set position and a resume position;

speed sensing means connected to said engine and to said electronic controller for producing an electrical signal corresponding to said engine speed;

wherein said electronic controller produces an engine speed command corresponding to the electrical signal produced by said speed sensing means as a function of said PTO set/resume switch being moved to said set position and said PTO on/off switch being in said on position; and

wherein said electronic controller produces a fuel injection signal delivered to said driver circuit corresponding to said engine speed command when said PTO on/off switch is in the on position, and said brake/clutch ignore switch is in the ignore position.

5,611,752

HYDRAULIC CONTROL SYSTEM FOR LOWERING THE DUTY RATIO WHEN THE PRESSURE IS ABOVE A PRESET PRESSURE AS A FUNCTION OF TEMPERATURE

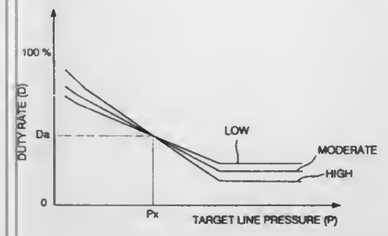
Shinya Kamada, and Toshihisa Marusue, both of Hiroshima, Japan, assignors to Madza Motor Corporation, Hiroshima-ken, Japan

Filed May 19, 1995, Ser. No. 446,580

Claims priority, application Japan, May 20, 1994, 6-130920

Int. Cl.[6] F16H *1/00*

U.S. Cl. 477—98 **12 Claims**



1. A hydraulic control system for an automatic transmission, said hydraulic control system including a three-way type of solenoid valve which is operated with a drive signal depending upon driving conditions to open and close a drain port of said valve so as to regulate hydraulic pressure introduced at an input port of said valve and develop a controlled pressure at an output port of said valve leading to a frictional coupling element hydraulically connected to said solenoid valve for shifting the automatic transmission to a specific one of a plurality of gears, thereby forcing said controlled pressure to reach a desired hydraulic pressure according to driving conditions, said hydraulic control system comprising:

a hydraulic pressure control circuit including a hydraulic pressure source for supplying a working oil as a hydraulic pressure to said input port of said solenoid valve from said hydraulic pressure source;

detection means for detecting a parameter relating to a viscosity of said working oil for defining fluidity of said working oil; and

control means for changing said drive signal so as to change a period of time for which said drain port remains closed, in a range of said desired hydraulic pressure greater than a predetermined pressure, longer when said detection means detects said parameter indicating that the viscosity of said working oil is higher than a specific value of viscosity than when said detection means detects said parameter indicating that the viscosity of said working oil is lower than said specific value of viscosity.

5,611,753

SPEED CHANGE CONTROL METHOD FOR CONTROLLING CHANGEOVER BETWEEN GEARSHIFT POSITIONS OF AN AUTOMOTIVE AUTOMATIC TRANSMISSION UTILIZING A DETECTED DEGREE OF NECESSITY OF ENGINE BRAKING AND LEARNING CORRECTION

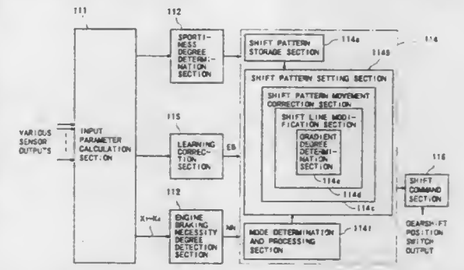
Kaoru Kondo, Kyoto; Kenjiro Fujita, Kusatsu, and Shinji Watanabe, Himeji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, and Mitsubishi Denki Kabushiki Kaisha, both of Japan

Division of Ser. No. 277,029, Jul. 19, 1994. This application Oct. 20, 1995, Ser. No. 546,312

Claims priority, application Japan, Jul. 20, 1993, 5-179026; Sep. 9, 1993, 5-224695; Dec. 16, 1993, 5-316613; Apr. 5, 1994, 6-067361

Int. Cl.[6] F16H *61/02*

U.S. Cl. 477—118 **12 Claims**



1. A speed change control method for controlling changeover between gearshift positions of an automotive automatic transmission, comprising the steps of:

detecting, using a running condition detector, values of parameters indicitive of a running condition of a vehicle;

detecting, using a neural network receiving at least one of the detected parameter values as an input, a degree of necessity of engine braking; and

selecting a predetermined shift pattern by fuzzy inference based on at least a different one of the detected parameter values and the detected necessity degree of engine braking.

5,611,754

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takashi Haga, and Hidezo Umiyama, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

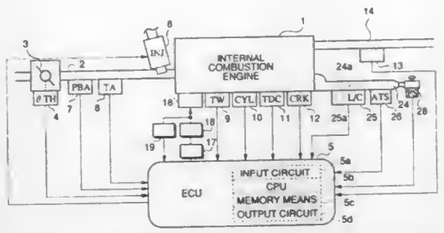
Filed Jun. 6, 1995, Ser. No. 467,872

Claims priority, application Japan, Oct. 26, 1994, 6-285816

Int. Cl.[6] F02D *43/00*

U.S. Cl. 477—181 **8 Claims**

1. In a control system for an internal combustion engine to which are connected a lock-up clutch and a torque converter, including combustion state-detecting means for detecting a state of combustion of said engine, combustion variation rate-calculating means for calculating a rate of combustion variation, based on said state of combustion of said engine detected by said combustion state-detecting means while said engine is in a combustive state, operating condition-detecting means for detecting operating conditions of said engine, and control parameter-adjusting means for adjusting at least one predetermined control parameter such that said rate of combustion variation calculated by said combustion



variation rate-calculating means becomes equal to a desired rate of combustion variation dependent on said operating conditions of said engine detected by said operating condition-detecting means while said engine is in said combustive state,

the improvement comprising:

engagement state-detecting means for detecting a state of engagement of said lock-up clutch;

slip ratio-detecting means for detecting a slip ratio of said torque converter; and

desired combustion variation rate-correcting means for correcting said desired rate of combustion variation in dependence on at least one of said state of engagement of said lock-up clutch detected by said engagement state-detecting means and said slip ratio of said torque converter detected by said slip-ratio detecting means.

5,611,755

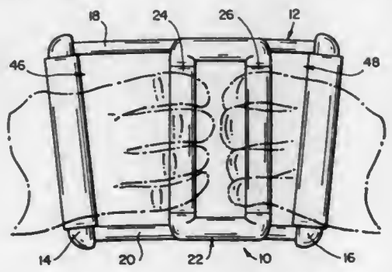
ISOMETRIC HAND EXERCISING SYSTEM

John M. Blackmore, Redwood City, Calif., assignor to MedDev Corporation, Palo Alto, Calif.

Filed Jun. 1, 1995, Ser. No. 456,857

Int. Cl.[6] A63B *23/16*

U.S. Cl. 482—49 **13 Claims**



1. An exercising apparatus comprising:

an outer frame having spaced apart first and second outer handles,

an inner frame coupled to said outer frame for reciprocating movement of said inner frame between said outer handles, said inner frame having first and second inner handles retained in a fixed spaced-apart configuration during the reciprocating movement of said inner frame, said inner handles each being positioned opposite one of said outer handles so that said first inner handle is moved toward said first outer handle and said second inner handle is moved away from said second outer handle when said inner frame is moved in a first direction, and said second inner handle is moved toward said second outer handle and said first inner handle is moved away from said first outer handle when said inner frame is moved in a second direction,

said first outer handle and said first inner handle defining a first gripping member and said second outer handle and said second inner handle defining a second gripping member, said gripping members each being engageable by a hand for moving said inner frame relative to said outer frame with one hand applying force to one of said gripping members to move said inner handle of said one of said gripping members toward said outer handle of said one of said gripping members while the other hand applies force to the other of said gripping members to resist movement of said inner handle of said other of said gripping members away from said outer handle of said other of said gripping members,

said inner frame being movable relative to said outer frame by engaging each of said gripping members with a hand to move said inner frame relative to said outer frame with one hand while resisting the movement of said inner frame relative to said outer frame with the other hand.

5,611,756

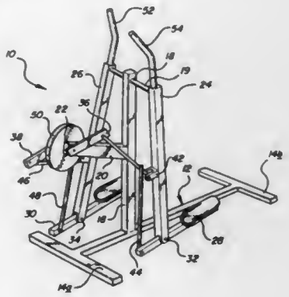
STATIONARY EXERCISE DEVICE

Larry Miller, 1628 Treeside, Rochester, Mich. 48307

Continuation-in-part of Ser. No. 598,548, Feb. 8, 1996. This application Apr. 22, 1996, Ser. No. 636,074

Int. Cl.[6] A63B *69/16;22/00*

U.S. Cl. 482—52 **18 Claims**



1. An exercise device comprising:

a frame configured to be supported on a floor, said frame having a first and a second pivot axis defined thereupon;

a first and a second guide link, each guide link having a first and a second attachment point defined thereupon, each guide link being pivotally attached, through its first attachment point, to said frame at the first pivot axis thereof;

a first and a second foot link, each foot link being pivotally attached to a respective one of said first and second guide links through the second attachment point thereof;

a first and a second crank arm, each being pivotally attached to said frame at said second pivot axis so as to be rotatable thereabout;

a first and a second intermediate link, each having a first connection point mechanically coupled to a respective one of said guide links, and a second connection point mechanically coupled to a respective one of said crank arms, so that rotation of said first and second crank arms about said second pivot axis causes said respective first and second guide links to pivot about said first pivot axis; and

a first and a second control link, each having a first end mechanically coupled to a respective one of said foot links, and a second end mechanically coupled to a respective one of said intermediate links, each of said control links being operative to vary an angle defined between its respective foot link and its associated guide link, as said guide link pivots about said first pivot axis.

5,611,757

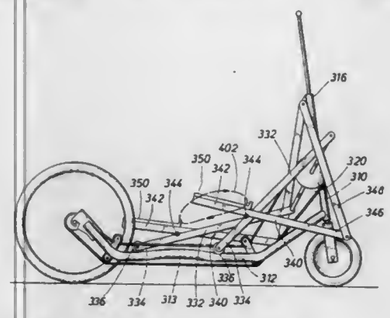
MOBILE EXERCISE APPARATUS

Robert E. Rodgers, Jr., 8011 Meadowcroft, Houston, Tex. 77063

Division of Ser. No. 522,178, Aug. 31, 1995, Pat. No. 5,527,246, which is a continuation-in-part of Ser. No. 426,467, Apr. 19, 1995, Pat. No. 5,549,526, which is a continuation-in-part of Ser. No. 377,846, Jan. 25, 1995, Pat. No. 5,573,480. This application Feb. 23, 1996, Ser. No. 604,814

Int. Cl.[6] A63B *69/16*

U.S. Cl. 482—57 **11 Claims**



1. A mobile exercising apparatus comprising:

a frame having at least two wheels;

camming means supported by said frame;

a pair of pivotal linkage assemblies, each linkage assembly having at least a first end and a second end, said first end adapted for substantially linear movement along said frame and includes means for supporting each foot of the user;

a coupling assembly supported within said frame and pivotally connected to said second end of each linkage assembly; and

means for rotatably engaging said coupling assembly with at least one of said wheels,

wherein pivotal movement of said linkage assemblies revolves each foot of the user in a substantially elliptical path and enables said rotating means to initiate rotation of at least one of said wheels.

5,611,758

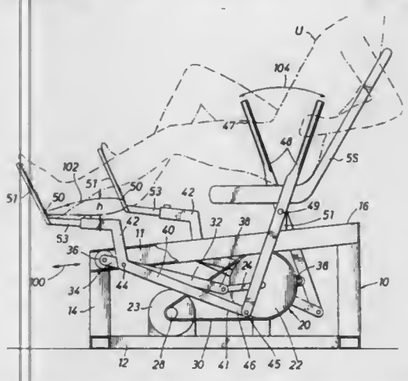
RECUMBENT EXERCISE APPARATUS

Robert E. Rodgers, Jr., Houston, Tex., assignor to CCS, LLC, Denver, Colo.

Filed May 15, 1996, Ser. No. 648,434

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—57 **27 Claims**



1. An apparatus for exercising in a recumbent position comprising:

a frame having a base portion adapted to be supported by a floor;

a seat attached to said frame and adapted to support the user in the recumbent position;

first and second reciprocating members, each reciprocating member having a first end and a second end, a portion of said first and second reciprocating members adapted for substantially linear motion;

a coupling member having (i) a pulley supported by said frame defining a pivot axis, and (ii) means for attaching said second ends of said first and second reciprocating members to said pulley so that rotation of said pulley results in the rotation of said second ends of said first and second reciprocating members in a substantially circular path about said pivot axis while a portion of each of said first and second reciprocating members distal said second end of each said first and second reciprocating member moves in a reciprocating pattern; and

first and second pivotal linkage assemblies operatively associated with said reciprocating members for orienting the feet of the user of the apparatus so that each foot of the user follows a closed ovate path during operation of the apparatus.

5,611,759

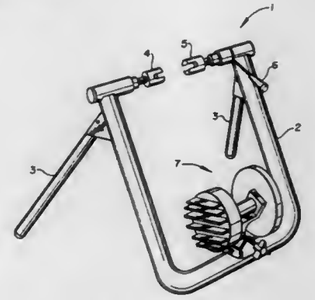
RESISTANCE DEVICE FOR BICYCLE TRAINERS

Mark A. Zeh, Wayzata; George D. Stickler, Shorewood, both of Minn., and Jeffrey C. Nichols, New York, N.Y., assignors to Cycle-Ops Products, Inc., New York, N.Y.

Filed Jun. 26, 1995, Ser. No. 494,503

Int. Cl.[6] A63B *22/06;69/16*

U.S. Cl. 482—61 **2 Claims**



1. A resistance applying device for use with a bicycle exercise apparatus having a driven wheel supported by a stationary support frame, said resistance applying device comprising:

a rotatable shaft in operable engagement with said driven wheel, said rotatable shaft being rotated when said driven wheel is rotated;

a rotatable impeller connected to one end of said rotatable shaft; and

a sealed housing comprising first and second shell members joined to form a fluid-tight impeller chamber for receiving said rotatable impeller and containing a fluid that provides resistance against the rotation of said impeller, wherein one of said first and second shell members includes an expansion chamber in fluid communication with said impeller chamber, said expansion chamber sealed by a removable cap.

5,611,760

FLEXIBLE ATHLETIC TRAINING PERIMETER SYSTEM

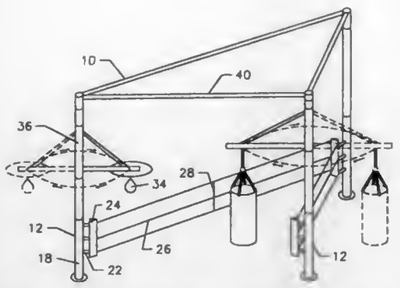
Dicky R. Jordan, 224 Dee Dee St., Longview, Tex. 75602

Continuation-in-part of Ser. No. 413,122, Mar. 29, 1995, Pat. No. 5,542,894. This application May 6, 1996, Ser. No. 646,689

Int. Cl.[6] A63B *71/02*

U.S. Cl. 482—83 **2 Claims**

1. An athletic training perimeter system comprising:



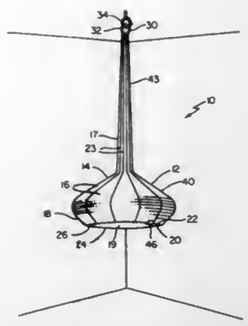
a plurality of corner posts, said corner posts having first and second coupling eye pairs of coupling eyes, each said coupling eye of each said coupling eye pair being positioned at substantially the same longitudinal position on said corner post and being relatively positioned on the exterior surface of said corner posts substantially at 90° angles about a longitudinal axis of each said corner posts, said first coupling eye pair being positioned at a first longitudinal corner post position and said second coupling eye pair being positioned at a second longitudinal corner post position;

a plurality of fence sections having first and second fence section ends respectively delineated by first and second fence posts oriented in a parallel relative relationship, extending respectively from said first and second fence posts in perpendicular arrangement with said fence posts are first and second sets of metallic rods, said first set of said metallic rods for each said fence section being fixedly attached to said first fence post at first rod ends and being fixedly attached to a first end plate at second rod ends, a second set of said metallic rods for each said fence section being fixedly attached to said second fence post at first rod ends and being fixedly attached to a second end plate at second rod ends, said first and second end plates being hingedly attached whereby said fence section is moveable from a substantially linear configuration to an angular configuration whereby a first span of said fence section which includes said first fence post and said first end plate extends along a first line, and a second span of said fence section which includes said second fence post and said second end plate extends along a second line angularly displaced from said first line, said fence posts of said fence sections having fixedly attached thereto, in an orientation substantially opposite the attachment site of said metallic rods, first and second coupling pins, a portion of said coupling pins being sized and shaped for telescopic engagement with said coupling eyes, and said coupling pins being positioned on said fence posts for simultaneous mating with said coupling eyes on one said corner post.

5,611,761
THERAPEUTIC DEVICE
Michael A. Brown, 434 Triangle Ave., Dayton, Ohio 45419
Filed Mar. 3, 1994, Ser. No. 205,572
Int. Cl.[6] A63B *9/00*
U.S. Cl. 482—87 **7 Claims**

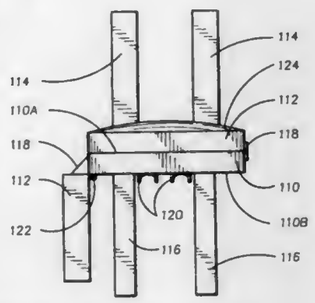
1. A therapeutic device for treating an individual having a neurophysiological dysfunction, comprising:

a flexible body having a relatively enlarged end on which the individual sits and relatively elongated end of a length at least that of the individual's torso to which an individual grasps when seated on said enlarged end and wherein said elongated end and said enlarged end generally having a common central axis, wherein said body includes an outer shell of a sheet material having a fastenable section which is readily opened and closed, and an elongated insert of a size and configuration to substantially fill a space within said elongated end of said body and an enlarged insert of a size and configuration to substantially fill a space within said enlarged end of said body



and an end of said elongated insert extends into an open surface of said enlarged end to be received therein wherein said inserts are readily insertable through said fastenable section and disposable within said shell such that said fastenable section is closable and said shell encloses said inserts, and wherein said inserts aid to impart a generally uniform softness to each said elongated end and said enlarged end to said body when inserted therein, said body having a size and configuration to enable various aged and sized individuals to sit on said enlarged end and grasp said elongated end, and wherein said body is capable of bending along said elongated end such that said elongated end and said enlarged end have a different central axis, said device to permit varying flexion patterns.

5,611,762
CONVERTIBLE WORKOUT BENCH-COFFEE TABLE
John Kaye, 44 9 Mile Rd., NW., Rte. 2, Comstock Park, Mich. 49321
Filed Oct. 2, 1995, Ser. No. 538,135
Int. Cl.[6] A63B *71/078*
U.S. Cl. 482—104 **5 Claims**



1. A workout bench-coffee table comprising;

a) a resting portion;

b) said resting portion comprising a resting portion top face, and a resting portion bottom face, said resting portion bottom face being disposed on an opposing face from said resting portion top face, whereby the resting portion top face can be used as a table top, or a back rest when performing the exercise known as bench pressing;

c) a folding side hingedly attached onto said resting portion, whereby said folding side can be moved from an essentially horizontal position on the same plane as the resting portion for use as a coffee table, and to an essentially vertical position, for use as a bench press, and can be moved horizontally, adjacent to and above the resting portion top face, whereby the user can rest their back against said folding side;

d) a leg frame supporting said resting portion;

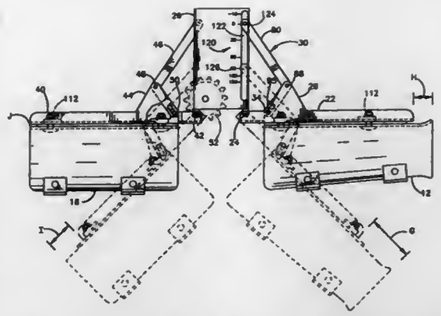
e) a means for supporting a weight above the leg framing;

f) a means for hingedly moving said folding side from an essentially horizontal position to an essentially vertical position and to a horizontal position adjacent to and above the resting portion top face;

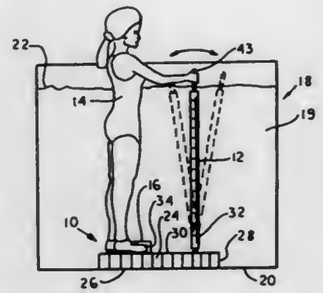
g) a means for holding said weight bearing means beneath said resting portion, adjacent to said resting portion bottom face;

h) a means for locking said folding side into an essentially planar horizontal position, whereby the invention can have an increased horizontal surface area for effective use as a coffee table; and

i) a folding side padding disposed on said folding side whereby the user can rest his back against said folding side padding when said folding side is folded horizontally, adjacent to and above said resting portion top face.



5,611,763
STABILIZER FOR AQUATIC EXERCISE
Kenneth Lochbaum, 3002 E. 38th St., Erie, Pa. 16510-2924
Continuation-in-part of Ser. No. 365,498, Dec. 28, 1994. This application May 26, 1995, Ser. No. 451,674
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—111 **27 Claims**



1. A stabilizing device for use when engaged in water resistive element aquatic exercise in a container of water having bottom and side walls;

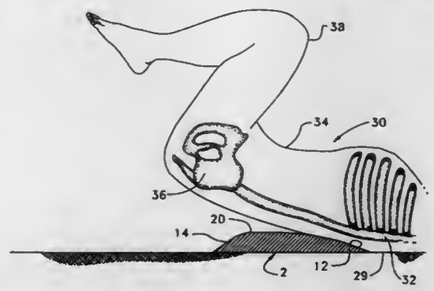
attaching means attaching said stabilizing device to said container;

a foot engaging means on said stabilizing device for engaging the top of a foot of a person while leaving the hands and arms free during aquatic exercise in said water whereby the person is supported in an exercise position.

5,611,764
METHOD OF INCREASING RANGE OF MOTION
Peter M. Bonutti, 1303 W. Evergreen Plaza, Effingham, Ill. 62401, and Gary E. Zitzmann, Newton, Ill., assignors to Peter M. Bonutti, Effingham, Ill.
Division of Ser. No. 297,258, Aug. 26, 1994, Pat. No. 5,453,075, which is a division of Ser. No. 126,081, Sep. 23, 1993, Pat. No. 5,395,303, which is a division of Ser. No. 690,845, Apr. 24, 1991, Pat. No. 5,285,773, which is a continuation-in-part of Ser. No. 559,700, Jul. 30, 1990, Pat. No. 5,167,612, and a continuation-in-part of Ser. No. 686,811, Apr. 17, 1991, Pat. No. 5,213,094. This application Jun. 2, 1995, Ser. No. 458,982
Int. Cl.[6] A61F *5/00*
U.S. Cl. 482—124 **4 Claims**

1. A method of increasing a range of relative movement between first and second body portions interconnected by a joint, said method comprising the steps of connecting a first cuff of an orthosis with the first body portion, connecting a second cuff of the orthosis with the second body portion, stretching viscoelastic body tissue connected with the joint and first and second body portions to a first extent by operating the orthosis to move the first cuff relative to the second cuff in a first direction from a first position to a second position, maintaining the first cuff in the second position relative to the second cuff for a period of time against the influence of force transmitted from the stretched viscoelastic body tissue through the first and second body portions to the first and second cuffs to maintain the first extent of stretching of the viscoelastic body tissue, and further stretching the viscoelastic body tissue connected with the joint and first and second body portions from the first extent to a second extent by operating the orthosis to further move the first cuff relative to the second cuff in the first direction from the second position to a third position.

5,611,765
EXERCISE DEVICE
Frederick W. Koch, Jr., 1235 Chanticleer Dr., Cherry Hill, N.J. 08003
Continuation of Ser. No. 210,439, Mar. 21, 1994, abandoned. This application Sep. 20, 1995, Ser. No. 530,828
Int. Cl.[6] A63B *26/00*
U.S. Cl. 482—142 **9 Claims**



1. A device consisting of a single unitary member, which is free-standing, comprising first means for exercising the upper and the lower abdominal muscles and the lower back of a person said unitary member further comprising:

(a) a flat bottom wall;

(b) a pair of opposing side walls;

(c) a central section having a generally flat top surface, the plane of said top surface being generally parallel to the plane of said bottom wall;

(d) second means for causing flexion and extension of said abdominal and lower back muscles of a person; and

(e) third means for providing exercise requiring more than one level of effort comprising a first and a second end section, said end sections being attached to said central section, said first and said second end sections each having a top surface inclined to said bottom wall at a first and at a second angle respectively, said first angle being larger than said second

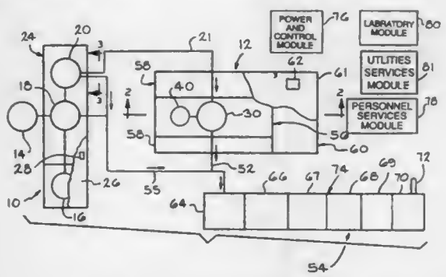
angle, so that when the legs of the person are positioned adjacent said first end section the level of exercise is greater than when the legs of the person are positioned adjacent said second end section.

5,611,766

TRANSPORTABLE, MODULAR VITRIFICATION SYSTEM FOR THE TREATMENT OF WASTE MATERIAL

Richard C. Carle, Waterville; Karl M. Slevert, Oregon; Douglas H. Davis, Perrysburg; John E. Polcyn, Toledo, all of Ohio; David M. Bennert, Newry, S.C., and Irving M. Williams, Bowling Green, Ohio, assignors to Envitco, Inc., Toledo, Ohio

Filed Feb. 6, 1996, Ser. No. 597,114
Int. Cl.[6] A62D *3/00*; **B09B** *3/00*; **G21F** *9/00*
U.S. Cl. 588—252 **24 Claims**



1. A system for the treatment of waste material comprising:

a waste-receiving module for receiving waste material and blending it with glassmaking additives, where the waste-receiving module is enclosed within a waste-receiving module container, and where the waste-receiving module container is capable of being sealed for over the road transport so that the waste-receiving module can be transported from one source of waste material to another;

a melter module containing a melter for melting the blended waste material and glassmaking additives to form molten glass, thereby stabilizing the waste material, and for discharging the molten glass to form a vitrified waste material, where the melter module is comprised of one or more melter module containers, and where the melter module containers are capable of being sealed for over the road transport so that the melter module can be transported from one source of waste material to another; and

an emission control module for receiving waste gases from the melter module and for cleaning the waste gases for discharge to the atmosphere, where the emission control module is capable of being sealed for over the road transport so that it can be transported from one source of waste material to another;

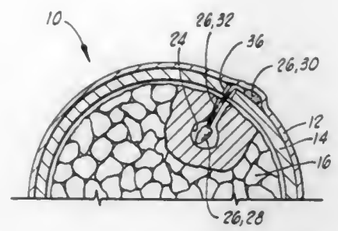
wherein the system for the treatment of waste materials can be readily disassembled, transported over the road from one source of waste material to another, and reassembled.

5,611,767

RADIATION TREATMENT OF TUMORS USING INFLATABLE DEVICES

Jeffery A. Williams, Oklahoma City, Okla., assignor to ONCOcath, Inc., Woodinville, Wash.

Continuation of Ser. No. 715,923, Jun. 14, 1991, Pat. No. 5,429,582. This application Sep. 16, 1994, Ser. No. 307,165
Int. Cl.[6] A61N *5/02*
U.S. Cl. 600—2 **16 Claims**



1. A surgical procedure for providing radiation treatment of a tumor in a living patient, comprising:

(a) making a surgical incision extending into the tumor and surgically removing at least a portion of the tumor so that said incision includes a cavity in the patient's remaining tissue;

(b) placing an inflatable treatment device in the cavity adjacent the tumor;

(c) inflating said device with a radioactive treatment fluid such that said inflatable treatment device is inflated to a volume not substantially greater than a volume of said cavity, thereby avoiding any substantial compression or distortion of normal tissue; and

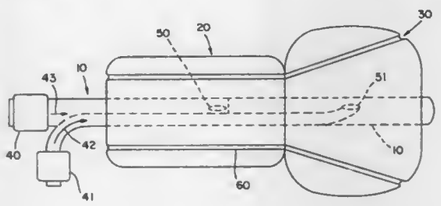
(d) thereby placing said radioactive treatment fluid in close proximity to the tumor surrounding said inflatable treatment device and applying radiation to the tumor.

5,611,768

INFLATABLE VAGINAL PESSARY

Ronald F. Tutrone, Jr., 3 Wendover Rd., Baltimore, Md. 21218

Continuation of Ser. No. 434,362, May 5, 1995, which is a continuation of Ser. No. 273,391, Jul. 1, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 473,017
Int. Cl.[6] A61B *19/00*
U.S. Cl. 600—29 **16 Claims**



1. A pessary device comprising:

(a) an inflatable anterior chamber adapted to fit in a vestibule of a vaginal cavity of a human when inflated, wherein said inflatable anterior chamber compresses a urethra of the human when inflated,

(b) an inflation tube having a first end fluidly connected to said inflatable anterior chamber and a second end having an inflation valve that permits inflation and deflation of said inflatable anterior chamber, said inflation tube being sufficiently flexible to conform to the vaginal cavity and sufficiently rigid to provide support for said inflatable anterior chamber and upon insertion of said pessary device, and

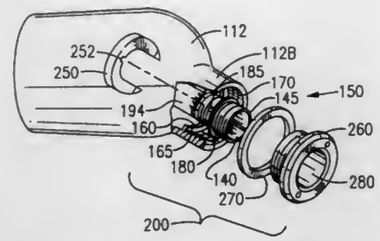
(c) an anchor member comprising a non-inflatable posterior member adapted to anchor the device in a posterior region of the vaginal cavity, said anchor member being posteriorly connected to said inflatable anterior chamber when said pessary device is in its normal operating position.

5,611,769

DETACHABLE CONNECTOR ASSEMBLY FOR USE WITH VIDEO CAMERA EQUIPPED MEDICAL INSTRUMENTS

Richard A. Monroe, Liverpool, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 22, 1995, Ser. No. 532,978
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—112 **16 Claims**



1. A connector assembly for a video camera head having a threaded outlet opening that includes an internal retaining shoulder, a video output connector having a circumferential flange, a key structure and a plurality of output pins connected to a video imaging device, including, in combination:

a U-shaped spacer shaped to engage said key structure and flange and to seat on said retaining shoulder;

a retaining collar adapted to thread into said outlet opening and secure said spacer and said connector in place with respect to the imaging head;

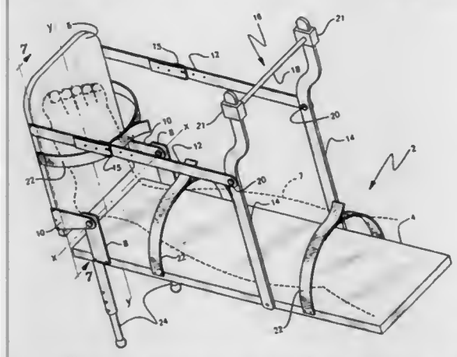
whereby an external cable may be attached to and detached from said video output connector without subjecting the connections between said pins and said imaging device to forces high enough to damage said connections.

5,611,770

LEG STRETCHING APPARATUS

Charles V. Tesch, 4704 John Cones Pl., Jonesboro, Ark. 72401

Filed Sep. 27, 1995, Ser. No. 534,448
Int. Cl.[6] A61H *1/02*
U.S. Cl. 601—34 **6 Claims**



1. A therapeutic apparatus for stretching the muscles of the lower leg of a patient comprising:

a leg board having a first end, a second end, a top side, a left side, and a right side for fixedly receiving the leg of a patient on said top side thereof;

a foot board having a heel portion and a toe portion, a top side for receiving the foot of a patient, and a left side, and a right side;

means for applying a force near the toe portion of the foot board to cause the top of the patient's foot to be forced toward the patient to thus stretch the muscles of the calf of the patient's leg;

means for rotatably supporting said foot board above said leg board wherein said means comprises:

a first vertical support member positioned on the left side leg board near its first end;

a second vertical support member positioned on the fight side of said leg board near its first end;

a first horizontal support member positioned near said heel portion of said foot board and rotatably connected to said first vertical support member

a second horizontal support member positioned near said heel portion of said foot board and rotatably connected to said second vertical support member,

whereby the said force when applied near the toe portion of the foot board causes the foot of the patient to generally rotate about the ankle of the patient with the toes of the patient being forced toward the patient while the heel portion of said foot board and thus the heel of the patient moves away from the patient; and

wherein the said means for applying a force near the toe portion of a foot board comprises:

a first second-class lever operatively positioned between said left side of said foot board near said toe of said foot board and said left side of said leg board near said second end of said leg board and

a second second-class lever operatively positioned between said right side of said foot board near said toe of said foot board and said right side of said leg board near said second end of said leg board,

wherein said first second-class lever and said second second-class lever comprise:

a first rigid elongated member having a first end rotatably connected to the left side of said leg board near the said second end of said leg board and a second end adapted to be grasped by the user and extending upwardly from said top side of said leg board,

a second rigid elongated member having a first end rotatably connected to the right side of said leg board near the said second end of said leg board and a second end adapted to be grasped by the user and extended upwardly from said top side of said leg board,

a first longitudinally adjustable member having a first end rotatably connected to said left side of said toe portion of said foot board and a second end rotatably connected to said elongated member positioned on the said left side of said leg board between said first end of said elongated member and said second end of said elongated member, and

a second longitudinally adjustable member having a first end rotatably connected to said right side of said toe portion of said foot board and a second end rotatably connected to said elongated member positioned on the said right side of said leg board between said first end of said elongated member and said second end of said elongated member,

whereby a force supplied to said second end of said rigid elongated members and away from said foot board causes said foot board to rotate where said horizonal support member is rotatably connected to said vertical support member.

5,611,771

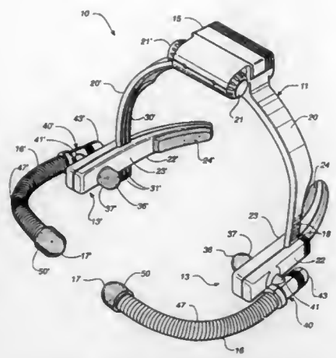
HEAD MOUNTED PULSE ACTION FACIAL MASSAGER

Charles E. Taylor, San Rafael, Calif., assignor to Sharper Image Corporation, San Francisco, Calif.

Filed Nov. 14, 1994, Ser. No. 339,030
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—70 **27 Claims**

24. A pulse action facial massager apparatus for massaging the face of a user's head comprising:

a headset assembly formed and dimensioned for mounting to the user's head;



a pair of vibrating devices each generating a respective vibrating action;

a pair of motor housings each formed for housing and containing a respective one of said vibrating devices therein, each motor housing being movably mounted to said headset assembly for independent selective positioning vertically along opposing sides of the user's head;

a controller operably coupled to each of said vibrating devices to drive and control said respective vibrating action; and

a pair of flexible and bendable, elongated extension fingers each having a tip portion manually movable for selected contact at independent portions of the user's face, each extension finger being operably coupled to a respective one of said vibrating devices for the transmission of the vibrating action thereof to the respective tip portion, and each having an end opposite the tip portion pivotally mounted to a respective motor housing to position the respective tip portion at a selected one of a plurality of positions vertically along the user's face, each said extension finger includes a bending strip extending longitudinally therealong enabling bendable and retainable positioning of the tip portion along the user's face.

5,611,772

AIR MASSAGE DEVICE

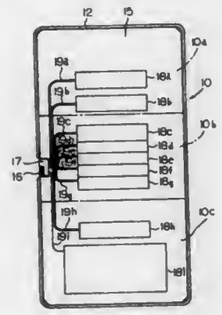
Shinichiro Fujimoto, and Yoshikiyo Yamasaki, both of Osaka-fu, Japan, assignors to Kabushiki Kaisha Fujl Iryoki, and Kabushiki Kaisha Japan Health, both of Osaka-fu, Japan

Continuation-in-part of Ser. No. 212,957, Mar. 15, 1994, abandoned, Ser. No. 212,956, Mar. 15, 1994, abandoned, and Ser. No. 212,959, Mar. 15, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 422,502

Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—149 **6 Claims**

1. A massage device for providing a uniform massage treatment



upon a human body, comprising:

an air-mat divided into three distinct sections and upon which said human body will lie;

a plurality of air-bags installed inside said air-mat so as to be disposed in said three distinct sections of said air-mat;

an intake/exhaust instrument capable of independently supplying air to each individual air-bag of said plurality of air-bags in said air-mat to inflate and deflate said individual air-bags in said air-mat so as to provide said massage treatment upon said human body;

control circuit means for determining which said individual air-bag of said plurality of air-bags in said air-mat will be inflated and deflated with air by said intake/exhaust instrument;

selection means for selecting at least one of a plurality of massage regions of said air-mat for inflation and deflation of said individual air-bag therein to provide said massage treatment, a first one of said massage regions having said individual air-bags therein disposed in two adjacent sections of said three distinct sections; and

said control circuit means also including means for causing said individual air-bags within said at least one massage region over a set period of time to be inflated and deflated in an initial successive order, and upon inflation and deflation of a last said air-bag at one end of said initial successive order, for causing each of said individual air-bags of said at least one massage region to then be inflated and deflated in a reverse successive order relative to said initial successive order so that a first air-bag to be inflated and deflated in said reverse successive order is said last air-bag to be inflated and deflated during said initial successive order, each said air-bag being substantially deflated after being inflated before a next successive one of said air-bags is inflated, wherein said individual air-bags in said first massage region are successively inflated and deflated between said two adjacent sections when said first massage region is selected by said selection means.

5,611,773

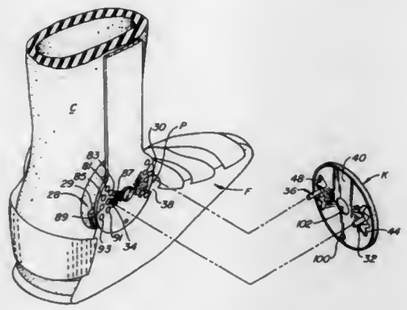
RANGE OF MOTION CAP FOR RANGE OF MOTION ORTHOTIC

Michael Nash, Danville, and Gary Stafford, Hayward, both of Calif., assignors to Orthopedic Technology Incorporated, Tracy, Calif.

Filed Nov. 9, 1994, Ser. No. 336,861

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—16 **8 Claims**



1. In a range of motion device for an orthotic extending across a joint of the body between two connected relatively moving body portions, the range of motion device including;

a hinge having first and second relatively moving hinge members;

at least one of the relatively moving hinge members including a pivot and a series of apertures at defined locations off axis from the pivot for receiving a range of motion pin;

the other of the relatively moving hinge members defining a surface for bearing against the range of motion pin for restricting movement of the hinge to a selected range of motion;

a first sleeve section for capturing the first body portion, the first sleeve section having connection to the first relatively moving hinge member;

a second sleeve section for capturing the second body portion, the second sleeve section having connection to the second relatively moving hinge member;

the improvement comprising:

a removably detachable cap for fitting over the hinge at the pivot and the series of apertures off axis from the pivot;

a pin for restricting the range of motion of the hinge, the pin having a head portion and a shank portion, the shank portion of the pin being of sufficient length to enable the shank portion to penetrate a selected aperture for restricting the range of motion of the hinge;

means for holding the pin for removal with the removably detachable cap, said means for holding including:

a plate juxtaposed to the cap defining a groove;

the plate with the groove permitting the juxtaposition of the plate to the cap permitting capture of the head portion of the pin with protrusion of the shank portion of the pin from the groove; and,

defined locations on the groove for permitting registration of a pin to corresponding defined locations off axis from the pivot for holding the pin shank in position for penetration to one of the series of apertures to limit the range of motion of the hinge.

5,611,774

KNEE SUPPORT OR REPLACEMENT APPARATUS

Roberto J. J. Postelmans, Brussels, Belgium, assignor to Françoise Ghislaine Dumont, Brussels, Belgium

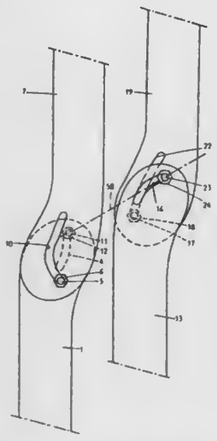
PCT No. PCT/BE93/00066, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/09729, PCT Pub. Date May 11, 1994

PCT Filed Oct. 22, 1993, Ser. No. 416,892

Claims priority, application Belgium, Oct. 23, 1992, 09200918

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—16 **14 Claims**



1. A knee support or replacement apparatus comprising:

at least one outer joint and one inner joint which are arranged each side of a vertical, antero-posterior plane, each joint comprising articulated members including at least one proximal member and at least one distal member articulated together,

first connection means for connecting together the proximal members of the joints, and second connection means for connecting together the distal members of the joints, the connection means effecting mutual positioning of the joints along a common axis,

attaching means for fixing the proximal members to a femoral part of a leg and the distal members to a tibial part of the leg,

and guide means for guiding the articulated members together, enabling relative flexion movement, antero-posterior rolling connected with at least one of a sliding, rotating and varus movement between the femoral and tibial parts, the guide means providing the articulated members of each of the joints with a movement different from that of the articulated members of the other joint,

said guide means for each joint comprising at least one guide surface having a predetermined curvature on one of the articulated members and at least one corresponding follower element on the other articulated member, these articulated members of each joint further comprising bearing surfaces having a predetermined curvature which cooperate during the relative movement between the femoral and tibial parts,

said bearing surfaces of the guide means of each joint having mutually different complex curvatures by means of which the bearing surfaces are in only partial contact, at at least three points, during movement between the femoral and tibial parts.

5,611,775

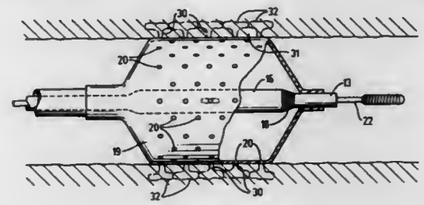
METHOD OF DELIVERY THERAPEUTIC OR DIAGNOSTIC LIQUID INTO TISSUE SURROUNDING A BODY LUMEN

Timothy R. Machold, Moss Beach; Janine C. Robinson, Half Moon Bay; Mary B. Michaels, and Motasim M. Sirhan, both of Sunnyvale, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 31,569, Mar. 15, 1993, abandoned. This application May 6, 1994, Ser. No. 238,904

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—53 **13 Claims**



1. A method of delivering therapeutic or diagnostic material in liquid form into tissue surrounding a body lumen of a patient comprising:

a) providing a catheter with:

a catheter shaft having proximal and distal ends and at least one inner lumen extending therein;

an inflatable member on a distal portion of the catheter shaft having an interior in fluid communication with the inner lumen extending within the catheter shaft and a wall with a plurality of small apertures extending therethrough; and

means to direct therapeutic or diagnostic material in liquid form from the inner lumen to the interior of the inflatable member;

b) advancing the catheter through a body lumen of a patient until the inflatable member is disposed at a site therein where the therapeutic or diagnostic liquid is to be delivered; and

c) directing therapeutic or diagnostic liquid through the inner lumen into the interior of the inflatable member so that the liquid is ejected from the plurality of small apertures in the

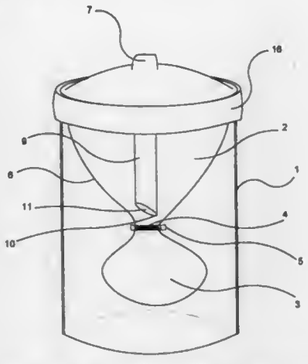
wall of the inflatable member in the form of a corresponding plurality of individual streams, each individual stream having a velocity capable of piercing the tissue surrounding the body lumen so that the liquid enters the tissue as a stream, to form a resevoir of therapeutic or diagnostic material within the tissue surrounding the body lumen.

5,611,776

MEANS AND METHOD FOR SEQUENTIAL ORAL ADMINISTRATION OF MULTIPLE FLUIDS TO INFANTS

Chelsey Simmons, and Renee Simmons, both of 3020 NW. 9th Pl., Gainesville, Fla. 32605

Filed Jul. 14, 1995, Ser. No. 502,452
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—65 **15 Claims**



1. A nursing bottle for the sequential oral administration of different fluids, comprising a rigid container having an open upper end, a bag to be disposed in said container and having an open end arranged proximal to the upper end of said container, a cap having a central opening, a nipple having a sealing flange and defining a nipple compartment, said nipple being arranged in said cap so that it projects outwardly of the central opening of said cap, a compartment access means in fluid connection with said nipple compartment and comprising an accession orifice a plurality of compartments within said bag, comprising at least one upper compartment and at least one lower compartment, said compartments being separated by a breachable compartment barrier and configured such that when sufficient suction force is applied on said nipple and through said compartment access means, said compartment barrier is brought into contact with said compartment access means and is thereby breached.

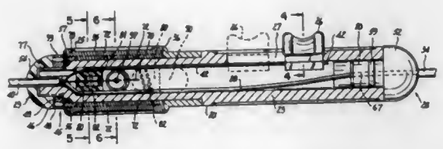
5,611,777

STEERABLE ELECTRODE CATHETER

Russell W. Bowden, Tyngsboro, Mass.; Gary S. Falwell, Manchester, N.H.; Charles A. Gibson, Malden, Mass.; Richard B. Stevens, Chelmsford, Mass., and Debbie E. Stevens-Wright, Lowell, Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 61,718, May 14, 1993, abandoned. This application Aug. 23, 1995, Ser. No. 518,521
Int. Cl.[6] A61M *37/00;25/00;* A61B *5/042*
U.S. Cl. 604—95 **8 Claims**

1. A deflectable tip steerable catheter comprising:
a control handle having a longitudinal axis therethrough and a proximal end and a distal end;
a slideblock axially movably supported in the control handle; the slideblock having a distal part and a separate proximal part not fixedly connected to the slideblock distal part, an opening being defined in the distal part;



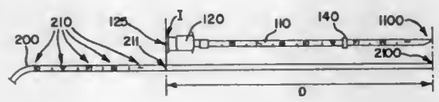
a catheter shaft having a proximal end attached to the control handle distal end and having at least one passageway therethrough from the shaft proximal end to a shaft distal end;
a deflectable tip portion having a proximal end attached to the shaft distal end, the tip portion also having a distal end and a longitudinal axis therethrough; and
a pullwire attached to the deflectable tip portion near its distal end to a point spaced radially outwardly from the tip portion longitudinal axis, the pullwire extending proximally through the tip portion, through the catheter shaft portion passageway, into the control handle through its distal end, through the opening in the distal part of the slideblock, and being secured to the proximal part of the slideblock, whereby proximal displacement of the distal part of the slideblock within the control handle causes corresponding proximal travel of the proximal part of the slideblock and the pullwire within the control handle, but distal displacement of the distal part of the slideblock within the control handle causes no distal movement of the separate proximal part of the slideblock within the control handle.

5,611,778

SURGICAL INSTRUMENT FOR PERFORMING EPIDURAL ANESTHESIA

Thierry Brinon, Montsoult, France, assignor to Vygon, Ecouen, France

PCT No. PCT/FR93/00465, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO93/23109, PCT Pub. Date Nov. 25, 1993
PCT Filed May 12, 1993, Ser. No. 331,646
Claims priority, application France, May 14, 1992, 92 05857
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—117 **8 Claims**



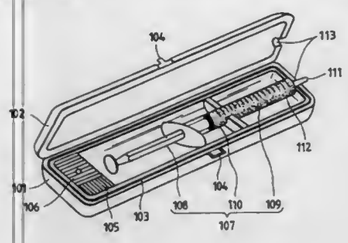
1. A surgical instrument for performing epidural anesthesia comprising:
a needle having an index mark defined thereon; and
an associated catheter sliding inside said needle, said catheter having a set of main axial marks that when said catheter is inserted in said needle, coincide with said index mark on said needle, to indicate merely by reading and without performing any calculations, the length of said catheter extending beyond the distal end of said needle, said catheter further having a set of auxiliary marks easily distinguished from said main marks that are suitabe for indicating, merely by being read and without performing any calculations, the length of said catheter that extends from its distal end to each of said auxiliary marks; and
a cursor that is slidably mounted on said needle, said cursor bearing against the edge of an incision through which said needle is inserted and moving along said needle through a distance corresponding to the length that said needle is inserted into said incision.

5,611,779

ELECTROCHEMICAL FLUID DELIVERY DEVICE

Satoshi Saito; Yuko Fujita, and Akio Tokunaga, all of Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Feb. 15, 1995, Ser. No. 388,850
Claims priority, application Japan, Feb. 17, 1994, 6-044961
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—156 **19 Claims**



1. An electrochemical fluid delivery device comprising:
fluid reservoir means for accumulating fluid therein;
pressure generating means for generating a pressure to deliver fluid, said pressure generating means including an electrochemical cell part in which gas is generated when a direct current is made to flow therein and power supply part for supplying the direct current to said electrochemical cell part; and
a case including a cover capable of being opened and closed, said case accommodating said fluid reservoir part therein and maintaining an inside of said case in an airtight condition due to closing said cover;
wherein the fluid is delivered when said fluid reservoir means is pressurized by the action of gas generated in said electrochemical cell part.

5,611,780

ENDOSCOPIC SURGICAL METHOD

Andre P. Decarie, Royersford, Pa.; David L. Brown, Wallingford, Conn.; Stanley J. Malinowski, Guilford, Conn., and Douglas M. Dunklee, Bridgeport, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 916,368, Jul. 20, 1992, Pat. No. 5,315,985, which is a continuation of Ser. No. 673,233, Mar. 21, 1991, Pat. No. 5,144,942. This application May 10, 1994, Ser. No. 241,167
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 **4 Claims**

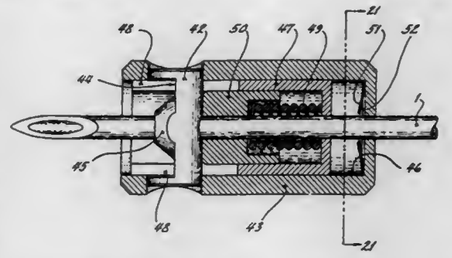
1. A method of performing endoscopic or laparoscopic surgical procedures comprising the steps of:
providing an endoscopic kit including a first obturator for penetrating body tissue and first and second sleeve members adapted for use with the first obturator and a second obturator for penetrating body tissue and at least third and fourth sleeve members adapted for use with the second obturator, the third and fourth sleeve members being different in size than the first and second sleeve members;
inserting the first obturator into the first sleeve member;
penetrating a body wall of a patient with the first obturator and the first sleeve member;
removing the first obturator from the first sleeve member such that the first sleeve member remains in the body wall;
inserting the first obturator into the second sleeve member;
penetrating the body wall with the first obturator and the second sleeve member;
removing the obturator from the second sleeve member such that the second sleeve member remains in the body wall;
inserting the second obturator into the third sleeve member;
penetrating a body wall of a patient with the second obturator and the third sleeve member;
removing the second obturator from the third sleeve member such that the third sleeve member remains in the body wall;
inserting the second obturator into the fourth sleeve member;
penetrating the body wall with the second obturator and the fourth sleeve member; and
removing the second obturator from the fourth sleeve member such that the fourth sleeve member remains in the body wall.

5,611,781

CATHETER WITH AUTOMATIC NEEDLE GUARD

Richard C. Sircom, 19 Richards Drive, Dartmouth, Nova Scotia, Canada; Youssef M. Youssef, 1845 Sharel Drive, Ottawa, Ontario, Canada, and Robert S. Solomon, 12 College View Avenue, Toronto, Ontario, Canada

Continuation of Ser. No. 672,651, Mar. 20, 1991, Pat. No. 5,328,482, which is a continuation-in-part of Ser. No. 309,305, Feb. 1, 1989, abandoned. This application Jul. 11, 1994, Ser. No. 272,598
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 **4 Claims**



1. A needle tip protecting device for covering the tip of a needle wherein said protecting device is characterized by engagement means for automatically, non-removably, directly engaging the outer surface of the needle with said protecting device when said protecting device is moved from a position on said needle, spaced from said tip, to a position where said protecting device encloses said tip, said protecting device comprising:
(i) a body;
(ii) a locking element in the form of leaf means mounted in said body for placement adjacent the needle;
(iii) a pressure sleeve displaceably carried within said body and aligned for contact with said leaf means;
(iv) an energy storage means carried by said body for displacement of the pressure sleeve; and
(v) latch means for releaseably containing said energy storage means positioned to sense entry of the needle tip within the protecting device
whereby, upon entry of the needle tip within said protecting device, the latch means releases said energy storage means to thrust the pressure sleeve against the leaf means effecting a jamming engagement of the leaf means directly with the needle thereby locking the protecting device against further removal from the needle.

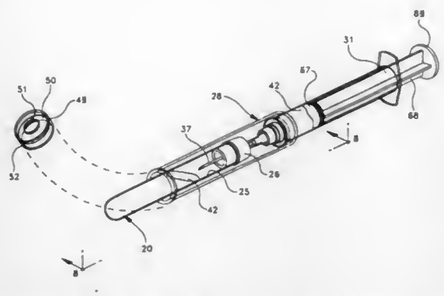
5,611,782

METHOD OF DELIVERING A BLOOD SAMPLE TO AN EVACUATED RECEPTACLE

Lori E. Haedt, Marietta, Ga., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 276,390, Jul. 18, 1994, Pat. No. 5,439,450. This application Aug. 7, 1995, Ser. No. 511,813
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—198 **20 Claims**

1. A method of delivering a blood sample to an evacuated receptacle having a closed end, an opposed open end, a cylindrical side wall therebetween defining a cavity, and a pierceable stopper



occluding the open end, the cavity being at a subatmospheric pressure, comprising the steps of:

(a) providing a syringe assembly comprising a syringe barrel having an open proximal end, a distal end and a side wall therebetween defining a chamber for retaining fluid, a needle cannula having a sharp distal end and a lumen therethrough connected to said distal end so that said lumen is in fluid communication with said chamber, a cylindrical safety shield having an open distal end and a open proximal end, a cap removably connected to said distal end of said safety shield, said cap having an aperture smaller than the inside diameter of said open distal end of said shield for limiting access to said open distal end of said shield, said safety shield slidably mounted over said syringe barrel for telescoping movement from a proximal position where said needle cannula projects through said aperture to a distal position where said safety shield protectively surrounds said needle cannula, a piston in fluid-tight slidable engagement inside said barrel, a rigid elongate plunger rod connected to said piston and extending proximally through said open proximal end of said barrel;

(b) providing a catheter having a proximal end, a distal end and a passageway therethrough and a housing having a hollow interior in fluid communication with said passageway, said housing having a port extending therefrom, said port having a conduit therethrough in fluid communication with said hollow interior, a pierceable septum sealing said conduit;

(c) placing said distal end of said catheter in a mammalian blood vessel;

(d) piercing said pierceable septum with said sharp distal end of said needle so that said lumen is in fluid communication with said conduit and drawing blood from said blood vessel through said catheter, said hollow interior, said conduit and into said chamber by manipulating said plunger rod;

(e) withdrawing said needle from said pierceable septum;

(f) moving said safety shield to said distal needle protecting position;

(g) removing said cap from said distal end of said safety shield;

(h) inserting said evacuated receptacle, stopper first, into said safety shield until said sharp distal end of said needle cannula pierces said stopper and enters said cavity of said receptacle;

(i) allowing blood to flow from said syringe chamber through said lumen into said cavity of said receptacle; and

(j) removing said receptacle from said safety shield when the desired amount of blood has entered said cavity of said receptacle from said chamber.

5,611,783

PEN-SHAPED SYRINGE

Søren Mikkelsen, Ballerup, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

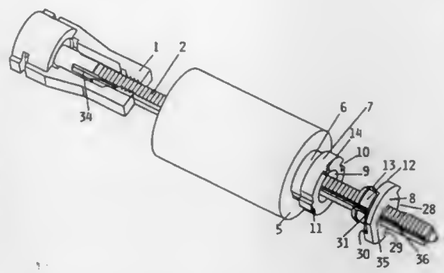
PCT No. PCT/DK92/00359, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO93/10839, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 30, 1992, Ser. No. 256,888

Claims priority, application Denmark, Nov. 29, 1991, 1942/91

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—208 **5 Claims**



1. An apparatus for use with a pen shaped syringe comprising a first part having an end surface carrying a tubular stud with a flange forming a bayonet coupling part, and a second part having interlocking bayonet coupling means for engagement with the bayonet coupling part of the first part, the first part further comprising:

(a) a piston rod projecting through the stud and having a non-circular cross section and carrying along one side a cogging,

(b) a carrier on a proximal end of the piston rod which can be advanced to inject a set dose of medicine and which unidirectionally transmits axial movements of this carrier to the piston rod,

(c) a piston rod guide mounted on the stud at an end of the flange, said piston rod guide maintaining the piston rod in a rotational position in the syringe ensuring the engagement between the carrier and the cogging of the piston rod when the syringe is in use, the piston rod guide having a non circular opening conforming to the cross section of the piston rod, and through which opening the piston rod passes,

said second part being tubular and having an open proximal and a distal end, said interlocking bayonet coupling means being on said proximal end thereof, the second part further comprising:

(a) a tubular reservoir for medicine, located within said second part which reservoir has a first end placed at the distal end of the second part, and a second end placed at the proximal end of the second part and closed by a piston which can be actuated by the piston rod,

wherein the interlocking bayonet coupling means of the second part is provided with means engaging the piston rod guide to rotate this guide and consequently the piston rod during at least part of a rotational movement of the bayonet coupling means in relation to the stud, the flange having an outer diameter corresponding to an inner diameter at the proximal end of the tubular second part, such that a space is left between the flange and the end surface of the first part, the flange being cut away preferably at diametrically opposite positions, and locking protrusions on an inner surface of the proximal end of the first part corresponds to the cut of the flange and extend axially from the proximal end a distance

way from this proximal end, which distance corresponds to the distance between the flange and the end surface of the first part.

5,611,784

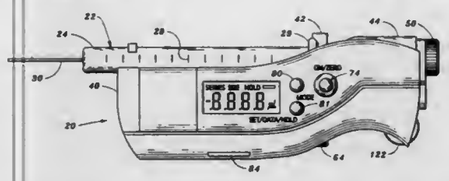
MANUAL DISPENSING AID FOR A SYRINGE

Thomas Barresi, Reno, Nev.; Robert Scalese, Truckee, Calif.; Eric Riedi; Jon E. Frudden, both of Reno, Nev.; Randy Hall, Carson City, Nev.; Son Nguyen, Sparks, Nev., and Robert Anderson, Reno, Nev., assignors to Hamilton Company, Reno, Nev.

Continuation of Ser. No. 85,500, Jun. 30, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,528

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—211 **41 Claims**



1. A releasably attachable manual dispensing aid operable with a syringe having a syringe body and a syringe plunger slidable within the syringe body, the dispensing aid comprising:

a dispensing aid body;

a slide that is slidable within the dispensing aid body;

means for releasably attaching the dispensing aid body directly to the syringe body;

a dispensing aid plunger connected to the slide, the dispensing aid plunger being directly graspable and operable by a human hand to produce a linear motion of the slide;

means for releasably attaching the dispensing aid plunger to the syringe plunger;

an electronic linear position measuring device having a first portion fixed to the dispensing aid body and a second portion fixed to the dispensing aid plunger;

a microprocessor which receives an output signal from the linear position measuring device;

a digital volume readout which receives an output signal from the microprocessor; and

means for providing a volume calibration factor to the microprocessor.

5,611,785

LUER NEEDLE UNIT AND INJECTOR

Yutaka Mito; Hitoshi Katayama, both of Sanda, and Hisao Tobiki, Chiyoda, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Nishinomiya, Japan

Continuation of Ser. No. 285,135, Aug. 3, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,162

Claims priority, application Japan, Aug. 6, 1993, 5-195944

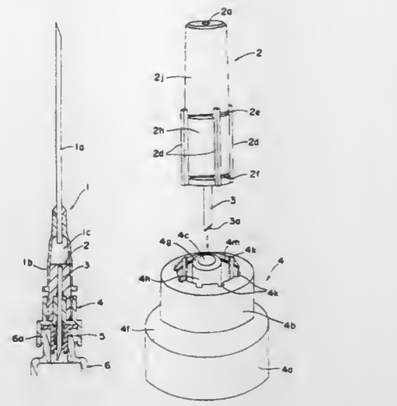
Int. Cl.[6] A61M *5/00; 5/31*

U.S. Cl. 604—239 **8 Claims**

1. A luer needle unit, comprising:

a luer needle supporting cap adapted to be fitted at a mouth of a syringe having a syringe cap and pharmaceutical liquid filled in the syringe beforehand; and

a luer needle mounted to said supporting cap, whereby a disposable needle is settable on the luer needle, said luer needle further comprising a needle part, wherein said needle part extends away from the disposable needle and toward the syringe and is selectively held in engagement with said supporting cap at a non-use position where said needle part does not pierce the syringe cap provided at the mouth of the syringe and at a use position where said needle part pierces



the syringe cap, a confronting surface, a fitting portion, and a notch portion defining a front end and a base end, wherein:

said supporting cap has a flange portion, a cylindrical guiding projecting portion extending from one side of said flange portion and having a through hole through which said needle part penetrates, a confronting surface, and a cylindrical portion extending from the other side of said flange portion to be fitted in the mouth of the syringe, said fitting portion of said luer needle being fitted outside said guiding projecting portion and being guided by said guiding projecting portion,

guide protrusions extending in the axial direction of the syringe at one of the confronting surfaces of said supporting cap and said luer needle, which engage with guide recesses formed at the other of the confronting surfaces of said supporting cap and said luer needle in the axial direction of the syringe, thereby prohibiting relative rotation of said luer needle and said supporting cap and providing guide engagement of said luer needle with said supporting cap in the axial direction of the syringe, and

the two positions of said luer needle relative to said supporting cap define a distance not smaller than the sum of the axial distance between said front end and said base end of said notch portion of said needle part of said luer needle and a thickness of the syringe cap.

5,611,786

NEEDLE SYSTEM FASTENING MECHANISM

Fritz Kirchhofer, Sumiswald, and Willy Michel, Burgdorf, both of Switzerland, assignors to Disetronic AG, Burgdorf, Switzerland

PCT No. PCT/CH94/00146, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO95/01812, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 8, 1994, Ser. No. 387,870

Claims priority, application Switzerland, Jul. 9, 1993, 02067/93

Int. Cl.[6] A61M *5/00; 5/31*

U.S. Cl. 604—240 **5 Claims**



1. A fastening mechanism comprising the combination of

a needle holder;

a generally cylindrical cartridge ampoule means containing a liquid;

means at an end of said cartridge ampoule means defining a helically extending radial protrusion; and

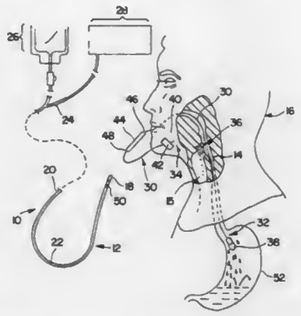
a plurality of radially flexible pawl means on said needle holder for engaging said radial protrusion wherein said needle holder is repeatedly attachable to said cartridge ampoule means by a substantially linear motion in which said pawl means snap over said protrusion and being repeatedly detachable therefrom by rotational motion in which said pawl means follow said helical protrusion.

5,611,787

METHOD AND DEVICE FOR GASTRIC LINE INSERTION

Robert J. Demeter, Mooresville; Henry C. Bock, and Dayong Gao, both of Indianapolis, all of Ind., assignors to Methodist Hospital of Indiana, Inc., Indianapolis, Ind.

Filed Oct. 13, 1994, Ser. No. 322,579
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—270 **19 Claims**



1. A gastric tube insertion kit comprising

a flexible gastric tube having a gastric end and an oral end and a lumen extending from said gastric end to said oral end;

a guide line having a gastric end and an opposite oral end, said guide line extending through the lumen of the gastric tube so that the oral end of said guide line extends from the oral end of said gastric tube and the gastric end of said guide line extends from the gastric end of said gastric tube; and

a bolus attached to the gastric end of the guide line for locating the gastric end of the guide line in the stomach, wherein said bolus is a capsule containing a portion of the guide line proximal to its gastric end.

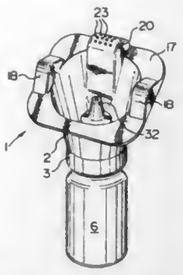
5,611,788

EYE DROP DISPENSER

David Marchment, R.R.3, Site 16C, Compartment 11, Kelowna, British Columbia V1Y 7R2, Canada

Filed Jul. 5, 1995, Ser. No. 497,933
Int. Cl.[6] A61H *35/00;33/04*
U.S. Cl. 604—295 **7 Claims**

1. An eyedrop dispenser for use with a bottle including a neck and an annular flange on the neck, said dispenser comprising elongated tapering, tubular body means for mounting on the bottle, said body means including a first, narrow diameter, resilient end, said first end having a diameter smaller than that of the annular flange on the neck of the bottle; annular groove means in said first end for receiving the annular flange when the dispenser is in the use position on a bottle; a second wide diameter end on said body means for covering an area of the face of a user larger than the eye of the user; flange means extending outwardly of the entire periphery of said second end of said body means, said flange means being inclined with respect to an axis extending longitudinally of said body means through said first end whereby, when said second



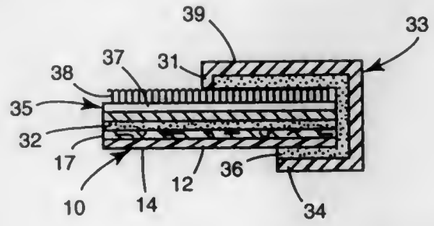
end of said body means is placed against the face of a user with one side of said flange means proximate the eyebrow, the opposite side of said flange means bears against the face of the user; and first projection means extending longitudinally outwardly from said opposite side of said flange means for forcing the lower eyelid downwardly away from the eye of a user when the dispenser is in the use position, whereby the dispensing of liquid beneath the lower eyelid is facilitated.

5,611,789

DISPOSABLE DIAPER MECHANICAL CLOSURE SYSTEM WITH ADHESIVE DISPOSABILITY

Jayshree Seth, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1995, Ser. No. 400,748
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **8 Claims**



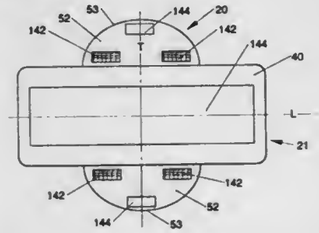
1. A disposable article having a mechanical fastener closure system comprising a disposable article having two opposing substrate portions to be attached, a first substrate portion having a first mechanical fastening element comprising a fibrous loop patch directly and permanently attached to a first face of said first substrate portion, a second mechanical fastening element comprising a male mechanical fastener having a backing, said backing having a first face and a second face with the first face having individual projecting hook elements engagable with the fibers of said fibrous loop patch and said backing second face directly and permanently attached to a first face of a second of said two opposing substrate portions directly adjacent an outermost edge of said second substrate portion, and a pressure-sensitive adhesive tape tab having a first end pressure-sensitive adhesive portion and a second end pressure-sensitive adhesive portion, said tape tab first end portion being releasably secured by said first end pressure-sensitive adhesive to said second mechanical fastening element projecting hook elements and said tape tab second end portion pressure-sensitive adhesive being permanently secured to a second face of said second substrate portion, wherein said first mechanical fastening element is mechanically attachable with said second mechanical fastening element so as to secure said first and second substrate portions in an overlapping relationship and said pressure-sensitive adhesive tape tab first end pressure-sensitive adhesive portion is removable from said second mechanical fastening element so as to secure to a face of said disposable article to keep said disposable article in a rolled or folded condition prior to disposal.

5,611,790

STRETCHABLE ABSORBENT ARTICLES

Thomas W. Osborn, III; Bruce W. Lavash, both of Cincinnati, Ohio; Kazuko Sugahara, Osaka, Japan; Charles W. Chappell, West Chester, Ohio; Katherine L. Mayer, Newport, Ky., and Letha M. Hines, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 915,284, Jul. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 539,779, Sep. 12, 1990, abandoned, Ser. No. 605,583, Oct. 29, 1990, Pat. No. 5,324,278, Ser. No. 630,451, Dec. 19, 1990, abandoned, Ser. No. 637,090, Jan. 3, 1991, Pat. No. 5,304,161, Ser. No. 637,571, Jan. 3, 1991, Pat. No. 5,300,054, Ser. No. 769,891, Oct. 1, 1991, Pat. No. 5,389,094, Ser. No. 769,607, Oct. 1, 1991, Pat. No. 5,354,400, Ser. No. 734,392, Jul. 23, 1991, Pat. No. 5,281,208, Ser. No. 734,404, Jul. 23, 1991, Pat. No. 5,356,405, Ser. No. 734,405, Jul. 23, 1991, Pat. No. 5,334,176, Ser. No. 794,745, Nov. 19, 1991, abandoned, Ser. No. 810,774, Dec. 17, 1991, abandoned, Ser. No. 823,797, Jan. 22, 1992, abandoned, Ser. No. 827,555, Jan. 28, 1992, abandoned, Ser. No. 832,246, Feb. 7, 1992, Pat. No. 5,344,416, Ser. No. 874,872, Apr. 28, 1992, abandoned, Ser. No. 882,738, May 14, 1992, abandoned, and Ser. No. 892,398, May 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,238
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **5 Claims**



1. An extensible sanitary napkin for wearing in the crotch region of a pair of panties, said sanitary napkin having a longitudinal dimension and a transverse dimension which is shorter than said longitudinal dimension, said sanitary napkin comprising:

an extensible liquid pervious topsheet;

an extensible liquid impervious backsheet joined to said topsheet;

an extensible absorbent core positioned between said topsheet and said backsheet; and

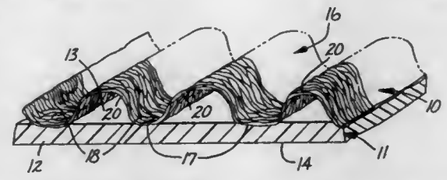
a mechanical fastener on said backsheet for attaching said sanitary napkin to the crotch region of the wearer's panties, said fastener being capable of permitting at least portions of said sanitary napkin to extend when said sanitary napkin is worn in the wearer's panties wherein said sanitary napkin has an original longitudinal dimension and an original transverse dimension when it is in a relaxed configuration and said sanitary napkin is capable of extending between about 110% to about 150% of its original dimensions under forces of between greater than or equal about 50 grams and less than or equal to about 500 grams.

5,611,791

SHEET OF LOOP MATERIAL, AND GARMENTS HAVING SUCH LOOP MATERIAL INCORPORATED THEREIN

Michael R. Gorman; Dennis L. Becker; Donald W. Folske; William L. Melbye; Susan K. Nestegard, and Ronald L. Ott, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 142,190, Oct. 26, 1993, abandoned, which is a division of Ser. No. 555,049, Jul. 18, 1990, Pat. No. 5,256,231, which is a continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Jan. 11, 1996, Ser. No. 585,262
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **5 Claims**



1. A disposable garment including a fastener comprising releasably engageable hook and loop portions, said loop portion comprising:

a backing comprising a thermoplastic non-fibrous backing layer with generally uniform internal structure and having front and rear major surfaces: and

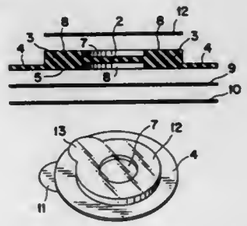
a sheet of longitudinally oriented fibers, said sheet of longitudinally oriented fibers having anchor portions of said sheet in the thermoplastic backing layer at spaced bonding locations and having arcuate portions of said sheet projecting from the front surface of the backing between the bonding locations, the fibers in the anchor portions of the sheet of fibers being generally non-deformed and being bonded in the thermoplastic backing layer at said spaced bonding locations.

5,611,792

VALUE DEVICE FOR ASEPTIC INJECTION AND REMOVAL OF A MEDICAL FLUID INTO/FROM A CONTAINER

Sven Gustafsson, Värmdö , Sweden, assignor to Dicamed AB, Sollentuna, Sweden

PCT No. PCT/SE93/01031, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/13247, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 30, 1993, Ser. No. 446,854
Claims priority, application Sweden, Apr. 12, 1992, 9203659
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—403 **8 Claims**



1. A valve device to enable aseptic injection and withdrawal of medical fluids into/from an infusion container, the valve device comprising:

a valve body having a centrally located, self-sealing passage portion, a surrounding portion surrounding the passage portion, and a surrounding peripheral portion surrounding the

surrounding portion, the valve device having, on one side thereof, an application surface having an adhesive layer on at least a portion thereof for applying the application surface to an infusion container;

an underside of the passage portion being defined by a pressure relief zone recessed relative to the application surface;

an upper side of the passage portion disposed on an upper side of the valve body, opposite the application surface, being defined by an insert zone recessed relative to at least part of the upper side of the valve body;

the surrounding portion having an edge substantially perpendicular relative to the peripheral portion;

the passage portion, the surrounding portion, and peripheral portion being a one piece structure and being formed from the same material; and

a first protective film on the application surface, and a second protective film on the upper side of the valve body, the first protective film protecting the adhesive layer, the second protective film extending at least over the upper side of the passage portion and onto the surrounding portion, the first and second protective films including projecting portions projecting beyond edges of the application surface and the surrounding portion, respectively, for removal of the first and second protective films.

5,611,793

LASER TREATMENT

Michael Wilson, London, Great Britain, and Wilson Harvey, Gargunnock, United Kingdom, assignors to Institute of Dental Surgery, London, Great Britain

PCT No. PCT/GB93/00909, § 371 Date Oct. 25, 1994, § 102(e) Date Oct. 25, 1994, PCT Pub. No. WO93/21992, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 325,322

Claims priority, application United Kingdom, Apr. 30, 1992, 9209379; May 26, 1992, 9211138

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—2 **18 Claims**

1. A method of disinfecting or sterilising a locus wherein said locus is selected from the group consisting of tissues of the oral cavity and wounds and lesions in the oral cavity, said method comprising topically applying a photosensitising compound to said locus and irradiating said locus with laser light at a wave length absorbed by said photosensitising compound, so as to destroy microbes at said locus.

5,611,794

CLAMP FOR APPROXIMATING TISSUE SECTIONS

Jude S. Sauer, Pittsford, and Theodore J. Tiberio, Hilton, both of N.Y., assignors to LaserSurge, Inc., Rochester, N.Y.

Continuation of Ser. No. 958,277, Oct. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 595,871, Oct. 11, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 483,957

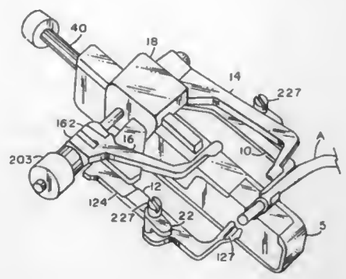
Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—8 **33 Claims**

1. A surgical apparatus for laser welding first and second body tissue sections comprising:

a first pair of opposed arms for clamping the first tissue section;

a second pair of opposed arms for clamping the second tissue section, wherein at least one of said arms of each said pair of arms being pivotably connected to said opposing arm and is pivotable from an open position spaced from said opposing arm through an arc of up to approximately 270° to a closed position overlying said arm;



means for moving one of said pairs of opposed arms toward the other pair of opposed arms to bring the first and second tissue sections into abutting relationship to form a seam; and

means for transmitting laser energy to the seam to weld together the first and second tissue sections.

5,611,795

LASER FACIAL REJUVENATION

Michael Slatkine, Herziiah, Israel, and Douglass Mead, Allendale, N.J., assignors to Laser Industries, Ltd., Israel

Filed Feb. 3, 1995, Ser. No. 382,918

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—9 **9 Claims**



3. A method of smoothing a predetermined area of human skin comprising:

irradiating a portion of said predetermined area of human skin with a laser beam for a predetermined scan time to ablate the epidermal layer of said portion of said predetermined area of human skin and to further ablate the dermal layer of said portion of said predetermined area of human skin originally underlying said epidermal layer to above the papillary dermis;

irradiating a next portion of said predetermined area of human skin for said predetermined scan time to ablate the epidermal layer of said next portion of said predetermined area of human skin and to further ablate the dermal layer of said nest portion of said predetermined area of human skin originally underlying said epidermal layer to above the papillary dermis; and

repeating the first and second steps such that said irradiating causes ablation of said skin that is uniform.

5,611,796

HANDPIECE FOR A DEVICE FOR PERFORMING LASER SURGERY OF THE NOSE

Yves-Victor Kamami, 43, Boulevard Malesherbes, 75008 Paris, France

Filed Aug. 3, 1995, Ser. No. 510,967

Claims priority, application France, Aug. 4, 1994, 94 09704

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—15 **15 Claims**



1. A handpiece for performing laser surgery of a nose having a nostril, said handpiece comprising a handle piece having a distal end and a proximal end, said proximal end including means for connecting said handle piece to a source of laser radiation, said handle piece having a transit region forming a channel having an axis, said transit region extending between said proximal and distal ends of the handle piece for passing laser radiation from said proximal end to said distal end of said handle piece, said handle piece including a suction outlet in communication with said transit region of said handle piece, said suction outlet including means for connecting said suction outlet to suction means, said handle piece including a distal piece having a distal end and a proximal end adapted to be mounted on said distal end of said handle piece, said distal piece having a transit region forming a channel, and having an axis coaxial with the axis of the handle piece, said transit region extending between said proximal and distal ends of said distal piece for passing laser radiation from said proximal end to said distal end of said distal piece, whereby said laser radiation travels through the transit regions of said handle piece and said distal piece to a working zone adjacent said distal end of said distal piece to perform said laser surgery, a longitudinal slit formed in said transit region of said distal piece and extending from said distal end of said distal piece, said slit defining an open channel extending over less than half of the periphery of the distal piece whereby said suction outlet enables suction to be performed in said working zone via the transit region of respectively said distal piece and said handle piece whereas said longitudinal slit allows a practitioner to observe the working zone.

5,611,797

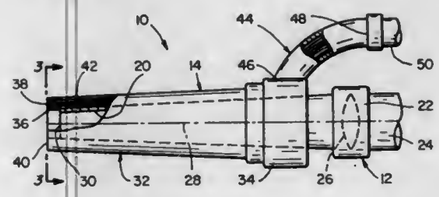
COMBINATION HANDPIECE AND SURGICAL LASER TOOL

Virginia C. George, 8164 Capitola Ave., Fair Oaks, Calif. 95628, assignor to Virginia C. George, Fair Oaks, Calif.

Filed Jul. 26, 1995, Ser. No. 507,581

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—16 **19 Claims**



1. A illuminating handpiece for use with a surgical laser tool which includes a probe having an outer wall and an internal passage through which a visible laser beam is focused in a direction from a distal end of the probe toward an anatomical structure, the illuminating handpiece comprising the combination of a hollow body having an internal wall mounted about the outer wall of the probe with the body having a tip end which is positioned about the distal end of the probe; and illumination means carried by the body for directing visible light out from said tip end in a light pattern about a longitudinal axis along which the laser beam extends whereby the visible light illuminates a portion of said anatomical structure in a path which circumscribes a spot at which the laser beam impinges on the anatomical structure.

5,611,798

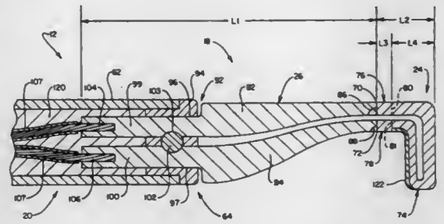
RESISTIVELY HEATED CUTTING AND COAGULATING SURGICAL INSTRUMENT

Philip E. Eggers, 5366 Reserve Dr., Dublin, Ohio 43017

Filed Mar. 2, 1995, Ser. No. 398,007

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—31 **19 Claims**



1. A working end assembly for connection with a surgical instrument and responsive to electrical power supplied from a source for carrying out thermal and hemostatic cutting of tissue, comprising:

an electrical heating component, responsive to said source to generate heat, formed of a material exhibiting low thermal conductivity, high thermal resistance having an electrical resistance effective for carrying out said thermal and hemostatic cutting at temperatures above about 300° C. said heating component extending continuously from a first terminus to a second terminus, having a tissue engaging region located between said first and second termini and having first and second thermal transition regions extending toward said tissue engaging region from said first and second termini and exhibiting a thermal resistance eater than about 200° C./Watt;

a support assembly formed of thermally conductive material exhibiting a thermal resistance value of less than about 100° C./watt and low electrical resistance. configured having first and second ends in heat transfer communication with respective said first and second termini to derive said first and second thermal transition regions at said heating component and extending to an oppositely disposed connector portion for connection with said surgical instrument; and

said first and second thermal transition regions being effective to restrict the temperature level exhibited at said support assembly to values atraumatic to said tissue when said heating component is at said cutting temperatures.

5,611,799

OCULAR REPAIR METHOD

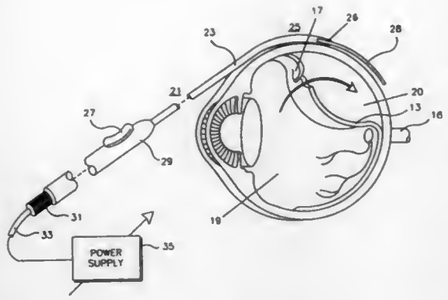
Albert C. Smith, P.O. Box 782, Los Altos, Calif. 94022

Division of Ser. No. 259,482, Jun. 14, 1994. This application Dec. 4, 1995, Ser. No. 566,678

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—32 **7 Claims**

1. A surgical method for selectively exerting electrostatic force at a location near the back of an eye in response to electrical signals applied to an array of plural electrodes having a layer of electrical insulation disposed thereon, the method comprising the steps of:



introducing the array of the plural electrodes to a position adjacent an area on the back of the eye and in close proximity thereto; and

selectively applying electrical signals to at least a pair of the plural electrodes in the array to produce electrostatic force in said area in a direction toward the array of electrodes.

5,611,800

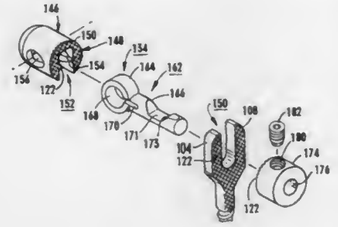
SPINAL FIXATION SYSTEM

Bradford D. Davis, Rancho Mirage; Mike Stednitz, Indio, and Mark Urbanski, La Quinta, all of Calif., assignors to Alphatec Manufacturing, Inc., Palm Desert, Calif.

Filed Feb. 15, 1994, Ser. No. 196,448

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **36 Claims**



1. A bone fixation system comprising:

a bone mounting device configured to be mounted on a bone in a patient, said bone mounting device having a first multi-faceted connecting surface and a mounting point wherein said bone mounting device, when mounted on a bone, extends in a first direction;

a support rod; and

an attachment assembly having a locked and unlocked configuration for securely interconnecting said bone mounting device with said support rod, said attachment assembly including a member extending along a first axis, wherein said member defines a first mounting location for said support rod and a second mounting location for said bone mounting device, and said attachment assembly also including a second multi-faceted connecting surface positioned adjacent said second mounting location so that said first and said second connecting surfaces are relatively rotatable and translatable and interlock when said attachment assembly is in said locked configuration to securely retain said bone mounting device in one of a range of first rotational positions about said first axis and at one of a range of first translational positions relative to said member in said first direction.

5,611,801

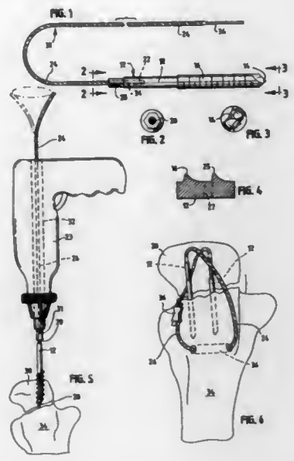
METHOD AND APPARATUS FOR BONE FRACTURE FIXATION

Matthew N. Songer, Marquette, Mich., assignor to Pioneer Laboratories, Inc., Marquette, Mich.

Filed Nov. 29, 1994, Ser. No. 346,152

Int. Cl.[6] A61B *17/82*

U.S. Cl. 606—73 **14 Claims**



5. The method of fixation of a bone fracture, which comprises:

screw driving a threaded pin into said bone in a manner to cause said pin to advance across the fracture area of the bone, to provide internal securance for fixation of said bone fracture; said threaded pin having a cable secured to said pin and extending outwardly from the proximal pin end; and wrapping said cable around said bone to provide external securance for fixation of said bone fracture.

5,611,802

METHOD AND APPARATUS FOR RESECTING BONE

Kent M. Samuelson, 370 Ninth Ave., Salt Lake City, Utah 84103, and Mark V. Vandewalle, 7401 E. Shoop Rd., Pierceton, Ind. 46562

Filed Feb. 14, 1995, Ser. No. 389,136

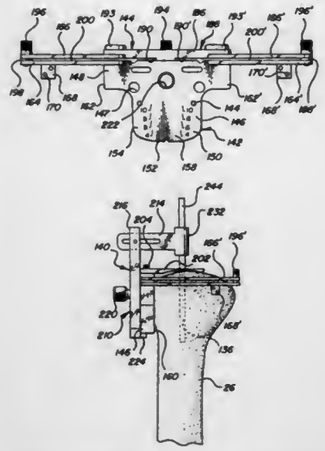
Int. Cl.[6] A61F *5/00*; A61B *17/58*

U.S. Cl. 606—86 **11 Claims**

1. A surgical instrument for resecting a bone with a saw, the saw including a blade, said surgical instrument comprising:

a guide body operable to be used during resection of the bone; and

a laterally extending member defined by a first component operably attached to said guide body at a first attachment area and a second component operably attached to said guide body at a second attachment area, said attachment areas defining two opposing walls, said components being spaced apart such



that a constrained opening is defined therebetween for capturing the blade, said constrained opening extending substantially between said attachment areas.

5,611,803

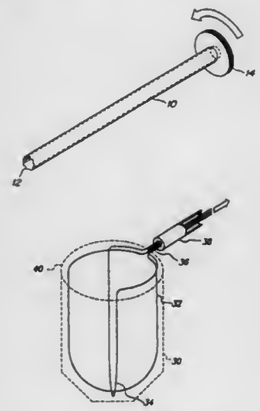
TISSUE SEGMENTATION DEVICE

Malcolm D. Heaven, Hopewell, and Michael Ko, Plainsboro, both of N.J., assignors to Urohealth Systems, Inc., Costa Mesa, Calif.

Filed Dec. 22, 1994, Ser. No. 361,493

Int. Cl.[6] A61B *17/22;17/36;17/38*

U.S. Cl. 606—114 **18 Claims**



1. A tissue segmentation device comprising:

a tissue isolation bag having an opened end and means for closing the opened end of the bag, the bag being capable of being introduced into a body cavity while in a collapsed state, and being expandable from the collapsed state to an expanded state when inserted into a body cavity;

at least one loop positioned within the bag, the loop having ends; and

tension means for applying tension to at least one of the ends of the loop to reduce the diameter of the loop from a first diameter large enough to surround a tissue specimen placed in the bag to a second diameter small enough to cut the tissue specimen, the loop being removably secured to an inner surface of the bag, and the loop being detachable from the inner surface when tension is applied to at least one of the ends of the loop.

5,611,804

APPLIANCE FOR THE REMOVAL OF BODY HAIRS

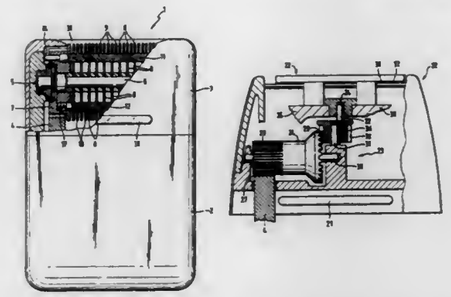
Hans-Eberhard Heintke, Wächtersbach, and Achim Flesser, Königstein, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Jun. 9, 1994, Ser. No. 257,684

Claims priority, application Germany, Jun. 24, 1993, 43 20 958.0

Int. Cl.[6] A45D *26/00;27/00*

U.S. Cl. 606—133 **15 Claims**



1. An appliance for the removal of human body hairs comprising:

a casing;

a driving gear carried in the casing and adapted to be driven by a motor;

a first attachment that attaches to, and detaches from, the casing, the first attachment configured as an epilation head and comprising an epilating cylinder mounted in the epilation head, said epilating cylinder adapted to be rotated by the driving gear for gripping and extracting the body hairs; and

a second attachment that attaches to, and detaches from, the casing in exchange for the first attachment, the second attachment comprising a depilator incorporating a long-hair trimmer and a gear arrangement adapted to be driven by the driving gear, wherein said long hair trimmer includes a first cutter which is adapted to be driven by said gear arrangement to perform a reciprocating motion in alternate directions relative to a second cutter.

5,611,805

METHOD AND DEVICE FOR DETERMINING PLACEMENT OF KERATOTOMY INCISIONS

Gary W. Hall, 2501 N. 32nd St., Phoenix, Ariz. 85008

Continuation-in-part of Ser. No. 151,273, Nov. 12, 1993, Pat. No. 5,411,511. This application May 2, 1995, Ser. No. 433,862

Int. Cl.[6] A61F *9/00*

U.S. Cl. 606—166 **14 Claims**

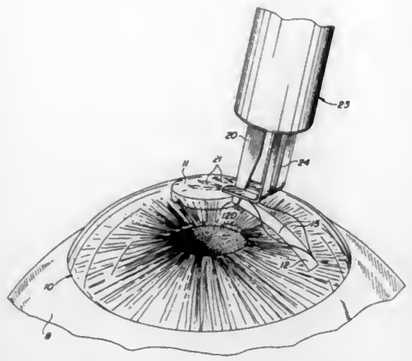
1. A method of making incisions in a cornea, comprising the steps of:

(a) manipulating an RK knife so that a blade thereof extends a particular depth into the cornea at a starting point;

(b) applying sufficient force to the RK knife to advance the blade in a particular direction;

(c) halting movement of the blade in the particular direction when resistance of the cornea against a leading edge of the blade exceeds a particular level, to thereby complete an incision;

(d) repeating steps (a) through (c) to form a plurality of incisions in a predetermined pattern until a final incision is made



wherein resistance of the cornea against the leading edge of the blade exceeds the particular level at the starting point for that final incision; and

(e) withdrawing the blade from the cornea,

whereby the plurality of incisions reduce strain in collagen fibrils of the cornea so as to correct a refractive error associated with such strain.

5,611,806

SKIN PERFORATING DEVICE FOR TRANSDERMAL MEDICATION

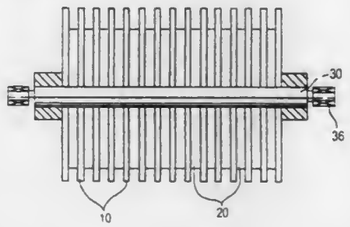
Kwang K. Jang, Kyungki-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 23, 1995, Ser. No. 450,949

Claims priority, application Rep. of Korea, May 23, 1994, U94-11522; May 23, 1994, U94-11523

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **10 Claims**



1. A skin perforating device for forming a plurality of drug delivery cuts in bodily skin to facilitate delivery of transdermal medication, comprising:

a plurality of needle disks each having a plurality of circumferentially spaced skin perforation needles;

a central shaft for holding the needle disks in assembled relation therealong in a face-to-face relationship with one another;

a plurality of spacers assembled on the central shaft in alternately disposed relationship between substantially each of the needle disks;

a pair of end plates assembled at opposite ends of the central shaft, respectively, an outer diameter of each end plate being greater than a first diameter of the needle disks measured at a point from which a base of each needle extends radially from the disk and less than a second diameter as measured from the needle tips; and

fixing means for fixing and joining the needle disks, spacers and end plates together on the central shaft.

5,611,807

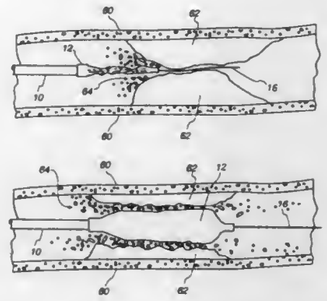
ULTRASONIC ANGIOPLASTY BALLOON CATHETER

Matthew O'Boyle, Webster, Tex., assignor to The Joe W. & Dorothy Dorsett Brown Foundation, New Orleans, La.

Division of Ser. No. 14,021, Feb. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,414

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—169 **6 Claims**



1. A method of ablating a stenosis in a human blood vessel with an angioplasty balloon catheter having a balloon with piezoelectric properties and having means for applying an ultrasonic electrical excitation signal to the balloon, comprising the steps of:

guiding an angioplasty balloon catheter having a guide wire into the blood vessel up to a site of stenosis by means of said guide wire,

providing an ultrasonic electrical excitation signal to the means for applying the signal to the balloon,

providing an axial load to the catheter in the direction which tends to force the catheter through the stenosis, and

inflating the balloon once the catheter has crossed the stenosis.

5,611,808

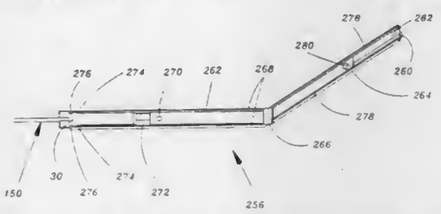
BLADE ASSEMBLY RECEPTACLE AND METHOD

K. Mosaddeq Hossain, Somerville, N.J., and Krzysztof Gacek, Philadelphia, Pa., assignors to Cabot Technology Corporation, Wilmington, Del.

Filed Sep. 12, 1995, Ser. No. 527,228

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **18 Claims**



1. A receptacle for holding an end portion of a tool, said receptacle being adapted to facilitate handling of said tool for installation of said tool into a reusable device or for removal of said tool from a reusable device, said receptacle comprising:

a receptacle body shaped to accommodate said end portion of said tool, said receptacle body having at one end a surface defining a passageway with a passageway axis positioned to receive said end portion of said tool; and

a receiving member for receiving at least a portion of said end portion of said tool, said receiving member being engaged said receptacle body and positioned adjacent to an end of said receptacle body substantially opposite from said passageway, said receiving member being longitudinally movable with respect to said receptacle body along a member axis that substantially corresponds to said passageway axis, said receiving member having an external portion positioned for access from outside said receptacle body for manipulation of said receiving member, and said receiving member having an internal portion positioned within said receptacle body and means for releasably engaging said end portion of said tool to prevent longitudinal movement of said tool with respect to said receiving member.

5,611,809

NEEDLE DEVICES FOR MEDICAL USE

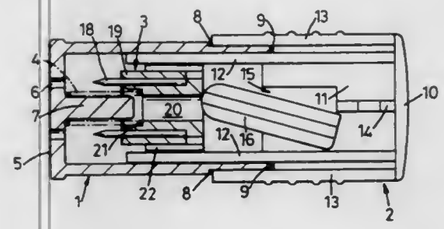
Jeremy Marshall, and Stuart Weekes, both of Oxford, United Kingdom, assignors to Owen Mumford Limited, Woodstock, United Kingdom

Filed Nov. 6, 1995, Ser. No. 563,532

Claims priority, application United Kingdom, Nov. 4, 1994, 9422260; Sep. 19, 1995, 9519161

Int. Cl.[6] A61B *17/14*

U.S. Cl. 606—181 **10 Claims**



1. A needle device comprising a body with a needle at its forward end for skin penetration and an actuating member for exerting pressure on the body from the rearward end in the needle direction, the actuating member having a coupling to the body which includes a connection that fractures under pressure above a predetermined limit thereby to render the device non-re-usable.

5,611,810

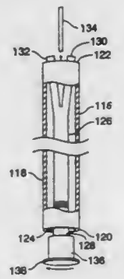
HAIR TRANSPLANTATION APPARATUS

James E. Arnold, 24142 Big Basin Way, Saratoga, Calif. 95070, and Douglas E. Dority, Sunnyvale, Calif., assignors to James E. Arnold, Saratoga, Calif.

Continuation-in-part of Ser. No. 298,823, Aug. 31, 1994, Pat. No. 5,578,054. This application Jan. 18, 1995, Ser. No. 375,312

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—185 **7 Claims**



1. A surgical cutter assembly, comprising:

an elongate cylindrical sheath having a proximal end, a distal end, and a central lumen therebetween;

a chuck member slidable within the sheath lumen, the chuck member having a proximal end and a distal end, wherein the proximal end of the chuck is threaded, and wherein a set of at least two prongs are disposed at the distal end of the chuck;

a threaded end element for mating with the proximal threaded end of the chuck member, wherein rotation of the end element relative to the chuck member while the distal end of the chuck is engaged with the distal end of the sheath proximally translates the chuck member within the lumen to translate the prongs toward each other; and

an elongate shaft having a proximal end and a sharpened distal end which forms a blade for making incisions into a patient's skin, wherein the blade is spear-shaped and has a maximum length that is less than 1.8 mm, and wherein the proximal end of the shaft is received in the prongs of the chuck member.

5,611,811

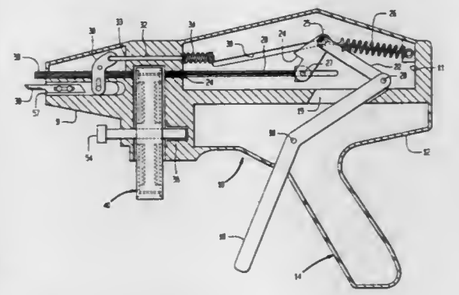
MICRO AND MINI HAIR TRANSPLANT DEVICE

Paul M. Goldberg, Matawan, N.J., assignor to Star-Wood, Inc., Matawan, N.J.

Filed Apr. 29, 1994, Ser. No. 236,563

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—187 **4 Claims**



1. A device for transplanting hair comprising:

a body member;

a first means for puncturing the scalp at a transplant site mounted to the body member comprising a retractable scalpel blade that is mounted in a first recess in the body member;

a second means for containing a plurality of hair grafts mounted in the body member such that the second means is free to rotate about an axis in the body member;

a third means, mounted slidably in a second recess in the body member and aligned with an axis of the body member, for ejecting the plurality of hair grafts from the second means by sliding along the axis of the body member through the second recess and into the second means;

a fourth means, connected to the body member and extending therefrom, and further connected to the third means, for actuating the third means and thereby ejecting hair hair grafts from the second means and further connected to the retractable scalpel blade to cause the retractable scalpel blade to retract into the first recess in the body member; and

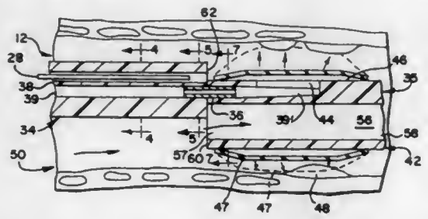
a fifth means, mounted in the body member and aligned with the axis of the body member, for delivering hair grafts from the second means into the transplant site.

5,611,812

PERFUSION CATHETER WITH BIFURCATED DISTAL END PORTION AND METHOD OF USING THE SAME

Edward Skornia, Pembroke Pines, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Dec. 11, 1995, Ser. No. 570,649
Int. Cl.[6] A61M *25/10*
U.S. Cl. 606—194 **20 Claims**



1. A balloon dilation catheter for active dilation and passive perfusion within a blood vessel having proximal and distal ends, the catheter comprising: a flexible, catheter shaft carrying an inflatable dilation balloon adjacent the distal end, said catheter having a guidewire lumen and an inflation lumen extending at least most of the length of said catheter, said catheter further having a perfusion lumen, said catheter shaft having two distinct portions, one of said portions being a catheter shaft body portion and the other of said portion being a catheter shaft head portion, said perfusion lumen extending through said catheter shaft head portion, said catheter shaft body and head portions lying adjacent each other along a longitudinal axis of said catheter, said guidewire and inflation lumens extending substantially through both of said catheter shaft body and bead portions, said catheter shaft body and head portions being displaceable relative to each other such that said catheter shaft head portion may be displaced from said catheter shaft body portion after insertion of said catheter into said blood vessel from an initial insertion position wherein said catheter shaft body and head portions are aligned with each other along said catheter longitudinal axis such that said guidewire lumen extends in alignment through said catheter shaft body and head portions to a subsequent working position wherein said catheter shaft body and head portions are not aligned along said catheter longitudinal axis to expose said perfusion lumen to flow of blood within said blood vessel and such that said guidewire lumen opens at the distal end of said catheter shaft body portion rather than at the distal end of said catheter shaft head portion, said inflation lumen extending from said catheter shaft body portion to said catheter shaft head portion.

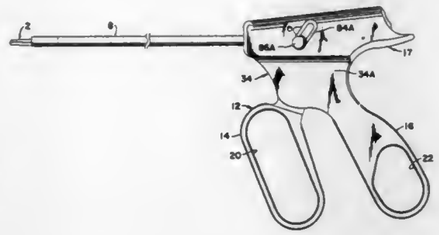
5,611,813

SURGICAL INSTRUMENT

Philip R. Lichtman, Newton, Mass., assignor to Microsurge, Inc., Needham, Mass.

Division of Ser. No. 26,489, Mar. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 869,535, Apr. 15, 1992, Pat. No. 5,318,589. This application Apr. 28, 1995, Ser. No. 431,023
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—205 **28 Claims**

1. A surgical instrument for performing electrosurgery comprising:



a handle housing with a first handle member affixed thereto, and at least first and second concentrically arranged shafts extending longitudinally away from said housing, said second shaft having proximal and distal ends and being affixed to said housing at its proximal end so as to be immobile with respect to said housing, and said first shaft surrounding said second shaft and being arranged to translate longitudinally with respect to said second shaft;

a jaw unit carried by said distal end of said second shaft, said jaw unit comprising at least two jaws, a rear section, and intermediate leaf spring elements connecting each of said jaws to said rear section, said leaf spring elements biasing said jaws so that when said leaf spring elements are unrestrained, said jaws are deployed in angular spaced relation with one another;

said first shaft having a length such that when said first shaft is caused to translate towards the distal end of said second shaft, the distal end of said first shaft will slide over said jaw unit and mechanically cause said jaws to close towards one another;

translation means for causing said first shaft to translate longitudinally relative to said second shaft, said translation means comprising a second handle member mounted for pivotal movement relative to said first handle member, and means coupling said second handle member and said first shaft for causing reciprocal movement of said first shaft relative to said second shaft as said second handle member is pivoted relative to said first handle member, whereby to cause said first shaft to move into and out of jaw-closing relation with said jaws; and

electrically-conductive means carried in part by said handle housing for applying an electrical potential to said jaws, whereby an electrical current will flow in tissue engaged by said jaws.

5,611,814

RESORBABLE SURGICAL APPLIANCES AND ENDOSCOPIC SOFT TISSUE SUSPENSION PROCEDURE

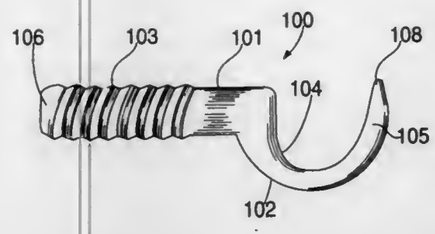
Z. Paul Lorenc, 52 East End Ave., Apt. 35A, New York, N.Y. 10028

Filed Nov. 16, 1994, Ser. No. 340,710
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—213 **9 Claims**

1. A surgical appliance for use in supporting soft tissue in a position superior to its natural state in a body, the surgical compliance comprising:

coupling means adapted to connect the surgical appliance to a bone or hard tissue;

gripping means secured to the coupling means for selectively gripping soft tissue and retaining the soft tissue in the superior position, wherein the gripping means includes two hooking members;



resorbable means for forming the coupling and gripping means so that the coupling means maintains a required connection strength with the bone or hard tissue for a period of time at least equal to a healing period, the resorbable means including a resorbable material, the gripping means grips the soft tissue so as to retain the soft tissue in the superior position for a period of time at least equal to the healing period, and for causing the surgical appliance to be substantially resorbed by the body after the healing period;

whereby in a single procedure the surgical appliance may be inserted and enable movement of the soft tissue to a superior position and retention of the soft tissue in said superior position for a healing period, without the need for a second procedure to remove the surgical appliance or the permanent presence of the surgical appliance in the body.

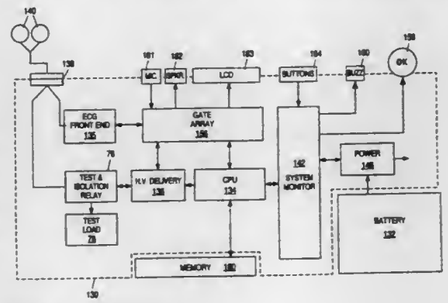
5,611,815

DEFIBRILLATOR WITH TRAINING FEATURES

Clinton Cole, Seattle; Carlton B. Morgan, Bainbridge Island; Judith Cyrus, Preston, and Daniel Powers, Bainbridge Island, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Filed Dec. 8, 1994, Ser. No. 351,897
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **57 Claims**

16. An external defibrillator having a treatment mode and a



training mode, comprising:

an energy source;

an electrode connector;

a controller, the controller comprising means for connecting the energy source to the electrode connector; and

training mode means for simulating the operation of the external defibrillator in treatment mode.

5,611,816

PROCESS FOR DESIZING AND COLOR FADING GARMENTS

Eric Wasinger, 16403 Ledge Way, San Antonio, Tex. 78232

Filed Apr. 3, 1996, Ser. No. 626,850
Int. Cl.[6] D06L *3/04;1/14*
U.S. Cl. 8—102 9 Claims

1. A process for desizing and/or decolorizing fabrics or garments containing about 5 to 10% by weight water, cellulosic material and an ozone degradable colorant in an environment that does not contain steam or any water in addition to said about 5 to 10% by weight, which comprises the steps of:

a) rotating said fabrics or garments in a closed chamber at about 2 to 10 revolutions per minute; and

b) simultaneously contacting said fabrics or garments in said chamber with ozone in the absence of steam or any water in addition to said about 5 to 10% by weight for a period of time so as to desize and/or decolorize said fabrics or garments prior to any degradation of the fabrics or garments.

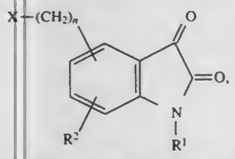
5,611,817

ISATIN DERIVATIVES FOR COLORING KERATIN-CONTAINING FIBERS

Hinrich Moeller, Haydnstr. 27, 40789 Monheim, and Horst Hoeffkes, Carlo-Schmid-Str. 113, 40595 Duesseldorf, both of Germany

PCT No. PCT/EP94/01247, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/24989, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 21, 1994, Ser. No. 535,263
Claims priority, application Germany, Apr. 30, 1993, 43 14 318.0
Int. Cl.[6] A61K *7/13*
U.S. Cl. 8—405 20 Claims

17. A process for coloring keratin-containing fibers comprising contacting said fibers with a composition comprising an isatin derivative corresponding to formula I:



(I)

wherein R^1 is hydrogen, a C_{1-4} alkyl group, a C_{2-4} hydroxyalkyl group, C_{2-20} acyl group, a benzyl or phenyl group, R^2 is hydrogen, a C_{1-4} alkyl group, a C_{1-4} alkoxy group, a hydroxy, halogen or nitro group, X is a sulfo group $—SO_3H$ or a carboxyl group —COOH and n is an integer from 0 to 3, including water-soluble salts thereof.

5,611,818

DRY LEUCO SULPHUR DYES IN PARTICULATE FORM

Manuel J. Domingo, Barcelona, Spain, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 887,513, May 22, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,340
Claims priority, application United Kingdom, May 23, 1991, 9111194; May 23, 1991, 9111211; Nov. 25, 1991, 9124959; Nov. 25, 1991, 9124998; Nov. 20, 1992, 9224368
Int. Cl.[6] C09B *67/02;49/00*
U.S. Cl. 8—524 66 Claims

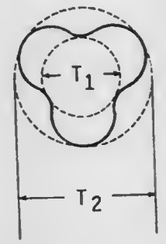
1. A process for producing a hydrosoluble dry leuco sulfur dye (L) which comprises reacting a sulfur dye (S) at a temperature of at least 120° C. with a reducing agent (A) in an aqueous mixture of (S), (A) and (B) an alkali metal hydroxide and drying the reaction mixture at a temperature above 60° C. and without exclusion of air, said reducing agent (A) being an aliphatic carbonyl compound containing a hydroxy group, an etherified hydroxy group, an amino group or an acetylated amino group as a substituent in the alpha-position to the carbonyl group and being employed in an amount sufficient for the practically complete reduction of the sulfur dye (S).

5,611,819

FABRIC SUPERIOR IN ANTI-DRAPE STIFFNESS, STIFFNESS AND SOFT HANDLE, AND MANUFACTURE THEREOF

Yasuhiko Nomura, Iwakuni; Ikuharu Nishida, Osaka, and Tadaaki Kashima, Ise, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 516,482, Aug. 17, 1995, Pat. No. 5,534,336. This application Mar. 14, 1996, Ser. No. 615,866
Claims priority, application Japan, Aug. 22, 1994, 6-196820; Aug. 25, 1994, 6-200798
Int. Cl.[6] D06P *5/00, 5/02;* D03D *3/00*
U.S. Cl. 8—529 4 Claims



1. A method of manufacture of a fabric superior in anti-drape stiffness, stiffness and soft handle, comprising weaving or knitting a spun yarn comprising at least 20% by weight of the yarn of regenerated fibers to form a woven or knit fabric, wherein said regenerated fibers have an average polymerization degree of not less than 400 and a modified cross-section selected from the group consisting of cocoon, triangular and square cross-sections, and wherein the degree of modification of the cross-section is from 0.10–0.95, treating the obtained woven fabric or knit fabric with an enzyme, and dyeing the fabric with a jet dyeing machine.

5,611,820

PROCESS FOR DYEING WOOL-CONTAINING FIBRE MATERIALS

Philippe Ouziel, Altkirch, France, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 6, 1995, Ser. No. 554,422
Claims priority, application Switzerland, Nov. 8, 1994, 3338/94; May 18, 1995, 1474/95
Int. Cl.[6] D06P *1/60;3/852*
U.S. Cl. 8—533 14 Claims

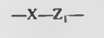
1. A process for dyeing wool-containing fibre materials with anionic dyes, which comprises dyeing said materials in the presence of a wool protective agent containing at least one compound of formula



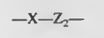
(1)

wherein R and R' are each independently of the other hydrogen, C_1–C_6alkyl or a cation, R_1, R_2, R_1' and R_2' are each independently of one another hydrogen, C_1–C_6alkyl or halogen,

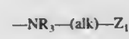
B is a radical of formula



(2*a*),



(2*b*) or



(2*c*),

X is a functional group —O— or —NR_3—,

R_3 and R_3' are each independently of the other hydrogen or C_1–C_6alkyl,

Z_1 is a radical of formula

$$—(CH_2—CH_2—O)_p—(CHY_1—CHY_2—O)_q—(CHY_3—CHY_4—O)_r— \quad (3),$$

one of Y_1 and Y_2 is methyl and the other is hydrogen,

one of Y_3 and Y_4 is ethyl and the other is hydrogen,

p, q and r are each independently of each other an integer from 0 to 20, and the sum of (p+q+r) is from 2 to 20,

Z_2, if X is —NR_3—, is the radical of a tri-, tetra- or polyamine, whose free amino groups are partially or completely in the form of an acylamino group of formula

$$—NR_3—CO—CR_1"=CR_2"—CO—O—R" \quad (4a),$$

or, if X is —O—, is the radical of a tri-, tetra- or polyol, whose free hydroxyl groups are partially or completely in the form of an ester group of formula

$$—O—CO—CR_1"=CR_2"—CO—O—R" \quad (4b),$$

R" independently has the meaning of R, and R_1" and R_2" have each independently of the other the meaning of R_1 and R_2, and

(alk) is a C_1–C_4alkylene radical which is further unsubstituted or substituted.

5,611,821

BLACK REACTIVE DYE COMPOSITION

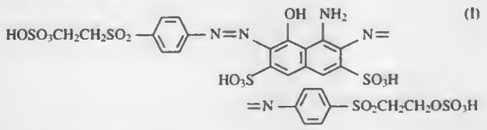
Huei C. Huang, Taoyuan Hsien, and Sheue R. Lee, Chung Li, both of Taiwan, assignors to Everlight USA, Inc., Pineville, N.C.

Filed Oct. 19, 1995, Ser. No. 545,259
Int. Cl.[6] D06P *1/384*

U.S. Cl. 8—549 **8 Claims**

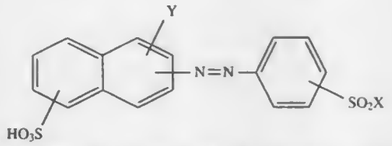
1. A black reactive dye composition comprising:

(a) a black reactive dye of the formula (I);



(I)

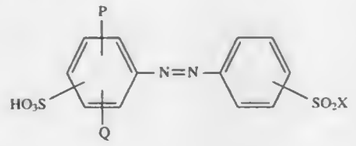
(b) a mono azo reactive dye of the formula (II)



(II)

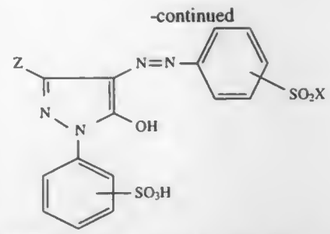
wherein X is —CH=CH_2 or CH_2CH_2W, W is —OSO_3H, Y is hydrogen, hydroxyl, or amino; and

(c) at least one mono azo reactive dye selected from the formula (III) and (IV)



(III)

-continued



(IV)

wherein X is —CH=CH_2 or CH_2CH_2W, W is —OSO_3H, each of P and Q independently is hydrogen, methyl, ethyl, n-propyl, amino or acetamide, Z is methyl, ethyl, n-propyl or carboxyl, and SO_2X in each of Formulas (I), (II), and (III) is at para position.

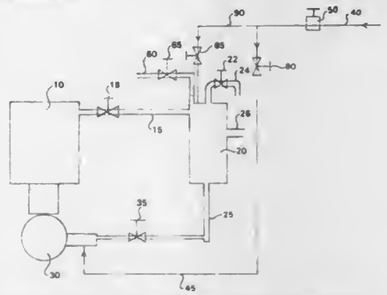
5,611,822

INDIGO DYE PROCESS

Sally Gurley, Boulder, Colo., assignor to Allegro Natural Dyes LLC, Longmont, Colo.

Continuation of Ser. No. 472,251, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 366,241, Dec. 23, 1994, Pat. No. 5,494,491, which is a continuation-in-part of Ser. No. 59,545, May 10, 1993, Pat. No. 5,378,246. This application Apr. 29, 1996, Ser. No. 639,714
Int. Cl.[6] D06P *1/34;3/60*

U.S. Cl. 8—625 **22 Claims**



1. A process for dyeing fibers with indigo comprising:

a. placing said fibers in a substantially enclosed compartment of a commercial dye apparatus, wherein said apparatus comprises means for introducing a non-oxidizing gas into said compartment;

b. Prior to or following step a. introducing a non-oxidizing gas into said compartment to produce a substantially non-oxidizing atmosphere therein;

c. after steps a. and b. contacting said fibers with a dye liquor comprising leuco indigo in said compartment containing said substantially non-oxidizing atmosphere whereby said leuco indigo is taken up by said fibers;

d. oxidizing said leuco indigo taken up by said fibers to produce a blue color in said fibers.

5,611,823

METHOD FOR FABRICATING A BATTERY ELECTRODE

Martin Klein, Brookfield, Conn., assignor to Electro Energy, Inc., Danbury, Conn.

Division of Ser. No. 320,080, Oct. 7, 1994, which is a continuation-in-part of Ser. No. 134,429, Oct. 8, 1993, Pat. No. 5,393,617. This application Dec. 22, 1995, Ser. No. 577,993
Int. Cl.[6] H01M *4/04*

U.S. Cl. 29—623.5 **30 Claims**

1. A method for preparing a battery electrode comprising:

coating particles of an electrochemically active material with a sensitizing agent to produce particles having a sensitized surface;

reacting a nucleating agent with said sensitized surface to produce particles having a surface activated for electroless deposition;

immersing said particles having an activated surface in an electroless deposition bath;

depositing a microporous metal layer on said activated surface to produce metal-coated particles of said electrochemically active material;

removing said metal-coated particles from said bath and

fabricating an electrode from said metal-coated particles.

5,611,824

FULLERENE JET FUELS

William D. Stephens, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 578,005, Dec. 22, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 668,030
Int. Cl.[6] C10L *1/00*

U.S. Cl. 44—282 **7 Claims**

1. A high energy fuel comprising an admixture of a hydrocarbon base carrier fuel and solid fuel fullerenes selected from the group consisting of solid fuel, high density fullerenes having a cage structure and derivatives of solid fuel, high density fullerenes having a cage structure, said high energy fuel comprising an admixture of said hydrocarbon base carrier fuel in an amount from about 75 weight percent to about 50 weight percent and said solid, high density fullerenes in an amount from about 25 weight percent to about 50 weight percent.

5,611,825

ABRASIVE ARTICLES AND METHODS OF MAKING SAME

Robbyn L. Engen, River Falls, Wis., and Jeffrey E. Ford, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 300,854, Sep. 2, 1994, Pat. No. 5,486,219, which is a continuation of Ser. No. 945,126, Sep. 15, 1992, abandoned. This application Sep. 19, 1994, Ser. No. 308,656
Int. Cl.[6] B24D *3/02*

U.S. Cl. 51—295 **64 Claims**

1. A coated abrasive comprising:

(1) a backing comprising a polymeric film, the polymeric film having a front and back surface, said front surface being primed;

(2) an abrasive coating bonded to the front surface of the polymeric film, the abrasive coating comprising a plurality of abrasive particles dispersed in a binder, the binder comprising a cured binder precursor composition comprising a major portion of a non-solidified urea-aldehyde resin, a minor portion of a solids portion of a latex, and a cocatalyst.

5,611,826

ABRASIVE TAPE

Katsumi Ryoke; Masami Sato, and Masaaki Fujiyama, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 203,564, Mar. 1, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,886
Int. Cl.[6] B24D *11/00;* **G11B** *5/41*

U.S. Cl. 51—295 **5 Claims**

1. An abrasive tape comprising an abrasive layer overlaid on a flexible substrate, wherein said abrasive layer primarily contains fine abrasive grains and a binder resin, and wherein:

the flexible substrate has a thickness within the range of 4 μm to 8 μm;

said fine abrasive grains contain at least one member selected from the group consisting of chromium oxide grains, α-alumina grains, silicon carbide grains, non-magnetic iron oxide grains, and diamond grains;

said fine abrasive grains have a mean grain diameter of from 0.1 μm to 10 μm; and

said fine abrasive grains further contain magnetic grains in an amount of 0–40% by weight of said at least one member.

5,611,827

METHOD FOR PREPARING MIXTURES FOR ABRASIVE ARTICLES

Janet L. Hammarstrom, Auburn; Michael J. Lemberger, Worcester; Mark W. Rowden, Leicester, all of Mass., and Arno Gardziella, Rüdinghauser Berg, Germany, assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 333,178, Nov. 2, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 689,575
Int. Cl.[6] B24D *3/28*

U.S. Cl. 51—298 **33 Claims**

1. An improved method for preparing a molding material for abrasive articles, comprising the step of continuously blending an abrasive material with measured portions of

(i) a low-molecular weight phenol-novolac resin having a phenol-formaldehyde molar ratio in the range of about 1:0.2 to about 1:0.35, heated to a temperature sufficient to yield a viscosity in the range of about 300 cp to about 3000 cp;

(ii) a composition comprising a second phenol-novolac resin; and

(iii) a curing agent;

at a blending temperature in the range of about 80° C. to about 130° C.;

such that the resulting molding material is a flowable, granular material homogeneously coated with the phenol-novolac resins.

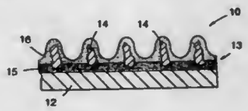
5,611,828

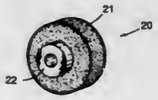
METHOD OF MAKING ALUMINA ABRASIVE GRAIN HAVING A METAL BORIDE COATING THEREON

Ahmet Celikkaya, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 28, 1995, Ser. No. 562,225
Int. Cl.[6] C09C *1/68*

U.S. Cl. 51—309 **19 Claims**



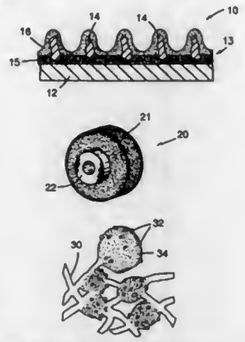




1. A method for making an alpha alumina-based abrasive grain, said method comprising heating a plurality of alpha alumina-based abrasive particles each having an outer surface including metal oxide, in the presence of a particulate boron source, for a time, at

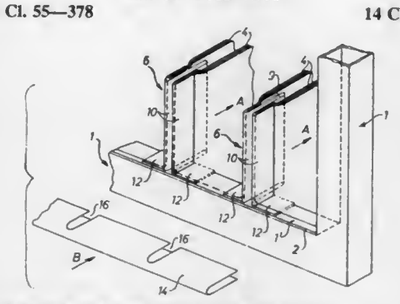
a temperature, and under a non-oxidizing atmosphere, sufficient to convert at least a portion of said metal oxide to metal boride.

5,611,829
ALPHA ALUMINA-BASED ABRASIVE GRAIN CONTAINING SILICA AND IRON OXIDE
Larry D. Monroe, Eagan, and Thomas E. Wood, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 492,898, Jun. 20, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 670,890
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—309 **48 Claims**



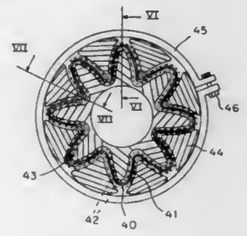
1. Alpha alumina-based ceramic abrasive grain comprising, on a theoretical oxide basis, Al_2O_3, SiO_2, and at least about 0.25% by weight Fe_2O_3, having alpha alumina crystallites with an average crystallite size of less than about 0.5 micrometer, said abrasive grain having a surface roughness height of greater than about 200 nanometers and a density of greater than about 3.5 g/cm^3.

5,611,830
AIR FILTER HAVING POCKETS, AND METHOD OF ASSEMBLY THEREOF
Beat Ernst, Wettingen, Switzerland, assignor to Zenteco AG, Wettingen, Switzerland
Filed Jun. 26, 1995, Ser. No. 494,443
Claims priority, application Switzerland, Jul. 4, 1994, 02124/94
Int. Cl.[6] B01D *46/02*
U.S. Cl. 55—378 **14 Claims**



1. A filter for a flowing gaseous medium having
a frame element (**1**);
a plurality of adjacently located filter bags (**4**) of a material which is gas-permeable with respect to said medium, and open to the flow of the gaseous medium; and
parallel positioned bag supporting ribs (**6**) having end portions supported by said frame,
wherein, in accordance with the invention,
the supporting ribs comprise zig-zag folded rib structures (**6**), which are folded from a blank (**11, 11'**) in zig-zag form,
said folded rib structures including support legs extending at essentially right angles therefrom, and supported on the frame element (**1**), and
wherein the gas-permeable material of said bags of adjacent filter pockets (**4**) is retained between the folds (**9, 10'; 9, 10"; 9, 10**) of the zig-zag folded rib structures (**6**).

5,611,831
DIESEL PARTICULATE FILTER APPARATUS
Hiroshi Matsuoka, Yamato; Hideo Kawamura, Samukawa; Akira Higashino, Yokohama, and Toshiaki Sakaguchi, Fujisawa, all of Japan, assignors to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-ken, Japan
Filed Nov. 13, 1995, Ser. No. 556,269
Claims priority, application Japan, Nov. 16, 1994, 6-307023; Nov. 21, 1994, 6-309439; Dec. 6, 1994, 6-330227
Int. Cl.[6] B01D *29/07*
U.S. Cl. 55—486 **17 Claims**

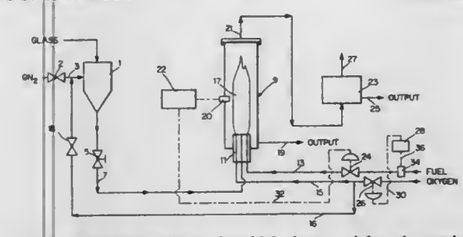


1. A diesel particulate filter apparatus comprising filter structures comprising ceramic fiber laminate materials formed by randomly laminating a ceramic fiber, and nets laminated on said ceramic fiber laminate materials for collecting particulates contained in exhaust gas from an engine with said filter structures;
wherein said filter structures are each bent in a wavy profile and formed in a tubular form, and
wherein both end portions of said filter structures further comprise first rigid members having a form fitting in said wavy profile on the inner sides of said filter structures, second rigid members having a form fitting on said wavy profile on the outer sides of said filter structures, and tubular clamping members for clamping said filter structures in the thickness-wise direction thereof on the outer sides of said second rigid members.

5,611,832
DIESEL PARTICULATE FILTER APPARATUS
Shogo Suzuki, Yamato; Hideo Kawamura, Samukawa-machi, and Akira Higashino, Fujisawa, all of Japan, assignors to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-ken, Japan
Filed Sep. 14, 1995, Ser. No. 528,357
Claims priority, application Japan, Sep. 21, 1994, 6-251565; Sep. 26, 1994, 6-254158; Sep. 26, 1994, 6-254159
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—523 **21 Claims**

1. A diesel particulate filter apparatus provided with a filter body to be disposed in the exhaust system of a diesel engine for collecting particulates contained in exhaust gas,
wherein said filter body is constituted of a fiber laminate material of fibers in felt form,
individual fibers of said fiber laminate material each comprising a core material in the form of a fiber and a covering layer of a material different from that of said core material formed directly in contact with and around the outer periphery of said core material by coating, said core material being an inorganic fiber material.

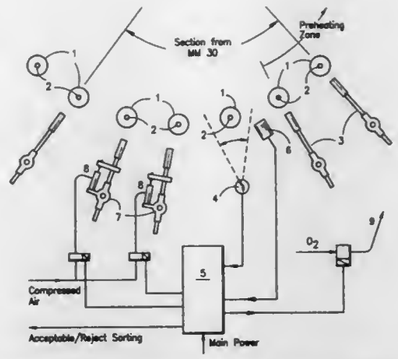
5,611,833
METHOD AND APPARATUS FOR PRODUCING SPHEROIDAL GLASS PARTICLES
Sudhir R. Brahmbhatt, Glencoe, and Christopher R. Young, St. Charles, both of Mo., assignors to MG Industries, Malvern, Pa.
Continuation-in-part of Ser. No. 115,665, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 935,395, Aug. 26, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,215
Int. Cl.[6] C03B *19/10*
U.S. Cl. 65—21.3 **13 Claims**



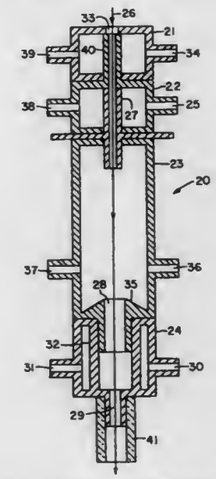
1. A method of making spheroidal glass particles, the method comprising the steps of:
a) providing a quantity of glass particles in a form of a powder, the powder being composed of particles having an average diameter in a range of about 2–150 microns,
b) entraining the powder in a carrier gas,
c) directing the carrier gas and the powder into a chamber which houses a burner, while simultaneously supplying fuel and substantially pure oxygen, through a fuel line and a separate oxygen line, to the burner, and simultaneously injecting the powder and the carrier gas into a flame produced by the burner, wherein the particles become spheroidal while within the flame and do not stay within the flame long enough to melt, and
d) collecting the particles from the chamber after the particles have become spheroidal,
wherein the entraining step comprises a step of diverting some oxygen from the oxygen line and using only said diverted oxygen as the carrier gas,
further comprising the steps of sensing the temperature in the flame, and varying a flow of fuel in the fuel line in response to the sensed flame temperature, and
further comprising the steps of measuring a flow of fuel in the fuel line, and varying a flow of oxygen in the oxygen line so as to maintain a desired ratio of oxygen to fuel.

5,611,834
METHOD FOR CONTROLLING THE FREE DEFORMATION OF THERMOPLASTIC MATERIAL
Claus Walter, and Paul Schmitz, both of Mitterteich, Germany, assignors to Schott Rohrglas GmbH, Bayreuth, Germany
Filed Sep. 21, 1994, Ser. No. 308,508
Claims priority, application Germany, Sep. 21, 1993, 43 32 024.4
Int. Cl.[6] C03B *21/00*
U.S. Cl. 65—29.12 **19 Claims**

1. A method for controlling free deformation of a thermoplastic material in the production of an article including an ampule and a bottle from a workpiece made of the thermoplastic material including glass, the method comprising the steps of:
freely deforming said workpiece in a deformation region to a predetermined extent by applying beat thereto in a preheating phase so as to allow a residual range of deformation to remain in said deformation region;
measuring, after completing and ending said preheating phase, an intermediate deformation of said deformation region to obtain a measurement of an actual value of the deformation;
comparing said actual value to a desired value of the deformation in said deformation region to provide a variable indicative of the difference between the actual and desired values and therefore indicative of said intermediate deformation; and
applying heat to said deformation region of said workpiece as a function of said variable to continue deforming said deformation region to correct for said difference as the workpiece is further deformed through said residual range and thereafter drawing out said deformation region until the deformation of said deformation region reaches its end value.



5,611,835
METHOD FOR APPLYING A CARBON COATING TO OPTICAL FIBERS IN ALUMINUM REACTOR VESSEL
Joseph C. Meabon, Castle Hayne, N.C.; Michelle R. Tuzzolo, Wrightsville Beach, N.Y., and Eric H. Urruti, Wilmington, N.C., assignors to Corning Incorporated, Corning, N.Y.
Division of Ser. No. 950,072, Sep. 23, 1992, Pat. No. 5,346,520,. This application Jun. 7, 1995, Ser. No. 473,695
Int. Cl.[6] C03B *37/029*
U.S. Cl. 65—384 **1 Claim**



1. A method for applying a carbon coating to an optical waveguide fiber being drawn on a drawing apparatus, comprising the steps of:

(a) heating an end of a preform in a draw furnace,
(b) drawing the fiber from said end of the preform,
(c) introducing the fiber to a reactor vessel comprising walls while supplying the reactor vessel with a reactant gas flow comprising a reactant gas, said reactant gas comprising carbon,
(d) forming the carbon coating on the fiber by decomposition of said reactant gas, wherein the reactor vessel walls are comprised of aluminum.

5,611,836

METHOD OF PRODUCING SIZED GLASS STRANDS

Patrick Moireau, Curienne, France, assignor to Vetrotex France, Chambery, France

Filed Dec. 8, 1994, Ser. No. 354,823
Claims priority, application France, Dec. 9, 1993, 93 14792
Int. Cl.[6] C03B *37/10;* **C03C** *25/02*
U.S. Cl. 65—453 **13 Claims**

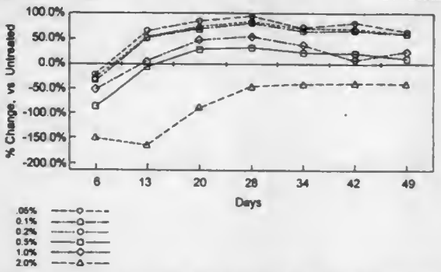
1. A method of producing and treating sized glass strands, comprising the steps of:
drawing a plurality of threads of molten glass flowing from a plurality of holes disposed at the base of one of more dies to form one or more fans of continuous filaments; assembling said filaments into one or more strands; and collecting the one or more strands on a moving support, wherein a heat-polymerizable sizing composition is deposited on a surface of said filaments during drawing and before said filaments are assembled into strands, said sizing composition being constituted by a solution with a solvent content of less than 5% by weight and a viscosity less than or equal to 400 cP, said solution comprising a basic structure which can be polymerized and/or cross-linked thermally, said basic structure comprising at least 60% by weight of one or more components with molecular weights (Mw) of less than 750 having at least one of an acrylic, a methacrylic, a vinyl ether, an N-vinylamide, and an N-vinyllactam function, the proportion of polyfunctional component(s) within said components being at least 45% by weight of said components, so as to produce glass strands coated with a non-polymerized, heat-polymerizable sizing composition.

5,611,837

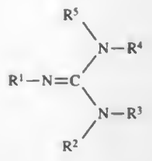
BIOREMEDIATION METHOD

Ingeborg D. Bossert, Newburgh; Michael V. Walter, Verbank, and Edward C. Nelson, LaGrangeville, all of N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Oct. 24, 1994, Ser. No. 327,745
Int. Cl.[6] C05G *3/06;3/04*
U.S. Cl. 71—27 **17 Claims**



1. A process for enhancing the biodegradation of hydrocarbons in a hydrocarbon-contaminated matrix comprising adding a surfactant-fertilizer to the hydrocarbon-contaminated matrix in a concentration of about 1 part by weight surfactant-fertilizer per each 1 to about 10,000 parts by weight of hydrocarbon contaminant, where the surfactant-fertilizer is the reaction product of guanidine, represented by the formula



and at least one alkyl carboxylic acid of formula:



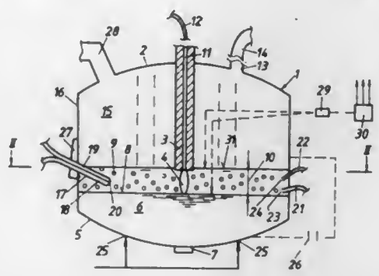
where R represents one or more branched or straight-chain, saturated or unsaturated, alkyl or alkaryl substituent containing between about 6 and about 30 carbon atoms from plant or animal sources, and R^1–R^5 are independently one or more of hydrogen, or alkyl, alkaryl, or aryl substituents, each containing between about 1 and about 25 carbon atoms.

5,611,838

PROCESS FOR PRODUCING AN IRON MELT

Ernst Fritz, and Stefan Dimitrov, both of Linz, Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Filed Dec. 7, 1994, Ser. No. 350,952
Claims priority, application Austria, Dec. 10, 1993, 2495/93
Int. Cl.[6] C21B *13/12*
U.S. Cl. 75—10.38 **35 Claims**



1. A process for producing an iron melt in a reactor with current supply, which process comprises in combination:
providing an iron melt in said reactor with current supply,
providing and maintaining a foamed slag on said iron melt,
introducing fine-grained iron carriers into said foamed slag,
supplying fine-grained carbon-containing reducing agents into said foamed slag,
additionally introducing fine-grained carbon-containing energy carriers into said foamed slag for furnishing required process heat,
largely burning process gases forming during reduction and carbon-containing energy carriers to CO_2 and H_2O within said formed slag for further furnishing locally required process heat,
accelerating the process course by introducing at least one of gases and gas mixtures into said iron melt; and
withdrawing iron melt and slag through respective taps.

5,611,839

METHOD FOR RENDERING REFRACTORY SULFIDE ORES MORE SUSCEPTIBLE TO BIOOXIDATION

William J. Kohr, San Mateo, Calif., assignor to Geobiotics, Inc., Hayward, Calif.

Continuation of Ser. No. 161,742, Dec. 3, 1993, Pat. No. 5,431,717. This application May 30, 1995, Ser. No. 453,016
Int. Cl.[6] C22B *3/18*
U.S. Cl. 75—712 **20 Claims**

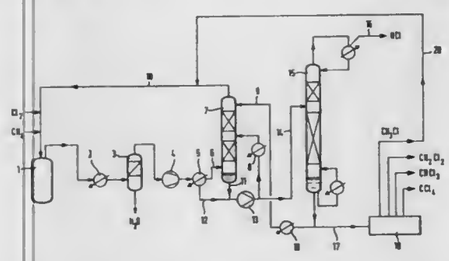
1. A method for recovering precious metal values from refractory sulfide ores comprised of iron sulfide particles, the process comprising the steps of:
a. separating fines from a crushed refractory sulfide ore;
b. forming a heap with said refractory sulfide ore;
c. bioleaching the ore in said heap to thereby oxidize the iron sulfide particles contained therein;
d. treating the bioleached ore to inhibit pregrobbing by carbonaceous components contained therein;
e. hydrometallurgically treating the bioleached ore to recover the precious metal values; and
f. treating the separated fines to recover precious metal values contained therein.

5,611,840

PROCESS FOR SEPARATING OUT HYDROGEN CHLORIDE

Werner Kraus, Hünstetten; Thomas Vernaleken, Hofheim; Wolfgang Schick, Frankfurt am Main, and Peter M. Roth, Eppstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 29, 1995, Ser. No. 564,599
Claims priority, application Germany, Dec. 1, 1994, 44 42 743.3
Int. Cl.[6] B01D *53/14;47/06*
U.S. Cl. 95—41 **8 Claims**



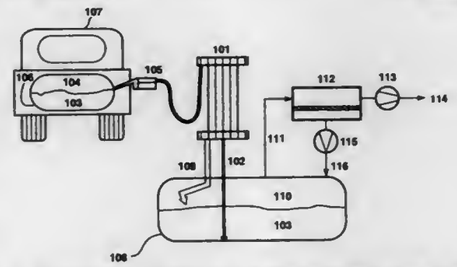
1. A process for separating out hydrogen chloride from a gas mixture forming in the chlorination of methane, which gas mixture contains unreacted methane, its chlorination products and hydrogen chloride, by cooling and compression of the gas mixture and subsequent scrubbing with a scrubbing liquid which comprises at least one liquid methane chlorination product, and wherein the gas mixture is separated into a methane-containing gas phase and a liquid phase containing hydrogen chloride and methane chlorination products, and desorbing the hydrogen chloride from the liquid phase by heating.

5,611,841

VAPOR RECOVERY PROCESS USING BAFFLED MEMBRANE MODULE

Richard W. Baker, Palo Alto; Douglas Gottschlich, Mountain View; Thomas Hofmann, Sunnyvale; Scott Segelke, Mountain View, all of Calif., and Matthias Wessling, Enschede, Netherlands, assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Sep. 29, 1995, Ser. No. 536,522
Int. Cl.[6] B01D *53/22;63/10*
U.S. Cl. 95—50 **53 Claims**



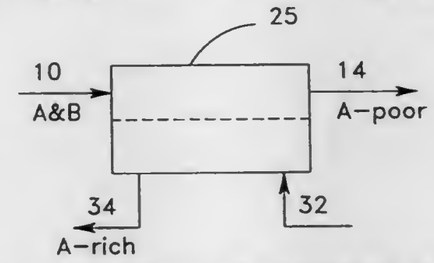
1. A method for controlling vapor emissions from a tank containing volatile liquid, said tank having a vent system for releasing said vapor emissions from said tank, said method comprising:
(a) providing a spiral-wound membrane module having a feed side, a permeate side, and a permeate collection pipe having two ends and perforations through which gas can pass from said permeate channel into said permeate pipe, said module being adapted by providing one or more feed-side baffles aligned substantially lengthwise with respect to said module, thereby forming a feed channel divided into at least two segments connected in series, through which gas flows sequentially as it passes along said feed channel, said feed side of said module being connected to said vent system;
(b) passing a raw vent gas comprising said vapor emissions across said feed side;
(c) withdrawing from said feed side a treated vent gas depleted in vapor compared with said raw vent gas;
(d) withdrawing from said permeate side a permeate enriched in vapor compared with said raw vent gas;
(e) returning said permeate to said tank.

5,611,842

ORGANIC AND INORGANIC VAPOR PERMEATION BY COUNTERCURRENT CONDENSABLE SWEEP

Dwayne T. Friesen; David D. Newbold; Scott B. McCray, and Roderick J. Ray, all of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 307,293, Sep. 14, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,309
Int. Cl.[6] B01D *53/22*
U.S. Cl. 95—50 **14 Claims**



1. A countercurrent sweep vapor permeation process for the removal of at least one non-water vapor component of a vaporous mixture feed, said vaporous mixture feed consisting essentially of

vapors and being predominantly condensable and including at least one non-water vapor component, comprising the steps of:

(a) providing a membrane that has a feed side and a permeate side and is selectively permeable to said at least one non-water vapor component;

(b) directing said vaporous mixture feed against said feed side of said membrane while maintaining said vaporous mixture feed near saturation without condensing the same;

(c) directing a sweep stream of condensable vapor past said permeate side of said membrane in a manner such that the flow of said sweep stream is substantially countercurrent to the flow of said vaporous mixture feed, thereby forming a retentate stream of non-permeating components and transporting at least a portion of said at least one non-water vapor component of said vaporous mixture feed from said feed side to said permeate side of said membrane to form a combined non-condensed permeate side mixture of said condensable vapor and said at least one non-water vapor component; and

(d) removing said combined permeate side mixture

wherein the partial pressure of said at least one non-water vapor component in said vaporous mixture feed exceeds the partial pressure of said at least one non-water vapor component on said permeate side.

5,611,843

MEMBRANES COMPRISING SALTS OF AMINOACIDS IN HYDROPHILIC POLYMERS

W. S. Winston Ho, Annandale, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

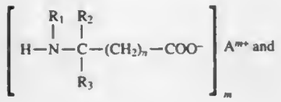
Filed Jul. 7, 1995, Ser. No. 499,267

Int. Cl.[6] B01D *53/22;71/28*

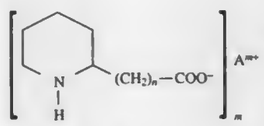
U.S. Cl. 95—51 **11 Claims**

8. A process for separating CO_2 from a CO_2-containing gas stream comprising:

contacting a CO_2-containing gas stream with one side of a nonporous, CO_2 selectively permeable, membrane comprising a hydrophylic polymer and at least one salt of an aminoacid, the aminoacid being present in an amount ranging from about 10 to about 80 wt % based on the weight of the composition, wherein the aminoacid salt is selected from salts having the formula:

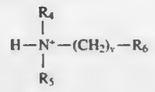


(I)



(II)

wherein R_1, R_2 and are hydrogen or alkyl groups having from 1 to 4 carbon atoms, n is an integer ranging from 0 to 4, A^{m+} is a cation having a valence of 1 to 3 and selected from Groups Ia, IIa, and IIIa metals of the Periodic Table of Elements and an amine cation having the formula:



wherein R_4 and R_5 are hydrogen or alkyl groups having from 1 to 4 carbon atoms; R_6 is hydrogen, an alkyl group of from 1 to 4 carbon atoms or an alkyl amine of from 2 to 6 carbon atoms and 1 to 4 nitrogen atoms, y is an integer ranging from 1 to 4; and m is an integer equal to the valence of the cation, whereby CO_2 is selectively transported through the membrane; and, withdrawing from the obverse side of the membrane a permeate containing CO_2 whereby CO_2 is selectively removed from the gaseous stream.

5,611,844

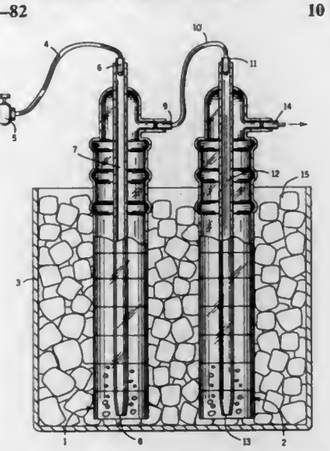
METHOD FOR SAMPLING AND ANALYZING LANDFILL GAS

John Troost, Lafayette, La.; George Prokuda, Mukwonago, and James A. Petersen, Waukesha, both of Wis., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 8, 1995, Ser. No. 399,069

Int. Cl.[6] B01D *15/08;53/14*

U.S. Cl. 95—82 **10 Claims**



1. A method of sampling and analyzing a gas containing volatile organic compounds, comprising the steps of passing the gas through a quantity of liquid tetraglyme to cause the volatile organic compounds to be absorbed in the tetraglyme, mixing said tetraglyme with water to form a dispersion, and thereafter subjecting the dispersion to gas chromatography/mass spectrometry analysis to analyze the volatile organic compounds.

5,611,845

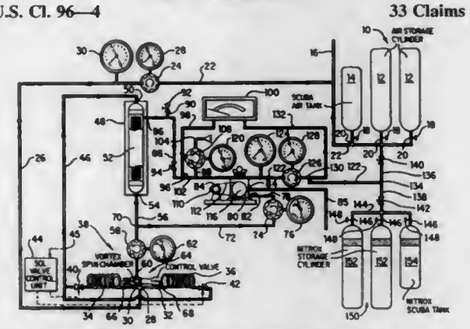
OXYGEN ENRICHED AIR GENERATION SYSTEM

William H. Delp, II, Lake Worth, Fla., assignor to Undersea Breathing Systems, Inc., Lake Worth, Fla.

Filed Aug. 22, 1995, Ser. No. 518,020

Int. Cl.[6] B01D *53/22*

U.S. Cl. 96—4 **33 Claims**



1. A system for generating oxygen enriched air comprising:

an air supply for supplying compressed air;

a permeable membrane gas separation system for separating a nitrogen gas component and an oxygen enriched air component from said compressed air;

means for detecting an oxygen concentration in said oxygen enriched air component;

means for dividing said nitrogen gas component into a cold gas stream and a hot gas stream;

flow modifying means for modifying a flow path of said compressed air through said cold gas stream and said hot gas stream to selectively heat and cool said compressed air; and

means for selectively distributing said oxygen enriched air component for further use.

5,611,846

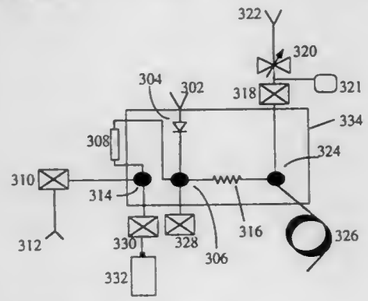
PORTABLE GAS CHROMATOGRAPH

Edward B. Overton, and Kenneth R. Carney, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 563,558, Nov. 28, 1995, abandoned, which is a continuation of Ser. No. 181,705, Jan. 14, 1994, abandoned. This application Jul. 19, 1996, Ser. No. 684,332

Int. Cl.[6] B01D *15/08;53/30*

U.S. Cl. 96—102 **34 Claims**



1. A gas chromatograph comprising:

(a) an elongated or coiled heater;

(b) an elongated or coiled analytical column, wherein at least about 80% of the length of said column is positioned substantially parallel to said heater, and wherein at least about 80% of the length of said column is within 5 millimeters of the nearest point of said heater;

(c) a temperature sensor for measuring the temperature of said column or the temperature near said column; and

(d) a microprocessor responsive to said temperature sensor to control said heater;

wherein said chromatograph is adapted for controlled temperature programming of said column; and wherein said heater is adapted for controlled temperature programming of said column at a rate of power consumption less than about 110 Watts.

5,611,847

AQUEOUS PIGMENT DISPERSIONS CONTAINING SEQUESTERING AGENTS FOR USE AS INK JET PRINTING INKS

Robert A. Guistina, Rochester; Domenic Santilli, Webster, and Douglas E. Bugner, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1994, Ser. No. 351,870

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **5 Claims**

1. A stable ink jet ink having a viscosity from about 1 to about 10 centipoise and comprising a dispersant, from 1 to 20 wt/% of a metallized azo red pigment and 0.5 to 10 wt/% of a sequestering agent selected from the group consisting of an alkali metal, an alkaline earth metal or an ammonium salt of a linear aliphatic substituted glycine and water.

5,611,848

PROCESS FOR PREPARING REFRACTORY MOLDED ARTICLES AND BINDERS THEREFOR

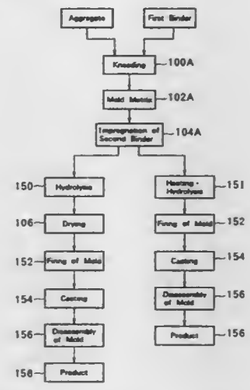
Nobuyoshi Sasaki; Tetsuya Yokokawa, both of Yokohama; Yoshikazu Hashimoto, Tokyo; Yoshiro Ohta, Kawasaki, and Hideo Sekiguchi, Tokyo, all of Japan, assignors to Cadic Corporation; KSP Inc., both of Kanagawa-ken, and Tama Chemicals Co., Ltd., Tokyo, all of Japan

Division of Ser. No. 365,111, Dec. 28, 1994. This application Jul. 16, 1996, Ser. No. 680,635

Claims priority, application Japan, Dec. 28, 1993, 5-354148; Jul. 13, 1994, 6-183048

Int. Cl.[6] C04B *24/04;24/40*

U.S. Cl. 106—38.2 **7 Claims**



1. A process for preparing a refractory molded article comprising the steps of:

(a) forming a molded matrix from an aggregate and a first binder;

(b) impregnating said molded matrix formed in the aforementioned step (a) with a second binder consisting of an alcoholic solution containing one kind or two or more kinds of alkoxides selected from alkoxides of elements of Group 4A or Group 4B, excepting carbon, and Group 3A or Group 3B of the periodic table and their partial hydrolysates and an alkaline compound of alkali metal or alkaline earth metal and hydrolyzing; and

(c) drying and firing said molded matrix at high temperature.

5,611,849

STABILIZED MONOBUTYLTIN TRICHLORIDE

Heinz-Gunther Eisen, Essen; Maria Mecking, Bottrop, and Sven-Uwe Vallerien, Essen, all of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Jul. 12, 1996, Ser. No. 679,283

Claims priority, application Germany, Jul. 18, 1995, 195 26 100.3

Int. Cl.[6] C09D *7/12*

U.S. Cl. 106—287.19 **4 Claims**

1. A composition of monobutyltin trichloride, stabilized against crystallization and against darkening, comprising monobutyltin trichloride and an effective amount of a stabilizer selected from the group consisting of glycerol esters of optionally unsaturated aliphatic carboxylic acids having 1 to 18 carbon atoms, and mixtures thereof.

5,611,850

COMPOSITION FOR ANTI-REFLECTIVE COATING ON RESIST

Mineo Nishi, and Tadashi Teramoto, both of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 618,307
Claims priority, application Japan, Mar. 23, 1995, 7-064132
Int. Cl.[6] C09D *5/32;201/04;* G03L *5/00;1/73*
U.S. Cl. 106—287.26 7 Claims

1. A composition for an anti-reflective coating on resist, which comprises a water-soluble fluorine compound and water as the main components, wherein the water-soluble fluorine compound contains (A) a water-soluble fluorine compound that is solid at 20° C., 1 atmospheric pressure, and (B) a water-soluble fluorine compound that is liquid at 20° C., 1 atmospheric pressure and that has a boiling point of at least 100° C. under 1 atmospheric pressure.

7. A pattern formation method comprising the steps of coating a photoresist composition on a substrate; coating on the obtained photoresist a composition for anti-reflective coating on resist; exposing the photoresist and the obtained anti-reflective coating on resist to form a specific pattern; and developing the photoresist with an aqueous alkaline solution, characterized in that a composition according to any of claim **1** to **6** is used as said composition for anti-reflective coating on resist.

5,611,851

PROCESS FOR PREPARING UNSUPPORTED METAL OXIDE NACREOUS PIGMENTS

Carmine DeLuca, and William P. Kurtenbach, both of Peekskill, N.Y., assignors to The Mearl Corporation, Ossining, N.Y.

Filed Dec. 13, 1995, Ser. No. 571,456
Int. Cl.[6] C04B *14/32*
U.S. Cl. 106—415 20 Claims

1. A method for the preparation of a nacreous pigment comprising subjecting a metal oxide coated mica nacreous pigment to a two step extractive dissolution, the first step comprising contacting the pigment with an aqueous acidic solution containing phosphoric acid and a mineral acid and the second step comprising contacting the pigment with an aqueous alkali solution.

5,611,852

STABILIZED CONDUCTIVE PIGMENT

Gerhard Pfaff, and Hans-Dieter Bruckner, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 16, 1994, Ser. No. 291,795
Claims priority, application Germany, Aug. 17, 1993, 43 27 620.2
Int. Cl.[6] C09C *1/04*
U.S. Cl. 106—428 16 Claims

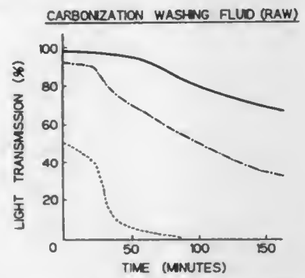
1. A stabilized conductive pigment comprising a conductive layer containing both aluminum doped zinc oxide, and an additive for stabilizing the electric conductivity which is an alkaline earth metal titanate.

5,611,853

COMPOSITION OF MATTER AND SOLID MEDIUM BASED-ON NATURALLY-OCCURRING HUMIC ALLOPHANE SOIL USEFUL IN TREATMENT OF FLUIDS

Haruo Morimoto, 187, Nakajinzenji, Kochi-shi, Kochi-ken, Japan, assignor to Haruo Morimoto, Kochi-ken; Katusi Maeno, Tokyo, and Takahiro Yamada, Osaka, all of Japan

Filed Sep. 6, 1995, Ser. No. 524,032
Claims priority, application Japan, Sep. 6, 1994, 6-212431
Int. Cl.[6] C04B *14/02*
U.S. Cl. 106—633 11 Claims



1. A composition of matter free of active carbon for use in preparation of solid media for treating fluids, which comprises, on a weight basis:

humic allophane soil particulates	40–80%;
binder material	20–50%; and
aggregate material	0–30%.

5,611,854

SEED CRYSTALS WITH IMPROVED PROPERTIES FOR MELT PROCESSING SUPERCONDUCTORS FOR PRACTICAL APPLICATIONS

Boyd W. Veal; Arvydas Paulikas, both of Downers Grove; Uthamalingam Balachandran, Hinsdale, and Wei Zhong, Chicago, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Sep. 21, 1995, Ser. No. 531,399
Int. Cl.[6] C30B *11/04*
U.S. Cl. 117—1 20 Claims

1. A method of fabricating a bulk superconducting material including $RBa_2Cu_4O_3$ comprising heating compressed power oxides and/or carbonates of R and Ba Cu present in mole ratios to form $RBa_2Cu_3O_x$ in physical contact with an oxide single crystal seed temperature at which a liquid phase in the $RBa_2Cu_3O_x$ is formed while maintaining the single crystal seed solid to grow the superconducting material and thereafter cooling to provide a material including $RBa_2Cu_3O_x$, R being Y or La and said single crystal seed having a lattice mismatch with $RBa_2Cu_3O_x$ of less than about 2% at the growth temperature.

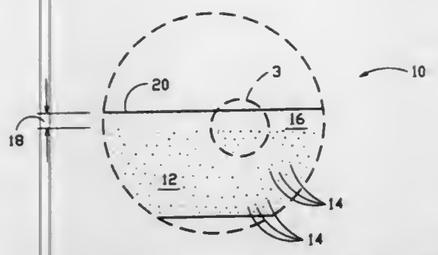
5,611,855

METHOD FOR MANUFACTURING A CALIBRATION WAFER HAVING A MICRODEFECT-FREE LAYER OF A PRECISELY PREDETERMINED DEPTH

Witawat Wijaranakula, Vancouver, Wash., assignor to SEH America, Inc., Vancouver, Wash.

Filed Jan. 31, 1995, Ser. No. 382,751
Int. Cl.[6] C30B *29/06*
U.S. Cl. 117—2 12 Claims

1. A method of manufacturing a semiconductor silicon calibration wafer including a semiconductor silicon bulk region having



easily detectable microdefects and an epitaxially deposited microdefect-free layer, comprising:

providing a semiconductor silicon substrate having sufficient interstitial oxygen to form oxide microdefects;

depositing an epitaxial layer onto the semiconductor silicon substrate, the semiconductor substrate having throughout the substrate sufficient dissolved oxygen to form oxide microdefects and the epitaxial layer having no nucleation sites to form oxide microdefects;

maintaining the semiconductor silicon substrate within a first temperature range to nucleate oxide microdefects within the substrate; and

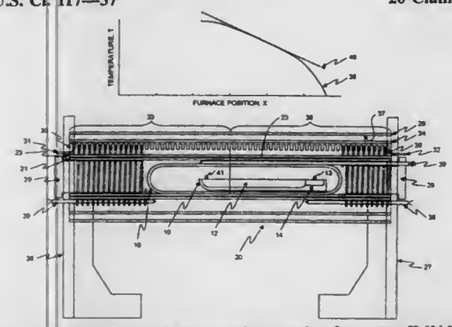
maintaining the semiconductor silicon substrate within a second temperature range to grow the easily detectable oxide microdefects within the semiconductor silicon substrate, the epitaxial layer providing a microdefect-free layer easily distinguishable from the semiconductor silicon substrate having microdefects.

5,611,856

METHOD FOR GROWING CRYSTALS

Peter G. Schunemann, Malden, Mass., and Thomas M. Pollak, Amherst, N.H., assignors to Lockheed Sanders, Inc., Nashua, N.H.

Filed May 19, 1994, Ser. No. 245,774
Int. Cl.[6] C30B *13/02*
U.S. Cl. 117—37 20 Claims



1. A method for producing single crystals of a group II-IV-V_2 and group [I-III-IV_2] I-III-VI_2 compounds from their constituents, comprising the steps of:

synthesizing a compound material for the crystal to be produced including steps of heating the constituents thereof to above a melting temperature of the compound material, maintaining the melted constituents above said melting temperature for a period of time and then cooling the melted constituents to freeze the resulting compound material;

melting the frozen compound material adjacent to a seed crystal, using a transparent horizontal gradient freeze furnace which maintains a substantially uniform temperature gradient of less than 5° C. per centimeter in the direction of intended growth, until all of the compound material and a part of the seed crystal melts, said seed crystal having a known crystallographic orientation; and

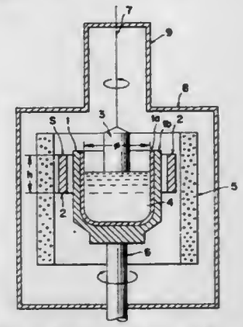
freezing the melted compound material at a controlled rate of freezing to grow the single crystal from the seed crystal in accordance with the known crystallographic orientation of the seed crystal including a step of observing the crystal during freezing to detect the formation of multiple grain patterns.

5,611,857

APPARATUS FOR PRODUCING SINGLE CRYSTALS

Yoshihiro Akashi, Kobe, Japan; Kaoru Kuramochi, Montgomery, Ohio; Setsuo Okamoto, Nishinomiya, Japan; Yasuji Tsujimoto, Kobe, Japan, and Makoto Ito, Saga, Japan, assignors to Sumitomo Sitix Corporation, Amagasaki, Japan

Division of Ser. No. 322,197, Oct. 13, 1994, Pat. No. 5,474,019.
This application Jun. 7, 1995, Ser. No. 474,662
Claims priority, application Japan, Oct. 18, 1993, 5-259508
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—217 16 Claims



1. An apparatus for producing silicon single crystals with excellent dielectric strength of gate oxide films, comprising:

a heating element outside a crucible containing a melt of single crystal material;

a pulling shaft extending in a vertical direction to pull up a single crystal out of the melt of single crystal material in the crucible; and

means for adjusting heat supplied to the crucible by maintaining a ratio of length h in the vertical direction of the heating element to an inner diameter ϕ of the crucible such that h/ϕ is 0.2 to 0.8.

5,611,858

APPARATUS FOR TRANSPORTING DISCOIDAL SUBSTRATES IN A VACUUM COATING APPARATUS

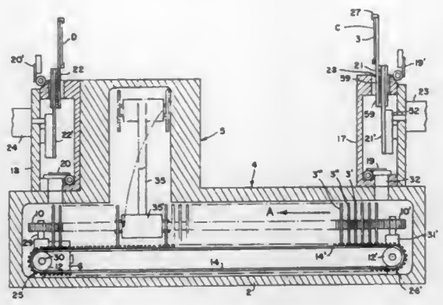
Jaroslav Zejda, Rodenbach, Germany, assignor to Leybold Aktiengesellschaft, Hanau, Germany

Filed Oct. 4, 1994, Ser. No. 317,715
Claims priority, application Germany, Dec. 7, 1993, 43 41 634.9
Int. Cl.[6] B65G *49/07*
U.S. Cl. 118—50 3 Claims

1. Apparatus for transporting discoidal substrates from a first processing station to a second processing station, said apparatus comprising

a first cogbelt on a pair of first sprockets, said first cogbelt comprising a pair of first strands extending between said first sprockets and having pairs of outward facing cleats extending transversely of said first strands,

a second cogbelt on a pair of second sprockets, said second cogbelt comprising a pair of second strands extending between said second sprockets and having pairs of outward facing cleats extending transversely of said second strands, one of said first strands being movable in a direction and one of said second strands being in facing relationship with said one of said first strands and movable in said direction, each



pair of cleats of said one of said first strands being directly opposed from a pair of cleats of said one of said second strands, said directly opposed pairs of cleats being spaced to receive a discoidal substrate therebetween,

said one of said first strands and said one of said second strands facing upward so that said strands can support a discoidal substrate therebetween, each pair of cleats having a point of contact with said discoidal substrate, the points of contact in directly opposed pairs being spaced apart by a distance substantially less than the diameter of the substrate, and

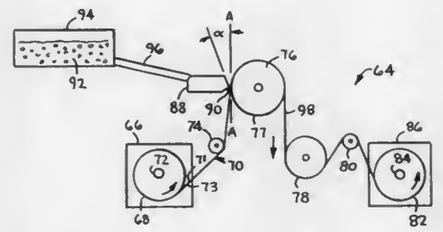
means for synchronously driving said first and second cogbelts.

5,611,859

APPARATUS FOR COATING A STRIP OF PAPER

Steven J. Nielsen, Greenville; Yihua Chang, and Tammy J. Rentmeester, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1995, Ser. No. 477,044
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—67 **20 Claims**



1. An apparatus for coating a strip of paper comprising:

a) a first drive mechanism for supporting a supply roll of a continuous strip of uncoated paper;

b) a coating roll positioned downstream of said first drive mechanism;

c) a melt tank including a supply of hot resin at a temperature of between about 300° F to about 400° F, said resin comprising from between about 95 percent by weight to about 98 percent by weight of ethylene vinyl acetate and from between about 2 percent by weight to about 5 percent by weight of a slip agent;

d) a slot coater connected to said melt tank by a conduit through which a continuous stream of hot resin is supplied;

e) a slot die attached to said slot coater and angularly aligned with said coating roll to provide a nip therebetween, said slot die dispensing a uniform thickness of from between about 0.3 mils to about 1.0 mils of said hot resin onto a surface of said strip of uncoated paper;

f) a chill roll positioned downstream of said slot die which cools said hot resin to at least a partially solidified state; and

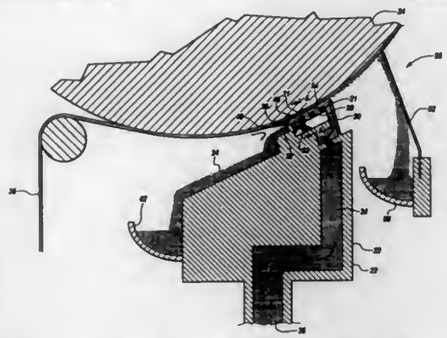
g) a second drive mechanism positioned downstream of said chill roll which can wind up said coated paper into a roll.

5,611,860

HYDROSTATIC SHEAR INDUCING SHORT DWELL COATER

Theodore G. Waech, Janesville, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed May 17, 1995, Ser. No. 443,126
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—410 **2 Claims**



1. A coater apparatus for applying coating material to a web guided by a backing roll, said apparatus comprising:

a coater head housing disposed in close proximity to the backing roll such that the web guided by the backing roll moves between the backing roll and the head housing, wherein the housing defines an application chamber which opens toward the web and which extends along the web in a cross-machine direction, and wherein the application chamber receives and retains coating material in a coating pond, and wherein the application chamber is connected to a pressurized source of coating material;

portions of the coater head housing which define a baffle plate upstream of the application chamber, wherein the baffle plate has portions defining a lip spaced from the backing roll, and wherein excess coating material within the application chamber overflows the baffle plate lip to escape the application chamber;

a premetering blade mounted to the coater housing downstream of the application chamber which engages the web against the backing roll, wherein coating is applied by the premetering blade to the web;

a first bar member fixed within the head housing and spaced upstream from the premetering blade, wherein the first bar member extends in the cross-machine direction across the housing; and

a second bar member fixed within the head housing and spaced upstream from the first member, wherein the second bar member is substantially parallel to the first bar member, the bar members being positioned within the head housing such that coating flows downstream both beneath and above the members, and wherein both bar members are spaced between one thousandth of an inch and about two-hundred-and-fifty thousandths of an inch from the web.

5,611,861

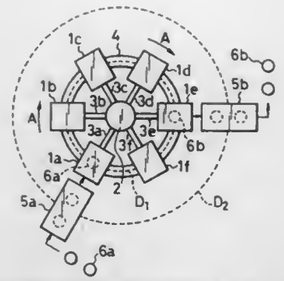
ROTARY TYPE APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS AND METHOD OF PROCESSING SEMICONDUCTOR WAFERS

Kumiko Higashi, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1996, Ser. No. 656,483
Claims priority, application Japan, May 31, 1995, 7-133677
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—719 **24 Claims**

1. A semiconductor wafer processing apparatus comprising:

N process chambers for processing a semiconductor wafer therein wherein N is a positive integer greater than 1, said N



process chambers being disposed in a circle having a first diameter and circumferentially spaced away from each other by 360/N degrees, said N process chambers being supported for rotation about a center of said circle;

at least one pair of wafer transferring devices for transferring a semiconductor wafer into one of said N process chambers and taking a semiconductor wafer out of one of said N process chambers, said wafer transferring devices being disposed in a circle having a second diameter greater than said first diameter, said wafer transferring devices being circumferentially spaced away from each other by 360M/N degrees wherein M is a positive integer ranging from 1 to (N−1) both inclusive; and

a driver for rotating said N process chambers about said center so that any two process chambers among said N process chambers face to said wafer transferring devices.

22. A method of processing a semiconductor wafer comprising the steps of:

(a) preparing N process chambers for processing a semiconductor wafer therein wherein N is a positive integer greater than 1, said N process chambers being disposed in a circle and circumferentially spaced away from each other by 360/N degrees, said N process chambers being supported for rotation about a center of said circle;

(b) transferring a semiconductor wafer at a first location into a first process chamber among said N process chambers;

(c) rotating said N process chambers by 360M/N degrees wherein M is a positive integer ranging from 1 to (N−1) both inclusive;

(d) carrying out processing of a semiconductor wafer in said first process chamber;

(e) transferring a semiconductor wafer at said first position into a second process chamber among said N process chambers;

(f) repeating said steps (c) to (e) for subsequent semiconductor wafers;

(g) taking a processed semiconductor wafer out of said first process chamber at a second location which is circumferentially spaced away from said first location by 360L/N degrees wherein L is a positive integer ranging from 1 to (N−1) both inclusive; and

(h) repeating said steps (b) to (g).

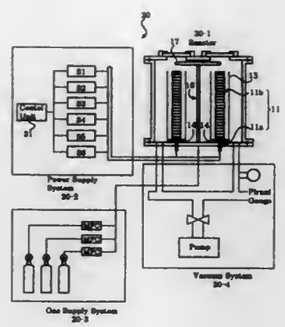
5,611,862

METHOD AND APPARATUS FOR MANUFACTURING HEAD DRUMS COATED WITH DIAMOND-LIKE CARBON COATING FILM USING HIGH-FREQUENCY PLASMA

Kwang-Ryeol Lee, and Kwang-Yong Eun, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Aug. 15, 1995, Ser. No. 515,429
Claims priority, application Rep. of Korea, Aug. 17, 1994, 94-20259
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **5 Claims**

1. An apparatus for forming coating films on a large number of cylindrical substrates simultaneously using a high frequency plasma chemical deposition method comprising:



a reactor;

a power supply system electrically connected to said reactor;

a gas supply system supplying source gas to said reactor; and

a vacuum system maintaining a vacuum state and controlling a pressure in said reactor within a range of 0.1 Torr to 1.0 Torr during a film synthesizing process; wherein,

said power supply system comprises multiple high-frequency current sources having a frequency within a range of 100 kHz to 10 MHz and a control unit connected to the multiple high-frequency current sources,

said reactor comprises a plurality of electrodes each of which is connected with a different high-frequency current source, a plurality of electrically conductive workpiece supports which are combined with said plurality of electrodes respectively to form power electrodes and used to stack cylindrical substrates thereon, a plurality of insulators respectively insulating said plurality of electrodes and said workpiece supports from said reactor, and a plurality of annular ground electrodes disposed in a form of concentric circles spaced from an outer surface of said cylindrical substrates by a distance and electrically connected with said reactor, wherein

said power electrodes are disposed in a formation which minimizes interaction between the power electrodes.

5,611,863

SEMICONDUCTOR PROCESSING APPARATUS AND CLEANING METHOD THEREOF

Katsushin Miyagi, Sagamihara, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Tohoku Limited, Esashi, both of Japan

Filed Aug. 21, 1995, Ser. No. 517,286
Claims priority, application Japan, Aug. 22, 1994, 6-196535
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 MP **9 Claims**

1. A semiconductor processing apparatus for ECR plasma CVD, comprising:

a plasma generation chamber to which a microwave and a plasma source gas are introduced;

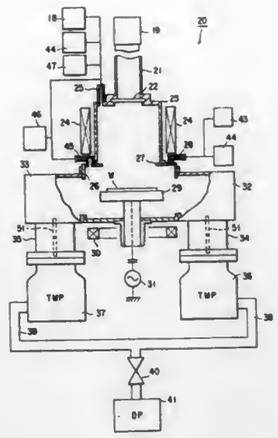
an excitation solenoid, surrounding said plasma generation chamber, for forming an electron cyclotron resonance magnetic field with the microwave in said plasma generation chamber;

a plasma reaction chamber which is provided in communication with said plasma generation chamber and to which a reactive gas is introduced;

holding means, set in said plasma reaction chamber, for holding a target object;

a leakage-type valve which is provided in communication with said plasma reaction chamber and whose opening degree can be freely controlled;

a high-vacuum pump coupled to an outlet of said leakage-type valve;



cleaning gas supply means for supplying a cleaning gas into said plasma reaction chamber; and

a sub-pump coupled to an outlet of said high-vacuum pump.

5,611,864

MICROWAVE PLASMA PROCESSING APPARATUS AND PROCESSING METHOD USING THE SAME

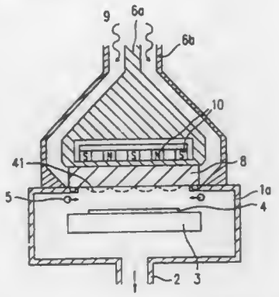
Tadashi Kimura, Kyoto; Yoshikazu Yoshida; Shinichi Mizuguchi, both of Osaka, and Yasunao Okazaki, Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 16, 1995, Ser. No. 404,971

Claims priority, application Japan, Mar. 24, 1994, 6-053945; Aug. 5, 1994, 6-184441

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MR **18 Claims**



1. A microwave plasma processing apparatus for generating plasma from a gas with microwave power, comprising:

a vacuum chamber comprising a gas inlet port and a gas outlet port;

a holder for holding an object to be processed, the holder being disposed inside the vacuum chamber;

a dielectric plate having a front surface facing the object to be processed and a rear surface substantially parallel to the front surface; and

a microwave power supply means for supplying microwave power substantially inverse-radially from a circumferential side of the dielectric plate towards a center thereof, the microwave power having a direction of propagation which is substantially inverse-radial at the circumferential side of the dielectric plate.

5,611,865

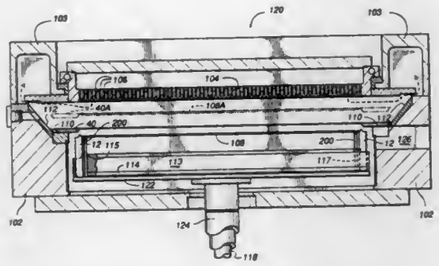
ALIGNMENT OF A SHADOW FRAME AND LARGE FLAT SUBSTRATES ON A HEATED SUPPORT

John M. White, Hayward; David E. Berkstresser, Los Gatos, and Carl T. Petersen, Fremont, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 462,442, Jun. 5, 1995, which is a continuation of Ser. No. 313,501, Sep. 26, 1994, abandoned, which is a continuation of Ser. No. 10,892, Jan. 28, 1993, Pat. No. 5,352,294. This application Feb. 14, 1996, Ser. No. 605,581

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—725 **4 Claims**



1. A substrate processing system comprising:

a) a processing chamber for processing a substrate inserted therein upon a blade horizontally movable into a processing area of said chamber;

b) a vertically movable centering support;

c) a plurality of centering members attached to said support and extending vertically therefrom, each said centering member having

i) an inner vertically extending side, and

ii) a centering feature disposed on a top of said centering member and having an inner inclined surface extending inwardly and downwardly to said vertically extending side; and

d) a substrate support vertically movable with respect to said centering support for supporting said substrate centered by said centering features.

5,611,866

METHOD OF REMOVING B_2O_3 ENCAPSULANT FROM A STRUCTURE

Paul Klocek, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 748,602, Aug. 22, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,601

Int. Cl.[6] B08B *3/04;5/04*

U.S. Cl. 134—5 **10 Claims**

1. A method of removing B_2O_3 encapsulant from a structure comprising the steps of:

(a) providing a structure having a melting temperature above 400° C. and having a layer of B_2O_3 thereon;

(b) placing said structure with said layer of B_2O_3 thereon in a chamber at a temperature in excess of 400° C. and below said melting temperature of said structure and at a pressure above the foaming temperature of said B_2O_3;

(c) decreasing said pressure in said chamber until said B_2O_3 foams;

(d) then lowering the temperature in said chamber to below 400° C.;

(e) washing said structure with said B_2O_3 thereon in an alcohol after said B_2O_3 has foamed; and

(f) then washing said structure with said B_2O_3 thereon after said B_2O_3 has foamed in a liquid non-reactive with said structure to remove said B_2O_3 from said structure.

5,611,867

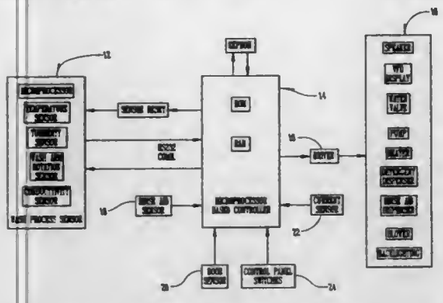
METHOD OF SELECTING A WASH CYCLE FOR AN APPLIANCE

Randall L. Cooper, Newton; Mitchell N. Corbett, Clive, and Douglas W. Gardner, Newton, all of Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Apr. 12, 1995, Ser. No. 422,124

Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—18 **17 Claims**



1. A method of selecting a washing cycle from a plurality of progressively higher wash cycles for an intelligent appliance for which a number of previous wash cycles have been selected from the plurality of wash cycles, comprising the steps of:

sensing a plurality of operating conditions in the appliance;

generating a first value based on the sensed conditions;

determining an average selected cycle from the number of previously selected wash cycles;

generating a second value based on the determined average selected cycle;

sensing the number of occurrences that the appliance is opened;

generating a third value based on the number of occurrences that the appliance is opened;

measuring an amount of time elapsed since one of the previous wash cycles;

generating a fourth value based on the amount of time elapsed since one of the previous wash cycles; and

making a cycle selection based on the first, second, third, and fourth values.

5,611,868

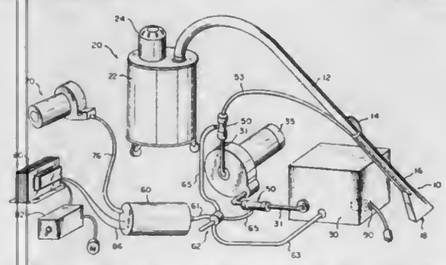
FABRIC CLEANER WITH OZONE INJECTION

Russell Gurstein, Hayden Lake, Id., and Edgar York, Vancouver, Wash., assignors to U. S. Products, Inc., Hayden Lake, Id.

Filed Dec. 13, 1994, Ser. No. 357,243

Int. Cl.[6] A47L *11/34;* **B08B** *3/00;5/00;5/04*

U.S. Cl. 134—21 **4 Claims**



1. A method of cleaning a surface of a carpet, drape, fabric, comprising the steps of:

providing a vacuum means;

providing cleaning liquid;

providing an ozone generator for creating ozone in an air stream;

creating ozone-bearing air in the generator;

injecting the ozone-bearing air into the cleaning liquid to make the cleaning liquid ozone-bearing;

delivering the ozone-bearing cleaning liquid to the surface; and then

sucking up the ozone-bearing cleaning liquid from the surface with the vacuum means.

5,611,869

REFINERY VESSEL CLEANING TREATMENT

Paul R. Hart, The Woodlands, Tex., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Oct. 25, 1995, Ser. No. 548,215

Int. Cl.[6] B08B *9/00;* **C10G** *33/04*

U.S. Cl. 134—22.19 **17 Claims**

1. A method for cleaning a refinery vessel of oil and sludge and for separating the resulting emulsion formed by said cleaning comprising the steps of (a) adding to said refinery vessel an effective cleaning amount of a composition which comprises an aqueous solution of an alkylphenol-formaldehyde resin alkoxylate, a poly(ethylene glycol)dialkyl ester, and a solvent selected from the group consisting of a C_1 to C_8 alcohol, glycol, and glycol ether, wherein the resulting emulsion of oil, sludge, and cleaner is transported to a separate vessel; and (b) adding to said emulsion an emulsion-breaking amount of an aqueous solution of a poly(alkanolamine) condensate or polyamine/aluminum salt blend.

5,611,870

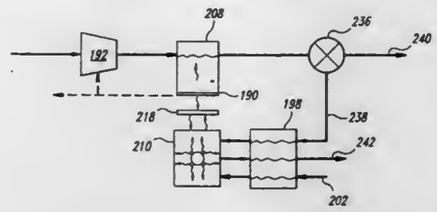
FILTER ARRAY FOR MODIFYING RADIANT THERMAL ENERGY

William E. Horne, Renton, and Mark D. Morgan, Kent, both of Wash., assignors to Edtek, Inc., Kent, Wash.

Filed Apr. 18, 1995, Ser. No. 423,957

Int. Cl.[6] H01L *31/058;* **G02B** *5/26*

U.S. Cl. 136—253 **42 Claims**



1. A system for modifying the radiant energy spectrum of a thermal energy source to a desired spectral bandwidth profile, comprising:

a source of thermal energy adapted to generate incoherent thermal radiation, and

a frequency-selective resonant micromesh filter confronting the thermal energy source, the micromesh filter including an array of resonant conductive antenna elements and a substrate for supporting the resonant conductive antenna elements,

whereby thermal radiation emitted from the thermal energy source is filtered by the micromesh filter to produce a transmitted radiant energy spectrum modified to a desired bandwidth profile about the resonant frequency of the antenna array, and

whereby thermal energy not passed by the micromesh filter is reflected back to the source by the filter with reflectivity >97% broadband.

11. The system of claim **1**, and further comprising a photovoltaic cell confronting the micromesh filter and exposed to the radiant energy transmitted from the filter,

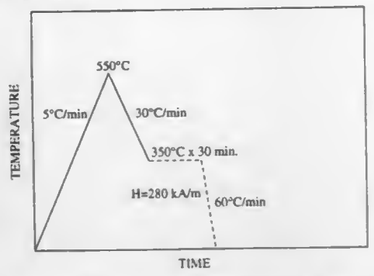
whereby the photovoltaic cell converts the incident transmitted radiant energy to electricity.

5,611,871

METHOD OF PRODUCING NANOCRYSTALLINE ALLOY HAVING HIGH PERMEABILITY

Yoshihito Yoshizawa, Fukaya; Yoshio Bizen, Yasugi; Shin Nakajima, and Shunsuke Arakawa, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 503,935
Claims priority, application Japan, Jul. 20, 1994, 6-168170
Int. Cl.[6] C21D *1/04*
U.S. Cl. 148—108 5 Claims



1. A method for producing a nanocrystalline alloy comprising the steps of:

(a) heating an amorphous alloy from a temperature lower than the crystallization temperature of said amorphous alloy to a first heat treatment temperature higher than said crystallization temperature, said amorphous alloy having a chemical composition represented by the following formula:

$$(Fe_{1-d}M_d)_{100-x-y-z-b-c-d}A_xM'_yM''_zX_bSi_cB_d \text{ (by atomic \%)},$$

wherein M is at least one element selected from the group consisting of Co and Ni, A is at least one element selected from the group consisting of Cu and Au, M' is at least one element selected from the group consisting of Ti, V, Zr, Nb, Mo, Hf, Ta and W, M" is at least one element selected from the group consisting of Cr, Mn, Sn, Zn, Ag, In, platinum group elements, Mg, Ca, Sr, Y, rare earth elements, N, O and S.X is at least one element selected from the group consisting of C, Ge, Ga, Al and P, and each of a, x, y, z, b, c and d respectively satisfies $0 \leq a \leq 0.1$, $0.1 \leq x \leq 3$, $1 \leq y \leq 10$, $0 \leq z \leq 10$, $0 \leq b \leq 10$, $11 \leq c \leq 17$ and $3 \leq d \leq 10$;

(b) keeping the alloy of step (a) at said first heat treatment temperature for 0 to less than 5 minutes; and

(c) cooling the heat-treated alloy of step (b) to room temperature at a cooling rate of 20° C./min or more at least until the temperature falls to 400° C.

5,611,872

MAGNETIC STRIPS AND METHODS FOR MAKING THE SAME

Neil R. Manning, and Richard L. Anderson, both of Marengo, Ill., assignors to The Arnold Engineering Company, Marengo, Ill.

Division of Ser. No. 114,439, Aug. 30, 1993, Pat. No. 5,431,746. This application Mar. 28, 1995, Ser. No. 412,165
Int. Cl.[6] H01F *1/147*
U.S. Cl. 148—306 8 Claims

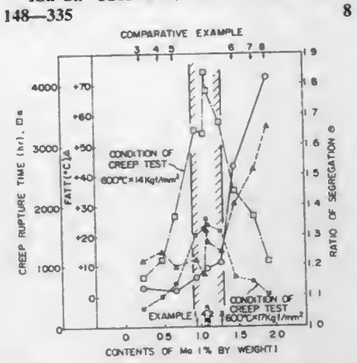
6. An electronic article surveillance system utilizing an improved ferrous alloy magnetic component, said component comprising a thin magnetic strip having a thickness of between 0.0005 and 0.003 inches, said strip consisting essentially of iron, from about 0.45 to about 0.7 weight percent carbon, from about 2.5 to about 7 weight percent chromium, from about 0.1 to about 2 weight percent molybdenum, and optionally from about 0.05 to about 0.7 weight percent vanadium, from about 0.3 to about 1.2 weight percent manganese, and from about 0.3 to about 1 weight percent silicon, and being essentially free of cobalt, said strip having a coercive level of at least about 35 oersteds and a residual induction of at least 7,000 gauss.

5,611,873

HIGH PRESSURE-LOW PRESSURE SINGLE CYLINDER TURBINE ROTOR AND METHOD OF MAKING

Masayuki Yamada, Kanagawa-ken, and Yoichi Tsuda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 29, 1995, Ser. No. 413,156
Claims priority, application Japan, Mar. 30, 1994, 6-060596
Int. Cl.[6] C21D *8/10*; C22C *38/44*;*38/46*
U.S. Cl. 148—335 8 Claims



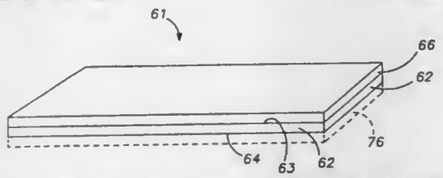
1. A high pressure-low pressure single cylinder turbine rotor comprising an electroslag remelted steel consisting essentially of, by weight, a C content in the range of from 0.2 to 0.27%, a Si content of not more than 0.1%, (not including 0%), a Mn content of not more than 0.7% (not including 0%), a Ni content in the range of from 1.5 to 1.8%, a Cr content in the range of from 2.0 to 2.3%, a Mo content in the range of from 1.0 to 1.2%, a V content in the range of from 0.18 to 0.23%, a Nb content in the range of from 0.02 to 0.05%, a W content in the range of 0.2 to 0.5%, and the balance of Fe and inevitable impurities, said inevitable impurities having a P content of not more than 0.005%, a S content of not more than 0.001%, an As content of not more than 0.004%, and a Sn content of not more than 0.008%, whereby segregation of carbon in a central portion of the turbine rotor is reduced over the segregation resulting in the absence of electroslag remelting.

5,611,874

CLAD SHAPE MEMORY ALLOY COMPOSITE STRUCTURE AND METHOD

Gholam R. Zadno-Azizi, Newark; Raj Subramaniam, Fremont, and Mir A. Imran, Palo Alto, all of Calif., assignors to Surface Genesis, Inc., Sunnyvale, Calif.

Filed Jul. 26, 1995, Ser. No. 507,752
Int. Cl.[6] B32B *7/02*; C22K *1/00*
U.S. Cl. 148—402 22 Claims



1. A composite structure comprising a body of a superelastic shape memory material and having a surface and having certain physical characteristics including transformation temperature, ductility and tensile strength and recoverable strain and cladding formed of a material covering substantially all of said surface of the body and being in intimate mechanical contact with said surface, said body and said cladding being formed of different materials, said superelastic shape memory material having a recoverable strain in excess of 1.0% and in cross-section of the composite structure forming a major portion thereof, said cladding being formed of a material excluding a shape memory material, said

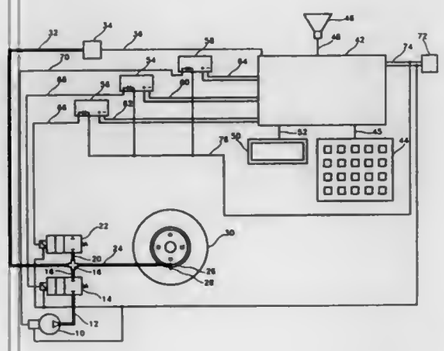
mechanical intimate contact having been formed without substantial diffusion from the material of the cladding into the material of the body so that there is no significant diffusion zone between the material of the cladding and the material of the body so that said certain physical characteristics of the body remain substantially unchanged from their values prior to said intimate mechanical contact.

5,611,875

AUTOMOTIVE TIRE INFLATION SYSTEM

Anthony A. Bachhuber, 1019 Hazel St., Oshkosh, Wis. 54901

Filed Aug. 30, 1994, Ser. No. 298,253
Int. Cl.[6] B60C *23/00*
U.S. Cl. 152—415 5 Claims



1. A controller for adjusting the pressure of pneumatic tires for vehicles from a source of pressurized air comprising:

an air flow valve connected at one end of an elongate hose extending to the pneumatic tire, the valve permitting the flow of air between the valve and the pneumatic tire through the hose, when in an open state and preventing the flow of air between the valve and the pneumatic tire through the hose when in a closed state;

a data entry terminal permitting the entry of a desired inflation pressure for the pneumatic tire;

a pressure transducer attached to the hose between the valve and the tire, the transducer providing a reading of a hose pressure of air within the hose; and

an electronic computer receiving data from the data entry terminal and the pressure transducer, connected to the air flow valve, and operating according to a stored program to:

a) close the air valve for a first predetermined time interval sufficient so as to equalize the pressure between the the hose;

b) read the hose pressure after step (a); and

c) if the desired inflation pressure differs from the hose pressure open the air flow valve for a second predetermined time interval and repeat steps (a) through (c)

wherein the electronic computer also operates according to the stored program to:

(i) read the hose pressure inflation pressure at an initial repetition of step (b) to determine a first reference hose pressure;

(ii) count the number of repetitions of step (b) until a later repetition of step (b);

(iii) determine at the later repetition of step (b) a second reference hose pressure;

(iv) calculate a difference between the first and second reference hose pressures; and

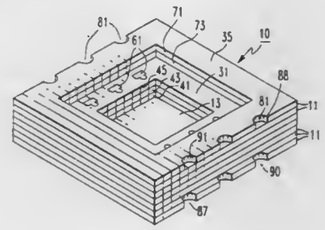
(v) cease repeating steps (a) through (c) if the number of repetitions exceeds a predetermined count and the magnitude of the difference is less than a predetermined limit.

5,611,876

METHOD OF MAKING A MULTILAYER LTCC TUB ARCHITECTURE FOR HERMETICALLY SEALING SEMICONDUCTOR DIE, EXTERNAL ELECTRICAL ACCESS FOR WHICH IS PROVIDED BY WAY OF SIDEWALL RECESSES

Charles M. Newton, Palm Bay; Edward G. Palmer, Melbourne; Albert Sanchez, and Christopher A. Myers, both of Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 84,665, Jun. 28, 1993, Pat. No. 5,455,385. This application Feb. 22, 1995, Ser. No. 392,636
Int. Cl.[6] B32B *31/18*;*31/26*
U.S. Cl. 156—89 6 Claims



1. A method of manufacturing a packaging device for a semiconductor circuit chip, comprising the steps of:

(a) providing a plurality of dielectric layers of preselected shapes;

(b) forming prescribed patterns of vias in said dielectric layers;

(c) providing conductive material in selected ones of the vias of said prescribed patterns of vias in said dielectric layers and electrical interconnect patterns intersecting selected vias on surfaces of selected ones of said layers;

(d) laminating a stack of the layers processed in step (c), so as to form a tub-configured structure having a floor member upon which a semiconductor circuit chip is mountable, and a wall member surrounding and adjoining said floor member, said wall member having an inner wall member portion adjacent to a mounting surface portion of said floor member upon which a semiconductor circuit chip is mountable, extending a first height above said floor member, and an outer wall member portion adjoining said inner wall member and extending a second height above said floor member, greater than said first height, and wherein

a portion of the electrical interconnect patterns formed in step (c) on said inner wall member portion has one or more first contact regions formed on a first, top surface portion thereof, so that said one or more first contact regions may be electrically connectable to a semiconductor circuit chip mounted on the adjacent mounting surface region of said floor member, and said electrical interconnect patterns include an electrical interconnection network which extends between said one or more first contact regions and one or more second and third contact regions defined by respective conductive vias; and

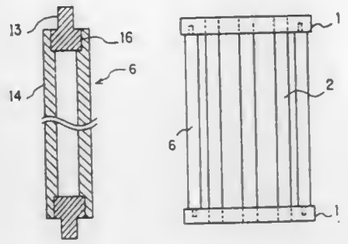
(e) removing material from the layers of said stack so as to expose said second and third contact regions, and form one or more conductive first pockets at a top surface of an outer sidewall edge of said outer wall portion, and one or more conductive second pockets at a bottom surface of said outer sidewall edge of said outer wall portion.

5,611,877

JIGS FOR MANUFACTURE OF JOINED CERAMIC STRUCTURE, AND METHOD FOR MANUFACTURING JOINED CERAMIC STRUCTURE BY USE OF JIGS

Toshihiro Yoshida, Nagoya, and Keiichiro Watanabe, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 20, 1995, Ser. No. 407,066
Claims priority, application Japan, Mar. 22, 1994, 6-050171
Int. Cl.[6] B32B *31/26;* F28F *7/00;* C04B *37/00*
U.S. Cl. 156—89 7 Claims



1. Jigs usable in a method for manufacturing a joined ceramic structure comprising a plurality of tubes and perforated plates joined to both the end portions of these tubes which comprises the steps of inserting the tubes of sintered ceramics into through-holes of the perforated plates of unsintered ceramics having a plurality of the through-holes, standing the tubes vertically to a floor surface, and then firing them in a condition where the perforated plates are positioned at the upper and lower end portions of the tubes, thereby integrally joining both the members by the utilization of a difference between firing shrinkage ratios of both the members,

said jigs comprising end portions which are inserted into jig fixation orifices beforehand formed through the perforated plates and which have an outer diameter slightly smaller than a diameter of the orifices, and

stems having an outer diameter larger than the diameter of the jig fixation orifices,

said end portions and said stems being constituted so as to be detachably combined at engagement portions where they are engaged with each other without mutual restriction,

said jigs being integrally combined with the joined ceramic structure after the completion of the joining.

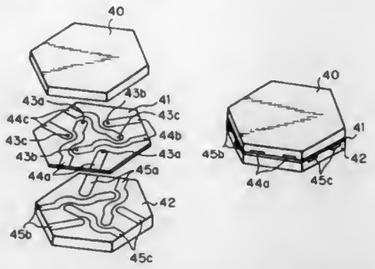
7. A method for manufacturing a joined ceramic structure comprising a plurality of tubes and perforated plates joined to both the end portions of these tubes which comprises the steps of inserting the tubes of sintered ceramics into through-holes of the perforated plates of unsintered ceramics having a plurality of the through-holes, standing the tubes vertically to a floor surface, and then firing them in a condition where the perforated plates are positioned at the upper and lower end portions of the tubes, thereby integrally joining both the members by the utilization of a difference between firing shrinkage ratios of both the members, said method comprising the steps of previously forming jig fixation orifices in the perforated plates, and then positioning the perforated plates by the use of jigs comprising end portions which are inserted into the jig fixation orifices and which have an outer diameter slightly smaller than a diameter of the orifices, and stems having an outer diameter larger than the diameter of the jig fixation orifices, said end portions and said stems being constituted so as to be detachably combined at engagement portions where they are engaged with each other without mutual restriction, said jigs being integrally combined with the joined ceramic structure after the completion of the joining.

5,611,878

METHOD OF MANUFACTURING MICROWAVE CIRCULATOR

Taro Miura, Tokyo; Makoto Kobayashi, and Kazuaki Suzuki, both of Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,855
Claims priority, application Japan, Apr. 1, 1994, 6-085265
Int. Cl.[6] B32B *31/12;31/26;* H01P *1/387*
U.S. Cl. 156—89 8 Claims



1. A method of manufacturing a circulator, said method comprising the steps of:

forming, on at least one sheet of an insulating ferromagnetic material, dummy inner conductors made of a material which is thermally decomposed at a temperature equal to or less than a sintering completion temperature of said insulating ferromagnetic material;

laminating a plurality of the sheets of the insulating ferromagnetic material so that at least one insulating ferromagnetic material sheet covers said dummy inner conductors formed on said insulating ferromagnetic material sheet;

firing the laminated insulating ferromagnetic material sheets to form an insulating ferromagnetic material body in a single continuous body and to form ducts for inner conductors at portions occupied by said dummy inner conductors;

injecting, with pressure, conductive paste at ambient temperature into said ducts in the insulating ferromagnetic material body; and

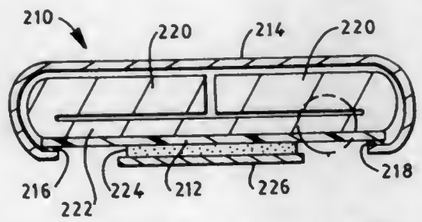
firing said insulating ferromagnetic material body to form the inner conductors in the insulating ferromagnetic body.

5,611,879

ABSORBENT ARTICLE HAVING AN ABSORBENT WITH A VARIABLE DENSITY IN THE Z DIRECTION AND A METHOD OF FORMING SAID ARTICLE

Michael T. Morman, Alpharetta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 595,055, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 136,171, Dec. 18, 1987, abandoned. This application Apr. 15, 1991, Ser. No. 685,585
Int. Cl.[6] B31F *1/00;* B32B *31/20;* B29C *49/00*
U.S. Cl. 156—201 1 Claim



1. A method of forming an absorbent article for absorbing fluid, comprising the steps of:

a) compressing a sheet of absorbent into at least two compressed portions which are integrally joined to at least one noncompressed portion at two junction lines, each portion having a different thickness;

b) folding said absorbent at each of said junction lines to vertically align said compressed portions with said noncompressed portion to create a variable density in the z direction;

c) heating an external surface of at least one of said compressed portions to a sufficient temperature to fuse said surface and form a liquid-impermeable layer; and

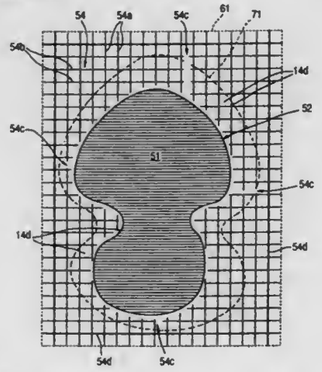
d) enclosing said absorbent with a liquid-permeable cover.

5,611,880

PHOTOFORMING METHOD AND APPARATUS

Hisatomo Onishi, Tokyo, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 114,829, Sep. 2, 1993, abandoned, which is a division of Ser. No. 18,196, Feb. 16, 1993, abandoned. This application Sep. 29, 1994, Ser. No. 314,926
Claims priority, application Japan, Feb. 10, 1992, 4-032470
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—234 6 Claims



1. A method of producing a three-dimensional object by repeatedly irradiating a semi-hardened layer of a photohardenable resin separably supported on a transparent base film as a gel to form a hardened layer which is to be laminated on a previously formed hardened layer, comprising:

(1) a first step of transferring said semi-hardened layer of said photohardenable resin separably supported on said transparent base film onto said previously formed hardened layer;

(2) a second step of irradiating partly said semi-hardened layer through said transparent base film to produce a first hardened layer and a first semi-hardened layer portion, said first hardened layer consisting of a first-region hardened layer portion and a second-region hardened layer portion, said first-region hardened layer portion to be formed into part of said three-dimensional object within a first work area, said second-region hardened layer portion being constituted by forming a first net-like layer divided by a plurality of slits into a plurality of net-like parts, each net-like part spaced by a first gap from said first-region hardened layer portion and connecting said net-like parts with a grid frame surrounding said first net-like layer to integrally connect the net-like parts of said net-like layer, and said second-region hardened layer portion guiding said first-region hardened layer portion at a predetermined position through part of said first semi-hardened layer portion remaining as said gel within said first gap;

(3) a third step of separating said base film from said first hardened layer and said first semi-hardened layer portion;

(4) a fourth step of transferring an additional semi-hardened layer of said photohardenable resin separably supported on said transparent base film as a gel onto said first hardened layer and said first semi-hardened layer portion;

(5) a fifth step of irradiating partly said additional semi-hardened layer through said transparent base film to produce a second hardened layer and a second semi-hardened layer portion, said second hardened layer consisting of a first-region hardened layer portion and a second-region hardened layer portion, the first-region hardened layer portion of said second hardened layer to be formed into part of said three-dimensional object within said first work area, the second-region hardened layer portion of said second hardened layer being constituted by forming a second net-like layer divided by a plurality of slits into a plurality of net-like parts, each net-like part spaced by a second gap from said first-region hardened layer portion of said second hardened layer to be formed outside a predetermined section area and connecting said nets-like parts with a grid frame surrounding said second net-like layer to integrally connect the net-like parts of said net-like layer, and part of said second semi-hardened layer portion being overlapped with said first semi-hardened layer portion and guiding said first region hardened layer portions of said first and second hardened layers through part of said first and second semi-hardened layer portions remaining as said gel within said first and second gaps;

(6) a sixth step of separating said base film from said second hardened layer and said second semi-hardened layer portion;

(7) a seventh step of transferring a further additional semi-hardened layer of said photohardenable resin separably supported on said transparent base film as a gel onto said second hardened layer and said second semi-hardened layer portion;

(8) an eighth step of irradiating partly said further additional semi-hardened layer through said transparent base film to produce a third hardened layer and a third semi-hardened layer portion, said third hardened layer consisting of a first-region hardened layer portion and a second-region hardened layer portion, the first-region hardened layer portion of said third hardened layer to be formed into part of said three-dimensional object with said predetermined section area, said second-region hardened layer portion of said third hardened layer being constituted by forming a third net-like layer divided by a plurality of slits into a plurality of net-like parts each net-like part spaced by a third gap from said first-region hardened layer portion of said third hardened layer and connecting said net-like parts with a grid frame surrounding said third net-like layer to integrally connect the net-like parts of said third net-like layer, and the first-region hardened layer portion produced in the present step having an overhang portion protruding beyond said first-region hardened layer portions of said first and second hardened layers so as to face the second-region hardened layer portion of said first hardened layer, whereby said second-region hardened layer portion of said first hardened layer supports said overhang portion of said first-region hardened layer portion produced in the present step through said second semi-hardened layer portion previously produced; and

(9) a ninth step of separating said base film from said third hardened layer and said third semi-hardened layer portion.

5,611,881

METHOD OF THERMAL TRANSFER RECORDING ON MARKING FILM

Yasunori Kimura; Takeshi Yoshikawa; Akifumi Kuwabara; Tatsuya Nakao; Motohiko Kashioka; Hiromi Yokoyama; Hideaki Kumada, and Toru Ohmura, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,068
Claims priority, application Japan, Aug. 14, 1992, 4-239018; Mar. 5, 1993, 5-44799; Mar. 5, 1993, 5-44800; Mar. 12, 1993, 5-52343
Int. Cl.[6] B44C *3/02*
U.S. Cl. 156—241 9 Claims

1. A thermal transfer recording method, comprising the steps of:

forming a marking film selected from the group consisting of a plastic film comprising a heat adhesive resin and a plastic film having a heat-sensitive image-receiving layer thereon, the heat-sensitive image-receiving layer comprising a heat adhesive resin;

forming a thermal transfer ribbon by forming a heat-melting ink layer on one surface of a substrate by laminating a separable layer containing a wax and a coloring ink layer on the substrate, the coloring ink layer consisting essentially of a resin and a coloring material and containing substantially no wax; and

forming a pattern on the marking film with the thermal transfer ribbon;

wherein at least one of the heat adhesive resin of the marking film and the resin of the color ink layer comprises sucrose benzoate.

5,611,882

BOARD STOCK AND METHOD OF MANUFACTURE FROM RECYCLED PAPER

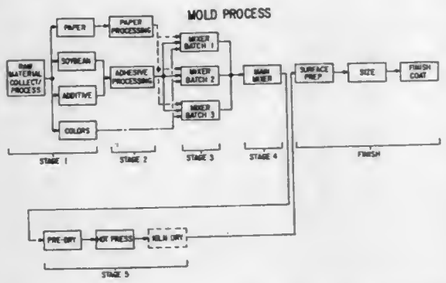
Michael J. Riebel, Mankato; Donald E. Anderson, Northfield; Carl Gruber, Le Seur; Paul Torgusen, New Ulm; Robert DeGezelle, and Molly DeGezelle, both of Mankato, all of Minn., assignors to Phenix Biocomposites, Inc., St. Peter, Minn.

PCT No. PCT/US93/07538, § 371 Date May 2, 1994, § 102(e) Date May 2, 1994, PCT Pub. No. WO94/04360, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 211,567

Int. Cl.[6] B27N *3/00;* **C09J** *4/00*

U.S. Cl. 156—272.2 **24 Claims**



1. A method for preparing a pressure-formed article comprising:

(a) preparing an adhesive binder having a pH of about 10–13 from a legume derivative and water; wherein the adhesive binder includes a colorant;

(b) blending the adhesive binder with shredded cellulosic material to form a semidry flocculent material;

(c) reducing the moisture content of the semidry flocculent material;

(d) combining at least two differently colored batches of semidry flocculent material; and

(e) pressing the flocculent material having a reduced moisture content at a temperature and pressure effective to fuse the flocculent material to form a pressure-formed article having a stone-like granular appearance.

23. A pressure-formed article comprising fused flocculent material prepared from an aqueous legume-based adhesive binder and cellulosic material; said pressure-formed article having stone-like granular appearance.

5,611,883

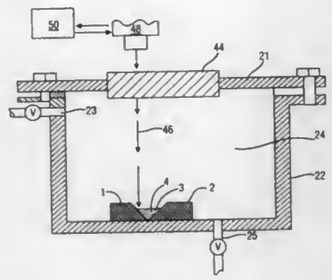
JOINING CERAMICS AND ATTACHING FASTENERS TO CERAMICS BY GAS PHASE SELECTIVE BEAM DEPOSITION

James V. Tompkins; Britton R. Birmingham; Kevin J. Jakubenas, and Harris L. Marcus, all of Austin, Tex., assignors to Board Of Regents, The University of Texas System, Austin, Tex.

Filed Jan. 9, 1995, Ser. No. 369,820

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—272.8 **14 Claims**



1. A process for joining solid compositions, comprising:

placing a first solid composition having a first joining zone and a second solid composition, discrete from said first solid composition, having a second joining zone in a chamber;

positioning a first gas phase, which comprises a substance that decomposes to a material that adheres to the first and second solid compositions during the process, proximate the first joining zone and the second joining zone;

directing an energy beam to the first and second joining zones to selectively deposit material from the first gas phase on the first joining zone and the second joining zone until a joint is formed between the first and second solid compositions wherein the joint adheres to the first and second compositions at the first and second joining zones.

5,611,884

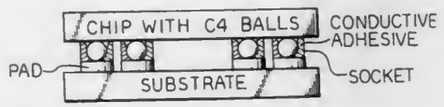
FLIP CHIP SILICONE PRESSURE SENSITIVE CONDUCTIVE ADHESIVE

Clayton R. Bearinger; Robert C. Camilletti, both of Midland, Mich.; Jack S. Kilby, Dallas, Tex.; Loren A. Haluska, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 11, 1995, Ser. No. 570,030

Int. Cl.[6] C09J *4/00*

U.S. Cl. 156—325 **8 Claims**



1. A method of joining a chip to a substrate comprising positioning a flip chip back-side-up with respect to a substrate, wherein an electrical connection can be made between the circuits on the flip chip and the substrate, applying an adhesive between the active side of the flip chip and the substrate, the adhesive being an electrically conductive silicone pressure sensitive adhesive containing (i) a silicone resin, (ii) a siloxane gum, (iii) a conductive particulate material, and optionally (iv) a peroxide catalyst, and joining the flip chip and the substrate with the conductive silicone pressure sensitive adhesive therebetween.

5,611,885

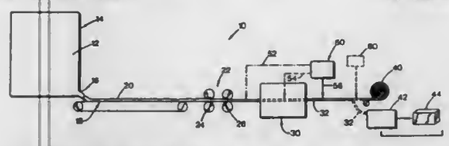
PARTICLE BINDERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Division of Ser. No. 108,217, Aug. 17, 1993, Pat. No. 5,547,745, which is a continuation-in-part of Ser. No. 931,059, Aug. 17, 1992, Pat. No. 5,543,215, Ser. No. 931,277, Aug. 17, 1992, Pat. No. 5,538,783, Ser. No. 931,213, Aug. 17, 1992, Pat. No. 5,300,192, Ser. No. 931,278, Aug. 17, 1992, Pat. No. 5,352,480, Ser. No. 931,279, Aug. 17, 1992, and Ser. No. 931,284, Aug. 17, 1992, Pat. No. 5,308,896. This application Jun. 7, 1995, Ser. No. 486,353

Int. Cl.[6] C09J *4/00*

U.S. Cl. 156—326 **50 Claims**



1. A method of binding particles to fibers with a binder, comprising the steps of:

providing fibrous material comprising a fiber having a hydrogen bonding functionality;

providing particles having a hydrogen bonding or a coordinate covalent bond forming functionality;

selecting a binder from the group consisting of a polymeric binder, a non-polymeric organic binder, and nonreactive combinations thereof with each other or with other binders, the binder comprising binder molecules, the binder molecules having at least one functional group capable of forming a hydrogen bond or a coordinate covalent bond with the particles, and at least one functional group capable of forming a hydrogen bond with the fibrous material,

wherein the polymeric binder is selected from the group consisting of polypropylene glycol, a polycarboxylic acid, a polycarboxylate, a poly(lactone) polyol, a polyamide, a polyamine, a polysulfonic acid, a polysulfonate, and combinations thereof, the polymeric binder having repeating units, wherein each repeating unit has a functional group capable of forming a hydrogen bond or a coordinate covalent bond with the particles or a hydrogen bond with the fibers, and

wherein the non-polymeric organic binder has a volatility less than water; and

exposing the particles to sufficient amounts of the binder in the presence of the fibrous material, under conditions that favor formation of non-covalent bonds, to bind the particles to the fibrous material.

5,611,886

PROCESS CHAMBER FOR SEMICONDUCTOR SUBSTRATES

Stephen A. Bachman, N. Attleboro, Mass., and Gary B. Tepolt, Pelham, N.H., assignors to Integrated Solutions, Inc., Tewksbury, Mass.

Filed Sep. 19, 1995, Ser. No. 531,195

Int. Cl.[6] B44C *1/22;* **H01L** *21/00*

U.S. Cl. 156—345 **22 Claims**

1. A process chamber for a semiconductor or analogous substrate comprising:

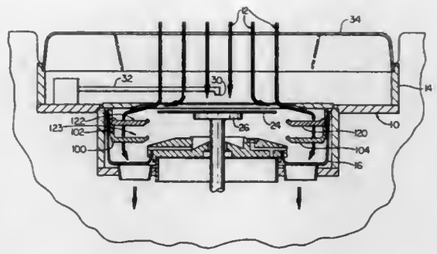
a chamber housing having side walls and a bottom surface, the housing defining a cavity and the side walls having an upper rim, and

a ring assembly disposed within said cavity, said ring assembly comprising

a ring support structure proximate said chamber side walls,

a lower ring disposed on said ring support structure and substantially parallel with said chamber bottom surface,

an upper ring disposed on said ring support structure and substantially parallel with said lower ring,



at least one ventilation passage defined by said ring support structure and adjacent said lower and upper rings, and

a well formed on each of said lower and upper rings for retaining a quantity of process chemical.

5,611,887

SINGLE FACER AND CORRUGATING ROLL FOR THE SAME

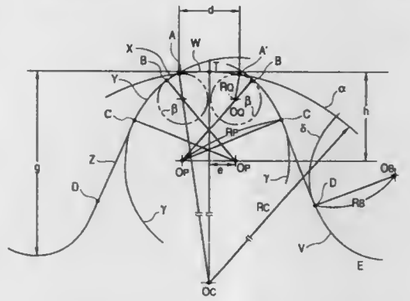
Hiroyuki Takenaka; Hiroaki Sasashige, and Takayuki Miyake, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,637

Claims priority, application Japan, May 13, 1994, 6-099441; Feb. 24, 1995, 7-036547

Int. Cl.[6] B31F *1/20;1/28*

U.S. Cl. 156—472 **9 Claims**



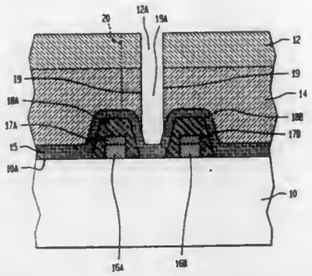
1. A corrugating apparatus for a single facer, comprising a pair of corrugating rolls which engage with each other through a tooth form in parallel to roll axes on circumferential surface portions of the rolls, wherein each tooth form of one of said corrugating rolls is defined by a first convex arc having substantially the same radius of curvature as that of an outer circle of said corrugating roll in a cross section perpendicular to an axis of said corrugating roll; and each tooth form is formed symmetrically with a tooth apex portion, said tooth form including a tooth tip portion having a cross-sectional form defined by a second arc extending from and inscribing with the first arc at a terminal portion of the first arc and a third arc extending from and circumscribing with the second arc at a terminal portion of the second arc, a straight portion extending as a tangential line contacting at a terminal portion of said third arc, and a tooth bottom portion defined by a concave arc contacting at a terminal portion of said straight line portion.

5,611,888

PLASMA ETCHING OF SEMICONDUCTORS

William F. Bosch, San Jose; Helen Zhu, Milpitas, and Syed A. Haider, Fremont, all of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Division of Ser. No. 537,309, Sep. 29, 1995. This application Jun. 7, 1996, Ser. No. 657,586
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—643.1 3 Claims



1. A method for reactive ion etching selectively a layer of silicon nitride on a silicon wafer that includes at least one layer of an oxide of silicon that is not to be etched, the method comprising the steps of:

positioning the wafer in a plasma reactor that includes a chamber within which there can be created a radio frequency discharge; and

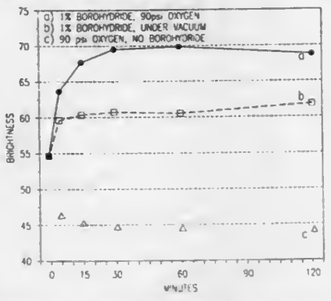
flowing through the chamber a gaseous medium that when subjected to the radio frequency discharge generates a plasma that includes reactive ions, the gaseous medium consisting essentially of between about 10 to 25 percent CHF_3 with the remainder oxygen.

5,611,889

EXOTHERMIC BLEACHING OF HIGH-YIELD PULPS SIMULTANEOUSLY WITH OXYGEN AND BOROHYDRIDE

Gordon Leary, Baie d'Urfe, and David Giampaolo, Pointe Claire, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Continuation of Ser. No. 297,288, Aug. 29, 1994, abandoned. This application Oct. 31, 1995, Ser. No. 551,046
Int. Cl.[6] D21C 9/147;9/16
U.S. Cl. 162—65 25 Claims



13. A process for increasing brightness and reducing yellowness of a high-yield lignin-containing pulp comprising:

a) in a first stage, simultaneously bleaching the high-yield pulp with oxygen gas and a borohydride in an exothermic reaction in the presence of an alkaline agent, without delignification of the pulp during bleaching and subsequently.

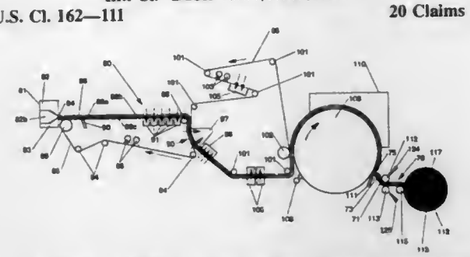
b) in a second stage, bleaching the pulp from a) with a peroxide in the presence of an alkaline agent.

5,611,890

TISSUE PAPER CONTAINING A FINE PARTICULATE FILLER

Kenneth D. Vinson; John P. Erspamer; Charles W. Neal, all of Cincinnati, Ohio, and Jeffress P. Halter, Jackson, Tenn., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Apr. 7, 1995, Ser. No. 418,990
Int. Cl.[6] D21H 15/04;17/67;17/68
U.S. Cl. 162—111 20 Claims



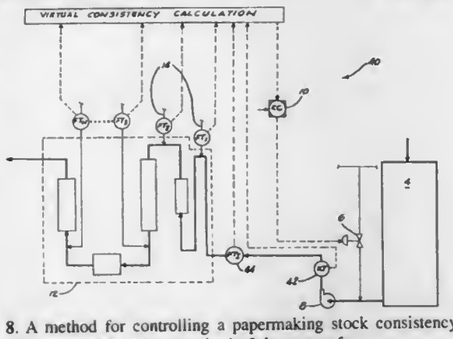
1. A strong, soft and low dusting filled, creped tissue paper comprising papermaking fibers and a non-cellulosic particulate filler, said filler comprising from about 5% to about 50% by weight of said tissue paper, wherein said particulate filler is selected from the group consisting of clay, calcium carbonate, titanium dioxide, talc, aluminum silicate, calcium silicate, alumina trihydrate, activated carbon, pearl starch, calcium sulfate, diatomaceous earth, and mixtures thereof.

5,611,891

SYSTEM AND METHOD FOR CONTROLLING PAPERMAKING STOCK CONSISTENCY

Raymond E. Hundley, III, Hot Springs, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,589
Int. Cl.[6] D21F 1/08;1/06
U.S. Cl. 162—198 8 Claims



8. A method for controlling a papermaking stock consistency, wherein said method is comprised of the steps of:

determining a desired papermaking stock consistency value;

determining a papermaking stock consistency value from a papermaking stock consistency transmitter means;

determining a papermaking stock flow value from a papermaking stock flow measuring means;

determining a process stage additive flow value from a process stage additive flow measurement means;

calculating a virtual papermaking stock consistency value according to the equation:

$$\text{Virtual Consistency} = \frac{\left[\frac{A}{100}\right] \times [B]}{B + C} \times 100$$

where

A=papermaking stock consistency value

B=papermaking stock flow value, and

C=process stage additive flow value;

comparing said virtual papermaking stock consistency value with said desired papermaking stock consistency value; and

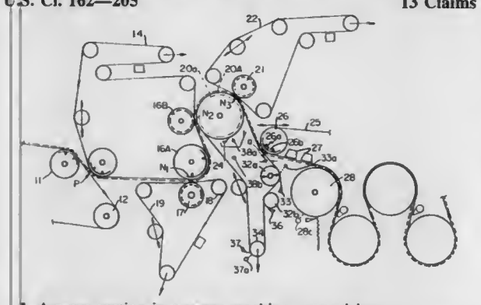
adjusting, if necessary, said virtual papermaking stock consistency value.

5,611,892

COMPACT PRESS SECTION IN A PAPER MACHINE

Mikko Karvinen, Vihtavuori; Reima Kerttula, Muurame; Jorma Laapotti, Palokka, and Juhani Pajula, Jyvaskyla, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation-in-part of Ser. No. 25,190, Mar. 2, 1993, Pat. No. 5,393,383, which is a continuation-in-part of Ser. No. 829,989, Feb. 3, 1992, Pat. No. 5,240,563. This application Oct. 6, 1994, Ser. No. 319,164
Claims priority, application Finland, Dec. 19, 1991, 916026
Int. Cl.[6] D21F 3/04
U.S. Cl. 162—205 13 Claims



1. A press section in a paper machine, comprising

a compact combination of press rolls defining press nips with each other, one of the press rolls being a center roll,

a plurality of fabrics for supporting a web in its run through said press section, one of said fabrics comprising a transfer band running a closed loop around said center roll and having an outer face upon which the web is supported,

means for transferring the web from said transfer band in a transfer zone after said at least one press nip as a fully closed draw onto a drying wire or press fabric, said web transferring means comprising a suction roll located after said center roll in the running direction of the web,

means for preventing the web from remaining on said transfer band after said transfer zone,

means for cleaning said outer face of said transfer band, and

deflecting means located in said run of the web through the press section in proximity to said suction roll, the web being deflected by said deflecting means in conjunction with said suction roll, said deflecting means comprising a guide shoe or a guide roll located immediately before said transfer zone by whose means the detaching of the web from said outer face of said transfer band and the transfer of the web as a closed draw onto said drying wire or onto said press fabric are promoted.

12. A method for dewatering a web in a paper machine including a press section and a drying section, the press section comprising a compact combination of press rolls defining press nips with each other, one of said press rolls being a center roll and a plurality of fabrics for supporting a web in its run through said press section, comprising the steps of:

carrying the web on an outer face of a transfer band running a closed loop around said center roll,

arranging a suction roll after said at least one press nip in the running direction of said transfer band,

transferring the web from said outer face of said transfer band after said at least one press nip in a transfer zone as a fully closed draw onto a drying wire in proximity to said suction roll,

promoting detaching of the web from said outer face of said transfer band and the transfer of the web as a fully closed draw onto the drying wire by arranging deflecting means immediately before said transfer zone in proximity to said suction roll, the web being deflected by said deflecting means in conjunction with said suction roll, said deflecting means comprising a guide shoe or a guide roll,

doctoring said outer face of said transfer band to prevent the web from remaining on said transfer band after said transfer zone and to clean said outer face of said transfer band,

arranging a leading roll inside said transfer band loop, and

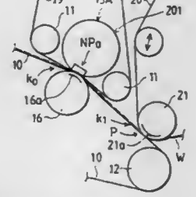
adjusting a contact angle defined between said transfer band and said suction roll by moving said suction roll.

5,611,893

DEVICE FOR DEWATERING OF A PAPER WEB INCLUDING PREPRESSING WITH EXTENDED NIP SHOE

Juhani Pajula, Jyvaskyla; Martti Hipsimaki, Jyska; Juha Kivimaa; Pekka Taskinen, both of Jyvaskyla; Jorma Laapotti, Palokka, and Mikko Karvinen, Vihtavuori, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Division of Ser. No. 26,851, Mar. 5, 1993, Pat. No. 5,389,205, which is a continuation-in-part of Ser. No. 795,043, Nov. 20, 1991, abandoned. This application Jan. 24, 1995, Ser. No. 377,173
Claims priority, application Finland, Nov. 23, 1990, 905798
Int. Cl.[6] D21F 3/06
U.S. Cl. 162—360.2 16 Claims



1. A paper machine, comprising

a forming section for forming a paper web,

a drying section for drying the web,

a press section arranged between the forming section and the drying section for dewatering the web by pressing, said press section comprising

an arrangement of press fabrics and press rolls defining at least first and second separate press-nip zones for dewatering the web in each of which the web is transferred from one of said fabrics to another one of said fabrics, the web being transferred in at least a last one of said press-nip zones such that there is a substantially non-rewetting transfer of the web between said fabrics,

said fabrics being arranged such that the web to be pressed has a closed draw from a pick-up point on a forming wire at a first end of said press section at which the web is transferred to said press section from the forming section to a transfer point at an opposite end of said press section at which the web is transferred to the drying section, said web passing through said press section without free, unsupported draws,

at least one of said press nip-zones comprising an extended-nip press zone defined between a band roll and an adjustable-crown hollow-faced roll, the web having a substantially non-rewetting transfer in said extended-nip press zone, the length of said extended-nip press zone in a machine direction being larger than about 100 mm, said band roll comprising a thin, elastic hose mantle having a

substantially circular cross-sectional shape, roll ends fixed to said hose mantle, a stationary inner frame around which said roll ends and said hose mantle rotate, an adjustable glide shoe attached to said inner frame, and hydraulic loading members arranged on said inner frame and adapted to load said adjustable glide shoe in a controlled manner such that the compression pressure in the extended-nip zone can be controlled both in the machine direction and in a cross-machine direction transverse to the machine direction, said adjustable-crown hollow-faced roll comprising a cylinder mantle, glide shoes arranged in the cross-machine direction and adapted to engage an inner face of said cylinder mantle and actuator means arranged in said adjustable-crown hollow-faced roll to load said glide shoes against said inner face of said cylinder mantle, and

means for draining-pressing the web as it is carried on a single-wire run of said forming section, said draining-pressing means comprising a pre-pressing zone formed between the forming wire and a pre-press fabric, the web being carried on the single-wire run of the forming wire after said pre-pressing zone, said pre-pressing zone comprising an extended-nip having a length greater than about 100 mm and a compression pressure from about 0.5 to about 3 MPa, said extended-nip comprising a press shoe arranged in a loop of said pre-press fabric.

5,611,894

METHOD AND APPARATUS FOR CHANGING SOLVENT COMPOSITION IN A SOLVENT RECOVERY SYSTEM OF A DEWAXING APPARATUS

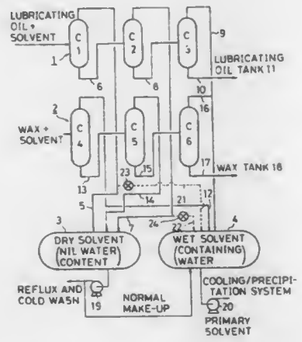
Akira Kawamura, Kanagawa; Susumu Suzuki, Yokosuka, and Masahumi Imamura, Yokohama, all of Japan, assignors to Nippon Petroleum Refining Company Limited, Tokyo, Japan

Division of Ser. No. 294,706, Aug. 23, 1994. This application Jun. 7, 1995, Ser. No. 483,067

Claims priority, application Japan, Aug. 27, 1993, 5-212887

Int. Cl.[6] C10G *73/00*; B01D *11/00*

U.S. Cl. 196—14.5 **3 Claims**



1. Apparatus for changing the solvent composition in a solvent recovery system of a dewaxing apparatus which is used for manufacturing wax and lubricating oil by mixing a mixed solvent of MEK and toluene with stock oil, cooling the mixture and filtering and which consisting essentially of: A) a lubricating oil and solvent recovery system, B) a wax and solvent recovery system, C) a dry solvent tank, D) a wet solvent tank, and E) dry solvent distribution means, wherein

means are provided for introducing a lubricating oil and mixed MEK/toluene solvent into said A) lubricating oil and solvent recovery system and for evaporating off said solvent from the lubricating oil, said recovered dry solvent being conducted by a pipe to C) the dry solvent tank, which also receives dry solvent via a pipe from B) said wax and solvent recovery system, where solvent is separated from wax by evaporation, the D) wet solvent tank similarly receiving wet solvent by way of pipes from the two recovery systems A) and B), while said E) dry solvent distribution means transmits dry solvent as make-up to maintain the amount of solvent in said D) wet solvent tank, conducts lubricating oil to a lubricating oil tank, and supplies dry solvent for reflux use in temperature adjustment and for cold wash use in washing the wax in the B) wax and solvent recovery system, wherein the dry solvent in said C) dry solvent tank is supplied as a secondary solvent for reflux use in temperature adjustment and for cold wash use in washing the wax, and is also supplied to the D) wet solvent tank for normal make-up.

5,611,895

ARRANGEMENT FOR REMOVING AND COLLECTING THE DISTILLATE OF ROTARY VACUUM EVAPORATORS

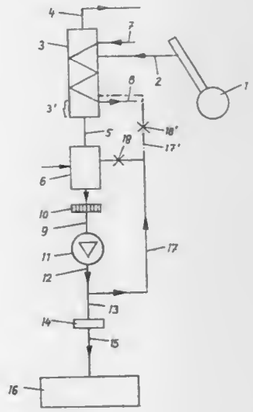
Hans-Georg Genser, Bölleinsmühle, 91639 Wolframs-Eschenbach, Germany

Filed Feb. 15, 1995, Ser. No. 388,880

Claims priority, application Germany, Feb. 23, 1994, 44 05 717.2

Int. Cl.[6] B01D *3/14*

U.S. Cl. 202—182 **20 Claims**



1. In an arrangement for discharging and collecting distillate of a rotary vacuum evaporator, the arrangement comprising a rotating flask and a cooler for liquefying the distillate, means for conducting the distillate from the rotating flask to the cooler, means for conducting the distillate from the cooler into a collector and from the collector into a storage container, and a safety check valve provided between the collector and the storage container, the improvement comprising the safety check valve being a pressure control valve, further comprising an excess pressure producer for increasing pressure of the distillate provided between the collector and the pressure control valve, the pressure control valve and the excess pressure producer being configured so as to interact in such a way that the pressure control valve opens when a predetermined excess pressure of the distillate has been reached.

5,611,896

PRODUCTION OF FLUOROCARBON COMPOUNDS

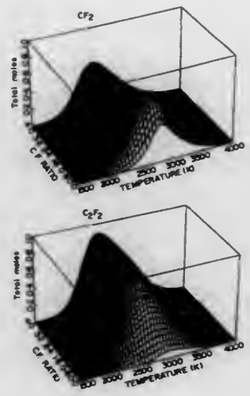
Jacobus Swanepoel, and Ruan Lombaard, both of Pretoria, South Africa, assignors to Atomic Energy Corporation of S. Africa Limited, Pelindaba, South Africa

Filed Oct. 13, 1994, Ser. No. 323,073

Claims priority, application South Africa, Oct. 14, 1993, 93/7644

Int. Cl.[6] C07C *17/00*

U.S. Cl. 204—169 **24 Claims**



17. A method for producing a fluorocarbon compound, the method comprising the steps of:

(a) providing a high temperature zone by providing an electrical arc between essentially non-consumable electrodes;

(b) providing a mixing zone adjacent the high temperature zone;

(c) feeding an input gas stream containing at least one fluorocarbon substance into the high temperature zone and generating a thermal plasma in the high temperature zone, the thermal plasma having fluorine-containing species and carbon-containing species, the thermal plasma having a molar C:F ratio, x, and a specific enthalpy, y;

(d) controlling the molar C:F ratio, x in the thermal plasma at a selected value between about 0.4 and 2;

(e) controlling in the high temperature zone the specific enthalpy, y, of the thermal plasma between about 1 kWh/kg and about 10 kWh/kg;

(f) introducing a particulate carbon-containing substance into the mixing zone to mix with the thermal plasma while maintaining the C:F ratio at the selected value to form a reactive thermal mixture in which the carbon-containing particles reach temperatures of between about 2000 K. and 3000 K., the reactive thermal mixture having reactive species including reactive fluorine-containing precursors and reactive carbon-containing precursors, the reactive thermal mixture having a specific enthalpy of not less than about 3 kWh/kg;

(g) maintaining the reactive thermal mixture at the conditions defined in step (f) for a time interval; and

(h) rapidly cooling the reactive thermal mixture in a cooling zone in a manner to produce a product mixture having at least one fluorocarbon compound.

5,611,897

Patent Not Issued For This Number

5,611,898

REACTION CHAMBER HAVING IN SITU OXYGEN GENERATION

Glenn F. Guhman, and Madbukar L. Joshi, both of Chittenden, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 351,868, Dec. 8, 1994, abandoned. This application May 25, 1995, Ser. No. 450,063

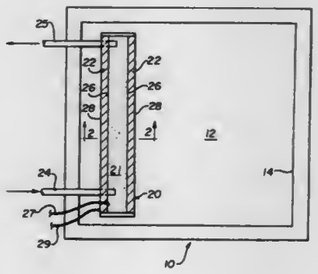
Int. Cl.[6] C25B *9/00*; C23C *16/00*

U.S. Cl. 204—262 **22 Claims**

1. A semiconductor processing device, comprising:

a processing chamber for processing a semiconductor substrate;

an electrolyte oxygen pump assembly for generating ultra-pure oxygen, said assembly being positioned such that ultra-pure oxygen leaving said oxygen pump assembly enters directly into said processing chamber without passing through any intermediate structure, whereby contaminant introduction into said chamber is minimized; and



a means for supplying an oxygen containing medium to said oxygen pump assembly.

2. The device of claim 1 wherein said oxygen pump assembly is positioned within said processing chamber.

5. The device of claim 2 further comprising a means for heating said electrolyte.

5,611,899

DEVICE FOR SUPPRESSING FLASHOVERS IN CATHODE SPUTTERING INSTALLATIONS

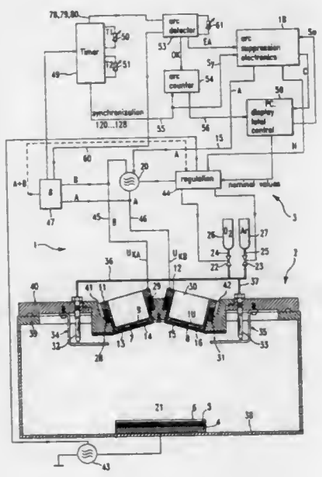
Wolfram Maass, Eriensee, Germany, assignor to Leybold Aktiengesellschaft, Hanau, Germany

Filed Nov. 20, 1995, Ser. No. 560,845

Claims priority, application Germany, Nov. 19, 1994, 44 41 206.1

Int. Cl.[6] C23C *14/54*

U.S. Cl. 204—298.08 **18 Claims**



4. Apparatus for suppressing arcs in a cathode sputtering installation having at least one cathode to which a target is mounted and at least one anode to which a substrate is mounted, said apparatus comprising

an AC voltage source having an output connected to said at least one cathode, said output providing voltage as a series of halfwaves,

halfwave counting means for counting said halfwaves,

arc detection means for detecting arcs at said at least one cathode,

arc counting means for counting the number of arcs detected by said detection means,

means for determining the ratio of counted halfwaves to counted arcs, and

switch off means for switching off the connection between the AC voltage source and the cathode means for a switch off time t_a when said ratio reaches a threshold ratio.

5,611,900

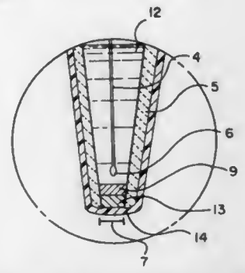
MICROBIOSENSOR USED IN-SITU

R. Mark Worden, Holt, Mich.; David Emerson, and Serban F. Peteu, both of East Lansing, all of Mich., assignors to Michigan State University, East Lansing, Mich.

Filed Jul. 20, 1995, Ser. No. 504,687

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—403 **15 Claims**



1. A microbiosensor that is an amperometric, internal referenced, oxygen microelectrode measuring device, having a biological interface as a sensing device that consumes or generates oxygen when exposed to an organic analyte in a response directly proportional to the tapered concentration of the analyte comprising:

a tapered casing having an aperture at its tip no greater than 40 micrometers.

enclosed within the tapered casing an anode, which serves as an internal reference; a cathode; an electrolyte therebetween and a membrane in the aperture that prevents contact between a specimen and the components inside the tapered casing, and

attached to the tip an immobilized biological interface layer which measures an analyte.

5,611,901

OXYGEN MEASURING PROBE

Alan J. Cocker, Ormskirk, and Esther C. Batchelor, Burscough, both of United Kingdom, assignors to Pilkington plc, United Kingdom

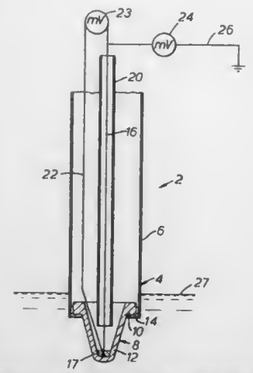
Division of Ser. No. 357,788, Dec. 16, 1994, Pat. No. 5,480,523, which is a continuation of Ser. No. 35,786, Mar. 23, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,487

Claims priority, application United Kingdom, Mar. 24, 1992, 9206367

Int. Cl.[6] G01N *27/411*

U.S. Cl. 204—422 **16 Claims**

1. An oxygen measuring probe for use with molten metal baths for the manufacture of glass, which probe comprises: a tubular probe body comprising an elongate tubular member closed by a separate tip part which is connected thereto, which tip part is formed of stabilized zirconia which constitutes a solid electrolyte through which oxygen ions can pass, said tubular member being formed of alumina; and an emf measuring device for measuring the emf generated in use between inner and outer surfaces of the zirconia tip part, wherein the zirconia tip part comprises a generally annular portion received within an end of the tubular member, at which the tip part is sealed to the elongate tubular member by a glass ceramic material having a thermal expansion coefficient between that of alumina and zirconia, and a hollow portion depending therefrom having inwardly sloping walls which meet to define an apex at an end of the zirconia tip part remote from the tubular member, to thereby define a substantially conically shaped



portion and wherein a thermocouple is disposed in said substantially conically shaped portion of the tip part and is in contact with an inner surface thereof for measuring the temperature of the zirconia tip part, said thermocouple being located between said inwardly sloping walls and in contact with the inner surface of the tip part at the apex.

5,611,902

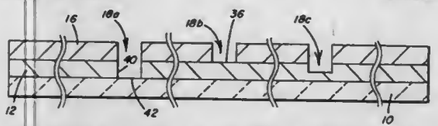
CATHODE IN A LAYERED CIRCUIT AND ELECTROCHEMICAL CELL FOR MEASUREMENT OF OXYGEN IN FLUIDS

Matthew J. Leader, Laguna Niguel, and Jeffery A. Graves, San Juan Capistrano, both of Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 106,504, Aug. 13, 1993, abandoned, which is a division of Ser. No. 624,948, Dec. 10, 1990, Pat. No. 5,246,576. This application Dec. 13, 1994, Ser. No. 355,423

Int. Cl.[6] G01N *27/404*

U.S. Cl. 204—431 **8 Claims**



1. In a sensing device for measuring PO_2 in a fluid, the improvement comprising an electrode assembly for PO_2, wherein the electrode assembly is part of a printed wiring board and wherein the electrode assembly, comprises:

a nonconducting substrate,

at least one thick film metallic layer overlying the said nonconducting substrate in a pattern to provide distinct cathode and anode and conductive pathways to both electrodes where the pathways are electrically isolated from each other and where each is capable of eventual external electrical connection from the electrode assembly and where the anode has a semicircular shape for uniform current density between the anode and cathode electrodes,

an encapsulant layer overlying that portion of said metallic layer other than the anode to electrically isolate the conductive pathway to the anode from the conductive pathway to the cathode in the metallic layer and having at least one laser-produced finite-sided opening with a bottom, where at least a portion of the walls of said opening are formed by the encapsulant layer, and where the opening exposes in addition to the portion of the walls of the opening that is comprised of the encapsulant layer, the remaining portion of the walls that is comprised of the metallic layer, and wherein the bottom of the opening is comprised of the metallic layer, so that the metallic portion of the walls and of the bottom act as the cathode, and where the opening is capable of ionic contact and where the cathode has a diameter between 0.001 and 0.0015±0.0003 inches, and where the ratio of the surface area of the anode to the surface area of the cathode is between 50 to 1 and 300 to 1; and

an electrolyte present in the electrode assembly to provide ionic contact with the cathode and the adjacent anode for electrical ionic relationship between the cathode and anode.

5,611,903

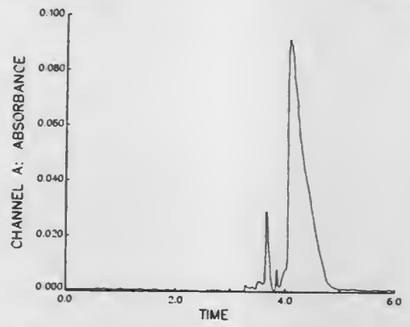
CAPILLARY ELECTROPHORESIS METHOD USING INITIALIZED CAPILLARY AND POLYANION-CONTAINING BUFFER AND CHEMICAL KIT THEREFOR

Jacques Janssens, Watermael-Boitsfort; Roland Chevigne, Wepion, and Philippe Louis, Dalhem, all of Belgium, assignors to Analis S. A., Namur, Belgium

Filed Mar. 22, 1995, Ser. No. 412,032

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—454 **25 Claims**



1. A capillary electrophoresis method comprising the following steps:

a. rinsing a ready-to-use capillary with an initiator, which produces producing an initialized capillary, said capillary comprising a cathode end and an anode end, said initiator comprising a molecule or a mixture of molecules having a molecular weight higher than 1000 daltons and bearing positive charges at the pH of a capillary buffer used in subsequent step (b), wherein said initiator becomes a polycation when bearing only positive charges and becomes a polyelectrolyte when bearing positive and negative charges;

b. adding a capillary buffer into said initialized capillary, wherein said capillary buffer comprises a polyanion or a mixture of different polyanions, said polyanion or each polyanion in said mixture of polyanions being selected from the group consisting of polysaccharide derivatives, synthetic polymer derivatives, polyacidic amino-acids, polynucleotides, polyphosphoric acids, and a mixture of any of the foregoing, wherein said polyanion or each polyanion in said mixture of polyanions bears a net negative charge at the pH of said capillary buffer;

c. adding a sample to be analyzed into said initialized capillary; and

d. submitting said sample to capillary electrophoresis.

5,611,904

ELECTROCHROMATOGRAPHY APPARATUS

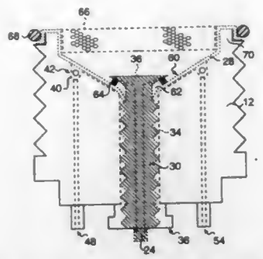
Kenneth D. Cole, Gaithersburg, Md., and Heriberto Cabezas, Jr., Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 9, 1995, Ser. No. 555,449

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—640 **13 Claims**

1. A fitting for an electrochromatography apparatus comprising:



a fitting body comprised of a non-conducting material for attaching to one end of an electrochromatography column, said fitting body including:

a fluid passageway extending through said fitting body for communicating with the electrochromatography column; and

an electrode chamber within said fitting body annularly surrounding at least a portion of said fluid passageway, said electrode chamber including inlet and outlet conduits which allow an electrode buffer solution to flow into and out of said electrode chamber;

an electrode for applying an electric field to said fluid passageway, said electrode being suspended in said electrode chamber and annularly surrounding at least a portion of said fluid passageway; and

a membrane separating said fluid passageway from said electrode chamber, said membrane allowing fluids and ions to pass between said electrode chamber and said fluid passageway and preventing the flow of electrolytic products, gases, proteins and macromolecules between said electrode chamber and said fluid passageway.

5,611,905

ELECTROPLATING PROCESS

Steven M. Florio, Hopkinton; Jeffrey P. Burress, Milford; Carl J. Colangelo, New Bedford; Edward C. Couble, Brockton, and Mark J. Kapeckas, Worcester, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Filed Jun. 9, 1995, Ser. No. 488,943

Int. Cl.[6] C25D *15/00;5/02;* **C23C** *28/00;* **H01B** *1/04*

U.S. Cl. 205—109 **13 Claims**

1. A process for depositing metal on a substrate having metallic and non-metallic regions, said process comprising the steps of providing an aqueous dispersion of carbonaceous particles containing an etchant for the metallic regions in an amount of from 0.1 to 10 percent by weight of said dispersion, contacting said substrate with said dispersion to form a coating of said dispersion over all surfaces of said substrate and simultaneously dissolve the top surface of said metallic regions, removing carbonaceous coating from the metallic regions of the substrate and electroplating metal on said substrate from an electrolytic metal plating solution.

5,611,906

PREPARATION OF N-ALLYL COMPOUNDS

Bernd Burkhart, Mutterstadt; Alfred Oftring, Bad Durkheim; Rudi Widder, Leimen, and Ulrich Schroeder, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

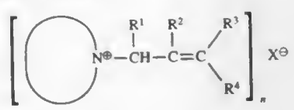
Division of Ser. No. 318,743, Oct. 19, 1994. This application Jun. 7, 1995, Ser. No. 487,524

Claims priority, application Germany, May 16, 1992, 42 16 314.5

Int. Cl.[6] C25D *3/62*

U.S. Cl. 205—271 **9 Claims**

1. A process for the manufacture of nickel-plated shaped articles by galvanic deposition of nickel from aqueous/acid solution containing a brightener, wherein the brightener used is an N-allyl compound of the formula



in which



denotes a nitrogen-containing heterocyclic compound,

R^1, R^3, and R^4 independently denote hydrogen or C_1–C_4 alkyl,

R^2 denotes hydrogen or methyl,

n is equal to 1, 2, 3, or 4, and

$X^{\ominus}$ denotes a water-solubilizing anion.

5,611,907

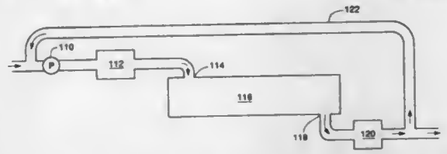
ELECTROLYTIC TREATMENT DEVICE AND METHOD FOR USING SAME

Robert J. Herbst; F. William Gilmore, both of Denver, Colo., and Scott W. Powell, West Jordan, Utah, assignors to Global Water Industries, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 229,028, Apr. 18, 1994, Pat. No. 5,423,962. This application Jun. 7, 1995, Ser. No. 487,607

Int. Cl.[6] C02F *1/461;1/463*

U.S. Cl. 205—742 **28 Claims**



1. A method for electrolytically treating a waste stream, comprising the steps of:

(a) polarizing said waste stream by passing said waste stream through polarizing means having an electric potential that is different than ground potential;

(b) passing said waste stream through a first electric field established between a first elongate electrode having a first potential and a second elongate electrode having a second potential that is different from said first potential;

(c) passing said waste stream through a second electric field established between said second elongate electrode and a third elongate electrode, said third elongate electrode having a third potential that is different from said second potential; and

(d) treating said waste stream to remove solids therefrom and form a treated waste stream.

5,611,908

METHOD OF OPERATING AND AMPEROMETRIC MEASURING CELL

Hans Matthiessen, Bad Schwartau, and Matthias Studer, Pansdorf, both of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Dec. 21, 1995, Ser. No. 576,456

Claims priority, application Germany, Dec. 22, 1994, 44 45 948.3

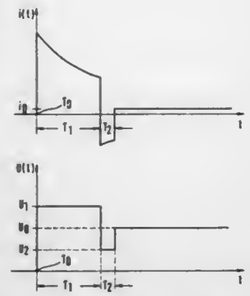
Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—775 **3 Claims**

1. A method of operating an amperometric measuring cell for measuring a sample, the measuring cell including: an electrolyte chamber having an opening directed toward the sample to be measured and holding an electrolyte; a permeable membrane mounted on said chamber for closing off said chamber; and, a measuring electrode and a counter electrode disposed in said chamber so as to be in spaced relationship to each other; and, the method comprising the steps of:

providing a voltage source outputting a voltage U for applying said voltage U across said electrodes to generate a sensor current i(t) between said electrodes; and,

starting with said voltage U across said electrodes at a reference voltage U_0 at a reference time T_O and applying a voltage U_1 during a first time span T_1 measured from said reference time T_O with said voltage U_1 being increased relative to said reference voltage U_0, wherein the sensor current i(t) adjusts more rapidly to a sensor rest current i_0 to shorten the run time of the cell.



chamber having an opening directed toward the sample to be measured and holding an electrolyte; a permeable membrane mounted on said chamber for closing off said chamber; and, a measuring electrode and a counter electrode disposed in said chamber so as to be in spaced relationship to each other; and, the method comprising the steps of:

providing a voltage source outputting a voltage U for applying said voltage U across said electrodes to generate a sensor current i(t) between said electrodes; and,

starting with said voltage U across said electrodes at a reference voltage U_0 at a reference time T_O and applying a voltage U_1 during a first time span T_1 measured from said reference time T_O with said voltage U_1 being increased relative to said reference voltage U_0, wherein the sensor current i(t) adjusts more rapidly to a sensor rest current i_0 to shorten the run time of the cell.

5,611,909

METHOD FOR DETECTING SOURCE OF ERROR IN AN AMPEROMETRIC MEASURING CELL

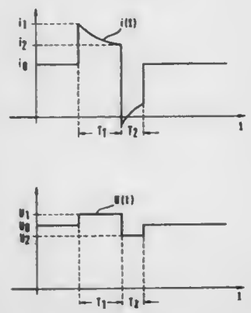
Matthias Studer, Pansdorf, Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Dec. 21, 1995, Ser. No. 576,457

Claims priority, application Germany, Dec. 22, 1994, 44 45 947.5

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—775 **6 Claims**



1. A method for detecting error sources in an amperometric measuring cell for measuring a sample, the measuring cell including: an electrolyte chamber having an opening directed toward the sample to be measured and holding an electrolyte; a permeable membrane mounted on said chamber for closing off said chamber; and, a measuring electrode and a counter electrode disposed in said chamber so as to be in spaced relationship to each other; and, the method comprising the steps of:

providing a voltage source outputting a voltage U to apply across said electrodes to generate a sensor current i(t) between said electrodes;

starting with said voltage U across said electrodes at a reference voltage U_0 with a reference current i_0, increasing or decreasing said voltage U to a first voltage U_1 during a first time span T_1;

shortly after said voltage U assumes said first voltage U_1, measuring a first sensor current i_1 and/or, toward the end of said first time span T_1, measuring a second sensor current i_2; and,

comparing said sensor currents i_1 and/or i_2 to said reference current i_0, wherein the comparison of the sensor currents i_1 and/or i_2 to the reference current i_0 detects a fault in the measuring cell.

5,611,910

METHOD FOR REDUCING SULFUR EMISSIONS IN PROCESSING AIR-BLOWN ASPHALT

Jorge A. Marzari, Bolingbrook; Michael R. Franzen, Lombard, and Jeffrey W. Smith, Bolingbrook, all of Ill., assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 459,081, Jun. 2, 1995. This application Feb. 12, 1996, Ser. No. 599,773

Int. Cl.[6] C10C *1/20;3/02*

U.S. Cl. 208—44 **20 Claims**

1. A method for reducing emissions from an asphalt blowing process comprising adding to aspbalt an emission-reducing additive in an amount sufficient to reduce the SO_x emissions from the blowing process by at least about 25 percent by weight over the same process without the additive, wherein the additive comprises: (a) at least one compound selected from the group consisting of metal hydroxides, metal oxides, metal carbonates and metal bicarbonates, where the metal is selected from the group consisting of sodium, potassium, calcium and magnesium; and (b) at least one compound selected from the group consisting of metal hydroxides, metal oxides, metal carbonates and metal bicarbonates, where the metal is selected from the group consisting of zinc, copper and aluminum.

5,611,911

HIGH TEMPERATURE CORROSION INHIBITOR

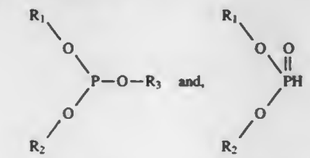
James G. Edmondson, Conroe, Tex., assignor to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 213,293, Mar. 15, 1994, Pat. No. 5,500,107. This application Jan. 17, 1996, Ser. No. 587,439

Int. Cl.[6] C10G *9/12*

U.S. Cl. 208—47 **4 Claims**

1. A method for inhibiting the corrosion of the internal metallic surfaces of the equipment used in the processing of crude oil containing sulfur compounds between about 400° and 790° F. comprising adding to the crude oil a corrosion inhibiting amount of an aryl containing phosphite compound having a structure selected from the group consisting of:



wherein R_1, R_2 and R_3 are C_6 to C_{12} and at least one R group is an aryl radical.

5,611,912

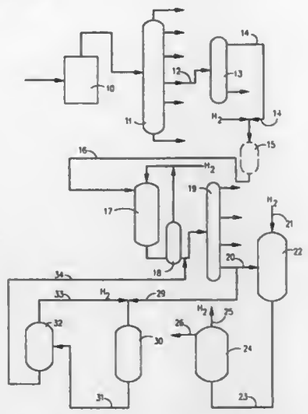
PRODUCTION OF HIGH CETANE DIESEL FUEL BY EMPLOYING HYDROCRACKING AND CATALYTIC DEWAXING TECHNIQUES

Scott Han, Lawrenceville; Roland H. Heck, Pennington, and Michael E. Ehlers, Lakewood, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 375,749, Jan. 20, 1995, which is a continuation-in-part of Ser. No. 112,029, Aug. 26, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,700

Int. Cl.[6] C10G *47/18;73/02*

U.S. Cl. 208—58 **17 Claims**



1. A process for producing a high cetane diesel fuel having a cetane number of at least 55 at less than or equal to 41° F. cloud point, the process comprising the following steps:

(a) hydrocracking a highly aromatic, substantially dealkylated hydrocarbon feed produced by the catalytic cracking of a hydrocarbon fraction, the feed boiling at a temperature greater than about 235° F., the feed having an aromatic content of at least 30 weight percent at a hydrogen partial pressure of from about 1500 psig to about 3000 psig to form a hydrocracked product fraction boiling between about 400 to about 1000° F., having an API gravity of at least 40, a sulfur content of not more than 1 wt % wherein the hydrocracking is conducted in the presence of a large pore size zeolite catalyst having acidic and hydrogenation-dehydrogenation functionality;

(b) catalytically dewaxing the fraction of the HDC effluent boiling between 400° F. and 1000° F. by passing said fraction over a fixed bed of dewaxing catalyst wherein the dewaxing catalyst consists essentially of an intermediate pore size zeolite and binder, at conditions comprising a range of from 200 to 800 psig, from 1000 to 3000 SCF/BBL H_2, a space velocity from 0.5 to 2.5 LHSV, and a temperature from 400° to 1000° F. to obtain a diesel fuel.

5,611,913

DISSOLVING SALT FOR SOLID CAUSTIC WITH OIL

Tsoung Y. Yan, Wayne, Pa., assignor to Mobile Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1994, Ser. No. 367,412

Int. Cl.[6] C10G *19/00*

U.S. Cl. 208—140 **9 Claims**

1. A process for producing a low halide reformate using a Pt and halogen containing reforming catalyst comprising:

a. hydrotreating and distilling a naphtha fraction to produce a hydrotreated naphtha containing less than 1 wt ppm acidic halide compounds and less than 50 wt ppm water;

b. catalytically reforming said hydrotreated naphtha over a halogen and Pt containing reforming catalyst at catalytic reforming conditions to produce a reformate liquid fraction containing at least 0.1 wt ppm acidic halide compounds and less than 25 wt ppm water; and

c. depositing solid salt deposits on a bed of solid caustic by contacting said reformate liquid containing acidic halide compounds with solid caustic at reaction conditions sufficient to remove at least a majority of said acidic halide compounds and produce:

a de-halided reformate which is removed from contact with said solid caustic as a product of the process, and

solid caustic containing solid salt deposits; and

d. regenerating, at least periodically, said solid caustic containing solid salt deposits by contacting said solid caustic with a wash liquid hydrocarbon phase containing dissolved or entrained water, and wherein the water content of said liquid hydrocarbon phase is greater than that of said reformate liquid fraction, to produce solid caustic containing no or less solid deposits.

5,611,914

METHOD FOR REMOVING SULFUR FROM A HYDROCARBON FEED

William R. Prince, Torrance, and Robert L. Jacobson, Vallejo, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Filed Aug. 12, 1994, Ser. No. 289,536

Int. Cl.[6] C10G *45/06*

U.S. Cl. 208—217 **23 Claims**

1. A method for removing sulfur from a hydrotreated naphtha feedsock containing sulfur compounds, comprising contacting the naphtha feedstock with massive nickel catalyst in the presence of hydrogen, with the amount of hydrogen being such that the molar ratio of hydrogen to hydrocarbon is about 1 and the temperature of the contacting step is in the range of from about 350° to 400° F.

5,611,915

PROCESS FOR REMOVAL OF HETEROATOMS UNDER REDUCING CONDITIONS IN SUPERCRITICAL WATER

Michael Siskin, Morristown; David T. Ferrughelli, Flemington, both of N.J.; Alan R. Katritzky, Gainesville, Fla., and William N. Olmstead, Murray Hill, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 212,607, Mar. 9, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,692

Int. Cl.[6] C10G *1/06*

U.S. Cl. 208—433 **9 Claims**

1. A process for enhancing the reactivity of highly refractory heteroatom-containing aromatic ring structures, to facilitate heteroatom removal, consisting essentially of:

contacting a compound having at least one bond connecting a first heteroaryl moiety to a moiety selected from the group consisting of an aryl moiety and a second heteroaryl moiety, with supercritical water having a temperature of from about 440° C. to about 600° C. and from about 3.4 MPa to about 18.6 MPa of CO to produce lower molecular weight products having decreased aromatic heteroatom content.

5,611,916

AQUEOUS COMPOSITION USEFUL IN ORE FLOTATION CONTAINING ALIPHATIC AMINE

Janusz S. Laskowski, Richmond, and Qun Wang, Vancouver, both of Canada, assignors to The University of British Columbia, Canada

Continuation of Ser. No. 249,513, May 26, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,054

Int. Cl.[6] B03D *1/01;1/02*

U.S. Cl. 209—166 **8 Claims**

1. An aqueous predispersion flotation composition, adapted to be used in the benefication of coarse potash ore fractions, in the substantial absence of extender oil, which consists essentially of: (a) water; and (b) from about 0.1% to about 10%, by weight of the composition, of a long chain primary aliphatic amine having an iodine value of from about 20 to about 70 cg/g.

5,611,917

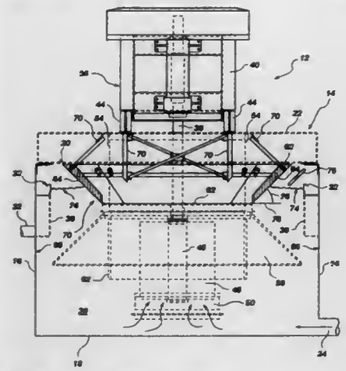
FLOTATION CELL CROWDER DEVICE

Vernon R. Degner, Colsax, Calif., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 2, 1995, Ser. No. 552,008

Int. Cl.[6] B03D *1/14;1/16*

U.S. Cl. 209—168 **10 Claims**



1. A froth flotation cell comprising:

a tank having a continuous outer wall, a closed bottom and an upper section;

a motorized rotor positioned within said tank;

an influent feed inlet positioned relative to said tank to introduce influent feed into said tank;

an overflow launder positioned near said upper section of said tank; and

a crowder device positioned in said tank and extending at least in part above said overflow launder, said crowder device comprising an upper perimeter edge spaced apart from a lower perimeter edge and a substantially continuous contact surface extending therebetween, said upper perimeter edge being greater in dimension than said lower perimeter edge such that said substantially continuous contact surface is sloped downwardly and inwardly from said upper perimeter edge to said lower perimeter edge at an angle not greater than 45° from a horizontal plane formed through said lower perimeter edge, said overflow launder has an overflow lip and said upper edge is positioned above said overflow lip, the vertical distance between the upper perimeter edge and said overflow lip being about 6% to about 11% of the depth of the tank and the vertical distance between the lower perimeter edge and the overflow lip being between about 5% to about 15% of the depth of said tank.

5,611,918

ELECTRONIC DRIVER FOR WATER TREATMENT SYSTEM UV BULB

Ronald C. Markham, Kentwood, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Aug. 2, 1995, Ser. No. 510,426

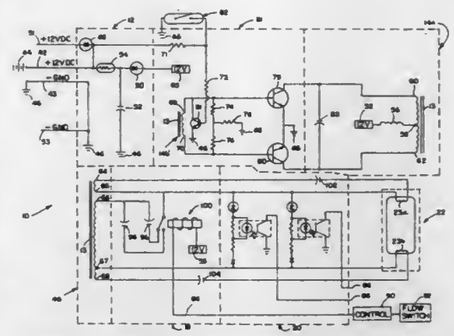
Int. Cl.[6] C02F *1/32*

U.S. Cl. 210—87 **11 Claims**

5. A water treatment system comprising:

an ultraviolet bulb;

water flow switch means for providing a signal indicative of whether water is flowing through said system;



a transformer having a primary adapted to be electrically connected to a power supply and a secondary electrically connected to said bulb;

an oscillator electrically connected to said transformer primary; and

a control means for controlling the frequency at which said oscillator operates, said control means operating said oscillator at a first frequency when said water flow switch means signal indicates that water is not flowing, said control means operating said oscillator at a second frequency when said water flow switch means signal indicates that water is flowing.

5,611,919

PURIFICATION OF INDUSTRIAL LUBRICATING AGENTS

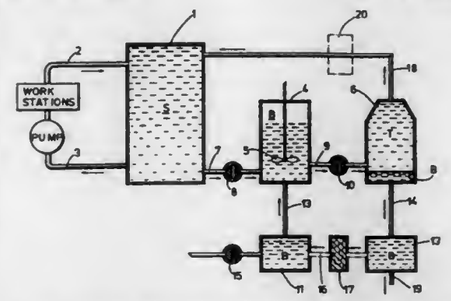
Gunnar Ström, Upsala, Sweden, assignor to Alfa Laval Separation AB, Sweden

Continuation of Ser. No. 149,393, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 995,909, Dec. 22, 1992, Pat. No. 5,308,503, which is a continuation of Ser. No. 689,785, Jun. 6, 1991, abandoned. This application Sep. 21, 1994, Ser. No. 309,615

Claims priority, application Sweden, Nov. 21, 1988, 8804206

Int. Cl.[6] B01D *17/025*

U.S. Cl. 210—168 **6 Claims**



1. A device for microbial purification of a lubricating agent which comprises:

1) a mixing chamber for mixing top and bottom immiscible liquid phases therein; said mixing chamber including a first mixing chamber inlet conduit for introducing the top liquid phase therein, and a second mixing chamber inlet conduit for introducing the bottom liquid phase therein; means for mixing the two phases in the mixing chamber and mixing chamber outlet conduit for removing the mixed phase from the mixing chamber;

2) a separation chamber for receiving the two mixed phases from the mixing chamber and for allowing said phases to stratify into top and bottom phases within said separation

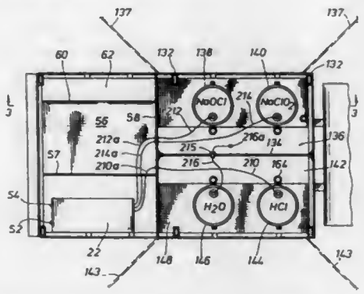
chamber; said separation chamber being connected to said mixing chamber by said mixing chamber outlet conduit;
3) first and second separation chamber outlet conduits connected to said separation chamber; said second separation chamber outlet conduit being located below said first separation chamber outlet conduit for removing the bottom phase from said separation chamber; and said first separation chamber outlet conduit being located above said separation chamber outlet conduit for removing the top phase from the separation chamber;
4) a tank for containing said top phase; said tank being connected to said separation chamber by said first separation chamber outlet conduit so that said top phase is capable of flowing into said tank from said separation chamber; said tank including a first tank outlet conduit connected to said first mixing chamber inlet conduit for the introduction of said top phase into said mixing chamber;
5) work stations which require said top phase as a lubricant; and
6) means for circulating said top phase from said tank to said work stations and back to said tank.

5,611,920

BIOCIDE TREATMENT SYSTEM AND METHOD

Gregory D. Simpson, Deer Park; Garry D. Laxton, Pasadena, both of Tex.; Harold D. McCullough, and Jay T. Miller, both of Hobbs, N.M., assignors to Unichem International Inc., The Woodlands, Tex.

Division of Ser. No. 146,590, Nov. 1, 1993, Pat. No. 5,453,207. This application Jun. 19, 1995, Ser. No. 492,394
Int. Cl.[6] C02F *1/76*
U.S. Cl. 210—192 **37 Claims**



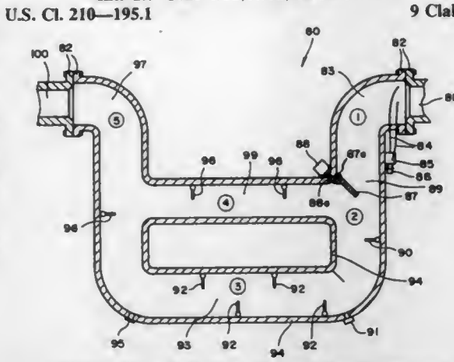
1. A chlorine dioxide delivery system, comprising:
a vehicle for transporting chlorine dioxide precursors overland to a facility to be treated with chlorine dioxide comprising a first compartment carrying a container of a first chlorine dioxide precursor, and a second compartment carrying a container of a second chlorine dioxide precursor incompatible with the first precursor, the first and second compartments being isolated from each other;
a chlorine dioxide generator carried in said vehicle and adapted to generate chlorine dioxide using said first and second precursors;
means for communicating the generator with a fluid flow path passing through the facility to be treated;
means for simultaneously generating chlorine dioxide in the generator from the precursors while circulating a carrier liquid through the fluid flow path and the generator, introducing the chlorine dioxide from the generator to the carrier liquid and carrying the chlorine dioxide through the facility to treat the facility;
means for isolating the precursors from the generator and continuing to circulate the carrier liquid through the fluid flow path, including the generator, to flush the generator into the facility;
means for stopping the operation of the generator; and
means for evacuating the precursors from the facility site.

5,611,921

SEWAGE DEWATERING PROCESS AND EQUIPMENT

Franklin D. Deskins, 23 Fairway Dr., Alexandria, Ind. 46001

Division of Ser. No. 419,289, Apr. 10, 1995. This application Apr. 23, 1996, Ser. No. 636,675
Int. Cl.[6] C02F *1/52;11/12;* **B01D** *33/72*
U.S. Cl. 210—195.1 **9 Claims**



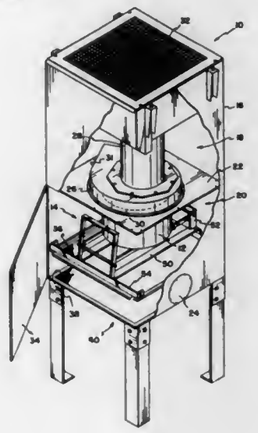
1. Apparatus for mixing and flocculating fluids containing suspended solids comprising conduit means for conducting said fluid to an outlet in said conduit means, a vertical drop section in said conduit means, a horizontal section in said conduit means extending from said vertical drop section, a vertical rise section in said conduit means extending from said horizontal section, a horizontal recycle section in said conduit means extending from said vertical rise section to said vertical drop section, a movable, nonflexible baffle plate pivotally mounted on one end in said vertical drop section at or near the top portion of the intersection between said vertical drop section and said horizontal recycle section, said pivotal, movable baffle plate adopted to constrict in a variable manner, at such location, the internal diameter of said vertical drop section, a set of at least one nonflexible baffle located on the bottom internal surface of and a set of at lest one nonflexible baffle located on the top internal surface of said horizontal section, said sets of nonflexible baffles being positioned in relation to each other so as to be in alternating sequence.

5,611,922

FILTER CARTRIDGE RETENTION SYSTEM

David W. Stene, Hudson, Wis., assignor to Donaldson Company, Minneapolis, Minn.

Filed Aug. 16, 1993, Ser. No. 106,803
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—238 **11 Claims**



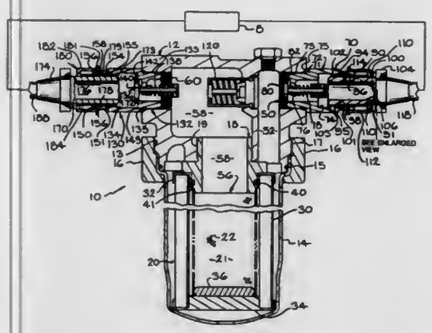
1. In a filtration system having a housing with first and second inner chambers separated by an exhaust port and a door which opens to the first chamber, the improvement comprising:
a filter cartridge retention mechanism for releasably retaining between an operational position and a released position a filter cartridge within the filtration system; the mechanism including,
(a) a pivot bracket located within the first chamber;
(b) a support member having a first end and a second end extending generally below the exhaust port, the second end of the support member being pivotally attached to the pivot bracket, the support member being movable between a reclined release position and a generally horizontal operational position;
(c) handle means being substantially U-shaped and including a pair of feet, the handle means being pivotally attached to the first end of the support member for pivotal movement between a generally vertical position and a horizontal position, the support member being in the released position when the handle means is in the horizontal position, and the support member being in the operational position when the handle means is in the generally vertical position so that the filter cartridge is retained in fluid communication with the exhaust port when the
support member is in the operational position;
(d) the support member including two substantially parallel arms, each of the arms being connected to the pivot bracket and the handle means; and
(e) a pair of slides connected to the pivot bracket for holding the feet.

5,611,923

FILTER ASSEMBLY HAVING QUICK CONNECT/ DISCONNECT SEALING VALVE MEANS

Kanwar Suri; Z. Paul Akian, both of Los Angeles, Calif.; Steven H. Parker; Robert F. Udell, both of Grand Rapids, Mich.; Michael M. Leitzell, Holland, Mich.; David K. Nees, Toledo, Ohio, and S. Glenn McLean, Albemarle, N.C., assignors to Vickers, Inc., Maumee, Ohio

Filed Jul. 12, 1995, Ser. No. 501,517
Int. Cl.[6] B01D *27/08;27/10;35/153*
U.S. Cl. 210—238 **12 Claims**



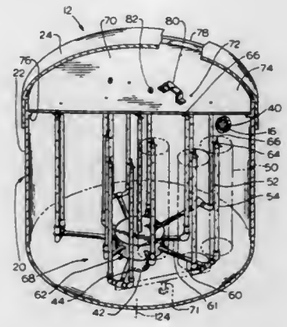
1. A filter assembly comprising a filter element and a housing for supporting said filter element, the filter assembly having a first quick connect/disconnect sealing valve means operatively connected to an inlet passageway in the housing and a second quick connect/disconnect sealing valve means operatively connected to an outlet passageway in the housing wherein the filter assembly is easily connected and disconnected from a fluid circulation system;
each quick connect/disconnect sealing valve means comprising a valve portion in communication with a locking portion, the valve portion and the locking portion being axially moveable relative to each other between a connect position and a disconnect position without need to circumferentially rotate either the valve portion or the locking portion relative to one another;
the valve portion defining a passageway having a valve seat axially moveable between open and closed positions, the valve seat being biased to the closed position when no fluid is flowing through the filter assembly, the valve portion further having at least one engaging member angularly disposed with an annular recess within the passageway in the valve portion for removably engaging the locking portion; and,
the locking portion comprising a locking means having a cam surface having a leading edge adjacent a trailing edge, wherein the leading edge contacts the engaging member of the valve portion when the locking portion is moved into communication with the valve portion; and, unlocking means for disengaging said engaging member to allow the locking portion to be disconnected from the valve portion.

5,611,924

HIGH FLOW FILTER SYSTEM

William Osborne, 2444 - 205th St., Unit 4, Torrance, Calif. 90501

Filed Aug. 29, 1995, Ser. No. 520,639
Int. Cl.[6] B01D *29/54*
U.S. Cl. 210—323.2 **11 Claims**



1. A high flow filter system, comprising:
a pressure vessel having a vertical axis and having inlet and outlet ports, said vessel including a tank having bottom and side walls and an open top, and said vessel having a cover which is removably mounted on said tank and which covers said top;
an outlet structure which includes a manifold region lying near the bottom of said tank and having an outlet, and a plurality of elongated largely vertical center conduits having lower ends coupled to said manifold region and having upper ends, said center conduits each having at least one hole;
a plurality of disposable filters that each have a central filter passage, said filters each being mounted on one of said center conduits with each center conduit projecting through most of the length of the filter passage of a corresponding filter;
a stabilizer lying in said tank over said filters, said stabilizer having a plate portion with a plurality of plate holes;
a plurality of fittings, each having a lower end attached to the upper end of one of said center conduits and having an upper end engaged with said stabilizer plate portion, with each fitting having a stud projecting into one of said plate holes and having graspable part (**104**) lying below the stud and being capable of being grasped to turn it and remove said fitting lower end from said center conduit upper end when said stabilizer plate portion is removed, so after the stabilizer is removed the graspable part can be detached from the center conduit.

5,611,925

HUB RING AND SUPPORTING PLATE FOR A FILTER AND METHODS FOR MANUFACTURING THESE MEMBERS

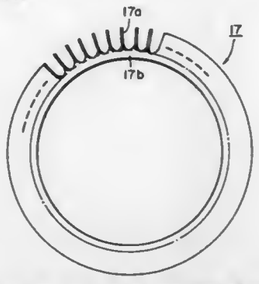
Syoichi Yasue, Minokamo, and Keiichi Murakami, Funabashi, both of Japan, assignors to Filtration Systems, Inc., and Kabushiki Kaisha Toukai Spring Seisakusho, both of Japan

Filed Mar. 22, 1995, Ser. No. 408,483

Claims priority, application Japan, Mar. 23, 1994, 6-078111; Jul. 25, 1994, 6-192333

Int. Cl.[6] B01D *29/54*

U.S. Cl. 210—346 **3 Claims**



1. A hub ring provided on at least one of inner and outer circumferences of a disc-type filter comprising:

(a) a pair of keep plates disposed spacedly from each other and in parallel to each other, each of said pair of keep plates being formed as an annular plate; and

(b) an annular supporting member disposed between said pair of keep plates, said supporting member having (i) a plurality of supporting portions disposed spacedly from each other in a circumferential direction of said hub ring, each of said plurality of supporting portions extending between said pair of keep plates in a radial direction to said hub ring and twisting about said radial direction until reaching a substantially perpendicular orientation to said pair of keep plates and (ii) an annular plate portion connected to said plurality of supporting portions.

5,611,926

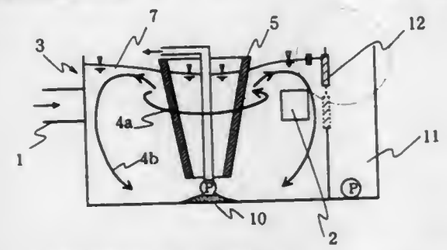
WATER TREATMENT DEVICE

Tetsuo Nishida, Shinkawa 5-17-4, Mitaka-shi, Tokyo, Japan

Filed Jan. 13, 1995, Ser. No. 372,249

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—512.3 **10 Claims**



1. A water treatment device comprising:

a treatment tank having a top end and a bottom end located below the top end, said treatment tank further having an inlet and an outlet for treatment water; and

a rotating drum positioned in a treatment water in the treatment tank;

wherein:

a rotation of said rotating drum in said treatment water creates a primary current in said treatment tank which is a rotational current that causes material in said treatment water having a first specific gravity to gather at the center of the bottom end of the treatment tank, and a secondary current in said treatment tank which defines a vertical vortex in a direction that is approximately perpendicular to a direction of rotation of said rotating drum and causes material in said treatment water with a second specific gravity which is smaller than the said first specific gravity and suspended matter in said treatment water to flow to a surface of the treatment water and thereafter to side walls of the treatment tank;

wherein the rotating drum has a top portion with a first diameter, a middle portion located below said top portion with a second diameter, and a bottom portion located below said middle portion with a third diameter, such that at least one of said first, second and third diameters is different from the other two diameters.

5,611,927

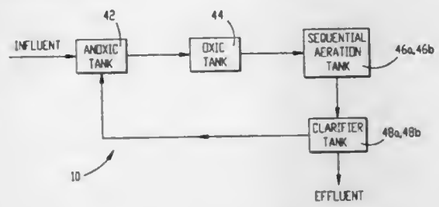
SYSTEM FOR REMOVING NUTRIENTS FROM WASTEWATER

Lawrence A. Schmid, Manhattan, Kans., assignor to Waterlink, Inc., Canton, Ohio

Filed Mar. 7, 1996, Ser. No. 612,227

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **18 Claims**



1. A method of treating wastewater comprising the steps of:

(a) receiving an influent of wastewater containing biosolids and ammonia;

(b) aerating the wastewater in the presence of nitrifying organisms with sufficient aeration and for a time long enough for the nitrifying organisms to convert ammonia to nitrate;

(c) after step (b), reducing nitrate in the wastewater to nitrogen gas by subjecting the wastewater to alternating quiescent and agitating steps in the presence of denitrifying organisms,

said quiescent step including the step of subjecting the wastewater to a quiescent period in which the wastewater is unagitated thereby allowing the biosolids and denitrifying organisms to settle with said quiescent period being long enough for the wastewater and denitrifying organisms to become oxygen deprived,

said agitating step including the step of subjecting the oxygen deprived wastewater to an agitation period by agitating the wastewater in order to disperse the biosolids and denitrifying organisms for a time sufficient for the denitrifying organisms to reduce at least a portion of the nitrate to nitrogen gas;

(d) repeating step (c) a plurality of times for successive reductions of the nitrate to nitrogen gas; and

(e) after step (d), clarifying the wastewater to produce a clarified effluent of substantially reduced levels of nitrogen-based nutrients and to produce activated sludge.

5,611,928

PROCESS FOR TREATING WASTE WATER

Martti Savolainen; Tarmo Syväpuro, both of Espoo, and Eija Laine, Oulu, all of Finland, assignors to Kemira Oy, and Oy Keskuslaboratorio-Central Laboratorium AB, both of Espoo, Finland

PCT No. PCT/FI93/00524, § 371 Date Jul. 14, 1995, § 102(e) Date Jul. 14, 1995, PCT Pub. No. WO94/13591, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 3, 1993, Ser. No. 454,316

Claims priority, application Finland, Dec. 4, 1992, 925506

Int. Cl.[6] C02F *1/72;1/12*

U.S. Cl. 210—631 **8 Claims**

1. A process for treating waste water of at least one of a pulp mill and a paper mill, comprising:

biologically treating the waste water by an activated sludge process; and

chemically treating the biologically treated waste water by adding an Fe(II) salt to the biologically treated waste water and by adding hydrogen peroxide to the biologically treated waste water.

5,611,929

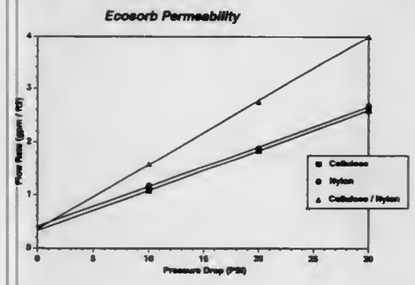
ADSORBENT FILTER BED WITH PLIANT AND STIFF MEMBERS AND METHOD FOR REMOVING IMPURITIES FROM LIQUID

Bruce L. Libutti, Teaneck, N.J., and Joseph M. Ragosta, Elkton, Md., assignors to Graver Chemical, Glasgow, Del.

Division of Ser. No. 259,260, Jun. 14, 1994, Pat. No. 5,585,171, which is a continuation-in-part of Ser. No. 2,957, Jan. 11, 1993, Pat. No. 5,346,624. This application Aug. 22, 1996, Ser. No. 697,343

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—639 **4 Claims**



1. A method for separating impurities from a liquid comprising:

applying a mixture on an upstream surface of a porous support member to form a filter bed, said mixture substantially composed of about 1 to about 95 weight percent adsorbent particles, about 2 to about 89 weight percent pliant fibers having a modulus of elasticity in the range of about 1,000 to about 200,000 pounds per square inch and about 2 to about 95 weight percent stiff fibers having a modulus of elasticity that is greater than 200,000 pounds per square inch; and

passing a liquid contaminated with impurities through the filter bed to separate the impurities from the liquid.

5,611,930

CELLULOSE ESTER BLEND MEMBRANES, PROCESS FOR MAKING SAME AND THEIR USE

Quang T. Nguyen, Ludres; Jean M. L. Néel, Villers-les-Nancy, both of France; Hartmut E. A. Brüschke, Nussloch, and Hermann Steinhauser, Saarbrücken, both of Germany, assignors to Deutsche Carbone AG, Frankfurt, Germany

Filed Oct. 13, 1993, Ser. No. 135,403

Claims priority, application European Pat. Off., Oct. 13, 1992, 92117467

Int. Cl.[6] B01D *61/36*

U.S. Cl. 210—640 **9 Claims**

1. A method for removing C_1–C_3 alkanols from their mixtures with hydrocarbons or heteroatom-containing hydrocarbons, said method comprising

(a) contacting a feed mixture comprising at least one C_1–C_3-alkanol and at least one hydrocarbon or heteroatom-containing hydrocarbon in liquid phase or after evaporation with a first side (feed side) of a non-porous layer of a membrane,

(b) maintaining a gradient of a partial vapor pressure of the C_1–C_3-alkanol across said non-porous separating layer of said membrane,

(c) recovering from a second side (permeate side) of said membrane as a permeate a mixture richer in said C_1–C_3-alkanol and leaner in said hydrocarbon or heteroatom-containing hydrocarbon than the feed mixture, said permeate being recovered as a vapor at a pressure below the partial vapor pressure of said lower alcohol at the feed side, and

(d) recovering from the feed side of said membrane a product which is leaner in said C_1–C_3-alkanol and richer in said hydrocarbon or heteroatom-containing hydrocarbon,

wherein the improvement comprises utilizing a membrane comprising a non-porous separation layer of a cellulose ester-containing polymeric material, characterized in that said polymeric material is a polymer blend of a first polymer selected from cellulose esters and at least one second polymer selected from polyvinylpyrrolidone (PVP), copolymers of vinylpyrrolidone and vinylacetate (VP-co-VA), polyethylene glycol (PEG), N,N-dialkylated polyacrylic amides (DPAA) and cellulose esters other than said first polymer.

5,611,931

HIGH TEMPERATURE FLUID SEPARATIONS USING CERAMIC MEMBRANE DEVICE

Paul K. T. Liu; Hillary K. Sabol, both of Pittsburgh; Gerald W. Smith, Harwick, and Richard J. Ciora, Jr., Butler, all of Pa., assignors to Media and Process Technology Inc., Pittsburgh, Pa.

Filed Jul. 31, 1995, Ser. No. 509,199

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—653 **19 Claims**

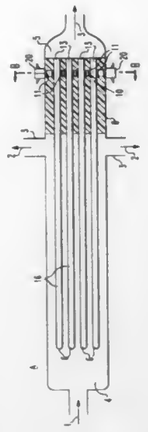
18. A method of treating hydrocarbons at a temperature of greater than 100° C. to remove low molecular weight hydrocarbons or hydrogen from high molecular weight hydrocarbons, the method comprising the steps of:

(a) providing a membrane device for removing said low molecular weight hydrocarbons or hydrogen from said high molecular weight hydrocarbons, the device comprising

(i) a housing having an entrance for introducing hydrocarbons containing said low molecular weight hydrocarbons or hydrogen to said housing to be treated, an exit for removing hydrocarbons after being subjected to a low molecular weight hydrocarbons or hydrogen removal treatment;

(ii) a plate mounted in one end of said housing, said plate having openings therein;

(iii) a membrane means comprised of porous ceramic tubes, said tubes permeable by said low molecular weight hydrocarbons or hydrogen and substantially impermeable by said high molecular weight hydrocarbons, the open end designed to remove said low molecular weight hydrocarbons or hydrogen from said tube, said tubes mounted in



said openings in said plate so that said open end is extended outside said plate; and

(iv) insulation means provided in said housing, said insulation means surrounding said tubes in said housing and positioned to insulate hot hydrocarbons in said housing from said plate;

(b) introducing said hydrocarbons containing said low molecular weight hydrocarbons or hydrogen to said housing;

(c) maintaining said hydrocarbons at a temperature greater than 100° C. and at a pressure sufficiently high to maintain a high pressure side outside said tubes and a low pressure side inside said tubes;

(d) passing low molecular weight hydrocarbons or hydrogen through said porous tube to separate said low molecular weight hydrocarbons or hydrogen from said high molecular weight hydrocarbons;

(e) removing high molecular weight hydrocarbons from said housing; and

(f) removing low molecular weight hydrocarbons or hydrogen through the open end of said tubes.

5,611,932

METHOD FOR THE PURIFICATION OF RECLAIMED AQUEOUS N-METHYLMORPHOLINE N-OXIDE SOLUTION

Wha S. Lee; Seong M. Jo; Chong S. Park, and Yong K. Hong, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Mar. 30, 1995, Ser. No. 413,302

Claims priority, application Rep. of Korea, Apr. 27, 1994, 1994-8948

Int. Cl.[6] B01J *39/00;* **B01D** *15/04*

U.S. Cl. 210—669 **6 Claims**

1. A method for purifying a used aqueous N-methylmorpholine N-oxide (NMMO) solution reclaimed from a spinning aqueous solution to remove coloring and metal ion impurities remaining in said solution from producing a cellulose dope from a cellulose solution, comprising:

(a) oxidizing a portion of said coloring impurities in the spinning aqueous solution with hydrogen peroxide;

(b) purifying any remaining coloring impurities with active carbon to provide an uncolored aqueous N-methylmorpholine N-oxide solution; and

(c) removing metal ion impurities from the solution of step (b) using chitosan to provide a reclaimed, purified and uncolored N-methylmorpholine N-oxidesolution.

5,611,933

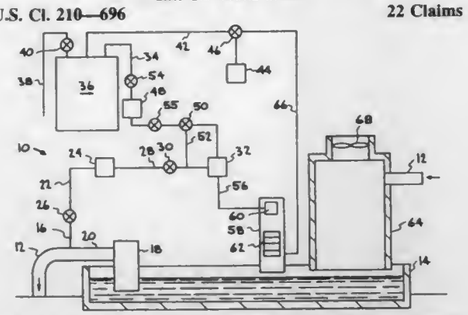
SLIP STREAM APPARATUS AND METHOD FOR TREATING WATER IN A CIRCULATING WATER SYSTEM

Joe R. Cleveland, West Hills, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 14, 1995, Ser. No. 422,412

Int. Cl.[6] B01F *3/04*

U.S. Cl. 210—696 **22 Claims**



1. An apparatus for treating water in a circulating water system that includes a cooling water basin, said apparatus comprising:

a slip stream conduit in flow communication with said circulating water system;

a source of acid solution in flow communication with said slip stream conduit; and

a decarbonator in flow communication with said slip stream conduit and said cooling water basin.

5,611,934

PROCESS FOR DYE REMOVAL

Paul W. Shepperd, III, Mooresville; Larry W. Becker, Charlotte, and Robert J. Cundiff, Mt. Holly, all of N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 18, 1995, Ser. No. 574,009

Int. Cl.[6] C02F *1/56;1/70*

U.S. Cl. 210—719 **18 Claims**

1. A process for treating liquid effluent containing dye comprising steps (a)–(e):

(a) treating the effluent with a reducing agent at a concentration of 50–100 parts per million of reducing agent per 1000 ADMI units of color;

(b) reducing the pH of the liquid effluent to a value in the range of 2.0–7.0;

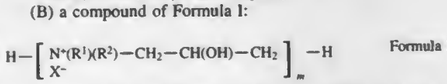
(c) treating the liquid effluent with a charge neutralization mixture wherein said neutralization mixture comprises in a ratio of 30–70 to 70–30 parts by weight of i:ii:

(i) at least one aluminum salt selected from the group consisting of aluminum hydroxychloride, aluminum polyhydroxychloride, alum, aluminum chloride and sodium aluminate; and

(ii) a cationic polymer selected from the group consisting of:

(A) at least one water soluble cationic polymer selected from the group consisting of (A) a copolymer of acrylamide with a cationic monomer selected from the group consisting of: methacryloylethyltrimethylammonium[X^-] and acryloylethyltrimethylammonium[X^-], wherein X^- is selected from the group consisting of chloride, bromide, iodide, SO_4^{-2} and $CH_3SO_4^{-2}$;

(B) a compound of Formula I:



Formula I

wherein: R^1 and R^2 may be the same or different and are each independently selected from the group consisting of hydrogen and C_1–C_8 straight or branched alkyl; and substituted C_1–C_8 straight or branched alkyl; X^- is selected from the group consisting of chloride, bromide, iodide, SO_4^{-2} and $CH_3SO_4^{-2}$; m is a number from 200 to 50,000; and

(C) a compound of Formula II:



Formula II

wherein R^3 and R^4 may be the same or different and are each independently selected from the group consisting of C_1–C_8 straight or branched alkyl, m is a number from 200 to 50,000 and X^- has the same value as defined in Formula I,

until the Zeta potential reaches±15 millivolts;

(d) adjusting the pH of a mixture thus formed to be greater than or equal to 5.0; and

(e) subjecting the mixture to a flocculating process by adding 1–5 parts per million of at least one compound selected from the group consisting of:

(i) anionic polymers selected from the group consisting of acrylic acid/acrylamide copolymers in excess of 2 million molecular weight; and

(ii) nonionic polymers selected from the group consisting of polyacrylamides greater than 2 million molecular weight.

5,611,935

METHOD AND DEVICE FOR TREATING SLUDGE

Heinz Thlemann, Essen; Helmut Brauweiler, Lünen; Ivan Rupert, Essen; Jörg Bublies, Overath, and Burkhard Möller, Kleinwaltersdorf, all of Germany, assignors to Steag Aktiengesellschaft, Essen, Germany

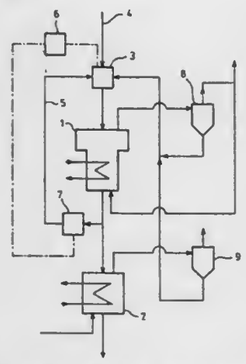
PCT No. PCT/EP93/03533, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO94/14882, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 14, 1993, Ser. No. 481,461

Claims priority, application Germany, Dec. 17, 1992, 42 42 747.9

Int. Cl.[6] C02F *11/12*

U.S. Cl. 210—742 **13 Claims**



1. A method for treating sludge by predewatering to form thick sludge and drying to form dry sludge, said method comprising the steps of:

a) mechanically predewatering thick sludge to produce predewatered thick sludge;

b) mixing the predewatered thick sludge with non-cooled dry sludge to produce a sludge mixture;

c) measuring the temperature of the sludge mixture to be dried;

d) determining the dry substance contents of the dry sludge based on the measured temperature;

e) compensating fluctuations in the dry substance contents of the dry sludge by controlling the amount of recirculated dry sludge to be mixed with the predewatered thick sludge as a function of the temperature of the sludge mixture to be dried;

f) drying the sludge mixture to produce dry sludge; and

g) recirculating a portion of the dry sludge to step b).

5,611,936

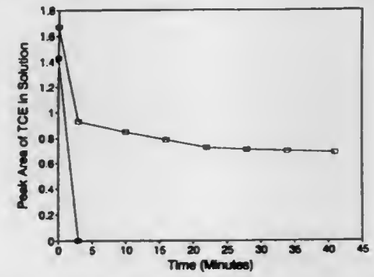
DECHLORINATION OF TCE WITH PALLADIZED IRON

Quintus Fernando; Rosy Muftikian, both of Tucson, Ariz., and Nic Korte, Grand Junction, Colo., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Dec. 23, 1994, Ser. No. 363,125

Int. Cl.[6] C02F *1/70*

U.S. Cl. 210—747 **53 Claims**



1. A method of dechlorinating a chlorinated organic compound present in an aqueous effluent or groundwater comprising contacting said effluent with a palladized iron bimetallic system under conditions sufficient to dechlorinate said chlorinated organic compound.

5,611,937

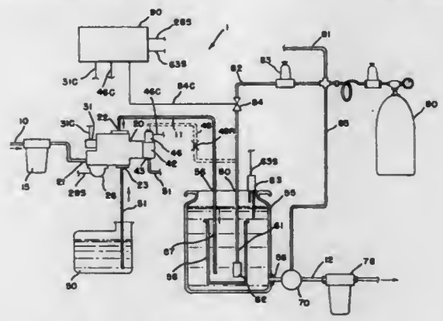
WATER TREATING APPARATUS AND METHOD

George J. Jarocki, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed May 12, 1995, Ser. No. 440,058

Int. Cl.[6] B01D *35/30*

U.S. Cl. 210—754 **20 Claims**



1. A water treating apparatus comprising:

a treating module incorporating a water supply port, a water discharge port, a first flow passage extending between the water supply port and the water outlet port, a flow sensor and a valve disposed in the first flow passage, a treating agent inlet, a second flow passage extending between the treating agent inlet and the first flow passage and a pump for moving a treating agent supplied to the treating agent inlet through the second passage into the first passage;

a holding vessel incorporating a water inlet coupled to the water outlet port of the treating module, a water outlet and a water level sensor; and

control means for (1) operating the pump in response to signals generated by the flow sensor and (2) operating the valve in response to signals generated by the water level sensor.

5,611,938

BIOCIDAL BLENDS OF QUATERNARY AMMONIUM COMPOUNDS AND CHLORINE DIOXIDE

Nancy A. Smolik, Staten Island, N.Y.; Linda H. Rusznak, Bayonne, and Dale A. Jenson, Long Valley, both of N.J., assignors to Ashland Inc., Columbus, Ohio

Filed Feb. 28, 1995, Ser. No. 396,135

Int. Cl.[6] C02F *1/50*

U.S. Cl. 210—755 **6 Claims**

1. A process for reducing the population of bacteria in a contaminated aqueous system having a pH of at least 7.2 which comprises co-treating said aqueous system with

A. a quaternary ammonium compound selected from the group consisting of:

(1) n-alkyl dimethyl benzyl ammonium chloride,

(2) n-alkyl dimethyl ethylbenzyl ammonium chloride, and mixtures thereof, and

B. chlorine dioxide,

wherein the ratio of quaternary ammonium compound to chlorine dioxide is from 1:5 to 1:25.

5,611,939

METHODS FOR INHIBITING THE PRODUCTION OF SLIME IN AQUEOUS SYSTEMS

Roy Hernandez-Mena, The Woodlands, Tex.; Richard J. Sujdak, Yardley, Pa., and Patric L. Friend, Conroe, Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 568,070, Dec. 6, 1995. This application Jun. 3, 1996, Ser. No. 657,122

Int. Cl.[6] C02F *1/50*

U.S. Cl. 210—764 **16 Claims**

1. A method for inhibiting the attachment of microbes to the surfaces of aqueous systems comprising adding to said aqueous systems an effective inhibiting amount of a copolymer of a tannin and a cationic monomer, said cationic monomer being selected from the group consisting of methyl chloride or dimethyl sulfate quaternary salt of dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, dimethyl aminopropyl methacrylamide, dimethylaminopropyl acrylamide, and diallyl dimethyl ammonium chloride.

5,611,940

MICROSYSTEM WITH INTEGRATED CIRCUIT AND MICROMECHANICAL COMPONENT, AND PRODUCTION PROCESS

Thomas Zettler, München, Germany, assignor to Siemens Aktiengesellscbaft, Munich, Germany

Filed Apr. 28, 1995, Ser. No. 431,499

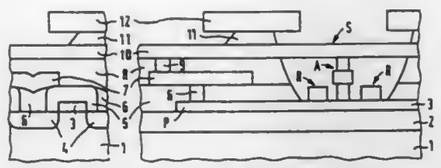
Claims priority, application Germany, Apr. 28, 1994, 44 14 968.9

Int. Cl.[6] B44C *1/22*

U.S. Cl. 73—514.16 **18 Claims**

12. A production process for a microsystem including an integrated circuit having an insulating layer and a conductive layer on the insulating layer; and a micromechanical component having a fixed micromechanical structure and a movable micromechanical structure, which comprises:

structuring the conductive layer for producing the fixed and movable micromechanical structures, while simultaneously structuring the conductive layer in the region of the integrated circuit; and



exposing the movable micromechanical structure by removing the insulating layer located under the movable micromechanical structure in an etching process having adequate selectively for the conductive layer and having an isotropic component.

5,611,941

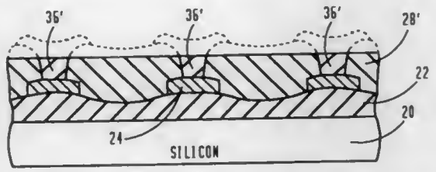
METHOD FOR FORMING A FERROELECTRIC LIQUID CRYSTAL SPATIAL LIGHT MODULATOR UTILIZING A PLANARIZATION PROCESS

John S. Booth, Austin, Tex., assignor to Rainbow Display Serivices, Austin, Tex.

Filed Jul. 17, 1995, Ser. No. 503,036

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—23 **7 Claims**



1. A method for forming a spatial light modulator, comprising the steps of:

forming a substrate of control elements having an irregular surface;

depositing a conformal insulating layer of buffer material over the substrate;

forming vias in the buffer layer to expose underlying control elements;

depositing a conformal layer of conductive material over the buffer layer and vias to fill the vias;

downwardly etching the conformal layer of conductive material to remove substantially all of the conformal layer of conductive material with the exception of a portion thereof that is disposed in the vias;

chemical planarizing the surface of the substrate such that the plugs are not removed;

forming mirrored elements on the upper surface of the substrate over substantially all of the remaining portions of the plugs; and

disposing a layer of liquid crystal material over the substrate that has characteristics that will change in response to a voltage applied to the mirrored elements.

5,611,942

METHOD FOR PRODUCING TIPS FOR ATOMIC FORCE MICROSCOPES

Tadashi Mitsui, Wappingers Falls, and Katsuya Okumura, Poughkeepsie, both of N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 2, 1995, Ser. No. 397,617

Int. Cl.[6] H01J *37/00;* **B44C** *1/22*

U.S. Cl. 216—67 **23 Claims**

1. A method for forming a three point atomic force microscope tip, the method comprising:

forming a substantially longitudinally extending solid silicon tip having a peripheral surface and a forward end surface;

forming three carbon masks upon the substantially longitudinally extending solid silicon tip, a first and second of said carbon masks formed along said peripheral surface, and a third of said carbon masks formed on the forward end surface;

etching said substantially longitudinally extending solid silicon tip for a first period of time to remove material from both said substantially longitudinally extending solid silicon tip and said carbon masks, wherein the removal of said material from said substantially longitudinally extending solid silicon tip and said carbon masks results in the formation of three spikes which are pointed at the location from which the carbon masks were removed.

5,611,943

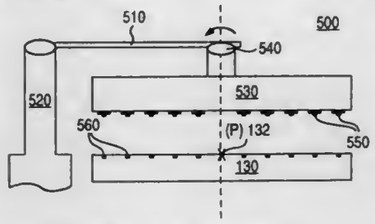
METHOD AND APPARATUS FOR CONDITIONING OF CHEMICAL-MECHANICAL POLISHING PADS

Kenneth C. Cadien, and Leopoldo D. Yau, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,467

Int. Cl.[6] B24B *29/00*

U.S. Cl. 216—88 **31 Claims**



1. Method for conditioning a pad comprising:

providing said pad;

rotating a scoring apparatus over said pad, wherein said scoring apparatus is rotated concentrically about the center of said pad; and

scoring said pad.

5,611,944

HOLLOW COMPONENT MANUFACTURE

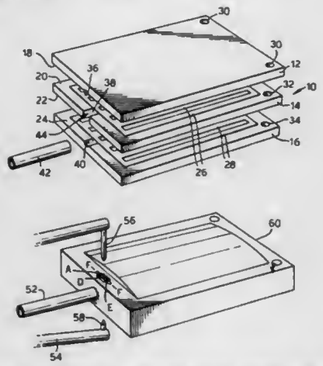
John J. Gilkinson, and Brian Richardson, both of Lancashire, England, assignors to Rolls-Royce plc, Derby, England

Filed Apr. 28, 1995, Ser. No. 430,617

Claims priority, application United Kingdom, May 10, 1994, 9409303

Int. Cl.[6] B23K *11/11;11/34;101/04*

U.S. Cl. 219—117.1 **11 Claims**



1. A hollow component manufacturing method including the steps of:

(a) forming at least two metallic sheets by a process of diffusion bonding them together in selected places, at least one of the sheeets being capable of superplastic deformation and at least one of the sheets accommodating in the thickness thereof gas channel means for entry of pressurized gas into the interior of the component after diffusion bonding,

(b) where the sheets are not diffusion bonded together, expanding at least one of said sheets away from at least one other sheet by means of inflation by supplying pressurized gas under superplastic forming conditions through the gas channel means into the interior of the component to produce the desired interior structure for the component,

(c) locally deforming the material of at least one of the sheets at least in the area defining the gas channel means to reduce the height of said gas channel means,

(d) making at least one fusion weld pass over the deformed area defining the gas channel means thereby to obturate the gas channel means with weld material such that the gas channel means is hermetically sealed.

5,611,945

RESISTANCE WELDING ELECTRODE

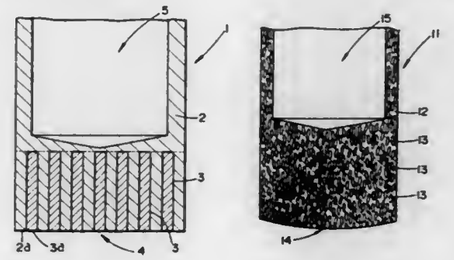
Mitsuo Kuwabara; Teruaki Yoshida, and Tomohiko Ito, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Oct. 7, 1994, Ser. No. 319,635

Claims priority, application Japan, Oct. 8, 1993, 5-252965

Int. Cl.[6] B23K *35/02;11/30*

U.S. Cl. 219—119 **7 Claims**



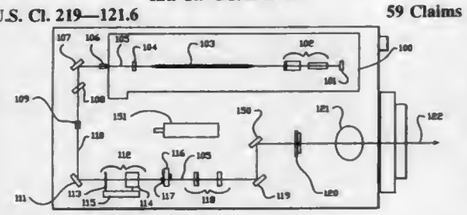
1. A resistance welding electrode for supplying a current to metal workpieces to weld the workpieces to each other, comprising:

an electrode matrix of a copper alloy; and

a plurality of members disposed in said electrode matrix and having portions exposed on a tip end surface of said electrode matrix, said members being made of a material having an electric conductivity lower than that of said electrode matrix, the exposed portions of the members having a total area which is in the range of 40 to 82% of the entire area of the tip end of said electrode matrix,

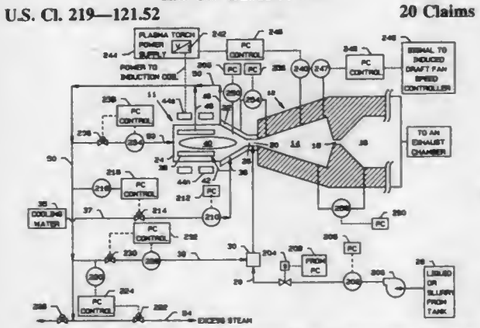
wherein said material having an electric conductivity lower than that of said electrode matrix comprises one of a filamentary material, a fibrous material, and a granular material, and is disposed in said electrode matrix, said exposed portions of the members being exposed as lands on said surface of the tip end of said electrode matrix.

5,611,946
MULTI-WAVELENGTH LASER SYSTEM, PROBE STATION AND LASER CUTTER SYSTEM USING THE SAME
Tony P. Leong, San Jose; Edward S. North, Los Altos, and Richard L. Herbst, Palo Alto, all of Calif., assignors to New Wave Research, Sunnyvale, Calif.
Filed Feb. 18, 1994, Ser. No. 199,389
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.6 **59 Claims**



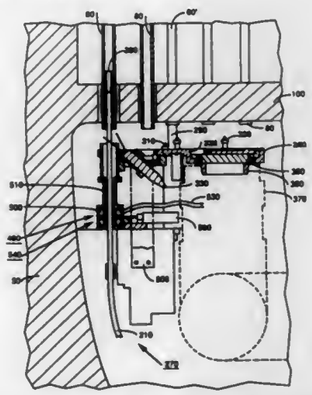
1. A probe station, comprising:
a base,
a chuck mounted on the base to hold a device to be analyzed or tested;
a probe platen mounted on the base on which to mount probes for the device;
a laser supplying an output beam at a fundamental wavelength;
an optical system coupled with the laser having a single beam path on which the optical system receives the laser output beam, transforms the output beam into a plurality of wavelengths and selectively transmits one or more of the wavelengths along a single line, the optical system including a mechanism having at least two settings, each setting causing a different subset of the plurality of wavelengths to be transmitted along the single beam line; and
a microscope mounted on the base, having a field of view of the device on the chuck, the microscope being positioned to receive the one or more wavelengths transmitted by the optical system and transmit the one or more wavelengths into the field of view along the single beam line.

5,611,947
INDUCTION STEAM PLASMA TORCH FOR GENERATING A STEAM PLASMA FOR TREATING A FEED SLURRY
John S. Vavruska, Santa Fe, N.M., assignor to Alliant Techsystems, Inc., Hopkins, Minn., and Plasma Technology, Inc., Santa Fe, N.M.
Filed Sep. 7, 1994, Ser. No. 302,048
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.52 **20 Claims**



1. An induction steam plasma torch for generating a steam plasma comprising:
a. an induction coil means including a power supply means connected to said induction coil means;
b. steam generator tubes/radiation shields means positioned interior of said induction coil means;
c. gas enclosure means positioned between said induction coil means and said steam generator tubes/radiation tube means;
d. a steam supply tube centrally positioned at an inlet end of said gas enclosure means; and,
e. means for starting and maintaining an inductively coupled steam plasma.

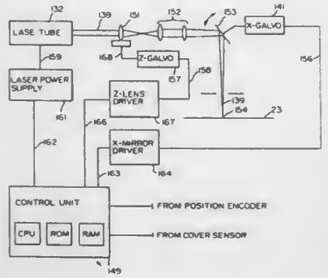
5,611,948
APPARATUS AND METHOD FOR REMOTELY POSITIONING A PROBE IN A TUBULAR MEMBER
Phillip J. Hawkins, Hempfield Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 31, 1994, Ser. No. 333,090
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.63 **26 Claims**



1. An apparatus for remotely positioning an extended conduit into a remote radioactive environment, the conduit having a contorted region therein inducing torsional stress in the conduit, the conduit having a probe connected thereto, comprising:
(a) means for remotely extending the conduit into the environment;
(b) mechanized means engaging the conduit for relieving the torsional stress induced in the conduit;
(c) sensory means connected to the conduit for automatically identifying the torsional stress induced in the conduit, said sensory means generating an output signal in response to the torsional stress sensed thereby; and
(d) means responsive to the output signal for operating said mechanized means to relieve the torsional stress.

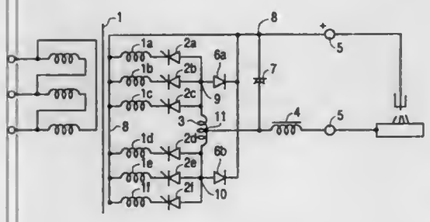
5,611,949
METHOD AND APPARATUS FOR LASER CUTTING SEPARATE ITEMS CARRIED ON A CONTINUOUSLY MOVING WEB
Donald L. Snellman, and Dean G. Tonkin, both of Seattle, Wash., assignors to Norfin International, Inc., Seattle, Wash.
Continuation of Ser. No. 237,641, May 4, 1994, abandoned.
This application May 16, 1996, Ser. No. 650,045
Int. Cl.[6] B23K *26/02;26/08*
U.S. Cl. 219—121.67 **15 Claims**

1. Apparatus for severing a continuously moving web comprising a carrier for items connected thereto at spaced intervals, said web being severed at predetermined locations between said items comprising;
conveyor apparatus for moving said web and said items in a predetermined path,
a laser beam source for producing a cutting beam,



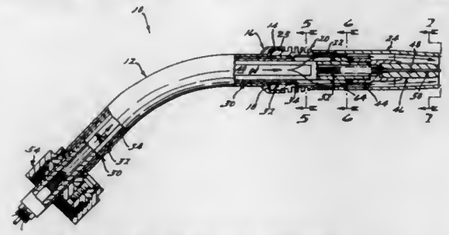
a laser beam delivery system for moving said beam across the surface of the web in a path transverse to the direction of travel thereof and focusing said cutting beam in the plane of said web, and
sensor apparatus for sensing the position of each successive item on the web,
said beam delivery system including control apparatus responsive to said sensor to activate and move said cutting beam to sever the web at each successive predetermined location.

5,611,950
ARC WELDING POWER SOURCE
Masamitsu Tochino, Kawanishi, and Norikazu Osaki, Ikoma-gun, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 27, 1995, Ser. No. 549,236
Claims priority, application Japan, Oct. 27, 1994, 6-263005
Int. Cl.[6] B23K *9/10*
U.S. Cl. 219—130.1 **6 Claims**



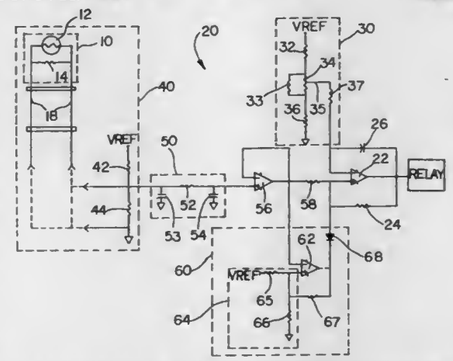
1. An arc welding power source comprising:
a welding transformer having a pair of star connection three phase secondary coils,
a first welding output terminal made by connecting each neutral point of said pair of star connection three phase secondary coils,
a pair of common connecting points, at each of said pair of star connection three phase secondary coils, which connects secondary coils of said star connection three phase secondary coils at an end opposite to said neutral point,
a plurality of control rectifiers connected between said neutral point and said common connecting points in series to each of said secondary coils,
an interphase reactor connected between said two common connected points,
a DC reactor connected to a middle point of said interphase reactor,
a second welding output terminal connected to the DC reactor,
a capacitor, having two ends, connected at one end to a connecting point between said interphase reactor and said DC reactor and at the other end to said first welding output terminal, and
a pair of rectifiers connected between said neutral point and each of said common connecting points.

5,611,951
ARC WELDING TORCH
Erwin Kunz, Eugen Huberstr 160, 8048 Zurich, Switzerland, and Jeffrey Bond, 6 Andermans, Windsor, Berks. SL4 5RN, England
Filed Dec. 20, 1995, Ser. No. 575,857
Int. Cl.[6] B23K *9/173*
U.S. Cl. 219—137.62 **3 Claims**



1. A gas cooled arc welding torch comprising;
an elongated metal tube;
an electrical insulating sleeve disposed radially inwardly of said tube in close telescoped relation;
an outer metal heat transfer sleeve disposed radially inwardly of said insulating sleeve in close telescoped relation;
an inner metal heat transfer sleeve disposed radially inwardly of said outer heat transfer sleeve, said outer and inner transfer sleeves having longitudinally extending portions spaced from one another so as to define a longitudinally extending gas channel therebetween;
an intermediate gas shroud at one end of said outer tube communicating with the gas channel defined by said heat transfer sleeves;
an outer gas shroud supported by said intermediate gas shroud;
a welding tip disposed radially inwardly of said outer gas shroud and supported by said inner heat transfer sleeve in heat transfer relationship, said welding tip having a central passage for the guidance of a consumable welding wire; and
means at the opposite end of said outer tube for connecting the gas passage defined by said heat transfer and gas conductor tubes to a source of cooling gas.

5,611,952
TEMPERATURE SENSOR PROBE AND SENSOR DETECTION CIRCUIT
Thaddeus M. Jones, 1302 High St., South Bend, Ind. 46601
Filed Jun. 30, 1994, Ser. No. 269,193
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—505 **3 Claims**



1. In combination, an electrical temperature control circuit for controlling the operation of a heater, and a remote temperature sensor probe, said sensor probe being connected to said circuit by only two electrical wires, the improvement comprising:

said combination including means for detecting an open sensor condition when one of said wires is severed,

said sensor probe including a thermistor for sensing a temperature and producing a resistance proportional to said temperature, and second resistance means connected to said thermistor for establishing a maximum resistance for said sensor probe when said sensor probe is connected to said circuit,

said circuit including means for generating an electrical signal across said sensor probe whereby said maximum resistance limits said signal below a predetermined signal value when said sensor probe is connected to said circuit, logic means responsive to said signal for providing an output to control the operation of said heater, and means operatively connected to said logic means and responsive to said signal for deactivating the operation of said heater when said signal exceeds said predetermined signal value.

5,611,953

SINTER-HOMOGENIZED HEATING PRODUCTS

Jainagesh A. Sekhar, Cincinnati, and Naiping Zhu, Cleveland, both of Ohio, assignors to Micropyretics Heaters International, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 242,362, May 13, 1994, abandoned. This application May 15, 1995, Ser. No. 441,606

Int. Cl.[6] H05B *3/10*

U.S. Cl. 219—553 **21 Claims**

1. A pliable composition comprising by weight percent:

(a) between about 10 and 90% of a powdery mass of material which is electrically conductive, semiconductive or electrically conductive and semiconductive, selected from the group consisting of WSi_2, $MoSi_2$ and mixtures thereof;

(b) between about 5 % and 50% of a combustible source which is selected from the group consisting of WO_3, Al and Si, MoO_3, Zr and Si, WO_3, Zr and Si, WC, and Si, MoC_2 and Si and mixtures thereof;

(c) between about 0.5 to 10% of grain growth inhibitors selected from the group consisting of TiB_2, HfB_2, SiC and mixtures thereof;

(d) at least about 1 weight percent bentonite; and

(e) at least about 3 ml per 30 g of (a) through (d), of colloidal silica solution.

5,611,954

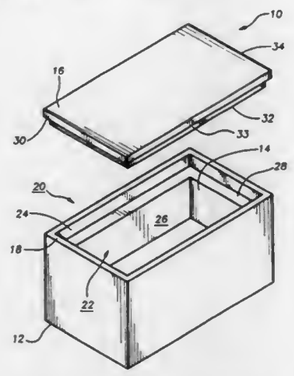
CONTAINER WITH MICROWAVE HEATABLE LINER FOR HEATING PRE-MOISTENED

Carolyn Wright, 1349 Palmetto Ave., Toledo, Ohio 43606

Filed Sep. 22, 1995, Ser. No. 532,078

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—759 **2 Claims**



1. A microwave heatable container comprising:

a microwavable housing constructed of a microwave transparent, heat resistant plastic having a top border defining an upper opening, an exterior surface, and an interior surface;

a microwave heatable liner adhesively secured to said interior surface of said housing, said liner defining a cavity within said housing for disposing premoistened fabric sheets, said microwave heatable liner being a liquid filled plastic bag;

a microwavable lid constructed of a microwave transparent, heat resistant plastic having a bottom surface for closing said upper opening of said housing; and

a microwave heatable top liner adhesively secured to said bottom surface of said lid, said top liner being recessed from an outer edge of said lid in a manner to be snugly disposable within said upper opening of said housing and in contact with a top edge of said liner in a manner to completely enclose said cavity when said lid is placed atop said housing and to form a seal between said lid and said housing for retaining heat and moisture within said cavity for disposing said premoistened fabric sheets, said top liner being a liquid filled plastic bag.

5,611,955

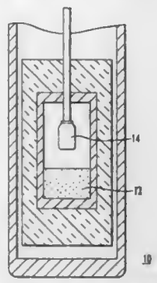
HIGH RESISTIVITY SILICON CARBIDE SUBSTRATES FOR HIGH POWER MICROWAVE DEVICES

Donovan L. Barrett, Penn Hills Twp.; Hudson M. Hobgood, Murrysville; James P. McHugh, Wilkins Twp., and Richard H. Hopkins, Murrysville, all of Pa., assignors to Northrop Grumman Corp., Los Angeles, Calif.

Filed Oct. 18, 1993, Ser. No. 138,566

Int. Cl.[6] C04B *35/565*

U.S. Cl. 252—62.3 C **13 Claims**



1. A composition of matter for use in semiconductor devices, fabricated of single polytype silicon carbide and having a resistivity of at least 1500Ω-cm, the matter being characterized as having deep level dopants incorporated therein;

wherein the deep level dopants are at a depth at least about 300 meV and include a selected heavy metal; and

wherein the selected heavy metal is an element found in periodic groups IIIB, IVB, VB, VIB, VIIB, VIIIB, IB and IIB.

5,611,956

TWO COMPONENT POLYURETHANE SEALANT

Gerhard Piestert, Schwetzingen, and Bodo Müller, Würzburg, both of Germany, assignors to Bostik, Inc., Middleton, Mass.

Division of Ser. No. 758,876, Sep. 10, 1991, Pat. No. 5,194,488. This application Nov. 24, 1992, Ser. No. 980,665

Claims priority, application Germany, Sep. 10, 1990, 40 28 704.1

Int. Cl.[6] C08K *5/053;13/02;5/10;* **C08B** *30/12*

U.S. Cl. 252—182.32 **9 Claims**

1. A pasty water-containing composition comprising a carrier substance dispersed in a plasticiser that is selected from the group consisting of an alkylsulphonic acid ester of phenol, an alkylsulphonic acid ester of a cresol and benzyl butyl phthalate, the carrier substance comprising ground cellulose, starch or cork, the composition liberating water in a delayed manner after mixing with a pasty polyurethane composition comprising a polyurethane prepolymer having free isocyanate groups, and a curing agent, and wherein the ground cellulose and starch are reversibly bound to water with a weight ratio of between about 1:0.25 to 1:1.

5,611,957

FERROELECTRIC LIQUID CRYSTAL DEVICE

Damien G. McDonnell; John C. Jones, and Ian C. Sage, all of Worcestershire, United Kingdom, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Defence Research Agency, United Kingdom

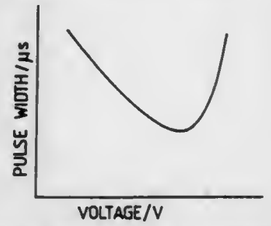
PCT No. PCT/GB93/02422, § 371 Date Jul. 5, 1995, § 102(e) Date Jul. 5, 1995, PCT Pub. No. WO94/12591, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 22, 1993, Ser. No. 436,479

Claims priority, application United Kingdom, Nov. 24, 1992, 9224542

Int. Cl.[6] C09K *19/52;* **G02F** *1/13*

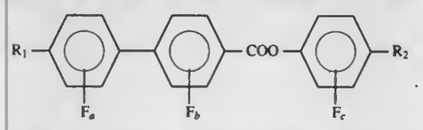
U.S. Cl. 252—299.01 **14 Claims**



1. A retroelectric liquid crystal device comprising two spaced cell walls each bearing electrode structures and treated on at least one facing surface with an alignment layer, a layer of a smectic liquid crystal material enclosed between the cell walls, a minimum in its response time versus voltage curve, wherein the liquid crystal material consists of three components; A, B and C, where the three components are given by:

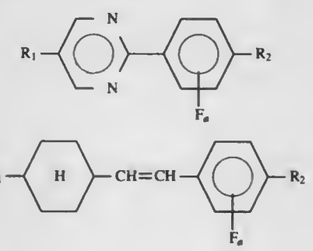
Component A being present in the range of 0.1–50 wt % and is one or more optically active compounds capable of imparting a spontaneous polarisation to the material;

Component B being present in the range of 10–90 wt % and selected as one or more compounds having formula B:

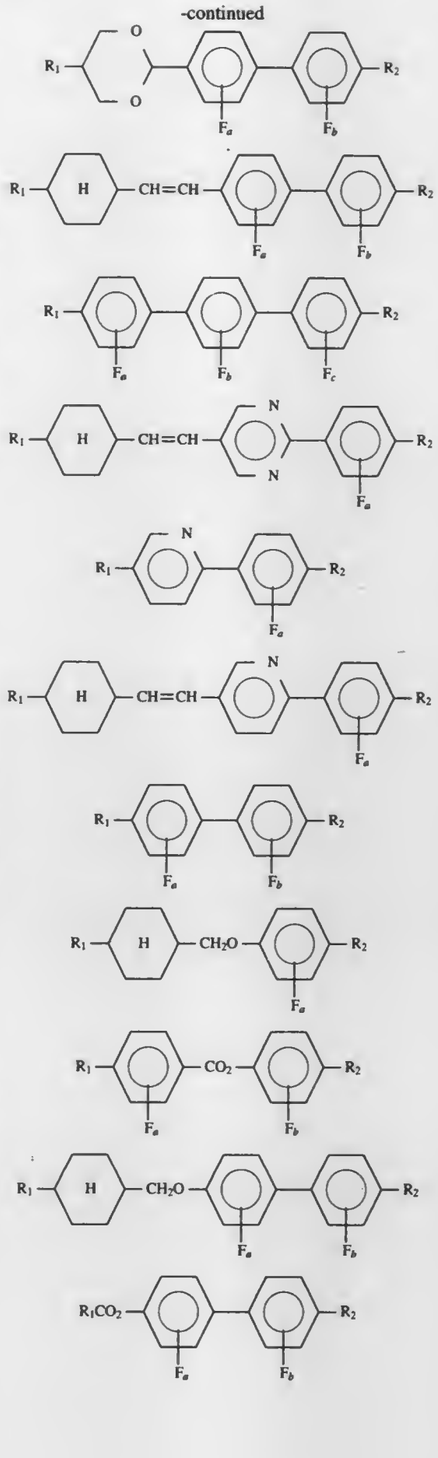


R_1 and R_2 independently represent straight or branched chain C_3–C_{12} alkyl or alkoxy; a, b and c are independently 0.1 or 2 and the total of a+b+c is not greater than 4;

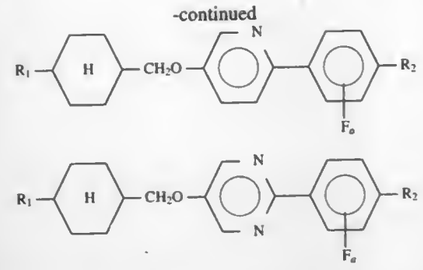
Component C is present in the range sufficient to enable A+B+C= 100 wt %, and is one or more compounds selected from:



-continued



-continued



wherein a, b and c are independently 0, 1, 2, 3; R_1 and R_2 are C_1–C_{15}alkyl or alkoxy.

5,611,958

INFRARED PHOSPHOR AND MATERIAL HAVING LATENT IMAGES AND OPTICAL READING SYSTEM USING SAID PHOSPHOR

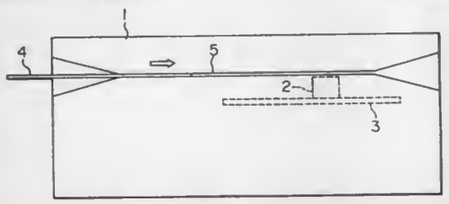
Yoji Takeuchi; Toshio Oshima, both of Toride; Ryuzo Fukao, Ibaraki-ken, and Hisao Kanzaki, Toride, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed May 4, 1994, Ser. No. 238,068

Claims priority, application Japan, May 11, 1993, 5-109595; May 11, 1993, 5-109596; Sep. 24, 1993, 5-261634; Sep. 24, 1993, 5-261635

Int. Cl.[6] C09K *11/70;11/81;* **G06K** *19/14;* **B32B** *33/00*

U.S. Cl. 252—301.4 P **11 Claims**



1. An infrared phosphor having nonacicularly-shaped particles that are less than or equal to 4 μm in size, the phosphor being stimulated to phosphoresce by infrared light, the infrared phosphor comprising a phosphate compound represented by the following formula:

$$Ln_xB_{1-x}PO_4$$

wherein: B represents at least one element selected from the group consisting of Y, La, Gd, Bi, Ce, Lu, In, Pr and Tb; Ln represents at least one element selected from the group consisting of Nd; Yb and Er; and x is a numerical value of 0.01 to 0.99.

5,611,959

ALUMINATE PHOSPHOR

Naoto Kijima; Yasuo Shimomura; Chisato Miura, all of Yokohama; Takayuki Hisamune, Odawara; Masakazu Nabu, Odawara, and Koichi Toriumi, Odawara, all of Japan, assignors to Mitsubishi Chemical Corporation, and Kasei Optonix, Ltd., both of Tokyo, Japan

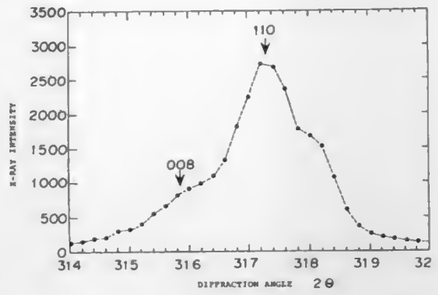
Filed Aug. 16, 1995, Ser. No. 515,807

Claims priority, application Japan, Aug. 17, 1994, 6-193141; Sep. 19, 1994, 6-223021; Sep. 19, 1994, 6-223022

Int. Cl.[6] C09K *11/64*

U.S. Cl. 252—301.4 R **18 Claims**

1. An aluminate phosphor comprising (a) at least one element selected from the group consisting of Ba, Sr and Ca, (b) Eu, (c) Mg or Mg and Zn, (d) optionally Mn and (e) Al, said aluminate phosphor comprising a crystalline inorganic compound which



shows, in its powder X-ray diffraction pattern upon incidence of X-rays of $CuK\alpha_1$, no medium value at Miller index 008 independent of a diffraction peak at Miller index 110.

5,611,960

PROCESS OF PREPARING TANTALATE X-RAY INTENSIFYING PHOSPHORS WITH DECREASED DELAYED FLUORESCENCE

Carmine Torardi, Wilmington, Del., and Chwen-Chang R. Miao, Folcroft, Pa., assignors to Sterling Diagnostic Imaging, Inc., Glasgow, Del.

Filed Mar. 28, 1996, Ser. No. 623,476

Int. Cl.[6] C09K *11/67*

U.S. Cl. 252—301.4 R **20 Claims**

1. A process for preparing an X-ray intensifying phosphor chosen from a group consisting of:

(a) $YNb_xTa_{1-x}O_4$, where x is 0 to about 0.15;

(b) $LuNb_xTa_{1-x}O_4$, where x is 0 to about 0.2;

(c) $Y_{1-y}Tm_yTaO_4$, where y is 0 to about 0.03;

(d) a solid solution of (a) and (b);

(e) a solid solution of (a) and (c);

(f) $Y_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(g) $Lu_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(h) $Gd_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(i) a solid solution of at least two of (f), (g) and (h);

(j) any of (a) to (i) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;

(k) any of (a) to (i) wherein up to 15 mole percent of the yttrium, lutetium or. gadolinium is replaced by ytterbium;

(l) any of (a), (b), (c), (d) and (e) wherein up to 15 mole percent of the yttrium or lutetium is replaced by gadolinium; and

(m) $Y_{1-x}Bi_xTaO_4$ where x is 0.00005 to about 0.1;

said process comprising the steps:

(i) intimately mixing stoichiometric quantities of corresponding precursor oxides;

(ii) mixing the resultant mixture from (i) with a flux consisting essentially of 2–95% by weight KCl, 5–98% by weight of at least one lithium salt chosen from a group consisting of LiCl and Li_2SO_4 and 0–50% by weight of $SrCl_2$;

(iii) heating the flux-containing mixture from (ii) in the range of about 1100° C to about 1400° C., for at least 3 hours; and

(iv) recovering the phosphor.

5,611,961

METHOD OF PREPARING MANGANESE ACTIVATED ZINC ORTHOSILICATE PHOSPHOR

Cheryl M. Forster, Vau Etten, N.Y.; Anthony F. Kasenga, Towanda, and Chung N. Chau, Sayre, both of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Sep. 14, 1994, Ser. No. 306,046

Int. Cl.[6] C09K *11/54*

U.S. Cl. 252—301.6 F **7 Claims**

1. A process for producing a manganese activated zinc orthosilicate phosphor having the nominal formula Zn_2SiO_4:Mn, said method comprising the steps of:

preparing a uniform aqueous dispersion comprising fumed silica having an ultrafine average particle size of less than 50 nm, a zinc precursor, and a manganese precursor, the molar ratio of zinc:silicon in said dispersion being approximately 1.3:1 to 2.0:1, and the molar ratio of manganese in said dispersion being sufficient to activate said phosphor;

calcining precipitate from said dispersion in an inert atmosphere at a temperature and for a time sufficient to form a manganese activated zinc silicate phosphor having a broad band emission peaking in the green region of the visible spectrum when stimulated by external radiation at approximately 254 nm.

5,611,962

PRODUCTION OF ENCAPSULATED CHEMICAL FOAMING CONCENTRATES

Rodrigo A. Garcia, Conroe, Tex., and Joseph G. Gho, Vancouver, Canada, assignors to GAIA Research, Conroe, Tex.

Continuation of Ser. No. 61,182, May 13, 1993, abandoned, which is a division of Ser. No. 974,109, Nov. 10, 1992, Pat. No. 5,234,963, which is a continuation-in-part of Ser. No. 882,279, May 13, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 404,142

Int. Cl.[6] C09K *3/00;* **B32B** *27/00*

U.S. Cl. 252—350 **11 Claims**

1. An encapsulated chemical foaming concentrate which comprises solid extruded strand cut pellets comprising a mixture of a high melting thermoplastic resin selected from the group consisting of polyethylene, polypropylene, polystyrene, polyethylene acrylic acid, and polyethylene methacrylic acid, and foaming agents comprising an organic acid and a base in an amount necessary to result in a chemical reaction which produces a high concentration of active foaming gas; said chemical foaming agents having been encapsulated within said pellets, said pellets having unfoamed outer surfaces solidified by an application of positive pressure during compounding of said resin and said foaming agents, said outer surfaces containing the escape of said foaming agents, both reacted and unreacted, and said outer surfaces preventing further reaction of said foaming agents.

5,611,963

METHOD OF REDUCING HALIDES IN SYNTHESIS GAS

Phillip E. Unger, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 46,355, Apr. 8, 1993, abandoned. This application Aug. 24, 1994, Ser. No. 295,186

Int. Cl.[6] B01D *53/68;* **C01B** *3/50;3/34*

U.S. Cl. 252—373 **14 Claims**

6. A method for reducing halide content of a synthesis gas stream consisting essentially of:

(a) admixing one halide-free metal compound selected from the group consisting of potassium oxide, potassium hydroxide, potassium bicarbonate, potassium carbonate, sodium oxide, sodium hydroxide, sodium bicarbonate, and sodium carbonate with a carbonaceous feed material selected from the group consisting of coal, petroleum coke, liquid hydrocarbons, and mixtures thereof, wherein said carbonaceous feed material contains halide-containing compounds, and wherein the amount of metal compound admixed with the feed is 1 to about 3 times the stoichiometric amount of metal compound necessary to form metal halide with respect to the halide content of the feed;

(b) feeding the resulting mixture into an entrained flow gasifier under gasifying conditions at a temperature in the gasifier from about 1480° C. to about 1760° C. thereby producing a synthesis gas comprising hydrogen and carbon monoxide, wherein the metal compound in the mixture substantially vaporizes;

(c) reacting the vaporized metal compound with the halide from the halide-containing compounds, thereby producing a vaporized metal halide, wherein said vaporized metal compound does not substantially react to form metal sulfides, wherein said vaporized metal halide is carried with said synthesis gas;

(d) sufficiently cooling the vaporized metal halide downstream from said gasifier to produce solid metal halide particles contained within the synthesis gas stream;

(e) passing the synthesis gas stream to a solids removal unit for removing the solid metal halide particles, said solid metal halide particles being substantially-free of metal sulfides formed by reaction with said vaporized metal compound, wherein the synthesis gas stream exiting said solids removal unit is substantially free of halide-containing compounds; and

(f) recovering the synthesis gas stream.

5,611,964

FIBRIL FILLED MOLDING COMPOSITIONS

Stephen O. Friend, Boxford, and James J. Barber, Arlington, both of Mass., assignors to Hyperion Catalysis International, Lexington, Mass.

Continuation of Ser. No. 132,127, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 859,611, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 385,835, Jul. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 149,573, Jan. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 872,215, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 678,701, Dec. 6, 1984, Pat. No. 4,663,230. This application Mar. 20, 1995, Ser. No. 407,266

Int. Cl.[6] H01B *1/00;1/24*

U.S. Cl. 252—511 **34 Claims**

1. A shaped composite comprising a reaction injection molded polymer matrix containing about 0.5% to about 20% by weight of graphitic carbon fibrils having a diameter of between 3.5 and 75 nanometers, inclusive, and a length to diameter ratio of at least 5.

5,611,965

PLASTIC OPTICAL FILTER

Masuhiro Shooji; Takeo Ogihara; Hiroki Katono, and Teruo Sakagami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 519,731

Claims priority, application Japan, Sep. 7, 1994, 6-239373

Int. Cl.[6] F21V *9/00;9/04*

U.S. Cl. 252—582 **10 Claims**

1. A plastic optical filter comprising a filter base formed of a plastic material comprising a copolymer obtained by copolymerizing

a first monomer represented by the following formula I:

$$PO(OH)_nR_{3-n} \quad \text{I}$$

wherein R means a polymerizable functional group represented by the following formula II:

$$CH_2{=}CXCOO(C_2H_4O)_m{-} \quad \text{II}$$

in which X denotes a hydrogen atom or a methyl group, and m is an integer of 1–5, and n is 1 or 2,

with at least one second monomer copolymerizable therewith, and an ionic metal component composed of a copper ion incorporated in the copolymer;

said plastic material having been cast polymerized in a mold having an inner surface on which a negative pattern of a phase grating is formed, to form a phase grating on a surface of the filter base and

wherein said second monomer is miscible and soluble uniformly with the first monomer, has good radical polymerizability with the first monomer, and forms an optically transparent copolymer.

5,611,966

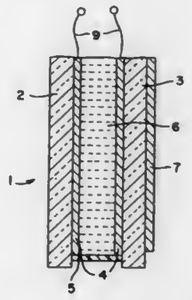
ELECTROCHEMICHROMIC SOLUTIONS, PROCESSES FOR PREPARING AND USING THE SAME, AND DEVICES MANUFACTURING WITH THE SAME

Desaraju V. Varaprasad, Holland, Mich.; Steven D. Looman, Salt Lake City, Utah; Mingtang Zhao, Holland, Mich.; Hamid R. Habibi, Holland, Mich., and Niall R. Lynam, Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 61,742, Jan. 17, 1993, Pat. No. 5,424,865, which is a division of Ser. No. 756,342, Sep. 6, 1991, Pat. No. 5,239,405. This application Jun. 1, 1995, Ser. No. 458,080

Int. Cl.[6] G02F *1/00*

U.S. Cl. 252—583 **11 Claims**



1. An electrochemichromic device comprising:

(a) a first substantially transparent substrate coated with a substantially transparent conductive coating on its interior face having a sheet resistance in the range of from about 1 to about 100 ohms per square;

(b) a second substantially transparent substrate coated with a substantially transparent conductive coating on its interior face having a sheet resistance in the range of from about 1 to about 100 ohms per square, said second substrate positioned in substantially parallel spaced-apart relationship with said first substrate and being laterally displaced therefrom;

(c) a sealing means positioned toward the peripheral edge of each of said first substrate and said second substrate and sealing forming a cell cavity therebetween;

(d) an electrochemichromic solution capable of color change when an applied potential is introduced thereto having been dispensed into and confined within said cell cavity, said electrochemichromic solution comprising:

(i) at least one anodic compound, the anodic compound having been previously contacted with a redox agent such that the anodic compound exists in a different valence state than prior to having been contacted with the redox agent;

(ii) at least one cathodic compound; and

(iii) a solvent,

wherein the redox potential of the anodic compound in the different valence state is greater than the redox potential of the cathodic compound while each is contacted with the solvent; and

(e) a means for introducing an applied potential to said electrochemichromic solution to controllably cause a variation in the amount of light transmitted through said device.

5,611,967

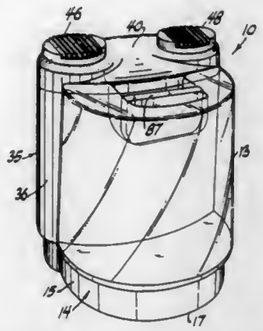
COMBINATION EVAPORATIVE/WARM MIST HUMIDIFIER

Rodney Jane, Westboro, and John Longan, Shrewsbury, both of Mass., assignors to Duracraft Corporation, Southborough, Mass.

Filed Nov. 20, 1995, Ser. No. 561,089

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—142 **25 Claims**



1. A combination evaporative/warm mist humidifier capable of selectively operating in an evaporative mode, a warm mist mode, and/or a combined evaporative/warm mist mode, comprising:

(a) a base;

(b) an evaporative cavity disposed within said base;

(c) a warm mist cavity disposed within said base;

(d) a wick element comprising a lower supply portion disposed within said evaporative cavity and an upper evaporative portion disposed thereabove, said wick element adapted to provide liquid flow by capillary action from said lower supply portion to said upper evaporative portion;

(e) a housing removably mounted on said base, said housing comprising an evaporative chamber and a warm mist chamber, each chamber comprising an inlet opening, a discharge opening, and a fluid passageway therebetween, said evaporative chamber disposed above said evaporative cavity and adapted to receive said upper evaporative portion of said wick element, and said warm mist chamber disposed above said warm mist cavity;

(f) a selectively operable heating element disposed within said warm mist cavity for inducing evaporation of liquid contained therein, said warm mist chamber adapted to receive said evaporated liquid vapor through said inlet opening and to discharge said vapor through said discharge opening; and

(g) a selectively operable blower assembly mounted in said evaporative chamber.

5,611,968

METHOD OF MAKING INTRAOCULAR LENSES

Bernard F. Grisoni, Arlington, Tenn., and Glenn R. Sussman, Lake Forest, Calif., assignors to Allergan, Waco, Tex.

Filed Aug. 16, 1994, Ser. No. 291,386

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.1 **20 Claims**

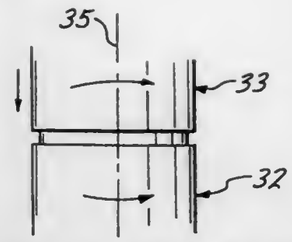
1. A method of making an intraocular lens comprising:

placing an item comprising a polymer and having a thickness between two surfaces so that said surfaces each contact said item and are separated by said thickness, said polymer being selected from the group consisting of methyl methacrylate homopolymers, methyl methacrylate-containing copolymers and polycarbonates;

heating said item to a temperature of above about 30° C.;

rotating at least a portion of one of said surfaces around an axis of rotation substantially parallel to said thickness, provided that each of said surfaces includes a central portion which is not so rotated, to form a rotated item having increased tensile strength relative to said item; and

forming an intraocular lens including an optic and at least one fixation member secured to said optic and extending from said optic from said rotated item.



5,611,969

OPTICAL LENS MOLD AND METHOD OF MAKING THE MOLD

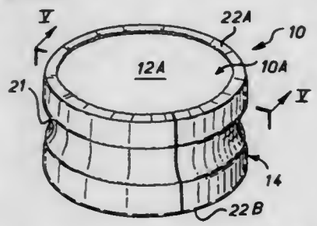
Jean-Paul Cano, Sucy-en-Brie; Jean-François Magne, Creteil, and Georges Wajs, Ivry, all of France, assignors to Essilor International, Compagnie Generale d'Optique, Charenton le Pont, France

Filed Mar. 9, 1995, Ser. No. 401,457

Claims priority, application France, Mar. 29, 1994, 94 03655

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.5 **15 Claims**



1. A method of making a mold for molding an optical lens, said method comprising the steps of a providing two molding shells and an annular closure sleeve member of heat shrinkable material, applying the closure sleeve around peripheral edges of the molding shells, and then heat shrinking the closure sleeve around the molding shells to locate the molding shells and firmly hold them relative to the closure sleeve non adhesive whereby there results a mold for molding an optical lens.

5,611,970

METHOD OF CAST MOLDING TORIC CONTACT LENSES

Attilio Apollonio, Livonia, and Paul M. Erickson, Kent, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 189,351, Jan. 31, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,046

Int. Cl.[6] B29D *11/00*

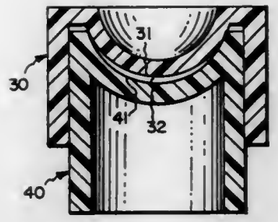
U.S. Cl. 264—2.5 **7 Claims**

1. A method of cast molding a toric contact lens including a posterior toric central zone having a cylindrical axis, and an anterior lens surface forming a ballast that has an axis of orientation offset from said cylindrical axis at a selected rotational angle, said method comprising:

providing anterior and posterior mold sections including respective anterior and posterior mold cavity defining surfaces, wherein the posterior mold cavity defining surface includes a toric central zone and the anterior mold cavity defining surface is shaped to provide the ballast, said mold sections being alignable at multiple rotational positions;

adjusting rotational alignment of the anterior and posterior mold sections with respect to one another to align the mold sections at a rotational position corresponding to said selected rotational angle, and assembling said anterior and posterior mold sections at said corresponding rotational position to form a lens-shaped molding cavity therebetween, and

curing a polymerizable lens-forming mixture in the lens-shaped cavity of the assembled mold sections to form the toric contact lens.



5,611,971

PRODUCTION OF MICROCAPSULES OF WATER-SOLUBLE DRUGS

Koichi Maedera, Suita; Masuhisa Hori, Amagasaki, and Tomomichi Futo, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 6, 1993, Ser. No. 102,790

Claims priority, application Japan, Aug. 7, 1992, 4-211462

Int. Cl.[6] B01J *13/02;13/04*

U.S. Cl. 264—4.1 **21 Claims**

1. A process for producing microcapsules of a water-soluble drug by in-water drying process, which comprises carrying out the process in the presence of an osmotic pressure adjustor present in the external aqueous phase, wherein the concentration of the osmotic pressure adjustor in the external aqueous phase is about 0.001 to about 60% (w/w), and wherein the osmotic pressure adjustor is selected from the group consisting of water-soluble polyhydric alcohols, water-soluble monohydric alcobols, water-soluble monosaccharides, water-soluble disaccharides, water-soluble oligosaccharides and their derivatives, and water-soluble amino acids and their salts.

5,611,972

DEVICES AND RELATED METHOD FOR THE SELECTIVE EXPOSURE OF MICROENCAPSULATED LIQUIDS

Christopher Tararuj, Hamilton, and Hung Y. Chao, Princeton Junction, both of N.J., assignors to Webcraft Technologies, Inc., Horsham, Pa.

Continuation of Ser. No. 227,262, Apr. 13, 1994, abandoned. This application May 13, 1996, Ser. No. 647,257

Int. Cl.[6] B01J *13/02;13/04*

U.S. Cl. 264—4.1 **13 Claims**

1. A reusable device for exposing a microencapsulated liquid comprising two surfaces adhered to each other by an adhesive composition, the adhesive composition comprising

a non-film forming repositionable adhesive comprising a plurality of adhesive polymeric acrylic microparticles having an average diameter of about 10 μm to about 90 μm and

microcapsules of an average diameter of about 5 μm to about 60 μm which have the microencapsulated liquid therein and which are adhered to each surface by the adhesive,

wherein at least a portion of the microcapsules are broken when the surfaces are separated, and wherein the adhesive has the

ability to readhere the surfaces to each other after the surfaces are separated and microcapsules broken.

5,611,973

PROCESS OF PRODUCING A STARTING MATERIAL IN THE FORM OF GRANULES

Veronique Gurfein, Le Plessis Robinson; Christian Zaffran, Suresnes, and Eric Lapoirie, Villemonble, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 2, 1995, Ser. No. 460,625
Claims priority, application France, Jun. 3, 1994, 94 06843
Int. Cl.[6] B29B *9/10*
U.S. Cl. 264—5 **10 Claims**

1. Process for producing a starting material in the form of granules in the mircoporus anhydrous state having an even surface, a regular shape and a graded size, which consists in:

(a) obtaining a dispersion or a solution, in a lyophilizable solvent or mixture of solvents of a starting material, said dispersion or solution having a viscosity which makes it possible mechanically to form graded drops;

(b) shaping said dispersion or solution through a mechanical device so that said dispersion or solution flows dropwise from said device in the form of graded drops;

(c) freezing in a freezing medium the drops formed in Stage (b) in order to obtain frozen drops; and

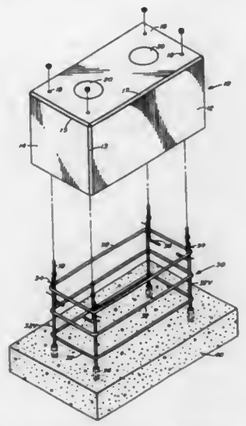
(d) recovering from the freezing medium and lyophilizing the frozen drops obtained in Stage (c) in order to obtain granules of the starting material in the microporous anhydrous state having an even surface, a regular shape and a graded size.

5,611,974

METHOD FOR PREPARING OR REPAIRING A MACHINE FOUNDATION

William L. Welch, Houston; Don W. Sluder, Lake Jackson, and Wallace D. Hill, Pasadena, all of Tex., assignors to Welch-Sluder IP Partners, Houston, Tex.

Division of Ser. No. 962,968, Nov. 16, 1992, Pat. No. 5,437,430, which is a continuation-in-part of Ser. No. 625,293, Dec. 10, 1990, Pat. No. 5,165,651, which is a continuation-in-part of Ser. No. 449,608, Dec. 11, 1989, abandoned. This application Jul. 1, 1995, Ser. No. 509,825
Int. Cl.[6] B32B *35/00;* **E04B** *1/16*
U.S. Cl. 264—34 **11 Claims**



1. A method for preparing a machine foundation for supporting a machine attached thereto which comprises:

enclosing a maze of vertically extending reinforcement rods with a corrosion resistant form made of a material free from fluid attack selected from the group consisting of an aggregate filled thermosetting resin and thermoplastic resins by placing said form upon a slab, said form having vertical walls to surround said maze and a horizontal upper wall to cover said maze, and at least one wall having at least one opening;

filling said form through said opening with a fortifying material to secure said form with said vertically extending reinforcement rods to said slab; and

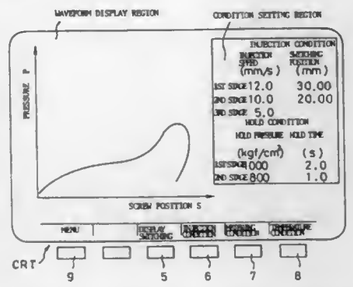
closing said opening in said form to provide said machine foundation for supporting said machine.

5,611,975

MOLDING CONDITION SETTING METHOD FOR AN INJECTION MOLDING MACHINE

Masao Kamiguchi, and Noriaki Neko, both of Minamitsuru-gun, Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

Continuation of Ser. No. 80,653, Jun. 24, 1993, abandoned, which is a continuation of Ser. No. 720,760, Jul. 2, 1991, abandoned. This application Mar. 20, 1995, Ser. No. 406,806
Claims priority, application Japan, Nov. 2, 1989, 1-284832
Int. Cl.[6] B29C *45/76*
U.S. Cl. 264—40.1 **13 Claims**



1. A method of resetting injection molding conditions, comprising the steps of:

simultaneously displaying current settings for injection molding conditions and a pressure in an object being injected, the pressure being displayed as a curved lined in a graph with pressure on one axis, and one of time and screw position on another axis, the current settings for injection molding conditions including at least one setting different than a pressure setting;

visually comparing the current settings for injection molding conditions and the pressure; and

resetting the injection molding conditions based on the comparison of the current settings for injection molding conditions and the pressure.

5,611,976

PROCESS FOR THE PRODUCTION OF MOLDINGS FROM TWO-COMPONENT REACTIVE SYSTEMS HA'ING A HIGH FILLER CONTENT

Lothar Klier, Langenfeld; Thomas Gross, Wermelskircheo; Karl-Dieter Kreuer, Leverkusen, and Achim Symannek, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 22, 1995, Ser. No. 447,306
Claims priority, application Germany, May 27, 1994, 44 18 506.5
Int. Cl.[6] B29C *35/02*
U.S. Cl. 264—45.3 **3 Claims**

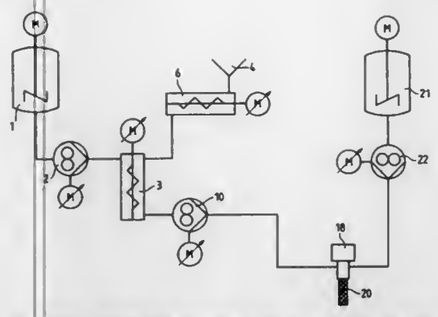
1. A process for the production of moldings comprising:

1) mixing and reacting an aromatic di- or polyisocyanate with a di- and/or polyol of a molecular weight of 1,000 to 20,000 in a quantity insufficient to react with all the NCO groups to yield an isocyanate pre-adduct having an NCO group content of 5 to 32%,

2) mixing the pre-adduct with a ground material and/or filler, wherein the ground material and/or filler is present in an amount of from 5 to 95% by weight of the mixture of step 2),

3) mixing the mixture of step 2) in astatic mixer with a di- and/or polyol of a molecular weight of 62 to 2,000 (crosslinking agent), which optionally contains water and/or organic blowing agents, and

4) introducing the mixture of step 3) into a mold.

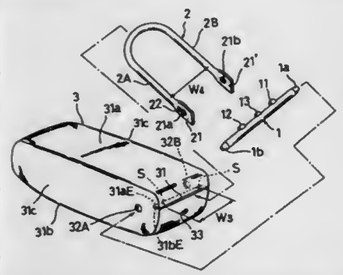


5,611,977

METHOD FOR FORMING AN ARMREST

Noriyuki Takei, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1996, Ser. No. 601,773
Claims priority, application Japan, Feb. 28, 1995, 7-063506
Int. Cl.[6] B29C *44/06;44/12*
U.S. Cl. 264—46.5 **11 Claims**



1. A method for forming an armrest, comprising the steps of:

providing a frame;

providing a shaft independently of said frame;

said frame and shaft including a connecting means for connecting said shaft to said frame at a predetermined position;

providing a preformed three-dimensional trim cover assembly of closed box-like type which includes one cover section having an opening means formed therein and a pair of lateral cover sections, wherein a pair of through-holes is formed, with one through-hole in each lateral cover section;

inserting said frame through said opening means into an inside of said trim cover assembly;

thereafter, inserting one end of said shaft into one of said pair of through-holes of said trim cover assembly;

manipulating said shaft via said connecting means so as to connect the shaft to said frame at the predetermined position within said trim cover assembly;

then, exposing said one end of said shaft outwardly from another of said pair of through-holes of said trim cover assembly, to thereby mount said frame and shaft within said trim cover assembly, whereby an incomplete unit of armrest is formed;

thereafter, placing said incomplete unit of armrest in a foaming die;

injecting a base foaming material in liquid into the inside of said trim cover assembly placed in said foaming die; and

subjecting said incomplete unit of armrest to foaming in said foaming die so as to create a foam cushion member in said trim cover assembly, thereby forming a complete armrest with said both ends of said shaft projecting from lateral sides thereof.

5,611,978

PRODUCTION OF SINTERED MOLDINGS

Peter Truebenbach, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00072, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/25205, PCT Pub. Date Nov. 10, 1994
PCT Filed Jan. 12, 1994, Ser. No. 492,117
Int. Cl.[6] C04B *40/00;35/64*
U.S. Cl. 264—63 **7 Claims**

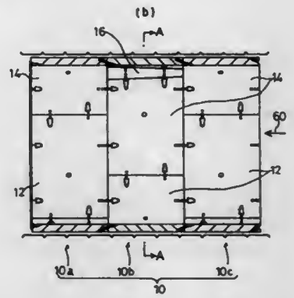
1. A process for the production of sintered moldings which comprises: molding a mixture of a sinterable ceramic or metallic powder and polyoxymethylene or a copolymer containing a majority of oxymethylene units as binder to give a compact, removing the binder by treatment with a gaseous acid,a nd sintering the molding wherein the acid is solid at room temperature and sublimes or melts and evaporates when heated.

5,611,979

FABRICATION METHOD FOR A FUNNEL LINER

Mitsutoshi Hayashi, Omiya, and Mitsuo Ishitani, Sapporr, both of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, and Nippon High Strength Concrete Co. Ltd., Hokkaido, both of Japan

Filed May 9, 1994, Ser. No. 239,877
Claims priority, application Japan, May 11, 1993, 5-109495; May 11, 1993, 5-109496; Jul. 30, 1993, 5-190256; Dec. 3, 1993, 5-303930; Dec. 3, 1993, 5-303931
Int. Cl.[6] B28B *1/08;1/20*
U.S. Cl. 264—71 **5 Claims**



1. A method of fabricating centrifugally molded concrete tunnel liner segments comprising the steps of:

preparing individual arcuate hollow forms, each of which comprise an arcuate bottom plate, two arcuate side wall plates, two rectangular side wall plates, a removable arcuate cover plate and a charge opening near one of said rectangular side wall plates;

holding each of said arcuate hollow forms in a position such that said charge opening of each hollow form is in an upper position, so that three of four abutment portions of concrete being molded in said arcuate hollow form are adhered closely to inside surfaces of said hollow form;

filling each of said hollow forms with said concrete through said charge opening of said hollow form;

enclosing said charge opening of each said hollow forms;

accelerating flowing-down filling of said concrete and compacting said concrete by applying vibration to said concrete in each of said hollow forms, in order to fabricate at least one of projections and recessed grooves on surfaces of each abutment portion of each concrete tunnel liner segment being formed in each hollow arcuate form;

mounting a plurality of said concrete-filled, arcuate hollow forms in a centrifugal molding drum;

rotating said drum at high revolutions to consolidate said concrete by applying a centrifugal force to said concrete;

removing said arcuate hollow forms from said centrifugal molding drum, and also removing said removable arcuate cover plate of each of said arcuate hollow forms to allow for finishing of an arcuate inner surface side of said concrete tunnel liner segments formed in each of said arcuate hollow forms; and

performing concrete curing.

5,611,980

APPARATUS AND METHOD FOR SLIP CASTING

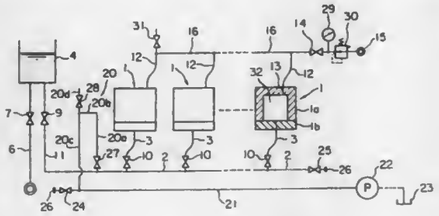
Mamoru Eto; Masaharu Yasui; Hidetoshi Ohtani, and Taiichi Aso, all of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka-ken, Japan

Filed Jun. 5, 1995, Ser. No. 464,419

Claims priority, application Japan, Jun. 8, 1994, 6-126352

Int. Cl.[6] B28B *1/26*

U.S. Cl. 264—87 **8 Claims**



1. An apparatus for slip casting formed bodies, which comprises:

one or more slip casting molds;

a pouring pipe for supplying slip and arranged below said slip casting molds;

one or more branch pipes which branch off from said pouring pipe and which each are connected to a slip supply and discharge port at a lower end of each of said slip casting molds;

means for feeding pressurized air into slip discharge spaces of formed bodies cast within said slip casting molds; and

pipe means which includes a first portion rising from said pouring pipe for discharging said slip from said slip casting molds to a slip delivery port located at a second portion of said pipe means,

said pipe means including meads for substantially balancing head pressure of slip within said pipe means with a pressure of slip which is pushed out from said slip discharge spaces by said pressurized air fed from said means for feeding pressurized air, so that disengagement of said formed bodies in said slip casting molds does not occur during said discharging of said slip.

5,611,981

PROCESS OF MAKING FIBERS

Bobby M. Phillips, Jonesborough, and Shriram Bagrodia, Kingsport, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 736,267, Jul. 23, 1991, which is a continuation-in-part of Ser. No. 333,651, Apr. 4, 1989, abandoned. This application Oct. 8, 1993, Ser. No. 133,426

Int. Cl.[6] D01D *5/253;* **D01F** *11/04*

U.S. Cl. 264—130 **7 Claims**

1. A process for preparing a fiber comprising heating a fiber-forming material at or above its melting point and extruding said heated material through a spinneret having at least one orifice capable of forming the desired fiber, and applying an appropriate surface treatment, wherein the fiber satisfies the equation

$$(1-X\cos\theta_a)<0,$$

wherein

θ_a is the advancing contact angle of water measured on a flat film made from the same material as the fiber and having the same surface treatment,

X is a shape factor of the fiber cross-section that satisfies the following equation

$$X=\frac{P_w}{4r+(\pi-2)D}$$

P_w is the wetted perimeter of the fiber and r is the radius of the circumscribed circle circumscribing the fiber cross-section and D is the minor axis dimension across the fiber cross-section.

5,611,982

PRODUCT FOR THE PRODUCTION OF A DEEP-DRAWABLE FILM

Thambirajah Mathavan, Munich, and Eberhardt Dous, Steinebach, both of Germany, assignors to Alkor GmbH Kunststoffe, Munich, Germany

Division of Ser. No. 267,592, Jun. 2, 1994, Pat. No. 5,482,766. This application May 12, 1995, Ser. No. 439,779

Claims priority, application Germany, Jun. 21, 1993, 43 20 474.0; Sep. 7, 1993, 43 30 201.7

Int. Cl.[6] B29C *47/06*

U.S. Cl. 264—131 **10 Claims**



1. A process for the production of the deep-drawable laminated film, comprising:

a polyolefin-containing bottom film which (based on 100 parts by weight of polymer in the film) comprises:

(d) from about 1 to 60% by weight of at least one partially crosslinked EPDM;

(e) from about 12 to 30% by weight of a propylene homopolymer, copolymer or graft polymer with or without reactive groups;

(f) from about 77 to 9.5% by weight of at least one polymer and/or ionomer containing reactive groups and based on ethylene and methacrylic acid or acrylic acid, at least some of the acid groups containing a metal ion or being neutralized by metal ions; and

(g) from about 10 to 0.5% by weight of at least one polymeric crosslinking agent which contains reactive groups and comprises more than about 51% by weight (based on 100 parts by weight of (g)) of ethylene or other olefin groups and from about 1 to 49% by weight of acrylate and/or methacrylate groups and reactive groups, the reactive groups being selected from epoxy, isocyanate, ketone, aldehyde, silane, alkyl halide and/or anhydride groups; and

at least one polyolefin-containing top film, which differs from the composition of the bottom film, comprising (based on 100 parts by weight of plastic of the top film)

(a) from about 20 to 80 parts by weight of at least one crosslinked PP-EPDM (alloy or blend of propylene homo- and/or copolymer and crosslinked or partially crosslinked ethylene-propylene-diene copolymer) and

(b) from about 80 to 20 parts by weight of an uncrosslinked propylene block copolymer or a heterophase propylene block polymer having an elastomer content of from about 35 to 75% by weight (based on 100 parts by weight of the heterophase propylene block copolymer or uncrosslinked propylene block polymer) in the block or in the chain, from about 15 to 1% by weight of (b) being replaced with the same amount by weight of a polymer and/or ionomer (c) containing reactive groups and being based on ethylene and methacrylic acid and/or acrylic acid, at least some of the acid groups containing metal ions or being neutralized by metal ions,

said process comprising the steps of:

heat plastifying components (a) to (c) of the top film in at least one extruder; and

heat plastifying components (d) to (g) of the bottom film in at least one further extruder, at a temperature of from about 150° to 280° C., whereby two or more components of the bottom film at least partially undergo a reaction at the extrusion temperature; and

coextruding the laminated film through a single slot die.

5,611,983

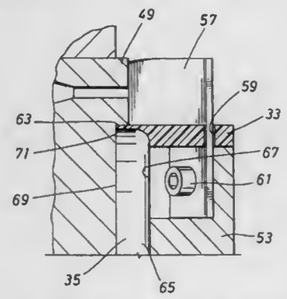
PROCESS FOR PELLETIZING POLYMER

Chin-Yuan G. Ma, Sugar Land, and Jerry W. Secrist, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 28, 1995, Ser. No. 431,240

Int. Cl.[6] B29B *9/06;* **A01J** *21/02*

U.S. Cl. 264—142 **8 Claims**



1. A process for pelletizing a molten ultra low melt viscosity thermoplastic material having a melt viscosity of 300,000 cps or lower in a liquid medium, said process comprising the steps of:

(a) extruding said molten ultra low melt viscosity thermoplastic material through an extrusion die plate said die plate comprising:

a die face at a downstream side of the die plate;

a die ring formed on a downstream side of the die face, said die ring having a wear surface projecting outwardly from the die face and having a recessed cavity in the center of said projecting surface of said die ring, said recessed cavity having a bottom surface facing an inner surface of a hub; and

a channel means extending from an upstream side of the die plate and the die ring to the die face, and said channel means forming an orifice in the die ring for said extruded material to exit the die plate;

wherein said molten ultra low melt viscosity thermoplastic material is delivered from the upstream side of the die plate to the die face through said channel means and exits said die plate through said orifice in the die ring to form an extruded strand of said ultra low melt thermoplastic material; and

(b) cutting said extruded strand of ultra low melt viscosity thermoplastic material into pellets using a cutting assembly, said cutting assembly comprising:

said hub connected to a driving shaft;

cutting blades mounted on the hub, said cutting blades having cutting edges; and

a shroud element fixedly mounted on an outer periphery of the hub, said shroud element having a slots for inserting and affixing the cutting blades to the inner surface of the hub, wherein said shroud element substantially covers said recessed cavity of said die ring, said shroud element having an outer diameter substantially equal to an inner diameter of said recessed cavity thereby allowing said cutting edges of the cutting blades to move adjacent the downstream surface of the die ring, wherein substantially all the cut pellets are prevented from entering the recessed cavity by causing a portion of the shroud element to protrude into the recessed cavity of the die ring, the outer peripbery of said shroud element being in close proximity to the inner diameter of the recessed cavity to provide a barrier against migration of said pellets into said recessed cavity, wherein said process further comprises advancing said shroud element and said cutting assembly toward the die ring to compensate for wearing of the cutting blades; wherein said shroud portion protruding into the recessed cavity reduces in size through grinding of said shroud portion against the bottom surface of said recessed cavity as said shroud element and said cutting assembly advances.

5,611,984

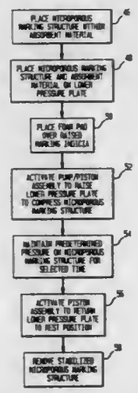
METHOD FOR STABILIZING MICROPOROUS MARKING STRUCTURES

Steven J. Sculler, Morganville, and Arthur A. Tracton, Hillsborough, both of N.J., assignors to M&R Marking Systems, Inc., Piscataway, N.J.

Filed Nov. 22, 1995, Ser. No. 562,117

Int. Cl.[6] B41K *1/50*

U.S. Cl. 264—238 **24 Claims**



1. A method of stabilizing microporous marking structures comprising the steps of: placing a microporous marking structure substantially adjacent to an absorbent material; placing the microporous marking structure and the absorbent material on a rigid plate of a stabilizing device; compressing the microporous marking structure between a pair of rigid plates by applying a driving force to at least one of the rigid plates under a predetermined pressure sufficient to force ink retained within the microporous marking structure to flow therefrom into said absorbent material so that the microporous marking structure is substantially stabilized; and removing the substantially stabilized

microporous marking structure from its compressed position between the pair of rigid plates.

5,611,985

METHOD OF MANUFACTURING A POLYSULFONE RESIN FILM AND A RETARDATION FILM

Hitoshi Kobayashi, and Takao Saito, both of Hasuda, Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Filed May 24, 1995, Ser. No. 449,666

Int. Cl.[6] B29C *55/06;55/08*

U.S. Cl. 264—291 **15 Claims**

1. In a method of manufacturing a polysulfone resin film using solution casting in which a solution of polysulfone resin is cast on a support piece to a desired thickness, dried to remove solvent, and resultant resin film is then peeled from the support piece, the improvement comprising:

casting a solution of polysulfone resin comprising at least one first solvent selected from the group consisting of anisole, dioxane, and tetrahydropyrane.

5,611,986

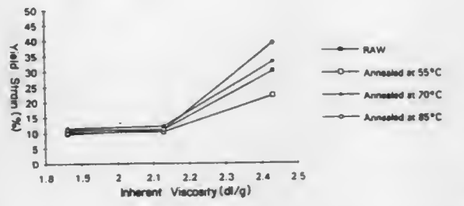
MEDICAL DEVICES CONTAINING HIGH INHERENT VISCOSITY POLY(P-DIOXANONE)

Arindam Datta, Hillsborough, N.J.; Rohit Tandon, Flowery Branch, Ga.; I-Jen Chen, Princeton; Bethany A. Canterberry, Stockton, both of N.J., and Scott E. Fitzgerald, Nazareth, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 5, 1994, Ser. No. 270,712

Int. Cl.[6] B29F *1/06;1/08*

U.S. Cl. 264—328.16 **9 Claims**



1. A process for producing molded surgical devices from high inherent viscosity poly(p-dioxanone) comprising

a) heating poly(p-dioxanone) with an inherent viscosity in the range of from about 2.10 dL/g to about 3.5 dL/g to a temperature in the range of from about 105° C. to about 140° C. to form a melted poly(p-dioxanone); then

b) injecting said melted poly(p-dioxanone) into a mold at a volumetric flow rate of greater than 0.70 cubic inches per second wherein said mold is being maintained at a temperature above 35° C.;

c) cooling said melted poly(p-dioxanone) sufficiently to maintain its shape while in the mold and thereby forming a hardened poly(p-dioxanone) device; and

d) removing said hardened poly(p-dioxanone) from the mold.

5,611,987

PROCESS FOR PRODUCING BIAXIALLY DRAWN PLASTIC BOTTLES HAVING EXCELLENT HEAT RESISTANCE

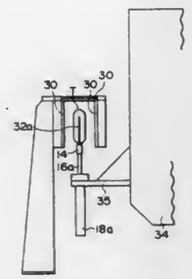
Nobuyuki Kato; Kenji Matsuno; Yoshitsugu Maruhashi, all of Yokohama; Hideo Kurashima, Yokosuka; Hiroo Ikegami, Sagamihara; Setsuko Iida, Yokohama, and Kimio Takeuchi, Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jul. 28, 1994, Ser. No. 281,686

Claims priority, application Japan, Jul. 28, 1993, 5-185684

Int. Cl.[6] B29C *49/12*

U.S. Cl. 264—458 **10 Claims**



1. A process for producing biaxially drawn plastic bottles having excellent heat resistance comprising:

A. a step of biaxially drawing and free blow-molding a preformed article to form a secondary molded article having a biaxially drawn barrel portion and biaxially drawn bottom portion;

B. a step of heating and shrinking the secondary molded article in the infrared rays emitted from an infrared-ray radiation member that has at least one first substantially planar radiation surface having a height larger than that of the secondary molded article in the direction of height and facing the barrel portion of the secondary molded article and a second substantially planar radiation surface facing the bottom portion of the secondary molded article, in order to obtain a tertiary product, wherein each substantially planar radiation surface has a surface temperature of from 350° C. to 1000° C.; and

C. a step of blow-molding the tertiary product that is in a heated state in a metal mold to obtain the bottle.

5,611,988

METHOD OF BLOW MOLDING A CONTAINER WITH INTEGRAL HOLLOW BASE STAND

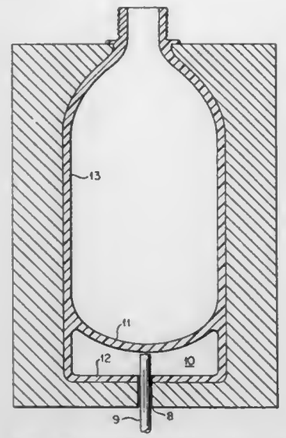
Gautam Mahajan, 57 Jay Rd., Stamford, Conn. 06905

Division of Ser. No. 907,298, Jul. 1, 1992, Pat. No. 5,400,911. This application Mar. 28, 1995, Ser. No. 412,001

Int. Cl.[6] B29C *49/02*

U.S. Cl. 264—523 **3 Claims**

1. A method of forming a bottle for containing fluids therein, said method comprising the steps of forming a preform including a body portion having a mouth portion and a closed generally hemispherical end portion and a bottom defining portion including a void (**4**), forming said bottom defining portion integral with said body portion and connected thereto adjacent to and underlying said closed hemispherical end portion, and blow molding said preform and thereby forming a bottle having a product receiving portion with a closed generally hemispherical end portion and a hollow



base portion with a flat bottom surface (**12**), said hollow base portion being integral with said product receiving portion.

5,611,989

METHOD FOR PRODUCING EASILY VOLATILE MATERIALS

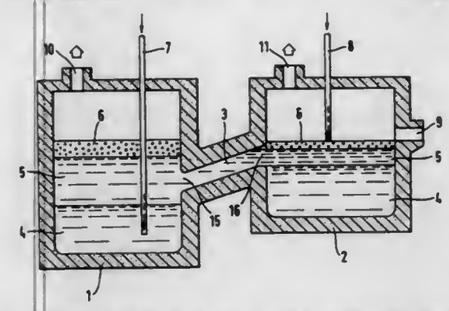
Timo Talonen, Pori; Heikki Eerola, and Antti Roine, both of Ulvila, all of Finland, assignors to Outokumpu Research Oy, Pori, Finland

Continuation-in-part of Ser. No. 320,855, Oct. 11, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 574,354

Claims priority, application Italy, Oct. 14, 1993, 934550

Int. Cl.[6] C21B *7/00*

U.S. Cl. 266—44 **6 Claims**



1. A method for producing easily volatile metals from sulfidic metal concentrates by means of two closely interconnected furnaces, comprising: feeding a sulfidic concentrate of at least one easily volatile metal into a molten metal bath in a reduction furnace for converting the easily volatile metal in the concentrate into metallic form and removing the easily volatile metal as metal vapor from the reduction furnace; forming a molten metal sulfide matte and slag in the reduction furnace and feeding the metal sulfide matte and slag in the reduction furnace and feeding the metal sulfide matte and slag to a molten metal bath in a converter through an inclined channel for conversion of the metal sulfide back to metal; discharging slag from the converter and feeding metal formed in the converter back to the reduction furnace through said channel, whereby simultaneous flow in opposite directions through the same channel of molten metal sulfide matte and slag from the reduction furnace to the converter and flow through the channel of metal from the converter to the reduction furnace is caused by changes in hydrostatic pressure and volumes of the molten metal baths resulting from chemical reactions occurring in the reduction furnace and converter.

5,611,990

COOLED CONVERTER TRUNNION RING

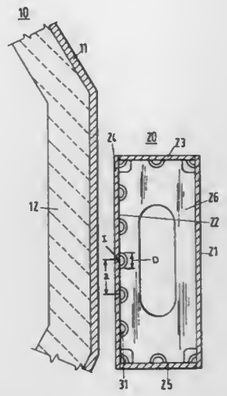
Karlheinz Langlitz, Mülheim, and Gunter Schmitz, Duisburg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Jun. 20, 1995, Ser. No. 492,849

Claims priority, application Germany, Jun. 20, 1994, 44 23 334.5

Int. Cl.[6] C21C *5/42*

U.S. Cl. 266—241 **9 Claims**



1. A cooled converter trunnion ring arrangeable at a distance from a converter so as to encompass the converter, the trunnion ring comprising: a steel mantle having an inner side arrangeable to substantially face the converter, the inner side having an inner surface; and at least two pipe coils mounted on the inner surface of the inner side of the steel mantle in a meandering fashion so that a portion of the inner surface of the steel mantle forms part of the pipe coils, as seen in cross-section, and so as to permit a liquid coolant to flow through the pipe coils, the pipe coils being arranged so that adjacent pipe coils are separated by a distance that is at least twice a diameter of the pipe coils.

5,611,991

CORROSION INHIBITOR CONTAINING PHOSPHATE GROUPS

Ali Naraghi, Missouri City, Tex., assignor to Champion Technologies, Inc., Houston, Tex.

Continuation of Ser. No. 248,370, May 24, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 599,429

Int. Cl.[6] C23F *11/16*

U.S. Cl. 422—15 **13 Claims**

1. A method of inhibiting corrosion of metal process equipment in an oil field corrosive environment comprising the step of introducing a corrosion inhibiting effective amount of a mixture consisting essentially of ether phosphates defined by the formula:

$$[R—X—(C_mH_{2m}O)_n]_k—PO(OH)_{(3-k)}$$

where;

R is an alkyl group containing 4 to 18 carbon atoms or an alkylaryl group comprising an aryl group selected from the group consisting of phenol, diphenol, and mixtures thereof, and an alkyl group containing 4 to 18 carbon atoms;

X is selected from the group consisting of a carboxyl group (—COO—), oxygen (—O—), and a secondary amine group (—NH—);

m is from 2 to 4;

n is between about 1 and about 20; and

k is from 1 to 2.

5,611,992

CORROSION INHIBITOR BLENDS WITH PHOSPHATE ESTERS

Ali Naraghi, Missouri City, and Nick Grahmann, Sugar Land, both of Tex., assignors to Champion Technologies Inc., Houston, Tex.

Continuation of Ser. No. 322,943, Oct. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 248,370, May 24, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 599,430

Int. Cl.[6] C23F *11/16*

U.S. Cl. 422—15 20 Claims

1. A method of inhibiting corrosion of metal process equipment in an oilfield corrosive environment comprising the step of introducing a corrosion inhibiting effective amount of a corrosion inhibitor in the absence of oxygen comprising:

(b) at least one phosphate ester defined by the equation:

$$[R—X—(C_mH_{2m}O)_n]_k—PO(OH)_{(3-k)}$$

where;

R is an alkyl group containing 4 to 18 carbon atoms or an alkylaryl group comprising an aryl group selected from the group consisting of phenol, diphenol, and mixtures thereof, and an alkyl group containing 4 to 18 carbon atoms;

X is selected from the group consisting of a carboxyl group (—COO—), oxygen (—O—), and a secondary amine group (—NH—);

m is from 2 to 4;

n is between about 1 and about 20; and

k is from 1 to 2.

5,611,993

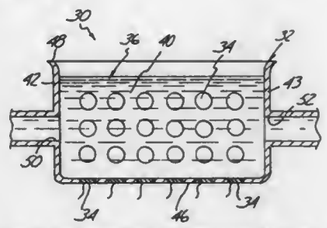
ULTRASONIC METHOD OF TREATING A CONTINUOUS FLOW OF FLUID

Eilaz P. O. Babaev, Hopkins, Minn., assignor to Areopag USA, Inc., Minneapolis, Minn.

Filed Aug. 25, 1995, Ser. No. 519,389

Int. Cl.[6] A61L *2/02*; C02F *1/36*

U.S. Cl. 422—20 9 Claims



9. A method for sterilizing a continuous flow of wastewater containing bacteria, the method comprising:

providing a continuous flow of wastewater in a fluid passageway; and

directing high frequency sound waves into the continuous flow of wastewater to cause cavitation in the wastewater to kill the bacteria, the directing step further including:

directing ultrasound waves in a first and second direction into the wastewater flow, the first direction being diametrically opposite the second direction;

directing ultrasound waves in a third direction and a fourth direction into the wastewater flow, the third and fourth directions being diametrically opposed to each other and being at a 90° angle relative to the first and second directions; and

directing ultrasound waves in a fifth and sixth direction into the wastewater flow, the fifth and sixth directions being diametrically opposed to each other and being at a 90° angle relative to the first direction and second directions and at a 90° angle relative to the third and fourth directions.

5,611,994

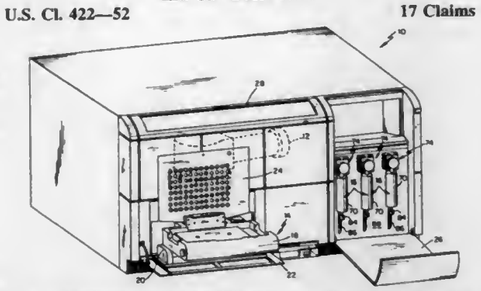
LUMINOMETER

James S. Bailey, Arlington; Phillip P. Brown, Centreville; Kenneth W. Simpson, Marshall, and Walter W. Taylor, Dale City, all of Va., assignors to Dynatech Laboratories, Inc., Chantilly, Va.

Filed Nov. 22, 1995, Ser. No. 561,755

Int. Cl.[6] G01N *21/76*

U.S. Cl. 422—52 17 Claims



1. In a luminometer having at least one injector for injecting a reagent into a sample containing open top test cell to produce a luminescent reaction and an optical system for reading the intensity of the light generated in said test cell by said reaction, the improvement comprising:

a top loading holder for said test cell having upstanding walls, a base and an open top;

a mask having at least one aperture therein, hingedly attached at an edge thereof to an upper wall portion of said holder and rotatable between an open position and a closed position wherein said mask overlies the open top of said holder,

means carried by said holder for receiving said test cell and orienting the same so that the open top of said test cell is in registration with the aperture in said mask, responsive to rotational movement of said mask from an open position to a closed position.

5,611,995

APPARATUS FOR THE DETECTION OF A SPECIFICALLY REACTING SUBSTANCE

Juan P. de Zoeten, Boxtel; Petrus F. H. M. Verheijden, Eersel; Theodorus J. J. Groothuizen, Rotterdam, and Jozef H. M. Raijmakers, Delft, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

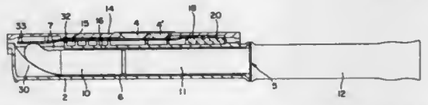
PCT No. PCT/EP94/00899, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/22011, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 454,352

Claims priority, application Germany, Mar. 17, 1993, 43 08 521.0

Int. Cl.[6] G01N *31/22*

U.S. Cl. 422—58 12 Claims



1. Apparatus for the detection of at least one substance in a test liquid comprising:

a housing,

a holding device, and

a test strip which is held in the holding device and which includes a material that transports the test liquid essentially by capillary forces and comprises an analytical system which indicates the presence or absence of said substance to be detected, wherein the housing has an interior space and a first opening for introducing said test liquid into said interior space,

wherein said holding device is held on said housing with a gap along at least one side of said holding device for allowing evaporation of test liquid and said holding device being provided with at least one window for observing the indication of the presence or absence of said substance to be detected.

5,611,996

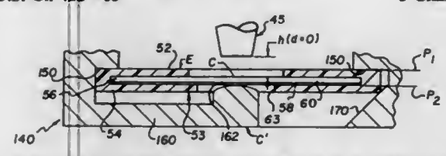
SLIDE TEST ELEMENT HOLDER WITH MINIMIZED Z-AXIS VARIABILITY

James D. Shaw, and Merrit N. Jacobs, both of Rochester, N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Jun. 6, 1995, Ser. No. 471,073

Int. Cl.[6] G01N *1/28*

U.S. Cl. 422—63 3 Claims



1. In a holder of slide test elements for use in an analyzer at a sample-dispensing station, said holder comprising two opposing holding surfaces for holding generally horizontally a slide test element at opposite side edges of the test element, and a tower extending above said holding surfaces for generally centering a dispensing tip above a held slide test element,

the improvement wherein one of said holding surfaces of said holder extends at least sufficiently far horizontally underneath a slide test element held by said holding surfaces to be disposed under an approximate center of said held test element, said one holding surface including a raised reference surface located under, and disposed for abutting against, an approximate center of an under-surface of said held slide test element, said raised reference surface being spaced away from the other of said holding surfaces a distance which ensures that said raised reference surface always contacts the under surface of a held test element so that a held slide test element is prevented by said raised reference surface from warping downwardly away at said approximate center, from a dispensing tip in said tower.

5,611,997

APPARATUS FOR PRODUCING BLOOD COMPONENT PRODUCTS

Robert W. Langley, Westminister, and Larry J. Dumont, Arvada, both of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 912,973, Jul. 10, 1992. This application Jun. 1, 1995, Ser. No. 457,840

Int. Cl.[6] G01N *33/00*; G06F *15/00*

U.S. Cl. 422—73 10 Claims

10. An assembly for providing a blood component product having a determined yield pursuant to at least two on-line yield determination techniques, comprising:

means for harvesting a plurality of a desired blood component from a source of blood which is fluidly interconnected with said means for harvesting to form harvested blood components;

means for providing a first set of predetermined information relating to said source of blood, said source of blood being from a living donor and said first set of predetermined information comprising at least one of said donor's hematocrit, height, weight and total blood volume;

means for providing a second set of predetermined information relating to said means for harvesting, said second set of predetermined information comprising at least one of a collection efficiency for obtaining said harvested blood components, a number of fluid interconnections between said donor and said means for harvesting, at least one flow rate associated with said means for harvesting, and a duration in which said means for harvesting will be used for obtaining said harvested blood components;

means for predicting a first predicted yield value for said harvested blood components based upon said first and second sets of predetermined information, said means for predicting comprising a first of said at least two on-line yield determination techniques;

means for monitoring said harvested blood components to obtain a first monitored yield value for said harvested blood components, said means for monitoring comprising a second said at least two on-line yield determination techniques;

means for applying a first calibration factor, which calibrate; said means for predicting in relation to a predetermined off-line yield determination technique, to said first predicted yield value to obtain a second predicted yield value;

means for applying a second calibration factor, which calibrates said means for monitoring in relation to said predetermined off-line yield determination technique, to said first monitored yield value to obtain a second monitored yield value;

means for deriving said determined yield from said second predicted yield value and said second monitored yield value; and

means for packaging said harvested blood components, whereby said determined yield value is identified with said packaged blood components to provide said blood component product.

5,611,998

OPTOCHEMICAL SENSOR AND METHOD FOR PRODUCTION

Franz Aussenegg; Harald Brunner; Alfred Leitner, all of Graz; Fritz Pittner, Vienna, and Thomas Schalkhammer, Kasten, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Apr. 10, 1995, Ser. No. 419,615

Claims priority, application Austria, Apr. 12, 1994, 753/94

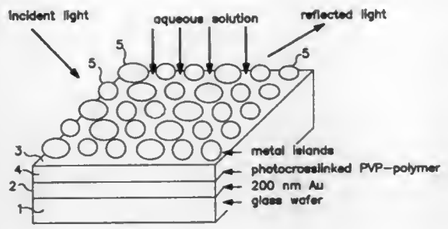
Int. Cl.[6] G01N *21/75*

U.S. Cl. 422—82.05 21 Claims

1. Optochemical sensor system for measuring the concentration of a substance, said system comprising a light source and a sensor, said light source emitting incident light at a wavelength toward said sensor for irradiating said sensor, said sensor comprising:

a mirror layer,

an island layer consisting of a plurality of islands of electrically conductive material, said islands having a diameter smaller than the wavelength of incident light emitted from said light source and used for irradiating said sensor, and



a reactive matrix situated between said mirror layer and said island layer, said reactive matrix being composed of a material which is capable of swelling or shrinking in the presence of the substance to be measured depending on the concentration of the substance, wherein the shrinking or swelling of the reactive matrix causes a change in color of light reflected from said sensor, wherein the change of color can be monitored as an optical response due to swelling or shrinking of said reactive matrix.

5,611,999

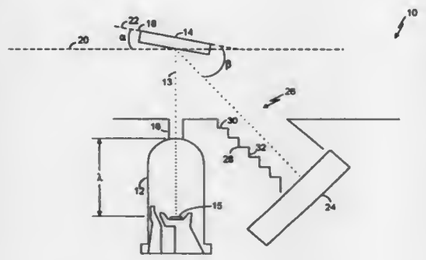
DIFFUSED LIGHT REFLECTANCE READHEAD

Andrew Dosmann, Granger, and Rick J. Johnson, Elkhart, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed Sep. 5, 1995, Ser. No. 523,272

Int. Cl.[6] G01N *21/47*

U.S. Cl. 422—82.05 **4 Claims**



1. A diffused light reflectance readhead for detecting diffuse light reflected off of a reagent test pad reacted with an analyte, comprising:

illuminating means having a beam axis for illuminating said reagent test pad;

supporting means for supporting said reagent test pad at an angle a within an approximate range of 3 to 8 degrees with respect to a perpendicular of said illuminating means beam axis;

optical detector means for receiving and detecting said light reflected off of said reagent test pad, said optical detector means converting said light into corresponding electrical signals, said optical detector means positioned such that an axis through which light is received by said optical detector means is at a greater acute angle to an axis perpendicular to said reagent test pad than said illuminating means beam axis; and

interpretation means for interpreting said corresponding electrical signals to detect the presence of a substance of interest in an analyte.

5,612,000

REFILL PACK FOR PIPETTE TIP RACKS

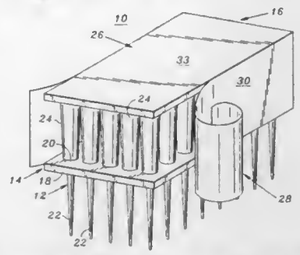
David J. Lemieux, Middleton, Mass., assignor to Rainin Instrument Co., Inc., Emeryville, Calif.

Continuation of Ser. No. 125,019, Sep. 21, 1993, Pat. No. 5,441,702. This application Jun. 21, 1995, Ser. No. 492,776

The portion of the term of this patent subsequent to Sep. 21, 2013, has been disclaimed.

Int. Cl.[6] B01L *3/02;* **B65D** *1/34;55/00*

U.S. Cl. 422—100 **4 Claims**



1. A refill pack for refilling an empty pipette tip rack, the refill pack comprising:

an organizing plate including an array of holes;

a plurality of pipette tips with distal end portions extending vertically through the array of holes in the organizing plate for support in a horizontally spaced array;

a carrier extending from the organizing plate for grasping by a user to hand position the organizing plate and the array of pipette tips in an empty pipette tip rack; and

hand-releasable means securing the array of tips relative to the carrier for releasing the array of tips from the carrier for support with the organizing plate in the empty pipette tip rack.

5,612,001

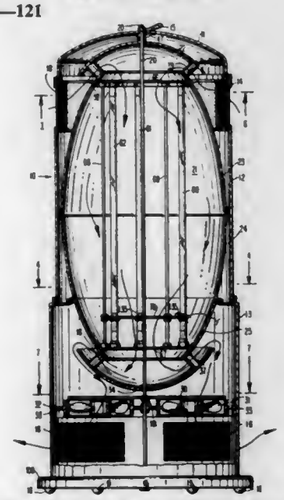
APPARATUS AND METHOD FOR GERMICIDAL CLEANSING OF AIR

Arthur L. Matschke, P.O. Box 266, Centerbrook, Conn. 06409

Continuation-in-part of Ser. No. 211,796, Jun. 15, 1994, Pat. No. 5,498,394, which is a continuation of Ser. No. 778,737, Oct. 18, 1991, Pat. No. 5,216,251. This application Oct. 3, 1995, Ser. No. 538,447

Int. Cl.[6] A61L *9/20*

U.S. Cl. 422—121 **9 Claims**



1. An apparatus for germicidal cleansing of air comprising:

a housing;

a chamber in the housing;

said housing and chamber each having first openings to allow air to enter the chamber and second openings to allow air to return to the environment surrounding the housing;

an ultraviolet light source positioned in the chamber;

the internal wall of the chamber is made from an ultraviolet reflective material; and

the wall of the chamber is shaped to direct ultraviolet light incident upon the wall of the chamber uniformly throughout the chamber such that the energy in the chamber accumulates over time to reach a steady state energy level greater than that emitted by the UV source.

5,612,002

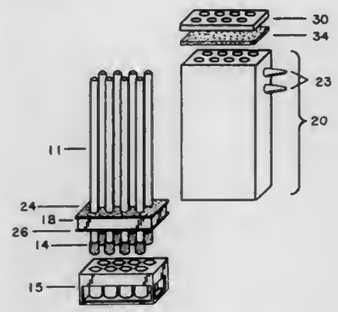
APPARATUS AND METHOD FOR MULTIPLE SIMULTANEOUS SYNTHESIS

Donna R. Cody, Saline; Sheila H. H. DeWitt, Dexter; John C. Hodges; John S. Kiely, both of Ann Arbor, all of Mich.; Walter H. Moos, Oakland, Calif.; Michael R. Pavia, Newton, Mass.; Bruce D. Roth, Ann Arbor, Mich.; Mel C. Schroeder, Dexter, Mich., and Charles J. Stankovic, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 217,347, Mar. 24, 1994, abandoned, which is a division of Ser. No. 12,557, Feb. 2, 1993, Pat. No. 5,324,483, which is a continuation-in-part of Ser. No. 958,383, Sep. 8, 1992, abandoned. This application Apr. 28, 1995, Ser. No. 430,696

Int. Cl.[6] B01J *19/00;8/00;* **C12M** *1/00;* **C07K** *17/00*

U.S. Cl. 422—131 **36 Claims**



1. A method for the multiple, simultaneous synthesis of compounds, said method comprising the steps of:

1) providing an apparatus comprising:

a plurality of reaction tubes, each reaction tube having an upper end and a lower end, said lower ends each having a filter member, said upper end and said filter each having an inside diameter and an outside diameter;

a holder member having a plurality of apertures for supporting said plurality of reaction tubes;

a reservoir member having means for receiving said filter members on the lower ends of said plurality of reaction tubes;

a manifold member located adjacent to said holder member, said manifold enclosing the upper ends of said plurality of reaction tubes;

2) charging said apparatus with reactants required for synthesis; and

3) synthesizing compounds in said apparatus.

5,612,003

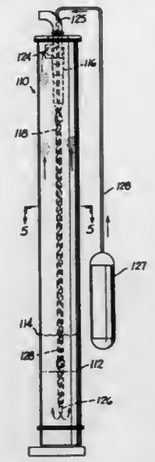
FLUIDIZED BED WTIH CYCLONE

William L. Heumann, Crestwood, Ky., assignor to Fisher-Klosterman, Inc., Louisville, Ky.

Filed Oct. 18, 1995, Ser. No. 544,883

Int. Cl.[6] B01J *8/18;* **F27B** *15/08;* **B01D** *50/00*

U.S. Cl. 422—139 **10 Claims**



1. A fluidized bed, comprising:

a vessel,

a cyclone cooperating with said vessel for separating out particulate material and returning the material to the fluidized bed,

a leg extending down from said cyclone for returning the particulate material to the fluidized bed;

an eductor at a lower portion of said leg, said eductor having an exit end; and

a pressurized gas line within the leg having an opening before the exit end of said eductor so as to blow gas through said eductor and out of said leg, wherein said pressurized gas flowing out of said eductor creates a gas stream near the bottom of said vessel which fluidizes the bed and induces a downward air flow in said leg to help pull particulate matter down said leg.

5,612,004

EXHAUST GAS PROCESSING SYSTEM

Toshio Ikeda, Sagamihara, Japan, assignor to Nessy Kogyo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Jan. 6, 1995, Ser. No. 369,696

Claims priority, application Japan, Oct. 11, 1994, 6-245606

Int. Cl.[6] B01D *53/34*

U.S. Cl. 423—240.5 **9 Claims**

1. An exhaust gas processing system comprising:

a first duct for communicating with an exhaust port of an incinerator which generates an exhaust gas;

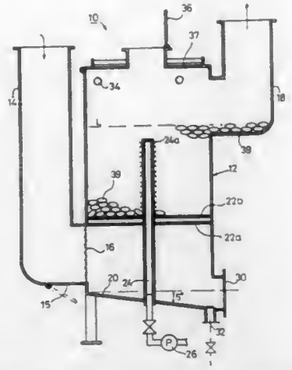
a neutralizing tower to which said first duct is connected;

a second duct which is connected to a discharge portion of said neutralizing tower;

a water supply means arranged inside said neutralizing tower, said water supply means comprising a water supply pipe disposed on and extending vertically upright from a bottom wall of said neutralizing tower; and

a plurality of individual pieces of a neutralizing agent charged to a predetermined depth inside said neutralizing tower, said individual pieces being in contact with and surrounding said water supply pipe,

wherein the exhaust gas is introduced from said first duct, and toxic components in said exhaust gas react with said individual pieces of the neutralizing agent in said neutralizing



tower, and a neutralized exhaust gas is discharged to atmosphere from said second duct, and

wherein water is supplied by said water supply means to the inside of said neutralizing tower after passage of a predetermined period of time, and said water supply pipe having a plurality of openings to spray water to the individual pieces of the neutralizing agent to react with and remove components deposited on surfaces of said neutralizing agent, for exposing renewed surfaces on said pieces of the neutralizing agent.

5,612,005

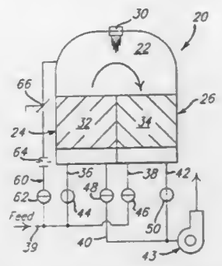
TWO CHAMBER REGENERATIVE THERMAL OXIDIZER

Richard Garvey, Northville, Mich., assignor to Salem Engelhard, South Lyon, Mich.

Continuation of Ser. No. 206,970, Mar. 4, 1994, abandoned. This application May 23, 1995, Ser. No. 447,840

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—171 **1 Claim**



1. A two chamber regenerative thermal oxidizer comprising:

a contaminated fluid feed duct;

an oxidizing chamber;

a pair of regenerator chambers each having one side communicating with said oxidizing chamber;

a pair of regenerator chamber feed ducts communicating with an opposite side of said regenerator chambers, respectively, and directly with said contaminated fluid feed duct;

a pair of inlet valves disposed in said regenerator chamber feed ducts for controlling contaminated fluid flow to said regenerator chambers, respectively;

a pair of outlet ducts communicating with the opposite side of said regenerator chambers, respectively, and directly with a low pressure side of an exhaust blower;

a pair of outlet valves in said outlet ducts, respectively;

a transition duct communicating with said contaminated fluid feed duct upstream of said inlet valves and with said oxidizing chamber;

a valve in said transition duct for controlling flow therethrough;

an orifice plate in said transition duct for controlling the pressure of contaminated fluid flow therethrough;

a damper in said transition duct for balancing contaminated fluid pressure between said feed duct and the low pressure side of said exhaust blower; and

control means for opening and closing said valves, selectively, in a prearranged sequence whereby at least one of the inlet valves in said regenerative chamber feed ducts leading to the opposite sides of said regenerator chambers, respectively, or the transition valve in the transition duct leading to said oxidizing chamber is open at all times and at least one of outlet valves is open at all times whereby the pressure of fluid flow through said regenerative thermal oxidizer is maintained relatively constant.

5,612,006

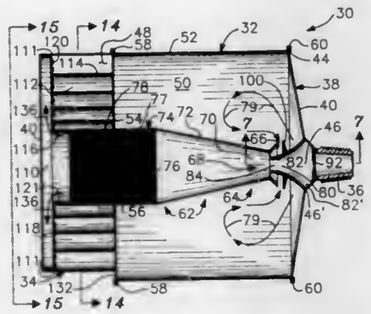
CATALYTIC CONVERTER AND PHASE-SPREADING SPIRAL MUFFLER ASSEMBLY

James C. Fisk, 26 S. Oak Forest Dr., Asheville, N.C. 28803

Filed Jul. 5, 1995, Ser. No. 498,045

Int. Cl.[6] B01D *50/00;* **F01N** *3/10*

U.S. Cl. 422—171 **16 Claims**



1. A device for treating exhaust gas from an engine which produces exhaust gas in periodic surges, said device comprising:

an exhaust gas inlet;

an expansion chamber for reducing periodic exhaust gas surges, said expansion chamber having an expansion chamber inlet connected to said exhaust gas inlet and an expansion chamber outlet;

a venturi downstream of said expansion chamber outlet for drawing in and mixing atmospheric air with exhaust gas;

a catalytic converter downstream of said venturi for oxidizing exhaust gas constituents; and

a phase-spreading muffler downstream of said catalytic converter, said muffler including:

a spirally coiled exhaust channel formed about a central axis, said exhaust channel having an inner extremity and an outer extremity, and said exhaust channel having a muffled exhaust outlet at said outer extremity,

a distribution chamber adjacent said exhaust channel sharing a common wall with said exhaust channel, said common wall being perpendicular to the central axis, and said distribution chamber having an inlet for receiving exhaust gas from said catalytic converter, and

said common wall having a plurality of openings spaced along said exhaust channel at different distances from said muffled exhaust outlet for introducing exhaust gas from said distribution chamber into said exhaust channel.

5,612,007

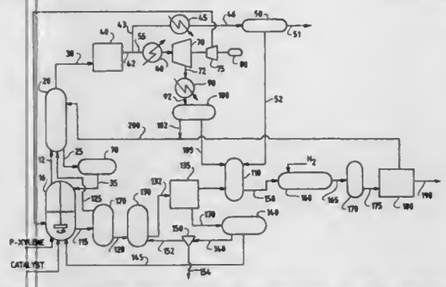
APPARATUS FOR PREPARING AROMATIC CARBOXYLIC ACIDS WITH EFFICIENT ENERGY RECOVERY

Kenneth J. Abrams, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 323,047, Oct. 14, 1994, abandoned. This application May 22, 1995, Ser. No. 445,694

Int. Cl.[6] B01J *8/04;* **C07C** *51/16*

U.S. Cl. 422—189 **4 Claims**



1. A reactor apparatus suitable for converting an alkyl aromatic feedstock compound to an aromatic carboxylic acid by the liquid-phase oxidation of the aromatic feedstock compound in a reaction mixture comprising acetic acid reaction solvent and water, and which provides for the efficient recovery of energy produced by the oxidation reaction, comprising:

a reaction vessel suitable for conducting a liquid-phase oxidation of an aromatic feedstock compound at an elevated temperature,

a high efficiency distillation column having at least 30 theoretical plates,

a means for directing vapor produced by the liquid-phase oxidation reaction in the reaction vessel to the distillation column,

a means for removing combustible materials from offgas from the distillation column, and

a means for recovering energy from the offgas after the offgas exits said means for removing combustible materials.

5,612,008

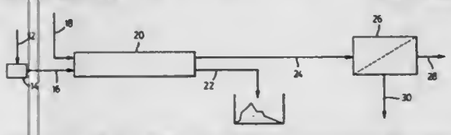
PROCESS FOR TREATING SOLID WASTE CONTAINING VOLATILIZABLE INORGANIC CONTAMINANTS

Donald W. Kirk, 7 Coates Hill Crt., R.R. #1, Bolton, Ontario, Canada, and John W. Graydon, 3 Mossom Place, Toronto, Ontario, Canada

Filed Jul. 27, 1995, Ser. No. 507,887

Int. Cl.[6] C01G *37/00*

U.S. Cl. 423—60 **20 Claims**



1. A process for separating volatilizable contaminants from solid waste which contains at least one volatilizable inorganic contaminant, the process comprising the steps of:

(a) providing solid waste containing at least one volatilizable inorganic contaminant;

(b) providing a chlorine source;

(c) heating the waste and the chlorine source to a temperature sufficiently high for the volatilization of the at least one inorganic contaminant and sufficiently low so as to prevent slag formation of the solid waste, to produce a contaminant-rich vapor phase including a chloride of the at least one inorganic contaminant and a contaminant-poor solid phase;

(d) separating said solid phase from said vapor phase while said chloride is in said vapor phase; and,

(e) recovering said chloride from said vapor phase subsequent to step (d).

5,612,009

CATALYTIC DECOMPOSITION OF DINITROGEN MONOXIDE

Thomas Fetzer; Wolfgang Buechele, both of Ludwigshafen; Hermann Wistuba, Mannheim; Claus Witte, Bad Durkheim; Gert Buerger, Mannheim, and Guenter Herrmann, Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/01900, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/04774, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 20, 1992, Ser. No. 199,191

Claims priority, application Germany, Aug. 29, 1991, 41 28 629.4

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—239.1 **14 Claims**

1. A process for the decomposition of dinitrogen monoxide which comprises: passing the dinitrogen monoxide at a temperature of from 200° to 1000° C. over a silver-containing catalyst supported on an aluminum oxide material having a specific surface area of from about 40 to 300 m^2/g, wherein the dinitrogen monoxide decomposes to form the elements nitrogen and oxygen.

5,612,010

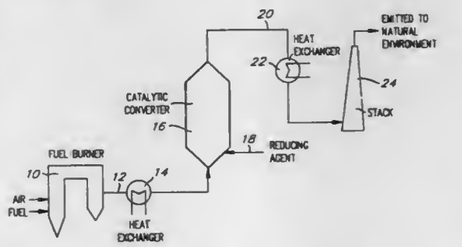
SELECTIVE CATALYTIC REDUCTION OF NITROGEN OXIDES

Raj N. Pandey, 34 Old Colony Trail, Guelph, Ontario, Canada; Kebir Ratnani, Boucherville; Raghunandan L. Varma, Guelph; David Elkaim, St.-Laurent, and Rupesh N. Pandey, Guelph, all of Canada, assignors to Gas Metropolitain & Company, Limited, Montreal, and Raj N. Pandey, Guelph, both of Canada

Filed Jan. 30, 1995, Ser. No. 380,401

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—239.1 **14 Claims**



1. A process for the selective catalytic reduction of nitrogen oxides to nitrogen, which comprises reacting nitric oxide, nitrogen dioxide or a mixture thereof with a reducing agent consisting of an aliphatic carboxylic acid having 1 to 5 carbon atoms at a temperature ranging from about 250° to 600° C., in the presence of molecular oxygen and a catalyst consisting of a metal oxide selected from the group consisting of vanadium oxide, copper oxide, nickel oxide, iron oxide, and a mixture thereof, said catalyst being supported on a porous carrier consisting essentially of alumina.

5,612,011

PROCESS FOR THE PURIFICATION OF INERT GASES

Guido Ghisolfi; Dario Giordano; Giuseppina Boveri, all of Tortona, and Hussain A. K. Al Ghatta, Fiuggi, all of Italy, assignors to Sinco Engineering S.p.A., Tortona, Italy

Continuation-in-part of Ser. No. 397,209, Mar. 10, 1995, Pat. No. 5,547,652. This application Nov. 16, 1995, Ser. No. 559,553

Claims priority, application Italy, Jul. 16, 1993, MI93A1576; Jan. 20, 1995, MI95A0085

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—245.3 15 Claims

1. Process for the purification, from impurities formed of organic compounds, of a recycle inert gas stream leaving a solid-state polycondensation reactor of aromatic polyester resins, comprising the steps of:

adding oxygen or gas containing oxygen to the gas stream;

circulating said gas stream on a catalytic bed containing Pt or mixtures of Pt and Pd supported on an inert porous support at temperatures from 250° to 600° C. in an oxidation reactor having an outlet wherein the quantity of oxygen used is in such an excess that the gas at the outlet of the oxidation reactor contains greater than 10 ppm but less than or equal to 250 ppm of oxygen;

drying the gaseous stream leaving the oxidation reactor to remove water from the stream; and

recycling the stream to the solid-state polycondensation reactor.

5,612,012

METHOD FOR REMOVING CARBON MONOXIDE FROM REFORMED GAS

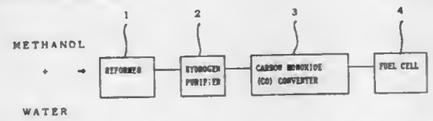
Takao Soma, Aichi-prefecture; Tomonori Takahashi, Chita, and Manabu Isomura, Tsushima, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 26, 1995, Ser. No. 451,367

Claims priority, application Japan, Jun. 8, 1994, 6-126338

Int. Cl.[6] C01B *31/18*

U.S. Cl. 423—246 10 Claims



1. A method for removing carbon monoxide from a reformed gas said method comprising the steps of providing a reformed gas containing hydrogen, carbon dioxide, carbon monoxide and water, treating the reformed gas by subjecting said gas to a hydrogen purifier to reduce the concentration of carbon dioxide, carbon monoxide and water thereby decreasing the ratio of the concentration of components other than hydrogen to the concentration of hydrogen and then converting the carbon monoxide contained in the treated gas into a gas other than carbon monoxide.

5,612,013

METHOD FOR SYNTHESIS OF BORAZINE

Larry G. Sneddon, Newtown Square, and Thomas Wideman, Philadelphia, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 10, 1995, Ser. No. 386,930

Int. Cl.[6] C01B *35/14*

U.S. Cl. 423—285 19 Claims

11. A method for preparing borazine consisting essentially of contacting, at a temperature of at least about 100° C. and in solution and in an inert solvent, an ammonium salt with a non-halogen anion selected from the group consisting of $(NH_4)_2SO_4$, $(NH_4)HSO_4$, and $(NH_4)_2HPO_4$ and an alkali metal borohydride, wherein said solvent has a boiling point above said temperature of said reaction.

5,612,014

COMPOUND SEMICONDUCTOR CRYSTAL

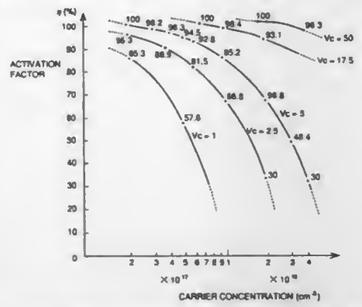
Tetsuya Inoue, and Yoshiaki Hagi, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 31, 1995, Ser. No. 509,384

Claims priority, application Japan, Aug. 10, 1994, 6-188524; Dec. 5, 1994, 6-300724

Int. Cl.[6] C01G *101/04*

U.S. Cl. 423—417 20 Claims



1. A compound semiconductor crystal containing a compound semiconductor material, a dopant impurity, boron in a concentration of at least 1×10^{16} atoms/cm^3 and not more than 6×10^{18} atoms/cm^3, and carbon in a concentration of not more than 5×10^{14} atoms/cm^3, and satisfying the following relations, wherein c.c. represents a carrier concentration of said crystal in cm^{-3} and η represents an activation factor of said crystal in %:

$\eta \leqq c.c./(7.8\times10^{15})$.

$\eta \leqq (10/19)\times(197-2.54\times10^{-17}\times c.c.)$, and

$\eta \geqq c.c./(3.6\times10^{16})$.

5,612,015

CARBON FIBERS AND PROCESS FOR THEIR PRODUCTION

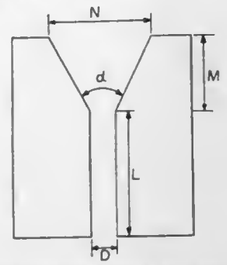
Iwao Yamamoto, and Hiroyuki Aikyo, both of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 992,008, Dec. 17, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 322,376

Claims priority, application Japan, Dec. 18, 1991, 3-335271

Int. Cl.[6] D01F *9/12*

U.S. Cl. 423—447.6 1 Claim



1. A process for producing a carbon fiber having a spread La of graphite crystallites in the layer plane direction thereof of more than 1000Å, an electrical specific resistance of less than 1.1 μΩm and a thermal conductivity of more than 1100 W/m·K at room temperature, which comprises:

spinning an optically anisotropic pitch at a temperature at which the viscosity of the optically anisotropic pitch is not higher than 150 poise, by means of a nozzle having an introduction angle of smaller than 70° and a ratio (L/D) of the outlet length L to the outlet diameter D of more than 4, thereby obtaining a pitch fiber; and

subjecting the pitch fiber to an infusibilization treatment, followed by carbonization, or carbonization and graphitization.

5,612,016

CONJUGATES OF ANTIBODIES AND BIFUNCTIONAL LIGANDS

Gary L. Griffiths, Morristown; Habibe Diril, Paterson, and Hans J. Hansen, Mystic Island, all of N.J., assignors to Immunomedics, Inc., Morris Plains, N.J.

Continuation-in-part of Ser. No. 760,466, Sep. 17, 1991, Pat. No. 5,328,679, Ser. No. 581,913, Sep. 13, 1990, abandoned, Ser. No. 518,707, May 7, 1990, abandoned, and Ser. No. 392,280, Aug. 10, 1989, Pat. No. 5,128,119, which is a continuation-in-part of Ser. No. 364,373, Jun. 12, 1989, abandoned, said Ser. No. 760,466is a continuation-in-part of Ser. No. 408,241, Sep. 18, 1989, abandoned, and Ser. No. 364,373, said Ser. No. 581,913is a continuation of Ser. No. 176,421, Apr. 1, 1988, Pat. No. 5,061,641, said Ser. No. 518,707is a continuation-in-part of Ser. No. 176,421. This application Mar. 29, 1993, Ser. No. 38,416

Int. Cl.[6] A61K *51/10*

U.S. Cl. 424—1.49 16 Claims

1. A precursor conjugate of a therapeutic conjugate, comprising:

(a) an antibody or $F(ab')_2$ antibody fragment having at least one stereoprotected mercapto group, wherein said antibody or $F(ab')_2$ antibody fragment specifically binds to a marker associated with a cancerous lesion or an infectious lesion; and

(b) at least one ligand having (i) a first functional moiety which is bound to said stereoprotected mercapto group, and (ii) a chelating functional moiety.

5,612,017

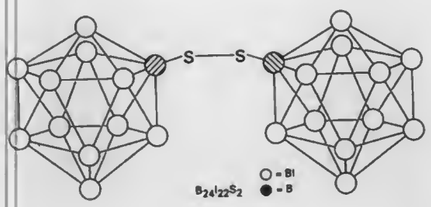
HALOGENATED SULFIDOHYDROBORANES FOR NUCLEAR MEDICINE AND BORON NEUTRON CAPTURE THERAPY

Michiko Miura, Hampton Bays, and Daniel N. Slatkin, Southold, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Division of Ser. No. 118,300, Sep. 9, 1993, Pat. No. 5,455,022. This application Apr. 24, 1995, Ser. No. 427,673

Int. Cl.[6] C01B *35/00;* A61K *31/69*

U.S. Cl. 424—1.61 8 Claims



2. An iodinated sulfidohydroborane having the chemical formula

$$B_xI_yH_{x-y-2}S_2$$

wherein B_x includes at least about 20 atom % boron-10 isotope, and wherein x is an integer between 10 and 24, and y is a positive integer less than or equal to X—2.

5,612,018

DRUG SCREENING AND TREATMENT FOR HIV THYMOCYTE DEPLETION

Mark L. Bonyhadi, Belmont; Hideto Kaneshima, Palo Alto; Joseph M. McCune, San Francisco; Reiko Namikawa, and Lishan Su, both of Palo Alto, all of Calif., assignors to Systemix, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 882,937, May 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 836,195, Feb. 13, 1992, which is a continuation of Ser. No. 347,912, May 5, 1989, abandoned. This application Jan. 18, 1994, Ser. No. 183,178

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.2 7 Claims

1. A method for screening therapeutic agents for effectiveness in preventing HIV mediated apoptotic thymic depletion of $CD4^+$ or $CD4^+$ $CD8^+$ thymocytes said method comprising:

administering a compound of interest in at least one dosage to a chimeric immunocompromised mouse comprising:

a scid/scid mouse host having an implant comprising human fetal liver and fetal thymus substantially contiguous to provide a bone marrow equivalent tissue, which bone marrow equivalent tissue remains functional for periods of at least about 12 months, and is infected with HIV; and

analyzing said bone marrow equivalent or the blood of said mouse host for the effect of said compound on the presence of human $CD4^+$ T cells or $CD4^+$ progenitor cells thereof.

5,612,019

DIAGNOSIS AND TREATMENT OF HIV VIRAL INFECTION USING MAGNETIC METAL TRANSFERRIN PARTICLES

David Gordon, deceased, late of Sokie, Pa.; Eunice Gordon, legal representative, and Robert T. Gordon, all of 4936 W. Estes, Sokie, Ill. 60077

Continuation of Ser. No. 38,037, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 792,474, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 285,979, Dec. 19, 1988, abandoned. This application Feb. 14, 1994, Ser. No. 195,070

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.32 10 Claims

1. A method of diagnosing HIV viral disease or an HIV viral infection in a cell of or from a living host comprising:

introducing into the host of said virus or cells, particles localizable near, in or on the virus or vital-infected cells, such particles being capable of responding to a magnetic field and being of a size less than 1 micron, whereby the particles are selectively located near, into or on the virus and/or viral-infected cells, wherein said particles are magnetic metal transferrin particles, and

measuring a magnetic property of the particles.

5,612,020

DENTIFRICE-COMPATIBLE SILICA PARTICULATES

Jacques Persello, Montluel, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

which is a division of Ser. No. 901,078, Jun. 19, 1992, Pat. No. 5,286,478, which is a continuation-in-part of Ser. No. 261,935, Oct. 25, 1988, abandoned, Ser. No. 261,936, Oct. 25, 1988, abandoned, Ser. No. 518,764, May 3, 1990, abandoned, and Ser. No. 518,765, May 3, 1990, abandoned. This application Oct. 26, 1993, Ser. No. 141,337

Claims priority, application France, Nov. 4, 1987, 87 15276; Nov. 19, 1987, 87 15275; May 3, 1989, 89 05869; May 3, 1989, 89 05868

Int. Cl.[6] A61K *7/16;7/18;* C01B *33/12;* C04B *14/04*

U.S. Cl. 424—57 6 Claims

1. A process for the preparation of silica particulates adapted for formulation into dentifrice compositions, having a surface chemis-

try as to be at least 65% compatible with guanidine values, comprising reacting a silicate with an acid to form a suspension or gel of silica, separating such silica suspension or gel, and then washing said separated silica with water until the conductivity of the filtrate is at most 200 microsiemens·cm^{-1}.

5,612,021

COSMETIC MAKE-UP COMPOSITION CONTAINING A FULLERENE OR MIXTURE OF FULLERENES AS A PIGMENTING AGENT

Myriam Mellul, L'Hay les Roses, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 150,732, Nov. 12, 1993, abandoned. This application May 30, 1995, Ser. No. 453,728

Claims priority, application France, Nov. 13, 1992, 92 13675

Int. Cl.^{6} A61K *7/043;7/48*

U.S. Cl. 424—61 **25 Claims**

1. A cosmetic composition in the form of an oil-in-water or water-in-oil emulsion containing an effective amount of fullerene or mixture of fullerenes as a pigment or filler, and a surfactant in a proportion of between 0.01 and 30% by weight, the oily phase of the emulsion being between 0.1 and 50% by weight relative to the total weight of the composition.

2. An anhydrous cosmetic composition selected from the group consisting of free powder, compacted powder, solid, pasty and liquid cosmetic containing, in a suitable cosmetic vehicle, an effective amount of a fullerene or mixture of fullerenes as a pigment or filler, and a binding agent present in a proportion between 0.01 and 95% by weight relative to the total weight of the composition.

3. A cosmetic composition in the form of an aqueous nail varnish, comprising, as a pigment or filler, an effective amount of a fullerene or mixture of fullerenes, said varnish containing:

from 10 to 80% by weight of an aqueous synthetic dispersion of a polymer selected from the group consisting of polyvinyl acetate, polyurethane, acrylic polymers, acrylic copolymers and polyvinyl acetate copolymers,

from 5 to 20% by weight of a film-forming material, and

from 0.5 to 15% by weight of a resin.

5. A cosmetic make-up composition comprising, in a suitable cosmetic vehicle for said make-up composition, an effective amount of a fullerene or mixture of fullerenes as a pigment or filler, and at least one cosmetic ingredient selected from the group consisting of demulcents, preservatives, sequestering agents, perfumes, and cohesion agents.

5,612,022

PULVERULENT HAIR BLEACH OF PEROXYGEN OXIDIZER AND POLYOXYETHYLENE/ POLYOXYPROPYLENE COPOLYMER

Caroline Tricaud, Cormeilles En Parisis; Jean-Marie Millequant, Saint-Maur, and Henri Sebag, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 475,649, Jun. 7, 1995, abandoned, which is a division of Ser. No. 361,659, Dec. 22, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 683,104

Claims priority, application France, Jan. 14, 1994, 94 00366

Int. Cl.^{6} A61K *7/07;7/135*

U.S. Cl. 424—62 **1 Claim**

1. A process for preparing a cosmetic composition for bleaching hair, wherein said composition consists essentially of at least one oxidizing agent selected from peroxygen compounds and from 5 to 27% by weight relative to the total weight of said composition of at least one block and/or random linear polyoxyethylene/ polyoxypropylene copolymer, said copolymer being anhydrous and, at room temperature, further being both liquid and soluble in water and said composition being pulverulent and anhydrous,

the process comprising the step of mixing, in non-solvent medium and at room temperature, a dry bleaching powder based on solid peroxygen compounds, with said copolymer.

5,612,023

COMPOSITION FOR PERMANENT WAVING OF HUMAN HAIR

Akira Kiyomine, Kawachi-gun; Yoshinori Nishizawa, Utsunomiya, both of Japan; Bernd Nöcker, Ober-Ramstadt, and Burkhard Rose, Darmstadt, both of Germany, assignors to KAO Corporation, Japan

Filed Apr. 15, 1996, Ser. No. 633,953

Claims priority, application Germany, Apr. 22, 1995, 195 14 935.1

Int. Cl.^{6} A61K *7/09*

U.S. Cl. 424—70.5 **6 Claims**

1. Composition for permanent waving of human hair, comprising as reducing agent 1,3-propanediol monothioglycollate and 1,3-propanediol dithioglycollate in a proportion related to propanediol monothioglycollate of not more than 10% by wt. alone or in admixture with other reducing agents.

5,612,024

COSMETIC PREPARATIONS FOR THE HAIR

Karl Giede, Hilden; Kurt Seidel, Duesseldorf; Reinhard Mueller, Erkelenz, and Detlef Hollenberg, Erkrath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 122,517, Sep. 27, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 414,149

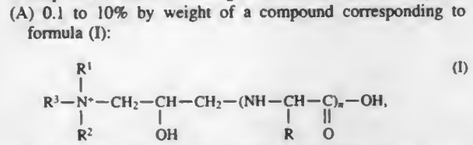
Claims priority, application Germany, Mar. 27, 1991, 41 09 999.0

Int. Cl.^{6} A61K *7/06*

U.S. Cl. 424—70.11 **16 Claims**

1. Preparations for the cleaning and care of hair consisting of

(A) 0.1 to 10% by weight of a compound corresponding to formula (I):



(I)

in which R represents the side chains of the amino acids of the protein, R^1 and R^2 independently of one another represent alkyl chains containing 1 to 4 carbon atoms and R^3 represents an alkyl chain containing 8 to 22 carbon atoms,

(B) 0.1 to 10% by weight of a carbohydrate selected from the group consisting of monosaccharides, oligosaccharides, onic and uronic acids, sugar alcohols and glycosides; and

(C) 0.1 to 5% by weight of a cationic or ampholytic polymer, based on the weight of said preparations.

5,612,025

COSMETIC COMPOSITIONS CONTAINING A SYNERGISTIC MIXTURE OF CONDITIONING POLYMERS

Daniele Cauwet-Martin, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Filed Mar. 10, 1995, Ser. No. 401,887

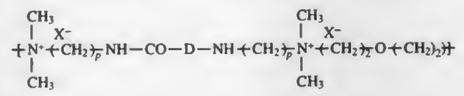
Claims priority, application France, Mar. 15, 1994, 94 02991

Int. Cl.^{6} A61K *7/06*

U.S. Cl. 424—70.17 **27 Claims**

1. A cosmetic composition comprising:

at least one quaternary polyammonium polymer (a) consisting essentially of a sequence of units corresponding to the following formula (I):



in which

p is an integer ranging from 1 to 6 whose value in each instance can be the same or different,

D may not exist or is a —$(CH_2)_r$—CO— group in which r is a number equal to 4 or to 7,

X^- is an anion derived from an inorganic or organic acid,

at least one polymer (b) consisting essentially of 70% to 90% by weight of diallyldialkylammonium units in which the alkyl radicals, which can be the same or different, contain from 1 to 18 carbon atoms, and 30% to 10% by weight of acrylic or methacrylic units,

wherein said polymers (a) and (b) are present in a proportion sufficient to produce a synergistic cosmetic activity.

5,612,026

CHOLESTEROL LOWERING DRINK MIX COMPOSITONS

Sherry L. Diehl, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 25, 1996, Ser. No. 591,840

Int. Cl.^{6} A61K *31/785*

U.S. Cl. 424—78.01 **16 Claims**

1. A drink mix composition comprising:

(a) a therapeutically effective dose of an anion exchange resin;

(b) from about 0.05 g to about 1.25 g of xanthan gum; and

(c) from about 0.3 g to about 1.75 g of edible, water soluble salt at a level wherein the gelation rate of the drink mix composition in an aqueous solution is reduced.

5,612,027

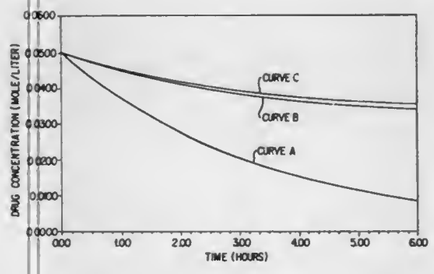
CONTROLLED RELEASE OF MIOTIC AND MYDRIATIC DRUGS IN THE ANTERIOR CHAMBER

Miles A. Galin, 180 E. End Ave., New York, N.Y. 10128; Joseph C. Salamone, 2202 NW. 62nd. Dr., Boca Raton, Fla. 33496, and Stanley C. Israel, 675 West St., Carlisle, Mass. 01741

Filed Apr. 18, 1995, Ser. No. 423,703

Int. Cl.^{6} A61K *31/74*

U.S. Cl. 424—78.04 **2 Claims**



1. A method of maintaining the structural integrity of the anterior chamber of the eye during surgery while concurrently maintaining the desired pupil size comprising administering a composition comprising an acidic viscoelastic polymer and a therapeutically effective amount of a basic agent selected from the group consisting of miotic agents and mydriatic agents, to be administered to a subject in need thereof.

5,612,028

METHOD OF REGENERATING OR REPLACING CARTILAGE TISSUE USING AMNIOTIC CELLS

Jonathan M. Sackier, Surrey; Christopher B. Wood, Buckinghamshire; Rajagopallan Krishnan, Surrey; Gordon R. Wigington, Hampshire, and Douglas Mitchel H. Butler, Surrey, all of Great Britain, assignors to Genethics Limited, Surrey, United Kingdom

Filed Oct. 17, 1990, Ser. No. 605,858

Claims priority, application United Kingdom, Feb. 17, 1988, 8803697

Int. Cl.^{6} A61K *35/50*

U.S. Cl. 424—93.7 **7 Claims**

1. A method of regenerating or replacing in vivo diseased or damaged cartilage tissue in a skeletal joint which comprises implanting into the skeletal joint an effective amount of viable human or animal amniotic cells or tissue.

5,612,029

TISSUE PLASMINOGEN ACTIVATOR GLYCOSYLATION VARIANTS WITH IMPROVED THERAPEUTIC PROPERTIES

William F. Bennett, San Mateo; Bruce A. Keyt, Pacifica, and Nicholas F. Paoni, Moraga, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Division of Ser. No. 389,611, Feb. 13, 1995, abandoned, which is a continuation of Ser. No. 275,462, Jul. 13, 1994, abandoned, which is a continuation of Ser. No. 894,213, Jun. 3, 1992, abandoned. This application May 8, 1995, Ser. No. 436,697

Int. Cl.^{6} A61K *38/49;* **C12N** *9/48;9/64*

U.S. Cl. 424—94.64 **2 Claims**

1. A method of treating a mammal to prevent fibrin deposition or adhesion formation or reformation comprising administering to a site on the mammal of potential fibrin or adhesion formation an effective amount of a composition comprising a human tissue plasminogen activator (t-PA) variant having an N-linked glycosylation at any of positions 103–105, devoid of functional carbohydrate structure at position 117, and having a substitution, other than the substitution of aspartic acid for arginine at position 299, within the amino acid region 296–302 of the wild-type human t-PA amino acid sequence, said variant exhibiting: a) extended circulatory half-life and substantially retained fibrin binding, or b) improved in vivo fibrinolytic potency, as compared to wild-type human t-PA, in admixture with a pharmaceutically acceptable carrier.

5,612,030

ANTI-IDIOTYPE MONOCLONAL ANTIBODY 1A7 AND USE FOR THE TREATMENT OF MELANOMA AND SMALL CELL CARCINOMA

Malaya Chatterjee, and Kenneth A. Foon, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Jan. 17, 1995, Ser. No. 372,676

Int. Cl.^{6} A61K *39/395;* **C07K** *16/42;* **C12P** *21/05;* **C12N** *15/06*

U.S. Cl. 424—131.1 **21 Claims**

1. An antibody having all the identifying characteristics of monoclonal antibody 1A7 produced by the hybridoma deposited under ATCC Accession No. HB-11786.

5,612,031

ANTIBODIES AGAINST STREPTOCOCCUS

Thomas Lehner, and Roberta Smith, both of London, England, assignors to Council of Governors of the United Medical School and Dental Schools of Guy's and St. Thomas's Hospital, London, England

Continuation of Ser. No. 301,481, Sep. 7, 1994, Pat. No. 5,518,721, which is a continuation of Ser. No. 80,693, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 970,655, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 806,814, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 399,515, Oct. 27, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 481,732

Claims priority, application United Kingdom, Feb. 27, 1987, 8704648; WIPO, Feb. 26, 1988, PCT/GB88/00135

Int. Cl.[6] A61K *39/40;39/395;* **C07K** *16/28;* **C12P** *21/08*

U.S. Cl. 424—150.1 **2 Claims**

1. An antibody or antigen binding fragment thereof obtained by using as an immunogen the surface antigen I/II of *Streptococcus sobrinus* serotype d or a fragment of said antigen retaining epitopes characteristic of the surface antigen I/II of *S. sobrinus* serotype d, wherein said antibody or antigen binding fragment reacts with the surface antigen I/II of said serotype d, and cross-reacts with the surface antigen I/II of *Streptococcus mutans* serotypes C, e, f and g.

5,612,032

METHOD FOR DIAGNOSING TUMORS USING MOUSE MONOCLONAL ANTIBODIES

Ira Pastan, Potomac, and Mark C. Willingham, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 51,133, Apr. 22, 1993, abandoned, which is a division of Ser. No. 596,289, Oct. 12, 1990, Pat. No. 5,242,813. This application Dec. 22, 1994, Ser. No. 363,203

Int. Cl.[6] A61K *39/395;51/10;* **C07K** *16/00;16/28*

U.S. Cl. 424—174.1 **3 Claims**

1. A method of diagnosing a tumor bearing an antigen reactive with antibody B1 secreted by the hybridoma cell line bearing ATCC No. HB10572 in a patient comprising: administering to the patient a radioisotope coupled to an antibody having the tissue binding specificity of antibody B 1 and detecting for the presence of the tumor by imaging using radiation detection methods.

5,612,033

METHODS OF TREATMENT USING HEAT-TREATED IGM ANTIBODY PREPARATIONS

Grace C. Tsay, Walnut Creek, and Gary Jesmok, Pinole, both of Calif., assignors to Bayer Corporation, Berkeley, Calif.

Division of Ser. No. 96,398, Jul. 26, 1993, Pat. No. 5,510,465, which is a division of Ser. No. 504,161, Apr. 3, 1990, Pat. No. 5,256,771. This application Jun. 6, 1995, Ser. No. 468,221

Int. Cl.[6] A61K *39/395;* **C07K** *16/06*

U.S. Cl. 424—177.1 **3 Claims**

1. In a method of treating a mammal in need thereof by administering an antibody preparation the improvement comprising administering to said mammal an antibody preparation comprising biologically active antibodies of the IgM type wherein said antibodies of the IgM type comprise at least about 20% by weight of the total amount of antibodies, the preparation having the characteristics of generating non-specific complement activation of less than about 1.0 ug/ml $C4_a$ in an in vitro assay, retaining antigen binding ability and being capable of generating specific complement activating activity.

5,612,034

SUPER-GLOBULING FOR IN VIVO EXTENDED LIFETIMES

Philippe Pouletty, and Christine Pouletty, both of Atherton, Calif., assignors to RedCell, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 137,821, Oct. 15, 1993, which is a continuation-in-part of Ser. No. 70,092, May 27, 1993, which is a continuation-in-part of Ser. No. 592,214, Oct. 3, 1990. This application May 3, 1994, Ser. No. 237,346

Int. Cl.[6] A61K *39/00;38/00*

U.S. Cl. 424—184.1 **15 Claims**

1. A method for extending the lifetime of a therapeutic agent of interest having a molecular weight of less than 5 kDa, said method comprising:

administering to the vascular system of a mammalian host a compound comprising a reactive functional group which reacts with proteins to form stable covalent bonds, said reactive functional group being joined to said therapeutic agent of interest, whereby said reactive functional group reacts with at least one of mobile protein and cells of the vascular system to produce at least one of modified mobile protein and modified cells, wherein said reactive functional group reacts with a functional group on said protein or cells to form a member of the group consisting of amide, ester, imine, thioether, disulfide and substituted amine:

wherein said therapeutic agent of interest is added in an amount effective to achieve its therapeutic function over an extended period of time.

5,612,035

VACCINATION AGAINST DISEASES RESULTING FROM PATHOGENIC RESPONSES BY SPECIFIC T CELL POPULATIONS

Mark D. Howell, San Diego; Steven W. Brostoff, Carlsbad, and Dennis J. Cario, Rancho Santa Fe, all of Calif., assignors to The Immune Response Corporation, Carlsbad, Calif.

Continuation of Ser. No. 974,334, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 326,314, Mar. 21, 1989, abandoned. This application Aug. 6, 1993, Ser. No. 103,418

Int. Cl.[6] A61K *38/00;* **C07K** *14/725*

U.S. Cl. 424—185.1 **12 Claims**

1. A substantially pure, single chain peptide comprising an amino acid sequence from a T cell receptor present on the surface of an autoaggressive T cell mediating a pathology, wherein said peptide induces an immune response against said autoaggressive T cell that reduces the severity of said pathology.

5,612,036

SYNTHETIC *PSEUDOMONAS AERUGINOSA* PILIN PEPTIDE VACCINE

Robert S. Hodges; William Paranchych; Kok K. Lee; Sastry A. Parimi, all of Edmonton; Randall T. Irvin, Mississauga, and Peter C. Doig, Toronto, all of Canada, assignors to The Governors of the University of Alberta, Canada

Continuation of Ser. No. 927,797, Aug. 10, 1992, Pat. No. 5,445,818, which is a continuation of Ser. No. 344,565, Apr. 28, 1989, abandoned. This application Aug. 25, 1995, Ser. No. 519,506

Int. Cl.[6] A61K *39/02;39/108;38/10*

U.S. Cl. 424—190.1 **2 Claims**

1. A peptide vaccine composition composed of

(A) a pilin peptide consisting of amino acid residues 128–144 of a Pseudomonas pilin protein, including one of the sequences:

(i) C T S D Q D E Q F I P K G C,

(ii) C K S T Q D P M F T P K G C,

(iii) C T S T Q E E M F T P K G C,

(iv) C T S N A D N K Y L P K T C, or

(v) C A T T V D A K F R P N G C;

where the two cysteine residues (C) in the peptide are cross-linked;

(B) an immunogenic carrier to which the peptide is attached; and

(C) a pharmaceutically acceptable diluent.

5,612,037

INFLUENZA VIRUS SUBUNIT CONJUGATES

Robert C. Huebner, Bartonsville, and Maurice W. Harmon, Tannersville, both of Pa., assignors to Connaught Laboratories, Inc., Swiftwater, Pa.

Filed Jul. 26, 1994, Ser. No. 280,463

Int. Cl.[6] A61K *39/145;39/385*

U.S. Cl. 424—194.1 **9 Claims**

1. A method of forming a conjugate of a whole hemagglutinin, HA, protein of influenza virus, which comprises the steps of:

isolating the whole HA protein containing transmembrane domain and endodomain from the influenza virus by a method consisting of extracting the whole HA protein from the influenza virus with a non-denaturing detergent.

forming a free sulfhydryl group in the endodomain of the isolated whole HA protein, and

cross-linking the free sulfhydryl group in the endodomain of the isolated whole HA protein to a carrier molecule which potentiates an immune response to said HA protein.

5,612,038

PRODUCT WITH LIPOLYTIC ACTIVITY AND ITS METHOD OF PREPARATION

Jean Gedouin, and Romuald Vallee, both of Saint Malo, France, assignors to Codif Inernational SA, France

Filed Dec. 28, 1994, Ser. No. 365,567

Claims priority, application France, Jan. 18, 1994, 94 00686

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. A process for preparing a product with lipolytic activity, wherein a dehydrated sea-weed of the type Laminaria is subjected to the following steps:

a) rehydrating a previously dehydrated lyophilized sea-weed to its original level of humidity, said rehydration being carried out with demineralized water,

b) lixiviating said rehydrated sea-weed in semi-fluid bed,

c) filtering to eliminate macromolecules and particles having a size larger than 0.22 microns from an extraction juice obtained by said lixiviation of step b), and

d) concentrating organic elements by eliminating minerals from the extraction juice filtered in step c.

5,612,039

DIETARY SUPPLEMENT

Nini E. Policappelli, 361 N. Robertson Blvd., Los Angeles, Calif. 90048; Rafaele Garzone, and Claudio Russo, both of Bari, Italy, assignors to Nini E. Policappelli, Los Angeles, Calif.

Continuation-in-part of Ser. No. 212,246, Mar. 14, 1994, abandoned, and a continuation-in-part of Ser. No. 303,533, Sep. 9, 1994, abandoned, and a continuation-in-part of Ser. No. 344,180, Nov. 23, 1994, abandoned. This application Apr. 21, 1995, Ser. No. 426,677

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. A dietary formulation comprising at least three compositions, the first composition including Teucrium Chamaedrys Herba, Camelia Thea Folia, and Spirulina Maxima; the second composition including dry extract of Garcinia Cambogia Fructuse, dry extract of Fucus Vesicolosus, and Teucrium Chamaedrys Herba; and the third composition including dry extract of Garcinia Cambogia Fructuse, dry extract of Fucus Vesicolosus, and dry extract of Orthosiphon Stamineus Folia.

5,612,040

NON-INFECTIOUS FOOT-AND-MOUTH DISEASE VIRUSES

Peter W. Mason, Killingworth, Conn.; Barry Baxt, Port Jefferson Station, N.Y.; Elizabeth Reider, Westbrook, Conn.; Analia Berinstein, Capital Federal, Argentina, and Angray S. Kang, Carlsbad, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 7, 1995, Ser. No. 418,716

Int. Cl.[6] A61K *39/135;* **C12N** *7/04;7/06;* **C07H** *21/02*

U.S. Cl. 424—205.1 **5 Claims**

1. A foot-and-mouth disease virus, wherein the amino acid sequence Gly-Val-Arg-Gly-Asp-Phe (SEQ ID NO: 8) from the G-H loop of VP1 has been deleted and replaced with the amino acid sequence Asn-Pro.

4. A vaccine comprising an effective immunization dosage of the virus of claim 1 and a pharmaceutically acceptable carrier or diluent.

5,612,041

RECOMBINANT HERPES SIMPLEX GD VACCINE

Rae L. Burke; Mickey S. Urdea, and Pablo D. T. Valenzuela, all of San Francisco, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 991,703, Dec. 17, 1992, abandoned, which is a continuation of Ser. No. 477,027, Feb. 8, 1990, abandoned, which is a continuation of Ser. No. 921,214, Oct. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 631,669, Apr. 17, 1984, Pat. No. 4,618,578. This application Sep. 27, 1994, Ser. No. 312,666

Int. Cl.[6] A61K *39/245*

U.S. Cl. 424—231.1 **5 Claims**

1. A method for alleviating recurrent Herpes Simplex Virus (HSV) infection in a human comprising vaccinating said human subsequent to HSV infection with an amount of a vaccine effective to produce an immune response in said human, said vaccine consisting essentially of an adjuvant and a protein selected from the group consisting of glycoprotein D (gD) of HSV and a C-terminally truncated form of HSV gD which lacks all or a portion of the anchor sequence coding region.

5,612,042

VACCINE AGAINST *STREPTOCOCCUS SUIS* INFECTION

Antonius A. C. Jacobs, Kessel, Netherlands, assignor to Akzo Nobel NV, Arnhem, Netherlands

Filed May 13, 1994, Ser. No. 242,406

Claims priority, application European Pat. Off., May 17, 1993, 93201401

Int. Cl.[6] A61K *39/085;39/00;39/385;39/09*

U.S. Cl. 424—237.1 **11 Claims**

1. A polypeptide of *Streptococcus suis* having a molecular weight of about 54 kD as determined by SDS-PAGE, which can be activated by thiol, inhibited by cholesterol and has a haemolytic activity when in its native form.

5,612,043

OIL-IN-WATER EMULSION CONTAINING A PERFLUOROPOLYETHER, COMPOSITION CONTAINING THE SAME, PREPARATION PROCESS AND USE IN COSMETICS AND DERMATOLOGY

Sabine Deprez, Morangis, and Didier Candau, Bièvres, both of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR94/00295, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/21233, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 17, 1994, Ser. No. 338,466
Claims priority, application France, Mar. 18, 1993, 93 03158
Int. Cl.[6] A61K *7/00*
U.S. Cl. 424—401 24 Claims

1. Oil-in-water emulsion, comprising at least:
one perfluoropolyether,
one fluoro surfactant, with the exception of any cationic fluoro surfactant,
one co-emulsifying agent,
one fatty alcohol, and
a gelled aqueous phase.

5,612,044

SELF-TANNER COSMETIC COMPOSITIONS

Alan J. Suares, Cheshire, and Brian J. Dobkowski, Milford, both of Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 808,784, Dec. 16, 1991. This application Apr. 7, 1995, Ser. No. 419,073
Int. Cl.[6] A61K *7/42;9/66*
U.S. Cl. 424—401 10 Claims

1. A cosmetic product which is a multi-compartment dispenser wherein a first and second substance are stored in separate compartments thereof, at least one of the substances including from about 0.1 to about 60% of a silicone,
the first substance comprising:
from about 0.1 to about 40% of a compound selected from the group consisting of dihydroxy acetone, glucose, xylose, fructose, reose, ribose, pentose, arabinose, allose, tallose, altrose, mannose, galactose, lactose, sucrose, erythrose, glyceraldehyde and combinations thereof; and
an effective amount of a pharmaceutically acceptable vehicle for supporting the compound; and
the second substance comprising:
from about 0.01 to about 25% of at least one amino acid; and
an effective amount of a pharmaceutically acceptable vehicle for delivering at least one amino acid.

5,612,045

INHIBITION OF EXOPROTEIN IN ABSORBENT ARTICLE

Rae E. Syverson, Fond du Lac, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1995, Ser. No. 487,950
Int. Cl.[6] A01N *25/34*
U.S. Cl. 424—402 24 Claims

1. An absorbent article comprising an effective amount of an ether compound having the formula:

R_1—O—R_2

wherein R_1 is a straight or branched alkyl or alkenyl chain of 8 to 18 carbon atoms and R_2 is selected from the group consisting of an alcohol a polyalkoxylated sulfate salt and a polyalkoxylated sulfosuccinate salt wherein said compound is effective in substantially inhibiting the production of exoprotein from Gram positive bacteria.

5,612,046

PRODUCTION OF SHAPED BODIES WHICH HAVE FUNGICIDAL AND INSECTICIDAL PROPERTIES

Chen-Woo Chin, Wheelers Hill, and Christopher N. McEvoy, Mt. Martha, both of Australia, assignors to Saneish Pty Ltd., Victoria, Australia

PCT No. PCT/AU92/00161, § 371 Date Mar. 28, 1994, § 102(e) Date Mar. 28, 1994, PCT Pub. No. WO92/18007, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 133,098
Claims priority, application Australia, Apr. 12, 1991, PK5605
Int. Cl.[6] A01N *25/00*
U.S. Cl. 424—405 17 Claims

1. A molded, solid wood preservative insert for insertion into a cavity of a wooden structure, comprising:
a solid insert member, consisting essentially of at least one boron compound and at least one fluorine compound, said at least one boron compound and at least one fluorine compound being bonded together by a hydration reaction such that in the presence of moisture while positioned in the wooden structure, the solid insert member will dissolve and be absorbed into the wooden structure.

5,612,047

PESTICIDAL MICROEMULSION FORMULATION

Eric P. Duffy, 13561 Rawhide Pkwy., Farmers Branch, Tex. 75234; Joe D. McDaniel, Jr., 1112 Alameda, Carrollton, Tex. 75007, and William A. Donahue, 2307 Harbinger La., Dallas, Tex. 75287

Filed Mar. 8, 1994, Ser. No. 207,862
Int. Cl.[6] A01N *25/16*
U.S. Cl. 424—405 11 Claims

1. A stable pesticidal microemulsion formulation comprising a dispersed oil phase including from about 0.05 to about 5.0% by weight of (S) methoprene; from about 1.0 to about 5.0% by weight of pyrethrins; from about 1.0 to about 15.0% by weight of pyrethrin synergists; from about 0.01 to about 2.0% by weight of a butylated hydroxy toluene; and from about 15 to 30% of one or more surfactants; and a continuous aqueous phase including from about 30 to about 60% by weight of water wherein the dispersed phase consists of micelles in the range from about 0.001 to about 0.50 micrometers.

5,612,048

STABILIZED MOISTURE-SENSITIVE PESTICIDE COMPOSITION AND METHOD OF MAKING

Joseph Synek, Overland Park, Kans., assignor to AMVAC Chemical Corporation, Los Angeles, Calif.

Filed Nov. 22, 1994, Ser. No. 343,705
Int. Cl.[6] A61K *31/545*
U.S. Cl. 424—409 24 Claims

1. A stabilized moisture-sensitive pesticide composition which comprises:
(a) at least 25 wt % of a moisture-sensitive pesticide; and
(b) from about 5 to 15 wt % of a moisture barrier component selected from the group consisting of a fatty acid, an alkyl ester of a fatty acid and a combination thereof wherein said moisture barrier component is effective to reduce the degradation of said moisture-sensitive pesticide due to exposure to moisture,
wherein said stabilized moisture-sensitive pesticide composition has a dry powdered form.

5,612,049

BIOACTIVE COATINGS AND THEIR PREPARATION AND USE

Panjian Li, Oegstgeest, Netherlands, and Ilkka Kangasniemi, Turku, Finland, assignors to Axidental Oy, Turku, Finland

PCT No. PCT/FI93/00163, § 371 Date Dec. 7, 1994, § 102(e) Date Dec. 7, 1994, PCT Pub. No. WO93/21969, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 21, 1993, Ser. No. 302,884
Claims priority, application Finland, Apr. 23, 1992, 921802
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—422 16 Claims



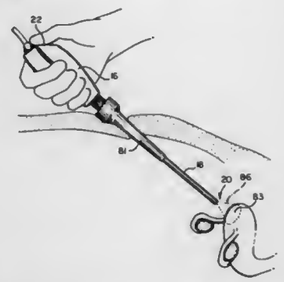
1. A process for the preparation of a coating material for the use on biomedical implants wherein a gel-derived titania-based coating is formed according to a sol-gel method and then treated at an elevated temperature of at least 350° C., such that said coating material induces calcium phosphate formation onto its surface under at least one condition of the group consisting of in vitro conditions and in vivo conditions.

5,612,050

APPARATUS AND METHOD FOR LOCAL APPLICATION OF POLYMERIC MATERIAL TO TISSUE

Stephen C. Rowe, Wellesley, Mass.; Jeffrey A. Hubbell, San Marino, Calif.; Stephen J. Herman, Andover, Mass.; Vae Sun, Palo Alto, Calif.; Michael F. Lang, North Andover, Mass.; George E. Selecman, Marblehead, Mass., and Frederick F. Ahari, Newton, Mass., assignors to Focal, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 36,128, Mar. 23, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,124
Int. Cl.[6] A61F *2/02;* A61M *1/30;* A61K *31/74*
U.S. Cl. 424—423 33 Claims



1. A method of applying polymeric, non-fluent material to mammalian tissue, comprising:
applying an initially entirely fluent, pre-polymeric material to the tissue by emitting the pre-polymeric material from an emission element located on an applicator; and
applying to the material actinic light from an emitter of actinic light located on the applicator for a period of time sufficient to convert the material to a polymeric, non-fluent condition.

5,612,051

METHOD OF TREATING INVOLUNTARY MUSCLE DYSFUNCTION WITH RELAXIN HORMONE

Samuel K. Yue, 4928 Hoppy La., Edina, Minn. 55435

Filed Nov. 17, 1995, Ser. No. 560,492
Int. Cl.[6] A61F *2/02;* A61K *9/70;9/48;9/20*
U.S. Cl. 424—423 10 Claims

1. A method for treating involuntary muscle dysfunction by administering to a patient exhibiting pain, fatigue, and tenderness from involuntary muscle dysfunction a therapeutically effective amount of relaxin hormone, thereby decreasing the amount of contraction of the muscles affected by relaxin.

5,612,052

HYDROGEL-FORMING, SELF-SOLVATING ABSORBABLE POLYESTER COPOLYMERS, AND METHODS FOR USE THEREOF

Shalaby W. Shalaby, Anderson, S.C., assignor to Poly-Med, Inc., Anderson, S.C.

Filed Apr. 13, 1995, Ser. No. 421,222
Int. Cl.[6] A61F *2/00*
U.S. Cl. 424—426 19 Claims

1. A hydrogel-forming, self-solvating absorbable polyester copolymer capable of selective, segmental association into a compliant hydrogel mass on contact with an aqueous environment.

5,612,053

CONTROLLED RELEASE INSUFFLATION CARRIER FOR MEDICAMENTS

Anand Baichwal, Wappingers Falls, N.Y., and John N. Staniforth, Bath, England, assignors to Edward Mendell Co., Inc., Patterson, N.Y.

Filed Apr. 7, 1995, Ser. No. 419,635
Int. Cl.[6] A61K *9/68;9/14;9/50*
U.S. Cl. 424—440 19 Claims

1. A respirable particle-based pharmaceutical formulation for delivering a medicament via insufflation, comprising controlled release particles of a cohesive composite of a medicament and a pharmaceutically-acceptable carrier comprising a polysaccharide gum of natural origin, wherein the average particle size of the said cohesive composite particles is from about 0.1 to about 125 microns in diameter.

5,612,054

PHARMACEUTICAL COMPOSITIONS FOR TREATING GASTROINTESTINAL DISTRESS

Jeffrey L. Garwin, Paoli, Pa., assignor to McNeil-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 81,740, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 852,355, Mar. 17, 1992, Pat. No. 5,248,505, which is a continuation of Ser. No. 430,707, Nov. 1, 1989, abandoned. This application Apr. 19, 1995, Ser. No. 426,423
Int. Cl.[6] A61K *9/28;31/74;31/695;31/62*
U.S. Cl. 424—441 16 Claims

1. A composition for treating a human suffering from an intestinal disorder characterized by the symptoms of diarrhea and flatulence or gas comprising: an effective amount of an antidiarrheal compound selected from the group consisting of loperamide, bismuth subsalicylate, diphenoxylate, polycarbophil, their pharmaceutically acceptable salts and mixtures thereof; and an antiflatulent effective amount of simethicone.

5,612,055

ENZYME FEED ADDITIVE AND ANIMAL FEED

Michael R. Bedford; Andrew J. Morgan, both of Marlborough, United Kingdom; Kathleen Clarkson, San Francisco, Calif., and Hagen K. Schulze, Marlborough, United Kingdom, assignors to Genecor International, Inc., Rochester, N.Y., and Finnfeeds International Limited, United Kingdom

Filed Aug. 16, 1995, Ser. No. 515,610

Claims priority, application United Kingdom, Aug. 19, 1994, 9416841

Int. Cl.[6] A23K *1/165;1/17*

U.S. Cl. 424—442 **28 Claims**

1. An enzyme feed additive comprising:
(i) a xylanase;
(ii) a protease; and optionally
(iii) a β-glucanase
wherein the ratio of the units of xylanase activity per g of the feed additive to the units of the β-glucanase activity per g of the feed additive is 1:0–0.25.

5,612,056

TRANSDERMAL FORMULATIONS

John Jenner; Dennis W. Swanston, both of Salisbury, and Ahsan Saleem, Bootle, all of Great Britain, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Gt. Britain & Northern Ireland, England

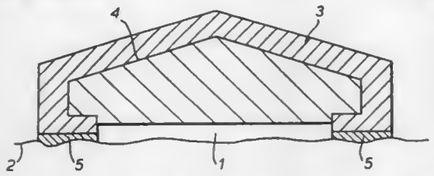
PCT No. PCT/GB92/01547, § 371 Date Mar. 15, 1994, § 102(e) Date Mar. 15, 1994, PCT Pub. No. WO93/03767, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 21, 1992, Ser. No. 196,094

Claims priority, application United Kingdom, Aug. 21, 1991, 9118028

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 **15 Claims**



1. A topical composition for transdermal application comprising:
(a) a C_2 to C_4 fatty acid,
(b) oleic acid or a C_1 to C_4 alkyl ester thereof in a ratio of (b) to (a) of 40:60 to 60:40 vol./vol., and
(c) 10–50% wt./vol of a therapeutic and/or prophylactic agent comprising a carbamate acetylcholinesterase inhibiting compound.

5,612,057

ACOUSTICALLY REFLECTIVE LIPOSOMES AND METHODS TO MAKE AND USE SAME

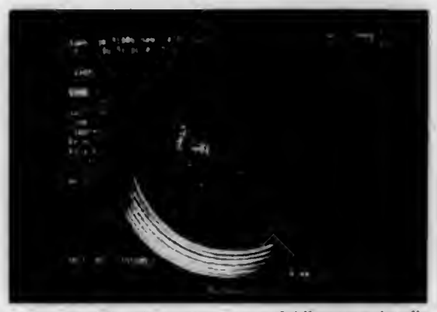
Gregory M. Lanza, Evanston; M. Hayat Onyuksel, LaGrange; Melvin E. Klegerman, Chicago; Michael J. Vonesh, Northbrook, and David L. McPherson, Chicago, all of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 329,145, Oct. 12, 1994, abandoned, which is a continuation of Ser. No. 865,480, Apr. 9, 1992, abandoned. This application Oct. 11, 1995, Ser. No. 541,185

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **1 Claim**

1. An acoustically reflective oligolamellar liposome for use in ultrasonic imaging consisting essentially of phosphatidylethanolamine and an additional lipid selected from the group consisting of phosphatidylserine, cholesterol, phosphatidylglycerol and phosphatidylcholine, wherein said liposome has a particle size of 0.8 to



10 microns and has internally separated bilayers and a ligand selected from the group consisting of an antibody, a peptide, a lectin and a nucleic acid is conjugated to said bilayers to increase the separation of the bilayers and the echogenicity of said liposome.

5,612,058

LYOPHILIZED EMULSION CONTAINING AN ACTIVE SUBSTANCE

Andreas Schütz, Cologne; Hans-Jürgen Mika, Bonn; Frank Sievert, Burscheid, and Bernhard Emschermann, Düsseldorf, all of Germany, assignors to Schwarz Pharma AG, Germany

PCT No. PCT/DE93/01188, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO94/13394, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 10, 1993, Ser. No. 491,862

Claims priority, application Germany, Dec. 24, 1992, 42 44 122.6

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **18 Claims**

1. An anhydrous emulsion composition comprising at least one active substance, and at least one cryoprotection/bulking agent, wherein after reconstitution with water affords a water-containing emulsion with identical particle size distribution as the original water-containing emulsion.

5,612,059

USE OF ASYMMETRIC MEMBRANES IN DELIVERY DEVICES

John R. Cardinal; Scott M. Herbig; Richard W. Korsmeyer; Jeelin Lo; Kelly L. Smith, and Avinash G. Thombre, all of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 391,741, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 238,371, Aug. 30, 1988, abandoned. This application Sep. 25, 1992, Ser. No. 951,931

Int. Cl.[6] A61K *9/62*

U.S. Cl. 424—495 **41 Claims**



1. A process for preparing a tablet for controlled release of one or more active substances into an environment, said tablet comprised of a core of said active substances, with or without one or

more excipients, surrounded by an asymmetric membrane selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate comprising:

coating said core with a solution of a material selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate; and

inducing a phase separation to occur.

13. A process for preparing a capsule for controlled release of one or more active substances into an environment, said capsule comprised of a core of said active substances, with or without one or more excipients, surrounded by an asymmetric membrane selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate comprising:

coating a mandrel with a solution of a material selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate; inducing a phase separation to occur to form a capsule; and

filling said capsule with said core.

19. A process for preparing beads for controlled release of one or more active substances into an environment, said beads comprised of a core of said active substances, with or without one or more excipients, surrounded by an asymmetric membrane comprising:

coating said core with a solution of a material selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate; and

inducing a phase separation to occur.

29. A process for preparing a capsule, said capsule having a shell, said shell comprised of an asymmetric membrane selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate comprising:

coating a mandrel with a solution of a material selected from the group consisting of mono-, di- and triacyl cellulose esters wherein said acyl group contains from two to four carbon atoms, alkyl cellulose ethers wherein said alkyl group contains one to four carbon atoms, cellulose nitrate, acetaldehyde dimethyl cellulose, cellulose acetate ethyl carbamate, cellulose acetate phthalate, cellulose acetate methyl carbamate, cellulose acetate succinate, cellulose acetate dimethaminoacetate, cellulose acetate ethyl carbonate, cellulose acetate chloroacetate, cellulose acetate ethyl oxalate, cellulose acetate methyl sulfonate, cellulose acetate butyl sulfonate, cellulose acetate p-toluene sulfonate, cellulose cyanoacetates, cellulose acetate trimellitate, cellulose methacrylates, polysulfones, polyamides, polyurethanes, polypropylene, ethylene-vinyl acetate, polyvinyl chloride, polyvinyl alcohol, ethylenevinyl alcohol, polyvinylidene fluoride and polymethyl methacrylate; and

inducing a phase separation to occur.

5,612,060

ENHANCEMENT OF TRANSPLANT GRAFT SURVIVAL THROUGH NUTRITIONAL IMMUNOMODULATION AND IMMUNOSUPPRESSIVE THERAPY

J. Wesley Alexander, 2869 Grandin Rd., Cincinnati, Ohio 54208

Filed May 25, 1995, Ser. No. 452,550

Int. Cl.[6] A61K *35/14;31/505;31/52;31/195;31/20;31/395*

U.S. Cl. 424—529 **18 Claims**

1. An improved immunomodulatory therapy comprising the synergistic combination of an immunomodulatory diet and an immunosuppressive treatment for the enhancement of allograft survival and improved host defense mechanism, wherein said immunomodulatory diet comprises, administered in a daily dosage,

a) from about 3.0 to about 40.0 grams of arginine, ornithine, or their salts or mixtures thereof;

b) from about 0.1 to about 4.0 grams of RNA or an mixtures thereof, and

c) from about 0.1 to about 20.0 grams of omega-3 polyunsaturated fatty acids,

and wherein said immunosuppressive treatment comprises the administration of donor specific transfusion and cyclosporine.

5,612,061

COMPOSITION AND METHOD FOR THE TREATMENT OF PREMENSTRUAL SYNDROME

Simon W. Rabkin, 3564 Quesnel Dr., Vancouver, B.C., Canada

Filed Oct. 14, 1994, Ser. No. 323,080

Int. Cl.[6] A61K *31/16;31/165;33/06;33/42;31/13;31/152*

U.S. Cl. 424—602 **10 Claims**

1. A therapeutic composition for the treatment of premenstrual syndrome comprising an effective amount of:

a) calcium;

b) magnesium;

c) acetaminophen; and

d) pamabrom.

5,612,062

MEANS FOR HOLDING STAMPER PLATE IN MOLDING METAL DIE

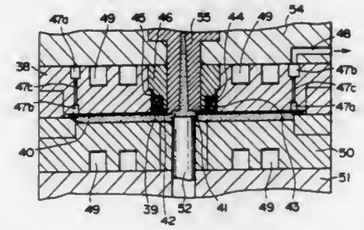
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed May 30, 1996, Ser. No. 655,484

Claims priority, application Japan, Oct. 25, 1995, 7-300618

Int. Cl.[6] B29C *45/17*

U.S. Cl. 425—3 **7 Claims**



1. Means for bolding a stamper plate in a molding metal die, comprising:

said stamper plate having a hole at the center thereof and composed of a ferromagnetic substance;

a stamper plate bush having an engaging shaft portion to be engaged with the center hole of said stamper plate in a molding cavity and disposed at the center of a disc cavity plate on the side where said stamper plate is mounted;

magnetic flux generating means disposed in a ring shape around the outer periphery of the engaging shaft portion of said stamper plate bush in said disc cavity plate for generating magnetic flux in a direction vertical to the surface of said stamper plate coupled with said engaging shaft portion;

a vacuum hole defined to said disc cavity plate in correspondence to the portion of said stamper plate where no information is recorded for vacuuming the rear surface of said stamper plate; and

an air passage defined to said disc cavity plate for connecting said vacuum hole to vacuum means, wherein said stamper plate is supported on said disc cavity plate by a magnetic force and a vacuuming force.

5,612,063

APPARATUS FOR MELT SPINNING MULTIFILAMENT YARNS

Diederich Schilo, Klingenberg, and Wolfgang Peschke, Obernburg, both of Germany, assignors to Akzo N.V., Netherlands

Filed Sep. 2, 1992, Ser. No. 939,936

Claims priority, application Germany, Sep. 6, 1991, 41 29 521.8; Jan. 17, 1992, 42 01 119.1; Mar. 6, 1992, 42 07 095.3

Int. Cl.[6] B29C *47/88;* **D01D** *5/088*

U.S. Cl. 425—72.2 **23 Claims**



1. An apparatus for melt spinning multifilament yarns from fiber-forming polymers at wind-up speeds of at least 2000 m/min, comprising:

a spinnerette for spinning a plurality of filaments;

a porous tube for solidifying the plurality of filaments, the plurality of filaments passing within said porous tube, said porous tube being located downstream from said spinnerette;

a convergence element for converging the plurality of filaments to yarn, said convergence element being located downstream of said porous tube; and

a wind-up means for winding the yarn, said wind-up means winding the plurality of filaments at a speed of at least 2000 m/min, said wind-up means being located downstream from said convergence element; wherein an essentially vertical spinline is disposed at least between said spinnerette and said convergence element, said porous tube being open in a spinning direction and concentric relative to said spinline, air for cooling the filaments being drawn through said porous tube solely by the filaments themselves due to the wind-up speed of at least 2000 m/min to cool and solidify the filaments, wherein a porosity of said porous tube is selected such that the porosity will produce a pressure drop of about 3 to 150 Pa at an air flow rate of 1 m/sec.

5,612,064

APPARATUS FOR MANUFACTURING GREEN BRICKS FOR THE BRICK MANUFACTURING INDUSTRY

Wilhelmus J. M. Kosman, Groesbeek, Netherlands, assignor to Beheermaatschappij De Boer Nijmegen B.V., Netherlands

Filed May 3, 1995, Ser. No. 433,811

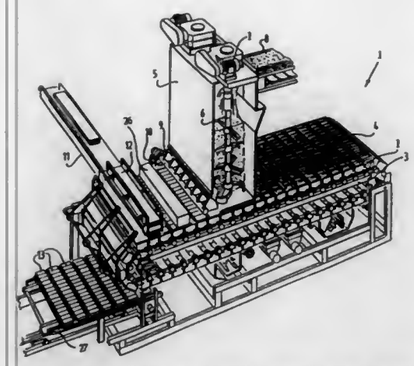
Claims priority, application Netherlands, May 6, 1994, 9400756

Int. Cl.[6] B28B *5/02;7/10*

U.S. Cl. 425—255 **2 Claims**

1. An apparatus for manufacturing green bricks from clay, comprising:

a circulating chain conveyor carrying mould containers provided with movable bottoms, a reservoir for clay arranged above the mould containers, means for carrying clay out of the reservoir into the mould containers, means for pressing and trimming clay in the mould containers, means for discharging green



bricks released from the mould containers and means for supplying and placing take-off plates onto the mould containers after pressing and trimming the clay, wherein the chain conveyor turns over the mould container part such that green bricks are released from the mould containers and come to lie on the take-off plates and such that the take-off plates with the released bricks thereon come to lie on the discharging means, and wherein the mould containers are combined to a mould container part detachably coupled to a chain part connectable to the chain conveyor, and wherein an ejector is connected to the mould container part for displacing the movable bottom during release of the turned over green bricks from the mould containers, said ejector lying under bias of a spring serving as centering member for the ejector.

5,612,065

APPARATUS FOR PRODUCING MOLDINGS FROM, IN PARTICULAR, CONCRETE

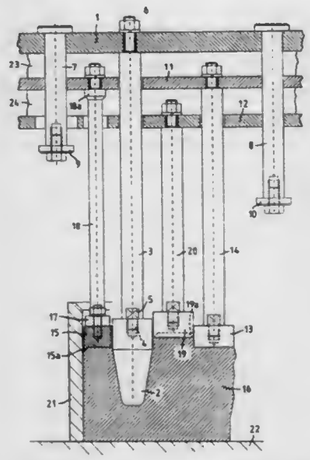
Gottfried Keller, Allmendingen, Germany, assignor to Rampf Formen GmbH, Allmendingen, Germany

Filed Mar. 1, 1995, Ser. No. 396,233

Claims priority, application Germany, Mar. 4, 1994, 44 07 127.2

Int. Cl.[6] B28B *11/10*

U.S. Cl. 425—356 **11 Claims**



1. An arrangement for producing a molded concrete article which has a surface including zones at varying levels, the arrangement comprising:

a molding surface;

a molding box that is open on a top thereof and receiving the concrete article therein, the molding box resting on the molding surface; and

a molding device including:

at least three groups of punches disposed above the molding box and completely covering the surface of the concrete article, each group of punches further being configured to produce impressions on the concrete article at a depth different from a depth of impressions produced by another group of punches, the groups of punches thereby defining respective impression depths into the concrete article;

at least three head plates, each head plate being connected to a corresponding one of the groups of punches, the head plates including:

an upper head plate connected to a group of punches of the groups of punches which has a deepest impression depth with respect to the other groups of punches, the upper head plate being adapted to transmit a load to the other head plates;

a lower head plate disposed below the upper head plate and connected to a group of punches of the groups of punches which has a shallowest impression depth with respect to the other groups of punches; and

at least one intermediate head plate disposed between the upper head plate and the lower head plate and connected to a group of punches of the groups of punches which has an impression depth between the deepest impression depth and the shallowest impression depth, wherein the groups of punches are connected in a descending order of their impression depths to their corresponding head plates disposed successively below the upper head plate, and wherein any one group of punches connected to a head plate disposed above at least one other head plate passes through the at least one other head plate; and

at least two guide rods for suspending head plates below the upper head plate, each guide rod having a stop at a lower end thereof adapted to determine a lowest position of the corresponding one of the head plates, wherein a guide rod passes through its corresponding head plate and through at least a head plate disposed thereabove.

5,612,066

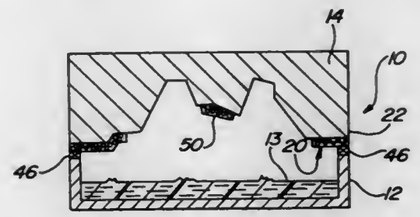
HEAT INSULATING MOLD PANEL FOR A MOLD TOOL

Harold W. Swenson, Dover, N.H., assignor to Davidson Textron, Inc., Dover, N.H.

Filed Apr. 11, 1995, Ser. No. 419,905

Int. Cl.[6] B29C *41/18;41/38*

U.S. Cl. 425—425 **5 Claims**



1. A heat insulating mold panel for a powder molding tool, said panel characterized by:

a surface for being mounted onto a section of mold tool;

said panel having an exposed upper surface and a thickness great enough to provide heat insulation sufficient to maintain its temperature lower at its exposed upper surface than the melting temperature of a powder plastic resin that is melted on said mold tool to retain any powder plastic resin on said exposed surface in powder form during molding with said mold tool;

said heat insulating panel having inner, side and outer walls made from laminated alternating layers of fiberglass and silicone rubber; and

an inner core filled with silicone rubber and a plurality of hollow glass beads.

5,612,067

MOLDING APPARATUS FOR PRODUCING SYNTHETIC RESIN MOLDED PRODUCT

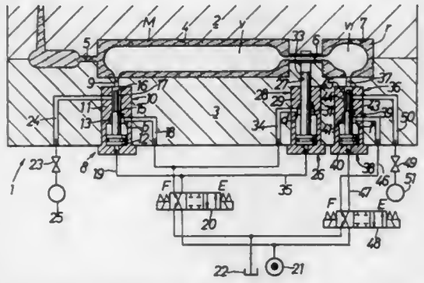
Tsuneo Kurihara; Katsushige Kusaka; Teruo Ichikawa; Hiromi Tanaka, and Toshiyuki Higashi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 963,312, Oct. 20, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,606

Claims priority, application Japan, Oct. 22, 1991, 3-274257; Oct. 22, 1991, 3-274258

Int. Cl.[6] B29C *45/00;49/06*

U.S. Cl. 425—533 **2 Claims**



1. A molding apparatus for producing a synthetic resin molded product, comprising:

a forming mold including a molding cavity, a resin injection gate communicating with said molding cavity, and an overflow chamber communicating with said molding cavity at a position of the molding cavity remotest from said resin injection gate through a flow-out passage;

a first gas blow-in mechanism including a first gas blow-in hole for communicating with said molding cavity for blowing gas into a molten synthetic resin, which has been injected into said molding cavity through said resin injection gate, so as to form a void in said molten synthetic resin for molding a hollow molded product; and

a flow-out passage opening and closing mechanism for opening and closing said flow-out passage; wherein

said gas blow-in mechanism further includes a mechanism for opening and closing said first gas blow-in hole, said first gas blow-in hole opening and closing mechanism and said flow-out passage opening and closing mechanism closing the first gas blow-in hole and the flow-out passage, respectively, until said molten synthetic resin injected through said resin injection gate fills said molding cavity, and then opening said first gas blow-in hole and said flow-out passage, respectively, when said molding cavity is filled with said molten synthetic resin and said first gas blow-in mechanism is operated for blowing gas into said molten synthetic resin to form said void in the molten synthetic resin within said molding cavity and said overflow chamber, wherein

said molding apparatus further includes a dwell pressure applying mechanism having a second gas blow-in hole open to said overflow chamber for blowing gas into the void within the overflow chamber thereby to apply a dwell pressure to said hollow molded product from inside of the product in a manner that the gas flow from said second gas blow-in hole is mixed with the gas flow inside the product from said first blow-in hole, said dwell pressure applying mechanism further includes a mechanism for opening and closing said second gas blow-in hole wherein said first gas blow-in hole opening and closing mechanism, said flow-out passage opening and closing mechanism, and said second gas blow-in hole opening and closing mechanism are operated from a common actuating source, and wherein

a first switchover valve is interposed between said common actuating source and said first gas blow-in hole opening and closing mechanism as well as said flow-out passage opening and closing mechanism, whereas a second switchover valve is interposed between said common actuating source and said second gas blow-in hole opening and closing mechanism.

5,612,068

APPARATUS FOR THE TRANSFER OF SUBSTRATES

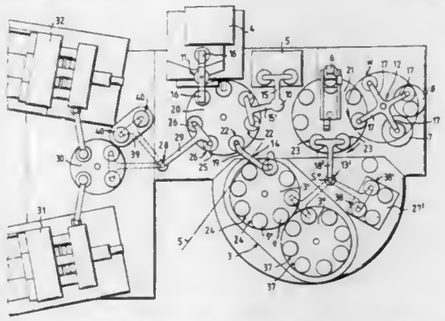
Stefan Kempf, Alzenau, and Eggo Sichmann, Gelnhausen, both of Germany, assignors to Leybold Aktiengesellschaft, Hanau am Main, Germany

Filed Dec. 7, 1994, Ser. No. 350,684

Claims priority, application Germany, Mar. 14, 1994, 44 08 537.0; Mar. 19, 1994, 44 09 558.9

Int. Cl.[6] B29C *45/06*

U.S. Cl. 425—574 **15 Claims**



1. Apparatus for transporting substrates through a plurality of process stations, said apparatus comprising

a first carousel having a plurality of substrate holders,

a first process station configured to process one substrate at a time,

a first manipulator having two opposed arms, each arm in a period of time carrying a plurality of substrates one at a time from one of said carousel and said first process station to the other of said carousel and said first process station,

a second process station configured to simultaneously process a plurality of substrates, and

a second manipulator having a first arm which in said period of time carries a plurality of substrates simultaneously from said first carousel to said second process station.

5,612,069

APPARATUS FOR MANUFACTURING A LONG NON-CERAMIC INSULATOR IN A MOLD LONGITUDINALLY SHORTER THAN THE INSULATOR

Daisaku Goto, Konan, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 172,807, Dec. 27, 1993, Pat. No. 5,484,564. This application Oct. 24, 1995, Ser. No. 547,404

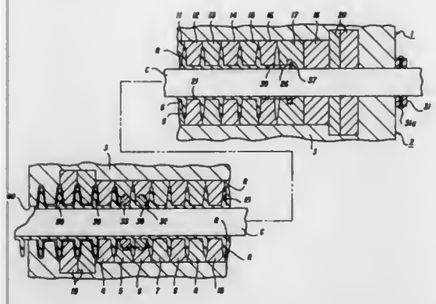
Claims priority, application Japan, Dec. 28, 1992, 4-347840

Int. Cl.[6] B29C *45/44*

U.S. Cl. 425—527 **3 Claims**

1. A non-ceramic insulator molding apparatus for molding an insulator housing having trunks and skirts around a long size core, said apparatus comprising:

a pair of separable molds having a cavity for forming said insulator housing, said cavity having an opening at end portions of said molds for holding end portions of said housing;



a first jig for forming a head portion of said housing;

a second jig for positioning a long size core and for clamping one of said end portions of said housing, said first and second jigs being removable from said mold; and

a sleeve having a slanted surface for forming a connecting portion at a tail portion of said housing.

5,612,070

CHEWING GUMS CONTAINING NATURAL CARBOHYDRATE GUM HYDROLYZATE

Robert J. Yatka, Orland Park; Lindell C. Richey, Lake Zurich; Marc A. Meyers, Naperville, and David G. Barkalow, Deerfield, all of Ill., assignors to Wm. Wrigley Jr. Co., Chicago, Ill.

PCT No. PCT/US93/11766, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/14332, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 3, 1993, Ser. No. 492,022

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **20 Claims**

1. A chewing gum composition comprising sweetness imparting amounts of unencapsulated aspartame and an effective amount of a natural carbohydrate gum hydrolyzate to stabilize said aspartame against decomposition during storage at 85° F. for eight weeks whereby at least 5% less aspartame decomposes into non-sweetening derivatives than would have decomposed if the natural carbohydrate gum hydrolyzate was not included in the gum composition.

5,612,071

CONTINUOUS CHEWING GUM MANUFACTURING PROCESS YIELDING GUM WITH IMPROVED FLAVOR PERCEPTION

Joo H. Song, Northbrook; Christafor E. Sundstrom, Glen Ellyn; David W. Record, River Forest; Donald J. Townsend, Chicago; Kevin B. Broderick, Berwyn, and Philip G. Schnell, Downers Grove, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 362,254, Dec. 22, 1994, Pat. No. 5,543,160, which is a continuation-in-part of Ser. No. 305,363, Sep. 13, 1994, abandoned. This application Sep. 12, 1995, Ser. No. 527,294

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **29 Claims**

1. A method of continuously manufacturing chewing gum with improved flavor perception comprising the steps of:

a) adding at least an elastomer and filler into a high-efficiency continuous mixer, and mixing the elastomer and filler together in the continuous mixer;

b) adding at least one ingredient selected from the group consisting of fats, oils, waxes and elastomer plasticizers into the continuous mixer, and mixing said ingredient with the elastomer and filler in the continuous mixer; and

c) adding at least one sweetener and at least one flavor into the continuous mixer, and mixing said sweetener and flavor with the remaining ingredients to form a chewing gum composition;

d) wherein steps a)–c) are performed using a single high-efficiency continuous mixer and wherein the flavor is added at a level lower than that used to make the same chewing gum composition in a batch mixer but the flavor intensity in the chewing gum product is comparable to that of said same chewing gum composition made in a batch mixer.

5,612,072

PROCESS FOR THE PRODUCTION OF NON-ALCOHOLIC OR LOW ALCOHOL MALT BEVERAGE

Heikki Lommi, Kantvik, Finland; Wim Swinkels, Beek En Donk, and Ben Van Dieren, Oedenrode, both of Netherlands, assignors to Cultor Ltd., Helsinki, Finland

Continuation-in-part of Ser. No. 601,865, Oct. 23, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 993,799

Int. Cl.[6] C12C *11/00*

U.S. Cl. 426—11 **16 Claims**

1. A process for the production of substantially non-alcoholic beer by a continuous yeast treatment at low temperature, comprising the steps of:

preparing a substantially liquid wort;

boiling the wort;

vigorously percolating a gas through the boiled wort under conditions that avoid oxidation in the wort;

thereafter cooling the wort to a temperature between the freezing point of the wort and about 10° C.;

filtering the cooled wort;

passing the cooled filtered wort through a packed column reactor comprising a substantially incompressible anionic carrier having yeast bound thereto.

5,612,073

LOW FAT CHEESE CURD PRODUCTS

Aly Gamay, Franklin, Wis., assignor to Alpine Lace Brands, Inc., Maplewood, N.J.

Continuation of Ser. No. 250,336, May 27, 1994, Pat. No. 5,395,630, which is a continuation of Ser. No. 67,455, May 27, 1993, abandoned, which is a continuation of Ser. No. 877,953, Apr. 30, 1992, Pat. No. 5,225,220, which is a continuation of Ser. No. 522,203, May 11, 1990, abandoned. This application Jan. 26, 1995, Ser. No. 378,515

Int. Cl.[6] A23C *19/032;19/06;19/09;19/14*

U.S. Cl. 426—39 **7 Claims**

1. A low fat cheese curd product, comprising:

(a) an unripened enzyme clotted cheese curd formed from a starting skim milk, said curd being in contact with whey solution which has calcium dissolved therein and said curd having a fat content of about 0.1–0.3% by weight and a pH between 4.7 and 5.5,

(b) about 45–65% by weight water in said curd;

(c) a salt content of said curd of about 1–3% by weight;

(d) a milk protein content of said curd of about 32–55% by weight; and

(e) a calcium to protein ratio of said curd less than conventional skim milk curd.

5,612,074

NUTRIENT FORTIFIED FOOD BAR

Robin L. Leach, 5358 Calder Way A518, Indianapolis, Ind. 46226

Filed Dec. 21, 1995, Ser. No. 548,804
Int. Cl.[6] A23L *1/0562;1/29*
U.S. Cl. 426—74 22 Claims

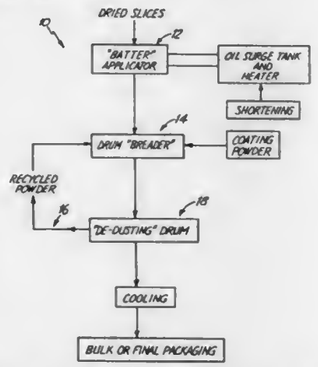
1. An uncooked ready to eat food bar consisting essentially of a mixture of dry ingredients combined with a mixture of liquid ingredients in a ratio of about 3:1 by weight, wherein said mixture of dry ingredients includes about 38% by weight of at least one dry ingredient containing dietary fiber, about 18% by weight of at least one dry ingredient containing non-animal protein, at least one dry ingredient containing antioxidant, at least one dry ingredient containing simple carbohydrate, at least one dry ingredient containing complex carbohydrate, at least one dry ingredient containing sugar, at least one dry ingredient containing lecithin, at least one oil seed containing polyunsaturated linoleic acid, at least one oil seed containing superunsaturated alpha-linolenic acid, at least one seed containing amino acids, at least one dry ingredient containing chlorophyll, at least one dry ingredient containing pyridoxine, at least one dry ingredient containing magnesium, at least one dry ingredient containing sodium, at least one dry ingredient containing potassium, and at least one dry flavoring, and said mixture of liquid ingredients includes at least one naturally occurring syrup sweetener containing sugar, simple carbohydrate and complex carbohydrate, at least one vegetable oil containing polyunsaturated linoleic acid, at least one vegetable oil containing superunsaturated alpha-linolenic acid, wherein the polyunsaturated linoleic acid is present in a ratio of about 3:1 by weight to superunsaturated alpha-linolenic acid and at least one oil containing antioxidant, said mixture of liquid ingredients containing about 90% by weight of said syrup sweetener, whereby the food bar contains about 35% by weight of complex carbohydrate, about 17% by weight of simple carbohydrate, potassium is present in the food bar in a ratio of about 10:1 by weight to sodium, and water is present in a ratio of about 1:3 to sugar and is less than about 10% by weight of the food bar.

5,612,075

COAT DEHYDRATED POTATO SLICES AND A PROCESS OF MAKING THE COATED POTATO SLICES

Dennis A. Lonergan, Medina, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 483,443
Int. Cl.[6] A23L *1/216*
U.S. Cl. 426—99 14 Claims



1. A method of forming a potato based food product including dehydrated potato pieces coated with a preselected amount of edible particles, comprising:

providing dehydrated potato pieces having outer surfaces;

providing a high solids fat that is substantially flowable at a temperature of at least 90° F.;

heating the high solids fat to a temperature which is at least hot enough to cause the fat to flow;

coating the outer surfaces of the potato pieces with the flowable fat, forming fat-coated surfaces;

coating the fat-coated surfaces further with a preselected quantity of edible particles, which are a mixture of 20–40% by weight dehydrated cheese and whey powders, 30–60% by weight starch and 10–30% by weight spices and flavors forming a fat and particle coating; and

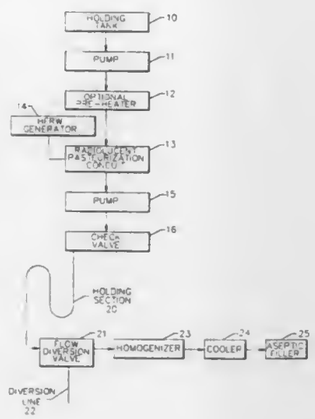
cooling the coated potato particles to ambient temperature, wherein the fat and edible particle coating is substantially nonflowable and adheres to the surfaces of the food pieces at ambient temperatures and wherein the fat and particle coating has an increased yield stress value as compared to the fat alone without substantially altering the crystalline properties of the fat, such that the fat and particle coating is substantially nonflowable at a melting point temperature of the high solids fat.

5,612,076

METHOD FOR THE PASTEURIZATION OF EGG PRODUCTS USING RADIO WAVES

Mohammad-H. H. Samimi, Eden Prairie, Minn.; Kenneth R. Swartzel, Raleigh, and Hershell R. Ball, Jr., New Hill, both of N.C., assignors to North Carolina State University, Raleigh, N.C., and Michael Foods, Minneapolis, Minn.

Filed Oct. 19, 1993, Ser. No. 139,185
Int. Cl.[6] A23L *1/32;3/01*
U.S. Cl. 426—234 2 Claims



1. A method of pasteurizing a flowable egg product while passing the product as a continuous stream through a pasteurizing apparatus, comprising:

passing said flowable egg product continuously through a conduit transparent to high frequency radio waves, wherein said flowable egg product comprises shell eggs in a liquid medium; and

heating said flowable egg product in said conduit to a predetermined temperature by subjecting said egg product to high frequency radio waves; and then

holding said flowable egg product at said predetermined temperature for a predetermined time to provide a total thermal treatment to said egg product;

wherein the total thermal treatment of said product is sufficient to pasteurize said egg product without coagulation thereof, and wherein said high frequency radio waves are in the frequency range from about 15 MHz to 150 MHz.

5,612,077

METHOD OF PROCESSING GARLIC AND PREPARING AJOENE-CONTAINING EDIBLE OIL PRODUCTS

Takayoshi Hibi, Nagoya, Japan, assignor to Nagoyaseiraku Co., Ltd., Aichi-Ken, Japan

Filed May 22, 1995, Ser. No. 446,327
Claims priority, application Japan, Sep. 16, 1994, 6-221937
Int. Cl.[6] A23L *1/22*
U.S. Cl. 426—533 5 Claims

1. A method of preparing ajoene-containing oil, comprising the steps of:

(a) adding water to raw garlic bulbs;

(b) mashing the garlic bulbs;

(c) squeezing juice from the mashed garlic bulbs;

(d) adding edible oil to the garlic juice;

(e) mixing the edible oil and the garlic juice; and

(f) incubating the mixture at a temperature ranging between 0° C. and 55° C. for a period of between three hours and seven days thereby forming ajoene-containing oil; wherein step (f) further comprises the step of forming not less than 300 mg of ajoene per 1 kg of raw garlic bulbs.

5,612,078

FILLER CREAM COMPOSITIONS FOR REDUCED FAT SANDWICH COOKIES

Christina M. Fileti, Hackensack; Richard C. Gill, Randolph; Mark J. Ramundo, Clifton, and Lis K. Renini, Mercerville, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Aug. 8, 1994, Ser. No. 287,318
Int. Cl.[6] A23C *13/00*
U.S. Cl. 426—572 29 Claims

1. A substantially anhydrous filler cream for reduced fat sandwich cookies comprising at least one sugar, an oleaginous composition, a polyol for increasing the air bolding capacity, body, and lubricity of the filler cream, and an emulsifier for preventing separation of said polyol from said oleaginous composition and for improving mouthfeel and air holding capacity of the filler cream, said emulsifier comprising monoglycerides and having an iodine value of at least about 60, said filler cream being aerated by injection of air to reduce the specific gravity to about 0.7 to about 1.0.

5,612,079

PREPARATION OF COLD-WATER-SOLUBLE INSTANT TEA

Tito L. Lunder, Morges, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Oct. 12, 1994, Ser. No. 321,542
Claims priority, application Europeao Pat. Off., Nov. 18, 1993, 93118574
Int. Cl.[6] A23F *5/24;5/28*
U.S. Cl. 426—597 13 Claims

1. A process for preparing an instant tea product comprising steps of extracting a mixture of green tea leaves and black tea leaves with hot water, wherein the leaves of the mixture are, by weight, in ratio of green leaves to black leaves from 4:1 to 2:1, under a pressure of from 1 atmosphere to 2 atmospheres to obtain a tea extract from the mixture and isolating the tea extract from extracted mixture to obtain a primary tea extract, concentrating the primary tea extract to obtain a concentrated extract, and drying the concentrated extract to obtain an instant tea product.

5,612,080

LOW CALORIE FAT SUBSTITUTE

Gordon O. Gruetzmacher; Jeffery W. Raggon, and Bisbop Wlodecki, all of 235 E. 42nd St., New York, N.Y. 10017

Division of Ser. No. 253,187, Jun. 2, 1994, Pat. No. 5,458,910.
This application Jun. 6, 1995, Ser. No. 470,891
Int. Cl.[6] A23D *9/007*
U.S. Cl. 426—611 49 Claims

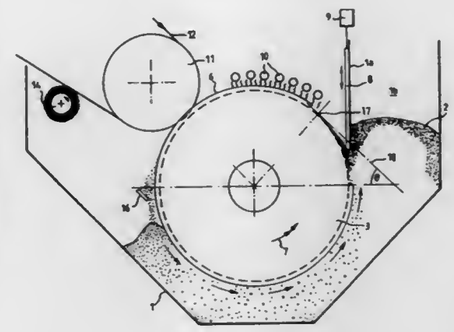
1. An edible composition consisting essentially of a sorbitol fatty acid ester with a degree of substitution of about 4 fatty acid groups derived from a mixture of fatty acids provided that not all of the fatty acid groups of said ester are derived from oleic acid, at least a portion of said ester in the anhydride form, said composition useful as a low calorie fat substitute having a caloric availability of from about 10% to about 33%, said sorbitol ester resulting in less depletion of fat soluble nutrients when fed to a mammal than a fully esterified polyol fatty acid polyester.

5,612,081

APPLYING GRIT PARTICLES TO A CONTINUOUS WEB

Brian Orr, and Nigel E. Wrigley, both of Lancashire, United Kingdom, assignors to Netlon Limited, Blackburn, United Kingdom

Continuation-in-part of Ser. No. 380,751, Jan. 31, 1995, abandoned. This application Jan. 22, 1996, Ser. No. 589,701
Claims priority, application United Kingdom, Nov. 25, 1994, 9423853; Nov. 24, 1995, 9524097
Int. Cl.[6] B05D *1/12;1/28;* B05C *11/02;1/08*
U.S. Cl. 427—8 38 Claims



1. A method of continuously applying grit particles to a continuous web and thereby gritting the web, comprising:

providing a container containing grit particles;

providing a roller which is rotating about a substantially horizontal axis, said roller having a peripheral surface and said peripheral surface defining an ascending part, at least a portion of said ascending part of said peripheral surface being in said container, said ascending part transporting a layer of grit particles up onto an upper part of said peripheral surface;

guiding the web in a path which brings it into a receiving zone for receiving grit particles which said ascending part has transported up onto said upper part of said roller peripheral surface and in which grit particles are transferred to the web, to thereby grit the web; and

adding grit particles to the container as grit particles are removed by the web whilst maintaining the top surface of a mass of grit particles adjacent said ascending part of said roller peripheral surface at a controlled level below an uppermost part of the roller, thereby controlling the thickness of said layer on said upper part of said peripheral surface.

5,612,082

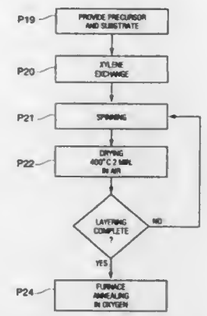
PROCESS FOR MAKING METAL OXIDES

Masamichi Azuma; Michael C. Scott; Carlos A. Paz de Araujo, and Larry D. McMillan, all of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo., and Matsushita Electronics Corporation, Takatsuki, Japan

Continuation-in-part of Ser. No. 165,082, Dec. 10, 1993, Ser. No. 132,744, Oct. 6, 1993, Pat. No. 5,514,822, Ser. No. 981,133, Nov. 24, 1992, Pat. No. 5,423,285, and Ser. No. 965,190, Oct. 23, 1992, said Ser. No. 981,133and Ser. No. 965,190, , each is a continuation-in-part of Ser. No. 807,439, Dec. 13, 1991, abandoned. This application Jul. 26, 1994, Ser. No. 280,601

Int. Cl.[6] C07F *19/00;* B05D *5/12*

U.S. Cl. 427—96 40 Claims



1. A method of fabricating a metal oxide thin film for use in an integrated circuit comprising the steps of:

providing an integrated circuit substrate;

providing an initial liquid precursor comprising at least one metal compound dissolved in a first solvent;

adding a second solvent to said initial liquid precursor to form an intermediate precursor, said second solvent having a boiling point greater than that of said first solvent;

heating said intermediate liquid precursor to distill off said first solvent and form a final liquid precursor that is capable of forming a metal oxide thin film having better electrical properties than the thin films formed by said initial precursor;

applying said final liquid precursor to said substrate; and

treating said final precursor on said substrate to form a thin film of said metal oxide.

33. A method of making a final liquid precursor for use in manufacturing metal oxide thin films for use in integrated circuits, said method comprising the steps of:

providing an initial liquid precursor comprising an oxygenated metallic moiety dissolved in a first solvent, said first solvent having a boiling point less than that of xylene; and

performing a xylene exchange step on said initial liquid precursor to form said final precursor.

5,612,083

FLEXIBLE RUBBER ARTICLE AND METHOD OF MAKING

Wu-Nan Haung, Greer; Niles R. Manwill, Belton; Adana Muschelewicz, Easley, and Fung-Bor Chen, Greer, all of S.C., assignors to Maxxim Medical, Inc., Sugar Land, Tex.

Division of Ser. No. 264,588, Jun. 23, 1994, Pat. No. 5,545,451, which is a continuation of Ser. No. 896,642, Jun. 10, 1992, abandoned. This application May 19, 1995, Ser. No. 445,231

Int. Cl.[6] B05D *1/18*

U.S. Cl. 264—233 7 Claims

1. A process for making a flexible multilayered article comprising:

forming a first layer from an aqueous emulsion comprising natural rubber latex;

forming a second layer from an aqueous emulsion on said first layer comprising natural rubber latex, polyurethane, poly(acrylamide-acrylic acid, sodium salt) and polyethylene oxide; and

forming a third layer from an aqueous emulsion on said second layer comprising acrylic copolymer and fluorocarbon telomer resin.

5,612,084

AMINOPLAST-ANCHORED ULTRAVIOLET LIGHT STABILIZERS

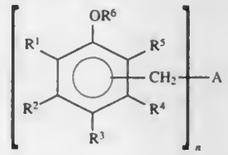
Jeno G. Szita, Norwalk, and Paul S. Waterman, Shelton, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 998,099, Dec. 29, 1992. This application May 23, 1995, Ser. No. 448,161

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—160 54 Claims

1. A method of coating a substrate comprising the steps of (I) contacting said substrate with a curable composition comprising (i) a stabilizingly effective amount of a stabilizer composition, (ii) a crosslinkingly effective amount of a crosslinking agent, and (iii) a polyfunctional active hydrogen containing material, and (II) thereafter curing said curable composition, wherein the stabilizer composition comprises a monomeric or oligomeric aminoplast anchor having more than 0.5 mole of phenolic light stabilizer groups per mole of aminoplast pendently attached thereto via an N-methylene bridge, represented by the formula



wherein

A is an m functional monomeric or oligomeric aminoplast anchor molecule to which n phenolic light stabilizer groups are attached through n N-methylene bridges, the bridges replacing the R^2, R^3, R^4 or R^5 groups on the phenolic ring;

R^1 is a group which, together with the phenolic ring, comprise the phenolic light stabilizer group;

R^2, R^3, R^4 and R^5 are substituents independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, hydroxy, alkoxy, and alkyl which is interrupted, substituted, or interrupted and substituted by one or more oxygen, carbonyl or carboxy groups;

R^6 is hydrogen or a blocking group selected from the group consisting of alkyl, acyl, aminocarbonyl and silyl groups;

m is at least 1; and

n is more than 0.5.

5,612,085

LENS HOLDER AND METHOD FOR MAKING A THIN FILM

Katsuaki Mitani; Masayuki Takahashi, and Syunsuke Kimura, all of Ibaraki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 70,912, Jun. 4, 1993, Pat. No. 5,353,070. This application Apr. 4, 1994, Ser. No. 222,397

Claims priority, application Japan, Jun. 8, 1992, 4-147257

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—162 11 Claims

1. A method for making a thin film comprising the steps of:

dipping a lens holder into a solution comprising a solvent and a fluororesin compound, said fluororesin compound having a refractive index lower than a refractive index of a lens barrel of said lens holder;

determining a raising speed of said lens holder to provide a desired thickness of said thin film, said thickness of said thin film being dependent upon the raising speed and the density of said solution,

raising said lens holder out of said solution at said raising speed to provide said thin film; and

removing said solvent to thereby form said thin film.

5,612,086

METHOD OF MANUFACTURING AN OPTICAL WAVEGUIDE DEVICE

Hironao Hakogi; Takashi Yamane, and Junko Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

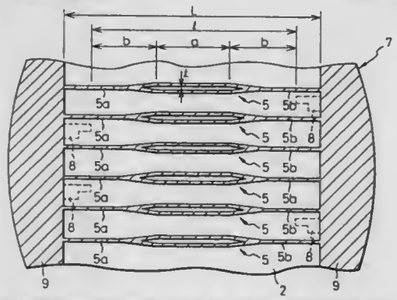
PCT No. PCT/JP93/01565, § 371 Date Jun. 28, 1994, § 102(e) Date Jun. 28, 1994, PCT Pub. No. WO94/10592, PCT Pub. Date May 11, 1994

PCT Filed Oct. 28, 1993, Ser. No. 256,179

Claims priority, application Japan, Oct. 28, 1992, 4-290020

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—163.2 15 Claims



1. A manufacturing method for an optical waveguide device of length l comprising the steps:

forming a metallic conductor pattern on a substrate having a pyroelectric effect; said conductor pattern including an optical waveguide pattern located in an effective chip range of said substrate, said effective chip range being an area of said substrate having a width equal to l;

heating the substrate to thermally diffuse the metallic conductor pattern; and

cutting the substrate in said effective chip range to provide a chip-shaped optical waveguide device,

said conductor pattern further including a conductor portion wider than the optical waveguide pattern located at a position outside of the effective chip range on the substrate, and at least one end of the optical waveguide pattern connects with the conductor portion.

5,612,087

METHOD FOR PREPARING A FIBROUS ELECTRICALLY CONDUCTIVE FILLER

Takao Hayashi, Yamaguchi; Nobuyoshi Kasahara, Saitama; Norihiro Sato, and Kouichi Kawaratani, both of Yamaguchi, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Division of Ser. No. 128,233, Sep. 29, 1993, Pat. No. 5,501,907. This application Nov. 30, 1995, Ser. No. 565,016

Claims priority, application Japan, Sep. 29, 1992, 4-283709

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—226 6 Claims

1. A method for preparing a fibrous electrically-conductive filler comprising the steps of forming coating layer of tin oxide hydrate on the surface of fibrous aluminum borate as a core material and then calcining the coated layer of the hydrate at a temperature ranging from 150° to 600° C. in an inert gas atmosphere or a reducing atmosphere to form an antimony-free tin oxide layer.

5,612,088

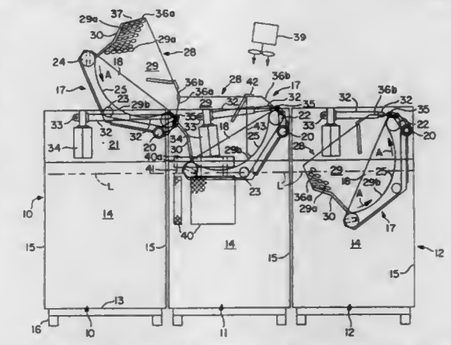
METHOD FOR THE SURFACE TREATMENT OF PARTS

Robert F. Zecher, 556 Woodward Dr., Huntingdon Valley, Pa. 19006

Division of Ser. No. 134,315, Oct. 8, 1993, Pat. No. 5,417,829. This application May 19, 1995, Ser. No. 444,250

Int. Cl.[6] B05D *3/12;1/40*

U.S. Cl. 427—242 4 Claims



1. A method of surface treatment of parts with liquid baths comprising the steps of:

(a) cleaning said parts in a first treatment tank;

(b) transferring said cleaned parts by first conveyor means to a second conveyor means;

(c) next immersing said parts transferred to said second conveyor means in a treatment tank containing a liquid bath of treatment solution and tumbling said parts on said second conveyor means within said liquid bath;

(d) transferring said tumbled parts out of said treatment tank by said second conveyor means and onto a third conveyor means in a rinse tank containing rinsing solution and subjecting the parts on said third conveyor to a rinsing action utilizing said rinsing solution;

(e) allowing the parts on said third conveyor to drain;

(f) recapturing the drained solution within said rinse tank; and

(g) discharging the parts on said third conveyor from said rinse tank.

5,612,089

METHOD FOR PREPARING DIAPHRAGM FOR USE IN CHLOR-ALKALI CELLS

Colonel R. Dilmore, Jr., Jeannette, and John O. Snodgrass, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 26, 1995, Ser. No. 507,174

Int. Cl.[6] B05D *5/00*

U.S. Cl. 427—247 26 Claims

18. A method for forming an electrolyte permeable asbestos-free diaphragm on a foraminous cathode structure for use in a chlor-alkali electrolytic cell comprising:

(a) forming on said cathode structure from a liquid slurry a liquid-permeable diaphragm base mat of asbestos-free material comprising fibrous synthetic polymeric material resistant to the chlor-alkali cell environment and ion exchange material,

(b) drawing through said diaphragm base mat a liquid slurry comprising inorganic particulate material dispersed in aqueous alkali metal halide brine containing a wetting amount of surfactant selected from the group consisting of nonionic, anionic and amphoteric surfactants, and mixtures of said

surfactants to deposit a coating of inorganic particulate material on said diaphragm base mat, and

(c) drying the coated diaphragm at temperatures below the sintering or melting temperature of the synthetic polymeric material.

5,612,090

IRON-BASED MATERIAL HAVING EXCELLENT OXIDATION RESISTANCE AT ELEVATED TEMPERATURES AND PROCESS FOR THE PRODUCTION THEREOF

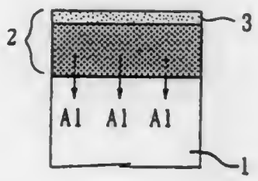
Yasushi Fukui, Osaka; Atsushi Ando, Sakai; Yoshikazu Morita; Masanori Matsuno, both of Izumisano; Minoru Saito, Izumiotsu; Hideo Miyake, Sakai, and Masahiko Souda, Amagasaki, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Division of Ser. No. 155,373, Nov. 22, 1993. This application Jun. 6, 1995, Ser. No. 467,637

Claims priority, application Japan, Nov. 20, 1992, 4-333869; Jun. 17, 1993, 5-169870

Int. Cl.[6] C23C *14/08*

U.S. Cl. 427—255.3 **9 Claims**



1. A process for production of an oxidation resistant iron-based heat-generating material which comprises vacuum evaporating aluminum onto a surface of an iron-based alloy capable of generating heat by passing electricity therethrough wherein an oxygen partial pressure in a vacuum gaseous atmosphere for the vacuum evaporation is adjusted so that there is formed directly on the surface of the iron-based alloy a coating consisting of aluminum and oxygen, the amount of the oxygen in said coating being less than the stoichiometric amount of oxygen in Al_2O_3.

5,612,091

METHOD AND APPARATUS FOR CONTROLLING THE COAT PROFILE IN COATERS BASED ON SHORT DWELL TIME APPLICATION

Petri Paloviita, Vantaa, and Jukka Linnonmaa, Järvenpää, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Oct. 17, 1995, Ser. No. 544,065

Claims priority, application Finland, Oct. 24, 1994, 944991

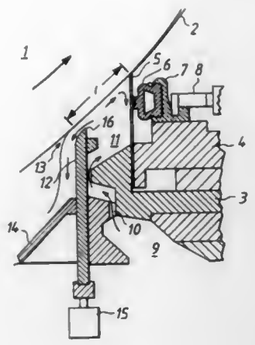
Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—355 **14 Claims**

1. A method for controlling a coat profile of a web to be coated with a coating mix comprising:

feeding the coating mix into an application chamber formed by a surface of the web to be coated, by a doctoring means for smoothing the coating mix applied to the web, and by a front planar member, the front planar member being disposed a distance from the doctoring means in a direction counter to movement of the web, an edge of the front planar member and of the doctoring means being disposed at a distance from the surface of the web to be coated and extending across at least a portion of a width of the web;

adjusting the distance between the edge of the front planar member and the surface of the web to be coated at a plurality of points across the width of the web, the distance corresponding to each point being separately adjustable; and



feeding the coating mix from the application chamber to the surface of the web to be coated to coat said surface.

5,612,092

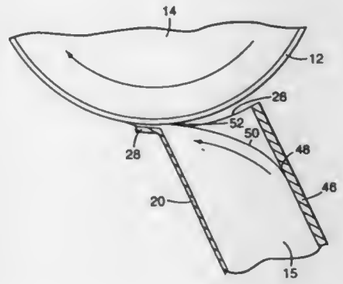
KNIFE COATING METHOD USING ASCENSION OF THE FLUID BY ITS TENSION

Mark R. Strenger, Woodbury; Robert B. Secor, Stillwater, both of Minn., and Bernhard Lenz, Kleinenbroich, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 6, 1994, Ser. No. 319,266

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—356 **8 Claims**



1. A method of applying a coating fluid having a thickness on to a surface using a trough coating apparatus having a trough and a knife, the method comprising:

providing relative movement between the coating apparatus and the surface;

applying the coating fluid to the surface through a trough opening which extends transversely across the surface by ascending the coating upwardly;

feeding the coating fluid directly into the trough;

regulating the thickness of the coating applied on the surface using a knife; and

maintaining a sufficient distance between a separation line, which is the intersection line of the coating fluid, the upweb side of the trough, and the surrounding gas, and a wetting line, which is the intersection line of the coating fluid, the surface to be coated, and the surrounding gas, to maintain flow in an upstream coating bead substantially uniform in a crossweb direction to eliminate upstream coating bead flow instability.

5,612,093

TITANIUM AND ZIRCONIUM COMPLEXES OF CARBOXYLIC ACIDS AS CORROSION INHIBITORS

Adalbert Braig, Binzen, Germany; Markus Frey, Marly, and Andreas Kramer, Düdingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jun. 30, 1995, Ser. No. 491,333

Claims priority, application Switzerland, Jul. 1, 1994, 2118/94

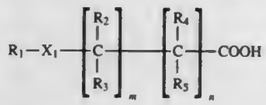
Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—386 **24 Claims**

1. A coating composition comprising

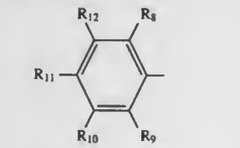
a) an organic film-forming binder and

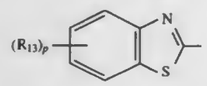
b) a corrosion inhibiting amount of, at least one titanium or zirconium complex of a compound of the formula I

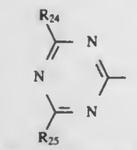

(I)

in which

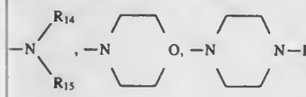
R_1 is hydrogen, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_2–C_{24}alkenyl, C_4–C_{15}cycloalkyl which is unsubstituted or substituted by C_1–C_4alkyl; C_5–C_{15}cycloalkenyl which is unsubstituted or substituted by C_1–C_4alkyl; C_{13}–C_{26}polycycloalkyl, C_7–C_9phenylalkyl which is unsubstituted or substituted on the phenyl ring by C_1–C_4alkyl; —COR_7, a 5- or 6-membered heterocyclic ring which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or carboxyl; a benzo-fused 5- or 6-membered heterocyclic ring which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or carboxyl; or R_1 furthermore is a radical of the formula II, III or IV


(II)

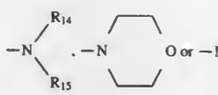

(III)


(IV)

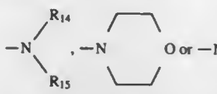
R_2, R_3, R_4 and R_5 independently of one another are hydrogen, hydroxyl, C_1–C_{18}alkoxy, C_2–C_{18}alkoxy which is interrupted by oxygen, sulfur or >N—R_6;



C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_2–C_{24}alkenyl, C_5–C_{15}cycloalkyl which is unsubstituted or substituted by C_1–C_4alkyl; C_5–C_{15}cycloalkenyl which is unsubstituted or substituted by C_1–C_4alkyl; phenyl or naphthyl which are unsubstituted or substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or substituted on the phenyl ring by C_1–C_4alkyl; C_{10}–C_{12}naphthylalkyl which is unsubstituted or substituted on the naphthyl ring by C_1–C_4alkyl; or —COR_7, with the proviso that if one of the radical R_2, R_3, R_4 or R_5 is hydroxyl,



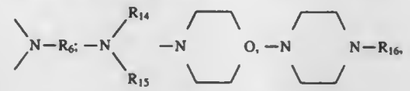
the other radical bonded to the same C atom is other than hydroxyl,

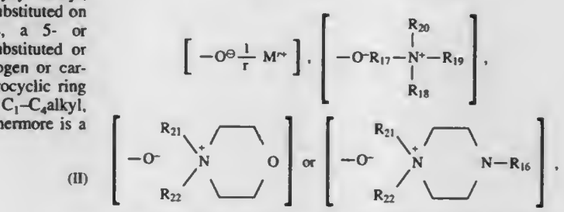


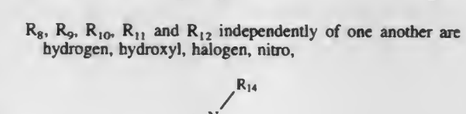
or R_2 and R_3 or R_4 and R_5 furthermore, together with the C atom to which they are bonded, form a C_5–C_{12}cycloalkylidene ring which is unsubstituted or substituted by C_1–C_4alkyl,

R_6 is hydrogen or C_1–C_8alkyl,

R_7 is hydroxyl, C_1–C_{18}alkoxy, C_2–C_{18}alkoxy which is interrupted by oxygen, sulfur or







R_8, R_9, R_{10}, R_{11} and R_{12} independently of one another are hydrogen, hydroxyl, halogen, nitro,



cyano, CF_3, —COR_7, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_1–C_{25}halogenoalkyl, C_1–C_{18}alkoxy, C_2–C_{18}alkoxy which is interrupted by oxygen, sulfur or >N—R_6; C_1–C_{18}alkylthio, C_2–C_{24}alkenyl, C_5–C_{15}cycloalkyl which is unsubstituted or substituted by C_1–C_4alkyl; C_5–C_{15}cycloalkenyl which is unsubstituted or substituted by C_1–C_4alkyl; phenyl or naphthyl which are unsubstituted or substituted by C_1–C_4alkyl; or C_7–C_9-phenylalkoxy which is unsubstituted or substituted on the phenyl ring by C_1–C_4alkyl; C_{10}–C_{12}naphthylalkoxy which is unsubstituted or substituted on the naphthyl ring by C_1–C_4alkyl; or the radicals R_9 and R_{10} or the radicals R_{10} and R_{11} or the radicals R_{11} and R_{12} or the radicals R_8 and R_{12} furthermore, together with the carbon atoms to which they are bonded, form a benzo ring which is unsubstituted or substituted by C_1–C_4alkyl, halogen or C_1–C_4alkoxy,

R_{13} is hydrogen, hydroxyl, halogen, nitro, cyano, CF_3, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_1–C_{25}halogenoalkyl, C_1–C_{18}alkoxy, C_2–C_{18}alkoxy which is interrupted by oxygen, sulfur or >N—R_6; C_1–C_{18}alkylthio or C_2–C_{24}alkenyl;

R_{14} and R_{15} independently of one another are hydrogen, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_2–C_{24}alkenyl, C_5–C_{15}cycloalkyl which

is unsubstituted or substituted by C_1–C_4alkyl; phenyl or naphthyl which are unsubstituted or substituted by C_1–C_4alkyl,

R_{16} is hydrogen or C_1–C_{18}alkyl,

R_{17}, R_{18}, R_{19}, R_{20}, R_{21} and R_{22} independently of one another are hydrogen or C_1–C_{25}alkyl,

R_{23} is hydrogen, C_1–C_{25}alkyl, C_2–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_6; C_2–C_{24}alkenyl, C_5–C_{15}cycloalkyl which is unsubstituted or substituted by C_1–C_4alkyl; phenyl or naphthyl which are unsubstituted or substituted by C_1–C_4alkyl,

R_{24} and R_{25} independently of one another are hydrogen, C_1–C_{25}alkyl, C_1–C_{18}alkoxy, —X_2—$(CH_2)_5COR_7$ or



M is an r-valent metal cation,

X_1 is a direct bond, oxygen, sulfur, —NR_{23}—, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or >N—R_6, C_2–C_{18}alkenylene, C_2–C_{18}alkynylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene or C_5–C_8cycloalkylene, with the proviso that if m and n are 0, X_1 is other than oxygen and sulfur,

X_2 is oxygen or —NR_{23}—,

m and n independently of one another are an integer from 0 to 10,

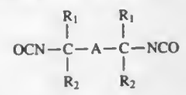
p is an integer from 0 to 4,

r is 1, 2 or 3, and

s is an integer from 1 to 8.

with an OH group content not to exceed an OH number of 10, and acid function content not to exceed an acid number of 30, wherein from 10 to 50 weight percent of the component (I) is optionally one or more unsaturated reaction products of carboxy functional polycondensates with ethylenically unsaturated monomers, and

(II) 0.5 to 15 weight percent based on the solids content of the binder of a polyisocyanate that is liquid at room temperature or is liquefied by an organic solvent, containing more than one free isocyanate group having the formula



(A)

wherein

R_1 and R_2 are independently of each other —C_nH_{2n+1}, or R_1 is H,

n is a cardinal number from 1 to 6, and

A is a single bond, an aromatic or alicyclic residue, or a linear or branched aliphatic residue or a polyisocyanate derived therefrom, wherein up to 40 percent based on the weight of the solids of the polyisocyanate component II, is optionally a different polyisocyanate that is liquid at room temperature or is liquefied by an organic solvent and has more than one free isocyanate group,

wherein the component (II) is mixed with the base coat before the application thereof to the substrate, and applying a clear coat containing an organic solvent over the aqueous base coat while the latter is still wet or after it has dried.

5,612,094

COMPOSITIONS AND METHODS FOR PRESERVING WOOD PRODUCTS

David M. Schubert, and Mark J. Manning, both of Los Angeles, Calif., assignors to U.S. Borax Inc., Valencia, Calif.

Filed Oct. 18, 1995, Ser. No. 544,903

Int. Cl.[6] A01N *3/00;59/14*

U.S. Cl. 427—397 **18 Claims**

7. The method for preserving wood products against fungi, insects and fire, which comprises treating said wood product with a fungicidal, insecticidal and fire-retardant amount of 1) a borate selected from the group consisting of boric acid and the water-soluble salts thereof and 2) a water-soluble zirconium salt, and drying said treated wood product, thereby depositing in said wood product a zirconium borate complex which is resistant to leaching by moisture, wherein the ZrO_2:B_2O_3 weight ratio is about 0.75:1 to 10:1 and wherein the resultant preserved wood product contains about 0.3 to about 9% by weight B_2O_3.

5,612,095

PROCESS FOR MULTICOAT LACQUERING

Thomas Brock, Hürth, and Klaus Wandelmaier, Wuppertal, both of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Continuation of Ser. No. 262,403, Jun. 20, 1994, abandoned. This application Mar. 5, 1996, Ser. No. 653,078

Claims priority, application Germany, Jun. 29, 1993, 43 21 534.3

Int. Cl.[6] B05D *1/36;7/14*

U.S. Cl. 427—407.1 **7 Claims**

1. A process for applying a multicoat lacquer finish to a substrate, which comprises applying to the substrate a base coat layer containing water, a binder, a pigment, and optionally an organic solvent, a neutralizing agent, and a laquer additive, wherein the binder comprises

(I) 85 to 99.5 weight percent based on the solids content of the binder of an aqueous, physically drying polyurethane binder

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5,612,096

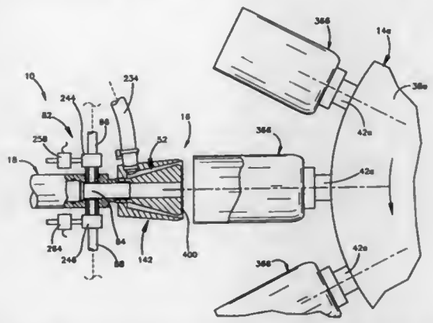
METHODS AND APPARATUS FOR APPLYING POWDER TO WORKPIECES

Douglas C. Mulder, Wellington; Ronald E. Niemiec, Elyria, both of Ohio; Joseph Pintelon, Lennix, Belgium; Harald Pleuse, Langenfeld, Germany; Lawrence J. Macartney, Elyria, Ohio; Masafumi Matsunaga, Kanagawa, Japan, and Don R. Scarbrough, Elyria, Ohio, assignors to Nordson Corporation, Westlake, Ohio

Division of Ser. No. 906,677, Jun. 30, 1992, Pat. No. 5,474,609. This application Apr. 25, 1995, Ser. No. 428,026

Int. Cl.[6] B05D *1/06;3/02;7/22*

U.S. Cl. 427—466 **21 Claims**



1. A method of sequentially applying powder to each article of a plurality of articles, said method comprising the steps of sequentially forming a series of pulses of air with powder entrained therein, sequentially conducting each of the pulses of air with powder entrained therein along a flow path through a spray gun toward a work station where powder is applied to each of the articles in turn, and sequentially diverting a portion of each of the pulses of air with powder entrained therein from the flow path through the spray gun to sharply define an edge portion of each of the pulses of air with powder entrained therein.

5,612,097

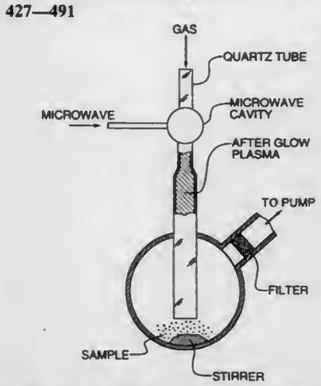
PLASMA ASSISTED GRAFTING OF MALEIC ANHYDRIDE TO POLYOLEFINS

Renate Foerch, Oestrich-Winkel, Germany; Duncan H. Hunter; Mary J. Walzak, both of London, Canada, and Blair A. Graham, Brights Grove, Canada, assignors to The University of Western Ontario, in trust for Surface Science Western; The University of Western Ontario, both of London, and The Institute For Chemical Science and Technology, Sarnia, all of Canada

Filed Jun. 2, 1995, Ser. No. 458,246

Int. Cl.[6] C08J *7/18*

U.S. Cl. 427—491 **6 Claims**



1. A process for grafting maleic anhydride, in the solid state, to the surface of a solid polyolefin, said process comprising the steps of mixing solid maleic anhydride with a solid polyolefin and exposing the resultant mixture to an inert gas plasma in a low pressure environment.

5,612,098

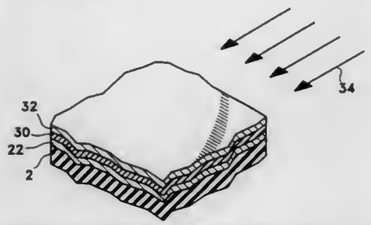
METHOD OF FORMING A THIN FILM MAGNETIC STRUCTURE HAVING FERROMAGNETIC AND ANTIFERROMAGNETIC LAYERS

Minshen Tan, Fremont; Hua-Ching Tong, San Jose; Francis H. Liu, Fremont, and Swie-In Tan, San Jose, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Aug. 14, 1996, Ser. No. 696,656

Int. Cl.[6] C23C *14/08*

U.S. Cl. 427—529 **23 Claims**



1. A method of forming a thin film magnetic structure, comprising the steps of:

providing a substrate;

depositing a first layer of ferromagnetic material on said substrate in the presence of a magnetic field oriented in a first direction;

depositing a layer of antiferromagnetic material on said first layer of ferromagnetic material; and

depositing a second layer of ferromagnetic material on saidlayer of antiferromagnetic material in the presence of a magnetic field oriented in a second direction, said first layer of ferromagnetic material being spaced from said second layer of ferromagnetic material by said antiferromagnetic material.

5,612,099

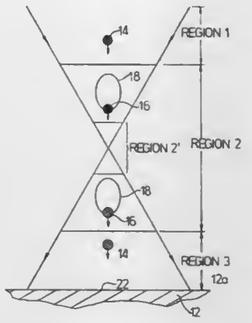
METHOD AND APPARATUS FOR COATING A SUBSTRATE

Stephen L. Thaler, Independent City, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 23, 1995, Ser. No. 447,403

Int. Cl.[6] B05D *3/00;3/12;* **C23C** *14/30;* **H05B** *7/00*

U.S. Cl. 427—565 **20 Claims**



1. A method of coating a surface of a substrate comprising the steps of:

suspending a coating material above the surface of the substrate; and

irradiating the coating material and the underlying surface of the substrate, wherein said irradiating step comprises the steps of:

melting at least a portion of the coating material to form a plurality of at least partially molten droplets of coating material;

propelling the at least partially molten droplets of coating material toward a portion of the substrate, wherein said propelling step comprises the step of ablating the at least partially molten droplets of coating material to thereby create ablation plumes which propel the respective at least partially molten droplets of coating material toward the substrate; and

heating the portion of the substrate toward which the coating material is propelled such that the at least partially molten droplets of coating material adhere to the beated substrate, thereby coating the surface of the substrate;

wherein said ablating step comprises the step of forming a portion of each of the at least partially molten droplet into a plasma which is propelled toward the substrate and which deposits within and at least partially fills depressions within the coating of the substrate following adherence of the at least partially molten droplets of the coating material to the surface of the substrate.

5,612,100

MARKING OF BLOCK GAUGES

Chung-Ping Lai; Ai-Kang Li, and Cheng-Tsu Fu, all of Chutung Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 24, 1996, Ser. No. 668,698

Int. Cl.[6] C23C *14/28*

U.S. Cl. 427—595 **7 Claims**

1. A method for marking on the surface of a block gauge, comprising:

preparing a block gauge with electric conductivity or partial conductivity; and

marking said block gauge with an electroo discharging machining;

wherein the marking is conducted with said block gauge in an immersed oil environment.

5,612,101

HOLLOW MOLDED ARTICLE CONTAINER AND METHOD FOR PRODUCING THE SAME

Motonobu Furuta, Chiba, and Takanari Yamaguchi, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 13, 1996, Ser. No. 648,514

Claims priority, application Japan, May 12, 1995, 7-114437; Sep. 14, 1995, 7-236879

Int. Cl.[6] C09K *19/00*

U.S. Cl. 428—1 **12 Claims**

1. A hollow molded article container of a liquid crystal polyester resin composition comprising a liquid crystal polyester as a component (A) and an epoxy group-containing ethylene copolymer of 50.0 through 99.9% by weight of an ethylene unit (a), 0.1 through 30.0% by weight of an unsaturated carboxylic acid glycidyl ester unit or unsaturated glycidyl ether unit (b) and 0 through 49.9% by weight of an ethylenically unsaturated ester unit (c) as a component (B), wherein the component (A) is 56.0 through 99.0% by weight and the component (B) is 44.0 through 1.0% by weight.

5,612,102

FACETED JEWELRY ORNAMENT WITH FACET GROOVED FOR LIGHT DIFFRACTION

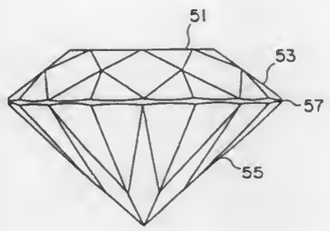
Hiroshi Nakama, Kanagawa-ken, Japan, assignor to Yamato Kako Kabushiki Kaisha, Japan

Filed Dec. 30, 1993, Ser. No. 175,560

Claims priority, application Japan, Oct. 13, 1993, 5-255951

Int. Cl.[6] A44C *17/00*

U.S. Cl. 428—15 **13 Claims**



1. An ornament of a light transmissive material having a plurality of cut facets, wherein at least one of said cut facets has a plurality of fine grooves, said plurality of fine grooves being spaced over the total surface of said one facet with a substantially equal spacing suitable for the diffraction of visible light entering the ornament through said one facet to form a rainbow of seven colors within said ornament and thereby enhance the appearance of the ornament.

5,612,103

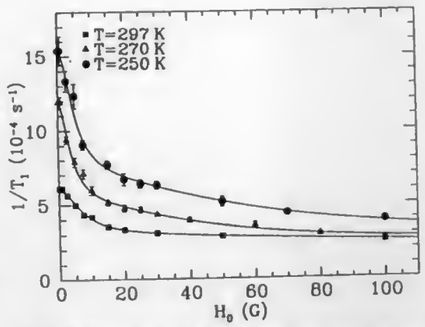
COATINGS FOR PRODUCTION OF HYPERPOLARIZED NOBLE GASES

Bastiaan Driehuys, Bristol, Pa.; William Happer, Princeton, and Gordon D. Cates, Jr., Skillman, both of N.J., assignors to Princeton University, Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 478,276

Int. Cl.[6] A47G *19/22*

U.S. Cl. 428—34.7 **47 Claims**



34. A container having reduced capacity for depolarization of a noble-gas, modified according to a method comprising:

coating a surface of a container, adapted to receive a noble gas, with a polymer modified by deuteration and/or modified to have reduced permeability to the hyperpolarized noble gas when applied to the surface, thereby providing the surface with reduced capacity to depolarize said noble gas.

5,612,104

FIVE-LAYER, BIAXIALLY STRETCHED TUBULAR FILM FOR PACKAGING AND ENCASING PASTY FOOD STUFFS

Hartmut Grund, Otterstadt, Germany, assignor to Naturin GmbH, Weinheim, Germany

PCT No. PCT/EP94/03676, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO95/13707, PCT Pub. Date May 26, 1995

PCT Filed Nov. 9, 1994, Ser. No. 492,012

Claims priority, application Germany, Nov. 19, 1993, 43 39 337.3

Int. Cl.[6] A22C *13/00;* **F16L** *11/08*

U.S. Cl. 428—348 **23 Claims**

1. A five-layer tubular film for packaging pasty foodstuffs, said film comprising an inner polyamide layer and an outer polyamide layer, a core polyolefin layer, and two primer layers; said polyamide layers being formed of the same polyamide material consisting of at least one polyamide selected from the group consisting of aliphatic polyamides, aliphatic copolyamides, partially aromatic polyamides and partially aromatic copolyamides; and said two primer layers consisting of the same material as each other.

5,612,105

BIAXILLY ORIENTED POLYAMIDE FILM AND ITS PRODUCTION PROCESS

Takashi Okamoto; Minoru Kishida; Masanobu Hioki; Atsuhiro Ishikawa, and Toshikazu Kawakita, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jun. 5, 1995, Ser. No. 461,734

Claims priority, application Japan, Jun. 3, 1994, 6-145383; Mar. 16, 1995, 7-057458

Int. Cl.[6] B29C *47/06;* **B32B** *27/34*

U.S. Cl. 428—34.8 **17 Claims**



1. A biaxially oriented polyamide film having a tear linearity in the longitudinal direction of the film, which comprises as a main material nylon 6 and an aliphatic polyamide resin other than nylon 6 mixed in a weight ratio of from 75:25 to 99:1, wherein the difference in surface tension (dyne/cm) between N6 and PA satisfies the following relationship (1)

$$3.0 \leqq \gamma_{A-\gamma B} \leqq 15.0 \quad (1)$$

wherein γ_A is the surface tension of N6 and γ_B is the surface tension of PA, and wherein particles of PA are uniformly dispersed in a matrix of N6.

12. A process for producing a biaxially oriented polyamide film, which comprises:

(1) extruding a mixture of nylon 6 and an aliphatic polyamide resin other than nylon 6 in a weight ratio of from 75:25 to 99:1 in the shape of a sheet through a lip opening of a die, wherein particles of PA are uniformly dispersed in a matrix of N6, and wherein the shear rate of the melted polymers is kept at 100 to 400 sec^{-1} and the relationship between the temperature of the melted polymers (PT) extruded from the lip opening of the die and the time (t) until the melted polymers reach a cooling drum is controlled under any one of the following conditions (a) to (e)

(a) $t \leqq 1.2$ seconds when PT is within $240 \leqq PT < 250°$ C.,

(b) $t \leqq 0.9$ seconds when PT is within $250 \leqq PT < 260°$ C.,

(c) $t \leqq 0.6$ seconds when PT is within $260 \leqq PT < 270°$ C.,

(d) $t \leqq 0.3$ seconds when PT is within $270 \leqq PT < 280°$ C., and

(e) $t \leqq 0.1$ seconds when PT is within $280 \leqq PT < 290°$ C.,

(2) adjusting the water content of the resulting undrawn sheet to 1 to 6% by weight, and

(3) drawing the sheet at a temperature of 150 to 220° C. with a draw ratio of 2.5 or more in both the lengthwise and crosswise directions.

5,612,106

LAMINATED TUBE CONTAINER

Yuji Komiya, Tama; Hiroyuki Uchiumi, Tokyo; Shintaro Ohashi, and Akio Kuboniwa, both of Yokohama, all of Japan, assignors to Toppan Printing Co, Ltd., and Lion Corporation, both of Tokyo, Japan

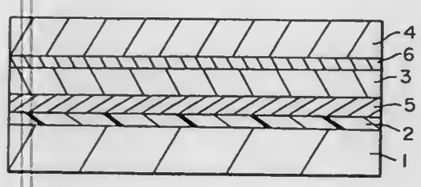
Continuation of Ser. No. 74,987, Jun. 10, 1993, abandoned, which is a continuation of Ser. No. 757,570, Sep. 11, 1991, Pat. No. 5,232,755. This application May 16, 1995, Ser. No. 442,559

Claims priority, application Japan, Sep. 14, 1990, 2-96583

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[6] B32B *7/12;15/08;13/06;27/08*

U.S. Cl. 428—36.91 **4 Claims**



1. A laminated tube container comprising a sheet material comprising a substrate of a plastic material, a deposited silicon oxide layer, an adhesive layer, a heat buffer layer, an anchor coat layer and a first extruded coating layer of a thermoadhesive resin which are successively laminated, said deposited silicon oxide layer being crack-free and having a thickness of at least 800 Å, said heat buffer layer being selected from the group consisting of a polyester film, a polyethylene film, a polypropylene film and a polyamide film, said anchor coat layer being a polyester anchoring agent.

5,612,107

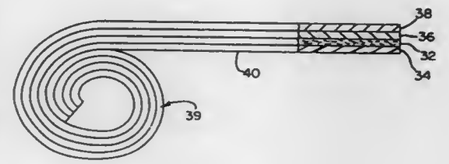
MOTTLE PREVENTION FILM OR COATING

Nailesh Sangani, Mentor; Carolyn Eberly; Markieta Valvoda, both of Chardon, and Robert Rega, Mentor, all of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Feb. 24, 1995, Ser. No. 394,179

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—41.7 **38 Claims**



1. A composite construction comprising:

(A) a layer of plasticized polymer film having a face side and a back side;

(B) a release-coated liner having one surface in contact with the back side of the layer of plasticized polymer film; and either

(C) a plasticizer-resistant polymer backcoating on the other surface of the release-coated liner (B) which is essentially impervious to the plasticizer in (A); or

(D) a removable plasticizer-resistant polymer film in contact with the face side of the layer of plasticized polymer film (A).

5,612,108

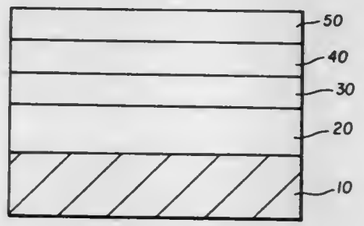
MAGNETO-OPTICAL STRUCTURE HAVING TITANIUM UNDERLAYER

Tukaram K. Hatwar, Penfield; Douglas G. Stinson, Fairport, and Robert H. Webster, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1996, Ser. No. 602,400

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **7 Claims**



1. An optical recording structure, comprising:

a) a substrate made substantially from aluminum; and

b) separate multilayer recording structures formed on each surface of the substrate, each such multilayer structure including:

i) a surface smoothing layer on the substrate;

ii) a metal underlayer deposited on the surface smoothing layer wherein the underlayer includes Ti metal, Ti—Al and Ti—Cr alloys;

iii) a recording layer over the metal underlayer; and

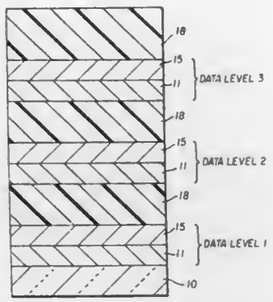
iv) a transparent protective layer over the recording layer.

5,612,109

OPTICAL STORAGE MEDIUM INCLUDING MULTIPLE DATA LEVELS MADE OF CO/PT MAGNETO-OPTIC RECORDING MEDIA

Yuan-Sheng Tyan; Giuseppe Farruggia, both of Webster, and Tukaram K. Hatwar, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 14, 1996, Ser. No. 615,367
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **13 Claims**



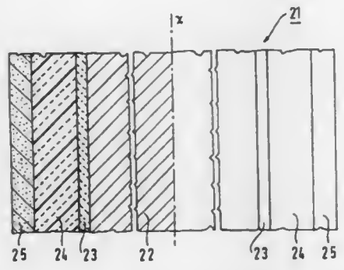
1. An optical data storage medium comprising:
a) multiple data storage levels, and
b) each storage level comprising a transparent dielectric seed layer and a partially transmissive recording layer having a multilayer structure including alternating layers of Co/Pt on to said seed layer.

5,612,110

MULTIMATERIAL DISK FOR HIGH-ENERGY BRAKING COMPRISING AN ASSEMBLY OF VARIOUS FLANGES

Michel Watremez, Marly, France, assignor to GEC Alsthom Transport SA, Paris, France

Filed Mar. 24, 1995, Ser. No. 409,588
Claims priority, application France, Mar. 25, 1994, 94 03536
Int. Cl.[6] F16D *69/00*
U.S. Cl. 428—66.2 **21 Claims**



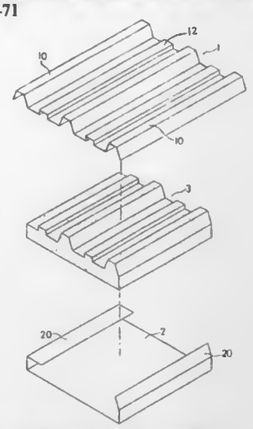
1. A multimaterial disk for high-energy braking comprising an assembly of flanges and including in succession a central flange, thermal barriers on either side of said central flange, and outer flanges each comprising a substrate having an inner side disposed on a corresponding one of said thermal barriers and an outer side carrying a facing, wherein said thermal barriers are made from composite materials comprising a mixture of oxide ceramic fibers and an organic binder.

5,612,111

METHOD OF PRODUCING AND PRODUCT OF HEAT-PROOF LAMINATE BOARD

Gary Lin, Taipei, Taiwan, assignor to Tienchi Trading Co., Ltd., and Tung Yik Trading Co., Ltd., both of Taipei, Taiwan

Filed May 30, 1995, Ser. No. 454,593
Int. Cl.[6] B32B *3/00;* **A47B** *13/08*
U.S. Cl. 428—71 **9 Claims**



1. A heat-proof laminate board, comprising:
a corrugated upper layer formed from a material selected from the group consisting of steel plate, polyvinyl chloride, polycarbonate, polypropylene, aluminum plate, and iron sheet, said upper layer having a first, second, third and fourth edges and first and second surfaces, said first edge defining a slant flange and said surfaces defining first and second parallel convex portions;
a sticky middle layer of expandable polyurethane foam;
a bottom layer formed from a material selected from the group consisting of polyvinyl chloride film, polypropylene film, papery film, fabric film, nylon film and wooden fiber sheet, said bottom layer having a first, second, third, and fourth edges and a first surface and a second surface, said first edge of said bottom layer being folded vertically and incorporating a slant flange formed thereon, said slant flange conforming to opposed edges of the upper layer, and said third edge being folded vertically and having a horizontal flange, said bottom layer having a width less than that of the upper layer, so that said sticky middle layer disposed one side of said corrugated upper layer will be sealedly confined in between said corrugated upper layer and said lower layer during foaming process in a manner where said middle layer dimensionally corresponds to the lower layer and is firmly bound with said corrugated upper layer and where the upper layer is offset along said first edge thereof from said middle and lower layers, said offset projecting beyond said bottom layer and said middle foam layer whereby the offset provides an overlap for connection of said boards.

5,612,112

SAXONY CARPETS HAVING FIBERS FORMED OF MODIFIED POLYAMIDE BLENDS

Richard Kotek, Arden, N.C., and Hans-Georg Matthles, Ludwigshafen, Germany, assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 319,723, Oct. 7, 1994, Pat. No. 5,559,194, which is a continuation of Ser. No. 12,821, Feb. 3, 1993, abandoned. This application Jan. 25, 1996, Ser. No. 591,323
Int. Cl.[6] B32B *3/02;3/16;27/02*
U.S. Cl. 428—92 **13 Claims**

1. A saxony carpet having a backing and a tufted pile surface on said backing, said tufted pile surface including carpet fibers formed of a polymer blend comprised of:

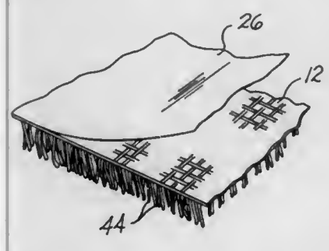
(a) from about 70 to about 99.85% by weight of a nylon polymer;
(b) from about 0.05 to about 5% by weight of an amorphous polyamide miscible with the nylon polymer (a), and
(c) from about 0.1 to about 35% by weight of an amorphous polymer immiscible with the nylon polymer (a) which is at least one selected from the group consisting of poly(phenylene oxides), polymethyl methacrylates, bisphenol A polycarbonates, polyethersulfones, polyarylethersulfones, polyphenylsulfones and bisphenol A polysulfones.

5,612,113

CARPET WITH FLUID BARRIER

Donald A. Irwin, Sr., Dalton, Ga., assignor to Darwin Enterprises, Inc., Dalton, Ga.

Continuation of Ser. No. 349,438, Dec. 5, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,709
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—95 **5 Claims**



1. A carpet for covering a floor having a primary backing material including a face surface and a back surface, a plurality of yarn strands extending from said face surface and a plurality of back stitches disposes on said back surface, a secondary backing having a first surface and a second surface bonded over said back surface with said first surface facing said backstitches, and a flexible film having a thickness in the range of approximately 1 to 5 mils comprising liquid impervious thermoplastic material bonded by a non-aqueous thermoplastic adhesive to said second surface to form an exterior surface of said carpet and provide a fluid barrier precluding liquids accidentally spilled onto said face surface from penetrating through to a floor beneath the carpet.

5,612,114

TEXTILE COMPOSITE, PRODUCTION THEREOF AND USE THEREOF

Edwin Zalewski, and Karl-Christian Zerfass, both of Bobingen, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 3, 1994, Ser. No. 333,846
Claims priority, application Germany, Nov. 6, 1993, 43 37 984.2; Mar. 14, 1994, 44 08 492.7
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—102 **21 Claims**

1. A composite comprising at least one textile sheet material composed of synthetic polymer fibers and at least one textile sheet material composed of inorganic fibers, which textile sheet materials are joined to one another by yarns composed of synthetic polymer fibers, and the composite having a tensile strength of at least 800 N/5 cm.

5,612,115

METAL-DEPOSITED POLYESTER FILM CAPACITOR

Shin-ichi Kinoshita, Tokyo; Hisayoshi Watanabe, and Nobuyuki Kume, both of Osaka, all of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, and Matsushita Electric Industrial Co., Ltd., Kadoma, both of Japan

Continuation of Ser. No. 84,607, Jul. 1, 1993, abandoned. This application May 4, 1995, Ser. No. 433,826
Claims priority, application Japan, Jul. 3, 1992, 4-177237
Int. Cl.[6] B32B *15/08;27/06;27/00;27/40*
U.S. Cl. 428—141 **18 Claims**

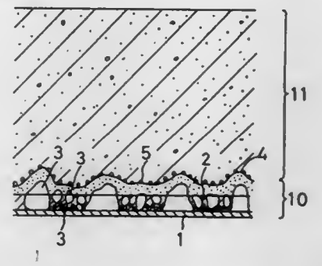
1. A metal-deposited polyester film capacitor formed by laminating or winding a polyester film,
wherein the polyester film comprises a polyester base film which has on at least one of its surfaces a coating layer containing a water-soluble or water-dispersible aromatic polyurethane and an aliphatic polyurethane,
wherein the coating layer comprises 30 to 80% by weight of said aromatic polyurethane and 20 to 70% by weight of said aliphatic polyurethane, both based on the total weight of the coating layer, and
wherein the coating layer further comprises alkali metal in a concentration of not more than 1000 ppm and
wherein a deposited metal layer is on said coating layer, such that the coating layer is located between the polyester base film and the deposited metal layer.

5,612,116

DECORATIVE TRANSFER SHEET WITH FOAM BACKING LAYER

Chitoshi Jinno, Chigasaki; Hiroyuki Toyohara, Tokyo; Hikaru Mimura, Hadano, and Takashi Murohashi, Yokohama, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara; Nippon Preston Kabushiki Kaisha, Yokohama, and Eslen Chemical Co., Ltd., Tokyo, all of Japan

Continuation of Ser. No. 265,964, Jun. 27, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 614,607
Claims priority, application Japan, Jun. 30, 1993, 5-161555
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—143 **8 Claims**



1. A decorative sheet for construction comprising: a thermoplastic polyester resin foam selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polyethylene naphthalate, polybutylene terephthalate elastomer and polycyclohexane terephthalate or combinations thereof, forming a surface layer,
a large number of inorganic aggregates scattered over the surface of the foam in the presence of an adhesive medium, said inorganic aggregates forming a decorative face layer by the medium of the adhesive, and
a backing layer formed on the decorative face layer.

5,612,117

CORE-BOARD

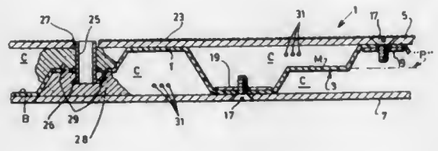
Germain Bélanger, St-Germain-de-Grantham; Pierre Larivière, Roxton Falls; Normand Labonté , Richmond; Bruno Archambault, Richmond, and Bruno St-Sauveur, Richmond, all of Canada, assignors to Baultar Composite Inc., Richmond, Canada

Filed May 9, 1995, Ser. No. 437,657

Claims priority, application Canada, Mar. 9, 1995, 2144295

Int. Cl.[6] B32B *3/12; E04C 2/32*

U.S. Cl. 428—178 **17 Claims**



1. A core for use in a core-board, said core consisting of an embossed sheet of a light weight material comprising:

a central surface extending in a plane;

a plurality of embossments hereinafter called "top cells", that are identical in shape and project from said central surface on one side thereof; and

another plurality of embossments hereinafter called "bottom cells", that are identical in shape and project from the central surface in a direction opposite to said top cells;

wherein:

each of said top and bottom cells is integral to said central surface and of pyramidal shape and has an open base of regular hexagonal shape extending in the plane of said central surface, a top flat surface that is of regular hexagonal shape and of a smaller surface area than said base, said top flat surface extending parallel to said plane, and six tapering side surfaces joining the top surface to the central surface,

the bases of said top and bottom cells are of a same size; and

said top and bottom cells are regularly distributed onto said central surface in such a manner that each top cell is not adjacent to another top cell but extends edge to edge to three spaced apart bottom cells, and each bottom cell is not adjacent to another bottom cell but extends edge to edge to three spaced apart top cells, each of said top and bottom cells thus being spaced apart from the other top and bottom cells respectively by portions of said central surface that are of hexagonal shape and of the same size as the bases of said top and bottom cells.

5,612,118

ELONGATE, SEMI-TONE PRINTING PROCESS AND SUBSTRATES PRINTED THEREBY

Robert J. Schleinz, Appleton, Wis.; Daniel J. Conrad, Murfreesboro, Tenn., and Joseph S. Kucherovsky, Philadelphia, Pa., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 359,481, Dec. 20, 1994. This application May 8, 1995, Ser. No. 437,005

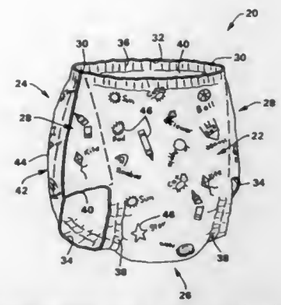
Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—195 **9 Claims**

1. A printed elasticized substrate made by the process comprising the steps of:

continuously moving a substrate having a printing surface,

printing a semi-tone graphic with an amount of ink less than an amount of ink for a full-tone graphic on the printing surface of the substrate,



elasticizing the substrate after it has been printed, and

contracting the substrate to provide the full-tone graphic.

5,612,119

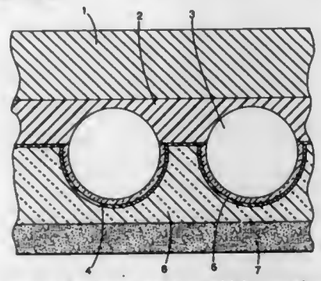
TRANSFER ARTICLE FOR FORMING RETROREFLECTIVE AND COLORED IMAGES AND METHOD OF MAKING SAME

Ulf N. Olsen, Solbergmoen, Norway; Erik Franke, Copenhagen, Denmark, and Eilif Strand, Drammen, Norway, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 39,454, Jun. 23, 1993, Pat. No. 5,510,178. This application Dec. 19, 1995, Ser. No. 574,942

Int. Cl.[6] B32B *3/00; 27/14*

U.S. Cl. 428—195 **7 Claims**



1. A transfer for decorating surfaces, which comprises a support sheet having microspheres that have a first portion embedded about one-fourth to one-half the microsphere's diameter in the support sheet and a reflective layer associated with a second portion of the microspheres, the second portion of the microspheres having printed imagewise thereon one or more coloured layers prepared from a polyester resin and an isocyanate hardener and, if there is more than one coloured layer, on top of all the coloured layers and microspheres, there is disposed a corresponding two-component extender or a glue that contains a polyester, the single colour layer or the extender or polyester glue and the multiple coloured layers containing an elastomer that contains a polyester or polyamide and that has been applied to the single coloured layer or the extender layer or the polyester containing glue while either was still wet, and fused into the single coloured layer or the extender layer or the polyester containing glue and the multiple coloured layers.

5,612,120

THERMAL TRANSFER SHEET

Yasuo Tago; Kenji Kurokawa, and Naohiro Ikeda, all of Osaka, Japan, assignors to Fujicopian Co., Ltd., Japan

Filed Apr. 19, 1996, Ser. No. 634,916

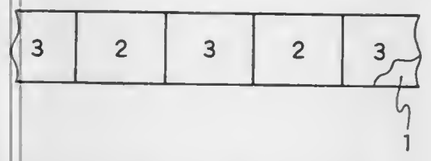
Claims priority, application Japan, Apr. 21, 1995, 7-96925

Int. Cl.[6] B41M *5/26*

U.S. Cl. 428—195 **5 Claims**

1. A thermal transfer sheet comprising:

a base film; and



a filling layer provided on one side of the base film;

the filling layer containing an n-paraffin wax in an amount of not less than 10% by weight and an isoparaffin wax in an amount of 20% to 80% by weight of the total amount of the n-paraffin wax and the isoparaffin wax.

5,612,121

CONDUCTIVE PASTES, CONDUCTIVE MATERIALS AND MULTI-LAYERED CERAMIC SUBSTRATES USING SAME

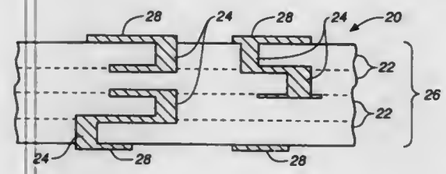
Hiroji Tani, and Kazuhito Oshita, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 1, 1995, Ser. No. 565,686

Claims priority, application Japan, Dec. 2, 1994, 6-299756

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—210 **8 Claims**



1. An electrically conductive paste comprising an organic vehicle and electrically conductive particles dispersed therein, said electrically conductive particles including Cu particles by 90–99.5 weight % and Ag particles by 0.5–10 weight %.

5,612,122

HIGH RECORDING DENSITY MAGNETIC RECORDING MEDIUM HAVING AN UNDERCOAT LAYER OF IRON OXIDE AND CARBON BLACK

Yoji Tsukamoto; Shigeto Oiri, and Toshio Ohta, all of Kanagawa, Japan, assignors to Imation Corp., St. Paul, Minn.

PCT No. PCT/US94/01331, § 371 Date Aug. 8, 1995, § 102(e) Date Aug. 8, 1995, PCT Pub. No. WO94/18672, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 7, 1994, Ser. No. 501,106

Claims priority, application Japan, Feb. 8, 1993, 5-020185

Int. Cl.[6] G11B *5/70*

U.S. Cl. 428—216 **8 Claims**

1. A magnetic recording medium comprising:

a non-magnetic base film;

a magnetic layer; and

an undercoat layer comprised of non-magnetic particles, a binder resin, and a lubricant, wherein the undercoat layer is provided between the base film and magnetic layer, and wherein the non-magnetic particles comprise (1) a non-magnetic iron oxide with an aspect ratio ranging from 5 to 10 and a long axis length ranging from 0.05 to 0.3 μm, and (2) a carbon black having a structured constitution and an oil absorbency of at least 300 (DBP) ml/100 g, wherein the weight ratio between the non-magnetic iron oxide and the carbon black is within the range between 85/15 and 99/1.

5,612,123

DISTRIBUTION ENHANCED POLYOLEFIN PRODUCT

Scott L. Gessner, Encinitas, Calif., and William Fowells, Washougal, Wash., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Division of Ser. No. 333,651, Nov. 3, 1994, Pat. No. 5,549,867. This application Apr. 19, 1996, Ser. No. 635,332

Int. Cl.[6] D03D *3/00*

U.S. Cl. 442—401 **20 Claims**

1. A spunbonded fabric comprising a plurality of filaments comprising an enhanced molecular weight distribution polyolefin resin having property parameters comprising:

(i) a molecular weight distribution breadth, M_z/M_n, of between 7.2 and 10, a flow rate ratio of less than 15.5, and a power law index at 20 sec^{-1} of between 0.70 and 0.78; and

(ii) either a z-average molecular weight, M_z, of between 400,000 and 580,000, or a second order constant, b_2, determined from the regression analysis viscosity equation, of between –0.029 and –0.047, or both; and

(iii) unless both of the M_z and b_2 parameters are within said ranges of between 400,000 and 580,000, and between –0.029 and –0.047, respectively, a die swell, B^2, of between 1.6 and 2.0, and a spinnability factor $\ln(B^2)/MFR$ of between about 0.08 and about 0.026.

5,612,124

FABRICS OF HIGH THERMAL STABILITY

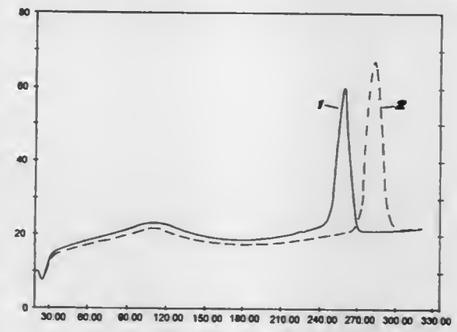
Wolf R. Krummheuer, Wupperatl, and Volker Siejak, Duisburg, both of Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands

Filed Aug. 17, 1994, Ser. No. 291,656

Claims priority, application Germany, Mar. 25, 1992, 42 09 628.6; Feb. 5, 1993, 43 03 345.8

Int. Cl.[6] D03D *3/00*

U.S. Cl. 442—181 **9 Claims**



1. An uncoated woven fabric of high thermal stability and protection against thermal failure useful for the production of an airbag comprising multifilament yarns of polytetramethyleneadipamide having an enthalpy in the range of from 720 to 820 Joules per gram, said yarns having a yarn linear density of 200–500 dtex, a filament linear density <7 dtex, a tenacity of at least 60 cN/tex and a breaking extension of 15–30%, and said uncoated woven fabric having an air permeability <20 $l/dm^2 \times min$.

5,612,125

PROCESS FOR PRODUCING PREPREG

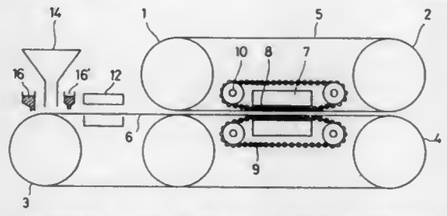
Seizo Kobayashi, Yokohama; Kazutosi Nomiyama, Akishima; Yoshimu Iwanami; Sumio Yoshida, both of Yokohama; Kazuhiko Kurihara, Tokyo, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Nippon Oil Co., Ltd.; Nippon Petrochemicals Co., Ltd., and Polymer Processing Research Institute Ltd., all of Tokyo, Japan

Continuation of Ser. No. 886,939, May 22, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 354,268

Claims priority, application Japan, May 27, 1991, 3-121404

Int. Cl.[6] B29C *70/50;70/10*

U.S. Cl. 442—170 **15 Claims**



12. A prepreg obtained by stretching a material comprising, as a main component, an ultra-high-molecular-weight polyethylene having an intrinsic viscosity of 5–50 dl/g as measured at 135° C. in decalin, to a total draw ratio of at least 20, subjecting the resulting stretched polyethylene material to a splitting treatment such that the split yarn thickness is 10–200 μm and the split yarn width is 10–500 μm, and impregnating the resulting material with a thermosetting resin.

5,612,126

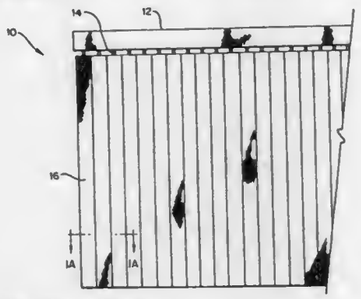
STIFF FABRIC AND METHOD OF FORMING THE STIFF FABRIC

David M. Cross, Westport, Conn.; Manfred H. K. Hueneke, Graham, N.C.; Ronald A. Farris, Gibsonville, N.C.; Bobby L. McConnell, Greensboro, N.C., and Robert M. Newman, Thomasville, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 19, 1994, Ser. No. 182,986

Int. Cl.[6] B32B *3/10;7/00;* **D03D** *3/00*

U.S. Cl. 442—227 **18 Claims**



1. A stiff fabric comprising:

a woven fabric formed of synthetic material;

a latex curable compound applied to one side of said woven fabric and comprising an acrylic emulsion blended from an inorganic filler and a curable resin;

said latex compound being foamed with air when applied to said woven fabric and imparting a stiffness to said woven fabric, the weight of said foamed latex compound lying within a range of 0.63–0.89 gms/ml, and

said latex compound being treated upon application to said woven fabric to provide said stiff fabric having a stiffness such that a flat piece of said stiff fabric 8.89 cm wide cantilevered in a horizontal direction 12.7 cm from a support has a droop at its distal end within a range of 7.6–10.2 cm.

5,612,127

Patent Not Issued For This Number

5,612,128

ULTRA FINE PARTICLES HAVING UNEVEN SURFACES AND TREATMENT PLATE USING SAME

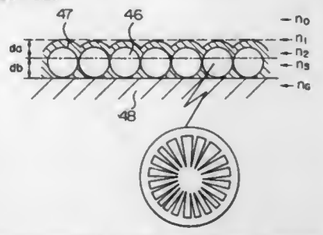
Yoshishige Endo, Tsuchiura; Masahiko Ono; Toshihiro Yamada, both of Ibaraki-ken; Takao Kawamura, Chiba; Hiromitsu Kawamura; Katsumi Kobara, both of Mobara, and Takeshi Araya, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 855,055, Mar. 19, 1992, abandoned, Continuation-in-part of Ser. No. 404,553, Sep. 8, 1989, Pat. No. 5,189,337. This application Nov. 16, 1994, Ser. No. 341,946

Claims priority, application Japan, Sep. 9, 1988, 63-224658; Mar. 19, 1991, 3-054371

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **12 Claims**



1. A plate comprising a base plate, a film containing ultrafine particles provided thereon, and a binder, said ultrafine particles comprising substantially. spherical ultrafine particles, each of which having been treated to have an uneven surface so as to provide the plate with an anti-reflection function and high resolution, wherein said substantially spherical ultrafine particles having an uneven surface have an average diameter of not more than 100 nm and have pores formed substantially uniformly on their surface, said pores forming said uneven surface.

5,612,129

SHEET MATERIAL

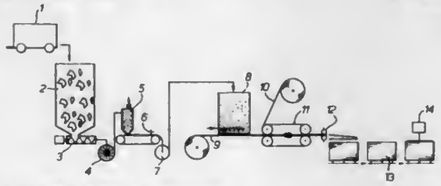
Hannu Karhuketo; Alpo A. Pollari, and Pentti K. Rautanen, all of Valkeakoski, Finland, assignors to Yhtyneet Paperitehtaat Oy, Valkeakoski, Finland

Continuation of Ser. No. 43,348, Apr. 6, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 384,342

Claims priority, application Finland, Apr. 7, 1992, 921538

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **2 Claims**



1. A sheet material comprising:

(a) an inner surface layer and an outer surface layer, at least one of said inner layer and said outer layer being moisture-proof and at least one of said inner layer and said outer layer having mesh grooving imprinted thereon; and

(b) a compressed, adhesive-bonded, core layer disposed between said inner and outer surface layers, said core layer comprising shredded paper-based material and shredded plastic material, and said core layer having a density 0.1–0.8 kg/dm^3.

5,612,130

FIRE RESISTANT MULTIPURPOSE PROTECTIVE COATING

Aleksandr V. Smirnov; Oleg G. Oriov; Pyotr N. Golipad, and Yurii N. Koriakin, all of Moscow, Russian Federation, assignors to Herbert F. Boeckmann, II, Sepulveda, Calif.

PCT No. PCT/US93/09405, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/08786, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 4, 1993, Ser. No. 416,744

Claims priority, application Russian Federation, Oct. 14, 1992, 92000566

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **8 Claims**

1. A fire resistant multi-purpose protective coating which comprises:

a heat resistant, continuous bottom layer consisting of a polymer resin and about 2–28 wt %, based on the weight of said bottom layer, oxidized graphite, and

a hydrophobic top layer comprising an inorganic hydrophobic powder, an adhesive, a silicone liquid, and a volatile organic solvent;

said bottom layer having a thickness of about 0.1 mm to 1 mm; and

said top layer having a thickness of about 40 Å to 10 μm.

5,612,131

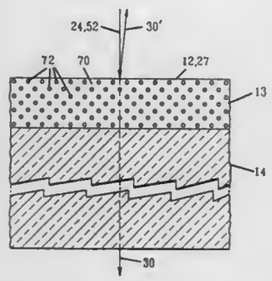
COMPOSITE MAGNETO-OPTIC MEMORY AND MEDIA

Nestor A. Bojarczuk, Jr., Poughkeepsie; Richard J. Gambino, Yorktown Heights, and Ralph Ruf, New City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1993, Ser. No. 54,646

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—332 **15 Claims**



1. A magnetic material comprising:

a matrix of metal selected from the group consisting of iron, cobalt, nickel and alloys thereof, and

a plurality of separated phases distributed in said matrix, said separated phases selected from the group consisting of EuS, EuO, EuOTb, PtMnSb, MnAs, MnBi, MnSb, CrO_2, CrTe, GdN, Gd_4C, and compounds of Dy, Ho, Er, Tm, Yb and Lu,

said separated phases distributed in said matrix in the range from 5 to 40 mole percent with respect to said matrix of metal.

5,612,132

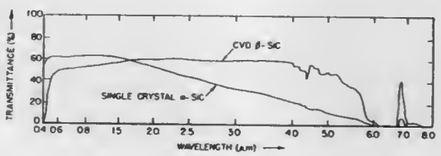
CHEMICAL VAPOR DEPOSITION-PRODUCED SILICON CARBIDE HAVING IMPROVED PROPERTIES

Jitendra S. Goela, Andover; Lee E. Burns, Woburn, and Raymond L. Taylor, Saugus, all of Mass., assignors to CVD, Incorporated, Woburn, Mass.

Division of Ser. No. 439,034, May 11, 1995, which is a division of Ser. No. 389,780, Feb. 16, 1995, abandoned, which is a continuation of Ser. No. 159,915, Nov. 30, 1993, abandoned, which is a continuation of Ser. No. 979,965, Nov. 23, 1992, abandoned. This application May 31, 1995, Ser. No. 455,007

Int. Cl.[6] C01B *31/36*

U.S. Cl. 428—332 **6 Claims**



A comparison of transmission of CVD-β SiC (Run -9) with that of α - SiC single crystal
Sample thickness = 0.012 - inch

1. Free-standing chemical vapor deposited β-SiC having an attenuation coefficient at 0.6328 μm of about 20 cm^{-1} or less.

5,612,133

MAGNETO-OPTICAL RECORDING MEDIUM HAVING A REFELECTING LAYER OF A SILVER-MAGNESIUM ALLOY HAVING A MAGNESIUM OXIDE COATING

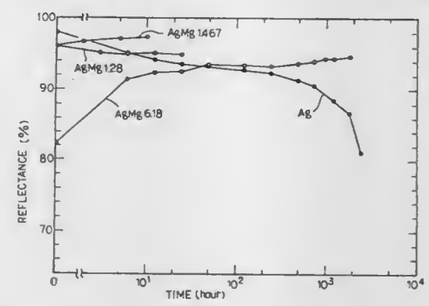
Rie Mori, and Kenichi Hijikata, both of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 402,845, Mar. 13, 1995, abandoned, which is a division of Ser. No. 231,484, Apr. 22, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 631,623

Claims priority, application Japan, Apr. 22, 1993, 5-120689; Apr. 12, 1994, 6-98046

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—336 **4 Claims**



1. A magneto-optical recording medium comprising

a) a substrate transparent to an incident light,

b) a recording layer formed over a major surface of said substrate, and having a plurality of magnetic domains for storing data bits,

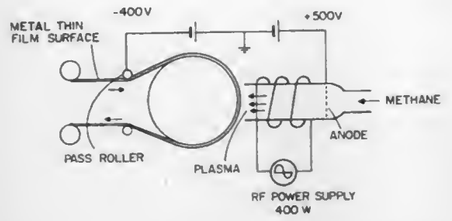
c) a reflection layer formed over said recording layer wherein said reflection layer has a thickness ranging from 500 angstroms to 1,000 angstroms, and wherein said reflection layer comprises a silver-magnesium alloy containing magnesium in an amount ranging from 1 atom % to 5 atom %, wherein the surface of said silver-magnesium alloy is coated with magnesium oxide.

5,612,134

MAGNETIC RECORDING MEDIUM HAVING A CARBON PROTECTIVE LAYER AND A FLUORO-LUBRICANT SUPPLIED FROM A BACKCOAT LAYER

Tsutomu Okita; Hideomi Watanabe; Toshio Ishida; Masaki Satake, and Hiroshi Hashimoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 294,348, Aug. 23, 1994, abandoned.
This application Jul. 19, 1996, Ser. No. 687,796
Claims priority, application Japan, Aug. 24, 1993, 5-209479
Int. Cl.[6] G11B 5/72
U.S. Cl. 428—336 8 Claims



1. A magnetic recording medium having a Co—Ni alloy thin film magnetic layer on at least one surface of a non-magnetic support, wherein the improvement comprises a surface layer formed on a carbon protective film having a thickness of from 5 to 25 nm, said surface layer containing a fluorine-containing compound supplied from a back coat layer formed on said non-magnetic support, and said fluorine-containing compound represented by the following formula (1) or (2):

Rf-R_1 Formula (1)

Rf-R_2-Rf Formula (2)

where
Rf: $(CF_3)_a CF_{3-a}(CF_2)_b$
a: 1 to 3
a+b: 1 to 11
R_1: an alkyl or alkenyl group having from 8 to 26 carbon atoms
R_2: all alkylene or alkenylene group having from 2 to 14 carbon atoms.

5,612,135

PAINT-FILM PROTECTIVE SHEET

Komaharu Matsui; Takeshi Eda; Mitsuo Wakimoto, all of Kanagawa; Kenichi Shibata, Osaka; Toshitaka Suzuki, Osaka; Mitsuyoshi Shirai, Osaka; Kenichi Okada, Osaka; Tsuyoshi Inoue, Osaka; Hiroyoshi Onishi, Osaka, and Taiki Kusaka, Hyogo, all of Japan, assignors to Nitto Denko Corporation, Osaka, and Kansai Paint Co., Ltd., Hyogo, both of Japan

Filed Mar. 1, 1995, Ser. No. 396,725
Claims priority, application Japan, Mar. 3, 1994, 6-060173
Int. Cl.[6] C09J 7/02
U.S. Cl. 428—343 5 Claims

1. A sheet for protecting a painted surface having a low glass transition point, said sheet comprising a substrate having formed thereon a rubber-based pressure-sensitive adhesive layer containing a fatty acid glycerol ester and an antifungal agent.

5,612,136

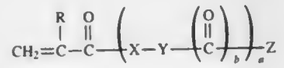
PRESSURE-SENSITIVE ADHESIVES HAVING IMPROVED ADHESION TO ACID-RAIN RESISTANT AUTOMOTIVE PAINTS

Albert I. Everaerts, Oakdale, Minn.; Satoshi Takeda, Sagamihara, Japan, and Peter A. Stark, Cottage Grove, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 33,174, Mar. 16, 1993, abandoned.
This application Oct. 6, 1994, Ser. No. 319,246
Int. Cl.[6] C09J 7/02
U.S. Cl. 428—355 AK 20 Claims

1. A pressure-sensitive adhesive consisting essentially of:
a crosslinked copolymer of 100 parts by weight of monomer of elements (a), (b), and (c) wherein the copolymer comprises
(a) about 60 to about 90 parts by weight of at least one monomer selected from the group consisting of monofunctional unsaturated (meth)acrylate esters of non-tertiary alkyl alcohols, and mixtures thereof, the alkyl groups of which comprise from about 4 to about 12 carbon atoms which as homopolymers have glass transition temperatures below about −20° C.;
(b) correspondingly, about 40 to about 10 parts by weight of a basic copolymerizable monomer having the formula

Formula (I)



wherein
a represents an integer of 0 to 1;
b represents an integer of 1;
R is selected from the group consisting of H— and CH_3—;
X is selected from the group consisting of —O— and —NH—;
Y is a divalent linking group comprising 1 to 5 carbon atoms;
Z is a non-sterically hindered group



wherein
R^1 is selected from the group consisting of an electron donating group and a radical which completes a ring structure including Y to form a heterocycle;
R^2 is Selected from the group consisting of an electron donating group and a radical which completes a ring structure including Y to form a heterocycle,
wherein R^1 and R^2 cannot simultaneously represent a radical which completes a ring structure including Y to form a heterocycle;
(c) about 0 to about 3 parts by weight an acidic monomer copolymerizable with the monomers of elements (a) and (b) wherein when the acidic monomer is included, the basic copolymerizable monomer should be present in a molar excess;
(d) about 0.05 to about 1 percent by weight of a crosslinking agent, based upon the total weight of (a) plus (b) plus (c); and
(e) optionally a material selected from the group consisting of fillers, pigments, woven fabrics, nonwoven fabrics, foaming agents, antioxidants, stabilizers, fire retardants, viscosity adjusting agents, and solvents;
wherein the pressure-sensitive adhesive has a basic character and wherein the pressure sensitive-adhesive has the ability to permanently bond to solid acidic surfaces.

5,612,137

REPULPABLE SPLICING TAPE

William F. Scholz, Altadena, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 207,356, Mar. 7, 1994, Pat. No. 5,550,181.
This application Jun. 7, 1995, Ser. No. 484,026
Int. Cl.[6] B32B 7/12; C08F 220/06
U.S. Cl. 428—355 AC 7 Claims

1. A splicing tape comprising:
a. a first backing layer providing opposed first and second surfaces and having on one surface thereof a first release coating;
b. a first pressure-sensitive adhesive layer having opposed first and second surfaces in which the first surface thereof is releasably bonded to the first release coating;
c. a tissue support layer providing opposed first and second surfaces in which the first surface is bonded to the second surface of the first pressure-sensitive adhesive layer;
d. a second pressure-sensitive adhesive layer having opposed first and second surfaces, the first surface of the second pressure-sensitive adhesive layer being bonded to the second surface by the tissue support layer; and
e. a second backing layer providing opposed first and second surfaces and having one surface thereof a second release coating releasably bonded to the second surface of the second pressure-sensitive adhesive layer; and
wherein said first and second pressure-sensitive adhesive layers are water-dispersible, inherently tacky pressure-sensitive adhesives comprising from about 97% to about 45% by weight of a tacky emulsion polymer formed from about 55% to 90% by weight of a first monomer which is at least one alkyl acrylate containing from 4 to about 8 carbon atoms in the alkyl group, from about 10% to about 20% by weight of at least one unsaturated carboxylic acid, from 0% to about 15% by weight of at least one vinyl ester, and from 0% to about 15% by weight methyl acrylate, said emulsion polymer being formed in the presence of anionic and nonionic surfactants, said polymer having a glass transition temperature of about −15° to about −50° C., and formed in the presence of a sufficient amount of chain transfer agent to provide an emulsion polymer which, when coated onto a repulpable paper substrate, is water-dispersible and passes Tappi Useful Method 204; from 0 to about 25% by weight of an acrylic polymer having a glass transition temperature of less than −50° C. and from about 3% to about 20% by weight of a plasticizer which is compatible with the emulsion and acrylic polymers and which is releasable from the first and second release coatings, said pressure-sensitive adhesive composition having, at a coat weight of 50 to 60 grams per sq. meter, an adhesivity sufficient to pass a flying splice test.

5,612,138

POLYESTER RAW MATERIAL, AND FILM PRODUCED THEREFROM

Rainer Kurz, Taunusstein; Andreas Ferdinand, and Hermann Dallmann, both of Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 228,204, Apr. 15, 1994, Pat. No. 5,478,632.
This application May 9, 1995, Ser. No. 438,208
Claims priority, application Germany, Apr. 24, 1993, 43 13 510.2
Int. Cl.[6] B32B 9/04
U.S. Cl. 428—411.1 13 Claims

1. An oriented, single or multilayer film comprising a film having a total thickness of ≦about 4 μm, a roughness on at least one film surface of R_a< 30 nm, and a surface gas-flow resistance (+) on the at least one film surface that satisfies the relationship

$t \leqq a \cdot d^b$[sec],

where a=about 0 to 10,000 [sec/μm], b=about −3.0 to 0 and d is the overall film thickness.

5,612,139

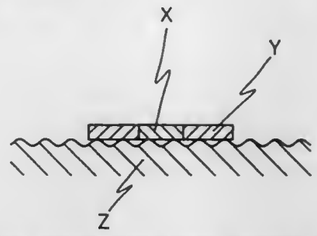
Patent Not Issued For This Number

5,612,140

THERMAL TRANSFER RECORDING MEDIUM

Jun Sogabe, Osaka, Japan, assignor to Fujicopian Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/01423, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO95/06565, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 29, 1994, Ser. No. 424,306
Claims priority, application Japan, Aug. 30, 1993, 5-214019
Int. Cl.[6] B41M 5/26
U.S. Cl. 428—484 6 Claims



1. A thermal transfer recording medium comprising a foundation and a heat-meltable ink layer provided on the foundation, the ink layer containing 50 to 80% by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of not more than 19% by weight, 0 to 20% by weight of a wax having a melting point of 70° C. to 90° C., 10 to 20% by weight of a resin having a glass transition point of 50° C. to 140° C., and 20 to 50% by weight of a coloring agent, the vehicle in the ink layer having a softening point of 60° C. to 85° C., a melt viscosity at 100° C. of not lower than 1,000 poises and a melt viscosity at 160° C. of not higher than 400 poises.

5,612,141

ADHESIVE TAPE COMPOSITIONS AND METHOD FOR COVERING ROOFS

James A. Davis, Indianapolis; Joseph R. Hoppert, Noblesville; Chester T. Chmiel, Granger, and Brian S. Alexander, Sheridan, all of Ind., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 330,041, Oct. 27, 1994, Pat. No. 5,504,136.
This application Apr. 28, 1995, Ser. No. 430,875
Int. Cl.[6] C08L 23/16
U.S. Cl. 428—515 11 Claims

1. A laminate seam of flat rubber sheet material for roofing comprising:
two layers of sheet material, one of said layers at least partially overlapping the other of said layers; and
an adhesive composition in the form of a pressure sensitive adhesive tape interposed between the area of overlapping of said layers to form a seam, said adhesive composition comprising
a polymer blend comprising
from about 50 to 90 parts by weight of at least one EPDM rubber having a weight average molecular weight up to about 275,000 and
from about 50 to 10 parts by weight of an adhesive-enhancing polymer selected from the group consisting of polyisoprene, polybutadiene, and ethylene-propylene copolymer and mixtures thereof;
at least one compatible tackifying additive; and
a cure package containing a curing agent and at least one accelerator, for said polymer blend, said adhesive compo-

sition being devoid of butyl rubber and having a peel adhesion seam strength of at least 5.2 lbs/inch upon aging 24 hours at 23° C.

5,612,142

PRESERVATION OF WOOD WITH PHENOL FORMALDEHYDE RESORCINOL RESINS

Jean Lewis, deceased, late of Worcester, Mass., assignor to Polymer Wood Processors, Inc., Ambler, Pa.

Division of Ser. No. 113,651, Aug. 31, 1993, Pat. No. 5,461,108. This application Oct. 23, 1995, Ser. No. 547,056

Int. Cl.[6] B27K *3/08;3/50;3/52*

U.S. Cl. 428—528 **14 Claims**

1. A method of treating wood by penetration of a treating solution, said method comprising the steps of:

(a) placing the wood to be treated in an evacuation zone and exposing the wood to pressures below atmospheric pressure for a time sufficient to remove moisture and other volatiles from the wood;

(b) immersing the wood in a water-based treating solution comprising a phenolic resin prepolymer, a resorcinol formaldehyde resin prepolymer, and water;

(c) maintaining the wood immersed in the treating solution under pressures below atmospheric pressure until the solution has penetrated into the wood;

(d) increasing the pressure above the solution to a pressure above atmospheric to thereby increase the penetration of the wood by said treating solution; and

(e) recovering treated wood.

5,612,143

SINGLE PACKAGE IONIC EMULSION POLYMERS AND THEIR PREPARATION

Lowell O. Cummings, San Anselmo; Patrick A. Terrizzi, and Norman Gac, both of San Francisco, all of Calif., assignors to Adhesive Coatings Co., San Mateo, Calif.

Division of Ser. No. 184,758, Jan. 21, 1994, Pat. No. 5,441,996, which is a continuation of Ser. No. 967,018, Oct. 27, 1992, abandoned. This application Jun. 9, 1995, Ser. No. 489,299

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—626 **12 Claims**

1. A heat hardening or air drying single component water-based composition suitable for use as a coating, ink, adhesive, or sealant, comprising:

the combination of the reaction product of an enhanced molecular weight epoxy ionic emulsion and an inactivated amine chosen from the group consisting of primary, secondary, and tertiary amines in which said enhanced molecular weight epoxy polymer is prepared by polymerizing water-born epoxy resin particles in the presence of an alkaline substance; and water dispersed modifying synthetic latexes, alkyds, low molecular weight resin emulsions, epoxy ester emulsions, cationic and non-ionic asphalt emulsions, waxes and wax-like materials at a level in said water-based composition of about 2 to 60 percent by weight of the solids content.

5,612,144

ELECTRIFICATION REMOVING COMPONENT

Nobuhiro Shinohara, and Otojiro Kida, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

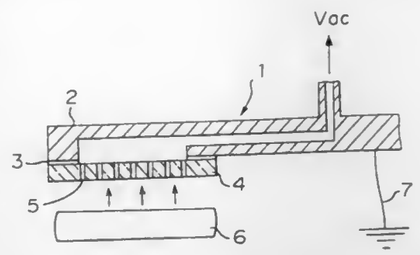
Filed Aug. 17, 1993, Ser. No. 107,316

Claims priority, application Japan, Nov. 11, 1992, 4-325966

Int. Cl.[6] B32B *15/00*

U.S. Cl. 428—688 **20 Claims**

1. An electrification-removing component, comprising:



a) a ceramic material for removing electrification and having a surface resistivity in a range of 2×10^6 to 10^{10} Ω/cm^2; and

b) an electro-conductive material connected to the ground;

the ceramic material for removing electrification being electrically connected to the electro-conductive material with an area by contact or bonding on surfaces of the ceramic material for removing electrification, wherein the ceramic material is prepared from one or more fine powders selected from the group consisting of nitrides and carbides of Ti, Zr, Hf, Nb and Ta, in a ceramic matrix consisting essentially of alumina or silicon nitride.

5,612,145

PERPENDICULAR MAGNETIC MEDIUM AND MANUFACTURING METHOD FOR THE MEDIUM

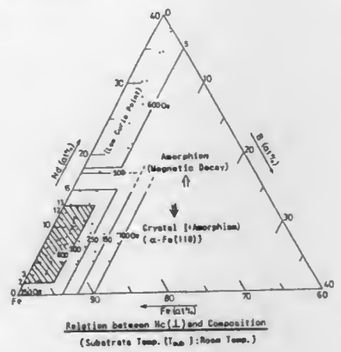
Masaru Segawa, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 974,944, Nov. 12, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,836

Claims priority, application Japan, Nov. 14, 1991, 3-326403

Int. Cl.[6] G11B *5/66;* **C23C** *14/00*

U.S. Cl. 428—694 T **5 Claims**



1. A perpendicular magnetic recording medium used for a magnetic recording and reproducing apparatus comprising:

a non-magnetic base; and

a magnetic thin film made of a Nd—Fe—B alloy on said non-magnetic base, said Nd—Fe—B alloy comprising 2 to less than 13 atom % Nd, above zero to no more than 4 atom % B and the remainder being Fe, and with said Nd—Fe—B alloy having a crystalline structure of α-Fe with a diffraction peak at the crystal face (110) which is detectable by X-ray analysis.

5,612,146

SOFT-MAGNETIC MULTILAYER THIN FILM FOR USE IN A THIN-FILM MAGNETIC HEAD AND A METHOD OF MANUFACTURING THE SAME

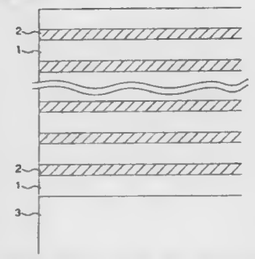
Nobuyuki Komura, Kyoto, and Yuuji Omata, Toyonaka, both of Japan, assignors to Matshushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 144,436, Nov. 2, 1993, abandoned. This application Mar. 5, 1996, Ser. No. 611,017

Claims priority, application Japan, Nov. 2, 1992, 4-294108

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 T **5 Claims**



1. A soft-magnetic multilayer thin film having a multilayer film structure which consists essentially of:

a plurality of soft-magnetic plated film layers having a crystal structure and produced by electroplating a substrate to produce a soft-magnetic film thereon, and

an amorphous re-dissolution effect layer produced by subjecting said soft-magnetic plated layer to anode redissolution by reversing the current in said electroplating being interposed between and laminated to each of said soft-magnetic plated film layers by said anode re-dissolution,

each of said re-dissolution effect layers having a crystal structure different from that of said soft-magnetic plated film layer, and

wherein said soft-magnetic plated film layers are magnetically isolated from each other by said re-dissolution effect layers.

5,612,147

CELL BOX AND OPTICAL APPARATUS USING THE SAME

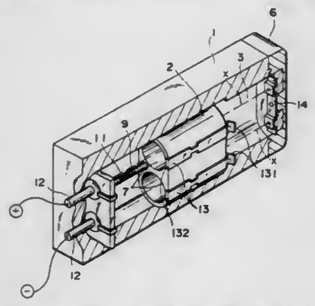
Koulchi Nagata, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Apr. 18, 1995, Ser. No. 424,005

Claims priority, application Japan, Apr. 20, 1994, 6-082038

Int. Cl.[6] H04M *2/10*

U.S. Cl. 429—9 **24 Claims**



1. A cell box for receiving either a first cell or a second cell which are different in shape from each other, said cell box comprising:

a casing having a cavity for receiving either a first cell or a second cell, the first and second cells having different shapes, said cavity being defined by a first inner end surface of the casing, a second inner end surface facing the first inner end surface, and an inner perimetrical surface defining an interval between the first inner end surface and the second inner end surface, and

a cell-positioning holder located in the cavity, said holder having a through hole for receiving part of a second cell and holding the second cell in a direction substantially parallel to a longitudinal axis of said through hole, and said holder having a first end surface facing said first inner end surface of the casing, a second end surface opposite the first end surface of said holder, and a perimetrical surface continued from the first to the second end surface of said holder, where a distance between said first and second end surfaces of said holder is substantially equal to a value obtained upon subtracting an integer multiple of a length of said first cell from said interval between the first inner end surface and the second inner end surface of the casing, so that a first cell is capable of being held between said second end surface of the holder and said second inner surface of the casing parallel to the longitudinal axis.

5,612,148

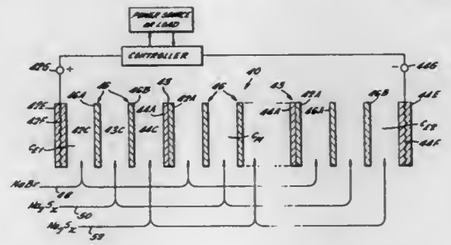
PROCESS FOR ENERGY STORAGE AND/OR POWER DELIVERY WITH MEANS FOR RESTORING ELECTROLYTE BALANCE

Ralph Zito, Chapel Hill, N.C., assignor to National Power PLC, Wiltshire, United Kingdom

Filed Apr. 13, 1994, Ser. No. 226,986

Int. Cl.[6] H01M *8/06*

U.S. Cl. 429—15 **11 Claims**



1. An electrochemical process for energy storage and/or power delivery comprising the steps of:

a) maintaining circulating electrolyte flows in a single cell or in an array of repeating cell structures, each cell having a chamber (+^{ve} chamber) containing a +^{ve} electrode and a chamber (−^{ve} chamber) containing a −^{ve} electrode, the chambers being separated one from another by a plurality of cation exchange membranes which form one or more buffer chambers therebetween, wherein the electrolyte circulating via the −^{ve} chamber during power delivery contains a sulfide and the electrolyte circulating in the buffer chamber or chambers comprises an idler electrolyte;

b) oxidizing any S^{2-} ions and/or HS^- ions contained in the idler electrolyte to sulfur as precipitated sulfur;

c) collecting the precipitated sulfur; and

d) reintroducing the precipitated sulfur into the −^{ve} electrolyte.

5,612,149

FUEL CELL COLUMN HEAT EXCHANGER MATED MODULE

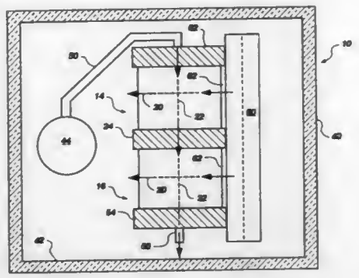
Joseph J. Hartvigsen, Kaysville; Ashok C. Khandkar, Salt Lake City, and Singaravelu Elangovan, Sandy, all of Utah, assignors to Ceramatec, Inc., Salt Lake City, Utah

Filed Jan. 2, 1996, Ser. No. 581,989

Int. Cl.[6] H01M *8/04;8/24*

U.S. Cl. 429—26 **6 Claims**

1. A fuel cell module comprising:



a support structure for attaching components of said fuel cell module thereto;

an insulating enclosure removably sealed to the support structure defining a module housing within;

a plurality of manifold frames joining and sealing a fuel cell stack into a fuel cell column; and

a heat exchanger mounted on said support structure, said heat exchanger having a planar wall matingly engaged to said fuel cell column defining an air plenum between the planar wall of the heat exchanger, the fuel cell column, and the support structure.

5,612,150

METHOD AND APPARATUS FOR TREATMENT OF A BATTERY CONTAINING ALKALI METAL

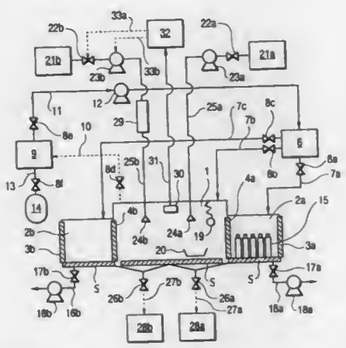
Katsunori Nishimura; Hidetoshi Honbo; Akihiro Gotoh, all of Hitachi; Mamoru Mizumoto, Hitachinaka, and Tatsuo Horiba, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,694

Claims priority, application Japan, Mar. 16, 1994, 6-045371

Int. Cl.[6] H01M *10/54*

U.S. Cl. 429—49 **15 Claims**



1. A method of treating a secondary battery comprising at least one component containing alkali metal, comprising the step of introducing a gas containing at least one of water vapor and alcohol vapor into a closed chamber containing at least said component, thereby to form at least one of alkali metal hydroxide and alkoxide.

5,612,151

ELECTROCHEMICAL CELL LABEL WITH INTEGRATED TESTER

John F. Hughen, Rancho Cucamonga, Calif., assignor to Duracell Inc., Bethel, Conn.

Division of Ser. No. 315,317, Sep. 29, 1994, Pat. No. 5,578,390.

This application Apr. 1, 1996, Ser. No. 625,827

Int. Cl.[6] H01M *10/48*

U.S. Cl. 429—93 **23 Claims**



1. In combination, an electrochemical cell and a label/tester composite; said cell comprising a metal housing having a cylindrical wall with first and second shoulders at respective ends thereof; said label/tester composite being attached to the cell housing; said composite including a heat shrinkable base film, a thermochromic coating, a heat cured electrically conductive coating in thermal contact with the thermochromic coating, and means for maintaining said conductive coating spaced from the cell housing, said means electrically and thermally insulating said conductive coating from the cell housing.

5,612,152

RECHARGEABLE LITHIUM BATTERY FOR USE IN APPLICATIONS REQUIRING A LOW TO HIGH POWER OUTPUT

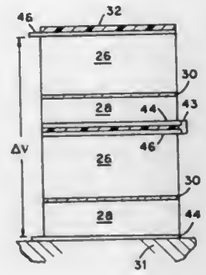
John B. Bates, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 180,231, Jan. 12, 1994, abandoned.

This application Apr. 17, 1996, Ser. No. 634,115

Int. Cl.[6] H01M *10/02;10/36*

U.S. Cl. 429—152 **12 Claims**



1. A multicell battery comprising:

at least two thin-film battery cells supported in a side-by-side or stacked relationship and each including a film of cathode material, an anode film of lithium, and a film of electrolyte material disposed between and separating the cathode and anode films and wherein each of the cathode film, anode film and eletrolyte film is thin film-deposited and possesses a thickness of no more than a few microns, and

the two battery cells being connected in one of a series relationship and one of a parallel relationship for purposes of simultaneously withdrawing electrical power from the two cells and wherein the two cells are separated from one another by a film of insulative material.

5,612,153

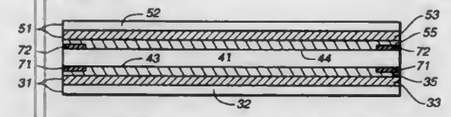
BATTERY MASK FROM RADIATION CURABLE AND THERMOPLASTIC MATERIALS

Russell D. Moulton, San Jose, Calif., and Ib I. Olsen, Henderson, Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Apr. 13, 1995, Ser. No. 422,209

Int. Cl.[6] H01M *10/36*

U.S. Cl. 429—191 **31 Claims**



1. A solid secondary electrolytic cell which comprises:

an anode;

a cathode;

a solid electrolyte functionally disposed between said anode and said cathode; and

a mask comprising an electrically insulative layer that is coated on a surface along the perimeter of said anode, cathode, or solid electrolyte, wherein the mask is fabricated by a process comprising:

(i) depositing a liquid radiation curable material onto said surface; and

(ii) curing said radiation curable material wherein the mask is interposed between the solid electrolyte and the anode or the cathode.

5,612,154

BETA-ALUMINA SOLID ELECTROLYTE

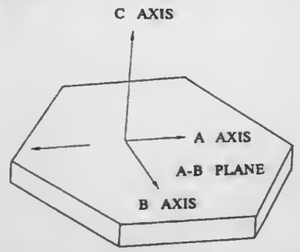
Masaharu Kajita, Tajimi; Takehiro Kajihara, Komaki, and Takao Totoki, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 2, 1995, Ser. No. 397,756

Claims priority, application Japan, Mar. 29, 1994, 6-058972

Int. Cl.[6] H01M *6/18*

U.S. Cl. 429—193 **4 Claims**



1. A beta-alumina solid electrolyte for use in a sodium-sulfur battery, wherein the beta-alumina crystals constituting said electrolyte have a degree of orientation toward the C axis thereof, of 0.2–0.4 and an aspect ratio of 4.0 or less.

5,612,155

LITHIUM ION SECONDARY BATTERY

Norio Takami; Takahisa Ohsaki, both of Yokohama, and Yoshiaki Asami, Niza, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Toshiba Battery Co, Ltd., Tokyo, both of Japan

Filed Jun. 13, 1995, Ser. No. 489,747

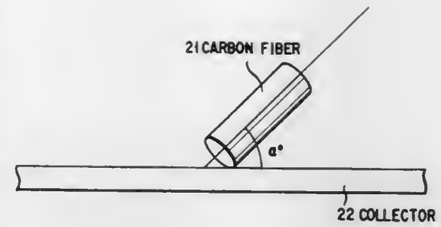
Claims priority, application Japan, Jun. 15, 1994, 6-133222

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—218 **15 Claims**

1. A lithium ion secondary battery comprising:

a positive electrode;



a negative electrode comprising a collector and carbon fibers held to said collector for absorbing and desorbing lithium ions;

a separator arranged between said positive electrode and said negative electrode; and

a nonaqueous electrolyte,

wherein said carbon fibers have a radial orientation from an axis of the fibers, and at least 50 vol % of all carbon fibers are arranged such that an angle between an axis of each carbon fiber and a surface of said collector is 45° or less.

5,612,156

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE ELEMENT AND A PROCESS FOR MANUFACTURING AN OFFSET PRINTING MASTER FROM THE ELEMENT

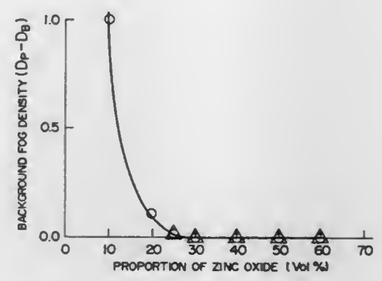
Sadao Murasawa, Itami, and Mitsuru Watanabe, Moriyama, both of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Division of Ser. No. 573,264, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 371,079, Jun. 26, 1989, abandoned. This application Sep. 3, 1993, Ser. No. 115,781

Claims priority, application Japan, Jun. 27, 1988, 63-158260

Int. Cl.[6] G03G *13/28;15/08;13/20*

U.S. Cl. 430—49 **4 Claims**



1. A method for manufacturing offset printing masters comprising the steps of:

obtaining an electrophotographic photosensitive element which has an electrically conductive support having a photosensitive layer formed thereon consisting essentially of binder resin, zinc oxide, and rutile titanium dioxide, which layer contains 20 to 55% by volume of zinc oxide based on the total volume amount of rutile titanium dioxide and zinc oxide,

charging the photosensitive layer in an uniform manner,

exposing the charged photosensitive layer through an original having halftone image to light,

treating the exposed charged photosensitive layer with a developer, and

treating the developed photosensitive layer with lipophobicating agents to obtain the offset printing masters.

5,612,157

CHARGE BLOCKING LAYER FOR ELECTROPHOTOGRAPHIC IMAGING MEMBER

Huoy-Jen Yuh, Pittsford, and John S. Chambers, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 583,904
Int. Cl.[6] G03G 5/14
U.S. Cl. 430—58 15 Claims

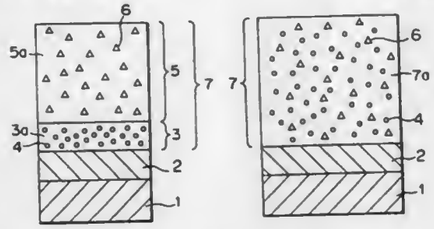
1. An electrophotographic imaging member comprising a substrate, a hole blocking layer comprising a hydrogen bonding or reaction product of a hydrolyzed metal alkoxide molecule or hydrolyzed metal aryloxide molecule and a film forming alcohol soluble nylon polymer containing carboxylic acid amide groups in the polymer backbone, a charge generating layer, and a charge transport layer.

5,612,158

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR AND PROCESS FOR PRODUCING THE SAME

Yasushi Iguchi; Sumitaka Nogami, and Kyoko Kitagawa, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 1, 1996, Ser. No. 625,214
Claims priority, application Japan, Mar. 31, 1995, 7-074989
Int. Cl.[6] G03G 5/14
U.S. Cl. 430—58 10 Claims



1. An electrophotographic photoconductor comprising:
an conductive substrate;
an undercoat layer provided on the conductive substrate; and
a photosensitive layer having both charge-generation and charge-transport functions provided on the undercoat layer,
wherein said undercoat layer comprises a polyamide resin and a methylhydrogenpolysiloxane-treated titanium dioxide.

5. The electrophotographic photoconductor as claimed in claim 1, wherein said photosensitive layer has a functionally distinguishable laminate structure comprising a charge-generation layer having a charge-generation function and a charge-transport layer having a charge-transport function, in which the charge-generation layer and the charge-transport layer are laminated on the substrate in this order.

5,612,159

TONER COMPOSITION FOR ELECTROSTATIC CHARGE DEVELOPMENT AND IMAGE FORMING PROCESS USING THE SAME

Shuji Sato; Chiaki Suzuki; Tetsu Torigoe; Satoshi Inoue, and Takahisa Fujii, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,995
Claims priority, application Japan, Sep. 12, 1994, 6-242420
Int. Cl.[6] G03G 9/08;13/16
U.S. Cl. 430—110 13 Claims

1. A toner composition for electrostatic charge development, which comprises (i) toner particles and (ii) fluorine-containing cerium oxide fine particles having a fluorine content of from 0.1 to 10.0% by weight added to said toner particles.

5,612,160

ELECTROSTATIC CHARGE DEVELOPING TONER COMPOSITION AND IMAGE-FORMING PROCESS

Satoshi Inoue; Chiaki Suzuki; Tetsu Torigoe; Shuji Sato, and Takahisa Fujii, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,136
Claims priority, application Japan, Sep. 12, 1994, 6-242419
Int. Cl.[6] G03G 9/097
U.S. Cl. 430—110 11 Claims

1. An electrostatic charge developing toner composition comprising (i) toner particles containing a low-molecular weight polypropylene wax and a low-molecular weight polyethylene wax, each having a softening point of 90° to 160° C., having a volume average particle size of from 4 to 9 μm, and having an exposed amount of the wax (X% by weight) on the surface thereof in the range of 40% by weight≦X≦65% by weight, and (ii) abrasive fine particles having an average particle size of from 0.5 to 5.5 μm.

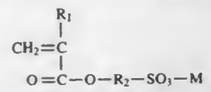
5,612,161

NEGATIVELY CHARGABLE TONER FOR ELECTROPHOTOGRAPHY

Masao Watanabe, Meguro-Ku; Kozo Suzuki, Nagareyama, and Hikoji Ueda, Fujimi, all of Japan, assignors to Fujikura Kasei Co., Ltd., Japan

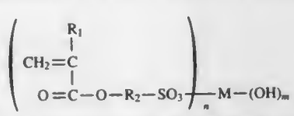
Filed Dec. 20, 1995, Ser. No. 580,056
Claims priority, application Japan, Dec. 20, 1994, 6-334617
Int. Cl.[6] G03G 9/097
U.S. Cl. 430—110 4 Claims

1. A negatively chargable toner for electrophotography, comprising a binder, a coloring agent and a charge control agent,
the charge control agent comprising a copolymer of 1 to 30% by weight of a sulfoalkyl (meth)acrylic acid monomer represented by the following general formula (1) or (2):



(1)

wherein R_1 represents H or CH_3, R_2 represents C_2H_4 or C_3H_6, and M represents one selected from H, Na, K and NH_4,



(2)

wherein R_2 represents H or CH_3, R_2 represents C_2H_4 or C_3H_6, M represents Ca or Mg, n is 1 or 2, and m is 2−n, and 99 to 70% by weight of other vinyl monomer which is copolymerizable with said monomer (1) or (2),
the amount of the charge control agent being from 0.1 to 10 parts by weight for 100 parts by weight of the binder.

5,612,162

LIQUID DEVELOPER FOR ELECTROSTATOGRAPHY

Terence M. Lawson, Aldgate, and Stephen L. Nicholls, Willunga, both of Australia, assignors to Research Laboratories of Australia PTY Ltd., Eastwood, Australia

PCT No. PCT/AU94/00022, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/17454, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 18, 1994, Ser. No. 500,885
Claims priority, application Australia, Jan. 22, 1993, PL6905
Int. Cl.[6] G03G 9/125
U.S. Cl. 430—113 26 Claims

1. A method of forming a liquid developer or a constituent of a liquid developer for electrostatography comprising the steps of dispersing at least one monomer in silicone fluid and polymerizing

the at least one monomer to form polymer particles in the silicone fluid further including a polymerization stabilizer which is compatible with the silicone fluid wherein the polymerization stabilizer is a silicone fluid having a high viscosity.

5,612,163

TRANSFER SHEET OF POLYCARBONATE-BASED RESIN

Yoshikichi Teramoto, Inashiki-gun; Tooru Misawa, Iwaki, and Satoru Matsunaga, Ishioka, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 320,193, Oct. 7, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,311
Claims priority, application Japan, Oct. 12, 1993, 5-279101; Mar. 25, 1994, 6-79958
Int. Cl.[6] C08L 69/00; C08G 64/10; G03G 7/00
U.S. Cl. 430—126 16 Claims

1. A method of transferring an image of an electrophotographic copying machine or printer, comprising:
transferring an image to a transfer sheet of the electrophotographic copying machine or printer,
the transfer sheet comprising a brominated polycarbonate-based resin, or a composition comprising not less than 75 % by mass to less than 100% by mass of a polycarbonate-based resin or a brominated polycarbonate-based resin and not more than 25% by mass to more than 0% by mass of a brominated polycarbonate oligomer, and having characteristics that:
the ratio of infrared absorbance at the wave number of 155 mm^{-1} to that at 160 mm^{-1} of said sheet is 03 to 0.6;
the melt viscosity at the shear rate of 200/sec at 280° C. of said sheet is not less than 2,000 Pa·s; and
the thickness of said sheet is 130 to 250 μm.

5,612,164

POSITIVE PHOTORESIST COMPOSITION COMPRISING A MIXED ESTER OF TRISHYDROXYPHENYL ETHANE AND A MIXED ESTER OF TRIHYDROXYBENZOPHENONE

Anthony Canize, Flemington, N.J.; Stanley A. Ficner, Bethlehem, Pa.; Ping-Hung Lu, Bridgewater, N.J., and Walter Spiess, Muenster, Germany, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 9, 1995, Ser. No. 385,857
Int. Cl.[6] G03F 7/023
U.S. Cl. 430—165 13 Claims

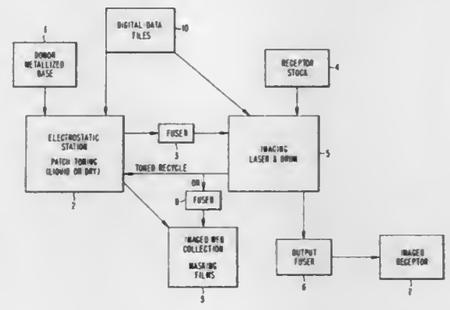
1. A positive photoresist composition which comprises an admixture of:
(a) a photosensitizer comprising an admixture of from about 25% by weight to about 85% by weight of a trishydroxyphenylethane 80/20 to 50/50 2,1,5 -2,1,4-diazonaphthoquinone sulfonate, and from about 15% by weight to about 75% by weight of a trihydroxybenzophenone 0/100 to 20/80 2,1,5-/2,1,4-diazonaphthoquinone sulfonate, the photosensitizer being present in the photoresist composition in an amount sufficient to uniformly photosensitize the photoresist composition; and
(b) a water insoluble, aqueous alkali soluble novolak resin, the novolak resin being present in the photoresist composition in an amount sufficient to form a substantially uniform photoresist composition.

5,612,165

ON-DEMAND PRODUCTION OF LAT IMAGING FILMS

Ernest W. Ellis, Leverett, Mass., assignor to Rexham Graphics Inc., So. Hadley, Mass.

Continuation of Ser. No. 978,482, Nov. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 470,586
Int. Cl.[6] G03C 1/73; G03F 7/28;7/38;7/34
U.S. Cl. 430—201 18 Claims



1. A composite LAT imaging film which comprises a support substrate, said support substrate comprising a polyester, a polycarbonate, a polyurethane, a polyolefin, a polyamide, a polysulfone, a polystyrene, or a cellulosic; at least one intermediate dynamic release layer essentially coextensive therewith comprising a metal, metal oxide or metal sulfide thin layer; and a laser radiation-ablative discontinuous film topcoat essentially coextensive therewith, said discontinuous film ablative topcoat comprising a contrast imaging amount of toner particulates.

5,612,166

IMAGING ELEMENT AND METHOD FOR MAKING LITHOGRAPHIC PRINTING PLATES ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; René De Keyzer, Waasmunster, and Johan Loccufier, Zwijnaarde, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 3, 1996, Ser. No. 660,004
Claims priority, application European Pat. Off., Jun. 23, 1995, 95201713
Int. Cl.[6] G03C 8/06;8/50;1/805; G03F 7/07
U.S. Cl. 430—204 9 Claims

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer and (iii) an intermediate layer between said image receiving layer and said photosensitive layer, characterized in that said intermediate layer comprises particles of an alkali insoluble non-polymeric organic compound having a melting point of at least 50° C., said particles having a number average size between 0.1 μm and 10 μm.

5,612,167

IMAGE FORMING METHOD USING STRIPPABLE LAYER AND LIGHT-SENSITIVE POLYMERIZABLE LAYER CONTAINING SILVER HALIDE

Hiroaki Yokoya, and Koji Shirakawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 148,512, Nov. 8, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 559,886

Claims priority, application Japan, Nov. 6, 1992, 4-322602; Nov. 6, 1992, 4-322603; Nov. 6, 1992, 4-322604

Int. Cl.[6] G03C *11/12*

U.S. Cl. 430—257 5 Claims



1. An image forming method comprising the steps of (1), (2), (3) and (4):

(1) imagewise exposing to light a light-sensitive polymerizable layer of a light-sensitive material, which comprises a support, a strippable layer and the light-sensitive polymerizable layer in order, said light-sensitive polymerizable layer containing silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound or a cross-linkable polymer and a colorant, and said strippable layer having a thickness of not less than 1.0 μm and containing a fluorine compound in an amount of not less than 1 wt. %;

(2) heating the light-sensitive polymerizable layer at a temperature of 70° to 200° C. to harden the ethylenically unsaturated polymerizable compound or the cross-linking polymer within the exposed area or, in the alternative, within the unexposed area;

(3) removing the unhardened area using a solvent to obtain a hardened color replica image; and

(4) placing the light-sensitive material in contact with an image receiving material whereby the hardened color replica image together with the strippable layer is transferred to the image receiving material.

5,612,168

IMAGE TRANSFER SHEET COMPRISING AN INTERMEDIATE LAYER AND AN IMAGING LAYER WHEREIN THE POLYMER IN THE INTERMEDIATE LAYER AND THE IMAGING LAYER HAVE A COMMON MONOMER

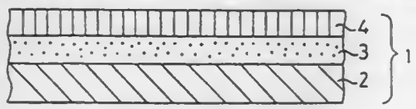
Keiko Ishikawa, Toyota, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 19, 1993, Ser. No. 63,316

Claims priority, application Japan, Jul. 30, 1992, 4-224685

Int. Cl.[6] G03C *1/93;11/12*

U.S. Cl. 430—263 19 Claims



1. An image transfer sheet for transferring an image developed thereon to an image receiving surface, comprising:

a base sheet;

an intermediate layer removably coupled to said base sheet, said intermediate layer including a polymer; and

a top imaging layer coupled to said intermediate layer, said top imaging layer including image forming material and a binder having a polymer,

wherein said polymer in said intermediate layer and said polymer in said binder have a common monomer.

16. An image transfer sheet for transferring image developed thereon to an image receiving surface comprising:

a base sheet;

an intermediate layer removably coupled to said base sheet, said intermediate layer including a polymer;

a top-imaging layer coupled to said intermediate layer, said top-imaging layer including image forming material and a binder having a polymer;

wherein said polymer in said intermediate layer and said polymer in said binder have a common monomer selected from the group consisting of a styrene monomer, a polybasic acid monomer, a polyol monomer, an amine monomer, vinyl acetate, vinyl chloride, ethyl acrylate, butyl acrylate, methyl cyanoacrylate, acrylic acid and ethylene.

5,612,169

N,N-DISUBSTITUTED SULFONAMIDES AND RADIATION-SENSITIVE MIXTURE PREPARED THEREWITH

Mathias Eichhorn, Niedernhausen, and Gerhard Buhr, Koenigstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 165,132, Dec. 10, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,054

Claims priority, application Germany, Dec. 14, 1992, 42 42 051.2

Int. Cl.[6] G03C *1/492;1/494;1/76;1/725*

U.S. Cl. 430—270.1 8 Claims

1. A radiation-sensitive mixture which comprises:

a) a compound which under the influence of actinic radiation forms acid,

b) an acid-cleavable compound whose cleavage products in an aqueous-alkaline developer have a higher solubility than the starting compound, and

c) a polymeric organic binder which is insoluble in water but is soluble or at least swellable in an aqueous alkaline developer,

wherein the acid-cleavable compound b) is an N,N-disubstituted sulfonamide of the formulae $R^1[—N(CO—OR^2)—SO_2—R^3]_n$ (I) or $R^1[—SO_2—N(CO—OR^2)—R^3]_n$ (II) in which

R^1 for n=1 is a (C_1–C_{20})alkyl, (C_3–C_{10})cycloalkyl, (C_6–C_{14})aryl or (C_7–C_{20})aralkyl radical, individual methylene groups in the radicals containing alkyl being optionally replaced by oxygen for n=2, 3 or 4 the n-valent radical of a (C_1–C_{20})alkane or (C_5–C_7)cycloalkane, individual methylene groups in the n-valent (C_3–C_{20})alkane groups being optionally replaced by oxygen, by (C_5–C_7)cycloaklylene radicals or by phenylene, or the n-valent radical of a non-condensed or condensed polynuclear (C_6–C_{18})aromatic compound or a mononuclear (C_6–C_{18})aromatic compound,

R^2 is a (C_3–C_{11})alkyl, (C_3–C_{11})alkenyl or (C_7–C_{11})aralkyl radical,

R^3 is a (C_1–C_6)alkyl, (C_3–C_6)cycloalkyl, (C_6–C_{14})aryl or (C_7–C_{20})aralkyl radical, and

n is an integer from 1 to 4.

5,612,170

POSITIVE RESIST COMPOSITION

Katsuya Takemura; Junji Tsuchiya; Toshinobu Ishihara, all of Nakakubiki-gun; Akinobu Tanaka, Fujisawa; Yoshio Kawai, and Jiro Nakamura, both of Isehara, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Nippon Telegraph and Telephone Company, both of Tokyo, Japan

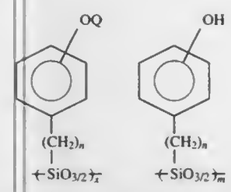
Filed Dec. 8, 1995, Ser. No. 569,659

Claims priority, application Japan, Dec. 9, 1994, 6-331720; Dec. 9, 1994, 6-331721; Dec. 9, 1994, 6-331722

Int. Cl.[6] G03C *1/73*

U.S. Cl. 430—270.1 23 Claims

1. A positive resist composition comprising a silicone polymer of the general formula (1):



(1)

wherein Q is selected from the group consisting of t-butoxycarbonyl, t-butoxycarbonylmethyl, trimethylsilyl and tetrahydropyranyl groups, letter n is an integer of 1 to 3, x and m are numbers satisfying x+m=1, and x is not equal to 0, and

a photo acid generator which will decompose to generate an acid upon exposure to radiation, said photo acid generator being an onium salt of the general formula (2):

$$(R)_pJM \quad (2)$$

wherein R is a substituted or unsubstituted aromatic group, at least one of the R groups is a phenyl group having a t-alkoxy substituent represented by $R'_3CO—$ wherein R' is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 10 carbon atoms, a t-butoxycarbonyloxy substituent or a t-butoxycarbonylmethoxy substituent,

J is sulfonium or iodonium,

M is a p-toluenesulfonate or trifluoromethanesulfonate group, and

letter p is equal to 2 or 3, said resist composition being developable with alkaline aqueous solution.

5,612,171

PLANAR OPTICAL WAVEGUIDES WITH PLANAR OPTICAL ELEMENTS

Venkata A. Bhagavatula, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 87,312, Jul. 7, 1993, abandoned, which is a division of Ser. No. 840,749, Feb. 24, 1992, Pat. No. 5,253,319. This application Feb. 13, 1995, Ser. No. 387,976

Int. Cl.[6] G02F *7/00*

U.S. Cl. 430—321 4 Claims

4. A process for manufacturing planar optical waveguides, comprising

(a) forming a planar structure by combining a substrate having a first refractive index with at least one region of an optically transmitting material having a second refractive index which is different from said first refractive index;

(b) removing material from at least one portion of said planar structure using lithographic techniques to produce thereon, (i) preselected optical circuitry, and (ii) at least one planar optical element comprising at least one optically functional interface and at least one cavity having a width adjacent to said optically functional interface; and

(c) combining a region of additional material with said planar structure over at least one area where material has been removed, wherein said region of additional material does not alter said width of said at least one cavity adjacent to said optically functional interface, wherein a layer of polymer material is applied over said at least one cavity before applying said region of additional material, wherein said layer of polymer material does not alter the width of said cavity adjacent to said optically functional interface; and wherein said region of additional material is applied using low temperature, plasma-enhanced chemical vapor deposition techniques.

5,612,172

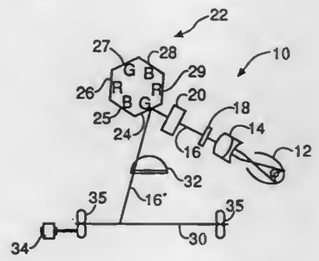
METHOD AND APPARATUS FOR WRITING ONTO A PHOTOSENSITIVE MATERIAL USING A MODULATED LIGHT BEAM

Raymond E. Wess, Holley, and Mark M. Meyers, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 292,446, Aug. 18, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 575,184

Int. Cl.[6] G06K *15/12*

U.S. Cl. 430—347 4 Claims



2. A method of writing an image onto a photosensitive material using a single modulated collimated white light beam from and incoherent light source having a plurality of color components, comprising the steps of:

sequentially modulating said collimated white light beam in accordance with digital image data for a plurality of preselected color components; and

selectively filtering each of said preselected colors of said modulated white light beam and sequentially exposing a photosensitive material by scanning said light beam in accordance with predetermined digital image data.

5,612,173

ONE EQUIVALENT COUPLERS AND LOW PKA RELEASE DYES

Gary S. Proehl, Rochester; Stephen P. Singer, Spencerport, and J. Michael Buchanan, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 897,713, Jun. 12, 1992, abandoned. This application May 23, 1995, Ser. No. 449,891

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—504 28 Claims

1. A photographic element comprising a support, and a silver halide emulsion layer having associated therewith a molecule which is a one-equivalent coupler having the structure

$$COUP—(CONNECT)_n—(T)_m—DYE$$

wherein

n' is 0or 1.

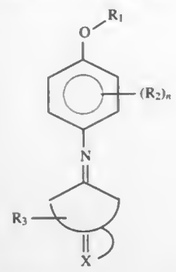
m is 0, 1, or 2.

COUP is a coupler moiety,

CONNECT is a group attached to a coupling site of the coupler that connects the coupler to either the timing group T or directly to the dye, if attached directly to the dye it remains permanently attached to the dye after the dye is released from COUP,

T is a timing group, which is cleaved from the dye during processing,

DYE is a dye having the following structure,



(I)

wherein,

R_1=H, a removable timing group, or a removable blocking group, wherein removable denotes that after processing, R_1 is hydrogen, so that the dye remains substantially or completely ionized in the element,

R_2=one or more substituents, which ensure that the oxygen auxochrome group remains ionized after processing of the element,

n=1, 2, 3 or 4,

X=O or N; wherein if X is N then it is part of a heterocyclic ring that forms part of the dye chromophore,



represents a carbon containing ring or ring system,

R_3=one or more substituents, which may be located anywhere along the ring or ring system, the

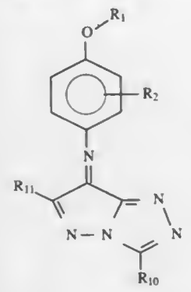


indicates that if X is N, then it is part of the ring or ring system;

with the proviso that the substituent R_2 and R_3 and the ring or ring system are selected so that the dye has a pKa below about five so that the dye remains fully ionized or substantially ionized in the processed photographic element such that the dye retains the desired hue;

and with the further proviso that the molecule may optionally contain one or more ballast groups,

wherein said dye is a yellow dye, or a cyan dye, or has the structure



wherein,

R_{10} and R_{11} are independently selected from a substituted alkyl, substituted alkyloxy or substituted phenyl group.

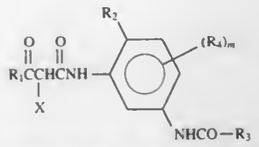
5,612,174

PHOTOGRAPHIC YELLOW DYE-FORMING COUPLERS AND SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING THE SAME

Hiroo Takizawa; Yasuhiro Yoshioka, and Masakazu Morigaki, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 7, 1995, Ser. No. 568,488
Claims priority, application Japan, Dec. 7, 1994, 6-330333
Int. Cl.[6] G03C *1/08;7/26;7/32*
U.S. Cl. 430—557 **22 Claims**

1. A photographic yellow dye-forming coupler represented by formula (I)



(I)

wherein R_1 represents an alkyl group, a cycloalkyl group, an aryl group, an alkylamino group, an anilino group, or a heterocyclic group; R_2 represents a hydrogen atom, a halogen atom, an aliphatic-oxy group, an aryloxy group, an aliphatic group, or an amino group; R_3 represents an alkenyl group; R_4 represents a substituent; m represents an integer of from 0 to 3; and X represents a hydrogen atom, or a group capable of being split off from the formula by the coupling reaction with an oxidation product of an aromatic primary amine developing agent.

5,612,175

EPITAXIALLY SENSITIZED TABULAR GRAIN EMULSIONS EXHIBITING ENHANCED SPEED AND CONTRAST

Lyn M. Eshelman, Penfield; Paul J. Madigan, Rochester; Joseph C. Deaton, Rochester; David A. Dumont, Rochester; Michael G. Antoniades, Rochester, and Sharon G. Johnston, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1996, Ser. No. 592,169
Int. Cl.[6] G03K *1/035*
U.S. Cl. 430—567 **16 Claims**

1. A radiation-sensitive emulsion comprised of

(1) a dispersing medium,

(2) silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide and up to 10 mole percent iodide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area, and

(d) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, and

(3) a spectral sensitizing dye adsorbed to the surface of the tabular grains, wherein

(4) the surface chemical sensitization sites include epitaxially deposited silver halide protrusions of a face centered cubic rock salt crystal lattice structure forming epitaxial junctions with the tabular grains, the protrusions

(a) being restricted to those portions of the tabular grains located nearest peripheral edges of and accounting for less than 10 percent of the {111} major faces of the tabular grains,

(b) accounting for less than 5 percent of total silver forming the tabular grains and protrusions,

(c) containing a silver chloride concentration at least 10 mole percent higher than that of the tabular grains, and

(d) containing at least 1 mole percent iodide, based on silver in the protrusions, and (5) the tabular grains exhibit an average equivalent circular diameter of at least 3.5 μm.

5,612,176

HIGH SPEED EMULSIONS EXHIBITING SUPERIOR SPEED-GRANULARITY RELATIONSHIPS

Lyn M. Eshelman, Penfield; David H. Levy, and Paul J. Madigan, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1996, Ser. No. 592,251
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **14 Claims**

1. A radiation-sensitive emulsion comprised of

(1) a dispersing medium,

(2) silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide and from 0.25 to 10 mole percent iodide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area, and

(d) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, and

(3) a spectral sensitizing dye adsorbed to the surfaces of the tabular grains, wherein

(4) the surface chemical sensitization sites include epitaxially deposited silver halide protrusions of a face centered cubic rock salt crystal lattice structure forming epitaxial junctions with the tabular grains, the protrusions

(a) being restricted to those portions of the tabular grains located nearest peripheral edges of and accounting for less than 50 percent of the {111} major faces of the tabular grains,

(b) containing a silver chloride concentration at least 10 mole percent higher than that of the tabular grains, and

(c) including a higher iodide concentration than those portions of the tabular grains extending between the {111} major faces and forming epitaxial junctions with the protrusions, and

(5) the tabular grains exhibit an average aspect ratio of greater than 50 and an average equivalent circular diameter of greater than 10 micrometers.

5,612,177

(111) TABULAR GRAIN EMULSIONS EXHIBITING INCREASED SPEED

David H. Levy, Rochester; Lyn M. Eshelman, Penfield, and Paul D. Zimmerman, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1996, Ser. No. 592,827
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **10 Claims**



1. A radiation-sensitive emulsion comprised of

(1) a dispersing medium,

(2) silver halide grains including tabular grains

(a) containing greater than 50 mole percent bromide, based on total silver,

(b) accounting for greater than 50 percent of total grain projected area, and

(c) having {111} major faces, and

(3) silver halide epitaxy forming chemical sensitization sites on the surfaces of the tabular grains, wherein

(d) the silver halide epitaxy exhibits an isomorphic face centered cubic crystal lattice structure and contains at least 1 mole percent iodide,

(e) at least 90 percent of the silver halide epitaxy is deposited on the {111} major faces in the form of monocrystalline terraces,

(f) each epitaxial terrace being located along and extending inwardly from an edge of a {111} major face, and

(g) the epitaxial terraces overlie less than 25 percent of the {111} major faces.

5,612,178

METHOD OF QUANTITATIVE ENZYME DETERMINATION

Julian Gordon, Lake Bluff; Andreas A. Kapsalis, Evanston, and Richard E. Thompson, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 117,278, Nov. 5, 1987, abandoned. This application Aug. 24, 1992, Ser. No. 933,971
Int. Cl.[6] C12Q *1/00;1/48;1/34;1/26*
U.S. Cl. 435—4 **6 Claims**

1. A method for the quantitative determination of the presence of an analyte enzyme in a sample comprising the steps of:

(a) immobilizing the analyte enzyme present in a quantity of sample to be analyzed at a reaction site on a chromatographic medium,

(b) contacting said chromatographic medium with a solution comprising a substrate,

(c) transporting said solution to said reaction site wherein said analyte enzyme catalyzes the reaction of said substrate to produce a detectable reaction product at a rate related to the amount of enzyme present;

(d) transporting said solution and said reaction product from said reaction site to a detection region comprising a length of said chromatographic medium downstream from said reaction site wherein transport continues until said solution reaches the end of said chromatographic medium or until the quantity of solution is exhausted, and wherein the production of said reaction product results in a continuous record of the rate of reaction, and

(e) detecting a signal produced by (i) said substrate, (ii) said reaction product, or (iii) a reactant or product of one or more additional reactions of said reaction product, at a selected site in said detection region.

5,612,179

INTRON SEQUENCE ANALYSIS METHOD FOR DETECTION OF ADJACENT AND REMOTE LOCUS ALLELES AS HAPLOTYPES

Malcolm J. Simons, Fryerstown, New Zealand, assignor to GeneType A.G., Zug, Switzerland

Continuation of Ser. No. 551,239, Jul. 11, 1990, Pat. No. 5,192,659, which is a continuation-in-part of Ser. No. 465,863, Jan. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 405,499, Sep. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 398,217, Aug. 25, 1989, abandoned. This application Sep. 23, 1992, Ser. No. 949,632
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*
U.S. Cl. 435—6 **36 Claims**

1. A method for detection of at least one coding region allele of a multi-allelic genetic locus comprising:

a) amplifying genomic DNA with a primer pair that spans a non-coding region sequence, said primer pair defining a DNA sequence which is in genetic linkage with said genetic locus and contains a sufficient number of non-coding region sequence nucleotides to produce an amplified DNA sequence characteristic of said allele; and

b) analyzing the amplified DNA sequence to detect the allele.

5,612,180
GENETIC FOOTPRINTING: INSERTIONAL MUTAGENESIS AND GENETIC SELECTION

Patrick Brown, Stanford, and Victoria Smith, Palo Alto, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 62,454, May 13, 1993, abandoned. This application May 23, 1994, Ser. No. 247,903
Int. Cl.[6] C12Q *1/68;* C12N *15/09*
U.S. Cl. 435—6 **11 Claims**

1. A method for functional analysis of a target region in a genome of a microorganism which grows as a haploid, said method comprising:

mutagenizing said genome by insertion of a sequence tag to provide a population of cells wherein at least 90% of target regions in the genomes of said population of cells contains a sequence tag insertion;

subjecting a first aliquot of said population of cells to at least one selective condition and a second aliquot to a non-selective condition to provide at least one selected and one non-selected aliquot;

amplifying target region DNA from said at least one selected and one non-selected aliquots, wherein said amplification is by polymerase chain reaction using a first primer hybridizing to said sequence tag and a second primer hybridizing to a known endpoint, said endpoint being characterized as an arbitrary unique sequence in said target region, to provide amplified DNA; and

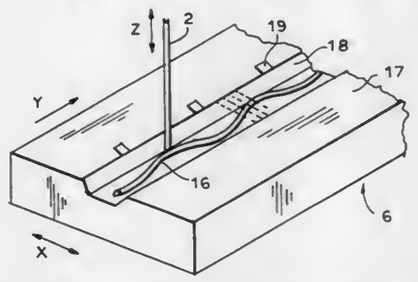
resolving by gel electrophoresis said amplified DNA from said at least one selected and one non-selected aliquots into individual bands differing by size to identify the position of individual sequence tag insertions within said target region,

whereby differences in the presence or intensity of bands between said at least one selected and one non-selected aliquots are indicative that said sequence tag insertion causes a difference in response to said selective condition employed with said at least one aliquot, resulting in the functional analysis of said target region.

5,612,181
METHOD FOR ARRANGING A POLYNUCLEOTIDE ON A SUBSTRATE FOR POINT-BY-POINT ANALYSIS OF THE BASES THEREOF

Jean E. R. Fourmentin-Guilbert, 84, avenue de la Republique, 93160 Noisy Le Grand, France

Continuation-in-part of Ser. No. 845,918, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 541,530, Jun. 21, 1990, abandoned. This application Jul. 29, 1994, Ser. No. 282,627
Claims priority, application France, Jun. 21, 1989, 89 08284
Int. Cl.[6] C12Q *1/68;* G01N *33/24*
U.S. Cl. 435—6 **11 Claims**



1. A method for arranging a polynucleotide sample on the surface of a substrate for point-by-point analysis of each successive base of said polynucleotide, said point-by-point analysis being performed by scanning said surface by means of a probe which is part of a tunnel effect microscope and which is capable of detecting a difference of level with respect to the surface of less than one atomic diameter, comprising:

positionning said polynucleotide by anchoring said polynucleotide towards a first extremity thereof to the substrate at a precise location on said substrate, and

stretching out said anchored polynucleotide by performing at least one step selected from the group consisting of:

(i) placing the said anchored polynucleotide in a current of a fluid, and

(ii) applying an electric field.

5,612,182
MYCOBACTERIOPHAGE SPECIFIC FOR THE MYCOBACTERIUM TUBERCULOSIS COMPLEX

Robert E. Pearson, Durham; Julie A. Dickson, Raleigh; Paul T. Hamilton, Cary; Michael C. Little, Raleigh, and Wayne F. Beyer, Jr., Bahama, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 10, 1995, Ser. No. 402,066
Int. Cl.[6] C07K *16/00;* C12Q *1/68;* A61K *39/02*
U.S. Cl. 435—6 **9 Claims**

1. A method for detecting or identifying gp36 of mycobacteriophage DS6A comprising binding an anti-gp36 antibody to the gp36 and detecting binding of the antibody by means of a detectable label linked to the antibody, thereby detecting or identifying the gp36.

5,612,183
METHOD FOR DETERMINING THE EFFECT OF ANTIMICROBIAL AGENTS ON GROWTH USING RIBOSOMAL NUCLEIC ACID SUBUNIT SUBSEQUENCE SPECIFIC PROBES

David E. Kohne, La Jolla, Calif., assignor to Gen-Probe Incorporated, San Diego, Calif.

Division of Ser. No. 199,486, Feb. 22, 1994, which is a continuation of Ser. No. 179,922, Jan. 11, 1994, abandoned, which is a continuation of Ser. No. 857,081, Mar. 19, 1992, Pat. No. 5,288,611, which is a continuation of Ser. No. 584,432, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 464,717, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 353,208, May 17, 1989, abandoned, which is a continuation of Ser. No. 655,365, Sep. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 456,729, Jan. 10, 1983, abandoned. This application Jun. 2, 1995, Ser. No. 460,531
Int. Cl.[6] C12Q *1/68;1/18*
U.S. Cl. 435—6 **8 Claims**

1. A method for determining the effect of one or more antimicrobial agents on the growth of one or more microorganisms present in a sample, wherein said microorganisms belong to a specific category of microorganisms, said method comprising the steps of:

(a) contacting an aliquot of said sample containing said antimicrobial agents with a nucleic acid probe able to specifically hybridize with a ribosomal nucleic acid subunit subsequence specific to said category of microorganisms at a predetermined time,

wherein said probe is complementary to less than the entire ribosomal nucleic acid subunit sequence of any microorganism belonging to said category of microorganisms, and

wherein said probe is not complementary to a nucleotide base sequence of a ribosomal nucleic acid subunit of any organism not belong to said category of microorganisms;

(b) incubating said aliquot and said probe under selective hybridization conditions, such that said probe specifically hybridizes with said ribosomal nucleic acid subunit subsequence specific to said category of microorganisms;

(c) assaying for hybridization of said probe with said microorganisms as an indication of the amount of said microorganisms in said sample at said predetermined time;

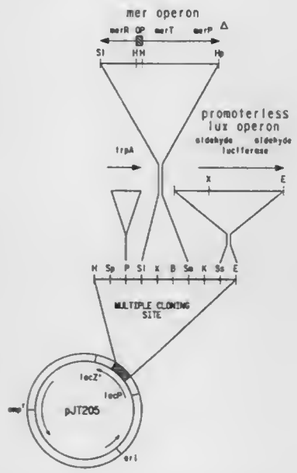
(d) repeating steps (a)–(c) one or more times at different predetermined times; and

(e) comparing the amounts of probe hybridized with said microorganisms in each said aliquot at each said predetermined time in order to determine the effect of said antimicrobial agents on the growth of said microorganisms in said sample.

5,612,184
DEVICE FOR DETECTING MERCURY IN WATER

Reinhardt A. Rosson, Manitowoc, Wis., assignor to Bio-Technical Resources L.P., Manitowoc, Wis.

Division of Ser. No. 111,316, Aug. 23, 1993, which is a continuation-in-part of Ser. No. 737,951, Jul. 30, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,405
Int. Cl.[6] C12Q *1/70*
U.S. Cl. 435—6 **12 Claims**



1. A device for the detection of mercury in water comprising:

(1) an aqueous suspension of biosensory microorganism cells, the microorganism cells containing a recombinant plasmid, the recombinant plasmid comprising a plasmid cassette, the plasmid cassette comprising:

(a) a promoterless, lux gene operon complex from *Xenorhabdus luminescens*, the lux operon complex comprising luxC, luxD, luxA, luxB, and luxE genes; and

(b) an inducible regulatory gene that is activated by exposure to divalent mercury ions, the regulatory gene being located 5' of the lux gene operon complex; and

(2) a receptacle, the aqueous suspension being present in the receptacle;

(3) a light-tight container, the receptacle being present in the container; and

(4) means for detecting bioluminescence operably connected to the aqueous suspension of biosensory microorganism cells by a means for conveying bioluminescence.

5,612,185
METHOD FOR IDENTIFYING TUMOR CELLS IN CELL CYCLE ARREST

Jonathan W. Uhr; Ellen S. Vitetta; Louis J. Picker, all of Dallas, and Richard H. Scheuermann, Carrollton, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 967,072, Oct. 14, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,525
Int. Cl.[6] G01N *33/574*
U.S. Cl. 435—7.23 **8 Claims**

1. A method for identifying tumor cells in cell cycle arrest comprising:

(a) obtaining a syngeneic population of cells from a patient suspected of having cancer;

(b) contacting said syngeneic population of cells with at least three monoclonal antibodies, each antibody being directed against a distinct cell surface molecule on tumor cells, under conditions effective to allow antibody binding;

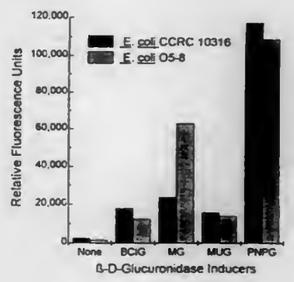
(c) subjecting the contacted population of cells to multiparameter cell sorting to sort antibody bound tumor cells away from syngeneic non-tumor cells in said population; and

(d) identifying, in the sorted population of tumor cells, the presence of tumor cells in cell cycle arrest.

5,612,186
ENZYME-CAPTURE ASSAY (ECA) FOR THE IDENTIFICATION OF *ESCHERICHIA COLI* IN CLINICAL SAMPLES

Shiu W. Huang, Hsinchu; Jiunn J. Wu, Tainan, and Tsung C. Chang, Taoyuan, all of Taiwan, assignors to Food Industry Research and Development Institute, Taiwan

Filed Jun. 22, 1994, Ser. No. 263,541
Int. Cl.[6] G01N *33/569*
U.S. Cl. 435—7.37 **9 Claims**



1. A method for determining the presence of *Escherichia coli* (*E. coli*) in a sample comprising the steps of culturing the sample at about 35° C. for about 24 hours in the presence of an *E. coli* β-D-glucuronidase inducer p-nitrophenyl-β-D-glucuronide; preparing a cell lysate from said cultured sample; contacting said lysate with an immobilized antibody against β-D-glucuronidase of *E. coli* to bind any *E. coli* β-D-glucuronidase in said lysate; and detecting any β-D-glucuronidase bound to said immobilized antibody with a β-D-glucuronidase substrate; whereby transformation of said substrate indicates the presence of *E. coli* in the sample.

5,612,187

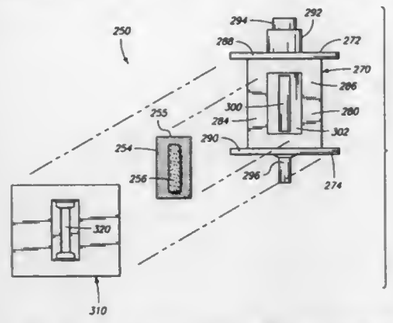
CLOT LYSIS TIME DETERMINING DEVICE AND METHOD FOR DETERMINING THE TIME NECESSARY FOR FLUID TO LYSE A CLOT, AND CLOT SUPPORTER

Daniel B. Brubaker, Clovis, Calif., assignor to Espress Tech, Inc., Clovis, Calif.

Continuation-in-part of Ser. No. 216,189, Mar. 22, 1994, Pat. No. 5,432,084. This application Apr. 28, 1995, Ser. No. 431,276

Int. Cl.[6] **C12Q** *1/56;* **C12M** *1/40*

U.S. Cl. 435—13 **38 Claims**



1. A clot lysis time determining device for determining the time necessary for a fluid to lyse a clot, the device comprising:

a body defining a chamber;

a fluid receiving inlet port to the body in fluid communication with the chamber, the inlet port permitting the fluid to flow into the chamber;

a fluid discharging outlet port to the body in fluid communication with the chamber, the outlet port permitting the fluid to flow out from the chamber;

the inlet port, the chamber, and the outlet port defining a communicating fluid passageway;

a body opening formed in the body along the fluid passageway;

a clot over the body opening, the body opening permitting a portion of the fluid within the passageway to flow against the clot and to thereby lyse the clot;

a cover detachably connectable to the body and configured for holding the clot; and

the device being configured to permit determination of the time necessary for the fluid to lyse the clot.

35. A method for determining the time necessary for a fluid to lyse a clot comprising the following steps:

flowing a fluid through a passageway which contains at least two paths of flow, at least one of the paths of flow being impeded by a clot and at least one of the paths of flow being unimpeded by a clot; and

monitoring a flow condition of the fluid to determine when the clot breaks.

5,612,188

AUTOMATED, MULTICOMPARTMENTAL CELL CULTURE SYSTEM

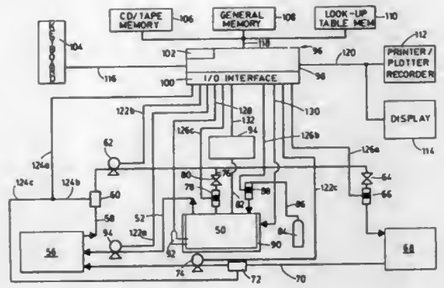
Michael L. Shuler, Ithaca; John G. Babish, Brooktondale, both of N.Y.; Lisa M. Sweeney, White Bear Lake, Minn., and Brian E. Johnson, Spencer, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 66,823, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,044, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 797,311, Nov. 25, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,792

Int. Cl.[6] **C12Q** *1/00;* **C12M** *1/34*

U.S. Cl. 435—29 **26 Claims**

1. An in vitro system which maintains different cell types in a viable state comprising:



a plurality of cell culture chambers each containing the different cell types in a culture medium containing a substance to be evaluated;

a gas-liquid exchange device;

a conduit system to conduct culture medium between said gas-liquid exchange device and said plurality of cell culture chambers;

a circulation mechanism for circulating culture medium through said conduit system, said plurality of cell culture chambers, and said gas-liquid exchange device, including circulating culture medium between said plurality of cell culture chambers, wherein the substance to be evaluated contacts the different cell types, thereby producing either metabolites of the substance to be evaluated or metabolites of the different cell types; and

a microprocessor to control operation of said gas-liquid exchange device and said circulation mechanism, wherein said plurality of cell culture chambers, said conduit system, and said circulation mechanism are configured such that the metabolites of the different cell types or the metabolites of the substance to be evaluated are exchanged between said plurality of cell culture chambers.

11. A method for physiological and metabolic evaluation of a substance comprising:

providing an in vitro system for physiological and metabolic evaluation of substances, said system comprising:

a plurality of cell culture chambers each containing different types of cells in a culture medium;

a gas-liquid exchange device;

a conduit system to conduct culture medium between said gas-liquid exchange device and said plurality of cell culture chambers;

a circulation mechanism for circulating culture medium through said conduit system; and

a microprocessor to control operation of said gas-liquid exchange device and said circulation mechanism;

adding a substance to be evaluated to the culture medium of said in vitro system;

circulating the culture medium containing the substance through said plurality of cell culture chambers, said gas-liquid exchange device, and said conduit system with said circulation mechanism, wherein the substance to be evaluated contacts the different types of cells, thereby producing either metabolites of the substance to be evaluated or metabolites of the different types of cells and the metabolites of the different types of cells or the metabolites of the substance to be evaluated are exchanged between said plurality of cell culture chambers; and

evaluating the cells in each of said plurality of cell culture chambers or the culture medium for physiological and metabolic changes resulting from the presence of the substance in the culture medium.

5,612,189

Patent Not Issued For This Number

5,612,190

DNA MOLECULE ENCODING BOVINE GROUP I PHOSPHOLIPASE A_2 RECEPTOR

Hitoshi Arita, Kawanishi; Osamu Ohara, Toyonaka, and Jun Ishizaki, Takarazuka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 30, 1994, Ser. No. 220,603

Claims priority, application Japan, Mar. 30, 1993, 5-072323; Aug. 20, 1993, 5-206686; Mar. 10, 1994, 6-040177

Int. Cl.[6] **C12N** *15/12;* **C07K** *14/705*

U.S. Cl. 435—69.1 **10 Claims**

1. An isolated DNA molecule encoding a bovine group I phospholipase A_2 receptor comprising an amino acid sequence from Leu in the 486 position to Pro in the 940 position of SEQ ID NO: 11.

5,612,191

PLANT GENES AFFECTING GIBBERELLIC ACID BIOSYNTHESIS

Steven P. Briggs, Des Moines, and Robert J. Bensen, Grimes, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jun. 17, 1994, Ser. No. 261,465

Int. Cl.[6] **C12N** *15/29*

U.S. Cl. 435—69.1 **8 Claims**

1. An isolated DNA molecule capable of hybridizing with a nucleotide sequence in monocots under conditions of high stringency, said sequence encoding a product necessary for the conversion of GGPP to ent-kaurene in the biosynthesis of gibberellic acid, and wherein said DNA molecule is capable of hybridizing to a nucleotide sequence according to the Anl sequence of FIG. 3 under conditions of high stringency.

5,612,192

DNA BASE SEQUENCE CONTAINING REGIONS INVOLVED IN THE PRODUCTION AND SECRETION OF A PROTEIN, RECOMBINANT DNA INCLUDING THE WHOLE OR A PART OF THE DNA BASE SEQUENCE, AND METHOD OF PRODUCING PROTEINS BY USE OF THE RECOMBINANT DNA

Yoshio Furutani, Miuragun; Hiroaki Shimada, Mobara; Izumi Mita, Mobara; Kazuaki Manabe, Mobara; Masaru Honjo, Mobara, and Noboru Tomioka, Mobara, all of Japan, assignors to Agency of Industrial Science and Technology, and Extra-Ministerial Bureau of Ministry of International Trade and Industry, both of Tokyo, Japan

Continuation of Ser. No. 988,015, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 628,989, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 159,513, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 686,892, Dec. 27, 1984, abandoned. This application Dec. 20, 1994, Ser. No. 359,863

Claims priority, application Japan, Dec. 28, 1983, 58-245065; Apr. 3, 1984, 59-65156; Aug. 24, 1984, 59-175158

Int. Cl.[6] **C12N** *15/00;* **C12P** *21/00*

U.S. Cl. 435—69.1 **13 Claims**

1. A recombinant DNA of about 6.4 kilobase pairs, comprising:

(a) a vector DNA which can be retained in host cells, and

(b) a DNA fragment which has a size of about 1.8 kilobase pairs, the DNA fragment inserted into said vector DNA having a DNA base

sequence comprising a promotor region for RNA polymerase recognition and binding sites a ribosome binding region, a region encoding a peptide for extracellular secretion of neutral protease, a structural gene for the neutral protease and terminator region for showing an end of genetic information, all being of a neutral protease gene of *B. amyloliquefaciens*, Strain F.

5,612,193

TRANSLATION OF MRNA

Thomas M. A. Wilson, East Brunswick, N.J., assignor to Diatech Ltd., London, United Kingdom

Continuation of Ser. No. 255,796, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 125,399, Sep. 23, 1993, abandoned, which is a continuation of Ser. No. 948,472, Sep. 22, 1992, abandoned, which is a continuation of Ser. No. 640,946, Jan. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 148,650, Feb. 4, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 467,926

Claims priority, application United Kingdom, Jun. 4, 1986, 8613481

Int. Cl.[6] **C12N** *15/00;15/70;15/85;* **C12P** *21/02*

U.S. Cl. 435—69.1 **2 Claims**

1. A method of producing a polypeptide comprising translation of an RNA which encodes said polypeptide, wherein said RNA comprises two operatively linked subsequences, comprising

i) a first subsequence comprised of the Ω' sequence of tobacco mosaic virus, and

ii) a second subsequence downstream of said first subsequence and comprised of a coding sequence heterologous to said virus;

wherein said first subsequence is capable of enhancing translation of said second subsequence.

5,612,194

METHODS OF PRODUCING EFFECTIVE RECOMBINANT SERINE PROTEASE INHIBITORS AND USES OF THESE INHIBITORS

Harvey Rubin, Philadelphia; Barry Cooperman, Penn Valley; Norman Schechter, Philadelphia; Michael Plotnick, Havertown, and Zhi M. Wang, Philadelphia, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 229,286, Apr. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 221,078, Mar. 31, 1994, and Ser. No. 221,171, Mar. 31, 1994, said Ser. No. 221,078and Ser. No. 221,171, , each is a continuation-in-part of Ser. No. 5,898, Jan. 15, 1993, abandoned, and Ser. No. 5,908, Jan. 15, 1993, Pat. No. 5,367,064, each which is a division of Ser. No. 735,335, Jul. 24, 1991, Pat. No. 5,252,725, which is a division of Ser. No. 370,704, Jun. 23, 1989, Pat. No. 5,079,336. This application Jul. 19, 1994, Ser. No. 276,936

Int. Cl.[6] **A61K** *38/55;38/57;* **C07K** *14/81;* **C12N** *15/15*

U.S. Cl. 435—69.2 **5 Claims**

1. A method of producing a recombinant serine protease inhibitor capable of effectively modulating serine protease activity comprising:

a) determining a sequence of a selected serine protease inhibitor;

b) identifying a reactive loop of said serine protease inhibitor, said reactive loop containing a first amino acid sequence of a protease binding site and a second amino acid sequence of a hinge region;

c) modifying DNA encoding the first amino acid sequence of said protease binding site so that the selectivity of a recombinant serine protease inhibitor for other proteases will be altered;

d) modifying DNA encoding the second amino acid sequence of said hinge region so that said recombinant serine protease inhibitor is capable of effectively modulating an activity of the protease;

e) synthesizing said modified recombinant serine protease inhibitor; and

f) isolating said modified recombinant serine protease inhibitor,

wherein said modified recombinant serine protease inhibitor is an antichymotrypsin analogue and with the proviso that said antichymotrypsin analoques does not consist of:

(i) an antichymotrypsin analogue wherein the amino acid corresponding to leucine at position 358 is substituted with arginine or methionine;

(ii) an antichymotrypsin analogue wherein the amino acids corresponding to alanine-alanine at amino acid positions 349 and

350 of wild type α-1-antichymotrypsin are substituted with glycine-threonine and the amino acids corresponding to valine-arginine at amino acid positions 368 and 369 are substituted with threonine-arginine; or

(iii) an antichymotrypsin analogue wherein the amino acids corresponding to alanine-alanine at amino acid positions 349 and 350 of wild type α-1-antichymotrypsin are substituted with glycine-threonine, the amino acids corresponding to valine-arginine at amino acid positions 368 and 369 are substituted with threonine-arginine and the amino acid at position 358 is substituted with a phenylalanine.

5,612,195

RECOMBINANT PRODUCTION OF A HUMAN INTERFERON (IFN)-GAMMA ANTAGONIST CYTOKINE

Patricia Krief, Gonesse; Bruno Azzarone, Longjumeau; Yvette Augery-Bourget, Paris; Claude Boucheix, Villejuif, and Claude Jasmin, Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale (INSERM), Paris, France

PCT No. PCT/FR92/01123, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/11232, PCT Pub. Date Jun. 10, 1993

PCT Filed Feb. 12, 1992, Ser. No. 244,557

Claims priority, application France, Dec. 2, 1991, 91 14908

Int. Cl.[6] C12N *15/19;* **A61K** *38/19;* **C07K** *14/52*

U.S. Cl. 435—69.5 **13 Claims**

1. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) a sequence which encodes a polypeptide comprising the amino acid sequence shown in SEQ ID NO: 2;

(b) a sequence which encodes a polypeptide comprising an amino acid sequence which differs from that shown in SEQ ID NO: 2 by the substitution of one amino acid, wherein said polypeptide is capable of specifically antagonizing the induction by IFN-γ of the expression of class II histocompatibility antigens at the surface of a human cell; and

(c) a sequence complementary to the full length of the sequence of (a) or (b).

5,612,196

HUMAN SERUN ALBUMIN, PREPARATION AND USE

Jérôme Becquart, Paris; Reinhard Fleer, Bures sur Yvette, and Gérard Jung, Montlhery, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00072, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO93/15204, PCT Pub. Date Aug. 5, 1993

FCT Filed Jan. 26, 1993, Ser. No. 256,966

Claims priority, application France, Jan. 27, 1992, 92 00807

Int. Cl.[6] C12N *15/09;15/14;1/19;* **C07K** *14/765*

U.S. Cl. 435—69.6 **11 Claims**

1. A process for preparing human serum albumin having a colorimetry index of less than 0.2 in a Kluyveromyces host consisting essentially of:

introducing an exogenous DNA encoding human serum albumin into the host,

culturing the host in a defined medium consisting essentially of basic medium B_0 and at least one carbon source selected from the group consisting of ethanol, glycerol, sorbitol, sucrose, acetates, lactates, disaccharides having a 1–4 type glycoside bond, and microfiltered glucose,

recovering the human serum albumin produced.

5,612,197

PROCESS FOR PRODUCING RECOMBINANT HUMAN SERUM ALBUMIN

Toyoo Ohda; Wataru Ohtani; Tomoshi Obya; Shinobu Kuwae; Kenji Tomomitsu; Kaoru Kobayashi, and Takao Ohmura, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed May 17, 1995, Ser. No. 442,756

Claims priority, application Japan, May 18, 1994, 6-103994

Int. Cl.[6] C12P *21/02;* **C07K** *14/765*

U.S. Cl. 435—69.6 **17 Claims**

1. A process for producing recombinant human serum albumin which comprises culturing a human serum albumin-producing host, prepared by gene manipulation techniques, in a medium supplemented with at least one amino acid selected from the group consisting of alanine, aspartic acid, arginine, cysteine, glutamic acid, histidine, isoleucine, phenylalanine, serine, tryptophan and valine, with the proviso that no other amino acids are present in said medium and that said human serum albumin-producing host would grow in said medium not supplemented with the at least one amino acid.

5,612,198

PRODUCTION OF INSULIN-LIKE GROWTH FACTOR-1 IN METHYLOTROPHIC YEAST CELLS

Russell A. Brierley, Exton, Pa.; Geneva R. Davis, San Diego, Calif.; Gregory C. Holtz, San Diego, Calif.; Martin A. Gleeson, San Diego, Calif., and Bradley D. Howard, San Diego, Calif., assignors to The Salk Institute, La Jolla, Calif.

Continuation of Ser. No. 983,523, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 578,728, Sep. 4, 1990, abandoned. This application Sep. 19, 1994, Ser. No. 308,196

Int. Cl.[6] C12N *15/18;1/19*

U.S. Cl. 435—69.9 **56 Claims**

1. A DNA construct, comprising one or more copies of an expression cassette that contains:

(a) a sequence of nucleotides encoding an insulin-like growth factor-1 (IGF-1) peptide;

(b) a promoter region from a methanol responsive gene of a methylotrophic yeast operably linked to the sequence of nucleotides that encodes IGF-1;

(c) a sequence of nucleotides encoding the *Saccharomyces cerevisiae* α-mating factor (αMF) pre-pro sequence;

(d) a transcription terminator functional in a methylotrophic yeast host cell operably linked to the sequence of nucleotides that encodes an IGF-1 peptide, wherein:

the sequence of nucleotides that encodes the pre-pro sequence is operably linked via a sequence of nucleotides encoding the processing site lys-arg to the sequence of nucleotides that encodes an IGF-1 peptide;

the promoter region directs methanol-induced transcription in a methylotrophic yeast host of the sequence of nucleotides encoding the pre-pro sequence and the IGF-1 peptide; and

the methylotrophic yeast is a species that utilizes methanol as a sole carbon source and is a member of the genus Hansenula or Pichia.

5,612,199

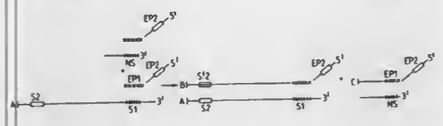
METHOD FOR PRODUCING A POLYNUCLEOTIDE FOR USE IN SINGLE PRIMER AMPLIFICATION

Linda M. Western, San Mateo; Karen M. Hahnenberger, Cupertino; Samuel Rose, Mountain View; Martin Becker, Palo Alto, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Continuation of Ser. No. 776,538, Oct. 11, 1991, abandoned. This application Apr. 1, 1994, Ser. No. 221,662

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.1 **46 Claims**



2. A method for producing from an extender probe a polydeoxynucleotide, said polydeoxynucleotide being an extended extender probe and having two segments that are non-contiguous and complementary with each other, wherein during said method said extender probe is modified to reduce the priming effectiveness thereof in an amplification of said polydeoxynucleotide, said method comprising:

providing in combination (a) a polynucleotide having two non-contiguous, non-complementary nucleotide sequences S1 and S2 wherein S2 is 5' of S1 and is at least ten nucleotides long wherein said S1 and S2 are separated by at least 10 nucleotides, (b) an extender probe comprised of two deoxynucleotide sequences, wherein the sequence at the 3'-end of said extender probe, EP1, hybridizes with S1 and the other of said deoxynucleotide sequences, EP2, is homologous to S2, and (c) an enzyme for chemically modifying the 3'-end of said extender probe that does not hybridize with said polynucleotide, and

extending, by means of a polydeoxynucleotide polymerase and polydeoxynucleoside triphosphates, said extender probe along said polynucleotide to produce extended extender probe which is said polydeoxynucleotide having two segments that are non-contiguous and complementary with each other, wherein the 3'-end of said extender probe not hybridized with said polynucleotide is extended or degraded by means of said enzyme, thereby producing modified extender probe.

5,612,200

METHOD AND KIT FOR DESTROYING ABILITY OF NUCLEIC ACID TO BE AMPLIFIED

Nanibhushan Dattagupta, San Diego; Thomas B. Ryder, Escondido; Daniel L. Kacian, and Kelichi Kamisango, both of San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 903,495, Jun. 24, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,990

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.2 **7 Claims**

1. A method for inhibiting the ability to be amplified of nucleic acids produced by a previous amplification, comprising the step of:

contacting said nucleic acids produced by a previous amplification with bleach in an amount and for a time sufficient to inhibit the subsequent amplification of said nucleic acids produced by a previous amplification, thereby inhibiting the ability of said nucleic acids produced by a previous amplification to be amplified.

5,612,201

ISOLATED NUCLEIC ACID MOLECULES USEFUL IN DETERMINING EXPRESSION OF A TUMOR REJECTION ANTIGEN PRECURSOR

Etienne De Plaen; Thierry Boon-Falleur; Bernard Lethé ; Jean-Pierre Szikora; Charles De Smet, and Patrick Chomez, all of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 37,230, Mar. 26, 1993, which is a continuation-in-part of Ser. No. 807,043, Dec. 12, 1991, Pat. No. 5,342,774, which is a continuation-in-part of Ser. No. 764,364, Sep. 23, 1991, Pat. No. 5,327,252, which is a continuation-in-part of Ser. No. 728,838, Jul. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 705,702, May 23, 1991, abandoned. This application Sep. 1, 1994, Ser. No. 299,849

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—91.2 **3 Claims**

3. Method for determining expression of a MAGE gene of interest, comprising contacting a nucleic acid containing sample with at least one pair of primers selected from the group consisting:

(b) SEQ ID NO: 29 and SEQ ID NO: 30

(c) SEQ ID NO: 31 and SEQ ID NO: 32

(d) SEQ ID NO: 33 and SEQ ID NO: 34

(e) SEQ ID NO: 35 and SEQ ID NO: 36

(f) SEQ ID NO: 37 and SEQ ID NO: 38

(g) SEQ ID NO: 39 and SEQ ID NO: 40

(h) SEQ ID NO: 41 and SEQ ID NO: 42

(i) SEQ ID NO: 43 and SEQ ID NO: 44 and

(j) SEQ ID NO: 45 and SEQ ID NO: 46, subjecting said nucleic acid containing sample and pair of primers to a reverse transcriptase-polymerase chain reaction, and determining any amplification product as a determination of expression of said MAGE gene.

5,612,202

PROCESS FOR THE NON-RANDOM CLEAVAGE OF STARCH AND THE LOW D.E. STARCH CONVERSION PRODUCTS PRODUCED THEREBY

Phillip J. Brumm, Rockford, Ill., assignor to Enzyme Bio-Systems Ltd., Beloit, Wis.

Continuation of Ser. No. 967,762, Oct. 28, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,399

Int. Cl.[6] C12P *19/14;19/22;19/04*

U.S. Cl. 435—99 **2 Claims**

1. A process for making a maltodextrin having branched molecules, a molecular weight from about 20,000 to about 50,000 daltons, a concentration of from about 70% to about 100% and a D.E. of less than about 8, which comprises the sequential steps of:

a) contacting an aqueous slurry comprising from about **20**% to about 50% d.s. of a starch having more than about 50% amylopectin with a *Bacillus stearothermophilus* alpha-amylase designated as G995 which cleaves amylopectin to make branched molecules having a molecular weight distribution of from about 20,000 to about 50,000 daltons and cleaves amylose to a molecular weight less than about 5,000 daltons at a temperature from about 102° C. to about 112° C. for from about 2 to about 30 minutes to make a liquefact having a D.E. of from about 10 to about 30;

b) inactivating the alpha-amylase by adjusting the pH to from about 3.5 to about 4.5 and maintaining a temperature of from about 60° C. to about 100° C. for from about 10 to about 240 minutes;

c) removing insoluble materials from the liquefact; and

d) filtering the maltodextrin from the liquefact.

5,612,203

PROCESS FOR PRODUCING SACCHARIDES

Shigeaki Maruo, Osaka; Noriyuke Tachikake, Kyoto, and Yohji Ezure, Shiga, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

PCT No. PCT/JP92/01498, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO93/10256, PCT Pub. Date May 27, 1993

PCT Filed May 19, 1994, Ser. No. 244,117

Claims priority, application Japan, Nov. 19, 1991, 3-331212; Jan. 22, 1992, 4-032569; Sep. 8, 1992, 4-266639

Int. Cl.[6] C12P *19/04;19/12;19/14*

U.S. Cl. 435—101 6 Claims

1. A process for producing a desired saccharide of a predetermined, definite chain length which comprises subjecting a saccharide having a chain length larger than said definite chain length or mixture of such saccharides to modification of the hydroxy group carried by the anomeric carbon atom at the reducing end thereof without using any transglycosidase, and without modifying the non-reducing end thereof, then repeatedly cleaving the modified saccharide by treating the modified saccharide with an enzyme capable of repeatedly cleaving a saccharide chain of said predetermined definite chain length in an exo manner therefrom to produce said desired saccharide of predetermined definite chain length and recovering said desired saccharide.

5,612,204

BIOLOGICAL DEGRADATIVE TREATMENT OF CHLORINE SUBSTITUTED ETHYLENE

Hisashi Saeki, and Akira Miura, both of Saitama, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,215

Claims priority, application Japan, Jul. 8, 1994, 6-179689

Int. Cl.[6] C12P *7/00;* C12N *9/00;* C07H *17/00*

U.S. Cl. 435—132 9 Claims

9. A method for biologically degradative-treating a chlorine-substituted ethylene comprising culturing *Nocardia corallina* B-276 (FERM P-4094; FERM BP-5124; ATCC 31338) in a medium containing a chlorine-substituted ethylene having 1 to 3 chlorine atoms, wherein said chlorine-substituted ethylene is oxidized to a corresponding epoxide by said microorganism.

5,612,205

HOMOLOGOUS RECOMBINATION IN MAMMALIAN CELLS

Robert M. Kay, San Francisco, Calif.; Anton Berns, Spaarndam, Netherlands; Paul Krimpenfort, Heemstede, Netherlands; Frank Pieper, Utrecht, Netherlands, and Rein Strijker, Oegstgeest, Netherlands, assignors to GenPharm International, Incorporated, Mountain View, Calif.

PCT No. PCT/US91/05917, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/03917, PCT Pub. Date Mar. 19, 1992

Continuation-in-part of Ser. No. 574,747, Aug. 29, 1990, abandoned. This PCT application Aug. 28, 1991, Ser. No. 989,002

Int. Cl.[6] C12N *15/00*

U.S. Cl. 435—172.3 15 Claims

1. A method for generating a DNA segment inside a cell comprising the step of introducing at least a first and a second DNA fragment different from the first DNA fragment into a recombination competent mammalian cell, said first DNA fragment having a sequence portion having at least 80% sequence identity to a sequence portion of said second DNA fragment, wherein said first and second DNA fragments homologously recombine in said cell to form a recombined DNA segment greater than 50 kb in length, said recombined DNA segment being integrated into the genome of said cell, wherein said cell is selected from the group consisting of endothelial cells, epithelial cells, myoblasts, hepatocytes, leukocytes, fibroblasts, mouse ES cells, and non-human zygotes.

5,612,206

RETROVIRUS INFECTING PRIMATE BONE MARROW CELLS AND HARVESTING BOTH NON-ADHERENT AND ADHERENT CELLS

Domenico Valerio, Leiden, and Victor W. van Beusechem, Amsterdam, both of Netherlands, assignors to Introgene B.V., Netherlands

PCT No. PCT/NL92/00177, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/07281, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 5, 1992, Ser. No. 211,342

Claims priority, application Netherlands, Oct. 4, 1991, 9101680

Int. Cl.[6] C12N *15/00;5/00*

U.S. Cl. 435—172.3 13 Claims

1. A method for preparing primate bone marrow cells containing a DNA sequence of interest, the method comprising,

a) isolating bone marrow cells from a primate,

b) co-culturing the bone marrow cells with retrovirus producer cells which produce an amphotropic retroviral vector, wherein the retroviral vector contains the DNA sequence of interest, and

c) harvesting from the co-culture both non-adherent and adherent cells which contain the DNA sequence of interest.

5,612,207

METHOD AND APPARATUS FOR ENCAPSULATION OF BIOLOGICALLY-ACTIVE SUBSTANCES IN CELLS

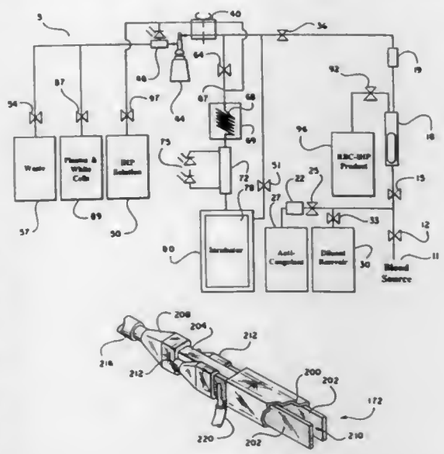
Yves C. Nicolau, Chestnut Hill; Ulrich Brüggemann, Cambridge, both of Mass.; Youssef Mouneimne, College Station, Tex., and Eric C. Roux, Framingham, Mass., assignors to CBR Laboratories, Inc., Boston, Mass.

PCT No. PCT/US94/03189, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO94/21117, PCT Pub. Date Sep. 29, 1994

Continuation-in-part of Ser. No. 35,467, Mar. 23, 1993, abandoned. This PCT application Mar. 23, 1994, Ser. No. 525,719

Int. Cl.[6] C12M *1/42;* C12N *13/00*

U.S. Cl. 435—173.6 32 Claims



7. A method of incorporating a biologically-active substance into red blood cells in a continuous flow system comprising the steps of:

a. introducing blood into the continuous flow system;

b. separating red blood cells from at least some plasma and leukocytes in the blood to provide a plasma and leukocyte fraction;

c. mixing the red blood cells with a biologically-active substance to provide a red blood cell suspension;

d. electroporating the red blood cell suspension, thereby causing the biologically-active substance to be encapsulated in the red blood cells;

e. incubating the red blood cells to allow the red blood cells to reseal to provide modified red blood cells; and

f. washing the modified red blood cells to remove unencapsulated biologically-active substance therefrom.

5,612,208

ASCORBATE OXIDASE, GENE ENCODING THE SAME, PROCESS FOR PRODUCING THE SAME, AND REAGENT COMPOSITION USING THE SAME

Yuji Nakanishi, Aichi; Hitoshi Amano, and Shotaro Yamaguchi, both of Ibaraki, all of Japan, assignors to Amano Pharmaceutical Co., Ltd., Aichi, Japan

Filed May 11, 1995, Ser. No. 439,114

Claims priority, application Japan, May 11, 1994, 6-123113

Int. Cl.[6] C12N *9/02;15/53;* C12Q *1/26;* A23J *1/00*

U.S. Cl. 435—189 11 Claims

1. An isolated ascorbate oxidase obtained from a strain belonging to the genus Eupenicillium which has a residual activity of at least 50% when stored at 37° C. for one month in a buffer comprising 50 piperazine-N,N'-bis (2-ethanesulfonic acid (PIPES) (pH 6.5), 0.02M dehydroacetic acid and 1 mM ethylenediaminetetraacetic acid (EDTA) and catalyzes reaction of one molecule of L-ascorbic acid and one molecule of molecular oxygen to form one molecule of L-dehydroascorbic acid and one molecule of hydrogen peroxide.

5,612,209

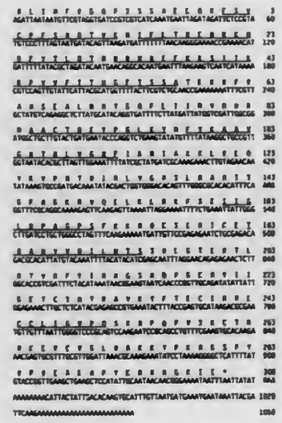
CLONING AND RECOMBINANT PRODUCTION OF VESPID VENOM PHOSPHOLIPASES, AND IMMUNOLOGICAL THERAPIES BASED THEREON

Te P. King, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 31,400, Mar. 11, 1993, abandoned. This application Feb. 8, 1995, Ser. No. 385,745

Int. Cl.[6] C12N *9/20;15/00;* A61K *38/00;* C07H *21/04*

U.S. Cl. 435—198 22 Claims



1. An isolated nucleic acid encoding a vespid venom phospholipase.

5,612,210

PROCESS FOR PRODUCING 7β-(4-CARBOXYBUTANAMIDO)-CEPHALOSPORANIC ACID ACYLASE ("GA") ENZYME

Wilhelmus Van der Goes, Turin; Antonella Bernardi, Novara; Aldo Bosetti, Vercelli; Pietro Cesti, Novara, and Giuliana Franzosi, Milan, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Filed Dec. 30, 1994, Ser. No. 366,457

Claims priority, application Italy, Jan. 14, 1994, MI94A0031

Int. Cl.[6] C12N *1/21;15/55;9/80;15/72*

U.S. Cl. 435—228 10 Claims

1. A process for producing 7-(4-carboxybutanamido)-cephalosporanic acid acylase (GA) enzyme, comprising the steps of:

culturing an *Escherichia coli* strain selected from the group consisting of NCIMB40560, NCIMB40559, NCIMB40592 and NCIMB40593 in medium comprising Corn Steep Liquor, and

extracting GA enzyme from said culture medium.

5,612,211

STIMULATION, PRODUCTION AND CULTURING OF HEMATOPOIETIC PROGENITOR CELLS BY FIBROBLAST GROWTH FACTORS

Elaine L. Wilson, and Janice Gabrilove, both of New York, N.Y., assignors to New York University, and Sloan-Kettering Institute For Cancer Research, both of New York, N.Y.

Continuation-in-part of Ser. No. 950,549, Sep. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 536,108, Jun. 8, 1990, abandoned. This application Jun. 15, 1993, Ser. No. 76,875

Int. Cl.[6] A61K *38/18*

U.S. Cl. 435—378 6 Claims

1. A method for in vitro proliferation of hematopoietic progenitor cells that are progenitors of mature blood or lymph cells comprising culturing the hematopoietic progenitor cells in a culture medium containing a hematopoietic progenitor cell proliferating effective amount of a fibroblast growth factor for a time sufficient to permit proliferation of the hematopoietic progenitor cells.

5,612,212

SELECTIVE INHIBITION OF CELL PROLIFERATION BY VAV ANTISENSE OLIGONUCLEOTIDES

Alan M. Gewirtz, Philadelphia, Pa., assignor to The University of Pennsylvania, Philadelphia, Pa.

Filed Nov. 12, 1993, Ser. No. 152,634

Int. Cl.[6] C12N *5/10;15/85;* C07H *21/00;* C12Q *1/68*

U.S. Cl. 435—172.3 18 Claims

1. An oligonucleotide consisting of the nucleotide sequence shown as SEQ ID NO:2.

5,612,213

METHOD OF SELECTING MAMMALIAN CELL LINES HAVING IMPROVED PRODUCTIVITY

Sham Y. Chan, El Sobrante, Calif., assignor to Bayer Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 75,209, Jun. 10, 1993, abandoned. This application Nov. 3, 1994, Ser. No. 333,706

Int. Cl.[6] C12N *5/06;15/63;* C12P *21/06;* C12Q *1/68*

U.S. Cl. 435—6 16 Claims

1. A process of selecting a cell line having high heterologous protein productivity from a population of cells at least some of which may include an endogenous sequence for an amplifiable marker and some of which do not include the endogenous sequence for the same marker, comprising:

A. co-transfecting the population of mammalian cells with DNA sequences coding for the heterologous protein and an amplifiable marker, and a DNA sequence encoding a selectable marker;

B. further cloning the transfected cells into subpopulations in a medium containing a selective agent and selecting for such selectable marker resistant cells;

C. assaying the selectable marker resistant cells for heterologous protein productivity;

D. culturing said selectable marker resistant cells in media containing an amplifying agent, wherein the host cell includes the sequence for the amplifiable marker;

E. establishing the amplifiability index AE for each cell population, said index being defined by the equation

$$\Delta E = Y/X$$

wherein X is the productivity of cells before a first amplification, and Y is the productivity of cells after said first amplification;

F. selecting and further amplifying cells with a ΔE index value of greater than 3, said amplifying step being performed in increasing amounts of amplifying agent; and

G. selecting at least one cell line having high productivity from the cells of step F.

5,612,214

Patent Not Issued For This Number

5,612,215

STROMELYSIN TARGETED RIBOZYMES

Kenneth G. Draper, Boulder; Pamela Payco, Layfayette; James McSwiggen, Boulder; John Gustofson, Boulder, and Dan T. Stinchcomb, Boulder, all of Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 354,920, Dec. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 152,487, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 989,848, Dec. 7, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,850

Int. Cl.[6] C12N *15/85;* **C12Q** *1/68;* **A61K** *48/00*

U.S. Cl. 435—366 **166 Claims**

1. An enzymatic RNA molecule which specifically cleaves stromelysin RNA.

5,612,216

NUCLEOTIDE SEQUENCE ENCODING INTERCELLULAR ADHESION MOLECULE-1 AND FRAGMENTS THEREOF

Timothy A. Springer, Newton, Mass.; Robert Rothlein; Steven D. Marlin, both of Danbury, Conn., and Michael L. Dustin, University City, Mo., assignors to Dana Farber Cancer Institute, Boston, Mass.

Division of Ser. No. 515,478, Apr. 27, 1990, Pat. No. 5,284,931, and a continuation-in-part of Ser. No. 45,963, May 4, 1987, abandoned, Ser. No. 115,798, Nov. 2, 1987, abandoned, Ser. No. 155,943, Feb. 16, 1988, abandoned, Ser. No. 189,815, May 3, 1988, abandoned, Ser. No. 250,446, Sep. 28, 1988, abandoned, Ser. No. 324,481, Mar. 16, 1989, abandoned, Ser. No. 373,882, Jun. 30, 1989, abandoned, and Ser. No. 456,647, Dec. 22, 1989, abandoned. This application Jan. 25, 1994, Ser. No. 186,456

Int. Cl.[6] C12N *1/21;5/10;15/12;* **C07K** *14/705*

U.S. Cl. 435—252.3 **10 Claims**

1. An isolated nucleic acid molecule encoding human ICAM-1, wherein said human ICAM-1 consists of the amino acid sequence depicted in FIG. 8.

5,612,217

STREPTOMYCES SP. MA 7074 (ATCC 55605) USED FOR MICROBIAL SYNTHESIS OF HIV PROTEASE INHIBITORS

Ali Shafiee, Westfield; Shieh-Shung T. Chen, Morganville; Byron H. Arison, Watchung; Randall R. Miller, Somerset; George M. Garrity, Westfield, and Brian Heimbuch, North Brunswick, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 25, 1994, Ser. No. 328,221

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—253.5 **1 Claim**

1. A pure culture of *Streptomyces sp.* MA 7074 having ATCC number 55605.

5,612,218

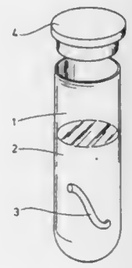
METHOD OF HANDLING BIOLOGIC MATTER AND MEANS FOR CARRYING OUT THE METHOD

Christer Busch, Nya Valsatravagen 17, S-756 46 Uppsala, and Ingrid Backlund, Norrtaljegatan 9B, 8-753 27 Uppsala, both of Sweden

Continuation-in-part of Ser. No. 801,880, Dec. 3, 1991, abandoned. This application Apr. 19, 1994, Ser. No. 229,719

Int. Cl.[6] C12M *1/24;* **C12N** *5/06;* **C12Q** *1/24*

U.S. Cl. 435—288.1 **9 Claims**



1. In a device for handling a tissue sample which has been taken for analysis with the aid of a biopsy needle, comprising a container and a liquid in the container, wherein the improvement comprises said liquid consisting essentially of an aqueous viscoelastic solution of cellulose ether, and optionally containing at least one of a buffer, sodium chloride, potassium chloride, a fixative and a dye, isosmotic with said tissue sample, atoxic, mixable with one of water and alcohol-based solvents, pyrogen free, sterile and freezable without the formation of crystals, the density and the pH of said liquid being about equal to the density and pH, respectively, of said tissue sample.

5,612,219

ANTI-FOAM DEVICE FOR A BIOREACTOR

Ignacio Rodicio, Pully, and Gerard Mignot, Lavigny, both of Switzerland, assignors to Applied Research Systems Ars Holding N.V., Netherlands

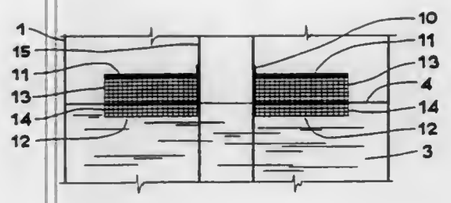
PCT No. PCT/EP93/01488, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO94/29432, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 11, 1993, Ser. No. 557,134

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—301.1 **28 Claims**

1. An anti-foam device for a bioreactor containing a liquid culture medium and equipped with an impeller for stirring and with sparging gas means, comprising:



a perforated plate constructed of a hydrophobic material for reducing foam on the surface of the culture medium, said plate being fixed to a shaft of said impeller with an inclination from 45 to 90 degrees in respect of the culture medium surface and being partially immersed into said liquid culture medium.

5,612,220

ISOLATED DNA MOLECULE ENCODING SPRM-1 PROTEIN

Bogi Andersen, La Jolla; Richard V. Pearse, San Diego, both of Calif.; Peter N. Schlegel, New York, N.Y.; Michael G. Rosenfeld, San Diego, Calif., and C. Wayne Bardin, New York, N.Y., assignors to The Population Council, Center for Biomedical Research, New York, N.Y.

Filed Dec. 1, 1994, Ser. No. 347,826

Int. Cl.[6] C12N *1/00;5/10;15/11;15/63*

U.S. Cl. 435—320.1 **10 Claims**

1. An isolated and purified DNA molecule encoding a mammalian Sprm-1 protein or an analog of said mammalian Sprm-1 protein that exhibits Sprm-1 DNA binding activity.

5,612,221

AVIDIN-BINDING FLUORESCING AND QUENCHING REAGENT FOR USE IN HOMOGENEOUS ASSAYS

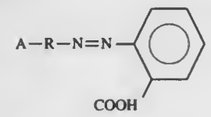
Donald M. Simons, Wilmington; Susan Y. Tseng, Hockessin, both of Del., and Patricia C. Weber, Kennett Square, Pa., assignors to Dade Chemistry Systems Inc., Deerfield, Ill.

Division of Ser. No. 264,590, Jun. 23, 1994, Pat. No. 5,536,820, which is a continuation of Ser. No. 23,282, Feb. 26, 1993, abandoned. This application May 30, 1995, Ser. No. 453,617

Int. Cl.[6] G01N *33/536;33/531;* **C07C** *245/10*

U.S. Cl. 435—7.1 **2 Claims**

1. A composition useful in detecting the presence or absence of an analyte in a homogeneous assay, said composition comprising a conjugate of a fluorescence quenching azo compound and analyte, said conjugate binds to the biotin-binding site of avidin with a binding constant less than $10^{15}M^{-1}$ through the azo compound to form an avidin-azo compound-analyte complex, said conjugate having the structure:



wherein A is an analyte;

R is a substituted or unsubstituted naphthalenyl moiety or a substituted or unsubstituted bicyclic heteroaryl moiety selected from the group consisting of quinolinlyl and isoquinolinyl and wherein said quenching is used to quantitate at least one spectrophotometric change selected from the group consisting of a change in the fluorescence spectrum of avidin and a change in the polarization of fluorescence of avidin.

5,612,222

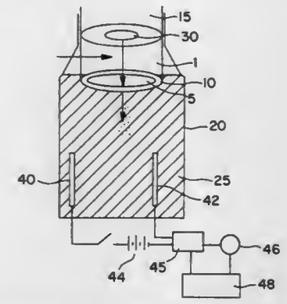
IN VITRO TEST FOR DERMAL CORROSIVE PROPERTIES

Virginia C. Gordon, Huntington Beach; Soheila Mirhashemi, Laguna Niguel, and Rosalind W. Wei, Costa Mesa, all of Calif., assignors to In Vitro International, Irvine, Calif.

Division of Ser. No. 98,735, Jul. 27, 1993, Pat. No. 5,411,888, which is a continuation-in-part of Ser. No. 921,023, Jul. 27, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,276

Int. Cl.[6] G01N *13/00;21/29*

U.S. Cl. 436—5 **33 Claims**



1. A method for determining the degree of corrosive toxicity of a test substance to human skin or membrane which method comprises:

(a) providing a biobarrier having a first face and a second face, which biobarrier mimics human skin or membrane, the test substance being applied to said first face, and

which biobarrier is in contact at its second face with a detection system for said substance, wherein contact of said test substance with said detection system produces a detectable signal; or

which biobarrier comprises at least one component which is broken down by a skin or membrane corrosive substance to form a breakdown product, said biobarrier being in contact at its second face with a breakdown product detection system wherein contact of said breakdown product with said detection system produces a detectable signal;

(b) applying the test substance at a time T1 to said first face;

(c) allowing the test substance to transit the biobarrier to the second face to contact the detection system and to produce said detectable signal; or

allowing the test substance to react in transit with the biobarrier component to produce said breakdown product and allowing the breakdown product to transit to the second face of the biobarrier and to contact the breakdown product detection system and to produce a detectable signal;

(d) detecting said signal at a subsequent time T2, said time T2 being that time at which said signal is first detectable at a predetermined level;

(e) obtaining the time difference between said times T1 and T2; and

(f) correlating said time difference with corrosive toxicity by comparing said time difference with time differences obtained using substances of known toxicity.

5,612,223

CYANIDE-FREE REAGENT AND METHOD FOR THE DETERMINATION OF HEMOGLOBIN

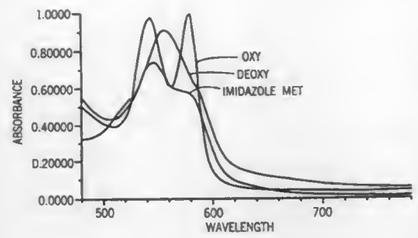
Young R. Kim, Sunnyvale, Calif., and Stephen D. Stroupe, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 212,626, Mar. 11, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 524,128

Int. Cl.[6] G01N *33/52*

U.S. Cl. 436—17 **7 Claims**

1. A cyanide-free reagent for use in total hemoglobin measurement comprising an aqueous solution of:



(a) a cyanide-free ligand selected from the group consisting of imidazole, imidazole derivatives, N-hydroxyacetamide, N-hydroxyl amine, pyridine, oxazole, thiazole, pyrazole, pyrimidine, purine, quinoline, and isoquinoline and the ligand is present at a concentration of 0.1 to 2.0 Molar; and

(b) a surfactant selected from the group consisting of lauryl dimethylamine oxide and octylphenoxy polyethoxy ethanol present at a concentration from about 0.1% to about 1.0% (w/v),

wherein the pH of the reagent is adjusted to between 11 and 14, and wherein the ligand substantially completely ligates heme molecules of a blood sample to which the reagent has been added.

5,612,224

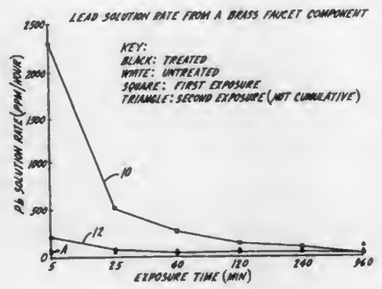
METHOD FOR MEASURING THE QUANTITY OF LEAD ON THE SURFACE OF A BRASS COMPONENT

Timothy J. O'Brien, Bay Village, Ohio, assignor to 21st Century Companies, Inc., Tyler, Tex.

Continuation-in-part of Ser. No. 391,447, Feb. 21, 1995, abandoned. This application Dec. 5, 1995, Ser. No. 567,752

Int. Cl.[6] C12P *19/64*

U.S. Cl. 436—73 **13 Claims**



1. A process for measuring the quantity of lead on the waterway surface of a brass component including the steps of:

filling the brass component waterway with an aqueous solution of an acid which removes lead from the surface of the brass component, removing the acid solution from brass component waterway after a time period which is sufficient to remove substantially all surface lead from the brass component, which time period is insufficient for the acid to remove significant surface zinc and copper from the brass component to expose subsurface lead,

measuring the concentration of lead in the acid solution, and

determining the quantity of lead removed from the brass component by means of the volume of acid solution and the concentration of lead in the acid solution after removal from the brass component.

5,612,225

PROCESS AND APPARATUS FOR DETERMINING TOTAL NITROGEN CONTENT BY ELEMENTAL ANALYSIS

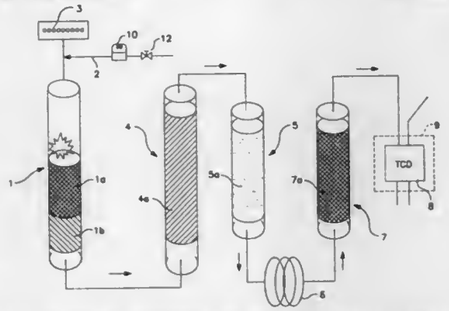
Marco Baccanti, Milan, and Paolo Magni, Besana in Brianza, both of Italy, assignors to Fisons Instruments S.p.A., Milan, Italy

Continuation of Ser. No. 113,436, Aug. 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,126

Claims priority, application Italy, Aug. 31, 1992, MI92A2034

Int. Cl.[6] G01N *31/12;33/00*

U.S. Cl. 436—114 **15 Claims**



1. A process for determining the nitrogen content of a sample, comprising the steps of:

(a) combusting said sample in a combustion reactor in the presence of oxygen, which oxygen is introduced into the combustion reactor in pulse form; using a loop, simultaneously with a sample, the volume of oxygen introduced being of from 10 to 200 ml per pulse at a pressure of from 80 to 200 KPa,

(b) reducing the resulting combustion gasses by flowing them in a flow of a noble carrier gas through a Cu-containing reduction reactor;

(c) performing the steps of (i) drying the reduced gases in a water trap, (ii) flowing the reduced gases through a gas-chromatographic column in order to carry out a gas chromatographic separation of N_2 from CH_4 possibly present within the reduced gases, which gas chromatographic column is packed with a material suitable for separating N_2 from CH_4, and (iii) removing CO_2 from the reduced gases using a CO_2 trap, with the proviso that step (i) immediately precedes step (ii); and

(d) analyzing the resulting gases using a means for detecting thermal conductivity, so as to thereby determine the nitrogen content of the sample.

5,612,226

GAS/LIQUID CONTACT APPARATUS

Michael R. Williams, Burlington, Canada, assignor to LifeTech Corporation, Canada

Continuation of Ser. No. 173,001, Dec. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,630, Jan. 7, 1993, Pat. No. 5,366,696. This application Oct. 3, 1995, Ser. No. 538,199

Int. Cl.[6] A61M *11/00*

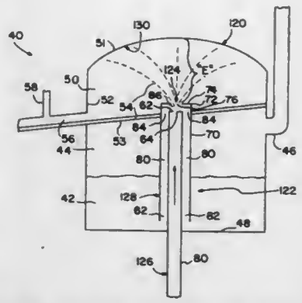
U.S. Cl. 436—167 **24 Claims**

21. A method for effectively oxygenating blood while avoiding hemolysis, comprising:

providing a chamber having a spray orifice and a gas supply conduit the discharge from which provides a gas flow through said orifice;

establishing an oxygenating gas stream flow from said conduit to said orifice;

feeding a blood supply to the gas flow between the conduit discharge and orifice, the reduced pressure created by said gas flow between said discharge and orifice causing blood to be induced into and contacted with the said oxygenating gas stream and to issue from the orifice as a dispersed low pressure spray of blood droplets; and



intercepting and collecting substantially the entirety of the droplets of oxygenated blood, by means of a spray collection surface located within the chamber in the path of said spray of blood droplets, said surface being spaced from said spray orifice a distance selected so that said droplets impinge thereon at relatively low velocity and form a film for further contact with the oxygenating gas while minimizing impact damage to the blood; said surface being shaped and positioned with respect to said orifice and chamber, and having sufficient dimensions transverse to the orifice axis, to intercept, capture and return to said chamber as oxygented blood substantially the entirety of the droplets of oxygenated blood, and said droplets thereby being precluded from exiting said chamber by axial directed movement away from said orifice.

5,612,227

LIQUID BOUNDARY DETECTING METHOD AND APPARATUS AND LIQUID REMOVING METHOD AND APPARATUS

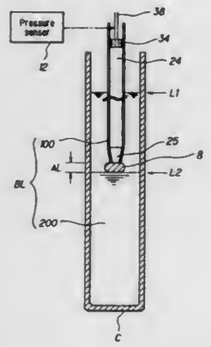
Tsuyoshi Inoue, Kanagawa; Keiichi Nakamachi, Saitama; Takeshi Nakamura, Kanagawa, and Kenji Okada, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Mar. 9, 1995, Ser. No. 401,929

Claims priority, application Japan, Mar. 17, 1994, 6-073819

Int. Cl.[6] G01N *1/10*

U.S. Cl. 436—180 **16 Claims**



5. A method for removing a first liquid layer from a second liquid layer that is different from the first liquid layer, comprising the steps of:

inserting, into the first liquid layer, means for sucking a liquid of the first liquid layer;

generating an air bubble on and in fluid communication with the sucking means located in the first liquid layer;

moving the sucking means toward the second liquid layer while the sucking means keeps retaining the air bubble;

detecting a pressure change within the sucking means;

moving the sucking means to a prescribed position; and

causing the sucking means to suck the liquid of the first liquid layer while moving the sucking means from the prescribed position approximately to a position where the pressure change was detected.

5,612,228

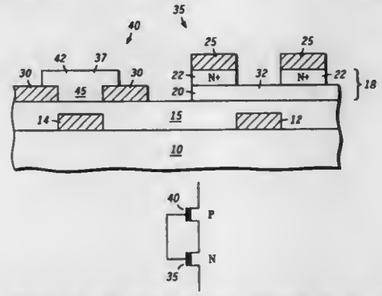
METHOD OF MAKING CMOS WITH ORGANIC AND INORGANIC SEMICONDUCTING REGION

Chan-Long Shieh, Paradise Valley, Ariz., and Donald E. Ackley, Lambertville, N.J., assignors to Motorola, Schaumburg, Ill.

Filed Apr. 24, 1996, Ser. No. 634,599

Int. Cl.[6] H01L *21/84;51/40*

U.S. Cl. 437—1 **18 Claims**



1. A method of fabricating a thin film transistor device comprising the steps of:

providing a supporting substrate; and

forming an inorganic thin film transistor and an organic thin film transistor on the substrate, the inorganic thin film transistor including a first control terminal in contact with a dielectric layer, an inorganic semiconducting region in contact with the dielectric layer and a first pair of current carrying terminals in contact with the inorganic semiconducting region and spaced on either side of the first control terminal, and the organic thin film transistor including a second control terminal in contact with the dielectric layer, an organic semiconducting region in contact with the dielectric layer and a second pair of current carrying terminals in contact with the organic semiconducting region and spaced on either side of the second control terminal.

5,612,229

METHOD OF PRODUCING PHOTOVOLTAIC DEVICE

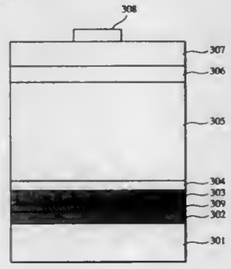
Yumi Yoshida, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1995, Ser. No. 448,760

Claims priority, application Japan, May 30, 1994, 6-116734

Int. Cl.[6] H01L *31/18;31/20*

U.S. Cl. 437—4 **48 Claims**



1. A method of producing a photovoltaic device, comprising the steps of:

forming a first metal oxide film on a metal member by non-reactive sputtering;
forming a second metal oxide film composed of the same basic material as said first metal oxide film on said first metal oxide film by reactive sputtering; and
forming a semiconductor layer on said second metal oxide film.

5,612,230

PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE BY APPLYING A NON-SINGLE-CRYSTALLINE MATERIAL ON A SIDEWALL INSIDE OF AN OPENING PORTION FOR GROWING A SINGLE-CRYSTALLINE SEMICONDUCTOR BODY

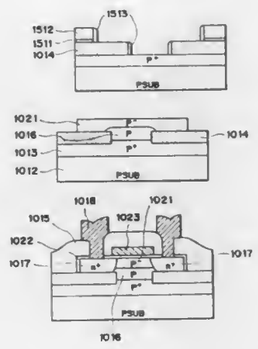
Hiroshi Yuzurihara, Isehara; Mamoru Miyawaki, Tokyo; Akira Ishizaki, Atsugi; Genzo Momma, and Tetsunobu Kochi, both of Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 158,371, Nov. 29, 1993, Pat. No. 5,428,237, which is a continuation of Ser. No. 872,294, Apr. 22, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 417,901

Claims priority, application Japan, Apr. 16, 1991, 3-97257; Apr. 26, 1991, 3-97244; May 31, 1991, 3-129506

Int. Cl.[6] H01L *21/265;21/20*

U.S. Cl. 437—21 **10 Claims**



1. A process for manufacturing a semiconductor device, comprising the steps of:
a) forming, on a single-crystalline semiconductor region of a substrate, a first insulating film having a first opening portion with a first lateral dimension for exposing the single-crystalline semiconductor region therethrough;
b) forming, on the first insulating film, a second insulating film having a second opening portion with a second lateral dimension larger than the first lateral dimension, the second opening portion overlying the first opening portion for exposing the single-crystalline semiconductor region therethrough;
c) applying a non-single-crystalline material on a sidewall inside of the second opening portion;
d) growing a single-crystalline semiconductor body in the first and the second opening portions to have a portion on the first insulating film;
e) introducing a dopant into the portion of the single-crystalline semiconductor body which is on the first insulating film to form spaced source and drain regions having a conductivity type opposite to a conductivity type of the single-crystalline semiconductor body; and
f) forming a gate insulating film and a gate electrode on the single-crystalline semiconductor body between the source and drain regions.

5,612,231

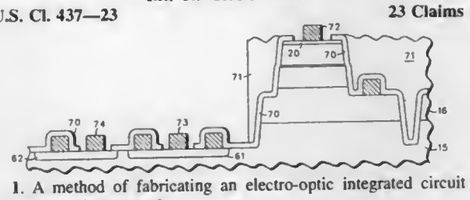
METHOD OF FABRICATING AN ELECTRO-OPTIC INTEGRATED CIRCUIT HAVING LIGHT EMITTING DIODES

Paige M. Holm, Phoenix; George W. Rhyne, Scottsdale, both of Ariz., and Thomas J. Walczak, Woodstock, Ill., assignors to Motorola, Schaumburg, Ill.

Division of Ser. No. 239,626, May 9, 1994, Pat. No. 5,483,085. This application Aug. 10, 1995, Ser. No. 513,655

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—23 **23 Claims**



1. A method of fabricating an electro-optic integrated circuit comprising the steps of:
providing a substrate with a major surface and a plurality of layers of material on the major surface of the substrate, the plurality of layers of material cooperating to form light emitting devices;
separating portions of the plurality of layers of material into a plurality of light emitting devices positioned in rows and columns;
providing an electronics area of the substrate adjacent the plurality of light emitting devices; and
forming a plurality of switching transistors and switching diodes in the electronics area and address lines between the electronics area and the columns of light emitting devices, including depositing first and second metallization layers electrically connecting the plurality of light emitting devices in rows and columns and connecting the switching transistors, switching diodes and address lines to the columns of light emitting devices to form a column decoder having fewer address lines than columns of light emitting devices.

5,612,232

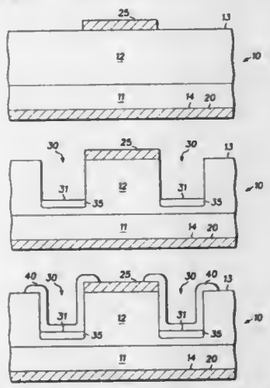
METHOD OF FABRICATING SEMICONDUCTOR DEVICES AND THE DEVICES

Christine Thero, Scottsdale; Mohit Bhatnagar, and Charles E. Weitzel, both of Mesa, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Mar. 29, 1996, Ser. No. 625,605

Int. Cl.[6] H01L *21/265;21/20;21/44*

U.S. Cl. 437—39 **19 Claims**



1. A method of fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate structure having first and second surfaces;

forming a Schottky contact on the first surface of the substrate structure;
etching a trench in the semiconductor structure around the Schottky contact utilizing the Schottky contact as an etch mask; and
implanting material to form a damage region in the trench.

5,612,233

METHOD FOR MANUFACTURING A SINGLE ELECTRON COMPONENT

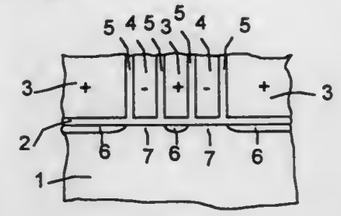
Wolfgang Roesner, Munich, Germany, and Thomas Vogelsang, Essex Junction, Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 13, 1995, Ser. No. 403,194

Claims priority, application Germany, Mar. 22, 1994, 44 09 863.4

Int. Cl.[6] H01L *21/335*

U.S. Cl. 437—40 **11 Claims**



1. A method for manufacturing a single electron component, comprising the steps of:
providing a silicon substrate;
defining an active zone in said silicon substrate by applying an insulating layer onto the substrate and structuring the insulating layer with assistance of a fine-structuring method such that a surface of the silicon substrate is uncovered in a region of the active zone, and the active zone is defined such that it at least partially comprises a strip-shaped cross-section having a width of <100 nm in one dimension;
providing a surface of the active zone with a gate dielectric;
producing a first gate level such that it comprises strip-shaped structures that proceed transversely relative to the strip-shaped cross-section of the active zone and wherein at least one of the strip-shaped structures of the first gate level has a width of <100 nm;
providing an insulating layer on a surface and side walls of the first gate level;
generating a second gate level on said insulating layer and over said surface and said side walls of the first gate level at least in a region of said active zone; and
the first gate level providing a center gate electrode and outer gate electrodes, the second gate level providing respective gate electrodes between the central and outer gate electrodes of the first gate level, applying a positive voltage to the first gate level and applying a negative voltage to the second gate level so that inversion layers are created only under the gate electrodes of the first gate level.

5,612,234

METHOD FOR MANUFACTURING A THIN FILM TRANSISTOR

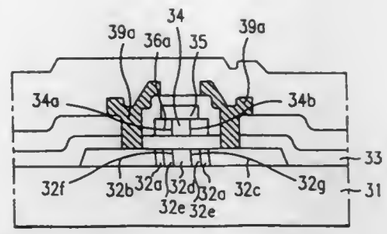
Yong M. Ha, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 4, 1995, Ser. No. 539,156

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 **21 Claims**

1. A method of fabricating a semiconductor device comprising the steps of:
forming a semiconductor layer;
forming an insulative layer on said semiconductor layer;



forming a first gate layer on said insulative layer;
forming a second gate layer on said first gate layer;
patterning said first and second gate layers so that said first gate layer has a width substantially the same as a width of said second gate layer;
introducing a first amount of first impurities into said semiconductor layer using said first and second gate layers as a mask, thereby forming a doped region in said semiconductor layer;
oxidizing an edge of said first gate layer to the exclusion of said second gate layer, thereby reducing a width of said first gate layer; and
introducing a second amount of second impurities into said semiconductor layer using said oxidized edge of said first gate layer as a mask, said second amount is greater than said first amount,
wherein said reduced width of said first gate layer defines a gate underlying region in said semiconductor layer, and said doped region is spaced from said gate underlying region in said semiconductor layer.

5,612,235

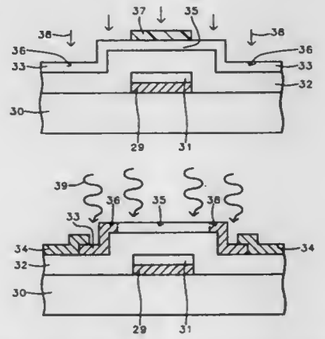
METHOD OF MAKING THIN FILM TRANSISTOR WITH LIGHT-ABSORBING LAYER

Meng-Yueh Wu, and Tzung-Szu Weng, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsin-chu, Taiwan

Filed Nov. 1, 1995, Ser. No. 551,727

Int. Cl.[6] H01L *21/84*

U.S. Cl. 437—41 **13 Claims**



1. A method of manufacturing a self-aligned polysilicon thin film transistor, comprising the steps of:
providing an insulating substrate;
forming a gate electrode on said insulating substrate;
forming a protective light-absorbing layer over said gate electrode and over said insulating substrate;
patterning said protective light-absorbing layer;
forming a gate dielectric layer over said protective light-absorbing layer and over said insulating substrate;
forming a layer of amorphous silicon over said gate dielectric layer;
forming a photoresist mask over said layer of amorphous silicon, aligned with said protective light-absorbing layer;

implanting said amorphous silicon layer with a conductivity-imparting dopant in source/drain regions not protected by said photoresist mask;

removing said photoresist mask;

laser-annealing said amorphous silicon layer, whereby doped polysilicon is formed in said source/drain regions, and undoped polysilicon is formed in areas between said source/drain regions; and

forming source and drain electrodes of electrically conductive material in contact with said source/drain regions.

5,612,236

METHOD OF FORMING A SILICON SEMICONDUCTOR DEVICE USING DOPING DURING DEPOSITION OF POLYSILICON

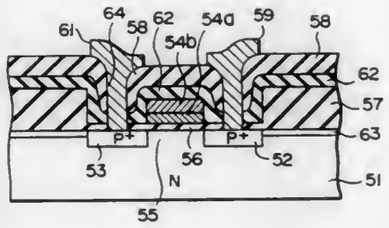
Yuuichi Mikata, Kawasaki; Toshiro Usami, and Katsunori Ishihara, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 231,973, Apr. 22, 1994, abandoned, which is a continuation of Ser. No. 161,080, Dec. 3, 1993, abandoned, which is a continuation of Ser. No. 789,442, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 472,404, Feb. 1, 1990, abandoned, which is a continuation of Ser. No. 180,842, Apr. 12, 1988, abandoned. This application Feb. 6, 1995, Ser. No. 383,946

Claims priority, application Japan, Apr. 14, 1987, 62-89772

Int. Cl.[6] H01L *21/265;21/44;21/48*

U.S. Cl. 437—41 **11 Claims**



1. A method of forming a silicon semiconductor device comprising the steps of:

(a) preparing a silicon substrate having a crystal plane with a Miller index of "100";

(b) forming a gate oxide film on the silicon substrate at an island region, said gate oxide film having a thickness of less than 50 nm;

(c) forming a polysilicon layer having a thickness greater than the thickness of the gate oxide film by depositing a silicon material on the substrate;

(d) doping a first impurity of a first conductivity type into the polysilicon layer during the depositing of the polysilicon layer in step (c), so that the polysilicon layer has a resistance of less than 1×10^{-3} ohm-cm;

(e) forming, by depositing silicon and metal materials on the polysilicon layer, a laminated structure of the polysilicon layer and a metal silicide layer, wherein the laminated structure constitutes a gate electrode;

(f) forming drain and source regions by doping the silicon substrate with a second impurity of a second conductivity type while employing said gate electrode as a mask; and

(g) steps (c) and (e) together providing, at the conclusion of step (e), the polysilicon layer with a grain size of approximately ten (10) nanometers.

5,612,237

METHOD OF MAKING FLASH EEPROM CELL

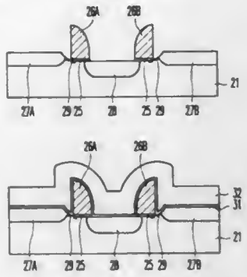
Byung J. Ahn, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 20, 1995, Ser. No. 575,510

Claims priority, application Rep. of Korea, Dec. 23, 1994, 94-36290

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **5 Claims**



1. A method of making a flash EEPROM cell, comprising the steps of:

sequentially forming a pad oxide film and a nitride film on a silicon substrate;

patterning said nitride film and said pad oxide film to open a portion of said silicon substrate and form an etched surface of said nitride film;

forming an oxide film with an exposed portion in a portion of said silicon substrate by means of an oxidation process using said patterned nitride film as an oxidation preventing layer;

etching the exposed portion of said oxide film by means of an etching process using said patterned nitride film as an etching mask to expose a portion of said silicon substrate, thereby forming a first and second residual oxide film, both with an etched surface, below said patterned nitride film;

forming a tunnel oxide film on said exposed silicon substrate;

forming a first floating gate at the etched surface of said patterned nitride film and said first residual oxide film, and then forming a second floating gate at the etched surface of said patterned nitride film and said second residual oxide film;

removing said patterned nitride film, and then forming source and drain regions by means of a self-aligned ion implantation method using said first and second floating gates and said first and second residual oxide films as masks, thereby leaving the tunnel oxide and pad oxide partially exposed;

removing said first and second residual oxide films and removing said exposed pad oxide film and said exposed tunnel oxide film;

forming a select channel region in said silicon substrate by an ion implantation process for controlling a threshold voltage; and

sequentially forming an interpoly oxide film and a control gate on the resulting structure after forming said select channel region.

5,612,238

METHOD OF MANUFACTURING FIRST AND SECOND MEMORY CELL ARRAYS WITH A CAPACITOR AND A NONVOLATILE MEMORY CELL

Yasuo Sato, and Shigeki Amano, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

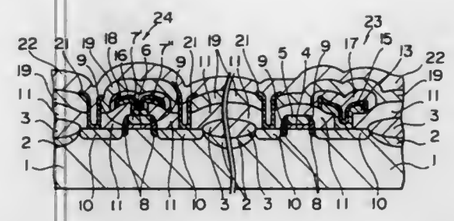
Division of Ser. No. 362,860, Dec. 23, 1994, abandoned. This application May 1, 1996, Ser. No. 640,684

Claims priority, application Japan, Dec. 28, 1993, 5-351866

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **34 Claims**

1. A method of manufacturing a semiconductor memory comprising a main section including a first memory cell array including a plurality of first memory cells, each of the first memory cells including one metal-oxide-semiconductor transistor and one capacitor, a spare section including a second memory cell array



including a plurality of first memory cells, the spare section including a redundant circuit, an address decoder for specifying addresses respectively of the first and second memory cell arrays, and a defective bit replacement control circuit connected to the address decoder, the control circuit including a plurality of second memory cells, each of the second memory cells being an electrically rewritable and nonvolatile memory cell and of a floating-gate type including a floating gate and a control gate, the address decoder conducting a change-over operation for specification of an address of the first or second memory cell array according to a storage state of the second memory cells, the method comprising:

a first step of forming first insulation layers, respectively, on a semiconductor substrate in a first element forming region in which the first memory cell is formed and in a second element forming region in which the second memory cell is formed;

a second step of forming first conductive layers in predetermined patterns, respectively, on the first insulation layer in the first element forming region and on the first insulation layer in the second element forming region;

a third step of conducting ion implantation on the semiconductor substrate with the first conductive layers as a mask and thereby forming a pair of impurity diffusion layers, respectively, in the first and second element forming regions;

a fourth step of forming a second insulation layer on the overall surface of the semiconductor substrate;

a fifth step of producing a first hole in the second insulation layer, the first hole extending to one of the paired impurity diffusion layers in the first element forming region and a second hole in the second insulation layer, the second hole extending to the first conductive layer in the second element forming region;

a sixth step of forming second conductive layers which fill the first and second holes, respectively;

a seventh step of forming dielectric layers, respectively, on at least a surface of the second conductive layer in the first element forming region and on at least a surface of the second conductive layer in the second element forming region; and

an eighth step of forming third conductive layers, respectively, on at least a surface of the dielectric layer in the first element forming region and on at least a surface of the dielectric layer in the second element forming region.

5,612,239

USE OF OXIDE SPACERS FORMED BY LIQUID PHASE DEPOSITION

Jengping Lin, Tayuan Village, and Sun-Chieh Chien, Hsin-chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-chu, Taiwan

Filed Aug. 24, 1995, Ser. No. 519,069

Int. Cl.[6] H01L *21/336*

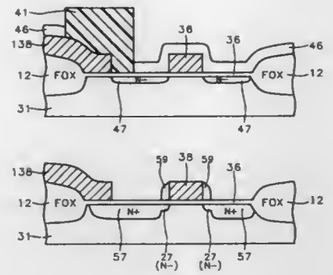
U.S. Cl. 437—44 **17 Claims**

1. A process for manufacturing a field effect transistor and connections thereto, comprising:

(a) providing a structure that comprises a body of P type silicon, including field isolating regions comprised of thick layers of silicon oxide, the surface of said silicon body being covered by a thin layer of silicon oxide in the regions between said field isolating regions;

(b) depositing a layer of polycrystalline silicon over said structure;

(c) patterning and then etching said layer of polycrystalline silicon, down to the level of said thin layer of silicon oxide, so as to leave a gate pedestal in the region between said field isolation regions and a drain connector over a field isolation region on one side of said gate pedestal;



(d) then subjecting the structure to ion implantation of N type dopant material with energies low enough for penetration to be slight, to a dosage level such that the implanted silicon becomes lightly N type;

(e) protecting said drain connector with a layer of photoresist that extends into the region between said drain connector and said gate pedestal;

(f) forming, through liquid phase deposition, a layer of silicon oxide that covers all areas not protected by said layer of photoresist and then removing said layer of photoresist;

(g) anisotropically reactive ion etching said layer of silicon oxide, thereby forming spacers on the vertical side walls of said gate pedestal;

(h) subjecting the structure to ion implantation of N type dopant material to a dosage level such that the implanted silicon becomes strongly N type;

(i) removing said layer of thin oxide wherever it is uncovered;

(j) coating the structure with a layer of a refractory metal;

(k) heating the structure until said refractory metal has been converted to its silicide wherever it is in contact with silicon; and

(l) etching the structure with an etchant that removes said refractory metal and does not remove said refractory metal silicide.

5,612,240

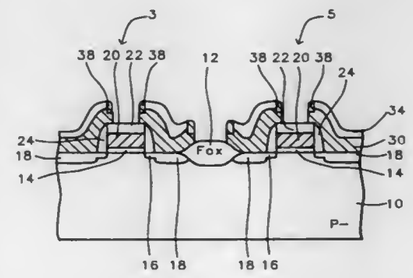
METHOD FOR MAKING ELECTRICAL CONNECTIONS TO SELF-ALIGNED CONTACTS THAT EXTENDS BEYOND THE PHOTO-LITHOGRAPHIC RESOLUTION LIMIT

Ming-Bing Chang, Santa Clara, Calif., assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed Jun. 13, 1996, Ser. No. 663,439

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 437—44 **12 Claims**



1. A method for fabricating electrical connections to self-aligned

source/drain contact areas for field effect transistors comprising the steps of:

forming on a semiconductor substrate field oxide regions surrounding and electrically isolating device areas;

forming a gate oxide on said device areas;

depositing a first polysilicon layer on said device areas and elsewhere on said substrate, said first polysilicon layer being conductively doped;

depositing a first insulating layer on said first polysilicon layer;

patterning by using a photoresist mask and anisotropic plasma etching said first insulating layer and said first polysilicon layer, thereby forming gate electrodes over said device areas and electrical interconnecting lines over said field oxide regions;

forming lightly doped source/drain areas in said device areas adjacent to said gate electrodes by ion implantation;

depositing a first sidewall insulating layer; and

anisotropically plasma etching said first sidewall insulating layer thereby forming insulating sidewall spacers on sidewalls of said gate electrodes;

depositing a conformal second polysilicon layer on said substrate and contacting said device areas;

forming self-aligned source/drain contact areas in said device areas adjacent to said sidewall spacers by ion implanting into said second polysilicon layer;

forming a refractory metal silicide layer on said second polysilicon layer, thereby forming a polycide layer;

depositing a second insulating layer on said silicide layer;

coating a photoresist layer on said second insulating layer;

patterning said photoresist layer, said patterned photoresist layer having open regions over said gate electrodes and lying between said source/drain areas in each said field effect transistor, and also having open regions over said field oxide regions, said open regions having the minimum feature size achievable by said photoresist layer;

anisotropically plasma etching and removing said second insulating layer, and etching partially into said polycide layer in said open regions and thereby forming recesses having vertical sidewalls;

removing said photoresist layer;

depositing a second sidewall insulating layer and anisotropically etching back thereby forming second sidewall spacers on said sidewalls in said recesses thereby reducing said minimum feature size of said photoresist by twice the width of said second sidewall spacers;

anisotropic plasma etching and removing said remaining polycide layer in said recesses between said second sidewall spacers, and thereby completing said electrical connections to said self-aligned source/drain contact areas.

5,612,241

METHOD OF MANUFACTURING A DRAM HAVING PERIPHERAL CIRCUITRY IN WHICH SOURCE DRAIN INTERCONNECTION CONTACT OF A MOS TRANSISTOR IS MADE SMALL BY UTILIZING A PAD LAYER

Hideaki Arima, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 232,315, Apr. 25, 1991, Pat. No. 5,486,712, which is a continuation of Ser. No. 690,843, Apr. 24, 1991, abandoned. This application Oct. 31, 1995, Ser. No. 558,584

Claims priority, application Japan, May 1, 1990, 2-115642

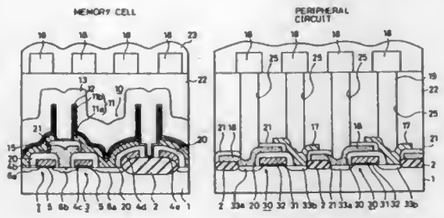
Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **1 Claim**

1. A method of manufacturing a DRAM including a memory cell having one MOS transistor and one stacked capacitor and a peripheral circuit including a MOS transistor, comprising the steps of:

forming MOS transistors in a memory cell region and in a peripheral circuit region on a main surface of a semiconductor substrate;

forming a first conductive layer on the entire surface of said semiconductor substrate and patterning the same to form an electrode layer connected to one of impurity regions of the MOS transistor in said memory cell and to form a first interconnection layer connected to one of impurity regions of



the MOS transistor in said peripheral circuit extending at least above a gate electrode;

covering surfaces of said electrode layer and said first interconnection layer with an insulating layer; and

forming a second conductive layer on the entire surface of said semiconductor substrate and patterning the same to form a lower electrode of said capacitor connected to the other one of the impurity regions of the MOS transistor in said memory cell, and to form a second interconnection layer connected to the other one of the impurity region of the MOS transistor of said peripheral circuit extending at least above said gate electrode.

5,612,242

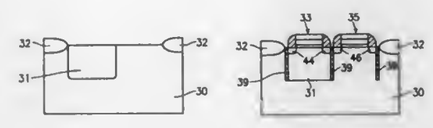
TRENCH ISOLATION METHOD FOR CMOS TRANSISTOR

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Mar. 11, 1996, Ser. No. 613,517

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—56 **18 Claims**



1. A method of producing trench isolation in a CMOS transistor, comprising the steps of:

(a) forming a field oxide layer on a first conductivity-type silicon substrate to isolate an active region;

(b) forming a second conductivity-type well at a position in the active region;

(c) depositing on the active region a gate oxide layer, a polysilicon layer and a silicide layer in sequence, and forming first and second gate electrodes by lithography and etching wherein the first gate electrode is on a surface of the well, and the second gate electrode is on a surface of the active region outside of the well;

(d) depositing an insulating layer and etching back, so as to form spacers on side walls of the first gate electrode and the second gate electrode, and so as to leave slits between the field oxide layer and the spacers, and between mutually adjacent spacers;

(e) forming a plurality of trenches by etching the substrate in the slits;

(f) forming an oxide layer to refill the trenches and then etching back so as to remove the spacers;

(g) implanting first conductivity-type impurities in the well while using the first gate electrode as a mask, so as to provide first conductivity-type source-drain regions; and

(h) implanting second conductivity-type impurities in the active region outside the well to provide second source-drain regions.

5,612,243

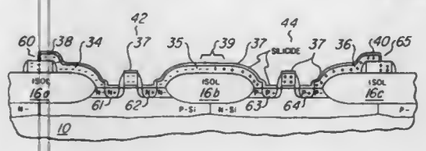
POLYCIDE LOCAL INTERCONNECT METHOD AND STRUCTURE

Douglas P. Verrett, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 557,245, Jul. 24, 1990, abandoned, which is a continuation of Ser. No. 377,696, Jul. 10, 1989, abandoned. This application Aug. 20, 1992, Ser. No. 933,595

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—57 **8 Claims**



1. In a CMOS process, a method for forming a local interconnect, comprising the steps of:

depositing a layer of non-monocrystalline silicon on a source or drain and on a gate contact on an isolation region adjoining said source or drain;

forming a silicide layer on said non-monocrystalline silicon layer; and

doping the non-monocrystalline silicon layer.

5,612,244

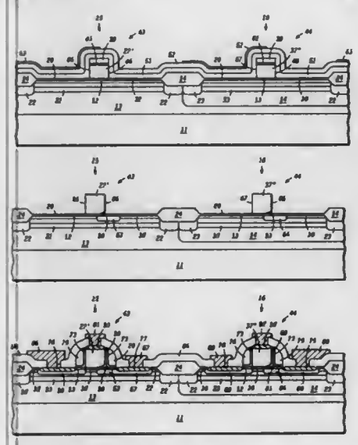
INSULATED GATE SEMICONDUCTOR DEVICE HAVING A CAVITY UNDER A PORTION OF A GATE STRUCTURE AND METHOD OF MANUFACTURE

Robert B. Davies, Tempe, and Andreas A. Wild, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 21, 1995, Ser. No. 408,657

Int. Cl.[6] H01L *21/265;21/70;27/00*

U.S. Cl. 437—57 **15 Claims**



1. A method for fabricating an insulated gate semiconductor device, comprising the steps of:

providing a semiconductor material of a first conductivity type and having a major surface;

forming at least one enhanced dopant region of the first conductivity type in a first portion of the semiconductor material;

forming a first layer of dielectric material on the major surface;

forming a first gate structure on the first layer of dielectric material, the first gate structure having first and second sides;

forming a first cavity extending under a portion of the first gate structure from the first side of the first gate structure and exposing a portion of the major surface;

forming a first dopant region in the semiconductor material adjacent the first cavity and extending into the semiconductor material from the major surface;

forming a second layer of dielectric material which fills the first cavity;

forming a second dopant region in a second portion of the semiconductor material, the second dopant region of a second conductivity type opposite to the first conductivity type and aligned to the first side of the first gate structure; and

forming a third dopant region in a third portion of the semiconductor material, the third dopant region of the second conductivity type and aligned to the second side of the first gate structure.

5,612,245

METHOD OF MANUFACTURING CMOS DEVICE

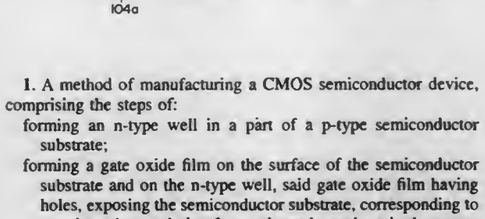
Yasuyuki Saito, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 95,995, Jul. 23, 1993, Pat. No. 5,464,789, which is a continuation of Ser. No. 533,867, Jun. 6, 1990, abandoned. This application May 3, 1995, Ser. No. 434,406

Claims priority, application Japan, Jun. 8, 1989, 1-145641

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—57 **3 Claims**



1. A method of manufacturing a CMOS semiconductor device, comprising the steps of:

forming an n-type well in a part of a p-type semiconductor substrate;

forming a gate oxide film on the surface of the semiconductor substrate and on the n-type well, said gate oxide film having holes, exposing the semiconductor substrate, corresponding to a region where a drain of an n-channel transistor in the p-type semiconductor substrate is to be formed and to a region where a drain of a p-channel transistor in the n-type well is to be formed;

forming punch-through current suppression layers and counter-dose regions under regions where gates of the p-channel and n-channel transistors are to be formed;

depositing a polysilicon film on said gate oxide film and on the semiconductor surface exposed through said holes;

depositing an amorphous film on said polysilicon film;

selectively forming a first resist film having a hole corresponding to said n-type well;

implanting boron ions through the amorphous film into said polysilicon film over the n-type well;

removing said first resist film;

selectively forming a second resist film having a hole corresponding to a region where said n-channel transistor is to be formed;

implanting n-type impurity ions into said polysilicon film within the region where said n-channel transistor is to be formed; and

heat processing to diffuse boron and n-type impurity regions into said n-type well and p-type substrate, respectively, to form impurity diffusion regions at the portions where drains are to be formed.

5,612,246
METHOD FOR MANUFACTURING SEMICONDUCTOR SUBSTRATE HAVING BUCK TRANSISTOR AND SOI TRANSISTOR AREAS

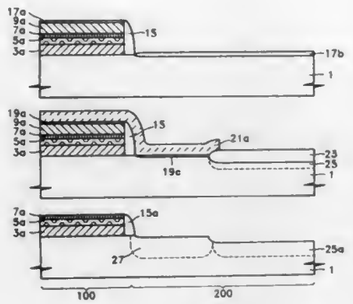
Jong-Hyon Ahn, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 27, 1995, Ser. No. 549,441

Claims priority, application Rep. of Korea, May 30, 1995, 95-13964

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—62 **8 Claims**



1. A method for manufacturing a semiconductor substrate structure, comprising the steps of:

sequentially forming a first oxide layer, and a first oxidation resistant layer over a SOI substrate comprising

a lower single crystalline silicon layer,

a buried oxide layer formed over the lower single crystalline silicon layer, and

an upper single crystalline silicon layer formed over the buried oxide layer;

selectively removing a portion of the first oxidation resistant layer, the first oxide layer, the upper single crystalline silicon layer, and the buried oxide layer to expose a portion of the lower single crystalline silicon layer, the exposed portion of the lower single crystalline silicon layer forming a bulk transistor area, and the structure formed by the unremoved portion of the first oxidation resistant layer, the first oxide layer, the upper single crystalline silicon layer, and the buried oxide layer forming a SOI transistor area;

forming a spacer on a portion of the bulk transistor area which covers a sidewall of the SOI transistor area;

forming a second oxide layer over the bulk transistor area and the SOI transistor area;

forming a second oxidation resistant layer over the second oxide layer;

selectively removing a portion of the second oxidation resistant layer to expose a first portion of the second oxide layer overlaying the bulk transistor area, wherein a second portion of the second oxide layer is disposed between the exposed first portion of the second oxide layer and the spacer, and a third portion of the second oxide layer overlays the SOI transistor area;

forming a first conductive well region in the lower single crystalline silicon layer beneath the first portion of the second oxide layer and forming a well oxide layer over the first conductive well region;

removing the remaining portion of the second oxidation resistant layer;

forming a second conductive well in the lower single crystalline silicon layer beneath the second portion of the second oxide layer, and a rediffused first conductive well beneath the the well oxide layer; and

removing the well oxide layer, the second and third portions of the second oxide layer, and a remaining portion of the first oxidation resistant layer over SOI transistor area.

5,612,247
METHOD FOR FABRICATING ISOLATION REGION FOR A SEMICONDUCTOR DEVICE

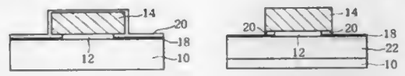
Kazuo Itabashi, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Jul. 18, 1995, Ser. No. 503,823

Claims priority, application Japan, Sep. 22, 1994, 6-228402

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **19 Claims**



1. A method for fabricating a semiconductor device comprising the steps of:

forming a first oxide film on a surface of a semiconductor substrate and forming a first nitride film on a surface of the first oxide film, the first nitride film having a predetermined pattern;

isotropically etching the first oxide film, with the first nitride film as a mask, to partially expose the surface of the semiconductor substrate and form a hollow just under an end portion of the first nitride film;

forming a second oxide film, thinner than the first oxide film, at least on the surface of the semiconductor substrate exposed at the outside of the first nitride film and on a inner surface of the hollow;

depositing a second silicon nitride film on at least the second oxide film, the second silicon nitride film being more liable to oxidation than the first silicon nitride film; and

oxidizing a region where the first silicon nitride film is absent, with the first silicon nitride film as a mask, to form a device isolation film.

2. A method for fabricating a semiconductor device comprising the steps of:

forming a first oxide film on a surface of a semiconductor substrate and forming a first nitride film on a surface of the first oxide film, the first nitride film having a predetermined pattern;

isotropically etching the first oxide film, with the first nitride film as a mask, to partially expose the surface of the semiconductor substrate and form a hollow just under an end portion of the first nitride film;

forming a second oxide film, thinner than the first oxide film, at least on the surface of the semiconductor substrate exposed at the outside of the first nitride film and on a inner surface of the hollow;

depositing a second silicon nitride film on at least the second oxide film;

removing that portion of the second silicon nitride film that is deposited on a region for a device isolation film to be formed in; and

oxidizing a region where the first silicon nitride film is absent, with the first silicon nitride film as a mask, to form the device isolation film.

5,612,248
METHOD FOR FORMING FIELD OXIDE OR OTHER INSULATORS DURING THE FORMATION OF A SEMICONDUCTOR DEVICE

Nanseng Jeng, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 11, 1995, Ser. No. 540,866

Int. Cl.[6] H01L *21/76*

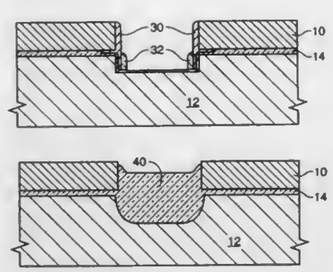
U.S. Cl. 437—69 **20 Claims**

1. A method for forming a semiconductor device comprising the following steps:

a) forming a first insulation-resistant layer over a semiconductor layer, said first insulation-resistant layer forming at least a portion of a sidewall;

b) forming a second insulation-resistant layer over said sidewall;

c) forming an oxidizable layer over said second insulation-resistant layer; and



d)oxidizing said oxidizable layer, a portion of said semiconductor layer, and completely oxidizing said second insulation-resistant layer over said sidewall.

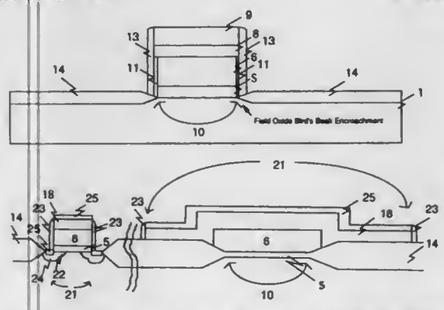
5,612,249
POST-GATE LOCOS

Yu Sun, Saratoga, and Yowjuang W. Liu, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 14, 1996, Ser. No. 645,844

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **18 Claims**



1. A method of fabricating an integrated circuit semiconductor device having a plurality of field effect transistors (FETs) in and on a silicon substrate with local oxidation of silicon (LOCOS) as field oxide isolating regions between the FETs, the method comprising the steps of:

a) forming a gate oxide layer on a top surface of the substrate;

b) forming a polysilicon layer on said gate oxide layer;

c) etching said gate oxide layer and said polysilicon layer to form gate structures for said FETs;

d) surrounding said gate structures with an oxidation mask; and

e) forming the LOCOS field oxide isolation regions by growing an oxide layer between the FETs.

5,612,250
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING A CATALYST

Hisashi Ohtani; Akiharu Miyanaga; Hongyong Zhang; Naoaki Yamaguchi, and Atsunori Suzuki, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

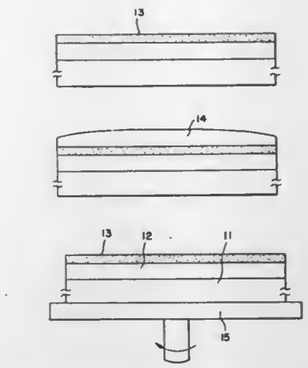
Continuation-in-part of Ser. No. 341,935, Nov. 16, 1994, Pat. No. 5,543,352. This application Jun. 7, 1995, Ser. No. 481,061

Claims priority, application Japan, Dec. 1, 1993, 5-329761

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—101 **1 Claim**

1. A method for manufacturing a semiconductor device comprising the steps of:



disposing a catalyst element for promoting a crystallization of silicon or a compound containing said catalyst element in a continuous layer in contact with an amorphous silicon film;

crystallizing said amorphous silicon film with said catalyst element or said compound kept in contact with said silicon film; and then

improving a crystallinity of said silicon film by irradiating a laser light or an intense fight to said silicon film.

5,612,251
MANUFACTURING METHOD AND DEVICE FOR A POLYCRYSTALLINE SILICON

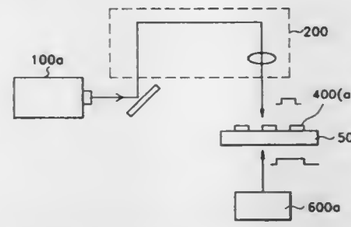
Jae-won Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 161,473, Dec. 6, 1993, abandoned. This application Sep. 15, 1995, Ser. No. 528,862

Claims priority, application Rep. of Korea, May 27, 1993, 939357

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—173 **17 Claims**



1. A method for manufacturing a polycrystalline silicon including recrystallizing an a-Si thin film formed on a substrate, wherein said manufacturing method comprises the steps of:

preliminarily heating a thin film a-Si prepared on a top side of the substrate using a second laser light source which is positioned below the substrate facing towards a bottom side of the substrate opposite to said top side of the substrate;

heating and melting said preliminarily heated a-Si using a first laser light source which is positioned opposite said second laser light source above said top side of the substrate; and

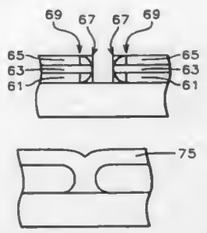
re-crystallizing said melted a-Si while heating the melted a-Si using said second laser light source.

5,612,252

METHOD OF FORMING METALLIZATION TO IMPROVE ELECTROMIGRATION RESISTANCE

Water Lur, Taipei, and Jiun Y. Wu, Hsin-chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-chu, Taiwan

Division of Ser. No. 241,005, May 11, 1994, Pat. No. 5,464,794. This application Sep. 29, 1995, Ser. No. 537,104
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—187 **13 Claims**



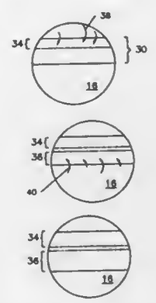
1. The method of fabricating an integrated circuit device having lower current density and better electromigration endurance than a conventional integrated circuit device with square cross-section metal contacts, no gaps in metal lines, and no concavo-concave contact profiles, the method comprising:
forming metal contacts having one dimension wider than second dimension, as measured in a direction parallel to a surface of a substrate;
forming contact openings of a first size having concavo-concave profiles and filling said contact openings with a conductive material; and
forming gaps within metal lines;
wherein said current density is reduced, improving said electromigration endurance of said integrated circuit relative to said conventional integrated circuit.

5,612,253

METHOD FOR FORMING ORDERED TITANIUM NITRIDE AND TITANIUM SILICIDE UPON A SEMICONDUCTOR WAFER USING A THREE-STEP ANNEAL PROCESS

M. M. Farahani, and Shyam Garg, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Filed Jan. 31, 1995, Ser. No. 382,217
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—190 **16 Claims**



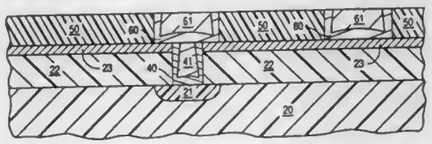
1. A method for forming titanium nitride and titanium silicide upon a semiconductor wafer, comprising:
depositing a layer of titanium upon a semiconductor wafer;
first heating the layer of titanium in the presence of NH_3 at a first temperature sufficient to cause a nitridation of said titanium for a first period of time;
second heating the layer of titanium in the presence of NH_3 at a second temperature greater than said first temperature for a second period of time subsequent to said first period of time; and
third heating the layer of titanium in the presence of NH_3 at a third temperature greater than said second temperature for a third period of time subsequent to said second period of time.

5,612,254

METHODS OF FORMING AN INTERCONNECT ON A SEMICONDUCTOR SUBSTRATE

Xiao-Chun Mu, Saratoga; Srinivasan Sivaram, San Jose; Donald S. Gardner, Mountain View, and David B. Fraser, Danville, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 29, 1992, Ser. No. 905,473
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 **22 Claims**



1. A method of forming an interconnect on a semiconductor substrate comprising the steps of:
depositing a first dielectric layer on said substrate;
patterning said first dielectric layer to form a patterned first dielectric layer having a first opening;
filling said first opening with a conductive plug;
depositing a second dielectric layer over said patterned first dielectric layer and said conductive plug;
patterning said second dielectric layer to form a patterned second dielectric layer having an interconnect channel, wherein part of said interconnect channel lies over at least part of said conductive plug, and wherein at least the upper portion of said first dielectric layer has a lower etch rate than said second dielectric layer such that said first dielectric layer acts as an etch stop;
depositing a barrier layer over said patterned second dielectric layer and within said interconnect channel;
depositing a metal layer over said barrier layer;
polishing said substrate with a polishing solution to remove that portion of said barrier and metal layers that lie on said patterned second dielectric layer to form said interconnect within said interconnect channel; and
depositing a diffusion barrier layer over said patterned second dielectric layer and said interconnect.

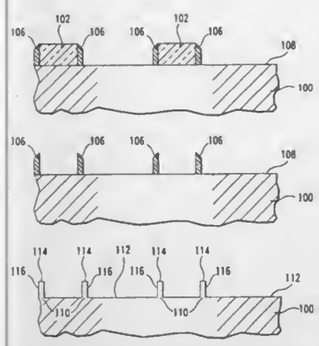
5,612,255

ONE DIMENSIONAL SILICON QUANTUM WIRE DEVICES AND THE METHOD OF MANUFACTURE THEREOF

Jonathan D. Chapple-Sokol, Poughkeepsie; Seshadri Subbanna, Hopewell Junction, and Manu J. Tejwani, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 171,287, Dec. 21, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,315
Int. Cl.[6] H01L *21/265;21/44;21/48*
U.S. Cl. 437—203 **13 Claims**

1. A method of forming a transistor in a silicon substrate, said method comprising the steps of:
a) forming a plurality of device regions in a surface of said silicon substrate;
b) sub-etching away said surface of said silicon substrate to form a sub-etched surface in said plurality of device regions, sub-etching the surface comprising the steps of:



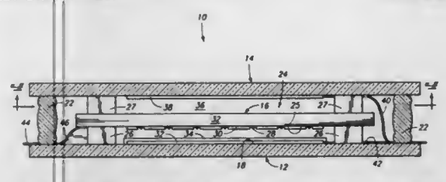
1) depositing a plurality of oxide pads on said surface,
2) forming a polysilicon layer on said plurality of oxide pads along the sides of said pads and on said substrate,
3) Reactive Ion Etching said polysilicon layer from said pads and said surface, whereby sidewalls of polysilicon remain along the sides of at least one of said plurality oxide pads,
4) removing said plurality of oxide pads, and,
5) Reactive ion etching to remove said sidewalls and said silicon surface simultaneously, such that a plurality of ridges remain above the sub-etched surface beneath each said sidewall, each of said plurality of ridges being ≦500 Å tall and ≦500 Å wide and being a quantum wire; and,
c) forming at least 2 conductive regions in each said quantum wire, said at least 2 conductive regions being conduction regions of said transistor,
whereby when said transistor is conducting current and the length of said quantum wire between said conduction regions is the primary current path for said current through said transistor.

5,612,256

MULTI-LAYER ELECTRICAL INTERCONNECTION STRUCTURES AND FABRICATION METHODS

Darryl M. Stansbury, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Feb. 10, 1995, Ser. No. 386,644
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **13 Claims**



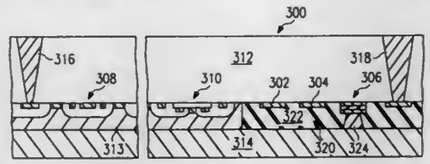
1. A method of fabricating a multi-layer electrical interconnection structure comprising:
screen printing a plurality of conductors over a substrate at upper and lower levels;
wire bonding between individual screen-printed conductors of the upper and lower levels to create inter-level electrical connections between said individual screen-printed conductors of the upper and lower levels; and
further comprising:
positioning a semiconductor die over the substrate, the semiconductor die having die bond pads which face the substrate;
aligning individual die bond pads to said individual upper-level screen-printed conductors;
making wedge bonds either to said individual die bond pads or to said individual upper-level screen-printed conductors with bond wire from a wire bonder;
leaving projecting tails of bond wire from individual wedge bonds, the bond wire tails being interposed between said individual die bond pads and said individual upper-level screen-printed conductors; and
pressing the semiconductor die against the substrate, the projecting tails forming conductive bonds between said individual aligned die bond pads and said individual upper-level screen-printed conductors.

5,612,257

METHOD OF MAKING FLIP-CHIP MICROWAVE INTEGRATED CIRCUIT

Hua Q. Tserng, Dallas, and Paul Saunier, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 298,822, Aug. 31, 1994, Pat. No. 5,521,406. This application Jun. 7, 1995, Ser. No. 473,621
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **5 Claims**



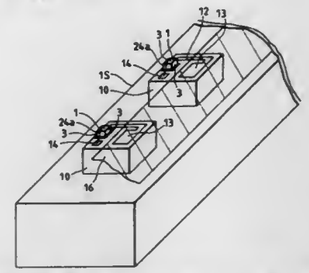
1. A method of fabricating an integrated circuit, comprising the steps of:
(a) forming at least one transistor at a frontside surface of a substrate, said transistor comprising an airbridge over said frontside transistor;
(b) forming at least one passive component at said frontside surface;
(c) forming dielectric over said passive component such that a surface of said dielectric is substantially planar with said airbridge;
(d) contacting a heatsink with said airbridge.

5,612,258

METHOD OF PRODUCING A SEMICONDUCTOR LASER DEVICE

Haruo Tanaka, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 27, 1995, Ser. No. 495,100
Claims priority, application Japan, Jun. 29, 1994, 6-146887
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **5 Claims**



1. A method of producing a semiconductor laser device, comprising the steps of:
fixing a semiconductor laser chip to a die bonding portion of a submount having a surface electrode;
connecting an electrode of said semiconductor laser chip to a wire bonding portion of said submount with a conductor;
covering the surface electrode of the submount; and
thereafter forming a coating film on a light emitting end surface of said semiconductor laser chip.

5,612,259

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE WHEREIN A SEMICONDUCTOR CHIP IS MOUNTED ON A LEAD FRAME

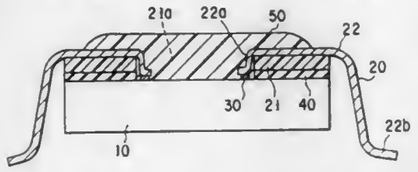
Takayuki Okutomo, and Morihiko Ikemizu, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 277,206, Jul. 19, 1994, abandoned. This application Jul. 16, 1995, Ser. No. 500,066

Claims priority, application Japan, Jul. 29, 1993, 5-187981; Jun. 22, 1994, 6-140352

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **21 Claims**



1. A method for manufacturing a semiconductor device, comprising:

a first step of electrically connecting each of a plurality of connecting electrodes formed on a semiconductor chip to a corresponding one of a plurality of lead end portions of each of a plurality of leads of a lead frame; and

a second step, following said first step, of fixing part of each of said plurality leads extending on said semiconductor chip to a surface of said semiconductor chip by an adhesive member.

5,612,260

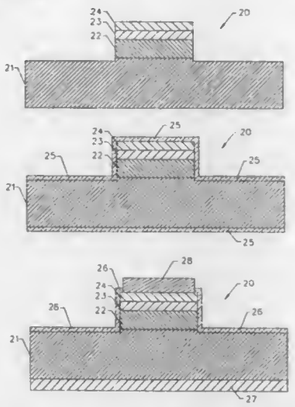
METHOD OF OBTAINING HIGH QUALITY SILICON DIOXIDE PASSIVATION ON SILICON CARBIDE AND RESULTING PASSIVATED STRUCTURES

John W. Palmour, Cary, N.C., assignor to Cree Research, Inc., Durham, N.C.

Continuation of Ser. No. 893,642, Jun. 5, 1992, Pat. No. 5,459,107. This application Dec. 9, 1994, Ser. No. 353,456

Int. Cl.[6] H01L *21/02*

U.S. Cl. 437—238 **10 Claims**



8. A method of obtaining high quality passivation layers on silicon carbide surfaces, the method comprising:

depositing a thin boron-doped silicon carbide epitaxial layer on a p-type silicon carbide portion of a device structure;

forming a sacrificial layer of silicon on the boron-doped silicon carbide epitaxial layer; and

thermally oxidizing the silicon layer while avoiding oxidation of the underlying p-type silicon carbide portion to substantially consume the silicon layer to produce an oxide passivation layer on the silicon carbide portion that is substantially free of dopants and carbon-oxygen by-product species that would otherwise degrade the electrical integrity of the oxide layer;

wherein the boron-doped silicon carbide spitaxial layer is thick enough to prevent aluminum from reaching the resulting oxide while otherwise remaining as thin as possible.

5,612,261

SEALING GLASS COMPOSITION AND METHOD OF MAKING AND OF USING

Byung C. Lim, Kyungki-do; Tae H. Park, Seoul, and Tae H. Park, Kyungki-do, all of Rep. of Korea, assignors to Samsung Corning Co., Ltd, Rep. of Korea

Filed Jun. 23, 1995, Ser. No. 520,985

Claims priority, application Rep. of Korea, Jun. 24, 1994, 94-14593

Int. Cl.[6] C03C *10/02;8/24;3/074*

U.S. Cl. 501—32 **3 Claims**

1. A sealing glass composition comprising a crystalline glass powder and a filler, wherein the composition is comprised of:

89 to 98 wt % of a crystalline glass powder consisting of 70 to 87 wt % PbO, 6 to 15 wt % B_2O_3, 2 to 12 wt % ZnO, and 0.1 to 5 wt % mixture of SiO_2 and Al_2O_3, 0 to 3 wt % BaO;

0 to 1 wt % of zircon; and

1 to 10 wt % garnet.

5,612,262

COLORED BOROSILICATE GLASS

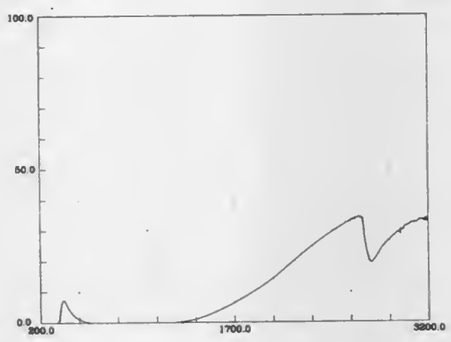
Thomas Kloss, and Eckhart Watzke, both of Jena, Germany, assignors to JENAer GLASWERK GmbH, Jena, Germany

Filed Aug. 7, 1995, Ser. No. 511,807

Claims priority, application Germany, Aug. 10, 1994, 44 28 234.6

Int. Cl.[6] C03C *3/091;4/08*

U.S. Cl. 501—65 **5 Claims**



1. A colored borosilicate glass composition with Ti^{3+} ions comprising (in percent by weight on oxide basis) SiO_2>78; B_2O_3>8; $Al_2O_3$1.5 to 4; alkali oxide >2 having an increasing near infrared radiation (NIR) absorption until becoming completely non-transmissible in the ultraviolet, visible and near infrared radiation (NIR) ranges and further comprising 0.1 to 3.0 percent by weight TiO_2 and a reducing agent.

5,612,263

GLASS COMPOSITION FOR A LAMP ENVELOPE OF A BLACK LIGHT BLUE LAMP

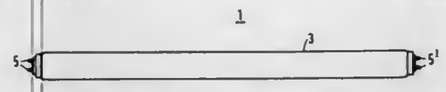
Bartholomeus Filmer, and Henderikus De Vroome, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1996, Ser. No. 587,187

Claims priority, application European Pat. Off., Jan. 13, 1995, 95200069

Int. Cl.[6] C03C *3/087*

U.S. Cl. 501—71 **6 Claims**



1. A leadless, black glass which allows passage of UV-light for an envelope of a fluorescent lamp, said glass being composed, expressed as a percentage by weight, of the following constituents:

SiO_2	65–75
Al_2O_3	1–3
Na_2O	14–18
K_2O	0.5–5
MgO	2–5
CaO	3–6
CoO	0.45–1.0
NiO	2.8–3.4
Fe_2O_3	0–0.2
rest	0–0.3.

5,612,264

METHODS FOR MAKING WC-CONTAINING BODIES

Robert T. Nilsson, Coleman; Richard T. Fox, and Stephen D. Dunmead, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 56,142, Apr. 30, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 555,944

Int. Cl.[6] C04B *35/56*

U.S. Cl. 501—87 **15 Claims**

1. A method of forming a high density tungsten carbide-containing body, the method comprising:

A) forming a preform comprised of WC powder and at least one carbon lowering material selected from the group consisting of an oxidized tungsten carbide powder, tungsten, di-tungsten carbide, tungsten oxide, and tungsten nitride; and

B) pressureless sintering the preform at an elevated temperature to form a resulting sintered tungsten carbide-containing body having a density of at least 97% of theoretical and a tungsten-bound carbon concentration of at most about 6.05% by weight of tungsten and tungsten-bound carbon in the body.

5,612,265

COMPOSITES FOR WEAR

Edward Bullock, and Jean B. Veyret, both of Bergen, Netherlands, assignors to European Atomic Energy Community (Euratom), Luxembourg, Luxembourg

Filed Mar. 22, 1995, Ser. No. 408,439

Claims priority, application European Pat. Off., Mar. 29, 1994, 94200780

Int. Cl.[6] C04B *35/565;35/584*

U.S. Cl. 501—89 **18 Claims**

1. A carbon fibre reinforced ceramic matrix composite comprising carbon fibres and a matrix of an engineering ceramic which includes Al_2O_3 and Y_2O_3 as sinter additives, said composite having a density of at least 95% theoretical, a fibre content of at least 30% by volume and said fibres being uniformly distributed within said matrix with an inter-fibre spacing of about 10–15 micrometers.

5,612,266

DECORATIVE, NON-COMBUSTIBLE SYNTHETIC FIRE-LOG

Pierre Delvaux, Bromptonville; Normand Lesmerises, Rock Forest, and Marcel Gouin, Deauville, all of Canada, assignors to Cerminco Inc., Sherbrooke, Canada

Filed Mar. 21, 1996, Ser. No. 619,336

Claims priority, application Canada, Mar. 21, 1995, 2145135

Int. Cl.[6] C04B *35/03;16/08;38/08*

U.S. Cl. 501—123 **7 Claims**

1. A decorative, non-combustible, synthetic fire-log for use in a gas or oil burning fireplace or stove, said synthetic fire-log having a density ranging from 15 to 45 lb/ft^3 and being made by:

pouring into a mold shaped as a natural wood-log, a mineral foam comprising:

(a) 1 part by weight of a solution of phosphoric acid in which polyvinyl alcohol is dissolved in such an amount as to make said solution viscous;

(b) from 0.03 to 6 parts by weight of wollastonite containing from 0.5 to 4% by weight of a carbonate salt; and

(c) from 0.2 to 10 parts by weight of water, said amount of water depending on the concentration of said solution of phosphoric acid and on the required density of the resulting synthetic fire-log, it being understood that the more concentrated is the solution of phosphoric acid or the lower is the required density, the higher is the amount of water;

letting said foam harden in said mold to form said synthetic fire-log;

unmolding the so-formed synthetic fire-log; and

letting it dry.

5,612,267

CERAMIC PREFORMS COMPRISING MONOCRYSTALLINE HEXAGONAL PLATELETS OF α-ALUMINA

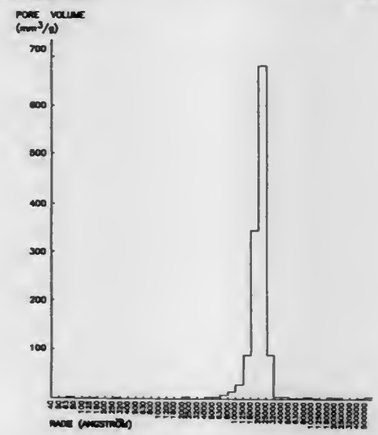
Roland Bachelard, Lyon, and Annick Faure, Venissieux, both of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 335,953, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 71,038, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 915,757, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 704,368, May 23, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,616

Claims priority, application France, May 23, 1990, 90 06448

Int. Cl.[6] C04B *35/10*

U.S. Cl. 501—127 **18 Claims**



1. A ceramic preform which will withstand molten metal infiltration comprising monocrystalline hexagooal platelets of α-alumina having a porosity of at least 70% and essentially consisting of pores having a radius larger than 0.1 μm.

5,612,268

DIELECTRIC CERAMIC COMPOSITION

Sakiko Iwamoto; Masamitsu Shibata, and Yukio Hamaji, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 22, 1995, Ser. No. 447,234
Claims priority, application Japan, May 24, 1994, 6-109840; May 24, 1994, 6-109841
Int. Cl.[6] C04B *35/462;35/475;35/495*
U.S. Cl. 501—138 11 Claims

1. A dielectric ceramic composition, comprising from 97.5 to 99.95% by weight of a main component and from 0.05 to 2.5% by weight of a first subsidiary component,

said main component being a mixture represented by formula:

$$\{100-(a+b+c+d)\}BaTiO_3+aZnO+b(2Bi_2O_3.3AO_2)+cTa_2O_5+dRe_2O_3$$

wherein A represents Zr or Sn; Re represents at least one member selected from the group consisting of La, Pr, Nd, Sm, Dy and Er; and {100–(a+b+c+d)}, a, b, c, and d represent the contents of $BaTiO_3$, ZnO, $(2Bi_2O_3.3AO_2)$, Ta_2O_5, and Re_2O_3 in terms of molar percent, respectively, provided that a, b, c, and d satisfy the following relationships:

$$0.5 \leqq a \leqq 4.5$$
$$0.5 \leqq b \leqq 4.5$$
$$0.5 \leqq c \leqq 4.5$$
$$0.5 \leqq d \leqq 5.5$$

said first subsidiary component being glass mainly comprising SiO_2.

5,612,269

METHOD FOR STABLY RETAINING AN INTERLAYER CROSS-LINKED CLAY UNDER HYDROTHERMAL REACTION AND METHOD FOR PRODUCTION OF A STABLE INTERLAYER CROSS-LINKED

Kenzi Suzuki, Aichi-ken, Japan, assignor to Agency of Industrial Science and Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,589
Claims priority, application Japan, Sep. 13, 1994, 6-246851; Sep. 13, 1994, 6-246852
Int. Cl.[6] B01J *29/04*
U.S. Cl. 502—62 7 Claims

1. A method for producing an interlayer cross-linked clay having carbon attached to the surface thereof and exhibiting stability under a hydrothermal treatment, which method comprises preparing a suspension having an interlayer cross-linked clay and an organic compound capable of being carbonized by a hydrothermal treatment as essential main components thereof, subjecting said suspension to a hydrothermal treatment under conditions effective to carbonize said organic compound, filtrating the resultant product of said treatment, and drying the residue of filtration.

5,612,270

AMMONIUM TREATED SELECTIVATED ZEOLITE CATALYST

Jeffrey S. Beck, Princeton, and David L. Stern, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 15, 1995, Ser. No. 441,517
Int. Cl.[6] B01J *29/06*
U.S. Cl. 502—64 10 Claims

1. A method for preparing a selectivated catalyst composition, said method comprising the steps of:

(a) contacting a catalyst comprising an intermediate pore size zeolite with an organosilicon compound;

(b) calcining the organosilicon compound and catalyst in an oxygen containing atmosphere under conditions sufficient to remove organic material therefrom and to deposit a siliceous material on said catalyst;

(c) treating the siliceous material-containing catalyst from step (b) with an aqueous solution comprising at least one nitrogen containing cation selected from the group consisting of ammonium ions and organoammonium ions;

(d) washing the aqueous solution treated catalyst from step (c) with water;

(e) drying the washed catalyst from step (d); and

(f) calcining the dried catalyst from step (e) under conditions sufficient to decompose the nitrogen containing cations added during step (c).

5,612,271

PROCESS FOR THE PREPRATION OF A CATALYTIC SYSTEM, PROCESS FOR THE (CO)POLYMERIZATION OF OLEFINS AND (CO)POLYMERS OF AT LEAST ONE OLEFIN

Nicola Zandona, Waterloo, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Jun. 4, 1993, Ser. No. 71,067
Claims priority, application Belgium, Jun. 5, 1992, 09200526
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—117 19 Claims

1. A process for the preparation of a catalytic system, comprising:

preparing a mixture of at least one organoaluminium compound of general formula AlT'T", in which T, T' and T" each denote a radical containing carbon and hydrogen and which may comprise oxygen, and at least one neutral metallocene selected from compounds of formula $(C_p)_a(C_p')_bMX_xZ_z$, in which:

C_p denotes an unsaturated hydrocarbon radical coordinated to the central atom M

C_p' denotes an unsaturated hydrocarbon radical coordinated to the central atom M, or a radical derived from an element chosen from groups VA and VIA of the Periodic Table, the groups C_p and C_p' being identical or different, and being able to be linked via a covalent bridge

M denotes a transition metal chosen from groups IIIB, IVB, VB and VIB of the Periodic Table

a, b, x and z denote integers such that (a+b+x+z)=m, x≧1, z>0 and a and/or b≠0

m denotes the valency of the transition metal M

X denotes a halogen

Z denotes a hydrocarbon radical or a silyl radical of formula (—R_r—Si—R'R"R"'), where

R denotes an optionally substituted alkyl, alkenyl, aryl, alkoxy or cycloalkyl group

R', R" and R"' are identical or different and each denote a halogen or an optionally substituted alkyl, alkenyl, aryl, alkoxy or cycloalkyl group

t denotes 0 or 1 in at least one hydrocarbon diluent and,

in a second stage, adding an ionising agent thereto such that a molar ratio of said ionising agent to said neutral metallocene is at least 0.1 and less than 2.

5,612,272

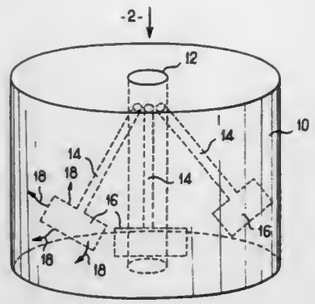
METHOD OF PRODUCING AN ACTIVE COMPOSITE

Jacques Prosdocimi, Canohes, and Charles Timoney, L'Etang La Ville, both of France, assignors to Elf Aquitaine, France

Filed Mar. 18, 1994, Ser. No. 214,751
Int. Cl.[6] B01J *20/02*
U.S. Cl. 502—181 9 Claims

1. A method for producing an active composite, which comprises the steps of

forming at least two porous supports by the compression of expanded pulverulent product;



forming at least one cavity extending into each porous support;

forming an assembly of said supports; and

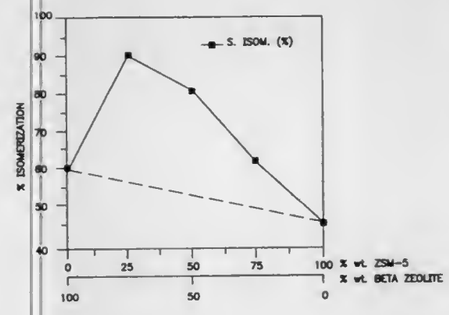
introducing into each porous support an active agent brought into the cavity.

5,612,273

CATALYST FOR THE HYDROISOMERIZATION OF CONTAMINATED HYDROCARBON FEEDSTOCK

Ricardo Prada; Mariana Torrealba; Jorge Tejada; Yilda Romero, and Edito Reyes, all of Caracas, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Dec. 30, 1994, Ser. No. 367,405
Int. Cl.[6] B01J *23/00*
U.S. Cl. 502—313 77 Claims



1. A catalyst system for treating sulfur and nitrogen contaminated hydrocarbon feedstock, comprising:

a matrix selected from the group consisting of alumina, silica alumina, titanium alumina and mixtures thereof;

at least one support medium substantially uniformly distributed through said matrix wherein said support medium is zeolite;

a first catalytically active metal phase supported on said support medium, said first catalytically active metal phase comprising a first metal selected from the group consisting of nickel, cobalt, iron and mixtures thereof and a second metal selected from the group consisting of palladium, platinum, ruthenium, rhodium and mixtures thereof;

a second catalytically active metal phase supported on said matrix, said second catalytically active metal phase comprising a third metal selected from the group consisting of nickel, cobalt, iron and mixtures thereof, a fourth metal selected from the group consisting of palladium, platinum, ruthenium, rhodium and mixtures thereof and a fifth metal selected from the group consisting of tungsten, molybdenum and mixtures thereof.

5,612,274

METHOD OF PREPARING TRANSALKYLATION CATALYST

An-hsiang Wu, Bartlesville, and Charles A. Drake, Nowata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 4, 1995, Ser. No. 416,261
Int. Cl.[6] B01J *23/40;23/42*
U.S. Cl. 502—325 26 Claims

1. A process for treating a Group VIII noble metal-promoted zeolite material with ammonium hexafluorosilicate consisting essentially of the steps of:

mixing a solid Group VIII noble metal-promoted zeolite material with solid ammonium hexafluorosilicate to obtain a mixture wherein the weight ratio of said solid ammonium hexafluorosilicate to said solid Group VIII noble metal-promoted zeolite material is in the range of about 0.1:1 to about 1:1; and

heating said mixture in a gas stream containing about 5–100 mole-% of molecular hydrogen at a temperature of about 100° C. to about 450° C. for a period of time of at least about 5 minutes.

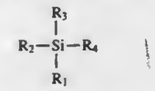
5,612,275

CHEMICALLY ACTIVE CERAMIC COMPOSITIONS WITH A PHOSPHO-ACID MOIETY

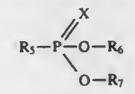
Lawrence L. Tavlarides, Fayetteville, and Nandu Deorkar, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Sep. 27, 1994, Ser. No. 313,019
Int. Cl.[6] B01J *20/10;* C02F *1/42*
U.S. Cl. 502—407 28 Claims

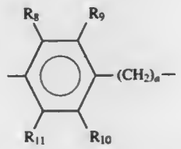
1. A composite material suitable for removing heavy metal ions from solutions, said material having the formula:



wherein at least one of R_1, R_2, and R_3 is SUPPORT-O- and R_4 is



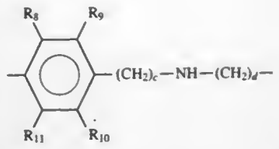
wherein X is S or O; R_5 is —$(CH_2)_a$—, where a is an integer from 1 to 5; or



wherein R_8–R_{11} are the same or different and are —H or —$(CH_2)_bCH_3$, where b is an integer from 0 to 20; or

—$[CH_2]_c$—NH—$[CH_2]_d$—

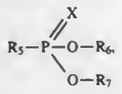
or



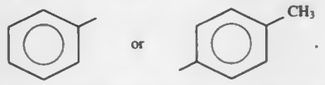
wherein c and d are integers from 1 to 5 and c+d are no greater than 6;

R_6 and R_7 are the same or different and are —H or $-(CH_2)_6CH_3$; and

remaining of R_1, R_2 and R_3 are



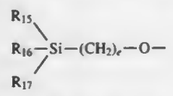
an alkyl group having 1 to 5 carbon atoms; or



9. A composite material suitable for removing heavy metals from waste streams having the formula:



wherein X is S or O; at least one of R_{12}, R_{13} and R_{14} is



wherein at least one of R_{15}, R_{16} and R_{17} is SUPPORT-O- and remaining of R_{15}, R_{16} and R_{17} are unsubstituted or lower alkyl or lower aryl substituted saturated hydrocarbon chains having 1 to 20 carbon atoms, and e is an integer from 1 to 5; and

remaining of R_{12}, R_{13} and R_{14} are —OH, $-O(CH_2)_fCH_3$, or $-(CH_2)_fCH_3$ wherein f is an integer from 0 to 5.

5,612,276

ADSORBENTS FOR REMOVING LOW-CONCENTRATION NITROGEN OXIDES

Shigenori Onitsuka, Ikoma-gun; Masayoshi Ichiki, Osaka; Chikashi Inazumi; Takanobu Watanabe, both of Kyoto; Atsushi Fukuju, Ibaraki; Masaki Akiyama, Osaka; Yuki Sairyo, Suita, and Hidetsugu Kobayashi, Osaka, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, and The Pollution Related Health Damage Compensation & Prevention Association, Tokyo, both of Japan

Division of Ser. No. 288,763, Aug. 11, 1994, Pat. No. 5,439,868, which is a continuation of Ser. No. 968,531, Oct. 29, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 429,768

Claims priority, application Japan, Oct. 31, 1991, 3-286276; Oct. 31, 1991, 3-286277; Jan. 23, 1992, 4-10312

Int. Cl.[6] B01J *20/06;20/08;20/10;20/16*

U.S. Cl. 502—415 **2 Claims**

1. An adsorbent for removing low-concentration nitrogen oxides comprising a carrier comprising anatase-type titania and at least one inorganic forming agent selected from the group consisting of alumina sol, alumina, silica sol, silica-alumina and ceramic fibers, and ruthenium halide supported on the carrier.

5,612,277

CATALYST AND METHOD FOR MANUFACTURING THE SAME

Matti Härkönen; Thomas Slotte, and Matti Kivioja, all of Oulu, Finland, assignors to Kemira OY, Espoo, Finland

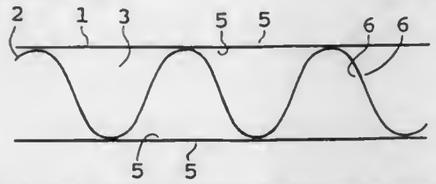
PCT No. PCT/FI93/00338, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/05424, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 27, 1993, Ser. No. 392,912

Claims priority, application Finland, Aug. 28, 1992, 923855

Int. Cl.[6] B01J *21/04;23/38;* **F01N** *3/10*

U.S. Cl. 502—325 **16 Claims**



1. A catalyst comprising at least two metal foil strips, at least one of the metal foil strips having corrugations transverse to a longitudinal direction of the metal foil strip, the metal foil strips being formed into a honeycomb containing channels, each of the metal foil strips being coated with a support to form a coated strip, and each coated strip having at least one catalytically active agent thereon, the support and catalytically active agent of each metal foil strip defining a catalytic surface of the respective metal foil strip, the catalytically active agent being a noble metal, the honeycomb comprises first and second catalytic surfaces, the first catalytic surface being different than the second catalytic surface.

13. A method for manufacturing a catalyst having first and second metal foil strips, in at least one of the metal foil strip there are formed corrugations transverse to a longitudinal direction of the at least one metal foil strip, the first and second metal foil strips are formed into a honeycomb which contains channels, the first metal foil strip is coated with a first support to form a first coated strip, and a first catalytically active agent that is a noble metal is added to the first coated strip to form a first catalytic surface, the second metal foil strip is coated with a second support to form a second coated strip, and a second catalytically active agent that is a noble metal is added to the second coated strip to form a second catalytic surface such that the honeycomb comprises the first and second catalytic surfaces that are different from each other.

5,612,278

REVERSIBLE IMAGE RECORDING METHOD USING REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL

Fumihito Masubuchi; Yoshihiko Hotta, both of Mishima; Yusuke Takeda, Yokohama; Makoto Obu, Yokohama; Toshio Kawakubo, Yokohama; Katsuaki Miyawaki, Yokohama, and Tetsuya Amano, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

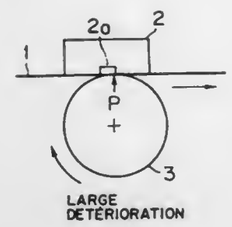
Continuation-in-part of Ser. No. 164,778, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 34,811, Mar. 19, 1993, abandoned. This application Jul. 25, 1994, Ser. No. 280,336

Claims priority, application Japan, Mar. 21, 1992, 4-094754

Int. Cl.[6] B41M *5/34*

U.S. Cl. 503—201 **6 Claims**

1. A recording method for forming images on a reversible thermosensitive recording material, which comprises bringing a heating element of a thermal head into pressure contact with said reversible thermosensitive recording material, which is capable of



assuming a first colored state when heated to a first temperature which is higher than room temperature, and then cooled, and which is capable of assuming a second colored state when heated to a second temperature which is higher than said first temperature, and then cooled, and relatively moving at least one of said heating element or said reversible thermosensitive recording material and controlling the pressure contact and the relative motion so that the stress exerted on said reversible thermosensitive recording material per unit area thereof, σ (g/cm^2), which is generated by the pressure contact of said heating element with said reversible thermosensitive recording material and by the relative movements of said heating element and said reversible thermosensitive recording material, is represented by formula (I):

$$\sigma \leqq A(Ts/T)+B$$

wherein A is 8.0×10^4, B is -5.78×10^4, T (K°) represents the temperature of the surface of the heating element and Ts (K°) represents the softening point of said reversible thermosensitive recording material.

5,612,279

OPTICAL RECORDING SHEET

Toshimi Satake; Toshiyuki Takano; Hideki Hayasaka; Yukiko Uehori, and Tomoaki Nagai, all of Tokyo, Japan, assignors to Nippon Paper Industries, Ltd., Tokyo, Japan

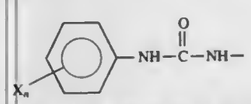
Division of Ser. No. 267,903, Jul. 6, 1994, Pat. No. 5,470,816. This application Jun. 1, 1995, Ser. No. 456,806

Claims priority, application Japan, Jul. 8, 1993, 5-169244; Dec. 13, 1993, 5-311502

Int. Cl.[6] B41M *5/30;* **G03C** *1/725*

U.S. Cl. 503—201 **15 Claims**

1. An optical recording sheet having a thermal recording layer containing a colorless or pale colored dye precursor and a color developer reactable with said dye precursor upon heating to develop a color, wherein said color developer is a urea compound having at least two groups of Formula (1) in the molecule, and the thermal recording layer contains at least one of said urea compound:



wherein X is alkyl group having 1 to 12 carbon atoms, halogenated alkyl group having 1 to 6 carbon atoms, aralkyl group having 7 to 14 carbon atoms, alkoxy group having 1 to 12 carbon atoms, aryloxy group having 6 to 12 carbon atoms, alkoxycarbonyl group having 1 to 12 carbon atoms, acyl group having 1 to 12 carbon atoms, dialkylamino group having 1 to 12 carbon atoms, arylalkylamino group having 7 to 12 carbon atoms, arylamino group having 6 to 12 carbon atoms, acylamino group having 1 to 12 carbon atoms, nitro group, cyano group, halogen group or hydrogen group and containing an optical absorbent capable of absorbing and converting light to heat.

5,612,280

THERMOSENSITIVE RECORDING MATERIAL

Yoshiyuki Takahashi, Kawasaki; Ayako Shirai, Yokohama; Takako Segawa, Machida, and Kunitaka Toyofuku, Sakura, all of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,887

Claims priority, application Japan, Dec. 18, 1992, 4-338557; Mar. 10, 1993, 5-049403

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—216 **6 Claims**

1. A thermosensitive recording material comprising:

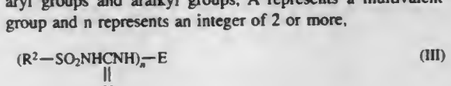
a substrate sheet; and

a thermosensitive colored image-forming layer formed on a surface of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder,

the color-developing agent comprising at least one aromatic compound: selected from the group consisting of those of the formulae (II), (III) and (IV):



in which X represents a member selected from the group consisting of oxygen and sulfur atoms, R^1 represents an aromatic group substituted with at least one substituent selected from the group consisting of nitro group, alkyl groups substituted with at least one halogen atom, alkyloxy groups, aryloxy groups, aralkyloxy groups, alkylcarbonyl groups, alkenyl groups, alkynyl groups, cycloalkyl groups, aryl groups and aralkyl groups, A represents a multivalent group and n represents an integer of 2 or more,

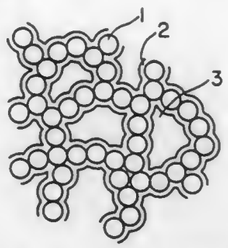


in which X is as defined above, R^2 represents a member selected from alkyl groups, cycloalkyl groups, alkenyl groups, alkynyl groups, alkyl groups having at least one hetero atom contained in the backbone chain thereof, cycloalkyl groups having at least one hetero atom contained in the cyclic chain thereof, and alkenyl groups having at least one hetero atom contained in the backbone chain thereof, E represents a multivalent group having at least one aromatic cyclic group, and n represents an integer of 2 or more, and



in which X is as defined above, R^3 represents a member selected from the group consisting of aralkyl groups; substituted aralkyl groups having a hetero atom-containing aliphatic hydrocarbon moiety in which at least one methylene group is replaced by at least one hetero atom; substituted aralkyl groups having a substituted aromatic hydrocarbon moiety in which at least one member selected from the group consisting of substituent atoms other than hydrogen atom and substituent group is attached to an aromatic hydrocarbon moiety; and substituted aralkyl groups having a hetero atom-containing aliphatic hydrocarbon moiety in which at least one methylene group is replaced by at least one hetero atom, and a substituted aromatic hydrocarbon moiety in which at least one member selected from the group consisting of substituent atoms other than hydrogen atom and substituent groups is attached to the aromatic hydrocarbon moiety, A represents a multivalent group and n represents an integer of 2 or more.

5,612,281
RECORDING SHEET
Takashi Kobayashi, and Yoshio Tani, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 5, 1995, Ser. No. 417,864
Claims priority, application Japan, Apr. 5, 1994, 6-090557
Int. Cl.[6] B41M *5/00;5/035;5/26;5/38*
U.S. Cl. 503—227 **6 Claims**

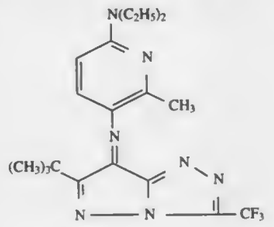


1. A recording sheet comprising a transparent support and a transparent colorant-receptive layer provided thereon, in which the colorant-receptive layer has a three-dimensional network structure having a void volume of 50 to 80%, the three-dimensional network structure being formed of silicic anhydride particles having a mean primary particle diameter of not more than 10 nm and a water-soluble resin wherein a weight ratio between the silicic anhydride particles and the water-soluble resin is in the range of 1.5:1 to 10:1.

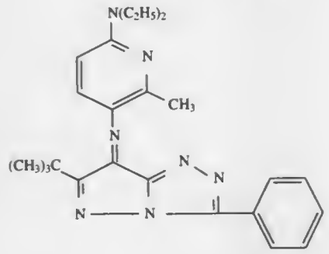
5,612,282
DYE AND HEAT SENSITIVE TRANSFER MATERIAL COMPRISING THE SAME
Tawara Komamura; Katsunori Katoh, and Tatsuo Tanaka, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Division of Ser. No. 212,003, Mar. 11, 1994. This application May 11, 1995, Ser. No. 439,421
Claims priority, application Japan, Mar. 22, 1993, 5-61853; Sep. 22, 1993, 5-236760
Int. Cl.[6] B41M *5/38;* **C09B** *55/00*
U.S. Cl. 503—227 **10 Claims**

1. A heat sensitive transfer material comprising a support and provided thereon, a dye layer containing a dye and a binder, wherein said dye is selected from the group consisting of:

D-1

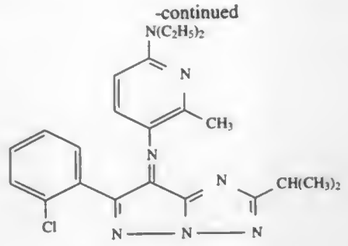


D-2

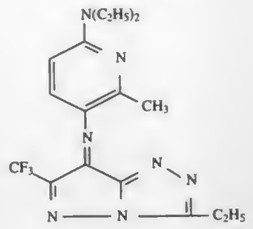


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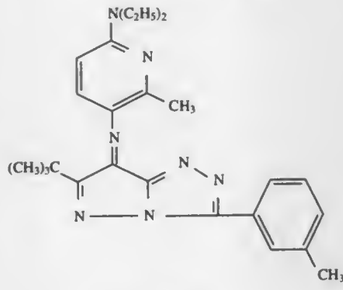
D-3



D-5

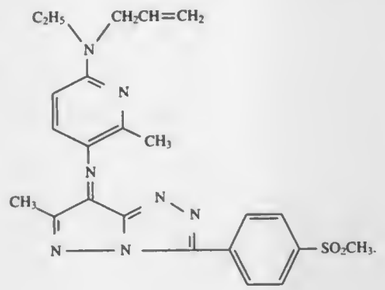


D-9



and

D-22



5,612,283
DYE-RECEIVING ELEMENT FOR THERMAL DYE TRANSFER
Bruce C. Campbell, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 14, 1996, Ser. No. 664,334
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **18 Claims**

7. A process of forming a dye transfer image comprising:
a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and
b) transferring a dye image to a dye-receiving element to form said dye transfer image,

wherein said dye-receiving element comprises a support having on the front side thereof, in order, a biaxially-oriented composite film laminated thereto and a dye image-receiving layer, said composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer, said support having on the back side thereof a biaxially-oriented transparent film laminated thereto which has a light transmission of at least 70%, the ratio of thickness of said transparent film to said composite film being from about 0.45 to about 0.75.

5,612,284
HERBICIDAL COMPOSITIONS COMPRISING A GROWTH REGULATING HERBICIDE TO SAFEN SULFONYLUREA HERBICIDES
Mark C. Boyles, Ripley, Okla.; John M. Fenderson, Kiowa, Kans., and Bart Brinkman, Salem, Oreg., assignors to Sandoz Ltd., Basel, Switzerland
Continuation of Ser. No. 351,863, Sep. 15, 1994, which is a continuation-in-part of Ser. No. 207,103, Mar. 4, 1994, abandoned, which is a continuation of Ser. No. 68,727, May 26, 1993, abandoned. This application May 26, 1995, Ser. No. 452,166
Int. Cl.[6] A01N *25/32*
U.S. Cl. 504—110 **11 Claims**

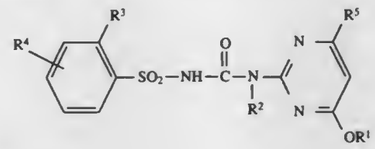
1. A herbicidal composition comprising a herbicidally effective aggregate amount of a growth regulator herbicide and an amino acid synthesis inhibitor herbicide wherein the inhibitor herbicide is selected from the group of sulfonylurea herbicides consisting of rimsulfuron, metsulfuron, metasulfuronmethyl, ethametsulfuron, nicosulfuron, triasulfuron, primisulfuron, bensulfuron, chlorimuron, chlorimuron-ethyl, chlorsulfuron, sulfometuron, thifensulfuron, tribenuron, triflusuluron, clopyrasulfuron and pyrazasulfuron and wherein the growth regulator herbicide reduces the phytotoxicity of said amino acid synthesis inhibitor herbicide to crop plants.

5,612,285
GLYPHOSATE HERBICIDE FORMULATION
Kristin A. Arnold, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 922,715, Jul. 31, 1992. This application Jun. 5, 1995, Ser. No. 463,447
Int. Cl.[6] A01N *25/12;57/02*
U.S. Cl. 504—206 **34 Claims**

1. A method for making a water-soluble granular herbicidal composition comprising
(1) forming a homogenous mixture of at least one surfactant and an extrusion aid at a temperature substantially below the melting point of the extrusion aid, wherein the surfactant is liquid at ambient temperature and the extrusion aid comprises at least one polyalkylene glycol in which the alkylene oxide unit is ethylene oxide, propylene oxide or butylene oxide and the polyalkylene glycol has an average molecular weight of from about 1,000 to about 15,000;
(2) blending the mixture with a dry particulate form of N-phosphonomethylglycine or a salt thereof; and
(3) extruding the blend to form herbicidal granules.

5,612,286
HERBICIDAL N-[PYRIMIDIN-2-LY) AMINOCARBONYL]-BENZENESULFONAMIDES
Horst Mayer, Ludwigshafen; Gerhard Hamprecht, Weinheim; Karl-Otto Westphalen, Speyer; Matthias Gerber, Limburgerhof; Uwe Kardorff, Mannheim, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
PCT No. PCT/EP93/00362, § 371 Date Aug. 24, 1994, § 102(e) Date Aug. 24, 1994, PCT Pub. No. WO93/16998, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 16, 1993, Ser. No. 290,959
Claims priority, application Germany, Feb. 28, 1992, 42 06 145.8
Int. Cl.[6] C07D *239/47;* **A01N** *43/54*
U.S. Cl. 504—214 **15 Claims**

1. An N-[(pyrimidin-2-yl)aminocarbonyl]benzenesulfonamide of the formula I

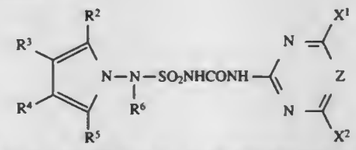


I

where
R^1 is methyl;
R^2 is hydrogen;
R^3 is C_1–C_4-alkyl which carries from one to three methoxy groups or fluorine atoms;
or R^3 is a group ER^6 in which E is O or S, R^6 being C_1–C_2-alkyl, which may carry from 1 to 3 or 1 to 5 fluorine atoms, with the exception of difluoromethoxy, and, if E is O and at the same time R^5 is trifluoromethyl, R^6 may furthermore be methylsulfonyl, ethylsulfonyl, trifluoromethylsulfonyl, allylsulfonyl or propargylsulfonyl;
or R^3 is di-C_1–C_3-alkylaminosulfonyl if R^5 is fluorine;
or R^3 is C_1 or C_2-alkylsulfonyl which may carry 1–3 halogen atoms;
R^4 is hydrogen, methyl, ethyl, methoxy, ethoxy, fluorine, chlorine, methylthio, ethylthio or C_1–C_2-baloalkoxy;
and R^5 is fluorine or trifluoromethyl,
and its environmentally compatible salts.

5,612,287
N-(SUBSTITUTED AMINO) PYRROLE DERIVATIVES PREPARATION PROCESS THEREOF, AND HERBICIDAL COMPOSITIONS
Yoichi Kanda; Hideo Arabori; Masato Arahira, and Tsutomu Sato, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan
Division of Ser. No. 323,413, Oct. 14, 1994. This application Jun. 6, 1995, Ser. No. 467,441
Claims priority, application Japan, Oct. 15, 1993, 5-281889
Int. Cl.[6] C07D *403/12;* **A01N** *43/54*
U.S. Cl. 504—215 **7 Claims**

1. An N-(substituted amino) pyrrole derivative represented by the formula (I):



(I)

wherein R^2, R^3, R^4 and R^5 is independently hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_5 haloalkyl group, C_2–C_5 alkoxyalkyl group, C_3–C_5 alkenyl group, C_3–C_5 haloalkenyl group, C_3–C_5 alkinyl group, phenyl group which may be substituted with

1–3 halogen atoms and/or C_1–C_4 alkyl groups, C_7–C_9 aralkyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, (C_1–C_4 alkyl)carbonyl group, (C_2–C_5 alkoxyalkyl)carbonyl group, (C_3–C_6 cycloalkyl)carbonyl group, (C_1–C_4 haloalkyl)carbonyl group, (C_3–C_5 alkenyl)carbonyl group, benzoyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, (C_7–C_9 aralkyl)carbonyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, carbamoyl group, N-(C_1–C_4 alkyl)aminocarbonyl group, N,N-[(di-C_1–C_4 alkyl)amino]carbonyl group, carboxyl group, (C_1–C_4 alkoxy)carbonyl group, (C_1–C_4 haloalkoxy)carbonyl group, (C_2–C_5 alkoxyalkoxy)carbonyl group, (C_3–C_5 alkenyloxy)carbonyl group, (C_3–C_5 haloalkenyloxy)carbonyl group or (C_3–C_5 alkynyloxy)carbonyl group;

R^6 is hydrogen atom, C_1–C_5 alkyl group, C_1–C_5 haloalkyl group, C_2–C_5 alkoxyalkyl group, C_3–C_5 alkenyl group, C_3–C_5 haloalkenyl group, C_3–C_5 alkynyl group or C_7–C_9 aralkyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups;

X^1 and X^2 are independently hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxy group, C_1–C_4 alkylthio group, C_1–C_4 haloalkyl group, C_1–C_4 haloalkoxy group, C_1–C_4 haloalkylthio group, C_2–C_4 alkoxyalkyl group, C_2–C_4 thioalkoxyalkyl group or NR^7R^8 wherein R^7 and R^8 are independently hydrogen atom, C_1–C_4 alkyl group or C_1–C_4 alkoxy group; and

Z is CH.

5,612,288

SELECTIVE HERBICIDAL COMPOSITION

Werner Föry, Riehen, Switzerland; Elmar Kerber, Görwihl, Germany, and Manfred Hudetz, Rheinfelden, Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

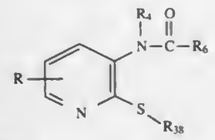
Division of Ser. No. 434,902, May 1, 1995, Pat. No. 5,532,203, which is a continuation of Ser. No. 291,319, Aug. 16, 1994, abandoned, which is a continuation of Ser. No. 157,870, Jan. 24, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,508

Claims priority, application Switzerland, Dec. 2, 1992, 3697/92; Jan. 25, 1993, 213/93; Feb. 10, 1993, 397/93; Mar. 25, 1993, 906/93

Int. Cl.[6] C07D *213/32;213/40*

U.S. Cl. 504—254 **4 Claims**

1. A compound of formula XI



(XI)

wherein

R is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4alkylthio, or is C_1–C_4alkyl mono- or poly-substituted by halogen;

R_4 is hydrogen, C_1–C_6alkyl, or C_1–C_6alkyl that is mono- or poly-substituted by halogen, C_1–C_6-alkoxy, C_3–C_6alkenyloxy, C_3–C_6alkynyloxy or by C_1–C_6alkylthio;

R_6 is hydrogen, C_1–C_6alkyl, C_3–C_6cycloalkyl or C_2–C_6alkynyl; or is C_1– C_6alkyl or C_3–C_6cycloalkyl each-substituted by halogen or by C_1–C_4alkoxy; or is C_2–C_6alkenyl, or C_2–C_6alkenyl substituted by halogen; or is phenyl, benzyl, naphthyl or OR_{12}, or phenyl, benzyl or naphthyl each substituted by halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_3–C_6alkenyloxy, C_3–C_6alkoynyloxy, nitro, cyano, $COOR_{13}$, $NR_{15}R_{16}$, $C(O)NR_{17}R_{18}$, X_1R_{20}, $SO_2NR_{21}R_{22}$ or by X_2R_{23};

R_{12} is C_1–C_6alkyl, C_1–C_6haloalkyl, oxetan-3-yl, or C_4–C_6cycloalkyl, which may for its part be substituted by halogen, C_1–C_4alkyl or by C_1–C_4alkoxy; or is phenyl, benzyl or naphthyl, or phenyl, benzyl or naphthyl each substituted by C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4-alkylthio C_1–C_4haloalkylthio, C_1–C_4alkylsulfonyl, C_1–C_4alkylsulfinyl, nitro, cyano, $COOR_{27}$, $NR_{25}R_{26}$, $CONR_{28}R_{29}$ or by $SO_2NR_{30}R_{14}$; or is C_1–C_6alkyl substituted by C_1–C_4alkoxy, C_3–C_6cycloalkyl, cyano, $COOR_{24}$ or by $CONR_{32}R_{33}$; or is C_3–C_6alkenyl, C_3–C_6haloalkenyl, C_3–C_6alkynyl, C_3–C_6haloalkynyl, X_3R_{35} or X_4R_{36};

R_{13} is hydrogen, C_1–C_6alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl or oxetan-3-yl;

R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{21}, R_{22}, R_{25}, R_{26}, R_{28}, R_{29}, R_{30}, R_{32} and R_{33} are each independently of the others hydrogen, C_1–C_4alkyl, C_3–C_6alkenyl or C_3–C_6alkynyl; or R_{15} and R_{25} are each independently of the other the groups —C(O)—X_5—C_1–C_4alkyl or —C(O)—C_1–C_4alkyl, which may for their part be substituted by halogen; or R_{25} and R_{26} or R_{28} and R_{29} or R_{30} and R_{14} or R_{32} and R_{33} together form a C_4–C_5alkylene chain,

R_{19} is hydrogen, C_1–C_4alkyl, C_3–C_6alkenyl or C_3–C_6alkynyl;

R_{20} and R_{35} are each independently of the other C_1–C_4alkyl or C_1–C_4haloalkyl;

R_{23} and R_{36} are each independently of the other C_1–C_4alkyl substituted by $COOR_{34}$;

R_{24}, R_{27} and R_{34} are each independently of the other hydrogen or C_1–C_4alkyl;

X_1 and X_3 are each independently of the other sulfur, SO or SO_2;

X_2 and X_4 are each independently of the other oxygen or sulfur;

X_5 is oxygen or NR_{37};

R_{37} is hydrogen, C_1–C_4alkyl, C_3–C_6alkenyl or C_3–C_6alkynyl; and

R_{38} is benzyl, methoxymethyl or isopropyl.

5,612,289

4-IMINO-OXAZOLIDINE-2-ONE DERIVATIVES, A PROCESS FOR PRODUCING SUCH DERIVATIVES AND A HERBICIDE CONTAINING THEM AS AN ACTIVE INGREDIENT

Kenji Hirai; Tomoko Matsukawa; Tomoyuki Yano; Katsuyuki Masuda, all of Kanagawa-ken; Tomoko Yoshii, Shizuoka-ken; Takehito Mouri, Chiba-ken; Sadayuki Ugai, and Osamu Yamada, both of Shizuoka-ken, all of Japan, assignors to Sagami Chemical Research Center, and Kaken Pharmaceutical Co., Ltd., both of Japan

PCT No. PCT/JP94/01683, § 371 Date Jul. 8, 1996, § 102(e) Date Jul. 8, 1996, PCT Pub. No. WO95/10509, PCT Pub. Date Apr. 20, 1995

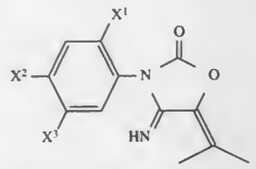
PCT Filed Oct. 7, 1994, Ser. No. 624,557

Claims priority, application Japan, Oct. 8, 1993, 5-276009

Int. Cl.[6] A01N *43/76;* **C07D** *263/48;263/44*

U.S. Cl. 504—270 **11 Claims**

1. 4-Imino-oxazolidine-2-one derivatives represented by the general formula (1):



(1)

(where X^1 is a hydrogen atom or a halogen atom; X^2 is a hydrogen atom, a halogen atom or an alkyloxy group; X^3 is a hydrogen atom, a halogen atom, an alkyloxy group, a cycloalkyloxy group or an alkynyloxy group) and salts thereof.

5,612,290

JOSEPHSON JUNCTION DEVICE FORMED OF OXIDE SUPERCONDUCTOR

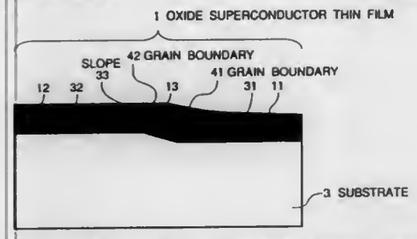
Saburo Tanaka; Takashi Matsuura, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 68,189, May 28, 1993, Pat. No. 5,422,337. This application Jun. 5, 1995, Ser. No. 461,295

Claims priority, application Japan, May 29, 1992, 4-164150

Int. Cl.[6] H01L *39/22;39/00;27/00*

U.S. Cl. 505—190 **18 Claims**



1. A Josephson junction device comprising a single crystalline substrate including a principal surface having two horizontal planes and a slope inclined at an angle of 5° to 30° between the two horizontal planes, and an oxide superconductor thin film formed on the principal surface of the substrate, which includes a first and second superconducting portions of a first single crystalline oxide superconductor and a second single crystalline oxide superconductor respectively positioned on the two horizontal planes of the substrate, a junction portion of a single crystalline oxide superconductor having a different crystal orientation from the first and the second superconducting portions, positioned on the slope of the substrate and two grain boundaries between each of the first and the second superconducting portions and the junction portion, which constitutes one weak link of the Josephson junction, in which there are relatively large differences in lattice parameters between the substrate and the oxide superconductor.

5,612,291

SUPERCONDUCTIVE DEVICE FOR HELPING SHIELD MAGNETIC FIELD AND MANUFACTURING METHOD THEREFOR

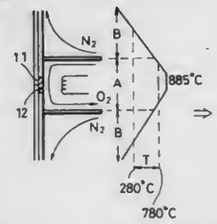
Shoji Seike; Hideki Shimizu, both of Nagoya, and Makoto Tani, Inazawa, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 803,940, Dec. 9, 1991, Pat. No. 5,359,149. This application Apr. 20, 1994, Ser. No. 230,236

Claims priority, application Japan, Dec. 8, 1990, 2-407265

Int. Cl.[6] H01L *39/24*

U.S. Cl. 505—470 **14 Claims**



1. A method for making a superconductive device for shielding a magnetic field, comprising the steps of:

providing at least two members, each member having a superconductive layer containing a first superconductive oxide positioned thereon;

connecting said at least two members along a joint;

applying a material for forming a second superconductive oxide containing Bi along the joint connecting the members;

firing said material to temperatures of not less than 780° C. thereby forming a superconductive joint connecting said superconductive layers, wherein during said firing a first area of said superconductive layers adjacent to said material is separated from a first area of said superconductive layers distant from the material by a partition, and wherein during the firing the material and the first adjacent area are kept in an atmosphere containing more than 20% of oxygen and have temperatures of not less than 780° C., and the first distant area is kept in an atmosphere containing less than 15% of oxygen and has temperatures lower than 780° C.; and then

heat-treating the superconductive joint and a second area of the superconductive layers adjacent to said superconductive joint by heating said joint and said second adjacent area to temperatures ranging from 280° C. to 780° C. in an atmosphere containing less than 15% of oxygen, said second adjacent area being separated from a second area of the superconductive layers distant from the superconductive joint by a partition during said heat-treating step, and said second adjacent area including at least the first adjacent area.

5,612,292

METHOD OF MAKING MULTILAYER DISTORTED-LATTICE COPPER-OXIDE PEROVSKITE STRUCTURES

Arunava Gupta, Rockland, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 264,837, Jun. 23, 1994, Pat. No. 5,529,980, which is a continuation of Ser. No. 892,599, May 29, 1992, abandoned, which is a continuation of Ser. No. 420,842, Oct. 13, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 480,586

Int. Cl.[6] B05D *5/12*

U.S. Cl. 505—470 **8 Claims**

1. A method for obtaining multilayer superconducting structure with an electrical superconducting property that differs from that electrical superconducting property of the material in any layer of the multilayer superconducting structure, the method comprising the steps of:

epitaxially depositing on a substrate a first epitaxial layer of superconducting materials having in its unstressed bulk state a first crystallographic structure with first unit cell dimensions; and

depositing on the first epitaxial layer a second epitaxial layer of a different superconducting material selected for having in its unstressed bulk state a second crystallographic structure with at least one unit cell dimension different from the first crystallographic structure to cause in said depositions of said first and different superconducting materials lattice distortion from the structures in their unstressed bulk states which distortion provides the different electrical superconducting property.

5,612,293

DRILL-IN FLUIDS AND DRILLING METHODS

Rosa T. Swartwout, and Stephen Stroh, both of Houston, Tex., assignors to Tetra Technologies, Inc., The Woodlands, Tex.

Filed Dec. 22, 1994, Ser. No. 362,809

Int. Cl.[6] C09K *7/02;7/00;* **E21B** *43/26;33/138*

U.S. Cl. 507—110 **18 Claims**

1. A high density drilling fluid comprising a high density base brine, which includes at least one dissolved monovalent salt and at least one dissolved divalent salt, and a viscosifying suspension polymer, wherein said base brine has a density of at least about 1.30 g/cm^3 and said drilling fluid has a plastic viscosity of less than about 40 lbs/100 ft^2 when measured at a temperature of 150° F. or less, and wherein said base brine is an unsaturated clear brine system.

5,612,294

SCLEROGLUCAN BASED DRILLING MUD

Alain Vaussard, Pau; Alain Ladret, Saint-Gaudens, and Alain Donche, Jurancon, all of France, assignors to Elf Aquitaine, Courbevoie, France

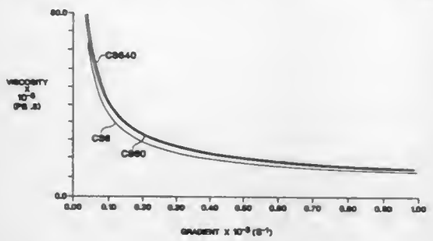
Continuation of Ser. No. 78,778, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 688,055, Apr. 19, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,494

Claims priority, application France, Apr. 19, 1990, 90 05021

The portion of the term of this patent subsequent to Nov. 3, 2014, has been disclaimed.

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—110 15 Claims



1. A base composition for a water-based drilling mud comprising a mixture of (i) water, (ii) scleroglucan, and (iii) a non-reactive inorganic colloidal solid, wherein said colloidal solid is contained in an amount greater than 0 but less than or equal to 50 g/l and wherein said scleroglucan has been produced by carrying out fermentation of a producing fungus and said composition further comprises at least 15% by weight of the mycelium of said producing fungus.

5,612,295

LUBRICANT ADDITIVE COMPOSITIONS

Donald R. Bell, Collinsville, Ill.; Rolfe J. Hartley, Glen Allen, Va., and Andrew G. Papay, Manchester, Mo., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 245,600, May 18, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 624,865

Int. Cl.[6] C10M *133/00*

U.S. Cl. 508—188 22 Claims

1. An additive composition formed by a process which comprises heating concurrently or in any sequence a) an oil-soluble ashless dispersant containing basic nitrogen with b) an alkoxylated alcohol of at least 8 carbon atoms and c) a borating agent to a temperature in the range of about 50° to about 150° C., and if water and/or solids are present in the resultant mixture, removing both of them or whichever of them is present in the resultant mixture.

5,612,296

ASHLESS DISPERSANTS THEIR PREPARATION AND THEIR USE

Anthony J. Rollin, and Joseph J. Valcho, both of Midlothian, Va., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 447,308, May 22, 1995, Pat. No. 5,496,480, which is a division of Ser. No. 77,724, Jun. 16, 1993, Pat. No. 5,433,875. This application Dec. 1, 1995, Ser. No. 566,264

Int. Cl.[6] C10M *133/56;* C07C *69/34;69/52*

U.S. Cl. 508—240 6 Claims

1. An ashless dispersant having in its chemical structure at least one aliphatic hydrocarbyl substituent derived from a liquid, substantially linear polymer of propylene having a controlled amount of branching, said polymer having stereo-irregularity and optionally containing up to 25 mol percent of ethylene or C_4 to C_{10} monoolefin polymerized into the polymer chain, at least 60 mol percent of said polymer having a terminal vinylidene group, said dispersant being a succinic ester-amide, formed from (i) an alkenyl succinic acylating agent having said substituent thereon and (ii) an N-substituted poly(hydroxyalkyl) amine or a combination of a polyamine and a polyol, which polyamine and polyol are reacted with said acylating agent concurrently or sequentially in any order.

5,612,297

POWDERY MOLYBDENUM OXYSULFIDE DITHIOCARBAMATE COMPOSITION, A PROCESS FOR PRODUCING SAME, AND A GREASE COMPOSITION CONTAINING THE COMPOSITION

Tamiji Kamakura; Noriyoshi Tanaka; Aritoshi Fukushima; Yukio Tatsumi, and Kazuhisa Morita, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

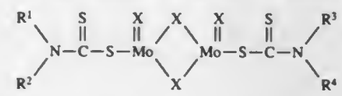
Continuation-in-part of Ser. No. 284,128, Aug. 2, 1994, Pat. No. 5,494,608. This application Nov. 21, 1995, Ser. No. 561,419

Claims priority, application Japan, Aug. 13, 1993, 5-201498

Int. Cl.[6] C10M *135/18;115/00*

U.S. Cl. 508—363 5 Claims

1. A grease composition comprising: 0.1 to 10 parts by weight, based on 100 parts by weight of a base grease, of a powdered molybdenum oxysulfide dithiocarbamate composition which comprises a compound represented by the following formula:



wherein R^1, R^2, R^3 and R^4 are independent hydrocarbyl groups and may be the same or different groups, and the total number of carbon atoms contained in R^1 to R^4 is 4 to 36; and wherein X is sulfur or oxygen and the composition of the total of all Xs is given as S_m and O_n in which m and n satisfy the ranges of $1.8 \leqq m \leqq 3.0$ and $1.0 \leqq n \leqq 2.2$, respectively, in which the constituent particles have diameters of not larger than 50 μm.

5,612,298

GREASE FOR CONSTANT VELOCITY JOINTS

Dae Y. Bae, Kyungsangnam-do, and Sung G. Son, Dae-ku, both of Rep. of Korea, assignors to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 8, 1995, Ser. No. 569,611

Claims priority, application Rep. of Korea, Oct. 11, 1995, 95-34810

Int. Cl.[6] C10M *141/02;141/06*

U.S. Cl. 508—376 5 Claims

1. A grease for constant velocity joints, comprising:

0.5–5 wt % of an organic molybdenum compound;

0.5–5 wt % of an antimonydialkyl dithiocarbamate;

0.5–5 wt % of a zincdithiophosphate;

0.5–10 wt % of an organic sulfide; and

up to about 98 wt % of a lithium grease or a lithium aluminum mixed grease.

5,612,299

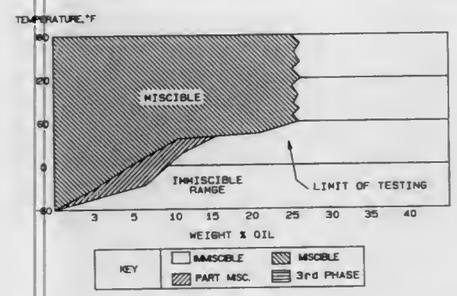
LUBRICANT COMPOSITION FOR FLUORINATED REFRIGERANTS USED IN COMPRESSION REFRIGERATION SYSTEMS

Glenn D. Short, Midland, Mich., assignor to CPI Engineering Services, Inc., Midland, Mich.

Continuation of Ser. No. 358,968, Dec. 19, 1994, Pat. No. 5,486,302, which is a continuation of Ser. No. 770,615, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 642,464, Jan. 17, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,267

Int. Cl.[6] C10M *105/38;105/40*

U.S. Cl. 508—485 6 Claims



1. A fluid composition comprising a non-chlorinated, fluorinated hydrocarbon refrigerant and an ester lubricant base having a viscosity suitable for compression refrigeration and miscible in said non-chlorinated, fluorinated, hydrocarbon refrigerant in the range from 20° F.–80° F. at a percent by weight of lubricant base to refrigerant of up to about 3%, said lubricant base consisting essentially of an ester made by reacting dipentaerythritol with an acid blend consisting of substantially 70% branched 3, 5, 5, trimethylhexanoic acid and a remainder comprising a mixture of substantially linear carboxylic C_7, C_8, and C_{10} acid.

5,612,300

MICROEMULSION FOR THE DECONTAMINATION OF ARTICLES CONTAMINATED WITH CHEMICAL WARFARE AGENTS

Hasso von Blücher, Parkstrasse 10, D-40699 Erkrath, and Ernest de Ruiter, Höhenstrasse 57A, D-51381 Leverkusen, both of Germany

Filed Sep. 20, 1994, Ser. No. 309,450

Claims priority, application Germany, Aug. 13, 1994, 44 28 793.3

Int. Cl.[6] A62D *3/00;* B01J *13/00;* C11D *1/14*

U.S. Cl. 510—110 1 Claim

1. A method of decontaminating equipment and persons contaminated with chemical warfare agents comprising the use of a non-oxidizing microemulsion, said microemulsion consisting essentially of 85–97% water, 0.1–3.5% of a dodecane oily phase, 0.5–4% of sodium lauryl sulfate emulsifier, 0.5–7% of hexanol co-emulsifier and 0.1–1% of a wetting agent mixture of monoether reaction products of a mixture of perfluoroalkyl alcohols with ethylene oxide, polyethylene glycol and 1,4-dioxane, wherein said alkyl groups are C_2 to C_{20}.

5,612,301

HAIR CONDITIONING SHAMPOO COMPOSITIONS WITH SILICONE CONDITIONING AGENT

Everett J. Inman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 185,105, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 8,257, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 681,016, Apr. 5, 1991, abandoned. This application Feb. 8, 1995, Ser. No. 385,224

Int. Cl.[6] C11D *1/82;1/72;1/12*

U.S. Cl. 510—122 11 Claims

1. A hair conditioning composition comprising;

(a) from about 5% to about 50% by weight of a detersive surfactant component wherein said detersive surfactant component comprises:

(i) from about 0.5% to about 20% by weight of the composition of a polyethylene glycol glycerol fatty acid ester nonionic surfactant mixture wherein said mixture comprises polyethylene glycol PEG-82 glyceryl monotallowate and polyethylene glycol PEG-30 glyceryl cocoate; and

(ii) at least about 2% by weight of the composition, of an anionic surfactant selected from the group consisting of alkyl sulfates, alkyl ethoxylated sulfates, or mixtures thereof;

(b) from about 0.1% to about 10% by weight, of a dispersed, nonvolatile, insoluble, silicone conditioning agent; and

(c) water.

5,612,302

CLEANING SOLUTION FOR RECYCLING RECORDING MEMBER HAVING TONER IMAGES

Masazumi Yoshida, Amagasaki; Susumu Tanaka, Aichi-Ken, and Junji Machida, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1994, Ser. No. 176,265

Claims priority, application Japan, Jan. 8, 1993, 5-001659; Dec. 17, 1993, 5-318071

Int. Cl.[6] C11D *1/08;1/83;3/20;3/60*

U.S. Cl. 510—174 11 Claims

1. A cleaning solution for removing a resin formed toner image from a recording member, comprising a monoester of bivalent organic acid, an organic acid, 0.1 to 5 percent by weight of a surface active agent and water.

5,612,303

SOLVENT COMPOSITION

Yasuyuki Takayanagi; Satoshi Endou, and Naoki Sugama, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

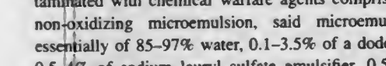
Continuation-in-part of Ser. No. 260,741, Jun. 15, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,309

Claims priority, application Japan, Jun. 15, 1993, 5-167374; Jun. 22, 1993, 5-173606; Sep. 19, 1993, 5-253688; Dec. 24, 1993, 5-346056; Mar. 11, 1994, 6-103457

Int. Cl.[6] C11D *7/22*

U.S. Cl. 510—174 26 Claims

1. A method for dissolving a polymeric compound which comprises administering to the polymeric compound in need of such treatment an effective amount of a solvent composition comprising, as an active component, at least 5% by weight of at least one oxyisobutyric acid ester, wherein said oxyisobutyric acid ester is selected from the group consisting of an alkyl α-alkoxyisobutyrate represented by formula (I):



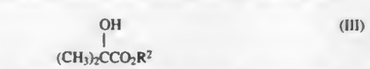
(I)

an alkyl β-alkoxyisobutyrate represented by formula (II):



(II)

and an alkyl α-hydroxyisobutyrate represented by formula (III):



(III)

wherein R^1 and R^2 each represent an alkyl group having from 1 to 4 carbon atoms.

5,612,304

REDOX REAGENT-CONTAINING POST-ETCH RESIDUE CLEANING COMPOSITION

Kenji Honda, Barrington, and Rodney Hurditch, Providence, both of R.I., assignors to Olin Microelectronic Chemicals, Inc., Cheshire, Conn.

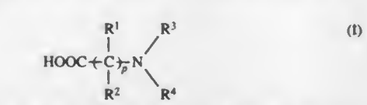
Filed Jul. 7, 1995, Ser. No. 499,355
Int. Cl.[6] C11D *7/32;7/26;7/34;7/50*
U.S. Cl. 510—176 **21 Claims**

1. A post-etch residue cleaner composition, comprising:

(a) from about 1 to about 70% by weight of an organic polar solvent having a dipole moment of more than 3.5;

(b) from about 1 to about 70% by weight of an alkanolamine compound having a boiling point higher than 150° C. at atmospheric pressure;

(c) from about 0.1 to about 10% by weight of an amino acid selected from the group consisting of compounds having the formula (I):



(I)

wherein p is an integer ranging from 1–3; R^1 and R^2 are each independently selected from the group consisting of hydrogen and compounds having the formula (II):



(II)

wherein R^5, R^6, and R^7 are each independently selected from hydrogen, —OH, —CH_2OH, alkyl, alkoxy, phenyl, and mono-, di- or tri-hydroxy-substituted phenyl groups; and R^3 and R^4 are each independently selected from the group consisting of hydroxy and compounds having the formula (III):



(III)

wherein X', Y', and Z' are each independently selected from hydrogen, —OH, —CH_2OH, —CH_2CH_2OH, alkyl, or alkoxy group, and at least one of them is —OH, —CH_2OH or —CH_2CH_2OH;

(d) from about 1 to about 20% by weight of a redox reagent having a redox potential in the range between +1.0 $\bar{V}$ and −2.0 $\bar{V}$ vs. SHE (at pH=7) selected from the group consisting of sugar alcohols, piperidine, aniline, o-phenylenediamine, hydrazine, 1,10-phenanthroline and benzidine; and

(e) optionally, from about 0% to about 90% by weight of water; all percents based on the total weight of the cleaner composition.

5,612,305

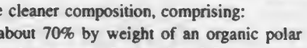
MIXED SURFACTANT SYSTEMS FOR LOW FOAM APPLICATIONS

Ronald G. Lewis, Austin, Tex., assignor to Huntsman Petrochemical Corporation, Salt Lake City, Utah

Filed Jan. 12, 1995, Ser. No. 372,049
Int. Cl.[6] C11D *1/825;1/70;1/72;1/722*
U.S. Cl. 510—220 **9 Claims**

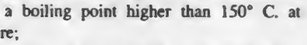
1. In a machine dishwashing composition, a nonionic surfactant mixture comprising:

(a) at least one first nonionic surfactant selected from the group consisting of nonionic surfactants having the formula (I)



(I)

wherein R^1 represents a linear alkyl or olefinic group having from about 6 to about 18 carbon atoms and y represents a number ranging from about 3 to about 15, and the formula (II)



(II)

wherein Np is the carbon residue of nonylphenol or octylphenol and z represents a number ranging from about 4 to about 200; and

(b) at least one second nonionic surfactant having the formula (IV)

(IV)

wherein R^3 represents a linear or branched alkyl or olefinic group having from about 6 to about 18 carbon atoms, n represents a number ranging from about 10 to about 25, A^2 represents a group having the formula —(CH_2—$CH(CH_3)$—O)$_t$—, —($CH(CH_3)$—CH_2—O)$_u$— or a combination thereof with t and u each representing a number ranging from 0 to about 15 and the sum of t and u represents a number ranging from about 2 to about 15, and A^3 represents a group having the formula —(CH_2—$CH(CH_3)$—O)$_v$—, —($CH(CH_3)$—CH_2—O)$_w$— or a combination thereof with v and w each representing a number ranging from 0 to about 55 and the sum of v and w represents a number ranging from about 10 to about 55,

wherein the at least one first surfactant and the at least one second surfactant are compatible with each other.

5,612,306

STABLE ENZYME-CONTAINING AQUEOUS LAUNDRY PRESPOTTING COMPOSITION

Jeanne A. O'Brien, and Mark M. Gipp, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 215,219, Mar. 21, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 539,647
Int. Cl.[6] C11D *3/386*
U.S. Cl. 510—321 **24 Claims**

1. A stable, enzyme-containing aqueous laundry prespotting composition comprising:

a. at least one detergent enzyme in amounts effective to reduce fabric stains;

b. an enzyme stabilizing system effective to preserve the detergent enzyme for at least 12 weeks at at least 90° F. in an amount effective to reduce fabric stains, the enzyme stabilizing system including citric acid and at least one nonionic surfactant, with from 0% to less than 2% by weight of other materials that further maintain enzyme stability; and

c. an aqueous carrier

where a detergent enzyme shall be deemed to be in an amount effective to reduce stains if a rating of at least 2 is attained for grass stain removal from cotton fabric under the Home Laundering Pre-Wash Spotter Stain Removal test method designated CSMA-DCC-11.

5,612,307

DETERGENT COMPOSITIONS CONTAINING SEPARATE STRIPES OF SURFACE ACTIVE AGENTS AND BENEFIT AGENT

John G. Chambers, Bromborough; Ailsa P. H. Grieveson, Heswall, and Margaret Jobling, Bebington, all of Great Britain, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,145
Claims priority, application United Kingdom, Jul. 19, 1994, 9414573
Int. Cl.[6] C11D *3/16;3/18;3/20;* **A61K** *7/00*
U.S. Cl. 510—406 **8 Claims**

1. An aqueous liquid cleansing and moisturizing composition comprising:

(a) 50% to 99.9% by wt. of a base formulation comprising 1% to 35% by wt. of a surface active agent selected from the group consisting of anionic, nonionic, zwitterionic and cationic surface active agents, soap and mixtures thereof; and

(b) 0.1% to 50% by wt. of a benefit agent selected from the group consisting of silicone oils, gums, fats, oils, waxes, hydrophobic plant extracts, hydrocarbons, fatty acids, alcohols, esters, essential oils, lipids, phospholipids, vitamins, sunscreens, and mixtures thereof;

wherein the benefit agent and the base formulation comprising said surface active agent are physically separate such that the base formulation and the benefit agent are not in direct contact with one another but are nonetheless dispensable from a single packing means which comprises both the base formulation and the benefit agent as individual stripes;

wherein each stripe comprises either said benefit agent or said base formulation;

wherein each stripe has a width of at least 1,000 microns; and

wherein (a) and (b) are not post mixed prior to use.

5,612,308

ACIDIC LIQUID DETERGENT COMPOSITIONS FOR BATHROOMS

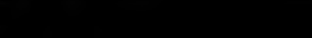
Ricky A. Woo, Hamilton, Ohio; Michel J. Carrie, Strombeek-Bever, Belgium; William A. Cilley, Cincinnati, Ohio; Ronald A. Masters, Loveland, Ohio; Daniel W. Michael, Cincinnati, Ohio, and Eddy Vos, Linden, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 140,377, Oct. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 35,122, Mar. 19, 1993, Pat. No. 5,384,063. This application Jun. 6, 1995, Ser. No. 470,166
Int. Cl.[6] C11D *1/72;1/94;3/37;3/43*
U.S. Cl. 510—423 **10 Claims**

1. An acidic aqueous hard surface detergent composition comprising: (a) a detergent surfactant system which comprises a mixture of amphoteric-non-zwitterionic and nonionic detergent surfactants wherein said amphoteric-non-zwitterionic detergent surfactant has the generic formula:



wherein RC(O)— is a C_{8-14} hydrophobic fatty acyl moiety containing from about 8 to about 14 carbon atoms which, in combination with the nitrogen atom, forms an amido group, each n is from 1 to 3, and each R^1 is hydrogen or a C_{1-2} alkyl or hydroxy alkyl group and wherein said nonionic detergent surfactant contains a C_{6-10} alkyl group and from about 2.5 to about 12 ethylene oxide groups and has an HLB of from about 6 to about 18, the nonionic detergent surfactant being present at a level of from about 0.5% to about 6% and the ratio of nonionic surfactant to amphoteric, non-zwitterionic surfactant being from about 1:4 to about 3:1; (b) optional hydrophobic solvent that provides a primary cleaning function selected from the group consisting of: alkyl and cycloalkyl hydrocarbons and halohydrocarbons, alpha olefins, glycol ethers having the formula R^1O—(R^2O—)$_m$H wherein each R^1 is an alkyl group which contains from about 4 to about 8 carbon atoms, each R^2 is either ethylene or propylene, and m is a number from 1 to about 3, and the compound has a solubility in water of less than about 20%; diols having from about 6 to about 16 carbon atoms in their molecular structure; benzyl alcohol; n-hexanol; phthalic acid esters of C_{1-4} alcohols; and mixtures thereof, the solvent, when present, being at a level of from about 1% to about 15%; and (c) polycarboxylate detergent builder selected from the group consisting of: dicarboxylic acids having from about 2 to about 14 carbon atoms between the carboxyl groups; citric acid; builders having the generic formula:



wherein each R^5 is selected from the group consisting of H and OH and n is a number from about 2 to about 3 on the average; chelating agents having the formula:

wherein R is selected from the group consisting of:

—$CH_2CH_2CH_2OH$; —$CH_2CH(OH)CH_3$; —$CH_2CH(OH)CH_2OH$; —$CH(CH_2OH)_2$; —CH_3; —$CH_2CH_2OCH_3$; —C(O)—CH_3; —CH_2—C(O)—NH_2; —$CH_2CH_2CH_2OCH_3$; —$C(CH_2OH)_3$; and mixtures thereof;

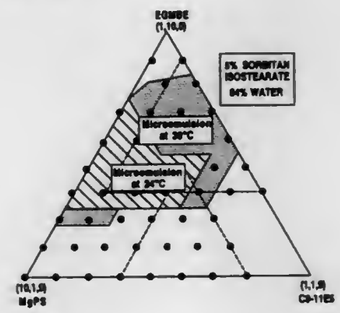
and each M is hydrogen; and mixtures thereof, the builder, when present, being at a level of from about 2% to about 14%; said composition having a pH of from about 1 to about 5.5, and from about 2 to about 4 when said dicarboxylic acid detergent builder is present.

5,612,309

NITROGEN-FREE RINSE CYCLE FABRIC SOFTENERS BASED ON MICROEMULSIONS

André Crutzen, Liege-Sclessin, and France Wouters, Liers, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 286,036, Aug. 4, 1994. This application Feb. 14, 1996, Ser. No. 601,603
Int. Cl.[6] D06M *13/224*
U.S. Cl. 510—526 **15 Claims**



1. A nitrogen-free rinse cycle softener composition consisting essentially of an anionic microemulsion of (i) about 2 to about 40 weight % of a hydrophobic, normally liquid, oxygenated, long chain hydrocarbon wherein said long chain hydrocarbon is a fatty acid ester of a polyol wherein the polyol is a hexitol or hexitol anhydride or a glycerol trimer and the fatty acid moiety contains about 12 to about 22 carbon atoms; and (ii) about 2 to about 30% of an anionic surfactant.

5,612,310

METHODS FOR IMPROVING THERAPEUTIC EFFECTIVENESS OF AGENTS FOR THE TREATMENT OF SOLID TUMORS AND OTHER DISORDERS

Mark W. Dewhirst, Chapel Hill; Robert E. Meyer, Cary; Joseph Bonaventura, Beauford, all of N.C., and Joseph DeAngelo, Hamtramck, Mich., assignors to Duke University, Durham; North Carolina State University, Raleigh, and Apex Bioscience, Inc., Durham, all of N.C.

Filed May 24, 1993, Ser. No. 66,756

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—6 **19 Claims**

1. A method for treating a subject having a vascularized solid tumor comprising administering to a subject having a vascularized solid tumor an amount of a nitric oxide scavenger compound sufficient to reduce tumor blood flow and a therapeutically effective amount of an hypoxic cytotoxin or an acidotic cytotoxin, wherein the subject is a mammal, the solid tumor is a sarcoma or carcinoma, the nitric oxide scavenger compound binds free nitric oxide in mammalian tissues, the hypoxic cytotoxin is more toxic to a mammalian cell under hypoxic conditions than to the mammalian cell not under hypoxic conditions, and the acidotic cytotoxin is more toxic to the mammalian cell under acidotic conditions than to the mammalian cell not under acidotic conditions.

5,612,311

METHOD AND COMPOSITION FOR TREATING THROMBOSIS

Michael D. Pierschbacher, San Diego, Calif.; David S. Lukeman, Milan, Italy; Soan Cheng, San Diego, Calif.; William S. Craig, San Diego, Calif., and Juerg F. Tschopp, San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 204,817, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 50,736, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 681,119, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,444, Apr. 6, 1990, abandoned. This application Dec. 22, 1994, Ser. No. 363,963

Int. Cl.[6] A61K *38/12;* **C07K** *7/64*

U.S. Cl. 514—11 **3 Claims**

1. A peptide selected from the group consisting of:
GpenGHRGDLRCA (SEQ ID NO: 2);
RPenGHRGDWRCR (SEQ ID NO: 3);
RPenGHRGD(ChA)RCR (SEQ ID NO: 4);
PmpGHGDLRCA (SEQ ID NO: 5);
G(dPen)GHRGDLRCA (SEQ ID NO: 6);
R(Pmc)GHRGDWRCR (SEQ ID NO: 7);
R(Pmc)GHRGD(O—Me—Y)RCR (SEQ ID NO: 8);
R(Pmc)GHRGD(p-Cl—F)RCR (SEQ ID NO: 9);
R(Pmc)GHRGDFRCR (SEQ ID NO: 10);
R(Pmc)GHRGDFRCR (SEQ ID NO: 11);
R(t-but-Pmc)GHRGDLRCR (SEQ ID NO: 12);
Ac-CNPRGD(O—Me—Y)RC—NH_2 (SEQ ID NO: 13);
Ac-CNPKGD(O—Me—Y)RC—NH_2 (SEQ ID NO: 14); and
Ac-CNPRGD(O—N-Butyl-Y)RC—NH_2 (SEQ ID NO: 15);
the underlining of the amino acid residues indicates the cyclic portion of the peptide and, wherein the peptide inhibits platelet aggregation without prolonging bleeding time.

3. A method of treating thrombosis, comprising administering a therapeutically effective amount of the peptide of claim 1 in a physiologically acceptable carrier.

5,612,312

METHOD FOR TREATING INSULIN RESISTANCE WITH IGF-I

Alan C. Moses, 470 Quinobequin Rd., Waban, Mass. 02168; Linda A. Morrow, 11 Rice St., Newton, Mass. 02159, and Jeffrey S. Flier, 14 Sylvan Ave., West Newton, Mass. 02165

Division of Ser. No. 279,831, Jul. 25, 1994, which is a continuation of Ser. No. 8,461, Jan. 25, 1993, abandoned. This application May 8, 1995, Ser. No. 436,633

Int. Cl.[6] A61K *38/30*

U.S. Cl. 514—12 **2 Claims**

1. A method of effecting chronic reversal of insulin resistance in humans with severe insulin resistance by administering rhIGF-I in a dose of 100 μg/kg body weight subcutaneously twice a day for about 21 consecutive days to about 28 consecutive days wherein said reversal persists at least about one week after concluding said administering.

5,612,313

CONTROLLED-PH FORMULATION FOR INTRAVESICULAR INSTILLATION OF TGFαPE$_{40}$AB

Dorothy Marquis-Omer, Lansdale; C. Russell Middaugh, Quakertown, and Gautam Sanyal, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 203,169, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 957,581, Oct. 7, 1992, abandoned. This application Jun. 27, 1996, Ser. No. 671,383

Int. Cl.[6] A61K *47/48;31/66;33/42;* **C07K** *14/495*

U.S. Cl. 514—12 **9 Claims**

1. A buffered intravesicular preparation of TGFαPE$_{40}$ab comprising a phosphate buffer or modified phosphate buffer system present in an amount sufficient to optimize binding of TGFαPE$_{40}$ab to its receptor binding site.

5,612,314

NITROSYLATED NEUROPEPTIDES

Jonathan Stamler, Chapel Hill, N.C., and Inigo S. de Tejada, Madrid, Spain, assignors to Brigham & Women's Hospital, and Trustees of Boston University, both of Boston, Mass.

Filed Apr. 21, 1995, Ser. No. 426,935

Int. Cl.[6] A61K *37/00*

U.S. Cl. 514—13 **41 Claims**

1. A compound comprising a neuropeptide or analog, fragment or derivative thereof having vascular or non-vascular smooth muscle relaxant activity to which has been directly or indirectly linked at least one NO or NO_2 group.

5,612,315

PHARMACEUTICAL GROWTH HORMONE FORMULATIONS

Michael J. Pikal, Greenwood, and Michael L. Roy, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 162,769, Mar. 1, 1988, abandoned. This application Jul. 6, 1992, Ser. No. 909,264

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—21 **10 Claims**

1. A parenteral pharmaceutical formulation of human growth hormone which is stabilized against aggregation consisting essentially of biosynthetic human growth hormone in admixture with aggregation stabilizing amounts of glycine and mannitol, wherein said human growth hormone, glycine, and mannitol are present in a weight ratio of about 1:1:3 to about 1:1:5, respectively.

5,612,316

FLUOROSUGAR DERIVATIVES OF MACROLIDES

Kevin Koch, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

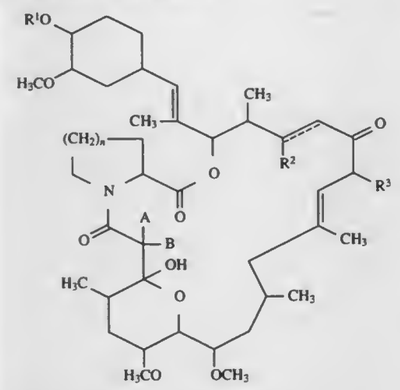
PCT No. PCT/US93/00428, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO93/18049, PCT Pub. Date Sep. 16, 1993

PCT Filed Jan. 27, 1993, Ser. No. 295,625

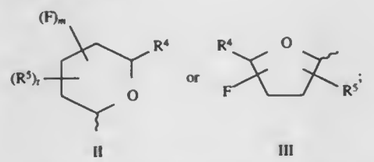
Int. Cl.[6] A61K *31/70;* **C07H** *17/00*

U.S. Cl. 514—25 **24 Claims**

1. A compound of the formula

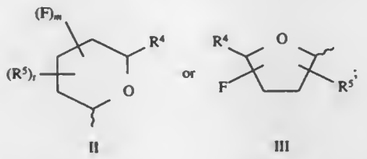


or a pharmaceutically acceptable salt thereof;
wherein n is 1 or 2;
the symbol of the dotted line represents an optional double bond in the case where R^2 is H;
A and B are taken separately and A is H and B is H or —OH, or A and B are taken together and form =O;
R^2 is H, (C_2–C_5)alkanoyloxy or —OR^0;
R^3 is (C_1 to C_3)alkyl or allyl;
R^0 and R^1 are each H,



II III

R^4 is, for each occurrence, independently —CO_2R^8, —CO_2H, —CH_2OH, H, —CH_3, —CH_2F, —CHF_2, —CF_3, —$CONH_2$, —$CONHR^8$, —$CON(R^8)_2$, —CH_2OCOR^8, —$CH_2OCO_2R^8$, —$CH_2OCONR_2^8$ or —CH_2 OR^8;
R^5 is, for each occurrence, independently (C_1 to C_4)alkoxy, benzyloxy, —OH, —$OCOR^8$, —$OCOCH_2R^8$, —OCO_2R^8 or —$OSi(R^8)_3$;
t is 1, 2 or 3;
m is 0 or 1; and
R^8 is (C_1–C_6)alkyl, (C_3–C_6)cycloalkyl, allyl, pyridyl, thienyl, benzyl, benzyl substituted with one to five halogen atoms, —OH groups or (C_1–C_4)alkoxy groups, phenyl or phenyl substituted with one to five halogen atoms, —OH groups or (C_1–C_4)alkoxy groups;
provided that (1) R^1 and R^0 are not both H; (2) when R^2 is H or (C_2–C_5)alkanoyloxy, R^1 is



II III

(3) when m is 0, R^4 is —CH_2F, —CHF_2 or —CF_3; (4) when R^1 is H, R^2 is not alkanoyloxy; and (5) in formulae (II) and (III), each ring carbon atom must bear at least one hydrogen atom.

18. A method for treating resistance to transplantation in a mammal in need of such treatment comprising administering to said mammal a resistance to transplantation treating effective amount of a compound according to claim 1 or a pharmaceutically-acceptable salt thereof.

5,612,317

METHOD FOR DELIVERING ESTROGEN

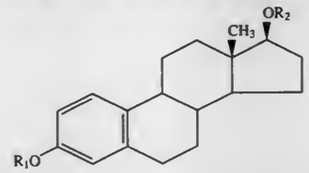
Michael F. Holick, 31 Bishop La., Sudbury, Mass. 01776

Filed Aug. 4, 1994, Ser. No. 285,438

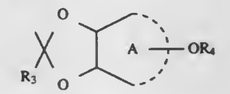
Int. Cl.[6] A61K *31/705*

U.S. Cl. 514—26 **10 Claims**

1. A method for treating or preventing osteoporosis in an individual in need thereof, comprising administering to said individual an effective amount of a compound having the formula:



wherein R_1 and R_2 are independently hydrogen or a straight or branched chain glycosidic residue containing 1–20 glycosidic units per residue, or R_1 or R_2 is an orthoester glycoside moiety of the formula:



wherein A represents a glycofuranosyl or glycopyranosyl ring; with the further proviso that at least one of R_1 and R_2 is either a glycosidic residue or an orthoester glycoside moiety;
R_3 is hydrogen, lower alkyl (C_1-C_4), aralkyl (C_7-C_{10}), phenyl or phenyl substituted by chloro, fluoro, bromo, iodo, lower C_1-C_4 alkyl, C_1-C_4 alkoxy; or naphthyl; and
R_4 is hydrogen or a straight or branched chain glycosidic residue containing 1–20 glycosidic units per residue.

5,612,318

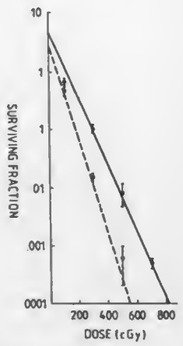
CONTROL OF GENE EXPRESSION BY IONIZING RADIATION

Ralph R. Weichselbaum, 2031 N. Sedgwick, Chicago, Ill. 60616; Dennis E. Hallahan, 5343 N. Moody, Chicago, Ill. 60630; Vikas P. Sukhatme, 1511 E. 56th St., Chicago, Ill. 60637, and Donald W. Kufe, 179 Grove St., Wellesley, Mass. 02181

Continuation of Ser. No. 35,897, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 633,626, Dec. 20, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 212,308

Int. Cl.[6] K61K *48/00*

U.S. Cl. 514—44 8 Claims



1. A method for expressing a structural gene in a cell, said method comprising the steps of:

(a) incorporating into said cell a genetic construct comprising the structural gene and a Egr, c-jun or TNF-α promoter-enhancer region inducible by ionizing radiation, the promoter-enhancer region driving the expression of the structural gene; and

(b) exposing the cell to ionizing radiation at a dose sufficient to induce expression of the structural gene.

5,612,319

POSTEXPOSURE PREVENTION OF HIV INFECTION OR SEROCONVERSION

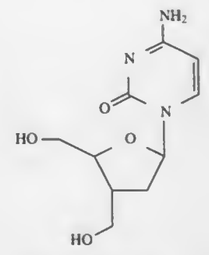
Bo F. Oberg, Upsala, Sweden, assignor to Medivir AB, Huddinge, Sweden

Filed May 31, 1994, Ser. No. 251,316

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—49 24 Claims

1. A method of inhibiting the establishment of HIV infection in a human or simian following exposure to a potential infection establishing amount of HIV, comprising administering to said human or simian an effective anti-HIV establishment amount of the compound:



1-[2',3'-dideoxy-3'-C-(hydroxymethyl)-β -D-erythro-pentofuranosyl]cytosine or a pharmaceutically acceptable salt thereof.

5,612,320

THERAPEUTIC CARBOHYDRATE BLENDS FOR TREATING AND AIDING PREMENSTRUAL SYNDROME

Judith J. Wurtman, Boston, Mass.; Jeff L. Shear, and Alvin Kershman, both of St. Louis, Mo., assignors to Internutria, Inc., Framingham, Mass.

Continuation-in-part of Ser. No. 168,492, Dec. 22, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 359,695

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—54 41 Claims

1. A composition for alleviating or managing symptoms associated with pre-menstrual syndrome comprising an effective amount of an aqueous mixture of water and a rapidly digestible carbohydrate blend comprising dextrose, dextrin, maltodextrin, or a mixture thereof and starch, pre-gelatinized starch, or a mixture thereof,

said aqueous mixture being essentially free of protein, having a pH of less than 6 and having a ratio of water to carbohydrate blend of about 3–12 mL of water to 1 g of carbohydrate blend.

27. A method of alleviating or managing symptoms associated with pre-menstrual syndrome comprising administering a composition comprising an effective amount of an aqueous mixture of water and a rapidly digestible carbohydrate blend comprising dextrose, dextrin, maltodextrin, or a mixture thereof and starch, pre-gelatinized starch, or a mixture thereof,

said aqueous mixture being essentially free of protein, having a pH of less than 6 and having a ratio of water to carbohydrate blend of about 3–12 mL of water to 1 g of carbohydrate blend.

5,612,321

ANTIOXIDANT GRAFTED POLYSACCHARIDES

Tuyen T. Nguyen, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 22, 1995, Ser. No. 493,854

Int. Cl.[6] A61K *31/715;6/00;* C08B *37/00;16/00*

U.S. Cl. 514—54 84 Claims

1. A grafted polysaccharide composition comprising polysaccharide grafted with antioxidant on at least one hydroxyl group of the polysaccharide.

5,612,322

ACTIVATOR FOR HERBICIDE

Tetsuji Iwasaki, Wakayama, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 166,597, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 418,903, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 139,720, Dec. 30, 1987, abandoned, which is a division of Ser. No. 42,545, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 725,028, Apr. 19, 1985, abandoned. This application May 26, 1995, Ser. No. 451,187

Claims priority, application Japan, Apr. 23, 1994, 81538/84

Int. Cl.[6] A01N *57/26*

U.S. Cl. 514—78 15 Claims

1. An agricultural herbicidal composition which consists essentially of an effective amount of an agricultural chemical herbicide and an effective amount of a substance for increasing the herbicidal rate of said herbicide, said herbicide being N-(phosphonomethyl)glycine or a salt thereof and said substance being selected from the group consisting of an alkyl phosphate, an alkenyl phosphate, a hydroxyalkyl phosphate, a polyoxyalkylene alkyl ether phosphate, a polyoxyalkylene alkenyl ether phosphate, a polyoxyalkylene hydroxyalkyl ether phosphate and salts thereof, said substance having from 1 to 22 carbon atoms in the alkyl or alkenyl group thereof and the weight ratio of said substance/said herbicide being in the range of 1/1 to 15/1.

5,612,323

PHOSPHINIC ESTER SUBSTITUTED BENZOPYRAN DERIVATIVES

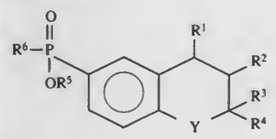
Raj N. Misra, Hopewell, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 479,324

Int. Cl.[6] A61K *31/665;* C07F *9/28*

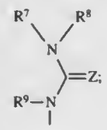
U.S. Cl. 514—100 5 Claims

1. A compound of the formula



1

where R^1 is



R^2 is hydroxy;

R^3 and R^4 are each independently hydrogen or alkyl;

R^5 is alkyl;

R^6 is aryl;

R^7 is aryl or heterocyclo;

R^8 is hydrogen;

R^9 is hydrogen;

Y is —O—; and

Z is NCN or O.

5,612,324

METHOD FOR TREATING ACNE

Spencer Guang Lin, and Kathleen G. Baier, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 287,047, Aug. 8, 1994, abandoned, which is a continuation of Ser. No. 141,434, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 878,650, May 5, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 422,012

Int. Cl.[6] A61K *31/615;31/655*

U.S. Cl. 514—162 18 Claims

1. A method for reducing the irritation on mammalian skin of the topical application of salicylic acid when treating acne in mammalian skin comprising the step of treating the skin with a safe and effective amount of a composition comprising:

(a) from about 0.01% to about 20% salicylic acid;

(b) from about 0.1% to about 10% dexpanthenol; and

(c) a pharmaceutically acceptable carrier wherein said carrier has a pH of from about 2 to about 6.5.

5,612,325

VITAMIN D ANALOGUES HAVING A HALOGEN-OR AZIDO- SUBSTITUTED SIDE CHAIN

Kai Hansen, Herlev, and Henrik Pedersen, Bagsværd, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Løvens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

PCT No. PCT/DK95/00305, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/07851, PCT Pub. Date Apr. 14, 1994

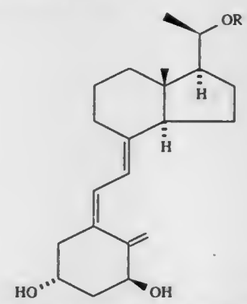
PCT Filed Sep. 23, 1993, Ser. No. 367,206

Claims priority, application United Kingdom, Sep. 25, 1992, 9220272

Int. Cl.[6] A61K *31/59;* C07C *401/00*

U.S. Cl. 514—167 8 Claims

1. A compound of formula I



I

in which R stands for a straight or branched, saturated or unsaturated alkyl group containing from 4 to 12 carbon atoms optionally substituted with a hydroxy group, and possibly containing a ring structure, and in which at least one of the carbon atoms not bearing a hydroxyl group is substituted with one or more halogen atoms or an azido group; and prodrugs of I in which one or more of the hydroxy groups are masked as groups which can be reconverted to hydroxy groups in vivo.

5,612,326

METHODS CONTAINING VITAMIN D COMPOUNDS FOR IMPROVEMENT OF SKIN CONDITIONS

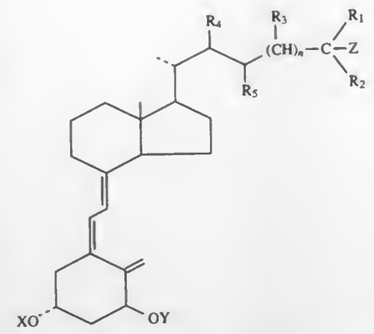
Hector F. DeLuca, Deerfield, and Connie M. Smith, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 971,669, Nov. 4, 1992, Pat. No. 5,459,136, which is a continuation of Ser. No. 573,560, Aug. 24, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 396,636

Int. Cl.[6] A61K *31/59;* C07C *401/00*

U.S. Cl. 514—167 17 Claims

1. A method for treating skin conditions selected from the group consisting of lack of adequate skin firmness, wrinkles, lack of dermal hydration and insufficient sebum secretion which comprises administering to a patient by oral or parenteral means an effective amount of a compound of the formula:



where R_4 and R_5 represent hydrogen or when taken together R_4 and R_5 represent a carbon-carbon double bond or a carbon-carbon triple bond, Z represents hydrogen, hydroxy or protected-hydroxy, R_3 represents hydrogen, hydroxy, protected-hydroxy or an alkyl group, X and Y which may be the same or different, are hydrogen or a hydroxy-protecting group, R_1 represents the group $-(CH_2)_q-H$ and R_2 represents the group $-(CH_2)_p-H$, and where n, q and p are integers having independently the values of 1 to 5 with the proviso that at least one of n, q and p is greater than 1, and R_1 and R_2 when taken together represent the group $-(CH_2)_m-$ where m is an integer having the value of 2 to 5 and with the further proviso that when q or p is 2 or more, n cannot be 1, and when q and p are both 1, n cannot be 2.

5,612,327

1α,24-(OH)$_2$-CHOLECALCIFEROL EMULSION COMPOSITION AND METHOD FOR TREATING PSORIASIS

Yuji Makino; Hideo Matugi, and Yoshiki Suzuki, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP94/01443, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO95/06482, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 1, 1994, Ser. No. 428,106

Claims priority, application Japan, Sep. 1, 1993, 5-217261

Int. Cl.^{6} A61K *47/44*

U.S. Cl. 514—167 **6 Claims**

1. A 1α,24-(OH)$_2$-cholecalciferol cream composition for psoriasis comprising:

(a) a therapeutically effective amount to treat psoriasis of 1α,24-(OH)$_2$-cholecalciferol,

(b) an oil phase component comprising:

(i) a solid oil component comprising white petrolatum and a mixture of higher alcohols, wherein the white petrolatum is present in an amount of from 5 to 20 parts by weight based on 100 parts by weight of the total cream composition, and the mixture of higher alcohols is present in an amount of from 5 to 15 parts by weight based on 100 parts by weight of the total cream composition, and

(ii) a liquid oil component, wherein the liquid oil component comprises squalane, wherein the squalane is present in an amount of from 3 to 10 parts by weight based on 100 parts by weight of the total cream composition,

(c) an aqueous phase component, and

(d) at least two surfactants present in an amount of from 2.5 to 7.5 parts by weight based on 100 parts by weight of the total cream composition,

wherein the weight ratio of the solid oil component to the liquid oil component is at least approximately 2; the liquid component is ⅓ or less of the oil phase component; the mixture of higher alcohols is stearyl alcohol and cetyl alcohol; the weight ratio of stearyl alcohol to the total amount of stearyl alcohol and cetyl alcohol is approximately 0.7 to 0.9; at least 50% by weight of the surfactants is at least one surfactant having an HLB value of approximately 5 or less, and the HLB value of the surfactants as a whole is approximately 8 to 18.

5,612,328

VITAMIN D3 FLUORINATED ANALOGS

Barbara J. Baggiolini, North Caldwell; Shian-Jan Shiuey, Nutley, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

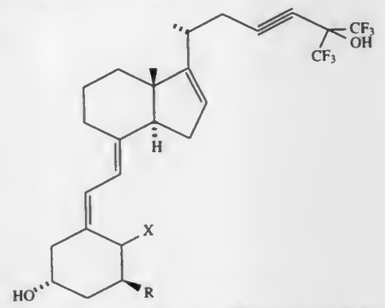
Division of Ser. No. 419,796, Apr. 11, 1995, Pat. No. 5,512,554, which is a division of Ser. No. 184,082, Jan. 18, 1994, Pat. No. 5,451,574, which is a continuation of Ser. No. 971,788, Nov. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 957,500, Oct. 7, 1992, abandoned. This application Feb. 1, 1996, Ser. No. 595,373

Int. Cl.^{6} A61K *31/59*

U.S. Cl. 514—167 **6 Claims**

1. A method for the treatment of sebaceous gland diseases which comprises administering to a host in need of such treatment an effective amount of a compound of formula

I



wherein R is hydrogen, hydroxy or fluorine and X is H_2.

5,612,329

DIAZIRIDINYLPOLYAMINE ANTI-CANCER AGENTS

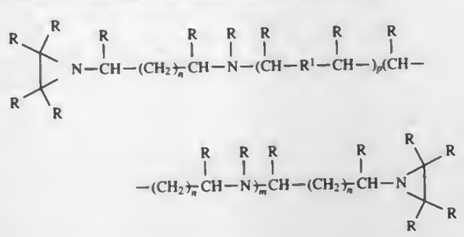
Patrick S. Callery, Perry Hall; Merrill J. Egorin, Reisterstown; Yanglong Li, Dundalk, all of Md., and Zhi-min Yuan, Brookline, Mass., assignors to University of Maryland at Baltimore, Baltimore, Md.

Filed Jun. 5, 1995, Ser. No. 462,636

Int. Cl.^{6} A61K *31/395;* **C07D** *403/12*

U.S. Cl. 514—183 **25 Claims**

1. A diaziridinylpolyamine represented by formula (I):



wherein each R, which may be the same or different, represents a hydrogen atom or an alkyl group having from 1 to 5 carbon atoms; R^1 represents CH=CH, C≡C or phenyl; each n, which may be the same or different, represents an integer of from 1 to 6; m represents 0 or an integer of from 1 to 3 and p represents 0 or an integer of from 1 to 3.

5,612,330

METHODS FOR INHIBITING AND CONTROLLING VIRAL GROWTH

David T. Connor, and Stephen J. Gracheck, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

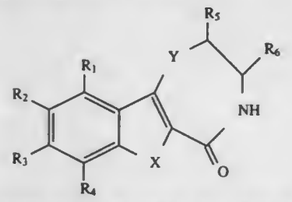
Continuation-in-part of Ser. No. 351,611, Dec. 12, 1994, Pat. No. 5,489,586, which is a continuation-in-part of Ser. No. 207,330, Mar. 7, 1994, abandoned. This application Mar. 22, 1995, Ser. No. 408,431

Int. Cl.^{6} A61K *31/55;* **C07D** *513/04*

U.S. Cl. 514—211 **11 Claims**

1. A method of inhibiting treating herpesvirus comprising administering to a subject in need of treatment an anti-herpesvirus amount of a compound of the formula

I



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1, R_2, R_3, and R_4 are each independently hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy, benzyloxy, trifluoromethyl, nitro, or $-NR_8R_9$, in which R_8 and R_9 are each independently hydrogen or lower alkyl;

R_5 and R_6 are each independently hydrogen, lower alkyl or phenyl;

X is O, $S(O)_n$ or NR_7;

Y is O, $S(O)_n$ or NR_8;

R_7 is hydrogen, lower alkyl, phenyl, benzyl, CH_2OR_8 or lower alkyl, phenyl, benzyl substituted with halo;

R_8 is hydrogen, lower alkyl or phenyl;

n is an integer of 0, 1 or 2;

with the provisos that

1) when X is NH, Y is NH, R_1 is H, R_3 is H and R_4 is Br, R_2 is not methyl;

2) when X is NH, Y is NH, R_1, R_3 and R_4 are H, R_2 is not methoxy or ethoxy; and

3) when X is NH, Y is S, at least one of R_1, R_2, R_3, and R_4 is not H.

5,612,331

TETRAHYDROCARBAZOLE DERIVATIVES AS 5-HT1-LIKE AGONISTS

Roderick A. Porter, Hertfordshire, and Mythily Vimal, London, both of England, assignors to SmithKline Beecham PLC, United Kingdom

PCT No. PCT/EP93/03628, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/14773, PCT Pub. Date Jul. 7, 1994

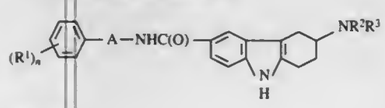
PCT Filed Dec. 16, 1993, Ser. No. 464,615

Claims priority, application United Kingdom, Dec. 21, 1992, 9226566

Int. Cl.^{6} A61K *31/40;* **C07D** *209/88*

U.S. Cl. 514—212 **9 Claims**

1. A compound of formula (I):



Formula (I)

wherein

R^1 represents halogen, C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, NO_2, $-NR^4R^5$, $R^4R^5NCO(CH^2)_m-$, $R^4R^5NSO_2(CH_2)_m-$, $R^6CONH(CH_2)_m-$ or $R^7SO_2NH(CH_2)_m-$;

R^4 and R^5 each independently represent hydrogen or C_{1-4}alkyl or NR^4R^5 represents a 5- to 7-membered heterocyclic ring;

R^6 represents hydrogen or C_{1-4}alkyl;

R^7 represents C_{1-4}alkyl;

m is zero, 1 or 2;

n is zero or 1 to 5;

R^2 and R^3 each independently represent hydrogen, C_{1-6}alkyl or benzyl or $-NR^2R^3$ represents a pyrrolidino, piperidino or hexahydroazepino ring; and

A represents a bond, a C_{1-5}alkylene chain or a C_{3-5}alkenylene chain wherein the double bond is not adjacent the nitrogen atom;

or a salt thereof.

5,612,332

DI- AND TRIAMINOGUANIDINES, AND METHODS OF USE

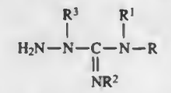
Dilip R. Wagle, Valley Cottage, N.Y.; Peter C. Ulrich, Old Tappan, N.J., and Anthony Cerami, Shelter Island, N.Y., assignors to Alteon Inc., Ramsey, N.J., and The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 274,243, Jul. 13, 1994, abandoned, which is a division of Ser. No. 889,141, May 27, 1992, Pat. No. 5,356,895, which is a division of Ser. No. 605,654, Oct. 30, 1990, Pat. No. 5,140,048, which is a continuation-in-part of Ser. No. 264,930, Nov. 2, 1988, Pat. No. 4,983,604, which is a continuation-in-part of Ser. No. 119,958, Nov. 13, 1987, Pat. No. 4,908,446, which is a continuation-in-part of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Jun. 7, 1995, Ser. No. 487,059

Int. Cl.^{6} A61K *31/415;* **C07C** *281/00;277/00;* **C07D** *211/56;265/30*

U.S. Cl. 514—212 **23 Claims**

1. A method for inhibiting the advanced glycosylation of a target protein comprising contacting the target protein with an effective amount of composition comprising a compound selected from the group consisting of compounds of the formula



(I)

wherein R is a lower alkyl group, or a group of the formula



wherein R^4 is hydrogen, and R^5 is a lower alkyl group or a hydroxylower alkyl group; or R^4 and R^5 together with the nitrogen atom are a heterocyclic group containing 4–6 carbon atoms and, in addition to the nitrogen atom, 0–1 oxygen, nitrogen or sulfur atoms;

R^1 is hydrogen or an amino group;

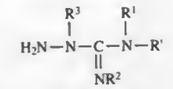
R^2 is hydrogen or an amino group;

R^3 is hydrogen or a lower alkyl group;

with the proviso that at least one of R^1, R^2, and R^3 is other than hydrogen; and with the further proviso that R and R^1 cannot both be amino groups; their pharmaceutically acceptable acid addition salts; and mixtures thereof, and

a carrier therefor.

17. A compound of the formula



(I)

wherein R' is a group of the formula



wherein $R^{4'}$ is hydrogen and $R^{5'}$ is a hydroxy(lower)alkyl group, or $R^{4'}$ and $R^{5'}$ together with the nitrogen atom are a heterocyclic group containing 4–6 carbon atoms and, in addition to the nitrogen atom, 0–1 oxygen, nitrogen or sulfur atoms;

R^1 is hydrogen or an amino group;

R^2 is hydrogen or an amino group;

R^3 is hydrogen or a lower alkyl group;

with the proviso that at least one of R^1, R^2, and R^3 is other than hydrogen; and with the further proviso that R and R^1 cannot both be amino groups; or their pharmaceutically acceptable acid addition salts.

5,612,333

ANTIVIRAL COMBINATIONS

Janet M. Cameron, Greenford, Great Britain, assignor to Glaxo Group Limited, Great Britain

PCT No. PCT/EP93/01847, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/02155, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 13, 1993, Ser. No. 356,322

Claims priority, application United Kingdom, Jul. 16, 1992, 9215178

Int. Cl.[6] A61K *31/55;31/505*

U.S. Cl. 514—220 **9 Claims**

1. A combination comprising about 150 mg (2R,cis)-4-amino-1-(2-hydroxymethyl- 1,3-oxathiolan-5-yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt or ester thereof and about 200 mg 11-cyclopropyl-5, 11-dihydro- 4-methyl-6H-dipyrido[3,3-b;2^1,3^1-e][1,4]diazepin-6-one or a pharmaceutically acceptable salt or ester thereof.

5,612,334

TRICYCLIC BENZAZEPINE VASOPRESSIN ANTAGONISTS

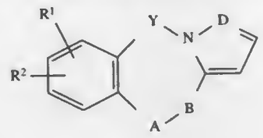
Jay D. Albright, and John P. Dusza, both of Nanuet, N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 373,132, Jan. 17, 1995, Pat. No. 5,536,718. This application Jun. 2, 1995, Ser. No. 460,346

Int. Cl.[b] C07D *487/04;* **A61K** *31/55*

U.S. Cl. 514—220 **9 Claims**

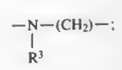
1. A compound selected from those of the formula:



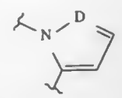
wherein

Y is a moiety —(CH_2)—;

A—B is a moiety:



the moiety:



is a five membered aromatic (unsaturated) nitrogen containing heterocyclic ring optionally substituted by halogen, (C_1–C_3)lower alkyl, or —$(CH_2)_q$—$N(R_b)_2$ wherein D is carbon;

q is 1 or 2;

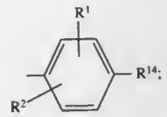
R_b is independently selected from hydrogen, –CH_3, and C_2H_5;

R^3 is a moiety of the formula:



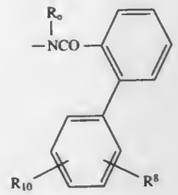
wherein

Ar is a moiety selected from the group consisting of



R^1 and R^2 are independently selected from hydrogen, (C_1–C_3)lower alkyl, (C_1–C_3)lower alkoxy or halogen;

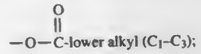
R^{14} is selected from a moiety of the formula:



wherein R_a is hydrogen;

R^{10} is selected from hydrogen, halogen, or (C_1–C_3)lower alkyl;

R^8 is selected from hydrogen, lower alkyl(C_1–C_3), -S-lower alkyl(C_1–C_3), halogen, —NH-lower alkyl(C_1–C_3), —N-[lower alkyl(C_1–C_3)]$_2$, —OCF_3, —OH, —CN, —S—CF_3, —NO_2, —NH_2, O-lower alkyl(C_1–C_3), CF_3, or



and the pharmaceutically acceptable salts, esters and pro-drug forms thereof.

8. A method for treating disease in a mammal characterized by excess renal reabsorption of water, the method comprising administering to a mammal in need thereof an effective amount of a compound of claim 1, or a pharmaceutically acceptable salt, ester or prodrug form thereof, and a suitable pharmaceutical carder.

5,612,335

CYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

F. Himmelsbach, Mittelbiberach; Helmut Pieper; Volkhard Austel, both of Biberach; Gunter Linz, Mittelbiberach; Brian Guth, Warthausen; Thomas Muller, and Johannes Weisenberger, both of Biberach, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

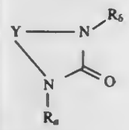
Division of Ser. No. 200,125, Feb. 22, 1994, Pat. No. 5,519,036. This application May 2, 1995, Ser. No. 434,136

Claims priority, application Germany, Feb. 22, 1993, 43 05 388.2; Sep. 22, 1993, 43 32 168.2

Int. Cl.[6] C07D *223/16;* **A61K** *31/55*

U.S. Cl. 514—221 **6 Claims**

1. An imidazolidinone of formula



(I)

wherein:

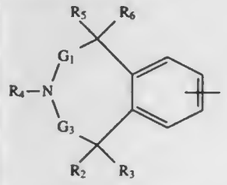
Y is a —CH_2CH_2—, —$CH_2CH_2CH_2$—, —CH=CH—, —CH=N—, —N=CH—, —CH_2CO— or —$COCH_2$— group optionally substituted by one or two methyl groups;

R_a is a group of general formula

A—B—

wherein

A is a group of the formula



wherein the benzo moiety of the above-mentioned group may be hydrogenated to the corresponding hexahydro-derivative,

G_1 is a methylene group,

G_3 is a methylene group,

R_2 is a hydrogen atom,

R_3 is a hydrogen atom,

R_4 is a hydrogen atom, a C_{1-6}-alkyl, cyclopropyl, cyclohexyl, cyclopropylmethyl, cyclohexylmethyl, 2-hydroxy-ethyl, allyl, benzyl, carboxymethyl or C_{1-2} -alkoxymethyl group, alkoxy carbonylmethyl group

R_5 is a hydrogen atom,

R_6 is a hydrogen atom, and

B is a bond, a —CH_2CH_2— or phenylene group;

R_b is a group of formula

F—E—D—

wherein

D is a bond, an alkylene, phenylene or cyclohexylene group;

E is a straight-chained alkylene group which may be substituted by an alkyl or phenyl group,

a C_{2-4}-alkenylene group,

a phenylene group, or

E is a straight-chained O-alkylene group linked to the group D via the oxygen atom; and

F is a carbonyl group substituted by a hydroxy, alkoxy or C_{5-6}-cycloalkoxy group, and

the shortest distance between the group F and the ring nitrogen atom of group A is at least 11 bonds;

whilst unless otherwise specified the above-mentioned alkyl, alkylene or alkoxy moieties may each contain 1 to 4 carbon atoms, and each carbon atom in the above mentioned alkylene and cycloalkylene moieties is linked to one heteroatom at most and each of the above-mentioned phenyl or phenylene groups may be substituted by a fluorine, chlorine or bromine atom, by a methyl or methoxy group;

the tautomers, stereoisomers or salts thereof.

5,612,336

HETEROCYCLIC AMIDE DERIVATIVES AS TACHYKININ ANTAGONISTS

Richard J. Lewis, Harlow; Angus M. MacLeod, and Kevin J. Merchant, both of Bishops Stortford, all of United Kingdom, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB93/01415, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/01402, PCT Pub. Date Jan. 20, 1994

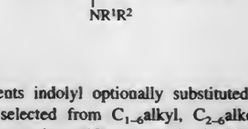
PCT Filed Jul. 6, 1993, Ser. No. 373,195

Claims priority, application United Kingdom, Jul. 13, 1992, 9214864; Oct. 22, 1992, 9222175; Dec. 14, 1992, 9226070; Mar. 4, 1993, 9304398

Int. Cl.[6] A61K *31/44;31/535;* **C07D** *401/12;413/12*

U.S. Cl. 514—235.2 **13 Claims**

1. A compound of formula (I):



(I)

wherein

Q^1 represents indolyl optionally substituted by one or more groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, SR^a, SOR^a, SO_2R^a, OR^a, NR^aR^b, NR^aCOR^b, NR^aCOOR^b, $COOR^a$, $CONR^aR^b$ and, optionally substituted at the indolyl nitrogen atom by a group selected from C_{1-6}alkyl, phenyl (C_{1-4}alkyl) optionally substituted on the phenyl ring by one or more of the above substituents, $COOR^a$ or $CONR^aR^b$, where R^a and R^b independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;

the dotted line represents an optional covalent bond;

one of X and Y represents H and the other of X and Y represents hydroxy or C_{1-6}alkoxy, or X and Y together form a group =O or =NOR^5 where R^5 is H or C_{1-6}alkyl;

R^1 represents H or C_{1-6}alkyl;

R^2 represents CO—W—R^6 where W represents a bond or a saturated or unsaturated hydrocarbon chain of 1, 2, 3, 4, 5 or 6 carbon atoms and R^6 is imidazolyl, pyridyl, morpholinyl or pyrrolidinyl and each of which may be optionally substituted by C_{1-6}alkyl, C_{1-6}alkoxy, oxo, SH, =S, halo, trifluoromethyl, NR^aR^b, NR^aCOR^b, $CONR^aR^b$, CO_2R^a and CH_2OR^a;

R^3 represents H, C_{1-6}alkyl or C_{2-6}alkenyl; and

R^4 represents phenyl optionally substituted by 1, 2, or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a or $CONR^aR^b$; or a salt or prodrug thereof.

5,612,337

SUBSTITUTED MORPHOLINE DERIVATIVES AND THEIR USE AS THERAPEUTIC AGENTS

Raymond Baker, Green Tye; Timothy Harrison, Great Dunmow; Angus M. MacLeod, Bishops Stortford; Andrew P. Owens, Rushden; Eileen M. Seward, Bishops Stortford; Christopher J. Swain, Duxford, and Martin R. Teall, Bishops Stortford, all of United Kingdom, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB94/02819, § 371 Date Jun. 13, 1996, § 102(e) Date Jun. 13, 1996, PCT Pub. No. WO95/18124, PCT Pub. Date Jul. 6, 1995

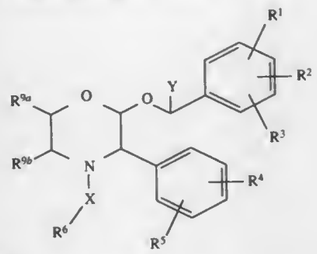
PCT Filed Dec. 23, 1994, Ser. No. 663,201

Claims priority, application United Kingdom, Dec. 29, 1993, 9326480; Apr. 12, 1994, 9407189; Apr. 22, 1994, 9408065; Aug. 15, 1994, 9416428

Int. Cl.[6] A61K *31/535;* **C07D** *413/06;413/14*

U.S. Cl. 514—236.2 **24 Claims**

1. A compound of the formula (I):



(I)

wherein:

R^1 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6} alkoxy, CF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2 R^a, $CONR^aR^b$, C_{2-6}alkenyl, C_{2-6} alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, where R^a and R^b each independently represent hydrogen or C_{1-4}alkyl;

R^2 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6} alkoxy substituted by C_{1-4}alkoxy or CF_3;

R^3 is hydrogen, halogen or CF_3;

R^4 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6} alkoxy, CF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2 R^a, $CONR^aR^b$, C_{2-6}alkenyl, C_{2-6} alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, where R^a and R^b each independently represent hydrogen or C_{1-4}alkyl;

R^5 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6} alkoxy substituted by C_{1-4}alkoxy or CF_3;

R^6 is a 5-membered or 6-membered heterocyclic ring containing 2 or 3 nitrogen atoms optionally substituted by =O, =S or a C_{1-4}alkyl group, and optionally substituted by a group of the formula ZNR^7R^8 where

Z is C_{1-6}alkylene or C_{3-6}cycloalkylene;

R^7 is hydrogen, C_{1-4}alkyl, C_{3-7} cycloalkyl or C_{3-7}cycloalkylC_{1-4}alkyl, or C_{2-4}alkyl substituted by C_{1-4}alkoxy or hydroxyl;

R^8 is hydrogen, C_{1-4}alkyl, C_{3-7} cycloalkyl or C_{3-7}cycloalkylC_{1-4}alkyl, or C_{2-4}alkyl substituted by one or two substituents selected from C_{1-4}alkoxy, hydroxyl or a 4, 5 or 6 membered heteroaliphatic ring containing one or two heteroatoms selected from N, O and S;

or R^7, R^8 and the nitrogen atom to which they are attached form a heteroaliphatic ring of 4 to 7 ring atoms, optionally substituted by one or two groups selected from hydroxy or C_{1-4}alkyl optionally substituted by a C_{1-4}alkoxy or hydroxyl group, and optionally containing a double bond, which ring may optionally contain an oxygen or sulphur ring atom, a group S(O) or $S(O)_2$ or a second nitrogen atom which will be part of a NH or NR^c moiety where R^c is C_{1-4}alkyl optionally substituted by hydroxy or C_{1-4}alkoxy;

or R^7, R^8 and the nitrogen atom to which they are attached form a non-aromatic azabicyclic ring system of 6 to 12 ring atoms;

or Z, R^7 and the nitrogen atom to which they are attached form a heteroaliphatic ring of 4 to 7 ring atoms which may optionally contain an oxygen ring atom;

R^{9a} and R^{9b} are each independently hydrogen or C_{1-4}alkyl, or R^{9a} and R^{9b} are joined so, together with the carbon atoms to which they are attached, there is formed a C_{5-7} ring;

X is an alkylene chain of 1 to 4 carbon atoms optionally substituted by oxo; and

Y is a C_{1-4}alkyl group optionally substituted by a hydroxyl group;

with the proviso that if Y is C_{1-4}alkyl, R^6 is substituted at least by a group of the formula ZNR^7R^8 as defined above;

or a pharmaceutically acceptable salt or prodrug thereof.

5,612,338

PYRAZOLYL ACRYLIC ACID DERIVATIVES, INTERMEDIATES THERETO, AND IN THEIR USE AS MICROBICIDES

Stephan Trah, Freiburg, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/00103, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/17060, PCT Pub. Date Aug. 4, 1994

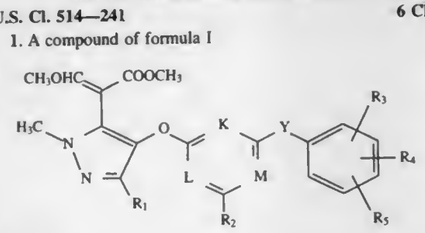
PCT Filed Jan. 17, 1994, Ser. No. 495,532

Claims priority, application Switzerland, Jan. 29, 1993, 292/93

Int. Cl.[6] A01N *43/66;43/56;* **C07D** *403/12*

U.S. Cl. 514—241 **6 Claims**

1. A compound of formula I



(I)

wherein

R_1 is hydrogen or methyl,

R_2 is hydrogen, halogen, OCH_3, SCH_3 or CN,

R_3, R_4, R_5 are each independently of one another hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_5alkoxycarbonyl, C_1–C_5alkanoyl, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, CN, NO_2, or wherein two of these substituents are adjacent to each other and together are a methylenedioxy or difluoromethylenedioxy radical,

K, L, M are each nitrogen, and

Y is oxygen or sulfur.

5,612,339

2-HYDROXY-3-AMINOPROPYLSULFONAMIDES

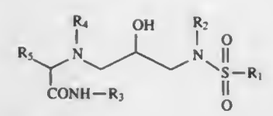
Paul Sprengeler, Philadelphia; Amos B. Smith, III, Merion; Ralph F. Hirschmann, Blue Bell, and Akihisa Yokoyama, Philadelphia, all of Pa., assignors to Trustees Of The University Of Pennsylvania, Philadelphia, Pa.

Filed Jan. 17, 1995, Ser. No. 373,651

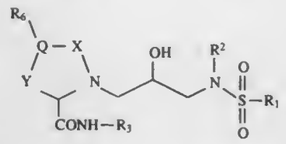
Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—252 **24 Claims**

1. A compound having formula I or II:



I



II

wherein:

R_1 is H, OH, alkyl having 1 to 10 carbon atoms, or aryl having 3 to 20 carbon atoms;

R_2 is H, alkyl having 1 to 10 carbon atoms, aryl having 3 to 20 carbon atoms, alkaryl having 4 to 25 carbon atoms, or an amino acid side chain;

R_3 is H, alkyl having one to 10 carbon atoms, or alkaryl having 4 to 25 carbon atoms;

R_4 is H, alkyl having 1 to 10 carbon atoms, aryl having 3 to 20 carbon atoms, alkaryl having 4 to 25 carbon atoms, or an amino acid side chain;

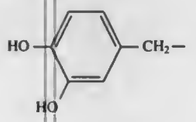
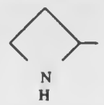
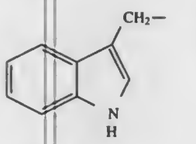
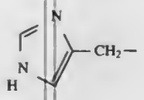
R_5 is H, alkyl having 1 to 10 carbon atoms, or aryl having 3 to 20 carbon atoms;

R^6 is H, alkyl having 1 to 10 carbon atoms, aryl having 3 to 20 carbon atoms, or alkaryl having 4 to 25 carbon atoms;

X and Y are, independently, alkylene having 1 to about 6 carbon atoms, provided that the sum of X and Y is less than or equal to 9;

Q is N or CH_2;

said amino acid side chains are independently selected from the group consisting of:

CH_3-	$CH_3-CH_2-S-CH_2-CH_2-$
$HO-CH_2-$	$HO-CH_2-CH_2-$
$C_6H_5-CH_2-$	$CH_3-CH_2(OH)-$
$HO-C_6H_5-CH_2-$	$HO_2C-CH_2-NH_2C(O)-CH_2-$
	
	$HCO_2-CH_2-CH_2-$ $NH_2C(O)-CH_2-CH_2-$ $(CH_3)_2-CH-$ $(CH_3)_2-CH-CH_2-$
	$CH_3-CH_2-CH_2-$ $H_2N-CH_2-CH_2-CH_2-$ $H_2N-C(NH)-NH-$ $-CH_2-CH_2-CH_2-$
$S-CH_2-$	$H_2N-C(O)-NH-$ $-CH_2-CH_2-CH_2-$
$HO_2C-CH(NH_2)-$ $-CH_2-S-S-CH_2-$	$CH_3-CH_2-CH(CH_3)-$
CH_3-CH_2-	$CH_3-CH_2-CH_2-CH_2-$
$CH_3-S-CH_2-CH_2-$	$H_2N-CH_2-CH_2-CH_2-CH_2-$;

said alkyl groups are straight or branched chain groups; and said aryl groups are selected from the group consisting of imidazolyl, naphthyl, phenyl, pyridyl, pyrimidinyl, and xylyl groups optionally substituted with amino, nitro, hydroxy, methyl, methoxy, thiomethyl, trifluoromethyl, mercaptyl, and carboxy groups.

5,612,340

PYRIMIDINEAMINE DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Jürg Zimmermann, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/03150, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO95/09847, PCT Pub. Date Apr. 13, 1995

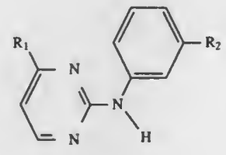
PCT Filed Sep. 21, 1994, Ser. No. 436,345

Claims priority, application Switzerland, Oct. 1, 1993, 2967/93; Jul. 18, 1994, 2279/94

Int. Cl.[6] C07D *239/42;* **A61K** *31/505*

U.S. Cl. 514—252 **8 Claims**

1. An N-phenyl-2-pyrimidineamine derivative of formula I



(I)

wherein

R_1 is

a) napbthyl,

b) fluorenyl,

c) anthracenyl or

d) a substituted cyclic radical, the cyclic radical being bonded to a ring carbon atom in each case and being selected by from phenyl, pyridyl, 1H-indolyl, pyrazinyl, thiazolyl, pyrimidinyl, pyridazinyl and imidazolyl, and the substituents of the above-mentioned phenyl radical being selected from

α) hydroxy,

β) halogen,

γ) nitro,

δ) cyano,

ε) unsubstituted or halogen-substituted lower alkoxy,

ζ) a radical of formula II



(II)

wherein

m is 0 or 1 and

R_3 is hydrogen, benzyl, lower alkyl or amino-lower alkyl wherein the amino group is free, lower alkylated or lower alkoxylated,

η) a radical of formula III

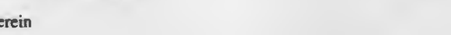


(III)

wherein

R_4 and R_5 are each independently of the other hydrogen or unsubstituted or amino- or hydroxy-substituted lower alkyl,

θ) a radical of formula IV



(IV)

wherein

R_6 and R_7 are each independently of the other hydrogen, lower alkyl or amino-lower alkyl, or wherein

R_6 and R_7 together form the bivalent radical $—(CH_2)_2—NH—(CH_2)_2—$, and

t) a radical of formula V

$$—N(R_8)R_9 \quad (V)$$

wherein

R_8 and R_9 are each independently of the other lower alkyl, or wherein

R_8 is hydrogen and

R_9 is amino or amino-cyclohexyl, or is lower alkyl that is substituted by imidazolyl, guanidyl, lower alkylamino-carbonylamino, amidino, di-lower alkylamino-cyclohexyl, piperazinyl, carboxy, lower alkoxycarbonyl, carbamoyl, N-hydroxy-carbamoyl, hydroxy, lower alkoxy, dihydroxy-phosphoryloxy or by formylpiperazinyl, and the substituents of the other above-mentioned cyclic radicals pyridyl, 1H-indolyl, pyrazinyl, thiazolyl, pyrimidinyl, pyridazinyl and imidazolyl being selected from

a) hydroxy,

b) halogen,

c) cyano,

d) amino-lower alkyl,

e) unsubstituted or halogen-substituted lower alkoxy,

f) phthalimido-substituted lower alkyl,

g) a radical of the above-mentioned formulae II, III or IV and

h) a radical of formula VI

$$—N(R_{10})R_{11} \quad (VI)$$

wherein

R_{10} and R_{11} are each independently of the other hydrogen or lower alkyl, or wherein

R_{10} is hydrogen and

R_{11} is amino or amino-cyclohexyl, or is lower alkyl substituted by amino, lower alkylamino, di-lower alkylamino, lower alkanoylamino, imidazolyl, guanidyl, lower alkylamino-carbonylamino, amidino, di-lower alkylamino-cyclohexyl, piperazinyl, formylpiperazinyl, carboxy, lower alkoxycarbonyl, carbamoyl, N-hydroxy-carbamoyl, hydroxy, lower alkoxy, dihydroxyphosphoryloxy or by glycylamido; and R_2 is nitro, fluorine-substituted lower alkoxy or a radical of formula VII

$$—N(R_{12})—C(=X)—(Y)_n—R_{13} \quad (VII)$$

wherein

R_{12} is hydrogen or lower alkyl,

X is oxo, thio, imino, N-lower alkyl-imino, hydroximino or O-lower alkyl-hydroximino,

Y is oxygen or the group NH,

n is 0 or 1, and

R_{13} is

a) an unsubstituted aliphatic hydrocarbon radical having 5 to 22 carbon atoms,

b) phenyl or naphthyl each of which is unsubstituted or substituted by α) cyano, β) lower alkyl that is unsubstituted or substituted by hydroxy, amino or by 4-methyl-piperazinyl, γ) trifluoromethyl, δ) hydroxy, ε) lower alkoxy, ζ) lower alkanoyloxy, η) halogen, θ) amino, ι) lower alkylamino, χ) di-lower alkylamino, λ) lower alkanoylamino, μ) benzoylamino, ν) carboxy, or ξ) lower alkoxycarbonyl,

c) lower alkyl which is substituted by a phenyl or naphthyl radical as defined in the preceding paragraph b),

d) a 5- or 6-membered cycloalkyl radical,

e) lower alkyl which is substituted by a 5- or 6-membered cycloalkyl radical,

f) a thienyl or 2-, 3- or 4-pyridyl radical or

g) lower alkyl substituted by a thienyl or a 2-, 3- or 4-pyridyl radical,

or a salt of such a compound having at least one salt-forming group.

5,612,341

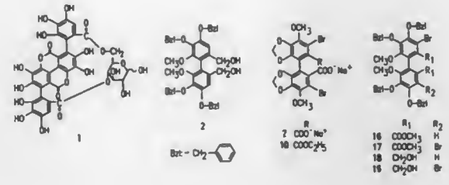
BROMINATED HEXAHYDROXYBIPHENYL DERIVATIVES

Kuo-Hsiung Lee, Chapel Hill, N.C.; Yoshiki Kashiwada, Niigata, Japan; Lan Xie, Chapel Hill, N.C.; Louis M. Cosentino, Springfield, Va.; Mark Manak, Laurel, Md.; Jing-Xi Xie, Beijing, China; Yung-Chi Cheng, Woodbridge, Conn., and Robert Kilkuskie, Shrewsbury, Mass., assignors to Biotech Research Laboratories, Rockville, Md., and University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jun. 7, 1995, Ser. No. 477,939

Int. Cl.[6] A61K *31/36;* **C07D** *317/62;317/64;317/66*

U.S. Cl. 514—253 **20 Claims**

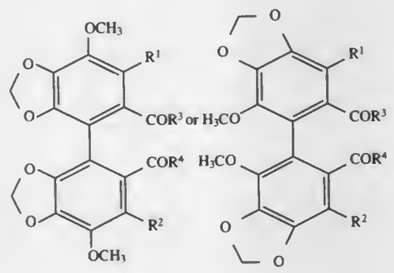


1

2

	R_1	R_2
16	$COOCH_3$	H
17	$COOCH_3$	Br
18	CH_2OH	H
19	CH_2OH	Br

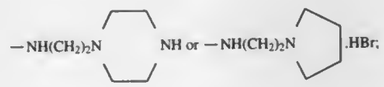
1. A compound having one of the formulae:



wherein

R^1 and R^2 are independently hydrogen or bromine;

R^3 and R^4 are independently one of hydroxy, $C_{1\text{-}6}$ alkoxy, $—O(CH_2)_2N^+(CH_3)_3\ Cl^-$,



provided that (a) R^1 and R^2 are not both hydrogen, and (b) when R^3 and R^4 are both methoxy, then R^1 and R^2 are not both bromine.

5,612,342

[(4-HETEROARYL-1-PIPERINDYL)ALKOXY]-3,4-DIHYDRO-1(2H)-NAPHTHALENONES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

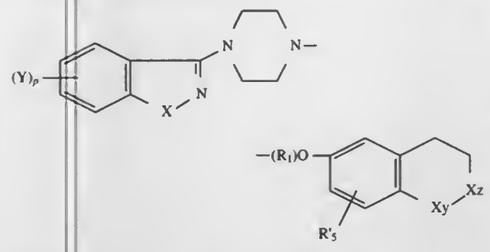
Joseph T. Strupczewski, Flemington, N.J., and Kenneth J. Bordeau, Kintnersville, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,252

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/04;403/04;417/04;419/04;221/04;275/04;239/02*

U.S. Cl. 514—254 **16 Claims**

1. A compound of the formula:



wherein,

X is —O—, —S—, —NH—, or —N(R_2);

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10}) cycloalkyl, aroyl, (C_2–C_{18}) alkanoyl, (C_1–C_{18}) alkoxycarbonyl and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{27})_n—$, where n is 0,1,2 or 4; or

$—CHR_{24}CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CHR_{24}—$,

$—CHR_{24}—CH=CH—CR_{23}R_{24}—CHR_{24}—$,

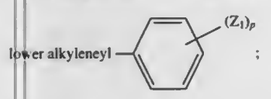
$—CHR_{24}—CR_{23}R_{24}—CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CR_{23}R_{24}—CHR_{24}—$, or

$CHR_{24}—CR_{23}R_{24}—C\equiv C—CHR_{24}$,

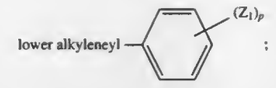
the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl or (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyoxy(C_1–C_6)alkl or (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



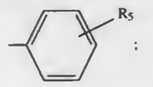
where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

either one of X_y or X_z is —C(=O)— and the other is $—CH_2—$;

R_5' is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, or bromine;

aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,612,343

N-[(4-HETEROARYL-1-PIPERAZINYL)ALKYL]-2,3-NAPHTHALIMIDES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

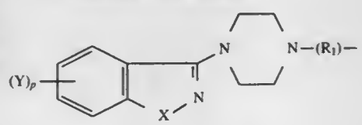
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

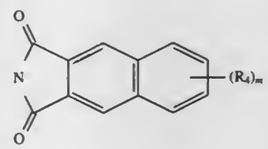
Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 467,912

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/04;403/04;417/04;419/04;221/04;275/04;239/02*

U.S. Cl. 514—254 **17 Claims**

1. A compound of the formula:





wherein

X is —O—, —S—, —NH—, or —N (R_2);

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}$ where n is 0, 1, 2 or 3; or

$—CHR_{24}CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CHR_{24}—$,

$—CHR_{24}—CH═CH—CR_{23}R_{24}—CHR_{24}—$,

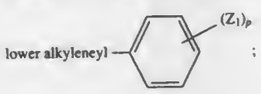
$—CHR_{24}—CR_{23}R_{24}—CH═CH—CHR_{24}—$,

$—CHR24—C≡C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C≡C—CHR_{24}$,

the —CH═CH— bond being cis or trans;

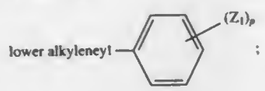
R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl (C_1–C_{18}) alkyloxy, (C_1–C_{18}) alkanoyloxy, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl or



;

where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18}) alkyoxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl or



;

where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_8)acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(═O)—(C_1–C_{18}straight or branched chain-)alkyl or —C(═O)—aryl;

in which aryl is phenyl or



;

where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

m is 1, 2, or 3;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18}) carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18}) alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,612,344

TRIAZOLOQUINAZOLINES FOR THE TREATMENT OF CENTRAL NERVOUS DISORDERS

Rainer Schlecker, Bissersheim; Hans-Jörg Treiber, Bruehl; Berthold Behl, Ludwigshafen, and Hans P. Hofmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03424, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO94/13294, PCT Pub. Date Jul. 23, 1994

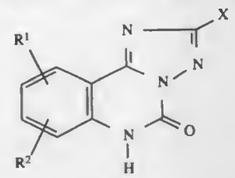
PCT Filed Dec. 6, 1993, Ser. No. 433,509

Claims priority, application Germany, Dec. 10, 1992, 42 41 564.0

Int. Cl.[6] A61K *31/505;* **C07D** *487/02*

U.S. Cl. 514—257 **4 Claims**

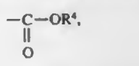
1. A process for treating central nervous disorders which comprises administering to a patient in need thereof an effect amount of a composition comprising a compound of the formula I



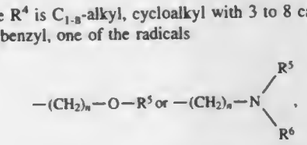
(I)

where

X is carboxyl, or carboxyl in the form of its salt with a physiologically tolerated amine cation or metal cation, the radical



where R^4 is C_{1-8}-alkyl, cycloalkyl with 3 to 8 carbons in the ring, benzyl, one of the radicals



where n is 2, 3 or 4 and R^5 and R^6 are each C_{1-3}-alkyl; hydroxy-C_{1-4}-alkyl, nitrile-C_{1-4}-alkyl, tetrazolyl, carbonylaminotetrazole or carbamoyl, and

R^1 and R^2, which are identical or different, and are hydrogen, fluorine, chlorine or bromine atoms, trifluoromethyl, nitro, amino, C_{1-5}-alkyl, mono- or di-C_{1-5} -alkylamino groups, a C_{1-6}-alkoxy group, a C_{1-6}-alkylthio, C_{1-6} -alkylsulfenyl, C_{1-6}-alkylsulfonyl, di-C_{1-6}-alkylaminosulfonyl radical, or

R^1 and R^2 together form a methylene- or ethylenedioxy group or a C_{3-5}-alkylene group,

and their physiologically tolerated acid addition salts, wherein said central nervous disorder is epilepsy, brain damage, Parkinson's disease, emesis or trauma of the head or spinal cord.

5,612,345

DIHALOTRIAZOLOPYRIMIDINE DERIVATIVES AS FUNGICIDES

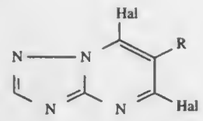
Heinz-Manfred Becher, Bingen, and Klaus-Jurgen Pees, Mainz, both of Germany, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Continuation of Ser. No. 424,535, Aug. 28, 1995. This application Jun. 5, 1995, Ser. No. 464,349

Int. Cl.[6] A01N *43/54*

U.S. Cl. 514—258 **10 Claims**

1. A fungicidal composition which comprises a carrier and, as active ingredient, 0.5 to 95% by weight of a compound of formula



(I)

wherein

R represents a C_{1-12} alkyl, C_{1-12} alkoxy, C_{3-8} cycloalkyl, phenyl, phenoxy or naphthyl group, each group or ring being optionally substituted by one or more substituents selected from halogen atoms, nitro, cyano, hydroxyl, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, formyl, C_{1-4} alkoxycarbonyl, carboxyl, halosulphonyl, phenyl, phenoxy, benzyl, benzyloxy group or, in the case where R represents a C_{3-8} cycloalkyl group optionally ortho-fused with a benzene ring, and Hal represents a fluorine, chlorine, bromine or iodine atom.

5,612,346

RISPERIDONE PAMOATE

Jean L. Mesens, Wechelderzande, and Jozef Peeters, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

PCT No. PCT/EP94/01296, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO94/25460, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 22, 1994, Ser. No. 522,422

Claims priority, application European Pat. Off., Apr. 28, 1993, 93201216

Int. Cl.[6] C07D *413/14;* **A61K** *31/505*

U.S. Cl. 514—258 **7 Claims**

1. A compound which is a pamoate acid addition salt of risperidone.

5,612,347

AGENTS FOR PRESERVING OR RESTORING THE SOUNDNESS OF THE SKIN

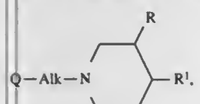
Gerard F. M. J. Cauwenbergh, Vorselaar, and Marc J. De Brabander, Zoersel, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 705,684, May 24, 1991, abandoned, which is a continuation of Ser. No. 324,262, Mar. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 173,858, Mar. 28, 1988, abandoned. This application Nov. 21, 1994, Ser. No. 342,666

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—259 **8 Claims**

1. A method for treating a skin condition selected from the group consisting of skin striae, wrinkles, keloids and scars after formation, and acne induced pitting in subjects in need of such treatment, said method comprising the administration to the skin of said subjects of an amount effective to treat said condition of a serotonin antagonist comprising a compound of the formula:



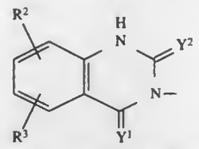
(I)

a pharmaceutically acceptable acid-addition salt thereof and the possible stereoisomeric form thereof; wherein:

R represents hydrogen or C_{1-6}alkyl;

Alk represents C_{1-4}alkanediyl;

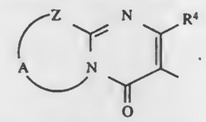
Q represents a radical of the formula:



(a)

wherein Y^1 and Y^2 each independently represent O or S; R^2 represents hydrogen, halo, C_{1-6}alkyl or C_{1-6}alkyloxy; and R^3 represents hydrogen or halo; or

Q represents a radical of the formula:



(b)

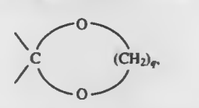
wherein R^4 represents hydrogen or C_{1-6}alkyl; Z represents —S—, $—CH_2—$, or $—CR^5═CR^6—$, wherein said R^5 and R^6 each independently represent hydrogen or C_{1-6}alkyl; and A represents a bivalent radical $—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—$ or $—CR^7═CR^8$ — wherein said R^7 and R^8 each independently represent hydrogen, halo, amino, or C_{1-6}alkyl; and

R^1 represents a radical of the formula:



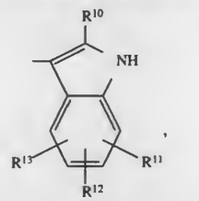
(c)

wherein Ar represents phenyl or substituted phenyl, said substituted phenyl bearing an amino group, 1, 2, or 3 halo atoms, or both an amino group and 1, 2, or 3 halo atoms; and X represents —CO—, —CH(OH)—, —CH(O—CO—R^9)—, $—CH_2—$, $—C[(OC_{1-6}alkyl)_2]—$, —C(═N—OH)—, $—C(═N—NH_2)—$, or



wherein R^9 represents hydrogen or C_{1-6}alkyl and q represents 2 or 3; or

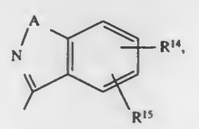
R^1 represents a radical of the formula:



(d)

wherein R^{10} represents hydrogen or C_{1-6}alkyl; and R^{11}, R^{12}, and R^{13} each independently represent hydrogen or halo;

or R^1 represents a radical of the formula:



(e)

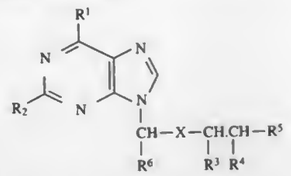
wherein A represents O or S; and R^{14} and R^{15} each independently represent hydrogen, halo, hydroxy, C_{1-6}alkyloxy, or C_{1-6}alkyl.

5,612,348
METHOD OF TREATING WARTS

James B. Pinski, 55 E. Washington St., Suite 3404, Chicago, Ill. 60602

Filed Mar. 12, 1992, Ser. No. 849,764
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—262 8 Claims

1. A method of treating a viral infection manifested in a human a warts, said method comprising the step of administering a dosage of between about 1,500 mg/day and about 15,000 mg/day of a substituted purine of formula (I)



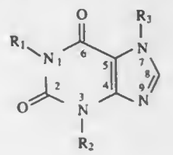
wherein x is oxygen; R^1 is hydroxy; R^2 is amino; R^3 is hydrogen; R^4 is hydrogen; R^5 is hydroxy; R^6 is hydrogen; and a pharmaceutically acceptable salt thereof.

5,612,349
ENANTIOMERICALLY PURE HYDROXYLATED XANTHINE COMPOUNDS TO TREAT SHOCK SYMPTOMS

James A. Bianco, Seattle; Paul Woodson, Bothell; David Porubek, Edmonds, and Jack Singer, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 343,810, Nov. 22, 1994, abandoned, which is a division of Ser. No. 307,554, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 13,977, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,062
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—263 4 Claims

1. A method for treating septic syndrome to a patient exhibiting shock-like symptoms or to a patient in need of prophylactic treatment for septic syndrome, comprising administering an effective amount of a compound wherein the compound has a formula:



wherein:

R_1 is a substantially pure resolved R enantiomer ω-1, secondary alcohol-substituted alkyl (C_{5-8}) group; and

R_2 and R_3 are independently hydrogen atom or an alkyl (C_{1-12}) or alkoxyl (C_{1-12}) or a pharmaceutical composition thereof.

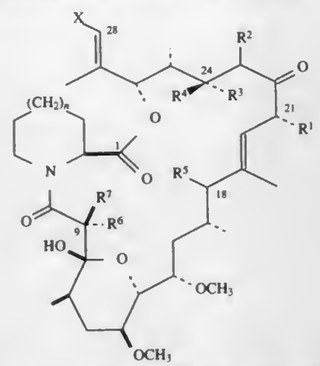
5,612,350
MACROCYCLIC IMMUNOMODULATORS WITH NOVEL CYCLOHEXYL RING REPLACEMENTS

Yat S. Or, and Jay R. Luly, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 334,454, Nov. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 159,406, Nov. 30, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,912
Int. Cl.[6] A61K *31/395*
U.S. Cl. 514—291 7 Claims

1. A pharmaceutical composition for immunomodulatory treatment comprising a compound having the formula

(II)



or a pharmaceutically acceptable salt, ester, amide or prodrug thereof,

wherein n is zero or one;

R^1 is selected from the group consisting of methyl, ethyl, propyl, cyclopropylmethyl, 2-oxopropyl, 2-ethanal, 2-hydroxyethyl and allyl;

R^2 is hydrogen or R^2 taken together with R^3 forms a C-22/C-23 bond;

R^3 is selected from the group consisting of hydrogen, hydroxy and protected hydroxy; or R^2 taken together with R^3 forms a C-22/C-23 bond; or R^3 taken together with R^4 is oxo;

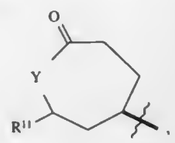
R^4 is hydrogen or R^4 taken together with R^3 is oxo;

R^5 is selected from hydrogen, hydroxy, protected hydroxy and fluoro;

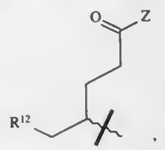
R^6 and R^7 are independently selected from hydrogen, hydroxy and protected hydroxy, with the proviso that at least one of R^6 and R^7 is hydrogen; or R^6 and R^7 taken together are oxo;

X is a substituent selected from the group of radicals having the subformulae:

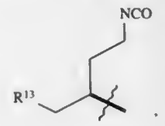
(IIa)



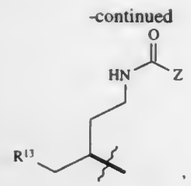
(IIb)

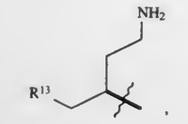


(IIc)

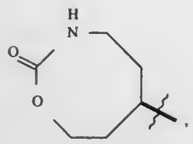


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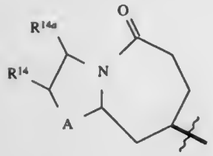




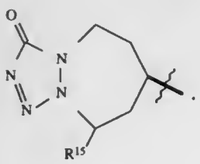
(IIe)



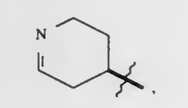
(IIf)



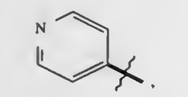
(IIg)



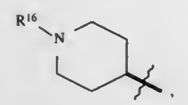
(IIh)



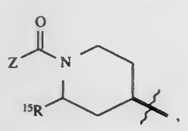
(IIi)



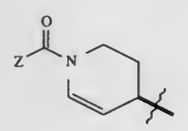
(IIj)



(IIk)



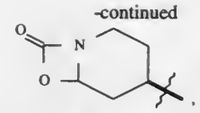
(IIm)



and

-continued

(IId)



(IIn)

wherein A is —O— or —S—;

Y is —O— or —NR^{21}— wherein R^{21} is selected from the group consisting of:

(IId') (1) hydrogen,
(2) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic,
(3) aryl and
(4) heterocyclic;

Z is selected from the group consisting of hydrogen, hydroxy, —(C1–C10-alkyl), aryl, heterocyclic, —(C1–C10-alkoxy) and —$NR^{23}R^{24}$, wherein R^{23} and R^{24} are independently selected from:

(1) hydrogen,
(2) aryl,
(3) heterocyclic and
(4) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic, or, alternatively, —$NR^{23}R^{24}$ represents a 3- to 7-membered heterocyclic ring, with the proviso that in subformulae (IId), (IIk) and (IIm) Z is other than hydroxy;

R^{11} is hydrogen, hydroxy or methoxy;

R^{12} is selected from the group consisting of:

(1) —CHO,
(2) —(C1–C10-alkyl) optionally substituted with one, two or three substituents independently selected from the group consisting of hydroxy, amino, aryl and heterocyclic,
(3) —(C2–C10-alkenyl) optionally substituted with aryl or heterocyclic,
(4) —CH_2—$NR^{21}R^{22}$ where R^{21} is independently defined as above and R^{22} is hydrogen or acyl;

R^{13} is selected from the group consisting of —CHO, hydroxy, protected hydroxy, —(C2–C10-alkenyl) optionally substituted with aryl and —(C1–C10-alkyl) optionally substituted with aryl, with the proviso that in subformula (IId') R^{13} is other than —CHO;

R^{14} and R^{14}a are independently selected from hydrogen, aryl, heterocyclic and —(C1–C10-alkyl) or, taken together with the carbon atoms to which they are attached, R^{14} and R^{14a} form an aryl group or a heterocyclic group;

R^{15} is hydrogen or hydroxy; and

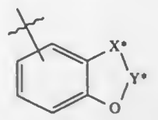
R^{16} is selected from the group consisting of

(1) hydrogen,
(2) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic,
(3) aryl,
(4) heterocyclic and
(5) —C(=NH)—NH_2;

wherein at each occurrence the aryl group is independently selected from phenyl, 1-naphthyl, 2-naphthyl, fluorenyl, (1,2)-dihydronaphthyl, (1,2,3,4,)-tetrahydronaphthyl and indenyl and wherein each aryl group is unsubstituted or substituted with one, two or three substituents independently selected from the group consisting of —(C1–C10-alkyl), —(C2–C10-alkenyl), halogen, —$(CH_2)_m$N(C1–C6-alkyl)$_2$, wherein m is zero to six, —CN, —CHO, mono-, di-, tri-, or perhalogenated —(C1–C6-alkyl), —S(O)$_p$(C1–C6-alkyl), wherein p is 0, 1 or 2,—C(O)N(C1–C6-alkyl), —$(CH_2)_m$O(C1–C6-alkyl), where m is as defined above, $(CH_2)_q$OC(O)(C1–C6-alkyl), wherein q is zero to six, $(CH_2)_r$C(O)O(C1–C6-alkyl), wherein r is zero to six, —NO_2, —N_3, —S(O)$_2$N(C1–C6-alkyl)$_2$, —(C2-to-C10-alkynyl), —C≡C—$Si(CH_3)_3$, guanidino, hydroxy, —COOH, —(C1–C6-alkoxy), —OC(O)(C1–C6-alkyl), unsubstituted aryl and unsubstituted Het,

wherein at each occurrence the Het group and heterocyclic group is independently selected from the group consisting of indolyl, quinolyl, isoquinolyl, tetrahydroquinolyl, benzofuryl, dihydrobenzofuryl or benzothienyl, azetidi-

nyl, oxetanyl, pyrrolyl, pyrrolinyl, pyrrolidinyl, pyridyl, piperidinyl, homopiperidinyl, pyrazinyl, piperazinyl, pyrimidinyl, pyridazinyl, oxazolyl, oxazolidinyl, isoxazolyl, isothiazolidinyl, quinolinyl, isoquinolinyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, furyl, thienyl, thiazolidinyl, isothiazolyl, triazolyl, tetrazolyl, isoxazolyl, oxadiazolyl, thiadiazolyl, pyrimidyl, cytosinyl, thiosytosinyl, xanthenyl, xanthonyl, uricyl, thyminyl, and compounds of the formula



where X* is —CH_2— or —O— and Y* is —C(O)— or —[$C(R^n)_2$—]$_v$ where R^n is hydrogen or C1–C4-alkyl and v is 1, 2 or 3 and wherein each heterocyclic group is unsubstituted, monosubstituted or disubstituted with substituents independently selected from —(C1-to-C10 alkyl), —(C2-to-C10alkenyl), halogen, amino, —$(CH_2)_f$N(C1–C6-alkyl)$_2$, wherein f is 0 to 6, —CN, —CHO, mono-, di-, tri-, or perhalogenated —(C1–C6-alkyl), —S(O)$_g$(C1–C6-alkyl) wherein g is 0, 1 or 2, —C(O)N(C1–C6-alkyl), —$(CH_2)_h$N(C1–C6-alkyl), wherein h is 0 to 6, —$(CH_2)_i$OC(O)(C1–C6-alkyl) wherein i is 0 to 6, —$(CH_2)_j$C(O)O(C1–C6-alkyl), wherein j is 0 to 6, —NO_2, —N_3, —S(O)$_2$N(C1–C6-alkyl)$_2$, —(C2–C10-alkynyl), —C≡C—$Si(CH_3)_3$, guanidino, hydroxy, —COOH, —(C1–C6-alkoxy), —OC(O)(C1–C6-alkyl), oxo (=O), unsubstituted aryl and unsubstituted Het; and

wherein at each occurrence the acyl group is independently selected from —C(O)R wherein R is aryl as defined above, (C1–C10-alkyl), (C2–C10-alkenyl) and heterocyclic as defined above in combination with a pharmaceutically acceptable carrier.

5,612,351

METHOD OF TREATING URINARY BLADDER DYSFUNCTIONS

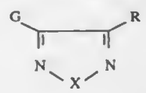
Mark A. Muhlhauser, Indianapolis; Harlan E. Shannon, and Kari B. Thor, both of Carmel, all of Ind., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Nov. 8, 1994, Ser. No. 336,357

Int. Cl.[6] A61K *31/44;31/55;31/41;31/415*

U.S. Cl. 514—304 **12 Claims**

1. A method of treating a urinary bladder dysfunction in a subject in need thereof comprising administering to the subject an effective amount of a compound of formula I



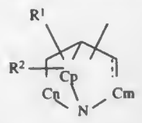
(I)

wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO_2, —R^4, —Y, —NHCO—R^4, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-10}-cycloalkyl, C_{4-10}-cycloalkenyl, C_{4-10}-(cycloalkylalkyl), —Z^1—C_{3-10}-cycloalkyl, —Z^1—C_{4-10}-cycloalkenyl, —Z^1—C_{4-10}-(cycloalkylalkyl), —Z^1—C_{4-10}-(cycloalkenylalkyl), —Z^1—C_{4-10}-(methylenecycloalkylalkyl), —NH—R^4, —NR^4R^5, —NH—OR^4, —CH=NOR^4, or an aromatic ring selected from the group consisting of phenyl, benzyloxycarbonyl, phenoxy, benzoyl, tetrahydronaphthyl, naphtyl, and indenyl, wherein each aromatic ring is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenoxy or phenyl; or R is —Z^1—R^6—Z^2—R^5, —Z^1—R^6—Z^2—R^7—R^5, —Z^1—CO—R^5, —Z^1—R^6—CO—R^5, —Z^1—R^6—CO_2—R^5, —Z^1—R^6—O_2C—R^5, —Z^1—R^6—CONH—R^5, —Z^1—R^6—NHCO—R^5, —Z^1—R^6—Y, —Z^1—R^6—Z^2—Y, wherein Z^1 and Z^2 independently are oxygen or sulphur, and R^4 and R^5 independently are straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), C_{1-6}-alkoxy, —CF_3, —CN, —COOH, —OH, —NH_2, C_{1-6}-alkyl ester, —SH, —NHR^4, —NR^4R^5, or a phenyl or phenoxy group, wherein the phenyl or phenoxy group is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenyl or phenoxy, and wherein R^6 and R^7 independently are straight or branched C_{1-10}-alkylene, straight or branched C_{2-10}-alkenylene, straight or branched C_{2-10}-alkynylene, each of which is optionally substituted with one or more halogen(s), —CF_3, —CN, —COOH, —OH, —NH_2, C_{1-6}-alkyl ester, —SH, —NHR^4, —NR^4R^5, phenyl or phenoxy, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together with an oxygen atom form a carbonyl group, or wherein the heterocyclic group is optionally fused with a phenyl group; and

G is an azabicyclic ring of formula II



(II)

wherein

the thiadiazole or oxadiazole ring is attached to any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position of the thiadiazole or oxadiazole ring and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, —NH_2, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; m and n are 1; p is 2; and fheight. . . . is a single or double bond; or a pharmaceutically acceptable salt thereof.

5,612,352

HETEROCYCLIC COMPOUNDS

George R. Brown, Wilmslow; Peter J. Harrison, deceased, late of Macclesfield, and Keith B. Mallion, Knutsford, all of England, assignors to Zeneca Limited, London, United Kingdom

PCT No. PCT/GB93/00754, § 371 Date Jul. 14, 1994, § 102(e) Date Jul. 14, 1994, PCT Pub. No. WO93/21089, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 8, 1993, Ser. No. 162,093

Claims priority, application United Kingdom, Apr. 10, 1992, 9207962; Apr. 10, 1992, 9207965

Int. Cl.[6] A61K *31/46;* **C07D** *211/22*

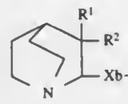
U.S. Cl. 514—305 **6 Claims**

1. A compound of formula I,

Q—Ar^1—Ar^2 I

or a pharmaceutically acceptable salt thereof, wherein:

Q is of formula Ib;



Ib

R^1 is selected from hydrogen, (1–6C)alkyl, halogeno and hydroxy; R^2 is selected from (1–6C)alkyl, halogeno and hydroxy; or R^1 and R^2 when taken together define an oxo group;

Xb is selected from —CH_2—, =CH— and —CH(OH);

Ar^1 is a 1,4-phenylene moiety;

Ar^2 is phenyl; and

one or both of Ar^1 and Ar^2 is optionally unsubstituted or substituted by one or more substituents independently selected from halogeno, hydroxy, amino, nitro, cyano, carboxy, carbamoyl, (1–6C)alkyl, (2–6C)alkenyl, (1–6C)alkoxy, (1–6C)alkylamino, di-[(1–6C)alkyl]amino, N-[(1–6C)alkyl]carbamoyl, N,N-di-[(1–6C)alkyl]carbamoyl, (1–6C)alkoxycarbonyl, (1–6C)alkylthio, (1–6C)alkylsulphinyl, (1–6C)alkylsulphonyl, halogeno-(1–6C)alkyl and (1–6C)alkanoylamino;

provided that when one of R^1 and R^2 is hydroxy, the other of R^1 and R^2 is not hydroxy or halogeno; and

provided that when R^1 and R^2 together define an oxo group and Xb is =CH—, then Ar^1 and Ar^2 phenyl rings are not both unsubstituted.

5,612,353

SUBSTITUTED (SULFINIC ACID, SULFONIC ACID, SULFONYLAMINO OR SULFINYLAMINO) N-[(AMINOIMINOMETHYL)PHENYLALKYL]-AZAHETEROCYCLYLAMIDE COMPOUNDS

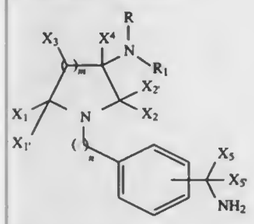
William R. Ewing, King of Prussia; Michael R. Becker, Norristown; Henry W. Pauls, Collegeville; Daniel L. Cheney, West Chester, all of Pa.; Jonathan S. Mason, Dagenham, United Kingdom, and Alfred P. Spada, Lansdale, Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Filed Jun. 7, 1995, Ser. No. 481,024

Int. Cl.[6] C07D *401/02;* **A61K** *31/40;31/435*

U.S. Cl. 514—309 **12 Claims**

1. A compound of formula I



X_1 and $X_{1'}$ are hydrogen;

X_2 and $X_{2'}$ are independently selected from the group of hydrogen, alkyl, aryl, aralkyl, carboxyalkyl, alkoxycarbonylalkyl or hydroxyalkyl, or X_1 and $X_{1'}$ or X_2 and $X_{2'}$ independently taken together form oxo;

X_3 is hydroxy, alkyl, aralkyl or aryl, or X_3 and one of X_1 and $X_{1'}$ taken together form a 4 to 7 membered ring;

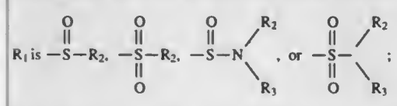
X_4 is hydrogen, alkyl, aralkyl, or hydroxyalkyl;

X_5 and $X_{5'}$ are hydrogen or taken together are =NH;

m is 1, 2 or 3;

n is 1,2 or 3;

R is hydrogen, alkyl, alkylaryl, hydroxyalkyl or alkoxy;



R_2 is alkyl, aralkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, hetereocyclyl, or R and R_2 taken together form a 5 to 7 membered ring; and

R_3 is alkyl, cycloalkyl or aryl, or R_2 and R_3 taken together form a 4 to 7 membered ring, or

a pharmaceutically acceptable salt thereof, an N-oxide thereof, a hydrate thereof or a solvate thereof.

5,612,354

(1H-AZOL-1-YLMETHYL)SUBSTITUTED QUINOLINE DERIVATIVES

Gerard C. Sanz, Garges les Gonesse; Marc G. Venet, Paris, both of France; Eddy J. E. Freyne, Rumst, and Alfons H. M. Raeymaekers, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

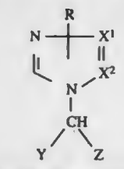
Division of Ser. No. 131,817, Oct. 5, 1993, Pat. No. 5,441,954, which is a division of Ser. No. 973,871, Nov. 10, 1992, Pat. No. 5,268,380, which is a division of Ser. No. 704,746, May 23, 1991, Pat. No. 5,185,346, which is a continuation-in-part of Ser. No. 434,205, Nov. 13, 1989, abandoned. This application Mar. 23, 1995, Ser. No. 409,551

Claims priority, application United Kingdom, Nov. 29, 1988, 8827821

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—314 **9 Claims**

1. A method of treating mammals suffering from disorders which are characterized by an increased proliferation or abnormal differentiation of cells by the systemic or topical administration to said mammals of an effective amount of a compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt thereof or a stereochemically isomeric form thereof, wherein:

—X^1=X^2— represents a bivalent radical of formula

—CH=CH— (x),

—CH=N— (y),

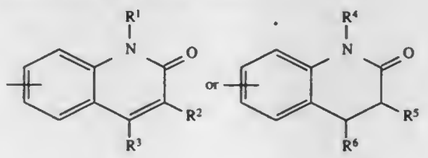
or

—N=CH— (z);

R represents hydrogen or C_{1-6}alkyl;

Y represents hydrogen, C_{1-10}alkyl, C_{3-7}cycloalkyl, Ar^1, Ar^2—C_{1-6}-alkyl, C_{2-6}alkenyl or C_{2-6}alkynyl; and

Z represents a radical of the formula:



(a-1) (a-2)

wherein:

R^1 and R^4 each independently represent hydrogen, C_{1-6}alkyl or Ar^2C_{1-6}alkyl;

R^2 and R^5 each independently represent hydrogen, C_{1-6}alkyl or Ar^2; and

R^3 and R^6 each independently represent hydrogen or C_{1-6}alkyl, and

wherein in the foregoing:

Ar^1 represents phenyl, substituted phenyl, naphthalenyl, pyridinyl, imidazolyl, triazolyl, thienyl, furanyl or thiazolyl, and

Ar^2 represents phenyl or substituted phenyl,

wherein said substituted phenyl in Ar^1 or Ar^2 represents phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, cyano, amino, mono- and di(C_{1-6}alkyl)amino, nitro, carboxyl, formyl and C_{1-6}alkyloxycarbonyl.

5,612,355
PHENYL AMIDINE LACTONES USEFUL AS PLATELET AGGREGATION INHIBITORS

Norman A. Abood, Morton Grove, Ill.; Robert E. Manning, St. Louis, Mo., and Masateru Miyano, Salem, S.C., assignors to G. D. Searle & Co., Chicago, Ill.

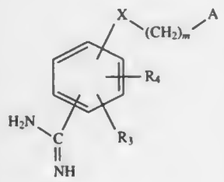
Division of Ser. No. 256,707, Jul. 21, 1994, Pat. No. 5,504,106. This application May 26, 1995, Ser. No. 451,815

Claims priority, application WIPO, Jun. 23, 1993, PCT/US93/05861

Int. Cl.[6] C07D *405/06;* A61K *31/44*

U.S. Cl. 514—336 **6 Claims**

1. A compound of the formula



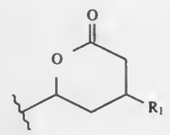
or a pharmaceutically acceptable salt thereof, wherein

R_3 and R_4 are each independently selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms and halo;

X is $—CH_2CH_2—$, —CH=CH—, —C≡C— or HNCO

m is an integer from 1 to 3; and

A is the group



wherein

R_1 is a fully unsaturated heteromonocyclic ring structure having 5 or 6 ring carbon atoms wherein one of the ring carbon atoms is replaced by nitrogen, oxygen or sulfur.

5,612,356
HETEROCYCLE-CONTAINING CARBONIC ACID DERIVATIVES

Hiroyuki Yoshimura; Mitsuo Nagai; Shigeki Hibi; Koichi Kikuchi, all of Tsukuba; Ieharu Hishinuma, Kitasouma-gun; Junichi Nagakawa, Tsuchiura; Makoto Asada, Tsukuba; Norimasa Miyamoto, Tsukuba; Takayuki Hida, Tsukuba; Aichi Ogasawara, Tsukuba, and Isao Yamatsu, Ushiku, all of Japan, assignors to Eisai Co., Ltd., Japan

PCT No. PCT/JP93/01841, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/14777, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 20, 1993, Ser. No. 295,636

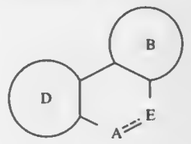
Claims priority, application Japan, Dec. 28, 1992, 4-358616; Jan. 20, 1993, 5-023450

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—338 **7 Claims**

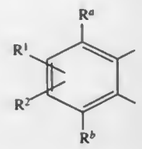
1. A compound represented by the following formula (I) or a physiologically acceptable salt thereof:

(I)



wherein

the ring D represents a group represented by the following formula:



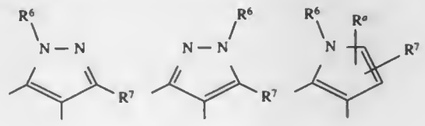
where R^1 and R^2 are the same or different and each represents a hydrogen atom, a C_{1-6} alkyl group, a C_{1-4} alkoxy group, a cycloalkyloxy group, a cycloalkyloxy group substituted with a cyclopropyloxy group, a cyclobutyloxy group, a cyclopentyloxy group, a cyclohexyloxy group or a cycloheptloxy group, a halogen atom, an aryl group, an aryl group substituted with a lower alkyl group, a halogen atom or a lower alkoxy group, an aryloxy group, an aryloxy group substituted with a lower alkyl group, a halogen atom or a lower alkoxy group or a heteroaryl group, or alternatively R^1 and R^2 together form a 5- to 7-membered cycloalkyl ring which is substituted with one or more C_{1-6} alkyl groups or a 5- to 7-membered saturated heterocycle containing as the hetero atom S, O, SO, SO_2 or NR^3 where R^3 represents a hydrogen atom or a lower alkyl group, wherein the heterocycle may be substituted with one or more C_{1-6} alkyl groups; and R^a and R^b are the same or different and each represents a hydrogen atom, a C_{1-6} alkyl group or a C_{1-4} alkoxy group;

A represents O, S, SO_2, NR^3 where R^3 is as described above, or CR^4R^5 where R^4 and R^5 are the same or different and each represents a hydrogen atom or a C_{1-6} alkyl group;

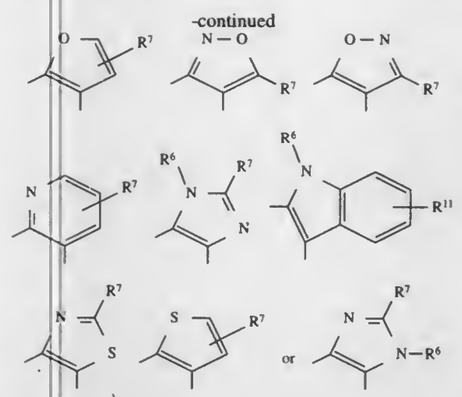
E represents $(CH_2)_n$ wherein n is 0, 1 or 2, $CHCH_3$ or $C(CH_3)_2$;

the symbol ---- represents a single or double bond; and

the ring B represents a group represented by one of the following formulae:



-continued



where R^9 represents a hydrogen atom, a C_{1-6} alkyl group, an alkenylalkyl group, an alkynylalkyl group, a bridged cyclic hydrocarbon group, a cycloalkyl group, a cycloalkylalkyl group, a C_{1-6} alkoxyalkyl group, an aryl group, a heteroaryl group, an arylalkyl group or a heteroarylalkyl group; R^7 represents a group represented by the following formula:



where the ring G represents a phenylene group or a 5- or 6-membered heterocyclic group having one or two hetero atoms; and R^8 represents a hydrogen atom, a hydroxyl group, a C_{1-4} alkoxy group, a morpholylalkyloxy group or a group represented by the formula: $—NR^9R^{10}$ where R^9 and R^{10} are the same or different and each represents a hydrogen atom, a hydroxyl group, a C_{1-6} alkyl group, a C_{1-4} alkoxy group, a hydroxyalkyl group, an aryl group or a hetroaryl group, or alternatively R^9 and R^{10} may form a ring, which may contain a nitrogen atom, an oxygen atom or a sulfur atom, together with the nitrogen atom to which R^9 and R^{10} are bonded, R^a is as defined above and R^{11} represents a group represented by the formula: $—COR^8$ where R^8 is as defined above.

5,612,357
USE OF COTININE TO ASSIST IN THE CESSATION OF TOBACCO SMOKING

Robert M. Keenan, Baltimore, Md., and Dorothy K. Hatsukami, Golden Valley, Minn., assignors to Pharmaco Behavioral Associates, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 885,314, May 18, 1992. This application Aug. 22, 1994, Ser. No. 293,585

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—343 **19 Claims**

1. A pharmaceutical composition useful to assist in the cessation of smoking comprising an amount of cotinine or a pharmaceutically acceptable salt thereof sufficient to deliver a dose of cotinine to a human subject of from about 1.0 mg/kg to about 100 mg/kg in combination with a pharmaceutically acceptable carrier.

5,612,358
PYRIDINE COMPOUDS WHICH HAVE USEFUL INSECTICIDAL ACTIVITY

Keiichi Ishimitsu, Kanagawa; Haruhito Ohishi, Saitama; Renpei Hatano; Jun Mitsui, both of Kanagawa; Junji Suzuki, Toyama; Tomio Yamada, and Nobuo Takakusa, both of Kanagawa, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

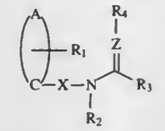
Continuation of Ser. No. 700,165, Jul. 9, 1991, Pat. No. 5,304,566. This application Sep. 7, 1993, Ser. No. 117,470

Claims priority, application Japan, Jul. 26, 1990, 2-196258

Int. Cl.[6] C07D *213/36;* A01N *43/36*

U.S. Cl. 514—357 **7 Claims**

1. An insecticidal compound of the formula



wherein

A completes a 6 membered aromatic ring having one heteroatomic ring member comprising nitrogen, provided, however, that the ring is not unsubstituted 2-pyridyl;

R_1 is hydrogen or C_{1-5}alkyl, C_{1-5}haloalkyl, C_{1-5}alkoxy, C_{1-5}alkylthio, C_{1-5}alkylsulfonyl, cyano, halogen, phenoxy, or C_{1-5}dialkylamino;

X is C_{1-3}alkylene or C_{1-3}alkylidene;

R_2 is hydrogen, carbamoyl, monoalkylcarbomoyl, C_{1-5}dialkylcarbamoyl, thiocarbamoyl, monoalkylthiocarbamoyl, sulfamoyl, monoalkylsulfamoyl, C_{1-5}dialkylsulfamoyl, C_{1-5}alkyl, C_{1-5}alkyl substituted with halogen, C_{1-5}alkoxy, C_{1-5}alkylthio, C_{1-5}alkoxycarbonyl, cyano, aryl, haloaryl, C_{1-5}alkoxyaryl, furyl, thienyl, pyridyl, halopyridyl, thiazolyl or halothiazolyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkenyl, aryl, or the radical

—Y—R_5

wherein

Y is O, $S(O)_n$, CO, CS or CO_2;

n is O, 1 or 2,

R_5 is hydrogen, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, C_{3-5}cycloalkenyl, aryl or haloaryl;

R_3 is hydrogen, C_{1-5}alkyl, C_{1-5}alkyl substituted with halogen, C_{1-5}alkoxy, C_{1-5}alylthio, C_{1-5}alkoxycarbonyl, cyano, aryl, haloaryl, amino, monoalkylamino, C_{1-5}dialkylamino, cyanoimino, N-halopyridyl-C_{1-5}alkylamino, N-(halopyridyl-C_{1-5}alkyl)-C_{1-5}alkylamino, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, or C_{3-5}cycloalkenyl;

R_4 is cyano or nitro;

Z is CH or N;

with the proviso that the insecticidal compound of such formula can not be a compound wherein;

R_1 is hydrogen or C_{1-5}alkyl, C_{1-5}haloalkyl, C_{1-5}alkoxy, C_{1-5}alkylthio, C_{1-5}alkylsulfonyl, cyano, halogen, or C_{1-5}dialkylamino;

X is C_{1-3}alkylene or C_{1-3}alkylidene;

$R_2$is hydrogen, carbamoyl, monoalkylcarbamoyl, C_{1-5}dialkylcarbamoyl, thiocarbamoyl, monoalkylthiocarbamoyl, sulfamoyl, monoalkylsulfamoyl, C_{1-5}dialkylsulfamoyl, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, C_{3-5}cycloalkenyl, aryl, or the radical

—Y—R_5

wherein

Y is O, S(O)n. CO, CS or CO_2,

n is O, 1 or 2,

R_5 is hydrogen, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-5}cycloalkyl, C_{3-5}cycloalkenyl, or aryl;

R_3 is hydrogen, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, or C_{3-8}cycloalkenyl;
R_4 is cyano or nitro;
Z is CH or N; and an insecticidal acceptable salt thereof.

5,612,359

SUBSTITUTED BIPHENYL ISOXAZOLE SULFONAMIDES

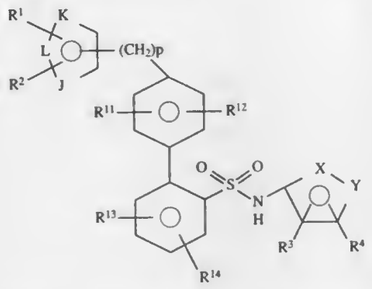
Natesan Murugesan, Lawrenceville, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation-in-part of Ser. No. 368,285, Jan. 4, 1995, abandoned, which is a continuation-in-part of Ser. No. 297,187, Aug. 26, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,358

Int. Cl.[6] **A01K** *31/465;* **C07D** *417/12*

U.S. Cl. 514—365 **73 Claims**

1. A compound of the formula



or an enantiomer, diastereomer or pharmaceutically acceptable salt thereof, wherein:
one of X and Y is N and the other is O;
R^1, R^2, R^3 and R^4 are each directly bonded to a ring carbon and are each independently
(a) hydrogen;
(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, aryloxy, aralkyl or aralkoxy, any of which may be substituted with Z^1, Z^2 and Z^3;
(c) halo;
(d) hydroxyl;
(e) cyano;
(f) nitro;
(g) —C(O)H or —C(O)R^5;
(h) —CO_2H or —CO_2R^5;
(i) —Z^4—NR^6R^7; or
(j) —Z^4—$N(R^{10})$—Z^5—NR^8R^9; or
(k) R^3 and R^4 together may also be alkylene or alkenylene, either of which may be substituted with Z^1, Z^2 and Z^3, completing a 4- to 8-membered saturated, unsaturated or aromatic ring together with the carbon atoms to which they are attached;
R^5 is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl or aralkyl, any of which may be substituted with Z^1, Z^2 and Z^3;
R^6, R^7, R^8, R^9 and R^{10} are each independently
(a) hydrogen; or
(b) alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl, any of which may be substituted with Z^1, Z^2 and Z^3; or
R^6 and R^7 together may be alkylene or alkenylene, either of which may be substituted with Z^1, Z^2 and Z^3, completing a 3- to 8-membered saturated or unsaturated ring together with the nitrogen atom to which they are attached; or any two of R^8, R^9 and R^{10} together are alkylene or alkenylene, either of which may be substituted with Z^1, Z^2 and Z^3, completing a 3- to 8-membered saturated or unsaturated ring together with the atoms to which they are attached;
R^{11}, R^{12}, R^{13} and R^{14} are each independently
(a) hydrogen;
(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, aryloxy, aralkyl or aralkoxy, any of which may be substituted with Z^1, Z^2 and Z^3,
(c) halo;
(d) hydroxyl;
(e) cyano;
(f) nitro;
(g) —C(O)H or —C(O)R^5;
(h) —CO_2H or —CO_2R^5;
(i) —SH, —$S(O)_nR^5$, —$S(O)_m$—OH, —$S(O)_m$—OR^5, —O—$S(O)_m$—OR^5, —O—$S(O)_m$OH or —O—$S(O)_m$—OR^5;
(j) —Z^4—NR^6R^7; or
(k) —Z^4—$N(R^{10})$—Z^5—NR^8R^9;
Z^1, Z^2 and Z^3 are each independently
(a) hydrogen;
(b) halo;
(c) hydroxy;
(d) alkyl;
(e) alkenyl;
(f) aralkyl;
(g) alkoxy;
(h) aryloxy;
(i) aralkoxy;
—SH, —$S(O)_nZ^6$, —$S(O)_m$—OH, —$S(O)_m$—OZ^6, —O—$S(O)_m$—Z^6, —O—$S(O)_m$OH or —O—$S(O)_m$—OZ^6;
(k) oxo;
(l) nitro;
(m) cyano;
(n) —C(O)H or —C(O)Z^6;
(o) —CO_2H or —CO_2Z^6;
(p) —Z^4—NZ^7Z^8;
(q) —Z^4—$N(Z^{11})$—Z^5—H;
(r) —Z^4—$N(Z^{11})$—Z^5—Z^6; or
(s) —Z^4—$N(Z^{11})$—Z^5—NZ^7Z^8;
Z^4 and Z^5 are each independently
(a) a single bond;
(b) —Z^9—$S(O)_n$—Z^{10}—;
(c) —Z^9—C(O)—Z^{10}—;
(d) —Z^9—C(S)—Z^{10}—;
(e) —Z^9—O—Z^{10}—;
(f) —Z^9—S—Z^{10}—;
(g) —Z^9—O—C(O)—Z^{10}—; or
(h) —Z^9—C(O)—O—Z^{10}—;
Z^6 is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl or aralkyl;
Z^7 and Z^8 are each independently hydrogen, alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl or Z^7 and Z^8 together are alkylene or alkenylene, completing a 3- to 8-membered saturated or unsaturated ring together with the nitrogen atom to which they are attached;
Z^9 and Z^{10} are each independently a single bond, alkylene, alkenylene or alkynylene;
Z^{11} is
(a) hydrogen; or
(b) alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl;
or any two of Z^7, Z^8 and Z^{11} together are alkylene or alkenylene, completing a 3- to 8-membered saturated or unsaturated ring together with the atoms to which they are attached;
J is O, S, N or NR^{15};
K and L are N or C, provided that at least one of K or L is C;
R^{15} is hydrogen, alkyl, hydroxyethoxy methyl or methoxyethoxy methyl;
each m is independently 1 or 2;
each n is independently 0, 1 or 2; and
p is 0 or an integer from 1 to 2.

5,612,360

ANGIOTENSIN II ANTAGONISTS

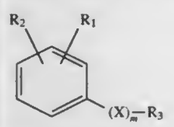
Donald B. Boyd, Greenwood; Sherryl L. Lifer, Indianapolis; Winston S. Marshall, Bargersville; Alan D. Palkowitz; William Pfeifer, both of Indianapolis; Jon K. Reel, Carmel; Richard L. Simon, Greenwood; Mitchell I. Steinberg, Indianapolis; K. Jeff Thrasher, Indianapolis; Venkatraghavan Vasudevan, Indianapolis, and Celia A. Whitesitt, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 892,854, Jun. 3, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 49,916

Int. Cl.[6] **A61K** *31/41;31/415;31/435;* **C07D** *401/12;235/12;471/00;231/56*

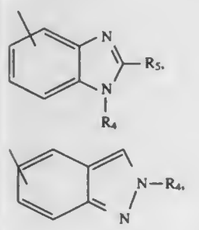
U.S. Cl. 514—381 **32 Claims**

1. A compound of the Formula

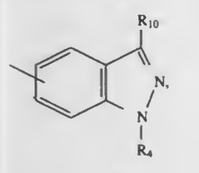


(I)

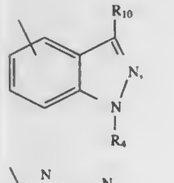
wherein:
R_1 is CO_2H, SO_3H, PO_3H_2, $CONHSO_2R_8$, or 5-tetrazolyl;
R_2 is H, —OH, —$OCOCH_3$, halo, C_1–C_4 alkyl, or C_1–C_4 alkoxy;
R_3 is



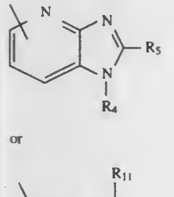
(a)



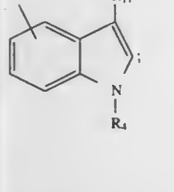
(b)



(b$_1$)



(c)



(d)

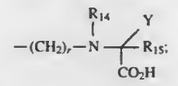
or



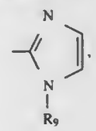
X is —$(CH_2)_m$CONH—, —$(CH_2)_m$NHCO—, —CH_2—, —O—, —NH—, or —$(CH_2)_m$CO—;
R_4 is



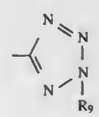
C_4–C_9 straight chain alkyl, or C_4–C_9 straight chain trifluoroalkyl providing when R_4 is a C_4–C_9 straight chain alkyl or trifluoroalkyl R_3 must be (a) or (d);
R_5 is H, C_1–C_5 alkyl, C_1–C_5 trifluoroalkyl, $(CF_2)_nCF_3$, benzyl, —$(CH_2)_m$N(C_1–C_3 alkyl)$_2$, —$(CH_2)_m$NH(C_1–C_3 alkyl), —CH_2-1-pyrrolidine, —$(CH_2)_nCO_2$H, or



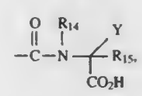
R_6 is $(CH_2)_pR_1$, —CONH(C_1–C_4 alkyl), —CONH(C_1–C_4 trifluoroalkyl), —COO (C_1–C_4 alkyl), —COO (C_1–C_4 trifluoroalkyl), —CONH (hydroxy-C_1–C_4 alkyl),



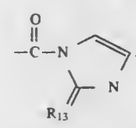
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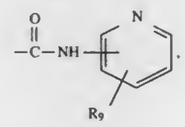
(g)



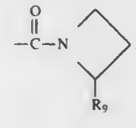
(h)



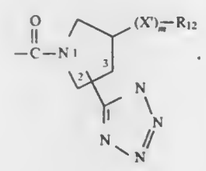
(i)



(k)

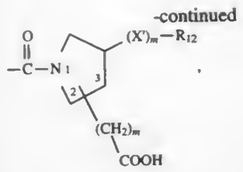


(k)

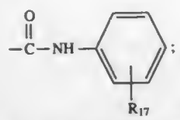


(l)

-continued



or



R_7 is C_4–C_9 straight chain alkyl, C_4–C_9 straight chain trifluoroalkyl, C_4–C_9 straight chain alkenyl, or C_4–C_9 straight chain trifluoroalkenyl;
R_8 is phenyl, C_1–C_4 alkyl substituted phenyl, C_1–C_5 alkyl, or C_1–C_5 trifluoroalkyl;
R_9 is $(CH_2)_pR_1$, or C_1–C_4 alkyl;
R_{10} is H or C_1–C_3 alkyl;
R_{11} is H, C_1–C_4 alkyl, halo, or $—(CH_2)_q$phenyl;
R_{12} is H, $—(CH_2)_pR_1$, C_1–C_7 alkyl, C_1–C_7 trifluoroalkyl, halo, substituted or unsubstituted phenyl, 3-pyridyl, 2-pyrimidyl, furanyl, oxazolyl, or isoxazolyl, or when m is 0, 4,4-ethylenedioxy;
R_{13} is O or S;
R_{14} is H or CH_3;
R_{15} is H or $—(CH_2)_qR_{16}$;
R_{16} is OH, NH_2, or CO_2H;
R_{17} is H, OH, C_1–C_4 alkoxy, CO2H, SO_3H, PO_3H_2, $CONHSO_2RS$, or tetrazolyl;
Y is a R group of a naturally occurring amino acid;
X' is —O—, $—(CH_2)_p—$, or —S—;
m is independently 0 or 1;
n is independently 1, 2 or 3;
p is independently 0. 1, 2, 3 or 4;
q is 1, 2, 3, or 4;
r is independently 0, 1, 2, or 3;
providing when R_6 is (1) or (m), and R_{12} is not H, the carboxy of (m) or the tetrazolyl of (l) is in position 2; and when R_6 is (l) or (m), m is 0, and R_{12} is H, the carboxy of (m) or the tetrazolyl of (l) is in position 2 or 3; or a pharmaceutically acceptable salt or solvate thereof.

5,612,361

APPARATUS FOR REMOVING COMPONENTS FROM SOLUTIONS

Barbara L. Heyl, Atlanta; Lynn C. Winterton, Roswell; Kai C. Su, Alpharetta, and Jack C. White, Stone Mountain, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 24,224, Mar. 1, 1993, Pat. No. 5,496,471, which is a continuation-in-part of Ser. No. 873,215, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 814,728, Dec. 19, 1991, abandoned, which is a division of Ser. No. 671,967, Mar. 18, 1991, Pat. No. 5,080,800, which is a division of Ser. No. 461,988, Jan. 8, 1990, Pat. No. 5,056,689.
This application Jun. 2, 1995, Ser. No. 458,674
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—385 **4 Claims**

1. A method for the administration to a patient of a pharmacologically active substance which substance is stable only at a pH value which is extreme in the acidic or alkaline region and at which pH value the substance cannot be administered without causing discomfort and/or injury to the patient, which comprises maintaining the substance in a solution or dispersion at the pH at which the substance is stable until the time of administration and administering the substance to the patient by passing the solution or dispersion containing the substance through a chamber containing an ion exchange material which changes the pH of the solution or dispersion to a value which will not cause discomfort and/or injury to the patient.

5,612,362

IMIDAZOLINONE DERIVATIVES AS TACHYKININ RECEPTOR ANTAGONISTS

Angus M. MacLeod, Bishops Stortford, United Kingdom, assignor to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB93/02131, § 371 Date Apr. 18, 1995, § 102(e) Date Apr. 18, 1995, PCT Pub. No. WO94/10168, PCT Pub. Date May 11, 1994
PCT Filed Oct. 14, 1993, Ser. No. 411,616
Claims priority, application United Kingdom, Oct. 23, 1992, 9222262
Int. Cl.[6] A61K *31/415*; **C07D** *403/06*
U.S. Cl. 514—392 **12 Claims**

1. A compound of formula (I), or a salt or prodrug thereof:



(I)

wherein
Q^1 represents optionally substituted indolyl, optionally substituted benzthiophenyl, or optionally substituted benzofuranyl;
the dotted line represents an optional covalent bond;
one of A^1 and A^2 represents NR^1 and the other is NR^3;
R^1 and R^3 each independently represent H; C_{1-6}alkyl optionally substituted by hydroxy, cyano, COR^c, CO_2R^c, $CONR^cR^d$, or NR^cR^d (where R^c and R^d each independently represent H, C_{1-6}alkyl or C_{0-4}alkylphenyl optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethylmethyl); phenyl (C_{1-4}alkyl) (optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl); COR^c; CO_2R^c; $CONR^cR^d$; COC_{1-4}alkylNR^cR^d; $CONR^cCOOR^d$; SO_2R^c, where R^c and R^d are as above defined; WR^6 or $CO—Y—W—R^6$ where R^6 is an optionally substituted aromatic or non-aromatic azacyclic or azabicyclic group, Y is a bond, O, S or NR^y, where R^y is H or C_{1-6}alkyl, and W represents a bond or a saturated or unsaturated hydrocarbon chain of 1, 2, 3, 4, 5 or 6 carbon atoms;
R^2 represents phenyl optionally substituted by 1, 2, or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a or $CONR^aR^b$, where R^a and R^b independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl.

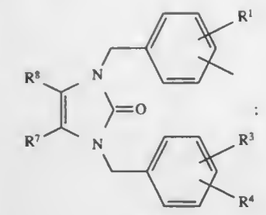
5,612,363

N,N-DI(ARYL) CYCLIC UREA DERIVATIVES AS ANTI-COAGULANTS

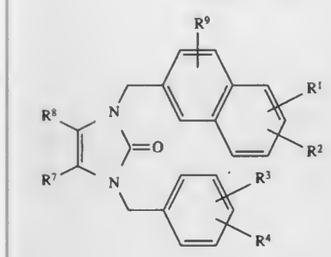
Raju Mohan, Moraga, and Michael M. Morrissey, Danville, both of Calif., assignors to Berlex Laboratories, Inc., Richmond, Calif.

Filed Jun. 2, 1995, Ser. No. 458,598
Int. Cl.[6] A61K *31/415*; **C07D** *233/32*
U.S. Cl. 514—392 **16 Claims**

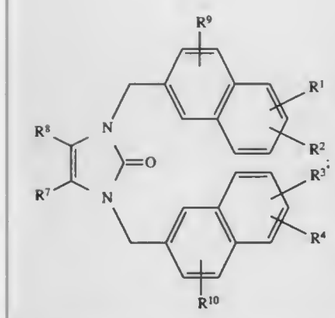
1. A compound selected from the group consisting of the following formulae:



an



an



wherein:
A is $—C(R^5)R^6—(CH_2)_m—C(R^9)(R^{10})—$ (wherein m is 0 to 2);
R^1 is $—C(NH)NH_2$, $—C(NH)N(H)OR^{11}$, $—C(NH)N(H)C(O)R^9$, or $—C(NH)N(H)C(O)OR^{11}$;
R^2 and R^3 are the same or different and are selected from the group consisting of independently hydrogen, halo, lower alkyl, lower haloalkyl, phenyl, naphthyl, $—OR^{11}$, $—C(O)OR^{11}$, $—C(O)N(R^{11})R^{12}$, $—N(R^{11})R^{12}$, $—N(H)C(O)R^{11}$, and $—N(H)S(O)_2R^{11}$;
R^4 is halo, lower haloalkyl, $—C(NH)NH_2$, $—C(NH)N(H)OR^{11}$, $—C(NH)N(H)C(O)R^9$, $—C(NH)N(H)C(O)OR^{11}$, $—OR^{11}$, $—(CH_2)_nC(O)OR^{11}$ (where n is 0 to 6), $—C(O)N(R^{11})R^{12}$, or $—N(R^{11})R^{12}$;
R^7 and R^8 are independently hydrogen, lower alkyl, lower haloalkyl, $—C(O)OR^{11}$, $—C(O)N(R^{11})R^{12}$, phenyl (optionally substituted by one or more substituents selected from the group consisting of halo, hydroxy, lower alkyl, lower haloalkyl, lower alkoxy and $—N(R^{11})R^{12}$), or naphthyl (optionally substituted by one or more substituents selected from the group consisting of halo, hydroxy, lower alkyl, lower haloalkyl, lower alkoxy and $—N(R^{11})R^{12}$);
R^9 and R^{10} are independently hydrogen, halo, lower alkyl, lower haloalkyl, $—OR^{11}$, $—C(O)OR^{11}$, $—C(O)N(R^{11})R^{12}$, phenyl (optionally substituted by one or more substituents selected from the group consisting of halo, hydroxy, lower alkyl, lower haloalkyl, lower alkoxy and $—N(R^{11})R^{12}$), or naphthyl (optionally substituted by one or more substituents selected from the group consisting of halo, hydroxy, lower alkyl, lower haloalkyl, lower alkoxy and $—N(R^{11})R^{12}$); and
R^{11} and R^{12} are independently hydrogen, lower alkyl, phenyl, naphthyl or lower aralkyl, or a pharmaceutically acceptable salt thereof.

5,612,364

SUBSTANTIALLY PURE APRACLONIDINE

Billie M. York, Fort Worth; John M. Yanni, Burleson, and Mark T. DuPriest, Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 8, 1995, Ser. No. 555,252
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—392 **4 Claims**

1. A topical composition for controlling intraocular pressure, comprising 0.1 to 10.0 weight percent of (2-[(4-amino-2,6-dichlorophenyl)imino]imidazolidine monohydrochloride substantially free of (2-[(4-amino-2,3,6-trichloropbenyl)imino]imidazolidine in a pharmaceutically acceptable carrier.

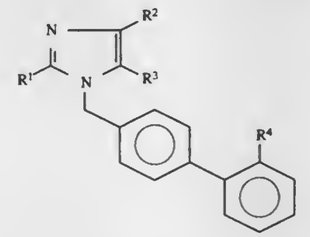
5,612,365

ANGIOTENSIN II RECEPTOR ANTAGONISTS FOR THE TREATMENT AND PROPHYLAXIS OF CORONARY HEART DISEASE

Holger Heitsch, Hofheim/Ts.; Gabriele Wiemer, Kronberg; Adalbert Wagner, Hattersheim/Main, and Heinz-Werner Kleemann, Bad Homburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 83,187, Jun. 29, 1993, Pat. No. 5,475,004.
This application May 24, 1995, Ser. No. 447,547
Claims priority, application Germany, Jul. 1, 1992, 42 21 535.8; Aug. 27, 1992, 42 28 555.0
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—398 **9 Claims**

1. A method for the treatment or prophylaxis of coronary heart disease in a mammal comprising the step of administering a mammal in recognized need thereof an effective amount of an antagonist for angiotensin II receptors of the AT_1 subtype of the formula



in which:
R^1 is (C_1–C_7)-alkyl, (C_3–C_7)-alkenyl or (C_3–C_7)-alkynyl;
R^2 is Cl or $—S(O)_r—R^{19}$;
R^3 is $—CH_2OR^5$ or $—CO—R^6$;
R^4 is $—SO_2—NH—CO—NR^7R^9$, $—SO_2—NH—COO—R^7$, $—SO_2—NH—CO—R^7$, or $—SO_2—N=CH—N(CH_3)_2$;
R^5 is hydrogen;
R^6 is hydrogen or $—OR^7$;

R^7 and R^9 are identical or different and are hydrogen, $(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyl, $(C_3–C_6)$-cycloalkyl- $(C_1–C_3)$-alkyl, $(C_6–C_{12})$-aryl, $(C_6–C_{10})$-aryl-$(C_1–C_4)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_3–C_6)$-alkenoyl or $(C_3–C_6)$-alkynyl;

R^{19} is $(C_1–C_6)$-alkyl; and

r is 0, 1 or 2;

or a physiologically tolerable salt thereof.

5,612,366

MESO-AZACYCLIC AROMATIC ACID AMIDES AND ESTERS AS NOVEL SEROTONERGIC AGENTS

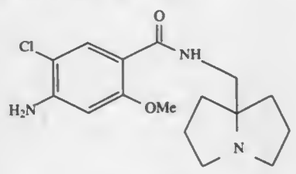
Daniel P. Becker, Glenview; Daniel L. Flynn, Mundelein; Alan E. Moorman, Skokie; Roger Nosal, Buffalo Grove, and Clara I. Villamil, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 973,090, Nov. 6, 1992, Pat. No. 5,318,977, which is a continuation-in-part of Ser. No. 666,151, Mar. 7, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 234,336

Int. Cl.[6] A01K *31/40;* **C07D** *487/04*

U.S. Cl. 514—413 **2 Claims**

1. A compound of the formula



a stereoisomer or pharmaceutically acceptable salt thereof.

5,612,367

METHOD OF ENHANCING BIOAVAILABILITY OF PHARMACEUTICAL AGENTS

Robert J. Timko, West Chester; Randy J. Bradway, Downingtown, both of Pa., and Arlene Clements, Turnersville, N.J., assignors to Zeneca Limited, London, England

Continuation of Ser. No. 116,781, Sep. 3, 1993, Pat. No. 5,482,963, which is a continuation of Ser. No. 805,421, Dec. 11, 1991, Pat. No. 5,319,097. This application Jun. 7, 1995, Ser. No. 474,191

Claims priority, application United Kingdom, Dec. 12, 1990, 9027014; Jul. 12, 1991, 9115107

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—415 **8 Claims**

1. A method of enhancing the bioavailability of N-[4-[5-(cyclopentyloxycarbonyl)amino- 1-methylindol-3-yl-methyl]-3-methoxybenzoyl] -2-methylbenzenesulphonamide upon oral administration to living mammals, said method comprising formulating a pharmaceutical composition comprising, as active ingredient, an amorphous physical form of N-[4-[5-(cyclopentyloxycarbonyl)amino- 1-methylindol-3-yl-methyl]-3-methoxybenzoyl] -2-methylbenzenesulphonamide, which is substantially free of other physical forms, and has an infra-red spectrum (0.5% in KBr) having sharp peaks at 1690, 1530, 1490, 1420, 1155, 1060, 862 and 550 cm^{-1}, in combination with polyvinylpyrrolidone.

5,612,368

O-ARYLMETHYL-N-(THIO)ACYLHYDROXYLAMINES

Jean Andrieux, Antony; Michel Langlois, Sceaux; Pierre Renard, Versailles, and Philippe Delagrange, Issy-les-Moulineaux, all of France, assignors to Adir et Compagnie, Courbevoie, France

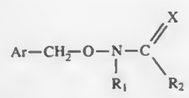
Filed Oct. 25, 1995, Ser. No. 548,209

Claims priority, application France, Oct. 26, 1994, 94 12784

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—418 **10 Claims**

1. A compound selected from those of formula (I):



(I)

in which:

X represents oxygen or sulfur,

R_1 represents hydrogen or a radical chosen from alkyl, cycloalkyl, cycloalkylalkyl, aryl, and arylalkyl,

R_2 represents:

a radical R_{21} which is hydrogen or a radical chosen from:

unsubstituted or substituted alkyl,

unsubstituted or substituted alkenyl,

unsubstituted or substituted alkynyl,

and unsubstituted or substituted cycloalkyl or cycloalkylalkyl,

or a radical R_{22} chosen from:

alkylamino in which alkyl may be unsubstituted or substituted,

and cycloalkylamino or cycloalkylalkylamino in which cycloalkyl or cycloalkylalkyl may be unsubstituted or substituted,

Ar represents an unsubstituted or substituted group chosen from:

naphthyl,

indolyl,

benzofuranyl,

benzothiophenyl,

it being possible for Ar to be partially or totally hydrogenated,

it being understood that in the description of formula (I):

the terms "alkyl" and "alkoxy" designate linear or branched groups containing 1 to 6 carbon atoms, inclusive,

the terms "alkenyl" and "alkynyl" designate unsaturated linear or branched groups containing 2 to 6 carbon atoms, inclusive,

the term "cycloalkyl" designates a group containing 3 to 8 carbon atoms, inclusive,

the term "substituted" associated with the alkyl, cycloalkyl, alkenyl, alkynyl and cycloalkylalkyl groups means that the substitution may be made by one or more radicals chosen from halogen, alkyl, and alkoxy,

the term "substituted" associated with the Ar group means that Ar is substituted with one or more radicals R, which are identical or different, chosen from halogen, hydroxyl, Ra, —CH_2—Ra, —O—Ra, —CO—Ra, and —O—CO—Ra (with Ra chosen from alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, substituted cycloalkyl, cycloalkylalkyl, substituted cycloalkylalkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl),

and the term "substituted" associated with the expressions "aryl" and "arylalkyl" means that the substitution consists of one or more radicals chosen from halogen, alkyl, alkoxy, hydroxy, and alkyl substituted with one or more halogens;

and its enantiomers or diastereoisomer thereof.

5,612,369

THROMBIN INHIBITORS

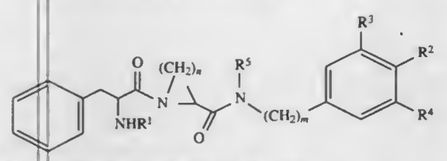
Roger F. Bone, Bridgewater; Richard M. Soll, Lawrenceville, both of N.J.; Carl L. Illig, Phoenixville, Pa.; Tianbao Lu, Exton, Pa., and Nalin L. Subasinghe, West Chester, Pa., assignors to 3-Dimensional Pharmaceuticals, Inc., Exton, Pa.

Filed Jun. 7, 1995, Ser. No. 487,421

Int. Cl.[6] A61K *31/40;* **C07D** *207/08*

U.S. Cl. 514—423 **14 Claims**

1. A compound having the Formula I:



I

or a pharmaceutically acceptable salt thereof;

wherein

R^1 is one of hydrogen, SO_2R^8, —$CONHR^8$ CO_2R^8, where R^8 is one of hydrogen, $C_1–C_8$ alkyl, $C_2–C_{10}$ alkenyl, $C_2–C_{10}$ alkynyl, $C_6–C_{10}$ aryl or $C_6–C_{10}$ aryl $C_1–C_6$ alkyl;

R^2 is one of hydroxy or —NR^6R^7;

R^3 and R^4 are independently one of hydrogen, hydroxy, —NR^6R^7, $C_1–C_8$ alkyl, $C_6–C_{10}$ aryl, $C_6–C_{10}$ aryl $C_1–C_6$ alkyl, $C_1–C_8$ alkoxy, halogen, $C_1–C_8$ haloalkyl, $C_1–C_8$ aminoalkyl or $C_1–C_8$ hydroxyalkyl;

R^5, R^6 and R^7 are independently one of hydrogen, $C_1–C_8$ alkyl, $C_6–C_{10}$ aryl or $C_6–C_{10}$ aryl $C_1–C_6$ alkyl;

n is 3; and

m is from 1 to 6;

provided that when R^2 is —NR^6R^7, then one or both of R^3 and R^4 is other than hydrogen, fluoro or $C_1–C_8$ alkyl.

5,612,370

PHENYLGLYCINE AND PHENYLALANINEN AMIDO BENZOPYRAN DERIVATIVES

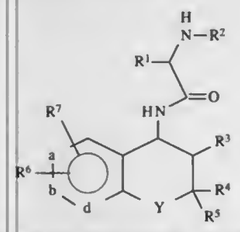
Karnail S. Atwal, Newtown, Pa., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 484,765

Int. Cl.[6] A61K *31/35;* **C07D** *311/68*

U.S. Cl. 514—456 **5 Claims**

1. A compound of the formula



I

or pharmaceutically acceptable salts thereof wherein

a, b and d are all carbon atoms;

Y is —O—;

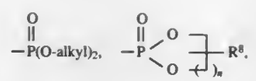
R^1 is a aryl, (aryl)alkyl, heterocyclo or (heterocyclo)alkyl;

R^2 is hydrogen, alkyl, —COR^8, —$COOR^8$, —$CONR^8R^9$ or —SO_2R^8;

R^3 is hydrogen, hydroxy or —$OC(O)R^8$;

R^4 and R^5 are each independently hydrogen, alkyl or arylalkyl; or R^4 and R^5 taken together with the carbon atom to which they are attached form a 5- to 7-membered carbocyclic ring;

R^6 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, (cycloalkyl)alkyl, —CN, —NO_2, —COR^8, —$COOR^8$, —$CONHR^8$, —$CONR^8R^9$, —CF_3, —S-alkyl,



halogen, amino, substituted amino, —O-alkyl, —OCF_3, —OCH_2CF_3, —OCOalkyl, —$OCONR^8$alkyl, —NR^8COalkyl, —$NR^8COOalkyl$ or —NR^8CONR^9, tetrazolyl, imidazole, oxazole or triazole, —SOR^8, —SO_2R^8 or —$SO_2NR^8R^9$;

R^7 is hydrogen, alkyl, halogen, hydroxy, —O-alkyl, amino, substituted amino, —$NHCOR^8$, —CN or —NO_2;

R^8 and R^9 are independently hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl or (cycloalkyl)alkyl; or R^8 and R^9 taken together with the atoms to which they are attached form a 5- to 7-membered ring; and

n is an integer of 1 to 3.

4. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

5. A method for treating ischemia comprising administering to a mammalian specie in need thereof a therapeutically effective amount of a composition of claim 4.

5,612,371

AMINO ACID, DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Denis Danvy, Yvetot; Thierry Monteil, Mont-Saint-Aignan; Christophe Lusson, Rouen; Jean-Charles Schwartz, Paris; Claude Gros, Paris; Nadine Noel, Paris; Jeanne-Marie Lecomte, Paris; Pierre Duhamel, and Lucette Duhamel, both of Mont-Saint-Aignan, all of France, assignors to Societe Civile Bioproject, Paris, France

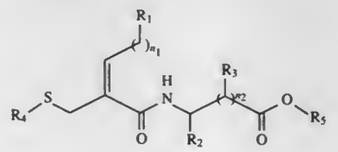
Filed Jul. 18, 1994, Ser. No. 276,665

Claims priority, application France, Jul. 16, 1993, 93 08765

Int. Cl.[6] A61K *31/36;31/195;31/215;* **C07C** *323/29;327/06;317/50;* **C07D** *317/50*

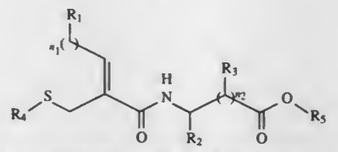
U.S. Cl. 514—465 **5 Claims**

1. Amino acid derivatives, characterized in that they correspond to the general formulae



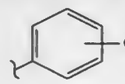
(I.a)

and

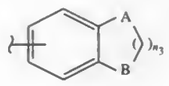


(I.b)

in which R_1 represents a hydrogen atom, a phenyl group which is optionally mono- or polysubstituted with a halogen atom, a trifluoromethyl group, a nitro group, a cyano group or an amino group, a lower alkyl group or a lower phenylalkylene group; the group



where R'_1 represents a hydrogen atom, a lower alkyl group, a phenyl group or a lower phenylalkylene group; a group



where A, B and n_3 have the meanings given below

A	B	n_3
O	O	1
O	CH_2	1
CH_2	CH_2	1
O	O	2
CH_2	CH_2	2
O	CH_2	2

a biphenyl group, alpha and beta naphthyl,

n_1 varies from 0 to 10

n_2 varies from 1 to 10

R_2 represents a hydrogen atom; a lower alkyl group; a lower hydroxyalkylene group; a phenyl group; a lower phenylalkylene group; a lower hydroxyphenylalkylene group; a lower aminoalkylene group; a lower guanidinoalkylene group; a lower mercaptoalkylene group; a lower thioalkylene lower alkyl group; a lower imidazolylalkylene group; a lower indolylalkylene group; a lower carbamylalkylene group; a lower carboxyalkylene group;

R_3 also represents a hydrogen atom or one of the groups mentioned above for the definition of R_2;

R_4 represents a hydrogen atom, a linear or branched aliphatic acyl radical, an aromatic acyl radical which is optionally mono- or polysubstituted, or a linear or branched acyl radical containing one or more oxygen atoms;

R_5 represents a hydrogen atom; a linear or branched lower alkyl group; a phenyl group or a lower phenylalkylene group, the two last-mentioned groups being optionally mono- or polysubstituted on the phenyl ring; a linear or branched substituent containing one or more oxygen atoms.

5,612,372

LIQUID DISPERSANTS FOR PESTICIDES

Michael H. West, Senatobia, Miss., assignor to IBC Manufacturing Company, Memphis, Tenn.

Filed Sep. 4, 1990, Ser. No. 577,020

Int. Cl.[6] A01N *47/10;33/12;* **B01J** *13/00*

U.S. Cl. 514—479 **10 Claims**

1. A dispersant pesticide composition which comprises

(1) a salt or partial salt of the reaction product of

(a) an alkyl substituted amine and

(b) a phosphonic acid,

and

(2) a pesticide.

5,612,373

CERTAIN DIACYL HYDRAZINE DERIVATIVES

Andrew G. Brewster; Peter W. R. Caulkett; Alan W. Faull, all of Macclesfield; Robert J. Pearce, Wilmslow, and Richard E. Shute, Macclesfield, all of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

Filed Jun. 27, 1994, Ser. No. 266,375

Claims priority, application United Kingdom, Jun. 28, 1993, 9313285

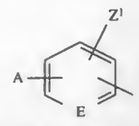
Int. Cl.[6] C07C *243/38;255/46;* **A61K** *31/165;31/275*

U.S. Cl. 514—522 **7 Claims**

1. An acid derivative of the formula I

$R^1—CON(R^2)—N(R^3)CO—X^1—Q—X^2—G$ I

wherein R^1 represents a group of the formula II



II

in which A is attached meta or para to the position where the group $CONR^2NR^3CO$ is attached and is selected from aminomethyl, guanidino and $R^aN{=}C(NH_2)$— where R^a is hydrogen or phenyl;

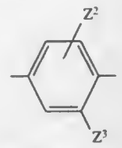
E is CH;

Z^1 is hydrogen, halogeno, (1–4C)alkyl, (1–4C)alkoxy, cyano or nitro;

R^2 and R^3, which may be the same or different, represent hydrogen, (1–4C)alkyl or ar(1–4C)alkyl;

X^1 is a bond or (1–4C)alkylene;

Q is a group of formula IV



IV

in which Z^2 is hydrogen, halogeno, (1–4C)alkyl, (1–4C)alkoxy, cyano or nitro, and

Z^3 is a group of formula $X^2—G^a$ in which X^2 can have any of the values given hereinafter for X^2 and G^a can have any of the values given hereinafter for G, or G^a has any of the values given hereinbefore for Z^2;

X^2 is a bond, (1–4C)alkylene, or oxy(1–3C)alkylene; and

G is a carboxy group or a pharmaceutically acceptable metabolically labile ester or amide thereof; or a pharmaceutically acceptable salt thereof.

5,612,374

INHIBITING GROWTH OF MAMMARY ADENOCARCINOMA

Ronald T. Stanko, 795 Scrubgrass Rd., Pittsburgh, Pa. 15234, assignor to Ronald T. Stanko, Coraopolis, Pa.

Filed Feb. 14, 1994, Ser. No. 194,857

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **3 Claims**

1. The method of inhibiting growth of mammary adenocarcinoma in a mammal comprising introducing orally into the mammal's digestive system a therapeutically effective dose of pyruvate.

5,612,375

CREATINE BEVERAGE AND PRODUCING PROCESS THEREOF

Haruhiko Sueoka, 9-11-204, Kamata 3-Chome, Setagaya-Ku, Tokyo, Japan

Continuation of Ser. No. 383,007, Feb. 3, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 583,963

Claims priority, application Japan, Feb. 28, 1994, 6-052657

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—565 **13 Claims**

1. A creatine beverage which is produced by a process comprising the steps of:

heating water rendered weakly alkaline;

adding from 1 to 3 grams per 100 cc of the heated water, of crystalline creatine powder to the heated water;

dissolving the creatine powder by stirring to form a creatine aqueous solution;

adding an additive to the creatine aqueous solution for improving nutrition or palatability; and

sterilizing the creatine aqueous solution to obtain a creatine drink having a pH value of 7 to 10.

5,612,376

METHOD OF TREATING WRINKLES USING 3-PHENYLLACTIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 465,703

Int. Cl.[6] A61K *7/48;31/19*

U.S. Cl. 514—570 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 3-phenyl 2-hydroxypropanoic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,612,377

METHOD OF INHIBITING LEUKOTRIENE BIOSYNTHESIS

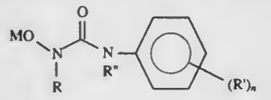
Stephen L. Crooks, Mahtomedi, Minn.; Bryon A. Merrill, River Falls, Wis., and Paul D. Wightman, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 286,017, Aug. 4, 1994, abandoned. This application May 31, 1995, Ser. No. 455,643

Int. Cl.[6] A01N *47/28*

U.S. Cl. 514—596 **30 Claims**

1. A method of inhibiting leukotriene biosynthesis in an animal and of treating in an animal a condition responsive to such inhibition comprising administering to the animal, in an amount effective to inhibit leukotriene biosynthesis, a compound of the formula:



wherein n is 0, 1, 2 or 3,

R is selected from the group consisting of hydrogen; cyclic alkyl containing five to ten carbon atoms; straight chain or branched chain alkyl containing one to fourteen carbon atoms and substituted straight chain or branched chain alkyl containing one to twelve carbon atoms, wherein the substituent is alkoxycarbonyl wherein the alkoxy group contains one to four carbon atoms; alkoxyalkyl wherein the alkoxy moiety contains one to six carbon atoms and the alkyl moiety contains one to six atoms;

each R' is independently selected from the group consisting of halogen; nitro; straight chain or branched chain alkyl containing one to five carbon atoms; alkoxy containing one to four carbon atoms; alkoxyphenyl wherein the alkoxy group contains one to eight carbon atoms; alkylthio containing one to four carbon atoms; alkylsulfonoxy containing one to four carbon atoms; alkylsulfinyl containing one to four carbon atoms; alkylsulfonyl containing one to four carbon atoms; benzoyl; benzyl; cyclohexylmethoxy; cyclopentyloxy; phenoxy; phenyl; phenylalkyloxy wherein the alkyl group contains one to four carbon atoms; trifluoromethyl; trifluoromethylthio; and trifluoromethylsulfonoxy;

R" is selected from the group consisting of hydrogen and straight chain alkyl containing one to twelve carbon atoms; and

M is selected from the group consisting of hydrogen, a pharmaceutically acceptable cation, and a pharmaceutically acceptable metabolically cleavable group with the proviso that R, R', and R" are not all hydrogen.

5,612,378

BIS-ARYLSULFONYLAMINOBENZAMIDE DERIVATIVES AND THE USE THEREOF AS FACTOR XA INHIBITORS

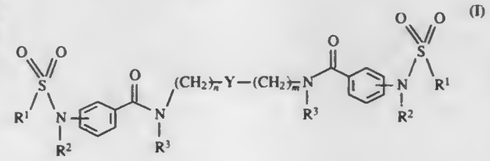
Lu Tianbao, Exton, Pa., and Richard M. Soll, Lawrenceville, N.J., assignors to 3-Dimensional Pharmaceuticals, Inc., Exton, Pa.

Filed Jun. 6, 1995, Ser. No. 470,579

Int. Cl.[6] A61K *31/18;* **C07C** *311/16*

U.S. Cl. 514—602 **10 Claims**

1. A compound having Formula I:



(I)

wherein

each R^1 is independently one of alkyl, substituted alkyl cycloalkyl, aryl, or substituted aryl;

each R^2 and R^3 is independently one of hydrogen, alkyl, aryl or arylalkyl;

Y is a bond, or is one of $—(CH_2)_p—$, cycloalkyl, or aryl; and

m, n and p are each independently 1 to 10.

5,612,379

MODAFINIL FOR THE TREATMENT OF SLEEP APNEAS AND VENTILATORY DISORDERS OF CENTRAL ORIGIN

Philippe Laurent, Oullins, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

PCT No. PCT/FR94/00711, § 371 Date Apr. 30, 1996, § 102(e) Date Apr. 30, 1996, PCT Pub. No. WO95/00132, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 14, 1994, Ser. No. 564,286

Claims priority, application France, Jun. 22, 1993, 93 07555

Int. Cl.[6] A61K *31/165*

U.S. Cl. 514—618 **3 Claims**

1. Process for the treatment of ventilatory disorders of central origin comprising the administration to a patient of an effective amount of modafinil.

5,612,380

METHOD FOR SLEEP INDUCTION

Richard A. Lerner; Dale Boger, both of La Jolla; Ben Cravatt; Gary E. Siuzdak, both of San Diego, and Steven J. Henriksen, Solana Beach, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 314,583, Sep. 27, 1994, abandoned. This application Jan. 5, 1995, Ser. No. 369,036

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—627 **12 Claims**

1. A method for inducing sleep comprising the step of administering a fatty acid primary amide to a subject.

5,612,381
1,2-ETHANEDIOL DERIVATIVE AND SALT THEREOF PROCESS FOR PRODUCING THE SAME, AND CEREBRAL FUNCTION-IMPROVING AGENT COMPRISING THE SAME

Satoshi Ono, Toyama; Tetsuo Yamafuji; Hisaaki Chaki, both of Toyama-ken; Mutsuko Maekawa, Toyama; Yozo Todo, Toyama, and Hirokazu Narita, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

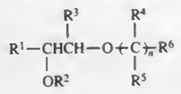
Division of Ser. No. 174,793, Dec. 29, 1993, Pat. No. 5,472,984, which is a division of Ser. No. 940,747, Sep. 8, 1992, Pat. No. 5,280,032, which is a continuation of Ser. No. 566,889, Aug. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 480,114, Feb. 14, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 478,810

Claims priority, application Japan, Feb. 14, 1989, 1-032714; Mar. 20, 1989, 1-068958; Apr. 26, 1989, 1-106187; Feb. 5, 1990, 2-024501; Feb. 5, 1990, 2-024502; Feb. 5, 1990, 2-024503

Int. Cl.[6] A61K *31/135;* **C07C** *217/10*

U.S. Cl. 514—651 **11 Claims**

1. A 1,2-ethanediol derivative represented by the following general formula or a salt thereof;



wherein R^1 represents a substituted or unsubstituted phenyl group; R^2 represents a hydrogen atom, a lower alkyl group or a hydroxyl-protecting group; R^3 represents a hydrogen atom or a lower alkyl group; nR^4's and nR^5's are the same as or different from one another and represent hydrogen atoms or lower alkyl groups; R^6 represents a substituted or unsubstituted amino group; and n represents an integer of 1 to 6, wherein the substituent or R^1 is selected from the group consisting of halogen atoms, substituted or unsubstituted amino, lower alkyl, aryl, ar-lower alkyl, lower alkoxy, ar-lower alkoxy, aryloxy, carbamoyloxy, lower alkylthio, lower alkenyl, lower alkanyloxy, ar-lower alkylthio, ar-lower alkylsolfonyl, arylsulfonyl, lower alkylsulfonylamino, arylsulfonylamino and heterocyclic groups, protected amino groups, protected or unprotected hydroxyl groups, nitro group, and lower alkylenedioxy groups; the substituted lower alkyl, aryl, ar-lower alkyl, lower alkoxy, ar-lower alkoxy, aryloxy, carbamoyloxy, lower alkIthio, lower alkenyl, lower alkenyloxy, ar-lower alkylthio, ar-lower alkylsulfonyl, arylsulfonyl, lower alkylsulfonylamino, arylsulfonylamino or heterocyclic group as the substituent of R^1 and the substituted amino group as the substituent of R^1 and the substituted amino group as R^6 have at least one substituent selected from the group consisting of protected or unprotected hydroxyl groups, unsubstituted lower alkyl groups, lower alkyl groups substituted by a protected or unprotected carboxyl or hydroxyl groups, cycloalkyl groups, aryl groups, lower acyl groups, ar-lower alkyl groups, heterocyclic groups, unsubstituted or oxo-substituted heterocyclic-CO- groups, adamantyl group, lower alkylsulfonyl groups and arylsulfonyl groups, provided that there are excluded the compounds in which R^1 is a phenyl group which may optionally be substituted by the halogen atom or the lower alkyl, lower alkylenedioxy, lower alkoxy or protected or unprotected hydroxyl group and R^6 is $—NR^7R^8$ in which R^7 represents an ar-lower alkyl or heterocyclic group and R^8 represents a hydrogen atom or a lower alkyl group; all the above heterocyclic groups being selected from the group consisting of furyl, thienyl, benzothienyl, pyranyl, isobenzofuranyl, oxazolyl, benzofuranyl, indolyl, benzimidazolyl, benzoxazolyl, benzothiazolyl, quinoxalyl, dihydroquinoxalyl, 2,3-dihydrobenzothienyl, 2,3-dihydrobenzopyrrolyl, 2,3-dihydro-4H-1-thianaphthyl, 2,3-dihydrobenzofuranyl, benzo[b]dioxanyl, imidazo[2,3-a]pyridyl, benzo[b]piperazinyl, chromenyl, isothiazolyl, isoxazolyl, oxadiazolyl, pyridazinyl, isoindolyl and isoquinolyl groups.

5,612,382
COMPOSITION FOR PERCUTANEOUS ABSORPTION OF PHARMACEUTICALLY ACTIVE INGREDIENTS

Elmer A. Fike, Nitro, W. Va., assignor to Frances B. Fike, Nitro, W. Va.

Filed Jul. 15, 1994, Ser. No. 275,423

Int. Cl.[6] A01N *37/18;* **A01K** *31/16*

U.S. Cl. 514—14 **24 Claims**

1. A pharmaceutical composition for transdermal application, comprising at least one pharmaceutically active ingredient, present in an amount effective to treat symptoms of a local disease or ailment, in admixture with a pharmaceutically acceptable carrier capable of penetrating skin or mucosal tissue, said pharmaceutically acceptable carrier consisting essentially of at least one hydroxy alkyl amide selected from the group consisting of N-(2-hydroxyethyl) acetamide, dihydroxyethyl acetamide, N-acetyl propanolamine, N-acetyl dipropanolamine, N-acetyl isopropanolamine and N-acetyl diisopropanolamine.

5,612,383
WEAKLY BASIC ANION EXCHANGERS, PROCESSES FOR THEIR PREPARATION BY AMINOLYSIS AND THEIR USE FOR REMOVING SULPHATE IONS FROM AQUEOUS LIQUIDS

Harold Heller, Köln; Franz-Rudolf Minz, Dormagen; Reinhold M. Klipper, Köln; Alfred Mitschker, Odenthal-Holz, and Heiko Hoffmann, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 277,383, Jul. 19, 1994, Pat. No. 5,441,646, which is a continuation of Ser. No. 931,165, Aug. 17, 1992, abandoned. This application May 18, 1995, Ser. No. 443,827

Claims priority, application Germany, Aug. 22, 1991, 41 27 861.5

Int. Cl.[6] C08F *8/32;* **C02F** *1/42;* **B01J** *41/04;41/12*

U.S. Cl. 521—32 **3 Claims**

3. A weakly basic polymeric macroporous anion exchanger having polyamino groups and having a sulphate ion absorption capacity of at least 48 g of sulphate per kg of anion exchanger (dry, based on the OH form and measured on an aqueous solution of 100 g of sodium chloride and 4.5 g of sodium sulphate per liter of solution; flow rate: 5 bed volumes per hour at 25° C.), said macroporous anion exchanger prepared by a process comprising the following steps:

A. preparing a macroporous polymer of poly(meth)acrylonitrile and/or poly(meth)acrylate and/or a mixture thereof and/or a copolymer thereof by a suspension polymerization process comprising polymerizing the component monomers of said polymer at a temperature of from 20° to 120° C. in the presence of:

(I) a free radical initiator;

(II) a suspension stabilizer;

(III) a porogenic agent; and

(IV) a cross-linking agent; and

B. aminolyzing the macroporous polymer produced in step A by reacting said macroporous polymer with a polyamine, wherein said polyamine:

(I) contains 4 to 8 nitrogen atoms per molecule;

(II) carries at least 1 primary amino group per molecule; and

(III) contains an amount of heterocyclic isomer below a value of:

$$x=100-(A\times B^{n-4})\ [\%]$$

wherein

A represents 70 to 99;

B represents 0.7 to 0.9; and

n represents the number of nitrogen atoms per molecule.

5,612,384
SUPERABSORBING POLYMERIC NETWORKS

Robert J. Ross, Elmhurst; Kim C. Low, Alsip; Larry P. Koskan, Orland Park, all of Ill., and Alfred P. Wheeler, Clemson, S.C., assignors to Donlar Corporation, Bedford Park, Ill.

Filed Sep. 13, 1994, Ser. No. 305,266

Int. Cl.[6] C08J *9/28*

U.S. Cl. 521—64 **11 Claims**

1. A method of producing polymeric networks comprising crosslinked polyaspartate comprising the steps of:

a) dissolving a polysuccinimide in a polar aprotic organic solvent;

b) reacting the dissolved polysuccinimide with an effective crosslinking amount of an organic crosslinking agent that is an organic base containing at least two primary amine groups to form a crosslinked polysuccinimide product in the resulting reaction mixture;

c) isolating the crosslinked polysuccinimide product obtained by admixing the reaction mixture with a solvent in which the polar aprotic organic solvent is soluble and the crosslinked polysuccinimide product is not;

d) recovering the crosslinked polysuccinimide product; and

e) hydrolyzing the recovered crosslinked polysuccinimide product to produce a polymeric network of polyaspartate.

5,612,385
AERATED FIBROUS FOAM COMPOSITIONS

Anthony Ceaser, and Mark A. Ceaser, both of P.O. Box 161, Cemetery Rd., Great Meadows, N.J. 07838

Filed Aug. 30, 1994, Ser. No. 298,427

Int. Cl.[6] C08L *1/00;89/00;5/02*

U.S. Cl. 521—68 **14 Claims**

1. An aerated fibrous slurry composition consisting of

a) a fibrous slurry composition consisting of:

10 to 2,500 parts by weight of said composition of fibrous material consisting of fibers from 1 to 20 mm in length;

0.5 to 25 parts by weight of said composition of foaming agent;

1 to 50 parts by weight of said composition of stabilizer; and

500 to 25,000 parts by weight of said composition of water;

wherein said fibrous material, foaming agent and stabilizer together constitute the dry components of said fibrous slurry composition, said dry components constituting 1 to 10% by weight of said fibrous slurry composition; and

b) a volume of gas, equal to 5 to 1,000% of the volume of said fibrous slurry composition, incorporated into said fibrous slurry composition to form said aerated fibrous slurry composition having a density of 0.2 to 0.6 g/cc,

wherein said stabilizer is selected from the group consisting of starch, proteins, lignin, sodium alginate, calcium polyacrylate and carboxymethyl cellulose.

5,612,386
BLOWING AGENT FOR THERMOPLASTIC AND THERMOSET POLYMERS

Raymond T. Ertle, and Raymond J. Ertle, both of Pompton Plains, N.J., assignors to Cylatec, Inc., Canton, Ohio

Continuation-in-part of Ser. No. 123,431, Sep. 17, 1993. This application Feb. 22, 1995, Ser. No. 392,466

Int. Cl.[6] C08J *9/12*

U.S. Cl. 521—91 **12 Claims**

1. In the method for reducing by foaming the density of a thermally processed polymer by adding to the polymer prior to the thermal processing of same a blowing or foaming agent which generates gases during the said processing to foam said polymer; the improvement comprising: utilizing as said blowing or foaming agent an intumescing or expanding particulate alkali metal silicate which contains between 5 and 40% water, which water is released when the compounds are subjected during normal polymer thermal processing to a temperature greater than about 250° F. but below the degradation temperature of the polymer in which the particulate is contained; the silicate having a mole ratio of SiO_2: M_2O of at least 1.5:1, where M represents an alkali metal or a combination of alkali metals.

5,612,387
NONLINEAR OPTICAL MATERIAL AND ITS METHOD OF MANUFACTURE

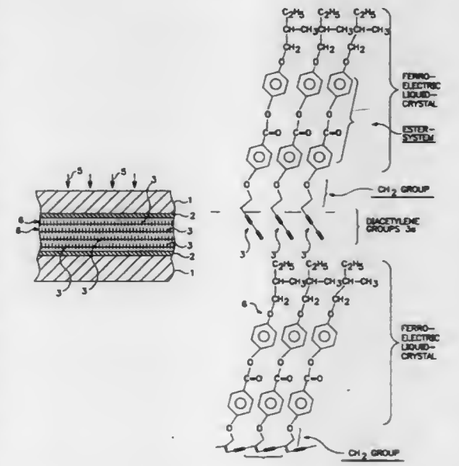
Kazufumi Ogawa, Osaka, Japan, assignor to Matsusbita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 76,284, Jun. 11, 1993, Pat. No. 5,589,235, which is a continuation of Ser. No. 681,994, Apr. 8, 1991, abandoned. This application May 31, 1995, Ser. No. 455,979

Claims priority, application Japan, Apr. 13, 1990, 2-98499

Int. Cl.[6] G02F *1/13;* **C08F** *2/46*

U.S. Cl. 522—3 **8 Claims**



1. A method of manufacturing a nonlinear optical material comprising:

forming an organic orientation film on a surface of each of two substrates;

positioning said substrates in a spaced apart relationship with said organic orientation films in a face to face relationship to establish a gap therebetween;

introducing energy-beam sensitive monomer molecules which are derivatives of a ferroelectric liquid crystal and having a large dipole moment which results in orientation in an aligned direction when exposed to a magnetic field into said gap, said energy-beam sensitive monomer molecules having energy-beam sensitive parts comprising diacetylene groups bonded via CH_2 groups;

applying a magnetic field in order to align the directions of said dipole-moments, and

irradiating said monomer molecules having aligned dipole-moments with an energy-beam in order to polymerize the energy-beam sensitive parts of said monomer molecules.

5,612,388

POLYFUNCTIONAL CATIONIC MONOMER AND PROCESS FOR PRODUCING THE SAME

Tadashi Irizawa; Masahiko Morooka, both of Kanagawa, and Masahiko Miyanoki, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

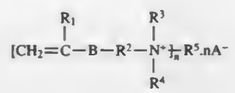
Filed Sep. 15, 1995, Ser. No. 528,706

Claims priority, application Japan, Sep. 21, 1994, 6-251563

Int. Cl.[6] C08F *2/46;12/34;* **C07C** *233/00*

U.S. Cl. 522—6 **11 Claims**

1. A polyfunctional cationic monomer represented by formula (1):



(1)

wherein R^1 represents a methyl group or a hydrogen atom; B represents a —COO— group or a —CONH— group; R^2 represents a divalent hydrocarbon group having 2 to 8 carbon atoms; R^3 and R^4 each represents a hydrocarbon group having 1 to 4 carbon atoms; n is an integer of from 2 to 6; R^5 is an organic group having a valence of n; and A is an acid radical anion.

9. A process for producing a polyfunctional cationic monomer as claimed in claim **1**, which comprises:

reacting a tertiary amine having a polymerizable vinyl group represented by formula (2):



(2)

wherein R^1 represents a methyl group or a hydrogen atom; B represents a —COO— group or a —CONH— group; R^2 represents a divalent hydrocarbon group having 2 to 8 carbon atoms; and R^3 and R^4 each represents a hydrocarbon group having 1 to 4 carbon atoms;

with a compound having at least two oxirane groups.

5,612,389

FUNCTIONALIZED PHOTOINITIATORS, MACROMERS THEREOF, AND THE USE THEREOF

Peter Chabrecek, Basel, and Dieter Lohmann, Münchenstein, both of Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

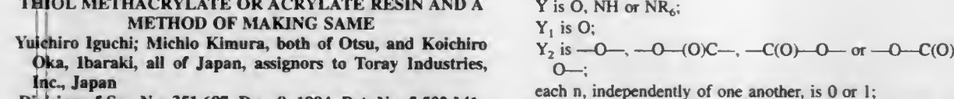
Division of Ser. No. 265,597, Jun. 24, 1994, Pat. No. 5,527,925. This application Jun. 6, 1995, Ser. No. 465,993

Claims priority, application Switzerland, Jul. 2, 1993, 2006/93

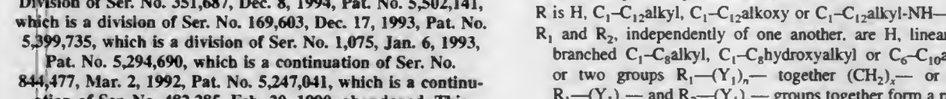
Int. Cl.[6] C08L *1/08;3/04;5/00;5/16*

U.S. Cl. 522—35 **3 Claims**

1. An oligomer or polymer containing H-active groups —OH and/or —NH— bonded to the oligomer or polymer backbone, without a bridge group or via a —(C_1–C_4alkylene—O)— or —(C_2–C_{10}alkylene—NH)— bridge group, some or all of whose H atoms in the H-active groups have been substituted by radicals of the formulae IV and/or IVa



(IV)



(IVa)

in which

X is O;

Y is O, NH or NR_6;

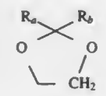
Y_1 is O;

Y_2 is —O—, —O—(O)C—, —C(O)—O— or —O—C(O)—O—;

each n, independently of one another, is 0 or 1;

R is H, C_1–C_{12}alkyl, C_1–C_{12}alkoxy or C_1–C_{12}alkyl —NH—;

R_1 and R_2, independently of one another, are H, linear or branched C_1–C_8alkyl, C_1–C_8hydroxyalkyl or C_6–C_{10}aryl, or two groups R_1—$(Y_1)_n$— together are —$(CH_2)_x$— or the R_1—$(Y_1)_n$— and R_2—$(Y_1)_n$— groups together form a radical of the formula:



R_3 is a direct bond or linear or branched C_1–C_8alkylene, which is unsubstituted or substituted by —OH and/or is uninterrupted or interrupted by one or more —O—, —O—C(O)— or —O—C(O)—O— groups;

R_4 is branched C_3–C_{18}alkylene, C_6–C_{10}arylene, which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_7–C_{18}aralkylene which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_3–C_8cycloalkylene which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_3–C_8cycloalkylene—C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or —C_yH_{2y}—C_3–C_8cycloalkylene—C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy;

each R_5, independently of one another, has the same meaning as R_4 or is linear C_3–C_{18}alkylene;

R_6 is linear or branched C_1–C_6alkyl;

x is an integer from 3 to 5;

y is an integer from 1 to 6; and

R_a and R_b, independently of one another, are H, C_1–C_8alkyl, C_3–C_8cycloalkyl, benzyl or phenyl;

with the provisos:

that n in the —$(Y_1)_n$—R_1 groups is 0 if R_2 is H,

that at most two Y_1 radicals in the —$(Y_1)_n$— groups in the formula I are O and n in the other —$(Y_1)_n$— groups is 0,

that at most one Y_1 in the —$(Y_1)_n$— groups in the formula Ia is O and n in the other —$(Y_1)_n$—group is 0, and

that n in the —$(Y_2)_n$— group is 0 if R_3 is a direct bond;

wherein the oligomer or polymer is a natural or synthetic oligomer or polymer selected from the group consisting of cyclodextrin, starch, hyaluronic acid, deacetylated hyaluronic acid, chitosan, trehalose, cellobiose, maltotriose, maltohexaose, chitohexaose, agarose, chitin 50, amylose, glucan, heparin, xylan, pectin, galactan, glycosaminoglycan, dextran, aminated dextran, cellulose, hydroxyalkylcellulose, carboxyalkylcellulose, heparin, fucoidan, chondroin sulfate, a sulfated polysaccharide, a mucopolysaccharide, gelatin, collagen, albumin, globulin, bilirubin, ovalbumin, keratin, fibronectcin, vitronectin, pepsin, trypsin and lysozyme.

5,612,390

THIOL METHACRYLATE OR ACRYLATE RESIN AND A METHOD OF MAKING SAME

Yuichiro Iguchi; Michio Kimura, both of Otsu, and Koichiro Oka, Ibaraki, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 351,687, Dec. 8, 1994, Pat. No. 5,502,141, which is a division of Ser. No. 169,603, Dec. 17, 1993, Pat. No. 5,399,735, which is a division of Ser. No. 1,075, Jan. 6, 1993, Pat. No. 5,294,690, which is a continuation of Ser. No. 844,477, Mar. 2, 1992, Pat. No. 5,247,041, which is a continuation of Ser. No. 482,285, Feb. 20, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 480,090

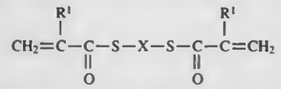
Claims priority, application Japan, Feb. 22, 1989, 1-42822; Apr. 18, 1989, 1-98372

Int. Cl.[6] C08F *2/48*

U.S. Cl. 522—173 **9 Claims**

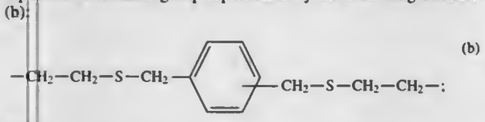
1. A process for preparing a thiol methacrylate or acrylate resin consisting essentially of the steps:

incorporating 0.001 to 5 parts by weight of a radical polymerization initiator in 100 parts by weight of a thiol methacrylate or acrylate monomer represented by the following formula (1) or a monomer mixture comprising at least 10% by weight of the thiol methacrylate or acrylate monomer of the formula (1):



(1)

wherein R^1 represents a hydrogen atom or a methyl group and X represents a divalent group represented by the following formula (b):



(b)

and

polymerizing the monomer or monomer mixture by irradiation with ultraviolet light.

5,612,391

FUNCTIONALIZED PHOTOINITIATORS, MACROMERS THEREOF, AND THE USE THEREOF FOR CONTACT LENS

Peter Chabrecek, Basel, and Dieter Lohmann, Münchenstein, both of Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 265,597, Jun. 24, 1994, Pat. No. 5,527,925. This application Jun. 6, 1995, Ser. No. 469,399

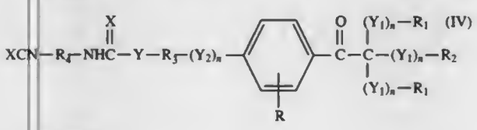
Claims priority, application Switzerland, Jul. 2, 1993, 2006/93

Int. Cl.[6] C08J *3/28;5/00;5/18;7/04*

U.S. Cl. 523—106 **13 Claims**

1. A contact lens, comprising:

(a) an oligomer or polymer containing H-active groups, —OH and/or —NH— bonded to the oligomer or polymer backbone, either via a bridge group selected from the group consisting of —(C_1–C_4alkylene-O)—, —(C_2–C_{10}alkylene-NH)— and —C(O)—(CHOH)$_r$—CH_2—O— where r is 0–4, or directly bonded, or containing H-active —NH— groups bonded in the oligomer or polymer backbone, some or all of whose H atoms in the H-active groups have been substituted by radicals of formula IV:



(IV)

in which

X is O;

Y is O, NH or NR_6;

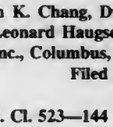
Y_1 is O;

Y_2 is —O—, —O—(O)C—, —C(O)—O— or —O—C(O)—O—;

each n, independently of one another, is 0 or 1;

R is H, C_1–C_{12}alkyl, C_1–C_{12}alkoxy or C_1–C_{12}alkyl-NH—;

R_1 and R_2, independently of one another, are H, linear or branched C_1–C_8alkyl, C_1–C_8hydroxyalkyl or C_6–C_{10}aryl, or two groups R_1—$(Y_1)_n$— together $(CH_2)_x$— or the R_1—$(Y_1)_n$— and R_2—$(Y_1)_n$— groups together form a radical of the formula:



R_3 is a direct bond or linear or branched C_1–C_8alkylene, which is unsubstituted or substituted by —OH and/or is uninterrupted or interrupted by one or more —O—, —O—C(O)— or —O—C(O)—O— groups;

R_4 is branched C_3–C_{18}alkylene, C_6–C_{10}arylene, which is unsubstituted or substituted by by C_1–C_4alkyl or C_1–C_4alkoxy, C_7–C_{18} aralkylene which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_3–C_8cycloalkylene which is substituted by C_1–C_4alkyl or C_1–C_4 alkoxy, C_3–C_8cycloalkylene-C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or —C_yH_{2y}—C_3–C_8cycloalkylene-C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy;

R_6 is linear or branched C_1–C_6alkyl;

x is an integer from 3 to 5;

y is an integer from 1 to 6; and

R_a and R_b, independently of one another, are H, C_1–C_8alkyl, C_3–C_8cycloalkyl, benzyl or phenyl;

with the provisos:

that n in the —$(Y_1)_n$—R_1 groups is 0 if R_2 is H,

that at most two Y_1 radicals in the —$(Y_1)_n$— groups in the formula I are O and n in the other —$(Y_1)_n$— groups is 0,

that at most one Y_1 in the —$(Y_1)_n$— groups in the formula Ia is O and n in the other —$(Y_1)_n$ — group is 0,

that R_4 provides different reactivity to the two NCX groups, and

that n in the —$(Y_2)_n$— group is 0 if R_3 is a direct bond; and

(b) a thin outer coating, on at least part of the oligomer or polymer surface, of a graft polymer formed by photopolymerization of a non-volatile or low-volatility olefin.

5,612,392

HEAT CURED FOUNDRY BINDER SYSTEMS AND THEIR USES

Ken K. Chang, Dublin; Thomas E. Dando, Sunbury, and A. Leonard Haugse, Dublin, all of Ohio, assignors to Ashland Inc., Columbus, Ohio

Filed May 16, 1995, Ser. No. 442,485

Int. Cl.[6] B22C *01/22*

U.S. Cl. 523—144 **4 Claims**

1. A heat cured foundry binder system comprising as separate components:

A. from 50 to 90 parts of a furan resin;

B. an effective amount of a curing catalyst composition comprising in admixture:

(1) from 0 to 30 of parts of polyvinyl alcobol having an average molecular weight of 5,000 to 100,000;

(2) from 20 to 80 parts of water;

(3) from 1 to 40 parts of a copper aryl sulfonate;

(4) from 5 to 70 parts of an aryl sulfonic acid; and

(5) from 1 to 20 parts of a copper halide,

wherein said parts by weight of the catalyst composition are based upon the total weight of the catalyst composition, and said parts of the furan resin are based upon the total weight of the binder system.

5,612,393

CASTING CORE COMPOSITION

Takuya Arakawa, Matsusaka; Hiroshi Tako, Fujl, and Toru Tohata, Kaminokawa, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, and Aichi Machine Industry Co. Ltd., Aichi, both of Japan

Continuation-in-part of Ser. No. 357,008, Dec. 16, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 639,067

Claims priority, application Japan, Dec. 24, 1993, 5-327175

Int. Cl.[6] C08K *3/22*

U.S. Cl. 523—145 **6 Claims**

1. A casting core composition comprising:

refractory grains, a majority of said refractory grains comprising mullite grains, said refractory grains being substantially spherical in shape and containing a first fraction having a first diameter larger than 420 μm and a first amount which is 0 wt %, a second fraction having a second diameter within a range of 297–420 μm and a second amount within a range of 0–1.3 wt %, a third fraction having a third diameter within a range of 210–297 μm and a third amount within a range of 0–28.7 wt %, a fourth fraction having a fourth diameter within a range of 149–210 μm and a fourth amount within a range of 3.5–37.6 wt %, a fifth fraction having a fifth diameter within a range of 105–149 μm and a fifth amount within a range of 19.1–70.8 wt %, a sixth fraction having a sixth diameter within a range of 74–105 μm and a sixth amount within a range of 7.8–23.9 wt %, a seventh fraction having a diameter within a range of 53–74 μm and a seventh amount within a range of 0.8–5.5 wt %, and an eighth fraction having an eighth diameter smaller than 53 μm and an eighth amount within a range of 0–0.7 wt %, a first total of said first, second, third, fourth, fifth, sixth, seventh and eighth amounts being 100 wt %; and

a phenolic resin for binding said refractory grains, said phenolic resin amounting to a range of from 1.0 to 2.2 wt % based on the total weight of said refractory grains and said phenolic resin,

wherein a second total divided by 100 wt % is within a range of 78–110, said second total being a sum of said second amount multiplied by 40, said third amount multiplied by 50, said fourth amount multiplied by 70, said fifth amount multiplied by 100, said sixth amount multiplied by 140, said seventh amount multiplied by 200, and said eighth amount multiplied by 300.

5,612,394

AQUEOUS, MODIFIED EPOXY RESIN DISPERSIONS

Armin Pfeil; Michael Hoenel; Paul Oberressl; Dieter Dreischhoff, all of Wiesbaden, and Stefan Petri, Taunusstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 2, 1994, Ser. No. 253,077

Claims priority, application Germany, Aug. 16, 1993, 43 27 493.5

Int. Cl.[6] C08K *3/20;* **C08L** *63/00*

U.S. Cl. 523—403 **18 Claims**

1. A process for preparing an aqueous one-component epoxy resin dispersion or two-component epoxy resin dispersion system comprising

an epoxy resin which is a condensation product of

(A-1) from 50 to 95% by weight of one or more epoxide compounds having at least two epoxide groups per molecule and an epoxide equivalent mass of from 100 to 2000 g/mol,

(A-2) from 5 to 50% by weight of aromatic polyol, and

(A-3) from 0 to 25% by weight of modifying compounds containing at least two epoxide-reactive groups and which is not classifiable under,

(B) a dispersant comprising

(B-1) a condensation product of a polyol having a weight-average molecular-mass (M_w) of from 200 to 20,000 g/mol and an epoxide compound having on average at least two epoxide groups per molecule and an epoxide equivalent mass of from 100 to 10,000 g/mol, and

(B-2) optional surfactants,

(C) a polymer, prepared in a dispersion of (A) in (B), of ethylenically unsaturated monomers which are capable of free-radical polymerization or copolymerization,

(D) optionally a curing agent for the epoxy resins, and

(E) optional additives and catalysts; comprising the steps of

a) preparing epoxy resin (A) by condensation of components (A-1) and (A-2) and optionally (A-3), in the presence of a condensation catalyst,

b) adding the ethylenically unsaturated monomers which are used to form polymer (C) to the epoxy resin (A),

c) adding dispersant B and water to epoxy resin (A) to produce an aqueous dispersion,

d) polymerizing the monomers added in step b) to give polymer (C),

e) optionally adding curing agent (D) to cure epoxy resins and optionally adding components (E).

5,612,395

PIGMENT GRINDING RESIN COMPOSITION FOR ELECTRODEPOSITION PAINT AND PIGMENT PASTE CONTAINING THE SAME

Hiroyuki Nojiri; Ichiro Kawakami, both of Takatsuki, and Mitsuo Yamada, Suita, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka-fu, Japan

Filed Jan. 9, 1995, Ser. No. 370,299

Claims priority, application Japan, Jan. 10, 1994, 6-000786

The portion of the term of this patent subsequent to Jan. 9, 2015, has been disclaimed.

Int. Cl.[6] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—415 **6 Claims**

1. A pigment grinding resin composition for an electrodeposition paint comprising a cationic pigment grinding resin obtained by reacting a modified epoxy resin with sulfide in the presence of a monobasic acid having 1 to 20 carbon atoms and a hydroxyl group-containing dibasic acid having up to 10 carbon atoms;

wherein said modified epoxy resin is obtained by reacting at least one epoxy resin having an epoxy equivalent of 150 to 2000 selected from the group consisting of bisphenol A, F and S type epoxy resins with a half-blocked diisocyanate, and wherein said sulfide is selected from the group consisting of 1-(2-hydroxyethylthio)-2-propanol, 1-(2-hydroxyethylthio)-2-butanol and 1-(2-hydroxyethylthio)-3-butoxy-1-propanol.

5,612,396

COPOLYMERS

Salvatore Valenti, Binningen; Bernhard Leikauf, Linn, both of Switzerland, and Akira Ohta, Chigasaki, Japan, assignors to Sandoz Ltd., Basel, Switzerland

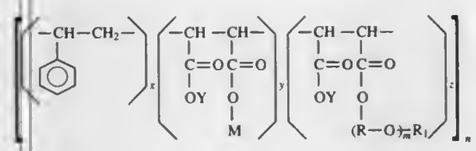
Continuation of Ser. No. 272,709, Jul. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 108,961, Aug. 18, 1993, abandoned, which is a continuation of Ser. No. 814,020, Dec. 26, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 471,544

Claims priority, application Germany, Dec. 29, 1990, 40 42 182.1

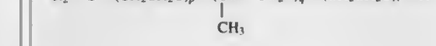
Int. Cl.[6] C08K *5/098*

U.S. Cl. 524—5 **22 Claims**

1. A random copolymer in free acid or salt form having the following formula



in which M is a polysiloxane or a residue of a hydrophobic polyalkylene glycol having the formula



wherein

Y is hydrogen, an alkali or alkaline earth metal ion, ferrous ion, aluminum ion, (alkanol)ammonium ion or (alkyl)ammonium ion,

R is a C_{2-6} alkylene radical,

R_1 is a C_{1-20} alkyl, C_{6-9} cycloalkyl or phenyl group,

R_2 is hydrogen or R_1,

x, y and z are numbers from 1 to 100,

m is a number from 1 to 100,

n is a number from 10 to 100,

p, q and r are numbers from 0–100, provided that at least one of p, q and r is at least 1 and that q>p+r provided that

i) the ratio of x to (y+z) is from 1:10 to 10:1 inclusive,

ii) the ratio of z:y is from 5:1 to 100:1, and

iii) m+n=15–100, and

iv) M is different from $—(R—O)_m—R_1$.

5,612,397

COMPOSITION HAVING WET STATE CLARITY

Matthew S. Gebhard, New Britain; William E. deVry, Malvern; Caren A. Puschak, Norristown, all of Pa.; Anne M. Bacho, Delran, N.J., and Gary R. Larson, Hatfield, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 19, 1994, Ser. No. 359,140

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;1/00*

U.S. Cl. 524—35 **20 Claims**

1. A composition in its wet state having a wet state clarity index (ΔL) of less than 65 comprising:

a first aqueous binder combination having said wet state clarity, said first combination comprising polymer particles having a diameter of less than 80 nanometers and a thickener or

a second aqueous binder combination having said wet state clarity, said second combination comprising polymer particles having a diameter of less than 120 nanometers and a polyurethane thickener comprising an aqueous mixture of polyurethanes, which includes a first polyurethane with at least two end groups, wherein each end group comprises a terminal isocyanate and a polyether; a second polyurethane with at least two end groups, wherein each end group comprises a terminal isocyanate group and a non-functional group; and a third polyurethane with at least two end groups, wherein one end group comprises a terminal isocyanate and a polyether and one other end group comprises a terminal isocyanate and a non-functional group.

5,612,398

RADIATION-RESISTANT POLYCARBONATES

Gerhard Fennhoff, Willich; Ralf Hufen, Duisburg; Klaus Kircher, Leverkusen. and Wolfgang Ebert, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

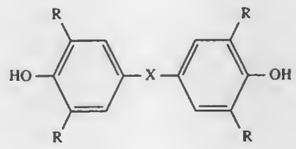
Filed Jan. 12, 1995, Ser. No. 371,993

Claims priority, application Germany, Jan. 24, 1994, 44 01 928.9; Nov. 4, 1994, 44 39 333.4

Int. Cl.[6] C08K *5/43;* **C08G** *64/00*

U.S. Cl. 524—169 **4 Claims**

1. Mixtures of thermoplastic aromatic polycarbonates based on diphenols of the formula (I)



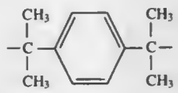
(I)

wherein

X is a single bond, C_1–C_5 alkylene, C_2–C_5 alkylidene, C_5–C_6 cycloalkylene, C_5–C_{12} cycloalkylidene, —S—, —O—,



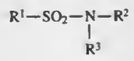
$—SO_2—$, —SO— or a residue of the formula



and

R is H and/or C_1–C_3 alkyl

with sulphonamides of the formula (II)



(II)

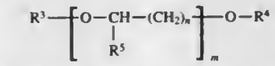
wherein

R^1 is a C_1–C_8 alkyl, C_5–C_6 cycloalkyl or a C_6–C_{10} aryl residue,

R^2 and R^3 are the same or different and are H, a C_1–C_8 alkyl, phenyl or a C_5–C_6 cycloalkyl,

wherein said sulphonamides are present in amounts of from 0.001 wt. % to 5 wt. % based in each case on 100 wt. % of aromatic polycarbonate and

with polyalcohols, wherein said polyalcohols are present in amounts of from 0.001 wt. % to 2 wt. %, based on 100 wt. % of aromatic polycarbonate, further wherein said polyalcohols are diols of the formula (IV)



(IV)

wherein R^3=R^4H, R^5=H or C_1–C_4 alkyl, n is an integer from 1 to 36 and m is an integer from 2 to 1200.

5,612,399

PROCESSABLE SILICONE COMPOSITE MATERIALS HAVING HIGH TEMPERATURE RESISTANCE

Don A. Beckley, Newport Beach, and John Stites, Huntington Beach, both of Calif., assignors to Hitco Technologies, Inc., Gardena, Calif.

Division of Ser. No. 356,559, Dec. 15, 1994, Pat. No. 5,552,466, which is a continuation of Ser. No. 169,505, Dec. 17, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,073

Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—261 **17 Claims**

1. A cured article comprising a cured silicone blend, wherein said silicone blend comprises:

a first silicone polymer component comprising at least one silsesquioxane, and

a second silicone polymer component comprising at least one polydiorganosiloxane;

wherein the blend is ceramitizable at a temperature above about 1100° F.;

and wherein at 25° C. said first silicone polymer component has a viscosity of about 500,000 centipoise and above and said second silicone polymer component has a viscosity of from about 10 to about 1000 centipoise;

wherein said polydiorganosiloxane is selected from the group consisting of silanol terminated polydiorganosiloxane, methyl terminated polydiorganosiloxane and mixtures thereof.

5,612,400

SILICONE PRESSURE SENSITIVE ADHESIVE COMPOSITIONS AND METHOD FOR MAKING

David C. Gross; Shaow B. Lin, both of Schenectady, and Peter M. Miranda, Glenville, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 6, 1995, Ser. No. 470,860

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—268 **12 Claims**

1. A silicone PSA composition comprising by weight,

(1) 100 parts of an organopolysiloxane having a viscosity of at least 500,000 centipoise at 25° C.,

(2) 60 to 300 parts of an organosiloxane hydrolyzate comprising SiO_2 units chemically combined with triorganosiloxy units having about 0.2% to about 5% of silicon bonded hydroxy radicals, and a ratio of 0.6:1 to 1.2:1 of the triorganosiloxy units to SiO_2 units, and,

(3) 20 to 2500 parts of a linear or cyclic volatile organosiloxane fluid having a boiling point in the range of about 95° C. to about 250° C.,

where the organo radicals of the silicone PSA composition are selected from $C_{(1-13)}$ organo radicals which are attached to silicon by carbonsilicon linkages.

5,612,401

COMPOSITIONS OF POLY(PHENYLENE ETHER) POLY(ARYLENE SULFIDE) POLYESTER RESINS AND COMPATIBILIZER COMPOUND

Sterling B. Brown, Schenectady; Kevin H. Dai, Clifton Park, both of N.Y.; Chorng-Fure R. Hwang, Cary, N.C.; Steven T. Rice, Scotia, N.Y.; James J. Scobbo, Jr., Slingerlands, N.Y., and John B. Yates, Glenmont, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 405,635, Mar. 17, 1995, abandoned. This application Apr. 17, 1996, Ser. No. 634,081

Int. Cl.[6] C08L *71/12;81/04;67/02*

U.S. Cl. 524—413 **15 Claims**

1. A composition comprising:

(a) a poly(phenylene ether) resin;

(b) a poly(arylene sulfide) resin;

(c) a polyester resin; and

(d) a compatibilizer compound comprising at least two reactive groups selected from the group consisting of ortho ester, epoxy, or mixtures of ortho ester and epoxy, and

wherein the poly(arylene sulfide) resin is present in a sufficient amount to be the continuous phase and wherein the polyester resin is present in an effective amount to provide a composition which exhibits increased tensile strength and tensile elongation over the same composition without the polyester resin.

5,612,402

CURABLE POLYSULFIDE POLYMER COMPOSITION

Liliana S. Orecharova, 19, Hristo Belchev Street, Sofia 1000; Emil S. Vassev, 520 Block, B Entr., Lulin 501 Street, Sofia; Rossislav L. Orecharov, and Petko L. Orecharov, both of 19, Hristo Belchev Street, Sofia 1000, all of Bulgaria

PCT No. PCT/BG94/00005, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO94/28072, PCT Pub. Date Dec. 8, 1994

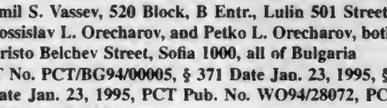
PCT Filed Apr. 29, 1994, Ser. No. 374,631

Claims priority, application Bulgaria, May 28, 1993, 96953

Int. Cl.[6] C08K *3/10*

U.S. Cl. 524—437 **16 Claims**

1. A curable polysulfide composition comprising a polysulfide polymer or copolymer, a curing agent, fillers, plasticizers and other special-purpose additives, the said composition containing at least one polysulfide polymer or polysulfide copolymer having a sulfur rank of 2.20 to 4.00, a SH- and SSH- groups content from 0 to 4 mol %, a polymerization degree of 10 to 500, wherein said polysulfide polymer or polysulfide copolymer is present in an amount of 90 to 110 pbw of the composition having the formula



wherein

S_x represents a divalent polysulfide or monosulfide radical;

x is an integer ranging from 1 to 6;

a_1, a_2 and a_3 are the same different and have values from 0 to 1;

y has values from 1 to 10;

y' has a value from 0 to 1;

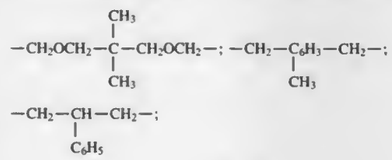
y" has a value from 0 to 5;

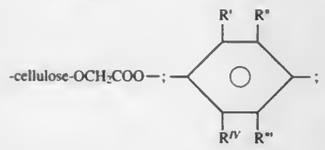
z has a value from 10 to 500;

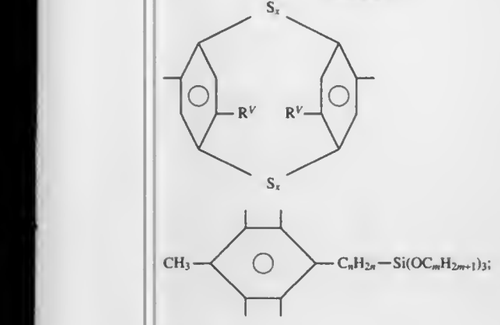
w has a value from 0 to 5;

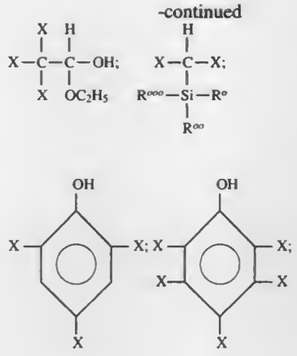
b has a value equal to the degree of polyvalency of R' minus 2

R is a divalent radical selected from the group consisting of: $-C_nH_{2n}-$; $-C_6H_4-$; $-C_nH_{2n}OC_nH_{2n}-$; $-C_nH_{2n}SC_nH_{2n}-$; $-C_nH_{2n}C_6H_4C_nH_{2n}$; $-C_6H_4OC_6H_4-$; $-C_6H_4OC_nH_{2n}-$; $-C_nH_{2n}C_6H_4OC_6H_4C_nH_{2n}-$; $-C_6H_4O(C_mH_{2m}O)_fC_6H_4-$; $-C_6H_4C_nH_{2n}OC_nH_{2n}\ C_6H_4-$; $-C_nH_{2n}O(C_mH_{2m}O)_fC_nH_{2n}-$; $-C_nH_{2n}OC_6H_4OC_nH_{2n}-$;









wherein

n ranges from 1 to 24;

m ranges from 1 to 5;

f ranges from 1 to 10;

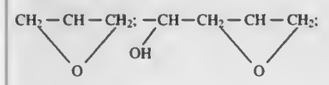
R', R", R"' and R^{IV} are the same or different saturated monovalent, hydrocarbon, oxahydrocarbon or thiahydrocarbon radical

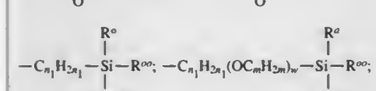
R^V is a saturated monovalent alkyl radical of the kind $-SC_mH_{2m+1}$ or $-OC_mH_{2m+1}-$;

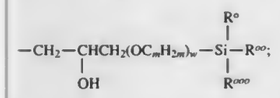
S_x is a polysulfide linkage;

x ranges from 3 to 5;

R_1, R_2 and R_3 are the same or different terminals representing normal or isoalkyl, aryl or aralkyl radicals or groups of the type: —SH; —S —Na^+; —SSH; —OH;—CHO; $-C_nH_{2n+1}$; $-C_nH_{2n}C_6H_5$; $-C_6H_4OC_6H_5$; $-C_nH_{2n}OC_6H_5$; $-C_nH_{2n}OC_nH_{2n+1}$; $-C_6H_5$; $-C_{10}H_7$; $-C_6H_4SC_6H_5$; $-OC_nH_{2n+1}$; $-OC_6H_5$; $-OC_7\ H_{10}$; $-OC_6H_4OC_nH_{2n+1}$; $-C_nH_{2n}OH$; $-C_6H_4OH$; $-OC_6H_4C_6H_4OH$; $-OC_nH_{2n}OH$; $-O(C_nH_{2n})m-NHC_6H_5$;







wherein

R^o, R^{oo} and R^{ooo} are the same or different monovalent radicals of the group: $-OC_mH_{2m+1}$; $-OC_mH_{2m}C_6H_5$ or $-C_mH_{2m+1}$;

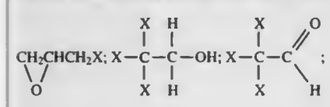
n_1 has values from 1 to 10;

m has values from 1 to 5;

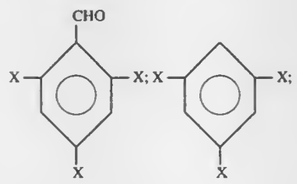
w has values from 1 to 10;

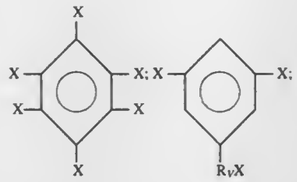
R' is a polyvalent radical with a weight up to 10% of the molecular weight of the said polymer or copolymer and is a radical of a polyfunctional compound selected from the group;

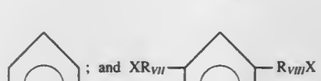
XR X_2; $XCH_2CHXR_{II}CHXCH_2X$; R CX_3; $R_{IV}X_4$;

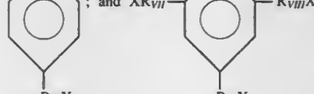


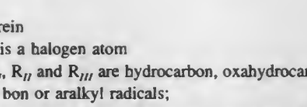
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wherein

x is a halogen atom

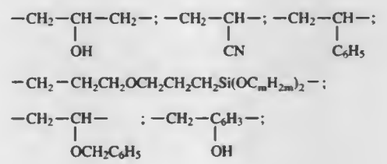
R_I, R_{II} and R_{III} are hydrocarbon, oxahydrocarbon, thiahydrocarbon or aralkyl radicals;

R_{IV} is selected from the group consisting of alkyl, aryl, aralkyl radicals or is a carbon atom;

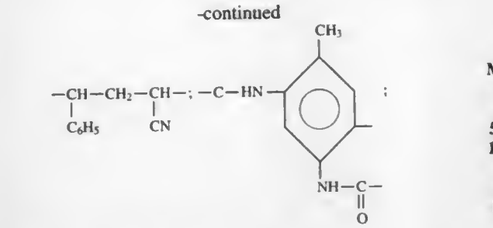
R_V, R_{VI}, R_{VII}, R_{VIII} and R_{IX} are alkyl radicals representing a hydrocarbon or oxahydrocarbon;

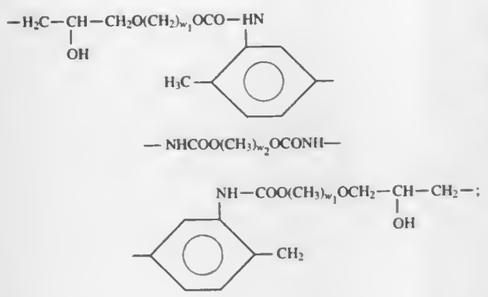
R^o, R^{oo} and R^{ooo} are the same or different monovalent radicals of the group: $-OC_mH_{2m+1}$; $-C_nH_{2n}C_6H_5$; or $-OC_6H_5$.

R" represents a divalent radical free of SH, SSH and S_x groups and is selected from the group:

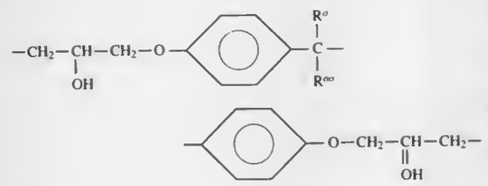


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or



wherein

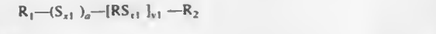
m has values from 1 to 5;

w_1 has values from 4 to 6;

w_2 has values from 4 to 6;

R^o and R^{oo} are the same or different having the corresponding meaning of R^o, R^{oo}, R^{ooo} included in R, or they are hydrogen atoms or alkyl radicals and the said composition comprises as well:

a modifier of 3 to 75 pbw of the composition wherein the modifier polymerizes, copolymerizes or cocures with the basic polysulfide polymer or copolymer and wherein the modifier is a polysulfide polymer free of —SH and —SSH groups, the said polymer having an average molecular weight of up to 2000, a degree of polymerization of 2 to 10, a sulphur rank of 2.5 to 5 and the formula



wherein

s_{x_1} is a polysulfide linkage

x_1 has values ranging from 2 to 6;

y_1 has values from 3 to 10;

a is from 0 to 1; and

R, R_1 and R_2 are as defined above excepting —SH and —SSH;

a curing agent of 0.2 to 20 pbw of the composition;

a polar reagent and/or solvent of 10 to 25 pbw of the composition;

an acceptor of 5 to 50 pbw of the composition; and

fillers and other additives of up to 150 pbw.

5,612,403

LOW TEMPERATURE FLEXIBLE DIE ATTACH ADHESIVE AND ARTICLES USING SAME

My N. Nguyen, and Yuan Y. Chien, both of San Diego, Calif., assignors to Johnson Matthey, Inc., Valley Forge, Pa.

Continuation of Ser. No. 392,602, Feb. 22, 1995, Pat. No. 5,489,637, which is a continuation of Ser. No. 68,794, May 27, 1993, abandoned, which is a division of Ser. No. 890,618, May 28, 1992, Pat. No. 5,250,600, which is a division of Ser. No. 843,738, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 602,504, Oct. 24, 1990, Pat. No. 5,150,195. This application Oct. 16, 1995, Ser. No. 543,321

Int. Cl.[6] C08K *3/08*

U.S. Cl. 524—440 **3 Claims**

1. A die attach adhesive composition capable of being cured in less than five minutes at 200° C. comprising:

about 10 to about 40 weight percent resin vehicle comprising cyanate ester monomers and at least one flexibilizer;

about 60 to about 90 weight percent silver; and wherein said composition is free of added metal containing catalysts or added alkylphenol.

5,612,404

AQUEOUS, ANIONIC, AMINO ACRYLATE COATING COMPOSITIONS

Suryya K. Das, Fox Chapel Boro.; Soner Kilic, Hampton Township, Allegheny County; Robert E. Jennings, New Sewickley Township, Beaver County, and James A. Claar, Washington Township, Westmoreland County, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1995, Ser. No. 576,534

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08F** *8/30*

U.S. Cl. 524—507 **15 Claims**

1. An aqueous coating composition having pH above 7.0 having a binder comprising polyureas formed by the combination of:

(a) an anionic amino polymer synthesized in water from olefinically unsaturated compounds containing isocyanate-reactive groups selected from the group consisting of primary amino groups, secondary amino groups, or combinations thereof, said olefinically unsaturated compounds being substantially free of acid groups, said polymerization carried out in the presence of an azo initiator dispersed in water by neutralization of acid groups present on the initiator; and

(b) a polyisocyanate.

5,612,405

GLASS FIBER BINDING COMPOSITION CONTAINING LATEX ELASTOMER AND METHOD OF REDUCING FALLOUT FROM GLASS FIBER COMPOSITIONS

David W. Bainbridge, Littleton; James W. Stacy, Castle Rock, and Mario P. Tocci, Littleton, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

Continuation of Ser. No. 949,442, Sep. 22, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,989

Int. Cl.[6] C08K *3/20*

U.S. Cl. 524—510 **26 Claims**

1. A process for the preparation of binder-coated glass fiber mat or blanket products having reduced fiber fallout, comprising:

a) providing newly formed discontinuous glass fibers;

b) spraying said glass fibers in mid-air prior to collection with a binding effective amount of a sprayable aqueous binding composition comprising:

i) an aqueous compatible phenol formaldehyde resin in an amount of from about 4.6 weight percent to about 23 weight percent,

ii) an aqueous compatible elastomeric latex in an amount of from about 10.6 weight percent to about 45 weight percent,

iii) an effective amount of a nitrogenous formaldehyde scavenger,

iv) balance water; and

c) collecting binder coated fibers as a random mat or blanket wherein the total solids content of the aqueous binding composition is from about 2 weight percent to about 50 weight percent, and wherein said weight percents are weight percent solids relative to total aqueous binding composition weight.

5,612,406

PROCESSES FOR PRODUCTION OF AZO MACROINITIATORS FOR THE SYNTHESIS OF BLOCK COPOLYMERS AND OF AQUEOUS BLOCK COPOLYMER DISPERSIONS AND EMULSIONS AND THE USE THEREOF

Rainer B. Frings, Berlin, Germany; Shigeru Komazaki, Izumi-ootsu, Japan, and Gerwald F. Grahe, Berlin, Germany, assignors to Dainippon Ink & Chemicals Inc.

Continuation of Ser. No. 191,357, Feb. 3, 1994, abandoned, which is a continuation of Ser. No. 911,728, Jul. 10, 1992, abandoned. This application Apr. 3, 1996, Ser. No. 626,979

Claims priority, application Germany, Jul. 11, 1991, 41 23 223.2

Int. Cl.[6] C08L *31/00*

U.S. Cl. 524—533 **2 Claims**

1. A composition comprising a block-copolymer neutralized with a base and dissolved, dispersed or emulsified in water,

said block-copolymer having an acid number between 5 and 200 mg KOH before neutralization and having been prepared by reaction of at least one radically polymerizable monomer having acid groups with an azo-macro-initiator in water,

said azo-macro-initiator having a number average molecular weight between 1500 and 60000 and having been prepared by reaction of at least one prepolymer having isocyanate-reactive end groups, said pre-polymer being selected from the group consisting of polyurethanes, polyacrylates, polymethacrylates, polyesters, polybutadienes, aminopropyldimethylpolysiloxanes, polydimethylsiloxanecarbinols, polyethers, polyepoxides, polylactones, polycarbonates and polyamides, with an azodiisocyanate prepared by reaction of a diisocyanate and a thermally decomposable azo-initiator containing at least 2 hydroxy groups.

5,612,407

SOLVENT-FREE WATER-BASED EMULSIONS OF ANIONICALLY POLYMERIZED POLYMERS

Jeffrey G. Southwick, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 307,560, Sep. 16, 1994, abandoned, which is a division of Ser. No. 66,598, May 24, 1993, Pat. No. 5,358,981, which is a continuation-in-part of Ser. No. 986,192, Dec. 7, 1992, abandoned. This application Feb. 20, 1996, Ser. No. 603,490

Int. Cl.[6] C08L *9/00*

U.S. Cl. 524—571 **3 Claims**

1. A solvent-free water-based emulsion with an average particle size of less than one micron consisting of:

(a) from 20 to 80% by weight of a hydrogenated polydiene having terminal functional groups,

(b) a surfactant, and

(c) water.

5,612,408

POLYURETHANE-BASED THICKENERS FOR AQUEOUS COMPOSITIONS

Klaus König, Odenthal; Jürgen Schwindt, Leverkusen; Jan Mazanek; Josef Pedain, both of Köln; Manfred Dietrich, Leverkusen; Gerhard Klein, Monheim, and Karl-Roland Jerg, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 29, 1996, Ser. No. 593,036

Claims priority, application Germany, Feb. 2, 1995, 195 03 281.0

Int. Cl.[6] C08G *18/12;18/42*

U.S. Cl. 524—591 **9 Claims**

1. A process for the preparation of a polyurethane suitable for use as a thickener for aqueous compositions by reacting at an NCO/OH equivalent ratio of 0.9:1 to 1.2:1

a) a polyether component having an OH number of 10 to 30 mg KOH/g and obtained by the alkoxylation of a mixture of

a1) 30 to 80 mole % of a monofunctional alcohol or alkylphenol having 8 to 30 carbon atoms,

a2) 2 to 10 mole % of sodium hydroxide or potassium hydroxide,

a3) 10 to 60 mole % of water and

a4) 0 to 10 mole % of a trihydric to hexahydric alcohol having a molecular weight of 92 to 600,

with ethylene oxide or a mixture of ethylene oxide with up to 20 mole %, based on the total moles of alkylene oxides, of propylene oxide, in which the percentages of a1) to a4) add up to 100,

with

b) a polyisocyanate component containing at least one organic diisocyanate, optionally in admixture with up to 20 mole %, based on the total moles of component b), of higher than difunctional polyisocyanates.

5,612,409

ORGANOSILOXANES HAVING NITROGEN-CONTAINING AND ETHER GROUP-CONTAINING RADICALS

Harald Chrobaczek; Ingo Görlitz, both of Augsburg, and Michael Messner, Diedorf-Hausen, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

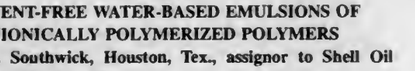
Continuation of Ser. No. 313,658, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 86,965, Jul. 2, 1993, abandoned. This application Jul. 18, 1995, Ser. No. 503,573

Claims priority, application Germany, Jul. 9, 1992, 42 22 483.7

Int. Cl.[6] C08G *77/26;* **C08J** *3/03*

U.S. Cl. 524—838 **10 Claims**

1. An aqueous composition for the treatment of fiber materials to impart a soft handle thereto, which composition contains one or more compounds of the formula (VII)

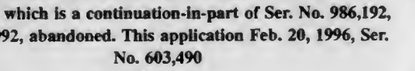


(VII)

where

R^a is H or CH_3,

R^b is —OH or $—NH_2$,

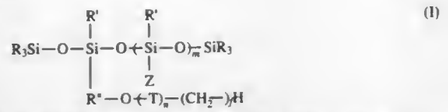


R^d is an unbranched or branched alkyl radical containing 1 to 4 carbon atoms, which is unsubstituted or substituted by an OH group or an OR^e group and

R^e is all unbranched or branched alkyl radical containing 1 to 4 carbon atoms, which is unsubstituted or substituted by an OH group,

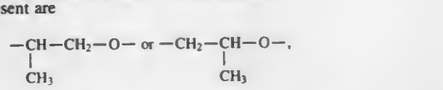
which composition further contains an organooligosiloxane or organopolysiloxane component, wherein said component consists

essentially of an organooligosiloxane or organopolysiloxane of the formula (I)

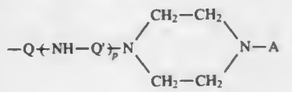


(I)

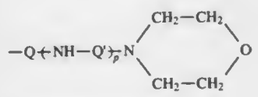
where each radical R is either a methyl or a phenyl radical,
where R" is a divalent, unbranched or branched organic radical containing 1 to 6 carbon atoms,
n is a number from 5 to 25,
m is a number from 20 to 1500,
f has the value 0 or 1,
where from 60 to 100% of all radicals T present are —CH_2—CH_2—O and from 0 to 40% of all radicals T present are



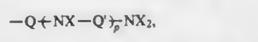
all radicals Z are, independently of one another, either R' or R'" or R^{IV} or R^{V},
R'" being a radical of the formula (IIa) or (IIb) and R^{IV} being a radical of the formula (III)



(IIa)

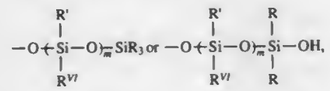


(IIb)



(III)

A being hydrogen or an alkyl group containing 1 to 4 carbon atoms, where Q and Q' are in each case a divalent, unbranched or branched alkylene radical containing 1 to 4 carbon atoms, where p=0 or 1 and where all radicals X present are, independently of one another, hydrogen, an alkyl radical containing 1 to 6 carbon atoms, which is unsubstituted or substituted by one or more hydroxyl groups, or are the cyclohexyl radical or the radical —CO—Y, Y being an aliphatic radical containing 1 to 6 carbon atoms which is unsubstituted or has one or more hydroxyl groups as substituents, R^{V} being a radical of the formula



where all radicals R^{VI} present are, independently of one another, R', R'", R^{IV} or R^{V}, with the proviso that at least one of the radicals Z or R^{VI} present is a radical R'" or a radical R^{IV}, all radicals R' being in each case a radical R^{V} or a phenyl radical or alkyl radical containing 1 to 4 carbon atoms.

5,612,410

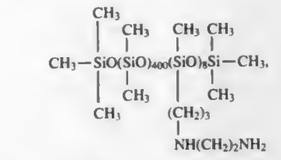
SILICONE FOAM CONTROL COMPOSITIONS

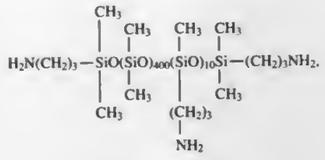
Hidetoshi Kondo, and Masahiro Takahashi, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

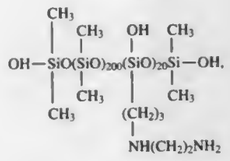
Filed May 25, 1995, Ser. No. 451,110
Claims priority, application Japan, May 30, 1994, 6-139488
Int. Cl.[6] C08K *3/22*
U.S. Cl. 524—863 **20 Claims**

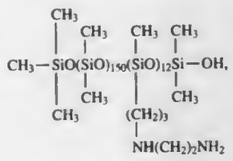
1. A silicone foam control composition comprising:

(A) 80 to 99 weight % of an organopolysiloxane selected from:

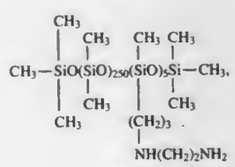








or



and

(B) 1 to 20 weight % of silica having a specific surface area of at least 50 m^2/g.

5,612,411

ABSORBENT PHYCOCOLLOIDS AND A METHOD FOR THEIR MANUFACTURE

James R. Gross, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 18, 1992, Ser. No. 977,459
Int. Cl.[6] C08J *5/00*
U.S. Cl. 525—54.3 **14 Claims**

1. A method for producing a water-swellable, water-insoluble particle defining an interior void, said method comprising the following steps:

preparing a first solution comprising water, a gelation-retarding agent, and from about 0.1 to about 25.0 weight percent, based on total weight of the first solution, of a water-soluble phycocolloid selected from the group consisting of algin and carrageenan;

adding said first solution to a second solution containing an ion capable of rendering said water-soluble phycocolloid water insoluble whereby particles are formed;

recovering said particles; and

removing water present in said particles through a solvent exchange to produce a water-swellable, water-insoluble particle defining an interior void containing the polycocolloid as a solid particle.

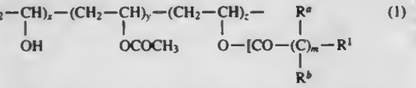
5,612,412

LACTONE-MODIFIED POLYVINYL ALCOHOL, A PROCESS FOR THE PREPARATION THEREOF

Kazushi Watanabe, Hiroshima-ken; Takaaki Fujiwa, Niigata-ken; Tomohisa Isobe, Yamaguchi-ken, and Hiroshi Sagane, Osaka-fu, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 476,676
Claims priority, application Japan, Sep. 30, 1994, 6-261424; Oct. 20, 1994, 6-281322; Nov. 22, 1994, 6-311305; Feb. 16, 1995, 7-051959; Mar. 22, 1995, 7-087655
Int. Cl.[6] C08L *29/04;* **C08F** *16/06*
U.S. Cl. 525—58 **5 Claims**

1. A lactone-modified polyvinyl alcobol which comprises having the structure represented by General Formula (1) described below



(1)

[wherein, x, y, and z are a composition by mol in the respective components, having a range of $0 \leqq x \leqq 95$, $0 \leqq y \leqq 30$, $5 \leqq z \leqq 100$, x+y+z is 100, respective components shown by x, y, and z are randomly connected, R^a and R^b are an independent hydrogen atom or a methyl group, m is a natural number ranging from 2 to 10, R^1 is a hydrogen atom or an acetyl group, n is an average number of a lactone monomer to be added, and a range of $1 \leqq n \leqq 100$].

5,612,413

IMPACT-MODIFIED POLY(VINYL CHLORIDE)

Kenneth P. Rozkuszka, Melrose Park, Pa., and Jane E. Weier, Hopewell, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 300,851, Sep. 8, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 557,266
Int. Cl.[6] C08L *51/04*
U.S. Cl. 525—85 **7 Claims**

1. A toughened blend comprising:

a. 100 parts of a polymer comprising at least 80 weight percent of units derived from vinyl chloride;

b. from 2 to 30 parts of a multi-stage impact modifier, wherein the first stage of the multi-stage impact modifier comprises from 80 to 95 weight percent of the total stages, the first stage comprising

1. from 60 to 80 weight percent of units derived from butyl acrylate,
2. from 20 to 40 weight percent of units derived from 2-ethylhexyl acrylate,
3. from 0.5 to 1.2 weight percent of units derived from a monomer containing at least two non-conjugated copolymerizable carbon-carbon double bonds of the structure



and wherein the final stage of the multi-stage impact modifier is a copolymer containing at least 80 weight percent of units derived from methyl methacrylate; wherein all stages of the multi-stage impact polymer are prepared by emulsion polymerization; and

wherein the toughened blend exhibits superior resistance to impact in comparison to control blends of identical composition and particle size, except that the first-stage of the multi-stage impact modifier of the control blend contains substantially 100 weight percent of units derived from butyl acrylate or contains substantially 100 weight percent of units derived from 2-ethylhexyl acrylate.

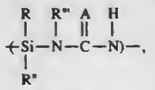
5,612,414

ORGANIC/INORGANIC POLYMERS

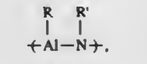
Kurt J. Becker, Newark; James A. Jensen, Hockessin, and Alexander Lukacs, III, Wilmington, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 148,044, Nov. 5, 1993, abandoned. This application Mar. 12, 1996, Ser. No. 614,293
Int. Cl.[6] C08F *8/42*
U.S. Cl. 525—102 **28 Claims**

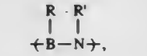
1. A reaction mixture comprising (1) at least one organic polymer comprising a multiplicity of organic, electrophilic substituents wherein said at least one organic polymer comprises at least one compound selected from the group consisting of at least one diester, at least one polyester, at least one polyamide, at least one polyacrylate, at least one polymethacrylate, at least one diepoxide, at least one multifunctional epoxide, at least one diisocyanate and at least one multi functional isocyanate, and (2) at least one of (i) a polymer selected from the group consisting of silicon-nitrogen polymers, aluminum-nitrogen polymers, and boron-nitrogen polymers comprising the repeat units (a), (b), and (c),



(a)

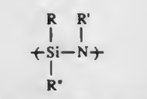


(b)



(c)

and



(d)

respectively, where R, R', R" and R'"=hydrogen, alkyl, alkenyl, alkynyl or aryl and A=O or S; (ii) mixtures of polymers comprising two or more of the structural units (a), (b), (c), and (d); (iii) metal-crosslinked polymers comprising one or more of the structural units (a), (b), (c), and (d); and (iv) block copolymers comprising two or more of the structural units (a), (b), (c), and (d).

5,612,415

PROCESS FOR COATING A SUBSTRATE WITH COATINGS INCLUDING HIGH TG ACRYLIC POLYMERS AND COATED ARTICLE OBTAINED THEREBY

Faith S. Loney-Crawford, Detroit, Mich., assignor to BASF Corporation, Southfield, Mich.

Division of Ser. No. 282,405, Jul. 28, 1994. This application May 4, 1995, Ser. No. 434,736
Int. Cl.[6] C08F *8/30*
U.S. Cl. 525—123 **10 Claims**

1. A process for coating a substrate comprising

A. applying to a substrate surface at least one layer of a two-component coating comprising

i) an acrylic polymer consisting essentially of styrene, acrylic acid and monomers selected from the group consisting of methyl methacrylate, cyclohexyl methacrylate, ethyl bexyl methacrylate, hydroxy propyl methacrylate, isobornyl methacrylate, and mixtures thereof, wherein styrene is used in an amount ≧ 25% by weight, where said acrylic polymer

has a reactive functionality for reaction with a crosslinker and a glass transition temperature (T_g) of between 53° C. and 86° C., and

ii) a crosslinker selected from the group consisting of polyisocyanates and mixtures thereof, and

B. curing the coating by heating the coated substrate to a temperature of between 115° and 160° C., to form a cured film.

5,612,416

UNSATURATED HYDROXY DIESTER COPOLYMERS AND THEIR USE IN COATING COMPOSITIONS

Gregory J. McCollum, Hampton Township, Allegheny County; Karl F. Schimmel, Penn Hills Boro.; James A. Claar, Washington Township, Westmoreland County; Joseph M. Carney, Reserve Township, Allegheny County; Stephen J. Thomas, Aspinwall, Boro., and Leigh A. Humbert, West Deer Township, Allegheny County, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 10, 1995, Ser. No. 541,993

Int. Cl.[6] C08L *35/06;25/14;* **C08F** *222/20*

U.S. Cl. 525—123 **12 Claims**

1. A coating composition comprising:

(a) a copolymer comprising the polymerization product of vinyl aromatic monomer, alpha-olefin, and an unsaturated diester monomer in which at least one of the esterifying groups includes a hydroxyl group; and

(b) a hydroxy group-reactive curing agent.

5,612,417

THERMOPLASTIC MOLDING MATERIALS HAVING HIGH TRANSPARENCY PREPARED FROM COMPATIBLE POLYMER ALLOYS

Thomas Rhein, Stadecken-Elsheim; Michael Wicker, Seeheim-Jugenheim; Mona Rueppel, Hoechst/Odenwald; Gerald Dietrich, Darmstadt, and Ernst Mohr, Lorsch, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Dec. 7, 1995, Ser. No. 568,487

Claims priority, application Germany, Dec. 7, 1994, 44 43 557.6

Int. Cl.[6] C08L *25/14;33/02:33/10*

U.S. Cl. 525—221 **8 Claims**

1. A thermoplastic molding material having a high degree of transparency, comprising a compatible mixture of 1 to 99 wt % of a copolymer P consisting of copolymerized monomer units:

(p1): from 30 to 70 wt % of styrene, α-methylstyrene or a mixture thereof;

(p2): from 29 to 70 wt % of (C_1–C_6-alkyl)methacrylate; and

(p3): from 1 to 20 wt % of acrylic acid, methacylic acid, or a mixture thereof;

wherein the sum of (p1), (p2) and (p3) totals 100 wt % of copolymer P; and

99 to 1 wt % of a polymethylmethacrylate polymer PM, comprising monomer units derived from:

(pm1): from 80 to 100 wt % of methylmethacrylate, and

(pm2): from 0 to 20 wt % of monomers copolymerizable with methylmethacrylate.

5,612,418

PEROXIDE-CURED BLENDS OF POLYACRYLATES AND PARTIALLY HYDROGENATED NITRILE RUBBERS

Paul E. Manley, Louisville, Ky.; Richard J. Fleckstein, Crystal Lake, Ill., and Michael E. Wood, Floyds Knobs, Ind., assignors to Zeon Chemical Incorporated, Louisville, Ky.

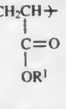
Filed Jan. 18, 1996, Ser. No. 588,516

Int. Cl.[6] C08L *33/20;51/04*

U.S. Cl. 525—222 **12 Claims**

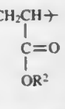
1. A peroxide-cured blend consisting essentially of:

10 to 90 parts by weight of a polyacrylate elastomer comprising at least 10 mole % of the structural unit

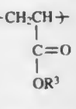


wherein R^1 is a C_{4-8} alkyl group;

up to 30 mole % of the structural unit



wherein R^2 is an alkoxyalkyl group containing 2–12 carbon atoms; and the balance to a total of 100 mole % of the structural unit



wherein R^3 is a C_{1-3} alkyl group; and

90–10 parts by weight of a partially hydrogenated nitrile rubber having a degree of unsaturation of from 0.1 to 20%.

5,612,419

FLUORINATED THERMOPLASTIC ELASTOMERS HAVING SUPERIOR MECHANICAL AND ELASTIC PROPERTIES, AND THE PREPARATION PROCESS THEREOF

Vincenzo Arcella, Novara; Giulio Brinati, Milan; Margherita Albano, Milan, and Vito Tortelli, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 22, 1994, Ser. No. 361,660

Claims priority, application Italy, Dec. 29, 1993, MI93A2749

Int. Cl.[6] C08F *259/08*

U.S. Cl. 525—252 **8 Claims**

1. A fluorinated thermoplastic elastomer having a block structure consisting of at least a fluorinated polymer segment of type A, having elastomeric properties, whose monomer structure is selected from the group consisting of (% by moles):

vinylidene fluoride (VDF) 45–85%, hexafluoropropene (HFP) 15–45%, tetrafluoroethylene (TFE) 0–30%;

vinylidene fluoride 50–80%, (per) fluoroalkylvinylether CF_2=$CFOR_f$ where R_f is a C_1–C_6 perfluoroalkyl (PAVE) 5–50%, tetrafluoroethylene 0–20%;

vinylidene fluoride 20–30%, C_2–C_8 non-fluorinated olefin 10–30%, hexafluoropropene and/or PAVE 18/27%, tetrafluoroethylene 10–30%;

tetrafluorethylene 50–80%, PAVE 20–50%;

tetrafluoroethylene 32–60%, C_2–C_8 non-fluorinated olefin 10–40%, PAVE 20–40%, and at least a fluorinated polymer segment of type B, having plastomeric properties, selected from the group consisting of (compositions expressed as % by moles)

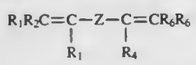
1) polytetrafluorethylene or modified polytetrafluorethylene containing from 0.1 to 3% of one or more comonomers selected from HFP, PAVE, VDF, hexafluoroisobutene, chorotrifluoroethylene (CTFE), perfluoroalkylethylenes;

2) TFE thermoplastic polymers containing from 0.5 to 8% of at least a PAVE;

3) TFE thermoplastic polymers containing from 2 to 20% of a perfluoroolefin C_3–C_8, optionally containing up to 5% of PAVE or (per)fluorooxyalkylvinylether CF_2=CFO_x, where x is a (per) fluoro oxyalkyl C_1–C_{12};

4) copolymers of the TFE or CTFE (40–60%) with ethylene, propylene or isobutylene (40–60%), optionally containing as a third comonomer a (per) fluoroolefin C_3–C_8 or a PAVE, in an amount of from 0.1 to 10%;

5) polyvinylidenefluoride or modified polyvinylidenefluoride containing from 0.1 to 10% of one or more fluorinated comonomers selected from: hexafluoropropene, tetrafluoroethylene, trifluroethylene, wherein at least one of the segments of type A or B comprises monomeric units deriving from a bis-olefin having general formula:



wherein:

R_1, R_2, R_3, R_4, R_5, R_6, equal or different from each other, are H or alkyl C_1–C_5;

Z is a linear or branched alkylene or cycloalkylene radical C_1–C_{18}, optionally at least partially fluorinated, or a (per) fluoropolyoxyalkylene radical.

5,612,420

PROCESS FOR PREPARING A POLYMERIC GLOSS MODIFIER

Jin N. Yoo; Dong O. Kim; Yeong R. Chang, and Jong K. Yeo, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

PCT No. PCT/KR93/00081, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO94/05715, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 7, 1993, Ser. No. 211,946

Claims priority, application Rep. of Korea, Sep. 8, 1992, 92-16383

Int. Cl.[6] C08F *257/02;265/06;* **C08L** *51/00*

U.S. Cl. 525—296 **7 Claims**

1. A process for preparing a polymeric gloss modifier which comprises:

(a) emulsion polymerizing an acrylic monomer, an ethylenically unsaturated cyanide compound and, optionally, an aromatic vinyl monomer to obtain a copolymer latex of a linear structure;

(b) conducting a crosslinking emulsion polymerization of the resulting linear copolymer latex obtained in step(a) with an addition of the same monomers used in step(a), an acrylamide inter-particle crosslinking agent and an ethylenically unsaturated crosslinking agent to produce a partially crosslinked latex; and

(c) coagulating and inter-particle crosslinking the partially crosslinked latex obtained in step(b) with an addition of an acid to obtain the polymeric gloss modifier.

5,612,421

METHODS AND COMPOSITIONS FOR PRETREATMENT OF METALS

Alan E. Goliaszewski, The Woodlands, Tex.; David W. Reichgott, Richboro, Pa., and Lothar S. Sander, Princeton, N.J., assignors to BetzDearborn Inc., Trevose, Pa.

Division of Ser. No. 392,696, Feb. 23, 1995, Pat. No. 5,518,770. This application Mar. 5, 1996, Ser. No. 611,152

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—326.5 **4 Claims**

1. A non-chromate, metal pretreatment composition comprising a zinc salt hydrolysate of a copolymer selected from the group consisting of maleic anhydride and vinyltrialkoxysilane, and acrylic acid and vinyltrialkoxysilane.

5,612,422

PROCESS FOR HYDROGENATING AROMATIC POLYMERS

Dennis A. Hucul, Midland, and Stephen F. Hahn, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1995, Ser. No. 434,636

Int. Cl.[6] C08F *8/04*

U.S. Cl. 525—338 **13 Claims**

1. A process of hydrogenating an aromatic polymer comprising contacting the aromatic polymer with a hydrogenating agent in the presence of a silica supported metal hydrogenation catalyst such that at least 80 percent aromatic hydrogenation is achieved, characterized in that the silica has a surface area of at least 10 m^2/g and a pore size distribution such that at least 98 percent of the pore volume is defined by pores having diameter of greater than 600 angstroms.

5,612,423

PROCESS FOR MANUFACTURING POLYESTER COPOLYMERS CONTAINING TEREPHTHALATE AND NAPHTHALATE UNITS

Eugene J. Burkett, Scott Depot, W. Va.; Douglas D. Callander, Akron, Ohio; Joseph Galko, Akron, Ohio, and Edwin A. Sisson, Akron, Ohio, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 355,945, Dec. 14, 1994, Pat. No. 5,539,078. This application Feb. 1, 1996, Ser. No. 595,314

Int. Cl.[6] C08G *63/181;63/78*

U.S. Cl. 525—444 **12 Claims**

1. A press for manufacturing a random polyester copolymer comprising:

contacting a phthalic acid with a first alkyl diol under esterification conditions to form a phthalate-based oligomer product, wherein the degree of polymerization for the phthalate-based oligomer product is from about 1.4 to about 10;

contacting an alkyl diester of a naphthalene dicarboxylic acid with a second alkyl diol and a suitable transesterification catalyst under transesterification conditions to form a bis(hydroxyalkylnaphthalate) product and subsequently deactivating the transesterification catalyst;

contacting the bis(hydroxyalkylnaphthalate) and a suitable polycondensation catalyst under polycondensation conditions to form a low molecular weight naphthalate-based polymer product, wherein the naphthalate-based polymer product has a degree of polymerization of from about 20 to about 100; and

adding the naphthalate-based polymer product and a suitable polycondensation catalyst to the phthalate-based oligomer product under polycondensation conditions to form a random polyester copolymer product;

wherein the random polyester copolymer contains a major proportion of phthalate-based units and a minor proportion of naphthalate-based units, based upon total moles of carboxylate units.

5,612,424

FIBER-REINFORCED RESIN COMPOSITION

Shoichi Sato, Sagamihara; Tohru Imanara, Atsugi, and Takao Uematsu, Sagamihara, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 60,516, May 12, 1993, abandoned, which is a continuation of Ser. No. 722,142, Jun. 27, 1991, abandoned. This application Aug. 18, 1994, Ser. No. 292,927

Claims priority, application Japan, Jun. 27, 1990, 2-169539; Jul. 11, 1990, 2-183811

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—530 **20 Claims**

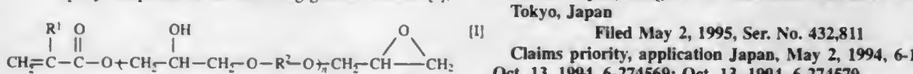
1. An injection molded fiber-reinforced cured resin product which comprises

at least one reinforcing fiber and

a reactive resin composition which consists essentially of the following Components A, B, C, D and E:

Component A: an epoxy resin having at least two epoxy groups in the molecule,

Component B: a polymerizable unsaturated group-containing epoxy compound of the following general formula [I],



[I]

wherein R^1 is H or CH_3, R^2 is an alkylene group having 1 to 20 carbon atoms, and n is an integer of 0 to 20,

Component C: a liquid carboxylic acid anhydride containing a monofunctional carboxylic acid anhydride and/or a polyfunctional carboxylic acid anhydride obtained by reacting a lower aliphatic polyhydric alcohol with a trimellitic acid,

Component D: a curing promoter selected from the group consisting of a Lewis acid, BF_3, an amine complex, a tertiary amine or salt thereof, an imidazole or complex thereof and an organic phosphine compound,

Component E: a radical polymerization initiator, provided that the glass transition temperature (Tg, °C.) and breaking strain (E, %) of an injection molded cured resin product of said reactive resin composition containing no reinforcing fibers satisfies the following properties:

$Tg \geqq -17E+240$,

$E \geqq 4$, and

$Tg \geqq 125$.

5,612,425

MOLDING COMPOSITIONS BASED ON MODIFIED POLYARYL ETHERS

Martin Weber, Neustadt; Klaus Muehlbach, Gruenstadt, and Eckhard M. Koch, Fussgoenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 857,134, Mar. 25, 1992, abandoned. This application May 14, 1993, Ser. No. 61,537

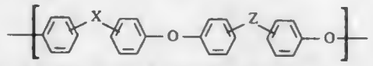
Claims priority, application Germany, Mar. 30, 1991, 41 10 460.9; May 3, 1991, 41 14 455.4

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—534 **9 Claims**

1. Molding composition containing a polyarylene ether A, obtained by grafting

a) from 90 to 99.9% by weight of polyarylene ether B_1 with repeating structural elements (I)



(I)

where X and Z, independently of one another are each $—SO_2—$, —O—, —S—, >C=O, a C—C single bond or $—CRR^1$, R and R^1 are each hydrogen, C_1–C_6-alkyl or alkoxy, with the proviso that X and Z are not both —O—, and having halogen, methoxy, phenoxy, benzyloxy or amino end groups

or

b) from 90 to 99.9% by weight of polyarylene ether B_2 with repeating structural elements (I) which are substituted in the nucleus by C_1 to C_6 alkyl, alkoxy, phenyl, chlorine or fluorine and having halogen, methoxy, phenoxy, benzyloxy or amino end groups

with

c) 0.1 to 10% by weight of maleic anhydride, itaconic acid anhydride or tetrahydrophthalic acid anhydride in the presence of from 0 to 1% by weight of a radical initiator.

5,612,426

PROCESS OF PRODUCING VINYL CHLORIDE POLYMER USING AN ORGANIC PEROXIDE IN COMBINATION WITH 3-HYDROXY-1,1-DIMETHYLBUTYL PEROXYNEODECANOATE

Toshihiko Nakano, and Tadashi Amano, both of Kamisumachi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 2, 1995, Ser. No. 432,811

Claims priority, application Japan, May 2, 1994, 6-115996; Oct. 13, 1994, 6-274569; Oct. 13, 1994, 6-274570

Int. Cl.[6] C08F *2/20*

U.S. Cl. 526—62 **11 Claims**

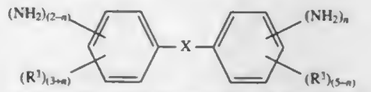
1. A process of producing a vinyl chloride polymer, which comprises suspension polymerizing vinyl chloride or a mixture of vinyl monomers containing vinyl chloride in an aqueous medium in the presence of an oil-soluble polymerization initiator in a polymerization vessel, wherein said oil-soluble polymerization initiator comprises:

(A) an organic peroxide such that a 10-hour half-life period temperature of a solution containing 0.1 mol of the organic peroxide per liter of benzene is 30° to 50° C., wherein the organic peroxide is at least one member selected from the group consisting of isobutyryl peroxide, t-hexyl peroxyneodecanoate, t-butyl peroxyneodecanoate, t-hexyl peroxyneohexanoate, 2,4,4-trimethylpentyl peroxy-2-neodecanoate and 1-cyclohexyl-1-methylethyl peroxyneodecanoate, and

(B) 3-hydroxy-1,1-dimethylbutyl peroxyneodecanoate, in combination;

wherein the weight ratio of component (A) to component (B) is from 1:9 to 9:1 and the total amount of the components (A) and (B) is from 0.05 to 0.4% by weight based on the monomer;

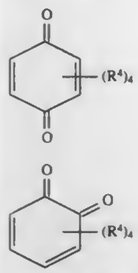
wherein the inner wall surface of the polymerization vessel has a polymer scale deposition preventive coating formed by applying, onto said inner wall surface, an alkaline liquid containing at least one member selected from the group consisting of (a) condensation products of a diphenyl compound having at least two amino groups represented by the following formula (6):



(6)

wherein R^3 which are the same or different, represent a group selected from the group consisting of —H, —OH, —COOH, $—SO_3H$, $—NH_2$, —Cl, $—NO_2$, $—COCH_3$, $—N(CH_3)_2$, and an alkyl group having 1 to 3 carbon atoms, X represents a bivalent group selected from the group consisting of an alkylene group having 1 to 5 carbon atoms, $—N(CH_3)—$, $—C(CH_3)_2—$, —CONH—, $—P(=O)H—$, $—SO_2—$, —O—, —S—, and $—Si(R)_2—$ in which R represents an alkyl group having 1 to 10 carbon atoms, and n is an integer of from 1 to 2, with a quinone compound, and (b) self-condensation products having a molecular weight of 400 to 50,000 obtained by condensing a quinone compound; and (c) at least one member selected from the group consisting of water-soluble polymer compounds, inorganic colloids, and alkali metal silicates;

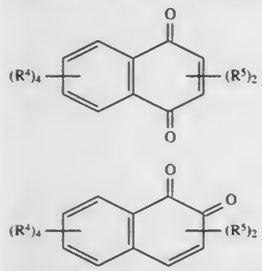
wherein said quinone compound of components (a) and (b) is a member selected from the group consisting of benzoquinone compounds represented by the following formulas (7) and (8):



(7)

(8)

wherein R^4, which are the same or different, represent a group selected from the group consisting of —H, $—NH_2$, —Cl, —Br, —OH, $—NO_2$, $—COCH_3$, $—OCH_3$, $—N(CH_3)_2$, —COOH, $—SO_3H$, and an alkyl group having 1 to 3 carbon atoms, and naphthoquinone compounds represented by the following general formulas (9) and (10):



(9)

(10)

wherein R^4 have the same meaning as defined above, and R5, which are the same or different, represent a group selected from the group consisting of —H, —Cl, —Br, —OH, $—COCH_3$, $—OCH_3$, $—CH_3$, —COOH, and $—SO_3H$;

followed by drying the alkaline liquid.

5,612,427

CATALYST FOR THE POLYMERIZATION OF DIOLEFINS, METHOD FOR ITS PREPARATION, AND ITS USE FOR THE PREPARATION OF POLYMERS

Pierre Robert, Clermont-Ferrand, and Roger Spitz, St-Symphorien-D'Ozon, both of France, assignors to Campagnie Generale des Establissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, and Elf Atochem S.A., Puteaux, both of France

Division of Ser. No. 156,029, Nov. 19, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,607

Claims priority, application France, Nov. 23, 1992, 92 14145

Int. Cl.[6] C08F *4/52*

U.S. Cl. 526—124.9 **3 Claims**

1. A method of polymerizing conjugated dienes, wherein at least one conjugated diene is polymerized in a hydrocarbon solvent in the presence of an organometallic catalyst, wherein the organometallic catalyst comprises the reaction product of:

A) a solid support which consists essentially of magnesium dihalide;

B) a swelling agent of the support, wherein the swelling agent is ether;

C) at least one carboxylic acid salt of a metal selected from the group consisting of rare-earth metals having an atomic number of between 57 and 71 in Mendelyeev's periodic table of elements and a metal having an atomic number of 92, wherein the carboxylic acid moiety thereof has from 2 to 12 carbon atoms; and

a halogenation agent selected from the group consisting of: halogenated compounds of aluminum represented by the formula X_nAlR_{3-n}, in which X represents chlorine, bromine, iodine or fluorine atoms, Al represents aluminum, R represents an alkyl radical having from one to fifteen carbon atoms, and n represents a number having a value of between 1 and 3; halogenated compounds not containing aluminum that have an exchange labile halogen; and if the halogenation agent is not a halogenated derivative of aluminum,

(i) at least one organic derivative of aluminum represented by the formula $X_mAl(R')_{3-m}$ in which X represents a halogen atom, Al represents aluminum, R' a hydrogen atom or an alkyl radical having from one to eight carbon atoms, the substituents R' however, not all representing a hydrogen atom, m represents the value 0, 1 or 2, in which the organic derivative of aluminum is necessarily present when the halogenation agent is a halogen compound not containing aluminum and optionally present when the halogenation agent contains aluminum.

5,612,428

PROCESS FOR PREPARING OLEFIN POLYMER WITH CATALYST CONTAINING METALLOCENE

Andreas Winter, Glashütten; Frank Küber, Oberursel; Michael Aulbach, Hofheim; Bernd Bachmann, Eppstein; Robert Klein, Frankfurt am Main; Klaus Kühlein, Kelkheim; Walter Spaleck, Liederbach, and Christian Kohlpaintner, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

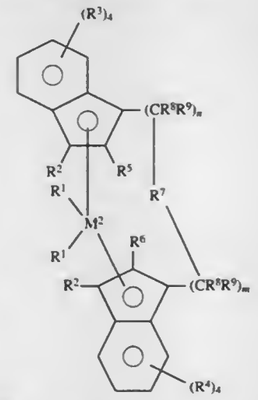
Division of Ser. No. 361,762, Dec. 22, 1994. This application Jun. 7, 1995, Ser. No. 477,853

Claims priority, application Germany, Dec. 27, 1993, 43 44 689.2

Int. Cl.[6] C08F *4/642*

U.S. Cl. 526—127 **3 Claims**

1. A process for preparing an olefin polymer comprising the step of polymerizing or copolymerizing at least one olefin in the presence of a catalyst composition comprising at least one metallocene and at least one cocatalyst therefor, wherein the metallocene is a compound of the formula I



(I)

where

M^2 is a metal of group IVb of the Periodic Table, the radicals R^1 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{40}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

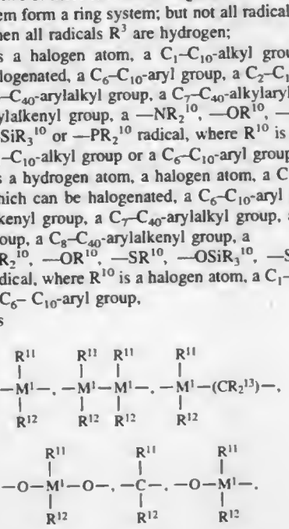
the radicals R^2 are identical or different and are hydrogen, a halogen atom, a C_1–C_{10}-alkyl group which can be halogenated, a C_6–C_{10} -aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group, a $-NR_2^{10}$, $-OR^{10}$, $-SR^{10}$, $-OSiR_3^{10}$, $-SiR_3^{10}$ or $-PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, the radicals R^3 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_7–C_{40}-alkoxy group, a C_8–C_{40}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, a $-NR_2^{10}$, $-OR^{10}$, $-SR^{10}$, $-OSiR_3^{10}$, $-SiR_3^{10}$ or $-PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10} -aryl group, or two or more radicals R^3 together with the atoms connecting them form a ring system; but not all radicals R^3 are hydrogen when all radicals R^4 are hydrogen;

the radicals R^4 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-arylyalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, a $-NR_2^{10}$, $-OR^{10}$, $-SR^{10}$, $-OSiR_3^{10}$, $-SiR_3^{10}$ or $-PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1– C_{10}-alkyl group or a C_6–C_{10}-aryl group, or two or more radicals R^4 together with the atoms connecting them form a ring system; but not all radicals R^4 are hydrogen when all radicals R^3 are hydrogen;

R^5 is a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group, a $-NR_2^{10}$, $-OR^{10}$, $-SR^{10}$, $-OSiR_3^{10}$, $-SiR_3^{10}$ or $-PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^6 is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group, a C_2– C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkyloxy group, a C_8–C_{40}-arylalkenyl group, a $-NR_2^{10}$, $-OR^{10}$, $-SR^{10}$, $-OSiR_3^{10}$, $-SiR_3^{10}$ or $-PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6– C_{10}-aryl group,

R^7 is



$=BR^{11}$, $=AlR^{11}$, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{11}$, =CO, $=PR^{11}$ or $=P(O)R^{11}$,

where

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13} together with the atoms connecting them form a ring, M^1 is silicon, germanium or tin,

R^8 and R^9 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^8 and R^9 together with the atoms connecting them form a ring,

m and n are identical or different and are zero, 1 or 2, where m plus n is zero, 1 or 2, wherein the two indenyl ligands have substitution patterns different from one another on the six-member ring of the indenyl ligands.

5,612,429

PROCESS FOR THE POLYMERIZATION OF POLYMERS IN NON-AQUEOUS LIQUID MEDIA

Paul T. Kimpton, Northants, Great Britain; Mark P. Houghton, Rotterdam, and Stephen W. Russell, Maasland, both of Netherlands, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 175,895, Dec. 30, 1993, abandoned, which is a continuation of Ser. No. 871,449, Apr. 21, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 420,391

Int. Cl.[6] C08F *2/04;2/32*

U.S. Cl. 526—209 **11 Claims**

1. A process for preparing a random or block copolymer of the general formula

$$A_mB_nC_p$$

wherein

A is a vinyl or ethylenically unsaturated monomer or mixture thereof, said monomer containing a moiety capable of extending away from the surface of particles of a solid phase dispersed in a non-aqueous liquid, said moiety selected from the group consisting of polyalkoxy groups, polyalkoxylated fatty alcohol groups, long-chain alkyl groups, polyethylene glycol groups, polyalkoxylated alkyl groups and polyester groups;

B is a vinyl or ethylenically unsaturated monomer or mixture thereof, said monomer containing a moiety capable of association with the particles, said moiety selected from the group consisting of carboxylate groups, sulphonate groups, sulphate groups, either as acids or their corresponding salts or esters, amine groups or silane groups;

C is selected from the group consisting of ethylenically unsaturated C_2 to C_6 mono or dicarboxylic acids, C_1 to C_6 ester of ethylenically unsaturated C_2 to C_6 mono or dicarboxylic acids and the corresponding hydroxy derivatives thereof, styrene and vinyl acetate;

wherein the molar ratio of n:m is from 100:1 to 1:100, p is 0 or >0 and the molar ratio of (n+m):p is 100:1 to 1:100;

the process comprising the free radical polymerization of at least one monomer at a reaction temperature of 50° to 120° C., using as the sole solvent therefor a substantially non-aqueous liquid polymerization medium consisting essentially of a surfactant, less than 10 weight percent of water; and optionally, an ester of a polyhydric alcohol; wherein the surfactant must comprise a detergent.

5,612,430

PROCESS FOR MOLECULAR WEIGHT REGULATION IN (CO)POLYMERS

Walter H. N. Nijhuis, Hengelo; Auke G. Talma, Bathmen; Luc L. T. Vertommen, Westervoort, all of Netherlands, and Bernard J. Maillard, Pessac, France, assignors to Akzo Nobel nv, Arnhem, Netherlands

PCT No. PCT/EP93/03323, § 371 Date Jul. 5, 1995, § 102(e) Date Jul. 5, 1995, PCT Pub. No. WO94/13705, PCT Pub. Date Jun. 23, 1994

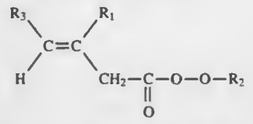
PCT Filed Nov. 25, 1993, Ser. No. 446,665

Claims priority, application European Pat. Off., Dec. 4, 1992, 92203756

Int. Cl.[6] C08F *4/34;2/38*

U.S. Cl. 526—232.5 **8 Claims**

1. A method of radically (co)polymerizing monomers with a polymerization initiator in the presence of an effective amount of at least one unsaturated organic peroxide chain transfer agent, wherein the unsaturated organic peroxide is selected from the group represented by the following formula:



wherein R_1 is an activating group capable of enhancing the reactivity of the olefinic unsaturation towards free radical addition; R_2 is selected from the group of hydrogen, C_1-C_{18} alkyl, C_3-C_{18} alkenyl, C_3-C_{18} alkynyl, C_7-C_{22} aralkyl, and C_3-C_{18} saturated or unsaturated carbocyclic and heterocyclic rings; and R_3 is selected from the group of hydrogen, C_1-C_{18} alkyl, C_3-C_{18} alkenyl, C_6-C_{18} aryl, C_6-C_{22} alkaryl, and C_7-C_{22} aralkyl, or R_1 and R_3 may combine to form a C_5-C_{10} ring; all of groups R_1, R_2, and R_3 may be linear or branched and may be optionally substituted with one or more groups selected from hydroxy, alkoxy, aryloxy, epoxy, halogen, acid, ester, nitrile, ketone, and amido.

5,612,431

LEACHING OF PRECIOUS METAL ORE WITH FLUOROALIPHATIC SURFACTANT

Jennifer E. Waddell, Burnsville; Michael J. Sierakowski, Stillwater; Patricia M. Savu, Maplewood; George G. I. Moore, Afton; Chetan P. Jariwala, and Miguel A. Guerra, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 309,924, Sep. 21, 1994. This application Jun. 7, 1995, Ser. No. 474,271

Int. Cl.[6] C08F *12/30*

U.S. Cl. 526—243 **2 Claims**

1. A surfactant polymer, comprising;

(A) at least 40% by weight of imerpolymerized units derived from $C_aF_{2a+1}(SO_2NR_1)_b(CH_2)_bOC(O)C(R_2)=CH_2$, where a is 0 or 1, b is 1 to 12, R_1 is Cb_3, C_2H_4, C_3H_2, or C_4H_9, and R_2 is H or CH_3;

(B) at least 5% by weight of interpolymerized units derived from sulfonic acid containing, or sulfonic acid salt containing, free-radically polymerizable, ethylenically-unsaturated monomer; and

(C) interpolymerized units derived from a polar, flee-radically polymerizable, ethylenically-unsaturated monomer.

5,612,432

SHEETLIKE ARTICLE FOR OPTICAL USE

Takashi Taniguchi, Yasu-gun; Kazuo Tanaka, Gamo-gun; Shinya Adachi, and Masaki Maekawa, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 852,229, May 28, 1992, abandoned. This application Aug. 16, 1994, Ser. No. 291,353

Claims priority, application Japan, Oct. 3, 1990, 2-267165; Jun. 18, 1991, 3-146261

Int. Cl.[6] C08F *222/40;222/10;220/10;236/02;212/08*

U.S. Cl. 526—262 **6 Claims**

1. A resinous sheetlike article or optical applications, said article having both a glass transition point and a softening point of higher than 130° C., a modulus of elasticity when bent of more than 50 kgf/mm^2 and not more than 1,000 kgf/mm^2, a double refraction index of not greater than 30 mm, a yellow color index of not higher than 5, a specific gravity of not more than 1.5, and a thickness of more than 0.3 mm and not more than 0.7 mm, and said article consisting essentially of a resin three-dimensionally cross-linked by cast polymerization of a mixture consisting essentially of vinyl monomers selected from the group consisting of maleimides, acryls, methacryls, fumerates, allyls, styrenes, and divinylbenzenes.

5,612,433

AGENT FOR WATER-REPELLENT TREATMENT OF FIBERS

Ichiro Ono; Kenichi Isobe, both of Annaka; Hironori Tsukada, Sakai; Kenji Ueji, Kawachinagano, and Masakazu Komemushi, Hirakata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, and Konishi Co., Ltd., Osaka-fu, both of Japan

Continuation of Ser. No. 269,276, Jun. 30, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 557,515

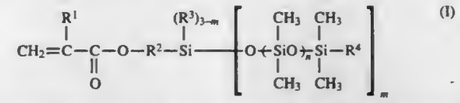
Claims priority, application Japan, Jun. 30, 1993, 5-183423; Jun. 24, 1994, 6-166297

Int. Cl.[6] C08F *230/08;220/10;220/22;224/00;* **B32B** *27/12*

U.S. Cl. 526—279 **18 Claims**

1. An acryl-silicone copolymer prepared by the radical copolymerization reaction of

an organopolysiloxane compound containing one radical polymerizable group of the formula



(I)

wherein R^1 is a hydrogen atom or a methyl group, R^2 is a divalent hydrocarbon group containing 1 to 12 carbon atoms the carbon chain of which optionally contains oxygen atoms to provide ether groups, R^3 is a methyl group or a trimethyl siloxy group, R^4 is a monovalent hydrocarbon group containing 1 to 4 carbon atoms, n is an integer of 3–200, and m is an integer of 1–3,

with radical polymerizable monomers including an acrylate, a methacrylate or a mixture thereof as a main member, wherein 30–80% by weight of the copolymer is formed from the organopolysiloxane compound and 20–70% by weight of the copolymer is formed from the radical polymerizable monomers, with the proviso that the radical polymerizable monomers do not include methacrylic acid.

5,612,434

COPOLYMERS COMPRISING CYCLIC OR POLYCYCLIC MONOMERS HAVING A SPECIFIC ISOMER DISTRIBUTION, METHODS FOR THEIR MANUFACTURE, AND THEIR USE

Ulrich Epple; Holger Schmidt, both of Wiesbaden; Gerhard Brindoepke, Sulzbach, and Karl-Friedrich Doessel, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 3, 1995, Ser. No. 538,216

Claims priority, application Germany, Oct. 7, 1994, 44 35 950.0

Int. Cl.[6] C08F *10/14;224/00;232/00*

U.S. Cl. 526—282 **32 Claims**

1. A copolymer prepared by polycondensation or free-radical polymerization of olefinically unsaturated monomers, wherein at least one of the monomers is an isomer mixture of a cyclic or polycyclic olefinically unsaturated compound, which mixture contains a mass fraction from 8 to 50 per cent of at least one isomer of the main component in addition to this main component.

5,612,435

TERMINALLY FUNCTIONALIZED POLYMERS PRODUCED USING PROTECTED FUNCTIONAL INITIATORS

Robert C. Bening, Katy, and Carl L. Willis, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

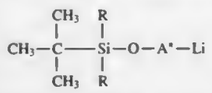
Division of Ser. No. 330,055, Oct. 27, 1994, abandoned, which is a division of Ser. No. 155,665, Nov. 22, 1993, Pat. No. 5,391,663. This application Oct. 5, 1995, Ser. No. 539,467

Int. Cl.[6] C08F *136/06;8/04;4/48*

U.S. Cl. 526—335 **6 Claims**

1. A functionalized polymer, produced by a process comprising the steps of:

initiating polymerization of butadiene at a temperature from 20° C. to 60° C. with a lithium initiator having the structure



wherein each R is methyl, ethyl, n-propyl, or n-butyl and A" is an alkyl-substituted or non-substituted propyl bridging group or an alkyl-substituted or non-substituted octyl bridging group;

polymerizing the butadiene in the presence of a structure modifier to provide 1,2-addition from 40% to 60%;

hydrogenating the polymer prior to recovery; and

recovering a hydrogenated linear or branched polymer having one or more terminal functional groups.

5,612,436

ISOPRENE-BUTADIENE DIBLOCK RUBBER

Adel F. Halasa, Bath; Wen-Liang Hsu, Akron; David J. Zanzig, Uniontown; Paul H. Sandstrom, Tallmadge, and Laurie E. Austin, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1995, Ser. No. 524,666

Int. Cl.[6] C08F *236/00*

U.S. Cl. 526—337 **56 Claims**

1. An isoprene-butadiene diblock rubber which has an excellent combination of properties for use in making truck tire treads, said isoprene-butadiene diblock rubber being comprised of a butadiene block and an isoprene-butadiene block, wherein said butadiene block has a number average molecular weight which is within the range of about 25,000 to about 350,000, wherein said isoprene-butadiene block has a number average molecular weight which is within the range of about 25,000 to about 350,000, wherein said isoprene-butadiene diblock rubber has essentially one glass transition temperature which is within the range of about −100° C. to about −70° C., wherein said isoprene-butadiene diblock polymer has a Mooney ML-4 viscosity at 100° C. which is within the range of about 50 to about 140, and wherein the repeat units derived from isoprene and 1,3-butadiene in the isoprene-butadiene block are in essentially random order.

5,612,437

POLYMERIZATION APPARATUS AND METHOD OF PRODUCING VINYL CHLORIDE TYPE POLYMER BY USING THE SAME

Takuya Ueda, Kamisu-machi; Kikuo Nakajima, Hasaki-machi; Yoichi Tanifuji, Kamisu-machi; Tadashi Amano, Kamisu-machi, and Shuji Ohnishi, Kamisu-machi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

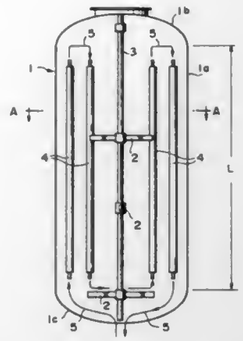
Filed Dec. 27, 1994, Ser. No. 364,449

Claims priority, application Japan, Dec. 27, 1993, 5-351850

Int. Cl.[6] C08F *2/18*

U.S. Cl. 526—344.2 **10 Claims**

1. A method of producing a vinyl chloride polymer comprising the step of subjecting vinyl chloride or a monomer mixture containing vinyl chloride in an amount of 50% by weight or more to suspension polymerization in an aqueous medium by using a polymerization apparatus equipped with a polymerization vessel comprising a substantially cylindrical container, wherein said polymerization vessel has a plurality of baffles each having a cooling function comprised of pipes vertically extending in said polymerization vessel; and serpentine pipelines each of which is placed between two adjacent baffles and is extended in a repeated serpentine fashion along the polymerization vessel inner wall from the lower part to the upper part of the polymerization vessel with said serpentine pipeline apart from said inner wall; and a refrigerant is passed through said baffles and said serpentine pipelines.



5,612,438

CURABLE SILOXANE POLYMERS CONTAINING INTEGRAL UV ABSORBERS

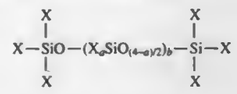
William J. Raleigh, Rensselaer; Raymond J. Thimineur, Scotia, both of N.Y., and James A. Campagna, Pittsfield, Mass., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 411,061, Mar. 27, 1995, abandoned, which is a continuation of Ser. No. 208,761, Mar. 8, 1994, abandoned, which is a division of Ser. No. 974,054, Nov. 10, 1992, Pat. No. 5,310,845. This application Oct. 25, 1995, Ser. No. 547,907

Int. Cl.[6] C08G *77/04*

U.S. Cl. 528—26 **6 Claims**

1. A curable siloxane polymer containing integral UV stabilizers comprising those of the following general formula:



wherein each X is the same or different and represents hydrogen, hydroxyl, hydrocarbon or substituted hydrocarbon or a curable silylated ultraviolet absorbing group provided at least one of X is a curable silylated ultraviolet absorbing agent, a is 0, 1 or 2, and b is above about 1.

5,612,439

PROCESS FOR POLYMERIZATION REACTIONS WITH FUNCTIONALIZED PEROXIDES

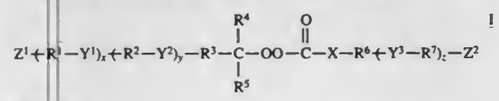
Daryl L. Stein, Bolingbrook, Ill., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 214,938, Mar. 17, 1994, Pat. No. 5,466,855, which is a division of Ser. No. 908,576, Jun. 25, 1992, Pat. No. 5,319,130, which is a continuation of Ser. No. 577,977, Sep. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,665

Int. Cl.[6] C08G *18/28;63/02;69/02;73/10*

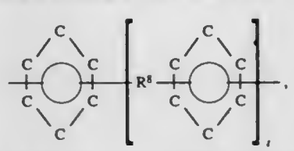
U.S. Cl. 528—44 **8 Claims**

1. A process for preparing a polymeric peroxide comprising reacting a peroxide compound with one or more monomers selected from the group consisting of phosgene, a bis-haloformate, a polyhaloformate, a diacid halide, a polyacid halide, a diisocyanate, a polyisocyanate, a dianhydride, a diol, a polyol, a diamine, a polyamine, an aminoalcohol and a polyfunctional aminoalcohol, the peroxide compound having the following Formula I:



wherein

R^1, R^2, R^6 and R^7 are independently a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted cycloalkyl diradical of 5 to 18 carbons, a substituted or unsubstituted bicycloalkyl diradical of 7 to 12 carbons, a substituted or unsubstituted bicycloalkenyl diradical of 7 to 12 carbons, a substituted or unsubstituted alkenyl diradical of 2 to 18 carbons, a substituted or unsubstituted alkynyl diradical of 2 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or a substituted or unsubstituted diradical having the following Formula II:



R^3 is a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or the substituted or unsubstituted diradical having the Formula II;

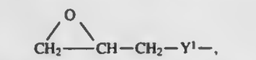
R^4 and R^5 are independently a substituted or unsubstituted alkyl radical of 1 to 10 carbons;

R^8 is a direct bond, —O—, —S—, —S(=O)$_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—NH— or a substituted or unsubstituted alkyl diradical of 1 to 6 carbons;

X is —O—;

Y^1, Y^2 and Y^3 are independently —O—, —S—, —S(=O)$_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—O—, —O—C(=O)—NH—, —NH—C(=O)—NH—, —C(=O)—C(=O)—, —O—C(=O)—C(=O)—O—, —NH—C(=O)—C(=O)—NH—, —NH—C(=O)—C(=O)—O— or —O—C(=O)—C(=O)—NH—;

Z^1 and Z^2 are independently H_2N—, O=C=N—, Cl—C(=O)—, Br—C(=O)—, HO—C(=O)—,



H_2N—C(R^9) (R^{10})—(CH_2)$_w$—Y^1— or R^{11}—O—C(=O)—;

R^9 and R^{10} are independently hydrogen or a substituted or unsubstituted alkyl radical of 1 to 4 carbons;

R^{11} is an alkyl radical of 1–4 carbons, benzyl or phenyl;

t, x, y and z are independently 0 or 1;

w is an integer from 1 to 12; and

substituents for any of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9 or R^{10} are independently one or more of chloro, bromo, fluoro, cyano, amino, sulfo, carboxy, nitro, alkoxy of 1 to 12 carbons, alkylamino of 1 to 12 carbons, acyloxy of 1 to 12 carbons, alkenoyloxy of 3 to 12 carbons, alkenoylamino of 3 to 12 carbons, aroyloxy of 7 to 15 carbons, aroylamino of 7 to 15 phthalimido, alkoxycarbonyloxy of 2 to 13 carbons, alkoxycarbonylamino of 2 to 13 carbons, alkenyloxycarbonyloxy of 3 to 12 carbons, alkenyloxycarbonylamino of 3 to 12 carbons, aryloxycarbonyloxy of 7 to 15 carbons, alkylaminocarbonyloxy of 2 to 13 carbons, arylaminocarbonyloxy of 7 to 15 carbons, aralkylaminocarbonyloxy of 7 to 16 carbons, alkylsulfonyloxy of 1 to 8 carbons, alkylsulfonylamino of 1 to 8 carbons, arylsulfonylamino of 6 to 11 carbons or epoxyalkoxycarbonyl of 2 to 13 carbons.

5,612,440

POLYMERIC ORIENTATING MATERIAL AND FERROELECTRIC LIQUID CRYSTAL DISPLAY ADOPTING THE SAME

Jae-keun Park, and Jong-cheon Lee, both of Suwon, Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

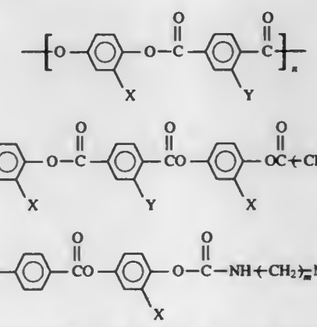
Filed Jun. 6, 1995, Ser. No. 470,696

Claims priority, application Rep. of Korea, Aug. 27, 1994, 94-21307

Int. Cl.[6] C08G *18/30*

U.S. Cl. 528—71 **12 Claims**

1. A polymeric orientating material for use in a liquid crystal display, wherein said material is comprised of at least one compound selected from the group consisting of the following polymer compounds:



wherein, n is an integer of 10 or more, m is an integer of 5–10, X is —$SO_3^-K^+$ or —$SO_3^-Na^+$ and Y is Cl, Br, NO_2 or H.

5,612,441

WET ADHESION MONOMERS WITH UREIDO FUNCTIONALITY AND POLYMERS PREPARED THEREFROM

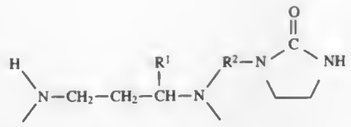
Michael J. Dochniak, Stillwater, Minn., assignor to H.B. Fuller Licensing & Financing, Inc., Willington, Del.

Division of Ser. No. 300,309, Sep. 2, 1994, Pat. No. 5,496,907, which is a continuation-in-part of Ser. No. 25,091, Mar. 2, 1993, Pat. No. 5,399,706. This application May 31, 1995, Ser. No. 455,092

Int. Cl.[6] C08G *18/32*

U.S. Cl. 528—73 **9 Claims**

1. A polymer having terminal or pendant imidazolidinone functional groups, the polymer comprising a plurality of groups of the formula:



where R^1 is H or an alkyl group, R^2 is alkylene optionally interrupted with one or more ether oxygen atoms, and the polymer being free of imidazolidinone groups having no ureido hydrogen atom.

5,612,442

PHENOL NOVOLAK CONDENSATE AND BIS(METHOXYMETHYL)BIPHENYL FOR PRODUCTION THEREOF

Katuhiko Okazaki; Mikito Kashima; Yumiki Noda; Hiroshi Jibiki, and Takashi Honma, all of Ube, Japan, assignors to Ube Industries, Ltd., and Meiwa Plastic Industries, Ltd., both of Ube, Japan

Filed Sep. 19, 1995, Ser. No. 530,735

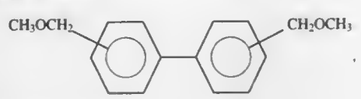
Claims priority, application Japan, Sep. 20, 1994, 6-251328; Feb. 21, 1995, 7-032635

Int. Cl.[6] C08G *65/38*

U.S. Cl. 528—212 **10 Claims**

1. A phenol novolak condensate obtained from a reaction between:

(a) a mixture of isomers of bis(methoxymethyl)biphenyl according to formula (I')



(I')

and

(b) a phenol compound.

5,612,443

LOW MOLECULAR WEIGHT POLYALDEHYDES

Gary T. Martino, Plainsboro, and Martin M. Tessler, Edison, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 310,451, Sep. 22, 1994, Pat. No. 5,466,862, which is a division of Ser. No. 74,278, Jun. 8, 1993, Pat. No. 5,386,040, which is a continuation of Ser. No. 889,548, May 27, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,289

Int. Cl.[6] C08G *12/00*

U.S. Cl. 528—229 **8 Claims**

1. A polyaldehyde having a molecular weight of about 200–3000 and the general structure R_3—(L—R_4—CHO)$_x$(Y)$_z$, wherein R_3 is the residue from a polyamine containing at least two amine groups bonded to different carbon atoms or the residue from a polyhalide containing at least two halide groups bonded to different carbon atoms; R_4 is a divalent organic group; L is $N(R_5)$ or $N^+(R_5)_2$; R_5 is hydrogen, a C_1–C_{10} alkyl group or —R_6—CHO; R_6 is a divalent organic group; Y is an anion which is present when L is $N^+(R_5)_2$; x is 2 to less than 20; and z, if present, is equal to x.

5,612,444

PROCESS FOR MAKING POLYETHERESTERS WITH HIGH AROMATIC ESTER CONTENT

Gangfeng Cai, West Chester, Pa.; Lau S. Yang, Wilmington, Del., and Jeffrey A. Klang, Exton, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Mar. 28, 1995, Ser. No. 412,176

Int. Cl.[6] C08G *63/78*

U.S. Cl. 528—274 **22 Claims**

1. A process which comprises:

(a) heating a low molecular weight polyether polyol having an average hydroxyl functionality from about 2 to about 8 and a number average molecular weight less than about 2000 with an aromatic dicarboxylic acid under conditions effective to promote esterification of the polyol hydroxyl end groups to produce a polyester intermediate, wherein the relative proportions of aromatic dicarboxylic acid and low molecular weight polyol are adjusted to provide up to about 2 moles of —COOH groups for each mole of —OH groups present; and

(b) heating the polyester intermediate with an anhydride or an aliphatic dicarboxylic acid in the presence of a catalyst under conditions effective to promote random insertion of the anhydride or aliphatic dicarboxylic acid into polyether segments of the polyester intermediate to produce a polyetherester resin that contains greater than about 10 wt. % of recurring units derived from the aromatic dicarboxylic acid.

5,612,445

ULTRAVIOLET CURABLE EPOXIDIZED ALKYDS

Raymond H. Jones, Lynn Haven, Fla., assignor to Arizona Chemical Co., Panama City, Fla.

Filed Feb. 15, 1995, Ser. No. 388,926

Int. Cl.[6] C08G *63/48;* **C08F** *2/46*

U.S. Cl. 528—295.5 **8 Claims**

1. An internally plasticized, ultraviolet cured epoxy resin derived from the epoxidation of an alkyd comprised of:

(a) an unsaturated fatty acid,

(b) an anhydride or diacid containing cycloaliphatic unsaturation, and

(c) a polyol.

5,612,446

TRANSPARENT POLYAMIDE AND MULTI-PLY BARRIER FILMS CONTAINING SAME

Ulrich Presenz, Trin, and Manfred Hewel, Rodels, both of Switzerland, assignors to EMS-Inventa AG, Zürich, Switzerland

Filed Mar. 24, 1994, Ser. No. 216,886

Claims priority, application Germany, Mar. 24, 1993, 43 09 534.8

Int. Cl.[6] C08G *69/26*

U.S. Cl. 528—310 **4 Claims**

1. A transparent polyamide, consisting of:

(a) a first component comprising hexamethylenediamine/adipic acid and present from about 15 to 75 mol %;

(b) a second component selected from the group consisting of hexamethylenediamine/azelaic acid, hexamethylene/sebacic acid, and mixtures thereof and present from about 15 to 65 mol %; and

(c) a third component selected from the group consisting of hexamethylenediamine/isophthalic acid, hexamethylenediamine/terephthalic acid, and mixtures thereof, and present from about 10 to 70 mol %,

said first, second and third components totaling 100 mol %, and said polyamide exhibiting barrier values having a ratio of at least 3:1 with respect to carbon dioxide and oxygen.

5,612,447

PRODUCTION OF POLYSUCCINIMIDE BY THERMAL POLYMERIZATION OF MALEAMIC ACID

Michael B. Freeman, Harleysville, Pa.; Yi H. Paik, Princeton, N.J.; Ethan S. Simon, Ambler, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 960,070, Oct. 13, 1992, Pat. No. 5,393,868. This application Nov. 15, 1994, Ser. No. 339,605

Int. Cl.[6] C08G *69/10;73/10*

U.S. Cl. 528—328 **9 Claims**

1. A method for producing polysuccinimide comprising: suspending maleamic acid in one or more diluents selected from the group consisting of tetrahydronaphthalene, anionic surfactants, cationic surfactants and zwitterionic surfactants, and heating the maleamic acid to a temperature of from about 160° to about 330° C.

5,612,448

CURABLE ADHESIVE COMPOSITIONS CONTAINING POLYAMIDE RESINS

Charles R. Frihart, Lawrenceville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Continuation of Ser. No. 128,392, Sep. 28, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 426,448

Int. Cl.[6] C08G *69/00;69/26*

U.S. Cl. 528—339.5 **30 Claims**

1. A polyamide resin having flexibility, high strength, and low tack comprising the condensation product of an acid component comprising non-linear polymerized fatty acids, and optionally, at least one acid selected from the group consisting of linear dicarboxylic and monocarboxylic acids; and an amine component comprising from about 90 to about 30 equivalent percent of 1,2-diaminopropane, and from about 10 to about 70 equivalent percent of a piperazine-containing diamine, with optionally from about 0.5 up to about 10 equivalent percent of the amine component comprising polyetherdiamine.

5,612,449

NONLINEAR OPTICAL MATERIAL, PROCESS OF PRODUCTION OF SAME, AND NONLINEAR OPTICAL DEVICE AND DIRECTIONAL COUPLING TYPE OPTICAL SWITCH USING SAME

Wataru Sotoyama; Satoshi Tatsuura; Tetsuzo Yoshimura; Azuma Matsuura, and Tomoaki Hayano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

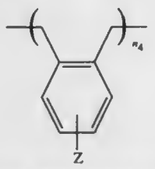
Division of Ser. No. 88,649, Jul. 9, 1993, Pat. No. 5,459,232. This application Jun. 5, 1995, Ser. No. 462,597

Claims priority, application Japan, Jul. 13, 1992, 4-184895; Jun. 25, 1993, 5-155418

Int. Cl.[6] C08G *73/00*

U.S. Cl. 528—345 **4 Claims**

1. A polymer nonlinear optical material having the formula (IV):



(IV)

wherein, Z is a portion having a nonlinear optical effect and n_4 is an integer of 2 or more.

5,612,450

LIQUID CRYSTAL ALIGNING AGENT AND LIQUID CRYSTAL DISPLAY DEVICE

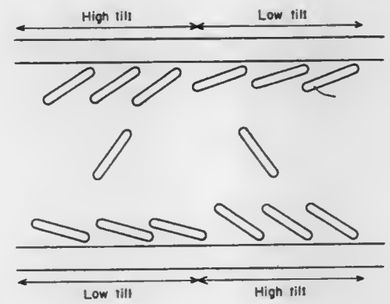
Shigeaki Mizushima, Ikoma; Noriko Watanabe, Nara; Hiroko Iwagoe, Yamatokooriyama; Seiji Makino, Tenri; Sigeo Kawamura, Yokohama; Yusuke Tsuda, Yokohama, and Nobuo Bessho, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, and Sharp Corporation, Osaka, both of Japan

Filed May 16, 1995, Ser. No. 441,740

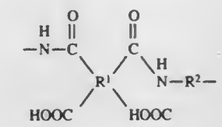
Claims priority, application Japan, May 17, 1994, 6-102929

Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—353 **16 Claims**



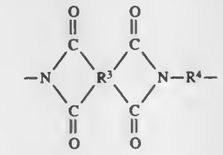
1. A liquid crystal aligning film which comprises a polymer, said polymer comprising at least one structural unit selected from the group consisting of a structural unit represented by the following formula (1):



(1)

wherein R^1 and R^2 are tetravalent and divalent organic groups, respectively, and at least one of the organic groups is an aliphatic or alicyclic hydrocarbon group, or a group containing an aliphatic or alicyclic hydrocarbon group,

and a structural unit represented by the following formula (2):



(2)

wherein R^3 and R^4 are tetravalent and divalent organic groups, respectively, and at least one of the organic groups is an aliphatic or alicyclic hydrocarbon group, or a group containing an aliphatic or alicyclic hydrocarbon,

which film has been exposed to radiation sufficient to change the pretilt angle of a liquid crystal in contact with said film as compared with a pretilt angle of the liquid crystal in contact with the film before exposure of said film to radiation.

5,612,451

AMPHOTERIC METAL OXIDES AS COCATALYST IN THE ELECTROPHILIC SYNTHESIS OF POLYARYL ETHER KETONES

Thomas Heitz, Dannstadt-Schauernheim; Alexander Glück, Bad Dürkheim; Walter Heitz, Kirchhain, and Ralf Richter, Cölbe, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 6, 1995, Ser. No. 498,971

Claims priority, application Germany, Jul. 11, 1994, 44 24 039.2

Int. Cl.[6] C08G *67/02;8/02*

U.S. Cl. 528—392 **4 Claims**

1. A process for preparing polyaryl ether ketones which comprises: electrophilically polycondensing an acyl halide and an electron rich aromatic in a reaction mixture in the presence of a molar excess of a Lewis acid, from 0.01 to 60% by weight, based on the weight of the prepared polyaryl ether ketone being added to the reaction mixture before or during polycondensation, said inert filler being selected from the group consisting of amphoteric metal oxides, oxides, alkoxides and hydroxides of aluminum, double salts of alkali metals or alkaline earth metals with aluminum and aluminosilicates, the molar excess of the Lewis acid being from 0.02 to 1.00 based on the molar amount of carbonyl groups and acyl halide groups present in the reaction mixture.

5,612,452

PROCESS FOR PURIFICATION OF STYRENIC POLYMER

Hideo Teshima, Kanno Sodegaura, and Komei Yamasaki, Kamiizumi Sodegaura, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 290,786, Sep. 6, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,806

Claims priority, application Japan, Jan. 11, 1993, 5-002221; Sep. 3, 1993, 5-219984; Sep. 28, 1993, 5-240826

Int. Cl.[6] C08F *6/24*

U.S. Cl. 528—492 **8 Claims**

1. A process for purifying a styrenic polymer which comprises adding a poor solvent to a crystalline styrenic polymer having a high degree of syndiotactic configuration which is produced by the use of a catalyst comprising (A) an aluminoxane or a coordination complex compound comprising a cation and an anion in which a plurality of radicals are bonded to a metal and (B) a transition metal compound, and treating said polymer in a state of slurry for both, the catalyst deactivation and the polymer deashing in one step; wherein said poor solvent is a compound represented by the general formula (I)

$$R^{14}\text{-OH}$$

wherein R^{14} is an C_1–C_6 alkyl or a compound represented by the general formula (II)

$$NR^{15}{}_3$$

wherein each R^{15} is a hydrogen atom or a C_1–C_6 alkyl group, and when R^{15} is an alkyl group, each R^{15} may be the same or different and the amount of that poor solvent to be added is 30 to 95% by weight based on the total amount of the crystalline styrene polymer and the poor solvent to be added.

5,612,453

SELECTED PEPTIDES OF THE GROUP-SPECIFIC ANTIGEN (GAG) OF HUMAN IMMUNODEFICIENCY VIRUS (HIV), THE PREPARATION AND USE THEREOF

Matthias Niedrig, Marburg; Susanne Modrow, München, and Hans Wolf, Starnberg, all of Germany, assignors to Chiron Behring GmbH & Co., Marburg, Germany

Continuation of Ser. No. 191,706, Feb. 4, 1994, abandoned, which is a continuation of Ser. No. 47,051, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 805,689, Dec. 12, 1991, abandoned. This application Dec. 13, 1994, Ser. No. 356,798

Claims priority, application Germany, Dec. 14, 1990, 40 39 925.7

Int. Cl.[6] A61K *38/00;* **C07K** *7/08;14/00*

U.S. Cl. 530—327 **1 Claim**

1. A peptide of the HIV gag protein having the amino acid sequence NPGLLETSEGCRQ.

5,612,454

PROCESS FOR PURIFICATION OF POLYPEPTIDE USING A BUCHNER FUNNEL

Toshihiko Kaminuma; Toshii Iida, and Masahiro Tajima, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

PCT No. PCT/JP91/00421, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991, PCT Pub. No. WO91/15502, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 29, 1991, Ser. No. 776,272

Claims priority, application Japan, Mar. 30, 1990, 2-86898; Aug. 10, 1990, 2-213016

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *1/00;5/00*

U.S. Cl. 530—344 **1 Claim**

1. A process for purifying a polypeptide, which comprises the steps of:

(a) regulating the pH range of an aqueous solution containing a crude polypeptide to 1–4 using formic acid, to cause impurities to precipitate, followed by removing these impurities leaving a supernatant,

wherein said crude polypeptide is a reaction solution in which a fused polypeptide is cleaved into physiologically active moieties having a molecular weight of not more than 15,000 and another protein moiety fused thereto, wherein said physiologically active moiety is selected from the group consisting of insulin, growth hormone release factor, epidermal growth factor, atrial natriuretic peptide, thymosin α_1, thymosin β_4, thymopoietin, transforming growth factor, adrenocorticotropic hormone, calcitonin gene-related peptide, and cartilage factor; and said other protein moiety is selected from the group consisting of β-galactosidase and chloramphenicol acetyltransferase; which is directly followed by

(b) adsorbing the supernatant on a packing material for reversed phase high performance liquid chromatography by pouring said supernatant into a Buchner funnel into which said packing material has been placed, followed by eluting the desired polypeptides.

5,612,455

NUCLEAR FACTORS AND BINDING ASSAY

Timothy Hoey, Woodside, Calif., assignor to Tularik, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 270,653, Jul. 5, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 396,479

Int. Cl.[6] C07K *14/47*

U.S. Cl. 530—350 **6 Claims**

1. An isolated human nuclear factor of activated T-cells, hNFAT, protein comprising $hNFATp_1$ (SEQ ID NO:2), $hNFATp_2$ (SEQ ID NO:2, residues 220–921), hNFAT3 (SEQ ID NO:6), hNFAT4b (SEQ ID NO: 10) or hNFAT4c (SEQ ID NO:12).

5,612,456

FACTOR XIII COMPOSITIONS

Paul D. Bishop, Fall City; Gerald W. Lasser, Everett; Mads Laustsen, Seattle, and Jin-Jyi Chang, Issaquah, all of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 927,196, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 741,263, Aug. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 270,714, Nov. 14, 1988, Pat. No. 5,204,447, and Ser. No. 525,556, May 18, 1990, abandoned, and Ser. No. 521,805, May 10, 1990, abandoned. This application Nov. 2, 1994, Ser. No. 333,236

Int. Cl.[6] A61K *35/14;38/36;* **C07K** *1/20;14/39*

U.S. Cl. 530—381 **21 Claims**

1. A method for purifying factor XIII from a biological fluid, comprising the steps of:

a) fractionating a biological fluid by anion exchange chromatography to produce a fraction enriched for factor XIII;

b) adding Na-acetate to the enriched fraction to form a crystalline precipitate;

c) dissolving the precipitate to form a solution;

d) fractionating the solution by hydrophobic interaction chromatography to produce a second fraction enriched for factor XIII;

e) fractionating the second enriched fraction by anion exchange chromatography to produce a third fraction enriched for factor XIII;

f) adjusting the pH of the third enriched fraction to pH 5.2–6.5 to produce a factor XIII-containing precipitate;

g) recovering said precipitate;

h) dissolving the precipitate to form a solution; and

i) fractionating the solution by gel filtration and collecting a factor XIII-containing peak fraction.

5,612,457

Patent Not Issued For This Number

5,612,458

ANTIBODY TO PNA/NUCLEIC ACID COMPLEXES

Jens J. Hyldig-Nielsen, Vanløse, and Karl-Johan Pluzek, Smoerum, both of Denmark, assignors to Dako/AS, Denmark

Filed Dec. 22, 1994, Ser. No. 361,643

Claims priority, application Denmark, Dec. 23, 1993, 1454/93

Int. Cl.[6] A61K *39/00;51/10;* **C07K** *16/44*

U.S. Cl. 530—388.21 **21 Claims**

1. Antibody characterized in that it binds to complexes formed between PNA (Peptide Nucleic Acid) and nucleic acids.

5,612,459

PRODUCTION AND CHARACTERISTICS OF ANTI-TEICOPLANIN POLYCLONAL ANTIBODY

Emil Toma, 150 Berlioz, #607, Iles des Soeurs, Québec, Canada, and Madeleine Ravaoarinoro, 3511 Charles Daoust, #402, Chomedey, Québec, Canada

Continuation of Ser. No. 55,364, May 3, 1993, abandoned. This application Oct. 3, 1994, Ser. No. 316,368

Int. Cl.[6] C07K *16/00*

U.S. Cl. 530—389.8 **1 Claim**

1. A method for producing polyclonal antibodies specific to teicoplanin, which comprises the steps of:

a) immunizing an animal with an immunogen liposomal composition consisting of teicoplanin encapsulated in negatively- or positively-charged liposomes, wherein said composition is in a concentration of about 10 to 20 mg/ml to elicit an immunogenic reaction from said animal;

b) allowing incubation for a time sufficient for said immunogenic reaction to occur;

c) collecting sera from said immunized animal; and

d) isolating the anti-teicoplanin polyclonal antibodies from said sera by centrifugation.

5,612,460

ACTIVE CARBONATES OF POLYALKYLENE OXIDES FOR MODIFICATION OF POLYPEPTIDES

Shmuel Zalipsky, Edison, N.J., assignor to Enzon, Inc., Piscataway, N.J.

Division of Ser. No. 817,757, Jan. 8, 1992, Pat. No. 5,324,844, which is a division of Ser. No. 511,243, Apr. 19, 1990, Pat. No. 5,122,614, which is a continuation-in-part of Ser. No. 340,928, Apr. 19, 1989, abandoned. This application Feb. 17, 1994, Ser. No. 198,193

Int. Cl.[6] C07K *16/00;* **C07D** *207/40;* **A61K** *39/385;* **C12P** *21/06*

U.S. Cl. 530—391.9 **15 Claims**

1. A modified polypeptide comprising a polypeptide and a polyalkylene oxide having a molecular weight of less than about 20,000 wherein said polyalkylene oxide is covalently bound to an amine group of the polypeptide by a urethane linkage formed by the process of

a) treating said polyalkylene oxide with phosgene to form a polyalkylene oxide chloroformate in situ;

b) reacting said polyalkylene oxide chloroformate with an N-hydroxy-N-dicarboximide followed by triethylamine to form a polyalkylene oxide having a terminal oxycarbonyl-oxy-N-dicarboximide group; and

c) reacting said polyalkylene oxide having a terminal oxycarbonyl-oxy-N-dicarboximide group with said polypeptide whereby said polypeptide and said polyalkylene oxide are covalently coupled said urethane linkage.

5,612,461

Patent Not Issued For This Number

5,612,462

PROCESS FOR PREPARING BRIDGED STEREORIGID METALLOCENES

Richard Lisowsky, Kamen, Germany, assignor to Witco GmbH, Bergkamen, Germany

Filed Feb. 22, 1995, Ser. No. 392,388

Claims priority, application Germany, Feb. 25, 1994, 44 06 109.9

Int. Cl.[6] C07F *17/00;7/22*

U.S. Cl. 534—15 **20 Claims**

1. A process for preparing bridged, stereorigid metallocenes of the general formula (1a)

$$Q(CpR_a)_2M(X)_n \qquad (1a)$$

wherein Cp is a cyclopentadienyl, an indenyl, or a fluorenyl radical;

R is an alkyl, alkoxy, phosphine, amino, alkylamino, dialkylamino, alkoxy-alkyl, arylalkyl, or aryloxy-alkyl group;

$0 \leq a \leq 4$;

Q is a single-membered or multi-membered bridge

$$(R^1\text{—}Z\text{—}R^2)_b$$

between the Cp groups wherein R^1 and R^2 are identical or different and in each occurrence is a hydrogen atom, a

C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, Z is carbon, silicon or germanium, and b is 1, 2 or 3;

M is a transition metal from any of the groups 3 to 6 of the Periodic Table (IUPAC notation);

X is halogen; and

n is the oxidation state of M in said compound, reduced by 2;

which comprises

1) in a first step reacting a compound of the formula CpR_a with one or more magnesium compounds of the formula $(R^3R^4)_cMg$, wherein R^3 and R^4 are each bonded to the Mg and are identical or different and each is [H] hydrogen or a C_1–C_{12}-alkyl radical and c is 0 or 1, in accordance with the general equation

$$2CPR_a+(R^3R^4)_cMg\rightarrow(CPR_a)_2Mg+cR^3H+cR^4H$$

and then

2) in a second step, reacting the reaction product of the first step with one or more compounds of the formula X^1QX^2, wherein X^1 and X^2 are identical or different and each is C_1, Br, I or —OSO_2R^5, wherein R^5 is an alkyl radical having 1–10 carbon atoms or an aryl radical having 6–10 carbon atoms, in accordance with the general equation

$$(CpR_a)_2Mg+X^1QX^2\rightarrow(CpR_a)_2Q+MgX^1X^2$$

and then

3) in a third step, reacting the reaction product of the second step with one or more magnesium compounds of the formula $(R^3R^4)_cMg$ in accordance with the general equation

$$(CPR_a)_2Q+(R^3R^4)_cMg\rightarrow Q(CpR_a)_2Mg+cR^3H+cR^4H$$

and then

4) in a fourth step, reacting the reaction product of the third step with one or more tin compounds of the formula $R^6_{4-k}SnX^3_k$, wherein R^6 is a C_2–C_{20}-alkyl radical, or a C_2–C_{20}-aryl radical, X^3 is a halogen atom, and k is 1–4, in accordance with the general equation

$$Q(CpR_a)_2Mg+2R^6_{4-k}SnX^3_k\rightarrow Q(CpR_a)_2(SnX^3_{k-1}R^6_{4-k})_2+MgX^3_2$$

and then

5) in a fifth step, reacting the reaction product of the fourth step with a transition metal halide of the formula $M(X)_m$, where m is equal to the oxidation state of M, in accordance with the equation

$$Q(CpR_a)_2(SnX^3_{k-1}R^6_{4-k})_2+M(X)_m\rightarrow Q(CpR_a)_2M(X)_2+2SnX^3_{k-1}XR^6_{4-k}.$$

12. A process for preparing a bridged, stereorigid metallocene of the general formula (1b)

$$Q(CpR_aR'_{a'})MX_n \qquad (1b)$$

wherein Cp is a cyclopentadienyl, an indenyl, or a fluorenyl radical;

R and R' are identical or different and each is an alkyl, alkoxy, phosphine, amino, alkylamino, dialkylamino, alkoxy-alkyl, arylalkyl, or aryloxy-alkyl group;

$0 \leqq a \leqq 4$; and $0 \leqq a' \leqq 4$;

Cp' is cyclopentadienyl, indenyl, or fluorenyl, or when a' is 1, Cp'R' can be NR" wherein R" is a C_1–C_{12} alkyl or C_6–C_{12} aryl radical;

Q is a single-membered or multi-membered bridge

$$-(R^1-Z-R^2)_b-$$

between Cp and Cp' wherein R^1 and R^2 are identical or different and in each occurrence is a hydrogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, Z is carbon, silicon or germanium, and b is 1, 2 or 3;

M is a transition metal from any of the groups 3 to 6 of the Periodic Table (IUPAC notation);

X is halogen; and

n is the oxidation state of M in said compound, reduced by 2;

which process comprises

reacting a compound of the formula $(CpR_a)Q(CP'R'_{a'})$ with one or more magnesium compounds of the formula $(R^3R^4)_cMg$ in accordance with the general equation

$$(CpR_a)Q(Cp'R'_{a'})+(R^3R^4)_cMg\rightarrow (CpR_a)Q(Cp'R'_{a'})Mg+cR^3H+cR^4H$$

and then

reacting the reaction product of the preceding step with one or more tin compounds of the formula $R^6_{4-k}SnX^3_k$, wherein R^6 is a C_2–C_{10}-alkyl radical, or a C_6–C_{10}-aryl radical, X^3 is a halogen atom, and k is 1–4, in accordance with the general equation

$$Q(CpR_a)(Cp'R'_{a'})Mg+2R^6_{4-k}SnX^3_k\rightarrow Q(CpR_a)(Cp'R'_{a'})(SnX^3_{k-1}R^6_{4-k})_2+MgX^3_2$$

and then reacting the reaction product of the preceding step with a transition metal halide of the formula $M(X)_m$, where m is equal to the oxidation state of M, in accordance with the equation

$$Q(CpR_a)(Cp'R'_{a'})(SnX^3_{k-1}R^6_{4-k})_2+M(X)_m\rightarrow Q(CpR_a)(Cp'R'_{a'})M(X)_2+2SnX^3_{k-1}XR^6_{4-k}$$

5,612,463

FIBRE-REACTIVE DYES AND DYE MIXTURES AND THEIR USE

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

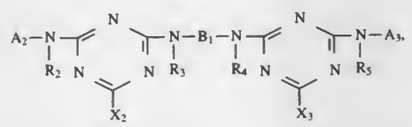
Continuation of Ser. No. 48,082, Apr. 15, 1993, Pat. No. 5,451,665, which is a division of Ser. No. 764,555, Sep. 20, 1991, Pat. No. 5,232,462. This application May 31, 1995, Ser. No. 456,215

Claims priority, application Switzerland, Sep. 25, 1990, 3077/90

Int. Cl.[6] C09B *62/513;62/09;* **D06P** *1/38*

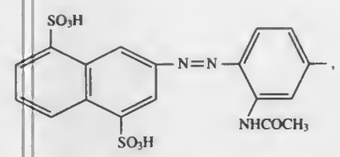
U.S. Cl. 534—634 **7 Claims**

1. A dye of the formula

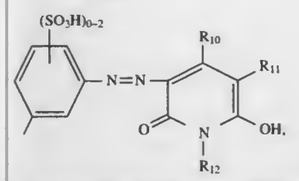


(2a)

in which A_2 and A_3, independently of one another, are the radical of a monoazo dye of the formula

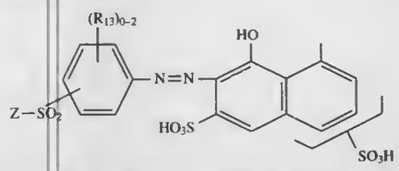


b)



c)

in which R_{12} and R_{10}, independently of one another, are hydrogen, C_1–C_4alkyl or phenyl, and R_{11} is hydrogen, cyano, carbamoyl or sulfomethyl, or



d)

in which R_{13} represents 0 to 2 substituents selected from the group consisting of C_1–C_4alkyl, C_1–C_4alkoxy, halogen, carboxyl and sulfo, and Z is β-sulfatoethyl, β-thiosulfatoethyl, β-phosphatoethyl, β-acyloxyethyl, β-haloethyl or vinyl, R_2, R_3, R_4 and R_5, independently of one another, are hydrogen or C_1–C_4alkyl, B_1 is straight chain or branched C_1–C_{10}alkylene or unsubstituted or C_1–C_4alkyl-substituted cyclohexylene and X_2 and X_3 are each fluorine.

5,612,464

DISAZO DYES CONTAINING A DIFLUOROPYRIMIDINYL REACTIVE GROUP

Rainer Nusser, Neuenburg, Germany, assignor to Clariant Fiance (BVI) Limited, Virgin Islands (Br.)

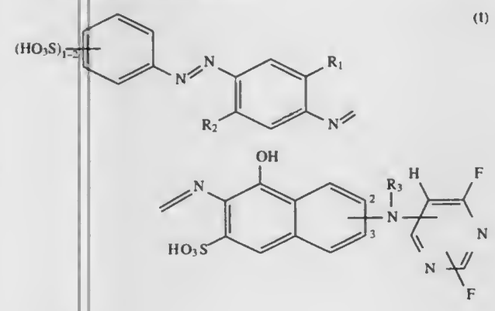
Filed May 2, 1996, Ser. No. 643,137

Claims priority, application United Kingdom, May 5, 1995, 9509159

Int. Cl.[6] C09B *62/25;67/22;* **D06P** *1/382*

U.S. Cl. 534—637 **8 Claims**

1. A compound of the formula



(I)

wherein

R_1 represents hydrogen or —SO_3H;

R_2 represents hydrogen, methyl, —$NHCONH_2$, or —$NHCOCH_3$; and

R_3 represents hydrogen, C_{1-4}alkyl, or substituted C_{1-4}alkyl; or a salt thereof.

5,612,465

PHENYLAZOTRIAZOLOPYRIDINE DYESTUFFS

Ernst Schefczik, Ludwigshafen; Ruediger Sens, Mannheim; Karl-Heinz Etzbach, Frankenthal; Helmut Reichelt, Neustadt, and Clemens Grund, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02634, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO95/05420, PCT Pub. Date Feb. 23, 1995

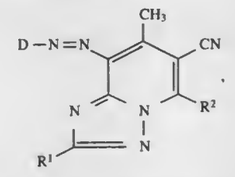
PCT Filed Aug. 9, 1994, Ser. No. 592,310

Claims priority, application Germany, Aug. 13, 1993, 43 27 222.3

Int. Cl.[6] C09B *29/36;* **C07D** *471/04*

U.S. Cl. 534—752 **5 Claims**

1. An azo dyestuff of the formula I



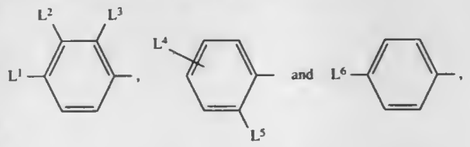
(I)

where

R^1 is C_1–C_{20}-alkyl which is unsubstituted or substituted and can be interrupted by 1 to 4 ether oxygen atoms. or is unsubstituted or substituted phenyl, or mercapto or unsubstituted or substituted alkylthio,

R^2 is hydroxyl or mercapto and

D is the radical of a diazo component which is selected from the group consisting of the radicals of the formulae



where L^1 is C_1–C_4-alkyl, C_1–C_4-alkoxy which is unsubstituted or substituted by C_1–C_4-alkoxy, or is C_1–C_4-alkanoylamino, C_1–C_4-alkylsulfonylamino or a radical of the formula NY^1Y^2, where Y^1 and Y^2 independently of one another in each case are hydrogen or C_1–C_4-alkyl or, together with the nitrogen bonding them, are a 5- or 6-membered saturated heterocyclic radical, one of the two radicals L^2 and L^3 is hydrogen and the other is C_1–C_4-alkyl, C_1–C_4-alkoxy which is unsubstituted or substituted by C_1–C_4-alkoxy, or is C_1–C_4-alkanoylamino, C_1–C_4-alkylsulfonylamino or a radical of the formula NY^1Y^2, in which Y^1 and Y^2 in each case have the above-mentioned meanings, L^4 is hydrogen or C_1–C_4-alkyl, L^5 is C_1–C_4-alkoxy which is unsubstituted or substituted by C_1–C_4-alkoxy; or is C_1–C_4-alkylthio and L^6 is C_8–C_{13}-alkyl which can be interrupted by 1 to 4 ether oxygen atoms, or is phenoxy.

5,612,466

Patent Not Issued For This Number

5,612,467

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED ALKYL OLIGOGLYCOSIDE PASTES

Manfred Weuthen, Solingen; Burkhard Beckedahl, and Irmgard Hartel, both of Duesseldorf, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/02343, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO93/08203, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 12, 1992, Ser. No. 212,000

Claims priority, application Germany, Oct. 21, 1991, 41 34 707.2

Int. Cl.[6] C07G *3/00;* C07H *15/04;1/00*

U.S. Cl. 536—18.6 **20 Claims**

1. A process for the production of light colored alkyl oligoglycoside pastes comprising the steps of: (1) reacting a glycose and a fatty alcohol having from 6 to 22 carbon atoms in the presence of an acid catalyst at an elevated temperature not above 125° C. while continuously removing the water of reaction to form a reaction product which is comprised of unreacted fatty alcohol and less than about 0.1% by weight residual glycose based on the initial amount or said glycose; (2) neutralizing said reaction product with a base wherein the molar ratio of hydrogen ions in said reaction mixture to said base is from about 1:1 to about 1:1.5; (3) removing said unreacted fatty alcohol by distillation to form a residue; (4) adding water and aqueous sodium hydroxide to said residue to form a paste having a solids content of from about 30% to about 70% by weight and a pH of greater than 11.5.

5,612,468

PTERIDINE NUCLETIDE ANALOGS AS FLUORESCENT DNA PROBES

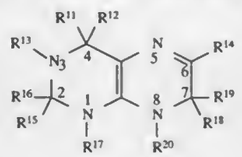
Mary E. Hawkins, Potomac, Md.; Wolfgang Pfleiderer, Constance, Germany; Michael D. Davis, Rockville, and Frank Balis, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 245,923, May 18, 1994. This application May 26, 1995, Ser. No. 451,641

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—22.1 **20 Claims**

1. An oligonucleotide comprising one or more nucleotide monomers which are pteridine derivatives having the formula shown below, with ring vertices 1 through 8 as shown:



in which:

ring vertices 2 and 4 collectively bear at most one oxo oxygen

R^{11} is combined with R^{12} to form a single oxo oxygen joined by a double bond to ring vertex 4, or with R^{13} to form a double bond between ring vertices 3 and 4;

R^{12} when not combined with R^{11} is NH_2;

R^{13} when not combined with R^{11} is lower alkyl or H;

R^{14} is a member selected from the group consisting of H, lower alkyl and phenyl;

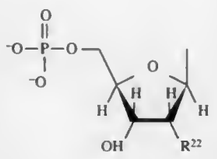
R^{15} is combined with R^{16} to form a single oxo oxygen joined by a double bond to ring vertex 2, or with R^{17} to form a double bond between ring vertices 1 and 2,

R^{16} when not combined with R^{15} is a member selected from the group consisting of H, phenyl, and NH_2;

when R^{15} is not combined with R^{16}, R^{18} is combined with R^{19} to form a single oxo oxygen joined by a double bond to ring vertex 7;

when R^{15} is combined with R^{16}, R^{18} is combined with R^{20} to form a double bond between ring vertices 7 and 8, and R^{19} is a member selected from the group consisting of H and lower alkyl; and

R^{17} when not combined with R^{15}, or R^{20} when not combined with R^{18}, is



in which R^{22} is a member selected from the group consisting of H and OH.

5,612,469

ENHANCEMENT OF RIBOZYME CATALYTIC ACTIVITY BY A NEIGHBORING FACILITATOR OLIGONUCLEOTIDE

John Goodchild, Worcester, Mass., assignor to Worcester Foundation for Experimental Biology, Worcester, Mass.

Continuation of Ser. No. 138,896, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 830,713, Feb. 4, 1992, abandoned. This application May 1, 1995, Ser. No. 431,625

Int. Cl.[6] C12N *15/11;* C12Q *1/68*

U.S. Cl. 536—23.1 **9 Claims**

1. A composition comprising a ribozyme and an effective amount of a facilitator oligonucleotide.

5,612,470

NUCLEIC ACID ENCODING THE GROWTH HORMONE RELEASING HORMONE RECEPTOR

Michael O. Thorner, North Garden; Bruce D. Gaylinn, Trevillans, both of Va.; John R. Zysk, French Town, N.J.; Kevin R. Lynch, Charlottesville, and Jeffrey K. Harrison, Keswick, both of Va., assignors to American Cyanamid Company, Wayne, N.J., and The University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 902,826, Jun. 23, 1992. This application Sep. 18, 1992, Ser. No. 947,672

The portion of the term of this patent subsequent to Sep. 15, 2012, has been disclaimed.

Int. Cl.[6] C12N *15/12*

U.S. Cl. 536—23.5 **2 Claims**

1. An isolated and purified nucleic acid molecule having a sequence which encodes the amino acid sequence of SEQ ID NO:8.

5,612,471

NEMATODE-INDUCED GENES IN TOMATO

David McK. Bird, Riverside, and Mark A. Wilson, Moreno Valley, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 25, 1994, Ser. No. 248,474

Int. Cl.[6] C12N *15/11*

U.S. Cl. 536—24.1 **1 Claim**

1. An isolated polynucleotide capable of hybridizing under stringent conditions to a nucleic acid having the sequence of SEQ. ID. No. 17.

5,612,472

PLANT PROMOTER

Stacy L. Wilson, Cupertino, and Karen J. Brunke, Belmont, both of Calif., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 75,690, Jun. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 791,929, Jan. 9, 1992, abandoned. This application May 11, 1995, Ser. No. 439,145

Int. Cl.[6] C12N *15/11;15/82;* A01H *5/00*

U.S. Cl. 536—24.1 **15 Claims**

1. A DNA construct which comprises:

(a) a 1568 promoter having the sequence of nucleotide 472 through 2039 of SEQ ID No.1 or a DNA sequence having all of the functional properties of said promoter the complement of which under stringent hybridization conditions hybridizes to the sequence of nucleotide 472 through 2039 of SEQ ID NO: 1; and

(b) a heterologous coding sequence operably joined to the regulatory region set forth in (a).

5,612,473

METHODS, KITS AND SOLUTIONS FOR PREPARING SAMPLE MATERIAL FOR NUCLEIC ACID AMPLIFICATION

Linxian Wu, Sandy; Jana Coombs; Sharon L. Malmstrom, both of Salt Lake City, and Michael J. Glass, Centerville, all of Utah, assignors to Gull Laboratories, Salt Lake City, Utah

Filed Jan. 16, 1996, Ser. No. 587,209

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—25.42 **30 Claims**

1. A method for processing sample material for amplification of one or more selected target nucleic acid sequences contained therein, said method comprising the steps of:

obtaining a sample of material potentially containing the target nucleic acid sequences;

mixing said sample with an extraction buffer solution, said extraction buffer solution comprising at least one detergent composition and at least one salt composition, said salt composition being present in a greater than 1 molar concentration;

centrifuging the mixture to obtain a first supernatant portion;

heating said first supernatant portion;

centrifuging said first supernatant portion to precipitate proteins and to obtain a second supernatant portion;

precipitating nucleic acids within said second supernatant portion; and

dissolving said nucleic acids.

5,612,474

ACID LABILE IMMUNOCONJUGATE INTERMEDIATES

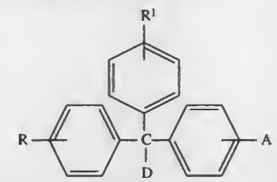
Vinod F. Patel, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 30, 1994, Ser. No. 269,493

Int. Cl.[6] C07H *19/173;19/16;17/08*

U.S. Cl. 536—27.14 **8 Claims**

1. A compound of the formula:



wherein:

R and R^1 are independently selected from the group consisting of:

—NO_2, —CHO, —COOH, —CO_2X, —PO_2X, —CBR_3, —CCl_3, —CF_3, —CI_3, —COX, —CN, —$CONH_2$, —OC(O)OX, —OC(O)NHX, —$OC(O)NX_2$, —CH_2Cl, —CH_2X, —CH_3, —CHX_2, —CX_3, —F, —Cl, —Br, —I, —H, —NH_2, —SH, —OPOX, —OH, —OX, —OCO_2X, —SX, —$SONH_2$, —$S(O)_nX$, —SO_2NH_2, —SO_2NHX, —SONHX, —NHX, and —NX_2,

where X is C_1–C_{12} alkyl or aryl,

and n is 0–3;

D is a drug selected from the group consisting of doxorubicin, gemcitabine and 2-Amino-2'-deoxy-2',2'-difluoroadenosine;

A is



wherein:

y is C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_2–C_{12} alkynyl, C_1–C_{12} alkoxy, C_1–C_{12} alkylthio, C_1–C_{12} alkylamino, aryl, arylamino, aralkylamino, arylthio, aryloxy, aralkyl, aralkylamino, aralkalkyamino, aralkylthio, aralkoxy, or a peptide having from 2–6 amino acids,

or a salt or solvent thereof.

5,612,475

CARBOXYMETHYLATED GUAR GALACTOMANNAN AS A SIZING AGENT

Hans P. Miemietz, Moenchengladbach; Kaspar Schlueter, Solingen; Siegrid Waltenberger-Scharffetter, Breitscheid, and Bernhard Wuestnienhaus, Erkelenz, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01948, § 371 Date Dec. 20, 1995, § 102(e) Date Dec. 20, 1995, PCT Pub. No. WO95/00696, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 15, 1994, Ser. No. 564,260

Claims priority, application Germany, Jun. 24, 1993, 43 21 016.3

Int. Cl.[6] C08B *37/00;* C07H *1/00;23/00;13/02*

U.S. Cl. 536—114 **20 Claims**

1. A process for sizing natural and synthetic yarns comprising contacting said yarns with a sizing agent comprising an alkali metal salt of carboxymethyl guar galactomannan having a degree of substitution below 0.15.

5,612,476

ANTI-ENDOTOXIN COMPOUNDS

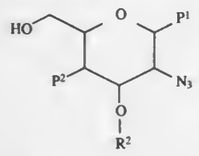
William J. Christ, Andover; Lynn D. Hawkins, Haverhill; Tsutomu Kawata; Daniel P. Rossignol, both of Andover, all of Mass.; Seiichi Kobayashi, Tsuchiurashi, and Osamu Asano, Tsukuba, both of Japan, assignors to Eisai Co., Ltd., Andover, Mass.

Division of Ser. No. 935,050, Aug. 25, 1992, Pat. No. 5,530,113, which is a continuation-in-part of Ser. No. 776,100, Oct. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 484,525

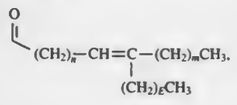
Int. Cl.[6] C07H *11/04;13/06;15/04*

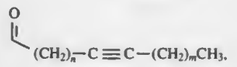
U.S. Cl. 536—117 **6 Claims**

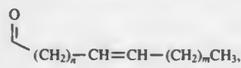
1. A compound of formula:

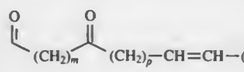


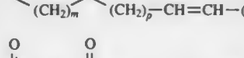
wherein R^2 is:

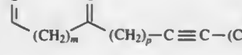


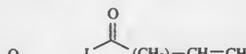


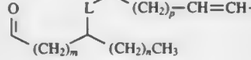


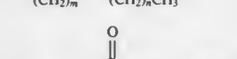


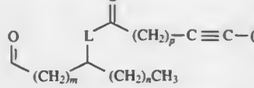


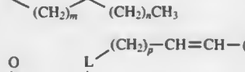


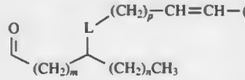


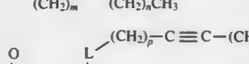


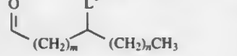


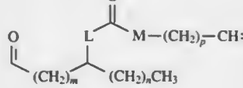




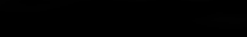




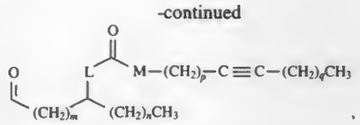




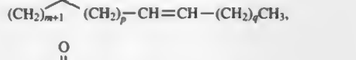


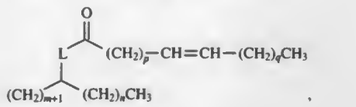


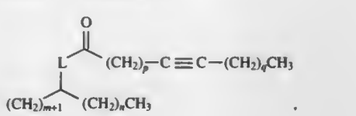
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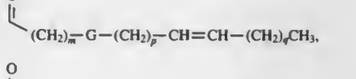


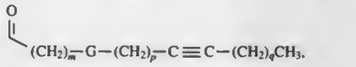


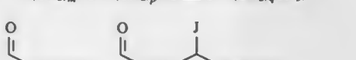


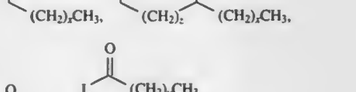


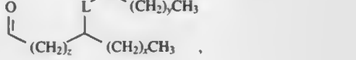


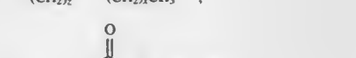


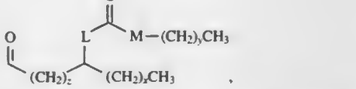


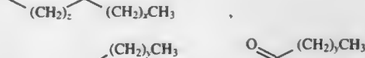


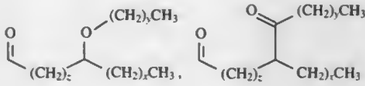


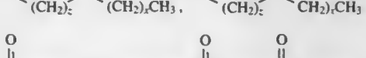


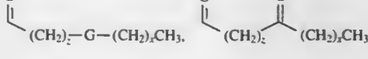


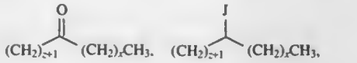


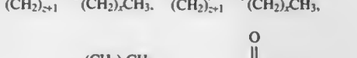


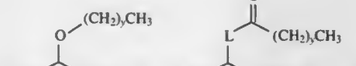


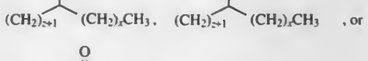




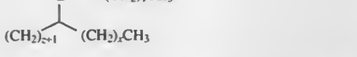


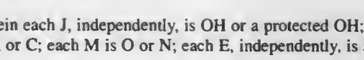




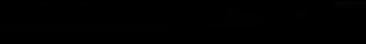






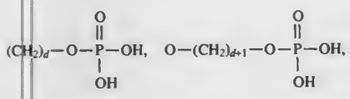


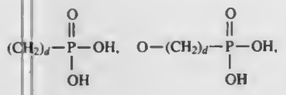


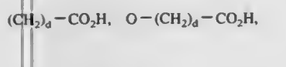


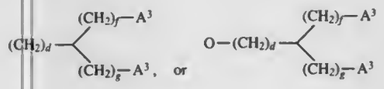
wherein each J, independently, is OH or a protected OH; each L is O, N, or C; each M is O or N; each E, independently, is an integer between 0 and 14 inclusive; each m, independently, is an integer between 0 and 14 inclusive; each n, independently, is an integer between 0 and 14 inclusive; each p, independently, is an integer between 0 and 10 inclusive; each q, independently, is an integer between 0 and 10 inclusive; each x, independently, is an integer between 0 and 14 inclusive; each y, independently, is an integer between 0 and 14 inclusive; each z, independently, is an integer between 0 and 10 inclusive; and each G, independently, is N, O, S, SO, or SO_2;

P^1 is OH, a protected OH, or a protected A^1 group wherein each A_1 group, independently, is:

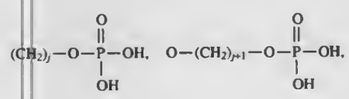


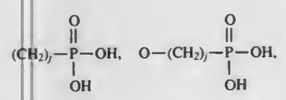






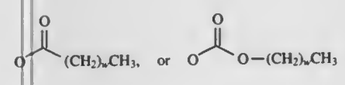
wherein each d, independently, is an integer between 0 and 5 inclusive; each f, independently, is an integer between 0 and 5 inclusive; each g, independently, is an integer between 0 and 5 inclusive; and each A^3, independently, is:





wherein each j, independently, is an integer between 0 and 14 inclusive; and

P^2 is H, a halo group, OH, a protected OH, $O(CH_2)_wCH_3$,



wherein w is an integer between 0 and 14 inclusive, or a pharmaceutically acceptable salt thereof.

5,612,477

2-(PYRAZOL-3-YL)CARBAPENEM DERIVATIVES

Steven Coulton; Jeremy D. Hinks, both of Horsham, and Eric Hunt, Betchworth, all of England, assignors to SmithKline Beecham p.l.c

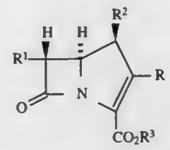
Filed Jun. 1, 1995, Ser. No. 457,002

Claims priority, application United Kingdom, Oct. 29, 1993, 9322284; Jun. 1, 1994, 9410929

Int. Cl.[6] C07D *487/04*

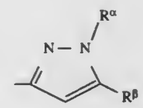
U.S. Cl. 540—302 **5 Claims**

1. A process for the preparation of a compound of formula (I):



(I)

in which R is:



wherein

R^α is hydrogen, optionally substituted (C_{1-6})alkyl or optionally substituted aryl;

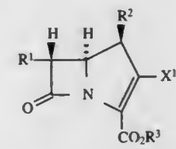
R^β is hydrogen, optionally substituted (C_{1-6})alkyl or optionally substituted aryl; or R^α and R^β together form an optionally substituted 5 or 6 membered heterocyclic ring with or without additional heteroatoms;

R^1 is (C_{1-6})alkyl which is unsubstituted or substituted by fluoro, a hydroxy group which is optionally protected by a readily removable hydroxy protecting group, or by an amino group which is optionally protected by a readily removable amino protecting group;

R^2 is hydrogen or methyl, and

$—CO_2R_3$ is carboxy or the group R^3 is a readily removable carboxy protecting group,

or a pharmaceutically acceptable salt thereof, which process comprises treating a compound of formula (X):



(X)

in which R^1 and R^2 are as hereinbefore defined, R^3 is a readily removable carboxy protecting group and X^1 is a leaving group, with a compound of formula (XI):

M—R (XI)

in which M is a metallo group and R is as hereinbefore defined;

in a cross-coupling reaction in the presence of a cross-coupling reaction catalyst and thereafter and if necessary removing any protecting group

and thereafter optionally forming a pharmaceutically acceptable salt thereof.

5,612,478

PROCESS FOR PREPARING 1,1'-[1,4-PHENYLENEBIS-(METHYLENE)]-BIS-1,4,8,11-TETRAAZACYCLOTETRADECANE

David Xu, Whippany; Prasad Kapa, Parsippany; Oljan Repic, Randolph, and Thomas J. Blacklock, Clark, all of N.J., assignors to Johnson Matthey PLC, London, England

Filed Mar. 30, 1995, Ser. No. 413,582
Int. Cl.[6] C07D *257/02*
U.S. Cl. 540—474 **19 Claims**

1. A process for preparing 1,1'-[1,4-phenylenebis-(methylene)]-bis-1,4,8,11-tetraazacyclotetradecane comprising the steps of:
   1) in a first part a), selectively functionalizing an acyclic tetraamine, in a second part b), dimerizing the functionalized acyclic tetraamine prepared in part a) and, in a third part c), hydrolyzing the 1,4-phenylenebis-methylene bridged acyclic dimer prepared in part b) and tosylating the intermediate;
   2) cyclizing the bridged hexatosyl acyclic precursor prepared in part c) of the first step; and
   3) detosylating the hexatosyl cyclam dimer prepared in the second step.

5,612,479

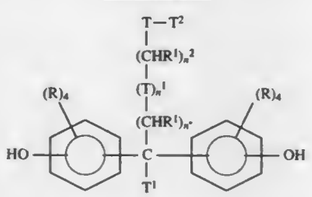
POLYPHENOLS CONTAINING MESOGENIC MOIETIES AS LATERAL SUBSTITUENTS

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

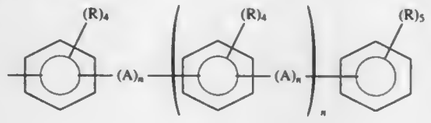
Division of Ser. No. 996,457, Dec. 24, 1992, Pat. No. 5,374,769, which is a division of Ser. No. 770,791, Oct. 3, 1991, Pat. No. 5,206,321. This application Aug. 17, 1994, Ser. No. 291,969
Int. Cl.[6] C08G *73/06;* **C07C** *69/76;65/30;39/12;59/40;65/01*
U.S. Cl. 544—88 **2 Claims**

1. A diphenol represented by the following Formula II

Formula II

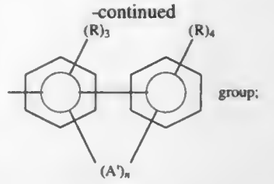


wherein each R is independently hydrogen or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms, a halogen atom, a nitro group, a nitrile group, a phenyl group, or a —CO—R^1 group; each R^1 is independently hydrogen or a hydrocarbyl group having from 1 to about 3 carbon atoms; n^1 has a value of zero or one and n^2 has a value of zero to about 10, with the proviso that when n^1 has a value of 1, n^2 has a value of 1 to about 10; n" independently has a value of zero to about 10; each T is independently a —NR^1—, —O—, —S—, —CO—O—, —O—CO—, —NR^1—CO— or —CO—NR^1— group; T^1 is —H, $—(CHR^1)_{n"}—CH_2R^1$ or $—(CHR^1)_{n"}—(T)_{n^1}—(CHR^1)_{n^2}—T—T^2$, and T^2 is a

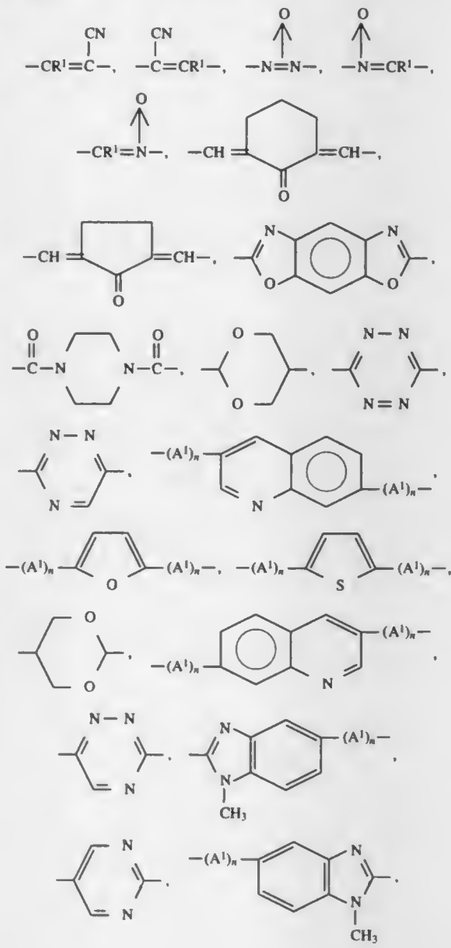


or

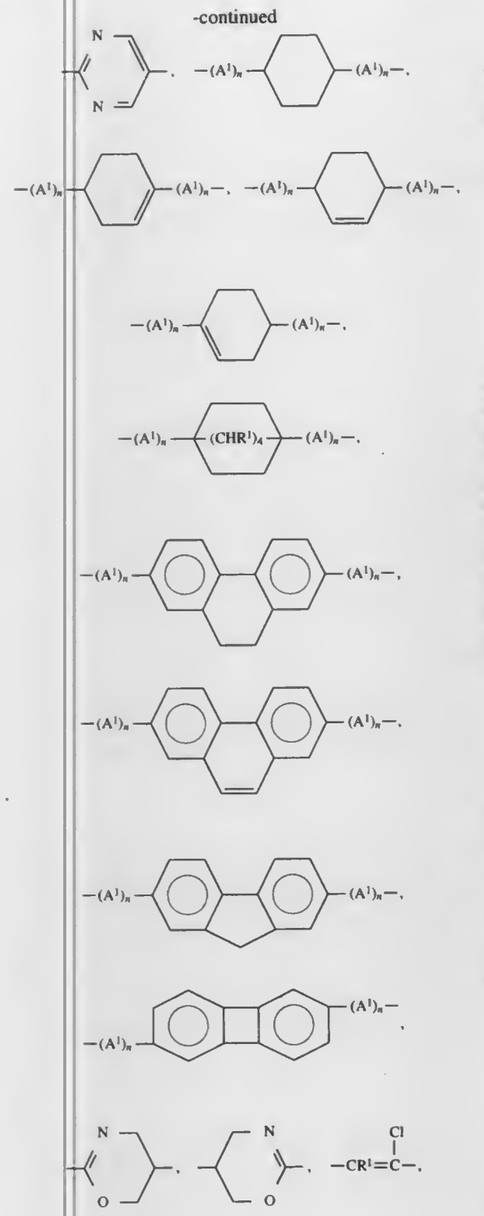
-continued



wherein at least about 80 percent of the —A— linkages, the direct bond and the aromatic ring bonding position are in the para position with respect to each other; each A is independently —CR^1=CR^1—, —C≡C—, —N=N—, —CR^1=N—, —O—CO—, —NR^1—CO—, —CR^1=N—N=CR^1—, —CR^1=CR^1—CO—, —CO—O—, —CO—NR^1—, —CO—CR^1=CR^1—, —CR^1=CR^1—O—CO—$(CH_2)_n$—, —N=CR^1—, $—(CH_2)_n—CO—O—CR^1$=CR^1—, —CR^1=CR^1—O—CO—, —CO—O—CR^1=CR^1—, —CO—O—N=CR^1—, —CR^1=N—O—CO—, —CR^1=CR^1—CO—O—, —CO—S—, —O—CO—CR^1=CR^1—, —CR^1=CR^1—CO—O—$(CH_2)_n$—, —S—CO—, $—(CH_2)_n—O—CO—CR^{1"}CR^1$—, —$CHR^1$—$CHR^1$—CO—O—, —O—CO—$CHR^1$—$CHR^1$—, —C≡C—C≡C—, —$CR^1$=$CR^1$—$CR^1$=$CR^1$—, —CO—$NR^1$—$NR^1$—CO—,



-continued



each A' is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; A^1 is independently a —CO—, —O—CO—, —CO—O—, —CO—NR^1—, or —NR^1—CO— group; n has a value of zero or one and n' has a value from 1 to about 6; q has a value of 1 or 2 and wherein the aromatic rings can also contain one or more heteroatoms selected from N, O, or S.

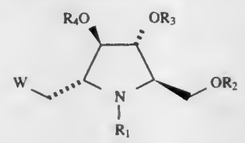
5,612,480

2-CHLORO AND 2-BROMO DERIVATIVES OF 1,5-IMINOSUGARS

Thomas E. Barta, Evanston, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 207,340, Mar. 8, 1994, Pat. No. 5,451,679. This application Mar. 6, 1995, Ser. No. 398,839
Int. Cl.[6] C07F *7/02;* **C07D** *207/00;405/00*
U.S. Cl. 544—180 **8 Claims**

1. A compound of the formula



wherein R_1 is H or a C_1–C_{12} branched or unbranched alkyl group, alkoxyalkyl, alkenyl, alkynyl, arylalkyl, substituted arylalkyl, arylalkenyl, or substituted arylalkenyl; R_2, R_3 and R_4 are independently H or COR_5 where R_5 is C_1–C_6 branched or unbranched alkyl, or C_6–C_{12} aryl or alkylaryl; W is Cl, Br, CN, N_3, SCN, OH, $R_5(CO)O$, $R_5(CO)S$, $R_5(CS)S$, $(NR_9R_{10})(CO)O$, $(NR_9R_{10})(CS)O$, $R_{10}R_{11}N$, R_9S, R_9SO, R_9SO_2, HetS, HetSO, $HetSO_2$ and Het, where R_9 is C_1–C_{12} branched or unbranched alkyl, or C_6–C_{12} aryl or alkaryl, R_{10} and R_{11} are independently H or R_9, and Het is a substituted or unsubstituted 5 or 6 membered aromatic heterocyclic ring containing 1 to 4 nitrogen, oxygen or sulfur heteroatoms; provided that when W is OH, R_2, R_3 and R_4 are not each H; and provided that when R_9 in R_9SO or in R_9SO_2 is H, the oxidation products are sulfinic or sulfonic acids and not sulfoxides or sulfones.

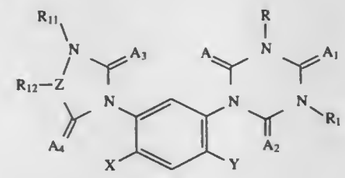
5,612,481

1-(3-HETEROCYCLYLPHENYL)-S-TRIAZINE-2,4,6-OXO OR THIORTIONE HERBICIDAL AGENTS

Alvin D. Crews, Jr., Voorhees; Philip M. Harrington, Mercer; Gary M. Karp, Princeton Jct.; Mark C. Manfredi, Hamilton, and Michael A. Guaciaro, Hightstown, all of N.J., assignors to American Cyanamid Company, Parsippany, N.J.

Filed Jun. 2, 1995, Ser. No. 459,567
Int. Cl.[6] C07D *403/10*
U.S. Cl. 544—222 **2 Claims**

1. A process for the preparation of a compound having the structural formula



wherein

X and Y are each independently hydrogen, halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $S(O)_mR_2$;

m is an integer of 0, 1 or 2;

R_2 is C_1–C_4alkyl or C_1–C_4haloalkyl;

R is hydrogen, C_1–C_6alkyl, C_2–C_{12}alkoxyalkyl, C_3–C_{12} alkylcarbonylalkyl, C_3–C_{12}haloalkylcarbonylalkyl, C_3–C_{12}alkoxycarbonylalkyl, C_3–C_{12}haloalkoxycarbonylalkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups, or benzyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups;

R_1 is hydrogen, C_3–C_6alkenyl, C_3–C_6alkynyl, cyano,

C_1–C_{12}alkyl optionally substituted with one or more halogen atoms, or one cyano, $C(O)R_3$, $OC(O)R_5$, $CH_2OC(O)R_5$, OR_4, CH_2OR_4 or $CR_6(OR_7)_2$ group, or one phenyl group optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4-haloalkoxy groups, or

phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 -haloalkoxy groups;

R_3 is OR_8, SR_8 or NR_9R_{10};

R_4, R_5 and R_6 are each independently hydrogen, C_1–C_4alkyl or C_1–C_4haloalkyl;

R_7 is C_1–C_4alkyl;

R_8 is C_1–C_6alkyl optionally substituted with C_1–C_4alkoxy, C_1–C_4alkylthio, halogen, hydroxy, C_3–C_6cycloalkyl, furyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4 alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups,

C_3–C_6alkenyl optionally substituted with C_1–C_4 alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4 alkoxy or C_1–C_4haloalkoxy groups,

C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen, or

C_3–C_6cycloalkyl;

R_9 and R_{10} are each independently hydrogen,

C_1–C_6alkyl,

benzyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4 haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or

phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;

R_{11} and R_{12} are each independently hydrogen,

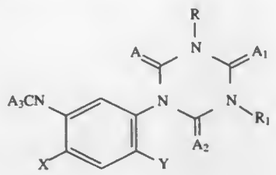
C_1–C_6alkyl optionally substituted with one or more halogen atoms, or

C_3–C_6cycloalkyl optionally substituted with one or more halogen atoms, and

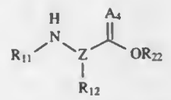
when R_{11} and R_{12} are taken together with the atoms to which they are attached, they represent a four- to seven-membered saturated or unsatureated ring optionally interrupted by O, S(O), or N, and optionally substituted with one to three methyl groups or one or more halogen atoms;

A, A_1, A_2, A_3 and A_4 are each independently O or S;

r is an integer of 0, 1 or 2; and Z is N or CH, which comprises reacting an isocyanate or isothiocyanate having the structural formula



wherein X, Y, R, R_1, A, A_1, A_2 and A_3 are as described above with a hydrazine having the structural formula



wherein R_{11}, R_{12}, Z and A_4 are as described above and R_{22} is C_1–C_4alkyl to form an intermediate compound, and cyclizing the intermediate compound with base.

5,612,482

PROCESS FOR PREPARING 5-SUBSTITUTED PYRROLO-[2,3-D]PYRIMIDINES

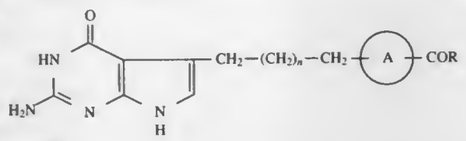
Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 362,392, Dec. 22, 1994, which is a division of Ser. No. 66,831, May 24, 1993, Pat. No. 5,416,211, which is a continuation-in-part of Ser. No. 951,515, Sep. 25, 1992, abandoned. This application Jan. 31, 1996, Ser. No. 594,971

Int. Cl.[6] **C07D** *487/02*

U.S. Cl. 544—280 **16 Claims**

1. A process for preparing 5-substituted pyrrolo[2,3-d]pyrimidines of formula I



(I)

wherein

R is $NHC^*H(COOR^1)CH_2CH_2COOR^1$ or OR^1;

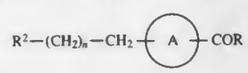
each R^1 is H or the same or different carboxy protecting group;

the configuration about the carbon atom designated * is L;

n is 0 or 1;

Ⓐ is an aryl group which may be substituted; or a salt thereof, which comprises

a) reacting a halogenating agent with a compound of formula III

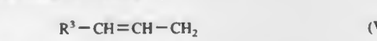


(III)

wherein

R, R^1, Ⓐ, n and * are as defined above; and

R^2 is a substituent of formula V,



(V)

wherein R^3 is

OR^4, wherein R^4 is a hydroxy protecting group;

$OCOR^5$, wherein R^5 is C_1–C_6 alkyl, phenyl, benzyl or C_3–C_6 cycloalkyl; or

NR^6R^7, wherein R^6 and R^7 are independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, or are taken together with the nitrogen atom and, optionally, an oxygen atom, to form a 5- to 6-membered saturated monocyclic group which optionally may be substituted with one or two substituents selected from the group consisting of C_1–C_4 alkyl, and C_1–C_4 alkoxy;

b) reacting the reaction product from step a) with 2,4-diamino-6-hydroxypyrimidine; and

c) optionally salifying the reaction product from step b).

5,612,483

PROCESS FOR THE PREPARATION OF NITRO-SUBSTITUTED ARYLAMINES

Manfred Jautelat, Burscheid, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

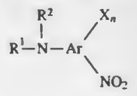
Filed Sep. 6, 1995, Ser. No. 523,970

Claims priority, application Germany, Sep. 13, 1994, 44 32 556.8

Int. Cl.[6] **C07C** *209/12;* **C07D** *239/42;213/74*

U.S. Cl. 544—332 **8 Claims**

1. Process for the preparation of compounds of the formula



(I)

wherein

Ar denotes a mono- or polycyclic aromatic radical having 4 to 16 C atoms, which can also contain 1 to 2 heteroatoms from the series consisting of N, O and S,

R^1 denotes a mono- or polycyclic aromatic radical having 5 to 16 ring members, which consist of carbon atoms and optionally up to 3 heteroatoms from the series N, O and S,

R^2 denotes hydrogen, C_1–C_8-alkyl, C_2–C_8-alkenyl, C_3–C_7-cycloalkyl or C_6–C_{14}-aryl, where these substituents can be substituted 1 to 3 times by halogen, C_1–C_4-alkyl, amino and/or C_1–C_4-alkoxy,

X denotes halogen, cyano, C_1–C_4-alkyl, halogenated C_1–C_4-alkyl, C_1–C_4-alkoxy, halogenated C_1–C_4-alkoxy, C_1–C_4-alkylmercapto, halogenated C_1–C_4-alkylmercapto, C_1–C_4-alkylsulphonyl, carboxyl or nitro,

n denotes zero, 1, 2 or 3,

where if n>1 the substituents X can be different, according to which nitroaromatics of the formula



(II)

wherein X, Ar and n have the meanings indicated above, are reacted with amines of the formula



(III)

wherein R^1 and R^2 have the meanings indicated above, in the presence of bases while introducing oxygen in polar solvents.

5,612,484

PROCESS FOR MAKING HIV PROTEASE INHIBITORS

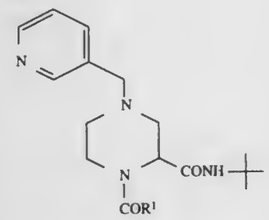
David Askin; Jess Sager, both of Warren; Kai Rossen, Westfield; Ralph P. Volante, Cranbury, and Paul J. Reider, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 18, 1995, Ser. No. 443,631

Int. Cl.[6] **C07D** *401/06*

U.S. Cl. 544—360 **1 Claim**

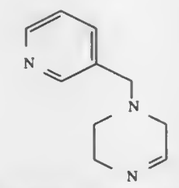
1. A process for forming a compound (F)



F

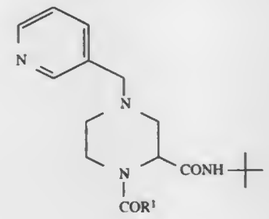
wherein R^1 is selected from hydrogen, $C_{1\text{-}10}$ alkoxy, mono-, di-, or tri-halogenated $C_{1\text{-}10}$ alkyl or aryl;

comprising reacting an imine (C)



C

with t-butyl-NC in the presence of a carboxylic acid, R^1—CO_2H, to form the compound (F)



F

5,612,485

HIGH CIS BETA-CAROTENE COMPOSITION

Lance E. Schlipalius, Ashwood, Australia, assignor to Betatene Ltd of Cheltenham, Victoria, Australia

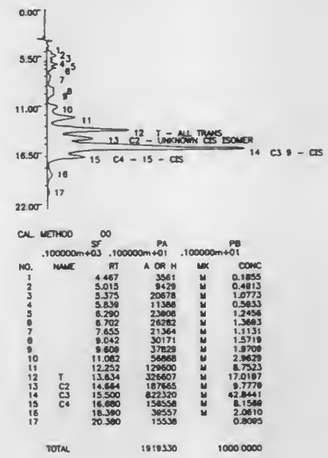
PCT No. PCT/AU93/00267, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/24454, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 4, 1993, Ser. No. 347,458

Claims priority, application Australia, Jun. 4, 1992, PL2789

Int. Cl.[6] **C07C** *403/00;7/20;* **C10M** *105/02*

U.S. Cl. 585—351 **19 Claims**



CAL. METHOD 00

NO.	NAME	RT	SP .100000m+03 A OR H	PA .100000m+01 MK	PB .100000m+01 CONC
1		4.467	3561	M	0.1855
2		5.015	9429	M	0.4913
3		5.375	20678	M	1.0773
4		5.839	11368	M	0.5833
5		6.290	23808	M	1.2456
6		6.702	26282	M	1.3683
7		7.655	21364	M	1.1131
8		9.042	30171	M	1.5719
9		9.608	37828	M	1.9709
10		11.082	56068	M	2.9629
11		12.252	129600	M	8.7523
12	T	13.634	326607	M	17.0187
13	C2	14.664	187665	M	9.7778
14	C3	15.500	822320	M	42.8441
15	C4	16.680	158558	M	8.1588
16		18.380	38557	M	2.0610
17		20.380	15538		0.8095
TOTAL			1919330		1000 0000

14. A method for producing a carotenoid composition derived from a natural source, wherein the carotenoid composition contains at least 50% by weight of cis-beta-carotene, said method comprising

(a) forming a carotenoid-containing preparation from the natural source,

(b) treating the preparation by using density differentiation means, so as to separate cis-isomer carotenoids from trans-isomer carotenoids contained in the preparation.

5,612,486

TRANSGENIC ANIMALS HARBORING APP ALLELE HAVING SWEDISH MUTATION

Lisa C. McConlogue, San Francisco, and Jun Zhao, San Diego, both of Calif., assignors to Athena Neurosciences, Inc., South San Francisco, Calif., and Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 143,697, Oct. 27, 1993. This application Nov. 1, 1993, Ser. No. 148,211

Int. Cl.[6] C12N *15/00;* C07H *21/04*

U.S. Cl. 800—2 4 Claims

1. A transgenic rodent comprising a diploid genome comprising a transgene encoding a heterologous APP polypeptide having the Swedish mutation wherein the amino acid residues at positions corresponding to positions 595 and 596 in human APP695 are asparagine and leucine, respectively, wherein the transgene is expressed to produce a human APP polypeptide having the Swedish mutation, and wherein said polypeptide is processed to ATF-betaAPP in a sufficient amount to be detectable in a brain homogenate of said transgenic rodent.

5,612,487

ANTI-VIRAL VACCINES EXPRESSED IN PLANTS

Dominic Man-Kit Lam, and Charles J. Arntzen, both of The Woodlands, Tex., assignors to Edible Vaccines, Inc., Conroe, Tex.

Continuation-in-part of Ser. No. 750,049, Aug. 26, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,393

Int. Cl.[6] A01H *1/00;5/00;* C12N *15/82;15/51*

U.S. Cl. 800—205 14 Claims

1. A transgenic tobacco plant comprising a DNA sequence encoding a recombinant hepatitis B viral surface antigen protein, wherein said plant is capable of synthesizing a recombinant hepatitis B viral surface antigen protein which assembles into antigenic particles.

5,612,488

SEMICONDUCTOR ACCELERATION DETECTING DEVICE

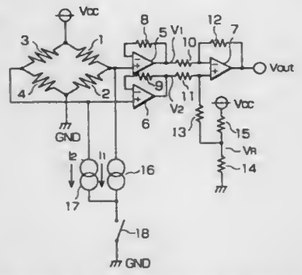
Masahiro Yamamoto, and Toru Araki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1995, Ser. No. 507,161

Claims priority, application Japan, Dec. 26, 1994, 6-323171

Int. Cl.[6] G01P *21/00*

U.S. Cl. 73—1 D 3 Claims



1. A semiconductor acceleration system for detecting acceleration by outputting an electrical signal that changes in response to applied acceleration, the system comprising:

strain gauge resistors having piezoresistance properties;

a semiconductor substrate on or in which said strain gauge resistors are present, said strain gauge resistors being connected in a bridge circuit having first and second output terminals;

an output amplifier connected to said first and second output terminals, said output amplifier providing an output signal indicative of the applied acceleration; and

a diagnostic circuit for detecting a failure in said output amplifier and comprising first and second constant current sources for producing respective, different constant current flows and connected to said first and second output terminals, respectively, and a switch connecting said first and second constant current sources to ground, a failure being detected by closing said switch and drawing the different constant currents from said first and second output terminals of said bridge circuit to ground and observing the output signal.

5,612,489

ENHANCED SENSITIVITY FOR OXYGEN AND OTHER INTERACTIVE GASES IN SAMPLE GASES USING GAS CHROMATOGRAPHY

Daniel J. Ragsdale, Quakertown; George H. Smudde, Jr., Macungie, and David A. Zatko, Lansdale, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 14, 1996, Ser. No. 601,627

Int. Cl.[6] G01N *30/34*

U.S. Cl. 73—23.35 15 Claims

1. A method for detecting trace levels of an interactive gas selected from the group consisting of oxygen, carbon monoxide, hydrogen, carbon dioxide, fluorine, chlorine and water, contained in a sample gas, which is mixed with a carrier gas, by detection of said interactive gas using a gas chromatograph in gas communication with a detector sensitive to said interactive gas, the improvement comprising doping said carrier gas with a low level of said interactive gas prior to said detection.

5,612,490

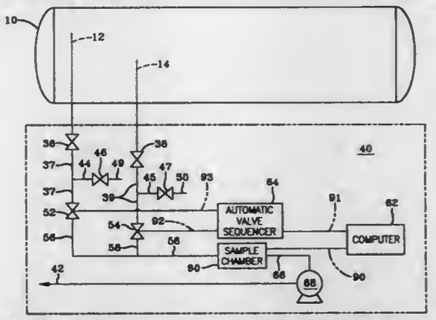
METHOD AND APPARATUS FOR MEASURING PHASES IN EMULSIONS

Edwin D. Carlson, Sparta, and Salvatore J. Rossetti, Bernardsville, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 31, 1995, Ser. No. 551,077

Int. Cl.[6] G01N *9/26;* B01D *17/06;* C02F *1/40;* G01R *27/22*

U.S. Cl. 73—61.43 12 Claims



10. A desalter comprising a desalting drum which serves as an emulsion coalescer, means for feeding an emulsion of crude oil and water into said drum and means for withdrawing an oil continuous phase and a water continuous phase from said drum, said drum further containing (i) electrostatic means for breaking said emulsion into an oil continuous phase, a water continuous phase and an emulsion phase in a multilayered arrangement of said phases in said drum having boundaries between said phases in quasi equilibrium under known conditions of pressure and temperature and (ii) liquid sampling means selected from the group consisting of trycocks, a swing-arm sampler, or having both said trycocks and said swing-arm sampler for withdrawing liquid samples from a plurality of known vertical positions in said desalter and separately passing each withdrawn sample outside of said desalter at substantially the same pressure and temperature conditions as known for the coalescer at said known vertical positions, said desalter also containing at least one sample receiver outside of said drum with said receiver containing means for measuring an electrical property of said withdrawn sample which is determinative of whether said sample is water or oil continuous and the water content of said sample.

5,612,491

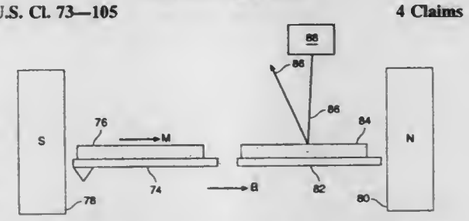
FORMATION OF A MAGNETIC FILM ON AN ATOMIC FORCE MICROSCOPE CANTILEVER

Stuart M. Lindsay, Tempe, Ariz., assignor to Molecular Imaging Corporation, Tempe, Ariz.

Division of Ser. No. 403,238, Mar. 10, 1995, Pat. No. 5,513,518, which is a continuation-in-part of Ser. No. 246,035, May 19, 1994, Pat. No. 5,515,719. This application Nov. 7, 1995, Ser. No. 553,111

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 4 Claims



1. A method for magnetizing a thin film of magnetizable material disposed on a force sensing cantilever comprising:

placing the thin film of magnetizable material on the force sensing cantilever;

placing the force sensing cantilever between two opposite poles of an electromagnet; and

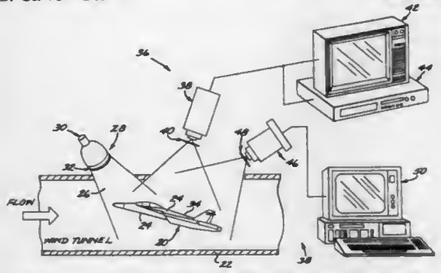
applying current to said electromagnet so as to generate a magnetic field between said opposite poles of said electromagnet while said force sensing cantilever is between said opposite poles.

5,612,492

FORMULATIONS AND METHOD OF USE OF PRESSURE SENSITIVE PAINT

Scott D. Schwab, Richmond, Va., and Ram L. Levy, St. Louis, Mo., assignors to McDonnell Douglas Corporation, Hazelwood, Mo.

Filed Jun. 7, 1995, Ser. No. 483,711
Int. Cl.[6] G01M *9/00*; G01L *9/00*
U.S. Cl. 73—147 **16 Claims**



1. A pressure sensitive paint, comprising in combination a mixture of

a photoluminescent-compatible binder comprising a binder mixture of silanol-terminated polydimethylsiloxane and methyltriacetoxysilane, wherein the silanol-terminated polydimethylsiloxane is present in an amount of about 97 parts by weight of the binder, and the methyltriacetoxysilane is present in an amount of about 3 parts by weight of the binder, and

a photoluminescent active agent, where the binder is present in an amount of from about 99.5 to about 99.9 percent by weight of the mixture of binder and active agent, and the active agent is present in an amount of from about 0.5 to about 0.1 percent by weight of the mixture of binder and active agent,

whereby, when the paint is applied to a surface, oxygen in the air permeates through the binder to partially quench a photoluminescent reaction of the active agent.

5,612,493

METHOD OF DETERMINING GAS-OIL RATIOS FROM PRODUCING OIL WELLS

Lloyd G. Alexander, 1319 Klondike Avenue S.W., Calgary, Alberta, Canada

Filed Apr. 25, 1996, Ser. No. 635,168
Int. Cl.[6] G01V *1/00*; E21B *49/00*; G09B *23/40*
U.S. Cl. 73—152.55 **7 Claims**

1. A method for creating a simulated solution gas curve for oil produced from a crude oil well, said well having a tubing string extending through the casing string of a wellbore and forming an annular space therebetween, said tubing string having a bore for delivering pumped crude oil to the surface at a known oil production rate, the oil being produced from a subterranean reservoir initially at the crude oil's bubble-point or higher pressure, any gas within the annular space being produced, the method comprising:

(a) obtaining the bubble-point pressure condition of the crude oil;

(b) determining the gas flow rate produced from the annular space;

(c) determining the flowing bottom hole pressure of the well;

(d) normalizing the annular space gas flow rate by dividing by the oil production rate;

(e) comparing the normalized annular gas flow rate to the reduction in pressure from the bubble-point pressure to the flowing bottom hole pressure as representing a linear relationship of the quantity of solution gas released from the produced oil as its pressure is reduced; and

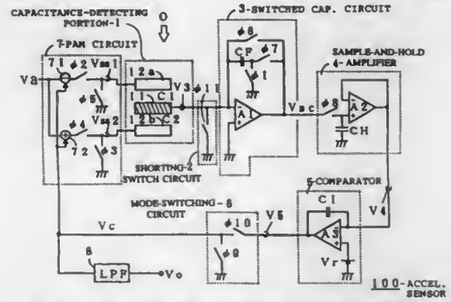
(f) creating a simulated solution gas curve representing the gas-oil ratio of solution gas contained in the oil at any pressure by forcing the intersection of said linear relationship through the conditions at zero solution gas remaining to be released from the oil at zero gauge pressure, where atmospheric pressure equals zero gauge pressure.

5,612,494

CAPACITANCE-TYPE ELECTROSTATIC SERVO ACCELERATION SENSOR

Tomio Shibano, Yokobama, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 20, 1995, Ser. No. 575,884
Claims priority, application Japan, Dec. 22, 1994, 6-320860
Int. Cl.[6] G01D *15/125*
U.S. Cl. 73—514.32 **7 Claims**



1. A capacitance-type electrostatic servo acceleration sensor comprising:

a capacitance-detecting portion having a movable electrode and a pair of fixed electrodes located on opposite sides of said movable electrode, said movable electrode being capable of being displaced in response to an acceleration;

a switched capacitor circuit for converting variations in capacitances in said capacitance-detecting portion into an output voltage;

a comparator for producing a comparator output voltage so that a difference between said output voltage from said switched capacitor circuit and a given reference voltage becomes 0;

a feedback circuit for feeding servo signals back to said fixed electrodes, respectively, of said capacitance-detecting portion, said servo signals being pulse amplitude-modulated according to said comparator output voltage;

an output signal-generating circuit for generating an output signal according to said output voltage from said switched capacitor circuit;

wherein an operational amplifier forms said comparator and has an inverting input terminal to which said output voltage from said switched capacitor circuit is applied, a non-inverting input terminal to which said reference voltage is applied, and an output terminal, said operational amplifier having an open gain and a voltage feedback ratio; and

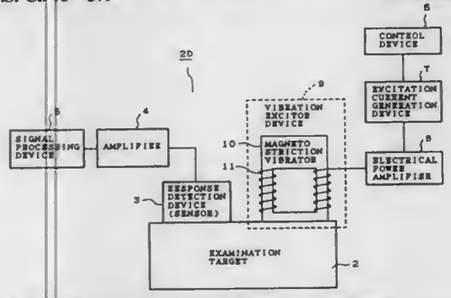
a feedback circuit connected between said inverting input terminal and said output terminal of said operational amplifier, said feedback circuit providing said voltage feedback ratio so that said electrically obtained open gain is sufficiently greater than a mechanically obtained gain of the capacitance-detecting portion.

5,612,495

NON-DESTRUCTIVE EXAMINATION DEVICE

Takashi Shimada; Takahiro Sakamoto; Ryosuke Taniguchi; Shinichi Hattori, and Noritaka Egami, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1995, Ser. No. 539,962
Claims priority, application Japan, Jun. 9, 1995, 7-143731
Int. Cl.[6] G01H *1/00*
U.S. Cl. 73—579 **15 Claims**



1. A non-destructive examination device, comprising:

excitation current generation means for generating an excitation current and supplying said excitation current;

control means for generating a control signal to control operation of said excitation current generation means and for transmitting said control signal to said excitation generation means;

vibration excitor means for receiving said excitation current and for generating an elastic wave in accordance with a magnitude of said excitation current and for vibrating an examination target to be examined by using said elastic wave;

response detection means for detecting a vibration of said examination target responding to said elastic wave and for transforming said vibration to an electrical signal and for providing said electrical signal;

signal processing means for receiving said electrical signal and for processing said electrical signal in order to obtain desired examination information; and

amplifier means located between said excitation current generation means and said vibration excitor means for amplifying said excitation current and for generating an excitation current having a desired magnitude, and for providing said amplified excitation current to said vibration excitor means;

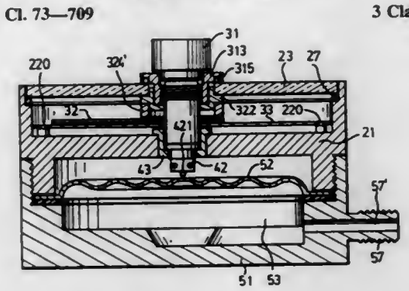
wherein said signal processing means receives said excitation current generated by said excitation current generation means, and adds and averages said electrical signal provided from the response detection means at a constant timing rate in accordance with the vibration of said vibration excitor means imparted to said examination target, based on a trigger generated when said excitation current is detected.

5,612,496

PRESSURE GAUGE BEING CAPABLE OF AUTOMATICALLY STOPPING SUPPLY OF PRESSURE FROM A PRESSURE SOURCE

Tien-Tsai Huang, No. 4-2, Lane 30, Wu-Chang St., Pan-Chiao City, Taipei Hsien, Taiwan

Filed Aug. 9, 1995, Ser. No. 513,008
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—709 **3 Claims**



1. A pressure gauge comprising:

a housing unit with an air passage formed therein, said air passage having an air inlet which is communicated fluidly with an exterior of said gauge and which is adapted to be communicated fluidly with an article whose pressure value is to be measured;

a membrane having a periphery secured to an inner wall of said housing unit in a such a manner that an air-tight seal is established therebetween, so as to define an air chamber under said membrane in said housing unit, said air chamber being communicated fluidly with said air passage, said membrane having a central portion which can move upward in said housing unit in response to increase in air pressure of said air chamber;

a pressure-value indicating panel secured in said housing unit above said membrane;

a tubular guiding member secured in said housing unit above said panel and having a threaded hole formed therethrough;

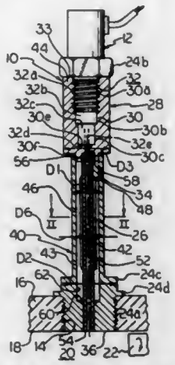
a transparent cover secured on said housing unit above said guiding member;

an adjustment rod having an externally threaded portion extending through and engaged threadably within said threaded hole of said guiding member, said adjustment rod being capable of being actuated so as to rotate and move relative to said housing unit; and

a pointer mounted securely on said adjustment rod so as to indicate a preset upper limit value of air pressure of said air chamber;

a microswitch installed on a lower end portion of said adjustment rod and adapted to be connected electrically to a pressure source which is adapted to supply compressed air into said article, rotation of said adjustment rod relative to said guiding member moving said microswitch in said housing unit to a predetermined position which corresponds to the preset upper limit value of air pressure of said air chamber, said microswitch being capable of being contacted and activated by said central portion of said membrane to stop supply of compressed air from said pressure source into said article when the air pressure of said air chamber exceeds the preset upper limit value.

5,612,497
ADAPTOR FOR MONITORING A PRESSURE SENSOR TO A GAS TURBINE HOUSING
Hilger A. Walter, Stade; Herwart Hönen, Uebach-Palenberg, and Heinz E. Gallus, Aachen, all of Germany, assignors to Dow Deutschland Inc., Germany
Filed May 20, 1994, Ser. No. 246,907
Claims priority, application European Pat. Off., Aug. 10, 1992, 92113585
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—756 **20 Claims**



1. The combination of an adaptor and pressure sensor for attachment to the exterior side of a wall to measure pressure variations in a space interior to the wall, said combination comprising:
(a) as the adaptor, a carrier means having a hollow middle portion, and oppositely disposed first and second end portions;
(b) means in the first end portion for mounting the carrier means in a hole defined in the wall so that the hollow middle portion and second end portion extend in a direction outwardly and away from the exterior surface of the wall;
(c) a pressure sensor affixed to the carrier means remote from said first end portion and separated therefrom by the hollow middle portion of the carrier means, whereby the pressure sensor is remotely positioned from the wall on the exterior side thereof;
(d) an opening defined in the first end portion which provides communication with the space interior to the wall;
(e) the carrier means defining a generally sealed, internal space communicating between the opening in the first end portion and the remotely positioned pressure sensor;
(f) said generally sealed internal space being defined in part by the bore of an elongated tube means, said tube means being in communication with the opening in the first end portion and extending through the hollow middle portion of the carrier means, whereby pressure variations in the space interior to the wall are communicated to the remotely positioned pressure sensor through the bore of the tube means.

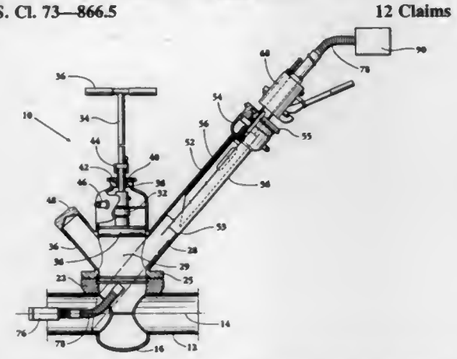
5,612,498
GROUND WATER SAMPLING DEVICE
Volker Wittig; Thomas M. Christy, both of Salina, and Melvin P. Kejr, Brookville, all of Kans., assignors to Kejr Engineering, Inc., Salina, Kans.
Division of Ser. No. 430,340, Apr. 28, 1995. This application Jan. 3, 1996, Ser. No. 582,278
Int. Cl.[6] E21B *49/08*
U.S. Cl. 73—864.74 **4 Claims**

1. A ground water sampling device adapted to be driven into the ground at the lower end of a probe rod string, comprising:
an elongated cylindrical integral hollow housing having an inner surface defining an inner bore and an opening on its lower end, an upper end of said housing adapted to be attached to a probe rod string;



an elongated hollow screen telescopically received within said housing and capable of being placed in a stowed position completely within said housing during driving of the device into the ground and a deployed position where it extends out the lower end of said housing to collect ground water, said screen having an aperture on its lower end and an unobstructed interior so that a string of extension rods can pass through said screen interior to said aperture;
a removable plug received in said screen aperture to seal said aperture, said plug capable of being forced downwardly out of said screen aperture by an extension rod string so that grout can be dispensed through said aperture to fill a sample hole as said housing and screen are removed; and
an expendable drive point positioned in said opening of said housing during driving of said device into the ground, said drive point being disengaged from said opening prior to said screen being deployed.

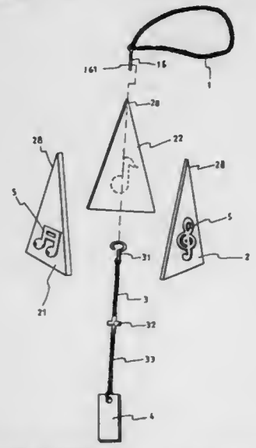
5,612,499
METHOD OF INSERTING A SENSOR INTO A PIPELINE
Bill D. Andrew, Tulsa, and Edward W. Levy, Jennings, both of Okla., assignors to TDW Delaware, Inc., Wilmington, Del.
Filed May 5, 1995, Ser. No. 435,966
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—866.5 **12 Claims**



1. A process to insert a sensor into a pipeline having an axis, which process comprises:
securing a fitting onto said pipeline;
tapping an opening in said pipeline through said fitting perpendicular to said pipeline to provide a pipeline opening;

installing a housing on said fitting, said housing having at least one nipple extending at an angle to said pipeline axis;
attaching a sensor insertion assembly to a said nipple, said insertion assembly having a launch tube movable axially between said insertion assembly and said pipeline;
extending said launch tube from said insertion assembly and through said pipeline opening into said pipeline, the launch tube intersecting said pipeline axis at an acute angle and providing communication between said sensor insertion assembly and the interior of said pipeline; and
passing a sensor from said insertion assembly and through launch tube into said pipeline.

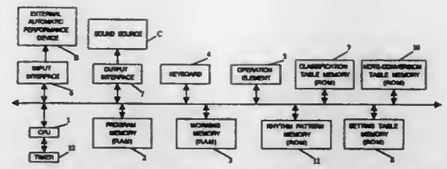
5,612,500
MUSIC BELL
Fu-Chern Liang, 58, Ma Yuan West St., Taichung, Taiwan
Filed Nov. 6, 1995, Ser. No. 565,190
Int. Cl.[6] G10D *13/08*
U.S. Cl. 84—402 **15 Claims**



1. A music bell comprising:
a dangling chain surrounded by a plurality of bell plates;
an upper end of said dangling chain linking an annular chain;
a lower end of said dangling chain connecting a bob vane;
each of said bell plates having various thickness;
an upper end of each of said bell plates and an upper end of said dangling chain welded together; and
a striking device disposed in a middle of said dangling chain.

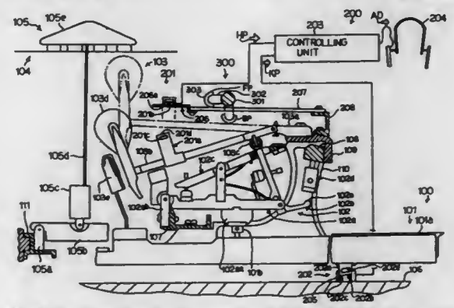
5,612,501
AUTOMATIC ACCOMPANIMENT INFORMATION PRODUCING APPARATUS
Masao Kondo; Shinichi Ito, and Hiroki Nakazono, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Mar. 24, 1995, Ser. No. 409,717
Claims priority, application Japan, Mar. 24, 1994, 6-053597
Int. Cl.[6] G10H *1/38;7/00*
U.S. Cl. 84—637 **11 Claims**

1. An automatic accompaniment information producing apparatus, comprising:
first input means for receiving tone pitch information of an accompaniment pattern from an external device, said first input means comprising a plurality of channels;
second input means for receiving a designating chord;
supply means for supplying an original chord based on the accompaniment pattern and corresponding with each channel of said first input means;



tone pitch conversion means for converting in tone pitch the tone pitch information of the accompaniment pattern in accordance with the designation chord and the original chord respectively supplied from said second input means and said supply means; and
output means for producing the converted tone pitch information of the accompaniment pattern as automatic accompaniment information.

5,612,502
KEYBOARD MUSICAL INSTRUMENT ESTIMATING HAMMER IMPACT AND TIMING FOR TONE-GENERATION FROM ONE OF HAMMER MOTION AND KEY MOTION
Tomoyuki Ura, Shizuoka, Japan, assignor to Yamaha Corporation, Japan
Filed Aug. 1, 1995, Ser. No. 509,812
Claims priority, application Japan, Aug. 1, 1994, 6-199048; Apr. 19, 1995, 7-094064
Int. Cl.[6] G10C *3/12;5/00;* **G10D** *15/00;* **G10H** *1/34*
U.S. Cl. 84—687 **8 Claims**



8. A keyboard musical instrument having at least an acoustic sound mode and an electronic sound mode, comprising:
an acoustic piano including
a plurality of keys responsive to fingerings of a player so as to turn around a stationary board member,
a plurality of key action mechanisms functionally connected to said plurality of keys, and
a plurality of strings corresponding to said plurality of keys, respectively,
a plurality of hammer assemblies respectively driven for rotations by said plurality of key action mechanisms, and respectively striking said plurality of strings through said rotations for generating acoustic sounds;
an electronic system including
a plurality of key sensors respectively associated with said plurality of keys for monitoring key motions, and producing key position signals each indicative of an actual key position of the associated key,
a plurality of hammer sensors respectively associated with said plurality of hammer assembly for monitoring hammer motions, and producing hammer position signals each indicative of an actual hammer position of the associated hammer assembly,
a first means operative estimate a first intensity of impact of said hammer assembly on the associated string and a first timing for said impact from each key motion,

a second means operative to estimate a second intensity of impact of said hammer assembly on said associated string and a second timing for said impact from each hammer motion,

a third means for analyzing each of said fingerings on said plurality of keys, and

a fourth means for selecting one of said first intensity of impact and said second intensity of impact and one of said first timing and said second timing for generating electronic sounds; and

a silent system changed between a free position in said acoustic sound mode and a blocking position in said electronic sound mode, said silent system in said free position allowing said plurality of hammer assemblies to strike the associated strings for playing a music through said acoustic sounds, said silent system in said blocking position causing said plurality of hammer assembly to rebound before an impact on said strings, thereby allowing said electric system to play a music through said electronic sounds.

5,612,503

LASER WEAPON SYSTEM

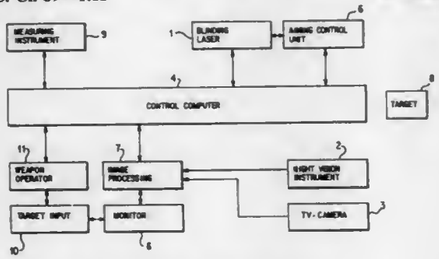
Gunther Sepp, Ottobrunn, Germany, assignor to Daimler-Benz Aerospace AG, Germany

Filed Dec. 15, 1995, Ser. No. 574,441

Claims priority, application Germany, Dec. 15, 1994, 44 44 637.3

Int. Cl.[6] F41B *15/00*

U.S. Cl. 89—1.11 **8 Claims**



1. A nonlethal laser weapon system comprising:

a laser beam generator;

a target reconnaissance system comprising an imaging instrument for acquiring an image which includes potential target individuals, image processing apparatus, a monitor for displaying said image, means for selecting target individuals in said image and means for tracking target individuals after selection thereof;

target sensor units for detecting at least a range and illumination of target individuals;

an aiming control unit for directing a laser beam from said laser beam generator at a target individual's head; and

a control computer for controlling said aiming control unit to direct said laser beam sequentially at heads of selected target individuals, and for adjusting intensity of said laser beam to reversibly blind said target individuals;

wherein said image processing unit includes means for determining when eyes of target individuals are exposed in a direction of said laser beam.

5,612,504

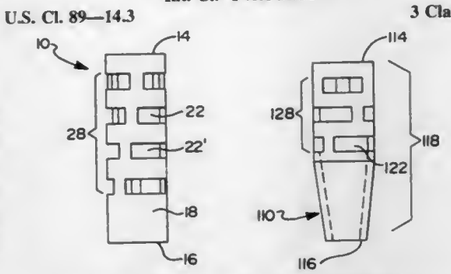
MUZZLE BRAKE FOR RIFLE OR SIMILAR FIREARMS

Michael R. Stitt, 9191 Pine Knob Dr., Clarkston, Mich. 48348; Joseph C. Kapelczak, 3656 Lorena, Waterford, Mich. 48329, and Lauchlan C. McInnes, 8897 Eaton Rd., Davisburg, Mich. 48350

Filed Nov. 3, 1993, Ser. No. 147,114

Int. Cl.[6] F41A *21/36*

U.S. Cl. 89—14.3 **3 Claims**



1. A muzzle break attachment for a rifle, comprising:

(a) cylindrical member having an outer surface and comprising:

(1) a forward end,

(2) a rearward end, and

(3) a medial portion formed between the forward end and the rearward end;

wherein the cylindrical member has an interior bore of uniform diameter formed therethrough;

and wherein further the medial portion of the cylindrical member has a plurality of slots formed therein having an exterior opening and an interior opening, the slots being formed in a plurality of rings, the slots of each ring being deployed such that no slot in any one ring aligns with any slot from another ring, each slot being defined by a fiat wall the interior opening being of a reduced area relative to the exterior opening.

5,612,505

DUAL MODE WARHEAD

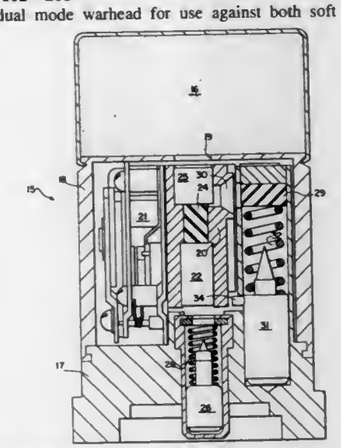
James S. O'Brasky, King George County, Va.; Alan A. Alexander, Minnetonka, Minn.; Odis H. Griffin, Jr., Mogadore, Ohio; John S. Foster, Fredericksburg, Va., and Morley C. Shamblen, La Plata, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 181,303

Int. Cl.[6] F42C *9/14*; **F42B** *12/22*

U.S. Cl. 102—268 **7 Claims**

1. A dual mode warhead for use against both soft and hard



targets and capable of sensing which type of target has been struck comprising:

a hollow casing formed of a strong ductile material;

a base closure for closing the rearward end of said casing;

a structurally-stiff explosive charge filling the interior of said casing;

a booster disposed within said explosive charge for detonating said explosive; and

a shock-sensing fuze assembly mounted on said base closure and carrying said booster for initiating said booster upon impact with a target, said fuze assembly comprising:

a low g inertial firing train responsive to low impact deceleration for initiating said booster upon impact with a soft target, said low g firing train including a time delay element to permit substantial penetration of the target before detonation of said explosive charge; and

a high inertial firing train responsive to high impact deceleration for initiating said booster upon impact with a hard target, the ductility of said casing allowing said casing to mushroom without fragmenting immediately upon impact with a hard target thereby disposing more of said explosive charge closer to the surface of said target prior to detonation of said explosive charge whereby the blast effectiveness is increased.

5,612,506

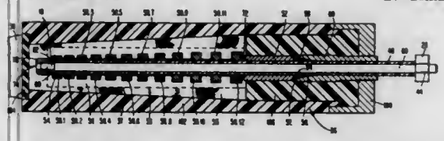
METHOD OF AND APPARATUS FOR GENERATING A HIGH PRESSURE GAS PULSE USING FUEL AND OXIDIZER THAT ARE RELATIVELY INERT AT AMBIENT CONDITIONS

Yeshayahu S. A. Goldstein, Gaithersburg, Md., assignor to General Dynamics Land Systems, Inc., Sterling Heights, Mich.

Continuation-in-part of Ser. No. 329,755, Oct. 26, 1994. This application Apr. 6, 1995, Ser. No. 417,529

Int. Cl.[6] F42B *5/08*

U.S. Cl. 102—472 **27 Claims**



1. Apparatus for accelerating a projectile along a gun barrel having a longitudinal axis comprising a structure for establishing at least several axial gaps for providing at least several axial electrical discharges behind the projectile, the discharges causing plasma to flow with components at right angles to the axial discharges for a substantial time while the projectile is traversing the barrel, a propellant mass positioned to be responsive to the plasma flow resulting from the discharges, the propellant mass being converted into a high pressure gas for accelerating the projectile in the barrel in response to the plasma resulting from the discharges being incident on the propellant mass, the propellant mass including a solid fuel and an oxidizer that do not react at ambient conditions, a portion of the fuel abutting the structure, the fuel and oxidizer being vaporized and elevated to a sufficiently high temperature by the plasma as to produce an exothermic chemical reaction resulting in derivation of the high pressure gas pulse that is supplied to the projectile, the axial gaps being arranged so that the power applied to the plasma via gaps close to the projectile causes initial vaporization of the fuel closest to the projectile prior to vaporization of the fuel farther from the projectile and progressive vaporization of the fuel farther from the projectile.

5,612,507

BENEFICIAL USE OF ENERGY-CONTAINING WASTES

Ross P. Clark, San Jose; Walter B. Grens, Saratoga, both of Calif.; Oldrich Machacek, Dallas, Tex., and Gary R. Eck, Sarcoxie, Mo., assignors to United Technologies Corporation, Hartford, Conn., and Universal Tech Corporation, Dallas, Tex.

Continuation of Ser. No. 905,972, Jun. 29, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 353,950

Int. Cl.[6] C06B *31/30*

U.S. Cl. 149—60 **9 Claims**

1. A modified blasting agent comprised of a high velocity detonation wave blasting agent and waste material which contains an energetic material, the waste material being in particulate form in admixture with the high velocity detonation wave blasting agent wherein the quantity and particulate size of said waste material is such that the ingredients in the waste material participate in the high velocity detonation process, wherein the energetic material is a composite solid propellant designated class 1.3, and wherein the blasting agent in admixture with the waste material is a slurry blasting agent and wherein the upper limit of size of the waste material is the point where a further increase in size will cause the detonation process not to occur and the upper limit in quantity of the waste material is the point where a further increase in quantity of waste material will cause the detonation not to occur.

5,612,508

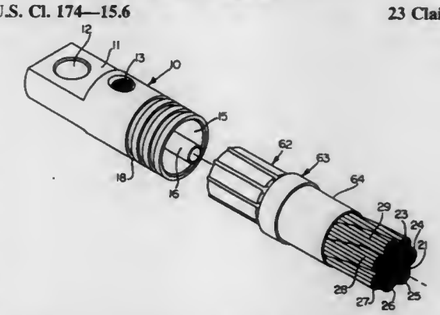
FLEXIBLE JUMPER AND METHOD OF MAKING

James J. Kasper, Sheffield Village, Ohio, assignor to Watteredge-Uniflex, Inc., Avon Lake, Ohio

Filed Mar. 6, 1995, Ser. No. 398,885

Int. Cl.[6] H01B *7/34*

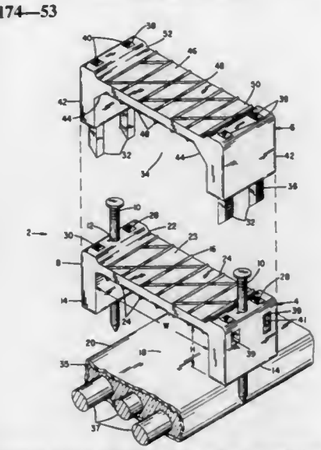
U.S. Cl. 174—15.6 **23 Claims**



13. A jumper comprising a series of individual cut to length conductors surrounding a hollow core, a conductor sleeve at each end of the jumper surrounding the conductors as a more compact

and generally uniform density annulus surrounding the core at each end of the jumper, each sleeved end of the circular annulus being soldered into a termination.

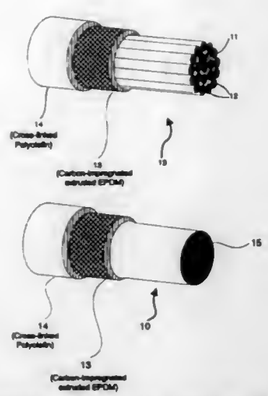
5,612,509
STACKABLE WIRE STAPLE AND RACEWAY SYSTEM
Roger Market, 3108 Riverview Dr., Eau Claire, Wis. 54703
Filed Apr. 29, 1994, Ser. No. 235,803
Int. Cl.[6] H01H *9/02*
U.S. Cl. 174—53 **18 Claims**



1. A fastener for an electrical conductor comprising;
a) a base strap having first and second standoffs, each having a bore with a serrated surface, a first bridge extending between said first and second standoffs to define a first conductor support channel beneath said first bridge, and means for securing said base strap to a mounting surface;
b) a retainer strap having third and fourth standoffs and a second bridge extending between said third and fourth standoffs to define a second conductor support channel beneath said second bridge, wherein third and fourth bores at said third and fourth standoffs each include a serrated surface, and wherein first and second prongs having serrated surfaces extend from said third and fourth standoffs, whereby a first conductor is contained in said first channel and a second conductor is vertically stacked at said second channel upon mounting said base strap to said mounting surface and mounting said first and second prongs to the bores of said first and second standoffs; and
c) tab means at said second channel for biasing said first and second prongs into engagement with the serrated surfaces of one bores of said first and second standoffs.

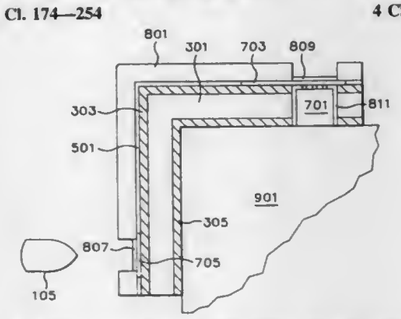
5,612,510
HIGH-VOLTAGE AUTOMOBILE AND APPLIANCE CABLE
Nelson Hildreth, Colchester, Vt., assignor to Champlain Cable Corporation, Colchester, Vt.
Filed Oct. 11, 1994, Ser. No. 320,721
Int. Cl.[6] H01B *7/02*
U.S. Cl. 174—120 SC **20 Claims**

1. A cable article having a high voltage rating of approximately 7,500 volts and at an operative temperature of at least approximately 150° C., comprising:
a conductive core member;
an intermediate, semiconductive layer overlaying said conductive core member, said semiconductive layer comprising a carbon-impregnated nylon tape having a wall thickness in the approximate range of between 2 and 20 mils; and



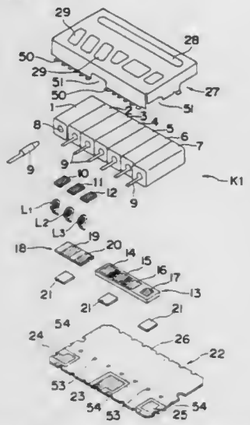
an outer, insulative jacket layer overlaying said intermediate, semiconductive layer comprising a cross-linked polyolefin.

5,612,511
DOUBLE-SIDED ELECTRICAL INTERCONNECT FLEXIBLE CIRCUIT FOR INK-JET HARD COPY SYSTEMS
Neal Meyer, Corvallis, Oreg., and Byron K. Davis, San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 25, 1995, Ser. No. 533,481
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—254 **4 Claims**



1. A double-sided electrical interconnect flexible circuit for electrically connecting a first device to a second device, comprising:
a first layer, of a flexible, dielectric material composition;
adhesive material, subjacent said first layer, for attaching said flexible circuit to said first device;
a second layer, superjacent said first layer, of an adhesive material;
a third layer, superjacent said second layer, of a metal material, having a predetermined electrical circuit pattern;
a fourth layer, superjacent said third layer, of a flexible, dielectric material composition,
said first layer and said second layer having aligned vias for connecting predetermined elements of said predetermined electrical circuit pattern to said first device; and
said fourth layer having vias for connecting predetermined elements of said predetermined electrical circuit pattern to said second device and conductive material contact pads within said vias.

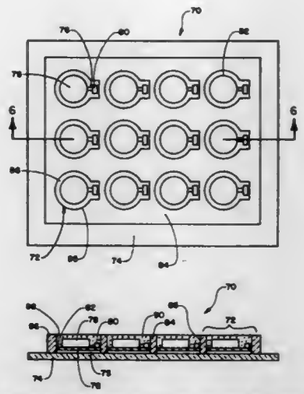
5,612,512
HIGH FREQUENCY ELECTRONIC COMPONENT HAVING BASE SUBSTRATE FORMED OF BISMALEIMIDE-TRIAZINE RESIN AND RESISTANT FILM FORMED ON BASE SUBSTRATE
Hiroki Wakamatsu, Kanazawa, and Hajime Suemasa, Ishikawa-ken, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Nov. 10, 1993, Ser. No. 150,601
Claims priority, application Japan, Nov. 11, 1992, 4-327453; Jan. 20, 1993, 5-004644 U; Mar. 10, 1993, 5-016276 U; Mar. 10, 1993, 5-016277 U
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—260 **3 Claims**



1. A high-frequency electronic component comprising:
a base substrate;
at least one electrode located on the base substrate, the at least one electrode including a copper film located on the base substrate, a nickel film located on the copper film and a gold plating film located on the nickel film;
a layer of solder located on the gold plating film;
a high-frequency electronic component element located on the layer of solder such that the layer of solder attaches the high-frequency electronic component element to the gold plating film so that the high-frequency electronic component element is physically mounted on the base substrate and electrically connected to the at least one electrode; wherein
the base substrate is made of bismaleimide-triazine resin; and
an input/output terminal and an earth terminal provided at predetermined locations on a peripheral edge on a lower surface of the base substrate so as to be connectable to terminals formed on the printed circuit board; and a resist film located on substantially the entire lower surface of the base substrate except for said predetermined locations of the input/output terminal and the earth terminal.

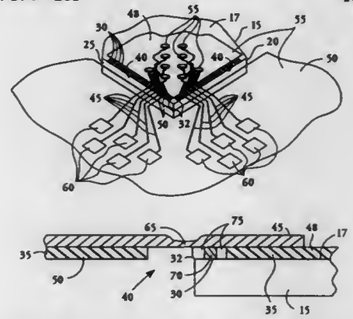
5,612,513
ARTICLE AND METHOD OF MANUFACTURING AN ENCLOSED ELECTRICAL CIRCUIT USING AN ENCAPSULANT
Mark E. Tuttle; Rickie C. Lake; Joe P. Mousseau, and Clay L. Cirino, all of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.
Filed Sep. 19, 1995, Ser. No. 530,747
Int. Cl.[6] H05K *3/00*
U.S. Cl. 174—260 **34 Claims**

1. A method for manufacturing an encapsulated electrical circuit comprising:
forming a substrate;



forming an image on a surface of the substrate viewable through the substrate;
forming the circuit on the surface;
forming a barrier on the substrate to define a cavity surrounding the circuit; and
placing an encapsulant in the cavity.

5,612,514
TAB TEST DEVICE FOR AREA ARRAY INTERCONNECTED CHIPS
Ken Lam, Colorado Springs, Colo., assignor to Atmel Corporation, San Jose, Calif.
Division of Ser. No. 129,753, Sep. 30, 1993. This application Aug. 12, 1994, Ser. No. 289,884
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—261 **10 Claims**

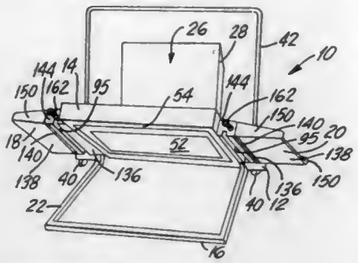


1. A device for providing electronic and support connections for an integrated circuit comprising:
an integrated circuit chip having bond pads adjacent to a perimeter of a face of said chip;
a flexible, electrically insulative tape having opposed first and second major surfaces and a gap near said perimeter of said chip face, said first major surface connected to said chip face; and
a plurality of electrically and thermally conductive leads supported on said second major surface, said leads having test terminals disposed beyond said perimeter of said chip face and having interconnect pads disposed in an area array adjacent to said face, said leads connected to said bond pads of said chip and having a reduced thickness closely peripheral to said connections to said bond pad, whereby said leads are severable at regions closely peripheral to said bond pads after testing said chip via test terminals.

5,612,515
PORTABLE WEIGHING SCALE HAVING A PIVOTAL WEIGHING PLATFORM

Saul Eisen, 29 Paerdegat 15 St., Brooklyn, N.Y. 11236

Filed Dec. 27, 1994, Ser. No. 364,798
Int. Cl.[6] G01G *21/00*
U.S. Cl. 177—126 24 Claims



22. A weighing scale comprising:

a support member;

a weighing platform pivotally connected to said support member for weighing persons;

means for pivoting said weighing platform between a horizontal, lowered operational position and a vertical, raised non-operational position; and

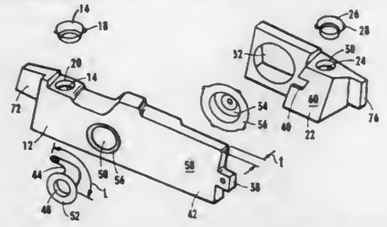
said means for pivoting said weighing platform including a motor for activating a ball-screw mechanism to retract and extend a piston thereof for rotating cams mounted on a rotatable bar, two of said cams each being connected to an associated rod for pivoting each opposite side of said weighing platform about an associated pin;

whereby said weighing scale has a reduced floor space when said weighing platform is in said vertical, raised non-operational position so that said weighing scale can be transported to another location for use, or for storage thereof.

5,612,516
ENCLOSURE FOR MULTIPLE VEHICULAR AUDIO SPEAKERS

Diane M. Valitutti, Sterling Heights; James Finck, Canton, and Kurt M. Straub, Plymouth, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 24, 1995, Ser. No. 562,441
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—141 15 Claims



1. An apparatus for holding a plurality of audio speakers in a passenger compartment of a vehicle defining a passenger side, a driver side, and a passenger compartment width therebetween, comprising:

a hollow plastic passenger side housing formed with at least a first receptacle for receiving an audio speaker therein;

a hollow plastic driver side housing formed with at least a second receptacle for receiving an audio speaker therein, the driver side housing being connected to the passenger side housing to establish a speaker enclosure, wherein the speaker enclosure extends across substantially the passenger compartment width when positioned therein;

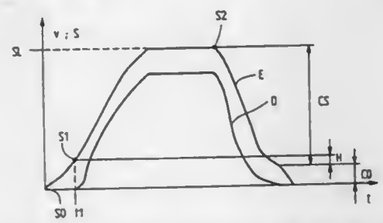
a third receptacle formed in the speaker enclosure for receiving an audio speaker therein; and

a tube positioned in the speaker enclosure for directing sound emanating from the third receptacle out of the speaker enclosure.

5,612,517
PROCESS AND APPARATUS FOR CONTROLLING A HYDRAULIC LIFT

Kjell Johansson, Ingelstad, Sweden, assignor to Inventio AG, Hergiswil, Switzerland

Filed Aug. 15, 1994, Ser. No. 290,284
Claims priority, application European Pat. Off., Sep. 15, 1993, 93114800
Int. Cl.[6] B66B *1/26*
U.S. Cl. 187—285 12 Claims



1. A process for controlling a hydraulic lift including a control device and control signals produced by a sensing element associated with a car of the lift, the control signals are forwarded to a regulation valve arrangement for regulating a through-flow of pressurized fluid to accelerate, upwardly or downwardly, the lift car, the lift car is moved at an operational speed and decelerated upon receiving a slow down signal input from elevator shaft information, the process comprising:

receiving lift car position signals from the sensing element and controlling a position of the car during a deceleration phase occurring after the slow down signal is input;

issuing a drive command;

determining and storing a first value of the control signal at the start time the drive command is issued;

storing a second value of the control signal upon receiving the slow down signal;

calculating a control region based on the following relationship:

$$CS=S2-S1+H.$$

wherein, CS represents the control region; S1 represents the first value of the control signal; S2 represents the second value of the control signal; and H represents a previously determined hysteresis value;

producing, during the deceleration phase, actual position values from the lift car position signals;

ascertaining a percentage value of the control region for each actual position value;

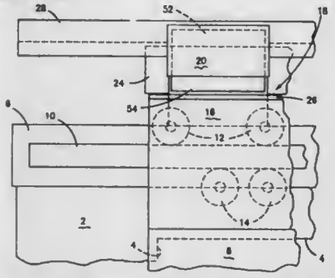
multiplying each ascertained percentage value with the calculated value of the control region; and

determining an extent of the control signal utilized during the deceleration phase.

5,612,518
LINEAR INDUCTION MOTOR DOOR DRIVE ASSEMBLY FOR ELEVATORS

Jerome F. Jaminet, South Windsor; Zbigniew Piech, East Hampton; Frank Guliuzza, Jr., Wallingford; Thomas M. McHugh, Farmington; Edward E. Ahigian, West Hartford; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Thomas M. Kowalczyk, Farmington; Richard E. Kulak, Bristol, and David W. Barrett, East Hartland, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 8, 1994, Ser. No. 225,024
Int. Cl.[6] B66B *13/14*
U.S. Cl. 187—316 4 Claims



1. An elevator cab assembly having a cab with a passenger entrance along with a cab door operable to close and open at least a portion of said passenger entrance; and a cab door operating system, said assembly comprising:

a) a linear induction motor (LIM) primary winding component fixed to the cab above the passenger entrance;

b) a complementary LIM primary component disposed opposite said primary winding component and separated therefrom by a predetermined gap;

c) a LIM secondary component secured to said cab door and interposed between said complementary primary component and said primary winding component, said secondary component extending through said gap; and

d) a secondary component guide mounted on said cab and operable to engage said secondary component to maintain a desired spacing between said secondary component and said primary components as said door moves to open and close said passenger entrance, said secondary component guide extends the length of the door.

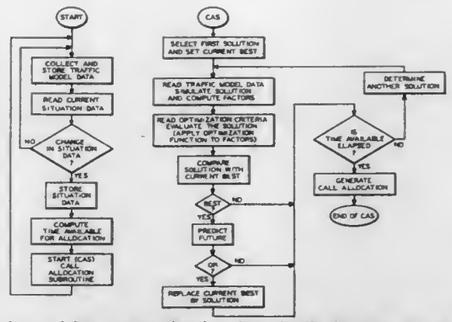
5,612,519
METHOD AND APPARATUS FOR ASSIGNING CALLS ENTERED AT FLOORS TO CARS OF A GROUP OF ELEVATORS

Patrick Chenais, Ebikon, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Continuation-in-part of Ser. No. 48,269, Apr. 14, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 296,008
Claims priority, application Switzerland, Apr. 14, 1992, 01242/92
Int. Cl.[6] B66B *1/18*
U.S. Cl. 187—382 13 Claims

4. A method for assigning hall calls to cars of an elevator group, the elevator group having an elevator control which generates signals representing optimization criteria data and situation data for the cars and entered hall calls and responds to call allocation data signals for serving the entered hall calls, comprising the steps of:

a. storing as passenger data a distribution of passengers entering hall calls into an elevator control for a group of elevators, the passenger data representing a probable number of passengers waiting at floors served by the elevators and their probable destination floors, and outputting the passenger data as an output signal;



b. receiving current situation data signals from the elevator control representing a current situation of the elevator cars and entered hall calls;

c. generating a first possible call allocation solution based on the current situation data signals as a probable best call allocation solution signal and as a best call allocation solution signal representing a best call allocation solution;

d. generating a factors data signal based upon the output signal representing the stored passenger data and the probable best call allocation solution signal;

e. receiving optimization criteria data signals from the elevator control representing desired optimization criteria for assigning the entered hall calls;

f. calculating another call allocation solution from the optimization criteria data signals and the factors data signal and generating the another call allocation solution as another call allocation solution signal;

g. checking the another call allocation solution signal against the best call allocation solution signal, predicting future situation data for the elevator cars and the entered hall calls from the output data signals and the probable best call allocation solution signal when the another call allocation solution signal is better than the best call allocation solution signal, and storing the probable best call allocation solution as the best call allocation solution when the future situation data indicates that an unfavorable allocation of the entered hall calls would not result;

h. generating another possible call allocation solution based on the current situation data signals as the probable best call allocation signal and repeating the steps d. through h.; and

i. generating a call allocation data signal to the elevator control for assigning the entered hall calls to the elevator cars according to the best call allocation solution when the steps d. through g. have been performed on all possible call allocation solutions.

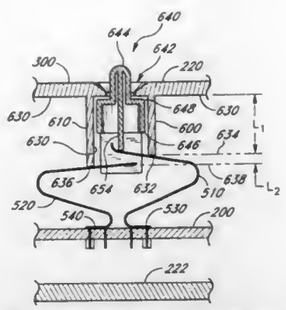
5,612,520
SUSPEND SWITCH FOR PORTABLE ELECTRONIC EQUIPMENT

Thomas Toedtman, Lake Forest, and Robert D. Tusan, Laguna Niguel, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Filed Jun. 7, 1995, Ser. No. 485,084
Int. Cl.[6] H01H *13/14;3/16*
U.S. Cl. 200—16 D 13 Claims

1. A printed circuit board mounted switch which accommodates varying distances between a printed circuit board on which said switch is mounted and a surface which defines the location of an actuator which actuates said switch, said switch comprising:

a first switch contact which is electrically and mechanically connected to said printed circuit board, said first switch contact having a first contact portion and a first spring-like mounting portion, said first spring-like mounting portion allowing said first contact portion to be positioned a varying distance from said printed circuit board;



a second switch contact which is electrically and mechanically connected to said printed circuit board, said second switch contact having a second contact portion and a second spring-like mounting portion, said second spring-like mounting portion allowing said second contact portion to be positioned a varying distance from said printed circuit board;

a first contact positioner mounted on said surface, said first contact positioner positioning said first contact portion at a first predetermined location with respect to said surface;

a second contact positioner mounted on said surface, said second contact positioner positioning said second contact portion at a second predetermined location with respect to said first predetermined location, said second predetermined location being different from said first predetermined location to space said first contact portion apart from said second contact portion; and

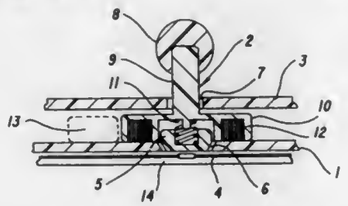
an actuator mounted with respect to said surface, said actuator moving with respect to said first contact positioner and said second contact positioner to move said first contact portion into electrical and mechanical engagement with said second contact portion to close said switch.

5,612,521

ELECTRICAL OR ELECTRONIC APPARATUS SWITCHING DEVICE INCLUDING ACTUATOR MAGNETIC LATCHING

Michael-Georg Bistekos, Greinergasse 36/2/7, A-1190 Wien, Austria

Filed Dec. 5, 1994, Ser. No. 349,620
Claims priority, application Austria, Jun. 9, 1992, 1173/92
Int. Cl.[6] H01H *25/04*; G05G *1/02*; H03K *17/968;17/975*
U.S. Cl. 200—16 R **12 Claims**



1. A switching device for electrical and electronic apparatus, in which predetermined control processes are actuated by switching respective ones of a plurality of switching elements, comprising:

a support plate of magnetically conducting material on which a predetermined, forking guide track with a plurality of branches is defined;

an actuating member in the form of a slide which is movable along said guide track;

and a plurality of switching elements attached to said support plate and disposed along said track, said switching elements, upon being selectively actuated by said actuating member, effecting control processes; and permanent magnets disposed on said slide for magnetically adhering said slide to said support plate.

3. The device according to claim 1, which further comprises a switching plate disposed below said support plate, a contactor disposed on said slide, said switching elements including contacts disposed on said switching plate below said support plate, said contacts being actuatable with said contactor of said slide.

5,612,522

ADSORPTION AND ION EXCHANGE ZEOLITE GEL MEDIA TO IMPROVE THE QUALITY AND CARBONATION OF WATER

Ehud Levy, 5933 Peachtree Industrial Blvd., Bldg. B, Norcross, Ga. 30092

Continuation-in-part of Ser. No. 261,998, Jun. 17, 1994, Pat. No. 5,538,746. This application Jun. 7, 1995, Ser. No. 478,863
Int. Cl.[6] C01B *33/00*
U.S. Cl. 204—157.4 **8 Claims**

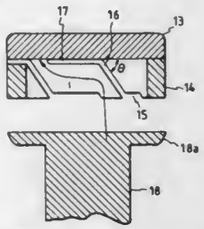
1. In the production of synthetic potassium aluminosilicate, wherein a sodium silicate solution and an aluminate solution are combined to form a gel containing Na_2O, Al_2O_3, SiO_2 and H_2O said gel comprising a porous amorphous structure, the improvement which comprises exposing said gel to ultraviolet radiation for at least a sufficient period to commence formation of the porous amorphous structure of said gel, said gel forming into an aluminosilicate product having pore diameters which are at least about 60 Angstroms to about 250 Angstroms.

5,612,523

VACUUM CIRCUIT-BREAKER AND ELECTRODE ASSEMBLY THEREFOR AND A MANUFACTURING METHOD THEREOF

Yoshimi Hakamata; Toru Tanimizu, both of Hitachi; Akira Osaka, Katsuta, and Katsuhiro Komuro, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1994, Ser. No. 206,670
Claims priority, application Japan, Mar. 11, 1993, 5-050776
Int. Cl.[6] H01H *33/66*
U.S. Cl. 218—132 **1 Claim**



1. A method of manufacturing an electrode assembly for a vacuum circuit-breaker, the electrode assembly having a front surface side with a front surface and a rear surface side with a rear surface and including an arc electrode portion positioned on the front surface side, a coil electrode portion positioned on the rear surface side for generating a magnetic field being approximately parallel to an arc caused by a current flowing through said coil electrode portion, and a rod connected to a rear surface of said coil electrode portion, said method comprising the steps of:

superpositioning a highly conductive metal member on a porous high melting point metal member formed by compressing and sintering of a high melting point metal powder;

heating and fusing at least a part of said highly conductive metal member on a side connected with said high melting point metal member for infiltrating said highly conductive metal member in voids of said high melting point metal member, thereby integrally joining both said metal members to each other;

machining a high melting point metal area in which said highly conductive metal is infiltrated in voids of said high melting point metal member to form said arc electrode portion;

forming a highly conductive metal area composed of only said highly conductive metal approximately in a cylindrical shape by bollowing an interior portion of said coil electrode portion through machining, and providing inclined or circumferential slits on a side surface of said cylindrically shaped highly conductive metal area, thereby forming said coil electrode portion; and

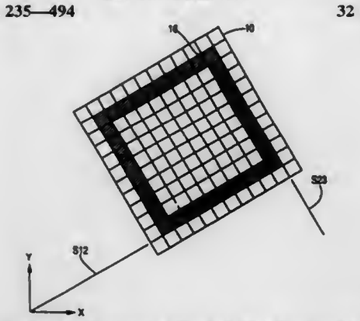
connecting said rod on the rear surface of said coil electrode portion.

5,612,524

IDENTIFICATION SYMBOL SYSTEM AND METHOD WITH ORIENTATION MECHANISM

Carl Sant'Anselmo, Rancho Palos Verdes; Robert Sant'Anselmo, Canoga Park, and David C. Hooper, Ramona, all of Calif., assignors to Veritec Inc., Calabasas, Calif.

Continuation of Ser. No. 239,932, May 9, 1994, abandoned, which is a continuation of Ser. No. 97,629, Jnl. 27, 1993, abandoned, which is a continuation of Ser. No. 892,409, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 423,900, Oct. 19, 1989, abandoned, which is a continuation of Ser. No. 125,616, Nov. 25, 1987, Pat. No. 4,924,078. This application Mar. 28, 1995, Ser. No. 412,091
Int. Cl.[6] G06K *7/14*
U.S. Cl. 235—494 **32 Claims**



1. An identification symbol system for an object, comprising:

an identification symbol, comprising:

a substrate associated with the object;

a computer readable data matrix data field formed on said substrate and providing symbol information for uniquely identifying the symbol; and

computer readable orientation means, formed on said substrate and positioned adjacent said field on at least one side, for providing orientation information from a substantially omni-directional three-dimensional orientation of capture; and

a device for capturing the symbol, identifying the object from the symbol information.

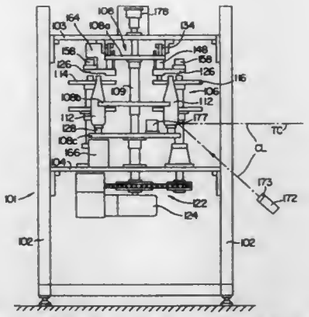
5,612,525

APPARATUS FOR MARKING REFILLABLE CONTAINERS, MORE ESPECIALLY PLASTIC BOTTLES

Robert Apter, Zürich, and Julian Weinstock, Rudolfstetten, both of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Division of Ser. No. 893,194, Jun. 2, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 398,515
Int. Cl.[6] G06F *17/00*
U.S. Cl. 235—375 **4 Claims**

1. Apparatus for marking refillable containers, having a manufacturer's code, which defines a reference position on the container, and code symbols with the aid of which it can later be ascertained whether a container has to be refilled or separated, comprising:



a conveyor for moving the containers in a conveying direction;

a detection station positioned along the conveyor, and having a combined detection and reading arrangement with a camera for photographing manufacturer's codes and code symbols on the containers;

a processing arrangement with an image processor connected to the camera for determining the positions of the manufacturer's code and the code symbols on the containers;

a rotary device for rotating the containers about an axis of symmetry,

a controller connected to the image processor and to the rotary device to rotatably position the containers for marking relative to the manufacturer's code, and

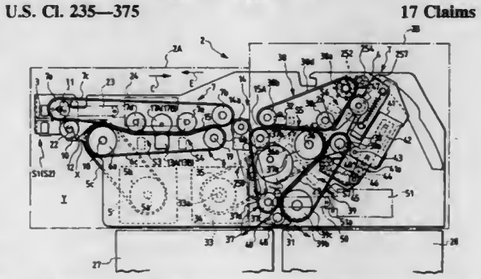
a marking station positioned along the conveyor and having a marking device for marking the containers with code symbols indicative of the number of times a container has been refilled and positioned on the containers in reference to the positions of the manufacturer's code and any other code symbols previously-marked on the container, the marking station being positioned after the detection station in the conveying direction.

5,612,526

MAGNETIC CARD READER

Shigeki Oguchi; Jun-ichi Yazaki, and Shigeyuki Nagata, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Oct. 6, 1995, Ser. No. 540,245
Claims priority, application Japan, Oct. 6, 1994, 6-243153
Int. Cl.[6] G06F *17/00*
U.S. Cl. 235—375 **17 Claims**



1. A magnetic card reader which receives a magnetic card with a magnetic stripe, comprising:

an entrance port through which the magnetic card is inserted;

a first transporting means for transporting the magnetic card along a transport path;

magnetic read/write means for carriing out a process of reading and writing information out of and to the magnetic stripe of

the magnetic card, the magnetic read/write means being located so as to face the transport path;

cutter unit for cutting the magnetic card into at least two cards in a direction orthogonal to a card transporting direction, the cutter unit being located in the transport path; and

a card discharge path being continuous to the transport path;

a collector path being continuous to the transport path; and

a first path-selector means located at an intersection of the card discharge path and the collector path and for guiding cut cards to the card discharge path or the collector path;

wherein a distance between the magnetic read/write means and the cutter unit is the sum of the length of the cut card which is the shortest one of all the cut cards when viewed in the transport direction and a braking distance of the transporting means in a time from a constant transporting state of the transporting means to a stop state of the transporting means by a stop signal.

5,612,527

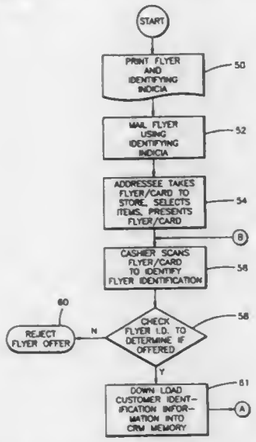
DISCOUNT OFFER REDEMPTION SYSTEM AND METHOD

Victor A. Ovadia, 1929 Boulevard, West Hartford, Conn. 06107

Filed Mar. 31, 1995, Ser. No. 414,281

Int. Cl.[6] G06K *15/00*

U.S. Cl. 235—383 **20 Claims**



1. A method for redeeming discount offers comprising:

providing a circulation medium and providing said medium with indicia which includes a machine readable identification code;

causing said medium to be distributed to potential users;

associating said identification code with data identifying items which are to be offered at a discount provided as part of said medium and storing said data in memory in a data base so as to be addressable by said identification code;

providing means for reading said identification code provided with said circulation medium;

providing means associated with said code reading means for tabulating sales of items so that any discount corresponding to an item listed in said data is deducted from the price of the item in the tabulation; and

using said reading means to identify said code provided with said medium and using said means for tabulating items to obtain a price for the involved item and to cause a discount to be debited against the purchased item if the involved item is listed as part of said data identifying an item as qualifying for a discount as called for by the data base data defined by the identification code of the medium.

5,612,528

PROCESSING OF MAGNETICALLY RECORDED DATA TO DETECT FRAUD

Ian M. Green, London, and Simon N. M. Willcock, High Wycombe, both of England, assignors to Central Research Laboratories Limited, Middlesex, England

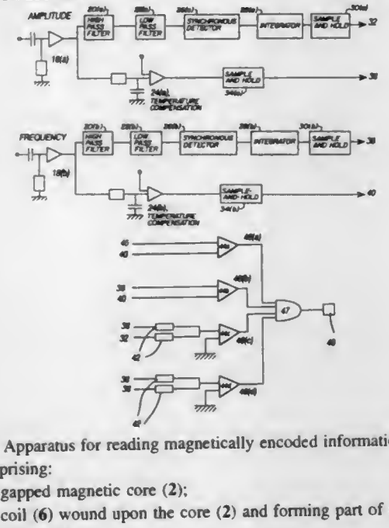
PCT No. PCT/GB93/01581, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/02943, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 27, 1992, Ser. No. 374,609

Claims priority, application United Kingdom, Jul. 27, 1992, 9215924

Int. Cl.[6] G06K *7/08*

U.S. Cl. 235—449 **8 Claims**



1. Apparatus for reading magnetically encoded information (**14**) comprising:

a gapped magnetic core (**2**);

a coil (**6**) wound upon the core (**2**) and forming part of a tuned circuit (**8**);

an oscillator (**10**) for driving the tuned circuit (**8**) at a frequency lying on its resonance curve;

means for providing a first signal dependant upon the amplitude of signals occurring within the tuned circuit; and

verification means (**18, 20, 22, 24, 26, 28, 30, 34, 42, 44, 47**) for verifying the genuineness of the magnetically encoded information, which verification means comprises means for providing a second signal dependant upon the frequency of signals occurring within the tuned circuit, characterized in that the verification means further comprises:

means (**18, 20, 22, 24, 26, 28, 30, 34**) for deriving from the first and second signals a plurality of output values (**32, 36, 38, 40**) representative of signal amplitude and frequency variations occurring within the circuit (**8**) upon relative movement between the coil (**6**) and the magnetically encoded information (**14**);

means (**44**) for comparing at least one of the output values (**32,36**) representative of signal amplitude variations and at least one of the output values (**38, 40**) representative of signal frequency variations, or functions thereof, with a value from a group comprising the said other output values and functions thereof and known reference values, thereby to obtain a plurality of test values (**46**) derived from the comparison; and

means (**47**) for combining the test values (**46**) to provide a combination value (**48**), such that a positive indication of genuine magnetically encoded information is obtained in dependence upon the combination value (**48**) having a defined relationship with a predetermined threshold value.

5,612,529

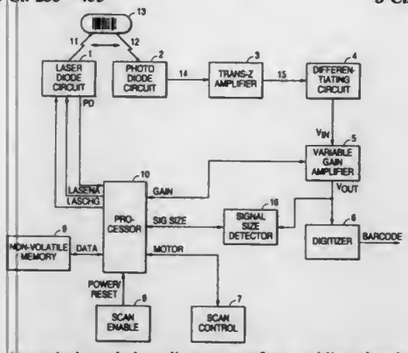
SYSTEM FOR BAR CODE READING AND SCANNING WITH AUTOMATIC GAIN CONTROL

Edward P. Coleman, Fairport, N.Y., assignor to PSC Inc., Webster, N.Y.

Filed Oct. 31, 1994, Ser. No. 332,015

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—455 **8 Claims**



1. An optical symbol reading system for providing signals representing an optical symbol in response to returned light from a light beam which scans the symbol and which is received by a photo-detector, in which the returned light can vary in intensity depending on a distance of the symbol away from said photo-detector, and an intensity of the light beam, said system comprising:

(a) means for producing a first signal responsive to said returned light received by said photo-detector,

(b) means for amplifying said first signal at an amplification level to produce an amplified signal as a second signal,

(c) means for selecting said amplification level of said amplifying means from a plurality of candidate amplification levels,

(d) means for successively scanning said symbol and operating said selecting means with each successive scan such that each successive scan is at an incrementally different one of said plurality of candidate amplification levels,

(e) means utilizing said second signal for providing said signals representing said symbol,

(f) a light source for producing said light beam having a variable output power level,

(g) means for setting the optical power level of said light source at a certain optical power level,

(h) means for varying said certain optical power level to select an optimum optical power level of said light source with respect to different ones of said plurality of candidate amplification levels to minimize an effect on said system by said intensity variations in said returned light from said symbol, and

(i) memory means for storing data identifying said selected optimum power level,

wherein said setting means, responsive to said data from said memory means, sets said light source to said optimum power level prior to scanning said symbol.

5,612,530

SCANNER WITH PRE-PROGRAMMED WORKING RANGES

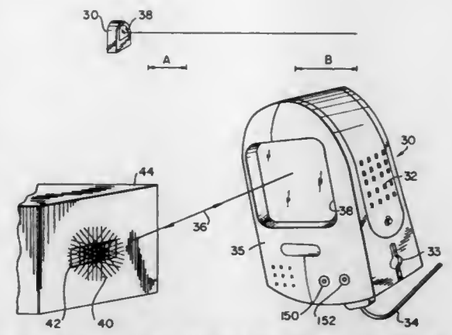
Robert Sanders, Bayport; Altaf Mulla, Merrick, and Michael Catalano, Lindenhurst, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Jan. 24, 1995, Ser. No. 377,448

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **20 Claims**

1. An optical scanner for scanning indicia having regions of differing light reflectivity, the scanner being usable in a first mode



in which it is held in the hand of a user and in a second mode in which it is supported by a fixed support, the scanner comprising:

(a) a scanner body;

(b) scanning and decoding means for emitting a scanning light beam from the scanner body towards an indicia to be read, for receiving light reflected from the indicia and for decoding the indicia based on the said reflected light;

(c) mode detection means arranged automatically to determine whether the scanner is being used in the first mode or in the second mode;

(d) control means actuated by the mode detection means to optimize the scanning and decoding means to read the indicia in a first working range in the first mode and in a second working range in the second mode; and

(e) field adjustment means for enabling the user to manually and independently adjust each working range.

5,612,531

BAR CODE READER WITH MULTIPLE SENSITIVITY MODES USING VARIABLE THRESHOLDING COMPARISONS

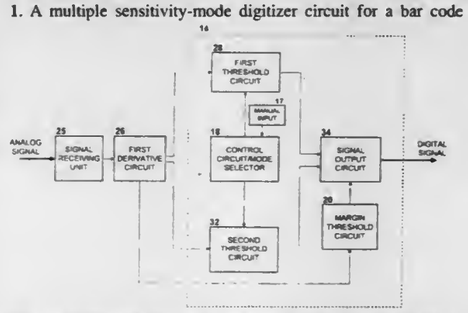
Edward Barkan, Miller Place, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 241,014, May 11, 1994, Pat. No. 5,436,440, which is a division of Ser. No. 28,107, Mar. 8, 1993, Pat. No. 5,408,081. This application Jun. 7, 1995, Ser. No. 480,802

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **73 Claims**

1. A multiple sensitivity-mode digitizer circuit for a bar code



reader for generating an output digitized signal corresponding to data encoded in a scanned bar code symbol, the bar code reader having a first derivative circuit for receiving an analog signal from a scan of the bar code symbol and for generating a first derivative signal of the analog signal, and the digitizer circuit comprising:

a first thresholding circuit for generating a first digitized signal in response to a comparison between the first derivative signal and a first threshold representing a first detection sensitivity;

a second thresholding circuit for generating a second digitized signal in response to a comparison between the first derivative signal and a second threshold representing a second detection sensitivity; and

a mode selector for selecting as the output digitized signal one of the first digitized signal and a third digitized signal, the third digitized signal representing the first digitized signal modified by the second digitized signal.

5,612,532

THIN IC CARD AND METHOD FOR PRODUCING THE SAME

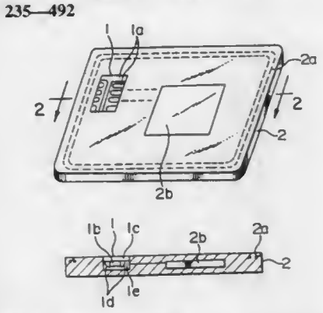
Hiroshi Iwasaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 272,549, Jul. 11, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 554,927

Claims priority, application Japan, Sep. 1, 1993, 5-217504; Dec. 17, 1993, 5-318632

Int. Cl.[6] G06K *19/06*

U.S. Cl. 235—492 **53 Claims**



1. A thin IC card comprising:

a plate type IC module having a semiconductor chip sealed or molded with a resin on a lower portion of the IC module, the IC module having a connecting portion on the lower portion of the IC module and said module having means for direct communication with an external terminal, and the semiconductor chip having a memory and a CPU; and

a card-like support having a first area and a second area formed outside of the first area, a fitting section formed inside the first area and an antenna formed inside the second area, the fitting section freely fitting the IC module detachably, and the fitting section having a connection terminal electrically connected to the connecting portion of the fitted IC module.

5,612,533

LOW-PROFILE HORIZON-SAMPLING LIGHT SENSOR

J. Stephen Judd, Plainsboro, N.J., and Barak P. Pearlmutter, Cambridge, Mass., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Dec. 27, 1994, Ser. No. 364,885

Int. Cl.[6] H01L *27/00*

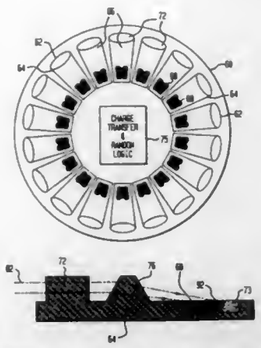
U.S. Cl. 250—208.1 **9 Claims**

1. An omnidirectional light sensor for producing a plurality of electrical signals each representative of an image portion of a panoramic picture of associated scenery surrounding said sensor at a given elevation, said sensor comprising:

a disk-like housing including a top section and a bottom section;

a plurality of successive spaced apart individual radially directed capsules each having a frontmost opening along a circumferential edge of said disk, said capsules being formed between and within opposing portions of said top and bottom sections of said disk;

a plurality of photosensors each located radially inward in said plurality of capsules, respectively, for converting light waves



from the scenery into electrical signals, the signals from each photosensor representing a bin of pixels of an associated image portion;

a plurality of lenses located in the frontmost openings of each one of said plurality of capsules respectively, for focusing light rays entering an associated said capsule;

a plurality of light ray directing means located in each one of said plurality of capsules, respectively, between an associated lens and photosensor, for directing focused light waves from the associated lens onto a light sensitive portion of the associated photosensor.

5,612,534

ATMOSPHERIC PRESSURE IONIZATION MASS SPECTROMETER

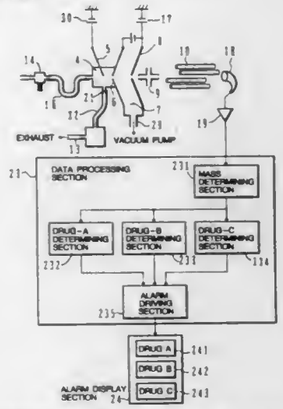
Tadao Mimura, and Masayoshi Yaao, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 325,098, Nov. 2, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 689,952

Claims priority, application Japan, Nov. 9, 1993, 5-279310

Int. Cl.[6] H01J *49/04*

U.S. Cl. 250—281 **17 Claims**



1. An atmospheric pressure ionization mass spectrometer comprising:

an ionization portion which operates under substantially atmospheric pressure to ionize sample gas;

a mass spectrometer portion to which ions produced in said ionization portion are supplied through an intermediate pressure region and which analyzes said ions;

a sample gas suction device, one end of said sample gas suction device being connected to said ionization portion, the other end of said sample gas suction device being movable relative to said one end of said sample gas suction device;

a data processing section coupled to said mass spectrometric portion and including a drug determining portion; and

a pump arranged at a downstream side of said ionization portion, said pump being connected to said ionization portion to introduce said sample gas into said ionization portion through said sample gas suction device.

5,612,535

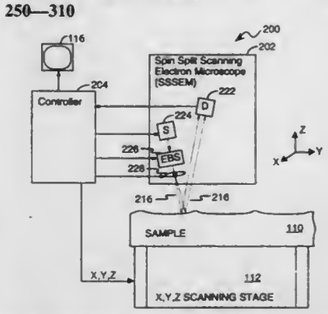
SPIN-SPLIT SCANNING ELECTRON MICROSCOPE

Youqi Wang, 3748 Redwood Cir., Palo Alto, Calif. 94306

Filed Jun. 7, 1996, Ser. No. 659,218

Int. Cl.[6] H01J *37/252*

U.S. Cl. 250—310 **16 Claims**



1. A spin-split scanning electron microscope (SSSEM), comprising:

an electron beam source that generates a flying stream of electrons;

a spin-split electron beam splitter that splits the flying stream of electrons into first and second electron beams, said second electron beam having a different trajectory than said first electron beam;

an electron beam intensity detector that receives a reflected portion of said first and second electron beams after said first and second electron beams have been reflected from distinct positions of a target surface and that then interfere with each other so as to generate an interference intensity signal; and

a controller coupled to the electron beam intensity detector for receiving the intensity signal, and for analyzing changes in said intensity signal to determine differences in path lengths of said first and second electron beams.

5,612,536

THIN FILM SENSOR ELEMENT AND METHOD OF MANUFACTURING THE SAME

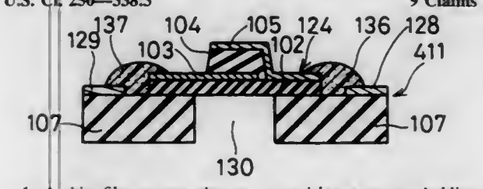
Hideo Torii, Higashiosaka; Takeshi Kamada, Nara; Shigenori Hayashi, Gose; Ryoichi Takayama, Suita; Takashi Hirao, Moriguchi, and Masumi Hattori, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1995, Ser. No. 374,989

Claims priority, application Japan, Feb. 7, 1994, 6-013413; Jun. 20, 1994, 6-136981

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—338.3 **9 Claims**



1. A thin film sensor element comprising a sensor holding substrate made of a ceramic having an opening part and a multi-layer film adhered thereon comprising an electrode film A, an electrode film B having a (100) plane orientation, and a piezoelectric dielectric oxide film interposed between said electrode film A and said electrode film B,

wherein the element further comprises a rock-salt crystal structure oxide film oriented to a (100) plane on a surface of said sensor holding substrate such that the opening part is covered by said rock-salt crystal structure oxide film, said electrode film B comprising Pt and disposed on said rock-salt crystal structure oxide film, said piezoelectric dielectric oxide film being disposed on said electrode film B, and said electrode film A being disposed on top of said piezoelectric dielectric oxide film.

5,612,537

DETECTING THE PRESENCE OF A FIRE

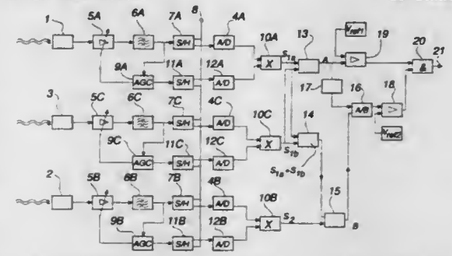
Steven P. Maynard, London; Paul J. Basham, High Wycombe, and Mark E. Pleydell, West Drayton, all of Great Britain, assignors to Thorn Security Limited, Middlesex, England

Filed Sep. 1, 1994, Ser. No. 298,307

Claims priority, application United Kingdom, Sep. 3, 1993, 9318284

Int. Cl.[6] G08B *17/12*

U.S. Cl. 250—339.15 **10 Claims**



1. A method of detecting the presence of a fire, comprising determining whether a quantity derived from the output of a first detector for radiation within a spectral band which includes a wavelength characteristic of a fire exceeds a threshold which is varied in dependence upon the output signal of a second detector for radiation within a spectral band of wavelengths characteristic of black body radiation, characterized in that the threshold is varied in accordance with the degree of similarity between variation with time of the output signal of the second detector and variation with time of the output signal of said first detector in such manner that the threshold is increased with increasing similarity and decreased with decreasing similarity.

5,612,538

FARADAY IMAGING AT HIGH TEMPERATURES

Lloyd A. Hackel, Livermore, and Patrick Reichert, Hayward, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jan. 17, 1995, Ser. No. 373,994

Int. Cl.[6] G01J *5/06*

U.S. Cl. 250—341.1 **27 Claims**

1. A laser viewing system, comprising:

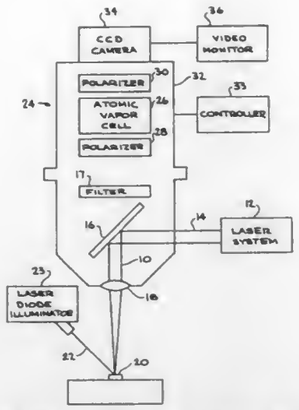
means for producing a processing laser beam having a first wavelength;

a turning mirror for reflecting said processing laser beam to produce a reflected beam;

means for delivering said processing laser beam to said turning mirror;

a focusing lens optically positioned to focus said reflected beam onto a high temperature workpiece;

a laser illuminator for producing a low power illumination laser beam, having a second wavelength, for illuminating said workpiece and desired viewing areas, wherein said illumina-



tion laser beam reflects from said workpiece and said desired viewing areas and is transmitted through said focusing lens and said turning mirror to produce a transmitted laser beam;

a Faraday optical filter optically positioned to transmit said transmitted laser beam to produce a filtered beam, wherein said Faraday optical filter does not transmit background light from said workpiece and said desired viewing areas;

a non-intensified charge coupled device (CCD) camera optically positioned to receive said filtered beam to produce an image; and

means for displaying said image.

5,612,539

METHOD OF EVALUATING LIFETIME RELATED QUALITY OF SEMICONDUCTOR SURFACE

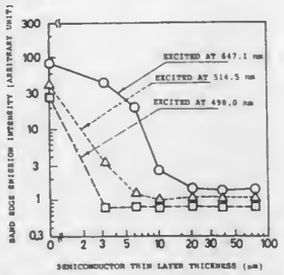
Ryoji Hoshi, Fukushima-ken; Yutaka Kitagawara, Takasaki, and Takao Takenaka, Annaka, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,563

Claims priority, application Japan, Nov. 14, 1994, 6-279321

Int. Cl.[6] G01R *31/265*

U.S. Cl. 250—341.4 **16 Claims**



1. A method used with a semiconductor wafer having a semiconductor thin layer over the main surface of semiconductor substrate, for evaluating the lifetime related quality of the semiconductor thin layer and/or the vicinity thereof, said method comprising the steps of:

generating electron-hole pairs in the vicinity of a surface of the semiconductor thin layer by the use of excitation light having a larger energy than the band gap of a semiconductor to be tested;

detecting the intensity at a particular wavelength of light emitted by recombination of said electron-hole pairs; and

evaluating the lifetime related quality of the semiconductor thin layer and/or the vicinity thereof based on the detected intensity.

5,612,540

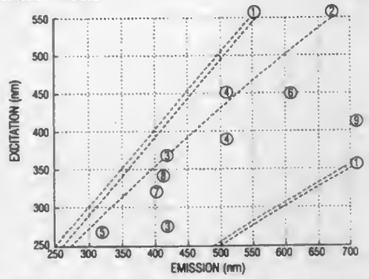
OPTICAL METHOD FOR THE DETECTION OF CERVICAL NEOPLASIAS USING FLUORESCENCE SPECTROSCOPY

Rebecca Richards-Kortum, Austin; Gregg Staerkel, Houston; Youseph Yazdi, Austin, and Michele F. Mitchell, Houston, all of Tex., assignors to Board of Regents, The University of Texas Systems, Austin, Tex.

Filed Mar. 31, 1995, Ser. No. 412,325

Int. Cl.[6] G01N *21/64*

U.S. Cl. 250—461.2 **15 Claims**



1. A method of detecting tissue abnormality in a tissue sample in vitro comprising:

(i) providing a tissue sample;

(ii) sequentially illuminating said tissue sample in vitro with a set of at least two electromagnetic radiation wavelengths selected to cause said tissue sample to produce a set of fluorescence intensity spectra indicative of tissue abnormality;

(iii) detecting said set of fluorescence intensity spectra emitted from said tissue sample as a result of illumination with each of said wavelengths; and

(iv) calculating from said set of fluorescence intensity spectra, a probability that said tissue sample is normal or abnormal.

5,612,541

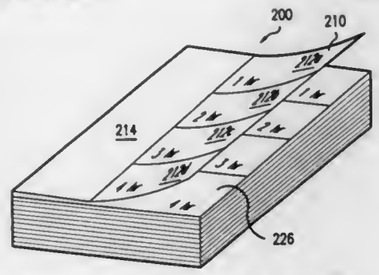
ULTRAVIOLET RADIATION MONITORING DEVICE AND USE THEREOF

Donald J. Hoffmann, Elmhurst, and John C. H. Chang, Naperville, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed May 22, 1995, Ser. No. 446,311

Int. Cl.[6] G01J *1/38*

U.S. Cl. 250—474.1 **32 Claims**



1. An ultraviolet radiation monitoring kit comprising:

at least one first substrate and at least one second substrate, said at least one second substrate being capable of being closely associated with at least one said first substrate,

said at least one first substrate having a first surface bearing an indicator area comprising a chromogenic composition, said chromogenic composition comprising (a) the colored reaction product resulting from contact between a chromogen and a color developer, said colored reaction product being capable of changing color when exposed to ultraviolet radiation, or (b) a substantially colorless mixture of a chromogen and a color developer capable of reacting to form color when exposed to ultraviolet radiation,

said at least one second substrate having a first surface bearing a reference color chart, said reference color chart comprising a plurality of reference colors, each of said reference colors corresponding to a different time exposure to ultraviolet radiation, such that comparison of the color developed by said chromogenic composition upon exposure to ultraviolet light with a reference color provides an indication of the time and degree of exposure to ultraviolet radiation.

5,612,542

ULTRAVIOLET LIGHT INTENSITY MONITOR

John F. Brown, and Steve P. Gawne, both of Calgary, Canada, assignors to 649020 Alberta Ltd., Calgary, Canada

Filed Jun. 7, 1995, Ser. No. 487,519

Int. Cl.[6] G01J *1/38*

U.S. Cl. 250—474.1 **19 Claims**

OVERCAST DAY

Recommended Exposure Time Minutes					
S	0	15	30	45	60
P	8	45	60	75	90
	15	60	75	90	120
F	30	90	120	135	2 HR

1. An ultraviolet light intensity monitor comprising:

a) a substrate,

b) a two-dimensional array comprising a plurality of discrete areas formed on the substrate;

c) indicia imprinted in the discrete areas indicating specific time levels of maximum recommended exposure to ultraviolet light;

d) a legend setting out specific conditions associated with the time levels imprinted on the substrate adjacent to and forming a part of the array;

e) each discrete area having a given density of photosensitive material forming discrete segments of the array,

wherein, upon exposure to ultraviolet light, discrete areas including at least one segment will be activated in accordance with exposure level such that both the maximum recommended exposure time level corresponding to said exposure level and the specific condition associated with the maximum recommended exposure time level will be simultaneously viewed on the array.

5,612,543

SEALED BASKET FOR BOILING WATER REACTOR FUEL ASSEMBLIES

Thomas J. Wenner, Hayward, and David T. W. Pi, San Jose, both of Calif., assignors to Sierra Nuclear Corporation, Scotts Valley, Calif.

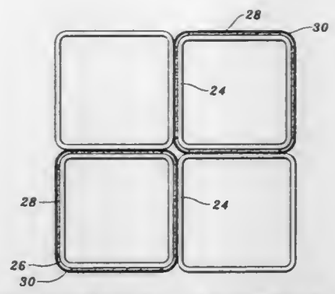
Filed Jan. 18, 1996, Ser. No. 588,528

Int. Cl.[6] G21F *5/00*

U.S. Cl. 250—507.1 **10 Claims**

1. A basket for transporting, storing, and containing nuclear fuel assemblies, comprising:

an assembly of sleeves comprising a plurality of independent sleeves arranged in a uniform pattern and secured within a cylindrical shell; each of said plurality of independent sleeves being sized to secure and contain a fuel assembly;



a plurality of angular shaped separator elements are selectively positioned and secured between said plurality of independent sleeves;

a sheet of neutron absorbing material being positioned between said plurality of angular shaped separator elements for maintaining fission reactions within said basket below a critical level necessary to sustain a fission reaction;

a support element for positioning and securing said plurality of independent sleeves;

a bottom plate secured to said cylindrical shell providing vertical support means for the plurality of independent sleeves;

a shield lid secured to the cylindrical shell including a plurality of disc elements and access means for selective entry into the basket; and,

a lid element secured to said shield lid and to the cylindrical shell; said lid element including access means for selective entry into the basket.

5,612,544

MEASURING DEVICE WITH AN INTEGRATED LIGHT SCANNING MEANS WHICH SCANS BOTH ROTATIONS OF A ROTATING BODY AND CODED DATA ASSOCIATED WITH THE ROTATING BODY

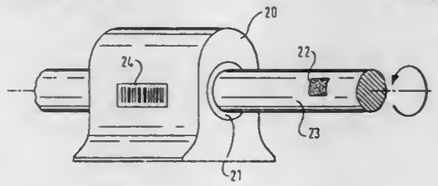
Dieter Busch, Ismaning, Germany, assignor to Prüftechnik Dieter Busch AG, Ismaning, Germany

Filed Jun. 6, 1995, Ser. No. 468,001

Claims priority, application Germany, Jun. 13, 1994, 44 20 562.7

Int. Cl.[6] G06K *5/00*

U.S. Cl. 250—556 **10 Claims**



1. A measuring device, comprising:

an integrated light beam scanning means for scanning both a rotating body and contrast coded data on a surface of a data carrier; and

means for detecting the number of revolutions of the rotating body and for detecting said contrast-coded data on a surface of the data carrier (**24**) based on detection signals outputted from the light beam scanning means.

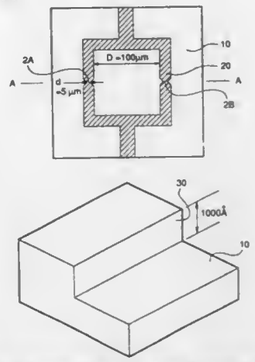
5,612,545
SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE FORMED OF OXIDE SUPERCONDUCTOR THIN FILM

Takashi Matsuura; Saburo Tanaka, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 268,112, Jul. 6, 1994, abandoned, which is a continuation of Ser. No. 811,686, Dec. 23, 1991, abandoned. This application Dec. 13, 1995, Ser. No. 589,242

Int. Cl.[6] **H01L** *31/0256;29/06;39/22*

U.S. Cl. 257—31 **13 Claims**



1. A SQUID including a substrate and a superconducting current path of a single patterned oxide superconductor material thin film, all of which is formed of the same high-Tc YBCO type oxide superconductor material and which is formed on a surface of the substrate, a c-axis of an oxide crystal of the high-Tc YBCO type oxide superconductor material thin film being oriented in parallel to the surface of the substrate, wherein the oxide superconductor thin film has a thickness in the range of 500Å to 5,000Å, the substrate having a step formed on a deposition surface thereof and the oxide superconductor material thin film being in the form of a closed loop crossing the step, a portion of the oxide superconductor material thin film positioned on the step being polycrystalline and forming a weak link.

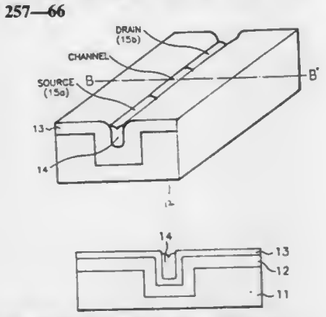
5,612,546
THIN FILM TRANSISTOR STRUCTURE

Jong M. Choi, Seoul, and Chang R. Kim, Chungcheongbuk-do, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 379,300

Int. Cl.[6] **H01L** *29/76;31/036;31/112*

U.S. Cl. 257—66 **1 Claim**



1. A thin film transistor structure comprising:
an insulating substrate including a trench with a fixed width formed generally parallel to a first axis;
a gate electrode formed to have a groove above the trench and to at least the level of the substrate along the first axis on the insulating substrate, wherein the gate electrode is formed on the insulating substrate and in the trench, and is divided in two parts separated in a direction transverse to the first axis by a fixed width;
a gate insulation film formed on the gate electrode;
a semiconductor layer formed in the groove of the gate electrode, wherein a central portion of the semiconductor layer functions as a channel region; and
source and drain impurity regions formed at both longitudinally spaced sides of the semiconductor layer and separated by the channel region.

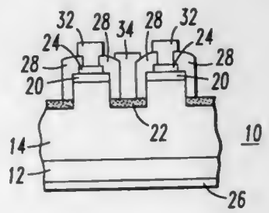
5,612,547
SILICON CARBIDE STATIC INDUCTION TRANSISTOR

Rowland C. Clarke, Bell Twp., Westmoreland County; Richard R. Siergiej, Irwin, and Saptharishi Sriram, Monroeville, all of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 139,472, Oct. 18, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,405

Int. Cl.[6] **H01L** *31/0312;29/80;31/112;27/095*

U.S. Cl. 257—77 **8 Claims**



1. A static induction transistor comprising a substrate layer and a drift layer on the substrate layer wherein:
the transistor is a recessed Schottky barrier gate type;
the substrate layer is fabricated of a heavily-doped silicon carbide having a selected conductivity type;
the drift layer is fabricated of a lightly-doped silicon carbide having the selected conductivity type provided upon the substrate layer, the drift layer having a plurality or spaced apart protrusions which extend outward from the drift layer, and
wherein the static induction transistor further comprises a plurality of source regions constructed of heavily-doped silicon carbide having the selected conductivity type, each source region being disposed upon a respective one of the protrusions of the drift layer;
a gate material provided along the drift layer between two adjacent ones of the protrusions;
a gate contact provided upon the gate material;
a drain contact provided along the substrate layer; and
source contacts provided along respective ones of the source regions.

5,612,548
DIAMOND LIGHT-EMITTING ELEMENT

Kimitsugu Saito, and Koichi Miyata, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

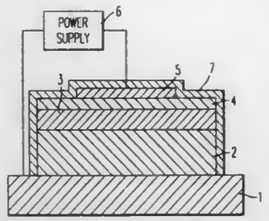
Continuation of Ser. No. 400,872, Mar. 8, 1995, abandoned. This application Feb. 12, 1996, Ser. No. 598,618

Claims priority, application Japan, Apr. 7, 1994, 6-069201

Int. Cl.[6] **H01L** *31/0312*

U.S. Cl. 257—77 **7 Claims**

1. A diamond light-emitting element comprising:
a first semiconducting diamond layer;
a second semiconducting diamond layer deposited on said first semiconducting diamond layer; and



first and second electrodes attached to said first and second semiconducting diamond layers, respectively, wherein said second semiconducting diamond layer has a crystal defect density of at least 10^{11} cm^{-2}.

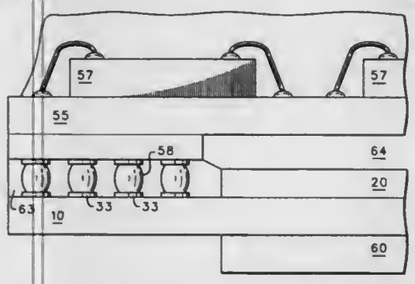
5,612,549
INTEGRATED ELECTRO-OPTICAL PACKAGE

Ronald J. Nelson, Scottsdale; John W. Stafford, Phoenix, and Thomas B. Harvey, III, Scottsdale, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Mar. 24, 1994, Ser. No. 217,000

Int. Cl.[6] **H01L** *31/0232*

U.S. Cl. 257—88 **35 Claims**



1. An integrated electro-optical package comprising:
an optically transparent substrate with an array of light emitting devices formed thereon and cooperating to generate a complete real image, the light emitting devices being positioned in rows and columns to define all pixels of the real image and operably connected to connection pads adjacent outer edges of the optically transparent substrate;
a driver substrate defining a central area substantially coextensive with the real image generated by the optically transparent substrate and mounting pads formed on a surface surrounding the central area, the connection pads on the optically transparent substrate being bump bonded to the mounting pads on the driver substrate;
a plurality of driver circuits positioned on the driver substrate and connected to the array of light emitting devices through the mounting pads on the driver substrate and the connection pads on the optically transparent substrate; and
a lens system mounted to the optically transparent substrate over the complete real image and on a side of the optically transparent substrate opposite the array of light emitting devices to receive and magnify the complete real image and produce an easily viewable virtual image.

5,612,550
HETEROJUNCTION TYPE SEMICONDUCTOR DEVICE HAVING ORDERED PHASE ALLOY LAYERS FOR ACTIVE AND CLADDING LAYERS

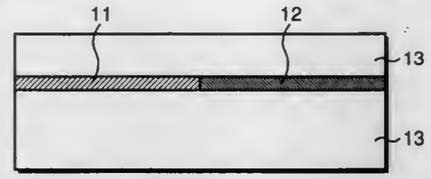
Akiko Gomyo, and Tobru Suzuki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 395,500

Claims priority, application Japan, Feb. 24, 1994, 6-025827; Jan. 30, 1995, 7-013074

Int. Cl.[6] **H01L** *31/0328;* **H01S** *3/30;3/19*

U.S. Cl. 257—184 **12 Claims**



1. A heterojunction semiconductor device which has an ordered structure of at least two kinds of anion on a face centered cubic (FCC) sublattice and is constituted by a plurality of kinds of compound semiconductor layers including one or more kinds of compound semiconductor alloys, wherein the improvement comprises a plurality of ordered phase alloy layers, at least a part of each of said ordered phase alloy layers having a crystal structure (triple-period structure) in which the ordered alloy is of a composition corresponding to direction "A" and which has an anion composition modulation period that is triple that of a disordered structure.

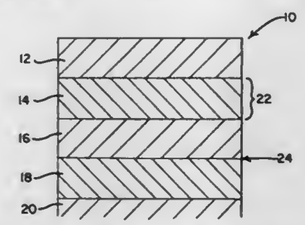
5,612,551
ALPSB/INP SINGLE HETEROJUNCTION BIPOLAR TRANSISTOR ON INP SUBSTRATE FOR HIGH-SPEED, HIGH-POWER APPLICATIONS

Takyiu Liu; Chanh Nguyen, both of Newbury Park, and Mehran Matloubian, Encino, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Division of Ser. No. 468,584, Jun. 6, 1995. This application Jun. 27, 1996, Ser. No. 672,210

Int. Cl.[6] **H01L** *31/0328*

U.S. Cl. 257—197 **8 Claims**



1. An epitaxial structure for a single heterojunction bipolar transistor comprising:
(a) a collector over a semiconductive support, said collector comprising a first semiconductor material;
(b) a base over said collector, said base comprising a second semiconductor material; and
(c) an emitter over said base, said emitter comprising about 39 mole percent AlP and about 61 mole percent Sb.

5,612,552

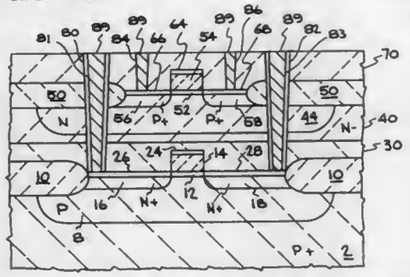
MULTILEVEL GATE ARRAY INTEGRATED CIRCUIT STRUCTURE WITH PERPENDICULAR ACCESS TO ALL ACTIVE DEVICE REGIONS

Alexander H. Owens, Los Gatos, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 220,732, Mar. 31, 1994, abandoned. This application Mar. 21, 1995, Ser. No. 408,035

Int. Cl.[6] H01L *27/10;29/76;29/04;27/01*

U.S. Cl. 257—202 17 Claims



1. A multilevel gate array integrated circuit structure wherein each region of each active device in the multilevel gate array integrated circuit structure is directly accessible normal to the plane of the underlying substrate comprising:

a) a semiconductor substrate;

b) a first level of active semiconductor devices formed in and on said semiconductor substrate, each of said active semiconductor devices of said first level having a plurality of semiconductor regions and at least one electrode region;

c) a first insulation layer over said first level of semiconductor devices;

d) at least one further semiconductor layer formed over said first insulation layer and having active semiconductor devices formed therein to comprise a second level of active semiconductor devices positioned to permit access, perpendicular to the plane of said substrate, to each of said semiconductor and electrode regions of each of said semiconductor devices formed in said first level of active semiconductor devices in said substrate, each of said active semiconductor devices of said second level having a plurality of semiconductor regions and at least one electrode region; and

e) a second insulation layer formed over said second level of semiconductor devices;

whereby each of said semiconductor regions and said at least one electrode region of each active semiconductor device formed in each of said first level of semiconductor devices and said second level of semiconductor devices is directly accessible perpendicular to the plane of said substrate.

5,612,553

SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF FABRICATING SAME AND METHOD OF ARRANGING CELLS

Takahiko Arakawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1995, Ser. No. 435,659

Claims priority, application Japan, Aug. 9, 1994, 6-186972

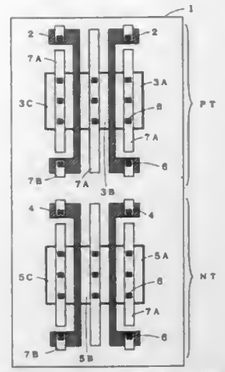
Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—206 5 Claims

1. A semiconductor integrated circuit including a plurality of basic cells arranged on a semiconductor chip, each of said plurality of basic cells including a transistor portion, said transistor portion comprising:

first and second diffused regions of a predetermined conductivity type and selectively formed on said semiconductor chip;

a control electrode formed on a region between said first and second diffused regions; and



a diffused region line formed on a wiring-required diffused region, said wiring-required diffused region being at least one of said first and second diffused regions, said diffused region line being electrically connected to said wiring-required diffused region,

wherein:

said diffused region line of said transistor portion extends outwardly beyond said wiring-required diffused region and includes an out-of-diffused-region connecting region for electrical connection over a region external to said wiring-required diffused region;

said diffused region line is formed in a first layer;

each of said plurality of basic cells further includes

a first transistor line formed in a second layer different from said first layer, and

first contact means having a first end connected to said first transistor line and a second end connected to said out-of-diffused-region connecting region of said diffuse region line for electrical connection between said first transistor line and said diffused region line;

said transistor portion includes a plurality of transistor portions each including a control electrode line formed in said first layer over a region of said control electrode, and second contact means having a first end connected to said first transistor line and a second end connected to said control electrode line for electrical connection between said first transistor line and said control electrode line; and

at least said first and second contact means electrically connect at least two of said plurality of transistor portions to establish respective a first logic function.

5,612,554

CHARGE DETECTION DEVICE AND DRIVER THEREOF

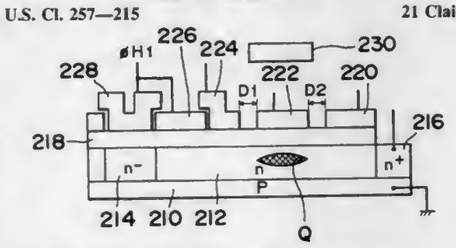
Hiromasa Funakoshi, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1994, Ser. No. 263,892

Claims priority, application Japan, Jun. 23, 1993, 5-152056; Dec. 10, 1993, 5-310439

Int. Cl.[6] H01L *27/148*

U.S. Cl. 257—215 21 Claims



1. A driver of a charge detection device comprising:

a floating gate amplifier comprising a bias means;

a charge coupled device which uses said floating gate amplifier for charge detection;

a sample and hold means for sampling a part of an output signal of said charge coupled device; and

a controller for controlling a signal applied to said bias means according to an output of said sample and hold means.

5,612,555

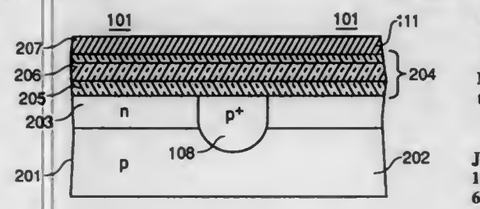
FULL FRAME SOLID-STATE IMAGE SENSOR WITH ALTERED ACCUMULATION POTENTIAL AND METHOD FOR FORMING SAME

Constantine N. Anagnostopoulos, Mendon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,370

Int. Cl.[6] H01L *27/148;29/768;29/792*

U.S. Cl. 257—222 11 Claims



1. A full frame solid-state image sensor of altered accumulation potential, which comprises:

(a) a substrate comprising a semiconductor of one conductivity type and having a surface;

(b) at least one photodetector at said surface of said substrate, said photodetector comprising a first storage area and a second storage area, said first storage area and said second storage area each comprising a CCD channel of conductivity type opposite to the conductivity type of said semiconductor;

(c) a first barrier region between said first storage area and said second storage area;

(d) a second barrier region between said second storage area and an adjacent photodetector wherein said second barrier region is shallower than said first barrier region;

(e) a channel stop of the same conductivity type as said semiconductor adjacent to one side of said photodetector;

(f) a first gate and a second gate each comprising a conductive layer overlying said CCD channel; and

(g) interposed between said CCD channel and said conductive layer, an O—N—O dielectric comprising a first silicon dioxide layer, a second silicon dioxide layer, and a silicon nitride layer interposed between said first and second silicon dioxide layers; wherein said silicon nitride layer comprises a trapped electric charge sufficient to alter said accumulation potential by 3 to 4 volts, said trapped electric charge being injected into said silicon nitride layer by applying a stress potential to said first and second gates.

5,612,556

MONOLITHIC INTEGRATION OF MICROWAVE SILICON DEVICES AND LOW LOSS TRANSMISSION LINES

Satwinder Malhi, Garland; Chi-Cheong Shen, Richardson, and Oh-Kyong Kwon, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 985,095, Nov. 30, 1992, Pat. No. 5,457,068. This application Apr. 25, 1995, Ser. No. 427,761

Int. Cl.[6] H01L *29/80;31/112;* H01P *3/08;1/00*

U.S. Cl. 257—275 15 Claims

1. A semiconductor device comprising:

(a) a silicon substrate having a first surface containing moat regions and high resistivity regions surrounding said moat regions;

(b) an active device disposed in each of said moat regions; and

(c) an electrically conductive interconnect disposed over a said high resistivity region and forming a microwave transmission line coupled to active devices in moat regions adjacent said high resistivity region.

5,612,557

SEMICONDUCTOR DEVICE HAVING AN INTER-LAYER INSULATING FILM DISPOSED BETWEEN TWO WIRING LAYERS

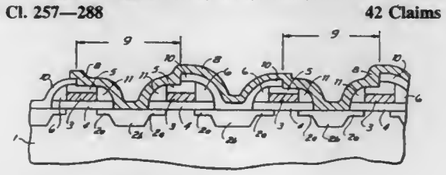
Toshihiko Kondo; Kazuo Tanaka, and Hirofumi Yasuda, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 284,733, Aug. 2, 1994, abandoned, which is a continuation of Ser. No. 980,046, Nov. 23, 1992, abandoned, which is a division of Ser. No. 531,672, Jun. 1, 1990, Pat. No. 5,191,402, which is a continuation-in-part of Ser. No. 202,649, Jun. 7, 1988, Pat. No. 5,075,762, and Ser. No. 360,611, Jun. 2, 1989, Pat. No. 4,931,996, which is a continuation of Ser. No. 114,311, Oct. 27, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 487,352

Claims priority, application Japan, Oct. 27, 1986, 61-164538; Jun. 9, 1987, 62-143717; Jun. 12, 1987, 62-145297; Jun. 30, 1987, 62-163497; Nov. 4, 1987, 62-278566; Feb. 24, 1988, 63-41253

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—288 42 Claims



1. A semiconductor device, comprising:

a substrate;

a first insulating film carried on said substrate;

a first conductor layer having sides and carried on said first insulating film;

an interlayer insulating film overlying the first conductor layer and the first insulating film, the interlayer insulating film having:

a top portion which overlies the first conductor layer; and

a pair of sidewall portions which overlie the first insulating film and are adjacent to and in contact with the sides of the first conductor layer; and

a second conductor layer which extends from overlying part of the top portion of the interlayer insulating film to and in contact with an exposed portion of the substrate and adjacent the first insulating film;

wherein a portion of the second conductor layer is in contact with a portion of the interlayer insulating film.

5,612,558

HEMISPHERICAL GRAINED SILICON ON REFRACTORY METAL NITRIDE

Steven T. Harshfield, Emmett, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 15, 1995, Ser. No. 558,164

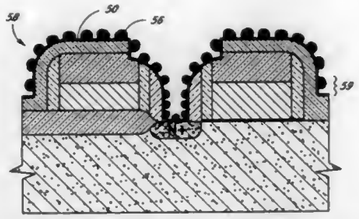
Int. Cl.[6] H01L *27/108*

U.S. Cl. 257—298 5 Claims

1. A capacitor plate, the plate comprising:

a conductive seed layer electrically connected to an active area of an underlying substrate; and

a rough polysilicon layer comprised of a plurality of silicon grains directly contacting the conductive seed layer, the seed



layer positioned between the rough polysilicon layer and the substrate and providing mechanical support for the silicon grains, electrical connection among the silicon grains, and electrical connection between the polysilicon layer and the active area.

5,612,559

SEMICONDUCTOR DEVICE HAVING PILLAR SHAPED TRANSISTOR AND A METHOD FOR MANUFACTURING THE SAME

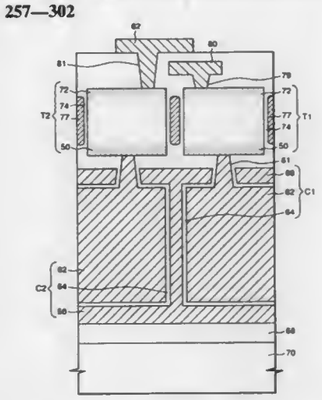
Kyu-chan Park, Songtan; Tae-earn Shim, Seongnam, and Seon-il Yu, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 30, 1994, Ser. No. 298,470

Claims priority, application Rep. of Korea, Nov. 24, 1993, 93-25138

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—302 **7 Claims**



1. A semiconductor memory device including a plurality of first semiconductor substrates and a plurality of memory cells contacted by a plurality of bit lines, each of said memory cells comprising:

a pillar-shaped vertical transistor formed by one of said first semiconductor substrate and comprising:

a first impurity region at a first end of a pillar formed by said one of said first semiconductor substrates,

a second impurity region at a second end of said pillar, and

a gate electrode surrounding a channel region of said pillar;

a capacitor connected to said first impurity region of said pillar-shaped vertical transistor; and

a first of said plurality of bitlines connected to said second impurity region of one of said pillar-shaped vertical transistors, said first of said plurality of bitlines overlapping a second of said plurality of bitlines.

5,612,560

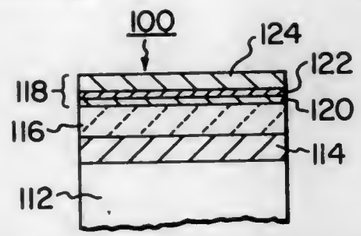
ELECTRODE STRUCTURE FOR FERROELECTRIC CAPACITORS FOR INTEGRATED CIRCUITS

Vasanta Chivukula, Nepean, and Pak K. Leung, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1995, Ser. No. 551,264

Int. Cl.[6] H01L *27/108*

U.S. Cl. 257—309 **8 Claims**



1. An integrated circuit comprising a ferroelectric capacitor having first and second conductive electrodes and a ferroelectric capacitor dielectric disposed therebetween,

at least one electrode of the first and second conductive electrodes comprising a first thin layer of a noble metal adjacent the ferroelectric dielectric, an intermediate thin layer of an other metal, and a second thicker layer of the noble metal, wherein non-uniform interdiffusion of the noble metal of said first thin layer and other metal of said intermediate thin layer at an interface between said at least one electrode and said ferroelectric dielectric form a mixed metal layer having a rough surface penetrating the ferroelectric dielectric, thereby anchoring said at least one electrode in the ferroelectric dielectric.

5,612,561

INVOLATILE SEMICONDUCTOR MEMORY

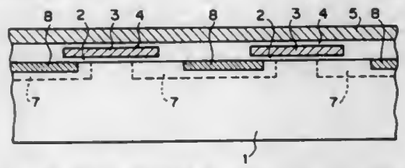
Noriaki Kodama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,837

Claims priority, application Japan, Dec. 22, 1993, 5-323839

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—314 **2 Claims**



1. A involatile semiconductor memory device comprising a virtual ground memory cell array wherein a composite gate having a first gate insulating film, a floating gate, a second gate insulating film and a control gate sequentially laminated on the surface of a semiconductor substrate is formed on the surface of a semiconductor substrate, a bit/source line being formed by a diffusion layer (integrally formed by diffusion layers of source or drain of adjacent memory cells) extending perpendicular to the direction in which the channel extends, a word line being formed by connecting the control gate in the direction in which the channel of the adjacent memory cells extends;

one of said diffusion layers which serves as a source or a drain of said memory cell is high in impurity density and overlaps with the end of said floating gate, and the other is formed from the end of said floating gate spaced apart from a diffusion layer of low impurity density.

5,612,562

SEMICONDUCTOR COMPONENT FOR SUPPLYING, RECIRCULATING AND DEMAGNETIZING AN INDUCTIVE LOAD

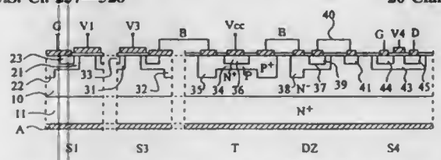
Jean-Louis Slaudeau, Belcodene, and Antoine Pavlin, Puyricard, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Sep. 14, 1995, Ser. No. 528,201

Claims priority, application France, Sep. 30, 1994, 94 11975

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—328 **20 Claims**



1. A semiconductor component for switching an inductive load, comprising:

first and second external terminals, first and second control terminals, and a node;

a vertical bipolar transistor having a base region and being disposed between the first external terminal and said node;

a first vertical transistor disposed between said node and the second external terminal; and

a zener diode and a second vertical transistor connected in parallel between the base of said vertical bipolar transistor and said node.

5,612,563

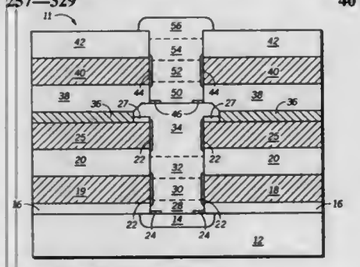
VERTICALLY STACKED VERTICAL TRANSISTORS USED TO FORM VERTICAL LOGIC GATE STRUCTURES

Jon T. Fitch; Carlos A. Mazuré, and Keith E. Witek, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 3,813, Jan. 11, 1993, Pat. No. 5,308,778, which is a continuation of Ser. No. 844,044, Mar. 2, 1992, Pat. No. 5,286,674. This application Jan. 25, 1994, Ser. No. 186,872

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—329 **40 Claims**



1. A transistor structure comprising:

plurality of M stacked transistors, where M is an integer, each of the M stacked transistors having:

a base layer having a surface;

a first dielectric layer overlying the base layer;

a control electrode conductive layer overlying the first dielectric layer;

a second dielectric layer overlying the control electrode conductive layer;

a device opening formed through each of the first dielectric layer, the control electrode conductive layer, and the second dielectric layer to expose the base layer, the device opening separating the control electrode conductive layer into N control electrode(s) where N is an integer, each of the N control electrode(s), having a sidewall;

a sidewall dielectric formed laterally adjacent each sidewall of the N control electrode(s),

a first current electrode formed within the device opening and overlying the base layer;

a channel region formed within the device opening, laterally adjacent each sidewall dielectric of the N control electrode(s), and overlying the first current electrode;

a second current electrode formed overlying the channel region; and

wherein each of the M stacked transistors have N control electrode(s) where N is a finite positive integer, each of the M stacked transistors, except an Mth top transistor which overlies all other M stacked transistors, having a second current electrode thereof electrically coupled to a first current electrode of an immediately overlying transistor, the transistor structure having an output conductor for providing an output signal, the output conductor being coupled to one second current electrode of one of the M stacked transistors wherein the one of the M stacked transistors is any of the M stacked transistors except the Mth top transistor which overlies all other M stacked transistors.

5,612,564

SEMICONDUCTOR DEVICE WITH LIMITER DIODE

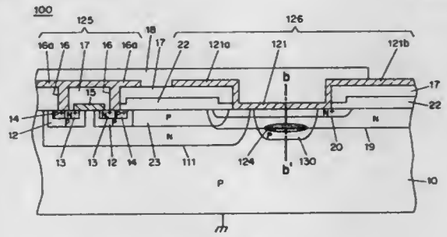
Naoto Fujishima, and Gen Tada, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,772

Claims priority, application Japan, Jan. 6, 1994, 6-000176

Int. Cl.[6] H01L *29/76;31/062*

U.S. Cl. 257—341 **8 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a well region of a second conductivity type formed from a major surface of the semiconductor substrate;

a pair of first base layers of the first conductivity type formed in the well region;

a pair of respective source layers of the second conductivity type formed in the first base layers;

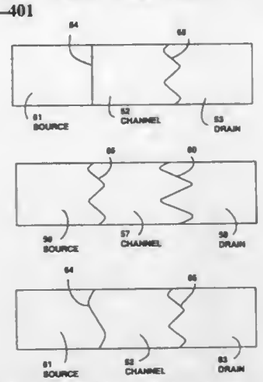
a gate electrode on a gate insulation film, coupled with the first base layers as a back gate and bridging the source layers over the well region;

a drain region of the second conductivity type formed from the major surface of the semiconductor substrate, connected with an edge portion of the well region;

a second base layer of the first conductivity type formed from a surface of the well region, bridging one of the first base layers and the drain region; and

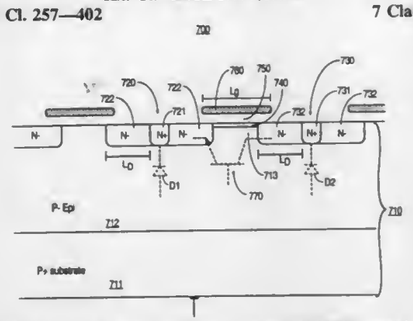
a further well region, of the first conductivity type, contacting an edge portion of the drain region.

5,612,565
SEMICONDUCTOR DEVICE HAVING CHANNEL BOUNDARY WITH UNEVEN SHAPE
Naoto Kusumoto, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Filed Dec. 5, 1994, Ser. No. 353,279
Claims priority, application Japan, Dec. 8, 1993, 5-340705
Int. Cl.[6] H01L 29/06
U.S. Cl. 257—401 23 Claims



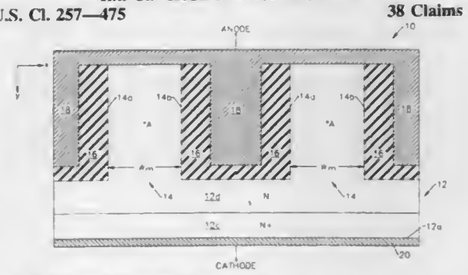
1. A semiconductor device comprising a source region, a drain region, and a channel region provided between the source region and the drain region,
wherein at least one of a boundary between the channel region and the source region and a boundary between the channel region and the drain region has an uneven shape having an amplitude smaller than a channel length of the channel region.

5,612,566
BIDIRECTIONAL BLOCKING LATERAL MOSFET WITH IMPROVED ON-RESISTANCE
Richard K. Williams, Cupertino, Calif., assignor to Siliconix incorporated, Santa Clara, Calif.
Continuation of Ser. No. 160,560, Nov. 30, 1993, Pat. No. 5,510,747. This application Dec. 8, 1995, Ser. No. 569,334
Int. Cl.[6] H01L 29/78;29/86
U.S. Cl. 257—402 7 Claims



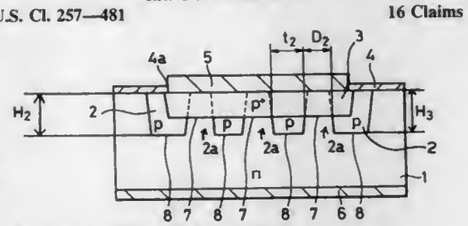
1. A bidirectional current blocking power MOSFET comprising:
a semiconductor substrate;
a first region of a first conductivity type and a second region of said first conductivity type formed in said substrate, respectively;
a body region of a second conductivity type formed in said substrate, said body region comprising a channel located between said first and second regions, said body region being connected to ground, neither of said first and second regions being shorted to said body region;
a threshold adjust layer disposed in said body region between said first and second regions; and
a gate formed over said channel;
wherein during certain time intervals the voltage of said first region is above the voltage of said second region and during other time intervals the voltage of said first region is below the voltage of said second region, the respective voltages of said first and second regions being within a range which includes ground and voltages on one side of ground such that respective PN junctions between said body region and said first and second regions, respectively, are reverse-biased.

5,612,567
SCHOTTKY BARRIER RECTIFIERS AND METHODS OF FORMING SAME
Bantval J. Baliga, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.
Filed May 13, 1996, Ser. No. 645,231
Int. Cl.[6] H01L 27/095;29/00;29/93
U.S. Cl. 257—475 38 Claims



1. A Schottky rectifier, comprising:
a semiconductor substrate having first and second opposing faces;
a cathode region of first conductivity type in said semiconductor substrate, adjacent the first face;
a drift region of first conductivity type in said semiconductor substrate, said drift region extending between said cathode region and the second face and having a concentration of first conductivity type dopants therein which increases monotonically in a direction from the second face to said cathode region;
a cathode electrode contacting said cathode region;
a trench in said semiconductor substrate at the second face, said trench having a bottom and sidewall extending adjacent said drift region;
an insulating region on the sidewall; and
an anode electrode on the second face and on said insulating region, said anode electrode forming a Schottky rectifying junction with said drift region at the second face.

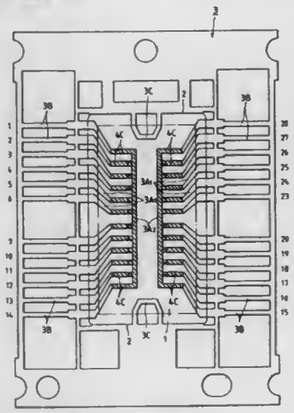
5,612,568
LOW-NOISE ZENER DIODE
Takao Arai, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 21, 1995, Ser. No. 560,190
Claims priority, application Japan, Nov. 22, 1994, 6-287740
Int. Cl.[6] H01L 29/861
U.S. Cl. 257—481 16 Claims



1. A low-noise Zener diode comprising:
a semiconductor substrate of a first conductivity type;

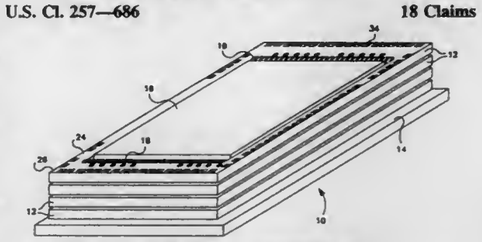
a first impurity doped region of a second conductivity type opposite to said first conductivity type, said first impurity doped region being formed in a surface area of said substrate;
said first impurity doped region having spaces into which no impurity of said second conductivity type is doped;
a second impurity doped region of said second conductivity type formed in said first impurity doped region, said second impurity doped region having a depth less than that of said first impurity doped region;
said second impurity doped region being contacted with said substrate in said spaces for producing a plurality of main p-n junctions of said diode at an interface of said second impurity doped region and said substrate;
said second impurity doped region being contacted with said first impurity doped region outside said spaces;
a first electrode electrically connected to said second impurity doped region; and
a second electrode electrically connected to said substrate;
wherein heat generation zones of said plurality of main p-n junctions are combined with each other to produce a total heat generation zone that is greater than a sum area of said plurality of main p-n junctions.

5,612,569
SEMICONDUCTOR DEVICE
Gen Murakami, Machida; Kunihiro Tsubosaki, Hino; Masahiro Ichitani, Kodaira; Kunihiko Nishi, Kokubunji; Ichiro Anjoh, Koganei; Asao Nishimura, Ushiku; Makoto Kitano; Akihiro Yaguchi, both of Shimoinayoshi; Sueo Kawai, Iwama-machi; Masatsugu Ogata, Hitachi; Syuuji Eguchi, Hitachi; Hiroyoshi Kokaku, Hitachi; Masanori Segawa, Hitachi; Hiroshi Hozoji, Hitachi; Takashi Yokoyama, Hitachi; Noriyuki Kinjo, Hitachi; Aizo Kaneda, Yokohama; Junichi Saeki, Yokohama; Shozo Nakamura, Yokohama; Akio Hasebe, Yokohama; Hiroshi Kikuchi, Zushi; Isamu Yoshida, Yokohama; Takashi Yamazaki; Kazuyoshi Oshima, both of Ohme, and Tetsurou Matsumoto, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 293,555, Aug. 22, 1994, Pat. No. 5,530,286, which is a division of Ser. No. 990,272, Dec. 14, 1992, Pat. No. 5,358,904, which is a division of Ser. No. 915,861, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 690,551, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 409,332, Sep. 19, 1989, Pat. No. 5,068,712. This application Jun. 5, 1995, Ser. No. 464,131
Claims priority, application Japan, Mar. 20, 1988, 1-65844; Sep. 20, 1988, 63-236156
Int. Cl.[6] H01L 23/495;23/48;23/52;29/40
U.S. Cl. 257—666 9 Claims



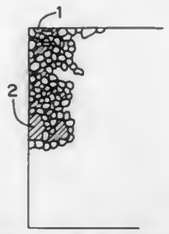
1. A semiconductor device comprising:

5,612,570
CHIP STACK AND METHOD OF MAKING SAME
Floyd K. Eide, Huntington Beach; John A. Forthun, Glendora, and Harlan Isaak, Costa Mesa, all of Calif., assignors to Dense-Pac Microsystems, Inc., Garden Grove, Calif.
Filed Apr. 13, 1995, Ser. No. 421,801
Int. Cl.[6] H01L 23/02
U.S. Cl. 257—686 18 Claims



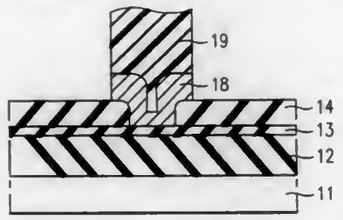
5. A chip stack comprising the combination of:
a plurality of integrated circuit chip packages formed into a stack, each of the chip packages including an integrated circuit chip and a frame, said integrated circuit chip being mounted within said frame and said integrated circuit chip being electrically coupled to conductive pads on opposite upper and lower surfaces of the frame, the conductive pads on the upper surfaces of the frames of at least some of the plurality of chip packages being soldered to the conductive pads on the lower surface of the frames of at least some of the plurality of chip packages to hold the chip stack together and provide electrical interconnection between the chip packages, each of the plurality of integrated circuit chip packages, including the conductive pads on the opposite upper and lower surfaces of the frame thereof, being of identical configuration to the other chip packages in the stack and being individually addressable to the exclusion of the other chip packages in the stack.
a semiconductor chip having a rectangular shape, said semiconductor chip including a main surface, a circuit and external terminals formed in said main surface;
an insulating film formed over said main surface and having slits formed therein for defining a first portion and second portions, said first portion of said insulating film extending in a first direction substantially parallel to a longer side of said semiconductor chip, said second portions extending towards said longer side of said semiconductor chip in a second direction substantially perpendicular to said first direction and said second portions of said insulating film being spaced from each other by said slits in said first direction;
a first lead having a first inner lead portion extending in said first direction and being arranged on said first portion of said insulating film;
second leads spaced from the first lead, each second lead having a second inner lead portion and an outer lead portion, each of said second inner lead portions extending toward said first inner lead portion of said first lead and being arranged, respectively, on each of said second portions of said insulating film;
bonding wires for electrically connecting said external terminals of said semiconductor chip with said first and second inner lead portions; and
an encapsulator encapsulating said semiconductor chip, said insulating film, said first and second inner lead portions of said first and second leads and said bonding wires.

5,612,571
SPUTTERED SILICIDE FILM
Michio Satou; Takasi Yamanobe; Mituo Kawai, all of Yokohama; Tooru Komatu, Yokosuka; Hiromi Shizu, Fujisawa, and Noriaki Yagi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 345,405, Nov. 21, 1994, Pat. No. 5,508,000, which is a division of Ser. No. 793,384, Mar. 13, 1992, Pat. No. 5,409,517. This application Aug. 9, 1995, Ser. No. 512,911
Claims priority, application Japan, May 15, 1990, 2-123054
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—757 **20 Claims**



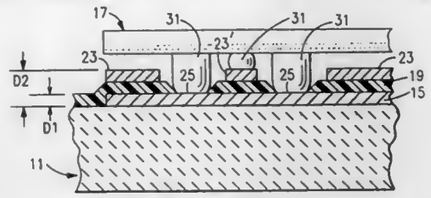
1. A silicide film having a carbon content of less than 100 ppm manufactured by depositing material removed from a sputtering target on a substrate, wherein said sputtering target comprises a metal silicide phase comprising a metal silicide having a stoichiometric composition MSi_2, where M is a metal, coupled in link form so as to provide a metal silicide phase and an Si phase comprising Si grains dispersed in the gaps of the metal silicide phase discontinuously so as to provide a compact mixed structure of the target, and wherein a carbon content of the mixed structure is less than 100 ppm.

5,612,572
SEMICONDUCTOR DEVICE WITH AN INSULATION GROOVE
Young K. Jun, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea
Division of Ser. No. 445,164, May 19, 1995, abandoned, which is a continuation of Ser. No. 173,982, Dec. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 472,006
Int. Cl.[6] H01L *23/522;23/532*
U.S. Cl. 257—758 **9 Claims**



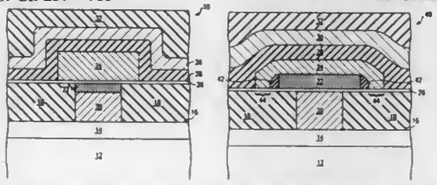
1. A semiconductor device with an improved wiring structure comprising:
a semiconductor substrate;
an insulation structure formed on the substrate, the insulation structure comprising an inter-layer insulation film formed on the substrate, an etch stopper formed on the interlayer insulation film, and a supplemental insulation film formed on the etch stopper and including a first groove extending along a top surface of the insulation structure, the first groove having a length which is greater than a width and having an upper portion with rounded corners; and
a wiring film formed in the first groove of the insulation structure, and including a second groove extending along a top surface of the wiring film, the second groove having a length which is greater than a width, and the second groove following the length of the first groove.

5,612,573
ELECTRONIC PACKAGE WITH MULTILEVEL CONNECTIONS
Robert L. Lewis, Apalachin; Robert D. Sebesta, Endicott, and Daniel M. Waits, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 233,193, Apr. 26, 1994. This application Jan. 11, 1996, Ser. No. 584,757
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—758 **14 Claims**



1. A circuitized substrate comprising:
an electronic device including a substantially flat surface having first and second equal amount solder elements thereon;
a dielectric substrate including an upper surface;
a first circuit pattern on said upper surface and including at least one exposed contact location established at a first distance from said upper surface;
a layer of dielectric material positioned on said first circuit pattern and including at least one opening therein located adjacent said one exposed contact location to thereby provide exposure of said contact location;
a second circuit pattern located on said layer of dielectric material and including at least one exposed contact location established at a second distance from said upper surface of said dielectric substrate and spaced at a predetermined distance from said exposed contact location of said first circuit pattern, said second distance being greater than said first distance, said exposed contact locations of said first and second circuit patterns being separately directly electrically coupled to said first and second equal amount solder elements of said electronic device, respectively.

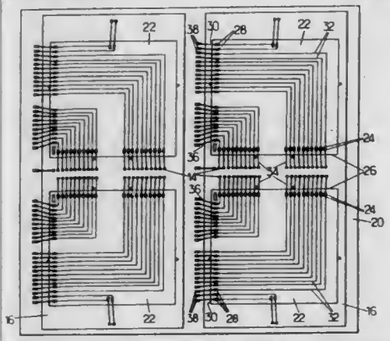
5,612,574
SEMICONDUCTOR STRUCTURES USING HIGH-DIELECTRIC-CONSTANT MATERIALS AND AN ADHESION LAYER
Scott R. Summerfelt, Dallas, and Howard R. Beratan, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 6, 1995, Ser. No. 476,948
Int. Cl.[6] H01L *29/12;29/92;29/68;* **H01G** *4/10*
U.S. Cl. 257—783 **20 Claims**



1. A semiconductor device formed outwardly from an outer surface of a semiconductor substrate, comprising:
an active region disposed proximate the outer surface of the substrate;
a conductive plug electrically connected to the active region;

an interlevel isolation layer disposed adjacent the outer surface of the semiconductor substrate and surrounding the conductive plug;
an inner electrode electrically coupled to the conductive plug and disposed proximate portions of an outer surface of the interlevel isolation layer; and
an adhesion layer overlying the conductive plug and disposed between the interlevel isolation layer and the inner electrode, the adhesion layer comprising at least partially oxidized titanium and having a thickness in the range of 2 to 100 angstroms, the adhesion layer operating to cause adhesion between the material comprising the interlevel isolation layer and the material comprising the inner electrode.

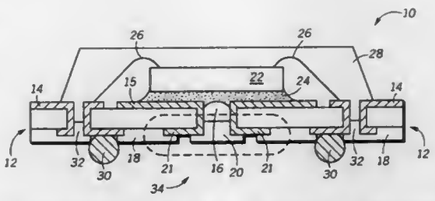
5,612,575
METHOD OF CONNECTING THE OUTPUT PADS ON AN INTEGRATED CIRCUIT CHIP, AND MULTICHIP MODULE THUS OBTAINED
Jacques De Givry, Les Loges en Josas, France, assignor to Matra Marconi Space France, Paris, France
Filed May 16, 1995, Ser. No. 441,747
Claims priority, application France, May 20, 1994, 94 06183
Int. Cl.[6] H01L *23/48;23/52;23/40*
U.S. Cl. 257—786 **4 Claims**



1. Multichip module, comprising a substrate, integrated-circuit chips each having a lower face fixed to the substrate and an upper face provided with output pads, at least some of the output pads of each chip being located other than on the periphery of the upper face of said chip, and connection means for connecting the output pads to the substrate, wherein the connection means comprise at least one wire-bonding adaptor in the form of a board, having an upper face with first bonding pads along at least one first edge thereof and second bonding pads along at least one second edge thereof, and including electrical connections between the first and second bonding pads, wherein the wire-bonding adaptor is bonded adhesively by a lower face thereof to the upper face of one of the chips so that said first edge is adjacent to a row of output pads located other than on the periphery of the upper face of said one of the chips, and so that said second edge is adjacent to the periphery of said one of the chips, and wherein bonding wires are bonded, on the one hand, between the output pads of said row and the first bonding pads and, on the other hand, between the second bonding pads and conducting pads on the substrate.

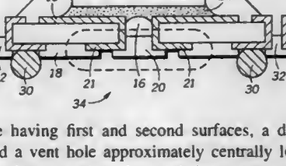
5,612,576
SELF-OPENING VENT HOLE IN AN OVERMOLDED SEMICONDUCTOR DEVICE
Howard P. Wilson, and Fonzell D. J. Martin, both of Austin, Tex., assignors to Motorola, Schaumburg, Ill.
Filed Oct. 13, 1992, Ser. No. 960,337
Int. Cl.[6] H01L *23/29*
U.S. Cl. 257—788 **12 Claims**

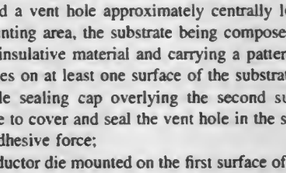
1. A self-opening vent hole semiconductor device comprising:



a substrate having first and second surfaces, a die mounting; area, and a vent hole approximately centrally located in the die mounting area, the substrate being composed of an electrically insulative material and carrying a pattern of conductive traces on at least one surface of the substrate;
a vent hole sealing cap overlying the second surface of the substrate to cover and seal the vent hole in the substrate with a first adhesive force;
a semiconductor die mounted on the first surface of the substrate on the die mounting area with an adhesive having a second adhesive force between the semiconductor die and the die mounting area of the substrate, the semiconductor die being electrically connected to the pattern of conductive traces;
a package body formed by an encapsulating material covering the semiconductor die on the first surface of the substrate, wherein the package body and the vent hole sealing cap are composed of different materials and wherein the vent hole sealing cap is physically isolated from the package body, the encapsulating material having a third adhesive force to the substrate; and
a plurality of external electrical connections to the semiconductor die, wherein the plurality of external electrical connections are electrically connected to the pattern of conductive traces;
wherein said second and third adhesive forces are stronger than said first adhesive force, thus making the vent hole sealing cap a weakest interface in the self-opening vent hole semiconductor device such that the vent hole sealing cap automatically breaks away from the vent hole at a vapor pressure that is less than a destructive pressure to the semiconductor device.

5,612,577
SYMMETRICAL CIRCUIT CONNECTION BOARD FOR VEHICLE APPLICATION
Robert M. Schmidt, Livonia, and John R. Cranick, White Lake, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Aug. 11, 1995, Ser. No. 514,409
Int. Cl.[6] H05K *1/02*
U.S. Cl. 307—10.1 **17 Claims**





1. A circuit connection board for use in a vehicle comprising:
a central planar circuit portion having opposed faces to be contacted by electrical contact members; and

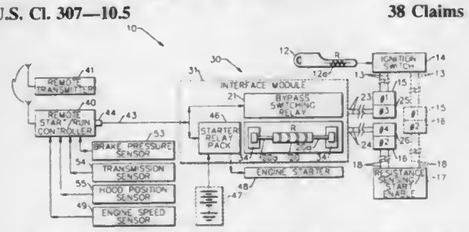
a body surrounding said circuit portion, said body including openings extending to said circuit portion to provide access to said circuit portion for connection of electrical contact members, said circuit portion mounted at an approximate midsection of said body, and said openings extending from each of said opposed faces of said circuit portion to opposed faces of said body, such that portions of both of said opposed faces of said central planar circuit portion are exposed for contact by said electrical contact members and such that either of said opposed faces of said body can be placed outwardly for selective use in one of two sides of a vehicle.

5,612,578

VEHICLE ENGINE START CONTROL APPARATUS INCLUDING INTERFACE DEVICE FACILITATING INSTALLATION AND RELATED METHOD

Robert L. Drew, Bowdon, Ga., assignor to Kenneth E. Flick, Douglasville, Ga.

Filed Oct. 31, 1995, Ser. No. 551,224
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.5 **38 Claims**



1. A remote engine starting apparatus for bypassing a theft-deterring start control circuit to permit remote starting of a vehicle engine, the theft-deterring start control circuit comprising an ignition switch for receiving a designated key having a preselected resistance, a first connector coupled to the ignition switch, a resistance sensing circuit portion for preventing starting of the vehicle engine unless the preselected resistance is sensed, and a second connector coupled to the resistance sensing circuit portion, the second connector being matable with the first connector; said remote engine starting apparatus comprising:

an interface device comprising

a housing,

bypass means positioned in said housing and comprising a bypass resistor and switching means for selectively coupling the bypass resistor to the resistance sensing circuit portion of the theft-deterring start control circuit to thereby enable vehicle engine starting without the designated key being received in the ignition switch, said bypass resistor having the preselected resistance of the designated key,

third and fourth connectors coupled to said bypass means and being removably mated with the first and second connectors, respectively, of the theft-deterring start control circuit to facilitate installation and removal of said interface device from the theft-deterring start control circuit;

a remote transmitter for sending a remote engine starting signal; and

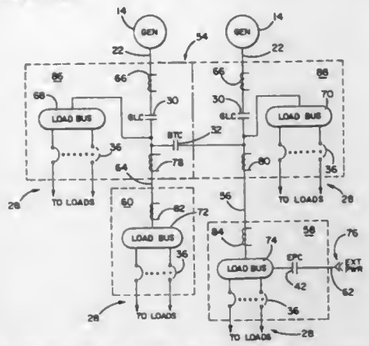
a receiver operatively connected to said bypass means for coupling the bypass resistor to the resistance sensing circuit portion to enable vehicle engine starting responsive to receiving the remote engine starting signal from the remote transmitter.

5,612,579

POWER DISTRIBUTION CENTER

Peter J. Wisbey, Machensey Park, and Lee R. Rateike, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 113,866, Aug. 27, 1993. This application Jun. 6, 1995, Ser. No. 469,959
Int. Cl.[6] H02J *1/10*
U.S. Cl. 307—18 **7 Claims**



1. An electric power generation and distribution system for an aircraft, comprising:

a first source of electrical energy having a predetermined rated capacity of electric power generation;

a first power distribution center having a main power input, a secondary power output, and a plurality of load distribution outputs;

a first set of main power feeders coupling said source of electrical energy to said main power input of said first power distribution center for conducting electrical energy thereto, said first set of main power feeders being of a gauge sufficient to conduct at least the rated capacity of said source of electrical energy;

a second power distribution center remotely located from said first power distribution center, said second power distribution center having a secondary power input and a plurality of load distribution outputs;

a first set of secondary power feeders coupling said secondary power output of said first power distribution center to said secondary power input of said second power distribution center for conducting electrical energy thereto, said first set of secondary power feeders being of a gauge sufficient to conduct the electrical energy required by said second power distribution center;

a second source of electrical energy having a predetermined rated capacity of electric power generation;

a third power distribution center having a main power input, a secondary power output, and a plurality of load distribution outputs;

a second set of main power feeders coupling said second source of electrical energy to said main power input of said third power distribution center for conducting electrical energy thereto, said second set of main power feeders being of a gauge sufficient to conduct at least the rated capacity of said second source of electrical energy;

a fourth power distribution center remotely located from said third power distribution center, said fourth power distribution center having a secondary power input and a plurality of load distribution outputs;

a second set of secondary power feeders coupling said secondary power output of said third power distribution center to said secondary power input of said fourth power distribution center for conducting electrical energy thereto, said second set of secondary power feeders being of a gauge sufficient to conduct the electrical energy required by said fourth power distribution center; and

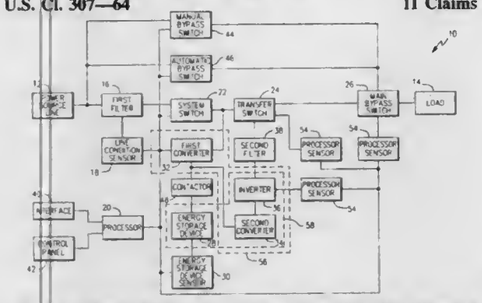
wherein said first power distribution center is located in close proximity to said third power distribution center in the center of the aircraft, and wherein said second power distribution center is located in the fore section of the aircraft, and wherein said fourth power distribution center is located in the aft section of the aircraft.

5,612,580

UNINTERRUPTIBLE POWER SYSTEM

Vytautas F. Janonis, Parma; Roland K. Massatti, Westlake, and Regis E. Novitskey, Mentor, all of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Oct. 10, 1995, Ser. No. 541,442
Int. Cl.[6] H02J *7/00*
U.S. Cl. 307—64 **11 Claims**



1. An uninterruptible power supply to provide AC electrical power from a power source line to a load, comprising:

a. a line booster circuit coupled to the power source line in a first on-line mode of operation to increase the voltage supplied to the load from the power source line in response to the voltage of the power source line dropping below a first voltage threshold value while being above a second threshold value or deviating from a specified frequency range;

said booster circuit including, (i) a first converter coupled to the power source line to rectify a line AC signal and generate a DC signal, (ii) a second converter coupled to the first converter to increase the voltage of said DC signal generated by said first converter in said first on-line mode of operation and coupled to an internal DC energy storage device providing another DC signal in a second on-line mode of operation, and (iii) an inverter coupled to the second converter to convert the DC signals from said first converter and said internal DC energy storage device to a load AC signal;

b. an internal supply circuit including said internal DC energy storage device to supply reserve power to the load in said second on-line mode of operation in response to the voltage of the power source line dropping below said second threshold value or exceeding a third threshold;

c. a transfer switch to selectively connect said power source line, said line booster circuit, and said internal supply circuit to the load;

d. a system switch to selectively connect the power source line to said line booster circuit and said transfer switch;

e. a main bypass switch to selectively connect the power source line and said transfer switch to the load;

f. a contactor interposed between said first converter and said DC energy storage device to selectively isolate said energy storage device from said first converter; and

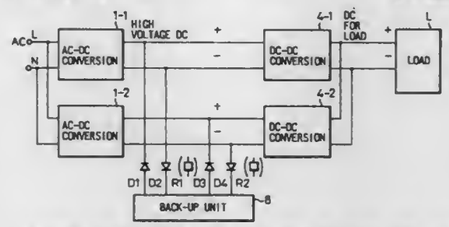
g. a processor for monitoring and controlling the power supply and being operable: (1) to configure said system switch, said transfer switch, and said main bypass switch to pass AC power directly from said power source line to said load in an off-line mode of operation, (2) to close said system switch to apply AC power from said power source to said line booster circuit and to configure said transfer switch to route AC power only from said inverter to said load in said first on-line mode of operation, and (3) to open said system switch to isolate AC power from the power source line, shut down said first converter and apply DC power from said DC energy storage device to said second converter through said contactor and configure said transfer switch so as to apply AC power only from said inverter to the main bypass switch in said second on-line mode of operation.

5,612,581

POWER SUPPLY APPARATUS WITH A BACK-UP POWER UNIT

Hironobu Kageyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 1, 1995, Ser. No. 551,414
Claims priority, application Japan, Jan. 18, 1995, 7-005895
Int. Cl.[6] H02J *7/00;* **H02M** *7/68*
U.S. Cl. 307—64 **6 Claims**



1. A power supply apparatus with a back-up power unit comprising:

a plurality of AC-DC conversion means each connected in parallel to an AC power source, and each converting an AC voltage of said power source to a high DC voltage;

a plurality of DC-DC conversion means each connected to an output of each AC-DC conversion means, each converting the high DC voltage to a low DC voltage to be supplied to a load, and each output thereof connected in parallel to said load; and

a back-up power means connected in parallel to the output of each AC-DC conversion means through a first and a second diode in order to supply the high DC voltage to the DC-DC conversion means when a failure occurs in said AC power source;

wherein the first diode is connected between a positive line of the AC-DC conversion means and a positive side of the back-up means in accordance with a connection direction in which the cathode of the first diode is connected to the positive line and the anode thereof is connected to the positive side, and the second diode is connected between a negative line of the AC-DC conversion means and a negative side of the back-up means in accordance with a connection direction in which the anode of the second diode is connected to the negative line and the cathode thereof is connected to the negative side.

5,612,582

SWITCHING DEVICE

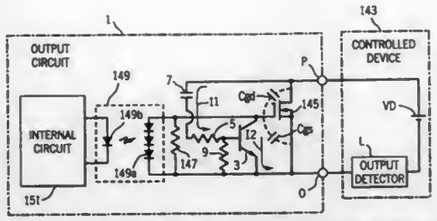
Makoto Shichi; Mamabu Hayakawa, both of Kariya, Japan, and Dennis M. Wright, Eastlake, Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jan. 2, 1996, Ser. No. 582,834
Int. Cl.[6] H01H *7/00*
U.S. Cl. 307—130 **5 Claims**

1. A switching device comprising: a transistor having a collector and an emitter, or a drain and a source connected, respectively, with two output terminals connected in series to a current line for supplying a current from a power supply to a predetermined load; and

and a drive control means for controlling the switching operation of the transistor by supplying a current or applying a voltage to a driving terminal connected to the base or the gate of the transistor to control the supply of current to the load;

characterized by;



a voltage application detecting means for detecting whether the supply voltage of the power supply is applied through the load across the two output terminals of the transistor; and

a voltage control means for forcibly holding the voltage applied to the driving terminal on a voltage level at which the transistor is turned off for a predetermined time when the voltage application detecting means detects the application of the supply voltage of the power supply across the two output terminals of the transistor.

5,612,583

ELECTRIC MOTOR AND APPARATUS COMPRISING THE ELECTRIC MOTOR

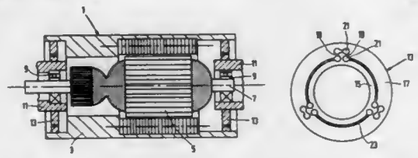
Jacobus Crucq, Eindhoven, and Paulus A. A. Kootwijk, Utrecht, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1993, Ser. No. 146,282

Claims priority, application European Pat. Off., Oct. 30, 1992, 92203345

Int. Cl.[6] H02K *5/16*

U.S. Cl. 310—90 **7 Claims**



1. An electric motor comprising a rotor shaft, a stator, at least one suspension element for securing the electric motor to an external device, means comprising a ball bearing supporting the rotor shaft relative to the stator, and means for suppressing vibrations in the suspension element, wherein at least one suspension element is secured to a device that is external to the electric motor, and is connected directly to a ball bearing, and wherein said means for suppressing vibrations in the suspension element have resilient properties and comprise at least one resilient element connecting the suspension element to the stator.

5,612,584

SLIP RING ASSEMBLY WITH REINFORCEMENT RING

Michael T. York, Whitmore Lake, and Richard K. Harris, Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 15, 1995, Ser. No. 440,600

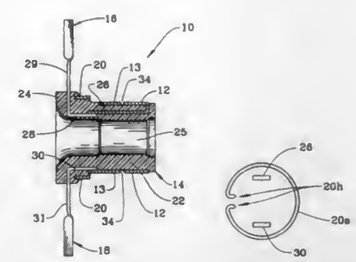
Int. Cl.[6] H01R *39/08;* **H02K** *5/00*

U.S. Cl. 310—232 **9 Claims**

1. A slip ring assembly for a rotary electric machine, said slip ring assembly comprising:

a plastic body including a tubular hub and a base;

at least one slip ring mounted to said tubular hub of said plastic body;



at least one electrical terminal connected to said slip ring and supported by said base of said plastic body; and

at least one reinforcement ring operatively disposed on said plastic body at least partially around said base and operatively adapted so as to strengthen said plastic body of said slip ring assembly against catastrophic failure resulting from loads applied to said slip ring assembly while in operation with a rotary electric machine.

5,612,585

HIGH-PRESSURE DISCHARGE LAMP AND HEAT SHIELD FOR SUCH A LAMP

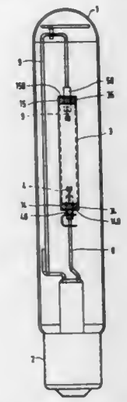
Patrick Verschueren, Turnhout, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1995, Ser. No. 461,456

Claims priority, application European Pat. Off., Jun. 7, 1994, 94201619

Int. Cl.[6] H01J *7/24*

U.S. Cl. 313—44 **10 Claims**



6. A heat shield for use in a high-pressure discharge lamp including a discharge tube having a lead-through conductor extending through an end of the discharge tube, wherein the heat shield comprises:

a wall portion shaped to enclose the end of the discharge tube and a bottom surface with radial incisions therein that define a plurality of flexible tongues adapted to apply a clamping force to a lead-through conductor of a high-pressure discharge lamp.

5,612,586

SPARK PLUG FOR INTERNAL COMBUSTION ENGINES

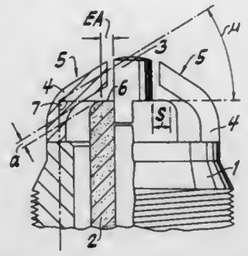
Walter Benedikt, Kornwestheim; Dittmar Klett, Pleidelsheim; Dietrich Trachte, Leonberg; Hermann Kersting, Ludwigsburg; Roland Mueller, Moeglingen, and Jochen Fischer, Bamberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 6, 1995, Ser. No. 471,260

Claims priority, application Germany, Jun. 30, 1994, 44 22 939.9

Int. Cl.[6] H01T *13/20*

U.S. Cl. 313—141 **6 Claims**



1. A spark plug for an internal combustion engine, comprising:

a cylindrical metal tube having a longitudinal opening therethrough and a first longitudinal axis;

a central electrode disposed within the opening of the cylindrical metal tube and having a second longitudinal axis;

a tubular insulator surrounding the central electrode and being disposed within the opening of the cylindrical metal tube, the tubular insulator having a third longitudinal axis, wherein the first, second and third longitudinal axes are rotationally symmetrical and congruent;

at least two earth electrodes mounted on the cylindrical metal tube, each of the at least two earth electrodes having a first portion and a second portion, the first portion extending in the direction of the rotationally symmetrical first, second and third longitudinal axes, and the second portion extending in a direction to form an angle in the range of 100° to 150° with the first portion, each of the at least two earth electrodes including an end portion facing the central electrode and defining an electrode spacing opening between the at least two earth electrodes and the central electrode for an air spark path; and

wherein the tubular insulator provides a creepage path for a creepage spark from the central electrode to at least one of the at least two earth electrodes, the electrode spacing opening being at least as great as a smallest distance between an inside surface of the at least two earth electrodes and the tubular insulator and the electrode spacing opening also being less than a sum of the smallest distance and the creepage path.

5,612,587

FIELD EMISSION CATHODE

Shigeo Itoh; Teruo Watanabe; Kazuhiko Tsuburaya, all of Mobara; Junji Itoh, and Seigo Kanemaru, both of Tsukuba, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, and Agency of Industrial Science and Technology, Tsukuba, both of Japan

Continuation of Ser. No. 37,592, Mar. 26, 1993, abandoned. This application May 8, 1995, Ser. No. 438,082

Claims priority, application Japan, Mar. 27, 1992, 4-071219

Int. Cl.[6] H01J *1/02*

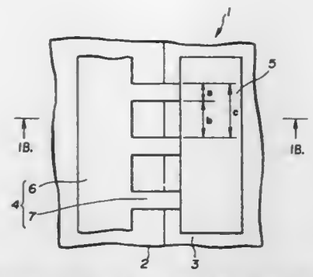
U.S. Cl. 313—309 **6 Claims**

1. A field emission device comprising:

an insulating substrate having a planar surface and a recess;

a gate formed on said recess; and

an emitter formed on said planar surface, said emitter having a pectinate shape including a plurality of rectangular tips of a predetermined pitch at a distal end thereof and said tips being formed substantially on a same plane with an edge of said gate when viewed from above so as to satisfy a relationship of $b/a \geqq 2$, wherein a represents an edge width of each of said tips and b represents an interval between each adjacent two of said tips.



5,612,588

ELECTRON BEAM DEVICE WITH SINGLE CRYSTAL WINDOW AND EXPANSION-MATCHED ANODE

George Wakalopulos, Pacific Palisades, Calif., assignor to American International Technologies, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 68,052, May 26, 1993, Pat. No. 5,414,267. This application Jan. 5, 1995, Ser. No. 369,127

Int. Cl.[6] H01J *33/00*

U.S. Cl. 313—420 **37 Claims**

1. An electron beam device comprising,

a body formed from gas impermeable material and defining a chamber having an aperture disposed at one end,

a crystalline substrate positioned on said body to cover said aperture, said crystalline substrate attached to said body forming a fluid-tight seal therewith, with said body forming a generally vacuous chamber, said crystalline substrate including a thin, electron permeable, gas impermeable, single crystal membrane, disposed adjacent to said aperture, said membrane having first and second opposed major surfaces,

means, distally positioned with respect to said membrane, for generating electrons within said chamber,

means, in electrical communication with said generating means, for accelerating said electrons toward said membrane.

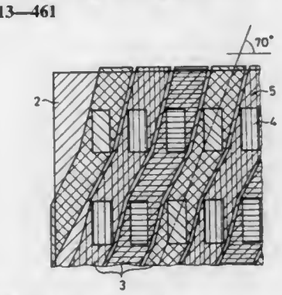
24. An electron beam device comprising,

a vacuum tube body having a front end and a back end, with a crystalline anode disposed near said front end, said crystalline anode including an electron permeable, gas impermeable crystalline membrane, said membrane having first and second major surfaces oriented transversely to said thickness, said first major surface facing said back end,

means for generating electrons within said body near said back end, and

an acceleration means, in electrical communication with said electrons, for accelerating said electrons toward said membrane, said accelerating means including an electrode, disposed distal to said front end, said electrode being adapted to maintain a cathode disposed distal to said membrane and held at an electrical potential more negative than said crystalline anode.

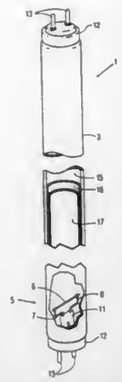
5,612,589
COLOR FILTER SUBSTRATE AND MAKING METHOD THEREFOR
Kazuo Ogata, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 131,533, Oct. 1, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 529,787
Claims priority, application Japan, Mar. 18, 1993, 5-058975
Int. Cl.[6] H01J *29/10*
U.S. Cl. 313—461 **7 Claims**



1. A color filter substrate comprising:
a substrate; and
a color filter provided on said substrate and including RGB patterns superimposed upon a black matrix, said black matrix having a plurality of apertures aligned in a predetermined reference direction:
wherein the improvement is that:
each of said RGB patterns is a substantially linear-shaped colored strip which is continuously extended in a direction oblique to said reference direction over said black matrix and wherein a plurality of said strips each covers at least two adjacent apertures.

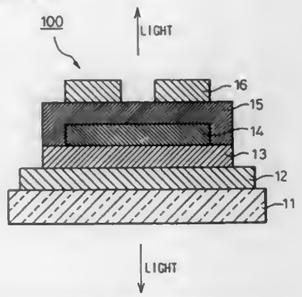
5,612,590
ELECTRIC LAMP HAVING FLUORESCENT LAMP COLORS CONTAINING A WIDE BANDWIDTH EMISSION RED PHOSPHOR
Charles Trushell, and Liviu Magean, both of Morgantown, W. Va., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Dec. 13, 1995, Ser. No. 572,219
Int. Cl.[6] H01J *1/62;63/04;* **C09K** *11/08*
U.S. Cl. 313—487 **18 Claims**

5. An electric lamp, which comprises:
a. a lamp envelope having an inner surface;
b. means within the lamp envelope for generating ultraviolet radiation; and
c. a layer of a luminescent material adjacent the inner surface of the lamp envelope for generating visible light when impinged by the ultraviolet radiation,
said luminescent material comprising a phosphor blend consisting essentially of (1) about 8 to 20% of a first red luminescent gadolinium magnesium borate activated with cerium, manganese, and terbium material;
(2) about 4 to 6% of a second green luminescent zinc silicate activated with manganese material;
(3) about 20 to 55% of a third luminescent blue halo calcium halophosphate activated with antimony material; and



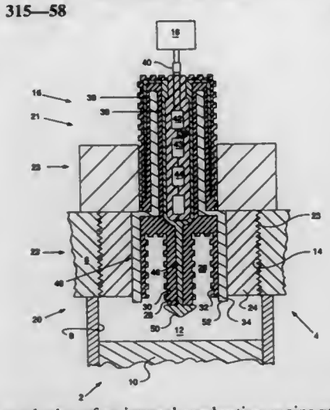
(4) about 20 to 55% of a fourth luminescent warm white calcium halophosphate activated with manganese and antimony material, the components of said blend being combined in proportions which are selected depending on the lamp color desired whereby a full spectrum in visible and CRI values of at least 82 are provided.

5,612,591
ELECTROLUMINESCENT DEVICE
Masayuki Katayama, Handa; Akira Kato, Kariya; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Dec. 29, 1994, Ser. No. 366,420
Int. Cl.[6] H01J *1/63*
U.S. Cl. 313—503 **5 Claims**



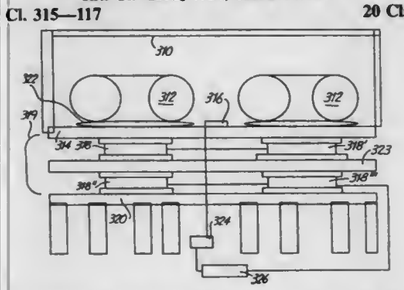
4. An electroluminescent device comprising:
a transparent substrate;
first electrode on said transparent substrate;
first insulating layer on said first electrode;
a phosphor layer on said first insulating layer, wherein said phosphor layer comprises a calcium thiogallate host which is doped with a luminescent center element and which has an x-ray diffraction intensity ratio I(400)/I(422) greater than about four, and said phosphor layer is grown by metal organic chemical vapor deposition while said transparent substrate is heated to a temperature equal to or greater than a prescribed temperature so that said x-ray diffraction intensity ratio is greater than about four;
second insulating layer on said phosphor layer; and
second electrode on said second insulating layer.

5,612,592
SPARK IGNITION SYSTEM AND SPARK PLUG FOR ULTRA LEAN FUEL/AIR MIXTURES
George Codina, North Hollywood, Calif.; James M. Schultz, Chillicothe, and J. Thomas Vachon, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 11, 1995, Ser. No. 570,073
Int. Cl.[6] H01T *13/04*
U.S. Cl. 315—58 **16 Claims**



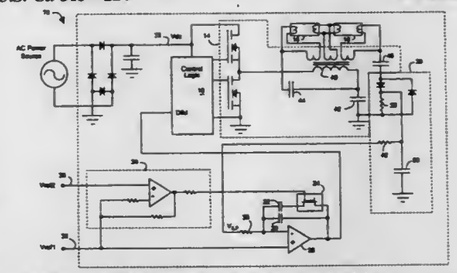
11. A spark plug of an internal combustion engine utilizing ultra lean fuel mixtures and generating high combustion pressures, comprising:
a body having first and second ends and first and second end portions, said first end portion having centrally positioned first electrode and a second electrode of tubular configuration extending about said first electrode and spaced at least about 3 mm therefrom, and thread formed on said first end portion and being mateable with threads of an engine spark plug opening, said second end portion of the spark plug having a plurality of rectifiers serially connected to the first electrode and being encased within the second end portion of the first electrode and said first electrode second end portion being surrounded by the second end portion of the second electrode, said adjacently positioned first and second electrode second end portions are of a construction sufficient for generating a capacitance greater than about 1000 pF.

5,612,593
FLUORESCENT TUBE THERMAL MANAGEMENT SYSTEM UTILIZING THERMAL ELECTRIC COOLER UNITS
Scot L. Olson, Mt. Vernon, Iowa, assignor to Rockwell International, Seal Beach, Calif.
Filed Aug. 30, 1995, Ser. No. 521,200
Int. Cl.[6] H01J *7/24;* **H05B** *31/24*
U.S. Cl. 315—117 **20 Claims**



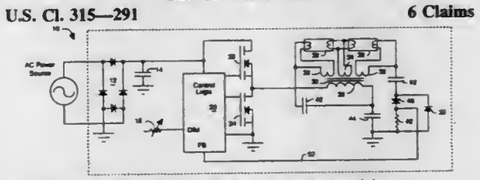
17. A method of controlling a fluorescent tube lighting system having a fluorescent tube, reflector assembly and thermal electric cooler units, comprising the following steps:
measuring the ambient air temperature of the fluorescent tube;
comparing the measured temperature value to a predetermined value;
determining the magnitude and direction of the measured value and predetermined value;
applying a current to the thermal electric cooling units in such manner as to minimize the difference between the measured temperature value and the predetermined value.

5,612,594
ELECTRONIC DIMMING BALLAST FEEDBACK CONTROL SCHEME
Ajay Maheshwari, Dallas, Tex., assignor to C-P-M Lighting, Inc., San Leandro, Calif.
Filed Sep. 13, 1995, Ser. No. 528,508
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—224 **5 Claims**



1. A dimmable fluorescent lamp system, comprising:
a ballast assembly with at least one fluorescent lamp connected to a power inverter for igniting the lamp with high-frequency AC power derived from a DC source and controlled by at least one of a pulse-width modulator or frequency controller that effect a lamp current (I_{LAMP}) that passes through the lamp during operation;
sensing means connected to said power inverter for sensing said lamp current (I_{LAMP});
error amplification means with a plurality of fixed gain control settings and connected to receive a feedback signal from the sensing means and a dimming setpoint signal, and connected to control said pulse-width modulator or frequency controller such that said feedback signal and setpoint signal automatically have a near zero error; and
range control means connected to change said gain control settings of the error amplification means in response to the operation of said dimming setpoint within particular ranges.

5,612,595
ELECTRONIC DIMMING BALLAST CURRENT SENSING SCHEME
Ajay Maheshwari, Dallas, Tex., assignor to C-P-M Lighting, Inc., San Leandro, Calif.
Filed Sep. 13, 1995, Ser. No. 528,507
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—291 **6 Claims**



1. A dimmable fluorescent lamp system, comprising:
a first fluorescent lamp with first and second filaments at respective opposite ends for continuous heating;
a resonating inductor with first and second ends;

a resonating capacitor with first and second ends connected in series with said second end of the resonating inductor;

a connection from said first filament to a junction of said second end of the resonating inductor and said first end of the resonating capacitor;

a dropping resistor and a first rectifier connected in series with a DC blocking capacitor between said second filament and said first end of the resonating capacitor with a second rectifier connected with opposite polarity across said dropping resistor and said first rectifier, wherein a feedback voltage is developed across said dropping resistor that is proportional to an arc current flowing through the fluorescent lamp between said first and second filaments; and

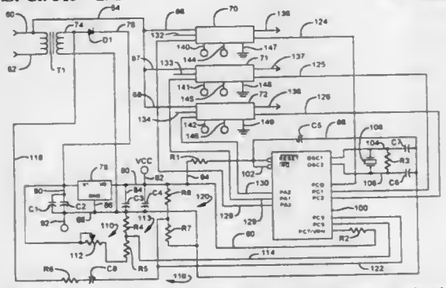
a control logic connected to receive said feedback voltage from said dropping resistor and connected to drive said first end of the inductor with a pulse-width or frequency modulated square wave that is controlled over a dimming range by said feedback voltage.

5,612,596

CONSERVATION TRAFFIC CONTROL LOAD SWITCH

Paul H. Wiese, Westerville, Ohio, assignor to Conservation Load Switch, Inc., Westerville, Ohio

Filed Oct. 16, 1995, Ser. No. 543,300
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—291 **20 Claims**



1. In a lamp switching circuit of a variety having a switching thyristor responsive to an actuating input to supply current from an a.c. source to an incandescent lamp, said a.c. source exhibiting a given voltage level and positive and negative going half cycle characteristics, to an incandescent lamp, said actuating input being derived at a solid state bilateral switch, in turn, having an actuating component responsive to first and second logic control conditions to respectively effect derivation of said actuating input and removal of said actuating input, the conservation circuit comprising:

a solid state shunt switch coupled in shunting relationship across said actuating component, having an on condition applying a shunt across said actuation component removing said actuating input in response to a cycle modulation on condition and having an off condition preventing said shunt across said actuation component in the presence of a cycle modulation off condition;

a logic control monitor network responsive to said first logic control condition to provide a lamp on condition;

a cycle state monitor network responsive to said a.c. source to derive a cycle state signal corresponding with the instantaneous wave shape defining amplitude of each said half cycle; and

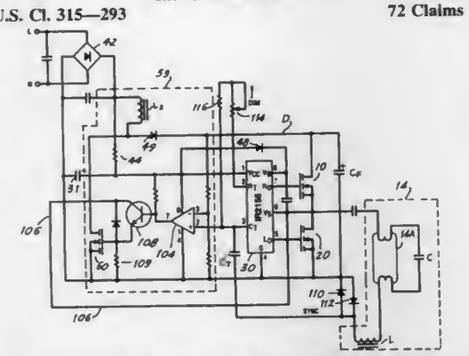
a processor responsive, when activated from an inactive to an active state, to the commencement of said lamp on condition of said logic control monitor network, and to said cycle state signal to generate said cycle modulation on condition for a predetermined soft start interval effecting a soft start characterized energization of said incandescent lamp.

5,612,597

OSCILLATING DRIVER CIRCUIT WITH POWER FACTOR CORRECTION, ELECTRONIC LAMP BALLAST EMPLOYING SAME AND DRIVER METHOD

Peter Wood, Rolling Hills Est., Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Dec. 29, 1994, Ser. No. 365,831
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—293 **72 Claims**



1. A circuit for driving a gas discharge illumination device comprising:

a pair of electronic switches arranged in a half bridge configuration;

a self oscillating driver circuit having two outputs for driving respective ones of said electronic switches, the electronic switches being coupled across a dc bus voltage and having a switched output coupled to the illumination device; and

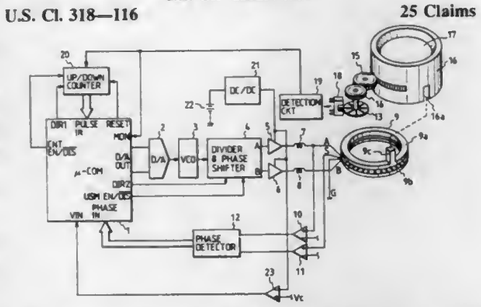
a voltage regulator circuit coupled across said dc bus voltage and coupled to said self oscillating driver circuit, said voltage regulator circuit maintaining said dc bus voltage within a preset range and being responsive to said dc bus voltage for preventing said dc bus voltage from exceeding said preset range if said illumination device is removed or becomes substantially an open circuit by regulating said dc bus voltage in comparison to a preset reference level.

5,612,598

VIBRATION DRIVEN MOTOR

Hajime Fukui, Tokyo; Akio Atsuta, and Fumikazu Nishikawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,615
Claims priority, application Japan, Jan. 8, 1992, 4-001757
Int. Cl.[6] H02N *1/00*
U.S. Cl. 318—116 **25 Claims**



1. A drive frequency control system for a vibration driven motor including a vibrating member which generates a vibration therein upon application of a drive frequency signal to an electro-mechanical energy conversion element thereon, and which uses the vibration as a driving force, the system comprising:

a drive circuit for generating a drive frequency signal;

a power supply for supplying an electric power to the drive circuit;

a detection circuit for detecting a power supply voltage level of the electric power supplied by said power supply to said drive circuit; and

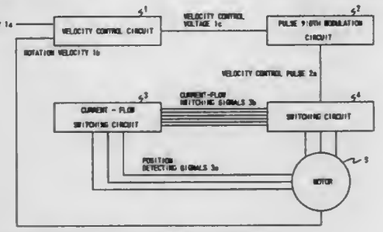
a control circuit for changing a state of frequency control of the drive frequency signal when the power supply voltage level detected by said detection circuit changes between a value equal to or less than a predetermined voltage level, and a value greater than the predetermined voltage level.

5,612,599

DC BRUSHLESS MOTOR DRIVING DEVICE, DC BRUSHLESS MOTOR, AND IMAGE FORMING DEVICE USING THE DRIVING DEVICE AND BRUSHLESS MOTOR

Yukio Itami, and Mitsuo Suzuki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1995, Ser. No. 427,021
Claims priority, application Japan, Apr. 25, 1994, 6-086224
Int. Cl.[6] H02P *6/00*
U.S. Cl. 318—254 **18 Claims**



1. A device for driving a DC motor comprising:

a velocity control circuit generating a velocity control signal based on a difference between a target velocity of the DC motor and a current velocity thereof;

a modulation circuit deriving a velocity control pulse signal having a pulse width modulated by the velocity control signal;

a switching circuit performing a switching operation in which a driving current in a pulse formation corresponding to said velocity control pulse signal is sequentially applied to driving coils of the DC motor from a power supply terminal to which a power supply voltage is applied in accordance with a switching signal; and

a current-flow switching circuit generating the switching signal on the basis of a current position of a rotator of the DC motor, said switching circuit including:

field effect transistors performing said switching operation; and

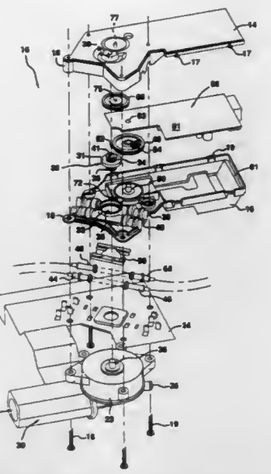
a capacitor coupled between said power supply terminal and a reference potential, said capacitor absorbing a counter current caused in the driving coils due to the switching operation.

5,612,600

POSITION ENCODER SYSTEM FOR A MOVABLE PANEL

Edward J. Bratkowski, Harrison Township; Lloyd G. Racine, Shelby Township, and Pam Storey, Utica, all of Mich., assignors to Webasto Sunroofs Inc., Rochester Hills, Mich.

Filed Oct. 17, 1995, Ser. No. 544,312
Int. Cl.[6] G05B *19/29*
U.S. Cl. 318—266 **11 Claims**



1. A position encoder system for controlling movement of a movable panel between predetermined positions, the panel being moved by a pair of cables coupled thereto, the system comprising:

a housing assembly including a pair of spaced channels, each of said channels being constructed and arranged to receive therein a portion of a respective cable of the cable pair;

a motor assembly including a motor having an output shaft rotatable in a forward direction and a reverse direction;

drive gear structure mounted with respect to said housing assembly and operatively associated with said output shaft so as to rotate in a forward and a reverse direction in response to rotation of said output shaft, said drive gear structure being constructed and arranged to cooperate with the pair of cables such that rotation of said drive gear structure will move the cables linearly and thus move the panel;

an encoder gear mounted within said housing assembly for continuous rotary movement through multiple revolutions of said output shaft, said encoder gear including a plurality of electrically conductive contacts on a surface thereof, said encoder gear contacts being coupled together electrically;

an idler gear mounted in said housing assembly and coupled between said drive gear structure and said encoder gear so as to transfer motion of said drive gear structure to said encoder gear such that said encoder gear rotates at fewer revolutions per minute than said drive gear structure; and

a printed circuit board mounted within said housing assembly and having an electric circuit, said circuit including a plurality of stationary circuit board electrically conductive contacts, a microprocessor, and a pair of relays electrically coupled between the motor and the microprocessor, said circuit board contacts being arranged in such a manner so as to be engaged by associated encoder gear conductive contacts upon rotation of said encoder gear, certain of circuit board contacts being associated with particular positions of the movable panel such that upon rotation of said encoder gear, electrical contact between certain of said circuit board contacts and certain of said encoder gear contacts generates binary codes associated with particular positions of the movable panel, the binary codes being inputted to said microprocessor,

said microprocessor being constructed and arranged to decode a present panel position based on said binary codes in response to a user inputted signal corresponding to a desired panel position, said microprocessor controlling the direction of rotation of said output shaft in response to the user inputted signal by energizing one relay of said pair of relays, thereby controlling the direction of movement of said drive gear structure and thus the movement of the panel.

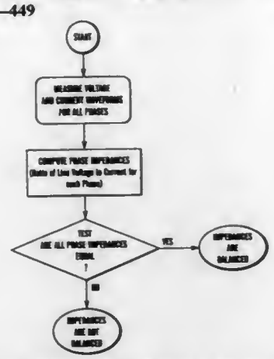
5,612,601
METHOD FOR ASSESSING MOTOR INSULATION ON OPERATING MOTORS

John D. Kueck, and Pedro J. Otaduy, both of Oak Ridge, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 155,260, Nov. 22, 1993, abandoned. This application Dec. 7, 1995, Ser. No. 568,550

Int. Cl.[6] G01R *31/06*

U.S. Cl. 318—449 **18 Claims**



1. A method for assessing the condition of an operating electrical motor, comprising the steps of:

measuring electrical variables associated with the functioning of said operating electrical motor, wherein said electrical variables include currents and voltages;

applying symmetrical components analysis to said electrical variables; and

classifying the type of fault in said operating motor based upon said symmetrical components analysis.

5,612,602
DEVICE AND METHOD COMPRISING A MOTOR AND/OR A DIGITAL SIGNAL PROCESSOR, MEANS FOR SUPPLYING SIGNALS OF A PLURALITY OF CHANNELS IN SERIAL FORM, OR MEANS FOR CAUSING AN ACTUATOR TO ABUT AN OBJECT

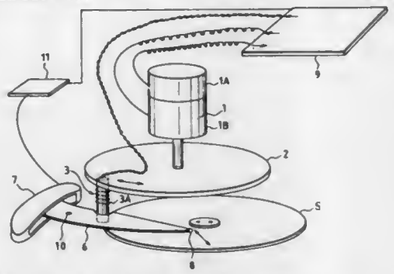
Yoichi Kubota; Naoki Kawamata, both of Yokohama; Masahiro Morisada, Tokyo; Katsuhiro Fujii, Ebina; Hiroshi Itoh, Fuchu, and Hiroaki Takeishi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 774,253, Oct. 10, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 176,511

Claims priority, application Japan, Oct. 11, 1990, 2-270570; Dec. 12, 1990, 2-401565; Dec. 12, 1990, 2-401567; Dec. 12, 1990, 2-401570

Int. Cl.[6] G11B *5/55*

U.S. Cl. 318—560 **6 Claims**



1. A positioning device comprising:

an actuator, having a magnetic material portion to be temporarily magnetized by conduction of electricity, for abutting an object;

abutting means for causing said actuator to abut the object;

detecting means for detecting a movement position of said actuator;

conducting means for causing said magnetic material portion of said actuator to conduct electricity when said actuator is located within a predetermined range set by the detection of said detecting means to fix said actuator to the object; and

write-in means for writing control information of the object on a medium when said actuator is fixed to the object.

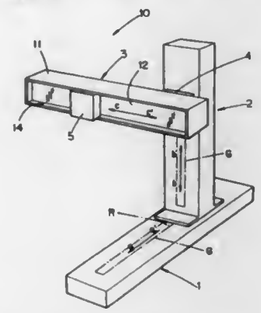
5,612,603
RECTILINEAL MOVEMENT SPEED ENHANCING APPARATUS OF AN ORTHOGONAL COORDINATE ROBOT

Hee J. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 466,525

Int. Cl.[6] B25J *9/16;18/00*

U.S. Cl. 318—568.11 **7 Claims**



1. A robotic mechanism, comprising:

a support; and

an arm mounted to said support and movable relative thereto in a rectilinear direction, said arm comprising:

a first member;;

a body mounted by said first member to said support and movable relative thereto in said rectilinear direction,

a second member mounted to said body for movement relative thereto in said rectilinear direction, and

a motor-activated drive mechanism connected to said body and said second member, for moving said body relative to said support in said rectilinear direction, and simultaneously moving said second member relative to said body in said rectilinear direction, to increase an effective speed of movement of said arm;

said body including two cavities separated by a partition wall, said drive mechanism comprising a motor mounted in said partition wall, a pair of rotary elements mounted to said body in respective ones of said cavities and driven at a common speed by said motor, one of said rotary elements interconnecting said body and said first member for moving said body relative to said first member in said rectilinear direction, and the other of said rotary elements interconnecting said body and said second member for moving said second member relative to said body in said rectilinear direction.

5,612,604
METHOD OF MONITORING A TEMPERATURE RISE OF A SQUIRREL CAGE INDUCTION MOTOR

Vesa Veijalainen, Espoo; Ilkka Erkkilä , Helsinki, and Matti Kauhanen, Espoo, all of Finland, assignors to ABB Industry Oy, Helsinki, Finland

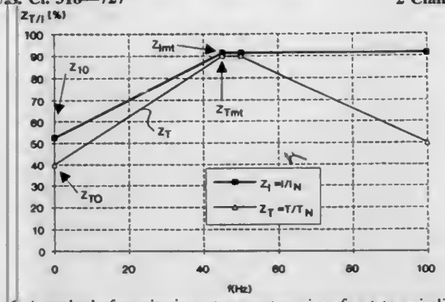
PCT No. PCT/F194/00137, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO94/24750, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 12, 1994, Ser. No. 525,560

Claims priority, application Finland, Apr. 14, 1993, 931674

Int. Cl.[6] H02H *6/00*

U.S. Cl. 318—727 **2 Claims**



1. A method of monitoring a temperature rise of a stator winding of a squirrel cage induction motor supplied by a frequency converter, in which method a stator current I of the motor is measured and the temperature rise of the motor at each moment is determined on the basis of this current I, when a rated temperature rise θ_N of the motor at a rated current I_N, the rated current I_N and a temperature rise time constant τ of the motor are known, the method comprising steps of

determining the stator current I of the motor as discrete moments separated by Δt long time periods,

determining a temperature rise $\theta_{n(1)}$ of the motor during one time period n from the equation

$$\theta_{n(1)} = \frac{I^2}{I_N^2}\,\theta_N(1 - e^{-\Delta t/\tau})$$

determining a cooling $\theta_{n(2)}$ of the motor during the same time period n from the equation

$$\theta_{n(2)} = \theta_{n-1} e^{-\Delta t/\tau},$$

where θ_{n-1} is the temperature rise of the motor at the end of the preceding time period, and

summing the temperature rise $\theta_{n(1)}$ and the cooling $\theta_{n(2)}$ occurred during the same time period to obtain the temperature rise θ_N of the motor at the end of the time period n, characterized in that the method additionally comprises a step of

multiplying the temperature rise θ_N by a multiplier K_F, which is determined from the equation

$$K_F = \left[\frac{1}{Z_{f0} + (Z_{fmt} - Z_{f0}) \times \frac{f_{act}}{f_{mt}} + S_{VP}} \right]^2,$$

where

Z_{f0}=maximum allowed continuous load current/rated current of the motor at zero frequency,

Z_{fmt}=maximum allowed continuous load current/rated current of the motor at a frequency f_{mt},

f_{act}=actual frequency value of the stator current of the motor,

f_{mt}=frequency of the stator current of the motor, below which frequency the cooling capacity of the motor decreases and

S_{VP}=constant dependent on slice number/modulation range of the frequency converter, this range corresponding to the actual frequency value f_{act}.

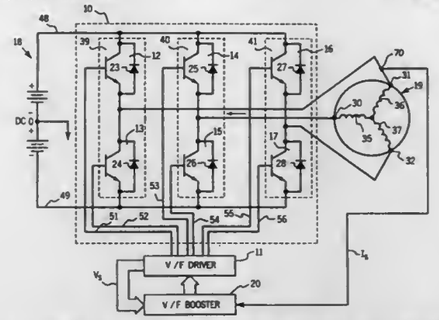
5,612,605
AUTO BOOST FOR VOLTAGE/FREQUENCY MOTOR CONTROLLER

Jinghan Tao, Shorewood, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 532,134, Sep. 22, 1995, abandoned. This application Nov. 17, 1995, Ser. No. 560,127

Int. Cl.[6] H02M *1/12;* **H02P** *1/42*

U.S. Cl. 318—805 **22 Claims**



1. A method to be used with a motor controller for controlling magnetizing flux between a motor stator and a rotor, the flux being proportional to a magnetizing current, the controller providing a stator current signal and a related stator voltage signal which is indicative of the stator voltage provided by the controller, the method comprising the steps of:

(a) determining an acceptable magnetizing current range in which the magnetizing current generates enough magnetizing flux to drive the motor;

(b) deriving a current phase angle;

(c) combining the phase angle and the stator current to produce a magnetizing current estimate;

(d) comparing the magnetizing current estimate to the acceptable magnetizing current range; and

(e) where the magnetizing current estimate is outside the acceptable magnetizing current range, adding a voltage boost to the stator voltage having a polarity tending to drive the magnetizing current to a level within the acceptable current range.

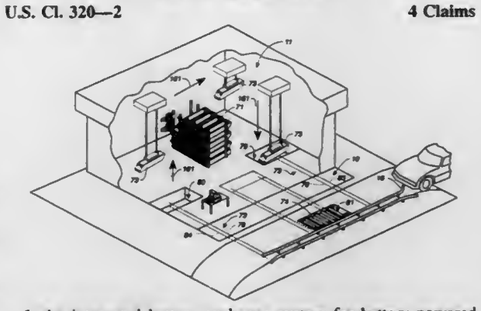
5,612,606
BATTERY EXCHANGE SYSTEM FOR ELECTRIC VEHICLES

David C. Guimarin, 2415 Lascar Pl., San Jose, Calif. 95124, and Wayne M. Janik, Union City, Calif., assignors to David C. Guimarin, San Jose, Calif.

Filed Sep. 15, 1994, Ser. No. 307,264

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **4 Claims**



1. An integrated battery exchange system for battery powered electric vehicles comprising:

an interchangeable battery platform structured to hold an assembly of batteries for powering the electric vehicle, said battery

platform being formed to enclose said assembly of batteries and to be mounted in the electric vehicle, said platform further comprising:

an electrical power receptacle for electrically connecting said platform to the vehicle for powering the vehicle and to a power source for charging said assembly of batteries; and

connection means for use in grasping said platform for lifting and maneuvering thereof;

a battery-platform support structure defined in an electric vehicle for receiving and holding said battery platform, comprising:

means defining a housing bay at the underside of the electric vehicle structured and arranged to receive said battery platform;

retaining means for retaining said platform in said housing bay, said retaining means having an engaged position for securely retaining said platform in said housing bay under conditions of operation of the vehicle and a release position for removing said platform from said housing bay; and

electrical communication means for electrically connecting said vehicle to said battery platform, said electrical communication means having a contact configuration making an electrical connection with said platform for communicating power to the vehicle and a release configuration for removing said platform from said housing bay; and

a service station including an exchange substation, at which a spent battery platform in a vehicle at said exchange station is exchanged with a charged battery platform, and a staging substation, at which battery platforms are prepared for exchange, said exchange substation comprising:

means defining a vehicle base position at said exchange station for placing said vehicle in position for battery platform exchange;

a lift comprising:

a primary lift assembly for raising and lowering said lift;

a secondary lift assembly mounted on said primary lift assembly for raising and lowering said lift by smaller amounts than said primary lift assembly; and

a platform receiving member mounted on said secondary lift assembly for receiving a battery platform;

wherein said lift is positionable underneath a vehicle in said base position; and

alignment means for determining the alignment of said spent battery platform as the spent platform is removed from the vehicle in registration with said housing bay and for aligning said charged battery platform corresponding to the spent platform alignment, whereby said charged battery platform is in registration with said housing bay as the charged battery platform is introduced into the housing bay; and

said staging substation comprising:

a storage rack for housing a plurality of battery platforms;

a platform manipulator for automatically removing a battery platform from said storage rack and for transporting said battery platform therefrom; and

a platform conveyance means for conveying said battery platform from said staging substation to said exchange substation; and

transfer means for transfering a battery platform from said platform conveyance means to said platform receiving member for installation into said housing bay.

5,612,607

METHOD FOR THE FAST CHARGING OF A BATTERY AND INTEGRATED CIRCUIT FOR THE IMPLEMENTATION OF THIS METHOD

Jean Nicolai, Chateauneuf le Rouge, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Mar. 18, 1994, Ser. No. 210,701

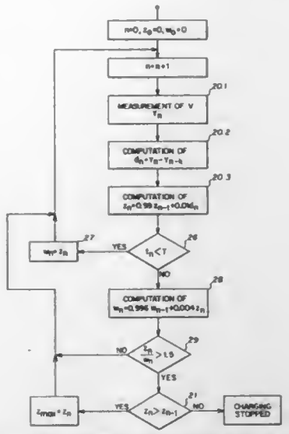
Claims priority, application France, Mar. 18, 1993, 93 03153

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—20 **36 Claims**

1. A method for fast charging of a battery comprising the steps of:

applying a charging current to the battery;



measuring a battery voltage during the step of applying and obtaining a first measurement signal therefrom;

generating a second signal, representing a variation of the battery voltage during a period;

determining when the battery voltage is at a rated value by identifying an instant at which the battery voltage measured during a period increases at a lower rate of change than during a preceding period; and

stopping the charging of the battery responsive to the battery voltage reaching the rated value;

wherein the step of determining that the battery voltage measured during a period increases at a lower speed than during a previous period, further includes the steps of:

dampening the second signal for a first time to generate a third measurement signal;

dampening the third measurement signal, to generate a fourth measurement signal; and

verifying that a ratio of the third measurement signal to the fourth measurement signal is greater than a threshold value before performing the step of determining; and

detecting a point of time when the third measurement signal passes through an extreme value.

5,612,608

APPARATUS FOR DISPLAYING RESIDUAL CAPACITY OF BATTERY FOR USE ON ELECTRIC VEHICLE

Kazunari Ishiguro, and Morio Kayano, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,294

Claims priority, application Japan, Dec. 28, 1993, 5-336774

Int. Cl.[6] G01N *27/416;* **H02J** *7/00*

U.S. Cl. 320—48 **10 Claims**

1. An apparatus for displaying a residual capacity of a battery for energizing an electric motor to propel an electric vehicle, comprising:

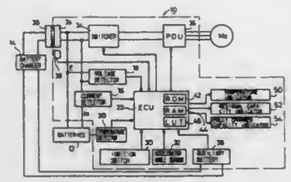
battery temperature detecting means for detecting a temperature of the battery;

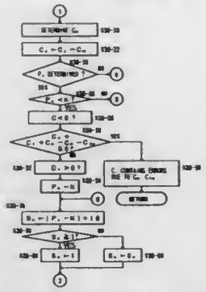
current detecting means for detecting a current of the battery;

voltage detecting means for detecting a voltage of the battery;

battery temperature indicating means composed of a first linear array of spaced light-emitting elements, for displaying the temperature of the battery by way of light emitted from at least one of the light-emitting elements of said first linear array which is in a position corresponding to the temperature of the battery detected by said battery temperature detecting means;

memory means for storing fully charged capacities corresponding respectively to temperatures of the battery;





fully charged capacity reading means for reading one of the fully charged capacities which corresponds to the temperature of the battery detected by said battery temperature detecting means, from said memory means;

fully charged capacity indicating means composed of a second linear array of spaced light-emitting elements, for displaying the fully charged capacity of the battery in association with the temperature of the battery displayed by said battery temperature indicating means by way of light emitted from one of the light-emitting elements of said second linear array which is in a position corresponding to the fully charged capacity read by said fully charged capacity reading means;

residual capacity calculating means for calculating a residual capacity of the battery while the battery is being discharged, based on a discharging current detected by said current detecting means and a voltage detected by said voltage detecting means when the battery is being discharged, and for calculating a residual capacity of the battery while the battery is being charged, based on a charging current detected by said current detecting means and a voltage detected by said voltage detecting means when the battery is being charged; and

residual capacity indicating means composed of a third linear array of spaced light-emitting elements, for displaying the residual capacity of the battery in association with the fully charged capacity of the battery displayed by said fully charged capacity indicating means by way of light emitted from at least one of the light-emitting elements of said third linear array which corresponds to the residual capacity calculated by said residual capacity calculating means.

5,612,609

CONTINUOUS CONDUCTION MODE SWITCHING POWER SUPPLY WITH IMPROVED POWER FACTOR CORRECTION

Nak-Choon Choi, Buchun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 29, 1993, Ser. No. 83,233

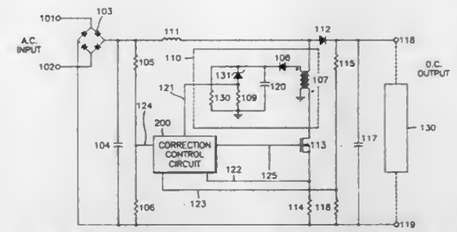
Claims priority, application Rep. of Korea, Jul. 3, 1992, 92-11866

Int. Cl.[6] G05F *1/70*

U.S. Cl. 323—210 **1 Claim**

1. An improved AC-to-DC converter having a rectifier for rectifying an AC input having a sinusoidal waveform, a switching device, and an inductor connected between the rectifier and the switching device. comprising:

a first voltage divider connected to the rectifier for dividing down the rectified AC input, to thereby produce a divided-down rectified signal;



a first current sensor connected to the switching device for detecting a current charging the inductor when the inductor is in a first position wherein a rectified input current produced by the rectifier charges the inductor, and for generating a first inductor current sense signal indicative of said rectified input current which charges the inductor;

a second current sensor including a transformer connected to the inductor and to the switching device for detecting a current discharging from the inductor when the inductor is in a second position wherein said rectified input current which charges the inductor when the inductor is in said first position is discharged from the inductor, and for generating a second inductor current sense signal indicative of said charging rectified input current which is discharged from the inductor, said second current sensor further including an output terminal, a resistor coupled to said output terminal, and a diode coupled between said transformer and said resistor;

a second voltage divider connected to an output of the AC-to-DC converter for producing a divided-down output voltage;

control means connected to the switching device for alternately placing the inductor in said first position and said second position, said control means including:

an error amplifier connected to said second voltage divider for determining a deviation between said divided-down output voltage and a predetermined reference voltage, and for generating an output voltage error signal corresponding to said deviation;

a multiplier connected to said error amplifier and said first voltage divider for multiplying said divided-down rectified signal with said output voltage error signal, and for generating a sinusoidal reference signal having a waveform substantially identical to that of said divided-down rectified signal;

current control means coupled to said multiplier, said first current sensor, and said second current sensor for determining peak and valley levels of a ripple component of a current running through the inductor, and for producing a control signal to control the switching device in such a manner as to approximate the waveform of said current running through the inductor to the sinusoidal waveform of the rectified AC input, said current control means including;

a peak comparator coupled to said first current sensor and said multiplier for comparing said first inductor current sense signal with said sinusoidal reference signal, and for generating a first logic signal when the voltage of said sinusoidal reference signal exceeds that of said first inductor current sense signal;

a valley comparator coupled to said second current sensor and said multiplier for comparing said first inductor current sense signal with said sinusoidal reference signal, and for generating a second logic signal when the voltage of said sinusoidal reference signal exceeds that of said second inductor current sense signal; and,

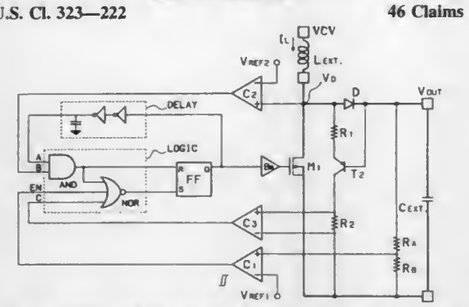
latch circuit means coupled to said peak and valley comparators for combining said first and second logic signals, and for generating said control signal.

5,612,610

DC-TO-DC CONVERTER OPERATING IN A DISCONTINUOUS MODE

Maria R. Borghi, Marcallo con Casone, and Pietro Menniti, Milan, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l, Agrate Brianza, Italy

Filed Oct. 24, 1994, Ser. No. 328,232
Claims priority, application Italy, Oct. 22, 1993, VA93A0024
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—222 **46 Claims**



1. A voltage boosting circuit, operable from first and second supply voltages, said first supply voltage being a positive supply voltage and said second supply voltage connection providing a chip ground, comprising:

a first node connectable to said first supply voltage through an external inductor;

a switching transistor connected to connect said first node to said second power supply voltage;

an output diode, interposed between said first node and an output node;

a first comparator connected to monitor the voltage of said output node,

a second comparator connected to monitor the voltage of said first node;

a third comparator connected to monitor the current through the output diode;

logic connected to intermittently turn on said switching transistor for a duration determined by said second comparator and only when said third comparator indicates that current through said inductor and said output diode has ceased while said first comparator indicates that additional current through said output diode is needed;

whereby said output node provides a third power supply voltage which is not equal to said first nor to said second supply voltage.

5,612,611

SWITCHING REGULATOR WITH DYSSYMETRICAL DIFFERENTIAL INPUT STAGE

Sylvie Drouot, Luynes, and Gérard D. F. Silvestre, Fuveau, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Apr. 19, 1995, Ser. No. 423,398
Claims priority, application France, Apr. 21, 1994, 94 04983
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—223 **22 Claims**

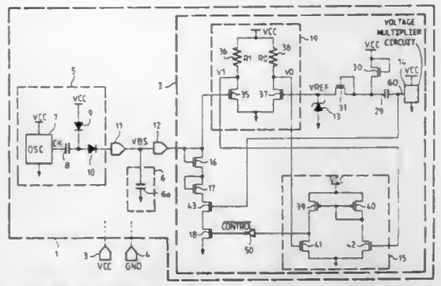
1. A voltage regulator circuit to limit an internal supply voltage produced by a supply circuit, the regulator circuit comprising:

a zener diode to produce a reference voltage;

means for limiting the internal supply voltage;

a dissymetrical differential stage having first and second inputs and first and second outputs, the first input being coupled, within the dissymetrical differential stage, to a control gate of a first transistor series-connected with a first resistor between a supply voltage and a ground reference voltage, the second input being connected, within the dissymetrical differential stage, to a control gate of a second transistor, series-connected with a second resistor between the supply voltage and the ground reference, the first output being formed by a midpoint of the first transistor and the first resistor, the second output being formed by the midpoint of the second transistor and the second resistor, and wherein the first and second outputs are coupled to first and second inputs of a comparator, and the first and second inputs are respectively coupled to the zener diode and the supply circuit; and

the comparator providing a control voltage to control the limiting means.

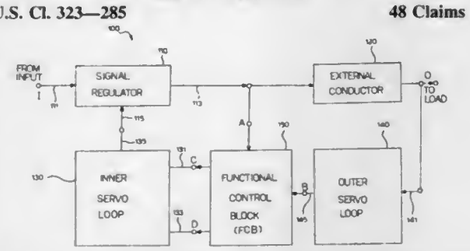


5,612,612

FUNCTIONAL CONTROL BLOCK FOR VOLTAGE REGULATOR WITH DUAL SERVO LOOPS

Donn Werrbach, Glendale, Calif., assignor to Aphex Systems, Ltd., Sun Valley, Calif.

Filed Dec. 21, 1995, Ser. No. 576,223
Int. Cl.[6] G05F *1/56*
U.S. Cl. 323—285 **48 Claims**



1. A functional control block device for use in conjunction with a signal regulating apparatus that includes a signal regulator having an input, an output and a control terminal for receiving an input signal at its input and generating an output signal at its output and delivering an actual signal on a load through an external conductor, an inner servo loop having a sense input and a reference input, and an output connected to the control terminal of the signal regulator for generating and delivering an inner servo loop control signal to the signal regulator to control the output signal of the signal regulator, and an outer servo loop having an input connected to the load and an output for generating and delivering an outer servo loop control signal which is responsive to the actual signal on the load, the functional control block device comprising:

a. a first input connected to said output of said signal regulator for receiving said output signal from said signal regulator;

b. a second input connected to said output of said outer servo loop for receiving said outer servo loop control signal from said outer servo loop;

c. an internal functional signal processing circuity for processing said output signal of said signal regulator and said outer servo loop control signal of said outer servo loop and producing a functional sense signal and a functional reference signal;

d. a first output connected to said sense input of said inner servo loop for delivering said functional sense signal to said inner servo loop; and

e. a second output connected to said reference input of said inner servo loop for delivering said functional reference signal to said inner servo loop;

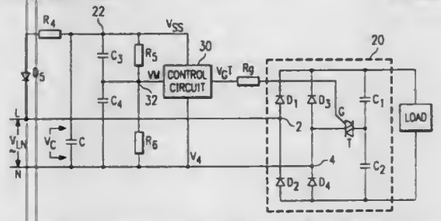
f. whereby said functional sense signal and said functional reference signal produced by said functional control block device are functions of said output signal of said signal regulator and said actual signal on said load.

5,612,613

REFERENCE VOLTAGE GENERATION CIRCUIT

Saibul Dutt, New Delhi, Ind., and Muni Mohan, Singapore, Singapore, assignors to SDS-Thomson Microelectronics Pte Limited, Singapore

Division of Ser. No. 271,288, Jul. 6, 1994. This application Jan. 24, 1996, Ser. No. 590,091
Claims priority, application United Kingdom, Jul. 9, 1993, 9314262
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—314 **8 Claims**



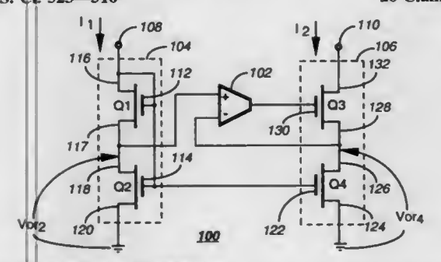
1. A reference voltage generation circuit for generating reference voltages at a fixed voltage with respect to a varying voltage including a reference voltage generator generating a reference voltage which is constant with respect to a ground voltage, a voltage multiplication circuit for multiplying the reference voltage by a predetermined multiple to provide the fixed voltage, and an offset circuit for offsetting the fixed voltage by the varying voltage.

5,612,614

CURRENT MIRROR AND SELF-STARTING REFERENCE CURRENT GENERATOR

Raymond L. Barrett, Jr., Ft. Lauderdale; Barry Herold, Boca Raton, and Grazyna A. Pajunen, Delray Beach, all of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 5, 1995, Ser. No. 539,388
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—316 **26 Claims**



1. A current mirror, comprising:

an input stage having at least one transistor conducting an input current;

an output stage having at least one transistor conducting an output current that mirrors the input current, each of the transistors having a control electrode and an output electrode, with a third electrode that is coupled to a reference potential, and each transistor having a voltage Vor between its output electrode and the reference potential to which its third electrode is coupled;

an amplifier sensing Vor voltages of both transistors and generating an output signal indicative of a sensed difference; and

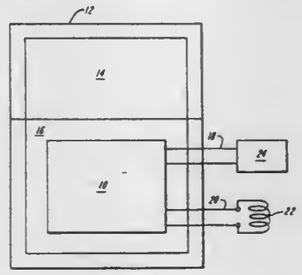
transistor means coupled between the amplifier and the output electrode of the transistor in the output stage and responsive to the output signal for altering the Vor voltage of the transistor in the output stage.

5,612,615

CRYOGENIC ELECTRONICS POWER SUPPLY

Calman Gold, Londonderry, N.H., and Carl J. Russo, Westlake, Ohio, assignors to American Superconductor Corporation, Westborough, Mass.

Continuation-in-part of Ser. No. 302,354, Sep. 7, 1994, abandoned, which is a continuation of Ser. No. 934,036, Aug. 21, 1992, Pat. No. 5,347,168. This application Feb. 6, 1995, Ser. No. 384,780
Int. Cl.[6] H01F *36/00*
U.S. Cl. 323—360 **21 Claims**



17. A high performance circuit comprising:

a plurality of circuit elements in a circuit configuration, said circuit elements including at least one inductor winding composed of a high temperature superconductivity material,

input/output means for supplying power to said circuit and receiving power from said circuit, said input output/means comprising at least one contacting switch for connecting/disconnecting power from a source and/or load, and

refrigeration means for cryogenically cooling said at least one contacting switch and said at least one inductor winding to a temperature wherein said inductor winding exhibits superconducting characteristics.

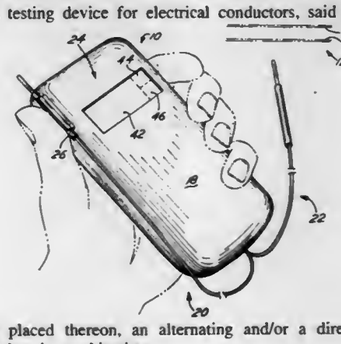
5,612,616

DEVICE FOR MEASURING A WIDE RANGE OF VOLTAGES AND FOR DETERMINING CONTINUITY

Kent L. Earle, Woodridge, Ill., assignor to Etcon Corporation, Burr Ridge, Ill.

Division of Ser. No. 99,145, Jul. 29, 1993, Pat. No. 5,477,133. This application Sep. 18, 1995, Ser. No. 529,761
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—72.5 **10 Claims**

1. A testing device for electrical conductors, said conductors having placed thereon, an alternating and/or a direct voltage, comprising, in combination:



a voltage type sensor for monitoring the type of said voltage and sending a direct voltage signal when said voltage is a direct voltage and an alternating voltage signal when said voltage is an alternating voltage;

a voltage sensor for receiving said direct and alternating voltage signals and measuring said voltage, said voltage sensor providing a direct voltage measurement signal upon receiving said direct voltage signal and providing an alternating voltage measurement signal upon receiving said alternating voltage signal; and

a displaying for receiving said alternating and direct voltage signals and responsively displaying said voltage of said conductors.

5,612,617

FREQUENCY DETECTION CIRCUIT

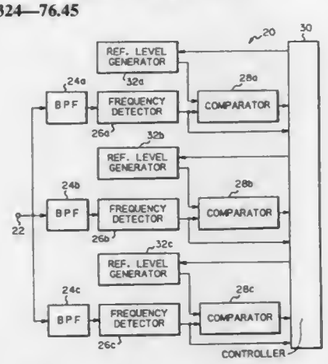
Shin-Ichi Waguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,054

Claims priority, application Japan, Feb. 15, 1994, 6-018020

Int. Cl.[6] H04L *27/22*

U.S. Cl. 324—76.45 **2 Claims**



1. A frequency detecting circuit for detecting whether or not an input signal has a particular frequency, comprising:

first band-pass filter means for detecting said particular frequency of said input signal;

second band-pass filter means for detecting presence of another frequency which is different from said particular frequency in said input signal;

comparing means for comparing output signal levels of said first and second band-pass filter means with a reference level, and for generating first and second comparison signals when said output signal levels of said first and second band-pass filter means are higher than said reference level, respectively;

level changing means for changing said reference level when said comparing means outputs said first and second comparison signals at a same time;

difference producing means for producing, when only said first comparison signal is generated after a change of said reference level, a difference between a new reference level and the output signal level of said first band-pass filter means; and

detecting means for detecting whether or not said difference is greater than a predetermined value.

5,612,618

ROTATIONAL POSITION DETECTING DEVICE HAVING PEAK AND BOTTOM HOLD CIRCUITS

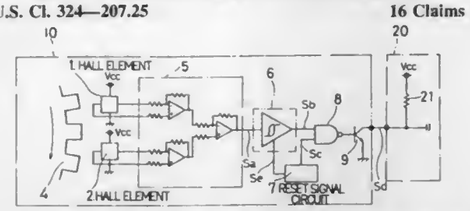
Miyao Arakawa, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 20, 1995, Ser. No. 530,881

Claims priority, application Japan, Oct. 6, 1994, 6-242525

Int. Cl.[6] G01R *33/06;* **G01B** *7/14;21/22;* **H03K** *5/22*

U.S. Cl. 324—207.25 **16 Claims**



1. A rotational position detecting device connected to an electric power source through a switch comprising:

means for generating an alternating signal in response to rotation of a rotating member;

circuit means for generating a signal having two levels which turn over each time a point of inflection is detected in said alternating signal; and

means connected to said circuit means for interrupting said signal of said circuit means when said switch is closed until said point of inflection is first detected,

wherein said circuit means comprises:

a peak hold circuit for holding a maximum of said alternating signal;

a bottom hold circuit for holding a minimum of said alternating signal;

a first member for providing a first threshold value based on said maximum of said alternating signal;

a first comparator for comparing said alternating signal with said first threshold value;

a second member for providing a second threshold value based on said minimum of said alternating signal;

a second comparator for comparing said alternating signal with said second threshold value; and

a flip-flop circuit connected to said first and second comparators for generating said signals having two levels which turn over each time a point of inflection is detected in said alternating signal.

5,612,619

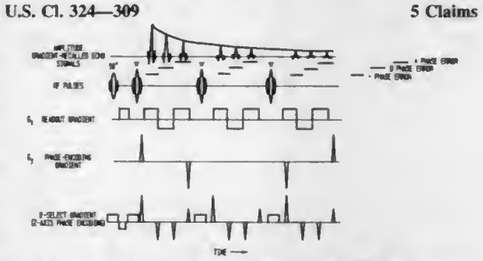
GRASE-TYPE THREE-DIMENSIONAL MR PULSE SEQUENCES

David A. Feinberg, 41 Hanzel Rd., Shokan, N.Y. 12481-5319

Filed Jul. 31, 1995, Ser. No. 509,071

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **5 Claims**



1. A method for acquiring three-dimensional MR data, comprising the step of using a GRASE-type MR pulse sequence in which Z axis phase-encoding varies identically in all signals between each two adjacent RF refocussing pulses in the MR pulse sequence.

5,612,620

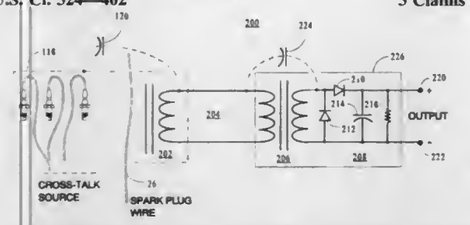
INDUCTIVE PICKUP SENSOR WITH ENHANCED CROSS-TALK IMMUNITY

Johannes B. O. Heuvel, Losser, Netherlands, assignor to Fluke Corporation, Everett, Wash.

Filed Mar. 27, 1996, Ser. No. 623,388

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—402 **3 Claims**



1. An inductive pickup sensor with enhanced immunity to cross-talk comprising:

(a) an inductive pickup coil for inductively receiving a spark signal from a selected spark plug wire while capacitively receiving a cross-talk signal from a cross-talk source;

(b) an isolation transformer having a primary winding and a secondary winding, said primary winding coupled to said inductive pickup coil wherein said spark signal is inductively coupled to said secondary winding and said cross-talk signal is capacitively coupled to said secondary winding;

(c) a detector coupled to said secondary winding for converting said spark signal into a trigger signal wherein the amplitude of said cross-talk signal at said detector is reduced to obtain a desired amount of cross-talk immunity by setting an appropriate distance between said primary winding and said secondary winding; and

(d) a pair of terminals for coupling said trigger signal to a test instrument.

5,612,621

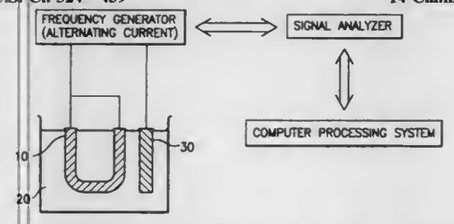
METHOD FOR MONITORING CRACKS AND CRITICAL CONCENTRATION BY USING PHASE ANGLE

Iuan-Jou Yang, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Oct. 27, 1992, Ser. No. 967,209

Int. Cl.[6] G01N *27/20*

U.S. Cl. 324—439 **14 Claims**



1. A method for monitoring cracks in a sample of materials, comprising the following steps of:

(a) preparing a solution capable of forming cracks in said sample;

(b) preparing said sample and an auxiliary electrode;

(c) making said sample and said auxiliary electrode contact said solution;

(d) preparing a frequency generator connecting said sample and said auxiliary electrode respectively;

(e) transmitting an alternating current signal from said frequency generator directly through said sample and said solution at a specified frequency;

(f) maintaining the frequency on said frequency generator at a constant frequency;

(g) measuring the phase angle of the alternating current signal being directly transmitted through said sample;

(h) analyzing the alternating current signal to detect changes in the phase angle resulting from a change in capacitance of said sample; and

(i) computer correlating the changes in the phase angle of the alternating current signal to the changes in capacitance in said sample cause by formation of cracks in said sample.

5,612,622

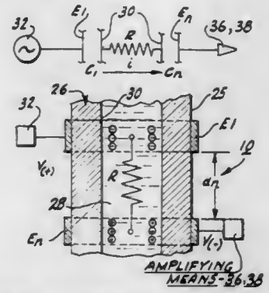
APPARATUS FOR IDENTIFYING PARTICULAR ENTITIES IN A LIQUID USING ELECTRICAL CONDUCTIVITY CHARACTERISTICS

Don S. Goldman, and Steven Wilcox, both of Folsom, Calif., assignors to Optical Solutions, Inc., Folsom, Calif.

Filed Dec. 28, 1994, Ser. No. 365,908

Int. Cl.[6] G01N *27/42*

U.S. Cl. 324—444 **13 Claims**



1. An apparatus for identifying components associated with a liquid within a dielectric container comprising:

a. a first electrode placed apart from contact with the liquid and adjacent the exterior of the dielectric container;

b. a second electrode placed apart from contact with the liquid and adjacent the exterior of the dielectric container, said second electrode positioned in spaced configuration from said first electrode along the outer surface of the container;

c. signal means for generating an input waveform, said signal means being electrically connected to said first electrode, and

d. analyzing means for receiving an output waveform from said second electrode after interaction of said input waveform with the components within the container, said analyzing means further including indicating means for correlating said output waveform to the presence of particular components in the container, dependent on the electrical conductivity of the particular components associated with a liquid within the container, said analyzing means further including timing means linked to said signal means for synchronizing said signal means with said analyzing means.

5,612,623

FAILURE DIAGNOSTIC APPARATUS AND METHOD FOR A RESISTOR ELEMENT

Makoto Watanabe, Nisshin, and Mitsuhiko Masegi, Nukata-gun, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 21, 1995, Ser. No. 426,582

Claims priority, application Japan, May 27, 1994, 6-138041

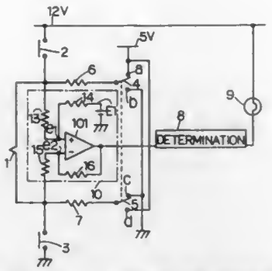
Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—549 **25 Claims**

1. A failure diagnostic apparatus for a resistor element, said apparatus comprising:

monitor drive means for conducting monitor currents through said resistor element in opposite directions alternately;

detecting means for detecting a difference of monitor voltages produced across said resistor element when said monitor



currents are conducted in opposite directions and producing a voltage difference which is larger than each of said monitor voltages; and

determination means for determining a failure of said resistor element by obtaining a resistance value of said resistor element from the value of said voltage difference.

5,612,624

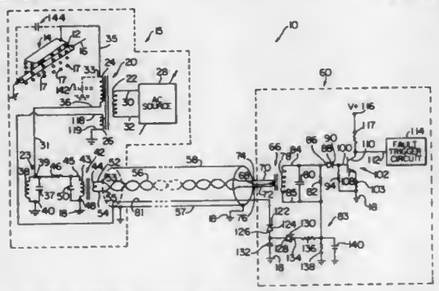
APPARATUS FOR TESTING THE INSULATION OF AN ELECTRICAL CONDUCTOR

Henry H. Clinton, Clinton, Conn., assignor to Clinton Instrument Company, Clinton, Conn.

Filed Jan. 24, 1996, Ser. No. 590,591

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—551 **6 Claims**



1. An apparatus for testing the insulation of an insulated conductor, said apparatus comprising:

a high voltage alternating current (AC) source for producing a test voltage at a desired magnitude and frequency across first and second points;

a test electrode connected to said first point for applying said test voltage to a portion of such insulation received within said test electrode while said conductor is grounded;

an antiresonant circuit tuned to a predetermined frequency and connected between said second point and ground for shunting to ground those components of the current flowing through said second point which are at frequencies other than said predetermined frequency,

a transmission pair of wires having a first pair of ends and a second pair of ends,

a first impedance matching transformer separate and apart from said antiresonant circuit and having a primary winding with first and second ends and a secondary winding connected across said first pair of ends of said pair of transmission wires,

means connecting said second end of said primary winding of said first impedance matching transformer to ground,

a coupling impedance means connected between said second point and said first end of said primary winding of said first impedance matching transformer,

a second impedance matching transformer having a primary winding connected across said second pair of ends of said pair of transmission wires and a secondary winding, and

a detecting circuit connected to said secondary winding of said second impedance matching transformer for producing a fault signal when the voltage across said secondary winding of said second impedance matching transformer exceeds a given value.

5,612,625

METHOD OF MEASURING INNER DIAMETER OF PIPE

Kiichi Suyama, Yokohama; Hajime Furusawa, Tokyo; Yasuharu Hosobara, and Takashi Kobori, both of Yokohama, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

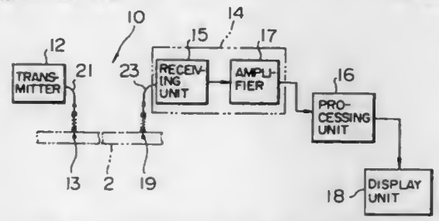
Continuation of Ser. No. 230,679, Apr. 21, 1994, abandoned.

This application Oct. 18, 1995, Ser. No. 544,898

Claims priority, application Japan, Jun. 15, 1993, 5-168551

Int. Cl.[6] G01R *29/00*

U.S. Cl. 324—635 **5 Claims**



1. A method of measuring an inner diameter of a pipe, comprising the steps of continuously transmitting RF waves of a predetermined frequency band from an antenna of a transmitter located inside of the pipe to be inspected, receiving the RF waves with an antenna of a receiver located inside the pipe, said antenna of the receiver being spaced apart from said antenna of the transmitter by a predetermined distance, detecting a frequency at a change point where an intensity of the received RF wave changes greatly, substituting the frequency at the change point into a formula: d=c/1.706f wherein d is the diameter of said pipe, c is the velocity of light, and f is the frequency at said change point) which shows the relation between the inner diameter of the pipe and the frequency to obtain a minimum inner diameter of the pipe.

5,612,626

SYSTEM USING INDUCED CURRENT FOR CONTACTLESS TESTING OF WIRING NETWORKS

Steven D. Golladay, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 36,781, Mar. 25, 1993, Pat. No. 5,404,110.

This application Dec. 27, 1994, Ser. No. 364,581

Int. Cl.[6] G01R *31/02;31/306*

U.S. Cl. 324—751 **22 Claims**

1. A method for measuring electrical characteristics of an electrical device having a conductive structure of conductors associated therewith, said method involving the sequence of steps as follows:

a) apply a bias potential on a grid above said device;

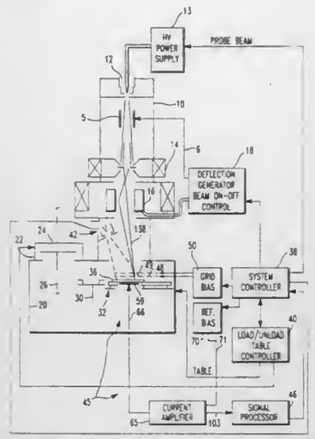
b) employ an electron beam to charge all conductors on a surface of said device to an initial equilibrium potential while said bias potential is on said grid;

c) change said grid to a different potential;

d) expose individual conductors to a focussed electron beam serially;

e) make measurements of an induced current signal produced when individual conductors are exposed to said focussed electron beam;

f) analyze induced current measurements derived from said individual conductors and provide an analysis; and



g) determine electrical characteristics of said device based on said analysis.

5,612,627

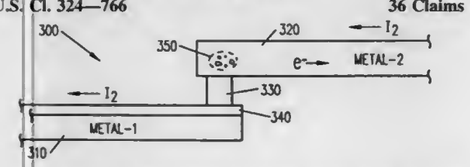
METHOD FOR EVALUATING THE EFFECT OF A BARRIER LAYER ON ELECTROMIGRATION FOR PLUG AND NON-PLUG INTERCONNECT SYSTEMS

Nguyen D. Bui, San Jose; John T. Yue, Los Altos, and Van Pham, Milpitas, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1994, Ser. No. 348,645

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—766 **36 Claims**



26. A method for determining an optimal barrier layer thickness in a type of structure comprising a first conductor, a barrier layer on said first conductor, a second conductor, and a conductive plug between said barrier layer and said second conductor, comprising the steps of:

providing a statistically significant first number of said type of structures having a barrier layer of a first thickness;

conducting a first current through each of said first number of said type of structures from the first conductor to the second conductor through said conductive plug and said barrier layer of a first thickness;

measuring a lifetime of said first number of said type of structures;

providing a statistically significant second number of said type of structures having a barrier layer of the first thickness;

conducting a second current through each of said second number of said type of structures from the second conductor to the first conductor through said barrier layer of the first thickness and said conductive plug;

measuring a lifetime of said second number of said type of structures;

providing a statistically significant third number of said type of structures having a barrier layer of a second thickness;

conducting a third current through each of said third number of said type of structures from the first conductor to the second conductor through said conductive plug and said barrier layer of a second thickness;

measuring a lifetime of said third number of said type of structures;

providing a statistically significant fourth number of said type of structures having a barrier layer of the second thickness;

conducting a fourth current through each of said fourth number of said type of structures from the second conductor to the first conductor through said barrier layer of a second thickness and said conductive plug;

measuring a lifetime of said fourth number of said type of structures.

5,612,628

METHOD AND APPARATUS FOR MEASURING THE BARRIER HEIGHT DISTRIBUTION IN AN INSULATED GATE FIELD EFFECT TRANSISTOR

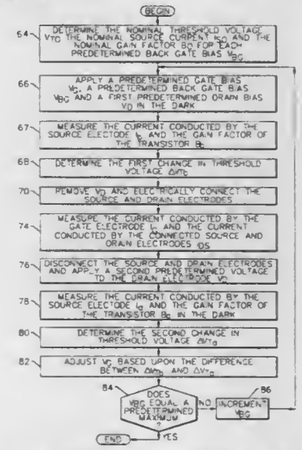
Edward H. Nicollian, Mecklenburg County, N.C.; Davorin Babic, Chicago, Ill., and John C. Lofgren, Mecklenburg County, N.C., assignors to University of North Carolina, Charlotte, N.C.

Division of Ser. No. 319,872, Oct. 7, 1994, Pat. No. 5,493,231.

This application Jan. 16, 1996, Ser. No. 586,961

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—769 **11 Claims**



1. A method of compensating for variations in the electric field in an insulator layer of a insulated gate field effect transistor due to charge generation in the insulator layer, the transistor having drain, gate and source electrodes formed on drain, gate and source regions of the transistor, respectively, and a back gate electrode formed on a face of a semiconductor substrate opposite the gate region, the gate electrode being at least partially transparent, the method comprising the steps of:

determining a nominal threshold voltage of the transistor for each of a plurality of predetermined back gate biases applied to the back gate electrode;

applying a predetermined gate bias to the gate electrode, a predetermined back gate bias to the back gate electrode, and a first predetermined voltage to the drain electrode;

determining a first change in threshold voltage between the nominal threshold voltage and a threshold voltage as the first predetermined voltage is applied to the drain electrode;

electrically connecting the source and drain electrodes, illuminating the partially transparent gate electrode while the predetermined gate and back gate biases are applied to the gate and back gate electrodes, respectively, and measuring the current conducted by the gate electrode and the current conducted by the connected source and drain electrodes;

applying a second predetermined voltage to the drain electrode after disconnecting the source and drain electrodes;

determining a second change in threshold voltage between the nominal thresbold voltage and a threshold voltage as the second predetermined voltage is applied to the drain electrode; and

adjusting the gate bias applied to the gate electrode to compensate for variations in the electric field in the insulator layer of the transistor based upon the difference between the first and second changes in threshold voltage.

5,612,629

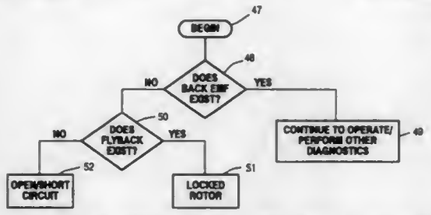
SYSTEM AND METHOD FOR DETECTING FAULT CONDITIONS IN A DIRECT CURRENT MOTOR

Eugene T. Mullin, Phoenixville, and Clifford J. Bader, West Chester, both of Pa., assignors to Lockheed Martin Tactical Systems, Inc., New York, N.Y.

Division of Ser. No. 851,652, Mar. 16, 1992. This application Jun. 7, 1995, Ser. No. 476,902

Int. Cl.[6] G05B *19/40*

U.S. Cl. 324—772 **56 Claims**



1. A method for detecting a fault condition of a locked rotor condition in a D.C. motor circuit having two voltage leads comprising the steps of:

a) applying a voltage to the D.C. motor by way of the two voltage leads, wherein the voltage is sufficient to cause motor rotation,

b) determining if flyback exists on the two voltage leads upon interruption of the applied voltage,

c) before, during or after said step of determining if flyback exists, determining if a back EMF exists on the two voltage leads upon interruption of the applied voltage, and

d) indicating a locked rotor condition exists when the back EMF does not exist and the flyback does exist.

5,612,630

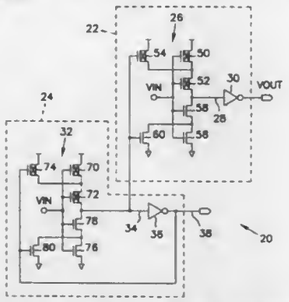
ASYNCHRONOUS SELF-ADJUSTING INPUT CIRCUIT

Jeffrey P. Wright, and Eugene H. Cloud, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 19, 1995, Ser. No. 548,801

Int. Cl.[6] H03K *17/13*

U.S. Cl. 326—22 **22 Claims**



1. An asynchronous self-adjusting circuit comprising:

an input circuit receiving an input signal and providing an output signal, wherein the input circuit starts to switch the output signal to a first logic level based on the level of the input signal reaching a falling edge adjustable trip point and wherein the input circuit starts to switch the output signal to a second logic level based on the level of the input signal reaching a rising edge adjustable trip point; and

a control circuit to dynamically and asynchronously adjust the falling and rising edge adjustable trip points as a function of a previous value of the input signal.

5,612,631

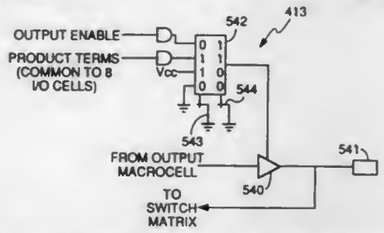
AN I/O MACROCELL FOR A PROGRAMMABLE LOGIC DEVICE

Om P. Agrawal, San Jose, Calif., and Jerry D. Moench, Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 816,515, Dec. 31, 1991, Pat. No. 5,436,514, which is a continuation of Ser. No. 699,427, May 13, 1991, Pat. No. 5,225,719, and a continuation-in-part of Ser. No. 490,808, Mar. 7, 1990, Pat. No. 5,015,884, which is a continuation-in-part of Ser. No. 243,574, Sep. 12, 1988, Pat. No. 4,963,768, which is a continuation-in-part of Ser. No. 178,707, Apr. 7, 1988, Pat. No. 4,931,671, which is a continuation of Ser. No. 717,640, Mar. 29, 1985, Pat. No. 4,742,252. This application Jun. 6, 1995, Ser. No. 474,629

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **12 Claims**



6. In a programmable logic device, a structure comprising:

a first product term and a second product term in a programmable array;

a plurality of I/O pins;

a plurality of I/O macrocells wherein each I/O macrocell further comprises:

a programmable multiplexer having:

a first input terminal connected to said first product term;

a second input terminal connected to said second product term; and

an output terminal;

wherein in response to an input select signal, said programmable multiplexer passes therethrough a signal on a selected input terminal to said output terminal; and

a three-state buffer having:

an enable terminal connected to said programmable multiplexer output terminal; and

an output terminal connected to one of said I/O pins in said plurality of I/O pins.

5,612,632

HIGH SPEED FLIP-FLOP FOR GATE ARRAY

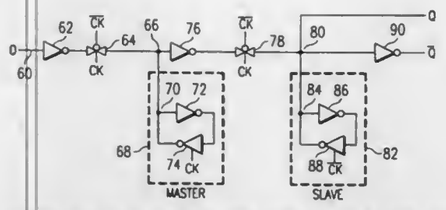
Shivaling Mahant-Shetti, Los Angeles, Calif.; Kevin Ovens, Plano, Tex.; Clive Bittlestone, Allen, Tex.; Robert C. Martin, Dallas, Tex., and Robert J. Landers, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1994, Ser. No. 346,562

Int. Cl.[6] H03K *19/173;19/00*

U.S. Cl. 326—46 **27 Claims**

1. Sequential circuitry for latching a logic state in response to a clock signal, comprising:



an input node for receiving an input signal having an input logic state;

a master storage node for storing a master logic state;

a single slave storage node for storing a slave storage logic state;

first transfer circuitry coupled to said input node for outputting the master logic state representative of the inverse of said input logic state to said master storage node in response to a first transition of the clock signal;

a master latch for latching said master logic state to said master storage node;

second transfer circuitry coupled to said master storage node for transferring the slave logic state representative of the inverse of said master logic state to said single slave storage node in response to a second transition of the clock signal;

a slave latch for latching said slave logic state to said single slave storage node;

an inverter having the input thereof connected to a node within said master latch, said inverter for outputting a logic state representative of the logic state on said master storage node;

third transfer circuitry substantially identical to said second transfer circuitry coupled to the output of said inverter for outputting a logic state representative of said master logic state to a single inverse slave storage node, said third transfer circuitry operating in response to said second transition of the clock signal; and

an inverse slave latch substantially identical to said slave latch for latching said inverse master logic state to said single inverse slave storage node.

5,612,633

CIRCUIT FOR SIMULTANEOUSLY INPUTTING AND OUTPUTTING SIGNALS ON A SINGLE WIRE

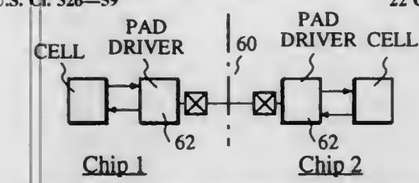
Thomas A. Kean, Edinburgh, Scotland, assignor to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 416,454, Mar. 31, 1995, Pat. No. 5,491,353, which is a continuation of Ser. No. 116,395, Sep. 3, 1993, which is a division of Ser. No. 761,835, Sep. 13, 1991, Pat. No. 5,243,238. This application May 25, 1995, Ser. No. 450,714

Claims priority, application United Kingdom, Mar. 17, 1989, 8906145; WIPO, Mar. 17, 1990, PCT/GB90/00376

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—59 **22 Claims**



1. A system for connecting a plurality of smaller programmable logic devices together to build a larger programmable logic device, wherein multiple logic signals from multiple smaller programmable logic devices share a single physical pin to pin connection between the connected smaller programmable logic devices, said pin to pin connection being apparent to the user in terms of increased delay at that connection, wherein an input connection and an output connection of a smaller programmable logic device share the same pin, wherein a first voltage level on the pin represents logic level 0, a second voltage level on the pin represents logic level 1, and a voltage level between said first and second voltage levels on the pin represents an intermediate logic level on the pin, and wherein each smaller programmable logic device connected to the pin determines the voltage being output by the other smaller programmable logic devices connected to the pin from the voltages on the pin and the voltage being output by itself.

5,612,634

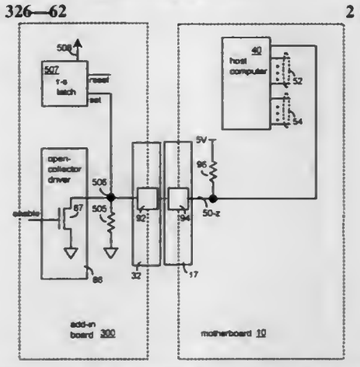
CIRCUIT FOR SENSING WHETHER OR NOT AN ADD-IN BOARD IS INSERTED INTO A BUS CONNECTOR OF A MOTHER BOARD

Craig A. MacKenna, Los Gatos, Calif., assignor to Zilog, Inc., Campbell, Calif.

Filed Sep. 26, 1994, Ser. No. 311,951

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—62 **2 Claims**



2. A sensing circuit for sensing whether or not a first contact of a first electronic module unit is electrically connected to a second contact of a second electronic module unit, wherein said second electronic module unit includes a pull-up resistor connected between said second contact and a logic HIGH voltage, said sensing circuit comprising:

a pull-down resistor connected between said first contact and a ground reference voltage, wherein said pull-down resistor has a resistance value greater than a resistance value of said pull-up resistor of said second electronic module unit, such that, when said first and second contacts are electrically connected, a voltage on a node defined at the connection between said pull-down resistor add said first contact is substantially pulled up to said logic HIGH voltage, and when said first and second contacts are not electrically connected, said voltage on said node is substantially pulled down to said ground reference voltage; and

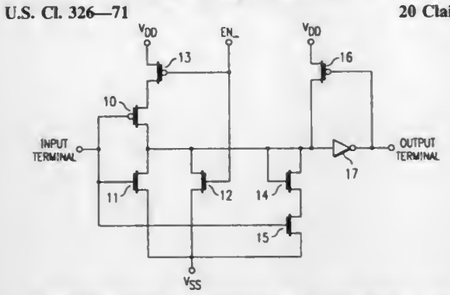
means for communicating to a circuit on said first electronic module unit, a logic level indicative of said voltage on said node defined at the connection between said pull-down resistor and said first contact, wherein said communicating means includes a R-S latch having a high-active set input connected to said voltage on said node defined at the connection between said pull-down resistor and said first contact, a reset input connected to a reset signal, and an output indicative of whether or not said first contact of said first electronic module unit is electrically connected to said second contact of said second electronic module unit.

5,612,635

HIGH NOISE-MARGIN TTL BUFFER CIRCUIT CAPABLE OF OPERATION WITH WIDE VARIATION IN THE POWER SUPPLY VOLTAGE

Raghava Madhu, Trichur, Ind., and Subramani Kengeri, Norwood, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 22, 1995, Ser. No. 408,514
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—71 **20 Claims**



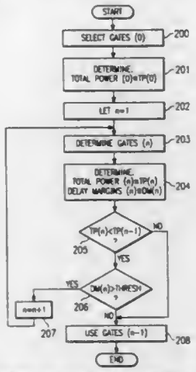
1. A buffer circuit for converting first logic signal levels to second logic signal levels, said buffer circuit comprising:
a circuit node;
an input stage applying a node signal to said circuit node related to an input signal;
a voltage-control stage responsive said first logic signal levels and a voltage level energizing said buffer circuit for determining, along with said node signal, a voltage level of said circuit node; and
a feedback output stage responsive to a voltage of said circuit node for determining an output state of said buffer circuit.

5,612,636

SHORT CIRCUIT POWER OPTIMIZATION FOR CMOS CIRCUITS

Uming Ko, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1995, Ser. No. 375,147
Int. Cl.[6] H03K *19/0948;* **G06F** *15/00*
U.S. Cl. 326—83 **20 Claims**



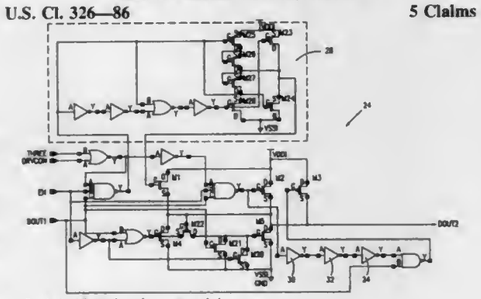
1. A method of constructing an electronic circuit from a plurality of logic gates, each said logic gate including a logic input and a logic output and a pair of power supply inputs, wherein each said logic gate will exhibit short circuit power dissipation during operation of the electronic circuit due to short circuit current flow between the power supply inputs of the logic gate during a logic level transition at the logic input of the logic gate, comprising the steps of:
selecting a first logic gate; and
selecting a second logic gate to drive said first logic gate, including selecting a drive strength for said second logic gate based on a total of all short circuit power that would be dissipated by said first and second logic gates during operation of the electronic circuit if said second logic gate were driving said first logic gate.

5,612,637

SUPPLY AND INTERFACE CONFIGURABLE INPUT/OUTPUT BUFFER

Michael J. Shay, Arlington, and Mark D. Koether, Grand Prairie, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 452,365
Int. Cl.[6] H03K *19/0948;19/0185*
U.S. Cl. 326—86 **5 Claims**



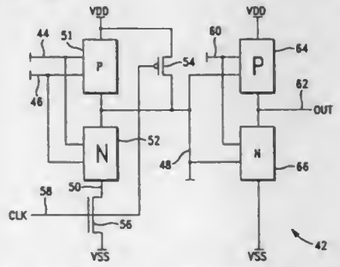
1. A buffer circuit, comprising:
an output node;
a first n-channel transistor coupled between the output node and a voltage supply node for pulling-up the output node;
a first p-channel transistor coupled between the output node and the voltage supply node for pulling-up the output node;
a second p-channel transistor coupled between the output node and the voltage supply node for pulling-up the output node; and
a control circuit which disables the first and second p-channel transistors and enables the first n-channel transistor for operation with a first voltage supply level present at the voltage supply node, and which enables the first and second p-channel transistors for operation with a second voltage supply level present at the voltage supply node.

5,612,638

TIME MULTIPLEXED RATIOED LOGIC

Lavi A. Lev, San Jose, Calif., assignor to MicroUnity Systems Engineering, Inc., Sunnyvale, Calif.

Filed Aug. 17, 1994, Ser. No. 292,799
Int. Cl.[6] H03K *19/096;19/094*
U.S. Cl. 326—98 **55 Claims**



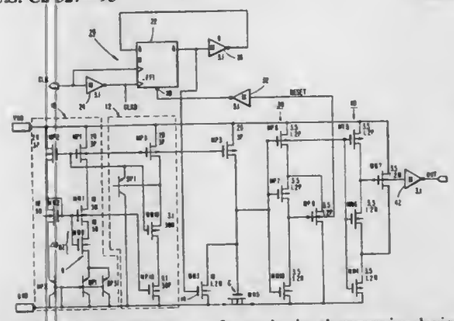
1. A pre-conditioned N-type complementary CMOS logic element using scaled MOSFETs and a single clock phase, comprising:
L_1 input lines, L_1 being a positive integer;
L_1 complementary MOSFET pairs, each pair including a P-channel charge MOSFET and an N-channel evaluation MOSFET;
each input line connected to the gate terminals of a different pair;
an output line;
a return line;
the charge MOSFETs forming a charge circuit connected between a supply voltage V_{DD} and the output line and the evaluation MOSFETs forming an evaluation circuit connected between the output line and the return line to provide a defined logical function of the input lines at the output line;
a P-channel pre-condition MOSFET having the source-to-drain path connected between the supply voltage V_{DD} and the output line;
an N-channel ground switch MOSFET having the source-to-drain path connected between a supply voltage V_{SS} and the return line;
a clock input line being connected to the gate terminals of the pre-condition and the ground switch MOSFETs; and
each MOSFET having a width, and the width of the N-channel MOSFETs being substantially greater than the width of the P-channel MOSFETs,
whereby the logic element uses scaled MOSFETs.

5,612,639

CAPACITOR CHARGING CIRCUIT WITH PROCESS VARIATION COMPENSATION

David C. Reynolds, Georgetown, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Division of Ser. No. 876,756, May 1, 1992, Pat. No. 5,446,322.
This application Oct. 5, 1994, Ser. No. 317,691
Int. Cl.[6] H03K *17/14;* **G11C** *27/02*
U.S. Cl. 327—93 **3 Claims**



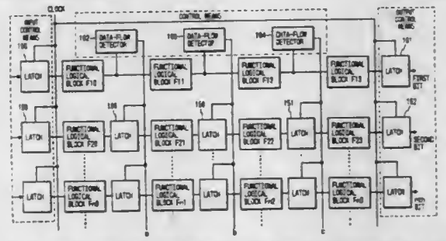
1. Capacitor charging means for use in signal-responsive devices comprising:
an integrated-circuit (IC) chip to be produced in sequential lots by an IC process, said chip having first and second MOS transistors;
said first transistor being formed as an MOS capacitor to be charged and discharged;
said second transistor being formed as an MOS resistor;
a source of voltage connected to said MOS resistor such that the voltage appears in its entirety across said MOS resistor, thereby to produce through said MOS resistor a current directly proportional to said voltage and inversely proportional to the magnitude of resistance of said MOS resistor; and
first circuit means responsive to said current through said MOS resistor and operable to supply to said MOS capacitor a charging current proportional to said MOS resistor current;
whereby when the oxide layer produced by the IC process for said first and second MOS transistors varies in thickness from one IC chip to a subsequently produced chip produced by said process, the resulting change in capacitance of said MOS capacitor in relation to the capacitance of a previously produced chip is at least partly compensated for by the corresponding change in resistance of the MOS resistor on the subsequently produced chip caused by said variation in oxide thickness so as to tend to maintain the rate of charging of said MOS capacitor relatively constant;
said second MOS transistor forming part of a band-gap regulator circuit;
said band-gap regulator circuit further including a pair of bipolar transistors driven with differing current densities so as to produce differing V_{BE} voltages for each; and
second circuit means connecting said second MOS transistor to said bipolar transistors to produce said source voltage as a ΔV_{BE} voltage across the resistor defined by said second MOS transistor.

5,612,640

SELF-TIMED SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Fumio Murabayashi, Urizura-machi; Tatsumi Yamauchi, Hitachioota, and Yutaka Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,303
Claims priority, application Japan, Sep. 17, 1993, 5-231250
Int. Cl.[6] H04L *7/00;* **H03K** *5/13*
U.S. Cl. 327—141 **10 Claims**



1. A semiconductor integrated circuit device comprising a plurality of data handling stages arranged successively in a series for handling data sequentially along said series, at least one of said stages having:
a plurality of functional blocks arranged in parallel;
a connecting means for connecting said functional blocks to functional blocks in a subsequent data handling stage, said connecting means including a plurality of connections each handling data flow from one of said functional blocks in said stage; and
a control means, including a detection means for detecting data flow along a selected one of said connections, for controlling data flow through at least one other of said connections based on said detection means detecting data flow along said selected connection.

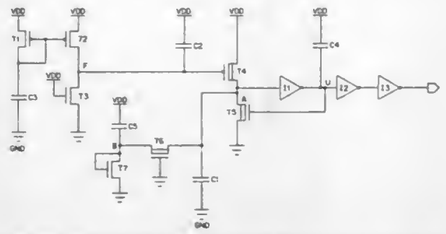
5,612,641

CIRCUIT FOR COVERING INITIAL CONDITIONS WHEN STARTING-UP AN INTEGRATED CIRCUIT DEVICE

Mauro L. Sali, S. Angelo Lodigiano, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 30, 1995, Ser. No. 380,309
Claims priority, application European Pat. Off., Jan. 31, 1994, 94830031
Int. Cl.[6] H03L *7/00*
U.S. Cl. 327—143 **9 Claims**

1. A reset circuit for resetting initial conditions of an integrated circuit device connected between a first supply terminal and a second supply terminal for coupling to a generator of a supply voltage variable from a low logic value to a high logic value, the circuit comprising:



an input stage having a first input terminal and a second input terminal coupled to the first supply terminal and the second supply terminal, respectively, and an output terminal, the input stage being a thresbold circuit designed to control the output stage when the supply voltage exceeds a predetermined threshold value;

an output stage including an input node to generate command signals with hysteresis, and a positive feedback loop coupled to the input node and the second supply terminal, the output terminal of the input stage being coupled to the input node;

a first capacitive element coupled between the input node and the second supply terminal thereby coupling the input node to the second supply terminal;

a first transistor coupled between a second node and the input node, the first transistor having a command terminal coupled to the second supply terminal;

a second capacitive element coupled between the second node and the first supply terminal; and

a second transistor coupled between the second node and the second supply terminal, the second transistor having a command coupled to the second node;

wherein the input stage further includes

a third transistor and a third capacitive element connected in series between the first supply terminal and the second supply terminal;

a fourth transistor and a fifth transistor connected in series between the first supply terminal and the second supple terminal, the fifth transistor having a gate terminal connected to the first supply terminal, the third transistor and the fourth transistor being configured as a current mirror circuit configuration;

a sixth transistor coupled between the first supply terminal and the input node of the output stage, a gate terminal of the sixth transistor being coupled to a third node between the fourth transistor and the fifth transistor; and

a fourth capacitive element coupled between the third node and the first supply terminal.

5,612,642

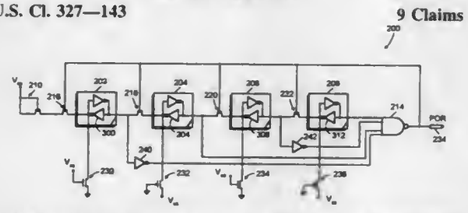
POWER-ON RESET CIRCUIT WITH HYSTERESIS

Cameron McClintock, Mountain View, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 28, 1995, Ser. No. 430,923

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—143 **9 Claims**



6. A method of operating power-on reset circuit in an integrated circuit comprising the steps of:

asserting a power-on reset signal when power is supplied to said power-on reset circuit;

deasserting the power-on reset signal when a power supply voltage reaches a first voltage level;

again asserting said power-on reset signal when said power supply voltage reaches a second voltage level, said second voltage level being below said first voltage level wherein the step of asserting a power-on reset signal when said power is supplied to said power-on reset circuit comprises the step of:

coupling an input of a first memory element to a first voltage said first voltage setting an output of the first memory element to a first output level, said output of the first memory element coupled to and asserting said power-on reset signal

coupling an input of a second memory element to a second voltage, said second voltage setting an output of the second memory element to a second output level, said output of the second memory element coupled to and asserting said power-on reset signal; and

wherein said first and said second memory elements are coupled to the power supply voltage and are the same as memory elements elsewhere in said integrated circuit.

5,612,643

SEMICONDUCTOR INTEGRATED CIRCUIT WHICH PREVENTS MALFUNCTIONS CAUSED BY NOISE

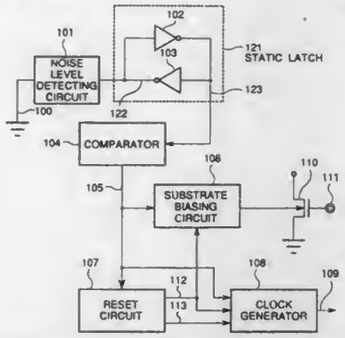
Takeshi Hirayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 414,009, Mar. 30, 1995, abandoned. This application Mar. 20, 1996, Ser. No. 618,730

Claims priority, application Japan, Mar. 30, 1994, 6-61688

Int. Cl.[6] G05F *3/02*

U.S. Cl. 327—534 **10 Claims**



1. A semiconductor integrated circuit device, comprising:

a least one MOS transistor having a variable threshold voltage;

a substrate biasing means for applying a predetermined substrate bias to said transistor during an operational period of said device;

a noise detecting means coupled to one of a ground line, a circuit external to said integrated circuit device, and a supply voltage line, for producing a noise detection signal upon detection of noise on said one of said ground line, said circuit external to said integrated circuit device, and said supply voltage line in excess of a predetermined noise level; and

a control means, responsive to said noise detection signal to stop said substrate biasing means from applying said predetermined bias to said transistor;

wherein the presence of said noise detection signal substantially defines a standby period for said device, and the absence of said noise detection signal substantially defines said operational period of said device:

wherein said substrate biasing means substantially does not consume power during said standby period.

5,612,644

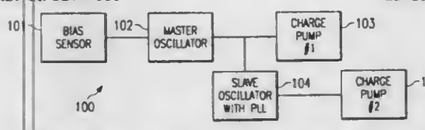
CIRCUITS, SYSTEMS AND METHODS FOR CONTROLLING SUBSTRATE BIAS IN INTEGRATED CIRCUITS

Michael E. Runas, McKinney, Tex., assignor to Cirrus Logic Inc., Fremont, Calif.

Filed Aug. 31, 1995, Ser. No. 521,891

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—535 **23 Claims**



1. Substrate bias control circuitry comprising:

a bias sensor for measuring a bias voltage of a substrate and generating a control signal in response;

a master oscillator for generating a first driving signal, a frequency of said first driving signal adjusted by said control signal;

a first charge pump for pumping electrons into said substrate in response to said first driving signal;

a slave oscillator for generating a second driving signal, a frequency of said second driving signal determined from said frequency of said first driving signal using a phased-locked loop; and

a second charge pump for pumping electrons into said substrate in response to said second driving signal.

5,612,645

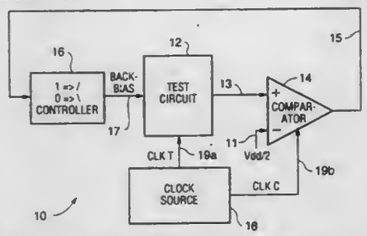
DYNAMIC MOSFET THRESHOLD VOLTAGE CONTROLLER

Sameer D. Halepete, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 1, 1995, Ser. No. 566,020

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—537 **23 Claims**



1. An apparatus including a threshold voltage controller circuit for controlling the threshold voltage of a plurality of complementary metal oxide semiconductor field effect transistors (CMOSFETs) integrated within an integrated circuit, said threshold voltage controller circuit comprising:

a first semiconductor region of a first conductivity type;

a second semiconductor region of a second conductivity type disposed within said first semiconductor region;

a test circuit for receiving a first clock signal and in response thereto providing a corresponding delayed clock signal, wherein said test circuit includes a plurality of CMOSFETs having a threshold voltage associated therewith and disposed within said second semiconductor region, and wherein said delayed clock signal is delayed with respect to said first clock signal by a response time period the duration of which is dependent upon said threshold voltage;

a comparison circuit for receiving a reference voltage, said delayed clock signal from said test circuit and a second clock signal, comparing said reference voltage and said delayed clock signal and, in accordance therewith and in response to said second clock signal, providing a comparison result signal, wherein said second clock signal is delayed with respect to said first clock signal by a clock delay time period; and

a controller for receiving said comparison result signal from said comparison circuit and in accordance therewith applying a control voltage across said first and second semiconductor regions for controlling said threshold voltage.

5,612,646

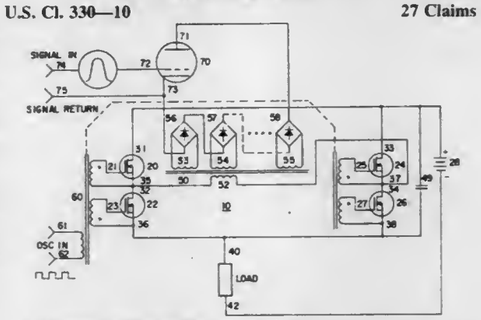
OUTPUT TRANSFORMERLESS AMPLIFIER IMPEDANCE MATCHING APPARATUS

David W. Berning, 12430 McCrossin La., Potomac, Md. 20854

Filed Aug. 30, 1995, Ser. No. 521,494

Int. Cl.[6] H03F *3/38*

U.S. Cl. 330—10 **27 Claims**



1. A linear audio amplifier comprising:

a dc voltage source having terminals for connecting in series an external load impedance;

a solid-state switching dc-dc power converter stage connected to a series combination of the dc voltage source and the external load impedance;

a linear amplifier stage configured as a load for the power converter stage; and

wherein the series combination of the dc voltage source and the external load impedance provides input power to the power converter stage.

5,612,647

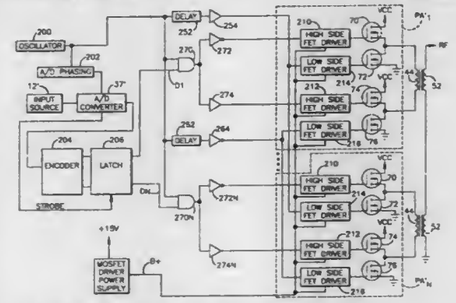
RF POWER AMPLIFIER SYSTEM HAVING AN IMPROVED DRIVE SYSTEM

Jeffrey M. Malec, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1995, Ser. No. 497,390

Int. Cl.[6] H03F *3/26*

U.S. Cl. 330—146 **24 Claims**



1. A RF power amplifier system, comprising:

a RF source for providing a train of RF pulses having a fixed frequency and wherein each pulse is of a fixed amplitude and duration;

a DC voltage source;

a bridge circuit including a first circuit including a first transistor switching means for, when on, connecting said DC voltage source across a load for DC current flow therethrough in a first direction and a second circuit including a second transistor switching means for, when on, connecting said DC voltage source across said load for DC current flow therethrough in a second direction;

switch driver control means for, when enabled, passing said RF pulses for driving said first and second transistor switching means on and off at a frequency dependent upon that of said RF signal and in such a manner that current from said DC voltage source alternately flows in said first and second directions through said load;

means for providing turn-on signals and selectively applying them to said switch driver control means for enabling said driver control means for passing said RF pulses to said switching means; and,

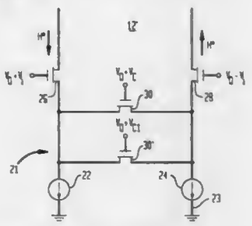
wherein said switch driver control means includes logic gating means enabled by said turn-on signal for passing said RF pulses to said first and second transistor switching means.

5,612,648

TRANSCONDUCTANCE-CAPACITANCE FILTER WITH EXTENDED CONTROL RANGE

Kelly P. McClellan, Irvine; Parameswaran K. Gopalier, Rancho Santa Margarita, and Khosrow H. Sadeghi, Irvine, all of Calif., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Mar. 14, 1995, Ser. No. 403,931
Int. Cl.[6] H03F *3/45;3/191*
U.S. Cl. 330—253 **7 Claims**



1. A transconductor element comprising

a first circuit leg comprising a first fixed current source and a first FET for receiving a positive input voltage, a second circuit leg comprising a second fixed current source and a second FET for receiving a negative input voltage,

a first degeneration FET connected between said first and second legs for receiving a first control voltage,

a second degeneration FET connected between said first and second legs for receiving a second control voltage

wherein:

said transconductor is connected to a phase-locked-loop containing a voltage-controlled-oscillator,

said first control voltage is an input voltage of said voltage-controlled-oscillator, and

said second control voltage is generated by a signal processing circuit from said first control voltage and is fed back to said voltage-controlled-oscillator.

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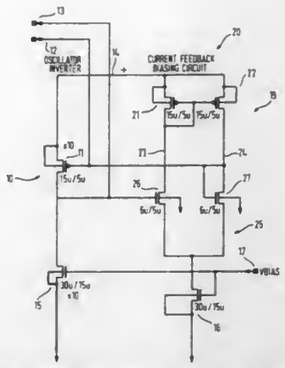
INVERTER AMPLIFIER CIRCUITS

Clive R. Taylor, Welwyn Garden City, England, assignor to VLSI Technology, Inc., San Jose, Calif.

Filed May 6, 1996, Ser. No. 643,755
Int. Cl.[6] H03B *5/36;5/04;* **H03F** *1/30;3/16*
U.S. Cl. 331—116 FE **13 Claims**

1. An inverter amplifier comprising:

(a) first and second transistors constituting a first current mirror;



(b) third and fourth transistors constituting a second current mirror, said first and third transistors being connected by a first current path and said second and fourth transistors being connected by a second current path, a control node of said first transistor being connected to a control node of said second transistor and also to said first current path; and

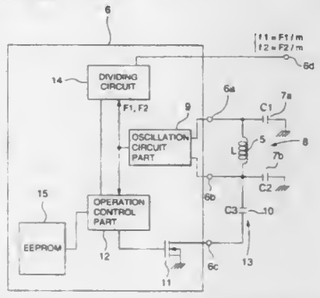
(c) an inverter connected between a control node of said fourth transistor and a control node of said third transistor.

5,612,650

TRANSMITTING DEVICE FOR A FREQUENCY MODULATED DIGITAL TRANSMISSION SIGNAL

Takashi Mizuno; Sadao Kokubu; Hisashi Aoki; Yoshiyuki Mizuno, and Shinichi Koga, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Niwa-gun, Japan

Filed Sep. 13, 1995, Ser. No. 527,600
Claims priority, application Japan, Sep. 14, 1994, 6-219793
Int. Cl.[6] H04L *27/12*
U.S. Cl. 332—100 **7 Claims**



1. A transmitting device for a frequency modulated digital transmission signal comprising:

an oscillation circuit for providing a clock signal of a switchable oscillation frequency; and

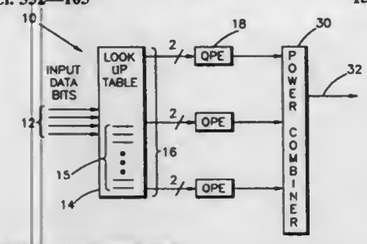
an operation controller for generating a frequency modulation signal in accordance with said clock signal from said oscillation circuit by applying a switching signal corresponding to variations in the level of a digital signal to said oscillation circuit to switch the oscillation frequency of said oscillation circuit.

5,612,651

MODULATING ARRAY QAM TRANSMITTER

Frank Chethik, Palo Alto, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Jan. 2, 1996, Ser. No. 582,604
Int. Cl.[6] H04L *27/36*
U.S. Cl. 332—103 **15 Claims**



11. A transmitter comprising:

a plurality of PSK modulators each comprising means for PSK modulating a local oscillator signal in accordance with a digital input signal comprised of a predetermined number of bits;

a plurality of amplifiers individual ones of which have an input coupled to an output of one of said PSK modulators; and

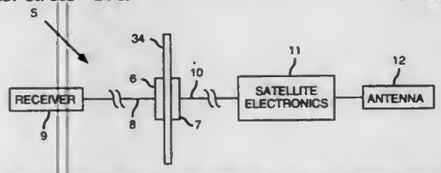
means for combining together amplified PSK modulated signals emanating from said plurality of amplifiers and outputting a composite signal representing a symbol within a QAM symbol constellation.

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APPARATUS FOR TRANSMITTING ELECTRICAL POWER AND BROADBAND COMMUNICATIONS SIGNALS THROUGH A DIELECTRIC

John B. Crosby, Yorba Linda, Calif., assignor to Multiplex Technology, Inc., Brea, Calif.

Filed Mar. 4, 1996, Ser. No. 610,327
Int. Cl.[6] H01P *5/00*
U.S. Cl. 333—24 R **1 Claim**



1. An interface circuit for transmitting electrical signals between a first transmission line that is connected to a receiver on a first side of a dielectric layer and a second transmission line that is connected to antenna electronics on a second side of the dielectric layer, comprising:

power transmission circuitry that includes:

a first inductor mounted adjacent the first side of the dielectric layer and connected to the first transmission line to receive DC electrical power therefrom;

a switch connected to the inductor, the switch being arranged to convert the DC power received by the inductor into time-varying electrical signals that produce a time-varying magnetic field;

a second inductor mounted adjacent the dielectric layer opposite the first inductor, the second inductor being within the time-varying magnetic field such that electrical power is transmitted through the dielectric layer via magnetic induction; and

a rectifier circuit connected between the second inductor and the second transmission line to convert electrical power output therefrom into DC electrical power and supply the DC electrical power to the second transmission line; and

RF signal transmission circuitry that includes:

apparatus connected to the second transmission line to receive broadband RF signals therefrom and produce a pair of balanced feed signals;

a first pair of plates mounted adjacent the second side of the dielectric layer;

a second pair of plates mounted adjacent the first side of the dielectric layer; the first and second pairs of plates being arranged to conduct the RF signals from the second transmission line across the dielectric layer; and

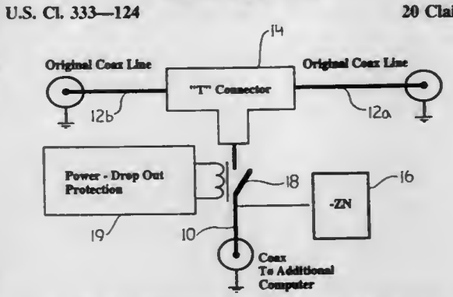
apparatus connected between the second pair of plates to convert the balanced feed into an unbalanced feed that is input to the first transmission line.

5,612,653

LAN STAR CONNECTION USING NEGATIVE IMPEDANCE FOR MATCHING

David E. Dodds, and Gregory J. Erker, both of Saskatoon, Canada, assignors to Telecommunications Research Laboratories, Edmonton, Canada

Filed Jun. 7, 1995, Ser. No. 480,094
Int. Cl.[6] H03H *11/28*
U.S. Cl. 333—124 **20 Claims**



1. A branched transmission line for a local area network, the branched transmission line comprising:

at least three transmission lines meeting in parallel at a junction; and

a negative impedance device being connected to the junction in parallel with the transmission lines, and the negative impedance device having a characteristic impedance so that signals approaching the junction on each transmission line encounter a matched impedance at the junction.

5,612,654

DIELECTRIC FILTER HAVING STEPPED RESONATOR HOLES WITH OFFSET HOLE PORTIONS

Tatsuya Tsujiguchi, and Hitoshi Tada, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

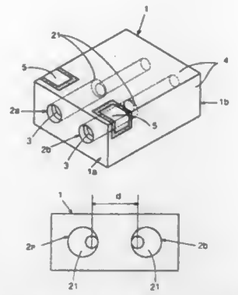
Filed Jan. 24, 1995, Ser. No. 377,394
Claims priority, application Japan, Jan. 25, 1994, 6-006399; Mar. 23, 1994, 6-051979
Int. Cl.[6] H01P *1/202*
U.S. Cl. 333—202 **21 Claims**

1. A dielectric filter, comprising:

a dielectric block having a pair of opposing end surfaces;

an outer conductor on an outer surface of said dielectric block between said pair of opposing end surfaces;

a plurality of resonator holes piercing through at least one end surface of said dielectric block, each resonator hole having a respective step therein which provides the corresponding resonator hole with a larger inner diameter portion and a smaller inner diameter portion thereof, with a respective central axis of said corresponding smaller inner diameter portion being offset from a respective central axis of said corresponding larger inner diameter portion; and



a respective inner conductor on an inner surface of each of said plurality of resonator holes, said respective inner conductors at said corresponding smaller inner diameter portions being connected directly to said outer conductor to define respective short-circuited ends of the corresponding resonators.

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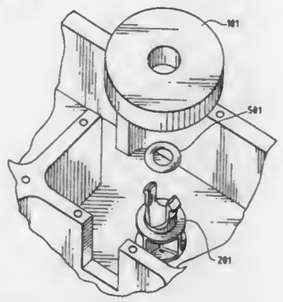
FILTER ASSEMBLY COMPRISING A PLASTIC RESONATOR SUPPORT AND RESONATOR TUNING ASSEMBLY

John Stronks; Erik Lilleholm, and Johnny Gee, all of Reno, Nev., assignors to Allen Telecom Group, Inc., Solon, Ohio

Filed Jul. 6, 1995, Ser. No. 498,629

Int. Cl.[6] H01P *1/20*

U.S. Cl. 333—202 **16 Claims**



1. A filter assembly comprising:

a cavity;

a substantially cylindrical dielectric resonator supported in said cavity;

a fiber filled plastic support structure, said support structure defining an integrally formed support surface and an opposed clamping surface;

said resonator being supported between and bearing against said support surface and said clamping surface;

said clamping surface and said support surface engaging opposite surfaces of said resonator, and maintaining said resonator in a predetermined relationship to said cavity;

said support structure further comprising an attachment means for fixedly positioning said support structure in said cavity;

such that said resonator remains substantially stationary with respect to said support structure and said cavity over the operating temperature range of said filter.

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RESONATOR WITH SPIRAL-SHAPED PATTERN ELECTRODES

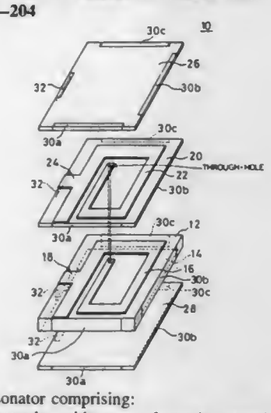
Yukio Sakamoto; Toshimi Kaneko; Kazuo Dougauchi; Masahiko Kawaguchi, and Katsuji Matsuta, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 361,317, Dec. 21, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 621,902

Claims priority, application Japan, Dec. 24, 1993, 5-347461

Int. Cl.[6] H03H *7/00; H01P 7/00*

U.S. Cl. 333—204 **6 Claims**



1. A λ/4 resonator comprising:

a center electrode, said center electrode comprising a pair of pattern electrodes having respective corresponding shapes sandwiching exclusively insulative material including at least one insulation layer therebetween,

one end of each of said pattern electrodes being connected to an earth electrode, and the other end of each of said pattern electrodes being open; and

a pair of drawing electrodes connected respectively to said pair of pattern electrodes, said pair of drawing electrodes being electrically connected to each other.

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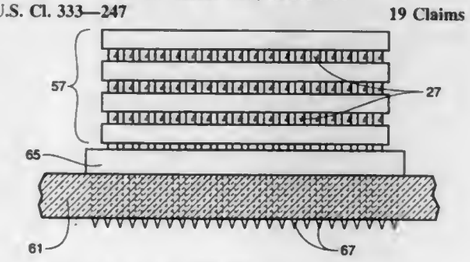
INHERENTLY IMPEDANCE MATCHED INTEGRATED CIRCUIT SOCKET

Kenneth J. Kledzik, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 352,414, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 105,275, Aug. 12, 1993, Pat. No. 5,400,003, which is a continuation of Ser. No. 932,108, Aug. 19, 1992, Pat. No. 5,266,912. This application Jul. 15, 1996, Ser. No. 680,072

Int. Cl.[6] H03H *1/00;* **H05K** *7/00*

U.S. Cl. 333—247 **19 Claims**



1. An electrical device comprising:

a) a substrate having circuit traces and active circuitry thereon, the active circuitry being connected to the circuit traces;

b) a plurality of connectors on said substrate connected to the circuit traces, the connectors each consisting of a primary conductor and a secondary conductor; and

c) a socket connected to said connectors.

5,612,658

ELECTROMAGNETIC RELAY

Horst Hendel, and Bernhard Kleine-Onnebrink, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

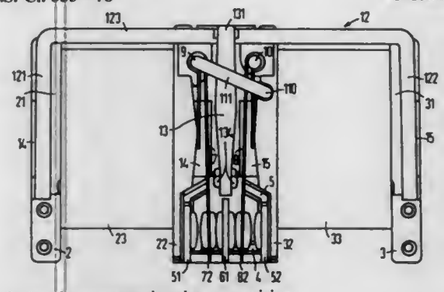
PCT No. PCT/DE93/00470, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO93/26030, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 1, 1993, Ser. No. 356,292

Claims priority, application Germany, Jun. 17, 1992, 42 19 933.6

Int. Cl.[6] H01H *51/22*

U.S. Cl. 335—78 **6 Claims**



1. An electromagnetic relay, comprising:

an insulating base body,

at least one coil disposed on said insulating base body, with a core,

a yoke connected to a first end of said core,

an armature mounted on said yoke at an armature bearing position and defining an air gap between a second end of said core,

a bolding pin anchored in said insulating base body;

at least one contact spring disposed between said armature and said coil and which is secured adjacent said armature bearing position, to said holding pin said at least one contact spring having a free end that is switchable by said armature between a neutral position and a working position,

at least one countercontact element anchored in said insulating base body and which, in a specified switching position of said armature, closes a load current circuit with said at least one contact spring,

said bolding pin being situated within a ferromagnetic circuit formed by said yoke, said armature and said core and said countercontact element being situated, at least by a connecting portion, outside said ferromagnetic circuit,

a connecting pin for said at least one contact spring being anchored in said insulating base body on that side of said armature opposite to said contact spring and said connecting pin being conductively connected to said at least one contact spring via a hoop portion which engages over said armature.

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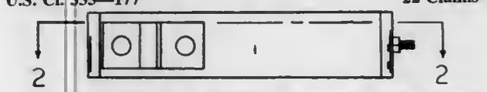
BATTERY PROTECTING CIRCUIT BREAKER

Nick M. Kerber, Tigard, Oreg., assignor to Quicksilver Engineering, Roseburg, Oreg.

Filed Aug. 8, 1994, Ser. No. 287,076

Int. Cl.[6] H01H *9/00*

U.S. Cl. 335—177 **22 Claims**



1. A circuit breaker for switching an external electrical circuit means having a current path comprising:

a frame;

an armature mounted relative to said frame and having an edge, said armature being movable for moving said edge between a first position and a second position spaced from said first position;

first means selectively operable for moving said armature edge from said first position to said second position;

a pair of electrical circuit contacts mounted adjacent to said edge of said armature and connectable to the external electrical circuit, said pair of contacts including a fixed-position contact and a movable contact, said movable contact being movable between contacting and noncontacting positions for opening and closing the external current path;

roller means having a radius of curvature is mounted on said armature edge;

means defining a roll surface for said roller means to roll along when said armature edge moves between said first and second positions, said roll surface including a movable surface that moves relative to said fixed-position contact a distance less than the radius of said roller means as said roller means rolls along said roll surface, with said contacts moving between said contacting position and said noncontacting position when said roller means rolls relative to said movable surface.

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INDUCTANCE ELEMENT

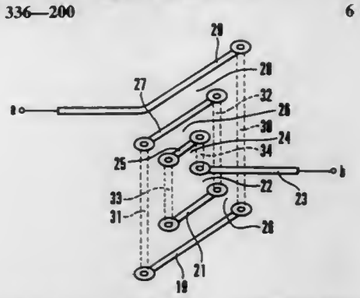
Hiroyuki Takimoto, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,417

Claims priority, application Japan, Jul. 27, 1994, 6-175168

Int. Cl.[6] H01F *27/30*

U.S. Cl. 336—200 **6 Claims**



1. An inductance element formed in a multilayer printed circuit board, comprising:

one outer conductive circuit formed on an outer layer on one side of the multilayer printed circuit board, said one outer conductive circuit having a conductive pattern connected to a terminal provided for external connection;

another outer conductive circuit formed on another outer layer on another side of the multilayer printed circuit board, said another outer conductive circuit having a conductive pattern;

a plurality of inner conductive circuits formed respectively on inner layers in the multilayer printed circuit board, said plurality of inner conductive circuits respectively having conductive patterns, and one of said conductive patterns of said plurality of inner conductive circuits being connected to a terminal provided for external connection; and

a plurality of insulator layers respectively sandwiched in between adjacent conductive layers between said one outer conductive circuit and said another outer conductive circuit, said plurality of insulator layers provided with a plurality of conductive through holes arranged to interconnect said conductive patterns of said conductive circuits,

wherein said plurality of through holes formed in said plurality of insulator layers are arranged in conjunction with said conductive patterns to form a rectangularly spiral conductor within a plane which orthogonally intersects a plane surface of the printed circuit board.

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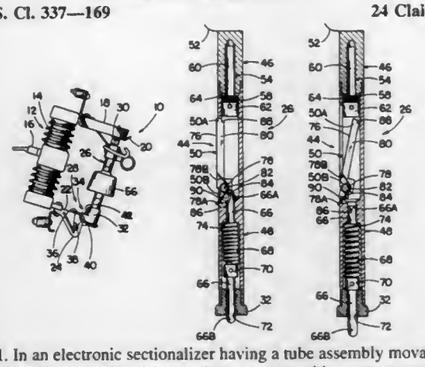
RESETTABLE INTERNAL ACTUATING MECHANISM FOR USE WITH AN ELECTRONIC SECTIONALIZER

Byron T. Twenter, Columbia, and Daren A. Clark, Centralia, both of Mo., assignors to Hubbell Incorporated, Conn.

Filed May 15, 1995, Ser. No. 440,704

Int. Cl.[6] H01H *71/10*

U.S. Cl. 337—169 **24 Claims**



1. In an electronic sectionalizer having a tube assembly movable between a closed position and an open position, an actuating mechanism comprising:

(a) an electro-mechanical means mounted in said tube assembly and biased to move to an extended position and movable to a retracted position in response to receipt of an electrical signal;

(b) actuating means spaced from said electro-mechanical means and mounted in said tube assembly and being biased to move from a non-actuated position to an actuated position; and

(c) linking means mounted in said tube assembly between said electro-mechanical means and said actuating means and biased to pivotably move from a latched position to an unlatched position;

(d) said linking means having opposite upper and lower ends being latched respectively to said electro-mechanical means and to said actuating means when said linking means is at said latched position and said electro-mechanical means is at said extended position to thereby hold said actuating means at said non-actuated position, said opposite ends of said linking means unlatching respectively from said electro-mechanical means and from said actuating means in response to said electro-mechanical means being moved to said retracted position to thereby release said linking means to move to said unlatched position and said actuating means to move to said actuated position.

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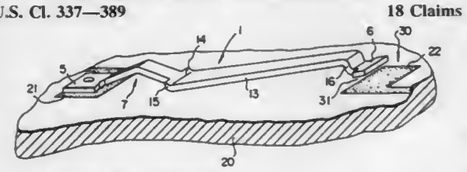
THERMAL FUSE AND METHOD FOR ITS ACTIVATION

Karl G. Drekmeier, Unterhaching, and Gerhard Winter, München, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 7, 1995, Ser. No. 384,821

Int. Cl.[6] H01H *37/46;37/76;37/60;69/02*

U.S. Cl. 337—389 **18 Claims**



1. A thermal fuse, comprising:

a leaf spring formed of a narrow sheet metal strip;

said leaf spring having ends and at least two contact points at said ends, at least one of said contact points being a soldering point for connection with corresponding circuit contacts of a circuit substrate;

said leaf spring having at least one spring arm interconnecting said contact points;

said at least one spring arm having a roof-shaped deformation in the vicinity of one of said contact points; and

said at least one spring arm having a flat and elongated spring segment with a transition adjoining said deformation and a transition extending to the other of said contact points, said spring segment being bending resistant in the vicinities of said transitions, for transforming a compressive deformation applied to said roof-shaped deformation into a lateral movement and into an arching of said spring segment, with both of said ends of said leaf spring attached to the circuit substrate without pretensioning.

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DUAL-TEMPERATURE FUSE

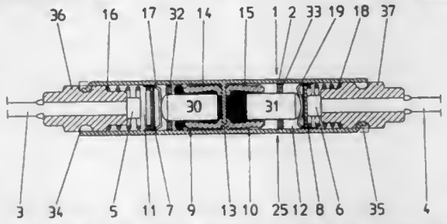
Walter Hollweck, Heroldsberg, Germany, assignor to Inter Control Hermann Kohler Elektrik Gmbh & Co. KG, Nuremberg, Germany

Filed Mar. 17, 1995, Ser. No. 405,974

Claims priority, application Germany, Mar. 18, 1994, 44 09 243.1; Jul. 14, 1994, 44 24 821.0

Int. Cl.[6] H01H *37/76*

U.S. Cl. 337—407 **18 Claims**



1. A thermal fuse which interrupts at least one current path running through it when a triggering temperature value is exceeded, with a fuse housing in which at least two thermal fuse elements are arranged and from which at least two connection contacts project for forming the at least one current path, where a closed contact segment is bridged in the interior of the housing, via a movement contact, when the fuse has not responded, and a fuse element puts spring stress on the movement contact assigned to it in the contact closing direction, which contact interrupts at least one current path when triggered, including the fuse housing being formed in a pipe shape and having two holder chambers for insertion of the thermal fuse elements which are separated from one another by a partition floor which essentially closes off the cross-section of the pipe and that the thermally sensitive elements of the at least two thermal fuse elements impact the partition floor, the two holder chambers running coaxial to one another, and the partition floor being formed in one piece with the pipe-shaped fuse housing.

5,612,664

ELECTRONIC CIRCUIT

Bernd Hilgenberg, Melsungen, and Klemens Haeckel, Reutlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 19, 1994, Ser. No. 308,721

Claims priority, application Germany, Sep. 29, 1993, 43 33 065.7

Int. Cl.[6] H01C *7/22*

U.S. Cl. 338—295 **11 Claims**

1. An electronic circuit comprising:

a plurality of series circuits coupled in parallel, each series circuit including at least one resistor coupled to at least one fusible cut-out via a signal path, wherein the signal path is interrupted by application of a fusing current to the fusible cut-out, the fusing current being sufficient to cause the fusible cut-out to transition to a non-conductive state;

at least one additional resistor coupled in parallel with at least one of the fusible cut-outs;

at least one current or voltage source coupled to each of the fusible cut-outs via at least one connection line;

at least one switch disposed in the connection line of each fusible cut-out, the switch switching the fusing current on and off; and

a shift register coupled to each switch, wherein each switch is under the control of an output of the shift register.

8. An electronic circuit comprising:

a plurality of series circuits coupled in parallel, each series circuit including at least one resistor coupled to at least one fusible cut-out via a signal path, wherein the signal path is interrupted by application of a fusing current to the fusible cut-out, the fusing current being sufficient to cause the fusible cut-out to transition to a non-conductive state;

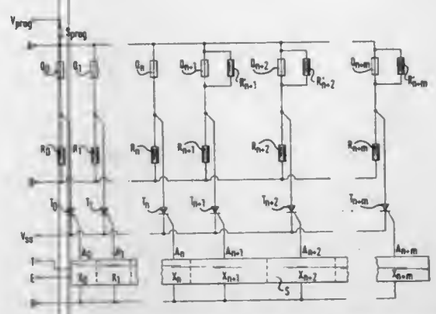
at least one additional resistor coupled in parallel with at least one of the fusible cut-outs;

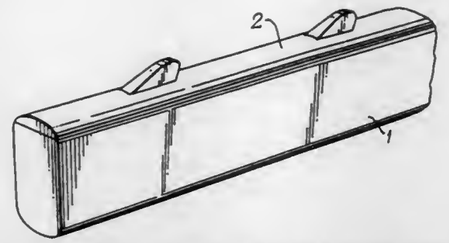
wherein the resistors and the at least one additional resistor are dimensioned so that a first total conductance of the electronic circuit when all of the fusible cut-outs are in a conductive state differs from a second total conductance of the electronic circuit when exactly one fusible cut-out is in a non-conductive state by a resistance value equal to a power of two times a unit resistance value; and wherein:

a) the at least one resistor corresponding to the at least one fusible cut-out in parallel with the at least one additional resistor has a value of $1/[1/(2^iR_D)+1/(mR_A)]$, where i is an index number of the at least one resistor, m is a total number of additional resistors, R_D is the unit resistance value, and R_A is a total resistance of the electronic circuit when all of the fusible cut-outs are in the non-conductive state;

b) the at least one additional resistor has a value of $(mR_A)-1/[\frac{1}{2}^kR_D)+1/(mR_A)]$, where k is an index number of the resistor corresponding to the at least one additional resistor; and

c) each of the resistors corresponding to a fusible cut-out having no additional resistor in parallel has a value of 2^iR_D.





electrical connection wires running through and being substantially concealed by said profile strip; and

a plurality of cover plates, said cover plates being removably attached to said hollow profile strip on at least two longitudinal sides of said strip to form an outer surface of the bandrail, at least some of said cover plates having a directional indication;

wherein said cover plates together provide substantially the complete outer surface of the rail, wherein some of said cover plates are top cover plates and the others of said cover plates are side cover plates, said top cover plates forming the entire top of said handrail, and wherein the side of said handrail is substantially free of indentations and gaps in between said side cover plates such that the side of said handrail is substantially continuous.

5,612,666

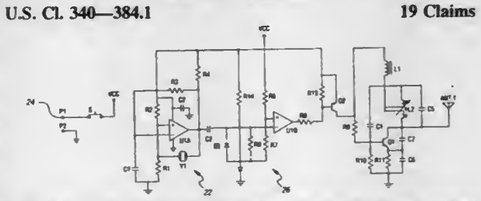
WIRELESS AUDIBLE INDICATIONS SYSTEM

Thomas G. Xydis, Ann Arbor, Mich., assignor to Dimango Products Inc., Brighton, Mich.

Filed Jul. 29, 1994, Ser. No. 282,709

Int. Cl.[6] G08B *3/00*

U.S. Cl. 340—384.1 **19 Claims**



1. A receiver for use in an audible indication system with a corresponding transmitter which transmits a radio frequency signal, the receiver comprising:

a radio frequency detector which produces a first signal upon receiving the radio frequency signal from the corresponding transmitter;

a signal processing circuit, coupled to the radio frequency detector, which processes the first signal to form a second signal, the signal processing circuit having a series of cascaded stages which includes a filter stage and an amplification stage, wherein the amplification stage includes a first inverter gate having an input and an output, a feedback network coupled between the input and the output of the first inverter gate to produce a fixed voltage level at the output of the first inverter gate, and a second inverter gate having an input biased using the output of the first inverter gate, wherein the output of the second inverter gate provides a processed signal having an AC component based upon an input signal AC coupled to the input of the second inverter gate and a DC component based on the output of the first inverter gate, and wherein the filter stage precedes the amplification stage; and

a sound generator, coupled to the signal processing circuit, which generates an audible indication when the second signal is indicative of reception of the radio frequency signal.

5,612,665

ESCAPE ROUTE INDICATION SYSTEM

Arne Gerhardsen, Haugland, N-1850 Mysen, Norway

Continuation of Ser. No. 256,243, Jul. 26, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 619,272

Claims priority, application Norway, Jan. 2, 1992, 92 0027

Int. Cl.[6] G08B *5/00*

U.S. Cl. 340—332 **20 Claims**

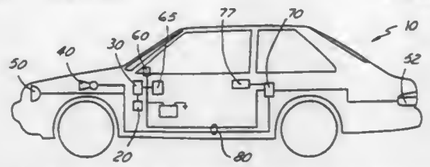
1. A modular handrail that conveys directional information to a user, said handrail having a top and a side, comprising:

a hollow profile strip that provides a basic supporting structure for the handrail, said profile strip comprising a plurality of modules each having a predetermined, modular length;

5,612,667
IN-VEHICLE BAROMETRIC PRESSURE DETECTION SYSTEM

David K. Trumpy, Farmington Hills, and Marvin P. Kraska, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,381
Int. Cl.[6] B60Q *9/00*
U.S. Cl. 340—425.5 **20 Claims**



1. A warning system for sensing the approach of an atmospheric disturbance, comprising:

a vehicle powered by a motor and having an electrical system, a first pressure sensor, a computer, and a first warning generator, each used in the normal operation of the vehicle;

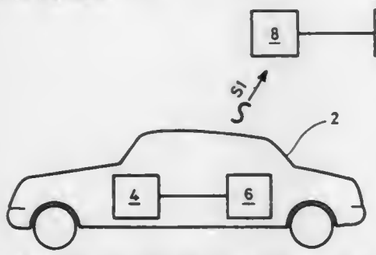
coupling means for coupling, when said vehicle is not in an operating mode, said first pressure sensor through said electrical system to said computer for calculating the changes in atmospheric pressure over time;

means for activating said first warning generator responsive to said computer calculating a time series pattern of changes in the atmospheric pressure characteristic of an approaching atmospheric disturbance, wherein said first warning generator provides warning of an approaching atmospheric disturbance to nearby persons when said vehicle is not in an operating mode.

5,612,668
VEHICLE SITE PROTECTION SYSTEM

Peter Scott, Norwich, United Kingdom, assignor to Forecourt Security Developments Limited, Norwich, United Kingdom

PCT No. PCT/GB91/02193, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO92/10387, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 10, 1991, Ser. No. 75,464
Claims priority, application United Kingdom, Dec. 11, 1990, 9026853; Mar. 7, 1991, 9104798
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—426 **12 Claims**

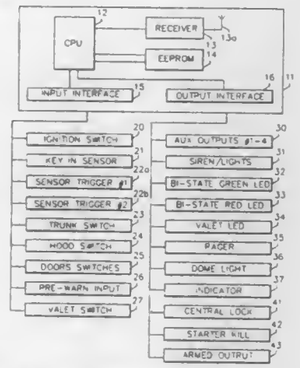


1. A vehicle site protection system for use in protecting a plurality of parked vehicles on said site from unlawful activity, the system comprising a control unit located remotely from the vehicles and arranged to activate an alarm signalling means in response to receipt of a signal from one of a plurality of free-standing wireless sensor units, each sensor unit being placed entirely within the interior of a respective one of the vehicles, each sensor unit comprising a piezocrystal motion and shock sensor, at least one of an ultrasonic scanner and an infrared detector capable of detecting motion of an object within the vehicle, a power supply, and a transmission means which is activated to send an identifying coded signal to the control unit in response to an output from the sensor, the control unit having readily programmable means for storing information relating to the vehicle's location wherein a sensor unit is located, the control unit further having display means for displaying information relating to the vehicle's location in response to an output from the sensor unit, there being no physical connection between the control unit and the transmission means, characterized in that each sensor unit is self-contained and self-powered and further characterized by each sensor unit being portable and thus readily transferable, requiring no external or internal connections, from one vehicle to another as vehicles enter and leave the site.

5,612,669
VEHICLE SECURITY SYSTEM HAVING ENHANCED FALSE ALARM COMPENSATION

Geoffrey C. Allen, Symrna, and Kenneth E. Flick, 5236 Presley Pl., Douglasville, Ga. 30135, assignors to Kenneth E. Flick, Douglasville, Ga.

Filed Apr. 14, 1995, Ser. No. 422,519
Int. Cl.[6] G01S *5/02*
U.S. Cl. 340—426 **23 Claims**



1. A vehicle security system comprising:

a plurality of vehicle sensors;

alarm indicating means for indicating an alarm at the vehicle; and

a controller operatively connected to said vehicle sensors and said alarm indicating means for generating an alarm when in an armed mode and responsive to triggering of at least one of said vehicle sensors, said controller comprising

first sensor full alarm generating means for generating a first sensor full duration alarm responsive to an initial triggering of a first vehicle sensor after said controller entered the armed mode,

first sensor first reduced alarm generating means for generating a first sensor first reduced duration alarm relative to said first sensor full duration alarm and responsive to a subsequent consecutive triggering of the first vehicle sensor after the initial triggering of the first vehicle sensor,

first sensor zone out means for zoning out the first vehicle sensor after a predetermined number of consecutive triggerings thereof,

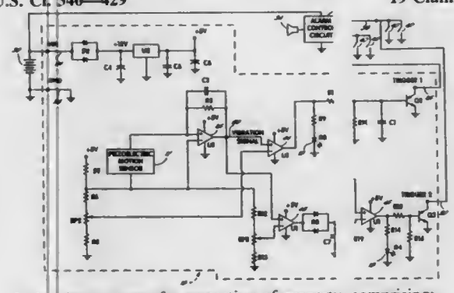
second sensor zone out means for zoning out a second vehicle sensor responsive to a predetermined number of consecutive triggerings thereof and after zoning out of the first vehicle sensor, and

first sensor restore means for zoning in the first vehicle sensor responsive to zoning out of the second vehicle sensor.

5,612,670
DUAL SENSITIVITY SHOCK DETECTOR

Douglas D. Snyder, Bergholz, and Kevin Lipovsky, West Milton, both of Ohio, assignors to Jon Snyder, Inc., Wintersville, Ohio

Division of Ser. No. 262,140, Jun. 20, 1994, Pat. No. 5,459,447. This application May 30, 1995, Ser. No. 453,791
Int. Cl.[6] B60R *25/10;* **G08B** *13/00*
U.S. Cl. 340—429 **19 Claims**



1. An alarm system for protection of property, comprising:

an alarm control circuit for responding to detection of first and second alarm conditions to respectively produce first and second different alarm signals,

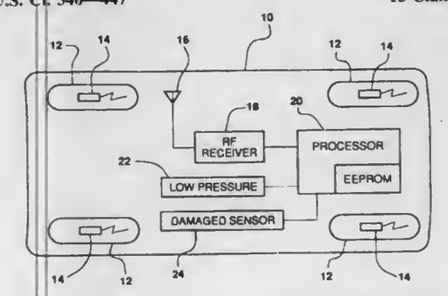
a vibration detector for electrically detecting mechanical vibration and producing an electrical vibration signal representative of said mechanical vibration, said vibration detector being mechanically coupled to said property,

first and second detection circuits responsive to said vibration signal, said first and second detection circuits respectively generating first and second electrical threshold signals and comparing a common frequency band of said vibration signal to said first and second threshold signals, said first and second detection circuits coupled to said alarm control circuit for respectively signalling said first and second alarm conditions to said alarm control circuit if said vibration signal respectively exceeds in magnitude said first and second threshold signals.

5,612,671
METHOD OF LEARNING TIRE PRESSURE TRANSMITTER ID

Victor Mendez, and Todd D. Eberwine, both of Kokomo, Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Dec. 11, 1995, Ser. No. 574,097
Int. Cl.[6] B60C *23/00*
U.S. Cl. 340—447 **13 Claims**



1. In an automotive low tire pressure warning system having a transmitter in each vehicle tire for sending messages comprising transmitter identification (ID) and pressure data to a receiver, the receiver having a memory for a table of transmitter IDs and associated parameters, a method of learning the transmitter IDs during vehicle operation comprising the steps of:

storing in the table received IDs which are not associated with low tire pressure in the table;

monitoring the activity of each transmitter to detect transmission failure When transmitters should be active;

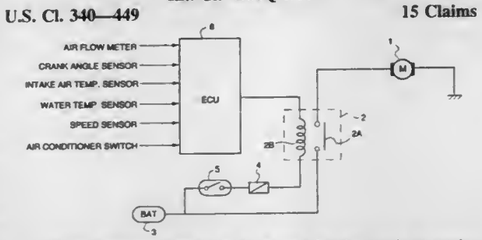
counting failures of each transmitter; and

deleting from the rabble the ID of a transmitter having a limit number of failures.

5,612,672
ENGINE COOLING FAN DIAGNOSIS DEVICE

Yukihiro Ino; Youichi Kishimoto; Atsushi Iochi, and Makoto Shoji, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 18, 1995, Ser. No. 529,898
Claims priority, application Japan, Sep. 22, 1994, 6-228336
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—449 **15 Claims**



1. A fault diagnosis device for a radiator fan that cools an engine of a vehicle comprising:

means for detecting a temperature of said engine,

determining means that functions so as to determine whether or not a preset test condition is satisfied, and to determine that said radiator fan has a fault when said engine temperature is equal to or greater than a preset first determining value when said condition is satisfied, and

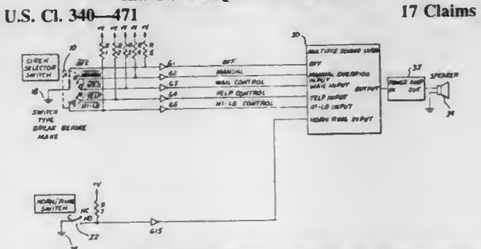
means for generating a warning when said determining means has determined that said fan has a fault,

wherein said determining means functions also so as to determine whether or not said vehicle is moving, and to determine that said radiator fan has a fault when said vehicle is in motion and said engine temperature is equal to or greater than a second determining value that is less than said first determining value.

5,612,673
EMERGENCY VEHICLE SIREN CIRCUIT SYSTEM

Ewing D. Nunn, Yorba Linda, Calif., assignor to Dunbar-Nunn Corporation, Anaheim, Calif.

Filed Mar. 23, 1995, Ser. No. 409,205
Int. Cl.[6] B60Q *1/52;* **G08B** *3/10*
U.S. Cl. 340—471 **17 Claims**



1. An emergency vehicle siren and disabling circuit comprising:

a siren circuit for providing signals for a siren sound;

amplification means connected to said siren circuit to amplify said signals from said siren circuit;

park/neutral switch means connected to said siren circuit and the transmission of a motorized emergency vehicle for disabling

said siren circuit when said emergency vehicle transmission is placed in a park or neutral position;

means for further disabling said siren circuit after said emergency vehicle transmission is removed from said park or neutral position;

means for enabling said siren circuit automatically after the park/neutral switch is actuated and the emergency vehicle operator selects a siren sound; and,

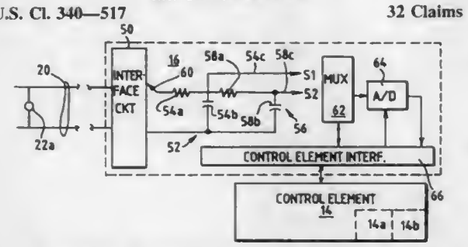
wherein said disabling and enabling means comprise a microprocessor connected to said park/neutral switch means and forming at least a part of said siren circuit.

5,612,674

HIGH SENSITIVITY APPARATUS AND METHOD WITH DYNAMIC ADJUSTMENT FOR NOISE

Lee D. Tice, Bartlett, Ill., assignor to Pittway Corporation, Chicago, Ill.

Filed Jan. 5, 1995, Ser. No. 369,424
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—517 **32 Claims**



1. An apparatus for detecting a selected condition comprising:

a control element;

a communications link coupled to said element;

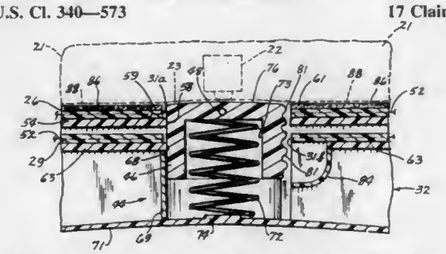
an ambient condition detector coupled to said link wherein said detector is capable of communicating indicia representative of a sensed ambient condition to said element and wherein said element includes means for forming a first smoothed representation of said indicia and for forming a second smoothed representation thereof and including means for determining when said second smoothed representation exhibits a zero slope.

5,612,675

ANTI-REMOVAL MONITORING DEVICE

Charles R. Jennings, Sioux City, Iowa, and Sidney C. Oakleaf, Sioux Falls, S. Dak., assignors to Intellitech International, Inc., Sioux City, Iowa

Continuation-in-part of Ser. No. 133,326, Oct. 8, 1993, abandoned. This application Jan. 23, 1996, Ser. No. 589,894
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **17 Claims**



1. A monitoring device for attachment to an object being monitored, and having electronic circuitry including a transmitter for transmitting a signal to a location remote from the device, the device comprising:

a housing;

switch means disposed within said housing;

an electrically conductive strap having opposite ends and of a length that allows it to be wrapped around the limb of an object being monitored, one end of said strap having means for receiving electrical energy;

a base for attachment to said housing and including first means for receiving and holding said one end of said strap below said housing;

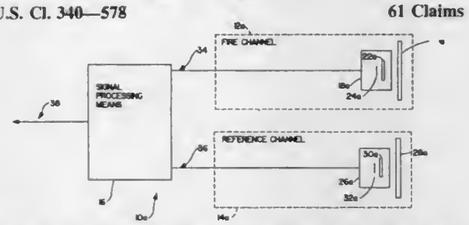
said base including further second means for receiving an opposite end of said strap whereby a loop is formed by said strap, and including further third means mounted within said base having a first position and a second position, said third means extended through both said ends of said strap in said second position and engaging said switch means, said switch means not engaged by said third means in said first position.

5,612,676

DUAL CHANNEL MULTI-SPECTRUM INFRARED OPTICAL FIRE AND EXPLOSION DETECTION SYSTEM

Jonathan C. Plimpton, Canterbury, and George L. Minott, Wilton, both of N.H., assignors to Meggitt Avionics, Inc., Manchester, N.H.

Continuation-in-part of Ser. No. 745,017, Aug. 14, 1991, Pat. No. 5,311,167. This application Nov. 16, 1993, Ser. No. 153,801
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—578 **61 Claims**



61. A fire detection system for automatically detecting fires fueled by one of a number of prespecified fire sources including hydrocarbons and certain non-hydrocarbons, the fire detection system having a low incidence of false alarms from incident infrared (IR) radiation emitted by non-fire radiation sources, the fire detection system comprising:

a first optical sensing channel being configured so as to sense IR radiation in at least one IR spectral region and to generate a first signal corresponding to incident IR radiation being sensed in each of said at least one IR spectral region, wherein each of said at least one first sensing channel IR spectral region is defined by a separate and distinct predetermined bandwidth;

wherein the predetermined bandwidth for each of said at least one first sensing channel IR spectral region is selected so said first optical sensing channel is responsive to the incident IR radiation emitted from the fires fueled by the one of the number of prespecified fire sources;

wherein the predetermined bandwidth for each of said at least one first sensing channel IR spectral region is also established so said first optical sensing channel is essentially non-responsive to the incident IR radiation emitted by the sun;

a second optical sensing channel being configured so as to simultaneously sense IR radiation in at least two IR spectral regions and to generate a second signal corresponding to the incident IR radiation being sensed in each of said second sensing channel IR spectral regions, each of said at least two second sensing channel IR spectral regions being defined by predetermined bandwidths that are separate and distinct from each other;

wherein the predetermined bandwidth for each of said at least two second sensing channel IR spectral regions is selected such that said second optical sensing channel is responsive to the incident radiation emitted by non-fire radiation sources but non-responsive to the incident IR radiation that lies in the predetermined bandwidth for each of said at least one first sensing channel IR spectral region; and

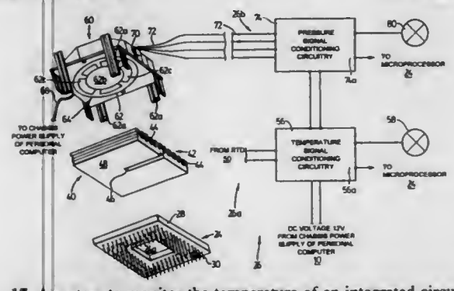
signal processing means both for processing said first and said second signals, respectively of said first and second optical sensing channels, and for generating a fire signal when the processed first and second signals are indicative of a fire.

5,612,677

SYSTEM TO MONITOR THE TEMPERATURE OF AN INTEGRATED CIRCUIT AND TO DISSIPATE HEAT GENERATED THEREBY

Jean-Jérôme C. Baudry, 567 Avenue Road, Apartment N102, Toronto, Ontario, Canada

Filed Sep. 29, 1995, Ser. No. 536,391
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—584 **29 Claims**



17. A system to monitor the temperature of an integrated circuit and to dissipate heat generated thereby comprising:

a heat sink to overlie an integrated circuit to dissipate heat generated thereby;

a temperature sensor on said heat sink to detect the temperature adjacent said integrated circuit;

temperature signal conditioning means responsive to said temperature sensor for generating a temperature alarm signal when the temperature at said integrated circuit reaches a threshold level;

a fan overlying said heat sink to draw air across and then away from said heat sink to cool the same;

a fan sensor to detect operation of said fan; and

fan signal conditioning means responsive to said fan sensor for generating a fan alarm signal when the operation of said fan falls below a desired threshold level.

5,612,678

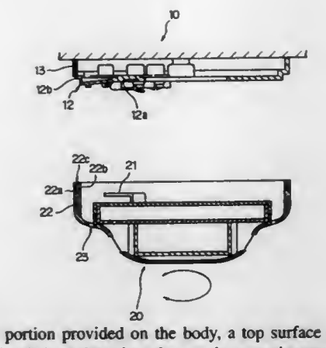
FIRE DETECTOR AND DEVICE FOR DETACHING BODY THEREOF

Masao Shibata, Sagamihara, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,534
Claims priority, application Japan, Apr. 14, 1994, 6-075548
Int. Cl.[6] G08B *27/00*
U.S. Cl. 340—628 **3 Claims**

1. A fire detector having a body and a base, the body being attachable to the base by means of metal fitting parts respectively provided in the body and the base by turning the body, while the body is being pushed against the base, to a fixing position at which the body is fixed to the base, whereby the metal fitting parts provided in the body are fitted to the metal fitting parts provided in the base, the body being unable to move downwardly away from the base when the metal fitting parts provided in the body are so fitted to the metal fitting parts provided in the base, the fire detector additionally comprising:

a vertically movable-shiftable engaging member provided on the base and adapted to be deflected upwardly by being pushed by the body when the body is pushed against the base; and



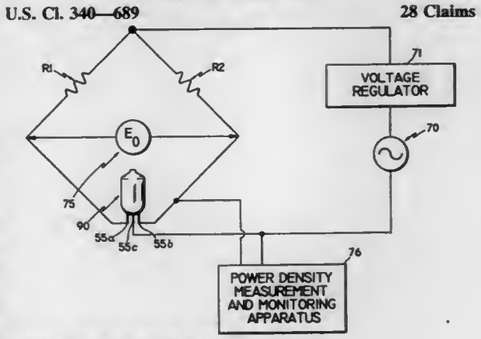
a wall portion provided on the body, a top surface of the wall portion being adapted to abut on the engaging member when the body is pushed against the base, at least one part of the wall portion on which the engaging member abuts when the body is located at the fixing position, being adapted to be cut away from the wall portion, whereby at least one recess portion, with which the engaging member is engaged is formed when said at least one part of the wall portion is cut away therefrom, wherein when the engaging member engages with the recess/portion in the case where the body is turned to the fixing position while the body is pushed against the base, the body is restrained from being turned back to release it from the base, and wherein in the case where said at least one part of the wall portion is not cut away therefrom, the engaging member is adapted to lie on wall portion at the fixing position such that the body is not restrained from being turned back to release it from the base, and wherein at least one drain and insertion hole is formed in the body at least one position each corresponding to a position at which the engaging member is placed when the body is at the fixing position; whereby said at lest one drain and insertion hole is used in detaching said body from said base of said fire detector.

5,612,679

ELECTROLYTIC TILT SENSOR

Lester E. Burgess, Box 522, Swarthmore, Pa. 19081

Filed Mar. 14, 1995, Ser. No. 403,292
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—689 **28 Claims**



1. An electrical circuit comprising:

a) an electrolytic tilt sensor including:

i) a closed containment vessel;

ii) an electrolyte sealed within the containment vessel; and

iii) a plurality of electrodes including a common electrode projecting through the closed containment vessel, the electrodes formed at least in part with a non-precious metal and at least partially immersed in the electrolyte, the electrodes and electrolyte having a threshold power density above

which the power at the surfaces of the electrodes increases markedly and the load life performance degrades markedly; and

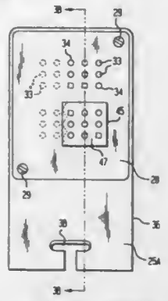
b) a voltage source electrically connected to the plurality of electrodes, the voltage source adapted such that a power density generated at the surface of any one of the electrodes is below the threshold power density.

5,612,680

UNIVERSAL TERMINATION MODULE FOR ASSEMBLING WIRE HARNESSES HAVING MULTIPLE DIVERSE CONNECTORS

Joseph J. DeSanto, 14 Hillcrest Rd., Belle Mead, N.J. 08502

Filed Mar. 31, 1995, Ser. No. 414,781
Int. Cl.[6] G08B *5/22;* **B23P** *19/00*
U.S. Cl. 340—815.45 **20 Claims**



17. In an electrical wire harness assembly apparatus for assembling a plurality of wires into a harness having a first multiconductor connector on at least one end thereof, said apparatus further including a wiring surface having guide means for indicating the configuration of the harness to be assembled including the locations of a plurality of harness terminations; termination module means located on said wiring surface adjacent to at least one harness termination location; and, electronic controller means connected to said termination modules, said improvement comprising:

multi-pin means located in said termination module means,

interchangeable face plate means receivable in said termination module means and having an aperture therein which receives a second multiconductor connector which mates with said first connector and which includes a plurality of conductors which selectively contact said multi-pin means, and

wherein different interchangeable face plate means can be received in the same termination module means in order to accommodate different types of first multiconductor connectors.

5,612,681

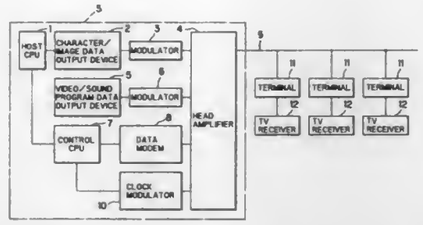
DATA TRANSMISSION SYSTEM HAVING DEDICATED CLOCK CHANNEL

Yasuhiro Funahashi; Kazunori Ikami; Osamu Nishimura; Yuji Kiyohara, all of Nagoya; Yoshihiko Hibino, Gifu-ken, and Yuichi Yasutomo, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha and Xing Inc., Aichi-ken, Japan

Filed Jul. 20, 1994, Ser. No. 277,744
Claims priority, application Japan, Jul. 21, 1993, 5-180340
Int. Cl.[6] H04L *7/00*
U.S. Cl. 340—825.21 **12 Claims**

1. A data transmission system for bidirectionally transmitting data between a center and a plurality of terminals, the data transmission system comprising:

a center and a plurality of terminals connected to the center by a single transmission line, the center transmitting data to and receiving data from the plurality of terminals over the transmission line over at least one channel, and the center including clock transmission means for continuously transmitting a clock signal over a predetermined channel that is different from the at least one channel over which data is transmitted to and from the center, at least one of the plurality of terminals receiving data from and transmitting data without a preamble to the center based on the clock signal transmitted from the center.

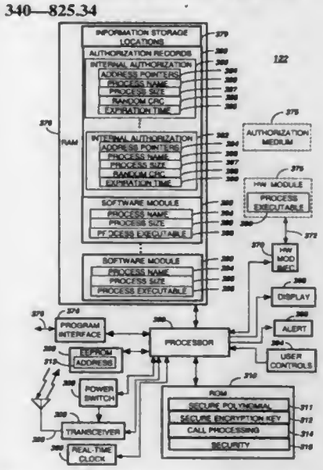


5,612,682

METHOD AND APPARATUS FOR CONTROLLING UTILIZATION OF A PROCESS ADDED TO A PORTABLE COMMUNICATION DEVICE

Michael J. DeLuca, Boca Raton; George W. Smoot, Lake Worth, and Douglas R. Kraul, Parkland, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1995, Ser. No. 452,785
Int. Cl.[6] G07D *7/00;* **G08B** *5/22*
U.S. Cl. 340—825.34 **24 Claims**



1. A method in a communication system operated by a service provider, the method for controlling utilization of a module added to a portable communication device comprising a transceiver which communicates with a fixed portion of the communication system, the method comprising in the portable communication device the steps of:

receiving a request for utilization of the module;

in response, acting to obtain a usage authorization for utilizing the module; and

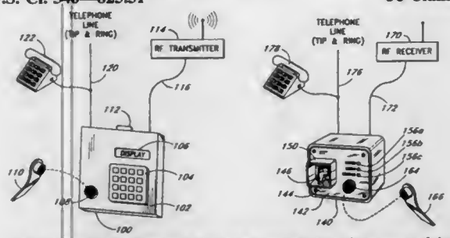
disallowing the utilization of the module, in response to the usage authorization being unobtainable.

5,612,683

SECURITY KEY HOLDER

Dohn J. Trempala, 1215 Dolphin Ter., Newport Beach, Calif. 92625, and Geoffrey G. Schulz, 4140 E. Washington, Orange, Calif. 92669

Filed Aug. 26, 1994, Ser. No. 296,530
Int. Cl.[6] G06K *7/04*
U.S. Cl. 340—825.31 **56 Claims**



1. A system for releasing a key at a remote location, comprising:

a decoder unit, said decoder unit comprising a key holder that holds the key, said key holder connected to a lock that prevents the key from being removed from said key holder, said lock coupled to a stepper motor that unlocks said lock to release the key, said stepper motor coupled to said lock such that said stepper motor must be sequenced through multiple angular steps of said stepper motor in order to unlock said lock;

a microprocessor coupled to said stepper motor such that said microprocessor directly controls said stepper motor; and

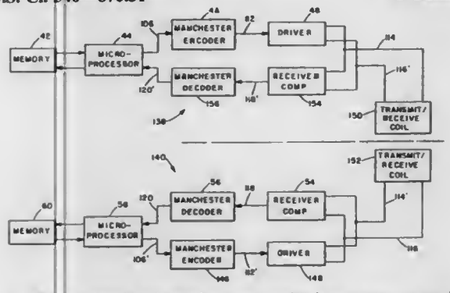
an encoder unit that sends a key release command to said decoder unit to release the key.

5,612,684

MASS TRANSIT INDUCTIVE DATA COMMUNICATION SYSTEM

Guy M. Kelly, La Jolla, and Charles J. Ingram, La Mesa, both of Calif., assignors to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Division of Ser. No. 87,994, Jul. 12, 1993, which is a continuation-in-part of Ser. No. 633,063, Dec. 19, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 345,124
Int. Cl.[6] G08C *19/06*
U.S. Cl. 340—870.31 **8 Claims**



1. A mass transit information communication system, comprising:

first data accumulation means disposed on a mass transit vehicle for storing first information pertinent to fares;

first data transmitter means disposed on a mass transit vehicle and connected to said first data accumulation means for retrieving said first information pertinent to fares, for serially providing first transmitted data bits corresponding to said first information pertinent to fares, for encoding said first transmitted data bits into sequences of first signal transitions, and for providing a first current change in response to each said first signal transition;

a first inductive transformer half connected to said first data transmitter means for providing a first flux change in response to each said first current change;

said first data transmitter means comprising a Manchester encoder and a differential driver having an input connected to said Manchester encoder and two outputs connected across said first inductive transformer half;

a second inductive transformer half for providing a second current change in response to each said first flux change, said first inductive transformer half and said second inductive transformer half being disposed such that they may be placed into sufficient proximity that each said flux change may induce a corresponding second current change in said second inductive transformer half;

first data receiver means connected to said second inductive transformer half for providing a second signal transition in response to each said second current change, for decoding sequences of second signal transitions into first received data bits reproducing said first information pertinent to fares, said first data receiver means comprising a Manchester decoder, and a comparator circuit having two inputs connected across said second inductive transformer half and an output connected to said Manchester decoder;

second data accumulation means connected to said first data receiver means for storing said reproduced first information pertinent to fares.

5. A mass transit information communication system, comprising:

first data accumulation means for storing first information pertinent to fares;

first data transmitter means connected to said first data accumulation means for retrieving said first information pertinent to fares, for serially providing first transmitted data bits corresponding to said first information pertinent to fares, for encoding said first transmitted data bits into sequences of first signal transitions, and for providing a first current change in response to each said first signal transition;

a first inductive transformer half connected to said first data transmitter means for providing a first flux change in response to each said first current change;

a second inductive transformer half for providing a second current change in response to each said first flux change, said first inductive transformer half and said second inductive transformer half being disposed such that they may be placed into sufficient proximity that each said flux change may induce a corresponding second current change in said second inductive transformer half;

first data receiver means connected to said second inductive transformer half for providing a second signal transition in response to each said second current change, for decoding sequences of second signal transitions into first received data bits reproducing said first information pertinent to fares;

second data accumulation means connected to said first data receiver means for storing said reproduced first information pertinent to fares;

second data transmitter means connected to said second data accumulation means for retrieving second information pertinent to fares, for serially providing second transmitted data bits corresponding to said second information pertinent to fares, for encoding said second transmitted data bits into sequences of third signal transitions, and for providing a third current change in response to each said third signal transition;

a third inductive transformer half collocated with said second inductive transformer half and connected to said second data transmitter means for providing a second flux change in response to each said third current change;

a fourth inductive transformer half collocated with said first inductive transformer half for providing a fourth current

change in response to each said second flux change, said third inductive transformer half and said fourth inductive transformer half being disposed such that they may be placed into sufficient proximity that each said second flux change may induce a corresponding fourth current change in said fourth inductive transformer half;

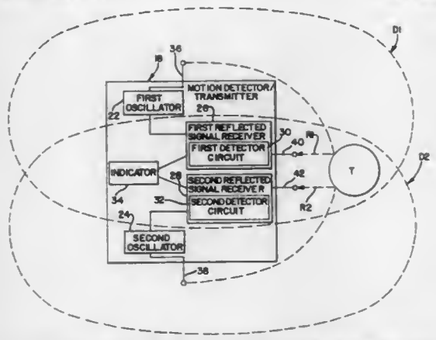
second data receiver means connected to said fourth inductive transformer half for providing a fourth signal transition in response to each said fourth current change, for decoding sequences of fourth signal transitions into received data bits, for providing reproduced second information pertinent to fares corresponding to said second received data bits, and for providing said reproduced second information to said first data accumulation means.

5,612,685

COMBINED MOTION DETECTOR/TRANSMITTER FOR A TRAFFIC INFORMATION WARNING SYSTEM

David C. Oliva, Chicago, Ill., assignor to Cobra Electronics Corp., Chicago, Ill.

Filed Mar. 20, 1996, Ser. No. 618,855
Int. Cl.[6] H01Q *1/10*
U.S. Cl. 340—901 **16 Claims**



1. A combined motion detector/transmitter for a traffic information warning system for conveying a message regarding a traffic situation comprising:

a first oscillator for transmitting a first unmodulated carrier signal and for setting up a first disturbance field, the first unmodulated carrier signal having a first carrier signal frequency;

a second oscillator for transmitting a second unmodulated carrier signal and setting up a second disturbance field, the second unmodulated carrier signal having a second carrier signal frequency, wherein the difference in magnitude between the first carrier signal frequency and the second carrier signal frequency specifies the message regarding the traffic situation;

a first reflected signal receiver associated with the first oscillator for receiving a first reflected signal when a target is within the first disturbance field;

a second reflected signal receiver associated with the second oscillator for receiving a second reflected signal when a target is within the second disturbance field;

a first detector circuit for detecting the presence or absence of a moving target in the first disturbance field;

a second detector circuit for detecting the presence or absence of a moving target in the second disturbance field; and,

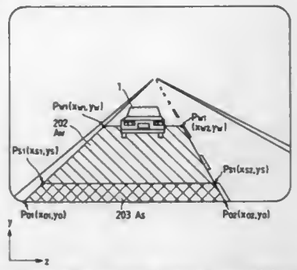
an indicator for indicating the detected presence of a moving target in either the first or second disturbance field.

5,612,686

METHOD AND AN APPARATUS FOR MONITORING THE ENVIRONMENT AROUND A VEHICLE AND AN OPERATION SUPPORT SYSTEM USING THE SAME

Kazuaki Takano, Mito; Naoyuki Tanaka, Abiko; Makoto Shioya, Tokyo; Takuya Imaide, Fujisawa, and Kenichirou Kurata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 313,777
Claims priority, application Japan, Sep. 28, 1993, 5-240939
Int. Cl.[6] G08G *1/16*
U.S. Cl. 340—903 **5 Claims**



1. A vehicle operation support system, comprising:

a picture pickup device attached to a vehicle for picking up a picture of a road surface in front of the vehicle so that the lane position of the vehicle is arranged almost at the center of the picked up picture;

a control unit, including a picture processing unit, for processing picture data picked up by said picture pickup device, a vehicle running state judgment unit for judging states of said vehicle and an actuator drive unit; and

an alarm unit for generating alarms;

whereby said picture processing unit generates display data representing a trapezoidal personal area enclosed by right and left white lines of a lane of said vehicle and two preset horizontal lines to represent a picture of the road surface in front of the vehicle, and wherein said actuator drive unit is operated and an alarm for urging an operator to initiate a steering operation is generated from said alarm unit, when a difference between lengths between said right and said left line type marks of said trapezoidal personal area exceeds a predetermined first threshold value.

5,612,687

PROCESS FOR REGULATING THE ORIENTATION OF A SUPPORT STRUCTURE SUCH AS THAT CARRYING A HEAD-UP CONTROL SYSTEM ON AN AIRCRAFT

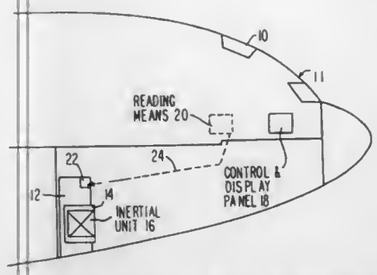
Gilles Cescon, Toulouse; Philippe Laborie, Thil; Claude Maffre, St. Gilles, and Marie-Odile Neillo, Toulouse, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 220,795, Mar. 31, 1994, abandoned. This application May 26, 1995, Ser. No. 453,576
Claims priority, application France, Apr. 2, 1993, 93 03893
Int. Cl.[6] G01C *21/00*
U.S. Cl. 340—980 **4 Claims**

1. Process for regulating an orientation of an aircraft support structure and its inertial unit, in which an aircraft comprises an electronic cabinet having a test plug and a rack adapted for receiving an inertial unit of the aircraft, with the pitch attitude, roll attitude and heading of the rack regulated in advance, said process comprising the following steps:

fitting said inertial unit to the rack, electrically connecting the test plug of the electronic cabinet to a reading means, and measuring a first pitch attitude, a first roll attitude and a first heading on said reading means from said inertial unit;

removing the inertial unit from the rack and fitting said inertial unit to the aircraft support structure to be oriented, electrically



connecting the inertial unit to the rack by an extension wire bundle, and precisely measuring a second pitch attitude, a second roll attitude and a second heading on said reading means from said inertial unit;

said measuring step being performed with measuring means available on the aircraft;

adjusting an orientation of the support structure such that the second pitch attitude, the second roll attitude and the second heading are respectively equal to the first pitch attitude, the first roll attitude and the first heading without a need to be oriented to an aircraft reference;

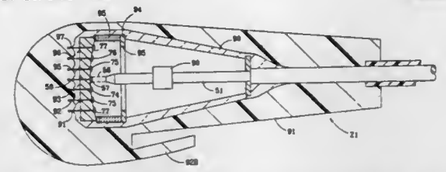
removing said inertial unit from the support structure to be oriented and replacing said inertial unit on the rack of the electronic cabinet provided in the aircraft.

5,612,689

FINGER ARTICULATION CONTROLLED INFORMATION GENERATING SYSTEM

Edward A. Lee, Jr., 317 Rita Dr., Garland, Tex. 75042

Filed Oct. 5, 1995, Ser. No. 539,706
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—20 **7 Claims**



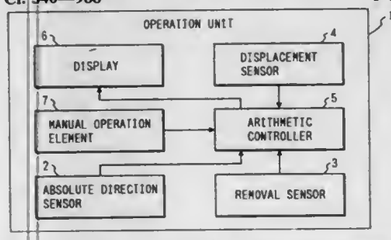
7. A finger articulation signal inducing unit comprising: enclosure means with an inner glass vacuum tube mounted within an outer plastic housing; finger nail mounting clip means on said outer plastic housing; weighted elongate flexible arm means mounted within the rear end of said glass vacuum tube and extended longitudinally within said tube to an end adjacent to the front end of said glass vacuum tube with flexed movement of said weighted elongate arm means in a plane generally perpendicular to the cross axis of said finger nail mounting clip means; and fingertip induced arm motion sensing means at the forward portion of said finger articulation unit.

5,612,688

APPARATUS FOR SEARCHING FOR SENSED OBJECT

Hideki Masudaya, Miyagi-ken, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 520,232
Claims priority, application Japan, Sep. 30, 1994, 6-236935
Int. Cl.[6] G08G *1/123;* **G01C** *21/00*
U.S. Cl. 340—988 **6 Claims**



1. An apparatus for searching for a sensed object comprising;

a portable operation unit;

an absolute direction sensor contained in said operation unit and generating an absolute direction signal which indicates an absolute direction;

a removal sensor for sensing a removal of said operation unit from said sensed object;

a displacement sensor for sensing the state of displacement of said operation unit after said operation unit is removed from said sensed object to generate displacement information;

an arithmetic controller for generating direction indicating information which indicates the direction in which said sensed object is present, based on said displacement information and said absolute direction signal; and

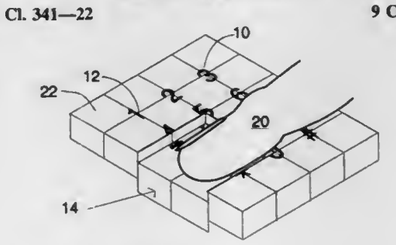
a display for displaying contents of said direction indicating information.

5,612,690

COMPACT KEYPAD SYSTEM AND METHOD

David Levy, 723 Raney Ct., Santa Clara, Calif. 95050-5533

Filed Jun. 3, 1993, Ser. No. 71,242
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—22 **9 Claims**



1. A compact keypad system comprising:

a housing;

a plurality of key switch means disposed on said housing;

a contact surface coupled to said plurality of key switch means;

a plurality of first symbols disposed upon said contact surface, wherein each of said first symbols (i) graphically identifies an associated location on said contact surface, (ii) corresponds with an associated one of a plurality of unique output functions, and (iii) is approximately equidistant to the key switch means of an associated one of a plurality of subsets, each subset comprising at least two adjacent ones of said plurality of key switch means wherein at least one of the dimensions between adjacent ones of said plurality of key switch means is less than the width of the adult human finger; and

an electronic detection circuit sensing the simultaneous actuation of said plurality of key switch means in a subset and subsequently outputting a first signal corresponding to said unique output function associated with said subset and its associated first symbol.

5,612,691

ERGONOMIC KEYBOARD

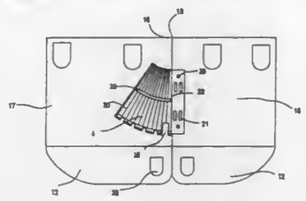
Günter Murmann, Pegnitz, and Manfred Frank, Cadolzburg, both of Germany, assignors to Cherry Mikroschalter GmbH, Auerbach, Germany

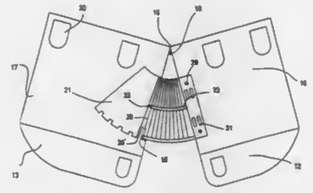
Filed Mar. 2, 1995, Ser. No. 397,472

Claims priority, application Germany, Mar. 11, 1994, 44 08 330.0

Int. Cl.[6] H03K *17/94;* H03M *11/00*

U.S. Cl. 341—22 12 Claims





1. An ergonomic keyboard comprising at least two housing sections each with a key pad for one hand of a keyboard operator, said two housing sections being interconnected by a joint permitting pivoting and also tilting of the two housing sections relative to each other with respect to a dividing plane, said joint comprising a coil spring extending between said housing sections and having opposite ends, one connected to one and the other to the other of said housing section at a location remote from the keyboard operator so as to form a universal joint between the two housing sections, an essentially circular sector-shaped indexing plate bridging said housing sections and having one end firmly mounted to one of said housing sections and the other end movably received in the other of said keyboard sections, said indexing plate having a partial circular guide slot, a guide pin mounted on the other of said housing sections and extending into said guide slot, said two housing sections being pivotable relative to each other about a pivot point formed at the center of curvature of said guide slot at the joint of said two housing sections by said coil spring.

5,612,692

FULL TRAVEL, SEALED, FULLY BACKLIGHTED KEYBOARD

Roger A. Dugas, Chester; James E. Respaut, Hampstead, both of N.H., and Peter K. Rhoads, Stowe, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 253,475, Jun. 3, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,351

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—22 15 Claims

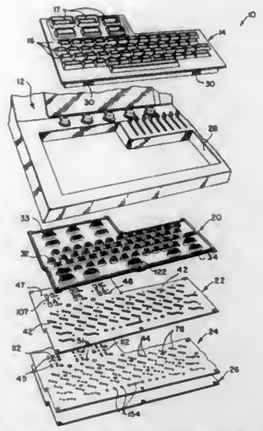
1. A keyboard adapted to be fixedly secured in a housing, comprising:

a removable panel having a plurality of keys, said keys having an upper surface having a light translucent region;

a board having electrical circuitry, including contact lands;

a translucent membrane disposed between all of said keys on said panel and said board and forming a liquid tight seal between said panel and said board, said membrane comprising:

a main body,



a plurality of flexible, resilient domes formed integrally with said main body, one dome being associated with each of said keys, and

a gasket integrally formed with said main body of said membrane and extending around a perimeter of said membrane, said gasket configured to be received by a correspondingly formed channel in the housing to provide a liquid-tight seal between said membrane and the housing,

wherein said main body, said gasket and said domes form a continuous, seamless, unitary membrane adapted to operate with the housing to form a water impermeable barrier between said board and said panel;

a source of illumination disposed on said board, light from said source of illumination passing through said domes on said membrane and through said upper surface of said keys; and

an electrically conductive surface associated with each of said domes and disposed on a side of said membrane facing said board, depression of a key on said keyboard causing deformation of an associated dome to urge said electrically conductive surface of said associated dome into contact with an associated one of said lands on said board.

5,612,693

SLIDING WINDOW DATA COMPRESSION USING A TOROIDAL BIT SHIFT REGISTER

David J. Craft, Austin, and Oscar C. Strohacker, Dripping Springs, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,865

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—51 14 Claims

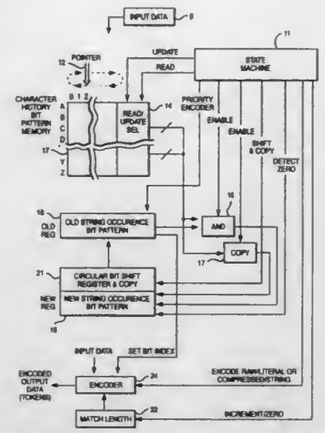
1. A data compression system, comprising:

means for receiving successive data characters;

means for marking a memory to indicate the receipt of a first data character and its order of occurrence;

means for marking the memory to indicate the receipt of a second data character and its order of occurrence;

means for detecting a string match between the order of successive new data characters and the first and second data characters by copying, shifting with a toroidal bit shift register, and comparing marked positions from the memory; and



means for encoding new data responsive to the means for detecting a string match.

5,612,694

ENCODING DATA

Jonathan Jedwab, Clifton; Simon E. Crouch, Chippenham, and David G. Cunningham, Wickwar, all of England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

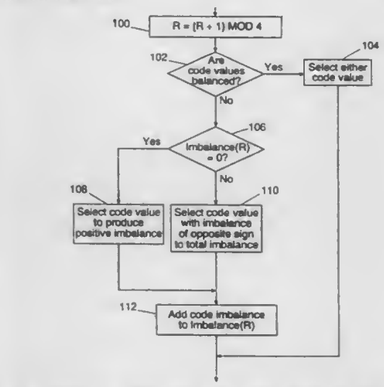
PCT No. PCT/GB94/01478, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO95/02283, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 7, 1994, Ser. No. 397,104

Claims priority, application United Kingdom, Jul. 9, 1993, 9314480

Int. Cl.[6] G06F *11/00;* H03N *13/00*

U.S. Cl. 341—94 8 Claims



1. A method of encoding n-bit data words as (n+1)-bit code words, wherein code words are selected in accordance with the values of non-corrupted data words and a code having the property that the value of a data word error resulting from inversion of a bit in a corrupted code word is specific to and dependent solely upon the position within the corrupted code word of the inverted bit, and further wherein a data word error is a difference between a corrupted data word that is derived from a corrupted code word with at least an inverted bit, and a non-corrupted data word, from which a non-corrupted code word was derived prior to conversion to said corrupted code word.

5,612,695

MULTIPLEXER CIRCUIT AND DEMULTIPLEXER CIRCUIT

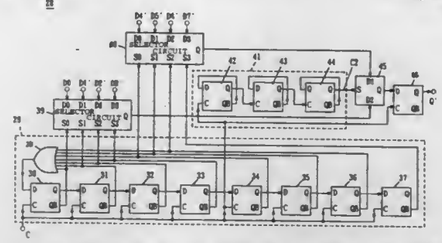
Kimio Ueda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 395,001

Claims priority, application Japan, Mar. 31, 1994, 6-064129

Int. Cl.[6] H03M *9/00*

U.S. Cl. 341—101 13 Claims



1. A multiplexer circuit for converting M parallel data signals (M is an integer of at least 2) of a bit into a serial data signal of M bits in synchronization with a clock signal, said multiplexer circuit comprising:

a select signal generation circuit receiving said clock signal for generating M phases of select signals differing in phase from each other and having a cycle M times that of said received clock signal, said M phases of select signals sequentially attaining an activation potential for each time period corresponding to one cycle of said clock signal; and

a selector circuit receiving said M parallel data signals of a bit and said M phases of select signals for selecting M parallel data signals of a bit one at a time according to said received M phases of select signals to output a serial data signal of M bits, said selector circuit including

an output terminal outputting said serial data signal of M bits,

a power supply circuit,

M signal generation circuits provided corresponding to said M parallel data signals of a bit, respectively, each signal generation circuit being driving by a power supply current from said power supply circuit to provide, to the output terminal, a data signal according to a corresponding parallel data signal, and

M connection circuits provided corresponding to the M signal generation circuits, respectively, for receiving M select signals, respectively, each connection circuit connecting the power supply circuit and a corresponding signal generation circuit in response to a received select signal attaning the activation potential.

5,612,696

DIGITAL-TO-ANALOG CONVERTER OF CURRENT SEGMENTATION

Ook Kim, Seoul, Rep. of Korea, assignor to Electronics & Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Dec. 19, 1994, Ser. No. 359,204

Claims priority, application Rep. of Korea, Dec. 3, 1994, 94-32660

Int. Cl.[6] H03M *1/66*

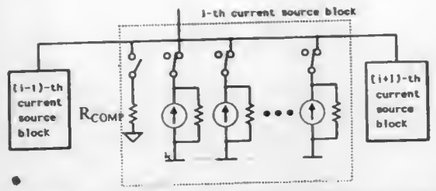
U.S. Cl. 341—136 10 Claims

1. A digital-to-analog converter comprising:

a plurality of current sources connected to an output resistance through a plurality of first switching means, said plurality of current sources being connected in parallel to one another;

at least one second switching means connected in parallel to said plurality of first switching means;

an output impedance compensation element connected in series to said second switching means; and



said second switching means connecting said output impedance compensation element to the output resistor depending on a switching state of the said first switching means.

5,612,697

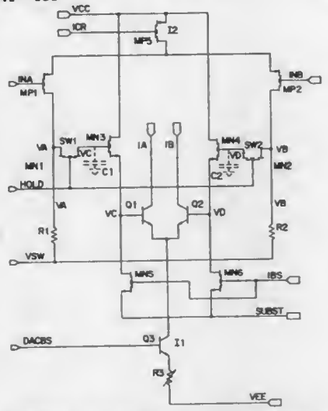
D/A CONVERTER WITH DIFFERENTIAL SWITCHING CIRCUIT PROVIDING SYMMETRICAL SWITCHING

Douglas A. Mercer, Bradford, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Division of Ser. No. 106,047, Aug. 12, 1993, Pat. No. 5,450,084. This application Dec. 28, 1994, Ser. No. 365,300

Int. Cl.[6] H03M *1/80*

U.S. Cl. 341—153 **4 Claims**



1. In a differential switch-pair circuit comprising two switch devices each having two current-carrying electrodes and a control electrode; said switch-pair circuit including complementary signal sources arranged to be coupled respectively to said control electrodes and operable when activated and coupled to those electrodes to turn one switch device on and to turn the other switch device off;

the method of operating said switch-pair circuit which comprises:

isolating said complementary signal sources from the corresponding control electrodes; and

thereafter removing the isolation of said signal sources and applying said signal sources to said control electrodes at the same time.

5,612,698

CURRENT-INPUT, AUTOSCALING, DUAL-SLOPE ANALOG-TO-DIGITAL CONVERTER

Richard J. Reay, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

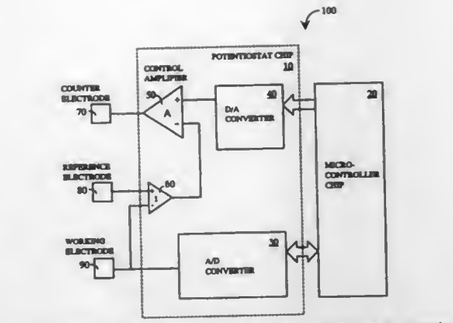
Filed Jan. 17, 1995, Ser. No. 375,378

Int. Cl.[6] H03M *1/50*

U.S. Cl. 341—167 **7 Claims**

1. An autoscaling analog-to-digital converter circuit comprising:

an integrator circuit having an input and an output;



first switching means responsive to a second signal for passing an input current to said integrator circuit input during a period of a pulse on said second signal;

second switching means for passing a reference current having an opposite polarity than said input current to said integrator circuit input in response to a third signal activated after said pulse on said second signal;

pulse generating means for receiving a scale factor value, and generating said pulse on said second signal such that said period of said pulse is related to said scale factor value;

means for receiving said output of said integrator circuit, and generating a digital number corresponding to the magnitude of said current input in response thereof; and

controller means for receiving said digital number corresponding to the magnitude of said current input, and generating said scale factor value such that said scale factor value is inversely proportional to said digital number.

5,612,699

VEHICLE RADAR FOR EXCLUDING A VEHICLE CHANGING A LANE FROM TARGETS TO TRACK

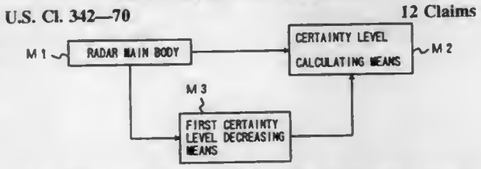
Yukinori Yamada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 29, 1995, Ser. No. 581,671

Claims priority, application Japan, Feb. 8, 1995, 7-020797

Int. Cl.[6] G01S *13/34;* **B60R** *21/00*

U.S. Cl. 342—70 **12 Claims**



1. A vehicle radar, provided on a vehicle, to calculate a relative distance and a relative speed between said vehicle and each of a plurality of target objects by transmitting forwardly a frequency modulated carrier wave and receiving the carrier wave reflected by each of said target objects, said vehicle radar comprising:

certainty level calculating means for calculating a certainty level, represented by probability of existence of said target objects, the certainty level being calculated based on a relationship between a current condition of detection of each of said target objects and a previous condition of detection of each of said target objects; and

certainty level changing means for changing the certainty level of one of said target objects when a determination is made that said one of said target objects moves away from a lane in which said vehicle is moving so that said one of said target objects are excluded from targets to track.

5,612,700

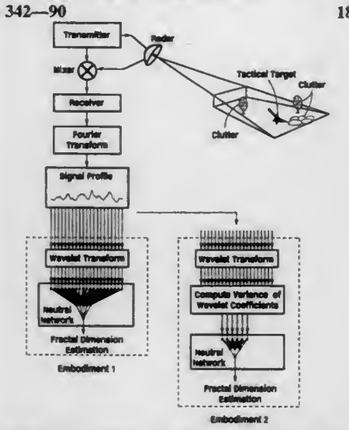
SYSTEM FOR EXTRACTING TARGETS FROM RADAR SIGNATURES

Michael Tucker, Austin, Tex., assignor to Fastman, Inc., Austin, Tex.

Continuation of Ser. No. 443,084, May 17, 1995, Pat. No. 5,504,487. This application Nov. 20, 1995, Ser. No. 559,663

Int. Cl.[6] G01S *13/00*

U.S. Cl. 342—90 **18 Claims**



1. A method for estimating the fractal dimension of an object's fractal surface, comprising the following steps:

receiving reflected electromagnetic signals from an object's fractal surface;

decomposing said electromagnetic signals into Scales of scaling basis coefficients and wavelet basis coefficients using a pyramid transform in conjunction a with Discrete Wavelet Transform to calculate said scaling basis coefficients and said wavelet basis coefficients; and

estimating the fractal dimension of the fractal surface of said object.

5,612,701

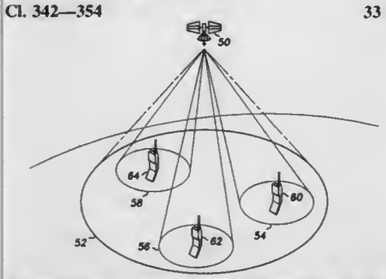
ADAPTIVE BEAM POINTING METHOD AND APPARATUS FOR A COMMUNICATION SYSTEM

Dennis P. Diekelman, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1995, Ser. No. 529,829

Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—354 **33 Claims**



4. A method for a communication system to provide service beams to communication units, the method comprising the steps of:

a) receiving a service request from a communication unit;

b) ascertaining a location of the communication unit in response to the service request;

c) determining, in response to the service request, whether an active service beam of the service beams is capable of servicing the communication unit based on the location; and

d) when the active service beam is capable of servicing the communication unit, determining a beam location for the active service beam which would enable the active service beam to provide service to the communication unit and steering the active service beam, in response to the service request, to the beam location that allows the active service beam to provide the service to the communication unit.

5,612,702

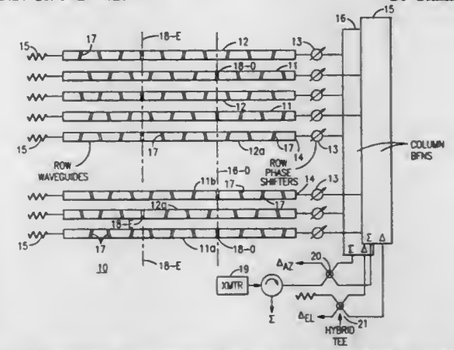
DUAL-PLANE MONOPULSE ANTENNA

Richard R. Kinsey, Dewitt, N.Y., assignor to Sensis Corporation, Dewitt, N.Y.

Continuation of Ser. No. 223,524, Apr. 5, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 621,698

Int. Cl.[6] G01S *5/02;13/00*

U.S. Cl. 342—427 **20 Claims**



1. A travelling wave antenna for monopulse operation, comprising:

an array of first elements having a first excitation function $f_o(x)$ of the form

$$f_o(x)=f\Sigma(x)-f\Delta(x);$$

an array of second elements, interleaved with the first elements, and having a second excitation function $f_E(x)$ of the form

$$f_E(x)=f\Sigma(x)+f\Delta(x);$$

and means for combining outputs from the first and second elements to provide a sum output and a difference output,

wherein $f\Sigma(x)$ is a first real illumination function having no imaginary component, and is an even amplitude taper function of variable aperture x,

wherein $f\Delta(x)$ is a second real illumination function having no imaginary component, and is an odd amplitude taper function of said variable aperture x, and

wherein for a given value of said variable aperture x, $f\Sigma(x)$ and $f\Delta(x)$ are one of co-phasal and anti-phasal with each other.

5,612,703

POSITION DETERMINATION IN AN INTEGRATED CELLULAR COMMUNICATIONS SYSTEM

Albert J. Mallinckrodt, Santa Ana, Calif., assignor to Celsat America, Inc., Torrance, Calif.

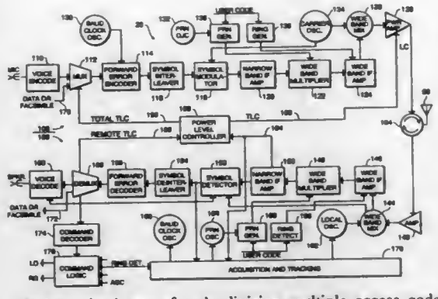
Division of Ser. No. 145,246, Oct. 28, 1993, Pat. No. 5,446,756, which is a continuation-in-part of Ser. No. 781,972, Oct. 24, 1991, Pat. No. 5,339,330, which is a continuation-in-part of Ser. No. 495,497, Mar. 19, 1990, Pat. No. 5,073,900. This application May 19, 1995, Ser. No. 444,574

Int. Cl.[6] G01S *3/02;* **H04M** *11/00;* **H04B** *1/00*

U.S. Cl. 342—457 **2 Claims**

1. A cellular communications system comprising:

at least one node positioned so to establish a set of cells, each node including means for transmitting and receiving different



predetermined sets of code division multiple access coded, digitally modulated spread spectrum waveforms;

a plurality of user units within the cells, each user unit including means for communicating with at least one of said nodes and being operatively responsive to a predetermined one of the sets of code division multiple access coded waveforms to thereby establish selective communication with at least one of said nodes; and

position determination means for determining the position of a selected user unit by providing a timing signal carried by one of the sets of code division multiple access coded waveforms to the user unit from one or more nodes, providing a timing response signal carried by one of the sets of code division multiple access coded waveforms from the selected user unit in response to each timing signal, receiving the timing response signal by at least one node, measuring the response time of the user unit to each timing signal, and determining the position of the user unit based on such measurements.

5,612,704

RETRACTABLE ANTENNA

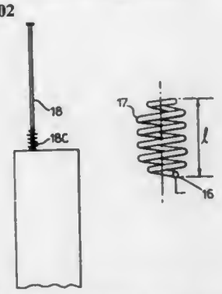
Richard A. Cole, Salisbury, United Kingdom, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Dec. 21, 1994, Ser. No. 360,969

Claims priority, application United Kingdom, Dec. 22, 1993, 9326190

Int. Cl.[6] H01Q *1/24*

U.S. Cl. 343—702 **11 Claims**



1. An antenna assembly mountable onto a housing for a radio device, comprising:

a helical antenna permanently mountable on said housing, and

an elongate antenna mountable within said housing so as to be movable between a retracted position and an extended position, wherein said elongate antenna has a conductive portion arranged to short-circuit the helical antenna when said elongate antenna is placed in its extended position and wherein the coil diameter of the helical antenna reduces at its ends so as to contact the elongate antenna.

5,612,705

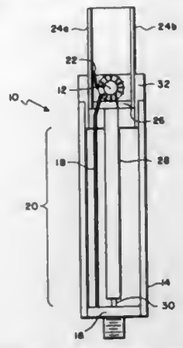
WIDE-BANDED BASE STATION ANTENNA

Wayne R. Openlander, Chicago, Ill., assignor to Antenex, Inc., Glendale, Ill.

Filed Jan. 11, 1996, Ser. No. 584,545

Int. Cl.[6] H01Q *9/04*

U.S. Cl. 343—790 **8 Claims**



1. A wide-banded base station antenna, comprising:

a metal sleeve, said metal sleeve being one-quarter wavelength or less of signals to be transmitted by the antenna;

a center conductor, said center conductor coaxial to and surrounded by said metal sleeve;

said metal sleeve and said center conductor forming a fifty ohm (50 Ω) coaxial transmission line;

an exposed metal radiator, said radiator held by an insulator to said sleeve in such proximity as to create a fringe capacitance between said radiator and said sleeve;

an inductor, said inductor electrically connected to said radiator and said center conductor; and

a second conductor electrically connecting said inductor to ground in parallel with said center conductor; whereby

said inductor acts as a power divider and forms an "L" network in conjunction with said fringe capacitance to broaden the bandwidth of the antenna.

5,612,706

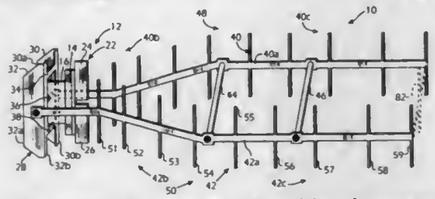
DUAL-ARRAY YAGI ANTENNA

Allen F. Podell, Palo Alto, Calif., assignor to Pacific Monolithics, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 235,490, Apr. 29, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,279

Int. Cl.[6] H01Q *19/30*

U.S. Cl. 343—818 **10 Claims**



1. An antenna for transmitting or receiving electromagnetic energy along an antenna axis, said antenna comprising:

a driven element disposed on the antenna axis for transmission of electromagnetic energy in a transmission direction along the antenna axis; and

first and second parasitic arrays disposed on opposite sides of the antenna axis in the transmission direction from said driven element and at least partially along a portion of the antenna axis along which parasitic elements each contribute less than half as much to the antenna directivity as does a corresponding element on one of the first and second parasitic arrays, each parasitic array having a plurality of parallel parasitic directors spaced apart along respective array lines that extend in a general direction from the driven element at a first acute angle to the transmission direction, which array lines extend, along the length of the array lines, at a maximum angle that is less than the first angle and not greater than thirty degrees, whereby the first and second parasitic arrays have a collective radiation pattern that has a lobe with greatest magnitude in the transmission direction.

5,612,707

STEERABLE BEAM HELIX ANTENNA

Rodney G. Vaughan, Lower Hutt; Neil L. Scott, and Colin A. Jenness, both of Stokes Valley, all of New Zealand, assignors to Industrial Research Limited, Lower Hutt, New Zealand

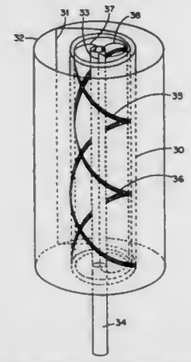
PCT No. PCT/NZ93/00027, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO93/22804, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 23, 1993, Ser. No. 325,324

Claims priority, application New Zealand, Apr. 24, 1992, 242498

Int. Cl.[6] H01Q *1/36*

U.S. Cl. 343—895 **10 Claims**



1. A helix antenna comprising a conductor secured to a dielectric sheet, the dielectric sheet being furled so that the conductor is of generally helical form, said dielectric sheet being furlable and unfurlable to alter the characteristics of the antenna; wherein the dielectric sheet is rotationally furled or unfurled by rotating an outer side of the dielectric sheet relative to an inner side, and wherein the inner side of the dielectric sheet being secured to a central tube and the outer side of the dielectric sheet being secured to a radome surrounding the antenna, and wherein said dielectric sheet is furled and unfurled by relative rotation of the radome with respect to the central tube.

5,612,708

COLOR HELMET MOUNTABLE DISPLAY

David A. Ansley, Sterling, Va., and William S. Beamon, III, Ormond Beach, Fla., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 261,509, Jun. 17, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 636,025

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—8 **18 Claims**

1. A helmet mountable display system for displaying left and right pixelated images onto a visor for viewing by a wearer of the helmet, said display system comprising:

left and right optical channels having respective central optical axes that are substantially parallel to each other, each channel comprising:

an array of light sources forming a complete scan line of said image in one-to-one correspondence with the image pixels, said light sources projecting first divergent luminance patterns for successive scan lines;

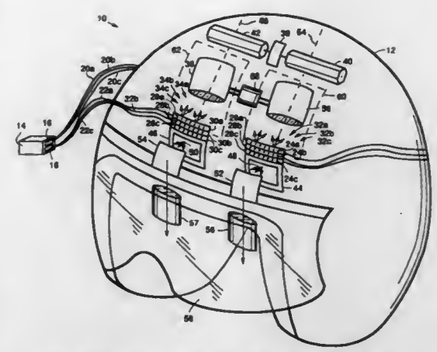
a lens for reducing the divergence of said first luminance patterns;

a back projection screen positioned to project said images onto the visor;

a scanning deflector; and

a deflector actuator controlling said scanning deflector to deflect successive first luminance patterns transmitted through the lens back through said lens so that the lens focuses the patterns onto successive scan lines on the screen's back side, said screen emitting a second luminance pattern for each successive scan line to project the pixelated image onto the visor,

said deflector actuators in said left and right optical channels comprising a single common drive motor for controlling both deflectors.



5,612,709

MULTI-EYE IMAGE DISPLAYING APPARATUS

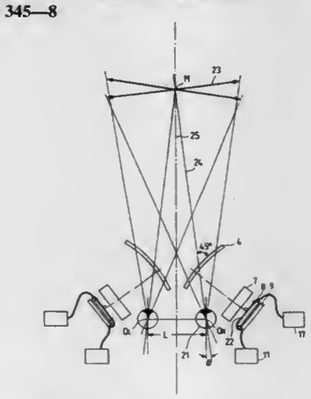
Toshiyuki Sudo, Kawasaki; Susumu Matsumura, Kawaguchi; Naosato Taniguchi; Yoko Yoshinaga, both of Machida; Shin Kobayashi, Atsugi; Hideki Morishima, Tokyo, and Tadashi Kaneko, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 218,927, Mar. 25, 1994, abandoned. This application May 16, 1996, Ser. No. 648,617

Claims priority, application Japan, Mar. 26, 1993, 5-092113

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **12 Claims**



1. A display apparatus comprising:

an image displaying means, provided for each of right and left eyes, having:

a display means for displaying an image;

an optical system for projecting the beams from said display means toward a pupil of a viewer, so that said viewer is made to observe a virtual image of the image displayed by said display means; and

a virtual image moving means for rotationally moving said virtual image observed by said viewer in a horizontal direction around said pupil of said viewer

wherein said virtual image moving means has a means for rotationally moving said image displaying means integral with said display means and said optical system within a horizontal plane by defining the pupil as a center of rotation.

5,612,710

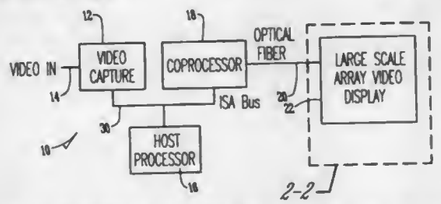
REAL TIME LOW COST, LARGE SCALE ARRAY 65K COLOR DISPLAY USING LAMPS

Thomas C. Christensen, Johnston; Jack L. Carter, Ankeny; Douglas E. DeVries, Johnston; Alan S. Foster; Jacques Y. Foster, both of Des Moines; William G. Phelps, Mitchellville; Timothy J. Prachar, San Jose; Daniel W. Smith, and Michael W. Walter, both of Des Moines, all of Iowa, assignors to Fairtron Corporation, Des Moines, Iowa

Filed Aug. 22, 1995, Ser. No. 517,624

Int. Cl.[6] G09G *3/00;3/18*

U.S. Cl. 345—30 **62 Claims**



25. An apparatus for processing and displaying video information over a plurality of pixels forming a large scale video display comprising:

a video capture device for receiving a plurality of frames of video signals from a video source and converting the video signals into digital video signals;

a video processor electrically connected to the video capture device for receiving the digital video signals and formatting the digital video signals by creating a single multicolor data word corresponding to each pixel of the video display, each multicolor data word containing data relating to multiple colors and intensities for a single pixel;

a video controller connected to the video processor for receiving the formatted video signals and partitioning the formatted video signals into a plurality of sections; and

a plurality of light boards each comprising a portion of the plurality of pixels, said light boards each being connected to the video controller for displaying one of the plurality of sections of formatted video signals.

5,612,711

DISPLAY SYSTEM

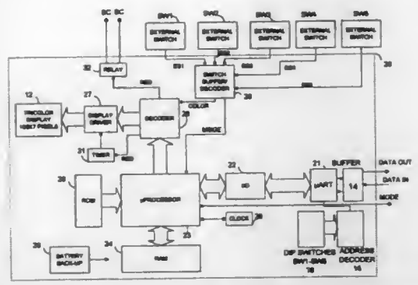
Steven B. Rose, Grandview, N.Y., assignor to Tally Display Corporation, Grandview, N.Y.

Continuation of Ser. No. 590,103, Jan. 25, 1996, abandoned, which is a continuation of Ser. No. 210,784, Mar. 18, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 682,868

Int. Cl.[6] G09G *3/20*

U.S. Cl. 345—59 **7 Claims**

1. A display system for use in a broadcast environment with monitors and broadcast signal sources, comprising a plurality of displays each having a unique one of 256 addresses and each for displaying the status via color and identifying mnemonic of a broadcast input to a monitor and means connecting the displays in a network for receiving real time serial data from a host computer



and a plurality of broadcast signal sources, wherein each display comprises: a matrix of display pixels each receptive of a drive signal for energizing same to emit light of one of a plurality of colors; a random access memory for storing a plurality of predetermined messages and color data corresponding thereto; bidirectional addressable means receptive of the serial data from the plurality of broadcast signal sources corresponding to the address of the display, a real time message and at least one color for the message, wherein the addressable means has actuatable talk back signals for acknowledging receipt of serial data; a microprocessor for reading the address data and for converting the serial data into display drive signals corresponding to the real time message and selected color, wherein the microprocessor has interrupt inputs responsive to an activation of switch inputs connected thereto via a connector to override a real time message currently being displayed with a stored message or a color change of the real time message to indicate status; switch means for controlling the addressable means to disable the talk back signals whereby data can be received by the display without an acknowledgement and more than one display can be assigned the same address when desired.

5,612,712

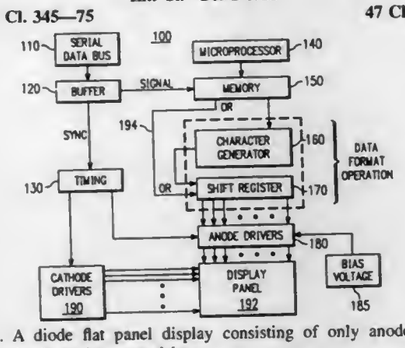
DIODE STRUCTURE FLAT PANEL DISPLAY

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 995,846, Dec. 23, 1992, Pat. No. 5,449,970, which is a continuation-in-part of Ser. No. 851,701, Mar. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,270

Int. Cl.[6] G09G *3/22*

U.S. Cl. 345—75 **47 Claims**



1. A diode flat panel display consisting of only anode and cathode electrodes, comprising:

a plurality of corresponding light-emitting anodes and field-emission cathodes, each of said anodes emitting light in response to emission from each of said corresponding cathodes; and

means for addressing and electrically exciting selectable ones of said corresponding anodes and cathodes by changing an electrical potential of both said corresponding cathode and anode.

5,612,713

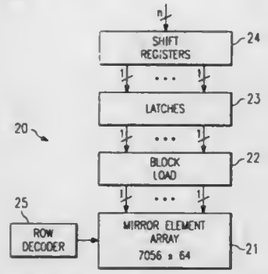
DIGITAL MICRO-MIRROR DEVICE WITH BLOCK DATA LOADING

Rohit L. Bhuva, Plano; James L. Conner, Rowlett; Michael J. Overlauer, Plano, and William R. Townson, Coppell, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 6, 1995, Ser. No. 369,247

Int. Cl.[6] H04N *3/02*

U.S. Cl. 345—84 **16 Claims**



1. A spatial light modulator (SLM), comprising:

an array of pixel-generating elements, each pixel-generating element being individually addressable with data, said array of pixel-generating elements having an associated array of memory cells for storing said data;

at least one bit-line associated with each column of memory cells for delivering data to said column of memory cells;

a row of shift registers for receiving row data for one row of said array from an external source for delivery to said memory cells;

a row of latches for receiving said row data from said shift registers, and for holding said row data on said bit-lines;

a block load circuit, interposed between said latches and said memory cells, for sequencing the delivery of said row data to a selected row of said memory cells by delivering a write signal to different blocks of said selected row of memory cells, with each block receiving said write signal at a different time; and

a row decoder for delivering a row select signal to said block load circuit for determining which row of said memory cells is said selected row of memory cells.

5,612,714

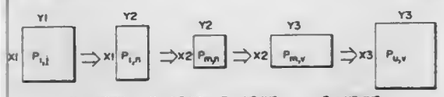
PROCESS AND SYSTEM OF IMAGE PROCESSING

Marc Souviron, Saint Sernin sur Rance, France, assignor to Synelec, S.A., Saint Sernin sur Rance, France

Filed Feb. 18, 1992, Ser. No. 836,611

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—127 **15 Claims**



1. A method for processing a source image in real time, the source image being furnished at a data rate C and being formed by a source matrix comprising **Y0** columns and **X0** lines of image elements, in order to produce a display image corresponding to said source image, or to a portion of said source image, the display image being displayed on a visualization display unit comprising N columns and M lines of visualization screens, said method comprising:

furnishing said source images at a data rate C, and assigning groups of adjacent data elements within the source matrix to respective image windows within an N by M matrix having M N image windows, each assigned group comprising one of M N image windows, each image window being divided into X1 lines and Y1 columns of image elements;

processing each image window, having X1 Y1 image elements, to produce a visualization screen matrix having Y4 columns and X4 lines of image elements, said processing comprising:

(a) sub-sampling the columns Y1 and lines X1 of each image window to produce an intermediate matrix of Y2 columns and X2 lines of image elements, Y2 being less than or equal to Y1 and X2 being less than or equal to X1, each image element of the intermediate image matrix being calculated as the arithmetic mean or the weighted mean of the corresponding image elements of the X1 Y1 image window;

(b) serially storing, at a rate C, the formed intermediate matrices in a temporary memory;

(c) reading image elements of the intermediate matrices from the temporary memory, in the same order as stored in said storing step, at a rate C' independent of the storing rate C;

(d) over-sampling columns Y2 and lines X2 of each intermediate matrix as data from the intermediate matrix is read from the temporary memory to produce an output matrix of Y3 columns and X3 lines of image elements, Y3 being greater than or equal to Y2 and X3 being greater than or equal to X2, each image element of the output matrix X3 Y3 being calculated as a weighted mean based upon the corresponding neighboring image elements of the intermediate matrix being over-sampled; and

(e) registering each X3 Y3 image element output matrix into a matrix having Y4 columns and X4 lines of image elements, wherein Y3 is less than or equal to Y4, and X3 is less than or equal to X4.

5,612,715

SYSTEM AND METHOD FOR DYNAMICALLY ADJUSTING DISPLAY RESOLUTION OF COMPUTER GENERATED DISPLAYS

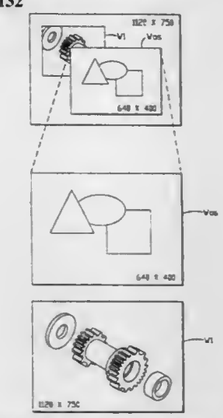
Nobuo Karaki, and Jinichi Nakamura, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 226,429, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 906,991, Jun. 30, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 426,459

Claims priority, application Japan, Jul. 1, 1991, 3-188150; May 6, 1992, 4-140914

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—132 **27 Claims**



1. A computer system having a dynamically adjustable display resolution for computer generated displays, comprising:

a) a multi-scan type monitor having at least high and low deflection frequencies which correspond to at least high and low resolution synchronizing signals, respectively, said multi-scan type monitor having a viewable area;

b) a main operating system means for controlling formation of a first image on the entire viewable area of said multi-scan type monitor, said first image including at least one window, and for associating a minor operating system means to said window, said minor operating system means being executed as a subordinate process of said main operating system means, wherein said first image has a resolution of M×N where M and N are integers;

c) said minor operating system means controlling formation of a second image, wherein said second image corresponds to image data in said window of said first image and has a resolution of P×Q, where P and Q are integers, P is less than M, and Q is less than N; and

d) a display switching means, coupled to said multi-scan type monitor and to said main operating system means, for switching dynamically between said first image and said second image, wherein said display switching means comprises a means for generating the low resolution synchronizing signal when said P×Q resolution image is displayed on the entire viewable area of said multi-scan type monitor with said P×Q resolution, and generating the high resolution synchronizing signal when said M×N resolution image is displayed on the entire viewable area of said multi-scan type monitor with said M×N resolution.

5,612,716

IMAGE DISPLAY DEVICE

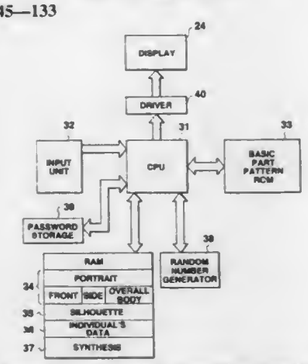
Kenji Chida, Kawaguchi; Hiroyuki Yoshino, Higashiyamato; Jun Oshima, Fussa; Yoshiyuki Murata, Ome, and Masahito Ariizumi, Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 109,743, Aug. 20, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 529,352

Claims priority, application Japan, Aug. 24, 1992, 4-224242; Dec. 28, 1992, 4-349428; Dec. 28, 1992, 4-361248

Int. Cl.[6] G09G *5/36*

U.S. Cl. 345—133 **2 Claims**



1. An image display device comprising: name-data storage means for storing a plurality of persons' name data;

image-data storage means for storing a plurality of persons' portrait data corresponding respectively to the plurality of persons' name data stored in said name-data storage means;

discrimination-data storage means for storing discrimination data corresponding respectively to the plurality of persons' portrait data stored in said image-data storage means, each discrimination data indicating whether the corresponding persons' portrait data stored in said image-data storage means with part of the corresponding person's portrait data being masked or said corresponding person's portrait data with no part being masked is to be displayed;

selecting means for selecting one name data from among the plurality of persons' name data stored in said name-data storage means;

reading means for reading out the name data selected by said selecting means from said name-data storage means, for reading out person's portrait data corresponding to the selected name data from said image-data storage means, and for reading out discrimination data corresponding to the read out person's portrait data from said discrimination-data storage means;

display means for displaying the person's name data read out by said reading means and the person's portrait data read out by said reading means with part of the person's portrait data being masked when the discrimination data read out by said reading means indicates that the person's portrait data is to be displayed with part being masked, and for displaying the read out person's name data and the read out person's portrait data with no part being masked when the read out discrimination data indicates that the person's portrait data is to be displayed with no part being masked;

password storage means for storing predetermined password data;

data input means for inputting data;

checking means for checking whether the data input by said data storage means coincides with the password data stored in said password data storage means; and

display control means, responsive to said checking means checking that the data input by said data input means coincides with the password data when the read out person's portrait data is displayed on said display means with at least part of the person's portrait data being masked, for changing to unmasked person's portrait data the person's portrait with at least part of the person's portrait data being masked.

5,612,717

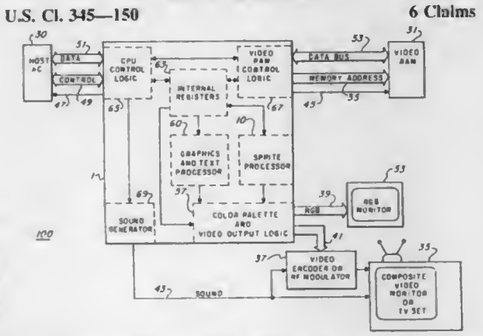
VIDEO DISPLAY PROCESSOR HAVING COLOR PALETTE AND DIGITAL TO ANALOG CONVERTER ON A SINGLE INTEGRATED CIRCUIT

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 103,498, Aug. 6, 1993, which is a division of Ser. No. 803,236, Dec. 5, 1991, Pat. No. 5,379,049, which is a continuation of Ser. No. 455,869, Dec. 18, 1989, Pat. No. 5,089,811, which is a continuation of Ser. No. 262,176, Oct. 20, 1988, abandoned, which is a continuation of Ser. No. 38,476, Apr. 13, 1987, abandoned, which is a continuation of Ser. No. 600,921, Apr. 16, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 473,166

Int. Cl.[6] G09G *5/02*

U.S. Cl. 345—150 **6 Claims**



1. A video display processor disposed on a single integrated circuit comprising:

a data port for receiving sequential data corresponding to a plurality of color data and color codes corresponding to respective pixels of a raster scan video display;

at least one sprite register storing a sprite horizontal location and sprite color data for a corresponding mobile pattern of a predetermined size in pixels smaller than said video display, said at least one sprite register outputting said sprite color data when said raster scan of said video display has a horizontal location including said corresponding mobile pattern;

a color palette including an input, a plurality of color palette registers each storing a color code wherein the number of colors specifiable by said color codes exceed the number of said color palette registers and an output, said color palette outputting a color code via said output corresponding to color data received at said input;

a color priority logic connected to said data port, said at least one sprite register and said color palette, said color priority logic supplying said color data from said data port to said input of said color palette when none of said at least one sprite register output sprite color data and supplying said sprite color data to said input of said color palette from a sprite register having the highest priority in a predetermined priority of sprites when any one of said at least one sprite register outputs sprite color data; and

a digital to analog converter having an input connected to said output of said color palette and an output, said digital to analog converter outputting at least one analog color signal corresponding to color codes received at said input of said digital to analog converter.

5,612,718

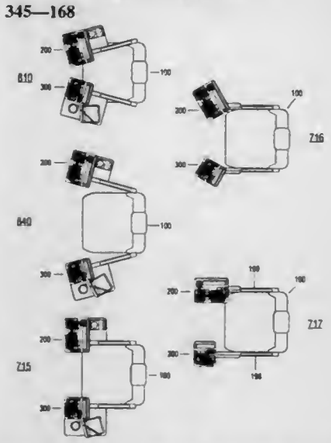
VARIABLY ADJUSTABLE CHAIR HAVING AN ADJUSTABLE ERGONOMIC KEYBOARD

Jed A. Bryan, 188 Linde Cir., Marina, Calif. 93933

Continuation of Ser. No. 981,163, Nov. 24, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 352,418

Int. Cl.[6] G09G *5/04*

U.S. Cl. 345—168 **7 Claims**



1. An improvement in a computer, keyboard and chair arrangement for reducing stress and tension experienced by a human operator, said computer including receiving means for receiving data signals, said chair of a type having a seat and a base, said seat positionally oriented along an x-axis, a y-axis and a z-axis, the improvement comprising:

first and second adjustable arms, said adjustable arms including:

a. first and second locking means for locking said first and second adjustable arms in position, said first and second locking means mounted to said base, said first and second locking means defining first and second bores;

b. a rod frame composed in part of first and second rods respectively located in said first and second bores for adjustably locating said first and second adjustable arms, said first and second rods for slidable movement respectively between first and second distal positions and first and second proximal positions from said first and second locking means, said first and second rods movable in a direction substantially parallel to said x-axis, said first and second locking means for locking said first and second rods in position;

c. first and second motional means respectively connected to said rod frame for movement of said first and second adjustable arms;

d. first and second cantilevered arms, one end of said first and second cantilevered arms respectively connected to said first and second motional means for curvilineal and axial movement, said first and second cantilevered arms capable of curvilineal movement in three planes defined by said x-axis, said y-axis and said z-axis, said first and second cantilevered arms axially movable partially about said z-axis for vertical movement in said y-axis and horizontal movement in said x-axis, said first and second cantilevered arms axially movable partially about said x-axis for vertical movement in said y-axis and lateral movement in said z-axis, said first and second cantilevered arms rotatable about said y-axis for lateral movement in said z-axis and horizontal movement in said x-axis, an end opposite said one end of said first and second cantilevered arms may be moved in a space above said seat defined by said x-axis, said y-axis and said z-axis, said end opposite said one end of said first and second cantilevered arms each capable of being simultaneously moved in the three planes, defined by said x-axis, said y-axis and said z-axis, said end opposite said one end of said first and second cantilevered arms further capable of being simultaneously pivoted in a horizontal plane defined by said x-axis and said z-axis and in a vertical plane defined by said x-axis and said y-axis; and

e. first and second supports pivotally mounted to the other end of said first and second cantilevered arms respectively, said first and second supports pivotally mounted for movement respectively between first and second down positions and first and second up positions, said first and second down positions substantially co-planar with planes defined by said x-axis and said y-axis, said first and second up positions substantially co-planer with planes defined by said x-axis and said z-axis;

f. pneumatic means for controlled positioning of said first and second adjustable arms connected to said first and second cantilevered arms and to said rod frame;

first and second keyboard sections coupled to said first and second supports, respectively, said first and second sections having predetermined keys located thereon, said predetermined keys arranged in first and second predetermined patterns on each said first and second section, one said first and second section for operation with one hand and the other said first and second section for operation with the other hand, said first and second keyboard sections for producing electronic signals; and

transmission means coupled to said first and second keyboard sections for transmitting said electronic signals to said receiving means;

wherein an operator can adjust the position of said adjustable arms and said first and second keyboard sections for reduced stress and tension.

5,612,719

GESTURE SENSITIVE BUTTONS FOR GRAPHICAL USER INTERFACES

Ernest H. Beernink, San Carlos; Gregg S. Foster, Woodside, and Stephen P. Capps, San Carlos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 985,588, Dec. 3, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 228,460

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—173 **20 Claims**

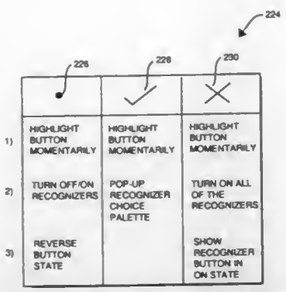
1. A gesture sensitive button for a graphical user interface comprising:

a digital processor,

a display screen coupled to said digital processor;

a pointer for pointing to locations on said display screen;

a button image displayed on said display screen, said digital processor being responsive without any intermediate input to



at least two different button gestures made by said pointer on said display screen at any location over said button image; and

gesture recognition means for detecting gestures made on said display screen by said pointer and operative to initiate a process in said digital processor that is determined by a recognizable button gesture made with said pointer on said display screen which selects said button image and which has meaning to said digital processor based upon a context associated with said button image wherein the gesture recognition means is arranged such that the function associated with each of said button gestures will be initiated and executed in an identical manner regardless of the location over the button image that the gesture was made,

wherein said digital processor is operable such that when said gesture recognition means recognizes a particular recognizable button gesture for said button image, said digital processor provides feedback relative to said button confirming that said button image has been selected, said feedback relative to said button also indicative of the particular function associated with said particular recognizable button gesture.

5,612,720

SYSTEMS FOR PROCESSING INFORMATION AND IDENTIFYING INDIVIDUAL

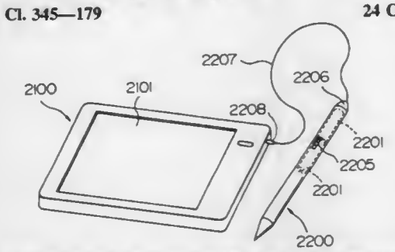
Jun Ito; Hiroyuki Kumai, both of Yokohama; Yasumasa Matsuda; Akira Nakajima, both of Tokyo; Yoshiisa Inoue, Fujisawa; Hiroyuki Koreeda, Yokohama, and Shigeto Obeda, Kamakura, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 180,999, Jan. 14, 1994, Pat. No. 5,453,762. This application Jun. 7, 1995, Ser. No. 480,381

Claims priority, application Japan, Jan. 20, 1993, 5-007802; Jan. 28, 1993, 5-012823

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—179 **24 Claims**



1. An information processing system arranged to have a coordinates indicating device and a main unit of said information processing system having a coordinates sensing means for sensing a coordinates indicated by said coordinates indicating device, processing means for doing a process based on the sensed result of said coordinates sensing means and display means for displaying the processed result of said processing means, wherein said coordinates indicating device has a battery for driving at least said main unit, and includes a cord through which an electric power is supplied from said battery to said main unit.

5,612,721

INK JET RECORDING DEVICE

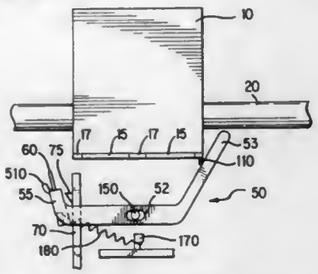
Tatsuhiro Ishize, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,674

Claims priority, application Japan, May 24, 1994, 6-109735

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **12 Claims**



1. An ink jet recording device comprising:

recording heads for ejecting ink and printing on recording media;

a carriage member having said recording heads and moving reciprocatingly between a printing region and a non-printing region, said carriage member further having an engaging portion; and

a cleaning member, having a projecting engaging portion, for cleaning a surface of said recording heads by contacting with said surface when said carriage member exits said non-printing region,

said cleaning member linking with a movement of said carriage member when the carriage member is transported toward the non-printing region for moving to a position at which said cleaning member is capable of contacting with said surface of said recording heads upon said carriage member moving to the printing region, and

said cleaning member linking with the passage of the engaging portion of said carriage member at a position of the projecting engaging portion of said cleaning member after said cleaning member contacts with said surface to move said cleaning member to a position at which said cleaning member separates from said surface of said recording heads, such that said cleaning member does not contact said surface of said recording heads when said carriage member is moved from said printing region to said non-printing region.

5,612,722

INK JET PRINTHEAD WIPER HAVING SIDE SURFACES INTERSECTING A TOP SURFACE AT ACUTE ANGLES TO FORM WIPING EDGES AND A SLAT CENTERED IN A BOTTOM SURFACE

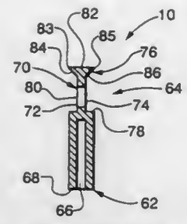
Monty L. Francis; Edmund H. James, III, and Donald N. Spitz, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Continuatioo of Ser. No. 143,210, Oct. 26, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 601,384

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **6 Claims**

1. A printhead wiper for wiping a surface of an ink jet printhead when the wiper is moved by a mounting beam into a path traversed by said printhead, said wiper comprising a flexible monolithic body, said body having a mounting portion for mounting said wiper, a wiper portion, and a beam portion, said beam portion having first and second parallel side surfaces, said wiper portion having a flat upper surface and first and second opposing side surfaces which diverge from said first and second parallel side surfaces, respectively, and intersect said flat upper surface at acute angles to form first and second parallel wiping edges, said mounting portion being joined at a first end to said beam portion and



having a second end which terminates at a bottom surface, said mounting portion having a slot centered in said bottom surface and extending into the interior of said mounting portion toward said beam portion, said slot being sized and shaped to receive and surround a mounting beam, said mounting portion having a thickness greater than a distance between said first and second parallel side surfaces of said beam portion whereby said wiper flexes primarily in said beam portion, said beam portion being centered with respect to said first end of said mounting portion whereby said wiper wipes said surface of said printhead with equal force regardless of the direction of movement of said printhead along said path.

5,612,723

ULTRASONIC PRINTER

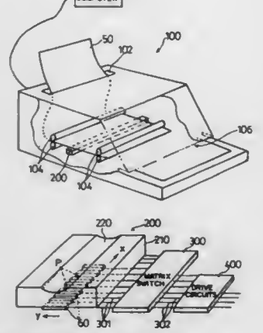
Takaki Shimura; Atsuo Iida; Yoshihiko Kaiju; Hirofumi Nakayasu, and Masao Hiyane, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1994, Ser. No. 208,470

Claims priority, application Japan, May 14, 1993, 5-113359; Feb. 14, 1994, 6-017657

Int. Cl.[6] B41J *2/04*

U.S. Cl. 347—46 **34 Claims**



1. An ultrasonic printer comprising:

ink supplying means; and

means for producing convergent ultrasonic acoustic waves which eject an ink from said ink supplying means near a convergent point of the convergent ultrasonic acoustic waves in the form of an ink droplet to deposit the ink droplet on a recording medium so as to form dots on the recording medium, this cycle being repeatedly performed plural number of times, thereby implementing a recording on the recording medium with multiple ink dots,

said means for producing convergent ultrasonic acoustic waves comprising:

a plurality of ultrasonic transducers for radiating ultrasonic acoustic waves;

drive circuits each for driving an associated one of said plurality of ultrasonic transducers; and

a control circuit for controlling said drive circuits such that at least part of said plurality of ultrasonic transducers are driven with at least two or more phases mutually different to converge the ultrasonic acoustic waves radiated from said plurality of ultrasonic transducers onto a predetermined position.

5,612,724

INK JET RECORDING HEAD WITH ENHANCED BONDING FORCE BETWEEN A HEAT STORING LAYER AND SUBSTRATE, A METHOD OF FORMING THE SAME AND A RECORDING APPARATUS HAVING SAID RECORDING HEAD

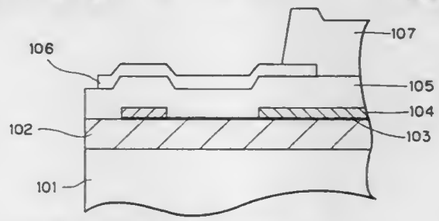
Keiichi Murakami, Hachioji, and Hirokazu Komuro, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 46,136

Claims priority, application Japan, Apr. 16, 1992, 4-096492; Jun. 8, 1992, 4-147676

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—64 **7 Claims**



1. An ink jet recording head comprising:

a substrate mainly composed of metal;

a heat resistant resin layer provided on said substrate;

an insulative heat accumulation layer for accumulating thermal energy used for discharging ink, said accumulation layer provided on said heat resistant resin layer; and

an energy generating element provided on said heat accumulation layer to generate the thermal energy.

5,612,725

INK-JET RECORDING HEAD WITH PLASTIC AND GLASS PLATES

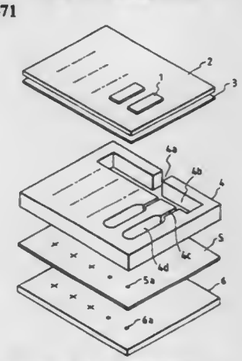
Kazuki Okimoto, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 15, 1995, Ser. No. 440,620

Claims priority, application Japan, May 16, 1994, 6-100331

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—71 **4 Claims**



1. An ink-jet recording bead, comprising:

a glass oscillating plate with a plurality of piezoelectric elements mounted thereon;

an intermediate film formed of a plastic, having a melt temperature;

a cavity plate formed of a plastic having a thermal deformation temperature higher than the melt temperature of the plastic forming said intermediate film, and provided with a plurality of through-holes wherein each of said plurality of through-holes are pressurizing chambers, said through-holes extending through a thickness of said cavity plate;

an intermediate nozzle film formed of a plastic having a melt temperature lower than the thermal deformation temperature of the plastic forming said cavity plate, and provided with a plurality of intermediate nozzles each communicating with a corresponding one of said pressurizing chambers, said intermediate nozzles extending through a thickness of said intermediate nozzle film; and

a glass terminal nozzle plate having a plurality of terminal nozzles, each communicating with one of said intermediate nozzles, said terminal nozzles extending through a thickness of said terminal nozzle plate;

wherein said oscillating plate, said intermediate film, said cavity plate, said intermediate nozzle film and said terminal nozzle plate are Sequentially stacked one on another; said oscillating plate and said intermediate film being joined together by a bonding adhesive, and said intermediate nozzle film and said terminal nozzle plate being joined together by a bonding adhesive; and said intermediate film and said cavity plate being joined together by thermal fusion bonding, and said cavity plate and said intermediate nozzle film joined together by thermal fusion bonding.

5,612,726

Patent Not Issued For This Number

5,612,727

PRINTER WITH PRINTHEAD PRESSURE ADJUSTING MECHANISM

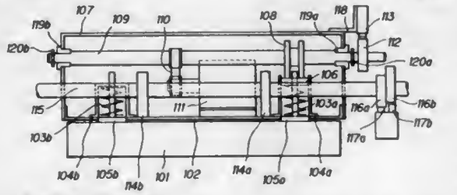
Yasumasa Morimoto, Nabari; Shotaro Okamoto, and Seiichi Kizu, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1996, Ser. No. 631,807

Claims priority, application Japan, Apr. 19, 1995, 7-093570

Int. Cl.[6] B41J *25/312;25/316*

U.S. Cl. 347—198 **4 Claims**



1. A printer comprising:

a thermal head for transferring ink of an ink ribbon onto recording paper by heat generation;

a platen drum for sandwiching the ink ribbon and the recording paper under pressure together with said thermal head;

adjusting means for adjusting pressure applied to said thermal head when pressing said thermal head;

detection means for detecting a size of the recording paper; and

a control unit for controlling said adjusting means in order to adjust the pressure applied to said thermal head in accordance with the size of the recording paper detected by said detection means.

5,612,728

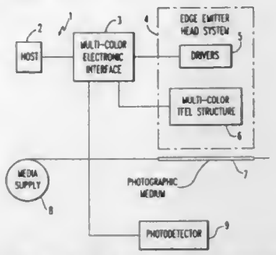
FULL COLOR TFEL EDGE EMITTER PRINTING SYSTEM

Zoltan K. Kun, Churchill; David Leksell, Oakmont; Gerald J. Faychak, McKeesport, and Juris A. Asars, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 20, 1994, Ser. No. 247,635

Int. Cl.[6] B42J *2/47;2/435*

U.S. Cl. 347—232 **32 Claims**



1. A color photographic printing apparatus using thin film electroluminescent (TFEL) devices comprising:

means for supplying photographic media for the photographic printing apparatus;

a multi-color TFEL edge emitter structure for emitting light of a plurality of different colors onto the photographic media supplied by the supplying means, said multi-color TFEL edge emitter structure including a plurality of light emitting pixels;

an electronic interface for receiving image data and converting the image data into signals for driving the multi-color TFEL edge emitter structure;

a photodetector for sensing light emitted from the multi-color TFEL edge emitter structure and having an output connected to the electronic interface; and

means for supplying an interlaced sequence of ON and OFF excitation pulses to each pixel of the TFEL edge emitter structure to create a pixel of print on the photographic media.

5,612,729

METHOD AND SYSTEM FOR PRODUCING A SIGNATURE CHARACTERIZING AN AUDIO BROADCAST SIGNAL

Michael D. Ellis; Stephen M. Dunn; Michael W. Fellinger; Fancy B. Younglove, all of Boulder; David M. James, Fort Collins; David L. Clifton, Boulder, and Richard S. Land, Lafayette, all of Colo., assignors to The Arbitron Company, Columbia, Md.

Division of Ser. No. 876,578, Apr. 30, 1992, Pat. No. 5,436,653. This application Jun. 7, 1995, Ser. No. 475,779

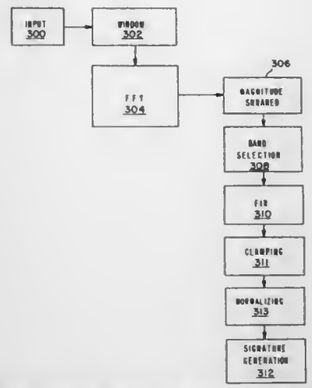
Int. Cl.[6] H04N *17/00;17/04*

U.S. Cl. 348—2 **4 Claims**

1. A method of producing a signature characterizing an audio broadcast signal for use in broadcast signal recognition, comprising the steps of:

forming a plurality of frequency band values each representing portions of said audio broadcast signal within a respective predetermined frequency band;

comparing each of a first group of said plurality of frequency band values with a respective one of a second group of said plurality of frequency band values representing portions of said audio broadcast signal within the same respective predetermined frequency band, each respective one of the second group of said plurality of frequency band values representing portions of said audio broadcast signal at least a part of which were broadcast prior to the portions of said audio broadcast signal represented by the corresponding one of said first group of said plurality of frequency band values; and



forming said signature based upon the comparisons of the first and second groups of said plurality of frequency band values.

5,612,730

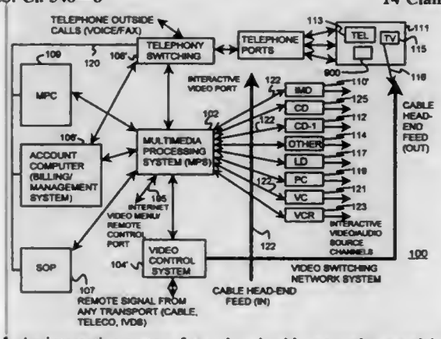
INTERACTIVE SYSTEM FOR A CLOSED CABLE NETWORK

Scott W. Lewis, Saratoga, Calif., assignor to Multimedia Systems Corporation, San Jose, Calif.

Filed Mar. 3, 1995, Ser. No. 400,245

Int. Cl.[6] H04N *7/14;7/18;7/00*

U.S. Cl. 348—8 **14 Claims**



1. An interactive system for a closed cable network comprising:

means for processing multimedia information, the processing means including an internet gateway for receiving and transmitting data across the network from and to an internet node;

a telephone switching system coupled to the multimedia processing means for receiving telephone messages from and transmitting telephone messages to the multimedia processing means;

means coupled to the multimedia processing means for receiving account information from and transmitting account information to the multimedia processing means;

means coupled to the multimedia processing means for receiving control information from and transmitting control information to the multimedia processing means;

a plurality of multimedia devices coupled to the multimedia processing means to provide updatable multimedia information; and

a multiplexer means coupled to an Interactive Multimedia Decoder (IMD), the multiplexer means for receiving inputs from the plurality of multimedia devices and for selecting from the plurality of multimedia devices to provide a multimedia output signal to the IMD.

5,612,731

METHOD AND APPARATUS FOR AUTOMATICALLY SETTING SPECIFIC NUMBERS OF CABLE BOXES FOR VIDEO EQUIPMENT

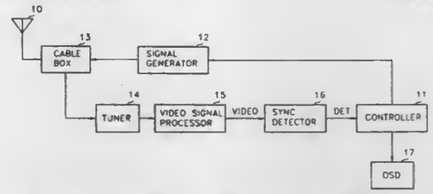
Myeong-geun Cheon, Anyang, Rep. of Korea, assignor to Samsung Electronic Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 28, 1995, Ser. No. 430,868

Claims priority, application Rep. of Korea, Apr. 28, 1994, 94-9154

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—10 **7 Claims**



1. An apparatus for automatically setting a specific number of a cable box for video equipment, the apparatus comprising:

sync detector means for receiving an output signal of a cable box and for generating a sync detection signal indicating whether a sync signal of a video signal has been detected from the received signal; and

controller means for storing a plurality of predetermined cable box numbers, and for outputting each one of the stored plurality of cable box numbers sequentially to a cable box in response to the sync detection signal supplied from said sync detector means, and for setting a specific number of the cable box for use in the video equipment in response to the sync detection signal, so that the video equipment receives a cable broadcast signal from the cable box when a stored specific number is identical to an externally supplied cable box number.

5,612,732

PORTABLE COMPACT IMAGING AND DISPLAYING APPARATUS WITH ROTATABLE CAMERA

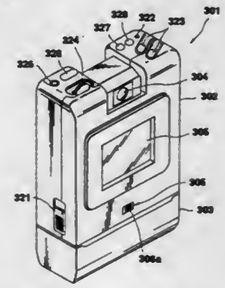
Masami Yuyama, Oome; Akihiro Tsukamoto, Hamura, and Shigenori Morikawa, Kokubunji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1994, Ser. No. 210,562

Claims priority, application Japan, Mar. 31, 1993, 5-098967; Apr. 28, 1993, 5-124935; Apr. 28, 1993, 5-124937

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—14 **8 Claims**



1. A pocketable television receiver with a rotatable camera comprising:

a case containing:

a television tuner;

a display section for displaying an image received by the television tuner;

a camera section installed to be rotated on the case;

means for causing an image taken by the camera section to be displayed on the display section;

means for compressing the image taken by the camera section; and

means for modulating the image compressed by the compressing means; and

a telephone line jack provided on the case and connected to a telephone line in order to output the image data modulated by the modulating means to the telephone line.

5,612,733

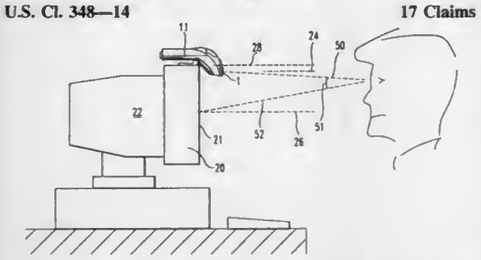
OPTICS ORIENTING ARRANGEMENT FOR VIDEOCONFERENCING SYSTEM

Daniel P. Flohr, Wilmington, N.C., assignor to C-Phone Corporation, Wilmington, N.C.

Continuation-in-part of Ser. No. 25,934, Jul. 18, 1994, Pat. No. Des. 363,730. This application May 18, 1995, Ser. No. 444,155

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—14 **17 Claims**



1. In a video camera adapted for use with, and for retrofit mounting on a computer monitor for a personal computer (PC) workstation, said video camera comprising a first housing, an optical window with an optical axis and an optical video sensor arranged to receive an optical image passed through said window, said window and said sensor being mounted in said first housing and arranged to view the face of a computer operator at said PC workstation, said video camera being connectable and operable as a single camera unit in a videoconferencing system for said PC workstation, said monitor comprising a second housing and a display screen mounted in the second housing and arranged to be viewed by the computer operator, said display screen having an image display surface with a central point and a central axis extending outward from said central point perpendicular to said display surface, said second housing including a frame portion disposed adjacent to and surrounding said display surface, said frame portion having a top surface and two lateral side surfaces; the improvement wherein said first housing is so configured, when mounted on said top surface of said second housing with said optical axis parallel to said central axis, as to position said optical window between said frame portion and the computer operator, with its optical axis intersecting said frame portion at a position below said top surface and between said lateral side surfaces of said frame portion; whereby the optical window is arranged at substantially eye level of the computer operator such that eyes of the operator's face in the image formed by the video sensor appear to be looking directly into the optical window when the computer operator is gazing at the display screen.

5,612,734

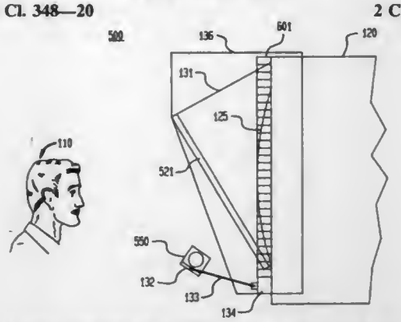
EYE CONTACT APPARATUS EMPLOYING A DIRECTIONALLY TRANSMISIVE LAYER FOR VIDEO CONFERENCING

Terence J. Nelson, New Providence, and Barry R. Vaning, Mountainside, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Nov. 13, 1995, Ser. No. 557,591

Int. Cl.[6] H04N *7/12*

U.S. Cl. 348—20 **2 Claims**



1. A video conferencing terminal without polarizers for allowing eye contact between a local party viewing a terminal screen and the image of a distant party on said screen, said terminal including

a camera module for capturing the image of the local party for transmission to a distant party and

a partially silvered mirror for transmitting the image of the distant party on said screen to the local party and for reflecting the image of the local party to said camera module,

said terminal further comprising means for concurrently increasing the transmission of light from said screen to the local party, for improving the contrast at said camera module between the image of the local party and the light radiated from said screen, and for increasing the transmission of light from the local party to said camera module, said means comprising a louver assembly having microlouvers, said louver assembly being positioned on said screen and between said screen and said camera module.

5,612,735

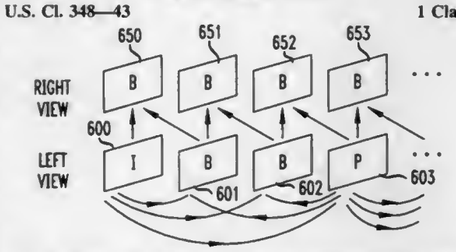
DIGITAL 3D/STEREOSCOPIC VIDEO COMPRESSION TECHNIQUE UTILIZING TWO DISPARITY ESTIMATES

Barin G. Haskell, Tinton Falls; Richard V. Kollarits, Colts Neck, both of N.J., and Atul Puri, Riverdale, N.Y., assignors to Luncent Technologies Inc., Murray Hill, N.J.

Filed May 26, 1995, Ser. No. 452,464

Int. Cl.[6] H04N *13/00*

U.S. Cl. 348—43 **1 Claim**



1. A method for encoding a three-dimensional stereoscopic video signal, the method comprising the steps of:

receiving a first digital video signal representative of a first succession of frames containing left views of a scene, said first succession of frames including a left current frame a left forward frame, and a left backward frame;

receiving a second digital video signal representative of a second succession of frames containing right views of a scene, said second succession of frames including a right current frame, a right forward frame, and a right backward frame;

selecting a current frame from either said first or second succession of frames as a reference frame;

producing a first disparity estimate signal representing a prediction between said reference frame and either said left or said right forward frame;

producing a second disparity estimate signal representing a prediction between said reference frame and either said left or said right backward frame;

employing said first and said second disparity estimate signals to encode said first and said second video signals to produce an encoded three-dimensional stereoscopic video signal.

5,612,736

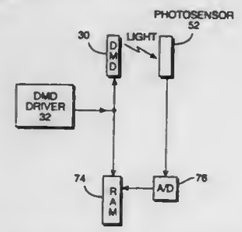
STYLUS POSITION SENSING AND DIGITAL CAMERA WITH A DIGITAL MICROMIRROR DEVICE

James H. Vogeley; Arthur W. Vogeley, both of Yorktown, and Giles K. Davis, Newport News, all of Va., assignors to nVIEW Corporation, Newport News, Va.

Filed Jun. 7, 1995, Ser. No. 475,995

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—207 **19 Claims**



1. A digital camera apparatus for sensing an image, said camera comprising:

a digital micromirror device (DMD) array, said DMD array including a plurality of pixel mirrors controllable between "ON" and "OFF" positions;

optical means for focussing light comprising said image on said DMD array;

detecting means for providing an output responsive to intensities of portions of said image received by said detecting means, when a portion of said image is reflected onto said detecting means by said DMD array;

energizing means for scanning said DMD array by selectively energizing each of said plurality of controllable pixel mirrors; and

image storage means, responsive to said detecting means output and said energizing means selective energizing of said plurality of controllable pixel mirrors, for storing detecting means outputs of intensities of portions of said image at storage locations related to the position of each energized controllable pixel mirror.

5,612,737

ELECTRONIC STILL CAMERA WITH TEMPORARILY HALTING AND RESTARTING OF OPTICAL SYSTEM CONTROL

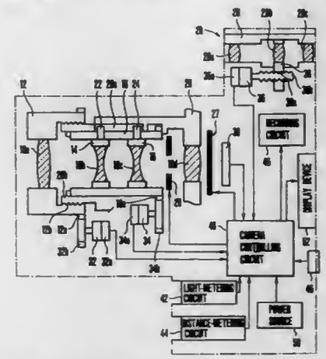
Masatoshi Nagano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 394,069, Feb. 24, 1995, Pat. No. 5,523,784, which is a continuation of Ser. No. 261,747, Jun. 17, 1994, abandoned, which is a continuation of Ser. No. 134,472, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 999,194, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 646,695, Jan. 28, 1991, abandoned. This application Mar. 4, 1996, Ser. No. 610,384

Claims priority, application Japan, Feb. 1, 1990, 2-023379; Feb. 1, 1990, 2-023380; Feb. 23, 1990, 2-043567; Feb. 23, 1990, 2-043568; Feb. 26, 1990, 2-044713; Feb. 26, 1990, 2-044714

Int. Cl.[6] H04N *5/225;5/232*

U.S. Cl. 348—207 **10 Claims**



1. An image pickup apparatus, comprising:

(a) image pickup means for forming an electrical image signal according to an optical image;

(b) an optical system for controlling optical condition of the image on said image pickup means;

(c) recording means for recording said electrical image signal;

(d) a first trigger means for starting a recording operation of said recording means;

(e) a second trigger means for starting a control operation of said optical system independently of said first trigger means; and

(f) halting means for temporarily halting the control operation of said optical system even during said second trigger means is being actuated when said first trigger means is actuated, and for resuming the control operation of said optical system after said recording operation is completed.

5,612,738

SYSTEM AND METHOD FOR COMPENSATING FOR COLOR DEVIATION IN AN IMAGE PRODUCED BY AN IMAGE CAPTURING AND REPRODUCING APPARATUS SUCH AS CAMERA

Hoo-shik Kim, Kyounggi-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Aug. 7, 1995, Ser. No. 512,160

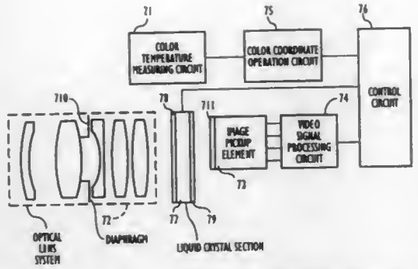
Claims priority, application Rep. of Korea, Aug. 12, 1994, 94-19933

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—223 **21 Claims**

1. A system for compensating for color deviation in image light of an object obtained by an image capturing and reproducing apparatus, comprising:

color temperature measuring means for detecting a color temperature of light rays incident upon said object and generating corresponding color temperature data;



color coordinate operation means for processing the color temperature data so as to obtain color coordinates;

control means for obtaining a color deviation compensation value based on said color coordinates to produce a color deviation compensation signal; and

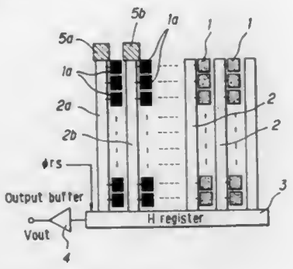
color compensation means for compensating the color deviation of the image light from the object by modulating polarization of the image light in response to said color deviation compensation signal, and for supplying color deviation compensated image light to the image capturing and reproducing apparatus.

5,612,739

CHARGE TRANSFER DEVICE

Yasuhito Maki; Maki Sato, and Tadakuni Narabu, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 216,542, Mar. 23, 1994, abandoned.
This application Mar. 7, 1996, Ser. No. 610,577
Claims priority, application Japan, Mar. 23, 1993, 5-088051
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—311 **12 Claims**



1. A charge transfer device comprising:

a charge input means for inputting two different magnitude reference charges;

a plurality of photo cells shielded from light for creating a dark signal component for each reference charge;

a plurality of photo electric conversion elements for converting incident light into signal charges;

a charge transfer portion for receiving the reference charges and dark signal components, and signal charges, and transferring the reference charges and dark signal components together, and the signal charges, at different times; and

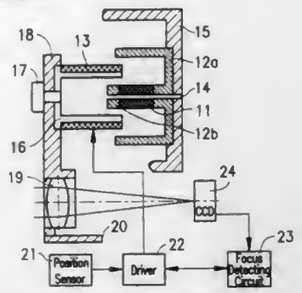
a conversion portion converting the reference charges and dark signal components outputted from the charge transfer portion into two reference voltages and using said reference voltages for converting said signal charges into signal voltages.

5,612,740

INNER FOCUS TYPE ZOOM LENS DRIVING MECHANISM

Chung-Shing Lee, Tainan, and Yih-Long Lin, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation of Ser. No. 306,449, Sep. 19, 1994, abandoned.
This application Aug. 16, 1995, Ser. No. 524,100
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—345 **4 Claims**



1. A driving device with linear motion structure for linearly moving and adjusting an inner focus type zoom lens using a CCD to receive an image of an object and generate an image signal, comprising:

a fixed portion including a frame, a cylindrical iron fixed on one side of said frame, a permanent magnet fixed at the center of said iron, a cylindrical pole piece fixed at one end of said permanent magnet, two guide rods fixed on said frame for guiding the lens in a direction of an optical axis of the lens, and said pole piece and said iron forming a gap therebetween where a magnetic field of the magnet passes through;

a movable portion including a lens socket for mounting a focus lens unit to the movable portion for linear movement along the optical axis, a coil socket fixed on said lens socket, and a cylindrical coil sleeved on said coil socket, said lens socket having two holes sleeved on said guide rods for maintaining said focus lens unit aligned with the optical axis during movement along said guide rods, said coil socket surrounding said cylindrical pole piece to cut the magnetic field of the magnet; and

a focusing circuit including a coil actuator to drive said coil, and a focus detecting circuit to receive an image from the CCD, output a focus signal to said coil actuator, and output an electrical current to said coil that causes a magnetic field to generate a force to move said focus lens unit linearly along the optical axis.

5,612,741

VIDEO BILLBOARD

Jerry M. Loban, Grapevine, Tex., and Henry D. Ryng, Phoenix, Ariz., assignors to Curtis Mathes Marketing Corporation, Dallas, Tex.

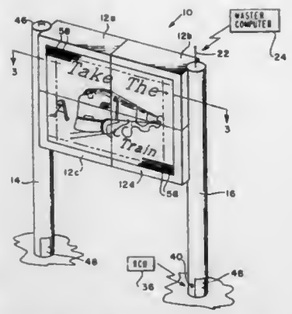
Filed Nov. 5, 1993, Ser. No. 148,048
Int. Cl.[6] H04N *5/66;9/12*
U.S. Cl. 348—383 **31 Claims**

1. A video billboard system comprising:

a plurality of projection unit modules connected together, each projection unit module comprising a hollow housing having an interior projection volume;

a liquid crystal light valve projector mounted in each of said housings, said projector having a cathode ray tube for controlling characteristic of a liquid crystal device, said liquid crystal device modulating light from a high intensity source;

a screen for each of said projection unit modules, said screens arranged to define an enlarged image area for said billboard system and for receiving the modulated light from each of said projectors, respectively;



a receiver coupled to said projectors, respectively;

transmitter means for transmitting commands to the receivers for controlling images to be projected onto said screens;

said screens each comprising an outer protective transparent sheet, a middle lens sheet having a lenticular lens structure and an inner lens sheet having a Fresnel lens structure; and

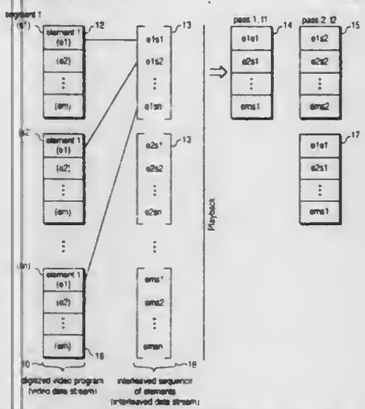
a remote control unit wirelessly coupled to said projectors for aligning images projected by said projectors onto said screens to provide an enlarged image for said billboard system.

5,612,742

METHOD AND APPARATUS FOR ENCODING AND FORMATTING DATA REPRESENTING A VIDEO PROGRAM TO PROVIDE MULTIPLE OVERLAPPING PRESENTATIONS OF THE VIDEO PROGRAM

Edward A. Krause; Paul Shen, both of San Diego, and Adam S. Tom, La Jolla, all of Calif., assignors to Imedia Corporation, San Francisco, Calif.

Filed Oct. 19, 1994, Ser. No. 326,511
Int. Cl.[6] H04N *7/24*
U.S. Cl. 348—385 **26 Claims**



1. A method of providing concurrent access to an ordered sequence of a plurality of n segments wherein each of the n segments corresponds to a different temporal portion of the same video program, said method comprising the steps of:

partitioning a data stream comprising an ordered sequence of data representative of the video program into n subsequences, each of the n subsequences comprising a portion of the data stream representative of one of the n segments, the data of each of the n subsequences organized as an ordered sequence of elements, at least two of the elements in at least one of the subsequences corresponding to different temporal portions of the video program; and

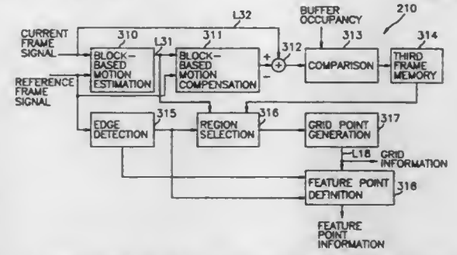
interleaving the elements of the n subsequences to produce an interleaved data stream.

5,612,743

METHOD FOR ENCODING A VIDEO SIGNAL USING FEATURE POINT BASED MOTION ESTIMATION

Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

Filed Jul. 5, 1995, Ser. No. 498,553
Claims priority, application Rep. of Korea, Apr. 29, 1995, 95-10585
Int. Cl.[6] H04N *7/133*
U.S. Cl. 348—409 **4 Claims**



1. A method, for use in a video signal encoder for encoding a digital video signal based on a feature point-based motion estimation technique, said digital video signal having a plurality of frames including a current frame and a reference frame, for adaptively selecting feature points according to motions of objects between the current frame and the reference frame, comprising:

(a) detecting a motion vector for each pixel in the current frame between the current frame and the reference frame;

(b) providing a pixel value from the reference frame based on the motion vector for each pixel in the current frame;

(c) subtracting the pixel value provided from the reference frame from a pixel value of said each pixel of the current frame to thereby provide a differential pixel value;

(d) comparing on a pixel-by-pixel basis the differential pixel value with a threshold value TH and selecting one or more regions, each of the selected regions consisting of the pixels having their respective differential pixel values larger than the thresbold value TH;

(e) shifting the pixels within the selected regions to positions indicated by their respective motion vectors to thereby provide shifted regions;

(f) detecting edge points from the reference frame;

(g) determining none or more processing regions from the shifted regions, wherein the processing regions are the shifted regions which overlap with a portion of the edge points;

(h) generating a first grid on the reference frame and generating a second grid for each of the processing regions, wherein the second grid is formed by a portion of grid points of the first grid and newly added grid points, each of the newly added grid points being positioned at the center of a pair of neighboring grid points of the first grid in a horizontal or a vertical direction; and

(i) selecting, as the feature points, a multiplicity of pixels in the reference frame based on the first and the second grids and the edge points.

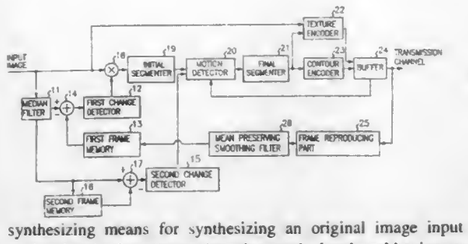
5,612,744

IMAGE SIGNAL TRANSMITTING SYSTEM USING IMAGE FRAMES DIFFERENCES

Sang M. Lee; Joo H. Jeong, and Chie T. Ahn, all of Yuseong-ku, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Seoul, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,246
Claims priority, application Rep. of Korea, Dec. 29, 1993, 1993-30907
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—416 **2 Claims**

1. An image signal transmitting system using image frame differences, in a video transmitting circuit using the difference between image frames, comprising:



synthesizing means for synthesizing an original image input signal and a first change detecting mask signal, and having an output for extracting a changed portion of a current frame;

initial segmenting means connected to the output of said synthesizing means for segmenting the changed portion of the current frame;

motion detecting means having inputs for receiving the output of said initial segmenting means and a second change detecting mask signal for detecting a moved portion in the output of the initial segmenting means;

final segment means having an input for receiving the output of said motion detecting means for extracting simplified areas;

texture encoding means having an input for receiving the output of said final segmenting means and the original image input signal for expressing texture information;

contour encoding means having an input for receiving the output of said final segmenting means for expressing contour information;

buffer means having inputs for receiving the output of said texture encoding means and the output of said contour encoding means for transmitting signals to a transmission channel and delivering its status information to said motion detecting means for adjusting an amount of data occurring in consideration of the capacity of the transmission channel;

frame reproducing means having an input for receiving the output of said buffer means for reproducing an image of the previous frame;

postprocess filtering means having an input for receiving the output of said frame reproducing means for smoothing out properties between regions reproduced in said frame reproducing means;

first frame memory means having an input for receiving the output of said postprocess filtering means for storing the reproduced frame;

preprocess filtering means for filtering the original image input signal and eliminating granular noises;

first adder means having inputs for receiving the output of said preprocess filtering means and the output of said first frame memory for obtaining the difference between the reproduced images of the previous frame and the preprocessed images of the current frame;

first change detecting means which receives and sets a threshold value for the output of said first adder means to generate the first change detecting mask signal;

second frame memory means for receiving and storing the output of said preprocess filtering means;

second adder means having inputs for receiving the output of said preprocess filtering means and the output of said second frame memory means for obtaining the difference between the original image of the current frame and the original image of the previous frame; and

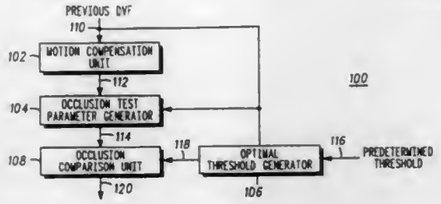
second change detecting means which receives and sets a threshold value for the output of said second adder means to generate the second change detecting mask signal.

5,612,745

METHOD AND APPARATUS FOR DETECTING OCCLUSION

Taner Ozcelik, San Jose, Calif.; James C. Brailean, Park Ridge, and Aggelos K. Katsaggelos, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 24, 1995, Ser. No. 505,991
Int. Cl.[6] H04N 7/36
U.S. Cl. 348—416 **23 Claims**



1. A method for detecting occlusion, comprising:

motion compensating, using a motion compensator, a previous displacement vector field (DVF) to provide a predicted DVF;

calculating an occlusion test parameter, using an occlusion test parameter generator, based on a difference between the previous DVF and the predicted DVF;

calculating an optimal threshold, using an optimal threshold generator, based on the previous DVF and a predetermined threshold; and

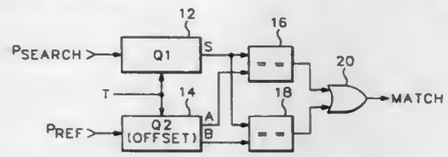
comparing, using an occlusion comparison unit, the occlusion test parameter to an optimal threshold to determine a presence of occlusion.

5,612,746

BLOCK MATCHING FOR PICTURE MOTION ESTIMATION USING OFFSET QUANTIZED PIXELS

Keith R. Slavin, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 10, 1995, Ser. No. 419,561
Int. Cl.[6] H04N 7/24
U.S. Cl. 348—420 **3 Claims**



3. A block matching method comprising the steps of:

offset quantizing pixels within a reference block of pixels from a first frame of a video picture sequence to produce a pair of offset quantized reference pixel signals;

quantizing pixels within a corresponding block of pixels in a search area from a second frame of the video picture sequence to produce a quantized search pixel signal, the search area being larger than the reference block; and

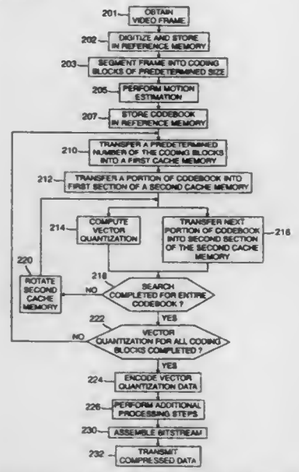
comparing the quantized search pixel signal with each of the offset quantized reference pixel signals on a pixel-by-pixel basis to produce a match signal when the quantized search pixel signal is equal to either of the pair of offset quantized reference pixel signals.

5,612,747

METHOD AND APPARATUS FOR VECTOR QUANTIZATION CACHING IN A REAL TIME VIDEO CODER

John Hartung, Warren, and Johathan D. Rosenberg, North Plainfield, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 8, 1995, Ser. No. 400,704
Int. Cl.[6] H04N 7/12
U.S. Cl. 348—422 **29 Claims**



1. A method of vector quantizing a video frame using a vector quantization codebook, wherein the video frame is segmented into a plurality of coding blocks, the method comprising the steps of:

transferring a predetermined portion of the vector quantization codebook into a first section of a first cache memory;

performing a vector quantization process for a predetermined number of the plurality of coding blocks with respect to the portion of the vector quantization codebook transferred to the first section of the first cache memory; and

transferring a next predetermined portion of the codebook into a second section of the first cache memory after initiating the step of performing a vector quantization process.

5,612,748

SUB-SAMPLE TRANSMISSION SYSTEM FOR IMPROVING PICTURE QUALITY IN MOTIONAL PICTURE REGION OF WIDE-BAND COLOR PICTURE SIGNAL

Seiichi Gohshi; Yoshinori Izumi; Masahide Naemura, and Kouichi Yamaguchi, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Continuation of Ser. No. 974,573, Feb. 22, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,425
Claims priority, application Japan, Jun. 27, 1991, 3-181555; Dec. 18, 1991, 3-334942; Jan. 24, 1992, 4-011155
Int. Cl.[6] H04N 7/24
U.S. Cl. 348—424 **5 Claims**

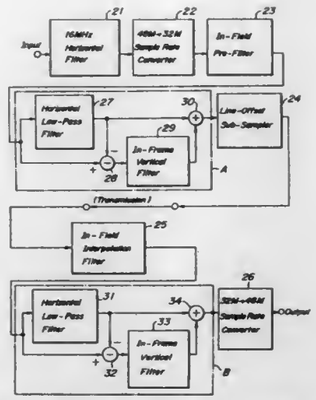
1. A sub-sample transmission method for wide-band color picture signals, comprising the steps of:

(a) sampling a wide-band color picture signal in accordance with a sampling pattern which circulates every two frames;

(b) determining a motional picture region and a still picture region of said wide-band color picture signal from said sampled wide-band color picture signal;

(c) inter-field offset sub-sampling said motional picture region, determined by step (b), to produce a sub-sampled motional picture region, and performing inter-field signal processing on said sub-sampled motional picture region to produce a processed motional color picture signal, wherein said inter-field offset subsampling and said inter-field signal processing are completed in every frame consisting of odd and even fields of said wide-band color picture signal; and

(d) offset sub-sample transmitting the processed motional color picture signal produced in step (c).

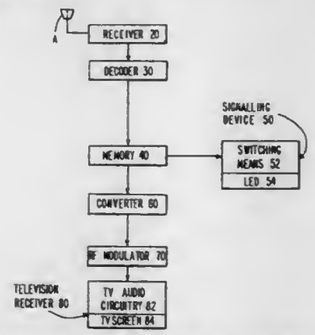


5,612,749

APPARATUS AND METHOD FOR RECEIVING MESSAGES FROM A CENTRAL TRANSMITTER WITH A TELEVISION RECEIVER

Emil G. Bacher, and Ida N. V. Bacher, both of Rua Comendador Bichara, No. 17, Sao Paulo, Brazil

Filed Jun. 27, 1994, Ser. No. 266,028
Int. Cl.[6] H04N 7/00
U.S. Cl. 348—552 **9 Claims**

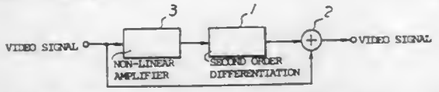


1. Apparatus for receiving a message from a central transmitter with a television receiver, said apparatus comprising means for receiving a radio-frequency signal including an encoded message transmitted by a central radio transmitter, said means for receiving the radio-frequency signal consisting of a radio receiver separate from the television receiver so that said radio receiver may be turned on when said television receiver is turned off; decoding means for producing a decoded message signal from the radio-frequency signal received by the radio receiver; memory means connected with the decoding means for storing the decoded message signal; signalling means for signalling after production of the decoded message signal by the decoding means; modulator means for producing a TV message signal from the decoded message signal and television receiver means connected to the modulator means so as to receive the TV message signal and communicate the message to a viewer.

5,612,750
LINE CONTOUR ENHANCING CIRCUIT FOR USE WITH VIDEO SIGNALS

Yasuo Yagi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Saitama, Japan

Continuation of Ser. No. 629,033, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 434,764, Nov. 13, 1989, abandoned. This application Dec. 2, 1994, Ser. No. 348,681
Claims priority, application Japan, May 10, 1989, 1-1118137
Int. Cl.[6] H04N *5/208*
U.S. Cl. 348—625 **12 Claims**

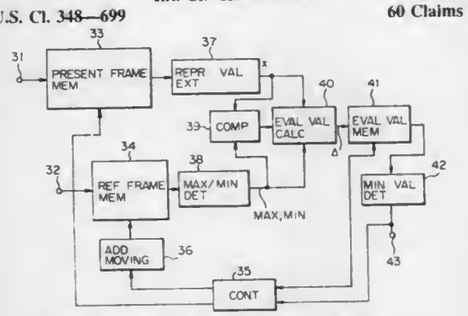


1. A line contour enhancing circuit for processing a video signal to produce an enhanced video signal, comprising:
a non-linear amplifier having a gain which varies with respect to the luminance level of said video signal in a manner such that a value of said gain at a first value of said luminance signal is greater than a value of said gain at a second value of said luminance signal, said second value of said luminance signal being a lesser magnitude in luminance level than said first value of said luminance signal, said non-linear amplifier receiving said video signal in an unaffected condition and producing an amplified video signal;
a second order differentiating circuit, coupled to receive said amplified video signal output from said non-linear amplifier for performing a second order differentiation of said amplified video signal to produce a second order differentiation signal; and
an adding circuit receiving said video signal and said second order differentiation signal for superimposing said second order differentiation signal on said video signal to generate said enhanced video signal.

5,612,751
IMAGE COLLATING METHOD AND APPARATUS

Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,392
Claims priority, application Japan, Jan. 31, 1994, 6-027457; Jan. 31, 1994, 6-027458; Feb. 4, 1994, 6-033174; Feb. 4, 1994, 6-033175
Int. Cl.[6] H04N *7/34*
U.S. Cl. 348—699 **60 Claims**

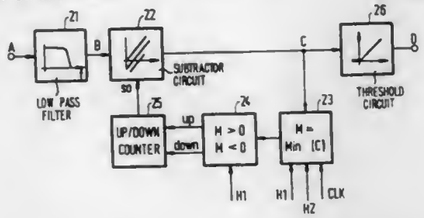


1. An image collating method, comprising the steps of:
segmenting first image data into a plurality of base blocks;
segmenting second pixel data into a plurality of verification blocks;
extracting representative pixel data from each of the base blocks;
extracting feature amount data from each of the verification blocks that contains pixel data corresponding to the representative pixel data, the feature amount data representing a feature amount of the verification block; and
comparing the representative pixel data with the feature amount data and partially collating the base block with the verification block.

5,612,752
NOISE REDUCTION METHOD AND APPARATUS

Gerhard Wischermann, Weiterstadt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 368,739, Jan. 4, 1995, abandoned, which is a continuation of Ser. No. 971,381, Nov. 4, 1992, abandoned. This application Dec. 18, 1995, Ser. No. 573,915
Claims priority, application Germany, Nov. 14, 1991, 41 37 404.5
Int. Cl.[6] H04N *5/213*
U.S. Cl. 348—701 **5 Claims**



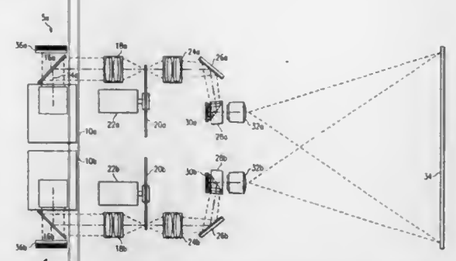
5. A method for reducing the noise in a signal provided by a motion detector which motion detector comprises an input for receiving an input signal and absolute difference means for determining the absolute difference between the input signal and a delayed input signal and for providing an absolute difference signal, wherein a portion of the amplitude range of the signal from said motion detector is suppressed if the portion is below a threshold value, said apparatus comprising in a control loop:
a subtractor for receiving the absolute difference signal and for producing an output signal representative of a motion signal;
a threshold circuit coupled to receive the output signal and produce the motion signal;
a minimum circuit coupled to receive the output signal, for forming the minimum of the output signal;
a discriminator coupled to said minimum circuit for determining whether the minimum produced by said minimum circuit lies above or below a given value; and
an up/down counter having an input coupled to said discriminator and an output coupled to said subtractor for incrementing and decrementing the threshold value in dependence on the minimum such that the magnitude of the DC component of the signal from said motion detector is represented at the output of said up/down counter and subtracted from the absolute difference signal by said subtractor, and wherein said threshold value is determined based on the noise in the absolute difference signal and independent of motion induced components in the input signal.

5,612,753
FULL-COLOR PROJECTION DISPLAY SYSTEM USING TWO LIGHT MODULATORS

Frank Poradish, Plano, and James M. Florence, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 27, 1995, Ser. No. 379,391
Int. Cl.[6] H04N *9/12;5/74*
U.S. Cl. 348—743 **32 Claims**

1. A full-color projection system comprising:
a first light source for generating a first light beam;
a second light source for generating a second light beam;
a first spatial light modulator for receiving said first light beam and redirecting a modulated version of said first light beam to a screen;

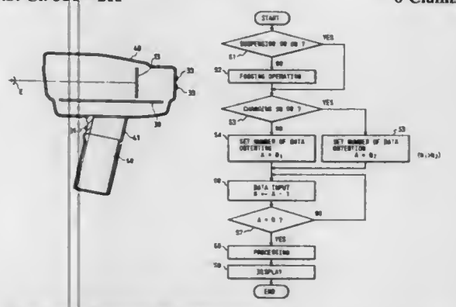


a color wheel disposed between said first light source and said first spatial light modulator; and
a second spatial light modulator for receiving said second light beam and redirecting a modulated version of said second light beam to said screen.

5,612,754
EYE-REFRACTOMETER HAVING A FOGGING OPERATION

Takumi Tanaka, Hiratsuka, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,343
Claims priority, application Japan, Jan. 19, 1995, 7-006538
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—211 **6 Claims**

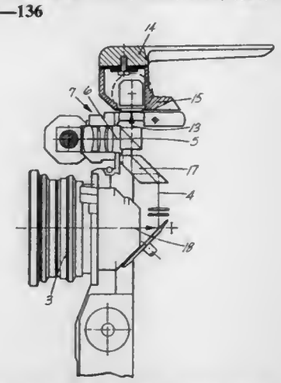


1. An eye-refractometer comprising:
a refracting power measurement system for objectively measuring a refracting power of an eye to be examined;
a fogging mechanism for relaxing an accommodation power of the eye to be examined by moving a target observed by the eye to be examined;
a measurement switch for instructing measurement to start;
a fogging operation suspension switch for instructing an operation of said fogging mechanism to be suspended; and
a control system for, when the measurement is instructed to start by said measurement switch and when the fogging operation is not instructed to be suspended by said fogging operation suspension switch, operating said fogging mechanism, and for obtaining, thereafter, data from said refracting power measurement system, and for, when the measurement is instructed to start by said measurement switch and when the fogging operation is instructed to be suspended by said fogging operation suspension switch, obtaining data from said refracting power measurement system without operating said fogging mechanism.

5,612,755
MOTION PICTURE FILM RECORDING CAMERA

Eugen Bayerl, Kirchheim, Germany, assignor to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG, Munich, Germany

PCT No. PCT/DE92/00205, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/18433, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 10, 1992, Ser. No. 295,890
Int. Cl.[6] G03B *13/02;13/08;19/18;* **H04N** *7/18*
U.S. Cl. 352—136 **8 Claims**



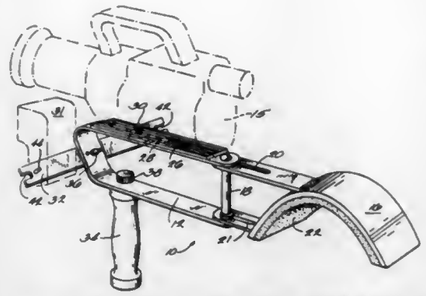
1. A motion picture film recording camera having, during operation, a film recording beam, a view finder beam, and a video beam, the camera comprising:
a camera housing having opposite sides, a front, and a top;
a recording lens mounted on the front of the camera housing and defining a film recording beam path for the film recording beam;
a grip base seated in the top of the camera housing;
a camera handle attached to the grip base;
a video adapter disposed on the grip base and having a video beam path through the grip base to the video adapter;
a view finder having an outlet with a center axis mounted on the front of the camera housing and defining a view finder beam path;
a reflex device for reflecting a component of the film recording beam into the view finder beam path;
a beam splitter disposed in the view finder beam path, for directing a component of the view finder beam toward the front of the camera housing into the view finder outlet, and for directing a component of the view finder beam upward to the top of the camera housing into the video beam path through the grip base to the video adapter;
a lens arm pivotally attached to the camera housing;
an eye piece support attached to the lens arm;
a rearward facing eye piece attached to the eye piece support; and
the lens arm, the support, and the eye piece being pivotal around the center axis of the view finder between the opposite sides of the camera.

5,612,756
SUPPORT FOR VIDEO CAMERA

Gerald E. Kardach, South Milwaukee, Wis., assignor to Lionshead Publishing Ltd., Frisco, Colo.

Filed Nov. 13, 1995, Ser. No. 555,899
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—422 **7 Claims**

1. A support for a video camera comprising
an elongated support body formed of first and second components adjustably secured to each other by means of a releasable fastener which passes through an opening in each of said components, the opening on at least one of said components being elongated whereby the length of said body can be



altered, said fastener pivotally attaching said first and second components to each other, whereby the angle between the axes of said components can be adjusted, said first and second components each being formed of upper and lower frame members, said fastener passing through opening in each of said upper and lower frame members,

said support body having a forward end and rearward end with a downwardly opening concave surface for placement on the shoulder of a videographer,

means on such said support body for attachment thereto of a video camera, and a hand grip attached to the forward end of said support body, said means for attachment being located rearwardly of said hand grip,

a cushioning member being placed in said concave end for engagement with the videographer's shoulder.

5,612,757

CAMERA ADAPTED TO USE FILM HAVING MAGNETIC RECORDING PART

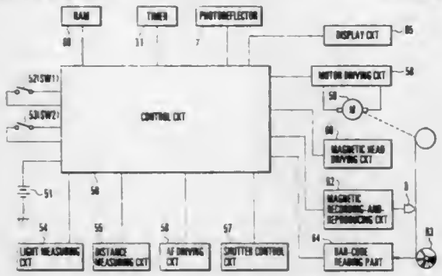
Kenichiro Amano, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,682

Claims priority, application Japan, Jun. 15, 1994, 6-155526

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—319 **14 Claims**



1. A camera arranged to detect, with sensing means, magnetic information recorded in a magnetic recording part provided at each frame of a film and to make a discrimination between exposed and unexposed frames, comprising:

a) film transporting means; and

b) rechecking means for causing, when a frame is decided to be an unexposed frame according to a result of detection of the magnetic information by said sensing means from the magnetic recording part of each frame while the film is transported by said film transport means in a first direction, said sensing means to detect again the magnetic information from the magnetic recording part of the same frame while the film is transported by said film transport means in a second direction which differs from the first direction.

5,612,758

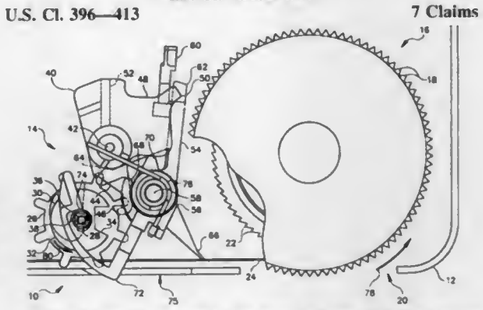
REWIND MECHANISM FOR SINGLE-USE CAMERA

Dwight J. Petruchik, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 11, 1995, Ser. No. 420,260

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—413 **7 Claims**



1. A still camera having an operating and interlock mechanism comprising:

a film advance mechanism including an advance wheel;

a sprocket wheel engageable with a film and rotatable by linear motion thereof within the camera;

a metering lever pivotable about an axis and biased toward engagement with the advance wheel, said metering lever coacting with a recess on the sprocket wheel to allow engagement of the metering lever with the advance wheel only at spaced intervals of film motion and preventing film advance when so engaged;

an actuating lever pivotable about an axis and biased for tripping a camera shutter when released, said actuating lever when tripped engaging the metering lever to release said actuating lever from said recess and allow further film advance;

said sprocket wheel having a cam engageable with said actuating lever upon rotation of the sprocket wheel during film advance to reset the actuating lever and release the metering lever to reengage the sprocket wheel recess and prevent further film advance after a predetermined film advance motion;

an anti-backup pawl biased toward engagement with said advance wheel for preventing reverse rotation of the advance wheel in a rewind direction; is characterized by:

a rewind lever pivotable about an axis and movable into separate advance and rewind positions;

said rewind lever being operative in said rewind position to disengage said anti-backup pawl from said advance wheel and to engage said metering lever and said actuating lever, said rewind lever being operative in said rewind position to prevent engagement of said metering lever and said actuating lever with said sprocket wheel, said rewind lever thereby allowing reverse motion of the advance wheel and the sprocket wheel to permit rewinding of the film.

5,612,759

VARIABLE FORMAT VIEWFINDER

David C. Smart, Fairport, and John H. Alligood, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

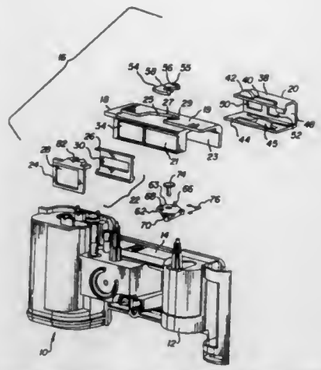
Filed Apr. 24, 1996, Ser. No. 637,117

Int. Cl.[6] G03B *13/10*

U.S. Cl. 396—380 **9 Claims**

1. A camera comprising a viewfinder field of view, a rear masking blade having two different format-defining rear openings individually positionable in the field of view, and movable front masking means having two different format-defining front openings corresponding to said respective rear openings and individually positionable in the field of view, is characterized in that:

said front masking means includes two separably movable masking blades each having one of said front openings; and



means interconnecting said rear masking blade with said two front masking blades to cause a first incremental movement of the rear masking blade to position one of the rear openings in the field of view to move one of the front masking blades to position its front opening in the field of view and to cause a second incremental movement of the rear masking blade to position the other rear opening in the field of view to move the other front masking blade to position its front opening in the field of view.

5,612,760

CAMERA ADAPTED TO USE FILM CARTRIDGE HAVING LIGHT SHIELDING DOOR

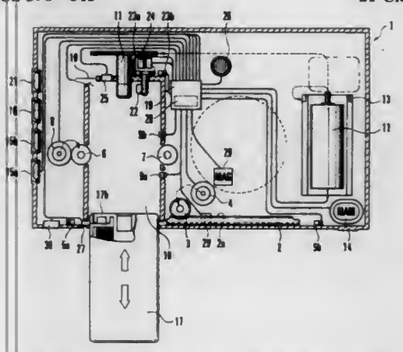
Ryoji Okuno, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,793

Claims priority, application Japan, Dec. 28, 1993, 5-337151

Int. Cl.[6] G03B *17/02;17/26*

U.S. Cl. 396—513 **21 Claims**



1. An apparatus adapted to an image recording medium cartridge, said apparatus comprising:

(A) an operation device which automatically performs at least one of loading the cartridge to a cartridge chamber and unloading said cartridge from the cartridge chamber, said operation device which automatically performs at least one of opening and closing a cover of the cartridge chamber; and

(B) a changing device which changes an operation of said operation device in accordance with a state where said cartridge has been used.

5,612,761

AUTOMATIC FOCUSING APPARATUS

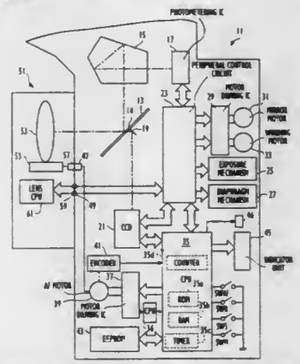
Masahiro Nakata, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 185,239, Jan. 24, 1994, Pat. No. 5,448,329, which is a continuation of Ser. No. 884,077, May 15, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,056

Claims priority, application Japan, May 15, 1991, 3-206605; May 15, 1991, 3-206606; May 15, 1991, 3-206607; May 15, 1991, 3-206608; May 15, 1991, 3-206609

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—95 **51 Claims**



1. An automatic focus adjusting apparatus that includes an optical system having a group of focusing lenses, means for measuring a defocus amount for a specific object imaged by a focusing optical system, and means for driving said focusing lens group to a focal position in which said specific object is in-focus, in accordance with said defocus amount, comprising:

a calculator for calculating a speed of said specific object image movement in accordance with a measurement and time interval of a measuring operation of said defocus amount measuring means; and

a controller for controlling said lens driving means so that a focal position of said optical system moves at a tracing speed corresponding to said speed of said specific object image movement.

5,612,762

FOCUS DETECTION DEVICE FOR A CAMERA

Keiji Ohsawa, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 339,282, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 955,254, Oct. 1, 1992, abandoned. This application Oct. 6, 1995, Ser. No. 540,562

Claims priority, application Japan, Oct. 9, 1991, 3-262329

Int. Cl.[6] G03B *13/36*

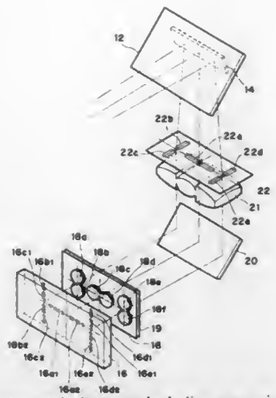
U.S. Cl. 396—114 **13 Claims**

1. A focus detection device for a camera capable of detecting focuses at a plurality of areas on a photographing field, comprising:

two pairs of photo-electric conversion device arrays arranged on one substrate in optical correspondence to two of said plurality of areas;

said two areas being arranged on a line extending generally vertically to a center axis crossing an optical axis on said photographing field, on opposite sides of said center line; and

a refocusing optical system for refocusing light beams passing through different points of an exit pupil of a photographing lens, onto said two pairs of photo-electric conversion device arrays;



said refocusing optical system including one pair of refocusing lenses for refocusing light beams onto both of said two pairs of photo-electric conversion device arrays.

5,612,763

FOCUS DETECTION DEVICE AND METHOD

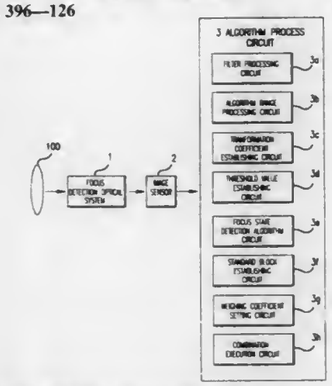
Shigeyuki Uchiyama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,171

Claims priority, application Japan, Sep. 28, 1994, 6-233152

Int. Cl.[6] G03B *3/00*

U.S. Cl. 396—126 **24 Claims**



1. A focus detection device comprising:

a pair of photo-electric conversion element arrays including a plurality of photo-electric conversion elements that output a pair of signal strings corresponding to the light intensity distribution of a pair of object images;

a focus detection optical system that guides a pair of light rays from an object to said pair of photo-electric conversion element arrays;

an algorithm range establishing device that establishes a focus detection algorithm range on said photo-electric conversion element arrays;

a contrast detection device that detects a contrast distribution of a portion of the pair of output signal strings which corresponds to the algorithm range established by the algorithm range establishing device;

a transformation coefficient determination device that determines a transformation coefficient of said algorithm range based on the contrast distribution detected by the contrast detection device and coefficients predefined for some of the plurality of photo-electric conversion elements of said photo-electric conversion element arrays; and

a focus detection algorithm device that computes a relative shift amount of the portion of the pair of output signal strings corresponding to said algorithm range and transforms the shift amount into a defocus amount of said focus detection optical system by the transformation coefficient determined by said transformation coefficient determination device.

5,612,764

DEVICE FOR COPYING PHOTOGRAPHIC MASTERS

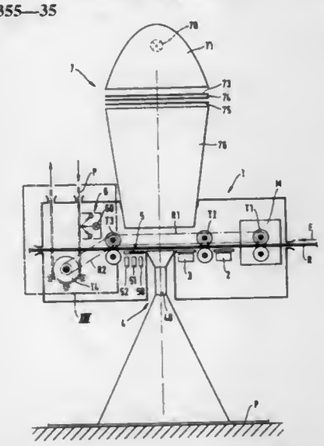
Patrik Atzrodt, Wil, and Hugo Knecht, Schönenbuch, both of Switzerland, assignors to Gretag Imaging AG, Regensdorf, Switzerland

Filed Sep. 28, 1994, Ser. No. 313,810

Claims priority, application European Pat. Off., Oct. 12, 1993, 93810718

Int. Cl.[6] G03B *27/73*

U.S. Cl. 355—35 **8 Claims**



1. Apparatus for copying photographic masters onto photographic copying material, comprising:

a masters stage on which a master is conveyed by a first conveyance means to a measuring station where the master is measured, such that copying light quantities required for exposure of the master can be determined;

an exposure station where the master is impacted with the determined copying light quantities and copied onto the copy material; and

at least one of a transmission measuring system and a reflection measuring system, in addition to said measuring station, for measuring a test master or a test copy, said at least one of the transmission measuring system and the reflection measuring system being structurally integrated with the masters stage.

5,612,765

FILM CARTRIDGE CARRIER

Tohru Yoshikawa, and Yoshiyuki Yamaji, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Apr. 5, 1995, Ser. No. 417,121

Claims priority, application Japan, Apr. 7, 1994, 6-069658

Int. Cl.[6] G03B *27/58;27/52*

U.S. Cl. 355—72 **9 Claims**

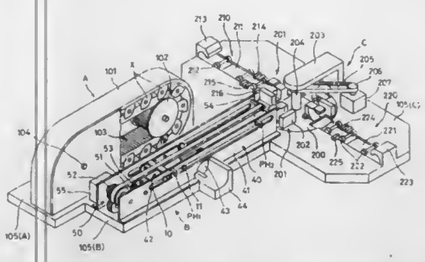
1. A carrier device for transporting a film cartridge to a photoprinting device, said carrier device comprising:

a guide unit defining a passage to be directed toward the photoprinting device;

a carriage guided by said guide unit for movement along said passage between a cartridge supply position, whereat a cartridge can be supplied to said carriage, and a transfer position, whereat the thus supplied cartridge can be transferred to the photoprinting device;

drive means for reciprocating said carriage along said passage; and

said carriage including a carriage body, a support plate mounted on said carriage body so as to be movable relative to said carriage body toward and away from a cartridge set in said carriage, a spring mounted between said support plate and said carriage body and biasing said support plate toward the cartridge set in said carriage, an arm mounted for movement between a closed position, whereat the cartridge is held between said arm and said support plate, and an open position, whereat the cartridge is detachable from said carriage, and a mechanical arm locking and unlocking means associated with said support plate for, when said support plate is pushed by the cartridge while compressing said spring with said arm in said open position, moving said arm to said closed position and locking said arm in said closed position, and for, when said support plate is pushed by said cartridge while compressing said spring with said arm in said closed position, unlocking said arm to allow said arm to move to said open position.



5,612,766

DEVICE FOR REGENERATING PRINTED SHEET-LIKE RECORDING MEDIUM

Toru Iida, Iaira-machi; Michihito Ohashi, Kawasaki; Yoshihiro Sakai, Tokyo; Shin-ichi Kuramoto, Numazu; Shunichi Chiba, Kawasaki; Yasuo Asahina, Numazu, and Junko Tomita, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

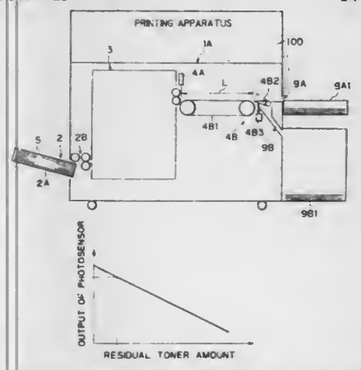
Division of Ser. No. 828,710, Jan. 31, 1992, Pat. No. 5,545,381.

This application Apr. 14, 1995, Ser. No. 421,880

Claims priority, application Japan, Jan. 31, 1991, 3-32489; Jan. 31, 1991, 3-32490; Jan. 31, 1991, 3-32491; Jan. 31, 1991, 3-32493; Jan. 31, 1991, 3-32495; Aug. 26, 1991, 3-213936

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—23 **14 Claims**



1. A device for regenerating a recording medium comprising:

regenerating means for eliminating an image formed on said recording medium; and

a printing apparatus for printing an image on said recording medium;

wherein a discharging channel of said regenerating means is connected to a paper feeding part of said printing apparatus.

5,612,767

IMAGE FORMING DEVICE HAVING AN IMAGE-HOLDING BODY WHICH ROLLS ON A RECORDING SHEET ABOUT AN AXIS PARALLEL TO A CONVEYING DIRECTION OF THE RECORDING SHEET

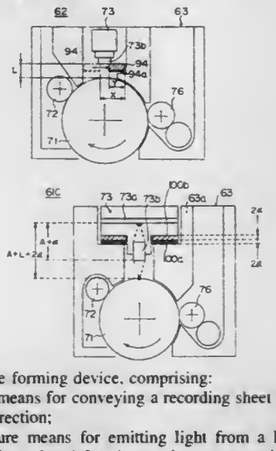
Ryouichi Iwama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 26, 1995, Ser. No. 429,134

Claims priority, application Japan, May 16, 1994, 6-101104

Int. Cl.[6] G03G *15/00;15/04*

U.S. Cl. 399—98 **10 Claims**



1. An image forming device, comprising:

conveying means for conveying a recording sheet in a predetermined direction;

light-exposure means for emitting light from a light emitting surface thereof and forming an image on an image-holding body by using the emitted light, which image-holding body rolls on said recording sheet by rotating about an axis parallel to said predetermined direction and thereby transferring said image on said image-holding body onto said recording sheet; and

cleaning means for cleaning said light-exposure means by moving relatively to, and in wiping contact with, the light emitting surface, the relative movement of said cleaning means being provided by said light-exposure means moving along with said image holding body for said transferring of said image onto said recording sheet.

5,612,768

IMAGE FORMING APPARATUS WITH AN AIR VENTILATION STRUCTURE FOR PREVENTING CONTAMINATION OF CHARGING DEVICE

Dong-Joon Kim, and Seong-Woo Kim, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 558,273

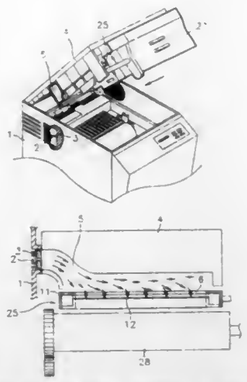
Claims priority, application Rep. of Korea, Nov. 12, 1994, 29692/1994

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—92 **20 Claims**

1. An image forming apparatus, comprising:

a main frame having an upper frame pivotally connected at one end of said main frame for enabling access into an interior of said image forming apparatus:



a process cartridge detachably mounted in said image forming apparatus, said process cartridge comprising a photosensitive drum and a charging device charging an exterior circumferential surface of said photosensitive drum with an electrical potential; air generating means installed in said main frame, for generating an air flow from an exterior air; and

air guiding means positioned to guide the air flow generated by said air generating means to said charging device when said upper frame is closed to cover said main frame, said air guiding means comprising an air duct for supplying the air flow through said charging device and toward said photosensitive drum to prevent contamination of said charging device.

5,612,769

SUBMODULAR UNIT FOR USE IN A MODULAR ROTARY DEVELOPING APPARATUS

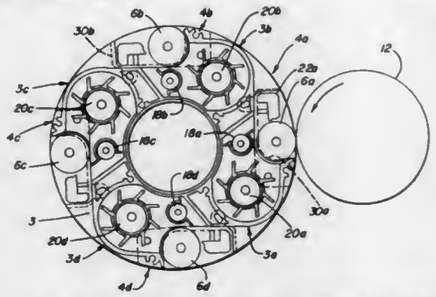
Kazuyuki Sugihara, Yokohama, and Katsuhiro Kosuge, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 25, 1994, Ser. No. 328,478

Claims priority, application Japan, Oct. 25, 1993, 5-266660; Nov. 26, 1993, 5-296658

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—119 **12 Claims**



1. A modular rotary developing device, comprising a photoreceptor drum for developing an image on an image-carrying medium utilizing toner selectively applied to the photoreceptor drum, said device including a main modular unit frame having sub-dividing walls juxtaposed to the photoreceptor drum and a plurality of developing units housed in said main modular unit frame, each of said developing units comprising:

a developer container defined by said sub-dividing walls of said main modular unit frame for containing the toner;

a submodular unit frame mounted to said main modular unit frame for providing an independent detachable frame; and

a developing roller mounted on said submodular unit frame for applying the toner onto the photoreceptor drum, said submodular unit frame along with said developing roller being detachable as a sub-unit from the main modular unit frame.

5,612,770

DEVELOPING DEVICE WITH PARTITION MEMBER OF VARYING LENGTH

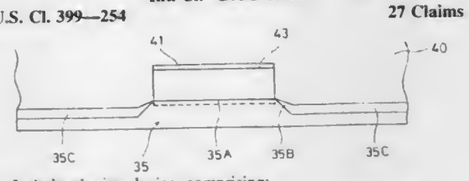
Yasuhito Bandai; Kazumasa Makino, and Soichiro Nishimura, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 2, 1995, Ser. No. 434,340

Claims priority, application Japan, Jul. 27, 1994, 6-175313

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—254 **27 Claims**



1. A developing device, comprising:

a developing chamber confronting a photosensitive drum;

a developing sleeve adjacent a peripheral surface of the photosensitive drum;

a first agitating member mounted in the developing chamber for agitating toner supplied to the developing chamber;

an agitating chamber, wherein toner is supplied to the agitating chamber from a toner source;

a second agitating member mounted in the agitating chamber for agitating toner in the agitating chamber and for supplying toner from the agitating chamber to the developing chamber; and

a partition member located between the agitating chamber and the developing chamber, the partition member having a height that varies along a length of the partition member such that all points along the length thereof toner can be supplied by the second agitating member over the partition member from the agitation chamber to the developing chamber.

5,612,771

MULTI-COLOR ELECTROPHOTOGRAPHIC PRINTER HAVING MULTIPLE IMAGE FORMING UNITS FOR CREATING MULTIPLE TONER IMAGES IN REGISTRY

Hajime Yamamoto, Osaka; Hiroshi Terada, Ikoma, and Masahiko Nakamura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 285,741

Claims priority, application Japan, Sep. 7, 1993, 5-221791; Oct. 12, 1993, 5-254252; Dec. 20, 1993, 5-319504; Jan. 25, 1994, 6-006344

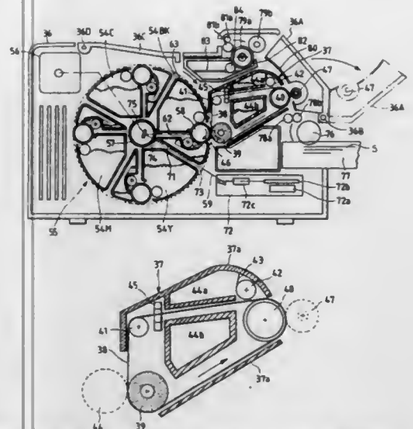
Int. Cl.[6] G03G *15/01:15/14*

U.S. Cl. 399—301 **15 Claims**

1. A multi-color electrophotographic apparatus comprising:

a casing;

a rotary image-forming assembly including a plurality of image-forming units each including a photoconductor and a developer having a toner of a single different color for forming a different color toner image disposed about a common axis, each photoconductor being rotatable about a given axis of rotation, said rotary image-forming assembly being movable between operative and inoperative positions, the operative position being such that each image-forming unit is displaced outward of a periphery of said image-forming assembly into engagement with a transfer belt at an image forming station to transfer the toner image formed thereon, in registration with one another, to said transfer belt for forming a multi-colored image, the inoperative position being such that each image-forming unit lies inside the periphery of said image-forming assembly out of engagement with said transfer belt;



driving means for rotating said image-forming assembly about said common axis to move said image-forming units, in sequence, to an image-forming station;

exposure means for providing a light-signal to said image-forming assembly;

optical orientation means, arranged at a central portion of said rotary image-forming assembly, for orienting the light-signal from said exposure means toward the photoconductor of each image-forming unit positioned at the image-forming station for forming a toner image of a different color thereon;

transfer means for transferring the multi-color toner image formed on said transfer belt to a recording sheet; and

a transfer belt unit having disposed therein said transfer belt and a cleaner for cleaning a surface of said transfer belt, said transfer belt unit being arranged in said casing detachably therefrom in a direction substantially perpendicular to the given axis of rotation of the photoconductor of each image-forming unit.

5,612,772

IMAGE FORMING APPARATUS

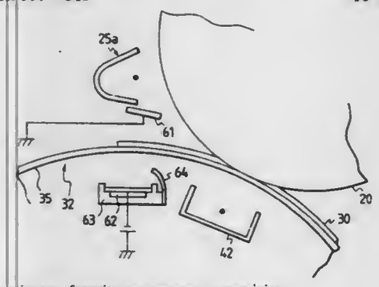
Yoshihiro Enomoto; Nobuo Hyakutake, and Tetsuya Fujita, all of Ebina, Japan, assignors to Fuji Xerox Co. Ltd., Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,547

Claims priority, application Japan, Dec. 15, 1994, 6-312138

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—315 **10 Claims**



1. An image forming apparatus, comprising:

an image carrier member on which a toner image is formed in accordance with image information;

a transfer-member supporting member, disposed adjacent to the image carrier member, being rotated in a state that the transfer-member supporting member attractively supports a recording sheet thereon by an electrostatic force;

a transfer charger for transferring the toner image from the image carrier member onto the recording sheet by applying charge of the polarity, which is opposite to that of the toner, to the rear side of the transfer-member supporting member;

pre-cleaning charge removal means for removing charge from the image carrier member after the toner image is transferred onto the recording sheet; and

charge restricting means for substantially preventing the charge of the same polarity as of the toner, generated by the pre-cleaning charge removal means, from attaching to the recording sheet laid on the transfer-member supporting member, said charge restricting means, said transfer charger and said pre-cleaning charge removal means being disposed in close proximity with each other so that the toner image, after being transferred onto the recording sheet, is prevented from being scattered.

5,612,773

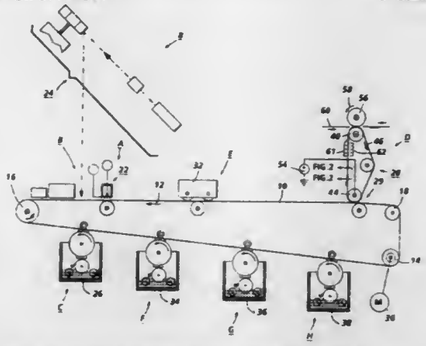
INTERMEDIATE TRANSFER MEMBER

John S. Berkes, Webster, and Rasin Moser, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 18, 1995, Ser. No. 516,843

Int. Cl.[6] G03G *15/16;15/20*

U.S. Cl. 399—307 **3 Claims**



1. An electrophotographic printing machine comprised of:

a photoreceptor having a photoconductive surface;

a charging station for charging said photoconductive surface to a predetermined potential;

an exposure station tier exposing the photoconductive surface to produce an electrostatic latent image on the photoconductive surface;

a developing station for depositing a toner layer on the photoconductive surface;

a biased transfusing member having a compression layer comprised of a highly conformable, low durometer material having a low surface tension, said transfusing member contacting said photoreceptor at a first nip which is characterized by a first transfer pressure such that the bias, the first transfer pressure, and the surface tension of the material comprising the transfusing member induces said toner layer to be transferred to said transfusing member; and

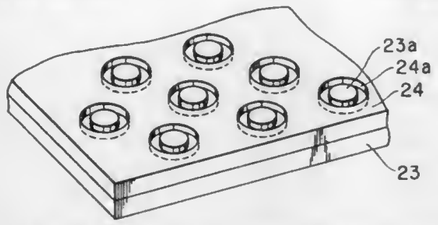
a backup roller contacting said transfusing member at a second nip which is characterized by a second transfer pressure which is of the same order of magnitude as said first transfer pressure, said backup roller for assisting in transfusing said toner layer on said transfusing member onto a substrate.

5,612,774

THERMAL FIXING DEVICE WITH HEAT ROLLER CAPABLE OF HEATING A NIP PORTION

Naohisa Kinoshita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 28, 1994, Ser. No. 330,662
Claims priority, application Japan, Oct. 29, 1993, 5-294129
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—331 13 Claims



1. A thermal fixing device for transporting an image recording medium provided with image developing material and for thermally fixing the image developing material onto the image recording medium, the device comprising:

a heat roller rotatable about a heat roller axis, the heat roller including:

a cylindrical first electrode layer provided substantially concentric with the heat roller axis, the first electrode layer having a plurality of electrode portions formed to and protruded from an outer peripheral surface thereof at predetermined positions on the outer peripheral surface;

a cylindrical resistor layer provided substantially concentric with the heat roller axis, with its inner peripheral surface being in confrontation with the outer peripheral surface of the first electrode layer; and

a cylindrical and resilient insulation layer provided interposed between the first electrode layer and the resistor layer, the insulation layer having a plurality of through holes formed therethrough, each through hole being formed at a position in the insulation layer that corresponds to one of the predetermined positions of the electrode surface so that an electrode portion is inserted in each through hole, a height of each of the plurality of electrode portions being shorter than a thickness of the resilient insulation layer so as to form a gap between a tip end of each of the plurality of electrode portions and the inner peripheral surface of the resistor layer;

a power source for supplying an electric power between the first electrode layer and the resistor layer of the heat roller;

a pressure roller rotatable about a pressure roller axis;

a driving unit for driving the heat roller and the pressure roller to rotate about the heat roller axis and the pressure roller axis, respectively; and

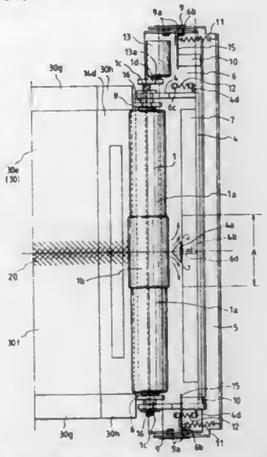
a pressing member for pressing the pressure roller axis toward the heat roller axis so as to form a nip portion between the pressure roller and the heat roller where the pressure roller abuts the heat roller, an image recording medium provided with image developing material being inserted into the nip portion between the heat roller and the pressure roller to be transported in accordance with the rotations of the heat roller and the pressure roller, the insulation layer of the heat roller being resiliently compressed at the nip portion so that the tip ends of the electrode portions formed on the first electrode layer at the nip portion are brought into electrical connection with the resistor layer at the nip portion, to thereby cause electric current to flow in the resistor layer at the nip portion and generate heat therein for thermally fixing the image developing material onto the image recording medium.

5,612,775

DISPLACE CLEANING APPARATUS WITH TONER SCATTERING FEATURE AND ELECTROPHTOGRAPHIC IMAGE FORMING APPARATUS USING SAME

Tomoo Nagaoka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,654
Claims priority, application Japan, Mar. 8, 1994, 6-036992; Mar. 2, 1995, 7-043004
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—345 22 Claims



1. A cleaning apparatus which can be applied to an electrophotographic image forming apparatus and is adapted to remove toner adhered to a member to be cleaned, comprising:

a cleaning means including a brush member which can be rotated along its longitudinal direction for removing the toner adhered to said member to be cleaned;

a displaceable support means for supporting said cleaning means, including a casing for containing said cleaning means therein, being shiftable between an operative position where said cleaning means contacts with said member to be cleaned and a retract position where said cleaning means is retracted from said operative position; and

an elastic means for elastically biasing said cleaning means supported by said support means toward said member to be cleaned.

5,612,776

RECORDING APPARATUS AND METHOD WITH SHEET FEED CONTROL THAT CONTROLS LOOP

Hitoshi Machino, Yokohama; Hiroshi Hashimoto; Soya Endo, both of Tokyo; Tomohiro Nakamori, Ichikawa; Masanori Ishizu, Tokyo, and Junichi Kimizuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 986,746, Dec. 8, 1992, abandoned.
This application Mar. 27, 1995, Ser. No. 412,213
Claims priority, application Japan, Dec. 10, 1991, 3-349886; Apr. 30, 1992, 4-135596
Int. Cl.[6] G03G *15/00;* B65H *5/22;3/44*
U.S. Cl. 399—43 44 Claims

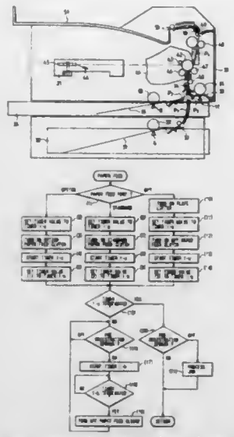
1. A sheet feeding apparatus comprising:

transport rollers for transporting a sheet;

means for driving said transport rollers;

registration rollers for registrating the sheet transported by the transport rollers;

detection means, provided between the transport rollers and the registration rollers, for detecting the sheet; and



control means for controlling the drive of said transport rollers in accordance with the detection of the sheet by the detecting means

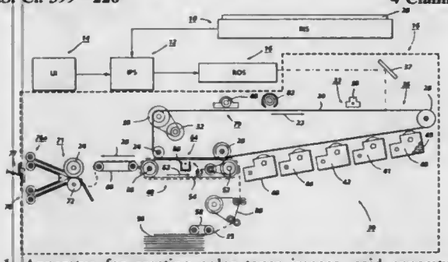
in a plurality of control modes, a flexure of the sheet between said transport rollers and said registration rollers being different in each of the control modes.

5,612,777

METHOD AND APPARATUS FOR APPLYING A CLEAR TONER RESIN CONTAINING LIGHTFASTNESS MATERIAL TO TONER IMAGES

Shadi L. Malhotra, Ontario, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 583,911
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—226 4 Claims



1. Apparatus for creating color toner images, said apparatus comprising:

means including a plurality of developer housings for forming color toner images on a charge retentive surface;

means including a developer housing for depositing a composition comprising a scratch resistant polymer material and a lightfastness inducing material on said charge retentive surface prior to the formation of said color toner images thereon, said lightfastness material comprising a UV absorber selected from the group consisting of 2-(4-benzoyl-3-hydroxyphenoxy) ethylacrylate; 1,2-hydroxy-4-(octyloxy) benzophenone; poly[2-(4-benzoyl-3-hydroxyphenoxy) ethylacrylate]; hexadecyl 3,5-di-tert-butyl-4-hydroxybenzoate; poly[N,N-bis(2,2,6,6-tetramethyl-4-piperidinyl)-1; 6-hexanediamine-co-2, 4-dichloro-6-morpholino-1,3,5-triazine); 2-dodecyl-N-(2,2,6,6-tetramethyl-4-piperidinyl) succinimide; 2-dodecyl-N-(1,2,2,6,6-pentamethyl-4-piperidinyl) succinimide; N-(1-acetyl-2,2,6,6-tetramethyl-4-piperidinyl)-2-dodecylsuccinimide; 1-[N-[poly(3-allyloxy-2-hydroxypropyl)-2-aminoethyl]-2-imidazolidinone; poly(2-ethyl-2-oxazoline) and an antioxidant; and

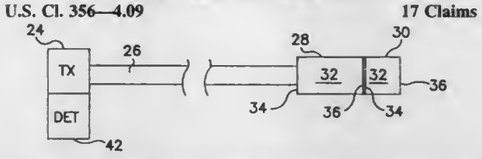
means for fusing said color toner images and said scratch resistant material to a substrate.

5,612,778

FIBER OPTIC SENSOR FOR MULTIPLE VARIABLES

Christopher J. Hall, Satellite Beach; Calvin L. Adkins, Palm Bay, both of Fla.; David Graves, Lawrenceville, Ga., and Ed Bryant, Fellsmere, Fla., assignors to Harris Corp., Melbourne, Fla.

Filed Oct. 18, 1995, Ser. No. 544,704
Int. Cl.[6] G01C *3/08;* G02B *27/00*
U.S. Cl. 356—4.09 17 Claims



1. An optical device for sensing plural ambient conditions comprising:

a transmitter for transmitting a continuous wave optical flux through a fiber optic cable to a section of said cable that is for placement where plural ambient conditions are to be sensed;

plural serially aligned sensors at said section of said cable for reflecting the optical flux back through said cable, each of said sensors having semi-reflective surfaces at ends thereof for partially reflecting the optical flux and a core between said two ends with a length that varies primarily as a function of a different one of the plural ambient conditions,

wherein the optical flux is partially transmitted and partially reflected at each of said ends of said sensors and the optical flux reflected back through said cable includes an interference pattern that is a function of the length of each said core; and

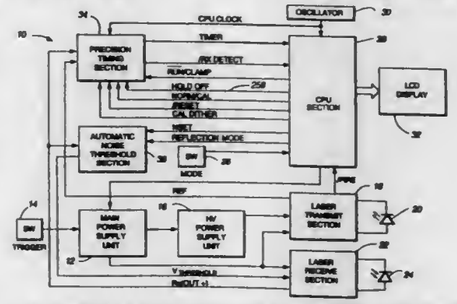
a detector for receiving the reflected optical flux and for evaluating the interference pattern to evaluate the ambient conditions sensed by said sensors.

5,612,779

AUTOMATIC NOISE THRESHOLD DETERMINING CIRCUIT AND METHOD FOR A LASER RANGE FINDER

Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.

Filed Jan. 19, 1995, Ser. No. 375,810
Int. Cl.[6] G01C *3/08;* G01S *13/08*
U.S. Cl. 356—5.01 40 Claims



1. An automatic noise threshold system for operative association with central processing and signal receiving sections of a signal pulse transmitting device for discriminating between an actual return signal pulse and noise that is associated with said actual return signal pulse, said system comprising:

determining means responsive to said central processing section for determining a desired signal-to-noise ratio for a series of said actual return signal pulses and said associated noise

received through said signal receiving section, each one of said return signal pulses and associated noise having a representative pulse value with respect to a signal pulse that was previously transmitted from said signal pulse transmitting device and that corresponds thereto; and

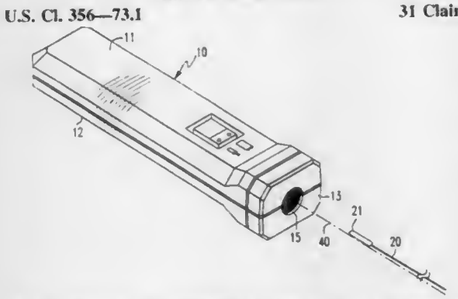
stack-placing means responsive to said central processing section for placing up to a preselected number of said representative pulse values in a stack until a predetermined number of said representative pulse values coincide within a specified precision, wherein said predetermined number of said representative pulse values that coincide within said specific precision are considered to be representative of said actual return signal pulse.

5,612,780

DEVICE FOR DETECTING LIGHT EMISSION FROM OPTICAL FIBER

Robert Rickenbach, Thousand Oaks, and Ronald G. Boyer, Camarillo, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 5, 1996, Ser. No. 660,679
Int. Cl.[6] G01N *21/84*
U.S. Cl. 356—73.1 **31 Claims**



28. A utility device comprising a housing having a chamber, and an aperture in a wall of said housing that is sized to accommodate the insertion of a medium therethrough into said chamber, and a brush-configured, light-blocking curtain disposed adjacent to said aperture having a plurality of bristles that are sized and arranged to allow said medium to be inserted through said aperture and to pass between said bristles, as said bristles of said brush-configured, light-blocking curtain effectively abut against said inserted medium and prevent the entry of ambient light into said chamber.

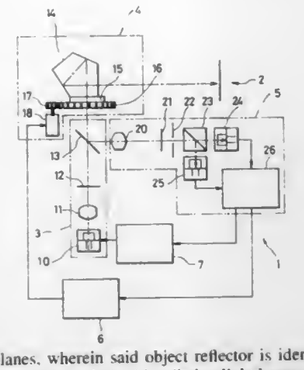
5,612,781

OBJECT REFLECTOR DETECTION SYSTEM

Fumio Ohtomo; Kunihiro Hayashi; Jun-ichi Kodaira; Hiroyuki Nishizawa; Ken-ichiro Yoshino; Satoshi Hirano, and Yohei Ogawa, all of Tokyo-to, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo-to, Japan

Filed Sep. 7, 1994, Ser. No. 302,051
Claims priority, application Japan, Sep. 9, 1993, 5-248765; Sep. 17, 1993, 5-231522; Jun. 24, 1994, 6-166105
Int. Cl.[6] G01B *11/26;* **G01C** *3/08*
U.S. Cl. 356—152.2 **18 Claims**

1. An object reflector detection system, comprising a laser emitter for emitting a polarized irradiation light beam, a rotating means for rotating said polarized irradiation light beam from said laser emitter, an object reflector having a first reflection plane for reflecting said polarized irradiation light beam and a second reflection plane for reflecting said polarized irradiation light beam while converting the direction of polarization thereof to a direction different from that of the polarized irradiation light beam reflected by said first reflection plane, and a reflection light beam detector for detecting polarized reflection light beams reflected from said



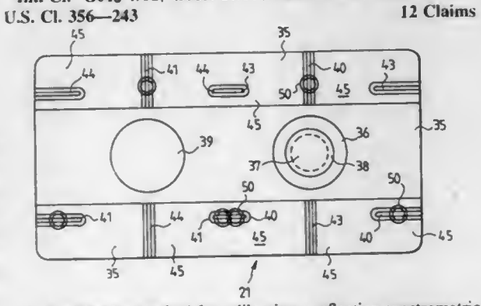
reflection planes, wherein said object reflector is identified based on comparison of the polarized irradiation light beams reflected by said reflection planes.

5,612,782

CALIBRATION METHOD AND CALIBRATION UNIT FOR CALIBRATING A SPECTROMETRIC DEVICE BASED UPON TWO CALIBRATION SAMPLES

Heimo Keränen, and Mika Christophliemk, both of Oulu, Finland, assignors to Spectra-Physics Visiontech Oy, Oulu, Finland

Filed Nov. 21, 1994, Ser. No. 345,427
Claims priority, application Finland, Nov. 22, 1993, 935180
Int. Cl.[6] G01J *1/02;* **G01N** *21/55;* **G01D** *18/00;* **G12B** *13/00*
U.S. Cl. 356—243 **12 Claims**



1. A calibration method for calibrating a reflection spectrometric gauge used for measuring a quantity of a substance forming a thin film-like layer on a surface, said reflection spectrometric gauge comprising a memory for storing gauge response parameters respectively corresponding to known substances and reflection data respectively corresponding to optical responses of known surfaces, and an optical detector, said calibration being conducted with a calibration unit comprising a first sample, and a second sample, said first and second samples having different absorption responses to light, said calibration method comprising the steps of:

irradiating light onto said first sample and said second sample;

detecting reflected light from said first sample and said second sample with said optical detector;

determining an optical response and reflection characteristic data of said first sample and said second sample from said reflected light;

determining gauge response values of said reflection spectrometric gauge based upon said optical response of said first sample and said second sample;

comparing a gauge response value for said first sample with a gauge response parameter, stored in said memory, which corresponds to said substance to be measured;

determining a calibration parameter from said comparison;

determining a surface roughness value of said second sample based upon said reflection characteristic data;

comparing said surface roughness value with reflection data, stored in said memory, of said surface on which said thin film-like layer is formed; and

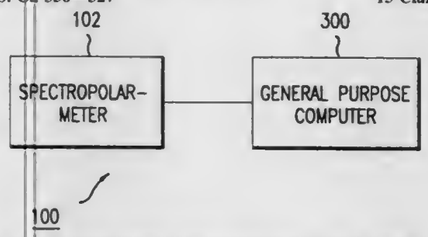
determining a roughness calibration parameter from said comparison.

5,612,783

MODIFIED INTRINSIC STATE SPECTRAL ANALYSIS APPARATUS AND METHOD

Allen G. Hirsh, Silver Spring, Md., assignor to Organ, Inc., Chicago, Ill.

Filed Mar. 23, 1995, Ser. No. 409,064
Int. Cl.[6] G01J *3/447*
U.S. Cl. 356—327 **15 Claims**



1. A method for determining a proportion of a plurality of intrinsic structures of an optically active substance within a sample of the optically active substance, the method comprising:

generating a plurality of intrinsic spectra, each intrinsic spectrum corresponding to one of the plurality of intrinsic structures of the optically active substance;

generating a plurality of estimated spectra, each estimated spectrum corresponding to a proportional combination of at least two perturbed intrinsic structures of the optically active substance;

generating a sample spectrum from the sample of the optically active substance;

selecting a best match estimated spectrum from the plurality of estimated spectra which most closely match the sample spectrum of the optically active substance; and

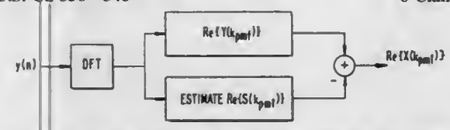
outputting the proportional combination of the best match estimated spectrum as the proportional combination of the plurality of perturbed intrinsic structures in the sample of the optically active substance.

5,612,784

DIGITAL SIGNAL PROCESSING TECHNIQUE FOR A FT-IR SPECTROMETER USING MULTIPLE MODULATIONS

Raul Curbelo, Lexington, Mass., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jan. 4, 1996, Ser. No. 584,217
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—346 **6 Claims**



1. In a Fourier transform spectrometer comprising an interferometer, a detector, and a digital signal processor, a method for processing the signal generated by said Fourier transform spectrometer comprising the steps of:

receiving, at said digital signal processor, a composite signal from said detector of said spectrometer, wherein said composite signal corresponds to a measurement from said interferometer and comprises a data signal and a transient signal;

calculating a transform representation of said composite signal;

estimating a transform representation of said transient signal, wherein said step of estimating includes;

identifying, from said transform representation of said composite signal, a first frequency band over which said data signal predominates;

identifying, from said transform representation of said composite signal, a second frequency band over which said transient signal predominates, said second frequency band being adjacent to and below said first frequency band;

identifying, from said transform representation of said composite signal, a third frequency band over which said transient signal predominates, said third frequency band being adjacent to and above said first frequency band;

deriving a first estimate of said transform representation of said transient signal in said second frequency band by averaging a plurality of first values of said transform representation of said composite signal in said second frequency band;

deriving a second estimate of said transform representation of said transient signal in said third frequency band by averaging a plurality of second values of said transform representation of said composite signal in said third frequency band;

deriving plurality of third values each corresponding to an estimate of said transform representation of said transient signal in said first frequency band by interpolating between said first estimate and said second estimate; and

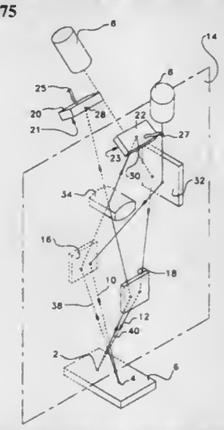
subtracting said transform representation of said transient signal from said transform representation of said composite signal to provide a modified measurement such that an effect of said transient signal on said measurement is reduced.

5,612,785

TWIN SENSOR LASER PROBE

Jean-Paul Boillot, Saint-Bruno de Montarville; Pierre Provencher, Montréal, and Denis Villemure, Longueuil, all of Canada, assignors to Servo Robot Inc., Québec, Canada

Filed Jan. 3, 1996, Ser. No. 582,500
Int. Cl.[6] G01B *11/14;11/24*
U.S. Cl. 356—375 **7 Claims**



1. A twin sensor laser probe for absolute depth measurement of two distinct points on an object surface, comprising:

a light source means for emitting two light beams directed toward the object surface at acute angles relative thereto, to illuminate two distinct points on the object surface having positions depending on depth thereof, the light beams extending on opposite sides of a plane separating the probe in two longitudinal portions and intersecting the object surface;

two optical sensors positioned above the object surface and extending on the opposite sides of the plane respectively, each of the sensors having a photo-sensitive surface aligned to

receive light derived from a corresponding one of the two illuminated points, and an output for producing a signal indicating where the light strikes on the sensitive surface;

lens means positioned between the two sensors and the object surface, for imaging the two illuminated points onto the sensitive surfaces of the sensors respectively, at positions in relation to the positions of the illuminated points on the object surface, the lens means having a focal length substantially coinciding with the object surface where the light beams are susceptible to strike thereon; and

two mirrors positioned between the lens means and the object surface, and extending on the opposite sides of the plane respectively, each of the mirrors being oriented to receive the light derived from the illuminated point on the opposite side of the plane and to reflect the light towards the sensitive surface of the sensor on the opposite side of the plane via the lens means;

whereby the signals produced by the sensors provide information for the absolute depth measurement of the two points.

5,612,786

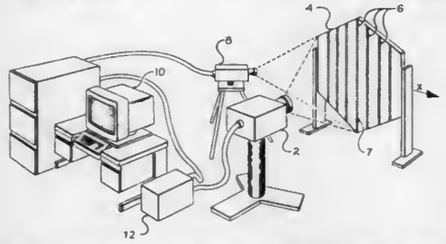
CONTOUR MEASUREMENT SYSTEM

Edward D. Huber, Sunnyvale; Rick A. Williams, Orinda; Dean M. Shough, Newark, all of Calif.; Osuk Y. Kwon, Seoul, Rep. of Korea, and Rebecca L. Welling, La Honda, Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 249,841, May 26, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,524

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **8 Claims**



1. A single-set-of-fringe-lines method for measuring in three-dimensional coordinates the surface shape contours of a three-dimensional object, said method comprising the steps of:

placing the object into the field of view of an optical system;

activating the optical system to project a single set of fringe lines onto the object and to obtain a raw phase map giving a phase at each of a plurality of pixels corresponding to the object;

unwrapping the phases; and

converting the set of unwrapped phases into a set of three-dimensional coordinates of said object for each of said pixels, utilizing a set of equations containing fixed calibration parameters whose values have been established during a previous calibration procedure;

wherein the optical system comprises:

a fringe line projector that illuminates the object with a single set of fringe lines of sinusoidally varying intensity; and

a camera having a field of view that includes at least a portion of said object illuminated by the fringe lines; wherein

the calibration procedure does not entail the use of a calibration object containing a set of fringe lines; and

the camera does not contain a set of fringe lines.

5,612,787

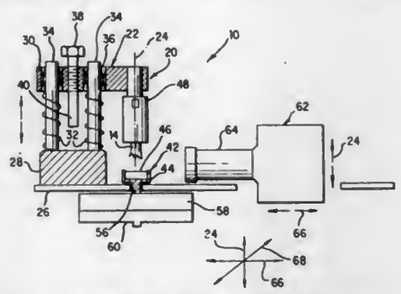
STRIATION MONITOR AND DISPLAY SYSTEM AND METHOD

William B. Harvey, Olney; Leonard S. Haynes, Rockville, both of Md.; Andrew J. Lavin, Washington, D.C., and Ramgopal Nair, Ellicott City, Md., assignors to Mnemonic Systems Incorporated, Washington, D.C.

Filed Jun. 5, 1995, Ser. No. 464,959

Int. Cl.[6] G06F *15/20*

U.S. Cl. 356—388 **32 Claims**



1. A striation monitor and display system comprising:

(a) means for releasably capturing a substantially cylindrically contoured object;

(b) means for positionally locating said object, said positionally locating means including a stationary table and an object placement fixture for positionally fixing and securing said object to said releasable capturing means, said object placement fixture including (a) means for releasably securing said object to said object placement fixture, and (b) means for vertically displacing said releasably secured object to said means for releasably capturing said object;

(c) means for rotating said object at a predetermined rotational speed about a vertically extending axis line of said object;

(d) means for photographing a plurality of images of said rotating object along a vertical direction at a predetermined image frame speed;

(e) means for synchronizing said predetermined object rotation with said image photographing means; and,

(f) means for displaying said photographed object.

5,612,788

VIDEO DATA COMPRESSION APPARATUS FOR RECORDING AND REPRODUCING COMPRESSED VIDEO DATA AT THEIR VARIOUS COMPRESSED DATA RATES

Jonathan J. Stone, Reading, United Kingdom, assignor to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed May 18, 1994, Ser. No. 245,563

Claims priority, application United Kingdom, Jul. 30, 1993, 9315857

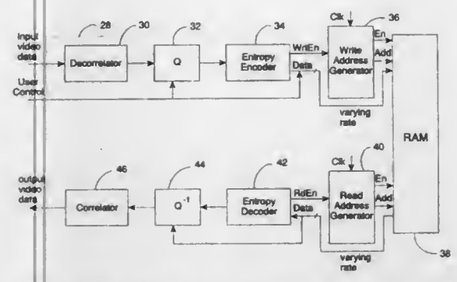
Int. Cl.[6] H04N *5/76;5/92;5/95*

U.S. Cl. 386—85 **16 Claims**

1. Apparatus for real time recording of uncompressed video data having a constant uncompressed data rate, said apparatus comprising:

compressing means for compressing said uncompressed video data and responsive to a compression control parameter for varying said constant uncompressed data rate to form compressed video data having unregulated varying compressed data rates, said compression control parameter being varied to maintain a constant level of picture quality during compression of said uncompressed video data;

adjusting means for adjusting said compression control parameter in response to a user input whereby the user may balance the picture quality against a recording capacity requirement of said uncompressed video data on a recording medium; and



storing means for storing said compressed video data on said recording medium at said varying compressed data rates.

5,612,789

VIDEO SIGNAL RECORDER AND VIDEO APPARATUS WITH INTERNAL CLOCK INDEX SIGNAL

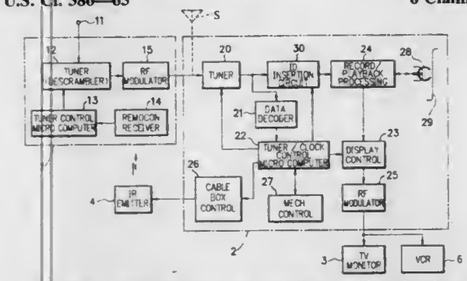
Kazuhiro Nagura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1994, Ser. No. 293,960

Claims priority, application Japan, Sep. 3, 1993, 5-219835; Sep. 14, 1993, 5-229001

Int. Cl.[6] H04N *5/91*

U.S. Cl. 386—65 **6 Claims**



1. A video signal recorder for recording a video signal on a record medium, comprising:

information detecting means for detecting, at the time of recording said video signal, information usable by the video signal recorder in its operations, said information being accurate during recording and becoming inaccurate at the time of a later playback of the recorded video signal; an internal clock operable to be set according to said information; and

index signal insertion means for inserting an index signal into said video signal which prevents said internal clock from being set in response to said information at the time of the later playback when said information detecting means detects said information in said video signal.

5,612,790

METHOD AND APPARATUS FOR MULTIPLEXED VIDEO DATA READING IN VIDEO LIBRARY SYSTEM

Hideki Sakamoto, Saitamaken; Kazutoshi Nishimura; Hideharu Suzuki, both of Tokyo; Tomoaki Kawaguchi, Saitamaken; Osamu Nakano, Kanagawaken, and Tatsuo Mori, Chibaken, all of Japan, assignors to Nippon Telegraph & Telephone Co., Tokyo, Japan

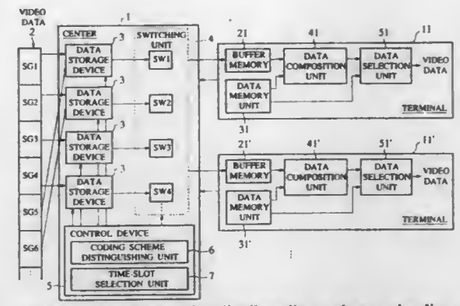
Filed Sep. 1, 1994, Ser. No. 299,749

Claims priority, application Japan, Sep. 2, 1993, 5-218411; May 30, 1994, 6-116111

Int. Cl.[6] H04N *5/76;7/10*

U.S. Cl. 386—69 **20 Claims**

1. An apparatus for multiplexed video data reading, comprising:



N data storage means for distributedly storing a plurality of video data divided into segments, where each segment is capable of being read out in one time-slot and N is an integer greater than one;

N switch means, provided in correspondence to said N data storage means, for selectively connecting each data storage means with one of a plurality of data transfer targets; and

a control device for generating N control time-slot sequences formed by periodic time-slots in correspondence to said N data storage means with mutually displaced phases in each period of said N control time-slot sequences, and controlling said N data storage means and said N switch means such that, in response to a request for reading one video data from one data transfer target, an earliest available idle time-slot is selected from said N control time-slot sequences, and the segments of said one video data are sequentially read out from said N data storage means at time-slots corresponding to said earliest idle time-slot in said N control time-slot sequences and transmitted to said one data transfer target as said N data storage means are sequentially switched to said one data transfer target by said N switch means.

5,612,791

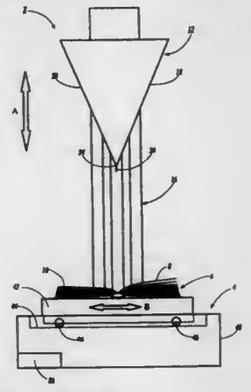
BOUND DOCUMENT IMAGER WITH AIR JET PAGE TURNING SYSTEM

William D. Turner, San Marino, and Robert A. Sprague, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1995, Ser. No. 570,791

Int. Cl.[6] H01L *27/14*

U.S. Cl. 358—497 **18 Claims**



1. A book imager, comprising:

a support upon which a book may be positioned in an open state so as to expose a pair of book pages;

an imaging device having a pair of imaging surfaces each being capable of capturing a two-dimensional digital representation of a page:

a drive assembly, positioned with respect to said support and said imaging device to impart relative movement therebetween so that said support and said imaging device are relatively movable from a first position to a second position, such that in the first position, said imaging device is located in close proximity to said support to enable imaging of at least one page of the book, and in the second position, said imaging device is located sufficiently remote from said support to enable a page of the book to be turned; and

an air jet page turning system for advancing one page at a time, said system including a fluffing jet for separating pages, a pick-off jet for separating the topmost page from said fluffed pages, a force applying jet for urging the topmost page into intimate contact with said imaging device and a page turning jet for driving the topmost page to the opposite side of the book.

5,612,792

IMAGE PROCESSING METHOD AND APPARATUS FOR OUTPUTTING A PATTERN IMAGE IN ACCORDANCE WITH THE COLOR AND DENSITY LEVEL OF EACH COLOR OF THE OUTPUT POLYCHROMATIC IMAGE

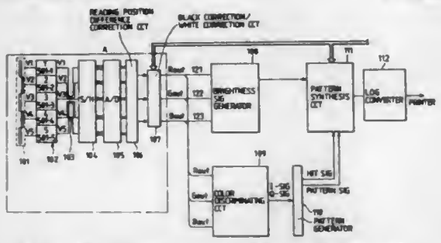
Hiroyuki Ichikawa, Kawasaki; Hiroshi Ohmura, Inagi; Shizuo Hasegawa, Tokyo; Keizo Isemura, Kokubunji, and Yoshinobu Aiba, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1991, Ser. No. 664,934

Claims priority, application Japan, Mar. 5, 1990, 2-51644; Jul. 30, 1990, 2-199182

Int. Cl.[6] H04N *1/56*

U.S. Cl. 358—500 **17 Claims**



1. An image processing method comprising the steps of:

discriminating a color an input color image from an input color image signal;

generating a pattern signal indicating a predetermined graphic pattern corresponding to the color in accordance with the color discrimination;

generating a density signal in accordance with a density level of the discriminated color; and

supplying an image forming signal based on the pattern signal and the density signal to an image forming unit so that the image forming unit may form a pattern image representing the color and density level of the input color image.

5,612,793

IMAGE PROCESSING APPARATUS AND METHOD WHICH PERFORMS PATTERNING OF COLOR DATA TO GENERATE A PATTERN IMAGE

Akio Ito, Machida; Hiroyuki Ichikawa, Kawasaki; Yoshinori Abe, Tama, and Shoji Miyake, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 25,754, Mar. 3, 1993, abandoned. This application Mar. 4, 1996, Ser. No. 609,864

Claims priority, application Japan, Mar. 5, 1992, 4-083495; Mar. 1, 1993, 5-064645

Int. Cl.[6] H04N *1/56;1/46*

U.S. Cl. 358—500 **29 Claims**

1. An image processing apparatus comprising:

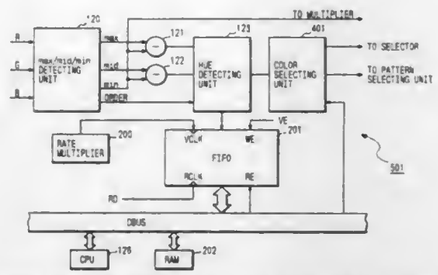


image processing means for processing input image data having a color value between first and second color values, said first and second color values defining a range of color;

count means for counting generation frequencies of the respective color values of the input image data; and

determining means for determining the first and second color values on the basis of a count result obtained by said count means.

10. An image processing apparatus comprising:

image processing means for processing input image data having a color value between first and second color values, said first and second color values defining a range of color;

statistics means for collecting statistics of generation frequencies of the respective color values of the input image data;

determining means for determining two valley values, located on both sides of a peak value of the statistics of the data collected by said statistics means, as the first and second color values; and

correcting means for, when a small peak value is present adjacent to a large peak value of the statistics of the data collected by said statistics means, performing a correction to set valley values, located on both sides of the large and small peak values, as the first and second color values.

12. An image processing apparatus comprising:

image converting means for converting an input image having a color value between first and second color values into a first image and converting an input image having a color value between third and fourth color values into a second image, said first, second, third and fourth color values defining a range of color; and

determining means for determining the first, second, third and fourth color value in accordance with the color value of the input image,

wherein said image converting means converts the input image between the first and second color values into a predetermined pattern image.

13. An image processing apparatus comprising:

image processing means for processing input image data having a color value between first and second color values, the first and second values defining a range of color;

statistics means for collecting statistics of generation frequencies of the respective color values of the input image data;

determining means for determining two valley values, located on both sides of a peak value of the statistics of the data collected by said statistics means, as the first and second color values when a number of peaks in the statistics is not greater than a predetermined number, and for determining two valley values located on both sides of the large and small peak values, as the first and second color values when the number of peaks in the statistics is greater than the predetermined number.

15. An image processing apparatus comprising:

image converting means for converting an input image having a color value between first and second color values into a first image and converting an input image having a color value between third and fourth color values into a second image, said first, second, third and fourth color values defining a range of color;

count means for counting generation frequencies of the respective color values of the input image; and

determining means for determining the first, second, third and fourth color values on the basis of a count result obtained by said count means,

wherein said determining means determines two color values of low generation frequencies, which are located on both sides of a color value of a high generation frequency, as the first and second color values.

5,612,794

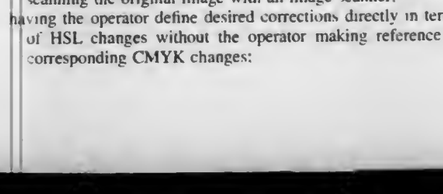
LIGHT SOURCE FOR AN IMAGE READING DEVICE

Marco Brandestini, Kirkland, and Richard F. Ferraro, Seattle, both of Wash., assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 320,113, Oct. 7, 1994, which is a continuation of Ser. No. 973,819, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 619,663, Nov. 28, 1990, Pat. No. 5,191,406, which is a continuation-in-part of Ser. No. 511,649, Apr. 20, 1990, abandoned. This application May 10, 1995, Ser. No. 438,498

Int. Cl.[6] H04N *1/04;1/46*

U.S. Cl. 358—505 **4 Claims**



1. A light source device for a scanner, comprising:

a first light emitting body for emitting a first wavelength light;

a second light emitting body for emitting a second wavelength light;

a first optical member for reflecting said first wavelength light and passing said second wavelength light; and

a second optical member for reflecting said second wavelength light;

said first and second optical members being arranged so that the first wavelength light reflected by the first optical member and the second wavelength light reflected by the second optical member travel along a common optical path.

5,612,795

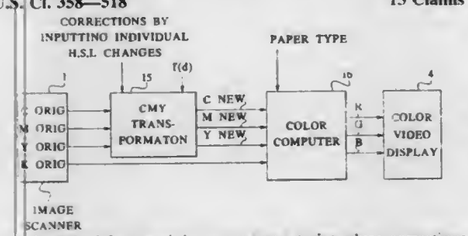
HSL CORRECTIONS IN CMY COLOR SPACE

Wilhelm Dichter, Tewksbury, Mass., assignor to Linotype-Hell AG, Eschborn, Germany

Continuation of Ser. No. 974,529, Nov. 12, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 302,247

Int. Cl.[6] H04N *1/60*

U.S. Cl. 358—518 **13 Claims**



1. A method for permitting an operator to introduce corrections in an original image represented by original CMYK printing colors, comprising the steps of:

providing original CMYK printing colors to be corrected by scanning the original image with an image scanner;

having the operator define desired corrections directly in terms of HSL changes without the operator making reference to corresponding CMYK changes;

transforming the original CMY printing colors to new CMY printing colors by use of said HSL changes without a color space translation of said original CMY printing colors to a new color space;

with a color computer, converting the new CMY printing colors to RGB colors; and

displaying said original image modified by said corrections with a color video display which receives said RGB printing colors from said color computer.

5,612,796

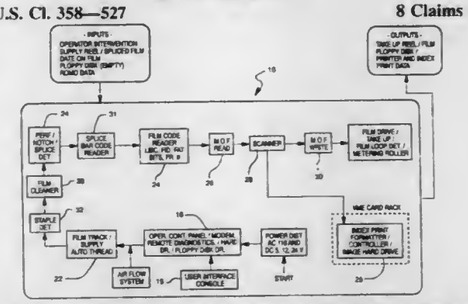
PHOTOGRAPHIC FILM PREPARATION WORKSTATION

Bradley C. DeCook, Rochester, and Thomas J. Murray, LeRoy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 394,533

Int. Cl.[6] H04N *1/27*

U.S. Cl. 358—527 **8 Claims**



1. A photographic film preparation workstation for supplying a high speed photographic printer and an index printer with film image computational data and film encoded data, said workstation being an integrated unit including:

a film motion controller subsystem for controlling film movement;

a film code reader subsystem for reading optically encoded film data;

a magnetics reader subsystem for reading magnetically encoded film data;

a film scanner subsystem for scanning film image data and generating a scanned image signal including digitized image data needed for generating index prints; and

a workstation controller in communication with said workstation subsystems for organizing, storing and distributing subsystem signals.

5,612,797

LIQUID CRYSTAL PROJECTION DISPLAY SYSTEMS

John A. Clarke, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1995, Ser. No. 439,318

Claims priority, application United Kingdom, May 14, 1994, 9409707

Int. Cl.[6] G02F *1/1335*

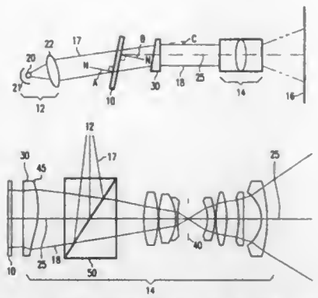
U.S. Cl. 349—5 **8 Claims**

1. A projection display system comprising:

a liquid crystal display panel for modulating light to produce a display output,

means for directing an illuminating beam of light onto said panel substantially at a predetermined small angle A with respect to a normal to the plane of said panel for enhancing a contrast of the display output; and

a projection lens for collecting a display output beam from said panel and projecting the beam onto a display screen, wherein the normal to the plane of said liquid crystal display panel is tilted at an angle B to a projection lens axis which is less than



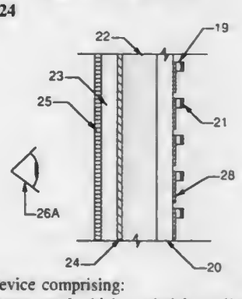
the angle A, and wherein a first optical deflector element is disposed between said panel and said projection lens for deflecting the display output beam such that it travels in a direction substantially parallel to the projection lens axis.

5,612,798

OPTICALLY ADDRESSED LIQUID CRYSTAL DISPLAY DEVICE HAVING A MATRIX ARRAY OF PHOTOCELLS

Raja S. Tuli, 55 City Centre Dr, Suite 500, Mississauga, Ontario, Canada

Filed May 31, 1994, Ser. No. 251,102
Int. Cl.[6] G02F *1/135*
U.S. Cl. 349—24 **6 Claims**



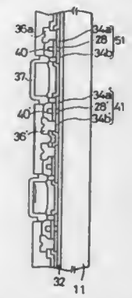
3. A visual device comprising:
a first transparent panel which sandwiches a liquid crystal material between itself and a second transparent panel;
a back side to the display which is towards the first transparent panel and a front side of the display which is towards the second transparent panel;
the said second transparent panel coated with a transparent conductive layer which is held at specific voltage;
a two dimensional array of photocells which are attached to the first transparent panel;
a filter layer behind each photocell which filters out all electromagnetic radiation other than a first small band of wavelengths;
a scanning laser which emits electromagnetic radiation within the said first band of wavelengths and scans the said two dimensional array of photocells and illuminates to different degrees specific said photocells;
selected photocells which then translate the illumination energy from the said scanning laser into an electrical charge which accumulates at the photocell site;
the charge accumulated at the photocell site which causes an electric field to occur between itself and the said coating on the second transparent panel;
the electric field which then causes the liquid crystals to polarize light passing through it;
a polarizing filter in front of the second transparent panel polarizes light in a different direction than that done by the liquid crystal under the influence of the electric charge and therefore enables a dark spot to be seen in front of this panel at a location where the electric field is influencing the liquid crystal;
a light source which is situated at the back side of the display having properties such that is emits light at all wavelengths accept for the said first band of wavelengths;
the said light emitted by the light source which travels through the first transparent panel, the liquid crystal material, the second transparent panel, and the polarizing filter before it can be seen by a person viewing the visual device.

5,612,799

ACTIVE MATRIX TYPE ELECTRO-OPTICAL DEVICE

Shunpei Yamazaki, Tokyo; Akira Mase, Atsugi, and Masaaki Hiroki, Isehara, all of Japan, assignors to Semiconductor Energy Laboratory Co., Inc., Kanagawa-ken, Japan

Division of Ser. No. 224,992, Apr. 8, 1994, Pat. No. 5,495,353, which is a division of Ser. No. 673,458, Mar. 22, 1991, abandoned. This application Oct. 13, 1995, Ser. No. 542,821
Claims priority, application Japan, Nov. 26, 1990, 2-323695; Dec. 10, 1990, 2-415721
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—42 **24 Claims**



1. An electro-optical device comprising:
a substrate having an insulating surface;
at least one thin film transistor formed on said insulating surface, said thin film transistor comprising source, drain and channel regions; a gate insulating layer adjacent to said channel region; and a gate electrode adjacent to said channel region;
an interlayer insulating film comprising an inorganic material formed on said thin film transistor;
a conductive film formed on said interlayer insulating film and electrically connected to said thin film transistor through a contact hole formed in said interlayer insulating film;
an organic resin film provided over said thin film transistor, said interlayer insulating film and said conductive film for providing a planarized surface thereon; and
a pixel electrode formed over said organic resin film and connected to said thin film transistor through an opening provided in said organic resin film,
wherein said interlayer insulating film is interposed between said organic resin film and said thin film transistor to prevent a direct contact therebetween.

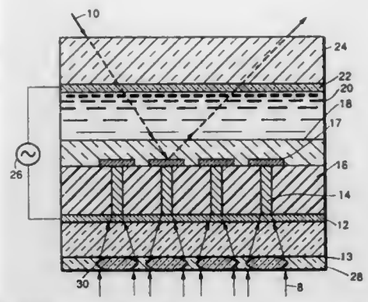
5,612,800

LCLV HAVING PHOTOCONDUCTIVE PEDESTALS EACH HAVING A CROSS-SECTIONAL AREA NO GREATER THAN 5 PERCENT OF THE AREA OF ITS RESPECTIVE REFLECTIVE PAD

Paul O. Braatz, Calabasas, and Chiung-Sheng Wu, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 2, 1994, Ser. No. 333,533
Int. Cl.[6] G02F *1/135;1/1335*
U.S. Cl. 349—27 **10 Claims**

1. A liquid crystal light valve (LCLV) having an input side for receiving an input light beam and a readout side for receiving a readout light beam, comprising:



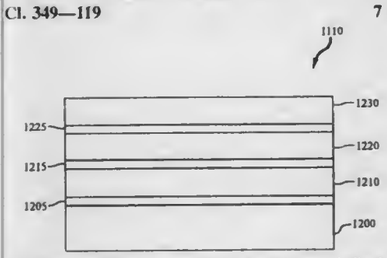
a transparent input electrode,
a low dielectric constant photosubstrate on the readout side of said input electrode, said photosubstrate comprising a layer of dielectric material on the readout side of said input electrode and a plurality of photoconductive pedestals extending through said dielectric material, said dielectric material having a dielectric constant lower than the dielectric constant of said photoconductive pedestals, thereby lowering the effective dielectric constant of said photosubstrate,
a liquid crystal (LC) layer on the readout side of said dielectric material, said photosubstrate having a thickness sufficient to impedance match it to said LC layer, with said dielectric material reducing the photosubstrate thickness required to impedance match it to said LC layer
respective electrically conductive and optically reflective pads extending over said pedestals between said dielectric material and said LC layer, said pads forming an array of pixels for reflecting said readout beam from the underlying photoconductive pedestals, and
a transparent counter-electrode on the readout side of said LC layer, said input and counter-electrodes being adapted to receive and to apply an electrical potential across said LC layer and said photoconductive pedestals,
each of said photoconductive pedestals having a cross-sectional area no greater than approximately 5 percent of the cross-sectional area of its respective pad, and responding to said input light beam to spatially modulate the potential across said LC layer in accordance with the spatial characteristics of said input beam, said dielectric material surrounding said pedestals to form potential barriers to the migration of charge between said pedestals.

5,612,801

MONOLITHIC OPTICAL COMPENSATION DEVICE FOR IMPROVED VIEWING ANGLE IN LIQUID CRYSTAL DISPLAYS

Bruce K. Winker, Moorpark, Calif., assignor to Rockwell Science Center, Inc., Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 223,251, Apr. 4, 1994, Pat. No. 5,504,603. This application Sep. 30, 1994, Ser. No. 313,532
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—119 **7 Claims**



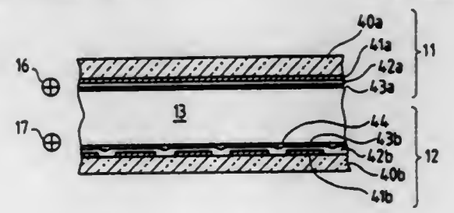
1. A monolithic compensator for a liquid crystal display comprising:
(a) a first deposited thin-film compensator layer having a first surface;
(b) a second thin-film compensator layer deposited onto said first surface of said first compensator layer, wherein each of said first and said second deposited thin-film compensator layers are selected from the group consisting of (i) a positively birefringent O-plate compensator layer, (ii) a positively birefringent A-plate compensator layer, (iii) a negatively birefringent A-plate compensator layer, and (iv) a negatively birefringent C-plate compensator layer.

5,612,802

CHIRAL SMECTIC LIQUID CRYSTAL DEVICE HAVING ALIGNMENT FILM OVER ELECTRODES BEING DIFFERENT AND HAVING DIFFERENT PRETILT FROM ALIGNMENT FILM BETWEEN ELECTRODES

Shinjiro Okada, Isehara; Osamu Taniguchi, Chigasaki; Hironobu Mizuno, Hiratsuka, and Yutaka Inaba, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 212,913, Mar. 15, 1994, abandoned, which is a division of Ser. No. 32,017, Mar. 16, 1993, Pat. No. 5,321,537, which is a division of Ser. No. 834,391, Feb. 12, 1992, Pat. No. 5,223,963. This application Jan. 17, 1995, Ser. No. 373,537
Claims priority, application Japan, Feb. 13, 1991, 3-40608
Int. Cl.[6] G02F *1/13*
U.S. Cl. 349—129 **4 Claims**



1. A chiral smectic liquid crystal display device, comprising a first substrate provided with a first plurality of electrodes;
a second substrate provided with a second plurality of electrodes facing and intersecting said first plurality of electrodes to define a matrix arrangement of pixels;
a chiral smectic liquid crystal interposed between said first and second substrates; and
first and second orientation films formed on at least one of said first and second substrates: said first orientation film formed corresponding to and on said plurality of electrodes on said substrate, said second orientation film formed corresponding to and between said electrodes to fill step configuration between said electrodes,
wherein said first orientation film provides a pre-tilt angle of said liquid crystal which is different from a pre-tilt angle provided by said second orientation film, and a pre-tilt angle of said liquid crystal disposed at a region where said first electrodes and said second electrodes are opposed to each other is different from a pre-tilt angle of said liquid crystal at a region where said first and second electrodes are not opposed to each other.

5,612,803

LIQUID CRYSTAL DISPLAY DEVICE WITH POLYMERIC WALLS AND A PRODUCTION METHOD FOR THE SAME

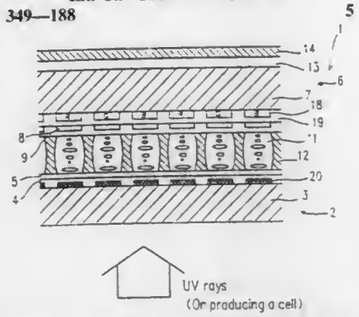
Nobuaki Yamada, Higashiosaka; Masahiko Kondo, Nara-ken; Masayuki Okamoto, Tenri, and Shuichi Kozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 324,976, Oct. 18, 1994, and a continuation-in-part of Ser. No. 54,454, Apr. 27, 1993, Pat. No. 5,473,450. This application May 25, 1995, Ser. No. 450,377

Claims priority, application Japan, Oct. 19, 1993, 5-261356; Oct. 27, 1993, 5-268612; Jul. 25, 1994, 6-172740

Int. Cl.[6] G02F *1/1339;1/1341*

U.S. Cl. 349—188 5 Claims



1. A method of producing a liquid crystal display device including a pair of electrode substrates, at least one of which is transparent, and a display medium including a polymeric wall and liquid crystal regions at least partly surrounded by the polymeric wall and sandwiched between the electrode substrates, the method comprising the steps of:

injecting, between said electrode substrates, a mixture including liquid crystal and a photopolymerizable material, when a phase state of said liquid crystal is one of an isotropic phase and a nematic phase;

beating said substrates and injected mixture until said liquid crystal is in the isotropic phase;

cooling said substrates and injected mixture until said liquid crystal is in the nematic phase; and

irradiating the mixture with light having a light intensity distribution so as to cause phase-separation between the liquid crystal and the photopolymerizable material, thereby forming the liquid crystal regions in weakly irradiated areas.

5,612,804

LIQUID CRYSTAL DISPLAY WITH AN ELECTRODE CONNECTOR

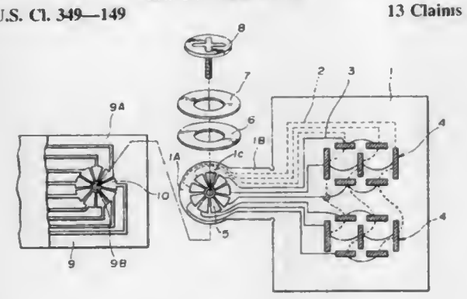
Minoru Hara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 125,678

Claims priority, application Japan, Nov. 2, 1992, 4-294493

Int. Cl.[6] G02F *1/1345*

U.S. Cl. 349—149 13 Claims



1. A liquid crystal display in which transparent electrodes are formed on a pair of flexible transparent bases facing each other, and in which a liquid crystal is enclosed inside the bases, said liquid crystal display comprising:

an extended portion formed by extending an end portion of one of the pair of transparent bases together with the transparent electrodes;

connection terminal means formed on an end of said extended portion and connected to connected terminal means for applying operating voltages to the transparent electrodes; and

said connection terminal means being formed to provide an electrode arrangement corresponding to an electrode arrangement of the connected terminal means, electrodes of said electrode being formed in a many-petaled corolla-like configuration of sectors divided from a circle at equal angles.

5,612,805

ADD-DROP OPTICAL SPECTRUM-DIVISION MULTIPLEXER

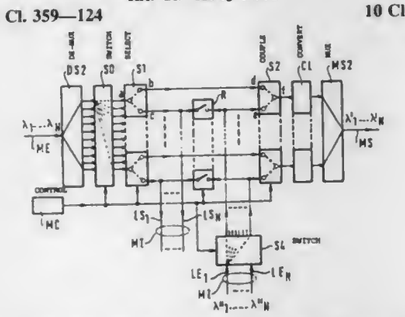
Hervé Fevrier, Verrieres le Buisson; Philippe Perrier, Velizy-Villacoublay, and Luc Berthelon, Palaiseau, all of France, assignors to Alcatel Cit, Paris, France

Filed Jun. 2, 1995, Ser. No. 460,562

Claims priority, application France, Jun. 7, 1994, 94 06984

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—124 10 Claims



1. An add-drop optical spectrum-division multiplexer for dropping a drop multiplex from an incoming multiplex, and for adding an add multiplex to an outgoing multiplex, the multiplexer comprising:

spectrum-division demultiplexing means for separating N number of carriers from the incoming multiplex, said incoming multiplex having no more than N number of carriers;

spectrum-division multiplexing means for multiplexing N number of carriers, thereby constituting an outgoing multiplex; and

coupling means for coupling the demultiplexing means to the multiplexing means;

the spectrum-division demultiplexing means and the coupling means comprise:

an optical broadcaster for receiving the incoming multiplex and reproducing said incoming multiplex on at least N number of outlets;

at least N number of tunable filters coupled respectively to the N number of outlets of the broadcaster to select T number of through carriers from the incoming multiplex, where the number T is variable and not greater than N;

selection means for selecting, amongst no more than N number of demultiplexed carriers, E number of carriers and constituting the drop multiplex, the number E being variable and not greater than N;

selection means for selecting, from amongst the carriers constituting the add multiplex, I number of add carriers, the number I being variable and not greater than N;

means for supplying the multiplexing means with T number of new carriers having T number of respective different wavelengths selectable from N number of fixed wavelengths, and being respectively modulated by the signals modulating the T number of through carriers; and

means for supplying the multiplexing means with I number of new optical carriers having I number of respective different wavelengths selectable from the N number of fixed wavelengths and different from the T number of wavelengths selected for the signals modulating the T number of through carriers, said I number of new wavelengths being modulated by the signals modulating the I number of add carriers.

5,612,806

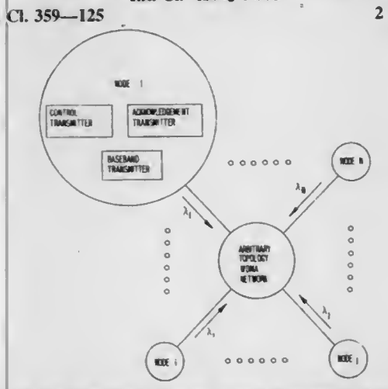
ACKNOWLEDGEMENT USING SUBCARRIER MULTIPLEXED TONES

Shing-Fong Su, Southboro, and Robert Olshansky, Wayland, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 100,513, Jul. 30, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,148

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 2 Claims



1. An opto-electronic system, having a plurality of nodes N_i where i=1, . . . ,n, for sending message from one node N_i to another node N_j where j=1, . . . ,n j not equal to i comprising:

a transmitter means residing in said node N_i for transmitting a control channel signal to node N_j which is centered at frequency f_j;

a baseband transmitter means for transmitting a message from node N_i to node N_j using an optical signal at wavelength λ_i;

an acknowledgement means residing at node N_j for notifying node N_i that said message is received;

whereby said acknowledgement means is a subcarrier multiplexed tone unique to node N_i.

5,612,807

OPTICAL DISPERSION COMPENSATION METHOD FOR SHIFTING A ZERO DISPERSION WAVELENGTH OF AN OPTICAL FIBER TO COMPENSATE FOR DISPERSION IN AN OPTICAL SYSTEM

George Ishikawa; Hideyuki Miyata; Hiroshi Onaka; Motoyoshi Sekiya, and Kazue Otsuka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

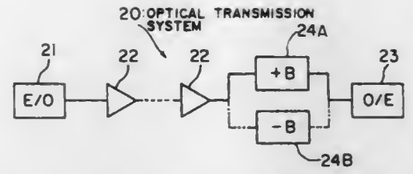
Division of Ser. No. 233,830, Apr. 26, 1994. This application Apr. 20, 1995, Ser. No. 425,613

Claims priority, application Japan, Aug. 10, 1993, 5-198674; Sep. 29, 1993, 5-242564

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—161 19 Claims

1. An optical dispersion compensation method for compensating for a dispersion amount of an optical transmission system which includes a transmitter, a repeater and a receiver and transmits, from said transmitter to said receiver by way of said repeater using an optical fiber, signal light which is arranged, taking a zero-dispersion wavelength λ_0 of said optical fiber and a zero-dispersion wavelength deviation range $\pm \Delta\lambda_0$ of said optical fiber in its longitudinal direction into consideration, within a transmissible band which is defined by an allowable dispersion value determined from a synergetic effect of self phase modulation and group velocity dispersion in said optical fiber and is set on a shorter wavelength side than a shorter wavelength end $\lambda_0-\Delta\lambda_0$ or on a longer wavelength side than a longer wavelength end $\lambda_0+\Delta\lambda_0$ of the zero-dispersion wavelength deviation range of said optical fiber, comprising the steps of:



preparing in advance two kinds of optical dispersion compensator units having dispersion amounts having different positive and negative signs;

measuring a dispersion amount of said optical transmission system; and

selecting one of the two kinds of optical dispersion compensator units which has a dispersion amount whose sign is opposite to that of a measured dispersion amount and incorporating the selected optical dispersion compensator unit into said optical transmission system;

wherein the zero dispersion wavelength λ_0 of said optical fiber is shifted to apparently arrange the signal light into the transmissible band to compensate for the dispersion amount of said optical transmission system.

5,612,808

SYSTEM AND A METHOD FOR PERFORMING SOLITON TRANSMISSION

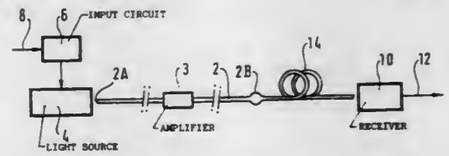
Olivier Audouin, Savigny sur Orge, and Jean-Pierre Hamaide, Saint Germain les Arpajon, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 186,141, Jan. 25, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,554

Claims priority, application France, Jan. 28, 1993, 93 00856

Int. Cl.[6] H04B *10/00;10/16*

U.S. Cl. 359—161 6 Claims



1. A soliton optical transmission system including:

a line fiber constituted by a very long optical fiber having an input and an output and presenting firstly a dispersive effect associated with positive chromatic dispersion per unit length, and secondly a Kerr effect, such that the dispersive effect and the Kerr effect compensate each other to retain the shape of a light pulse guided by the fiber when the pulse has intensity, duration, variation in shape, and spectrum width that are characteristic of a soliton of said fiber. the fiber applying gradual natural attenuation to the light pulses guided thereby, and being equipped with amplifier means, along the length of the fiber, for applying amplification to the pulses so as to

compensate, at least in part, the natural attenuation noise from the amplifier means simultaneously applying interfering random spectral displacement to the pulses, which displacement in association with said dispersive effect of the line, causes a random time displacement constituting pulse time jitter;

a light source for supplying transmission pulses constituting said solitons of said fiber to said input of the line fiber on command;

a system input circuit receiving data to be transmitted and controlling said light source to make said light source supply a succession of said transmission pulses, in which succession the time intervals between the pulses are representative of said data to be transmitted;

compensation means for compensating said time jitter; and

a receiver receiving said transmission pulses from said output of the line fiber, the receiver processing the time intervals between the pulses to restore said data to be transmitted;

wherein said compensation means include a compensation member transmitting said transmission pulses between said output of the line fiber and said receiver and presenting negative overall chromatic dispersion that corrects said time jitter in part, said compensation member spreading the shape of said transmission pulses so as to cause said transmission pulses not to have a soliton shape.

5,612,809

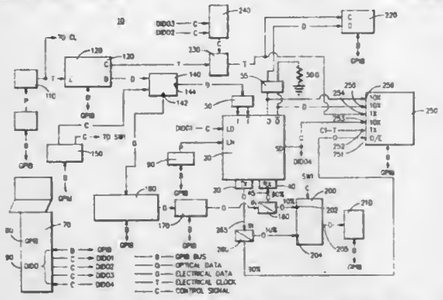
AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING TRANSMITTER RISE AND FALL TIMES OF ELECTRO-OPTIC MODULES

Nancy R. Aulet, Austin, Tex.; Muhammed I. Hussain, Hopewell Junction, N.Y.; George W. Hutt, Hyde Park, N.Y.; David C. Bogdan, Vestal, N.Y.; Donald L. Pearl, Endwell, N.Y., and David T. Pribula, Port Crane, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325. This application May 23, 1995, Ser. No. 448,074

Int. Cl.[6] H04B *10/04;* **G01R** *29/02*

U.S. Cl. 359—180 **4 Claims**



1. A method for testing an electro-optic module having an electro-optic transmitter, comprising the steps of:

providing an automated test system that receives an electro-optic module having an electro-optic transmitter for test;

initiating a test sequence of the automated test system that automatically performs the steps of

providing uniform, evenly spaced square wave electrical pulses at a transmission speed of interest to the electro-optic transmitter of the electro-optic module, such that the electro-optic transmitter produces a digital optical signal having square wave pulses,

displaying the square wave pulses of the digital optical signal of the electro-optic module on an oscilloscope display and automatically selecting a channel range and offset of the oscilloscope display,

measuring transmitter rise and fall time, wherein the transmitter rise time is defined to be the amount of time required for the upwardly inclined portion of a transmitter optical pulse to rise from 20% of the pulse topline to 80% of the pulse topline, relative to the pulse baseline, and transmitter fall time is defined to be the amount of time required for the downwardly inclined portion of a transmitter optical pulse to fall from 80% to 20% of the pulse topline, relative to the pulse baseline, and

providing a "passed" indication if the measured transmitter rise and fall times of the electro-optic module were within a predetermined range of acceptable times.

5,612,810

OPTICAL RECEIVING APPARATUS

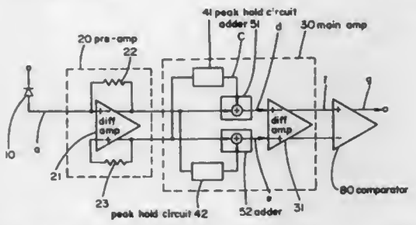
Daijiro Inami, Tokyo, and Yuichi Sato, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,036

Claims priority, application Japan, Sep. 12, 1994, 6-217404

Int. Cl.[6] H04B *10/06*

U.S. Cl. 359—189 **9 Claims**



2. An optical receiving apparatus comprising:

signal sending means for sending a non-inverting phase signal and a inverting phase signal of an input signal;

first peak value holding means for holding a peak value of the non-inverting phase signal and outputting a non-inverting phase peak value signal;

second peak value holding means for holding a peak value of the inverting phase signal and outputting a non-inverting phase peak value signal;

first adder means for adding the inverting phase signal to the non-inverting phase peak value signal and outputting a non-inverting phase sum signal;

second adder means for adding the non-inverting phase signal to the inverting phase peak value signal and outputting a inverting phase sum signal;

differential amplifier means for differentially amplifying the non-inverting phase sum signal and the inverting phase sum signal and sending a differentially amplified signal; and

duty detection means for detecting a duty of the differentially amplified signal.

5,612,811

SCANNING DEVICE

Toshiya Aikawa; Masashi Tazawa, both of Kawasaki, and Nobuhiro Fujinawa, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

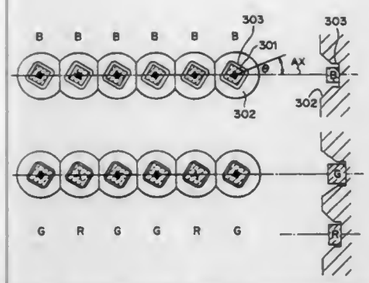
Division of Ser. No. 339,217, Nov. 10, 1994, abandoned, which is a division of Ser. No. 70,801, Jun. 3, 1993, Pat. No. 5,420,712. This application Mar. 27, 1995, Ser. No. 411,221

Claims priority, application Japan, Jun. 10, 1992, 4-150651

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—204 **3 Claims**

1. A light source device for a scanner which illuminates an



original to read an image of the original, comprising a plurality of LEDs each having a light emitting portion of a generally square-shape, and wherein said LEDs are arranged in line with one side of each generally square shaped light emitting portion being inclined with respect to a direction of said line by a predetermined angle.

5,612,812

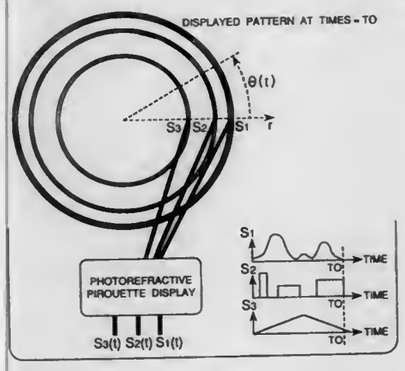
METHOD AND APPARATUS FOR PHOTOREFRACTIVE PIROUETTE DISPLAY AND PROCESSING OF ANALOG SIGNALS

Gan Zhou, Pasadena, Calif., and Dana Z. Anderson, Boulder, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 31, 1995, Ser. No. 521,680

Int. Cl.[6] G02F *1/03;* **G03H** *1/10*

U.S. Cl. 359—244 **27 Claims**

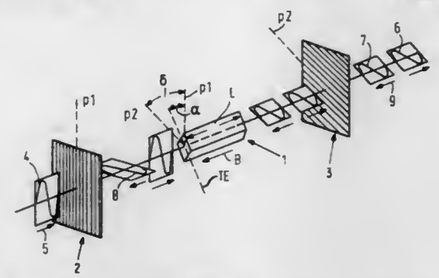


1. A photorefractive pirouette display system comprising:

a means for generating a signal beam;

a means for producing a pump beam; and

a means for photorefracting said signal beam and said pump beam into an annular pirouette display containing a time-delay representation of said signal beam.



5. An optical device, comprising:

a Faraday rotator arranged along an optical axis of propagation and having an identifiable TE plane, a propagation constant β_{TE} in the TE plane and a propagation constant β_{TM} in a TM plane wherein β_{TE} and β_{TM} are unequal;

a preceding polarization filter located along the optical axis on one size of the Faraday rotator and having a first plane of polarization; and

a succeeding polarization filter located along the optical axis on another side of the Faraday rotator and having a second plane of polarization and forming an angle δ with the first plane of polarization,

wherein the TE plane of the Faraday rotator is oriented at an angle α with the first plane of polarizatioo and $0<\alpha<\delta$, wherein the angle α between the plane of polarization of the polarization filter preceding the Faraday rotator in the direction in which light is blocked and the TE plane of the Faraday rotator is determined substantially according to the following equation:

$$tg2\alpha = \frac{K}{\sqrt{K^2+\left(\frac{\Delta\beta}{2}\right)^2}} \cdot tg\left(L\sqrt{K^2+\left(\frac{\Delta\beta}{2}\right)^2}\right)$$

with

K=coupling constant in degrees·cm^{-1}

$\Delta\beta=\beta_{TM}-\beta_{TE}$ in degrees·cm^{-1}

L=magneto-optically effective length of the Faraday rotator in cm,

and that the angle between the planes of polarization of the polarization filters is chosen to be such that the plane of polarization of the succeeding polarization filter is perpendicular to the plane of polarization of the light rotated by the Faraday rotator, whereby the light leaving said other side of the Faraday rotator is blocked.

5,612,814

COMPACT SIZED OPTICAL PROJECTION SYSTEM

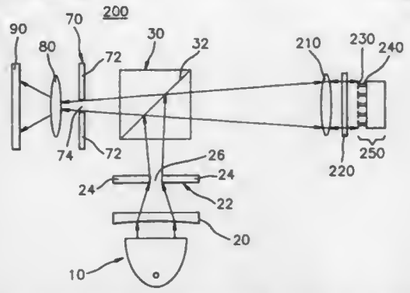
Jin-Se Yang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 24, 1995, Ser. No. 518,871

Claims priority, application Rep. of Korea, Aug. 24, 1994, 94-20846; Aug. 24, 1994, 94-20847

Int. Cl.[6] G02B *26/00*

U.S. Cl. 359—291 **11 Claims**



1. An optical projection system capable of displaying an image of M×N pixels, wherein M and N are integers, comprising: a light source for emitting a white light, wherein the white light consists of a first, a second and a third primary light beams, each of the primary light beams being one of the primary colors;

an array of M×N actuated mirrors for changing an optical path of each of the primary light beams reflected therefrom in response to an electric signal, wherein each of the actuated mirrors includes a pedestal, an actuator cantilevered from the pedestal and a mirror formed on top of the actuator, and the mirror in each of the actuated mirrors has a bending portion and an unbending portion, the unbending portion referring to a portion of the mirror on top of a portion of the actuator directly cantilevered on the pedestal, and each of the actuators is made of a piezoelectric or an electrostrictive material which deforms in response to the electric signal applied thereto;

a source stopper, provided with a light transmitting portion having a specific configuration and a light stopping portion and being placed in front of the light source, for shaping the white light from the light source into a predetermined configuration;

a source lens, disposed between the source stopper and the light source, for focussing the white light onto the source stopper;

an optical means for reflecting the white light from the source stopper to the array of M×N actuated mirrors at a predetermined angle;

a field lens located between the optical means and the array of M×N actuated mirrors, wherein the field lens is used for collimating the white light reflected from the optical means onto the array of M×N actuated mirrors and for refocussing each of the primary light beams reflected from each of the actuated mirrors in the array;

an array of M×N pixel filters, disposed between the field lens and the array of M×N actuated mirrors, each of the pixel filters being capable of transmitting only one of the primary light beams, wherein each of the primary light beams transmitted through the array of M×N pixel filters impinges onto a corresponding actuated mirror in the array and each of the primary light beams reflected by each of the actuated mirrors impinges onto the field lens through the array of M×N pixel filters to thereby produce a packet of reflected primary light beams;

a projection screen being placed in front of the array of M×N actuated mirrors for displaying an image made of the M×N number of pixels thereon;

a projection stopper located between the optical means and the projection screen, provided with a light transmitting portion and a light stopping portion for passing a predetermined amount from the packet of reflected primary light beams refocussed by the field lens to thereby produce a packet of modulated primary light beams; and

a projection lens for projecting the packet of modulated primary light beams from the projection stopper onto the projection screen.

5,612,815

OPTICAL DEVICE FOR OPTOMECHANICAL APPLICATION

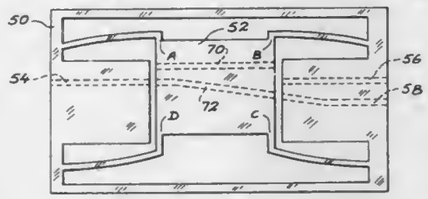
Pierre Labeye, and Eric Ollier, both of Grenoble, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 11, 1996, Ser. No. 584,372

Claims priority, application France, Jan. 10, 1995, 95 00201

Int. Cl.[6] G02F *1/29;* **G02B** *6/26*

U.S. Cl. 359—320 **24 Claims**



1. Optomechanical device comprising in an integrated optics guiding structure, a fixed part and a mobile part, which is connected to the fixed part, said mobile part being located between i output microguides formed in the fixed part and j input microguides also formed in the fixed part, the mobile part comprising a mass, which is only connected by fixing arms to the fixed part, so as to permit the displacement of the mass in a first direction, said mass having k microguides to permit the switching of a light beam from one of the j input microguides to one of the i output microguides.

5,612,816

ENDOSCOPIC ATTACHMENT FOR A STEREOSCOPIC VIEWING SYSTEM

Fritz Strähle, Heubach-Lautern; Ulrich Sander, Oberkochen, and Uwe Vry, Aalen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

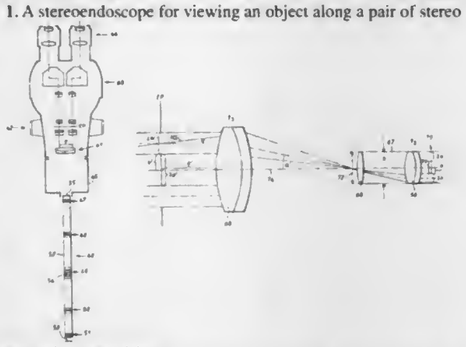
Continuation of Ser. No. 100,276, Aug. 2, 1993, abandoned, and a continuation-in-part of Ser. No. 875,634, Apr. 28, 1992, Pat. No. 5,321,447. This application Aug. 3, 1995, Ser. No. 510,697

Claims priority, application Germany, Aug. 1, 1992, 42 25 507.4; Jan. 21, 1993, 43 01 466.6

Int. Cl.[6] G02B *21/22;23/00;15/14*

U.S. Cl. 359—376 **31 Claims**

1. A stereoendoscope for viewing an object along a pair of stereo



beam paths, comprising:

a stereoscopic viewing apparatus including optical means for defining a pair of stereo beam paths with each beam path defining an apparatus pupil having an apparatus pupil diameter; and said stereo beam paths being separated by a distance defining a stereo basis;

an endoscope attachment;

said endoscope attachment and said stereoscopic viewing apparatus conjointly defining in-coupling means for coupling said pair of stereo beam paths into said endoscope attachment,

said endoscope attachment including:

an optical lens system for receiving and guiding both of said stereo beam paths in common therein;

said optical lens system defining a pupil of said endoscope attachment;

said optical lens system further including imaging optical means for generating an intermediate image of the object and for generating an intermediate image of said pupil of said endoscope attachment;

said imaging optical means having a clear diameter;

said in-coupling means including: a main objective for imaging said intermediate image of said object at infinity; and, additional optical imaging means;

said additional optical imaging means and said main objective conjointly imaging said apparatus pupils demagnified into said intermediate image of said pupil of said endoscope attachment so as to cause the image of the sum of the stereo basis and of the pupil diameter to be less than or equal to said clear diameter of said imaging optical means; and,

said intermediate image being generated at a stereo angle (α') and stereo component images being generated in said stereoscopic viewing apparatus while maintaining said stereo angle (α').

5,612,817

ZOOM SYSTEM FOR AT LEAST TWO STEREOSCOPIC VIEWING BEAM PATHS

Fritz Strähle, Heubach, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Dec. 21, 1995, Ser. No. 576,454

Claims priority, application Germany, Dec. 23, 1994, 44 46 210.7

Int. Cl.[6] G02B *21/22*

U.S. Cl. 359—377 **13 Claims**



1. A zoom system within a stereoscopic assembly defining a pregiven stereoscopic pupillary plane, the zoom system being for at least two stereoscopic beam paths of a viewing and/or documentation apparatus arranged downstream of the zoom system viewed in a direction starting from an object plane, the apparatus defining apparatus pupils lying in said stereoscopic pupillary plane, and said zoom system comprising:

a multi-element pancratic magnification system defining an optical axis; and,

an afocal inverting system arranged on said axis between said viewing and/or documentation apparatus and said pancratic magnification system for imaging said stereoscopic pupillary plane into said pancratic magnification system.

5,612,818

CONFOCAL MICROSCOPE

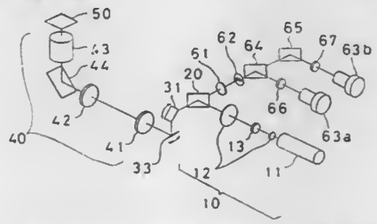
Satoru Kumagai, Chigasaki, and Hiroshi Ohki, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 7, 1994, Ser. No. 301,899

Claims priority, application Japan, Sep. 8, 1993, 5-246053; Dec. 27, 1993, 5-348840; Jul. 12, 1994, 6-181961

Int. Cl.[6] G02B *21/06*

U.S. Cl. 359—385 **7 Claims**



1. A confocal microscope for observing a specimen comprising:

a light source for producing an excitation light of a predetermined wavelength,

a deflecting optical system for deflecting an optical path of said excitation light from said light source,

an objective optical system for condensing the deflected excitation light on a specimen,

a condensing lens group for condensing a backward light, passing from said specimen illuminated by said excitation light and through said objective optical system and said deflecting optical system, at a position conjugate to a condensing point on said specimen,

a light shielding member including a pinhole aligned with a position of a condensing point of said backward light, said pinhole having an opening length and an opening width, the opening length being greater than said opening width, and

a detection system for detecting said backward light through the pinhole of said light shielding member,

the opening length of said pinhole of said light shielding member having a size covering a range of movements of the condensing point of said backward light caused by movement of said optical path by said deflecting optical system.

5,612,819

HOLDER FOR HIGH RESOLUTION TISSUE SAMPLE IMAGING

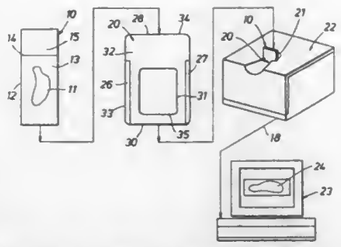
Robert D. Meyer, 4202 Bear Lodge Ct., Houston, Tex. 77084

Filed Jun. 23, 1995, Ser. No. 493,964

Int. Cl.[6] G01N *21/01*

U.S. Cl. 359—391 **10 Claims**

1. A system for use in obtaining a high resolution color image of a large tissue sample mounted in a microscope specimen slide, comprising: scanner means having a receptacle sized and arranged to receive a photographic slide of standard dimensions, said scanner means having a light source and sensor means for scanning a slide and providing a high resolution color image thereof; and holder means sized and arranged to be received in said receptacle and to mount said microscope specimen slide, said holder means defining an elongated slot into which said microscope specimen slide is inserted and a window that is opposite said tissue sample when said slide is positioned in said slot, an optically flat, clear,



neutral density filter mounted in said window and coveting the same to reduce the amount of light illuminating said tissue sample, said sensor means providing output signals representative of said image, and means for transmitting said signals to a computer.

5,612,820

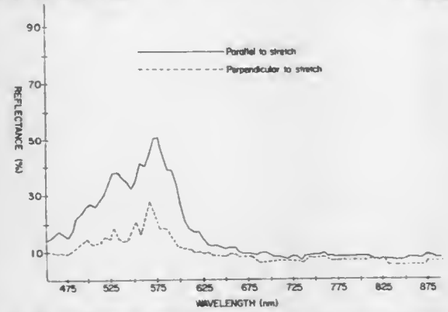
BIREFRINGENT INTERFERENCE POLARIZER

Walter J. Schrenk, Midland, Mich.; Victor S. Chang, Ellicott City, Md., and John A. Wheatley, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 618,191, Nov. 26, 1990, Pat. No. 5,486,949, which is a continuation-in-part of Ser. No. 463,645, Jan. 11, 1990, Pat. No. 5,122,906, and Ser. No. 466,168, Jan. 17, 1990, Pat. No. 5,122,905, which is a continuation-in-part of Ser. No. 368,695, Jun. 20, 1989, abandoned, said Ser. No. 463,645is a continuation-in-part of Ser. No. 368,695. This application May 30, 1995, Ser. No. 452,832

Int. Cl.[6] G02B *5/30;* **B29D** *11/00;* **B29C** *47/06*

U.S. Cl. 359—498 **17 Claims**



1. A birefringent interference polarizer comprising multiple alternating oriented layers of at least first and second polymeric materials having respective nonzero stress optical coefficients which are sufficiently different to produce a refractive index mismatch between said first and second polymeric materials in a first plane which is different from the refractive index mismatch between said first and second polymeric materials in a second plane normal to said first plane, wherein said layers increase in thickness to produce a layer thickness gradient.

5,612,821

MICRO LENS SYSTEM FOR CONTROLLING AN OPTICAL BEAM PATTERN

Lawrence E. Schmutz, Watertown, Mass., assignor to United Technologies Corporation, Hartford, Conn.

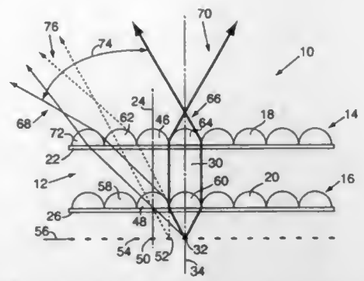
Filed Jun. 15, 1995, Ser. No. 490,946

Int. Cl.[6] G02B *3/00*

U.S. Cl. 359—622 **13 Claims**

1. A micro-optic multiplet (MOM) optical system comprising:

an array of optical sources each emitting radiation and separated a distance D/2;



a first MLM having an array of lenslets for receiving radiation from said optical sources, each of said lenslets having a diameter D and a lenslet optic axis substantially in registration with a one of said optical sources, with a lenslet optic axis passing through every other optical source; and

a second MLM having an array of lenslets for receiving radiation from said optical sources, each of said lenslets having a diameter D and a lenslet optic axis substantially in registration with an axis of a corresponding one of said first MLM lenslets, said second MLM spaced a distance approximately 2D from said first MLM.

5,612,822

Patent Not Issued For This Number

5,612,823

WIDE-FIELD EYEPIECE WITH INSIDE FOCUS

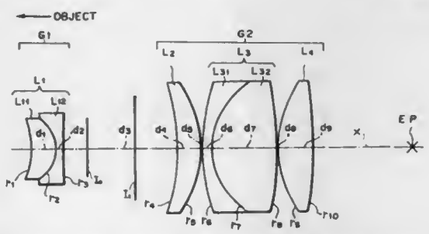
Noboru Koizumi, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Feb. 3, 1995, Ser. No. 383,435

Claims priority, application Japan, Feb. 15, 1994, 6-18136

Int. Cl.[6] G02B *25/00;9/34*

U.S. Cl. 359—644 **6 Claims**



1. A wide-field eyepiece with inside focus arranged from an object side to an eye point side, comprising a first lens group (G_1) having a negative cemented lens component and a second lens group (G_2) having a positive meniscus lens component with a first, convex face and a second, concave face opposed to the first face, said first face having a smaller radius of curvature than said second face, said first face facing the eye point side, a positive cemented lens component, and a positive lens component with a third face and a fourth face opposed to the third face, said third face having a smaller radius of curvature than said fourth face, said third face facing the object side, the first and second lens groups being arranged in this order from the object side, wherein the following formulae (1), (2) and (3) are satisfied,

$$-4<f_1/f<-1.5 \quad (1)$$

$$1.3<f_2/f<2 \quad (2)$$

$$1<d_{12}/f<3.5 \quad (3)$$

wherein f represents the focal length of the overall lens system, f_1 represents the focal length of the first lens group (G_1), f_2 represents the focal length of the second lens group (G_2) and d_{12} represents the axial air separation between the first lens group (G_1) and the second lens group (G_2).

5,612,824

NARROW BAND FILTER AND METHOD OF MAKING SAME

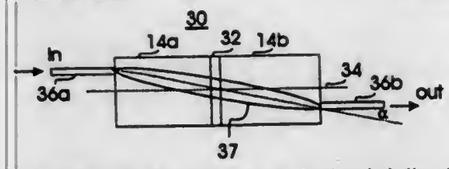
Y. Calvin Si; Gary S. Duck, both of Nepean; Joseph Ip, Kanata, and Neil Teitelbaum, Ottawa, all of Canada, assignors to JDS Fitel Inc., Nepean, Canada

Filed May 16, 1995, Ser. No. 442,365

Claims priority, application Canada, Apr. 10, 1996, 2146738

Int. Cl.[6] G02B *6/18*

U.S. Cl. 359—652 **4 Claims**



1. A method of fabricating a narrow band optical filter for passing a narrowband optical signal having a predetermined centre wavelength, comprising the steps of:

providing a first graded index lens having a substantially collimating end and a substantially focusing end;

providing a second graded index lens having a substantially collimating end and a substantially focusing end;

providing a wavelength selective means having a wavelength characteristic dependent upon on an angle of incidence between the substantially collimating ends of the first and second graded index lenses;

positioning the first and second graded index lenses such that they are disposed in a coaxial relationship so that the graded index lenses have a common optical axis;

coupling an optical waveguide to each substantially focusing end of the first and second graded index lenses, each at a location defining a port for porting a beam of light at each end face, the ports being on opposite sides of the optical axis and substantially equidistant from the optical axis;

launching an optical test signal into one of said ports through one of the optical waveguides;

allowing at least a portion of the signal to propagate through the wavelength selective means and through the lenses;

receiving the signal from the other optical waveguide at the other of said ports; and,

adjusting the location of at least one of said ports to receive at least one of a maximum intensity of the received signal and the predetermined wavelength, within predetermined limits.

5,612,825

ZOOM LENS

Akihisa Horiuchi, and Nobuyuki Tochigi, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,513

Claims priority, application Japan, Mar. 14, 1994, 6-070003; Mar. 24, 1994, 6-053764

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—687 **2 Claims**

1. A zoom lens of the rear focus type comprising, in order from an object side to an image side:

a first lens unit of positive refractive power;

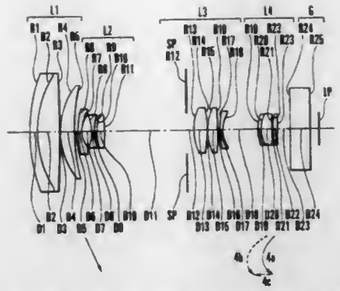
a second lens unit of negative refractive power;

a third lens unit of positive refractive power; and

a fourth lens unit of positive refractive power, said second lens unit and said fourth lens unit axially moving to effect zooming, and said fourth lens unit axially moving to effect focusing, wherein said third lens unit includes at least one positive lens at a front position and a negative lens of meniscus form concave toward the image side at the rearmost position, and said fourth lens unit includes one negative lens and two positive lenses, and wherein the following condition is satisfied:

$$0.73<f3/f4<1.00$$

where f3 and f4 are the focal lengths of said third lens unit and said fourth lens unit, respectively.



5,612,826

LENS HOLDING DEVICE FOR HOLDING A LENS SYSTEM AND METHOD FOR MAKING

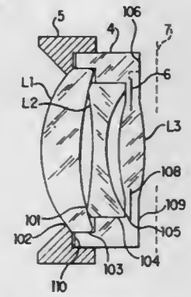
Koichi Ohshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,665

Claims priority, application Japan, Jul. 25, 1994, 6-192791

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—819 **25 Claims**



1. A lens holding device comprising:

a cylindrical lens barrel structured as one body with a single plastic lens, said cylindrical lens barrel having an inside diameter larger than an effective diameter of the single plastic lens; and

a holding ring made from an impermeable substance, said holding ring holding at least one lens inserted into the cylindrical lens barrel and fixing a position of the at least one lens, wherein the holding ring comprises.

a cylindrical portion that surrounds the outside surface of the lens barrel.

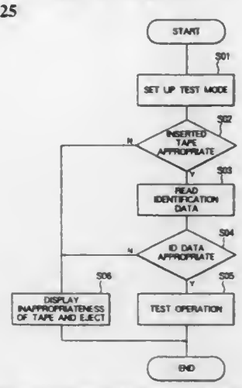
a covering component that covers an edge surface of the lens barrel, and

a contacting component that contacts and holds an outermost lens of the at least one lens inserted into the lens barrel.

5,612,827
DATA RECORDER HAVING SELF-DIAGNOSTIC FUNCTION USING MAGNETIC TAPE

Shinya Morita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 138,988, Oct. 21, 1993, abandoned.
This application Oct. 6, 1995, Ser. No. 539,503
Claims priority, application Japan, Oct. 21, 1992, 4-307648
Int. Cl.[6] G11B 5/02
U.S. Cl. 360—25 13 Claims



1. A magnetic tape recording and reproduction apparatus for use with different grades of tapes including a data recording tape, a cleaning tape, and a calibration tape loaded therein and capable of executing a self-diagnostic operation, the apparatus comprising:

a magnetic tape unit including a case and a magnetic tape accommodated in said case, said magnetic tape having a grade of one of a data recording tape, a cleaning tape, and a calibration tape, wherein said magnetic tape having a grade of a calibration tape includes identification data recorded thereon corresponding to a type of calibration;

magnetic tape grade indication means provided on said case for indicating the grade of said magnetic tape;

loading means for loading said magnetic tape unit on said magnetic tape recording and reproduction apparatus and ejecting said magnetic tape unit from said apparatus;

sensing means for sensing said magnetic tape grade indication means provided on said case of said magnetic tape unit when said magnetic tape unit is loaded on said recording and reproduction apparatus;

magnetic tape grade identification means for identifying the grade of said magnetic tape in accordance with data sensed by said sensing means;

reading means for reading said identification data recorded on said calibration tape;

operation mode setting means for setting an operation mode of said magnetic tape recording and reproduction apparatus, wherein said operation mode is one of a data recording operation mode, a cleaning operation mode and a self-diagnostic operation mode for executing a selected type of calibration;

decision means for deciding whether to eject said tape unit, said decision means deciding to actuate said loading means to eject said loaded magnetic tape unit when the identified grade of said magnetic tape is not the grade required in said set operation mode; and

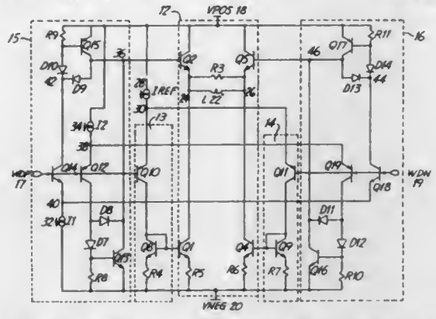
execution means for executing said operation using said magnetic tape in accordance with a decision of said decision means not to eject said tape unit, wherein when said set operation mode is a self-diagnostic operation mode, said execution means executes said operation only when said identification data corresponds to the selected type of calibration and,

wherein said execution means actuates said loading means to eject said loaded magnetic tape unit from said loading means when said read identification data is not appropriate for said self-diagnosis operation.

5,612,828
WRITE DRIVER WITH IMPROVEMENTS FOR RISETIME

Craig M. Brannon, Maplewood; Doug R. Peterson, Minnetonka, and Pete J. Jung, Eagan, all of Minn., assignors to VTC Inc., Bloomington, Minn.

Filed Sep. 11, 1995, Ser. No. 526,162
Int. Cl.[6] G11B 5/09;5/02
U.S. Cl. 360—46 28 Claims



1. A write driver circuit for providing current through a transducer in an information storage system having first and second voltage supply terminals and first and second data input terminals, the write driver circuit comprising:

an H-switch connected to the first and second voltage supply terminals and to the first and second data input terminals, the H-switch having a pair of pull-up transistors and a pair of pull-down transistors;

a biasing circuit connected to each of the pull-down transistors to bias the pull-down transistors; and

an anti-saturation circuit connected to each of the pull-up transistors to bias the pull-up transistors with the anti-saturation circuit containing at least one transistor having a collector, a base and an emitter and wherein a pair of diodes having an anode and a cathode are connected between the base and the collector of that transistor, wherein the cathodes of the diodes are connected together and wherein the diodes have substantially similar characteristics.

5,612,829
DATA RECORDING CONTROL METHOD OF MAGNETIC TAPE

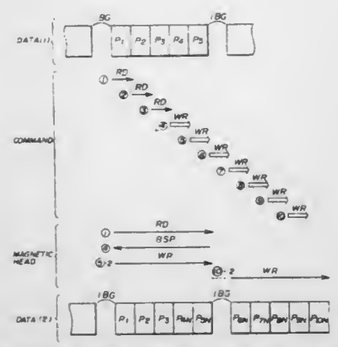
Nobuyuki Takai, and Kazufumi Hiyamizu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

PCT No. PCT/JP92/00926, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO93/02410, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 21, 1992, Ser. No. 24,648
Claims priority, application Japan, Jul. 22, 1991, 3-205436
Int. Cl.[6] G11B 5/02
U.S. Cl. 360—54 15 Claims

1. A data recording control method of a magnetic tape in which tape data is stored in extended fixed block size format constructed by combining a plurality of packets into a physical block, each packet corresponding to a data unit handled by a host unit issuing a read command and a write command applied to a magnetic tape, said method comprising steps of:

(a) reading, from the magnetic tape, when a read command for reading at least one packet in the physical block is output from the host unit, the data in the entire physical block including that packet, and storing the data in the entire physical block including that packet in a buffer;

(b) reorganizing, at any position in said physical block on the magnetic tape, the physical block using the packet in the buffer and new data to be recorded, when a write command and new data to be recorded are output from the host unit,



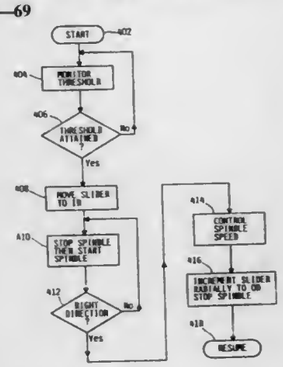
while replacing data other than the at least one packet commanded to be read by the host with the new data; and

(c) recording, on the magnetic tape, the data thus reorganized as the physical block.

5,612,830
METHOD AND APPARATUS FOR CLEANING DISKS UPON REACHING A DISK DRIVE START-STOP CYCLE THRESHOLD

Thomas A. Gregory; Christopher G. Keller, both of Rochester, and James M. Severson, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 857,354, Mar. 25, 1992, Pat. No. 5,351,156. This application Sep. 14, 1994, Ser. No. 307,138
Int. Cl.[6] G11B 27/36;19/26;5/41
U.S. Cl. 360—69 6 Claims



1. A method of cleaning a disk surface in a disk drive having a movable slider with a plowing surface on the back end of the slider, said slider attached to a suspension which biases the slider toward the disk surface, said method comprising the steps of:

rotating the disk toward the plowing surface of the slider at a rotational velocity less than a desired rotational velocity at which the slider is lifted up from the surface of the disk;

moving the slider from the inner diameter of the disk to the outer diameter of the disk during said rotation;

controlling said slider movement so that substantially the entire disk surface has been cleared of debris when the slider reaches the outer diameter of the disk;

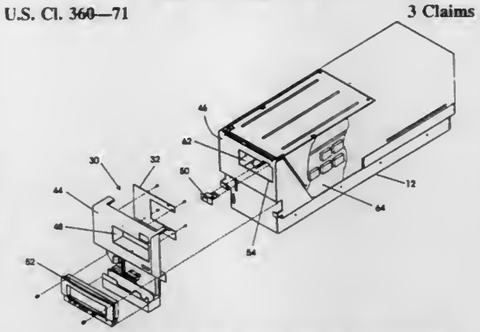
monitoring the number of start-stop cycles of the disk drive; and

initiating the cleaning steps when said number of cycles reaches a threshold.

5,612,831
REMOVEABLE MEDIA DRIVE UNIT WITH LOADER INTERLOCK TO INDICATE PRESENCE OF OBJECT

Frank D. Gallo; Hartmut E. Hausler; Paul Y.-F. Hu; Kevin K. Kartchner, all of Tucson, Ariz.; Scott M. Rockwell, Aurora, Colo.; Stephen J. Roffinoli, and James C. Simkins, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1995, Ser. No. 530,799
Int. Cl.[6] G11B 15/18
U.S. Cl. 360—71 3 Claims



1. A drive unit for removable media cartridges, comprising:

a loader to receive a cartridge;

means for reading information from media in a loaded cartridge;

a drive housing having a front face, said face having a loader throat through which a cartridge can be inserted into and removed from said loader;

a light source mounted in front of said face for projecting a light beam across said loader throat;

a photodetector mounted in front of said face and aimed across the loader throat toward said light source operable to generate an object-present signal when the light beam is interrupted;

a drive controller responsive to said object-present signal and operable to prevent said loader from attempting to load a cartridge when said drive controller receives the object-present signal;

a card on which said light source and photodetector are mounted, said card being mountable on said housing face when the drive unit is installed in an automated storage and retrieval library having an accessor gripper for inserting and removing media cartridges into and from said loader;

a first connector mounted on said card and pluggable into a corresponding second connector mounted on said housing face, said first connector being interconnected with said photodetector and said second connector being interconnected with said drive controller; and

a circuit on said card and interconnected with said first connector for indicating to said drive controller that the drive unit is mounted in the automated storage and retrieval library.

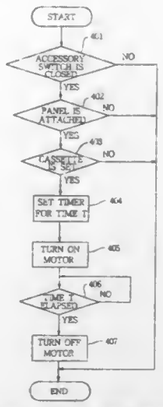
5,612,832
CASSETTE DECK OF A CAR STEREO

Terumasa Simizu; Mutsurou Tanoue; Masaya Kano; Mitsugu Ogino, and Jun Sato, all of c/o Kawagoe Koujou, Pioneer Electronic Corporation, 25-1 Aza Nishimachi, Ooaza Yamada, Kawagoe-shi, Saitama-ken, 350, Japan

Filed Nov. 7, 1995, Ser. No. 554,831
Claims priority, application Japan, Nov. 8, 1994, 6-273871
Int. Cl.[6] G11B 15/18
U.S. Cl. 360—73.04 4 Claims

1. A cassette deck of a car stereo having a removable panel having a plurality of operation buttons for operating the car stereo and attached to a body of the car stereo, the cassette deck having at least one capstan and a motor for driving the capstan, comprising:

an accessory switch detector for detecting closing of an accessory switch of a car provided with the car stereo;



a panel detector for detecting attachment of the removable panel;

a cassette detector for detecting setting of a cassette to the cassette deck;

driving control means responsive to detection of closing of the accessory switch, attachment of the removable panel, and setting of the cassette for operating the motor for rotating the capstan for a predetermined time.

5,612,833

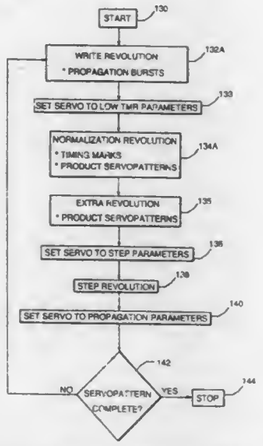
RADIAL SELF-PROPAGATION PATTERN GENERATION FOR DISK FILE SERVOWRITING

Edward J. Yarmchuk, Somers; Mark D. Schultz, Elmsford; Bucknell C. Webb, Ossining, and Timothy J. Chainer, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1994, Ser. No. 349,028

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—75 **14 Claims**



1. A product servo-pattern writing method in a storage device, said storage device comprising a storage medium having a plurality of sectors and a transducer for interacting with said storage medium, one or more of said plurality of sectors including a previously recorded transition, said method comprising:

determining a position error signal corresponding to a position error of said transducer relative to at least one previously recorded transition; and

writing a product servo-pattern in one of said plurality of sectors while servoing to said at least one previously recorded transition, wherein said writing comprises modulating the signal content of said product servo-pattern, using said position error signal, such that said position error is embodied within said product servo-pattern.

5,612,834

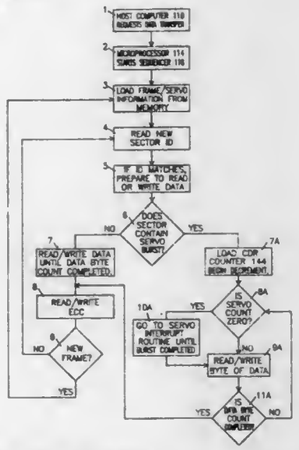
SERVO BURST CONTROLLER FOR A MAGNETIC DISK

Clifford E. Strang, Jr., San Jose, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Continuation of Ser. No. 145,037, Oct. 28, 1993, which is a continuation of Ser. No. 704,568, May 17, 1991, abandoned. This application May 31, 1995, Ser. No. 454,907

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—75 **12 Claims**



1. A disk controller comprising:

a sequencer for containing addressable instructions for reading and writing information from and to a rotating magnetic disk;

a sequencer address counter for providing an address for addressing one of said instructions in said sequencer;

one or more vector address registers, each containing a vector address for directing said sequencer to a selected vector address in the event of a generation of a servo interrupt signal;

a servo burst counter for determining when a servo burst is about to occur during reading from or writing to said rotating magnetic disk, wherein said servo burst counter signals said one or more vector address registers to direct said sequencer to begin the implementation of a servo burst skipping operation; and

a sequencer counter which counts a number of bytes read from or written to a sector in said magnetic disk to determine when an instruction being carried out in said sequencer has been completed.

5,612,835

METHOD AND DISK APPARATUS FOR AUTOMATICALLY ADJUSTING A HEAD POSITION

Hideyuki Shirota, and Tatuya Matuzaki, both of Gunma, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,371

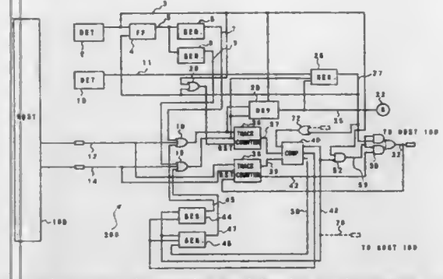
Claims priority, application Japan, Dec. 24, 1993, 5-326794

Int. Cl.[6] G11B *15/584;21/02*

U.S. Cl. 360—78.14 **17 Claims**

1. A storage disk apparatus, comprising:

a head;



a driving motor for moving said head a track position on a storage disk in response to a motor driving signal;

driving signal generating means for issuing said motor driving signal to said driving motor in response to each of an external drive instruction from a host, a first drive instruction and a second drive instruction, each of which includes data indicative of the number of tracks for said head to be moved and data indicative of a direction for said head to be moved to;

a detector for detecting that said storage disk is inserted;

first instruction generating means for issuing said first drive instruction such that said head is positioned on a track **0** position of said storage disk when said detector detects that said storage disk is inserted;

a first counter for summing the number of tracks of each of said external, first and second drive instructions in consideration of the direction;

a second counter for summing the number of tracks of said external drive instruction in consideration of the direction;

second instruction generating means for issuing said second drive instruction such that a value of said first counter becomes equal to that of said second counter when said head is moved to the track **0** position.

5,612,836

APPARATUS FOR GUIDING A TAPE IN A VIDEO CASSETTE TAPE RECORDER

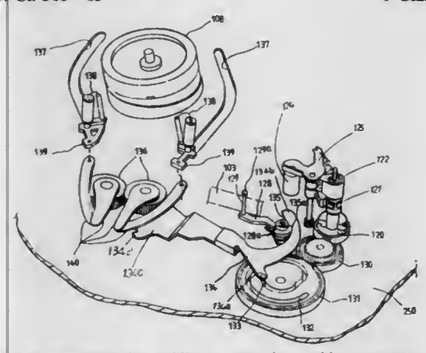
Tae-Hyoung Kim, Seoul, and Eung B. Kim, Kyungki-do, both of Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed Mar. 16, 1995, Ser. No. 406,014

Claims priority, application Rep. of Korea, Mar. 18, 1994, 5558/1994

Int. Cl.[6] G11B *5/027*

U.S. Cl. 360—85 **9 Claims**



1. An apparatus for guiding a tape in a video cassette tape recorder, comprising:

a pair of loading means driving a pair of tape ejecting members which extract a tape out of a cassette and wind said tape onto a drum;

a cam gear mounted on a first portion of a stationary base plate, the cam gear having a cam groove formed on an upper surface thereof and being driven by a force transferred from a drive means;

a three-branched intermediate loading member including a center portion pivoted at a second portion of the stationary base plate, a first branch end having a pin slidably fitted into and travelling along said cam groove for receiving a force from the cam gear, an inwardly curved second branch end and a third branch end having a geared portion drivingly engaged with one of said loading means to move said loading means; and

a take-up arm having one end thereof provided with a guide pole to guide movement of said tape and at another end thereof provided with an activating bracket contacting said second branch of said three-branched intermediate loading member and pivotably mounted at the stationary base plate.

5,612,837

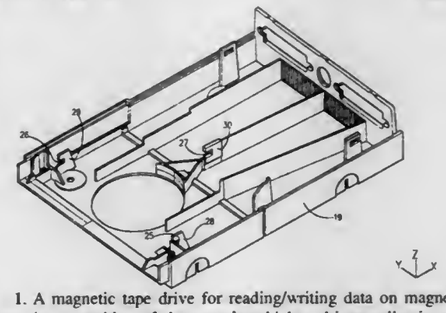
SNAP-IN CHASSIS FOR TAPE DRIVE

Mark W. Perona, San Diego, Calif., assignor to Iomega Corporation, Roy, Utah

Continuation-in-part of Ser. No. 531,718, Sep. 21, 1995. This application Oct. 13, 1995, Ser. No. 543,133

Int. Cl.[6] G11B *5/008;15/60;33/00*

U.S. Cl. 360—93 **11 Claims**



1. A magnetic tape drive for reading/writing data on magnetic tape in a cartridge of the type in which a driven roller in said cartridge moves tape past a read/write head in said drive, said drive comprising:

a read/write head;

a motor having a drive shaft;

a drive roller driven by said drive shaft of said motor;

said drive roller engaging said driven roller through an opening in said cartridge when said cartridge is inserted into said drive to move said tape past said read/write head;

a one-piece molded chassis, said read/write head, said motor and said drive roller being mounted on said chassis;

a pan enclosing said drive for mounting said drive;

means on said chassis and on said pan for mounting said chassis in said pan in an interference fitting relationship; and

keying means for referencing the front of said chassis to a bezel fitted on the front of said pan.

5,612,838

OXIDATION-STABILIZED HYDROCARBON LIQUID BEARINGS FOR LUBRICATED DISK DRIVES

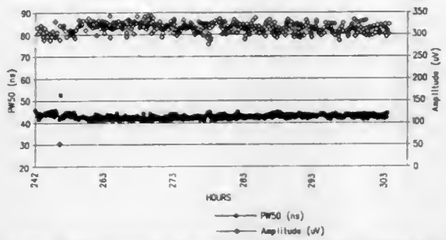
James H. Smith, Woodside, Calif., and Walter Wong, Boulder, Colo., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 205,184, Mar. 2, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 541,011

Int. Cl.[6] G11B *5/60;5/71*

U.S. Cl. 360—102 **10 Claims**

1. An information storage system, comprising:



a moveable information storage medium mounted within a housing;

a head for reading and/or writing information from and/or to the storage medium spaced proximate to the storage medium;

a non-Newtonian hydrocarbon liquid bearing consisting essentially of 2,2,4,4,6,8,8-heptamethylnonanein combination with a material for retarding oxidation that stabilizes PW50 values of the information storage system disposed between the storage medium and the head; and

means for inducing movement of the storage medium relative to the head to enable information transfer.

5,612,839

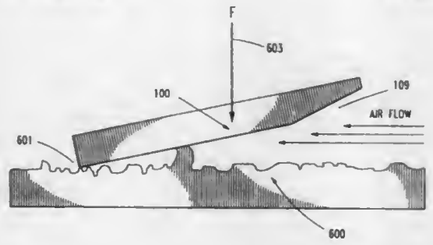
CONTACT RECORDING SLIDER WITH ACTIVE CONTACT SURFACES

Alan M. Jacques, San Diego, Calif., assignor to Sunward Technologies, Inc., San Diego, Calif.

Continuation of Ser. No. 276,960, Jul. 18, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 619,279

Int. Cl.[6] G11B *15/64*

U.S. Cl. 360—103 **8 Claims**



1. A contact slider for supporting a transducer for performing read and write operations on a recording medium, the contact slider having a leading edge and a trailing edge, the contact slider including:

a. a slider body having at least one rail projecting from the slider body, each rail including:

i. an air bearing surface (ABS) having a center of pressure; and

ii. an active contact surface (ACS) for contacting a recording medium during read and write operations, the ACS being disposed rearward of the ABS, such that, during read and write operations, the leading edge of the contact slider is generally disposed above the recording medium and the trailing edge of the contact slider remains in substantially continuous contact with the recording medium;

b. a load point disposed forward of a mid point of the contact slider and rearward of the ABS center of pressure.

5,612,840

MAGNETIC SPRING ARM ASSEMBLY INCLUDING STRUCTURE FOR PREVENTING DAMAGE TO A CONDUCTIVE LAYER RESULTING FROM BENDING

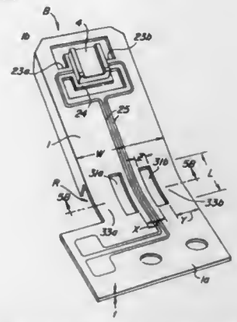
Sinji Hiraoka; Yoshihisa Matsumoto; Isamu Itoh, and Shigeo Terashima, all of Kawsaki, Japan, assignors to Fujitsu Limited, Japan

Filed May 24, 1994, Ser. No. 248,334

Claims priority, application Japan, Aug. 10, 1993, 5-198673

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **11 Claims**



1. A magnetic head unit used for a magnetic disk apparatus, said magnetic head unit comprising:

a magnetic head;

a spring arm having a gimbal portion, a bent portion and an attachment portion, said gimbal portion being provided for mounting said magnetic head, said bent portion being provided between said gimbal portion and said attachment portion so that an elastic force for pressing said magnetic head onto a magentic disk is generated, said attachment portion being provided for mounting said spring arm to a rigid arm; and

a conductive-pattern layer for transmitting electric signals to and from said magnetic head, said conductive pattern layer passing along a surface of said spring arm and extending from said gimbal portion across said bent portion to said attachment portion;

wherein said bent portion comprises means for relaxing a bending force applied to said conductive-pattern layer when said bent portion is bent.

5,612,841

FLEXURE ASSEMBLY FOR HARD DISC DRIVE HEADS

Lyle G. Johnson, Waverly, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 77,183, Jun. 15, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 390,894

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **9 Claims**

1. A flexure assembly for mounting a head to an actuator in a disc drive data storage device, the flexure assembly comprising:

a main flexure member, formed of a single continuous piece of material having a first material thickness, the main flexure member comprising:

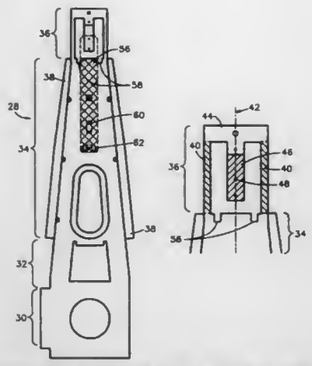
mounting means for connecting the flexure assembly to the actuator,

flexible beam means for exerting a balancing force to determine flying height of the head,

a rigid beam for carrying the balancing force to the head, gimbal means for allowing roll and pitch compliance in flying attitude of the head, the gimbal means comprising:

a pair of gimbal arms having a second material thickness less than the first material thickness,

the gimbal arms laterally displaced from and extending parallel to a longitudinal axis of the rigid beam, the



gimbal arms having first and second ends, the first ends being integral to the rigid beam,

a cross-member integral to and connecting the second ends of the gimbal arms, and

a head mounting tab integral to and projecting from the cross-member along the longitudinal axis toward the rigid beam,

the head mounting tab having a load point button and a thickness which is less than the first material thickness and substantially equal to the second material thickness except at the location of the load point button, which retains the first material thickness,

a load transfer extension fabricated as a separate piece of material from the main flexure member and comprising:

a mounting portion for attachment of the load transfer extension to the rigid beam, and

a contact surface which extends beyond the rigid beam and contacts a top of the load point button, and

attachment means for attaching the load transfer extension to the rigid beam.

5,612,842

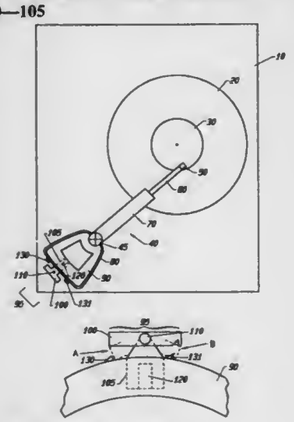
LANDING ZONE INERTIAL LATCH

Thomas A. Hickox, Scotts Valley, and Lawrence W. Gollbach, Felton, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 182,246, Jan. 13, 1994, abandoned. This application May 31, 1995, Ser. No. 456,045

Int. Cl.[6] G11B *5/54;21/22*

U.S. Cl. 360—105 **5 Claims**



1. A disc drive system comprising:

a housing;

a motor fixed within said housing;

a fixed disc rotatably coupled to said motor which records data and has a landing zone where no data is located;

an actuator arm assembly further comprising

voice coil magnets supported from said housing;

an actuator arm with a voice coil magnetically attracted to said voice coil magnets such that said voice coil magnets move said actuator arm in response to electrical signals, said voice coil being molded onto said actuator arm by an overmold;

a flexure rigidly fixed to said actuator arm;

a transducer fixed to an end of said flexure opposite an end connected to said actuator arm;

a landing zone inertial latch means for preventing said transducer from leaving the landing zone of said fixed disc when either a clockwise or counterclockwise external shock is applied to said housing, comprising:

a pair of protrusions held in place by said overmold;

and an elongated latch element of non-magnetic material supported for rotation about a pivot pin located immediately behind said voice coil and of sufficient length to be rotated into contact with one of said protrusions when rotating clockwise or counterclockwise;

said protrusions being spaced on said voice coil overmold so that one of said protrusions cooperates with said latch element when either a clockwise or counterclockwise shock causes motion of said actuator arm; said landing zone inertial latch means further comprises: a mass which is located beneath said voice coil of said actuator arm and bas a means for maintaining said inertial latch means in a storage position during normal operation of said actuator arm assembly; said elongated latch element is connected to said mass for rotating after a shock has occurred and for latching with one of said protrusions of said actuator arm and preventing said transducer from leaving said landing zone; and wherein said landing zone inertial latch means is automatically aligned with said voice coil magnets by magnetic leakage flux which attracts a magnetic insert supported in said mass.

5,612,843

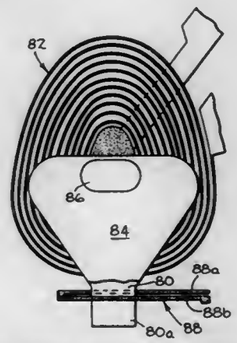
METHOD FOR ACCURATELY SETTING THE GAP IN AN INDUCTIVE MAGNETIC HEAD

Edward L. Packard, 908 Noreen Ct., San Marcos, Calif. 92069

Filed Dec. 6, 1994, Ser. No. 349,982

Int. Cl.[6] G11B *5/17*

U.S. Cl. 360—123 **13 Claims**



1. A method of correctly assessing the magnetic characteristics of an inductive magnetic head to be used to write upon closely adjacent magnetizable media, said magnetic head comprising core element of magnetically conductive material for providing a magnetic loop path having a gap therein and a pair of windings of electrically conductive material wound about the core element, said method comprising the steps of applying a varying electrical current to one of the pair of windings, and monitoring the flux generated within the core element via the other of said pair of windings in order to ascertain that the appropriate magnetic characteristics are present in the core element to create flux leakage at

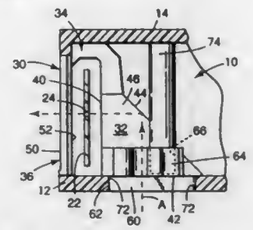
the gap of the appropriate shape and magnitude for the correct application of magnetic writing in the media, said one winding comprising the coil of the magnetic head to which the writing signals are to be subsequently applied and said other winding being placed directly adjacent to said gap in the core element.

5,612,844

PRISM FOR A DATA CARTRIDGE

Jerry L. Alexander, St. Paul Park, Minn., and David L. Tussey, New Richmond, Wis., assignors to Imation Corp., St. Paul, Minn.

Filed Apr. 27, 1995, Ser. No. 429,427
Int. Cl.[6] G11B *23/02*
U.S. Cl. 360—132 **8 Claims**



1. A data cartridge comprising:

a) a main base plate having a base plate window formed therein;

b) a cover having top, front, right, left and back sides arranged generally in a rectangular configuration and mounted to the main base plate to define a data cartridge shell, one side of the cover having a cover window opening formed therein;

c) a prism mounted inside the data cartridge shell contiguous to the base plate window, the prism comprising a transparent main prism body having:

i) a first face with a first end and a second end;

ii) a second face with a first end and a second end, the second face being substantially perpendicular to the first face, and the first ends of the first and second faces abutting one another;

iii) a third face contiguous to the second ends of the first and second faces; and

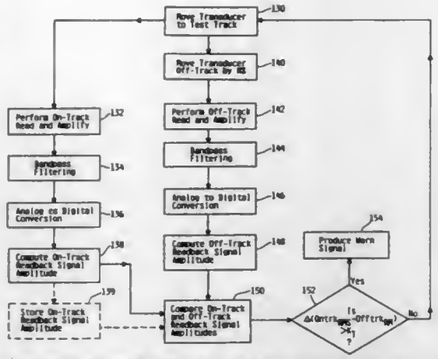
iv) two sides extending between and connecting the first, second and third faces, the sides being substantially diffusing, non-reflective or angled to substantially minimize reflection by the sides of light entering through the first or second faces toward the other of the second or first faces, substantially minimizing spurious reflection of light in either direction along a path between the first face, one of the sides, the third face and the second face.

5,612,845

METHOD AND APPARATUS FOR IN-SITU DETECTION OF DATA STORAGE SYSTEM SPINDLE MOTOR PERFORMANCE DEGRADATION

Gordon J. Smith, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1994, Ser. No. 364,088
Int. Cl.[6] G11B *33/10*
U.S. Cl. 360—137 **21 Claims**



16. An apparatus for detecting degradation in the performance of a spindle motor disposed in a data storage system, the apparatus comprising:

a data storage disk having a track,

means for sensing an off-track readback signal having a range of frequencies associated with degradation of the spindle motor, the off-track readback signal being sensed from a location of the track other than a centerline location of the track.

means for filtering the off-track readback signal to pass the range of frequencies associated with the degradation of the spindle motor;

means for determining a magnitude difference between the filtered off-track readback signal and an on-track readback signal; and

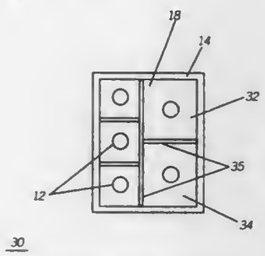
means for using the magnitude difference between the filtered off-track readback signal and the on-track readback signal to indicate degradation in spindle motor performance.

5,612,846

ELECTRICAL CONNECTOR INTERFACE

James T. Wiggenhorn, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1994, Ser. No. 236,825
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—56 **2 Claims**



1. An electrical connector interface for an electronic device, comprising:

a plurality of electrical interface conductors;

an electrical ground conductor spaced apart from the plurality of electrical interface conductors; and

a plurality of selectively conductive segments electrically coupled to the electrical ground conductor and being otherwise insulated from each other by insulative strips, each selectively conductive segment having at least one of the plurality of electrical interface conductors embedded therein;

wherein:

the electrical ground conductor is electrically isolated from the plurality of electrical interface conductors by the selectively conductive segments unless a voltage exceeding a predetermined threshold is applied across the electrical ground conductor and one of the plurality of the electrical interface conductors, and

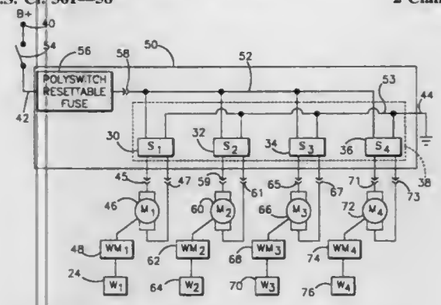
at least two of the plurality of selectively conductive segments have different compositions.

5,612,847

POWER WINDOW CIRCUIT BOARD OVERCURRENT PROTECTION

Joseph F. Malecke, South Lyon; Dennis D. Kaufman, Farmington, and Derrick Titus, Plymouth, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Apr. 28, 1995, Ser. No. 430,562
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—58 **2 Claims**



1. An apparatus comprising:

a plurality of automobile window motors, each one of said motors drawing a first, lesser amount of electric current when in a normal operating condition and drawing a second, substantially greater amount of electric current when in a stall condition;

a printed circuit board;

a plurality of automobile window switches mounted on said printed circuit board, each one of said switches being electrically connected with a respective one of said motors for controlling said one motor;

a source of electric power electrically connected with said circuit board;

at least one conductive trace on said circuit board for carrying current from said electric power source to all of said plurality of switches, said at least one conductive trace having a first current-carrying capacity; and

a polyswitch resettable fuse on said circuit board, said polyswitch resettable fuse being electrically connected in series between said electric power source and said at least one conductive trace;

said polyswitch resettable fuse having a first condition enabling substantially unimpeded current flow through said fuse when said polyswitch resettable fuse has a temperature less than a predetermined temperature;

said polyswitch resettable fuse being in the first condition when the amount of current passing through said polyswitch resettable fuse does not exceed said first current-carrying capacity of said at least one conductive trace;

said polyswitch resettable fuse having a second condition substantially blocking current flow through said polyswitch resettable fuse when said polyswitch resettable fuse has a temperature greater than said predetermined temperature;

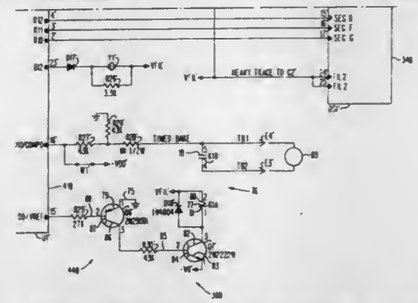
said polyswitch resettable fuse changing from the first condition to the second condition when the amount of current flowing through said polyswitch resettable fuse exceeds said first current-carrying capacity of said at least one conductive trace.

5,612,848

CONTROL DEVICE AND METHODS OF MAKING AND OPERATING THE SAME

Brian J. Kadwell, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 22,132, Feb. 25, 1993, Pat. No. 5,440,443.
This application Aug. 7, 1995, Ser. No. 511,818
Int. Cl.[6] H01H *47/04*
U.S. Cl. 361—160 **6 Claims**



1. A method of generating a direct current relay coil drive signal, comprising the steps of:

generating a DC voltage signal from an AC source in a power supply having a first capacitor connected in series with a first input of the AC source and a second capacitor connected between two outputs of said power supply;

activating a relay by connecting a relay coil across the outputs of said power supply; whereby

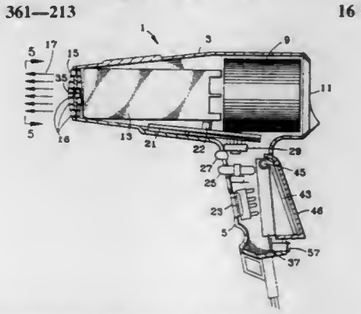
said power supply, in combination with said relay coil, are configured such that an output level of said power supply is at a first voltage level before the step of activating and the step of connecting results in a parallel connection of the second capacitor and the relay coil, permitting discharge of said second capacitor and causing the output of the power supply to move to a second voltage level, wherein said second voltage level is lower than said first voltage level.

5,612,849

STATIC ELIMINATOR FOR HAIR DRYERS

Barry V. Prehodka, Ridgefield; Ludwig Salce, Greenwich, and H. Roy Taylor, Stratford, all of Conn., assignors to Conair Corporation, Stamford, Conn.

Filed Dec. 30, 1994, Ser. No. 366,755
Int. Cl.[6] H05F *3/06*
U.S. Cl. 361—213 **16 Claims**



1. A static reducing hair dryer including

a housing having an air inlet and an air outlet, a motor-fan unit to draw air into said air inlet, produce an air stream, and force said air stream out through said air outlet,

an electron source mounted within said housing and adjacent to said air stream for releasing electrons into said air stream, and electron-producing means mounted within said housing and connected to said electron source.

said electron-producing means being a piezoelectric crystal providing a charge upon activation by compression or decompression, said piezoelectric crystal being effective to initially produce a negative electric charge upon said activation of said piezoelectric crystal.

whereby air exiting from said dryer will reduce static electricity in hair being dried.

5,612,850

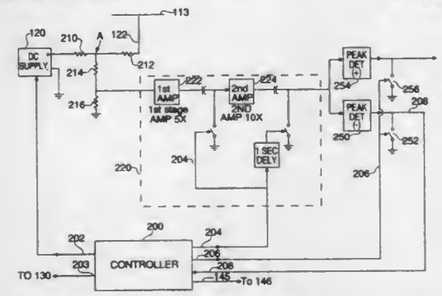
RELEASING A WORKPIECE FROM AN ELECTROSTATIC CHUCK

Manoocher Birang, Los Gatos, and Grigory Pyatigorsky, Santa Clara, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 207,331, Mar. 7, 1994, Pat. No. 5,459,632. This application Jan. 27, 1995, Ser. No. 379,376

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **4 Claims**



1. A method of retaining and then releasing a workpiece on an electrostatic chuck, wherein the chuck includes an electrode and a dielectric between the electrode and the workpiece, said method comprising the steps of:

(a) placing a workpiece on the chuck;

(b) determining an optimum dechucking voltage value by (i) testing an electrostatic force retaining the workpiece on the chuck for each of a plurality of different voltages, and (ii) selecting as the optimum dechucking voltage value the one of the different voltages which produced the smallest electrostatic force in the testing step;

(c) applying to the electrode a voltage large enough to retain the workpiece on the chuck by electrostatic attractive force;

(d) subsequently releasing the workpiece by changing the voltage applied to the electrode to the optimum dechucking voltage value.

5,612,851

GUARD RING ELECTROSTATIC CHUCK

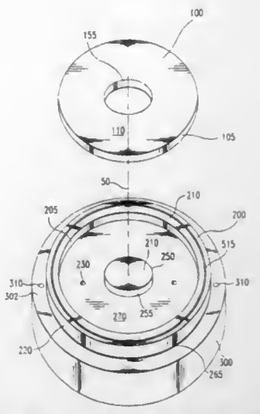
Michael S. Barnes, San Francisco, Calif.; John H. Keller, Newburgh, N.Y.; Joseph S. Logan, Jamestown, R.I.; Robert E. Tompkins, Pleasant Valley, and Robert P. Westerfield, Jr., Montgomery, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 169,932, Dec. 20, 1993, Pat. No. 5,463,525. This application Jun. 6, 1995, Ser. No. 471,105

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **12 Claims**

1. An electrostatic chuck system for holding, in a vacuum ambient, by electrostatic attraction of a DC potential a workpiece having a workpiece radius comprising: at least two circularly symmetric, concentric conductive electrodes having a dielectric coating and together providing a planar clamping surface, at least one of said conductive electrodes having gas feed means therein, characterized in that:



an outer electrode of said at least two circularly symmetric, concentric conductive electrodes has an electrode outer radius less than said workpiece radius by a guard ring distance;

said outer electrode is surrounded by a conductive guard ring having a guard ring outer radius less than said workpiece radius by an overhang amount, having a guard ring top surface substantially coplanar with said planar clamping surface and being dielectrically isolated from and capacitively coupled to said outer electrode and to said workpiece, whereby said guard ring suppresses vacuum arcs between said workpiece and said outer electrode by establishing a equipotential area substantially equal in potential to said workpiece between said workpiece and said outer electrode.

5,612,852

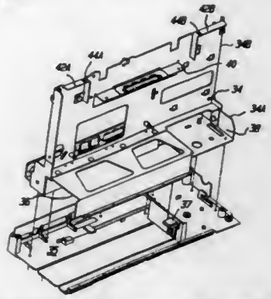
COMPACT HOUSING FOR A COMPUTER WORKSTATION

Craig M. Leverault, Mountain View; Michael F. McCormick, Jr.; Robert J. Lajara, both of San Jose; Alan W. Lam, Fremont; Peter C. D. Ta, Hayward; Howard W. Stolz, Soquel; Jay K. Osborn, San Francisco; Michael S. Dann, Mountain View, and Ronald Barnes, Livermore, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 205,311, Mar. 2, 1994, abandoned. This application Mar. 5, 1996, Ser. No. 610,844

Int. Cl.[6] H05K *5/00;7/20*

U.S. Cl. 361—687 **27 Claims**



1. A compact housing for a computer workstation, comprising:

a structural heat sink including:

a horizontal base heat sink to house a first plurality of electronic elements, said horizontal base heat sink including an interchangeable power source housing supporting an electrical connector, said horizontal base heat sink operating to conduct heat away from said first plurality of electronic elements; and

a vertical tower heat sink fixedly attached to said horizontal base heat sink in a substantially orthogonal manner such that at least one electronic element of said first plurality of electronic elements is positioned on both sides of said vertical tower heat sink, said vertical tower heat sink including a first side and a second side to support a second plurality of electronic elements, said vertical tower heat sink operating to conduct heat away from said second plurality of electronic elements; and

a vented exterior skin enclosing said structural heat sink, said vented exterior skin including a plurality of vents extending across the majority of the surface area of said vented exterior skin, said vented exterior skin operating to facilitate convective heat transfer from said structural heat sink so as to provide passive cooling capability that eliminates the need for active cooling devices.

5,612,853

PACKAGE FOR A POWER SEMICONDUCTOR DEVICE

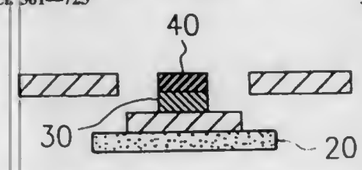
Dong-Goo Kim; Min-Kyu Song; Seong-Su Park; Seung-Goo Kang; Hyung-Jin Yoon, and Hyung-Moo Park, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-Shi, Rep. of Korea

Division of Ser. No. 268,104, Jul. 6, 1994, Pat. No. 5,446,959. This application Jan. 31, 1995, Ser. No. 381,304

Claims priority, application Rep. of Korea, Jul. 12, 1993, 93-13085

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—723 **3 Claims**



1. A package for accommodating a power semiconductor device comprising;

a lead frame on which a power semiconductor chip is provided, said lead frame including a body, a paddle on which the power semiconductor chip is located, tie bars connected to both of the body and the paddle and arranged at opposite sides of the paddle to support the paddle, a drain electrode lead connected to one side of the body, and a gate electrode lead arranged at opposite side of the drain electrode lead and connected to the body;

a heat radiating plate attached to a bottom surface of the paddle;

a Kovar plate formed on the paddle, said Kovar plate having similar thermal expansion coefficient to that of the semiconductor chip;

a polyimide layer having a predetermined thickness formed over the semiconductor chip;

a metal cap provided above the paddle and electrically connected to the tie bars by soldering; and

an epoxy resin layer deposited on the metal cap by molding, wherein said semiconductor chip being electrically connected with the Kovar plate by soldering, and respective terminals of the semiconductor chip being electrically connected to corresponding leads of the lead frame by wire-bonding, and wherein the paddle is provided lower in horizontal surface than the gate electrode lead.

5,612,854

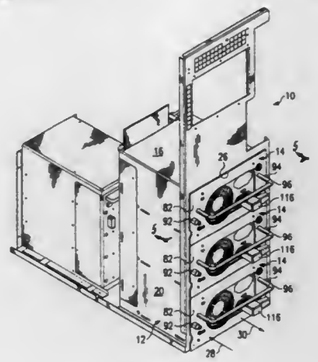
COMPUTER POWER SUPPLY APPARATUS

Nathan Wiscombe, Cedar Park; Arthur Lopez, and Victor Pecone, both of Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 24, 1995, Ser. No. 378,126

Int. Cl.[6] H05K *5/02;7/14;* **G06F** *1/16*

U.S. Cl. 361—727 **22 Claims**



4. Computer apparatus comprising:

a first housing having a wall opening therein;

a circuit board supported in said first housing and having a side spaced apart from and facing said wall opening;

a spaced plurality of first electrical connectors mounted on said side of said circuit board;

a power supply box structure including a second housing, a plurality of electrical leads extending outwardly from said second housing and having outer ends, and a plurality of second electrical connectors coupled to said outer ends and being removably mateable with said first electrical connector; and

a carrier structure including:

a first wall disposed generally parallel to said side of said circuit board and having a spaced plurality of openings therein that complimentarily receive portions of said second electrical connectors,

a second wall extending transversely to said first wall and removably secured to said second housing,

a third wall spaced apart from, parallel to and facing said first wall, said second housing being disposed between said first and third walls, and

switch means carried on said third wall and being operable to selectively enable and disable operation of said power supply box structure;

said carrier structure mounted on said first housing for movement through said wall opening toward and away from said side of said circuit board, said carrier structure supporting said second housing for movement therewith relative to said first housing, and supporting said second electrical connectors in a manner such that they project from said carrier structure toward said first electrical connectors, are in a mirror image positional relationship therewith, and are removably mateable with said first electrical connectors in response to movement of said carrier structure relative to said first housing into adjacency with said circuit board.

5,612,855

ADAPTER FOR MOUNTING ON A CIRCUIT BOARD

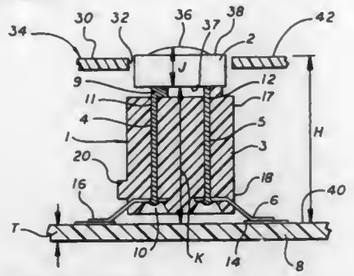
Alfred Heeb, and Klaus Wisskirchen, both of Berlin, Germany, assignors to Rudolf Schadow GmbH, Berlin, Germany

Filed Jun. 12, 1995, Ser. No. 489,336

Claims priority, application Germany, Jun. 14, 1994, 44 20 698.4

Int. Cl.[6] H05K 7/10; H01R 13/74

U.S. Cl. 361—773 7 Claims



1. An assembly comprising:

a case (34) having a top wall (30) with a window (32) therein and with a top wall upper face (42);

a circuit board (8) mounted within said case wherein said circuit board has a board upper face (40) and plurality of conductive traces (14) on said board upper face;

an optoelectronic component (2) that has a component housing (38) with an optically sensitive upper end (36) and a plurality of contacts (44), wherein said component housing has a bottom (37) and has a vertical thickness (J) which is less than half the board-to-top wall distance (H) between said board upper face and said top wall upper face;

an adaptor (1) which includes an adaptor housing (3) of dielectric material having a plurality of largely vertically-extending passages (4, 5) and having upper and lower adaptor housing portions (17, 18), with said optoelectric component housing substantially lying on said upper housing portion;

a plurality of SMD contacts (6), each mounted on said adaptor housing lower portion and joined to one of said traces on said circuit board;

a plurality of conductors (11, 12) each extending through one of said passages, with each conductor having an upper end electrically coupled to one of said component contacts (44) and a lower end connected to one of said SMD contacts;

said adaptor is tall enough that its height (K) is at least half of said board-to-top wall distance, and holds said component housing so said optically sensitive upper end is close to the level of said window in said case top wall.

5,612,856

CIRCUIT ARRANGEMENT FOR PRODUCING A DIRECT VOLTAGE WITH REDUCTION OF HARMONIC AND HIGH-FREQUENCY INTERFERENCES

Manfred Albach, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 342,296, Nov. 18, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,730

Claims priority, application Germany, Nov. 19, 1993, 43 39 451.5

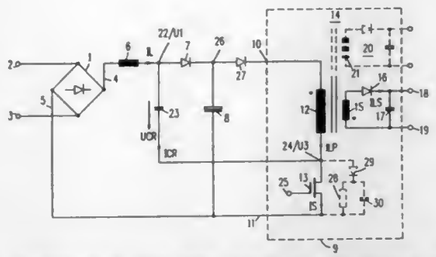
Int. Cl.[6] H02M 3/335:5/42

U.S. Cl. 363—20 7 Claims

1. A circuit arrangement for producing an output direct voltage from significantly sinusoidal input a.c. voltage of a first frequency, comprising:

a first rectifier device, for receiving the significantly sinusoidal input a.c. voltage and for producing a direct voltage output;

a first inductance, a second rectifier device and a first filter capacitor, which form a series arrangement arranged in parallel with the direct voltage output;



a switched-mode power supply having two input terminals and arranged parallel to the first filter capacitor and between which there is a series arrangement including a second inductance and a switching device, the switching device, being controlled by a second frequency, for being switched to the conductive and the non-conductive state and from which the output direct voltage can be supplied; and

a control capacitor, by means of which a junction point between the first inductance and the second rectifier device is linked to a junction point between the second inductance and the switching device, the first inductance and the control capacitor being rated such that a resonant frequency determined thereby exceeds the second frequency and the second frequency is chosen higher than the first frequency.

5,612,857

POWER SUPPLY APPARATUS

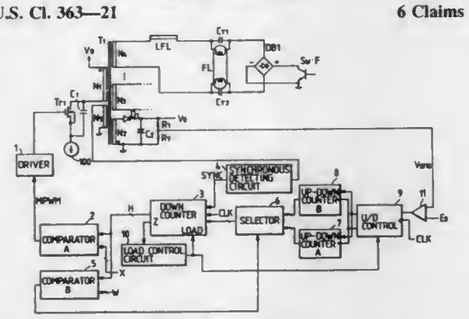
Tadashi Ishikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,204

Claims priority, application Japan, Jun. 11, 1995, 7-002691

Int. Cl.[6] G06F 1/26

U.S. Cl. 363—21 6 Claims



1. A power supply apparatus comprising:

a first comparator for comparing a detection value to detect a rectification output of a first predetermined winding of a transformer and a predetermined value;

first and second up/down counters in which counting up/down operations are switched by an output of said first comparator;

a selector for selecting outputs of said first and second up/down counters;

a sync circuit for generating a sync pulse at a predetermined timing in accordance with an output of a second predetermined winding of said transformer;

a down counter for loading the output of said up/down counter selected by said selector at a generating timing of said sync pulse;

second and third comparators for comparing an output of said down counter and different predetermined digital values; and

a driving circuit for deciding a conduction timing of a switching device of a driving winding on the primary side of said transformer in accordance with an output of said second comparator,

wherein said selector selects either one of said first and second up/down counters in accordance with an output of said third comparator.

5,612,858

FLYBACK CONVERTER

Harald Weinmeier, Vienna, and Eduard Schober, Acbau, both of Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

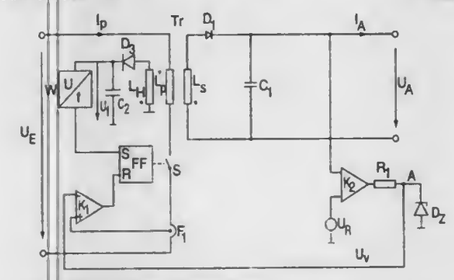
PCT No. PCT/EP94/03198, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996. PCT Pub. No. WO95/09476, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 26, 1994, Ser. No. 619,741

Claims priority, application Austria, Sep. 27, 1993, 1946/93

Int. Cl.[6] H02M 3/335

U.S. Cl. 363—21 7 Claims



1. A flyback converter comprising:

a transformer with a primary winding and at least one secondary winding;

a driving circuit;

a switch being driven by the driving circuit for applying an input direct voltage to the primary winding, the switch being driven at a clock frequency and with a duty factor;

a rectifier coupled to a load capacitor downstream from the secondary winding for generating an output direct voltage, the output direct voltage having an output voltage set value for deriving a deviation voltage; and

a current sensor for measuring a primary current flowing through the primary winding, the current sensor including a current sensor output signal for controlling the duty factor of the driven switch, the duty factor also being controlled by the deviation voltage of the output direct voltage,

wherein:

the output direct voltage is regulated while the primary current is less than a predetermined maximum primary current value,

the driver circuit includes a voltage/frequency converter to which a converter voltage is applied, the converter voltage being proportional to the output direct voltage, and

the clock frequency decreases as a function of the output direct voltage when the primary current exceeds the predetermined maximum primary current value and when the load increases.

5,612,859

BATTERY POLARITY SWITCH FOR GENERATING LOW FREQUENCY VOLTAGE WAVEFORMS

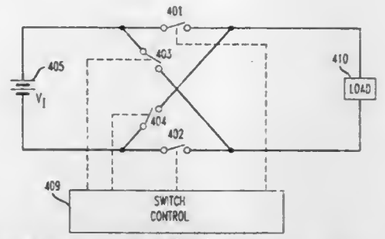
Robert J. Kakalec, Madison, N.J., and Keith C. Schmid, Dallas, Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 3, 1995, Ser. No. 435,297

Int. Cl.[6] H02J 3/00; H02M 7/02

U.S. Cl. 363—34 9 Claims

1. A power system for providing uninterruptible, low frequency AC power, comprising:



an input for accepting an AC voltage;

a rectifier for rectifying the AC voltage and supplying a DC voltage at the rectifier terminal;

means for supplying a reserve energy voltage at the rectifier terminal;

an output for accepting a load to be energized by low frequency AC voltage;

a bipolar switching circuit connecting the input to the output having a first pair of switches to couple the DC voltage to the load through an output and return lead and a second pair of switches for supplying an inverter version of the DC voltage to the load through the out and return leads; and

switch control circuitry for periodically switching the first and second pair of switches alternately conducting and non-conducting at low frequency, wherein

the first and second pair of switches do not include magnetic electrical components, the first and second pair of switches are directly connected to the output, and the power system does not include magnetic electrical components electrically connected to the output.

5,612,860

START-UP AND RUNNING CIRCUIT FOR RESONANT TRANSITION POWER CONVERTERS

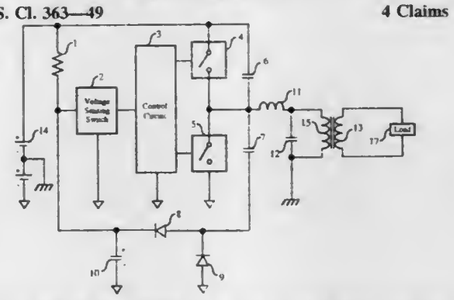
Ivan Meszlenyi, North York, Canada, assignor to Powerpaq Technologies Inc., Downsview, Canada

Filed Aug. 12, 1994, Ser. No. 289,401

Claims priority, application Canada, Aug. 12, 1993, 2103982

Int. Cl.[6] H02M 7/517

U.S. Cl. 363—49 4 Claims



1. A start-up and running circuit for a switch mode converter connected to a load, comprising:

a) a pair of switching elements connected at a junction in a bridge mode configuration;

b) control means for controlling the switching operation of said switching elements;

c) resonant network means having at least an inductor and an output capacitor;

d) transformer means having a primary winding and a secondary winding, wherein the primary winding is parallel to said output capacitor and the secondary winding is connected to said load;

e) snubber capacitor means connected to the junction of said switching elements for generating AC current responsive to operation of said switching elements;

f) rectifying means including a first rectifier for rectifying the AC current generated by said snubber capacitor means;

g) storage capacitor means for storing charges corresponding to said AC current rectified by said rectifying means;

h) resistor means for supplying an initial charge to said storage capacitor means; and

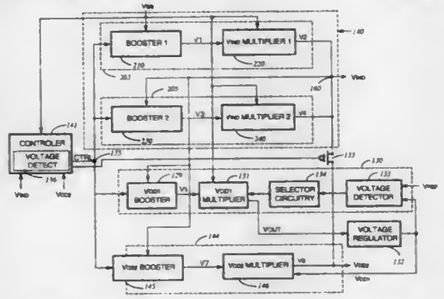
i) voltage sensing switch means with hysteresis, connected to said resistor means and storage capacitor means for applying power to said control means when the voltage on said storage capacitor means reaches a predetermined threshold voltage.

5,612,861

METHOD AND APPARATUS FOR LOW VOLTAGE CMOS START CIRCUIT

Zhong K. Zhong, Lake Worth, and Daniel Tran, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1995, Ser. No. 504,360
Int. Cl.[6] H02M *7/25;7/517*
U.S. Cl. 363—59 **19 Claims**



1. A start circuit for boosting a DC battery voltage to an initial predetermined voltage level VIND which is greater than the DC battery voltage, comprising:

first conversion means for boosting a DC battery voltage VBB, coupled to an input thereof, to a boosted output voltage V2;

second conversion means comprising second boosting means coupled to second multiplier means;

said second boosting means providing a boosted output voltage V3; and

said second multiplier means, having said voltage V3 input thereto and having the DC battery voltage input thereto, for providing a boosted output voltage V4, wherein said output voltage V4 is coupled to said output voltage V2 to provide an internal voltage VIND, said internal voltage VIND coupled as an input to said second boosting means and as an input to a main DC-DC conversion means;

voltage detect means for comparing said internal voltage V IND to a predetermined threshold level and for providing an output signal for disabling said first and second conversion means of said start circuit when said internal voltage VIND reaches the predetermined voltage level; and

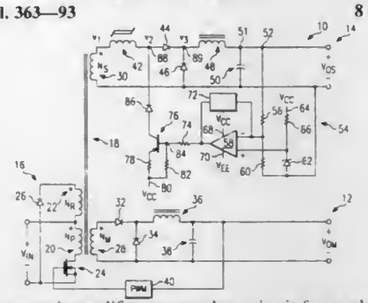
switching means, responsive to said voltage detect means, for coupling an output voltage VDD2 of the main DC-DC conversion means to an input of the main DC-DC conversion means.

5,612,862

METHOD AND CIRCUITRY FOR CONTROLLING CURRENT RESET CHARACTERISTICS OF A MAGNETIC AMPLIFIER CONTROL CIRCUIT

C. Lee Marusik, McKinney, and Edward Johnson, Plano, both of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed May 6, 1994, Ser. No. 238,779
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—93 **8 Claims**



1. A magnetic amplifier post regulator circuit for regulating an auxiliary output voltage of a switched-mode power supply having a transformer associated with a primary circuit for transforming a predetermined voltage across the transformer to the auxiliary output circuit, the predetermined voltage being controlled by the on-time of a power switch transistor of the primary circuit, said magnetic amplifier post regulator comprising:

a magnetic amplifier having a main magnetic amplifier winding, a reset control transistor, an error amplifier, and an auxiliary magnetic amplifier winding;

said magnetic amplifier for controllably blocking a portion of a voltage waveform in response to a controlled resetting condition to produce a magnetic amplifier output voltage for use by said auxiliary output circuit in producing said auxiliary output voltage;

said reset control transistor for controlling reset current to said magnetic amplifier in response to an error signal;

said error amplifier for comparing said auxiliary output voltage to a predetermined reference voltage and generating said error signal from said comparison; and

said auxiliary magnetic amplifier winding having a predetermined number of turns on said magnetic amplifier, said auxiliary magnetic amplifier winding for increasing the dynamic range of said magnetic amplifier post regulator for controlling said reset control transistor and said auxiliary output circuit so that said auxiliary output voltage may attain a zero value while said reset control transistor controls said magnetic amplifier in a blocking state during the entire on-time of the power switch transistor of the primary circuit.

5,612,863

SORTING SEQUENTIAL DATA PRIOR TO DISTRIBUTION OVER PARALLEL PROCESSORS IN RANDOM ACCESS MANNER

Alphonsius A. J. De Lange, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

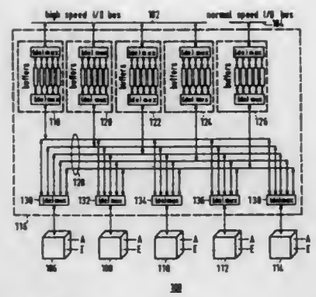
Filed Feb. 3, 1995, Ser. No. 383,392
Claims priority, application European Pat. Off., Feb. 4, 1994, 94200333
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—134 **7 Claims**

1. A data processing system comprising:

data port means;

a plurality of processing elements being operative to process sequential data and being coupled in parallel to the data port means;

control means coupled between the data port means and the processing elements for governing data communication;



characterized in that

the control means comprises a further plurality of buffer means for providing data channels between the data port means and the processing elements, each respective one of the buffer means including a respective plurality of parallel buffer segments;

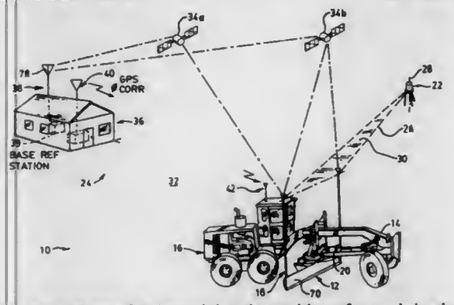
the control means is operative to selectively connect a single one of the buffer segments in respective ones of the buffer means to respective ones of the processing elements.

5,612,864

APPARATUS AND METHOD FOR DETERMINING THE POSITION OF A WORK IMPLEMENT

Daniel E. Henderson, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jun. 20, 1995, Ser. No. 493,188
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—167.01 **22 Claims**



1. An apparatus for determining the position of a work implement movably connected to a machine, comprising:

first receiving means for receiving electromagnetic radiation delivered from a plurality of remote locations and responsively producing a first position signal, said first receiving means being connected to said work implement and being at a first preselected location relative to said work implement spaced from a first point location on the work implement;

second receiving means for receiving electromagnetic radiation delivered from said plurality of remote locations and responsively producing a second position signal, said second receiving means being connected to said work implement and being at a preselected second location relative to said work implement spaced from a second point location on the work implement, said second means being spaced a preselected distance from said first means and said first point on the work implement being spaced a preselected distance from said second point on the work implement;

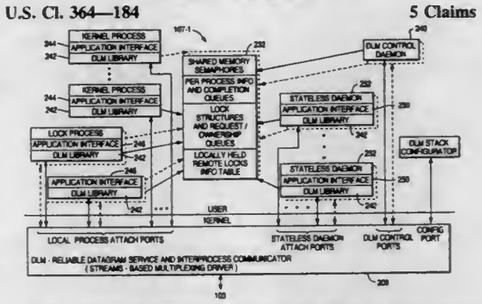
processing means for receiving said first and second position signals, determining first and second current coordinate positions of the first and second receiving means in a site coordinate system, defining a plane passing through the first and second current coordinate positions and a mid-point located along a substantially straight line passing between first and second previously defined coordinate positions of the first and second receiving means in the site coordinate system, transforming the first and second points from a local coordinate system related to the machine to the site coordinate system using said plane as a reference, and recording the position of the first and second points in the site coordinate system.

5,612,865

DYNAMIC HASHING METHOD FOR OPTIMAL DISTRIBUTION OF LOCKS WITHIN A CLUSTERED SYSTEM

Ranjan Dasgupta, Naperville, Ill., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 1, 1995, Ser. No. 456,435
Int. Cl.[6] G05B *9/02*
U.S. Cl. 364—184 **5 Claims**



1. In a clustered computer system including a network of processing nodes, resources shared by said processing nodes, and a distributed lock manager for coordinating processing activities within the clustered computer system, the improvement comprising a method for evenly distributing the mastership of said resources within a clustered computer system amongst the processing nodes, said method comprising the steps of:

maintaining a set of hash buckets within each processing node;

assigning each one of said resources to one of said hash buckets;

assigning a hash vector to each one of said hash buckets, each one of said hash vectors identifying said processing nodes in a predetermined sequence unique to said one of said hash buckets, mastership of the resources assigned to any one of said hash buckets residing with the first processing node identified by the hash vector assigned to said one of said hash buckets; and

reassigning mastership of the resources assigned to said set of hash buckets associated with one of said processing nodes following a failure of said one of said processing nodes to the next processing node having an active state identified by the hash vector assigned to said set of hash buckets associated with said failed processing node.

5,612,866

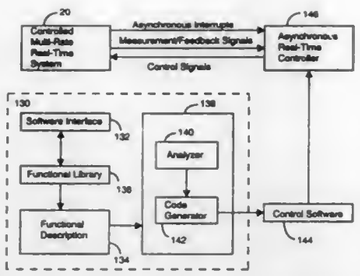
CODE GENERATION SYSTEM TO CONSTRUCT AN ASYNCHRONOUS REAL-TIME CONTROLLER FOR A REAL-TIME SYSTEM

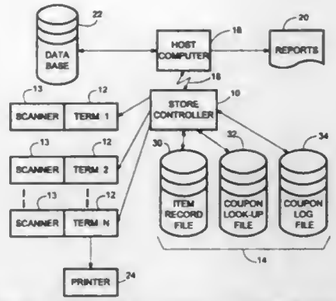
John Savanyo, Fremont, and Saumil S. Shah, Santa Clara, both of Calif., assignors to Integrated Systems, Inc., Santa Clara, Calif.

Filed Jun. 24, 1994, Ser. No. 265,389
Int. Cl.[6] G05B *19/42*
U.S. Cl. 364—191 **12 Claims**

1. A code generation system to construct an asynchronous real-time controller for a real-time system with asynchronous subsystems, comprising:

a software user interface to specify a functional description of a real-time system with asynchronous subsystems, said soft-





ware user interface including code construction elements selected from a functional library with a corresponding menu including

a start-up procedure selection option used to initialize a plurality of parameters associated with said real-time system,

a background procedure selection option to specify a control action to be executed in relation to said real-time system, and

an interrupt procedure selection option to specify an operation to be performed in response to an asynchronous interrupt signal, said startup procedure selection option, said background procedure selection option, and said interrupt procedure selection option each including a definition tool to read and write values to global variables; and

an automatic code generator responsive to said code construction elements to generate an asynchronous real-time controller with

a start-up procedure that initializes a plurality of parameters associated with said real-time system,

an interrupt procedure that specifies an operation to be performed in response to an asynchronous interrupt signal from said real-time system, and

a background procedure that continuously loops through a set of instructions and periodically generates a control action instruction, derived from said interrupt procedure, to be executed by said real-tume system, wherein said automatic code generator generates said asynchronous real-time controller such that said start-up procedure, said interrupt procedure, and said background procedure operate without being scheduled by a scheduler.

5,612,867

Patent Not Issued For This Number

5,612,868

METHOD AND APPARATUS FOR DISPENSING DISCOUNT COUPONS

George W. Off, Huntington Beach; Michael C. Scroggie, Valencia, both of Calif.; Thomas L. Mindrum, Fairfield, Conn., and Michael R. O'Brien, Santa Monica, Calif., assignors to Catalina Marketing International, Inc, St. Petersburg, Fla.

Continuation of Ser. No. 994,108, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 465,478, Feb. 15, 1990, Pat. No. 5,173,851, which is a division of Ser. No. 129,113, Dec. 4, 1987, Pat. No. 4,910,672, which is a continuation-in-part of Ser. No. 20,164, Feb. 27, 1987, Pat. No. 4,723,212, which is a continuation of Ser. No. 631,831, Jul. 18, 1984, abandoned. This application Feb. 9, 1995, Ser. No. 386,205

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—214 **12 Claims**

1. A system for generating, in a retail store, data defining a discount coupon, solely in response to a customer's action concerning the purchase of an item, the system comprising:

at least one terminal at a customer checkout location, having means for reading product codes on purchased items in a customer order;

an item record file, with which the terminal can communicate, containing price and other information for each product item;

means for storing the terms of at least one coupon deal in which the generation of a discount coupon for a selected product will be triggered by a customer's action concerning the purchase of a triggering product different from the one for which the coupon is generated;

means for identifying the triggering product in the customer order;

means for associating the triggering product with the coupon deal; and

means for automatically generating data defining at least one discount coupon for a product other than the triggering product, based on the details of the coupon deal and without the intervention or participation of the customer other than his or her action concerning the purchase of the triggering product.

5,612,869

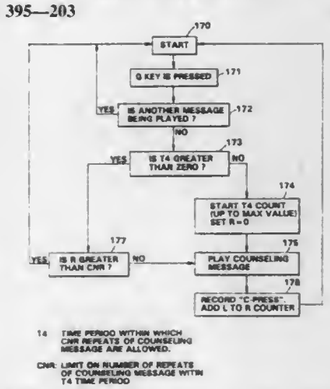
ELECTRONIC HEALTH CARE COMPLIANCE ASSISTANCE

Alan M. Letzt, Burke, Va., and Lester M. Spandorfer, Cheltenham, Pa., assignors to Innovative Enterprises International Corporation, Burke, Va.

Filed Jan. 21, 1994, Ser. No. 184,369

Int. Cl.[6] G06F *159/00*

U.S. Cl. 395—203 **47 Claims**



1. A health care compliance assistance system, comprising:

a host system, including:

input means for inputting speech data, user data and medication regimen data;

host storage means for storing said speech data, said user data and said medication regimen data;

programmed means responsive to said medication regimen data for generating a user file including said speech data and scheduling times for generating a speech message corresponding to said medication regimen data; and

transfer means;

a user device including:

user device storage means for storing said user file including speech data transferred to said user device by said transfer means;

speech generating means for generating the speech message corresponding to the speech data stored in said user device storage means; and

programmed control means for controlling said speech generating means to generate speech messages interactively with and responsive to a user,

wherein said programmed means of said host system is programmed for reducing transmission and storage inefficiencies in said health care compliance assistance system by reducing transmission and storage of speech data for repeated portions of a specific speech message, and for causing said transfer means to transfer to said user device speech-portion identifiers instead of said speech data for said repeated portions.

5,612,870

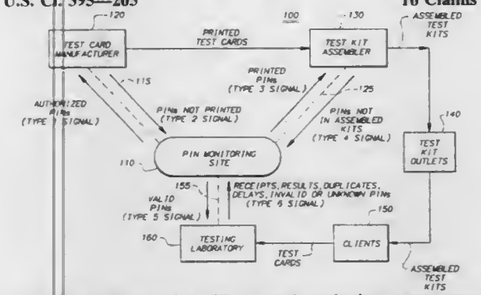
SYSTEM FOR TRACKING SECURE MEDICAL TEST CARDS

Stephen Welner, Martinsville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 30, 1994, Ser. No. 366,785

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—203 **16 Claims**



1. A method for tracking with a central monitoring system status and result information associated with a plurality of test cards, each of said test cards being anonymously associated with a patient such that said patient's identity is unknown to said central monitoring system, said central monitoring system being formed of a personal identification number database and a test results database, comprising the steps of:

(A) storing a first set of unique personal identification numbers (PINs) on said personal identification number database;

(B) providing a first digital signal representative of PINs from said first set of unique PINs to a test kit assembler;

(C) receiving in said central monitoring system a second digital signal from said test kit assembler representative of test kits actually assembled, each of said test kits actually assembled including a test card having one of said unique PINs from said first set of unique PINs associated therewith, and tracking said first set of unique PINs by updating said personal identification number database in response to said second digital signal;

(D) providing, from said central monitoring system, a third digital signal representative of a second set of unique PINs to a test lab in response to said second digital signal; and

(E) receiving in said central monitoring system a fourth digital signal from said test lab representative of test cards received at said test lab from patients, and tracking said first set of unique PINs by updating said personal identification number database and said test results database in response to said fourth digital signal;

wherein each of said test cards received at said test lab is known to said central monitoring system only by one of said unique PINs from said first set of unique PINs, and wherein an identity of a patient associated with each of said test cards received at said test lab is anonymous to said central monitoring system.

5,612,871

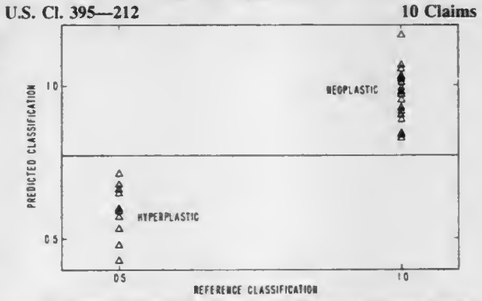
QUALITY MONITORED DISTRIBUTED VOTING SYSTEM

David Skogmo, Albuquerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Aug. 12, 1994, Ser. No. 289,861

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—212 **10 Claims**



1. A quality monitoring system for a distributed voting system comprising:

a) means for transmitting one or more check votes from a voter to a vote gathering facility of the distributed voting system, said check votes having predetermined check identifiers and associated predetermined check values;

b) means for selecting votes having predetermined check identifiers from votes received at the vote gathering facility

c) means for discovering fraud or malfunction in the distributed voting system by detecting differences between the values of said selected votes and the predetermined check values associated with said predetermined check identifiers.

5,612,872

MACHINE TRANSLATION SYSTEM

Kimikazu Fujita, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 12, 1995, Ser. No. 420,571

Claims priority, application Japan, Apr. 13, 1994, 6-074810

Int. Cl.[6] G06F *17/28*

U.S. Cl. 395—752 **20 Claims**

[SPECIFIED LANGUAGE DISPLAY]

ORIGINAL SENTENCE	TRANSLATED SENTENCE
J'ai achéte du pain.	I bought l(pane).
Once billetes de ida de segunda clase pura Toledo, por favor.	I(undici) second class one way tickets for Toledo, please.

1. A machine translation device for translating an original sentence written in a source language into a translated sentence written in a target language, comprising:

input means for inputting the original sentence;

original sentence analysis means for dividing the original sentence into single words and for analyzing syntactic structure of the original sentence;

a translation dictionary for storing related words of a same meaning in at least three languages including the source language and the target language;

dictionary reference means for referencing the translation dictionary and, when it finds an appropriate word in the target

language corresponding to a word in the original sentence, for retrieving the word in the target language, while when there is no appropriate word in the target language, for retrieving a word in a predetermined language aside from the source language which corresponds to a word in the original sentence from the translation dictionary as an untranslated word; and

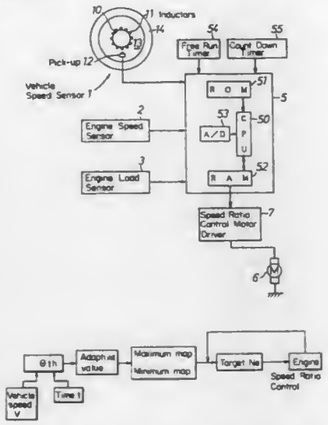
translated sentence generation means for converting every word in the syntactic structure of the original sentence into words in the target language and untranslated words and, by using the syntactic structure in which every word has been converted, for generating the translated sentence.

5,612,873

SPEED RATIO CONTROL METHOD AND DEVICE FOR CONTINUOUSLY VARIABLE TRANSMISSION

Sumitaka Ogawa, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 168,380
Claims priority, application Japan, Dec. 17, 1992, 4-337681
Int. Cl.[6] G06G *7/70;* **B60K** *23/00*
U.S. Cl. 364—424 **60 Claims**



1. An adaptive speed ratio control method for a continuously variable transmission of a vehicle having an engine, comprising the steps of:

computing an adaptation factor according to a function of an engine load component and time;

computing a target engine speed according to the adaptation factor; and

controlling said continuously variable transmission so that an engine speed becomes the target engine speed,

said step of computing an adaption factor comprising computing the adaptation factor by recursively adding a value of a previous adaptation factor to a value related to time.

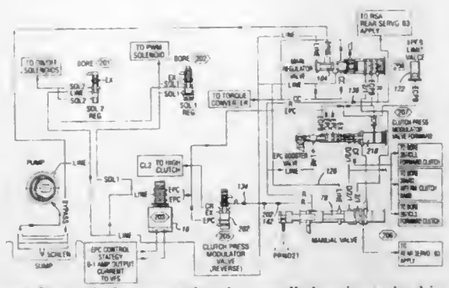
5,612,874

MULTIPLE RATIO AUTOMATIC TRANSMISSION WITH SOLENOID OPERATED VALVES FOR EFFECTING PRESSURE BUILDUP

Winfried F.-X. Schulz, Pulheim, and Johann Kirchhoffer, Cologne, both of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 323,464, Oct. 14, 1994, abandoned. This application May 4, 1995, Ser. No. 434,235
Int. Cl.[6] B60K *41/06*
U.S. Cl. 364—424.08 **12 Claims**

1. A control system for an automatic transmission comprising multiple ratio gearing elements with gear ratios defining plural torque flow paths between a throttle controlled engine and a driven shaft, said control system comprising;



pressure actuated clutch and brake means for controlling the relative motion of said gearing elements, an engine driven line pressure pump, at least one transmission ratio shift valve means for selectively distributing pressure developed by said pump to said clutch and brake means to effect ratio changes;

a pressure operated reverse clutch in said torque flow path between said engine and said gearing elements, said pump developing a line pressure, said control system providing a fluid pressure distribution path to said reverse clutch for activating said reverse clutch;

a main regulator valve means communicating with said pump for maintaining said line pressure;

a solenoid operated pressure control valve means for modulating said line pressure to produce a control pressure;

means for establishing control signals determined by operating variables of said transmission and said engine including engine throttle position and engine speed;

an electronic microprocessor having a memory portion with storage registers containing ratio shift and line pressure control strategy and means for distributing said control signals to said solenoid operated pressure control valve means;

said main regulator valve means including a line pressure booster valve means for augmenting line pressure maintained by said main regulator valve means;

a control pressure valve means communicating with said line pressure booster valve means and with said solenoid operated pressure control valve means for establishing control pressure values that determine a first functional relationship between said line pressure and said control pressure and for establishing boosted control pressure values that determine a second functional relationship between said line pressure and said control pressure thereby providing sufficient clutch and brake capacity during vehicle start-up;

a reverse clutch pressure modulator valve means in said control system communicating with said main regulator valve means, said solenoid operated pressure control valve means and said reverse clutch for modulating pressure buildup in said reverse clutch upon activation of said reverse clutch whereby reverse clutch engagement is cushioned.

5,612,875

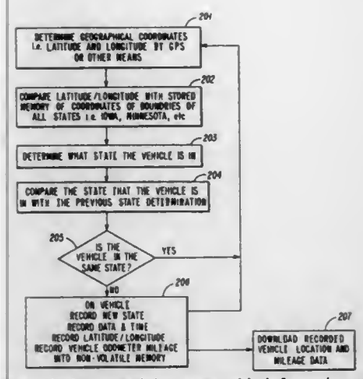
SYSTEM FOR ACCURATELY DETERMINING THE MILEAGE TRAVELED BY A VEHICLE WITHIN A STATE WITHOUT HUMAN INTERVENTION

Richard S. Haendel, Cedar Rapids, Iowa, and James C. Neisch, Clarkston, Mich., assignors to Rockwell Science Center Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 19,714, Feb. 19, 1993, Pat. No. 5,359,528. This application Oct. 24, 1994, Ser. No. 328,982
Int. Cl.[6] G06F *13/00*
U.S. Cl. 364—424.04 **2 Claims**

1. A system for determining distance traveled by a vehicle within a predetermined jurisdiction comprising:

a positioning system for generating present position information, in a predetermined geographic coordinate system, for said vehicle;



a memory device, containing geographic information of boundaries of said predetermined jurisdiction;

a processor coupled with said positioning system and said memory device for comparing the present position information with said geographic information and determining if said vehicle has crossed one of said boundaries; and

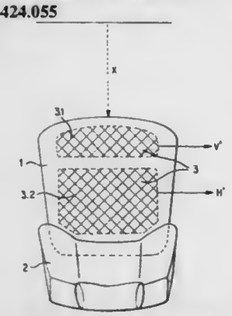
means for determining the distance traveled by said vehicle between successive events of said vehicle crossing said boundaries.

5,612,876

DEVICE FOR DETECTING SEAT OCCUPANCY IN A MOTOR VEHICLE

Falk Zeidler, Sindelfingen; Volker Petri, Aidlingen; Reinhold Mickeler, Altdorf, and Michael Meyer, Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 3, 1995, Ser. No. 399,714
Claims priority, application Germany, Mar. 3, 1994, 44 06 897.2
Int. Cl.[6] B60R *21/32*
U.S. Cl. 364—424.055 **15 Claims**



15. A device for detecting seat occupancy states in a motor vehicle, the device comprising:

a seat occupancy sensor integrated in a seat cushion of the seat;

an evaluation circuit coupled to the seat occupancy sensor;

wherein said seat occupancy sensor is divided into a front sensing region and a rear sensing region, said front sensing region responding to seat occupancy in a front region of the seat cushion close to a front seat edge, and the rear sensing region responding to seat occupancy in a rear region of the seat cushion;

wherein an occupancy state of both said front and rear regions is separately evaluated by said evaluation circuit; and

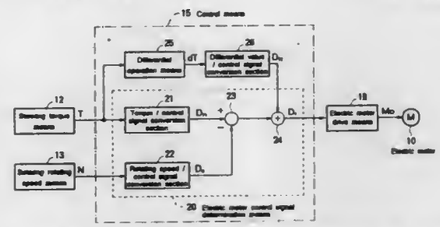
whereby a response from only said front sensing region indicates an incorrect seat occupancy state for an airbag release.

5,612,877

ELECTRIC POWER STEERING APPARATUS

Yasuo Shimizu; Shigeru Yamawaki; Shinzi Hironaka, and Yoshinobn Mukai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,593
Claims priority, application Japan, Jun. 27, 1994, 6-145043
Int. Cl.[6] B62D *5/04*
U.S. Cl. 364—424.051 **6 Claims**



1. An electric power steering apparatus for applying the power of an electric motor to a steering system to reduce the steering torque, comprising:

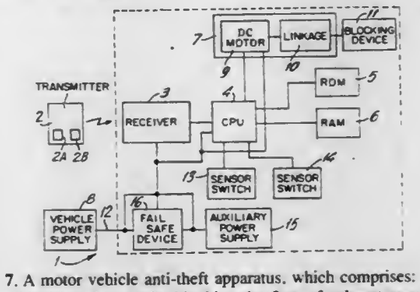
a steering torque detection means for detecting the steering torque of the steering system; a differential operation means for differentiating said steering torque; a steering rotating speed detection means for detecting the steering rotating speed of the steering system; an electric motor control signal determination means for determining an electric motor control signal by damping the value corresponding to a signal output from said steering rotating speed detection means from the value corresponding to a signal output from said steering torque detection means and then adding to the result the value corresponding to a signal output from said differential operation means; and an electric motor drive means for driving said electric motor based on the signal output from this electric motor control signal determination means.

5,612,878

APPARATUS AND METHOD FOR MOTOR VEHICLE ANTI-THEFT AND/OR THEFT DETERRENCE

Raymond A. Joao, and Raymond D. Joao, both of 122 Bellevue Pl., Yonkers, N.Y. 10703

Filed Jun. 22, 1995, Ser. No. 493,855
Int. Cl.[6] B60R *25/00*
U.S. Cl. 364—424.045 **20 Claims**



7. A motor vehicle anti-theft apparatus, which comprises:

a blocking element for blocking the flow of exhaust gases in a vehicle exhaust system;

a driving device for moving said blocking element;

a control device for controlling said driving device; and

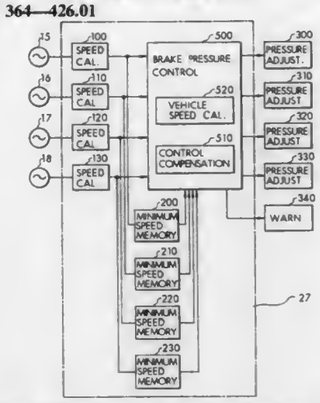
an actuation device for actuating said control device;

wherein said blocking element is moveable between at least of a first position, whereat said blocking element is located outside of the path of flow of exhaust gases, and a second position, whereat said blocking element is in the path of flow of exhaust gases.

5,612,879
VEHICLE CONTROL UNIT FOR CONTROLLING A SPECIFIC TARGET BASED ON WHEEL SPEED

Nobuhiko Makino, Anjo, Japan, assignor to Niipondenso Co., Ltd., Kariya, Japan

Filed Mar. 17, 1995, Ser. No. 405,692
Claims priority, application Japan, Mar. 22, 1994, 6-050300
Int. Cl.[6] B60T *8/32*
U.S. Cl. 364—426.01 **18 Claims**



1. A vehicle control unit for controlling a specific control target on a vehicle based on a wheel speed comprising:

signal outputting means for outputting a frequency signal corresponding to a wheel rotating speed;

wheel speed calculation means for calculating a wheel speed on the basis of the frequency signal output by the signal outputting means;

memory means for storing as a minimum calculable wheel speed a minimum value among the wheel speeds calculated by the wheel speed calculation means;

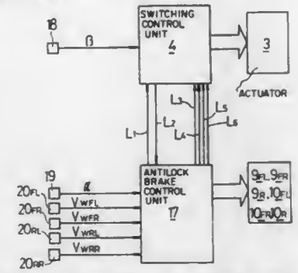
comparing means for comparing the minimum wheel speed with the wheel speeds calculated by the wheel speed calculation means; and

vehicle control changing means for changing a content of control toward the specific control target depending on the result of the comparison executed by the comparing means.

5,612,880
PROCESS FOR CONTROLLING TRAVEL STATE DURING BRAKING IN VEHICLE

Takeshi Kojima; Toshio Yahagi; Kazuaki Fukami; Syouji Suzuki, and Kunimichi Hatano, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 377,086
Claims priority, application Japan, Jan. 26, 1994, 6-007205
Int. Cl.[6] B60T *8/66;8/58;* **B60K** *17/34*
U.S. Cl. 364—426.019 **4 Claims**



1. A method for controlling the driving state of a vehicle switchable between a four-wheel drive state and a two-wheel drive state and having an antilock brake control system, during braking of the vehicle for eliminating a locking tendency of a wheel, said method comprising the steps of:

(a) sensing the speed of each of the vehicle wheels;

(b) sensing the longitudinal acceleration/deceleration of the vehicle;

(c) calculating a monitored estimated vehicle speed based upon the highest of the sensed wheel speeds and the sensed longitudinal acceleration/deceleration;

(d) determining a judgement speed having a value lower than the monitored estimated vehicle speed;

(e) calculating a vehicle speed based upon each of the sensed wheel speeds, respectively;

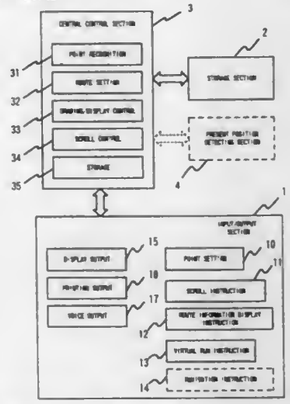
(f) comparing the highest calculated vehicle speed to the judgement speed; and

(g) switching the drive state of the vehicle from four-wheel drive to two-wheel drive when the highest calculated vehicle speed is equal to or less than the judgement speed when the vehicle is in a four-wheel drive state.

5,612,881
MAP DISPLAY SYSTEM

Syuzo Moroto, Nagoya; Koji Sumiya, Nishio; Yasunobu Ito, Okazaki; Kunihiro Yamada, Anjo; Mitsuhiro Nimura, and Takeshi Yano, both of Okazaki, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Dec. 15, 1994, Ser. No. 356,891
Claims priority, application Japan, Dec. 27, 1993, 5-332822; Dec. 27, 1993, 5-332825; Dec. 29, 1993, 5-351322; Jan. 25, 1994, 6-006144
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—449.3 **19 Claims**



1. A vehicle navigation apparatus for setting a route and then for selectively performing actual route guidance while traveling along the route or performing a virtual route guidance by simulating route guidance along the route, comprising:

data storage means in which map information is stored;

point setting means for setting at least two set route points on a map derived from the stored map information;

route setting means for determining a route on the map between the at least two set route points;

means for selecting an actual route guidance mode or a virtual route guidance mode;

actual vehicle location means responsive to selection of said actual route guidance mode for determining an actual present position of a vehicle;

simulated vehicle location means responsive to selection of said virtual route guidance mode for determining a simulated present position on the route;

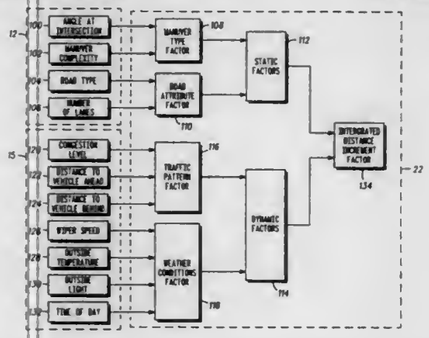
said simulated vehicle location means including means for setting a rate of movement of the simulated present position along the route; and

route information output means for outputting vehicle navigational display information including said actual present position when said actual guidance mode is selected and said simulated present position when the virtual route guidance mode is selected.

5,612,882
METHOD AND APPARATUS FOR PROVIDING NAVIGATION GUIDANCE

Rebecca K. LeFebvre, 130 Toulon Dr., Buffalo Grove, Ill. 60089; Patrick M. Ryan, 404 Concord La., North Barrington, Ill. 60010; Joseph W. Seda, 924 Valley Stream Dr., Wheeling, Ill. 60090; Leslie G. Seymour, 861 Shoreline Rd., Barrington, Ill. 60010, and Yilin Zhao, 2742 Wilshire La., Northbrook, Ill. 60062

Filed Feb. 1, 1995, Ser. No. 384,071
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—449.3 **16 Claims**



8. A method for providing navigation guidance via a land vehicle comprising the steps of:

providing a navigation route planner having a road network database for planning a navigation route along a road network;

determining a current estimated position of the land vehicle;

communicating maneuver instructions to a driver of the land vehicle at a predetermined maneuver distance base value before the land vehicle reaches a required maneuver along a planned navigation route;

quantifying information from the road network database into a plurality of static factors, wherein each static factor is formed from at least one of maneuver type factors and road attribute factors, wherein each maneuver type factor and road attribute factor corresponds to a maneuver on the planned navigation route;

detecting and quantifying environmental information into a dynamic factor, wherein the dynamic factor is formed from at least one of a traffic pattern factor and a weather condition factor including information representing an ambient temperature, a speed of windshield wiper movement, a time of day, and an amount of light;

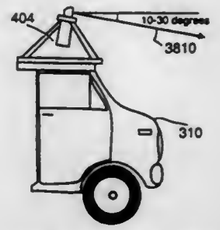
combining the dynamic factor and a static factor corresponding to each required maneuver into an integrated distance increment factor; and

adjusting the maneuver distance base value for each maneuver based on the integrated distance increment factor.

5,612,883
SYSTEM AND METHOD FOR DETECTING OBSTACLES IN THE PATH OF A VEHICLE

Gary K. Shaffer, Butler; William L. Whittaker; Jay H. West, both of Pittsburgh, all of Pa.; Richard G. Clow, Phoenix, Ariz.; Sanjiv J. Singh, Pittsburgh, Pa.; Norman K. Lay, Peoria, Ill., and Lonnie J. Devier, Pittsburgh, Pa., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Feb. 5, 1990. This application May 1, 1995, Ser. No. 432,406
Int. Cl.[6] G01C *3/06*
U.S. Cl. 364—460 **12 Claims**



1. A scanning system, mounted on a vehicle, for detecting an object in a path of said vehicle, comprising:

means for producing a beam of energy;

means for scanning said beam of energy through a desired range of angles relative to said vehicle;

means for measuring a distance between said vehicle and the object in the path of said vehicle, comprised of:

means for detecting reflected energy, said reflected energy being produced by a reflection of said beam off of the object,

means for storing information associated with said reflected energy, and

means for processing the associated information to calculate a distance said reflected energy has traveled; and

means for disabling said producing means during a portion of said desired range of angles so that only a fraction of said desired range of angles is scanned and an amount of the associated information that is stored is minimized.

5,612,884
REMOTE METER OPERATION

John G. Haines, Oakland, Calif., assignor to f.m.e. Corporation, Hayward, Calif.

Continuation of Ser. No. 777,776, Oct. 15, 1991, Pat. No. 5,369,401, which is a continuation-in-part of Ser. No. 328,112, Mar. 23, 1989, Pat. No. 5,077,660, Ser. No. 327,779, Mar. 23, 1989, Pat. No. 5,107,455, Ser. No. 327,487, Mar. 23, 1989, Pat. No. 5,058,025, and Ser. No. 614,054, Nov. 9, 1990, abandoned, which is a continuation of Ser. No. 328,099, Mar. 23, 1989, abandoned. This application Oct. 4, 1994, Ser. No. 317,951
Int. Cl.[6] G06F *7/04*
U.S. Cl. 364—464.13 **11 Claims**

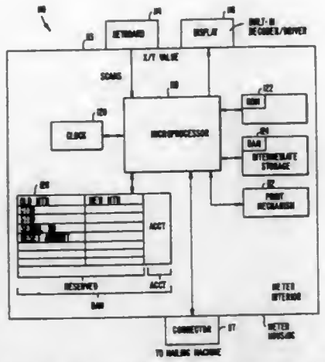
1. A method of operating a postage meter comprising the steps of:

installing said postage meter, installation of said postage meter being registered in a central office computer, said installing step including generating of first and second meter-generated codes by said postage meter and of first and second computer-generated codes by said central office computer;

waiting a specified time until an inspection date, said waiting step performed by said central office computer;

generating a reminder to inspect said postage meter at said central office computer, said generating step performed by said central office computer;

remotely resetting said postage meter without adding postage, said remote resetting without addition of postage performed by said central office computer and said postage meter upon



performance of a postal inspection, wherein said step of remote resetting without addition of postage includes advising said central office computer that said postage meter has been inspected; and

resetting said inspection date, said resetting step achieved by said central office computer in response to said remote resetting without adding postage.

5,612,885

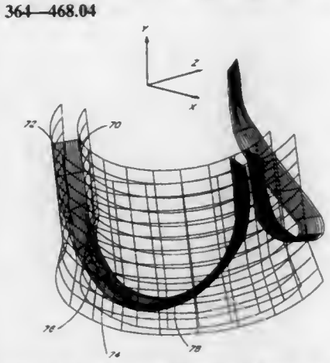
METHOD FOR CONSTRUCTING A HEART VALVE STENT

Charles S. Love, Newbury Park, Calif., assignor to Autogenics, Newbury Park, Calif.

Division of Ser. No. 169,336, Dec. 17, 1993. This application Jun. 6, 1995, Ser. No. 475,030

Int. Cl.[6] G06F *17/50;19/00;* **G06T** *17/10*

U.S. Cl. 364—468.04 **8 Claims**



1. A method for constructing a stent for a beart valve, comprising the steps of:

creating a stent profile primitive;

rotating said stent profile primitive about a first axis to create a solid stent blank having inner and outer surfaces;

creating first and second splines;

forming a plurality of planes by connecting the intersection of said first spline with said inner surface of said solid stent blank with the intersection of said second spline with said outer surface of said solid stent blank at a plurality of locations displaced angularly along said first axis from each other an equal amount;

removing the material from said solid stent blank above each of said planes to form posts; and

filleting said posts to provide a smooth upper surface for each of said posts.

5,612,886

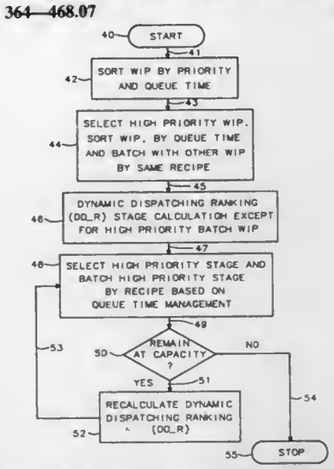
METHOD AND SYSTEM FOR DYNAMIC DISPATCHING IN SEMICONDUCTOR MANUFACTURING PLANTS

Yi-Cherng Weng, Tainan, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed May 12, 1995, Ser. No. 440,094

Int. Cl.[6] G06F *19/00;* **G06G** *7/64;7/66*

U.S. Cl. 364—468.07 **11 Claims**



1. A method of operating a manufacturing control system with computer control of work flow in automatic control of a manufacturing production line by the steps in the sequence comprising,

sorting Work In Process (WIP) by priority and queue time,

selecting high priority WIP, in terms of schedule requirements, after sorting of WIP by priority and queue time,

after said selecting high priority WIP, sorting WIP by queue time and hatching with other WIP with a same recipe of process steps and process conditions,

performing DD_R stage calculation except for high priority batch WIP, where

$$DD_R = UT - \frac{AO}{NEC_R},$$

where

UT=Updated Target,

AO=Actual Out data,

$$NEC_R = \frac{NEG_WIP}{EAC},$$

NEG_WIP=Next_Equipment Group WIP, and

EAC=Equipment Availability Capacity,

selecting a high priority stage by computer sorting, and then hatching said high priority stage by a said recipe based upon queue time management by computer sorting,

a testing step to determine whether the production line remains loaded at capacity, and

if the production line is operating below capacity, then since the dispatching system is operating below capacity the said method of operating a manufacturing control system stops,

but if the production line remains operating at capacity, then branching to recalculate the DD_R and then returning to the step of selecting the high priority stage and selecting the batch high priority stage by recipe of process steps and process conditions based upon queue time management followed by repeating said testing step and the steps which follow said testing step,

whereby automation of production control of a manufacturing process is provided by improved automation of work scheduling.

5,612,887

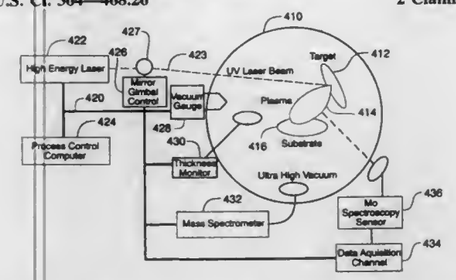
AUTOMATION OF PULSED LASER DEPOSITION

Samuel J. P. Laube, Cincinnati, and Elizabeth F. Stark, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1995, Ser. No. 386,240

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.26 **2 Claims**



1. A computer control system for a Pulsed Laser Deposition (PLD) growth process in which a target of a given material and a substrate are located within a vacuum chamber and subjected to laser beam scanning;

said PLD process having beam control means for controlling the direction of the laser beam to scan the target to produce a plasma which coats the substrate;

said PLD process including sensors for the vacuum chamber, with data acquisition means coupled to at least one of said sensors;

said PLD process also having a process control computer including an operator console, with said process control computer being coupled via a bus to bus instruments for said sensors and said data acquisition means;

wherein said computer control system comprises:

means for initializing a PLD instrumentation system which includes means for opening a data file means;

means for determining a presence of selected condition-indicating signals from said vacuum chamber sensors;

means for controlling deposit of a PLD film and for determining when a desired deposition is completed and then shutting down said laser; and

means for closing said data file means.

5,612,888

METHOD AND APPARATUS FOR GENERATING A MAILPIECE

Sung S. Chang, Stamford; James L. Harman, Southport; Gary S. Jacobson, East Norwalk; Wesley A. Kirschner; Michael J. Ramadei, both of Trumbull, and Eric L. Zuidema, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

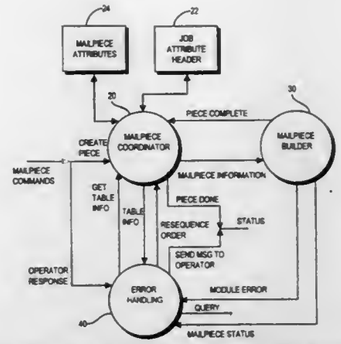
Filed Apr. 13, 1995, Ser. No. 421,120

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—478.09 **20 Claims**

1. A method for generating a mailpiece in a mailing system having a plurality of document paths, the method comprising the steps of:

generating a table for tracking each mailpiece in the mailing system, requiring no printing of codes on each mailpiece;



storing attribute data relating to the mailpiece in a memory;

storing job data relating to a mailing job in the memory;

determining a set of actions to be performed on the mailpiece in correspondence to the attribute data; and,

providing at least one mailpiece builder task for commanding the set of actions.

5,612,889

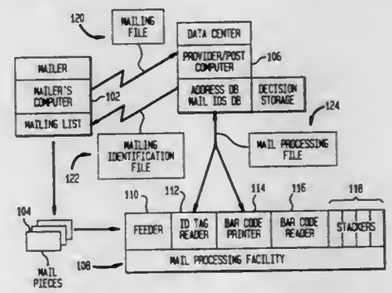
MAIL PROCESSING SYSTEM WITH UNIQUE MAILPIECE AUTHORIZATION ASSIGNED IN ADVANCE OF MAILPIECES ENTERING CARRIER SERVICE MAIL PROCESSING STREAM

Leon A. Pintsov, West Hartford, and Robert A. Cordery, Danbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1994, Ser. No. 317,515

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—478.14 **14 Claims**



1. A method for processing mail, comprising the steps of:

creating a mailing list including destination addresses for mailpieces to be submitted to a carrier service for delivery;

generating a unique mailpiece identifier associated with each of the mailpieces on said mailing list;

printing each said unique mailpiece identifier on the mailpiece with which it is associated;

submitting the mailpieces with the unique mailpiece identifier printed thereon to said carrier service;

processing said mailpiece to obtain said unique mailpiece identifier; and,

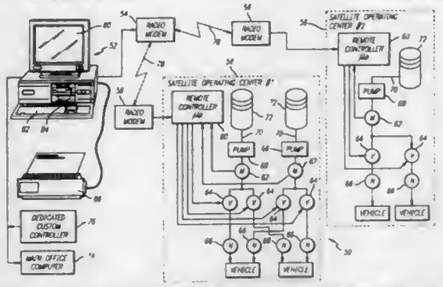
utilizing said obtained unique mailpiece identifier from each said mailpiece to obtain a destination delivery code.

5,612,890

SYSTEM AND METHOD FOR CONTROLLING PRODUCT DISPENSATION UTILIZING METERED VALVE APPARATUS AND ELECTRONIC INTERCONNECTION MAP CORRESPONDING TO PLUMBING INTERCONNECTIONS

John G. Strasser; Joseph Reymann, and John E. Fail, all of San Dimas, Calif., assignors to F C Systems, Inc., Pomona, Calif.

Filed May 19, 1995, Ser. No. 445,053
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—479.11 **23 Claims**



14. A system for controlling the dispensing of materials comprising:

at least one metered quantity control apparatus controlling a movement of materials from at least one bulk material supply in response to an authorization signal;

a central controller for establishing an electronic interconnection map corresponding to interconnections between said at least one bulk material supply and said at least one metered quantity control apparatus, said central processor employing said electronic interconnection map to generate said authorization signal; and

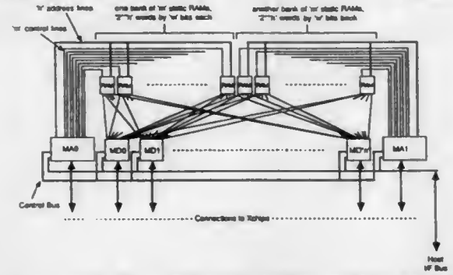
a remote communication link for providing said authorization signal from said central processor to said at least one metered quantity control apparatus.

5,612,891

HARDWARE LOGIC EMULATION SYSTEM WITH MEMORY CAPABILITY

Michael R. Butts, Portland, and Jon A. Batcheller, Newberg, both of Oreg., assignors to Quickturn Design Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 245,310, May 17, 1994, Pat. No. 5,452,231, which is a continuation of Ser. No. 923,361, Jul. 31, 1992, abandoned, which is a division of Ser. No. 698,734, May 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 417,196, Oct. 4, 1989, Pat. No. 5,036,473, which is a continuation-in-part of Ser. No. 254,463, Oct. 5, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 470,751
Int. Cl.[6] H03K *17/693*
U.S. Cl. 364—489 **10 Claims**



1. An electrically reconfigurable hardware emulation apparatus which can be configured with a circuit design in response to the input of circuit information, the circuit design including memory resources, said electrically reconfigurable hardware emulation apparatus comprising:

a plurality of electrically reconfigurable devices, at least some of said electrically reconfigurable devices containing reprogrammable functional logic elements and input/output terminals capable of being connected to at least some of said functional logic elements,

at least one other of said electrically reconfigurable devices containing reprogrammable electrical conductors which are used to reconfigurably interconnect selected input/output terminals of selected electrically reconfigurable devices containing functional logic elements such that selected functional logic elements in one of said selected electrically reconfigurable devices containing functional logic elements can be electrically coupled to selected functional logic elements in another of said selected electrically reconfigurable devices containing functional logic elements; and

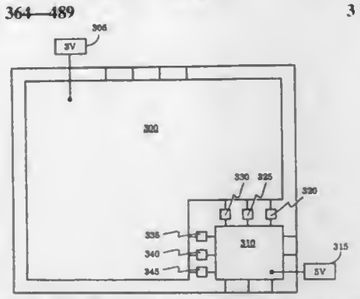
at least one memory device electrically coupled to selected input/output terminals of at least one predetermined electrically reconfigurable device in said plurality of electrically reconfigurable devices.

5,612,892

METHOD AND STRUCTURE FOR IMPROVING POWER CONSUMPTION ON A COMPONENT WHILE MAINTAINING HIGH OPERATING FREQUENCY

Waleed Almulla, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 168,932, Dec. 16, 1993, abandoned. This application Feb. 5, 1996, Ser. No. 596,493
Int. Cl.[6] H03K *17/14*
U.S. Cl. 364—489 **3 Claims**



1. A method for designing a low powered electrical component comprising signal paths of devices which operate at a supply voltage and operate at a determined operating frequency comprising the steps of:

determining a maximum propagation delay requirement permissible on critical signal paths of devices of the component from the determined operating frequency;

identifying those critical signal paths which do not meet the requirement determined at a determined lower power supply voltage; separating the critical signal paths which do not meet the requirement determined from the remainder of the signal paths;

connecting devices in the critical signal paths which do not meet the requirement to a higher voltage power supply such that the signal paths meet the requirement determined;

connecting the devices in the remainder of the signal paths to the lower voltage power supply; and

transitioning signals propagating between devices which operate at the higher power voltage supply and the lower power voltage supply;

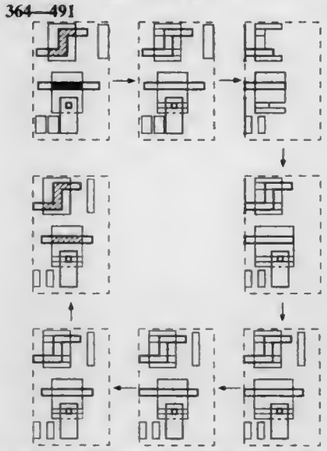
wherein a component operates at the determined operating frequency while consuming the minimum amount of power.

5,612,893

METHOD AND APPARATUS FOR COMPACTING INTEGRATAED CIRCUITS WITH TRANSISTOR SIZING

Ling-Hui Hao, Fremont, and Lawrence B. Edwards, San Jose, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 171,575, Dec. 22, 1993, abandoned. This application May 24, 1996, Ser. No. 653,476
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **4 Claims**



1. A method executed by a computer under the control of a program, said computer including a memory for storing said program, said method comprising the steps of:

receiving input data representing a semiconductor mask pattern for an integrated circuit layout;

invoking a set of compaction design rules to be satisfied by said semiconductor mask pattern;

identifying transistor gate cells within said semiconductor mask pattern;

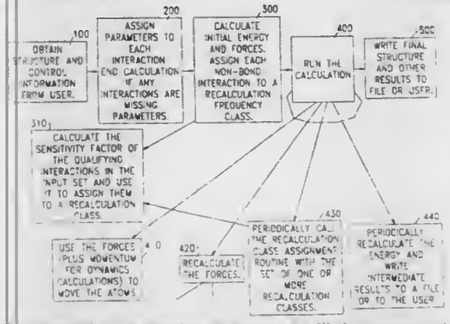
compacting said semiconductor mask pattern, including individual cells of said semiconductor mask pattern, except said transistor gate cells, in accordance with said set of compaction design rules.

5,612,894

SYSTEM AND METHOD FOR MOLECULAR MODELING UTILIZING A SENSITIVITY FACTOR

David H. Wertz, 169 Snowden La., Princeton, N.J. 08540

Filed Feb. 8, 1995, Ser. No. 390,600
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—496 **8 Claims**



2. A method for generating an image of a likely structure of a molecule, comprising the steps of:

(a) accepting as input into a computer an initial structure of the molecule, the initial structure of the molecule including a set of atom coordinates for the molecule;

(b) generating a set of interactions for each atom, each interaction corresponding to a force between its respective atom and one or more other atoms in the molecule;

(c) determining, from the initial structure of the molecule, a set of qualifying interactions and a set of non-qualifying interactions, the total set of interactions being a super-set of the set of qualifying interactions and the set of non-qualifying interactions;

(d) calculating a sensitivity factor for each interaction of the set of qualifying interactions based upon a sensitivity of the initial force of each interaction of the set of qualifying interactions with respect to changes in the position of the atoms which correspond to said each interaction, each sensitivity factor indicating a recalculation frequency for a respective interaction of the set of qualifying interactions;

(f) performing one of an energy minimization procedure and a molecular dynamics procedure, the step of performing including:

1) calculating a new force for each interaction of the set of interactions for an $n-1^{th}$ structure of the molecule, the step of calculating further including the steps of:

(a) fully calculating a new force for each interaction of the set of non-qualifying interactions;

(b) fully calculating a new force for an interaction of the set qualifying interactions if the respective recalculation frequency for said interaction indicates that a previously calculated force is invalid;

(c) using an approximation for the new force for an interaction of the set of qualifying interactions if the recalculation frequency for said interaction indicates that the approximation invalid, said approximation being one of a previously calculated force, and a force calculated using a rapidly calculated equation;

2) calculating a new total force for each atom by summing the new forces from all the interactions corresponding to said each atom;

3) using the new total forces for the $n-1^{th}$ structure of the molecule to calculate an nth structure of the molecule;

4) repeating step (f)(1–2) for n=1 through X interactions to generate X possible structures of the molecule,

(g) generating the image of the likely structure of the molecule, or a representative structure, or a sequence of structures based upon one or more of the X possible structures of the molecule.

5,612,895

METHOD OF RATIONAL DRUG DESIGN BASED ON AB INITIO COMPUTER SIMULATION OF CONFORMATIONAL FEATURES OF PEPTIDES

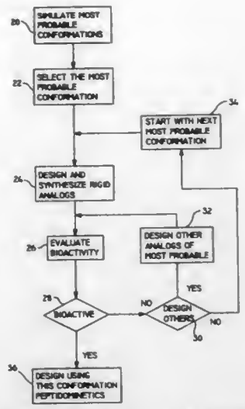
Vitukudi N. Balaji, 1642 Orchard Wood Rd., and Chandra U. Singh, 1213 Orchard Glen Cir., both of Encinitas, Calif. 92024

Continuation of Ser. No. 223,513, Apr. 5, 1994, which is a continuation of Ser. No. 628,111, Dec. 14, 1990, Pat. No. 5,331,573. This application Apr. 21, 1995, Ser. No. 427,118
Int. Cl.[6] G06F *15/42*
U.S. Cl. 364—496 **19 Claims**

1. An ab initio computer-assisted method of predicting a stable tertiary structure of a peptide without any presumption regarding the underlying structural characteristics of the peptide, comprising:

(a) simulating a real-size primary structure of a polypeptide in a solvent box, said primary structure comprising a plurality of amino acid residues linked together in a chain, each residue having ϕ, ψ angles associated therewith, said ϕ, ψ angles defining the relative angle of a first and second amide plane of said amino acid residue with a common C^{α} atom of said amino acid residue;

(b) shrinking the size of the peptide isobarically and isothermally;



(c) expanding the peptide to its real size in selected time periods; and

(d) measuring the ϕ, ψ angles of the expanding amino acid residues.

5,612,896

METHOD FOR DETERMINING CHARACTERISTIC VARIABLES OF AN ELECTROCHEMICALLY CONVERTIBLE SUBSTANCE IN A GAS SAMPLE

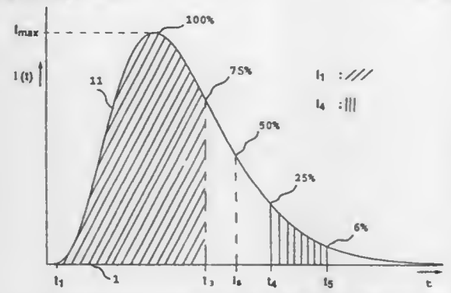
Burkhard Stock, Lübeck, Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Dec. 22, 1994, Ser. No. 361,514

Claims priority, application Germany, Dec. 23, 1993, 43 44 196.3

Int. Cl.[6] G06G *7/19*

U.S. Cl. 364—497 **18 Claims**



11. A method for determining characteristic variables of an electrochemically convertible substance in a gas sample, the method comprising the steps of:

utilizing an electrochemical measuring sensor generating a sensor current i(t) which changes as a function of time to define a curve and which increases from a reference current line up to a maximum value (i_{max}) and returns to said reference current line;

computing the portion of said substance in said gas sample in an evaluation circuit by integrating over an area (I) enclosed between said reference current line and said curve;

subdividing said area into component areas representing respective first to fourth component integrals (I_1, I_2, I_3, I_4);

determining at least one of a first of said characteristic variables as indicative of the concentration of said substance and a second of said characteristic variables as indicative of the identity of said substance from at least two of said component integrals (I_1, I_2, I_3, I_4); and,

forming the sum of said first and second component integrals (I_1+ I_2) and determining said first and second characteristic variables also from said sum of said first and second component integrals (I_1+ I_2).

5,612,897

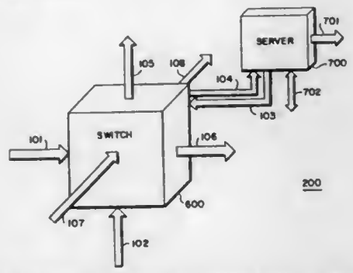
SYMMETRICALLY SWITCHED MULTIMEDIA SYSTEM

Satish L. Rege, Groton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 21, 1996, Ser. No. 620,110

Int. Cl.[6] H04L *12/00*

U.S. Cl. 364—514 C **12 Claims**



1. An apparatus for delivering multimedia items to customers via a communications network, comprising:

a plurality of nodes, each node including a switch connected to a server, each server including means for connecting to the communications network and means for storing a different portion of a selected multimedia item, and the switch including a first direct memory access engine connected to an input port of the switch, the first direct memory access engine for acquiring the different portions from an adjacent node via the data and control network, and an output buffer connected to an output port, the output buffer for storing the different portions acquired by the first direct memory access engine; and

a data and control network symmetrically connecting the plurality of nodes to each other.

5,612,898

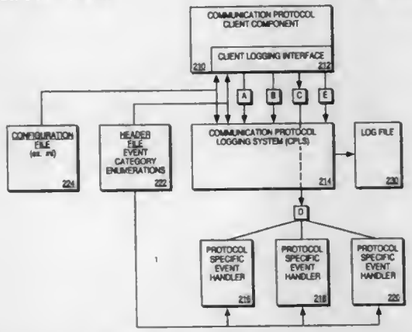
COMMUNICATION PROTOCOL EVENT LOGGING SYSTEM FOR USE WITH VARIOUS PROTOCOLS

Jeff Huckins, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 9, 1995, Ser. No. 385,805

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **18 Claims**



1. A computer software implemented protocol event logging system comprising:

means for receiving an event logging request from a client component operating under a particular protocol;

means for determining if said event logging request requires protocol specific processing;

means for invoking a protocol specific handler corresponding to said particular protocol to process said request if said request requires protocol specific processing; and

means for processing said event logging request without invoking said protocol specific handler if said request does not require protocol specific processing.

5,612,899

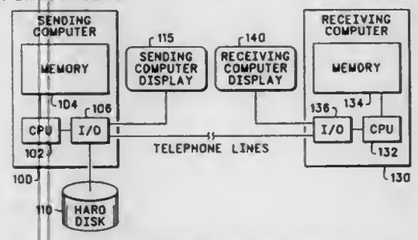
METHOD AND SYSTEM FOR COMPRESSING A VIDEO SIGNAL USING A HYBRID POLYNOMIAL COEFFICIENT SIGNAL

Shao W. Pan, Schaumburg; Shay-Ping T. Wang, Long Grove, and Nicholas M. Labun, Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1995, Ser. No. 495,154

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **41 Claims**



2. A method of compressing a video signal, the method performed by a computer and comprising the steps of:

providing a pixel map signal comprising a pixel map of pixel data representing pixels in a visual image;

separating the pixel map signal into block signals representing pixel map blocks in the pixel map;

converting the block signals into a coefficient signal of block coefficient signals, each of the block coefficient signals corresponding to one of the block signals and representing, for each of the pixel map blocks in the pixel map, one or more coefficients in a hybrid polynomial, the hybrid polynomial comprising discrete cosine terms, a constant term separated from the discrete cosine terms, and polynomial terms extracted from the discrete cosine terms, each of the block coefficient signals comprising a background component representing a coefficient of the constant term, a linear component representing coefficients of the polynomial terms and a nonlinear component representing coefficients of the discrete cosine terms; and

performing the providing, separating and converting steps multiple times to produce multiple compressed pixel map signals, the compressed pixel map signals being compressed frame signals in the video signal representing a video image, each of the compressed frame signals representing a frame in the video image.

5,612,900

VIDEO ENCODING METHOD AND SYSTEM WHICH ENCODES USING A RATE-QUANTIZER MODEL

Faramarz Azadegan, Waltham, Mass.; Hiroaki Unno, Ichikawa, Japan; Hideki Mimura, Yokohama, Japan, and Tetsuya Kitamura, Komea, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 473,783, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 438,014, May 8, 1995, abandoned. This application Aug. 31, 1995, Ser. No. 522,495

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **35 Claims**



1. A method for processing video signals included in video frames to determine characteristics of the video frames, comprising the steps of:

a) obtaining video signals included in plural video frames;

b) assigning plural quantization levels to one of said plural video frames;

c) pre-encoding said one of said plural video frames using said plural quantization levels to obtain plural bit-rates corresponding to each of said plural quantization levels;

d) determining bit-rates for each of said plural quantization levels resulting from said pre-encoding step; e) repeating steps b–d sequentially for plural succeeding video frames; and

f) encoding a plurality of said plural video frames after determining the bit-rates for each of said plural video frames.

5,612,901

APPARATUS AND METHOD FOR CLOUD MASKING

Sonia C. Gallegos, 122 Cedarwood Dr., Slidell, La. 70461; Ronald J. Holyer, 1640 Harbor Dr., No. 111, Slidell, La. 70458; Sarah H. Peckinpaugh, P.O. Box 1018, Ocean Springs, Miss. 39564, and Chiu-Fu Cheng, 1110 Highland Dr., Picayune, Miss. 39466

Filed May 17, 1994, Ser. No. 245,118

Int. Cl.[6] G01J *5/00;* **G06F** *17/00*

U.S. Cl. 364—526 **16 Claims**

1. An apparatus for cloud masking of an advanced very high resolution radiometer (AVHRR) image of a body of water, said image containing cloud-contaminated pixels, said apparatus comprising:

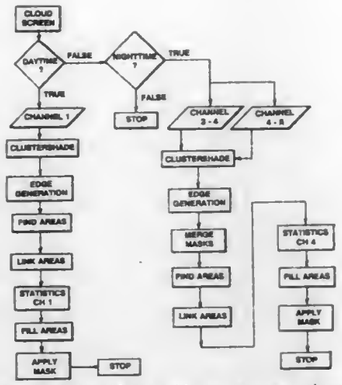
(a) a means for obtaining AVHRR sea surface temperature measurements over said body of water;

(b) channel 1 means operating at 585–685 nm to obtain albedo data over said body of water;

(c) a means for edge generation from said albedo data;

(d) a means for connecting said edges to form one or more closed boundaries, said one or more closed boundaries defining one or more polygons;

(e) a means for determining whether said one or more polygons contain said cloud contaminated pixels;



(f) a means for identifying said one or more polygons determined to contain said cloud contaminated pixels;

(g) a means for forming a cloud mask of said one or more identified cloud contaminated polygons; and

(h) a means for deleting said AVHRR sea surface temperature measurements corresponding to said cloud mask.

5,612,902

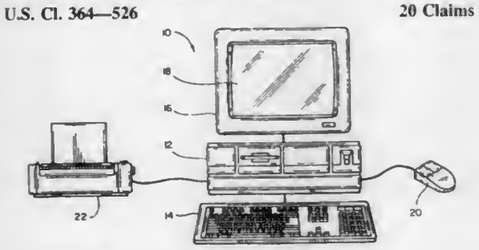
METHOD AND SYSTEM FOR ANALYTIC GENERATION OF MULTI-DIMENSIONAL COLOR LOOKUP TABLES

Michael Stokes, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 13, 1994, Ser. No. 304,838

Int. Cl.[6] H04N *1/50*

U.S. Cl. 364—526 **20 Claims**



1. A runtime self calibrating printer comprising:

printing means for receiving test image input and printing an image having a plurality of color samples in response to said test image input on a medium;

means for measuring at least one parameter for each of said plurality of color samples on said medium;

means for receiving said measured parameter data and using said measured parameter data to create a half toning model to estimate resultant colors which characterizes a response of said printer to a variety of image inputs, and for using said model to create values for a multidimensional lookup table; and

means for storing said multidimensional lookup table and supplying values from said table to said printing means, wherein said printing means subsequently prints images using image input which is compensated by values from said multidimensional lookup table.

5,612,903

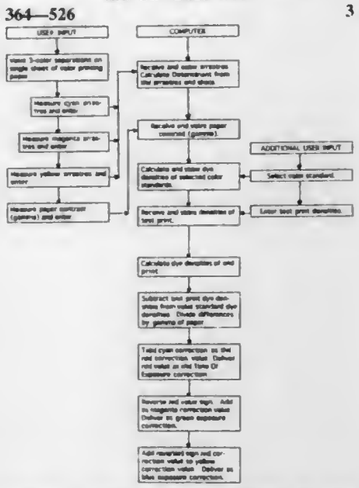
PROCESS FOR OBTAINING BALANCED COLOR PRINTS

Bertram W. Miller, Apartado Postal 316, 45900 Chapala, Jal., Mexico

Filed Feb. 1, 1995, Ser. No. 382,188

Int. Cl.[6] G02F *1/00*

U.S. Cl. 364—526 **3 Claims**



3. A method for simultaneously ascertaining the color balance and printing density of photographic color printing paper of the type having three superimposed light-sensitive layers, each of which is selectively responsive to a different primary color of light, each of which produces a dye image of a color nominally complementary to the light by which it is exposed: red light exposure producing a cyan dye image, green light exposure producing a magenta dye image and blue light exposure producing a yellow dye image, comprising the steps:

(a) arranging the relative densities of the red, green, and blue absorbing elements of each dye in columnar form with the elements of one dye forming a column on the left, of the elements of a second dye forming a column in the middle and the elements of the third dye forming a column on the right, the relative cyan dye absorptions being placed in the left-most column, the relative magenta dye absorptions being placed in the center column and the relative yellow dye absorptions being placed in the right-most column, the final structure being identified as a known mathematical entity called a 3×3 matrix, having a known value termed the Determinant (D), and

(b) solving said matrix for its Determinant (D) as the third-order determinant, followed by

(c) substituting in the left-most column of the matrix the red, green, and blue reflection densities, in the order in which they appear in any given usage, of a color standard against which the paper is to be balanced and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_1), and dividing this new Determinant by the Determinant (D) found in step (b) to discover the cyan dye density required to produce said color standard, and by

(d) substituting in the center column of the matrix the red, green, and blue reflection densities of a color standard against which the paper is to be balanced and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_2), and dividing this new Determinant by Determinant (D) found in step (b) to discover the magenta dye density required to produce said color standard, and by

(e) substituting in the right hand column of the matrix the red, green, and blue reflection densities of the color standard against which the paper is to be balanced and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_3), and dividing this new Determinant by

the Determinant (D) found in step (b) to discover the yellow dye density required to produce said color standard, and by

(f) making a test print from a negative containing the image of a color standard chosen in step (c), and by

(g) measuring on the processed test print the red, green, and blue reflection densities of the image corresponding to the said color standard, and by

(h) substituting the red, green, and blue reflection densities of the test print of step (g) in the left-most column of the 3×3 matrix of step (a) and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_4), and dividing this new Determinant by the Determinant (D) found in step (b) to discover the cyan dye density that was part of the test print image of the color standard, and by

(i) substituting the red, green, and blue reflection densities of the test: print of step (g) in the center column of the 3×3 matrix of step (a) and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_5), and dividing this new Determinant by the Determinant (D) found in step (b) to discover the magenta dye density that was part of the test print image of the color standard, and by

(j) substituting the red, green, and blue reflection densities of the test print of step (g) in the right-most column of the 3×3 matrix of step (a) and solving this new matrix in the same manner as was done in step (b) to obtain a new Determinant (D_6), and dividing this new Determinant by the Determinant (D) found in step (b) to discover the yellow dye density that was part of the test print image of the color standard, and by

(k) subtracting the cyan dye density discovered in step (h) from the cyan dye density discovered in step (c), dividing the difference by the slope of the linear portion of the color printing paper's sensitometric curve, to obtain the over-all exposure correction necessary to produce a subsequent print substantially matching the color and density of the chosen color standard, and by

(l) subtracting the magenta dye density discovered in step (i) from the magenta dye density discovered in step (d), dividing this difference by the slope of the linear portion of the color printing paper's sensitometric curve to obtain the change in green light exposure which produces the needed change in magenta dye density, by reversing the sign of the over-all exposure correction discovered in step (k) and adding it to the needed green light exposure change to obtain the green light exposure correction necessary to produce a subsequent print substantially matching the color and density of the chosen color standard, and by

(m) subtracting the yellow dye density discovered in step (j) from the yellow dye density discovered in step (e), dividing the this difference by the slope of the linear portion of the color printing paper's sensitometric curve to obtain the change in blue light exposure which produces the needed change in yellow dye density, by reversing the sign of the over-all exposure correction discovered in step (k) and adding it to the needed blue light exposure change to obtain the blue light exposure correction necessary to produce a subsequent print substantially matching the color and density of the chosen color standard.

5,612,904

OIL BURNER MONITOR AND DIAGNOSTIC APPARATUS

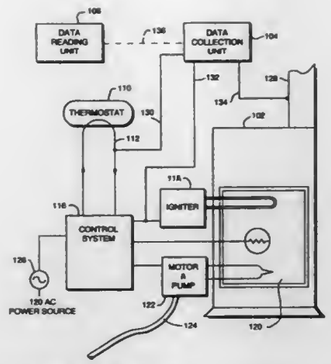
John E. Bunting, 75 Scoble Rd., New Boston, N.H. 03070

Continuation-in-part of Ser. No. 224,852, Apr. 8, 1994, Pat. No. 5,515,297. This application Apr. 25, 1996, Ser. No. 637,833

Int. Cl.[6] G01B *7/00*

U.S. Cl. 364—551.01 **6 Claims**

1. A monitor and diagnostic apparatus for an oil burner, with said oil burner having a low voltage thermostat, and an ignition transformer, with both having a measurable voltage independent from each other, and with said oil burner further having a vent stack with an outside measurable temperature, said oil burner having an operational history comprising a sequence of on/off cycles and performance events within each on/off cycle, said apparatus comprising:



a data recording unit comprising:

first sensing means for providing a first signal corresponding to the voltage at the thermostat of said oil burner;

second sensing means providing a second signal based on measuring the voltage at the ignition transformer of said oil burner;

third sensing means for providing a third signal corresponding to the temperature on the outside of the vent stack;

central processing means for processing said first, second, and third signals from said first, second and third sensing means, respectively, said central processing means providing an output of at least one signal corresponding to the performance events of said oil burner over a pre-selected time interval;

memory means for recording the output of said central processing means over the pre-selected time interval in the sequential order and timing corresponding to the performance events and sequence having occurred in said oil burner;

wherein, said pre-selected time interval extends over a plurality of on/off cycles such that said recorded output from said central processing means can be used to diagnose the operational history of said oil burner.

5,612,905

THREE-DIMENSIONAL MEASUREMENT OF LARGE OBJECTS

Jean-Luc H. R. Maillart, Bouc Bel Air; Michel Lequime, Eguilles; Pascale Bellamy, Senlis, and Gabriel De Smet, Enghien les Bains, all of France, assignors to Sollac, La Defense, and Bertin et Compagnie, Plaisir, both of France

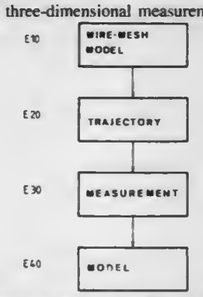
Filed May 16, 1995, Ser. No. 442,422

Claims priority, application France, May 19, 1994, 94 06238

Int. Cl.[6] G01B *17/06;11/24*

U.S. Cl. 364—561 **14 Claims**

1. A method for three-dimensional measurement of the surface



of an object by shape measuring means, comprising the steps of:

determining approximate measurement positions of said shape measuring means,

positioning said shape measuring means successively at said approximate measurement positions to read off the shape of surface portions of said object, said surface portions being each represented by points of the object, co-ordinates of said points being expressed in a system of axes fixed relative to said shape measuring means,

identifying each of said approximate measurement positions of said shape measuring means accurately in a predetermined fixed system of axes, and

transforming said co-ordinates of said surface portion points expressed in said system of axes fixed relative to said shape measuring means into co-ordinates of said surface portion points expressed in said predetermined fixed system of axes according to said approximate measurement positions of said shape measuring means identified in said fixed system of axes respectively.

5,612,906

SYSTEM FOR THE MEASUREMENT OF THE ABSOLUTE POSITION OF THE MOVABLE CYCLIC DIVISION MARK CARRIER OF AN INCREMENTAL POSITION INDICATOR

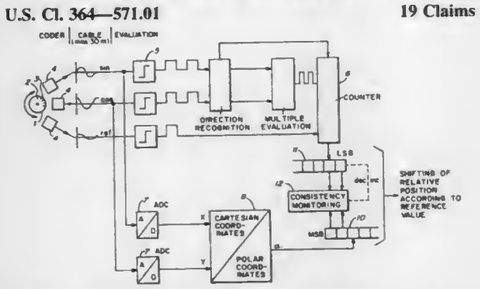
Fritz R. Gotz, Oberasbach, Germany, assignor to Baumuller Nurnberg GmbH, Nurnberg, Germany

Filed Sep. 12, 1994, Ser. No. 304,764

Claims priority, application Germany, Sep. 14, 1993, 43 31 151.2

Int. Cl.[6] G06F *17/00;* **H04M** *1/64*

U.S. Cl. 364—571.01 **19 Claims**



10. Device for measurement of an absolute position of a movable cyclic division mark carrier of an incremental position indicator with regard to one of its divisional segments periodically formed by division marks on the carrier, with two scanning elements, stationarily arranged and addressing the division marks, positioned at such a distance from one another along a length of the segment that they deliver sine and cosine-like measurement signals, respectively, with a computing system including an evaluation unit which receives the measurement signals, and in which these measurement signals are adjusted according to an arctangent function for determination of the absolute position, wherein the computing system includes an adaptation unit, connected on an input side, parallel to the evaluation unit, with the measurement signals and with an absolute position signal determined by the evaluation unit and, on an output side, with the evaluation unit, for transmission of adaptive measurement signals which are generated according to an adaptation rule implemented in the adaptation unit independently of the measurement signals, and that the adaptive measurement signals are combined with the measurement signals in the evaluation unit, according to a correction-calculating rule.

5,612,907

METHOD OF SIMULATING AT LEAST ONE COMPONENT WHOSE CHARACTERIZING FEATURES ARE DESCRIBED BY A SET OF PAIRS OF VALUES, BY MEANS OF A SIMULATOR ON A COMPUTER

Eberhard Lange, Obermichelbach, and Jûrgen Haible, Erlangen-Tennenlohe, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

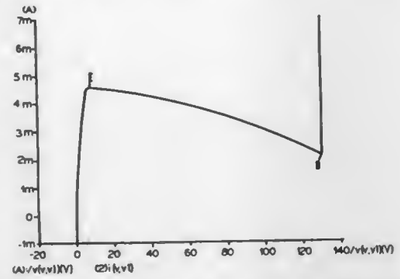
PCT No. PCT/EP93/02105, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/04987, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 6, 1993, Ser. No. 382,034

Claims priority, application Germany, Aug. 13, 1992, 92113834.3

Int. Cl.[6] G06F *9/455;17/50*

U.S. Cl. 364—578 **6 Claims**



1. A method of simulating at least one component, whose characterizing features are described by a set of pairs of values, by means of a simulator on a computer, the method comprising the steps of:

a) providing pairs of values of a component and using, in a first step for spline interpolation, a cubic spline function of the form:

$$s(x)=a_{i,3}\cdot(x-x_i)^3+a_{i,2}\cdot(x-x_i)^2+a_{i,1}\cdot(x-x_i)+a_{i,0}$$

with said pairs of values

$$(x_i,y_i),\ i=1,\ldots,n \text{ where } n\epsilon N$$

which are sorted in ascending sequence according to the magnitude of x_i and form interval limits of partial intervals for the spline interpolation;

b) determining coefficients

$$a_{i,3}, a_{i,2}, a_{i,1}, a_{i,0}$$

for each partial interval as:

$$a_{i,0}=y_i$$
$$a_{i,1}=s'(x_i)$$
$$a_{i,2}=1/2\cdot s''(x_i)$$

$$a_{i,3}=\frac{s''(x_{i+1})-s''(x_i)}{6\cdot(x_{i+1}-x_i)}$$

using recursion formulae

$$s'(x_{i+1})=\Delta'-\frac{1}{3}\,\Delta_x^i\left(s''(x_i)+\frac{1}{2}\,s''(x_{i+1})\right)$$

$$s'(x_n)=\Delta^{n-1}+\frac{1}{6}\,\Delta_x^{n-1}\cdot s''(x_{n-1})$$

$$\Delta_x^i:=x_{i+1}-x_i$$
$$\Delta_y^i:=y_{i+1}-y_i$$

$$\Delta_i:=\frac{\Delta_y^i}{\Delta_x^i}$$

-continued

$$d_i:=\frac{\Delta_x^i}{\Delta_x^{i+1}}$$

and with use of

$$s''(x_i)=\alpha_i\cdot s''(x_2)+\beta_i$$

$$\alpha_{i+1}=-\frac{1}{\alpha_i d_i+2\cdot(1+d_i)}$$

$$\beta_{i+1}=\frac{1}{\alpha_i d_i+2\cdot(1+d_i)}\cdot\left(6\,\frac{\Delta^{i+1}-\Delta^i}{\Delta_x^{i+1}}-d_i\beta_i\right)$$

$$\alpha_1=\beta_1=0.$$

as well as boundary conditions for natural splines

$$s''(x_1)=0 \text{ and } s''(x_n)=0$$

for all pairs of values a function s(x) being found which allocates in each instant to one value of a respective pair of values the other value of the respective pair of values,

Index "'" signifies 1st derivative

Index "''" signifies 2nd derivative; and

c) using in the simulator, in a further step, the function to determine further arbitrary pairs of values for the component and thereby simulate operation of the component.

5,612,908

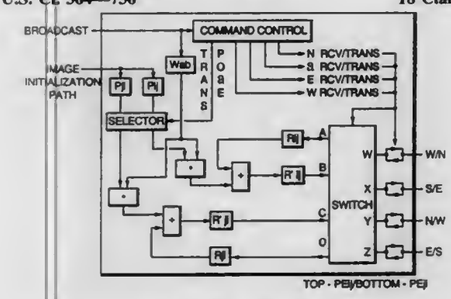
PROCESSING ELEMENT FOR PARALLEL ARRAY PROCESSOR

Gerald G. Pechanek, Endwell; Stamatis Vassiliadis, Vestal, and Jose G. Delgado-Frias, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 864,112, Apr. 6, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 194,364

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—736 **18 Claims**



1. A processing element (PE), comprising:

a first input port for receiving first and second type data sent to the PE;

a command control circuit coupled to the first input port for issuing commands in response to the first type data;

a first register coupled to the first input port for storing the second type data;

a second input port for receiving third type data sent to the PE;

a control switch coupled to the command control circuit and including a plurality of data ports, the control switch connecting selected ones of the data ports to selected other ones of the data ports, in response to commands from the command control circuit, for transmitting data from the selected ones to the selected other ones of the data ports;

a plurality of interface ports each for outputting PE data to a separate corresponding PE and for receiving coupled PE data from said separate corresponding PE;

a plurality of bidirectional switches, each coupled to one of the data ports, the command control circuit, and to one of the interface ports, for selectively transmitting PE data from a coupled one of the data ports to a coupled one of the interface ports and coupled PE data from said coupled one of the interface ports to said coupled one of the data ports in response to commands from the command control circuit; and

a first execution circuit coupled to the first register, the second input port, and to the control switch through a portion of the plurality of data ports, the first execution circuit including:

an initialization register for storing the third type data;

a first calculation circuit coupled to the first register and the initialization register for performing a calculation with the second and third type data;

a receiving register for storing the coupled PE data;

a second calculation circuit coupled to the first calculation circuit and to the receiving register for performing a calculation with a result output by the first calculation circuit and the coupled PE data; and

a result register coupled to the second calculation circuit for storing a second calculation circuit result, and for sending the second calculation circuit result to a data port of the control switch.

5,612,909

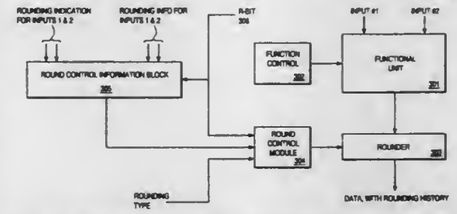
METHOD AND APPARATUS FOR ROUNDING OPERANDS USING PREVIOUS ROUNDING HISTORY

Warren R. Morrow, Vancouver, Wash., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1994, Ser. No. 314,705

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—745 **29 Claims**



1. A method for performing a numeric calculation having a plurality of intermediate numeric operations, said method comprising the steps of:

performing a first intermediate numerical operation, wherein the step of performing the first intermediate numerical operation comprises rounding if necessary to produce a first result and producing a rounding history indicating any rounding performed in producing the result; and

performing a second intermediate numeric operation subsequent to the first intermediate numeric operation using the first result to generate a second result, wherein the step of performing the second intermediate numeric operation includes performing rounding based on the rounding history of the first intermediate numeric operation.

5,612,910

CIRCUIT FOR INVERTING ELEMENTS OF A FINITE FIELD

Jacques Meyer, La Tronche, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Jul. 13, 1995, Ser. No. 501,964

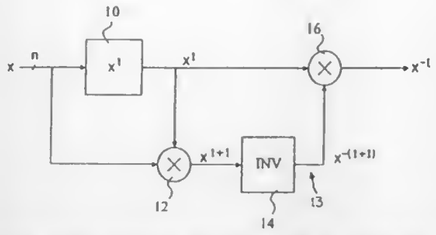
Claims priority, application France, Aug. 5, 1994, 94 09927

Int. Cl.[6] G06F *7/00;15/00*

U.S. Cl. 364—746.1 **18 Claims**

1. A circuit for inverting a number of n bits, the number being of a finite field of $2^n=N+1$ elements, comprising:

a raising circuit that receives the number, and raises the number to a power $t=2^{n/2}$;



a first complete multiplier that receives both the number and an output of the raising circuit that raises the number to the power t; and

a calculating circuit that provides a product of the output of the raising circuit that raises the number to the power t and an inverse of an output of the first complete multiplier, including:

t/2−1 multipliers that multiply the output of the raising circuit by constants, the constants being (t−1)th roots of a unit, and being distinct from each other and the unit, each multiplier receiving the output of the raising circuit that raises the number to the power t;

a multiplexer controlled by a decoder that selects an output of one of the t/2−1 multipliers as a function of the output of the first complete multiplier; and

an adder that receives both an output of the multiplexer and, depending upon the output of the first complete multiplier, one of a value 0 and the number.

5,612,911

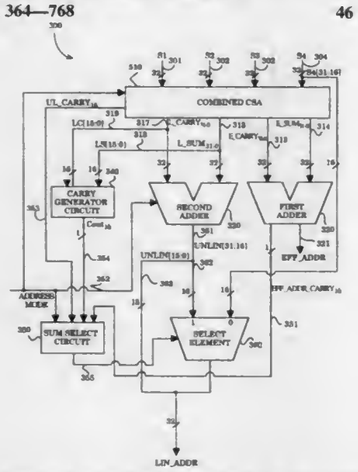
CIRCUIT AND METHOD FOR CORRECTION OF A LINEAR ADDRESS DURING 16-BIT ADDRESSING

Mark A. Timko, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 18, 1995, Ser. No. 444,205

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—768 **46 Claims**



1. An integrated circuit used to generate an effective address and a linear address in parallel, the integrated circuit comprising:

a first circuit that concurrently generates the effective address and an uncorrected linear address by performing arithmetic operations on a plurality of digital inputs including a segment address, a scaled index, a displacement and a segment base;

a second circuit coupled to the first circuit, said second circuit determines whether said uncorrected linear address differs from an arithmetic sum of the effective address and the segment base; and

a third circuit coupled to said first circuit and said second circuit, said third circuit outputs (i) said uncorrected linear address as the linear address if said uncorrected linear address is equal to the arithmetic sum of the effective address and the segment base and alternatively, (ii) a corrected linear address as the linear address if said uncorrected linear address differs from the arithmetic sum of the effective address and the segment base.

5,612,912

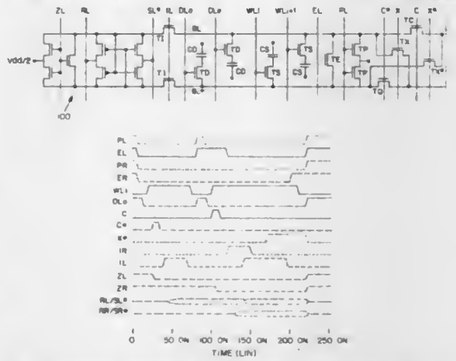
METHOD OF MULTILEVEL DRAM SENSE AND RESTORE

Peter B. Gillingham, Kanata, Canada, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Continuation-in-part of Ser. No. 366,921, Dec. 30, 1994, Pat. No. 5,532,955. This application Jan. 11, 1996, Ser. No. 584,887

Int. Cl.[6] G11C *11/46*

U.S. Cl. 365—168 **24 Claims**



1. A dynamic random access memory able to store one of multiple levels in each of a plurality of memory cells comprising:

columns of memory cells comprising storage capacitors coupled to bitlines through switches for reading and writing data from and to the memory cells, the bitlines being divided into subbitlines by switches therebetween, and subbitlines of adjacent bitlines being coupled by switches;

voltage sensors coupled to adjacent bitline pairs; and

a dummy capacitor matching a storage capacitor coupled to each subbitline through a switch, the dummy capacitors being selectively connected to the subbitlines such that each subbitline capacitance matches the capacitance of a subbitline having a storage capacitor connected thereto;

subbitlines being selectively connected through switches, and storage capacitors and dummy capacitors being selectively connected to subbitlines through switches, such that:

a stored charge is dumped from a storage capacitor to a subbitline and through a switch to another capacitively matched subbitline to establish a sensing voltage on plural subbitlines; and

a sense reference voltage is generated by dumping a charge from a capacitor onto plural capacitively matched subbitlines.

5,612,913

BYTE ERASABLE EEPROM FULLY COMPATIBLE WITH A SINGLE POWER SUPPLY FLASH-EPROM PROCESS

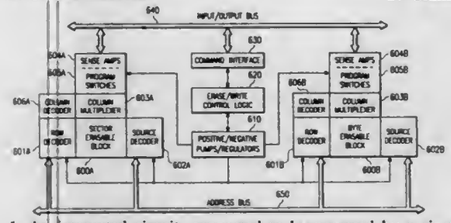
Paolo Cappelletti, Seveso, and Giulio Casagrande, Vignate, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Sep. 25, 1995, Ser. No. 533,631

Claims priority, application European Pat. Off., Sep. 27, 1994, 94830459

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.12 **27 Claims**



1. An integrated circuit, connected to be powered by a single supply voltage and ground, comprising:

a first array of floating-gate memory cells which includes integrated select transistors to permit selective erasure of individual bytes of data;

a second array of floating-gate memory cells which does not include said integrated select transistors; wherein all said cells in said first and second arrays include a floating gate capacitively coupled to a channel through a thin gate oxide, but do not include any tunnel oxide which is thinner than said thin gate oxide;

an on-chip charge-pumping circuit which generates

a first pumped voltage which is more extreme than and has the same polarity as said supply voltage, and

a second pumped voltage which has a polarity opposite to said supply voltage;

said charge-pumping circuit providing said first and second pumped voltages not only to said first array, but also to said second array;

auxiliary circuitry which provides read, write, and erase access to said first and second arrays; said erase access being byte-wise selectable in said first array, but not in said second array.

5,612,914

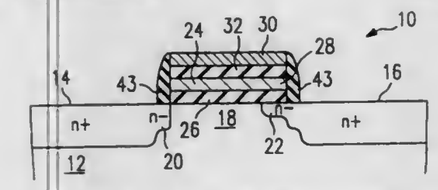
ASYMMETRICAL NON-VOLATILE MEMORY CELL, ARRAYS AND METHODS FOR FABRICATING SAME

David K. Liu, and Man Wong, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 723,700, Jun. 25, 1991, Pat. No. 5,202,576. This application Jan. 6, 1993, Ser. No. 1,004

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.26 **3 Claims**



1. A method for operating a non-volatile memory cell comprising the steps of:

providing the non-volatile memory cell, wherein said memory cell comprises:

heavily doped source and drain regions formed in a layer of semiconductor, said source and drain regions spaced by a channel region;

a lightly doped source region formed adjacent said heavily doped source region;

a lightly doped drain region formed adjacent said heavily doped drain region;

a floating gate conductor insulatively overlying said channel region and insulatively overlying said lightly doped drain region but not substantially overlying said lightly doped source region; and

a control gate conductor capacitively coupled with said floating gate conductor; and

programming said non-volatile memory cell by applying a first selected voltage to said control gate, a second selected voltage to said heavily doped source region and a third selected voltage to said heavily doped drain region wherein the application of said selected voltages creates a high electric field adjacent said lightly doped source region thereby injecting electrons from said lightly doped source region onto said floating gate;

wherein said non-volatile memory cell is further read by applying about five volts to said control gate, applying about zero volts to said heavily doped source region and applying about 1.5 volts to said heavily doped drain region.

5,612,915

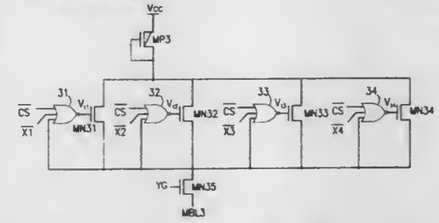
CLAMP CIRCUIT FOR READ-ONLY-MEMORY DEVICES

Stephen Fu, Chung-Li, and Hsin-Li Chen, Hsinchu Hsien, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jan. 25, 1996, Ser. No. 591,390

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—189.06 **7 Claims**



1. A clamp circuit for providing clamp voltages to a plurality of word lines of a read-only-memory (ROM) device, comprising:

an active load;

a plurality of amplifiers of various trip voltages connected in parallel to said active load, each of said plurality of amplifiers being controlled by one of a plurality of decoding signals for providing one of said clamp voltages; and

a transmission gate, connected to said amplifiers, for providing said clamp voltages to said word lines.

5,612,916

MEMORY BYPASS MODE

Alex Neduva, Migdal HA'Emek, Israel, assignor to Intel Corporation, Santa Clara, Calif.

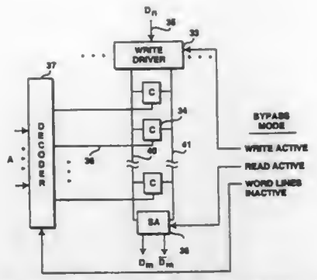
Division of Ser. No. 576,705, Dec. 20, 1995, Pat. No. 5,592,425. This application Sep. 10, 1996, Ser. No. 707,925

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.04 **4 Claims**

2 A bypass mode for a memory comprising:

means for simultaneously writing data onto bitlines in the memory and reading data from the bitlines; and.



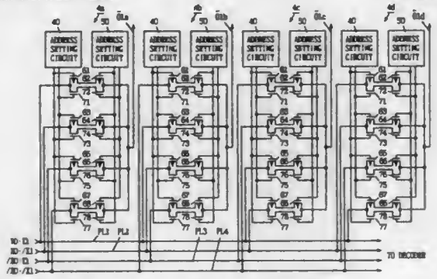
means for preventing any cells in the memory from being selected during the bypass mode.

5,612,917

SEMICONDUCTOR MEMORY DEVICE INCLUDING IMPROVED REDUNDANCY CIRCUIT

Kunihiko Kozaru, and Koreaki Fujita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,171
Claims priority, application Japan, Apr. 12, 1994, 6-073410
Int. Cl.[6] G11C *7/00;29/00*
U.S. Cl. 365—200 **8 Claims**



1. A semiconductor memory device comprising:

(a) a plurality of memory cell array blocks, including

a plurality of select lines, and

a plurality of memory cells connected to said plurality of select lines and arranged in a matrix of rows and columns,

(b) a plurality of first select means provided corresponding to said plurality of memory cell array blocks, each responsive to externally applied plurality of address signals for selecting any of the plurality of select lines in a corresponding memory cell array block,

(c) a plurality of redundant select lines, any of said plurality of redundant select lines being provided corresponding to each of said plurality of memory cell array blocks,

(d) a plurality of redundant memory cells connected to said plurality of redundant select lines,

(e) a plurality of redundancy circuit means, each provided corresponding to one of said plurality of memory cell array blocks and including

setting means having set in advance whether any corresponding redundant select line is to be used or not,

program means, when in a first case where any corresponding redundant select line is not used, for selecting and outputting any of said plurality of address signals, and when in a second case where any corresponding redundant select line is to be used, for selecting and outputting an address signal specifying an address of a select line to be replaced with that redundant select line to be used, and

second select means for selecting any corresponding redundant select line in response to outputs of said setting means and said program means,

(f) inactivation means for inactivating said plurality of first select means in response to an output of said plurality of redundancy circuit means when any corresponding redundant select line is selected by any of said plurality of redundancy circuit means,

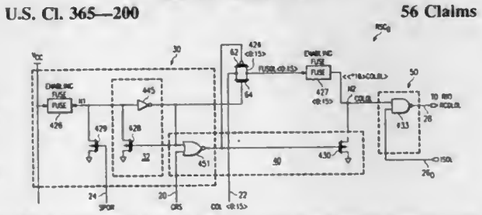
wherein one program means of said plurality of redundancy circuit means selects an address signal other than an address signal selected by another one program means in said first case.

5,612,918

REDUNDANCY ARCHITECTURE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 29, 1995, Ser. No. 582,424
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—200 **56 Claims**



8. A redundant decoder for selecting a redundant memory cell responsive to an address signal presented thereto, said redundant decoder comprising:

one or more redundant select circuits, each comprising:

an enable circuit, comprising a first fuse, having an output indicating whether or not the redundant select circuit is enabled responsive to the state of said first fuse;

a plurality of pass gates connected in parallel, wherein each one of said pass gates has a conduction path, and has a control terminal coupled to the output of said enable circuit so that said pass gates are conductive responsive to the enable circuit indicating that the redundant select circuit is enabled, and

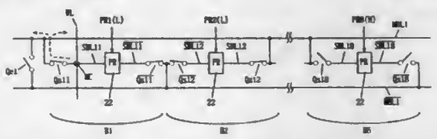
a plurality of fuses, wherein each one of said plurality of fuses are each connected singly in series with the conduction path of one pass gate between an input and an output of the redundant select circuit, for disconnecting, when opened, said input from said output.

5,612,919

METHOD OF TESTING AN OPERATION OF A SEMICONDUCTOR MEMORY DEVICE AND SEMICONDUCTOR MEMORY DEVICE WHICH CAN BE SUBJECTED TO SUCH AN OPERATION TEST

Kazutami Arimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1996, Ser. No. 587,683
Claims priority, application Japan, Jan. 18, 1995, 7-006005
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—201 **8 Claims**



1. A method of testing an operation of a semiconductor memory device including

a main bit line pair,

a plurality of sub-bit line pairs provided corresponding to said main bit line pair,

a plurality of transistor pairs provided respectively corresponding to said plurality of sub-bit line pairs, each transistor pair being responsive to a prescribed selection signal for connecting one sub-bit line of a corresponding sub-bit line pair to one main bit line of said main bit line pair and connecting another sub-bit line thereof to another main bit line thereof,

a plurality of word lines located across said plurality of sub-bit line pairs, and

a plurality of memory cells provided respectively corresponding to intersections of said plurality of sub-bit line pairs and said plurality of word lines, each memory cell being connected to a corresponding sub-bit line pair and a corresponding word line, comprising the steps of:

precharging at least two sub-bit line pairs out of said plurality of sub-bit line pairs;

applying said selection signal to two transistor pairs respectively corresponding to said two sub-bit line pairs to render said two transistor pairs conductive;

driving one word line out of said plurality of word lines, which is located across one sub-bit line pair of said two sub-bit line pairs; and

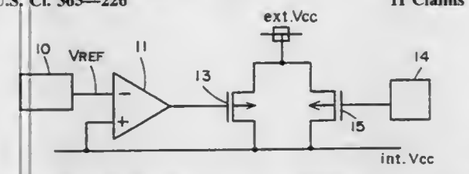
amplifying potential difference generated between said main bit line pair.

5,612,920

SEMICONDUCTOR MEMORY DEVICE HAVING A VOLTAGE DOWN CONVERTER FOR GENERATING AN INTERNAL POWER SUPPLY VOLTAGE FROM AN EXTERNAL POWER SUPPLY

Shigeki Tomishima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 529,961
Claims priority, application Japan, Nov. 28, 1994, 6-293311
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—226 **11 Claims**



1. A semiconductor memory device, comprising:

a voltage down converter for generating an internal power supply voltage based on an external power supply voltage; and

an internal circuitry operating in accordance with said internal power supply voltage; wherein

said voltage down converter includes

a first voltage lowering means for lowering said external power supply voltage supplied from an external power supply for generating said internal power supply voltage,

first control means for providing a control signal for a prescribed time period in response to a signal for activating an internal circuitry, said first voltage lowering means being responsive to said control signal to begin operating before said internal circuitry is activated to begin consumption of the internal power supply voltage,

reference voltage generating means for generating a reference voltage,

second voltage lowering means connected parallel to said first voltage lowering means, for generating said internal power supply voltage by lowering said external power supply voltage, and

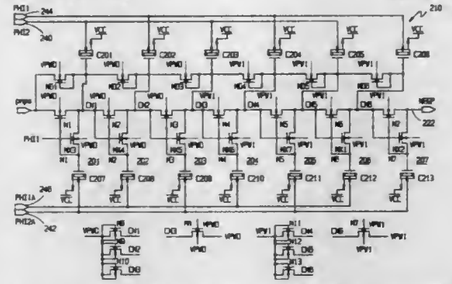
second control means for controlling said second voltage lowering means in response to a result of comparison between said reference voltage and said internal power supply voltage.

5,612,921

LOW SUPPLY VOLTAGE NEGATIVE CHARGE PUMP

Chung K. Chang, Sunnyvale; Johnny C. Chen, Cupertino, and Lee E. Cleveland, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 15, 1996, Ser. No. 559,705
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—226 **20 Claims**



1. A low supply voltage negative charge pump for generating a relatively high negative voltage to control gates of selected memory cells via wordlines in an array of flash EEPROM memory cells during flash erasure, said negative charge pump comprising:

clock means for generating a plurality of clock signals;

charge pumping means (**210**) responsive to an external power supply potential and to said plurality of clock signals for generating a relatively high negative voltage;

said charge pump means being formed of a plurality of charge pump stages (**201–206**);

coupling capacitor means (C**201**–C**212**) responsive to said plurality of clock signals and being coupled to each of said plurality of charge pump stages for delivering said plurality of clock signals to said plurality of charge pump stages; and

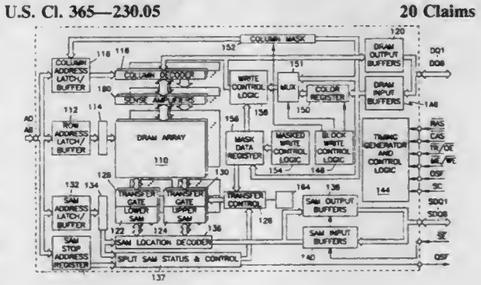
each of said plurality of charge pump stages being formed of an N-channel intrinsic pass transistor (N**1**–N**6**), an N-channel intrinsic initialization transistor (MD**1**–MD**6**), and an N-channel intrinsic pre-charge transistor (MX**3**–MX**7**, MX**1**).

5,612,922

PAGE MODE EDITABLE REAL TIME READ TRANSFER

Loren L. McLaury, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 5, 1995, Ser. No. 498,178
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.05 **20 Claims**



1. A memory device comprising:

a dynamic memory having memory cells arranged in a plurality of rows;

a static memory selectively coupled to the dynamic memory;

a data input coupled to the dynamic memory for transmitting new data to the dynamic memory; and

a controller for accessing one of the plurality of rows of the dynamic memory during an access cycle, storing the new data in the accessed one of the plurality of rows during the access

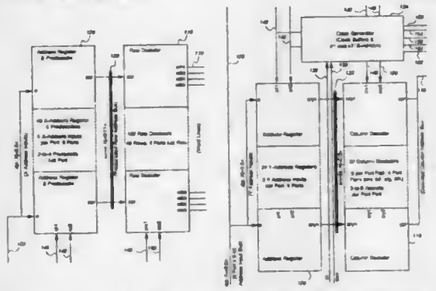
cycle, and transferring the new data from the accessed one of the plurality of rows to the static memory during the access cycle.

5,612,923

MULTI-PORT RANDOM ACCESS MEMORY

Garnet F. R. Gibson, Nepean, and Steven W. Wood, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 9, 1996, Ser. No. 644,081
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.05 **18 Claims**



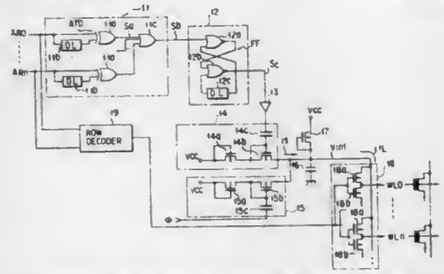
1. A multi-port RAM (random access memory) comprising:
store means for storing data, the store means including an array of m rows by n columns of RAM cells, with N read ports; and
addressing means for generating M address signals of X- and Y-addresses in response to an input clock signal and an input address signal of address information, the M address signals being generated during one clock cycle of the input clock signal and being different in phase from each other, the X- and Y-addresses of each of the M address signals identifying the row and column of the array of the RAM cell, respectively.

5,612,924

SEMICONDUCTOR MEMORY DEVICE USING INTERNAL VOLTAGE OBTAINED BY BOOSTING SUPPLY VOLTAGE

Junichi Miyamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 6, 1995, Ser. No. 417,888
Claims priority, application Japan, Apr. 8, 1994, 6-070554
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233.5 **12 Claims**



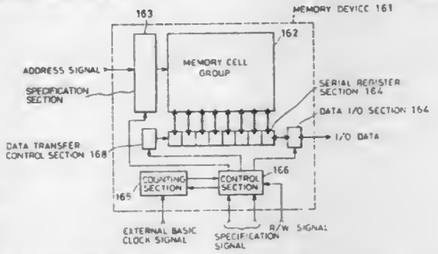
1. A semiconductor memory device having a logic gate supplied with an internal supply voltage obtained by boosting a supply voltage, said logic gate permitting one memory cell to be selected asynchronously in accordance with an address signal, said device comprising:
first booster means having a first capacitor, for charging said first capacitor in accordance with a first pulse signal to generate said internal supply voltage and supplying said internal supply voltage to said logic gate;
detection means for detecting a change in said address signal;
generation means for generating a second pulse signal of a higher frequency than that of said first pulse signal while said detection means detects a change in said address signal; and
second booster means, connected to said generation means and having a second capacitor with a smaller capacitance than said first capacitor, for charging said second capacitor in accordance with said second pulse signal from said generation means to generate said internal supply voltage and supplying said internal supply voltage to said logic gate.

5,612,925

SEMICONDUCTOR MEMORY DEVICE

Haruki Toda; Shozo Saito, and Kaoru Tokushige, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 223,222, Apr. 5, 1994, Pat. No. 5,500,829, which is a division of Ser. No. 775,602, Oct. 15, 1991, Pat. No. 5,313,437. This application Jun. 5, 1995, Ser. No. 463,394
Claims priority, application Japan, Oct. 19, 1990, 2-273170
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—236 **15 Claims**



1. A semiconductor memory device, comprising.
a memory cell array having a plurality of dynamic type memory cells arranged in a matrix;
a first circuit for receiving an externally supplied basic clock signal and for counting a number of clock cycles in the basic clock signal;
a second circuit for receiving a plurality of externally supplied control signals and for generating first and second internal control signals which are based on the number of clock cycles counted by the first circuit;
a third circuit for receiving externally supplied address signals and the first internal control signal, said third circuit latching the address signals in response to the first control signal; and
a fourth circuit for receiving the second internal control signal and data signals output from the memory cell array, the data signals corresponding to the address signals latched by the third circuit, said fourth circuit outputting the data signals based on the basic clock signal, said data signals being output from the fourth circuit upon receipt of the second internal control signal

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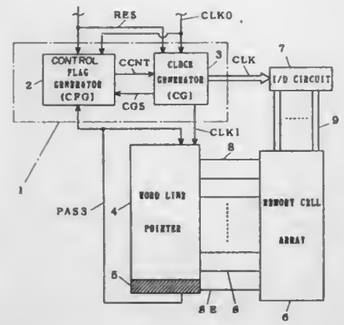
5,612,926

SEQUENTIAL ACCESS MEMORY

Minobu Yazawa, and Shiro Hosotani, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1995, Ser. No. 529,065
Claims priority, application Japan, Nov. 30, 1994, 6-296509
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—239 **17 Claims**

1. A sequential access memory comprising:



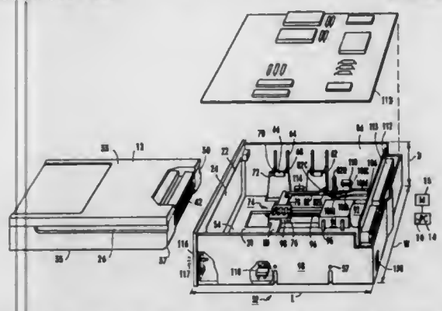
a memory cell array which data signals are written to and read from;
addressing means for receiving a reset signal which is externally given, to specify a word line address and a bit line address to make access to word lines and bit lines of said memory cell array in accordance with a reference clock signal which is externally given and thereby to output an output signal, said output signal specifying a predetermined word line; and
control means for detecting that a predetermined address of said predetermined word line has been specified based on said output signal from said addressing means and said reference clock signal to stop an operation of said addressing means in accordance with a detection result, wherein
said predetermined address of said predetermined word line is previously determined in accordance with a number of effective data of said data signals which are inputted.

5,612,927

MOTORIZED LATCH AND EJECTION MECHANISM FOR PORTABLE HARD DRIVE

Timothy J. Morrison, Oceanside, and Lynn H. Wilson, Carlsbad, both of Calif., assignors to Summatec Computer Corporation, Vista, Calif.

Filed Mar. 23, 1995, Ser. No. 409,494
Int. Cl.[6] G06F *1/16*; H05K *7/14*
U.S. Cl. 361—685 **8 Claims**



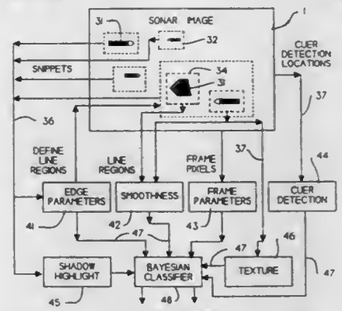
1. An apparatus operably engageable with a cavity of a desk-top personal computer (PC), comprising:
a sleeve for holding a hard computer disk drive, the sleeve being formed with an engagement surface;
a bay positioned in the cavity of the computer for receiving the sleeve, the bay including an opening for receiving the sleeve, the bay being in electrical communication with the personal computer;
a carriage reciprocally disposed in the bay, the carriage including at least one clip configured for engaging the engagement surface of the sleeve when the sleeve is advanced a predetermined distance into the opening, the carriage further including a shuttle formed with a plurality of nut docks; and
a motor coupled to the carriage for moving the carriage between an engaged position, wherein the hard drive is electrically connected to the personal computer, and a remove position, wherein the sleeve can be manually removed from the bay, the motor being coupled to the carriage via a lead screw and a nut, the lead screw being threadably engaged with the nut and rotatable by the motor, the nut being closely received in one of the nut docks such that rotation of the nut is prevented thereby.

5,612,928

METHOD AND APPARATUS FOR CLASSIFYING OBJECTS IN SONAR IMAGES

Paul H. Haley, Monroeville; James J. Oravec, Plum Boro; Walter J. Petlevich, Jr., Uniontown, and Philipp F. Schweizer, Monroeville, all of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed May 28, 1992, Ser. No. 847,512
Int. Cl.[6] G06K *9/00*
U.S. Cl. 367—11 **20 Claims**



1. A scene classifier for classifying objects in images consisting of a matrix of pixels, each pixel having a known greyness level comprising:
(a) snippet selection means for selecting portions of images for classification;
(b) a scene classifier connected to and receiving input from the snippet selection means, said scene classifier containing
(i) at least two parameter extraction modules selected from the group consisting of edge parameter module, smoothness module, frame parameter module, cuer detection module, highlight and shadow module and texture module, and
(ii) a Bayesian Classifier connected to and receiving input from said at least two parameter extraction modules.

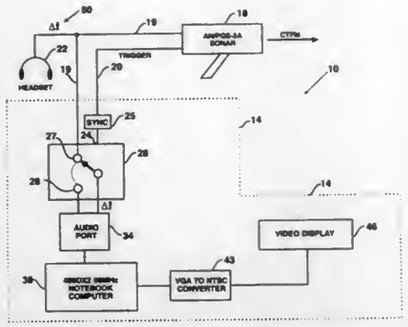
5,612,929

SPECTRAL PROCESSOR AND RANGE DISPLAY UNIT

Joseph L. Lopes, Lynn Haven, and Iris C. Paustian, Panama City, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1995, Ser. No. 587,800
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—107 **17 Claims**

1. An apparatus for converting the audio output of a signal return of a sonar to a visual output indicating detection and range of a sonar target, said sonar also having a trigger signal output, said apparatus comprising:
means for preprocessing said audio output to prepare said output for conversion to a visual output;
means for converting said preprocessed audio output from the time domain to a frequency domain spectrogram;



means for processing said frequency domain spectrogram to a video form; said means for processing said frequency domain spectrogram having a clock rate signal; and

means for displaying said video form of said spectrogram.

5,612,930

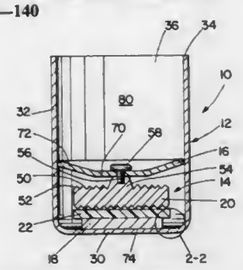
ULTRASONIC TRANSDUCER

Dov Hazony, University Heights, and Richard E. Berris, Jr., Chagrin Falls, both of Ohio, assignors to J. W. Harley Inc., Twinsburg, Ohio

Filed Jul. 13, 1995, Ser. No. 502,131

Int. Cl.[6] H04R *15/00*

U.S. Cl. 367—140 **11 Claims**



1. An ultrasonic transducer comprising:

a housing;

a piezoelectric crystal assembly received within said housing, said piezoelectric assembly comprising a piezoelectric element, a backing member, and an insulating member interposed between said piezoelectric element and said backing member; and

a retaining member received within said housing and contacting said piezoelectric crystal assembly, said retaining member grippingly engaging the surface defining said housing and applying a compressive force to said piezoelectric crystal assembly.

5,612,931

SWITCH DEVICE AND ELECTRONIC INSTRUMENTS EQUIPPED WITH THE SWITCH DEVICE

Hiroshi Sato; Masayoshi Okuyama, and Nobuhiro Aoki, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

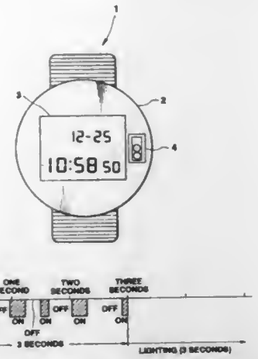
Filed Jul. 5, 1995, Ser. No. 498,171

Claims priority, application Japan, Jul. 7, 1994, 6-180579; Dec. 8, 1994, 6-304882

Int. Cl.[6] G04B *19/30*

U.S. Cl. 368—67 **10 Claims**

1. An electronic instrument provided with display means for displaying data and a lighting device for illuminating the display means, comprising:



attitude-detecting switch means for detecting an attitude of the electronic instrument and for outputting a switch signal when the electronic instrument assumes a predetermined attitude;

control data storing means for storing one of (i) operation control data for causing the lighting device to illuminate the display means, and (ii) non-operation control data for precluding the lighting device from illuminating the display means;

determining means for determining whether the control data storing means has stored therein the operation control data or the non-operation control data; and

illumination operation control means for (i) controlling the lighting device to illuminate the display means when (a) the attitude-detecting switch means outputs the switch signal, and (b) the determining means determines that the control data storing means has stored therein the operation control data, and (ii) for precluding the lighting device from illuminating the display means when the determining means determines that the control data storing means has stored therein non-operation control data.

5,612,932

WATCH AND TIMEPIECE ATTACHING DEVICE

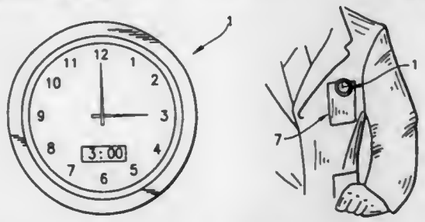
Abraham R. Albenda, 276 Exetes St., Brooklyn, N.Y. 11235

Filed Jun. 2, 1993, Ser. No. 70,732

The portion of the term of this patent subsequent to Jul. 28, 1993, has been disclaimed.

Int. Cl.[6] G04B *37/00*

U.S. Cl. 368—276 **5 Claims**



1. A combined timepiece and device for attaching the timepiece to an edged item, consisting essentially of:

a timepiece including a housing having a generally thin configuration and a time displaying device mounted in said housing, said housing having a front surface through which said time displaying device can be viewed and an opposite substantially flat rear surface; and

a spiral type attaching coil having one end fixed to said rear surface of said housing at a point of attachment thereon, with a remainder of said coil extending away from said one end in a spiral manner such that at least a portion of said remainder increasingly extends outwardly from said rear surface in accordance with movement along said spiral and such that said coil is substantially parallel with the substantially flat rear surface of said timepiece;

said attaching coil having at least one revolution (360 degrees) from said point of attachment to the housing, for attaching the timepiece to the edged item and for permitting placement of the timepiece at a desired rotational angle with respect to the edged item;

said attaching coil being made of a recoiling resilient material so that at least a portion of said attaching coil is self biased toward the timepiece and is resiliently bendable away from the timepiece to enable said attaching coil to be engaged over an edge of the edged item, and said attaching coil recoiling toward the timepiece to engage the timepiece firmly to the edged item with the edged item engaged against said recoiled bendable portion of said attaching coil and with the edged item gripped between the timepiece and the recoiled bendable portion of said attaching coil.

5,612,933

APPARATUS FOR REPRODUCING RECORDED INFORMATION WITH ERROR DETECTION AND CORRECTION PROCESSING

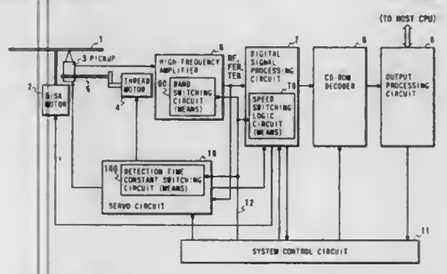
Yoshimi Iso, Maebashi; Toshihiko Watanabe, Takasaki; Kazuya Hara, Isezaki; Akihiko Rokusaka, Kodaira, and Hideaki Sato, Takasaki, all of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System Ltd., both of Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,121

Claims priority, application Japan, Jun. 17, 1994, 6-159173

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **15 Claims**



1. An apparatus for reproducing recorded information, which reads recorded information from a disk surface and which performs error detection and then outputs the reproduced information while detecting and correcting errors in the information, said apparatus comprising:

a control means to switch a reproduction mode from a first speed reproduction mode to a second speed reproduction mode in response to an error correction failure condition generated in the first speed mode and to retry reading the information read with an error uncorrectable in the first speed mode, the first speed mode being for reading recorded information at a first speed to reproduce it, the second speed mode being for reading at a second speed slower than the first speed to reproduce the recorded information that failed to be read correctly in the first speed reproduction mode, the first speed mode being more than two times faster than the second speed mode; and

a high frequency amplifier having a band switching means that makes a reproducing band narrower in the second speed mode than in the first speed mode.

5,612,934

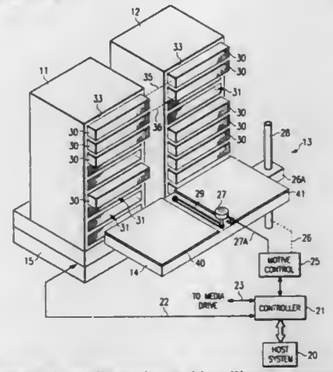
RECORD MEDIA LIBRARY ACCESSING USING A COMMON ACCESSING MECHANISM FOR A PLURALITY OF INDEPENDENT MEDIA LIBRARIES

Chi-Hung Dang, and Chi-Thanh Dang, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,944

Int. Cl.[6] G11B *17/04;17/22*

U.S. Cl. 369—36 **15 Claims**



1. An automatic media storing and handling apparatus, including in combination:

a first plurality of physically-juxtaposed storage-compartment modules, said physically-juxtaposed storage-compartment modules each having a plurality of record-medium storage compartments disposed in a linear array for storing a plurality of record media, respectively;

said record-medium storage compartments respectively having first access openings that open in a first direction through which said record media may be respectively inserted into and fetched from said record-medium storage compartments, all of said first access openings opening to a same side in the respective physically-juxtaposed storage-compartment modules;

a plurality of media drives, said media drives being in a predetermined one of said record-medium storage compartments in each one of said storage-compartment modules, respectively;

each of said media drives having a second access opening that opens in said first direction;

a single accessing mechanism movably disposed with respect to said storage compartment modules for relative movement across said first and second access openings for aligning said single accessing mechanism with one of said first or second access openings for transferring any one of said record media through said one of said first or second access openings;

an accessing module in said accessing mechanism being movable with said accessing mechanism across said first and second access openings for alignment with said one of said first and second access openings for transferring a predetermined one of said record media to and from one of said record-medium storage compartments and said media drives;

said accessing module having a second plurality, equal to said first plurality, of medium-carrying compartments;

said medium-carrying compartments respectively having media transfer openings facing said first and second access openings, respectively, said medium-carrying compartments being mounted for movement with said accessing module such that each of said medium-carrying compartments only accesses said record-medium storage compartments and said media drives in a respective one of said storage-compartment modules;

fetching means in each of said medium-carrying compartments for moving a predetermined one of said storage media between a predetermined one of said medium-storage compartments and said medium-carrying compartments, respectively;

motive means connected to said accessing mechanism and to said fetching means for actuating said accessing mechanism to move said accessing module to respectively align a predetermined one of said medium-carrying compartments with a predetermined one of said first and second access openings for actuating a predetermined one of said fetching means for transferring said predetermined one of said record media between said single accessing mechanism and a predetermined one of said storage-compartment modules and media drives;

said storage-compartment modules each being a single-compartment wide column of said record medium storage compartments, said media drives having said second access openings respectively in said columns of said record medium storage compartments;

said accessing module having a respective one of said medium-carrying compartments aligned with said columns such that movement of said accessing module across said first and second access openings is a reciprocation along a length of all of said columns, respectively;

said record-medium storage compartments in a first predetermined one of said storage-compartment modules being offset along the length of said columns from storage compartments in a second predetermined one of said storage-compartment modules;

spacers disposed between adjacent ones of said record-medium storage compartments in each of said columns, said spacers having an extent along the length of said columns such that first predetermined respective portions of said spacers in said first one of said storage-compartment modules are aligned with respective second predetermined portions of said spacers in said second one of said storage-compartment modules, said record media in said record-medium storage compartments extending outwardly from the respected storage compartments for creating access spaces having an extent equal to said extent of said spacers, respectively, between said record media stored in adjacent storage compartments in said first and second storage-compartment modules;

said medium-carrying compartments being movable to first and second positions with respect to a first predetermined one of said record-medium storage compartments in said first predetermined one of said storage compartment modules to respectively simultaneously align in said first position said first predetermined one of said medium-carrying compartments with a first one of said first predetermined respective portion and in said second portion align said first predetermined one of said medium-carrying compartments with said first predetermined storage compartment of said first predetermined one of said storage-compartment modules; and

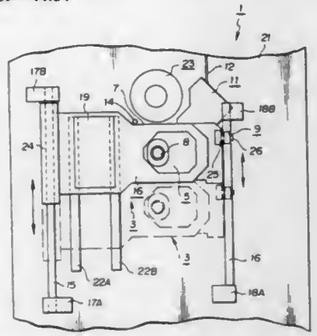
extending-retracting means in said accessing module and connected to said fetching apparatus in said first predetermined one of said medium-carrying compartments for extending said fetching apparatus along said first predetermined one of said storage-compartment modules such that in said first position said fetching apparatus extends into one of said access spaces and aligned is with said first one of said first predetermined respective portions and in said second position extends into said first predetermined one of said record-medium storage of compartments respectively for enabling retrieving and storing a predetermined record medium from or to said first predetermined one of said record-medium storage compartments in said first predetermined one of said storage-compartment modules.

5,612,935

APPARATUS AND METHOD FOR CONTROLLING THE POSITION OF AN OPTICAL PICKUP DEVICE IN A RECORDING/REPRODUCING APPARATUS FOR A DISC-SHAPED RECORDING MEDIUM

Yoshikazu Ishimatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 11, 1995, Ser. No. 514,142
Claims priority, application Japan, Aug. 15, 1994, 6-191448
Int. Cl.[6] G11B 7/09
U.S. Cl. 369—44.14 **6 Claims**



2. A recording/reproducing apparatus for a disc-shaped recording medium comprising:

a driving motor for running a disc-shaped recording medium in rotation;

an optical pickup device having an objective lens, a bobbin having the objective lens assembled thereon, a mounting base having a reference surface parallel to said optical axis for adjusting the array and tilt of the optical axis of the objective lens and a driving part for driving the mounting base;

a chassis member carrying said optical pickup device for moving the optical pickup device across the inner and outer peripheral portions of the signal recording region of the disc-shaped recording medium via a guide shaft and a guide member;

said chassis member having a stop member abutted by the reference surface of the mounting base when the optical pickup device has been moved to the inner most region of the signal recording region of the disc-shaped recording medium for stopping further movement of the optical pickup device and for providing a reference position from which said optical pickup device is to be moved;

means for detecting the reference position of said optical pickup device; and

means for moving said optical pickup device a pre-set distance from the reference position to a discrete write position or readout start position.

5,612,936

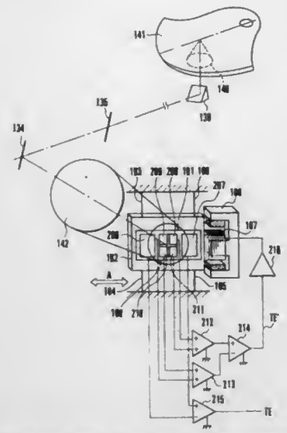
METHOD AND APPARATUS FOR DETECTING TRACKING ERROR SIGNAL FOR OPTICAL DISK USING PAIRS OF PHOTOSENSORS

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 18, 1995, Ser. No. 503,821
Claims priority, application Japan, Jul. 20, 1994, 6-168126
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.32 **10 Claims**

1. A method of detecting a tracking error signal for an optical disk, comprising the steps of:

detecting the tracking error signal from a differential output of a pair of first photosensors arranged in areas in which a 0th-order component and ±1st-order components of a reflected beam incident on a track groove of a grooved optical disk are superposed;



detecting an offset signal of the tracking error signal on the basis of outputs from a pair of second photosensors arranged between said first photosensors at a center of an area of the 0th-order component, in which the 0th-order component is not superposed on the ±1st-order components, said first and second photosensors being aligned in a tracking servo direction; and

controlling movement of the first and second photosensors on the basis of the detected offset signal;

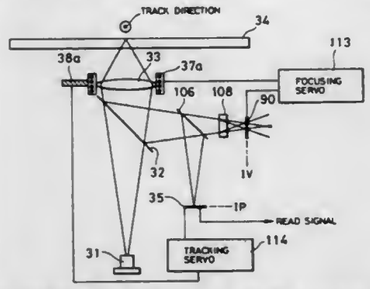
wherein said first and second photosensors include a 4-division photosensor having photosensor elements which are divided and aligned in the tracking servo direction, the tracking error signal is detected from outputs from a pair of outer photosensor elements of said 4-division photosensor, and the offset signal of the tracking error signal is detected from outputs from a pair of inner photosensor elements of said 4-division photosensor.

5,612,937

OPTICAL PICKUP APPARATUS HAVING A BISECTED OPTICAL RECEIVING ELEMENT FOR TRACKING CONTROL

Takanori Maeda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,440
Claims priority, application Japan, Jun. 13, 1994, 6-130597
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.42 **12 Claims**



1. An optical pickup apparatus for reading a recorded signal from a track of a recording medium comprising:

an irradiation optical system for irradiating a light beam to at least one track of a recording medium carrying a recorded signal to be read, each of said at least one track being constituted by a single sequence of pits extending in a track direction of said recording medium;

an image formation means for performing an image formation of a real image for said recorded signal or said track of said recording medium to make an image surface by using a reflected light from an irradiated portion of said light beam;

a photodetection means for detecting the reflected light and having an optical receiving element disposed on said image surface; and

said optical receiving element having:

at least one first optical receiving element of tracking control bisected in said track direction of a track image formed on said image surface, wherein said first optical receiving element has a width in a perpendicular direction to the track direction which is smaller than a distance represented by twice a track pitch of a track image formed on said first optical receiving element less a width of said track image, and

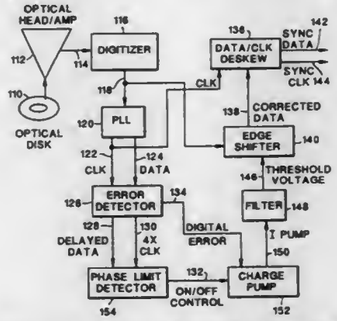
at least one second optical receiving element of signal-reading disposed adjacent to said first optical receiving element in the track direction of the track image.

5,612,938

CORRECTING RECORDED MARKS AND LAND LENGTHS TAKEN FROM AN OPTICAL DISK

Steven C. Dohmeier; Michael Meichle, both of Rochester, and Michael G. Fairchild, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 20, 1995, Ser. No. 425,549
Int. Cl.[6] G11B 5/09
U.S. Cl. 369—48 **4 Claims**



1. A method for correcting the length of marks and lands representing information taken from an optical disk, comprising the steps of:

a) digitizing amplified analog data having marks and lands played back from an optical disk;

b) providing a data synchronization clock by using a phase lock loop (PLL);

c) providing an adjustment to a threshold signal level based upon the difference in timing position in mark and land edges with reference to the data synchronization clock;

d) providing mark and land length data with reference to the data synchronization clock and monitoring the phase relationship between the data synchronization clock and mark and land data to insure the polarity of the adjustment is correct;

e) changing the data mark and land lengths with reference to the adjusted threshold signal; and

f) preventing changing the data mark and land lengths if the monitoring step determines that a phase limit is exceeded.

5,612,939

OPTICAL DISK RECORDING AND/OR REPRODUCING APPARATUS FOR PERFORMING OPTIMIZING OPERATION FOR SERVO CONTROL WITH RECORDING AND/OR REPRODUCING OPERATION

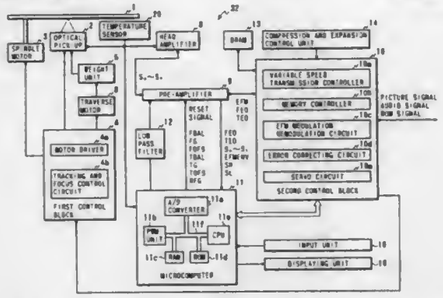
Yasuhiro Ueki, Sagamihara; Hideaki Yamagami, and Takeshi Aizawa, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 25, 1996, Ser. No. 591,938

Claims priority, application Japan, Jan. 27, 1995, 7-031514; Nov. 17, 1995, 7-323707

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—48 36 Claims



1. An optical disk reproducing apparatus for reproducing pieces of information data recorded in a plurality of layers including a first layer and a second layer of an optical recording medium, comprising:

a transducer for reading out the information data from each of the layers of the optical recording medium;

buffer storing means for temporarily storing the information data read out from each of the layers by the transducer;

data rate controlling means for controlling the writing of the information data in the buffer storing means and the reading-out of the information data from the buffer storing means to write the information data read out by the transducer in the buffer storing means at a first data rate and read out the information data stored in the buffer storing means to an external apparatus at a second data rate lower than the first data rate;

servo control performing means for performing a tracking control of the transducer or a focus control of the transducer;

standby condition setting means for setting the transducer to a standby condition to temporarily stop the reading-out of the information data from each of the layers of the optical recording medium performed by the transducer;

optimizing operation performing means for performing a first optimizing operation for the first layer in which the tracking or focus control of the transducer performed by the servo control performing means is optimized to read out the information data from the first layer of the optical recording medium, a second optimizing operation for the second layer in which the tracking or focus control of the transducer performed by the servo control performing means is optimized to read out the information data from the second layer of the optical recording medium and another or other optimizing operations for other layers except for the first and second layers in which the tracking or focus control of the transducer performed by the servo control performing means is optimized to read out the information data from the other layers of the optical recording medium;

reproduction request receiving means for receiving a first request requesting the reproduction of the information data recorded in the first layer of the optical recording medium or a second request requesting the reproduction of the information data recorded in the second layer of the optical recording medium; and

controlling means for performing a first control, in cases where the first request is received by the reproduction request receiving means, in which the optimizing operation performing means is controlled to perform the first optimizing operation for the first layer, the transducer of which the tracking or focus control is optimized by the optimizing operation performing means is controlled to read out pieces of first information data from the first layer of the optical recording medium under control of the servo control performing means, the data rate controlling means is controlled to write the first information data read out by the transducer in the buffer storing means at the first data rate and read out the first information data stored in the buffer storing means to the external apparatus at the second data rate, it is judged whether or not a volume of the first information data stored in the buffer storing means is equal to or more than a first predetermined value, the standby condition setting means is controlled to set the transducer to a standby condition in cases where the volume of the first information data is equal to or more than the first predetermined value, the optimizing operation performing means is controlled to perform the second and other optimizing operations for the second and other layers while setting the transducer to the standby condition and reading out the first information data stored in the buffer storing means to the external apparatus, it is judged whether or not the volume of the first information data stored in the buffer storing means is equal to or less than a second predetermined value, and the transducer and the data rate controlling means are controlled to read out pieces of other first information data from the first layer of the optical recording medium and write the other first information data in the buffer storing means in cases where the volume of the first information data is equal to or less than the second predetermined value, and

performing a second control, in cases where the second request is received by the reproduction request receiving means, in which the optimizing operation performing means is controlled to perform the second optimizing operation for the second layer, the transducer of which the tracking or focus control is optimized by the optimizing operation performing means is controlled to read out pieces of second information data from the second layer of the optical recording medium under control of the servo control performing means, the data rate controlling means is controlled to write the second information data read out by the transducer in the buffer storing means at the first data rate and read out the second information data stored in the buffer storing means to the external apparatus at the second data rate, it is judged whether or not a volume of the second information data stored in the buffer storing means is equal to or more than the first predetermined value, the standby condition setting means is controlled to set the transducer to a standby condition in cases where the volume of the second information data is equal to or more than the first predetermined value, the optimizing operation performing means is controlled to perform the first and other optimizing operations for the first and other layers while setting the transducer to the standby condition and reading out the second information data stored in the buffer storing means to the external apparatus, it is judged whether or not the volume of the second information data stored in the buffer storing means is equal to or less than the second predetermined value, and the transducer and the data rate controlling means are controlled to write pieces of other second information data read out from the second layer of the optical recording medium in the buffer storing means at the first data rate and read out the other second information data from the buffer storing means at the second data rate in cases where the volume of the second information data is equal to or less than the second predetermined value.

5,612,940

DISC CARTRIDGE FOR RECEIVING A DISK AND MECHANISM FOR PREVENTING AN INCORRECT INSERTION OF A CARTRIDGE

Yasuo Otsuka, Hase Kamakura; Nobuhiro Katase, and Tohru Sasaki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

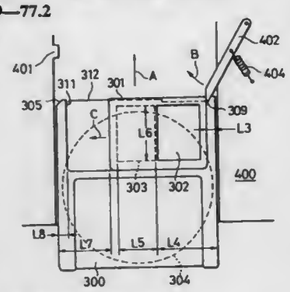
Continuation of Ser. No. 224,728, Jul. 27, 1988, Pat. No. 5,297,133. This application Dec. 27, 1993, Ser. No. 173,044

Claims priority, application Japan, Jul. 27, 1987, 62-185471; Nov. 9, 1987, 62-280919

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.[6] G11B 33/02

U.S. Cl. 369—77.2 83 Claims



48. A disc apparatus comprising:

receiving means for receiving a disc cartridge;

the disc cartridge including a case having a substantially square shape with first, second, third and fourth edge surface delimiting boundaries of the case, the case having a disc therein and having a window for exposing at least a portion of the disc within the case, the first edge surface of the case being delimited by a first corner portion connecting the first edge surface and the second edge surface and a second corner portion connecting the first edge surface and the third edge surface, a shutter member arranged for sliding movement in a direction toward the first corner portion over the first edge surface from a first position where the window is closed by the shutter member to a second position where the window is opened by movement of the shutter member, a spring for biasing the shutter member toward the first position wherein the window is closed, the spring being provided within the case in the region of the first corner portion, the case having a recess formed by a set back portion set back from the first edge surface of the case in a region of the first corner portion, a surface portion of the set back portion of the recess extending substantially parallel to the first edge surface and below the first edge surface., the shutter member being slidable over the first edge surface and the set back portion, the set back portion delimiting an opening extending through the case, and the case having a chamfer portion extending between the first edge surface and the second edge surface in the region of the first corner portion;

driving means for driving the disc; and

head means for at least one of recording information onto the disc and reproducing information from the disc;

the receiving means further including a shutter opening member responsive to the shutter member of the disc cartridge upon proper insertion of the disc cartridge into the receiving means for causing sliding movement of the shutter member for opening the window.

5,612,941

INFORMATION SIGNAL EDIT METHOD AND APPARATUS

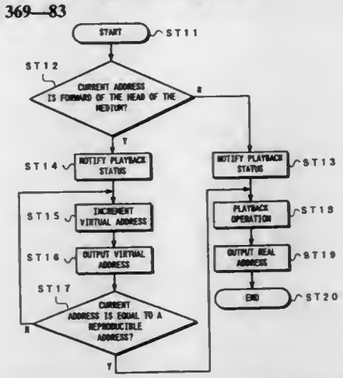
Yukio Shirako, Tokyo; Yoshio Kishi, Kanagawa; Yukihiro Maruyama, Tokyo, and Hiroyuki Fujikura, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 8, 1996, Ser. No. 694,265

Claims priority, application Japan, Aug. 18, 1995, 7-233407

Int. Cl.[6] G11B 27/00

U.S. Cl. 369—83 7 Claims



1. An information signal edit method using an editor, a recorder and a reproducer, comprising:

a first step locating a first address forward of an edit point address on a recording medium in response to an instruction from the editor to the reproducer;

a second step determining whether the first address is forward of or behind a head address of said recording medium on which recorded is an information signal to be reproduced by said reproducer;

a third step performed when the second step results in determining that said first address is forward, and positioning a reproducing element for said recording medium at a second address which is reproducible and located between said first address and said edit point address on said recording medium;

a fourth step commanding reproduction of said recording medium from said editor to said reproducer;

a fifth step supplying address information sequentially incremented from said first address from said reproducer to said editor;

a sixth step comparing said incremented address information with said reproducible second address; and

a seventh step performed when said incremented address information becomes equal to said reproducible second address, and starting actual reproduction of said recording medium.

5,612,942

OPTICAL HEAD

Jun-ichi Takahashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 21, 1994, Ser. No. 342,610

Claims priority, application Japan, Nov. 19, 1993, 5-314107; Dec. 28, 1993, 5-336202

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—112 9 Claims

1. An optical head, comprising:

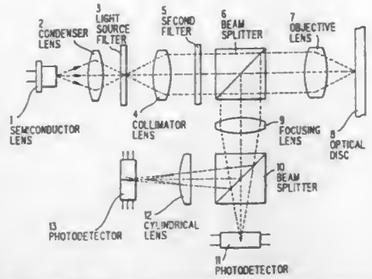
a light source for providing a radiated light beam;

a collimator lens for collimating said radiated light beam to provide a collimated light;

an objective lens for focusing said collimated light to form a light spot on an optical disc;

a beam splitter for splitting a light beam reflected from said optical disc to first and second light beams;

means for converting said first and second light beams to first and second electric signals;



a light source filter for converting an intensity distribution of said radiated light beam to an intensity distribution of a disc having a circular aperture to provide an intensity distribution-converted light which is supplied to said collimator lens as said radiated light beam; and a second filter for converting an intensity distribution of said intensity distribution of said distribution-converted light dependently on said intensity distribution-converted light, said second filter being positioned at an output stage of said collimator.

5,612,943

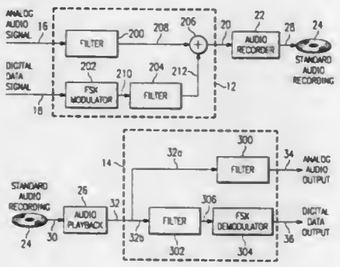
SYSTEM FOR CARRYING TRANSPARENT DIGITAL DATA WITHIN AN AUDIO SIGNAL

Robert W. Moses, 6528 26th Ave. NW, Seattle, Wash. 98117; Norman Durkee, The Marlborough House #1003, 1220 Boren Ave., Seattle, Wash. 98101-2712, and Charles H. Hustig, 482 Box Cir., Hudson, Wis. 54016

Filed Jul. 5, 1994, Ser. No. 270,252

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **10 Claims**



1. A system for combining an unmodulated first analog signal and a digital signal, said system comprising:

means for modulating said digital signal to a second analog signal different from said first analog signal;

a first filter for attenuating, in a first frequency band, the amplitude of said second analog signal;

a second filter for attenuating, in a second frequency band, the amplitude of said first analog signal, said first and second bands being nonoverlapping;

means for combining said first and second filtered analog signals to form a single composite analog signal,

a third filter for attenuating, in said second frequency band, the amplitude of said composite signal to extract said first analog signal;

a fourth filter for attenuating, in said first frequency band, the amplitude of said composite signal to extract said second analog signal;

means for demodulating said second analog signal to said digital signal; and

wherein:

said first band consists of frequencies below a −3 dB cutoff frequency,

said second band consists of frequencies above said cutoff frequency,

said first signal consists essentially of frequencies contained within said first band, and

said second signal consists essentially of frequencies contained within said second band.

5,612,944

DISC TRANSPORT APPARATUS

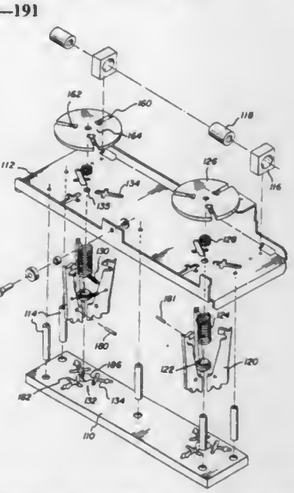
Dean A. Johnson, Churchville; James M. Gotta, Fairport, and Stephen A. Horstman, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 123,509, Sep. 20, 1993, abandoned.

This application Feb. 22, 1995, Ser. No. 392,277

Int. Cl.[6] G11B *17/10*

U.S. Cl. 369—191 **17 Claims**



1. A jaw assembly for clamping an information disc, said jaw assembly comprising:

a lower pivot plate coupled to an upper frame member such that the lower pivot plate and the upper frame member are in parallel planes;

a plurality of jaw blades arranged on an axis between and perpendicular to the lower pivot plate and the frame member, the jaw blades being pivotally mounted in openings located in the lower pivot plate, wherein a plurality of lower portions of the jaw blades extend from the lower pivot plate and a plurality of upper portions of the jaw blades extend through openings provided in the upper frame member;

means for applying an outward pivoting force to the lower portions of the jaw blades for engaging a disc;

a disc locating surface contained on each of the jaw blades;

a disc retaining surface contained on an outside edge of each of the jaw blades structured to engage only one disc upon application of the outward pivoting force; and

means for applying an inward pivoting force to the lower portions of the jaws blades to release discs engaged by the disc retaining surfaces, the means for applying an inward pivoting force further comprising a stripper plate having a plurality of rollers attached to the stripper plate such that there is at least one roller operatively connected to each of the jaw blades.

5,612,945

DEVICE FOR RECORDING AND/OR READING INFORMATION BY MEANS OF A RADIATION BEAM, PLATE-SHAPED ELEMENT SUITABLE FOR USE IN THE DEVICE, AND DISC PLAYER COMPRISING THE DEVICE

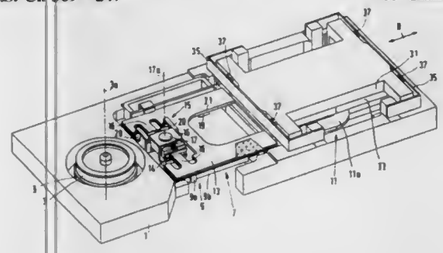
Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1994, Ser. No. 186,399

Claims priority, application European Pat. Off., Feb. 22, 1993, 93200495

Int. Cl.[6] G11B *7/08*

U.S. Cl. 369—247 **19 Claims**



10. A device for scanning a disc-shaped information carrier with a radiation beam, comprising:

a frame,

a turntable mounted for rotation with respect to the frame, and a drive unit for rotating the turntable about an axis of rotation,

a scanning device for focusing the beam of radiation onto a surface of the information carrier,

a slide, including a slide body to which the scanning device is secured, mounted for movement with respect to the frame and turntable in a direction which is substantially radial with respect to the axis of rotation, and

a drive arrangement for moving the slide in said direction, comprising a first drive element forming part of the slide and a second drive element connected to the frame,

wherein the scanning device and the first drive element are spaced from each other in said direction,

the first drive element is a flat drive coil having a coil axis oriented parallel to the axis of rotation,

the second drive element comprises at least one flat permanent magnet arranged opposite the drive coil and a yoke of soft magnetic material, the yoke being at least partly plate-shaped and oriented transversely to the coil axis, and

the slide body is formed from two plate-shaped parts which are parallel to each other and to the information carrier, and which extend in said direction between and interconnecting the flat drive coil and the scanning device, each of the plate-shaped parts having a pattern of raised portions on a side facing the other plate-shaped part, raised portions of one of the parts contacting raised portions of the other part at a plurality of locations and being affixed to the raised portions of the other part at the plurality of locations wherein the first drive element is affixed to one distal end of the slide body and the scanning device is affixed to an opposite, proximal end thereof with the entirety of the plate shaped parts interposed between the distal and proximal ends for providing stiffening and dampening means.

5,612,946

ELECTRICAL DEVICE WITH INPUT AND OUTPUT PORTS FOR CHANGING THE MULTIPLEX NUMBER OF TRANSMITTAL BUSES AND SYSTEM USING THE ELECTRICAL DEVICE

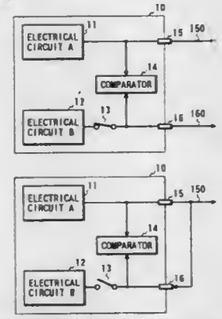
Nobuyasu Kanekawa; Shoji Suzuki; Yoshimichi Sato, and Shinya Ohtsuji, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,662

Claims priority, application Japan, Jul. 4, 1994, 6-152322

Int. Cl.[6] H04L *12/26*

U.S. Cl. 370—216 **19 Claims**



1. An electrical device to be connected to one or more external buses, comprising:

a plurality of input/output ports of a number no less than the number of external buses to be connected to said input/output ports,

wherein if the number of said input/output ports equals the number of said external buses the same signal is output from said plurality of input/output ports, and if the number of said input/output ports, is greater than the number of said external buses, at least one pair of said input/output ports are connected each other, and a signal is output from one of said at least one pair of said input/output ports, and said output signal is collated with a signal to be output, by feeding back said output signal via another one of said at least one pair of said input/output ports.

5,612,947

APPARATUS AND METHOD FOR FAST CHANGEOVER IN DUPLEX SYSTEM

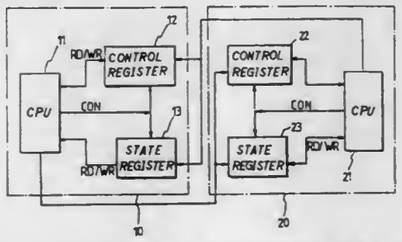
Chang H. No, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed May 23, 1995, Ser. No. 447,790

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15645

Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—228 **2 Claims**



1. An apparatus for a fast changeover in a duplex system comprising:

a pair of control registers, each control register being composed of eight bits in order of which one bit is for a duplex system mode, of which one bit is for a state of mode, of which one bit

is for an operation state of the mode state, and of which three bits and two bits are respectively for each address of a group/unit which operates in being linked to the duplex system;

a pair of state registers, each state register being composed of eight bits in order of which one bit is for a connection state of each unit/group based on the information of said control register, of which three bits are for the information of a fail position, and of which four bits are for the information of a fail state; and

wherein the pair of said control registers are separately configured, the pair of said state registers are separately configured, and each state of said control registers and state registers are read/written by a control signal of each CPU in each CPU.

5,612,948

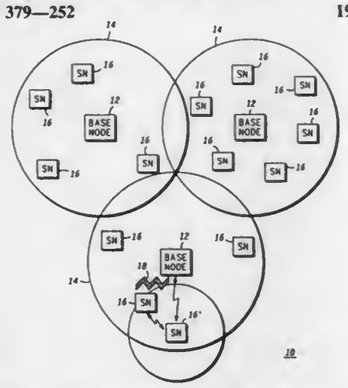
HIGH BANDWIDTH COMMUNICATION NETWORK AND METHOD

Bruce A. Fette, Mesa; Peter J. Leahy, Scottsdale, and David M. Harrison, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1994, Ser. No. 342,317

Int. Cl.[6] H04B *7/14*

U.S. Cl. 379—252 **19 Claims**



1. A method of operating a high bandwidth communication network, said method comprising the steps of:

directly receiving, at a subscriber node, signals transmitted from a base node;

identifying a communications service to be provided;

identifying a minimum data rate necessary to support said communications service;

determining whether to directly communicate between said base node and said subscriber node or to indirectly communicate between said base node and said subscriber node through a repeater subscriber node, selecting direct communication between said base node and said subscriber node when said data rate is supportable through direct communication with said base node; and

engaging in communications over said network, said communications occurring through a communication channel selected in response to said determining step.

5,612,949

METHOD AND APPARATUS FOR DETERMINING NETWORK DELAYS

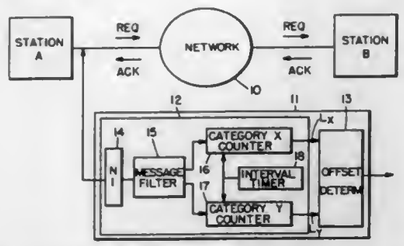
Steven N. Bennett, Cheltenham, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 5, 1995, Ser. No. 435,551

Claims priority, application European Pat. Off., Jun. 13, 1994, 94304256

Int. Cl.[6] H04B *17/00*

U.S. Cl. 370—253 **15 Claims**



12. Apparatus for determining delays in a network carrying messages between entities connected to the network, said messages including first messages and second messages of respective predetermined categories, the first and second messages each producing a respective time-dependent loading of the network and said second messages being caused by the first messages whereby said loadings vary in a similar manner with time but with the loading produced by the second messages being offset from that produced by the first messages; the apparatus comprising:

load measuring means for deriving load measures for said first and second messages at a predetermined location in said network, each said load measure being derived by counting the number of messages of the category concerned occurring in a predetermined time interval; and

offset determining means for utilising said load measures to determine an offset between the network loadings produced by the first and second messages, this offset providing a network-delay measurement at said predetermined location.

5,612,950

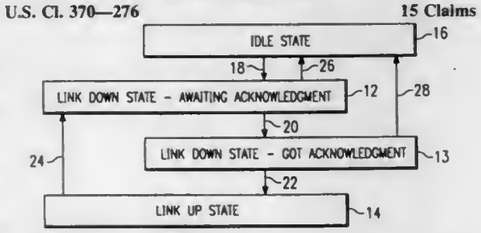
MANAGING COMMUNICATION ON AN UNSTABLE ERROR-PRONE CHANNEL

Charles D. Young, Richardson, Tex., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed May 27, 1993, Ser. No. 68,370

Int. Cl.[6] H04L *5/14*

U.S. Cl. 370—276 **15 Claims**



3. A method of managing communication between two nodes including a first node and a second node, comprising:

transmitting message management headers between the two nodes, including the priority of any message that is to be sent;

transmitting from the first node an indication, referred to as a "herald", that the first node is ready to send message data;

upon receipt of the herald by the second node, if the message data of the first node has a priority greater than that of any message data which the second node has to send, or if the message data of the first node has a priority equal to the highest priority of any message data the second node has stored, then establishing the first node as a driver node and the second node as a driven node, and transmitting, from the driven node to the driver, an indication, referred to as a "herald acknowledgment", that the driven node is ready to receive the message data of the driver node; and

transmitting the herald from the first node to the second node again, if the first node does not receive the herald acknowledgment, but if the first node does receive the herald acknowledgment, then transmitting data of a first message from the first node to the second node.

5,612,951

OUTPUT BUFFER TYPE ASYNCHRONOUS TRANSFER MODE(ATM) SWITCH

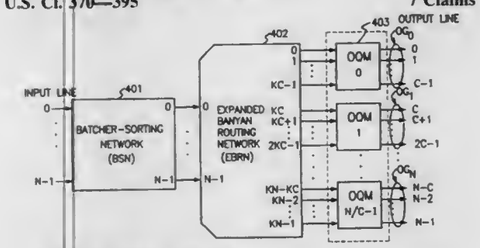
Keol W. Yu, and Tae S. Chung, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Aug. 9, 1995, Ser. No. 513,119

Claims priority, application Rep. of Korea, Dec. 13, 1994, 1994-34021

Int. Cl.[6] H04L *12/54*

U.S. Cl. 370—395 **7 Claims**



1. An ATM switch comprising:

a BSN arraying N cells in the order of output line group number, wherein $N=2^1, 2^2, \ldots, 2^n$ and n is a natural number;

cells simultaneously inputted through N input lines of the switch;

an EBRN outputting cells arrayed in said BSN to the corresponding output line group containing each output line;

and an OQM temporarily storing cells outputted from said EBRN in a buffer used as a common memory and sending these cells to the final output lines.

5,612,952

PACKET SWITCH AND BUFFER FOR STORING AND PROCESSING PACKETS ROUTING TO DIFFERENT PORTS

Masahiko Motoyama, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Sep. 19, 1994, Ser. No. 308,794

Claims priority, application Japan, Sep. 20, 1993, 5-232651; Dec. 28, 1993, 5-351057

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—412 **20 Claims**

1. A packet switch for storing and switching a plurality of packets for routing to different output ports, comprising:

storage means for storing at least information data obtained, respectively, from the packets which include routing tags, the packets being received from a plurality of different input ports;

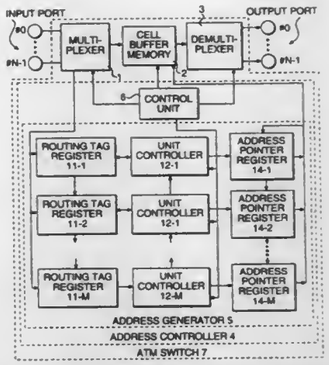
a plurality of routing tag storage means for storing each routing tag of each received packet, in an input order in which the packets are received;

a plurality of address information storage means, respectively corresponding to said plurality of routing tag storage means, for storing address information identifying storage regions of said storage means respectively storing information data corresponding to said routing tags stored in said routing tag storage means;

and control means for controlling a search of each of said plurality of routing tag storage means in the input order of the packets;

said address information storage means corresponding to said routing tag storage means storing the routing tags corresponding to a currently processed output port to read out said address information stored therein;

said storage means identified by said address information to output to the currently processed output port information data stored in the storage region thereof; and said routing tag storage means and said address information storage means to shift the contents therein and to reposition the routing tag and the address information corresponding to information data that have been output.



5,612,953

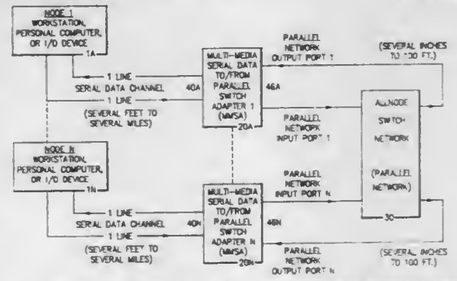
MULTI-MEDIA SERIAL LINE SWITCHING ADAPTER FOR PARALLEL NETWORKS AND HETEROGENEOUS AND HOMOLOGOUS COMPUTER SYSTEMS

Howard T. Olnowich, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 178,974, Jan. 7, 1994, abandoned, which is a division of Ser. No. 799,602, Nov. 27, 1991, abandoned, and a continuation-in-part of Ser. No. 659,199, Feb. 22, 1991, abandoned, Ser. No. 677,543, Mar. 29, 1991, abandoned, Ser. No. 748,316, Aug. 21, 1991, Pat. No. 5,404,461, Ser. No. 748,302, Aug. 21, 1991, Ser. No. 748,303, Aug. 21, 1991, Pat. No. 5,365,228, and Ser. No. 748,295, Aug. 21, 1991, Pat. No. 5,250,943. This application Oct. 18, 1995, Ser. No. 544,625

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—367 **9 Claims**



1. A multi-stage bufferless and clockless switch network comprising:

a plurality of bufferless and clockless switch apparatuses cascaded into a plurality of stages, said switch apparatuses each including a plurality of switch inputs and a plurality of switch outputs, of the switch outputs included in each of said switch apparatuses each coupled to a different one of the switch apparatuses via a switch input of said different one of the switch apparatuses, switch outputs of last stage switch apparatuses each comprising a network output port and switch inputs of first stage switch apparatuses each comprising a network input port; and

said network output ports each coupled to a network input port through one of a plurality of nodes, each of said nodes comprising:

a processor operating under a native protocol, said native protocol different from an operating protocol of at least one other of the nodes;

means for receiving a data message from a coupled network output port; and

means for sending a data message to a coupled network input port, said data message to a coupled network input port including a path connection request;

said switch apparatuses each further including:

connection means for establishing a point-to-point communication path between any one of the network input ports and any one of the network output ports in response to said connection request received at said any one of the network input ports, said point-to-point communication path for transmitting a data message received at said any one of the network input ports to said any one of the network output ports;

multicast means for establishing a multicast communication path between said any one of the network input ports and any portion of the network output ports in response to said connection request received at said any one of the network input ports, said multicast communication path for transmitting the data message received at said any one of the network input ports simultaneously to said any portion of the network output ports;

broadcast means for establishing a broadcast communication path between said any one of the network input ports and all of the network output ports in response to said connection request received at said any one of the network input ports, said broadcast communication path for transmitting the data message received at said any one of the network input ports simultaneously to said all of the network output ports; and

asynchronous connection means for establishing asynchronously, in response to a plurality of path connection requests received separately or simultaneously at a plurality of network input ports, a plurality of concurrently active:

point-to-point communication paths,

multicast communication paths, and

point-to-point and multicast communications paths in combination,

said plurality of concurrently active point-to-point communication paths, multicast communication paths, and point-to-point and multicast communications paths in combination for transmitting concurrently a plurality of data messages received separately or simultaneously at said plurality Of the network input ports to a plurality of the network output ports.

5,612,954

TIME SWITCH SYSTEM

Jan P. W. Sandquist, Huddinge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 21, 1995, Ser. No. 426,651

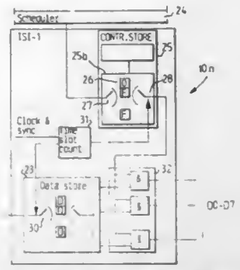
Claims priority, application Sweden, Apr. 29, 1994, 9401471

Int. Cl.[6] H04Q *11/08*

U.S. Cl. 370—244 **16 Claims**

1. A digital time switch system comprising:

a switch core including a bus having a bandwidth,



a number of switch ports sharing said bandwidth by time-division multiplexing wherein time is divided into time slots assembled in frames,

superior control means for assigning to said switch ports time slots in which data transmission between the switch ports is to be performed, based on information from said switch core to avoid bus conflict,

logical means in the switch ports for imparting a certain logical value to data directed to the switch core, said data appearing in time slots having not been assigned by the superior control means, and

multiplexing means in the switch core for multiplexing data from the switch ports through bit by bit logical operations in a way to prevent data, to which said certain logical value has been imparted, from giving any active contribution to the logical operations.

5,612,955

MOBILE RADIO WITH TRANSMIT COMMAND CONTROL AND MOBILE RADIO SYSTEM

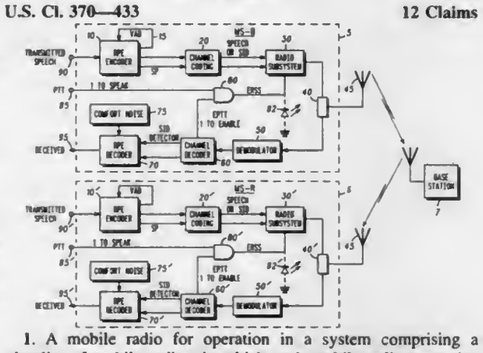
Julian V. Fernandes, Swindon, and Hugh C. Dunlop, London, both of United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 21, 1995, Ser. No. 408,097

Claims priority, application United Kingdom, Mar. 23, 1994, 9405752

Int. Cl.[6] H04J *3/17*

U.S. Cl. 370—433 **12 Claims**



1. A mobile radio for operation in a system comprising a plurality of mobile radios, in which each mobile radio transmits, selectively, traffic frames containing traffic data responsive to inputting of information to the mobile radio when the mobile radio is in an active transmit state of operation, and silence descriptor frees responsive to absence of input information when the mobile radio is in active transmit state of operation, the mobile radio comprising:

a transmitter for transmitting traffic on a radio channel;

a receiver for monitoring signals on the radio channel;

a control input for inputting a transmit command;

control means, responsive to the receiver and responsive to the control input, for controlling the transmitter, where the control means are arranged to enable activation of the transmitter,

when the receiver detects continuous silence descriptor frames on the radio channel for a predetermined duration and a transmit channel command is input at the control input.

5,612,956

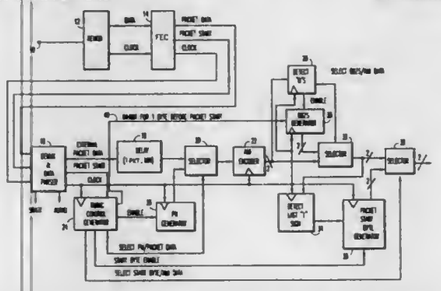
REFORMATTING OF VARIABLE RATE DATA FOR FIXED RATE COMMUNICATION

G. Kent Walker, Escondido; Paul Moroney, Olivenhain, and Ray Nuber, La Jolla, all of Calif., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Dec. 15, 1995, Ser. No. 573,227

Int. Cl.[6] H04J *3/22;3/26*

U.S. Cl. 370—545 **14 Claims**



1. A method for reformatting variable rate data for communication to an external device at a fixed rate, comprising the steps of:

recovering fixed length packets of said variable rate data from a multiplex of data packets;

adding a packet start byte to the beginning of each of said recovered packets;

adding fill bits to at least some of said recovered packets if an information rate of said variable rate data is less than said fixed rate; and

providing said recovered packets with the added packet start byte and any fill bits as an output to said external device at said fixed rate.

5,612,957

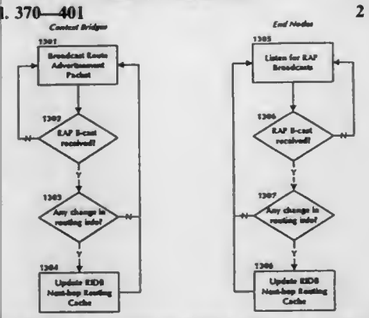
ROUTING METHOD IN SCALABLE DISTRIBUTED COMPUTING ENVIRONMENT

Daniel P. Gregerson, Half Moon Bay; David R. Farrell, San Francisco; Sunil S. Gaitonde; Ratinder P. Ahuja, both of Daly City; Krish Ramakrishnan, Union City; Muhammad Shafiq, El Granada, and Ian F. Wallis, Cupertino, all of Calif., assignors to Peeriogic, Inc., San Francisco, Calif.

Division of Ser. No. 293,073, Aug. 19, 1994, Pat. No. 5,526,358. This application Aug. 25, 1995, Ser. No. 519,634

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—401 **2 Claims**



1. A method for determining routing paths in a context bridge which is able to route packets between nodes having different communication protocols at different levels, the context bridge being one of many context bridges in a heterogeneous network containing a plurality of nodes, the method comprising the steps of:

setting up a list of context bridges and the communication protocols handled by each context bridge in the list;

listening for routing information packets which are periodically broadcast by other context bridges informing recipients of the communication protocols handled by the broadcasting context bridge;

updating the list using the information contained in the received routing information packets; and

determining the routing paths in the context bridge using the updated list.

5,612,958

METHOD AND DEVICE FOR THE ASYNCHRONOUS TRANSMISSION OF DATA BY MEANS OF A SYNCHRONOUS BUS

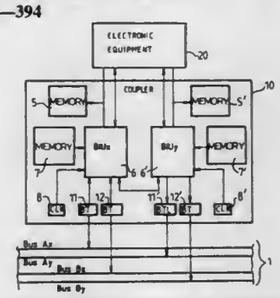
Christian Sannino, Vieille Eglise, France, assignor to Sextant Avionique, Meudon la Foret, France

Filed May 2, 1995, Ser. No. 433,918

Claims priority, application France, May 20, 1994, 94 06298

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—394 **10 Claims**



7. A device for transmitting digital data between plural electronic modules independent from one another and connected via respective couplers to a common synchronous bus comprising two pairs of redundant data transfer buses enabling transmission errors to be detected and corrected, the bus having a use time divided into cyclic time frames of fixed duration, each frame being divided into cells of fixed duration, each coupler having a redundant structure comprising two bus interfacing units connected respectively to said two pairs of data transfer buses, these interfacing units being interconnected so as to be able to check the consistency of signals traveling on said pairs of buses and to correct any errors, each interfacing unit being connected to a clock, a first memory, and a second memory containing a table indicating the cells of each of said cyclic frames during which the coupler has exclusive transmission rights, and a list of message identification codes expected by the electronic module connected to said coupler, each of said interfacing units comprising:

means for synchronizing said clock with said cyclic frames and cells,

means for detecting occurrences of cells attributed in said table to said coupler, and means for transmitting during said cells messages composed by the electronic module connected to said coupler and comprising digital data to be transmitted associated with a code identifying the message,

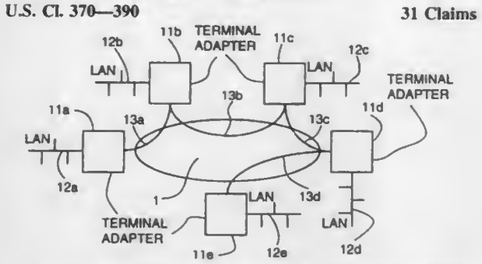
means for detecting occurrences of cells not attributed in said table to said coupler and means for receiving messages transmitted during said cells,

means for comparing the identification code of each message received with the codes contained in said list, and means for transmitting the message to said module if its identification code is contained in said list.

5,612,959
MULTICAST COMMUNICATIONS METHOD

Akihiko Takase, Tokyo; Shiro Tanabe, Hidaka; Noboru Endo, Kodaira; Ryoji Takeyari, Koganei; Yusuke Mishina, Kodaira; Toshiya Oouchi, Kokubunji, and Junichirou Yanagi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 86,088
Claims priority, application Japan, Jul. 8, 1992, 4-180180
Int. Cl.[6] H04L *12/28*
U.S. Cl. 370—390 **31 Claims**



1. A multicast communications method for multicasting information from a source node to a plurality of destination nodes, wherein each of said source and destination nodes is connected to one of terminal equipment and a communications network and wherein said source and destination nodes are connected together by a wide area network, comprising the steps of:

first transmitting information across the wide area network from the one of terminal equipment and the communications network connected to said source node and receiving and copying the information by at least one of the destination nodes with the one of terminal equipment and the communications network connected thereto, and then transmitting the copied information across the wide area network to at least another of said one of terminal equipment and the communications network connected to said destination nodes; and

repeating said receiving, copying and then transmitting steps at each of said destination nodes until said multicasting of information is completed.

5,612,960
RADIO LAN STATION WITH IMPROVED POINT-TO-POINT LINK DIAGNOSTIC CAPABILITY AND METHOD OF OPERATION THEREOF

Henricus J. M. Stevens, Veenendaal, and Adrianus C. van der Kuil, Utrecht, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 20, 1991, Ser. No. 810,749
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—20.1 **24 Claims**

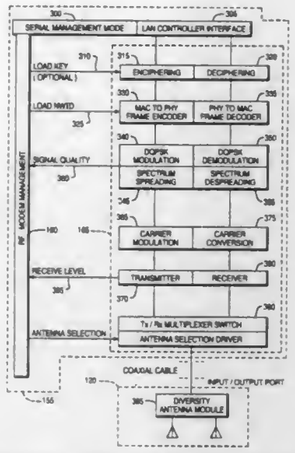
1. A radio local area network host station comprising:

transmitting means for transmitting diagnostic frames including a diagnostic network identification designator (NWID) code via a radio link to remote stations which are remote from said host station;

receiving means for receiving diagnostic frames via said radio link from said remote stations;

determining means, coupled to said receiving means, for determining if any of the frames received from said remote stations exhibit the same diagnostic NWID code as said host station; and

monitoring means, coupled to said receiving means, for monitoring those frames received from a particular remote station which are determined by said determining means to exhibit the same diagnostic NWID code as the diagnostic frames transmitted by said host station, said monitoring means thus

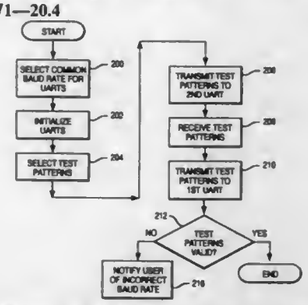


deriving signal quality characteristics for those frames received from said particular remote station and link quality information with respect to the radio link between said particular remote station and said host station.

5,612,961
METHOD AND SYSTEM FOR VERIFICATION OF THE BAUD RATE FOR AN ASYNCHRONOUS SERIAL DEVICE RESIDING WITHIN A DATA PROCESSING SYSTEM

Rafael G. Cabezas, Austin, and Richard A. Foster, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1995, Ser. No. 430,080
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.4 **6 Claims**



1. In a computer having a first and second Asynchronous serial device, the first and second serial devices being independent of one another, a method of verifying a selected baud rate for communication of data by said first serial device, said method comprising the steps of:

connecting said first serial device to said second serial device for communication of data therebetween;

transmitting a test sequence pattern at a selected baud rate from said first serial device to said second serial device;

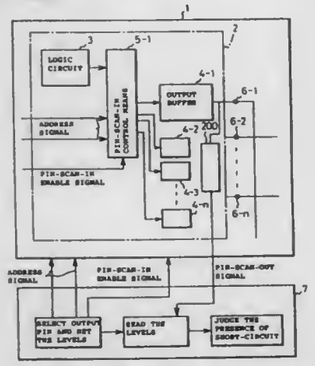
re-transmitting said received test sequence pattern from said second serial device to said first serial device at the same selected baud rate; and

verifying that said test sequence pattern received by said first serial device is valid.

5,612,962
PIN-SCAN-IN TYPE LSI LOGIC CIRCUIT, PIN-SCAN-IN SYSTEM DRIVING CIRCUIT, AND METHOD OF TESTING CIRCUIT-MOUNTING SUBSTRATES

Toshiro Sato; Kunitoshi Yamamoto, and Hiroyuki Adachi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP92/01289, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO93/07502, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 5, 1992, Ser. No. 70,412
Claims priority, application Japan, Oct. 4, 1991, 3-257646; Nov. 28, 1991, 3-314538
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—42.3 **5 Claims**



1. A pin-scan-in type LSI logic circuit comprising a pin-scan-in control means including:

a plurality of input terminals;

a plurality of output pins for outputting logic values;

a first NOR gate provided for each of said plurality of output pins, for decoding an address signal of a plurality of bits received at predetermined terminals of said plurality of input terminals; and

a second NOR gate responsive to an output of said first NOR gate and a pin-scan-in enable signal received at one input terminal other than said predetermined terminals, and outputting a signal of either a logic value **1** or a logic value **0** to a corresponding output pin,

said pin-scan-in control means selecting one of said plurality of output pins and causing the selected one to assume a level of one logic value, and causing all other output pins to assume a level of the other logic value.

5,612,963
HYBRID PATTERN SELF-TESTING OF INTEGRATED CIRCUITS

Bernd K. F. Koenemann, Hopewell Junction; Kenneth D. Wagner, Wappingers Falls, both of N.Y., and John A. Waicukauski, Tulatin, Oreg., assignors to International Business Machines Corporation, Armonk, N.Y.

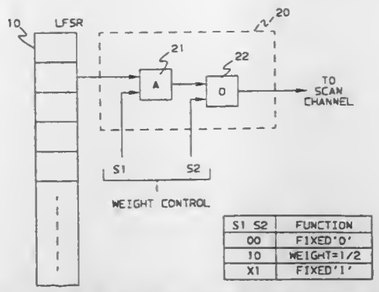
Continuation of Ser. No. 749,093, Aug. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,100
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—27 **13 Claims**

1. A digital test signal generation circuit comprising:

means for generating a pseudo-random sequence of binary digits;

weight storage means for storing a sequence of pairs of weight bits, each pair including a first weight bit and a second weight bit;

conjunctive circuit means for receiving, as a first input, a single bit from said generating means and, as a second input, said first weight bit from said weight storage means and for



S1 S2	FUNCTION
00	FIXED'0'
10	WEIGHT=1/2
X1	FIXED'1'

operating on said first and second inputs in non-inverted form to produce output signals; and

disjunctive circuit means for receiving, as a first input, said output signals from said conjunctive circuit means and, as a second input, said second weight bit from said weight storage means, the output signal from said disjunctive circuit means being said test signal.

8. A digital test signal generation circuit comprising:

means for generating a pseudo-random sequence of binary digits;

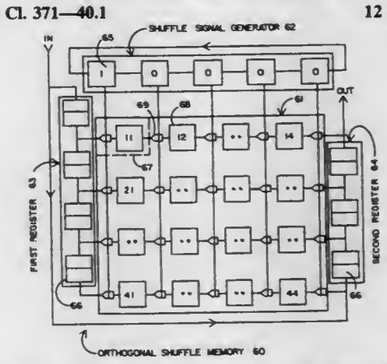
weighting means including a first means for receiving a single bit in non-inverted form from said pseudo-random sequence of binary digits and for receiving a first weighting signal supplied to said first means, said weighting means also including a second means for receiving the output of said first means and a second weighting signal for producing a weighted output sequence in which output binary digit distribution is altered; and

weight storage means for storing a sequence of weighting signals for transmittal to said weighting means.

5,612,964
HIGH PERFORMANCE, FAULT TOLERANT ORTHOGONAL SHUFFLE MEMORY AND METHOD

Tegze P. Haraszti, 102 Scholz Plz., No. 238, Newport Beach, Calif. 92663

Filed Apr. 8, 1991, Ser. No. 681,600
Int. Cl.[6] G11C *19/00;21/00;29/00*
U.S. Cl. 371—40.1 **12 Claims**



1. A method for sequentially accessing, storing, reading and writing data in a memory comprising first and second multi-stage registers holding one data bit per stage and a memory cell array coupled to said first and second registers and having rows and columns of memory cells, each memory cell from said memory cell array including a data storage element and a data transmission element coupled to said data storage element, said method comprising the steps of:

(a) transferring the data contents of the data storage elements of the first column of memory cells of said array into the first

register during a first time interval by way of respective ones of said data transmission elements of said first column of memory cells;

(b) transferring the data contents of the data storage elements of the second column of memory cells of said array into the data storage elements of the memory cells of said first column during a second time interval by way of respective ones of said data transmission elements of said second column of memory cells;

(c) transferring the data contents of the data storage elements of each succeeding column of memory cells of said array into the data storage elements of the memory cells of the immediately-preceding column during another time interval by way of respective ones of said data transmission elements of said succeeding column of memory cells;

(d) repeating step (c) until the data contents of the data storage elements of the last column of memory cells of said array are transferred into the data storage elements of the memory cells in the next-to-last column by way of respective ones of said data storage elements of said last column of memory cells, such that data is transferred between the storage elements of the memory cells of only two columns of said array during any time interval;

(e) transferring the data contents of said second register into the data storage elements of the last column of memory cells of said array;

(f) shifting the data contents of said first and second registers by one bit during each of said steps (a) through (e); and

(g) supplying the data contents of the first stage of said first register into the first stage of said second register during each of said steps (a) through (e).

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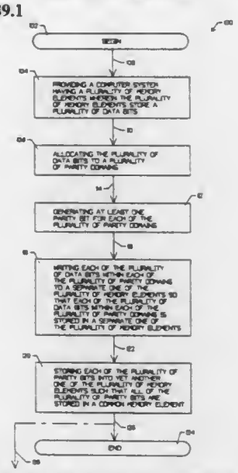
MULTIPLE MEMORY BIT/CHIP FAILURE DETECTION

Wayne A. Michaelson, Circle Pines, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 233,811, Apr. 26, 1994. This application Dec. 15, 1995, Ser. No. 573,509

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—49.1 **20 Claims**



1. An apparatus for detecting errors within a digital computer system wherein the digital computer system bas a plurality of memory elements for storing a plurality of data bits, the plurality of data bits being allocated to a plurality of parity domains, comprising:

a. parity computing means coupled to the plurality of memory elements for computing at least one corresponding parity bit for each particular one of the plurality of parity domains, thereby resulting in a plurality of corresponding parity bits; and

b. memory writing means coupled to the plurality of memory elements and to said parity computing means for writing the plurality of data bits and said plurality of corresponding parity bits into the plurality of memory elements, said memory writing means writing each particular one of the plurality of data bits within said particular one of the plurality of parity domains to a separate one of the plurality of memory elements using round-robin storage allocation, each said particular one of the plurality of data bits being in at least one particular one of the plurality of parity domains having no greater than one data bit for each said separate one of the plurality of memory elements and further writing said plurality of corresponding parity bits into a selected one of the plurality of memory elements.

5,612,966

AUTOMATIC DATA TRANSMISSION RATE DETECTION CIRCUIT

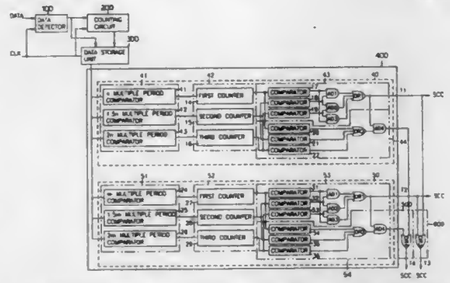
Dong S. Lee, Kyungki-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Sep. 19, 1995, Ser. No. 529,964

Claims priority, application Rep. of Korea, Sep. 26, 1994, 24201

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—61 **12 Claims**



1. An automatic data transmission rate detection circuit comprising:

data detection means for detecting input data in response to an external reference-clock pulse;

counting means for up-counting the reference clock pulse, said counting means clearing its count upon inputting an output signal from said data detection means at its clear terminal during its counting operation;

data storage means for storing an output value from said counting means upon inputting the output signal from said data detection means at its load enable terminal;

individual detection means including a plurality of individual detectors, each of said plurality of individual detectors detecting a transmission rate and an error rate of individual data in response to an output signal from said data storage means;

density detection means for detecting the entire data transmission rate in response to individual data transmission rate detect signals from said plurality of individual detectors in said individual detection means; and

error detection means for detecting in response to individual data error rate detect signals from said plurality of individual detectors in said individual detection means whether an error is present in the entire data transmission rate detected by said density detection means.

5,612,967

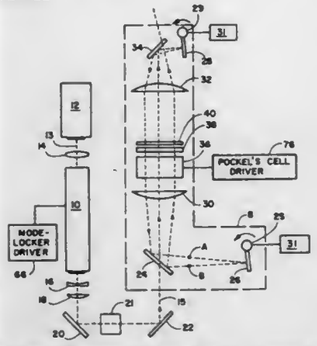
TWO DIMENSIONAL SCAN AMPLIFIER LASER

Shui T. Lai, 1223 Orchard Glen Cir., Encinitas, Calif. 92024

Division of Ser. No. 178,066, Jan. 4, 1994. This application May 9, 1995, Ser. No. 437,900

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—22 **7 Claims**



1. A laser beam frequency doubling device comprising:

a laser beam source for producing a first laser beam of a predetermined frequency;

a plurality of reflective beam splitters aligned to receive said first laser beam;

a plurality of lenses equal in number to said reflective beam splitters with one associated with each of said bean splitters;

a plurality of reflector means equal in number to said beam splitters with one of said reflector means associated with one of said beam splitters and one of said lens; and

a plurality of nonlinear optical crystals with one positioned between each of said reflective beam splitters and said reflector means, whereby said first laser beams splits at each splitter and the beam split from said first laser beam travels at approximately 90 degree angle relative to said first laser beam through an aligned lens, crystal and is reflected from said reflector means back through said aligned crystal, lens and said associated splitter and exits said splitter as a second laser beam having a frequency which is a second harmonic of said first laser beam frequency.

5,612,968

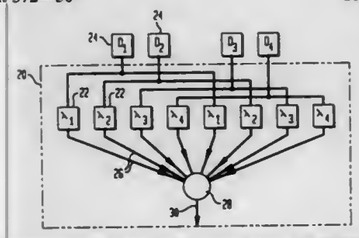
REDUNDANT MULTI-WAVELENGTH LASER ARRAYS

Chung-en Zah, Holmdel, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Apr. 20, 1995, Ser. No. 425,565

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—50 **10 Claims**



1. A semiconductor laser array comprising a first plurality of lasers fabricated on a chip and including self-tuning means to cause each laser to have one of a plurality of design lengths, a second plurality of lasers on said chip, each of said second plurality of lasers having the same design wavelength as one of said first plurality of lasers, and means for operatively connecting only one of said first and said second plurality of lasers between a data source and an output for each of said design frequencies.

5,612,969

TRANSVERSALLY PUMPED SOLID STATE LASER

Adam Dombi, Zurich, Switzerland, assignor to Balzers Aktiengesellschaft, Furstentum, Liechtenstein

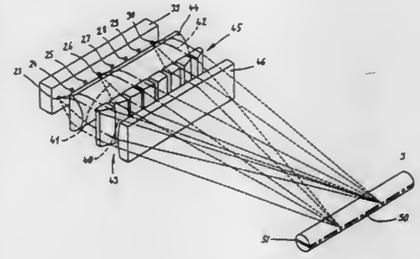
PCT No. PCT/EP95/00216, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO95/20833, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 21, 1995, Ser. No. 454,322

Claims priority, application Germany, Jan. 29, 1994, 44 02 668.4

Int. Cl.[6] H01S *3/091;3/094*

U.S. Cl. 372—75 **20 Claims**



1. Solid state laser consisting of a resonator and a mainly parallel to the resonator axis placed rod-like laser crystal stimulated by at least on a part of its length by two transversally pump light beams coupled-in, placed symmetrically to the axis whereby the transversally running pump light beam in the axis direction of the laser crystal is modulated in its intensity so that in the axis direction there change areas of high energy density with areas of lower energy density, whereby the number of areas with lower energy density is one smaller than the number of areas with high energy density.

5,612,970

Patent Not Issued For This Number

5,612,971

INTERMEDIATE FREQUENCY RECEIVER APPARATUS

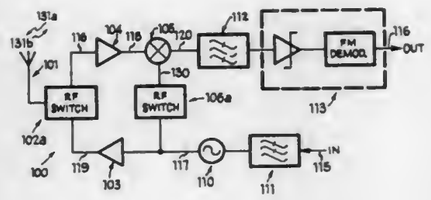
Michael W. Dormer, Basingstoke, Great Britain, assignor to Vtech Communications, Ltd., Hong Kong

Filed Jun. 1, 1994, Ser. No. 252,365

Claims priority, application United Kingdom, Jun. 2, 1993, 9311297

Int. Cl.[6] H04B *15/00*; H04K *1/00*; H04L *27/30*

U.S. Cl. 375—202 7 Claims



1. An apparatus for making image rejection in a superheterodyne receiver substantially unnecessary, said superheterodyne receiver receiving a transmission signal, said superheterodyne receiver an antenna operably connected to a mixer the output of said mixer being operably connected to a signal detector having an output, said apparatus comprising:

two or more radio frequencies on one of which said transmission signal is sent, each of the two or more radio frequencies being separated from one another by at least one predetermined channel spacing, each of said two or more radio frequencies being selected from available radio frequencies;

two or more local oscillator frequencies, each one of said two or more local oscillator frequencies being separated from a corresponding one of said two or more radio frequencies by an integer multiple of said predetermined channel spacing;

said available radio frequencies consisting of the group of radio frequencies which are not located at any frequency occupied by an image response of a previously selected one of said two or more radio frequencies;

means for one of said two or more local oscillator frequencies corresponding to said one of said two or more radio frequencies on which said transmission signal is being sent;

a frequency generator operably connected to said mixer, said frequency generator generating said one of said two or more local oscillator frequencies corresponding to said one of said two or more radio frequencies on which said transmission signal is being sent;

wherein said selecting means selects said two or more local oscillator frequencies based upon a time-based sequence, said time-based sequence is pseudo-random code known to both said superheterodyne receiver and a transmitter transmitting said transmission signal and synchronized to said superheterodyne receiver.

5,612,972

SPECTRUM SPREAD SIGNAL RECEPTION WITH DIFFERENTIAL DEMODULATION OF SPECTRUM SPREAD DEMODULATED COMPONENTS AT EACH SYNCHRONOUS POINT AND AT A POINT ALWAYS ONE SYMBOL PERIOD LATER

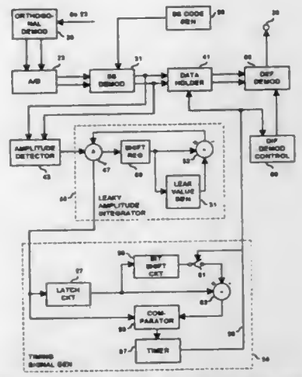
Mikio Fukushi, and Hideho Tomita, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 28, 1994, Ser. No. 364,701

Claims priority, application Japan, Dec. 28, 1993, 5-336643

Int. Cl.[6] H04K *1/00*; H04L *7/00*

U.S. Cl. 375—206 14 Claims



1. A spectrum spread receiving method of receiving a spectrum spread modulated signal transmitted from a spectrum spread transmitter for differential modulation of adjacent symbol data of a transmitter input signal into differential modulated components and for individually multiplying a spectrum spread code and said differential modulated components into spectrum spread modulated components of said spectrum spread modulated signal said spectrum spread receiving method includes the steps of receiving said spectrum spread modulated signal as reception components having a common symbol period, individually multiplying said spectrum spread code and said reception components into spectrum spread demodulated components, and output demodulating said spectrum spread demodulated components into differential demodulated components of a reproduction of said transmitter input signal, wherein said output demodulating step comprises the steps of:

tracking successive regions of a greater correlation value in said spectrum spread demodulated components to produce a timing signal indicative of synchronous points in said regions, respectively; and

differential demodulating responsive to said timing signal said spectrum spread demodulated components into said differential demodulated components at each of said synchronous points and at a time which is always one symbol period later than each of said synchronous points,

said spectrum spread code includes a predetermined number of chips having a common chip period equal to said symbol period divided by said predetermined number, wherein said tracking step comprises the steps of:

leaky integrating an instantaneous amplitude, during an integral submultiple of said chip period, into integrated amplitudes produced in each of said regions and comprising maximum correlation values in said regions, respectively, wherein said instantaneous amplitude is an instantaneous amplitude which said spectrum spread demodulated components have above an amplitude threshold level as said greater correlation value, each maximum correlation value and a succeeding one of said maximum correlation values in a succeeding one of said regions having a value interval variable shorter and longer than said symbol period; and

generating responsive to said maximum correlation values said timing signal.

5,612,973

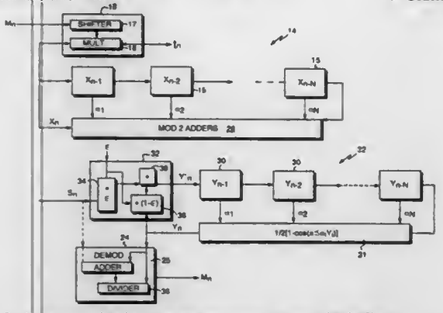
SYSTEM EMPLOYING DISSIPATIVE PSEUDORANDOM DYNAMICS FOR COMMUNICATIONS AND MEASUREMENT

Neil Gershenfeld, Somerville, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 19, 1995, Ser. No. 491,789

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—206 9 Claims



1. A communication or measurement system including:

A. a transmitter for transmitting a modulated signal, the transmitter including a first feedback shift register that produces a pseudo-random noise signal that is used to modulate a message signal;

B. a receiver for receiving the modulated message signal, the receiver including a second feedback shift register for reproducing the pseudo-random noise signal from the received modulated signal and using the noise signal to recover the message signal from the received signal, the second feedback shift register being characterized by a non-chaotic expression that is associated with the expression that governs the first feedback shift register and has stable fixed points at integer values and unstable fixed points at ½ integer values.

5,612,974

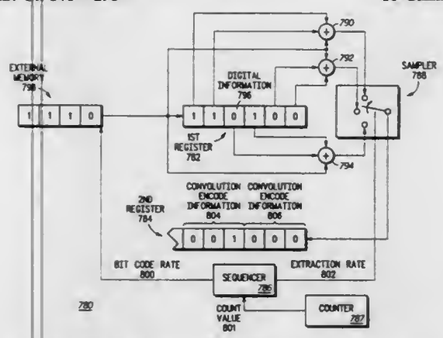
CONVOLUTIONAL ENCODER FOR USE ON AN INTEGRATED CIRCUIT THAT PERFORMS MULTIPLE COMMUNICATION TASKS

Paul M. Astrachan, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 1, 1994, Ser. No. 333,160

Int. Cl.[6] H04L *27/04*

U.S. Cl. 375—295 10 Claims



1. A convolution encoder comprising:

a first register that receives digital information at a code rate;

a plurality of logic gates operably coupled to the first register, wherein the plurality of logic gates performs a convolution encode function on the digital information received by the first register to produce, based on the code rate, a first number of encoded samples;

a sampler operably coupled to the plurality of logic gates, wherein the sampler extracts the first number of encoded samples at an extraction rate to produce extracted information;

a second register operably coupled to the sampler, wherein the second register receives the extracted information from the sampler;

a counter that provides a count value; and

a sequencer operably coupled to the first register and the plurality of logic gates, wherein the sequencer generates the code rate and the extraction rate based on the count value, and wherein the sequencer provides the code rate to the first register and the extraction rate to the sampler.

5,612,975

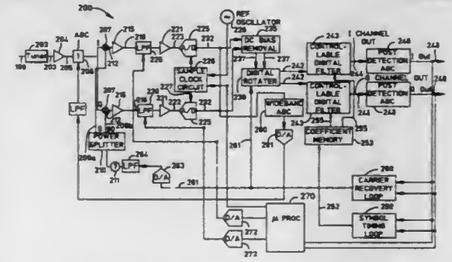
DIGITAL RECEIVER FOR VARIABLE DATA RATE COMMUNICATIONS

Donald W. Becker, Encinitas, and Thomas R. Bilotta, Escondido, both of Calif., assignors to TV/COM Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 68,560, May 28, 1993, Pat. No. 5,504,785. This application Jun. 16, 1994, Ser. No. 260,889

Int. Cl.[6] H04L *25/06*

U.S. Cl. 375—319 21 Claims



1. A digital receiver for a transmitted analog signal having an arbitrarily variable data rate, comprising:

a source of a modulated analog signal;

a sampler having an input of the modulated analog signal, the sampler operating at a fixed sampling rate and having an output of a sampled modulated signal including a first sequence of digitized samples at the sampling rate;

a controllable digital filter having a first input of the first sequence of digitized samples and a second input of a filter configuration signal, and an output of a second sequence of digitized samples at a variable symbol rate, the output representing a symbol stream;

the controllable digital filter including matched filter coefficients that enable the controllable digital filter to produce the second sequence of digitized samples by matched filtration of the first sequence digitized samples, wherein the matched filter coefficients are selected by the filter configuration signal; and

a timing loop coupled to the controllable digital filter for generating the filter configuration signal and for changing the filter configuration signal in response to a change in the symbol rate, the filter configuration signal being a function of the ratio of the symbol rate to the sampling rate.

5,612,976

DETECTORS

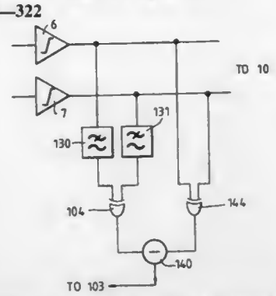
Marcus R. Granger-Jones, Swindon, United Kingdom, assignor to Plessey Semiconductors, Limited, United Kingdom

Filed Jul. 11, 1994, Ser. No. 272,839

Claims priority, application United Kingdom, Jul. 16, 1993, 9314841

Int. Cl.[6] H03D 3/00

U.S. Cl. 375—322 17 Claims



1. A frequency detector for producing an output signal which is a function of the frequency of an input signal, comprising:

a first node for receiving a first signal which is a function of the input signal;

a second node for receiving a second signal which is a function of the input signal;

third and fourth nodes;

phase shift means for coupling the first and second nodes to the third and fourth nodes respectively, and for providing a first phase shift between the first and third nodes and a second phase shift between the second and fourth nodes;

said phase shift means being operative such that the difference between the first and second phase shifts varies as a function of frequency;

a first phase detector means having first and second inputs coupled to the third and fourth nodes and an output, said first phase detector means being operative for producing a signal at said output which is a function of said difference between the first and second phase shifts;

a further phase detector means having first and second inputs coupled to the first and second nodes and an output; and

difference means having first and second inputs coupled to the outputs of the first phase detector means and the further phase detector means respectively, said difference means having an output for providing said output signal which is a function of the frequency of said input signal.

5,612,977

AUTOMATIC FREQUENCY CONTROL CIRCUIT FOR A RECEIVER OF PHASE SHIFT KEYING MODULATED SIGNALS

Kazuo Ogoro, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 28, 1994, Ser. No. 365,574

Claims priority, application Japan, Dec. 28, 1993, 5-335120

Int. Cl.[6] H04L 27/06

U.S. Cl. 375—344 15 Claims

1. A frequency control circuit for a receiver of phase shift keying modulated signals comprising:

intermediate frequency (IF) signal generating means for generating an IF signal from a frequency of a radio signal and a local oscillation signal;

measuring means for measuring a frequency of said IF signal to output a first frequency measurement signal;

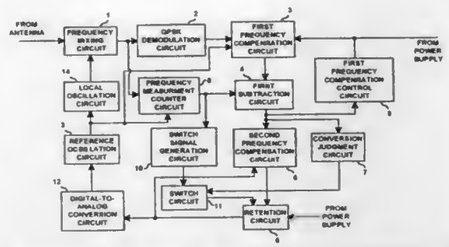
detecting means for detecting the frequency shift due to the phase shift keying modulation to output a frequency shift signal in response to a first control signal;

controlling means for detecting that the frequency of said IF signal is converged until said detecting means can detect the frequency shift due to the phase shift keying modulation, and outputting said first control signal;

arithmetic operation means for detecting a frequency of the IF signal which is not affected by the frequency shift due to the phase shift keying modulation from said frequency measurement signal and said frequency shift signal to output a second frequency measurement signal;

local oscillation signal generating means for outputting said local oscillation signal in accordance with a second control signal; and

compensating means for receiving said first frequency measurement signal and said second frequency measurement signal and compensating said second control signal in order to converge the frequency of said IF signal on a desired frequency.



5,612,978

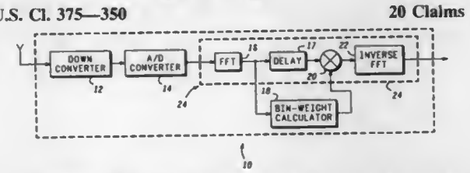
METHOD AND APPARATUS FOR REAL-TIME ADAPTIVE INTERFERENCE CANCELLATION IN DYNAMIC ENVIRONMENTS

Scott D. Blanchard, and Joseph O. Lester, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1995, Ser. No. 453,420

Int. Cl.[6] H04B 1/10

U.S. Cl. 375—350 20 Claims



1. An adaptive frequency domain filter adapted for responding to a non-continuous wave short duration interference signal comprising:

a fast Fourier transform (FFT) element for transforming digitized baseband signals from a time domain to a frequency domain and providing a plurality of frequency bins, each frequency bin corresponding to a frequency range;

a delay element for delaying said frequency bins by a predetermined amount and providing delayed frequency bins;

a multiplier for either passing or notching each of said delayed frequency bins;

an inverse FFT element for transforming said delayed frequency bins provided by said multiplier from said frequency domain to said time domain; and

a bin weight calculator adapted for sampling said plurality of frequency bins provided by said FFT element and providing a control signal that directs said multiplier to notch one of said delayed frequency bins, said control signal being time coincident with each of said delayed frequency bins provided by said delay element.

5,612,979

SYNCHRONOUS CIRCUIT

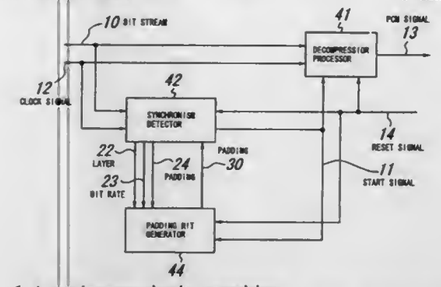
Hideto Takano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 1, 1995, Ser. No. 522,762

Claims priority, application Japan, Sep. 2, 1994, 6-209503

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—354 3 Claims



1. A synchronous circuit, comprising:

a synchronism detector including a synchronism pattern detector for detecting a synchronism pattern included in a bit stream of a bit rate Br formed from frames each composed of a plurality of slots as information units obtained by compression of a digital signal of a sampling frequency Fs by high efficiency coding, and a counter for counting a number of slots or a number of bits to a position of a synchronism pattern of a next frame based on frame length information included in said frame;

the bit stream including, when a value S' given by

$$S=(Br/N)\cdot(L/Fs)$$

is an integral number, frames each of which includes a number S of slots which is equal to the value S', N being a number of bits included in one slot, L being a number of samples of the digital signal of the sampling frequency Fs included in one frame of the bit stream, the bit stream including, when the value S' is not an integral number, a combination of frames wherein frames each of which includes a number of slots equal to an integral part S" of the value S' and frames each of which includes a number of slots equal to a number S"+1 which is a sum of the integral part S" of the value S' and 1 are combined so that the bit stream has an average bit rate approximated to the bit rate Br, the bit stream including, for each of the frames thereof, a padding which is information for identification of the number of slots between the value S" and the value S"+1; and

padding bit generation means for generating a padding synchronized with a period of variation of the padding and outputting the thus generated padding;

said counter counting the number of slots or the number of bits to the position of the synchronism pattern of the next frame based on the generated padding generated by said padding bit generation means.

5,612,980

METHOD AND APPARATUS FOR FAST LOCK TIME

Francesco Ledda, and Jeffrey W. Tsao, both of Plano, Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

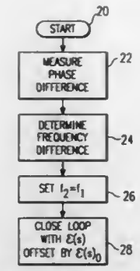
Filed Mar. 22, 1995, Ser. No. 408,313

Int. Cl.[6] H03D 3/24

U.S. Cl. 375—375 15 Claims

1. A method of locking an output synchronization signal's frequency onto an input synchronization signal's frequency, comprising:

determining a frequency difference between the input synchronization signal and the output synchronization signal;



based on the frequency difference, setting the frequency of the output synchronization signal to the frequency of the input synchronization signal;

after setting the frequency of the output synchronization signal, generating an offset signal based on a phase difference between the input synchronization signal and the output synchronization signal; then

generating an error signal related to the phase difference between the input synchronization signal and the output synchronization signal;

offsetting the error signal by an amount related to the offset signal; and

adjusting the frequency of the output synchronization signal based on the offset error signal to lock the output synchronization signal frequency onto the input synchronization signal frequency.

5,612,981

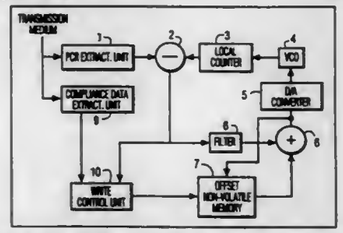
APPARATUS AND METHODS FOR IMPROVING TIMING RECOVERY OF A SYSTEM CLOCK

Cornelis M. Huizer, Mt. Kisco, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Feb. 15, 1994, Ser. No. 196,918

Int. Cl.[6] H03D 3/24

U.S. Cl. 375—376 29 Claims



1. An apparatus for providing timing recovery of a system clock, the apparatus comprising:

receiving means for receiving program clock references representing predetermined values of an encoder counter clocked by a stable clock having a first frequency;

local counter means for producing successive count values at a counter rate;

subtractor means for determining difference values, each of the difference values representing a difference between a predetermined value represented by a program clock reference and a current count value of said local counter means when that program clock reference is received;

oscillator means for producing the system clock with a second frequency which controls the rate in which said local counter means produces the counts values; and

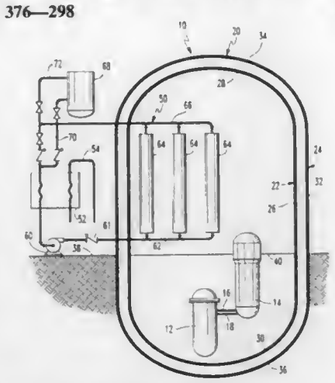
frequency control means for producing frequency control signals which control the second frequency, each of the frequency control signals being derived on the basis of at least one of the difference values and a predetermined offset value which assures that that frequency control signal causes the second frequency to be within a specified tolerance range.

5,612,982

NUCLEAR POWER PLANT WITH CONTAINMENT COOLING

Joel Woodcock, Sewickly Twp., and J. Singh Narula, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 31, 1995, Ser. No. 509,270
Int. Cl.[6] G21C *15/00*
U.S. Cl. 376—298 10 Claims



1. A nuclear power plant comprising:
a reactor vessel;
a containment structure enclosing the reactor vessel, the containment structure having a sidewall and a domed top end;
an out-of-containment heat sink; and
a containment cooling system piped with the out-of-containment heat sink, the cooling system including an in-containment heat exchanger vertically extending adjacent the sidewall of the containment structure and into the domed top end of the containment structure for transferring heat from atmosphere within the containment structure, the heat exchanger having a plurality of substantially parallel pipes with cooling fins vertically extending therefrom, the finned pipes having inlets elevated above the reactor vessel for inducing natural circulation of atmosphere in the containment.

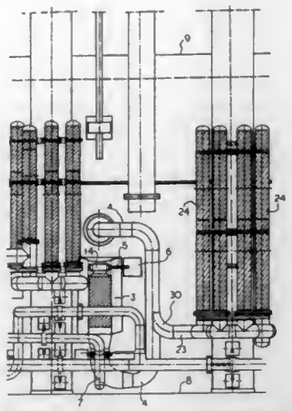
5,612,983

DEVICE FOR FILTERING WATER TO AN EMERGENCY COOLING SYSTEM IN A NUCLEAR POWER PLANT

Mats Henriksson, Älvkarleby, and Johan Sjöstrand, Kungsbacka, both of Sweden, assignors to Vattenfall Utveckling AB, Alvkarleby, Sweden

PCT No. PCT/SE93/01041, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/14166, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 3, 1993, Ser. No. 454,255
Claims priority, application Sweden, Dec. 4, 1992, 9203676
Int. Cl.[6] G21C *15/18*
U.S. Cl. 376—313 14 Claims

1. A device for filtering water to at least one emergency cooling system in a nuclear power plant of the type comprising a reactor arranged in a containment which substantially consists of an upright, suitably cylindrical container whose bottom part forms a pool for collecting water formed by condensation of steam present in the containment, the condensation pool including a number of back-flushable strainers (**3**) serving to filter water which is taken from the pool and, if required, is supplied to nozzles in the emergency cooling system in order to cool the reactor core in the event of an inadmissible temperature rise therein, each strainer having the shape of a housing with at least one, suitably cylindrical, apertured strainer wall (**10**) through which the water can flow from the outside and into the housing, and being connected, by a first conduit (**4**) passing through the container wall (**1**), to a suction pump disposed outside the container wall, as well as connected to a second conduit (**7**) for supplying wash water to the interior of the housing in order, if required, to flush the strainer wall (**10**) by flowing the wash water through it from the inside and out, thereby removing filtrate deposited on the outside of the strainer wall, characterised in that a number of secondary strainers (**24**), each consisting of an elongate, apertured tube which is substantially vertically mounted and has a diameter or maximum cross-sectional dimension from about 200 mm to about 400 mm and a length dimension at least five times greater than the diameter dimension, are connected either directly or indirectly by a third conduit (**23**) to the first conduit (**4**) connected to the suction pump.

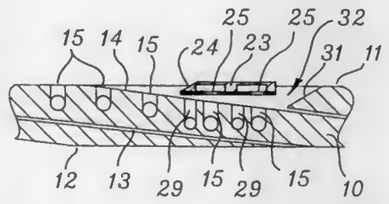


5,612,984

SHEET COUNTING

Graham D. Fuller, Cranfield, and Martin G. Snook, Colchester, both of Great Britain, assignors to Pelcombe Limited, England

PCT No. PCT/GB94/01302, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/00926, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 16, 1994, Ser. No. 569,113
Claims priority, application United Kingdom, Jun. 18, 1993, 9312614
Int. Cl.[6] G06M *7/00*
U.S. Cl. 377—8 15 Claims



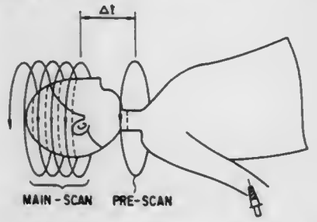
1. A rotor for counting the number of sheets in a stack by engaging an edge region of the stack and rotating the rotor to separate an edge portion of each sheet in turn from the stack and to transfer the separated edge portion through a transfer groove to the other side of the rotor, there being at least one suction port in the rotor and through which air is drawn in a timed relationship to rotor rotation to assist the separation from the stack of the next sheet edge portion to be counted, wherein the rotor is provided with at least one further port through which air is drawn during rotation of the rotor which further port is arranged on the opposite side of the transfer groove to said suction port, whereby should two adjacent sheet edge portions be simultaneously separated together from the stack and be lifted by said suction port, suction through the further port will lift the edge portion of the second sheet away from the sheet to be counted, to guide said second sheet edge portion away from the transfer groove for counting on a subsequent count cycle.

5,612,985

COMPUTER TOMOGRAPHY APPARATUS

Yusuke Toki, Utsunomiya; Manabu Hiraoka, Nishinasunomachi; Ichiro Yamagishi, Otawara; Hiroyuki Onuki, Tochigiken; Tatsuya Ban, Utsunomiya; Tetsuro Hada, Otawara; Takeo Nabatame, Tochigi-ken; Masao Yamahana, Otawara; Masakuni Fujise, Otawara; Yoshihiko Aochi, Otawara; Makoto Hayashibara, Tochigi-ken, and Masahiro Ozaki, Otawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 347,135, Nov. 23, 1994. This application Oct. 24, 1995, Ser. No. 547,144
Claims priority, application Japan, Nov. 26, 1993, 5-297079; Apr. 5, 1994, 6-067343; Oct. 31, 1994, 6-267280
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—4 22 Claims



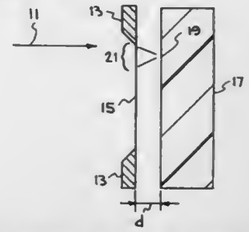
1. A computer tomography apparatus which can perform an angiography, comprising:
an X-ray tube which is supported to be continuously rotatable around an object to be examined;
rotation control means for controlling rotation of said X-ray tube;
X-ray control means for controlling X-ray radiation from said X-ray tube;
data acquisition means, arranged to face said X-ray tube to sandwich the object to be examined therebetween, for acquiring projection data on the basis of an X-ray transmitted through the object to be examined;
re-construction means for re-constructing tomographic image data on the basis of the projection data acquired by said data acquisition means;
display means for displaying the re-constructed tomographic image data; and
control means for controlling said rotation control means, said X-ray control means, said data acquisition means, and couch control means to execute a pre-scan at a first scan position, and controlling said rotation control means, said X-ray control means, said data acquisition means, and the couch control means to execute a main scan at a second scan position at a downstream of the first scan position,
in which said control means starts the main scan after an elapse of a time required for a blood flow to reach the second scan position from the first scan position after the end of the pre-scan.

5,612,986

X-RAY LITHOGRAPHY USING HOLOGRAPHIC IMAGES

Malcolm S. Howells, Berkeley, Calif., and Chris Jacobsen, Sound Beach, N.Y., assignors to Lawrence Berkeley Laboratory, University of CA, Berkeley, Calif.

Continuation of Ser. No. 786,265, Nov. 1, 1991, Pat. No. 5,455,850. This application Sep. 22, 1995, Ser. No. 532,458
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—34 8 Claims



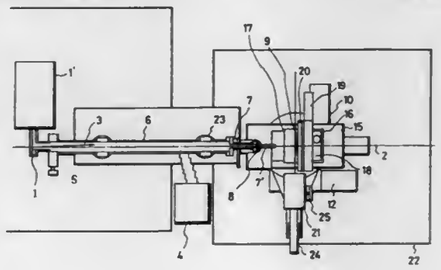
1. A method of forming a desired X-ray image, having minimum image linewidths no greater than s=0.25 μm, on a selected surface of X-ray-sensitive material, the method comprising the steps of:
providing a source of partially spatially coherent X-rays, having a predetermined wavelength λ and having a flux at least equal to a predetermined source flux;
providing a layer of X-ray-sensitive material with a selected surface to receive an X-ray image thereat;
positioning a membrane that is at least partly transparent to X-rays of wavelength λ and that holds a holographic pattern thereat, between the X-ray source and the X-ray-sensitive material so that X-rays produced by the X-ray source are transmitted through the substrate toward the selected surface;
determining a hologram, having variable thickness and variable associated transmissivity and optical phase angle, for transmission of X-rays of wavelength λ through the hologram so that, when the hologram is irradiated by the X-ray source, the X-ray image produced at the selected surface by X-rays diffracted by the hologram is the desired X-ray image, with X-ray image minimum linewidths no greater than 0.25 μm, said hologram having a finite number of discrete transmissivity values, where this number is at least two;
positioning the hologram on the membrane; and
irradiating the selected surface with X-rays received by transmission through the hologram to produce the desired X-ray image.

5,612,987

X-RAY ANALYZING APPARATUS

Shuzo Sudo, and Kunio Nakajima, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Continuation of Ser. No. 217,355, Mar. 25, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,861
Claims priority, application Japan, Mar. 25, 1993, 5-067135; Apr. 19, 1993, 5-091683; Apr. 19, 1993, 5-091688
Int. Cl.[6] G01N *23/20*
U.S. Cl. 378—82 5 Claims



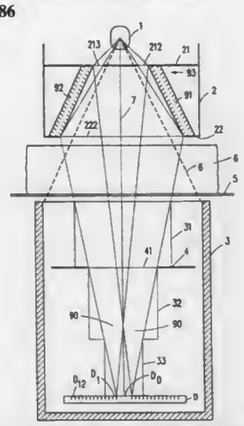
1. An X-ray analyzing apparatus comprising:
an X-ray radiation generator,
an X-ray optical element manipulator having an X-ray optical element constituted by a total reflection mirror disposed for converging and imaging X-rays generated by said X-ray radiation generator,
a sample scanning table for holding a sample having a surface, said table having a rotational gate mechanism, and
X-ray radiation detecting means,
wherein said X-ray optical element focusses the X-rays from the X-ray radiation generator to a converging point which is not more than 5 μm in diameter in a focal plane and the sample scanning table holds the sample at a location where the converging point in the focal plane is on the surface of the sample.

5,612,988

DEVICE FOR MEASURING THE MOMENTUM TRANSFER SPECTRUM OF X-RAY QUANTA ELASTICALLY SCATTERED IN AN EXAMINATION ZONE

Gerhard Martens, Henstedt-Ulzburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1996, Ser. No. 601,408
Claims priority, application Germany, Feb. 15, 1995, 195 04 952.7
Int. Cl.[6] G01N *23/201*
U.S. Cl. 378—86 **10 Claims**



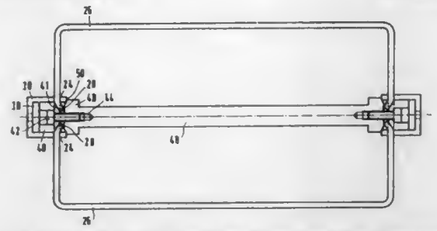
1. A device for measuring a momentum transfer spectrum of X-ray quanta elastically scattered in an examination zone, comprising:
an X-ray source;
a primary diaphragm device arranged between said X-ray source and the examination zone for forming a primary radiation beam which traverses the examination zone as a surface of a cone and wherefrom the elastically scattered X-ray quanta to be measured emanate, said primary diaphragm device further for forming a reference radiation beam which emanates from the X-ray source and traverses the examination zone;
a detector device for detecting X-ray quanta emanated from the examination zone, wherein said detector device comprises a plurality of detector elements for measuring elastic scattered radiation from the examination zone and at least one reference detector element on which the reference radiation beam is incident; and
at least one scatter member arranged between the examination zone and said X-ray source in order to scatter X-rays emanating from said X-ray source, and wherein the reference radiation beam is formed from a part of the scattered radiation which reaches the reference detector element rectilinearly through the examination zone.

5,612,989

MEDICAL DIAGNOSTIC AND/OR THERAPEUTIC APPARATUS COMPRISING A C-ARC COMPOSED OF PROFILES

Adrianus Van Der Ende, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1995, Ser. No. 571,317
Claims priority, application European Pat. Off., Dec. 12, 1994, 94203595
Int. Cl.[6] A61B *6/06*
U.S. Cl. 378—197 **16 Claims**



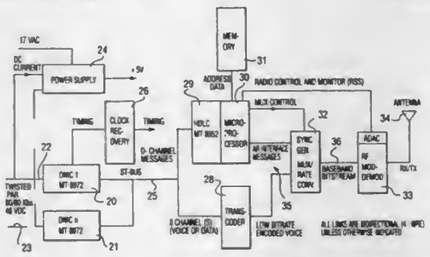
1. A medical diagnostic and/or therapeutic apparatus, comprising a support for diagnostic and/or therapeutic components which is rotatable in its own plane and which is shaped at least partly as a flat arc of circle, the support comprising two complementary profiles, each of which comprises two flanges in perpendicular cross-section, a first and a second flange of a first profile being oriented towards a first and a second flange, respectively, of the second profile, the support comprising a profile connection provided with grooves which extend in the longitudinal direction of the profiles and receive the flanges, the support comprising fixing means for fixing the flanges in the grooves characterized in that the profile connection comprises two separate rod-shaped parts which are provided with grooves which extend parallel to the axis of each of the rod-shaped parts.

5,612,990

DIGITAL WIRELESS INTERFACE FOR A BASE STATION FOR ESTABLISHING COMMUNICATION BETWEEN A PLURALITY OF DIGITAL RADIO CHANNELS AND A PLURALITY OF DIGITAL WIRELINE CIRCUITS

Rolf G. Meier, Carp, and Peter Bligh, Kanata, both of Canada, assignors to Mitel Corporation, Kanata, Canada

PCT No. PCT/CA92/00444, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO93/07724, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 9, 1992, Ser. No. 211,574
Claims priority, application Canada, Oct. 10, 1991, 2053137
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 379—58 **5 Claims**



1. A base station in a cellular network for establishing communication between one or more digital radio channels and one or more digital wireline circuits, each wireline circuit consisting of one or more bearer channels and a data channel carrying signaling information, comprising:
an r.f. unit for transmitting and receiving signals over said digital radio channels;

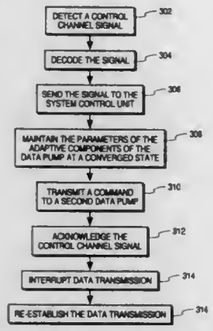
a digital interface unit (DNIC) connected to each wireline circuit for converting incoming channels from said wireline circuits to serial bus format, and for converting outgoing channels over said wireline circuits to an appropriate wireline format and;
a common serial bus connected to a plurality of said digital interface units, said bearer and data channels being assigned to appropriate channels on said serial bus;
a microprocessor connected to said serial bus for extracting the data channels and interpreting the signaling information to determine whether it is destined for the base station, said microprocessor responding to digital messages destined for the base station and passing through messages destined for the r.f. unit or wireline circuits; and
a multiplexer-demultiplexer unit for interfacing said microprocessor and said serial bus to said r.f. unit.

5,612,991

USE OF RSSI INDICATION FOR IMPROVED DATA TRANSMISSION OVER AMPS NETWORK

N. Gopolan Nair, and Zdenek Brun, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 414,907, Mar. 31, 1995. This application Mar. 31, 1995, Ser. No. 414,914
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—59 **8 Claims**



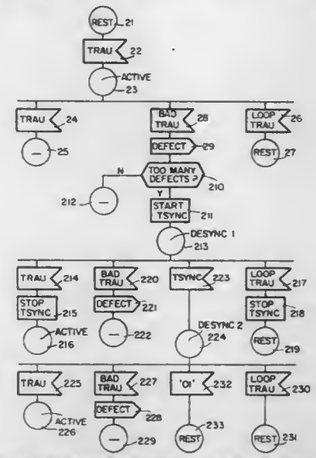
1. A method of operating an integrated cellular communication system which communicates with a remote modem by radio waves through a base station and the telephone network and wherein said system includes a data pump component having an adaptive component that adjusts the parameters of said data pump to match the characteristics of said remote modem and the communication channel between said remote modem and said integrated cellular communication system, said data pump component being operatively connected to a cellular transceiver component which is in turn operatively connected to a radio frequency transceiver component and a system control unit operatively connected to each of said components, and wherein said radio frequency transceiver component generates a RSSI signal, the method comprising the steps of:
monitoring said RSSI signal;
comparing said monitored RSSI signal with a predetermined value;
freezing said adaptive component when said RSSI signal and said predetermined value are in a specified relationship;
unfreezing said adaptive component when said RSSI is no longer in said specified relationship with said predetermined value such that said parameters of said data pump are substantially the same as at the time of freezing said adaptive component.

5,612,992

METHOD OF MANAGING TRANSMISSION ERRORS BETWEEN A BASE STATION AND A TRANSCODER IN A DIGITAL RADIOCOMMUNCATIONS SYSTEM, AND A BASE STATION AND TRANSCODER CORRESPONDING TO THE METHOD

Pierre Dupuy, Paris; Laurent Cruchant, Rueil Malmaison; André Jarvis, Bougival, and Jean-Philippe Poirault, Bois-Colombes, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Aug. 3, 1995, Ser. No. 495,615
Claims priority, application France, Feb. 26, 1993, 93 02309
Int. Cl.[6] H04Q *7/30;7/34*
U.S. Cl. 379—59 **10 Claims**



1. A method of managing transmission errors between a base station (**17**) and a transcoder (**16**), in a digital radiocommunications system for mobile stations, said system comprising a plurality of base stations, each of which controls a plurality of mobile stations via radio links;
a signal from a mobile station (**11**) to a remote terminal (**12**) (up direction) being conveyed:
from said mobile station (**11**) to a base station (**17**) via a radio link;
from said base station (**17**) to a transcoder (**16**) in the form of data frames containing check data and useful data, said useful data being encoded by using encoding that is recognized by said base station (**17**) and by said transcoder (**16**); and
from said transcoder (**16**) to a switching center (**14**) establishing connection to said remote terminal (**12**); and
a signal from said remote terminal (**12**) to said mobile station (**11**) (down direction) being conveyed symmetrically;
said method being characterized in that said transcoder (**16**) performs the following operations:
receiving and decoding (**22**, **24**, **28**, **214**, **220**, **225**, **227**) the frames transmitted by said base station (**17**);
detecting (**28**, **220**, **227**) transmission errors in the up direction by analyzing the received and decoded frames;
in the presence of a transmission error in the up direction, systematically inserting (**29**, **221**, **228**) an error message in a frame addressed to said base station (**17**) without interrupting useful data transmission to said base station (**17**); and
interrupting (**27**, **219**, **231**, **233**) data transmission to said base station (**17**) on detection (**26**, **217**, **230**, **232**) of an up-direction transmission interruption request (**314**) generated by said base station (**17**);
and in that said base station (**17**) performs the following operations:
receiving and decoding (**32**, **36**) frames transmitted by said transcoder;

detecting (**36**) transmission errors (**38**) in the down direction by analyzing the received and decoded frames; and

interrupting data transmission to said transcoder (down direction) and generating (**310**) an up-direction transmission interruption request (**314**) when the transmission errors detected in the down direction (**312**) and/or reported by an error message in the up direction (**311**) satisfy predetermined conditions.

5,612,993

FACSIMILE COMMUNICATION SYSTEM

Hideyuki Hanaoka; Kenji Ishihara, both of Tokyo, and Kazuo Harima, Yokohama, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Japan

Filed Jun. 24, 1994, Ser. No. 265,034

Claims priority, application Japan, Jun. 24, 1993, 5-153235; Dec. 7, 1993, 5-306424

Int. Cl.[6] H04M *11/00;1/00*

U.S. Cl. 379—100 **16 Claims**

TEL DIRECTORY AREA	ABBREVIATED NUMBER	TITLE OF SERVICE	DATA LENGTH	DIALLING CONTENT
	00	REQUESTING TRIAL EXAM RESULT	29	1000334011100010T1234000#10X
	01	SENDING TRIAL EXAM ANSWER	27	1100334011100ET1201010#01Y
	03	REQUESTING TRIAL EXAM GUIDANCE	23	0334911100ET2121#04#10Y
	04	AREA A	13	0339700211#05
	05	AREA B	10	0356780123
	#			

1. A facsimile communication system comprising:

operation means including a plurality of keys;

storing means for prestoring a first telephone number of a given station and a command string including a plurality of first commands each identified by at least one character and each otherwise inputted by an operator using said operation means, said first commands arranged according to a procedure for receiving a service from said given station, said storing means storing said first telephone number and said command string in a pair as a character string and in a first storing area which corresponds to at least one of said keys; and

control means, when said at least one of the keys is pressed, for analyzing the character string stored in the first storing area corresponding to said at least one of the keys and instructing an input of individual information upon detection, in said character string, of a second command requiring the input of said individual information, wherein said control means, after confirming the input of said individual information, sends out said first telephone number to make a call to said given station and communicates with said given station based on said command string including transmission of said individual information.

5,612,994

INTERPHONE SYSTEM

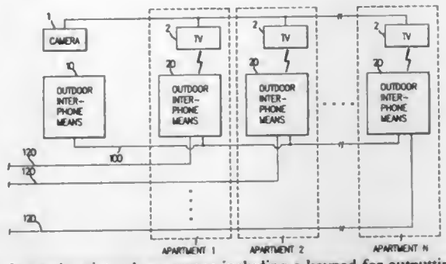
Jhy-ping Chen, 1st Fl., No. 5, Hsichou 2nd St., Chungli City, Taiwan

Filed Feb. 22, 1995, Ser. No. 392,128

Int. Cl.[6] H04M *9/00;11/00;* **H04N** *7/14*

U.S. Cl. 379—167 **2 Claims**

1. An interphone system comprising an outdoor interphone means and a plurality of indoor interphone means each of which is connected to the outdoor interphone means via a telephone line, a plurality of televisions electrically connected to a camera which monitors areas around a lobby door and sends an image taken therefrom to the televisions;



the outdoor interphone means including a keypad for outputting a specific signal representing one of the indoor interphone means upon depression by a visitor;

each of the indoor interphone means comprising a telephone set and a switching means which electronically connects the telephone set to the outdoor interphone means when the specific signal from the outdoor interphone means is received by the indoor interphone means and electrically connects the telephone set to a corresponding telephone line from a telephone exchange when an external telephone call is detected by the indoor interphone means, and means for setting the television into an audio/video input mode to show the visitor image when a receiver of the telephone set is picked up upon connection of the telephone set and the outdoor interphone means;

wherein the outdoor interphone means further comprises a microprocessor, a telephone status detecting circuit connected between the microprocessor and the interphone line, a multifrequency decoding circuit connected between the microprocessor and the interphone line, a direct speaking circuit connected between the microprocessor and the interphone line, a multifrequency encoding circuit connected to the microprocessor, a multifrequency dialing circuit connected between the multifrequency encoding circuit and the telephone line, an electrical lock control circuit connected to the microprocessor, and the keypad connected to the microprocessor;

wherein the indoor interphone means further comprises a microprocessor, a telephone status detecting circuit connected between the microprocessor and the interphone line, a multifrequency, decoding circuit connected between the microprocessor and the interphone line, a memory device storing an apartment number and being connected to the microprocessor, a switching circuit connected between the microprocessor and a telephone set, a television power supply detecting circuit connected to the microprocessor, and an infrared transmitting circuit connected to the microprocessor.

5,612,995

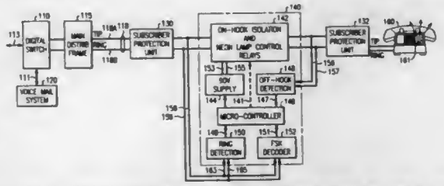
METHOD FOR ACTIVATING A LAMP ON ANALOG CUSTOMER PREMISES EQUIPMENT BY A DIGITAL SIGNAL

John T. Corwith, West Chicago, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1995, Ser. No. 575,791

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—377 **4 Claims**



1. In a telecommunications system comprising at least one digital central office switch serving at least one subscriber line connected to a telephone with an integrated message lamp illuminated by voltage applied to the subscriber line, a method for illuminating the message lamp under control of the digital central office switch comprises the steps of:

receiving a waiting message indication from the switch in a message conversion circuit;

disconnecting a subscriber-side of the message conversion circuit from the subscriber line upon receipt of the waiting message indication; and

connecting the subscriber-side of the message conversion circuit to a voltage supply unit to illuminate the integrated message lamp.

5,612,996

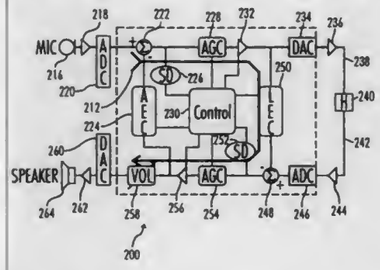
LOOP GAIN PROCESSING SYSTEM FOR SPEAKERPHONE APPLICATIONS

Xu Li, Cerritos, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 21, 1995, Ser. No. 531,992

Int. Cl.[6] H04M *9/08;* **H04B** *3/20*

U.S. Cl. 379—390 **24 Claims**



1. A method of adjusting and controlling transmit and receive signal amplitudes in a speakerphone system during speakerphone communication between a local user and a remote user, the speakerphone system including a microphone and loudspeaker arrangement, first and second echo cancellers, and transmit and receive channels across which the transmit and receive signals are carried, wherein the first and second echo cancellers and the transmit and receive channels have associated gain contributions, the speakerphone system further including a system controller for appropriately processing the associated gain contributions within the speakerphone system such that acoustic and electrical echo are minimized, the method comprising the steps of:

calculating a first half-loop gain comprising the gain contributions of the first echo canceller and the transmit and receive channels;

calculating a second half-loop gain comprising the gain contributions of the second echo canceller and the transmit and receive channels;

evaluating the first and second half-loop gains to determine if the transmit and receive signals should be attenuated; and

adjusting the first and second half-loop gains to include the gain of at least one automatic gain controller (AGC).

5,612,997

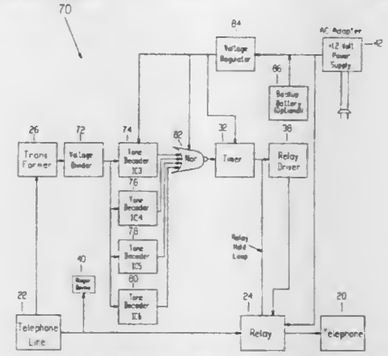
OFF-HOOK DISCONNECT AND RECONNECT RINGER DEVICE

Kenneth M. Vallelonga, Sr., 130 Oak St., Laurel Valley, and James W. Allman, Rte. 4 Box 503, both of Clarksburg, W. Va. 26301

Continuation-in-part of Ser. No. 382,523, Feb. 2, 1995. This application Sep. 5, 1995, Ser. No. 523,464

Int. Cl.[6] H04M *3/14;1/24*

U.S. Cl. 379—393 **7 Claims**



1. An off-hook disconnect and reconnect ringer device for a telephone connected to a telephone line of a telephone company which provides tones for warning of an off-hook condition of said telephone, comprising:

means for detecting at least one of said tones transmitted through said telephone line of said telephone which is off-hook, wherein said means for detecting said tones comprises four integrated circuits, each preset to decode a specific frequency for detecting if said telephone is off-hook:

means for producing a signal indicating that an off-hook condition of said telephone has been detected;

means for disconnecting said off-hook telephone from said telephone line after receiving said signal;

means for signaling that said off-hook disconnect and reconnect ringer device is receiving an incoming telephone call through said telephone line of said off-hook telephone;

means for electronically resetting said off-hook disconnect and reconnect ringer device for reconnecting said telephone with said telephone line for answering the incoming telephone call; and

means for adjusting the frequency of said integrated circuits.

5,612,998

INTEGRATED INTERFACE CIRCUIT FOR DRIVING A SUBSCRIBER LINE

Vanni Saviotti, Monza, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Jul. 27, 1994, Ser. No. 281,738

Claims priority, application Italy, Jul. 29, 1993, 93830338.5

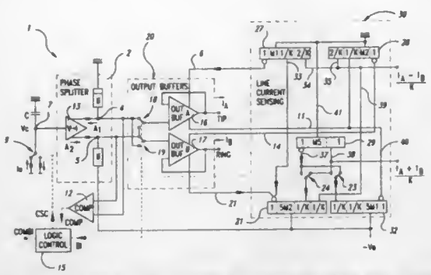
Int. Cl.[6] H04M *19/00*

U.S. Cl. 379—399 **9 Claims**

1. An interface circuit for a telephone subscriber line, comprising:

an input voltage generator having a control terminal, the input voltage generator being responsive to generate an input signal in response to a control signal at said control terminal;

a voltage-to-current converter connected to receive the input signal from the input voltage generator, the voltage-to-current converter having a first output terminal for supplying a first output current through a first circuit element and a second output terminal for supplying a second output current through a second circuit element wherein the first output current and the second output current are inversely proportional;



a voltage comparator couplable between the first and second output terminals, and producing a comparator output signal;

an electronic logic controller having a first input terminal for receiving the comparator output signal and a second input terminal for receiving a polarity reversal signal, the logic controller generating the control signal for input to the control terminal of the input voltage generator in response to the polarity reversal signal and the comparator output signal, the logic controller being operative to generate a buffer control signal in response to the comparator output signal;

a first buffer coupled to the first output terminal;

a second buffer coupled to the second output terminal; and

a pair of electronically actuatable switches, each connected between a respective one of the first and second output terminals of the voltage-to-current converter and a respective one of the output buffers, the switches being actuatable by the buffer control signal.

5,612,999

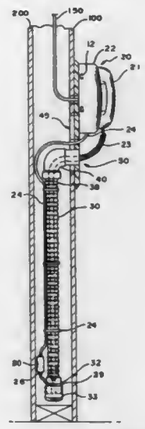
COILED CORD HOLDING ASSEMBLY

Charles E. Gardenhour, Jr., 3126 Belleview Ave., Cheverly, Md. 20785, and Christopher E. Gardenhour, 6125 43rd St., Riverdale, Md. 20737

Filed Mar. 4, 1992, Ser. No. 845,605

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—438 **21 Claims**



1. A coiled telephone cord bolding assembly comprising:

a face plate having a first support engaging surface and a second oppositely disposed surface with a coiled cord aperture therein running through said face plate;

a length of tubing having a proximal end connected to said face plate in order to cooperate with said aperture and extending from said first face plate surface away from said second surface;

a coiled cord securing means located on said length of tubing for preventing a portion of a coiled cord from being extracted from said length of tubing;

further comprising a tubular elbow positioned between said face plate and said length of tubing said tubular elbow having a first end which cooperates with said aperture and a second end connected to said proximal end of said length of tubing.

5,613,000

METHOD AND APPARATUS FOR CHANGING THE DATA SETTING MODES IN A BONDING MACHINE

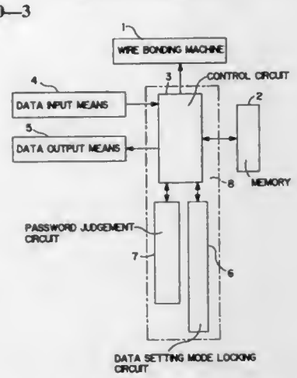
Kuniyuki Takahashi, Musashimurayama, and Shinichi Kumazawa, Higashikurume, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,517

Claims priority, application Japan, Sep. 11, 1991, 3-258771

Int. Cl.[6] G11B *23/28*

U.S. Cl. 380—3 **2 Claims**



1. An apparatus for changing data setting modes in a bonding machine, said apparatus comprising:

a memory for storing a plurality of data setting modes which control said bonding machine in a memory;

a data setting mode locking circuit for placing a lock that disallows the changing of data of specific ones of said plurality of data setting modes stored in said memory;

a password judgment circuit for determining whether an inputted password is able to unlock said specific one of said plurality of data setting modes locked by said data setting mode locking circuit; and

a control circuit for unlocking said specific one of said plurality of data setting modes which are locked by said data setting mode locking circuit in response to a determination made by said password judgment circuit.

5,613,001

DIGITAL SIGNATURE VERIFICATION TECHNOLOGY FOR SMART CREDIT CARD AND INTERNET APPLICATIONS

Ezzat G. Bakhoum, P.O. Box 305, Marlton, N.J. 08053

Filed Jan. 16, 1996, Ser. No. 587,026

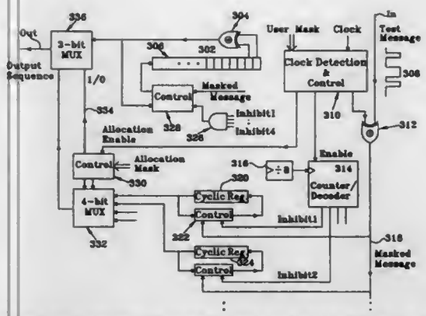
Int. Cl.[6] H04L *9/00;* **H04K** *1/00*

U.S. Cl. 380—4 **10 Claims**

1. A handshaking method between a computer and a smart digital system, consisting of:

a test signal, issued by the computer system;

a confirmation signal, issued by the smart digital system;



wherein the confirmation signal comprises a masked form of the test signal, mixed with other irrelevant data, such that the locations of the masked signal within said irrelevant data are known to the computer system.

5,613,002

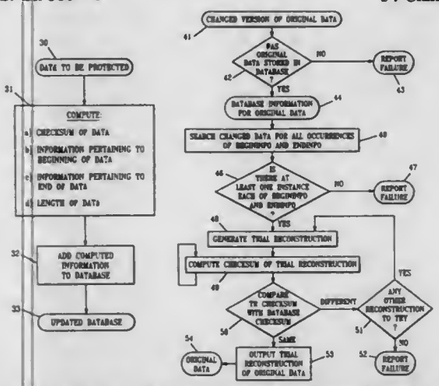
GENERIC DISINFECTION OF PROGRAMS INFECTED WITH A COMPUTER VIRUS

Jeffrey O. Kephart, Yorktown Heights, and Gregory B. Sorkin, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,520

Int. Cl.[6] H04L *9/00;* **H04K** *1/00*

U.S. Cl. 380—4 **34 Claims**



1. For a program initially having a non-infected state that subsequently attains an infected state as a result of infection with a computer virus, a method for restoring the computer program from the infected state to the non-infected state, comprising:

(a) storing, in a computer memory, electrical signals representing a plurality of parameters of the program in the non-infected state, the parameters comprising:

i. the length, in bytes, of the program in the non-infected state;

ii. a checksum of the program in the non-infected state;

iii. information pertaining to bytes in the program in the non-infected state, near the beginning of the program in the non-infected state, designated BeginInfo;

iv. information pertaining to bytes in the program in the non-infected state near the end of the program, designated EndInfo;

(b) scanning the program in the infected state for a first sequence of bytes characterized by BeginInfo, and for a second sequence of bytes characterized by EndInfo;

(c) generating one or more trial program reconstructions, based upon byte sequences found in the program in the infected state;

(d) computing a checksum of each trial program reconstruction;

(e) comparing the checksum of the each trial program reconstruction with the checksum of the program in the non-infected state;

(f) using the trial program reconstruction possessing a checksum equal to the checksum of the program in the non-infected state, if it exists, restoring the program from the infected state to the non-infected state.

5,613,003

PACKET VIDEO SIGNAL INVERSE TRANSPORT PROCESSOR MEMORY ADDRESS CIRCUITRY

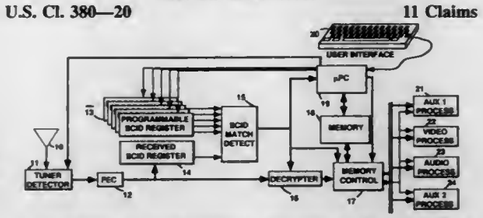
Kevin E. Bridgewater, Indianapolis, and Michael S. Deiss, Zionsville, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Division of Ser. No. 232,787, Apr. 22, 1994, Pat. No. 5,475,754.

This application Sep. 13, 1995, Ser. No. 527,663

Int. Cl.[6] H04N *7/167*

U.S. Cl. 380—20 **11 Claims**



1. Apparatus in a signal transport processor for processing signal including time division multiplexed packets of program components, wherein respective packets include a payload of program component data and a header including a program component identifier, SCID, and wherein payloads of respective components are stored in mutually exclusive portions of buffer memory, circuitry for addressing said buffer memory comprising;

a source of time division multiplexed packets;

an SCID detector, responsive to respective component identifiers in packet headers for detecting packets having predetermined program components;

a plurality of direct memory access circuits;

control apparatus programmed to condition respective ones of said direct memory access Circuits to write payloads of received packets into appropriate Said mutually exclusive portions of buffer memory responsive to detected said identifiers.

5,613,004

STEGANOGRAPHIC METHOD AND DEVICE

Marc Cooperman, Palo Alto, Calif., and Scott A. Moskowitz, Tokyo, Japan, assignors to The Dice Company, Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 489,172

Int. Cl.[6] H04L *9/20*

U.S. Cl. 380—28 **44 Claims**

18. A method of encoding information into a sample stream of data, comprising the steps of:

A) obtaining a mask set to be used for encoding, including:

a random or pseudo-random primary mask,

a random or pseudo-random convolution mask, and

a random or pseudo-random start of message delimiter,

wherein said mask set are concatenated and manipulated as a single bit stream;

B) inputting a message to be encoded;

C) generating a message bit stream to be encoded including a start of message delimiter,

an integer representing the number of message bytes to follow the message, and

the message;

D) loading the message bit stream, a map table, and the mask set into a memory;

E) resetting a primary mask index, a convolution mask and message bit index, setting the message size index equal to the number of bits in the message bitstream, and clearing a message encoded flag;

F) reading a window of samples of the inputted message and storing the samples sequentially in a sample buffer;

G) computing a spectral transform of the samples in the buffer;

H) resetting the primary mask index and looping through the sample buffer from a first spectral value to a last spectral value incrementing the primary mask index each time a spectral value is visited, such that for each spectral value position, a value of the mapping function is computed, which is either true or false, by using a bit of the primary mask representing a current spectral value and a bit of the convolution mask indicated by the convolution index to calculate an offset in the map table;

I) obtaining the bit value stored in the map table, wherein if the bit value is true, then encoding the bit of the message indicated by the message bit index into the current spectral value and incrementing the message bit index, if the message bit index equals the number of message bits, setting the message encoded flag, and exiting the loop;

J) computing the inverse spectral transform of the spectral values stored in the sample buffer;

K) outputting the values in the sample buffer, and if the message encoded flag is set, then clear the flag and jump back to step E);

L) incrementing the convolution index and when the convolution index equals the length of the convolution mask in bits resetting the convolution index; and

M) jumping back to step F).

5,613,005

CIPHER COMMUNICATION METHOD AND DEVICE

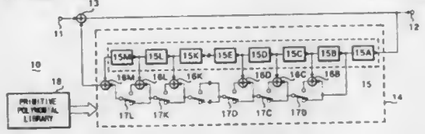
Yasuyuki Murakami, Uji, and Kazuhito Ito, Nagaokakyo, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 6, 1995, Ser. No. 499,064

Claims priority, application Japan, Jul. 7, 1994, 6-156307

Int. Cl.[6] H04L *9/28;9/00*

U.S. Cl. 380—28 **9 Claims**



5. A cipher communication device, comprising:

memory means for storing a plurality of irreducible polynomials,

selection means for selecting at least one irreducible polynomial from among the plurality of irreducible polynomials stored in the memory means,

construction means for constructing at least one desired irreducible polynomial in response to the selected irreducible polynomial, and

encryption/decryption means for using the desired irreducible polynomial to perform at least one of a self-synchronizing encryption of communication information and a self-synchronizing decryption of communication information.

5,613,006

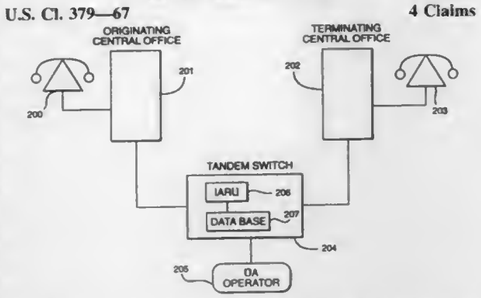
AUTOMATED DIRECTORY ASSISTANCE CALL COMPLETION AND CALLING NUMBER DELIVERY SYSTEM

Morris Reese, P.O. Box 6651, Thousand Oaks, Calif. 91360

Filed Nov. 18, 1994, Ser. No. 342,166

Int. Cl.[6] H04M *1/57;3/50*

U.S. Cl. 379—67 **4 Claims**



3. A method of automatically completing a call to a person to be contacted and then providing to the person to be contacted a directory telephone number with a corresponding name (DN) of a calling party wishing to converse with the person to be contacted when the calling party calls a directory assistance (DA) operator to request a phone number of the person to be contacted and asks that the call be completed automatically, comprising the steps of:

(a) in response to information received from the DA operator which is identical to information received from the calling party relating to the person to be contacted, searching an associated data base to find the phone number of the person to be contacted corresponding to said information received from the DA operator and, when the phone number is found and determined to be listed or unlisted, then providing the calling party with an appropriate recorded message;

(b) in response to a predetermined digit or voice response received from the calling party station responsively to said recorded message, retrieving the phone number of the person to be contacted from the associated data base and, upon translating area and office codes of the phone number into appropriate routing information to select a trunk line which is an appropriate route to a terminating central office serving the person to be contacted, then transmitting said DN of the calling party to the terminating central office;

(c) the terminating central office connecting to the person to be contacted idle telephone line and sending ringing signals and, during a silent interval between said ringing signals, then transmitting said DN of the calling party to the person to be contacted apparatus; and

(d) the person to be contacted apparatus receiving, displaying and storing said DN of the calling party from the terminating central office during the silent interval between said ringing signals.

5,613,007

PORTABLE THERMAL PRINTING APPARATUS INCLUDING A SECURITY DEVICE FOR DETECTING ATTEMPTED UNAUTHORIZED ACCESS

John T. Balga, Jr., Stratford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

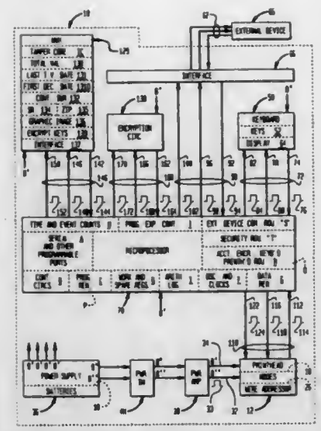
Filed Nov. 30, 1994, Ser. No. 347,002

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—51 **7 Claims**

1. A postage dispensing system comprising:

(a) a postage meter including means for printing an indicia indicative of value on a substrate, means for controlling the indicia printing means and accounting circuitry for storing value available for printing and for decrementing the stored value by the value associated with the printed indicia, and



(b) a device external to the postage meter which communicates with the accounting circuitry, via a communicating link, to add incremented value to the stored value;

wherein the controlling means includes means for establishing the communicating link with the device, the establishing means including a protocol which utilizes an encryption key, the controlling means including means operable for causing the printing means to print a tampering code as part of the indicia if a failed attempt to establish the communicating link occurs.

5,613,008

HEARING AID

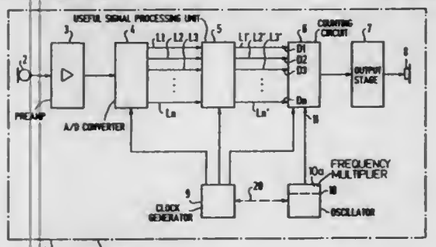
Raimund Martin, Eggolsheim, Germany, assignor to Siemens Audiologische Technik GmbH, Erlangen, Germany

Continuation of Ser. No. 77,669, Jun. 17, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,246

Claims priority, application Germany, Jun. 29, 1992, 92111014.4

Int. Cl.[6] H04K *25/00*

U.S. Cl. 381—68.2 **6 Claims**



1. A hearing aid, comprising:

an input transducer;

means for generating counting pulses;

useful signal processing means connected to the input transducer for sampling useful signals at a sampling frequency and for converting the useful signals into data words processed in discrete-time fashion;

a counting circuit means into which said data words are read via at least one input and which is placed into an initial condition after every read-in data word with said counting pulses;

an output stage designed as a switching amplifier and driven with an output signal of said counting circuit means; and

said counting circuit means comprising a chain of flip-flop circuits whose plurality corresponds to a maximum allowable bit plurality of the data words.

5,613,009

METHOD AND APPARATUS FOR CONTROLLING VIBRATION

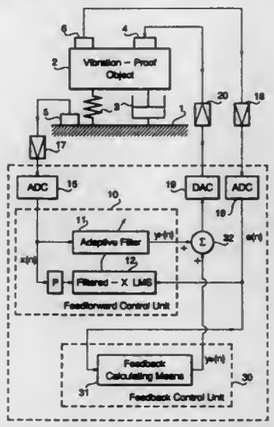
Toshihiro Miyazaki, Kodaira; Kazutomo Murakami, Yokohama, and Keiichiro Mizuno, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 166,962

Claims priority, application Japan, Dec. 16, 1992, 4-354587

Int. Cl.[6] A61F *11/06;* **H04B** *15/00*

U.S. Cl. 381—71 **8 Claims**



1. A vibration control method of applying a vibration through a vibration exciting means to a vibration-proof object for canceling vibration transmitted from a vibration source, thereby reducing the vibration, said method comprising the steps of:

inputting vibration information of said vibration source as a reference signal and vibration information of said vibration-proof object as an error signal into an adaptive filter, and processing said reference signal by updating a filter coefficient on the basis of a filtered-X LMS algorithm for forming a feedforward control signal;

inputting said vibration information of said vibration-proof object in a feedback calculation means comprising a state space controller, and forming a feedback control signal on the basis of a feedback control rule for damping a vibration system; and

synthesizing said feedforward control signal and said feedback control signal to form a drive signal, and applying said drive signal to said vibration exciting means, so as to drive and control said vibration exciting means to synthesize control of periodic vibration of said vibration proof object by said adaptive filter, and synthesize control of vibration at a natural frequency of said vibration-proof object by said feedback calculation means.

5,613,010

APPARATUS FOR REPRODUCING SOUND WITH A REDUCED DYNAMIC RANGE

Lawrence F. Heyl, Mountain View, and Steven E. Austin, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

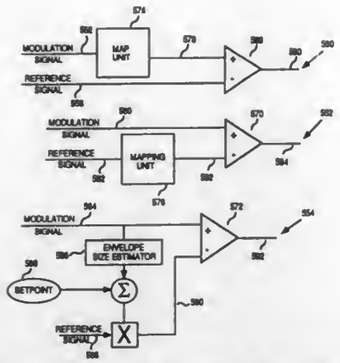
Filed Mar. 30, 1994, Ser. No. 219,996

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—117 **20 Claims**

1. An apparatus for reproducing sound with a reduced dynamic range, said sound being encoded in a modulation signal, the apparatus comprising:

a mapping function unit configured to receive a first signal and to generate a modified first signal based on said first signal, said first signal being either said modulation signal or a reference signal;



said mapping function unit generating an increased amplitude signal as said modified first signal when said first signal has an amplitude below a first predetermined level, said increased amplitude signal being said first signal with an increased amplitude;

said mapping function unit generating a decreased amplitude signal as said modified first signal when said first signal has an amplitude above a second predetermined level, said decreased amplitude signal being said first signal with a decreased amplitude;

a comparator coupled to said mapping function unit, said comparator receiving said modified first signal and a second signal and generating a pulse width modulation signal based on said modified first signal and said second signal, said second signal being said reference signal if said first signal is said modulation signal, said second signal being said modulation signal if said first signal is said reference signal;

a switch circuit operatively coupled to said comparator and to a speaker load, said pulse width modulation signal driving said switch circuit to produce a current flow through said speaker load responsive to said pulse width modulation signal.

5,613,011

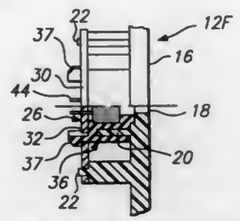
MICROPHONE ASSEMBLY MOUNTED TO A BEZEL WHICH FRAMES A MONITOR SCREEN OF A COMPUTER

Steven B. Chase, Cupertino, and James K. Levins, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 3, 1995, Ser. No. 415,464

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **9 Claims**



1. A microphone assembly for connection to a housing, comprising:

a circuit board having an aperture extending therethrough;

a body formed of resilient material, said body including:

a rearwardly projecting spring finger received in said aperture and forming an interference fit therewith for mounting said body to said circuit board,

an interior chamber,

a through-hole extending forwardly from said chamber and through said body, and

a forwardly open groove encompassing said chamber and adapted to receive a wall of a socket to which the microphone assembly is mounted; and

a microphone element mounted in said chamber and electrically connected to said circuit board.

5,613,012

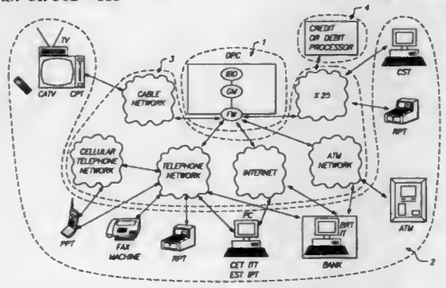
TOKENLESS IDENTIFICATION SYSTEM FOR AUTHORIZATION OF ELECTRONIC TRANSACTIONS AND ELECTRONIC TRANSMISSIONS

Ned Hoffman; David F. Pare, Jr., and Jonathan A. Lee, all of Berkeley, Calif., assignors to Smarttouch, LLC., Berkeley, Calif.

Continuation-in-part of Ser. No. 345,523, Nov. 28, 1994. This application May 17, 1995, Ser. No. 442,895

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—115 **170 Claims**



1. A voluntary tokenless identification computer system for determining an individual's identity from an examination of at least one biometric sample and a personal identification code gathered during a bid step, and comparison with previously recorded biometric sample and personal identification code gathered during a registration step, wherein the system is authenticated to the individual, said system comprising:

a. at least one computer;

b. first gathering and display means for voluntary input of at least one biometric sample, personal identification code, and a private code from an individual during the registration step, wherein the private code is not used for gaining access to the system;

c. second gathering and display means for voluntary input of at least one biometric sample and personal identification code, from an individual during a bid step;

d. first interconnecting means for interconnecting said first and second gathering and display means to said computer for transmitting the gathered biometric sample, personal identification code, or private code from said first and second gathering means to said computer;

e. means for comparison of biometric sample and personal identification code gathered during the bid step with the biometric samples and personal identification codes gathered during the registration step, for producing an evaluation;

f. execution means within said computer for storage of data and processing and execution of commands for producing a determination;

g. means for output of said evaluation, determination, or private code from said computer; and

h. system authentication means wherein the private code gathered during the registration step, is displayed to the authorized user of the system during the output step to authenticate that the computer system was accessed.

5,613,013

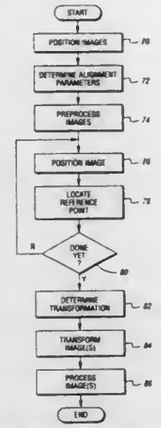
GLASS PATTERNS IN IMAGE ALIGNMENT AND ANALYSIS

Wade Schuette, Ann Arbor, Mich., assignor to Reticula Corporation, Ann Arbor, Mich.

Filed May 13, 1994, Ser. No. 242,565

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—124 **48 Claims**



1. A method of aligning first and second images containing randomly distributed features wherein the first image is a transformed version of the second image, and neither image is required to contain a periodic pattern, the method comprising:

superimposing the images to form a composite image in which a first Glass pattern having a determinable reference point is produced, said reference point, in turn, defining a pair of matching points, said matching point in each of the two superimposed images being defined to be point in said image collocated at that time with said reference point in said composite image;

repositioning at least once at least one of the images so that superimposition of the randomly distributed features from the superimposed images produces a subsequent composite image having a subsequent Glass pattern having, in turn, a determinable reference point, defining, in turn, a pair of matching points, said pair of matching points being different from the pairs of matching points determined in preceding repositionings; and

applying a smooth warping transformation to at least one of the images so as to simultaneously align each pair of matching points in the images so as to align the images.

5,613,014

FINGERPRINT MATCHING SYSTEM

Mohamed A. Eshera, and Russell E. Sanders, both of Columbia, Md., assignors to Martin Marietta Corp., Bethesda, Md.

Filed Oct. 12, 1994, Ser. No. 322,048

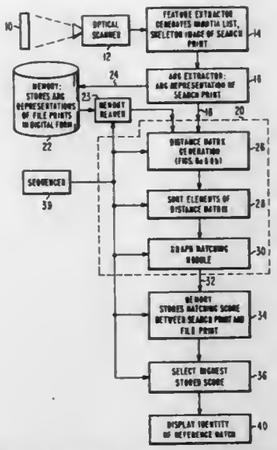
Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—124 **4 Claims**

1. A method for matching a set of unidentified fingerprints, which set includes at least one unidentified fingerprint, with a plurality of sets of reference fingerprints from a fingerprint file, said method comprising the steps of:

generating an attributed relational graph (ARG) including (a) nodes and node attributes and (b) branches between said nodes, and branch attributes, from an extracted digital minutia map of said set of unidentified fingerprints, to thereby implicitly generate stars centered at each of said nodes;

generating a distance matrix between (a) the stars in said ARG of one of said fingerprints of said set of unknown fingerprints and (b) the stars of the ARG of one of the fingerprints in one



of said sets of reference fingerprints, said distance matrix including a matrix element associated with each pair of stars;

sorting said elements of said distance matrix for each fingerprint pair, according to the value of said elements, to form a sorted distance matrix which establishes an order of star pair matches;

generating a match core of consistent sets of star pairs from said distance matrix and said ARG in an order established by said sorted distance matrix; wherein said step of generating a match core includes the steps of:

selecting a star pair associated with a highest element of said sorted distance matrix, to define a first element of a match core;

deleting from said distance matrix that element associated with said first element of said match core, to generate a reduced distance matrix;

selecting, from among candidate pairs of stars centered on neighbor nodes of the center nodes of said star pair in said first element of said match core, that candidate star pair which is both (a) consistent with said match core, and (b) among all said candidate star pairs which are consistent with said match core, associated with a highest distance matrix element in said reduced distance matrix, to thereby generate a second element for said match core;

adding said second element to said match core as a further element;

deleting from said reduced distance matrix that one of said elements of said distance matrix associated with said candidate star pair added to said match core, to form a further reduced distance matrix;

repeating said steps of selecting that further star pair, adding, and deleting from said reduced distance matrix, at least until no more candidate star pairs consistent with the match core remain.

5,613,015

IMAGE SIGNAL ANALYZING SYSTEM AND CODING SYSTEM

Kazuhiro Suzuki; Yutaka Koshi; Setsu Kunitake; Shunichi Kimura, and Koh Kamizawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

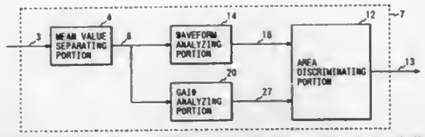
Continuation of Ser. No. 149,746, Nov. 10, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,607

Claims priority, application Japan, Nov. 12, 1992, 4-302628; Nov. 16, 1992, 4-305455

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—173 **13 Claims**

1. An image signal analyzing system comprising:



block extracting means for sampling an image signal and dividing the sampled image signal into input pixel blocks each comprising m×n pixels (m and n are positive integers);

mean value separating means for subtracting a mean value of the input pixel block from each pixel in the pixel block to provide a mean-value separated block;

first analyzing means for analyzing a feature quantity of a direction of tone variation of the mean-value separated block obtained from said mean value separating means;

second analyzing means for analyzing a feature quantity of a direction of amplitude based on a variance calculation and a computation of a histogram of the mean-value separated block; and

judging means for judging a waveform feature of the input pixel block based on analysis by said first analyzing means and said second analyzing means, whereby said judging means determines what type of image the input pixel block belongs to.

5,613,016

AREA DISCRIMINATION SYSTEM FOR TEXT IMAGE

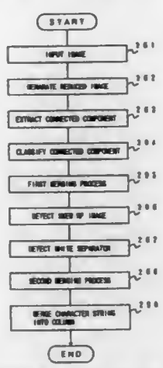
Takashi Saitoh, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 88,044, Jul. 6, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,070

Claims priority, application Japan, Jul. 6, 1992, 4-178192

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—174 **10 Claims**



1. An area discrimination system for discriminating areas from each other in a binary image, said system comprising:

reducing means for reducing a binary image supplied from an external unit and for outputting a reduced image;

skew detecting means for detecting a skew of the binary image with respect to a predetermined direction;

extracting means, coupled to said reducing means, for extracting from the reduced image, first areas, each of which first areas corresponds to a set of connected black pixels;

block forming means, coupled to said extracting means, for forming blocks by merging the first areas in a main scanning direction in accordance with a first merging rule;

first merging means, coupled to said skew detecting means and said block forming means, for merging blocks into a second area corresponding to a character string in accordance with a second merging rule using the skew detected by said skew detecting means; and

second merging means, coupled to said skew detecting means and said first merging means, for merging second areas into a third area corresponding to a column in accordance with a third merging rule using the skew detected by said skew detecting means, so that the third areas obtained by said second merging means are discriminated from each other in the binary image.

5,613,017

APPARATUS FOR PROCESSING IMAGE DATA AMONG MEDIA HAVING DIFFERENT IMAGE OUTPUT SIZES

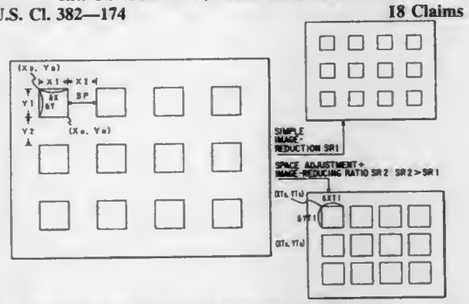
Gururaj Rao, and Hiroki Kanno, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Sep. 19, 1995, Ser. No. 530,072

Claims priority, application Japan, Sep. 29, 1994, 6-235391

Int. Cl.[6] G06T *3/40;* **G06K** *9/00;* **G06F** *17/21*

U.S. Cl. 382—174 **18 Claims**



1. An image-data processing apparatus comprising:

input means for inputting first document image data including area data representing an area included in a document of a first size, the area having characters and spaces located around the characters;

means for converting the first document image data including area data input by said input means into a second document image data of a second size with a first conversion ratio; and

size changing means for changing a relative size of the characters included in said area of the second size with respect to the spaces around the characters so that a space occupation ratio of the characters with respect to the space is increased in said area.

5,613,018

PAGE BUFFER ROTATOR

George L. Eldridge, Long Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 83,248, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 811,854, Dec. 23, 1991, abandoned. This application Dec. 1, 1995, Ser. No. 567,497

Int. Cl.[6] G06R *9/32*

U.S. Cl. 382—296 **4 Claims**

1. A method of rotating a rectangular original image comprising a number of image blocks comprising the steps of:

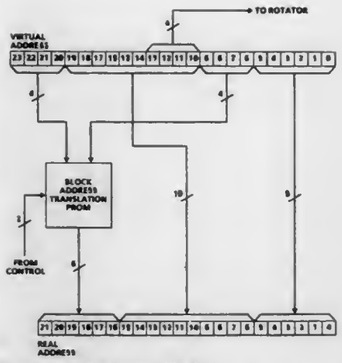
providing a square virtual memory having a number of memory blocks in each direction that is a power of two, said virtual memory being large enough in both length and width to contain said image,

providing a real memory which is large enough to contain said number of image blocks,

generating a list of corresponding virtual and real block addresses for said rectangular image shape so that all of said image blocks in said virtual memory can be loaded into blocks in said real memory,

storing said original image into said virtual memory after completing the generating step,

reading each image block from said virtual memory,



partially rotating each image block,

using said list to load each image block into a block of said real memory,

completing the rotation of said image block, and

using said list to return each rotated block to said virtual memory.

5,613,019

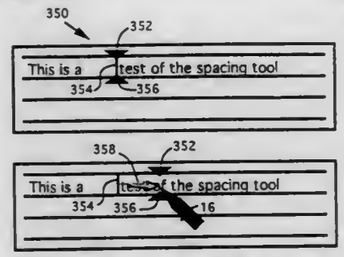
SYSTEM AND METHODS FOR SPACING, STORING AND RECOGNIZING ELECTRONIC REPRESENTATIONS OF HANDWRITING, PRINTING AND DRAWINGS

Dan Altman, Kula, Hi.; Michael W. Rouiller, San Jose; Gregory Stikeleather, Palo Alto, both of Calif.; Michele M. Evans, Palm Coast, Fla.; Steven R. Kusmer, San Francisco, and Michael P. Thompson, San Carlos, both of Calif., assignors to Microsoft Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 64,954, May 20, 1993, Pat. No. 5,517,578. This application Jun. 3, 1994, Ser. No. 253,546

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—311 **24 Claims**



1. A computerized method for modifying the amount of space between a plurality of ink stroke representations on a display device of a computing system, said method comprising the steps of:

inputting a space command;

receiving a pen down event;

determining a position of the pen down event;

displaying an insertion symbol having a first portion and a second portion at the position of the pen down event;

receiving additional pen events that specify movement of the second portion of the insertion symbol relative to the first portion of the insertion symbol;

updating the display of the insertion symbol for the additional pen events received by displaying the second portion of the insertion symbol in a different position relative to the first portion of the insertion symbol;

determining whether any of the additional pen events received was a pen up event; and

performing a space action if a pen up event has been received.

5,613,020

OPTICAL DEVICES HAVING A PERIODICAL CURRENT RESTRAINT LAYER AND OPTICAL COMMUNICATION SYSTEMS USING THE OPTICAL DEVICE

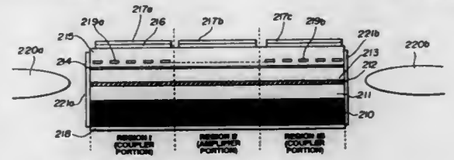
Mamoru Uchida, Yokohama, and Hidetoshi Nojiri, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 460,526, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 208,464, Mar. 9, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 571,741

Claims priority, application Japan, Mar. 15, 1993, 5-080170; Jul. 27, 1993, 5-185052; Nov. 22, 1993, 5-315969; Dec. 29, 1993, 5-352709

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—9 **35 Claims**



1. An optical device comprising:

a first waveguide for allowing a light wave to propagate therein;

a second waveguide;

transfer rate control means for controlling a power transfer rate of the light wave between said first waveguide and said second waveguide, the light-wave power transfer rate having a value of zero when said transfer rate control means is in an inoperative state, wherein said transfer rate control means comprises a refractive index modulating layer including a periodical current restraint layer; and

electric means for electrically controlling said transfer rate control means by imparting electric energy to said transfer rate control means, said transfer rate control means falling into the inoperative state when said electric means imparts no electric energy to said transfer rate control means.

5,613,021

OPTICAL FIBER SWITCHING DEVICE HAVING ONE OF A ROBOT MECHANISM AND AN OPTICAL FIBER LENGTH ADJUSTMENT UNIT

Kazuhito Saito; Masayuki Nishimura; Tohru Yamanishi, all of Yokohama; Hideo Kobayashi; Toshiaki Katagiri, both of Mito, and Masao Tachikura, Hitachi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Division of Ser. No. 345,815, Nov. 22, 1994, Pat. No. 5,504,825, which is a division of Ser. No. 22,641, Feb. 25, 1993, Pat. No. 5,386,485. This application May 24, 1995, Ser. No. 449,360

Claims priority, application Japan, Feb. 26, 1992, 4-39602; Feb. 26, 1992, 4-39607; Apr. 23, 1992, 4-104612; May 11, 1992, 4-117361; May 11, 1992, 4-117363; May 21, 1992, 4-128777; Feb. 4, 1993, 5-17484

Int. Cl.[6] G02B *6/26*

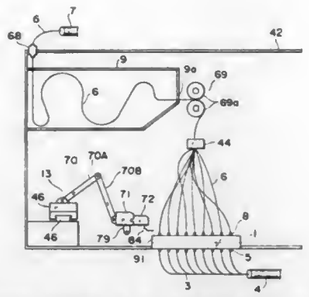
U.S. Cl. 385—17 **16 Claims**

1. An optical fiber switching apparatus, comprising:

a coupling board for optically coupling a selected one of a plurality of first optical fibers to a selected one of a plurality of second optical fibers, the coupling board having a first surface that holds the first optical fibers, and a second surface that opposes the first surface and holds the second optical fibers;

switching means for changing a position of the selected one of the second optical fibers to a desired position so as to allow for optical coupling of the selected one of the second optical fibers with the selected one of the first optical fibers;

guide means, provided in the coupling board, for guiding the switching means;



guided means, provided on the switching means, for displacing the switching means along the guide means; and

adjusting means for handling and storing a surplus portion of the selected one of the second optical fibers, the adjusting means including:

a line length adjusting unit that stores the surplus portion of the selected one of the second optical fibers, and

a mechanism that feeds the surplus portion of the selected one of the second optical fibers into the line length adjusting unit.

5,613,022

DIFFRACTIVE DISPLAY AND METHOD UTILIZING REFLECTIVE OR TRANSMISSIVE LIGHT YIELDING SINGLE PIXEL FULL COLOR CAPABILITY

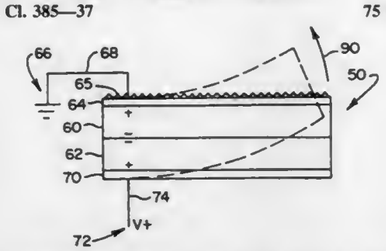
Jefferson E. Odhner, Orlando, Fla.; Daniel J. Smith, Stow, Ohio; Shailesh S. Bhat, Troy, Mich.; Donald L. Cullen, Columbus, Ohio, and Ken G. Wasson, Foster City, Calif., assignors to Luckoff Display Corporation, Columbus, Ohio

PCT No. PCT/US94/07584, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO95/02838, PCT Pub. Date Jan. 26, 1995

Continuation-in-part of Ser. No. 93,255, Jul. 16, 1993, abandoned. This PCT application Jul. 12, 1994, Ser. No. 295,900

Int. Cl.[6] G02B *6/34;* **G03H** *1/00*

U.S. Cl. 385—37 **75 Claims**



1. A display comprising an element which carries a holographic diffraction pattern which element is connected to a source energizable for movement of said element, wherein said holographic diffraction pattern is moved by movement of said element and wherein movement of said holographic diffraction pattern diffracts energy incident on said holographic diffraction pattern to generate different select diffracted energies from said holographic diffraction pattern.

47. A method for generating different select diffracted energies from energy incident on a display, which comprises:

(a) providing an element which carries a diffraction pattern which element is connected to a source energizable for movement of said element, wherein said diffraction pattern is moved by movement of said element and wherein movement of said diffraction pattern diffracts energy incident on said diffraction pattern to generate diffracted energy from said diffraction pattern;

(b) directing energy onto said embossed diffraction pattern; and

(c) controlling the movement of said element with said energizable source to vary the effective spacing of the diffraction pattern to control the select diffracted energy generated.

5,613,023

METHOD OF MODIFYING THE LONGITUDINAL DISTRIBUTION OF THE PITCH OF A DIFFRACTION GRATING, AND A METHOD OF MAKING SUCH A GRATING IN AN OPTICAL WAVEGUIDE

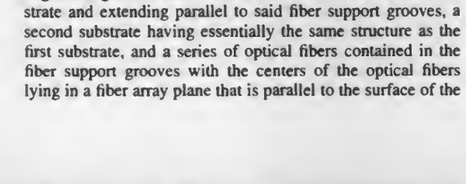
Jean Guillon, La Ferte Alais; David Macia, Paris; Isabelle Riant, and Pierre Sansonetti, both of Palaiseau, all of France, assignors to Alcatel Fibres Optiques, Bezons Cedex, France

Filed Aug. 2, 1995, Ser. No. 510,269

Claims priority, application France, Aug. 4, 1994, 94 09705

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **10 Claims**



1. A method of modifying the longitudinal distribution of the pitch of a diffraction grating formed in a deformable optical waveguide, said method comprising steps of:

providing an auxiliary part having a stiffness that is not substantially less than a stiffness of the waveguide, said auxiliary part being responsive by a deformation thereof to a force applied thereto and being such that said deformation includes longitudinally varying amounts of variation in the lengths of segments of a line of said auxiliary part when said force is suitable therefor, whereby said deformation constitutes a pitch-modifying deformation;

securely fixing the waveguide to said auxiliary part along said line whereby said line constitutes a carrier line; and

applying the suitable force to said auxiliary part.

5,613,024

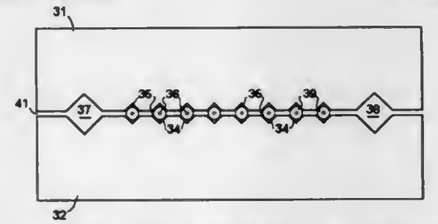
ALIGNMENT OF OPTICAL FIBER ARRAYS TO OPTICAL INTEGRATED CIRCUITS

Muhammed A. Shahid, Ewing Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 21, 1995, Ser. No. 576,142

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—52 **17 Claims**



1. A fiber array connector part adapted to be connected to a lightguide array comprising:

a first substrate containing a series of parallel fiber support grooves formed into the surface of the substrate and a pair of alignment grooves also formed into the surface of the substrate and extending parallel to said fiber support grooves, a second substrate having essentially the same structure as the first substrate, and a series of optical fibers contained in the fiber support grooves with the centers of the optical fibers lying in a fiber array plane that is parallel to the surface of the substrate, said first and second substrates being assembled together so that the optical fibers lie within mating support grooves, and said alignment grooves mate together to form an alignment sleeve with the precise center of the sleeve lying in the said fiber array plane.

5,613,025

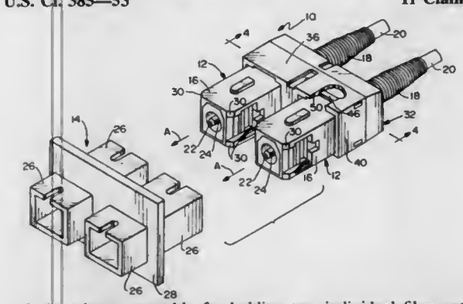
ADAPTER ASSEMBLY FOR FIBER OPTIC CONNECTORS

Igor Grois, 4010 Greenacre Dr., Northbrook, Ill. 60062, and Yuriy Belenkiy, 8655 Shermer Rd., Niles, Ill. 60714

Filed Jul. 13, 1995, Ser. No. 502,250

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—53 **11 Claims**



1. An adapter assembly for holding two individual fiber optic connectors, each connector including a housing and a ferrule mounted within the housing for terminating an optical fiber, in generally parallel side-by-side alignment, comprising:

a one piece body having a pair of through passages adapted for holding said fiber optic connectors in a substantially side-by-side relationship when the connectors are inserted axially into the passages, the body substantially entirely surrounding the connectors;

complementary interengaging snap-latch means between the body and the housing of each fiber optic connector for latching the connectors in the passages automatically in response to inserting the connectors thereinto; and

lost motion means between the body and the housing of each fiber optic connector to provide floating motion between the connectors and the body allowing said connectors held by the adapter assembly to be inserted into a duplex receptacle simultaneously.

5,613,026

PACKAGE STRUCTURE FOR OPTICAL ELEMENT AND FIBERS AND COMPOSITE STRUCTURE THEREOF

Hirotoshi Nagata; Masaru Shiroishi; Tsutomu Saito; Takashi Tateyama; Mithuru Sakuma; Naoki Kougo; Susumu Murata; Ryosuke Kaizu, and Nobuhide Miyamoto, all of Funabashi, Japan, assignors to Sumitomo Osaka Cement Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,190

Claims priority, application Japan, Dec. 28, 1993, 5-335291; Dec. 28, 1993, 5-336102; Mar. 30, 1994, 6-060750; Apr. 14, 1994, 6-075798; Apr. 15, 1994, 6-076928; Apr. 28, 1994, 6-092147; May 18, 1994, 6-103959

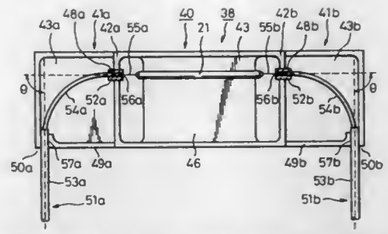
Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—94 **29 Claims**

1. A package structure for housing an optical element and gas-hermetically sealing optical fibers connected to the optical element, comprising:

a main container provided with a main chamber for housing an optical element therein;

a pair of side containers attached to the main container and provided with a pair of side chambers formed therein and separated from the main chamber through a pair of side walls, and having a pair of apertures through which the side chambers are connected to the outside of the side chambers; and



a pair of sleeves extending from or across the side walls and provided with a pair of hollow spaces through which the main chamber is connected to the side chambers;

a center line of the aperture of each side chamber intersecting a center line of the hollow space of the corresponding sleeve; and

a pair of optical fibers in a gradually curved form are introduced into the main chamber of the main container through said apertures and side chambers of the side containers and said hollow spaces of the sleeves, to connect the optical fibers to the optical element.

5,613,027

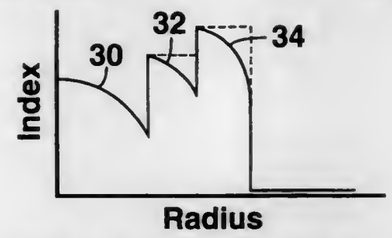
DISPERSION SHIFTED OPTICAL WAVEGUIDE FIBER

Venkata A. Bhagavatula, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Oct. 17, 1994, Ser. No. 287,262

Int. Cl.[6] G02B *6/02;6/16*

U.S. Cl. 385—123 **22 Claims**



1. A single mode optical waveguide fiber comprising:

a core region comprising,

a central region having a radius a_0 and a minimum refractive index n_0,

at least one annular region surrounding said central region, wherein the innermost of said at least one annular region is adjacent said central region and has inner radius a_i and minimum refractive index n_i, and $a_i > a_0$ and $n_i > n_0$; and,

a clad layer adjacent said core region having refractive index n_c and $n_c < n_i$.

5,613,028

CONTROL OF DISPERSION IN AN OPTICAL WAVEGUIDE

A. Joseph Antos, Elmira; Venkata A. Bhagavatula, Big Flats; Dipakbin Q. Chowdhury, and Daniel A. Nolan, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

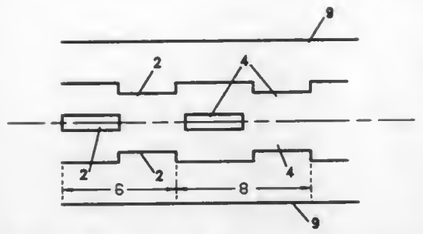
Filed Aug. 10, 1995, Ser. No. 513,654

Int. Cl.[6] G02B *6/17*

U.S. Cl. 385—123 **18 Claims**

1. A single mode optical waveguide fiber, comprising:

a core glass region having a refractive index profile;



a clad glass layer, surrounding said core glass region and having a refractive index profile, wherein at least a portion of said core glass refractive index profile is greater than at least a portion of said clad glass refractive index profile,

said waveguide fiber having a length and a longitudinal axis of symmetry;

a plurality of birefringence means disposed periodically along the waveguide fiber length to mix the two polarization modes; and,

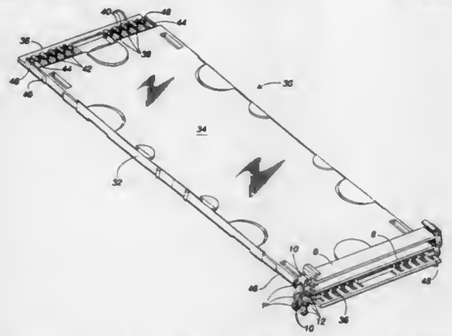
a plurality of means, disposed along the waveguide fiber length, for causing total dispersion to alternate between positive and negative values over a pre-selected wavelength range.

5,613,029

FIBER OPTIC SPLICE TRAY HINGE ADAPTER

Denis E. Burek, Cumming, and George E. Mock, Duluth, both of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 10, 1995, Ser. No. 438,312
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—135 **18 Claims**



1. An adapter for providing a hinging capability to an element comprising:

a U-shaped member having a central portion having first and second ends and a pair of arms depending from each end of said central portion with said arms having distal ends spaced apart from each other a distance approximately equal to a width of said central portion, wherein said central portion has a protrusion at each of said first and second ends and the distal end of each arm has a recessed portion; and

means, connected to said U-shaped member, for attaching said U-shaped member to a side of the element;

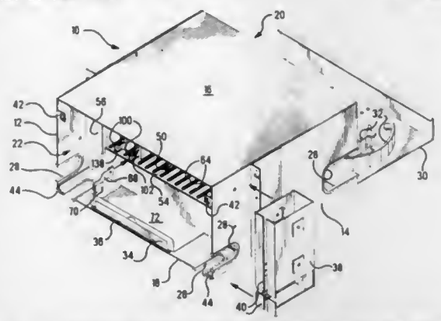
wherein said recessed portions of said arms are for receiving protrusions on a central portion of a second adapter with said recessed portions of said arms and said protrusions on said second adapter defining an axis about which the element can pivot.

5,613,030

HIGH DENSITY FIBER OPTIC INTERCONNECTION ENCLOSURE

John C. Hoffer, Harrisburg; Carl M. Bruckner, Washington, both of Pa.; Jon M. Orrell, Oregon City, Oreg., and Paula J. Parke, Elizabethtown, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 15, 1995, Ser. No. 441,504
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—135 **14 Claims**



1. An enclosure for interconnection of optical fibers at an interconnection interface, comprising:

a frame having opposed side walls and a top wall and bottom wall extending between front and rear openings to define an interior work space;

a card-receiving region defined within said frame and extending rearwardly to a rear face from an interconnection interface spaced inwardly from said front opening, said card-receiving region including pairs of opposed card guides extending along opposed frame members of said frame, said card guides of said pairs being spaced across said interconnection interface to define card sites for receipt of respective cards therein slidable along said pairs of opposed card guides;

an array of cards associated with respective ones of said card sites such that front faces of said cards are exposed along said interconnection interface and rearward ends thereof are positioned at said rear face of said card-receiving region, said cards including upper and lower edge portions insertable into and along pairs of said card guides at said card sites; and

each said card including a latch member adjacent a respective one of said associated pair of card guides and along said front face of said card and manually actuable from forwardly thereof, said latch member adapted to cooperate with cooperable latching sections of one of said opposed frame members to latch said card in a selected one of first and second positions spaced apart along said one of said frame members proximate said interconnection interface.

5,613,031

HERMETICALLY SEALED OPTICAL FIBER INSERT STRUCTURE

Takashi Tanabe, and Kouji Yamamoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,176
Claims priority, application Japan, Jun. 29, 1994, 6-147683
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—138 **6 Claims**

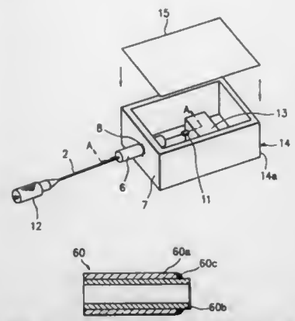
1. A hermetically sealed optical fiber insert structure comprising:

a package member having an outside wall thereof formed with a through hole;

a pipe member of a double tube structure fitted in the through hole; and

an optical fiber inserted in the pipe member;

the optical fiber including a jacketted part in which a bare fiber is jacketted with an insulator and a stripped part in which the bare fiber is stripped of the insulator;



the optical fiber having the stripped part fitted in and soldered to a first inside region of the pipe member with a solder filled therebetween, and the jacketted part fitted in and fixed to a second inside region of the pipe member with an adhesive filled therebetween;

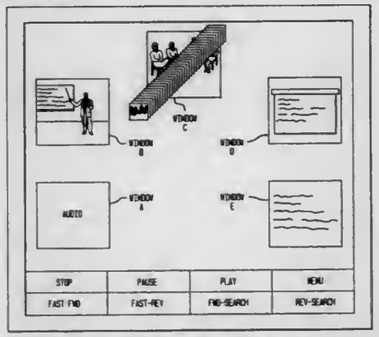
the pipe member being fixed to the outside wall of the package member by a welding along a circumference of the through hole.

5,613,032

SYSTEM AND METHOD FOR RECORDING, PLAYING BACK AND SEARCHING MULTIMEDIA EVENTS WHEREIN VIDEO, AUDIO AND TEXT CAN BE SEARCHED AND RETRIEVED

Gil C. Cruz, Annandale; Steven L. Rohall, Somerville; Jonathan Rosenberg, Annandale, and Lanny S. Smoot, Morris Township, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Sep. 2, 1994, Ser. No. 300,824
Int. Cl.[6] H04N *5/91;5/926;7/52*
U.S. Cl. 386—69 **22 Claims**



1. A system for recording and playing back to users a plurality of different aspects including visual, audible, graphic, or textual presentations of a multimedia event, each captured by a distinct one of a plurality of recording sources, to facilitate the indexing capability of users, wherein each of said captured aspects forms a distinct original continuous media temporal record of said multimedia event, said system comprising:

a preprocessor for processing each said original record, said preprocessor including

a digitizer for transforming each said original record into digitized blocks, and

means for generating derivative records, said means comprising a time stamp processor for time stamping each of said digitized blocks of each said original record with the relative time for said multimedia event and a derivative continuous temporal record generator for processing said original records to generate derivative records which contain arrangements of information in said original records to assist users in searching through said multimedia event;

a delivery processor for delivering to said users both said derivative records processed at said preprocessor and each said original record and for adjusting delivery of said original records of said multimedia event based on interactive commands received from users;

user control units for receiving said original and derivative records of said multimedia event from said delivery processors and transmitting to said delivery processor users' requests for said multimedia event and users' interactive commands for playing back said multimedia event, wherein each of said user control units includes a user local clock for tracking a relative time for said requested multimedia event and each said user control presents each said block of each said original and derivative record when said relative time of each said block matches said relative time at said user local clock; and

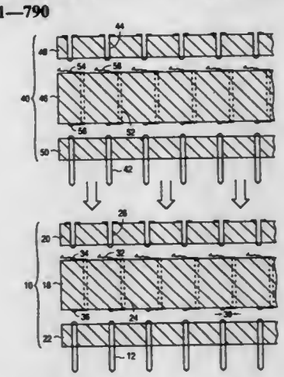
output devices for displaying derivative records to enable identification of the occurrence of events in one or more of said original records.

5,613,033

LAMINATED MODULE FOR STACKING INTEGRATED CIRCUITS

N. Deepak Swamy, and Tom J. Kocis, both of Austin, Tex., assignors to Dell USA, LP, Austin, Tex.

Filed Jan. 18, 1995, Ser. No. 374,275
Int. Cl.[6] H01R *23/72;9/09;* **H05K** *1/11;7/02*
U.S. Cl. 361—790 **8 Claims**



1. A laminated module comprising:

an intermediate component having first and second opposite sides, said intermediate component having a plurality of spaced first vias extending through said intermediate component and terminating at the first and second opposite sides at a position offset from a plurality of intermediate component bonding pads electrically connected therewith;

a female component having third and fourth opposite sides, said female component having a plurality of spaced second vias extending through said female component and terminating at the third side as sockets and the fourth side as female component bonding pads in registry with the plurality of intermediate component bonding pads upon the intermediate component first side;

a male component having fifth and sixth opposite sides, said male component having a plurality of spaced third vias extending through said male component and terminating at the sixth side as pins and the fifth side as male component bonding pads in registry with the plurality of intermediate component bonding pads upon the intermediate component second side;

an area upon the first side of said intermediate component adapted for receiving an integrated circuit having electrical wires extending from said integrated circuit to said intermediate component bonding pads; and

wherein said intermediate component bonding pads, said female component bonding pads and said male component bonding pads each include a solder coating that, when one solder coated bonding pad is placed in registry and engaged with another solder coated bonding pad and thereafter heated, allows said bonding pads permanent fixture to one another.

5,613,034

METHOD AND APPARATUS FOR RECOGNIZING SPOKEN WORDS IN A SPEECH SIGNAL

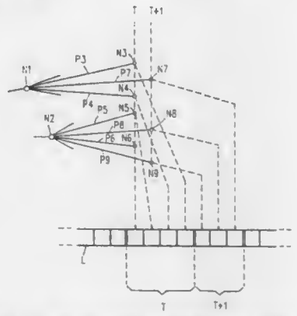
Hermann Ney, and Volker Steinbiss, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 944,560, Sep. 14, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 312,495

Claims priority, application Germany, Sep. 14, 1991, 41 30 632.5

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.6 **8 Claims**



1. A method for recognizing a sequence of words in a speech signal, said method comprising the steps of:

at recurrent instants, sampling said speech signal for generating a series of test signals and executing a signal-by-signal matching and scoring between said test signals and various series of reference signals from a unitary set of reference signal series that each represent a vocabulary word;

assigning a first score to any first string based on a first test signal of preliminarily recognized words terminating at said first test signal;

as from a particular second test signal subsequent to said first test signal, continuing said signal-by-signal matching and scoring for appropriate further series of reference signals of the above set so as to take along a backpointer to said first test signal indicating the terminated words until attainment of a subsequent word termination at a further first test signal, each such further series representing said subsequent word so producing a sub-score;

for each such further series, retrieving an n-gram language model score ($n \geq 2$) determined through a combined identity of said subsequent word and of (n−1) most recent vocabulary words at the preliminary recognized word string indicated by said backpointer;

adding said first score, said sub-score and said language model score for producing further said first score, an indication of said further first score, an indication of said subsequent word and said backpointer being stored in a region of a result list associated to said further first test signal;

selecting at least one minimum first score for so preliminarily recognizing a word string associated with said minimum first score.

5,613,035

APPARATUS FOR ADAPTIVELY ENCODING INPUT DIGITAL AUDIO SIGNALS FROM A PLURALITY OF CHANNELS

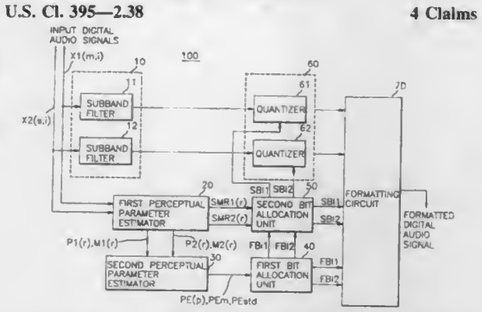
Jong-Il Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 367,521

Claims priority, application Rep. of Korea, Jan. 18, 1994, 1994-784

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.38 **4 Claims**



1. An apparatus for adaptively encoding input digital audio signals from N number of channels wherein each of the input digital audio signals includes a plurality of frames and each frame includes a plurality of subbands wherein N is a positive integer, which comprises:

N number of subband filtering means arranged in parallel for receiving and filtering the input digital audio signals, respectively, on a subband-by-subband basis;

first estimation means for estimating signal-to-mask ratio data, sound pressure levels and masking thresholds for the respective subbands included in each of the input digital audio signals;

second estimation means for estimating perceptual entropies for the respective frames included in each of the input digital audio signals based on the estimated signal-to-mask ratio data, sound pressure levels and masking thresholds and for deriving a mean and a standard deviation parameters for a frame group including N×M number of current and previous frames for the total N number of channels, which corresponds to the estimated perceptual entropies wherein M is a positive integer;

bit allocation means for adaptively determining bits for the respective subbands of the frame group based on the estimated signal-to-mask ratio data, perceptual entropies, and mean and standard deviation parameters and for generating bit allocation information corresponding to the determined bits for the respective subbands of the frame group;

N number of quantizing means arranged in parallel for quantizing the filtered subband audio signals for the N number of channels in response to the corresponding bit allocation information generated for the respective subbands of the frame group; and

means for formatting the quantized digital audio signals together with the bit allocation information.

5,613,036

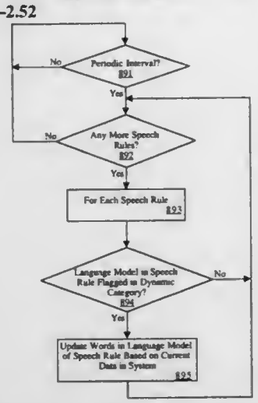
DYNAMIC CATEGORIES FOR A SPEECH RECOGNITION SYSTEM

Robert D. Strong, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 999,302, Dec. 31, 1992, abandoned. This application Apr. 25, 1995, Ser. No. 428,834

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.52 **13 Claims**



1. A method of maintaining dynamic categories for speech rules in a speech recognition system having an acoustic feature extractor which is separate from said speech rules, said method comprising the following steps:

a. creating a plurality of speech rules each comprising a language model and associated action to be performed in said speech recognition system, each said language model including a phrase list having a phrase comprising a sequence of words that may be recognized by a speech recognizer, each of said plurality of speech rules further comprising a dynamic flag identifying whether said words in said sequence of words are dynamic such that additional words may be added to the sequence of words and one of said words in said sequence of words is capable of being deleted from said sequence of words;

b. at periodic intervals during run time of said speech recognition system, for each dynamic flag in each said speech rule identifying that said words in said sequence of words are dynamic, dynamically determining said words in each said sequence of words based on data stored in said speech recognition system;

c. determining acoustic features in a sound sample, wherein said acoustic features are distinct from said speech rules; and

d. creating a current language model based upon each said language model from each of said plurality of said speech rules, and making said current language model available to the speech recognizer.

5,613,037

REJECTION OF NON-DIGIT STRINGS FOR CONNECTED DIGIT SPEECH RECOGNITION

Rafid A. Sukkar, Aurora, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

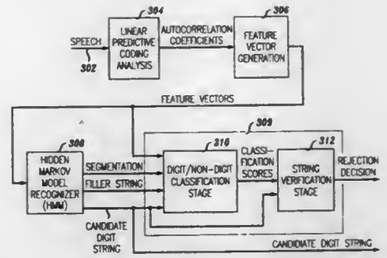
Filed Dec. 21, 1993, Ser. No. 171,071

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.65 **7 Claims**

1. A method usable in a speech processor for establishing whether speech signals comprising digitized speech represents a connected digit string, said speech signals being previously processed into feature vectors, the method comprising the steps of:

processing said feature vectors in a Hidden Markov Model (HMM) recognizer and determining a string of candidate digits and a string of filler models;



matching each candidate digit in said candidate digit string to a corresponding filler model in said filler model string;

generating a weighted sum for each candidate digit in said string of candidate digits and a weighted sum for each filler model in said string of filler models;

generating a confidence score for each candidate digit in said candidate digit string by subtracting said filler weighted sum from said digit weighted sum; and

comparing the resulting set of confidence scores to a threshold to determine whether a digit string has been detected.

5,613,038

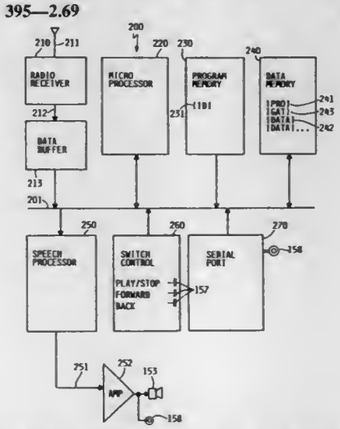
COMMUNICATIONS SYSTEM FOR MULTIPLE INDIVIDUALLY ADDRESSED MESSAGES

Charles A. Lemaire, and Bryan L. Striemer, both of Zumbrota, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,278

Int. Cl.[6] G10L *5/02;9/00*

U.S. Cl. 395—2.69 **8 Claims**



1. A portable communications receiver for receiving from a broadcast medium a stream of digitally coded messages each including a text portion directly representing the content of the message itself, and an address portion, comprising:

a demodulator for receiving said stream of messages from said medium;

a set of identifiers, including at least one identifier unique to said receiver;

means for comparing said identifier set with the address portion of all messages in said stream and for selecting those whose addresses match at least one identifier in said set;

means for storing the text portion of said selected messages in a sequence; and

switch means operable by a user of said portable communications receiver for choosing one message among said stored selected messages, and wherein said switch means includes

a first switch for sending a current one of said messages in said sequence to a text-to-speech conversion means, wherein said text-to-speech conversion means is coupled to said storing means and responsive to said switch means, for producing analog speech waveforms directly corresponding to the text portion of said one message,

a second switch for choosing a next message in said sequence as said current message, and wherein another operation of said second switch increases the speed of said text-to-speech conversion means,

a third switch for choosing a previous message in said sequence as said current message.

5,613,039

APPARATUS AND METHOD FOR MOTION DETECTION AND TRACKING OF OBJECTS IN A REGION FOR COLLISION AVOIDANCE UTILIZING A REAL-TIME ADAPTIVE PROBABILISTIC NEURAL NETWORK

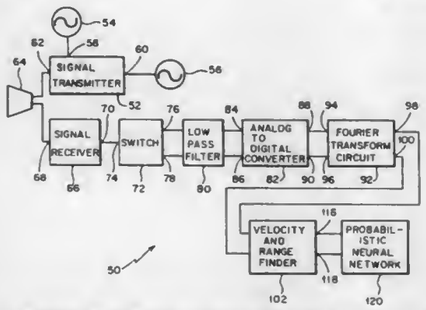
C. David Wang, Melville, and James P. Thompson, Greenlawn, both of N.Y., assignors to AIL Systems, Inc., Deer Park, N.Y.

Continuation-in-part of Ser. No. 648,194, Jan. 31, 1991, Pat. No. 5,276,772. This application Jan. 3, 1994, Ser. No. 177,359

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[6] G06F *15/18*; G01S *13/00*

U.S. Cl. 395—22 **20 Claims**



1. Apparatus for detecting and tracking motion of objects in a region for collision avoidance comprising:

a signal transmitter having an input port and an output port, the signal transmitter being responsive to first and second detection signals at the input port and transmitting the first and second detection signals from the output port to a spatial region, the first and second detection signals at least partially reflecting off at least one object located in the spatial region, the first detection signal having a first signal frequency and the second detection signal having a second signal frequency, the first signal frequency being substantially distinct from the second signal frequency,

a signal receiver being electrically coupled to the transmitter, the receiver having an input port and an output port, the signal receiver being responsive to the at least partially reflected first and second detection signals respectively corresponding to first and second object parameter data signals,

a probabilistic neural network processor being electrically coupled to the signal receiver and being responsive to the first and second object parameter data signals, the probabilistic neural network providing an output signal indicative of the proximity of an object detected in the spatial region; said probabilistic neural network including:

(a) a plurality of cluster processor circuits being responsive to the first and second object parameter data signals, each cluster processor circuit generating an output signal representing a probability density function estimation value corresponding to the received first and second object parameter data signals, each cluster processor circuit including:

(1) an input buffer memory circuit, the input buffer memory circuit having a plurality of serially connected registers for storing the first and second object parameter data signals assigned to a respective cluster processor circuit;

(2) a plurality of processing elements, each of the processing elements being coupled to a corresponding register of the input buffer memory circuit and being responsive to assigned first and second object parameter data signals stored in the input buffer memory circuit, each of the processing elements further being responsive to current unassigned first and second object parameter data signals, each processing element providing an output signal;

(3) a plurality of exponential function circuits, each of the exponential function circuits being coupled to a corresponding processing element, each exponential function circuit performing an exponential function on the output signal of each processing element and providing an output signal in response thereto; and

(4) a summation circuit coupled to each of the exponential function circuits of the respective cluster processor circuit, the summation circuit being responsive to the output signals from the exponential function circuits, performing an addition function thereon and providing an output signal representing a probability density function estimation value for each unassigned first and second object parameter data signal;

(b) a decision logic circuit, the decision logic circuit being coupled to the summation circuit of each cluster processor circuit, the decision logic circuit comparing the output signal of each summation circuit of the corresponding cluster processor circuit with at least first and second threshold value signals, and providing a decision address signal in response thereto;

(c) a switching circuit, the switching circuit being coupled to the decision logic circuit and to each of the cluster processor circuits and further being responsive to current unassigned first and second object parameter data signals and assigning the current unassigned first and second object parameter data signals to a respective cluster processor circuit for storage in the input buffer memory circuit of the respective cluster processor circuit in response to the decision address signal from the decision logic circuit, the switching circuit being electrically coupled to the input buffer memory circuit of each cluster processor circuit, the switching circuit assigning the current unassigned first and second object parameter data signal to the input buffer memory circuit of a currently operating cluster processor circuit if the summation circuit output signal representing a probability density function estimation value of the currently operating cluster processor circuit is at least equal to the first threshold value signal, the switching circuit assigning the current unassigned first and second object parameter data signal to the input buffer memory circuit of a newly operating cluster processor which was previously a non-operating cluster processor if the summation circuit output signal representing the probability density function estimation value of each currently operating cluster processor circuit is less than or equal to the second threshold value signal; and

(d) a storage register circuit, the storage register circuit being electrically coupled to the switching circuit, the switching circuit providing the current unassigned first and second object parameter data signals to the storage register circuit when the output signal of the summation circuit of each cluster processor circuit is less than the first threshold value signal and greater than the second threshold value signal, the unassigned first and second object parameter data signals being provided to the storage register circuit for later detailed analysis by the probabilistic neural network.

5,613,040

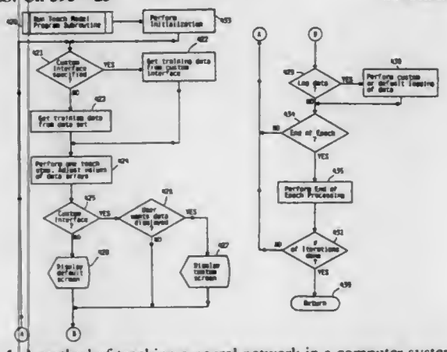
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 460,351

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **14 Claims**



1. A method of teaching a neural network in a computer system, the neural network having an input, an output for a result, comprising the steps of:

creating a neural network data structure in memory of the computer system, wherein the neural network data structure defines a structure and organization of a plurality of data arrays in the memory, wherein the plurality of data arrays have data types and an order within the neural network data structure, wherein the neural network data structure is common and generic to all of a plurality of defined neural network models, and wherein the plurality of data arrays have data values specific to a selected one of the plurality of defined neural network models;

presenting training data at said input of said neural network;

repeatedly adjusting the values of said plurality of data arrays until said result at said output is within tolerance of a correct result; and

locking the values of said plurality of data arrays responsive to said adjusting step.

5,613,041

METHOD AND APPARATUS FOR OPERATING NEURAL NETWORK WITH MISSING AND/OR INCOMPLETE DATA

James D. Keeler; Eric J. Hartman, and Ralph B. Ferguson, all of Austin, Tex., assignors to Pavilion Technologies, Inc., Austin, Tex.

Continuation of Ser. No. 980,664, Nov. 24, 1992, abandoned. This application Sep. 20, 1995, Ser. No. 531,100

Int. Cl.[6] G06F *15/18*

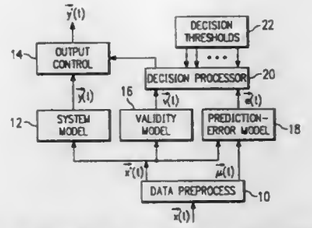
U.S. Cl. 395—23 **8 Claims**

1. A network for estimating error in a prediction output space of a predictive system model operating over a prediction input space as a prediction error, comprising:

an input for receiving an input vector comprising a plurality of input values that occupy the prediction input space;

an output for outputting an output prediction error vector that occupies an output space corresponding to the prediction output space of the predictive system model;

a processing layer for mapping the prediction input space to the prediction output space through a representation of the prediction error in the predictive system model to provide said output prediction error vector;



a preprocess input for receiving an unprocessed data input vector having associated therewith unprocessed data, said unprocessed data input vector associated with substantially the same input space as said input vector, said unprocessed data input vector having errors associated with the associated unprocessed data in select portions of the prediction input space; and

a data preprocessor for processing the unprocessed data in the unprocessed data input vector to minimize the errors therein to provide said input vector on an output.

5,613,042

CHAOTIC RECURRENT NEURAL NETWORK AND LEARNING METHOD THEREFOR

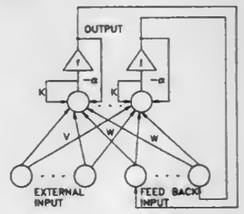
Ho-sun Chung, and Hye-young Tak, both of Taegu, Rep. of Korea, assignors to Gold Star Electroo Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 379,211

Claims priority, application Rep. of Korea, Feb. 14, 1994, 94-2540

Int. Cl.[6] G06E *1/00;3/00*

U.S. Cl. 395—24 **4 Claims**



1. A chaotic recurrent neural network comprising:

N neurons configured to receive an external input and the outputs of selected ones of said N neurons and performing an operation according to the following dynamic equations

$$\gamma_i Y_i(t+1) = \sum_{j \in I \cup E} W_{ij} Z_j(t) + kY_i(t) - \alpha X_i(t)$$

$$X_i(t) = f_i[Y_i(t)]$$

wherein W_{ij} is a synapse connection coefficient of the feedback input from the "j"th neuron to the "i"th neuron, $X_i(t)$ is the output of the "i"th neuron at time t, and γ_i, α and k are a time-delaying constant, a non-negative parameter and a refractory time attenuation constant, respectively, and wherein $Z_j(t)$ represents $X_j(t)$ when i belongs to the neuron group I and represents $a_j(t)$ when i belongs to the external input group E.

5,613,043

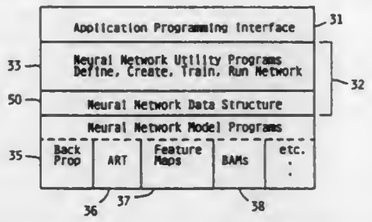
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 459,213

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—26 7 Claims



1. A program product for creating a default neural network data structure for a neural network in a computer system, comprising:

a recording medium containing instructions capable of being executed on the computer system;

means, recorded on the recording medium, for creating a common neural network data structure in memory of the computer system, wherein the common neural network data structure is common and generic to all of a plurality of defined neural network models, wherein the common neural network data structure defines a structure and organization of a plurality of data arrays in the memory, and wherein the plurality of data arrays have data types and an order within the neural network data structure;

means, recorded on the recording medium, for selecting a neural network model from the plurality of defined neural network models for said neural network;

means, recorded on the recording medium, for creating said default neural network data structure for said neural network model selected by said selecting means by inputting initial values for a plurality of data arrays into said default neural network data structure, wherein the default neural network data structure has the same structure and organization as the common neural network data structure;

means, recorded on the recording medium, for prompting for a plurality of parameters specific to said neural network; and

means, recorded on the recording medium, for inputting said plurality of parameters into said default neural network data structure.

5,613,044

LEARNING MACHINE SYNAPSE PROCESSOR SYSTEM APPARATUS

Gerald G. Pechanek, Endwell; Stamatis Vassiliadis, and Jose G. Delgado-Frias, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

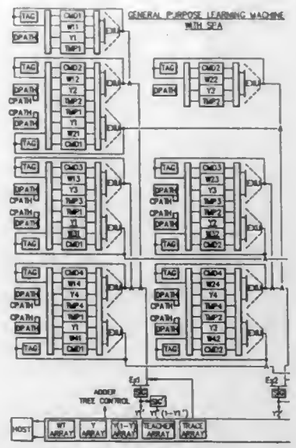
Continuation of Ser. No. 161,839, Dec. 1, 1993, Pat. No. 5,517,596, which is a division of Ser. No. 79,697, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 702,261, May 17, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,199

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 1 Claim

1. A computer system apparatus having a neural synapse processor architecture comprising:

an N neuron structure, where N is an integer greater than or equal to one, including N synapse processing units including means for storing instructions and data, means for receiving instructions and data, means in each synapse processing unit



for controlling a destination of instructions, data, and neuron output values, and means for executing instructions;

neuron activation function units;

communicating adder trees, wherein each communicating adder tree is connected to the synapse processing units at leaf nodes of the communicating adder tree and to one neuron activation function unit which is connected to a root of the communicating adder tree, each communicating adder tree thereby providing results to a programmable processor controlling apparatus;

means for communicating instructions, data, and outputs of the neuron activation function units back to input synapse processing units through said communicating adder trees; and

means for executing received instructions in each synapse processing unit, the means for executing received instructions including a programmable execution unit responding to instructions containing specifications of an operation mode, source, operands, result destination, and of immediate data.

5,613,045

DOCUMENT EDITING DEVICE AND METHOD

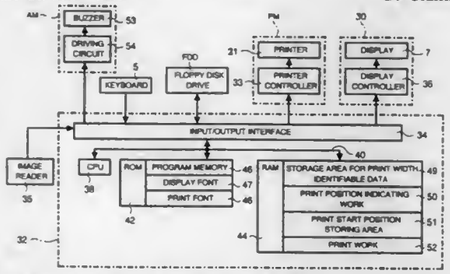
Yoshinari Morimoto, and Yuri Usami, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 21, 1995, Ser. No. 391,178

Claims priority, application Japan, May 30, 1994, 6-116912

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—102 20 Claims



1. A document editing device, comprising:

data storing means for storing print data having a variable print width in a print line direction, the print data comprising at least a number of dots in a lateral direction and a resolution of the print data;

main display means for providing a display;

print means for printing the print data on a print medium;

print width detecting means for detecting the print width in the print line direction of the print data stored in said data storing means, said print width of the print data is calculated based on at least the number of dots and the resolution of the print data; and

print width display means for displaying the print width detected by said print width detecting means on said main display means.

5,613,046

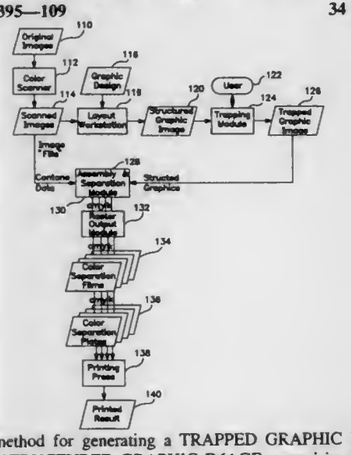
METHOD AND APPARATUS FOR CORRECTING FOR PLATE MISREGISTRATION IN COLOR PRINTING

Richard A. Dermer, Andover, Mass., assignor to Miles Inc., Wilmington, Mass.

Filed Mar. 31, 1993, Ser. No. 40,716

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—109 34 Claims



1. A method for generating a TRAPPED GRAPHIC IMAGE from an STRUCTURED GRAPHIC IMAGE comprising the following steps:

(A) generating a BOUNDARY MAP from the data representing said STRUCTURED GRAPHIC IMAGE, said BOUNDARY MAP containing a plurality of line segments and being unaffected by any trapping decisions, separation or rendering decisions made after the BOUNDARY MAP is generated;

(B) generating a TRAPPING MAP by defining stroke characteristics for some or all of the line segments making up said BOUNDARY MAP; and,

(c) combining said TRAPPING MAP with said data representing said STRUCTURED GRAPHIC IMAGE such as to cause said TRAPPING MAP to be superimposed upon said STRUCTURED GRAPHIC IMAGE when rendered for output processing.

5,613,047

APPARATUS HAVING SELF-REPAIRING FUNCTION AND METHOD OF SELF REPAIRING THE SAME

Yoshiki Shimomura; Sadao Tanigawa; Yukihiro Mori, all of Osaka; Yasushi Umeda, Tama; Tetsuo Tomiyama, and Hiroyuki Yoshikawa, both of Tokyo, all of Japan, assignors to Mata Industrial, Co., Ltd., Osaka, Japan

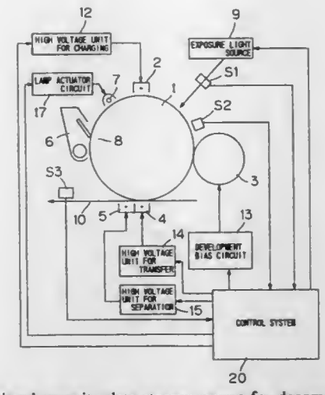
Filed Oct. 11, 1994, Ser. No. 344,812

Claims priority, application Japan, Oct. 8, 1993, 5-253487

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—113 16 Claims

1. An apparatus having a self-repairing function which implements a self-repair of a fault which prevents the apparatus from satisfactorily performing a given function, said apparatus comprising:



a functional quantity data storage means for decomposing said given function into a plurality of more specific lower-level functions, specifying for each of said plural lower-level functions a functional quantity indicative of a quantified functional degree of said each lower-level function, and storing preliminarily investigated characteristic data of the functional quantity indicative of a relationship between the functional quantity and a change in a physical parameter relative to the functional quantity;

a repair plan proposing means for suggesting a physical parameter which should be changed for the repair of the fault and a secondary effect which may be produced by a change in said physical parameter when the fault occurs;

a functional quantity calculation means for reading out of said functional quantity data storage means characteristic data of functional quantities of the lower-level functions corresponding to the suggested physical parameter and characteristic data of functional quantities of the lower-level function to be changed by the secondary effect, and calculating the most preferably balanced state of the read-out functional quantities of the lower-level functions for the repair of the fault; and

a self-repair implementation means for determining a change value of the physical parameter suggested by said repair plan proposing means based on the calculated functional quantity, and altering the physical parameter by the determined change value to implement a self-repair of the apparatus.

5,613,048

THREE-DIMENSIONAL IMAGE SYNTHESIS USING VIEW INTERPOLATION

Shenchang E. Chen, Sunnyvale, and Lance Williams, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 3, 1993, Ser. No. 100,923

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—119 21 Claims



1. A method for synthesizing views of a three-dimensional scene, comprising the steps of:

storing a plurality of two-dimensional images of the scene from different respective source viewpoints;

for each pair of images relating to adjacent viewpoints, determining and storing a map which identifies correspondence of pixels in the two images;

identifying a viewpoint located between at least two of said source viewpoints;

determining a coefficient relating to the location of said intermediate viewpoint relative to said source viewpoints;

morphing at least one of said images in accordance with said coefficient and the information contained in at least one of said maps to produce an interpolated image which defines the view from said intermediate viewpoint; and

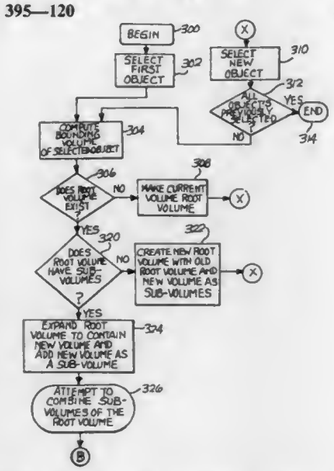
displaying the interpolated image.

5,613,049

METHOD FOR CREATING SPATIALLY BALANCED BOUNDING VOLUME HIERARCHIES FOR USE IN A COMPUTER GENERATED DISPLAY OF A COMPLEX STRUCTURE

Eric L. Brechner, Redmond, and Virgil E. Bourassa, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 26, 1994, Ser. No. 329,356
Int. Cl.[6] G06T *5/00*
U.S. Cl. 395—120 **43 Claims**



1. A method for processing an arbitrary collection of objects, represented by computer generated images thereof, into a hierarchy of bounding volumes, from a root volume bounding all objects, to sub-volumes bounding individual objects or assemblies thereof, for use as successive approximations to said objects, comprising the steps of:

a) creating bounding volumes for said objects;

b) processing selected bounding volumes through a predetermined combining algorithm to determine whether or not, based upon a geometric relationship between said bounding volumes and the root volume, the selected bounding volumes can be combined into a new volume representative of said selected bounding volumes, and with respect to those bounding volumes which can be combined:

c) creating a new bounding volume with said combined bounding volumes comprising sub-volumes thereof,

d) recursively applying steps b) and c) to said new bounding volume and treating the new bounding volume as the root volume and its combined volumes as the selected volumes,

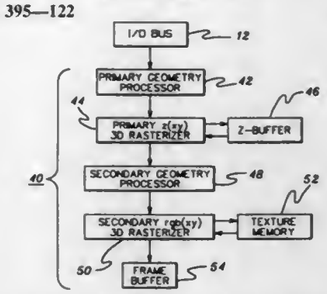
e) utilizing said new bounding volume as an approximation of the image of said sub-volumes in a computer generated display.

5,613,050

METHOD AND APPARATUS FOR REDUCING ILLUMINATION CALCULATIONS THROUGH EFFICIENT VISIBILITY DETERMINATION

Roland M. Hochmuth, Woodstock, and William L. Luken, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 6,002, Jan. 15, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,048
Int. Cl.[6] G06T *15/40*
U.S. Cl. 395—122 **27 Claims**



1. A computer graphics system for processing data for a sequence of graphical primitives and having a frame buffer coupled to a display device, comprising:

means for generating a plurality of pixels for each primitive in said sequence of graphical primitives;

means for determining whether respective current primitives in said sequence of graphical primitives are hidden or visible relative other primitives in said sequence of graphical primitives, a hidden determination indicating that no pixel of said current primitive will be displayed on said display device; and

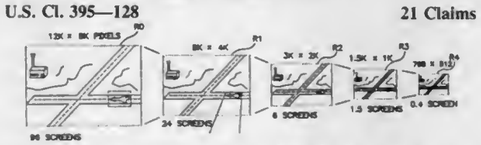
means for performing graphical calculations for only primitives of said current primitives determined as visible, said means for performing graphical calculations performing graphical calculations for each of said current primitives when, and as, determined to be visible.

5,613,051

REMOTE IMAGE EXPLOITATION DISPLAY SYSTEM AND METHOD

David M. Iodice, Melbourne, and David M. Bell, Palm Bay, both of Fla., assignors to Harris Corp., Melbourne, Fla.

Filed Dec. 21, 1994, Ser. No. 360,262
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—128 **21 Claims**



1. A system for displaying an image having a first level of resolution and being represented by a first set of digital data across a bandwidth-limited transmission medium, comprising:

reduced resolution generating means for creating plural, successively reduced resolution sets of digital data from said first set of digital data;

a digital storage means for storing said first set of digital data and said reduced resolution sets of digital data;

image display means remote from said digital storage means for visually displaying an image having a selective area;

a transmission medium operatively interconnecting said digital storage means and said image display means;

first control means for selecting an image area on said image display means;

second control means for automatically selecting and transmitting the appropriate one of said reduced resolution sets of digital data related to the size of a selected image area and a desired image resolution; and,

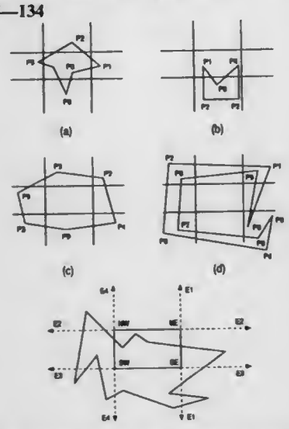
third control means for dynamically adjusting the resolution of the digital data transmitted to the image display means to the desired image resolution of the image area.

5,613,052

METHOD AND APPARATUS FOR CLIPPING AND DETERMINING COLOR FACTORS FOR POLYGONS

Chandrasekhar Narayanaswami, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1993, Ser. No. 116,238
Int. Cl.[6] G06T *15/30*
U.S. Cl. 395—134 **12 Claims**



7. A data processing system for clipping a graphical polygon to a clip region, said polygon being defined by a plurality of vertices with connecting edges, comprising:

processing means for processing data;

storage means for storing data to be processed; and

graphics processing means coupled to said processing means for processing graphical data, said graphics processing means including:

i) means for computing which vertices of a polygon to be displayed are discarded, the discarded vertices being not connected to an edge that intersects the clip region, and for computing at least one color factor only for vertices not discarded;

ii) means for computing boundary vertices on any edges that intersect a clip region boundary and for computing at least one color factor therefor by interpolating color factors previously computed for vertices connected to said edges;

iii) means for computing at least one color factor for each edge point within said clip region by interpolating color factors previously computed for vertices connected to said edge; and

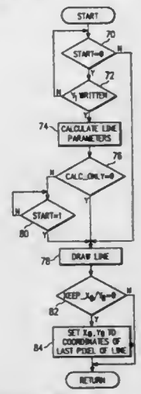
iv) means for displaying said vertices according to said computed color factors.

5,613,053

VIDEO GRAPHICS CONTROLLER WITH AUTOMATIC STARTING FOR LINE DRAWS

Thomas M. Albers; John V. Eberst; Darwin Fontenot; Richard L. Pyra, all of Houston; Mark W. Welker; Paul B. Wood, both of Spring, all of Tex., and Jack E. Bresenham, Rock Hill, S.C., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 21, 1992, Ser. No. 823,529
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—143 **40 Claims**



1. A computer system comprising:

a processing system;

a display; and

a graphics processor separate from said processing system coupled to said processing system and to said display, said graphics processor including:

circuitry for receiving a first value indicative of a set of coordinates of a first endpoint of a line in a first time period;

circuitry for storing a start control bit for selectively enabling determination of line data;

circuitry for receiving a second value indicative of a set of coordinates of a second endpoint of the line in a second time period subsequent to said first time period;

circuitry for sensing the reception of the second value by said circuitry for receiving the second value independent of the reception of the first value by said circuitry for receiving the first value; and

circuitry for automatically generating line data based on said first and second values responsive to the sensing circuitry and responsive to said start control bit.

5,613,054

VIDEO GRAPHICS CONTROLLER WITH IMPROVED CALCULATION CAPABILITIES

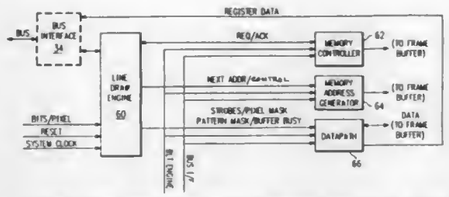
Thomas M. Albers; John V. Eberst; Darwin Fontenot; Richard L. Pyra, all of Houston; Mark W. Welker; Paul B. Wood, both of Spring, all of Tex., and Jack E. Bresenham, Rock Hill, S.C., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 260,607, Jun. 15, 1994, abandoned, which is a continuation of Ser. No. 822,992, Jan. 21, 1992, abandoned. This application Aug. 28, 1995, Ser. No. 520,040
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—143 **21 Claims**

1. Circuitry for drawing lines comprised of a plurality of pixels, comprising:

circuitry for receiving parameters defining first and second endpoints of a line;

circuitry for calculating line parameters based on said first and second endpoints, wherein said calculated line parameters



include a line error term which is updated after each pixel of the line is drawn to determine selection of a next pixel of the line;

circuitry for storing said calculated line parameters;

circuitry for selectively modifying the contents of said storing circuitry to redefine the calculated line parameters in response to a control signal prior to updating the line error term;

circuitry for drawing a line based on the contents of said storing circuitry.

5,613,055

METHOD OF AND APPARATUS FOR PRODUCING AN ANIMATION HAVING A SERIES OF ROAD DRAWINGS TO BE WATCHED FROM A DRIVER'S SEAT OF A VEHICLE

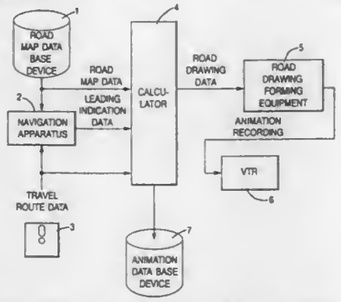
Hiroshi Shimoura, and Kenji Tenmoku, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 7, 1993, Ser. No. 86,899

Claims priority, application Japan, Jul. 14, 1992, 4-186834; Apr. 13, 1993, 5-086519

Int. Cl.[6] G06T *13/00;* **G08G** *1/133*

U.S. Cl. 395—173 **12 Claims**



1. A method of producing an animation having a series of three dimensional road drawings to be watched from a driver's seat of a vehicle during a travel between two predetermined positions in a road map, said three dimensional road drawings being formed on the basis of road data obtained through three dimensional computer graphics, and said road data being indicative of roads shown in said animation, comprising the steps of:

providing travel route data indicative of a travel route between said predetermined positions, and storing road map data including node data indicative of nodes formed by intersections, corners and ends of roads, link data indicative of links each connecting two of said nodes to define a road segment, and road width data indicative of widths of said road segment;

selecting the road map data covering said travel route based on the provided travel route data;

calculating the road data forming the series of three dimensional road drawings on the basis of the node and link data of the selected road map data to produce said animation having the series of three dimensional drawings; and

displaying said animation on a screen of a display.

5,613,056

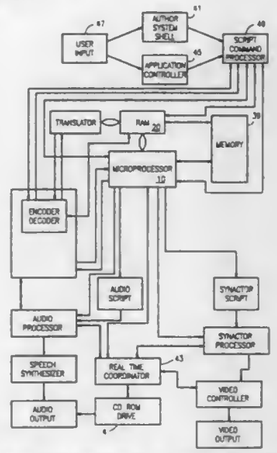
ADVANCED TOOLS FOR SPEECH SYNCHRONIZED ANIMATION

Elon Gasper, Bellevue; Joseph H. Matthews, III, Bothell, and Richard Wesley, Seattle, all of Wash., assignors to Bright Star Technology, Inc., Bellevue, Wash.

Division of Ser. No. 65,704, May 20, 1993, which is a continuation of Ser. No. 657,714, Feb. 19, 1991, abandoned. This application May 31, 1995, Ser. No. 457,269

Int. Cl.[6] G06T *13/00*

U.S. Cl. 395—173 **7 Claims**



1. An apparatus for providing an animated object with facial images synchronized to sound, the facial images corresponding to the sound; the sound defined by user inputted text, the apparatus comprising:

a programmed computer including memory, real-time random access animation and vivification engine drivers, a real-time controller and at least one microprocessor;

at least one input device coupled to the computer for inputting text to the computer;

means of the computer for instructing the computer: to retrieve prerecorded digitized sound corresponding to the user inputted text, to determine a time value for the digitized sound, to store the time value in the memory, to convert the user inputted text to a phonetic string, to use the phonetic string to convert the digitized sound into a list of phocodes, to provide an associated timing value for each of the phocodes, to map each of the phocodes with its associated timing value to form pairs of data, to store each of the pairs of data in tabular form in the memory, to add each associated timing value to provide a sum total, to compare the sum total obtained by adding each associated timing value to the time value for the digitized sound, and to proportionally adjust as necessary each associated timing value to make the sum total obtained by adding each associated timing value approximately equal the time value for the digitized sound;

audio output devices coupled to the computer for receiving the digitized sound and for providing the sound;

the computer for providing a sequence of the facial images corresponding to the pairs of data as adjusted as necessary; and

a display device coupled to the computer for displaying the sequence of the facial images;

the real-time controller of the computer for controlling displaying of the sequence of the facial images to the sound to provide the animated object with the facial images synchronized with the sound, the sound defined by the user inputted text.

5,613,057

METHOD FOR CREATING A MULTIMEDIA APPLICATION USING MULTIMEDIA FILES STORED IN DIRECTORIES THAT ARE CHARACTERISTICS OF DISPLAY SURFACE AREAS

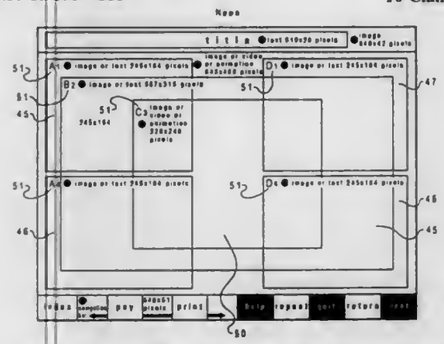
Muriel D. Caravel, Nice, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1994, Ser. No. 292,453

Claims priority, application European Pat. Off., Jan. 14, 1994, 94480008

Int. Cl.[6] G06T *11/60*

U.S. Cl. 395—806 **10 Claims**



1. A method for creating a multimedia application within a data processing system, said data processing system including a memory and a display device having a display screen, said method comprising:

storing a plurality of multimedia files representative of video or images information in a set of predetermined directories within said memory, wherein each directory within said set of directories is characteristic of one of a plurality of predetermined surface areas utilized to display image or video information contained within said plurality of multimedia files within said display screen;

in response to a request to create a multimedia application, providing a set of multimedia templates which are each comprised of a plurality of possibly overlapping zones, each of said plurality of zones having one among said plurality of predetermined surface areas;

providing a user with an opportunity to select a multimedia template within said set of said multimedia templates and displaying said selected multimedia template within said display screen;

in response to a selection of a particular zone among said plurality of zones within said selected multimedia template, displaying a window within said display screen containing a listing of multimedia files stored within a directory characteristic of a predetermined surface area of said particular zone;

in response to a selection of a multimedia file within said listing of multimedia files, automatically storing an entry in memory such that said selected multimedia file is associated with said particular zone;

constructing a screen of said multimedia application by repeating said steps of displaying a window and automatically storing an entry;

thereafter, in response to a request to build a script of said multimedia application, displaying a screen list containing a plurality of screens that can be included within said script;

in response to a selection of a particular screen among said plurality of screens within said screen list, adding said particular screen to a script list containing each selected screen and each linking navigation button within each screen of said script; and

associating each linking navigation button within said script list with a screen within said script to be displayed when said each linking navigation button is activated.

5,613,058

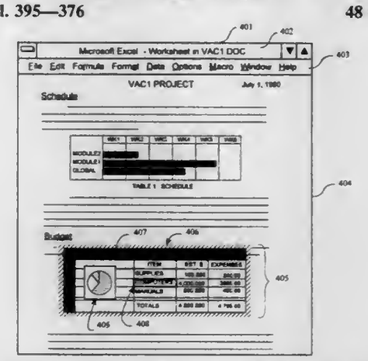
METHOD AND SYSTEM FOR IN-PLACE INTERACTION WITH CONTAINED OBJECTS

Srinivasa R. Koppolu; C. Douglas Hodges, both of Redmond; Barry B. MacKichan, Bainbridge Island, all of Wash.; Richard McDaniel, Pittsburg, Pa.; Rao V. Remala, Woodinville, and Antony S. Williams, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 984,868, Dec. 1, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 229,264

Int. Cl.[6] G06F *15/00;1/00*

U.S. Cl. 395—376 **48 Claims**



18. A computer system for activating a coatsinee object contained within a container object, the computer system having an operating system for scheduling execution of code, the container object having container application code with a container window environment with container resources for interacting with the container object file containce object having server application code with server resources for interacting with the containee object, the system comprising:

means for displaying the container window environment;

means for displaying the containee object within the displayed container window environment;

means for activating the containee object within the displayed container window enviromnent;

means for integrating and displaying a plurality of file server resources with the container resources of the displayed container window environment;

means for determining whether to execute the container application code or the server application code when a resource is selected from among the integrated and displayed server resources; and

means for executing the server application as a separately scheduled entity of the operating system when a server resource is the selected resource, and for processing the server resource selection.

5,613,059

ON-LINE RESTORATION OF REDUNDANCY INFORMATION IN A REDUNDANT ARRAY SYSTEM

David C. Stallmo; William A. Brant, and David Gordon, all of Boulder, Colo., assignors to EMC Corporation, Hopkinton, Mass.

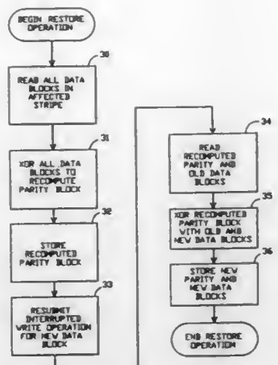
Continuation of Ser. No. 68,927, May 28, 1993, abandoned, which is a continuation of Ser. No. 632,182, Dec. 21, 1990, Pat. No. 5,235,601. This application Dec. 1, 1994, Ser. No. 349,766

The portion of the term of this patent subsequent to Dec. 21, 2007, has been disclaimed.

Int. Cl.[6] G06F *11/34;11/10*

U.S. Cl. 395—182.04 **62 Claims**

1. A storage device readable by a programmable control device when coupled to the storage device, the storage device containing a control program tangibly stored thereon, such that the control device is operated by the control program when the storage device



is read by the control device, the control device being operated to control a coupled redundant array of data storage units, the data storage units having at least one stripe containing a plurality of data blocks and at least one associated redundancy block, the control program being configured to operate the control device to perform restoration of a valid data block and at least one associated redundancy block to at least each affected data storage unit stripe after a potential corruption in either type of block during a data modification operation, such restoration being performed by the combination of the control program and the control device to perform the function of:

(a) accessing all of the data blocks, including the potentially corrupted data block, in each stripe containing the potentially corrupted blocks;

(b) computing at least one redundancy block from the accessed blocks;

(c) saving the at least one computed redundancy block;

(d) resubmitting the valid data block from the data modification operation to the redundant array of storage units for storage;

(e) updating the at least one saved computed redundancy block;

(f) storing the updated at least one redundancy block and the valid data block in the stripe.

5,613,060

ASYNCHRONOUS RESYNCHRONIZATION OF A COMMIT PROCEDURE

Kathryn H. Britton, Chapel Hill; Andrew P. Citron, Raleigh; James P. Gray, Chapel Hill, all of N.C.; Barbara A. M. Maslak, Endwell, and Timothy J. Thatcher, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 525,429, May 16, 1990, Pat. No. 5,139,773. This application Oct. 19, 1992, Ser. No. 963,889

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.13 **2 Claims**

1. A computer program product for operating a computer, said computer program product comprising:

a computer readable, magnetic medium;

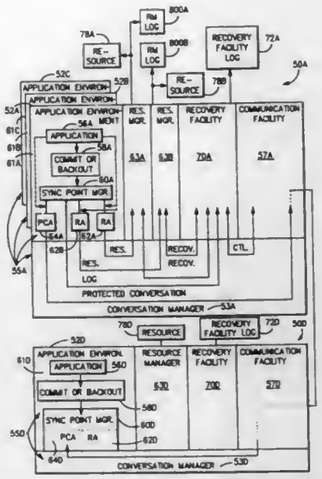
first program instruction means, recorded on said medium, for instructing a computer processor to control execution of an application which requests a work operation;

second program instruction means, recorded on said medium, for instructing a computer processor to attempt to implement a commit procedure for said work operation;

third program instruction means, recorded on said medium, for instructing a computer processor to notify said application that said application can continue with other operations if said commit procedure fails before completion, whereby said application need not wait for said commit procedure to be resynchronized; and

fourth program instruction means, recorded on said medium, for instructing a computer processor to recover from said failed commit procedure by resynchronizing said commit procedure asynchronously relative to said application; and

wherein each of said program instruction means is executable by the associated computer processor.



5,613,061

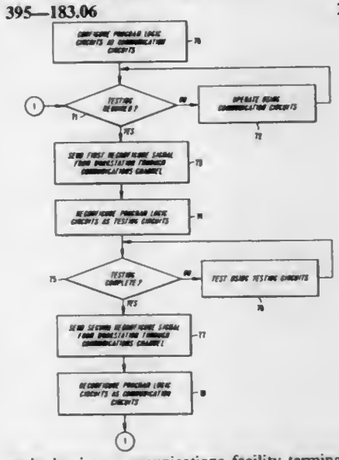
NETWORK CONTROLLER WITH RECONFIGURABLE PROGRAM LOGIC CIRCUITS CAPABLE OF PERFORMING BOTH CHANNEL SERVICE AND TESTING FUNCTIONS

Steven C. Taylor, Hillsborough, Calif., assignor to Verilink Corporation, San Jose, Calif.

Continuation of Ser. No. 304,202, Sep. 12, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,132

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.06 **24 Claims**



1. A method using communications facility termination equipment having a network controller, said network controller comprising program logic circuits, a processor, and a memory, for changing a function of said program logic circuits by configuring, from a workstation remotely located from the network controller and communications facility termination equipment, said program logic circuits as communications circuits and for reconfiguring, from said workstation, said program logic circuits as test circuits, comprising the steps of:

setting the program logic circuits as communications circuits for operating the communications facility termination equipment as a channel service unit;

performing, by the channel service unit, responsive to the communications-circuits-setting of the program logic circuits, channel service unit functions;

initiating, from the workstation, a first reconfigure signal;

sending the first reconfigure signal through a communications channel to the network controller;

setting, with the processor of the network controller, responsive to the first reconfigure signal, using software in the memory, the program logic circuits as test circuits for operating the channel service unit as a channel service unit test set; and

performing, by the channel service unit test set, responsive to the test-circuits-setting of the program logic circuits, testing functions.

5,613,062

LOGIC SIMULATOR

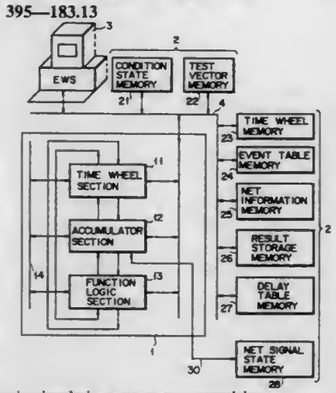
Tetsuya Hasebe, Tokyo; Hiroaki Hayashi, Sagamihara, and Kazuki Shinoda, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 639,893, Jan. 11, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 185,153

Claims priority, application Japan, Jan. 12, 1990, 2-4927; Jan. 12, 1990, 2-4928

Int. Cl.[6] G06F *17/50*

U.S. Cl. 395—183.13 **7 Claims**



7. A logic simulation apparatus comprising:

a memory unit for storing logical object data including data concerning an arrangement of a to-be-simulated logical object and data concerning an input signal to be input to said logical object; and

a logic simulator, connected to said memory unit, for executing logical simulation by free running in response to said memory unit,

wherein said logic simulator comprises:

a time wheel circuit for controlling a read timing of the logical object data from said memory unit;

an accumulator circuit connected to said time wheel circuit for executing a simulation concerning an arrangement of said to-be-simulated logical object in accordance with the logical object data read out from said memory unit, said accumulator circuit including a check circuit having at least one data input to which a data input signal is applied, a clock input to which a clock signal is applied, and an output, said check circuit comparing said data input signal with a predetermined data value at a timing determined by said clock input signal and producing at said output of said check circuit a timing error detection signal based on the comparison, and a memory cell having said data input signal applied to one input thereof, and the output signal of said check circuit applied from the output of said check circuit to another input of said memory cell, said memory cell having an output outputting said data input signal when said timing error detection signal indicates that no timing error has occurred and outputting a signal which exhibits neither a high level nor a low level when the timing error detection signal indicates a timing error has occurred;

a function logic circuit connecting to said time wheel circuit and said accumulator circuit for executing simulation concerning the operation of said to-be-simulated logical object in response to the simulation result obtained by said time accumulator circuit; and

means for executing said logic simulation without being controlled by said work station.

5,613,063

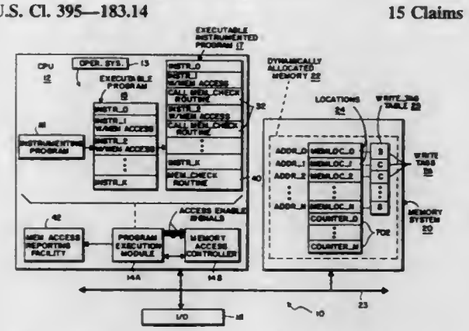
METHOD AND APPARATUS FOR CHECKING VALIDITY OF MEMORY OPERATIONS

Robert A. Eustace, and Louis Monier, both of Redwood City, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 270,061

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—183.14 **15 Claims**



1. A computer-implemented method for monitoring accesses by a computer program to a memory of a computer system for performing a plurality of operations including allocation operations, write operations and read operations; said method checking validity of each of a plurality of instructions of said computer program specifying at least one of said memory operations with respect to at least a specified one of a plurality of memory locations; said method comprising the steps of:

A) providing a plurality of write tags, each of the write tags corresponding to one of the memory locations;

B) initializing any of the memory locations that are uninitialized by performing the steps comprising (i) storing a preselected value, called "VALUEA," as contents in the uninitialized memory locations, and (ii) clearing the write tags corresponding to the uninitialized memory locations;

C) indicating allocation of the uninitialized memory locations by replacing the contents thereof with a preselected second value, called "VALUEB";

D) in association with each write operation, setting the corresponding write tag to a preselected write tag value; and

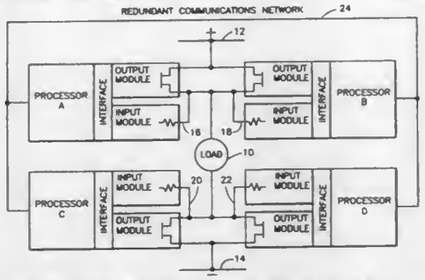
E) in response to the values of the write tags and the contents of the memory locations, determining whether each said allocation operation, read operation and write operation is valid.

5,613,064

OUTPUT NETWORK FOR A FAULT TOLERANT CONTROL SYSTEM

Keith W. Curtin, 1738 Old Forge Rd., Charlottesville, Va. 22901-2112

Filed Jan. 13, 1995, Ser. No. 372,181
Int. Cl.[6] G06F *11/08*
U.S. Cl. 395—184.01 **4 Claims**



1. A fault tolerant control system for coupling a load to a power source between a relatively positive voltage output bus and a relatively negative voltage output bus of the power source, the system comprising:

a first and a second logic controller, each of said controllers having an output module coupled in circuit between a first terminal of the load and the relatively positive voltage bus;

a third and a fourth logic controller, each of said third and fourth controllers having an output module coupled in circuit between a second terminal of the load and the relatively negative voltage bus;

a communication bus interconnecting said first, second, third and fourth logic controllers; and

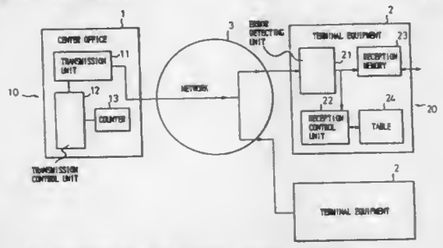
program means operable in said fourth logic controller for energizing said output module thereof only when said output modules of said first and second logic controllers are energized.

5,613,065

INFORMATION BROADCASTING SYSTEM HAVING RECEPTION ERROR MINIMIZING FACILITY

Ryoichi Ishibashi; Tetsuo Tachibana, and Tatsuru Nakagaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 19,578, Feb. 18, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,135
Claims priority, application Japan, Feb. 19, 1992, 4-031865; Mar. 19, 1992, 4-063795
Int. Cl.[6] G06F *11/00;11/34*
U.S. Cl. 395—185.01 **21 Claims**



1. An information broadcasting system, comprising:

a center office for providing information selectively read out from an information source storing various types of information;

a plurality of terminal equipment units for simultaneously receiving the same said information provided from the center office through a network in a point-to-multipoint configuration,

first means, which is provided in the center office, for repeatedly transmitting to the terminal equipment units, information with an added error check code, without interposition of a protocol for confirming if said information had been provided normally to the terminal equipment units via respective calls set up in said network for each of said terminal equipment units; and

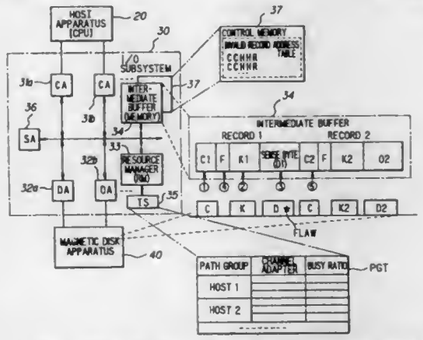
second means, provided in each of the terminal equipment units, for receiving said information from said center office via the corresponding said call set up in said network and ending reception of said information after confirming, using said error check code, that the information has been normally received at the terminal equipment units without the interposition of a protocol for confirming if said information provided from the center office was received normally and promptly disconnecting the corresponding call with said center.

5,613,066

DISK CONTROLLING METHOD AND APPARATUS FOR TRANSFERRING A RECORD FROM A DISK TO A HOST VIA AN INTERMEDIATE BUFFER

Hitoshi Matsushima; Tohru Kobayashi; Tadashi Kumasawa; Shoichi Murano; Jun Ishikawa, and Jun Katayama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Aug. 1, 1994, Ser. No. 284,003
Claims priority, application Japan, Oct. 1, 1993, 5-246650
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—185.02 **8 Claims**



1. A disk controlling method by a disk controlling apparatus provided between a host apparatus and a disk apparatus so as to store a record of a CKD format read from said disk apparatus into an intermediate buffer provided in said disk controlling apparatus, search said intermediate buffer for desired data and transfer said desired data to said host apparatus, said disk controlling method comprising the steps of:

monitoring whether or not a key portion or a data portion are normally read from said disk apparatus when said record of a CKD format read from said disk apparatus is written into said intermediate buffer; and

when said key portion or said data portion is not normally read,

creating sense data indicating the contents of an error,

writing said sense data in the area in said intermediate buffer in which said key portion or said data portion is to be written in place of said key portion or said data portion,

creating control information indicating that said sense data is written in said area,

writing said control information for each record at a predetermined position of said intermediate buffer,

searching for the record designated by a search command input from said host apparatus without outputting an error due to said sense data when said search command is a command for searching an area other than the area in which said sense data is stored,

judging whether or not said sense data is written in the area which is to be searched in accordance with a search command or a read command input from said host apparatus by reference to said control information for each record; and

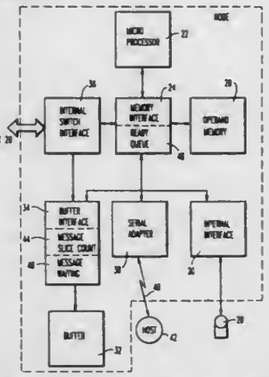
reporting said sense data as error information to said host apparatus if said sense data is written in said area.

5,613,067

METHOD AND APPARATUS FOR ASSURING THAT MULTIPLE MESSAGES IN A MULTI-NODE NETWORK ARE ASSURED FAIR ACCESS TO AN OUTGOING DATA STREAM

James T. Brady; Damon W. Finney, both of San Jose; Donald J. Lang, Cupertino; George B. Marenin, San Jose, and David Nowlen, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1993, Ser. No. 176,042
Int. Cl.[6] G06F *13/20;13/28*
U.S. Cl. 395—200.13 **14 Claims**



1. A method for assuring, in a multi-node data processing system, that plural messages are enabled access to a data stream, each node including means for controlling message transmission and/or reception from another node over a communication network, said method comprising the steps of:

a. transmitting a ready message from a first destination node to a source node, said ready message signalling a ready state of said first destination node to receive a data message;

b. transmitting a first data message to said first destination node from said source node in response to said ready message;

c. transmitting a conditional disconnect message from said first destination node to said source node upon receipt at said first destination node of at least a predetermined amount (i.e. a "slice") of said first data message; and

d. responding at said source node, upon receipt of said conditional disconnect message, by either:

1. disconnecting from said first destination node and commencing transmission of at least a slice of a second data message to a second destination node, if during transmission of said slice of said first data message, said source node received a ready message from a second destination node; or

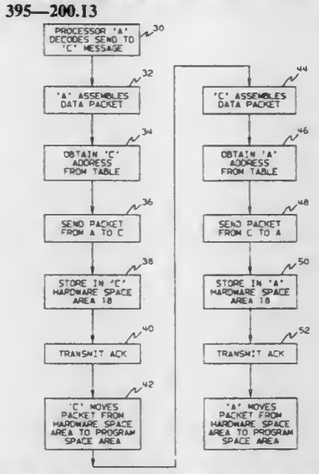
2. continuing transmission of said first data message to said first destination node until said first data message is completely transmitted or, if during continued transmission of said first data message, a new ready message is received from a further destination node, discontinuing transmission of said first data message and commencing transmission of at least a slice of another message to said further destination node.

5,613,068

METHOD FOR TRANSFERRING DATA BETWEEN PROCESSORS ON A NETWORK BY ESTABLISHING AN ADDRESS SPACE FOR EACH PROCESSOR IN EACH OTHER PROCESSOR'S MEMORY

Thomas A. Gregg, Highland; Robert S. Capowski, Verbank; Frank D. Ferraiolo, New Windsor; Marten J. Halma, Poughquag; Thomas H. Hillock, Woodstock, and Robert E. Murray, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1994, Ser. No. 262,081
Int. Cl.[6] G06F *9/24;12/08;13/38;15/16*
U.S. Cl. 395—200.13 **10 Claims**



1. A method for transferring data between central processor complexes that are interconnected in a network where each central processor complex comprises a processor, a main memory, and a port for sending and receiving data, said method including the steps of:

partitioning said main memory of each central processor complex into a program system area and a hardware system area;

assigning a system address space in said hardware system area of each central processor complex for each other central processor complex connected via said network;

establishing an address table link for each central processor complex linking an address in said system address space assigned in said assigning step to a central processor complex;

assembling data to be transmitted from one central processor complex to another central processor complex with an address to store said data in said hardware system area in said another central processor complex assigned to said one central processor complex; and

transmitting said data from said one central processor complex to said another central processor complex.

5,613,069

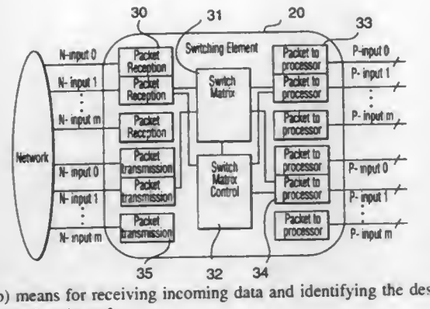
NON-BLOCKING PACKET SWITCHING NETWORK WITH DYNAMIC ROUTING CODES HAVING INCOMING PACKETS DIVERTED AND TEMPORARILY STORED IN PROCESSOR INPUTS WHEN NETWORK OUPUT IS NOT AVAILABLE

Tony Walker, 7316 Flewellyn Road, Stittsville, Ontario, Canada, assignor to Tony Walker, Stittsville, Canada

Filed Dec. 16, 1994, Ser. No. 357,335
Int. Cl.[6] G06F *13/00;13/14*
U.S. Cl. 395—200.15 **22 Claims**

1. A data transmission network comprising:

a) a plurality of packet switching nodes distributed throughout the network for transmitting data packets between a data source and destination;



b) means for receiving incoming data and identifying the destination thereof;

c) means for identifying a path through the network to said destination;

d) means for assembling incoming data into packets and including in said packets a plurality of routing codes respectively defining the path through successive switches in the network;

e) switching means in said packet switching nodes for interpreting said routing codes in incoming packets, said switching means having network inputs and network outputs and processor inputs and processor outputs corresponding respectively to said network inputs and said network outputs, said switching means routing said incoming packets to a designated said network output in accordance with said routing codes if a valid routing code is interpreted and said designated output is available and otherwise diverting said incoming packets to a corresponding processor input; and

f) a processor in said packet switching nodes connected to said processor inputs and processor outputs of said switching means, said processor receiving said diverted packets over said processor inputs and temporarily storing said diverted packets, said processor sending the diverted packets with a valid routing code back to the network over said processor outputs when the designated network output becomes available.

5,613,070

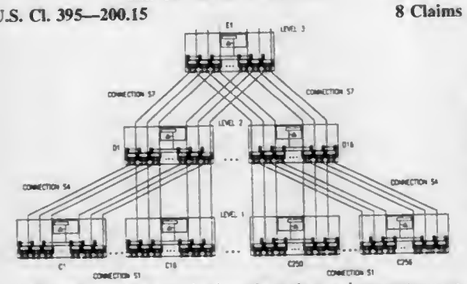
SYSTEM FOR PROVIDING IMPROVED COMMUNICATION TO DATA AND COMPUTER COMMUNICATIONS NETWORK USING PARALLEL AND SERIAL COMMUNICATION BUSES AND MASTER AND LOCAL ROUTERS

Eng C. Born, Richardson, Tex., assignor to Texas Instrument Incorporated, Dallas, Tex.

Division of Ser. No. 306,557, Sep. 15, 1994. This application Jun. 7, 1995, Ser. No. 473,612

Int. Cl.[6] G06F *15/80;13/20*

U.S. Cl. 395—200.15 **8 Claims**



1. A method of communications for a data and computer communications network, wherein said network includes a master system board with a plurality of subsystem boards, said method comprising:

transmitting informational packets to a network node from a first serial communications device through a serial communications bus, wherein said first serial communications device resides on a first subsystem board of said plurality of subsystem boards;

receiving informational packets to said network node from said first serial communications device through said serial communications bus;

transmitting and receiving informational packets from said first serial communications device to a second serial communications device through a first parallel communications bus; and

transmitting and receiving informational packets from said first serial communications device to a third serial communications device on a second subsystem board of said plurality of subsystem boards through a second parallel communications bus;

wherein said transmitting and receiving informational packets from said first serial communications device to said third serial communications device on said second subsystem board of said plurality of subsystem boards includes routing said informational packets by a first local router on said first subsystem board and a second local router on said second subsystem board;

wherein said routing said informational packets includes routing said informational packets by a parallel communications bus connecting said first local router and said second local router.

5,613,071

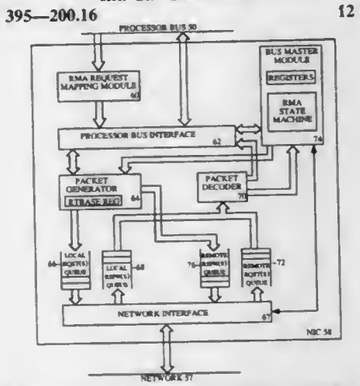
METHOD AND APPARATUS FOR PROVIDING REMOTE MEMORY ACCESS IN A DISTRIBUTED MEMORY MULTIPROCESSOR SYSTEM

Linda J. Rankin, Beaverton; Joseph Bonasera, Portland; Nitin Y. Borkar, Beaverton; Linda C. Ernst, Portland; Suvansh K. Kapur, Beaverton; Daniel A. Manseau, Portland, and Frank Verboorn, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 14, 1995, Ser. No. 502,071

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—200.16 **12 Claims**



1. In a massively parallel data processing system having a plurality of nodes, with the nodes connected together through a network, wherein each node includes a processor; a memory for storing data; a processor bus coupling the processor to the memory for facilitating communication and data transfer to and from the processor and the memory; and a remote memory access controller, coupled to the bus, for detecting and processing remote memory access requests, said remote memory access controller comprising:

(a) a remote memory access request mapping module coupled to the processor bus for detecting a remote memory access request;

(b) a processor bus interface coupled to the processor bus and the remote memory access request mapping module for providing an interface between the processor and the remote memory access controller;

(c) a packet generator coupled to the processor bus interface, said processor bus interface receiving a remote memory request, accessing a route table for network route information, and generating a request packet having said network route information, said request packet suitable for transmission on the network;

(d) a packet decoder coupled to the processor bus interface for decoding response packets and request packets into a corresponding response and request;

(e) a bus master module coupled to the packet decoder and to the packet generator, for implementing a remote memory access protocol; and

(f) a network protocol interface coupled to the network, said network protocol interface having at least two lanes, said network protocol interface receiving request packets from the network and sending response packets to the network and detecting network errors in the response and request packets, said network protocol interface adapted to handle multiple outstanding requests and responses.

5,613,072

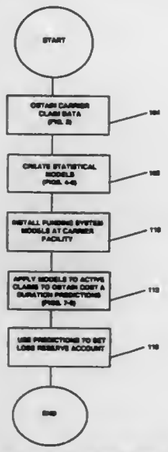
SYSTEM FOR FUNDING FUTURE WORKERS COMPENSATION LOSSES

Mark S. Hammond, Laguna Niguel; Vincent J. Bianco, Long Beach; James W. Bonk, Fullerton, all of Calif., and Jack Zwanziger, Rochester, N.Y., assignors to Risk Data Corporation, Irvine, Calif.

Continuation of Ser. No. 59,506, May 11, 1993, which is a continuation of Ser. No. 652,424, Feb. 6, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 456,492

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—204 **15 Claims**



1. A method for accurately predicting future losses to be incurred by an insurance carrier on insurance claims on a claim by claim basis, said method comprising the steps of:

collating historical data on insurance claims having known cost values and which are representative of expected future insurance claims to be funded and storing said historical data in a first memory storage area;

retrieving said historical data from said first memory storage area and generating one or more statistical models representative of said cost values of said historical insurance claims based upon significant characteristics of said historical insurance claims;

storing and maintaining said statistical models in a second memory storage area accessible by an insurance carrier;

storing information regarding active insurance claims including selected significant characteristics for each particular active insurance claim of said insurance carrier in a third memory storage area;

reading said information stored in said third memory storage area;

applying said models stored in said second memory storage area to said significant characteristics of each particular active insurance claim of said insurance carrier models to obtain an individual future cost prediction for each particular active claim;

calculating an individual reserve amount for each particular active claim based on the individual cost prediction for each particular active claim; and

placing money in a loss reserve account based on said calculated individual reserve amount for each particular active claim to fund future losses incurred on said particular active claim.

5,613,073

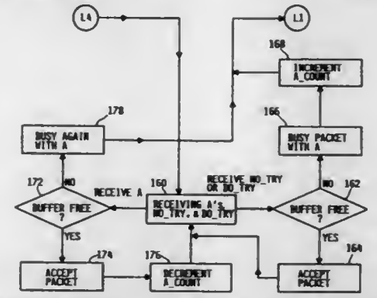
APPARATUS AND METHOD FOR A BUFFER RESERVATION SYSTEM

William A. Hammond, Jr.; Ross E. Johnson, both of Rochester, and George W. Nation, Eyota, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1994, Ser. No. 280,102

Int. Cl.[6] G06F *13/00;13/18;12/00*

U.S. Cl. 395—250 **11 Claims**



1. An apparatus for receiving data packets in a receiving node of a data processing network, said network comprising a plurality of nodes and a transmission medium for transmitting data packets among said nodes, said receiving node having a plurality of buffers for receiving data packets, each buffer of said plurality of buffers being in one of a free state, wherein said buffer is capable of receiving a data packet, and an occupied state, wherein said buffer is incapable of receiving a data packet, said receiving node issuing one or more reservation tokens to one or more sending nodes of said network for association with data packets being transmitted by said sending nodes, each said reservation token having an associated priority, said apparatus comprising:

means for detecting the presence of a first data packet being transmitted on said transmission medium from a first sending node;

means for determining whether the number of said buffers for receiving data packets in said receiving node being in said free state exceeds the number of outstanding reservation tokens having at least a first priority;

means for receiving said data packet into one of said buffers being in a free state if said determining means determines that the number of said buffers being in said free state exceeds the number of outstanding reservation tokens having at least said first priority; and

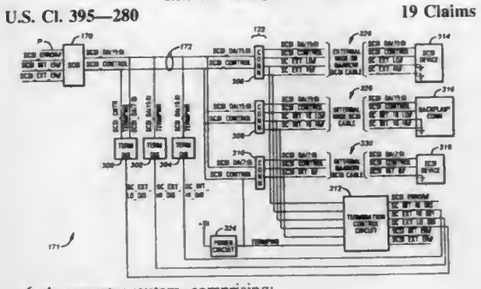
means for issuing said reservation token having a second priority lower than said first priority for association with said data packet if said determining means determines that the number of said buffers being in said free state does not exceed the number of outstanding reservation tokens having at least said first priority.

5,613,074

AUTOMATIC DISABLING OF SCSI BUS TERMINATORS

William C. Galloway, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 30, 1994, Ser. No. 366,510
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—280 19 Claims



6. A computer system, comprising:

a bus;

a processor coupled to said bus;

a SCSI bus coupled to said bus, said SCSI bus requiring termination at both ends of the SCSI bus, said SCSI bus having a first and a second data width portion, said SCSI bus for receiving SCSI devices of first and second data widths, the second data width being greater than the first data width and including the first data width;

a SCSI device coupled to said SCSI bus;

a first bus port which carries the second data width portion;

a first SCSI termination device connected near said first bus port for selectively terminating the first) data width portion of the SCSI bus;

a second SCSI termination device placed near said first bus port for selectively terminating the second data width portion of the SCSI bus other than the first data width portion; and

a termination control circuit coupled to said first SCSI termination device to said second SCSI termination device, and to said first bus port, said termination control circuit being adapted to detect if a first data width SCSI device is connected to said first bus port and if a second data width SCSI device is connected to said first bus port,

wherein said termination control circuit disables said first and second SCSI termination devices if a second data width SCSI device is detected,

wherein said termination control circuit disables said first SCSI termination device and enables said second SCSI termination device if a first data width device is detected, and

wherein said termination control circuit enables said first and second SCSI termination devices if neither a first or second data width SCSI device is detected.

5,613,075

METHOD AND APPARATUS FOR PROVIDING DETERMINISTIC READ ACCESS TO MAIN MEMORY IN A COMPUTER SYSTEM

Nicholas Wade, Folsom; Mark Lalich, Orangevale, both of Calif., and Bruce Young, Tigard, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 151,260, Nov. 12, 1993, abandoned. This application Jan. 12, 1996, Ser. No. 585,598
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—287 11 Claims

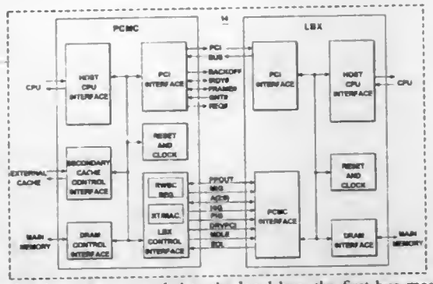
6. A computer system comprising:

a host central processing unit (CPU);

a local bus;

a main memory;

a first bridge circuit coupling the host CPU to the main memory and to the local bus, the first bridge circuit including a write buffer;



a first bus master coupled to the local bus, the first bus master arbitrating for access to the local bus to initiate and control operations on the local bus;

a secondary bus;

a second bridge circuit for transferring data therebetween the local and the secondary bus, the second bridge circuit including an arbitration circuit which controls access to the local bus in accordance with an arbitration algorithm;

the first bridge circuit further including a controller which asserts a back-off signal when the bus master requests a read access to the main memory through the local bus and the write buffer is posted with write data from the host CPU, the bus master responding to the back-off signal by retrying the read access within a certain period that guarantees the retrying bus master access to the main memory over any other non-CPU bus masters coupled to either the local or the secondary bus, the controller and arbitration circuit operating to flush the data in the write buffer and keeping the write buffer disabled even after the flush to ensure the blocked bus master will not be blocked again because of posted write data in the write buffer when the blocked bus master retries the desired main memory access, the flushing operation causing the requesting priority of the host CPU to drop to a level lower than that of the retrying bus master in accordance with the arbitration algorithm to endure access to the local bus by the retrying bus master over the host CPU; and

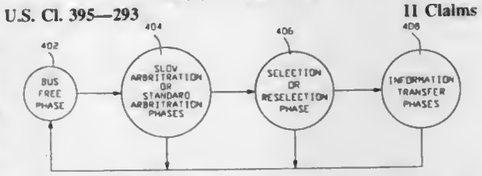
the bridge circuit further including signal monitoring means for detecting an idle condition on the local bus resulted from the bus master no longer making retry, the idle condition causing the write buffer to be reenabled for the host CPU.

5,613,076

SYSTEM AND METHOD FOR PROVIDING UNIFORM ACCESS TO A SCSI BUS BY ALTERING THE ARBITRATION PHASE ASSOCIATED WITH THE SCSI BUS

Farrukh Latif, Malvern, and Hung Nguyen, Downington, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 30, 1994, Ser. No. 352,051
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—293 11 Claims



I. A SCSI bus controller, implemented in a host device of a SCSI bus system having a SCSI bus and multiple peripheral devices, comprising:

first means for executing one or more user defined arbitration phases, each of said user defined arbitration phases comprising a SCSI standard specified arbitration phase delay period and a user defined delay period,

said first means having means for refraining from asserting a host device ID until after said user defined delay period when none of said multiple peripheral devices arbitrate during said SCSI standard specified arbitration phase delay period,

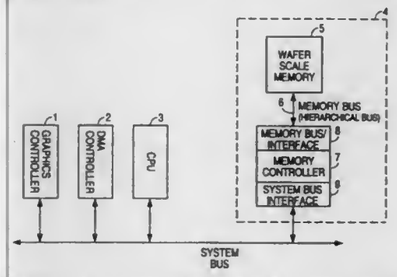
thereby providing the multiple peripheral devices an opportunity to sequentially gain control over the SCSI bus to complete previously issued I/O tasks prior to the host device issuing additional I/O commands.

5,613,077

METHOD AND CIRCUIT FOR COMMUNICATION BETWEEN A MODULE AND A BUS CONTROLLER IN A WAFER-SCALE INTEGRATED CIRCUIT SYSTEM

Wing Y. Leung, Cupertino, and Fu-Chieh Hsu, Saratoga, both of Calif., assignors to Monolithic System Technology, Inc., Santa Clara County, Calif.

Continuation of Ser. No. 927,564, Aug. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 865,410, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 787,984, Nov. 5, 1991, abandoned. This application Sep. 14, 1994, Ser. No. 307,496
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—306 34 Claims



I. A method for communication between a communicating module in a plurality of memory modules and a memory controller through a bus system having a set of signal lines, a set of control lines, and a plurality of bus transceivers, said method comprising the steps of:

transferring bus control signals through the set of control lines to said bus transceivers using an asynchronous scheme;

operating said bus transceivers in response to said bus control signals to control directions of signal transfer on said set of signal lines;

selectively enabling said bus transceivers in response to at least one of said bus control signals, and selectively disabling said bus transceivers in response to said at least one of said bus control signals, thereby dynamically controlling the configuration of said bus system; and then

using a source-synchronous scheme for transferring data, address and timing information through the set of signal lines, said timing information being driven by a source device from which the data information is sent, said timing information being used by a receiving device to latch in the data information.

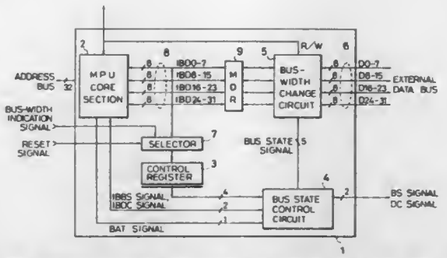
5,613,078

MICROPROCESSOR AND MICROPROCESSOR SYSTEM WITH CHANGEABLE EFFECTIVE BUS WIDTH

Hidechika Kishigami, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 149,384, Nov. 9, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,618
Claims priority, application Japan, Nov. 9, 1992, 4-298526
Int. Cl.[6] G06F *13/40;9/34*
U.S. Cl. 395—306 5 Claims

I. A microprocessor having a data bus-width change function for accessing instructions and data transferred to/from external device



means through external bus means consisting of a plurality of buses connected to said microprocessor, said microprocessor comprising:

processor core means comprising an instruction fetch unit for fetching an instruction and an execution unit for executing an instruction,

said instruction fetch unit generating a first control signal in order to fetch an instruction and transmitting said first control signal to said external device means during an instruction fetch bus cycle operation,

said execution unit generating a second control signal and transferring said second control signal to said external device means during a data access bus cycle operation,

internal bus means having a plurality of buses, connected to said processor core means and said external bus means, through which instructions and data are transferred to/from said processor core means;

bus-width memory means for storing first bus-width indication data indicating a bus-width of specified buses which are used in said external bus means during the instruction fetch bus cycle operation for fetching an instruction, and for storing second bus-width indication data indicating a bus-width of specified buses which are used in said external bus means during the data access bus cycle operation;

bus-width change means, connected between said internal bus means and said external bus means, for changing specified buses in said external bus means to connect specified buses in said internal bus means which are used during said instruction fetch bus cycle operation and said data access bus cycle operation; and

bus-width change control means connected to said processor core means and connected between said bus-width change means and said bus-width memory means, for receiving said first control signal, said second control signal transferred from said processor core means, said first bus-width indication data and said second bus-width indication data stored in said bus-width memory means, and for generating a signal for changing a bus-width of said external bus means based on said first control signal, said second control signal, said first bus-width indication data and said second bus-width indication data in order to transfer data with a specified bus-width of said external bus means.

5,613,079

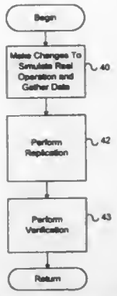
SYSTEM FOR VERIFYING THE PROPER OPERATION OF A REPLICATION FACILITY

Kirt Debique, and Balan S. Raman, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 230,324, Apr. 20, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 524,000
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—468 27 Claims

I. In a computer system having a storage with a name space containing logical structures and a multi-master replication facility for replicating said logical structures, a method for verifying proper operation of said replication facility, comprising the computer-implemented steps of:

providing a testing tool for verifying proper operation of said replication facility;



the testing tool making changes to selected ones of said logical structures within the name space at a first location in said computer system;

the testing tool logging information about said changes in a log held in said storage;

the replication facility replicating said selected logical structures to a second location in said computer system; and

the testing tool verifying that said changes to said selected logical structures were properly replicated to said second location in said replicating step to verify proper operation of said replication facility by examining the logged information in the log.

5,613,080

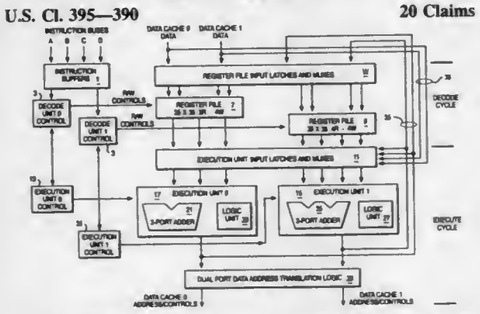
MULTIPLE EXECUTION UNIT DISPATCH WITH INSTRUCTION SHIFTING BETWEEN FIRST AND SECOND INSTRUCTION BUFFERS BASED UPON DATA DEPENDENCY

David S. Ray, Georgetown; Larry E. Thatcher, Austin, both of Tex., and Henry S. Warren, Jr., Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 305,507, Sep. 13, 1994, abandoned, which is a continuation of Ser. No. 123,828, Sep. 20, 1993, abandoned. This application Aug. 8, 1996, Ser. No. 695,750

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—390 **20 Claims**



1. A computer processing system including a first and second execution unit, comprising:

first and second instruction buffers, which receive instructions in a particular sequence from an instruction cache, corresponding to respective said first and second execution units for providing said instructions thereto;

means for interpreting whether said instructions in said first and second instruction buffers are independent instructions;

means for concurrently providing said instructions in said first instruction buffer and said instructions in said second instruction buffer to said first and second execution units, respectively, when said instructions in said first and second instruction buffers are determined to be independent; and

means for providing one of said instructions in said first instruction buffer to said first execution unit and concurrently moving one of said instructions directly from said second instruction buffer to said first instruction buffer and another of said instructions from said instruction cache to said second instruction buffer when said instruction in said second instruction buffer is dependent on the instruction in said first instruction buffer;

wherein said particular sequence of said instructions is maintained and executed in order.

5,613,081

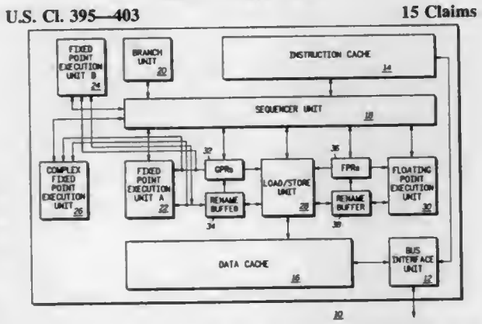
METHOD OF OPERATING A DATA PROCESSOR WITH RAPID ADDRESS COMPARISON FOR DATA FORWARDING

Bryan P. Black, and Marvin A. Denman, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 205,428, Mar. 4, 1994, abandoned. This application Sep. 11, 1995, Ser. No. 526,398

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—403 **15 Claims**



1. A method of operating a data processor comprising the steps of:

generating an address of a first requested data line in an execution unit of a data processor;

requesting a plurality of data lines from a memory system external to the data processor, the plurality of data lines comprising the first requested data line;

generating an address of a second requested data line in the execution unit, the address of the second requested data line being a sum of the address of the first requested data line and a predetermined value;

determining whether the plurality of data lines comprises the second requested data line responsive to adding the predetermined value to the address of the first requested data line;

asserting a control signal responsive to determining that the plurality of data lines comprises the second requested data line;

receiving each one of the plurality of data lines in the data processor; and

forwarding a selected one of the plurality of data lines to the execution unit before the selected one of the plurality of data lines is stored in a memory system internal to the data processor if a first subset of bits of the address of the selected one of the plurality of data lines is logically equivalent to a first subset of bits of the address of the second requested data line and if the execution unit asserts the control signal.

5,613,082

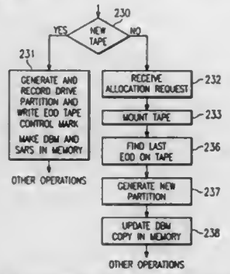
CONTROL OF RECORD MEDIA USING DEVICE ONLY ACCESSIBLE CONTROL AREAS AND DIRECTORY OF MEDIA CONTROL MARKS AND ERROR HISTORY

Michael A. Brewer; Alex Chliwnyj; Dale A. Christiansen; James W. Wolf, and Will A. Wright, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,478

Int. Cl.[6] G06F *9/26;9/34;12/00;12/02*

U.S. Cl. 395—404 **24 Claims**



18. A method of recording data onto and reading data from a data storage medium wherein a drive supports and provides access to the storage medium and a host means sends and receives data to and from the drive for recording on and reading from the storage medium, said storage medium and a head being relatively movably mounted in the drive for accessing portions of the record storage medium for recording data onto and reading data from the storage medium, including the steps:

establishing a directory having first directory contents in a first portion of said storage medium that indicates physical locations of data blocks stored in said storage medium;

indicating in a first partition that said storage medium is not mounted to said drive;

reading a copy of said first directory contents from said first partition into a memory in said drive;

then changing said indication in said first partition that said storage medium is mounted in said drive and that said directory is not a valid copy of the first directory contents

in said drive, generating a first plurality of diverse types of medium control blocks;

recording data onto the record medium as recorded data;

in said recording medium, interleaving and recording a second plurality of said medium control blocks among said recorded data at respective predetermined physical locations in said storage medium; and

in said first portion recording a second directory for respectively identifying each said type of medium control blocks including indicating said predetermined physical locations in the second directory for each said medium control block identified therein.

5,613,083

TRANSLATION LOOKASIDE BUFFER THAT IS NON-BLOCKING IN RESPONSE TO A MISS FOR USE WITHIN A MICROPROCESSOR CAPABLE OF PROCESSING SPECULATIVE INSTRUCTIONS

Andrew F. Glew, Hillsboro; Haitham Akkary, and Glenn J. Hinton, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1994, Ser. No. 316,089

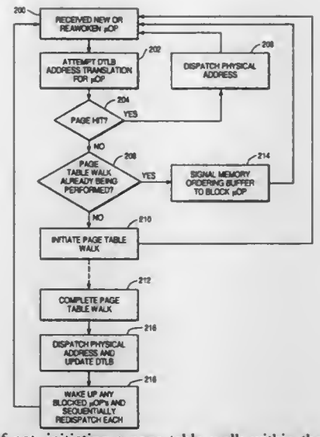
Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—417 **30 Claims**

I. In a microprocessor having a translation lookaside buffer and a page miss handler, a method for processing virtual address to physical address translations, said method comprising the steps of:

receiving a first instruction having a first virtual address to be translated into a physical address;

determining whether the physical address corresponding to the first instruction is stored in the translation lookaside buffer



and if not, initiating a page table walk within the page miss bander for determining the physical address, otherwise outputting the physical address corresponding to the first instruction;

receiving a second instruction having a second virtual address to be translated into a physical address;

determining whether the physical address corresponding to the second instruction is stored in the translation lookaside buffer;

if the physical address of the second instruction is not stored in the translation lookaside buffer and the page miss handler is busy completing a page table walk,

blocking the second instruction until the page table walk for the first instruction is complete, then

re-attempting the address translation for the second instruction;

if the physical address for the second instruction is stored in the translation lookaside buffer,

outputting the physical address corresponding to the second instruction; and

completing the page table walk for the first instruction.

5,613,084

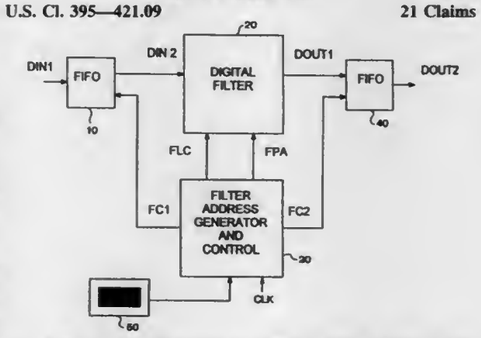
INTERPOLATION FILTER SELECTION CIRCUIT FOR SAMPLE RATE CONVERSION USING PHASE QUANTIZATION

Clarence J. Hau, Mt. Laurel, and Jerome D. Shields, Atco, both of N.J., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Filed Oct. 4, 1994, Ser. No. 317,474

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—421.09 **21 Claims**



1. A filter selector for generating a filter address value to select one of a plurality of filter characteristics to resample first data from a first segment of data to generate second sampled data in a second segment of data, the filter selector comprising:

means for adding a resampling factor to a previous address value to generate a current address value if the previous address value is less than a comparator value;

means for subtracting the comparator value from the previous address value to generate the current address value if the previous address value is not less than the comparator value; and

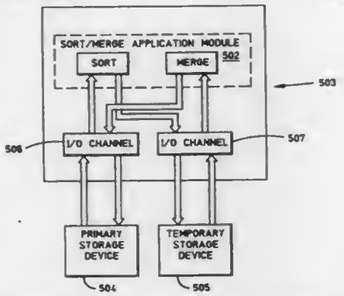
means for shifting the current address value by nbits bits to generate the filter address value where nbits is an integer and defines a number of bits for a phase quantization.

5,613,085

SYSTEM FOR PARALLEL STRIPING OF MULTIPLE ORDERED DATA STRINGS ONTO A MULTI-UNIT DASD ARRAY FOR IMPROVED READ AND WRITE PARALLELISM

Paul K.-W. Lee, San Jose, Calif., and Zvi Y. Yehudai, Haifa, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1994, Ser. No. 364,572
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—441 **38 Claims**



1. A method for storing and retrieving sorted strings in an array of DASD units to improve parallelism during subsequent merge operations, each DASD unit comprising multiple disks configured with at least one track where each disk of a DASD unit corresponds to one disk of each of the other DASD units, wherein a logical block comprises an aggregate of identically-sized locations from identically-positioned tracks of corresponding disks from each DASD unit, and wherein all identically-positioned tracks of all disks together from a logical array cylinder, said method comprising the steps of:

receiving multiple data strings from a computing system, each string being divisible into a number of ordered string-blocks;

storing the strings in the DASD array by striping catch string evenly across all of the DASD units, such that each logical block contains one string-block from each string and each string-block within a logical block has the same order relative to its string as the other string-blocks to their corresponding strings; and

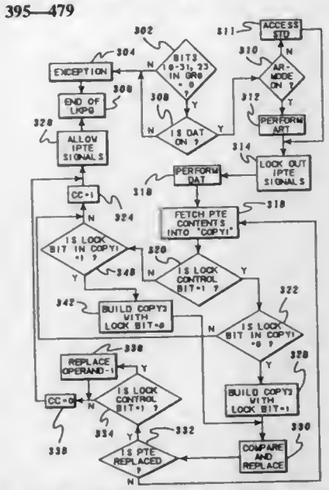
for each one of at least one predetermined logical block, simultaneously reading all string-blocks within the predetermined logical block.

5,613,086

METHOD AND SYSTEM FOR LOCKING A PAGE OF REAL STORAGE USING A VIRTUAL ADDRESS

Jeffrey A. Frey, Fishkill; David C. Manners, Wappinger Falls, and Jeffrey M. Nick, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 886,273, May 20, 1992, abandoned.
This application Dec. 6, 1995, Ser. No. 567,861
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—479 **8 Claims**



1. A method for selectively controlling locking and unlocking of one or more page frames in a real storage (random access memory) of a data processing system containing one or more central processors (CPUs), said method including the steps of:

controlling a set of general registers in a CPU by a current user of the CPU having access to one or more user-accessible virtual memory pages of the data processing system,

setting a lock control field in one of the general registers to one of plural control states for controlling both locked and unlocked states of the one or more user-accessible virtual memory pages,

selecting by a user one or more of the user-accessible virtual memory pages to be locked and unlocked by providing in a program one or more lock-control (LKPG) instructions having virtual addresses of each user-accessible virtual memory page to be locked and unlocked,

executing the program provided with the one or more lock-control (LKPG) instructions to lock and unlock the selected virtual memory pages according to the control state of the lock control field, each executed LKPG instruction having one or more virtual address operands for selecting one or more of the virtual memory pages, the execution of each LKPG instruction also comprising the steps of:

translating each virtual address in the operand of each LKPG instruction to a real address of an associated real page frame backing a virtual page for the translated virtual address in the real storage, a page table entry (PTE) accessed by the translation process containing a lock indicator field for controlling the locked and unlocked state of the associated real page frame in the real storage,

determining whether said associated real page frame is resident in the real storage by a valid state existing for the PTE, and copying the associated page frame into the real storage if not indicated as being in the real storage; and

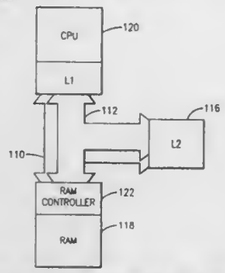
testing the control state of the lock control field during execution of each LKPG instruction, and during the execution of each of the one or more LKPG instructions setting a lock indicator in each associated PTE to the control state of the lock control field to indicate in the PTE a corresponding locked or unlocked state for an associated real page frame to lock and unlock the one or more associated page frames in said real storage during execution of the program.

5,613,087

CACHE TESTING USING A MODIFIED SNOOP CYCLE COMMAND

Henry Chin, Wappingers Falls, and George Totolos, Jr., Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1995, Ser. No. 392,614
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—481 **18 Claims**



1. In a computer system cache which has a tag array that stores address and status bits for data stored in a data array of the cache, wherein the states of the status bits are generated in internal control circuitry for the cache, apparatus for accessing the bit positions of the tag array independently of internal control circuitry from an external interface of the cache comprising:

a) detection circuit means responsive to a modified system access request to generate a testing mode operation signal, wherein the system access request is a request for data stored in said cache with a specific status identified by said status bits in said tag array;

b) logic means in the control circuitry responsive to said testing mode signal to load addressing bits for the tag array and data bits to be stored in the tag array from the address and control bit interface; and

c) independent test path means to the tag array responsive to said testing mode operation signal to permit both reading and writing in both address and status bit locations of the tag array.

5,613,088

RAID SYSTEM INCLUDING FIRST AND SECOND READ/WRITE HEADS FOR EACH DISK DRIVE

Kyosuke Achiwa, Hino; Akira Yamamoto, Sagamihara; Tetsuhiko Fujii, Kawasaki; Takao Satoh, Sagamihara, and Masafumi Nozawa, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

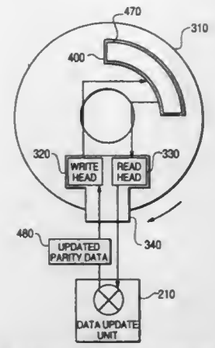
Filed Jul. 26, 1994, Ser. No. 273,171
Claims priority, application Japan, Jul. 30, 1993, 5-189622
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—482 **33 Claims**

1. A storage system having one or more disks as data storage mediums, each including a plurality of data records comprising:

a first head which reads data stored in a data record;

a second head positionable over the data record from which said first head has read data and being spaced from said first head a distance sufficient to produce a time delay of a predetermined amount when said data record moves from a position under said first head to a position under said second head, said second head performing a write operation into the data record when said data record moves to a position under said second head;

an actuator having said first head and said second head securely mounted thereon and performing a seek operation; and



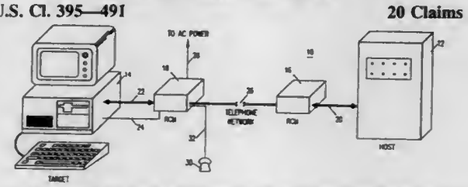
an updated data generator means for causing said first head to read said data stored in the data record, for generating new data from the data thus read out, and for causing said second head to write the new data into said data record when said data record moves sequentially from a position under said first head to a position under said second head.

5,613,089

METHOD AND APPARATUS FOR REMOTELY CONTROLLING AND MONITORING THE USE OF COMPUTER SOFTWARE

Gary D. Hornbuckle, Pebble Beach, Calif., assignor to SofTel, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 395,617, Feb. 28, 1995, Pat. No. 5,497,479, which is a continuation of Ser. No. 509,979, Apr. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 345,083, Apr. 28, 1989, abandoned. This application Feb. 22, 1996, Ser. No. 605,397
Int. Cl.[6] G06F *13/00;12/14*
U.S. Cl. 395—491 **20 Claims**



1. Apparatus for remotely controlling and monitoring the use of a computer game program comprising:

first and second computers, said first computer having storage memory for storing computer game programs, and having communication circuits for communicating with said second computer for downloading said computer game programs to said second computer and for monitoring the use of said computer game programs by said second computer, said first computer remotely controlling said second computer to transmit at predetermined times data indicating elapsed time of use of said downloaded computer game programs;

said communication circuits including a first transmitter and receiver at said first computer, and a second transmitter and receiver at said second computer;

said first transmitter and receiver and said second transmitter and receiver including a microprocessor for control thereof, a program memory for storage of a program executed by said microprocessor, a read/write memory, a real time clock for enabling measurement of elapsed time of use of said downloaded computer game programs, and a modem for sending and receiving data;

an interface device coupled between said second computer and said second transmitter and receiver for adapting said second transmitter and receiver to said second computer, said second computer being provided with a slot for receiving computer

game cartridges, said interface device formed as a plug-in adapter that mates with said slot provided in said second computer;

an encryption device coupled to said first computer and to said first transmitter and receiver for encrypting at least one preselected portion of downloaded computer game programs to be transmitted from said first transmitter and receiver to form an encrypted information module, said encryption device including a first encryption key for encrypting said encrypted information module, said preselected portion including at least one portion of a computer program essential to the correct execution thereof;

a decryption device coupled to said second transmitter and receiver for decrypting said encrypted information module to form a decrypted information module, said decryption device including a copy of said first encryption key for decrypting said encrypted information module; and

a transfer circuit for transferring said decrypted information module to said second computer for execution by said second computer and for deleting said decrypted information module from said second computer when execution by said second computer of the received program and program information is entirely completed.

5,613,090

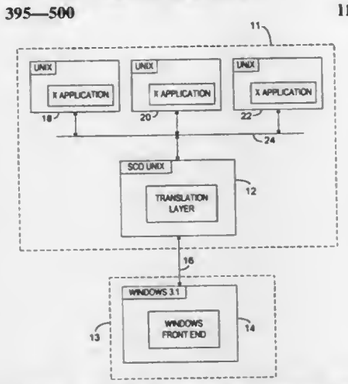
COMPUTER SYSTEM FOR DISPARATE WINDOWING ENVIRONMENTS WHICH TRANSLATES REQUESTS AND REPLIES BETWEEN THE DISPARATE ENVIRONMENTS

Richard A. Willems, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 5, 1993, Ser. No. 132,141

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—500 **11 Claims**



1. A computer system for disparate environments, wherein an application is executing in said first windowing environment, the computer system comprising:

a network, including a plurality of personal computers and means for connecting said plurality of personal computers together in a manner which enables communications there between;

said plurality of personal computers including at least one personal computer of a first type operating in a first windowing environment and one or more personal windowing computers of a second type operating in a second windowing environment;

a translation layer receiving replies and providing requests according to said first windowing environment and providing requests and receiving replies according to an intermediate format and

a front end compatible with said second windowing environment and communicating with said translation layer, said front end receiving replies and providing requests according to said intermediate format and receiving requests and providing replies according to said second windowing environment,

wherein said translation layer comprises:

first protocol interface means for interfacing said first windowing environment in accordance with a first protocol;

first means for converting a plurality of requests from said application in said first windowing environment into a corresponding plurality of requests of said intermediate format;

second means for converting a plurality of replies in said intermediate format from said front end into a corresponding plurality of replies for said first windowing environment;

third means for converting a plurality of event codes in said intermediate format from said front end into a corresponding plurality of event codes for said first windowing environment;

fourth means for converting a plurality of error codes in said intermediate format generated by said front end into a corresponding plurality of error codes for said first windowing environment; and

second protocol interface means for interfacing to said front end in accordance with an intermediate protocol.

5,613,091

DATA COMPRESSION

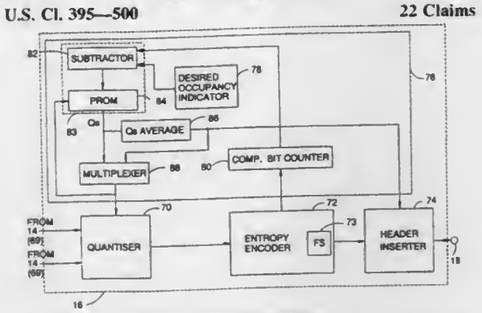
Jonathan J. Stone, Mortimer, and Terence R. Hurley, St Brides Major, both of United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Oct. 27, 1993, Ser. No. 141,609

Claims priority, application United Kingdom, Dec. 22, 1992, 9226698

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—500 **22 Claims**



1. A signal processing system comprising:

data compression means for compressing an input block of data samples including a plurality of sub-blocks, each sub-block including an array of data samples, into a block of compressed data; and

sequencing means for accessing said data samples of said input block to be passed to said data compression means with said sub-blocks being accessed in a predetermined first order and data samples within each said sub-block being accessed in a predetermined pseudo-random order such that successively accessed locations in said array of data samples for a sub-block are scattered throughout that sub-block and such that the order in which any one data sample is accessed cannot be predicted from the order in which other data samples in that sub-block are accessed,

wherein said sequencing means sequentially accesses said sub-blocks in said first order a number of passes equal to the number of data samples per sub-block and with one data sample per sub-block being selected on each pass, the location of said data sample selected from each sub-block on successive passes being determined in accordance with said pseudo-random order.

5,613,092

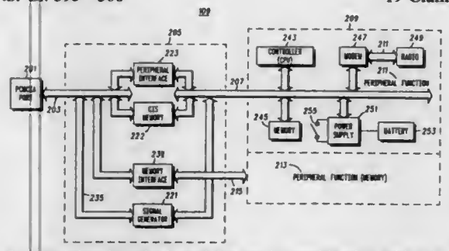
PERIPHERAL CARD HAVING AN ADAPTIVE PCMCIA COMPLIANT INTERFACE

Ricardo Lim, Richmond; David Russo, Burnaby; Barry Moss, Matsqui, all of Canada, and Charles W. Bethards, Crystal Lake, Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 1, 1994, Ser. No. 299,383

Int. Cl.[6] G06F *13/00;15/177*

U.S. Cl. 395—500 **19 Claims**



1. A peripheral card adapted for use in combination with a host processor, the card, comprising:

an RF modem;

a host interface unit;

a first bus coupling the RF modem to the interface unit; and

a second bus coupled to the interface unit and adapted for coupling the interface unit to the host processor,

wherein;

the interface unit comprises a peripheral unit status signal generator having an input coupled to the RF modem via the first bus and an output adapted for coupling to the host processor via the second bus for outputting first and second status signals indicative of first and second statuses, respectively, of the peripheral card to the host processor;

said RF modem comprises a processor for controlling the signal generator to output one of the first and second status signals; and

the peripheral card further comprises a configuration memory coupled to the RF modem processor and the second bus for storing card configuration data and for read access by the host processor, the RF modem processor also having write access to change the card configuration data.

5,613,093

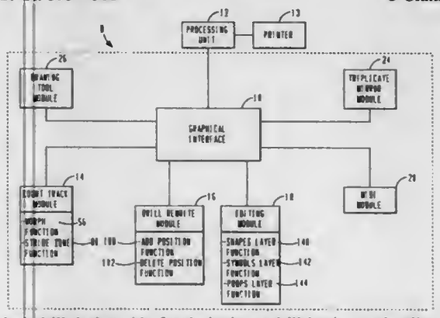
APPARATUS AND METHOD FOR DRILL DESIGN

George P. Kolb, 3311 Teasley La., Denton, Tex. 76205

Filed Oct. 12, 1994, Ser. No. 321,914

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—500 **8 Claims**



1. A drill design aide for designing a drill having a plurality of positions comprising:

a graphical interface for generating a display of a drill being designed and providing access to a plurality of modules;

a drawing tool module for creating and editing the drill displayed by the graphical interface; and

a count track module for editing a previously generated first drill formation to create a second drill formation and generating each formation occurring between the first drill formation and the second drill formation, said count track module including a stride zone function for determining the maximum area a formation may move within during a preselected number of counts.

5,613,094

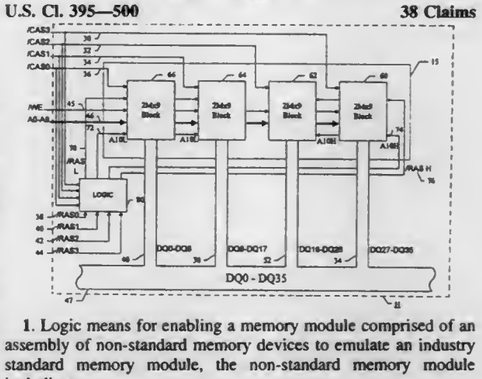
METHOD AND APPARATUS FOR ENABLING AN ASSEMBLY OF NON-STANDARD MEMORY COMPONENTS TO EMULATE A STANDARD MEMORY MODULE

Feroze R. Khan, Milpitas; Pranatharthi S. Haran, Fremont; Cong V. Trinh, San Jose, and Mukesh Patel, Pleasanton, all of Calif., assignors to Smart Modular Technologies, Fremont, Calif.

Filed Oct. 17, 1994, Ser. No. 325,651

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—500 **38 Claims**



1. Logic means for enabling a memory module comprised of an assembly of non-standard memory devices to emulate an industry standard memory module, the non-standard memory module including

a plurality of addressable memory devices, each of which is responsive to a combination of signals including at least one Column Address Strobe (CAS) signal, one Row Address Strobe (RAS) signal, and address input signals A_0–A_{n+1}, one less than the number of address signals received by said memory module, and is operative to receive and output data signals via data input/output pins, and

a circuit board for supporting said memory devices and having

connector means for receiving control signals and for receiving and outputting the data signals, the control signals including at least a plurality of CAS signals, a plurality of RAS signals, a WRITE ENABLE signal, and a plurality of computer-generated address input signals A_0–A_n, the data signals including a plurality of D_0–D_m data signals where m is a function of the number of said memory devices,

means for coupling the control signals from said connector means to said memory devices, and

a databus for coupling the data signals between the data input/output pins of said memory devices and said connector means,

said logic means forming a part of said means for coupling the control signals to said memory devices, and comprising:

a logic circuit responsive to said plurality of CAS signals and said plurality of RAS signals and operative to generate a RAS L signal, a RAS H signal, a first extra address signal A_{n+1}L, and a second extra address signal A_{n+1}H,

said RAS L signal providing a row address strobe for a first group L of said memory devices,

said RAS H signal providing a row address strobe for a second group H of said memory devices,

said address signal A_{n+1}L providing an extra address input for use with said address input signals A_0–A_n to address said first group of memory devices, and

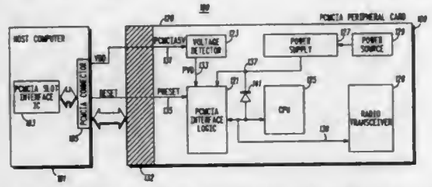
said address signal $A_{n+1}H$ providing an extra address input for use with said address input signals A_0–A_n to address said second group of memory devices.

5,613,095

PERIPHERAL CARD HAVING INDEPENDENT FUNCTIONALLY AND METHOD USED THEREWITH

Barry Moss, Matsqui; David W. Russo, Burnaby; Thomas W. Lockhart; Ricardo Lim, both of Richmond, and Denis Beaudoin, Surrey, all of Canada, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 332,008
Int. Cl.[6] G06F *13/00;15/177*
U.S. Cl. 395—500 **10 Claims**



1. A PCMCIA card having independent functionality and alternatively arranged to operate in conjunction with a host processor, comprising:

a peripheral apparatus comprising a peripheral processor, a power unit, and a voltage detector operating to assert a PCMCIA voltage detect (PVD) signal, said peripheral apparatus being adapted for both a dependent operating state and an independent operating state, said peripheral processor initiating said dependent operating state at said peripheral apparatus, responsive to said PVD signal;

an interface function coupled to said peripheral apparatus, said interface function comprising plural state dependent registers selectively reset based on a change in operating state of the peripheral apparatus, the interface function being arranged and constructed to couple said peripheral apparatus to the host processor over a PCMCIA compliant interface, wherein said plural state dependent registers comprise a first set of registers associated with said PCMCIA card coupled to said host processor over said PCMCJA compliant interface, said host processor operating to assert a PCMCIA reset (PRESET) signal to reset said first set of registers and a second set of registers coupled to said peripheral processor, said peripheral processor operating to assert a CPU reset (CRESET) signal to reset said second set of registers.

5,613,096

NETWORK PROTOCOL SENSOR

Daniel A. Danknick, Orange, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Nov. 4, 1994, Ser. No. 336,062
Int. Cl.[6] G06F *17/30;* **H04L** *29/06*
U.S. Cl. 395—500 **12 Claims**

1. A method of registering each of plural different protocol stacks with a link support layer (LSL) on a network, comprising the steps of:

executing the LSL so as to monitor network communications for broadcast frame packets, LSL being adapted to accept registrations for any one of plural frame types;

registering each of the plural frame types with LSL;

receiving from LSL a frame packet which matches a first one of the frame types;

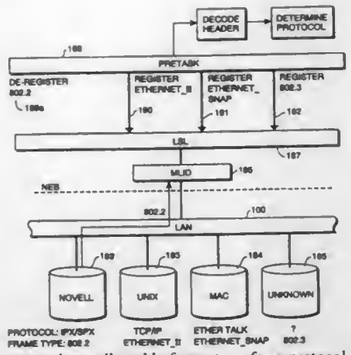
decoding header information in the received frame packet so as to determine which protocol is used by the frame packet;

de-registering the first frame type from LSL, said step of de-registering not being performed in a case where the first frame type is an allowable frame type for a protocol stack not already registered with LSL;

initializing a first protocol stack corresponding to the determined protocol by using the first frame type;

loading the first protocol stack; and

registering the first protocol stack with LSL so that the first protocol stack receives future frame packets which match the first frame type.

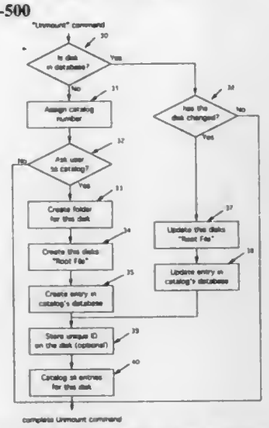


5,613,097

METHOD OF CATALOGING REMOVABLE MEDIA ON A COMPUTER

Roger D. Bates, Aloha, Oreg.; Scott R. Ketterer, 6781 SE. 68th Ct., Hillsboro, Oreg. 97123, and John Bridgman, Scarborough, Canada, assignors to Scott R. Ketterer, Hillsboro, Oreg.

Filed Nov. 18, 1994, Ser. No. 342,929
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—500 **1 Claim**



1. A method of cataloging off-line media, the method comprising the steps:

providing a computer system, the computer system including a programmable processing element and disk drive storage device, the processing element executing operating system programming including a removable media unmount procedure and a file access procedure;

modifying said unmount procedure relative to a normal operating system programming to reference a catalog of off-line media stored on said hard disk by comparing identification and status indicia of a media to be removed with entries in said catalog, wherein is modified said catalog when said identification and status indicia fail to match said catalog entries; and

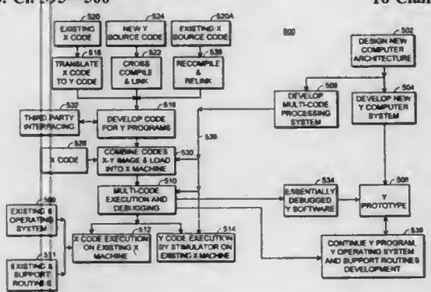
modifying said file access procedure to examine said catalog for an entry therein representing of a file to be accessed and it said entry is found therein prompt a user the computer system to mount a media indicated in said catalog entry.

5,613,098

TESTING AND DEBUGGING NEW Y ARCHITECTURE CODE ON EXISTING X ARCHITECTURE SYSTEM BY USING AN ENVIRONMENT MANAGER TO SWITCH BETWEEN DIRECT X CODE EXECUTION AND SIMULATED Y CODE EXECUTION

Robert V. Landau, Bath; James E. Johnson, Midgham, and Michael V. Iles, Baslngstoke, all of England, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 207,897, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 665,886, Mar. 7, 1991, abandoned. This application Mar. 16, 1995, Ser. No. 405,579
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—500 **16 Claims**



14. A computer implemented process for testing a Y code module designed in accordance with a new computer system based on a new (Y) architecture comprising the steps of:

converting said Y code module by combining said Y code module with related X code to form a mixed-code image;

executing said mixed-code image on a multicode execution system to test and debug said Y code module, said mixed code execution system including an existing X computer system designed in accordance with an X architecture and having an operative X operating system and operative X support routines, said multi-code processing system further including a Y architecture simulator program and an environment manager program to control and interface the switching of code execution between direct execution on said X computer system and execution on said Y architecture simulator.

5,613,099

PERSISTENT OBJECT STORAGE SYSTEM WITH MODIFIABLE GROUP SKELETAL FORMATS

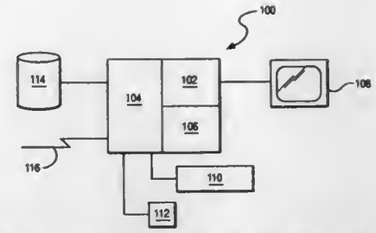
Charles R. Erickson, Cedar Park, and Roger H. Sessions, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 18,608, Feb. 17, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 409,109
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—500 **11 Claims**

1. A persistent object system having modifiable object group storage formatting, the system comprising:

group formatting interface means for specifying a single set of method interfaces for persistent object group storage formatting;

means for receiving a request to store a persistent object from an object oriented computer program, said storage request invoking one of said set of method interfaces and including a group storage format type;



means for specifying a plurality of system object group storage formatting methods each responsive to said group formatting interface means and having a plurality of formatting properties, said methods specifying a physical format for storing a persistent object on a storage device;

means for specifying a plurality of custom object group storage formatting methods responsive to said group formatting interface means, said means for specifying a custom object group storage formatting method causing said custom method to inherit one or more of said properties of one of said system object group storage formatting methods and to override one or more of said properties;

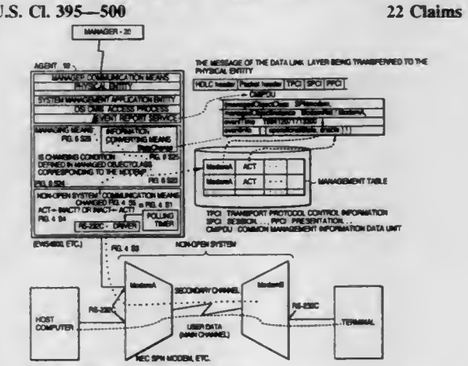
means for invoking one of said plurality of system object group storage formatting methods or custom object group storage formatting methods, said means for invoking being responsive to said group storage format type said request to store a persistent object received by said means for receiving, said invoked method formatting said persistent object into a formatted object for storage.

5,613,100

COMPUTER SYSTEM HAVING AN OPEN SYSTEMS INTERCONNECTION (OSI) MANAGEMENT SYSTEM FOR AN INFORMATION CONVERSION FOR MANAGEMENT OF NON-OPEN SYSTEMS

Akihiro Anezaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 82,166, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 580,541, Sep. 11, 1990, abandoned. This application Apr. 25, 1995, Ser. No. 428,058
Claims priority, application Japan, Sep. 12, 1989, 1-235980
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **22 Claims**



1. A packaged system, comprising:

open system manager means for operating, on the basis of information in an open systems interconnection (OSI) management information format, as an OSI management center for open systems to provide management in accordance with OSI management protocols;

a plurality of non-open systems for supplying and responding to only information in a corresponding non-open system infor-

mation format, at least two of said non-open systems having different corresponding formats; and

open system agent means, coupled between said open system manager means and said plurality of non-open systems, for causing said non-open systems to appear to said open system manager means as if said non-open systems were operating as open systems, said open system agent means comprising

a manager communication unit for communicating with said open system manager means in accordance with OSI management protocols,

a non-open system communication unit for communicating with said non-open systems,

an information converting unit

for converting first input information in an OSI information format into first output information in one of said corresponding non-open system information formats, and

for converting second input information in one of said corresponding non-open system information formats into second output information in an OSI information format, and

managing means, coupled to said units, for managing said manager communication unit, said non-open system communication unit and said information converting unit by receiving information, including said first and second output information, from said units, processing said information into processed information and transferring said processed information to said units,

wherein said open system agent means causes said non-open systems to appear to said open system manager means as if said non-open systems were operating as open systems.

5,613,101

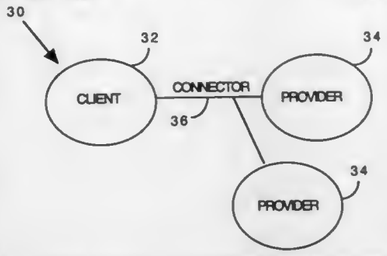
METHOD AND APPARATUS FOR DETERMINING AT EXECUTION COMPATIBILITY AMONG CLIENT AND PROVIDER COMPONENTS WHERE PROVIDER VERSION LINKED WITH CLIENT MAY DIFFER FROM PROVIDER VERSION AVAILABLE AT EXECUTION

Alan W. Lillich, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 58,345, May 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,621

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—500 **19 Claims**



1. A method for verifying compatibility between modular components in a system having a processor, at least one client component and at least one provider component, the at least one provider component capable of providing services to the at least one client component, a provider component having one or more versions, the at least one client being linked to a version of a provider component during the creation of an executable file of the at least one client and the at least one client, during execution on the processor, using a version of the provider component which is available in the system at the time of execution, wherein the provider component used during execution may be a different version than the provider component to which the client was linked, said method comprising the steps of:

specifying a provider indicator for each provider component, said provider indicator identifying a provider component's type and uniquely identifying the provider component in a manner that distinguishes the provider component from other provider components;

specifying a current indicator for each version of each provider component, said current indicator having a value identifying a version of the provider component in a manner which distinguishes the version from other versions of the provider component;

specifying for each version of each provider component a compatibility range, the compatibility range for a version of a provider component identifying a range of versions of the provider component which are compatible with that version of the provider component such that during execution of a client that version of the provider can be used as long as the client was built using a version of the provider component identified in that version's compatibility range;

specifying for each client component a compatibility range for each provider component to which it is linked, each compatibility range identifying a range of versions of a provider component which can be used to execute the client component;

linking the at least one client to a provider component to construct an executable client component;

associating the at least one client with the current indicator of the linked provider component;

when a client component is executed, determining which of the at least one provider component and versions thereof are available on the system and connecting the client component and the available at least one provider component such that information such as the current indicator and compatibility range of the provider component, the current indicator of a provider component associated with the client component during linking, and the compatibility range of the client can be exchanged between the connected client component and the available at least one provider component;

determining compatibility between the client component and the connected at least one provider component, the determination being based on the current indicator of the at least one provider component, the current indicator of a provider component associated with the client component during linking, and the compatibility range of the newer of the at least one provider component and the client component such that compatibility is found to exist when the current indicator of the at least one provider component and the current indicator of the linked provider component indicate substantially the same version of the provider component or when the current indicator of the older of the at least one provider component and the linked provider component is within the compatibility range of the newer of the at least one provider component and the client component; and

indicating whether compatibility exists.

5,613,102

METHOD OF COMPRESSING DATA FOR USE IN PERFORMING VLSI MASK LAYOUT VERIFICATION

Kuang-Wei Chiang, Easton, Pa.; Chi-Yuan Lo, Basking Ridge; Doowan Paik, Scotch Plains, both of N.J., and Shun-Lin Su, Macungie, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 159,403, Nov. 30, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 545,109

Int. Cl.[6] G06F *17/50*

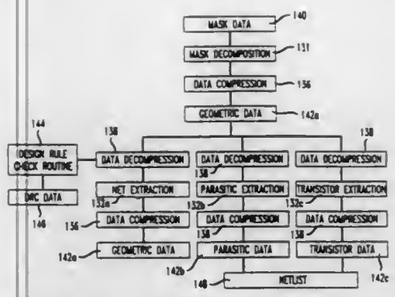
U.S. Cl. 395—500 **7 Claims**

1. A method of compressing data used in IC layout verifications of an IC chip comprising:

a) identifying each circuit component from each layer of the IC chip;

b) applying a range compression transformation to uncompressed data which reduces the value of the data by a predetermined order of magnitude;

c) arranging each circuit component in an established order based on the physical location of the circuit component within the IC chip;



d) identifying predetermined parameters for each component;

e) performing a differential measurement to determine the difference in value of the parameters for a pair of components in successive order, said differential measurement resulting in a compressed data representation of the parameter values for a second component relative to a first component, said first and second components comprising the pair of components, said second component being a component for which the compressed data representation is currently being recorded and the first component being a component for which a compressed data representation has previously been recorded, said compressed data representation representing the minimal amount of information required to retrieve the parameter values for the second component, said data representation containing relational information for the pair of components, said differential measurement acting as a mechanism for compressing the data representing the circuit components;

f) identifying rectangles contained within a given layer of the chip which are substantially identical;

g) encoding common data attributes in a compact form;

h) storing the compressed data representation for the second component; and

i) repeating steps e) and h) for each successive pair of components contained in the IC chip.

5,613,103

DISPLAY CONTROL SYSTEM AND METHOD FOR CONTROLLING DATA BASED ON SUPPLY OF DATA

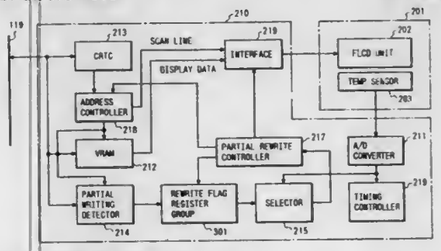
Toshiyuki Nobutani; Kenzoh Ina, both of Yokobama; Masami Shimakura, Tokyo; Junichi Tanahashi, Yokohama; Kenichiro Ono, Kawasaki; Hajime Morimoto, Tokyo; Tatsuya Sakashita, Yokohama, and Eiichi Matsuzaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,216

Claims priority, application Japan, May 19, 1992, 4-126163; May 19, 1992, 4-126165; May 19, 1992, 4-126166

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **22 Claims**



1. A display controller comprising:

storage means for storing data to be displayed on a display;

means for supplying data to said storage means;

a first flag group having plural flags for indicating lines on a display screen of the display corresponding to data supplied by said data supplying means;

a second flag group having plural flags for indicating a plurality of flags of said first flag group;

means for detecting a status of the display;

means for selecting one of said first flag group and said second flag group in accordance with the status of the display detected by said detecting means; and

display controlling means for reading data designated by one of said first flag group and said second flag group selected by said selecting means from said storage means, and displaying said data on the display.

5,613,104

SERIAL TRANSMISSION APPARATUS HAVING AN OPERATION SURELY CARRIED OUT EVEN IF A SERIAL DATUM IS REPRESENTED BY AN UNKNOWN NUMBER OF DATA BITS

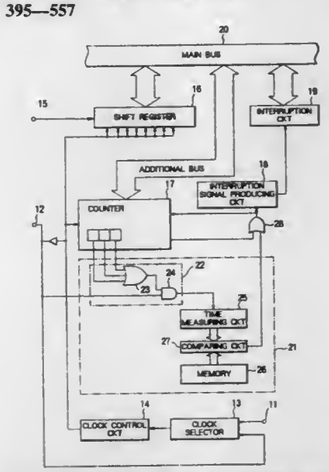
Ayako Hiraishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,839

Claims priority, application Japan, Oct. 29, 1993, 5-271096

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—557 **6 Claims**



1. A serial transmission apparatus responsive to a serial datum represented by a plurality of data bits transmitted in series with a predetermined time interval between transmissions, said serial transmission apparatus comprising:

data memorizing means for receiving said data bits of said serial datum and memorizing said serial datum as a memorized datum;

overflow signal producing means connected to said data memorizing means for producing an overflow signal when said data memorizing means is filled with said memorized datum;

end signal producing means operatively connected to said data memorizing means for producing an end signal when said data memorizing means does not receive said data bits for a period of time greater than said predetermined time interval;

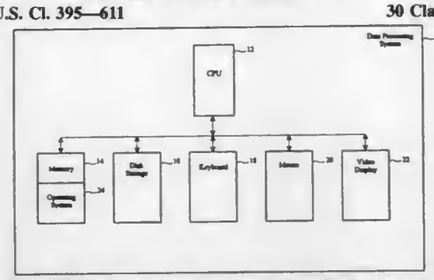
interruption request signal producing means connected to said overflow signal producing means and said end signal producing means for producing an interruption request signal in response to at least one of said overflow signal and said end signal; and

data processing means connected to said data memorizing means and said interruption request signal producing means for processing said memorized datum in response to said interruption request signal.

5,613,105
EFFICIENT STORAGE OF OBJECTS IN A FILE SYSTEM

Mark Zbikowski, Woodinville; Brian T. Berkowitz, Bellevue, and Robert I. Ferguson, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 30, 1993, Ser. No. 86,344
Int. Cl.[6] G06F *17/30;12/04*
U.S. Cl. 395—611 **30 Claims**



1. In a file system in a data processing system having secondary storage divided into sectors, a method of storing contents of files in the secondary storage, comprising the steps of:

providing a sequence of fixed-sized file system data structures of a data type that is specifically designed for storing contents of the files on the secondary storage wherein said fixed-sized file system data structures are distinct from the sectors of the secondary storage;

storing a first set of contents of files that are logically related of a first size in a first variable-sized file system data structure of a given structure type on the secondary storage; and

storing the first variable-sized file system data structure of the given structure type in which the first set of contents of files that are logically related are stored in at least one of the fixed-sized file system data structures on the secondary storage.

5,613,106
METHOD FOR PROCESSING AND STORING A TRANSACTION IN A DISTRIBUTED DATABASE SYSTEM

Audree Thurman, Phoenix; Stan Person, Mesa; Ronald Norden-Paul, Mesa, and Richard Shelton, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 408,164, Sep. 15, 1989, abandoned. This application Oct. 12, 1993, Ser. No. 135,140
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—620 **11 Claims**

1. In a data processing system comprising:

a plurality of nodes communicating with one another over a network to which they are coupled;

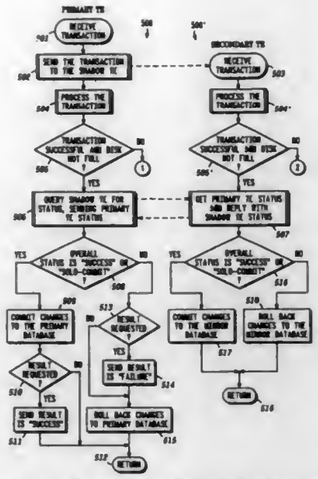
a first one of said plurality of nodes comprising an input device, a primary database, a primary database transaction engine, and a local data store comprising primary temporary files each containing a subset of a plurality of data objects copied from said primary database;

a second one of said plurality of nodes comprising a mirror database, a mirror database transaction engine and a local data store comprising mirror temporary files each containing a subset identical to the subset of the plurality of data objects copied from said primary database;

a method for processing and storing a transaction, said transaction comprising at least one change made by a system user by means of said input device to one or more data objects in said local data store, said method comprising the steps of:

sending said transaction to said primary and mirror database transaction engines;

using said primary and mirror database transaction engines in parallel, processing identical copies of said transaction along with selected data objects from said respective primary and mirror temporary files of said local data store;



determining whether processing said transaction by said primary and mirror database transaction engines was successfully performed;

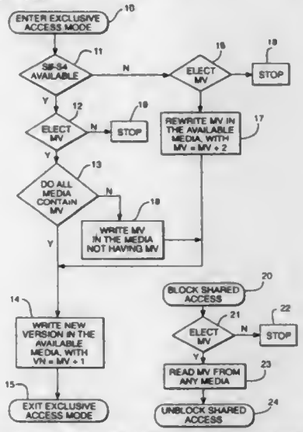
copying said primary temporary file to said primary database if and only if said processing of said transaction by said primary database transaction engine was successfully performed; and

copying said mirror temporary file to said mirror database if and only if said processing of said transaction by said mirror database transaction engine was successfully performed and said step of copying said primary temporary file to said primary database was successfully performed.

5,613,107
METHOD AND APPARATUS FOR MANAGING FILE VERSIONS IN AN INFORMATION PROCESSING SYSTEM BASED ON A PREDETERMINED AMOUNT OF STORAGE MEDIA

Michel Villette, Le Chesnay, and Rémi Cayuela, Marly-Le-Roi, both of France, assignors to Bull, S.A., Paris, France

Filed Dec. 20, 1993, Ser. No. 169,403
Claims priority, application France, Dec. 22, 1992, 92 15520
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—617 **18 Claims**



1. A method of managing a file in an information processing system having a plurality of storage media which each contain a version of said file and a version number associated therewith, said

method being implemented by said information processing system and comprising the steps of:

determining, when said file is to be replaced with an updated version, whether all of said plurality of media are available;

electing a reference version of said file from the available media of said plurality of media based on a predetermined criteria, said reference version having a first version number;

writing said reference version in any and all of the available media which do not have said reference version, so that all of the available media have said reference version;

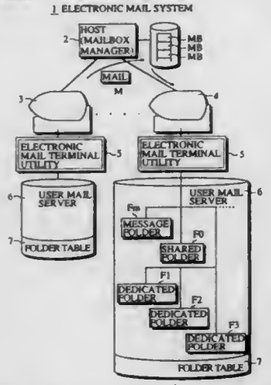
assigning a second version number to said reference version that have all of the available media which is equal to either said first version number if all of the plurality of media are available or said first version number plus two units if at least one medium of said plurality of media is not available;

writing said updated version of said file in all available media; and assigning a third version number to said updated version of said file on all available media which is equal to the second version number plus one unit.

5,613,108
ELECTRONIC MAIL PROCESSING SYSTEM AND ELECTRONIC MAIL PROCESSING METHOD

Takashi Morikawa, Nishinomiya, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1994, Ser. No. 198,900
Claims priority, application Japan, Feb. 24, 1993, 5-035273
Int. Cl.[6] G06F *17/30*
U.S. Cl. 393—616 **20 Claims**



1. An electronic mail processing system comprising:

(1) receiving means for receiving electronic mail from a host processor which undertakes the management of mailboxes;

(2) a plurality of folders for storing electronic mail; and

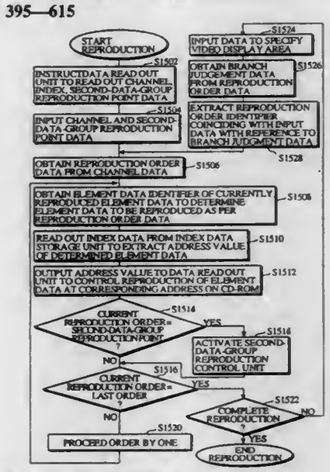
(3) management means for automatically classifying a data file written in the received electronic mail in accordance with specific data included in the electronic mail; and

(4) means for automatically selecting a folder for storing the data file in accordance with a result of the classification.

5,613,109
SYSTEM FOR OUTPUTTING REPRODUCTION DATA BY JUDGING WHETHER A SECOND DATA GROUP IS OUTPUTTED AFTER FIRST DATA GROUP IS OUTPUTTED BY REPRODUCTION POINT DATA

Kazuhiko Yamauchi; Masayuki Kozuka, both of Neyagawa; Ryousuke Kobayashi, Tokyo, all of Japan, and Stuart Donnelly, Edinburgh, United Kingdom, assignors to Mataushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 307,927
Claims priority, application Japan, Sep. 20, 1993, 5-232905; Sep. 6, 1994, 6-212711
Int. Cl.[6] G06F *3/00;3/14*
U.S. Cl. 395—615 **25 Claims**



1. A data reproduction apparatus comprising:

storage means for storing primary data, management data, channel data, and second-data-group reproduction print group data, said primary data being a plurality of element data, said management data including index data that divide said plurality of element data into a first data group and a second data group, said channel data indicating a reproduction order in said first data group, and said second-data-group reproduction point group data being management data for directing reproduction of the element data of said second data group within a reproduction channel of the element data of said first data group being reproduced, wherein the index data include an element data identifier identifying individual element data and an address value identifying a place in said storage means where each element data specified by a respective element data identifier are store, and

wherein the channel data include reproduction order data formed of a reproduction order and an element data identifier, and a reproduction order identifier identifying individual reproduction order data;

management data readout and save means for reading out and saving the index data, the channel data from said storage means, and the second-data-group reproduction point group data stored in said storage means;

first-data-group-readout first direction means for outputting a first readout direction to readout the element data of said first data group as per the channel data saved in said management data readout and save means, including

a first address value extraction unit for extracting the address value from the index data by referring to the reproduction order in the reproduction order data in the channel data and finding the element data identifier in the index data that coincides with the element data identifier in the index data that coincides with the element data identifier in the reproduction order data; and

a first address indication unit for outputting the address value extracted by said first address value extraction unit to said first-data-group readout means,

input manipulation means for accepting instruction input for directing a selection of a reproduction channel of the element data of said first data group;

first-data-group-readout second direction means for outputting a second readout direction to readout the element data of said first data group from said storage means as per the channel data specified by the instruction input from said input manipulation means, including a second address value extraction unit for extracting the address value from the index data by referring to the reproduction order in the reproduction order data in the channel data and finding the element data identifier in the index data that coincides with the element data identifier in the reproduction order data, the address value extracted by said first address value extraction unit being different from the address value extracted by said second address value extraction unit, and a second address indication unit for outputting the address value extracted by said second address value extraction unit to said first-data-group readout means;

first-data-group readout means for reading out the element data stored in said storage means as per one of the first and second readout direction;

first-data-group reproduction means for converting the element data readout by said first-data-group readout means into reproduction data and outputting resulting reproduction data;

first-data-group output means for converting the reproduction data inputted from said first-data-group reproduction means into output data and outputting resulting output data;

second-data-group output judgment means for judging whether it is adequate to output the element data of said second data group after the element data of said first data group is reproduced and judging the adequacy when the element data from said first-data-group output means coincide with the second-data-group reproduction point data saved in said management data readout and save means;

second-data-group readout means for reading out the element data of said second data group stored in said storage means when said second-data-group output judgment means judges adequacy of the output of the element data of said second data group;

second-data-group reproduction means for converting the element data read out by said second-data-group readout means into reproduction data and outputting resulting reproduction data; and

second-data-group output means for converting the reproduction data inputted from said second-data-group reproduction means into output data and outputting resulting output data;

second-data-group reproduction history record means for recording the element data outputted from said second-data-group output means by means of an identifier identifying individual element data;

second-data-group selection means for firstly selecting the element data of said second data group whose identifier doe snot coincide with the identifiers stored in said second-data-group reproduction history record means, wherein said second-data group readout means reads out the element data selected by said second-data-group selection means from said storage means, wherein said input manipulation means accepts instruction input as to a reproduction channel by means of a location coordinate, and wherein branch judgment data are attached to the element data identifier in the reproduction order data when the reproduction order corresponding to said element data identifier is placed last in the order and a reproduction channel for the element data identified by said element data identifier has a branching point at an end thereof, and wherein said branch judgment data include a reproduction order identifier, and screen area data consisting of location coordinates, each indicating respective locations of a plurality of video data areas, each of said plurality of video data areas corresponding to the respective reproduction order identifiers, and wherein said first-data-group readout means includes:

a branch channel judgment unit for judging within of which said screen area data the location coordinate accepted by said input manipulation means exist;

a reproduction channel determination unit for determining a reproduction channel as per the reproduction order data identified by the reproduction order identifier corresponding to the screen area data judged by said branched channel judgment unit;

a third address value extraction unit for extracting the address value from the index data by referring to the reproduction order in the reproduction order data in the channel data and finding the element data identifier in the index data that coincides with the element data identifier in the reproduction order data, the address values extracted, respectively, by said first, second, and third address value extraction units being different; and

an element data readout unit for reading out the element data from said storage means using the address value extracted by said third address value extraction unit.

5,613,110

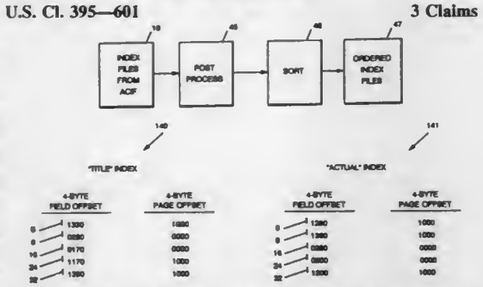
INDEXING METHOD AND APPARATUS FACILITATING A BINARY SEARCH OF DIGITAL DATA

Anthony F. Stuart, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1995, Ser. No. 368,824

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **3 Claims**



1. A report archive, distribution and retrieval apparatus, comprising:

archival digital storage means containing at least one report file that contains a plurality of individual pages;

each individual one of said pages being identified by a page-offset;

each individual one of said pages containing a plurality of individual rows of data wherein each of said rows of data may contain both text data fields and numeric data fields;

the physical location within a page of each individually text-data fields and each individual numeric-data fields being identified by an associated field-offset;

index storage means containing an alphabetic-ordered text-index for said text-data fields and a number-ordered numeric-index for said numeric-data fields;

each of said two ordered indexes containing a plurality of index-addresses;

each individual index-address pointing to an ordered index entry that comprises a page-offset and a corresponding field-offset that respectively point to a page and to a row within said page whereat a corresponding text-data field or a corresponding numeric-data field may be found within said report file;

distributed computing means enabling users to specify an alphabetic search key and a number search key; and

a search engine responsive to said alphabetic search key and to said number search key and operable to perform binary searches of said report file in accordance with said order of said two ordered indexes;

said search engine operating to determine a first data field range comprising page-offsets and field-offsets of text-data within said report file wherein all of the associated alphabetic text satisfies said alphabetic search key;

said search engine operating to determine a second data field range comprising page-offsets and field-offsets within said data record wherein all of the associated number data satisfies said number search key;

computing means operable to interrogate said first and second data field ranges to determine portions of said report file that are common to said first data field range and to said second data field range; and

display means for visually displaying said common portions of said report file in accordance with said determination by said computing means.

5,613,111

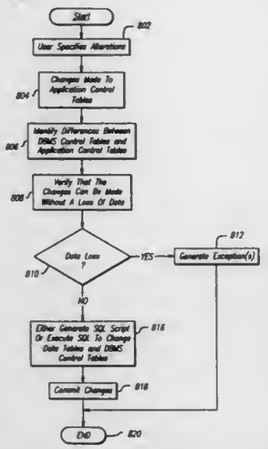
METHOD FOR MIGRATING APPLICATION DATA DEFINITION CATALOG CHANGES TO THE SYSTEM LEVEL DATA DEFINITION CATALOG IN A DATABASE

John A. Malatesta, Alamo, and Richard A. Bergquist, Danville, both of Calif., assignors to Peoplesoft, Inc., Walnut Creek, Calif.

Continuation of Ser. No. 106,765, Aug. 13, 1993, Pat. No. 5,491,818. This application Jun. 7, 1995, Ser. No. 484,946

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **12 Claims**



1. A method of altering information in a computer system comprising the steps of:

defining a system definition, said system definition containing a system-level definition for said information;

defining an application definition, said application definition containing an application-level definition for said information and said system-level definition;

identifying an alteration to said application definition;

altering said application definition to obtain a modified system-level definition in said application definition;

comparing said modified system-level definition in said application definition to said system-level definition in said system definition to identify a plurality of alterations for said system definition;

performing said plurality of alterations on said system definition.

5,613,112

MANAGEMENT OF RECORDABLE AREA FOR TOC (TABLE OF CONTENTS) AND RECORDING OR RECORDING/REPRODUCING APPARATUS FOR PERFORMING RECORDING ACTION BASED ON THE SAME TOC INFORMATION

Hideki Nagashima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

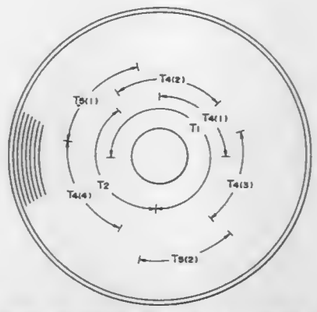
Filed Oct. 18, 1993, Ser. No. 138,924

Claims priority, application Japan, Oct. 16, 1992, 4-303223

Int. Cl.[6] G06F *17/30;7/08*

U.S. Cl. 395—616 **14 Claims**

1. A recording/reproducing apparatus for recording information on a recordable disc medium having an inner periphery, an outer periphery, and at least one recordable area, the apparatus comprising:



storing means for storing addresses of recordable areas and sequential link information which provides an order for the recordable areas starting from a first recordable area;

determining means for determining whether an area at the outer periphery of the disc medium is a recordable area; and

control means for changing the sequential link information in the storing means so that when the determining means determines that the area at the outer periphery is a recordable area, then the recordable area at the outer periphery is the first recordable area.

5,613,113

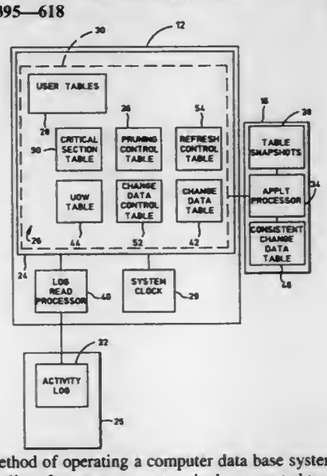
CONSISTENT RECREATION OF EVENTS FROM ACTIVITY LOGS

Robert D. Goldring, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 134,766, Oct. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,593

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **17 Claims**



1. A method of operating a computer data base system comprising a plurality of computer user terminals connected to a computer central processor having a memory unit, a system clock, and a non-volatile storage medium, the data base system recording a sequence of computer system events in a data base activity log of the non-volatile storage medium, the computer system events comprising data base operations generated by the user terminals, the method comprising the steps of:

recording the user terminal data base operations in the activity log automatically, as the data base operations occur, with a transaction number that is not time-ordered;

periodically generating a data base operation that comprises a time stamp event having a system clock time value and that is thereby automatically recorded in the activity log;

reading the activity log and identifying a recorded system clock time value of interest;

reading the activity log following the system clock time value of interest and identifying a computer system event having an event characteristic of interest;

storing the computer system event in a table of the memory unit and assigning the system clock time value to the computer system event; and

continuing to read the activity log for a next computer system event having the event characteristic of interest; wherein:

the computer system events comprise updates to relational data base tables;

the activity log includes records of committed and uncommitted transactional updates and the event characteristic of interest comprises committed updates; and

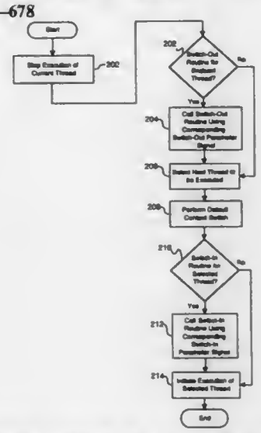
the step of reading the activity log comprises reading a log record having information including an update operation identifier, a unit of work identifier, and the transaction number.

5,613,114

SYSTEM AND METHOD FOR CUSTOM CONTEXT SWITCHING

Eric W. Anderson, Los Gatos, and David F. Harrison, Boulder Creek, both of Calif., assignors to Apple Computer, Inc, Cupertino, Calif.

Filed Apr. 15, 1994, Ser. No. 228,140
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—678 **27 Claims**



1. In a computer system having a processing unit and a memory having an operating system providing a multithreaded execution environment, a method for custom context switching, comprising the steps of:

executing a thread;

determining whether the thread has a switch-out routine for performing thread-dependent context switching operations, the switch-out routine comprising program instructions stored external to the thread;

executing the switch-out routine, if the switch-out routine exists; and

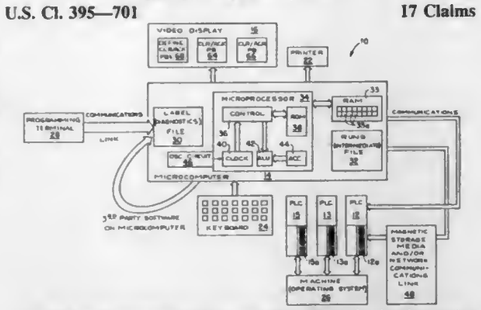
performing a default context switch, wherein the default context switch performs a predetermined set of thread-independent context switching operations, the default context switch comprising program instructions stored external to the thread.

5,613,115

METHOD FOR USING PLC PROGRAMMING INFORMATION TO GENERATE SECONDARY FUNCTIONS SUCH AS DIAGNOSTICS AND OPERATOR INTERFACE

Nicholas T. Gihl, Elmhurst, and John R. Skach, Palatine, both of Ill., assignors to Total Control Products, Inc., Melrose Park, Ill.

Filed Dec. 9, 1991, Ser. No. 804,010
Int. Cl.[6] G06F *9/06;15/46*
U.S. Cl. 395—701 **17 Claims**



1. In a programmable logic controller (PLC) for implementing primary functions of an operating system, wherein operating program instructions are stored in said PLC and include a first label field and a second comment field, wherein said primary functions implement control functions of said system, the improvement comprising a program for said PLC wherein said first label field includes first instructions for implementing said primary functions in said operating system and said second comment field includes second instructions for implementing secondary functions relating to non-control functions in said operating system:

first memory means for storing a predetermined syntax in said PLC;

further memory means for storing a series of secondary function instructions in said second comment field associated with a given first label field in said PLC;

means for comparing said secondary function instructions with said predetermined syntax; and

means for generating a rung file representing programming commands for said PLC if said secondary function instructions include said predetermined syntax;

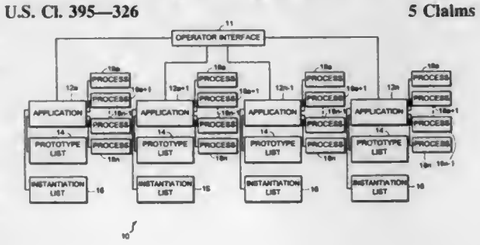
wherein said rung file is stored in said PLC for programming the operation of said PLC.

5,613,116

SYSTEM FOR SPECIFYING INTERACTIONS AMONG OBJECTS IN A DIGITAL DATA PROCESSING SYSTEM

Ken Moreau; Bradley A. Becker, both of Nashua, N.H.; Don A. Carignan, Tyngsboro; Jeff M. Diewald, Billerica, both of Mass.; Kevin B. Routley, Nashua, and Jim Wooldridge, Amherst, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 378,868, Jul. 12, 1989, abandoned.
This application Sep. 29, 1992, Ser. No. 954,407
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—326 **5 Claims**



1. A digital computer system for using a plurality of objects each of which has at least one instance that is activated during operation of said system, activation of an instance of at least one of said objects affecting other instances of said objects, said system comprising:

A. classification means including a prototype list, said prototype list including one or more object descriptors, each one of said object descriptors associated with an object prototype, each one of said object descriptors including an interaction list, said interaction list having zero or more records, each one of said interaction list records including a descriptor identification field, each said descriptor identification field including an index into said prototype list, each one of said interaction list records including a action field, said action field defining an operation;

B. an operator interface, responsive to a user activating an instance of a first object prototype, for providing an activation identifier, said activation identifier including a descriptor identification field, said descriptor identification field including an index into said prototype list, said index into said prototype list indexing a first one of said object descriptors, said first one of said object descriptors associated with said first object prototype; and

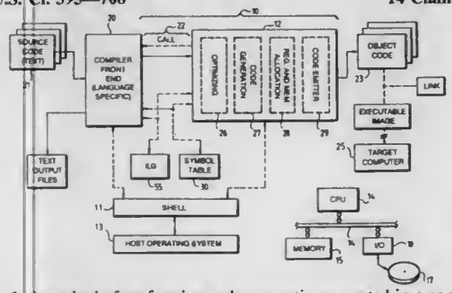
C. an application, coupled with said classification means and said operator interface, and responsive to said activation identifier, for performing an action on one or more instances of a second object prototype, said second object prototype associated with a second one of said object descriptors, said second one of said object descriptors indexed by a descriptor identifier within an interaction list record, said interaction list record contained in an interaction list within said first one of said object descriptors, and said action defined by an action field in said interaction list record.

5,613,117

OPTIMIZING COMPILER USING TEMPLATES CORRESPONDING TO PORTIONS OF AN INTERMEDIATE LANGUAGE GRAPH TO DETERMINE AN ORDER OF EVALUATION AND TO ALLOCATE LIFETIMES TO TEMPORARY NAMES FOR VARIABLES

Caroline S. Davidson, Hollis, N.H.; Richard B. Grove, and Steven O. Hobbs, both of Westford, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 662,464, Feb. 27, 1991, abandoned.
This application Apr. 20, 1994, Ser. No. 231,441
Int. Cl.[6] G06F *3/00;5/00*
U.S. Cl. 395—708 **14 Claims**



1. A method of performing code generation executed in a computer system comprising the steps of:

matching a portion of an intermediate language graph with a code template, said portion of said intermediate language graph comprising a plurality of tuples and being a representation of a first source program in an intermediate language, each tuple representing a single operation to be performed in said first source program, said code template including a predetermined intermediate language pattern which corresponds to said portion of said intermediate language graph to guide in generating a part of a first object module that corresponds to said first source program;

analyzing said portion of said intermediate language graph to determine an order of evaluation of an expression in said portion of said intermediate language graph using actions which are included in said code template and which indicate said order of evaluation;

allocating, using said actions in accordance with said order of evaluation, a temporary name for a variable and assigning an allocation lifetime to said temporary name, said allocation lifetime indicating the extent to which the temporary name and the storage of the temporary name are associated with said variable in said intermediate language graph;

updating at least one of said plurality of tuples in said portion of said intermediate language graph as needed to perform said analyzing and said allocating steps as indicated by said actions; and

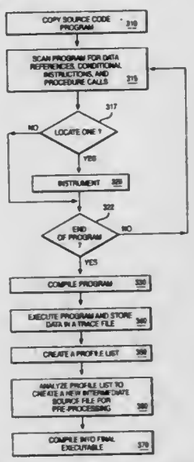
generating machine language instructions that are included in said part of said object module by using said actions and said intermediate language graph having at least one updated tuple.

5,613,118

PROFILE-BASED PREPROCESSOR FOR OPTIMIZING PROGRAMS

Randall R. Heisch, and Paul J. Kilpatrick, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,704
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—709 **1 Claim**



1. A method for controlling a computer system to optimize a source code program, having a plurality of data references, at the source code level, comprising the steps of:

inserting instrumentation code after each data reference in said source code program, thereby creating an instrumented source code program;

said instrumentation code having instructions for storing a representation of the previous data reference into a storage media each time said data reference is executed;

compiling said instrumented source code program;

executing said compiled program to produce instrumentation information for each of said data references;

analyzing said instrumentation information to determine how often each data reference was executed;

comparing said number of executions for each of said data references; and

sequentially reordering said data references from most executed to least executed in said source code program.

5,613,119

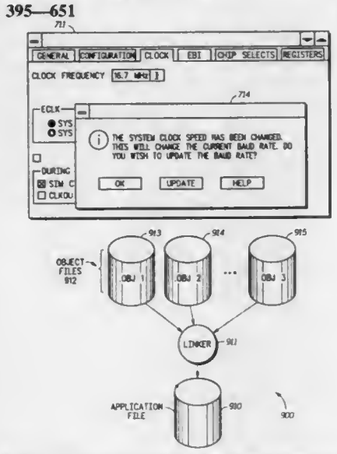
DATA PROCESSOR INITIALIZATION PROGRAM AND METHOD THEREFOR

Robert B. France; Arthur H. Claus, and Brian E. Calvert, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 25, 1994, Ser. No. 279,602

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—651 **11 Claims**



1. A method for programming a data processing system, comprising the steps of:

storing a software program in a memory circuit of the data processing memory system;

storing a plurality of parameters for modeling a data processor in a memory, the plurality of parameters for initializing the data processor to operate properly and indicating both a physical rule and a contextual rule of the data processor;

receiving a first user input for initiating the software program at an interface circuit, the interface circuit being coupled to the memory circuit;

processing the first user input in a central processing unit to generate and communicate a plurality of data signals, a plurality of address signals, and a plurality of control signals to the memory circuit, the central processing unit being coupled to the interface circuit for communicating the user input and being coupled to the memory circuit for communicating the plurality of data signals, the plurality of address signals, and the plurality of control signals;

accessing the software program in the memory unit using the plurality of data signals, the plurality of address signals, and the plurality of control signals, the software program providing a first configuration of the data processor;

receiving a second user input for modifying a first portion of the first configuration of the data processor;

accessing the software program in the memory unit to determine if the second user input modifying the first portion of the first configuration results in a first allowable configuration of the data processor; and

selectively modifying the plurality of parameters to reflect a modified first configuration of the data processor when the first configuration results in a first allowable configuration of the data processor.

5,613,120

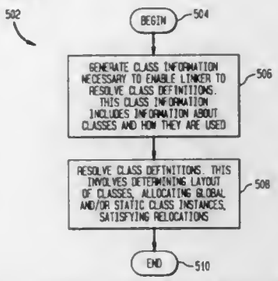
SYSTEM AND METHOD FOR ENABLING, WITHOUT RECOMPILATION, MODIFICATION OF CLASS DEFINITIONS AND IMPLEMENTATIONS IN AN OBJECT-ORIENTED COMPUTER PROGRAM

Andrew J. Palay, Mountain View; Shankar Unni, Campbell, and Michey N. Mehta, San Jose, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Oct. 20, 1994, Ser. No. 325,155

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—710 **23 Claims**



1. A method of compiling and linking a source file, comprising the steps of:

(1) generating, by a compiler, class information pertaining to object-oriented classes referenced in said source file, said class information being sufficient to enable a linker to resolve class definitions and to perform class relocation operations;

(2) generating, by said compiler, an object file from said source file, said object file comprising said class information, said object file being generated such that resolution of class definitions and performance of class relocation operations are delayed until operation of said linker; and

(3) linking, by said linker, said object file with at least one of another object file and a shared library to thereby generate an executable file, step (3) comprising the step of using said class information contained in said object file to resolve class definitions and to perform class relocation operations.

5,613,121

METHOD AND SYSTEM OF GENERATING COMBINED STORAGE REFERENCES

Robert J. Blainey, North York, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1994, Ser. No. 326,130

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—709 **12 Claims**

1. A method of reducing the number of cycles required to execute a program on a data processing system which provides two-register load and store instructions, comprising the steps of:

(i) dividing the instructions of the program into at least one region of strongly connected instructions;

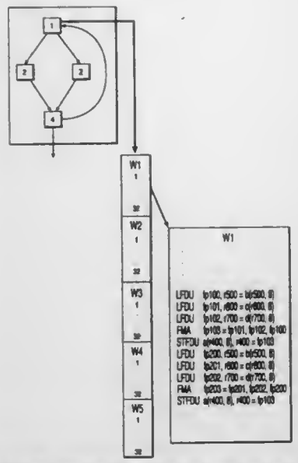
(ii) subdividing each said at least one region into at least one block of instructions, each said block comprising a sequential series of instructions without jump or branch instructions;

(iii) subdividing each said block into at least one window, each said window comprising a predefined number of instructions;

(iv) for each window in a region, examining each of the instructions in the window to identify load instructions and store instructions;

(v) for each identified load instruction, determining if another identified load instruction exists in the same window with which said identified instruction may be paired for replacement with a two-register load instruction;

(vi) for each determined pair of identified load instructions, replacing the identified load instruction in the pair which precedes the other identified load instruction in the pair with an appropriate two-register load instruction, deleting the other



identified load instruction in the pair and noting any addressing adjustments necessitated by said replacement;

(vii) for each identified store instruction, determining if another identified store instruction exists in the same window with which said identified instruction may be paired for replacement with a two-register store instruction;

(viii) for each determined pair of identified store instructions, deleting the identified store instruction which precedes the other identified store instruction in the pair, replacing the other identified store instruction with an appropriate two-register store instruction and noting any addressing adjustments necessitated by said replacement;

(ix) affecting said addressing adjustments noted in steps (vi) and (ix) for the region containing said windows; and

(x) repeating steps (iv) through (ix) for each region.

5,613,122

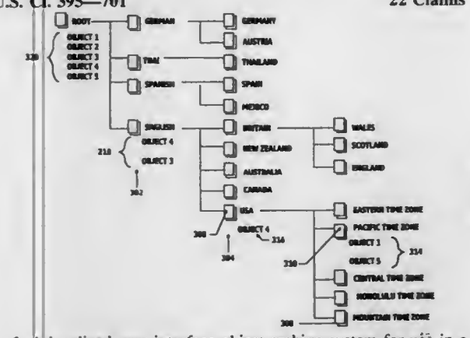
OBJECT-ORIENTED OPERATING SYSTEM

David J. Burnard, and Thomas H. Taylor, both of San Jose, Calif., assignors to Object Technology Licensing Corp., Cupertino, Calif.

Filed Nov. 14, 1994, Ser. No. 339,101

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—701 **22 Claims**



1. A localized user interface object archive system for use in a computer system having a storage means for translating a first application program which includes language specific to a first locale to a second application program includes language specific to a second locale under control of a program developer, the archive system comprising:

means controlled by the developer for creating a hierarchical locale tree in the storage means, the locale tree having a root locale and at least one other locale level representing the second locale;

means controlled by the developer for creating, in the root locale, a first plurality of user interface objects, each of which includes language specific to the first locale;

means controlled by the developer for creating, in the root locale, a second plurality of user interface objects, each of which does not include language specific to the first locale;

means controlled by the developer for storing the second plurality of user interface objects in the other locale level; and

means controlled by the second application program for traversing the locale tree starting at the other locale level and proceeding to the root locale, the traversing means assembling a set of user interface objects from the user interface objects in the other locale level and user interface objects in the root locale that are not located in the other locale level.

5,613,123

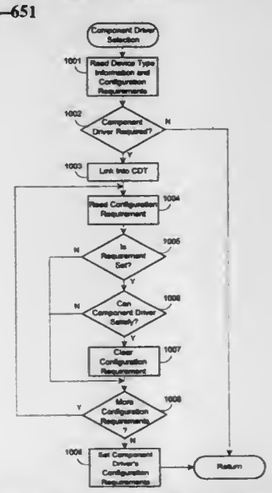
METHOD AND SYSTEM FOR CONFIGURING AND EXECUTING DEVICE DRIVERS BASED ON CONFIGURATION REQUIREMENTS

Michael H. Tsang, Renton, and Andrew P. R. Crick, Woodinville, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 954,677, Sep. 30, 1992, abandoned. This application May 18, 1995, Ser. No. 444,218

Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—651 **41 Claims**



1. A method in a computer system for configuring a device driver from a plurality of component drivers by determining whether each of the plurality of component drivers should be included in the device driver, the method comprising the computer-implemented steps of:

for each selected one of the plurality of component drivers,

determining configuration requirements imposed by each of the component drivers that is already included in the device driver;

determining whether the selected component driver satisfies at least one of the determined configuration requirements imposed by the component drivers that are already included in the device driver; and

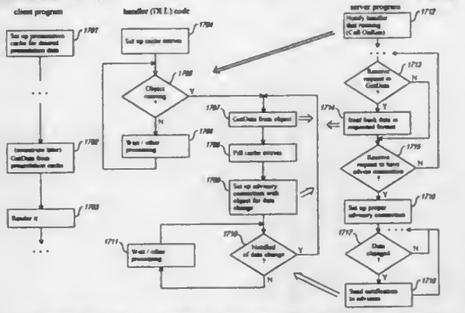
when the selected component driver satisfies at least one of the determined configuration requirements, including the selected component driver in the device driver.

5,613,124

METHOD AND SYSTEM FOR GENERATING AND STORING MULTIPLE REPRESENTATIONS OF A SOURCE OBJECT IN OBJECT STORAGE

Robert G. Atkinson, Woodinville; Antony S. Williams, Redmond; Craig Wittenberg, Mercer Island; Srinivasa R. Koppolu, and C. Douglas Hodges, both of Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 227,970, Apr. 15, 1994. This application Jun. 7, 1995, Ser. No. 477,303
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—133 15 Claims



1. A method in a computer system for generating multiple representations of a source object having object storage, the method comprising the computer-implemented steps of:

receiving a request for first presentation data in a first presentation format, the first presentation format specifying:

a data format for the first presentation data,

a target device that indicates a device for which the first presentation data is to be arranged, and

view information that indicates which portion of the source object is to be used for generating the first presentation data;

generating first presentation data according to the requested first presentation format;

receiving a request for second presentation data in a second presentation format, the second presentation format specifying:

a data format for the second presentation data,

a target device that indicates a device for which the second presentation data is to be arranged, and

view information that indicates which portion of the source object is to be used for generating the second presentation data;

generating second presentation data for the source object according to the requested second presentation format;

storing the generated first presentation data and the generated second presentation data in the object storage;

receiving a request for rendering presentation data in the first presentation format;

in response to receiving the request for rendering presentation data in the first presentation format,

retrieving the stored first presentation data in the first presentation format; and

returning the retrieved first presentation data in the first presentation format;

receiving a request for rendering presentation data in the second presentation format; and

in response to receiving the request for rendering presentation data in the second presentation format,

retrieving the stored second presentation data in the second presentation format; and

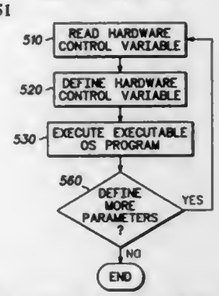
returning the retrieved second presentation data in the second presentation format.

5,613,125

METHOD AND SYSTEM FOR SELECTIVELY DEFINING HARDWARE PARAMETERS IN AN EXECUTABLE OPERATING SYSTEM PROGRAM

Lan V. Nguyen, and C. Bala Kumar, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 262,111, Jun. 17, 1994. This application Aug. 1, 1996, Ser. No. 691,227
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—651 6 Claims



1. A method of selectively defining a hardware parameter in an executable operating system program, the method performed by a computer system having a processor and a memory storing the executable operating system program, and the method comprising the steps of:

storing in the memory a configuration file including a hardware control variable comprising the following hardware control bits:

an instruction cache enable bit indicating whether an instruction cache is enabled,

a target instruction cache enable bit indicating whether a target instruction cache in the processor is enabled,

a branch prediction enable bit indicating whether a branch prediction function is enabled,

a double instruction issue enable bit indicating whether a double instruction issue in the processor is enabled,

a data cache enable bit indicating whether a data cache in the processor is enabled,

a force write-through bit indicating whether a force write-through function in the data cache in the processor is enabled,

a snoop enable bit indicating whether a snooping function in the data cache in the processor is enabled,

a cache inhibit instruction pages bit indicating whether all instruction pages are cache inhibited,

a cache inhibit data pages bit indicating whether data space pages are cache inhibited,

a write-through mode bit indicating whether the executable operating system places all data pages in a write-through mode,

a software table walk enable bit indicating whether a software table walk function is enabled,

a decoupled cache enable bit indicating whether a decoupled cache in the processor is enable,

an only off board memory bit indicating whether the executable operating system program will map only portions of the memory which are not provided on a main board,

a nested interrupt enable bit indicating whether the executable operating system program will allow interrupts to be nested,

a window interrupt enable bit indicating whether the executable operating system will delay interrupts for a determined window of time, and

a data matching disable bit indicating whether the processor will be enabled to read values loaded in a previous cycle;

obtaining from a user a value corresponding to a definition of a hardware parameter represented by at least one of the hardware control bits;

storing in the memory the hardware control variable indicating the value corresponding to the definition of the hardware parameter; and

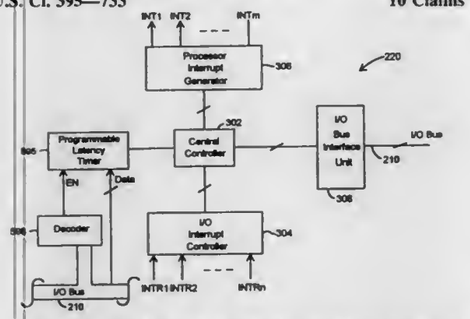
executing the executable operating system program, the executable operating system program defining the hardware parameter during execution based on the value indicated by the hardware control variable.

5,613,126

TIMER TICK AUTO-CHAINING TECHNIQUE WITHIN A SYMMETRICAL MULTIPROCESSING SYSTEM

Rodney Schmidt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 31, 1994, Ser. No. 251,850
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—733 10 Claims



1. A method of broadcasting an interrupt signal from an interrupt requestor within a symmetrical multiprocessing system including a plurality of processing units comprising the steps of:

receiving said interrupt signal at a central control unit;

determining relative task priorities of a predetermined number of said plurality of processing units;

providing from said central control unit, an interrupt corresponding to said interrupt signal to a designated one of said predetermined number of processing units having the lowest current task priority;

sequentially providing from said central control unit, said interrupt signal to another of a remaining number of said predetermined number of processing units when said designated processing unit has completed service of said interrupts said another of said remaining number of said predetermined number of said processing Units having the next lowest task priority; and repeating said sequentially providing step until said interrupt signal has been provided to all of said predetermined number of said processing units.

5,613,127

SEPARATELY CLOCKED PROCESSOR SYNCHRONIZATION IMPROVEMENT

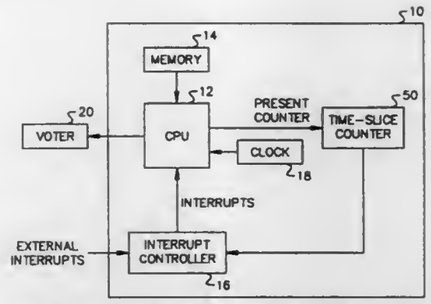
Wayne L. Schultz, Robbinsdale, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 931,180, Aug. 17, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 457,787
Int. Cl.[6] G06F *11/18*
U.S. Cl. 395—557 4 Claims

1. A computing system comprising, in combination:

a plurality of microprocessors each having a central processing unit, an interrupt controller and an output, each central processor having a program programmed to synchronously execute an identical set of tasks to produce each output;

a plurality of clocks one each connected to each microprocessor for producing a plurality of timing pulses, said clocks having frequencies which may differ by 200 parts per million, each program having allotted thereto a predetermined number of pulses so that the same number of tasks are executed in each program by each processor although often taking slightly different times due to the frequencies which may differ;



counter means connected to each microprocessor and operable to count pulses from the clock connected to the microprocessor with which the counter means is connected and to produce an output signal after the predetermined number of pulses; and

means connecting the counter means connected to each microprocessor to the interrupt controller of the microprocessor with which the counter means is connected to provide the output signal thereto, upon receipt of the output signal the interrupt controller interrupting the central processing unit of the microprocessor with which the counter means is connected to assure that the output of each microprocessor includes the same number of performed tasks; and

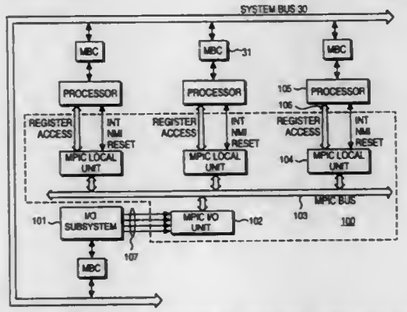
means for supplying periodic external interrupt signals at equal intervals to the interrupt controller to restart the processing of the central processing unit.

5,613,128

PROGRAMMABLE MULTI-PROCESSOR INTERRUPT CONTROLLER SYSTEM WITH A PROCESSOR INTEGRATED LOCAL INTERRUPT CONTROLLER

P. K. Nizar, El Dorado Hills, Calif., and David Carson, Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 49,515, Apr. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 8,074, Jan. 22, 1993, Pat. No. 5,283,904, which is a continuation of Ser. No. 632,149, Dec. 21, 1990, abandoned. This application May 6, 1996, Ser. No. 643,734
Int. Cl.[6] G06F *13/26*
U.S. Cl. 395—739 17 Claims



1. A multi-processor programmable interrupt controller system, comprising;

(a) a common system bus;

(b) an interrupt bus;

(c) at least one I/O interrupt controller, coupled to said interrupt bus, operable to receive an interrupt request signal and, responsive thereto, to transmit formatted interrupt requests on said interrupt bus;

(d) a multiplicity of processors, coupled to said common system bus, each comprising a central processor unit with data, address, and control ports; and

(e) a multiplicity of local processor interrupt controllers, each coupled to said data, address, and control ports of an associated one of said processors and each coupled to said interrupt bus, each being operable to receive said formatted interrupt requests from said interrupt bus and to accept those which said associated processor is eligible to service, to broadcast on said interrupt bus an acceptance signal upon said acceptance, to queue said accepted interrupt requests, and to deliver in priority order said accepted interrupts to said associated processor for servicing,

said acceptance being based on the current priority of the associated processor task so that, amongst a subset of eligible processors of the multiplicity of processors, the local processor interrupt controller associated with the lowest priority eligible processor accepts said formatted interrupt request signal; and

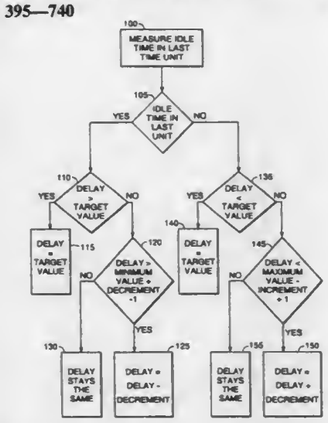
said acceptance being further based on, when more than one is operating at a same lowest priority level, distributing the requests and servicing uniformly amongst the subset for eligible processors operating at the same lowest priority level.

5,613,129

ADAPTIVE MECHANISM FOR EFFICIENT INTERRUPT PROCESSING

Robert J. Walsh, Ashland, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 2, 1994, Ser. No. 236,930
Int. Cl.[6] G06F *13/24*
U.S. Cl. 395—740 **10 Claims**



1. An apparatus for adaptively processing interrupts, comprising:

a memory for storing a delay value for interrupt processing and for storing a target value;

means for determining system idle time;

means for comparing said delay value and said target value; and,

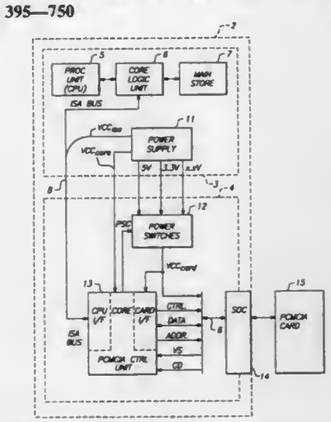
means for altering said delay value in response to said comparing and in response to said means for determining system idle time.

5,613,130

CARD VOLTAGE SWITCHING AND PROTECTION

Yen-Chang G. Teng, San Jose, and Robert K. Bendler, Mountain View, both of Calif., assignors to Vadem Corporation, San Jose, Calif.

Filed Nov. 10, 1994, Ser. No. 337,302
Int. Cl.[6] G06F *1/26*
U.S. Cl. 395—750 **12 Claims**



1. A computer system including,

primary means for executing control software,

a pluggable card operating with a card voltage and having signal means for providing a CD signal for indicating when the pluggable card is plugged into the computer system,

a power supply for providing at least first and second supply voltages,

power switching means for selecting one of said supply voltages as said card voltage,

power control means for controlling said power switching means to select one of said supply voltages, said power control means including,

voltage select means for storing a voltage code for specifying said one of said supply voltages,

power enable means for enabling said voltage select means and operable to be reset in the absence of said CD signal,

code generating means operable for storing said voltage code in said voltage select means.

5,613,131

AUTO-FORMATTING OF TABLES IN A SPREADSHEET PROGRAM

Ken A. Moss, Redmond, and Andrew Kwatinetz, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 29, 1993, Ser. No. 11,305
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—765 **4 Claims**

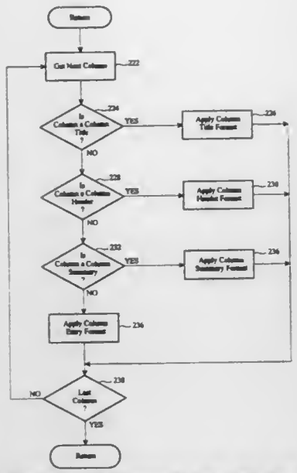
1. In a data processing system having a processor that runs a spreadsheet program, a method of identifying a table to be formatted in a spreadsheet composed of cells that may be empty or hold contents, said method comprising the computer-implemented steps of:

designating a cell as an active cell;

identifying the active cell as part of the table to be formatted;

iteratively identifying each cell that is immediately adjacent in a vertical direction to a cell that has already been identified as part of the table and that holds non-empty contents as part of the table to be formatted, such that said identifying identifies a selected column of cells composed of a number of cells that are part of the table to be formatted; and

iteratively identifying each column of cells, that has a number of cells equal to the selected column of cells and that is immediately adjacent to a column of cells that already has been identified as part of the table to be formatted and that includes at least one cell that holds non-empty contents, as part of the table to be formatted.

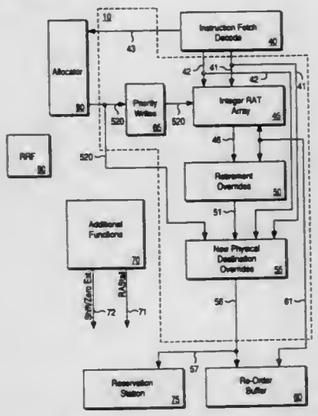


5,613,132

INTEGER AND FLOATING POINT REGISTER ALIAS TABLE WITHIN PROCESSOR DEVICE

David W. Clift, Hillsboro; James M. Arnold, Aloha; Robert P. Colwell, Portland, and Andrew F. Glew, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1993, Ser. No. 129,678
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—393 **30 Claims**



1. An apparatus for renaming a current set of logical source registers and logical destination registers associated with a current set of operations, said apparatus for eliminating false data dependencies of said current set of operations, said apparatus comprising:

memory array means for providing a plurality of addressable entries for renaming logical registers, said memory array means for storing addresses of physical registers most recently used to rename said logical registers;

table read means for indexing said memory array means by said current set of logical source registers to initially read said memory array means and for outputting addresses of a set of physical registers based on said current set of logical source registers;

destination override means for overriding a particular physical register address of said addresses of said set of physical registers if a logical source register corresponding to said particular physical register matches with a logical destination register of a previous operation of said current set of operations, wherein said destination override means overrides said particular physical register address of said addresses of said set of physical registers with an address of a physical register allocated for said logical destination register of said previous operation of said current set of operations;

priority write means for writing addresses of newly allocated physical registers into entries of said memory array means, said entries indexed by said logical destination registers of said current set of operations, wherein said current set of operations are associated with a single clock cycle of a microprocessor pipeline and are received in program code order; and

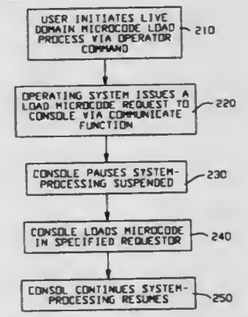
a retirement register file for containing register values for retired operations and wherein said memory array means comprises a separate valid bit for each entry of said plurality of addressable entries, said valid bit for designating said retirement register file and wherein said priority write means sets a valid bit for each entry of said memory array means that is not being written to by said priority means and that contains a retired physical register.

5,613,133

MICROCODE LOADING WITH CONTINUED PROGRAM EXECUTION

Michael Bell, Glen Mills; William Burroughs, Exton; Susanne Gilliam, Radnor, and William Holman, Coatesville, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 9, 1994, Ser. No. 303,493
Int. Cl.[6] G06F *9/26;9/18*
U.S. Cl. 395—712 **20 Claims**



1. A method of loading a microcode image into a processor in a computer system, wherein said processor is executing one or more tasks, said method comprising the steps of:

receiving a request to load microcode into said processor.

signalling said processor to suspend execution of said one or more tasks;

suspending execution of said one or more tasks at respective states of said one or more tasks;

transferring said microcode image into said processor;

signalling said processor to resume execution of said one or more tasks; and

resuming execution of said one or more tasks at said respective states.

5,613,134

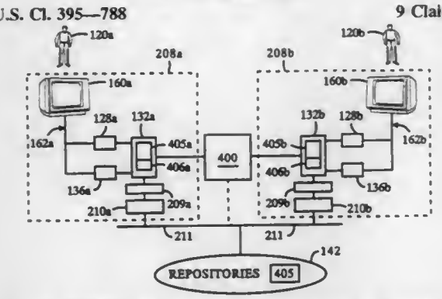
DOCUMENT DISPLAY SYSTEM USING DOCUMENTS HAVING EPHEMERAL ATTRIBUTES FOR SHARING INFORMATION REGARDING THE LOCATION OF THE DISPLAY OF EACH DOCUMENT ON MULTIPLE DISPLAY DEVICES

Peter Lucus; Jeffrey A. Senn, both of Pittsburgh, Pa., and Andrew D. Brown, New York, N.Y., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 123,418, Sep. 17, 1993, abandoned. This application Nov. 29, 1995, Ser. No. 563,871

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—788 **9 Claims**



1. An apparatus for simultaneously displaying a document to multiple users comprising:

a first user system having a first display device, a first user input device for detecting user manipulations of visual representations of documents on said first display device, a first copy of said document, and a first set of ephemeral attributes, each one of said first set of ephemeral attributes having a name and a value, wherein the value of each one of said first set of ephemeral attributes defines an aspect of a location of a first visual display of said document upon said first display device, and where said first user system creates said first set of ephemeral attributes in response to user manipulation through said first user input device of said location of said first visual display of said document upon said first display device;

a second user system having a second display device, a second user input device for detecting user manipulations of visual representations of documents on said second display device, a second copy of said document, and a second set of ephemeral attributes, each one of said second set of ephemeral attributes having a name and a value, wherein the value of each one of said second set of ephemeral attributes defines an aspect of a location of a second visual display of said document upon said second display device, and where said second user system creates said second set of ephemeral attributes in response to user manipulation of said location of said first visual display of said document upon said first display device; and

a network connection coupled with both said first user system and said second user system, wherein said first set of ephemeral attributes are transmitted from said first user system to said second user system, and said second user system modifies said second set of ephemeral attributes responsive to said first set of ephemeral attributes, and said second user system modifies said location of said second visual display of said document on said second display device responsive to said second set of ephemeral attributes such that said second visual display of said document on said second display device is identical to said location of said first visual display of said document on said first display device.

5,613,135

PORTABLE COMPUTER HAVING DEDICATED REGISTER GROUP AND PERIPHERAL CONTROLLER BUS BETWEEN SYSTEM BUS AND PERIPHERAL CONTROLLER

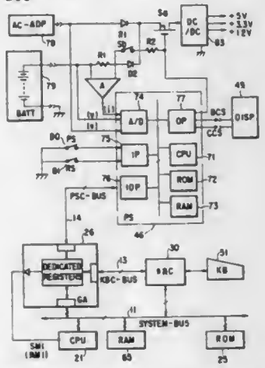
Makoto Sakai; Ryoji Ninomiya; Koji Nakamura; Koichi Dewa; Hiroyuki Tsukada; Keiichi Uehara; Tohru Mamata; Yasuhiro Nishino; Hiroyuki Oda; Hiroyuki Kubota, all of Tokyo; Shuji Hori, Iruma, and Masanobu Kumakawa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Aug. 16, 1993, Ser. No. 106,724

Claims priority, application Japan, Sep. 17, 1992, 4-248327; Sep. 17, 1992, 4-248328; Sep. 17, 1992, 4-248356; Sep. 17, 1992, 4-272471; Sep. 17, 1992, 4-272479; Sep. 18, 1992, 4-250165; Sep. 24, 1992, 4-255000; Sep. 24, 1992, 4-255001; Sep. 24, 1992, 4-255004

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—800 **3 Claims**



1. A portable computer having a CPU, a memory, a keyboard, and a system bus, the portable computer further comprising:

a keyboard controller connected to the CPU through the system bus, the keyboard controller having scan-out I/O ports to which scan lines are connected to transmit, to the keyboard, scan signals, and scan-in I/O ports to which return lines are connected to receive return signals from the keyboard;

a keyboard interface bus including the scan lines and the return lines, and connecting the keyboard controller to the keyboard;

a dedicated register group connected to the CPU through the system bus and to the keyboard controller through the scan lines of the keyboard interface bus, for temporarily storing control information exchanged between the CPU and the keyboard controller;

wherein the keyboard controller writes a hot key data portion of key data in the dedicated register group from the scan I/O port through the keyboard interface bus, the hot key data being formed to set or change an operation mode of the portable computer; and

wherein the keyboard controller transmits remaining key data to the CPU through the system bus.

5,613,136

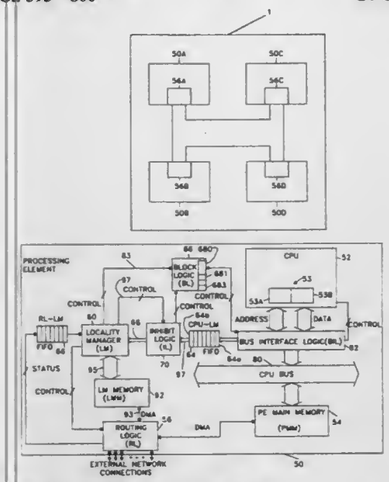
LOCALITY MANAGER HAVING MEMORY AND INDEPENDENT CODE, BUS INTERFACE LOGIC, AND SYNCHRONIZATION COMPONENTS FOR A PROCESSING ELEMENT FOR INTERCOMMUNICATION IN A LATENCY TOLERANT MULTIPLE PROCESSOR

Thomas L. Casavant, Iowa City, Iowa; Samuel A. Fineberg, Sunnyvale, Calif.; Devin L. Bright, Palatine, Ill.; Subbiah Sundaram, Los Angeles, Calif., and Michelle L. Roderick, Fort Collins, Colo., assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 800,530, Dec. 4, 1991, Pat. No. 5,442,797. This application Oct. 29, 1993, Ser. No. 143,368

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800 **24 Claims**



1. A parallel multiprocessor comprising:

a plurality of processing elements connected to each other in an interconnection structure, wherein each of said plurality of processing elements has a unique address within said structure and comprises:

a processing element main memory for storing local cpu code;

a central processing unit coupled to said processing element main memory for executing the local cpu code and for reading events from and writing events to said processing element main memory, wherein each of said events has a tag field indicating wbether or not said event may be non-local to said central processing unit;

a locality manager memory for storing local locality manager code; and

a locality manager processor coupled to said locality manager memory, for controlling data movement between processing elements which are cooperating on a single task by executing local locality manager code in association with said events.

5,613,137

COMPUTER SYSTEM WITH TOUCHPAD SUPPORT IN OPERATING SYSTEM

Randal L. Bertram, and James L. Combs, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1994, Ser. No. 210,610

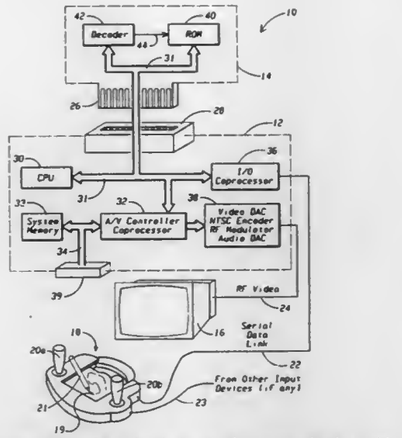
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800 **14 Claims**

1. A computer system comprising:

(a) a central processing unit (CPU) for executing operating system and application programs;

(b) a memory in circuit communication with said CPU for storing operating system and application programs;



(c) a peripheral interface circuit in circuit communication with said CPU for interfacing to said CPU coordinate type data from at least one external input device, the input device having a pressure sensitive bounded plane for detecting localized pressure applied at any location within the boundary of the plane; and

(d) touch region definition logic associated with said CPU and said peripheral interface circuit and responding to execution by said CPU of operating system and application programs by defining a region of the input device bounded plane and associating the defined region with a region identifier responsive to input from at least one application program executing on said CPU; and

wherein said CPU while executing operating system and application programs divides the input device bounded plane into mapped units of area and said touch region definition logic accepts region definition inputs in units corresponding to the mapped units and further comprising touchpad mapping units logic associated with said CPU and which responds to execution by said CPU of operating system and application programs by changing the mapped units of the inputs to said touch region definition logic as directed by inputs from the at least one application program.

5,613,138

DATA TRANSFER DEVICE AND MULTIPROCESSOR SYSTEM

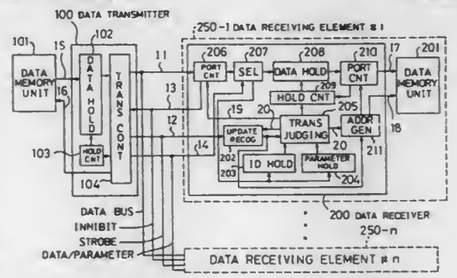
Tetsuji Kishi; Ichiro Okabayashi; Yasuhiro Mori; Manabu Migita, all of Osaka, and Yuri Kuwata, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1994, Ser. No. 213,959

Claims priority, application Japan, Mar. 17, 1993, 5-056609

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800 **3 Claims**



1. A data transfer device, comprising:

a data receiver for selectively receiving an element of array data which is transmitted via a data bus connecting the transmitter and receiver, comprising:

a first identification number holding unit for holding an identification number assigned to the data receiver,

a first control parameter holding unit for holding a control parameter, received from the transmitter via the data bus prior to data transfer, indicating an element range of array data to be received,

a first data memory, connected to the transmitter via the data bus, for receiving transmitted data in synchronization with a strobe signal, and

a first transfer allowance judging unit having as inputs the identification number from the first identification number holding unit, the first control parameter from the first control parameter holding unit, and the strobe signal from said transmitter, the first transfer allowing judging unit updating a counting value according to the control parameter in synchronization with the strobe signal sent out from the data transmitter to the receiver, the first transfer allowing judging unit comparing the identification number and the counting value and controlling the data memory to receive data only upon conformity of the identification number with the counting value; and

a data transmitter for transmitting an element of array data to a data receiver via a data bus connecting the transmitter and receiver. comprising:.

a second identification number holding unit for holding a second identification number assigned to the data transmitter,

a second control parameter holding unit for holding a second control parameter, received from the receiver via the data bus prior to data transfer, indicating an element range of array data to be transmitted,

a second data memory, connected to the receiver via the data bus, for storing data to be transmitted and transmitting said stored data in synchronization with a second strobe signal, and

a second transfer allowance judging unit having as inputs the identification number from the second identification number holding unit, the second control parameter from the second control parameter holding unit, and the strobe signal from said transmitter, the second transfer allowing judging unit updating a second counting value according to the second control parameter in synchronization with the second strobe signal sent out from the data receiver to the transmitter, the second transfer allowing judging unit comparing the second identification number and the second counting value and controlling the second data memory to transmit data only upon conformity of the second identification number with the second counting value,

wherein the control parameter functions so that data transmission occurs without a data packet being transmitted with every data transfer.

5,613,139

HARDWARE IMPLEMENTED LOCKING MECHANISM FOR HANDLING BOTH SINGLE AND PLURAL LOCK REQUESTS IN A LOCK MESSAGE

James T. Brady, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

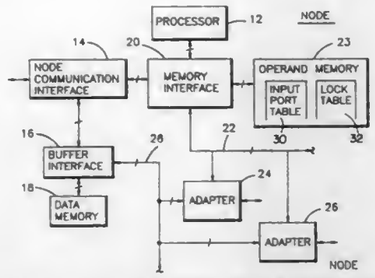
Filed May 11, 1994, Ser. No. 241,922

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **14 Claims**

1. In a parallel computing system including multiple nodes, each node including a processor with software control, a lock system for controlling access to system resources, said lock system distributed among said multiple nodes, each node including hardware-based processing apparatus comprising:

a communication interface for receiving and transmitting control messages, one said control message containing plural lock



requests to acquire possession of lock words, said lock requests comprising a lock message;

a table for storing plural lock words;

hardware logic circuitry connected to said table and to said communication interface and responsive to a received lock message to perform hardware-controlled, software independent, functions including: determining if a stored lock word from said table is available in response to said received lock message, compiling a message which grants said lock request if said determining indicates availability or a message denying said lock request if said determining indicates a nonavailability, said hardware logic circuitry performing said functions without invoking operation of software which controls said processor, whereby lock grant/denial messages are handled independently of software-controlled processor procedures; and

wherein said hardware logic circuitry iteratively performs said determining function for each of said plural lock requests by accessing a lock word referred to by each lock request and determining availability of the lock word that is accessed, said hardware logic circuitry compiling a locking message response indicating results of said determining function and transmitting said message to a node which originated said locking message.

5,613,140

QUANTUM DOT-TUNNEL DEVICE WHICH CAN BE SELECTIVELY EXCITED BY A FIRST LIGHT EMITTING SOURCE AND THE INFORMATION THUS STORED CAN BE READ WITH A SECOND LIGHT EMITTING SOURCE

Kenichi Taira, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

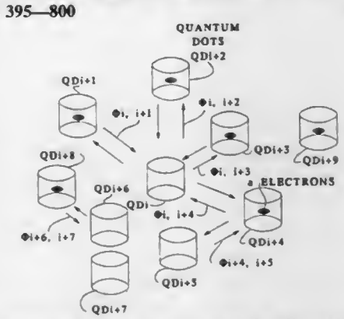
Continuation of Ser. No. 902,668, Jun. 22, 1992, abandoned.

This application Oct. 11, 1994, Ser. No. 320,375

Claims priority, application Japan, Jun. 21, 1991, 3-150446

Int. Cl.[6] H01L *33/00*

U.S. Cl. 395—800 **2 Claims**



1. A quantum dot-tunnel device comprising a plurality of side-by-side quantum dots mounted on a transparent base, first light emitting means for selectively scanning during a first time period said plurality of quantum dots so as to selectively excite electrons in certain ones of said quantum dots to an energy level which is higher than they were before such excitation, a second light emitting means for scanning during a second time period said plurality of quantum dots, and said second light emitting means mounted on one side of said transparent base, and a two-dimensional light detecting means mounted on the opposite side of said transparent base from which said second light emitting means is mounted so as to detect during said second time period which ones of said quantum dots have electrons which have been excited by detecting the light energy which has passed straight through said transparent base; wherein the energy level of said first light emitting means is substantially higher than the energy level of said second light emitting means; wherein the energy level of said first light emitting means is such to excite electrons in said quantum-dots from the quantimized ground level of the conduction band from the valence band, and the wavelength of the light from said first light emitting means is about 1 mm, wherein the energy level of said second light emitting means is such to excite electrons between a ground level of a valence band of the quantum dots and a first excited level and the wavelength of the light from the second light emitting means is about several mm, and wherein the output of said first laser light emitting source has a wavelength having an energy equivalent to a band gap of the said quantum dots.

5,613,141

DATA STORAGE SUBSYSTEM HAVING DEDICATED LINKS CONNECTING A HOST ADAPTER, CONTROLLER AND DIRECT ACCESS STORAGE DEVICES

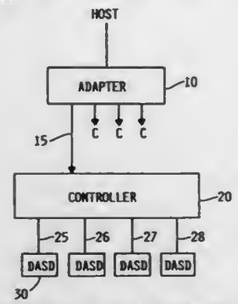
Michael J. Szatkowski, Brockenhurst, and Ian D. Judd, Otterbourne, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 938,056, Oct. 19, 1992, abandoned.

This application Jan. 19, 1995, Ser. No. 375,099

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **11 Claims**



1. A data storage subsystem for a host system, comprising:

a host adapter for transferring data to and from the host system;

a controller connected to the host adapter via a dedicated serial link;

a plurality of direct access storage devices;

said dedicated serial link connecting the host adapter to the controller comprising a pair of inbound and outbound connections and means for operating the inbound and outbound connections in full duplex mode wherein data is transferred simultaneously over the inbound and outbound connections;

a plurality of dedicated links each connecting the controller to a respective direct access storage device;

wherein the dedicated links between the controller and the direct access storage devices are also serial links, each dedicated link comprising a respective pair of inbound and outbound connections and means for operating the respective pair of inbound and outbound connections in full duplex mode wherein data is transferred simultaneously over the respective pair of inbound and outbound connections;

wherein data and commands are transferred over a serial link in packets, the serial link further comprising means for multiplexing said packets; and

said controller having a data buffer and each direct access storage device having a data buffer, the controller data buffer being large relative the data buffer of each direct access storage device the controller data buffer being shared between the direct access storage devices for reception of read data being transferred from the direct access storage devices to the host system and for write data being transferred from the host system to the direct access storage devices.

5,613,142

JOIN PROCESSING SYSTEM AND METHOD FOR JOINING RELATIONS BASED ON JOIN FIELDS IN A RELATIONAL DATABASE

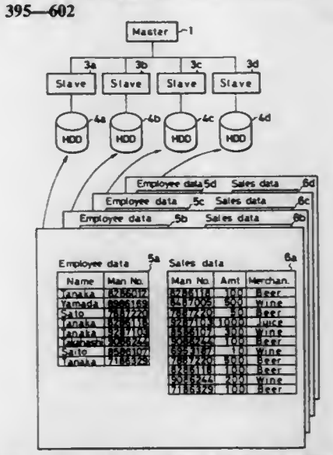
Toshio Matsumoto, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,616

Claims priority, application Japan, Mar. 16, 1994, 6-045620

Int. Cl.[6] G06F *7/08;7/14;7/36;12/04*

U.S. Cl. 395—602 **16 Claims**



1. A join processing system which joins distributed first and second data, the first data including a first join key, the second data including a second join key and produces a joined table, the join processing system comprising:

(a) a plurality of recording means for storing the distributed first and second data;

(b) a plurality of sub-processor means, each respectively coupled to a respective recording means of the plurality of recording means, for retrieving the first and second data from the respective recording means and outputting the first and second data; and

(c) main processor means for receiving the first and second data from the plurality of sub-processor means and producing the joined table;

wherein each of the snb-processor means retrieves the first data with the first join key from the respective recording means and produces a first sub-table including the first join key based on the first data including a predetermined value, and transfers the first subtable to the main processor means;

wherein the main processor means, receives the first sub-tables from the plurality of sub-processor means, and produces a first main table;

wherein each of the sub-processor means retrieves the second data in the respective recording means with a second join key equal to a first join key included in the first main table, produces a second sub-table based on the retrieved second data, and transfers the second sub-table to the main processor means; and

wherein the main processor means receives the second sub-table from the plurality of sub-processor means. produces a second

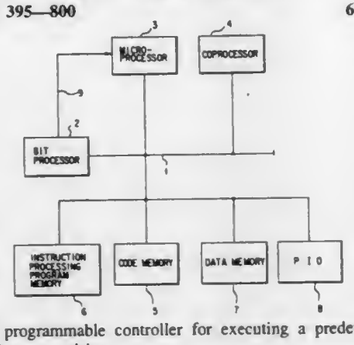
main table, joins the first and second data based on the first and second main tables, and produces the joined table.

5,613,143

PROGRAMMABLE CONTROLLER FOR HIGH-SPEED ARITHMETIC OPERATIONS

Yoshiyuki Shimokawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 966,011, Oct. 23, 1992, abandoned. This application Apr. 25, 1995, Ser. No. 428,839
Claims priority, application Japan, Oct. 25, 1991, 3-279704
Int. Cl.[6] G06F *9/26;9/00;13/00*
U.S. Cl. 395—800 **6 Claims**



1. A programmable controller for executing a predetermined instruction, comprising:

a microprogram memory for holding a microinstruction to execute the predetermined instruction;

a code memory for holding at least one operation instruction for executing an operation in accordance with the operation instruction having a predetermined bit length;

a data memory for holding data to be processed by the operation instruction; and

an integrated central processing unit connected to the microprogram memory, code memory and data memory for analyzing said operation instruction held in the code memory and for executing the operation of the data held in said data memory by the programmable controller based on the microinstruction held in the microprogram memory;

wherein said central processing unit includes:

a sequencer for designating an address of said microprogram memory and reading out a microinstruction at the designated address;.

a decoder for decoding the microinstruction read out by said sequencer and supplying an operation command to constituent circuits of said programmable controller;

a program counter circuit having a plurality of counters, for holding a next address, a current address, and a previous address for said code memory;

an instruction register circuit having a plurality of registers corresponding to addresses of said program counter circuit, for holding an instruction of said code memory and an abnormal state;

a data memory control circuit for writing/reading the data to be processed by the operation instruction in/from said data memory based on the instruction read out from said instruction register circuit;

an address matching circuit for determining address states of said code memory and said data memory;

a control register circuit for receiving an interrupt signal or an abnormal signal from said code memory or said data memory and sending out the state of said code memory or said data memory to said sequencer and a predetermined constituent circuit;

a bit operation circuit for executing a bit operation on the basis of the instruction from said code memory and holding a calculation result of the bit operation;

a register circuit for holding intermediate data in a word operation and intermediate data in other operations;

a multiplier circuit for performing a multiplication operation;

a fixed-point operation circuit for executing a fixed-point operation, a logical operation, and a digit position shift operation by using said multiplier circuit based on the instruction from said code memory; and

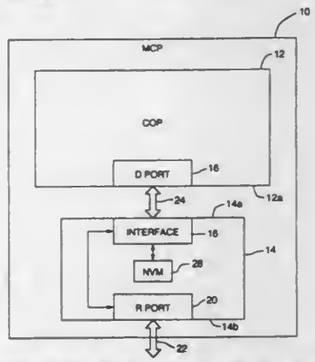
a floating-point operation circuit for executing a floating-point operation using said multiplier circuit based on the instruction from said code memory.

5,613,144

SERIAL REGISTER MULTI-INPUT MULTIPLEXING ARCHITECTURE FOR MULTIPLE CHIP PROCESSOR

Christopher M. Hall, Redwood City; Gary D. Phillips, and David W. Weinrich, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Divisional of Ser. No. 359,417, Dec. 20, 1994. This application May 19, 1995, Ser. No. 444,532
Int. Cl.[6] G06F *15/76*
U.S. Cl. 395—800 **16 Claims**



1. A multiple chip package processor having multiple operational modes, including a run mode and an external programming mode, said multiple chip package processor comprising;

a processor die including a central processing unit, said central processing unit having a data output terminal for outputting data, a data input terminal for receiving data, and a program counter output terminal for outputting addresses for instruction fetching,

a memory die including a primary memory for storing instructions for operating said central processing unit in said run mode, said primary memory having a plurality of addressable storage locations, an address input terminal for accepting addresses for accessing said storage locations, a data input terminal for accepting data to be stored in said storage locations, and a data output terminal for outputting data stored in said storage locations, said memory die further comprising a port,

a package enclosing said processor die and said memory die,

a data bus on said processor die coupled to said data output terminal and said data input terminal of said central processing unit,

an address register on said memory die for temporarily storing addresses, said register having an input terminal and an output terminal, said output terminal coupled to said address input terminal of said memory,

an input data register on said memory die for temporarily storing data, said register having an input terminal and an output terminal, said output terminal coupled to said data input terminal of said memory and to circuitry external to said multiple chip package processor,

a first multiplexer on said memory die having an output terminal coupled to said input terminal of said address register and further having first and second input terminals, said first input terminal coupled to said program counter output terminal of said central processing unit and said second input terminal coupled to a first terminal of said port,

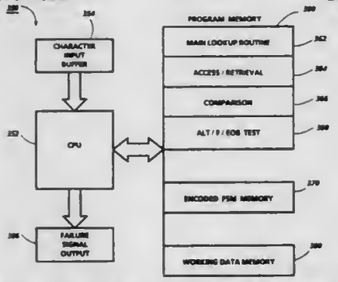
control circuitry coupled to a control input terminal of said first multiplexer for controlling said multiplexer to select its first input in run mode in order that said memory receives addresses from said central processing unit and to select its second input in external programming mode in order that said memory can receive addresses from an apparatus external to said multiple chip package processor.

5,613,145

STORED STRING DATA WITH ELEMENT DATA UNITS AND POINTER DATA UNITS IN DISTINCT SUBRANGES OF VALUES

Ronald M. Kaplan, Palo Alto, and Martin Kay, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 855,129, Mar. 18, 1992, Pat. No. 5,450,598, which is a continuation of Ser. No. 619,821, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 274,701, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 814,146, Dec. 27, 1985, abandoned. This application May 25, 1995, Ser. No. 450,594
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—800 **20 Claims**



1. An article of manufacture for use in a machine that includes a processor, the article comprising:

memory for storing data, the data stored in the memory being accessible by the processor when the article is used in the machine; and

string data stored in the memory; the string data indicating a set of strings of elements; the string data comprising two or more data units stored in the memory so that the processor can access the stored data units to search the stored data units with a string of elements;

the stored data units including a series of two or more subsequences of data units; each subsequence including an element data unit or a pointer data unit; each element data unit having a value that indicates at least one of a set of element values that elements in strings in the set of strings can have; each pointer data unit having a value the processor can use to obtain location data indicating a location in the memory for use by the processor in searching the stored data units with a string of elements; the element data units and pointer data units of the subsequences in the series all having values from a range of values; the range of values being divided into first and second subranges by a value Q, with each value in one of the first and second subranges being at least as great as the value Q and with each value in the other of the first and second subranges being less than the value Q; the first subrange including all of the element data unit values; the second subrange including all of the pointer data unit values;

the second subrange including first and second sets of pointer data unit values; each pointer data unit value in the first set indicating a first way to obtain a pointer; each pointer data unit value in the second set indicating a second way to obtain a pointer, the second way being different than the first way;

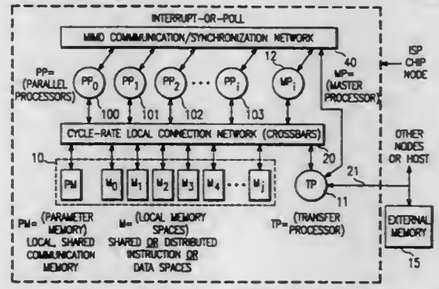
the processor, upon accessing a pointer data unit with a value in the first set, obtaining a pointer in the first way; the processor, upon accessing a pointer data unit with a value in the second set, obtaining a pointer in the second way.

5,613,146

RECONFIGURABLE SIMD/MIMD PROCESSOR USING SWITCH MATRIX TO ALLOW ACCESS TO A PARAMETER MEMORY BY ANY OF THE PLURALITY OF PROCESSORS

Robert J. Gove, Plano, Tex.; Keith Balmer; Nicholas K. Ing-Simmons, both of Bedford, England, and Karl M. Guttag, Missouri City, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 264,111, Jun. 22, 1994, Pat. No. 5,522,083, which is a continuation of Ser. No. 895,565, Jun. 5, 1992, abandoned, which is a continuation of Ser. No. 437,856, Nov. 17, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 483,658
Int. Cl.[6] G06F *15/80*
U.S. Cl. 395—800 **7 Claims**



1. A multi-processor system operating in a selected one of a plurality of modes comprising:

a plurality of processors, each processor having a data port and a separate instruction port and operating from instructions provided to said instruction port for controlling a process including movement of data to and from said data port;

a plurality of memories greater in number than the number of said plurality of processors, said plurality of memories including an instruction memory corresponding to each of said processors and at least one parameter memory;

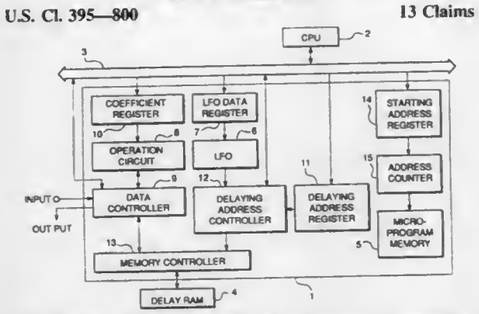
a switch matrix connected to said data port and said instruction port of each of said plurality of processors and each of said plurality of memories, said switch matrix for selectively and concurrently connecting said data port of each of said processors and said memories in a plurality of operational modes, each of said operational modes including only predetermined particular processor to memory accesses, said switch matrix further connecting said instruction port of each processor to said corresponding instruction memory, said switch matrix connecting any of said plurality of processors for access to said at least one parameter memory regardless of said operational mode; and

an interprocessor communication bus connected to each of said processors for transmitting signals from any processor to any other selected processor for effecting changes in said operational mode, said interprocessor communication bus transmitting a parameter read signal from any processor to any other selected processor to read data stored in said at least one parameter memory.

5,613,147
SIGNAL PROCESSOR HAVING A DELAY RAM FOR GENERATING SOUND EFFECTS

Kazuhisa Okamura, and Yoshio Fujita, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 178,032, Jan. 6, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 521,286
Claims priority, application Japan, Jan. 8, 1993, 5-002130
Int. Cl.[6] G10H *7/00*
U.S. Cl. 395—800 **13 Claims**



12. A signal processor for sequentially executing a plurality of different microprograms during one sampling period, comprising:

memory means having a storage area thereof divided into a plurality of divided areas corresponding, respectively, to said microprograms;

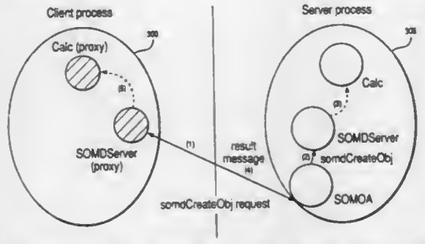
instructing means for giving an instruction for changing at least one of said microprograms;

memory clearing means responsive to said instruction from said instruction means, for clearing a specified portion of said memory means which may be less than all divided areas of said memory means, wherein said memory clearing means clears said specified portion of said memory means corresponding to a microprogram to be changed, only over a time period during which said at least one microprogram to be changed should be executed without stopping execution of microprograms other than said at least one microprogram to be changed.

5,613,148
METHOD AND APPARATUS FOR ACTIVATING AND EXECUTING REMOTE OBJECTS

Dawn E. Bezviner; Michael H. Conner; Kevin J. Greene; Scott Danforth; Erin E. Shepler, and Marc G. Smith, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 77,221, Jun. 14, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 545,369
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—800 **22 Claims**



1. A method for activating and executing objects containing data and procedures in a computer system, wherein said objects exist in an object oriented environment, comprising the steps of:

determining by a process in a second address space that a target object is not available in the second address space;

generating by said process a call to a manager object in said second address space to locate the target object in a first address space;

locating by said manager object a second object in the first address space for said target object and creating a proxy server object in the second address space for said second object;

automatically relaying, by a first object in the first address space in said object-oriented environment, a communication from the process in the second address space to said second object in the first address space;

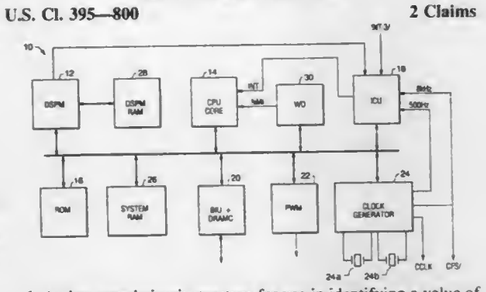
automatically activating, by the second object in said object oriented environment, a third object in the first address space containing data and procedures in response to the relayed communication from the process in said second address space; and

automatically executing, by the activated third object in said object oriented environment, an operation in response to the relayed communication from the process in said second address space.

5,613,149
INTEGRATED DATA PROCESSING SYSTEM UTILIZING SUCCESSIVE APPROXIMATION ANALOG TO DIGITAL CONVERSION AND PWM FOR PARALLEL DISCONNECT

Yachin Afek; Oved Oz, both of Cfar Saba, and Gideon Intrater, Tel-Aviv, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 307,399, Sep. 16, 1994, Pat. No. 5,491,828, which is a continuation of Ser. No. 75,175, Jun. 10, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Oct. 20, 1995, Ser. No. 546,187
Int. Cl.[6] G06F *11/00;15/16*
U.S. Cl. 395—800 **2 Claims**



1. An integrated circuit structure for use in identifying a value of an analog signal, the integrated circuit structure comprising:

a central processing unit that executes instructions to perform data processing operations, the data processing operations including a successive approximation analog-to-digital conversion operation to provide a digital value based upon an input data signal;

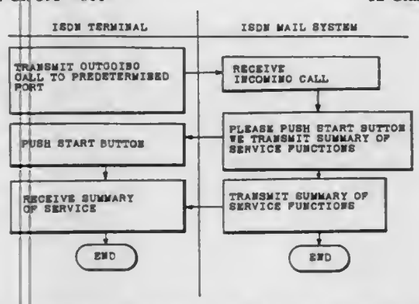
a pulse width modulation (PWM) element that converts the digital value to a square-wave output signal having a duty cycle corresponding to the digital value, the PWM element adapted for connection to a low pass filter such that the square-wave output signal is provided as an input to the low pass filter, the low pass filter providing an output analog signal corresponding to a duty cycle of the square-wave output signal; and

an input port adapted for connection to an output of a comparator, the comparator receiving as inputs the output analog signal of the low pass filter and the analog signal, and the comparator provides a digital signal output corresponding to a difference between inputs, the input port connected to provide the output of the comparator as the input data signal to the central processing unit.

5,613,150
APPARATUS FOR PRODUCING OPERATIONAL MANUAL

Toshiaki Yamada, Yamato, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 249,695, May 31, 1994, abandoned, which is a continuation of Ser. No. 719,135, Jun. 20, 1991, abandoned. This application Nov. 27, 1995, Ser. No. 562,715
Claims priority, application Japan, Jun. 25, 1990, 2-167764
Int. Cl.[6] G06F *13/00;15/00*
U.S. Cl. 395—800 **12 Claims**



1. An apparatus for producing an operational manual of an integrated services digital network (ISDN) terminal and for supplying the operational manual to an operator of the ISDN terminal, said apparatus comprising:

a) communication means for controlling communications between said apparatus and the ISDN terminal by means of predetermined protocol information transmitted between the ISDN terminal and said apparatus, the ISDN terminal and the apparatus being coupled via the ISDN;

b) first memory means for storing a help information item for each minimum procedure of minimum procedures which can no longer be segmented, each help information item indicating how to operate a corresponding minimum procedure;

c) second memory means for storing operations which are input to the ISDN terminal by the operator;

d) detecting means, coupled to said second memory means, for performing an analysis of the operations stored in the second memory means and for detecting a predetermined function desired by the operator based on said analysis of the operations; and

e) means, coupled to said first memory means and to said detecting means, for producing the operational manual by:

i) determining a plurality of minimum procedures based on the predetermined function detected by said detecting means,

ii) determining help information items in the first memory means corresponding to said plurality of minimum procedures, and

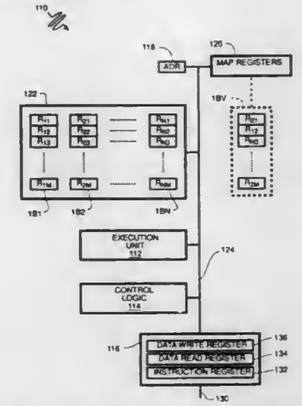
iii) reading out addresses of said help information items in said first memory means corresponding to said plurality of minimum procedures, wherein said communications means supplies the operational manual, including said help information items in said first memory means corresponding to said plurality of minimum procedures, to the operator of the ISDN terminal;

wherein said apparatus and the ISDN terminal are each connected to a data channel (B-channel) and a signal channel (D-channel), said communication means comprises a D-channel control means for controlling the connection between the ISDN terminal and said apparatus by means of predetermined protocol information transmitted through the D-channel, the predetermined protocol information including identification information of said apparatus and the ISDN terminal, and the operational manual is supplied to the operator of the ISDN terminal if said communication means receives predetermined identification information from the ISDN terminal.

5,613,151
DATA PROCESSOR WITH FLEXIBLE REGISTER MAPPING SCHEME

Kenneth A. Dockser, 3132 Terra Cotta Ct., San Jose, Calif. 95135

Continuation of Ser. No. 245,981, May 19, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,408
Int. Cl.[6] G06F *12/06;12/10*
U.S. Cl. 395—800 **4 Claims**



1. In a data processor, a register scheme comprising:

N*M physical registers arranged in N banks with M ordinal positions within each bank, where M and N are integers greater than or equal to 2, each of said registers being located at a respective one of said ordinal positions within a respective one of said banks;

register address means for indicating one of M register addresses, each of said addresses corresponding to a respective one of said M ordinal positions;

map storage means for storing a map assigning each of said M ordinal positions to a respective one of said banks, said map storage means including means for receiving said map; and

control logic for addressing the one of said N*M registers having its ordinal position corresponding to said one register address indicated by said register address means and its bank indicated by said map as corresponding to said ordinal position, said control logic being cupled to said N*M registers them, said control logic being coupled to said register means for determining which of said M ordinal positions is to be addressed, said control logic being coupled to said map storage means for determining which of said N banks is to be addressed.

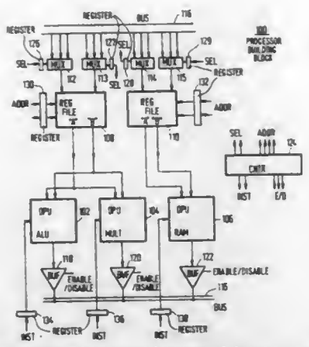
5,613,152
DATA PROCESSOR WITH OPERATION UNITS EXECUTING DYADIC AND MONADIC OPERATIONS SHARING GROUPS OF REGISTER FILES WITH ONE OF THE UNITS EXCLUSIVELY ACCESSING ONE OF THE REGISTER FILES

Jozef L. Van Meerbergen; Hendricus A. Hilderink; Paul E. R. Lippens, and Antoine Delaruelle, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 136,799, Oct. 14, 1993, abandoned. This application Dec. 13, 1995, Ser. No. 572,187
Claims priority, application European Pat. Off., Oct. 19, 1992, 92203192
Int. Cl.[6] G06F *15/00;12/00*
U.S. Cl. 395—800 **5 Claims**

1. A data processor, comprising:

data processing means with a first plurality of operation units, coupled in parallel and having outputs selectively coupled to inputs, each respective one thereof for receiving respective



data and executing a respective one of data processing operations on the respective data;

register file means being coupled to the data processing means and being operative to store data prior to supplying the data to the data processing means, the register file means comprising a plurality of physically separate register files; and

wherein each particular one of the operation units is coupled to a particular one of the register files;

wherein at least a first one of the register files is connected to respective inputs of first and second ones of the operation units; and

wherein at least a second one of the register files is exclusively connected to an output of a third one of the operation units.

5,613,153

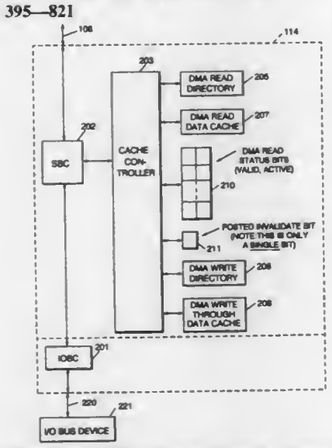
COHERENCY AND SYNCHRONIZATION MECHANISMS FOR I/O CHANNEL CONTROLLERS IN A DATA PROCESSING SYSTEM

Ravi K. Arimilli, Round Rock; John S. Dodson, Pflugerville; Guy L. Guthrie, Austin, and Jerry D. Lewis, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1994, Ser. No. 316,977

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—821 **13 Claims**



1. An input/output ("I/O") channel controller, comprising:

an I/O bus controller adaptable for coupling to an I/O bus;

a system bus controller adaptable for coupling said I/O channel controller to a system bus;

one or more data caches; and

a cache controller coupled to said one or more data caches, said cache controller coupled to said system bus controller, wherein said I/O bus controller, said system bus controller, said one or more data caches, and said cache controller are all located coextensively with said I/O channel controller.

5,613,154

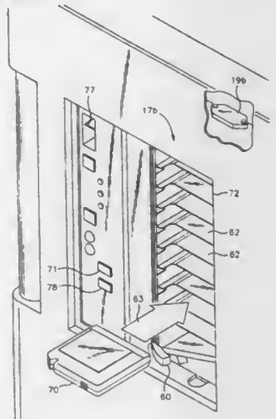
SYSTEM AND METHOD FOR MANAGEMENT OF TRANSIENT DATA STORAGE MEDIUMS IN AN AUTOMATED DATA STORAGE LIBRARY

William T. Burke; Timothy A. Griffin, and Jonathan W. Peake, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1994, Ser. No. 360,106

Int. Cl.[6] G06F *13/00;* **G11B** *17/22*

U.S. Cl. 395—821 **43 Claims**



1. A method for servicing a host processor request to process one or more data volumes stored on one or more respective requested unmounted transient data storage mediums (TDSMs) in a storage library including one or more storage bins, each bin for storing a data storage medium (DSM) therein, the DSM having an attached machine readable label containing information related to the DSM, the storage library also including one or more storage medium drives and a robotic picker for transferring a DSM between any storage bin and any medium drive, the storage library having an input station for adding one or more DSMs to the storage library, the robotic picker having an information sensing device for automatically reading the machine readable label, the storage library further having a library controller and an operator display, electronic memory coupled with the control unit, the control unit in communication with the operator display and the host processor, the method comprising the machine-executed steps of:

(a) determining if the one or more requested unmounted TDSMs are positioned at the input station for being transferred by the picker;

(b) disabling the information sensing device such that if a condition exists wherein a machine readable label is attached to the one or more requested unmounted TDSMs then the label is not automatically read;

(c) in response to determining if the one or more requested unmounted TDSMs are positioned at the input station, commanding the picker to transfer a TDSM selected from the one or more TDSMs at the input station to a selected medium drive;

(d) mounting the TDSM on the selected medium drive;

(e) sending a signal to indicate that the mounting of the TDSM on the selected medium drive is completed;

(f) processing the data volume stored on the TDSM to satisfy the host processor request; and

(g) commanding the picker to transfer the TDSM from the selected medium drive to the input station.

5,613,155

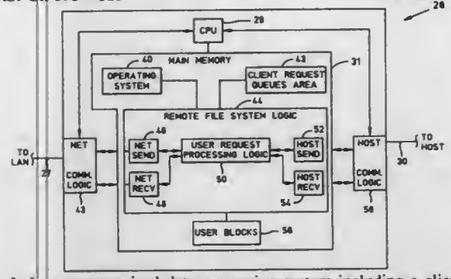
BUNDLING CLIENT WRITE REQUESTS IN A SERVER

Frank P. Baldiga, Endwell, and Christopher Meyer, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,728

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—825 **34 Claims**



1. In a computerized data processing system including a client system, a server system in communication with the client system, the server system further including an intermediate server and a remote server having a data store, the intermediate server having main memory adapted to store a plurality of pending client write requests in a queue, and logic coupled to the remote server for managing access to the data store, a method for communicating client write requests to write data to the data store comprising the machine-executed steps of:

responsive to receiving a current client write request, referencing a predetermined data characteristic criterion defining a relationship between data specified by the current write request and data specified by a client write request received before the current write request to determine if the data characteristic criterion is met;

waiting an amount of time for additional client write requests to be received and placed in the queue, wherein the amount of time is determined according to whether the predetermined data characteristic criterion is met;

determining if any additional client write requests received during the waiting step are contiguous to the current write request;

bundling together an amount of client write requests that have been received in the queue with the current write request, wherein the amount bundled is determined according to whether a predetermined capacity of client write requests that are contiguous to the current write request have been placed in the queue;

sending the bundled client write requests to be committed to the data store; and

sending a separate reply to the client for each write request included in the bundled write request.

5,613,156

IMAGING SYSTEM WITH 1-N PARALLEL CHANNELS, EACH CHANNEL HAS A PROGRAMMABLE AMPLIFIER AND ADC WITH SERIAL CONTROLLER LINKING AND CONTROLLING THE AMPLIFIERS AND ADCS

Andrew S. Katayama, Cardiff-by-the-Sea, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 27, 1994, Ser. No. 313,486

Int. Cl.[6] G06T *1/20*

U.S. Cl. 395—827 **2 Claims**

1. An imaging system comprising:

an image sensor which is read out in 1 to n parallel analog image signals; 1 to n programmable amplifiers for respectively amplifying said 1 to n parallel analog image signals, such that each said amplifier amplifies only one of said image signals to the exclusion of any of said other image signals;

1 to n programmable analog-to-digital converters(ADCs) for respectively converting the amplified image signal from said amplifier to a digital signal, such that each said analog-to-digital converters converts only one of said amplified image signals to the exclusion of any of said other image signals;

a controller; and

a closed loop serial I/O transmission link which includes an amplifier leg which is linked at one end to said controller, and which links all of said amplifiers serially together, and which further includes an ADC leg which is linked at one end to said controller and which links all of said ADCs serially together, the other ends of said legs being linked together;

wherein said controller controls said 1 to n programmable amplifiers and said 1 to n programmable ADCs by selectively transmitting control signals by said closed loop serial I/O transmission link, said control signals being separate from and not commingled with said image signals.

5,613,157

ADDRESS RANGE EXTENSION FOR A MODULAR COMPUTER

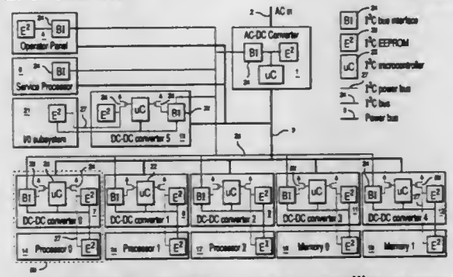
Joel R. Davidson; Hebching H. Li, and Franklin M. Liu, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 168,620, Dec. 17, 1993, abandoned.

This application Jun. 10, 1996, Ser. No. 699,709

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—828 **13 Claims**



1. In a modular computer, a system controlling access to memory devices in modules of the computer comprising:

a plurality of first modules connected to a control bus, the first modules each having a first addressable nonvolatile memory device storing data about the first module and a controller for enabling signal transmission between the first nonvolatile memory device and the control bus;

a plurality of second modules each related by function to respective first modules, the second modules each having a second addressable nonvolatile memory device storing data about the second module;

means for controllers in the first modules to enable signal transmission between second nonvolatile memory devices in related second modules and the control bus;

means for a selected controller to simultaneously enable signal transmission between the control bus and both first and second nonvolatile memory devices responsive to a single control message provided on the control bus and

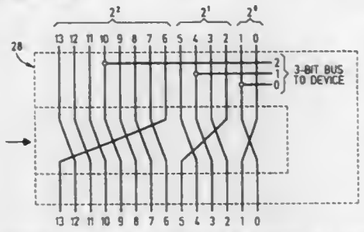
means for transmitting over the control bus; an address signal to both first and second nonvolatile memory devices to selectively accesses stored data about either the first or the second module based upon the content of the address signal.

5,613,158

SYSTEM FOR SPECIFYING ADDRESSES BY CREATING A MULTI-BIT RANKED ORDERED ANCHOR PATTERN AND CREATING NEXT ADDRESS BY SHIFTING IN THE DIRECTION OF THE SUPERIOR POSITION

Thomas W. Savage, San Jose, Calif., assignor to Tandem Computers, Inc., Cupertino, Calif.

Filed May 25, 1994, Ser. No. 248,807
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—829 **17 Claims**



1. A method of specifying the physical address of a plurality of devices each requiring a unique address in an array, said method comprising the steps of:

(a) selecting the individual desired address sequence;

(b) creating an anchor pattern representing an initial device address, said pattern having a plurality of multi-bit rank ordered fields each having a superior end position and an inferior end position;

(c) creating a bit pattern representing the next address in the sequence by shifting the bit pattern in each field in the direction of the superior end position of that field by an integral multiple of one rank and relocating the superior end rank position bit of the pattern to the inferior end rank position; and

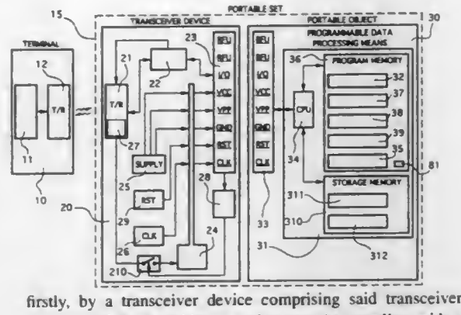
(d) continuing step (c) until the last address in the sequence is attained.

5,613,159

CONTACT-FREE DATA EXCHANGE BETWEEN A TERMINAL AND MODULAR PORTABLE SET HAVING TWO DIFFERENT PROTOCOLS FOR EXCHANGE WHICH IS SELECTED BASED ON PORTABLE SET TYPE

Cedric Colnot, Ivry sur Seine, France, assignor to Innovatron Industries S.A., Paris, France

Filed Mar. 31, 1993, Ser. No. 41,005
Claims priority, application France, Apr. 8, 1992, 92 04480
Int. Cl.[6] H01J *3/00*
U.S. Cl. 395—831 **29 Claims**



1. A system for the exchange of data between, firstly, at least one portable set and, secondly, a terminal, wherein said data exchange takes place without physical contact between the portable set and the terminal, by means of a predetermined protocol for exchanges of data,

said portable set and said terminal each comprising transceiver means controlled by means for the implementation and the management of said protocol,

wherein said portable set is constituted:

firstly, by a transceiver device comprising said transceiver means of the portable set and means for coupling with a portable object;

secondly, a portable object comprising coupling means used to ensure a two-way transfer of data with at least two types of transfer devices and notably with said transceiver device, and programmable data processing means, made in the form of logic micro-structures;

said transceiver device and said portable object being capable of being either separate or coupled to each other by means of said coupling means;

wherein the programmable data processing means of the portable object comprise:

means for the processing of the useful data elements exchanged between the portable set and the terminal;

said means for the management of the transmission/reception protocol of said portable set;

means for the generation of transmission/reception commands intended for the transceiver means contained in the transceiver device, said command generation means being controlled by said protocol management means;

wherein said portable object comprises means to recognize the type of the transfer device to which it is coupled through said coupling means;

wherein said data processing means of the portable object comprise:

first means for the exchange of data according to a first protocol to exchange data with a transfer device of a first type;

second means for the exchange of data according to a second protocol, through the transceiver means of the portable set which constitutes a transfer device of a second type, with said terminal; and means to select first and second data exchange means as a function of an information element on the transfer device type provided by said means to recognize;

wherein said first protocol is the ISO 7816-3 protocol, stipulating that the signal present in said exchange wire of the coupling means should be in a high state after an initialization of said portable object;

wherein said transceiver device, when it is coupled to said portable object, dictates a condition where the signal present in said data exchange wire of the coupling means should be in a low state for a first period of time after an initialization of said portable object; and

wherein said recognition means determine a testing state equal to the state of the signal present in said data exchange wire of the coupling means after a second period of time, said second period of time being smaller than said first period of time, said information on the type of transfer device given by said recognition means indicating that the transfer device to which the portable object is coupled is:

either of the first type, if said testing state is a high state;

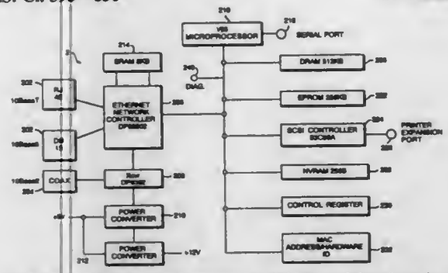
or of the second type, if said testing state is a low state.

5,613,160

IN AN INTERACTIVE NETWORK BOARD, METHOD AND APPARATUS FOR PLACING A NETWORK PERIPHERAL IN A DEFAULT CONFIGURATION

Andrew J. Kraslavsky, Rancho Santa Margarita; William C. Russell, Laguna Hills; George A. Kalwitz; Robert D. Wadsworth, both of Costa Mesa, and Lorraine F. Barrett, Yorba Linda, all of Calif., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,517
Int. Cl.[6] G06F *11/30*
U.S. Cl. 395—836 **21 Claims**



1. An apparatus for guaranteeing a default peripheral environment for a LAN peripheral having a non-volatile memory which stores a plurality of default configuration codes, the plurality of default configuration codes comprising signals which set predetermined ones of peripheral characteristics into predetermined states, said apparatus comprising:

a circuit board coupled to said LAN peripheral;

a first connector for a bi-directional interface, disposed on said circuit board, for coupling said circuit board to the LAN peripheral;

a second connector for a LAN interface, disposed on said circuit board, for coupling said circuit board to the LAN;

a RAM, disposed on said circuit board, for storing peripheral data received over said LAN interface; and

a processor, disposed on said circuit board, for (1) analyzing the peripheral data to determine which one of the plurality of default configuration codes corresponds to the peripheral data, (2) reading the one default configuration code which corresponds to the peripheral data from the peripheral non-volatile memory to said RAM on said circuit board over said bi-directional interface, and (3) transmitting the one default configuration code which corresponds to the peripheral data and the peripheral data to the peripheral over the bi-directional interface whereby the peripheral sets the predetermined ones of the peripheral characteristics into their respective predetermined states using the one default configuration code which corresponds to the peripheral data.

5,613,161

METHOD AND APPARATUS FOR PREEMPTABLE MULTIPLEXING OF CONNECTIONS TO INPUT/OUT DEVICES

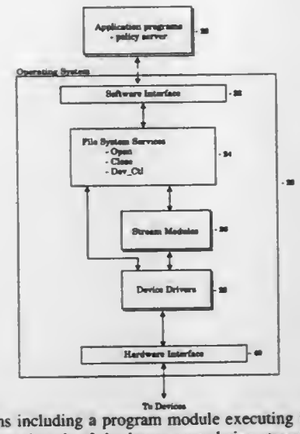
Scott N. Stanton, Menlo Park; Jeff Peck, Sunnyvale, and Ben Stoltz, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 6, 1994, Ser. No. 239,326
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—841 **22 Claims**

1. A computer implemented method comprising the steps of:

(a) a plurality of upper streams attaching themselves to a plurality of upper ports, each of the upper streams including a program module executing in an user space of a computer system, each of the upper ports being stored in a first storage area mapped into a system space of the computer system, and each of the upper ports including a queue structure;

(b) said upper streams causing a plurality of lower streams to be attached to a plurality of lower ports, each of the lower



streams including a program module executing in the system space, and each of the lower ports being stored in a second storage area mapped into the system space, and each of the lower ports including a queue structure;

(c) said upper streams causing data to be moved downstream from themselves into said queue structures of said upper ports, and moving data upstream into themselves from said queue structures of said upper ports;

(d) said lower streams moving data downstream from said queue structures of said lower ports into themselves, and causing data to be moved upstream from themselves into said queue structures of said lower ports;

(e) said upper streams requesting a splice and unsplice routine executing in the system space to logically splice and unsplice selected ones of said upper and lower ports to enable and disable data flow between selected pairs of said upper and lower streams; and

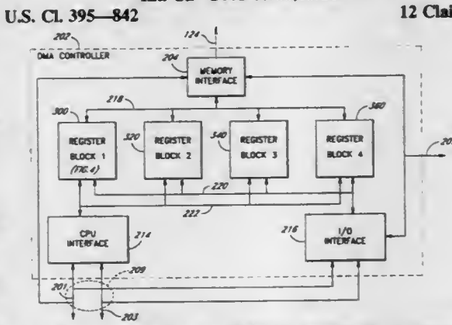
(f) said splicing and unsplicing routine logically splicing and unsplicing said selected ones of said upper and lower ports in response to said requests, thereby selectively enabling and disabling data flow between said selected pairs of said upper and lower streams.

5,613,162

METHOD AND APPARATUS FOR PERFORMING EFFICIENT DIRECT MEMORY ACCESS DATA TRANSFERS

Gregory V. Kabenjian, Duarte, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Jan. 4, 1995, Ser. No. 368,474
Int. Cl.[6] G06F *13/00;13/28*
U.S. Cl. 395—842 **12 Claims**



1. A direct memory access (DMA) controller for a computer system having a memory coupled to a high speed memory bus and having an I/O device coupled to an I/O bus, said DMA controller comprising:

a first set of independently programmable DMA control registers which identify a first source, a first destination and a first quantity of data to be transferred between said memory and said I/O device via said I/O bus, said first set of DMA control registers being selectable to control a first transfer of data between said memory and said I/O device;

a second set of independently programmable DMA control registers which identify a second source, a second destination and a second quantity of data to be transferred between said memory and said I/O device via said I/O bus, said second set of DMA control registers being selectable to control a second transfer of data between said memory and said I/O device; and

a set of device parameter registers which are programmable to specify the data transfer characteristics of said I/O device,

wherein said registers in said second set of DMA control registers are programmable while said registers in said first set of DMA control registers are selected to control said first transfer of data between said memory and said I/O device, said second set of DMA control registers being selectable as soon as said first transfer of data is complete to control said second transfer of data between said memory and said I/O device.

5,613,163

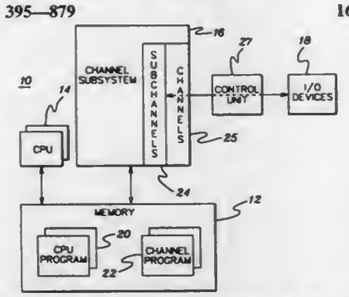
METHOD AND SYSTEM FOR PREDEFINED SUSPENSION AND RESUMPTION CONTROL OVER I/O PROGRAMS

Assaf Marron, Ramat Gan, Israel, and Allan S. Meritt, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1994, Ser. No. 342,459

Int. Cl.[6] G06F *3/00;3/04*

U.S. Cl. 395—879 **16 Claims**



1. A method for providing control within a data processing system, said data processing system comprising one or more central processing units, one or more input/output devices and a memory coupled to said one or more central processing units and said one or more input/output devices, said method comprising:

executing one or more input/output operations within said data processing system;

suspending execution of said one or more input/output operations by executing a suspend operation, said suspend operation executing independently of said one or more input/output operations,

resuming said execution of said one or more input/output operations, and

suspending said execution of said one or more input/output operations which has been resumed when a predefined number of channel command words has been processed.

5,613,164

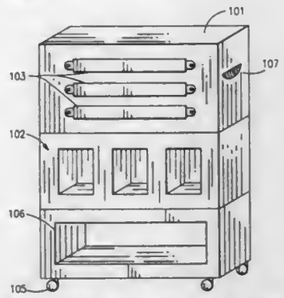
PORTABLE SYSTEM HAVING DATA DISTRIBUTION AND POWER DISTRIBUTION REMOVABLY POSITIONED WITHIN PORTABLE ENCLOSURE DURING SHIPPING AND ADAPTED FOR REPOSITIONING WITHIN INTERNAL STORAGE SPACE DURING OPERATION

Michael F. DiAngelo, Boca Raton, Fla., and Gerald F. O'Neil, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,368

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—884 **8 Claims**



1. A portable central power and data distribution system (CPDDS) comprising:

a rigid, portable enclosure surrounding an internal storage space, the enclosure including a movable surface for allowing manual access to the internal storage space and also serving as a shipping container;

power distribution means including:

at least one transformer having primary and secondary terminals;

power supply lines for coupling the primary terminals to a power source; and

power distribution lines for coupling the secondary terminals to a plurality of computer terminals and a plurality of LAN adapters;

data distribution means including:

at least one multiple access unit (MAU) for linking a plurality of the LAN adapters, the LAN adapters each coupled to one MAU and to one of the computer terminals via data cables;

the data distribution means and the power distribution means stored in the internal storage space; and

the data distribution means and the power distribution means being removably positioned within said rigid, portable enclosure during shipping and thereafter removable from the internal storage space and adapted for being repositioned within said internal storage space for assembly and operation of said CPDDS, for providing power and network connections to the plurality of computer terminals and to the plurality of LAN adapters, and for communicating data among the plurality of computer terminals, the computer terminals for use by a plurality of computer terminal operators.

5,613,165

PHOTOGRAPHIC FILM PRE-EXPOSURE METHOD

Gregg T. Dobbs; Loura L. Dobbs, both of Windemere, and John M. Dobbs, Winter Garden, all of Fla., assignors to Keepsake, Inc., Windermere, Fla.

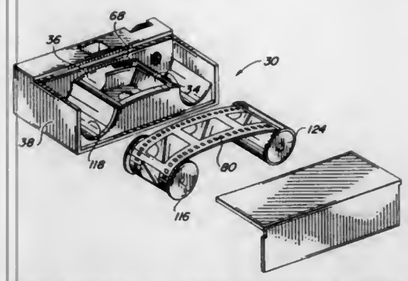
Continuation of Ser. No. 229,689, Apr. 19, 1994, Pat. No. 5,546,146. This application Feb. 13, 1996, Ser. No. 600,876

Int. Cl.[6] G03B *1/00;27/52*

U.S. Cl. 396—6 **25 Claims**

1. A method for pre-exposing film to an image in registration with a camera frame opening, the method comprising the steps of:

providing a camera having an exposure frame opening;



covering a portion of the opening for shielding a corresponding portion of a filmstrip frame from exposure to image bearing light, the film frame shielded portion sufficient for receiving an artwork image;

providing an unexposed alignment filmstrip for use in the camera, the alignment filmstrip for aligning artwork within a portion of the filmstrip;

mounting the alignment filmstrip within the camera for exposing the filmstrip to image bearing light;

operating the camera for exposing the alignment filmstrip to light sufficiently bright to form a latent image of the exposure frame opening onto the alignment filmstrip;

developing the alignment filmstrip for forming an image of the unshielded frame opening portion on the alignment filmstrip wherein the developed filmstrip frame has a clear portion for viewing artwork therethrough and an opaque portion corresponding to the unshielded frame opening portion;

placing artwork for viewing through the alignment film frame clear portion during operation within the camera, the artwork thus positioned within the shielded exposure frame portion;

removing the alignment filmstrip and shield from the camera;

mounting an imaging filmstrip within the camera having an unshielded frame opening for photographing artwork within an artwork portion corresponding to the alignment filmstrip clear portion;

placing the artwork for exposure within the artwork portion;

operating the camera for viewing the artwork; and

exposing the imaging filmstrip to imaging light from the artwork thereby forming a latent image of the artwork within a frame portion for covering by the shield when placed over the camera exposure frame opening.

5,613,166

EYE-START AF CAMERA

Masataka Hamada, Osakasayama; Kenji Ishibashi, Sakai; Hiroshi Ueda, Habikino; Hiroshi Ootsuka, Sakai, and Yoshihiro Hara, Kishiwada, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 200,009, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 885,615, May 19, 1992, Pat. No. 5,315,339. This application Jun. 7, 1995, Ser. No. 481,204

Claims priority, application Japan, May 22, 1991, 3-147916; May 23, 1991, 3-149984; May 23, 1991, 3-149985; May 24, 1991, 3-149987; May 24, 1991, 3-149988; Jun. 27, 1991, 3-156675

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—80 **20 Claims**

1. A camera conaprising:

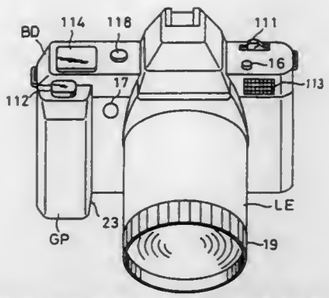
a detecting device for detecting that a user begins an image recording operation;

a manual operating member that is actuated by the user;

a determining device for determining a position of a main subject image in an image plane;

a first controller for controlling said determining device to start a determining operation after said detecting device detects the beginning of the image recording operation and to repeat the determining operation until said manual operating member is actuated; and

a second controller for controlling a predetermined operation of the camera in accordance with the position of the main subject image as determined by said determining device.



5,613,167

ACTIVE-TYPE AUTOMATIC FOCUSING APPARATUS

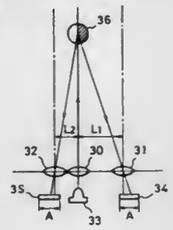
Ryouichi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,820

Claims priority, application Japan, Oct. 25, 1993, 5-287280

Int. Cl.[6] G03B *13/36;* **G01C** *3/08*

U.S. Cl. 396—106 **9 Claims**



1. An apparatus for determining at least one of a distance to an object and a focus state of the object, said apparatus comprising:

light emitting means for emitting light, said light being reflected by said object;

first and second light receiving optical systems, each positioned to receive light emitted from the light emitting means and reflected by the object; and

first and second light receiving means, each positioned to receive light from said first and second light receiving optical systems, respectively,

wherein said light emitting means is disposed between said first and second light receiving optical systems, wherein a first distance between said first light receiving optical system and said light emitting means and a second distance between said second light receiving optical system and said light emitting means are different from each other, and wherein a ratio of an output to a length of said first light receiving means and a ratio of an output to a length of said second light receiving means are identical to each other, and

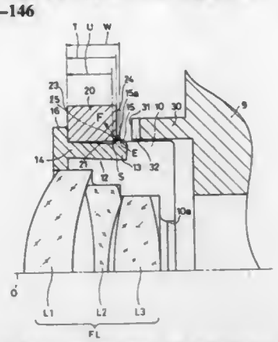
wherein at least one of said distance to the object and a focus state of the object is determined in accordance with an output representing light received by said first and second light receiving means.

5,613,168

APPARATUS FOR ADJUSTING POSITION OF LENS IN CAMERA

Kiyoshi Kawano, and Hisashi Tatamiya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1995, Ser. No. 421,529
Claims priority, application Japan, Apr. 15, 1994, 6-077184
Int. Cl.[6] G03B *13/32*; **G02B** *7/04*
U.S. Cl. 396—146 **20 Claims**



1. A position adjusting apparatus for adjusting a position of a lens frame of a camera in an optical axis direction, said lens frame holding a focusing lens group, said apparatus comprising:

a lens frame supporting member which is rotatable relative to said lens frame for rotational adjustment of said lens frame;

a guide mechanism which controls movement of said lens frame in the optical axis direction during the rotational adjustment of said lens frame; and,

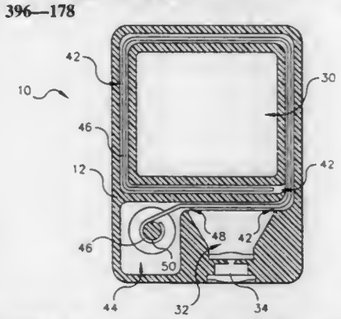
a friction mechanism which provides a frictional force between said lens frame and said lens frame supporting member to prevent said lens frame and said lens frame supporting member from rotating relative to each other, said friction mechanism permits said lens frame and said lens frame supporting member to rotate relative to each other for rotational adjustment of said lens frame when a predetermined adjusting force is applied to overcome said frictional force, said frictional force maintaining said lens frame and said lens frame supporting member in an adjusted position relative to each other upon removal of said predetermined adjusting force.

5,613,169

COMPACT CAMERA WITH UNEXPOSED-FILM STORAGE SLOT SURROUNDING FLASH RECEIVING POCKET FOR FLIP-UP FLASH UNIT

Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1996, Ser. No. 612,030
Int. Cl.[6] G03B *15/03*; *17/04*
U.S. Cl. 396—178 **5 Claims**



1. A compact camera comprising a body portion, and a flash unit supported to be flipped up from said body portion for picture-taking and to be flipped down to the body portion for storage, is characterized in that;

said body portion is configured to form an exterior flash receiving pocket for receiving said flash unit when the flash unit is flipped down;

an unexposed-film storage slot inside said body portion longitudinally extends at least part way around said flash receiving pocket;

an exposed-film chamber inside said body portion is located to receive successive sections of a filmstrip from said unexposed-film storage slot after each film section is exposed; and

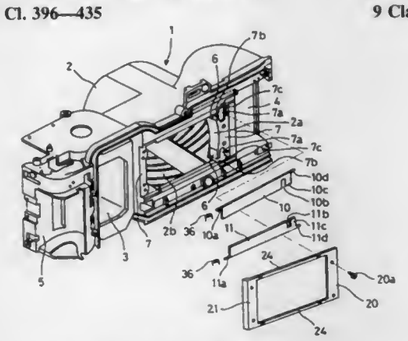
film moving means is actuatable to move successive sections of the filmstrip from said unexposed-film storage slot to said exposed-film chamber.

5,613,170

CAMERA WITH NOVEL EXPOSURE FRAME

Masashi Takamura, Tokyo, and Akio Ohmiya, Saitama-ken, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-ken, and Fuji Photo Film Co., Ltd., Kanagawa-ken, both of Japan

Continuation of Ser. No. 497,911, Jul. 3, 1995, abandoned, which is a continuation of Ser. No. 218,378, Mar. 28, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,255
Claims priority, application Japan, Mar. 26, 1993, 5-092331; Mar. 26, 1993, 5-092332
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—435 **9 Claims**



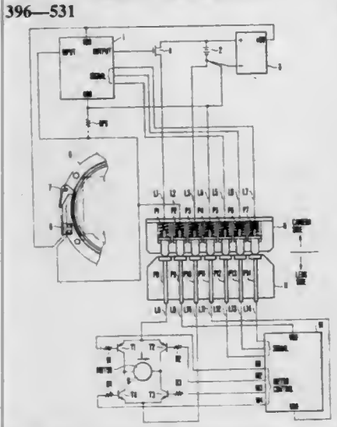
1. A camera comprising an integrally molded camera body and lens barrel, an aperture frame detachably mounted on a rear of said camera body to define an exposure frame, said lens barrel having a smaller inner diameter than a diagonal dimension of said exposure frame, flanks disposed in a pair of vertical planar surfaces parallel to an optical axis of said lens barrel and extending beyond arcuate inner surfaces of a frame receiving surface at locations defining four corners of the aperture frame adjacent a rear end of said lens barrel, and masking plates rotatably mounted on the rear of the camera body and supported by said aperture frame so as to cover the rear end of said lens barrel partially along upper and lower sides thereof, said plates comprising notches shaped to receive said flanks, and being vertically swingable selectively to adjust the camera for normal photography or for panoramic photography, said flanks thereby preventing a vignetting effect caused by said lens barrel having said smaller diameter than said diagonal dimension of said exposure frame.

5,613,171

CAMERA SYSTEM

Yoshihiko Aihara; Masayoshi Yamamichi, both of Kanagawa-ken, and Masahisa Fujino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 780,829, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 535,342, Jun. 8, 1990, abandoned, which is a continuation of Ser. No. 471,034, Jan. 26, 1990, abandoned, which is a continuation of Ser. No. 267,655, Nov. 3, 1988, abandoned, which is a continuation of Ser. No. 12,862, Feb. 10, 1987, abandoned. This application Nov. 27, 1995, Ser. No. 562,783
Claims priority, application Japan, Feb. 13, 1986, 61-029767; Feb. 13, 1986, 61-029768; Feb. 17, 1986, 61-021416
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—531 **14 Claims**



1. A camera body having a bayonet type mount with a mounting pawl which can have an optical accessory mounted thereon by rotation of the accessory, comprising:

(a) a switch related to a power source; and

(b) an operating member for actuating said switch, said operating member actuating said switch as said operating member is pushed by an accessory mounting pawl of the optical accessory when said optical accessory is mounted by rotation, said operating member having an abutting portion which abuts said accessory mounting of the optical accessory being positioned immediately inwardly of said camera mounting pawl along an axis parallel to an optical axis of said camera, said camera mounting pawl comprising a protrusion on the camera body formed in a substantially circular arc shape and projecting in a direction transversely of the optical axis.

5,613,172

HYBRID DC RECHARGE METHOD AND APPARATUS FOR SPLIT RECHARGE IMAGING

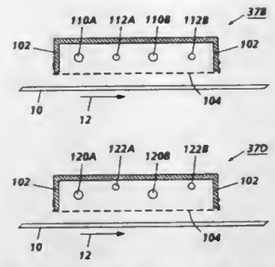
Kenneth W. Pietrowski, Penfield, and Thomas J. Fleck, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1995, Ser. No. 519,872
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—50 **18 Claims**

1. A charging station for charging a charge retentive surface to a predetermined potential, said charging station comprising:

a first corona generating device for charging a charge retentive surface to a greater absolute potential than a predetermined potential; and

a second corona generating device for charging the charge retentive surface to adjust the charge thereon to said predetermined potential, said second corona generating device including a plurality of spaced apart coronodes which each can impress charges on the charge retentive surface, and electrical inputs for receiving electrical power and for applying DC potentials to said coronodes such that at least two adjacent coronodes have different polarities and such that positive potentials are applied to positive coronodes and negative potentials are applied to negative coronodes.

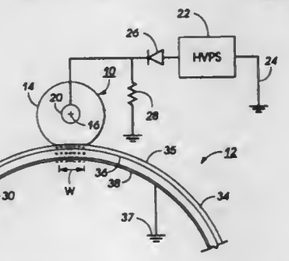


5,613,173

BIASED ROLL CHARGING APPARATUS HAVING CLIPPED AC INPUT VOLTAGE

Brendan W. Kunzmann, Rochester; James D. Rieble, Webster, and James M. Markovics, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1995, Ser. No. 577,893
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—89 **18 Claims**



1. An apparatus for applying an electrical charge to a member to be charged, comprising:

a contact roll member situated in contact with a surface of the member to be charged; and

means for applying an electrical bias to said contact roll member, the electrical bias including an oscillating voltage signal which is clipped to remove a selected polarity component thereof to supply a single polarity oscillating input drive voltage to said contact roll member, such that degradation and wear of the member to be charged is reduced by permitting reduced current flow to achieve a predetermined surface potential thereon.

5,613,174

IMAGING DEVICE WITH POSITIVE AIR PRESSURE AND ELECTROSTATIC PRECIPITATOR

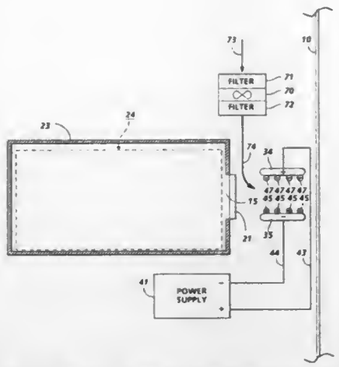
Gary A. Denton, Lexington, Ky.; Douglas A. Kreckel, Webster, and Paul F. Sawicki, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1995, Ser. No. 540,369
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—98 **19 Claims**

1. An apparatus for illuminating a surface, including:

a housing defining a chamber and an open end;

an optical device, disposed in the chamber of said housing, for transmitting light rays through the open end of said housing to the surface;



an air moving device, coupled to said housing, for maintaining an outwardly directed flow of air from the open end of said housing to move particles away from the open end of said housing; and

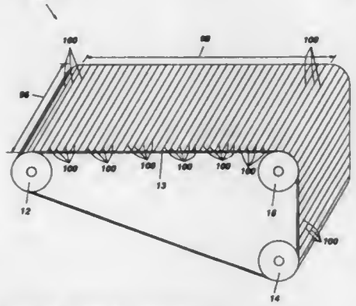
an electrically biased member, interposed between said optical device and the surface, to attract particles thereto so as to prevent particles from contaminating said optical device.

5,613,175

ANISOTROPIC IMAGING MEMBER

Neil A. Frankel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1995, Ser. No. 521,781
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—162 **20 Claims**



1. An imaging member, including:

a substrate; and

a photoconductive layer coated on said substrate, said substrate being anisotropic so as to be stiff along a first axis and flexible along a second axis transverse to the first axis.

5,613,176

IMAGE ON IMAGE PROCESS COLOR WITII TWO BLACK DEVELOPMENT STEPS

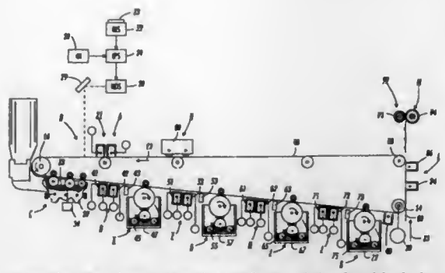
Robert E. Grace, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1996, Ser. No. 618,054
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—223 **20 Claims**

1. A method for creating image on image process color images representing a document in a printing machine comprising:

recording a first latent image on a charge retentive surface moving along an endless path;

developing the first latent image on the charge retentive surface with a first black development material;



recharging the charge retentive surface and the first black developed image;

recording at least a second latent image;

developing the second latent image on the charge retentive surface with a non-black development material;

recharging the charge retentive surface and the first black and the at least second non-black developed images;

recording a last latent image on the charge retentive surface; and

developing the last latent image on the charge retentive surface with a second black development material, wherein developing the first latent image is an interactive development process and developing the last latent image is a non-interactive development process.

18. A method for creating image on image process color images representing a document in a printing machine comprising:

recording a first latent image on a charge retentive surface moving along an endless path;

developing the first latent image on the charge retentive surface with a first black development material;

recharging the charge retentive surface and the first black developed image;

recording at least a second latent image;

developing the second latent image on the charge retentive surface with a non-black development material;

recharging the charge retentive surface and the first black and the at least second non-black developed images;

recording a last latent image on the charge retentive surface; and

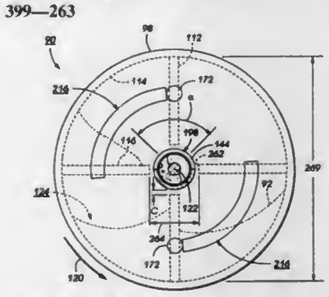
developing the last latent image on the charge retentive surface with a second black development material, wherein the first black development material includes a low gloss black toner.

5,613,177

CLEAN FINNED TONER CARTRIDGE

Murray O. Meetze, Jr., Rochester; Rhonda L. Staudt, Webster, and Timothy G. Struczewski, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,074
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—263 **26 Claims**



1. A device for storing a supply of particles for use in a developer unit of an electrophotographic printing machine, the developer unit including a feed mechanism, said device comprising:

an open ended container defining a chamber in communication with the open end thereof with the particles being stored in the chamber of said container, said container defining a longitudinal axis thereof; and

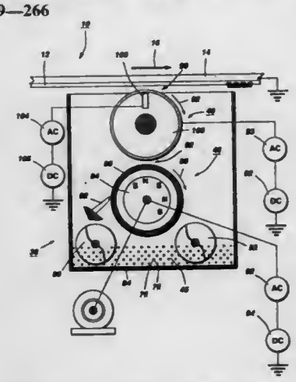
a radial protrusion extending inwardly from an internal periphery of said container substantially toward the longitudinal axis of said container, said radial protrusion extending substantially the length of said container, for urging the marking particles in the chamber toward the center of said chamber, said protrusion extending inwardly from the internal periphery of said container so that the free end thereof is in substantial proximity to the feed mechanism such that said protrusion guides the particles directly to the feed mechanism.

5,613,178

ELECTRODED DONOR ROLL

Mark S. Amico, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1995, Ser. No. 520,223
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—266 **19 Claims**



1. An apparatus for developing a latent image recorded on a surface, including:

a movable donor member;

a plurality of conductive electrodes mounted on said donor member and adapted to move in unison therewith;

a resistive member connected electrically to said plurality of conductive electrodes and adapted to move in unison therewith; and

a voltage source mounted stationarily and coupled electrically to said resistive member, said resistive member being made from a material which prevents a maximum voltage between adjacent ones of said plurality of conductive electrodes from exceeding a dielectric breakdown voltage of air with a voltage applied to one of said plurality of conductive electrodes varying as a function of the distance between said voltage source and said one of said plurality of conductive electrodes.

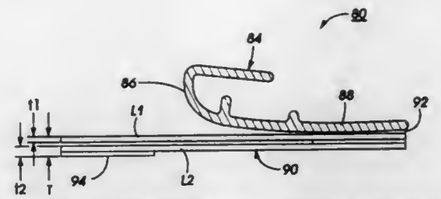
5,613,179

FORCE APPLYING BLADE DEVICE EXHIBITING A REDUCED CREEP RATE

Daniel L. Carter, Scottsville, and Geoffrey C. Williams, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1995, Ser. No. 560,234
Int. Cl.[6] G03G *15/16*
U.S. Cl. 399—316 **9 Claims**

2. A spring force applying blade device for exhibiting a reduced creep rate when bent in a force applying application, the blade device comprising:



(a) a guide member including a curved portion for supporting a blade member when the blade member is bent around said guide member; and

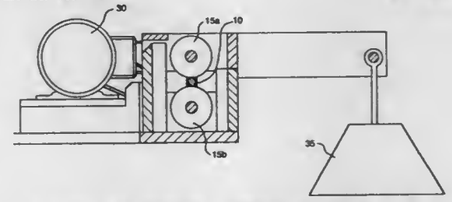
(c) a spring force applying blade member having a first edge attached to said guide member, and a second and opposite edge for applying a force when bent over said curved portion of said guide member, said blade member being comprised of a plurality of blade layers so as to reduce stress, and a creep rate, of said blade member when bent over said curved portion in a force applying application, and said plurality of blade layers including a least thickness layer, and being attached together at said first edge of said blade member such that said least thickness layer is closest to said guide member.

5,613,180

HIGH DENSITY FERROUS POWER METAL ALLOY

John C. Kosco, St. Marys, Pa., assignor to Keystone Investment Corporation, Wilmington, Del.

Filed Sep. 30, 1994, Ser. No. 315,635
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—5 **48 Claims**



1. A method for producing a sintered ferrous material having high density, high surface hardness and desirable rolling contact fatigue properties, the method comprising the steps of:

compacting a portion of a powder at about 40 to about 50 tsi to provide a green compact, said powder comprising iron and iron alloys and being substantially free of graphite;

heating said green compact in an inert, non-oxidizing environment at a temperature between about 2050° F. to about 2300° F. to provide a sintered compact;

repressing said sintered compact at about 60 tsi to provide a repressed compact;

carburizing said repressed compact in a controlled environment at high temperature to introduce carbon into said repressed compact to thereby provide said compact with a layer of relatively high carbon concentration to a depth of at least about 0.010 inches, said carburizing step thereby providing a heated carburized compact at a temperature greater than room temperature;

quenching said heated carburized compact to bring the temperature of said carburized compact to about room temperature to provide a quenched compact; and

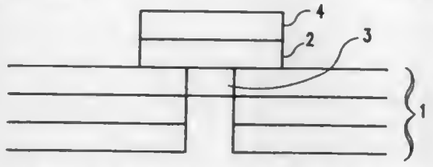
tempering said quenched compact to provide a tempered compact.

5,613,181

CO-SINTERED SURFACE METALLIZATION FOR PIN-JOIN, WIRE-BOND AND CHIP ATTACH

Govindarajan Natarajan, and Srinivasa S. N. Reddy, both of Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1994, Ser. No. 360,526
Int. Cl.[6] B22F *7/02;7/04*
U.S. Cl. 419—6 **7 Claims**



1. A method of providing surface metallization on a ceramic structure used for pin-joining, wire bonding, and chip attach comprising the steps of:

depositing first and second layers over metallization formed in a ceramic on a surface of said ceramic at a site where a metal component is to be bonded to said ceramic, said first layer being a paste of glass-ceramic/copper composite and said second layer being a metal paste containing nickel;

sintering said ceramic after said step of depositing to form a glass-ceramic substrate having a structure comprised of a first layer of glass-ceramic/copper composite and a second layer of nickel-containing metal;

plating said nickel-containing metal with nickel/gold alloy or gold; and

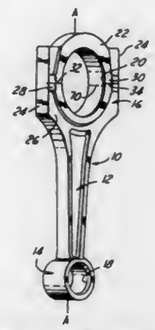
diffusion annealing the resulting structure.

5,613,182

METHOD OF MANUFACTURING A POWDER METAL CONNECTING ROD WITH STRESS RISER CREASE FORMED IN THE SIDE FACE

Jean C. Lynn, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 2, 1996, Ser. No. 626,659
Int. Cl.[6] B22F *3/24*
U.S. Cl. 419—28 **3 Claims**



1. A method for manufacturing a readily cracked connecting rod from powder metal, comprising the following steps:

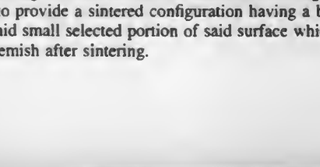
pressure molding powder metal into a green compact form utilizing a mold configuration creating a generally V-shaped notch in a side thrust face of the green compact; heating the green compact sufficiently to bond the metal particles together forming a sintered preform; forging the sintered preform to form a one-piece rod characterized by great density and strength while simultaneously folding the spaced, notch defining surfaces inward toward one another to produce a stress riser crease in the side thrust face of the rod; positioning the rod so that the creases lie adjacent crack inducing force apparatus, whereby the maximum stress imparted to the rod blank by the crack inducing apparatus is applied along the crease.

5,613,183

MANUFACTURE OF PARTS FROM PARTICULATE MATERIAL

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Witec Cayman Patents Limited, Cayman Islands, Cayman Islands Division of Ser. No. 107,874, Oct. 14, 1993, abandoned, which is a division of Ser. No. 804,529, Dec. 10, 1991, Pat. No. 5,262,122, which is a division of Ser. No. 692,955, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 143,315, Jan. 11, 1988, abandoned, which is a continuation of Ser. No. 520,764, Aug. 8, 1983, abandoned, which is a continuation of Ser. No. 191,996, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 111,632, Jan. 14, 1980, abandoned. This application Jun. 5, 1995, Ser. No. 463,842

Int. Cl.[6] B22F *3/16;* H01B *17/00*
U.S. Cl. 419—36 **30 Claims**



1. A method of manufacturing sintered parts of particulate material comprising of the steps of:

(a) mixing together predetermined amounts of powdered particulate material and a binder comprising two thermoplastic materials to produce a liquid slurry mixture, said binder being comprised of at least two components having differing melting points, at least a lower melting point binder component and a higher melting point binder component, said binder components having sufficiently different flow temperatures such that the high temperature flow component of said binder remains behind and provides strength to the remaining green body when the low temperature flow component of said binder is withdrawn from the green body;

(b) molding the mixture of particulate material and binder into a part of desired shape by injecting said mixture under heat and pressure into a mold, and allowing said mixture to solidify;

(c) removing the lower melting point component of the binder;

(d) then removing the higher melting point component of the binder; and

(e) then subjecting the debinderized part to a final sintering temperature to complete sintering.

23. The product of the process for producing an article from a fired particulate configuration by the steps of:

(a) forming an admixture by mixing together predetermined amounts of sinterable particulate material and a sufficient amount of a binder so that the binder covers substantially all of the surface of the particles of the particulate material;

(b) forming said admixture from (a) into a desired green body configuration.

(c) causing the portion of said binder in said green body configuration at the surface region thereof to travel in a direction away from a small selected portion of said surface of said green body and causing the remaining binder in said green body to travel in a direction to said small selected portion of said surface of said green body by applying to said small selected portion of said surface of said green body an absorbing body capable of absorbing said binder which is wetted by said binder to remove binder from said green body; and

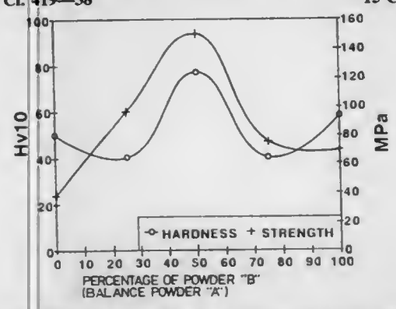
(d) sintering said binder-removed and formed configuration from (c) to provide a sintered configuration having a blemish only at said small selected portion of said surface which will form a blemish after sintering.

5,613,184

ALUMINIUM ALLOYS

Charles G. Purnell, W. Midlands; Paul Smith, Birmingham, and Mohammad S. Mahmoud, London, all of Great Britain, assignors to The Aluminium Powder Company Limited, Sutton Coldfield, and Brico Engineering Limited, Coventry, both of England

PCT No. PCT/GB94/01180, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO94/29489, PCT Pub. Date Dec. 22, 1994
PCT Filed May 31, 1994, Ser. No. 553,712
Int. Cl.[6] B22F *3/16;* C22C *1/04;21/02;21/04*
U.S. Cl. 419—38 **15 Claims**



1. An aluminium alloy made by a powder metallurgy route, the aluminium alloy having a structure comprising at least two interpenetrating reticular structures derived from the original powder particles, said at least two reticular structures including a first structure derived from a first alloy powder comprising a near-eutectic aluminium-silicon based material and a second structure derived from a second alloy powder comprising a hypereutectic aluminium-silicon based material, said aluminium alloy being characterised in that the relative proportions of said first and said second structures lie in the range from about 25:75% and 75:25%, respectively.

7. A method for the production of an aluminium alloy by a powder metallurgy route, the method comprising the steps of producing at least a first powder of a near-eutectic aluminium-silicon based first alloy; producing at least a second powder of a hypereutectic aluminium-silicon based second alloy; mixing desired proportions of the at least first and second powders together; compacting the powder mixture and sintering the compacted powder, the method being characterised in that the desired relative proportions of said first alloy and said second alloy powders lie in the range from 25:75% and 75:25%, respectively.

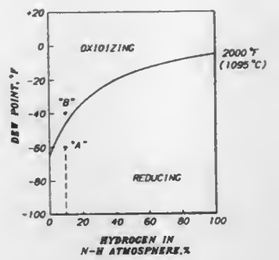
5,613,185

ATMOSPHERES FOR EXTENDING LIFE OF WIRE MESH BELTS USED IN SINTERING POWDER METAL COMPONENTS

James G. Marsden, Lenhartsville; Donald J. Bowe, Macungie; Kerry R. Berger, Lehighton; Diwakar Garg, Emmaus, and David L. Mitchell, Jr., Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 1, 1995, Ser. No. 456,594
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—58 **6 Claims**

1. A process for sintering of steel components in a furnace at an elevated temperature wherein such sintering is carried out in an atmosphere comprising nitrogen and hydrogen and wherein such steel parts are supported in the furnace on a belt comprised of a wire mesh material, characterized in that an effective amount of a gaseous oxidant is added to the furnace such that the resulting



OXIDATION-REDUCTION DIAGRAM FOR A TYPICAL STAINLESS STEEL

atmosphere in the furnace is oxidizing to the belt material yet reducing to the steel components thus enabling an extended belt life.

5,613,186

METHOD FOR MONITORING THE ADU PROCESS FOR TECHNETIUM

Richard I. Larson; Judith E. Culbreth, both of Wilmington, and Juanita H. Pigford, Willard, all of N.C., assignors to General Electric Company, Schnectedy, N.Y.

Filed Jan. 11, 1996, Ser. No. 584,547
Int. Cl.[6] C01G *57/00*
U.S. Cl. 423—2 **5 Claims**

1. A process of determining the presence of technetium-99 in a sample containing uranium comprising the steps of sequentially:

(a) solubilizing the uranium contained in the sample;

(b) selectively removing the solubilized uranium from the sample;

(c) solubilizing the technetium-99 in the sample by converting it to the pertechnetate ion form;

(d) selectively sorbing the pertechnetate ions on an extraction chromatographic column;

(e) eluting the sorbed technetium-99 from the extraction chromatographic column; and

(f) determining the amount of technetium-99 contained in the eluant of step (e).

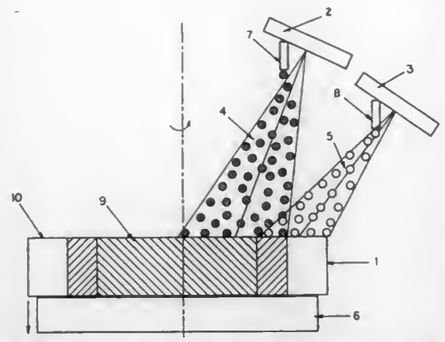
5,613,187

ROTATIONALLY SYMMETRICAL ARTICLE WITH PROPERTIES VARYING OVER THE CROSS-SECTION

Dieter Stock, Regglisweiler, Germany, and W. Gary Watson, Cheshire, Conn., assignors to Wieland-Werke AG Metallwerke, Ulm, Germany

Continuation of Ser. No. 139,220, Oct. 19, 1993, abandoned. This application Aug. 1, 1995, Ser. No. 510,010
Claims priority, application Germany, Oct. 20, 1992, 42 35 303.3
Int. Cl.[6] B22F *5/00*
U.S. Cl. 428—547 **10 Claims**

1. An article of copper or a copper alloy manufactured from a rotationally symmetrical preform, said preform having a metal matrix cross-section consisting of at least a core, an outer layer surrounding the core and an undefined boundary provided between the core and the outer layer, at least one of the core and the outer layer having additives contained therein which result in the core



and the outer layer having different properties from each other, said additives comprising metallic particles of molybdenum, niobium, tungsten or lead which are insoluble in the metal matrix.

5,613,188

INTERLACED CONDUCTOR/BACK-IRON SECONDARY FOR INDUCTION MOTORS

Zbigniew Piech, East Hampton; Robin M. Miller, Ellington, and John L. Kettle, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 15, 1995, Ser. No. 515,191
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—547 **20 Claims**



1. An induction motor, comprising:

a secondary portion, comprising:

conductive lattice means, for having an electrical current induced therein and for allowing the flow of said current therein; and

ferromagnetic lattice means, interlaced with said conductive lattice means, for allowing the flow of magnetic flux therein.

5,613,189

METAL MATRIX COMPOSITIONS AND METHOD OF MANUFACTURE THEREOF

Robin A. Carden, Costa Mesa, Calif., assignor to Alyn Corporation, Irvine, Calif.

Division of Ser. No. 183,728, Jan. 19, 1995, Pat. No. 5,486,223. This application Sep. 29, 1995, Ser. No. 537,269
Int. Cl.[6] B22F *7/04*
U.S. Cl. 428—565 **4 Claims**

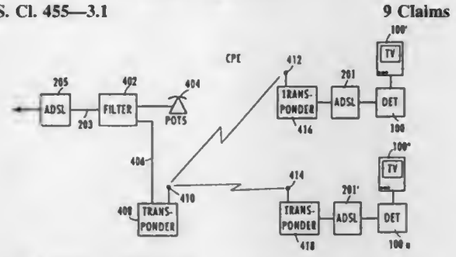
1. A bicycle frame comprising a plurality of interconnected tubes, each such tube comprising a metal matrix composite fabricated by blending degassed powders of an aluminum alloy and boron carbide, isopressing and sintering the powders and extruding the resultant ingot to form said tube of desired size and thickness; said tubes being interconnected by welding and then being heat treated.

5,613,190

CUSTOMER PREMISE WIRELESS DISTRIBUTION OF AUDIO-VIDEO, CONTROL SIGNALS AND VOICE

Denny L. Hylton, Great Falls, Va., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed May 1, 1995, Ser. No. 431,940
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—3.1 **9 Claims**



1. In a system comprising:

a communication network selectively providing broadband communications links;

a plurality of information service provider systems connected to the network for transmitting broadband digital information signal via communication links through the network;

a gateway for connecting selected information provider systems to user terminals responsive to user terminals transmitting control signals upstream through the network in response to user inputs;

wherein said user terminals include a digital entertainment terminal for coupling to a communication link transporting at least said broadband digital information and upstream and downstream control signaling;

said digital entertainment terminal being coupled to said communication link transporting at least said broadband digital information and two-way upstream and downstream control signaling through a coupling including:

a first transponder located at the premise for receiving and transmitting radio frequency signals, said transponder translating into radio frequency signals and transmitting by radiation, upstream control signals received from said digital entertainment terminal, and receiving and translating from radio frequency and delivering to said digital entertainment terminal, broadband and downstream control signals received;

a second transponder located at the premise for receiving and transmitting radio frequency signals, said transponder translating into radio frequency signals and transmitting by radiation, broadband and downstream control signals received from said communication link, and receiving and translating from radio frequency and delivering to said communication link upstream control signals received from said first transponder;

said coupling of said digital entertainment terminal to said communication link including a pair of multiplexing/demultiplexing circuits, wherein one of said multiplexing/demultiplexing circuits is at said premise and the other said multiplexing/demultiplexing circuit is removed from said premise; and

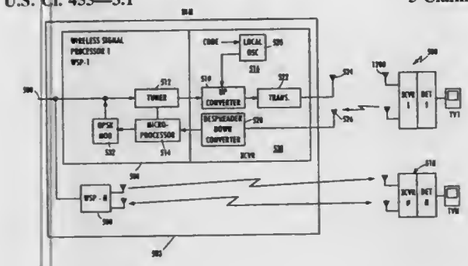
wherein said one of said multiplexing/demultiplexing circuits is connected between said digital entertainment terminal and said first transponder.

5,613,191

CUSTOMER PREMISE WIRELESS DISTRIBUTION OF AUDIO-VIDEO, CONTROL SIGNALS AND VOICE USING CDMA

Denny L. Hylton, Great Falls, Va.; Steven Olsen, Catonsville, Md.; William Burton, Ashton, Md., and Dave Lichtenwalner, Columbia, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 431,940, May 1, 1995. This application Jul. 27, 1995, Ser. No. 508,131
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—3.1 **5 Claims**



1. In a system comprising:

a communication network selectively providing broadband communications links to user premises;

a plurality of information service provider systems connected to the network for transmitting broadband digital information signal via communication links through the network;

a gateway for connecting selected information provider systems to user terminals at user premises and responsive to user terminals transmitting control signals upstream through the network in response to user inputs;

wherein said user terminals include a digital entertainment terminal for coupling to a communication link to said network, said communication link transporting at least said broadband digital information and upstream and downstream control signalling;

said digital entertainment terminal being coupled to said communication link through a coupling including:

a first transponder located at the premises for receiving and transmitting spread spectrum radio frequency signals, said transponder translating into radio frequency code division multiple access (CDMA) signals and transmitting by radiation, upstream control signals received from said digital entertainment terminal, and receiving and translating from spread spectrum radio frequency and delivering to said digital entertainment terminal, broadband and downstream control signals received;

a second transponder located at the premise for receiving and transmitting spread spectrum radio frequency signals, said transponder translating into code division multiple access (CDMA) radio frequency signals and transmitting by radiation, broadband and downstream control signals received from said communication link, and receiving and translating from spread spectrum radio frequency signals and delivering to said communication link, upstream control signals received from said first transponder;

a multiplexing/demultiplexing circuit; and

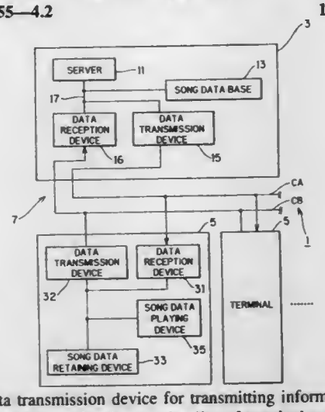
a frequency tuning circuit.

5,613,192

ONE-WAY DATA TRANSMISSION DEVICE WITH TWO-WAY DATA TRANSMISSION FUNCTION

Kazunori Ikami; Yasuhiro Funahashi, both of Nagoya, and Yukie Hasegawa, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, and Xing Inc., both of Aichi, Japan

Filed Jun. 1, 1995, Ser. No. 457,594
Claims priority, application Japan, Jun. 1, 1994, 6-120219
Int. Cl.[6] H04N *7/14*
U.S. Cl. 455—4.2 **15 Claims**



1. A data transmission device for transmitting information data from a central control unit to a plurality of terminals via a transmission line, the data transmission device comprising:

a central control unit; and

a plurality of terminals connected to the central control unit via a transmission line, the transmission line having an information data transmission channel,

wherein the central control unit includes:

information data memory means for storing a plurality of information data;

data normal transmission means for successively transmitting the plurality of information data in a predetermined order over the information data transmission channel of the transmission line cyclically;

request data reception means for receiving request data transmitted from the terminals via the transmission line, the request data designating information data desired to be obtained at the terminals; and

data urgent transmission means for inserting the designated information data between two successive information data of the plurality of information data which are being transmitted successively by the data normal transmission means so that the designated information data are transmitted over the information data transmission channel of the transmission line while being mixed in the plurality of information data,

wherein each of the plurality of terminals includes:

judging means for judging whether or not it is necessary to rapidly obtain the information data that is desired to be obtained at the corresponding terminal;

request means for transmitting, to the central control unit, request data designating the desired information data when the judging means judges that it is necessary to rapidly obtain the desired information data; and

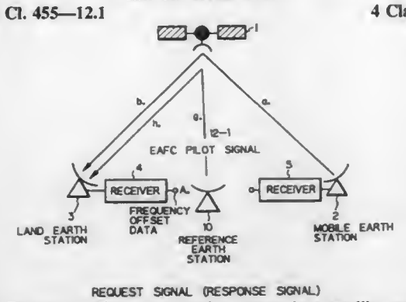
data pick up means for picking up the desired information data transmission channel of the transmission line, the data pick up means picking up the desired information data from the plurality of information data transmitted from the data normal transmission means when the request means transmits no request data to the central control unit, the data pick up means picking up the desired information data transmitted from the data urgent transmission means when the request means transmits request data to the central control unit.

5,613,193

COMPENSATION OF FREQUENCY OFFSET

Hiroyasu Ishikawa, and Hideo Kobayashi, both of Saitama, Japan, assignors to Kokusai Denshin Denwa Co. Ltd., Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 268,437
Claims priority, application Japan, Jul. 5, 1993, 5-190976
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—12.1 4 Claims



1. Frequency offset compensation system in a satellite mobile communication system including a plurality of land earth stations each coupled with a terrestrial network and a satellite through a first radio link, a reference earth station coupled with said satellite through a second radio link to monitor and control said land earth stations, and at least one mobile earth station coupled with said satellite through a third radio link, said system comprising:

means installed in a land earth station of the plurality of land earth stations for measuring a first frequency offset in a request signal or a response signal in a received signal from said mobile earth station through said satellite through the third radio link due to a second frequency offset by a transponder in said satellite and a local oscillator in said mobile earth station, and third frequency offset due to doppler shift by movement of said satellite,

means for informing the first frequency offset thus measured to said mobile earth station which transmits said request signal or said response signal through a communication channel through the third radio link through said satellite,

means installed in said mobile earth station for controlling local frequency for the communication channel based upon said first frequency offset informed by said land earth station so that said first frequency offset thus measured becomes a minimum.

5,613,194

SATELLITE-BASED CELLULAR MESSAGING SYSTEM AND METHOD OF OPERATION THEREOF

Keith A. Olds; Gregory B. Vatt, both of Mesa, Ariz., and Christopher N. Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 317,083
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—12.1 26 Claims

1. In a system comprising a plurality of addressable call receivers and at least one satellite having a transmitter for transmitting a plurality of messages to said receivers located in a region, said satellite having a limited resource for supplying power to said transmitter, a method of operating said system comprising the following steps;

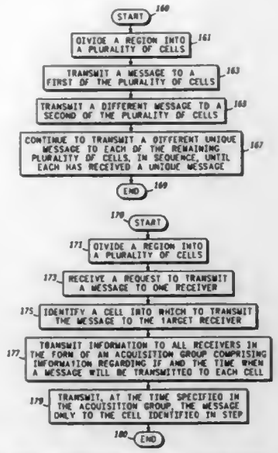
a) dividing said region into a plurality of cells;

b) transmitting a message to a first of said plurality of cells;

c) transmitting a different message to a second of said plurality of cells; and

d) continuing to transmit a different unique message to each of said remaining plurality of cells, in sequence, until each has received a unique message;

wherein said transmitter transmits a plurality of blocks, each block comprising a plurality of groups of information including an acquisition group, said acquisition group comprising a plurality of frames, one for each of said cells in the form of said message.

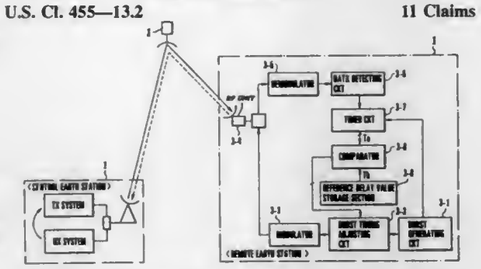


5,613,195

BURST OUTPUT TIMING CONTROL SYSTEM IN SATELLITE COMMUNICATION SYSTEM

Tomoyuki Ooi, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 241,484, May 12, 1994, abandoned.
This application Feb. 23, 1996, Ser. No. 606,227
Claims priority, application Japan, May 12, 1993, 5-132374
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—13.2 11 Claims



1. A method for controlling a burst output timing in a satellite communication system for performing radio communication between a central earth station and a plurality of remote earth stations via a satellite, comprising the steps of;

time-counting a time between a transmission of burst data from each of said remote earth stations to a central earth station via the satellite and a reception of the burst data returned from the central earth station via the satellite; and

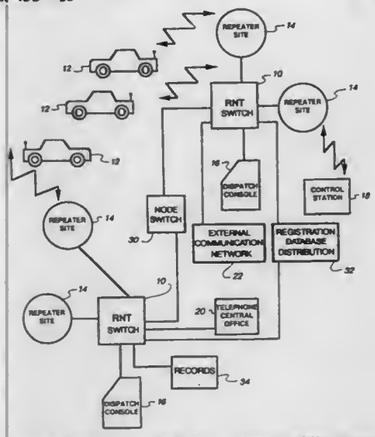
adjusting an output timing of the burst data transmitted from each remote earth station, when the burst data is to be sent to said central earth station, in accordance with a time difference between said time counting time and a preset reference time which is a time between a transmission of burst data from a reference remote earth station to the central earth station via the satellite and a reception of the burst data returned from the central earth station via the satellite.

5,613,196

METHOD AND APPARATUS FOR A DISTRIBUTIVE WIDE AREA NETWORK FOR A LAND MOBILE TRANSMISSION TRUNKED COMMUNICATION SYSTEM

Keith W. Barnes; Donald R. Bauman; Howard N. Brace; Philip A. Keefer, and Michael E. Mihelich, all of Waseca, Minn., assignors to E. F. Johnson Company, Minneapolis, Minn.

Continuation of Ser. No. 903,050, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 716,757, Jun. 18, 1991, Pat. No. 5,159,701, which is a continuation of Ser. No. 332,675, Mar. 31, 1989, abandoned. This application Sep. 2, 1994, Ser. No. 300,629
Int. Cl.[6] H04B 7/155
U.S. Cl. 455—15 9 Claims



1. A remote network switch for a land mobile transmission trunked communication system, the land mobile transmission trunked communication system having a plurality of transceiver means for transmitting and receiving radio communications over one or more radio channels, the remote network switch comprising:

a plurality of repeater sites, each repeater site comprising a plurality of repeater means, each repeater means for establishing transmission trunked radio communications on a preassigned one of the radio channels between the repeater means and one or more transceiver means, the transmission trunked communications having either voice information, data information, or both, and a control signal, and the plurality of repeater means at a repeater site operably connected together by a high speed bus means for synchronously communicating control signals among the plurality of repeater means using a variable time multiplex system having a frame time period which is based on a number of repeater means at the repeater site; and

switch means for selectively interconnecting two or more repeater means at two or more repeater sites in response to a control signal from a transceiver means, the switch means operably connected to each of the repeater means by a network bus means separate from the high speed bus means, for synchronously communicating control and information signals between the repeater means and the switch means.

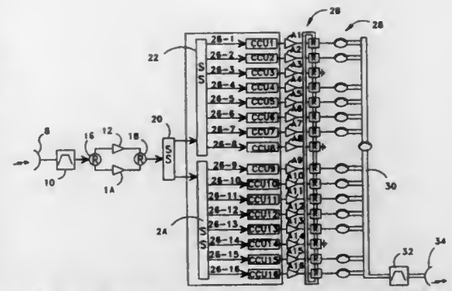
5,613,197

MULTI-CHANNEL TRANSPONDER WITH CHANNEL AMPLIFICATION AT A COMMON LOWER FREQUENCY

Wilbert B. Copeland, Los Angeles; Erik Soderburg, Redondo Beach; John Dunwoody, Long Beach; Robert Brunner, Redondo Beach, and Keith Williams, Los Angeles, all of Calif., assignors to Hughes Aircraft Co., Los Angeles, Calif.

Filed Nov. 3, 1994, Ser. No. 334,491
Int. Cl.[6] H04B 7/14
U.S. Cl. 455—22 16 Claims

1. A radio frequency (RF) signal transponder, comprising:



a) a receive antenna for receiving input signals at different respective RF reception frequencies,

b) an input band pass filter connected to restrict signals received from said antenna to a desired RF reception band,

c) a signal splitter for splitting an input signal from said input band pass filter into a plurality of different input signals for different respective channels, each of said channels including:

i) a down conversion signal mixer connected to receive the input signal for its channel,

ii) a mixing signal generator for generating a down conversion mixing signal having an RF frequency equal to the difference between or sum of a desired reception frequency for that channel and a lower intermediate frequency (IF) that is common to each of said channels, and an up conversion mixing signal having an RF frequency equal to the difference between or sum of a desired transmission frequency for that channel and said IF, said mixing signal generator comprising:

1) a signal generator for generating first and second loop mixing signals at respective frequencies equal to the difference between said reception and transmission frequencies, and to said transmission frequency offset by IF and further offset by N·CLK, where CLK is a clock signal frequency and N is a lop divisor factor,

2) a differential frequency detector having CLK and variable frequency inputs,

3) a loop filter connected to receive an output from said differential frequency detector,

4) a voltage controlled oscillator (VCO) connected to receive an output control signal from said loop filter, and to produce said down conversion mixing signal as an output,

5) a first loop mixer connected to mix said VCO output with said first loop mixing signal to produce said up conversion mixing signal as an output,

6) a second loop mixer connected to mix said first loop mixer output signal with said second loop mixing signal to produce an output signal at a frequency less than either of said first loop mixer output or second loop mixing signals, and

7) a +N frequency divider connected to divide the frequency of the second loop mixer output by N, and to apply the resulting frequency-divided signal to the differential frequency detector's variable frequency

iii) a circuit for applying said down conversion mixing signal to said down conversion signal mixer to mix with said channel input signal and produce an output at said IF,

iv) a channel band pass filter tuned to said IF and connected to filter the output of said down conversion signal mixer,

v) a channel control connected to control the gain of the output of said down conversion signal mixer after it has been filtered by said channel band pass filter,

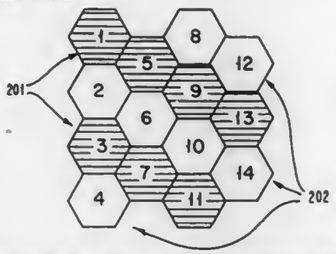
vi) an up conversion signal mixer connected to receive a gain controlled output of said channel control, and

vii) a circuit for applying said up conversion mixing signal to said up conversion signal mixer to mix with said channel control output and produce a channel output at said channel transmission frequency,

d) a signal combiner for combining said channel outputs, and

e) a transmit antenna for transmitting the combined channel outputs of said signal combiner.

5,613,198
MULTIACCESS SCHEME FOR MOBILE INTEGRATED LOCAL AREA NETWORKS
Hamid Ahmadi, Somers; Amotz Bar-Noy; Ilan Kessler, both of Bronx, and Arvind Krishna, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 56,165, Apr. 30, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 402,767
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 455—33.1 **4 Claims**



1. A method of allocating overall communications bandwidth in two tiers of allocation to cells in a cellular network for transmitting bursty data to and from mobile units, comprising the steps of:

a. partitioning overall communications bandwidth into a plurality of distinct channels, each said distinct channel having sufficient bandwidth to handle bursty data to and from a mobile unit;

b. forming a plurality of groups of said cells, said plurality of groups being equal in number to said plurality of distinct channels, by collecting into each said group a plurality of said cells selected so as to minimize interference between cells within each said group, at least one said group having some interference between cells therein, no two of said groups having the same one of said cells therein;

c. in a first tier of allocation, assigning a different one of said distinct channels to each said group; and

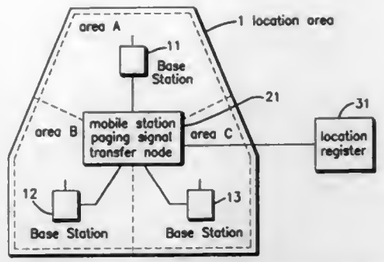
d. in a second tier of allocation, for each said group, dynamically allocating bandwidth of said one distinct channel assigned to said group to said cells of said group in accordance with user demand in each cell of said group, said bandwidth of said one channel assigned to said at least one group being allocated in said second tier of allocation using time division multiple access (TDMA) scheduling with spatial reuse.

5,613,199
MOBILE COMMUNICATION SYSTEM AND A MOBILE STATION PAGING METHOD
Masahiko Yahagi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 30, 1995, Ser. No. 453,895
Claims priority, application Japan, May 30, 1994, 6-116946
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 455—33.1 **6 Claims**

1. A mobile communication system comprising:

a plurality of base stations in a corresponding plurality of base station areas, said base stations communicating with a plurality of mobile stations and said base stations being identified by a location signal from each of said base stations;

a location register for supplying a paging signal for paging a mobile station at which an incoming call is to be received, said paging signal including mobile station identification number; and



a mobile station paging signal transfer node interconnecting said base stations and said location register, comprising:

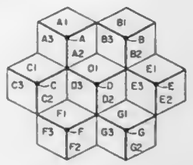
receiving means for receiving said paging signal supplied from said location register and for analyzing a mobile station identification number supplied therewith;

storage means for storing sublocation information indicating correspondences between a number of mobile stations existing in each base station area and a group number classified into predetermined groups based on said mobile station identification number;

identification means for identifying at least one base station in whose base station area a mobile station to be paged is expected to be present by searching said sublocation information for each base station area; and

transferring means for transferring a paging signal to said at least one base station.

5,613,200
METHOD OF ALLOCATING RADIO CHANNELS FOR MOBILE COMMUNICATION SYSTEM
Kojiro Hamabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 214,291, Mar. 17, 1994, abandoned.
This application Jun. 7, 1995, Ser. No. 487,696
Claims priority, application Japan, Mar. 17, 1993, 5-081101
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 455—33.1 **10 Claims**



CHANNEL GROUP	CHANNELS
CHG 1	1 4 7 10
CHG 2	2 5 8 11
CHG 3	3 6 9 12

SECTORAL ZONE	SELECTION ORDER OF CHANNEL GROUPS
X1	①CHG 1, ②CHG 2 OR CHG 3
X2	①CHG 2, ②CHG 3 OR CHG 1
X3	①CHG 3, ②CHG 1 OR CHG 2

X=A, B, C, D, E, F, G

1. A method of allocating radio channels in a mobile communication system comprising base stations, each base station having a plurality of sectoral zones whose direction is defined by a directional antenna located at the base station, said method comprising the steps of:

dividing all of the available radio channels for said system into a number of radio channel groups equal to the number of sectoral zones per base station;

assigning each of said radio channel groups to said sectoral zones so that one of said radio channel groups is assigned as a preferential allocation channel group to each of said sectoral zones whose directions are substantially the same; and

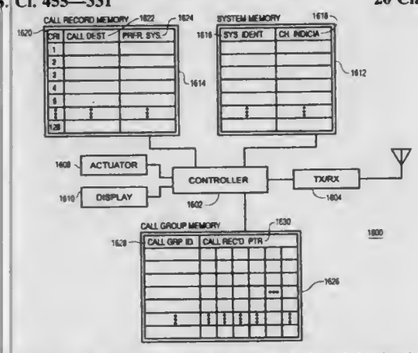
when a request for communication occurs between a base station and a mobile station positioned in a sectoral zone covered by said base station,

testing a carrier-to-interference power ratio of a selected radio channel from the preferential allocation channel group assigned to said sectoral zone; and

allocating the selected radio channel which has a carrier-to-interference power ratio equal to or greater than a predetermined value;

whereby a number of identical radio channels are allocated to the sectoral zones having substantially the same direction in many of the base stations.

5,613,201
AUTOMATIC CALL DESTINATION/SYSTEM SELECTION IN A RADIO COMMUNICATION SYSTEM
George C. Alford, Plano; Yamin Damghani, Dallas; Nickolas A. Avdonin, North Richland Hills, all of Tex., and Billy G. Moon, Apex, N.C., assignors to Uniden America Corporation, Fort Worth, Tex.
Filed Jul. 25, 1995, Ser. No. 506,461
Int. Cl.[6] H04Q *7/38;* **H04B** *7/26*
U.S. Cl. 455—331 **20 Claims**



1. A radio, operable to place a call to a preferred destination by user selection of a current call record, the radio operable to check accessibility of a current preferred system defined by the current call record, and if the current preferred system is not accessible, the radio further operable to recall a different call record defined by a current link in the current call record, thereby redefining the current call record to be utilized in placing the call to the preferred destination, the radio comprising:

a call record memory comprising a plurality of storage locations for storing a plurality of call records, and wherein at least a portion of said call records further comprise a call destination, a preferred system, and a link;

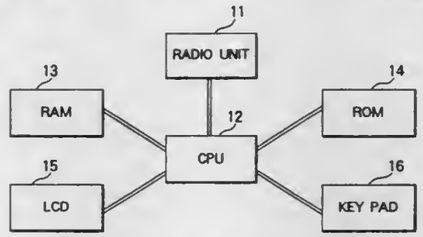
a system memory comprising a plurality of storage locations for storing a plurality of system records, each of said plurality of system records further comprise a system identifier having at least one channel indicia;

a transceiver for receiving and transmitting signals between the radio and a plurality of systems, and wherein said transceiver is controllable to operate on a plurality of channels for communicating with said plurality of systems in accordance with said channel indicia;

a controller, coupled to said call record memory and operable to recall call records therefrom, said controller coupled to said system memory and further coupled to said transceiver and operable to recall any of said channel indicia from said system memory in accordance with any one of said plurality of preferred systems recalled from said call record memory, and

an actuator, coupled to said controller and operable to select a first call record as the current call record thereby defining a current call destination, the current preferred system and the current link in accordance with said first call record, said actuator further causing said controller to check said current preferred system to determine if it is accessible, and upon finding that said current preferred system is not accessible, causing said controller to recall a second call record in accordance with the current link, and further redefining the current call record in accordance with said second call record.

5,613,202
MOBILE STATION WITH FUNCTION WHICH ENABLES A USER TO EASILY RECOGNIZE A CURRENT POSITION
Takeshi Ishida, and Noriko Norimatsu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 74,500, Jun. 11, 1993, abandoned.
This application Apr. 18, 1996, Ser. No. 634,369
Claims priority, application Japan, Jun. 11, 1992, 4-177630
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—33.1 **4 Claims**



1. A mobile station for use in radio communication with a selected station selected from a plurality of base stations which are placed at different positions and which are assigned with station numbers, respectively, said selected station transmitting a particular signal representative of an assigned one of said station numbers, said mobile station including displaying means for displaying a display datum, said mobile station further comprising:

a position data memory for storing position data in a form in which said position data are dependent on said station numbers, respectively, said position data representing said positions, respectively;

particular reading means connected to said position data memory for reading, as a particular datum, one of said position data in accordance with said particular signal; and

particular making means connected to said displaying means and said particular reading means for making said displaying means display said particular datum as said display datum,

said particular making means comprising:

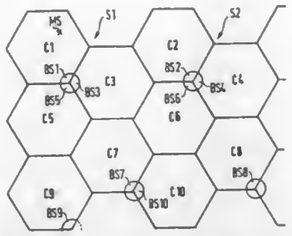
a local memory connected to said particular reading means for storing said particular datum;

particular command signal producing means for producing a particular command signal; and

means connected to said local memory and said displaying means and said particular command signal producing means for making said displaying means display said particular datum as said display datum in response to said particular command signal.

5,613,203
HANDOVER METHOD AND DEVICE FOR A CELLULAR MOBILE RADIO SYSTEM
Pierre Dupuy, and Vinod Kumar, both of Paris, France, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed Oct. 27, 1994, Ser. No. 329,844
Claims priority, application France, Oct. 28, 1993, 93 12890
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 455—33.2 **11 Claims**

1. Method for handover between old and new cells of a time-division multiple access (TDMA) cellular mobile radio system, in which method a call between a mobile station and said system,



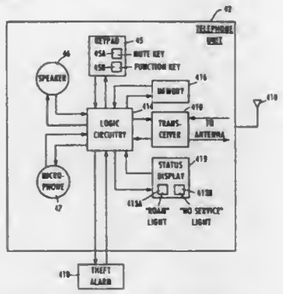
initially effected via said old cell on a first channel defined by a first on air timeslot and on a first set of frequencies comprising at least one frequency, is transferred to be effected via said new cell on a new channel defined by a second on air timeslot and a second set of frequencies comprising at least one frequency, said first and second on air timeslots are identical, said first and second sets of frequencies are separate, and said method consists in transmitting, after verifying that said second on air timeslot identical to said first on air timeslot is available in said new cell, a frequency indication message indicating to said mobile station said second set of frequencies so that said mobile station continues said call using the same on air timeslot and said second set of frequencies.

5,613,204

BEACON SYSTEM FOR ROAMING CELLULAR STATIONS

Michael Haberman, Morris Plains; Robert T. Braun, Pittstown, both of N.J., and James F. McHenry, Doylestown, Pa., assignors to Bell Atlantic Mobile Systems, Inc., Bedminster, N.J.

Filed Dec. 22, 1994, Ser. No. 362,307
Int. Cl.[6] H04Q *7/22;* **H04B** *7/26*
U.S. Cl. 455—33.2 **15 Claims**



9. A radio telephone subscriber unit comprising:

(a) means for automatically tuning to a first predetermined frequency when a roaming state is detected;

(b) means for responding to receipt of a System Identification Number (SID) corresponding to a home service provider of said radio telephone subscriber unit while said radio telephone subscriber unit is roaming; and

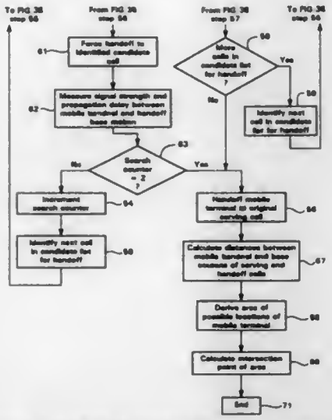
(c) means for carrying out a communication operation responsive to receipt of said SID, wherein said communication operation comprises tuning to a control frequency accompanying said SID and further comprises means for automatically tuning to a control frequency stored in said handset and corresponding to said SID, wherein said communication operation still further comprises automatically tuning to a voice channel to receive a data download of at least a list of preferred SIDs.

5,613,205

SYSTEM AND METHOD OF LOCATING A MOBILE TERMINAL WITHIN THE SERVICE AREA OF A CELLULAR TELECOMMUNICATION SYSTEM

Daniel Dufour, Blainville, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 31, 1995, Ser. No. 414,362
Int. Cl.[6] H04Q *7/00;9/00*
U.S. Cl. 455—33.2 **17 Claims**



1. A method of locating a mobile terminal in an unsynchronized cellular telecommunication system having a plurality of unsynchronized base stations and associated cells, said mobile terminal being served by one of said plurality of base stations, said method comprising the steps of:

identifying a plurality of candidate handoff cells having sufficient signal strength to maintain a call with said mobile terminal;

forcing sequential handoffs of said mobile terminal from said serving cell to said plurality of candidate handoff cells having sufficient signal strength to maintain a call;

measuring signal strength and propagation delay between the mobile terminal and each unsynchronized base station associated with each of said plurality of candidate handoff cells and between the mobile terminal and said serving base station;

calculating a distance between the mobile terminal and each unsynchronized base station associated with each of said plurality of candidate handoff cells and between the mobile terminal and said serving base station;

defining a plurality of arcs of possible locations of said mobile terminal, said arcs being centered on said serving base station and each unsynchronized base station associated with each of said plurality of candidate handoff cells; and

calculating an intersection point of said plurality of arcs of possible locations, said intersection point defining the location of said mobile station.

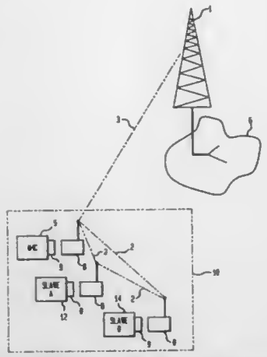
5,613,206

AD HOC PACKET DATA NETWORKS USING CELLULAR TELEPHONE NETWORKS

David F. Bantz, Chappaqua, and Anand Narasimhan, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1995, Ser. No. 417,570
Int. Cl.[6] H04Q *7/14*
U.S. Cl. 455—34.1 **9 Claims**

1. In a cellular network having a plurality of mobile units communicating with a fixed base station, a method sharing a single radio channel among said mobile units, said method comprising:



a) transmitting a first request signal from a selected one of said mobile units to said base station, said request signal indicating a request to use a radio channel;

b) assigning, in response to said first request signal, said radio channel to said selected mobile unit for use by said selected mobile unit;

c) transmitting an idle signal from said selected mobile unit over said radio channel to indicate use of said radio channel by said selected mobile unit;

d) transmitting an advertisement signal to other of said mobile units indicating that said other mobile units may request use of said radio channel;

e) transmitting a second request signal from at least one requesting one of said other mobile units to said selected mobile unit, said second request signal indicating a request to use said radio channel;

f) transmitting a response from said selected mobile unit to said requesting one mobile unit indicating that said requesting mobile unit may use said radio channel, wherein said requesting one mobile unit then uses said radio channel; and

g) upon cessation of the use of said radio channel by said requesting mobile unit, resumption by said selected mobile unit of transmission of said idle signal.

5,613,207

METHOD FOR TRANSMITTING MESSAGES IN A COMMUNICATION SYSTEM

Alan Wilson, Hoffman Estates, and Michael Sasuta, Mundelein, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

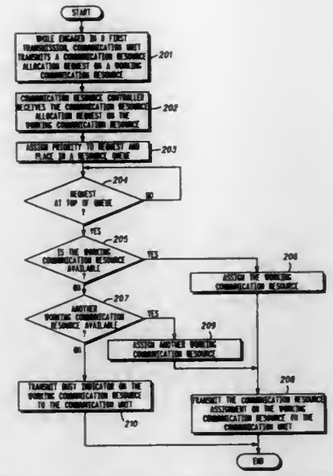
Filed May 27, 1994, Ser. No. 250,410
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 455—34.2 **19 Claims**

11. A method for assigning communication resources in a communication system, the method comprising the steps of:

a) receiving, from a communication unit, a communication resource allocation request on a first working communication resource while the communication unit is engaged in a transmission of a message on the first working communication resource;

b) determining whether a second working communication resource is available for allocation to the communication unit; and

c) when the second working communication resource is available for allocation to the communication unit, transmitting, on the first working communication resource, a communication resource assignment of the second working communication resource to the communication unit.

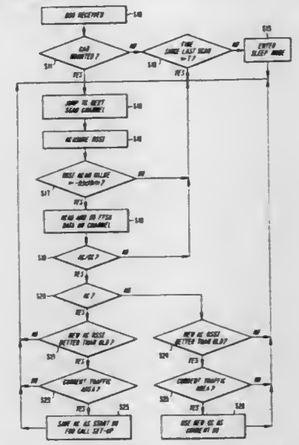


5,613,208

CHANNEL SCAN IN CELLULAR TELEPHONE SYSTEM

Hans Blackman, Malmoe, and Sven Tryding, Lund, both of Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Jun. 6, 1994, Ser. No. 254,915
Int. Cl.[6] H04Q *9/00*
U.S. Cl. 455—34.1 **17 Claims**



1. A method for controlling scanning of radio channels by mobile stations in a cellular radiotelephone system, wherein said mobile stations are operationally connected to at least one base station over a plurality of radio channels, the method comprising the steps of:

transmitting from a base station a control signal to at least one mobile station for informing said at least one mobile station that no pages will be issued directed to said at least one mobile station for a predetermined period;

receiving, in said at least one mobile station, said control signal;

scanning during said predetermined period, in said at least one mobile station, said radio channels to identify which radio channels have superior characteristics; and

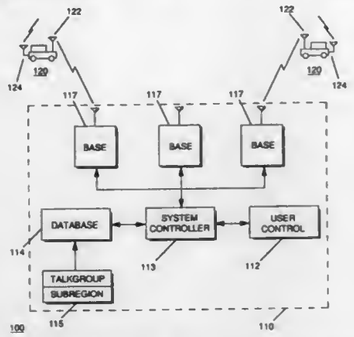
storing, in said mobile station radio, channels determined to have superior characteristics.

5,613,209

METHOD AND APPARATUS FOR AUTOMATICALLY SELECTING A RADIO TALKGROUP

Larry M. Peterson, West Dundee, and Timothy J. Sherburne, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1994, Ser. No. 299,134
Int. Cl.[6] H04Q *7/00;9/00*
U.S. Cl. 455—34.1 **21 Claims**



1. A method comprising the steps of:

providing a plurality of wireless two-way communication units capable of communicating with one another within a first geographic area of operation; and

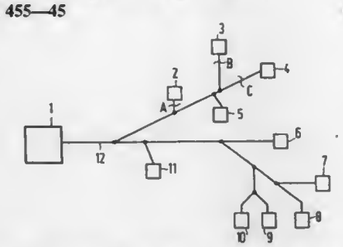
automatically causing a particular member of the plurality of wireless two-way communication units to operate as a member of a particular talkgroup when that particular member is within a particular second geographic area of operation identified by specific geographic parameters, which second geographic area of operation is smaller than, and contained within, the first geographic area of operation.

5,613,210

TELECOMMUNICATION NETWORK FOR TRANSMITTING INFORMATION TO A PLURALITY OF STATIONS OVER A SINGLE CHANNEL

Carel-Jan L. Van Driel, and Atul N. Sinha, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 151,077, Nov. 12, 1993, abandoned. This application May 30, 1995, Ser. No. 453,293
Claims priority, application European Pat. Off., Nov. 19, 1992, 92203568
Int. Cl.[6] H04B *1/50;10/24*
U.S. Cl. 455—45 **6 Claims**



1. A telecommunication system for transmitting distribution and return signals, comprising:

a main station;

a plurality of sub-stations, each of said plurality of sub-stations for transmitting to said main station a return signal modulated on a return carrier having a frequency in a predetermined return frequency band and for receiving from said main station a distribution signal modulated on a distribution carrier having a frequency in a distribution signal frequency band;

wherein said distribution frequency band and said return frequency band at least partially overlap and the distribution carrier and return carrier of each sub-station have different frequencies;

wherein said distribution carriers each have a frequency different from that of all other distribution carriers, and said return carriers each have a frequency different from that of all other return carriers; and,

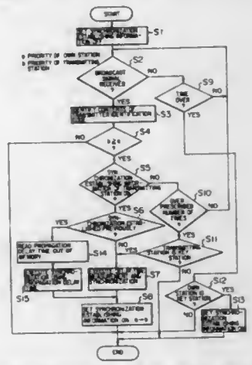
wherein at least said distribution carrier of a first sub-station and said return carrier of a second sub-station have the same frequency.

5,613,211

METHOD OF ESTABLISHING INTER BASE-STATION SYNCHRONIZATION AND MOBILE RADIO COMMUNICATON SYSTEM USING THE METHOD

Keishi Matsuno, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 132,247, Oct. 6, 1993. This application May 16, 1994, Ser. No. 243,622
Claims priority, application Japan, Oct. 7, 1992, 4-293696; Dec. 25, 1992, 4-359474; Mar. 14, 1994, 6-069040
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—51.1 **30 Claims**



1. A method of establishing synchronization among a plurality of radio base stations forming a mobile radio communication system comprising the steps of:

transmitting from each of the radio base stations a radio control signal including priority information indicating a synchronization priority of the radio base station, and synchronization establishing information indicating whether synchronization has been established between the radio base station and any other one of the radio base stations; and

establishing synchronization in any one of the radio base stations, which is acting as a receiving base station, when the receiving base station receives the radio control signal transmitted from another transmitting radio base station, with the transmitting base station, provided that the receiving base station has not previously established synchronization, and providing that the priority information included in the received radio control signal indicates that the receiving base station is allowed to establish synchronization with the transmitting base station, and providing that the synchronization establishing information included in the received radio control signal indicates that the transmitting base station has established synchronization; and

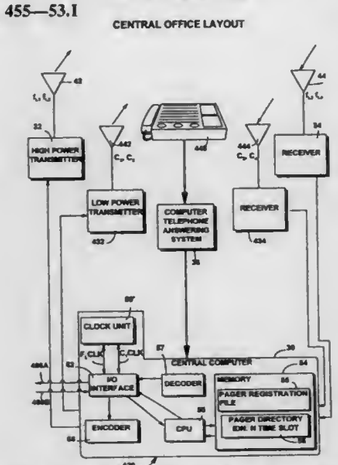
changing, when the receiving base station has established synchronization with the transmitting base station, the priority of the receiving base station to the priority of the transmitting base station.

5,613,212

PAGING METHOD AND APPARATUS

Gabriel K. Y. Wong, and Po S. Tsui, both of Honolulu, Hi., assignors to Digicomm, Ltd., Hong Kong, Hong Kong

Division of Ser. No. 264,973, Jun. 24, 1994. This application Feb. 29, 1996, Ser. No. 609,978
Int. Cl.[6] H04B *1/04*
U.S. Cl. 455—53.1 **7 Claims**



1. A control station which communicates with a paging unit, the control station comprising:

a first transmitter for transmitting a set of local frequencies to a cell region associated with the control station;

a second transmitter for transmitting a set of switching signal frequencies to a switching region associated with the control station;

a clock unit for generating a local clock signal and a switching clock signal;

a processor for generating message information and switching information; and

wherein a first of the local frequencies is modulated to carry the local clock signal, a second of the local frequencies is modulated to carry the message information; a first of the switching signal frequencies is modulated to carry the switching clock signal; and a second of the switching signal frequencies is modulated to carry the switching information.

5,613,213

DETERMINING AND DISPLAYING AVAILABLE SERVICES FOR A COMMUNICATION UNIT

Marc C. Naddell, Schaumburg, and Gary W. Grube, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1994, Ser. No. 221,136
Int. Cl.[6] H04B *7/00*
U.S. Cl. 455—54.1 **15 Claims**

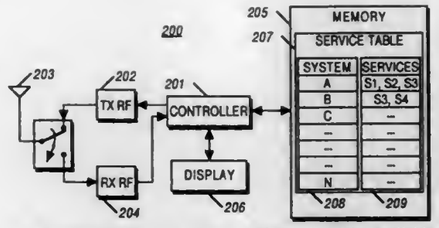
1. A method comprising the steps of

in a radio frequency (RF) communication system that provides a plurality of services, wherein each of the plurality of services has a status of either currently available, when the service is presently functional within the RF communication system, or currently unavailable, when the service is presently non-functional within the RF communication system, determining, by the RF communication system, when the status of one of the plurality of services changes from currently available to currently unavailable or when the status of one of the plurality of services changes from currently unavailable to currently available;

transmitting, by the RF communication system on an RF communication resource, information regarding currently available services from the RF communication system;

receiving the information by at least one communication unit;

determining, by the at least one communication unit, from the information the currently available services; displaying, by the at least one communication unit, an indication of the currently available services.

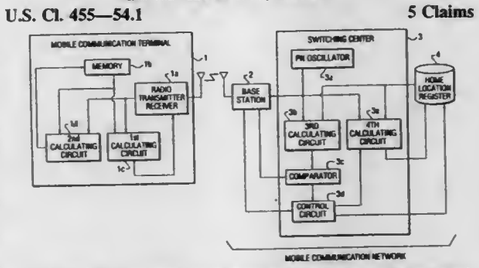


5,613,214

MOBILE COMMUNICATION TERMINAL AUTHENTICATING SYSTEM

Susumu Shirasawa; Kenichiro Kamachi, and Hiroyuki Tomoike, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,614
Claims priority, application Japan, Oct. 18, 1993, 5-282089
Int. Cl.[6] H04B *1/00;* H04K *1/00*
U.S. Cl. 455—54.1 **5 Claims**



1. A mobile communication authenticating system for authenticating a mobile communication terminal to be used in a mobile communication network having at least one base station for radio communication with said mobile communication terminal, a home location register configured to store information related to each mobile communication terminal and a switching center configured to switch each mobile communication call, said mobile communication terminal authenticating system comprising:

a first authenticating key being stored in said mobile communication terminal and said home location register respectively;

a random number generated by said switching center;

a first and a second calculating circuit respectively provided in said mobile communication terminal and said switching center for executing a first calculation on the basis of said random number and said first authenticating key;

a third and a fourth calculating circuit respectively provided in said mobile communication terminal and said switching center for executing a second calculation on the basis of said random number and said first authenticating key;

a calculation result signal sent by said mobile communication terminal to said switching center for indicating a result of said first calculation having been executed by said first calculation circuit;

a calculation instruction signal sent by said switching center to said mobile communication terminal for instructing said

mobile communication terminal to execute said second calculation with said third calculation circuit when a result of said first calculation by said first and second calculating circuits coincide with each other; and

a second authenticating key, provided based on a calculation result of said second calculation by said third and fourth calculating circuits, to be stored respectively in said mobile communication terminal and said switching center as an authenticating key for a subsequent authentication of said mobile communication terminal.

5,613,215

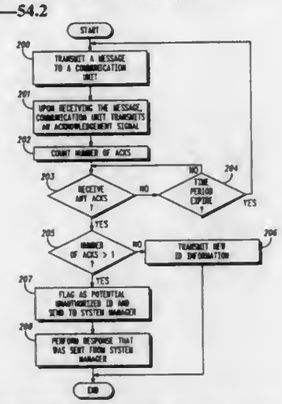
METHOD OF TRANSMITTING SECURITY CODES TO COMMUNICATION UNITS

Gary W. Grube, Palatine; Timothy W. Markison, Hoffman Estates, and Susan L. Lukasik, Lombard, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 21, 1994, Ser. No. 230,997

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—54.2 **13 Claims**



I. A method comprising the steps of:

transmitting, via a wireless communication system, a request for an acknowledgment to a communication unit, wherein the request includes a unique identification (ID) code of the communication unit;

when only one acknowledgment is received for the unique ID code, transmitting, via the wireless communication system, a security code to the communication unit;

when more than one acknowledgment is received for the unique ID code,

A) flagging the unique ID code as a potential unauthorized ID;

B) transmitting a reprogramming instruction with the unique ID code, wherein the reprogramming instruction instructs any communication unit having the unique ID code to reprogram to a default group; and

C) denying access by any communication unit in the default group to the wireless communication system.

5,613,216

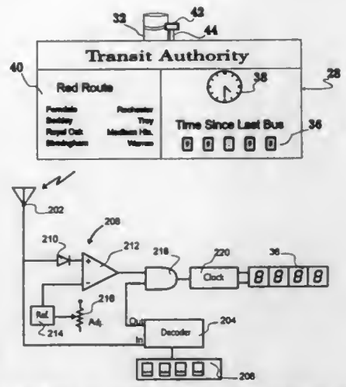
SELF-CONTAINED VEHICLE PROXIMITY TRIGGERED RESETTABLE TIMER AND MASS TRANSIT RIDER INFORMATION SYSTEM

Bernard A. Galler, 1056 Ferdon Rd., Ann Arbor, Mich. 48104

Continuation of Ser. No. 141,532, Oct. 27, 1993, abandoned. This application May 19, 1995, Ser. No. 445,070

Int. Cl.[6] H04B *7/00;* **G08G** *1/123*

U.S. Cl. 455—66 **15 Claims**



I. A decentralized mass transit rider information system to reduce rider anxiety for use in a mass transit system having a route traveled by at least one mass transportation vehicle in accordance with a posted schedule and having at least one stop on said route visited by said vehicle during that schedule, comprising:

a first stationary unit for placement at a first stop, the first stationary unit having a first receiving unit, a first display unit and a first timer unit coupled to said first receiving unit; the first receiving unit, the first display unit and the first timer unit being proximally associated with said first stationary unit for placement at said first stop; the first receiving unit having means for issuing a first command signal to said first timer unit the first timer unit and first display unit being responsive to said first command signal to repeatedly measure and display a first numerical value indicative of the current elapsed time following receipt of said first command signal;

a second stationary unit for placement at a second stop, the second stationary unit having a second receiving unit, a second display unit and a second timer unit coupled to said second receiving unit; the second receiving unit, the second display unit and the second timer unit being proximally associated with said second stationary unit for placement at said second stop; the second receiving unit having means for issuing a second command signal to said second timer unit the second timer unit and second display unit being responsive to said second command signal to repeatedly measure and display a second numerical value indicative of the current elapsed time following receipt of said second command signal;

a vehicle unit for placement on said vehicle, the vehicle unit having a transmitting unit for causing said first and second receiving units to respectively issue first and second command signals to said first and second timer units when the vehicle passes in proximity to said first and second stationary units;

wherein said receiving units include means for discriminating between said first and second command signals based on the respective energy levels of said first and second command signals;

whereby the rider is provided with elapsed time information allowing the rider to estimate the arrival time of the next scheduled vehicle from the posted schedule.

5,613,217

TRANSCEIVER SITE SELECTION A CELLULAR COMMUNICATIONS SYSTEM

Ulf E. Hagström, and Magnus B. Isaksson, both of Täby, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 3, 1995, Ser. No. 433,097

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.1 **4 Claims**

I. In a cellular communications system having a plurality of cells, each cell being served by at least one of a plurality of existing base stations, a method of determining a location for a new micro base station antenna comprising the steps of:

providing a test antenna at a test location in one of the cells;

for a predetermined time period, performing a monitoring procedure comprising the steps of:

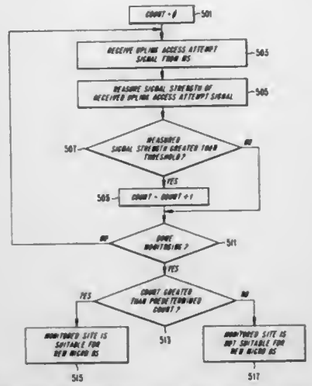
in the test antenna, receiving an uplink access attempt signal that is transmitted from a mobile station to an intended one of the existing base stations;

measuring signal strength of the received uplink access attempt signal;

comparing the measured signal strength to a predetermined threshold level; and

if the measured signal strength is greater than the predetermined threshold level, then incrementing a count value; and

after performing the monitoring procedure, comparing the count value to a predetermined count value and if the count value is higher than the predetermined count value, then establishing the new micro base station at the test location.



5,613,218

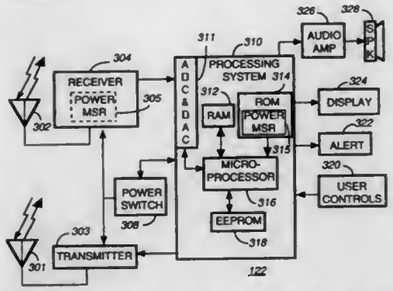
METHOD AND APPARATUS IN A RADIO COMMUNICATION SYSTEM FOR MITIGATING NOISE AND INTERFERENCE EFFECTS

Xiaojun Li, Boynton Beach; Sunil Satyamurti, Delray Beach, and Thomas V. D'Amico, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1995, Ser. No. 520,067

Int. Cl.[6] H04B *1/46*

U.S. Cl. 455—71 **21 Claims**



1. A method for mitigating effects of multipath fading, interference, and noise in a single sideband (SSB) signal transmitted by a radio communication system and demodulated by a portable subscriber unit utilizing a demodulator compensated by a pilot signal, the method comprising in the portable subscriber unit the steps of:

calculating a pilot fading threshold F_{th}, wherein F_{th} is calculated as a first predetermined function of a pilot threshold T and a predetermined desired signal/noise ratio S_d; and

adjusting compensation of the demodulator whenever pilot signal power is equal to or less than F_{th}.

5,613,219

TRANSCEIVER HAVING PLURAL ANTENNAS AND ADJUSTING THE TIME DELAY OF TRANSMITTED SIGNALS TO MATCH THE TIME DELAY OF RECEIVED SIGNALS

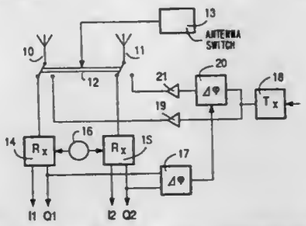
Martin Vogel, Erlangen, and Adrian van Kampen, Burgthann, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 190,959, Feb. 3, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 567,863

Claims priority, application Germany, Feb. 5, 1993, 43 03 355.5

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—78 **14 Claims**



1. A transceiver for use in a radio communication system wherein said transceiver is one of a plurality of transceivers and communicates with at least an other of said transceivers, said one transceiver being remote from said other transceiver; said one transceiver comprising:

a plurality of receiving antennas for producing separate received antenna signals from radio signals received from said other transceiver;

detecting means coupled to the receiving antennas for detecting a time delay between the received antenna signals;

transmitting means including a plurality of transmitting antennas for transmitting radio signals which are received at said other transceiver; and

means coupled to said transmitting means and further being responsive to an output of said time delay detecting means for producing a time delay between the transmitted radio signals which substantially matches the detected time delay between the received antenna signals.

5,613,220

RADIO COMMUNICATION APPARATUS

Shunji Arai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 310,253

Claims priority, application Japan, Sep. 28, 1993, 5-264274; Aug. 5, 1994, 6-184364

Int. Cl.[6] H04B *1/38*

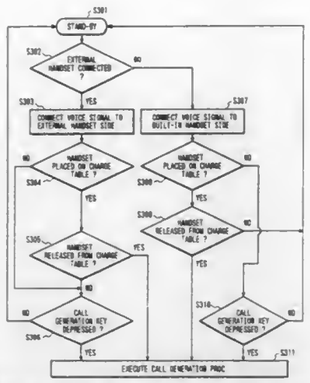
U.S. Cl. 455—88 **15 Claims**

7. A control method of a radio communication apparatus to which another communication apparatus can be connected and which communicates a communication signal of said another communication apparatus through a radio line, comprising the steps of:

judging whether a charge table has been connected or not;

judging whether said another communication apparatus has been connected or not;

deciding, in response to a connection of said charge table, whether radio communication is finished or not in accordance with whether said another communication apparatus has been connected or not; and



terminating or continuing the radio communication based upon said decision.

5,613,221

RADIATION SHIELD FOR CELLULAR TELEPHONES

James R. Hunt, Cocoa, Fla., assignor to J. R. Hunt Ventures, Cocoa, Fla.

Filed Apr. 12, 1993, Ser. No. 46,095
Int. Cl.[6] H04B *1/33*
U.S. Cl. 455—89 **7 Claims**



1. A radiation shield for a cellular telephone having an elongated housing, an antenna rod extending longitudinally outward from said housing, and a speaker in the housing in proximity to the antenna rod, said shield comprising:

a metal strip connected to said housing and disposed between said antenna rod and a user whereby the amount of radiation emitted by said antenna rod and reaching a region adjacent to the speaker will be substantially reduced, said strip having a flat body portion adapted to be placed generally parallel to said antenna, said strip having an overall length at least slightly longer than the antenna rod, and

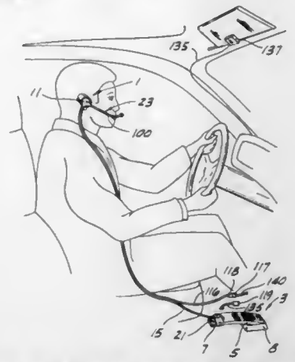
wherein said flat body portion extends over one-half way to a distal end of the strip, said strip includes an outwardly curved end portion, and cross sections defined by said end portion transverse to said flat body portion are linear.

5,613,222

CELLULAR TELEPHONE HEADSET FOR HAND-FREE COMMUNICATION

Donald E. Guenther, Chesterfield, Mo., assignor to The Creative Solutions Company, Clayton, Mo.

Filed Jun. 6, 1994, Ser. No. 254,379
Int. Cl.[6] H04B *1/38;* H04M *1/05*
U.S. Cl. 455—89 **16 Claims**



1. A headset for a cellular telephone, said cellular telephone having a speaker and a transmitter, said headset comprising:

a) an acoustical earpiece assembly adapted for the acoustical transmission of sound to the ear;

b) a device for mounting the earpiece assembly on the head in a position adjacent an ear of a person wearing the headset;

c) an acoustical receiving system comprising:

i) a flexible acoustical receiving tube having an upper end connected to said earpiece assembly, and a lower end;

ii) an acoustical receiver attached to the lower end of the acoustical receiving tube; and

iii) a device for releasably attaching the acoustical receiver to said telephone in a position where the receiver is disposed for receiving sound emitting from the speaker of the telephone, said acoustical receiver being adapted for the acoustical transmission of said sound to said earpiece assembly via said acoustical receiving tube; and

d) electrical transmitter means attached to the earpiece assembly for picking up sounds made by the person wearing the headset, and for transmitting such sounds to the transmitter of the telephone, said electrical transmitter means including a microphone support extending forward from the earpiece assembly at one side of the head of the person wearing the headset to a position generally adjacent the mouth of the person, a microphone at the forward end of the support, and electrical conductor means for connecting the microphone to a microphone mechanism associated with the transmitter of the telephone;

said acoustical receiving system being operable to transmit sound acoustically from the speaker of the telephone to the ear, and said electrical transmitter means being operable to transmit sound electronically from the person wearing the headset to the transmitter of the telephone.

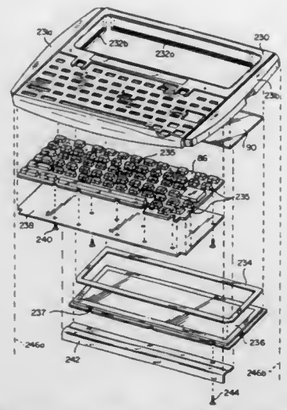
5,613,223

MOBILE COMMUNICATOR BRACING SYSTEM

David J. Ross, Leesburg, Va.; Blake L. Isaacs, Logan, Utah, and Kevin J. Williams, Eugene, Oreg., assignors to AMSC Subsidiary Corporation, Reston, Va.

Continuation-in-part of Ser. No. 408,526, Mar. 22, 1995, and a continuation-in-part of Ser. No. 187,996, Jan. 28, 1994, Pat. No. 5,512,912. This application May 22, 1995, Ser. No. 445,777
Int. Cl.[6] H04B *1/03;1/08*
U.S. Cl. 455—89 **19 Claims**

13. In a mobile satellite system including a satellite communication switching office having a satellite antenna for receiving/



transmitting a satellite message via a satellite from/to a vehicle using a mobile communication system having internal components, a satellite interface system, a central controller at least one of mapping occurrences of predetermined conditions along a transport route responsive to the satellite message received from the vehicle via the satellite and the satellite interface system using a mobile sensing station mounted on the vehicle traversing said transport route, and receiving data in the satellite message received from the vehicle, the mobile communication system including a bracing system for protecting and securing the internal components, the bracing system comprising:

an upper housing comprised of a shock resistant material and including

a monitor cavity;

a first shock absorbing material anchored on said monitor cavity forming a first seal between said monitor cavity and said upper housing;

a breakage resistant transparent material placed on said elastomer material and in conformity with said monitor cavity;

a display monitor being protected by said breakage resistant material and secured to said upper housing;

a second shock absorbing material disposed around the peripheries of said breakage resistant transparent material and said display monitor;

an integral keyboard formed of a water resistant material including elevated keys and mounting holes arranged around the periphery and between selected keys; and

a first printed circuit board including switches selectively activated in response to depression of said elevated keys and mounted to said upper housing through said mounting holes in said integral keyboard forming a second seal between said keyboard and said upper housing; and

a lower housing comprised of another shock resistant material and including a second printed circuit board including a central processing unit, and mounted to said lower housing, and receiving data from or transmitting data to an external device or destination.

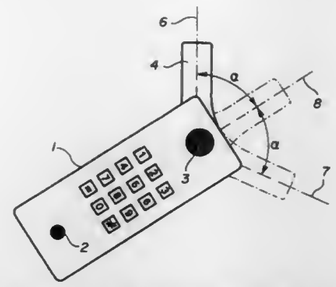
5,613,224

PORTABLE MOBILE RADIO TRANSCEIVER

Gérard Auvray, Bezons, France, assignor to Alcatel Radiotelephone, Paris, France

Continuation of Ser. No. 194,023, Feb. 9, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 587,702
Claims priority, application France, Feb. 11, 1993, 93 01532
Int. Cl.[6] H04B *1/38;* H01Q *1/24*
U.S. Cl. 455—89 **2 Claims**

1. A portable mobile radio transceiver for direct communication with a radio relay station on a satellite, comprising: a casing with a microphone and an earpiece, said casing having a longitudinal direction; and an antenna mounted on said casing, wherein a main direction of radiation of said antenna is substantially vertical when said casing is in a position of use in which it is held in a hand near the head of a user, and wherein said casing is provided with a pivoting antenna support having a predetermined discrete first locking position and a predetermined discrete second locking position, said first and second locking positions respectively corresponding to two symmetrical orientations of said antenna relative to the longitudinal direction of said casing, and thus, to two positions of said use in which said antenna is substantially vertical when said casing is respectively held in the right hand and the left hand.

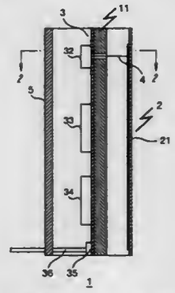


5,613,225

RADIO MODULE INCLUDED IN A PRIMARY RADIO STATION, AND A RADIO STRUCTURE CONTAINING SUCH MODULES

Philippe Charas, Upplands Vasby, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 9, 1993, Ser. No. 149,532
Claims priority, application Sweden, Nov. 9, 1992, 9203335
Int. Cl.[6] H04B *1/03*
U.S. Cl. 455—103 **14 Claims**



1. A radio module includable in a primary radio station of a mobile radio system for transmitting radio signals on a radio channel comprising:

a main body having a cross-sectional profile forming a first and a second chamber;

an antenna positionable substantially within said first chamber;

a component pack having a transmitter unit and a first connecting means wherein said component pack is positionable substantially within said second chamber and said first connecting means allows a first electrical connection between said transmitter unit and a control unit of said primary radio station;

a second connecting means to allow a fixed second electrical connection directly between said antenna and said component pack;

said transmitter unit and said antenna cooperating so as to transmit first radio signals independently of other radio signals in said radio station during a period only on a first radio channel determined by said control unit.

5,613,226

LINEAR TRANSMITTER FOR USE IN COMBINATION WITH RADIO COMMUNICATION SYSTEMS

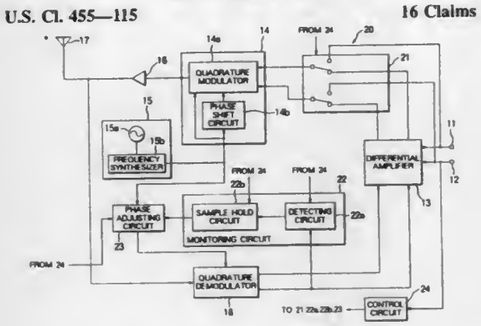
Shuji Kanami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,056

Claims priority, application Japan, Nov. 30, 1993, 5-299287; Nov. 30, 1993, 5-299338

Int. Cl.[6] H04J 4/00

U.S. Cl. 455—115 16 Claims



1. A linear transmitter for use in combination with a radio communication system of time division multiple access that has a plurality of radio stations each of which has said linear transmitter, said linear transmitter being for producing a transmission signal having transmission inphase and quadrature components in accordance with an input signal having input inphase and quadrature components during a predetermined period, wherein:

said input signal has a preamble signal at a first period and an information signal at a second period following said first period, said preamble signal having preamble inphase and quadrature components, said information signal having information inphase and quadrature components;

said linear, transmitter comprising:

quadrature modulating means for quadrature modulating a carrier signal by a supplied signal therein to produce said transmission signal;

differential amplifier means supplied with said input signal and a feedback signal having feedback inphase and quadrature components for producing a difference signal having difference inphase and quadrature components; switching means, connected to receive said preamble signal and said difference signal, for switching to select said preamble signal as said supplied signal during said first period and switching to select said difference signal as said supplied signal during said second period, wherein said supplied signal is supplied from said switching means to said quadrature modulating means;

quadrature demodulating means supplied with said transmission signal for quadrature demodulating said transmission signal into a demodulated signal in accordance with said carrier signal to produce said demodulated signal as said feedback signal;

monitoring means for monitoring a level of said feedback quadrature components during said first period to produce a level monitored signal representative of a monitored level; and

phase adjusting means for adjusting a carrier phase of said carrier signal during said first period in accordance with said level monitored signal to produce an adjusted carrier signal, said phase adjusting means supplying said adjusted carrier signal as said carrier signal to said quadrature demodulating means.

5,613,227

TRANSCEIVER MEASURING BATTERY VOLTAGE WHEN NOT TRANSMITTING IN A TDMA SYSTEM

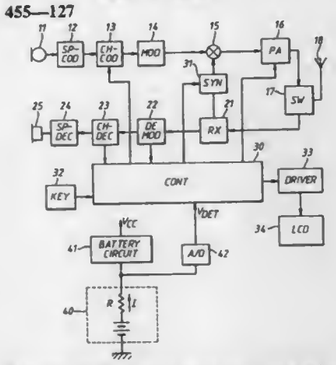
Katsuhisa Maki, Tokyo; Takaaki Ishii, Kanagawa-ken, and Masaki Satou, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jan. 21, 1994, Ser. No. 184,139

Claims priority, application Japan, Jan. 21, 1993, 5-008243

Int. Cl.[6] H04B 1/40

U.S. Cl. 455—127 5 Claims



1. A radio telecommunication apparatus communicating with a base station over radio channels established by a time division multiple access (TDMA) system, wherein the apparatus communicates with another apparatus via the base station over a speech channel of the radio channels in a first state and the apparatus communicates with only the base station over a control channel of the radio channels in a second state, the apparatus having a battery whose voltage decreases in response to consumption of the battery, the apparatus comprising:

recognizing means for recognizing whether the apparatus is sending signals to the base station;

measuring means responsive to the recognizing means for measuring the voltage of the battery only when the apparatus is not sending signals to the base station;

comparing means responsive to the measuring means for comparing the measured voltage of the battery with at least one first predetermined criterion when the apparatus is in the first state and for comparing the measured voltage of the battery with at least one second predetermined criterion when the apparatus is in the second state; and

converting means responsive to the measuring means for converting the measured voltage of the battery into a value.

5,613,228

GAIN ADJUSTMENT METHOD IN TWO-WAY COMMUNICATION SYSTEMS

John R. Tuttle, and Charles K. Snodgrass, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 206,471, Mar. 3, 1994, abandoned, which is a continuation of Ser. No. 909,370, Jul. 6, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 430,711

Int. Cl.[6] H04B 1/02

U.S. Cl. 455—127 3 Claims

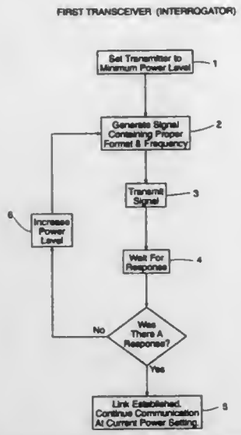
1. A method of reducing the dynamic range reception requirements of an RF identification tag transceiver in RF communication with a local transceiver, the RF identification tag transceiver being smaller and lighter than the local transceiver, comprising the steps of:

A. the local transceiver transmitting to the RF identification tag a first RF signal having a minimum power level;

B. the local transceiver waiting to receive a response RF signal from the identification tag; and

C. subsequently, if the transceiver fails to receive a response during the waiting step, repeating steps A and B using successively higher powers to transmit the first RF signal in each successive repetition of step A;

D. whereby the local transceiver avoids sending unnecessarily powerful signals to the RF identification tag transceiver, thereby reducing the dynamic range of RF signals which the RF identification tag transceiver must be capable of receiving.



5,613,229

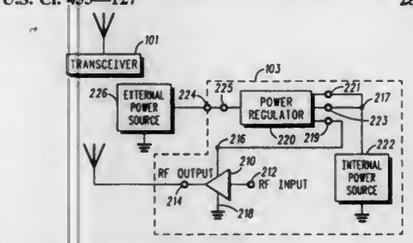
VOLTAGE AND CURRENT MODE POWER REGULATOR

Robert Baranowski; William P. Alberth, Jr., both of Crystal Lake, and Donald J. Millar, Libertyville, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 443,244, May 17, 1995, abandoned. This application Mar. 25, 1996, Ser. No. 624,046

Int. Cl.[6] H01Q 11/12; H04B 1/04

U.S. Cl. 455—127 28 Claims



1. A power regulator, comprising:

a power source circuit having a power source output, wherein the power source circuit includes a power source selection circuit to selectively couple the power source output to one of at least two power sources;

an energy storage circuit having an energy storage circuit input and an energy storage circuit output;

a controller including a mode control output; and

a switching circuit coupled to the power source output, the mode control output and to the energy storage circuit input, the switching circuit controlling an energy supply to the energy storage circuit such that a voltage level at the energy storage circuit output is substantially constant in a voltage regulator mode and a current level at the energy storage circuit output is controlled in a current regulator mode.

5,613,230

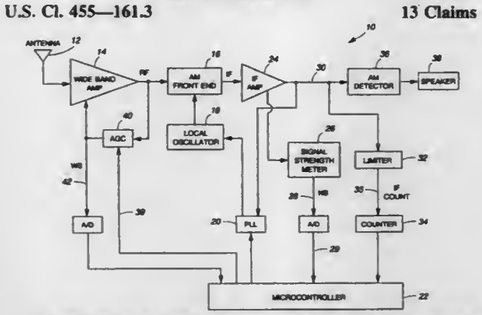
AM RECEIVER SEARCH TUNING WITH ADAPTIVE CONTROL

Gordon E. Gottfried, Dearborn, and Mohammad-Reza Sheikh-Movahhed, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 486,467

Int. Cl.[6] H04B 1/18

U.S. Cl. 455—161.3 13 Claims



1. A radio receiver with a microprocessor controller including a search tuning stop feature, the receiver having a tuned signal strength detector in addition to said a microprocessor controller, the microprocessor controller comprising;

a determiner for comparing a sensed tuned signal strength with a threshold level for said search tuning stop that sustains reception of a radiowave received at the tuner front end, and

an adjuster for adapting the threshold in response to a wideband signal strength detector.

5,613,231

SUPER-REACTIVE OSCILLATOR AND RECEIVER

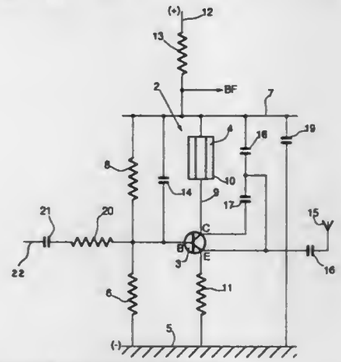
Gilles Morey, Saint-Ismier, France

Filed May 31, 1995, Ser. No. 455,911

Claims priority, application France, Jun. 3, 1994, 94 06795

Int. Cl.[6] H04B 1/24

U.S. Cl. 455—266 5 Claims



1. Super-reactive receiver comprising:

a bipolar transistor having

a base connected to a first pole of a power supply via a first resistor and connected to a common point via a second resistor and

an emitter connected to said first pole via a third resistor;

a ceramic tubular coaxial dielectric resonator having

a core connected between a collector of said transistor and said common point and

a screen connected to said common point; and

a capacitor connected between said base of said transistor and said common point which is connected to a second pole of said power supply.

5,613,232

RECEIVER APPARATUS COMPRISING DISPLAY MEANS FOR DISPLAYING SIGNAL STRENGTHS OF SIGNALS HAVING A PLURALITY OF FREQUENCIES, AND DISPLAY APPARATUS FOR USE IN RECEIVER APPARATUS

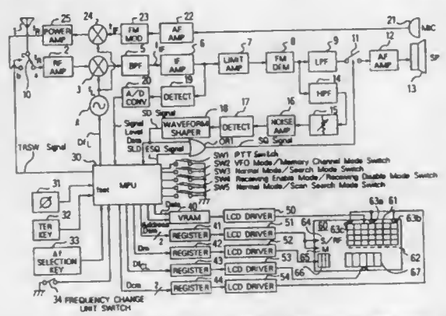
Youichi Toshida, Sulta; Kazuko Nakagawa, Nara; Toshihide Kuroda, Takatsuki; Kazuyuki Nakayama, Katano, and Tomotsugu Taki, Osaka, all of Japan, assignors to Alinco Incorporated, Osaka, Japan

Filed Mar. 11, 1994, Ser. No. 208,841

Claims priority, application Japan, Mar. 12, 1993, 5-010732 U; Mar. 12, 1993, 5-051958; Apr. 21, 1993, 5-094273; Apr. 21, 1993, 5-094281; Sep. 13, 1993, 5-226977; Sep. 13, 1993, 5-227013

Int. Cl.[6] H04B 17/00

U.S. Cl. 455—226.4 14 Claims



1. A display apparatus for use in a receiver apparatus for receiving a high-frequency signal having a predetermined reception frequency, comprising:

detection storage means, having a plurality of storage addresses, for detecting signal strengths of signals having a plurality of reception frequencies received by selectively switching over among said plurality of reception frequencies according to a predetermined order of said switching around a predetermined center reception frequency, and storing data of the detected signal strengths of the signals in said plurality of storage addresses;

display means, having a plurality of display sections, for displaying on said plurality of display sections the signal strengths of the signals having said plurality of reception frequencies, around said center reception frequency according to said predetermined order of said switching, wherein the displayed signal strengths of the signals are said data of the signal strengths of the signals stored in said plurality of storage addresses of said detection storage means corresponding to said plurality of display sections;

first control means for shifting display positions of the signal strengths of the signals having said plurality of reception frequencies displayed on said display means, in a direction corresponding to a predetermined direction of change, by automatically changing said reception frequencies including said center reception frequency in said predetermined order of said switching and in a predetermined direction of said change of said reception frequencies, and shifting said data of the signal strengths of the signals stored in said plurality of storage addresses of said detection storage means according to said change of the reception frequencies; and

second control means, after the process of said first control means is completed, for controlling said detection storage means to detect and store a signal strength of a signal having a reception frequency corresponding to the display section located at the end of said display means for which a signal strength has not yet been detected by said detection storage means when said first control means shifts said data of the signal strengths of the signals, and for controlling said display means to display said stored signal strength on the display section located at the end of said display means.

5,613,233

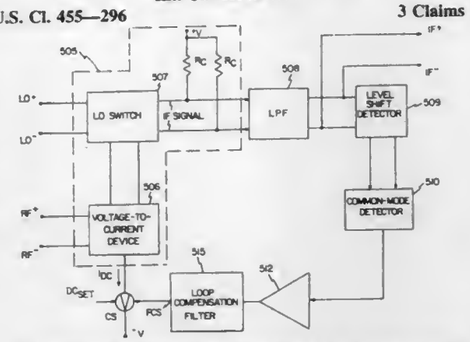
APPARATUS WITH DISTORTION CANCELLING FEEDBACK SIGNAL

Michael R. Vagher, Cedar Rapids, Iowa, assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Sep. 30, 1994, Ser. No. 316,287

Int. Cl.[6] H04B 1/10

U.S. Cl. 455—296 3 Claims



3. A method for suppressing distortion in a RF receiver comprising the following steps:

mixing a received RF signal with an output signal of a local oscillator thereby creating an intermediate signal;

filtering the local oscillator and RF frequencies from the intermediate signal;

extracting the resultant signal of the filtering step;

suppressing common-mode component of the RF signal at the resultant extracted signal;

amplifying the resultant signal of the suppressing step; and

electrically coupling the resultant signal of the suppressed extracted signal to a current source that provides a current signal to the mixing step.

5,613,234

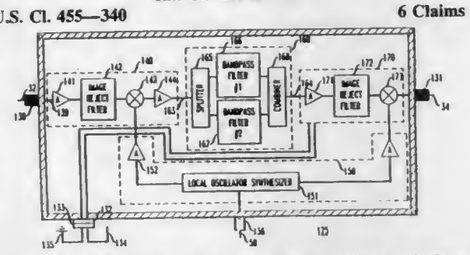
RECEIVE FILTER USING FREQUENCY TRANSLATION FOR OR IN CELLULAR TELEPHONY BASE STATION

George P. Vella-Coleiro, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 28, 1994, Ser. No. 330,889

Int. Cl.[6] H04B 1/10

U.S. Cl. 455—340 6 Claims



1. The improvement in a base station cellular telephone transmit-receive system comprising: antenna means for radiating and detecting, respectively, first and second wide-band microwave transmission and reception signals each subdivided into smaller frequency bands providing a plurality of channels common to said first and second signals, and for conveying different conversations in said channels, and said wide-band reception signal having a center frequency and being initially at radio frequencies ("the wide-band reception signal at RF"); and having lower and upper frequency limits defining between them in the frequency spectrum an interval including frequency bands allocated to said wide-band reception signal at RF and a central band of frequencies extraneous to that signal and interposed between such allocated frequency bands, transmitter apparatus comprising, a plurality of transmitter

channel circuits respectively corresponding to said channels and having respective output terminals in a set thereof, said transmitter channel circuits being responsive to baseband signals and operable to produce at said terminals a plurality of modulated carrier transmitter channel signals respective to and for said plurality of channels in said first signal, and said transmitter apparatus further comprising a signal combiner having an output terminal and a set of input terminals numerically corresponding to and coupled to said output terminals of said transmitter circuits, said combiner being responsive to concurrent applications of transmitter channel signals to corresponding ones of said input terminals to combine such signals into said first wide-band transmission signal and deliver said first signal to said combiner's output terminal, receiver apparatus comprising a signal splitter having an input terminal and a set of output terminals respectively corresponding to said channels in said second wide-band reception signal, said splitter being responsive to application to its input terminal of said second signal to distribute that signal to appear at each of said splitter's output terminals, said receiver apparatus further comprising a plurality of receiver channel circuits having respective input terminals in a set thereof and numerically corresponding to and coupled to said output terminals of said splitter to have said second signal appear at the last named input terminals, said receiver channel circuits being operable to recover baseband signals from said second signal appearing at said input terminals thereof, and a duplexer having a T-junction coupled by first and second microwave transmission paths to, respectively, said output terminal of said combiner and said input terminal of said splitter, and coupled by a third microwave transmission path to said antenna means, said improvement comprising: a wave filtering device having input and output terminals and interposed in said second microwave transmission path between said T-junction and said input terminal of said splitter to have said device's input and output terminals electrically coupled to, respectively said T-junction and said splitter input terminal, a local oscillator stage which is a source of an electrical fixed-frequency heterodyne wave having a frequency different from the center frequency of said wide-band reception signal at RF, a mixer stage electrically coupled to said device's input terminal and to said local oscillator stage to receive respective inputs thereto of said wide-band reception signal at RF and said heterodyne wave, said mixer stage being responsive to said inputs thereto to convert said wide-band reception signal at RF to a wide-band reception signal in which the center frequency of that signal has been shifted from its initial radio frequency value down to a frequency value in the range of intermediate frequencies so as to become a wide-band reception signal at IF, a filtering stage coupled to the mixer stage to receive therefrom said wide-band reception signal at IF and to attenuate passage through said filtering stage of electrical energy components of frequency in said central extraneous band of frequencies for said wide-band reception signal at IF while, concurrently, passing with less attenuation through said filtering stage, electric signal components of frequencies in said allocated frequency bands, and signal transfer means coupled between said filtering stage and said device's output terminal for supplying to that terminal said wide-band reception signal as so filtered by said filtering stage, and at a selected frequency for the center frequency of said wide-band reception signal.

5,613,235

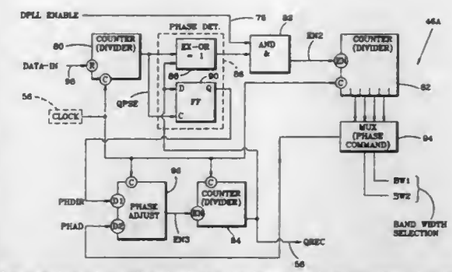
OPERATION OF A RADIOTELEPHONE IN A SYNCHRONOUS EXTENDED STANDBY MODE FOR CONSERVING BATTERY POWER

Raimo K. Kivari, Haukipudas, and Veijo L. Kontas, Oulu, both of Finland, assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Jun. 29, 1995, Ser. No. 496,688

Int. Cl.[6] H04B 1/16

U.S. Cl. 455—343 21 Claims



1. A method for operating a radiotelephone at reduced power, the radiotelephone having a receiver for receiving a sequence of messages of a control channel, each message having a synchronization portion and a data portion which follows the synchronization portion, the radiotelephone having signal processing circuitry including synchronization circuitry responsive to the synchronization portion of an individual one of said messages to permit a reading of data of the data portion of an individual one of said messages, said signal processing circuitry including a digital phase locked loop (DPLL) with phase adjustment capability, said radiotelephone including power application circuitry for application and disconnection of electric power to said receiver, wherein power is applied continuously to the DPLL, the method comprising steps of:

synchronizing the DPLL with bits of a portion of an Nth message of said sequence of messages, the DPLL providing a clock signal to enable a reading of data;

reading data of the data portion of said N^{th} message;

subsequent to said reading step, inhibiting phase adjustment of the DPLL;

operating the power application circuitry for deactivating the receiver;

operating the power application circuitry for activating the receiver at a predetermined time interval prior to occurrence of a selected part

of the data portion of a message subsequent to a first message, said predetermined time interval being limited in duration to the duration of a transient settling time of the receiver upon the activation of the receiver; and

enabling the phase adjustment capability of the DPLL in an interval of time beginning at or prior to the selected part of the data portion of the subsequent message and continuing during the occurrence of the selected part of the data portion of the subsequent message.

5,613,236

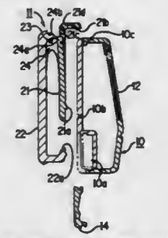
CLIP HOLDER FOR A PORTABLE RECEIVER

Kazuaki Tajima, Yokohama, and Masahiro Kikuchi, Mizusawa, both of Japan, assignors to Oi Denki Co., Ltd., Japan

Filed Aug. 4, 1994, Ser. No. 286,090

Int. Cl.[6] H04B 1/08

U.S. Cl. 455—351 13 Claims



1. A clip holder for holding a portable receiver, comprising:

a receiver holder, having two opposite ends, an inner surface and an outer surface between the two ends, wherein a portion of the inner surface of the receiver holder is adapted to be engaged with the portable receiver;

a clip plate having opposite ends and an inner surface and an outer surface between the ends;

a cam apparatus wherein a portion of the receiver holder and a portion of the clip plate are attached to opposite sides of the

cam apparatus, such that the inner surface of the clip plate faces the outer surface of the receiver holder; and

a pivot disposed within the cam apparatus, wherein the clip plate and receiver holder are rotatable about the pivot to maintain the receiver holder in a first position, second position, and third position with respect to the clip plate to be held in each position by the cam apparatus frictionally engaging the receiver holder; and

a flexible portion on the outer surface of the receiver holder that extends outwardly away from the receiver holder to frictionally engage the cam to maintain the receiver holder in a fixed position with respect to the clip plate.

5,613,237

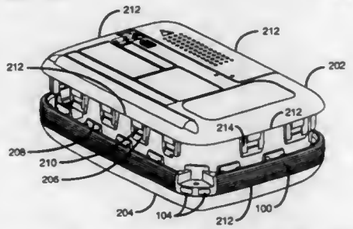
HOUSING LATCH SYSTEM UTILIZING AN ELASTOMERIC INTERLOCKING BAND

Michael S. Bent, Greenacres; Melvin Teitzman, Lantana, and Christopher R. Long, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1994, Ser. No. 323,975

Int. Cl.[6] H04B *1/08*

U.S. Cl. 455—351 **20 Claims**



1. A latch system for a housing, the latch system comprising:

front and rear housing sections having outer and inner surfaces and a common side peripbery when assembled, the front and rear housing sections comprising a plurality of wall segments projecting rearward from the inner surface of the front housing section and projecting forward from the inner surface of the rear housing section, each wall segment having a locking side positioned adjacent and parallel to the common side periphery and having a recess therein on said locking side, the recess positioned for mating with a contiguous elastomeric interlocking band; and

the contiguous elastomeric interlocking band, comprising teeth projecting therefrom for engaging with the recesses in the wall segments, wherein to latch together the front and rear housing sections the contiguous elastomeric interlocking band is aligned with the common side periphery of a first one of the front and rear housing sections and then slidably assembled onto the wall segments thereof until the teeth engage with the recesses in the wall segments, thereby latching the contiguous elastomeric interlocking band to the first one of the front and rear housing sections, and wherein a remaining one of the front and rear housing sections is thereafter aligned with the common side periphery, after which the wall segments thereof are slidably assembled into the contiguous elastomeric interlocking band until the teeth thereof also engage with the recesses in the wall segments of said remaining one of the front and rear housing sections, thereby latching together the front and rear housing sections, wherein the front and rear housing sections and the elastomeric interlocking band are arranged such that assembly can be accomplished in a single-axis housing assembly direction.

5,613,238

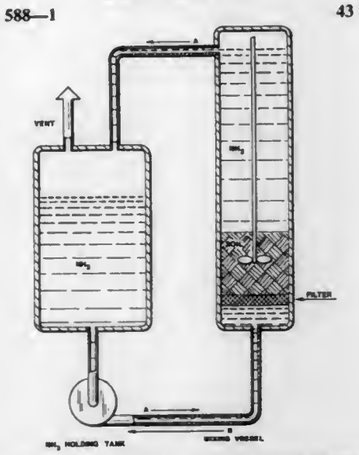
METHODS OF DECONTAMINATING SOILS CONTAINING HAZARDOUS METALS

Robert W. Mouk, Westerville; Alan F. Heyduk, Columbus, and Albert E. Abel, Powell, all of Ohio, assignors to Commodore Applied Technologies, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 304,791, Sep. 12, 1994, Pat. No. 5,495,062. This application Aug. 23, 1995, Ser. No. 507,126

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—1 **43 Claims**



1. A method of decontaminating soil containing hazardous metals, which comprises the steps of:

(a) mixing in a closed vessel an ammoniacal liquid with a soil contaminated with at least one ion of a hazardous metal or metalloid to form a dispersion or slurry;

(b) separating an ammoniacal liquid-containing product from the dispersion or slurry of step (a) to yield a soil residue sufficiently free of ions of said hazardous metal or metalloid to permit reclamation, and

(c) separating the ammoniacal liquid from the ammoniacal liquid-containing product of step (b) to yield a hazardous metal or metalloid-containing residue for disposal or further treatment.

5,613,239

METHOD AND APPARATUS FOR DECOMPOSING ORGANIC SOLUTIONS COMPOSED OF CHELATING SOLUTIONS AND/OR ORGANIC ACIDS CONTAINING RADIOACTIVE METAL IONS AND COLLECTION METHOD AND APPARATUS USING THE SAME

Hiroshi Obinata, Nagano; Seigo Ichikawa, and Akihisa Kikuya, both of Kohshoku, all of Japan, assignors to Morikawa Industries Corp., Nagano-ken, and Genden Engineering Services & Construction Co., Tokyo, both of Japan

Filed Dec. 19, 1995, Ser. No. 575,045

Claims priority, application Japan, Oct. 2, 1995, 7-255391

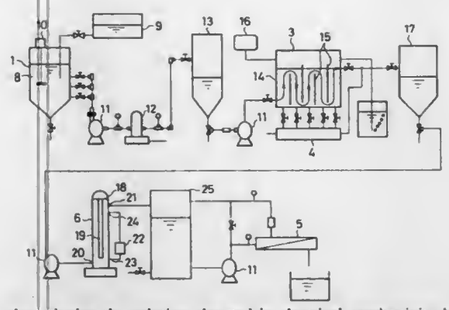
Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—1 **12 Claims**

1. A method for decomposing an organic solution containing radioactive metal ions, which comprises:

forming a solution containing radioactive metal ions by applying a solution composed of a chelating solution and/or an organic acid to radioactive metals laden with radioactivity;

adding an alkaline agent to the formed solution to elevate electrical conductivity thereof; and



electrolyzing the solution elevated in electrical conductivity by an electrolytic device.

5,613,240

METHOD OF PREPARING SODALITE FROM CHLORIDE SALT OCCLUDED ZEOLITE

Michele A. Lewis, Naperville, and Candido Pereira, Lisle, both of Ill., assignors to United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1995, Ser. No. 375,141

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—11 **17 Claims**

1. A method for immobilizing waste chloride salts containing radionuclides and hazardous nuclear material for permanent disposal comprising providing a substantially dry zeolite, the waste chloride salts, and sufficient glass to form leach resistant sodalite with occluded radionuclides and hazardous nuclear material; heating the zeolite, the waste chloride salts, and glass to a temperature up to about 1000° K. to convert the zeolite to sodalite; and thereafter maintaining the sodalite at a pressure and temperature sufficient to form a sodalite product near theoretical density.

5,613,241

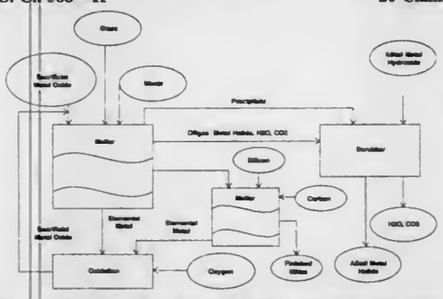
TREATMENT OF HALOGEN-CONTAINING WASTE AND OTHER WASTE MATERIALS

Charles W. Forsberg; Edward C. Beahm, both of Oak Ridge, and George W. Parker, Concord, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 230,156, Apr. 19, 1994, Pat. No. 5,461,185. This application May 18, 1995, Ser. No. 443,624

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—11 **20 Claims**



8. A process for the conversion of waste material containing halogen-containing compounds and elemental metal or carbon-containing compounds comprising the steps of:

providing a bath of molten glass containing at least one sacrificial metal oxide, wherein at least one sacrificial metal oxide is capable of reacting with a halogen in the waste material, or of oxidizing elemental metal or carbon-containing compounds within the waste material, and the sacrificial metal oxide is present in at least a stoichiometric amount for the reaction or the oxidation;

introducing the waste material into the bath of molten glass to cause a reaction between the waste material and the sacrificial metal oxide, wherein at least one sacrificial metal oxide reacts with a halogen in the waste material to yield a metal halide which is a gas at the temperature of the molten glass and at least one sacrificial metal oxide oxidizes elemental metal to form an oxide of the elemental metal which is soluble in the molten glass or oxidizes the carbon-containing compound thereby reducing the sacrificial metal oxide to its elemental metal;

separating the gaseous metal halide from the molten glass;

contacting the gaseous metal halide with an aqueous scrubber solution of an alkali metal hydroxide to yield a metal-containing precipitate and a soluble alkali metal halide;

separating the precipitate from the aqueous scrubber solution;

removing the molten glass containing the treated waste material as a waste glass; and

recovering the elemental metal derived from the sacrificial metal oxide from the bath.

5,613,242

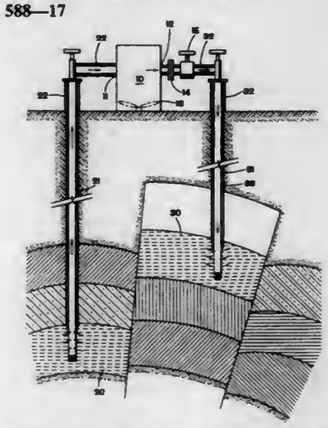
METHOD AND SYSTEM FOR DISPOSING OF RADIOACTIVE SOLID WASTE

John E. Oddo, 2907 Albans, Houston, Tex. 77005

Filed Dec. 6, 1994, Ser. No. 349,948

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—17 **22 Claims**



1. A solid-waste disposal system for disposing solid waste containing radioactive material, the solid-waste disposal system comprising:

a. a producing means for producing water from a first subterranean geological formation;

b. a source of radioactive material;

c. a grinder for receiving radioactive material from the source and reducing the radioactive material to a slurry of micro-emulsion particle size, a portion of the slurry being soluble in acid;

d. an acidification unit for receiving the slurry from the grinder and treating the slurry with an acid to dissolve the acid soluble portions of the slurry and to produce and disposal brine; and

e. an injecting means for injecting said dilute solution into a second subterranean geological formation.

5,613,243

STABILIZATION OF RADIONUCLIDES INTO WASTES

Michael J. Hollitt, Box Hill North; Ross A. McClelland, Maryknoll; Matthew J. Liddy, South Melbourne; Kaye P. Hart, Balgownie, and Peter J. McGlinn, Thirroul, all of Australia, assignors to Technological Resources Pty. Ltd., Melbourne, Australia

PCT No. PCT/AU93/00413, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/05015, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 13, 1993, Ser. No. 381,877

Claims priority, application Australia, Aug. 18, 1992, PL4141

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—19 13 Claims

1. A process for stabilization of radionuclides derived from naturally occurring mineral sources, the process comprising the steps of:

(i) forming a substantially barium-free composition comprising a radionuclide and sufficient stabilizing component to ensure that when the composition is roasted, a crystalline phase is formed having a structure that binds the radionuclide; and

(ii) roasting the composition under conditions sufficient to form said crystalline phase as a granular solid of surface area 1–100 m^2/g in which the radionuclide is bound such that there is substantially no solubility of the radionuclide.

5,613,244

PROCESS FOR PREPARING LIQUID WASTES

Laurance L. Oden; Paul C. Turner, both of Albany; William K. O'Connor, Lebanon, and Jeffrey S. Hansen, Corvallis, all of Oreg., assignors to United States of America, Washington, D.C.

Filed Sep. 26, 1995, Ser. No. 533,978

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—20 9 Claims

1. A process for treating liquid wastes comprising:

mixing finely divided dry solid glass-forming minerals and reductant(s);

forming the mixture with water into pellet, brick, briquette, plate, extrudate, or agglomerate by conventional methods including mixing, rolling, compacting, extruding, agglomerating, or other pelletizing technique;

heating the resulting substrate in the temperature range 50° to 120° C. to remove free moisture;

allowing absorption of the liquid waste to occur by the substrate;

drying the loaded substrate in the temperature range 50° to 120° C. to remove free moisture;

heating the dry intermediate product to the temperature range 150° C. to 450° C. in order to initiate and complete reaction between

nitrogenous species in the liquid waste and any reductant; and

heating the denitrified material by any means to cause melting.

5,613,245

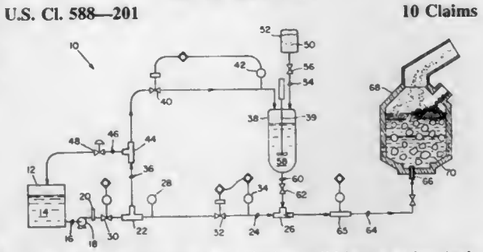
METHOD AND APPARATUS FOR INJECTING WASTES INTO A MOLTEN BATH WITH AN EJECTOR

Edgar J. Robert, Glenshaw, Pa., assignor to Molten Metal Technology, Inc., Waltham, Mass.

Filed Jun. 7, 1995, Ser. No. 479,507

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—201 10 Claims



1. A method for injecting a particulate solid into a molten bath, comprising the steps of:

a) forming a liquid stream;

b) directing a first portion of said liquid stream through an ejector for subsequent injection into a molten bath;

c) directing an adjustable second portion of the liquid stream into a receiving vessel;

d) directing a particulate solid into said receiving vessel, whereby the second portion of the liquid stream and the particulate solid combine to form a slurry; and

e) directing said slurry from the receiving vessel to the ejector, whereby the slurry and the first portion of the liquid stream are combined to form a dilute slurry that is injected into the molten bath.

DESIGNS

MARCH 18, 1997

378,467

GOLF GLOVE

David B. Leadbetter, Orlando, Fla., assignor to Golf Training Systems, Inc., Duluth, Ga.

Filed May 1, 1996, Ser. No. 53,867

Term of patent 14 years

U.S. Cl. D2—619



378,468

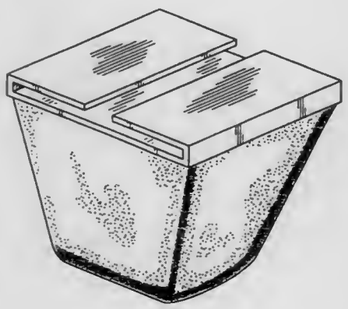
SEAT BELT COMFORT SPACER

Karl B. Rydgren, 2323 Fifth St., Santa Monica, Calif. 90405

Filed Sep. 5, 1995, Ser. No. 43,569

Term of patent 14 years

U.S. Cl. D2—639



378,469

GOALIE PANTS

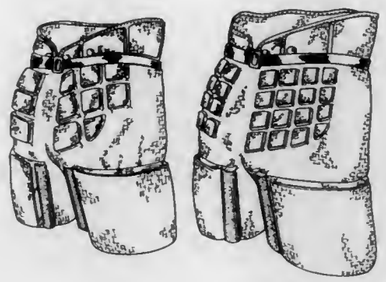
Gina Tremblay, Montreal, Canada, assignor to Tropsport Acquisitions Inc., Lachine, Canada

Filed Mar. 9, 1995, Ser. No. 35,896

Claims priority, application Canada, Oct. 4, 1994, 1994-1962

Term of patent 14 years

U.S. Cl. D2—738



378,470

BOOT SHIELD FOR A MOTORCYCLIST

Gary L. McDaniel, 141 S. Santa Ana, Modesto, Calif. 95354

Filed Aug. 3, 1995, Ser. No. 42,176

Term of patent 14 years

U.S. Cl. D2—909



378,471
SLIPPER SOLE
Myron Winson, Piermont, N.Y., assignor to S. Goldberg & Co., Inc., Hackensack, N.J.
Filed Dec. 12, 1995, Ser. No. 47,764
Term of patent 14 years
U.S. Cl. D2—953



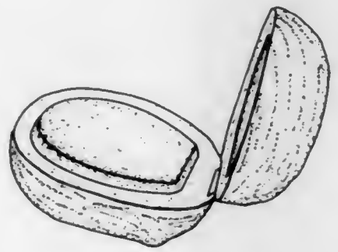
378,473
SHOE UPPER
Craig L. Feller, Duxbury, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jun. 23, 1995, Ser. No. 40,676
Term of patent 14 years
U.S. Cl. D2—970



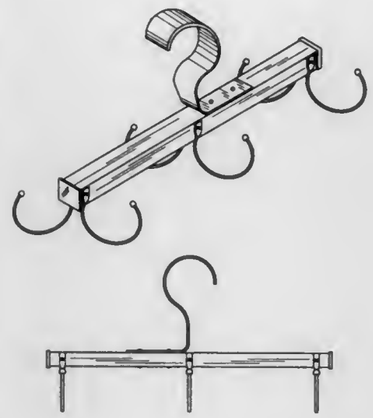
378,472
COMBINED TREAD SURFACE AND PERIPHERY OF A SHOE SOLE
Marco Bramani, Milan, Italy, assignor to Vibram S.p.A., Albizzate, Italy
Filed Nov. 30, 1995, Ser. No. 47,313
Claims priority, application WIPO, May 31, 1995, DMA/002955
Term of patent 14 years
U.S. Cl. D2—957



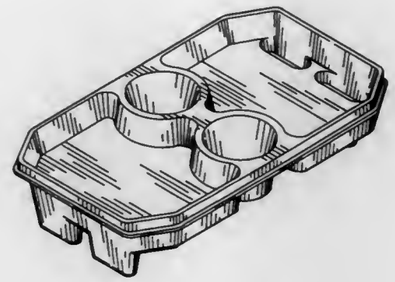
378,474
JEWELRY CASE
Ralph Herzog, 389 Querbes Avenue, Montreal, Canada
Filed Nov. 29, 1995, Ser. No. 47,306
Term of patent 14 years
U.S. Cl. D3—271



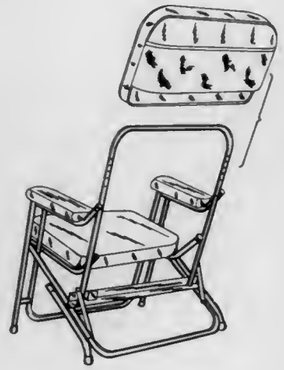
378,475
BELT HANGER
Judy D. Brown, 2055 Turner Rd., Reidsville, N.C. 27320
Filed May 10, 1996, Ser. No. 54,309
Term of patent 14 years
U.S. Cl. D6—317



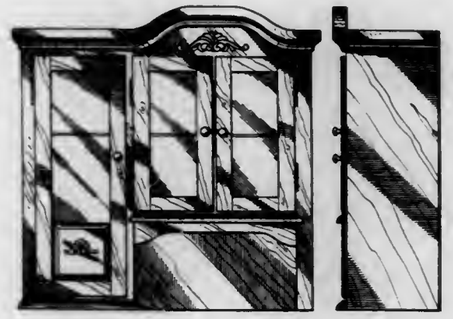
378,477
LAP TRAY
Sy Sussman, 435 Promontory Dr. West, Newport Beach, Calif. 92660
Filed Oct. 30, 1995, Ser. No. 46,728
Term of patent 14 years
U.S. Cl. D6—406



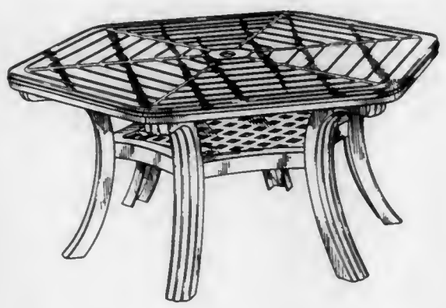
378,476
ADJUSTABLE BOAT CHAIR
Kenneth A. Spaeth, 3204 Mishicot Rd., Two Rivers, Wis. 54241
Filed Jul. 21, 1995, Ser. No. 41,708
Term of patent 14 years
U.S. Cl. D6—367



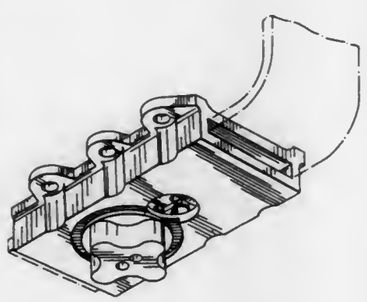
378,478
HUTCH
Sidney A. Lenger, Kernsville, N.C., assignor to Schottenstein Stores Corporation, Columbus, Ohio
Division of Ser. No. 40,886, Jun. 29, 1995. This application May 22, 1996, Ser. No. 54,808
Term of patent 14 years
U.S. Cl. D6—436



378,479
TABLE
Stephen T. Smith, Richmond, Australia, assignor to Pacific Leisure Australia Pty Ltd, Victoria, Australia
Filed Mar. 20, 1995, Ser. No. 36,416
Claims priority, application Australia, Sep. 19, 1994, 3062/94
Term of patent 14 years
U.S. Cl. D6—477



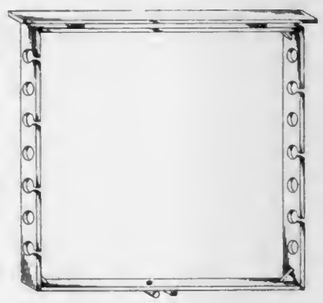
378,480
LATERAL ADJUSTMENT MECHANISM FOR A CHAIR ARMREST SUPPORT
Frank Doerner, Kitchener, Canada, assignor to Doerner Products Ltd., Waterloo, Canada
Filed Dec. 7, 1994, Ser. No. 31,834
Term of patent 14 years
U.S. Cl. D6—500



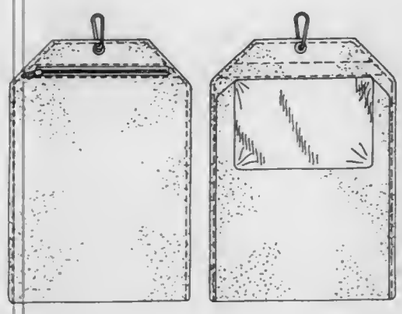
378,481
STORAGE SHELF
Fred D. Oberhaus, and John Gusdorf, both of St. Louis County, Mo., assignors to Industrial Wipe Products, Inc., Sullivan, Mo.
Filed Feb. 27, 1995, Ser. No. 35,411
Term of patent 14 years
U.S. Cl. D6—511



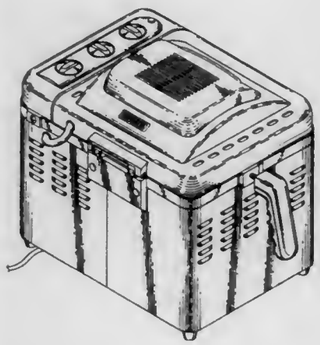
378,482
FISHING POLE LATCHING STORAGE APPARATUS
Darrell R. Hall, Sr., and Neva S. Kistner, both of 18344 Hawthorne Rd., Ft. Myers, Fla. 33912
Filed Aug. 3, 1995, Ser. No. 42,193
Term of patent 14 years
U.S. Cl. D6—552



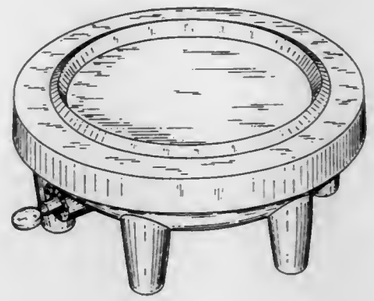
378,483
TOWEL WITH STORAGE POCKET
Robert P. Kiefer, 9906 Fairmount Rd., Louisville, Ky. 40291
Filed Sep. 25, 1995, Ser. No. 44,465
Term of patent 14 years
U.S. Cl. D6—608



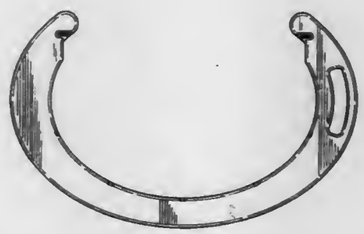
378,484
BAGEL COOKER
Robert G. Harrison, Seattle, Wash., assignor to PMI International Corporation, Seattle, Wash.
Filed Jan. 23, 1996, Ser. No. 49,345
Term of patent 14 years
U.S. Cl. D7—350



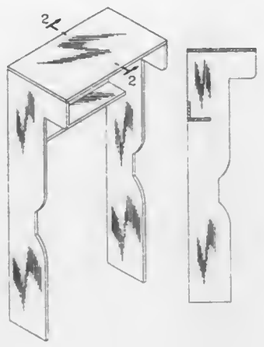
378,485
POWER UNIT FOR COOKING
Oscar E. Peña Angarita, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 13, 1995, Ser. No. 41,425
Claims priority, application Switzerland, Feb. 7, 1995, DMA/002774
Term of patent 14 years
U.S. Cl. D7—362



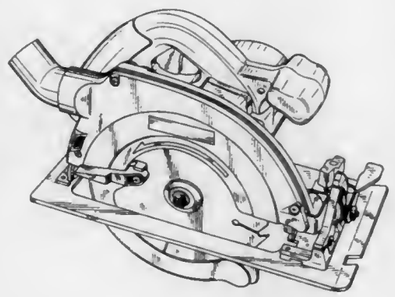
378,486
BARBEQUE GRILL OPEN RING SHELF
Kathy L. Bradley, Mt. Washington; Richard H. Bird; Olden A. Dockery, both of Louisville, all of Ky.; Randy A. Smitley, Corydon; Calvin F. Sprinkle, Borden, both of Ind., and Donald T. Payne, Louisville, Ky., assignors to Porcelain Metals Corporation, Louisville, Ky.
Filed Aug. 11, 1995, Ser. No. 42,560
Term of patent 14 years
U.S. Cl. D7—406



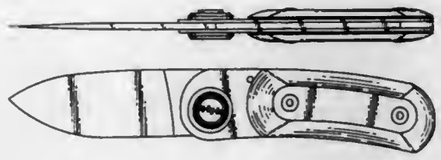
378,487
RANGE HOOD STAND
George Salas, 2020 Pickle Rd., Oregon, Ohio 43616
Filed Nov. 6, 1995, Ser. No. 46,009
Term of patent 14 years
U.S. Cl. D7—406



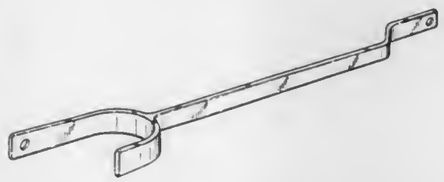
378,488
PORTABLE ELECTRIC CIRCULAR SAW
Akihiro Ito, and Kouichi Kawai, both of Anjo, Japan, assignors to Makita Corporation, Japan
Filed Jan. 17, 1996, Ser. No. 49,103
Claims priority, application Japan, Jul. 18, 1995, 7-20818
Term of patent 14 years
U.S. Cl. D8—66



378,489
KNIFE
Paul W. Poehlmann, P.O. Box 412, Heriot Bay, Canada
Filed Jan. 13, 1995, Ser. No. 33,468
Term of patent 14 years
U.S. Cl. D8—99



378,490
PULL BAR DOOR HANDLE WITH HOOK
Sheila R. Campbell, 22843 Sunoyside, St. Clair Shores, Mich. 48080, and Frank J. Campbell, St. Clair Shores, Mich., assignors to Sheila R. Campbell, St. Clair Shores, Ill.
Filed May 4, 1995, Ser. No. 38,467
Term of patent 14 years
U.S. Cl. D8—319



378,491
SHOWER ROD
Philippe Chretien, Stafa, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed Aug. 31, 1995, Ser. No. 43,309
Claims priority, application Switzerland, Mar. 22, 1995, DM/032 498
Term of patent 14 years
U.S. Cl. D8—376



378,492
PERFUME FLASK
René Salle, Paris, France, assignor to Paco Rabanne Parfums, Neuilly sur Seine, France
Filed Nov. 28, 1995, Ser. No. 47,189
Claims priority, application France, Jun. 2, 1995, 95 3135
Term of patent 14 years
U.S. Cl. D9—300



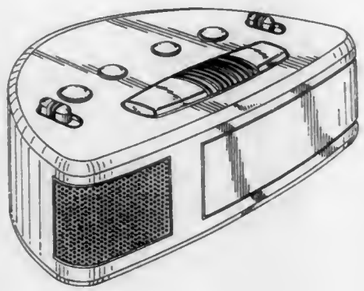
378,493
INK BOTTLE
Ramesh B. Subbaraman, Fullerton, and Barry R. Brucker, Beverly Hills, both of Calif., assignors to Independent Ink, Inc., Gardena, Calif.
Filed Jul. 27, 1995, Ser. No. 41,941
Term of patent 14 years
U.S. Cl. D9—524



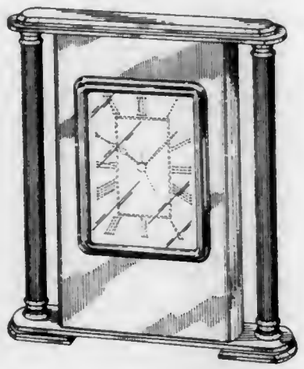
378,494
CORNER POUR CONTAINER
Wallace A. Miller, Cincinnati, Ohio, assignor to SST Industries, Inc., Loveland, Ohio
Filed Feb. 5, 1996, Ser. No. 49,970
Term of patent 14 years
U.S. Cl. D9—528



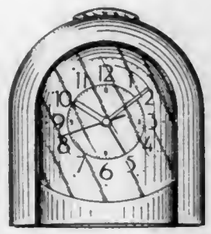
378,495
CLOCK
Lionel D. Gillespie, Atlanta, Ga., assignor to GTC Properties, Inc., Wilmington, Del.
Filed Feb. 8, 1996, Ser. No. 50,136
Term of patent 14 years
U.S. Cl. D10—1



378,496
CLOCK
Frederick N. Levinger, Providence, R.I., and Brian LaBrecqoe, New York, N.Y., assignors to Colibri Corporation, Linden Division, Providence, R.I.
Filed Sep. 1, 1995, Ser. No. 43,481
Term of patent 14 years
U.S. Cl. D10—26



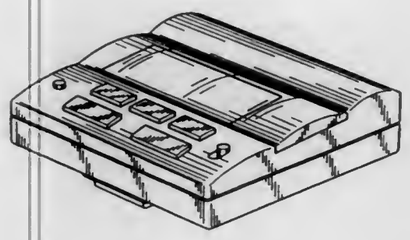
378,497
CLOCK
Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Sep. 18, 1995, Ser. No. 44,089
Term of patent 14 years
U.S. Cl. D10—28



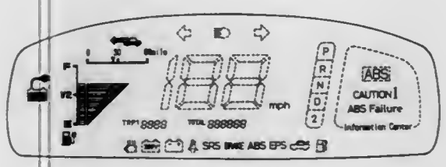
378,498
WATCH
Hannes Wettstein, Zurich, Switzerland, assignor to Ventura Design On Time AG, Wangen, Switzerland
Filed Feb. 15, 1995, Ser. No. 34,953
Claims priority, application Switzerland, Aug. 16, 1994, DM/030426
Term of patent 14 years
U.S. Cl. D10—39



378,499
TIMER
Raymond Chan, Kowloon, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda
Filed May 8, 1996, Ser. No. 54,189
Claims priority, application United Kingdom, Nov. 17, 1995, 2052049
Term of patent 14 years
U.S. Cl. D10—40



378,500
RESIDUAL BATTERY CAPACITY AND ELECTRIC VEHICLE RANGE GAUGE
Tomoaki Nakai; Makoto Kondo, and Morio Kayano, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1995, Ser. No. 37,855
Claims priority, application Japan, Oct. 21, 1994, 6-257000
Term of patent 14 years
U.S. Cl. D10—125



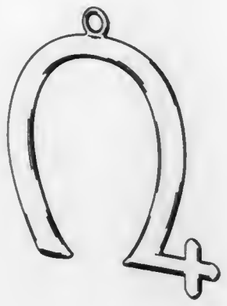
378,501
JEWELRY BRACELET
Gabriella Garzi, Arezzo, Italy, assignor to Garzi S.R.L., Arezzo, Italy
Filed Feb. 5, 1996, Ser. No. 49,916
Term of patent 14 years
U.S. Cl. D11—4



378,502
PENDANT
Jane L. Szlanfucht, 19156 Orchard Heights Dr., South Bend, Ind. 46614
Filed Jan. 29, 1996, Ser. No. 49,568
Term of patent 14 years
U.S. Cl. D11—81



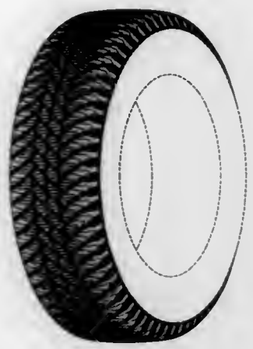
378,503
CHARM
Darlene J. Limtanakool, 16 Sukumuit Soi 33, Bangkok THX
Filed Dec. 15, 1995, Ser. No. 49,597
Term of patent 14 years
U.S. Cl. D11—85



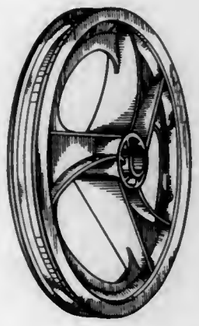
378,504
AUTOMOBILE TIRE
Naoya Ochi, and Kazunori Shinohara, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 20, 1995, Ser. No. 40,513
Claims priority, application Japan, Dec. 27, 1994, 6-39729
Term of patent 14 years
U.S. Cl. D12—147



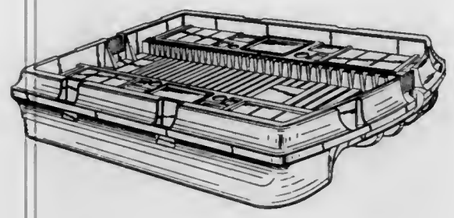
378,505
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 26, 1995, Ser. No. 41,898
Term of patent 14 years
U.S. Cl. D12—147



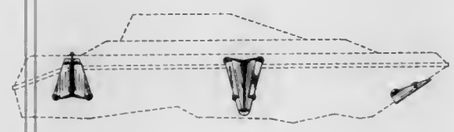
378,506
WHEEL FOR A BICYCLE
Rein H. Stolz, Redding, and Jon B. Raudman, Palo Cedro, both of Calif., assignors to Skyway Machine, Inc., Redding, Calif.
Filed Sep. 19, 1995, Ser. No. 44,166
Term of patent 14 years
U.S. Cl. D12—209



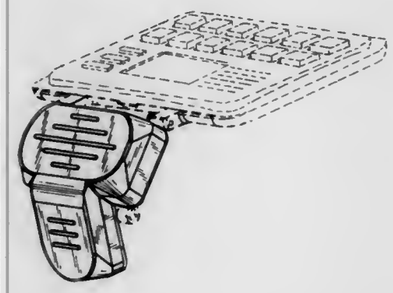
378,507
BOAT
Christopher E. Schafer, and Betty L. Schafer, both of Adair, Iowa, assignors to Schafer Systems, Inc., Adair, Iowa
Filed Oct. 23, 1995, Ser. No. 45,505
Term of patent 14 years
U.S. Cl. D12—316



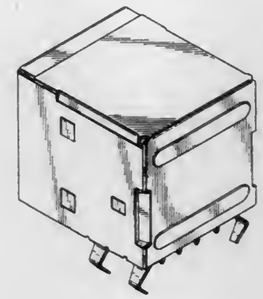
378,508
SET OF BOAT BUMPER
Alan Kinkead, 4650 W. Route K., Columbia, Mo. 65203
Filed Apr. 17, 1996, Ser. No. 53,209
Term of patent 14 years
U.S. Cl. D12—317



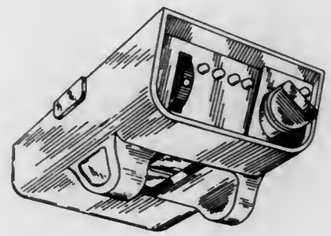
378,509
QUICK RELEASE OUTBOARD BATTERY FOR A COMPACT WIRELESS TELEPHONE
Barry Voroba, Minnetonka; Daniel E. Kobylarz, Bloomington, and Carrie L. Zochert, Minnetonka, all of Minn., assignors to MicroTalk Technologies, Inc., Minnetonka, Minn.
Filed Jun. 20, 1994, Ser. No. 24,754
Term of patent 14 years
U.S. Cl. D13—103



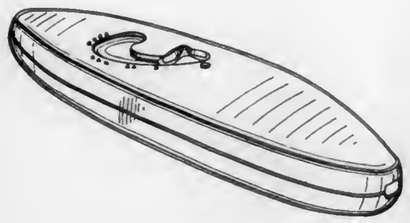
378,510
DUAL CONNECTOR
Haw-Chan Tan, Diamond Bar, and Tim S. L. Chang, Chino Hills, both of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan
Filed Dec. 8, 1995, Ser. No. 48,764
Term of patent 14 years
U.S. Cl. D13—147



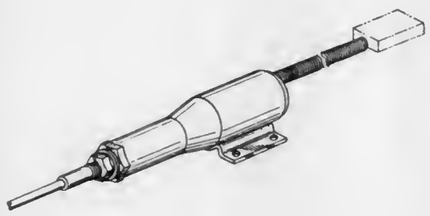
378,511
ELECTRONIC CONTROLLER FOR ELECTRIC BRAKES
Barry G. Austin, Marshall, Mich., assignor to Tekonsha Engineering Company, Tekonsha, Mich.
Filed Mar. 30, 1995, Ser. No. 37,082
Term of patent 14 years
U.S. Cl. D13—162



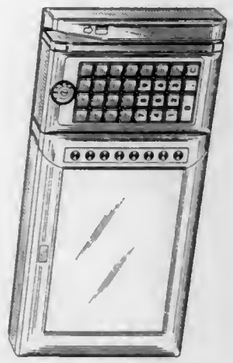
378,512
ROTARY CONTROLLER
Stuart H. Lee, Brooklyn; Tucker Viemeister, and Jarrod L. Linton, both of New York, all of N.Y., assignors to KAZ, Incorporated, New York, N.Y.
Filed Jun. 12, 1995, Ser. No. 40,144
Term of patent 14 years
U.S. Cl. D13—168



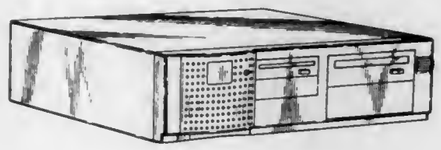
378,513
SOLENOID ASSEMBLY
John Bandas, Streamwood, and Pete Stocco, Schaumburg, both of Ill., assignors to Synchro-Start Products, Inc., Niles, Ill.
Filed Dec. 4, 1995, Ser. No. 47,403
Term of patent 14 years
U.S. Cl. D13—183



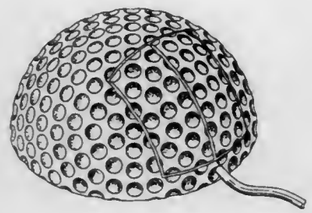
378,514
INFORMATION AND CONTROL TERMINAL HOUSING
Bernd Kruse, Altenbeken, Germany, assignor to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany
Filed Sep. 7, 1995, Ser. No. 43,942
Claims priority, application Germany, Mar. 7, 1995, M9502101.9
Term of patent 14 years
U.S. Cl. D14—100



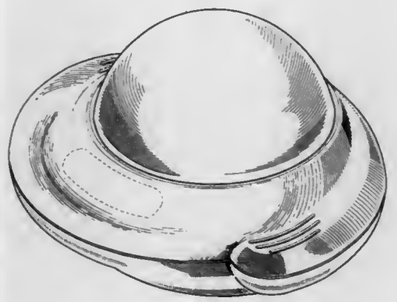
378,515
CENTRAL PROCESSING UNIT FOR ELECTRONIC COMPUTER
Yasunori Senshiki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1995, Ser. No. 46,399
Claims priority, application Japan, May 15, 1995, 7-13481
Term of patent 14 years
U.S. Cl. D14—100



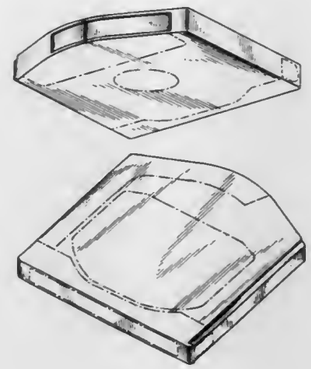
378,516
COMPUTER MOUSE
Christopher E. Smith, and Brian A. Nehila, both of Easton, Pa., assignors to Neware Corporation, Inc., Easton, Pa.
Filed Sep. 27, 1994, Ser. No. 29,031
Term of patent 14 years
U.S. Cl. D14—114



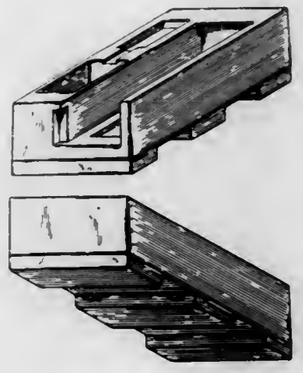
378,517
POINTING DEVICE
Steven T. Kaneko; Aditha M. Adams; Christopher Alviar, all of Seattle; Ferdinand van Engelen, Bellevue; Dana Kim, Redmond; Bridget C. Greenberg, and Dick C. K. Liu, both of Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Apr. 12, 1995, Ser. No. 37,502
The portion of the term of this patent subsequent to Jan. 21, 2013, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—114



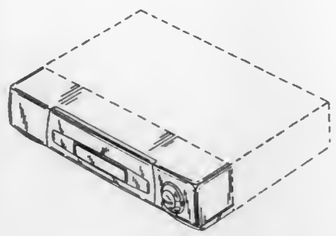
378,518
COMPUTER STORAGE DISK CARTRIDGE
Wayne A. Sumner, Ogden; David W. Griffith; Allen T. Bracken, both of Layton, all of Utah, and Nicholas Brawne, Columbus, Ohio, assignors to Iomega Corporation, Roy, Utah
Filed Aug. 25, 1995, Ser. No. 48,745
Term of patent 14 years
U.S. Cl. D14—114



378,519
BASE UNIT FOR OPTICAL READER
Lawrence R. Ober, Charlotte, N.C.; Danny M. Beadle, Mission Viejo; Gerald A. Wines, Santa Ana, both of Calif., and Lieb A. Lurie, Troy, Ohio, assignors to Hand Held Products, Inc., Charlotte, N.C.
Continuation of Ser. No. 45,474, Oct. 20, 1995. This application Mar. 25, 1996, Ser. No. 52,121
Term of patent 14 years
U.S. Cl. D14—114



378,520
FRONT SECTION OF A VIDEO CASSETTE RECORDER
Kuninori Hyougo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 19, 1994, Ser. No. 32,453
Term of patent 14 years
U.S. Cl. D14—135

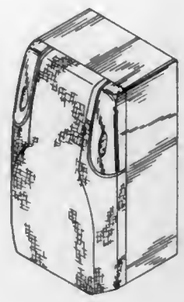


378,521
AUDIO PREAMPLIFIER
Joseph R. Neuman, 3590 Bridger Canyon Rd., Bozeman, Moot. 59715
Filed Apr. 12, 1995, Ser. No. 37,407
Term of patent 14 years
U.S. Cl. D14—188



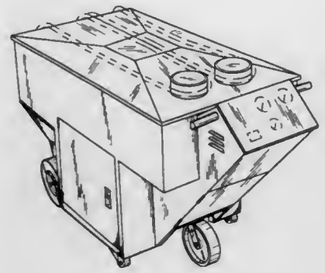


378,522
SPEAKER BOX
Yoichi Nara, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 22, 1996, Ser. No. 49,235
Term of patent 14 years
U.S. Cl. D14—214



378,523
FREQUENCY CHANGER FOR RECEIVING SATELLITE BROADCASTING
Atsushi Sawada, Hyogo; Mitsuru Takami, Osaka, and Emiko Maekawa, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 10, 1996, Ser. No. 54,229
Claims priority, application Japan, Dec. 14, 1995, 7-37911
Term of patent 14 years
U.S. Cl. D14—230

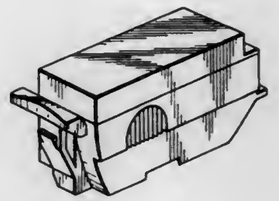
378,524
PORTABLE COOLANT RECONDITIONING SYSTEM
William Bettag, Noblesville; Ronald W. Lyon, Carmel, and Greg Lyon, Indianapolis, all of Ind., assignors to Coolant Wizard, Inc., Indianapolis, Ind.
Filed May 10, 1996, Ser. No. 54,227
Term of patent 14 years
U.S. Cl. D15—199



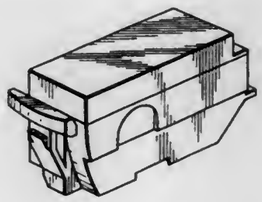
378,525
IMAGE FORMING APPARATUS
Hideki Ito, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1996, Ser. No. 48,821
Claims priority, application Japan, Jul. 7, 1995, 7-19837
Term of patent 14 years
U.S. Cl. D18—40



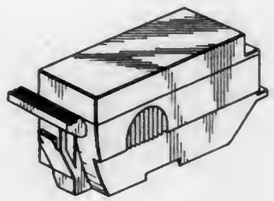
378,526
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,264
Claims priority, application Japan, Feb. 6, 1995, 7-2792
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



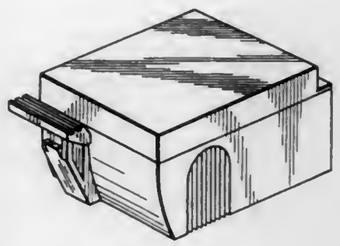
378,527
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,271
Claims priority, application Japan, Feb. 6, 1995, 7-2798
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



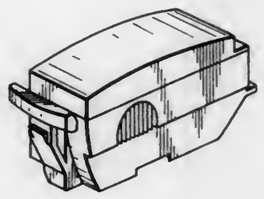
378,528
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,273
Claims priority, application Japan, Feb. 6, 1995, 7-2793
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



378,530
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,287
Claims priority, application Japan, Feb. 6, 1995, 7-2771
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



378,529
CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,285
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



378,531
MAGNETIC DOCUMENT HOLDER
Bela Szikszay, P.O. Box 15, Fleischmanns, N.Y. 12430
Filed May 20, 1996, Ser. No. 54,711
Term of patent 14 years
U.S. Cl. D19—65



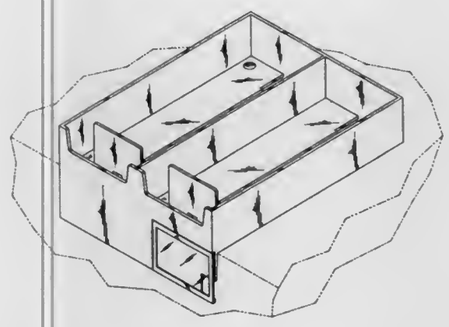
378,532
CORRECTION TAPE DISPENSER
Kazuhiko Suzuki, Kiyose, Japan, assignor to Tombow Pencil Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1995, Ser. No. 44,644
Term of patent 14 years
U.S. Cl. D19—69



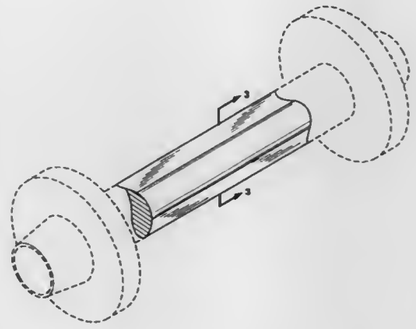
378,534
INFORMATION TERMINAL
Syuzo Kato; Tadashi Hibino; Inahiko Tanaka; Kyoko Daisyoji, and Tsuneo Shimada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Apr. 29, 1996, Ser. No. 53,720
Claims priority, application Japan, Nov. 20, 1995, 7-35059
Term of patent 14 years
U.S. Cl. D20—10



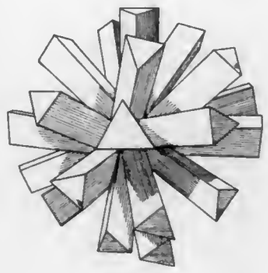
378,533
PROMOTIONAL STORAGE COMPARTMENT AND BUSINESS CARD HOLDER WITH MOVEABLE DIVIDERS
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Continuation-in-part of Ser. No. 48,537, Jan. 3, 1996. This application Mar. 27, 1996, Ser. No. 52,284
Term of patent 14 years
U.S. Cl. D19—75



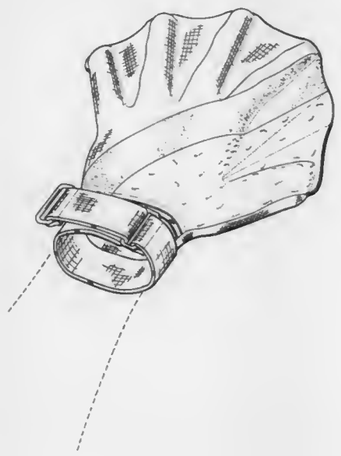
378,535
WEIGHT TRAINING BAR
Robert G. Wilber, 21 St. Johns Ct., Walnut Creek, Calif. 94596
Filed Jun. 30, 1994, Ser. No. 25,443
Term of patent 14 years
U.S. Cl. D21—198



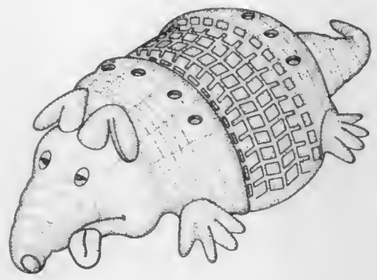
378,536
SPONGE BALL
Andrew F. Fireman, Brighton, and Harvey Zelman, Stoughton, both of Mass., assignors to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Dec. 12, 1995, Ser. No. 47,745
Term of patent 14 years
U.S. Cl. D21—203



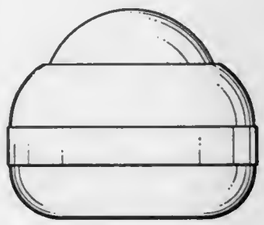
378,537
PAIR OF WATER SPORTS GLOVES
Mark A. Kamark, c/o Lou Marcus Inc., P.O. Box 845, Sturgeon Bay, Wis. 54235-0845
Filed Jan. 22, 1996, Ser. No. 49,648
Term of patent 14 years
U.S. Cl. D21—238



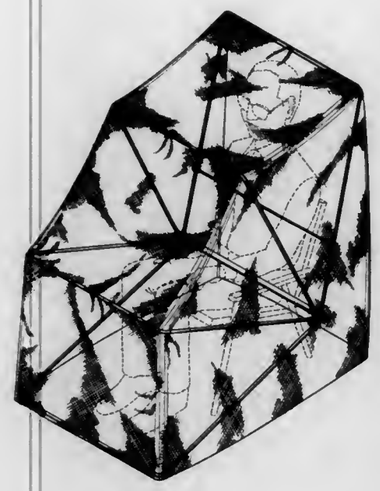
378,538
COMBINED TOY ARMADILLO AND AIR FRESHENER
Thomas A. Gaskin, III, 4216 Antietam Dr., Birmingham, Ala. 35213
Filed Dec. 11, 1995, Ser. No. 47,721
Term of patent 14 years
U.S. Cl. D23—367



378,539
MASSAGER
Robert L. Scott, 3949 Los Feliz Blvd., #207, Los Angeles, Calif. 90027
Filed Dec. 20, 1995, Ser. No. 48,093
Term of patent 14 years
U.S. Cl. D24—211



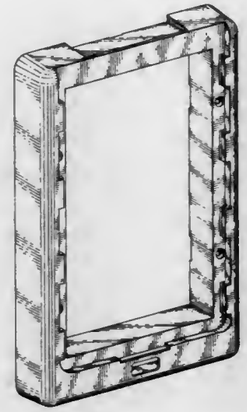
378,540
PORTABLE SHELTER
Mark A. Becker, 721 14th Ave. South, St. Cloud, Minn. 56301
Filed May 10, 1995, Ser. No. 38,646
Term of patent 14 years
U.S. Cl. D25—16



378,541
PET DOOR SECURITY COVER
George N. Davlantes, 21457 Iglesia Dr., Woodlawn Hills, Calif. 91364
Filed Jan. 24, 1996, Ser. No. 49,389
Term of patent 14 years
U.S. Cl. D25—49



378,542
PET DOOR LOCKING FRAME
George N. Davlantes, 21457 Iglesia Dr., Woodlawn Hills, Calif. 91364
Filed Jan. 4, 1996, Ser. No. 48,562
Term of patent 14 years
U.S. Cl. D25—60



378,543
PET DOOR FLAP FRAME
George N. Davlantes, 21457 Iglesia Dr., Woodlawn Hills, Calif. 91364
Filed Jan. 24, 1996, Ser. No. 49,391
Term of patent 14 years
U.S. Cl. D25—60



378,544

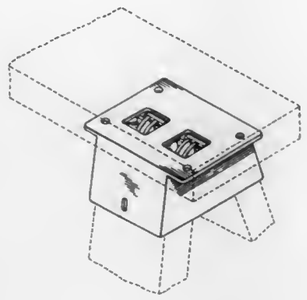
COLLAPSIBLE SAWHORSE BRACKET

Robert L. Aldredge, 7525 Bratford Rd., Dayton, Ohio 45414

Filed Jan. 24, 1996, Ser. No. 49,358

Term of patent 14 years

U.S. Cl. D25—68



378,545

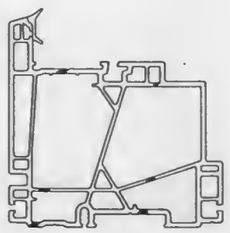
FIXED CASEMENT WINDOW FRAME COMPONENT

Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada

Filed Mar. 19, 1996, Ser. No. 51,907

Term of patent 14 years

U.S. Cl. D25—125



378,546

SLIDER WINDOW FRAME COMPONENT

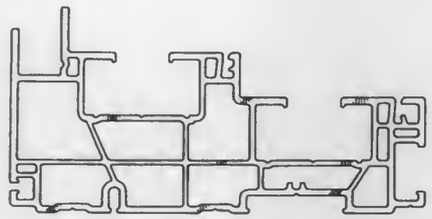
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada

Filed Mar. 21, 1996, Ser. No. 52,042

Claims priority, application Canada, Sep. 22, 1995, 1995-2141

Term of patent 14 years

U.S. Cl. D25—125



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Volvo: *See—*
Olofsson, Bengt; Olsson, Jimmy; Remen, Milan; and Gullberg, Kenneth, 5,611,658, Cl. 414-797.300.

ABB Industrial Systems, Inc.: *See—*
Reed, Gordon K., 5,611,396, Cl. 165-300.000.

ABB Industry Oy: *See—*
Meijalainen, Vesa; Erkkilä , Ilkka; and Kauhanen, Matti, 5,612,604, Cl. 318-727.000.

Abbott, Joe L., to Enviro Pac International, Llc. Extruded metal tubes. 5,611,454, Cl. 220-604.000.

Abbott Laboratories: *See—*
Gallup, David A.; Sperinde, John M.; Ambrisco, William A.; Hughes, Timothy J.; Pantages, Anthony J.; Sarge, Jeffrey A.; and Tsuchitani, Scott T., 5,611,338, Cl. 128-634.000.
Gordon, Julian; Kapsalis, Andreas A.; and Thompson, Richard E., 5,612,178, Cl. 435-4.000.
Kim, Young R.; and Stroupe, Stephen D., 5,612,223, Cl. 436-17.000.
Ogden, John E.; Abrahamson, Kent D.; Bryant, Peter L.; Joyce, Thomas P.; and Ziegler, John S., 5,611,458, Cl. 222-1.000.
Or, Yat S.; and Luly, Jay R., 5,612,350, Cl. 514-291.000.

Abe, Yoshinori: *See—*
Ito, Akio; Ichikawa, Hiroyuki; Abe, Yoshinori; and Miyake, Shoji, 5,612,793, Cl. 358-500.000.

Abel, Albert E.: *See—*
Mouk, Robert W.; Heyduk, Alan F.; and Abel, Albert E., 5,613,238, Cl. 588-1.000.

Abood, Norman A.; Manning, Robert E.; and Miyano, Masateru, to G. D. Searle & Co. Phenyl amidine lactones useful as platelet aggregation inhibitors. 5,612,355, Cl. 514-336.000.

Abrahamson, Kent D.: *See—*
Ogden, John E.; Abrahamson, Kent D.; Bryant, Peter L.; Joyce, Thomas P.; and Ziegler, John S., 5,611,458, Cl. 222-1.000.

Abrams, Kenneth J., to Amoco Corporation. Apparatus for preparing aromatic carboxylic acids with efficient energy recovery. 5,612,007, Cl. 422-189.000.

Abukhader, Saleem A. Vehicle disabling device. 5,611,408, Cl. 180-287.000.

Achiwa, Kyosuke; Yamamoto, Akira; Fujii, Tetsuhiko; Satoh, Takao; and Nozawa, Masafumi, to Hitachi, Ltd. Raid system including first and second read/write heads for each disk drive. 5,613,088, Cl. 395-482.000.

Ackley, Donald E.: *See—*
Shieh, Chan-Long; and Ackley, Donald E., 5,612,228, Cl. 437-1.000.

Acusphere, Inc.: *See—*
Bernstein, Howard; Straub, Julie A.; Brush, Henry T.; and Wing, Richard E., 5,611,344, Cl. 128-662.020.

Adachi, Hiroyuki: *See—*
Sato, Toshiro; Yamamoto, Kunitoshi; and Adachi, Hiroyuki, 5,612,962, Cl. 371-22.300.

Adachi, Shinya: *See—*
Taniguchi, Takashi; Tanaka, Kazuo; Adachi, Shinya; and Maekawa, Masaki, 5,612,432, Cl. 526-262.000.

Adaptec, Inc.: *See—*
Strang, Clifford E., Jr., 5,612,834, Cl. 360-75.000.

Adhesive Coatings Co.: *See—*
Cummings, Lowell O.; Terrizzi, Patrick A.; and Gac, Norman, 5,612,143, Cl. 428-626.000.

Adir et Compagnie: *See—*
Andrieux, Jean; Langlois, Michel; Renard, Pierre; and Delagrange, Philippe, 5,612,368, Cl. 514-418.000.

Adkins, Calvin L.: *See—*
Hall, Christopher J.; Adkins, Calvin L.; Graves, David; and Bryant, Ed, 5,612,778, Cl. 356-4.090.

Adkins, Lola. Separable garment. 5,611,087, Cl. 2-114.000.

Advanced Cardiovascular Systems, Inc.: *See—*
Machold, Timothy R.; Robinson, Janine C.; Michaels, Mary B.; and Sirhan, Motasim M., 5,611,775, Cl. 604-53.000.

Advanced Micro Devices, Inc.: *See—*
Agrawal, Om P.; and Moench, Jerry D., 5,612,631, Cl. 326-39.000.
Bui, Nguyen D.; Yue, John T.; and Pham, Van, 5,612,627, Cl. 324-766.000.
Chang, Chung K.; Chen, Johnny C.; and Cleveland, Lee E., 5,612,921, Cl. 365-226.000.
Farahani, M. M.; and Garg, Shyam, 5,612,253, Cl. 437-190.000.
Schmidt, Rodney, 5,613,126, Cl. 395-733.000.
Sun, Yu; and Liu, Yowjuang W., 5,612,249, Cl. 437-69.000.

Aerospatiale Societe Nationale Industrielle: *See—*
Cescon, Gilles; Laborie, Philippe; Maffre, Claude; and Neillo, Marie-Odile, 5,612,687, Cl. 340-980.000.

Afek, Yachin; Oz, Oved; and Intrater, Gideon, to National Semiconductor Corporation. Integrated data processing system utilizing successive approximation analog to digital conversion and PWM for parallel disconnect. 5,613,149, Cl. 395-800.000.

Affa, Alfred, to Dr. Johannes Heidenhain GmbH. Low vibration fastening of a scale to a carrier of a position measuring arrangement. 5,611,148, Cl. 33-702.000.

Agata, Akihiko, to Shin-Ei Kabushiki Kaisha. Vacuum jet pump for recovering a mixed fluid of gas and liquid condensates from steam-using apparatus. 5,611,673, Cl. 417-198.000.

Agency of Industrial Science and Technology: *See—*
Furutani, Yoshio; Shimada, Hiroaki; Mita, Izumi; Manabe, Kazuaki; Honjo, Masaru; and Tomioka, Noboru, 5,612,192, Cl. 435-69.100.
Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Itoh, Junji; and Kanemaru, Seigo, 5,612,587, Cl. 313-309.000.

Agency of Industrial Science and Technology, Ministry of International Trade & Industry: *See—*
Suzuki, Kenzi, 5,612,269, Cl. 502-62.000.

Agfa-Gevaert, N.V.: *See—*
Coppens, Paul; De Keyzer, René; and Loccufier, Johan, 5,612,166, Cl. 430-204.000.

Agrawal, Om P.; and Moench, Jerry D., to Advanced Micro Devices, Inc. An I/O macrocell for a programmable logic device. 5,612,631, Cl. 326-39.000.

Agrawal, Raj K.; and Crank, Doug, to Donnelly Corporation. Method of making a vehicle window assembly. 5,611,180, Cl. 52-393.000.

Agripak, Inc.: *See—*
Dugan, Thomas F.; Rupnow, Daniel R.; and Sroub, Brian J., 5,611,172, Cl. 47-1.010.

Ahari, Frederick F.: *See—*
Rowe, Stephen C.; Hubbell, Jeffrey A.; Herman, Stephen J.; Sun, Vae; Lang, Michael F.; Selecman, George E.; and Ahari, Frederick F., 5,612,050, Cl. 424-423.000.

Ahigian, Edward E.: *See—*
Jaminet, Jerome F.; Piech, Zbigniew; Guliuzza, Frank, Jr.; McHugh, Thomas M.; Ahigian, Edward E.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; Kulak, Richard E.; and Barrett, David W., 5,612,518, Cl. 187-316.000.

Ahmadi, Hamid; Bar-Noy, Amotz; Kessler, Ilan; and Krishna, Arvind, to International Business Machines Corporation. Multiaccess scheme for mobile integrated local area networks. 5,613,198, Cl. 455-33.100.

Ahn, Byung J., to Hyundai Electronics Industries Co., Ltd. Method of making flash EEPROM cell. 5,612,237, Cl. 437-43.000.

Ahn, Chie T.: *See—*
Lee, Sang M.; Jeong, Joo H.; and Ahn, Chie T., 5,612,744, Cl. 348-416.000.

Ahn, Jong-Hyon, to Samsung Electronics Co., Ltd. Method for manufacturing semiconductor substrate having buck transistor and SOI transistor areas. 5,612,246, Cl. 437-62.000.

Ahuja, Ratinder P.: *See—*
Gregerson, Daniel P.; Farrell, David R.; Gaitonde, Sunil S.; Ahuja, Ratinder P.; Ramakrishnan, Krish; Shafiq, Muhammad; and Wallis, Ian F., 5,612,957, Cl. 370-401.000.

Aiba, Yoshinobu: *See—*
Ichikawa, Hiroyuki; Ohmura, Hiroshi; Hasegawa, Shizuo; Isemura, Keizo; and Aiba, Yoshinobu, 5,612,792, Cl. 358-500.000.

Aichi Machine Industry Co. Ltd.: *See—*
Arakawa, Takuya; Tako, Hiroshi; and Tohata, Toru, 5,612,393, Cl. 523-145.000.

Aihara, Yoshihiko; Yamamichi, Masayoshi; and Fujino, Masahisa, to Canon Kabushiki Kaisha. Camera system. 5,613,171, Cl. 396-531.000.

Aikawa, Toshiya; Tazawa, Masashi; and Fujinawa, Nobuhiro, to Nikon Corporation. Scanning device. 5,612,811, Cl. 359-204.000.

Aikyo, Hiroyuki: *See—*
Yamamoto, Iwao; and Aikyo, Hiroyuki, 5,612,015, Cl. 423-447.600.

AIL Systems, Inc.: *See—*
Wang, C. David; and Thompson, James P., 5,613,039, Cl. 395-22.000.

Air Products and Chemicals, Inc.: *See—*
Baukal, Charles E., Jr.; Slavejkov, Aleksandar G.; and Monroig, Louis W., 5,611,683, Cl. 431-10.000.
Marsden, James G.; Bowe, Donald J.; Berger, Kerry R.; Garg, Diwakar; and Mitchell, David L., Jr., 5,613,185, Cl. 419-58.000.
Ragsdale, Daniel J.; Smudde, George H., Jr.; and Zatko, David A., 5,612,489, Cl. 73-23.350.
Slavejkov, Aleksandar G.; Gosling, Thomas M.; and Knorr, Robert E., Jr., 5,611,682, Cl. 431-8.000.

Aisin AW Co., Ltd.: *See—*

Moroto, Syuzo; Sumiya, Koji; Ito, Yasunobu; Yamada, Kunihiro; Nimura, Mitsuhiro; and Yano, Takeshi, 5,612,881, Cl. 364-449.300.

Aisin Seiki Kabushiki Kaisha: *See*—
Ooumi, Takeharu; Naruse, Yoshihiro; Yamada, Takahiro; Tsukahara, Kinji; Ando, Mitsuhiro; and Tsuchimoto, Katsuya, 5,611,676, Cl. 417-322.000.

Aitken, Diane E.: *See*—
Small, Dorsey D.; and Aitken, Diane E., 5,611,680, Cl. 417-422.000.

Aitken, Janice C.: *See*—
Creffield, Geoffrey K.; Chapman, Ian F.; Aitken, Janice C.; Cole, Mark; White, George R., III; and Nayar, Harbhajan S., 5,611,366, Cl. 137-209.000.

Aizawa, Takeshi: *See*—
Ueki, Yasuhiro; Yamagami, Hideaki; and Aizawa, Takeshi, 5,612,939, Cl. 369-48.000.

Akamatsu, Toshiya; Karasawa, Kazuaki; Nakanishi, Teru; and Shimizu, Kozo, to Fujitsu Limited. Integrated electronic device having flip-chip connection with circuit board and fabrication method thereof. 5,611,481, Cl. 228-180.220.

Akashi, Yoshihiro; Kuramochi, Kaoru; Okamoto, Setsuo; Tsujimoto, Yasuji; and Ito, Makoto, to Sumitomo Sitix Corporation. Apparatus for producing single crystals. 5,611,857, Cl. 117-217.000.

Akeno, Mitsuru; and Ichikawa, Nobuhiro, to YKK Corporation. Automatic lock slider for concealed slide fastener. 5,611,121, Cl. 24-423.000.

Akian, Z. Paul: *See*—
Suri, Kanwar; Akian, Z. Paul; Parker, Steven H.; Udell, Robert F.; Leitzell, Michael M.; Nees, David K.; and McLean, S. Glenn, 5,611,923, Cl. 210-238.000.

Akiyama, Masaki: *See*—
Onitsuka, Shigenori; Ichiki, Masayoshi; Inazumi, Chikashi; Watanabe, Takanobu; Fukuju, Atsushi; Akiyama, Masaki; Sairyo, Yuki; and Kobayashi, Hidetsugu, 5,612,276, Cl. 502-415.000.

Akkary, Haitham: *See*—
Glew, Andrew F.; Akkary, Haitham; and Hinton, Glenn J., 5,613,083, Cl. 395-417.000.

Akzo N.V.: *See*—
Schilo, Diederich; and Peschke, Wolfgang, 5,612,063, Cl. 425-72.200.

Akzo Nobel N.V.: *See*—
de Zoeten, Juan P.; Verheijden, Petrus F. H. M.; Groothuizen, Theodorus J. J.; and Raijmakers, Jozef H. M., 5,611,995, Cl. 422-58.000.

Akzo Nobel NV: *See*—
Jacobs, Antonius A. C., 5,612,042, Cl. 424-237.100.
Krummheuer, Wolf R.; and Siejak, Volker, 5,612,124, Cl. 442-181.000.
Nijhuis, Walter H. N.; Talma, Auke G.; Vertommen, Luc L. T.; and Maillard, Bernard J., 5,612,430, Cl. 526-232.500.

Al-Ko Kober Corporation: *See*—
Smith, Elwood B., II; and Bailey, Leonard R., 5,611,653, Cl. 411-395.000.

Alava, Hannu. Splash guard for a tracked vehicle. 5,611,572, Cl. 280-847.000.

Alba-Waldensian, Inc.: *See*—
Osborne, Harold G., 5,611,722, Cl. 450-99.000.

Albach, Manfred, to U.S. Philips Corporation. Circuit arrangement for producing a direct voltage with reduction of harmonic and high-frequency interferences. 5,612,856, Cl. 363-20.000.

Albano, Margherita: *See*—
Arcella, Vincenzo; Brinati, Giulio; Albano, Margherita; and Tortelli, Vito, 5,612,419, Cl. 525-252.000.

Albenda, Abraham R. Watch and timepiece attaching device. 5,612,932, Cl. 368-276.000.

Albers, Thomas M.; Eberst, John V.; Fontenot, Darwin; Pyra, Richard L.; Welker, Mark W.; Wood, Paul B.; and Bresenham, Jack E., to Compaq Computer Corporation. Video graphics controller with automatic starting for line draws. 5,613,053, Cl. 395-143.000.

Albers, Thomas M.; Eberst, John V.; Fontenot, Darwin; Pyra, Richard L.; Welker, Mark W.; Wood, Paul B.; and Bresenham, Jack E., to Compaq Computer Corporation. Video graphics controller with improved calculation capabilities. 5,613,054, Cl. 395-143.000.

Alberth, William P., Jr.: *See*—
Baranowski, Robert; Alberth, William P., Jr.; and Millar, Donald J., 5,613,229, Cl. 455-127.000.

Albrecht, Jeffrey A.; and Vega, Hector L., to American Creative Packaging. Adhesive-striped bandoleer packaging. 5,611,430, Cl. 206-390.000.

Albright, Jay D.; and Dusza, John P., to American Cyanamid Company. Tricyclic benzazepine vasopressin antagonists. 5,612,334, Cl. 514-220.000.

Alcatel Cit: *See*—
Fevrier, Hervé; Perrier, Philippe; and Berthelon, Luc, 5,612,805, Cl. 359-124.000.

Alcatel Fibres Optiques: *See*—
Guillon, Jean; Macia, David; Riant, Isabelle; and Sansonetti, Pierre, 5,613,023, Cl. 385-37.000.

Alcatel N.V.: *See*—
Audouin, Olivier; and Hamaide, Jean-Pierre, 5,612,808, Cl. 359-161.000.
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Dupuy, Pierre; and Kumar, Vinod, 5,613,203, Cl. 455-33.200.

Alcatel Network Systems, Inc.: *See*—
Ledda, Francesco; and Tsao, Jeffrey W., 5,612,980, Cl. 375-375.000.
Marusik, C. Lee; and Johnson, Edward, 5,612,862, Cl. 363-93.000.

Alcatel Radiotelephone: *See*—
Auvray, Gérard, 5,613,224, Cl. 455-89.000.

Alcon Laboratories, Inc.: *See*—
York, Billie M.; Yanni, John M.; and DuPriest, Mark T., 5,612,364, Cl. 514-392.000.

Alcuf Inc.: *See*—
Parisien, Harvey E., 5,611,523, Cl. 256-68.000.

Aldcroft, Gary T.: *See*—
Hoyt, David; and Aldcroft, Gary T., 5,611,379, Cl. 150-160.000.

Alessandri, Martial G.; and Theret, Jean-Marc, to Societe Nationale d'Etude et de Construction de Moterus D'Aviation S.N.E.C.M.A. Procedure for the fabrication of crystalline blades. 5,611,389, Cl. 164-122.200.

Alexander, Alan A.: *See*—
O'Brasky, James S.; Alexander, Alan A.; Griffin, Odis H., Jr.; Foster, John S.; and Shamblen, Morley C., 5,612,505, Cl. 102-268.000.

Alexander, Brian S.: *See*—
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., 5,612,141, Cl. 428-515.000.

Alexander, Jerry L.; and Tussey, David L., to Imation Corp. Prism for a data cartridge. 5,612,844, Cl. 360-132.000.

Alexander, J. Wesley. Enhancement of transplant graft survival through nutritional immunomodulation and immunosuppressive therapy. 5,612,060, Cl. 424-529.000.

Alexander, Lloyd G. Method of determining gas-oil ratios from producing oil wells. 5,612,493, Cl. 73-152.550.

Alfa Laval Separation AB: *See*—
Ström, Gunnar, 5,611,919, Cl. 210-168.000.

Alford, George C.; Damghani, Yamin; Avdonin, Nickolas A.; and Moon, Billy G., to Uniden America Corporation. Automatic call destination/system selection in a radio communication system. 5,613,201, Cl. 455-331.000.

Al Ghatta, Hussain A. K.: *See*—
Ghisolfi, Guido; Giordano, Dario; Boveri, Giuseppina; and Al Ghatta, Hussain A. K., 5,612,011, Cl. 423-245.300.

Algonquin Industries Inc.: *See*—
Kasper, Kazmier J., 5,611,456, Cl. 221-154.000.

Alien Warper, Inc.: *See*—
Vandermaas, John, 5,611,720, Cl. 446-47.000.

Alinco Incorporated: *See*—
Toshida, Youichi; Nakagawa, Kazuko; Kuroda, Toshihide; Nakayama, Kazuyuki; and Taki, Tomotsugu, 5,613,232, Cl. 455-226.400.

Alkor GmbH Kunststoffe: *See*—
Mathavan, Thambirajah; and Dous, Eberhardt, 5,611,982, Cl. 264-131.000.

Allegro Natural Dyes LLC: *See*—
Gurley, Sally, 5,611,822, Cl. 8-625.000.

Allegrucci, Jean-Pierre; and Testart, Gérard, to KIHN. Process for modifying the section of a railway rail and rail thus obtained. 5,611,234, Cl. 72-377.000.

Allen, Alexander R. Strap tensioning system. 5,611,119, Cl. 24-301.000.

Allen-Bradley Company, Inc.: *See*—
Shichi, Makoto; Hayakawa, Mamabu; and Wright, Dennis M., 5,612,582, Cl. 307-130.000.
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Allen, Geoffrey C.; and Flick, Kenneth E., to Flick, Kenneth E. Vehicle security system having enhanced false alarm compensation. 5,612,669, Cl. 340-426.000.

Allen Telecom Group, Inc.: *See*—
Stronks, John; Lilieholm, Erik; and Gee, Johnny, 5,612,655, Cl. 333-202.000.

Allergan: *See*—
Grisoni, Bernard F.; and Sussman, Glenn R., 5,611,968, Cl. 264-2.100.

Alleyne, Neville. Cardiac protection device. 5,611,354, Cl. 128-846.000.

Alliant Techsystems, Inc.: *See*—
Vavruska, John S., 5,611,947, Cl. 219-121.520.

AlliedSignal Inc.: *See*—
Krambeck, Dagoberto; and Watson, Monte G., 5,611,497, Cl. 242-375.100.
Miller, Harold J., III; and Dybro, Niels, 5,611,498, Cl. 242-379.100.
Thomas, Rudy V.; and Goniea, Philip H., 5,611,604, Cl. 297-478.000.

Alligood, John H.: *See*—
Smart, David C.; and Alligood, John H., 5,612,759, Cl. 396-380.000.

Allman, James W.: *See*—
Vallelonga, Kenneth M., Sr.; and Allman, James W., 5,612,997, Cl. 379-393.000.

Almon, Amy C. Method and device for disinfecting a toilet bowl. 5,611,088, Cl. 4-222.000.

Almulla, Waleed, to Intel Corporation. Method and structure for improving power consumption on a component while maintaining high operating frequency. 5,612,892, Cl. 364-489.000.

Alphatec Manufacturing, Inc.: *See*—
Davis, Bradford D.; Stednitz, Mike; and Urbanski, Mark, 5,611,800, Cl. 606-61.000.

Alpine Lace Brands, Inc.: *See*—
Gamay, Aly, 5,612,073, Cl. 426-39.000.

Alps Electric Co., Ltd.: *See*—
Masudaya, Hideki, 5,612,688, Cl. 340-988.000.

Alt, John D. Method and apparatus for operating multiple passenger carrying trams simultaneously in both directions in a single dedicated lane transit system. 5,611,282, Cl. 104-88.060.

Alteon Inc.: *See*—

Wagle, Dilip R.; Ulrich, Peter C.; and Cerami, Anthony, 5,612,332, Cl. 514-212.000.

Altera Corporation: *See*—
McClintock, Cameron, 5,612,642, Cl. 327-143.000.

Altman, Dan; Rouiller, Michael W.; Stikeleather, Gregory; Evans, Michele M.; Kusmer, Steven R.; and Thompson, Michael P., to Microsoft Corporation. System and methods for spacing, storing and recognizing electronic representations of handwriting, printing and drawings. 5,613,019, Cl. 382-311.000.

Aluminium Powder Company Limited, The: *See*—
Purnell, Charles G.; Smith, Paul; and Mahmoud, Mohammad S., 5,613,184, Cl. 419-38.000.

Alyn Corporation: *See*—
Carden, Robin A., 5,613,189, Cl. 428-565.000.

Amano, Hitoshi: *See*—
Nakanishi, Yuji; Amano, Hitoshi; and Yamaguchi, Shotaro, 5,612,208, Cl. 435-189.000.

Amano, Kenichiro, to Canon Kabushiki Kaisha. Camera adapted to use film having magnetic recording part. 5,612,757, Cl. 396-319.000.

Amano Pharmaceutical Co., Ltd.: *See*—
Nakanishi, Yuji; Amano, Hitoshi; and Yamaguchi, Shotaro, 5,612,208, Cl. 435-189.000.

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Sato, Yasuo; and Amano, Shigeki, 5,612,238, Cl. 437-43.000.

Amano, Tadashi: *See*—
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American Creative Packaging: *See*—
Albrecht, Jeffrey A.; and Vega, Hector L., 5,611,430, Cl. 206-390.000.

American Cyanamid Company: *See*—
Albright, Jay D.; and Dusza, John P., 5,612,334, Cl. 514-220.000.
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,612,481, Cl. 544-222.000.
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American International Technologies, Inc.: *See*—
Wakalopulos, George, 5,612,588, Cl. 313-420.000.

American Standard Inc.: *See*—
Jensen, Robert M., 5,611,091, Cl. 4-405.000.

American Superconductor Corporation: *See*—
Gold, Calman; and Russo, Carl J., 5,612,615, Cl. 323-360.000.

Americo: *See*—
Rones, James M., 5,611,101, Cl. 15-230.170.

Amico, Mark S., to Xerox Corporation. Electroded donor roll. 5,613,178, Cl. 399-266.000.

Amoco Corporation: *See*—
Abrams, Kenneth J., 5,612,007, Cl. 422-189.000.

AMSC Subsidiary Corporation: *See*—
Ross, David J.; Isaacs, Blake L.; and Williams, Kevin J., 5,613,223, Cl. 455-89.000.

AMVAC Chemical Corporation: *See*—
Synek, Joseph, 5,612,048, Cl. 424-409.000.

Amway Corporation: *See*—
Markham, Ronald C., 5,611,918, Cl. 210-87.000.

Anagnostopoulos, Constantine N., to Eastman Kodak Company. Full frame solid-state image sensor with altered accumulation potential and method for forming same. 5,612,555, Cl. 257-222.000.

Analis S. A.: *See*—
Janssens, Jacques; Chevigne, Roland; and Louis, Philippe, 5,611,903, Cl. 204-454.000.

Analog Devices, Incorporated: *See*—
Mercer, Douglas A., 5,612,697, Cl. 341-153.000.
Reynolds, David C., 5,612,639, Cl. 327-93.000.

Andersen, Bogi; Pearse, Richard V.; Schlegel, Peter N.; Rosenfeld, Michael G.; and Bardin, C. Wayne, to Population Council, Center for Biomedical Research, The. Isolated DNA molecule encoding SPRM-1 protein. 5,612,220, Cl. 435-320.100.

Anderson, Dana Z.: *See*—
Zhou, Gan; and Anderson, Dana Z., 5,612,812, Cl. 359-244.000.

Anderson, Donald E.: *See*—
Riebel, Michael J.; Anderson, Donald E.; Gruber, Carl; Torgusen, Paul; DeGezelle, Robert; and DeGezelle, Molly, 5,611,882, Cl. 156-272.200.

Anderson, Eric W.; and Harrison, David F., to Apple Computer, Inc. System and method for custom context switching. 5,613,114, Cl. 395-678.000.

Anderson, Richard L.: *See*—
Manning, Neil R.; and Anderson, Richard L., 5,611,872, Cl. 148-306.000.

Anderson, Robert: *See*—
Barresi, Thomas; Scalese, Robert; Riedi, Eric; Frudden, Jon E.; Hall, Randy; Nguyen, Son; and Anderson, Robert, 5,611,784, Cl. 604-211.000.

Ando, Atsushi: *See*—
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Dewhirst, Mark W.; Meyer, Robert E.; Bonaventura, Joseph; and DeAngelo, Joseph, 5,612,310. Cl. 514-6.000.

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Lillich, Alan W., 5,613,101, Cl. 395-500.000.
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Strong, Robert D., 5,613,036, Cl. 395-2.520.

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Birang, Manoocher; and Pyatigorsky, Grigory, 5,612,850, Cl. 361-234.000.
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Ellis, Michael D.; Dunn, Stephen M.; Fellinger, Michael W.; Younglove, Fancy B.; James, David M.; Clifton, David L.; and Land, Richard S., 5,612,729, Cl. 348-2.000.

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Cai, Gangfeng; Yang, Lau S.; and Klang, Jeffrey A., 5,612,444, Cl. 528-274.000.

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Malecek, Edward L.; and Ramberg, Charles H., 5,611,392, Cl. 165-47.000.

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Forry, John S., 5,611,549, Cl. 277-180.000.

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Bayerl, Eugen, 5,612,755, Cl. 352-136.000.

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Manning, Neil R.; and Anderson, Richard L., 5,611,872, Cl. 148-306.000.

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Kamakura, Tamiji; Tanaka, Noriyoshi; Fukushima, Aritoshi; Tatsumi, Yukio; and Morita, Kazuhisa, 5,612,297, Cl. 508-363.000.

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Shinohara, Nobuhiro; and Kida, Otojiro, 5,612,144, Cl. 428-688.000.

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Kawano, Kiyoshi; and Tatamiya, Hisashi, 5,613,168, Cl. 396-146.000.
Nakata, Masahiro, 5,612,761, Cl. 396-95.000.

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Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,612,766, Cl. 399-23.000.

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Christ, William J.; Hawkins, Lynn D.; Kawata, Tsutomu; Rossignol, Daniel P.; Kobayashi, Seiichi; and Asano, Osamu, 5,612,476, Cl. 536-117.000.

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Kun, Zoltan K.; Leksell, David; Faychak, Gerald J.; and Asars, Juris A., 5,612,728, Cl. 347-232.000.

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Ash, William O., Jr. Backpack dispensing system for beverage containers. 5,611,457, Cl. 221-185.000.

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Ashland Inc.: *See—*
Chang, Ken K.; Dando, Thomas E.; and Haugse, A. Leonard, 5,612,392, Cl. 523-144.000.
Smolik, Nancy A.; Rusznak, Linda H.; and Jenson, Dale A., 5,611,938, Cl. 210-755.000.

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Hahn, Stan S., 5,611,701, Cl. 439-131.000.

Askin, David; Sager, Jess; Rossen, Kai; Volante, Ralph P.; and Reider, Paul J., to Merck & Co., Inc. Process for making HIV protease inhibitors. 5,612,484, Cl. 544-360.000.

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AST Research, Inc.: *See—*
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Smith, Sam D.; Peitsch, Michael A.; and Curtis, Richard D., 5,611,284, Cl. 105-220.000.

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McConlogue, Lisa C.; and Zhao, Jun, 5,612,486, Cl. 800-2.000.

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Lam, Ken, 5,612,514, Cl. 174-261.000.

Atochem: *See—*
Bachelard, Roland; and Faure, Annick, 5,612,267, Cl. 501-127.000.

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Swanepoel, Jacobus; and Lombaard, Ruan, 5,611,896, Cl. 204-169.000.

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Peltier, Kenneth J., 5,611,248, Cl. 74-490.090.

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Fukui, Hajime; Atsuta, Akio; and Nishikawa, Fumikazu, 5,612,598, Cl. 318-116.000.

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Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,612,428, Cl. 526-127.000.

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Heyl, Lawrence F.; and Austin, Steven E., 5,613,010, Cl. 381-117.000.

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Sangani, Nailesh; Eberly, Carolyn; Valvoda, Markieta; and Rega, Robert, 5,612,107, Cl. 428-41.700.
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Heitz, Thomas; Glück, Alexander; Heitz, Walter; and Richter, Ralf, 5,612,451, Cl. 528-392.000.
Mayer, Horst; Hamprecht, Gerhard; Westphalen, Karl-Otto; Gerber, Matthias; Kardorff, Uwe; and Walter, Helmut, 5,612,286, Cl. 504-214.000.
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Tsay, Grace C.; and Jesmok, Gary, 5,612,033, Cl. 424-177.100.

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Mitra, Niranjan K., 5,611,700, Cl. 439-101.000.

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Berning, David W. Output transformerless amplifier impedance matching apparatus. 5,612,646, Cl. 330-10.000.

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Kay, Robert M.; Berns, Anton; Krimpenfort, Paul; Pieper, Frank; and Strijker, Rein, 5,612,205, Cl. 435-172.300.

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Berthelon, Luc: *See—*
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Maillart, Jean-Luc H. R.; Lequime, Michel; Bellamy, Pascale; and De Smet, Gabriel, 5,612,905, Cl. 364-561.000.

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Baloche, François; and Reubeuze, Yann, 5,611,599, Cl. 297-367.000.

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Betatene Ltd of Cheltenham: *See—*
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Bethards, Charles W.: *See—*
Lim, Ricardo; Russo, David; Moss, Barry; and Bethards, Charles W., 5,613,092, Cl. 395-500.000.

Bethel, Robert K.: *See—*
Myers, William D., Jr.; Haugvalstad, Kare-Jonny; Bethel, Robert K.; Ireland, Kelly D.; and Sampson, Timothy W., 5,611,401, Cl. 166-297.000.

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Goliaszewski, Alan E.; Reichgott, David W.; and Sander, Lothar S., 5,612,421, Cl. 525-326.500.
Hart, Paul R., 5,611,869, Cl. 134-22.190.
Hernandez-Mena, Roy; Sujdak, Richard J.; and Friend, Patric L., 5,611,939, Cl. 210-764.000.

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Pearson, Robert E.; Dickson, Julie A.; Hamilton, Paul T.; Little, Michael C.; and Beyer, Wayne F., Jr., 5,612,182, Cl. 435-6.000.

Bezviner, Dawn E.; Conner, Michael H.; Greene, Kevin J.; Danforth, Scott; Shepler, Erin E.; and Smith, Marc G., to International Business Machines Corporation. Method and apparatus for activating and executing remote objects. 5,613,148, Cl. 395-800.000.

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Odhner, Jefferson E.; Smith, Daniel J.; Bhat, Shailesh S.; Cullen, Donald L.; and Wasson, Ken G., 5,613,022, Cl. 385-37.000.

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Thero, Christine; Bhatnagar, Mohit; and Weitzel, Charles E., 5,612,232, Cl. 437-39.000.

Bhuva, Rohit L.; Conner, James L.; Overlauer, Michael J.; and Townson, William R., to Texas Instruments Incorporated. Digital micro-mirror device with block data loading. 5,612,713, Cl. 345-84.000.

Bianco, James A.; Woodson, Paul; Porubek, David; and Singer, Jack, to Cell Therapeutics, Inc. Enantiomerically pure hydroxylated xanthine compounds to treat shock symptoms. 5,612,349, Cl. 514-263.000.

Bianco, Vincent J.: *See—*
Hammond, Mark S.; Bianco, Vincent J.; Bonk, James W.; and Zwanziger, Jack, 5,613,072, Cl. 395-204.000.

Bibbee, E. Bruce. Visored headwear retaining device. 5,611,118, Cl. 24-298.000.

Biek, Paul A.; and Kachich, Albert J., to GPX Corp. Hydraulic impulse tool with enhanced fluid seal. 5,611,404, Cl. 173-1.000.

Bielfeldt, Friedrich B., to Maschinenfabrik J. Dieffenbacher GmbH & Co. Contituouosly operating press for the production of particle boards, fiber boards or similar wood boards and plastic boards. 5,611,269, Cl. 100-311.000.

Bielfeldt, Friedrich B., to Maschinenfabrik J. Dieffenbacher GmbH & Co. Press with a window-type tension frame. 5,611,271, Cl. 100-199.000.

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Bigham, David W. Carrier for in-line skates and ice skates. 5,611,427, Cl. 206-315.100.

Bigliano, Robert P.: *See—*
Friel, Daniel D.; and Bigliano, Robert P., 5,611,726, Cl. 451-177.000.

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Rosson, Reinhardt A., 5,612,184, Cl. 435-6.000.

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Bishop, Paul D.; Lasser, Gerald W.; Laustsen, Mads; and Chang, Jin-Jyi, to ZymoGenetics, Inc. Factor XIII compositions. 5,612,456, Cl. 530-381.000.

Bishop, Walter M., to DeVlieg-Bullard, Inc. Combination fence and table for power tool. 5,611,525, Cl. 269-303.000.

Bistekos, Michael-Georg. Electrical or electronic apparatus switching device including actuator magnetic latching. 5,612,521, Cl. 200-16.00R.

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Mahant-Shetti, Shivaling; Ovens, Kevin; Bittlestone, Clive; Martin, Robert C.; and Landers, Robert J., 5,612,632, Cl. 326-46.000.

Bizen, Yoshio: *See—*
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Black, Bryan P.; and Denman, Marvin A., to Motorola, Inc. Method of operating a data processor with rapid address comparison for data forwarding. 5,613,081, Cl. 395-403.000.

Blacklock, Thomas J.: *See—*
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Blackman, Hans; and Tryding, Sven, to Ericsson Inc. Channel scan in cellular telephone system. 5,613,208, Cl. 455-34.100.

Blackmore, John M., to MedDev Corporation. Isometric hand exercising system. 5,611,755, Cl. 482-49.000.

Blaha, Roger N. Hunting scent holder. 5,611,165, Cl. 43-1.000.

Blainey, Robert J., to International Business Machines Corporation. Method and system of generating combined storage references. 5,613,121, Cl. 395-709.000.

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Blanchard, Scott D.; and Lester, Joseph O., to Motorola, Inc. Method and apparatus for real-time adaptive interference cancellation in dynamic environments. 5,612,978, Cl. 375-350.000.

Blebert, Michael L.; and Geyer, Robert A., to Tennant Company. Torsionally flexible frame structure. 5,611,105, Cl. 15-320.000.

Bligh, Peter: *See—*
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BMW Rolls-Royce GmbH: *See—*
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Board Of Regents, The University of Texas System: *See—*
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Uhr, Jonathan W.; Vitetta, Ellen S.; Picker, Louis J.; and Scheuermann, Richard H., 5,612,185, Cl. 435-7.230.

Board of Regents, The University of Texas Systems: *See—*
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Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See—*
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BOC Group, Inc., The: *See—*
Creffield, Geoffrey K.; Chapman, Ian F.; Aitken, Janice C.; Cole, Mark; White, George R., III; and Nayar, Harbhajan S., 5,611,366, Cl. 137-209.000.
Naumovitz, Joseph P., 5,611,218, Cl. 62-646.000.

BOC Group plc, The: *See—*
Wong, David C.; and Schofield, Nigel P., 5,611,660, Cl. 415-90.000.

Bock, Henry C.: *See—*
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Boeckmann, II, Herbert F.: *See—*
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Brechner, Eric L.; and Bourassa, Virgil E., 5,613,049, Cl. 395-120.000.
Haynes, Barbara L.; Ng, Susana S.; Serati, Paul M.; Yesil, Oktay; Jackson, Eugene A.; and Lawrence, Samuel M., 5,611,504, Cl. 244-119.000.

Bogdan, David C.: *See—*
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Boillot, Jean-Paul; Provencher, Pierre; and Villemure, Denis, to Servo Robot Inc. Twin sensor laser probe. 5,612,785, Cl. 356-375.000.

Bojarczuk, Nestor A., Jr.; Gambino, Richard J.; and Ruf, Ralph, to International Business Machines Corporation. Composite magneto-optic memory and media. 5,612,131, Cl. 428-332.000.

Bona, Gioachino: *See—*
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Bonaquist, Dante P., to Praxair Technology, Inc. Air boiling cryogenic rectification system with staged feed air condensation. 5,611,219, Cl. 62-646.000.

Bonasera, Joseph: *See—*
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Bonaventura, Joseph: *See—*
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Bond, Jeffrey: *See—*
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Bone, Roger F.; Soll, Richard M.; Illig, Carl L.; Lu, Tianbao; and Subasinghe, Nalin L., to 3-Dimensional Pharmaceuticals, Inc. Thrombin inhibitors. 5,612,369, Cl. 514-423.000.

Bonk, James W.: *See—*
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Bono, Michael. Aerosol inhalation device containing a rain-off chamber. 5,611,332, Cl. 128-200.180.

Bonora, Anthony C.; Wartenbergh, Robert P.; Jain, Sudhir; and Davis, Mark R., to Asyst Technologies, Inc. Sealable transportable container having improved liner. 5,611,452, Cl. 220-378.000.

Bonutti, Peter M.; and Zitzmann, Gary E., to Bonutti, Peter M. Method of increasing range of motion. 5,611,764, Cl. 482-124.000.

Bonyhadi, Mark L.; Kaneshima, Hideto; McCune, Joseph M.; Namikawa, Reiko; and Su, Lishan, to Systemix, Inc. Drug screening and treatment for HIV thymocyte depletion. 5,612,018, Cl. 424-9.200.

Boon-Falleur, Thierry: *See—*
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Boothby, Terry A.: *See—*
Remerowski, David L.; and Boothby, Terry A., 5,611,205, Cl. 60-634.000.

Bordeau, Kenneth J.: *See—*
Strupczewski, Joseph T.; and Bordeau, Kenneth J., 5,612,342, Cl. 514-254.000.

Borghi, Maria R.; and Menniti, Pietro, to SGS-Thomson Microelectronics S.r.l. DC-to-DC converter operating in a discontinuous mode. 5,612,610, Cl. 323-222.000.

Borkar, Nitin Y.: *See—*
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Born, Eng C., to Texas Instrument Incorporated. System for providing improved communication to data and computer communications network using parallel and serial communication buses and master and local routers. 5,613,070, Cl. 395-200.150.

Bosch Automotive Motor Systems, Inc.: *See—*
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Bosch, William F.; Zhu, Helen; and Haider, Syed A., to Lam Research Corporation. Plasma etching of semiconductors. 5,611,888, Cl. 156-643.100.

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Bosgoed, Henrikus W. F., to Forest Group Nederland B.V. Curtain rail glider. 5,611,111, Cl. 16-93.00D.

Bossert, Ingeborg D.; Walter, Michael V.; and Nelson, Edward C., to Texaco, Inc. Bioremediation method. 5,611,837, Cl. 71-27.000.

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Boston Scientic Corporation: *See—*
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Bottelsen, Walter E. No bounce dart with rotatable barrel. 5,611,543, Cl. 473-582.000.

Boucheix, Claude: *See—*
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Boveri, Giuseppina: *See*—
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Bowers, Charles W., to Hughes Aircraft Company. Modular CO_2 jet spray device. 5,611,491, Cl. 239-582.100.
Bowman, Harold M. Method and apparatus for anchoring a utility grate cover. 5,611,640, Cl. 404-4.000.
Boyd, Donald B.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Thrasher, K. Jeff; Vasudevan, Venkatraghavan; and Whitesitt, Celia A., to Eli Lilly and Company. Angiotensin II antagonists. 5,612,360, Cl. 514-381.000.
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Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, to Sandoz Ltd. Herbicidal compositions comprising a growth regulating herbicide to safen sulfonylurea herbicides. 5,612,284, Cl. 504-110.000.
Braatz, Paul O.; and Wu, Chiung-Sheng, to Hughes Aircraft Company. LCLV having photoconductive pedestals each having a cross-sectional area no greater than 5 percent of the area of its respective reflective pad. 5,612,800, Cl. 349-27.000.
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Bradley Corporation: *See*—
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Brady, David F., to Sutcliffe Leisure Limited. Seats for swings. 5,611,602, Cl. 297-452.230.
Brady, James T.; Finney, Damon W.; Lang, Donald J.; Marenin, George B.; and Nowlen, David, to International Business Machines Corporation. Method and apparatus for assuring that multiple messages in a multi-node network are assured fair access to an outgoing data stream. 5,613,067, Cl. 395-200.130.
Brady, James T., to International Business Machines Corporation. Hardware implemented locking mechanism for handling both single and plural lock requests in a lock message. 5,613,139, Cl. 395-800.000.
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Braig, Adalbert; Frey, Markus; and Kramer, Andreas, to Ciba-Geigy Corporation. Titanium and zirconium complexes of carboxylic acids as corrosion inhibitors. 5,612,093, Cl. 427-386.000.
Brailean, James C.: *See*—
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Brammall, Inc.: *See*—
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Brannon, Craig M.; Peterson, Doug R.; and Jung, Pete J., to VTC Inc. Write driver with improvements for risetime. 5,612,828, Cl. 360-46.000.
Brant, William A.: *See*—
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Bratkowski, Edward J.; Racine, Lloyd G.; and Storey, Pam, to Webasto Sunroofs Inc. Position encoder system for a movable panel. 5,612,600, Cl. 318-266.000.
Brauer, Robert K., to Boeing Company, The. Optimal airplane passenger seating configurations and methods therefor. 5,611,503, Cl. 244-118.600.
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Braun, Hans-Dieter, to Maschinenfabrik Berthold Hermle AG. Machine tool, more particularly for drilling and milling. 5,611,137, Cl. 29-560.000.
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Pope, Randy D., 5,611,261, Cl. 99-289.00R.
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Barriac, Jacques J.; and Spathias, Adonis, 5,611,490, Cl. 239-333.000.

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Amano, Kenichiro, 5,612,757, Cl. 396-319.000.
Arai, Shunji, 5,613,220, Cl. 455-88.000.
Fukui, Hajime; Atsuta, Akio; and Nishikawa, Fumikazu, 5,612,598, Cl. 318-116.000.
Hiramatsu, Soichi; and Suzuki, Tetsuo, 5,611,632, Cl. 400-335.000.
Horiuchi, Akihisa; and Tochigi, Nobuyuki, 5,612,825, Cl. 359-687.000.
Ichikawa, Hiroyuki; Ohmura, Hiroshi; Hasegawa, Shizuo; Isemura, Keizo; and Aiba, Yoshinobu, 5,612,792, Cl. 358-500.000.
Ishikawa, Tadashi, 5,612,857, Cl. 363-21.000.
Ito, Akio; Ichikawa, Hiroyuki; Abe, Yoshinori; and Miyake, Shoji, 5,612,793, Cl. 358-500.000.
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Kubota, Yoichi; Kawamata, Naoki; Morisada, Masahiro; Fujii, Katsuhiro; Itoh, Hiroshi; and Takeishi, Hiroaki, 5,612,602, Cl. 318-560.000.
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Murakami, Keiichi; and Komuro, Hirokazu, 5,612,724, Cl. 347-64.000.
Nagano, Masatoshi, 5,612,737, Cl. 348-207.000.
Nagaoka, Tomoo, 5,612,775, Cl. 399-345.000.
Nobutani, Toshiyuki; Ina, Kenzoh; Shimakura, Masami; Tanahashi, Junichi; Ono, Kenichiro; Morimoto, Hajime; Sakashita, Tatsuya; and Matsuzaki, Eiichi, 5,613,103, Cl. 395-501.000.
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Li, Xiaojun; Satyamurti, Sunil; and D'Amico, Thomas V., 5,613,218, Cl. 455-71.000.
Damman, Hans; Pross, Elke B.; Rabe, Gert; and Tolksdorf, Wolfgang F. M., to U.S. Philips Corporation. Optical isolator, circulator, switch or the like, including a faraday rotator. 5,612,813, Cl. 359-281.000.
Dana Corporation: *See—*
Breese, Douglas E., 5,611,135, Cl. 29-527.600.
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Springer, Timothy A.; Rothlein, Robert; Marlin, Steven D.; and Dustin, Michael L., 5,612,216, Cl. 435-252.300.
Dance, Mark N.; Salvestrao, Aldo T.; and Auchinleck, Geoffrey F., to Osteonics Corp. Method and apparatus for locating functional structures of the lower leg during knee surgery. 5,611,353, Cl. 128-782.000.
Dando, Thomas E.: *See—*
Chang, Ken K.; Dando, Thomas E.; and Haugse, A. Leonard, 5,612,392, Cl. 523-144.000.
Danforth, Scott: *See—*
Bezviner, Dawn E.; Conner, Michael H.; Greene, Kevin J.; Danforth, Scott; Shepler, Erin E.; and Smith, Marc G., 5,613,148, Cl. 395-800.000.
Dang, Chi-Hung; and Dang, Chi-Thanh, to International Business Machines Corporation. Record media library accessing using a common accessing mechanism for a plurality of independent media libraries. 5,612,934, Cl. 369-36.000.
Dang, Chi-Thanh: *See—*
Dang, Chi-Hung; and Dang, Chi-Thanh, 5,612,934, Cl. 369-36.000.
Danieli & C. Officine Meccaniche SpA: *See—*
Benedetti, Giampietro; Pavlicevic, Milorad; Gensini, Gianni; and Poloni, Alfredo, 5,611,390, Cl. 164-485.000.
Danknick, Daniel A., to Canon Information Systems, Inc. Network protocol sensor. 5,613,096, Cl. 395-500.000.
Dann, Michael S.: *See—*
Leverault, Craig M.; McCormick, Michael F., Jr.; Lajara, Robert J.; Lam, Alan W.; Ta, Peter C. D.; Stolz, Howard W.; Osborn, Jay K.; Dann, Michael S.; and Barnes, Ronald, 5,612,852, Cl. 361-687.000.
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; Lecomte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, to Societe Civile Bioproject. Amino acid, derivatives, processes for their preparation and their therapeutic application. 5,612,371, Cl. 514-465.000.
Darwin Enterprises, Inc.: *See—*
Irwin, Donald A., Sr., 5,612,113, Cl. 428-95.000.
Das, Suryya K.; Kilic, Soner; Jennings, Robert E.; and Claar, James A., to PPG Industries, Inc. Aqueous, anionic, amino acrylate coating compositions. 5,612,404, Cl. 524-507.000.
Dasgupta, Ranjan, to NCR Corporation. Dynamic hashing method for optimal distribution of locks within a clustered system. 5,612,865, Cl. 364-184.000.
Datta, Arindam; Tandon, Rohit; Chen, I-Jen; Canterberry, Bethany A.; and Fitzgerald, Scott E., to Ethicon, Inc. Medical devices containing high inherent viscosity poly(p-dioxanone). 5,611,986, Cl. 264-328.160.
Dattagupta, Nanibbushan; Ryder, Thomas B.; Kacian, Daniel L.; and Kamisango, Keiichi, to Gen-Probe Incorporated. Method and kit for destroying ability of nucleic acid to be amplified. 5,612,200, Cl. 435-91.200.
Davidow, Robert P. Speed change mechanism. 5,611,556, Cl. 280-236.000.
Davidson, Caroline S.; Grove, Richard B.; and Hobbs, Steven O., to Digital Equipment Corporation. Optimizing compiler using templates corresponding to portions of an intermediate language graph to determine an order of evaluation and to allocate lifetimes to temporary names for variables. 5,613,117, Cl. 395-708.000.
Davidson, James A., to Smith & Nephew, Inc. Zirconium oxide and zirconium nitride coated percutaneous devices. 5,611,347, Cl. 128-697.000.
Davidson, Joel R.; Li, Hehching H.; and Liu, Franklin M., to International Business Machines Corporation. Address range extension for a modular computer. 5,613,157, Cl. 395-828.000.
Davidson Textron, Inc.: *See—*
Swenson, Harold W., 5,612,066, Cl. 425-425.000.

Davies, Robert B.; and Wild, Andreas A., to Motorola, Inc. Insulated gate semiconductor device having a cavity under a portion of a gate structure and method of manufacture. 5,612,244, Cl. 437-57.000.
Davis, Bradford D.; Stednitz, Mike; and Urbanski, Mark, to Alphatec Manufacturing, Inc. Spinal fixation system. 5,611,800, Cl. 606-61.000.
Davis, Byron K.: *See*—
Meyer, Neal; and Davis, Byron K., 5,612,511, Cl. 174-254.000.
Davis, Douglas H.: *See*—
Carle, Richard C.; Sievert, Karl M.; Davis, Douglas H.; Polcyn, John E.; Bennert, David M.; and Williams, Irving M., 5,611,766, Cl. 588-252.000.
Davis, Geneva R.: *See*—
Brierley, Russell A.; Davis, Geneva R.; Holtz, Gregory C.; Gleeson, Martin A.; and Howard, Bradley D., 5,612,198, Cl. 435-69.900.
Davis, Giles K.: *See*—
Vogeley, James H.; Vogeley, Arthur W.; and Davis, Giles K., 5,612,736, Cl. 348-207.000.
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., to Bridgestone/Firestone, Inc. Adhesive tape compositions and method for covering roofs. 5,612,141, Cl. 428-515.000.
Davis, James G.; Deneve, Jeffrey A.; and Joy, James A., to Caterpillar Inc. Linkage arrangement for a work implement. 5,611,656, Cl. 414-694.000.
Davis, John B.; and Bredt, Robert C., to Horton, Inc. Rotational control apparatus. 5,611,415, Cl. 192-18.00A.
Davis, Mark R.: *See*—
Bonora, Anthony C.; Wartenbergh, Robert P.; Jain, Sudhir; and Davis, Mark R., 5,611,452, Cl. 220-378.000.
Davis, Michael D.: *See*—
Hawkins, Mary E.; Pfleiderer, Wolfgang; Davis, Michael D.; and Balis, Frank, 5,612,468, Cl. 536-22.100.
Davis, Robert G., to Gibbs, William W. Method and apparatus for dispensing a substance. 5,611,485, Cl. 239-8.000.
Davis, Tim A.: *See*—
Pratt, Samuel S.; Shaffer, Dan; Davis, Tim A.; Heiple, Ashley; and Lalos, Peter N., 5,611,158, Cl. 37-468.000.
Day, David R. Fishing lure apparatus. 5,611,166, Cl. 43-35.000.
DDK Ltd.: *See*—
Mizunuma, Yasuyuki; and Nozawa, Katsuhiro, 5,611,708, Cl. 439-358.000.
DeAngelo, Joseph: *See*—
Dewhirst, Mark W.; Meyer, Robert E.; Bonaventura, Joseph; and DeAngelo, Joseph, 5,612,310, Cl. 514-6.000.
Deaton, Joseph C.: *See*—
Eshelman, Lyn M.; Madigan, Paul J.; Deaton, Joseph C.; Dumont, David A.; Antoniades, Michael G.; and Johnston, Sharon G., 5,612,175, Cl. 430-567.000.
Debique, Kirt; and Ramar Balan S., to Microsoft Corporation. System for verifying the proper operation of a replication facility. 5,613,079, Cl. 395-468.000.
De Brabander, Marc J.: *See*—
Cauwenbergh, Gerard F. M. J.; and De Brabander, Marc J., 5,612,347, Cl. 514-259.000.
Decarie, Andre P.; Brown, David L.; Malinowski, Stanley J.; and Dunklee, Douglas M., to United States Surgical Corporation. Endoscopic surgical method. 5,611,780, Cl. 604-164.000.
DeCook, Bradley C.; and Murray, Thomas J., to Eastman Kodak Company. Photographic film preparation workstation. 5,612,796, Cl. 358-527.000.
DeGezelle, Molly: *See*—
Riebel, Michael J.; Anderson, Donald E.; Gruber, Carl; Torgusen, Paul; DeGezelle, Robert; and DeGezelle, Molly, 5,611,882, Cl. 156-272.200.
DeGezelle, Robert: *See*—
Riebel, Michael J.; Anderson, Donald E.; Gruber, Carl; Torgusen, Paul; DeGezelle, Robert; and DeGezelle, Molly, 5,611,882, Cl. 156-272.200.
De Givry, Jacques, to Matra Marconi Space France. Method of connecting the output pads on an integrated circuit chip, and multichip module thus obtained. 5,612,575, Cl. 257-786.000.
Degner, Vernon R., to Baker Hughes Incorporated. Flotation cell crowder device. 5,611,917, Cl. 209-168.000.
deGraaff, Willem T., to General Electric Company. Grinding wheel having dead end grooves and method for grinding therewith. 5,611,724, Cl. 451-53.000.
Deiss, Michael S.: *See*—
Bridgewater, Kevin E.; and Deiss, Michael S., 5,613,003, Cl. 380-20.000.
De Keyzer, René: *See*—
Coppens, Paul; De Keyzer, René; and Loccufier, Johan, 5,612,166, Cl. 430-204.000.
Delagrange, Philippe: *See*—
Andrieux, Jean; Langlois, Michel; Renard, Pierre; and Delagrange, Philippe, 5,612,368, Cl. 514-418.000.
De Lange, Alphonsius A. J., to U.S. Philips Corporation. Sorting sequential data prior to distribution over parallel processors in random access manner. 5,612,863, Cl. 364-134.000.
Delaruelle, Antoine: *See*—
Van Meerbergen, Jozef L.; Hilderink, Hendricus A.; Lippens, Paul E. R.; and Delaruelle, Antoine, 5,613,152, Cl. 395-800.000.
Delco Electronics Corporation: *See*—
Kesler, Scott B., 5,611,318, Cl. 123-630.000.
Mendez, Victor; and Eberwine, Todd D., 5,612,671, Cl. 340-447.000.
Delgado-Frias, Jose G.: *See*—
Pechanek, Gerald G.; Vassiliadis, Stamatis; and Delgado-Frias, Jose G., 5,612,908, Cl. 364-736.000.
Pechanek, Gerald G.; Vassiliadis, Stamatis; and Delgado-Frias, Jose G., 5,613,044, Cl. 395-27.000.
Dell USA, L.P.: *See*—
Wiscombe, Nathan; Lopez, Arthur; and Pecone, Victor, 5,612,854, Cl. 361-727.000.
Dell USA, LP: *See*—
Swamy, N. Deepak; and Kocis, Tom J., 5,613,033, Cl. 361-790.000.
Delp, William H., II, to Undersea Breathing Systems, Inc. Oxygen enriched air generation system. 5,611,845, Cl. 96-4.000.
DeLuca, Carmine; and Kurtenbach, William P., to Mearl Corporation, The. Process for preparing unsupported metal oxide nacreous pigments. 5,611,851, Cl. 106-415.000.
DeLuca, Hector F.; and Smith, Connie M., to Wisconsin Alumni Research Foundation. Methods containing vitamin D compounds for improvement of skin conditions. 5,612,326, Cl. 514-167.000.
DeLuca, Michael J.; Smoot, George W.; and Kraul, Douglas R., to Motorola, Inc. Method and apparatus for controlling utilization of a process added to a portable communication device. 5,612,682, Cl. 340-825.340.
Delvaux, Pierre; Lesmerises, Normand; and Gouin, Marcel, to Cerminco Inc. Decorative, non-combustible synthetic fire-log. 5,612,266, Cl. 501-123.000.
DeMars, Robert A. Mop head wringer to be used with a bucket. 5,611,104, Cl. 15-263.000.
DeMars, Robert A. Trash receptacle with built-in dustpan and broom. 5,611,450, Cl. 220-334.000.
Demeter, Robert J.; Bock, Henry C.; and Gao, Dayong, to Methodist Hospital of Indiana, Inc. Method and device for gastric line insertion. 5,611,787, Cl. 604-270.000.
Deneve, Jeffrey A.: *See*—
Davis, James G.; Deneve, Jeffrey A.; and Joy, James A., 5,611,656, Cl. 414-694.000.
Denman, Marvin A.: *See*—
Black, Bryan P.; and Denman, Marvin A., 5,613,081, Cl. 395-403.000.
Dense-Pac Microsystems, Inc.: *See*—
Eide, Floyd K.; Forthun, John A.; and Isaak, Harlan, 5,612,570, Cl. 257-686.000.
Dental Concepts Inc.: *See*—
Wagner, Eugene C., 5,611,687, Cl. 433-80.000.
Denton, Gary A.; Kreckel, Douglas A.; and Sawicki, Paul F., to Xerox Corporation. Imaging device with positive air pressure and electrostatic precipitator. 5,613,174, Cl. 399-98.000.
D'Entremont, Everett A., to M.C. Healthcare Products Inc. Wall stop for a bed. 5,611,094, Cl. 5-424.000.
Deorkar, Nandu: *See*—
Tavlarides, Lawrence L.; and Deorkar, Nandu, 5,612,275, Cl. 502-407.000.
De Plaen, Etienne; Boon-Falleur, Thierry; Lethé , Bernard; Szikora, Jean-Pierre; De Smet, Charles; and Chomez, Patrick, to Ludwig Institute for Cancer Research. Isolated nucleic acid molecules useful in determining expression of a tumor rejection antigen precursor. 5,612,201, Cl. 435-91.200.
Deprez, Sabine; and Candau, Didier, to L'Oreal. Oil-in-water emulsion containing a perfluoropolyether, composition containing the same, preparation process and use in cosmetics and dermatology. 5,612,043, Cl. 424-401.000.
Dermer, Richard A., to Miles Inc. Method and apparatus for correcting for plate misregistration in color printing. 5,613,046, Cl. 395-109.000.
de Ruiter, Ernest: *See*—
von Blücher, Hasso; and de Ruiter, Ernest, 5,612,300, Cl. 510-110.000.
DeSanto, Joseph J. Universal termination module for assembling wire harnesses having multiple diverse connectors. 5,612,680, Cl. 340-815.450.
Desjardins, Pierre. Golf scorecard with automatic totaling system. 5,611,574, Cl. 283-49.000.
Deskins, Franklin D. Sewage dewatering process and equipment. 5,611,921, Cl. 210-195.100.
De Smet, Charles: *See*—
De Plaen, Etienne; Boon-Falleur, Thierry; Lethé , Bernard; Szikora, Jean-Pierre; De Smet, Charles; and Chomez, Patrick, 5,612,201, Cl. 435-91.200.
De Smet, Gabriel: *See*—
Maillart, Jean-Luc H. R.; Lequime, Michel; Bellamy, Pascale; and De Smet, Gabriel, 5,612,905, Cl. 364-561.000.
de Tejada, Inigo S.: *See*—
Stamler, Jonathan; and de Tejada, Inigo S., 5,612,314, Cl. 514-13.000.
Deutsche Carbone AG: *See*—
Nguyen, Quang T.; Néel, Jean M. L.; Brüschke, Hartmut E. A.; and Steinhauser, Hermann, 5,611,930, Cl. 210-640.000.
Devier, Lonnie J.: *See*—
Shaffer, Gary K.; Whittaker, William L.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Lay, Norman K.; and Devier, Lonnie J., 5,612,883, Cl. 364-460.000.
DeVlieg-Bullard, Inc.: *See*—
Bishop, Walter M., 5,611,525, Cl. 269-303.000.
DeVries, Douglas E.: *See*—
Christensen, Thomas C.; Carter, Jack L.; DeVries, Douglas E.; Foster, Alan S.; Foster, Jacques Y.; Phelps, William G.; Prachar, Timothy J.; Smith, Daniel W.; and Walter, Michael W., 5,612,710, Cl. 345-30.000.
De Vroome, Henderikus: *See*—

Filmer, Bartholomeus; and De Vroome, Henderikus, 5,612,263, Cl. 501-71.000.
deVry, William E.: *See*—
Gebhard, Matthew S.; deVry, William E.; Puschak, Caren A.; Bacho, Anne M.; and Larson, Gary R., 5,612,397, Cl. 524-35.000.
Dewa, Koichi: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Dewhirst, Mark W.; Meyer, Robert E.; Bonaventura, Joseph; and DeAngelo, Joseph, to Duke University; North Carolina State University; and Apex Bioscience, Inc. Methods for improving therapeutic effectiveness of agents for the treatment of solid tumors and other disorders. 5,612,310, Cl. 514-6.000.
DeWitt, Sheila H. H.: *See*—
Cody, Donna R.; DeWitt, Sheila H. H.; Hodges, John C.; Kiely, John S.; Moos, Walter H.; Pavia, Michael R.; Roth, Bruce D.; Schroeder, Mel C.; and Stankovic, Charles J., 5,612,002, Cl. 422-131.000.
de Zoeten, Juan P.; Verheijden, Petrus F. H. M.; Groothuizen, Theodorus J. J.; and Raijmakers, Jozef H. M., to Akzo Nobel N.V. Apparatus for the detection of a specifically reacting substance. 5,611,995, Cl. 422-58.000.
Diafoil Hoechst Company, Limited: *See*—
Kinoshita, Shin-ichi; Watanabe, Hisayoshi; and Kume, Nobuyuki, 5,612,115, Cl. 428-141.000.
DiAngelo, Michael F.; and O'Neil, Gerald F., to International Business Machines Corporation. Portable system having data distribution and power distribution removably positioned within portable enclosure during shipping and adapted for repositioning within internal storage space during operation. 5,613,164, Cl. 395-884.000.
Diatech Ltd.: *See*—
Wilson, Thomas M. A., 5,612,193, Cl. 435-69.100.
Dicamed AB: *See*—
Gustafsson, Sven, 5,611,792, Cl. 604-403.000.
Dice Company, The: *See*—
Cooperman, Marc; and Moskowitz, Scott A., 5,613,004, Cl. 380-28.000.
Dichter, Wilhelm, to Linotype-Hell AG. HSL corrections in CMY color space. 5,612,795, Cl. 358-518.000.
Dickson, Julie A.: *See*—
Pearson, Robert E.; Dickson, Julie A.; Hamilton, Paul T.; Little, Michael C.; and Beyer, Wayne F., Jr., 5,612,182, Cl. 435-6.000.
Diehl, Roy E.: *See*—
Berger, Alvin H.; Diehl, Roy E.; and Verduce, Anthony, 5,611,416, Cl. 192-58.420.
Diehl, Sherry L., to Procter & Gamble Company, The. Cholesterol lowering drink mix compositons. 5,612,026, Cl. 424-78.010.
Diekelman, Dennis P., to Motorola, Inc. Adaptive beam pointing method and apparatus for a communication system. 5,612,701, Cl. 342-354.000.
Dietrich, Gerald: *See*—
Rhein, Thomas; Wicker, Michael; Rueppel, Mona; Dietrich, Gerald; and Mohr, Ernst, 5,612,417, Cl. 525-221.000.
Dietrich, Manfred: *See*—
König, Klaus; Schwindt, Jürgen; Mazanek, Jan; Pedain, Josef; Dietrich, Manfred; Klein, Gerhard; and Jerg, Karl-Roland, 5,612,408, Cl. 524-591.000.
Diewald, Jeff M.: *See*—
Moreau, Ken; Becker, Bradley A.; Carignan, Don A.; Diewald, Jeff M.; Routley, Kevin B.; and Wooldridge, Jim, 5,613,116, Cl. 395-326.000.
Digicomm, Ltd.: *See*—
Wong, Gabriel K. Y.; and Tsui, Po S., 5,613,212, Cl. 455-53.100.
Digital Equipment Corporation: *See*—
Davidson, Caroline S.; Grove, Richard B.; and Hobbs, Steven O., 5,613,117, Cl. 395-708.000.
Eustace, Robert A.; and Monier, Louis, 5,613,063, Cl. 395-183.140.
Landau, Robert V.; Johnson, James E.; and Iles, Michael V., 5,613,098, Cl. 395-500.000.
Lucus, Peter; Senn, Jeffrey A.; and Brown, Andrew D., 5,613,134, Cl. 395-788.000.
Moreau, Ken; Becker, Bradley A.; Carignan, Don A.; Diewald, Jeff M.; Routley, Kevin B.; and Wooldridge, Jim, 5,613,116, Cl. 395-326.000.
Rege, Satish L., 5,612,897, Cl. 364-514.00C.
Walsh, Robert J., 5,613,129, Cl. 395-740.000.
Dilmore, Colonel R., Jr.; and Snodgrass, John O., to PPG Industries, Inc. Method for preparing diaphragm for use in chlor-alkali cells. 5,612,089, Cl. 427-247.000.
Dimango Products Inc.: *See*—
Xydis, Thomas G., 5,612,666, Cl. 340-384.100.
Dimitrov, Stefan: *See*—
Fritz, Ernst; and Dimitrov, Stefan, 5,611,838, Cl. 75-10.380.
Dinner, Paul, to Europäische Atomgemeinschaft (Euratom). Method and a device for reducing the gap between a static part and a movable part. 5,611,659, Cl. 415-90.000.
Diril, Habibe: *See*—
Griffiths, Gary L.; Diril, Habibe; and Hansen, Hans J., 5,612,016, Cl. 424-1.490.
Disetronic AG: *See*—
Kirchhofer, Fritz; and Michel, Willy, 5,611,786, Cl. 604-240.000.
Dixon, Randy L. Mechanical safety wedgelock and method of assembly with a tool handle. 5,611,134, Cl. 29-525.110.
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., to Keepsake, Inc. Photographic film pre-exposure method. 5,613,165, Cl. 396-6.000.
Dobbs, John M.: *See*—
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., 5,613,165, Cl. 396-6.000.
Dobbs, Loura L.: *See*—
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., 5,613,165, Cl. 396-6.000.
Dobkowski, Brian J.: *See*—
Suares, Alan J.; and Dobkowski, Brian J., 5,612,044, Cl. 424-401.000.
Dochniak, Michael J., to H.B. Fuller Licensing & Financing, Inc. Wet adhesion monomers with ureido functionality and polymers prepared therefrom. 5,612,441, Cl. 528-73.000.
Dockser, Kenneth A. Data processor with flexible register mapping scheme. 5,613,151, Cl. 395-800.000.
Dodds, David E.; and Erker, Gregory J., to Telecommunications Research Laboratories. LAN star connection using negative impedance for matching. 5,612,653, Cl. 333-124.000.
Dods, Robert E., to Racing Champions, Inc. Model vehicle and trading card packaging system. 5,611,432, Cl. 206-459.500.
Dodson, John S.: *See*—
Arimilli, Ravi K.; Dodson, John S.; Guthrie, Guy L.; and Lewis, Jerry D., 5,613,153, Cl. 395-821.000.
Doepker, Roy J.: *See*—
Bass, Mark; Doepker, Roy J.; Caillat, Jean-Luc M.; and Warner, Wayne R., 5,611,674, Cl. 417-220.000.
Doessel, Karl-Friedrich: *See*—
Epple, Ulrich; Schmidt, Holger; Brindoepke, Gerhard; and Doessel, Karl-Friedrich, 5,612,434, Cl. 526-282.000.
Dohmeier, Steven C.; Meichle, Michael; and Fairchild, Michael G., to Eastman Kodak Company. Correcting recorded marks and land lengths taken from an optical disk. 5,612,938, Cl. 369-48.000.
Dohta, Hisayo; and Kawai, Katsuhiko, to Nippondenso Co., Ltd. Fuel supply amount control apparatus for internal combustion engine. 5,611,315, Cl. 123-492.000.
Doig, Peter C.: *See*—
Hodges, Robert S.; Paranchych, William; Lee, Kok K.; Parimi, Sastry A.; Irvin, Randall T.; and Doig, Peter C., 5,612,036, Cl. 424-190.100.
Dolan, Donald T.; Jennings, Beth A.; Murphy, Charles F., III; and Zeller, Claude, to Pitney Bowes Inc. Method and apparatus for securely printing a postal indicia image having a different dot density in two dimensions thereof. 5,611,630, Cl. 400-120.090.
Dolmatsky, Alexander: *See*—
Lobel, Frederick B.; and Dolmatsky, Alexander, 5,611,573, Cl. 281-29.000.
Dombi, Adam, to Balzers Aktiengesellschaft. Transversally pumped solid state laser. 5,612,969, Cl. 372-75.000.
Domingo, Manuel J., to Sandoz Ltd. Dry leuco sulphur dyes in particulate form. 5,611,818, Cl. 8-524.000.
Donahue, William A.: *See*—
Duffy, Eric P.; McDaniel, Joe D., Jr.; and Donahue, William A., 5,612,047, Cl. 424-405.000.
Donaldson Company: *See*—
Stene, David W., 5,611,922, Cl. 210-238.000.
Donche, Alain: *See*—
Vaussard, Alain; Ladret, Alain; and Donche, Alain, 5,612,294, Cl. 507-110.000.
Donlar Corporation: *See*—
Ross, Robert J.; Low, Kim C.; Koskan, Larry P.; and Wheeler, Alfred P., 5,612,384, Cl. 521-64.000.
Donnelly Corporation: *See*—
Agrawal, Raj K.; and Crank, Doug, 5,611,180, Cl. 52-393.000.
Varaprasad, Desaraju V.; Looman, Steven D.; Zhao, Mingtang; Habibi, Hamid R.; and Lynam, Niall R., 5,611,966, Cl. 252-583.000.
Donnelly, Stuart: *See*—
Yamauchi, Kazuhiko; Kozuka, Masayuki; Kobayashi, Ryousuke; and Donnelly, Stuart, 5,613,109, Cl. 395-615.000.
Donner, Edward O.; and Zumbrunnen, Michael L., to International Business Machines Corporation. High density and high current capacity pad-to-pad connector comprising of spring connector elements (SCE). 5,611,696, Cl. 439-66.000.
Dority, Douglas E.: *See*—
Arnold, James E.; and Dority, Douglas E., 5,611,810, Cl. 606-185.000.
Dormer, Michael W., to Vtech Communications, Ltd. Intermediate frequency receiver apparatus. 5,612,971, Cl. 375-202.000.
Dörr, Holger; and Kieferle, Hermann, to Stierlen-Maquet AG. Connecting device for selectively connecting a patient support means with the support column of an operating table. 5,611,638, Cl. 403-327.000.
Dosmann, Andrew; and Johnson, Rick J., to Bayer Corporation. Diffused light reflectance readhead. 5,611,999, Cl. 422-82.050.
Dougauchi, Kazuo: *See*—
Sakamoto, Yukio; Kaneko, Toshimi; Dougauchi, Kazuo; Kawaguchi, Masahiko; and Matsuta, Katsuji, 5,612,656, Cl. 333-204.000.
Dous, Eberhardt: *See*—
Mathavan, Thambirajah; and Dous, Eberhardt, 5,611,982, Cl. 264-131.000.
Dow Chemical Company, The: *See*—
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,612,479, Cl. 544-88.000.
Hucul, Dennis A.; and Hahn, Stephen F., 5,612,422, Cl. 525-338.000.
Nilsson, Robert T.; Fox, Richard T.; and Dunmead, Stephen D., 5,612,264, Cl. 501-87.000.
Schrenk, Walter J.; Chang, Victor S.; and Wheatley, John A., 5,612,820, Cl. 359-498.000.

Dow Corning Corporation: *See*—
Bearinger, Clayton R.; Camilleri, Robert C.; Kilby, Jack S.; Haluska, Loren A.; and Michael, Keith W., 5,611,884, Cl. 156-325.000.
Dow Corning Toray Silicone Co., LTD.: *See*—
Kondo, Hidetoshi; and Takahashi, Masahiro, 5,612,410, Cl. 524-863.000.
Dow Deutschland Inc.: *See*—
Walter, Hilger A.; Hönen, Herwart; and Gallus, Heinz E., 5,612,497, Cl. 73-756.000.
Dr. Johannes Heidenhain GmbH: *See*—
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Matthiessen, Hans; and Studer, Matthias, 5,611,908, Cl. 205-775.000.
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Pfeil, Armin; Hoenel, Michael; Oberressl, Paul; Dreischhoff, Dieter; and Petri, Stefan, 5,612,394, Cl. 523-403.000.
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Troost, John; Prokuda, George; and Petersen, James A., 5,611,844, Cl. 95-82.000.
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Drouot, Sylvie; and Silvestre, Gérard D. F., to SGS-Thomson Microelectronics S.A. Switching regulator with dyssymetrical differential input stage. 5,612,611, Cl. 323-223.000.
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Kolouch, Robert J.; Reichert, David L.; Freed, Robert L.; Birchenall, Andrew K.; Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,611,897, Cl. 204-252.000.
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Ducret, Lucien C. Clamping device for use with a hand-held tool. 5,611,146, Cl. 30-92.000.
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Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; Lecomte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,612,371, Cl. 514-465.000.
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Dumke, Dan. Foot stop for beds. 5,611,097, Cl. 5-651.000.
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Eames, Douglas J.: *See*—
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Eastern Company, The: *See*—
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Campbell, Bruce C., 5,612,283, Cl. 503-227.000.
Cornell, David J., 5,611,526, Cl. 271-3.010.
DeCook, Bradley C.; and Murray, Thomas J., 5,612,796, Cl. 358-527.000.
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Hatwar, Tukaram K.; Stinson, Douglas G.; and Webster, Robert H., 5,612,108, Cl. 428-64.100.
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Albers, Thomas M.; Eberst, John V.; Fontenot, Darwin; Pyra, Richard L.; Welker, Mark W.; Wood, Paul B.; and Bresenham, Jack E., 5,613,054, Cl. 395-143.000.
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Edlin, George R.; Madewell, J. Michael; Buff, Randy D.; and Gebhart, W. Welman, to United States of America, Army. Interceptor seeker/discriminator using infrared/gamma sensor fusion. 5,611,502, Cl. 244-3.160.
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Egenolf, Bernhard, to Whitaker Corporation, The. Electrical contact having improved secondary locking surfaces. 5,611,716, Cl. 439-857.000.
Eggen, Kathleen R. Nursing garment. 5,611,086, Cl. 2-104.000.
Eggers, Philip E. Resistively heated cutting and coagulating surgical instrument. 5,611,798, Cl. 606-31.000.
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Eichhorn, Mathias; and Buhr, Gerhard, to Hoechst Aktiengesellschaft. N,N-disubstnited sulfonamides and radiation-sensitive mixture prepared therewith. 5,612,169, Cl. 430-270.100.
Eick, Rüdiger, to Lucas Industries Public Limited Company. Pneumatic brake booster and process for manufacturing same. 5,611,257, Cl. 91-367.000.
Eide, Floyd K.; Forthun, John A.; and Isaak, Harlan, to Dense-Pac Microsystems, Inc. Chip stack and method of making same. 5,612,570, Cl. 257-686.000.
Eiley, Stanley; and Tremblay, Marc, to E.R.A. Display Co. Ltd. Hanger with identification clip. 5,611,469, Cl. 223-85.000.
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Eisen, Saul. Portable weighing scale having a pivotal weighing platform. 5,612,515, Cl. 177-126.000.
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Boyd, Donald B.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Thrasher, K. Jeff; Vasudevan, Venkatraghavan; and Whitesitt, Celia A., 5,612,360, Cl. 514-381.000.
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EMC Corporation: *See—*
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Emerson Electric Co.: *See—*
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Endo, Yoshishige; Ono, Masahiko; Yamada, Toshihiro; Kawamura, Takao; Kawamura, Hiromitsu; Kobara, Katsumi; and Araya, Takeshi, to Hitachi, Ltd. Ultra fine particles having uneven surfaces and treatment plate using same. 5,612,128, Cl. 428-323.000.

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Abbott, Joe L., 5,611,454, Cl. 220-604.000.

Envirotrench: *See—*
Tallard, Gilbert R., 5,611,643, Cl. 405-157.000.

Envitco, Inc.: *See—*
Carle, Richard C.; Slevert, Karl M.; Davis, Douglas H.; Polcyn, John E.; Bennert, David M.; and Williams, Irving M., 5,611,766, Cl. 588-252.000.

Enzon, Inc.: *See—*
Zalipsky, Shmuel, 5,612,460, Cl. 530-391.900.

Enzyme Bio-Systems Ltd.: *See—*
Brumm, Phillip J., 5,612,202, Cl. 435-99.000.

Epic Enterprises, Inc.: *See—*
Stokes, David L.; and Walker, Michael R., 5,611,499, Cl. 242-419.400.

Epoxy Technology, Inc.: *See—*
Kulesza, Frank W.; and Estes, Richard H., 5,611,140, Cl. 29-832.000.

Epple, Ulrich; Schmidt, Holger; Brindoepke, Gerhard; and Doessel, Karl-Friedrich, to Hoechst Aktiengesellschaft. Copolymers comprising cyclic or polycyclic monomers having a specific isomer distribution, methods for their manufacture, and their use. 5,612,434, Cl. 526-282.000.

Erickson, Charles R.; and Sessions, Roger H., to International Business Machines Corporation. Persistent object storage system with modifiable group skeletal formats. 5,613,099, Cl. 395-500.000.

Erickson, Paul M.: *See—*
Apollonio, Attilio; and Erickson, Paul M., 5,611,970, Cl. 264-2.500.

Erico International Corporation: *See—*
Kies, Antonius M., 5,611,142, Cl. 29-874.000.

Ericsson Inc.: *See—*
Blackman, Hans; and Tryding, Sven, 5,613,208, Cl. 455-34.100.

Erker, Gregory J.: *See—*
Dodds, David E.; and Erker, Gregory J., 5,612,653, Cl. 333-124.000.

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Ernst, Beat, to Zenteco AG. Air filter having pockets, and method of assembly thereof. 5,611,830, Cl. 55-378.000.

Ernst, Linda C.: *See—*
Rankin, Linda J.; Bonasera, Joseph; Borkar, Nitin Y.; Ernst, Linda C.; Kapur, Suvansh K.; Manseau, Daniel A.; and Verhoorn, Frank, 5,613,071, Cl. 395-200.160.

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Vinson, Kenneth D.; Erspamer, John P.; Neal, Charles W.; and Halter, Jeffress P., 5,611,890, Cl. 162-111.000.

Ertle, Raymond J.: *See—*
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Eslen Chemical Co., Ltd.: *See—*
Jinno, Chitoshi; Toyohara, Hiroyuki; Mimura, Hikaru; and Murohashi, Takashi, 5,612,116, Cl. 428-143.000.

Espress Tech, Inc.: *See—*
Brubaker, Daniel B., 5,612,187, Cl. 435-13.000.

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Cano, Jean-Paul; Magne, Jean-François; and Wajs, Georges, 5,611,969, Cl. 264-2.500.

Essrich, Wolfgang, to HTS Elektrotechnik GmbH. Multi-pole plug insert. 5,611,710, Cl. 439-513.000.

Estes, Richard H.: *See—*
Kulesza, Frank W.; and Estes, Richard H., 5,611,140, Cl. 29-832.000.

Etcon Corporation: *See—*
Earle, Kent L., 5,612,616, Cl. 324-72.500.

Ethicon, Inc.: *See—*
Datta, Arindam; Tandon, Rohit; Chen, I-Jen; Canterberry, Bethany A.; and Fitzgerald, Scott E., 5,611,986, Cl. 264-328.160.

Ethyl Corporation: *See—*
Bell, Donald R.; Hartley, Rolfe J.; and Papay, Andrew G., 5,612,295, Cl. 508-188.000.
Rollin, Anthony J.; and Valcho, Joseph J., 5,612,296, Cl. 508-240.000.

Eto, Mamoru; Yasui, Masaharu; Ohtani, Hidetoshi; and Aso, Taiichi, to Toto Ltd. Apparatus and method for slip casting. 5,611,980, Cl. 264-87.000.

Etzbach, Karl-Heinz: *See—*
Schefczik, Ernst; Sens, Ruediger; Etzbach, Karl-Heinz; Reichelt, Helmut; and Grund, Clemens, 5,612,465, Cl. 534-752.000.

Eun, Kwang-Yong: *See—*
Lee, Kwang-Ryeol; and Eun, Kwang-Yong, 5,611,862, Cl. 118-723.00E.

Eupopean Gas Turbines Limited: *See—*
Royle, Eric E., 5,611,669, Cl. 416-193.00A.

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Dinner, Paul, 5,611,659, Cl. 415-90.000.

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Bullock, Edward; and Veyret, Jean B., 5,612,265, Cl. 501-89.000.
Hemmerich, Johann L.; and Milverton, Paul, 5,611,208, Cl. 62-55.500.

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Evans, David J., to Marketing & Distribution Services, Inc. Food film cutter assembly. 5,611,255, Cl. 83-614.000.

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Altman, Dan; Rouiller, Michael W.; Stikeleather, Gregory; Evans, Michele M.; Kusmer, Steven R.; and Thompson, Michael P., 5,613,019, Cl. 382-311.000.

Eveloff, Paul: *See—*
Grebler, Robert K.; Eveloff, Paul; and Sheftel, James E., 5,611,544, Cl. 273-447.000.

Everaerts, Albert I.; Takeda, Satoshi; and Stark, Peter A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesives having improved adhesion to acid-rain resistant automotive paints. 5,612,136, Cl. 428-355.0AK.

Everitt, David G., to Hydrair Limited. Reciprocating rod type pump for shear sensitive material. 5,611,681, Cl. 417-569.000.

Everlight USA, Inc.: *See—*
Huang, Huei C.; and Lee, Sheue R., 5,611,821, Cl. 8-549.000.

Ewing, William R.; Becker, Michael R.; Pauls, Henry W.; Cheney, Daniel L.; Mason, Jonathan S.; and Spada, Alfred P., to Rhone-Poulenc Rorer Pharmaceuticals Inc. Substituted (sulfinic acid, sulfonic acid, sulfonylamino or sulfinylamino) N-[(aminoiminomethyl)phenylalkyl]-azaheterocyclylamide compounds. 5,612,353, Cl. 514-309.000.

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Manninen, Taisto; Ripatti, Markku; and Jaatinen, Pauli, 5,611,571, Cl. 280-819.000.

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Furutani, Yoshio; Shimada, Hiroaki; Mita, Izumi; Manabe, Kazuaki; Honjo, Masaru; and Tomioka, Noboru, 5,612,192, Cl. 435-69.100.

Exxon Research and Engineering Company: *See—*

Carlson, Edwin D.; and Rossetti, Salvatore J., 5,612,490, Cl. 73-61.430.
Ho, W. S. Winston, 5,611,843, Cl. 95-51.000.
Siskin, Michael; Ferrughelli, David T.; Katritzky, Alan R.; and Olmstead, William N., 5,611,915, Cl. 208-433.000.

Ezure, Yohji: *See—*
Maruo, Shigeaki; Tachikake, Noriyuke; and Ezure, Yohji, 5,612,203, Cl. 435-101.000.

F & B Enterprises, Inc.: *See—*
Ferreira, Thomas, 5,611,157, Cl. 37-449.000.

F C Systems, Inc.: *See—*
Strasser, John G.; Reymann, Joseph; and Fail, John E., 5,612,890, Cl. 364-479.110.

f.m.e. Corporation: *See—*
Haines, John G., 5,612,884, Cl. 364-464.130.

Faas, Jurg, to Rieter Machine Works, Ltd. Sliver-delivery machine and a sliver coiler. 5,611,115, Cl. 19-98.000.

Fab-Tech Industries, Inc.: *See—*
Harkonen, Jorma O., 5,611,422, Cl. 198-681.000.

Fail, John E.: *See—*
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Fairchild, Michael G.: *See—*
Dohmeier, Steven C.; Meichle, Michael; and Fairchild, Michael G., 5,612,938, Cl. 369-48.000.

Fairtron Corporation: *See—*
Christensen, Thomas C.; Carter, Jack L.; DeVries, Douglas E.; Foster, Alan S.; Foster, Jacques Y.; Phelps, William G.; Prachar, Timothy J.; Smith, Daniel W.; and Walter, Michael W., 5,612,710, Cl. 345-30.000.

Falwell, Gary S.: *See—*
Bowden, Russell W.; Falwell, Gary S.; Gibson, Charles A.; Stevens, Richard B.; and Stevens-Wright, Debbie E., 5,611,777, Cl. 604-95.000.

Fanuc, Ltd.: *See—*
Kamiguchi, Masao; and Neko, Noriaki, 5,611,975, Cl. 264-40.100.

Farahani, M. M.; and Garg, Shyam, to Advanced Micro Devices, Inc. Method for forming ordered titanium nitride and titanium silicide upon a semiconductor wafer using a three-step anneal process. 5,612,253, Cl. 437-190.000.

Faro Technologies, Inc.: *See—*
Raab, Simon, 5,611,147, Cl. 33-503.000.

Farrell, David R.: *See—*
Gregerson, Daniel P.; Farrell, David R.; Gaitonde, Sunil S.; Ahuja, Ratinder P.; Ramakrishnan, Krish; Shafiq, Muhammad; and Wallis, Ian F., 5,612,957, Cl. 370-401.000.

Farrelly, Philip J., to Hudson Control Group, Inc. Two-axis article loader/unloader. 5,611,193, Cl. 53-475.000.

Farris, Mark S.; and Harrison, Michael A. Bicycle suspension system. 5,611,557, Cl. 280-275.000.

Farris, Ronald A.: *See—*
Cross, David M.; Hueneke, Manfred H. K.; Farris, Ronald A.; McConnell, Bobby L.; and Newman, Robert M., 5,612,126, Cl. 442-227.000.

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Tyan, Yuan-Sheng; Farruggia, Giuseppe; and Hatwar, Tukaram K., 5,612,109, Cl. 428-64.100.

Fastman, Inc.: *See—*
Tucker, Michael, 5,612,700, Cl. 342-90.000.

Fata, Joseph J., to Emhart Inc. Lockset. 5,611,226, Cl. 70-454.000.

Faull, Alan W.: *See—*
Brewster, Andrew G.; Caulkett, Peter W. R.; Faull, Alan W.; Pearce, Robert J.; and Shute, Richard E., 5,612,373, Cl. 514-522.000.

Faure, Annick: *See—*
Bachelard, Roland; and Faure, Annick, 5,612,267, Cl. 501-127.000.

Fauret, Patrick: *See—*
Dufour, Yvon; Roy, Jean-Guy; and Fauret, Patrick, 5,611,727, Cl. 452-153.000.

Favre, Bernard, to Lir France, S.A. Double dispenser for fluid products. 5,611,463, Cl. 222-137.000.

Faychak, Gerald J.: *See—*
Kun, Zoltan K.; Leksell, David; Faychak, Gerald J.; and Asars, Juris A., 5,612,728, Cl. 347-232.000.

Faye, Robert L. Method and apparatus for starting an internal combustion engine. 5,611,305, Cl. 123-179.500.

Feigel, Hans-Joerg, to ITT Automotive Europe GmbH. Controllable valve arrangement for controllable two-tube vibration absorbers. 5,611,413, Cl. 188-299.000.

Feinberg, David A. Grase-type three-dimensional MR pulse sequences. 5,612,619, Cl. 324-309.000.

Felix, André; and Felix, Laurent. Covering panel. 5,611,184, Cl. 52-506.050.

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Felix, André; and Felix, Laurent, 5,611,184, Cl. 52-506.050.

Fellinger, Michael W.: *See—*
Ellis, Michael D.; Dunn, Stephen M.; Fellinger, Michael W.; Younglove, Fancy B.; James, David M.; Clifton, David L.; and Land, Richard S., 5,612,729, Cl. 348-2.000.

Fenderson, John M.: *See—*
Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, 5,612,284, Cl. 504-110.000.

Fennhoff, Gerhard; Hufen, Ralf; Kircher, Klaus; and Ebert, Wolfgang, to Bayer AG. Radiation-resistant polycarbonates. 5,612,398, Cl. 524-169.000.

Ferdinand, Andreas: *See—*
Kurz, Rainer; Ferdinand, Andreas; and Dallmann, Hermann, 5,612,138, Cl. 428-411.100.

Ferguson, Ralph B.: *See—*
Keeler, James D.; Hartman, Eric J.; and Ferguson, Ralph B., 5,613,041, Cl. 395-23.000.

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Zbikowski, Mark; Berkowitz, Brian T.; and Ferguson, Robert I., 5,613,105, Cl. 395-611.000.

Fernandes, Julian V.; and Dunlop, Hugh C., to Motorola, Inc. Mobile radio with transmit command control and mobile radio system. 5,612,955, Cl. 370-433.000.

Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, to Research Corporation Technologies, Inc. Dechlorination of TCE with palladized iron. 5,611,936, Cl. 210-747.000.

Ferraiolo, Frank D.: *See—*
Gregg, Thomas A.; Capowski, Robert S.; Ferraiolo, Frank D.; Halma, Marten J.; Hillock, Thomas H.; and Murray, Robert E., 5,613,068, Cl. 395-200.130.

Ferraro, Richard F.: *See—*
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Ferreira, Thomas, to F & B Enterprises, Inc. Wear pad assembly. 5,611,157, Cl. 37-449.000.

Ferrughelli, David T.: *See—*
Siskin, Michael; Ferrughelli, David T.; Katritzky, Alan R.; and Olmstead, William N., 5,611,915, Cl. 208-433.000.

Fette, Bruce A.; Leahy, Peter J.; and Harrison, David M., to Motorola, Inc. High bandwidth communication network and method. 5,612,948, Cl. 379-252.000.

Fetzer, Thomas; Buechele, Wolfgang; Wistuba, Hermann; Witte, Claus; Buerger, Gert; and Herrmann, Guenter, to BASF Aktiengesellschaft. Catalytic decomposition of dinitrogen monoxide. 5,612,009, Cl. 423-239.100.

Fevrier, Hervé; Perrier, Philippe; and Berthelon, Luc, to Alcatel Cit. Add-drop optical spectrum-division multiplexer. 5,612,805, Cl. 359-124.000.

Fiberweb North America, Inc.: *See—*
Gessner, Scott L.; and Fowells, William, 5,612,123, Cl. 442-401.000.

Ficner, Stanley A.: *See—*
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Fike, Elmer A., to Fike, Frances B. Composition for percutaneous absorption of pharmaceutically active ingredients. 5,612,382, Cl. 514-14.000.

Fike, Frances B.: *See—*
Fike, Elmer A., 5,612,382, Cl. 514-14.000.

Files, Leigh A.: *See—*
Vickers, Kenneth G.; Files, Leigh A.; Shen, Chi-Cheong; and Gnade, Bruce E., 5,611,719, Cl. 445-24.000.

Fileti, Christina M.; Gill, Richard C.; Ramundo, Mark J.; and Renini, Lis K., to Nabisco, Inc. Filler cream compositions for reduced fat sandwich cookies. 5,612,078, Cl. 426-572.000.

Filgueiras, Jose. Removable side sun visor assembly. 5,611,590, Cl. 296-97.500.

Filmer, Bartholomeus; and De Vroome, Henderikus, to U.S. Philips Corporation. Glass composition for a lamp envelope of a black light blue lamp. 5,612,263, Cl. 501-71.000.

Filtration Systems, Inc.: *See—*
Yasue, Syoichi; and Murakami, Keiichi, 5,611,925, Cl. 210-346.000.

Finck, James: *See—*
Valitutti, Diane M.; Finck, James; and Straub, Kurt M., 5,612,516, Cl. 181-141.000.

Findlay, Robert. Portable folding chair. 5,611,594, Cl. 297-28.000.

Fineberg, Samuel A.: *See—*
Casavant, Thomas L.; Fineberg, Samuel A.; Bright, Devin L.; Sundaram, Subbiah; and Roderick, Michelle L., 5,613,136, Cl. 395-800.000.

Fingerhut Corporation: *See—*
Gatehouse, Janet L., 5,611,595, Cl. 297-228.120.

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Finnfeeds International Limited: *See—*
Bedford, Michael R.; Morgan, Andrew J.; Clarkson, Kathleen; and Schulze, Hagen K., 5,612,055, Cl. 424-442.000.

Firma Carl Freudenberg: *See—*
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Firma Fedag: *See—*
Wörwag, Peter, 5,611,109, Cl. 15-386.000.

Fischer, James W.: *See—*
Corrado, Frank C.; Fischer, James W.; Larsen, Gary R.; and Sweet, Ronald W., 5,611,281, Cl. 101-425.000.

Fischer, Jochen: *See—*
Benedikt, Walter; Klett, Dittmar; Trachte, Dietrich; Kersting, Hermann; Mueller, Roland; and Fischer, Jochen, 5,612,586, Cl. 313-141.000.

Fisher-Klosterman, Inc.: *See—*
Heumann, William L., 5,612,003, Cl. 422-139.000.

Fisher, Randall K.; and Thompson, Donald B., to Schering-Plough Healthcare Products, Inc. Insole for heel pain relief. 5,611,153, Cl. 36-43.000.

Fisk, James C. Catalytic converter and phase-spreading spiral muffler assembly. 5,612,006, Cl. 422-171.000.

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Baccanti, Marco; and Magni, Paolo, 5,612,225, Cl. 436-114.000.

Fitch, Jon T.; Mazuré, Carlos A.; and Witek, Keith E., to Motorola Inc. Vertically stacked vertical transistors used to form vertical logic gate structures. 5,612,563, Cl. 257-329.000.

Fitzgerald, Scott E.: *See—*
Datta, Arindam; Tandon, Rohit; Chen, I-Jen; Canterberry, Bethany A.; and Fitzgerald, Scott E., 5,611,986, Cl. 264-328.160.

Flaig, Robert T.: *See—*
Rummell, Thomas H.; Weaver, Jeffrey P.; Flaig, Robert T.; and Burns, Thomas E., 5,611,130, Cl. 29-34.00B.

Fleck, Randy J. Apparatus for hanging fascia board. 5,611,189, Cl. 52-702.000.

Fleck, Thomas J.: *See—*
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Manley, Paul E.; Fleecksteiner, Richard J.; and Wood, Michael E., 5,612,418, Cl. 525-222.000.

Fleenor, Jeff A., to Vermeer Manufacturing Corporation. Hammermill having sealed hammers. 5,611,496, Cl. 241-166.000.

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Becquart, Jérôme; Fleer, Reinhard; and Jung, Gérard, 5,612,196, Cl. 435-69.600.

Flesser, Achim: *See—*
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Flick, Kenneth E.: *See—*
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Drew, Robert L., 5,612,578, Cl. 307-10.500.

Flier, Jeffrey S.: *See—*
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Flohr, Daniel P., to C-Phone Corporation. Optics orienting arrangement for videoconferencing system. 5,612,733, Cl. 348-14.000.

Florence, James M.: *See—*
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Florida Power Corporation: *See—*
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Florio, Steven M.; Burress, Jeffrey P.; Colangelo, Carl J.; Couble, Edward C.; and Kapeckas, Mark J., to Shipley Company, L.L.C. Electroplating process. 5,611,905, Cl. 205-109.000.

Flory, John F. Tension member termination with segmented potting socket and central passage. 5,611,636, Cl. 403-269.000.

Fluke Corporation: *See—*
Heuvel, Johannes B. O., 5,612,620, Cl. 324-402.000.

Flynn, Daniel L.: *See—*
Becker, Daniel P.; Flynn, Daniel L.; Moorman, Alan E.; Nosal, Roger; and Villamil, Clara I., 5,612,366, Cl. 514-413.000.

Focal, Inc.: *See—*
Rowe, Stephen C.; Hubbell, Jeffrey A.; Herman, Stephen J.; Sun, Vae; Lang, Michael F.; Selecman, George E.; and Ahari, Frederick F., 5,612,050, Cl. 424-423.000.

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Foon, Kenneth A.: *See—*
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Berger, Alvin H.; Diehl, Roy E.; and Verduce, Anthony, 5,611,416, Cl. 192-58.420.
Gottfried, Gordon E.; and Sheikh-Movahhed, Mohammad-Reza, 5,613,230, Cl. 455-161.300.
Schulz, Winfried F.-X.; and Kirchhoffer, Johann, 5,612,874, Cl. 364-424.080.
Trumpy, David K.; and Kraska, Marvin P., 5,612,667, Cl. 340-425.500.
Wirtz, Hans-Peter, 5,611,371, Cl. 137-625.640.
York, Michael T.; and Harris, Richard K., 5,612,584, Cl. 310-232.000.

Forecourt Security Developments Limited: *See—*
Scott, Peter, 5,612,668, Cl. 340-426.000.

Foreshew, David A. Puzzle box. 5,611,536, Cl. 273-153.00S.

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Bosgoed, Henrikus W. F., 5,611,111, Cl. 16-93.00D.

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Forrest, Jr., Charles P.: *See—*
Forrest, Charles P., Sr., 5,611,532, Cl. 473-576.000.

Forrest, Jr., Reginald E.: *See—*
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Forry, John S., to Armstrong World Industries, Inc. Gasket structure with tapered bolt area densification. 5,611,549, Cl. 277-180.000.

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Forster, Cheryl M.; Kasenga, Anthony F.; and Chau, Chung N., to Osram Sylvania Inc. Method of preparing manganese activated zinc orthosilicate phosphor. 5,611,961, Cl. 252-301.60F.

Forthun, John A.: *See—*
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O'Brasky, James S.; Alexander, Alan A.; Griffin, Odis H., Jr.; Foster, John S.; and Shamblen, Morley C., 5,612,505, Cl. 102-268.000.

Foster, Richard A.: *See—*
Cabezas, Rafael G.; and Foster, Richard A., 5,612,961, Cl. 371-20.400.

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Fowells, William: *See—*
Gessner, Scott L.; and Fowells, William, 5,612,123, Cl. 442-401.000.

Fox, Richard T.: *See—*
Nilsson, Robert T.; Fox, Richard T.; and Dunmead, Stephen D., 5,612,264, Cl. 501-87.000.

France, Robert B.; Claus, Arthur H.; and Calvert, Brian E., to Motorola Inc. Data processor initialization program and method therefor. 5,613,119, Cl. 395-651.000.

Francis, Monty L.; James, Edmund H., III; and Spitz, Donald N., to Lexmark International, Inc. Ink jet printhead wiper having side surfaces intersecting a top surface at acute angles to form wiping edges and a slat centered in a bottom surface. 5,612,722, Cl. 347-33.000.

Frank, Manfred: *See—*
Murmann, Günter; and Frank, Manfred, 5,612,691, Cl. 341-22.000.

Franke, Erik: *See—*
Olsen, Ulf N.; Franke, Erik; and Strand, Eilif, 5,612,119, Cl. 428-195.000.

Frankel, Neil A., to Xerox Corporation. Anisotropic imaging member. 5,613,175, Cl. 399-162.000.

Frantz, Robert A.: *See—*
Gray, Mark F.; and Frantz, Robert A., 5,611,603, Cl. 297-476.000.

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Theurer, Josef; Oellerer, Friedrich; and Wörgötter, Herbert, 5,611,403, Cl. 171-16.000.

Franzen, Michael R.: *See—*
Marzari, Jorge A.; Franzen, Michael R.; and Smith, Jeffrey W., 5,611,910, Cl. 208-44.000.

Franzosi, Giuliana: *See—*
Van der Goes, Wilhelmus; Bernardi, Antonella; Bosetti, Aldo; Cesti, Pietro; and Franzosi, Giuliana, 5,612,210, Cl. 435-228.000.

Fraser, David B.: *See—*
Mu, Xiao-Chun; Sivaram, Srinivasan; Gardner, Donald S.; and Fraser, David B., 5,612,254, Cl. 437-195.000.

Frattarola, Albert J.; and Lavalley, Kevin P., to Southco, Inc. Captive nut. 5,611,654, Cl. 411-432.000.

Frazier, Joseph R., Jr.: *See—*
Richard, Daniel J.; and Frazier, Joseph R., Jr., 5,611,152, Cl. 36-28.000.

Freed, Robert L.: *See—*
Kolouch, Robert J.; Reichert, David L.; Freed, Robert L.; Birchenall, Andrew K.; Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,611,897, Cl. 204-252.000.

Freeman, Michael B.; Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, to Rohm and Haas Company. Production of polysuccinimide by thermal polymerization of maleamic acid. 5,612,447, Cl. 528-328.000.

French, Thomas. Gun holster. 5,611,471, Cl. 224-243.000.

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Braig, Adalbert; Frey, Markus; and Kramer, Andreas, 5,612,093, Cl. 427-386.000.

Freyne, Eddy J. E.: *See—*
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,612,354, Cl. 514-314.000.

Frick, Hans: *See—*

Luitz, Max; and Frick, Hans, 5,611,559, Cl. 280-617.000.

Friedrich, Hauner; and Manfred, Wagner, to Rieter Ingolstadt, Spinnereimaschinenbau AG. Spinning plant machine with attachment for can transporting carriage. 5,611,117, Cl. 19-159.00A.

Friel, Daniel D.; and Bigliano, Robert P., to Edgecraft Corporation. High speed precision sharpening apparatus. 5,611,726, Cl. 451-177.000.

Friend, Patric L.: *See—*
Hernandez-Mena, Roy; Sujdak, Richard J.; and Friend, Patric L., 5,611,939, Cl. 210-764.000.

Friend, Stephen O.; and Barber, James J., to Hyperion Catalysis International. Fibril filled molding compositions. 5,611,964, Cl. 252-511.000.

Friesen, Dwayne T.; Newbold, David D.; McCray, Scott B.; and Ray, Roderick J., to Bend Research, Inc. Organic and inorganic vapor permeation by countercurrent condensable sweep. 5,611,842, Cl. 95-50.000.

Frihart, Charles R., to Union Camp Corporation. Curable adhesive compositions containing polyamide resins. 5,612,448, Cl. 528-339.500.

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Fritz, Ernst; and Dimitrov, Stefan, to Voest-Alpine Industrieanlagenbau GmbH. Process for producing an iron melt. 5,611,838, Cl. 75-10.380.

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Nell, Joachim; Fritzsching, Torsten; and Kruse, Werner, 5,611,606, Cl. 303-155.000.

Frodsham, John: *See—*
Watterson, Scott R.; Lay, William C.; Frodsham, John; Heath, John C.; and Dalebout, William T., 5,611,539, Cl. 473-197.000.

Frohnhaus, Ernst-Reiner: *See—*
Bauer, Heinz; Becker, Burckhard; and Frohnhaus, Ernst-Reiner, 5,611,747, Cl. 475-162.000.

Frölich, Hans, to Gardena Kress & Kastner GmbH. Sprinkler, particularly for watering vegetation. 5,611,488, Cl. 239-242.000.

Frolov, George; Walsh, John E., III; and Wobbles, James C., to Harrow Products, Inc. Impact resistant armature. 5,611,582, Cl. 292-251.500.

Frudden, Jon E.: *See—*
Barresi, Thomas; Scalese, Robert; Riedi, Eric; Frudden, Jon E.; Hall, Randy; Nguyen, Son; and Anderson, Robert, 5,611,784, Cl. 604-211.000.

Fu, Cheng-Tsu: *See—*
Lai, Chung-Ping; Li, Ai-Kang; and Fu, Cheng-Tsu, 5,612,100, Cl. 427-595.000.

Fu, Stephen; and Chen, Hsin-Li, to United Microelectronics Corporation. Clamp circuit for read-only-memory devices. 5,612,915, Cl. 365-189.060.

Fuji Electric Co., Ltd.: *See—*
Fujishima, Naoto; and Tada, Gen, 5,612,564, Cl. 257-341.000.
Iguchi, Yasushi; Nogami, Sumitaka; and Kitagawa, Kyoko, 5,612,158, Cl. 430-58.000.
Okimoto, Kazuki, 5,612,725, Cl. 347-71.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Masuda, Toshio, 5,611,568, Cl. 280-784.000.

Fuji Oozx Inc.: *See—*
Takano, Yuji, 5,611,306, Cl. 123-188.300.

Fuji Photo Film Co., Ltd.: *See—*
Kobayashi, Takashi; and Tani, Yoshio, 5,612,281, Cl. 503-227.000.
Okita, Tsutomu; Watanabe, Hideomi; Ishida, Toshio; Satake, Masaki; and Hashimoto, Hiroshi, 5,612,134, Cl. 428-336.000.
Ryoke, Katsumi; Sato, Masami; and Fujiyama, Masaaki, 5,611,826, Cl. 51-295.000.
Takamura, Masashi; and Ohmiya, Akio, 5,613,170, Cl. 396-435.000.
Takizawa, Hiroo; Yoshioka, Yasuhiro; and Morigaki, Masakazu, 5,612,174, Cl. 430-557.000.
Yokoya, Hiroaki; and Shirakawa, Koji, 5,612,167, Cl. 430-257.000.

Fuji Photo Optical Co., Ltd.: *See—*
Koizumi, Noboru, 5,612,823, Cl. 359-644.000.
Nagata, Kouichi, 5,612,147, Cl. 429-9.000.
Takamura, Masashi; and Ohmiya, Akio, 5,613,170, Cl. 396-435.000.

Fuji Tool Co., Ltd.: *See—*
Fujiwara, Yoshinori, 5,611,149, Cl. 33-833.000.

Fuji Xerox Co. Ltd.: *See—*
Enomoto, Yoshihiro; Hyakutake, Nobuo; and Fujita, Tetsuya, 5,612,772, Cl. 399-315.000.
Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, 5,612,160, Cl. 430-110.000.
Ishize, Tatsuhiro, 5,612,721, Cl. 347-33.000.
Sato, Shuji; Suzuki, Chiaki; Torigoe, Tetsu; Inoue, Satoshi; and Fujii, Takahisa, 5,612,159, Cl. 430-110.000.
Suzuki, Kazuhiro; Koshi, Yutaka; Kunitake, Setsu; Kimura, Shunichi; and Kamizawa, Koh, 5,613,015, Cl. 382-173.000.

Fujicopian Co., Ltd.: *See—*
Sogabe, Jun, 5,612,140, Cl. 428-484.000.
Tago, Yasuo; Kurokawa, Kenji; and Ikeda, Naohiro, 5,612,120, Cl. 428-195.000.

Fujii, Katsuhiro: *See—*
Kubota, Yoichi; Kawamata, Naoki; Morisada, Masahiro; Fujii, Katsuhiro; Itoh, Hiroshi; and Takeishi, Hiroaki, 5,612,602, Cl. 318-560.000.

Fujii, Masanobu; Matsubara, Tomoki; Tanaka, Mitsuru; and Sugihara, Naoki, to Ikeda Bussan Co., Ltd. Seat arrangement for motor vehicle. 5,611,589, Cl. 296-64.000.

Fujii, Takahisa: *See—*
Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, 5,612,160, Cl. 430-110.000.
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Fujii, Tetsuhiko: *See—*
Achiwa, Kyosuke; Yamamoto, Akira; Fujii, Tetsuhiko; Satoh, Takao; and Nozawa, Masafumi, 5,613,088, Cl. 395-482.000.

Fujikoki Mfg. Co., Ltd.: *See—*
Saito, Kiyoaki; Furuta, Takuji; and Endo, Moriyoshi, 5,611,215, Cl. 62-509.000.

Fujikura, Hiroyuki: *See—*
Shirako, Yukio; Kishi, Yoshio; Maruyama, Yukihiro; and Fujikura, Hiroyuki, 5,612,941, Cl. 369-83.000.

Fujikura Kasei Co., Ltd.: *See—*
Watanabe, Masao; Suzuki, Kozo; and Ueda, Hikoji, 5,612,161, Cl. 430-110.000.

Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, to Kabushiki Kaisha Fuji Iryoki; and Kabushiki Kaisha Japan Health. Air massage device. 5,611,772, Cl. 601-149.000.

Fujimura, Akira: *See—*
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, 5,611,320, Cl. 123-698.000.

Fujinawa, Nobuhiro: *See—*
Aikawa, Toshiya; Tazawa, Masashi; and Fujinawa, Nobuhiro, 5,612,811, Cl. 359-204.000.

Fujino, Masahisa: *See—*
Aihara, Yoshihiko; Yamamichi, Masayoshi; and Fujino, Masahisa, 5,613,171, Cl. 396-531.000.

Fujise, Masakuni: *See—*
Toki, Yusuke; Hiraoka, Manabu; Yamagishi, Ichiro; Onuki, Hiroyuki; Ban, Tatsuya; Hada, Tetsuro; Nabatame, Takeo; Yamahana, Masao; Fujise, Masakuni; Aochi, Yoshihiko; Hayashibara, Makoto; and Ozaki, Masahiro, 5,612,985, Cl. 378-4.000.

Fujishima, Naoto; and Tada, Gen, to Fuji Electric Co., Ltd. Semiconductor device with limiter diode. 5,612,564, Cl. 257-341.000.

Fujita, Kenjiro: *See—*
Kondo, Kaoru; Fujita, Kenjiro; and Watanabe, Shinji, 5,611,753, Cl. 477-118.000.

Fujita, Kimikazu, to Matsushita Electric Industrial Co., Ltd. Machine translation system. 5,612,872, Cl. 395-752.000.

Fujita, Koreaki: *See—*
Kozaru, Kunihiko; and Fujita, Koreaki, 5,612,917, Cl. 365-200.000.

Fujita, Tetsuya: *See—*
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Fujita, Yoshihisa: *See—*
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Fujita, Yoshio: *See—*
Okamura, Kazuhisa; and Fujita, Yoshio, 5,613,147, Cl. 395-800.000.

Fujita, Yuko: *See—*
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Fujitsu Limited: *See—*
Akamatsu, Toshiya; Karasawa, Kazuaki; Nakanishi, Teru; and Shimizu, Kozo, 5,611,481, Cl. 228-180.220.
Hakogi, Hironao; Yamane, Takashi; and Watanabe, Junko, 5,612,086, Cl. 427-163.200.
Hiraoka, Sinji; Matsumoto, Yoshihisa; Itoh, Isamu; and Terashima, Shigeo, 5,612,840, Cl. 360-104.000.
Ishibashi, Ryoichi; Tachibana, Tetsuo; and Nakagaki, Tatsuru, 5,613,065, Cl. 395-185.010.
Ishikawa, George; Miyata, Hideyuki; Onaka, Hiroshi; Sekiya, Motoyoshi; and Otsuka, Kazue, 5,612,807, Cl. 359-161.000.
Itabashi, Kazuo, 5,612,247, Cl. 437-69.000.
Iwama, Ryouichi, 5,612,767, Cl. 399-98.000.
Kageyama, Hironobu, 5,612,581, Cl. 307-64.000.
Matsushima, Hitoshi; Kobayashi, Tohru; Kumasawa, Tadashi; Murano, Shoichi; Ishikawa, Jun; and Katayama, Jun, 5,613,066, Cl. 395-185.020.
Sato, Toshiro; Yamamoto, Kunitoshi; and Adachi, Hiroyuki, 5,612,962, Cl. 371-22.300.
Shimura, Takaki; Iida, Atsuo; Kaiju, Yoshihiko; Nakayasu, Hirofumi; and Hiyane, Masao, 5,612,723, Cl. 347-46.000.
Sotoyama, Wataru; Tatsnura, Satoshi; Yoshimura, Tetsuzo; Matsuura, Azuma; and Hayano, Tomoaki, 5,612,449, Cl. 528-345.000.
Takai, Nobuyuki; and Hiyamizu, Kazufumi, 5,612,829, Cl. 360-54.000.

Fujiwa, Takaaki: *See—*
Watanabe, Kazushi; Fujiwa, Takaaki; Isobe, Tomohisa; and Sagane, Hiroshi, 5,612,412, Cl. 525-58.000.

Fujiwara, Yoshinori, to Fuji Tool Co., Ltd. Gage for use in welding. 5,611,149, Cl. 33-833.000.

Fujiya, Junzou: *See—*
Fukuoka, Hirofumi; Fujiya, Junzou; Uena, Yoshiaki; and Nakano, Akihiro, 5,611,388, Cl. 164-119.000.

Fujiyama, Masaaki: *See—*
Ryoke, Katsumi; Sato, Masami; and Fujiyama, Masaaki, 5,611,826, Cl. 51-295.000.

Fukagawa, Masami; Matsumoto, Hidenori; Higuchi, Eisei; and Kakizaki, Masuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Automotive floor panel assembly. 5,611,593, Cl. 296-204.000.

Fukami, Kazuaki: *See—*
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Fukao, Ryuzo: *See—*
Takeuchi, Yoji; Oshima, Toshio; Fukao, Ryuzo; and Kanzaki, Hisao, 5,611,958, Cl. 252-301.40P.

Fukasawa, Yoshio; Hosoda, Shozo; Nakagome, Tatsuya; Tozawa, Takashi; Suzuki, Koji; Ishihara, Yasumasa; Aoyagi, Minoru; and Kajihara, Mahito, to Tokyo Electron Limited; and Tokyo Electron Yamanashi Limited. Vacuum process apparatus and vacuum processing method. 5,611,655, Cl. 414-217.000.

Fukuda, Yoshinori: *See—*
Sato, Tomio; Sato, Hitoshi; Oguma, Koji; and Fukuda, Yoshinori, 5,611,351, Cl. 128-734.000.

Fukui, Hajime; Atsuta, Akio; and Nishikawa, Fumikazu, to Canon Kabushiki Kaisha. Vibration driven motor. 5,612,598, Cl. 318-116.000.

Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, to Nisshin Steel Co., Ltd. Iron-based material having excellent oxidation resistance at elevated temperatures and process for the production thereof. 5,612,090, Cl. 427-255.300.

Fukuju, Atsushi: *See—*
Onitsuka, Shigenori; Ichiki, Masayoshi; Inazumi, Chikashi; Watanabe, Takanobu; Fukuju, Atsushi; Akiyama, Masaki; Sairyo, Yuki; and Kobayashi, Hidetsugu, 5,612,276, Cl. 502-415.000.

Fukuoka, Hirofumi; Fujiya, Junzou; Uena, Yoshiaki; and Nakano, Akihiro, to Mazda Motor Corporation. Method of and apparatus for low-pressure casting. 5,611,388, Cl. 164-119.000.

Fukushi, Mikio; and Tomita, Hideho, to NEC Corporation. Spectrum spread signal reception with differential demodulation of spectrum spread demodulated components at each synchronous point and at a point always one symbol period later. 5,612,972, Cl. 375-206.000.

Fukushima, Aritoshi: *See—*
Kamakura, Tamiji; Tanaka, Noriyoshi; Fukushima, Aritoshi; Tatsumi, Yukio; and Morita, Kazuhisa, 5,612,297, Cl. 508-363.000.

Fukuyama, Tadashi, deceased (by Yukio Fukuyama, legal representative): *See—*
Fuwa, Naohide; Tanaka, Hiroshi; Miyashita, Shigeki; Nihei, Hiroaki; Fukuyama, Tadashi, deceased, 5,611,314, Cl. 123-491.000.

Fukuyama, Yukio, legal representative: *See—*
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Fuller, Graham D.; and Snook, Martin G., to Pelcombe Limited. Sheet counting. 5,612,984, Cl. 377-8.000.

Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Kiyohara, Yuji; Hibino, Yoshihiko; and Yasutomo, Yuichi, to Brother Kogyo Kabushiki Kaisha and Xing Inc. Data transmission system having dedicated clock channel. 5,612,681, Cl. 340-825.210.

Funahashi, Yasuhiro: *See—*
Chaya, Norio; Nishikawa, Hiroshi; Hayashi, Koichi; Takada, Hiroyuki; Aoyama, Yasutada; Funahashi, Yasuhiro; and Nishimura, Osamu, 5,611,693, Cl. 434-307.00A.
Ikami, Kazunori; Funahashi, Yasuhiro; and Hasegawa, Yukie, 5,613,192, Cl. 455-4.200.

Funakoshi, Hiromasa, to Matsushita Electric Industrial Co., Ltd. Charge detection device and driver thereof. 5,612,554, Cl. 257-215.000.

Furlani, Edward P.: *See—*
Ghosh, Syamal K.; Furlani, Edward P.; and Lysiak, Paul A., 5,611,679, Cl. 417-420.000.

Furusawa, Hajime: *See—*
Suyama, Kiichi; Furusawa, Hajime; Hosohara, Yasuharu; and Kobori, Takashi, 5,612,625, Cl. 324-635.000.

Furuta, Motonobu; and Yamaguchi, Takanari, to Sumitomo Chemical Company, Limited. Hollow molded article container and method for producing the same. 5,612,101, Cl. 428-1.000.

Furuta, Takuji: *See—*
Saito, Kiyoaki; Furuta, Takuji; and Endo, Moriyoshi, 5,611,215, Cl. 62-509.000.

Furutani, Yoshio; Shimada, Hiroaki; Mita, Izumi; Manabe, Kazuaki; Honjo, Masaru; and Tomioka, Noboru, to Agency of Industrial Science and Technology; and Extra-Ministerial Bureau of Ministry of International Trade and Industry. DNA base sequence containing regions involved in the production and secretion of a protein, recombinant DNA including the whole or a part of the DNA base sequence, and method of producing proteins by use of the recombinant DNA. 5,612,192, Cl. 435-69.100.

Futaba Denshi Kogyo K.K.: *See—*
Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Itoh, Junji; and Kanemaru, Seigo, 5,612,587, Cl. 313-309.000.

Futo, Tomomichi: *See—*
Maedera, Koichi; Hori, Masuhisa; and Futo, Tomomichi, 5,611,971, Cl. 264-4.100.

Fuwa, Naohide; Tanaka, Hiroshi; Miyashita, Shigeki; Nihei, Hiroaki; Fukuyama, Tadashi, deceased (by Yukio Fukuyama, legal representative), to Toyota Jidosha Kabushiki Kaisha. Control device for internal combustion engine. 5,611,314, Cl. 123-491.000.

G. D. Searle & Co.: *See—*
Abood, Norman A.; Manning, Robert E.; and Miyano, Masateru, 5,612,355, Cl. 514-336.000.
Barta, Thomas E.; and Mueller, Richard A., 5,612,480, Cl. 544-180.000.
Becker, Daniel P.; Flynn, Daniel L.; Moorman, Alan E.; Nosal, Roger; and Villamil, Clara I., 5,612,366, Cl. 514-413.000.

G.-E. Leblanc Inc.: *See—*
Dufour, Yvon; Roy, Jean-Guy; and Fauret, Patrick, 5,611,727, Cl. 452-153.000.

Gabrilove, Janice: *See—*
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Gac, Norman: *See—*
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Gacek, Krzysztof: *See—*
Hossain, K. Mosaddeq; and Gacek, Krzysztof, 5,611,808, Cl. 606-170.000.

Gaetano, Ralph R. Continuous feed storage envelopes. 5,611,482, Cl. 229-69.000.

Gagas, John M.: *See—*
Barnum, Thomas G.; York, Phillip B.; Eberhardy, Thomas R.; and Gagas, John M., 5,611,093, Cl. 4-624.000.

Gähr, Harold: *See—*
Wohlhaupter, Manfred; Gähr, Harold; Maar, Peter; and Wohlhaupter-Hermann, Rolf, 5,611,651, Cl. 408-153.000.

GAIA Research: *See—*
Garcia, Rodrigo A.; and Gho, Joseph G., 5,611,962, Cl. 252-350.000.

Gaitonde, Sunil S.: *See—*
Gregerson, Daniel P.; Farrell, David R.; Gaitonde, Sunil S.; Ahuja, Ratinder P.; Ramakrishnan, Krish; Shafiq, Muhammad; and Wallis, Ian F., 5,612,957, Cl. 370-401.000.

Galin, Miles A.; Salamone, Joseph C.; and Israel, Stanley C. Controlled release of miotic and mydriatic drugs in the anterior chamber. 5,612,027, Cl. 424-78.040.

Galko, Joseph: *See—*
Burkett, Eugene J.; Callander, Douglas D.; Galko, Joseph; and Sisson, Edwin A., 5,612,423, Cl. 525-444.000.

Gallegos, Sonia C.; Holyer, Ronald J.; Peckinpaugh, Sarah H.; and Cheng, Chiu-Fu. Apparatus and method for cloud masking. 5,612,901, Cl. 364-526.000.

Galler, Bernard A. Self-contained vehicle proximity triggered resettable timer and mass transit rider information system. 5,613,216, Cl. 455-66.000.

Gallo, Frank D.; Hausler, Hartmut E.; Hu, Paul Y.-F.; Kartchner, Kevin K.; Rockwell, Scott M.; Roffinoli, Stephen J.; and Simkins, James C., to International Business Machines Corporation. Removeable media drive unit with loader interlock to indicate presence of object. 5,612,831, Cl. 360-71.000.

Galloway, William C., to Compaq Computer Corporation. Automatic disabling of SCSI bus terminators. 5,613,074, Cl. 395-280.000

Gallup, David A.; Sperinde, John M.; Ambrisco, William A.; Hughes, Timothy J.; Pantages, Anthony J.; Sarge, Jeffrey A.; and Tsuchitani, Scott T., to Abbott Laboratories. Multi-purpose multi-parameter cardiac catheter. 5,611,338, Cl. 128-634.000.

Gallus, Heinz E.: *See—*
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Gamay, Aly, to Alpine Lace Brands, Inc. Low fat cheese curd products. 5,612,073, Cl. 426-39.000.

Gambino, Richard J.: *See—*
Bojarczuk, Nestor A., Jr.; Gambino, Richard J.; and Ruf, Ralph, 5,612,131, Cl. 428-332.000.

Gao, Dayong: *See—*
Demeter, Robert J.; Bock, Henry C.; and Gao, Dayong, 5,611,787, Cl. 604-270.000.

Garavaldi, Italo: *See—*
Caspani, Marco; and Garavaldi, Italo, 5,611,326, Cl. 125-39.000.

Garby, Gage L.; and Ballas, Jeffrey T., to Senetics, Inc. Indicator device responsive to axial force. 5,611,444, Cl. 215-230.000.

Garcia, Roberto R., to Panderra Enterprises Inc. Unibeam trailer chassis. 5,611,570, Cl. 280-789.000.

Garcia, Rodolfo. Fastener removing tool. 5,611,519, Cl. 254-22.000.

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Walker, G. Kent; Moroney, Paul; and Nuber, Ray, 5,612,956, Cl. 370-545.000.

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Cameron, Janet M., 5,612,333, Cl. 514-220.000.

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Rickenbach, Robert; and Boyer, Ronald G., 5,612,780, Cl. 356-73.100.
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Harrison, David F.: *See*—
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Hershey, Michael D. Multiple-catch mouse trap. 5,611,171, Cl. 43-66.000.

Hess, John. Cryogenic interface for perpendicular loading of independent measurement inserts. 5,611,207, Cl. 62-51.100.

Hess, Max W.: *See*—
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Jedwab, Jonathan; Crouch, Simon E.; and Cunningham, David G., 5,612,694, Cl. 341-94.000.
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Heyl, Barbara L.; Winterton, Lynn C.; Su, Kai C.; and White, Jack C., to Ciba-Geigy Corporation. Apparatus for removing components from solutions. 5,612,361, Cl. 514-385.000.

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Osborn, Thomas W., III; Lavash, Bruce W.; Sugahara, Kazuko; Chappell, Charles W.; Mayer, Katherine L.; and Hines, Letha M., 5,611,790, Cl. 604-391.000.

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Hino, Yoshiaki: *See*—
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Hinode Engineering Co., Ltd.: *See*—
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Hinton, Glenn J.: *See*—
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Hirai, Kenji; Matsukawa, Tomoko; Yano, Tomoyuki; Masuda, Katsuyuki; Yoshii, Tomoko; Mouri, Takehito; Ugai, Sadayuki; and Yamada, Osamu, to Sagami Chemical Research Center; and Kaken Pharmaceutical Co., Ltd. 4-imino-oxazolidine-2-one derivatives, a process for producing such derivatives and a herbicide containing them as an active ingredient. 5,612,289, Cl. 504-270.000.

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Sprengeler, Paul; Smith, Amos B., III; Hirschmann, Ralph F.; and Yokoyama, Akihisa, 5,612,339, Cl. 514-252.000.

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Shepperd, Paul W., III; Becker, Larry W.; and Cundiff, Robert J., 5,611,934, Cl. 210-719.000.

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Moeller, Hinrich; and Hoeffkes, Horst, 5,611,817, Cl. 8-405.000.

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Copeland, Wilbert B.; Soderburg, Erik; Dunwoody, John; Brunner, Robert; and Williams, Keith, 5,613,197, Cl. 455-22.000.

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Ansley, David A.; and Beamon, William S., III, 5,612,708, Cl. 345-8.000.
Liu, Takyiu; Nguyen, Chanh; and Matloubian, Mehran, 5,612,551, Cl. 257-197.000.
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Gallup, David A.; Sperinde, John M.; Ambrisco, William A.; Hughes, Timothy J.; Pantages, Anthony J.; Sarge, Jeffrey A.; and Tsuchitani, Scott T., 5,611,338, Cl. 128-634.000.

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Coulton, Steven; Hinks, Jeremy D.; and Hunt, Eric, 5,612,477, Cl. 540-302.000.

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Hunt, James R.; and Hunt, Jerry L., 5,611,492, Cl. 241-23.000.

Hunt, James R.; and Hunt, Jerry L., to Hunt Industries Inc. Refuse tire grinder/separator. 5,611,492, Cl. 241-23.000.

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Johnson, Dwight N., 5,611,090, Cl. 4-345.000.

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Lewis, Ronald G., 5,612,305, Cl. 510-220.000.

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Moses, Robert W.; Durkee, Norman; and Hustig, Charles H., 5,612,943, Cl. 369-124.000.

Hutchinson: *See—*
Blin, Philippe; and Mahin, Daniel, 5,611,374, Cl. 138-149.000.

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Brown, Sterling B.; Dai, Kevin H.; Hwang, Chorng-Fure R.; Rice, Steven T.; Scobbo, James J., Jr.; and Yates, John B., 5,612,401, Cl. 524-413.000.

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Hyp, Edward J., to Westinghouse Electric Corporation. Powered guide tubes. 5,611,391, Cl. 165-11.200.

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Friend, Stephen O.; and Barber, James J., 5,611,964, Cl. 252-511.000.

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Ahn, Byung J., 5,612,237, Cl. 437-43.000.
No, Chang H., 5,612,947, Cl. 370-228.000.

Hyundai Motor Company: *See—*
Bae, Dae Y.; and Son, Sung G., 5,612,298, Cl. 508-376.000.
Choi, Suk J., 5,611,580, Cl. 292-164.000.
Jang, Jaeduk; and Kim, Taekyun, 5,611,749, Cl. 477-65.000.

I Am Fine, Inc.: *See—*
Halleck, Michael E.; and James, Donald N., 5,611,349, Cl. 128-721.000.

IAP Research, Inc.: *See—*
Chelluri, Bhanumathi; Barber, John P.; and Newman, Duane C., 5,611,139, Cl. 29-744.000.
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West, Michael H., 5,612,372, Cl. 514-479.000.

Ichikawa, Hiroyuki; Ohmura, Hiroshi; Hasegawa, Shizuo; Isemura, Keizo; and Aiba, Yoshinobu, to Canon Kabushiki Kaisha. Image processing method and apparatus for outputting a pattern image in accordance with the color and density level of each color of the output polychromatic image. 5,612,792, Cl. 358-500.000.

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Ichikawa, Nobuhiro: *See—*
Akeno, Mitsuru; and Ichikawa, Nobuhiro, 5,611,121, Cl. 24-423.000.

Ichikawa, Seigo: *See—*
Obinata, Hiroshi; Ichikawa, Seigo; and Kikuya, Akihisa, 5,613,239, Cl. 588-1.000.

Ichikawa, Teruo: *See—*
Kurihara, Tsuneo; Kusaka, Katsushige; Ichikawa, Teruo; Tanaka, Hiromi; and Higashi, Toshiyuki, 5,612,067, Cl. 425-533.000.

Ichiki, Masayoshi: *See—*
Onitsuka, Shigenori; Ichiki, Masayoshi; Inazumi, Chikashi; Watanabe, Takanobu; Fukuju, Atsushi; Akiyama, Masaki; Sairyo, Yuki; and Kobayashi, Hidetsugu, 5,612,276, Cl. 502-415.000.

Ichitani, Masahiro: *See—*
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.

Icon Health & Fitness, Inc.: *See—*
Watterson, Scott R.; Lay, William C.; Frodsham, John; Heath, John C.; and Dalebout, William T., 5,611,539, Cl. 473-197.000.

Idemitsu Kosan Co., Ltd.: *See—*
Teshima, Hideo; and Yamasaki, Komei, 5,612,452, Cl. 528-492.000.

Idesawa, Masanori, to Rikagaku Kenkyusho. Apparatus for formation of visual sense effect and method for formation of visual sense effect. 5,611,162, Cl. 40-435.000.

Igarashi, Hisashi: *See—*
Kuroda, Shigetaka; Igarashi, Hisashi; Katoh, Akira; and Ishii, Kenichiro, 5,611,310, Cl. 123-399.000.

Iguchi, Yasushi; Nogami, Sumitaka; and Kitagawa, Kyoko, to Fuji Electric Co., Ltd. Electrophotographic photoconductor and process for producing the same. 5,612,158, Cl. 430-58.000.

Iguchi, Yuichiro; Kimura, Michio; and Oka, Koichiro, to Toray Industries, Inc. Thiol Methacrylate or acrylate resin and a method of making same. 5,612,390, Cl. 522-173.000.

Iida, Atsuo: *See—*
Shimura, Takaki; Iida, Atsuo; Kaiju, Yoshihiko; Nakayasu, Hirofumi; and Hiyane, Masao, 5,612,723, Cl. 347-46.000.

Iida, Setsuko: *See—*
Kato, Nobuyuki; Matsuno, Kenji; Maruhashi, Yoshitsugu; Kurashima, Hideo; Ikegami, Hiroo; Iida, Setsuko; and Takeuchi, Kimio, 5,611,987, Cl. 264-458.000.

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Iida, Toshii: *See—*
Kaminuma, Toshihiko; Iida, Toshii; and Tajima, Masahiro, 5,612,454, Cl. 530-344.000.

Iijima, Katsumi: *See—*
Yoshinari, Akira; Tamaki, Hideki; Saito, Tosiaki; Kobayashi, Mitsuru; Iijima, Katsumi; Wada, Katsuo; Kano, Kimio; and Matsuzaki, Hiroyuki, 5,611,670, Cl. 416-241.00R.

Iijima, Takashi; and Ohta, Hideo, to Kabushikigaisha Tokyo Kikai Seisakusho. Width adjusting device and method for a paper web. 5,611,275, Cl. 101-181.000.

Iijima, Yoichi, to Nissin Kogyo Co., Ltd. Automatic boot mounting apparatus. 5,611,131, Cl. 29-235.000.

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Ikami, Kazunori: *See—*
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Kiyohara, Yuji; Hibino, Yoshihiko; and Yasutomo, Yuichi, 5,612,681, Cl. 340-825.210.

Ikeda Bussan Co., Ltd.: *See—*
Fujii, Masanobu; Matsubara, Tomoki; Tanaka, Mitsuru; and Sugihara, Naoki, 5,611,589, Cl. 296-64.000.

Ikeda, Naohiro: *See—*
Tago, Yasuo; Kurokawa, Kenji; and Ikeda, Naohiro, 5,612,120, Cl. 428-195.000.

Ikeda, Toshio, to Nessy Kogyo Kabushiki Kaisha. Exhaust gas processing system. 5,612,004, Cl. 423-240.500.

Ikegami, Hiroo: *See—*
Kato, Nobuyuki; Matsuno, Kenji; Maruhashi, Yoshitsugu; Kurashima, Hideo; Ikegami, Hiroo; Iida, Setsuko; and Takeuchi, Kimio, 5,611,987, Cl. 264-458.000.

Ikemizu, Morihiko: *See—*
Okutomo, Takayuki; and Ikemizu, Morihiko, 5,612,259, Cl. 437-209.000.

Ikeo, Mitsuru: *See—*
Oshima, Yoshikazu; Kato, Atsushi; Ikeo, Mitsuru; Nishida, Toshiyuki; Ueda, Kazuhiro; Nakamura, Katsunori; Noseyama, Ryuichi; Ishibashi, Kenichiro; and Aoki, Shigeru, 5,611,316, Cl. 123-494.000.

Ikon Corporation: *See—*
Nimitz, Jonathan S.; and Lankford, Lance H., 5,611,210, Cl. 62-114.000.

Iles, Michael V.: *See—*
Landau, Robert V.; Johnson, James E.; and Iles, Michael V., 5,613,098, Cl. 395-500.000.

Illig, Carl L.: *See—*
Bone, Roger F.; Soll, Richard M.; Illig, Carl L.; Lu, Tianbao; and Subasinghe, Nalin L., 5,612,369, Cl. 514-423.000.

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Imahashi, Takahiro, 5,611,725, Cl. 451-104.000.

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Takano, Kazuaki; Tanaka, Naoyuki; Shioya, Makoto; Imaide, Takuya; and Kurata, Kenichirou, 5,612,686, Cl. 340-903.000.

Imamura, Masahumi: *See—*
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Imanara, Tohru: *See—*
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Imation Corp.: *See—*
Alexander, Jerry L.; and Tussey, David L., 5,612,844, Cl. 360-132.000.
Tsukamoto, Yoji; Oiri, Shigeto; and Ohta, Toshio, 5,612,122, Cl. 428-216.000.

Imedia Corporation: *See—*
Krause, Edward A.; Shen, Paul; and Tom, Adam S., 5,612,742, Cl. 348-385.000.

Immune Response Corporation, The: *See—*
Howell, Mark D.; Brostoff, Steven W.; and Carlo, Dennis J., 5,612,035, Cl. 424-185.100.

Immunomedics, Inc.: *See—*
Griffiths, Gary L.; Diril, Habibe; and Hansen, Hans J., 5,612,016, Cl. 424-1.490.

Imran, Mir A.: *See—*
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In Vitro International: *See—*
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Ina, Kenzoh: *See—*
Nobutani, Toshiyuki; Ina, Kenzoh; Shimakura, Masami; Tanahashi, Junichi; Ono, Kenichiro; Morimoto, Hajime; Sakashita, Tatsuya; and Matsuzaki, Eiichi, 5,613,103, Cl. 395-501.000.

Inaba, Kazuo; Hamanaka, Tatsuo; and Maeda, Mitsuyo, to Nihon Plast Co., Ltd.; Sumitomo Chemical Co., Ltd.; and Tanabe Chemical Industrial Inc. Airbag storing casing. 5,611,565, Cl. 280-728.300.

Inaba, Yutaka: *See—*
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Inagaki, Mitsuo: *See—*
Uchida, Kazuhide; Matsuda, Mikio; Inagaki, Mitsuo; and Sakai, Takeshi, 5,611,675, Cl. 417-270.000.

Inami, Daijiro; and Sato, Yuichi, to NEC Corporation. Optical receiving apparatus. 5,612,810, Cl. 359-189.000.

Inazumi, Chikashi: *See—*
Onitsuka, Shigenori; Ichiki, Masayoshi; Inazumi, Chikashi; Watanabe, Takanobu; Fukuju, Atsushi; Akiyama, Masaki; Sairyo, Yuki; and Kobayashi, Hidetsugu, 5,612,276, Cl. 502-415.000.

Industrial Research Limited: *See—*
Vaughan, Rodney G.; Scott, Neil L.; and Jenness, Colin A., 5,612,707, Cl. 343-895.000.

Industrial Technology Research Institute: *See—*
Lai, Chung-Ping; Li, Ai-Kang; and Fu, Cheng-Tsu, 5,612,100, Cl. 427-595.000.
Lee, Chung-Shing; and Lin, Yih-Long, 5,612,740, Cl. 348-345.000.
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Industrie Borla SpA: *See—*
Guala, Ernesto, 5,611,576, Cl. 285-38.000.

Ingersoll-Rand Company: *See—*
Haugen, Ronald L., 5,611,664, Cl. 415-146.000.
Herbstritt, Dale R., 5,611,177, Cl. 52-111.000.

Ingram, Charles J.: *See—*
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Ingram, Keith W.; and Crowley, Daniel J., Jr., to Owens-Illinois Closure Inc. Tamper indicating package. 5,611,446, Cl. 215-252.000.

Ing-Simmons, Nicholas K.: *See—*
Gove, Robert J.; Balmer, Keith; Ing-Simmons, Nicholas K.; and Guttag, Karl M., 5,613,146, Cl. 395-800.000.

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Innovative Enterprises International Corporation: *See—*
Letzt, Alan M.; and Spandorfer, Lester M., 5,612,869, Cl. 395-203.000.

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Colnot, Cedric, 5,613,159, Cl. 395-831.000.

Ino, Yukihiro; Kishimoto, Youichi; Iochi, Atsushi; and Shoji, Makoto, to Nissan Motor Co., Ltd. Engine cooling fan diagnosis device. 5,612,672, Cl. 340-449.000.

Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, to Fuji Xerox Co., Ltd. Electrostatic charge developing toner composition and image-forming process. 5,612,160, Cl. 430-110.000.

Inoue, Satoshi: *See—*
Sato, Shuji; Suzuki, Chiaki; Torigoe, Tetsu; Inoue, Satoshi; and Fujii, Takahisa, 5,612,159, Cl. 430-110.000.

Inoue, Tetsuya; and Hagi, Yoshiaki, to Sumitomo Electric Industries, Ltd. Compound semiconductor crystal. 5,612,014, Cl. 423-417.000.

Inoue, Tomoyuki: *See—*
Satou, Kazuo; Inoue, Tomoyuki; and Hino, Yoshiaki, 5,611,592, Cl. 296-203.000.

Inoue, Tsuyoshi; Nakamachi, Keiichi; Nakamura, Takeshi; and Okada, Kenji, to Sony Corporation. Liquid boundary detecting method and apparatus and liquid removing method and apparatus. 5,612,227, Cl. 436-180.000.

Inoue, Tsuyoshi: *See—*
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.

Inoue, Yoshiisa: *See—*
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Institut National de la Sante et de la Recherche Medicale (INSERM): *See—*
Krief, Patricia; Azzarone, Bruno; Augery-Bourget, Yvette; Boucheix, Claude; and Jasmin, Claude, 5,612,195, Cl. 435-69.500.

Institute For Chemical Science and Technology, The: *See—*
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Institute of Dental Surgery: *See—*
Wilson, Michael; and Harvey, Wilson, 5,611,793, Cl. 606-2.000.

Instrumentarium Corp.: *See—*
Kankkunen, Jukka; and Heinonen, Erkki, 5,611,375, Cl. 141-18.000.
Meriläinen, Pekka, 5,611,348, Cl. 128-719.000.

Integrated Solutions, Inc.: *See—*
Bachman, Stephen A.; and Tepolt, Gary B., 5,611,886, Cl. 156-345.000.

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Savanyo, John; and Shah, Saumil S., 5,612,866, Cl. 364-191.000.

Intel Corporation: *See—*
Almulla, Waleed, 5,612,892, Cl. 364-489.000.
Cadien, Kenneth C.; and Yau, Leopoldo D., 5,611,943, Cl. 216-88.000.
Clift, David W.; Arnold, James M.; Colwell, Robert P.; and Glew, Andrew F., 5,613,132, Cl. 395-393.000.
Glew, Andrew F.; Akkary, Haitham; and Hinton, Glenn J., 5,613,083, Cl. 395-417.000.
Huckins, Jeff, 5,612,898, Cl. 364-514.00R.
Morrow, Warren R., 5,612,909, Cl. 364-745.000.
Mu, Xiao-Chun; Sivaram, Srinivasan; Gardner, Donald S.; and Fraser, David B., 5,612,254, Cl. 437-195.000.
Nair, N. Gopolan; and Brun, Zdenek, 5,612,991, Cl. 379-59.000.
Neduva, Alex, 5,612,916, Cl. 365-189.040.
Nizar, P. K.; and Carson, David, 5,613,128, Cl. 395-739.000.
Rankin, Linda J.; Bonasera, Joseph; Borkar, Nitin Y.; Ernst, Linda C.; Kapur, Suvansh K.; Manseau, Daniel A.; and Verboorn, Frank, 5,613,071, Cl. 395-200.160.
Timko, Mark A., 5,612,911, Cl. 364-768.000.
Wade, Nicholas; Lalich, Mark; and Young, Bruce, 5,613,075, Cl. 395-287.000.

Intellitech International, Inc.: *See—*
Jennings, Charles R.; and Oakleaf, Sidney C., 5,612,675, Cl. 340-573.000.

Inter Control Hermann Kohler Elektrik Gmbh & Co. KG: *See—*
Hollweck, Walter, 5,612,663, Cl. 337-407.000.

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Ahmadi, Hamid; Bar-Noy, Amotz; Kessler, Ilan; and Krishna, Arvind, 5,613,198, Cl. 455-33.100.
Arimilli, Ravi K.; Dodson, John S.; Guthrie, Guy L.; and Lewis, Jerry D., 5,613,153, Cl. 395-821.000.
Aulet, Nancy R.; Hussain, Muhammed I.; Hutt, George W.; Bogdan, David C.; Pearl, Donald L.; and Pribula, David T., 5,612,809, Cl. 359-180.000.
Baldiga, Frank P.; and Meyer, Christopher, 5,613,155, Cl. 395-825.000.
Bantz, David F.; and Narasimhan, Anand, 5,613,206, Cl. 455-34.100.
Barnes, Michael S.; Keller, John H.; Logan, Joseph S.; Tompkins, Robert E.; and Westerfield, Robert P., Jr., 5,612,851, Cl. 361-234.000.
Bertram, Randal L.; and Combs, James L., 5,613,137, Cl. 395-800.000.
Bezviner, Dawn E.; Conner, Michael H.; Greene, Kevin J.; Danforth, Scott; Shepler, Erin E.; and Smith, Marc G., 5,613,148, Cl. 395-800.000.
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Brewer, Michael A.; Chliwnyj, Alex; Christiansen, Dale A.; Wolf, James W.; and Wright, Will A., 5,613,082, Cl. 395-404.000.
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Burke, William T.; Griffin, Timothy A.; and Peake, Jonathan W., 5,613,154, Cl. 395-821.000.
Cabezas, Rafael G.; and Foster, Richard A., 5,612,961, Cl. 371-20.400.
Caravel, Muriel D., 5,613,057, Cl. 395-806.000.
Chapple-Sokol, Jonathan D.; Subbanna, Seshadri; and Tejwani, Manu J., 5,612,255, Cl. 437-203.000.
Chin, Henry; and Totolos, George, Jr., 5,613,087, Cl. 395-481.000.
Craft, David J.; and Strohacker, Oscar C., 5,612,693, Cl. 341-51.000.
Dang, Chi-Hung; and Dang, Chi-Thanh, 5,612,934, Cl. 369-36.000.
Davidson, Joel R.; Li, Hehching H.; and Liu, Franklin M., 5,613,157, Cl. 395-828.000.
DiAngelo, Michael F.; and O'Neil, Gerald F., 5,613,164, Cl. 395-884.000.
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Gallo, Frank D.; Hausler, Hartmut E.; Hu, Paul Y.-F.; Kartchner, Kevin K.; Rockwell, Scott M.; Roffinoli, Stephen J.; and Simkins, James C., 5,612,831, Cl. 360-71.000.
Goldring, Robert D., 5,613,113, Cl. 395-618.000.
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Gallin, Miles A.; Salamone, Joseph C.; and Israel, Stanley C., 5,612,027, Cl. 424-78.040.

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Ito, Nobuei: *See*—
Katayama, Masayuki; Kato, Akira; Ito, Nobuei; and Hattori, Tadashi, 5,612,591, Cl. 313-503.000.

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Itoh, Isamu: *See*—
Hiraoka, Sinji; Matsumoto, Yoshihisa; Itoh, Isamu; and Terashima, Shigeo, 5,612,840, Cl. 360-104.000.

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Ogino, Masanori; Iwahara, Yoshiaki; Kuroda, Shoji; Sakamoto, Shuichi; itoh, Takashi; and Kamiya, Makoto, 5,611,611, Cl. 353-74.000.

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Matsuura, Takashi; Tanaka, Saburo; and Itozaki, Hideo, 5,612,545, Cl. 257-31.000.
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ITT Automotive Europe GmbH: *See*—
Feigel, Hans-Joerg, 5,611,413, Cl. 188-299.000.

Ivankoe, Eugene M.: *See*—
Sniezek, Frank; Ivankoe, Eugene M.; and Ruffini, Steve, 5,611,424, Cl. 206-3.000.

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Iwama, Ryouichi, to Fujitsu Limited. Image forming device having an image-holding body which rolls on a recording sheet about an axis parallel to a conveying direction of the recording sheet. 5,612,767, Cl. 399-98.000.

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Narai, Hiroshi; Kadokawa, Satoshi; Shimazaki, Yasuyuki; and Iwasa, Hiroshi, 5,611,250, Cl. 74-569.000.

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Gohshi, Seiichi; Izumi, Yoshinori; Naemura, Masahide; and Yamaguchi, Kouichi, 5,612,748, Cl. 348-424.000.

Izuo, Takashi, to Toyota Jidosha Kabushiki Kaisha. Valve operating apparatus of internal combustion engine. 5,611,303, Cl. 123-90.110.

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Heim, John P.; and Carmichael, John, 5,611,420, Cl. 198-371.200.

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Hunt, James R., 5,613,221, Cl. 455-89.000.

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Jaatinen, Pauli: *See*—
Manninen, Taisto; Ripatti, Markku; and Jaatinen, Pauli, 5,611,571, Cl. 280-819.000.

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Jacob, Werner; Niederhüfner, Manfred; and Heyne, Jürgen E., to Löhr & Bromkamp GmbH. Driveshaft with plunging part. 5,611,733, Cl. 464-140.000.

Jacob, William L., to Busch Co. Strip cooling, heating, wiping or drying apparatus and associated method. 5,611,151, Cl. 34-395.000.

Jacobs, Antonius A. C., to Akzo Nobel NV. Vaccine against *streptococcus suis* infection. 5,612,042, Cl. 424-237.100.

Jacobs, Merrit N.: *See*—

Shaw, James D.; and Jacobs, Merrit N., 5,611,996, Cl. 422-63.000.

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Howells, Malcolm S.; and Jacobsen, Chris, 5,612,986, Cl. 378-34.000.

Jacobson, Gary S.: *See—*
Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,612,888, Cl. 364-478.090.

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Jacques, Alan M., to Sunward Technologies, Inc. Contact recording slider with active contact surfaces. 5,612,839, Cl. 360-103.000.

Jae Young, Choi, to Mando Machinery Corporation. In-line valve for a master cylinder. 5,611,367, Cl. 137-505.250.

Jain, Sudhir: *See—*
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Jakubenas, Kevin J.: *See—*
Tompkins, James V.; Birmingham, Britton R.; Jakubenas, Kevin J.; and Marcus, Harris L., 5,611,883, Cl. 156-272.800.

James, David M.: *See—*
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Halleck, Michael E.; and James, Donald N., 5,611,349, Cl. 128-721.000.

James, Edmund H., III: *See—*
Francis, Monty L.; James, Edmund H., III; and Spitz, Donald N., 5,612,722, Cl. 347-33.000.

James, Maurice L.: *See—*
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Jaminet, Jerome F.; Piech, Zbigniew; Guliuzza, Frank, Jr.; McHugh, Thomas M.; Ahigian, Edward E.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; Kulak, Richard E.; and Barrett, David W., to Otis Elevator Company. Linear induction motor door drive assembly for elevators. 5,612,518, Cl. 187-316.000.

Jane, Rodney; and Longan, John, to Duracraft Corporatiion. Combination evaporative/warm mist humidifier. 5,611,967, Cl. 261-142.000.

Jang, Jaeduk; and Kim, Taekyun, to Hyundai Motor Company. Electronic and hydraulic control system of a 4-speed automatic transmission for automotive vehicle and method for controlling hydraulic pressure. 5,611,749, Cl. 477-65.000.

Jang, Kwang K., to Samsung Electro-Mechanics Co., Ltd. Skin perforating device for transdermal medication. 5,611,806, Cl. 606-167.000.

Jang, Siang-Guey. Multi-purpose mountain climbing tool. 5,611,615, Cl. 362-119.000.

Janik, Wayne M.: *See—*
Guimarin, David C.; and Janik, Wayne M., 5,612,606, Cl. 320-2.000.

Janonis, Vytautas F.; Massatti, Roland K.; and Novitskey, Regis E., to Northrop Grumman Corporation. Uninterruptible power system. 5,612,580, Cl. 307-64.000.

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Resch, Dennis E.; and Janssen, David C., 5,611,225, Cl. 70-422.000.

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Cauwenbergh, Gerard F. M. J.; and De Brabander, Marc J., 5,612,347, Cl. 514-259.000.
Mesens, Jean L.; and Peeters, Jozef, 5,612,346, Cl. 514-258.000.
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymackers, Alfons H. M., 5,612,354, Cl. 514-314.000.

Janssens, Jacques; Chevigne, Roland; and Louis, Philippe, to Analis S. A. Capillary electrophoresis method using initialized capillary and polyanion-containing buffer and chemical kit therefor. 5,611,903, Cl. 204-454.000.

Japan Energy Corporation: *See—*
Saeki, Hisashi; and Miura, Akira, 5,612,204, Cl. 435-132.000.

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Saito, Satoshi; Fujita, Yuko; and Tokunaga, Akio, 5,611,779, Cl. 604-156.000.

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Mizushima, Shigeaki; Watanabe, Noriko; Iwagoe, Hiroko; Makino, Seiji; Kawamura, Sigeo; Tsuda, Yusuke; and Bessho, Nobuo, 5,612,450, Cl. 528-353.000.

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Ogura, Shinji; and Hasegawa, Tatsuya, 5,611,359, Cl. 131-88.000.

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Waddell, Jennifer E.; Sierakowski, Michael J.; Savu, Patricia M.; Moore, George G. I.; Jariwala, Chetan P.; and Guerra, Miguel A., 5,612,431, Cl. 526-243.000.

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Dupuy, Pierre; Cruchant, Laurent; Jarvis, André; and Poirault, Jean-Philippe, 5,612,992, Cl. 379-59.000.

Jasmin, Claude: *See—*
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Si, Y. Calvin; Duck, Gary S.; Ip, Joseph; and Teitelbaum, Neil, 5,612,824, Cl. 359-652.000.

Jedwab, Jonathan; Crouch, Simon E.; and Cunningham, David G., to Hewlett-Packard Company. Encoding data. 5,612,694, Cl. 341-94.000.

Jelic, Ralph, to Verosol USA Inc. Window having a blind between two panes of glass. 5,611,381, Cl. 160-107.000.

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Henry, Sam W.; and Jensen, Myron, 5,611,241, Cl. 73-323.000.

Jensen, Robert M., to American Standard Inc. Toilet trip lever arm with integral energy absorbing member. 5,611,091, Cl. 4-405.000.

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Smolik, Nancy A.; Rusznak, Linda H.; and Jenson, Dale A., 5,611,938, Cl. 210-755.000.

Jeong, Joo H.: *See—*
Lee, Sang M.; Jeong, Joo H.; and Ahn, Chie T., 5,612,744, Cl. 348-416.000.

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König, Klaus; Schwindt, Jürgen; Mazanek, Jan; Pedain, Josef; Dietrich, Manfred; Klein, Gerhard; and Jerg, Karl-Roland, 5,612,408, Cl. 524-591.000.

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Hwang, Sung-Tai; Choi, Jong-Hyeun; Kim, Tae-Joon; Choi, Yun-Dong; and Jo, Byung-Real, 5,611,368, Cl. 137-553.000.

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Lee, Wha S.; Jo, Seong M.; Park, Chong S.; and Hong, Yong K., 5,611,932, Cl. 210-669.000.

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O'Boyle, Matthew, 5,611,807, Cl. 606-169.000.

Jofa AB: *See—*
Skottheim, Leif, 5,611,080, Cl. 2-16.000.

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John, Michael S. Method and apparatus for facilitating recovery of patients in deep coma. 5,611,350, Cl. 128-731.000.

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Shaw, James D.; and Jacobs, Merrit N., 5,611,996, Cl. 422-63.000.

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Shuler, Michael L.; Babish, John G.; Sweeney, Lisa M.; and Johnson, Brian E., 5,612,188, Cl. 435-29.000.

Johnson, Bruce C., to Creative Integration & Design, Inc. Dilator with peel force reducing structure. 5,611,333, Cl. 128-200.240.

Johnson, Dean A.; Gotta, James M.; and Horstman, Stephen A., to Eastman Kodak Company. Disc transport apparatus. 5,612,944, Cl. 369-191.000.

Johnson, Dwight N., to Hunter Industries Incorporated. Toilet flush control assembly and methods. 5,611,090, Cl. 4-345.000.

Johnson, Edward: *See—*
Marusik, C. Lee; and Johnson, Edward, 5,612,862, Cl. 363-93.000.

Johnson, James E.: *See—*
Landau, Robert V.; Johnson, James E.; and Iles, Michael V., 5,613,098, Cl. 395-500.000.

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Nguyen, My N.; and Chien, Yuan Y., 5,612,403, Cl. 524-440.000.

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Xu, David; Kapa, Prasad; Repic, Oljan; and Blacklock, Thomas J., 5,612,478, Cl. 540-474.000.

Johnson, Rick J.: *See—*
Dosmann, Andrew; and Johnson, Rick J., 5,611,999, Cl. 422-82.050.

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Hammond, William A., Jr.; Johnson, Ross E.; and Nation, George W., 5,613,073, Cl. 395-250.000.

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Lutz, James R., 5,611,644, Cl. 405-186.000.

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Esheiman, Lyn M.; Madigan, Paul J.; Deaton, Joseph C.; Dumont, David A.; Antoniades, Michael G.; and Johnston, Sharon G., 5,612,175, Cl. 430-567.000.

Joly, Jean C., to Whitaker Corporation, The. Miniature anti-fretting receptacle terminal. 5,611,717, Cl. 439-857.000.

Jon Snyder, Inc.: *See—*
Snyder, Douglas D.; and Lipovsky, Kevin, 5,612,670, Cl. 340-429.000.

Jones, John C.: *See—*
McDonnell, Damien G.; Jones, John C.; and Sage, Ian C., 5,611,957, Cl. 252-299.010.

Jones, Raymond H., to Arizona Chemical Co. Ultraviolet curable epoxidized alkyds. 5,612,445, Cl. 528-295.500.

Jones, Richard H. Construction system. 5,611,187, Cl. 52-646.000.

Jones, Thaddeus M. Temperature sensor probe and sensor detection circuit. 5,611,952, Cl. 219-505.000.

Jordan, Dicky R. Flexible athletic training perimeter system. 5,611,760, Cl. 482-83.000.

Joshi, Madhukar L.: *See—*
Guhman, Glenn F.; and Joshi, Madhukar L., 5,611,898, Cl. 204-262.000.

Joy, James A.: *See—*
Davis, James G.; Deneve, Jeffrey A.; and Joy, James A., 5,611,656, Cl. 414-694.000.

Joyce, Thomas P.: *See—*
Ogden, John E.; Abrahamson, Kent D.; Bryant, Peter L.; Joyce, Thomas P.; and Ziegler, John S., 5,611,458, Cl. 222-1.000.

Judd, Ian D.: *See—*
Szatkowski, Michael J.; and Judd, Ian D., 5,613,141, Cl. 395-800.000.

Judd, J. Stephen; and Pearlmutter, Barak P., to Siemens Corporate Research, Inc. Low-profile horizon-sampling light sensor. 5,612,533, Cl. 250-208.100.

Juengert, Robert P.; and Weingart, Edward. Antenna support structure. 5,611,176, Cl. 52-40.000.

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Brüstle, Klaus; Netzer, Emanuel; and Huber, Edgar, 5,611,637, Cl. 402-297.000.
Röck, Erich; and Dubach, Fredi, 5,611,112, Cl. 16-237.000.
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Jun, Young K., to LG Semicon Co., Ltd. Semiconductor device with an insulation groove. 5,612,572, Cl. 257-758.000.

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Jung, Pete J.: *See—*
Brannon, Craig M.; Peterson, Doug R.; and Jung, Pete J., 5,612,828, Cl. 360-46.000.

Kabenjian, Gregory V., to AST Research, Inc. Method and apparatus for performing efficient direct memory access data transfers. 5,613,162, Cl. 395-842.000.

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Takemoto, Takatoshi; Kawashima, Kazunari; and Handa, Shigeru, 5,611,534, Cl. 273-121.00B.

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Kobayashi, Kenji, 5,611,742, Cl. 473-345.000.

Kabushiki Kaisha Fuji Iryoki: *See—*
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Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; Mizuno, Yoshiyuki; and Koga, Shinichi, 5,612,650, Cl. 332-100.000.

Kabushiki Kaisha TOPCON: *See—*
Ohtomo, Fumio; Hayashi, Kunihiro; Kodaira, Jun-ichi; Nishizawa, Hiroyuki; Yoshino, Ken-ichiro; Hirano, Satoshi; and Ogawa, Yohei, 5,612,781, Cl. 356-152.200.

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Azadegan, Faramarz; Unno, Hiroaki; Mimura, Hideki; and Kitamura, Tetsuya, 5,612,900, Cl. 364-514.00R.
Iwasaki, Hiroshi, 5,612,532, Cl. 235-492.000.
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Maki, Katsuhisa; Ishii, Takaaki; and Satou, Masaki, 5,613,227, Cl. 455-127.000.
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Mitsui, Tadashi; and Okumura, Katsuya, 5,611,942, Cl. 216-67.000.
Miyamoto, Junichi, 5,612,924, Cl. 365-233.500.
Motoyama, Masahiko, 5,612,952, Cl. 370-412.000.
Nagamori, Akira; Konno, Satoru; Horino, Hirohumi; and Kobayashi, Yoichiro, 5,611,667, Cl. 416-178.000.
Okutomo, Takayuki; and Ikemizu, Morihiko, 5,612,259, Cl. 437-209.000.
Rao, Gururaj; and Kanno, Hiroki, 5,613,017, Cl. 382-174.000.
Saito, Yasuyuki, 5,612,245, Cl. 437-57.000.
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Satou, Michio; Yamanobe, Takasi; Kawai, Mituo; Komatu, Tooru; Shizu, Hiromi; and Yagi, Noriaki, 5,612,571, Cl. 257-757.000.
Shimokawa, Yoshiyuki, 5,613,143, Cl. 395-800.000.
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Yamada, Masayuki; and Tsuda, Yoichi, 5,611,873, Cl. 148-335.000.

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Kabushiki Kaisya Advance: *See—*
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Kachich, Albert J.: *See—*
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Kacian, Daniel L.: *See—*
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Kadokawa, Satoshi: *See—*
Narai, Hiroshi; Kadokawa, Satoshi; Shimazaki, Yasuyuki; and Iwasa, Hiroshi, 5,611,250, Cl. 74-569.000.

Kadwell, Brian J., to Robertshaw Controls Company. Control device and methods of making and operating the same. 5,612,848, Cl. 361-160.000.

Kageyama, Hironobu, to Fujitsu Limited. Power supply apparatus with a back-up power unit. 5,612,581, Cl. 307-64.000.

Kaiju, Yoshihiko: *See—*
Shimura, Takaki; Iida, Atsuo; Kaiju, Yoshihiko; Nakayasu, Hirofumi; and Hiyane, Masao, 5,612,723, Cl. 347-46.000.

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Kajihara, Mahito: *See—*
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Kajihara, Takehiro: *See—*
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Kakalec, Robert J.; and Schmid, Keith C., to Lucent Technologies Inc. Battery polarity switch for generating low frequency voltage waveforms. 5,612,859, Cl. 363-34.000.

Kaken Pharmaceutical Co., Ltd.: *See—*
Hirai, Kenji; Matsukawa, Tomoko; Yano, Tomoyuki; Masuda, Katsuyuki; Yoshii, Tomoko; Mouri, Takehito; Ugai, Sadayuki; and Yamada, Osamu, 5,612,289, Cl. 504-270.000.

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Kalwitz, George A.: *See—*
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Kamachi, Kenichiro: *See*—
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Kamada, Shinya; and Marusue, Toshihisa, to Madza Motor Corporation. Hydraulic control system for lowering the duty ratio when the pressure is above a preset pressure as a function of temperature. 5,611,752, Cl. 477-98.000.
Kamada, Takeshi: *See*—
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Kamakura, Tamiji; Tanaka, Noriyoshi; Fukushima, Aritosbi; Tatsumi, Yukio; and Morita, Kazuhisa, to Asahi Denka Kogyo K.K. Powdery molybdenum oxysulfide dithiocarbamate composition, a process for producing same, and a grease composition containing the composition. 5,612,297, Cl. 508-363.000.
Kamami, Yves-Victor. Handpiece for a device for performing laser surgery of the nose. 5,611,796, Cl. 606-15.000.
Kambara, Shigeru: *See*—
Yoshimoto, Hisaya; Kambara, Shigeru; and Matsumoto, Ikuo, 5,611,129, Cl. 29-25.350.
Kamei, Takahiro: *See*—
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Kamiguchi, Masao; and Neko, Noriaki, to Fanuc, Ltd. Molding condition setting method for an injection molding machine. 5,611,975, Cl. 264-40.100.
Kaminsky, Stephen T.: *See*—
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Kaminuma, Toshihiko; Iida, Toshii; and Tajima, Masahiro, to Shiseido Company Ltd. Process for purification of polypeptide using a buchner funnel. 5,612,454, Cl. 530-344.000.
Kamisango, Keiichi: *See*—
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Kamiya, Makoto: *See*—
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Kamizawa, Koh: *See*—
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Kanami, Shuji, to NEC Corporation. Linear transmitter for use in combination with radio communication systems. 5,613,226, Cl. 455-115.000.
Kanari, Issei; and Awataguchi, Munehiro, to Unisia Jecs Corporation. Piston ring mount structure. 5,611,260, Cl. 92-248.000.
Kanda, Yoichi; Arabori, Hideo; Arahira, Masato; and Sato, Tsutomu, to Kureha Kagaku Kogyo K.K. N-(substituted amino) pyrrole derivatives preparation process thereof, and herbicidal compositions. 5,612,287, Cl. 504-215.000.
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Kanekawa, Nobuyasu; Suzuki, Shoji; Sato, Yoshimichi; and Ohtsuji, Shinya, to Hitachi, Ltd. Electrical device with input and output ports for changing the multiplex number of transmittal buses and system using the electrical device. 5,612,946, Cl. 370-216.000.
Kaneko, Tadashi: *See*—
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Kang, Jong K.; Jeong, Sang H.; Lee, Kam K.; Kang, Tae W.; and Yun, Jeom Y., to LG Electronics Inc. Fin for heat exchanger. 5,611,395, Cl. 165-151.000.
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Kang, Sue-May. Device for helping a disabled person use chopsticks. 5,611,586, Cl. 294-99.200.
Kang, Tae W.: *See*—
Kang, Jong K.; Jeong, Sang H.; Lee, Kam K.; Kang, Tae W.; and Yun, Jeom Y., 5,611,395, Cl. 165-151.000.
Kangasniemi, Ilkka: *See*—
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Kankkunen, Jukka; and Heinonen, Erkki, to Instrumentarium Corp. Arrangement for overfill protection of a container for anaesthetic liquid. 5,611,375, Cl. 141-18.000.
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Kano, Kimio: *See*—
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Kano, Masaya: *See*—
Simizu, Terumasa; Tanoue, Mutsurou; Kano, Masaya; Ogino, Mitsugu; and Sato, Jun, 5,612,832, Cl. 360-73.040.
Kano, Takashi; and Rai, Seizo, to Mect Corporation. Lid for container. 5,611,445, Cl. 215-249.000.
Kansai Paint Co., Ltd.: *See*—
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.
Kanzaki, Hisao: *See*—
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Kao Corporation: *See*—
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Kaplan, Ronald M.; and Kay, Martin, to Xerox Corporation. Stored string data with element data units and pointer data units in distinct subranges of values. 5,613,145, Cl. 395-800.000.
Kapsalis, Andreas A.: *See*—
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Kapur, Suvansh K.: *See*—
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Kaye, John. Convertible workout bench-coffee table. 5,611,762, Cl. 482-104.000.
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Kensrue, Milo M., to Bagel Trap, Inc. Tool for cutting bread and bagels. 5,611,266, Cl. 99-537.000.

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Nielsen, Steven J.; Chang, Yihua; and Rentmeester, Tammy J., 5,611,859, Cl. 118-67.000.
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Iguchi, Yasushi; Nogami, Sumitaka; and Kitagawa, Kyoko, 5,612,158, Cl. 430-58.000.

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Lanza, Gregory M.; Onyuksel, M. Hayat; Klegerman, Melvin E.; Vonesh, Michael J.; and McPherson, David L., 5,612,057, Cl. 424-450.000.

Klein, Gerhard: *See*—
König, Klaus; Schwindt, Jürgen; Mazanek, Jan; Pedain, Josef; Dietrich, Manfred; Klein, Gerhard; and Jerg, Karl-Roland, 5,612,408, Cl. 524-591.000.

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Zaguroli, James, Jr., 5,611,522, Cl. 254-331.000.
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Ko, Uming, to Texas Instruments Incorporated. Short circuit power optimization for CMOS circuits. 5,612,636, Cl. 326-83.000.
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Rasovich, Ivan, 5,611,213, Cl. 62-374.000.
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Christ, William J.; Hawkins, Lynn D.; Kawata, Tsutomu; Rossignol, Daniel P.; Kobayashi, Seiichi; and Asano, Osamu, 5,612,476, Cl. 536-117.000.
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Kobayashi, Yoichiro: *See*—
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Kobayashi, Yutaka: *See*—
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Koch, Kevin, to Pfizer Inc. Fluorosugar derivatives of macrolides. 5,612,316, Cl. 514-25.000.
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Shay, Michael J.; and Koether, Mark D., 5,612,637, Cl. 326-86.000.
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Kohlpaintner, Christian: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,612,428, Cl. 526-127.000.
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Haskell, Barin G.; Kollarits, Richard V.; and Puri, Atul, 5,612,735, Cl. 348-43.000.
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Kondo, Masao; Ito, Shinichi; and Nakazono, Hiroki, to Yamaha Corporation. Automatic accompaniment information producing apparatus. 5,612,501, Cl. 84-637.000.
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Kondo, Toshihiko; Tanaka, Kazuo; and Yasuda, Hirofumi, to Seiko Epson Corporation. Semiconductor device having an inter-layer insulating film disposed between two wiring layers. 5,612,557, Cl. 257-288.000.
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Konica Corporation: *See*—
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Yu, Keol W.; and Chung, Tae S., 5,612,951, Cl. 370-395.000.
Koreeda, Hiroyuki: *See*—
Ito, Jun; Kumai, Hiroyuki; Matsuda, Yasumasa; Nakajima, Akira; Inoue, Yoshiisa; Koreeda, Hiroyuki; and Oheda, Shigeto, 5,612,720, Cl. 345-179.000.
Koriakin, Yurii N.: *See*—
Smirnov, Aleksandr V.; Orlov, Oleg G.; Golipad, Pyotr N.; and Koriakin, Yurii N., 5,612,130, Cl. 428-323.000.
Korsmeyer, Richard W.: *See*—
Cardinal, John R.; Herbig, Scott M.; Korsmeyer, Richard W.; Lo, Jeelin; Smith, Kelly L.; and Thombre, Avinash G., 5,612,059, Cl. 424-495.000.
Korte, Nic: *See*—
Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, 5,611,936, Cl. 210-747.000.
Kosco, John C., to Keystone Investment Corporation. High density ferrous power metal alloy. 5,613,180, Cl. 419-5.000.
Koshi, Yutaka: *See*—
Suzuki, Kazuhiro; Koshi, Yutaka; Kunitake, Setsu; Kimura, Shunichi; and Kamizawa, Koh, 5,613,015, Cl. 382-173.000.
Koskan, Larry P.: *See*—
Ross, Robert J.; Low, Kim C.; Koskan, Larry P.; and Wheeler, Alfred P., 5,612,384, Cl. 521-64.000.
Kosman, Wilhelmus J. M., to Beheermaatschappij De Boer Nijmegeo B.V. Apparatus for manufacturing green bricks for the brick manufacturing industry. 5,612,064, Cl. 425-255.000.
Kosuge, Katsuhiro: *See*—
Sugihara, Kazuyuki; and Kosuge, Katsuhiro, 5,612,769, Cl. 399-119.000.
Kotek, Richard; and Matthies, Hans-Georg, to BASF Corporation. Saxony carpets having fibers formed of modified polyamide blends. 5,612,112, Cl. 428-92.000.
Kotzur, Joachim, to MAN Gutehoffnungshütte Aktiengesellschaft. Geared multishaft turbocompressor and geared multishaft radial expander. 5,611,663, Cl. 415-122.100.
Kougo, Naoki: *See*—
Nagata, Hirotoshi; Shiroishi, Masaru; Saito, Tsutomu; Tateyama, Takashi; Sakuma, Mithuru; Kougo, Naoki; Murata, Susumu; Kaizu, Ryosuke; and Miyamoto, Nobuhide, 5,613,026, Cl. 385-94.000.
Kovey, Stephen R.: *See*—
Saadi, Robert E.; Creager, Brian N.; Becker, Allen R.; and Kovey, Stephen R., 5,611,517, Cl. 251-129.040.
Kowalczyk, Thomas M.: *See*—
Jaminet, Jerome F.; Piech, Zbigniew; Guliuzza, Frank, Jr.; McHugh, Thomas M.; Ahigian, Edward E.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; Kulak, Richard E.; and Barrett, David W., 5,612,518, Cl. 187-316.000.
Kozaki, Shuichi: *See*—
Yamada, Nobuaki; Kondo, Masahiko; Okamoto, Masayuki; and Kozaki, Shuichi, 5,612,803, Cl. 349-188.000.
Kozaru, Kunihiko; and Fujita, Koreaki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device including improved redundancy circuit. 5,612,917, Cl. 365-200.000.
Kozuka, Masayuki: *See*—
Yamauchi, Kazuhiko; Kozuka, Masayuki; Kobayashi, Ryousuke; and Donnelly, Stuart, 5,613,109, Cl. 395-615.000.
Krambeck, Dagoberto; and Watson, Monte G., to AlliedSignal Inc. Active tension reducer for the seat belt of a safety restraint system. 5,611,497, Cl. 242-375.100.
Kramer, Andreas: *See*—
Braig, Adalbert; Frey, Markus; and Kramer, Andreas, 5,612,093, Cl. 427-386.000.
Krampe, Josef. Plier-shaped tool to drill a partially free end region of a stranded vein of an insulated conductor. 5,611,138, Cl. 29-564.400.
Kraska, Marvin P.: *See*—
Trumpy, David K.; and Kraska, Marvin P., 5,612,667, Cl. 340-425.500.
Kraslavsky, Andrew J.; Russell, William C.; Kalwitz, George A.; Wadsworth, Robert D.; and Barrett, Lorraine F., to Canon Kabushiki Kaisha. In an interactive network board, method and apparatus for placing a network peripheral in a default configuration. 5,613,160, Cl. 395-836.000.
Kraul, Douglas R.: *See*—
DeLuca, Michael J.; Smoot, George W.; and Kraul, Douglas R., 5,612,682, Cl. 340-825.340.
Kraus, Werner; Vernaleken, Thomas; Schick, Wolfgang; and Roth, Peter M., to Hoechst Aktiengesellschaft. Process for separating out hydrogen chloride. 5,611,840, Cl. 95-41.000.
Krause, Edward A.; Shen, Paul; and Tom, Adam S., to Imedia Corporation. Method and apparatus for encoding and formatting data representing a video program to provide multiple overlapping presentations of the video program. 5,612,742, Cl. 348-385.000.
Kreckel, Douglas A.: *See*—
Denton, Gary A.; Kreckel, Douglas A.; and Sawicki, Paul F., 5,613,174, Cl. 399-98.000.
Kreitenberg, Arthur. Earthquake activated safety latch. 5,611,579, Cl. 292-130.000.
Kreuer, Karl-Dieter: *See*—
Klier, Lothar; Gross, Thomas; Kreuer, Karl-Dieter; and Symannek, Achim, 5,611,976, Cl. 264-45.300.
Krief, Patricia; Azzarone, Bruno; Augery-Bourget, Yvette; Boucheix, Claude; and Jasmin, Claude, to Institut National de la Sante et de la Recherche Medicale (INSERM). Recombinant production of a human interferon (IFN)-gamma antagonist cytokine. 5,612,195, Cl. 435-69.500.
Krimpenfort, Paul: *See*—
Kay, Robert M.; Berns, Anton; Krimpenfort, Paul; Pieper, Frank; and Strijker, Rein, 5,612,205, Cl. 435-172.300.
Krishna, Arvind: *See*—
Ahmadi, Hamid; Bar-Noy, Amotz; Kessler, Ilan; and Krishna, Arvind, 5,613,198, Cl. 455-33.100.
Krishnan, Rajagopallan: *See*—
Sackier, Jonathan M.; Wood, Christopher B.; Krishnan, Rajagopallan; Wiggington, Gordon R.; and Butler, Douglas Mitchel H., 5,612,028, Cl. 424-93.700.
Krivec, Bert, to Snap-on Technologies, Inc. Wire flex pivot. 5,611,714, Cl. 439-759.000.
Krohn, Martin: *See*—
Bauer, Ludwig; Semler, Jürgen; Krohn, Martin; and Schlitzer, Franz, 5,611,372, Cl. 137-884.000.
Krummheuer, Wolf R.; and Siejak, Volker, to Akzo Nobel NV. Fabrics of high thermal stability. 5,612,124, Cl. 442-181.000.
Kruse, Werner: *See*—
Nell, Joachim; Fritzsching, Torsten; and Kruse, Werner, 5,611,606, Cl. 303-155.000.
KSP Inc.: *See*—
Sasaki, Nobuyoshi; Yokokawa, Tetsuya; Hashimoto, Yoshikazu; Ohta, Yoshiro; and Sekiguchi, Hideo, 5,611,848, Cl. 106-38.200.
Küber, Frank: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,612,428, Cl. 526-127.000.
Kuboniwa, Akio: *See*—
Komiya, Yuji; Uchiumi, Hiroyuki; Ohashi, Shintaro; and Kuboniwa, Akio, 5,612,106, Cl. 428-36.910.

Kubota, Hidemi; and Osada, Torachika, to Canon Kabushiki Kaisha. Ink container. 5,611,461, Cl. 222-105.000.
Kubota, Hiroyuki: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Kubota, Yoichi; Kawamata, Naoki; Morisada, Masahiro; Fujii, Katsuhiro; Itoh, Hiroshi; and Takeishi, Hiroaki, to Canon Kabushiki Kaisha. Device and method comprising a motor and/or a digital signal processor, means for supplying signals of a plurality of channels in serial form, or means for causing an actuator to abut an object. 5,612,602, Cl. 318-560.000.
Kucherovsky, Joseph S.: *See*—
Schleinz, Robert J.; Conrad, Daniel J.; and Kucherovsky, Joseph S., 5,612,118, Cl. 428-195.000.
Kudlacek, Donald S. Archery bow stabilizer. 5,611,325, Cl. 124-89.000.
Kueck, John D.; and Otaduy, Pedro J., to Martin Marietta Energy Systems, Inc. Method for assessing motor insulation on operating motors. 5,612,601, Cl. 318-449.000.
Kufe, Donald W.: *See*—
Weichselbaum, Ralph R.; Hallahan, Dennis E.; Sukhatme, Vikas P.; and Kufe, Donald W., 5,612,318, Cl. 514-44.000.
Kühlein, Klaus: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,612,428, Cl. 526-127.000.
Kulak, Richard E.: *See*—
Jaminet, Jerome F.; Piech, Zbigniew; Guliuzza, Frank, Jr.; McHugh, Thomas M.; Ahigian, Edward E.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; Kulak, Richard E.; and Barrett, David W., 5,612,518, Cl. 187-316.000.
Kulesza, Frank W.; and Estes, Richard H., to Epoxy Technology, Inc. Method of forming electrically conductive polymer interconnects on electrical substrates. 5,611,140, Cl. 29-832.000.
Kulp, Jack H.; and McKenney, John D., to Traffix Devices, Inc. Quick release mechanism for a display stand. 5,611,509, Cl. 248-188.700.
Kumada, Hideaki: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.
Kumagai, Katsuhiro; Ono, Tetsuya; Katoh, Akira; and Ishii, Kenichiro, to Honda Giken Kogyo Kabushiki Kaisha. Throttle valve control system for internal combustion engines. 5,611,309, Cl. 123-399.000.
Kumagai, Satoru; and Ohki, Hiroshi, to Nikon Corporation. Confocal microscope. 5,612,818, Cl. 359-385.000.
Kumai, Hiroyuki: *See*—
Ito, Jun; Kumai, Hiroyuki; Matsuda, Yasumasa; Nakajima, Akira; Inoue, Yoshiisa; Koreeda, Hiroyuki; and Oheda, Shigeto, 5,612,720, Cl. 345-179.000.
Kumakawa, Masanobu: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Kumar, C. Bala: *See*—
Nguyen, Lan V.; and Kumar, C. Bala, 5,613,125, Cl. 395-651.000.
Kumar, Nalin; and Xie, Chenggang, to Microelectronics and Computer Technology Corporation. Diode structure flat panel display. 5,612,712, Cl. 345-75.000.
Kumar, Vinod: *See*—
Dupuy, Pierre; and Kumar, Vinod, 5,613,203, Cl. 455-33.200.
Kumasawa, Tadashi: *See*—
Matsushima, Hitoshi; Kobayashi, Tohru; Kumasawa, Tadashi; Murano, Shoichi; Ishikawa, Jun; and Katayama, Jun, 5,613,066, Cl. 395-185.020.
Kumazawa, Shinichi: *See*—
Takahashi, Kuniyuki; and Kumazawa, Shinichi, 5,613,000, Cl. 380-3.000.
Kume, Nobuyuki: *See*—
Kinoshita, Shin-ichi; Watanabe, Hisayoshi; and Kume, Nobuyuki, 5,612,115, Cl. 428-141.000.
Kun, Zoltan K.; Leksell, David; Faychak, Gerald J.; and Asars, Juris A., to Westinghouse Electric Corporation. Full color TFEL edge emitter printing system. 5,612,728, Cl. 347-232.000.
Kunitake, Setsu: *See*—
Suzuki, Kazuhiro; Koshi, Yutaka; Kunitake, Setsu; Kimura, Shunichi; and Kamizawa, Koh, 5,613,015, Cl. 382-173.000.
Kunz, Erwin; and Bond, Jeffrey. Arc welding torch. 5,611,951, Cl. 219-137.620.
Kunzmann, Brendan W.; Riehle, James D.; and Markovics, James M., to Xerox Corporation. Biased roll charging apparatus having clipped AC input voltage. 5,613,173, Cl. 399-89.000.
Kurahashi, Yoichi: *See*—
Mitsui, Hiroyuki; Oya, Shiro; Nomura, Etuzo; Tagawa, Yuji; and Kurahashi, Yoichi, 5,611,293, Cl. 112-470.180.
Kuramochi, Kaoru: *See*—
Akashi, Yoshihiro; Kuramochi, Kaoru; Okamoto, Setsuo; Tsujimoto, Yasuji; and Ito, Makoto, 5,611,857, Cl. 117-217.000.
Kuramoto, Shin-ichi: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,612,766, Cl. 399-23.000.
Kurashima, Hideo: *See*—
Kato, Nobuyuki; Matsuno, Kenji; Maruhashi, Yoshitsugu; Kurashima, Hideo; Ikegami, Hiroo; Iida, Setsuko; and Takeuchi, Kimio, 5,611,987, Cl. 264-458.000.
Kurata, Kenichirou: *See*—
Takano, Kazuaki; Tanaka, Naoyuki; Shioya, Makoto; Imaide, Takuya; and Kurata, Kenichirou, 5,612,686, Cl. 340-903.000.
Kurby, Christopher N.: *See*—
Olds, Keith A.; Vatt, Gregory B.; and Kurby, Christopher N., 5,613,194, Cl. 455-12.100.
Kureha Kagaku Kogyo K.K.: *See*—
Kanda, Yoichi; Arabori, Hideo; Arahira, Masato; and Sato, Tsutomu, 5,612,287, Cl. 504-215.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Shouji, Masuhiro; Ogihara, Takeo; Katono, Hiroki; and Sakagami, Teruo, 5,611,965, Cl. 252-582.000.
Teramoto, Yoshikichi; Misawa, Tooru; and Matsunaga, Satoru, 5,612,163, Cl. 430-126.000.
Kurihara, Kazuhiko: *See*—
Kobayashi, Seizo; Nomiyama, Kazutosi; Iwanami, Yoshimu; Yoshida, Sumio; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 5,612,125, Cl. 442-170.000.
Kurihara, Tsuneo; Kusaka, Katsushige; Ichikawa, Teruo; Tanaka, Hiromi; and Higashi, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Molding apparatus for producing synthetic resin molded product. 5,612,067, Cl. 425-533.000.
Kuroda, Shigetaka; Igarashi, Hisashi; Katoh, Akira; and Ishii, Kenichiro, to Honda Giken Kogyo Kabushiki Kaisha. Driving force-calculating system and control system incorporating same for automotive vehicles. 5,611,310, Cl. 123-399.000.
Kuroda, Shoji: *See*—
Ogino, Masanori; Iwahara, Yoshiaki; Kuroda, Shoji; Sakamoto, Shuichi; Itoh, Takashi; and Kamiya, Makoto, 5,611,611, Cl. 353-74.000.
Kuroda, Toshihide: *See*—
Toshida, Youichi; Nakagawa, Kazuko; Kuroda, Toshihide; Nakayama, Kazuyuki; and Taki, Tomotsugu, 5,613,232, Cl. 455-226.400.
Kurokawa, Kenji: *See*—
Tago, Yasuo; Kurokawa, Kenji; and Ikeda, Naohiro, 5,612,120, Cl. 428-195.000.
Kursinsky, Steven D. Camera actuating archery apparatus. 5,611,324, Cl. 124-86.000.
Kurtenbach, William P.: *See*—
DeLuca, Carmine; and Kurtenbach, William P., 5,611,851, Cl. 106-415.000.
Kurz, Rainer; Ferdinand, Andreas; and Dallmann, Hermann, to Hoechst Aktiengesellschaft. Polyester raw material, and film produced therefrom. 5,612,138, Cl. 428-411.100.
Kusaka, Katsushige: *See*—
Kurihara, Tsuneo; Kusaka, Katsushige; Ichikawa, Teruo; Tanaka, Hiromi; and Higashi, Toshiyuki, 5,612,067, Cl. 425-533.000.
Kusaka, Taiki: *See*—
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.
Kusmer, Steven R.: *See*—
Altman, Dan; Rouiller, Michael W.; Stikeleather, Gregory; Evans, Michele M.; Kusmer, Steven R.; and Thompson, Michael P., 5,613,019, Cl. 382-311.000.
Kusumoto, Naoto, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device having channel boundary with uneven shape. 5,612,565, Cl. 257-401.000.
Kuwabara, Akifumi: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.
Kuwabara, Mitsuo; Yoshida, Teruaki; and Ito, Tomohiko, to Honda Giken Kogyo Kabushiki Kaisha. Resistance welding electrode. 5,611,945, Cl. 219-119.000.
Kuwae, Shinobu: *See*—
Ohda, Toyoo; Ohtani, Wataru; Ohya, Tomoshi; Kuwae, Shinobu; Tomomitsu, Kenji; Kobayashi, Kaoru; and Ohmura, Takao, 5,612,197, Cl. 435-69.600.
Kuwata, Yuri: *See*—
Kishi, Tetsuji; Okabayashi, Ichiro; Mori, Yasuhiro; Migita, Manabu; and Kuwata, Yuri, 5,613,138, Cl. 395-800.000.
Kuzara, James H.: *See*—
Kuzara, Patricia A.; Kuzara, James H.; and Kuzara, Stephen A., 5,611,607, Cl. 312-9.140.
Kuzara, Patricia A.; Kuzara, James H.; and Kuzara, Stephen A., to ELF Technologies Corporation. Electronic librarian and filing system and method. 5,611,607, Cl. 312-9.140.
Kuzara, Stephen A.: *See*—
Kuzara, Patricia A.; Kuzara, James H.; and Kuzara, Stephen A., 5,611,607, Cl. 312-9.140.
Kwatinetz, Andrew: *See*—
Moss, Ken A.; and Kwatinetz, Andrew, 5,613,131, Cl. 395-765.000.
Kwon, Oh-Kyong: *See*—

Malhi, Satwinder; Shen, Chi-Cheong; and Kwon, Oh-Kyong, 5,612,556, Cl. 257-275.000.
Kwon, Osuk Y.: *See*—
Huber, Edward D.; Williams, Rick A.; Shough, Dean M.; Kwon, Osuk Y.; and Welling, Rebecca L., 5,612,786, Cl. 356-376.000.
L&P Property Management Company: *See*—
Howard, John D., 5,611,442, Cl. 211-187.000.
La Jolla Cancer Research Foundation: *See*—
Pierschbacher, Michael D.; Lukeman, David S.; Cheng, Soan; Craig, William S.; and Tschopp, Juerg F., 5,612,311, Cl. 514-11.000.
Laapotti, Jorma: *See*—
Karvinen, Mikko; Kerttula, Reima; Laapotti, Jorma; and Pajula, Juhani, 5,611,892, Cl. 162-205.000.
Pajula, Juhani; Hipsimaki, Martti; Kivimaa, Juha; Taskinen, Pekka; Laapotti, Jorma; and Karvinen, Mikko, 5,611,893, Cl. 162-360.200.
Labaig, Jean-Jacques: *See*—
Reinhold, Klaus; Ratz, Gerd; and Labaig, Jean-Jacques, 5,611,473, Cl. 226-170.000.
Labeye, Pierre; and Ollier, Eric, to Commissariat A L'Energie Atomique. Optical device for optomechanical application. 5,612,815, Cl. 359-320.000.
Labonté , Normand: *See*—
Bélanger, Germain; Larivière, Pierre; Labonté , Normand; Archambault, Bruno; and St-Sauveur, Bruno, 5,612,117, Cl. 428-178.000.
Laboratoire L. Lafon: *See*—
Laurent, Philippe, 5,612,379, Cl. 514-618.000.
Laborie, Philippe: *See*—
Cescon, Gilles; Laborie, Philippe; Maffre, Claude; and Neillo, Marie-Odile, 5,612,687, Cl. 340-980.000.
Labun, Nicholas M.: *See*—
Pan, Shao W.; Wang, Shay-Ping T.; and Labun, Nicholas M., 5,612,899, Cl. 364-514.00R.
Lacoste, Fernand. Chipper knife babbitt removal tool. 5,611,132, Cl. 29-239.000.
Ladret, Alain: *See*—
Vaussard, Alain; Ladret, Alain; and Donche, Alain, 5,612,294, Cl. 507-110.000.
Lai, Chung-Ping; Li, Ai-Kang; and Fu, Cheng-Tsu, to Industrial Technology Research Institute. Marking of block gauges. 5,612,100, Cl. 427-595.000.
Lai, Shui T. Two dimensional scan amplifier laser. 5,612,967, Cl. 372-22.000.
Laine, Eija: *See*—
Savolainen, Martti; Syväpuro, Tarmo; and Laine, Eija, 5,611,928, Cl. 210-631.000.
Lajara, Robert J.: *See*—
Leverault, Craig M.; McCormick, Michael F., Jr.; Lajara, Robert J.; Lam, Alan W.; Ta, Peter C. D.; Stolz, Howard W.; Osborn, Jay K.; Dann, Michael S.; and Barnes, Ronald, 5,612,852, Cl. 361-687.000.
Lake, Rickie C.: *See*—
Tuttle, Mark E.; Lake, Rickie C.; Mousseau, Joe P.; and Cirino, Clay L., 5,612,513, Cl. 174-260.000.
Lake Shore Mining Company, Inc.: *See*—
Crewdson, Lawrence S.; and Shaw, Donald A., 5,611,421, Cl. 198-607.000.
Lalich, Mark: *See*—
Wade, Nicholas; Lalich, Mark; and Young, Bruce, 5,613,075, Cl. 395-287.000.
Lalos, Peter N.: *See*—
Pratt, Samuel S.; Shaffer, Dan; Davis, Tim A.; Heiple, Ashley; and Lalos, Peter N., 5,611,158, Cl. 37-468.000.
Lam, Alan W.: *See*—
Leverault, Craig M.; McCormick, Michael F., Jr.; Lajara, Robert J.; Lam, Alan W.; Ta, Peter C. D.; Stolz, Howard W.; Osborn, Jay K.; Dann, Michael S.; and Barnes, Ronald, 5,612,852, Cl. 361-687.000.
Lam, Dominic Man-Kit; and Arntzen, Charles J., to Edible Vaccines, Inc. Anti-viral vaccines expressed in plants. 5,612,487, Cl. 800-205.000.
Lam, Ken, to Atmel Corporation. Tab test device for area array interconnected chips. 5,612,514, Cl. 174-261.000.
Lam Research Corporation: *See*—
Bosch, William F.; Zhu, Helen; and Haider, Syed A., 5,611,888, Cl. 156-643.100.
Lamensdorf, Marc, to Truetech, Inc. Flameless heater and method of making same. 5,611,329, Cl. 126-263.070.
Land, Richard S.: *See*—
Ellis, Michael D.; Dunn, Stephen M.; Fellinger, Michael W.; Younglove, Fancy B.; James, David M.; Clifton, David L.; and Land, Richard S., 5,612,729, Cl. 348-2.000.
Landau, Robert V.; Johnson, James E.; and Iles, Michael V., to Digital Equipment Corporation. Testing and debugging new Y architecture code on existing X architecture system by using an environment manager to switch between direct X code execution and simulated Y code execution. 5,613,098, Cl. 395-500.000.
Landers, Robert J.: *See*—
Mahant-Shetti, Shivaling; Ovens, Kevin; Bittlestone, Clive; Martin, Robert C.; and Landers, Robert J., 5,612,632, Cl. 326-46.000.
Landini S.p.A.: *See*—
Santachiara, Dante, 5,611,242, Cl. 74-15.630.
Landwehrkamp, Hans: *See*—
Lovas, Kurt; Bahlmann, Bernd; Landwehrkamp, Hans; and Schuller, Edmund, 5,611,195, Cl. 57-264.000.
Landy, Richard, to Auto-Shade, L.L.C. Collapsible sunshade awning. 5,611,380, Cl. 160-76.000.
Lane, William H.; Learned, Daniel J.; Peterson, Randy N.; Smith, Aaron L.; and White, Scott T., to Caterpillar Inc. Series combination catalytic converter. 5,611,198, Cl. 60-299.000.
Lang, Donald J.: *See*—
Brady, James T.; Finney, Damon W.; Lang, Donald J.; Marenin, George B.; and Nowlen, David, 5,613,067, Cl. 395-200.130.
Lang, Michael F.: *See*—
Rowe, Stephen C.; Hubbell, Jeffrey A.; Herman, Stephen J.; Sun, Vae; Lang, Michael F.; Selecman, George E.; and Ahari, Frederick F., 5,612,050, Cl. 424-423.000.
Lange, Eberhard; and Haible, Jürgen, to Siemens Aktiengesellschaft. Method of simulating at least one component whose characterizing features are described by a set of pairs of values, by means of a simulator on a computer. 5,612,907, Cl. 364-578.000.
Langley, Robert W.; and Dumont, Larry J., to COBE Laboratories, Inc. Apparatus for producing blood component products. 5,611,997, Cl. 422-73.000.
Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Aktiengesellschaft. Cooled converter trunnion ring. 5,611,990, Cl. 266-241.000.
Langlois, Michel: *See*—
Andrieux, Jean; Langlois, Michel; Renard, Pierre; and Delagrange, Philippe, 5,612,368, Cl. 514-418.000.
Lankford, Lance H.: *See*—
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Komiya, Yuji; Uchiumi, Hiroyuki; Ohashi, Shintaro; and Kubouiwa, Akio, 5,612,106, Cl. 428-36.910.

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Rankin, Linda J.; Bonasera, Joseph; Borkar, Nitin Y.; Ernst, Linda C.; Kapur, Suvansh K.; Manseau, Daniel A.; and Verhoorn, Frank, 5,613,071, Cl. 395-200.160.

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Spitzer, Joseph C., 5,611,223, Cl. 70-58.000.

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Maresse, Alain; Robin, Philippe; and Romanyszyn, Didier, to Heidelberger Druckmaschinen AG; and Heidelberg Harris Inc. Device for the delivery of printed products out of a fan. 5,611,530, Cl. 271-315.000.

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Evans, David J., 5,611,255, Cl. 83-614.000.

Markham, Ronald C., to Amway Corporation. Electronic driver for water treatment system UV bulb. 5,611,918, Cl. 210-87.000.

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Kunzmann, Brendan W.; Riehle, James D.; and Markovics, James M., 5,613,173, Cl. 399-89.000.

Marley Company, The: *See*—
Small, Dorsey D.; and Aitken, Diane E., 5,611,680, Cl. 417-422.000.

Marlin, Steven D.: *See*—
Springer, Timothy A.; Rothlein, Robert; Marlin, Steven D.; and Dustin, Michael L., 5,612,216, Cl. 435-252.300.

Marotta Scientific Control, Inc.: *See*—
Reinicke, Robert H.; Cardin, Joseph M.; and Dalene, Arnold, 5,611,516, Cl. 251-77.000.

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Marshall, Jeremy; and Weekes, Stuart, to Owen Mumford Limited. Needle devices for medical use. 5,611,809, Cl. 606-181.000.

Marshall, Winston S.: *See*—
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Wilson, Howard P.; and Martin, Fonzell D. J., 5,612,576, Cl. 257-788.000.

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Eshera, Mohamed A.; and Sanders, Russell E., 5,613,014, Cl. 382-124.000.

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Bates, John B., 5,612,152, Cl. 429-152.000.
Kueck, John D.; and Otaduy, Pedro J., 5,612,601, Cl. 318-449.000.

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Mahant-Shetti, Shivaling; Ovens, Kevin; Bittlestone, Clive; Martin, Robert C.; and Landers, Robert J., 5,612,632, Cl. 326-46.000.

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Maruyama, Yukihiro: *See*—
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Masegi, Mitsuhiko: *See*—

Watanabe, Makoto; and Masegi, Mitsuhiko, 5,612,623, Cl. 324-549.000.

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Masudaya, Hideki, to Alps Electric Co., Ltd. Apparatus for searching for sensed object. 5,612,688, Cl. 340-988.000.

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Shimomura, Yoshiki; Tanigawa, Sadao; Mori, Yukihiro; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,613,047, Cl. 395-113.000.

Mataushita Electric Industrial Co., Ltd.: *See*—
Yamauchi, Kazuhiko; Kozuka, Masayuki; Kobayashi, Ryousuke; and Donnelly, Stuart, 5,613,109, Cl. 395-615.000.

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Komura, Nobuyuki; and Omata, Yuuji, 5,612,146, Cl. 428-694.00T.

Matsu, Richard L.: *See*—
Yapp, Martin G.; and Matsu, Richard L., 5,611,668, Cl. 416-189.000.

Matsubara, Tomoki: *See*—
Fujii, Masanobu; Matsubara, Tomoki; Tanaka, Mitsuru; and Sugihara, Naoki, 5,611,589, Cl. 296-64.000.

Matsuda, Hideaki: *See*—
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Matsuda, Mikio: *See*—
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Matsuda, Yasumasa: *See*—
Ito, Jun; Kumai, Hiroyuki; Matsuda, Yasumasa; Nakajima, Akira; Inoue, Yoshiisa; Koreeda, Hiroyuki; and Oheda, Shigeto, 5,612,720, Cl. 345-179.000.

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Matsui, Tsutomu, to NEC Corporation. Method and apparatus for detecting tracking error signal for optical disk using pairs of photosensors. 5,612,936, Cl. 369-44.320.

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Hirai, Kenji; Matsukawa, Tomoko; Yano, Tomoyuki; Masuda, Katsuyuki; Yoshii, Tomoko; Mouri, Takehito; Ugai, Sadayuki; and Yamada, Osamu, 5,612,289, Cl. 504-270.000.

Matsumoto, Hidenori: *See*—
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Matsumoto, Ikuo: *See*—
Yoshimoto, Hisaya; Kambara, Shigeru; and Matsumoto, Ikuo, 5,611,129, Cl. 29-25.350.

Matsumoto, Tetsurou: *See*—
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.

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Hiraoka, Sinji; Matsumoto, Yoshihisa; Itoh, Isamu; and Terashima, Shigeo, 5,612,840, Cl. 360-104.000.

Matsumura, Susumu: *See*—
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Matsunaga, Satoru: *See*—
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Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, 5,612,090, Cl. 427-255.300.

Matsuoka, Hiroshi; Kawamura, Hideo; Higashino, Akira; and Sakaguchi, Toshiaki, to Isuzu Ceramics Research Institute Co., Ltd. Diesel particulate filter apparatus. 5,611,831, Cl. 55-486.000.

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Funakoshi, Hiromasa, 5,612,554, Cl. 257-215.000.
Kimura, Tadashi; Yoshida, Yoshikazu; Mizuguchi, Shinichi; and Okazaki, Yasunao, 5,611,864, Cl. 118-723.0MR.
Kinoshita, Shin-ichi; Watanabe, Hisayoshi; and Kume, Nobuyuki, 5,612,115, Cl. 428-141.000.
Kishi, Tetsuji; Okabayashi, Ichiro; Mori, Yasuhiro; Migita, Manabu; and Kuwata, Yuri, 5,613,138, Cl. 395-800.000.
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Ogawa, Kazufumi, 5,612,387, Cl. 522-3.000.
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Torii, Hideo; Kamada, Takeshi; Hayashi, Shigenori; Takayama, Ryoichi; Hirao, Takashi; and Hartori, Masumi, 5,612,536, Cl. 250-338.300.
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Matsuta, Katsuji: *See*—
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Matsuzaki, Eiichi: *See*—
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Yoshinari, Akira; Tamaki, Hideki; Saito, Tosiaki; Kobayashi, Mitsuru; Iijima, Katsumi; Wada, Katsuo; Kano, Kimio; and Matsuzaki, Hiroyuki, 5,611,670, Cl. 416-241.00R.

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Matthews, Joseph H., III: *See*—
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Matuzaki, Tatuya: *See*—
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May, Angela R.: *See*—
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Mayer, Horst; Hamprecht, Gerhard; Westphalen, Karl-Otto; Gerber, Matthias; Kardorff, Uwe; and Walter, Helmut, to BASF Aktiengesellschaft. Herbicidal N-[pyrimidin-2-ly) aminocarbonyl]-benzenesulfonamides. 5,612,286, Cl. 504-214.000.
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Mayer, Katherine L.: *See*—
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Mazda Motor Corporation: *See*—
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McAnulty, Michael J., to ValleyLab Inc. Method and assembly of member and terminal. 5,611,709, Cl. 439-422.000.
McCarthy, Donald E. Method apparatus and cartridge for non-explosive rock fragmentation. 5,611,605, Cl. 299-13.000.
McClellan, Kelly P.; Gopalier, Parameswaran K.; and Sadeghi, Khosrow H., to Standard Microsystems Corporation. Transconductance-capacitance filter with extended control range. 5,612,648, Cl. 330-253.000.
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McClure, David C., to SGS-Thomson Microelectronics, Inc. Redundancy architecture. 5,612,918, Cl. 365-200.000.
McCollum, Gregory J.; Schimmel, Karl F.; Claar, James A.; Carney, Joseph M.; Thomas, Stephen J.; and Humbert, Leigh A., to PPG Industries, Inc. Unsaturated hydroxy diester copolymers and their use in coating compositions. 5,612,416, Cl. 525-123.000.
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McCreary, Wilma. Dispenser and method of dispensing individual sheets from continuous bulk material. 5,611,455, Cl. 221-45.000.
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Thaler, Stephen L., 5,612,099, Cl. 427-565.000.
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Hemmerich, Johann L.; and Milverton, Paul, 5,611,208, Cl. 62-55.500.

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Minerd, Timothy M.: *See*—
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Van der Goes, Wilhelmus; Bernardi, Antonella; Bosetti, Aldo; Cesti, Pietro; and Franzosi, Giuliana, 5,612,210, Cl. 435-228.000.

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Heller, Harold; Minz, Franz-Rudolf; Klipper, Reinhold M.; Mitschker, Alfred; and Hoffmann, Heiko, 5,612,383, Cl. 521-32.000.

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Tomishima, Shigeki, 5,612,920, Cl. 365-226.000.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Mizuta, Keiji; Hashimoto, Ritsuo; Takeoka, Yasuyoshi; Kishida, Akira; and Muramoto, Harumasa, 5,611,394, Cl. 165-89.000.
Takenaka, Hiroyuki; Sasashige, Hiroaki; and Miyake, Takayuki, 5,611,887, Cl. 156-472.000.

Mitsubishi Materials Corporation: *See*—
Mori, Rie; and Hijikata, Kenichi, 5,612,133, Cl. 428-336.000.

Mitsubishi Pencil Kabushiki Kaisha: *See*—

Ando, Yoichi; Nakamura, Fumitoshi; Shiraishi, Haruhito; Toda, Hajime; Suzuki, Susumu; Hirano, Koichi; and Tamano, Hisami, 5,611,279, Cl. 101-401.100.

Mitsuboshi Belting Ltd.: *See*—
Uto, Kuniharu; Fujita, Yoshihisa; and Mizuno, Takahide, 5,611,745, Cl. 474-205.000.

Mitsui, Hiroyuki; Oya, Shiro; Nomura, Etuzo; Tagawa, Yuji; and Kurahashi, Yoichi, to Brother Kogyo Kabushiki Kaisha. Sewing machine. 5,611,293, Cl. 112-470.180.

Mitsui, Jun: *See*—
Ishimitsu, Keiichi; Ohishi, Haruhito; Hatano, Renpei; Mitsui, Jun; Suzuki, Junji; Yamada, Tomio; and Takakusa, Nobuo, 5,612,358, Cl. 514-357.000.

Mitsui Mining & Smelting Co., Ltd.: *See*—
Hayashi, Takao; Kasahara, Nobuyoshi; Sato, Norihiro; and Kawaratani, Kouichi, 5,612,087, Cl. 427-226.000.

Mitsui, Tadashi; and Okumura, Katsuya, to Kabushiki Kaisha Toshiba. Method for producing tips for atomic force microscopes. 5,611,942, Cl. 216-67.000.

Miura, Akira: *See*—
Saeki, Hisashi; and Miura, Akira, 5,612,204, Cl. 435-132.000.

Miura, Chisato: *See*—
Kijima, Naoto; Shimomura, Yasuo; Miura, Chisato; Hisamune, Takayuki; Nabu, Masakazu; and Toriumi, Koichi, 5,611,959, Cl. 252-301.40R.

Miura, Michiko; and Slatkin, Daniel N., to Associated Universities, Inc. Halogenated sulfhdohydroboranes for nuclear medicine and boron neutron capture therapy. 5,612,017, Cl. 424-1.610.

Miura, Taro; Kobayashi, Makoto; and Suzuki, Kazuaki, to TDK Corporation. Method of manufacturing microwave circulator. 5,611,878, Cl. 156-89.000.

Miyagi, Katsushin, to Tokyo Electron Limited; and Tokyo Electron Tohoku Limited. Semiconductor processing apparatus and cleaning method thereof. 5,611,863, Cl. 118-723.0MP.

Miyake, Hideo: *See*—
Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, 5,612,090, Cl. 427-255.300.

Miyake, Shoji: *See*—
Ito, Akio; Ichikawa, Hiroyuki; Abe, Yoshinori; and Miyake, Shoji, 5,612,793, Cl. 358-500.000.

Miyake, Takayuki: *See*—
Takenaka, Hiroyuki; Sasashige, Hiroaki; and Miyake, Takayuki, 5,611,887, Cl. 156-472.000.

Miyamoto, Junichi, to Kabushiki Kaisha Toshiba. Semiconductor memory device using internal voltage obtained by boosting supply voltage. 5,612,924, Cl. 365-233.500.

Miyamoto, Nobuhide: *See*—
Nagata, Hirotoshi; Shiroishi, Masaru; Saito, Tsutomu; Tateyama, Takashi; Sakuma, Mithuru; Kougo, Naoki; Murata, Susumu; Kaizu, Ryosuke; and Miyamoto, Nobuhide, 5,613,026, Cl. 385-94.000.

Miyamoto, Norimasa: *See*—
Yoshimura, Hiroyuki; Nagai, Mitsuo; Hibi, Shigeki; Kikuchi, Koichi; Hishinuma, Ieharu; Nagakawa, Junichi; Asada, Makoto; Miyamoto, Norimasa; Hida, Takayuki; Ogasawara, Aichi; and Yamatsu, Isao, 5,612,356, Cl. 514-338.000.

Miyanaga, Akiharu: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,612,250, Cl. 437-101.000.

Miyano, Masateru: *See*—
Abood, Norman A.; Manning, Robert E.; and Miyano, Masateru, 5,612,355, Cl. 514-336.000.

Miyanoki, Masahiko: *See*—
Irizawa, Tadashi; Morooka, Masahiko; and Miyanoki, Masahiko, 5,612,388, Cl. 522-6.000.

Miyashita, Shigeki: *See*—
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Miyata, Hideyuki: *See*—
Ishikawa, George; Miyata, Hideyuki; Onaka, Hiroshi; Sekiya, Motoyoshi; and Otsuka, Kazue, 5,612,807, Cl. 359-161.000.

Miyata, Koichi: *See*—
Saito, Kimitsugu; and Miyata, Koichi, 5,612,548, Cl. 257-77.000.

Miyawaki, Katsuaki: *See*—
Masubuchi, Fumihito; Hotta, Yoshihiko; Takeda, Yusuke; Obu, Makoto; Kawakubo, Toshio; Miyawaki, Katsuaki; and Amano, Tetsuya, 5,612,278, Cl. 503-201.000.

Miyawaki, Mamoru: *See*—
Yuzurihara, Hiroshi; Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; and Kochi, Tetsunobu, 5,612,230, Cl. 437-21.000.

Miyazaki, Toshihiro; Murakami, Kazutomo; and Mizuno, Keiichiro, to Bridgestone Corporation. Method and apparatus for controlling vibration. 5,613,009, Cl. 381-71.000.

Mizuguchi, Shinichi: *See*—
Kimura, Tadashi; Yoshida, Yoshikazu; Mizuguchi, Shinichi; and Okazaki, Yasunao, 5,611,864, Cl. 118-723.0MR.

Mizumoto, Mamoru: *See*—
Nishimura, Katsunori; Honbo, Hidetoshi; Gotoh, Akihiro; Mizumoto, Mamoru; and Horiba, Tatsuo, 5,612,150, Cl. 429-49.000.

Mizuno, Hironobu: *See*—
Okada, Shinjiro; Taniguchi, Osamu; Mizuno, Hironobu; and Inaba, Yutaka, 5,612,802, Cl. 349-129.000.

Mizuno, Keiichiro: *See*—
Miyazaki, Toshihiro; Murakami, Kazutomo; and Mizuno, Keiichiro, 5,613,009, Cl. 381-71.000.

Mizuno, Takahide: *See*—
Uto, Kuniharu; Fujita, Yoshihisa; and Mizuno, Takahide, 5,611,745, Cl. 474-205.000.

Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; Mizuno, Yoshiyuki; and Koga, Shinichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Transmitting device for a frequency modulated digital transmission signal. 5,612,650, Cl. 332-100.000.

Mizuno, Yoshiyuki: *See*—
Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; Mizuno, Yoshiyuki; and Koga, Shinichi, 5,612,650, Cl. 332-100.000.

Mizunuma, Yasuyuki; and Nozawa, Katsuhiro, to DDK Ltd. Electric connector. 5,611,708, Cl. 439-358.000.

Mizushima, Shigeaki; Watanabe, Noriko; Iwagoe, Hiroko; Makino, Seiji; Kawamura, Sigeo; Tsuda, Yusuke; and Bessho, Nobuo, to Japan Synthetic Rubber Co., Ltd.; and Sharp Corporation. Liquid crystal aligning agent and liquid crystal display device. 5,612,450, Cl. 528-353.000.

Mizuta, Keiji; Hashimoto, Ritsuo; Takeoka, Yasuyoshi; Kishida, Akira; and Muramoto, Harumasa, to Mitsubishi Jukogyo Kabushiki Kaisha; and Kawasaki Steel Corporation. Roll charged with heat transfer medium. 5,611,394, Cl. 165-89.000.

Mnemonic Systems Incorporated: *See*—
Harvey, William B.; Haynes, Leonard S.; Lavin, Andrew J.; and Nair, Ramgopal, 5,612,787, Cl. 356-388.000.

Mobil Oil Corporation: *See*—
Beck, Jeffrey S.; and Stern, David L., 5,612,270, Cl. 502-64.000.
Han, Scott; Heck, Roland H.; and Ehlers, Michael E., 5,611,912, Cl. 208-58.000.

Mobile Oil Corporation: *See*—
Yan, Tsoung Y., 5,611,913, Cl. 208-140.000.

Mock, George E.: *See*—
Burek, Denis E.; and Mock, George E., 5,613,029, Cl. 385-135.000.

Modesitt, D. Bruce, to Transnational Instruments, Inc. Pumping chamber movement activated downhole pneumatic pump. 5,611,672, Cl. 417-131.000.

Modrow, Susanne: *See*—
Niedrig, Matthias; Modrow, Susanne; and Wolf, Hans, 5,612,453, Cl. 530-327.000.

Moeller, Hinrich; and Hoeffkes, Horst. Isatin derivatives for coloring keratin-containing fibers. 5,611,817, Cl. 8-405.000.

Moench, Jerry D.: *See*—
Agrawal, Om P.; and Moench, Jerry D., 5,612,631, Cl. 326-39.000.

Moenkhaus, Patrick R., to Honeywell Inc. Linear hydraulic actuator with adjustable output speed. 5,611,200, Cl. 60-477.000.

Mohan, Muni: *See*—
Dutt, Saibal; and Mohan, Muni, 5,612,613, Cl. 323-314.000.

Mohan, Raju; and Morrissey, Michael M., to Berlex Laboratories, Inc. N,N-di(aryl) cyclic urea derivatives as anti-coagulants. 5,612,363, Cl. 514-392.000.

Mohr, Ernst: *See*—
Rhein, Thomas; Wicker, Michael; Rueppel, Mona; Dietrich, Gerald; and Mohr, Ernst, 5,612,417, Cl. 525-221.000.

Moireau, Patrick, to Vetrotex France. Method of producing sized glass strands. 5,611,836, Cl. 65-453.000.

Molecular Biosystems, Inc.: *See*—
Widder, Kenneth J., 5,611,342, Cl. 128-654.000.

Molecular Imaging Corporation: *See*—
Lindsay, Stuart M., 5,612,491, Cl. 73-105.000.

Molins PLC: *See*—
Bailey, Thomas W.; Cahill, Michael J.; Starkey, Stanley V.; and Taylor, Robert H., 5,611,191, Cl. 53-148.000.

Möller, Burkhard: *See*—
Thiemann, Heinz; Brauweiler, Helmut; Rupert, Ivan; Bublies, Jörg; and Möller, Burkhard, 5,611,935, Cl. 210-742.000.

Møller, Jens P., to Ryslinge Traevarer APS. Sales rack for kitchen utensils. 5,611,440, Cl. 211-70.700.

Molten Metal Technology, Inc.: *See*—
Robert, Edgar J., 5,613,245, Cl. 588-201.000.

Momma, Genzo: *See*—
Yuzurihara, Hiroshi; Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; and Kochi, Tetsunobu, 5,612,230, Cl. 437-21.000.

Monier, Louis: *See*—
Eustace, Robert A.; and Monier, Louis, 5,613,063, Cl. 395-183.140.

Monolithic System Technology, Inc.: *See*—
Leung, Wing Y.; and Hsu, Fu-Chieh, 5,613,077, Cl. 395-306.000.

Monroe, Larry D.; and Wood, Thomas E., to Minnesota Mining and Manufacturing Company. Alpha alumina-based abrasive grain containing silica and iron oxide. 5,611,829, Cl. 51-309.000.

Monroe, Richard A., to Welch Allyn, Inc. Detachable connector assembly for use with video camera equipped medical instruments. 5,611,769, Cl. 600-112.000.

Monroig, Louis W.: *See*—
Baukal, Charles E., Jr.; Slavejkov, Aleksandar G.; and Monroig, Louis W., 5,611,683, Cl. 431-10.000.

Monsanto Company: *See*—
Arnold, Kristin A., 5,612,285, Cl. 504-206.000.

Monteil, Thierry: *See*—

Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; Lecomte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,612,371, Cl. 514-465.000.

Moon, Billy G.: *See—*
Alford, George C.; Damghani, Yamin; Avdonin, Nickolas A.; and Moon, Billy G., 5,613,201, Cl. 455-331.000.

Moore, George G. I.: *See—*
Waddell, Jennifer E.; Sierakowski, Michael J.; Savu, Patricia M.; Moore, George G. I.; Jariwala, Chetan P.; and Guerra, Miguel A., 5,612,431, Cl. 526-243.000.

Moorman, Alan E.: *See—*
Becker, Daniel P.; Flynn, Daniel L.; Moorman, Alan E.; Nosal, Roger; and Villamil, Clara I., 5,612,366, Cl. 514-413.000.

Moos, Walter H.: *See—*
Cody, Donna R.; DeWitt, Sheila H. H.; Hodges, John C.; Kiely, John S.; Moos, Walter H.; Pavia, Michael R.; Roth, Bruce D.; Schroeder, Mel C.; and Stankovic, Charles J., 5,612,002, Cl. 422-131.000.

Moreau, Ken; Becker, Bradley A.; Carignan, Don A.; Diewald, Jeff M.; Routley, Kevin B.; and Wooldridge, Jim, to Digital Equipment Corporation. System for specifying interactions among objects in a digital data processing system. 5,613,116, Cl. 395-326.000.

Morey, Gilles. Super-reactive oscillator and receiver. 5,613,231, Cl. 455-266.000.

Morgan, Andrew J.: *See—*
Bedford, Michael R.; Morgan, Andrew J.; Clarkson, Kathleen; and Schulze, Hagen K., 5,612,055, Cl. 424-442.000.

Morgan, Carlton B.: *See—*
Cole, Clinton; Morgan, Carlton B.; Cyrus, Judith; and Powers, Daniel, 5,611,815, Cl. 607-5.000.

Morgan, Mark D.: *See—*
Horne, William E.; and Morgan, Mark D., 5,611,870, Cl. 136-253.000.

Morgan, Robert E. Light containing umbrella apparatus. 5,611,614, Cl. 362-102.000.

Mori, Hideharu: *See—*
Hayashi, Masakatsu; Takamura, Yoshiyuki; Hasegawa, Tsutomu; Mori, Hideharu; and Katoh, Tatsuji, 5,611,493, Cl. 241-23.000.

Mori, Rie; and Hijikata, Kenichi, to Mitsubishi Materials Corporation. Magneto-optical recording medium having a refelecting layer of a silver-magnesium alloy having a magnesium oxide coating. 5,612,133, Cl. 428-336.000.

Mori, Tatsuo: *See—*
Sakamoto, Hideki; Nishimura, Kazutoshi; Suzuki, Hideharu; Kawaguchi, Tomoaki; Nakano, Osamu; and Mori, Tatsuo, 5,612,790, Cl. 386-69.000.

Mori, Yasuhiro: *See—*
Kishi, Tetsuji; Okabayashi, Ichiro; Mori, Yasuhiro; Migita, Manabu; and Kuwata, Yuri, 5,613,138, Cl. 395-800.000.

Mori, Yukihiro: *See—*
Shimomura, Yoshiki; Tanigawa, Sadao; Mori, Yukihiro; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,613,047, Cl. 395-113.000.

Morigaki, Masakazu: *See—*
Takizawa, Hiroo; Yoshioka, Yasuhiro; and Morigaki, Masakazu, 5,612,174, Cl. 430-557.000.

Morikawa Industries Corp.: *See—*
Obinata, Hiroshi; Ichikawa, Seigo; and Kikuya, Akihisa, 5,613,239, Cl. 588-1.000.

Morikawa, Shigenori: *See—*
Yuyama, Masami; Tsukamoto, Akihiro; and Morikawa, Shigenori, 5,612,732, Cl. 348-14.000.

Morikawa, Takashi, to Minolta Camera Kabushiki Kaisha. Electronic mail processing system and electronic mail processing method. 5,613,108, Cl. 393-616.000.

Morimoto, Hajime: *See—*
Nobutani, Toshiyuki; Ina, Kenzoh; Shimakura, Masami; Tanahashi, Junichi; Ono, Kenichiro; Morimoto, Hajime; Sakashita, Tatsuya; and Matsuzaki, Eiichi, 5,613,103, Cl. 395-501.000.

Morimoto, Haruo, to Morimoto, Haruo; Maeno, Katusi; and Yamada, Takahiro. Composition of matter and solid medium based-on naturally-occurring numic allophane soil useful in treatment of fluids. 5,611,853, Cl. 106-633.000.

Morimoto, Yasumasa; Okamoto, Shotaro; and Kizu, Seiichi, to Sharp Kabushiki Kaisha. Printer with printhead pressure adjusting mechanism. 5,612,727, Cl. 347-198.000.

Morimoto, Yoshinari; and Usami, Yuri, to Brother Kogyo Kabushiki Kaisha. Document editing device and method. 5,613,045, Cl. 395-102.000.

Morisada, Masahiro: *See—*
Kubota, Yoichi; Kawamata, Naoki; Morisada, Masahiro; Fujii, Katsuhiro; Itoh, Hiroshi; and Takeishi, Hiroaki, 5,612,602, Cl. 318-560.000.

Morishima, Hideki: *See—*
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Morishita, Kazuhiro; and Takase, Hiraji, to Yazaki Corporation. Connector with terminal stopper attached and method for inserting and stopping terminal fittings using same. 5,611,712, Cl. 439-752.000.

Morita, Kazuhisa: *See—*
Kamakura, Tamiji; Tanaka, Noriyoshi; Fukushima, Aritoshi; Tatsumi, Yukio; and Morita, Kazuhisa, 5,612,297, Cl. 508-363.000.

Morita, Shinya, to Sony Corporation. Data recorder having self-diagnostic function using magnetic tape. 5,612,827, Cl. 360-25.000.

Morita, Yoshikazu: *See—*
Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, 5,612,090, Cl. 427-255.300.

Morman, Michael T., to Kimberly-Clark Corporation. Absorbent article having an absorbent with a variable density in the Z direction and a method of forming said article. 5,611,879, Cl. 156-201.000.

Moroney, Paul: *See—*
Walker, G. Kent; Moroney, Paul; and Nuber, Ray, 5,612,956, Cl. 370-545.000.

Morooka, Masahiko: *See—*
Irizawa, Tadashi; Morooka, Masahiko; and Miyanoki, Masahiko, 5,612,388, Cl. 522-6.000.

Moroto, Syuzo; Sumiya, Koji; Ito, Yasunobu; Yamada, Kunihiro; Nimura, Mitsuhiro; and Yano, Takeshi, to Aisin AW Co., Ltd. Map display system. 5,612,881, Cl. 364-449.300.

Morrison, Timothy J.; and Wilson, Lynn H., to Summatec Computer Corporation. Motorized latch and ejection mechanism for portable hard drive. 5,612,927, Cl. 361-685.000.

Morrissey, Michael M.: *See—*
Mohan, Raju; and Morrissey, Michael M., 5,612,363, Cl. 514-392.000.

Morrow, Linda A.: *See—*
Moses, Alan C.; Morrow, Linda A.; and Flier, Jeffrey S., 5,612,312, Cl. 514-12.000.

Morrow, Warren R., to Intel Corporation. Method and apparatus for rounding operands using previous rounding history. 5,612,909, Cl. 364-745.000.

Morton International, Inc.: *See—*
Olson, Brent K.; Storey, J. Kirk; Green, David J.; Saderholm, Davin G.; Bunker, S. Mark; and Minert, Daniel G., 5,611,563, Cl. 280-728.200.

Mosaid Technologies Incorporated: *See—*
Gillingham, Peter B., 5,612,912, Cl. 365-168.000.

Moser, Rasin: *See—*
Berkes, John S.; and Moser, Rasin, 5,612,773, Cl. 399-307.000.

Moses, Alan C.; Morrow, Linda A.; and Flier, Jeffrey S. Method for treating insulin resistance with IGF-1. 5,612,312, Cl. 514-12.000.

Moses, Robert W.; Durkee, Norman; and Hustig, Charles H. System for carrying transparent digital data within an audio signal. 5,612,943, Cl. 369-124.000.

Mosior, Donald J.; and Hay, Edward C., to Sage Products, Inc. Disposal container with locking closure and indicator to provide visual indication of locking of closure. 5,611,451, Cl. 220-346.000.

Moskowitz, Scott A.: *See—*
Cooperman, Marc; and Moskowitz, Scott A., 5,613,004, Cl. 380-28.000.

Moss, Barry; Russo, David W.; Lockhart, Thomas W.; Lim, Ricardo; and Beaudoin, Denis, to Motorola, Inc. Peripheral card having independent functionally and method used therewith. 5,613,095, Cl. 395-500.000.

Moss, Barry: *See—*
Lim, Ricardo; Russo, David; Moss, Barry; and Bethards, Charles W., 5,613,092, Cl. 395-500.000.

Moss, Ken A.; and Kwatinetz, Andrew, to Microsoft Corporation. Auto-formatting of tables in a spreadsheet program. 5,613,131, Cl. 395-765.000.

Motorola: *See—*
Holm, Paige M.; Rhyne, George W.; and Walczak, Thomas J., 5,612,231, Cl. 437-23.000.
Nelson, Ronald J.; Stafford, John W.; and Harvey, Thomas B., III, 5,612,549, Cl. 257-88.000.
Shieh, Chan-Long; and Ackley, Donald E., 5,612,228, Cl. 437-1.000.
Thero, Christine; Bhatnagar, Mohit; and Weitzel, Charles E., 5,612,232, Cl. 437-39.000.
Wilson, Howard P.; and Martin, Fonzell D. J., 5,612,576, Cl. 257-788.000.

Motorola Inc.: *See—*
Astrachan, Paul M., 5,612,974, Cl. 375-295.000.
Baranowski, Robert; Alberth, William P., Jr.; and Millar, Donald J., 5,613,229, Cl. 455-127.000.
Barrett, Raymond L., Jr.; Herold, Barry; and Pajunen, Grazyna A., 5,612,614, Cl. 323-316.000.
Bent, Michael S.; Teitzman, Melvin; and Long, Christopher R., 5,613,237, Cl. 455-351.000.
Black, Bryan P.; and Denman, Marvin A., 5,613,081, Cl. 395-403.000.
Blanchard, Scott D.; and Lester, Joseph O., 5,612,978, Cl. 375-350.000.
Davies, Robert B.; and Wild, Andreas A., 5,612,244, Cl. 437-57.000.
DeLuca, Michael J.; Smoot, George W.; and Kraul, Douglas R., 5,612,682, Cl. 340-825.340.
Diekelman, Dennis P., 5,612,701, Cl. 342-354.000.
Fernandes, Julian V.; and Dunlop, Hugh C., 5,612,955, Cl. 370-433.000.
Fette, Bruce A.; Leahy, Peter J.; and Harrison, David M., 5,612,948, Cl. 379-252.000.
Fitch, Jon T.; Mazuré, Carlos A.; and Witek, Keith E., 5,612,563, Cl. 257-329.000.
France, Robert B.; Claus, Arthur H.; and Calvert, Brian E., 5,613,119, Cl. 395-651.000.
Grube, Gary W.; Markison, Timothy W.; and Lukasik, Susan L., 5,613,215, Cl. 455-54.200.
Li, Xiaojun; Satyamurti, Sunil; and D'Amico, Thomas V., 5,613,218, Cl. 455-71.000.
Lim, Ricardo; Russo, David; Moss, Barry; and Bethards, Charles W., 5,613,092, Cl. 395-500.000.
Moss, Barry; Russo, David W.; Lockhart, Thomas W.; Lim, Ricardo; and Beaudoin, Denis, 5,613,095, Cl. 395-500.000.
Naddell, Marc C.; and Grube, Gary W., 5,613,213, Cl. 455-54.100.

Nguyen, Lan V.; and Kumar, C. Bala, 5,613,125, Cl. 395-651.000.
Olds, Keith A.; Vatt, Gregory B.; and Kurby, Christopher N., 5,613,194, Cl. 455-12.100.
Ozcelik, Taner; Brailcan, James C.; and Katsaggelos, Aggelos K., 5,612,745, Cl. 348-416.000.
Pan, Shao W.; Wang, Shay-Ping T.; and Labun, Nicholas M., 5,612,899, Cl. 364-514.00R.
Peterson, Larry M.; and Sherburne, Timothy J., 5,613,209, Cl. 455-34.100.
Thurman, Audree; Person, Stan; Norden-Paul, Ronald; and Shelton, Richard, 5,613,106, Cl. 395-620.000.
Wiggenhorn, James T., 5,612,846, Cl. 361-56.000.
Wilson, Alan; and Sasuta, Michael, 5,613,207, Cl. 455-34.200.
Zhong, Zhong K.; and Tran, Daniel, 5,612,861, Cl. 363-59.000.

Motoyama, Masahiko, to Kabushiki Kaisha Toshiba. Packet switch and buffer for storing and processing packets routing to different ports. 5,612,952, Cl. 370-412.000.

Mouk, Robert W.; Heyduk, Alan F.; and Abel, Albert E., to Commodore Applied Technologies, Inc. Methods of decontaminating soils containing hazardous metals. 5,613,238, Cl. 588-1.000.

Moulton, Russell D.; and Olsen, Ib I., to Valence Technology, Inc. Battery mask from radiation curable and thermoplastic materials. 5,612,153, Cl. 429-191.000.

Mouneimne, Youssef: *See—*
Nicolau, Yves C.; Brüggemann, Ulrich; Mouneimne, Youssef; and Roux, Eric C., 5,612,207, Cl. 435-173.600.

Mouri, Takehito: *See—*
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Mousseau, Joe P.: *See—*
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Mroz, Sharon L.: *See—*
Berger, Maria; Page, Nancy; and Mroz, Sharon L., 5,611,506, Cl. 248-65.000.

Mu, Xiao-Chun; Sivaram, Srinivasan; Gardner, Donald S.; and Fraser, David B., to Intel Corporation. Methods of forming an interconnect on a semiconductor substrate. 5,612,254, Cl. 437-195.000.

Muchin, Jerome D. Nose dilator device. 5,611,334, Cl. 128-200.240.

Muehlbach, Klaus: *See—*
Weber, Martin; Muehlbach, Klaus; and Koch, Eckhard M., 5,612,425, Cl. 525-534.000.

Mueller, Reinhard: *See—*
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Mueller, Richard A.: *See—*
Barta, Thomas E.; and Mueller, Richard A., 5,612,480, Cl. 544-180.000.

Mueller, Roland: *See—*
Benedikt, Walter; Klett, Dittmar; Trachte, Dietrich; Kersting, Hermann; Mueller, Roland; and Fischer, Jochen, 5,612,586, Cl. 313-141.000.

Muftikian, Rosy: *See—*
Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, 5,611,936, Cl. 210-747.000.

Muhlhauser, Mark A.; Shannon, Harlan E.; and Thor, Karl B., to Novo Nordisk A/S. Method of treating urinary bladder dysfunctions. 5,612,351, Cl. 514-304.000.

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Shimizu, Yasuo; Yamawaki, Shigeru; Hironaka, Shinzi; and Mukai, Yoshinobu, 5,612,877, Cl. 364-424.051.

Mulder, Douglas C.; Niemiec, Ronald E.; Pintelon, Joseph; Pleuse, Harald; Macartney, Lawrence J.; Matsunaga, Masafumi; and Scarbrough, Don R., to Nordson Corporation. Methods and apparatus for applying powder to workpieces. 5,612,096, Cl. 427-466.000.

Mulla, Altaf: *See—*
Sanders, Robert; Mulla, Altaf; and Catalano, Michael, 5,612,530, Cl. 235-462.000.

Mullaney, Sean: *See—*
Hoeting, Michael G.; and Mullaney, Sean, 5,611,721, Cl. 446-419.000.

Mullaney, Sean T.: *See—*
Hoeting, Michael G.; and Mullaney, Sean T., 5,611,321, Cl. 124-6.000.

Mulle, Theodore B.: *See—*
Rizzuto, Leandro P.; Mulle, Theodore B.; and Braginsky, Asik, 5,611,262, Cl. 99-294.000.

Müller, Bodo: *See—*
Piestert, Gerhard; and Müller, Bodo, 5,611,956, Cl. 252-182.320.

Muller, Thomas: *See—*
Himmelsbach, F.; Pieper, Helmut; Austel, Volkhard; Linz, Gunter; Guth, Brian; Muller, Thomas; and Weisenberger, Johannes, 5,612,335, Cl. 514-221.000.

Mullin, Eugene T.; and Bader, Clifford J., to Lockheed Martin Tactical Systems, Inc. System and method for detecting fault conditions in a direct current motor. 5,612,629, Cl. 324-772.000.

Multimedia Systems Corporation: *See—*
Lewis, Scott W., 5,612,730, Cl. 348-8.000.

Multiplex Technology, Inc.: *See—*
Crosby, John B., 5,612,652, Cl. 333-24.00R.

Murabayashi, Fumio; Yamauchi, Tatsumi; and Kobayashi, Yutaka, to Hitachi, Ltd. Self-timed semiconductor integrated circuit device. 5,612,640, Cl. 327-141.000.

Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, to Hitachi, Ltd. Semiconductor device. 5,612,569, Cl. 257-666.000.

Murakami, Kazutomo: *See—*
Miyazaki, Toshihiro; Murakami, Kazutomo; and Mizuno, Keiichiro, 5,613,009, Cl. 381-71.000.

Murakami, Keiichi; and Komuro, Hirokazu, to Canon Kabushiki Kaisha. Ink jet recording head with enhanced bonding force between a heat storing layer and substrate, a method of forming the same and a recording apparatus having said recording head. 5,612,724, Cl. 347-64.000.

Murakami, Keiichi: *See—*
Yasue, Syoichi; and Murakami, Keiichi, 5,611,925, Cl. 210-346.000.

Murakami, Yasuyuki; and Ito, Kazuhito, to Murata Kikai Kabushiki Kaisha. Cipher communication method and device. 5,613,005, Cl. 380-28.000.

Muramoto, Harumasa: *See—*
Mizuta, Keiji; Hashimoto, Ritsuo; Takeoka, Yasuyoshi; Kishida, Akira; and Muramoto, Harumasa, 5,611,394, Cl. 165-89.000.

Murano, Shoichi: *See—*
Matsushima, Hitoshi; Kobayashi, Tohru; Kumasawa, Tadashi; Murano, Shoichi; Ishikawa, Jun; and Katayama, Jun, 5,613,066, Cl. 395-185.020.

Murasawa, Sadao; and Watanabe, Mitsuru, to Ishihara Sangyo Kaisha, Ltd. Electrophotographic photosensitive element and a process for manufacturing an offset printing master from the element. 5,612,156, Cl. 430-49.000.

Murata Kikai Kabushiki Kaisha: *See—*
Murakami, Yasuyuki; and Ito, Kazuhito, 5,613,005, Cl. 380-28.000.

Murata Manufacturing Co., Ltd.: *See—*
Iwamoto, Sakiko; Shibata, Masamitsu; and Hamaji, Yukio, 5,612,268, Cl. 501-138.000.
Sakamoto, Yukio; Kaneko, Toshimi; Dougauchi, Kazuo; Kawaguchi, Masahiko; and Matsuta, Katsuji, 5,612,656, Cl. 333-204.000.
Shibano, Tomio, 5,612,494, Cl. 73-514.320.
Tani, Hiroji; and Oshita, Kazuhito, 5,612,121, Cl. 428-210.000.
Tsujiguchi, Tatsuya; and Tada, Hitoshi, 5,612,654, Cl. 333-202.000.
Wakamatsu, Hiroki; and Suemasa, Hajime, 5,612,512, Cl. 174-260.000.

Murata, Susumu: *See—*
Nagata, Hirotoshi; Shiroishi, Masaru; Saito, Tsutomu; Tateyama, Takashi; Sakuma, Mithuru; Kougo, Naoki; Murata, Susumu; Kaizu, Ryosuke; and Miyamoto, Nobuhide, 5,613,026, Cl. 385-94.000.

Murata, Yoshiyuki: *See—*
Chida, Kenji; Yoshino, Hiroyuki; Oshima, Jun; Murata, Yoshiyuki; and Ariizumi, Masahito, 5,612,716, Cl. 345-133.000.

Murmann, Günter; and Frank, Manfred, to Cherry Mikroschalter GmbH. Ergonomic keyboard. 5,612,691, Cl. 341-22.000.

Murohashi, Takashi: *See—*
Jinno, Chitoshi; Toyohara, Hiroyuki; Mimura, Hikaru; and Murohashi, Takashi, 5,612,116, Cl. 428-143.000.

Murphy, Andrew, to Ottenheimer Publishers, Inc. Transverse-fold pop-up device, and blank and method therefor. 5,611,161, Cl. 40-124.080.

Murphy, Charles F., III: *See—*
Dolan, Donald T.; Jennings, Beth A.; Murphy, Charles F., III; and Zeller, Claude, 5,611,630, Cl. 400-120.090.

Murray, Robert E.: *See—*
Gregg, Thomas A.; Capowski, Robert S.; Ferraiolo, Frank D.; Halma, Marten J.; Hillock, Thomas H.; and Murray, Robert E., 5,613,068, Cl. 395-200.130.

Murray, Thomas J.: *See—*
DeCook, Bradley C.; and Murray, Thomas J., 5,612,796, Cl. 358-527.000.

Murugesan, Natesan, to Bristol-Myers Squibb Company. Substituted biphenyl isoxazole sulfonamides. 5,612,359, Cl. 514-365.000.

Muschelewicz, Adana: *See—*
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Fung-Bor, 5,612,083, Cl. 264-233.000.

Myers, Christopher A.: *See—*
Newton, Charles M.; Palmer, Edward G.; Sanchez, Albert; and Myers, Christopher A., 5,611,876, Cl. 156-89.000.

Myers, William D., Jr.; Haugvalstad, Kare-Jonny; Bethel, Robert K.; Ireland, Kelly D.; and Sampson, Timothy W., to Baker Hughes Incorporated. One-trip conveying method for packer/plug and perforating gun. 5,611,401, Cl. 166-297.000.

Nabatame, Takeo: *See—*
Toki, Yusuke; Hiraoka, Manabu; Yamagishi, Ichiro; Onuki, Hiroyuki; Ban, Tatsuya; Hada, Tetsuro; Nabatame, Takeo; Yamahana, Masao; Fujise, Masakuni; Aochi, Yoshihiko; Hayashibara, Makoto; and Ozaki, Masahiro, 5,612,985, Cl. 378-4.000.

NABCO Limited: *See—*
Maehara, Katsumi; and Ohkuma, Hiroshi, 5,611,407, Cl. 180-249.000.
Matuo, Akira; and Kaneko, Takeshi, 5,611,258, Cl. 91-376.00R.

Nabisco, Inc.: *See—*
Fileti, Christina M.; Gill, Richard C.; Ramundo, Mark J.; and Renini, Lis K., 5,612,078, Cl. 426-572.000.

Nabu, Masakazu: *See—*
Kijima, Naoto; Shimomura, Yasuo; Miura, Chisato; Hisamune, Takayuki; Nabu, Masakazu; and Toriumi, Koichi, 5,611,959, Cl. 252-301.40R.

Naddell, Marc C.; and Grube, Gary W., to Motorola, Inc. Determining and displaying available services for a communication unit. 5,613,213, Cl. 455-54.100.
Naemura, Masahide: *See*—
Gohshi, Seiichi; Izumi, Yoshinori; Naemura, Masahide; and Yamaguchi, Kouichi, 5,612,748, Cl. 348-424.000.
Nagai, Mitsuo: *See*—
Yoshimura, Hiroyuki; Nagai, Mitsuo; Hibi, Shigeki; Kikuchi, Koichi; Hishinuma, Ieharu; Nagakawa, Junichi; Asada, Makoto; Miyamoto, Norimasa; Hida, Takayuki; Ogasawara, Aichi; and Yamatsu, Isao, 5,612,356, Cl. 514-338.000.
Nagai, Tomoaki: *See*—
Satake, Toshimi; Takano, Toshiyuki; Hayasaka, Hideki; Uehori, Yukiko; and Nagai, Tomoaki, 5,612,279, Cl. 503-201.000.
Nagakawa, Junichi: *See*—
Yoshimura, Hiroyuki; Nagai, Mitsuo; Hibi, Shigeki; Kikuchi, Koichi; Hishinuma, Ieharu; Nagakawa, Junichi; Asada, Makoto; Miyamoto, Norimasa; Hida, Takayuki; Ogasawara, Aichi; and Yamatsu, Isao, 5,612,356, Cl. 514-338.000.
Nagamori, Akira; Konno, Satoru; Horino, Hirohumi; and Kobayashi, Yoichiro, to Kabushiki Kaisha Toshiba. Transverse fan. 5,611,667, Cl. 416-178.000.
Nagamoto, Itsushi, to Yamaha Corporation. Golf club. 5,611,740, Cl. 473-305.000.
Nagano, Masatoshi, to Canon Kabushiki Kaisha. Electronic still camera with temporarily halting and restarting of optical system control. 5,612,737, Cl. 348-207.000.
Nagaoka, Tomoo, to Canon Kabushiki Kaisha. Displace cleaning apparatus with toner scattering feature and electrophtographic image forming apparatus using same. 5,612,775, Cl. 399-345.000.
Nagashima, Hideki, to Sony Corporation. Management of recordable area for TOC (table of contents) and recording or recording/reproducing apparatus for performing recording action based on the same TOC information. 5,613,112, Cl. 395-616.000.
Nagata, Hirotoshi; Shiroishi, Masaru; Saito, Tsutomu; Tateyama, Takashi; Sakuma, Mithuru; Kougo, Naoki; Murata, Susumu; Kaizu, Ryosuke; and Miyamoto, Nobuhide, to Sumitomo Osaka Cement Co., Ltd. Package structure for optical element and fibers and composite structure thereof. 5,613,026, Cl. 385-94.000.
Nagata, Kouichi, to Fuji Photo Optical Co., Ltd. Cell box and optical apparatus using the same. 5,612,147, Cl. 429-9.000.
Nagata, Shigeyuki: *See*—
Oguchi, Shigeki; Yazaki, Jun-ichi; and Nagata, Shigeyuki, 5,612,526, Cl. 235-375.000.
Nagata, Takeshi, to Nisshinbo Industries, Inc. Hydraulic circuit for driving a ram of hydraulic press. 5,611,259, Cl. 91-415.000.
Nagoyaseiraku Co., Ltd.: *See*—
Hibi, Takayoshi, 5,612,077, Cl. 426-533.000.
Nagura, Kazuhiro, to Sony Corporation. Video signal recorder and video apparatus with internal clock index signal. 5,612,789, Cl. 386-65.000.
Nair, N. Gopolan; and Brun, Zdenek, to Intel Corporation. Use of RSSI indication for improved data transmission over amps network. 5,612,991, Cl. 379-59.000.
Nair, Ramgopal: *See*—
Harvey, William B.; Haynes, Leonard S.; Lavin, Andrew J.; and Nair, Ramgopal, 5,612,787, Cl. 356-388.000.
Najmolhoda, Hamid, to Saturn Electronics & Engineering, Inc. Proportional variable force solenoid control valve and transmission fluid control device. 5,611,370, Cl. 137-625.610.
Nakagaki, Tatsuru: *See*—
Ishibashi, Ryoichi; Tachibana, Tetsuo; and Nakagaki, Tatsuru, 5,613,065, Cl. 395-185.010.
Nakagawa, Kazuko: *See*—
Toshida, Youichi; Nakagawa, Kazuko; Kuroda, Toshihide; Nakayama, Kazuyuki; and Taki, Tomotsugu, 5,613,232, Cl. 455-226.400.
Nakagome, Tatsuya: *See*—
Fukasawa, Yoshio; Hosoda, Shozo; Nakagome, Tatsuya; Tozawa, Takashi; Suzuki, Koji; Ishihara, Yasumasa; Aoyagi, Minoru; and Kajihara, Mahito, 5,611,655, Cl. 414-217.000.
Nakajima, Akira: *See*—
Ito, Jun; Kumai, Hiroyuki; Matsuda, Yasumasa; Nakajima, Akira; Inoue, Yoshiisa; Koreeda, Hiroyuki; and Oheda, Shigeto, 5,612,720, Cl. 345-179.000.
Nakajima, Kikuo: *See*—
Ueda, Takuya; Nakajima, Kikuo; Tanifuji, Yoichi; Amano, Tadashi; and Ohnishi, Shuji, 5,612,437, Cl. 526-344.200.
Nakajima, Kunio: *See*—
Sudo, Shuzo; and Nakajima, Kunio, 5,612,987, Cl. 378-82.000.
Nakajima, Shin: *See*—
Yoshizawa, Yoshihito; Bizen, Yoshio; Nakajima, Shin; and Arakawa, Shunsuke, 5,611,871, Cl. 148-108.000.
Nakajima, Toshihiro; Chiba, Takatoshi; Nishii, Kiyofumi; and Sato, Toru, to Dainippon Screen Mfg. Co., Ltd. Substrate heat treatment apparatus. 5,611,685, Cl. 432-205.000.
Nakama, Hiroshi, to Yamato Kako Kabushiki Kaisha. Faceted jewelry ornament with facet grooved for light diffraction. 5,612,102, Cl. 428-15.000.
Nakamachi, Keiichi: *See*—
Inoue, Tsuyoshi; Nakamachi, Keiichi; Nakamura, Takeshi; and Okada, Kenji, 5,612,227, Cl. 436-180.000.
Nakamori, Tomohiro: *See*—
Machino, Hitoshi; Hashimoto, Hiroshi; Endo, Soya; Nakamori, Tomohiro; Ishizu, Masanori; and Kimizuka, Junichi, 5,612,776, Cl. 399-43.000.
Nakamura, Fumitoshi: *See*—
Ando, Yoichi; Nakamura, Fumitoshi; Shiraishi, Haruhito; Toda, Hajime; Suzuki, Susumu; Hirano, Koichi; and Tamano, Hisami, 5,611,279, Cl. 101-401.100.
Nakamura, Jinichi: *See*—
Karaki, Nobuo; and Nakamura, Jinichi, 5,612,715, Cl. 345-132.000.
Nakamura, Jiro: *See*—
Takemura, Katsuya; Tsuchiya, Junji; Ishihara, Toshinobu; Tanaka, Akinobu; Kawai, Yoshio; and Nakamura, Jiro, 5,612,170, Cl. 430-270.100.
Nakamura, Katsunori: *See*—
Oshima, Yoshikazu; Kato, Atsushi; Ikeo, Mitsuru; Nishida, Toshiyuki; Ueda, Kazuhiro; Nakamura, Katsunori; Noseyama, Ryuichi; Ishibashi, Kenichiro; and Aoki, Shigeru, 5,611,316, Cl. 123-494.000.
Nakamura, Koji: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Nakamura, Masahiko: *See*—
Yamamoto, Hajime; Terada, Hiroshi; and Nakamura, Masahiko, 5,612,771, Cl. 399-301.000.
Nakamura, Shinya: *See*—
Kono, Katsumi; Nakamura, Shinya; and Honda, Atsushi, 5,611,750, Cl. 477-65.000.
Nakamura, Shozo: *See*—
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.
Nakamura, Takeshi: *See*—
Inoue, Tsuyoshi; Nakamachi, Keiichi; Nakamura, Takeshi; and Okada, Kenji, 5,612,227, Cl. 436-180.000.
Nakamura, Toshiyuki; and Hori, Toshio, to Mita Industrial Company, Ltd. Image-forming machine equipped with a cassette for feeding sheet materials. 5,611,528, Cl. 271-164.000.
Nakanishi, Teru: *See*—
Akamatsu, Toshiya; Karasawa, Kazuaki; Nakanishi, Teru; and Shimizu, Kozo, 5,611,481, Cl. 228-180.220.
Nakanishi, Yuji; Amano, Hitoshi; and Yamaguchi, Shotaro, to Amano Pharmaceutical Co., Ltd. Ascorbate oxidase, gene encoding the same, process for producing the same, and reagent composition using the same. 5,612,208, Cl. 435-189.000.
Nakano, Akihiro: *See*—
Fukuoka, Hirofumi; Fujiya, Junzou; Uena, Yoshiaki; and Nakano, Akihiro, 5,611,388, Cl. 164-119.000.
Nakano, Osamu: *See*—
Sakamoto, Hideki; Nishimura, Kazutoshi; Suzuki, Hideharu; Kawaguchi, Tomoaki; Nakano, Osamu; and Mori, Tatsuo, 5,612,790, Cl. 386-69.000.
Nakano, Toshihiko; and Amano, Tadashi, to Shin-Etsu Chemical Co., Ltd. Process of producing vinyl chloride polymer using an organic peroxide in combination with 3-hydroxy-1,1-dimethylbutyl peroxyneodecanoate. 5,612,426, Cl. 526-62.000.
Nakao, Tatsuya: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.
Nakata, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focusing apparatus. 5,612,761, Cl. 396-95.000.
Nakayama, Kazuyuki: *See*—
Toshida, Youichi; Nakagawa, Kazuko; Kuroda, Toshihide; Nakayama, Kazuyuki; and Taki, Tomotsugu, 5,613,232, Cl. 455-226.400.
Nakayasu, Hirofumi: *See*—
Shimura, Takaki; Iida, Atsuo; Kaiju, Yoshihiko; Nakayasu, Hirofumi; and Hiyane, Masao, 5,612,723, Cl. 347-46.000.
Nakazono, Hiroki: *See*—
Kondo, Masao; Ito, Shinichi; and Nakazono, Hiroki, 5,612,501, Cl. 84-637.000.
Nalbach, Joerg: *See*—
Busch, Hans-Walter; and Nalbach, Joerg, 5,611,600, Cl. 297-378.120.
Namikawa, Reiko: *See*—
Bonyhadi, Mark L.; Kaneshima, Hideto; McCune, Joseph M.; Namikawa, Reiko; and Su, Lishan, 5,612,018, Cl. 424-9.200.
Narabu, Tadakuni: *See*—
Maki, Yasuhito; Sato, Maki; and Narabu, Tadakuni, 5,612,739, Cl. 348-311.000.
Naraghi, Ali, to Champion Technologies, Inc. Corrosion inhibitor containing phosphate groups. 5,611,991, Cl. 422-15.000.
Naraghi, Ali; and Grahmann, Nick, to Champion Technologies Inc. Corrosion inhibitor blends with phosphate esters. 5,611,992, Cl. 422-15.000.
Narai, Hiroshi; Kadokawa, Satoshi; Shimazaki, Yasuyuki; and Iwasa, Hiroshi, to NSK, Ltd. Rolling/sliding part. 5,611,250, Cl. 74-569.000.
Narasimhan, Anand: *See*—

Bantz, David F.; and Narasimhan, Anand, 5,613,206, Cl. 455-34.100.
Narayanaswami, Chandrasekhar, to International Business Machines Corporation. Method and apparatus for clipping and determining color factors for polygons. 5,613,052, Cl. 395-134.000.
Narita, Hirokazu: *See*—
Ono, Satoshi; Yamafuji, Tetsuo; Chaki, Hisaaki; Maekawa, Mutsuko; Todo, Yozo; and Narita, Hirokazu, 5,612,381, Cl. 514-651.000.
Narula, J. Singh: *See*—
Woodcock, Joel; and Narula, J. Singh, 5,612,982, Cl. 376-298.000.
Naruse, Yoshihiro: *See*—
Ooumi, Takeharu; Naruse, Yoshihiro; Yamada, Takahiro; Tsukahara, Kinji; Ando, Mitsuhiro; and Tsuchimoto, Katsuya, 5,611,676, Cl. 417-322.000.
Nash, Michael; and Stafford, Gary, to Orthopedic Technology Incorporated. Range of motion cap for range of motion orthotic. 5,611,773, Cl. 602-16.000.
Natarajan, Govindarajan; and Reddy, Srinivasa S. N., to International Business Machines Corporation. Co-sintered surface metallization for pin-join, wire-bond and chip attach. 5,613,181, Cl. 419-6.000.
Nation, George W.: *See*—
Hammond, William A., Jr.; Johnson, Ross E.; and Nation, George W., 5,613,073, Cl. 395-250.000.
National Power PLC: *See*—
Zito, Ralph, 5,612,148, Cl. 429-15.000.
National Semiconductor Corporation: *See*—
Afek, Yachin; Oz, Oved; and Intrater, Gideon, 5,613,149, Cl. 395-800.000.
Asanasavest, Chainarong, 5,611,478, Cl. 228-110.100.
Hall, Christopher M.; Phillips, Gary D.; and Weinrich, David W., 5,613,144, Cl. 395-800.000.
Shay, Michael J.; and Koether, Mark D., 5,612,637, Cl. 326-86.000.
National Service Industries, Inc.: *See*—
Smith, Stephen T., 5,611,163, Cl. 40-570.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Kimpton, Paul T.; Houghton, Mark P.; and Russell, Stephen W., 5,612,429, Cl. 526-209.000.
Martino, Gary T.; and Tessler, Martin M., 5,612,443, Cl. 528-229.000.
Naturin GmbH: *See*—
Grund, Hartmut, 5,612,104, Cl. 428-348.000.
Naumovitz, Joseph P., to BOC Group, Inc., The. Nitrogen generation method and apparatus. 5,611,218, Cl. 62-646.000.
Naves, Neil H.: *See*—
Benderev, Theodore V.; Naves, Neil H.; and Legome, Mark J., 5,611,515, Cl. 128-898.000.
Nayar, Harbhajan S.: *See*—
Creffield, Geoffrey K.; Chapman, Ian F.; Aitken, Janice C.; Cole, Mark; White, George R., III; and Nayar, Harbhajan S., 5,611,366, Cl. 137-209.000.
NCR Corporation: *See*—
Dasgupta, Ranjan, 5,612,865, Cl. 364-184.000.
Stevens, Henricus J. M.; and van der Kuil, Adrianus C., 5,612,960, Cl. 371-20.100.
Neal, Charles W.: *See*—
Vinson, Kenneth D.; Erspamer, John P.; Neal, Charles W.; and Halter, Jeffress P., 5,611,890, Cl. 162-111.000.
NEC Corporation: *See*—
Anezaki, Akihiro, 5,613,100, Cl. 395-500.000.
Arai, Takao, 5,612,568, Cl. 257-481.000.
Fukushi, Mikio; and Tomita, Hideho, 5,612,972, Cl. 375-206.000.
Gomyo, Akiko; and Suzuki, Tohru, 5,612,550, Cl. 257-184.000.
Hamabe, Kojiro, 5,613,200, Cl. 455-33.100.
Higashi, Kumiko, 5,611,861, Cl. 118-719.000.
Hiraishi, Ayako, 5,613,104, Cl. 395-557.000.
Hirayama, Takeshi, 5,612,643, Cl. 327-534.000.
Inami, Daijiro; and Sato, Yuichi, 5,612,810, Cl. 359-189.000.
Ishida, Takeshi; and Norimatsu, Noriko, 5,613,202, Cl. 455-33.100.
Kanami, Shuji, 5,613,226, Cl. 455-115.000.
Kodama, Noriaki, 5,612,561, Cl. 257-314.000.
Matsui, Tsutomu, 5,612,936, Cl. 369-44.320.
Ogoro, Kazuo, 5,612,977, Cl. 375-344.000.
Ooi, Tomoyuki, 5,613,195, Cl. 455-13.200.
Shirasawa, Susumu; Kamachi, Kenichiro; and Tomoike, Hiroyuki, 5,613,214, Cl. 455-54.100.
Shirota, Hideyuki; and Matuzaki, Tatuya, 5,612,835, Cl. 360-78.140.
Takahashi, Jun-ichi, 5,612,942, Cl. 369-112.000.
Takano, Hideto, 5,612,979, Cl. 375-354.000.
Tanabe, Takashi; and Yamamoto, Kouji, 5,613,031, Cl. 385-138.000.
Waguri, Shin-Ichi, 5,612,617, Cl. 324-76.450.
Yahagi, Masahiko, 5,613,199, Cl. 455-33.100.
Neduva, Alex, to Intel Corporation. Memory bypass mode. 5,612,916, Cl. 365-189.040.
Néel, Jean M. L.: *See*—
Nguyen, Quang T.; Néel, Jean M. L.; Brüschke, Hartmut E. A.; and Steinhauser, Hermann, 5,611,930, Cl. 210-640.000.
Nees, David K.: *See*—
Suri, Kanwar; Akian, Z. Paul; Parker, Steven H.; Udell, Robert F.; Leitzell, Michael M.; Nees, David K.; and McLean, S. Glenn, 5,611,923, Cl. 210-238.000.
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Lunder, Tito L., 5,612,079, Cl. 426-597.000.
Nestegard, Susan K.: *See*—
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,611,791, Cl. 604-391.000.
Neth, William F.: *See*—
Biondo, John P.; Laphan, Dennis C.; Maier, Donald R.; Neth, William F.; and Winburn, Charles F., 5,611,124, Cl. 27-2.000.
Netlon Limited: *See*—
Orr, Brian; and Wrigley, Nigel E., 5,612,081, Cl. 427-8.000.
Netzer, Emanuel: *See*—
Brüstle, Klaus; Netzer, Emanuel; and Huber, Edgar, 5,611,637, Cl. 402-297.000.
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Leong, Tony P.; North, Edward S.; and Herbst, Richard L., 5,611,946, Cl. 219-121.600.
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Wilson, Elaine L.; and Gabrilove, Janice, 5,612,211, Cl. 435-378.000.
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Friesen, Dwayne T.; Newbold, David D.; McCray, Scott B.; and Ray, Roderick J., 5,611,842, Cl. 95-50.000.
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Kolouch, Robert J.; Reichert, David L.; Freed, Robert L.; Birchenall, Andrew K.; Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,611,897, Cl. 204-252.000.
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NGK Insulators, Ltd.: *See*—
Goto, Daisaku, 5,612,069, Cl. 425-527.000.
Kajita, Masaharu; Kajihara, Takehiro; and Totoki, Takao, 5,612,154, Cl. 429-193.000.
Seike, Shoji; Shimizu, Hideki; and Tani, Makoto, 5,612,291, Cl. 505-470.000.
Soma, Takao; Takahashi, Tomonori; and Isomura, Manabu, 5,612,012, Cl. 423-246.000.
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Nguyen, Chanh: *See*—
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Barresi, Thomas; Scalese, Robert; Riedi, Eric; Frudden, Jon E.; Hall, Randy; Nguyen, Son; and Anderson, Robert, 5,611,784, Cl. 604-211.000.

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Lawson, Terence M.; and Nicholls, Stephen L., 5,612,162, Cl. 430-113.000.
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Jacob, Werner; Niederhüfner, Manfred; and Heyne, Jürgen E., 5,611,733, Cl. 464-140.000.
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Fuwa, Naohide; Tanaka, Hiroshi; Miyashita, Shigeki; Nihei, Hiroaki; Fukuyama, Tadashi, deceased, 5,611,314, Cl. 123-491.000.
Nihon Medi-Physics Co., Ltd.: *See*—
Mito, Yutaka; Katayama, Hitoshi; and Tobiki, Hisao, 5,611,785, Cl. 604-239.000.
Nihon Plast Co., Ltd.: *See*—
Inaba, Kazuo; Hamanaka, Tatsuo; and Maeda, Mitsuyo, 5,611,565, Cl. 280-728.300.
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Makino, Nobuhiko, 5,612,879, Cl. 364-426.010.
Nijhuis, Walter H. N.; Talma, Auke G.; Vertommen, Luc L. T.; and Maillard, Bernard J., to Akzo Nobel nv. Process for molecular weight regulation in (co)polymers. 5,612,430, Cl. 526-232.500.
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Matsuzaki, Kouichi; and Yamagishi, Setsuo, 5,611,406, Cl. 180-167.000.
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Aikawa, Toshiya; Tazawa, Masashi; and Fujinawa, Nobuhiro, 5,612,811, Cl. 359-204.000.
Brandestini, Marco; and Ferraro, Richard F., 5,612,794, Cl. 358-505.000.
Kumagai, Satoru; and Ohki, Hiroshi, 5,612,818, Cl. 359-385.000.
Ohsawa, Keiji, 5,612,762, Cl. 396-114.000.
Ohshita, Koichi, 5,612,826, Cl. 359-819.000.
Tanaka, Takumi, 5,612,754, Cl. 351-211.000.
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Moroto, Syuzo; Sumiya, Koji; Ito, Yasunobu; Yamada, Kunihiro; Nimura, Mitsuhiro; and Yano, Takeshi, 5,612,881, Cl. 364-449.300.
Ninomiya, Ryoji: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Nippon High Strength Concrete Co. Ltd.: *See*—
Hayashi, Mitsutoshi; and Ishitani, Mitsuo, 5,611,979, Cl. 264-71.000.
Nippon Hoso Kyokai: *See*—
Gohshi, Seiichi; Izumi, Yoshinori; Naemura, Masahide; and Yamaguchi, Kouichi, 5,612,748, Cl. 348-424.000.
Nippon Oil Co., Ltd.: *See*—
Kobayashi, Seizo; Nomiyama, Kazutosi; Iwanami, Yoshimu; Yoshida, Sumio; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 5,612,125, Cl. 442-170.000.
Nippon Paint Co., Ltd.: *See*—
Nojiri, Hiroyuki; Kawakami, Ichiro; and Yamada, Mitsuo, 5,612,395, Cl. 523-415.000.
Nippon Paper Industries, Ltd.: *See*—
Satake, Toshimi; Takano, Toshiyuki; Hayasaka, Hideki; Uehori, Yukiko; and Nagai, Tomoaki, 5,612,279, Cl. 503-201.000.
Nippon Petrochemicals Co., Ltd.: *See*—
Kobayashi, Seizo; Nomiyama, Kazutosi; Iwanami, Yoshimu; Yoshida, Sumio; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 5,612,125, Cl. 442-170.000.
Nippon Petroleum Refining Company Limited: *See*—
Kawamura, Akira; Suzuki, Susumu; and Imamura, Masahumi, 5,611,894, Cl. 196-14.500.
Nippon Preston Kabushiki Kaisha: *See*—
Jinno, Chitoshi; Toyohara, Hiroyuki; Mimura, Hikaru; and Murohashi, Takashi, 5,612,116, Cl. 428-143.000.
Nippon Shinyaku Co. Ltd.: *See*—
Maruo, Shigeaki; Tachikake, Noriyuke; and Ezure, Yohji, 5,612,203, Cl. 435-101.000.
Nippon Soda Co., Ltd.: *See*—
Ishimitsu, Keiichi; Ohishi, Haruhito; Hatano, Renpei; Mitsui, Jun; Suzuki, Junji; Yamada, Tomio; and Takakusa, Nobuo, 5,612,358, Cl. 514-357.000.
Nippon Soken, Inc.: *See*—
Uchida, Kazuhide; Matsuda, Mikio; Inagaki, Mitsuo; and Sakai, Takeshi, 5,611,675, Cl. 417-270.000.
Nippon Steel Corporation: *See*—
Matsuno, Keishi, 5,613,211, Cl. 455-51.100.
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Nippon Telegraph & Telephone Co.: *See*—
Sakamoto, Hideki; Nishimura, Kazutoshi; Suzuki, Hideharu; Kawaguchi, Tomoaki; Nakano, Osamu; and Mori, Tatsuo, 5,612,790, Cl. 386-69.000.
Takemura, Katsuya; Tsuchiya, Junji; Ishihara, Toshinobu; Tanaka, Akinobu; Kawai, Yoshio; and Nakamura, Jiro, 5,612,170, Cl. 430-270.100.
Nippon Telegraph and Telephone Corporation: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,613,021, Cl. 385-17.000.
Nippondenso Co., Ltd.: *See*—
Arakawa, Miyao, 5,612,618, Cl. 324-207.250.
Dohta, Hisayo; and Kawai, Katsuhiko, 5,611,315, Cl. 123-492.000.
Kamizono, Tsutomu; and Takafuji, Tetsuya, 5,611,704, Cl. 439-164.000.
Katayama, Masayuki; Kato, Akira; Ito, Nobuei; and Hattori, Tadashi, 5,612,591, Cl. 313-503.000.
Shinojima, Masaaki, 5,611,304, Cl. 123-90.150.
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Nishi, Kunihiko: *See*—
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.
Nishi, Mineo; and Teramoto, Tadashi, to Mitsubishi Chemical Corporation. Composition for anti-reflective coating on resist. 5,611,850, Cl. 106-287.260.
Nishida, Ikuharu: *See*—
Nomura, Yasuhiko; Nishida, Ikuharu; and Kashima, Tadaaki, 5,611,819, Cl. 8-529.000.
Nishida, Tetsuo. Water treatment device. 5,611,926, Cl. 210-512.300.
Nishida, Toshiyuki: *See*—
Oshima, Yoshikazu; Kato, Atsushi; Ikeo, Mitsuru; Nishida, Toshiyuki; Ueda, Kazuhiro; Nakamura, Katsunori; Noseyama, Ryuichi; Ishibashi, Kenichiro; and Aoki, Shigeru, 5,611,316, Cl. 123-494.000.
Nishii, Kiyofumi: *See*—
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Nishikawa, Hiroshi: *See*—
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Nishimura, Asao: *See*—
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.
Nishimura, Katsunori; Honbo, Hidetoshi; Gotoh, Akihiro; Mizumoto, Mamoru; and Horiba, Tatsuo, to Hitachi, Ltd. Method and apparatus for treatment of a battery containing alkali metal. 5,612,150, Cl. 429-49.000.
Nishimura, Kazutoshi: *See*—
Sakamoto, Hideki; Nishimura, Kazutoshi; Suzuki, Hideharu; Kawaguchi, Tomoaki; Nakano, Osamu; and Mori, Tatsuo, 5,612,790, Cl. 386-69.000.
Nishimura, Masayuki: *See*—

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Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Kiyohara, Yuji; Hibino, Yoshihiko, and Yasutomo, Yuichi, 5,612,681, Cl. 340-825.210.
Nishimura, Soichiro: *See*—
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Nishino, Yasuhiro: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.
Nishiyama, Shigeki, to Mikado Propeller Co., Ltd. Auxiliary propelling device. 5,611,718, Cl. 440-49.000.
Nishizawa, Hiroyuki: *See*—
Ohtomo, Fumio; Hayashi, Kunihiro; Kodaira, Jun-ichi; Nishizawa, Hiroyuki; Yoshino, Ken-ichiro; Hirano, Satoshi; and Ogawa, Yohei, 5,612,781, Cl. 356-152.200.
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Kiyomine, Akira; Nishizawa, Yoshinori; Nöcker, Bernd; and Rose, Burkhard, 5,612,023, Cl. 424-70.500.
Nissan Motor Co., Ltd.: *See*—
Arakawa, Takuya; Tako, Hiroshi; and Tohata, Toru, 5,612,393, Cl. 523-145.000.
Ino, Yukihiro; Kishimoto, Youichi; Iochi, Atsushi; and Shoji, Makoto, 5,612,672, Cl. 340-449.000.
Nisshin Steel Co., Ltd.: *See*—
Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, 5,612,090, Cl. 427-255.300.
Nisshinbo Industries, Inc.: *See*—
Nagata, Takeshi, 5,611,259, Cl. 91-415.000.
Nissin Kogyo Co., Ltd.: *See*—
Iijima, Yoichi, 5,611,131, Cl. 29-235.000.
Nino Chemical Industry Co., Ltd.: *See*—
Irizawa, Tadashi; Morooka, Masahiko; and Miyanoki, Masahiko, 5,612,388, Cl. 522-6.000.
Takayanagi, Yasuyuki; Endou, Satoshi; and Sugama, Naoki, 5,612,303, Cl. 510-174.000.
Nitto Denko Corporation: *See*—
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.
Nizar, P. K.; and Carson, David, to Intel Corporation. Programmable multiprocessor interrupt controller system with a processor integrated local interrupt controller. 5,613,128, Cl. 395-739.000.
No, Chang H., to Hyundai Electronics Industries Co., Ltd. Apparatus and method for fast changeover in duplex system. 5,612,947, Cl. 370-228.000.
Nobutani, Toshiyuki; Ina, Kenzoh; Shimakura, Masami; Tanahashi, Junichi; Ono, Kenichiro; Morimoto, Hajime; Sakashita, Tatsuya; and Matsuzaki, Eiichi, to Canon Kabushiki Kaisha. Display control system and method for controlling data based on supply of data. 5,613,103, Cl. 395-501.000.
Nöcker, Bernd: *See*—
Kiyomine, Akira; Nishizawa, Yoshinori; Nöcker, Bernd; and Rose, Burkhard, 5,612,023, Cl. 424-70.500.
Noda, Yumiki: *See*—
Okazaki, Katuhiko; Kashima, Mikito; Noda, Yumiki; Jibiki, Hiroshi; and Honma, Takashi, 5,612,442, Cl. 528-212.000.
Noel, Nadine: *See*—
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; Lecomte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,612,371, Cl. 514-465.000.
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Nojiri, Hidetoshi: *See*—
Uchida, Mamoru; and Nojiri, Hidetoshi, 5,613,020, Cl. 385-9.000.
Nojiri, Hiroyuki; Kawakami, Ichiro; and Yamada, Mitsuo, to Nippon Paint Co., Ltd. Pigment grinding resin composition for electrodeposition paint and pigment paste containing the same. 5,612,395, Cl. 523-415.000.
Nokia Mobile Phones Ltd.: *See*—
Cole, Richard A., 5,612,704, Cl. 343-702.000.
Kivari, Raimo K.; and Kontas, Veijo L., 5,613,235, Cl. 455-343.000.
Nolan, Daniel A.: *See*—
Antos, A. Joseph; Bhagavatula, Venkata A.; Chowdhury, Dipakbin Q.; and Nolan, Daniel A., 5,613,028, Cl. 385-123.000.
Nomiyama, Kazutosi: *See*—
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Mitsui, Hiroyuki; Oya, Shiro; Nomura, Etuzo; Tagawa, Yuji; and Kurahashi, Yoichi, 5,611,293, Cl. 112-470.180.
Nomura, Yasuhiko; Nishida, Ikuharu; and Kashima, Tadaaki, to Toyo Boseki Kabushiki Kaisha. Fabric superior in anti-drape stiffness, stiffness and soft handle, and manufacture thereof. 5,611,819, Cl. 8-529.000.
Norden-Paul, Ronald: *See*—
Thurman, Audree; Person, Stan; Norden-Paul, Ronald; and Shelton, Richard, 5,613,106, Cl. 395-620.000.
Nordica S.p.A.: *See*—
Lucchetta, Faustino; and Barbisan, Silvano, 5,611,154, Cl. 36-50.500.
Nordson Corporation: *See*—
Mulder, Douglas C.; Niemiec, Ronald E.; Pintelon, Joseph; Pleuse, Harald; Macartney, Lawrence J.; Matsunaga, Masafumi; and Scarbrough, Don R., 5,612,096, Cl. 427-466.000.
Norfin International, Inc.: *See*—
Snellman, Donald L.; and Tonkin, Dean G., 5,611,949, Cl. 219-121.670.
Norimatsu, Noriko: *See*—
Ishida, Takeshi; and Norimatsu, Noriko, 5,613,202, Cl. 455-33.100.
Noritsu Koki Co., Ltd.: *See*—
Yoshikawa, Tohru; and Yamaji, Yoshiyuki, 5,612,765, Cl. 355-72.000.
North Carolina State University: *See*—
Baliga, Bantval J., 5,612,567, Cl. 257-475.000.
Dewhirst, Mark W.; Meyer, Robert E.; Bonaventura, Joseph; and DeAngelo, Joseph, 5,612,310, Cl. 514-6.000.
Samimi, Mohammad-H. H.; Swartzel, Kenneth R.; and Ball, Hershell R., Jr., 5,612,076, Cl. 426-234.000.
North, Edward S.: *See*—
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Northern Telecom Limited: *See*—
Chivukula, Vasanta; and Leung, Pak K., 5,612,560, Cl. 257-309.000.
Gibson, Garnet F. R.; and Wood, Steven W., 5,612,923, Cl. 365-230.050.
Northrop Grumman Corp.: *See*—
Barrett, Donovan L.; Hobgood, Hudson M.; McHugh, James P.; and Hopkins, Richard H., 5,611,955, Cl. 252-62.30C.
Clarke, Rowland C.; Siergiej, Richard R.; and Sriram, Saptharishi, 5,612,547, Cl. 257-77.000.
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Soderlund, Martin J.; Nutter, Francis C.; Couilliard, Robert P.; LeMieux, Pierre J.; and Waugh, Arthur, 5,611,476, Cl. 228-42.000.
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O'Brien, Jeanne A.; and Gipp, Mark M., to S. C. Johnson & Son, Inc. Stable enzyme-containing aqueous laundry prespotting composition. 5,612,306, Cl. 510-321.000.

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Oden, Laurance L.; Turner, Paul C.; O'Connor, William K.; and Hansen, Jeffrey S., 5,613,244, Cl. 588-20.000.

Oda, Hiroyuki: *See*—
Sakai, Makoto; Ninomiya, Ryoji; Nakamura, Koji; Dewa, Koichi; Tsukada, Hiroyuki; Uehara, Keiichi; Mamata, Tohru; Nishino, Yasuhiro; Oda, Hiroyuki; Kubota, Hiroyuki; Hori, Shuji; and Kumakawa, Masanobu, 5,613,135, Cl. 395-800.000.

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Veh, Gerhard; and Oerter, Jurgen, 5,611,434, Cl. 209-273.000.

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Ogasawara, Aichi: *See*—
Yoshimura, Hiroyuki; Nagai, Mitsuo; Hibi, Shigeki; Kikuchi, Koichi; Hishinuma, Icharu; Nagakawa, Junichi; Asada, Makoto; Miyamoto, Norimasa; Hida, Takayuki; Ogasawara, Aichi; and Yamatsu, Isao, 5,612,356, Cl. 514-338.000.

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Ogawa, Yohei: *See*—
Ohtomo, Fumio; Hayashi, Kunihiro; Kodaira, Jun-ichi; Nishizawa, Hiroyuki; Yoshino, Ken-ichiro; Hirano, Satoshi; and Ogawa, Yohei, 5,612,781, Cl. 356-152.200.

Ogden, John E.; Abrahamson, Kent D.; Bryant, Peter L.; Joyce, Thomas P.; and Ziegler, John S., to Abbott Laboratories. Liquid flow monitoring and control system. 5,611,458, Cl. 222-1.000.

Ogihara, Takeo: *See*—
Shouji, Masuhiro; Ogihara, Takeo; Katono, Hiroki; and Sakagami, Teruo, 5,611,965, Cl. 252-582.000.

Ogino, Masanori; Iwahara, Yoshiaki; Kuroda, Shoji; Sakamoto, Shuichi; Itoh, Takashi; and Kamiya, Makoto, to Hitachi, Ltd. Rear projection type display system. 5,611,611, Cl. 353-74.000.

Ogino, Mitsugu: *See*—
Simizu, Terumasa; Tanoue, Mutsurou; Kano, Masaya; Ogino, Mitsugu; and Sato, Jun, 5,612,832, Cl. 360-73.040.

Ogoro, Kazuo, to NEC Corporation. Automatic frequency control circuit for a receiver of phase shift keying modulated signals. 5,612,977, Cl. 375-344.000.

Oguchi, Shigeki; Yazaki, Jun-ichi; and Nagata, Shigeyuki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Magnetic card reader. 5,612,526, Cl. 235-375.000.

Oguma, Koji: *See*—
Sato, Tomio; Sato, Hitoshi; Oguma, Koji; and Fukuda, Yoshinori, 5,611,351, Cl. 128-734.000.

Ogura, Shinji; and Hasegawa, Tatsuya, to Japan Tobacco Inc. Predrying apparatus for a filter cigarette manufacturing system. 5,611,359, Cl. 131-88.000.

Ohara, Osamu: *See*—
Arita, Hitoshi; Ohara, Osamu; and Ishizaki, Jun, 5,612,190, Cl. 435-69.100.

O'Hara, Robert J.: *See*—
Knowlton, Christopher M.; Strickland, Timothy A.; and O'Hara, Robert J., 5,611,108, Cl. 15-340.400.

Ohashi, Michihito: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,612,766, Cl. 399-23.000.

Ohashi, Shintaro: *See*—
Komiya, Yuji; Uchiumi, Hiroyuki; Ohashi, Shintaro; and Kuboniwa, Akio, 5,612,106, Cl. 428-36.910.

Ohda, Toyoo; Ohtani, Wataru; Ohya, Tomoshi; Kuwae, Shinobu; Tomomitsu, Kenji; Kobayashi, Kaoru; and Ohmura, Takao, to Green Cross Corporation, The. Process for producing recombinant human serum albumin. 5,612,197, Cl. 435-69.600.

Oheda, Shigeto: *See*—
Ito, Jun; Kumai, Hiroyuki; Matsuda, Yasumasa; Nakajima, Akira; Inoue, Yoshiisa; Koreeda, Hiroyuki; and Oheda, Shigeto, 5,612,720, Cl. 345-179.000.

Ohishi, Haruhito: *See*—
Ishimitsu, Keiichi; Ohishi, Haruhito; Hatano, Renpei; Mitsui, Jun; Suzuki, Junji; Yamada, Tomio; and Takakusa, Nobuo, 5,612,358, Cl. 514-357.000.

Ohki, Hiroshi: *See*—
Kumagai, Satoru; and Ohki, Hiroshi, 5,612,818, Cl. 359-385.000.

Ohkuma, Hiroshi: *See*—
Maehara, Katsumi; and Ohkuma, Hiroshi, 5,611,407, Cl. 180-249.000.

Ohman, Randall L.: *See*—
Bartlett, Alan L.; and Ohman, Randall L., 5,611,096, Cl. 5-617.000.

Ohmiya, Akio: *See*—
Takamura, Masashi; and Ohmiya, Akio, 5,613,170, Cl. 396-435.000.

Ohmura, Hiroshi: *See*—
Ichikawa, Hiroyuki; Ohmura, Hiroshi; Hasegawa, Shizuo; Isemura, Keizo; and Aiba, Yoshinobu, 5,612,792, Cl. 358-500.000.

Ohmura, Takao: *See*—
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Ohmura, Toru: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.

Ohnishi, Shuji: *See*—
Ueda, Takuya; Nakajima, Kikuo; Tanifuji, Yoichi; Amano, Tadashi; and Ohnishi, Shuji, 5,612,437, Cl. 526-344.200.

Ohsaki, Takahisa: *See*—
Takami, Norio; Ohsaki, Takahisa; and Asami, Yoshiaki, 5,612,155, Cl. 429-218.000.

Ohsawa, Keiji, to Nikon Corporation. Focus detection device for a camera. 5,612,762, Cl. 396-114.000.

Ohshita, Koichi, to Nikon Corporation. Lens holding device for holding a lens system and method for making. 5,612,826, Cl. 359-819.000.

Ohta, Akira: *See*—
Valenti, Salvatore; Leikauf, Bernhard; and Ohta, Akira, 5,612,396, Cl. 524-5.000.

Ohta, Hideo: *See*—
Iijima, Takashi; and Ohta, Hideo, 5,611,275, Cl. 101-181.000.

Ohta, Toshio: *See*—
Tsukamoto, Yoji; Oiri, Shigeto; and Ohta, Toshio, 5,612,122, Cl. 428-216.000.

Ohta, Yoshiro: *See*—
Sasaki, Nobuyoshi; Yokokawa, Tetsuya; Hashimoto, Yoshikazu; Ohta, Yoshiro; and Sekiguchi, Hideo, 5,611,848, Cl. 106-38.200.

Ohtani, Hidetoshi: *See*—

Eto, Mamoru; Yasui, Masaharu; Ohtani, Hidetoshi; and Aso, Taiichi, 5,611,980, Cl. 264-87.000.

Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, to Semiconductor Energy Laboratory Co., Ltd. Method for manufacturing a semiconductor device using a catalyst. 5,612,250, Cl. 437-101.000.

Ohtani, Wataru: *See*—
Ohda, Toyoo; Ohtani, Wataru; Ohya, Tomoshi; Kuwae, Shinobu; Tomomitsu, Kenji; Kobayashi, Kaoru; and Ohmura, Takao, 5,612,197, Cl. 435-69.600.

Ohtomo, Fumio; Hayashi, Kunihiro; Kodaira, Jun-ichi; Nishizawa, Hiroyuki; Yoshino, Ken-ichiro; Hirano, Satoshi; and Ogawa, Yohei, to Kabushiki Kaisha TOPCON. Object reflector detection system. 5,612,781, Cl. 356-152.200.

Ohtsuji, Shinya: *See*—
Kanekawa, Nobuyasu; Suzuki, Shoji; Sato, Yoshimichi; and Ohtsuji, Shinya, 5,612,946, Cl. 370-216.000.

Ohya, Tomoshi: *See*—
Ohda, Toyoo; Ohtani, Wataru; Ohya, Tomoshi; Kuwae, Shinobu; Tomomitsu, Kenji; Kobayashi, Kaoru; and Ohmura, Takao, 5,612,197, Cl. 435-69.600.

Oi Denki Co., Ltd.: *See*—
Tajima, Kazuaki; and Kikuchi, Masahiro, 5,613,236, Cl. 455-351.000.

Oiri, Shigeto: *See*—
Tsukamoto, Yoji; Oiri, Shigeto; and Ohta, Toshio, 5,612,122, Cl. 428-216.000.

Oka, Koichiro: *See*—
Iguchi, Yuichiro; Kimura, Michio; and Oka, Koichiro, 5,612,390, Cl. 522-173.000.

Okabayashi, Ichiro: *See*—
Kishi, Tetsuji; Okabayashi, Ichiro; Mori, Yasuhiro; Migita, Manabu; and Kuwata, Yuri, 5,613,138, Cl. 395-800.000.

Okabe, Keiichiro; and Hibi, Toyoji, to Kabushiki Kaisya Advance; and Hisamitsu Pharmaceutical Co., Inc. Printed electrode for biological use. 5,611,339, Cl. 128-639.000.

Okada, Kenichi: *See*—
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.

Okada, Kenji: *See*—
Inoue, Tsuyoshi; Nakamachi, Keiichi; Nakamura, Takeshi; and Okada, Kenji, 5,612,227, Cl. 436-180.000.

Okada, Masahiro, to Sea-Chang Ting; and Shigeo Nakata. Automatically openable and closable hopper set for a fruit weighing and sorting machine. 5,611,437, Cl. 209-592.000.

Okada, Masao; and Sato, Kensaku, to Hirose Electric Co., Ltd. Electrical connector assembly. 5,611,711, Cl. 439-608.000.

Okada, Shinjiro; Taniguchi, Osamu; Mizuno, Hironobu; and Inaba, Yutaka, to Canon Kabushiki Kaisha. Chiral smectic liquid crystal device having alignment film over electrodes being different and having different pretilt from alignment film between electrodes. 5,612,802, Cl. 349-129.000.

Okamoto, Kenichi; and Taguchi, Naoto, to Yazaki Corporation. Lever connector. 5,611,702, Cl. 439-157.000.

Okamoto, Kenichi; and Taguchi, Naoto, to Yazaki Corporation. Lever-type connector. 5,611,703, Cl. 439-157.000.

Okamoto, Masayuki: *See*—
Yamada, Nobuaki; Kondo, Masahiko; Okamoto, Masayuki; and Kozaki, Shuichi, 5,612,803, Cl. 349-188.000.

Okamoto, Setsuo: *See*—
Akashi, Yoshihiro; Kuramochi, Kaoru; Okamoto, Setsuo; Tsujimoto, Yasuji; and Ito, Makoto, 5,611,857, Cl. 117-217.000.

Okamoto, Shotaro: *See*—
Morimoto, Yasumasa; Okamoto, Shotaro; and Kizu, Seiichi, 5,612,727, Cl. 347-198.000.

Okamoto, Takashi; Kishida, Minoru; Hioki, Masanobu; Ishikawa, Atsuhiro; and Kawakita, Toshikazu, to Unitika Ltd. Biaxilly oriented polyamide film and its production process. 5,612,105, Cl. 428-34.800.

Okamura, Kazuhisa; and Fujita, Yoshio, to Yamaha Corporation. Signal processor having a delay ram for generating sound effects. 5,613,147, Cl. 395-800.000.

Okazaki, Katuhiko; Kashima, Mikito; Noda, Yumiki; Jibiki, Hiroshi; and Honma, Takashi, to Ube Industries, Ltd.; and Meiwa Plastic Industries, Ltd. Phenol novolak condensate and bis(methoxymethyl)biphenyl for production thereof. 5,612,442, Cl. 528-212.000.

Okazaki, Yasunao: *See*—
Kimura, Tadashi; Yoshida, Yoshikazu; Mizuguchi, Shinichi; and Okazaki, Yasunao, 5,611,864, Cl. 118-723.0MR.

Oki Electric Industry Co., Ltd.: *See*—
Ooishi, Noboru; Andou, Hirokazu; Suemune, Toshiro; and Kishimoto, Mitsuru, 5,611,631, Cl. 400-124.110.

Okimoto, Kazuki, to Fuji Electric Co., Ltd. Ink-jet recording head with plastic and glass plates. 5,612,725, Cl. 347-71.000.

Okita, Tsutomu; Watanabe, Hideomi; Ishida, Toshio; Satake, Masaki; and Hashimoto, Hiroshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium having a carbon protective layer and a fluoro-lubricant supplied from a backcoat layer. 5,612,134, Cl. 428-336.000.

Okumura, Katsuya: *See*—
Mitsui, Tadashi; and Okumura, Katsuya, 5,611,942, Cl. 216-67.000.

Okuno, Ryoji, to Canon Kabushiki Kaisha. Camera adapted to use film cartridge having light shielding door. 5,612,760, Cl. 396-513.000.

Okutomo, Takayuki; and Ikemizu, Morihiko, to Kabushiki Kaisha Toshiba. Method for manufacturing a semiconductor device wherein a semiconductor chip is mounted on a lead frame. 5,612,259, Cl. 437-209.000.

Okuyama, Masayoshi: *See*—
Sato, Hiroshi; Okuyama, Masayoshi; and Aoki, Nobuhiro, 5,612,931, Cl. 368-67.000.

Olds, Keith A.; Vatt, Gregory B.; and Kurby, Christopher N., to Motorola, Inc. Satellite-based cellular messaging system and method of operation thereof. 5,613,194, Cl. 455-12.100.

Olin Microelectronic Chemicals, Inc.: *See*—
Honda, Kenji; and Hurditch, Rodney, 5,612,304, Cl. 510-176.000.

Oliva, David C., to Cobra Electronics Corp. Combined motion detector/transmitter for a traffic information warning system. 5,612,685, Cl. 340-901.000.

Oliver, Evon L.: *See*—
Oliver, James; and Oliver, Evon L., 5,611,514, Cl. 248-357.000.

Oliver, James; and Oliver, Evon L. Adjustable pipe pier. 5,611,514, Cl. 248-357.000.

Ollier, Eric: *See*—
Labeye, Pierre; and Ollier, Eric, 5,612,815, Cl. 359-320.000.

Olmstead, William N.: *See*—
Siskin, Michael; Ferrughelli, David T.; Katritzky, Alan R.; and Olmstead, William N., 5,611,915, Cl. 208-433.000.

Olnowich, Howard T., to International Business Machines Corporation. Multi-media serial line switching adapter for parallel networks and heterogeneous and homologous computer systems. 5,612,953, Cl. 370-367.000.

Olofsson, Bengt; Olsson, Jimmy; Remen, Milan; and Gullberg, Kenneth, to AB Volvo. Method and apparatus for destacking sheet metal members. 5,611,658, Cl. 414-797.300.

Olsen, Ib I.: *See*—
Moulton, Russell D.; and Olsen, Ib I., 5,612,153, Cl. 429-191.000.

Olsen, Steven: *See*—
Hylton, Denny L.; Olsen, Steven; Burton, William; and Lichtenwalner, Dave, 5,613,191, Cl. 455-3.100.

Olsen, Ulf N.; Franke, Erik; and Strand, Eilif, to Minnesota Mining and Manufacturing Company. Transfer article for forming retroreflective and colored images and method of making same. 5,612,119, Cl. 428-195.000.

Olshansky, Robert: *See*—
Su, Shing-Fong; and Olshansky, Robert, 5,612,806, Cl. 359-125.000.

Olson, Brent K.; Storey, J. Kirk; Green, David J.; Saderholm, Davin G.; Bunker, S. Mark; and Minert, Daniel G., to Morton International, Inc. Airbag inflator attachment with snap-in sleeve. 5,611,563, Cl. 280-728.200.

Olson, Scot L., to Rockwell International. Fluorescent tube thermal management system utilizing thermal electric cooler units. 5,612,593, Cl. 315-117.000.

Olsson, Jimmy: *See*—
Olofsson, Bengt; Olsson, Jimmy; Remen, Milan; and Gullberg, Kenneth, 5,611,658, Cl. 414-797.300.

Olympus Optical Co., Ltd.: *See*—
Hara, Minoru, 5,612,804, Cl. 349-149.000.

Omata, Yuuji: *See*—
Komura, Nobuyuki; and Omata, Yuuji, 5,612,146, Cl. 428-694.00T.

Onaka, Hiroshi: *See*—
Ishikawa, George; Miyata, Hideyuki; Onaka, Hiroshi; Sekiya, Motoyoshi; and Otsuka, Kazue, 5,612,807, Cl. 359-161.000.

ONCOcath, Inc.: *See*—
Williams, Jeffery A., 5,611,767, Cl. 600-2.000.

O'Neil, Gerald F.: *See*—
DiAngelo, Michael F.; and O'Neil, Gerald F., 5,613,164, Cl. 395-884.000.

Onishi, Hiroyoshi: *See*—
Matsui, Komaharu; Eda, Takeshi; Wakimoto, Mitsuo; Shibata, Kenichi; Suzuki, Toshitaka; Shirai, Mitsuyoshi; Okada, Kenichi; Inoue, Tsuyoshi; Onishi, Hiroyoshi; and Kusaka, Taiki, 5,612,135, Cl. 428-343.000.

Onishi, Hisatomo, to Teijin Seiki Co., Ltd. Photoforming method and apparatus. 5,611,880, Cl. 156-234.000.

Onitsuka, Shigenori; Ichiki, Masayoshi; Inazumi, Chikashi; Watanabe, Takanobu; Fukuju, Atsushi; Akiyama, Masaki; Sairyo, Yuki; and Kobayashi, Hidetsugu, to Hitachi Zosen Corporation; and Pollution Related Health Damage Compensation & Prevention Association, The. Adsorbents for removing low-concentratioo nitrogen oxides. 5,612,276, Cl. 502-415.000.

Ono, Ichiro; Isobe, Kenichi; Tsukada, Hironori; Ueji, Kenji; and Komemushi, Masakazu, to Shin-Etsu Chemical Co., Ltd.; and Konishi Co., Ltd. Agent for water-repellent treatment of fibers. 5,612,433, Cl. 526-279.000.

Ono, Kenichiro: *See*—
Nobutani, Toshiyuki; Ina, Kenzoh; Shimakura, Masami; Tanahashi, Junichi; Ono, Kenichiro; Morimoto, Hajime; Sakashita, Tatsuya; and Matsuzaki, Eiichi, 5,613,103, Cl. 395-501.000.

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Endo, Yoshishige; Ono, Masahiko; Yamada, Toshihiro; Kawamura, Takao; Kawamura, Hiromitsu; Kobara, Katsumi; and Araya, Takeshi, 5,612,128, Cl. 428-323.000.

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Welner, Stephen, 5,612,870, Cl. 395-203.000.
Orthopedic Technology Incorporated: *See*—
Nash, Michael; and Stafford, Gary, 5,611,773, Cl. 602-16.000.
Osada, Torachika: *See*—
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Ott, Ronald L.: *See*—
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Talonen, Timo; Eerola, Heikki; and Roine, Antti, 5,611,989, Cl. 266-44.000.
Ouziel, Philippe, to Ciba-Geigy Corporation. Process for dyeing wool-containing fibre materials. 5,611,820, Cl. 8-533.000.
Ovadia, Victor A. Discount offer redemption system and method. 5,612,527, Cl. 235-383.000.
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Owens, Alexander H., to LSI Logic Corporation. Multilevel gate array integrated circuit structure with perpendicular access to all active device regions. 5,612,552, Cl. 257-202.000.
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Packard, Edward L. Method for accurately setting the gap in an inductive magnetic head. 5,612,843, Cl. 360-123.000.
Page, Larry; and Palmer, Darrel, to Ballard Medical Products, Inc. Single use medical aspirating device and method. 5,611,336, Cl. 128-207.160.
Page, Nancy: *See*—
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Paino, Robert. Method of playing a ball game. 5,611,541, Cl. 273-317.000.
Pajula, Juhani; Hipsimaki, Martti; Kivimaa, Juha; Taskinen, Pekka; Laapotti, Jorma; and Karvinen, Mikko, to Valmet Corporation. Device for dewatering of a paper web including prepressing with extended nip shoe. 5,611,893, Cl. 162-360.200.
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Pandera Enterprises Inc.: *See*—
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Pandey, Raj N.; Ratnani, Kebir; Varma, Raghunandan L.; Elkaim, David; and Pandey, Rupesh N., to Gas Metropolitain & Company, Limited; and Pandey, Raj N. Selective catalytic reduction of nitrogen oxides. 5,612,010, Cl. 423-239.100.
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Hoffman, Ned; Pare, David F., Jr.; and Lee, Jonathan A., 5,613,012, Cl. 382-115.000.
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Park, Kyu-chan; Shim, Tae-earn; and Yu, Seon-il, to Samsung Electronics Co., Ltd. Semiconductor device having pillar shaped transistor and a method for manufacturing the same. 5,612,559, Cl. 257-302.000.
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Pascual, Wilfred D., to Wilden Pump & Engineering Co. Shaft seal arrangement for air driven diaphragm pumping systems. 5,611,678, Cl. 417-393.000.
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Paul, Leonard. Air freshening and/or deodorizing system. 5,611,486, Cl. 239-56.000.
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Pearson, Robert E.; Dickson, Julie A.; Hamilton, Paul T.; Little, Michael C.; and Beyer, Wayne F., Jr., to Becton, Dickinson and Company. Mycobacteriophage specific for the mycobacterium tuberculosis complex. 5,612,182, Cl. 435-6.000.
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Brown, Roger J.; Giese, Erik O.; and Racosky, Michael D., 5,611,155, Cl. 36-118.200.

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Meynier, Christophe, 5,611,707, Cl. 439-353.000.

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Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,612,354, Cl. 514-314.000.

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Libutti, Bruce L.; and Ragosta, Joseph M., 5,611,929, Cl. 210-639.000.

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Kano, Takashi; and Rai, Seizo, 5,611,445, Cl. 215-249.000.

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de Zoeten, Juan P.; Verheijden, Petrus F. H. M.; Groothuizen, Theodorus J. J.; and Raijmakers, Jozef H. M., 5,611,995, Cl. 422-58.000.

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Booth, John S., 5,611,941, Cl. 216-23.000.

Rainin Instrument Co., Inc.: *See—*
Lemieux, David J., 5,612,000, Cl. 422-100.000.

Raleigh, William J.; Thimineur, Raymond J.; and Campagna, James A., to General Electric Company. Curable siloxane polymers containing integral UV absorbers. 5,612,438, Cl. 528-26.000.

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Rall, Douglas V. Multiple hole pattern paper punch apparatus. 5,611,254, Cl. 83-467.100.

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Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,612,888, Cl. 364-478.090.

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Raman, Balan S.: *See—*
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Ramberg, Charles H.: *See—*
Malecek, Edward L.; and Ramberg, Charles H., 5,611,392, Cl. 165-47.000.

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Keller, Gottfried, 5,612,065, Cl. 425-356.000.

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Fileti, Christina M.; Gill, Richard C.; Ramundo, Mark J.; and Renini, Lis K., 5,612,078, Cl. 426-572.000.

Randle, Frank W.: *See—*
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Rao, Gururaj; and Kanno, Hiroki, to Kabushiki Kaisha Toshiba. Apparatus for processing image data among media having different image output sizes. 5,613,017, Cl. 382-174.000.

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Rassias, John N. Security and deployment assembly. 5,611,164, Cl. 42-70.110.

Rateike, Lee R.: *See—*
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Ratz, Gerd: *See—*
Reinhold, Klaus; Ratz, Gerd; and Labaig, Jean-Jacques, 5,611,473, Cl. 226-170.000.

Rau, Timothy P.; and Byler, Galen F. Golf training device. 5,611,737, Cl. 473-137.000.

Rautanen, Pentti K.: *See—*
Karhuketo, Hannu; Pollari, Alpo A.; and Rautanen, Pentti K., 5,612,129, Cl. 428-323.000.

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Raven Industries, Inc.: *See—*
Garry, Jeffrey R.; and Luskey, Gary, 5,611,084, Cl. 2-93.000.

Ray, David S.; Thatcher, Larry E.; and Warren, Henry S., Jr., to International Business Machines Corporation. Multiple execution unit dispatch with instruction shifting between first and second instruction buffers based upon data dependency. 5,613,080, Cl. 395-390.000.

Ray, Roderick J.: *See—*
Friesen, Dwayne T.; Newbold, David D.; McCray, Scott B.; and Ray, Roderick J., 5,611,842, Cl. 95-50.000.

Read, Bradley L.: *See—*
Perkins, Richard W.; and Read, Bradley L., 5,611,650, Cl. 408-87.000.

Read-Rite Corporation: *See—*
Tan, Minshen; Tong, Hua-Ching; Liu, Francis H.; and Tan, Swie-In, 5,612,098, Cl. 427-529.000.

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Record, David W.: *See—*
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,612,071, Cl. 426-3.000.

RedCell, Inc.: *See—*
Pouletty, Philippe; and Pouletty, Christine, 5,612,034, Cl. 424-184.100.

Reddy, Srinivasa S. N.: *See—*
Natarajan, Govindarajan; and Reddy, Srinivasa S. N., 5,613,181, Cl. 419-6.000.

Reed, Gordon K., to ABB Industrial Systems, Inc. Method and apparatus for throttle valve control of a calender roll actuator. 5,611,396, Cl. 165-300.000.

Reedman, David C.: *See—*
Preece, Clive; Simmons, John E. L.; Reedman, David C.; and Topis, Sterghios, 5,611,222, Cl. 69-9.000.

Reel, Jon K.: *See—*
Boyd, Donald B.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Thrasher, K. Jeff; Vasudevan, Venkatraghavan; and Whitesitt, Celia A., 5,612,360, Cl. 514-381.000.

Reese, Morris. Automated directory assistance call completion and calling number delivery system. 5,613,006, Cl. 379-67.000.

Rega, Robert: *See—*
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Rege, Satish L., to Digital Equipment Corporation. Symmetrically switched multimedia system. 5,612,897, Cl. 364-514.00C.

Reggiani, Fabio, to Reggiani, S.p.A. Illuminazione. Low-profile and homogeneous-beam lighting apparatus. 5,611,617, Cl. 362-300.000.

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Reggiani, Fabio, 5,611,617, Cl. 362-300.000.

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Schefczik, Ernst; Sens, Ruediger; Etzbach, Karl-Heinz; Reichelt, Helmut; and Grund, Clemens, 5,612,465, Cl. 534-752.000.

Reichert, David L.: *See—*
Kolouch, Robert J.; Reichert, David L.; Freed, Robert L.; Birchenall, Andrew K.; Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,611,897, Cl. 204-252.000.

Reichert, Patrick: *See—*
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Reichgott, David W.: *See—*
Goliaszewski, Alan E.; Reichgott, David W.; and Sander, Lothar S., 5,612,421, Cl. 525-326.500.

Reider, Elizabeth: *See—*
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Reider, Paul J.: *See—*
Askin, David; Sager, Jess; Rossen, Kai; Volante, Ralph P.; and Reider, Paul J., 5,612,484, Cl. 544-360.000.

Reilly, William P., III, to Florida Power Corporation. Turbine lubrication oil filtration safeguard system. 5,611,411, Cl. 184-6.400.

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Reinicke, Robert H.; Cardin, Joseph M.; and Dalene, Arnold, to Marotta Scientific Control, Inc. Rotary ball valve with retracting seat. 5,611,516, Cl. 251-77.000.

Relly, Robert H. Casket and fabric retainer members therefor. 5,611,126, Cl. 27-19.000.

Remala, Rao V.: *See—*
Koppolu, Srinivasa R.; Hodges, C. Douglas; MacKichan, Barry B.; McDaniel, Richard; Remala, Rao V.; and Williams, Antony S., 5,613,058, Cl. 395-376.000.

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Olofsson, Bengt; Olsson, Jimmy; Remen, Milan; and Gullberg, Kenneth, 5,611,658, Cl. 414-797.300.

Remerowski, David L.; and Boothby, Terry A., to Sencorp. Apparatus for igniting a propellant charge in a tool. 5,611,205, Cl. 60-634.000.

Renard, Pierre: *See—*
Andrieux, Jean; Langlois, Michel; Renard, Pierre; and Delagrange, Philippe, 5,612,368, Cl. 514-418.000.

Renini, Lis K.: *See—*
Fileti, Christina M.; Gill, Richard C.; Ramundo, Mark J.; and Renini, Lis K., 5,612,078, Cl. 426-572.000.

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Repic, Oljan: *See—*
Xu, David; Kapa, Prasad; Repic, Oljan; and Blacklock, Thomas J., 5,612,478, Cl. 540-474.000.

Resch, Dennis E.; and Janssen, David C., to Strattec Security Corporation. Breakaway cylinder head. 5,611,225, Cl. 70-422.000.

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Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, 5,611,936, Cl. 210-747.000.

Research Laboratories of Australia PTY Ltd.: *See—*
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Respaut, James E.: *See—*
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Reticula Corporation: *See—*
Schuette, Wade, 5,613,013, Cl. 382-124.000.

Reubeuze, Yann: *See—*
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Revlon Consumer Products Corporation: *See—*
Leone, Erlinda D., 5,611,361, Cl. 132-218.000.

Rex-Rosenlew International Incorporated: *See—*
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Rexham Graphics Inc.: *See—*
Ellis, Ernest W., 5,612,165, Cl. 430-201.000.

Reyes, Edito: *See—*
Prada, Ricardo; Torrealba, Mariana; Tejada, Jorge; Romero, Yilda; and Reyes, Edito, 5,612,273, Cl. 502-313.000.

Reymann, Joseph: *See—*
Strasser, John G.; Reymann, Joseph; and Fail, John E., 5,612,890, Cl. 364-479.110.

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Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See—*
Ewing, William R.; Becker, Michael R.; Pauls, Henry W.; Cheney, Daniel L.; Mason, Jonathan S.; and Spada, Alfred P., 5,612,353, Cl. 514-309.000.

Rhone-Poulenc Rorer S.A.: *See—*
Becquart, Jérôme; Fleer, Reinhard; and Jung, Gérard, 5,612,196, Cl. 435-69.600.

Rhyne, George W.: *See—*
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Riant, Isabelle: *See—*
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Draper, Kenneth G.; Pavco, Pamela; McSwiggen, James; Gustofson, John; and Stinchcomb, Dan T., 5,612,215, Cl. 435-366.000.

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Brown, Sterling B.; Dai, Kevin H.; Hwang, Chorng-Fure R.; Rice, Steven T.; Scobbo, James J., Jr.; and Yates, John B., 5,612,401, Cl. 524-413.000.

Riceman, Robert G.; and Medina, Mitchell A., to International Patent Holdings Ltd. Magnetic latch. 5,611,120, Cl. 24-303.000.

Richard, Bennett M.; Peterson, Elmer R.; and Horton, Brian J., to Baker Hughes Incorporated. Screen and method of manufacturing. 5,611,399, Cl. 166-230.000.
Richard, Daniel J.; and Frazier, Joseph R., Jr., to Converse Inc. Shoe sole construction containing a composite plate. 5,611,152, Cl. 36-28.000.
Richard Voss Grubenausbau GmbH: *See*—
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Richards-Kortum, Rebecca; Staerkel, Gregg; Yazdi, Youseph; and Mitchell, Michele F., to Board of Regents, The University of Texas Systems. Optical method for the detection of cervical neoplasias using fluorescence spectroscopy. 5,612,540, Cl. 250-461.200.
Richardson, Brian: *See*—
Gilkinson, John J.; and Richardson, Brian, 5,611,944, Cl. 219-117.100.
Richarz, Hans-Peter; Lünenschloss, Dirk; and Wüstenhagen, Bernd, to VITS Maschinenbau GmbH. Device for stream feeding sheets onto a stack. 5,611,529, Cl. 271-183.000.
Richey, Lindell C.: *See*—
Yatka, Robert J.; Richey, Lindell C.; Meyers, Marc A.; and Barkalow, David G., 5,612,070, Cl. 426-3.000.
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Rickenbach, Robert; and Boyer, Ronald G., to Harris Corporation. Device for detecting light emission from optical fiber. 5,612,780, Cl. 356-73.100.
Ricoh Company, Ltd.: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,612,766, Cl. 399-23.000.
Itami, Yukio; and Suzuki, Mitsuo, 5,612,599, Cl. 318-254.000.
Masubuchi, Fumihito; Hotta, Yoshihiko; Takeda, Yusuke; Obu, Makoto; Kawakubo, Toshio; Miyawaki, Katsuaki; and Amano, Tetsuya, 5,612,278, Cl. 503-201.000.
Saitoh, Takashi, 5,613,016, Cl. 382-174.000.
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Riebel, Michael J.; Anderson, Donald E.; Gruber, Carl; Torgusen, Paul; DeGezelle, Robert; and DeGezelle, Molly, to Phenix Biocomposites, Inc. Board stock and method of manufacture from recycled paper. 5,611,882, Cl. 156-272.200.
Riedi, Eric: *See*—
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Friedrich, Hauner; and Manfred, Wagner, 5,611,117, Cl. 19-159.00A.
Lovas, Kurt; Bahlmann, Bernd; Landwehrkamp, Hans; and Schuller, Edmund, 5,611,195, Cl. 57-264.000.
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Idesawa, Masanori, 5,611,162, Cl. 40-435.000.
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Riverwood International Corporation: *See*—
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Rizzi, Robert D.: *See*—
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Rizzuto, Leandro P.; Mulle, Theodore B.; and Braginsky, Asik, to Conair Corporation. Cappuccino maker. 5,611,262, Cl. 99-294.000.
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Benedikt, Walter; Klett, Dittmar; Trachte, Dietrich; Kersting, Hermann; Mueller, Roland; and Fischer, Jochen, 5,612,586, Cl. 313-141.000.
Hilgenberg, Bernd; and Haeckel, Klemens, 5,612,664, Cl. 338-295.000.
Robert, Edgar J., to Molten Metal Technology, Inc. Method and apparatus for injecting wastes into a molten bath with an ejector. 5,613,245, Cl. 588-201.000.
Robert, Pierre; and Spitz, Roger, to Campagnie Generale des Etablissements Michelin - Michelin & Cie; and Elf Atochem S.A. Catalyst for the polymerization of diolefins, method for its preparation, and its use for the preparation of polymers. 5,612,427, Cl. 526-124.900.
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Kadwell, Brian J., 5,612,848, Cl. 361-160.000.
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Robinson, Forrest L.: *See*—
Campbell, Willis R.; Robinson, Forrest L.; Perry, Bruce A.; and Schwlefert, Dan, 5,611,363, Cl. 134-110.000.
Robinson, Janine C.: *See*—
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Röck, Erich; and Dubach, Fredi, to Julius Blum Gesellschaft m.b.H. Mounting plate assembly for a hinge for mounting a door on a frame of an article of furniture. 5,611,112, Cl. 16-237.000.
Röck, Erich; and Dubach, Fredi, to Julius Blum Gesellschaft m.b.H. Frame hinge with perpendicular hinge and articulation axes. 5,611,113, Cl. 16-246.000.
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King, Te P., 5,612,209, Cl. 435-198.000.
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Rockland, Inc.: *See*—
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Rockwell International: *See*—
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Li, Xu, 5,612,996, Cl. 379-390.000.
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Vagher, Michael R., 5,613,233, Cl. 455-296.000.
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Haendel, Richard S.; and Neisch, James C., 5,612,875, Cl. 364-424.040.
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Rockwell, Scott M.: *See*—
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Rodgers, Robert E., Jr. Mobile exercise apparatus. 5,611,757, Cl. 482-57.000.
Rodgers, Robert E., Jr., to CCS, LLC. Recumbent exercise apparatus. 5,611,758, Cl. 482-57.000.
Rodicio, Ignacio; and Mignot, Gerard, to Applied Research Systems Ars Holding N.V. Anti-foam device for a bioreactor. 5,612,219, Cl. 435-301.100.
Roehm GmbH Chemische Fabrik: *See*—
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Freeman, Michael B.; Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,612,447, Cl. 528-328.000.
Gebhard, Matthew S.; deVry, William E.; Puschak, Caren A.; Bacho, Anne M.; and Larson, Gary R., 5,612,397, Cl. 524-35.000.
Rozkuszka, Kenneth P.; and Weier, Jane E., 5,612,413, Cl. 525-85.000.
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Yoshimoto, Hisaya; Kambara, Shigeru; and Matsumoto, Ikuo, 5,611,129, Cl. 29-25.350.
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Ronci, Fernando F.; and Pepin, Alan P. Combination charbroiler and fryer with spinning food basket. 5,611,265, Cl. 99-353.000.
Rones, James M., to Americo. Floor polishing pad assembly. 5,611,101, Cl. 15-230.170.
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Sangani, Nailesh; Eberly, Carolyn; Valvoda, Markieta; and Rega, Robert, to Avery Dennison Corporation. Mottle prevention film or coating. 5,612,107, Cl. 428-41.700.

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Sargent, Charles L. Butter storing and conditioning device. 5,611,206, Cl. 62-3.600.
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Sauer, Jude S.; and Tiberio, Theodore J., to LaserSurge, Inc. Clamp for approximating tissue sections. 5,611,794, Cl. 606-8.000.
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Savage, Thomas W., to Tandem Computers, Inc. System for specifying addresses by creating a multi-bit ranked ordered anchor pattern and creating next address by shifting in the direction of the superior position. 5,613,158, Cl. 395-829.000.
Savanyo, John; and Shah, Saumil S., to Integrated Systems, Inc. Code generation system to construct an asynchronous real-time controller for a real-time system. 5,612,866, Cl. 364-191.000.
Saviotti, Vanni, to SGS-Thomson Microelectronics, S.r.l. Integrated interface circuit for driving a subscriber line. 5,612,998, Cl. 379-399.000.
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Waddell, Jennifer E.; Sierakowski, Michael J.; Savu, Patricia M.; Moore, George G. I.; Jariwala, Chetan P.; and Guerra, Miguel A., 5,612,431, Cl. 526-243.000.
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Sawyer, Gerald F. Suspended ornament for lamp finial. 5,611,618, Cl. 362-417.000.
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Fisher, Randall K.; and Thompson, Donald B., 5,611,153, Cl. 36-43.000.
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Schilo, Diederich; and Peschke, Wolfgang, to Akzo N.V. Apparatus for melt spinning multifilament yarns. 5,612,063, Cl. 425-72.200.
Schimmel, Karl F.: *See*—
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Schlegel, Peter N.: *See*—
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Schleinz, Robert J.; Conrad, Daniel J.; and Kucherovsky, Joseph S., to Kimberly-Clark Corporation. Elongate, semi-tone printing process and substrates printed thereby. 5,612,118, Cl. 428-195.000.

Schlipalius, Lance E., to Betatene Ltd of Cheltenham. High cis beta-carotene composition. 5,612,485, Cl. 585-351.000.

Schlitzer, Franz: *See*—
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Schmid, Lawrence A., to Waterlink, Inc. System for removing nutrients from wastewater. 5,611,927, Cl. 210-605.000.

Schmidle, Josef; and Stefanoudakis, Dimitrios, to Hilti Aktiengesellschaft. Attachment member setting tool. 5,611,474, Cl. 227-10.000.

Schmidt, Erwin: *See*—
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Schmucker, Robert: *See*—
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Schmutz, Lawrence E., to United Technologies Corporation. Micro lens system for controlling an optical beam pattern. 5,612,821, Cl. 359-622.000.

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Schneider, Dena. Multi-function baby wrap. 5,611,095, Cl. 5-482.000.

Schnell, Philip G.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,612,071, Cl. 426-3.000.

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Weinmeier, Harald; and Schober, Eduard, 5,612,858, Cl. 363-21.000.

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Wong, David C.; and Schofield, Nigel P., 5,611,660, Cl. 415-90.000.

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Schott Rohrglas GmbH: *See*—
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Schrenk, Walter J.; Chang, Victor S.; and Wheatley, John A., to Dow Chemical Company, The. Birefringent interference polarizer. 5,612,820, Cl. 359-498.000.

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Cody, Donna R.; DeWitt, Sheila H. H.; Hodges, John C.; Kiely, John S.; Moos, Walter H.; Pavia, Michael R.; Roth, Bruce D.; Schroeder, Mel C.; and Stankovic, Charles J., 5,612,002, Cl. 422-131.000.

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Schuben, David M.; and Manning, Mark J., to U.S. Borax Inc. Compositions and methods for preserving wood products. 5,612,094, Cl. 427-397.000.

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Schuller, Edmund: *See*—
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Schuller International, Inc.: *See*—
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Schultz, Benjamin I.; and Thomas, Leslie A. Fishing lure with teeth and body closure. 5,611,168, Cl. 43-44.600.

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Schultz, Wayne L., to Honeywell Inc. Separately clocked processor synchronization improvement. 5,613,127, Cl. 395-557.000.

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Schulz, Winfried F.-X.; and Kirchhoffer, Johann, to Ford Motor Company. Multiple ratio automatic transmission with solenoid operated valves for effecting pressure buildup. 5,612,874, Cl. 364-424.080.

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Schulze, Wolfram; Couch, John; Grosser, Wolfgang; and Zielinski, Herbert, to Durkopp Adler Aktiengesellschaft. Folding device for an automatic sewing machine. 5,611,468, Cl. 223-38.000.

Schumacher, Paul M.; and Rizzi, Robert D., to Community Lottery Systems, Inc. System for displaying the output of a game of chance in a different format. 5,611,729, Cl. 463-18.000.

Schunemann, Peter G.; and Pollak, Thomas M., to Lockheed Sanders, Inc. Method for growing crystals. 5,611,856, Cl. 117-37.000.

Schütt, Hans-Joachim; Broszat, Lothar; Heep, Theo; and Prickler, Wolfgang, to TRW Fahrwerksysteme GmbH & Co. KG. Ball joint. 5,611,635, Cl. 403-141.000.

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Schwab, Scott D.; and Levy, Ram L., to McDonnell Douglas Corporation. Formulations and method of use of pressure sensitive paint. 5,612,492, Cl. 73-147.000.

Schwartz, Ian F.; and Stone, Mark A. Vessel formed of polymeric composite materials. 5,611,453, Cl. 220-453.000.

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Sciortino, Michael J., to Glenview Security Systems. Coin and currency receptacle assembly for money operated machines. 5,611,483, Cl. 232-15.000.

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Brown, Sterling B.; Dai, Kevin H.; Hwang, Chorng-Fure R.; Rice, Steven T.; Scobbo, James J., Jr.; and Yates, John B., 5,612,401, Cl. 524-413.000.

Scott, Michael C.: *See*—
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Scott, Neil L.: *See*—
Vaughan, Rodney G.; Scott, Neil L.; and Jenness, Colin A., 5,612,707, Cl. 343-895.000.

Scott, Peter, to Forecourt Security Developments Limited. Vehicle site protection system. 5,612,668, Cl. 340-426.000.

Scott, Terrell L. Shock-resistant gun rack. 5,611,439, Cl. 211-64.000.

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Scroggie, Michael C.: *See*—
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Sebag, Henri: *See*—
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Sebesta, Robert D.: *See*—
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Seco Products Corporation: *See*—
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Secrist, Jerry W.: *See*—
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Seda, Joseph W.: *See*—
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Segawa, Masanori: *See*—
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Segelke, Scott: *See*—
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Segen, Joseph C.: *See*—
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SEH America, Inc.: *See*—
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Seidel, Kurt: *See*—
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Yamazaki, Shunpei; Mase, Akira; and Hiroki, Masaaki, 5,612,799, Cl. 349-42.000.

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Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Nobuaki; and Suzuki, Atsunori, 5,612,250, Cl. 437-101.000.

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Sencorp: *See*—
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Senetics, Inc.: *See*—
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Senn, Jeffrey A.: *See*—
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Sens, Ruediger: *See*—
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Sensis Corporation: *See*—
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Separation Oil Services, Inc.: *See*—
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Sepp, Gunther, to Daimler-Benz Aerospace AG. Laser weapon system. 5,612,503, Cl. 89-1.110.

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Sessa, Eugene D.: *See*—
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Seth, Jayshree, to Minnesota Mining and Manufacturing Company. Disposable diaper mechanical closure system with adhesive disposability. 5,611,789, Cl. 604-391.000.

Severson, James M.: *See*—
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Nicolai, Jean, 5,612,607, Cl. 320-20.000.
Siaudeau, Jean-Louis; and Pavlin, Antoine, 5,612,562, Cl. 257-328.000.

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Morimoto, Yasumasa; Okamoto, Shotaro; and Kizu, Seiichi, 5,612,727, Cl. 347-198.000.
Yamada, Nobuaki; Kondo, Masahiko; Okamoto, Masayuki; and Kozaki, Shuichi, 5,612,803, Cl. 349-188.000.

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Taylor, Charles E., 5,611,771, Cl. 601-70.000.
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Becher, Heinz-Manfred; and Pees, Klaus-Jurgen, 5,612,345, Cl. 514-258.000.
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Bening, Robert C.; and Willis, Carl L., 5,612,435, Cl. 526-335.000.
Burkett, Eugene J.; Callander, Douglas D.; Galko, Joseph; and Sisson, Edwin A., 5,612,423, Cl. 525-444.000.
Ma, Chin-Yuan G.; and Secrist, Jerry W., 5,611,983, Cl. 264-142.000.
Southwick, Jeffrey G., 5,612,407, Cl. 524-571.000.
Unger, Phillip E., 5,611,963, Cl. 252-373.000.
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Thurman, Audree; Person, Stan; Norden-Paul, Ronald; and Shelton, Richard, 5,613,106, Cl. 395-620.000.
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Vickers, Kenneth G.; Files, Leigh A.; Shen, Chi-Cheong; and Gnade, Bruce E., 5,611,719, Cl. 445-24.000.
Shen, Feng-Lien, to Li Yuan Machine Industrial Co., Ltd. Mixing machine. 5,611,619, Cl. 366-296.000.
Shen, Naichang, to Sichuan Xinxin Mechanical Engineering Co., Ltd. Bicycle crank driven chain wheel assembly. 5,611,744, Cl. 474-141.000.
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Shibano, Tomio, to Murata Manufacturing Co., Ltd. Capacitance-type electrostatic servo acceleration sensor. 5,612,494, Cl. 73-514.320.
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Iwamoto, Sakiko; Shibata, Masamitsu; and Hamaji, Yukio, 5,612,268, Cl. 501-138.000.
Shibata, Masao, to Hochiki Kabushiki Kaisha. Fire detector and device for detaching body thereof. 5,612,678, Cl. 340-628.000.
Shichi, Makoto; Hayakawa, Mamabu; and Wright, Dennis M., to Allen-Bradley Company, Inc. Switching device. 5,612,582, Cl. 307-130.000.
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Hau, Clarence J.; and Shields, Jerome D., 5,613,084, Cl. 395-421.090.
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Agata, Akihiko, 5,611,673, Cl. 417-198.000.
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Nakano, Toshihiko; and Amano, Tadashi, 5,612,426, Cl. 526-62.000.
Ono, Ichiro; Isobe, Kenichi; Tsukada, Hironori; Ueji, Kenji; and Komemushi, Masakazu, 5,612,433, Cl. 526-279.000.
Takemura, Katsuya; Tsuchiya, Junji; Ishihara, Toshinobu; Tanaka, Akinobu; Kawai, Yoshio; and Nakamura, Jiro, 5,612,170, Cl. 430-270.100.
Ueda, Takuya; Nakajima, Kikuo; Tanifuji, Yoichi; Amano, Tadashi; and Ohnishi, Shuji, 5,612,437, Cl. 526-344.200.
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Hoshi, Ryoji; Kitagawara, Yutaka; and Takenaka, Takao, 5,612,539, Cl. 250-341.400.
Shinoda, Kazuki: *See*—
Hasebe, Tetsuya; Hayashi, Hiroaki; and Shinoda, Kazuki, 5,613,062, Cl. 395-183.130.
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Shinojima, Masaaki, to Nippondenso Co., Ltd. Valve timing control mechanism for internal combustion engine. 5,611,304, Cl. 123-90.150.
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Shioya, Makoto: *See*—
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Florio, Steven M.; Burress, Jeffrey P.; Colangelo, Carl J.; Couble, Edward C.; and Kapeckas, Mark J., 5,611,905, Cl. 205-109.000.
Shirai, Ayako: *See*—
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Shirai, Mitsuyoshi: *See*—
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Shirako, Yukio; Kishi, Yoshio; Maruyama, Yukihiro; and Fujikura, Hiroyuki, to Sony Corporation. Information signal edit method and apparatus. 5,612,941, Cl. 369-83.000.
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Kaminuma, Toshihiko; Iida, Toshii; and Tajima, Masahiro, 5,612,454, Cl. 530-344.000.
Shiuey, Shian-Jan: *See*—

Baggiolini, Barbara J.; Shiuey, Shian-Jan; and Uskokovic, Milan R., 5,612,328, Cl. 514-167.000.
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Short, Glenn D., to CPI Engineering Services, Inc. Lubricant composition for fluorinated refrigerants used in compression refrigeration systems. 5,612,299, Cl. 508-485.000.
Shough, Dean M.: *See*—
Huber, Edward D.; Williams, Rick A.; Shough, Dean M.; Kwon, Osuk Y.; and Welling, Rebecca L., 5,612,786, Cl. 356-376.000.
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Shuler, Michael L.; Babish, John G.; Sweeney, Lisa M.; and Johnson, Brian E., to Cornell Research Foundation, Inc. Automated, multicompartmental cell culture system. 5,612,188, Cl. 435-29.000.
Shute, Richard E.: *See*—
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Si, Y. Calvin; Duck, Gary S.; Ip, Joseph; and Teitelbaum, Neil, to JDS Fitel Inc. Narrow band filter and method of making same. 5,612,824, Cl. 359-652.000.
Siaudeau, Jean-Louis; and Pavlin, Antoine, to SGS-Thomson Microelectronics S.A. Semiconductor component for supplying, recirculating and demagnetizing an inductive load. 5,612,562, Cl. 257-328.000.
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Kempf, Stefan; and Sichmann, Eggo, 5,612,068, Cl. 425-574.000.
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Shen, Naichang, 5,611,744, Cl. 474-141.000.
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Krummheuer, Wolf R.; and Siejak, Volker, 5,612,124, Cl. 442-181.000.
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Hendel, Horst; and Kleine-Onnebrink, Bernhard, 5,612,658, Cl. 335-78.000.
Lange, Eberhard; and Haible, Jürgen, 5,612,907, Cl. 364-578.000.
Roesner, Wolfgang; and Vogelsang, Thomas, 5,612,233, Cl. 437-40.000.
Steinberg, Christoph; and Preusse, Bernd, 5,611,546, Cl. 277-3.000.
Tomare, Jean-Marc, 5,611,624, Cl. 374-179.000.
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Weinmeier, Harald; and Schober, Eduard, 5,612,858, Cl. 363-21.000.
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Sierakowski, Michael J.: *See*—
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Sievert, Frank: *See*—
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Silicon Graphics, Inc.: *See*—
Palay, Andrew J.; Unni, Shankar; and Mehta, Michey N., 5,613,120, Cl. 395-710.000.
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Williams, Richard K., 5,612,566, Cl. 257-402.000.
Silva, Tyrone A. Pin stabilizer for dental model. 5,611,686, Cl. 433-74.000.
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Sim, Ah T., to Sun Industrial Coatings Private Ltd. Soldering apparatus. 5,611,475, Cl. 228-40.000.
Simizu, Terumasa; Tanoue, Mutsurou; Kano, Masaya; Ogino, Mitsugu; and Sato, Jun, to Pioneer Electronic Corporation. Cassette deck of a car stereo. 5,612,832, Cl. 360-73.040.
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Preece, Clive; Simmons, John E. L.; Reedman, David C.; and Topis, Sterghios, 5,611,222, Cl. 69-9.000.
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Simmons, Chelsey; and Simmons, Renee, 5,611,776, Cl. 604-65.000.
Simon, Ethan S.: *See*—
Freeman, Michael B.; Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,612,447, Cl. 528-328.000.
Simon, Josef V.; Liebl, Thomas; Bauer, Hermann; Oswald, Ludwig; and Schmucker, Robert, to Temic Bayern-Chemie Airbag GmbH. Gas generator for a safety system for protecting occupants in motor vehicles. 5,611,566, Cl. 280-736.000.
Simon, Richard L.: *See*—
Boyd, Donald B.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Thrasher, K. Jeff; Vasudevan, Venkatraghavan; and Whitesitt, Celia A., 5,612,360, Cl. 514-381.000.
Simons, Donald M.; Tseng, Susan Y.; and Weber, Patricia C., to Dade Chemistry Systems Inc. Avidin-binding fluorescing and quenching reagent for use in homogeneous assays. 5,612,221, Cl. 435-7.100.
Simons, Malcolm J., to GeneType A.G. Intron sequence analysis method for detection of adjacent and remote locus alleles as haplotypes. 5,612,179, Cl. 435-6.000.
Simplimatic Engineering Company: *See*—
Lenhart, Ronald A., 5,611,648, Cl. 406-88.000.
Simpson, Gregory D.; Laxton, Garry D.; McCullough, Harold D.; and Miller, Jay T., to Unichem International Inc. Biocide treatment system and method. 5,611,920, Cl. 210-192.000.
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Ghisolfi, Guido; Giordano, Dario; Boveri, Giuseppina; and Al Ghatta, Hussain A. K., 5,612,011, Cl. 423-245.300.
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Proehl, Gary S.; Singer, Stephen P.; and Buchanan, J. Michael, 5,612,173, Cl. 430-504.000.
Singh, Chandra U.: *See*—
Balaji, Vitukudi N.; and Singh, Chandra U., 5,612,895, Cl. 364-496.000.
Singh, Sanjiv J.: *See*—
Shaffer, Gary K.; Whittaker, William L.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Lay, Norman K.; and Devier, Lonnie J., 5,612,883, Cl. 364-460.000.
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Sisson, Edwin A.: *See*—
Burkett, Eugene J.; Callander, Douglas D.; Galko, Joseph; and Sisson, Edwin A., 5,612,423, Cl. 525-444.000.
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Siuzdak, Gary E.: *See*—
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Skach, John R.: *See*—
Gihl, Nicholas T.; and Skach, John R., 5,613,115, Cl. 395-701.000.
Skerlan, Jim. Pro pitching device. 5,611,531, Cl. 473-454.000.
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Mencel, Kenneth G., 5,611,588, Cl. 294-149.000.
Skibik, John. Combination students organizer, seat cushion and lap desk. 5,611,098, Cl. 5-653.000.
Skogmo, David, to Sandia Corporation. Quality monitored distributed voting system. 5,612,871, Cl. 395-212.000.
Skornia, Edward, to Cordis Corporation. Perfusion catheter with bifurcated distal end portion and method of using the same. 5,611,812, Cl. 606-194.000.
Skottheim, Leif, to Jofa AB. Limb protector. 5,611,080, Cl. 2-16.000.
Slatkin, Daniel N.: *See*—
Miura, Michiko; and Slatkin, Daniel N., 5,612,017, Cl. 424-1.610.
Slatkine, Michael; and Mead, Douglass, to Laser Industries, Ltd. Laser facial rejuvenation. 5,611,795, Cl. 606-9.000.

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Baukal, Charles E., Jr.; Slavejkov, Aleksandar G.; and Monroig, Louis W., 5,611,683, Cl. 431-10.000.

Slavin, Keith R., to Tektronix, Inc. Block matching for picture motion estimation using offset quantized pixels. 5,612,746, Cl. 348-420.000.

Slevert, Karl M.: *See—*
Carle, Richard C.; Slevert, Karl M.; Davis, Douglas H.; Polcyn, John E.; Bennert, David M.; and Williams, Irving M., 5,611,766, Cl. 588-252.000.

Sloan-Kettering Institute For Cancer Research: *See—*
Wilson, Elaine L.; and Gabrilove, Janice, 5,612,211, Cl. 435-378.000.

Slotte, Thomas: *See—*
Härkönen, Matti; Slotte, Thomas; and Kivioja, Matti, 5,612,277, Cl. 502-325.000.

Sluder, Don W.: *See—*
Welch, William L.; Sluder, Don W.; and Hill, Wallace D., 5,611,974, Cl. 264-34.000.

Small, Dorsey D.; and Aitken, Diane E., to Marley Company, The. Spool assembly for field adjustable column length pump systems. 5,611,680, Cl. 417-422.000.

Smart, David C., and Alligood, John H., to Eastman Kodak Company. Variable format viewfinder. 5,612,759, Cl. 396-380.000.

Smart Modular Technologies: *See—*
Khan, Feroze R.; Haran, Pranatharthi S.; Trinh, Cong V.; and Patel, Mukesh, 5,613,094, Cl. 395-500.000.

Smarttouch, LLC.: *See—*
Hoffman, Ned; Pare, David F., Jr.; and Lee, Jonathan A., 5,613,012, Cl. 382-115.000.

Smay, John W., to Hughes Electronics. Spacecraft energy storage, attitude steering and momentum management system. 5,611,505, Cl. 244-165.000.

Smirnov, Aleksandr V.; Orlov, Oleg G.; Golipad, Pyotr N.; and Koriakin, Yurii N., to Boeckmann, II, Herbert F. Fire resistant multipurpose protective coating. 5,612,130, Cl. 428-323.000.

Smith, Aaron L.: *See—*
Lane, William H.; Learned, Daniel J.; Peterson, Randy N.; Smith, Aaron L.; and White, Scott T., 5,611,198, Cl. 60-299.000.

Smith, Albert C. Ocular repair method. 5,611,799, Cl. 606-32.000.

Smith, Allison H., Jr. Wall insert and method. 5,611,110, Cl. 16-2.100.

Smith, Amos B., III: *See—*
Sprengeler, Paul; Smith, Amos B., III; Hirschmann, Ralph F.; and Yokoyama, Akihisa, 5,612,339, Cl. 514-252.000.

Smith & Nephew, Inc.: *See—*
Davidson, James A., 5,611,347, Cl. 128-697.000.

Smith, Connie M.: *See—*
DeLuca, Hector F.; and Smith, Connie M., 5,612,326, Cl. 514-167.000.

Smith, Daniel J.: *See—*
Odhner, Jefferson E.; Smith, Daniel J.; Bhat, Shailesh S.; Cullen, Donald L.; and Wasson, Ken G., 5,613,022, Cl. 385-37.000.

Smith, Daniel W.: *See—*
Christensen, Thomas C.; Carter, Jack L.; DeVries, Douglas E.; Foster, Alan S.; Foster, Jacques Y.; Phelps, William G.; Prachar, Timothy J.; Smith, Daniel W.; and Walter, Michael W., 5,612,710, Cl. 345-30.000.

Smith, Elwood B., II; and Bailey, Leonard R., to Al-Ko Kober Corporation. Spindle having lubrication and nut retention means. 5,611,653, Cl. 411-395.000.

Smith, Gerald W.: *See—*
Liu, Paul K. T.; Sabol, Hillary K.; Smith, Gerald W.; and Ciora, Richard J., Jr., 5,611,931, Cl. 210-653.000.

Smith, Gordon J., to International Business Machines Corporation. Method and apparatus for in-situ detection of data storage system spindle motor performance degradation. 5,612,845, Cl. 360-137.000.

Smith, James H.; and Wong, Walter, to Conner Peripherals, Inc. Oxidation-stabilized hydrocarbon liquid bearings for lubricated disk drives. 5,612,838, Cl. 360-102.000.

Smith, Jeffrey W.: *See—*
Marzari, Jorge A.; Franzen, Michael R.; and Smith, Jeffrey W., 5,611,910, Cl. 208-44.000.

Smith, Jimmy R. Secure bag holding device. 5,611,507, Cl. 248-99.000.

Smith, Kelly L.: *See—*
Cardinal, John R.; Herbig, Scott M.; Korsmeyer, Richard W.; Lo, Jeelin; Smith, Kelly L.; and Thombre, Avinash G., 5,612,059, Cl. 424-495.000.

Smith, Marc G.: *See—*
Bezviner, Dawn E.; Conner, Michael H.; Greene, Kevin J.; Danforth, Scott; Shepler, Erin E.; and Smith, Marc G., 5,613,148, Cl. 395-800.000.

Smith, Paul: *See—*
Purnell, Charles G.; Smith, Paul; and Mahmoud, Mohammad S., 5,613,184, Cl. 419-38.000.

Smith, Philip W., to Beloit Technologies, Inc. Reel wound roll load sensing arrangement. 5,611,500, Cl. 242-541.400.

Smith, Roberta: *See—*
Lehner, Thomas; and Smith, Roberta, 5,612,031, Cl. 424-150.100.

Smith, Sam D.; Peitsch, Michael A.; and Curtis, Richard D., to Atchison Casting Corporation. Rail truck suspension and journal housing retention assembly. 5,611,284, Cl. 105-220.000.

Smith, Stephen T., to National Service Industries, Inc. Direction indicator covers for emergency lighting systems. 5,611,163, Cl. 40-570.000.

Smith, Victoria: *See—*
Brown, Patrick; and Smith, Victoria, 5,612,180, Cl. 435-6.000.

SmithKline Beecham p.l.c: *See—*
Coulton, Steven; Hinks, Jeremy D.; and Hunt, Eric, 5,612,477, Cl. 540-302.000.

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Porter, Roderick A.; and Vimal, Mythily, 5,612,331, Cl. 514-212.000.

Smolik, Nancy A.; Rusznak, Linda H.; and Jenson, Dale A., to Ashland Inc. Biocidal blends of quaternary ammonium compounds and chlorine dioxide. 5,611,938, Cl. 210-755.000.

Smoot, George W.: *See—*
DeLuca, Michael J.; Smoot, George W.; and Kraul, Douglas R., 5,612,682, Cl. 340-825.340.

Smoot, Lanny S.: *See—*
Cruz, Gil C.; Rohall, Steven L.; Rosenberg, Jonathan; and Smoot, Lanny S., 5,613,032, Cl. 386-69.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Rohde, Wolfgang; and Kneppe, Günter, 5,611,232, Cl. 72-202.000.

Smudde, George H., Jr.: *See—*
Ragsdale, Daniel J.; Smudde, George H., Jr.; and Zatko, David A., 5,612,489, Cl. 73-23.350.

Smydra, Andrew J.: *See—*
Kelley, Scott A.; Klozik, Mark M.; and Smydra, Andrew J., 5,611,562, Cl. 280-728.200.

Snap-on Technologies, Inc.: *See—*
Grover, Donald D.; and Randle, Frank W., 5,611,521, Cl. 254-235.000.
Krivec, Bert, 5,611,714, Cl. 439-759.000.

Sneddon, Larry G.; and Wideman, Thomas, to University of Pennsylvania, Trustees of the. Method for synthesis of borazine. 5,612,013, Cl. 423-285.000.

Snellman, Donald L.; and Tonkin, Dean G., to Norfin International, Inc. Method and apparatus for laser cutting separate items carried on a continuously moving web. 5,611,949, Cl. 219-121.670.

Sniezek, Frank; Ivankoe, Eugene M.; and Ruffini, Steve, to United States of America, Army, Container fuse for enhanced survivability. 5,611,424, Cl. 206-3.000.

Snodgrass, Charles K.: *See—*
Tuttle, John R.; and Snodgrass, Charles K., 5,613,228, Cl. 455-127.000.

Snodgrass, John O.: *See—*
Dilmore, Colonel R., Jr.; and Snodgrass, John O., 5,612,089, Cl. 427-247.000.

Snook, Martin G.: *See—*
Fuller, Graham D.; and Snook, Martin G., 5,612,984, Cl. 377-8.000.

Snyder, Douglas D.; and Lipovsky, Kevin, to Jon Snyder, Inc. Dual sensitivity shock detector. 5,612,670, Cl. 340-429.000.

Societe Civile Bioproject: *See—*
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; Lecomte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,612,371, Cl. 514-465.000.

Societe Nationale d'Etude et de Construction de Moterus D'Aviation S.N.E.C.M.A.: *See—*
Alessandri, Martial G.; and Theret, Jean-Marc, 5,611,389, Cl. 164-122.200.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See—*
Berneuil, Yves R. J.; Bettremieux, Christian W. B.; Kettler, Daniel G. A.; Lechevalier, Michel M. A. A.; Pasquali, Xavier J.; and Pincemin, Jean-Marie N., 5,611,489, Cl. 239-265.410.

Soderburg, Erik: *See—*
Copeland, Wilbert B.; Soderburg, Erik; Dunwoody, John; Brunner, Robert; and Williams, Keith, 5,613,197, Cl. 455-22.000.

Soderlund, Martin J.; Nutter, Francis C.; Couilliard, Robert P.; LeMieux, Pierre J.; and Waugh, Arthur, to BTU International. Solder reflow convection furnace employing flux handling and gas densification systems. 5,611,476, Cl. 228-42.000.

Söderström, Sven-Erik, to Collins, Alvin C. Strap collector. 5,611,520, Cl. 254-218.000.

SofTel, Inc.: *See—*
Hornbuckle, Gary D., 5,613,089, Cl. 395-491.000.

Sogabe, Jun, to Fujicopian Co., Ltd. Thermal transfer recording medium. 5,612,140, Cl. 428-484.000.

Soll, Richard M.: *See—*
Bone, Roger F.; Soll, Richard M.; Illig, Carl L.; Lu, Tianbao; and Subasinghe, Nalin L., 5,612,369, Cl. 514-423.000.
Tianbao, Lu; and Soll, Richard M., 5,612,378, Cl. 514-602.000.

Sollac: *See—*
Maillart, Jean-Luc H. R.; Lequime, Michel; Bellamy, Pascale; and De Smet, Gabriel, 5,612,905, Cl. 364-561.000.

Solomon, Robert S.: *See—*
Sircom, Richard C.; Youssef, Youssef M.; and Solomon, Robert S., 5,611,781, Cl. 604-164.000.

Solovieff, Paul G., to Emhart Inc. Handleset with thumb piece and rack. 5,611,227, Cl. 70-472.000.

Solvay (Société Anonyme): *See—*
Zandona, Nicola, 5,612,271, Cl. 502-117.000.

Soma, Takao; Takahashi, Tomonori; and Isomura, Manabu, to NGK Insulators, Ltd. Method for removing carbon monoxide from reformed gas. 5,612,012, Cl. 423-246.000.

Son, Sung G.: *See—*

Bae, Dae Y.; and Son, Sung G., 5,612,298, Cl. 508-376.000.

Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., to Wm. Wrigley Jr. Company. Continuous chewing gum manufacturing process yielding gum with improved flavor perception. 5,612,071, Cl. 426-3.000.

Song, Min-Kyu: *See—*
Kim, Dong-Goo; Song, Min-Kyu; Park, Seong-Su; Kang, Seung-Goo; Yoon, Hyung-Jin; and Park, Hyung-Moo, 5,612,853, Cl. 361-723.000.

Songer, Matthew N., to Pioneer Laboratories, Inc. Method and apparatus for bone fracture fixation. 5,611,801, Cl. 606-73.000.

Sony Corporation: *See—*
Inoue, Tsuyoshi; Nakamachi, Keiichi; Nakamura, Takeshi; and Okada, Kenji, 5,612,227, Cl. 436-180.000.
Ishimatsu, Yoshikazu, 5,612,935, Cl. 369-44.140.
Kondo, Tetsujiro, 5,612,751, Cl. 348-699.000.
Maki, Yasuhito; Sato, Maki; and Narabu, Tadakuni, 5,612,739, Cl. 348-311.000.
Morita, Shinya, 5,612,827, Cl. 360-25.000.
Nagashima, Hideki, 5,613,112, Cl. 395-616.000.
Nagura, Kazuhiro, 5,612,789, Cl. 386-65.000.
Shirako, Yukio; Kishi, Yoshio; Maruyama, Yukihiro; and Fujikura, Hiroyuki, 5,612,941, Cl. 369-83.000.
Stone, Jonathan J., 5,612,788, Cl. 386-85.000.
Stone, Jonathan J.; and Hurley, Terence R., 5,613,091, Cl. 395-500.000.
Taira, Kenichi, 5,613,140, Cl. 395-800.000.

Sony United Kingdom Limited: *See—*
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Stone, Jonathan J.; and Hurley, Terence R., 5,613,091, Cl. 395-500.000.

Sorin Biomedica Cardio S.p.A.: *See—*
Ceriani, Leonardo; and Bona, Gioachino, 5,611,127, Cl. 28-167.000.

Sorkin, Gregory B.: *See—*
Kephart, Jeffrey O.; and Sorkin, Gregory B., 5,613,002, Cl. 380-4.000.

Sotoyama, Wataru; Tatsuura, Satoshi; Yoshimura, Tetsuzo; Matsuura, Azuma; and Hayano, Tomoaki, to Fujitsu Limited. Nonlinear optical material, process of production of same, and nonlinear optical device and directional coupling type optical switch using same. 5,612,449, Cl. 528-345.000.

Souda, Masahiko: *See—*
Fukui, Yasushi; Ando, Atsushi; Morita, Yoshikazu; Matsuno, Masanori; Saito, Minoru; Miyake, Hideo; and Souda, Masahiko, 5,612,090, Cl. 427-255.300.

Southco, Inc.: *See—*
Frattarola, Albert J.; and Lavalley, Kevin P., 5,611,654, Cl. 411-432.000.

Southpac Trust International, Inc.: *See—*
Weder, Donald E., 5,611,192, Cl. 53-221.000.

Southwick, Jeffrey G., to Shell Oil Company. Solvent-free water-based emulsions of anionically polymerized polymers. 5,612,407, Cl. 524-571.000.

Souviron, Marc, to Synelec, S.A. Process and system of image processing. 5,612,714, Cl. 345-127.000.

Souza, Steven P.; and Dumoulin, Charles L., to General Electric Company. Apparatus and methods for magnetic resonance (MR) angiography using hydrogen polarized at low temperatures. 5,611,340, Cl. 128-653.200.

Spada, Alfred P.: *See—*
Ewing, William R.; Becker, Michael R.; Pauls, Henry W.; Cheney, Daniel L.; Mason, Jonathan S.; and Spada, Alfred P., 5,612,353, Cl. 514-309.000.

Spaleck, Walter: *See—*
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,612,428, Cl. 526-127.000.

Spandorfer, Lester M.: *See—*
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Spathias, Adonis: *See—*
Barriac, Jacques J.; and Spathias, Adonis, 5,611,490, Cl. 239-333.000.

Spectra-Physics Visiontech Oy: *See—*
Keränen, Heimo; and Christophliemk, Mika, 5,612,782, Cl. 356-243.000.

Sperinde, John M.: *See—*
Gallup, David A.; Sperinde, John M.; Ambrisco, William A.; Hughes, Timothy J.; Pantages, Anthony J.; Sarge, Jeffrey A.; and Tsuchitani, Scott T., 5,611,338, Cl. 128-634.000.

Spielman, Lyle S., to Eclipse, Inc. Fuel-air mixing unit. 5,611,684, Cl. 431-353.000.

Spiess, Walter: *See—*
Canize, Anthony; Ficner, Stanley A.; Lu, Ping-Hung; and Spiess, Walter, 5,612,164, Cl. 430-165.000.

Spitz, Donald N.: *See—*
Francis, Monty L.; James, Edmund H., III; and Spitz, Donald N., 5,612,722, Cl. 347-33.000.

Spitz, Roger: *See—*
Robert, Pierre; and Spitz, Roger, 5,612,427, Cl. 526-124.900.

Spitzer, Joseph C., to Mardesich Enterprises, Inc. Fast access electronic locking system and method of using same. 5,611,223, Cl. 70-58.000.

Sporn, Joseph S. Controllable dog harness and leash assembly. 5,611,298, Cl. 119-792.000.

Sprague, Robert A.: *See—*
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Sprengeler, Paul; Smith, Amos B., III; Hirschmann, Ralph F.; and Yokoyama, Akihisa, to Trustees Of The University Of Pennsylvania. 2-Hydroxy-3-aminopropylsulfonamides. 5,612,339, Cl. 514-252.000.

Springer, Timothy A.; Rothlein, Robert; Marlin, Steven D.; and Dustin, Michael L., to Dana Farber Cancer Institute. Nucleotide sequence encoding intercellular adhesion molecule-1 and fragments thereof. 5,612,216, Cl. 435-252.300.

Spude, Gerald T. Wall form system and apparatus. 5,611,182, Cl. 52-426.000.

Squire, Neil: *See—*
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Sriram, Saptharishi: *See—*
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Sroub, Brian J.: *See—*
Dugan, Thomas F.; Rupnow, Daniel R.; and Sroub, Brian J., 5,611,172, Cl. 47-1.010.

Stables, Lloyd J. Anti-spin/turning enhancer for personal watercraft. 5,611,295, Cl. 114-126.000.

Stacy, James W.: *See—*
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Staerkel, Gregg: *See—*
Richards-Kortum, Rebecca; Staerkel, Gregg; Yazdi, Youseph; and Mitchell, Michele F., 5,612,540, Cl. 250-461.200.

Stafford, Gary: *See—*
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Stafford, John W.: *See—*
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Stallmo, David C.; Brant, William A.; and Gordon, David, to EMC Corporation. On-line restoration of redundancy information in a redundant array system. 5,613,059, Cl. 395-182.040.

Stamler, Jonathan; and de Tejada, Inigo S., to Brigham & Women's Hospital; and Trustees of Boston University. Nitrosylated neuropeptides. 5,612,314, Cl. 514-13.000.

Standard Microsystems Corporation: *See—*
McClellan, Kelly P.; Gopalier, Parameswaran K.; and Sadeghi, Khosrow H., 5,612,648, Cl. 330-253.000.

Standard Products Company, The: *See—*
Belser, John, 5,611,550, Cl. 277-184.000.

Staniforth, John N.: *See—*
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Stanko, Ronald T., to Stanko, Ronald T. Inhibiting growth of mammary adenocarcinoma. 5,612,374, Cl. 514-557.000.

Stankovic, Charles J.: *See—*
Cody, Donna R.; DeWitt, Sheila H. H.; Hodges, John C.; Kiely, John S.; Moos, Walter H.; Pavia, Michael R.; Roth, Bruce D.; Schroeder, Mel C.; and Stankovic, Charles J., 5,612,002, Cl. 422-131.000.

Stansbury, Darryl M., to Micron Display Technology, Inc. Multi-layer electrical interconnection structures and fabrication methods. 5,612,256, Cl. 437-209.000.

Stanton, Scott N.; Peck, Jeff; and Stoltz, Ben, to Sun Microsystems, Inc. Method and apparatus for preemptable multiplexing of connections to input/out devices. 5,613,161, Cl. 395-841.000.

Star Metal Products, Inc.: *See—*
Eckloff, Donald, 5,611,554, Cl. 280-79.200.

Star-Wood, Inc.: *See—*
Goldberg, Paul M., 5,611,811, Cl. 606-187.000.

Stark, Elizabeth F.: *See—*
Laube, Samuel J. P.; and Stark, Elizabeth F., 5,612,887, Cl. 364-468.260.

Stark, Peter A.: *See—*
Everaerts, Albert I.; Takeda, Satoshi; and Stark, Peter A., 5,612,136, Cl. 428-355.0AK.

Starkey, Stanley V.: *See—*
Bailey, Thomas W.; Cahill, Michael J.; Starkey, Stanley V.; and Taylor, Robert H., 5,611,191, Cl. 53-148.000.

Staudt, Rhonda L.: *See—*
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Stawniak, Andrzej; and Ulrich, Robert, to Inventio AG. Apparatus for stopping a passenger conveyor. 5,611,417, Cl. 198-323.000.

Steag Aktiengesellschaft: *See—*
Thiemann, Heinz; Brauweiler, Helmut; Rupert, Ivan; Bublies, Jörg; and Möller, Burkhard, 5,611,935, Cl. 210-742.000.

Stednitz, Mike: *See—*
Davis, Bradford D.; Stednitz, Mike; and Urbanski, Mark, 5,611,800, Cl. 606-61.000.

Steelcase Inc.: *See—*
Knoblock, Glenn A., 5,611,598, Cl. 297-452.140.

Stefanoudakis, Dimitrios: *See—*
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Stein, Daryl L., to Elf Atochem North America, Inc. Process for polymerization reactions with functionalized peroxides. 5,612,439, Cl. 528-44.000.

Steinberg, Christoph; and Preusse, Bernd, to Siemens Aktiengesellschaft. Labyrinth seal having a pressure inducing fan means. 5,611,546, Cl. 277-3.000.

Steinberg, Mitchell I.: *See—*
Boyd, Donald B.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Thrasher, K. Jeff; Vasudevan, Venkatraghavan; and Whitesitt, Celia A., 5,612,360, Cl. 514-381.000.

Steinbiss, Volker: *See—*

Ney, Hermann; and Steinbiss, Volker, 5,613,034, Cl. 395-2.600.
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Nguyen, Quang T.; Néel, Jean M. L.; Brüschke, Hartmut E. A.; and Steinhauser, Hermann, 5,611,930, Cl. 210-640.000.
Stemmann, Hartmut. Positioning device for connecting a prosthesis to a body implant. 5,611,689, Cl. 433-189.000.
Stene, David W., to Donaldson Company. Filter cartridge retention system. 5,611,922, Cl. 210-238.000.
Stephens, William D., to United States of America, Army. Fullerene jet fuels. 5,611,824, Cl. 44-282.000.
Stephenson, Stanley W., to Eastman Kodak Company. Compact camera with unexposed-film storage slot surrounding flash receiving pocket for flip-up flash unit. 5,613,169, Cl. 396-178.000.
Sterling Diagnostic Imaging, Inc.: *See*—
Torardi, Carmine; and Miao, Chwen-Chang R., 5,611,960, Cl. 252-301.40R.
Stern, David L.: *See*—
Beck, Jeffrey S.; and Stern, David L., 5,612,270, Cl. 502-64.000.
Steuer, Armin. Rotary embossing machine. 5,611,272, Cl. 101-23.000.
Stevens, Henricus J. M.; and van der Kuil, Adrianus C., to NCR Corporation. Radio LAN station with improved point-to-point link diagnostic capability and method of operation thereof. 5,612,960, Cl. 371-20.100.
Stevens, Richard B.: *See*—
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Stevens-Wright, Debbie E.: *See*—
Bowden, Russell W.; Falwell, Gary S.; Gibson, Charles A.; Stevens, Richard B.; and Stevens-Wright, Debbie E., 5,611,777, Cl. 604-95.000.
Stickler, George D.: *See*—
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Stierlen-Maquet AG: *See*—
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Stikeleather, Gregory: *See*—
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Draper, Kenneth G.; Pavco, Pamela; McSwiggen, James; Gustofson, John; and Stinchcomb, Dan T., 5,612,215, Cl. 435-366.000.
Stinson, Douglas G.: *See*—
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Stirling Thermal Motors, Inc.: *See*—
Houtman, William H., 5,611,201, Cl. 60-517.000.
Stites, John: *See*—
Beckley, Don A.; and Stites, John, 5,612,399, Cl. 524-261.000.
Stitt, Michael R.; Kapelczak, Joseph C.; and McInnes, Lauchlan C. Muzzle brake for rifle or similar firearms. 5,612,504, Cl. 89-14.300.
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Lemaire, Charles A.; and Striemer, Bryan L., 5,613,038, Cl. 395-2.690.
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Suares, Alan J.; and Dobkowski, Brian J., to Elizabeth Arden Company, Division of Conopco, Inc. Self-tanner cosmetic compositions. 5,612,044, Cl. 424-401.000.
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Sudo, Toshiyuki; Matsumura, Susumu; Taniguchi, Naosato; Yoshinaga, Yoko; Kobayashi, Shin; Morishima, Hideki; and Kaneko, Tadashi, to Canon Kabushiki Kaisha. Multi-eye image displaying apparatus. 5,612,709, Cl. 345-8.000.
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Takayanagi, Yasuyuki; Endou, Satoshi; and Sugama, Naoki, 5,612,303, Cl. 510-174.000.
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Sujdak, Richard J.: *See*—
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Sukkar, Rafid A., to Lucent Technologies Inc. Rejection of non-digit strings for connected digit speech recognition. 5,613,037, Cl. 395-2.650.
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Furuta, Motonobu; and Yamaguchi, Takanari, 5,612,101, Cl. 428-1.000.
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Inoue, Tetsuya; and Hagi, Yoshiaki, 5,612,014, Cl. 423-417.000.
Matsuura, Takashi; Tanaka, Saburo; and Itozaki, Hideo, 5,612,545, Cl. 257-31.000.
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Shimpura, Hiroshi; and Tenmoku, Kenji, 5,613,055, Cl. 395-173.000.
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Sumitomo Osaka Cement Co., Ltd.: *See*—
Nagata, Hirotoshi; Shiroishi, Masaru; Saito, Tsutomu; Tateyama, Takashi; Sakuma, Mithuru; Kougo, Naoki; Murata, Susumu; Kaizu, Ryosuke; and Miyamoto, Nobuhide, 5,613,026, Cl. 385-94.000.
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Morrison, Timothy J.; and Wilson, Lynn H., 5,612,927, Cl. 361-685.000.
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Sumser, Siegfried; Schmidt, Erwin; and Schillings, Herbert, to Mercedes-Benz AG. Turbocharged internal combustion engine. 5,611,202, Cl. 60-605.200.
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Garner, Steve M.; and Hess, Max W., 5,611,278, Cl. 101-349.000.
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Sim, Ah T., 5,611,475, Cl. 228-40.000.
Sun Microsystems, Inc.: *See*—
Halepete, Sameer D., 5,612,645, Cl. 327-537.000.
Leverault, Craig M.; McCormick, Michael F., Jr.; Lajara, Robert J.; Lam, Alan W.; Ta, Peter C. D.; Stolz, Howard W.; Osborn, Jay K.; Dann, Michael S.; and Barnes, Ronald, 5,612,852, Cl. 361-687.000.
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Rowe, Stephen C.; Hubbell, Jeffrey A.; Herman, Stephen J.; Sun, Vac; Lang, Michael F.; Selecman, George E.; and Ahari, Frederick F., 5,612,050, Cl. 424-423.000.
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Casavant, Thomas L.; Fineberg, Samuel A.; Bright, Devin L.; Sundaram, Subbiah; and Roderick, Michelle L., 5,613,136, Cl. 395-800.000.
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Wisbey, Peter J.; and Rateike, Lee R., 5,612,579, Cl. 307-18.000.
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Grisoni, Bernard F.; and Sussman, Glenn R., 5,611,968, Cl. 264-2.100.
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Brady, David F., 5,611,602, Cl. 297-452.230.
Suval, William D. Method and apparatus for treating varicose veins. 5,611,357, Cl. 128-898.000.
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Suzuki, Atsunori: *See*—
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Ishimitsu, Keiichi; Ohishi, Haruhito; Hatano, Renpei; Mitsui, Jun; Suzuki, Junji; Yamada, Tomio; and Takakusa, Nobuo, 5,612,358, Cl. 514-357.000.
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Suzuki, Kazuhiro; Koshi, Yutaka; Kunitake, Setsu; Kimura, Shunichi; and Kamizawa, Koh, to Fuji Xerox Co., Ltd. Image signal analyzing system and coding system. 5,613,015, Cl. 382-173.000.
Suzuki, Kazuo: *See*—
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Suzuki, Kenzi, to Agency of Industrial Science and Technology, Ministry of International Trade & Industry. Method for stably retaining an interlayer cross-linked clay under hydrothermal reaction and method for production of a stable interlayer cross-linked. 5,612,269, Cl. 502-62.000.
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Suzuki, Ryouichi, to Canon Kabushiki Kaisha. Active-type automatic focusing apparatus. 5,613,167, Cl. 396-106.000.
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Suzuki, Shoji: *See*—
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Swamy, N. Deepak; and Kocis, Tom J., to Dell USA, LP. Laminated module for stacking integrated circuits. 5,613,033, Cl. 361-790.000.
Swanepoel, Jacobus; and Lombaard, Ruan, to Atomic Energy Corporation of S. Africa Limited. Production of fluorocarbon compounds. 5,611,896, Cl. 204-169.000.
Swanson, Mark S.; and King, Eric L., to Walbro Corporation. Carburetor and method and apparatus for controlling air/fuel ratio of same. 5,611,312, Cl. 123-436.000.
Swanston, Dennis W.: *See*—
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Swartwout, Rosa T.; and Stroh, Stephen, to Tetra Technologies, Inc. Drill-in fluids and drilling methods. 5,612,293, Cl. 507-110.000.
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Sweeney, Lisa M.: *See*—
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Sweers, Ronald L. Gutter-screen connecting clip. 5,611,175, Cl. 52-12.000.
Sweet, Ronald W.: *See*—
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Swenson, Harold W., to Davidson Textron, Inc. Heat insulating mold panel for a mold tool. 5,612,066, Cl. 425-425.000.
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Azuma, Masamichi; Scott, Michael C.; Paz de Araujo, Carlos A.; and McMillan, Larry D., 5,612,082, Cl. 427-96.000.
Synek, Joseph, to AMVAC Chemical Corporation. Stabilized moisture-sensitive pesticide composition and method of making. 5,612,048, Cl. 424-409.000.
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Bonyhadi, Mark L.; Kaneshima, Hideto; McCune, Joseph M.; Namikawa, Reiko; and Su, Lishan, 5,612,018, Cl. 424-9.200.
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Syverson, Rae E., to Kimberly-Clark Corporation. Inhibition of exoprotein in absorbent article. 5,612,045, Cl. 424-402.000.
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Szita, Jeno G.; and Waterman, Paul S., to Cytec Technology Corp. Aminoplast-anchored ultraviolet light stabilizers. 5,612,084, Cl. 427-160.000.
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Tada, Gen: *See*—
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Tada, Hitoshi: *See*—
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Tago, Yasuo; Kurokawa, Kenji; and Ikeda, Naohiro, to Fujicopian Co., Ltd. Thermal transfer sheet. 5,612,120, Cl. 428-195.000.
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Taira, Kenichi, to Sony Corporation. Quantum dot-tunnel device which can be selectively excited by a first light emitting source and the information thus stored can be read with a second light emitting source. 5,613,140, Cl. 395-800.000.
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Takada, Hiroyuki: *See*—
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Takahashi, Jun-ichi, to NEC Corporation. Optical head. 5,612,942, Cl. 369-112.000.
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Takahashi, Yoshiyuki; Shirai, Ayako; Segawa, Takako; and Toyofuku, Kunitaka, to New Oji Paper Co., Ltd. Thermosensitive recording material. 5,612,280, Cl. 503-216.000.
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Takamura, Masashi; and Ohmiya, Akio, to Fuji Photo Optical Co., Ltd.; and Fuji Photo Film Co., Ltd. Camera with novel exposure frame. 5,613,170, Cl. 396-435.000.
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Takano, Yuji, to Fuji Oozx Inc. Internal combustion engine valve. 5,611,306, Cl. 123-188.300.
Takase, Akihiko; Tanabe, Shiro; Endo, Noboru; Takeyari, Ryoji; Mishina, Yusuke; Oouchi, Toshiya; and Yanagi, Junichirou, to Hitachi, Ltd. Multicast communications method. 5,612,959, Cl. 370-390.000.
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Takei, Noriyuki, to Tachi-S Co., Ltd. Method for forming an armrest. 5,611,977, Cl. 264-46.500.
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Talonen, Timo; Eerola, Heikki; and Roine, Antti, to Outokumpu Research Oy. Method for producing easily volatile materials. 5,611,989, Cl. 266-44.000.
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Tan, Minshen; Tong, Hua-Ching; Liu, Francis H.; and Tan, Swie-In, to Read-Rite Corporation. Method of forming a thin film magnetic structure having ferromagnetic and antiferromagnetic layers. 5,612,098, Cl. 427-529.000.
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Tanahashi, Junichi: *See*—
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Tavlarides, Lawrence L.; and Deorkar, Nandu, to Syracuse University. Chemically active ceramic compositions with a phospho-acid moiety. 5,612,275, Cl. 502-407.000.

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Teng, Yen-Chang G.; and Bendler, Robert K., to Vadem Corporation. Card voltage switching and protection. 5,613,130, Cl. 395-750.000.

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Teramoto, Yoshikichi; Misawa, Tooru; and Matsunaga, Satoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Transfer sheet of polycarbonate-based resin. 5,612,163, Cl. 430-126.000.

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Sauer, Jude S.; and Tiberio, Theodore J., 5,611,794, Cl. 606-8.000.

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Lin, Gary, 5,612,111, Cl. 428-71.000.

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Tirumalai, Suresh S., to TB Wood's Incorporated. Flexible coupling with end stress relief structure. 5,611,732, Cl. 464-80.000.

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Mito, Yutaka; Katayama, Hitoshi; and Tobiki, Hisao, 5,611,785, Cl. 604-239.000.

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Bainbridge, David W.; Stacy, James W.; and Tocci, Mario P., 5,612,405, Cl. 524-510.000.

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Tohoku Electric Power Co., Inc.: *See—*
Yoshinari, Akira; Tamaki, Hideki; Saito, Tosiaki; Kobayashi, Mitsuru; Iijima, Katsumi; Wada, Katsuo; Kano, Kimio; and Matsuzaki, Hiroyuki, 5,611,670, Cl. 416-241.00R.

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Saito, Daisuke; and Matsuda, Hideaki, 5,611,253, Cl. 83-383.000.

Toki, Yusuke; Hiraoka, Manabu; Yamagishi, Ichiro; Onuki, Hiroyuki; Ban, Tatsuya; Hada, Tetsuro; Nabatame, Takeo; Yamahana, Masao; Fujise, Masakuni; Aochi, Yoshihiko; Hayashibara, Makoto; and Ozaki, Masahiro, to Kabushiki Kaisha Toshiba. Computer tomography apparatus. 5,612,985, Cl. 378-4.000.

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Fukasawa, Yoshio; Hosoda, Shozo; Nakagome, Tatsuya; Tozawa, Takashi; Suzuki, Koji; Ishihara, Yasumasa; Aoyagi, Minoru; and Kajihara, Mahito, 5,611,655, Cl. 414-217.000.
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Hayashi, Mitsutoshi; and Ishitani, Mitsuo, 5,611,979, Cl. 264-71.000.
Suyama, Kiichi; Furusawa, Hajime; Hosohara, Yasuharu; and Kobori, Takashi, 5,612,625, Cl. 324-635.000.

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Damman, Hans; Pross, Elke B.; Rabe, Gert; and Tolksdorf, Wolfgang F. M., 5,612,813, Cl. 359-281.000.

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Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,612,766, Cl. 399-23.000.

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Shimomura, Yoshiki; Tanigawa, Sadao; Mori, Yukihiro; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,613,047, Cl. 395-113.000.

Tomoike, Hiroyuki: *See*—
Shirasawa, Susumu; Kamachi, Kenichiro; and Tomoike, Hiroyuki, 5,613,214, Cl. 455-54.100.

Tomomitsu, Kenji: *See*—
Ohda, Toyoo; Ohtani, Wataru; Ohya, Tomoshi; Kuwae, Shinobu; Tomomitsu, Kenji; Kobayashi, Kaoru; and Ohmura, Takao, 5,612,197, Cl. 435-69.600.

Tompkins, James V.; Birmingham, Britton R.; Jakubenas, Kevin J.; and Marcus, Harris L., to Board Of Regents, The University of Texas System. Joining ceramics and attaching fasteners to ceramics by gas phase selective beam deposition. 5,611,883, Cl. 156-272.800.

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Barnes, Michael S.; Keller, John H.; Logan, Joseph S.; Tompkins, Robert E.; and Westerfield, Robert P., Jr., 5,612,851, Cl. 361-234.000.

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Tan, Minshen; Tong, Hua-Ching; Liu, Francis H.; and Tan, Swie-In, 5,612,098, Cl. 427-529.000.

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Snellman, Donald L.; and Tonkin, Dean G., 5,611,949, Cl. 219-121.670.

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Komiya, Yuji; Uchiumi, Hiroyuki; Ohashi, Shintaro; and Kuboniwa, Akio, 5,612,106, Cl. 428-36.910.

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Iguchi, Yuichiro; Kimura, Michio; and Oka, Koichiro, 5,612,390, Cl. 522-173.000.
Taniguchi, Takashi; Tanaka, Kazuo; Adachi, Shinya; and Maekawa, Masaki, 5,612,432, Cl. 526-262.000.

Torgusen, Paul: *See*—
Riebel, Michael J.; Anderson, Donald E.; Gruber, Carl; Torgusen, Paul; DeGezelle, Robert; and DeGezelle, Molly, 5,611,882, Cl. 156-272.200.

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Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, 5,612,160, Cl. 430-110.000.
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Torii, Hideo; Kamada, Takeshi; Hayashi, Shigenori; Takayama, Ryoichi; Hirao, Takashi; and Hattori, Masumi, to Matsushita Electric Industrial Co., Ltd. Thin film sensor element and method of manufacturing the same. 5,612,536, Cl. 250-338.300.

Toriumi, Koichi: *See*—
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Torrealba, Mariana: *See*—
Prada, Ricardo; Torrealba, Mariana; Tejada, Jorge; Romero, Yilda; and Reyes, Edito, 5,612,273, Cl. 502-313.000.

Torres, Al. Work pants with knee and shin protectors. 5,611,081, Cl. 2-23.000.

Torrington Company, The: *See*—
Nicot, Christophe, 5,611,545, Cl. 277-2.000.

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Arcella, Vincenzo; Brinati, Giulio; Albano, Margherita; and Tortelli, Vito, 5,612,419, Cl. 525-252.000.

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Takami, Norio; Ohsaki, Takahisa; and Asami, Yoshiaki, 5,612,155, Cl. 429-218.000.

Toshida, Youichi; Nakagawa, Kazuko; Kuroda, Toshihide; Nakayama, Kazuyuki; and Taki, Tomotsugu, to Alinco Incorporated. Receiver apparatus comprising display means for displaying signal strengths of signals having a plurality of frequencies, and display apparatus for use in receiver apparatus. 5,613,232, Cl. 455-226.400.

Total Control Products, Inc.: *See*—
Gihl, Nicholas T.; and Skach, John R., 5,613,115, Cl. 395-701.000.

Toto Ltd.: *See*—
Eto, Mamoru; Yasui, Masaharu; Ohtani, Hidetoshi; and Aso, Taiichi, 5,611,980, Cl. 264-87.000.

Totoki, Takao: *See*—
Kajita, Masaharu; Kajihara, Takehiro; and Totoki, Takao, 5,612,154, Cl. 429-193.000.

Totolos, George, Jr.: *See*—
Chin, Henry; and Totolos, George, Jr., 5,613,087, Cl. 395-481.000.

Townley, Richard. Arrow retention device. 5,611,323, Cl. 124-44.500.

Townsend, Donald J.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,612,071, Cl. 426-3.000.

Townson, William R.: *See*—
Bhuva, Rohit L.; Conner, James L.; Overlauer, Michael J.; and Townson, William R., 5,612,713, Cl. 345-84.000.

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Ono, Satoshi; Yamafuji, Tetsuo; Chaki, Hisaaki; Maekawa, Mutsuko; Todo, Yozo; and Narita, Hirokazu, 5,612,381, Cl. 514-651.000.

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Toyo Boseki Kabushiki Kaisha: *See*—
Nomura, Yasuhiko; Nishida, Ikuharu; and Kashima, Tadaaki, 5,611,819, Cl. 8-529.000.

Toyo Ink Manufacturing Co., Ltd.: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Kato, Nobuyuki; Matsuno, Kenji; Maruhashi, Yoshitsugu; Kurashima, Hideo; Ikegami, Hiroo; Iida, Setsuko; and Takeuchi, Kimio, 5,611,987, Cl. 264-458.000.

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Kono, Katsumi; Nakamura, Shinya; and Honda, Atsushi, 5,611,750, Cl. 477-65.000.

Toyofuku, Kunitaka: *See*—
Takahashi, Yoshiyuki; Shirai, Ayako; Segawa, Takako; and Toyofuku, Kunitaka, 5,612,280, Cl. 503-216.000.

Toyohara, Hiroyuki: *See*—
Jinno, Chitoshi; Toyohara, Hiroyuki; Mimura, Hikaru; and Murohashi, Takashi, 5,612,116, Cl. 428-143.000.

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Fuwa, Naohide; Tanaka, Hiroshi; Miyashita, Shigeki; Nihei, Hiroaki; Fukuyama, Tadashi, deceased, 5,611,314, Cl. 123-491.000.
Izoo, Takashi, 5,611,303, Cl. 123-90.110.
Yamada, Yukinori, 5,612,699, Cl. 342-70.000.

Toyota Tsusho Corporation: *See*—
Yamaguchi, Chikazi, 5,611,240, Cl. 73-304.00C.

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Tozawa, Takashi: *See*—
Fukasawa, Yoshio; Hosoda, Shozo; Nakagome, Tatsuya; Tozawa, Takashi; Suzuki, Koji; Ishihara, Yasumasa; Aoyagi, Minoru; and Kajihara, Mahito, 5,611,655, Cl. 414-217.000.

Trachte, Dietrich: *See*—
Benedikt, Walter; Klett, Dittmar; Trachte, Dietrich; Kersting, Hermann; Mueller, Roland; and Fischer, Jochen, 5,612,586, Cl. 313-141.000.

Tracton, Arthur A.: *See*—
Sculler, Steven J.; and Tracton, Arthur A., 5,611,984, Cl. 264-238.000.

Traffix Devices, Inc.: *See*—
Kulp, Jack H.; and McKenney, John D., 5,611,509, Cl. 248-188.700.

Trah, Stephan, to Ciba-Geigy Corporation. Pyrazolyl acrylic acid derivatives, intermediates thereto, and in their use as microbicides. 5,612,338, Cl. 514-241.000.

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Kolouch, Robert J.; Reichert, David L.; Freed, Robert L.; Birchenall, Andrew K.; Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,611,897, Cl. 204-252.000.

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Zhong, Zhong K.; and Tran, Daniel, 5,612,861, Cl. 363-59.000.

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Modesitt, D. Bruce, 5,611,672, Cl. 417-131.000.

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Schlecker, Rainer; Treiber, Hans-Jörg; Behl, Berthold; and Hofmann, Hans P., 5,612,344, Cl. 514-257.000.

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Trempala, Dohn J.; and Schulz, Geoffrey G. Security key holder. 5,612,683, Cl. 340-825.310.

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Palmero, Albert, 5,611,508, Cl. 248-123.200.

Tricaud, Caroline; Millequant, Jean-Marie; and Sebag, Henri, to L'Oreal. Pulverulent hair bleach of peroxygen oxidizer and polyoxyethylene/polyoxypropylene copolymer. 5,612,022, Cl. 424-62.000.

Trinh, Cong V.: *See*—
Khan, Feroze R.; Haran, Pranatharthi S.; Trinh, Cong V.; and Patel, Mukesh, 5,613,094, Cl. 395-500.000.

Tripp, Ralph N., Jr. Pumping system for groundwater sampling. 5,611,671, Cl. 417-126.000.

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Yu, Ruey J.; and Van Scott, Eugene J., 5,612,376, Cl. 514-570.000.

Troost, John; Prokuda, George; and Petersen, James A., to Dresser Industries, Inc. Method for sampling and analyzing landfill gas. 5,611,844, Cl. 95-82.000.

Truebenbach, Peter, to BASF Aktiengesellschaft. Production of sintered moldings. 5,611,978, Cl. 264-63.000.

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Lamensdorf, Marc, 5,611,329, Cl. 126-263.070.

Trumpy, David K.; and Kraska, Marvin P., to Ford Motor Company. In-vehicle barometric pressure detection system. 5,612,667, Cl. 340-425.500.

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Stamler, Jonathan; and de Tejada, Inigo S., 5,612,314, Cl. 514-13.000.

Trustees Of The University Of Pennsylvania: *See*—
Spriegeler, Paul; Smith, Amos B., III; Hirschmann, Ralph F.; and Yokoyama, Akihisa, 5,612,339, Cl. 514-252.000.

Trützschler GmbH & Co. KG: *See*—
Leifeld, Ferdinand, 5,611,116, Cl. 19-105.000.

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Schütt, Hans-Joachim; Broszat, Lothar; Heep, Theo; and Prickler, Wolfgang, 5,611,635, Cl. 403-141.000.

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Malecke, Joseph F.; Kaufman, Dennis D.; and Titus, Derrick, 5,612,847, Cl. 361-58.000.

TRW Vehicle Safety Systems Inc.: *See*—
Gray, Mark F.; and Frantz, Robert A., 5,611,603, Cl. 297-476.000.
Kelley, Scott A.; Klozik, Mark M.; and Smydra, Andrew J., 5,611,562, Cl. 280-728.200.

Tryding, Sven: *See*—
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Tsang, Michael H.; and Crick, Andrew P. R., to Microsoft Corporation. Method and system for configuring and executing device drivers based on configuration requirements. 5,613,123, Cl. 395-651.000.

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Tsao, Jeffrey W.: *See*—
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Braatz, Paul O.; and Wu, Chiung-Sheng, 5,612,800, Cl. 349-27.000.

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Amico, Mark S., 5,613,178, Cl. 399-266.000.
Berkes, John S.; and Moser, Rasin, 5,612,773, Cl. 399-307.000.
Carter, Daniel L.; and Williams, Geoffrey C., 5,613,179, Cl. 399-316.000.
Denton, Gary A.; Kreckel, Douglas A.; and Sawicki, Paul F., 5,613,174, Cl. 399-98.000.
Eldridge, George L., 5,613,018, Cl. 382-296.000.
Frankel, Neil A., 5,613,175, Cl. 399-162.000.
Grace, Robert E., 5,613,176, Cl. 399-223.000.
Kaplan, Ronald M.; and Kay, Martin, 5,613,145, Cl. 395-800.000.
Kunzmann, Brendan W.; Riehle, James D.; and Markovics, James M., 5,613,173, Cl. 399-89.000.
Malhotra, Shadi L., 5,612,777, Cl. 399-226.000.
Meetze, Murray O., Jr.; Staudt, Rhonda L.; and Struczewski, Timothy G., 5,613,177, Cl. 399-263.000.
Petrie, Glen W., 5,611,575, Cl. 283-67.000.
Pietrowski, Kenneth W.; and Fleck, Thomas J., 5,613,172, Cl. 399-50.000.
Rall, David W.; and Minerd, Timothy M., 5,611,697, Cl. 439-71.000.
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Yuh, Huoy-Jen; and Chambers, John S., 5,612,157, Cl. 430-58.000.

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Chaya, Norio; Nishikawa, Hiroshi; Hayashi, Koichi; Takada, Hiroyuki; Aoyama, Yasutada; Funahashi, Yasuhiro; and Nishimura, Osamu, 5,611,693, Cl. 434-307.00A.
Ikami, Kazunori; Funahashi, Yasuhiro; and Hasegawa, Yukie, 5,613,192, Cl. 455-4.200.

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Yagi, Yasuo, to Pioneer Electronic Corporation. Line contour enhancing circuit for use with video signals. 5,612,750, Cl. 348-625.000.

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Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.

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Kojima, Takeshi; Yahagi, Toshio; Fukami, Kazuaki; Suzuki, Syouji; and Hatano, Kunimichi, 5,612,880, Cl. 364-426.019.

Yamada, Hideki: *See*—
Ishino, Tsutomu; Maruyama, Ryoichi; and Yamada, Hideki, 5,611,405, Cl. 180-6.440.

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Moroto, Syuzo; Sumiya, Koji; Ito, Yasunobu; Yamada, Kunihiro; Nimura, Mitsuhiro; and Yano, Takeshi, 5,612,881, Cl. 364-449.300.

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Oouni, Takeharu; Naruse, Yoshihiro; Yamada, Takahiro; Tsukahara, Kinji; Ando, Mitsuhiro; and Tsuchimoto, Katsuya, 5,611,676, Cl. 417-322.000.

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Yamada, Toshiaki, to Ricoh Company, Ltd. Apparatus for producing operational manual. 5,613,150, Cl. 395-800.000.

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Yamada, Yukinori, to Toyota Jidosha Kabushiki Kaisha. Vehicle radar for excluding a vehicle changing a lane from targets to track. 5,612,699, Cl. 342-70.000.

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Ono, Satoshi; Yamafuji, Tetsuo; Chaki, Hisaaki; Maekawa, Mutsuko; Todo, Yozo; and Narita, Hirokazu, 5,612,381, Cl. 514-651.000.

Yamagami, Hideaki: *See*—
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Yamagishi, Setsuo: *See*—
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Yamaguchi, Kouichi: *See*—
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Yamaguchi, Naoaki: *See*—
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Yamaguchi, Shotaro: *See*—
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Yamaguchi, Takanari: *See*—
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Toki, Yusuke; Hiraoka, Manabu; Yamagishi, Ichiro; Onuki, Hiroyuki; Ban, Tatsuya; Hada, Tetsuro; Nabatame, Takeo; Yamahana, Masao; Fujise, Masakuni; Aochi, Yoshihiko; Hayashibara, Makoto; and Ozaki, Masahiro, 5,612,985, Cl. 378-4.000.

Yamaichi Electronics Co., Ltd.: *See*—
Ito, Toshiyasu, 5,611,698, Cl. 439-72.000.

Yamaji, Yoshiyuki: *See*—
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Yamamichi, Masayoshi: *See*—
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Yamamoto, Akira: *See*—
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Yamamoto, Hajime; Terada, Hiroshi; and Nakamura, Masahiko, to Matsushita Electric Industrial Co., Ltd. Multi-color electrophotographic printer having multiple image forming units for creating multiple toner images in registry. 5,612,771, Cl. 399-301.000.

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Yamamoto, Teruaki, to PIAA Corporation. Device for fitting up an auxiliary lamp. 5,611,510, Cl. 248-205.300.

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Yamanishi, Tohru: *See*—
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Yamasaki, Komei: *See*—
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Yamasaki, Yoshikiyo: *See*—
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Yamato Kako Kabushiki Kaisha: *See*—
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Yamatsu, Isao: *See*—
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Yamauchi, Tatsumi: *See*—
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Yamawaki, Shigeru: *See*—
Shimizu, Yasuo; Yamawaki, Shigeru; Hironaka, Shinzi; and Mukai, Yoshinobu, 5,612,877, Cl. 364-424.051.

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Yan, Tsoung Y., to Mobile Oil Corporation. Dissolving salt for solid caustic with oil. 5,611,913, Cl. 208-140.000.

Yanagi, Junichirou: *See*—
Takase, Akihiko; Tanabe, Shiro; Endo, Noboru; Takeyari, Ryoji; Mishina, Yusuke; Oouchi, Toshiya; and Yanagi, Junichirou, 5,612,959, Cl. 370-390.000.

Yang, Iuan-Jou, to Industrial Technology Research Institute. Method for monitoring cracks and critical concentratioo by using phase angle. 5,612,621, Cl. 324-439.000.

Yang, Jin-Se, to Daewoo Electronics Co., Ltd. Compact sized optical projection system. 5,612,814, Cl. 359-291.000.

Yang, Lau S.: *See*—
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Yanni, John M.: *See*—

York, Billie M.; Yanni, John M.; and DuPriest, Mark T., 5,612,364, Cl. 514-392.000.
Yano, Masayoshi: *See*—
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Yapp, Martin G.; and Matsu, Richard L., to Bosch Automotive Motor Systems, Inc. Multi-part injection-molded plastic fan. 5,611,668, Cl. 416-189.000.
Yarmchuk, Edward J.; Schultz, Mark D.; Webb, Bucknell C.; and Chainer, Timothy J., to International Business Machines Corporation. Radial self-propagation pattern generation for disk file servowriting. 5,612,833, Cl. 360-75.000.
Yasuda, Hirofumi: *See*—
Kondo, Toshihiko; Tanaka, Kazuo; and Yasuda, Hirofumi, 5,612,557, Cl. 257-288.000.
Yasue, Syoichi; and Murakami, Keiichi, to Filtration Systems, Inc.; and Kabushiki Kaisha Toukai Spring Seisakusho. Hub ring and supporting plate for a filter and methods for manufacturing these members. 5,611,925, Cl. 210-346.000.
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Yasutomo, Yuichi: *See*—
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Yates, John B.: *See*—
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Yatka, Robert J.; Richey, Lindell C.; Meyers, Marc A.; and Barkalow, David G., to Wm. Wrigley Jr. Co. Chewing gums containing natural carbohydrate gum hydrolyzate. 5,612,070, Cl. 426-3.000.
Yau, Leopoldo D.: *See*—
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Yazaki Corporation: *See*—
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Morishita, Kazuhiro; and Takase, Hiraji, 5,611,712, Cl. 439-752.000.
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Okamoto, Kenichi; and Taguchi, Naoto, 5,611,703, Cl. 439-157.000.
Samejima, Masakuni, 5,611,715, Cl. 439-850.000.
Takada, Kazuhiko; and Kato, Sanae, 5,611,141, Cl. 29-861.000.
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Yazawa, Hiroshi: *See*—
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Yazdi, Youseph: *See*—
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Yehudai, Zvi Y.: *See*—
Lee, Paul K.-W.; and Yehudai, Zvi Y., 5,613,085, Cl. 395-441.000.
Yeo, Jong K.: *See*—
Yoo, Jin N.; Kim, Dong O.; Chang, Yeong R.; and Yeo, Jong K., 5,612,420, Cl. 525-296.000.
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Sasaki, Nobuyoshi; Yokokawa, Tetsuya; Hashimoto, Yoshikazu; Ohta, Yoshiro; and Sekiguchi, Hideo, 5,611,848, Cl. 106-38.200.
Yokoya, Hiroaki; and Shirakawa, Koji, to Fuji Photo Film Co., Ltd. Image forming method using strippable layer and light-sensitive polymerizable layer containing silver halide. 5,612,167, Cl. 430-257.000.
Yokoyama, Akihisa: *See*—
Sprengeler, Paul; Smith, Amos B., III; Hirschmann, Ralph F.; and Yokoyama, Akihisa, 5,612,339, Cl. 514-252.000.
Yokoyama, Hiromi: *See*—
Kimura, Yasunori; Yoshikawa, Takeshi; Kuwabara, Akifumi; Nakao, Tatsuya; Kashioka, Motohiko; Yokoyama, Hiromi; Kumada, Hideaki; and Ohmura, Toru, 5,611,881, Cl. 156-241.000.
Yokoyama, Takashi: *See*—
Murakami, Gen; Tsubosaki, Kunihiro; Ichitani, Masahiro; Nishi, Kunihiko; Anjoh, Ichiro; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; Kawai, Sueo; Ogata, Masatsugu; Eguchi, Syuuji; Kokaku, Hiroyoshi; Segawa, Masanori; Hozoji, Hiroshi; Yokoyama, Takashi; Kinjo, Noriyuki; Kaneda, Aizo; Saeki, Junichi; Nakamura, Shozo; Hasebe, Akio; Kikuchi, Hiroshi; Yoshida, Isamu; Yamazaki, Takashi; Oshima, Kazuyoshi; and Matsumoto, Tetsurou, 5,612,569, Cl. 257-666.000.
Yoo, Jin N.; Kim, Dong O.; Chang, Yeong R.; and Yeo, Jong K., to Lucky Limited. Process for preparing a polymeric gloss modifier. 5,612,420, Cl. 525-296.000.
Yoo, Young S.; and Walker, Joseph C., to Otis Elevator Company. Elevator car hitch. 5,611,412, Cl. 187-412.000.
Yoon, Hyung-Jin: *See*—
Kim, Dong-Goo; Song, Min-Kyu; Park, Seong-Su; Kang, Seung-Goo; Yoon, Hyung-Jin; and Park, Hyung-Moo, 5,612,853, Cl. 361-723.000.
Yore, Robert G., Jr., to Conair Group, Inc., The. Centrifugal pellet dryer. 5,611,150, Cl. 34-58.000.
York, Billie M.; Yanni, John M.; and DuPriest, Mark T., to Alcon Laboratories, Inc. Substantially pure apraclonidine. 5,612,364, Cl. 514-392.000.
York, Edgar: *See*—
Gurstein, Russell; and York, Edgar, 5,611,868, Cl. 134-21.000.
York, Michael T.; and Harris, Richard K., to Ford Motor Company. Slip ring assembly with reinforcement ring. 5,612,584, Cl. 310-232.000.
York, Phillip B.: *See*—
Barnum, Thomas G.; York, Phillip B.; Eberhardy, Thomas R.; and Gagas, John M., 5,611,093, Cl. 4-624.000.
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Yoshida, Masazumi; Tanaka, Susumu; and Machida, Junji, to Minolta Camera Kabushiki Kaisha. Cleaning solution for recycling recording member having toner images. 5,612,302, Cl. 510-174.000.
Yoshida, Sumio: *See*—
Kobayashi, Seizo; Nomiyama, Kazutosi; Iwanami, Yoshimu; Yoshida, Sumio; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 5,612,125, Cl. 442-170.000.
Yoshida, Teruaki: *See*—
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Yoshida, Toshihiro; and Watanabe, Keiichiro, to NGK Insulators, Ltd. Jigs for manufacture of joined ceramic structure, and method for manufacturing joined ceramic structure by use of jigs. 5,611,877, Cl. 156-89.000.
Yoshida, Yoshikazu: *See*—
Kimura, Tadashi; Yoshida, Yoshikazu; Mizuguchi, Shinichi; and Okazaki, Yasunao, 5,611,864, Cl. 118-723.0MR.
Yoshida, Yumi, to Canon Kabushiki Kaisha. Method of producing photovoltaic device. 5,612,229, Cl. 437-4.000.
Yoshii, Tomoko: *See*—
Hirai, Kenji; Matsukawa, Tomoko; Yano, Tomoyuki; Masuda, Katsuyuki; Yoshii, Tomoko; Mouri, Takehito; Ugai, Sadayuki; and Yamada, Osamu, 5,612,289, Cl. 504-270.000.
Yoshikawa, Hiroyuki: *See*—
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Yoshikawa, Takeshi: *See*—
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Yoshikawa, Tohru; and Yamaji, Yoshiyuki, to Noritsu Koki Co., Ltd. Film cartridge carrier. 5,612,765, Cl. 355-72.000.
Yoshimoto, Hisaya; Kambara, Shigeru; and Matsumoto, Ikuo, to Rohm Co., Ltd. Method of making a packaged piezoelectric oscillator. 5,611,129, Cl. 29-25.350.
Yoshimura, Hiroyuki; Nagai, Mitsuo; Hibi, Shigeki; Kikuchi, Koichi; Hishinuma, Ieharu; Nagakawa, Junichi; Asada, Makoto; Miyamoto, Norimasa; Hida, Takayuki; Ogasawara, Aichi; and Yamatsu, Isao, to Eisai Co., Ltd. Heterocycle-containing carbonic acid derivatives. 5,612,356, Cl. 514-338.000.
Yoshimura, Tetsuzo: *See*—
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Yoshinaga, Yoko: *See*—
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Yoshinari, Akira; Tamaki, Hideki; Saito, Tosiaki; Kobayashi, Mitsuru; Iijima, Katsumi; Wada, Katsuo; Kano, Kimio; and Matsuzaki, Hiroyuki, to Hitachi, Ltd.; and Tohoku Electric Power Co., Inc. Blade for gas turbine. 5,611,670, Cl. 416-241.00R.
Yoshino, Hiroyuki: *See*—
Chida, Kenji; Yoshino, Hiroyuki; Oshima, Jun; Murata, Yoshiyuki; and Ariizumi, Masahito, 5,612,716, Cl. 345-133.000.
Yoshino, Ken-ichiro: *See*—
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Yoshioka, Yasuhiro: *See*—
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Yoshizawa, Yoshihito; Bizen, Yoshio; Nakajima, Shin; and Arakawa, Shunsuke, to Hitachi Metals, Ltd. Method of producing nanocrystalline alloy having high permeability. 5,611,871, Cl. 148-108.000.
Young, Bruce: *See*—
Wade, Nicholas; Lalich, Mark; and Young, Bruce, 5,613,075, Cl. 395-287.000.
Young, Charles D., to Rockwell International Corporation. Managing communication on an unstable error-prone channel. 5,612,950, Cl. 370-276.000.
Young, Christopher R.: *See*—
Brahmbhatt, Sudhir R.; and Young, Christopher R., 5,611,833, Cl. 65-21.300.
Young, Jeffrey L.: *See*—
Tomasiak, Mark J.; Young, Jeffrey L.; and Holsten, Stuart V., 5,611,107, Cl. 15-327.200.
Young, Richard H., Sr.: *See*—
Hansen, Michael R.; and Young, Richard H., Sr., 5,611,885, Cl. 156-326.000.
Younglove, Fancy B.: *See*—
Ellis, Michael D.; Dunn, Stephen M.; Fellinger, Michael W.; Younglove, Fancy B.; James, David M.; Clifton, David L.; and Land, Richard S., 5,612,729, Cl. 348-2.000.
Youssef, Youssef M.: *See*—
Sircom, Richard C.; Youssef, Youssef M.; and Solomon, Robert S., 5,611,781, Cl. 604-164.000.
Yu, Keoi W.; and Chung, Tae S., to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Output buffer type Asynchronous Transfer Mode(ATM) switch. 5,612,951, Cl. 370-395.000.
Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of treating wrinkles using 3-phenyllactic acid. 5,612,376, Cl. 514-570.000.
Yu, Seon-il: *See*—
Park, Kyu-chan; Shim, Tae-earn; and Yu, Seon-il, 5,612,559, Cl. 257-302.000.
Yuan, Zhi-min: *See*—
Callery, Patrick S.; Egorin, Merrill J.; Li, Yanglong; and Yuan, Zhi-min, 5,612,329, Cl. 514-183.000.
Yue, John T.: *See*—
Bui, Nguyen D.; Yue, John T.; and Pham, Van, 5,612,627, Cl. 324-766.000.
Yue, Samuel K. Method of treating involuntary muscle dysfunction with relaxin hormone. 5,612,051, Cl. 424-423.000.
Yuh, Huoy-Jen; and Chambers, John S., to Xerox Corporation. Charge blocking layer for electrophotographic imaging member. 5,612,157, Cl. 430-58.000.
Yun, Jeom Y.: *See*—
Kang, Jong K.; Jeong, Sang H.; Lee, Kam K.; Kang, Tae W.; and Yun, Jeom Y., 5,611,395, Cl. 165-151.000.
Yuyama, Masami; Tsukamoto, Akihiro; and Morikawa, Shigenori, to Casio Computer Co., Ltd. Portable compact imaging and displaying apparatus with rotatable camera. 5,612,732, Cl. 348-14.000.
Yuzurihara, Hiroshi; Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; and Kochi, Tetsunobu, to Canon Kabushiki Kaisha. Process for manufacturing a semiconductor device by applying a non-single-crystalline material on a sidewall inside of an opening portion for growing a single-crystalline semiconductor body. 5,612,230, Cl. 437-21.000.
Zadno-Azizi, Gholam R.; Subramaniam, Raj; and Imran, Mir A., to Surface Genesis, Inc. Clad shape memory alloy composite structure and method. 5,611,874, Cl. 148-402.000.
Zaffran, Christian: *See*—
Gurfein, Veronique; Zaffran, Christian; and Lapoirie, Eric, 5,611,973, Cl. 264-5.000.
Zaguroli, James, Jr., to Knight Industries, Inc. Hydraulically actuated portable hoist. 5,611,522, Cl. 254-331.000.
Zah, Chung-en, to Bell Communications Research, Inc. Redundant multi-wavelength laser arrays. 5,612,968, Cl. 372-50.000.
Zalewski, Edwin; and Zerfass, Karl-Christian, to Hoechst Aktiengesellschaft. Textile composite, production thereof and use thereof. 5,612,114, Cl. 428-102.000.
Zalipsky, Shmuel, to Enzon, Inc. Active carbonates of polyalkylene oxides for modification of polypeptides. 5,612,460, Cl. 530-391.900.
Zandona, Nicola, to Solvay (Société Anonyme). Process for the prepration of a catalytic system, process for the (co)polymerization of olefins and (co)polymers of at least one olefin. 5,612,271, Cl. 502-117.000.
Zanzig, David J.: *See*—
Hafasa, Adel F.; Hsu, Wen-Liang; Zanzig, David J.; Sandstrom, Paul H.; and Austin, Laurie E., 5,612,436, Cl. 526-337.000.
Zatko, David A.: *See*—
Ragsdale, Daniel J.; Smudde, George H., Jr.; and Zatko, David A., 5,612,489, Cl. 73-23.350.
Zbikowski, Mark; Berkowitz, Brian T.; and Ferguson, Robert I., to Microsoft Corporation. Efficient storage of objects in a file system. 5,613,105, Cl. 395-611.000.
Zecher, Robert F. Method for the surface treatment of parts. 5,612,088, Cl. 427-242.000.

Zeh, Mark A.; Stickler, George D.; and Nichols, Jeffrey C., to Cycle-Ops Products, Inc. Resistance device for bicycle trainers. 5,611,759, Cl. 482-61.000.
Zeidler, Falk; Petri, Volker; Mickeler, Reinhold; and Meyer, Michael, to Mercedes-Benz AG. Device for detecting seat occupancy in a motor vehicle. 5,612,876, Cl. 364-424.055.
Zejda, Jaroslav, to Leybold Aktiengesellschaft. Apparatus for transporting discoidal substrates in a vacuum coating apparatus. 5,611,858, Cl. 118-50.000.
Zeller, Claude: *See*—
Dolan, Donald T.; Jennings, Beth A.; Murphy, Charles F., III; and Zeller, Claude, 5,611,630, Cl. 400-120.090.
Zeneca Limited: *See*—
Brewster, Andrew G.; Caulkett, Peter W. R.; Faull, Alan W.; Pearce, Robert J.; and Shute, Richard E., 5,612,373, Cl. 514-522.000.
Brown, George R.; Harrison, Peter J., deceased; and Mallion, Keith B., 5,612,352, Cl. 514-305.000.
Timko, Robert J.; Bradway, Randy J.; and Clements, Arlene, 5,612,367, Cl. 514-415.000.
Zenteco AG: *See*—
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Zeon Chemical Incorporated: *See*—
Manley, Paul E.; Flecksteiner, Richard J.; and Wood, Michael E., 5,612,418, Cl. 525-222.000.
Zerfass, Karl-Christian: *See*—
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Zeuler, Thomas, to Siemens Aktiengesellschaft. Microsystem with integrated circuit and micromechanical component, and production process. 5,611,940, Cl. 73-514.160.
Zhang, Hongyong: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,612,250, Cl. 437-101.000.
Zhao, Jun: *See*—
McConlogue, Lisa C.; and Zhao, Jun, 5,612,486, Cl. 800-2.000.
Zhao, Mingtang: *See*—
Varaprasad, Desaraju V.; Looman, Steven D.; Zhao, Mingtang; Habibi, Hamid R.; and Lynam, Niall R., 5,611,966, Cl. 252-583.000.
Zhao, Yilin: *See*—
LeFebvre, Rebecca K.; Ryan, Patrick M.; Seda, Joseph W.; Seymour, Leslie G.; and Zhao, Yilin, 5,612,882, Cl. 364-449.300.
Zhong, Wei: *See*—
Veal, Boyd W.; Paulikas, Arvydas; Balachandran, Uthamalingam; and Zhong, Wei, 5,611,854, Cl. 117-1.000.
Zhong, Zhong K.; and Tran, Daniel, to Motorola, Inc. Method and apparatus for low voltage CMOS start circuit. 5,612,861, Cl. 363-59.000.
Zhou, Gan; and Anderson, Dana Z., to United States of America, Air Force. Method and apparatus for photorefractive pirouette display and processing of analog signals. 5,612,812, Cl. 359-244.000.
Zhu, Helen: *See*—
Bosch, William F.; Zhu, Helen; and Haider, Syed A., 5,611,888, Cl. 156-643.100.
Zhu, Naiping: *See*—
Sekhar, Jainagesh A.; and Zhu, Naiping, 5,611,953, Cl. 219-553.000.
Ziegler, John S.: *See*—
Ogden, John E.; Abrahamson, Kent D.; Bryant, Peter L.; Joyce, Thomas P.; and Ziegler, John S., 5,611,458, Cl. 222-1.000.
Zielinski, Herbert: *See*—
Schulze, Wolfram; Couch, John; Grosser, Wolfgang; and Zielinski, Herbert, 5,611,468, Cl. 223-38.000.
Zigelboim, Ilan; and Hagan, Virginia B. Paint roller. 5,611,100, Cl. 15-230.110.
Zilog, Inc.: *See*—
MacKenna, Craig A., 5,612,634, Cl. 326-62.000.
Zimmerman, Paul D.: *See*—
Levy, David H.; Eshelman, Lyn M.; and Zimmerman, Paul D., 5,612,177, Cl. 430-567.000.
Zimmermann, Jürg, to Ciba-Geigy Corporation. Pyrimidineamine derivatives and processes for the preparation thereof. 5,612,340, Cl. 514-252.000.
Zito, Ralph, to National Power PLC. Process for energy storage and/or power delivery with means for restoring electrolyte balance. 5,612,148, Cl. 429-15.000.
Zitzmann, Gary E.: *See*—
Bonutti, Peter M.; and Zitzmann, Gary E., 5,611,764, Cl. 482-124.000.
Zuidema, Eric L.: *See*—
Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,612,888, Cl. 364-478.090.
Zumbrunnen, Michael L.: *See*—
Donner, Edward O.; and Zumbrunnen, Michael L., 5,611,696, Cl. 439-66.000.
Zurn Industries, Inc.: *See*—
Saadi, Robert E.; Creager, Brian N.; Becker, Allen R.; and Kovey, Stephen R., 5,611,517, Cl. 251-129.040.
Zwanziger, Jack: *See*—
Hammond, Mark S.; Bianco, Vincent J.; Bonk, James W.; and Zwanziger, Jack, 5,613,072, Cl. 395-204.000.
ZymoGenetics, Inc.: *See*—
Bishop, Paul D.; Lasser, Gerald W.; Laustsen, Mads; and Chang, Jin-Jyi, 5,612,456, Cl. 530-381.000.
Zysk, John R.: *See*—

Thorner, Michael O.; Gaylinn, Bruce D.; Zysk, John R.; Lynch, Kevin R.; and Harrison, Jeffrey K., 5,612,470, Cl. 536-23.500.
21st Century Companies, Inc.: *See*—
O'Brien, Timothy J., 5,612,224, Cl. 436-73.000.
3-Dimensional Pharmaceuticals, Inc.: *See*—
Bone, Roger F.; Soll, Richard M.; Illig, Carl L.; Lu, Tianbao; and Subasinghe, Nalin L., 5,612,369, Cl. 514-423.000.
Tianbao, Lu; and Soll, Richard M., 5,612,378, Cl. 514-602.000.
649020 Alberta Ltd.: *See*—
Brown, John F.; and Gawne, Steve P., 5,612,542, Cl. 250-474.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

B-Line Systems, Inc.: *See*—
Witherbee, Martin L.; and Rinderer, Eric R., Re. 35,479, Cl. 248-49.000.
Crihfield, Michael W., to Woodie's Cajun Lures, Inc. Rattling fish lure. Re. 35,478, Cl. 43-42.310.
DeLisle, David J.; Fakhruddin, Saifuddin; Gauthier, Lloyd; and Kohtz, Robert A., to Zenith Data Systems Corporation. Hardware based interface for mode switching to access memory above one megabyte. Re. 35,480, Cl. 395-500.000.
Fakhruddin, Saifuddin: *See*—
DeLisle, David J.; Fakhruddin, Saifuddin; Gauthier, Lloyd; and Kohtz, Robert A., Re. 35,480, Cl. 395-500.000.
Gauthier, Lloyd: *See*—
DeLisle, David J.; Fakhruddin, Saifuddin; Gauthier, Lloyd; and Kohtz, Robert A., Re. 35,480, Cl. 395-500.000.
Hussinger, Keith R.; and Mallary, Michael L., to Quantum Corporation. Thin film head slider fabrication process. Re. 35,477, Cl. 29-603.070.
Kohtz, Robert A.: *See*—
DeLisle, David J.; Fakhruddin, Saifuddin; Gauthier, Lloyd; and Kohtz, Robert A., Re. 35,480, Cl. 395-500.000.
Mallary, Michael L.: *See*—
Hussinger, Keith R.; and Mallary, Michael L., Re. 35,477, Cl. 29-603.070.
Quantum Corporation: *See*—
Hussinger, Keith R.; and Mallary, Michael L., Re. 35,477, Cl. 29-603.070.
Rinderer, Eric R.: *See*—
Witherbee, Martin L.; and Rinderer, Eric R., Re. 35,479, Cl. 248-49.000.
Witherbee, Martin L.; and Rinderer, Eric R., to B-Line Systems, Inc. Cable tray hold-down device. Re. 35,479, Cl. 248-49.000.
Woodie's Cajun Lures, Inc.: *See*—
Crihfield, Michael W., Re. 35,478, Cl. 43-42.310.
Zenith Data Systems Corporation: *See*—
DeLisle, David J.; Fakhruddin, Saifuddin; Gauthier, Lloyd; and Kohtz, Robert A., Re. 35,480, Cl. 395-500.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Black & Decker, Inc.: *See*—
Naft, Stuart, B1 5,097,753, Cl. 99-341.000.
Electra Form, Inc.: *See*—
Maggert, Lynn R., B1 5,516,274, Cl. 425-526.000.
Hitachi America, Ltd.: *See*—
Saikalis, George; and Sugiura, Masatoshi, B1 5,353,765, Cl. 123-438.000.
Hocken, Robert J.: *See*—
Lau, Kam C.; and Hocken, Robert J., B1 4,714,339, Cl. 356-4.090.
Lau, Kam C.; and Hocken, Robert J., to United States of America, Commerce. Three and five axis laser tracking systems. B1 4,714,339, Cl. 356-4.090.
Maggert, Lynn R., to Electra Form, Inc. Stretch blow molding machine with movable blow mold assembly. B1 5,516,274, Cl. 425-526.000.
Naft, Stuart, to Black & Decker, Inc. Steam cooking utensil. B1 5,097,753, Cl. 99-341.000.
Raynes, Edward P.: *See*—
Waters, Colin M.; and Raynes, Edward P., B1 4,596,446, Cl. 359-55.000.
Saikalis, George; and Sugiura, Masatoshi, to Hitachi America, Ltd. Fuel management system for a gaseous fuel internal combustion engine. B1 5,353,765, Cl. 123-438.000.
Sugiura, Masatoshi: *See*—
Saikalis, George; and Sugiura, Masatoshi, B1 5,353,765, Cl. 123-438.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Her Defence in Her Britannic Majesty's Government of the: *See*—
Waters, Colin M.; and Raynes, Edward P., B1 4,596,446, Cl. 359-55.000.
United States of America
Commerce: *See*—
Lau, Kam C.; and Hocken, Robert J., B1 4,714,339, Cl. 356-4.090.
Waters, Colin M.; and Raynes, Edward P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Her Defence in Her Britannic Majesty's Government of the. Liquid crystal devices with particular cholestric pitch-cell thickness ratio. B1 4,596,446, Cl. 359-55.000.

LIST OF DESIGN PATENTEES

Adams, Aditha M.: *See*—
Kaneko, Steven T.; Adams, Aditha M.; Alviar, Christopher; van Engelen, Ferdinand; Kim, Dana; Greenberg, Bridget C.; and Liu, Dick C. K., 378,517, Cl. D14-114.000.
Aldredge, Robert L. Collapsible sawhorse bracket. 378,544, Cl. D25-68.000.
Alviar, Christopher: *See*—
Kaneko, Steven T.; Adams, Aditha M.; Alviar, Christopher; van Engelen, Ferdinand; Kim, Dana; Greenberg, Bridget C.; and Liu, Dick C. K., 378,517, Cl. D14-114.000.
Aqua-Leisure Industries, Inc.: *See*—
Fireman, Andrew F.; and Zelman, Harvey, 378,536, Cl. D21-203.000.
Arashima, Teruo: *See*—
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,526, Cl. D18-56.000.
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Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,528, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,529, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,530, Cl. D18-56.000.
Austin, Barry G., to Tekonsha Engineering Company. Electronic controller for electric brakes. 378,511, Cl. D13-162.000.
Bandas, John; and Stocco, Pete, to Synchro-Start Products, Inc. Solenoid assembly. 378,513, Cl. D13-183.000.
Beadle, Danny M.: *See*—
Ober, Lawrence R.; Beadle, Danny M.; Wines, Gerald A.; and Lurie, Lieb A., 378,519, Cl. D14-114.000.
Becker, Mark A. Portable shelter. 378,540, Cl. D25-16.000.
Bettag, William; Lyon, Ronald W.; and Lyon, Greg, to Coolant Wizard, Inc. Portable coolant reconditioning system. 378,524, Cl. D15-199.000.
Bird, Richard H.: *See*—
Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 378,486, Cl. D7-406.000.
Bracken, Allen T.: *See*—
Sumner, Wayne A.; Griffith, David W.; Bracken, Allen T.; and Brawne, Nicholas, 378,518, Cl. D14-114.000.
Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., to Porcelain Metals Corporation. Barbeque grill open ring shelf. 378,486, Cl. D7-406.000.
Bramani, Marco, to Vibram S.p.A. Combined tread surface and periphery of a shoe sole. 378,472, Cl. D2-957.000.
Brawne, Nicholas: *See*—
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Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,527, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,528, Cl. D18-56.000.
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Zelman, Harvey: *See*—
Fireman, Andrew F.; and Zelman, Harvey, 378,536, Cl. D21-203.000.
Zochert, Carrie L.: *See*—
Voroba, Barry; Kobylarz, Daniel E.; and Zochert, Carrie L., 378,509, Cl. D13-103.000.

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Cleangro Ltd.: *See*—
Wain, Peter, 9,829, Cl. Plt.-78.000.
Fernlea Flowers, Ltd.: *See*—
Leighfield, William, 9,831, Cl. Plt.-86.300.
K. and W. v.d. Knapp: *See*—
van der Knaap, Wim, 9,832, Cl. Plt.-88.900.
Konno, Eugene S.: *See*—
Spira, Joel S.; Spira, Ruth R.; Konno, Eugene S.; and Vincent, Neil J., 9,827, Cl. Plt.-36.000.
Spira, Joel S.; Spira, Ruth R.; Konno, Eugene S.; and Vincent, Neil J., 9,828, Cl. Plt.-36.000.
Leighfield, William, to Fernlea Flowers, Ltd. Poinsettia plant named 'Pink Sails'. 9,831, Cl. Plt.-86.300.
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Spira, Ruth R.: *See*—
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Spira, Joel S.; Spira, Ruth R.; Konno, Eugene S.; and Vincent, Neil J., 9,827, Cl. Plt.-36.000.
Spira, Joel S.; Spira, Ruth R.; Konno, Eugene S.; and Vincent, Neil J., 9,828, Cl. Plt.-36.000.
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VandenBerg, Cornelis P., 9,830, Cl. Plt.-82.200.

CLASSIFICATION OF PATENTS

ISSUED MARCH 18, 1997

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

16 5,611,080
23 5,611,081
79 5,611,082
84 5,611,083
93 5,611,084
102 5,611,085
104 5,611,086
114 5,611,087
455 5,611,079

CLASS 4

222 5,611,088
234 5,611,089
345 5,611,090
405 5,611,091
484 5,611,092
624 5,611,093

CLASS 5

424 5,611,094
482 5,611,095
617 5,611,096
651 5,611,097
653 5,611,098

CLASS 8

102 5,611,816
405 5,611,817
524 5,611,818
529 5,611,819
533 5,611,820
549 5,611,821
625 5,611,822

CLASS 15

21.1 5,611,099
230.11 5,611,100
230.17 5,611,101
235.5 5,611,102
250.32 5,611,103
263 5,611,104
320 5,611,105
5,611,106
327.2 5,611,107
340.4 5,611,108
386 5,611,109

CLASS 16

2.1 5,611,110
93.D 5,611,111
237 5,611,112
246 5,611,113
368 5,611,114

CLASS 19

98 5,611,115
105 5,611,116
159.A 5,611,117

CLASS 24

298 5,611,118
301 5,611,119
303 5,611,120
423 5,611,121
442 5,611,122
459 5,611,123

CLASS 27

2 5,611,124
3 5,611,125
19 5,611,126

CLASS 28

167 5,611,127

CLASS 29

2 5,611,128
25.35 5,611,129
34.B 5,611,130
235 5,611,131
239 5,611,132
509 5,611,133
525.11 5,611,134
527.6 5,611,135
587 5,611,136
590 5,611,137
564.4 5,611,138
603.07 Re.35,477
623.5 5,611,823
744 5,611,139
832 5,611,140
861 5,611,141
874 5,611,142
895.3 5,611,143
896.411 5,611,144

CLASS 30

43.92 5,611,145
92 5,611,146

CLASS 33

503 5,611,147
702 5,611,148
833 5,611,149

CLASS 34

58 5,611,150
395 5,611,151

CLASS 36

28 5,611,152
43 5,611,153
50.5 5,611,154
118.2 5,611,155
137 5,611,156

CLASS 37

449 5,611,157
468 5,611,158

CLASS 38

143 5,611,159

CLASS 40

1.6 5,611,160
124.08 5,611,161
435 5,611,162
570 5,611,163

CLASS 42

70.11 5,611,164

CLASS 43

1 5,611,165
35 5,611,166
42.31 Re.35,478
43.13 5,611,167
44.6 5,611,168
44.84 5,611,169
57.1 5,611,170
66 5,611,171

CLASS 44

282 5,611,824

CLASS 47

1.01 5,611,172

CLASS 49

468 5,611,173

CLASS 51

295 5,611,825
5,611,826
298 5,611,827
309 5,611,828
5,611,829

CLASS 52

8 5,611,174
12 5,611,175
40 5,611,176
111 5,611,177
169.6 5,611,178
293.3 5,611,179
393 5,611,180
396.04 5,611,181
426 5,611,182
5,611,183
506.05 5,611,184
506.07 5,611,185
557 5,611,186
646 5,611,187
702 5,611,189
740.3 5,611,190

CLASS 53

148 5,611,191
221 5,611,192
475 5,611,193
562 5,611,194

CLASS 55

378 5,611,830
486 5,611,831
523 5,611,832

CLASS 57

264 5,611,195

CLASS 60

39.11 5,611,196
39.75 5,611,197
299 5,611,198
404 5,611,199
477 5,611,200
517 5,611,201
605.2 5,611,202
5,611,203
5,611,204
634 5,611,205

CLASS 62

3.6 5,611,206
51.1 5,611,207
55.5 5,611,208
93 5,611,209
114 5,611,210
149 5,611,211
187 5,611,212
374 5,611,213
498 5,611,214
509 5,611,215
612 5,611,216
646 5,611,218
5,611,219

CLASS 65

21.3 5,611,833
29.12 5,611,834
384 5,611,835
453 5,611,836

CLASS 68

133 5,611,221

CLASS 69

9 5,611,222

CLASS 70

58 5,611,223
208 5,611,224
422 5,611,225
454 5,611,226
472 5,611,227

CLASS 71

27 5,611,837

CLASS 72

21.2 5,611,228
31.01 5,611,229
56 5,611,230
94 5,611,231
202 5,611,232
249 5,611,233
377 5,611,234
405.06 5,611,235
409.01 5,611,236
458 5,611,237

CLASS 73

1.D 5,612,488
23.35 5,612,489
61.43 5,612,490
105 5,612,491
147 5,612,492
152.55 5,612,493
160 5,611,238
290.V 5,611,239
304.C 5,611,240
323 5,611,241
514.16 5,611,940
514.32 5,612,494
579 5,612,495
709 5,612,496
756 5,612,497
864.74 5,612,498
866.5 5,612,499

CLASS 74

15.63 5,611,242
119 5,611,243
335 5,611,244
336.R 5,611,245
393 5,611,246
473.R 5,611,247
490.09 5,611,248
512 5,611,249
569 5,611,250

CLASS 75

10.38 5,611,838
712 5,611,839

CLASS 76

108.6 5,611,251

CLASS 82

165 5,611,252

CLASS 83

383 5,611,253
467.1 5,611,254
614 5,611,255

CLASS 84

402 5,612,500
637 5,612,501
687 5,612,502

CLASS 89

1.11 5,612,503
14.3 5,612,504

CLASS 91

1 5,611,256
367 5,611,257
376.R 5,611,258
415 5,611,259

CLASS 92

248 5,611,260

CLASS 95

41 5,611,840
50 5,611,841
5,611,842
51 5,611,843
82 5,611,844

CLASS 96

4 5,611,845
102 5,611,846

CLASS 99

289.R 5,611,261
294 5,611,262
339 5,611,263
340 5,611,264
341 B1 5,097,753
353 5,611,265
537 5,611,266

CLASS 100

38 5,611,267
50 5,611,268
102 5,611,270
199 5,611,271
311 5,611,269

CLASS 101

23 5,611,272
93.21 5,611,273
123 5,611,274
181 5,611,275
232 5,611,276
5,611,277
349 5,611,278
401.1 5,611,279
409 5,611,280
425 5,611,281

CLASS 102

268 5,612,505
472 5,612,506

CLASS 104

88.06 5,611,282
138.2 5,611,283

CLASS 105

220 5,611,284
355 5,611,285
389 5,611,286

CLASS 106

20.R 5,611,847
38.2 5,611,848
287.19 5,611,849
287.26 5,611,850
415 5,611,851
428 5,611,852
633 5,611,853

CLASS 108

44 5,611,287

CLASS 109

50 5,611,288

CLASS 110

194 5,611,289
222 5,611,290

CLASS 111

14 5,611,291
189 5,611,292

CLASS 112

470.18 5,611,293

CLASS 114

61 5,611,294
126 5,611,295

CLASS 117

1 5,611,854
2 5,611,855
37 5,611,856
217 5,611,857

CLASS 118

50 5,611,858
67 5,611,859
410 5,611,860
719 5,611,861
723.E 5,611,862
723.MP 5,611,863
723.MR 5,611,864
725 5,611,865

CLASS 119

51.01 5,611,296
708 5,611,297
792 5,611,298

CLASS 122

498 5,611,299

CLASS 123

48.A 5,611,300
48.C 5,611,301
65.VC 5,611,302
90.11 5,611,303
90.15 5,611,304
179.5 5,611,305
188.3 5,611,306
254 5,611,307
321 5,611,308
399 5,611,309
5,611,310
414 5,611,311
436 5,611,312
438 B1 5,353,765
456 5,611,313
491 5,611,314
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494 5,611,316
501 5,611,317
630 5,611,318
680 5,611,319
698 5,611,320

CLASS 124

6 5,611,321
5,611,322
44.5 5,611,323
86 5,611,324
89 5,611,325

CLASS 125

39 5,611,326

CLASS 126

39.R 5,611,327
246 5,611,328
263.07 5,611,329
391 5,611,330
539 5,611,331

CLASS 128

200.18 5,611,332
200.24 5,611,333
5,611,334
204.24 5,611,335
207.16 5,611,336
633 5,611,337
634 5,611,338
639 5,611,339
653.2 5,611,340
5,611,341
654 5,611,342
660.09 5,611,343
662.02 5,611,344
662.05 5,611,345
696 5,611,346
697 5,611,347
719 5,611,348
721 5,611,349
731 5,611,350
734 5,611,351
751 5,611,352
782 5,611,353
846 5,611,354
848 5,611,355
849 5,611,356
898 5,611,357
5,611,358
5,611,515

CLASS 131

88 5,611,359
194 5,611,360

CLASS 132

218 5,611,361
301 5,611,362

CLASS 134

5 5,611,866
18 5,611,867
21 5,611,868
22.19 5,611,869
110 5,611,363

CLASS 135

21 5,611,364

CLASS 136

253 5,611,870

CLASS 137

15 5,611,365
209 5,611,366
505.25 5,611,367
553 5,611,368
561.A 5,611,369
625.61 5,611,370
625.64 5,611,371
884 5,611,372

CLASS 138

113 5,611,373
149 5,611,374

CLASS 141

18 5,611,375
65 5,611,376
98 5,611,377

CLASS 144

135.2 5,611,378

CLASS 148

108 5,611,871
306 5,611,872
335 5,611,873
402 5,611,874

CLASS 149

60 5,612,507

CLASS 150

160 5,611,379

CLASS 152

415 5,611,875

CLASS 156

89 5,611,876
5,611,877
5,611,878
201 5,611,879
234 5,611,880
241 5,611,881
272.2 5,611,882

272.8 5,611,883
325 5,611,884
326 5,611,885
345 5,611,886
472 5,611,887
643.1 5,611,888

CLASS 160

76 5,611,380
107 5,611,381
113 5,611,382
133 5,611,383
135 5,611,384
173 5,611,385
344 5,611,386

CLASS 162

65 5,611,889
111 5,611,890
198 5,611,891
205 5,611,892
360.2 5,611,893

CLASS 164

113 5,611,387
119 5,611,388
122.2 5,611,389
485 5,611,390

CLASS 165

11.2 5,611,391
47 5,611,392
80.3 5,611,393
89 5,611,394
151 5,611,395
300 5,611,396

CLASS 166

68 5,611,397
75.11 5,611,398
230 5,611,399
293 5,611,400
297 5,611,401
369 5,611,402

CLASS 171

16 5,611,403

CLASS 173

1 5,611,404

CLASS 174

15.6 5,612,508
53 5,612,509
120 SC 5,612,510
254 5,612,511
260 5,612,512
5,612,513
261 5,612,514

CLASS 177

126 5,612,515

CLASS 180

6.44 5,611,405
167 5,611,406
249 5,611,407
287 5,611,408

CLASS 181

141 5,612,516
228 5,611,409

CLASS 182

129 5,611,410

CLASS 184

6.4 5,611,411

CLASS 187

285 5,612,517
316 5,612,518
382 5,612,519
412 5,611,412

CLASS 188

299 5,611,413

CLASS 190

2 5,611,414

CLASS 192

18 A 5,611,415
58.42 5,611,416

CLASS 196

14.5 5,611,894

CLASS 198

323 5,611,417
347.1 5,611,418
370.04 5,611,419
371.2 5,611,420
607 5,611,421
681 5,611,422
757 5,611,423

CLASS 200

16 D 5,612,520
16 R 5,612,521

CLASS 202

182 5,611,895

CLASS 204

157.4 5,612,522
169 5,611,896
252 5,611,897
262 5,611,898
298.08 5,611,899
403 5,611,900
422 5,611,901
431 5,611,902
454 5,611,903
640 5,611,904

CLASS 205

109 5,611,905
271 5,611,906
742 5,611,907
775 5,611,908
5,611,909

CLASS 206

3 5,611,424
144 5,611,425
308.1 5,611,426
315.1 5,611,427
364 5,611,428
365 5,611,429
390 5,611,430
434 5,611,431
459.5 5,611,432
569 5,611,433

CLASS 208

44 5,611,910
47 5,611,911
58 5,611,912
140 5,611,913
217 5,611,914
433 5,611,915

CLASS 209

166 5,611,916
168 5,611,917
192 5,611,920
195.1 5,611,921
238 5,611,922
5,611,923
323.2 5,611,924
346 5,611,925
512.3 5,611,926
605 5,611,927
631 5,611,928
639 5,611,929
640 5,611,930
653 5,611,931
669 5,611,932
696 5,611,933
719 5,611,934
742 5,611,935
747 5,611,936
754 5,611,937
755 5,611,938
764 5,611,939

CLASS 211

57.1 5,611,438
64 5,611,439
70.7 5,611,440
181 5,611,441
187 5,611,442

CLASS 215

220 5,611,443
230 5,611,444
249 5,611,445
252 5,611,446

CLASS 216

23 5,611,941
67 5,611,942
88 5,611,943

CLASS 218

132 5,612,523

CLASS 219

117.1 5,611,944
119 5,611,945
121.52 5,611,947
121.6 5,611,946
121.63 5,611,948
121.67 5,611,949
130.1 5,611,950
137.62 5,611,951
505 5,611,952
553 5,611,953
759 5,611,954

CLASS 220

2 5,611,447
4.27 5,611,448
6 5,611,449
334 5,611,450
346 5,611,451
378 5,611,452
453 5,611,453
604 5,611,454

CLASS 221

45 5,611,455
154 5,611,456
185 5,611,457

CLASS 222

1 5,611,458
67 5,611,459
78 5,611,460
105 5,611,461
134 5,611,462
137 5,611,463
189.06 5,611,464
214 5,611,465
402.13 5,611,466
464.4 5,611,467

CLASS 223

38 5,611,468
85 5,611,469

CLASS 224

240 5,611,470
243 5,611,471
403 5,611,472

CLASS 226

170 5,611,473

CLASS 227

10 5,611,474

CLASS 228

40 5,611,475
42 5,611,476
107 5,611,477
110.1 5,611,478
112.1 5,611,479
180.1 5,611,480
180.22 5,611,481

CLASS 229

69 5,611,482

CLASS 232

15 5,611,483

CLASS 235

375 5,612,525
5,612,526
383 5,612,527
449 5,612,528
455 5,612,529
462 5,612,530
5,612,531
492 5,612,532
494 5,612,524

CLASS 236

46 R 5,611,484

CLASS 239

8 5,611,485
56 5,611,486
172 5,611,487
242 5,611,488
265.41 5,611,489
333 5,611,490
582.1 5,611,491

CLASS 241

23 5,611,492
5,611,493
27 5,611,494
73 5,611,495
166 5,611,496

CLASS 242

375.1 5,611,497
379.1 5,611,498
419.4 5,611,499
541.4 5,611,500

CLASS 244

1 R 5,611,501
3.16 5,611,502
118.6 5,611,503
119 5,611,504
165 5,611,505

CLASS 248

49 Re.35,479
65 5,611,506
99 5,611,507
123.2 5,611,508
188.7 5,611,509
205.3 5,611,510
205.8 5,611,511
220.22 5,611,512
222.11 5,611,513
357 5,611,514

CLASS 250

208.1 5,612,533
281 5,612,534
310 5,612,535
338.3 5,612,536
339.15 5,612,537
341.1 5,612,538
341.4 5,612,539
461.2 5,612,540
474.1 5,612,541
5,612,542
507.1 5,612,543
556 5,612,544

CLASS 251

77 5,611,516
129.04 5,611,517
5,611,518

CLASS 252

62.3 C 5,611,955
182.32 5,611,956
299.01 5,611,957
301.4 P 5,611,958
301.4 R 5,611,959
5,611,960
301.6 F 5,611,961
350 5,611,962
373 5,611,963
511 5,611,964
582 5,611,965
583 5,611,966

CLASS 254

22 5,611,519
218 5,611,520
235 5,611,521
331 5,611,522

CLASS 256

68 5,611,523

CLASS 257

31 5,612,545
66 5,612,546
77 5,612,547
5,612,548
88 5,612,549
184 5,612,550
197 5,612,551
202 5,612,552
206 5,612,553
215 5,612,554
222 5,612,555
275 5,612,556
288 5,612,557
298 5,612,558
302 5,612,559
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329 5,612,563
341 5,612,564
401 5,612,565
402 5,612,566
475 5,612,567
481 5,612,568
666 5,612,569
686 5,612,570
757 5,612,571
758 5,612,572
5,612,573
783 5,612,574
786 5,612,575
788 5,612,576

CLASS 261

142 5,611,967

CLASS 264

2.1 5,611,968
2.5 5,611,969
5,611,970
4.1 5,611,971
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5 5,611,973
34 5,611,974
40.1 5,611,975
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46.5 5,611,977
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71 5,611,979
87 5,611,980
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131 5,611,982
142 5,611,983
233 5,612,083
238 5,611,984
291 5,611,985
328.16 5,611,986
458 5,611,987
523 5,611,988

CLASS 266

44 5,611,989
241 5,611,990

CLASS 267

154 5,611,524

CLASS 269

303 5,611,525

CLASS 271

3.01 5,611,526
133 5,611,527
164 5,611,528
183 5,611,529
315 5,611,530

CLASS 273

121 B 5,611,534
143 R 5,611,535
153 S 5,611,536
249 5,611,537
271 5,611,538
317 5,611,541
447 5,611,544

CLASS 277

2 5,611,545
3 5,611,546
121 5,611,547
152 5,611,548
180 5,611,549
184 5,611,550

CLASS 280

32.5 5,611,551
32.6 5,611,552
47.35 5,611,553
79.2 5,611,554
113 5,611,555
236 5,611,556
275 5,611,557
288.4 5,611,558
617 5,611,559
642 5,611,560
652 5,611,561
728.2 5,611,562
5,611,563
728.3 5,611,564
5,611,565
736 5,611,566
737 5,611,567
784 5,611,568
788 5,611,569
789 5,611,570
819 5,611,571
847 5,611,572

CLASS 281

29 5,611,573

CLASS 283

49 5,611,574
67 5,611,575

CLASS 285

38 5,611,576
261 5,611,577

CLASS 289

17 5,611,578

CLASS 292

130 5,611,579
164 5,611,580
165 5,611,581
251.5 5,611,582
307 R 5,611,583
338 5,611,584

CLASS 294

64.1 5,611,585
99.2 5,611,586
106 5,611,587
149 5,611,588

CLASS 296

64 5,611,589
97.5 5,611,590
97.6 5,611,591
203 5,611,592
204 5,611,593

CLASS 297

28 5,611,594
228.12 5,611,595
256.13 5,611,596
256.17 5,611,597
367 5,611,599
378.12 5,611,600
393 5,611,601
452.14 5,611,598
452.23 5,611,602
476 5,611,603
478 5,611,604

CLASS 299

13 5,611,605

CLASS 303

155 5,611,606

CLASS 307

10.1 5,612,577
10.5 5,612,578
18 5,612,579
64 5,612,580
5,612,581
130 5,612,582

CLASS 310

90 5,612,583
232 5,612,584

CLASS 312

9.14 5,611,607
223.3 5,611,608
263 5,611,609
5,611,610

CLASS 313

44 5,612,585
141 5,612,586
309 5,612,587
420 5,612,588
461 5,612,589
487 5,612,590
503 5,612,591

CLASS 315

58 5,612,592
117 5,612,593
224 5,612,594
291 5,612,595
5,612,596
293 5,612,597

CLASS 318

116 5,612,598
254 5,612,599
266 5,612,600
449 5,612,601
560 5,612,602
568.11 5,612,603
727 5,612,604
805 5,612,605

CLASS 320

2 5,612,606
20 5,612,607
48 5,612,608

CLASS 323

210 5,612,609
222 5,612,610
223 5,612,611
285 5,612,612
314 5,612,613
316 5,612,614
360 5,612,615

CLASS 324

72.5 5,612,616
76.45 5,612,617
207.25 5,612,618
309 5,612,619
402 5,612,620
439 5,612,621
444 5,612,622
549 5,612,623
551 5,612,624
635 5,612,625
751 5,612,626

766 5,612,627
769 5,612,628
772 5,612,629

CLASS 326

22 5,612,630
39 5,612,631
46 5,612,632
59 5,612,633
62 5,612,634
71 5,612,635
83 5,612,636
86 5,612,637
98 5,612,638

CLASS 327

93 5,612,639
141 5,612,640
143 5,612,641
5,612,642
5,612,643
535 5,612,644
537 5,612,645

CLASS 330

10 5,612,646
146 5,612,647
253 5,612,648

CLASS 331

116 FE 5,612,649

CLASS 332

100 5,612,650
103 5,612,651

CLASS 333

24 R 5,612,652
124 5,612,653
202 5,612,654
5,612,655
204 5,612,656
247 5,612,657

CLASS 335

78 5,612,658
177 5,612,659

CLASS 336

200 5,612,660

CLASS 337

169 5,612,661
389 5,612,662
407 5,612,663

CLASS 338

295 5,612,664

CLASS 340

332 5,612,665
384.1 5,612,666
425.5 5,612,667
426 5,612,668
5,612,669
429 5,612,670
447 5,612,671
449 5,612,672
471 5,612,673
517 5,612,674
573 5,612,675
578 5,612,676
584 5,612,677
628 5,612,678
689 5,612,679
815.45 5,612,680
825.21 5,612,681
825.31 5,612,683
825.34 5,612,682
870.31 5,612,684
901 5,612,685
903 5,612,686
980 5,612,687
988 5,612,688

CLASS 341

20 5,612,689
22 5,612,690
5,612,691
5,612,692
51 5,612,693
94 5,612,694
101 5,612,695
136 5,612,696
153 5,612,697
167 5,612,698

CLASS 342

70 5,612,699
90 5,612,700
354 5,612,701
427 5,612,702
457 5,612,703

CLASS 343

702 5,612,704
790 5,612,705
818 5,612,706
895 5,612,707

CLASS 345

8 5,612,708
5,612,709
30 5,612,710
59 5,612,711
75 5,612,712
84 5,612,713
127 5,612,714
132 5,612,715
133 5,612,716
150 5,612,717
168 5,612,718
173 5,612,719
179 5,612,720

CLASS 347

33 5,612,721
5,612,722
46 5,612,723
64 5,612,724
71 5,612,725
198 5,612,727
232 5,612,728

CLASS 348

2 5,612,729
8 5,612,730
10 5,612,731
14 5,612,732
5,612,733
20 5,612,734
43 5,612,735
207 5,612,736
5,612,737
223 5,612,738
311 5,612,739
345 5,612,740
383 5,612,741
385 5,612,742
409 5,612,743
416 5,612,744
5,612,745
420 5,612,746
422 5,612,747
424 5,612,748
552 5,612,749
625 5,612,750
699 5,612,751
701 5,612,752
743 5,612,753

CLASS 349

5 5,612,797
24 5,612,798
27 5,612,800
42 5,612,799
119 5,612,801
129 5,612,802
149 5,612,804
188 5,612,803

CLASS 351

211 5,612,754

CLASS 352

136 5,612,755

CLASS 353

74 5,611,611

CLASS 355

35 5,612,764
72 5,612,765

CLASS 356

4.09 5,612,778
B1 4,714,339
5.01 5,612,779
73.1 5,612,780
152.2 5,612,781
243 5,612,782
327 5,612,783
346 5,612,784
375 5,612,785
376 5,612,786
388 5,612,787

CLASS 358

497 5,612,791
500 5,612,792
5,612,793
505 5,612,794
518 5,612,795
527 5,612,796

CLASS 359

55 B2 4,596,446
124 5,612,805
125 5,612,806
161 5,612,807
5,612,808
180 5,612,809
189 5,612,810
204 5,612,811
244 5,612,812
281 5,612,813
291 5,612,814
320 5,612,815
376 5,612,816
377 5,612,817
385 5,612,818
391 5,612,819
498 5,612,820
622 5,612,821
644 5,612,823
652 5,612,824
687 5,612,825
819 5,612,826

CLASS 360

25 5,612,827
46 5,612,828
54 5,612,829
69 5,612,830
71 5,612,831
73.04 5,612,832
75 5,612,833
5,612,834
78.14 5,612,835
85 5,612,836
93 5,612,837
102 5,612,838
103 5,612,839
104 5,612,840
5,612,841
105 5,612,842
123 5,612,843
132 5,612,844
137 5,612,845

CLASS 361

56 5,612,846
58 5,612,847
160 5,612,848
213 5,612,849
234 5,612,850
5,612,851
685 5,612,927
687 5,612,852
723 5,612,853
727 5,612,854
773 5,612,855
790 5,613,033

CLASS 362

61 5,611,612
84 5,611,621
100 5,611,613
102 5,611,614
119 5,611,615
154 5,611,616
300 5,611,617
417 5,611,618

CLASS 363

20 5,612,856
21 5,612,857
5,612,858
34 5,612,859
49 5,612,860
59 5,612,861
93 5,612,862

CLASS 364

134 5,612,863
167.01 5,612,864
184 5,612,865
191 5,612,866
214 5,612,868
424 5,612,873
424.04 5,612,875
424.045 5,612,878
424.051 5,612,877
424.055 5,612,876
424.08 5,612,874
426.01 5,612,879
426.019 5,612,880
449.3 5,612,881
5,612,882
460 5,612,883
464.13 5,612,884
468.04 5,612,885
468.07 5,612,886
468.26 5,612,887
478.09 5,612,888
478.14 5,612,889
479.11 5,612,890
489 5,612,891
5,612,892
491 5,612,893
496 5,612,894
5,612,895
497 5,612,896
514 C 5,612,897
514 R 5,612,898
5,612,899
5,612,900
526 5,612,901
5,612,902
298 5,612,903
551.01 5,612,904
561 5,612,905
571.01 5,612,906
578 5,612,907
736 5,612,908
745 5,612,909
746.1 5,612,910
768 5,612,911

CLASS 365

168 5,612,912
185.12 5,612,913
185.26 5,612,914
189.04 5,612,916
189.06 5,612,915
200 5,612,917
5,612,918
201 5,612,919
226 5,612,920
5,612,921
230.05 5,612,922
5,612,923
233.5 5,612,924
236 5,612,925
239 5,612,926

CLASS 366

296 5,611,619

CLASS 367

11 5,612,928
107 5,612,929
140 5,612,930

CLASS 368

32 5,612,933
36 5,612,934
44.14 5,612,935
44.32 5,612,936
44.42 5,612,937
48 5,612,938
5,612,939
77.2 5,612,940
83 5,612,941
112 5,612,942
124 5,612,943
191 5,612,944
247 5,612,945

CLASS 370

216 5,612,946
228 5,612,947
244 5,612,954
253 5,612,949
276 5,612,950
367 5,612,953
390 5,612,959
394 5,612,958
395 5,612,951
401 5,612,957
412 5,612,952
433 5,612,955
545 5,612,956

CLASS 371

20.1 5,612,960
20.4 5,612,961
22.3 5,612,962
27 5,612,963
40.1 5,612,964
49.1 5,612,965
61 5,612,966

CLASS 372

22 5,612,967
50 5,612,968
75 5,612,969

CLASS 374

1 5,611,620
151 5,611,622
170 5,611,623
179 5,611,624

CLASS 375

202 5,612,971
206 5,612,972
5,612,973
295 5,612,974
319 5,612,975
322 5,612,976
344 5,612,977
350 5,612,978
354 5,612,979
375 5,612,980
376 5,612,981

CLASS 376

298 5,612,982
313 5,612,983

CLASS 377

8 5,612,984

CLASS 378

4 5,612,985
34 5,612,986
82 5,612,987
86 5,612,988
197 5,612,989

CLASS 379

58 5,612,990
59 5,612,991
5,612,992
67 5,613,006
100 5,612,993
156 5,612,970
167 5,612,994
252 5,612,948
377 5,612,995
390 5,612,996
393 5,612,997
399 5,612,998
438 5,612,999

CLASS 380

3 5,613,000
4 5,613,001
5,613,002
20 5,613,003
28 5,613,004
5,613,005
51 5,613,007

CLASS 381

68.2 5,613,008
71 5,613,009
117 5,613,010
169 5,613,011

CLASS 382

115 5,613,012
124 5,613,013
5,613,014
173 5,613,015
174 5,613,016
5,613,017
296 5,613,018
311 5,613,019

CLASS 383

4 5,611,625
10 5,611,626
37 5,611,627

CLASS 384

220 5,611,628

CLASS 385

9 5,613,020
17 5,613,021
37 5,613,022
5,613,023
52 5,613,024
53 5,613,025
94 5,613,026
123 5,613,027
5,613,028
135 5,613,029
5,613,030
138 5,613,031

CLASS 386

65 5,612,789
69 5,612,790
5,613,032
85 5,612,788

CLASS 393

616 5,613,108

CLASS 395

2.38 5,613,035
2.52 5,613,036
2.6 5,613,034
2.65 5,613,037
2.69 5,613,038
22 5,613,039
23 5,613,040
5,613,041
24 5,613,042
26 5,613,043
27 5,613,044
102 5,613,045
109 5,613,046
113 5,613,047
119 5,613,048
120 5,613,049
122 5,613,050
128 5,613,051
133 5,613,124
134 5,613,052
143 5,613,053
5,613,054
173 5,613,055
5,613,056
182.04 5,613,059
182.13 5,613,060
183.06 5,613,061
183.13 5,613,062
183.14 5,613,063
184.01 5,613,064
185.01 5,613,065
185.02 5,613,066
200.13 5,613,067
5,613,068
200.15 5,613,069
5,613,070
200.16 5,613,071
203 5,612,869
5,612,870
204 5,613,072
212 5,612,871
250 5,613,073
280 5,613,074
287 5,613,075
293 5,613,076
306 5,613,077
5,613,078
326 5,613,116
376 5,613,058
390 5,613,080
393 5,613,132
403 5,613,081
404 5,613,082
417 5,613,083
421.09 5,613,084
441 5,613,085
468 5,613,079
479 5,613,086
481 5,613,087
482 5,613,088
491 5,613,089
500 Re.35,480
5,613,090
5,613,091
5,613,092
5,613,093
5,613,094
5,613,095
5,613,096
5,613,097
5,613,098
5,613,099
501 5,613,100
557 5,613,101
5,613,102
5,613,103
5,613,104
5,613,127
601 5,613,110
602 5,613,111
5,613,142
611 5,613,105
615 5,613,109
616 5,613,112
617 5,613,107
618 5,613,113
620 5,613,106
651 5,613,119
5,613,123
5,613,125
678 5,613,114
701 5,613,115
5,613,122
708 5,613,117
709 5,613,118
5,613,121
710 5,613,120
712 5,613,133
733 5,613,126
739 5,613,128
740 5,613,129
750 5,613,130
752 5,612,872
765 5,613,131
788 5,613,134
800 5,613,135
5,613,136
5,613,137
5,613,138
5,613,139
5,613,140
5,613,141

	5,613,143
	5,613,144
	5,613,145
	5,613,146
	5,613,147
	5,613,148
	5,613,149
	5,613,150
	5,613,151
	5,613,152
806	5,613,057
821	5,613,153
	5,613,154
825	5,613,155
827	5,613,156
828	5,613,157
829	5,613,158
831	5,613,159
836	5,613,160
841	5,613,161
842	5,613,162
879	5,613,163
884	5,613,164
CLASS 396	
6	5,613,165
80	5,613,166
95	5,612,761
106	5,613,167
114	5,612,762
126	5,612,763
146	5,613,168
178	5,613,169
319	5,612,757
380	5,612,759
413	5,612,758
422	5,612,756
435	5,613,170
513	5,612,760
531	5,613,171
CLASS 399	
23	5,612,766
43	5,612,776
50	5,613,172
89	5,613,173
92	5,612,768
98	5,612,767
	5,613,174
119	5,612,769
162	5,613,175
223	5,613,176
226	5,612,777
254	5,612,770
263	5,613,177
266	5,613,178
301	5,612,771
307	5,612,773
315	5,612,772
316	5,613,179
331	5,612,774
345	5,612,775
CLASS 400	
82	5,611,629
120.09	5,611,630
124.11	5,611,631
335	5,611,632
CLASS 402	
60	5,611,633
297	5,611,637
CLASS 403	
102	5,611,634
141	5,611,635
269	5,611,636
327	5,611,638
397	5,611,639
CLASS 404	
4	5,611,640
6	5,611,641
CLASS 405	
128	5,611,642
157	5,611,643
186	5,611,644
196	5,611,645
290	5,611,646
CLASS 406	
88	5,611,647
	5,611,648
CLASS 407	
118	5,611,649
CLASS 408	
87	5,611,650
153	5,611,651
CLASS 411	
178	5,611,652
395	5,611,653
432	5,611,654
CLASS 414	
217	5,611,655
694	5,611,656
722	5,611,657
797.3	5,611,658
CLASS 415	
90	5,611,659
	5,611,660
112	5,611,661
115	5,611,662
122.1	5,611,663
146	5,611,664
CLASS 416	
1	5,611,665
82	5,611,666
178	5,611,667
189	5,611,668
193 A	5,611,669
241 R	5,611,670
CLASS 417	
126	5,611,671
131	5,611,672
198	5,611,673
220	5,611,674
270	5,611,675
322	5,611,676
336	5,611,677
393	5,611,678
420	5,611,679
422	5,611,680
569	5,611,681
CLASS 419	
5	5,613,180
6	5,613,181
28	5,613,182
36	5,613,183
38	5,613,184
58	5,613,185
CLASS 422	
15	5,611,991
	5,611,992
20	5,611,993
52	5,611,994
58	5,611,995
63	5,611,996
73	5,611,997
82.05	5,611,998
	5,611,999
100	5,612,000
121	5,612,001
131	5,612,002
139	5,612,003
171	5,612,005
	5,612,006
189	5,612,007
CLASS 423	
2	5,613,186
60	5,612,008
239.1	5,612,009
	5,612,010
240.5	5,612,004
245.3	5,612,011
246	5,612,012
285	5,612,013
417	5,612,014
447.6	5,612,015
CLASS 424	
1.49	5,612,016
1.61	5,612,017
9.2	5,612,018
9.32	5,612,019
57	5,612,020
61	5,612,021
62	5,612,022
70.11	5,612,024
70.17	5,612,025
70.5	5,612,023
78.01	5,612,026
78.04	5,612,027
93.7	5,612,028
94.64	5,612,029
131.1	5,612,030
150.1	5,612,031
174.1	5,612,032
177.1	5,612,033
184.1	5,612,034
185.1	5,612,035
190.1	5,612,036
194.1	5,612,037
195.1	5,612,038
	5,612,039
205.1	5,612,040
231.1	5,612,041
237.1	5,612,042
401	5,612,043
	5,612,044
402	5,612,045
405	5,612,046
	5,612,047
409	5,612,048
422	5,612,049
423	5,612,050
	5,612,051
426	5,612,052
440	5,612,053
441	5,612,054
442	5,612,055
449	5,612,056
450	5,612,057
489	5,612,058
495	5,612,059
529	5,612,060
602	5,612,061
CLASS 425	
3	5,612,062
72.2	5,612,063
255	5,612,064
356	5,612,065
425	5,612,066
526	B1 5,516,274
527	5,612,069
533	5,612,067
574	5,612,068
CLASS 426	
3	5,612,070
	5,612,071
11	5,612,072
39	5,612,073
74	5,612,074
99	5,612,075
234	5,612,076
533	5,612,077
572	5,612,078
597	5,612,079
611	5,612,080
CLASS 427	
8	5,612,081
96	5,612,082
160	5,612,084
162	5,612,085
163.2	5,612,086
226	5,612,087
242	5,612,088
247	5,612,089
255.3	5,612,090
355	5,612,091
356	5,612,092
386	5,612,093
397	5,612,094
407.1	5,612,095
466	5,612,096
491	5,612,097
529	5,612,098
565	5,612,099
595	5,612,100
CLASS 428	
1	5,612,101
15	5,612,102
34.7	5,612,103
34.8	5,612,105
36.91	5,612,106
41.7	5,612,107
64.1	5,612,108
	5,612,109
66.2	5,612,110
71	5,612,111
92	5,612,112
95	5,612,113
102	5,612,114
141	5,612,115
143	5,612,116
178	5,612,117
195	5,612,118
	5,612,119
	5,612,120
210	5,612,121
216	5,612,122
323	5,612,128
	5,612,129
	5,612,130
332	5,612,131
	5,612,132
336	5,612,133
	5,612,134
343	5,612,135
348	5,612,104
355 AC	5,612,137
355 AK	5,612,136
411.1	5,612,138
484	5,612,140
515	5,612,141
528	5,612,142
547	5,613,187
	5,613,188
565	5,613,189
626	5,612,143
688	5,612,144
694 T	5,612,145
	5,612,146
CLASS 429	
9	5,612,147
15	5,612,148
26	5,612,149
49	5,612,150
93	5,612,151
152	5,612,152
191	5,612,153
193	5,612,154
218	5,612,155
CLASS 430	
49	5,612,156
58	5,612,157
	5,612,158
110	5,612,159
	5,612,160
	5,612,161
113	5,612,162
126	5,612,163
165	5,612,164
201	5,612,165
204	5,612,166
257	5,612,167
263	5,612,168
270.1	5,612,169
	5,612,170
321	5,612,171
347	5,612,172
504	5,612,173
557	5,612,174
567	5,612,175
	5,612,176
	5,612,177
CLASS 431	
8	5,611,682
10	5,611,683
353	5,611,684
CLASS 432	
205	5,611,685
CLASS 433	
74	5,611,686
80	5,611,687
174	5,611,688
189	5,611,689
215	5,611,690
CLASS 434	
224	5,611,691
260	5,611,692
307 A	5,611,693
311	5,611,694
CLASS 435	
4	5,612,178
6	5,612,179
	5,612,180
	5,612,181
	5,612,182
	5,612,183
	5,612,184
	5,612,213
7.1	5,612,221
7.23	5,612,185
7.37	5,612,186
13	5,612,187
29	5,612,188
69.1	5,612,190
	5,612,191
	5,612,192
	5,612,193
69.2	5,612,194
69.5	5,612,195
69.6	5,612,196
	5,612,197
69.9	5,612,198
91.1	5,612,199
91.2	5,612,200
	5,612,201
99	5,612,202
101	5,612,203
132	5,612,204
172.3	5,612,205
	5,612,206
	5,612,212
173.6	5,612,207
189	5,612,208
198	5,612,209
228	5,612,210
252.3	5,612,216
253.5	5,612,217
288.1	5,612,218
301.1	5,612,219
320.1	5,612,220
366	5,612,215
378	5,612,211
CLASS 436	
5	5,612,222
17	5,612,223
73	5,612,224
114	5,612,225
167	5,612,226
180	5,612,227
CLASS 437	
1	5,612,228
4	5,612,229
21	5,612,230
23	5,612,231
39	5,612,232
40	5,612,233
	5,612,234
41	5,612,235
	5,612,236
43	5,612,237
	5,612,238
44	5,612,239
	5,612,240
52	5,612,241
56	5,612,242
57	5,612,243
	5,612,244
	5,612,245
62	5,612,246
69	5,612,247
	5,612,248
	5,612,249
101	5,612,250
173	5,612,251
187	5,612,252
190	5,612,253
195	5,612,254
203	5,612,255
209	5,612,256
	5,612,257
	5,612,258
	5,612,259
238	5,612,260
CLASS 439	
35	5,611,695
66	5,611,696
71	5,611,697
72	5,611,698
78	5,611,699
101	5,611,700
131	5,611,701
157	5,611,702
	5,611,703
164	5,611,704
266	5,611,705
275	5,611,706
353	5,611,707
358	5,611,708
422	5,611,709
513	5,611,710
608	5,611,711
752	5,611,712
752.5	5,611,713
759	5,611,714
850	5,611,715
857	5,611,716
	5,611,717
CLASS 440	
49	5,611,718
CLASS 442	
170	5,612,125
181	5,612,124
227	5,612,126
401	5,612,123
CLASS 445	
24	5,611,719
CLASS 446	
47	5,611,720
419	5,611,721
CLASS 450	
99	5,611,722
CLASS 451	
6	5,611,723
53	5,611,724
104	5,611,725
177	5,611,726
CLASS 452	
153	5,611,727
CLASS 454	
158	5,611,728
CLASS 455	
3.1	5,613,190
	5,613,191
4.2	5,613,192
12.1	5,613,193
	5,613,194
13.2	5,613,195
15	5,613,196
22	5,613,197
33.1	5,613,198
	5,613,199
	5,613,200
	5,613,202
33.2	5,613,203
	5,613,204
	5,613,205
34.1	5,613,206
	5,613,208
	5,613,209
34.2	5,613,207
45	5,613,210
51.1	5,613,211
53.1	5,613,212
54.1	5,613,213
	5,613,214
54.2	5,613,215
66	5,613,216
67.1	5,613,217
71	5,613,218
78	5,613,219
88	5,613,220
89	5,613,221
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103	5,613,225
115	5,613,226
127	5,613,227
	5,613,228
	5,613,229
161.3	5,613,230
226.4	5,613,232
266	5,613,231
296	5,613,233
331	5,613,201
340	5,613,234
343	5,613,235
351	5,613,236
	5,613,237
CLASS 463	
18	5,611,729
20	5,611,730
37	5,611,731
CLASS 464	
80	5,611,732
140	5,611,733
CLASS 470	
59	5,611,734
CLASS 473	
60	5,611,735
137	5,611,737
197	5,611,539
218	5,611,738
220	5,611,739
305	5,611,740
328	5,611,741
345	5,611,742
415	5,611,736
429	5,611,540
454	5,611,531
568	5,611,533
576	5,611,532
578	5,611,542
582	5,611,543
CLASS 474	
101	5,611,743
141	5,611,744
205	5,611,745
CLASS 475	
88	5,611,746
162	5,611,747
CLASS 477	
47	5,611,748
65	5,611,749
	5,611,750
73	5,611,751
98	5,611,752
118	5,611,753
181	5,611,754
CLASS 482	
49	5,611,755
52	5,611,756

57	5,611,757
	5,611,758
63	5,611,759
85	5,611,760
87	5,611,761
104	5,611,762
111	5,611,763
124	5,611,764
142	5,611,765
CLASS 501	
32	5,612,261
65	5,612,262
71	5,612,263
87	5,612,264
89	5,612,265
123	5,612,266
127	5,612,267
138	5,612,268
CLASS 502	
62	5,612,269
64	5,612,270
117	5,612,271
181	5,612,272
313	5,612,273
325	5,612,274
	5,612,277
407	5,612,275
415	5,612,276
CLASS 503	
201	5,612,278
	5,612,279
216	5,612,280
227	5,612,281
	5,612,282
	5,612,283
CLASS 504	
110	5,612,284
206	5,612,285
214	5,612,286
215	5,612,287
254	5,612,288
270	5,612,289
CLASS 505	
190	5,612,290
470	5,612,291
	5,612,292
CLASS 507	
110	5,612,293
	5,612,294
CLASS 508	
188	5,612,295
240	5,612,296
363	5,612,297
376	5,612,298
485	5,612,299
CLASS 510	
110	5,612,300
122	5,612,301
174	5,612,302
	5,612,303
176	5,612,304
220	5,612,305
321	5,612,306
406	5,612,307
423	5,612,308
526	5,612,309
CLASS 514	
6	5,612,310
11	5,612,311
12	5,612,312
	5,612,313
13	5,612,314
14	5,612,382
21	5,612,315
25	5,612,316
26	5,612,317
44	5,612,318
49	5,612,319
54	5,612,320
	5,612,321
78	5,612,322
100	5,612,323
162	5,612,324
167	5,612,325
	5,612,326
	5,612,327
	5,612,328
183	5,612,329
211	5,612,330
212	5,612,331
	5,612,332
220	5,612,333
	5,612,334
221	5,612,335
235.2	5,612,336
236.2	5,612,337
241	5,612,338
252	5,612,339
	5,612,340
253	5,612,341
254	5,612,342
	5,612,343
257	5,612,344
258	5,612,345
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259	5,612,347
262	5,612,348
263	5,612,349
291	5,612,350
304	5,612,351
305	5,612,352
309	5,612,353
314	5,612,354
336	5,612,355
338	5,612,356
343	5,612,357
357	5,612,358
365	5,612,359
381	5,612,360
385	5,612,361
392	5,612,362
	5,612,363
	5,612,364
398	5,612,365
413	5,612,366
415	5,612,367
418	5,612,368
423	5,612,369
456	5,612,370
465	5,612,371
479	5,612,372
522	5,612,373
557	5,612,374
565	5,612,375
570	5,612,376
596	5,612,377
602	5,612,378
618	5,612,379
627	5,612,380
651	5,612,381
CLASS 521	
32	5,612,383
64	5,612,384
68	5,612,385
91	5,612,386
CLASS 522	
3	5,612,387
6	5,612,388
35	5,612,389
173	5,612,390
CLASS 523	
106	5,612,391
144	5,612,392
145	5,612,393
403	5,612,394
415	5,612,395
CLASS 524	
5	5,612,396
35	5,612,397
169	5,612,398
261	5,612,399
268	5,612,400
413	5,612,401
437	5,612,402
440	5,612,403
507	5,612,404
510	5,612,405
533	5,612,406
571	5,612,407
591	5,612,408
838	5,612,409
863	5,612,410
CLASS 525	
54.3	5,612,411
58	5,612,412
85	5,612,413
102	5,612,414
123	5,612,415
	5,612,416
221	5,612,417
222	5,612,418
252	5,612,419
296	5,612,420
326.5	5,612,421
338	5,612,422
444	5,612,423
530	5,612,424
534	5,612,425
CLASS 526	
62	5,612,426
124.9	5,612,427
127	5,612,428
209	5,612,429
232.5	5,612,430
243	5,612,431
262	5,612,432
279	5,612,433
282	5,612,434
335	5,612,435
337	5,612,436
344.2	5,612,437
CLASS 528	
26	5,612,438
44	5,612,439
71	5,612,440
73	5,612,441
212	5,612,442
229	5,612,443
274	5,612,444
295.5	5,612,445
310	5,612,446
328	5,612,447
339.5	5,612,448
345	5,612,449
353	5,612,450
392	5,612,451
492	5,612,452
CLASS 530	
327	5,612,453
344	5,612,454
350	5,612,455
381	5,612,456
388.21	5,612,458
389.8	5,612,459
391.9	5,612,460
CLASS 534	
15	5,612,462
634	5,612,463
637	5,612,464
752	5,612,465
CLASS 536	
18.6	5,612,467
22.1	5,612,468
23.1	5,612,469
23.5	5,612,470
24.1	5,612,471
	5,612,472
25.42	5,612,473
27.14	5,612,474
114	5,612,475
117	5,612,476
CLASS 540	
302	5,612,477
474	5,612,478
CLASS 544	
88	5,612,479
180	5,612,480
222	5,612,481
280	5,612,482
332	5,612,483
360	5,612,484
CLASS 585	
351	5,612,485
CLASS 588	
1	5,613,238
	5,613,239
11	5,613,240
	5,613,241
17	5,613,242
19	5,613,243
20	5,613,244
201	5,613,245
252	5,611,766
CLASS 600	
2	5,611,767
29	5,611,768
112	5,611,769
CLASS 601	
34	5,611,770
70	5,611,771
149	5,611,772
CLASS 602	
16	5,611,773
	5,611,774
CLASS 604	
53	5,611,775
65	5,611,776
95	5,611,777
117	5,611,778
156	5,611,779
164	5,611,780
	5,611,781
198	5,611,782
208	5,611,783
211	5,611,784
239	5,611,785
240	5,611,786
270	5,611,787
295	5,611,788
391	5,611,789
	5,611,790
	5,611,791
403	5,611,792
CLASS 606	
2	5,611,793
8	5,611,794
9	5,611,795
15	5,611,796
16	5,611,797
31	5,611,798
32	5,611,799
61	5,611,800
73	5,611,801
86	5,611,802
114	5,611,803
133	5,611,804
166	5,611,805
167	5,611,806
169	5,611,807
170	5,611,808
181	5,611,809
185	5,611,810
187	5,611,811
194	5,611,812
205	5,611,813
213	5,611,814
CLASS 607	
5	5,611,815
CLASS 800	
2	5,612,486
205	5,612,487

CLASSIFICATION OF DESIGNS

D3—	619	378,467		511	378,481	D10—	1	378,495	D13—	103	378,509		230	378,523		238	378,537
	639	378,468		552	378,482		26	378,496		147	378,510	D15—	199	378,524	D23—	367	378,538
	738	378,469		608	378,483		28	378,497		162	378,511	D18—	40	378,525	D24—	211	378,539
	909	378,470	D7—	350	378,484		39	378,498		168	378,512		56	378,526	D25—	16	378,540
	953	378,471		362	378,485		40	378,499		183	378,513			378,527		49	378,541
	957	378,472		406	378,486		125	378,500	D14—	100	378,514			378,528		60	378,542
	970	378,473			378,487	D11—	4	378,501			378,515			378,529			378,543
D3—	271	378,474	D8—	66	378,488		81	378,502		114	378,516			378,530		68	378,544
D6—	317	378,475		99	378,489		85	378,503			378,517	D19—	65	378,531		125	378,545
	367	378,476		319	378,490	D12—	147	378,504			378,518		69	378,532			378,546
	406	378,477		376	378,491			378,505			378,519		75	378,533			
	436	378,478	D9—	300	378,492		209	378,506		135	378,520	D20—	10	378,534			
	477	378,479		524	378,493		316	378,507		188	378,521	D21—	198	378,535			
	500	378,480		528	378,494		317	378,508		214	378,522		203	378,536			

CLASSIFICATION OF PLANTS

P—	36	9,827			9,828		78	9,829		82.2	9,830		86.3	9,831		88.9	9,832

GEOGRAPHICAL INDEX

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Delaware	10	Montana	30	Vermont	50
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,611,186	5,611,358	5,611,888	5,612,538	5,612,866	5,613,158
		5,611,502	5,611,365	5,611,902	5,612,543	5,612,868	5,613,160
		5,611,532	5,611,379	5,611,914	5,612,551	5,612,884	5,613,161
		5,611,824	5,611,380	5,611,917	5,612,552	5,612,885	5,613,162
02	:	5,611,169	5,611,398	5,611,923	5,612,566	5,612,890	5,613,183
04	:	5,611,189	5,611,408	5,611,924	5,612,570	5,612,893	5,613,189
		5,611,207	5,611,419	5,611,933	5,612,588	5,612,895	5,613,197
		5,611,378	5,611,433	5,611,946	5,612,592	5,612,902	08	:	5,611,155
		5,611,514	5,611,450	5,612,018	5,612,597	5,612,921			5,611,349
		5,611,620	5,611,452	5,612,029	5,612,606	5,612,927			5,611,444
		5,611,805	5,611,460	5,612,033	5,612,612	5,612,956			5,611,501
		5,611,936	5,611,478	5,612,034	5,612,622	5,612,957			5,611,538
		5,612,228	5,611,479	5,612,035	5,612,627	5,612,964			5,611,605
		5,612,231	5,611,485	5,612,039	5,612,631	5,612,967			5,611,648
		5,612,232	5,611,490	5,612,041	5,612,632	5,612,970			5,611,709
		5,612,244	5,611,491	5,612,055	5,612,634	5,612,975			5,611,822
		5,612,491	5,611,505	5,612,094	5,612,638	5,612,986			5,611,907
		5,612,549	5,611,509	5,612,098	5,612,642	5,612,996			5,611,997
		5,612,701	5,611,515	5,612,123	5,612,645	5,613,004			5,612,082
		5,612,831	5,611,516	5,612,137	5,612,648	5,613,006			5,612,215
		5,612,934	5,611,519	5,612,143	5,612,651	5,613,010			5,612,405
		5,612,948	5,611,543	5,612,151	5,612,652	5,613,011			5,612,514
		5,612,978	5,611,544	5,612,153	5,612,673	5,613,012			5,612,729
		5,612,991	5,611,573	5,612,180	5,612,683	5,613,018			5,612,779
		5,613,082	5,611,575	5,612,183	5,612,684	5,613,036			5,613,059
		5,613,106	5,611,579	5,612,187	5,612,690	5,613,048			5,613,110
		5,613,154	5,611,581	5,612,199	5,612,698	5,613,061	09	:	5,611,102
		5,613,194	5,611,587	5,612,200	5,612,703	5,613,063			5,611,146
05	:	5,611,082	5,611,597	5,612,205	5,612,706	5,613,067			5,611,262
		5,611,770	5,611,613	5,612,213	5,612,718	5,613,072			5,611,412
06	:	5,611,081	5,611,650	5,612,220	5,612,719	5,613,075			5,611,486
		5,611,090	5,611,672	5,612,222	5,612,730	5,613,077			5,611,508
		5,611,104	5,611,678	5,612,223	5,612,742	5,613,085			5,611,582
		5,611,156	5,611,688	5,612,240	5,612,745	5,613,089			5,611,588
		5,611,179	5,611,701	5,612,249	5,612,780	5,613,094			5,611,630
		5,611,183	5,611,741	5,612,254	5,612,786	5,613,096			5,611,666
		5,611,213	5,611,746	5,612,311	5,612,791	5,613,101			5,611,694
		5,611,223	5,611,755	5,612,363	5,612,800	5,613,111			5,611,823
		5,611,226	5,611,771	5,612,380	5,612,801	5,613,113			5,611,988
		5,611,227	5,611,773	5,612,399	5,612,812	5,613,114			5,612,001
		5,611,254	5,611,775	5,612,403	5,612,834	5,613,120			5,612,040
		5,611,263	5,611,797	5,612,455	5,612,837	5,613,122			5,612,044
		5,611,266	5,611,799	5,612,471	5,612,838	5,613,128			5,612,059
		5,611,334	5,611,800	5,612,472	5,612,839	5,613,130			5,612,084
		5,611,338	5,611,810	5,612,486	5,612,842	5,613,139			5,612,126
		5,611,342	5,611,839	5,612,507	5,612,843	5,613,144			5,612,316
		5,611,343	5,611,841	5,612,520	5,612,850	5,613,145			5,612,518
		5,611,354	5,611,865	5,612,524	5,612,851	5,613,151			5,612,527
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For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

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U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on March 22, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,295,267 through 5,297,292
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 20, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,908,877 through 4,910,801
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 18, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,575,871 through 4,577,345
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED January 15, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,431	07/384,270	11/13/90
(4,796,324)	(07/101,371)	(01/10/89)
Re. 34,163	07/668,101	01/19/93
(4,797,775)	(06/854,246)	(01/10/89)
4,493,115	06/384,922	01/15/85
4,493,124	06/436,696	01/15/85
4,493,125	06/474,805	01/15/85
4,493,129	06/366,765	01/15/85
4,493,130	06/434,559	01/15/85
4,493,132	06/439,540	01/15/85
4,493,144	06/397,275	01/15/85
4,493,152	06/529,677	01/15/85
4,493,157	06/523,377	01/15/85
4,493,164	06/407,470	01/15/85
4,493,168	06/505,020	01/15/85
4,493,173	06/227,799	01/15/85
4,493,181	06/609,589	01/15/85
4,493,183	06/422,057	01/15/85
4,493,185	06/478,787	01/15/85
4,493,192	06/493,503	01/15/85
4,493,205	06/427,173	01/15/85
4,493,210	06/474,574	01/15/85
4,493,212	06/420,361	01/15/85
4,493,215	06/388,890	01/15/85
4,493,217	06/408,862	01/15/85
4,493,224	06/384,841	01/15/85
4,493,225	06/430,876	01/15/85
4,493,236	06/516,837	01/15/85
4,493,244	06/386,550	01/15/85
4,493,252	06/473,414	01/15/85
4,493,265	06/390,673	01/15/85
4,493,270	06/550,500	01/15/85
4,493,273	06/437,802	01/15/85
4,493,276	06/400,713	01/15/85
4,493,280	06/426,953	01/15/85
4,493,283	06/497,760	01/15/85
4,493,287	06/446,441	01/15/85
4,493,295	06/511,477	01/15/85
4,493,298	06/391,035	01/15/85
4,493,302	06/454,024	01/15/85
4,493,304	06/559,605	01/15/85
4,493,306	06/582,976	01/15/85
4,493,307	06/517,170	01/15/85
4,493,311	06/543,336	01/15/85
4,493,320	06/364,977	01/15/85
4,493,327	06/400,150	01/15/85
4,493,333	06/494,383	01/15/85
4,493,334	06/429,111	01/15/85
4,493,341	06/442,272	01/15/85
4,493,342	06/545,001	01/15/85
4,493,347	06/416,261	01/15/85
4,493,356	06/526,680	01/15/85
4,493,360	06/527,510	01/15/85
4,493,362	06/382,528	01/15/85
4,493,364	06/325,970	01/15/85
4,493,371	06/518,711	01/15/85
4,493,373	06/522,986	01/15/85
4,493,377	06/313,648	01/15/85
4,493,379	06/469,951	01/15/85
4,493,388	06/370,863	01/15/85
4,493,391	06/383,966	01/15/85
4,493,397	06/405,895	01/15/85
4,493,404	06/443,512	01/15/85
4,493,405	06/353,619	01/15/85
4,493,406	06/499,617	01/15/85
4,493,414	06/549,226	01/15/85
4,493,423	06/478,363	01/15/85
4,493,429	06/451,548	01/15/85
4,493,431	06/369,252	01/15/85
4,493,439	06/568,281	01/15/85
4,493,441	06/320,478	01/15/85
4,493,444	06/347,321	01/15/85
4,493,448	06/458,544	01/15/85
4,493,465	06/369,481	01/15/85
4,493,469	06/459,044	01/15/85
4,493,470	06/521,458	01/15/85
4,493,472	06/416,401	01/15/85
4,493,482	06/536,289	01/15/85
4,493,488	06/348,719	01/15/85
4,493,492	06/360,992	01/15/85
4,493,501	06/485,315	01/15/85
4,493,507	06/492,329	01/15/85
4,493,515	06/368,762	01/15/85
4,493,516	06/452,297	01/15/85
4,493,517	06/595,647	01/15/85
4,493,518	06/520,397	01/15/85
4,493,521	06/453,400	01/15/85
4,493,525	06/462,278	01/15/85
4,493,526	06/458,518	01/15/85
4,493,529	06/403,446	01/15/85
4,493,534	06/351,958	01/15/85
4,493,537	06/439,293	01/15/85
4,493,545	06/315,435	01/15/85
4,493,547	06/565,317	01/15/85
4,493,549	06/538,942	01/15/85
4,493,551	06/478,325	01/15/85
4,493,555	06/421,686	01/15/85
4,493,564	06/424,602	01/15/85
4,493,582	06/574,454	01/15/85
4,493,583	06/535,784	01/15/85
4,493,589	06/463,212	01/15/85
4,493,590	06/339,607	01/15/85
4,493,592	06/425,346	01/15/85
4,493,603	06/346,552	01/15/85
4,493,604	06/434,348	01/15/85
4,493,608	06/453,535	01/15/85
4,493,610	06/436,715	01/15/85
4,493,612	06/431,476	01/15/85
4,493,615	06/557,581	01/15/85
4,493,617	06/472,074	01/15/85
4,493,623	06/468,066	01/15/85
4,493,628	06/512,937	01/15/85
4,493,629	06/565,264	01/15/85
4,493,635	06/465,679	01/15/85
4,493,643	06/454,687	01/15/85
4,493,644	06/548,000	01/15/85
4,493,655	06/520,705	01/15/85
4,493,673	06/429,522	01/15/85
4,493,676	06/467,212	01/15/85
4,493,677	06/454,455	01/15/85
4,493,678	06/387,618	01/15/85
4,493,685	06/418,549	01/15/85
4,493,688	06/428,937	01/15/85
4,493,689	06/356,740	01/15/85
4,493,691	06/474,925	01/15/85
4,493,697	06/292,991	01/15/85
4,493,708	06/420,814	01/15/85
4,493,709	06/342,100	01/15/85
4,493,715	06/595,134	01/15/85
4,493,718	06/480,783	01/15/85
4,493,722	06/411,186	01/15/85
4,493,734	06/497,379	01/15/85
4,493,740	06/384,030	01/15/85
4,493,746	06/592,624	01/15/85
4,493,752	06/371,461	01/15/85
4,493,753	06/502,721	01/15/85
4,493,755	06/530,135	01/15/85
4,493,756	06/506,364	01/15/85
4,493,758	06/547,598	01/15/85
4,493,760	06/559,025	01/15/85
4,493,763	06/513,824	01/15/85
4,493,777	06/451,132	01/15/85
4,493,784	06/575,109	01/15/85
4,493,786	06/414,443	01/15/85
4,493,789	06/473,213	01/15/85
4,493,794	06/328,997	01/15/85
4,493,798	06/299,690	01/15/85
4,493,799	06/425,788	01/15/85
4,493,800	06/506,358	01/15/85
4,493,801	06/317,001	01/15/85
4,493,803	06/507,510	01/15/85
4,493,806	06/268,385	01/15/85
4,493,824	06/405,280	01/15/85
4,493,831	06/537,967	01/15/85
4,493,839	06/380,989	01/15/85
4,493,845	06/434,818	01/15/85
4,493,854	06/534,015	01/15/85
4,493,856	06/359,469	01/15/85
4,493,861	06/449,043	01/15/85
4,493,864	06/394,092	01/15/85
4,493,865	06/541,995	01/15/85
4,493,878	06/482,723	01/15/85
4,493,883	06/581,926	01/15/85
4,493,885	06/491,788	01/15/85
4,493,887	06/458,124	01/15/85
4,493,890	06/404,427	01/15/85
4,493,895	06/404,344	01/15/85
4,493,896	06/434,309	01/15/85
4,493,900	06/463,937	01/15/85
4,493,909	06/386,129	01/15/85
4,493,915	06/546,136	01/15/85
4,493,916	06/527,517	01/15/85
4,493,917	06/548,532	01/15/85
4,493,924	06/501,301	01/15/85
4,493,927	06/564,522	01/15/85
4,493,929	06/458,812	01/15/85
4,493,934	06/421,594	01/15/85
4,493,935	06/576,202	01/15/85
4,493,938	06/253,144	01/15/85
4,493,941	06/525,903	01/15/85
4,493,942	06/458,885	01/15/85
4,493,944	06/568,029	01/15/85
4,493,952	06/527,042	01/15/85
4,493,954	06/456,070	01/15/85
4,493,958	06/536,637	01/15/85
4,493,959	06/472,637	01/15/85
4,493,967	06/414,191	01/15/85
4,493,969	06/550,242	01/15/85
4,493,971	06/455,178	01/15/85
4,493,973	06/547,022	01/15/85
4,493,979	06/465,055	01/15/85
4,493,983	06/486,665	01/15/85
4,493,985	06/489,253	01/15/85
4,494,010	06/406,138	01/15/85
4,494,014	06/391,265	01/15/85
4,494,015	06/347,031	01/15/85
4,494,016	06/401,484	01/15/85
4,494,017	06/363,166	01/15/85
4,494,022	06/592,583	01/15/85
4,494,040	06/435,181	01/15/85
4,494,041	06/463,226	01/15/85
4,494,046	06/572,600	01/15/85
4,494,050	06/540,617	01/15/85
4,494,061	06/625,187	01/15/85
4,494,064	06/436,550	01/15/85
4,494,070	06/337,949	01/15/85
4,494,076	06/478,523	01/15/85
4,494,080	06/321,508	01/15/85
4,494,086	06/403,760	01/15/85
4,494,089	06/358,607	01/15/85
4,494,093	06/437,935	01/15/85
4,494,097	06/575,956	01/15/85
4,494,098	06/568,567	01/15/85
4,494,102	06/413,288	01/15/85

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4,494,106	06/349,757	01/15/85
4,494,108	06/617,303	01/15/85
4,494,109	06/229,175	01/15/85
4,494,116	06/298,633	01/15/85
4,494,118	06/524,274	01/15/85
4,494,123	06/520,766	01/15/85
4,494,125	06/472,924	01/15/85
4,494,126	06/465,412	01/15/85
4,494,130	06/398,630	01/15/85
4,494,131	06/315,505	01/15/85
4,494,137	06/388,824	01/15/85
4,494,140	06/340,619	01/15/85
4,494,145	06/416,645	01/15/85
4,494,152	06/332,778	01/15/85
4,494,154	06/286,221	01/15/85
4,494,164	06/364,729	01/15/85
4,494,167	06/364,965	01/15/85
4,494,174	06/424,808	01/15/85
4,494,175	06/569,002	01/15/85
4,494,179	06/464,695	01/15/85
4,494,182	06/458,109	01/15/85
4,494,186	06/286,444	01/15/85
4,494,189	06/371,754	01/15/85
4,494,190	06/377,299	01/15/85
4,494,194	06/430,575	01/15/85
4,494,200	06/338,627	01/15/85
4,494,202	06/421,538	01/15/85
4,494,203	06/367,959	01/15/85
4,494,207	06/368,737	01/15/85
4,494,208	06/368,738	01/15/85
4,494,211	06/444,139	01/15/85
4,494,213	06/387,642	01/15/85
4,494,215	06/437,159	01/15/85
4,494,228	06/407,409	01/15/85
4,796,309	07/105,504	01/10/89
4,796,316	07/119,507	01/10/89
4,796,323	06/948,051	01/10/89
4,796,329	07/029,624	01/10/89
4,796,340	06/921,363	01/10/89
4,796,348	07/058,401	01/10/89
4,796,354	07/027,832	01/10/89
4,796,357	07/155,773	01/10/89
4,796,360	07/114,657	01/10/89
4,796,362	07/089,809	01/10/89
4,796,363	07/142,192	01/10/89
4,796,364	07/141,041	01/10/89
4,796,368	07/056,438	01/10/89
4,796,371	07/193,603	01/10/89
4,796,383	06/868,263	01/10/89
4,796,391	07/124,570	01/10/89
4,796,393	06/764,296	01/10/89
4,796,394	07/119,969	01/10/89
4,796,395	07/001,591	01/10/89
4,796,406	07/058,164	01/10/89
4,796,407	07/079,517	01/10/89
4,796,409	07/061,881	01/10/89
4,796,411	07/048,538	01/10/89
4,796,419	07/007,200	01/10/89
4,796,421	07/149,178	01/10/89
4,796,425	07/105,702	01/10/89
4,796,428	06/458,598	01/10/89
4,796,430	07/085,536	01/10/89
4,796,431	06/885,868	01/10/89
4,796,437	07/111,635	01/10/89
4,796,438	07/114,013	01/10/89
4,796,445	06/941,597	01/10/89
4,796,448	07/140,904	01/10/89
4,796,453	07/063,327	01/10/89
4,796,458	07/086,948	01/10/89
4,796,459	07/093,888	01/10/89
4,796,464	07/114,331	01/10/89
4,796,468	07/022,213	01/10/89
4,796,472	07/071,776	01/10/89
4,796,485	06/782,496	01/10/89
4,796,489	07/042,528	01/10/89
4,796,492	07/196,311	01/10/89
4,796,497	06/946,210	01/10/89
4,796,504	06/891,924	01/10/89
4,796,509	07/122,112	01/10/89
4,796,510	07/118,674	01/10/89
4,796,511	06/768,017	01/10/89
4,796,512	07/106,952	01/10/89
4,796,515	07/002,740	01/10/89
4,796,517	07/067,009	01/10/89
4,796,536	07/065,509	01/10/89
4,796,542	07/063,261	01/10/89
4,796,544	06/918,999	01/10/89
4,796,551	07/117,468	01/10/89
4,796,552	07/050,360	01/10/89
4,796,553	06/935,821	01/10/89
4,796,554	07/038,691	01/10/89
4,796,559	07/051,142	01/10/89
4,796,563	07/039,708	01/10/89
4,796,564	06/837,890	01/10/89
4,796,571	07/132,152	01/10/89
4,796,573	07/103,879	01/10/89
4,796,580	07/095,085	01/10/89
4,796,590	06/802,723	01/10/89
4,796,592	06/871,135	01/10/89
4,796,596	07/093,815	01/10/89
4,796,613	06/912,043	01/10/89
4,796,615	06/920,290	01/10/89
4,796,616	07/090,955	01/10/89
4,796,618	06/820,845	01/10/89
4,796,619	06/837,089	01/10/89
4,796,621	07/130,301	01/10/89
4,796,622	07/026,540	01/10/89
4,796,623	07/075,842	01/10/89
4,796,624	06/932,638	01/10/89
4,796,635	07/013,592	01/10/89
4,796,638	07/169,144	01/10/89
4,796,650	07/127,263	01/10/89
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5,178,302	07/816,644	01/12/93
5,178,304	07/635,529	01/12/93
5,178,306	07/834,884	01/12/93
5,178,308	07/712,722	01/12/93
5,178,309	07/789,414	01/12/93
5,178,313	07/706,453	01/12/93
5,178,317	07/893,415	01/12/93
5,178,331	07/656,094	01/12/93
5,178,336	07/775,159	01/12/93
5,178,338	07/692,653	01/12/93
5,178,342	07/903,994	01/12/93
5,178,349	07/145,973	01/12/93
5,178,352	07/285,085	01/12/93
5,178,365	07/730,866	01/12/93
5,178,384	07/755,075	01/12/93
5,178,386	07/812,096	01/12/93
5,178,389	07/700,040	01/12/93
5,178,391	07/721,406	01/12/93
5,178,394	07/797,175	01/12/93
5,178,399	07/415,094	01/12/93
5,178,400	07/890,351	01/12/93
5,178,402	07/741,849	01/12/93
5,178,406	07/743,364	01/12/93
5,178,409	07/689,172	01/12/93
5,178,412	07/750,285	01/12/93
5,178,415	07/716,682	01/12/93
5,178,417	07/636,401	01/12/93
5,178,420	07/853,832	01/12/93
5,178,432	07/743,741	01/12/93
5,178,436	07/762,660	01/12/93
5,178,443	07/676,487	01/12/93
5,178,451	07/631,636	01/12/93
5,178,453	07/752,040	01/12/93
5,178,454	07/826,784	01/12/93
5,178,455	07/717,998	01/12/93
5,178,459	07/671,080	01/12/93
5,178,467	07/845,721	01/12/93
5,178,474	07/795,427	01/12/93
5,178,483	07/797,914	01/12/93
5,178,484	07/770,091	01/12/93
5,178,486	07/718,266	01/12/93
5,178,496	07/660,879	01/12/93
5,178,501	07/784,594	01/12/93
5,178,506	07/662,739	01/12/93
5,178,508	07/788,137	01/12/93
5,178,513	07/774,520	01/12/93
5,178,517	07/573,474	01/12/93
5,178,524	07/710,883	01/12/93
5,178,525	07/638,569	01/12/93
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5,178,548	07/726,742	01/12/93
5,178,561	07/752,718	01/12/93
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5,178,576	07/650,163	01/12/93
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5,178,585	07/816,429	01/12/93
5,178,589	07/836,110	01/12/93
5,178,590	07/784,778	01/12/93
5,178,591	07/889,267	01/12/93
5,178,592	07/892,027	01/12/93
5,178,600	07/871,184	01/12/93
5,178,602	07/756,924	01/12/93
5,178,619	07/706,311	01/12/93
5,178,626	07/607,845	01/12/93
5,178,627	07/818,770	01/12/93
5,178,640	07/334,198	01/12/93
5,178,654	07/885,760	01/12/93
5,178,655	07/768,891	01/12/93
5,178,656	07/745,462	01/12/93
5,178,664	07/541,939	01/12/93
5,178,666	07/801,945	01/12/93
5,178,673	07/684,075	01/12/93
5,178,683	07/671,317	01/12/93
5,178,685	07/713,687	01/12/93
5,178,686	07/678,901	01/12/93
5,178,695	07/782,951	01/12/93
5,178,700	07/334,139	01/12/93
5,178,706	07/750,237	01/12/93
5,178,707	07/753,146	01/12/93
5,178,711	07/814,837	01/12/93
5,178,712	07/588,991	01/12/93
5,178,722	07/726,222	01/12/93
5,178,724	07/759,824	01/12/93
5,178,725	07/673,652	01/12/93
5,178,730	07/537,061	01/12/93
5,178,733	07/724,910	01/12/93
5,178,734	07/481,024	01/12/93
5,178,749	07/586,622	01/12/93
5,178,750	07/718,140	01/12/93
5,178,752	07/557,544	01/12/93
5,178,756	07/720,646	01/12/93
5,178,758	07/906,355	01/12/93
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5,178,802	07/601,007	01/12/93
5,178,805	07/776,353	01/12/93
5,178,806	07/752,695	01/12/93
5,178,810	07/502,182	01/12/93
5,178,818	07/794,937	01/12/93
5,178,821	07/716,023	01/12/93
5,178,826	07/879,881	01/12/93
5,178,828	07/618,256	01/12/93
5,178,833	07/416,261	01/12/93
5,178,839	07/755,102	01/12/93
5,178,847	07/442,288	01/12/93
5,178,852	07/500,940	01/12/93
5,178,854	07/684,318	01/12/93
5,178,858	07/742,463	01/12/93
5,178,865	07/712,062	01/12/93
5,178,877	07/737,093	01/12/93
5,178,907	07/704,562	01/12/93
5,178,908	07/609,101	01/12/93
5,178,918	07/759,504	01/12/93
5,178,938	07/680,225	01/12/93
5,178,939	07/792,125	01/12/93
5,178,970	07/681,852	01/12/93
5,178,972	07/609,787	01/12/93
5,178,973	07/658,308	01/12/93
5,178,976	07/580,058	01/12/93
5,178,979	07/605,429	01/12/93
5,178,987	07/348,754	01/12/93
5,179,008	07/604,715	01/12/93
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5,179,025	07/737,756	01/12/93
5,179,027	07/639,913	01/12/93
5,179,028	07/511,707	01/12/93
5,179,038	07/456,029	01/12/93
5,179,044	07/798,741	01/12/93
5,179,046	07/772,252	01/12/93
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5,179,053	07/789,558	01/12/93
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5,179,058	07/707,571	01/12/93
5,179,060	07/620,514	01/12/93
5,179,063	07/834,914	01/12/93
5,179,066	07/866,052	01/12/93
5,179,080	07/401,046	01/12/93
5,179,082	07/662,225	01/12/93
5,179,084	07/504,393	01/12/93
5,179,086	07/671,740	01/12/93
5,179,087	07/568,855	01/12/93
5,179,090	07/779,203	01/12/93
5,179,091	07/709,613	01/12/93
5,179,105	07/775,571	01/12/93
5,179,108	07/665,481	01/12/93
5,179,110	07/725,157	01/12/93
5,179,111	07/284,223	01/12/93
5,179,114	07/764,965	01/12/93
5,179,115	07/717,501	01/12/93
5,179,121	07/745,567	01/12/93
5,179,124	07/590,789	01/12/93
5,179,125	07/504,654	01/12/93
5,179,136	07/580,066	01/12/93
5,179,138	07/769,574	01/12/93
5,179,145	07/589,083	01/12/93
5,179,151	07/670,676	01/12/93
5,179,160	07/233,150	01/12/93
5,179,165	07/713,879	01/12/93
5,179,172	07/616,471	01/12/93
5,179,175	07/627,468	01/12/93
5,179,182	07/532,105	01/12/93
5,179,193	07/789,554	01/12/93
5,179,203	07/560,634	01/12/93
5,179,205	07/687,147	01/12/93
5,179,206	07/534,832	01/12/93
5,179,219	07/615,106	01/12/93
5,179,223	07/627,196	01/12/93
5,179,229	07/873,471	01/12/93
5,179,245	07/806,474	01/12/93
5,179,246	07/819,544	01/12/93
5,179,249	07/682,151	01/12/93
5,179,252	07/642,936	01/12/93
5,179,254	07/736,033	01/12/93
5,179,255	07/763,201	01/12/93
5,179,264	07/450,343	01/12/93
5,179,272	07/540,340	01/12/93
5,179,280	07/596,387	01/12/93
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5,179,290	07/628,126	01/12/93
5,179,292	07/894,476	01/12/93
5,179,318	07/546,412	01/12/93
5,179,325	07/636,696	01/12/93
5,179,330	07/588,052	01/12/93
5,179,332	07/745,816	01/12/93
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5,179,339	07/745,729	01/12/93
5,179,342	07/653,571	01/12/93
5,179,359	07/851,724	01/12/93
5,179,363	07/669,252	01/12/93
5,179,375	07/563,705	01/12/93
5,179,399	07/645,232	01/12/93
5,179,425	07/741,383	01/12/93
5,179,440	07/704,571	01/12/93
5,179,445	07/661,312	01/12/93
5,179,447	07/847,423	01/12/93
5,179,453	07/679,986	01/12/93
5,179,482	07/742,510	01/12/93
5,179,497	07/707,691	01/12/93
5,179,509	07/781,030	01/12/93
5,179,513	07/608,383	01/12/93
5,179,518	07/562,266	01/12/93
5,179,521	07/851,414	01/12/93
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5,179,551	07/682,432	01/12/93
5,179,556	07/740,009	01/12/93
5,179,561	07/782,720	01/12/93
5,179,562	07/810,954	01/12/93
5,179,563	07/781,427	01/12/93
5,179,564	07/781,426	01/12/93
5,179,576	07/508,806	01/12/93
5,179,598	07/531,128	01/12/93
5,179,608	07/590,000	01/12/93
5,179,612	07/810,656	01/12/93
5,179,618	07/891,679	01/12/93
5,179,630	07/254,399	01/12/93
5,179,639	07/537,331	01/12/93
5,179,651	07/651,454	01/12/93
5,179,652	07/450,606	01/12/93
5,179,690	07/414,955	01/12/93
5,179,712	07/394,468	01/12/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 12/27/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,453,004	06/364,325	04/01/82	06/05/84	12/30/96
4,468,982	06/311,017	10/13/81	09/04/84	12/30/96
4,534,343	06/574,340	01/27/84	08/13/85	12/30/96
4,561,097	06/658,571	10/09/84	12/24/85	12/31/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,620,599	06/554,354	11/22/83	11/04/86	12/31/96
4,636,219	06/804,927	12/05/85	01/13/87	12/30/96
4,667,469	06/805,691	12/06/85	05/26/87	12/31/96
4,722,785	06/854,429	04/21/86	02/02/88	12/30/96
4,739,289	06/933,820	11/24/86	04/19/88	12/30/96
4,768,002	07/017,718	02/24/87	08/30/88	12/30/96
4,797,203	06/932,251	11/19/86	01/10/89	12/31/96
4,953,967	07/359,706	05/31/89	09/04/90	12/30/96
5,007,401	07/102,711	09/30/87	04/16/91	12/31/96
5,032,505	07/274,069	11/21/88	07/16/91	12/31/96
5,066,711	07/437,471	11/15/89	11/19/91	12/31/96
5,068,561	07/466,650	01/17/90	11/26/91	12/30/96
5,098,198	07/758,374	09/03/91	03/24/92	12/31/96
5,102,529	07/656,598	02/19/91	04/07/92	12/31/96
5,104,384	07/640,310	01/25/91	04/14/92	12/31/96
5,138,036	07/435,622	11/13/89	08/11/92	12/30/96
5,141,109	07/759,509	09/13/91	08/25/92	12/27/96
5,143,921	07/533,395	06/04/90	09/01/92	12/31/96
5,146,662	07/814,504	12/30/91	09/15/92	12/31/96

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 1/10/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,668,366	06/790,673	10/23/85	05/26/87	01/13/97
5,078,958	07/504,612	04/04/90	01/07/92	01/16/97
5,080,153	07/644,112	01/18/91	01/14/92	01/16/97
5,098,573	07/730,014	07/12/91	03/24/92	01/16/97
5,134,689	07/235,588	08/24/88	07/28/92	01/15/97
5,155,321	07/611,309	11/09/90	10/13/92	01/16/97
5,161,311	07/883,816	05/13/92	11/10/92	01/16/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,042,103, Re. S.N. 08/747,873, Nov. 13, 1996, Cl. 14/71.3, MOVABLE LOADING BRIDGE HAVING AN INFLATABLE FLEXIBLE BODY, Johannes H. Megens, Owner of Record: *M and I Marashall & Ilsley Bank, Milwaukee, Wis.*, Attorney or Agent: David B. Smith, Ex. Gp.: 3506

5,111,226, Re. S.N. 08/772,870, Dec. 26, 1996, Cl. 354, OPERATION CONTROL APPARATUS OF ELECTRIC ZOOM CAMERA, Toshiyuki Nakamura, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: None, Ex. Gp.: 2101

5,189,906, Re. S.N. 08/781,467, Jan. 10, 1997, Cl. 73, COMPACT ATOMIC FORCE MICROSOFT, Virgil B. Elings, et. al., Owner of Record: *Digital Instruments, Inc., Santa Barbara, Calif.*, Attorney or Agent: Patrick F. Bright, Ex. Gp.: 2212

5,201,549, Re. S.N. 08/420,033, April 11, 1995, Cl. 285/41, THERMAL ISOLATION COUPLING SYSTEM, Mark J. Davey, Owner of Record: *Senior Engineering Investments AG, Schaffhausen, Switzerland*, Attorney or Agent: Richard D. Harris, Ex. Gp.: 3501

5,278,889, Re. S.N. 08/585,338, Jan. 11, 1996, Cl. 379/53, VIDEO TELYPHONE DIALING, Andreas Constantine Papanicolaou, et. al., Owner of Record: *American Telephone And Telegraph Co., New York, N.Y.*, Attorney or Agent: Ronald D. Slusky, Ex. Gp.: 2608

5,315,177, Re. S.N. 08/653,516, May 24, 1996, Cl. 326/44, ONE-TIME PROGRAMMABLE FULLY-TESTABLE PROGRAMMABLE LOGIC DEVICE WITH ZERO POWER AND ANTI-FUSE CELL ARCHITECTURE, Paul S. Zagar, Owner of Record: *Micron Semiconductor, Inc., Boise, Idaho*, Attorney or Agent: James R. Duzan, Ex. Gp.: 2509

5,323,076, Re. S.N. 08/660,947, June 12, 1996, Cl. 310/090, DISK SPINDLE MOTOR, Chester S. Hajec, Owner of Record: *Inventor*, Attorney or Agent: Roger W. Jensen, Ex. Gp.: 2102

5,350,236, Re. S.N. 08/722,360, Sept. 27, 1996, Cl. 374/, METHOD FOR REPEATABLE TEMPERATURE MEASUREMENT USING SURFACE REFLECTIVE, Randhir P. S. Thakur, et. al., Owner of Record: *Micron Technology, Inc., Boise, Idaho*, Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 3108

5,363,448, Re. S.N. 08/751,932, Nov. 8, 1996, Cl. 380/23, PSEUDORANDUM NUMBER GENERATION AND CRYPTOGRAPHIC AUTHENTICATION, Philip J. Koopman, et. al., Owner of Record: *United Technologies Automotive, Inc., Dearborn, Mich.*, Attorney or Agent: Robert Greenspoon, Ex. Gp.: 2202

5,368,549, Re. S.N. 08/757,320, Nov. 27, 1996, Cl. 602/006, METHOD FOR INJECTION-MOLDING AN ORTHOPEDIC DEVICE AND PRODUCT OF THE METHOD, Henry J. McVicker, Owner of Record: *Aircast, Inc., Summit, N.J.*, Attorney or Agent: Sandra B. Weiss, Ex. Gp.: 3202

5,371,794, Re. S.N. 08/759,573, Dec. 5, 1996, Cl. 380/21, METHOD AND APPARATUS FOR PRIVACY AND AUTHENTICATION IN WIRELESS NETWORKS, Whitfield Diffie, et. al., Owner of Record: *Sun Microsystems, Inc., Mountain View, Calif.*, Attorney or Agent: Michael D. Hartogs, Ex. Gp.: 2202

5,372,836, Re. S.N. 08/764,205, Dec. 13, 1995, Cl. 427/8, METHOD OF FORMING POLYCRYSTALLING SILICON FILM IN PROCESS OF MANUFACTURING LCD, Issei Imahashi, et. al., Owner of Record: *Tokyo Electron Limited, Tokyo, Japan*, Attorney or Agent: Steven B. Kelber, Ex. Gp.: 1112

5,373,140, Re. S.N. 08/770,295, Dec. 20, 1996, Cl. 264, SYSTEM FOR CLEANING MOLDING EQUIPMENT USING A LASER, Robert A. Nagy, et. al., Owner of Record: *Vernay Laboratories, Inc., Yellow Springs, Ohio,* Attorney or Agent: Thomas W. Flynn, Ex. Gp.: 1307

5,373,512, Re. S.N. 08/766,806, Dec. 13, 1996, Cl. 371/40.100, MEMORY CONTROLLER WITH PARITY GENERATOR FOR AN I/O CONTROL UNIT, James T. Brady, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Esther E. Klein, Ex. Gp.: 2313

5,376,334, Re. S.N. 08/771,045, Dec. 20, 1996, Cl. 422/046, MASS TRANSFER DEVICE HAVING A HOLLOW FIBER BUNDLE, William S. Haworth, et. al., Owner of Record: *Avecor Cardiovascular, Inc., Plymouth, Minn.,* Attorney or Agent: Terry L. Wiles, Ex. Gp.: 1312

5,377,270, Re. S.N. 08/771,526, Dec. 23, 1996, Cl. 380/, CRYPTOGRAPHIC AUTHENTICATION OF TRANSMITTED MESSAGES USING PSEUDORANDOM NUMBERS, Philip J. Koopman, Jr., Owner of Record: *United Technologies Automotive, Dearborn, Mich.,* Attorney or Agent: Robert P. Greenspoon, Ex. Gp.: 2202

5,379,238, Re. S.N. 08/778,809, Jan. 3, 1997, Cl. 364/578, SIGNAL PROCESSING METHOD AND APPARATUS, Edward W. Stark, Owner of Record: *Inventor,* Attorney or Agent: Henry J. Sacco, Jr., Ex. Gp.: 2314

5,379,384, Re. S.N. 08/772,015, Dec. 19, 1996, Cl. 395/325, CONFIGURATION DATA LOOPBACK IN A BUS BRIDGE CIRCUIT, Gary Solomon, Owner of Record: *Intel Corp., Santa Clara, Calif.,* Attorney or Agent: Michael J. Mallie, Ex. Gp.: 2305

5,379,957, Re. S.N. 08/780,333, Jan. 7, 1997, Cl. 242/230, SPINNING REEL HAVING BALANCER, Yoshiyuki Furomoto, Owner of Record: *Shimano, Inc., Osaka, Japan,* Attorney or Agent: Rod S. Berman, Ex. Gp.: 3503

5,413,383, Re. S.N. 08/744,432, Nov. 8, 1996, Cl. 283/79, MULTIPURPOSE TUCK LABEL/FORM, David F. Laurash, et. al., Owner of Record: *The Standard Register Co., Dayton, Ohio,* Attorney or Agent: James E. Beyer, Ex. Gp.: 3206

5,418,007, Re. S.N. 08/772,792, Dec. 20, 1996, Cl. 427/154, METHOD FOR MAKING COMPOSITE ARTICLE COMPRISING ORIENTED MICROSTRUCTURES, Mark K. Debe, Owner of Record: *Minnesota Mining And Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Gregory D. Allen, Ex. Gp.: 1112

5,448,668, Re. S.N. 08/732,188, Oct. 17, 1996, Cl. 395/575, METHOD OF DETECTING CHANGES TO A COLLECTION OF DIGITAL SIGNALS, Alan S. Perelson, et. al., Owner of Record: *University of New Mexico, Albuquerque, New Mexico,* Attorney or Agent: Ronald L. Yin, Ex. Gp.: 2413

5,494,374, Re. S.N. 08/770,734, Dec. 19, 1996, Cl. 405/52, SECONDARY CONTAINMENT FLEXIBLE UNDERGROUND PIPING SYSTEM, Andrew Youngs, et. al., Owner of Record: *Advanced Polymer Technology, Inc., Elkhart, Ind.,* Attorney or Agent: Andrew R. Basile, Ex. Gp.: 3501

5,513,777, Re. S.N. 08/768,425, Dec. 18, 1996, Cl. 222/325, HOPPER CONVERTIBLE MATERIAL CONTAINER, Tsukasa Yoda, et. al., Owner of Record: *Hissei Plastic Industrial Co., Ltd., Nagano-ken, Japan,* Attorney or Agent: Edward A. Meilman, Ex. Gp.: 3104

5,535,124, Re. S.N. 08/732,798, Oct. 15, 1996, Cl. 364/426.03, METHOD AND APPARATUS FOR CONTROLLING DIFFERENTIALLY DRIVEN WHEEL-SLIP FOR AN ARTICULATED MACHINE, Javad Hosseini, et. al., Owner of Record: *Caterpillar, Inc., Peoria, Ill.,* Attorney or Agent: David M. Masterson, Ex. Gp.: 2304

5,543,864, Re. S.N. 08/780,578, Jan. 9, 1997, Cl. 351/47, METHOD AND KIT FOR ATTACHING SIDE SHIELDS TO EYEGLASS TEMPLES, Richard Hirschman, et. al., Owner of Record: *Hudsen Optical Corp., Bohemia, N.Y.,* Attorney or Agent: Steven I. Weisburd, Ex. Gp.: 2515

5,548,100, Re. S.N. 08/771,013, Dec. 20, 1996, Cl. 219/521, ARTICLE WARMER WITH HEATED FRAME, William R. Miller, Owner of Record: *Inventor,* Attorney or Agent: Thomas J. Wall, Ex. Gp.: 2106

5,549,216, Re. S.N. 08/764,326, Dec. 12, 1996, Cl. 220/695, PAINT HOLDER AND DELIVERY DEVICE, Robert Scholl, Owner of Record: *Inventor,* Attorney or Agent: Kevin C. Hooper, Ex. Gp.: 3207

5,571,051, Re. S.N. 08/780,313, Jan. 18, 1997, Cl. 273/081.5, GOLF CLUB GRIP, Ben Huang, Owner of Record: *Inventor,* Attorney or Agent: Gunther Hanke, Ex. Gp.: 3304

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 34,572, Reexam. No. 90/004,544, Feb. 10, 1997, Cl. 482/099, EXERCISE MACHINE WITH MULTIPLE EXERCISE STATIONS, Jeffrey B. Johnson, et. al., Owner of Record: *Vectra Fitness, Inc., Redmond, Wash.,* Attorney or Agent: Seed & Berry, Seattle, Wash., Ex. Gp.: 3302, Requester: Pacific Fitness Corp., c/o George W. Hoover, Blakely, Sokoloff, Taylor & Zafman, Seattle, Wash.

4,763,020, Reexam. No. 90/004,331, Aug. 9, 1996, Cl. 365/185.17, PROGRAMMABLE LOGIC DEVICE HAVING PLURAL PROGRAMMABLE FUNCTION CELLS, Akira Takata, et. al., Owner of Record: *Ricoh Corp., Ltd., Osaka, Japan,* Attorney or Agent: Cooper, Dunham, Clark, Griffin & Moran, aka Cooper & Dunham, New York, N.Y., Ex. Gp.: 2511, Requester: Owner; address is: Dickstein Shapiro Morin & Oshinsky, Wash., D.C.

4,900,291, Reexam. No. 90/004,540, Feb. 5, 1997, Cl. 474/080, BICYCLE GEAR SHIFTING METHOD AND APPARATUS, Sam H. Patterson, Owner of Record: *Sram Corp., Chicago, Ill.,* Attorney or Agent: Senniger Powers Leavitt & Roedel, St.Louis, Mo., Ex. Gp.: 3506, Requester: Owner

5,076,920, Reexam. No. 90/004,541, Dec. 7, 1997, Cl. 210/243, ELECTROSTATICALLY DISSIPATIVE FUEL FILTER, Daniel R. Danowski, et. al., Owner of Record: *Allied-Signal, Inc., Morris Township, N.J.,* Attorney or Agent: Ken C. Decker, Allied-Signal, Inc., South Bend, Ind., Ex. Gp.: 1308, Requester: Dale S. Lazar, Cushman Darby & Cushman, Intellectual Property Group of Pillsbury Madison & Sutro, Washington, D.C.

5,164,084, Reexam. No. 90/004,542, Feb. 7, 1997, Cl. 210/243, ELECTROSTATICALLY DISSIPATIVE FUEL FILTER, Daniel R. Danowski, et. al., Owner of Record: *Allied-Signal, Inc., Morris Township, N.J.,* Attorney or Agent: Ken C. Decker, Allied-Signal, Inc., South Bend, Ind., Ex. Gp.: 1308, Requester: Dale S. Lazar, Cushman Darby & Cushman, Intellectual Property Group of Pillsbury Madison & Sutro, Washington, D.C.

5,164,879, Reexam. No. 90/004,543, Feb. 7, 1997, Cl. 361/215, ELECTROSTATICALLY DISSIPATIVE FUEL FILTER, Daniel R. Danowski, et. al., Owner of Record: *Allied-Signal, Inc., Morris Township, N.J.,* Attorney or Agent: Ken C. Decker, Allied-Signal, Inc., South Bend, Ind., Ex. Gp.: 2104, Requester: Dale S. Lazar, Cushman Darby & Cushman, Intellectual Property Group of Pillsbury Madison & Sutro, Washington, D.C.

5,409,905, Reexam. No. 90/004,518, Feb. 10, 1997, Cl. 514/023, CURE FOR COMMON COLD, George A. Eby III, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 1808, Requester: Commissioner of Patents & Trademarks, Wash., D.C.

5,502,989, Reexam. No. 90/004,538, Feb. 4, 1997, Cl. 070/058, COMPUTER PHYSICAL SECURITY DEVICE, William R. Murray, et. al., Owner of Record: *Kensington Microwave Ltd., San Mateo, Calif.,* Attorney or Agent: Michael E. Woods, Townsend and Townsend and Crew, San Francisco, Calif., Ex. Gp.: 3508, Requester: Byte Brothers, Inc., c/o Richardson & Folise, Seattle, Wash.

5,566,678, Reexam. No. 90/004,539, Feb. 4, 1997, Cl. 128/731, DIGITAL EGG NOISE SYNTHESIZER, John A. Caldwell, Owner of Record: *Caldwell Industries, Inc., Kennewick, Wash.,* Attorney or Agent: Gary S. Kindness, Christensen, O'Connor, Johnson & Kindness, Seattle, Wash., Ex. Gp.: 3311, Requester: Astro-Med, Inc., Salter & Michaelson, Providence, R.I.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
December 16, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
108,981	71/090,023	03/14/1916
108,999	71/089,916	03/14/1916
109,008	71/088,962	03/14/1916
109,011	71/089,467	03/14/1916
109,023	71/087,951	03/14/1916
332,994	71/357,852	03/10/1936
333,008	71/371,669	03/10/1936
333,013	71/364,372	03/10/1936
333,023	71/371,398	03/10/1936
333,031	71/371,302	03/10/1936
333,032	71/371,300	03/10/1936
333,052	71/369,126	03/10/1936
333,096	71/370,675	03/10/1936
333,103	71/368,266	03/10/1936
333,118	71/370,842	03/10/1936
333,127	71/370,882	03/10/1936
333,143	71/355,428	03/10/1936
333,161	71/371,166	03/10/1936
333,175	71/370,522	03/10/1936
333,199	71/369,721	03/10/1936
333,203	71/369,791	03/10/1936
333,208	71/369,841	03/10/1936
622,847	71/680,683	03/13/1956
622,848	71/681,033	03/13/1956
622,856	71/687,994	03/13/1956
622,867	71/648,769	03/13/1956
622,870	71/679,835	03/13/1956
622,871	71/678,491	03/13/1956
622,884	71/687,292	03/13/1956
622,886	71/688,382	03/13/1956
622,888	71/688,641	03/13/1956
622,895	71/621,463	03/13/1956
622,899	71/687,633	03/13/1956
622,901	71/690,499	03/13/1956
622,902	71/691,095	03/13/1956
622,907	71/694,210	03/13/1956
622,912	71/694,753	03/13/1956
622,926	71/679,892	03/13/1956
622,930	71/689,470	03/13/1956
622,931	71/691,806	03/13/1956
622,932	71/691,807	03/13/1956
622,935	71/679,590	03/13/1956
622,936	71/652,098	03/13/1956
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622,943	71/683,607	03/13/1956
622,958	71/690,398	03/13/1956
622,959	71/690,725	03/13/1956
622,961	71/690,584	03/13/1956
622,977	71/675,247	03/13/1956
622,983	71/684,283	03/13/1956
622,986	71/687,592	03/13/1956
622,988	71/691,590	03/13/1956
622,991	71/680,765	03/13/1956
623,000	71/673,715	03/13/1956
623,018	71/672,370	03/13/1956
623,025	71/666,613	03/13/1956
623,029	71/680,729	03/13/1956
623,030	71/680,946	03/13/1956
623,056	71/668,257	03/13/1956
623,057	71/676,355	03/13/1956
623,060	71/685,721	03/13/1956
623,068	71/682,583	03/13/1956
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623,073	71/685,802	03/13/1956
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623,095	71/657,462	03/13/1956
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623,121	71/685,912	03/13/1956
623,139	71/687,482	03/13/1956
623,141	71/687,681	03/13/1956
623,153	71/683,314	03/13/1956
623,164	71/685,849	03/13/1956
623,175	71/662,548	03/13/1956
623,181	71/670,258	03/13/1956
623,187	71/681,243	03/13/1956
623,188	71/681,365	03/13/1956
623,200	71/683,270	03/13/1956
623,203	71/683,755	03/13/1956
623,205	71/683,967	03/13/1956
623,207	71/684,099	03/13/1956
623,212	71/684,692	03/13/1956
623,223	71/686,217	03/13/1956
623,229	71/689,947	03/13/1956
623,233	71/682,001	03/13/1956
623,239	71/681,443	03/13/1956
623,241	71/687,298	03/13/1956
623,250	71/682,189	03/13/1956
623,256	71/674,010	03/13/1956
623,268	71/653,043	03/13/1956
1,035,116	73/001,468	03/09/1976
1,035,118	73/047,039	03/09/1976
1,035,119	73/052,643	03/09/1976
1,035,123	73/035,481	03/09/1976
1,035,127	73/041,315	03/09/1976
1,035,129	73/043,855	03/09/1976
1,035,132	73/034,559	03/09/1976
1,035,136	73/045,358	03/09/1976
1,035,137	73/046,046	03/09/1976
1,035,143	73/055,071	03/09/1976
1,035,147	73/039,419	03/09/1976
1,035,152	73/039,608	03/09/1976
1,035,153	73/041,590	03/09/1976
1,035,154	73/041,715	03/09/1976
1,035,156	73/047,097	03/09/1976
1,035,157	73/047,105	03/09/1976
1,035,160	73/050,221	03/09/1976
1,035,161	73/050,545	03/09/1976

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1,035,176	73/062,730	03/09/1976
1,035,177	73/028,262	03/09/1976
1,035,179	73/035,599	03/09/1976
1,035,182	73/037,615	03/09/1976
1,035,185	73/040,907	03/09/1976
1,035,187	73/041,149	03/09/1976
1,035,189	73/041,491	03/09/1976
1,035,191	73/041,926	03/09/1976
1,035,192	73/042,520	03/09/1976
1,035,194	73/045,067	03/09/1976
1,035,197	73/051,244	03/09/1976
1,035,201	73/013,329	03/09/1976
1,035,205	73/028,601	03/09/1976
1,035,207	73/031,227	03/09/1976
1,035,209	73/033,411	03/09/1976
1,035,210	73/035,696	03/09/1976
1,035,211	73/035,869	03/09/1976
1,035,212	73/040,908	03/09/1976
1,035,217	73/053,632	03/09/1976
1,035,219	73/057,138	03/09/1976
1,035,220	73/005,763	03/09/1976
1,035,223	73/036,844	03/09/1976
1,035,225	73/055,451	03/09/1976
1,035,228	73/008,573	03/09/1976
1,035,232	73/030,830	03/09/1976
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1,035,243	73/040,823	03/09/1976
1,035,247	73/043,591	03/09/1976
1,035,248	73/049,077	03/09/1976
1,035,250	73/049,927	03/09/1976
1,035,254	73/062,341	03/09/1976
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1,035,261	73/049,507	03/09/1976
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1,035,297	73/056,144	03/09/1976
1,035,302	73/052,761	03/09/1976
1,035,317	73/025,560	03/09/1976
1,035,319	73/028,767	03/09/1976
1,035,320	73/031,410	03/09/1976
1,035,321	73/033,270	03/09/1976
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1,035,325	73/041,067	03/09/1976
1,035,326	73/041,386	03/09/1976
1,035,327	73/042,178	03/09/1976
1,035,328	73/045,093	03/09/1976
1,035,329	73/045,094	03/09/1976
1,035,332	73/046,761	03/09/1976
1,035,337	73/050,062	03/09/1976
1,035,344	73/055,564	03/09/1976
1,035,349	73/057,126	03/09/1976
1,035,350	73/028,668	03/09/1976
1,035,351	73/051,013	03/09/1976
1,035,359	73/047,469	03/09/1976
1,035,363	73/032,204	03/09/1976
1,035,364	73/032,248	03/09/1976
1,035,369	73/009,089	03/09/1976
1,035,375	73/054,474	03/09/1976
1,035,378	73/048,655	03/09/1976
1,035,379	73/051,151	03/09/1976
1,035,384	73/025,672	03/09/1976
1,035,388	73/036,226	03/09/1976
1,035,390	73/042,145	03/09/1976
1,035,391	73/042,378	03/09/1976
1,035,392	73/042,991	03/09/1976
1,035,393	73/043,035	03/09/1976
1,035,395	73/044,678	03/09/1976
1,035,397	73/046,794	03/09/1976
1,035,400	73/048,160	03/09/1976
1,035,402	73/051,233	03/09/1976
1,035,404	73/051,912	03/09/1976
1,035,405	73/052,022	03/09/1976
1,035,409	73/037,011	03/09/1976
1,035,412	73/004,971	03/09/1976
1,035,413	73/004,972	03/09/1976
1,035,417	73/046,471	03/09/1976
1,035,419	73/050,599	03/09/1976
1,035,421	73/050,699	03/09/1976
1,035,423	73/052,841	03/09/1976
1,035,424	73/054,839	03/09/1976
1,035,425	73/054,841	03/09/1976
1,035,427	73/016,534	03/09/1976
1,035,436	73/046,593	03/09/1976
1,035,440	73/053,039	03/09/1976
1,035,441	75/053,307	03/09/1976
1,035,444	73/056,970	03/09/1976
1,035,455	73/059,695	03/09/1976
1,035,457	73/059,877	03/09/1976
1,035,461	73/040,348	03/09/1976
1,035,462	73/041,957	03/09/1976
1,035,465	73/052,294	03/09/1976
1,035,466	73/053,092	03/09/1976
1,035,468	73/053,339	03/09/1976
1,035,469	73/054,544	03/09/1976
1,035,472	73/058,875	03/09/1976
1,035,474	73/059,726	03/09/1976
1,035,476	73/060,175	03/09/1976
1,035,477	73/008,947	03/09/1976
1,035,480	73/044,854	03/09/1976
1,035,481	73/051,471	03/09/1976
1,035,483	73/051,796	03/09/1976
1,035,484	73/051,987	03/09/1976
1,035,485	73/052,066	03/09/1976
1,035,486	73/052,223	03/09/1976
1,035,498	73/021,199	03/09/1976
1,035,500	73/041,399	03/09/1976
1,035,502	73/042,528	03/09/1976
1,035,505	73/045,990	03/09/1976
1,035,506	73/036,384	03/09/1976
1,035,507	73/045,634	03/09/1976
1,035,509	73/014,160	03/09/1976
1,035,510	73/026,410	03/09/1976
1,035,514	73/003,416	03/09/1976
1,035,515	73/010,068	03/09/1976
1,035,517	73/025,532	03/09/1976
1,035,520	73/041,533	03/09/1976
1,035,523	73/001,065	03/09/1976
1,035,527	73/035,744	03/09/1976
1,035,529	73/044,046	03/09/1976
1,035,532	73/048,667	03/09/1976
1,035,533	73/052,883	03/09/1976
1,035,536	72/457,073	03/09/1976
1,035,542	72/445,098	03/09/1976
1,035,545	72/455,124	03/09/1976
1,035,547	72/459,092	03/09/1976
1,035,550	72/463,864	03/09/1976
1,035,557	73/022,444	03/09/1976
1,035,560	73/005,669	03/09/1976
1,035,564	73/009,124	03/09/1976
1,035,567	73/046,654	03/09/1976
1,035,568	73/018,859	03/09/1976
1,035,573	73/043,072	03/09/1976
1,035,577	73/040,019	03/09/1976
1,035,579	73/030,023	03/09/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

The Learning Edge, Inc., Carmel, Indiana, Reg. No. 1,616,124, for the mark "THE LEARNING EDGE DEVELOPING THE MIND", Canc. No. 23,947.

Mendelson-Zeller Co., Inc., Fresno, Calif., Reg. No. 1,632,503, for the mark "NOB H", Canc. No. 24,644.

Successhare Inc., Grand Rapids, Mich., Reg. No. 1,453,598, for the mark "SUCCESS TRAIN", Canc. No. 20,445.

Power Parenting Corp., Ellicott City, Md., Reg. No. 1,791,615, for the mark "POWER PARENTING", Canc. No. 24,650.

Barbara E. Trachtman, Cherry Hill, N.J., Reg. No. 1,247,975, for the mark "THINKING OF YOU", Canc. No. 25,360.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Revised PTOL-85 Issue Fee Transmittal Form

The purpose of this notice is to advise the public that form PTOL-85 has been substantially revised so as to be more effective and easier to use. Form PTOL-85 starts out as a three page form. Page 1 is form PTOL-85B, the *Issue Fee Transmittal* form. This form is labeled "TRANSMIT THIS FORM WITH FEE" in red at the bottom. Form PTOL-85B is used for submitting the issue fee. The PALM data that is printed on this form will be much clearer than before as it is now the first (or top) printed copy. This should ensure that the submitted issue fee is promptly credited to the correct application file.

Pages 2 and 3 of PTOL-85 are, respectively, the applicant's copy and the PTO's copy of PTOL-85, the *Notice of Allowance and Issue Fee Due* form. The applicant's copy is labeled "YOUR COPY" in red at the bottom. The applicant should retain the applicant's copy of form PTOL-85.

Form PTOL-85B (*i.e.*, page 1) has also been revised to have the Certificate of Mailing in the upper right corner and to clarify that the Certificate of Mailing is to be used for domestic mailings only. Additionally, the CURRENT CORRESPONDENCE ADDRESS block shall permit write-in corrections for making minor changes in the correspondence address. Alternatively, a change in the correspondence address, or an indication of a "Fee Address" for maintenance fee notifications, may be made by checking the appropriate set of brackets in Block 1 and including the appropriate attachment.

Block 3 of the revised form PTOL-85B will be used to indicate assignee data to be printed on the patent, as well as the status of the assignee as: (1) individual, (2) corporation or other private group entity, or (3) government entity. Applicants are being asked to indicate the status of the assignee in order to increase the accuracy of the assignee category codes being entered by the Office into the Patent Full Text Data Base, which can later be extracted and used for statistical purposes. This has become necessary since the assignee's category is not always evident at the point in the publication process when the assignment data is being captured from the PTOL-85B form.

The applicant is requested to transmit an extra copy of PTOL-85B when payment of the issue fee is by way of authorization to debit a Deposit Account.

February 21,1997

STEPHEN O. KUNIN
Deputy Assistant Commissioner
for Patent Policy and Projects

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before May 9, 1997.

Brett, Robert A., 410 Chapel St., #2, Ottawa, Ont., K1N 7Z8, Canada

Kim, Hyo S., 2705 Sweet Clover Ct., Silver Spring, Md. 20904

Kondor, George F., 104-2224 Eton St., Vancouver, BC, V5L 1C8, Canada

Lynch, Michael J., 123 Quapaw Circle, Loudon, Tenn. 37774

Mah, Raymond Y., 6809 Massena Ct., Bethesda, Md. 20817

Sgantzos, Mark, 84-60 160 St., Jamaica, N.Y. 11432

Wicker, William J., 2586 G South Arlington Mill Dr., Arlington, Va. 22206

February 24, 1997

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held May 3, 1995, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before May 9, 1997.

Snyder, Glenn, 14000 Castle Blvd., Silver Spring, Md. 20904

February 24, 1997

KAREN L. BOVARD *Director*
Office of Enrollment and Discipline

Erratum

In the Notices of Certificates of Correction appearing at 1194 O.G. 604, delete all reference to Patent No. 4,892,851, since no certificate of correction was granted.

Disclaimers

5,089,307 — Hirofumi Ninomyiya; Sboji Suzuki; Kazuhiro Ishii, all of Tayama, Japan. EDIBLE FILM AND METHOD OF MAKING SAME. Patent dated February 18, 1992. Disclaimer filed November 20, 1992, by the assignee, Mitsubishi Rayon Co., Ltd.

Hereby enters this disclaimer to claim 4 of said patent.

5,459,730 — David C. Bilven, San Jose, Calif. DIGITAL ADDED MAIN LINE SYSTEM. Patent dated October 17,

1995. Disclaimer filed January 31, 1997, by the assignee, Raychem Corp.

The term of this patent shall not extend beyond the expiration date of Pat. No. 5,459,729.

5,473,613 — David C. Bilven, San Jose, Calif. DIGITAL ADDED MAIN LINE SYSTEM. Patent dated December 5, 1995. Disclaimer filed January 31, 1997, by the assignee, Raychem Corp.

The term of this patent shall not extend beyond the expiration date of Pat. No. 5,459,729.

5,603,930 — Dominique Brassart, Bussigny; Anne Donnet, Saint-Legier; Harriet Link, Vevey; Olivier Mignot, Blonay; Jean-Richard Neeser, Savigny; Florence Rochat, Montreaux; Eduardo Schiffrin, Crissier, all of Switzerland; Alain Servin, Chatenay-Malabry, France. *LACTOBACILLUS JOHNSONII* CNCM I-1225. Patent dated February 18, 1997. Disclaimer filed January 13, 1997, by the assignee, Nestec S.A.

The term of this patent shall not extend beyond the expiration date of Pat. No. 5,578,302.

Disclaimer and Dedication

D. 359,304 — Bren R. Smith, Henrietta; Donald E. Snyder, Jr., Brockport, both of N.Y. TONER CARTRIDGE. Patent dated June 13, 1995. Disclaimer and Dedication filed May 24, 1996, by the assignee, Nu-Kote International, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Certificates of Correction
For Week of March 25, 1997

P. 09,681	5,432,081	5,518,225	5,540,970
Re. 34,456	5,432,726	5,521,103	5,541,465
Re. 35,364	5,440,685	5,522,151	5,541,649
Re. 35,373	5,443,518	5,522,974	5,541,701
D. 328,137	5,451,410	5,523,137	5,541,711
D. 366,055	5,455,060	5,523,589	5,542,568
D. 372,766	5,457,920	5,523,830	5,542,887
D. 373,191	5,459,235	5,524,124	5,543,469
D. 374,034	5,461,450	5,524,172	5,543,524
D. 374,601	5,466,820	5,525,097	5,543,802
4,868,631	5,468,857	5,526,494	5,543,836
5,001,451	5,469,757	5,527,453	5,543,837
5,040,284	5,473,143	5,527,497	5,543,998
5,042,907	5,474,277	5,527,664	5,544,320
5,057,078	5,478,925	5,527,842	5,545,114
5,101,908	5,480,208	5,528,329	5,545,668
5,138,712	5,482,249	5,528,595	5,546,051
5,142,668	5,484,861	5,529,521	5,546,133
5,166,465	5,485,516	5,529,602	5,546,168
5,261,058	5,496,235	5,529,991	5,546,232
5,276,024	5,496,504	5,530,123	5,546,941
5,283,941	5,496,603	5,530,473	5,547,627
5,286,634	5,496,766	5,530,608	5,547,773
5,297,236	5,500,422	5,530,884	5,548,213
5,341,242	5,501,645	5,534,740	5,548,324
5,344,862	5,505,546	5,534,809	5,548,581
5,355,429	5,506,548	5,537,207	5,548,649
5,369,296	5,507,435	5,538,283	5,548,755
5,376,894	5,508,343	5,538,513	5,549,183
5,382,569	5,508,383	5,538,626	5,549,898
5,388,896	5,511,510	5,538,632	5,550,437
5,395,784	5,513,973	5,539,089	5,550,616
5,404,230	5,514,017	5,539,114	5,550,645
5,407,816	5,514,663	5,539,217	5,550,805
5,409,698	5,515,538	5,539,944	5,550,866
5,409,777	5,516,487	5,540,092	5,551,300
5,411,811	5,516,636	5,540,362	5,551,673
5,551,759	5,563,698	5,573,552	5,587,253
5,552,369	5,563,708	5,573,649	5,587,437
5,552,391	5,564,069	5,573,786	5,587,478
5,552,543	5,564,461	5,573,927	5,587,680
5,553,254	5,564,621	5,573,929	5,587,854
5,553,468	5,564,972	5,574,127	5,588,421
5,555,019	5,564,999	5,574,177	5,588,596
5,555,399	5,565,102	5,574,702	5,588,638
5,556,593	5,565,161	5,574,797	5,588,682
5,557,419	5,565,486	5,574,834	5,588,893
5,557,446	5,565,494	5,574,938	5,589,498
5,557,598	5,565,538	5,575,500	5,589,650
5,557,639	5,565,970	5,575,763	5,589,688
5,558,066	5,566,027	5,576,054	5,589,898
5,558,188	5,566,238	5,577,034	5,590,002
5,558,296	5,566,395	5,578,085	5,590,181
5,558,399	5,566,695	5,578,113	5,591,328
5,558,402	5,566,874	5,579,284	5,591,410
5,558,971	5,566,989	5,579,340	5,591,450
5,558,972	5,566,991	5,579,700	5,591,574
5,559,075	5,568,501	5,579,881	5,591,669
5,559,283	5,568,569	5,580,346	5,591,694
5,559,318	5,568,805	5,580,362	5,591,740
5,559,347	5,568,862	5,581,111	5,591,743
5,559,528	5,568,922	5,581,369	5,591,925
5,559,639	5,569,514	5,581,941	5,592,016
5,559,728	5,569,656	5,582,665	5,592,100
5,559,743	5,569,696	5,583,116	5,592,698
5,559,992	5,570,153	5,583,416	5,593,002
5,560,591	5,570,210	5,584,379	5,593,042
5,561,021	5,570,504	5,584,513	5,593,116
5,561,189	5,571,431	5,584,641	5,593,404
5,561,511	5,571,695	5,584,996	5,594,135
5,562,049	5,571,921	5,585,246	5,594,263
5,562,350	5,572,179	5,585,602	5,594,376
5,562,736	5,572,299	5,585,683	5,594,612
5,562,798	5,572,549	5,585,974	5,594,732
5,562,802	5,572,614	5,586,151	5,594,835
5,563,061	5,572,632	5,586,152	5,596,135
5,563,092	5,572,648	5,586,320	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 27-31, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-28	CANC	22,873	Forest Hills Associates of Charlottesville, Inc. v. Forest Hill Enterprises	Abandonment	Petition to Cancel Denied		"FOREST HILL ASSOCIATES" (and design) [construction, repair and renovation of casualty damaged buildings and general building contracting services]		No
1-29	EX (R)	74/463,731	Ronald C. Cosser	2(d)	Request for Reconsideration Denied [Refusal Affirmed]		"THE CRAFTSMAN" (and design) [furniture]	"THE ART OF THE CRAFTSMAN" [furniture]; "CRAFTSMAN SHOPPE CS" (and design) [wooden furniture]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
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Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box 6	Mail for the Office of Procurement.
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Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7325
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508 (808) 586-3477
Hawaii	Honolulu: Hawaii State Public Library System	(208) 885-6235
Idaho	Moscow: University of Idaho Library	(312) 747-4450
Illinois	Chicago Public Library	(217) 782-5659
	Springfield: Illinois State Library	(317) 269-1741
Indiana	Indianapolis-Marion County Public Library	(317) 494-2872
	West Lafayette Siegesmund Engineering Library, Purdue University	(515) 281-4118
Iowa	Des Moines: State Library of Iowa	(316) 689-3155
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Kentucky	Louisville Free Public Library	(504) 388-2570
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Maine	Orono: Raymond H. Fogler Library, University of Maine	(301) 405-9157
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(413) 545-1370 (617) 536-5400 Ext. 265
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(313) 647-5735
	Boston Public Library	(616) 592-3602
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 833-3379
	Big Rapids: Abigail S. Timme Library, Ferris State University	(612) 372-6570
	Detroit: Great Lakes Patent and Trademark Center	(601) 359-1036
Minnesota	Minneapolis Public Library and Information Center	(816) 363-4600
Mississippi	Jackson: Mississippi Library Commission	(314) 241-2288 Ext. 390
Missouri	Kansas City: Linda Hall Library	(406) 496-4281
	St. Louis Public Library	(402) 472-3411
Montana	Butte: Montana College of Mineral Science and Technology Library	(702) 784-6500 Ext. 257
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(603) 271-2239
Nevada	Reno: University of Nevada, Reno Library	(201) 733-7782
New Hampshire	Concord: New Hampshire State Library	(908) 445-2895
New Jersey	Newark Public Library	(505) 277-4412
	Piscataway: Library of Science and Medicine, Rutgers University	(518) 474-5355
New Mexico	Albuquerque: University of New Mexico General Library	(716) 858-7101
New York	Albany: New York State Library	
	Buffalo and Erie County Public Library	

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	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
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Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/12/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/22/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/19/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/07/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	03/31/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/12/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/13/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/22/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/20/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/26/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/24/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/23/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/02/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/03/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/07/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/24/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more relisble information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	12/13/96	—0—
Renewals (All Classes)	11/14/96	—0—
Section 12(c) Publications (All Classes)	07/26/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

MARCH 25, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,966,280 (3162nd)
MULTIPLE-PLY ANTI-STATIC PAPERBOARD

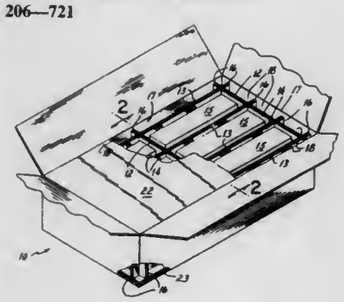
Judson A. Bradford, Holland, Mich., assignor to Bradford Company, Holland, Mich.

Reexamination Request No. 90/003,961, Sep. 13, 1995.

Reexamination Certificate for Patent 4,966,280, issued Oct. 30, 1990, Ser. No. 336,733, Apr. 12, 1989.

Int. Cl.[6] B65D *81/00*

U.S. Cl. 206—721



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–21** is confirmed.

1. A container for use with an article which can be damaged by static electricity, comprising:

a box having sidewalls and top and bottom walls;

a plurality of relatively rigid dividers located in said box, each said divider comprising a layer of electrically conductive material sandwiched between and contacting two layers of an anti-static material, said electrically conductive material having a surface resistivity of less than 10^5 ohms per square inch and said two layers of anti-static material having a surface resistivity of between 10^9 and 10^{14} ohms per square inch; and

wherein said dividers partially define a predetermined number of cells within said box, each said cell providing protection from both electrostatic discharge and conductive spall for a static electricity sensitive article to be packaged therein.

B1 5,408,508 (3163rd)
SYSTEM AND METHOD FOR SIMULTANEOUSLY TESTING A PLURALITY OF CONTROL RODS

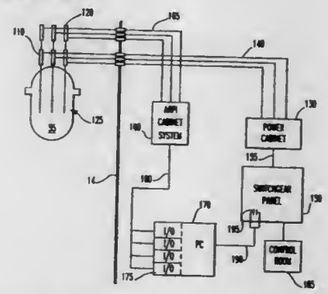
Panfilo A. Federico, Kennedy Township, Allegheny County, and James J. Patnesky, Jr., Allison Park, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Reexamination Request No. 90/004,121, Dec. 11, 1995.

Reexamination Certificate for Patent 5,408,508, issued Apr. 18, 1995, Ser. No. 168,491, Dec. 22, 1993.

Int. Cl.[6] G21C *17/00*

U.S. Cl. 376—258



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **7** are determined to be patentable as amended.

Claims **2–6** and **8–9**, dependent on an amended claim, are determined to be patentable.

1. A system for simultaneously testing at least any two control rod clusters contained within a reactor vessel, the system comprising:

a) a control rod drive mechanism *magnetically coupled with drive rods* attached to said control rod clusters for retracting said control rod clusters from within the reactor vessel to a position suitable for testing;

b) electrical power means connected to said control rod drive mechanism for supplying electrical power to said control rod drive mechanism and for terminating the power to said control rod drive mechanism and, when terminated, *magnetically decoupling all said drive rods and thereby* causing all said control rod clusters to fall into the reactor vessel *by gravity*;

c) a rod position indicator attached to said control rod drive mechanism for monitoring the position of said control rod clusters; and

d) computing means operatively [connected to] *networked with* said rod position indicator and receiving a signal representing a fall time of each control rod cluster for substantially simultaneously generating an elapsed time profile of all said control rod clusters falling into the reactor vessel *and then displaying or printing said elapsed time profiles*.

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REISSUES

MARCH 25, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,481

MULTIPLE STATION FLEXIBLE BORING MACHINE

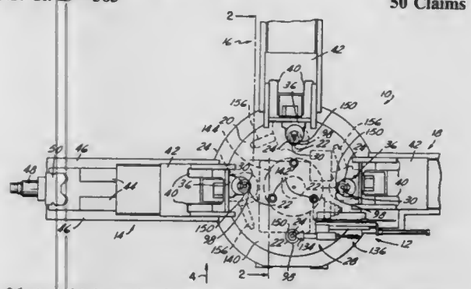
Richard Wloskowski, Fraser; Howard H. Schafer, Ann Arbor; George P. Bader, Clinton Township, and Edward J. Irvine, St. Clair Shores, all of Mich., assignors to Western Atlas, Inc., Hebron, Ky.

Original No. 5,199,158, dated Apr. 6, 1993, Ser. No. 920,764, Jul. 28, 1992. Application for reissue Mar. 22, 1995, Ser. No. 408,646

Int. Cl.[6] B23Q 7/02

U.S. Cl. 29—563

50 Claims



26. A multiple station boring machine for locating and transferring a pallet carrying a workpiece for performing a series of machining operations on the workpiece, said machine comprising:

a base;

a table carried by said base for receiving and transporting a pallet thereon;

a drive operably associated with said table for indexing said table relative to the base;

at least one pallet for receiving and clamping a workpiece, a locator ring on said pallet having a plurality of circumferentially spaced and generally radially extending teeth for accurately axially, radially, and circumferentially locating said pallet;

a part loading station adjacent said table having a base, a locator ring on said base having a plurality of circumferentially spaced and generally radially extending teeth for complementary mating engagement with said locator teeth of said locator ring on said pallet for accurately axially, radially and circumferentially locating said pallet on said base; and

at least two machine tool stations adjacent said table, each machine tool station having a separate base, the separate base of each machine tool station being independent of the bases of all other machine tool stations, a locator ring carried by said separate base of said machine tool station and having a plurality of circumferentially spaced and generally radially extending teeth for complementary mating engagement with said locator teeth of said locator ring on said pallet for accurately axially, radially, and circumferentially locating the workpiece on said pallet with respect to said separate base of said machine tool station and a separate clamp carried by said separate base of said machine tool station for clamping said pallet to said separate base while said locator ring on said pallet is in mating engagement with said locator ring on said separate base of said machine tool station for maintaining the accurate location of the workpiece with respect to said separate base of said machine tool station during the machining of the workpiece by a machine tool in said machine tool station independently of all other pallets, whereby said drive moves said table to transfer a pallet seriatim from one station to another station.

Re. 35,482

TOWING HITCH

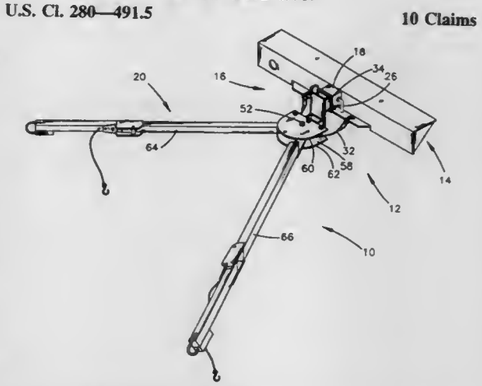
Andrew B. Johnson, deceased, late of Barton, N. Dak., assignor to Dethmers Mfg. Co., Boyden, Iowa

Original No. 5,232,240, dated Aug. 3, 1993, Ser. No. 968,195, Oct. 29, 1992. Application for reissue Mar. 24, 1995, Ser. No. 410,105

Int. Cl.[6] B60D 1/167

U.S. Cl. 280—491.5

10 Claims



1. A towing hitch, comprising:

a frame having a forward portion for selective removable connection to a towing vehicle, and a rearward portion for selective removable connection to a vehicle to be towed;

said forward portion including a generally horizontal forwardly extending member adapted for selectively lockable receipt within a conventional receiver hitch;

said rearward portion including first and second elongated bars having forward and rearward ends, the forward ends of said bars pivotally connected to a pivot bolt for pivotal movement within the same plane about said pivot bolt;

[a first pivot arm pivotally connected at a forward end to the rearward end of said first bar for pivotal movement coplanar with said first and second bars;

a second pivot arm pivotally connected at a forward end to the rearward end of said second bar for pivotal movement coplanar with said first and second bars;

connection means connected to rearward ends of said pivot arms for selective removable connection to a vehicle to be towed;

means connected to said first pivot arm and first bar for selectively locking said FIrst pivot arm and first bar in axial alignment;

means connected to said second pivot arm and second bar for selectively locking said second pivot arm and second bar in axial alignment;]

said rearward portion further including a pivot block having upper and lower surfaces, forward and rearward ends, and opposing side surfaces, pivotally connected to said forward portion on a generally horizontal pivot axis extending through said side surfaces of the pivot block;

said pivot bolt being mounted through the upper and lower surfaces of said pivot block, rearwardly of and perpendicular to the pivot block pivot axis, so as to pivot with said pivot block;

said pivot block connected for pivotal movement between a storage position, wherein the pivotal plane of the [arms and] bars is generally vertical, and a towing position, wherein the pivotal plane of the [arms and] bars is generally horizontal.

Re. 35,483

SWITCHING MATRIX CROSSPOINT

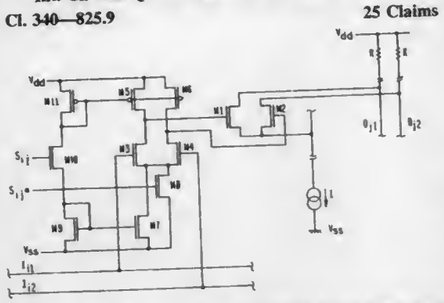
Michel Harrand, Saint Égrève, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Original No. 5,126,734, dated Jun. 30, 1992, Ser. No. 557,718, Jul. 26, 1990. Application for reissue Jun. 30, 1994, Ser. No. 269,326

Claims priority, application France, Jul. 27, 1989, 89 10384

Int. Cl.[6] H04Q *1/18;* **H04M** *3/00;* **G06G** *7/12*

U.S. Cl. 340—825.9 **25 Claims**



1. A crosspoint for a switching matrix having n input lines [(rows)] and m output lines [(columns)], each line comprising a pair of conductors, said crosspoint comprising [enhanced] P-channel and N-channel MOS transistors, wherein:

each input line conductor [(Ii1 and Ii2)] is connected to an input of a first differential amplifier [(M3, M4)], each leg of which is associated by a current mirror circuit to a first current source [(M9, M10, M11)] enabled by a selection input [(Sij)] of said crosspoint.

the outputs of the first differential amplifier are connected to a second differential amplifier [(M1, M2)] fed by a second current source [(I)] common to all the crosspoints of a selected output line, and

the outputs of the second differential amplifier are connected to said selected output line, an extremity of which is connected to a high voltage source [(Vdd)] through a [resistor (R)] *load element.*

Re. 35,484

LIGHT ACTIVATED COLORATION OF DENTAL RESTORATIONS

Gerald G. McLaughlin, 12 Cottonwood Ave., Port Jefferson Station, N.Y. 11776

Original No. 5,162,130, dated Nov. 10, 1992, Ser. No. 851,029, Mar. 9, 1992. Continuation-in-part of Ser. No. 441,371, Nov. 27, 1989, Pat. No. 5,094,619, which is a continuation-in-part of Ser. No. 225,713, Jul. 28, 1988, abandoned, which is a continuation of Ser. No. 943,927, Dec. 17, 1986, abandoned. Application for reissue Nov. 10, 1994, Ser. No. 337,554

Int. Cl.[6] A61C *5/10;13/08;* **B29C** *39/12*

U.S. Cl. 427—2.26 **20 Claims**

19. A method of effecting coloration of a dental restoration to produce a desired color in selected areas of said dental restoration comprising the steps of:

(a) forming a mixture of powdered dental porcelain and a photonucleable silicate material;

(b) shaping said mixture into a block and heating said block to its fusing temperature and thereafter allowing said block to cool;

(c) shaping said block into said dental restoration;

(d) exposing selected areas of said restoration to light of a specific wave length to establish color centers in said restoration;

(e) reheating said selected areas to a predetermined temperature sufficient to cause color intensification in said selected areas of said restoration and maintaining said predetermined temperature while said color intensifies and changes in said selected areas to produce said desired color in said selected areas; and

(f) cooling said restoration after said desired color of said selected areas is produced to thus prevent further color intensification of said color centers in said dental restoration.

PLANT PATENTS

GRANTED MARCH 25, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,833

HYBRID TEA ROSE VARIETY NAMED 'DEVCAL'

Stanley G. Marciel, and Jeanne A. Marciel, both of Aptos, Calif., assignors to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Mar. 31, 1995, Ser. No. 415,172

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct hybrid tea rose plant variety, substantially as shown and described.

9,834

BLUEBERRY PLANT CALLED 'SOUTHMOON'

Paul Lyrene, 1143 Fifield Hall Horticultural Sciences Dept., Univ. of FL, Gainesville, Fla. 32611

Filed Sep. 11, 1995, Ser. No. 527,753

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct highbush blueberry plant, substantially as illustrated and described, characterized by its low chilling requirement, large fruit, high fruit quality, early ripening, and resistance to Phytophthora root rot and Botryosphaeria stem blight, having the ability to be asexually propagated by softwood cuttings.

9,835

ASIAN PEAR TREE NAMED 'ASIO 1'

Joel S. Spira; Ruth R. Spira, both of Coopersburg; Eugene S. Konno, Germansville, and Neil J. Vincent, Quakertown, all of Pa., assignors to Subarashii Kudamono Co., Inc., Coopersburg, Pa.

Filed Sep. 19, 1995, Ser. No. 531,185

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct cultivar as Asian Pear, substantially as illustrated and described, which:

(a) forms early-ripening mild-flavored substantially round fruit that is yellow with prominent tan lenticels that matures approximately two weeks prior to the 'Twentieth Century' cultivar,

(b) forms a large tree having a vigorous well-branched and spreading growth habit, and

(c) forms medium green leaves with moderate venation.

9,836

"MATINEE" PLUM TREE

Eric Wuhl, 5480 E. Lane, Fresno, Calif. 93727

Filed Jan. 3, 1996, Ser. No. 582,287

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—38.1 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described, and which is somewhat remotely similar to the "Santa Rosa" plum tree (unpatented), but which it is distinguished by producing uniformly larger, more colorful fruit, having a very firm flesh with a sweet flavor, not being bitter near the pit, and which are mature for commercial harvesting approximately the first week of June in the San Joaquin Valley of Central California.

9,837

LANTANA PLANT 'ROBCOMPLAN'

Robert J. Roberson, 31706 E. Pink Hill Rd., Grain Valley, Jackson County, Mo. 64029

Filed Dec. 21, 1995, Ser. No. 576,493

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct cultivar of Lantana plant, substantially as described and illustrated herein, characterized particularly as to novelty by its very compact growth habit with short internode spacing and strong tendency to self branching, with a continuous multi-colored bloom display, a reduced tendency to set seed, and dense, rich forest green leaves providing a cultivar well suite for mass plantings, low borders, hanging baskets or floral specimens having no unusual susceptibility to traditional Lantana diseases and insects.

9,838

HIBISCUS PLANT NAMED 'BOST HYBRID NO. 4'

Georgia A. Bost, 1209 Pine Chase, Houston, Tex. 77055

Filed Jan. 17, 1996, Ser. No. 539,027

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—67.8 **1 Claim**

1. A new and distinct cultivar of Hibiscus plant, as shown and described.

9,839

KALANCHOE PLANT NAMED EMPRESS

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jun. 13, 1995, Ser. No. 489,715

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.15 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Empress, as illustrated and described.

9,840

CALATHEA PLANT NAMED 'SATURN'

Ann E. Lamb, Sebring, Fla., assignor to Twyford International, Inc., Santa Paula, Calif.

Filed Oct. 26, 1995, Ser. No. 548,870

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Calathea plant named 'Saturn', as illustrated and described.

PATENTS

GRANTED March 25, 1997

ERRATA

For CLASS	See PATENT NO.
473–586	5,613,688
229–109	5,613,694
473–438	5,613,855
473–435	5,613,922
508–251	5,614,124
525–438	5,614,126
523–500	5,614,299
482–122	5,614,300
482–122	5,614,300
442–315	5,614,301
442–286	5,614,302
442–247	5,614,303
442–136	5,614,304
442–381	5,614,306
252–400	5,614,571
552–615	5,614,651
364–474	5,614,677
313–336	5,614,795
395–612	5,614,927
396–311	5,614,968
396–319	5,614,968
396–164	5,614,970
396–409	5,614,971
396–135	5,614,972
396–448	5,614,973
396–055	5,614,974
396–396	5,614,975
396–392	5,614,976
396–392	5,614,976
396–395	5,614,977
396–578	5,614,979
396–147	5,614,981
396–050	5,614,982
396–095	5,614,983
396–097	5,614,984
396–106	5,614,985

ERRATA–CONTINUED

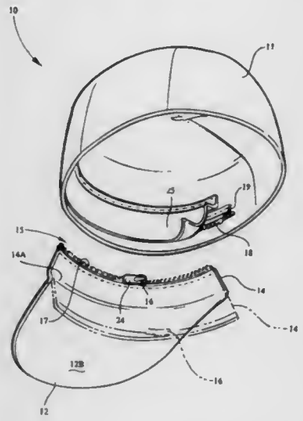
For CLASS	See PATENT NO.
396–051	5,614,992
399–081	5,614,993
399–256	5,614,995
399–385	5,614,996
399–121	5,614,997
399–314	5,614,998
399–329	5,614,999
399–361	5,615,500
399–226	5,615,001
399–227	5,615,002
386–104	5,615,056
386–117	5,615,057
395–208	5,615,109
395–238	5,615,110
395–615	5,615,112
395–209	5,615,121
379–029	5,615,225
395–685	5,615,400

PATENTS

GRANTED MARCH 25, 1997

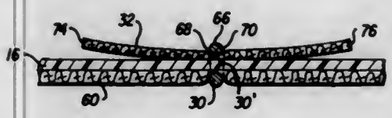
GENERAL AND MECHANICAL

5,613,246
CAP WITH A REMOVABLE AND REVERSIBLE VISOR
Billy Alexander, 6639 Rock Lake Dr., Charlotte, N.C. 28214
Filed Jun. 22, 1995, Ser. No. 493,788
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—10 **10 Claims**



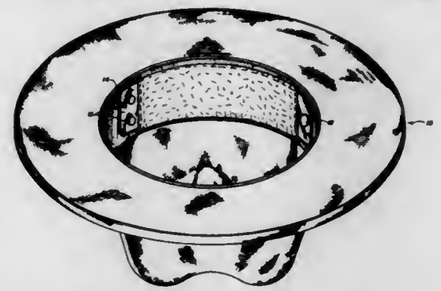
1. A cap, comprising:
(a) a crown including an annular base shaped to fit the head of a wearer;
(b) a reversible visor having first and second opposing major surfaces, and including an outwardly extending arcuate flange hinge-connected along an inside edge of the first and second major surfaces of the visor;
(c) first and second cooperating attachment members located respectively on the flange and on the crown proximate the base for removable attachment of the visor to the crown; and
(d) the flange being movable at said hinge connection between a first visor attachment position on the crown wherein the first major surface of the visor faces upwardly during wear, and a second visor attachment position on the crown wherein the second major surface of the visor faces upwardly during wear; and
(e) a liner formed on an inside surface of the crown proximate the base for residing adjacent to the flange of said visor, and providing a comfort barrier between the first and second attachment members and the forehead of the wearer.

5,613,247
FIREFIGHTER'S GARMENT WITH THREAD PROTECTOR
J. Robert Bowman, Hookset, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed Feb. 17, 1995, Ser. No. 390,578
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—81 **6 Claims**



1. A firefighter's garment including an outer shell formed of fire retardant material and having an outer surface, a piece of trim adjacent the outer surface of said shell and having an outer surface with a hard finish, a thread protector adjacent the outer surface of said trim and having an outer surface, and a thread forming a line of stitching which extends through said thread protector, said trim and said shell to hold the trim in place on the outer surface of said shell, said thread including exposed portions adjacent the outer surface of said thread protector, each of said exposed portions having a top and opposite sides, said thread protector being formed of soft material and extending away from the opposite sides of said exposed portions to protect said exposed portions of the thread.

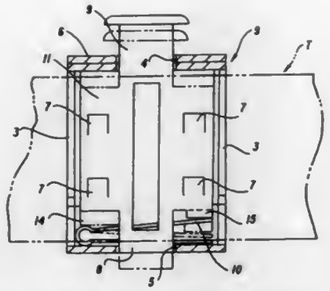
5,613,248
SWEATBAND FOR A HAT
Richard S. Young, 213 Wappoo Rd., Charleston, S.C. 29407
Filed Nov. 7, 1995, Ser. No. 554,700
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—181.4 **17 Claims**



1. A hat with a sweatband, comprising:
a hat with an inside surface and an outside surface;
a flexible strip having a first end, a second end, and a middle portion, the strip being permanently attached on the first end to the inside surface of the hat, and the second end having a first part of a snap fastener which can matingly engage a corresponding second part of the snap fastener on the inside surface of the hat; and
a tubular sweatband, which, when the first part and the second part of the snap fastener are disengaged, can be inserted around the middle portion of the flexible strip, and then be retained in the hat when the first part and the second part of the snap fastener are engaged.

5,613,249
DEVICE FOR ADJUSTING THE WAIST SIZE OF A GARMENT
Yutaka Ito, No. 3-11, Nakagawa 5 chome, Ikuno-ku, Osaka-shi, Osaka-fu, Japan
Continuation of Ser. No. 301,563, Sep. 7, 1994, abandoned.
This application Jun. 28, 1995, Ser. No. 495,910
Claims priority, application Japan, Sep. 10, 1993, 49331 U
Int. Cl.[6] A44B *19/00*
U.S. Cl. 2—235 **4 Claims**

1. A device for adjusting the waist size of a garment having an inner waist portion and an outer waist portion which are loose and can be held together in a mutually overlapping relation, said device comprising:
a guide tape for attachment to an outer surface of said inner waist portion of said garment and having a plurality of teeth formed on its inner surface along the length thereof; and
a slider attachable to said outer waist portion of said garment, said slider being slidable along said guide tape and engageable with said teeth thereon, said slider comprising:



a flat hollow body having substantially rectangularly disposed sides, a pair of first openings disposed in horizontally spaced apart sides of said body through which said tape is adapted to extend, and a pair of second openings disposed in vertically spaced apart sides of said body;

an actuator housed in said body for movement therein, said actuator having a push head at its top, a leg at its bottom, and a plurality of protrusions, each engageable with one of said teeth on said guide tape, said head and said leg being retained in said vertically spaced apart second openings, respectively, to guide the movement of said actuator in a vertical direction;

a fitting engageable with said body for securing said body to said outer waist portion of said garment; and

at least one spring housed in said body for urging said actuator upwardly to normally bias said protrusions on said actuator into engagement with some of said teeth on said guide tape to hold said slider against movement along said tape until said head is depressed against the force of said at least one spring to push said actuator downwardly to disengage said protrusions from said teeth and render said slider slidable along said tape.

5,613,250

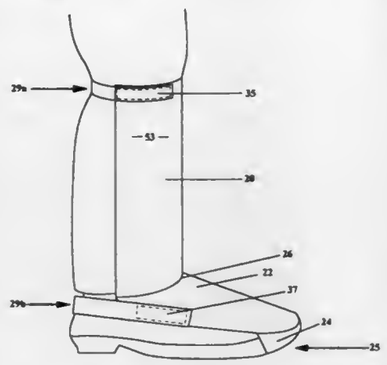
LEG, ANKLE, AND FOOT APPAREL PROTECTOR

Ronald V. Bell, 12420 Incline Dr., Auburn, Calif. 95603

Filed Aug. 6, 1996, Ser. No. 692,709

Int. Cl.[6] A41D *17/02*

U.S. Cl. 2—242 **1 Claim**



1. An elongated leg, ankle, and foot covering comprising:

a. a generally rectangular piece of fabric of sufficient width and length to cover the front half of the lower leg of a wearer from just below the knee to the arch of the foot to cover leg apparel associated with the lower leg;

b. a tapered piece of fabric of sufficient width and length to entirely cover the shoe top and the shoe tip of a shoe of the wearer;

c. a half-moon shaped sole forming a toe pocket of sufficient dimensions for said toe pocket to fit over said shoe tip, said toe pocket functioning as a means of securing said tapered piece of fabric to said shoe tip, said toe pocket also functioning as a means of covering said shoe tip;

d. a means of securing said rectangular piece of fabric to a point just below the knee;

e. a means of securing said tapered piece of fabric to the ankle of the wearer, said means also adapted to apply tension on said toe pocket in order to secure it to said shoe top and said shoe tip;

whereby said elongated leg, ankle, and foot covering provides optimum protection for the apparel associated with the leg, ankle, and foot.

5,613,251

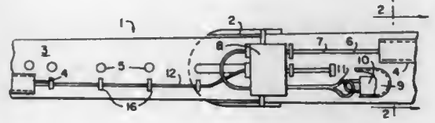
LOCKING RAPE PREVENTION BELT

Clifford N. Yandell, 2056 - 50th Ave., Vero Beach, Fla. 32966

Filed Mar. 15, 1996, Ser. No. 616,286

Int. Cl.[6] A41D *3/00*

U.S. Cl. 2—338 **7 Claims**



6. A cut resistant rape-preventing belt that cannot be removed from the waist of a user without consent, the belt comprising:

(A) a belt having a long axis, a buckle at a first termination, buckle engaging holes spaced apart from one another by interhole spacing at a second termination, an outer surface, and an undersurface;

(B) a cut resistant elongate flexible cable securely attached to the undersurface of the belt, the cable having a first end and a second end;

(C) a clasp means for securely engaging the cable at adjustable distances from the second end, the clasp means securely attached to the first end of the cable;

(D) looking means for maintaining the clasp means in securely engaging operation on the cable at adjustable distances from the second end so that the belt may be worn snug fitting about the waist and preventing removal thereof without the cooperation of the wearer and in which the cable is provided with enlargements at spaced apart distances, the spaced apart distances corresponding substantially to the interhole spaces, and the clasp means is openable to receive therein a cable portion between the enlargements, and the clasp means is closable to retain therein the cable portion, and the locking means maintains the clasp means in, closed condition.

5,613,252

MULTIPURPOSE SICKBED

Cheng-Nan Yu, No. 128, Chung Cheng Rd., Chu-Tung Town, Hsin Chu Hsien, and Chin-Jun Wu, 5F, No. 7, Lane 118, Sec. 2, Chung Cheng Rd., Shi-Lin District, Taipei, both of Taiwan

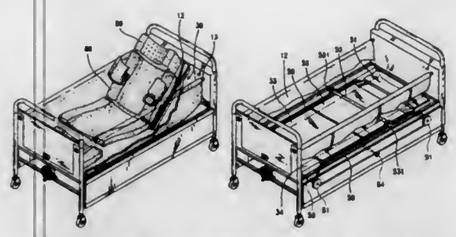
Filed Aug. 14, 1995, Ser. No. 514,999

Claims priority, application China, Aug. 12, 1994, ZL 94 218346.0

Int. Cl.[6] A61G *7/008;7/16*

U.S. Cl. 5—88.1 **5 Claims**

1. A multipurpose sickbed comprising a body turning-over mechanism controlled to turn over a sick person's body, a sit-up mechanism controlled to help the sick person sit up, and a massaging mechanism controlled to massage the sick person's back, wherein:



said body turning-over mechanism comprises a bedstead (**1**), a left revolving shaft (**11**), a right revolving shaft (**13**), a sheet-like bearing element (**12**), a left guide plate (**83**), a right guide plate (**84**), a reversible motor (**14**), a programmable controller (**17**), three timers (**171**), (**172**), and (**173**), and a detecting chain wheel (**18**), said left revolving shaft (**11**) and right revolving shaft (**13**) being longitudinally mounted on two opposite sides of said bedstead (**1**) and respectively mounted with a left chain wheel (**111**) and a right chain wheel (**131**), said sheet-like bearing element (**12**) having two opposite ends respectively connected to said left revolving shaft (**11**) and said right revolving shaft (**13**), said left guide plate (**83**) and said fight guide plate (**84**) being longitudinally mounted on said bedstead (**1**) at two opposite sides, said reversible motor (**14**) being mounted on said bedstead (**1**), having an output shaft (**141**) mounted with a first chain wheel (**142**), a second chain wheel (**143**), and a third chain wheel (**144**), said second chain wheel (**143**) and said third chain wheel (**144**) being respectively coupled to said left chain wheel (**111**) and said fight chain wheel (**131**) by a left chain (**15**) and a right chain (**16**), said programmable controller (**17**) and said three timers (**171**), (**172**), and (**173**) being mounted on said bedstead (**1**), said detecting chain wheel (**18**) being coupled to said first chain wheel (**142**) by a coupling chain (**181**) and fixedly mounted with a pin (**20**), three sensors (**21**), (**22**), and (**23**) being spaced in path of said pin (**20**) of said detecting chain wheel (**18**) and connected to said programmable controller (**17**) to detect a position of said pin (**20**) of said detecting chain wheel (**18**);

said sit-up mechanism comprises a bed plate (**30**), a hand wheel (**36**), a driving rod (**37**), and a driven rod (**38**), said bed plate (**30**) comprised of a head plate (**31**), a back plate (**32**), a bottom plate (**33**), and a foot plate (**34**), said head plate (**31**) and said back plate (**32**) being fixedly and longitudinally connected together, said bottom plate (**33**) and said back plate (**32**) being respectively turned about a pivot (**35**), said foot plate (**34**) being fixedly mounted on said bedstead (**1**), said hand wheel (**36**) being mounted on outside of said bedstead (**1**) and having a handle (**361**) for turning by hand, said driving rod (**37**) having one end fixedly connected to center of said hand wheel (**36**) and an opposite end connected to one end of said driven rod (**38**) by a screw joint, said driven rod (**38**) having an opposite end perpendicularly connected to a coupling rod (**39**), said coupling rod (**39**) having two opposite ends connected between two parallel rods (**321**), which extend from said back plate (**32**) adjacent to said pivot (**35**);

said massaging mechanism comprising two transmission chains (**50**), a transverse rod (**53**), a power drive (**56**), a control device (**61**), a front sensor (**59**), a rear sensor (**60**), a safety control switch (**63**), a driven rod (**70**), a contact disk (**71**), a pressure bar (**72**), a movable plate (**75**), a first transverse board (**26**), and a second transverse board (**27**), said transmission chains (**50**) being longitudinally mounted on said bedstead (**1**) at two opposite sides and turned by two pairs of transmission chain wheels (**51**), which are coupled to a transmission shaft (**52**), said transverse rod (**53**) having two connectors (**531**) at two opposite ends respectively connected to said transmission chains (**50**) and reciprocated by said transmission chains (**50**) between said back plate (**32**) and said bottom plate (**33**) to massage said sick person's back, said power drive (**56**) being mounted on said bedstead (**1**) at a bottom side and controlled to turn said transmission shaft (**52**) through a driving chain (**55**), said front sensor (**59**) and said rear sensor (**60**) being disposed below said transmission chain (**50**) and connected to said control device (**61**) to detect the movement of a pin (**58**) on said transmission chain (**50**), said safety control switch (**63**) being mounted on said bedstead (**1**) and depressed by a pin (**62**) of said head plate (**31**), said driven rod (**70**) being inserted through a hole on said first transverse board (**26**) and a hole on said second transverse board (**27**) and mounted with a spring (**73**), which is stopped between said first transverse board (**26**) and said second transverse board (**27**), said contact disk (**71**) being connected to one end of said driven rod (**70**), said pressure bar (**72**) being coupled to a middle part of said driven rod (**70**) and having an end block (**721**) and a switch (**76**) on said end block (**721**), said movable plate (**75**) having one end pivotably connected to one end of said driven rod (**70**) by a connector (**74**) and an opposite end pivoted to the driving rod (**37**) of said sit-up mechanism, said movable plate (**75**) detachably engaging a notch (**372**) on a disk (**371**), which is fixedly mounted around the driving rod (**37**) of said sit-up mechanism.

5,613,253

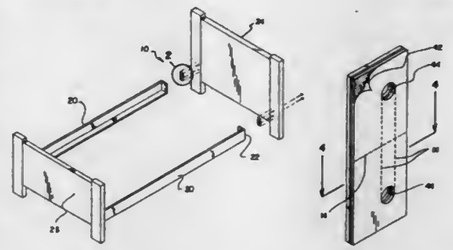
APPARATUS FOR PREVENTING BED FRAME SQUEAKING

Jean M. Rose, 1155 E. Stanley Rd., Mount Morris, Mich. 48458

Filed Apr. 5, 1996, Ser. No. 628,528

Int. Cl.[6] A47C *21/00*

U.S. Cl. 5—309 **4 Claims**



1. New and improved apparatus for preventing bed frame squeaking adapted for use in association with a bed frame including parallel rails having ends, a head board, a foot board and a plurality of bolts, the apparatus comprising, in combination:

a plurality of bed shim units each formed in a planar rectangular configuration, each bed shim unit including flexible front and rear plates fabricated of NEOPRENE and a rigid central plate fabricated of aluminum, each plate having parallel first and second long side edges and parallel short side edges, in an operative orientation the plates being secured together with corresponding side edges in alignment, the front plate having a checkered surface including a plurality of pyramid shaped bumps, the rear plate having a flat surface including a peel-off adhesive backing, each bed shim unit including two circular holes extending through each of the plates, one circular hole being positioned adjacent each short side edge and the first long side edge of each plate, bed shim units being affixed between a headboard and ends of bed frame rails, bed shim units also being positioned at other locations on the bed frame, headboard and foot board, the bed shim units functioning to reduce noise and scratching;

a central perforation extending from the center point of the first long side edge to the center point of the second long side edge of each plate, the central perforation permitting a user to divide each bed shim unit into two separate equally sized pieces; and

two parallel longitudinal perforations extending between the circular holes of each bed shim unit, the parallel longitudinal perforations defining a generally rectangular area between the circular holes, the generally rectangular area of each bed shim

unit adapted to be punched out to define a generally oval shaped hole extending therethrough.

5,613,254

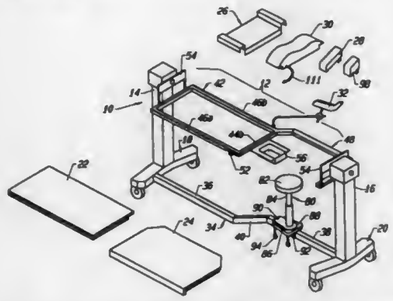
RADIOLUCENT TABLE FOR SUPPORTING PATIENTS DURING MEDICAL PROCEDURES

Ralph V. Clayman, 14 Ridgemoor Dr., Clayton, Mo. 63105, and Steve R. Lamb, 6724 Corte del Vista, Pleasanton, Calif. 94566

Continuation of Ser. No. 348,719, Dec. 2, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 690,018

Int. Cl.[6] A47B *71/00;7/00*

U.S. Cl. 5—600 **19 Claims**



1. A patient support framework mountable between upright head and foot posts of a medical table, the patient support framework for supporting a patient during medical procedures, comprising:

a first portion connectable to an upright head post and having patient support means mounted thereto, the first portion including laterally spaced apart edges, the table including a longitudinal axis extending the length of the framework and being centrally disposed between the edges;

a second portion extending from the first portion and connectable to ar. upright foot post, the second portion including

a first section extending longitudinally of the first portion and being laterally spaced from the longitudinal axis, and

a second section extending laterally from the first section towards the longitudinal axis,

the second section thereby being shaped to at least partially surround a working space located between the first portion of the patient support framework and the upright foot post, the second portion including an opening to permit lateral entry by medical personnel into the working space.

5,613,255

HOSPITAL BED HAVING SCISSORS LIFTING APPARATUS

Michael P. Bish, Harrison, Ohio; William M. Blyshak, Milan, Ind.; Donald E. Smith, Greensburg, Ind., and Jonathan D. Turner, Dillsboro, Ind., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Dec. 27, 1994, Ser. No. 363,899

Int. Cl.[6] A61G *7/00*

U.S. Cl. 5—611 **27 Claims**

1. A hospital bed comprising:

a base;

a deck having a head end and a foot end;

a first scissors lift linkage coupled between the base and the deck adjacent the head end of the deck, the first scissors lift linkage being movable from an extended position to a retracted position to raise and lower, respectively, the head end of the deck relative to the base;

a second scissors lift linkage coupled between the base and the deck adjacent the foot end of the deck, the second scissors lift linkage being movable from an extended position to a retracted position to raise and lower, respectively, the foot end of the deck relative to the base, the second scissors lift linkage being aligned in a plane which is generally perpendicular to a plane of the first scissors lift linkage to stabilize the deck relative to the base; and

a controller for selectively and independently moving the first and second scissors lift linkages between the extended positions and the retracted positions.

5,613,256

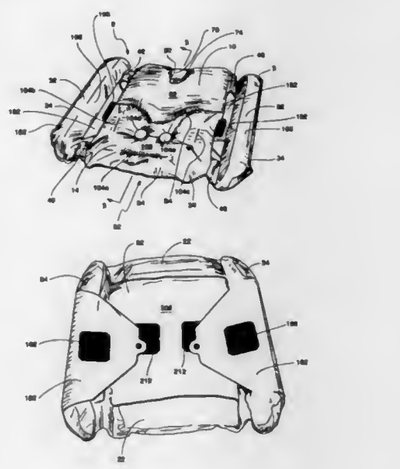
ADJUSTABLE WHEELCHAIR SEAT CUSHION SYSTEM

Chris A. Hanson, 4563 S. Meadow Dr., Boulder, Colo. 80301

Filed Nov. 14, 1995, Ser. No. 557,924

Int. Cl.[6] A47C *7/14;27/18*

U.S. Cl. 5—653 **24 Claims**



1. A seat cushion system, comprising:

a central cushion assembly having first and second laterally spaced sides;

elongated first and second side cushions associated with said first and second sides, respectively, of said central cushion assembly; and

first and second means for adjusting a lateral positioning of said first and second side cushions, respectively, relative to said central cushion assembly, wherein said first means for adjusting comprises a first positioner extending from said first side cushion assembly into engagement with a portion of a lower surface of said central cushion assembly and said second means for adjusting comprises a second positioner extending from said second side cushion assembly into engagement with a portion of said lower surface of said central cushion assembly.

5,613,257

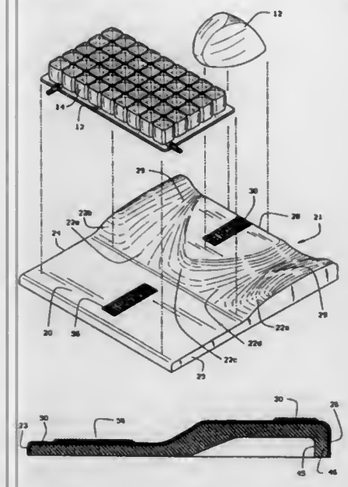
MODULAR CUSHION CONSTRUCTION WITH DETACHABLE POMMEL

Robert H. Graebe, 7 Persimmon Ridge Dr., Belleville, Ill. 62223

Continuation-in-part of Ser. No. 53,551, Apr. 27, 1993, abandoned, which is a continuation of Ser. No. 839,305, Feb. 20, 1992, abandoned. This application Nov. 4, 1994, Ser. No. 334,601

Int. Cl.[6] A47C *27/18;27/10;* **A61G** *7/057*

U.S. Cl. 5—654 **10 Claims**



1. A substantially rectangular shaped base made from expanded foam having a substantially rectangular rear portion having a substantially flat upper surface to accommodate the buttocks of a user, a raised front portion having a top surface adapted to support a user, the top surface of the front portion having a substantially flat center portion bounded by two slight leg depressions which retain and position the user without impeding slide transfer of the user on and off the base, the leg depressions being angularly inclined in a diverging direction toward the front of the base to assist in positioning the user, an angularly inclined stepdown section connecting the flat rear portion and the raised front portion to provide a transition which minimizes deformation of the soft tissues of the user which are positioned above this part of the base, the rear portion extending from the back edge of the base to the stepdown section and substantially completely across the base from side-to-side and being of substantially uniform thickness throughout, and a removable pommel member releasably attachable to the flat center of the front portion, the pommel member being a substantially triangular member having a flat substantially triangular bottom surface, a substantially triangular front surface and two substantially triangular side surfaces which come together at one edge to define a ridge line from the front toward the stepdown portion of the base.

9. A substantially rectangular shaped base made from porous water blown expanded polyurethane foam having a substantially rectangular rear portion having a substantially flat upper surface to accommodate the buttocks of a user, a raised front portion having a top surface adapted to support a user, and an angularly inclined stepdown section connecting the flat rear portion and the raised front portion to provide a transition which minimizes deformation of the soft tissues of the user which are positioned above this part of the base, the top surface of the front portion having a substantially flat center portion bounded by two slight leg depressions which retain and position the user without impeding slide transfer of the user on and off the base, the foam base being of relatively porous structure to reduce weight, and a moisture impervious skin adhered to and covering the top and outer side walls of the base to form a low weight water blown urethane foam base resistant to moisture and chemicals.

5,613,258

TOOTHBRUSH

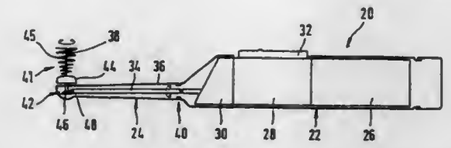
Peter Hilfinger, Bad Homburg, and Bernhard Boland, Frankfurt am Main, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Continuation of Ser. No. 385,235, Feb. 8, 1995, abandoned, which is a continuation of Ser. No. 50,366, May 14, 1993, abandoned. This application Mar. 12, 1996, Ser. No. 614,191

Claims priority, application Germany, Sep. 16, 1991, 41 30 741.0; Nov. 5, 1991, 41 36 376.0; WIPO, Aug. 5, 1992, PCT/EP92/01773

Int. Cl.[6] A46B *13/02*

U.S. Cl. 15—22.1 **21 Claims**



1. A toothbrush system for cleaning interproximal spaces between a user's teeth, comprising a handle member, a brush member coupled to said handle member, said brush member comprising a brush holder, a bristle supporting structure, and an array of bristles, said bristle supporting structure comprising a rod-shaped stem having first and second end portions, said stem comprising a twisted two-wire arrangement, said stem carrying no bristles in the region of said second end portion, said bristles being fixedly secured between the wires of said two-wire arrangement in said first end portion so that said array of bristles extend radially relative to said stem in the region of said first end portion and are arranged in a circumferentially distributed pattern, said stem extending away from said brush holder thereby allowing the first end portion of said stem along with said array of bristles to be inserted into the interproximal spaces between the user's teeth during use, said system further comprising a motor drive mechanism in said handle member for driving said bristle array in oscillating rotary motion about the axis of said stem, wherein the lengths of said bristles are larger at a distal end of said first end portion of said stem than in a region in the center of the bristled portion of said stem, said distal end of said first portion being the end of said first portion that is remote from said second portion.

5,613,259

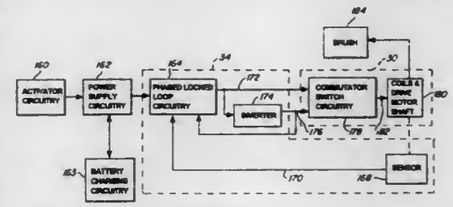
HIGH FREQUENCY ELECTRIC TOOTHBRUSH

Adam B. Craft, Fort Collins, Colo.; Keith E. Schleiffer, Gahanna; James E. Dvorsky, Hilliard, both of Ohio; Thomas W. Graves, Fort Collins, Colo.; Ronald B. Gray, III, Columbus, Ohio; Nagabhusan Senapati, and Matthew S. Zelinski, both of Worthington, Ohio, assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Continuation of Ser. No. 254,309, Jun. 6, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,667

Int. Cl.[6] A46B *13/02*

U.S. Cl. 15—22.1 **18 Claims**



1. An oscillating tool comprising:

a. a tubular handle housing defining an interior chamber and an axial opening at one end thereof,

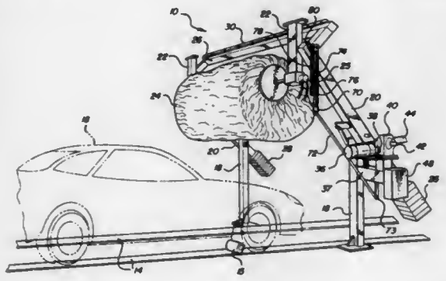
b. an electromagnetic motor mounted in said chamber, said motor including an oscillatable armature,
c. a mechanical oscillator having a first end and a second end, said mechanical oscillator integrally formed with said armature, said mechanical oscillator having a resonant frequency, said first end of said mechanical oscillator extending outwardly beyond said housing through said opening, and said second end being operably attached to said handle housing,
d. a power source operatively connected to said motor, said power source supplying an alternating current drive signal to said motor actuating said armature and said mechanical oscillator to effect oscillation thereof,
e. an oscillation sensor mounted on said housing in juxtaposition with said armature and generating a sensor signal in response to the oscillation of said armature, and
f. a control circuit receiving said sensor signal and altering the frequency of said drive signal applied to said motor in response to said sensor signal.

5,613,260

SUSPENSION AND CONTROL SYSTEM FOR A VEHICLE SURFACE TREATING IMPLEMENT

Michael J. Belanger, Walled Lake, and Robert J. Wentworth, Farmington Hills, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Jul. 28, 1995, Ser. No. 508,979
Int. Cl.[6] B60S *3/06*
U.S. Cl. 15—53.3 **9 Claims**



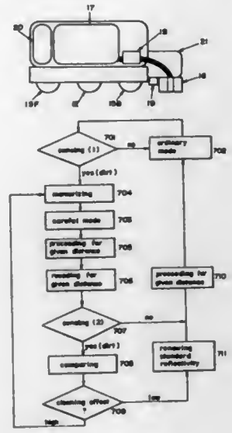
1. Apparatus for treating the exterior surfaces of a vehicle comprising:
support means;
at least one primary support arm having a first end pivotally connected to the support means for rotation about a first axis and an opposite second end;
at least one secondary support arm pivotally connected to the primary arm adjacent the second end thereof, the secondary support arm having a reference position relative to a fixed frame of reference and being displaceable from the reference position;
a surface treating implement mounted on the secondary support arm;
a reference bar pivotally mounted to the primary support arm and maintaining a constant angular orientation with respect to the reference position regardless of the position of the primary support arm;
sensor means mounted to the reference bar to detect the position of the secondary support arm relative to the reference position and generate signals in response to said relative position of the secondary support arm; and
means actuable by the sensor signals to rotate the primary support arm.

5,613,261

CLEANER

Yuichi Kawakami, Itami; Takayuki Hamaguchi, Takarazuka; Nobukazu Kawagoe, Toyonaka; Hideaki Nakanishi, Ibaraki, and Natsuko Waki, Jyoyo, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 12, 1995, Ser. No. 420,652
Claims priority, application Japan, Apr. 14, 1994, 6-075915
Int. Cl.[6] A47L *11/14*
U.S. Cl. 15—98 **26 Claims**



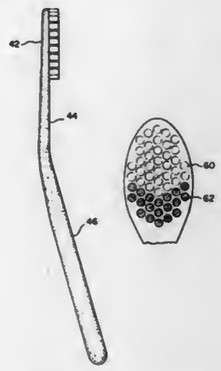
1. A cleaner comprising:
a driving unit;
a cleaner unit which cleans an object to be cleaned;
a sensor which detects the reflectivity of the object to be cleaned; and
a driving controller which controls the driving unit on the basis of the detected reflectivity.

5,613,262

LINGUAL BRUSH

Gina N. Choy-Maldonado, 24 Calle 0-63, Zona 1, Guatemala City 01001, Guatemala

Filed Jul. 27, 1994, Ser. No. 280,678
Int. Cl.[6] A46B *9/02;9/06*
U.S. Cl. 15—160 **13 Claims**



1. A device for cleaning the surface of the tongue, comprising:
(a) an elongated handle;
(b) an elongated neck portion having a first end connected to an end of said handle and an opposite second end, said neck portion and said handle cooperating to define an angle ranging from about 10 to 15 degrees;
(c) an elongated brush head having a proximal end and a distal end, the proximal end of the brush head being connected to the second end of said neck portion, the brush head being thicker at the proximal end thereof and tapering to the distal end thereof to minimize the gag reflex when brushing the back of the tongue, the brush head having a flat surface, rounded sides and a rounded surface opposing said flat surface;
(d) a plurality of bristle cells fixed to and extending from the flat surface of the brush head, each bristle cell being directed away from the axis of the handle and comprising a plurality of bristles, each bristle having a length in the range of 4 to 6 millimeters; and
(e) said bristle cells being arranged in a plurality of groups, each group having a different hardness with the bristle cells of each respective group having the same degree of hardness, the groups being arranged along the length of the brush head from the proximal end to the distal end thereof, the group at the proximal end of said brush head and nearest the neck portion being the softest in hardness, said groups being arranged on said brush head in a plurality of v-shaped rows.

5,613,263

CLEANING CLOTH

Werner Nolte, Nohen, Germany, assignor to Metaform Metallverabeitungsgellschaft mbH Industriegebiet, Weiersbach, Germany

PCT No. PCT/EP93/01246, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/24922, PCT Pub. Date Nov. 10, 1994
PCT Filed May 19, 1993, Ser. No. 360,773
Claims priority, application Germany, Apr. 29, 1993, 43 14 154.4
Int. Cl.[6] A47L *13/20*
U.S. Cl. 15—228 **16 Claims**



1. A cleaning cloth for stretching onto a wiper frame intended for such a cleaning cloth comprising a cloth member having a cleaning surface on one side and being provided on the opposite side with pockets to receive the opposite ends of a wiper frame stretching bow, the cleaning cloth having opposite peripheral edges and having a seam extending along and spaced inwardly from each of the peripheral edges to form an outer stiffening bead which extends along each of the respective peripheral edges of the cleaning cloth, said seam extending between the respective pocket and peripheral edge and forming a tilting articulation for the respective outer stiffening bead.

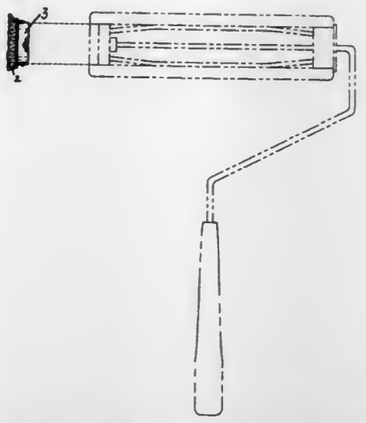
5,613,264

PAINT ROLLER CORNER COVER

Curtis N. Knowles, 6 Winterberry Dr., Wilbraham, Mass. 01095

Filed Aug. 4, 1993, Ser. No. 102,047
Int. Cl.[6] B44D *3/28*
U.S. Cl. 15—230.11 **1 Claim**

1. A conventional paint roller assembly having a handle, a roller having two ends, said handle being rotatably mounted at one of said ends of said roller, a cylindrical roller cover having an inner surface and an outer surface, with the inner surface mounted concentrically on said roller such that the roller cover extends axially beyond said other of said ends of the roller, and a corner cover end cap to enable the simultaneous application of paint to



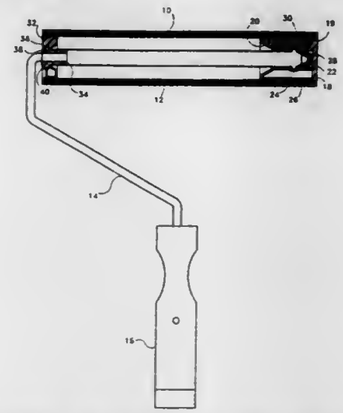
corner surfaces perpendicular to the surface being painted by the roller circumference, said corner cover end cap comprising a disc having two sides, a napped material on one of said sides of said disc and a protuberance means on the other of said sides of said disc, said protuberance means extending axially from said disc a length equal to the length said roller cover extends axially beyond said other of said ends of said roller and said protuberance means being adapted to be inserted into the roller cover at the other of said ends of the roller to bold said corner cover end cap in place on the paint roller assembly by frictionally engaging the inner surface of said roller cover at the inner surface which is located axially beyond the other of said ends of the roller.

5,613,265

PAINT ROLLER ASSEMBLY

Wayne Gemmell, 2520 Paqua Street, Regina, Saskatchewan, Canada

Filed Feb. 6, 1995, Ser. No. 386,522
Int. Cl.[6] B05C *17/02*
U.S. Cl. 15—230.11 **7 Claims**



1. A releasable mount assembly for a paint roller sleeve comprising:
(a) a cylindrical insert dimensioned to frictionally engage the inside surface of one end of a paint roller sleeve, having a closed face at one end there of and a receiving bore extending coaxially inwardly from the other face thereof said bore including a circumferential detent of a larger radius than that of the receiving bore;

(b) a tubular axle member dimensioned to slide inside the bore of said cylindrical insert permitting rotation of said insert thereabout wherein one end of said axle member is provided with diametrically opposed holes in mating alignment with the circumferential detent of said cylindrical insert;

(c) at least one retaining spring element having two opposing protrusions, said spring being compressible whereby said protrusions fit into the interior of said tubular axle member and released when the protrusions align with the holes of said tubular axle member to extend radially outwardly therethrough to spaceally engage the circuferential detent of said first insert when mounted on said tubular axle member.

5,613,266

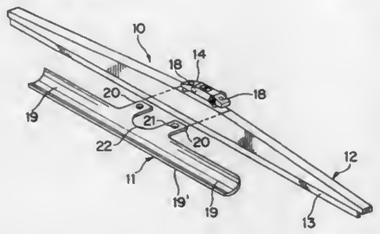
WINTER WINDSHIELD WIPER HAVING A CONTOURED AND FLEXIBLE VANE

Albert Lee, 232 Margate Rd., Timonium, Md. 21093

Filed Nov. 3, 1995, Ser. No. 552,929

Int. Cl.[6] B60S *1/38;1/40*

U.S. Cl. 15—250.201 **10 Claims**



1. A winter windshield wiper assembly for a motor vehicle, said assembly comprises:

a connecting member having an aperture therein for securely receiving a wiper arm;

an elongated frame assembly which includes at least a primary yoke, said assembly is enclosed by a rubber sheet, said connecting member is coupled by at least one connector to said primary yoke with said sheet disposed therebetween;

an elongated wiper blade supported by said frame assembly;

an elongated wind receiving vane member for imparting a biasing force to said blade by air flow thereover, said vane member coupled to said at least one connector by at least one extended portion, said at least one extended portion lying between and in abutting engagement with both the rubber sheet and the connecting member.

5,613,268

WINDSHIELD WIPER ARM FOR VEHICLES

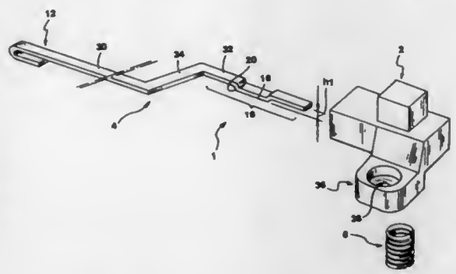
Marcello Scorsiroli, Turin, Italy, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 26, 1996, Ser. No. 592,528

Claims priority, application Italy, Jan. 27, 1995, T095A0054

Int. Cl.[6] B60S *1/34;1/32*

U.S. Cl. 15—250.352 **9 Claims**



1. A windshield wiper arm for a vehicle windshield, comprising:

a block;

a blade supporting arm having a first end and a second end, said first end of the blade supporting arm connected to said block so as to permit oscillation in a direction orthogonal to said windshield;

said second end including means for attaching the blade supporting arm to a windshield wiper;

means for imparting an elastic load between said block and said blade supporting arm so as to urge the windshield wiper against the windshield when the blade supporting arm is attached to the windshield wiper;

said block including a first elongated cavity therein receiving the first end of the blade supporting arm and a second elongated cavity therein for receiving said imparting means, said second cavity intersecting said first cavity; and

said imparting means received in said second cavity and positioned between an interior surface of said second cavity and said blade supporting arm to impart the load on the first end of the blade supporting arm.

5,613,267

WINDSHIELD WIPER SYSTEM WITH ADJUSTABLE BLADE PRESSURE

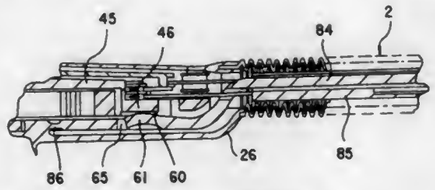
Stefan Battlogg, Haus NR. 26, A-6771 St., Anton I.M., Austria

Division of Ser. No. 164,257, Dec. 8, 1993, Pat. No. 5,481,778. This application Aug. 14, 1995, Ser. No. 514,957

Claims priority, application Austria, Jun. 18, 1991, 1223191

Int. Cl.[6] B60S *1/32;1/20;1/44;1/36*

U.S. Cl. 15—250.202 **12 Claims**



1. A windshield wiper system, comprising:

5,613,269

RECIRCULATING TYPE CLEANER

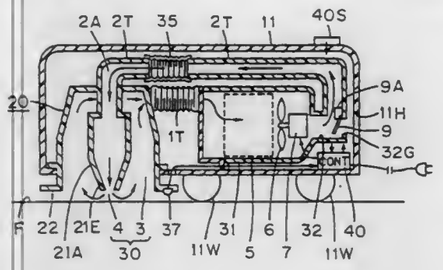
Hirohide Miwa, Kawasaki, Japan, assignor to Miwa Science Laboratory Inc., Kanagawa, Japan

Continuation-in-part of Ser. No. 139,714, Oct. 22, 1993, Pat. No. 5,457,848. This application Apr. 4, 1995, Ser. No. 416,278

Claims priority, application Japan, Oct. 26, 1992, 4-287278; Dec. 24, 1992, 4-344307

Int. Cl.[6] A47L *5/14;9/28*

U.S. Cl. 15—319 **3 Claims**



1. A recirculating type cleaner comprising:

a housing containing a dust collecting chamber therein;

a dust collecting head connected to said housing;

a jet nozzle provided within said dust collecting head for discharging an air jet;

a fan positioned at one end of said dust collecting chamber for drawing air from the dust collecting chamber and sending out air as after-flow of said fan;

a suction tube connecting said dust collecting head with said dust collecting chamber;

a recirculating tube supplying the after-flow of said fan to said jet nozzle;

an exhaust opening for communicating the after-flow side of said fan to the exterior of the housing;

a branching means for dividing the after-flow into an exhaust flow to be sent out through said exhaust opening and a recirculating flow to be sent to said jet nozzle through said recirculating tube;

a mode selecting means for generating, in response to manual operation for the selection of one of a plurality of operation modes, a selection signal indicating the selected operation mode; and

control means connected to said mode selecting means for electrically controlling, in response to said selection signal, said branching means to vary the recirculation ratio in stepwise fashion to one of a plurality of predetermined recirculation ratios in accordance with the selected operation mode.

5,613,270

MOTORLESS FLOOR WASHING MACHINE

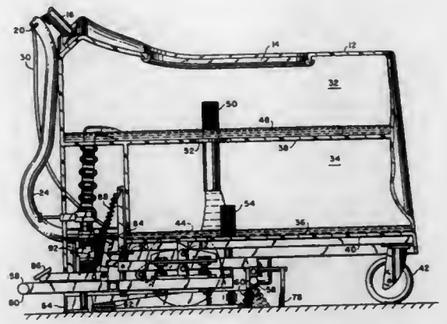
John M. Alvarez, 175 Beulah Rd., Doylestown, Pa. 18901, and David M. Alvarez, 4304 Old Bethlehem Pike, Telford, Pa. 18969, assignors to David M. Alvarez, and John M. Alvarez, Doylestown, Pa.

Filed Dec. 30, 1993, Ser. No. 177,090

Int. Cl.[6] A47L *11/30*

U.S. Cl. 15—320 **13 Claims**

1. A motorless floor washing machine comprising a frame carrying a suction pump having an inlet and discharge outlet, wheels carried by said frame for moving of the machine and actuation of said pump to suck up a liquid, means for manually moving the frame and elements carried thereby, thereby to move said wheels and actuate said pump, a recovery tank fed by said pump from the pump outlet, and means carried by said frame for discharging a cleaning liquid in front of said pump, whereby upon manual movement of said machine and discharge of a cleaning liquid carried thereby onto a floor, said cleaning liquid cleans the floor and is thereafter sucked up by the pump through its inlet to be discharged through its outlet.



5,613,271

VACUUM CLEANER

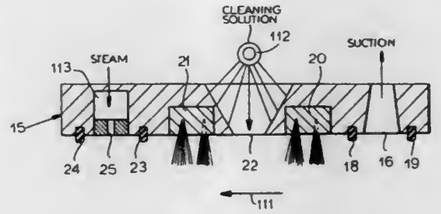
Paul-Gerhard Thomas, Neunkirchen, Germany, assignor to Robert Thomas Metall- und Elektrowerke, Neunkirchen, Germany

Filed Oct. 17, 1995, Ser. No. 543,887

Claims priority, application Germany, Oct. 17, 1994, 9416655 U; Feb. 20, 1995, 295 02 793.2

Int. Cl.[6] A47L *11/34*

U.S. Cl. 15—321 **26 Claims**



1. A vacuum cleaner comprising:

a housing;

a water tank in said housing provided with a steam generator;

a receptacle for vacuumed material in said housing;

a motor-driven turbine in said housing disposed to generate suction;

a suction hose connected to said housing;

a suction head connected to said suction hose and having a sole plate adapted to ride over a floor to be vacuumed, said sole plate being formed with:

an elongated suction passage connected by a suction nozzle to said suction hose,

yieldable sealing strips extending along opposite longitudinal sides of said suction passage,

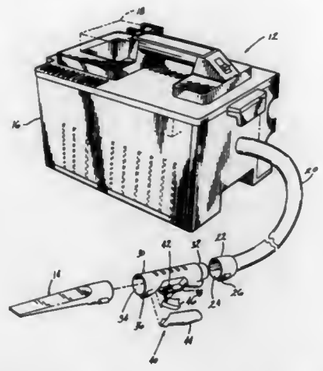
an elongated brush having a length corresponding substantially to a length of said suction passage and disposed ahead of one of said sealing strips in a direction of displacement of said suction head transverse to said passage and said strips,

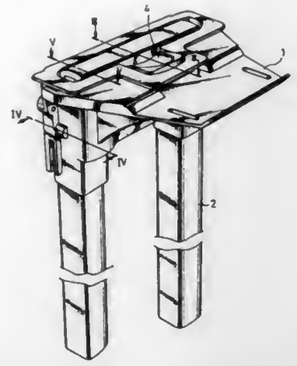
a nozzle strip ahead of said brush in said direction and provided with a row of steam orifices, and

a pair of sealing lips flanking said nozzle strip; and

a steam line extending from said steam generator to said steam orifices.

5,613,272
ACCESSORY CREVICE TOOL FOR USE WITH WATER EXTRACTION CLEANING MACHINE
Eric C. Huffman, Lowell, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
Filed Dec. 19, 1995, Ser. No. 574,769
Int. Cl.[6] A47L *9/02*
U.S. Cl. 15—321 **36 Claims**



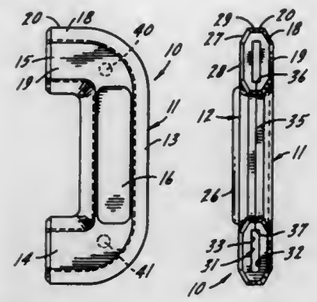


1. An accessory cleaning tool adapted to be used with a water extraction cleaning machine having a vacuum conduit and a solution conduit extending therefrom, the accessory cleaning tool comprising:
a hollow, tubular body portion having a prescribed diameter and a working air passageway formed therein;
a tapered body portion extending from one end of the tubular body portion, the tapered body portion comprising:
a pair of opposed side walls extending from one end of the tubular body portion to terminal edges wherein the side walls gradually converge toward one another with increasing distance from the tubular body portion; and
top and bottom walls extending from one end of the tubular body portion, terminating at terminal edges and intersecting the opposed side walls, the top and bottom walls being spaced from one another no more than the prescribed diameter of the tubular body portion and, in conjunction with the opposed side walls, defining a working air passageway which is fluidly connected to the working air passageway of the tubular body portion;
a nozzle opening formed by the terminal edges of the top, bottom and opposed side walls and fluidly opening into the working air passageway of the tapered body portion; and
a spray nozzle provided on one of the tubular body portion and tapered body portion and being adapted to be fluidly connected to the solution conduit of the water extraction cleaning machine and to direct a spray of cleaning solution onto a surface to be cleaned.

5,613,273
RETRACTABLE HANDLE ASSEMBLY OF A SUITCASE TRUCK
Cheng-Hsien Tsai, No. 103, Da-Ming 1st Rd., Tien-Tzu, Hsiang, Taichung Hsien, Taiwan
Filed Oct. 3, 1995, Ser. No. 538,337
Int. Cl.[6] B25G *1/04*
U.S. Cl. 16—115 **7 Claims**

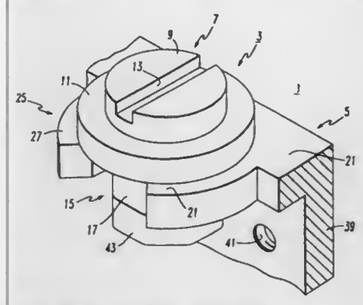
1. A retractable handle assembly comprising:
a mounting base fixedly secured to a suitcase at one side, said mounting base comprising an opening, two barrels perpendicularly downwardly extended from two opposite ends of said opening and two receiving chambers respectively defined within each barrel;
two sleeves respectively fixedly fastened to said barrels for receiving two retracting tubes respectively;
a handgrip received in the opening of said mounting base;
two retracting tubes respectively connected to two opposite ends of said handgrip in a parallel relation and respectively slidably inserted into said sleeves, each retracting tube having a fixed end connected to one end of said handgrip, a free end fixedly mounted with a respective end cap and slidably moved in one sleeve, a first pin hole adjacent to said fixed end, and a second pin hole adjacent to the respective end cap;
a control button movably disposed inside the opening of said mounting base, having two downward lugs at two opposite ends and a connecting block connected between said two downward lugs;
link means connected to said connecting block comprising at least one projecting rod, at least one spring element respectively mounted on each projecting rod and stopped against the peripheral wall of the opening of said mounting base, and two side boards respectively connected to two opposite ends of said connecting block, each side board having an inwardly beveled edge at one end inserted into a hole on a respective locking device;
two locking devices respectively coupled to said link means at two opposite sides, each locking device comprising a pin at one end for insertion into the first pin hole of one retracting tube to lock said retracting tube in a retracted position, or into the second pin hole of one retracting tube to lock said retracting tube in an extended position, a recessed hole at an opposite end, and a spring element mounted inside said recessed hole and stopped against a side board of said link means;
two locating devices respectively mounted inside the receiving chamber of each barrel, each locating device comprising a center through hole for passing one retracting tube, an upright annular flange raised around said center through hole at one side, and a spring element mounted around said upright annular flange and stopped against an inside wall of said mounting base; and
two sockets respectively mounted in one end of each sleeve remote from said mounting base, each socket comprising a mounting portion at one end fixedly secured to said suitcase, a receiving chamber at an opposite end, said receiving chamber having an orifice, an inward flange around the orifice of said receiving chamber, an inside post inside the receiving chamber of the respective sockets, a spring element mounted around said inside post, a bearing element inserted into the receiving chamber of the respective sockets and stopped between the spring element inside the respective sockets and the end cap of one retracting tube;
whereby when said control button is moved forwards, said locking devices are pulled inwards by said link means to disconnect the respective pins from the first or second pin holes of said retracting tubes for permitting said retracting tubes to be moved between said retracted position and said extended position.

5,613,274
INSULATED HANDLE GRIP
Harold F. Gerdmann, and Keith E. Mumpy, both of Manitowoc, Wis., assignors to Newell Operating Company, Freeport, Ill.
Filed Jul. 21, 1995, Ser. No. 505,809
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—116 R **8 Claims**



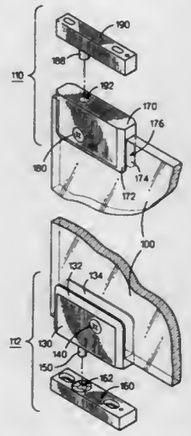
1. In combination,
a cookware vessel having a generally looped-shaped handle,
said handle having an open interior, being composed of metal and having a gripping portion,
said gripping portion being spaced, by spacing means, from the vessel a distance sufficient to provide access for the fingers of a user inserted through the open interior of the handle,
an insulating handle grip adapted to be received on and surround the gripping portion of the handle,
said handle grip having the characteristics with respect to deformability and insulating qualities of rubber, and
means for mechanically restraining separation of the handle and the grip one from the other.

5,613,275
ADJUSTING KNOB ASSEMBLY WITH DISCRETE POSITIONING
Kenneth D. Kolberg, Robinson Township; David A. Parks, Economy; Kimberley Morris, Robinson Township, and James R. Schachner, Findlay Township, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 27, 1996, Ser. No. 607,677
Int. Cl.[6] E05B *1/00*
U.S. Cl. 16—121 **14 Claims**



1. An adjusting knob assembly comprising:
a knob member having a knob and a shaft extending axially from said knob and terminating in a free end; and
a support bracket having an aperture defined at least in part by a compliant, gapped ring section, one of the shaft and aperture having a plurality of longitudinally extending, circumferentially distributed flat surfaces, and the other having at least one complimentary flat surface, said shaft and aperture being dimensioned such that said shaft is pliantly retained at any of a plurality of rotational positions within said aperture at which said flat surfaces on said shaft and aperture are in register.

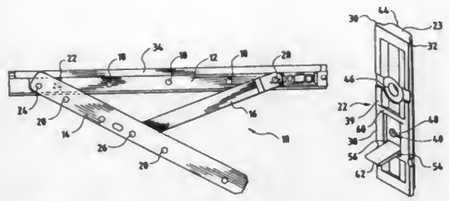
5,613,276
GLASS SHOWER DOOR HINGE SYSTEM AND METHOD
George W. Franz, 26 Dogwood La., Trumbull, Conn. 06611
Filed Dec. 20, 1995, Ser. No. 575,227
Int. Cl.[6] E05D *7/10;* **E05F** *1/02*
U.S. Cl. 16—229 **10 Claims**



1. A glass door hinge system for attachment of a glass door to a frame, said system comprising:
(a) an upper hinge member having an upper clamping member for attachment to an upper horizontal edge of said glass door and having an upper base member for attachment to said frame, said upper clamping member being rotatably attachable to said upper base member;
(b) a lower hinge member having a lower clamping member for attachment to a lower horizontal edge of said glass door and having an lower base member for attachment to said frame, said lower clamping member being rotatably attachable to said lower base member;
(c) said lower clamping member having a raised portion depending from a lower surface of said lower clamping member; and
(d) said lower base member having a horizontal surface with a depression formed therein;
whereby, engagement of said raised portion and said depression tends to cause said door to close and to rest in a centered position within said frame when said door is near a closed position, but engagement of said raised portion and said horizontal surface permits said door to remain in a selected one of a number of stationary open positions.

5,613,277
WINDOW HINGE SHOE
Mary B. Dallmann, Owatonna; Gregory O. Voss, Lakeville, and Brian D. Dallmann, Owatonna, all of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.
Filed Feb. 27, 1996, Ser. No. 607,719
Int. Cl.[6] E05D *15/00;13/00*
U.S. Cl. 16—368 **25 Claims**

1. In a hinge supporting a window sash relative to a window frame and having a track attachable to the window frame, a support arm pivotally secured to the track, and a sash arm connected to the window sash and pivotally secured to the support arm, an



improved shoe slidably received in said track and pivotally connected relative to said sash arm, wherein the improvement comprises:

a shoe body having a first side adjacent a track when received in a track, said shoe body further including a recess in the first side;

a pad integrally formed with the shoe body and received in the recess when the shoe body is received in a track; and

means for adjustably biasing the pad out of said recess and against a track when the shoe body is received in a track, said biasing means extending through the shoe body from the side opposite said first side.

5,613,278

CLEARANCE ADJUSTMENT IN THE FEEDING DEVICE OF A FIBER PROCESSING TEXTILE MACHINE

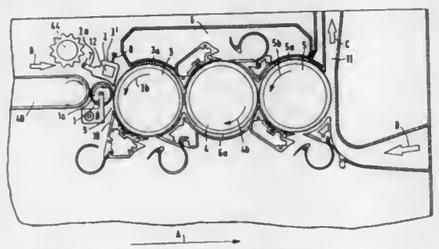
Konrad Temburg, Mönchengladbach, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Nov. 1, 1995, Ser. No. 551,608

Claims priority, application Germany, Nov. 19, 1994, 44 41 254.1

Int. Cl.[6] D01G *9/06;9/16*

U.S. Cl. 19—105 **12 Claims**



1. A fiber processing machine comprising

(a) an opening roll;

(b) a feeding device including

(1) a first feeding member positioned at a first clearance from said opening roll;

(2) a second feeding member positioned at a second clearance from said opening roll; one of said first and second feeding members being a feed roller and one of said first and second feeding members being a feed tray; said feed tray defining a nip with said feed roller for clamping and advancing fiber material in said nip to said opening roll; and

(c) setting means for adjusting at least one of said first and second clearances; said setting means including

(1) an adjusting element carrying said first feeding member;

(2) a holding element carrying said second feeding member;

(3) a first stationary pivot for pivotally supporting said adjusting element in a first plane;

(4) a second stationary pivot for pivotally supporting said holding element in a second plane; said first and second planes being parallel to one another;

(5) resilient means for resiliently urging said first feeding member and said second feeding member towards one another;

(6) coupling means for connecting said adjusting element with said holding element for movement of said holding element and said adjusting element as a unit upon displacement of said adjusting element, whereby upon a displacement of said adjusting element said first feeding member and said second feeding member are displaced in unison for simultaneously varying said first clearance and said second clearance; and

(7) arresting means for immobilizing said adjusting element in an adjusted position.

5,613,279

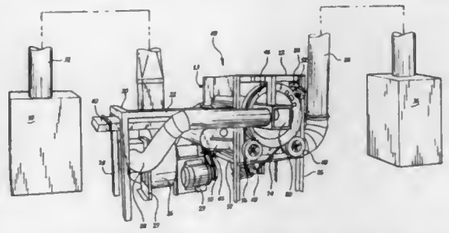
APPARATUS FOR REMOVING CONTAMINANTS FROM RAW COTTON

Ralph H. Rhyne, Kings Mountain, N.C., assignor to Kings Mountain Textile Machinery Company, Kings Mountain, N.C.

Filed Feb. 16, 1996, Ser. No. 602,927

Int. Cl.[6] D01G *9/08;9/20*

U.S. Cl. 19—200 **11 Claims**



1. An apparatus for removing contaminants from raw cotton, said raw cotton traveling in an airstream, comprising:

a floorstanding frame;

a rotatable drum mounted to said frame and having a cotton collection surface formed thereon at a radial spacing from an axis of rotation of said drum, said cotton collecting surface being formed with a plurality of openings therein, said openings being sized for the passage of contaminants therethrough while cotton tuffs do not pass through said openings and remain on said cotton collecting surface;

means for rotatably driving said drum mounted to said frame;

means for directing raw cotton within the airstream against said drum, said directing means including a cotton delivery conduit mounted to said frame and having an outlet adjacent said cotton collecting surface defining a cotton impingement zone;

first suction means disposed at least partially within said drum for creating the airstream and drawing said cotton in the airstream against said cotton collecting surface, thereby drawing contaminants contained in the cotton through said openings in said drum, with cleaned cotton remaining on said cotton collection surface, said first suction means including a contaminant receiving conduit having a contaminant inlet directed toward said drum and including a baffle, said baffle being disposed at a position vertically below said cotton impingement zone;

second suction means for removing cleaned raw cotton from said drum, said second suction means including a cotton collection conduit disposed vertically below said cotton delivery conduit and including a cotton collection inlet directed toward said drum with an upper surface of said cotton collection inlet and said baffle defining a cotton retention zone therebetween, with a lower surface of said cotton collection inlet and said baffle defining a cotton release zone, said drum being disposed for rotation sequentially through said cotton impingement zone, said cotton retention zone and said cotton release zone, with a portion of said drum within said cotton release zone being open to atmosphere for causing said second suction means to draw atmospheric air through said drum to assist in removing cotton therefrom.

5,613,280

APPARATUS FOR MONITORING SLIVER WRAPPING ABOUT A SLIVER GUIDING ROLL

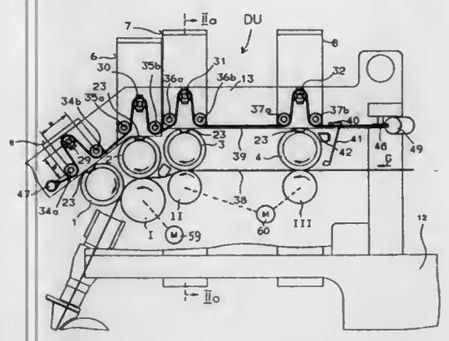
Gerhard Mandl, Winterthur, Switzerland, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Aug. 14, 1995, Ser. No. 515,009

Claims priority, application Germany, Aug. 13, 1994, 44 28 802.6; Jul. 4, 1995, 195 24 374.9

Int. Cl.[6] D01G *15/62;* **B65H** *54/76;* **D01H** *5/60*

U.S. Cl. 19—239 **18 Claims**



1. A sliver processing machine comprising

(a) a plurality of roll pairs between which a running sliver passes; each roll pair being composed of a driving roll and a pressure roll;

(b) roll-supporting means for supporting each roll of each roll pair; said roll-supporting means including means for radially displaceably supporting each said pressure roll relative to the driving roll of the respective roll pair;

(c) a separate pressing device connected with each said pressure roll for urging each said pressure roll against the driving roll of the respective roll pair; each pressing device having a shiftable element displaced by the pressure roll of a respective said roll pair upon radial displacement of the pressure roll in response to winding of sliver on either the pressure roll or the driving roll of the respective roll pair; each said pressing device including

(1) a pressing element contacting the pressure roll of the respective roll pair;

(2) force-generating means connected with said pressing element for urging said pressing element against the pressure roll of the respective roll pair; and

(3) means for displaceably supporting said pressing element;

(4) a deflecting roller mounted on said pressing element for movement with said deflecting roller; said deflecting roller and said pressing element together forming said shiftable element;

(d) a common actuating element formed by an elongated flexible member having first and second ends and being trained about the deflecting roller of each said pressing device for displacing said common actuating element upon displacement of any one of said shiftable elements;

(e) means for fixedly holding said first end of said flexible elongated member;

(f) means for resiliently yieldably holding said second end of said flexible elongated member, said second end being displaceable longitudinally of said flexible elongated member upon displacement of any of said deflecting rollers; and

(g) a switching device connected to said common actuating element; said switching device having an idle state and a signal-generating state; said switching device being placed into the signal-generating state by said common actuating element upon displacement of said common actuating element by one of said shiftable elements, whereby said switching device generates a signal in response to winding of sliver on any roll of any of said roll pairs.

5,613,281

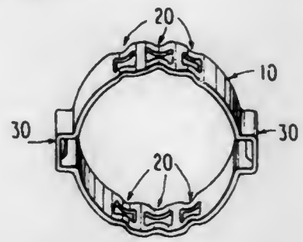
HOSE CLAMP

Hans Oetiker, Oberdorfstrasse 21, CH-8812, Horgen, Switzerland

Division of Ser. No. 446,729, Dec. 6, 1989, Pat. No. 5,437,081, which is a continuation-in-part of Ser. No. 409,798, Sep. 20, 1989, Pat. No. 4,987,651, and a continuation-in-part of Ser. No. 821,749, Jan. 10, 1992, Pat. No. 5,305,499, which is a continuation of Ser. No. 922,473, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 622,765, Jun. 20, 1984, abandoned. This application Apr. 7, 1995, Ser. No. 418,619

Int. Cl.[6] F16L *33/02*

U.S. Cl. 24—20 R **28 Claims**



1. A band having a predetermined normal width and made from a material substantially devoid of elastic stretchability in its longitudinal direction, especially a clamping band, to which elastic stretchability in its longitudinal direction is imparted, characterized in that the band comprises further means imparting elastic stretchability to the band in at least one section of the band including non-linear lateral band portions which are substantially concavely shaped, as viewed from the center longitudinal plane and extend on both sides of the band center longitudinal plane, each lateral band portion having a width less than about 40% of the normal width of the band material.

5,613,282

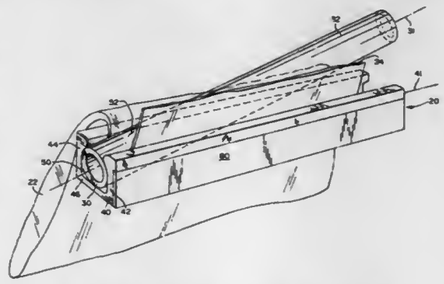
SEALING APPARATUS

John A. Deddens, Sr., 5230 Ridgewood Rd., Jackson, Miss. 39211, and Charles W. Thomas, 1895 Steeplebrook Cove, Cordova, Tenn. 38018

Filed Sep. 22, 1995, Ser. No. 532,394

Int. Cl.[6] B65D *77/10*

U.S. Cl. 24—30.5 R **15 Claims**



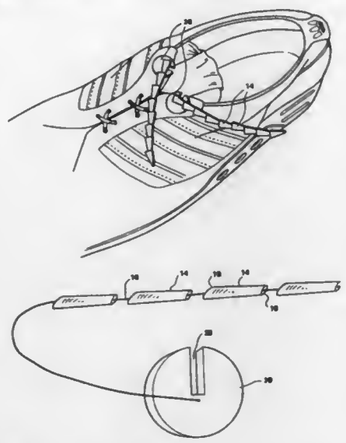
1. Apparatus for sealing flexible material comprising:

a substantially parallelepiped frame having a back panel, a front panel, a bottom panel and an inner channel, the inner channel communicating with an at least partially opened channel mouth formed between resilient lips provided on a top side of the frame, the inner channel accommodating the flexible material through the channel mouth; and

a cylindrical roller attached to the frame for pivotal movement of the roller into the channel toward a sealing position

whereat the roller engages the sealable mouth of the flexible material between the roller and the frame, the resilient lips permitting pivoting of the roller into the channel between the lips for engagement of the flexible material by the roller.

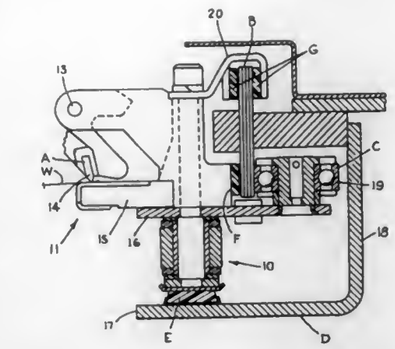
5,613,283
LACE CLOSURE SYSTEM
Shay Yusfan, 23A Tel Hay, 52335 Ramat Gan, Israel
Filed Oct. 2, 1995, Ser. No. 537,958
Int. Cl.[6] A43C *7/00;9/00*
U.S. Cl. 24—713 **19 Claims**



14. A lace system comprising:
(a) a lace having a pair of ends;
(b) at least two closure members on said lace near one of said pair of ends of said lace, each of said closure members having an outer-directed portion and an inner-directed portion, said outer-directed portions of each of said closure members being on said lace while said inner-directed portion of each of said closure members is free of said lace; and
(c) a lace retaining member fixed to the other end of said lace said lace retaining member formed with a cutout dimensioned to allow passage through said cutout of one of said ends of said lace along with said closure members when said lace is moved in a first direction while causing said inner-directed portion of one of said closure members to pivot about said outer-directed portion of said closure member and engage said lace retaining member, thereby immobilizing said lace when an attempt is made to move said lace in a second direction which is opposed to said first direction.

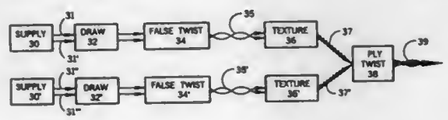
5,613,284
TENTER ASSEMBLY AND METHOD
Christopher E. Hosmer, Greer, S.C., assignor to Marshall & Williams Company, Providence, R.I.
Filed Apr. 30, 1996, Ser. No. 641,350
Int. Cl.[6] D06C *3/04*
U.S. Cl. 26—89 **7 Claims**

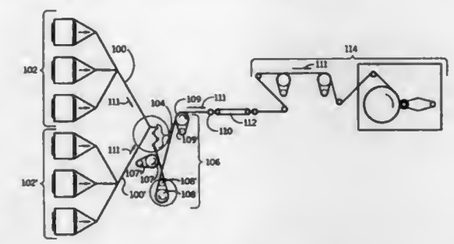
1. Tenter frame apparatus for use with a driven chain carrying tenter clips supporting a web in open width comprising:
a single vertical stationary monorail for supporting said tenter clips transporting the web in open width for subjecting the web to a treatment medium;
a single pair of horizontal longitudinally aligned bearings on vertical axes supporting each of said tenter clips on a back side of said monorail in opposed horizontal alignment with said web for carrying the tenter clips during treatment of the web;



a longitudinal stationary track beneath said chain for guiding the chain for longitudinal movement on said monorail;
a longitudinal horizontally disposed wear strip carried by said track providing a low friction bearing surface for guiding the endless chain for longitudinal movement;
first wear pads fixed to said tenter clips opposite said bearings on a front side of said monorail; and
second wear pads on said tenter clips providing guidance therefor at a top of said monorail;
whereby a compact, accessible monorail apparatus is provided for a tenter frame utilizing a pair of bearings for support and low friction wear strips and wear pads for guidance.

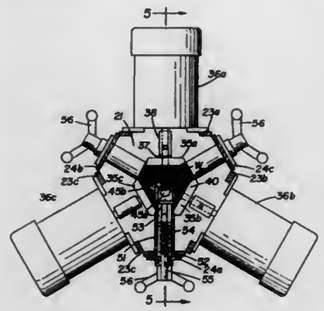
5,613,285
PROCESS FOR MAKING MULTICOLOR MULTIFILAMENT NON COMMINGLED YARN
Roy E. Chester, Sylvania, Ga.; Andrew M. Coons, III, Anderson, S.C.; Hugh G. Harrelson, Jr., Anderson, S.C.; Willis M. King, Anderson, S.C.; George E. Potter, Sylvania, Ga.; Carl D. Sanford, Lyerly, Ga.; Patrick C. Smith, Sylvania, Ga.; Melvin R. Thompson, Anderson, S.C.; Leonard C. Vickery, Jr., Anderson, S.C., and Jerry M. Whitfield, Anderson, S.C., assignors to BASF Corporation, Mt. Olive, N.J.
Filed Nov. 1, 1994, Ser. No. 333,158
Int. Cl.[6] D02G *1/00;3/22*
U.S. Cl. 28—247 **18 Claims**





1. A process comprising the sequential steps of:
(a) supplying in a separated side-by-side parallel relationship to a yarn drawing apparatus first multifilament feed yarn and second multifilament feed yarn which are differently colored or colorable with respect to each other;
(b) drawing the first feed yarn and the second feed yarn in the yarn drawing apparatus while keeping the first feed yarn and the second feed yarn in a relatively parallel relationship and separate from each other;
(c) making a bundle from the first drawn feed yarn and the second drawn feed yarn by simultaneously imparting false twist to the drawn first feed yarn and the drawn second feed yarn without commingling the first and second drawn feed yarns; and
(d) texturing the bundle without commingling to make a non-twisted, noncommingled singles yarn displaying two distinct unblended colors.

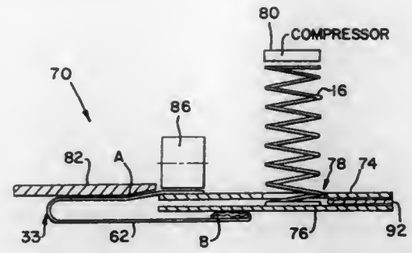
5,613,286
APPARATUS FOR DESCALING WIRE
Troy A. McCabe, Rockford, Ill., assignor to Fastener Engineers Group, Inc., Rockford, Ill.
Filed Sep. 8, 1995, Ser. No. 524,665
Int. Cl.[6] B21B *45/04;* **B21C** *43/04*
U.S. Cl. 29—81.04 **14 Claims**



8. In a wire descaling apparatus having a scale breaking mechanism for bending a wire in different planes as the wire is advanced lengthwise to break and loosen the scale on the wire and a brush type wire cleaning mechanism for cleaning the wire after it exits from the scale breaking mechanism, the improvement wherein said wire cleaning mechanism comprises a support frame having a wire inlet guide at one end for receiving wire from the scale breaking mechanism and a wire outlet guide at a remote end, a plurality of brush drive motors mounted on the frame and each having a motor output shaft disposed generally radially of a wire pass line extending between the inlet and outlet guides, the motor output shafts being angularly and axially spaced apart relative to the wire pass line, a rotary brush having an axis of rotation and a bristle end face transverse to the brush axis of rotation mounted on each motor output shaft for rotation thereby with the bristle end face adjacent the wire pass line, and a plurality of wire guide shoes mounted on the frame each associated with a respective one of the the wire brushes for guidably engaging and supporting wire at a side of the pass line opposite the bristle end face of the associated wire brush.

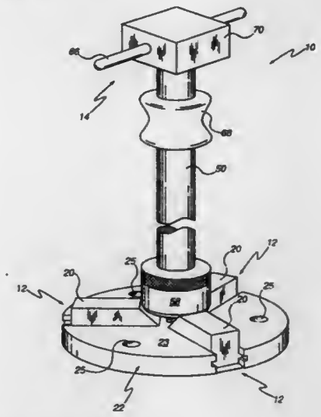
5,613,287
METHOD FOR FORMING STRINGS OF POCKETED SPRINGS
Albert R. St. Clair, Lilburn, Ga., assignor to Simmons Company, Atlanta, Ga.
Filed Jun. 7, 1995, Ser. No. 478,915
Int. Cl.[6] B68G *7/00*
U.S. Cl. 29—91.1 **6 Claims**

1. A method of forming a string of coil springs wherein each of the coil springs is enclosed within an individual fabric pocket having flat overlapping side seams, the method comprising the steps of:
folding an elongated web of fabric a first time to create a longitudinally extending first flap;



folding said web of fabric a second time to create a second longitudinally extending flap which overlaps said first flap laterally, thereby defining a fabric tube having a flap side and a back side with said second flap on said flap side laterally overlapping said first flap on said flap side;
conveying said fabric tube longitudinally across a first deflector member in a manner such that said first deflector member causes said second flap to deflect away from overlapping relationship with said first flap as said fabric tube is conveyed across said first deflector member thereby forming a laterally extending opening in said tube With said second flap on said flap side of said tube being displaced from overlapping relationship with said first flap on said flap side of said tube;
inserting a compressed coil spring into the opening between the first and second flaps on the flap side of the tube;
conveying said fabric tube across a second deflector member in a manner such that said second deflector member causes said second flap to be realigned into laterally overlapping relationship with said first flap as said fabric tube is conveyed longitudinally across said second deflector member; and
interconnecting said laterally overlapping first and second flaps to form a lap seal therebetween.

5,613,288
BLIND HOLE BEARING PULLER
James D. Lundsten, P.O. Box 495, Ellington, N.Y. 14732
Filed Dec. 11, 1995, Ser. No. 570,409
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—255 **9 Claims**



1. A puller tool comprising:
an elongated actuating member having a forward end, a rear end, and a longitudinal axis connecting said ends;
a finger guide member mounted at said forward end of said actuating member, said actuating member being axially movable relative to said finger guide member;

said finger guide member threadably mounted on said actuating member and said actuating member having a handle at said rear end for manually rotating said actuating member to effect said axial motion thereof;

a plurality of fingers angularly spaced about said axis and mounted on said finger guide member for radially directed motion normal to said axis, each said finger having a radially inner cam surface and a radially outer wedge surface terminating in a peripheral insertion edge defining a forwardmost extent of said puller tool;

said finger guide member having a plurality of radially extending guide channels for receiving and guiding said plurality of fingers;

a plurality of spring loaded plungers mounted in said finger guide member for engagement with said fingers to increase frictional resistance to said radial directed motion of said fingers and to prevent said fingers from sliding out of said channels;

said actuating member having an engagement head at said forward end arranged to engage said cam surfaces of said plurality of fingers for causing simultaneous radially directed motion thereof incident to axial motion of said actuating member relative to said finger guide member;

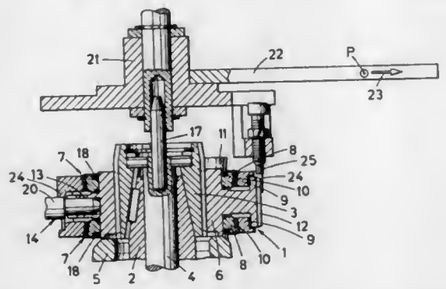
a slide hammer slidably mounted on said actuating member for axially directing travel therealong, and an impact member fixed at said rear end of said actuating member for impact by said slide hammer to force said puller tool in a rearward axial direction.

5,613,289

PROCESS OF ASSEMBLING A SYNCHRONIZER FOR A GEAR CHANGE BOX

Josef Zauner, Pettenbach, Austria, assignor to MIBA Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Aug. 1, 1995, Ser. No. 509,865
Claims priority, application Austria, Sep. 21, 1994, 1787/94
Int. Cl.[6] B23P *11/02*; B23Q *17/00*
U.S. Cl. 29—407.08 **3 Claims**



1. In a process of assembling a synchronizer for a gear change box, which synchronizer comprises a hub, a slidable sleeve axially slidably mounted on said hub, and at least one cone clutch, which cone clutch comprises an inner friction ring, which is axially coupled to said hub, a synchronizing outer ring, which is axially displaceable relative to said friction ring by means of said slidable sleeve to engage and disengage said clutch, and a double conical ring, which is freely rotatable relative to said hub and is disposed between said friction and synchronizing rings and is arranged to be frictionally gripped between said rings when said clutch is in an engaged state, wherein

a locating abutment is axially fixed to said hub,

said cone clutch in an engaged state is axially moved relative to said hub to a position in which said synchronizing ring engages said locating abutment to define for said friction ring a position in which said cone clutch provides for a predetermined axial lost motion between said synchronizing ring and said friction ring,

said friction ring is subsequently axially located on said hub while said clutch is still engaged and said synchronizing ring engages said locating abutment, and

said locating abutment is subsequently removed from said hub,

the improvement comprising the steps of

holding said friction ring on said hub so that said friction ring is axially displaceable on said hub substantially without friction before said cone clutch in an engaged state is axially moved relative to said hub to said position in which said synchronizing ring engages aid locating abutment,

subsequently causing said synchronizing ring to engage said locating abutment by exerting a predetermined axial force on said friction ring thus held on said hub, whereby a predetermined axial position on said hub is determined for said friction ring, and

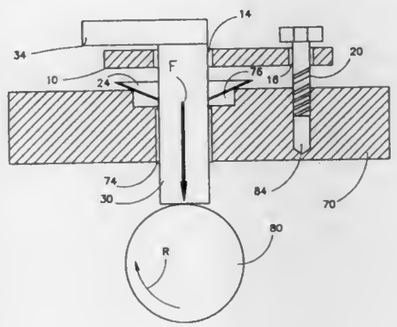
subsequently locating said friction ring on said hub in said predetermined axial position to provide for a predetermined axial lost motion between said friction ring and said synchronizing ring of said cone clutch.

5,613,290

APPARATUS AND METHOD FOR ATTACHING A SENSOR TO AN OBJECT

Eugene D. Alfors, Rockford, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 232,564, Apr. 25, 1994, Pat. No. 5,457,384.
This application Jun. 19, 1995, Ser. No. 491,773
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—434 **9 Claims**



1. A method of attaching a sensor to an object:

providing a sensor which has a tubular portion;

disposing said tubular portion through a first opening formed through a clamping bar;

disposing said tubular portion through a second opening formed through a deformable washer;

inserting said tubular portion into a third opening of an object until a distal end of said tubular portion touches a target; and

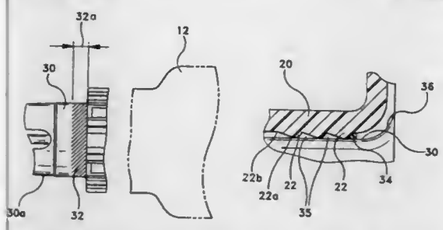
forcing said clamping bar toward said object and against said washer, thereby deforming said washer between said object and said clamping bar, and thereby causing said washer to grip and lift said tubular portion such that said distal end of said tubular portion is moved away from said target by a predetermined distance.

5,613,291

METHOD FOR PROVIDING A STERILITY SEAL IN A MEDICINAL STORAGE BOTTLE

Donald D. Solomon, Warwick, N.Y., and Jean-Claude Thibault, Saint-Egreve, France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 25, 1995, Ser. No. 377,885
Int. Cl.[6] B23P *25/00*
U.S. Cl. 29—458 **5 Claims**



1. A method of providing a seal between a bottle and a protective cap, comprising the steps of:

applying a layer of a sealing material to a sealing area of the bottle that is subject to contact with a portion of the interior of the protective cap;

providing at least one ridge on the interior portion of the cap in an area of the interior portion of the cap subject to contact with the sealing area of the bottle; and

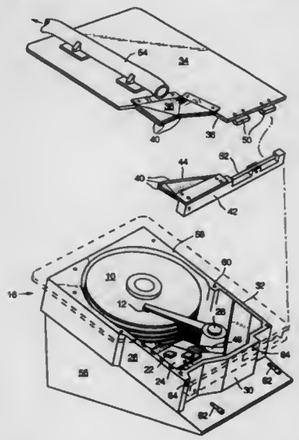
applying the cap into sealing contact with the bottle such that said at least one ridge on the interior portion of the cap comes into contact with the layer of sealing material to shape the layer of sealing material into a substantially toroidally-shaped seal between the bottle and the cap, said seal conforming to the dimensional variations between the sealing area of the bottle and the cap.

5,613,292

METHOD AND APPARATUS FOR DISK DRIVE MODIFICATION

Phillip P. Bennett, Portola Valley, and Edwin E. Flores, San Bruno, both of Calif., assignors to Scitex Corporation LTD., Herzlia B., Israel

Division of Ser. No. 294,426, Aug. 23, 1994, Pat. No. 5,491,607, which is a continuation of Ser. No. 868,474, Apr. 14, 1992, abandoned. This application May 30, 1995, Ser. No. 453,980
Int. Cl.[6] G11B *5/17;33/00*; B23P *19/00*
U.S. Cl. 29—603.02 **7 Claims**



3. A method of opening and closing a disk drive having a case with a removable cover which is hermetically sealed to the case, for the purpose of working on the disk drive without contaminating platters of the disk drive during the work, the method comprising the steps of:

(a) removing the removable cover from the disk drive case;

(b) before working on the disk drive, securing a plate to the disk drive case, the plate conforming substantially to the shape of the removable cover and engaging with the case as a substitute for the removable cover, the plate having a cut-away section with a flange connected to the plate along the cut-away section which extends into the interior of the case when the plate is substituted for the removable cover;

(c) upon completion of work on the disk drive, removing the plate from the disk drive case; and

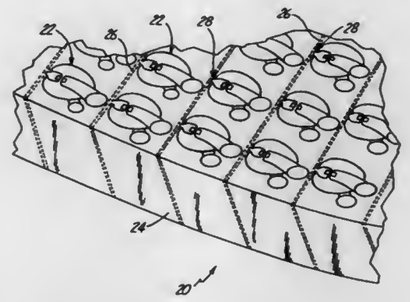
(d) after step (c), securing the removable cover to the disk drive case.

5,613,293

METHOD OF MAKING A SMOOTH TOPOGRAPHY HEAD/DISK INTERFACE SURFACE ON A HEAD WITH PATTERNED POLE

Steven B. Slade, New Hope; Daniel P. Burbank, Minneapolis, and William H. Nunne, Burnsville, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 7, 1995, Ser. No. 476,899
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.12 **7 Claims**



1. A method for producing thin-film head transducers, the method comprising:

depositing and etching materials on a wafer to create a plurality of partial thin-film heads;

cutting rows of partial thin-film heads from the wafer, the cut rows exposing working surfaces having pole tip surfaces;

rotating the thin-film heads so that the working surfaces are substantially in a common plane;

masking the working surfaces, creating masked portions on the working surface covered by-masking material and unmasked portions on the working surface not covered by masking material;

removing material adjacent to the working surface in the unmasked portions of the working surface to a selected depth to form exposed surfaces in the partial thin-film heads;

depositing a fill material on the masking material and the exposed surfaces; and

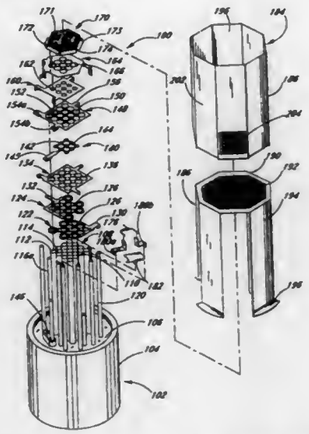
removing the fill material to form a smooth interface surface having pole tip surfaces.

5,613,294

METHOD OF MAKING A RESIDUAL GAS SENSOR UTILIZING A MINIATURE QUADRUPOLE ARRAY

Robert J. Ferran, San Diego, Calif., assignor to Ferran Scientific, San Diego, Calif.

Division of Ser. No. 76,161, Jun. 14, 1993, Pat. No. 5,401,962.
This application Mar. 24, 1995, Ser. No. 410,083
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—825
5 Claims



1. A method of manufacturing a gas sensor having multiple quadrupoles formed in an array, comprising the steps of:
positioning a plurality of rods in an array of quadrupoles;
forming a glass bead on said rods;
heating said glass beads to grip said rods and to hold said rods in said array, said rods having respective portions extending from said glass bead and held in a cantilevered position;
positioning a source of electrons proximate to one end of said rods to ionize gas molecules;
positioning an electrical lens proximate to said source of electrons to induce ionized gas molecules to propagate between said rods of said quadrupoles;
positioning a collector proximate to said rods and displaced from said lens to receive said ionized gas molecules propagating between said rods from said source of electrons; and
providing electrical connections through said glass bead to said source of electrons, to said electrical lens, to said collector and to said rods, said electrical connections positioned through said bead before said heating step such that said electrical connections are sealed by said glass bead in response to said heating step.

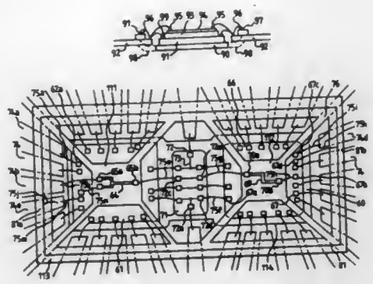
5,613,295

SEMICONDUCTOR DEVICE HAVING AN INTERCONNECTING CIRCUIT BOARD AND METHOD FOR MANUFACTURING SAME

Junya Nagano, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 253,589, Jun. 3, 1994, Pat. No. 5,473,514, which is a continuation of Ser. No. 808,848, Dec. 17, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 460,734
Claims priority, application Japan, Dec. 20, 1990, 2-404429; Dec. 10, 1991, 3-326148
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827
2 Claims

1. A method of manufacturing a semiconductor device, the method comprising the steps of:
providing a lead frame having a plurality of inner leads, an island depressed from the inner leads and connected to a plurality of support pins;



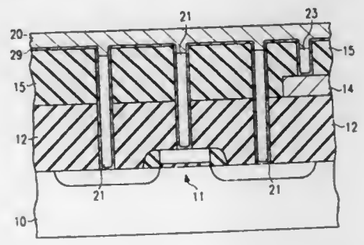
providing an interconnecting circuit board having an opening defining a center part and an outer part of the interconnecting circuit board, a plurality of electrically connecting electrode pads, and an electrically conductive pattern electrically connected to the electrically connecting electrode pads;
providing a semiconductor chip on the island, the semiconductor chip having a desired electrical function and a plurality of electrically connecting electrode pads;
mounting the interconnecting circuit board on the chip and the inner leads;
connecting a first one of the inner leads and a first one of the electrically connecting electrode pads on the chip with an electrically conductive material;
connecting a second one of the inner leads and a first one of the electrically connecting electrode pads on the interconnecting circuit board on the chip with an electrically conductive material;
connecting a second one of the electrically connecting electrode pads on the interconnecting circuit board on the chip and a second one of the electrically connecting electrode pads on the chip with an electrically conductive material;
connecting a third one of the inner leads and an electrically conductive pattern on the interconnecting circuit board on the inner leads; and
connecting the electrically conductive pattern on the interconnecting circuit board on the inner leads and a third one of the electrically connecting electrode pads on the chip.

5,613,296

METHOD FOR CONCURRENT FORMATION OF CONTACT AND VIA HOLES

Hiroyuki Kurino, Ushiku, and Yasuhiro Ogata, Tsuchiura, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1995, Ser. No. 420,997
Int. Cl.[6] H01K *3/10*
U.S. Cl. 29—852
20 Claims



1. A method for making electrical interconnections between a multiplicity of conductive layers in an integrated circuit, said method comprising the steps of:

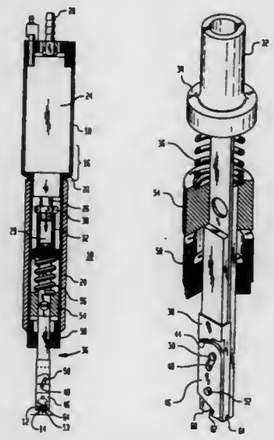
forming a first insulating layer over an initial conductive layer;
forming a first wiring layer over said first insulating layer;
forming a second insulating layer over said first insulating layer and said first wiring layer;
patterning said second insulating layer;
etching holes in said first and second insulating layers;
depositing a conductive layer of conductive material over said second insulating layer and said holes; and
forcing said conductive material into said holes to form a conductive plug for each hole.

5,613,297

WIRE INSERTION AND CUT-OFF TOOL AND METHOD OF USE

William A. Dvorak, Cary, N.C.; Alan H. Kirchner, Mount Holly, N.J.; Michael A. Lemacks, Apex, N.C.; Peter F. Lilienthal, II, Princeton, N.J.; Ivan Pawlenko, Holland; Michael F. Searle, Langhorne, both of Pa., and Frederick Simchock, Trenton, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 6, 1995, Ser. No. 399,018
Int. Cl.[6] H01R *43/20*
U.S. Cl. 29—861
11 Claims



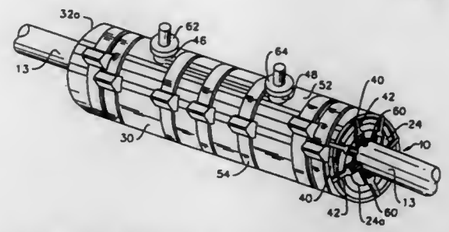
1. A method for inserting a wire into a wire-receiving slit of an Insulation Displacement Connector (IDC), comprising the steps of:
placing the wire at the wire-receiving slit of the IDC;
placing a guide member, having a wire-receiving notch extending therethrough at one of its ends and a slot extending into the guide member coextensive with the notch, on the IDC so that the IDC partially seats in the slot while the wire seats in the wire-receiving notch;
urging the guide member against the IDC using a force supplied by a power stroke of a prime mover that occurs as a portion of the prime mover moves axially toward the IDC so that the wire seated in the wire-receiving notch is urged deeply into the wire-receiving slit of the IDC; and
pivoting a wire-cutting blade across the guide member adjacent to the notch during the power stroke of the prime mover to sever an excess portion of the wire extending beyond the IDC.

5,613,298

FORCED ENCAPSULATION CABLE SPLICE ENCLOSURE

Andrew J. O'Neill, Cordova, Tenn.; William H. Cook, Levittown; Richard F. Strauss, Morrisville, both of Pa., and Kenneth R. Dumont, Collierville, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Jan. 17, 1995, Ser. No. 373,357
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—869
21 Claims



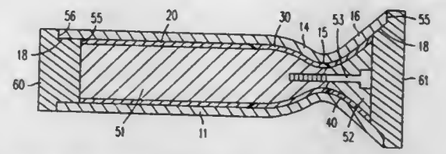
1. A method of sealing a splice in an elongate electrical cable comprising the steps of:
disposing a pair of spaced-apart sealing dams about said cable with said splice being located between said dams;
providing an elongate generally cylindrical splice-enclosing shell having a pair of opposed open ends and plural elongate shell fingers extending from each of said ends;
placing said shell over said splice with said open ends being adjacent said sealing dams and said shell fingers extending outwardly beyond said sealing dams; and
securing said shell fingers to each other at a location outwardly adjacent said dams to positionally confine said dams, preventing outward migration thereof.

5,613,299

METHOD OF FABRICATING A ROCKET THRUST CHAMBER

Peter J. Ring, 20335 Hickory Hill Way, Saratoga, Calif. 95070, and Mihkel Kangilaski, 260 S. 15th St., San Jose, Calif. 95112

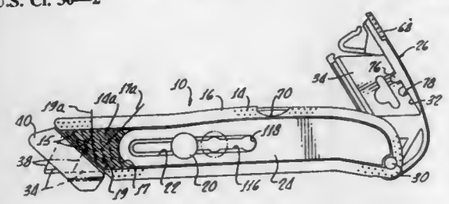
Filed Nov. 9, 1994, Ser. No. 336,636
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.01
8 Claims



1. The method of fabricating a thrust chamber comprising:
forming a one-piece hollow refractory metal thrust chamber having barrel portion forming a combustion chamber, a first conical portion extending to a venturi throat and a second conical portion extending from the venturi throat and forming an expansion nozzle;
positioning a hollow metal first liner section in said barrel portion;
positioning a hollow metal second liner section in said first conical portion;
positioning a hollow metal third liner section in said second conical portion;
overlapping scarfed ends of abutting liner sections;
inserting a split mandrel in the hollow of said liner sections;
forcing elements of said split mandrel together to push said liner sections against said chamber portions;
sealing the ends of said hollow with an end plug; and

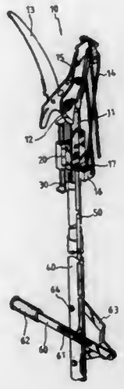
pressing the mandrel, the end plugs and the liner sections against the chamber portions at sufficient pressure and heat to bond said liner sections to said chamber portions.

5,613,300
ERGONOMIC UTILITY KNIFE/BOX CUTTER AND METHOD OF MAKING
Gregory G. Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Costa Mesa, Calif.
Continuation of Ser. No. 301,660, Sep. 7, 1994, abandoned, which is a continuation of Ser. No. 3,504, Jan. 12, 1993, Pat. No. 5,386,632. This application Dec. 15, 1995, Ser. No. 573,512
Int. Cl.[6] B26B *5/00*
U.S. Cl. 30—2 **4 Claims**



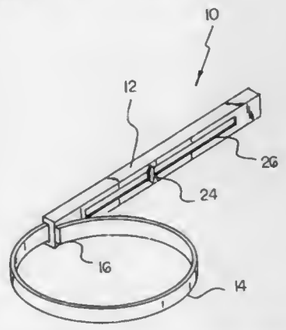
1. A utility knife comprising:
an ergonomically-shaped handle defining a longitudinal cavity at a forward end, a top surface and an aft recess substantially adjacent said top surface,
a channel member received in said cavity, said channel member including a pair of opposedly arranged channel portions separated by a web portion, the web portion including first and second longitudinally extending grooves,
a blade carrier member received in said channel member for receiving a cutting blade defining a cutting edge, the blade being received such that said cutting edge faces substantially away from said top surface,
a lock to retain said blade carrier member in a seleeted position relative said handle, and
a spare blade holder member pivotally received into said aft recess.

5,613,301
TREE PRUNER
Jeff Sheu, 1F,No.20,Lane 20, Hsin Tung Street, Taipei, Taiwan
Filed Apr. 22, 1996, Ser. No. 635,724
Int. Cl.[6] B26B *13/22*
U.S. Cl. 30—144 **6 Claims**



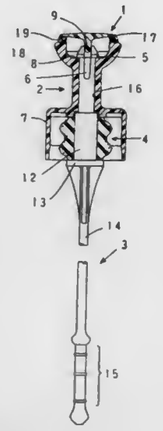
1. A tree pruner, which comprises:
a support rod having a top end provided with a slide seat; and
a cutting set fastened with said top end of said support rod and provided with a fastening piece, a cutting blade fastened pivotally with said fastening piece, a saw fastened with said fastening piece, a pull cord for regulating the motion of said cutting blade, and a tension spring for forcing said cutting blade back to an initial position thereof;
Wherein said fastening piece is mounted on a slide block capable of sliding up and down in said slide seat;
Wherein said fastening piece is fastened at a bottom end thereof with a pull rod which has a bottom end disposed pivotally in a slot of a rocking rod, said rocking rod provided at one end thereof with a grip fastened thereto, said rocking rod having another end fastened pivotally with two connection rods which are fastened with said support rod.

5,613,302
CIRCUMFERENTIAL WAIST MEASURING DEVICE
Paul Berman, 1650 Tenth St., Santa Monica, Calif. 90404, and Steve Love, 1000 Covewood Ct., Charlotte, N.C. 28270
Filed Aug. 22, 1995, Ser. No. 520,661
Int. Cl.[6] G01B *5/08*
U.S. Cl. 33—514.2 **1 Claim**

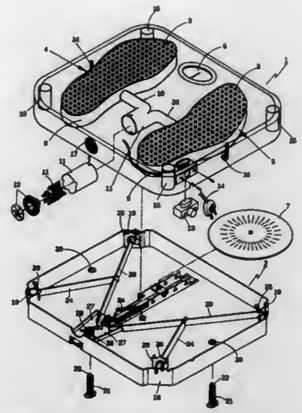


1. A circumferential waist measuring device comprising:
an elongated main body having a hollow interior and being securable to a supporting surface, the main body being shaped so as to define an elongated slot directed through a front face thereof, the elongated slot being oriented so as to extend along a portion of a longitudinal length of the main body, size indicia relating to waist size and circumference measurements for an individual being printed on the front face of the main body;
a measuring loop coupled at a first end thereof to a portion of the main body, the measuring loop extending into a substantially annular configuration, with a second end of the measuring loop projecting into the main body; a spring mounted within the main body and coupled to the second end of the measuring loop so as to bias the second end into the main body;
a post mounted within the main body, the spring comprising a spiral spring wound about the post, the spiral spring extending from the post to couple with the second end of the measuring loop;
an indicator projecting through the elongated slot and from a portion of the measuring loop which can be interpreted relative to the size indicia on the main body so as to indicate an approximate size and circumference of a waist of an individual around which the measuring loop is located; and
at least one mounting bracket secured to a rear surface of the main body which permits securement of the device to a supporting structure, the mounting bracket being substantially L-shaped and including a threaded aperture extending therethrough permitting the passage of a threaded securing fastener through the mounting bracket for subsequent engagement with a portion of a supporting structure.

5,613,303
OIL LEVEL GAUGE
Shigeru Kayano, and Kyokuichi Sato, both of Soja, Japan, assignors to OM Corporation, Okayama, Japan
Filed Jul. 14, 1995, Ser. No. 502,559
Claims priority, application Japan, Jul. 15, 1994, 6-163637
Int. Cl.[6] G01F *23/04*
U.S. Cl. 33—731 **4 Claims**



1. An oil level gauge comprising:
a rod having an oil level indicator at a lower end thereof, said rod being integrally provided with a separation groove formed in an upper portion thereof, an engagement portion at an upper end thereof, a flange at a middle portion thereof and an upper end of said flange is provided an enlarged diameter portion;
a handle mounted on said upper portion of said rod, said handle comprising a cylindrical hollow body and a skin portion formed continuously from a lower end of said cylindrical hollow body, said cylindrical hollow body being provided with a stepped portion being smaller in diameter than said engagement portion of said rod;
a cylindrical rubber packing provided on said enlarged diameter portion of said rod and inside said skin portion of said handle so that an upper end of said rubber packing is in contact with an inner top surface of said skin portion and a lower end of said rubber packing is compressed in an axial direction thereof by said inner top surface of said skirt portion and said flange of said rod, thus pressing and engaging by snap-fitted action said stepped portion of said handle against said engagement portion of said rod so as to hold said handle on said rod, and
an upper cover on the handle attached to an upper end of said cylindrical hollow body of said handle, said cover being provided with a projection extending downwardly, said projection being inserted into said separation groove of said rod and a cover surface being engaged with said rod by snap-fitted action.



connected with an inner side of the vertical circumferential wall of each air chamber, said air tubes of the two air chambers connected with a housing tube of an electric heater and an electric fan and located within said upper housing, a power switch fixed inside said upper housing an connected with said electric heater, said electric fan and the power cord to turn on and off the heater and the fan, a post provided at each of the four corners and extending down from the upper wall, and having a bottom concave surface on the bottom end;
a vertical L-shaped lever respectively provided on an inner surface of two opposite side walls of said upper housing;
a lower housing having a bottom wall, a spring hole respectively in each of two opposite sides of the bottom wall, a coil spring provided to fit up through each of the two spring holes and having an upper hook to hook with the lower end of each said vertical L-shaped hook, each of four short corner sides connected in an obtuse angle respectively with each two neighboring sides, two long connecting flat rods extending nearly diagonally from two short corner sides of a rear side thereof, two short connecting flat rods extending nearly diagonally from two short corner sides of a front side thereof, each said short flat rod having its end hooked at the center of each relative long connecting flat rod, the end of each long connecting flat rod welded on a support block described below;
a support block having a spring hole for a spring to fit through upward, a shaft rod fitted in the spring to support the support block, a hooking rod provided at a front side for pressing an activating rod connected with a transmitting rod of a disc scale, said transmitting rod having a toothed surface to engage with a toothed surface of a support shaft of the scale; and
characterized by said heater and said electric fan started by said power switch to produce hot air to blow into said two air chambers of said upper housing, said hot air flowing through out of the two groups of said air holes of said upper housing to dry the soles of a user, said weigher structure of said dryer and weigher able to weigh the body weight of the user when the user stands on the upper wall of said upper housing.

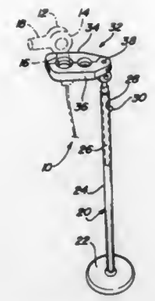
5,613,304
FOOT DRYER WITH WEIGHT SCALE
Jack Lin, 9F3R,No.210, Chung Hsueh Rd., Tainan, Taiwan
Filed Jun. 22, 1995, Ser. No. 493,540
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—90 **7 Claims**

1. A dryer and weigher comprising:
an upper housing having two groups of small air holes in an upper surface of an upper wall just on two air chambers provided under the upper surface and having a vertical circumferential wall extending down from a lower surface of the upper wall and having a sole-shaped profile, an air tube

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5,613,305
DEVICE FOR PROVIDING ELEVATED AND UNIVERSALLY ADJUSTABLE SUPPORT OF A HAIR DRYER
Nancy Narrin, 4450 Middle Channel Dr., Harsens Island, Mich. 48028
Filed Feb. 2, 1996, Ser. No. 594,647
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—90 **6 Claims**

1. A device for providing elevated and universally adjustable support of a held hair dryer, the hair dryer having a body with a handle portion and a heated air discharge portion, said device comprising:



an elongated support extending from a support surface and terminating in an elevated end portion;

a receptacle member secured to said elongated support end portion, said receptacle member further including a pedestal support attached to said elevated end portion of said elongated support; and

means for mounting the hair dryer by its handle portion to said receptacle member so that the hair dryer is capable of being pivotally adjusted to a plurality of different angled positions, said mounting means further including a substantially spherical shaped cavity formed in an uppermost portion of said pedestal support, a universal ball being attached to and extending from the hair dryer handle, said universal ball being inserted into said substantially spherical shaped cavity and providing a semi-friction adjustable fit to the hair dryer.

5,613,306

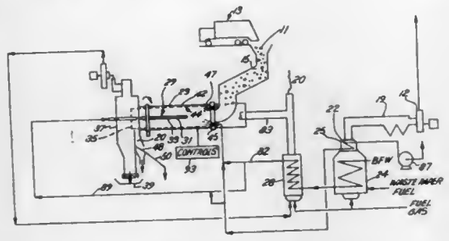
METHOD AND APPARATUS FOR CONDITIONING REFUSE

Frank T. Romweber, Olympia Fields, and Dennis F. Sowa, Wood Dale, both of Ill., assignors to Rapo-Shrink, Inc., Olympia Fields, Ill.

Continuation of Ser. No. 888,562, May 22, 1992, Pat. No. 5,412,881, which is a division of Ser. No. 698,355, May 6, 1991, Pat. No. 5,116,363, which is a continuation-in-part of Ser. No. 475,995, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,093, Sep. 20, 1989, abandoned. This application May 8, 1995, Ser. No. 436,164

Int. Cl.[6] F26B *11/02*

U.S. Cl. 34—136 **5 Claims**



1. A trash conditioner for shrinking refuse, comprising:

a rotatable chamber having an interior;

means for rotating said chamber;

refuse inlet mean providing an entrance into said interior of said chamber for movement of refuse therewithin;

means for generating hot gas at a temperature between 250° F. and 500° F. and for forcing said gas into said chamber;

means for distributing said hot gas inside said chamber; and

means for moving refuse:within said chamber during a minimum period of time during rotational movement of said chamber.

5,613,307

HEATABLE ROLL FOR THE TREATMENT OF WEBS OF MATERIAL AS WELL AS METHOD FOR THEIR OPERATION

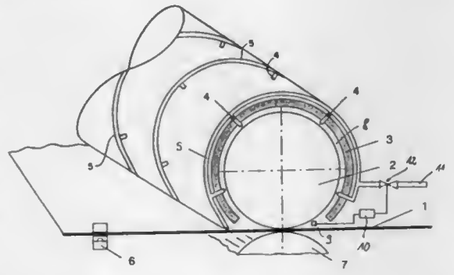
Hans-Rolf Conrad, Dormagen, and Dirk Cramer, Duisburg, both of Germany, assignors to Volth Sulzer Finishing GmbH, Krefeld, Germany

Filed May 12, 1995, Ser. No. 439,927

Claims priority, application Germany, May 26, 1994, 44 18 344.5

Int. Cl.[6] F26B *7/00*

U.S. Cl. 34—425 **9 Claims**



7. A process for utilizing heated roll and counter roll for treatment of a continuous sheet of goods in web form passing between the heated roll and the counter roll comprising:

providing a first heated roll rotatable about an axial length of a first axis;

providing a second counter-roll rotatable about a second axis parallel to the first axis;

relatively rotating the first heated roll and the second counter-roll and contacting the continuous sheet of goods in web form along a line of contact with the first heated roll;

placing a formed thermally insulating jacket defining a narrow interface around the first heated roll extending from the continuous sheet of goods in web form on a first side of the first heated roll to the continuous sheet of goods in web form on a second side of the first heated roll;

providing a plurality of nozzles at staggered radial locations relative to the first heated roll, the plurality of air nozzles extending through the formed thermally insulating jacket for supplying cooling air to the narrow interface between the formed thermally insulating jacket and the first heated roll; and,

providing cooling fluid to the plurality of nozzles upon interruption of web movement between the first heated roll and the second counter roll.

5,613,308

DOOR BRAKE

Alexander R. Little, Mackay, Australia, assignor to Marlene J. Little, Australia

Filed Aug. 24, 1995, Ser. No. 518,982

Claims priority, application Australia, Aug. 26, 1994, PM7706

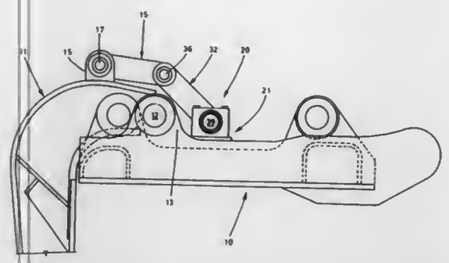
Int. Cl.[6] E02F *3/407*

U.S. Cl. 37—445 **8 Claims**

1. A brake assembly to control the movement of a first member, said first member hingedly mounted on a second member, said first member being movable between a first position and a second position, said brake assembly comprising:

a base mounted to one of said first and second members;

a torsion bar rotatably journalled on said base, said torsion bar having one end mounted to one of said first and second members and an opposite end mounted to the other of said first and second members;



link means for pivotable movement with respect to said torsion bar, said link means having one end connected to one of said first and second members;

lever means for oscillatory movement with said torsion bar, said lever means being mounted to said torsion bar, said lever means being spaced from said link means and having one end connected to one of said first and second members; and

spaced stop means for limiting the oscillatory movement of said lever means, said spaced stop means mounted to the other of said first and second members, said lever means engaging said stop means as said lever means oscillates between a first predetermined rotatable position and a second predetermined rotatable position opposite to said first predetermined position;

whereby as said lever means and second predetermined rotatable positions, said lever means is stopped oscillates and engages said stop means at one of said first while said torsion bar continues to rotate to generate and transmit a braking force to said link means.

5,613,309

STEAM IRON WITH STEAM GENERATING CHAMBER BAFFLE

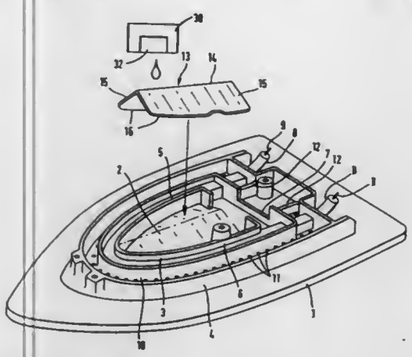
Klaus Amsel, Oberursel, and Albrecht Weller, Steinbach, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Apr. 20, 1995, Ser. No. 425,374

Claims priority, application Germany, Apr. 23, 1994, 44 14 221.8

Int. Cl.[6] D06F *75/18;75/38*

U.S. Cl. 38—77.83 **22 Claims**



1. A steam iron comprising:

a soleplate having a plurality of outlet ports;

a soleplate component attached to the soleplate and thermally decoupled from the soleplate;

a steam generating chamber provided in the soleplate, the steam generating chamber communicating through a channel with the outlet ports, whereby steam produced in the steam generating chamber is channeled to the outlet ports;

a heated rib member surrounding the steam generating chamber;

a water reservoir arranged above the soleplate and including a drop dispensing device in the area of the steam generating chamber, whereby the drop dispensing device drops water to be evaporated into the steam generating chamber; and

a baffle device provided within said steam generating chamber and beneath the drop dispensing device, the baffle device having a drop impingement location where water dropped by the drop dispensing device impinges, the baffle device having at least two oppositely inclined surfaces sloping from the drop impingement location into the heated rib member.

5,613,310

EDGE SHAPE IN A SMOOTHING IRON

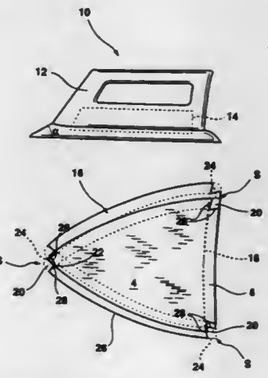
Miguel Jimenez, Molins de Rei; Miguel Vazquez, Barcelona; Francesc Carreras, Sant Just Desvern; Juan C. Coronado, Barcelona; Augustin Auria, Isidro Marti, all of Spain; Andrea Hahnewald, Dreieich, and Rolf Eimecke, Oberursel, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed May 25, 1995, Ser. No. 450,306

Claims priority, application Germany, Jun. 24, 1994, 44 22 090.1

Int. Cl.[6] D06F *75/38*

U.S. Cl. 38—93 **9 Claims**



1. A smoothing iron with a shoe,

a soleplate in heat exchange relation with said shoe, said soleplate having a planar sliding surface and an upwardly and inwardly bent edge area at the boundary line of said sliding surface, said soleplate having a pointed end and a slot at said pointed end, side edges which bound said slot adjoining each other directly, said slot being spaced from said boundary line of said sliding surface.

5,613,311

ERECTABLE PERISCOPING DISPLAY DEVICE

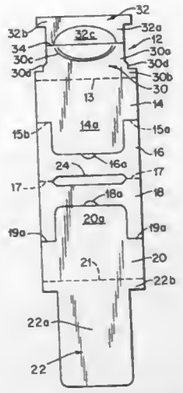
Ronald P. Burtch, 4226 Asherton Dr., Charlotte, N.C. 28210

Continuation-in-part of Ser. No. 555,987, Nov. 15, 1995. This application Feb. 13, 1996, Ser. No. 600,544

Int. Cl.[6] G09F *1/06*

U.S. Cl. 40—124.15 **14 Claims**

1. A display device comprising a support portion and an integral display portion adjoined to said support portion, said display and support portions being relatively movable between a first, planar configuration wherein said display portion is substantially covered by said support portion, and a second, erected configuration wherein said display portion extends upwardly from a base formed by said support portion, said support portion including first and second pairs of serially arranged panels defined by fold lines and



formed integrally with said display portion so that in said planar configuration said pairs of panels lie flat and overlie respective faces of said display portion and so that in said erected configuration said pairs of panels are disposed at an angle to form said base for said display portion, adjacent panels of said pairs of panels being joined along a central fold line having a central opening therein through which said display portion periscopes during said relative movement of said display and support portions from said planar configuration to said erected configuration, said display portion comprising a first end panel including a tongue portion which projects upwardly through said opening in the erected configuration of the device and a second end panel joined to one panel of said pairs of panels along a further fold line and secured to said first end panel, said second end panel comprising a pair of further panels folded one over the other along a common fold line and secured together in registration with one another, one panel of said pair of further panels including an opening in a edge thereof adjacent to said common fold line forming a recess, said recess being disposed between the other panel of said pair of further panels and said first end panel so as to receive a planar element to be displayed.

5,613,312

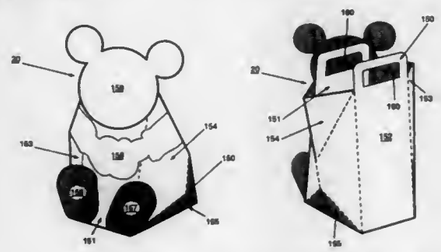
DECORATIVE, VISUALLY STIMULATING DISPLAY AND ARTICLE HOLDING SYSTEM

Christopher S. Crowell, 80 Plains Rd., Essex, Conn. 06426

Filed Nov. 18, 1994, Ser. No. 342,256

Int. Cl.[6] G09F *3/00*; **B65D** *33/10*

U.S. Cl. 40—312 **15 Claims**



1. A decorative, visually stimulating display and article holding system constructed for holding any desired object or gift and being used as a display item, said display and holding system comprising:

A. a multi-surfaced article holding receptacle forming a three-dimensional display when viewed in its entirety and visual appearing as a character with each surface of the receptacle representing a separate surface of the character;

B. a first decorative panel and a second decorative panel forming a portion of the article holding receptacle,

a. positioned in juxtaposed spaced relationship with each other,

b. comprising substantially the same overall dimensions and

c. each panel incorporating unique indicia thereon consistent with and forming a separate and independent part and visual representation of the three-dimensional character display provided by the article holding receptacle;

C. at least one first side panel forming the remainder of the three-dimensional article holding receptacle,

a. interconnected with and extending between the first decorative panel and the second decorative panel, and

b. incorporating unique indicia thereon consistent with and complementary to the indicia formed on the first and second decorative panels, forming a separate part and surface of the three-dimensional character display;

D. a bottom panel extending between and interconnected with the first and second decorative panels and the first side panel, thereby establishing and defining an internal retaining zone within which the desired item or gift can be stored; and

E. at least one independent, appearance-completing portion

a. affixed to at least one of the panels forming the article holding receptacle,

b. incorporating unique indicia thereon, corresponding to and complementing the indicia formed on the decorative panels and first side panel and

c. comprising a size and shape representing a required element of the three-dimensional display formed by the article holding receptacle, thereby completing the visual appearance of the three-dimensional character display;

whereby a unique, distinctive, visually exciting and interest generating article display and holding system is realized.

5,613,313

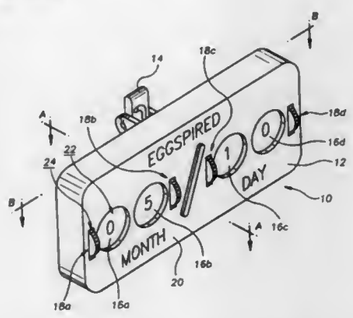
USER MODIFIABLE DATE DISPLAY UNIT

Deanna I. Homan, and Kenneth T. Homan, both of 20606 Gibraltar Rd., Brownstown, Mich. 48183

Filed Oct. 5, 1995, Ser. No. 539,359

Int. Cl.[6] G09F *11/15*

U.S. Cl. 40—524 **1 Claim**



1. A modifiable date display unit comprising:

a plastic housing having a front face having at least four display apertures and at least four positioning wheel apertures formed therethrough in connection with an internal chamber formed within said housing;

a spring biased clip mechanism secured to said housing, said clip mechanism including a section of rubberized magnet attached to a backside thereof;

four independently positionable indicia display loops constructed from a continuous closed loop of flexible plastic having an outwardly projecting surface bearing sequential indicia of the numerals zero through nine, each said display loop being disposed within said internal chamber, each said display loop including a protruding ring portion running the entire length thereof having a plurality of gear notches formed thereon; and

four loop positioning mechanisms, one each in connection with one of said display loops in a manner such that movement of one of said positioning mechanisms causes a movement in a respective display loop; all of said loop positioning mechanisms sharing a common pair of parallel oriented loop stretching rods, each said loop positioning mechanism including a separate positioning wheel having a geared portion that extends from a sidewall of said positioning wheel and is concentrically attached thereto, each said positioning wheel being rotatably mounted on a common gear rod located adjacent said display loops in a manner to allow said geared portion of each of said positioning wheels to mesh with said gear notches of a respective display loop, rotation of one of said positioning wheels moving one of said display loops to a desired position, each said stretching rod of said pair of loop stretching rods includes four circumferential ring channels, each circumferential ring channel being sized to receive a said protruding ring portion from one of said display loops, each protruding ring portion traveling within a pair of ring channels, one from each stretcher rod, each said ring channel preventing each display loop from moving laterally with respect to either of said stretching rods, said wheel rod and said pair of stretcher rods being adhesively secured within said internal chamber.

5,613,314

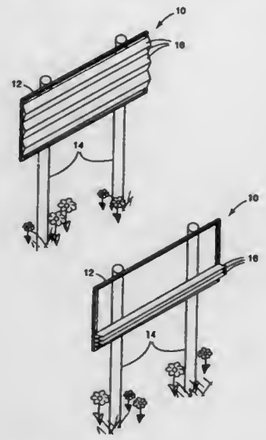
COLLAPSIBLE BILLBOARD SIGN

Clifford W. Leverenz, Orland Park, Ill.; Jamshed R. Cooper, Plymouth, Minn.; Stephen P. Sohm, Robbinsdale, Minn.; Jehangir E. Rudina, Apple Valley, Minn., and Steven C. Larson, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 16, 1995, Ser. No. 404,979

Int. Cl.[6] G09F *15/00*

U.S. Cl. 40—610 **22 Claims**



1. A collapsible sign comprising:

a) a substantially upright frame having a viewing side and a rear side, the frame comprising a plurality of channels lying in a first plane;

b) a plurality of sections located in front of the channels, each of the plurality of sections being hingedly and movably attached to the channels by a plurality of rollers attached proximate a first end of the section, each of the plurality of sections rotating about a first axis of rotation located proximate the first end of each of the plurality of sections, each Of the first axes of rotation located in front of the channels, and further wherein each of the plurality of sections is also hingedly attached to an adjacent section along a second axis of rotation proximate a second end of each of the plurality of sections, the second axis of rotation also being located in front of the channels;

c) means for moving the plurality of sections between a viewing position wherein the plurality of sections lie substantially parallel to the first plane, and a collapsed position wherein the plurality of sections are rotated and stacked in planes substantially orthogonal to the first plane, and further wherein the first end of each of the plurality of sections is proximate and in front of the channels and the second end of each of the plurality of sections is located distal from and in front of the channels when in the collapsed position; and

d) means for positioning each of the plurality of sections to provide a predetermined offset distance between the first and second axes of rotation of each of the plurality of sections when the plurality of sections are in the viewing position, wherein the second axes of rotation are located in front of the first plane and the first axes of rotation.

5,613,315

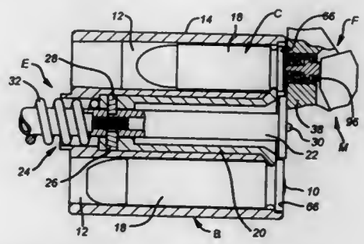
FIRING PIN MECHANISM

Roger A. Hunziker, Conroe, Tex., assignor to Phillips and Rodgers, Inc., Conroe, Tex.

Filed Aug. 1, 1995, Ser. No. 509,837

Int. Cl.[6] F41C *3/14*; **F41A** *19/06*

U.S. Cl. 42—65 **11 Claims**



1. A weapon firing mechanism for transferring the impact of a weapon firing hammer to a cartridge primer in a weapon cartridge chamber of the weapon for firing the cartridge, comprising:

a firing pin having a tip extending from a body portion for engaging the primer under impact from the firing hammer and a contact surface on said body portion opposite said tip for receiving impact from the weapon firing hammer;

a firing pin housing movably mounted in the weapon, said firing pin housing having:

a receiving chamber for mounting said firing pin body portion therein;

an opening in said receiving chamber adjacent the cartridge primer for passage of said tip of said firing pin outwardly towards the cartridge primer;

a forward contact for engaging the cartridge for contact of the primer by said firing pin tip; and

a stop shoulder defining a limit of forward travel of said firing pin;

resilient means mounted between said firing pin and said firing pin housing for urging said firing pin rearwardly in said receiving chamber into position for engagement of said contact surface by the weapon firing hammer after engagement of the cartridge primer by said firing pin tip; and

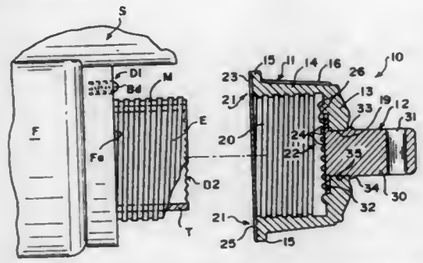
a bushing guide mounted in the weapon between the weapon firing hammer and the weapon cartridge chamber, said bushing guide having:

a housing chamber for receiving said firing pin housing therein;

an opening in said housing chamber for passage of said forward contact of said firing pin housing; and

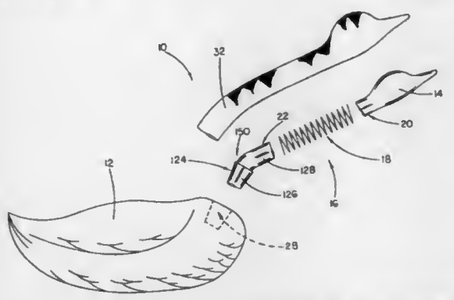
a stop for engaging said stop shoulder of said firing pin housing for limiting forward travel of said firing pin housing.

5,613,316
SHOTGUN MAGAZINE SLING ATTACHING DEVICE
Floyd L. Hightower, 5617 Lake Highlands Dr., Waco, Tex. 76710
Filed Mar. 6, 1995, Ser. No. 399,936
Int. Cl.[6] F41C *27/00*
U.S. Cl. 42—85 **1 Claim**



1. A magazine sling attaching device comprising a cap-like member defined by an end wall and a peripheral skirt, swivel means carried by said end wall for at least limited rotation, said swivel means including means for securing a shotgun sling thereto, said peripheral skirt including means for removably securing said cap-like member to a shotgun magazine, said first and second means for preventing inadvertent operation of said removable securing means, said first and second means include respective first and second sets of a plurality of peaks and valleys with each set being disposed in a generally annular configuration in respective first and second planes with each disposed substantially normal to an axis of rotation of said swivel means, said swivel means including a post having a longitudinal axis, a bore transverse to said longitudinal axis, said post being received in an opening of said end wall, and said post having first and second shoulder means spaced along said longitudinal axis and disposed on opposite sides of said end wall for retaining said post against displacement along its longitudinal axis while permitting rotation thereof.

5,613,317
MOVABLE DECOY HEAD AND NECK
Steve Ninegar, Rte. 1, Box 23, Elm Creek, Nebr. 68836
Filed Jun. 13, 1994, Ser. No. 259,176
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—3 **8 Claims**



1. A wildfowl decoy head and neck adapted for spontaneous and continuous movement in response to the wind and other external stimuli, thereby providing a realistic simulation of a wildfowl for hunting and adapted to be installed on conventional three dimensional decoy bodies permitting an interchangeable head and neck, the flexible head and neck comprising:

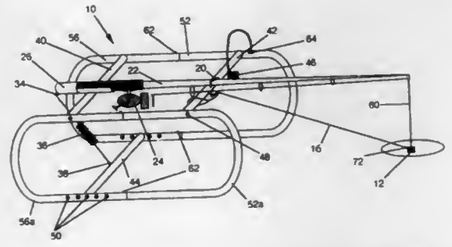
a three-dimensional head shaped to simulate said wildfowl;

a flexible neck operative for connecting said head to a three-dimensional decoy body and responsive to the impact of wind on said head and neck, said neck comprising a spring covered with material;

interconnection means for connecting said flexible neck and said body; and

said decoy body having a recess for receiving said three-dimensional head and neck and said interconnection means being a plug of a size and shape to receive and support said neck spring and to frictionally fit into said recess such that, upon connection of said neck to said body and placement in the wind, said neck and said head are adapted for continuous, spontaneous three-dimensional lifelike movement in response to said wind.

5,613,318
SELF HOOKING ROD HOLDER WITH TRIGGER FLOAT
Dennis M. Hislop, P.O. Box 385, Houston, Ak. 99694
Filed Jan. 6, 1995, Ser. No. 369,654
Int. Cl.[6] A01K *97/12*
U.S. Cl. 43—16 **6 Claims**



1. A self hooking fishing rod holder, said holder comprising:

a free standing frame comprising opposing side portions, said side portions attached by a forward cross section member and a rearward cross section member;

a tubular rod holder for releasably retaining a fishing rod, said rod holder pivotally mounted on said rearward cross section member, said rod holder and rod pivotable between a first horizonal position and a second raised position;

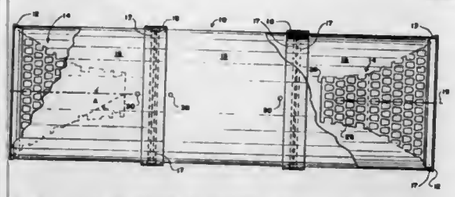
spring means mounted on said rod holder, said spring means attached to said frame, said spring means providing means to pivot said rod holder and rod from said first position to said second position;

a trigger line secured to said frame at a first end, said trigger line secured to a retaining clip at an other end, said retaining clip releasably grasping a trigger float, said trigger float providing means for releasably retaining a fishing line;

release means mounted to said forward cross section member, said release means comprising an upper arm and a lower arm and said arms being rotatable between a retaining position and a releasing position, said upper arm for retaining said rod holder and rod in said first position and said lower arm for releasably retaining said trigger line;

whereby said fishing line is positioned within said trigger float and upon a pull on said fishing line said release means is rotated from said retaining position to said releasing position.

5,613,319
DITCHLINE CRAWFISH TRAP
L. T. Botkins, P.O. Box 1663, Paragould, Ark. 72451
Filed Jul. 10, 1995, Ser. No. 500,349
Int. Cl.[6] A01K *61/00*
U.S. Cl. 43—103 **5 Claims**

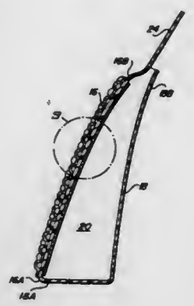


1. A kit for producing a crawfish trap from three pieces of cylindrical sidewall derived from metal cans of identical diameter and having extremities having circular rims, said kit comprising:

a) two identical connector collars in the form of monolithic circular rings comprised of outer and inner panels interconnected at their midlines by a transverse portion to produce a generally H shaped cross-sectional configuration defining two holding zones in symmetrical opposition about said transverse portion and adapted to receive said circular rims and thereby couple said sidewalls to produce a segmented cylindrical section elongated upon a center axis and terminating in opposed open extremities, and

b) two funnel members in the form of perforated structures of frustro-conical shape having a narrow opening and an opposed wide opening associated with a conical surface configured to insert into the open extremities of said cylindrical section.

5,613,320
SELF-SUPPORTING THERMALLY-PROTECTIVE PLANT ENCLOSURE FORMED BY SELF-STANDING CONTAINER BODIES
Joseph R. Thomasson, Hays, and John Van Dyke, Plainville, both of Kans., assignors to Phytae, Inc., Hays, Kans.
Division of Ser. No. 293,693, Aug. 19, 1994, Pat. No. 5,509,229, which is a continuation-in-part of Ser. No. 163,948, Dec. 8, 1993, abandoned. This application Mar. 22, 1996, Ser. No. 621,071
Int. Cl.[6] A01G *13/00*; **A47G** *7/08*
U.S. Cl. 47—32.1 **15 Claims**

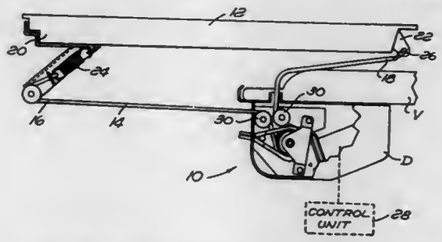


1. A protective plant enclosure, comprising:

(a) a plurality of elongated hollow container bodies each having an outer and an inner transparent wall, said outer and inner walls being spaced apart and peripherally interconnected by a plurality of walls defining a base, a top and a pair of opposite sides extending upwardly from said base to said top, each of said container bodies being closed along said opposite sides and said base and open through at least a portion of said top to define an internal cavity in said container body capable of receiving and holding a quantity of fluid therein, said container bodies being positioned in side-by-side relation and at least some of said container bodies being coupled one body to the next along said opposite sides thereof so as to form said plant enclosure with an open top and bottom and a generally annular configuration surrounding a protective plant growth chamber; and

(b) selected ones of said container bodies of said plurality thereof having means extending along and at least a short distance above said bases of the outer walls thereof and in heat transfer relationship therewith for receiving and absorbing thermal energy from the outside environment.

5,613,321
RELEASABLE DRIVE MECHANISM
Roy R. Rizkovsky, Lake Elizabeth, Calif., assignor to Ricon Corporation, Pacoima, Calif.
Filed Aug. 30, 1994, Ser. No. 298,438
Int. Cl.[6] E05F *15/00*; **F16D** *11/04*
U.S. Cl. 49—139 **9 Claims**



1. A power-driven sliding door assembly for a vehicle, comprising:

a door;

a chain connected to said door;

a motor assembly for driving said chain to move said door, said motor assembly comprising a motor and a shaft rotated about its axis by said motor;

a coupling mechanism releasably coupling a segment of said chain to said motor assembly, said mechanism comprising:

a gear secured for rotation with said shaft and configured to provide a first portion extending along said shaft axis;

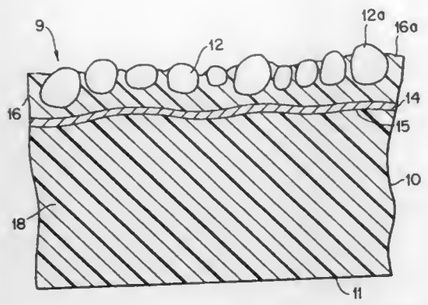
a sprocket mounted on said gear and configured to provide a second portion overlapping said first portion of said gear along said shaft axis to define an engagement zone, said sprocket configured to provide a plurality of keyways, said segment of said chain being wound on said sprocket;

a clutch adapted to releasably couple said chain segment to said motor assembly, said clutch having a plurality of keys positionable in said engagement zone;

wherein said gear provides spaces defined between teeth, said spaces adapted to be aligned with said keyways of said sprocket and being of a plurality for enabling fine alignment adjustments to facilitate releasable coupling of said chain to said motor assembly at said chain segment.

5,613,322
EDGE DRIVE CABLE WINDOW REGULATOR ASSEMBLY
Michael D. Kobrehel, Elkhart, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.
Filed Oct. 31, 1995, Ser. No. 550,657
Int. Cl.[6] E05F *11/48*
U.S. Cl. 49—352 **12 Claims**

1. A cable regulator assembly for controlling the vertical travel of a windowpane in a window opening of a motor vehicle door, comprising, in combination:



a cable support structure mountable in a door cavity of a motor vehicle, comprising

a lateral bridging member,

a first guide rail member extending vertically from the bridging member toward a first cable return, and

a second guide rail member laterally spaced from the first guide rail member and extending vertically from the bridging member toward a second cable return,

the lateral bridging member, first guide rail member and second guide rail member cooperatively forming an integral, rigid U-shape;

a regulator cable;

cable guide means mounted to the cable support structure for supporting the regulator cable for driven travel around the first and second cable returns in a U-shaped travel path along the cable support structure; and

first and second gliders attached to the regulator cable for cable-driven vertical travel along the first and second guide rails, respectively, each having mounting means for attachment to a windowpane.

5,613,323

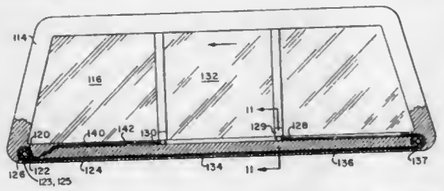
CABLE DRIVE ASSEMBLY FOR A WINDOW

Dennis J. Buening, Waterford, Mich., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed Jan. 19, 1995, Ser. No. 374,974

Int. Cl.[6] E06B *1/00*

U.S. Cl. 49—380 **18 Claims**



1. A window assembly for a motor vehicle body enclosing a passenger compartment, the window assembly comprising, in combination:

structural frame means for mounting in a window opening of the vehicle body, comprising a circumferentially extending frame;

a sliding pane mounted to the frame means for sliding between a closed position in a first plane and an open position in an offset, substantially parallel second plane;

guide means for guiding the sliding pane as it moves in a path of travel between its open and closed positions, the guide means comprising kick-out means for forcibly guiding the sliding pane from the first plane toward the second plane substantially simultaneously with initial lateral movement of the sliding pane from its closed position toward its open position; and

a cable-and-drum drive assembly comprising a drive cable wrapped around a drive drum and attached to the sliding pane for pulling the sliding pane open by rotation of the drive drum in a first rotational direction and for pulling the sliding pane closed by reverse rotation of the drive drum, the drive drum being rotatably mounted in a recess in the frame means and at least a portion of the drive cable extending between the sliding pane and the drive drum in a cable channel in the frame means.

5,613,324

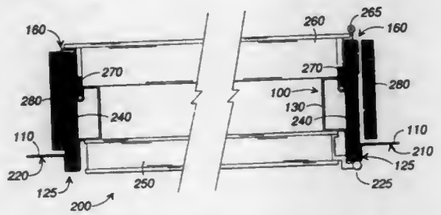
PREFABRICATED DOOR FRAME

Robert J. Theune, Dothan, Ala., assignor to Dunbarton Corporation, Dothan, Ala.

Filed Sep. 15, 1995, Ser. No. 529,051

Int. Cl.[6] E06B *3/32*

U.S. Cl. 49—380 **18 Claims**



1. A door frame for a prefabricated house having a doorway with a front side and a rear side and defining a doorway opening therethrough, comprising:

a header frame;

two side frames each fixedly attached to said header frame to form said door frame and wherein each of said side frames is constructed of formed metal and comprises:

a storm door side u-shaped member; and

an entry door side u-shaped member;

a lip extending outwardly from said storm door side u-shaped member of at least one of said side frames so that said door frame can be slid into the doorway opening until the sliding is arrested by said lip abutting the front side of the doorway in the prefabricated house; and

a substrate inserted into each side frame and extending between said u-shaped members in each side frame to strengthen each side frame.

5,613,325

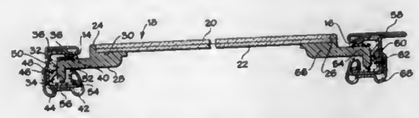
MOTOR VEHICLE GLAZING UNITS

James G. Mariel, Mishawaka, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed Dec. 22, 1995, Ser. No. 577,224

Int. Cl.[6] E05D *15/06;* **E05F** *11/38*

U.S. Cl. 49—404 **11 Claims**



1. A motor vehicle glazing unit comprising, in combination:

first and second generally U-shaped frame channels open toward each other in substantially fixed position;

a transparent glazing pane moveably mounted in the frame channels, comprising at least a non-frangible pane member and having a peripheral edge;

first and second edge flanges, each affixed along the peripheral edge of the glazing pane and extending laterally beyond the peripheral edge to a distal portion received in the first and second frame channels, respectively; and

first and second edge flange retainers in substantially fixed position relative the first and second generally U-shaped frame channels, respectively, each comprising a generally U-shaped structural member capturing the distal portion of the first and second edge flange in the first and second frame channel, respectively.

5,613,326

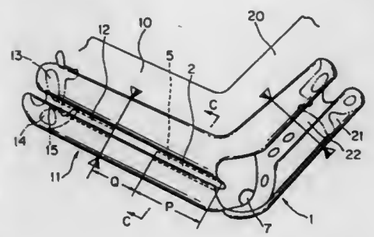
SEALING STRIP FOR CONVERTIBLE

Satoshi Inoue; Yasuyuki Fujita, and Takeo Kawazoe, all of Hiroshima, Japan, assignors to Nishikawa Rubber Co., Ltd., Hiroshima-ken, Japan

Filed Nov. 7, 1995, Ser. No. 556,741

Int. Cl.[6] E06B *7/16*

U.S. Cl. 49—476.1 **8 Claims**



1. A sealing strip for a convertible which is adapted to be attached to a portion of a front pillar of the convertible that is contiguous with a header of the convertible to seal the joint between the front pillar and a window glass of a front door, said sealing strip integrally comprising: an extruded section having a longitudinal groove, a hollow upper sealing part formed on one side of the groove, a hollow lower sealing part formed on the other side of the groove, and a first bridge interconnecting the upper sealing part and the lower sealing part; and a molded section which is continuous with the extruded section and has an external shape substantially the same as that of the extruded section, said molded section having first and second elongate seal sections defining an L-shape, said first seal section being joined to said extruded section and integrally having a longitudinal center groove, a hollow part which extends longitudinally and has a hollow upper sealing part formed on one side of the center groove for sealing contact with a window glass of a car door and a hollow lower sealing part formed on the other side of the center groove, said hollow lower sealing part provided with a lip which projects outwardly for sealing contact with said window glass, said molded section further including a second bridge formed at least partially along the length of the hollow part so as to interconnect a portion of the upper sealing part and a corresponding portion of the lower sealing part, said first seal section having an open end portion which is joined to said extruded section in communication therewith and a closed end portion substantially closing said upper and lower sealing parts, a drain hole for receiving rainwater from said second seal section being formed on a lower portion of the closed end portion of the sealing strip on one side of the center groove so as to communicate with the interior of the hollow lower sealing part of said molded section, said first bridge and said second bridge being longitudinally aligned such that said upper and lower sealing parts of said molded section are disposed in communication with said upper and lower sealing parts of said extruded section respectively whereby rainwater is flowable through said drain hole and said lower sealing parts of said extruded section and said molded section.

5,613,327

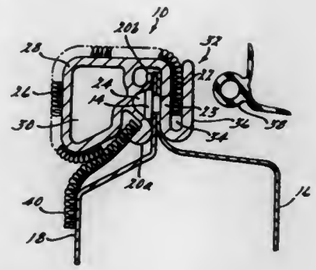
DOOR SILL GARNISH TRIM

Paul J. Sauve, Warren, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Feb. 24, 1995, Ser. No. 393,637

Int. Cl.[6] E06B *7/16*

U.S. Cl. 49—490.1 **18 Claims**



1. An apparatus for protecting a flange on a vehicle body, said flange retaining a fastener with a head, comprising:

a base section having a seating portion with a first surface for accepting said body flange and a first projection connected to and opposite said first surface, said first projection being curved to deflect over said fastener head during the seating of said body flange.

5,613,328

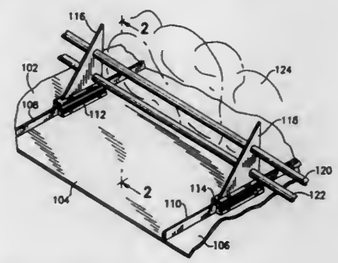
SNOW GUARD FOR A METAL ROOF

F. William Alley, Edson Hill Rd., Stowe, Vt. 05672

Filed Feb. 21, 1995, Ser. No. 391,726

Int. Cl.[6] E04D *13/10*

U.S. Cl. 52—25 **22 Claims**



1. A device capable of being attached to a metal roof having a first roofing panel and a second roofing panel, the first and second roofing panels each having a substantially perpendicular longitudinal edge thereon, the longitudinal edge of the first roofing panel positioned in close proximity to the longitudinal edge of the second roofing panel forming a seam therealong, said device comprising:

a block having a first and a second side wall, a base and a top;

a groove located in the base of the block, wherein the block is locatable on the metal roof by placement of the groove about a segment of the seam;

a first threaded hole located in the block between the first side wall and the groove;

a first cavity located in the groove diametrical to the first threaded hole;

a first element having a substantially curved surface;

a first set screw translocatable within the first threaded hole, the first set screw having a first terminal end in juxtaposition with the first element such that the curved surface of the first element is diametrical thereto and is pivotable thereabout, the first set screw further having a second terminal end drivable into the first threaded hole;

wherein driving the first set screw into the first threaded hole causes the substantially curved surface of the first element to engage a first portion of the seam of the metal roof, thereby precluding any rotational movement of the curved surface of the first element, relative to the first engaged portion of the seam, thus causing the first set screw to pivot about the curved surface of the first element; and

wherein further driving of the first set screw causes the first engaged portion of the seam to be driven towards the first cavity of the groove diametric thereto, thereby forming a pocket in the first engaged portion of the seam.

5,613,329

GROUND ANCHOR

Nicholas F. Land, Suffolk, and Michael E. Smith, Southampton, both of England, assignors to Terra-Lock Systems Limited, United Kingdom

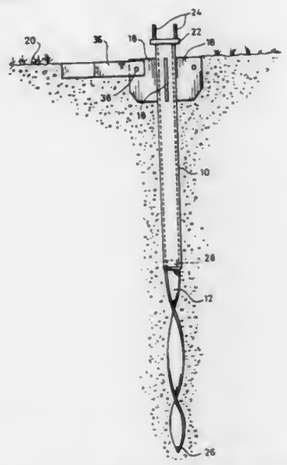
PCT No. PCT/GB94/00072, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/16177, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 13, 1994, Ser. No. 464,862

Claims priority, application United Kingdom, Jan. 15, 1993, 9300674

Int. Cl.[6] E02D *5/80*

U.S. Cl. 52—157 **7 Claims**



1. A ground anchor comprising a tubular socket with a closed bottom, the tubular socket being intended to be inserted in the ground, means for preventing rotation of the tubular socket in the ground, a diametral slot in the closed bottom of the tubular socket, and a twisted flat bar adapted to pass along the tubular socket and through the slot.

5,613,330

SUPPORT PILLAR SYSTEM FOR A MAGNETICALLY-SHIELDED ROOM

Martti Perälä , and Lasse Sohlström, both of Eura, Finland, assignors to Euroshield Oy, Eura, Finland

Filed Dec. 26, 1995, Ser. No. 578,012

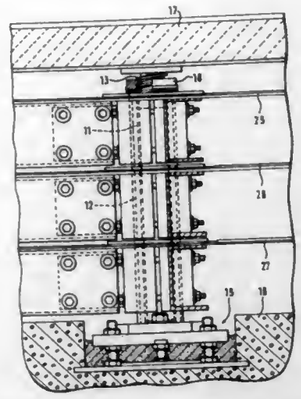
Claims priority, application Finland, Dec. 27, 1994, 946102

Int. Cl.[6] F02D *27/34;* **H05K** *9/00*

U.S. Cl. 52—167.1 **8 Claims**

1. A support pillar system for a magnetically-shielded room, comprising

a plurality of support pillars, each of said support pillars comprising a first inner structure having a threaded upper end, a second outer structure surrounding said first structure, and a



member having a thread cooperating with said threaded upper end of said first structure, a floor of the room being supported on said threaded upper end of said first structure,

magnetic shielding means for magnetically shielding the room, said shielding means being attached to said second structure, and

movement means for moving each of said members between a locking position in which said first structure and said second structure are locked together such that vibration of the floor of the room is transmitted to said shielding means and said shielding means vibrates substantially in synchronization with the vibration of the floor of the room and an open position in which said second structure is not locked with said first structure and the vibration of the room is not dependent on the vibration of said shielding means such that potential vibration of the room is not transmitted to said shielding means.

5,613,331

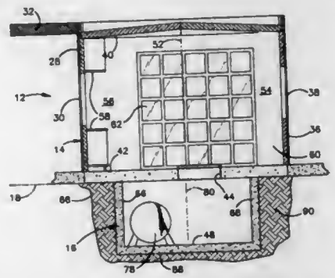
MODULAR OIL CHANGE AND LUBRICATION CENTER FOR VEHICLES

Timothy J. LaGanke, 14054 Sweetbriar La., Novelty, Ohio 44072

Filed Dec. 29, 1994, Ser. No. 367,446

Int. Cl.[6] E02D *27/00*

U.S. Cl. 52—169.7 **40 Claims**



1. A modular building for a vehicle oil change and lubrication center comprising:

(a) a one-piece vault positioned below grade, said vault having a floor, upstanding walls, and an open-top;

(b) an above-grade enclosure supported by said vault having upright walls, said above-grade enclosure comprising

(i) a floor and floor opening therein and;

(ii) a door access for a vehicle which allows a vehicle to be positioned over said floor opening, the floor opening being aligned with the vault open top and permitting access from the enclosure to the vault; and

(c) means releasably holding said enclosure to said vault;

said vault being dimensioned so that it is transportable on a truck-trailer bed and has a height effective for an attendant to stand up in the vault and service a vehicle positioned over said floor opening.

5,613,332

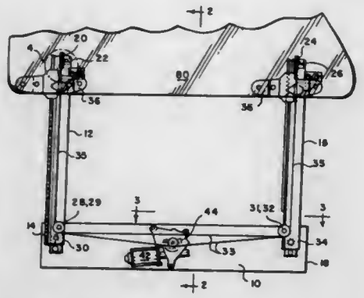
SLIP RESISTANT FLOOR MAT

Edward T. Saylor, Jr., 1025 33rd Ave., SW., Vero Beach, Fla. 32968

Continuation of Ser. No. 943,554, Sep. 11, 1992, abandoned. This application May 1, 1995, Ser. No. 431,823

Int. Cl.[6] E04F *11/16*

U.S. Cl. 52—177 **11 Claims**



1. A floor mat, comprising:

a woven roving sheet of glass fiber strands;

a layer of polyurethane bonded to one side of the sheet;

a plurality of evenly dispersed beads embedded in the polyurethane layer in a range of 200 to 1,100 beads per square inch, wherein the beads are sintered pelletized ceramic particles and wherein the beads are embedded 60–90% into the polyurethane with crowns of the beads being exposed; and

a backing layer bonded to the other side of the sheet.

5,613,333

MOTORIZED SKYLIGHT ASSEMBLY FOR MOUNTING ON THE ROOF OF A BUILDING

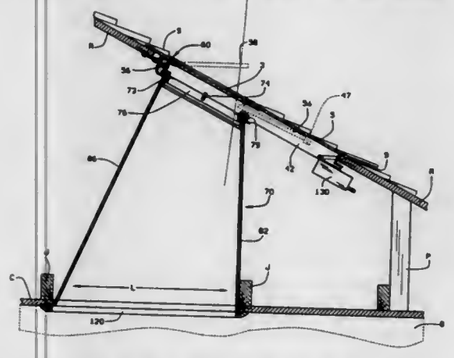
Michael J. Witzig, Jr., 616 Wallach, Eureka, Mo. 63025

Filed Sep. 16, 1994, Ser. No. 306,940

Int. Cl.[6] E04B *7/18*

U.S. Cl. 52—200 **10 Claims**

1. A motorized skylight assembly adapted to be flush mounted in



the roof of a building and adapted to communicate from the roof to a ceiling in the building comprising:

a flat elongated template having a first end and a second end, said template having an opening formed in the first end, said template constructed to mount over an opening cut in the roof, the template adapted to be substantially thin in relation to the thickness of the roof on which it is adapted to be mounted to thereby accommodate a window pane in an open position;

a motorized window pane assembly positioned beneath said template and adapted to be attached to the underside of said roof, said window pane assembly having a window pane movable from a first or closed position to a second or open position, said window pane being positioned under said second end of said template when moved to said second or open position; and

a prefabricated chute adapted to extend from said window pane assembly to said ceiling in a room.

5,613,334

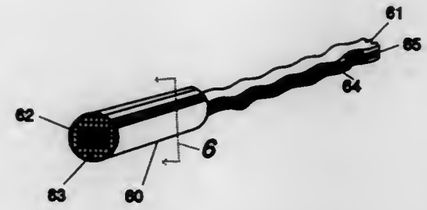
LAMINATED COMPOSITE REINFORCING BAR AND METHOD OF MANUFACTURE

Petru Petrina, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 356,658, Dec. 15, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 496,931

Int. Cl.[6] E04L *5/08*

U.S. Cl. 52—223.1 **21 Claims**



1. A laminated composite reinforcing rod comprising:

a) a core having a top and a bottom and a length, comprising at least one core layer comprising a plurality of fibers in a resin matrix, the fibers being oriented unidirectionally along the length of the core;

b) cover layers located on the top and bottom of the core, each layer comprising a plurality of fibers in a resin matrix, the fibers being oriented unidirectionally parallel the length of the core; and

c) a plurality of transverse ribs between the cover layer and the core, each rib comprising a plurality of fibers in a resin matrix, the ribs being oriented transverse to the length of the rod;

wherein the core, ribs and cover layers are bonded together.

5,613,335

PAPERBEAD FOR PROTECTING DRYWALL CORNERS

George Rennich; Roy Schouten, both of Edmonton, and Florent Gilmore, Sherwood Park, all of Canada, assignors to British Steel Canada Inc., Montreal, Canada

Filed Feb. 14, 1995, Ser. No. 389,817

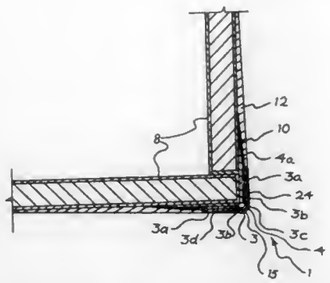
Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—255 **18 Claims**

1. A drywall paperbead comprising:

an elongated core having an outer surface; and

a paper strip bonded to said outer surface of said core, said paper strip comprising a stock paper impregnated with a latex to a relatively uniform concentration throughout its thickness,



whereby said paper strip is made resistant to abrasion and scuffing throughout its entire thickness.

5,613,336

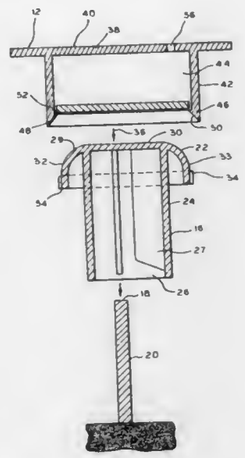
PROTECTIVE ASSEMBLY FOR REINFORCEMENT BARS

Gary Workman, Lombard, Ill., assignor to Deslauries, Inc., Bellwood, Ill.

Continuation-in-part of Ser. No. 124,273, Sep. 20, 1993, Pat. No. 5,447,290. This application Dec. 5, 1994, Ser. No. 349,250

Int. Cl.[6] E04C *5/16*

U.S. Cl. 52—301 **20 Claims**



1. A protective assembly upon an exposed end of a reinforcing bar, said protective assembly comprising:

a cover;

an insert that is moveable relative to the cover; and

first means cooperating between the cover and an exposed end of a reinforcing bar for maintaining the cover in an operative position,

wherein the first cooperating means includes a protective cap secured to a reinforcing bar to overlie a free end thereof and means cooperating between the cover and the protective cap on the reinforcing bar for maintaining the cover in the operative position wherein the insert is captive between the cover and the protective cap.

5,613,337

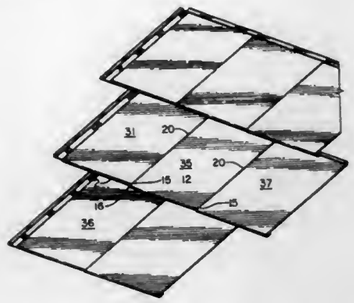
METAL SHINGLE WITH GUTTER AND INTERLOCKING EDGES

David J. Plath, Edwards, and James M. Buster, Eagle Vail, both of Colo., assignors to Vail Metal Systems, LLC, Vail, Colo.

Continuation of Ser. No. 218,286, Mar. 25, 1994, Pat. No. 5,440,856. This application May 24, 1995, Ser. No. 449,779

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—533 **15 Claims**



1. A substantially planar roofing shingle having a top surface and a bottom surface, and further comprising:

at least one side edge of the shingle folded over the top surface of the roofing shingle to form one side wall of a gutter with the side wall extending from an upper edge to a lower edge of the shingle, said upper edge being folded-over toward the top surface, and said lower edge being folded under toward the bottom surface in a manner that is adapted to engage a folded-over upper edge of a lower adjacent shingle;

an S shaped fold, spaced apart from the folded over side edge fold, to form another gutter side wall extending from the upper edge to the lower edge of the shingle, a fold of said S shaped fold adapted to receive a side edge of a lateral adjacent shingle;

the gutter side walls formed by said S shaped fold and said folded over side edge, and the top surface of the roofing shingle between the S shaped fold and the folded over side edge forming the gutter, said gutter for catching water migrating around the S shaped fold and under a laterally adjacent shingle, the gutter adapted to guide the water caught by the gutter to a top surface of a lower adjacent shingle.

5,613,338

CONSTRUCTION ARRANGEMENT INCLUDING MULTIPLE PANELS PROVIDED WITH INTERLOCKING EDGES AND RELATED METHODS

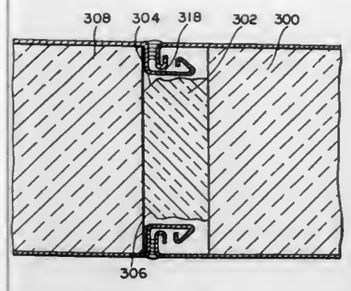
Chris Esposito, 5005 Veterans Memorial Hwy., Holbrook, N.Y. 11741

Continuation-in-part of Ser. No. 204,731, Mar. 2, 1994, Pat. No. 5,404,686, which is a continuation of Ser. No. 881,483, May 11, 1992, Pat. No. 5,363,606. This application Jan. 3, 1995, Ser. No. 367,588

Int. Cl.[6] E04B *2/72*; **E04C** *2/34*

U.S. Cl. 52—588.1 **3 Claims**

1. A panel construction comprising a plurality of panels, each of said panels including spaced skins and a filler core between the skins, said panels being arranged in edge engaging relationship in parallel and in a substantially common plane, said panels including longitudinal edges along which said edge engaging relationship is effected, said skins including portions extending beyond the associated core thereof to form interengageable members holding adjacent panels together, said adjacent panels having said longitudinal edges in facing relation, the interengageable members being engaged with one another at the facing edges of the adjacent panels; the interengageable members at one edge of each panel



defining a receptacle therebetween, the core of one of the adjacent panels including a tongue which penetrates into the receptacle of the other of the adjacent panels without penetrating into said other of the adjacent panels, the interengageable members at the facing edges of each panel including extremities formed as resilient cantilever arms positioned outside of the associated receptacle and parallel cantilever sections supporting said cantilever arms, said cantilever arms including terminal portions shaped as hooks, the interengageable members on said one of the adjacent panels including hooked extremities facing towards each other and adapted to ride up and beyond said cantilever arms upon engagement of the adjacent panels, at least one of the said hooked extremities bearing against the associated cantilever section in load bearing relation, and a seal positioned between the interengageable members of adjacent panels, said tongue being chamfered to permit a pivoting of said adjacent panels relative to each other, said tongue being separate from but cemented to the core of said one of the adjacent panels.

5,613,339

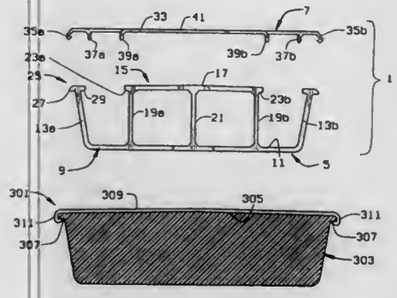
DECK PLANK AND COVER

Eugene B. Pollock, Assumption, Ill., assignor to Heritage Vinyl Products, Inc., Macon, Miss.

Filed Dec. 1, 1993, Ser. No. 160,436

Int. Cl.[6] B63B *35/44*; **E04C** *3/00*

U.S. Cl. 52—731.1 **26 Claims**



1. A deck plank comprising:

a plank member adapted to be secured to and to span between two or more support members, said plank member being an elongate channel-shaped member having a bottom web adapted to be supported by said support members and having a side flange at each side of said bottom web, said plank member having means between said side flanges and being integral with said bottom web and extending upwardly therefrom for stiffening said plank member such that when said plank member is supported on said support members said plank member will support a person walking thereon, said stiffening means comprising at least one hollow box section; and

a cover removably secured to said plank member so as to be supported by said stiffening means of said plank member with said cover extending along substantially the full length of its respective plank member and said cover constituting an upper surface of said deck plank upon which a person may walk.

5,613,340

REINFORCEMENT MEMBER FOR THE REINFORCEMENT OF CONCRETE STRUCTURES

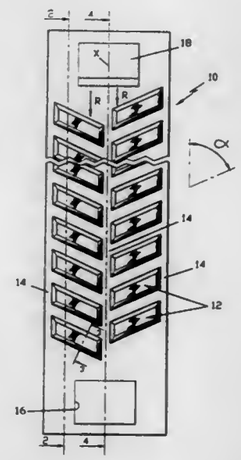
Geoffroy Bollaert, Paris, France; Vincent Gillet, Washington, D.C.; Georges J. M. Guerin, la Celle St Cloud, and Alain de Bon, Saint Germain en Laye, both of France, assignors to Sollac, Puteaux, France

Filed Apr. 19, 1994, Ser. No. 229,679

Claims priority, application France, Apr. 20, 1993, 93 04647

Int. Cl.[6] E04C *3/30*

U.S. Cl. 52—740.4 **15 Claims**



1. Reinforcement member for the reinforcement of concrete structures comprising a reelable steel tape for being incorporated into the concrete, wherein opposite faces of the steel tape each have ribs located thereon arranged in at least one longitudinal row, said ribs being substantially parallel to each other and inclined at an angle of inclination α in relation to the longitudinal direction of the tape, the at least one row comprising a first and second row and wherein each face of the steel tape comprises at least two rows of said ribs arranged side by side along the width of the tape, the ribs of said two rows having opposite angles of inclination equal to said angle of inclination α and the two rows of ribs being spaced apart from one another along a central longitudinal axis of the tape.

5,613,341

MODULAR STAIRCASE SYSTEM

Charles T. Skillern, 3150 Lanier Dr., Atlanta, Ga. 30319

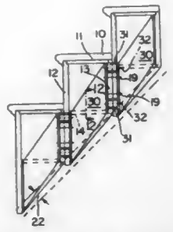
Continuation of Ser. No. 165,359, Dec. 10, 1993, Pat. No. 5,502,933. This application Aug. 22, 1995, Ser. No. 517,988

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—741.2 **5 Claims**

1. A method of building a staircase comprising:

molding a supply of one-piece stair modules, each said module having a front wall and a back wall; and



attaching a required number of one-piece stair modules together to form a staircase by inserting at least one connector through a front wall of a first module and a rear wall of a second module.

5,613,342

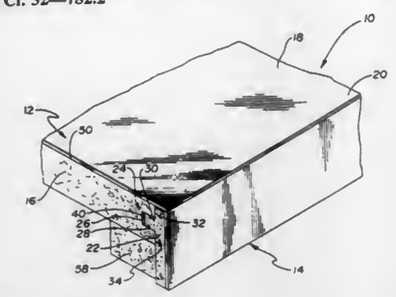
FURNITURE EDGE CONSTRUCTION

Thomas J. Nelson, Fridley, Minn., assignor to Wilsonart International Inc., Temple, Tex.

Division of Ser. No. 889,115, May 26, 1992, Pat. No. 5,469,685, which is a division of Ser. No. 758,709, Sep. 6, 1991, Pat. No. 5,157,891, which is a continuation of Ser. No. 536,427, Jun. 11, 1990, abandoned, which is a division of Ser. No. 104,737, Oct. 1, 1987, Pat. No. 4,996,817, which is a continuation-in-part of Ser. No. 33,310, Mar. 31, 1987, abandoned. This application Aug. 14, 1995, Ser. No. 514,521

Int. Cl.[6] E04C *2/38*

U.S. Cl. 52—782.2 **7 Claims**



1. An article, comprising:

a rib extending along a joining edge of the article for joining the article with a channel extending along an edge of a work piece, wherein the article and the rib on the article have parallel upper and lower sides, and

a glue channel means adjacent the upper side of the rib for the collection, upon the joining of the rib with a channel extending along an edge of a work piece, of glue placed at the intersection of the upper side of the rib with the joining edge of the article extending between the upper sides of the article and the rib on the article.

5,613,343

MARKING APPARATUS FOR ELECTRONIC COMPONENTS

Keiichi Inoue, and Hiroyuki Kanitani, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

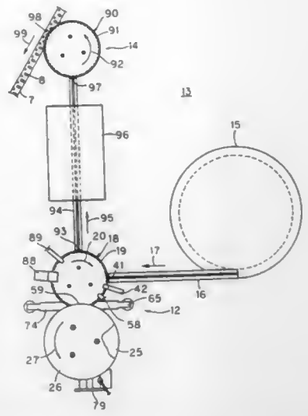
Filed Jun. 14, 1994, Ser. No. 259,549

Claims priority, application Japan, Jun. 16, 1993, 5-144991; Sep. 2, 1993, 5-218681; Oct. 7, 1993, 5-251753

Int. Cl.[6] B65B *15/04*

U.S. Cl. 53—111 R **5 Claims**

1. An apparatus for manufacturing a taped electronic component series, comprising:



an intermittently rotated discoidal first rotor having a plurality of first holding portions being distributed along its peripheral edge portion for holding electronic components one by one therein respectively;

supply means for successively supplying a plurality of said electronic components into said first holding portions respectively at a position on a moving path of said first holding portions being defined by rotation of said first rotor;

marking means for marking respective said electronic components at a marking position on said moving path of said first holding portions, said marking means comprising a discoidal printing plate having a plurality of printing surfaces being distributed along its peripheral edge portion for marking said electronic components respectively, said printing plate being intermittently rotated in synchronization with said first rotor thereby successively locating said plurality of printing surfaces at said marking position, said marking means further comprising displacing means for displacing said electronic components toward said printing surfaces in said marking position;

an intermittently rotated discoidal second rotor, being arranged on a position different from that of said first rotor, having a plurality of second holding portions being distributed along its peripheral edge portion for holding said electronic components one by one therein respectively;

carriage/supply means for carrying said electronic components from said first holding portions and successively supplying said plurality of electronic components into said second holding portions respectively; and

means for successively supplying said plurality of electronic components from said second holding portions toward a tape for holding said plurality of electronic components while distributing the same along its longitudinal direction.

5,613,344

DEVICE FOR THE FORMATION OF TUBULAR OVERWRAPPINGS IN HEAT-SEALABLE MATERIAL

Roberto Osti, Zola Predosa, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D. S.p.A., Bologna, Italy

Division of Ser. No. 155,164, Nov. 19, 1993, Pat. No. 5,533,323. This application Jun. 6, 1995, Ser. No. 471,090

Claims priority, application Italy, Nov. 20, 1992, BO92A0414

Int. Cl.[6] B65B *11/30;19/22;49/00*

U.S. Cl. 53—234 **16 Claims**

1. A device for forming heat-sealable tubular overwrappings around commodities, comprising:

an overwrapping wheel having a plurality of circumferentially spaced peripheral pockets each for containing a respective commodity, said wheel being mounted rotatably about its own axis in such a way as to move the commodities in a given feed direction along a conveying path between an infeed station and an outfeed station;

feed means for supplying the commodities singly and in succession each together with a respective overwrapping sheet to the infeed station;

pushing means for directing each commodity into a respective pocket in such a manner so as to cause the sheet to fold around the commodity into a "U" formation with a first and a second longitudinal flap thereof remaining projecting laterally from the commodity and externally of the pocket, the first flap following the second flap in the feed direction;

first folding means for folding the first longitudinal flap of each successive sheet against the respective commodity and capable of movement together with the respective commodity and said wheel between an at-rest position and a folding position while maintaining the first longitudinal flap folded against the respective commodity;

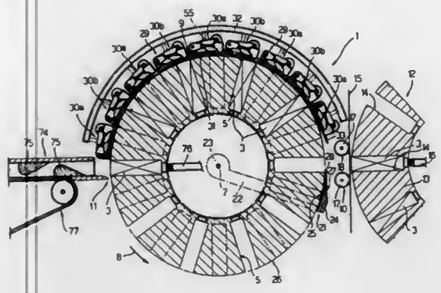
second folding means disposed at a position immediately beyond the folding position along the conveying path for folding the second flap of each successive sheet over the corresponding first flap;

a first heat-seal station positioned along the conveying path at a position beyond the folding position;

pressing means positioned at the first heat-seal station capable of movement toward the wheel in such a way as to restrain the second flap over the first flap; and

first heat-sealing means positioned at the first heat-seal station for securing the restrained second flap to the first flap in such a way as to form a tubular overwrapping;

said first folding means continuing movement together with the wheel to maintain the first longitudinal flap folded against the respective commodity as it moves from the folding position to the first heat-seal station.



5,613,345

WASTE DISPOSING SYSTEM AND APPARATUS

Yoshiko Saito, Tokyo; Teruyuki Fujita, Ishikawa, and Tomoo Iijima, Tokyo, all of Japan, assignors to Cattleya Music Co., Ltd., Tokyo; Fuji Machinery Co., Ltd., Ishikawa-ken, and North Corporation, Tokyo, all of Japan

Division of Ser. No. 226,627, Apr. 12, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 562,489

Claims priority, application Japan, Dec. 29, 1993, 5-075790 U; Dec. 29, 1993, 5-353673

Int. Cl.[6] B65B *67/02;67/04;7/06;7/16*

U.S. Cl. 53—266.1 **13 Claims**

1. A waste disposing apparatus using inverted conical frustum cup-like containers of paper or synthetic resin with brims having an adhesive applied thereto, said apparatus comprising

a container supplying means for holding a stack of containers having a top and a bottom, and formed by one sliding over another, and releasing, in response to a request, one after another, from the stack of containers, permitting the falling of a sequential container that has descended down to the bottom of the stack for its turn;

a standby means for holding the container with the open side thereof up, thereby permitting the filling of waste into container on standby;

a sealing means for pressing the top circumference of the container which is filled with waste to seal the container; and

a carrier means for transporting containers from the container supplying means to the standby means, and from the standby means to the sealing means.

5,613,346

APPARATUS FOR REMOVING PACKING MATERIAL FROM PACKED ARTICLE

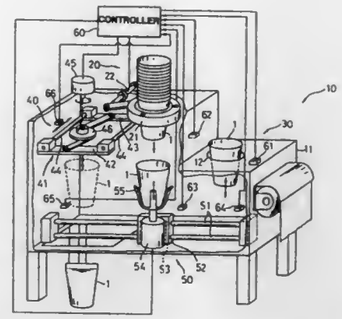
Takahiro Yamamichi, and Hiroshi Shibata, both of Tokyo-to, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo-to, Japan

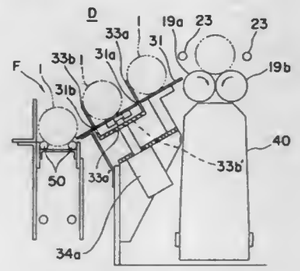
Continuation of Ser. No. 229,745, Apr. 19, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 635,781

Claims priority, application Japan, Jun. 21, 1993, 5-149253

Int. Cl.[6] B65B *35/30;35/50;43/26;* **B67B** *7/16*

U.S. Cl. 53—381.1 **20 Claims**





1. A packing material removal apparatus for removing a packing material from a package including a plurality of combined articles therein and a sheet-like packing material for packing the combined articles and supplying the combined articles to a next process by a supplying unit, the apparatus comprising:

a cutting unit having a suction opening for sucking the packing material to form a slack section having a space between the packing material and the combined articles, and a cutter for cutting the slack section;

a removal unit having a pair of removal rollers which rotate in opposite directions to each other while the package cut in the cutting unit is put on the removal rollers to remove the packing material from the package by biting the packing material between the removal rollers; and

a dropping unit having a transferring board provided between the removal unit and the supplying unit in a state wherein the combined articles can be moved on the transferring board, at least one pair of shutter members, provided parallel to the removal rollers and projected from a lower side of the trans-

ferring board through openings formed in the transferring board, which have support portions respectively formed by bending lower portions thereof and disposed under the transferring board so that an edge of the bent lower portions face each other, wherein the support portions are formed so that said edges which face each other have a concave-convex form for fitting or mating with each other, at least one pair of cylinder members for moving the shutter members up and down with respect to the transferring board provided parallel to the shutter members under the support portions, whose operating shafts are respectively connected to the convex portions of the support portions so as to alternately move upwardly and downwardly with respect to each other to stop the combined articles on the transferring board and to release the combined articles to the supplying unit, at least one pair of guide shafts provided in alignment with the operating shafts of the cylinder members and respectively connected to the convex portions of the support portions of the shutter members so that the shutter members are moved up and down in a perpendicular direction to the transferring board, and side boards provided for restricting both ends of the combined articles on the transferring board.

5,613,347

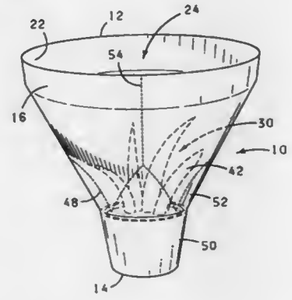
METHOD FOR FORMING A DECORATIVE COVER ABOUT A FLOWER POT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, Pat. No. 5,572,851, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application Jun. 2, 1995, Ser. No. 460,731

Int. Cl.[6] A01G *9/02*; **B65B** *25/02*; **B65D** *85/52*

U.S. Cl. 53—412 **31 Claims**



1. A method of wrapping a potted plant in a decorative cover, comprising:

providing a potted plant comprising a floral grouping disposed in a pot means, the pot means having a lower end, an upper rim and an outer peripheral surface;

providing a sleeve comprising:

a base having an upper end, a lower end, an inner peripheral surface and an outer peripheral surface, the base having a flattened state from which the base is openable to an opened position wherein the inner surface of the base defines and encompasses an inner retaining space, an opening being formed through the upper end of the base in communication with the inner retaining space, the base sized to fit the outer peripheral surface of the pot means and having a portion in the lower end inwardly folded to form a gusset which is unfoldable for forming a closed bottom of the base in the opened position of the base, and

an upper portion connected to the upper end of the base along a non-linear line of perforations and having means in the upper portion for supporting the sleeve from wicket means;

separating the base of the sleeve from the upper portion by tearing along the line of perforations forming a non-linear edge along the upper end of the base;

opening the base into the opened position thereby exposing the inner retaining space of the base thereby providing a base sized to fit the pot means and wherein substantially no folds are formed in the base when in the opened position; and

disposing the potted plant in the inner retaining space of the base of the sleeve with the lower end of the pot means positioned upon the closed bottom of the base and with the base covering at least a portion of the outer peripheral surface of the pot means to provide the decorative cover for the potted plant.

5,613,348

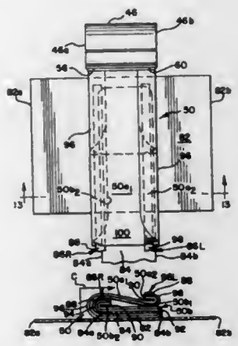
METHOD AND APPARATUS FOR PACKING AN INFLATABLE AIR BAG IN A HOUSING OF AN AIR BAG MODULE ASSEMBLY

Larry F. Lunt, and Michael J. Daines, both of Brigham, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 31, 1995, Ser. No. 412,348

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—429 **11 Claims**



1. A method of packing an inflatable air bag restraint cushion into a housing of an air bag module assembly for a motor vehicle occupant restraint system comprising the steps of:

providing an air bag cushion comprising joined together front panel and back panel, said back panel including an inlet chute positioned between a smaller back panel portion and a larger back panel portion;

securing said inlet chute of said air bag cushion into an open end of said housing positioned between opposite end walls of said housing with said back panel and said front panel of said air bag cushion extending outwardly of said open end;

folding said larger portion of said back panel in overlaying position over said smaller portion of said back panel on a substantially flat supporting surface with said front panel folded between said back panel portions;

folding a first outer side edge portion of said air bag transversely to overlay a central portion of said back panel and folding a second opposite outer side edge portion of said air bag transversely to overlay a central portion of said back panel as well as said folded first outer side edge portion, thereby forming fold lines along opposite outer side edges of said air bag projecting outwardly of said open end and positioned inside said opposite end walls of said housing;

rolling up said air bag after folding about a roll axis toward said open end of said housing; and

moving said air bag after folding and rolling into said open end of said housing.

5,613,349

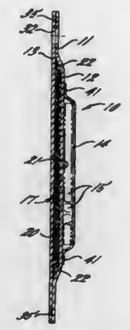
METHOD OF MAKING PRODUCT PACKAGES

Gerald L. Brown, Charlotte, N.C., assignor to ELR, Inc., Charlotte, N.C.

Filed Aug. 28, 1995, Ser. No. 519,994

Int. Cl.[6] B65B *47/00*

U.S. Cl. 53—453 **20 Claims**



14. A process of manufacturing a multilayer backing member for a product package having a front layer to which a plastic product enclosure may be heat-sealed, and a removable panel in a back layer of the backing member for enclosing ancillary materials, the process comprising the steps of:

printing on a blank sheet of backing member material a plurality of patterns to be displayed on individual backing members thereby defining a plurality of backing members each having a printed surface with at least a front layer portion and a back layer portion, and having an unprinted surface opposite thereto, and with the front layer portions and the back layer portions being disposed in parallel columns respectively on the blank sheet;

applying a heat-resistant coating to each of the columns of the back layer portions of the backing members;

applying a heat-seal coating to each of the columns of the front layer portions of the backing members;

cutting the sheet to form a plurality of backing member blanks, each including a front layer portion and a back layer portion which are interconnected along at least one fold line, with the cutting step also including forming a pattern of perforations in the back layer portion of each of the blanks, thereby defining the removable panel; and further, with regard to each of the blanks individually;

placing the ancillary materials against the surface opposite the printed surface of one of the front and back layer portions of the backing member blank;

applying adhesive to the surface opposite the printed surface of at least one of the front and back layer portions of the backing member blank; and, folding the front and back layer portions against each other along said one fold line so as to fold the adhesive between the front and back layer portions and thereby enclose the ancillary materials and form the multilayer backing member.

5,613,350

METHOD FOR PACKAGING AND HANDLING FRAGILE DICING BLADE

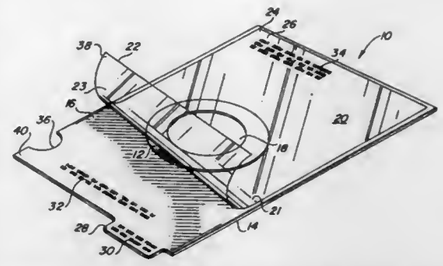
John N. Boucher, 110 Coveridge La., Longwood, Fla. 32779, and David E. Bajune, 6800 W. State Rd. 46, Sanford, Fla. 32773

Continuation-in-part of Ser. No. 996,612, Dec. 24, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 425,105

Int. Cl.[6] B65B *7/00*

U.S. Cl. 53—468 **25 Claims**

1. A method for storing and handling a fragile dicing blade useful in dicing semiconductor devices, the method comprising the steps of:



providing a substantially flat card having a flat smooth surface sufficiently smooth for permitting a fragile blade to be slidably moved across the surface, the surface sized to receive the fragile dicing blade;

placing the fragile dicing blade onto the smooth surface; and

placing a flexible plasticized film onto the smooth surface thus covering the blade, the film having a first outer surface and a second contact surface, the film second contact surface bonding to the card surface through a molecular bonding sufficient for holding the fragile blade between the contact surface and the card surface.

5,613,351

SEPARATING APPARATUS FOR SEPARATING PACKAGED PRODUCTS IN A PACKAGING APPARATUS

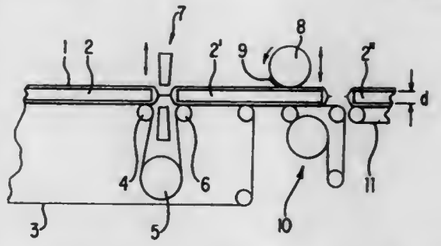
Ludovicus W. A. Hamers, Westzaan, and Roberto Tuyn, Zaandam, both of Netherlands, assignors to Buhrs-Zaandam B.V., Zaandam, Netherlands

Filed Jun. 23, 1995, Ser. No. 494,298

Claims priority, application Netherlands, Jun. 27, 1994, 9401064

Int. Cl.[6] B65B *9/20;61/06;61/12*

U.S. Cl. 53—55 **5 Claims**



1. A packaging apparatus comprising packaging material feed means for feeding a continuous strip of packaging material, sleeve-forming means for folding the continuous strip of packaging material into a sleeve, product feed means for feeding the products to be packaged into the sleeve, longitudinal connection means for interconnecting, by means of a longitudinal connection, the longitudinal sides of the material strip formed into a sleeve, cross connection means for interconnecting, by means of a cross connection, the upper and the lower layer of the sleeve, and a separating apparatus for separating the products from each other at the location of a formed cross connection to obtain separately packaged products, the apparatus comprising at least a first conveyor for feeding the products received in the sleeve to the separating apparatus, the separating apparatus being characterized by a second conveyor (**13**) downstream of the cross connection means (**7**), said second conveyor (**13**) engaging only one side of the products (**2'**), the second conveyor (**13**) comprising carrying means (**14**) for periodically accelerating a packaged product (**2'**) relative to a following product (**2**), the arrangement being such that the packaging sleeve (**1**) is severed at the location of the cross connection to obtain a separately packaged product (**2"**).

5,613,352

ELECTRONIC COMBINE HARVESTING HEAD STATUS DISPLAY SYSTEM

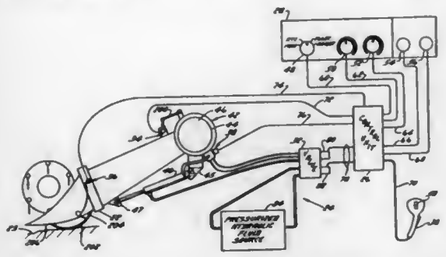
Dale W. Panoushek, Orion, Ill., and Jeffery S. Milender, Valley City, N. Dak., assignors to Case Corporation, Racine, Wis.

Continuation of Ser. No. 265,675, Jun. 24, 1994, Pat. No. 5,465,560. This application Nov. 8, 1995, Ser. No. 555,295

Int. Cl.[6] A01D *34/86;75/28*

U.S. Cl. 56—10.2 E

22 Claims



1. An agricultural vehicle for operation on a surface, the vehicle comprising:

a support structure for supporting the components of the vehicle;

an operator cab supported by the support structure and including an interior for housing an operator of the vehicle;

an implement movably supported by the support structure;

an implement positioner coupled to the structure and the implement to move the implement relative to the vehicle in response to electric control signals;

a transducer coupled to the implement to produce location signals representative of a location of the implement relative to a selected reference point;

an electronic display located for viewing from within the interior of the cab; and

a control circuit coupled to the implement positioner, the transducer, and the electronic display, and configured to monitor the location signals, apply display signals representative of one of the location signals to the display, and apply control signals to the implement positioner, the display displaying human-recognizable indicia representative of the location of the implement relative to the selected reference point in response to display signals.

5,613,353

MULCHING ATTACHMENT FOR LAWNMOWERS

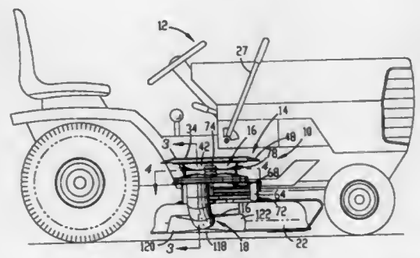
Jack L. Kugler, 746 NE. 43rd St., Topeka, Kans. 66617

Filed May 9, 1995, Ser. No. 437,821

Int. Cl.[6] A01D *34/70*

U.S. Cl. 56—13.8

16 Claims



1. A mulching attachment for lawnmowers for comminuting grass clippings cut by the lawnmower, said lawnmower including a cutting element rotatable about a first upright axis, a downwardly open mower deck overlying said cutting element and having a lateral discharge opening therein, and a power source drivingly connected to said cutting element, said mulching attachment comprising:

a mulching impeller for comminuting the grass clippings, said impeller being rotatable about a second upright axis;

said mulching impeller including a hub positioned along said second upright axis, a first row of circumferentially spaced flexible tines extending radially from said hub, and at least one additional, vertically spaced row of circumferentially spaced flexible tines extending radially from said hub;

means for operably coupling the mulching impeller to the power source of the lawnmower:

a housing defining a mulching chamber receiving said impeller, said bousing including an outlet leading from said chamber and a bottom wall having inlet leading to said chamber:

structure for mounting said housing above the mower deck such that said second upright axis of the impeller is laterally offset from said first upright axis of the cutting element; and

a duct connectable between said discharge opening of the lawnmower and said inlet of the housing for transferring the grass clippings from the mower deck to the mulching chamber.

5,613,354

CLEARING APPARATUS AND CARRIAGE FOR CLEARING APPARATUS

Thomas E. Foster, 1800 Loop 360 South, Austin, Tex. 78746

Filed Sep. 13, 1995, Ser. No. 527,448

Int. Cl.[6] A01D *67/00*

U.S. Cl. 56—16.7

51 Claims

1. A clearing apparatus comprising a clearing device for use in clearing operations, a carriage to which the clearing device is mounted for the carriage to support the clearing device during use, and a handle for use in guiding the apparatus during use;

the clearing device comprising an elongated support member, a clearing head mounted at a leading end of the support member, a power unit mounted at a trailing end of the support member, and a drive connection for connecting the power unit to the clearing head;

the carriage comprising a frame, a single support wheel having a wheel axis about which the support wheel is rotatably mounted on the frame to support the frame on a support surface during use, and a pivot mount mounting the clearing device to the frame such that the clearing apparatus can be supported proximate its center of gravity on the support wheel during use;

the pivot mount having a pivot axis extending generally parallel to the wheel axis, and the clearing device being pivotally displaceable about the pivot axis to allow the clearing device and frame to be pivotally displaced about the wheel axis between an operative position where the clearing apparatus is supported proximate its center of gravity on the support wheel during use with the pivot axis above the wheel axis, and a compact collapsed inoperative position in which the pivot axis has been lowered relatively to the wheel axis until the pivot axis is below the wheel axis and the clearing head and power unit are resting on the support surface on which the support wheel is supported; and

the handle being positioned for an operator grasping the handle for guiding the apparatus during use, to be positioned to one side of the support wheel and at least partially in line with part of an axial projection of the support wheel during normal use.

5,613,355

METHOD FOR REWINDING A SPINNING CAKE IN A POT SPINNING APPARATUS

Karl Koltze, Mönchengladbach; Volker Roland, Weissbach, and Peter Voidel, Chemnitz, all of Germany, assignors to Schlafhorst AG & Co., Moenchengladbach, Germany

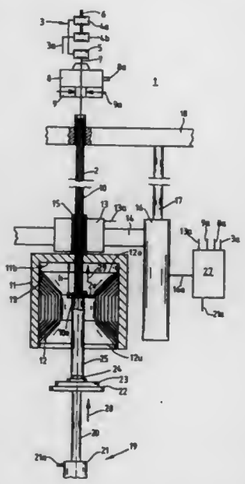
Filed Jul. 31, 1995, Ser. No. 509,509

Claims priority, application Germany, Jul. 29, 1994, 44 26 897.1

Int. Cl.[6] D01H *5/28;9/14*

U.S. Cl. 57—312

6 Claims



1. In a method for rewinding a spinning cake from a spinning pot of a pot spinning apparatus onto a rewinding body, which includes drawing a sliver to be spun in a drafting configuration, guiding the sliver in a pneumatic piecing aid, and depositing the sliver with a traversing yarn guide onto an inner wall surface of the rotating spinning pot as the spinning cake while maintaining a requisite rotation for spinning a yarn from the sliver, the improvement which comprises:

moving the traversing yarn guide toward the middle of the spinning cake in a last stroke being shorter than a next-to-last stroke of the yarn guide toward the middle of the spinning cake, once a predetermined size of the spinning cake is reached, before initiating rewinding of the spinning cake onto the rewinding body;

stopping a delivery of the sliver from the drafting configuration once a reversing point of the stroke is reached;

introducing the rewinding body into the spinning pot and transferring a piece of the yarn extending from the traversing yarn guide to the spinning cake to a tube tip of the rewinding body;

raising the rewinding body into a rewinding position; and

rewinding the yarn deposited on the spinning cake in the last yarn guide stroke onto the rewinding body, and covering the yarn of the last yarn guide stroke with subsequently wound on yarn layers.

5,613,356

METHOD OF COOLING THERMALLY LOADED COMPONENTS OF A GAS TURBINE GROUP

Hans-Ulrich Frutschi, Riniken, Switzerland, assignor to ABB Management AG, Baden, Switzerland

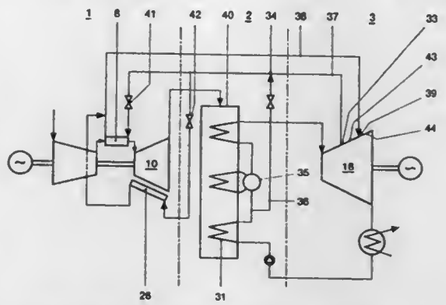
Filed Mar. 2, 1995, Ser. No. 397,498

Claims priority, application Germany, Mar. 21, 1994, 44 09 567.8

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.02

4 Claims



1. A method for cooling thermally loaded components of a gas turbine apparatus in a combined gas turbine and waste heat steam turbine apparatus, the gas turbine apparatus including at least a gas turbine, a compressor and a combustion chamber, and the waste heat steam turbine apparatus including at least a waste heat steam generator and a steam turbine, the method comprising the steps of:

extracting a quantity of steam from the steam turbine at a location selected so that the steam has a predetermined pressure;

dividing the extracted steam into a first branch and a second branch; directing the extracted steam in the first branch to the gas turbine and through the second branch to the combustion chamber for cooling the gas turbine and combustion chamber, wherein the steam is heated; and

returning the heated steam to working steam flow of the steam turbine at a location having a lower steam pressure than the predetermined pressure at the location of the extracting step.

5,613,357

STAR-SHAPED SINGLE STAGE LOW EMISSION COMBUSTOR SYSTEM

R. Jan Mowill, OPRA B.V. Opaalstraat 60-P.O. Box 838, 7550 AV Hengelo, Netherlands

Continuation of Ser. No. 394,037, Feb. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 376,360, Jan. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 348,829, Nov. 29, 1994, which is a continuation-in-part of Ser. No. 264,844, Jul. 5, 1994, which is a continuation-in-part of Ser. No. 261,256, Jun. 14, 1994, Pat. No. 5,481,866, which is a continuation of Ser. No. 86,833, Jul. 7, 1993, abandoned. This application May 29, 1996, Ser. No. 654,936

Int. Cl.[6] F02C *9/50*

U.S. Cl. 60—39.23

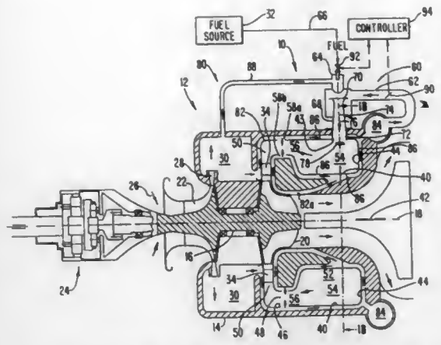
35 Claims

1. A combustor system for operation with a source of compressed air and a source of fuel in a gas turbine, the combustor system comprising:

a combustion chamber; and

at least one premixer located externally of said combustion chamber for premixing fuel and a first portion of the compressed air from the respective sources for delivery of a fuel/air mixture to the combustion chamber, the premixer further comprising:

a venturi having an inlet and an axis, said venturi inlet being operatively connected to said source of compressed air to define a compressed air flow path into said venturi inlet, the



portion of the flow-path immediately upstream of said inlet comprising an inlet region, said venturi also having an outlet flow-connected to said combustion chamber, the flow area of said venturi outlet being selected to provide minimum outlet velocities greater than the flame propagation speed of the fuel/air mixture; and

a fuel nozzle operatively connected to the fuel source and having an exit positioned to deliver a spray of fuel into said venturi inlet region,

wherein said first compressed air portion constitutes essentially all of the compressed air that undergoes combustion with the fuel in said combustion chamber, and

wherein said combustion chamber is cooled by another portion of the compressed air by convection cooling without film cooling.

5,613,358

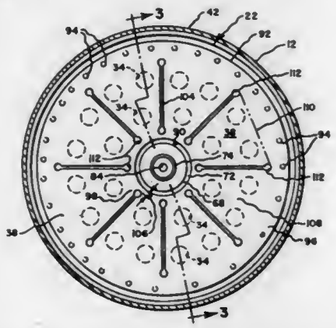
REDUCED COST MEMBRANE SEAL ASSEMBLY FOR PULSED ROCKET MOTOR

Robert G. Humiston, Ogden; Joseph L. Ralston, North Ogden, and Brent R. Marchant, Ogden, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Sep. 26, 1990, Ser. No. 588,370

Int. Cl.[6] F02K *9/26;9/38*

U.S. Cl. 60—250 **31 Claims**



1. A rocket motor comprising at least two combustion chambers each having propellant material therein, structural means separating said combustion chambers and having a plurality of aperture means therein for providing flow communication between said combustion chambers, a membrane seal means disposed in one of said combustion chambers for covering said aperture means and precluding flow communication between said combustion chambers when a substantially higher pressure is present in said one chamber than in the other chamber and for allowing flow communication between said chambers when a substantially higher pressure is present in said other chamber than in said one chamber, said membrane seal means comprises a membrane having a marginal portion which is attached to said structural means, said membrane characterized by a plurality of slits formed entirely through the thickness of said membrane and which extend to and terminate at said marginal portion to define a plurality of sectors integral with and extending from said marginal portion to cover said aperture means whereby said membrane may bend for movement hingedly of said sectors to uncover said aperture means when a pressure in said other chamber is substantially higher than a pressure in said one chamber to allow flow communication between said combustion chambers, and insulation means covering said membrane for precluding flow communication between said combustion chambers when a pressure in said one chamber is higher than a pressure in said other chamber.

5,613,359

METHOD AND APPARATUS FOR REDUCING HYDROCARBON EMISSIONS FOR AN INTERNAL COMBUSTION ENGINE

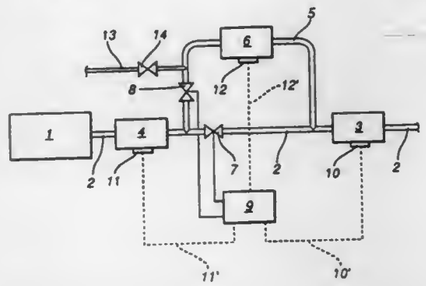
Wolfgang Zahn, Ludwigsburg; Gunter Loose, Remseck, and Erwin Strohmer, Bergien, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jan. 4, 1995, Ser. No. 368,498

Claims priority, application Germany, May 1, 1994, 44 00 202.5

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **12 Claims**



1. A method for reducing hydrocarbon emissions during a cold-starting phase of an internal combustion engine with an exhaust system including an exhaust conduit for discharging the exhaust gas from said engine and a first catalytic converter arranged in the exhaust system close to the engine and an adsorber with a sorbent which adsorbs hydrocarbons below a desorption temperature and desorbs them above the desorption temperature, arranged downstream of said first catalytic converter in a bypass conduit to said exhaust conduit, said exhaust system having a second catalytic converter arranged in said exhaust conduit downstream of said bypass conduit and means for controlling the exhaust gas flow through said bypass conduit and said exhaust conduit, the steps comprising, below an operating temperature of said first catalytic converter and below the desorption temperature of said adsorber, conducting the exhaust gas through said bypass conduit and said adsorber, below the operation temperature of said first catalytic converter and above the desorption temperature of said adsorber, closing the bypass conduit, above the operation temperature of said first catalytic converter and above the desorption temperature of said adsorber passing at least part of the exhaust gas through the bypass conduit and the adsorber for the desorption of the hydrocarbons, and closing said bypass conduit when the operating temperature of said first catalytic converter has been reached, at least until the operating temperature of said second catalytic converter has been reached.

5,613,360

WARMING UP CONTROL DEVICE FOR A CATALYTIC CONVERTER FOR AN INTERNAL COMBUSTION ENGINE

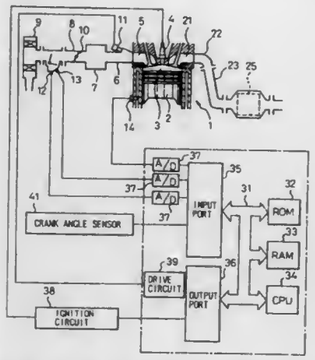
Akira Iwai; Mamoru Yoshioka, both of Susono, and Yasuhito Tsutsumi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 8, 1995, Ser. No. 385,436

Claims priority, application Japan, Feb. 18, 1994, 6-021120

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—284 **8 Claims**



1. A warming up control device for controlling a warming up operation of a catalytic converter disposed in an exhaust gas passage of an internal combustion engine comprising:

a heat amount estimating means for calculating an amount of heat transferred to the catalytic converter from an exhaust gas, said heat amount estimating means estimates said amount of heat based on an amount of the fuel fed to the engine and an ignition timing of the engine;

an total heat amount calculating means for calculating an accumulated value of the heat amount estimated by said heat amount estimating means after the engine starts; and,

a determining means for determining that the catalytic converter has been warmed up when said total value of the heat amount reaches a predetermined set value.

5,613,361

HYDRAULIC CIRCUIT FOR SUPPLYING A PLURALITY OF SERIES-OPERATED OF A HYDRAULICALLY CONTROLLED INSTALLATION

Jorg Dantlgraber, Lohr-Sackenbach; Lothar Schulz, Bischbrunn, and Reiner Puschel, Lohr/Main, all of Germany, assignors to Mannesmann Rexroth GmbH, Germany

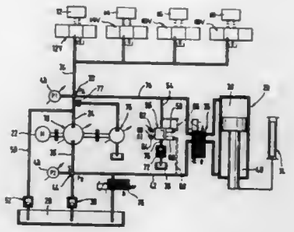
Continuation of Ser. No. 943,242, Sep. 10, 1992, abandoned. This application Dec. 9, 1994, Ser. No. 352,449

Claims priority, application Germany, Sep. 11, 1991, 41 30 219.2

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—427 **37 Claims**

13. A hydraulic circuit for supplying a plurality of consumers, operated sequentially, of a hydraulically controlled installation having a main pump with feed-flow and pressure control, characterized in that a portion of the consumers are operated by means of the main pump in an open circuit and at least one selected consumer is operated by means of the main pump in a semi-closed or closed circuit, wherein the main pump is a pump which can be rotated beyond zero and has an adjustable displacement volume, and that its feed direction is reversed for reversing at the at least one selected consumer, wherein the pump aspirates hydraulic fluid from a reservoir via respectively one back-pressure valve and that to the back-pressure valve, which is active in the open circuit in the normal feed direction of the main pump when the other



sequentially-operated consumers are operated, a 2/2-way valve is parallel connected each time an appropriate check valve, assigned to the respective sequentially-operated consumer, is opened.

5,613,362

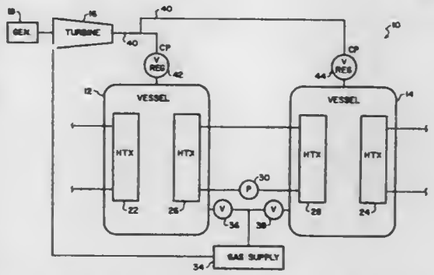
APPARATUS AND METHOD FOR ENERGY CONVERSION USING GAS HYDRATES

Billy D. Dixon, 307 N. Dixon, Wallis, Tex. 77485

Filed Oct. 6, 1994, Ser. No. 319,138

Int. Cl.[6] F01K *25/00*

U.S. Cl. 60—649 **15 Claims**



1. A method for converting energy using gas hydrates, the method comprising the steps of:

(a) forming gas hydrate at an initial temperature from a working gas and water;

(b) increasing the equilibrium pressure of the gas hydrate to an end pressure; and

(c) dissociating the gas hydrate into water and working gas at the end pressure.

5,613,363

AIR FUEL MIXER FOR GAS TURBINE COMBUSTOR

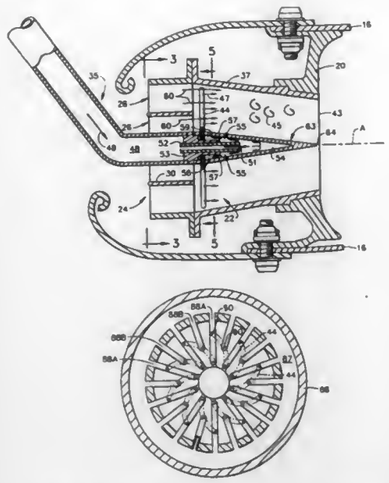
Narendra D. Joshi, Cincinnati; Michael J. Epstein, West Chester, both of Ohio, and Michael E. Ewbank, Pittsburgh, Pa., assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 26, 1994, Ser. No. 312,374

Int. Cl.[6] F02C *3/20*

U.S. Cl. 60—737 **19 Claims**

1. An apparatus for premixing fuel and air prior to combustion in a gas turbine engine, comprising:



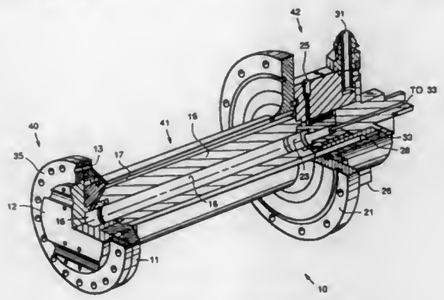
(a) a mixing duct having a longitudinal axis extending therethrough;
(b) a set of inner and outer counter-rotating swirlers adjacent the upstream end of said mixing duct;
(c) a shroud surrounding the upstream end of said mixing duct, said shroud having contained therein a fuel manifold in flow communication with a fuel supply and control means; and
(d) a plurality of fuel spokes extending radially inward from said shroud, each of said fuel spokes having a plurality of spaced fuel injection holes formed therein, wherein said fuel spokes have varying radial lengths when viewed in an axial cross-section of said mixing duct in order to minimize distance between adjacent fuel injection holes within said mixing duct, said fuel spokes being in flow communication with said fuel manifold to inject fuel into said mixing duct;

wherein high pressure air from a compressor is injected into said mixing duct through said swirlers to form an intense shear region and fuel is injected into said mixing duct from said fuel spokes so that the high pressure air and the fuel is uniformly mixed therein so as to produce minimal formation of pollutants when the fuel/air mixture is exhausted out the downstream end of said mixing duct into the combustor and ignited.

5,613,364
COMPACT REPLACEABLE TEMPERATURE CONTROL MODULE
Robert W. Higgins, San Jose, Calif., assignor to POU, Inc., San Jose, Calif.
Filed Oct. 6, 1995, Ser. No. 540,414
Int. Cl.[6] F25B *21/02*; F25D *11/00*
U.S. Cl. 62—3.2 **20 Claims**

1. A compact replaceable temperature control module for use with semiconductor manufacturing equipment and a controller to control an operating temperature of an internal surface in a process chamber of the equipment, the equipment discharging a liquid of unknown temperature, comprising a housing having a size which permits the housing to be placed in close proximity to the equipment, liquid carrying means carried by the housing and having inlet tubing means adapted to couple to the equipment for receiving the liquid from the equipment, a reservoir vessel and outlet tubing means adapted to couple to the equipment for returning the liquid to the equipment to create a closed loop system with the equipment for regulating the operating temperature of the internal surface in the process chamber, the liquid carrying means including thermal electric means provided with a hollow core element having a temperature different than the unknown temperature and means for causing the liquid to flow through the hollow core element of the thermal electric means so as to cause the temperature of the liquid to more closely approximate the temperature of the hollow core element, and sensing means coupled to the inlet tubing means for sensing the temperature of the liquid received from the equipment whereby the temperature of the hollow core element is adapted to be adjusted by the controller in response to the temperature of the liquid sensed by the sensing means.

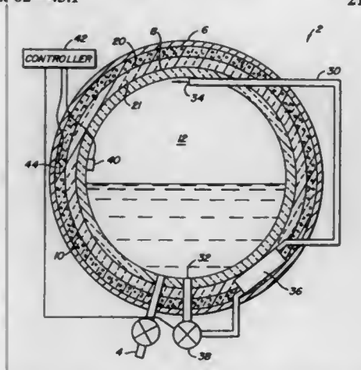
5,613,365
CONCENTRIC PULSE TUBE EXPANDER
Firthjof N. Mastrup, Rancho Palos Verdes; Steven C. Soloski, Manhattan Beach, and Alan A. Rattray, Alta Loma, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Dec. 12, 1994, Ser. No. 353,609
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **24 Claims**



1. A concentric pulse tube cooler comprising:
a cold finger assembly disposed at a first end of the concentric pulse tube cooler;
a heat exchanger assembly disposed at a second end of the concentric pulse tube cooler that is coupled to a source of operating gas; and
a pulse tube expander assembly comprising:
a housing;
a central pulse tube secured to said housing;
a thermal insulator concentrically disposed around the central pulse tube and secured to said housing;
a regenerator concentrically disposed around the concentric insulation tube;
means for thermally coupling the regenerator to the cold finger assembly; and

means for movably securing the pulse tube expander assembly to the heat exchanger assembly to permit motion of the pulse tube expander assembly during cooling.

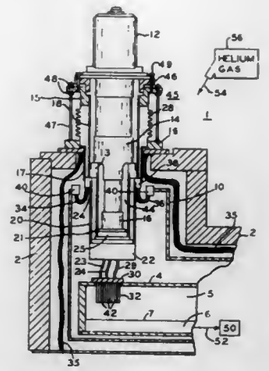
5,613,366
SYSTEM AND METHOD FOR REGULATING THE TEMPERATURE OF CRYOGENIC LIQUIDS
Leonard Schoenman, Citrus Heights, Calif., assignor to Aerojet General Corporation, Sacramento, Calif.
Filed May 25, 1995, Ser. No. 451,092
Int. Cl.[6] F17C *3/10*
U.S. Cl. 62—45.1 **21 Claims**



1. A storage vessel for storing a liquified gas comprising:
inner and outer walls defining a space therebetween, the inner wall further defining a chamber, the liquified gas being retained within the chamber;
a thermal control fluid disposed within the space for modulating heat flow to the liquified gas;
a fluid conduit having an inlet and an outlet in fluid communication with the chamber, the fluid conduit passing through the space and defining a heat transfer portion within the space; and
a control valve for controlling flow of the liquified gas through the fluid conduit, the liquified gas being in heat exchange relationship with the thermal control fluid when the liquified gas passes through the heat transfer portion of the fluid conduit.

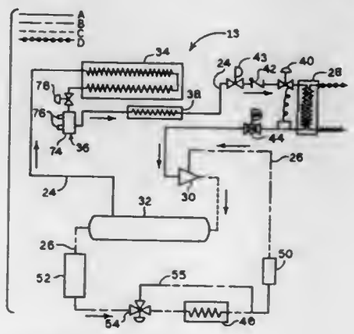
5,613,367
CRYOGEN RECONDENSING SUPERCONDUCTING MAGNET
William E. Chen, Florence, S.C., assignor to General Electric Company, Milwaukee, Wis.
Filed Dec. 28, 1995, Ser. No. 580,359
Int. Cl.[6] F17C *7/04*
U.S. Cl. 62—47.1 **17 Claims**

1. A liquid cryogen cooled superconducting magnet assembly suitable for magnetic resonance imaging including cryogen gas recondensing apparatus comprising:
a liquid cryogen vessel to contain a liquid cryogen reservoir to provide cryogenic temperatures to said superconducting magnet assembly for superconducting operation resulting in the formation of cryogen gas;
a closed vacuum vessel surrounding said cryogen vessel and spaced from said cryogen vessel;
a dual-wall cryocooler sleeve assembly including at least one selectively separable thermal joint extending into the space between said helium vessel and said vacuum vessel to form a dual-walled cavity in said closed vacuum vessel for thermally isolating said recondenser from the atmosphere outside said vacuum vessel;



said walls forming a stationary sleeve and mobile sleeve the movement of which breaks said selectively separable thermal joint;
a cryocooler in said cavity in said sleeve assembly;
a cryogen recondenser positioned within said cryogen vessel and thermally connected to said cryocooler;
said recondenser being rendered sufficiently cold to recondense said cryogen gas to liquid cryogen to return to said liquid cryogen reservoir;
said cavity extending through a portion of said vacuum vessel;
said selectively separable thermal joint thermally connecting said cryocooler to said recondenser during operation of said magnet assembly; and
means selectively openable to the outside of said superconducting magnet assembly for selective removal of said cryocooler from said cavity including means to break said thermal joints including said selectively separable joint and open the thermal connection between the recondenser and the mobile sleeve.

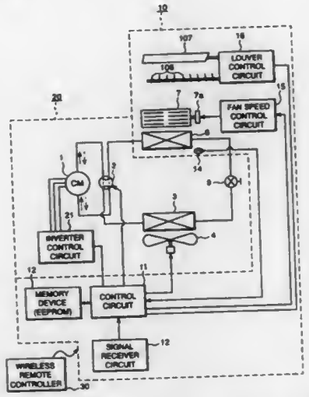
5,613,368
REFRIGERATION APPARATUS AND METHODS
Todd T. Marohl; Robert Burdick, both of Green Bay, Wis., and Ronald A. Cole, Champaigne, Ill., assignors to Omega Enterprises, Inc., Appleton, Wis.
Continuation of Ser. No. 158,021, Nov. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 69,561, Jun. 1, 1993, abandoned, which is a continuation of Ser. No. 679,119, Apr. 2, 1991, Pat. No. 5,214,928. This application Nov. 16, 1995, Ser. No. 559,579
Int. Cl.[6] F25B *43/02*
U.S. Cl. 62—84 **28 Claims**



1. A refrigeration system, comprising:
(a) a refrigerant loop subsystem, including
(i) a charge of refrigerant,

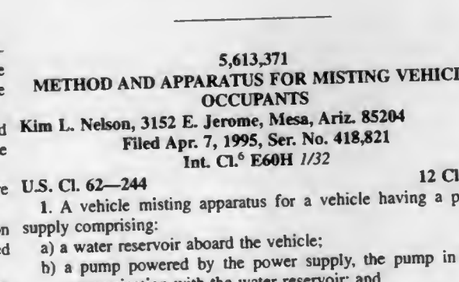
(ii) a first heat exchanger for receiving heat from a heat source,
(iii) a compressor,
(iv) an oil separator,
(v) a condenser adapted to condense said refrigerant and to exhaust the heat of condensation, and
(vi) expansion valve means, and
(b) an oil loop subsystem, including
(i) a main oil loop, including
(a) a charge of lubricating oil,
(b) said compressor, in common with said refrigeration loop subsystem,
(c) said oil separator in common with said refrigeration loop subsystem,
(d) a flow control valve,
(e) an oil cooler adapted to cool said oil and to exhaust the heat obtained from said oil to ambient air, and
(ii) a bypass loop connected to said main oil loop at said flow control valve which bypasses said oil cooler and reconnects with said oil loop subsystem on the opposing side of said oil cooler,
wherein said flow control valve and said bypass loop direct said lubricating oil around said oil cooler when the lubricating oil in said oil loop subsystem is operating at low temperature.

5,613,369
AIR CONDITIONER AND CONTROL METHOD FOR AN AIR CONDITIONER
Takashi Sato; Yasuhiro Kageyama; Masao Isshiki, and Harunobu Nukushina, all of Shizuoka-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 22, 1995, Ser. No. 532,108
Claims priority, application Japan, Sep. 28, 1994, 6-233846
Int. Cl.[6] F25D *17/00;17/04*
U.S. Cl. 62—89 **18 Claims**



1. A method for varying a set time to calculate a room temperature variation for an air conditioner which can selectively operate in a cooling mode and a heating mode, said method comprising the steps of:
determining a difference between a set temperature and a sensed temperature detected by a room temperature sensor every time said set time has elapsed;
determining an amount of variation of said sensed temperature over said set time;
determining a capacity value of said air conditioner based on said difference between said set temperature and said sensed temperature and based on said amount of variation; and
employing a first value for said set time in said cooling mode which is different from a second value of said set time in said heating mode.

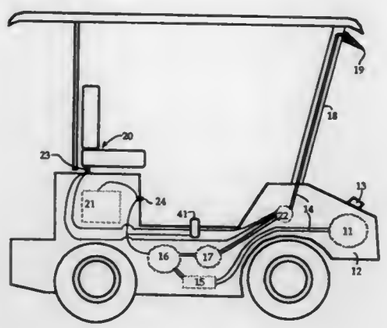
5,613,370
OFF-ROAD COOLING CONTROL
Andrew J. Pichotta, Minneapolis, Minn., assignor to Eagle Engineering and Manufacturing, Inc., Welcome, Minn.
Division of Ser. No. 73,887, Jun. 9, 1993, Pat. No. 5,490,556.
This application Nov. 20, 1995, Ser. No. 561,129
Int. Cl.[6] F25B *1/00;49/00*
U.S. Cl. 62—228.1 **18 Claims**



1. Apparatus for cooling an enclosed operator space in an off-road vehicle comprising:
a) fan speed control means for controlling the speed of an evaporator fan to circulate air past an evaporator coil and into the enclosed operator space in an off-road vehicle;
b) compressor clutch control means for controlling energization of an electromagnetic clutch connected between a prime mover and an air conditioning compressor;
c) condenser fan control means for selectively energizing a fan to blow air across a condenser coil;
d) a first sensor circuit connected to sense the presence or absence of electrical continuity to the condenser fan and providing a two-state electrical signal representative thereof;
e) a second sensor circuit connected to a pressure switch coupled to sense refrigerant pressure at an output of the compressor and providing a two-state signal representative of whether the refrigerant pressure at the compressor output is within a predetermined pressure range;
f) an operator space temperature sensor located in a flow path of the air circulating in the enclosed operator space and providing a signal representative thereof;
g) microprocessor system control means connected to the first and second sensor circuits and having an operator adjustable temperature input means for selecting a desired temperature for enabling operation when electrical continuity is present and the refrigerant pressure is within the predetermined pressure range wherein the system control means actuates the compressor clutch control means when the signal from the operator space temperature sensor indicates a temperature above the desired temperature.

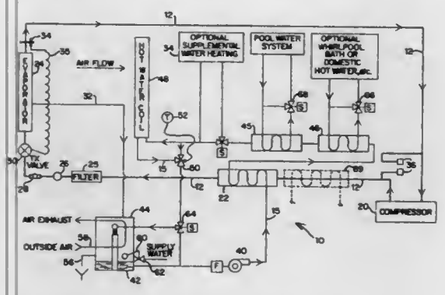
5,613,371
METHOD AND APPARATUS FOR MISTING VEHICLE OCCUPANTS
Kim L. Nelson, 3152 E. Jerome, Mesa, Ariz. 85204
Filed Apr. 7, 1995, Ser. No. 418,821
Int. Cl.[6] E60H *1/32*
U.S. Cl. 62—244 **12 Claims**

1. A vehicle misting apparatus for a vehicle having a power supply comprising:
a) a water reservoir aboard the vehicle;
b) a pump powered by the power supply, the pump in fluid communication with the water reservoir; and
c) an accumulator connected in fluid communication between the pump;



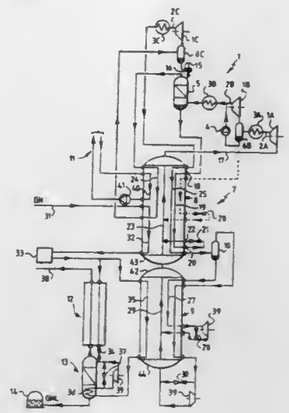
d) and at least one mist nozzle, wherein the nozzle sprays a mist of water with sufficient force to disperse water onto occupants of the vehicle without additional means of convection.

5,613,372
HEAT PUMP SYSTEM DEHUMIDIFIER WITH SECONDARY WATER LOOP
David E. Beal, Augusta, and Thomas P. Carson, Wells, both of Me., assignors to Dumont Management, Inc., Monmouth, Me.
Filed May 26, 1995, Ser. No. 451,447
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—434 **22 Claims**



1. A heat pump system for dehumidifying air in an enclosure containing a source of humidity comprising:
a primary refrigerant loop of circulating refrigerant including a compressor for pressurizing refrigerant vapor, a primary condenser for extracting rejection heat from the refrigerant and condensing the refrigerant, and an evaporator for evaporating refrigerant and cooling air from the enclosure for condensing and extracting moisture from said air;
a secondary water loop coupled in heat exchange relationship both to the primary condenser for receiving the rejection heat from the refrigerant and to the source of humidity for heating the source of humidity with the rejection heat, said secondary water loop comprising a circulating water pump for circulating water in the secondary water loop, and a storage tank for storing said water containing the rejection heat;
and a water to air reheat coil coupled in the secondary water loop for reheating air from the enclosure with said rejection heat after extracting the moisture and before returning the air to the enclosure.

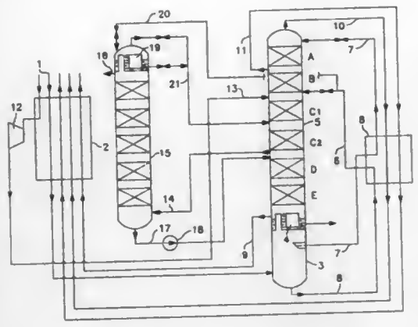
5,613,373
PROCESS AND APPARATUS FOR COOLING A FLUID ESPECIALLY FOR LIQUIFYING NATURAL GAS
Maurice Grenier, Paris, France, assignor to Gaz de France (Service National), Paris, France
Continuation of Ser. No. 347,365, Dec. 2, 1994, Pat. No. 5,535,594. This application May 10, 1996, Ser. No. 644,484
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—612 **40 Claims**



1. A cooling installation for cooling a fluid, the installation comprising:
a compressor unit for compressing at least a part of a coolant mixture to be used for cooling said fluid;
separating means for obtaining a separation of the pressurized coolant mixture in at least one vapour fraction and at least one liquid fraction; and
heat exchanger means comprising at least one plate heat exchanger and including:
a first inlet in fluid communication with the separating means, and a second inlet in fluid communication with an admission conduit for the fluid to be cooled, for circulating and exchanging heat between said fluid to be cooled and at least a part of the pressurized coolant mixture; and
a first outlet in fluid communication with a discharge conduit for said fluid after the fluid has circulated in said heat exchanger means, and a second outlet in fluid communication with an inlet of the compressor unit.

5,613,374
PROCESS FOR THE LOW TEMPERATURE SEPARATION OF AIR AND AIR SEPARATION INSTALLATION
Wilhelm Rohde, München, and Anton Moll, Raisting, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
PCT No. PCT/EP93/00623, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO93/19336, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 17, 1993, Ser. No. 307,626
Claims priority, application Germany, Mar. 20, 1992, 42 09 131.4; Jul. 21, 1992, 42 24 068.9
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—643 **32 Claims**

1. In a process for separating air at low temperature in which purified and cooled air is passed into a distillation system comprising at least one rectification column having at least one mass transfer section and wherein counter-current mass transfer between a vapor and a liquid phase is conducted in said at least one section of said at least one rectification column, the improvement wherein mass transfer is effected in at least part of at least one mass transfer



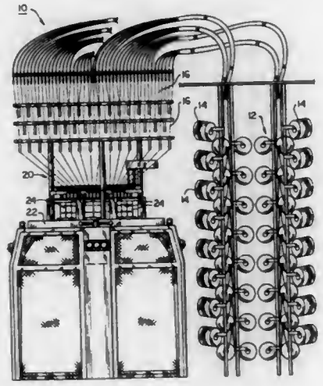
section of said at least one rectification column by a packing having a specific surface area of at least 1100 m^2/m^3.

5,613,375

CONVERTIBLE CIRCULAR KNITTING MACHINE

Philip Renda, Charlotte; James R. Earnhardt, Jr., Salisbury; Bill R. Anderson, Winston-Salem, and Sonny B. Driggars, Advance, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Nov. 13, 1995, Ser. No. 555,926
Int. Cl.[6] D04B *15/00*
U.S. Cl. 66—8 **25 Claims**



1. A circular knitting machine having a creel and feeders which is convertible from producing fleece fabric to producing jersey fabric or back, said apparatus comprising:

(a) a knitting cylinder for receiving a plurality of knitting needles;

(b) a bed for supporting said cylinder;

(c) a plurality of fleece section blocks for attachment to said bed and arranged along said cylinder at a perimeter thereof; and

(d) a plurality of jersey section blocks each having the same number of feeders as each fleece section block and each attachable to said bed and arranged along the perimeter of said cylinder;

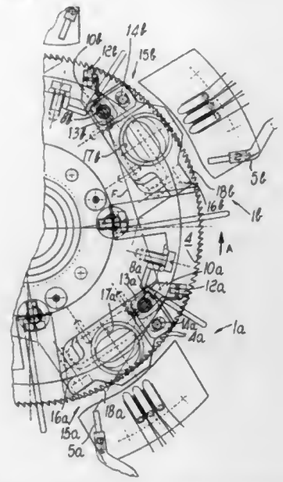
whereby, said circular knitting machine may be converted from producing fleece fabric with said fleece section blocks to producing jersey fabric with said jersey section blocks or back.

5,613,376

THREAD CUTTING AND ASPIRATION UNIT FOR MULTIPLE-FEED CIRCULAR KNITTING MACHINES

Jan Andó , Scandicci, Italy, assignor to Matec S.r.L., Italy

Filed Jan. 2, 1996, Ser. No. 582,217
Claims priority, application Italy, Jan. 25, 1995, BO95A0018
Int. Cl.[6] D04B *15/61*
U.S. Cl. 66—140 S **3 Claims**



1. Thread cutting and aspiration unit for a multiple-feed circular knitting machine for manufacturing socks and stockings, the unit comprising:

a suction port;

a toothed thread trimming disk with an axis;

a vertical cutter supporting post; and

a cutting blade mounted on the supporting post;

wherein the vertical cutter supporting post is shifted towards the axis of the toothed thread trimming disk and wherein the cutting blade is mounted at an end of a lower L-shaped portion of the supporting post, said L-shaped portion being arranged to allow a thread to pass beyond the cutting blade and be cut by a following blade, whereby to increase the length of thread aspirated by the suction port.

5,613,377

METHOD AND EQUIPMENT FOR RESTRAINING THE END PORTIONS OF CUT THREAD PROTRUDING FROM COLLARS FOR KNIT WEAR ARTICLES AND THE LIKE

Mario Marchesi, and Riccardo Marchesi, both of Florence, Italy, assignors to A.R.M.I. Assistenza Ricambi Macchine Industriali S.r.l., Florence, Italy

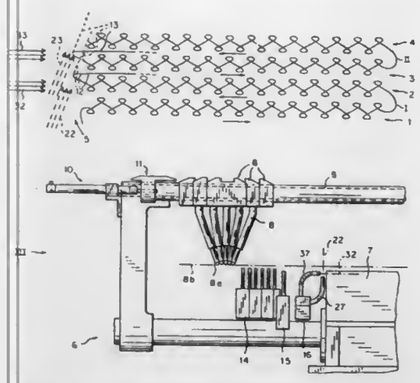
Filed Nov. 29, 1995, Ser. No. 564,391
Claims priority, application Italy, Dec. 2, 1994, FI94A0216
Int. Cl.[6] D04B *15/00*
U.S. Cl. 66—145 S **13 Claims**

1. A method for restraining the end portions of cut threads protruding from the edges of collars for knit-wear or similar articles while knitting, said articles being formed by a succession of courses of stitches, comprising the steps of:

cutting said thread after having knitted a chosen course of stitches with the release of a thread end protruding from said edge and contemporaneous gripping of said thread end,

releasing free said thread end and contemporaneously catching said thread end by means of a first fluid current acting in a catching direction, and

inserting said thread end between said chosen course of stitches and the subsequent course of stitches by means of a second fluid current acting in an inserting direction coplanar and



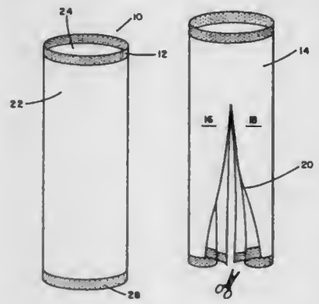
inclined at an angle with respect to said catching direction, said inserting direction being aligned with said chosen course of stitches.

5,613,378

INTEGRALLY KNIT LOWER BODY GARMENT

Catrinel I. Popa, New York, N.Y.; George A. Browder, Jr., Winston-Salem, and Archie D. Segraves, Clemmons, both of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Nov. 30, 1995, Ser. No. 565,413
Int. Cl.[6] A41B *9/06*; A41D *1/14*; D04B *1/24*
U.S. Cl. 66—176 **2 Claims**



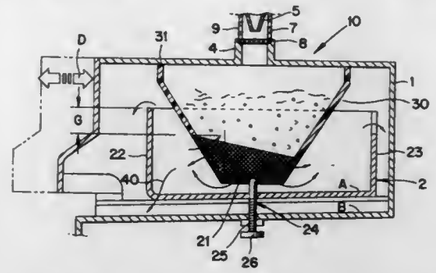
1. A lower body garment for covering legs, hips, waist and midriff of a wearer and formed from a singular tubular sleeve continuously knit of successive courses of yarn comprising: an integrally knit finished waistband or welt for maintaining the garment in a position on the wearer; a midriff encircling portion integrally knit with the waistband; first and second leg portions integrally knit with the midriff encircling portion; and finished first and second cuff portions integrally knit with the first and second leg portions, the midriff encircling portion and the first and second leg portion being substantially of the same circumference, the cuff and leg portions having a continuous slit forming slit edges, the edges seamed to provide a continuous leg encircling seam extending from the first cuff portion along the first leg portion, adjacent the midriff encircling portion, along the second leg portion and back to the second cuff portion.

5,613,379

DETERGENT DISSOLVING APPARATUS FOR A CLOTHES WASHER

Jin D. Kim, Ansan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 1, 1995, Ser. No. 551,331
Claims priority, application Rep. of Korea, Nov. 1, 1994, UM 94-28975 U; Oct. 26, 1995, 95-37355
Int. Cl.[6] D06F *39/02*
U.S. Cl. 68—17 R **8 Claims**



1. A detergent dissolving apparatus adapted to be mounted in a clothes washer for dissolving powdered detergent, the apparatus comprising:

an outer body adapted to be fixed on a clothes washer;

a water guide tube for conducting water;

a jetting nozzle at an end of the water guide tube for ejecting the water downwardly through a top wall of the outer body and into an interior of the outer body;

a first filter mounted in the water guide tube for preventing a backflow of water;

an inner body slidable into and from the outer body, the inner body including upstanding side walls;

a detergent container disposed in the inner body to be located beneath the nozzle when the inner body is slid into the outer body, the detergent container including a second filter extending upwardly to a height no higher than about a vertical midpoint of the detergent container and lower than upper edges of the side walls; and

a supporter for pushing the detergent container upwardly such that an upper edge of the detergent container bears against the top wall of the outer body.

5,613,380

COIL SPRING AND SNUBBER SUSPENSION SYSTEM FOR A WASHER

Sudhir D. Savkar, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 539,889, Oct. 6, 1995, Pat. No. 5,520,029, and Ser. No. 283,726, Aug. 1, 1994, Pat. No. 5,528,913. This application Dec. 18, 1995, Ser. No. 574,014
Int. Cl.[6] D06F *37/24*
U.S. Cl. 68—23.3 **17 Claims**

1. A machine for washing articles, comprising:

a housing having a front panel, rear panel, top panel with opening, closure panel, left panel and right panel;

a mounting platform within said housing;

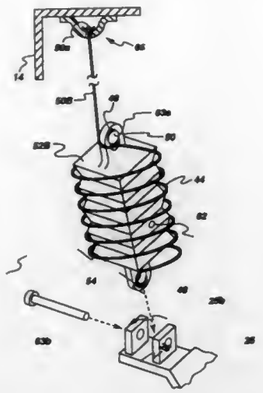
a tub having a top portion and a vertical axis and being mounted on said platform within said housing at a position spaced from each of said housing panels;

a basket in said tub having a size sufficient for holding articles to be washed;

an agitator within said basket to facilitate washing of the articles;

means for imparting oscillating motion to the agitator during a wash cycle;

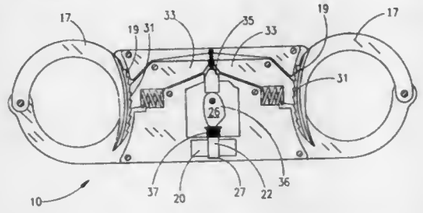
means for rotating said basket, said basket rotating about said vertical axis in a circular path with said basket remaining



vertical when said articles form a balanced load in said basket, said basket tending to rotate askew of said vertical axis in a noncircular path with said basket urged from vertical on excursions when said articles form an unbalanced load in said basket, said basket excursions urging said tub from said spaced position relative to said housing panels; and

a plurality of coil spring and snubber suspensions each having a coil spring attached at its upper end to the mounting platform, an extension rod of the coil spring from the lower end of the coil spring attached to the upper housing panel and a snubber positioned within and attached at opposite ends to the coil spring whereby the coil spring is loaded in compression and the snubber has a cavity therein and an aperture communicating therewith which changes in volume in response to predetermined basket excursions to minimize the effects thereof.

5,613,381
HANDCUFF
Julie M. Savage, 426 E. First St., Jennings, La. 70546
Filed Apr. 3, 1995, Ser. No. 415,192
Int. Cl.[6] E05B *75/00*
U.S. Cl. 70—16 **9 Claims**

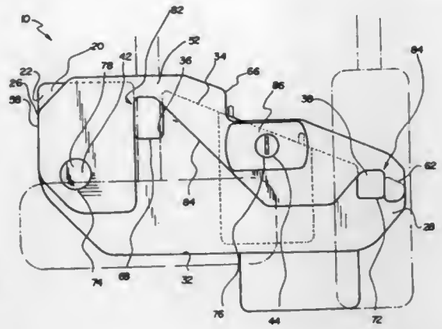


1. In a handcuff, for use in conjunction with a prisoner's waist chain, having a rigid central body comprised of a pair of rigid parallel plates and lockable wrist shackles at each end of said rigid body, an improvement wherein:

(a) said parallel plates of said central body have a slot for receiving a prisoner's waist chain; and

(b) said central body further includes a dead bolt and lock set means mounted between said parallel plates within said central body for extending said dead bolt through said slot between said rigid plates for engagement with said prisoners waist chain.

5,613,382
DEVICE FOR SECURING THE ACCELERATOR AND BRAKE PEDALS OF A VEHICLE
Donavon S. Uter, 13 Bleeker St., Apt. 9, Mount Vernon, N.Y. 10550
Filed Apr. 5, 1996, Ser. No. 630,947
Int. Cl.[6] G05G *5/00*
U.S. Cl. 70—199 **3 Claims**



1. A new and improved securing and indicating device for the accelerator and brake pedals of a vehicle, the securing and indicating device comprising, in combination:

a lower plate having an upper surface, a lower surface, a first end, a second end, a front edge and a rear edge, a first rectangular notch formed in the rear edge approximate the first end, a second rectangular notch formed within the rear edge approximate the second end, the rear edge extending at an angle between the first and second notches, a primary aperture formed within the lower plate approximate the first end, a secondary aperture formed within the lower plate intermediate the first and second notches approximate the rear edge;

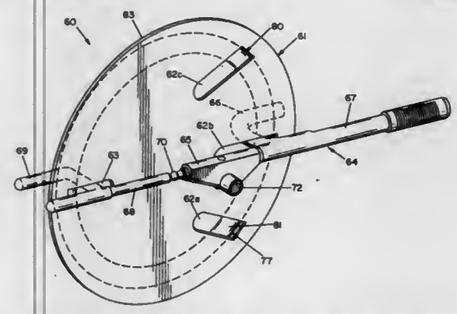
a lock indicator having an upper surface, a lower surface, a forward edge and an angled rear edge, a number of light emitting diodes secured to the rear edge, an aperture formed within the upper surface of the lock indicator, the upper surface of the lock indicator secured to the lower surface of the lower plate intermediate the first and second rectangular notches such that the angled rear edge of the lock indicator matches the angle of the rear edge of the lower plate between the first and second rectangular notches, the lock indicator having a first state wherein the light emitting diodes are illuminated and a second state wherein the light emitting diodes are not illuminated;

an upper plate having an upper surface, a lower surface, a first end, a second end, a front edge, a rear edge, a first notch formed within the front edge proximate the first end, a second notch formed within the front edge approximate the second end, a portion of the front edge intermediate the first and second notches being angled, a primary aperture formed within the upper plate approximate the first end, a secondary aperture formed within the upper plate intermediate the first and second notches;

a pin secured to the primary aperture of the lower plate and the primary aperture of the upper plate such that the lower plate and upper plate can pivot relative to one another with the lower surface of the upper plate sliding upon the upper surface of the lower plate, the lower and upper plates together having a closed orientation wherein the first rectangular notch of the lower plate cooperates with the first notch of the upper plate to define a brake pedal retaining aperture and the second notch of the lower plate cooperates with the second notch of the upper plate to define an accelerator pedal retaining aperture; and

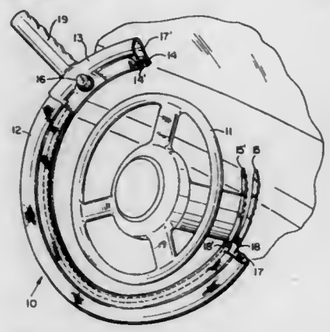
a lock having a receiving end and a cylinder end, with the lower and upper plates in the closed orientation, the cylinder end adapted to be inserted in the secondary aperture of the lower plate and the secondary aperture of the upper plate and the aperture of the lock indicator, a latch having a first orientation permitting the lock to be removed from the apertures of the lower and upper plates, and a second orientation securing the lock within the apertures of the lower and upper plates and keeping the lower and upper plates in their closed orientation as well as placing the indicator in its first state.

5,613,383
VEHICLE SECURITY DEVICE
Mark W. Banez, Youngstown, Ohio, assignor to Winner International Royalty Corporation, Sharon, Pa.
Continuation of Ser. No. 6,777, Jan. 21, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 422,034
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **39 Claims**



1. A vehicle security device for protecting a steering wheel having a rim comprising a cover means for substantially covering a front face of said steering wheel and connection means for attaching said cover means to said steering wheel, said cover means including a cut-resistant plate having a peripheral edge, said connection means including two hooks and lock means for locking said hooks in at least one position, said connection means including two telescopically engaging rods wherein each rod including at least one of said hooks.

5,613,384
STEERING WHEEL LOCKING DEVICE
Paul J. Weber, and Marianne Weber, both of 2881 E. Oakland Park Blvd., Ft. Lauderdale, Fla. 33306
Filed Jun. 30, 1995, Ser. No. 497,179
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **15 Claims**



1. A steering wheel locking device comprising:

a sheathing jacket consisting essentially of a wire mesh which is adapted to cover about one-half to about three-fourths of the circumferential thickness of a steering wheel rim which is adapted to circumferential thickness of a starring wheel rim which is adapted to completely cover the overall circumference of said rim;

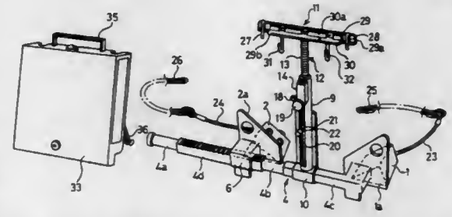
said jacket having a female end and a male end, wherein said ends are positioned for mutual connection to each other;

a blocking bar that interfits in a lateral plane with said sheathing jacket and is adapted to extend beyond the overall circumference of said rim to interfere and to prevent the turning of a steering wheel;

a retaining disk member which fits under said jacket and is adapted to cover an area over a hub of said steering wheel; and

a locking mechanism adapted to secure said male and female ends of said sheating jacket and the blocking bar together on said steering wheel.

5,613,385
VEHICLE DETENTION DEVICE
Hideyasu Yamabe, Osaka, Japan, assignor to Atras Auto Co., Ltd., Osaka-fu, Japan
Filed Feb. 25, 1994, Ser. No. 201,855
Claims priority, application Japan, May 27, 1993, 5-124573; Jun. 30, 1993, 5-160520
Int. Cl.[6] B60R *25/00*
U.S. Cl. 70—226 **7 Claims**



1. A vehicle detention device for preventing a vehicle with a wheel and tire mounted on said wheel from moving, comprising:

a guide shaft;

a first stopper block secured to said guide shaft;

a second stopper block movable on said guide shaft toward and away from said first stopper block;

a locking means for engaging said second stopper block to prevent its movement away from said first stopper block thereby maintaining contact of both said stopper blocks with said tire at both sides of a ground contact point to prevent rotation of said wheel;

a pair of chains, each chain of said pair being secured to one of said stopper blocks;

a key-actuated cover for concealing said stopper blocks and said chains;

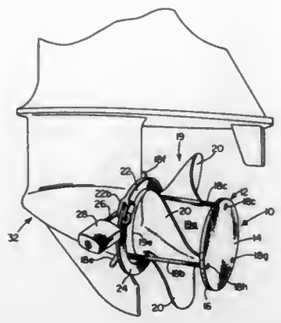
a strut movable on said guide shaft;

an elevating body including a shaft member received in said strut; and

a plurality of hooks on a top end of said elevating body for hanging said pair of chains.

5,613,386
SECURITY LOCK FOR PROPELLER
Jerry D. Mire, Sr., P.O. Box 1471, Morgan City, La. 70380-1471
Filed Oct. 6, 1995, Ser. No. 540,439
Int. Cl.[6] F16B *41/00*
U.S. Cl. 70—232 **9 Claims**

1. A propeller lock for preventing unauthorized removal of a marine propeller from the drive shaft of a marine propeller gear housing, said marine propeller having a plurality of blades extending from a generally hollow cylindrical hub having an outer end



and an inner end, said hub being connected to said drive shaft by a nut, said nut and said drive shaft being contained inside said hub and said outer end, comprising:

a. cover means for covering said outer end of said propeller to prevent removal of said nut, said cover means comprising a disk,

b. rotatable clamp means for attachment of said cover means to said propeller, said cover means being connected to said rotatable clamp means by a plurality of rods, said clamp means comprising two semi-circular members rotatably connected together at one end thereof by one of said rods, each of said semi-circular members having two ends, one of said two ends of said semi-circular members having a hole therein and the other of said two ends having a U-shaped bracket thereon, said U-shaped bracket having axially aligned holes extending therethrough, one end of one of said semi-circular members being received in said U-shaped bracket of the other of said semi-circular members and said holes therein being axially aligned, one of said rods being fitted through said axially aligned holes to rotatably connect said two semi-circular members together, each of said rods being an elongated rigid rod having two ends, one end of each of said rods having a bent portion generally perpendicular to the elongated portion of said rod for engaging the outside of said semi-circular members, said cover means being rigidly connected to each of said rods at the end of said rods opposite from said bent end of said rods.

5,613,387

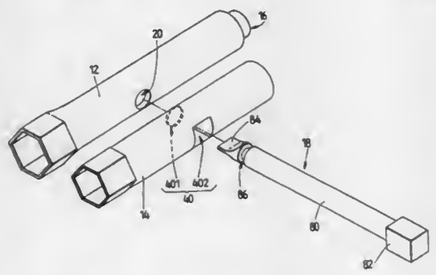
LOCK THAT CAN BE USED INTERCHANGEABLY AS A LOCK AND A HAND TOOL

Jin R. Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan

Filed Feb. 5, 1996, Ser. No. 596,754

Int. Cl.[6] B62H *5/00*

U.S. Cl. 70—233 **7 Claims**



1. A lock comprising:

a first retaining member provided with a first locating hole;

a second retaining member provided with a second locating hole;

a locking member mounted on said first retaining member such that a first retaining portion is driven by said locking member to move in a reciprocating manner, and that one end of said first retaining portion is moved into said first locating hole; and

a connection member engageable with said first locating hole and said second locating hole and having one end provided with a work portion engageable with said first locating hole, said connection member further having another end provided with an arresting portion having an outer diameter greater than an outer diameter of said work portion and engageable with said second locating hole, said connection member still further having a rod body provided with a second retaining portion located between said work portion and said arresting portion;

wherein said first retaining member and said second retaining member are of a hollow construction and are provided respectively with one end of a polygonal and socket-like construction.

5,613,388

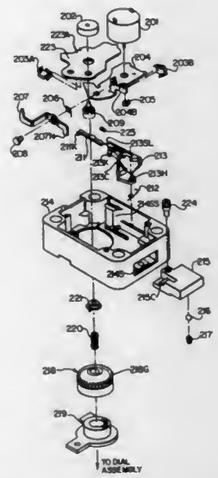
ELECTRONIC COMBINATION LOCK ENTERING A LOCKOUT MODE AFTER A NUMBER OF SUCCESSIVE INCORRECT COMBINATION ENTRIES

Gary R. Murphree, Annandale, Va., assignor to Sargent & Greenleaf, Nicholasville, Ky.

Division of Ser. No. 143,223, Oct. 29, 1993. This application Jun. 6, 1995, Ser. No. 466,896

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **17 Claims**



1. A combination lock capable of operating in:

(1) a normal mode in which at least one first combination allows the lock to be opened and

(2) a lockout mode in which the at least one first combination will no longer allow the lock to be opened,

the lock comprising:

a) means for receiving an input combination;

b) means for comparing the input combination with the at least one first combination;

c) means for counting a number of successively-entered incorrect input combinations which do not match a valid first combination; and

d) means, responsive to the counting means when the counting means determines that a given threshold number of successively entered incorrect combinations have been encountered, for changing the operational mode of the lock into the lockout mode in which:

d1) entry of at least one override combination allows the lock to be opened; but

d2) entry of one of the at least one first combination no longer allows the lock to be opened;

wherein the at least one first combination differs from the at least one override combination.

5,613,389

LOCKING DEVICE CONSISTING OF A KEY AND A LOCK CYLINDER

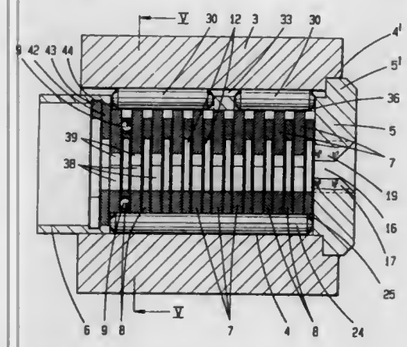
Herbert Häuser, Elsdorf, Germany, assignor to DOM Sicherheitstechnik GmbH & Co. KG., Brühl, Germany

Filed Apr. 29, 1994, Ser. No. 236,628

Claims priority, application Germany, Apr. 30, 1993, 43 14 208.7

Int. Cl.[6] E05B *29/04*

U.S. Cl. 70—366 **2 Claims**



1. A key operated cylindrical lock comprising

a selected number of cylindrical tumbler plates,

a cylindrical core for rotatably supporting said cylindrical tumbler plates, and

a ball cage plate assembly intermediate each adjacent pair of cylindrical tumbler plates, each assembly including

a ball cage plate and

a plurality of balls,

said ball cage plates having an orifice for receiving a key therein and having a corresponding plurality of cage bores for receiving said plurality of balls, each of said bores which receive said balls being radially spaced from said orifice, said balls being selectively sized so that tumbler plates will be engaged by said balls.

5,613,390

CORNER REDUCTION DEVICE EQUIPPED WITH CORNER ROLLS, CONTROL DEVICE THEREOF, AND METHOD OF ROLLING BY USING THESE DEVICES

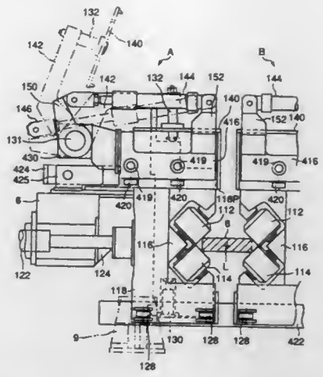
Takashi Ishikawa; Takao Yunde; Toshisada Takechi, all of Chiba; Katsumi Okada, Fujisawa, and Takatoshi Amakawa, Yokohama, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Nov. 21, 1994, Ser. No. 344,677

Claims priority, application Japan, Nov. 24, 1993, 5-293569; Mar. 17, 1994, 6-071261

Int. Cl.[6] B21B *1/30*

U.S. Cl. 72—13.7 **16 Claims**



1. A corner reduction device for reducing side corners of a material to be rolled, the corner reduction device comprising:

at least one corner roll unit including a movable unitary frame and a pair of movable upper and lower corner rolls secured to the unitary frame;

a plurality of cylinders each having an associated servo-valve for driving said movable unitary frame in widthwise and vertical directions of said material; and

a mechanism for controlling a position of said corner roll unit in the widthwise and vertical directions of said material, wherein an initial position of said corner roll unit is predetermined prior to rolling, said plurality of cylinders comprises at least one right, left, upper and lower cylinder, and each said cylinder and servo-valve are driven in accordance with a difference between pressures of said respective right, left, upper and lower cylinders and a present load value, to follow a shape of said material during the corner rolling.

5,613,391

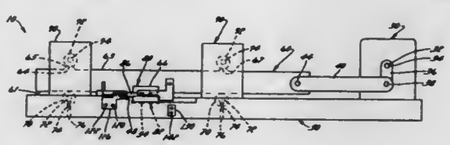
MACHINE AND METHOD FOR KNURLING THE TIP OF A NEEDLE

Stanley M. Loncar, 10130 S. Nicholson Rd., Oak Creek, Wis. 53154

Filed Mar. 8, 1995, Ser. No. 399,076

Int. Cl.[6] B21H *7/14*

U.S. Cl. 72—90 **9 Claims**



1. An apparatus for forming a knurl on an end portion of a needle, the apparatus comprising:

a base;

a pressure bar having at least two pressure bar lobes;

a reciprocating mechanism having one end attached to the base and the other end attached to the pressure bar;

a first serrated knurling block attached to the base and a second serrated knurling block attached to the pressure bar wherein said first and second knurling blocks are opposingly disposed to create a needle receiving void therebetween;

a pair of upwardly biased base rollers rotatably attached to the base;

a pair of roller blocks fixedly attached to the base, each block having an opening and an upper roller;

the pressure bar supported by the upwardly biased rollers and passing through the roller block openings wherein the roller blocks are biased against the lobes to impel the second block toward the first block.

5,613,392

HORIZONTAL/VERTICAL ROLL STAND

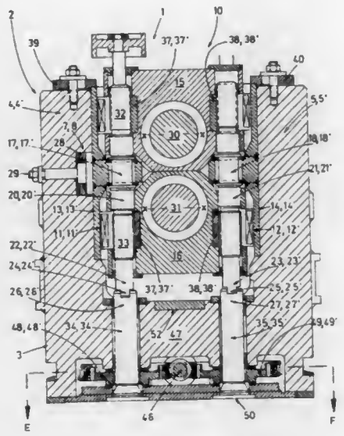
Hubert Müller, Grevenbroich, and Konrad Hamraths, Kaarst, both of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

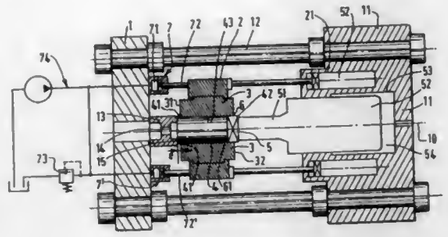
Filed Nov. 4, 1994, Ser. No. 334,785

Claims priority, application Germany, Nov. 6, 1993, 43 37 935.4

Int. Cl.[6] B21B *31/24*

U.S. Cl. 72—238 6 Claims





1. A horizontal/vertical roll stand, comprising a housing, the housing comprising a base plate having four corners, four posts connected to and extending upwardly from the four corners of the base plate, the posts having an essentially rectangular cross-section, a cube-shaped upwardly and laterally open receiving space being defined between the posts and the base plate, a cassette-type roll mounting unit including a pair of work rolls being received in the receiving space, such that for changing the rolls the roll mounting unit can be pulled upwardly as a structural unit out of the receiving space, wherein pairs of the posts form guide means therebetween, the roll stand further comprising four adjusting spindles and chocks, four support plates comprising a center support member each for the four adjusting spindles being releasably fastened to the guide means, the adjusting spindles comprising right/left thread portions, adjusting nuts being mounted on the right/left thread portions, each adjusting nut having a cylindrically shaped projection, wherein pairs of the adjusting nuts engage with cylindrically shaped projections into the chocks for adjusting the rolls, further comprising clamping claws for mounting the support plate on the posts, wherein the adjusting spindles have lower ends projecting downwardly out of the chocks, the lower ends forming coupling claws, a four-way synchronized gear unit being integrated into the base plate of the housing, the four-way synchronized gear unit having coupling heads, wherein the coupling claws engage in a releasable manner in the coupling heads.

5,613,393

METAL EXTRUSION PROCESS AND EXTRUSION PRESS

Guy Bessey, Auvers Sur Oise, France, assignor to Clecim, Cergy Pontoise, France

Filed May 6, 1994, Ser. No. 238,869

Claims priority, application France, May 6, 1993, 9305463

Int. Cl.[6] B21C *27/00*

U.S. Cl. 72—272 6 Claims

1. A process for extruding a metal billet in an extrusion press comprising:

(a) two fixed crosspieces separated by a constant distance;

(b) a container having a tubular housing for receiving a billet, said housing having first and second ends and being centered on an extrusion axis, said container bearing, during extrusion, on a first crosspiece:

(c) two pieces for closing said first and second ends of said housing, respectively, a bottom piece carried by said first crosspiece on which said container bears, and a dummy block having a cross-section substantially identical to a cross-section of said housing, said block being mounted on an end of an extended ram and penetrating into said housing by an axial sliding movement;

(d) a die centered on an extrusion axis and being mounted on one of said closing pieces;

(e) auxiliary jacks for axially moving said container between said crosspieces; and

(f) a main jack bearing against a second crosspiece to control pressing of said billet between said dummy block and an end face of said bottom piece in order to extrude said billet through said die;

(g) extrusion being preceded by precompression of said billet between said dummy block and an end face of said bottom piece until said billet is fully applied to an inner face of said housing;

said process comprising the step of preventing said container, at least during most of said precompression, from pressing against said bottom piece, by maintaining a small clearance between said bottom piece and a corresponding end of said container, so as to allow air contained in said housing to be progressively expelled during precompression of said billet until said billet is fully applied against said inner face of said housing.

5,613,394

METHOD AND APPARATUS FOR FILLING AND DISCHARGING A FILLING MATERIAL

Yoshiro Kawamura, and Tadayuki Matsuda, both of Kumamoto-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,569

Claims priority, application Japan, Jul. 30, 1993, 5-208803; Jul. 30, 1993, 5-208804

Int. Cl.[6] B21D *9/16*

U.S. Cl. 72—369 15 Claims

1. A method for filling and discharging a filling material comprising the steps of:

providing a single filling and discharging furnace including a lower filling furnace and an upper discharging furnace having a reservoir formed in a floor thereof;

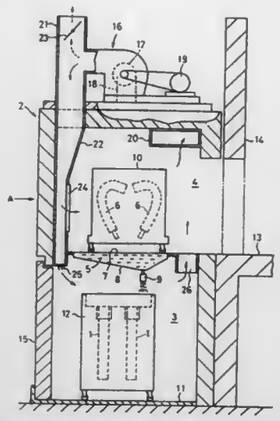
moving a workpiece into the lower filling furnace;

supplying a filling material of a low melting point into the workpiece;

bending the workpiece to form a bent workpiece;

moving the bent workpiece into the upper discharging furnace;

heating the bent workpiece to melt and discharge the filling material; and



collecting melted and discharged filling material in the reservoir formed in the floor of the upper discharging furnace for subsequent supplying of the filling material into a workpiece disposed in the lower filling furnace.

5,613,395

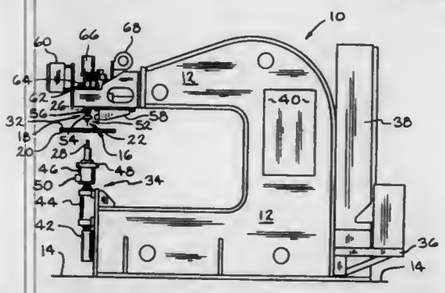
COLDWORKING TOOL AUTOMATION

John W. Zienkiewicz, North Tonawanda, and Bradley M. Roberts, Williamsville, both of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Filed Feb. 9, 1995, Ser. No. 386,013

Int. Cl.[6] B21D *39/08*

U.S. Cl. 72—370 36 Claims



1. In an automatic apparatus comprising a frame means defining a work axis in relation to a workpiece positioned for operation thereon by the apparatus; a tool means having a first component carried by the frame means and a second component that is movable towards and away from the workpiece along a tool axis to operate on the workpiece; and a transfer means mounted on the frame means and operatively associated with the tool means for moving the tool means into and out of a working position wherein the tool axis is coincident with the work axis; the improvement which comprises:

a) a cold working tool means carried by the transfer means and defining a coldworking tool axis that is spaced from the tool axis, wherein the coldworking tool means is movable into a position of alignment with the coldworking tool axis being coincident with the work axis when the transfer means moves the tool means out of the working position and wherein the coldworking tool means is then axially movable along the work axis and into and out of a hole provided in the workpiece;

b) control means operatively associated with the transfer means for selectively directing movement of the respective tool means and coldworking tool means into and out of alignment with the work axis, wherein the control means further regulates the axial movement of the coldworking tool means along the work axis to move the coldworking tool means into and out of the hole provided in the workpiece for coldworking the hole; and

c) means in said apparatus for supplying fluid comprising lubricant and coolant from an external source to said coldworking tool means when said coldworking tool means is out of alignment with said work axis and as part of a workpiece operation cycle of the apparatus.

5,613,396

INDEX-FEED MACHINING SYSTEM

Shoji Futamura, and Chikara Murata, both of Kawasaki, Japan, assignors to Institute of Technology Precision, Kanawa-ken, Japan

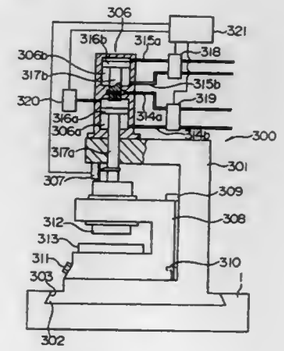
Division of Ser. No. 962,253, Oct. 16, 1992, Pat. No. 5,473,926.

This application Jul. 25, 1995, Ser. No. 506,809

Claims priority, application Japan, Oct. 18, 1991, 3-269830; Oct. 18, 1991, 3-269831; Mar. 31, 1992, 4-74864; May 15, 1992, 4-122369

Int. Cl.[6] B21J *7/28*

U.S. Cl. 72—404 2 Claims



1. An index-feed machining system comprising:

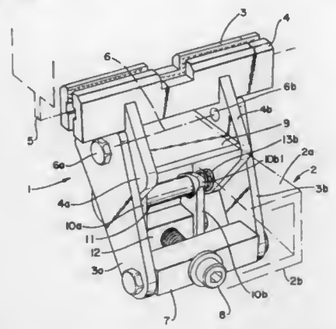
a base;

a plurality of machining units positioned on said base, each of said plurality of machining units including a machining means for machining a workpiece, said each machining unit also including a driving means for driving said machining means, each of said driving means in a subset of said machining units being formed by first and second fluid-pressure cylinders connected in series, each of said first and second fluid pressure cylinders being selectively drivable and having a movable piston and piston rod, said piston rod of said first fluid-pressure cylinder being in contact with said machining means, and said piston of said first fluid-pressure cylinder being positioned inside said first fluid-pressure cylinder, said piston of said second fluid-pressure cylinder being positioned inside said second fluid-pressure cylinder, said piston rod of said second fluid-pressure cylinder being movable into said first fluid-pressure cylinder, a cross sectional area of said piston of said second fluid-pressure cylinder being larger than a cross sectional area of said piston rod of said second fluid-pressure cylinder, said first fluid pressure cylinder includes a valve means cooperating with movement of said piston rod of said second fluid-pressure cylinder for containing fluid in said first fluid-pressure cylinder when said piston rod of said second fluid-pressure cylinder enters said first fluid-pressure cylinder.

5,613,397
DEVICE FOR FIXING A VEHICLE TO A STRAIGHTENING BENCH

Uno Johansson, Linköping, Sweden, assignor to Uno Liner System Aktiebolag, Linkoping, Sweden

PCT No. PCT/SE93/00729, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/05440, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 7, 1993, Ser. No. 392,867
Claims priority, application Sweden, Sep. 8, 1992, 920590
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—422 **2 Claims**



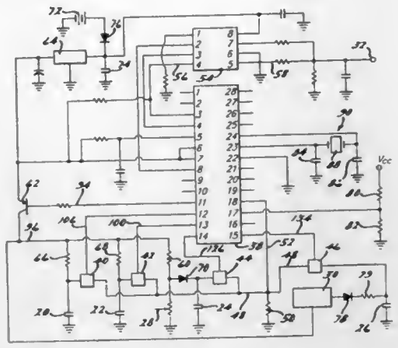
1. A device for the securing of a vehicle in an automobile body straightening bench, in which a car body rim (**5**) is fixed to a beam, said device comprising:
two clamp jaws (**3**,**4**),
a pair of scissor arms connected to each of said clamp jaws, said pairs of scissor arms being pivotally connected at two opposed points (**6***a*, **6***b*), said opposed points having an imagined junction line (**6**) parallel to the longitudinal axes of the clamp jaws (**3**,**4**),
a yoke linking the pair of scissor arms (**3***a*, **3***b*) for one clamp jaw (**3**), said yoke being parallel to the junction line and having a boring (**7***a*);
at least one threaded bolt (**8**) extending through said boring;
a plate (**9**) linking the scissor arms (**4***a*, **4***b*) for the other clamp jaw (**4**), whereby said plate (**9**) is arranged to form a holding-up tool against an upper side (**2***a*) of the beam (**2**);
two mutually parallel slewing brackets (**10***a*, **10***b*) pivotally connected to the scissor arms (**4***a*, **4***b*) for the other clamp jaw (**4**);
a shaft (**11**) parallel to the junction line (**6**) connecting the slewing brackets (**10***a*, **10***b*) to the scissor arms for the other clamp jaw (**4**);
a second yoke rotatably supported by said slewing brackets (**10***a*, **10***b*), said second yoke being parallel to the junction line (**6**) and provided with a tapped, drilled hole (**12***a*), through which said threaded bolt (**8**) extends;
torsion springs disposed between the scissor arms (**4***a*, **4***b*) of the second clamp jaw (**4**) and the slewing brackets (**10***a*, **10***b*);
wherein the slewing brackets (**10***a*, **10***b*) are formed with eccentric surfaces (**10***a***1**, **10***b***1**), whereby the slewing brackets are arranged to provide friction against the lower side (**2***b*) of said beam (**2**) when the bolt is tightened to close the clamping jaws.

5,613,398
SMART FUEL TANK MODULE

John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jan. 24, 1994, Ser. No. 185,336
Int. Cl.[6] G01F *23/26*
U.S. Cl. 73—304 C **7 Claims**

1. An apparatus for collecting liquid level data from a tank in a vehicle having a data transmission system that includes a multiplex bus, comprising:

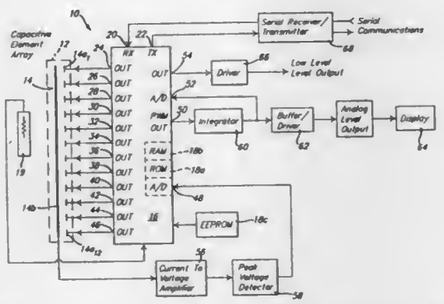


power supply means for providing power:
clock means, connected to said power supply means, for providing a clock cycle signal for timing circuit operations;
first capacitive sensing means, operatively connected to said power supply means and located within said tank, for storing a full liquid level charge proportional to a full liquid level in said tank:
second capacitive sensing means, operatively connected to said power supply means and located within said tank, for storing an instant liquid level charge proportional to the instant liquid level in said tank;
at least one resistive means, in communication with said first and second capacitive sensing means, for providing an instant voltage value as said first and second sensing means are discharged across said resistive means;
reference value means, for providing a reference voltage value;
discharging means for discharging said first and second capacitive sensing means through said resistive means:
first processing means, operatively connected to said power supply means, said clock means, said resistive means, said reference value means and said discharging means and in communication with said multiplex bus, for determining an absolute liquid level value within said tank and outputting a corresponding fuel level data signal to said multiplex bus.

5,613,399
METHOD FOR LIQUID LEVEL DETECTION

Alan R. Hannan, and Thomas M. Nickolin, both of Cincinnati, Ohio, assignors to KDI Precision Products, Inc., Cincinnati, Ohio

Division of Ser. No. 143,834, Oct. 27, 1993, Pat. No. 5,406,843. This application Apr. 17, 1995, Ser. No. 422,859
Int. Cl.[6] G01F *23/26*
U.S. Cl. 73—304 C **3 Claims**



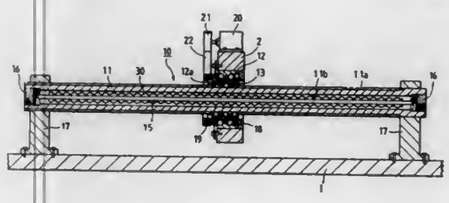
1. A method for detecting a level of a fluid within a fluid reservoir, the method comprising:

disposing a probe in said reservoir, wherein said probe includes a plurality of individually excitable input plates and a common output plate, said probe being positioned in said reservoir such that at least a portion of said output plate and a subplurality of said plurality of input plates are disposed in said fluid;
determining an electrical reference signal representative of the electrical output signal which would be generated by one of said input plates when said one input plate is disposed completely above an upper level of said fluid;
applying an electrical signal to each one of said input plates, sequentially, one at a time, to electrically excite each of said input plates and to generate a series of electrical signals;
sequentially reading said output signals generated on said output plate as said input plates are electrically excited;
comparing said output signals sequentially with said electrical reference signal;
determining from said comparison which ones of said input plates are not disposed completely above said upper level of said fluid disposed in said fluid; and
extrapolating from said input plates that are not disposed above said upper level of said fluid what a level of said fluid is within said reservoir relative to a known full level.

5,613,400
BALL SCREW DEVICE WITH RESONANCE PREVENTING MEANS FOR A SCREW SHAFT AND TABLE DRIVE DEVICE INCLUDING THE SAME

Hideyuki Sato, and Toshiharu Kajita, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 373,379
Claims priority, application Japan, Jan. 18, 1994, 6-003773; Apr. 20, 1994, 6-081668
Int. Cl.[6] F16H *25/24*
U.S. Cl. 74—89.15 **31 Claims**

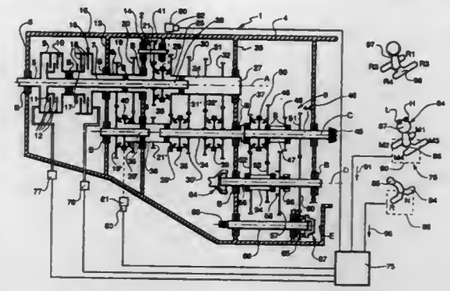


1. A ball screw device, comprising:
a screw shaft including a ball screw groove on an outer peripheral surface thereof and including a hollow hole;
a ball nut having a ball screw groove formed on an inner peripheral surface thereof and disposed opposed to said ball screw groove of said screw shaft;
a pluraiity of balls fitted between said ball screw groove of said screw shaft and said ball screw groove of said ball nut for enabling said screw shaft and said ball nut to move spirally with respect to each other;
a vibration controlling mass member inserted into said hollow hole of said screw shaft; and
a damping member interposed between an outer surface of said vibration controlling mass member and an inner surface of said hollow hole of said screw shaft for preventing contact between said vibration controlling mass member and said hollow bole.

5,613,401
TRANSMISSION FOR AGRICULTURAL TRACTORS

Galli Maurizio, Carpi, Italy, assignor to New Holland North America, Inc., New Holland, Pa.

Filed Aug. 8, 1995, Ser. No. 512,604
Claims priority, application Italy, Aug. 9, 1994, T094A2657
Int. Cl.[6] F16H *61/28;63/12*
U.S. Cl. 74—325 **12 Claims**

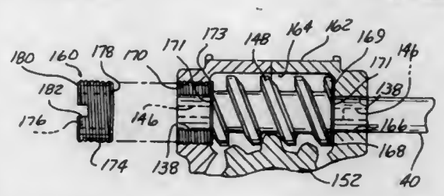


1. In a tractor transmission having a number of gears; an input shaft for receiving motion from the vehicle engine; first and second drive shafts coaxial with each other; first and second hydraulic clutches for selectively connecting said input shaft to said first drive shaft and to said second drive shaft, respectively; at least one driven shaft; and transmission means interposed between said first and second drive shafts and said driven shaft, and defining respective numbers of gear ratios, the improvement comprising:
at least one countershaft drivingly engageable with said driven shaft according to a first number of gear ratios;
first synchronized clutch means for selectively connecting a first countershaft to said first drive shaft according to a first and second gear ratio; and
second synchronized clutch means for selectively connecting said first countershaft to said second drive shaft according to a third and fourth gear ratio respectively lower and higher than said first gear ratio.

5,613,402
ADJUSTABLE SET BEARING

Derek K. Gauger, Ann Arbor, and Kirk K. Horvet, Royal Oak, both of Mich., assignors to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 6, 1995, Ser. No. 468,433
Int. Cl.[6] F16H *1/16;55/22;* **A47C** *1/024*
U.S. Cl. 74—425 **20 Claims**



1. A gear assembly for coupling a rotatable drive shaft to a rotatable driven shaft comprising:
a housing;
a first gear rotatably mounted in the housing and having connecting means to the rotatable drive shaft, said first gear having a pair of end journals and a worm disposed therebetween;
a second gear carried for rotation on the driven shaft and disposed within the housing in meshing engagement with the first gear, the first and second gears transmitting rotation of the rotatable drive shaft to movement of the associated rotatable driven shaft; and

adjustable supporting means for supporting at least one end journal of the first gear wherein connecting means are formed on each end journal for connecting to the rotatable driven shaft and said each connecting means is exposed externally from said housing.

5,613,403

DRIVE APPARATUS EQUIPPED WITH A BALL SCREW AND AN XY DRIVE APPARATUS CONTAINING SAID DRIVE APPARATUS

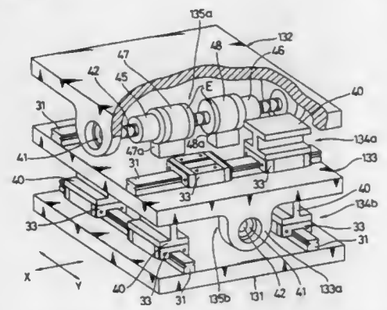
Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,891

Claims priority, application Japan, Jul. 11, 1994, 6-181780; May 16, 1995, 7-141279

Int. Cl.[6] F16H *25/22;25/24*

U.S. Cl. 74—490.09 **24 Claims**



1. A drive apparatus comprising a screw shaft axially supported at opposite ends and in which two types of left and right screw grooves are formed; a plurality of nuts fit loosely onto said screw shaft and provided with ball circulating paths corresponding to each of said screw grooves, respectively; a plurality of balls arranged and contained within said ball circulating paths that circulate accompanying relative rotation of said screw shaft and nuts; supporting mechanisms that support each of said nuts so as to be able to rotate freely; and rotary driving devices in the form of hollow motors fit loosely on said screw shaft and having rotating portions respectively attached to said nuts so as to individually rotate and drive each of said nuts; wherein, each said rotary driving device contains a detecting device that detects the amount of rotation of each of said nuts, and each of said detecting devices has a different resolution.

5,613,404

TILTABLE STEERING MECHANISM FOR AN OFF-HIGHWAY IMPLEMENT

Thomas G. Lykken, Fargo; Barry A. Bowman, Harwood, and Philip T. Kemper, Fargo, all of N. Dak., assignors to Case Corporation, Racine, Wis.

Filed Mar. 7, 1994, Ser. No. 207,346

Int. Cl.[6] B62D *1/18*

U.S. Cl. 74—493 **23 Claims**

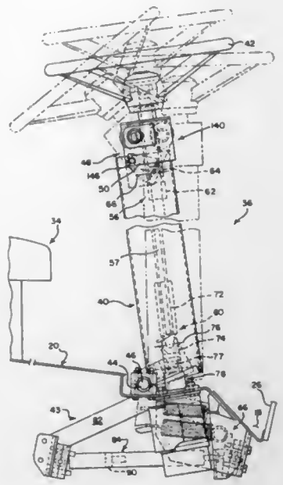
1. A tilting steering system for an off-highway implement comprising:

an operator station defined by a floor;

a steering column extending above said floor and having a generally horizontal pivot axis about which said steering column pivots to an infinite number of generally vertical tilt positions, said steering column having a steering wheel arranged toward an upper end thereof; and

a locking mechanism positioned substantially underneath the floor of the operator station and operably associated with said steering column for locking said steering column in said infinite number of tilt positions;

said locking mechanism including a pivot arm operably connected to the steering column and extending beneath said floor.



5,613,405

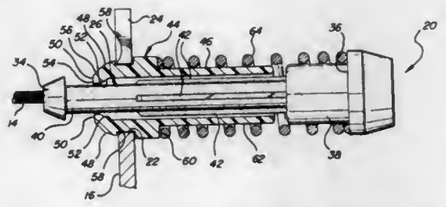
CABLE ASSEMBLY WITH TELESCOPING CORE TERMINAL

Larry Kelley, and Randy Watkins, both of Troy, Mich., assignors to Teleflex Incorporated, Troy, Mich.

Filed Nov. 13, 1995, Ser. No. 556,705

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—502.4 **14 Claims**



14. A motion transmitting remote control assembly (**10**) for transmitting motion along a curved path including an over-travel protection device, said assembly (**10**) comprising: a conduit (**12**); a core element (**14**) slidably disposed in said conduit (**12**), said core element (**14**) having at least one end extending from said conduit (**12**); a slider (**26**) operatively disposed on said end of said core element (**14**), said slider (**26**) including a tapered end stop flange (**34**); a tubular sleeve (**46**) surrounding said slider (**26**) and axially moveable thereover; a plurality of resilient fingers (**48**) extending from said sleeve (**46**) for gripping an aperture (**22**) in a thin-bodied control member (**16**); a compression spring operatively disposed between said sleeve (**46**) and said slider (**26**); and characterized by said fingers (**48**) each having a distal tip (**50**) angled inwardly toward and seated against said end stop flange (**34**) for preventing disconnection of said sleeve (**46**) from said slider (**26**); said end stop flange (**34**) having a tapered protective leading end to facilitate insertion through the aperture (**22**) in the control member (**16**); said distal tip (**50**) of each of said fingers (**48**) including an internal ramping surface (**52**) deflectable over said tapered end stop flange (**34**) during initial assembly of said sleeve (**46**) and said slider (**26**).

5,613,406

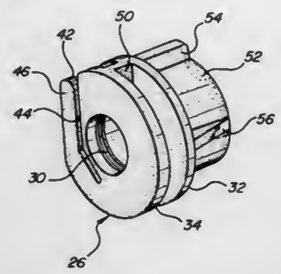
ROTATING SLIDE-N-SNAP

Gregory M. Rutkowski, St. Clair Shores, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Oct. 26, 1995, Ser. No. 548,579

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—502.6 **11 Claims**



1. A motion transmitting remote control assembly (**10**) of the type for transmitting motion in a curved path by a flexible motion transmitting core element (**12**) while being supported in a bulb-shaped slot having a narrow entrance (**14**) and a wider seat (**16**) and an adjacent retainer (**18**), said assembly comprising;

a conduit (**22**) having a bore extending along its longitudinal axis,

a flexible motion transmitting core element (**12**) movably supported in said bore of said conduit (**22**),

a fitting (**26**) supported on said conduit (**22**) and presenting a pair of spaced abutments (**32**, **34**) extending radially of said axis for engaging the slot,

said fitting (**26**) including a body portion disposed between said abutments (**32**, **34**),

said assembly characterized by said body portion having a minor dimension (**38**, **40**) transverse to said axis for moving through the narrow entrance (**14**) of the slot and a major dimension (**36**) transverse to said axis and said minor dimension (**38**, **40**) for extending across the wider seat (**16**) of the slot in a locked position to prevent said fitting (**26**) from being removed from the slot without realignment of said minor dimension (**38**, **40**) with the narrow entrance (**14**) to the slot,

and a gripping projection (**42**) for moving into engagement with the retainer (**18**) to prevent realignment of said minor dimension (**38**, **40**) with the narrow entrance to the slot.

5,613,407

HANDGRIP WITH BUILT-IN HEATER FOR MOTORCYCLE

Toru Ogata, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

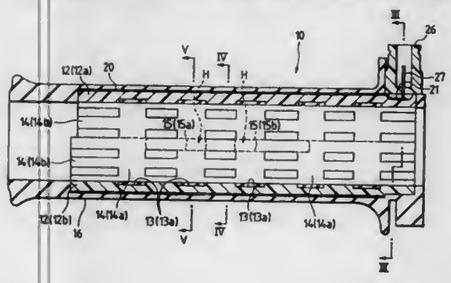
Filed Jul. 17, 1995, Ser. No. 503,289

Claims priority, application Japan, Jul. 15, 1994, 6-163826

Int. Cl.[6] B62K *21/26;* **H05B** *3/54*

U.S. Cl. 74—551.9 **16 Claims**

1. A handgrip with a built-in heater for a motorcycle, comprising:



an inner piece made of a synthetic resin and having a substantially hollow cylindrical shape, an opening formed in a peripheral portion of said inner piece, and a plurality of grooves communicating with each other being formed on an inner peripheral surface of said inner piece, said inner piece being split longitudinally into a plurality of pieces;

a flexible printed circuit heater wrapped around an outer peripheral surface of said inner piece;

a cladding rubber layer covering said flexible printed circuit heater; and

a rubber layer for making pressure contact with a handle or throttle pipe of the motorcycle formed integrally with said cladding rubber layer, said rubber layer filling said grooves.

5,613,408

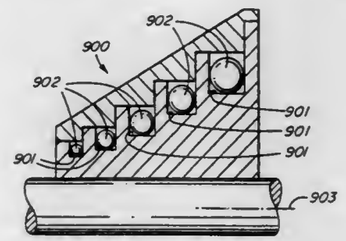
WEIGHT COMPENSATING METHOD AND APPARATUS

Gary R. Taylor; Paul Wierzba, and R. Craig Hannah, all of Calgary, Canada, assignors to ETI Technologies Inc., Guernsey, Channel Islands

Division of Ser. No. 246,864, May 20, 1994, which is a continuation-in-part of Ser. No. 66,307, May 21, 1993, Pat. No. 5,460,017, which is a continuation-in-part of Ser. No. 887,340, May 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,379

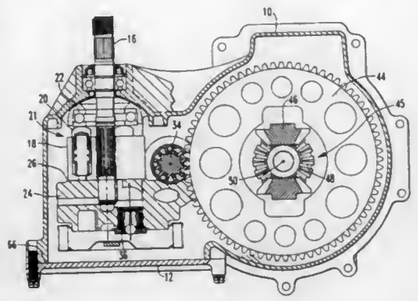
Int. Cl.[6] F16F *15/22*

U.S. Cl. 74—573 R **19 Claims**



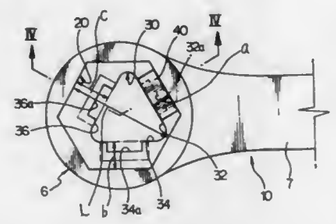
1. Imbalance removing arrangement for removing imbalance in a rotatable element having a rotational axis, comprising an enclosing structure enclosing a plurality of pathways, said plurality of pathways including a first annular continuous pathway, a second annular continuous pathway and a third annular continuous pathway, said first annular continuous pathway being disposed concentrically about the rotational axis and having an outer circumference spaced from the rotational axis by a first distance, said second annular continuous pathway being disposed concentrically about the rotational axis and having an outer circumference spaced from the rotational axis by a second distance that is greater than the first distance, said second annular continuous pathway being axially spaced from the first annular continuous pathway, said third annular continuous pathway being disposed concentrically about the rotational axis and having an outer circumference spaced from the rotational axis by a third distance that is greater than the first and second distances, said third annular continuous pathway being axially spaced from the first annular continuous pathway and the second annular continuous pathway, a first plurality of weights positioned in the first annular continuous pathway for movement within the first annular continuous pathway during rotation of the rotatable element, a second plurality of weights positioned in the second annular continuous pathway for movement in the second annular continuous pathway during rotation of the rotatable element, and a third plurality of weights positioned in the third annular continuous pathway for movement in the third annular continuous pathway during rotation of the rotatable element.

5,613,409
AXLE DRIVING APPARATUS HAVING IMPROVED CASING DESIGN
Ray Hauser, Decatur, Ill., assignor to Hydro-Gear Limited Partnership, Sullivan, Ill.
Filed Apr. 28, 1995, Ser. No. 430,360
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R 19 Claims



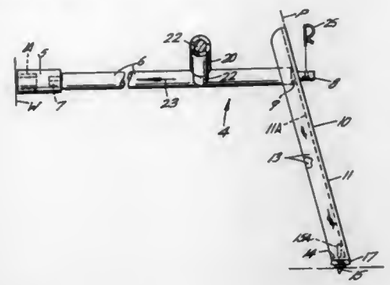
1. An axle driving apparatus, comprising;
a main casing;
a cap plate coupled to said main casing along a first split line;
an axle cap coupled to said main casing along a second split line; and
a center section supported entirely within said main casing at a location offset from said first split line, said center section supporting a hydraulic pump and a hydraulic motor.

5,613,410
ADJUSTABLE HEAD STRUCTURE FOR WRENCHES
Kwang-Moo Kim, 755-3, Kyomoon-Dong, Koori, Kyunggi-Do, Rep. of Korea
Filed Dec. 28, 1995, Ser. No. 580,247
Claims priority, application Rep. of Korea, Jul. 4, 1995, 95-16373
Int. Cl.[6] B25B *13/58*
U.S. Cl. 81—185.1 4 Claims



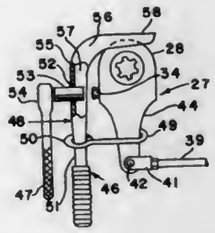
1. An adjustable head structure for wrenches having a head unit integrally formed with or rotatably mounted to a wrench handle, wherein said head unit includes:
a polygonal depression having a plurality of side walls, said polygonal depression being formed on a top surface of said head unit;
a size adjusting opening formed on the bottom of said polygonal depression and having a plurality of fitting edges, said opening being eccentrically formed on said bottom of the depression such that distances from said fitting edges to associated side walls of said polygonal depression are different from each other; and
a size adjusting block being selectively and detachably fitted in one of said fitting edges of the size adjusting opening, thereby adjusting a grip size of said head unit.

5,613,411
TOOL FOR BREAKING LOOSE LUG NUTS
Hubert M. Rines, P.O. Box 237, Yoncalla, Oreg. 97499
Filed Aug. 31, 1995, Ser. No. 521,878
Int. Cl.[6] B25B *23/00*
U.S. Cl. 81—462 1 Claim



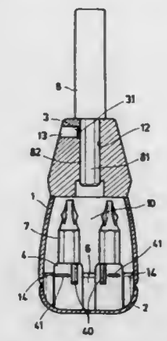
1. A tool for roadside use in breaking loose wheel lug nuts, said tool including,
a wrench socket for installation on a wheel lug nut,
an extension having first end on said socket and a second end, a load receiving surface on the extension adjacent said second end of the extension,
a support member including a plate having a row of apertures for the reception of said second end of the extension and abutment of said load receiving surface with said plate, a base flange adapted for placement on a ground surface, said base flange and said plate defining an acute inclined angle, said plate located transversely of said extension and having side flanges, projections on said base flange of the support member for ground engagement to retain the support member against slippage, said projections insertably engageable with the base flange, a resilient strip in place on said base flange for ground engagement, said strip apertured to frictionally receive said projections, and
an arm carried by said extension for the application of force to the extension for rotation of same and the socket thereon for breaking loose a lug nut.

5,613,412
SLACK CHECK TOOL
Ronald A. Dawson, 20264 Dubois, Clinton Township, Mich. 48035
Filed Oct. 11, 1995, Ser. No. 540,992
Int. Cl.[6] B25B *13/08*
U.S. Cl. 81—484 13 Claims



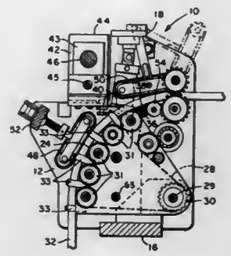
7. A tool for testing the setting of a slack adjuster in a foundation air brake system for a wheel rotatably mounted on an axle, the brake system comprising an air chamber mounted in a first fixed position relative to the axle, a push rod extending from the air chamber, a cam shaft having a axis parallel to the axle, an S-cam rigidly attached to one end of the cam shaft to be pivoted by in a first direction through an angular slack motion range and beyond the end of that range to apply braking force, the slack adjuster including a lever engaging the push rod and having a first side facing the air chamber and a first end enclosing a splined worm gear fitted onto the splined end of the cam shaft to rotate the cam shaft in response to longitudinal movement of the push rod, the slack adjuster having first and second surfaces spaced apart in the longitudinal direction of the cam shaft and wrench-adjustable means accessible outside the lever in a predetermined location to modify the angle of the lever relative to the cam shaft to control the angular extent of the slack motion range, said tool comprising:
(a) a handle;
(b) a holding member extending from the handle to engage a slack adjuster, the holding member comprising flange means engaging the first and second surfaces of the slack adjuster to help guide the tool into proper engagement with the slack adjuster;
(c) retention means attached to the tool to retain the tool in place on the slack adjuster when the holding member is engaged with the slack adjuster and to transmit to the second end force applied to the handle to pull the second end in the one direction from a relaxed position to the end of the slack movement; and
(d) access means in the holding member to permit a wrench to extend through the access means to engage the wrench-adjustable means to modify the setting of the worm.

5,613,413
HANDLE OF A HAND TOOL
Chiu-Hua Huang, P.O. Box 82-144, Taipei, Taiwan
Filed Feb. 20, 1996, Ser. No. 603,374
Int. Cl.[6] B25G *1/08*
U.S. Cl. 81—490 1 Claim



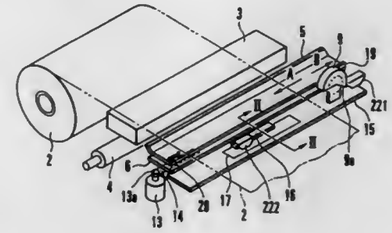
1. A handle for a hand tool, comprising: a handle body having a bottom chamber at a bottom end thereof, an inside annular groove around said bottom chamber, a hexagonal coupling hole longitudinally disposed at a front end thereof in communication with said bottom chamber, a transverse hole perpendicularly extending from said hexagonal coupling hole to the periphery, a springy strip suspending in said transverse hole adjacent to said hexagonal coupling hole, and two opposite press portions on the outside near the bottom end, said springy strip having a raised portion facing said hexagonal coupling hole for holding down a driving shaft in said hexagonal coupling hole for holding a tool bit; and a cover fastened to said handle body and covered on said bottom chamber, said cover comprising a plurality of split upright barrels for holding tool bits, two arched connecting walls connected between said split upright barrels, and a circular chamber defined within said arched connecting walls for holding a driving shaft, each of said split upright barrels having a transverse rib forced into engagement with the inside annular groove of said handle body; wherein said cover can be disconnected from said handle body by disengaging the transverse rib of each of said split upright barrels from the inside annular groove of said handle body by squeezing said press portions to deform the bottom end of said handle body.

5,613,414
SYSTEM FOR CUTTING A STRIP OF ELASTOMERIC MATERIAL SUCH AS A TIRE TREAD
Stephen B. Murphy, Medina, and Debbie J. Mathie, Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 28, 1994, Ser. No. 330,728
Int. Cl.[6] B26D *7/10*
U.S. Cl. 83—16 3 Claims



1. A method of cutting a body of elastomeric material having two thicknesses comprising:
a) electrically heating a knife blade
b) traversing said heated knife blade through said body;
c) applying predetermined constant pressure of said heated knife blade against said body;
d) increasing the temperature of said heated knife at the positions where the thickness is increased; and
e) decreasing the temperature of said heated knife at the positions where the thickness is decreased.

5,613,415
PAPER CUTTING APPARATUS
Takaaki Sanpei, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 12, 1995, Ser. No. 440,454
Claims priority, application Japan, May 16, 1994, 6-124719
Int. Cl.[6] B26D *7/32*
U.S. Cl. 83—86 9 Claims



1. A paper cutting apparatus comprising:
an elongated fixed blade;
a movable blade which reciprocates along said fixed blade in a direction of width of paper to cut the paper in cooperation with said fixed blade;
a fixed member arranged midway along a path of said movable blade;
a pair of paper holding members, movably arranged on two sides of said fixed member, for alternately holding a cut end portion of the paper cut by said movable blade; and
coupling means for detachably coupling said movable blade and said paper holding members with a predetermined coupling force, said coupling means allowing decoupling between said

movable blade and one of said paper holding members and coupling between said movable blade and the other of said paper holding members when said fixed member contacts said one of said paper holding members during movement of the movable blade along the fixed blade.

5,613,416

PUNCHING TOOL

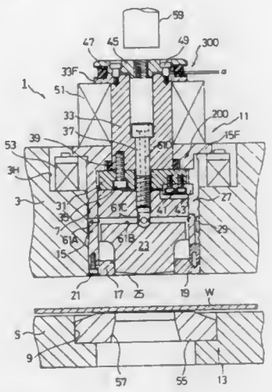
Oriya Fujita, Kanagawa-ken, Japan, assignor to Amada Metrecs Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 252,164, May 31, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,625

Claims priority, application Japan, Jun. 7, 1993, 5-136192

Int. Cl.[6] B26F *1/14*

U.S. Cl. 83—98 **2 Claims**



1. A punching tool struck by a striker for punching a work, the punching tool comprising:

a punch body having a cutting edge formed with a shear angle;

a punch driver, integral with the punch body, having an upper portion and a lower driver end portion having first and second diameters, respectively, said second diameter being larger than said first diameter;

a punch head disposed over the punch driver and struck by the striker;

a punch guide for guiding movement of the punch body during punching;

a stripper plate disposed under the punch guide;

a stripping spring interposed between the punch guide and the punch driver;

a first damping member interposed between the punch guide and the punch driver so as to be elastically deformable within a predetermined first deflection value, the first dampening member having an outer diameter smaller than the second diameter and an inner diameter substantially equal to the first diameter;

a second damping member interposed between the punch driver and the punch head so as to be elastically deformable with a predetermined second deflection value; and

the first dampening member being disposed in an annular recess bounded by an inner wall of said punch guide, and the upper and lower portions of the punch driver.

5,613,417

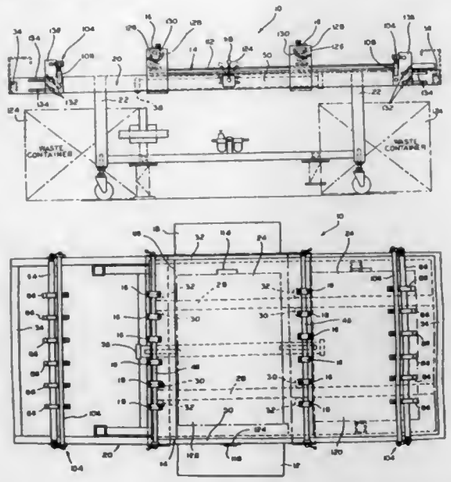
APPARATUS AND METHOD FOR FORMING A GROOVE IN A BOARD

Gavin Scobbie, Homewood; Thomas P. McQueeny, Chicago; Mel S. Kristmann, Lemont, and Richard C. Hennessey, Chicago, all of Ill., assignors to R. R. Donnelley & Sons Company, Lisle, Ill.

Continuation of Ser. No. 175,592, Dec. 30, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 629,460

Int. Cl.[6] B26D *3/06*

U.S. Cl. 83—875 **26 Claims**



23. A method for cutting a plurality of V-shaped grooves in boards of foam having a puzzle facing material thereon to form foldable corner pieces for a three-dimensional puzzle, comprising:

feeding said boards one at a time from a supply of said boards at a feeding station onto a generally rectangular board-receiving table where said boards are generally rectangular and planar;

supporting said boards on said board-receiving table so as to be disposed flat and in a generally horizontal plane after said boards have been fed at said feeding station;

said table being supported by a frame, said frame including a first location generally adjacent said feeding station for receiving said boards from said feeding station, said frame also including a second location and a third location;

said second location being positioned on one side of said first location and spaced from said feeding station, said third location being positioned on the other side of said first location and spaced from said feeding station;

forming said grooves in said boards while said boards are supported on said table including the steps of:

removing portions of said foam comprising said boards to form said V-shaped grooves therein by imparting reciprocating movement to said board-receiving table relative to a foam removing means and said frame, said table being movable relative to said frame to transfer one of said boards between said first location and said second location, said table also being movable relative to said frame to transport another of said boards between said first location and said third location, said relative movement being imparted by causing oppositely directed linear motion of said board-receiving table of a preselected distance in each direction relative to said foam removing means, said foam removing means including a plurality of fixedly mounted cutters each having a pair of blades positioned closely adjacent and above said board-receiving table;

said fixedly mounted cutters of said foam removing means removing foam during relative movement between said table and said fixedly mounted cutters of said foam removing means as a first one of said boards moves with said table from said first location to said second location and also as a second one of said boards moves with said table from said first location to said third location;

separating the portions of the foam comprising said grooves from the remainder of said boards by operation of a foam separating means after said grooves have been formed in said boards in said groove forming step;

removing said board from said board-receiving table at a removing station after forming said grooves in said groove forming step and separating the portion of the foam comprising said grooves;

said foam separating means separating foam during relative movement between said table and said foam separating means as said boards move from said second location to said first location and also during relative movement between said table and said foam separating means as said boards move from said third location to said first location;

removing the portions of said foam comprising said grooves on a second one of said boards while separating the portions of said foam comprising said grooves on a first one of said boards;

removing said first one of said boards from said first location at said removing station after said foam separation;

and feeding a third one of said boards to said first location at said feeding station following removal of said first one of said boards.

5,613,418

MULTIPLE-STAGE HYDRAULIC CYLINDER

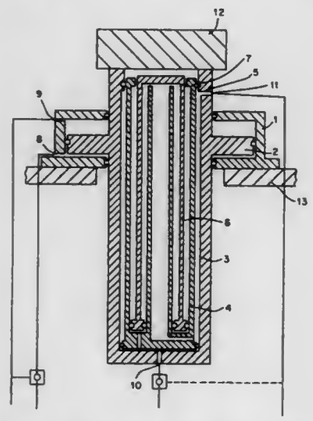
Heinz Guido, Duisburg, Germany, assignor to MAN Gutehoffnungsbütte Aktiengesellschaft, Oberhausen, Germany

Continuation of Ser. No. 142,446, Jan. 10, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 562,306

Claims priority, application Germany, Mar. 25, 1992, 42 09 649.9

Int. Cl.[6] F15B *11/18*; F01B *7/20*

U.S. Cl. 91—167 R **6 Claims**



1. A multiple-stage hydraulic cylinder with a support attached thereto and with three different pressure stages for shifting loads by exerting different forces over different distances to lift a bottom electrode out of a direct-current arc furnace, comprising: a hollow-piston cylinder with a hollow piston rod; a long-stroke cylinder in said hollow piston rod, said hollow piston rod also comprising a cylinder tube surrounding said long-stroke cylinder; and connections on said hollow piston rod and said long-stroke cylinder for admitting fluid to move said hollow-piston cylinder and said long-stroke cylinder, said hollow piston rod being a second telescopic section in stage one of said three pressure stages and displaced by said hollow-piston cylinder in a first telescopic section, said load in said stage one resting against a head of said second telescopic section and being shifted by said second telescopic section only, said second telescopic section accommodating inside thereof said long-stroke cylinder as a third telescopic section when said long-stroke cylinder is inoperative and retracted, said long-stroke cylinder being operative in stages two and three of said three stages and being inoperative until said load in stage one is to be grasped and raised, said multiple-stage hydraulic cylinder comprising a three-stage hydraulic cylinder with two separately operating pressure systems in form of a high pressure system and a low pressure system.

5,613,419

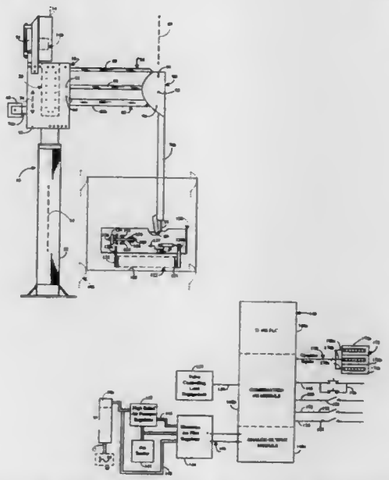
LOAD BALANCING ARM

Cary M. Pierson, Milwaukie, and Stephen L. Heston, Portland, both of Oreg., assignors to Integrated Systems, Inc., Milwaukie, Oreg.

Continuation of Ser. No. 233,020, Apr. 25, 1994, Pat. No. 5,456,130, which is a continuation of Ser. No. 839,632, Feb. 24, 1992, abandoned. This application Oct. 10, 1995, Ser. No. 541,671

Int. Cl.[6] F15B *13/16*

U.S. Cl. 91—361 **4 Claims**



4. In a load balancing system including a load engaging mechanism for selectively coupling a load to an arm and including a lifting mechanism for selectively providing a load counterbalancing lifting force adaptable to loaded and unloaded conditions of the arm, a control arrangement comprising:

a pneumatic cylinder as said lifting mechanism and coupled to said load engaging mechanism and providing said load counterbalancing lifting force as a function of the pressure of air maintained in a chamber thereof;

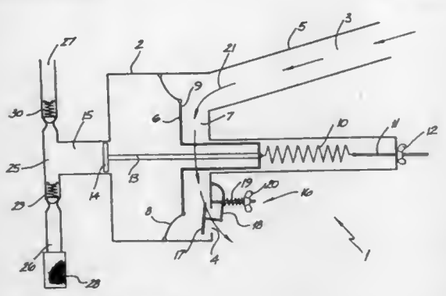
a programmable control element responsive to operator input and conditions of said system while in use, said control including an electric output signal representing a selected counterbalancing lifting force;

an electronic air pressure regulation arrangement responsive to said control element electric output signal and providing a selected air pressure condition within said chamber corresponding to said output signal; and

a lifting force biasing arrangement operatively coupled to said control arrangement and modifying operation of the lifting mechanism in response to operator applied forces, the biasing arrangement including an input mechanism responsive to slight operator applied force in a desired direction of movement for the load and producing a biasing signal representing a direction of said slight operator applied force, said control arrangement being responsive to said biasing signal to deviate

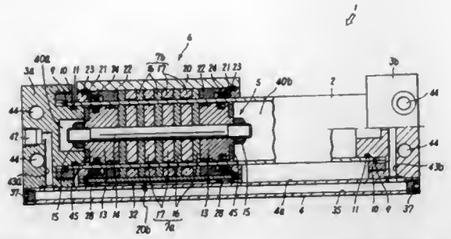
said counterbalancing lifting force to aid in movement of the arm in the indicated direction, said control arrangement deviating from said counterbalancing lifting force in response to said biasing signal by a predetermined percentage of said counterbalancing lifting force.

5,613,420
RECIPROCATING ENGINE
Ralph Glockemann, Candelo, Australia, assignor to Glockemann Peck Engineering Pty Ltd., Australia
PCT No. PCT/AU93/00547, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/10452, PCT Pub. Date May 11, 1994
PCT Filed Oct. 22, 1993, Ser. No. 416,839
Claims priority, application Australia, Oct. 27, 1992, PL5509
Int. Cl.[6] F15B *13/04;* **F04B** *43/06*
U.S. Cl. 91—404 **19 Claims**



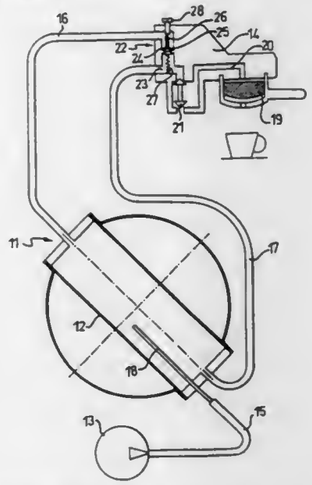
1. An engine comprising:
a hollow housing having an inlet and an outlet between which a liquid passes;
a primary chamber into which the liquid enters as it passes from said inlet to said outlet;
a movable wall continuously sealed with and partly defining said primary chamber and movable from a first position to a second position in which the volume of said primary chamber is larger than when said wall is in said first position;
valve means across said outlet;
a mechanical biasing means biasing said valve means to an open position wherein liquid is allowed to accelerate through said primary chamber from said inlet and through said outlet, said valve means being adapted to close when liquid force thereon from said accelerating flow exceeds said mechanical bias of said mechanical means, whereupon liquid impact in said primary chamber causes said wall to move from said first position to said second position, the liquid in said primary chamber then relaxing to allow said mechanical bias of said mechanical biasing means to open said valve means; and
return means to return said wall from said second position to said first position.

5,613,421
RODLESS CYLINDER
Takashi Abe, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Oct. 12, 1995, Ser. No. 542,322
Claims priority, application Japan, Nov. 10, 1994, 6-301571
Int. Cl.[6] F15B *15/14*
U.S. Cl. 92—165 PR **7 Claims**

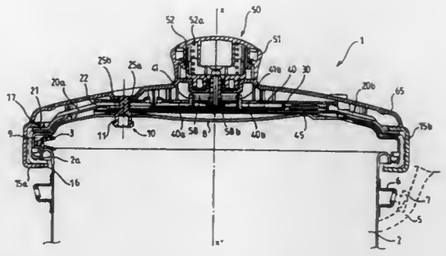


1. A rodless cylinder of the type including a cylinder tube formed of a non-magnetic material in a hollow cylindrical shape, a pair of end covers closing the opposite axial ends of said cylinder tube, a piston hermetically slidably received in said cylinder tube, a carriage member to be moved axially along the outer periphery of said cylinder tube, and a magnet coupling provided between said piston and said carriage member to couple same magnetically with each other, moving said carriage member in synchronism with said piston by magnetic attraction of said magnet coupling when said piston is axially moved in said cylinder tube by charging and discharging compressed air through ports in said end covers, characterized in that said rodless cylinder comprises:
a substantially flat abutting surface formed on an outer side of said carriage member; and
a rail member securely mounted on the outer periphery of the cylinder tube between said pair of end covers and having a substantially flat guide surface in contact with the said abutting surface of said carriage member to block rotational movements of the latter.

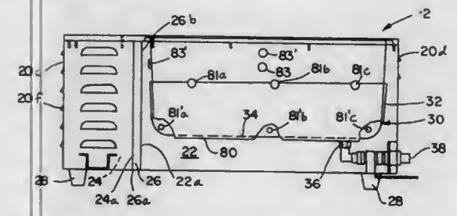
5,613,422
ESPRESSO COFFEE MAKER
Mario Giuliano, Cuneo, Italy, assignor to Faema S.P.A., San Donato Milanese, Italy
PCT No. PCT/EP93/01572, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/00045, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 21, 1993, Ser. No. 360,753
Claims priority, application Italy, Jun. 24, 1992, MI92A1544
Int. Cl.[6] A47J *31/24*
U.S. Cl. 99—281 **12 Claims**



1. An espresso coffee maker comprising a heat exchanger, at least one coffee dispenser unit, a water supply system in heat exchange relationship with said heat exchanger for supplying heated water to the coffee dispenser unit,
wherein the water supply system comprises a cold water feed pipe to the heat exchanger, a pump connected in the water feed pipe, a heated water delivery pipe to the dispenser unit from the heat exchanger, a heated water return pipe to the heat exchanger from the dispenser unit, said delivery and return pipes forming a heated water thermosiphon recirculation circuit between the heat exchanger and the dispenser unit through which heated water flows by natural convection to transfer heat from the heat exchanger to the dispenser unit for heating the latter,
wherein the water supply system comprises at least one heat operated control valve incorporated in the thermosiphon re-circulation circuit and including a chamber connected serially in the recirculation circuit, a transfer port for supplying water to the chamber, a shutter movable in the chamber between a normal position where it partly covers the port and a working position where it uncovers the port, a bias element made of a shape-memory material having a predetermined transition temperature and urging the shutter toward its normal position thus throttling down the transfer port when the temperature of the water through the recirculation circuit is above the transition temperature of the shape-memory material.



5,613,423
COOKER/RETHERMALIZER
Louis S. Polster, Alexandria, Va., assignor to Oliver Products Company, Grand Rapids, Mich.
Division of Ser. No. 65,627, May 21, 1993, Pat. No. 5,445,062. This application May 25, 1995, Ser. No. 450,517
Int. Cl.[6] A47J *27/00;27/62*
U.S. Cl. 99—330 **4 Claims**

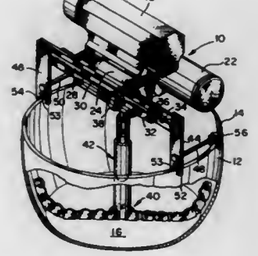


1. A constant temperature bath apparatus comprising:
a vessel for holding a liquid bath, having side and bottom walls;
a heater unit on said vessel walls;
temperature sensors on said walls, including at least one upper sensor on one of said side walls and one lower sensor adjacent said bottom wall, said upper and lower sensors being vertically spaced from each other and operably associated with said heater unit; and
means associated with said temperature sensors for activating said heater unit when the average of the temperatures sensed by the upper and lower sensors drops to a predetermined value.

5,613,424
DEVICE FOR CONTROLLING THE CLOSING AND OPENING OF LOCKING JAWS FOR A PRESSURE VESSEL
Eric Chameroy, Veronnes, and Michel Cartigny, Mirebeau, both of France, assignors to SEB S.A., Ecully, France
Filed Jul. 6, 1995, Ser. No. 499,249
Claims priority, application France, Jul. 6, 1994, 94 08585
Int. Cl.[6] A47J *27/08;27/09;* **B65D** *45/00;45/34*
U.S. Cl. 99—337 **17 Claims**

1. A device for controlling opening and closing of jaws mounted on a cover of a cooking vessel, the vessel having a central axis and the jaws being movable by drive arms over a radial path relative to the central axis between a locking position in which the cover is locked to a container of the vessel and an unlocking position in which the cover can be removed from the container, said device comprising a control element mounted for movement in a substantially radial direction on said cover, said element, during its movement relative to said cover, engaging said drive arms in a manner to control displacement of said drive arms over the radial path.

5,613,425
STIRRING APPARATUS
Mile Krznaric, 204 Fifth Ave., Estell Manor, N.J. 08319
Filed Jun. 26, 1996, Ser. No. 672,080
Int. Cl.[6] A47J *27/00;36/32;* **B01F** *7/16;7/20*
U.S. Cl. 99—348 **4 Claims**

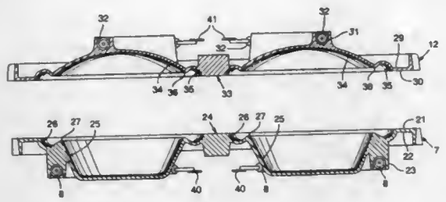


1. An apparatus for stirring fluid contents in a cooking vessel comprising a top opening with a peripheral upper edge, the apparatus comprising:
(a) a vertically positioned horizontally rotatable drive shaft comprising an upper end section and a lower end section,
(b) drive means to which the upper end section of the drive shaft is attached to cause the drive shaft to rotate,
(c) support means attached to the drive means to hold the apparatus in the top opening resting on the peripheral upper edge of the vessel,
(d) stirring means attached to the lower end section of the drive shaft, said means comprising a pair of lengths of chain connected elements, a first length extending horizontally along a line in a first direction from the lower end section and a second length extending horizontally along the same line from the lower end section in an opposite direction, the stirring means to:
(i) allow essentially full upward vertical rotational movement of each element of the chain with respect to each adjacent element,
(ii) prevent essentially all horizontal movement of each element of the chain with respect to each adjacent element, and
(iii) allow the achievement of a lower surface of the lengths of the chain to abut and conform to essentially any upper surface of a cavity of the cooking vessel.

5,613,426
PIE MAKER

Cynthia W. L. Chan Gabbai, Hong Kong, Hong Kong, assignor to Ying Fat Electric Products Limited, Hong Kong

Continuation of Ser. No. 103,243, Aug. 6, 1993, abandoned.
This application Mar. 5, 1996, Ser. No. 611,011
Claims priority, application United Kingdom, Mar. 31, 1993, 93 06664.5
Int. Cl.[6] A47J *37/06*
U.S. Cl. 99—375 11 Claims



1. A pie maker for making a pie having a base, a side wall and a cover, which pie maker comprises:
(a) a mould assembly comprising cooperating first and second moulds that are connected together for relative pivotal movement between an open position in which said first and second moulds are moved apart, and a closed position in which said first and second moulds are brought together, the first mould defining a frustoconical cavity having a base portion adapted to substantially fully contact and thus define the shape of the pie base, and a side wall portion adapted to substantially fully contact and thus define the shape of the side wall of the pie; and the second mould defining a dome-shaped cavity adapted to substantially fully contact and thus define the shape of the pie cover, the mould assembly further comprising a sealing ridge adapted, whenever the first and second moulds are in the closed position, to circumferentially seal the pie cover to the side wall of the pie; and
(b) heating means for heating the first and second moulds to cook the pie, the heating means for heating the first mould being disposed relative to said side wall portion of said first mould so as to direct heat to said side wall portion of the first mould.

5,613,427
CULINARY SHEET AND PAN LINER

Lien Wiley, 2164 Brownstone Creek Ave., Simi Valley, Calif. 93063

Filed Oct. 11, 1995, Ser. No. 541,166
Int. Cl.[6] A47J *37/10;* B32B *5/16*
U.S. Cl. 99—446 19 Claims

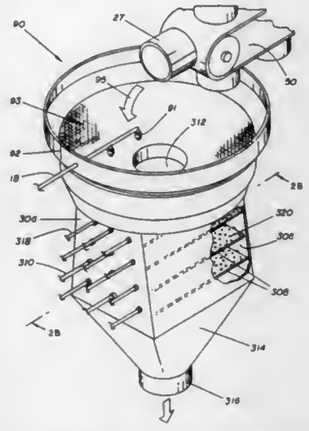


18. An improved flexible culinary sheet, said sheet comprising, in combination:
a) a matrix of at least one of cellulosic fibers and thermoplastic film; and,
b) a plurality of discrete metal foil particles substantially uniformly distributed throughout and permanently embedded within said matrix, said sheet having improved durability and thermal transfer properties; said particles having an average diameter of about 0.1–2 mm.

5,613,428
APPARATUS FOR COOKING FOOD PRODUCTS FOR CONSUMPTION

John H. Kendall, Sugar Land; Ranvir B. Mohindra; Duane S. Rutherford, both of Houston, all of Tex.; Satoru Satake, Tokyo, Japan; Sigebaru Kanamoto, and Katsuyuki Kumamoto, both of Mihara, Japan, assignors to Riviana Foods, Inc., Houston, Tex., and Satake Corporation, Higashi-Hiroshima, Japan

Continuation of Ser. No. 116,114, Sep. 2, 1993, abandoned.
This application Jun. 4, 1996, Ser. No. 658,980
Int. Cl.[6] A23B *4/08*
U.S. Cl. 99—473 14 Claims

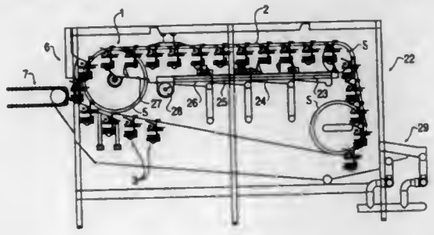


1. A steam cooker for cooking food products, comprising:
(a) a steam chamber adapted to provide a steam environment for the cooking of food products;
(b) a plurality of vertically arranged rotatable food product support structures each rotatable about an axis from a cooking position to a flow position, the cooking position supporting the food product during cooking, and the flow position facilitating transfer of the food product to a successive rotatable support structure; and
(c) means for supplying steam to the food product via the axis of each support structure.

5,613,429
MACHINE FOR AUTOMATICALLY SHELLING FRESH EGGS

Gianluigi Pettazzi, Milan, Italy, assignor to FPS Food Processing Systems, B.V., Barneveld, Netherlands

Filed Jun. 6, 1996, Ser. No. 659,307
Claims priority, application Italy, Jun. 9, 1995, PN95A0032
Int. Cl.[6] A23J *1/09;* A47J *43/14;* A01K *43/00*
U.S. Cl. 99—500 9 Claims



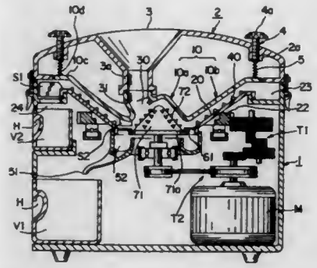
1. A machine for automatically shelling fresh eggs, comprising:
an egg feeding station;

a plurality of operative conveyor lines that are arranged side-by-side and are adapted to receive eggs from said egg feeding station, each of said plurality of operative conveyor lines comprising a single conveyor in a closed-loop and extending in a substantially vertical plane;
a drive means for driving each of said plurality of operative conveyor lines along its respective said single closed-loop; and
a plurality of compact groups distributed along each of said plurality of operative conveyor lines for breaking the shells of the eggs received from said egg feeding station and separately collecting the yolk and the albumen of the eggs.

5,613,430
GRINDER-TYPE JUICER

Mun-Hyon Lee, 8048 Emerson Pl., Rosemead, Calif. 91770-2429

Filed Jan. 9, 1995, Ser. No. 370,111
Int. Cl.[6] B02C *7/12*
U.S. Cl. 99—510 15 Claims



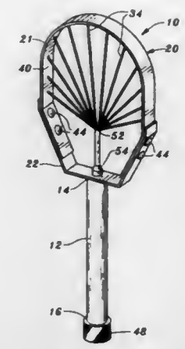
12. A grinder-type juicer comprising a convex upper plate with a central portion projecting upwardly and a concave lower plate with a central portion recessed downwardly which are aligned vertically so as to form a space food in between for receiving and grinding foodstuff when said upper and lower plates are rotated relative to each other, wherein a convex surface of said upper plate is provided with a spiral **14** groove extending outwardly from substantially a center of said upper plate and a concave surface of said lower plate is provided with a plurality of grooves each extending radially from a center to an outer edge of said lower plate, a rotary cutter provided in a hole formed at a center of said lower plate and a slicing device for slicing said foodstuff before said foodstuff is ground by said upper and lower plates, said slicing device comprising a plurality of supporting plates and a plurality of cutter arrays, each one of said plurality of supporting plates being provided with a plurality of slits and mounted on said rotary cutter and each one of said cutter arrays being provided with a plurality of cutting blades and mounted on said convex surface of cutting blades and mounted on said convex surface of said upper plate so that said cutting blades of said cutter arrays pass through said slits of said supporting plate, a pitch of said plurality of cutting blades of one of said cutter arrays being different from a pitch of cutting blades of other cutting arrays.

5,613,431
AVOCADO CUTTER

Chikara R. Tateno, 1815 Katrina Ct., Santa Cruz, Calif. 95062

Filed May 13, 1996, Ser. No. 645,449
Int. Cl.[6] A23N *3/00;* A47J *17/00;25/00*
U.S. Cl. 99—541 12 Claims

1. A tool for use on an avocado, for separating the meat of an avocado from its skin while simultaneously cutting the meat into separate slices, comprising:
a handle having a first end and a second end;

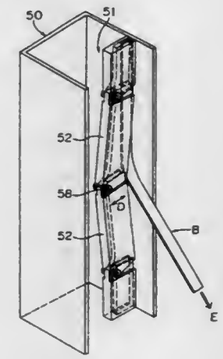


cutting means mounted at one end of the handle; the cutting means including a frame element operably secured to the handle and extending away therefrom; the frame element comprising a cutter fastener portion and a handle fastening portion; the cutter fastening portion having a plurality of apertures operably positioned therein, and the handle fastening portion having a receiving aperture operably positioned therein for receiving and securing said handle;
a plurality of cutting elements operably positioned on the cutter fastener portion of the cutting means;
adjustment means for adjusting said plurality of cutting elements; and
fastening element means for fastening said cutter fastening portion and said handle fastening portion are slidably secured to the cutter fastener portion of the cutting means and to the handle fastening portion of the cutting means allowing for adjustments of the cutter fastening portion and the handle fastening portion in relation to each other and to the second end of the handle.

5,613,432
ARCH TYPE STRAPPING MACHINE

Tetsuya Hoshino, Yokohama, Japan, assignor to Nichiro Kogyo Co., Ltd., Yokohama, Japan

Filed Sep. 7, 1995, Ser. No. 524,838
Claims priority, application Japan, Feb. 3, 1995, 7-037812; Apr. 7, 1995, 7-107152
Int. Cl.[6] B65B *13/06*
U.S. Cl. 100—26 6 Claims



1. A strapping machine for winding a band around an article and pulling back the band to tighten the band around the article, which machine comprises:
a band guide for guiding the band and having a]-like shape in cross section, wherein the band guide includes a plurality of

straight elements interconnected with a plurality of corner elements, each straight element being integrally formed and each corner element being integrally formed, wherein the straight elements and the corner elements are interconnected in series by pivots so as to be swingable relative to one another, said interconnected straight elements and corner elements forming an arch, said arch lying in a plane within which the straight elements and corner elements are positioned, and wherein said interconnected straight elements and corner elements are swingable relative to one another in a direction substantially perpendicular to said plane.

5,613,433

COMPACTING METHOD AND APPARATUS, PARTICULARLY ADAPTED TO COMPACTING HAZARDOUS MATERIALS

Daniel Tucoulat, Parisis; Patrick Jacq, Bretonneux; Philippe Kerrien, Montigny le Bretonneux, and Daniel Kerlau, Chatenay-Malabry, all of France, assignors to Compagnie Generale des Matieres Nucleaires, Velizy-Villa Coublay, France

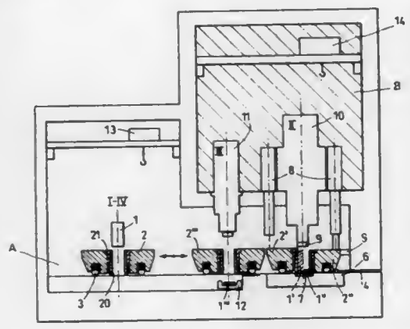
PCT No. PCT/FR94/00040, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO94/16449, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 13, 1994, Ser. No. 464,868

Claims priority, application France, Jan. 15, 1993, 93 00360

Int. Cl.[6] B30B *9/32*

U.S. Cl. 100—35 **18 Claims**



1. A compacting method suitable for compacting hazardous materials, in which a container (1, 1', 1", 1'") is compacted inside a mobile compacting skirt (20) by cooperation between a support surface (7) on which said skirt (20) with said container (1') is placed, and compacting means (9) disposed facing said support surface (7) and displaceable along a vertical axis inside said skirt (20), the method comprising moving said compacting skirt (20) containing said container (1, 1', 1", 1'") in translation between a loading station (I) for loading said container (1), a compacting station (II) where said container (1') is compacted, and an unmolding station (III) having unmolding means (11) for unmolding the compacted container (1") from said skirt and evacuation means for evacuating said compacted container (1'") downwards.

5,613,434

METHOD FOR CONTROLLING OR REGULATING THE PRESSING PRESSURE FOR THE SEPARATION OF SOLIDS AND LIQUIDS

Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Zurich, Switzerland

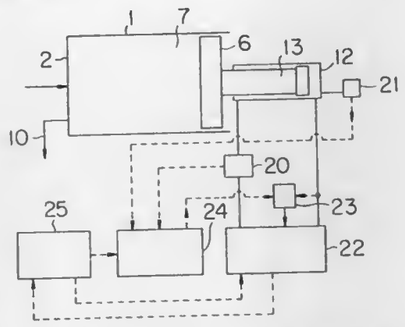
PCT No. PCT/CH95/00033, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO95/22453, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 15, 1995, Ser. No. 535,088

Claims priority, application Switzerland, Feb. 18, 1994, 491/94

Int. Cl.[6] B30B *9/02*

U.S. Cl. 100—37 **8 Claims**



1. A method for controlling or regulating the pressing pressure for the separation of solids and liquids from pressing material (7) by means of a press (1, 2, 6), which performs at least one pressing cycle during a pressing operation by means of a pressure increase, characterized in that the discharge (Q) of the liquid phase from the press (1) is directly or indirectly measured, and that from the course over time of the discharge behavior (Q) of this phase, an instant (t3, t5, t6, t7, t8) is determined at which the further pressure increase (P) is limited to a constant value (P3, P3.1, P4), wherein for each pressing cycle, this instant lies within a time interval which starts at the beginning of discharge (Q) and which ends after a certain length of time, which is equal to twice the length of time between the beginning of discharge (t3) and the onset (t6) of maximal average flow capacity ((Q/t)max) of the liquid phase.

5,613,435

APPARATUS FOR PALLETIZING TUBE SECTIONS OF PAPER OR THE LIKE

Gustav Kuckhermann, Lengerich, Germany, and Robert Corteccia, Roullet, France, assignors to SEEMI Societé d'Etudes d'Equipements de Modernisation Industrielle, La Couronne, France

Division of Ser. No. 314,483, Sep. 28, 1994. This application Jun. 6, 1996, Ser. No. 659,476

Claims priority, application Germany, Oct. 5, 1993, 43 33 906.9; Dec. 9, 1993, 9318897 U

Int. Cl.[6] B30B *7/02*

U.S. Cl. 100—196 **40 Claims**

1. Apparatus for palletizing tube packages comprising:

a frame means;

a loader means on said frame means receiving said tube packages to be palletized;

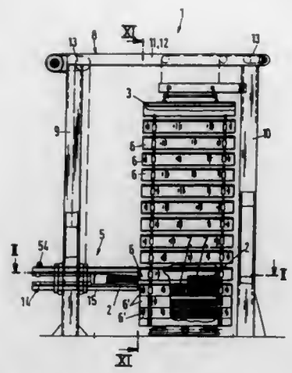
a multi-deck pallet means supportable by said frame means and comprising a plurality of superimposed pallet units, each of said pallet units being movable relative to a juxtaposed superimposed pallet unit between a moved-apart position and a moved-together position;

said loader means comprising a receiving surface which receives said tube packages and a lifting means comprising a plurality of lifting prongs, said lifting means being vertically moveable between a lowered position and a raised position, said lifting means when in said lowered position disposing said lifting prongs at an elevation lower than said receiving surface, said lifting means when in said raised position disposing said lifting prongs at an elevation higher than said receiving surface;

said lifting means being horizontally moveable between a start position and a deposit position, said lifting means when in said start position being operable to raise said lifting prongs to said raised position to thereby lift said tube package from said receiving surface and thereafter to transport said tube package from said start position to said deposit position, said lifting means being operable to lower said lifting prongs to said lowered position when in said deposit position to thereby deposit said tube package on one of said pallet units, the overlying pallet unit overlying said one pallet unit being in said moved-apart position when said lifting means is in its deposit position;

said multi-deck pallet means further comprising a compression plate for each pallet unit;

said multi-deck pallet means further comprising operable means operable to separately dispose a compression plate in a compression position on the tube packages on each pallet unit after deposit of said tube packages on said pallet unit by said lifting means, each of said pallet units being disposed in said moved-together position when said compression plate is in said compression position.



5,613,436

VARIABLE POSITION PIN REGISTRATION PLATE FOR MULTICOLOR SILK SCREEN PRINTING APPARATUS

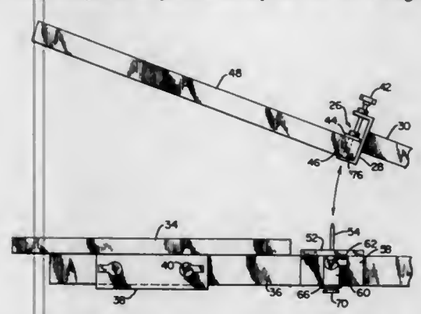
Richard E. Taylor, 1401 E. Green Willow La., Littleton, Colo. 80121

Filed Jul. 17, 1995, Ser. No. 503,094

Int. Cl.[6] B41F *15/04*

U.S. Cl. 101—115 **20 Claims**

1. A pin registration plate assembly for use in a single or multiple station silk screen printing press apparatus of the type having an apparel support platen mounted on an elongated support arm and a silk screen adapted to be carried above said platen by a movable frame support for placing said screen onto said platen, said assembly comprising a plate portion having a plurality of spaced vertical bores therethrough, guide means extending downwardly from said plate portion to releasably engage said support arm, locating pins mounted in a pair of said bores, each said pin extending upwardly from said plate portion for engaging correspondingly spaced holes in said screen, and means for adjustably locking each of said pins in position in said bores such that said pins extend a predetermined distance into holes in said screen whereby said screen is aligned with respect to said support platen when said screen is placed on said support platen.



5,613,437

MIMEOGRAPHIC PRINTING MACHINE HAVING A STENCIL PAPER CONVEYING DEVICE

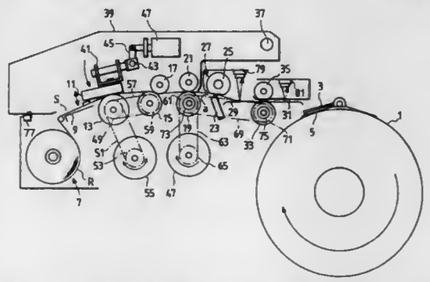
Katsuro Motoe, and Yoshikazu Hara, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 337,226

Claims priority, application Japan, Nov. 9, 1993, 5-279640

Int. Cl.[6] B41L *13/06;13/14*

U.S. Cl. 101—128.4 **4 Claims**



1. A mimeographic printing machine having a stencil making device, a rotary cylindrical printing drum, a stencil paper passageway between the stencil making device and the printing drum, and a cutter in the stencil paper passageway, and in which a mimeographic stencil paper is initially set in such a manner that a front leading end of the mimeographic stencil paper is located in the stencil paper passageway between the the cutter and the rotary cylindrical printing drum, said mimeographic printing machine comprising:

stencil paper conveying means which is driven selectively in a forward direction or in a reverse direction to selectively carry out a forward conveyance of conveying the stencil paper from the stencil making device towards the cylindrical printing drum or a reverse conveyance of returning the stencil paper towards the stencil making device;

a stencil paper sensor provided in the stencil paper passageway between the cutter and the rotary cylindrical drum, for detecting the presence or absence of the stencil paper therein; and

control means for controlling said stencil paper conveying means as follows:

in the case where said sensor does not detect the presence of the stencil paper when the stencil paper is initially set, said control means causes said stencil paper conveying means to forwardly move the stencil paper until, after said sensor detects the passage of the front leading end of the stencil paper, the front leading end of the stencil paper reaches a first predetermined position between the stencil paper sensor and the rotary cylindrical printing drum, and

in the case where said sensor detects the presence of the stencil paper when the stencil paper is initially set, said control means causes said stencil paper conveying means to backwardly move the stencil paper until, after said sensor detects the passage of the front leading end of the stencil paper, the front leading end of the stencil paper reaches a

second predetermined position between the stencil paper sensor and the cutter, and then to forwardly move the stencil paper until, after said sensor detects the passage of the front leading end of the stencil paper, the front leading end of the stencil paper reaches said first predetermined position.

5,613,438

PRINTING PRESS HAVING AT LEAST ONE PROTECTIVE DEVICE, A PROTECTIVE DEVICE FOR A PRINTING PRESS, AND A METHOD OF OPERATING A PRINTING PRESS

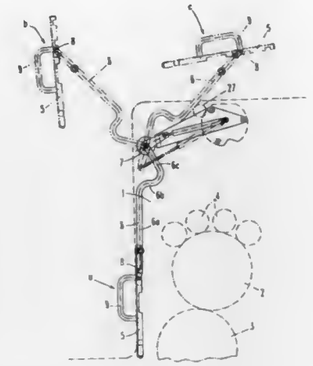
Michael Rehberg, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Jan. 24, 1995, Ser. No. 377,474

Claims priority, application Germany, Jan. 26, 1994, 44 02 158.5

Int. Cl.[6] B41J *5/00*

U.S. Cl. 101—216 **19 Claims**



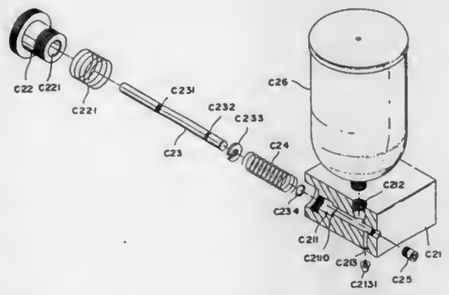
1. A printing press comprising:
a frame;
a plate cylinder being rotatably mounted on said frame;
an inking unit for supplying ink to said plate cylinder;
said inking unit comprising:
an ink fountain for containing ink;
a plurality of inking rollers;
means for transferring ink between said ink fountain and said plurality of inking rollers; and
a plurality of ink applicator rollers for transferring ink between said plurality of inking rollers and said plate cylinder;
a damping unit for supplying damping medium to said plate cylinder;
said printing press having an interior defined within said frame;
cover means for selectively permitting access to said interior of said printing press from outside of said printing press;
means for mounting said cover means on said printing press frame and for rendering said cover means displaceable with respect to said printing press frame;
said cover means being positionable between a first position, a second position and third position, wherein:
in said first position, said cover means is substantially fully closed and substantially impedes access to said interior of said printing press;
in said second position, said cover means is substantially fully open and permits access to said interior of said printing press; and
in said third position, said cover means is positioned intermediately between said first position and said second position and permits access to said interior of said printing press;
means for holding said cover means in said third, intermediate positions;
said mounting means comprising means, for being supported by said holding means, to hold said cover means in said third, intermediate position;
said mounting means comprising at least one shaft member being rotatably mounted with respect to said frame;
said means for being supported by said holding means comprising a support portion being fixedly connected with respect to said at least one shaft member;
said holding means comprising means for biasing against said support portion so as to hold said support portion at a predetermined position, and hold said cover means in said third, intermediate position;
said frame comprising a pair of sides, said plate cylinder and said plurality of inking rollers being mounted between said sides;
said cover means comprising a protective cover;
said mounting means comprising means for mounting said protective cover between both sides of said frame;
said at least one shaft member comprising a pair of shaft journals, each one of said pair of shaft journals being rotatably mounted at a corresponding side of said printing press; and
said mounting means comprising:
a pair of swivel arms, each of said pair of swivel arms being fixedly mounted with respect to a corresponding one of said shaft journals; and
pivot means for pivotably mounting said protective cover on said swivel arms.

5,613,439

STAMPING MACHINE

Ming F. Shu, No. 32, Lane 375, Hua Cheng Rd., Shin Chuang City, Taipei, Taiwan

Division of Ser. No. 525,014, Sep. 20, 1995, Pat. No. 5,560,291.
This application Jun. 12, 1996, Ser. No. 662,016
Int. Cl.[6] B41F *31/00*
U.S. Cl. 101—335 **8 Claims**



1. An automatic ink feeder for a stamping machine, comprising a reciprocating mechanism, and a ink feeder reciprocated by said reciprocating mechanism, said ink feeder comprising a rectangular holder plate, which has a threaded, stepped horizontal through hole, a vertical screw hole perpendicularly connected to said horizontal through hole at a top side, and a vertical ink outlet perpendicularly connected to said horizontal through hole at a bottom side, an ink tank fastened to the vertical screw hole of said holder plate, a screw cap and an externally threaded hexagonal socket respectively threaded into two opposite ends of said horizontal through hole, a round rod inserted through a center through hole on said screw cap into the horizontal through hole of said holder plate and stopped against said hexagonal socket, said round rod having a first annular groove and a second annular groove around the periphery, a metal clamp fastened to said first annular groove, a rubber sealing ring fastened to said second annular groove, a first compression spring mounted around said round rod and stopped between said metal clamp and a step in the horizontal through hole of said holder plate, a second compression spring mounted around said screw cap and stopped outside said holder plate.

5,613,440

APPARATUS AND METHOD FOR ATTACHING A FLEXIBLE PRINTING PLATE

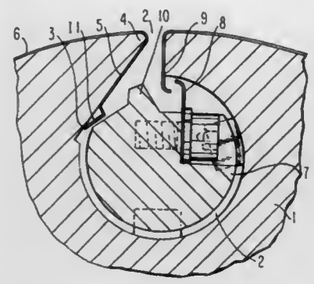
Gunnar Rau, Königsbrunn, Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Apr. 27, 1995, Ser. No. 429,813

Claims priority, application Germany, May 4, 1994, 44 15 683.9

Int. Cl.[6] B41F *27/06;27/12*

U.S. Cl. 101—415.1 **30 Claims**



1. An apparatus for clamping a flexible printing plate onto a form cylinder of a printing machine, comprising:
a form cylinder having a cylinder groove extending substantially axially from a circumferential surface of the form cylinder, the cylinder groove having a leading surface and a trailing surface, the leading surface having a protrusion extending across a width of the form cylinder extending into the cylinder groove the flexible printing plate sized to cover and removably disposed upon the circumferential surface of the form cylinder, said flexible printing plate having a leading flange extending into the cylinder groove of the form cylinder and a trailing flange extending into the cylinder groove of the form cylinder;
a clamping spindle rotatably mounted within the cylinder groove, said clamping spindle comprising a gripper edge and a leaf spring, said gripper edge having a clamping protrusion extending across a width of the clamping spindle, the clamping protrusion being positioned so that upon rotation of said clamping spindle from an open position to a closed position the clamping protrusion approaches the protrusion of the leading surface of the cylinder groove to releasably grip a leading flange of the printing plate, to draw the leading flange of the printing plate into the cylinder groove, and to releasably clamp the leading flange of the printing plate against .the .protrusion of the leading surface of the cylinder groove, said leaf spring having a shape so that upon rotation of said clamping spindle from the open position to the closed position the leaf spring releasably grips a trailing flange of the printing plate and draws the trailing flange of the printing plate into the cylinder groove.

5,613,441

Patent Not Issued For This Number

5,613,442

ARRANGEMENT AND METHOD FOR MESURING AND CORRECTING THE LINE OF A TRACK

Raimo Ahola, and Matti Tervaskanto, both of Oulu, Finland, assignors to Noptel Oy, Finland

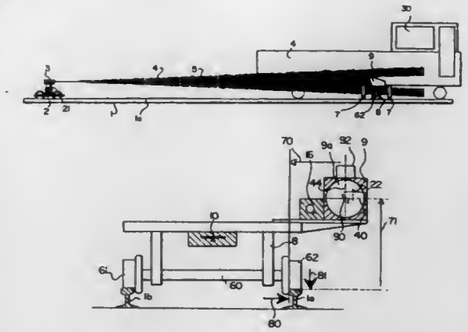
PCT No. PCT/FI93/00555, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO94/15024, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 22, 1993, Ser. No. 448,507

Claims priority, application Finland, Dec. 23, 1992, 925880

Int. Cl.[6] E01B *33/00*

U.S. Cl. 104—8 **14 Claims**



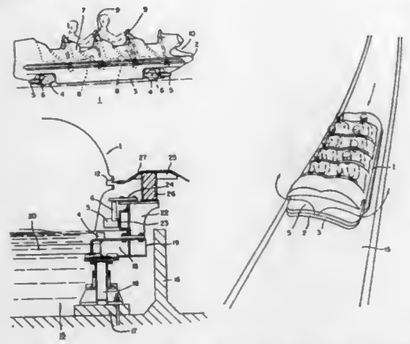
1. In apparatus for measuring and correcting a line of a track including an emitter bogie mounted on the track and provided with an emitter adapted to emit a substantially unidirectional optical beam;
a correcting car mounted on the track at a distance from the emitter bogie and provided with shifting elements for changing the line of the track;
a measuring carriage provided in the correcting car and supported on the track;
an optical position-sensitive receiver mounted on the measuring carriage and which substantially continuously measures a position of an optical beam from the emitter on a measuring surface of a screen and converts measured position data into electric signals;
a device provided in the correcting car for measuring lateral inclination of the track; and
a control unit connected to the optical position-sensitive receiver and to the device which measures lateral inclination of the track, said control unit being arranged to control said shifting elements;
an improvement wherein the optical position-sensitive receiver is positioned, at least during measuring, in substantially constant positioned relationship relative to the track in a transverse direction of the track such that said optical position-sensitive receiver is secured to said measuring carriage at least during measuring in such a manner that the position of the position-sensitive optical receiver in a plane perpendicular to the beam in relation to the track remains continuously substantially constant.

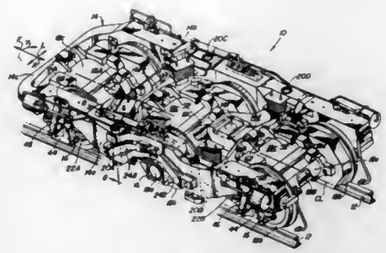
5,613,443

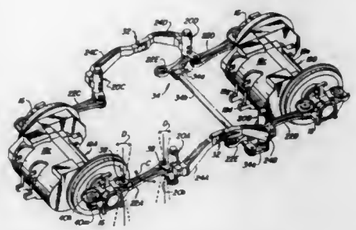
AMUSEMENT RIDE FOR TRAVELING DOWN A WATER CHUTE WITH REDUCED SPLASH

Moriaki Ariga, Yokohama; Reiichi Ojima; Yoshihiro Kawauchi, both of Tokyo, and Toshihiro Kobayashi, Kanagawa, all of Japan, assignors to The Walt Disney Company, Del.

PCT No. PCT/US93/06628, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO94/05389, PCT Pub. Date Mar. 17, 1994
PCT Filed Jul. 14, 1993, Ser. No. 290,889
Claims priority, application Japan, Sep. 2, 1992, 4-234983
Int. Cl.[6] A63G *21/00*
U.S. Cl. 104—70 16 Claims







1. An amusement ride of the type in which passengers are transported down a vertically inclined chute having side walls, to pass through a region of the chute containing water, intended to prevent splashing of the passengers, the amusement ride comprising:

rail assemblies extending along said chute; and

a vehicle shaped to fit within the chute in spatial relation to the side walls and the rail assemblies to travel along the chute in a forward direction while maintaining such spacing, said vehicle comprising:

means for contacting the rail assemblies to guide said vehicle for motion in a forward direction longitudinally along the chute without flotation as it passes through the water filled region;

a watertight upwardly open interior region for accommodating the passengers;

a forward end and a rearward end;

a bottom configured to define a centered concave channel extending longitudinally substantially between said forward end and said rearward end of said vehicle, for accommodating the passage of water; and

side surfaces extending longitudinally rearwardly of said vehicle in spaced relation from and facing toward the side walls of the chute,

said side surfaces being curved upwardly and outwardly away from said interior region to deflect water displaced by the passing of the vehicle through the water away from the interior region to avoid splashing the passengers.

5,613,444

SELF-STEERING RAILWAY TRUCK

Mehdi Ahmadian, Blacksburg, Va.; Laurence W. Gray, Kingston, Canada; Dean Z. McGrew; William A. Kurtzhals, both of Erie, Pa.; James H. Whitehill, Wattsburg, Pa., and Jennifer L. Jaramillo, Fuquay-Variena, N.C., assignors to General Electric Company, Erie, Pa.

Filed Nov. 8, 1995, Ser. No. 555,569
Int. Cl.[6] B61F *5/00*
U.S. Cl. 105—166 74 Claims

1. A railway truck comprising:

a frame including a pair of laterally spaced apart side frames and a plurality of longitudinally spaced apart transoms extending laterally between and integrally joined to said side frames;

a plurality of journal boxes resiliently suspended from said side frames;

a pair of first and second longitudinally spaced apart end axles extending laterally between said side frames and having opposite ends rotatably mounted in respective ones of said journal boxes;

a pair of longitudinally spaced apart bellcranks rotatably joined to each of said side frames between said end axles, each of said bellcranks having a vertically extending crankshaft and a crank arm extending radially outwardly therefrom;

a pair of traction links extending longitudinally along each of said side frames, with each of said traction links being pivotally joined between respective ones of said journal boxes and said crank arms for carrying tension and compression traction loads therebetween;

a pair of adjoining reaction arms extending longitudinally along each of said side frames, with each of said reaction arms having longitudinally opposite proximal and distal ends, and each of said proximal ends being fixedly joined to a respective one of said crankshafts, and said distal ends adjoining each other;

means for operatively joining together said adjoining reaction arm distal ends for carrying lateral reaction loads between each of said reaction arm pairs upon rotation of said crankshafts while permitting differential longitudinal and pivotal movement between said adjoining distal ends; and

wherein traction loads are carried in turn through said end axles, journal boxes, traction links, and bellcranks to said side frames, with said end axles being self-steering in a yaw direction so that yaw of said first end axle corotates together corresponding ones of said bellcranks on opposite sides of said frame which in turn corotate together said reaction arms joined thereto which cantilever to counterrotate together said adjoining reaction arms to counterrotate together said bellcranks joined thereto to counter-yaw said second end axle.

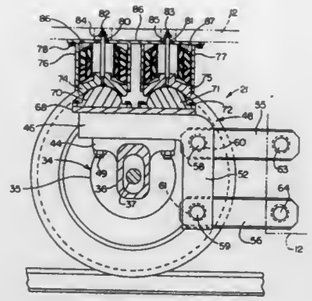
5,613,445

LOCOMOTIVE

Dennis E. Rismiller, Shelby, Ohio, assignor to Plymouth Locomotive International, Inc., Plymouth, Ohio

Filed Jun. 6, 1995, Ser. No. 467,186
Int. Cl.[6] B61F *5/26*
U.S. Cl. 105—224.1 21 Claims

1. A railroad locomotive comprising a chassis frame, wheel sets supporting said locomotive for movement along the rails, a suspension system for each respective wheel set comprising at least one torque bar means extending transversely of said frame, links



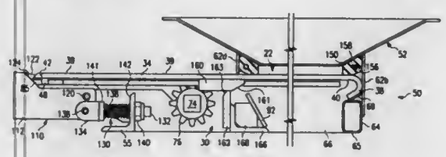
secured to the ends of the torque bar means and pivotally connected to each side of the respective wheel set and operative to urge the end of the wheel set downwardly with respect to the locomotive frame to maintain each wheel of the set in contact with the respective rail while permitting side-to-side canting of the wheel set with respect to the frame in a generally vertical plane, and spring snubbers at each side of a wheel set between the wheel set and frame supporting the weight of the locomotive on the respective wheel set.

5,613,446

RAILWAY HOPPER CAR GATE VALVE AND OPERATING ASSEMBLY

Michael W. DiLuigi; Raymond R. Lund, both of Asheville, and Kevin D. Bramlett, Mars Hill, all of N.C., assignors to Trinity Industries, Inc., Dallas, Tex.

Filed May 2, 1995, Ser. No. 433,311
Int. Cl.[6] B61D *7/20;7/22;7/26*
U.S. Cl. 105—282.2 36 Claims



1. A gate valve assembly to control discharging material from an opening comprising:

a frame assembly for mounting the gate valve assembly with the opening;

a valve member slidably disposed within the frame assembly for movement between a first, closed position blocking the discharge of material from the opening and a second, open position allowing material to flow through the opening;

an operating assembly disposed on the frame assembly for moving the valve member longitudinally between its first position and its second position;

a locking mechanism attached to the frame assembly having a first position which blocks movement of the valve member from its first position to its second position and a second position which allows movement of the valve member from its first position to its second position; and

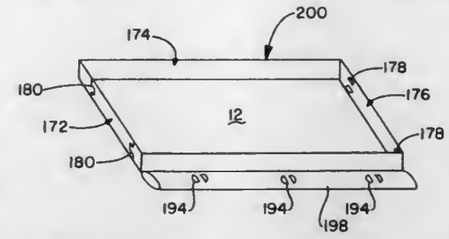
a lock striker slidably disposed on the valve member as part of the operating assembly whereby the lock striker may be extended longitudinally from the valve member to move the locking mechanism from its first position to its second position prior to the operating assembly moving the valve member from its first, closed position to its second, open position.

5,613,447

SLIP SHEET FOR TRANSPORTING GOODS

Howard J. Trickett, 2699 Pontius Rd., Hartville, Ohio 44632

Continuation-in-part of Ser. No. 154,308, Nov. 18, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 399,490
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 10 Claims



1. A slip sheet formed from a flat sheet of polymeric material, comprising:

a flat surface for receiving goods, each edge of said flat surface having an upstanding wall portion affixed thereto; and

at least one edge of the flat surface having a compressible tab portion extending outwardly therefrom, said compressible tab portion having a convex airfoil-type cross-sectional area to facilitate the grasping of said airfoil shaped tab portion by a push/pull type lift truck;

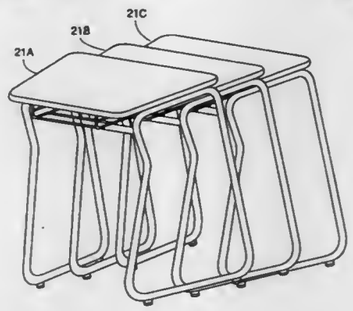
wherein each said upstanding wall portion is directly attached to an adjacent upstanding wall portion to thus form a closed perimeter to hold goods upon said flat surface of said slip sheet.

5,613,448

NESTING DESK

David W. Petty, Belton, Tex., assignor to Royal Seating Corporation, Cameron, Tex.

Filed Jul. 20, 1995, Ser. No. 504,681
Int. Cl.[6] A47B *7/00*
U.S. Cl. 108—91 10 Claims



1. A desk comprising:

two pairs of legs and a top member having an upper side, a lower side, a front edge, a rear edge, and a two side edges;

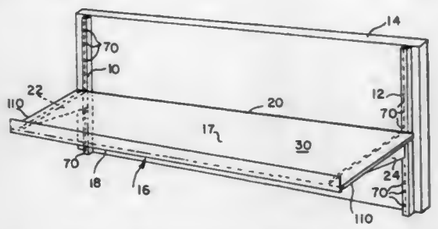
each pair of legs comprising a front leg and a rear leg with said front leg effectively having a beight greater than that of said rear leg such that said front edge of said top member is higher than said rear edge of said top member;

said front edge of said top member having a length greater than the length of said rear edge of said top member such that said top member is generally trapezoidal in shape;

said two pairs of legs being secured to said lower side of said top member near said two side edges respectively such that said front legs are located at the front of said desk and said rear legs are located at the rear of said desk and the distance

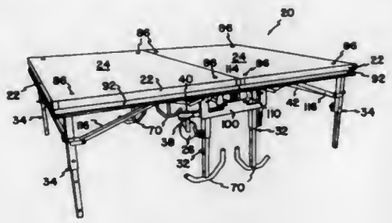
between said two front legs is greater than the distance between said two rear legs.

5,613,449
ADJUSTABLE SHELVING SYSTEM
Richard G. Pullman, Middleboro, Mass., assignor to J. Baker, Inc., Hyde Park, Mass.
Filed Apr. 5, 1995, Ser. No. 416,634
Int. Cl.[6] A47B 9/00
U.S. Cl. 108—108 26 Claims



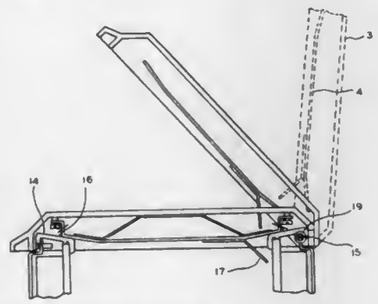
1. A shelf and supporting brackets combination to be mounted on a pair of vertical standards having slots thereon for receiving a back end portion of the brackets, the shelf and supporting brackets combination comprising:
a shelf including top and bottom surfaces, front and back edges and front and back flanges extending downwardly from the front and back edges the shelf having a front channel and a back channel respectively disposed lengthwise on the front and back flanges; and
at least two supporting brackets adjustably connected to the shelf in spaced relation to each other, each supporting bracket including a front tab and a back tab respectively secured to a front end and a back end of the supporting bracket,
the front and back tabs being slidably captured in the front and back channels so that each supporting bracket can be slid lengthwise along the shelf to adjust the spacing therebetween, the supporting brackets being constructed and arranged to be selectively retained on the shelf in a supporting position and a stored position, the supporting brackets being generally perpendicular to the shelf in the supporting position and substantially parallel to the shelf in the stored position.

5,613,450
MOBILE FOLDING STAGE
Walter R. Wagner, Minneapolis, and Richard C. Bue, Chaska, both of Minn., assignors to Sico Incorporated, Minneapolis, Minn.
Filed Nov. 10, 1994, Ser. No. 337,254
Int. Cl.[6] A47B 3/083; E04H 3/28
U.S. Cl. 108—175 22 Claims



1. A mobile folding stage, comprising:
a frame;
stage decks mounting to the frame and forming an extended stage surface;
a linkage folding the stage along a center axis from a use position wherein the stage decks are substantially horizontal to a folded position wherein the decks are substantially vertical with the stage surfaces facing one another;
inner support legs and outer support legs, wherein the inner support legs fold to a storage position lying substantially against undersides of the stage decks and wherein the inner support legs are actuable independently from the linkage, and wherein each of the inner support legs includes a floor engaging portion having a substantially horizontal bottom portion and an end portion having a planar lower surface extending upward from the bottom portion at an angle of less than 90 degrees and more than zero degrees.

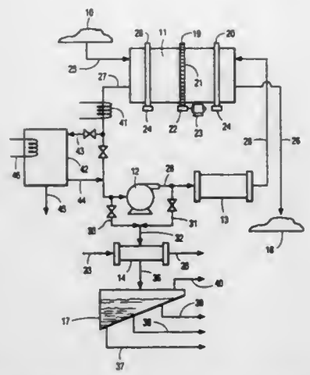
5,613,451
REMOVABLE HOPPER COVER
Jon C. Zook, Hendersonville, Tenn., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed May 15, 1995, Ser. No. 440,648
Int. Cl.[6] F23M 7/00
U.S. Cl. 110—173 R 5 Claims



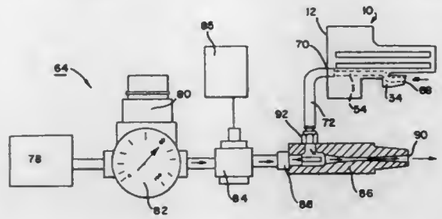
1. A cover apparatus comprising:
a cover lid for covering a hopper of a device for melting and supplying a hot melt and an adhesive;
the cover lid having cover lid hinge points;
a cover base attachable to a top section of the hopper;
the cover base having cover base hinge means engageable with the cover lid hinge points; and
detachment means, wherein upon over extension of the cover-lid, the cover lid hinge points disengage from the cover base hinge means and the cover lid disengages from the cover base without damage to any of the elements.

5,613,452
METHOD AND APPARATUS FOR SOIL REMEDIATION WITH SUPERHEATED STEAM THERMAL DESORPTION AND RECYCLE
Primo Marchesi, Lock Haven, and George M. Goyak, Murrysville, both of Pa., assignors to American Color and Chemical Corporation, Lock Haven, Pa.
Continuation of Ser. No. 55,433, Apr. 29, 1993, abandoned.
This application Mar. 30, 1995, Ser. No. 419,292
Int. Cl.[6] F23J 15/00; B09B 3/00
U.S. Cl. 110—215 23 Claims

1. A method for reducing the volatilizable organic pollutant content of soil which is contaminated with at least one volatilizable organic pollutant, comprising:
delivering contaminated soil to a treatment zone and passing said contaminated soil through said treatment zone in vapor/solids contact with treatment vapors consisting essentially of predominantly superheated steam and devolatilized organic pollutant whereby moisture from said contaminated soil is converted to steam and a substantial portion of said volatile organic pollutant is volatilized;
maintaining said treatment zone at a pre-selected temperature to cause moisture from said soil to convert to steam and a substantial portion of said organic pollutants to volatilize,
recovering from said treatment zone a relatively dried soil having substantially lower pollutant content than said contaminated soil;
recovering as an exit gas stream at an exit temperature and an exit pressure the treatment vapors from said treatment zone, said exit gas stream comprising predominantly superheated steam and a minor portion of volatilized organic pollutants; and
recirculating a major portion of said recovered exit gas steam at a pressure and temperature greater than said exit pressure and said exit temperature and consisting essentially of predominantly superheated steam and a minor portion of volatilized organic pollutant to said treatment zone as the treatment vapors therein.

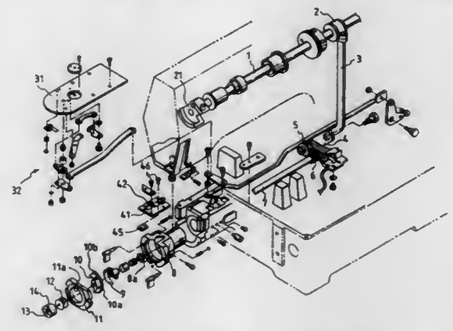


5,613,454
VACUUM LATCHTACK THROAT PLATE WITH A VACUUM GENERATING APPARATUS
Maximilian Adamski, Jr., Tega Cay, S.C.; Stephen S. Ruderman, Matthews, N.C., and Marian Pawlowski, Fort Mill, S.C., assignors to Union Special Corporation, Charlotte, N.C.
Filed Dec. 29, 1994, Ser. No. 366,324
Int. Cl.[6] D05B 65/06
U.S. Cl. 112—260 18 Claims



1. A vacuum latchtack throat plate comprising in the direction of a feed line:
body having a front edge and a side edge;
a stitch tongue integrally formed with the body and extending in a direction generally parallel to the side edge of the body, the stitch tongue comprising a back edge and an internal bore beginning at the back edge and extending longitudinally along a first axis; and
a conduit coupling the internal bore to the front edge of the body, wherein the conduit is angled from the first axis.

5,613,455
NEEDLE RECEIVING ASSEMBLY AND SEWING MACHINE HAVING SAME
Takashi Yamashita, and Mitsuo Watanabe, both of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,256
Claims priority, application Japan, Jun. 29, 1994, 6-148164
Int. Cl.[6] D05B 55/06; B65H 57/00
U.S. Cl. 112—302 17 Claims



1. A needle receiving assembly for a sewing machine, comprising:
a throat plate through which a sewing needle can pass;
a needle collar for regulating a rear loop of an upper thread passing through the sewing needle, the needle collar being adjustable in position relative to the sewing needle; and
a throat control panel disposed between the throat plate and the needle collar, the thread control panel having a thread control hole for receiving the sewing needle and the needle collar being adjustably mounted to the thread control panel.

5,613,453
METHOD AND APPARATUS FOR CONTAINING AND SUPPRESSING EXPLOSIVE DETONATIONS
John L. Donovan, P.O. Box 486, Danvers, Ill. 61732
Filed Dec. 29, 1995, Ser. No. 578,200
Int. Cl.[6] E23G 7/00
U.S. Cl. 110—237 22 Claims



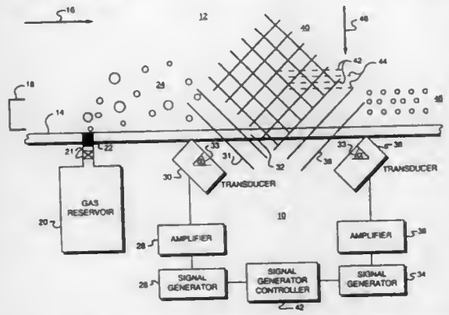
1. An apparatus for containing and suppressing explosions having a chamber, at least one sealable door, and ignition means for detonating an explosive charge within the chamber, and characterized by a plurality of plastic film containers filled with water and suspended in a spaced array within the chamber above the explosive to be detonated.

5,613,456

MICROBUBBLE POSITIONING AND CONTROL SYSTEM

Robert Kuklinski, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1995, Ser. No. 492,831
Int. Cl.[6] B63B *1/38*
U.S. Cl. 114—67 A 19 Claims



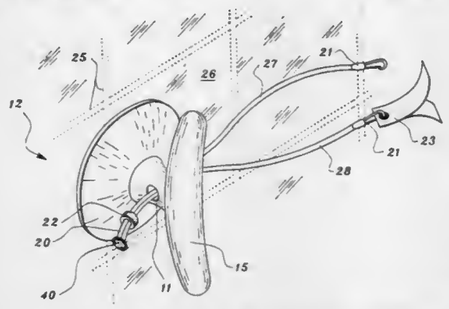
1. A system for positioning bubbles contained in liquid, comprising:
at least a first source of acoustic energy disposed in acoustic contact with said liquid containing said at least a first acoustic signal having a first frequency;
at least a second source of acoustic energy disposed in acoustic contact with said liquid containing said bubbles for producing in said liquid containing bubbles at least a second acoustic signal having a second frequency; and
wherein said at least a first source of acoustic energy and said at least a second source of acoustic energy are spatially positioned and oriented proximate each other so that said at least a first acoustic signal and said at least a second acoustic signal interact at an angle which is substantially perpendicular and cooperate to produce a three-dimensional standing wave field in said liquid containing said bubbles, said three-dimensional standing wave field positioning said bubbles proximate a predetermined location within said liquid containing said bubbles.

5,613,457

APPARATUS FOR ANCHORING FOR A FLOTATION DEVICE

Barbara Frank, Dallas; Calvin A. Barker, Jr., Pottsboro, and Lana S. Lissauer, Richardson, all of Tex., assignors to Bar&Cal Corp., Dallas, Tex.

Filed Aug. 8, 1996, Ser. No. 695,086
Int. Cl.[6] B63B *21/04*
U.S. Cl. 114—218 18 Claims



1. An apparatus for anchoring a flotation device, comprising:
(a) a tether, the tether further comprising:
(i) a first cord having proximal and distal ends,
(ii) a second cord having proximal and distal ends,
(iii) keeping means engaging the cords,
(iv) attachment means attached to the distal ends of the cords; and
(b) an anchor, the anchor further comprising:
(i) a base, the base having a face,
(ii) a handle attached to the base, the handle having a hole sized to permit the passage of the tether,
(iii) a plurality of suction cups attached to the face of the base,
(iv) means for causing the anchor to be buoyant in water; and
(c) the tether passing through the hole in the base.

5,613,458

SHORE ANCHOR FOR SMALL BOATS & PERSONAL WATERCRAFT

Kelly Owen, 21067 Commerce Pointe Dr., Walnut, Calif. 91789

PCT No. PCT/US94/08291, § 371 Date May 19, 1995, § 102(e) Date May 19, 1995, PCT Pub. No. WO96/03308, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 22, 1994, Ser. No. 448,496
Int. Cl.[6] B63B *21/24*
U.S. Cl. 114—230 6 Claims



1. An anchor device anchor comprising an elongated rod-like anchor member one end of which is pointed,
a drive anvil affixed to the anchor member,
a retraction anvil affixed to the anchor member in spaced relation to the drive anvil,
an annular weight engaged around the anchor member and slidable therealong between the anvils, and
an elongated sheath having a closed end and an open end at which the sheath defines connection features which are releasably cooperable with cooperating connection features at opposite ends of the weight.

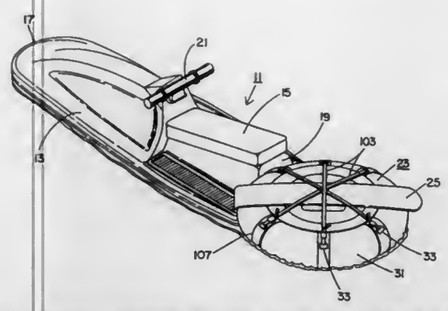
5,613,459

TOWABLE FLOATING STORAGE ACCESSORY FOR USE WITH WATERCRAFT

Andrew P. Remy, 8220 Sandpiper Cir., Fort Worth, Tex. 76138

Filed Jan. 4, 1996, Ser. No. 582,693
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—270 16 Claims

1. A storage accessory for use with a personal watercraft, comprising:
a) a floatable member that is toroidal in shape, the floatable member having a top, a bottom and a center cavity;



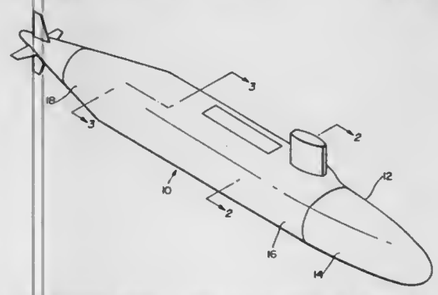
b) a container comprising a cylindrical wall, the cylindrical wall forming a storage compartment therein, the cylindrical wall having a top and a bottom, the cylindrical wall having a bottom wall and an opening in the top to allow access to the storage compartment;
c) the container comprising a rigid flange located at the top of the cylindrical wall and extending radially outward therefrom;
d) the cylindrical wall being located within the center cavity of the floatable member, and the flange being located on the top of the floatable member;
e) the container further comprising a lid for the opening, the lid being coplanar with the flange.

5,613,460

SUBMERSIBLE VESSEL EXTERNAL LOAD MOUNTING SYSTEM

Clinton W. Stallard, III, Hampton, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Continuation of Ser. No. 298,858, Aug. 31, 1994, abandoned. This application May 2, 1996, Ser. No. 642,123
Int. Cl.[6] B62G *8/00*
U.S. Cl. 114—312 18 Claims



1. An external storage system for a submarine having a hull comprising:
a storage means externally mounted to said submarine hull;
said external storage means being formed at least partly of syntactic material to provide structural support and compensating buoyancy;
said syntactic material being filled with at least one from a group of fillers including microspheres and macrospheres that are resistant to deformation under hydrostatic pressure and resistant to migration of water; and
said external storage means including an external boundary formed at least partly of said syntactic material and configured as a fairing member of said submarine.

5,613,461

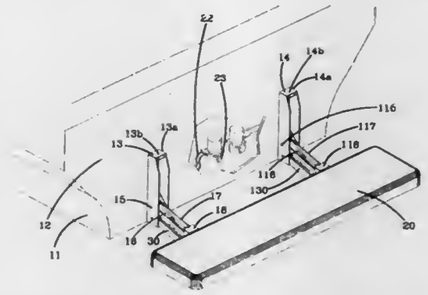
Patent Not Issued For This Number

5,613,462

LIFTING DEVICE

John B. Schwartz, 341 NE. 3rd Ave., Dania, Fla. 33004

Continuation-in-part of Ser. No. 373,423, Jan. 17, 1995. This application Feb. 26, 1996, Ser. No. 606,843
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—362 10 Claims



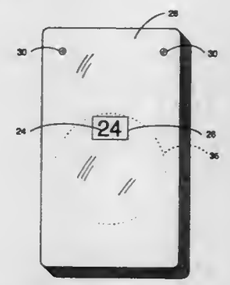
1. A lifting device comprising: a housing having two spaced vertical plates and mounted on a boat or stationary surface, upper and lower horizontal shaft means mounted and extending between said plates, a vertically movable bracket means including two spaced horizontal support arms and having upper and lower horizontal shaft means, a platform means supported by and spanning said support arms, said platform means being of sufficient width and length to support watercraft, hydraulic cylinder means pivotally mounted on said housing upper shaft means, piston rod means engageable with said hydraulic cylinder means and pivotally mounted on said bracket lower horizontal shaft means; first arm means pivotally connected to said upper housing horizontal shaft means and said upper bracket horizontal shaft means; second arm means pivotally connected to said lower housing horizontal shaft means and said lower bracket horizontal shaft means; said device being characterized in that retraction of said piston rod means causes said bracket means to rise, thus raising said platform means and extension of said piston rod means causes said bracket means to lower thus lowering said platform means; said device being characterized as permitting the raising or lowering of watercraft on its platform means.

5,613,463

NUMBERING DEVICE

William T. Stokes, 1125 Robin Way, Sunnyvale, Calif. 94087

Filed Jan. 3, 1995, Ser. No. 368,299
Int. Cl.[6] G09F *11/04*
U.S. Cl. 116—315 14 Claims



1. A numbering device for assigning selected multiple-digit numbers to a product which includes a casing, comprising:
a first generally circular digit wheel having a plurality of digits arranged on the wheel in a generally circular pattern near the

outer edge of the wheel, the first digit wheel being generally transparent so as to permit viewing of background behind the first digit wheel,

a second generally circular digit wheel generally the same size as the first digit wheel and having a plurality of digits arranged generally in a circular pattern near the outer edge of the second digit wheel,

means for mounting the two digit wheels, with the first digit wheel overlying the second digit wheel, in overlying registry within the casing such that the digits face outwardly of the casing,

viewing window means in the casing, for permitting viewing of selected juxtaposed digits from the first and second digit wheel,

and the first and second digit wheels having their digits offset from radials of the digit wheel, with digits of one of the digit wheels being offset to the left and the digits of the other digit wheel being offset to the right,

whereby, when digits are selectively juxtaposed in the casing so as to be viewable through the viewing window means, they are included in a selected number having digits in substantially proper and parallel arrangement.

5,613,464

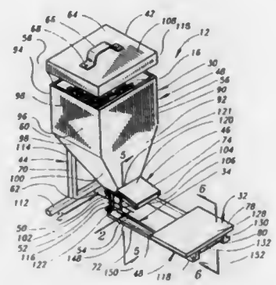
PLATFORM ACTUATED FEEDER APPARATUS

Jeffrey L. Petzel, R.R. #1, Box 119, Longton, Kans. 67352

Filed Nov. 21, 1994, Ser. No. 343,039

Int. Cl.[6] A01K *5/00*

U.S. Cl. 119—55 **4 Claims**



1. A platform actuated feeder apparatus operable to selectively dispense material therefrom, comprising:

a) a storage and delivery assembly having a platform and access lid assembly connected thereto;

b) said storage and delivery assembly adapted to receive the material therein and having a discharge section;

c) said platform and access lid assembly includes a lid member mounted adjacent said discharge section operable to selectively reveal and enclose the material in said discharge section; and an actuator platform assembly;

d) an actuator linkage assembly connecting said lid member member to said actuator platform assembly;

e) said actuator linkage assembly having a lid connector assembly connected at one end to said lid member and pivotally connected at an opposite end to an intermediate link member which, in turn, is pivotally connected to a platform connector assembly which is connected to said actuator platform assembly; and

f) said actuator platform assembly includes an actuator plate member having an outermost end pivotally connected to said platform connector assembly;

whereby movement of said actuator platform assembly in a downward pivotal movement about said platform connector assembly operates to immediately pivot said lid member to reveal the material in said discharge section.

5,613,465

CONTROLLED RELEASE AQUATIC NUTRIENTS

William P. Moore, Hopewell, Va., assignor to The Vigoro Corporation, Chicago, Ill.

Filed Jan. 27, 1995, Ser. No. 378,589

Int. Cl.[6] A01K *61/02*

U.S. Cl. 119—230 **13 Claims**

1. A method of using phosphate chemicals of formula $LDPO_4$ to provide controlled release nutrients to a food chain which grows in an aquatic environment and thereby supplies feed for the growth of fish therein, the method comprising:

(a) selecting a substantially water insoluble particulate phosphate compound of formula $LDPO_4$, wherein L represents a monovalent Lewis Acid moiety and D represents a divalent metal moiety, for use as a source of controlled release aquatic nutrients;

(b) placing a nutritiously effective amount of the selected phosphate compound in the aquatic environment in substantial contact with water; and,

(c) allowing the water to remain in contact with the selected phosphate compound for a period of time amounting to between 30 and 365 days to disseminate water soluble nutrients slowly released therefrom, effectively feeding members of the food chain and thereby supplying food for fish in the aquatic environment.

5,613,466

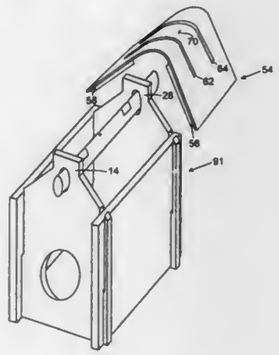
KNOCKDOWN BIRDHOUSE

Arthur A. Mennemeyer, 4142 Mesa Verde Ave. NE., #4, Albuquerque, N.M. 87110

Filed May 30, 1995, Ser. No. 453,366

Int. Cl.[6] A01K *31/00*

U.S. Cl. 119—431 **20 Claims**



1. A knock-down birdhouse, comprising:

a front member including an entrance;

a rear member;

two side members;

a floor member; and

a roof member including at least two lip members provided at least partially around opposite inside surfaces of said roof member in the vicinity of an edge of said roof member such that said lip members face each other when said roof member is folded over, wherein in a disassembled state, said roof member being foldable to accommodate all other members of said knock-down birdhouse, said birdhouse members being retained within said foldable roof member by said lip members.

5,613,467

PET ANCHOR

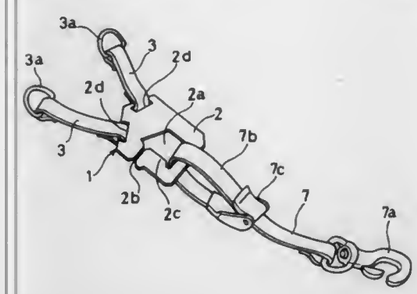
Makoto Arakawa, Tokyo, Japan, assignor to Kabushikigaisha Heisei, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 487,388

Claims priority, application Japan, Jul. 7, 1994, 6-179580; Aug. 9, 1994, 6-207959

Int. Cl.[6] A01K *1/06*

U.S. Cl. 119—792 **13 Claims**



1. A pet anchor comprising:

at least one anchor band, each said anchor band having one end for anchoring the anchor band to a seat of vehicle, and

an anchor plate, said anchor plate being formed, at a first portion thereof, with at least one slot, an other end of each said anchor band being securable to said anchor plate at a respective said slot, said anchor plate also being formed, at a second portion thereof, with at least one engaging recess having a substantially "C" shaped configuration and within which a looped end of a leash may be fitted, wherein said anchor plate is formed with a slit communicating with said engaging recess and through which the leash may be introduced into said engaging recess, said slit having a width slightly larger than the thickness of the leash, and wherein an edge of said engaging recess opposite said first portion has a length slightly longer than the width of the leash, further comprising an overhang portion projecting inwardly within said engaging recess and formed in one lateral side in which said slit is formed, such that a width between an inner edge of said overhang portion and an inner edge of an other lateral side opposingly facing said overhang portion is narrower than the leash.

5,613,468

FUEL INJECTION CONTROL

Takeru Ibara; Yoshihiko Moriya, and Yu Motoyama, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 19, 1996, Ser. No. 634,943

Claims priority, application Japan, Apr. 20, 1995, 7-095309

Int. Cl.[6] F02D *41/04*

U.S. Cl. 123—73 A **27 Claims**

1. An internal combustion engine having a combustion chamber, an intake passage for supplying an air charge to said combustion chamber, a reed type valve disposed in said induction passage for controlling the flow therethrough in response to pressure differences, a fuel injector disposed in said induction passage upstream of said reed type valve for injecting fuel into said induction passage, control means for sensing an engine condition and controlling the amount of fuel injected by said fuel injector, means for determining when the reed type valve closes at the end of an induction cycle, and means for terminating the fuel injection at a time not substantially later than the time when the closing of the reed type valve is determined.

5,613,469

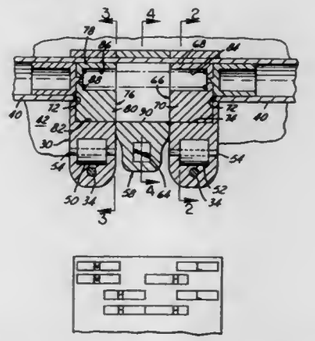
CONTROLS APPARATUS FOR ENGINE VARIABLE VALVE SYSTEM

Ronald Rygiel, Prospect Heights, Ill., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 26, 1995, Ser. No. 578,130

Int. Cl.[6] F01L *13/00*

U.S. Cl. 123—90.16 **3 Claims**



1. A control system for a hydraulically activated variable valve timing and lift mechanism for an internal combustion engine, comprising: a camshaft supported by the cylinder head having three eccentric cam lobe portions associated with each engine cylinder; a tubular support shaft supported by the cylinder head extending substantially parallel to said camshaft; three rocker arm members associated with each cylinder and each with an aperture formed therethrough for receiving said support shaft; said rocker arms being positioned in a side by side relation to one another on said support shaft to define two end rocker arms and one middle rocker arm; each rocker arm positioned so as to be engaged by one of said cam lobes such that each rocker arm is capable of independent pivotal movement about said support shaft; each of the two end rocker arms directly activating a valve; each end rocker arm having a cavity forming a pocket therein; said middle rocker arm having a channel formed therein; a latching means including a blade portion normally housed in said pocket and capable of partial movement out from said pocket and into said channel wherein the end rocker arm and middle rocker arm are locked together for common pivotal movements under the influence of said cam lobe which engages said middle rocker arm; said latching means further having a piston portion within said tubular support shaft and being attached to said blade portion; means for selectively applying fluid

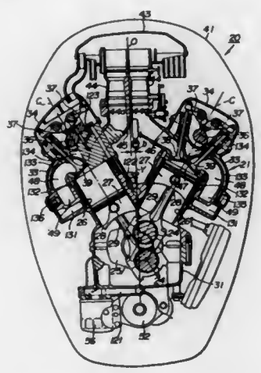
pressure to a surface of said piston portion to produce axial movements causing the attached blade portion to move from a rest position to a locked position; an electrical control unit responsive to engine and vehicle related parameters for selective activation of said latching means to produce a plurality of rocker arm movements in response to the three camshaft lobes.

5,613,470

OUTBOARD ENGINE ASSEMBLY

Kazuyuki Shiomi; Hideo Shigedomi; Yasushi Fujita; Yoshiyuki Matsuda; Chiharu Soda; Kazuomi Kiku, and Kentaro Furuya, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 42,552, Apr. 5, 1993, Pat. No. 5,388,555. This application Nov. 10, 1994, Ser. No. 337,560
Claims priority, application Japan, Apr. 3, 1992, 4-110812
Int. Cl.[6] F02F 7/00
U.S. Cl. 123—195 P 9 Claims



1. An outboard engine assembly having front, rear and side portions comprising:

cover means;

an engine disposed within said cover means, said engine including a crankshaft and a crankcase housing said crankshaft a cylinder block defining therein cylinders opened at an end thereof and a cylinder head closing the open end of said cylinders;

a mount case disposed underneath said engine and connected to the lower surfaces of said crankcase and said cylinder block;

an oil reservoir connected to the lower surface of said mount case;

an oil pump for drawing oil from said oil reservoir;

an oil filter disposed on the front side of said crankcase; and

continuous oil passage means extending from said oil reservoir to said oil filter and defined in said crankcase and in said cylinder block and returning to said oil reservoir.

5,613,471

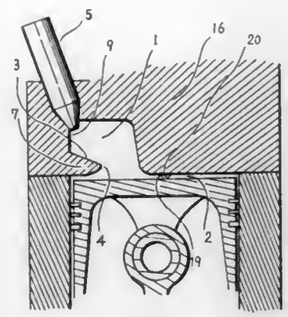
DIESEL ENGINE USING FUEL JET IMPINGEMENT AND DIFFUSION

Yasuhito Yaoita, Wellstone Terras 2,12-32, Nagahama, Kanazawa-ku, Yokohama, 236, Japan

Filed Jan. 5, 1995, Ser. No. 369,148
Int. Cl.[6] F02B 3/00
U.S. Cl. 123—298 8 Claims

1. A diesel engine using fuel jet impingement and diffusion comprising:

a main combustion chamber formed on a part of an inner wall of a cylinder head which faces a space in a cylinder;



a squish area situated between another part of said inner wall of said cylinder head and an opposing top of said piston;

a fuel injector installed at said inner wall of the main combustion chamber;

an impinging surface to which fuel jet is obliquely injected from said fuel injector; and

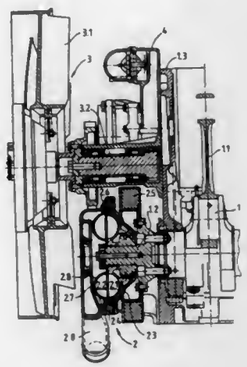
an edge of said impinging surface for causing said fuel jet after impinged to be dispersed into an area of said main combustion chamber close to said squish area.

5,613,472

DRIVE UNIT WITH INTERNAL COMBUSTION ENGINE AND HYDRODYNAMIC RETARDER

Peter Edelmann, Heidenheim; Jurgen Friedrich, Crailsheim; Hans Gebhardt, Langenzenn; Heribert Moller, Sachsan; Alfred Neitz, Wendelstein, and Klaus Vogelsang, Crailsheim, all of Germany, assignors to Voith Turbo GmbH, Heidenheim, Germany

Filed Nov. 7, 1995, Ser. No. 554,488
Claims priority, application Germany, Nov. 10, 1994, 44 40 165.5
Int. Cl.[6] F01P 3/12; B60T 1/087
U.S. Cl. 123—319 2 Claims



1. A drive unit for a motor vehicle comprising an internal combustion engine including a crankshaft and a crankcase, a fan, and a fan shaft comprising:

a hydrodynamic retarder having a stator, a rotor and a housing; said rotor is mounted on one of the crankshaft and a crankshaft journal which is coaxial with the crankshaft; and

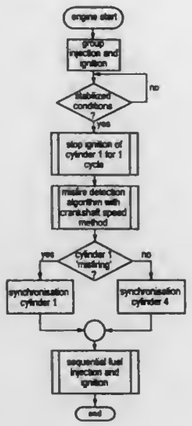
an intermediate body mounted on the crankcase in a space bounded by said crankcase, said fan and said retarder, said intermediate body supporting said fan, said retarder stator and said retarder housing.

5,613,473

METHOD OF IDENTIFYING THE STROKE POSITIONS IN AN INTERNAL COMBUSTION ENGINE UPON STARTUP

Anton Angermaier, Landshut, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 296,955, Aug. 26, 1994, abandoned. This application May 13, 1996, Ser. No. 645,239
Claims priority, application European Pat. Off., Aug. 26, 1993, 93113673
Int. Cl.[6] F02D 7/00
U.S. Cl. 123—481 3 Claims



1. An improved method for identifying respective stroke positions of cylinders of a four-stroke internal combustion engine with an even number of cylinders, and for synchronizing sequential fuel injection or ignition distribution to the cylinders, as a function of signals of a crankshaft sensor, wherein pistons of two cylinders each having the same position and direction of motion always form one group, the improvement which comprises:

defining a predetermined engine condition as one at which a starting operation has been ended and the engine is not subject to dynamic rpm changes;

jointly carrying out fuel injection and ignition for each said group of two cylinders from a time of engine start and until the predetermined engine condition is reached;

omitting ignition of a predetermined cylinder for one cylinder stroke, once the predetermined engine condition is reached;

if combustion fails to occur within a stroke following the cylinder stroke in which ignition was omitted for a first time, identifying a stroke position of one of the predetermined cylinders in a same said cylinder group; and

subsequently switching over to sequential fuel injection and ignition.

5,613,474

CONTROL METHOD FOR STARTING DIESEL ENGINES

Tadao Nakamura, Oyama, Japan; Makoto Watanabe, Madison, Wis., and Tatsuro Nakazato, Hiratsuka, Japan, assignors to Komatsu Ltd., Tokyo, Japan

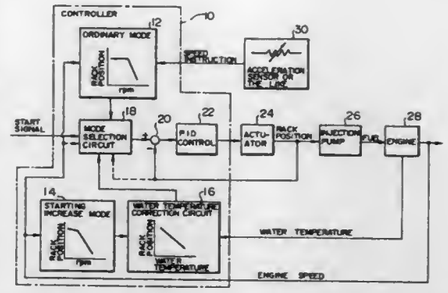
PCT No. PCT/JP94/01321, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO95/05536, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 10, 1994, Ser. No. 591,644
Claims priority, application Japan, Aug. 13, 1993, 5-220524
Int. Cl.[6] F02M 37/04
U.S. Cl. 123—496 20 Claims

1. A control method for starting a diesel engine, wherein said engine has a control rack for adjusting a rate of fuel injection into the engine, and wherein said control rack has a set position for ordinary control of the rate of fuel injection into the engine, said method comprising the steps of:

at the time of beginning the starting of the engine, positioning said control rack at a starting position on a fuel injection rate increasing side of said set position;

moving said control rack from said starting position in the fuel injection rate reducing direction to a first position, wherein said first position corresponds to a predetermined first engine rotating speed, so that the rack position has a predetermined first gradient, with respect to the engine rotating speed, between the beginning of engine starting and said predetermined first engine rotating speed; and

then moving said control rack from said first position in the fuel injection rate reducing direction toward a second position, wherein said second position corresponds to a second engine rotating speed at which said control rack is at said set position, so that the rack position has a predetermined second gradient, with respect to the engine rotating speed, between said first engine rotating speed and second engine rotating speed, said second gradient being greater than said first gradient.

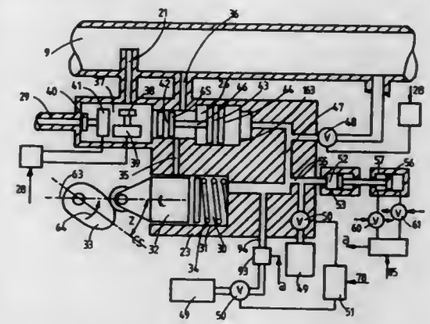


5,613,475

GASOLINE FUEL INJECTOR COMPENSATOR

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Mar. 7, 1996, Ser. No. 612,485
Int. Cl.[6] F02M 37/04
U.S. Cl. 123—496 9 Claims



1. In a four stroke cycle internal combustion engine mechanism comprising: at least one piston, operative within a cylinder, and connected to a crankshaft via a connecting rod; each said piston and cylinder comprising: a variable volume chamber, between the crown of said piston and the head of said cylinder, whose volume varies when said piston is moved by said connecting rod within said cylinder by rotation of said crankshaft; an air intake valve and an exhaust valve gas flow connecting into said variable volume chamber and opened and closed by a valve drive means from said crankshaft; said valve drive means being timed relative to said

piston so that a four stroke cycle is carried out with each two revolutions of said crankshaft; said four stroke cycle comprising in time order, an air intake stroke whenever said piston is moving to increase the volume of said variable volume chamber and said intake valve is opened and said exhaust valve is closed by said valve drive means, a compression stroke whenever said piston is moving to decrease the volume of said variable volume chamber and said intake and exhaust valve are closed by said valve drive means, an expansion stroke whenever said piston is moving to increase the volume of said variable volume chamber and said intake valve and said exhaust valve are closed by said valve drive means, a combustion process occurring during the ending of said compression stroke and the starting of said expansion stroke when fuel is supplied to said internal combustion engine mechanism, an exhaust stroke whenever said piston is moving to decrease the volume of said variable volume chamber and said exhaust valve is opened and said intake valve is closed by said valve drive means, and said four stroke cycle is repeated; an air supply manifold connection to said air intake valve; an exhaust gas manifold connection to said exhaust valve; a source of supply of engine liquid fuel at a pressure in excess of atmospheric; an ignition means for igniting compressed fuel air mixtures within said variable volume chamber so that a combustion process occurs during said compression and expansion strokes; an engine intake air density adjustment means for adjusting the density of the air in said air intake manifold;

said four stroke cycle internal combustion engine mechanism further comprising engine fuel injection systems wherein each said piston and cylinder is served by one such engine fuel injection system, each said engine fuel injection system comprising:

a gas pressure cycling means for cycling the pressure of a gas quantity so that during each cycle said gas pressure rises from a starting pressure to a peak pressure and said pressure rise is followed by a pressure decrease from said peak pressure to essentially said starting pressure; said gas pressure cycling means comprising, a variable volume chamber, containing said gas quantity, enclosed between a fixed container and a moveable element operating sealably within said fixed container, pressure cycler means for driving said moveable element so that said variable volume is decreased to increase the pressure of said gas quantity and is subsequenly increased to decrease the pressure of said gas quantity and to thusly cycle the pressure of said gas quantity, first means for connecting said variable volume chamber to said engine air supply manifold only during the ending of said pressure decrease and the start of the next said pressure increase so that said starting pressure essentially equals the pressure in said engine air supply manifold;

fuel injector means for injecting liquid fuel into said engine air supply manifold during each said air intake stroke and comprising: a fuel injector nozzle, a liquid fuel chamber containing liquid fuel, a nozzle valve means for connecting and disconnecting said fuel injector nozzle to said liquid fuel chamber and comprising drive means for opening and closing said nozzle valve means, a fuel supply valve means for connecting and disconnecting said liquid fuel chamber to said engine fuel supply source and comprising drive means for opening closing said fuel supply valve means, a liquid fuel pressurizer means for applying pressure to said liquid fuel in said liquid fuel chamber;

said fuel injector nozzle of said fuel injector means connecting into said engine air supply manifold;

pressure transmitter means for transmitting pressure from said variable volume chamber of said gas pressure cycling means to said liquid fuel pressurizer means of said fuel injector means so that pressure increase in said variable volume chamber of said gas pressure cycling means is transmitted as pressure increase on said liquid fuel in said liquid fuel chamber, and so that pressure decrease in said variable volume chamber is transmitted as pressure decrease on said liquid fuel, and so that gas does not enter said liquid fuel chamber and so that liquid fuel does not enter said variable volume chamber of said gas pressure cycling means, said pressure transmitter means comprising: means for connecting and disconnecting said pressure transmitter to said variable volume chamber of said gas pressure cycling means so that, pressure increase and decrease in said variable volume chamber act upon said pressure transmitter only during and throughout each said air intake stroke, and so that the pressure acting upon said liquid fuel in said liquid fuel chamber via said pressure transmitter is less than said liquid fuel supply pressure during and throughout each said compression stroke, expansion stroke and exhaust stroke;

inter drive means for driving said pressure cycler drive means for driving said moveable element of said gas pressure cycling means from said crankshaft of said internal combustion engine mechanism so that, a pressure cycle takes place during each said air intake stroke, and so that the duration of said pressure cycle is essentially equal to the duration of said intake stroke;

intake stroke sensor means for sensing the start of said air intake stroke and the end of said air intake stroke of said internal combustion engine mechanism;

fuel valve control means for controlling the connecting and disconnecting of said fuel injector nozzle to said liquid fuel chamber and for controlling the connecting and disconnecting of said liquid fuel chamber to said engine fuel supply source, and responsive to said intake stroke sensor means, and operative upon said nozzle valve means drive means and said fuel supply valve drive means, so that said nozzle valve means connects said fuel injector nozzle to said liquid fuel chamber only from essentially the start to the end of each said air intake stroke, and so that said fuel supply valve means connects said liquid fuel chamber to said engine fuel supply source only when said nozzle valve means has disconnected said fuel injector nozzle from said liquid fuel chamber;

wherein said liquid fuel pressurizer means of said fuel injector means comprises a liquid piston acting sealably on one side upon said liquid fuel within said liquid fuel chamber, the opposite side of said liquid piston being connected to said engine air supply manifold;

wherein said pressure transmitter means comprises: a gas piston acted on one side sealably by said gas quantity within said variable volume chamber of said gas pressure cycling means; the opposite side of said gas piston being connected to said engine air supply manifold;

wherein said pressure transmitter means further comprises

pivoted lever means for transmitting force from said gas piston to said liquid piston of said liquid fuel pressurizer and comprising a pivot, so that; whenever the gas pressure acting on the variable volume chamber side of said gas piston changes, the liquid pressure of said liquid fuel within said liquid fuel chamber of said fuel injector means changes in the same direction; and so that; the ratio of said net gas pressure to said net liquid pressure remains essentially constant when said pivot of said pivoted lever means is fixed relative to said gas piston and said liquid piston;

wherein the improvement comprises adding to each said engine fuel injection system an engine RPM compensator comprising:

an engine RPM sensor means for generating a signal proportioned to said engine RPM;

a pivot adjustment means for adjusting the position of the pivot of said pivoted lever pressure transmitter, relative to said gas piston and said liquid piston, and comprising pivot drive means for moving the pivot;

an engine RPM compensator control means for controlling said pivot drive means of said pivot adjustment means, responsive to said engine RPM sensor signal, and operative upon said pivot drive means, so that as engine RPM is increased, said pivot is moved toward said liquid piston, in order to increase the ratio of liquid pressure to gas pressure, and as engine RPM is decreased said pivot is moved toward said gas piston, in order to decrease the ratio of liquid pressure to gas pressure.

5,613,476

FUEL SUPPLY DEVICE

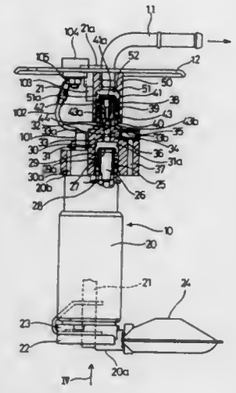
Kiyotoshi Oi, Kariya; Atsushige Kobayashi, Nagoya; Kazushi Nakashima, Obu; Yasushi Kawano, Anjo, and Hideki Kaga, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 9, 1994, Ser. No. 301,429

Claims priority, application Japan, Sep. 10, 1993, 5-225848

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—509 **11 Claims**



1. A fuel supply device comprising:

a fuel tank for storing fuel therein;

a fuel pump disposed within said fuel tank and having an electrical connector portion thereon;

a discharge pipe disposed on a wall of said fuel tank for supplying fuel from said fuel pump to an outside of said fuel tank;

a first connecting part formed with a first fuel passage therein and disposed adjacent to said electrical connector portion on said fuel pump;

a second connecting part formed with a second fuel passage therein and receiving one end of said discharge pipe therein;

a connecting member formed in a rigid block shape having a third fuel passage therein and attached to said first connecting part and said second connecting part for communicating said first fuel passage to said second fuel passage through said third fuel passage, said connecting member having a body portion for attachment to said first connecting part and a frame portion for fitting over an exterior of said electrical connector portion;

a first sealing member disposed in said third fuel passage to seal a space between said first connecting part and said connecting member; and

a second sealing member disposed in said third fuel passage to seal a space between said second connecting part and said connecting member.

5,613,477

EVAPORATIVE FUEL TREATMENT DEVICE

Kazuto Maeda, Nisshin, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 3, 1996, Ser. No. 642,422

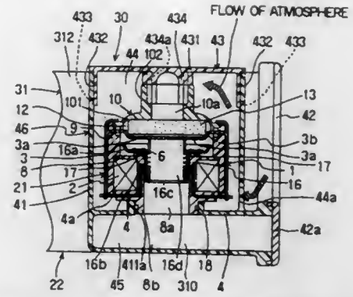
Claims priority, application Japan, May 8, 1995, 7-109300; Jan. 16, 1996, 8-004799

Int. Cl.[6] F02M *33/04*

U.S. Cl. 123—519 **20 Claims**

1. An evaporative fuel treatment device comprising:

a case having an evaporative fuel absorbing chamber for absorbing evaporative fuel, an air inlet for introducing air into said case, and a communicating portion for communicating said evaporative fuel absorbing chamber with said air inlet;



an electromagnetic valve, having a first opening portion for introducing air from said air inlet and a second opening portion disposed at said communicating portion, for opening and closing a communication between said first opening portion and said second opening portion; and

a cover forming a receiving chamber for receiving said electromagnetic valve with said case in such a manner that said receiving chamber communicates with said air inlet and having a fastening portion for positioning said electromagnetic valve;

wherein said fastening portion of said cover fastens said electromagnetic valve to said case when said cover is fixed to said case.

5,613,478

DEVICE FOR CONTROLLING THE AIR FLOW OF A SUPERCHARGED INTERNAL COMBUSTION ENGINE

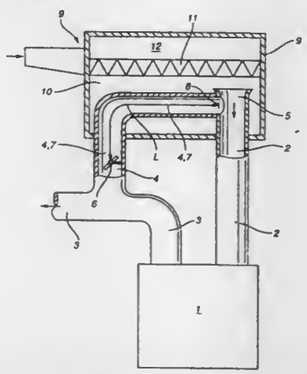
Wolfgang Widmann, Erdmannhausen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Apr. 29, 1996, Ser. No. 638,828

Claims priority, application Germany, May 2, 1995, 195 16 006.1

Int. Cl.[6] F02B *33/44*

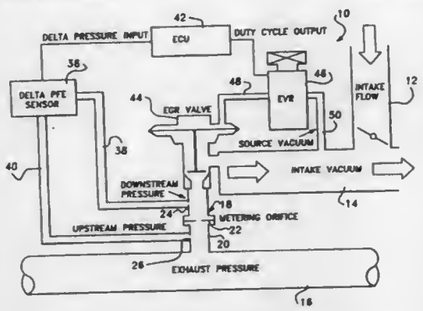
U.S. Cl. 123—564 **8 Claims**



1. Device for controlling the air flow of a supercharged internal combustion engine with a supercharger to deliver charge air from a suction line located upstream of the supercharger through a charge air line located downstream of the supercharger to the internal combustion engine, with the suction line comprising an intake and a recirculating line including a recirculating valve being located between the charge air line and the suction line, and with the recirculating line between the recirculating valve and the suction line being formed by a line section that terminates downstream of the intake in the suction line of the supercharger, wherein, in order to reduce induction noise, a length of line section from the recirculating valve to the opening in the suction line is dimensioned so

that the line section with the recirculating valve closed forms a resonator that is tuned to one or more pulsation frequencies of the supercharger.

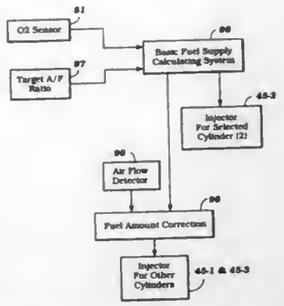
5,613,479
PRESSURE FEEDBACK EXHAUST GAS RECIRCULATION SYSTEM
Freeman C. Gates, Bloomfield Hills; Gregory McCliment, Royal Oak, and Joseph W. Pratt, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 8, 1995, Ser. No. 569,385
Int. Cl.[6] F02M *25/07*; G01F *1/42*
U.S. Cl. 123—568 **20 Claims**



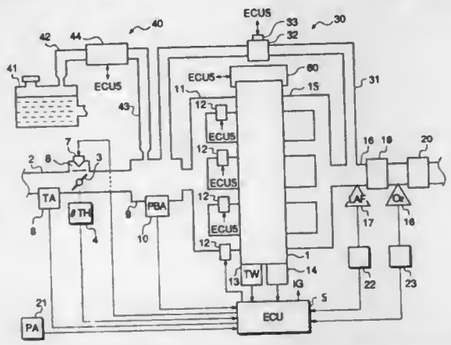
1. A pressure feedback EGR system comprising:
an EGR tube having a metering orifice therein and extending between an exhaust passageway and an intake passageway of the internal combustion engine;
a first pressure tap connected to said EGR tube on one side of said metering orifice;
a second pressure top connected to said EGR tube on the other side of said metering orifice; and
said first pressure tap and said second pressure tap each having an end disposed within said EGR tube and with each said end being partially closed to form an orifice extending therethrough;
a sensor for measuring a pressure difference across said metering orifice;
a first conduit interconnecting said sensor and said first pressure tap and second conduit interconnecting said sensor and said second pressure tap;
an EGR valve for allowing and restricting flow between the exhaust passageway and intake passageway;
an engine vacuum regulator interconnecting said EGR valve and the intake passageway; and
an electronic control unit connected to said sensor and said engine vacuum regulator for receiving a signal of the pressure difference from said sensor and outputting a signal to duty cycle said engine vacuum regulator.

5,613,480
FUEL CONTROL SYSTEM FOR MULTIPLE CYLINDER ENGINE
Masahiko Katoh; Kimihiro Nonaka, and Kazuhiro Nakamura, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jun. 7, 1995, Ser. No. 476,089
Claims priority, application Japan, Jun. 24, 1994, 6-143668
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—673 **12 Claims**

1. An internal combustion engine having a plurality of combustion chambers, a charge-forming and induction system for supplying a fuel/air charge to each of said combustion chambers, an exhaust system for collecting the combustion products from said combustion chambers and discharging them to the atmosphere, a combustion condition sensor cooperating with one of said combustion chambers for sensing the combustion condition therein, a feedback control system for controlling the amount of fuel supplied by said charge-forming system to said one combustion chamber from the output of said combustion condition sensor, means for measuring the total air flow to said engine, and means for providing a corrective factor from the total air flow to represent the anticipated air flow to the remaining combustion chambers, and means for adjusting the signal from said feedback control to compensate for the combustion chamber to combustion chamber variations and for controlling the supply of fuel to the remaining combustion chambers by said charge-forming system.



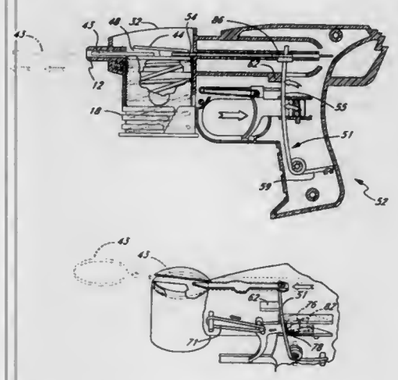
5,613,481
CONTROL SYSTEM HAVING FUNCTION OF PROCESSING EVAPORATIVE FUEL FOR INTERNAL COMBUSTION ENGINES
Hiroshi Kitagawa; Shusuke Akazaki, and Hidetaka Maki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 23, 1996, Ser. No. 606,077
Claims priority, application Japan, Feb. 24, 1995, 7-061777
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—698 **6 Claims**



1. A control system for an internal combustion engine having an intake system, an exhaust system, and a fuel tank, comprising:
a canister for adsorbing evaporative fuel generated in said fuel tank;
a purging passage extending between said canister and said intake system, for purging said evaporative fuel into said intake system;
a purge control valve for controlling a flow rate of said evaporative fuel to be supplied to said intake system through said purging passage;
operating condition-detecting means for detecting operating conditions of said engine;

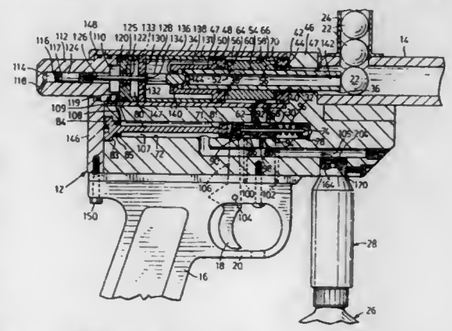
purge flow rate control means for controlling said purge control valve according to operating conditions detected by said operating condition-detecting means;
an air-fuel ratio sensor arranged in said exhaust system;
feedback control means for carrying out feedback control of an amount of fuel to be supplied to said engine by calculating a feedback control amount based on an output from said air-fuel ratio sensor by using a controller of a recurrence formula type, and controlling said amount of fuel to be supplied to said engine, based on the calculated feedback control amount, such that an air-fuel ratio of an air-fuel mixture supplied to said engine is converged to a desired air-fuel ratio; and
control amount-averaging means for calculating an average value of said feedback control amount while said purge control valve is open;
wherein said purge flow rate control means controls said purge control valve, based on said average value calculated by said control amount-averaging means.

5,613,482
DISK SHOOTING TOY GUN
Douglas Thai, and Dinh Thai, both of 19907 Tennessee Trail, Walnut, Calif. 91789
Filed Jan. 27, 1995, Ser. No. 379,366
Int. Cl.[6] F41B *7/00*; *7/08*
U.S. Cl. 124—16 **12 Claims**



1. A toy gun for propelling disk-shaped projectiles of varying thicknesses, the gun comprising:
a hollow gun body of a gun-like shape having a barrel with an open end and a handle for grasping the gun forming approximately a right angle with the barrel;
a removable magazine for sequentially dispensing a plurality of disk-shaped projectiles into the gun, the magazine sized to fit and insertable into an aperture in the gun body, the removable magazine comprising:
a hollow magazine body having a closed end and an open end;
a firing chamber formed between the open end of the magazine body and a planar retainer member retaining said disk-shaped projectiles in said magazine, said planar retainer member attached to the open end and spaced a distance apart from the open end, the maximum thickness of the disk-shaped projectiles defined by the distance between the retainer member and the open end, the planar retainer member coveting only edge portions of the disk-shaped projectile;
a traveler piston within the magazine body for moving a top projectile of a stack of the projectiles into the firing chamber; and
a spring between the closed end of the magazine body and the traveler piston for pushing the traveler piston;
a transparent window fixedly mounted to the gun body at an upper surface of the barrel to allow a user to view a major portion of the top projectile in the firing chamber, said transparent window positioned over said magazine and sized to be larger than the projectile's exposed surface area such that the entire projectile can be seen through the transparent window except for the portions of the projectile covered by the planar retaining member;
a propulsion lever disposed to strike a side edge of the top projectile for expelling the top projectile from the firing chamber, an end of the propulsion lever which strikes the edge of the projectile being angled for imparting a spin to the top projectile;
a main spring disposed within the body and engaging the propulsion lever for moving the propulsion lever towards the top projectile;
a trigger depending from the gun body in a position to be pulled by a finger of a hand grasping the handle of the body;
a cocking lever operationally connected to the trigger and capturing the main spring within a notch of the cocking lever for moving the main spring and the engaged propulsion lever rearward away from the magazine when the trigger is pulled; and
an inclined plane attached to an interior surface of the gun body for releasing the main spring from the notch by displacing the cocking lever, thereby causing the main spring and the propulsion lever to move rapidly forward towards the magazine, the propulsion lever striking the top projectile in the firing chamber, propelling it spinning from the open end of the barrel.

5,613,483
GAS POWERED GUN
Michael A. Lukas, 25 Pol Ct., St. Thomas, Ontario, Canada; Roger L. Hurst, 1253 Thistledown Ave., and Lee D. Kirwan, 1223 Thistledown Ave., both of Sarnia, Ontario, Canada
Filed Nov. 9, 1995, Ser. No. 555,625
Int. Cl.[6] F41B *11/00*
U.S. Cl. 124—73 **13 Claims**



1. A gas powered gun comprising:
a gun barrel,
a cylinder containing a piston rod slidably movable between a loading position in which the leading end of the piston rod is sufficiently withdrawn in the barrel to permit a projectile to be fed into the barrel through an opening in the side thereof, and a firing position in which the piston rod has moved forwardly to cause the leading end of the piston rod to engage the projectile and move the projectile forwardly in the barrel,
a trigger operable to cause the piston rod to move from the loading position to the firing position,
a pressurized gas supply,
said cylinder having first and second chambers through which the piston rod extends, said pressurized gas supply supplying pressurized gas to the first chamber when the piston rod is in the loading position,

said piston rod permitting communication between the pressurized gas supply and the first chamber and preventing communication between the first and second chambers when in the loading position, and when in the firing position preventing communication between the pressurized gas supply and the first chamber and permitting communication between the first chamber and the second chamber to cause pressurized gas in the first chamber to pass into the second chamber,

said piston rod having a longitudinally extending passage extending from the front and rearwardly along the piston rod to a location where the passage communicates with the exterior of the piston rod, and

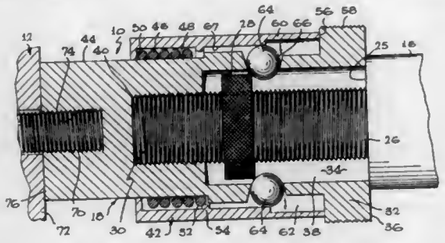
said location communicating with the second chamber when the piston rod is in the firing position to cause pressurized gas to pass from the second chamber into the longitudinally extending passage to the front end of the piston rod to propel the projectile from the gun barrel.

5,613,484

ARCHERY BOW AND CONNECTOR-STABILIZER ASSEMBLY AND IMPROVED CONNECTOR-STABILIZER SUB-ASSEMBLY FOR THE SAME

Vincent Troncoso, Montrose, Colo., assignor to Golden Key Futura, Inc., Montrose, Colo.

Filed Feb. 7, 1996, Ser. No. 598,268
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—89 **7 Claims**



1. An improved archery bow and stabilizer assembly, said assembly comprising, in combination:

a) an archery bow having means releasably receiving an archery bow stabilizer and connector sub-assembly; and,

b) an archery bow stabilizer and connector sub-assembly, said sub-assembly comprising, in combination:

i) an elongated archery bow stabilizer having a rear end and an opposite front end, said rear end having an externally threaded bolt extending rearwardly thereof along the longitudinal axis of said stabilizer and bearing an internally threaded nut of greater diameter than said bolt threaded on said bolt; and,

ii) an improved quick-disconnect connector releasably securable to said stabilizer and to said archery bow, said connector comprising, in combination:

a) an inner tubular elongated sleeve having first and second opposite ends and an annular sidewall, said first opposite end defining a central elongated space extending along the longitudinal axis of said connector and receiving said bolt and nut, and said second opposite end containing means releasably connecting said connector to said archery bow through said bow sub-assembly-receiving means;

b) an outer sleeve disposed around said annular sidewall and concentric therewith and slideable longitudinally between a first position abutting said first opposite end of said first sleeve and a second position toward said second opposite end, said outer sleeve defining with said inner sleeve a spring-receiving recess;

c) a spring disposed in said recess between said inner and outer sleeves, concentric with said sleeves and biasing said second sleeve toward said first opposite end; and,

d) a plurality of bearings disposed in a spaced array in openings in said inner sleeve adjacent said first opposite end, said bearings moveable between a first position wherein the diametrical spacing between said bearings is less than the diameter of said nut and a second position wherein said bearings have a diamterical spacing larger than the diameter of said nut, said outer sleeve defining a bearing-receiving annular pocket adjacent said first opposite end and a bearing-forcing detent at the inner end of said pocket, whereby

a) when thereafter said outer sleeve is retracted against said spring biasing, said nut biases said bearings into said pocket and passes toward said second opposite end past said bearings,

b) when thereafter said outer sleeve is spring biased toward said first opposite end said nut is trapped in said central space by said bearings, holding said stabilizer fixed to said connector and

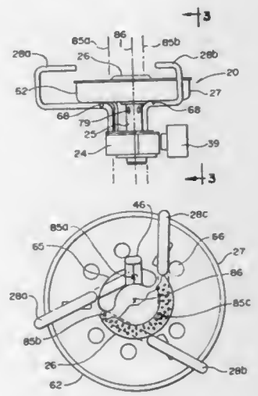
c) when thereafter said inner sleeve is tightened against said stabilizer, said nut and detent lock said outer sleeve and bearings together so that said outer sleeve cannot be retracted.

5,613,485

CAMPSTOVE WITH ADJUSTABLE GRATE

Andrew J. Covault, Wichita, Kans., assignor to Coleman Taymar Limited, Great Britain

Filed Jan. 30, 1995, Ser. No. 377,194
Int. Cl.[6] F24C *5/20*
U.S. Cl. 126—38 **12 Claims**



1. A campstove comprising:

a burner bowl having top and bottom surfaces,

a burner mounted within the burner bowl above the top surface,

a base rotatably connected to the burner bowl below the bottom surface,

a plurality of grate legs, each of the legs including a bottom portion which is rotatably mounted in the base, an intermediate portion which extends along the bottom surface of the burner bowl away from the axis of rotation of the leg and a top portion which extends above the top surface of the burner bowl toward the axis of rotation of the leg, and

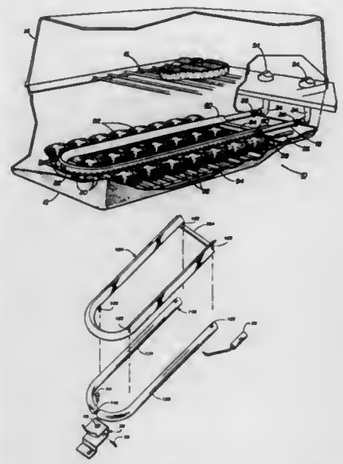
abutment means on the burner bowl for each of the legs which is engageable with the intermediate portion of the leg whereby rotation of the burner bowl relative to the base in one direction causes legs to rotate relative to the base and causes the top portions of the legs to move away from the burner and rotation of the burner bowl relative to the base in the opposite direction causes the top portions of the legs to move closer to the burner.

5,613,486

HEATING SYSTEM FOR BARBECUE GRILLS AND OTHER GAS APPLIANCES

Robert L. Johnston, Columbus, Ga., assignor to W.C. Bradley Company, Columbus, Ga.

Continuation-in-part of Ser. No. 106,424, Aug. 13, 1993, Pat. No. 5,421,319. This application Apr. 7, 1995, Ser. No. 418,308
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—41 R **6 Claims**



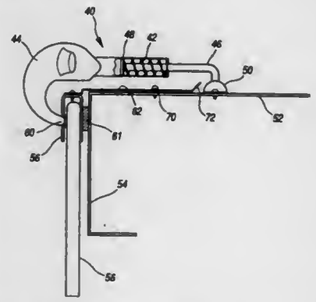
1. A heating system for a barbecue grill, said grill having a firebox and means for supporting food to be cooked, said heating system comprising a tube having an axis and forming a U-shaped tubular burner mounted in said firebox below said means for supporting food, said burner including ports disposed on substantially opposite sides of the tube, wherein the ports are downwardly angeled with respect to the axis of the tube, a radiant material disposed in said firebox below said burner and at or below the level of said ports, and a shield means covering said burner for preventing drippings from the food being cooked from contacting said burner.

5,613,487

FIREPLACE DOOR LATCH SYSTEM

Eric Hawkinson, Mt. Pleasant, Iowa, assignor to Hon Industries Inc., Muscatine, Iowa

Filed Jan. 16, 1996, Ser. No. 585,730
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—512 **7 Claims**



1. A fireplace assembly of the gas-fired type comprising:

an enclosure having a combustion chamber internal thereto;

a gas burner assembly disposed within said combustion chamber;

a glass panel fixed to a front of said enclosure and providing means for viewing the combustion chamber, said panel having an upper and a lower edge;

means for pivotably securing the lower edge of said panel to said enclosure; and

means for resiliently biasing the upper edge of said panel against said enclosure, said biasing means including at least one latch assembly fixed at a first end to said enclosure and having a hook at a second end which engages said glass panel;

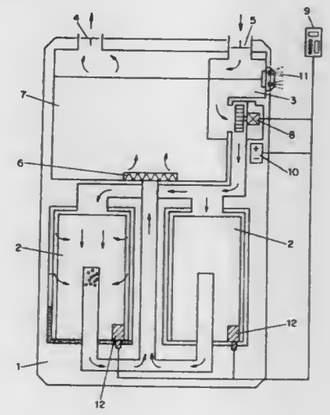
wherein said panel forms an opening adjacent to the upper edge of said panel by pivoting on said pivotably securing means when an explosion occurs in said combustion chamber.

5,613,488

CHEMICAL OXYGEN GENERATOR BREATHING DEVICE WITH THE EXHALATION BAG WITHIN THE INHALATION BAG

Michael Schwichtenberg, and Volker Hünnebeck, both of Berlin, Germany, assignors to Auergesellschaft GmbH, Germany

Filed Mar. 30, 1995, Ser. No. 413,184
Claims priority, application Germany, Apr. 2, 1994, 44 11 560.1
Int. Cl.[6] A61M *15/00;16/00;* **A62B** *7/08;21/00*
U.S. Cl. 128—202.26 **5 Claims**



1. A chemical oxygen device comprising:

a housing;

one or more CO_2-bonding and O_2-releasing chemical canisters disposed in said housing;

a first breathing bag for inhaled air disposed in said housing, said first breathing bag comprising an input, an inhalation valve and a particle filter, the particle filter operationally associated with the input;

a second breathing bag for exhaled air disposed in said first breathing bag, said second breathing bag comprising an exhalation valve;

a bellows arranged between said second breathing bag and said one or more canisters; and

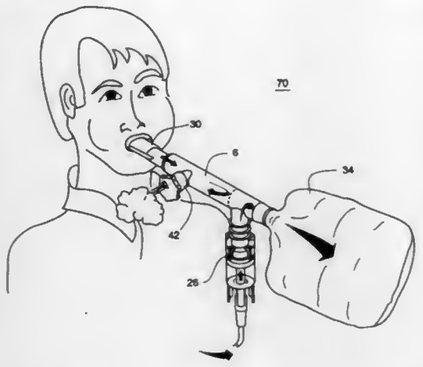
an evaluation unit connected with said bellows.

5,613,489

PATIENT RESPIRATORY SYSTEM DRUG APPLICATOR

Warren C. Miller, Webster, Tex., and Robert J. McKinnon, Cheyenne, Wyo., assignors to Westmed, Inc., Tucson, Ariz.

Filed Dec. 7, 1994, Ser. No. 351,660
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—203.28 14 Claims



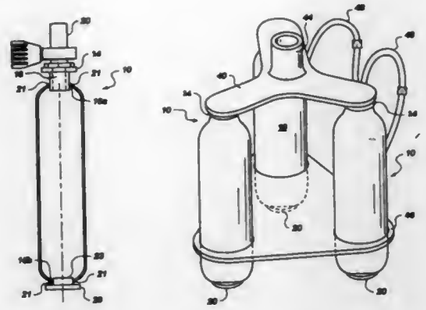
1. A patient respiratory system drug applicator, comprising:
a drug dispenser;
a patient inhalator;
a first conduit fluidly interconnecting said drug dispenser and said patient inhalator and comprising first and second ports, said drug dispenser being interconnected with said first port and said second port fluidly interconnecting said patient inhalator with an oxygen source;
a distensible drug reservoir fluidly interconnected with said patient inhalator; and
an adjustable flow regulator associated with said second port, wherein said adjustable flow regulator allows for an adjustment of an amount of a flow provided to the patient which is from said oxygen source and thereby also an adjustment of an amount of said flow provided to the patient which is from said distensible drug reservoir, whereby said adjustable flow regulator may be used to establish a certain pulsation of said distensible drug reservior, due to patient inhalations and exhalations, which provides biofeedback to the patient regarding the patient's breathing pattern and thereby the respiratory administration of the drug to the patient.

5,613,490

COMPACT, LIGHTWEIGHT BREATHABLE AIR PRESSURE VESSEL

Richard P. Mayes, 3210 Jefferson Ave., Ogden, Utah 84403; Richard Y. Royer, 572 E. 1950 North, Ogden, Utah 84414, and Ward D. Hubbard, 2675 Lawrence Ave., San Bernadino, Calif. 92404

Filed Jul. 28, 1994, Ser. No. 282,523
Int. Cl.[6] A62B *7/00;9/00;18/10;* B63C *11/02*
U.S. Cl. 128—205.22 20 Claims



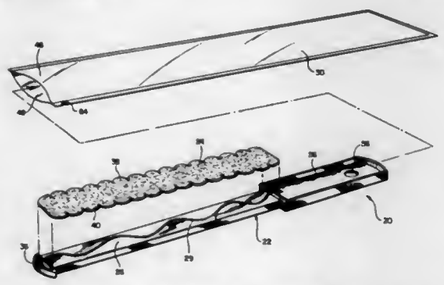
1. A method of supplying breathable air to a user comprising the steps of:
(a) providing at least one air tank having containing walls and being made of pressure-bearing metal;
(b) removably injecting breathable air into the tank so as to exert a pressure density upon at least a portion of the walls of the tank which exceeds approximately 50,000 lb/in^3 without causing expansion of the tank; and
(c) dispensing the breathable air from the tank to the user so as to enable the user to breathe the air.

5,613,491

COAGULATION TIMER

Rowland W. Kanner, Guntersville, and Fred E. Williams, Jr., Arab, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Division of Ser. No. 259,517, Jun. 14, 1994. This application Nov. 28, 1995, Ser. No. 563,369
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—637 20 Claims



1. A method of monitoring the bleeding time of a patient comprising:
administering an incision through the skin of a patient;
providing a coagulation timer device having a handle portion and a generally elongate extending support portion extending therefrom, a generally planar, elongate absorbing medium nonmovably affixed to said support portion, and a bag member overlying said absorbing medium;
retracting said bag member so as to uncover said absorbing medium; and
blotting blood from the incision at predetermined intervals with said coagulation timer device.

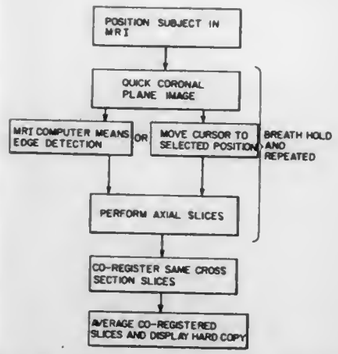
5,613,492

METHOD AND PRODUCT FOR IMPROVED IMAGES IN MAGNETIC RESONANCE IMAGING USING MULTIPLE BREATHOLDING

David A. Feinberg, Shokan, N.Y., assignor to New York University, New York, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,183
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 30 Claims

5. A method in Magnetic Resonance Imaging (MRI) for improving the signal-to-noise ratio of MRI images, including the steps of:
(a) positioning a subject in an MRI machine;



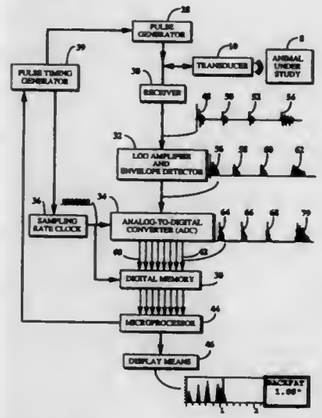
(b) having the subject hold his/her breath at least twice and simultaneously with each breatholding acquiring MRI signals and performing a Fourier transformation to obtain a rapid scout image along one axis to locate an edge of an organ of interest and then performing an MRI image along a different axis whose position is based on the scout image to thereby align the images of the organ of interest performed during different breatholdings so the images are co-registered; and
(c) combining the data from the co-registered images to generate a combined image.

5,613,493

ULTRASONIC APPARATUS AND METHOD FOR MEASURING ANIMAL BACKFAT

Mark E. Schafer, 165 Percy Ct., Norristown, Pa. 19401

Filed Sep. 25, 1995, Ser. No. 533,359
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.06 10 Claims



1. A system using a reverse time approach to accurately measure and indicate the thickness of backfat in an animal comprising a means to transmit a digital control signal to a pulse timing generator which synchronizes the transmitting and receiving functions of the system, said generator being operable to convert said digital control signal into a high voltage excitation, a transducer connected to said generator to convert said last mentioned signal into an ultrasonic wave and to transmit said wave signal through the outer skin and backfat of said animal and then off of the backfat/loin interface, a receiver to amplify the responding ultrasonic echo signal reflected from the backfat/loin interface and to convert said echo signal back to an electrical signal, a log amplifier and envelope detector to further amplify said last mentioned electrical signal in a logarithmic manner, an analog to digital converter to convert said last mentioned signal into a digital signal, a sample rate clock to regulate the rate by which said last mentioned signal is sampled by the analog to digital converter, said clock being connected to a pulse timing generator for synchronization therewith and to a microprocessor by way of a digital memory circuit, said microprocessor being operable to measure the peak of said last mentioned signal that is representative of the maximum amplitude of the response signal that is generated by said fat/loin interface, said microprocessor being further operable to select a prescribed point on the trace of said responding signal that is below said peak that represents an accurate measurement of the depth of backfat and a display means operably connected to said microprocessor for visually indicating the thickness of backfat in said animal.

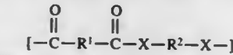
5,613,494

POLYCONDENSATES WHICH CONTAIN TARTARIC ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND USE THEREOF

Volker Krone, Hofheim am Taunus; Michael Magerstädt, Egelsbach; Axel Walch; Günter Ditzinger, both of Frankfurt am Main, and Norbert Lill, Kronberg/Ts., all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 370,885, Jan. 10, 1995, Pat. No. 5,505,784, which is a division of Ser. No. 886,197, May 21, 1992, Pat. No. 5,391,696. This application May 4, 1995, Ser. No. 435,115
Claims priority, application Germany, May 24, 1991, 41 16 936.0
Int. Cl.[6] A61B *8/14*
U.S. Cl. 128—662.02 36 Claims

1. An ultrasonic contrast comprising microparticles which contain a gas and a compound comprising:
a polycondensate compound which contains at least 95 mol % of recurring structural units of the formula I



(I)

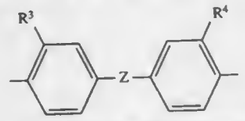
where R^1 is
a) straight-chain or branched (C_1–C_{18})-alkyl or straight-chain or branched (C_1–C_{18})-alkenyl which contains one or more double bonds,
b) straight-chain or branched (C_1–C_{18})-alkyl or straight-chain or branched (C1–C_{18})-alkenyl which contains one or more double bonds, mono- or polysubstituted by
1) (C_5–C_7)-cycloalkyl,
2) (C_5–C_7)-cycloalkenyl, having one or more double bonds,
3) halogen,
4) mercapto,
5) hydroxy,
6) (C_1–C_6)-alkoxy,
7) phenoxy,
8) phenoxy, mono- or polysubstituted by
8.1 halogen,
8.2 (C_1–C_6)-alkyl,
8.3 (C_1–C_6)-alkoxy,
8.4 nitro or
8.5 carbethoxy,
9) naphthyloxy,
10) benzyloxy,
11) benzyloxy, mono- or polysubstituted in the aryl moiety by
11.1 methoxy,
11.2 carboxamid,
11.3 amino,
11.4 halogen,
11.5 nitro or
11.6 methyl,
12) amino,
13) monoalkylamino, having 1 to 7 carbon atoms,
14) monoalkylamino, having 1 to 7 carbon atoms, mono- or polysubstituted in the alkyl moiety by

14.1 hydroxyl,
14.2 carboxyl,
14.3 carboxamide,
14.4 carboethoxy,
14.5 amino,
14.6 (C_1–C_6)-alkylamino,
14.7 di-(C_1–C_6)-alkylamino,
14.8 piperidine or
14.9 morpholine,
15) dialkylamino having 1 to 7 carbon atoms, or
16) dialkylamino having 1 to 7 carbon atoms, substituted as defined in b) 1.41 to 1.49

c) aryl, having 6 to 14 carbon atoms, optionally mono- or disubstituted by
1.1 (C_1–C_6)-alkyl,
1.2 (C_2–C_6)-alkenyl
1.3 (C_1–C_6)alkylcarboxy
1.4 hydroxyl,
1.5 halogen,
1.6 acetoxy,
1.7 (C_1–C_6)-alkylcarboxamide
1.8 sulfonamide,
1.9 nitro,
1.10 (C_1–C_6)-alkoxy or
1.11 amino,

d) compound of the formula IV

(IV)



in which R^3 and R^4 independently of one another are
1) hydrogen or
2) an inert radical and
wherein Z is a compound
1) —O—,
2) —S—,



3) —C—,

4) $—SO_2—$

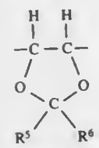


5) —C—O—,

6) $—C_nH_{2n}—$, in which n is an integer from 1 to 10 and the carbon chain is straight or branched, or
7) —O—aryl-O, in which aryl is as defined in c),

e) a compound of the formula II,

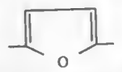
(II)



in which R^5 and R^6 independently of one another are
1) hydrogen,
2) alkyl or alkenyl having 1 to 18 carbon atoms,
3) alkyl or alkenyl having 1 to 18 carbon atoms, mono- or polysubstituted as defined in b) 1 to 16,
4) aryl, having 6 to 14 carbon atoms,
5) aryl, having 6 to 14 carbon atoms, mono- or polysubstituted as defined in c) 1.1 to 1.11, or

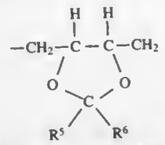
f) a compound of the formula V

(V)



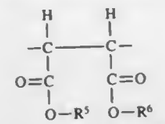
where X in formula I is
a) —O—,
b) —NH— or
c) —S—,
where R^2 in formula I is
a) a compound of the formula III

(III)



in which R^5 and R^6 have the above-mentioned meanings,
b) a compound of the formula VI,

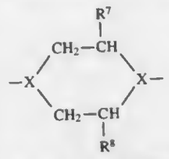
(VI)



in which R^5 and R^6 have the above-mentioned meanings,
c) straight-chain or branched alkyl or alkenyl having 1 to 18 carbon atoms,
d) straight-chain or branched alkyl or alkenyl having 1 to 18 carbon atoms, mono- or polysubstituted by a radical wherein said radical is
1) carboxyl,
2) carboxyl in which the hydroxyl group is replaced by a radical wherein said radical is
2.1 —O—(C_1–C_8)-alkyl,
2.2 halogen,
2.3 —O—(C_1–C_4)-alkylcarbonyl,
2.4 (C_1–C_6)-alkylamino,
2.5 (C_1–C_6)-alkylamino, mono- or polysubstituted in the alkyl moiety by a radical wherein said radical is
2.5.1 hydroxyl,
2.5.2 mercapto,
2.5.3. —O—(C_2–C_4)-alkyl,
2.6 L-amino acid or genetically encoded L-amino acid,
2.7 L-amino acid or genetically encoded L-amino acid, either of which is mono- or polysubstituted by 2.7.1 (C_1–C_4)-alkyl
3) hydroxyl,
4) halogen,
5) amino,
6) mercapto or
7) alkyl having 1 to 8 carbon atoms,

e) a cyclic compound of the formula VII

(VII)



in which R^7 and R^8 independently of one another, are
1) hydrogen or
2) (C_1–C_3)-alkyl
and X is N, or
f) aryl, having 5 to 14 carbon atoms, optionally mono- or disubstituted by
1.1 (C_1–C_6)-alkyl,
1.2 (C_2–C_6)-alkenyl,
1.3 (C_1–C_6)-alkylcarboxy,
1.4 hydroxyl,
1.5 halogen,
1.6 acetoxy,
1.7 (C_1–C_6)-alkylcarboxamide
1.8 sulfonamide,
1.9 nitro,
1.10 (C_1–C_6)-alkoxy or
1.11 amino,

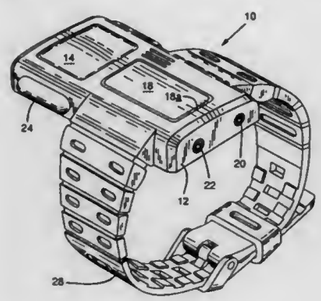
with the proviso that more than 5 mol % of the radicals R^1 and/or R^2 are present in the polycondensate of the formula, wherein R^1 is a compound of the formula II or R^2 is a compound of the formula III, or R^1 is a compound of the formula II and R^2 is a compound of the formula III, or in which more than 5 mol % of the radicals R^1 and R^2 are present in the polycondensate of the formula I, where
a) R^1 is a compound of the formula V and R^2 is a compound of the formula VI, or;
R^1 is phenyl-1,2; phenyl-1,3 or phenyl-1,4 and R^2 is a compound of the formula VI.

5,613,495

HIGH FUNCTIONAL DENSITY CARDIAC MONITORING SYSTEM FOR CAPTURED WINDOWED ECG DATA

Gary N. Mills, Gladstone, and Habib Homayoun, Aloha, both of Oreg., assignors to Instromedix, Inc., Hillsboro, Oreg.

Division of Ser. No. 303,570, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 192,809, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 2,265, Jan. 8, 1993, abandoned, which is a division of Ser. No. 816,389, Dec. 26, 1991, Pat. No. 5,289,824. This application Jul. 6, 1995, Ser. No. 498,609
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—696 **8 Claims**



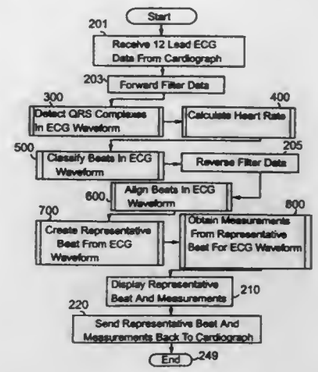
1. A high functional-density cardiac monitoring system for capturing windowed ECG data, the system comprising:
a pair of dry skin electrodes for contacting the skin surface of a cardiac patient;
an ECG signal amplifier coupled with said electrodes for producing an analog signal representative of an electrical field therebetween;
analog-to-digital signal conversion means connected with said amplifier for producing digital data representing the patient's ECG waveform over a defined interval of time;
memory means for recording said digital data, said memory means including at least one scrolling buffer of finite depth for continuously storing a window of said digital data and recording such a window of data in said memory means upon the occurrence of a defined event;
means for wirelessly communicating said data recorded in said memory means to a remote site; and
a housing containing said electrodes, said amplifier, said conversion means, said memory means and said communicating means;
said housing having an exterior predetermined volume not exceeding approximately 1.5 inches^3.

5,613,496

METHOD AND APPARATUS FOR CREATING A REPRESENTATIVE HEARTBEAT FROM AN ECG WAVEFORM

Patricia A. Arand; William L. Post, both of McMinnville, Oreg., and Alfred D. Forbes, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 29, 1995, Ser. No. 565,504
Int. Cl.[6] A61B *5/0452*
U.S. Cl. 128—702 **31 Claims**



1. A method of creating information about a representative heartbeat from an ECG waveform, said method comprising the steps of:
detecting a plurality of heartbeats in said ECG waveform;
classifying said plurality of heartbeats as dominant heartbeats and non-dominant heartbeats;
aligning said dominant heartbeats to create aligned dominant heartbeats;
creating a representative heartbeat from said plurality of aligned dominant heartbeats, said creating step further comprising the steps of:
time slicing through said plurality of aligned dominant heartbeats;
responsive to said time slicing step, determining the magnitudes of each of said plurality of aligned dominant heartbeats at a first slice of time, thereby creating first magnitudes;
sorting the first magnitudes from smallest first magnitude to largest first magnitude, thereby creating sorted first magnitudes;
first discarding a first percentage of the smallest first magnitudes;
second discarding a second percentage of the largest first magnitudes, wherein said first magnitudes remaining after said first discarding step and said second discarding step are remaining first magnitudes;
averaging said remaining first magnitudes, thereby creating an average first magnitude; and
storing said average first magnitude.

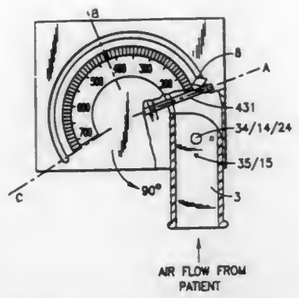
5,613,497

MINIATURE PEAK FLOW METER

George DeBush, Hamden, Conn., assignor to The D & T, Inc., Hamden, Conn.

Filed Jan. 3, 1995, Ser. No. 367,574
Int. Cl.[6] A61B *5/09*
U.S. Cl. 128—726 **22 Claims**

1. A miniature peak flow meter comprising, in combination:
a hollow body having a top surface;
a curved hollow cylinder disposed within said body, said cylinder having an opening;



a mouthpiece affixed to said body and adapted to direct a flow of fluid into said cylinder through said opening;

a piston movably mounted within said cylinder, said piston having a size and shape such that said piston fits freely inside said cylinder with enough clearance between said piston and said cylinder to allow said piston to move substantially frictionlessly along said cylinder;

means for rotationally mounting said piston about an axis extending through said body, the arrangement being such that said piston rotates concentrically through said cylinder when impacted by said fluid flow;

a spring mounted between said body and said rotatable mounting means, said spring biasing said piston in a direction towards said opening; and

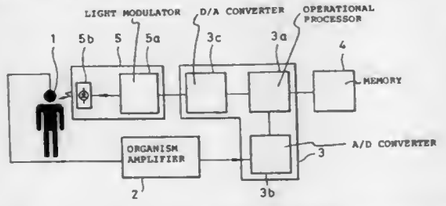
a pointer mounted within said top surface, said pointer being free to move along a defined path by rotation of said piston in said cylinder, whereby upon impact of said fluid flow said piston rotates from a rest position to a peak flow position causing said pointer to move along said path until it stops at a point indicating peak fluid flow, said spring forcing said piston to return to its rest position while said pointer remains in place along said path indicating peak fluid flow.

5,613,498

APPARATUS AND METHOD FOR LEADING HUMAN MIND AND BODY

Mitsuo Yasushi; Kazuhiro Akiyama, and Hiroshi Sato, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 28, 1994, Ser. No. 281,728
Claims priority, application Japan, Aug. 12, 1993, 5-200884
Int. Cl.[6] A61M *21/00*
U.S. Cl. 128—731 **12 Claims**



1. An apparatus for supplying a physical/mental leading signal to a user to lead a physiological condition of the user to a desired state, comprising:

renewable memory means storing physiological data indicative of a physiological condition of the user or a subject, said physiological data having previously been detected from the user during a period in which a physiological state of the user has led to a desired state;

signal producing means for producing a physical/mental leading signal for the user or subject, based on the physiological data stored in said memory means; and

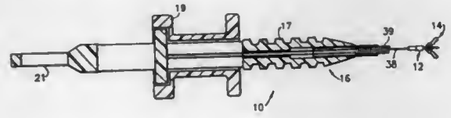
controller connected to both of said memory means and said signal producing means, for controlling said memory means and said signal producing means.

5,613,499

ENDOSCOPIC BIOPSY FORCEPS JAWS AND INSTRUMENTS INCORPORATING SAME

Matthew A. Palmer; Jose L. Francese; John R. Whittier, all of Miami, and Thomas O. Bales, Coral Gables, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 177,536, Jan. 5, 1994, Pat. No. 5,394,885, Ser. No. 837,046, Feb. 18, 1992, Pat. No. 5,507,296, and Ser. No. 265,217, Jun. 24, 1994, Pat. No. 5,482,054, which is a continuation of Ser. No. 16,595, Feb. 11, 1993, abandoned, said Ser. No. 837,046is a continuation of Ser. No. 521,766, May 10, 1990, Pat. No. 5,133,727. This application Sep. 22, 1994, Ser. No. 310,858
Int. Cl.[6] A61B *17/00*
U.S. Cl. 128—751 **22 Claims**



1. An endoscopic biopsy forceps jaw for use with an endoscopic biopsy forceps instrument having a hollow member with a control member extending therethrough, actuating means coupled to the proximal ends of the hollow member and control member for reciprocally moving the control member through the hollow member, and a pair of forceps jaws at least one of said pair being said endoscopic biopsy forceps jaw, said endoscopic biopsy forceps jaw comprising:

a) a distal jaw cup having an outer edge and an interior bollow portion, said outer edge being one of circular and oblate circular; and

b) a proximal coupling means for coupling said distal jaw cup to at least one of the control member and the bollow member of the biopsy forceps instrument such that the pair of forceps jaws will open and close with the reciprocally moving control member, wherein

said distal jaw cup has a plurality of teeth which extend substantially 360° around said distal jaw cup.

5,613,500

RETRACTABLE PHLEBOTOMY NEEDLE

Steve Bisbop, P.O. Box 1289, Ft. Worth, Tex. 76101-1289

Filed Feb. 21, 1995, Ser. No. 391,579
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—763 **8 Claims**

1. A needle assembly comprising:

a) a rigid shroud comprised of a sidewall elongated upon a center axis between forward and rearward extremities,

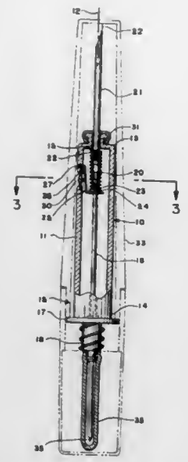
b) a centered aperture associated with said forward extremity,

c) a connector hub associated with said rearward extremity,

d) a stationary hollow needle secured by said connector hub upon said axis and extending between a front extremity located within said shroud and a pointed back extremity located rearwardly of said connector hub,

e) a forward hollow needle slideably positioned upon said stationary needle, slideably secured by said aperture, and extending between a pointed leading extremity initially disposed in front of said shroud, and a trailing extremity provided with an outwardly directed annular collar,

f) a compressed coil spring disposed upon said forward needle within said shroud, and interactive between the forward extremity of said shroud and said collar,



g) latch means interactive between said sidewall and collar resisting the urging of said spring, and

h) means associated with said sidewall for releasing said latch means, whereby

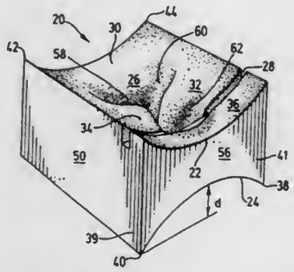
i) release of said latch means causes said spring to force said forward needle rearwardly upon said stationary needle until the pointed leading extremity of said forward needle is disposed within said shroud.

5,613,501

SURGICAL FACE SUPPORT

Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291, assignor to Gary K. Michelson, Venice, Calif.

Filed Jun. 10, 1993, Ser. No. 75,174
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—846 **11 Claims**



1. A surgical face support, comprising:

a body made of a compressible material having exterior side walls, end walls, an upper surface for supporting the face of a patient, and a lower surface;

a portion of the upper surface being concave curved in the direction from one side wall to the other side wall;

a portion of the lower surface having a raised central portion; and

said upper surface having support means for supporting the sides of a patient's face, said support means comprising an opening for providing space for the patient's eyes, nose, and mouth

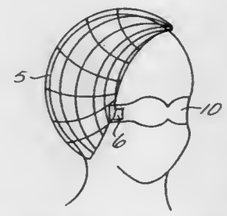
whereby when a patient's face is seated against said face support a first dynamic downward force from the weight of the patient's head causes said raised central portion to move downward resulting in the deformation of the raised central portion of said lower surface resulting in a second side vector force which causes the lower ends of the side walls to move outwardly so that a third stable force diverts said support means towards the face of the patient, resulting in an evenly distributed force at an angle to said first downward force and against the side of the face of the patient.

5,613,502

PHOTO THERAPY EYE MASK

Mary S. Lee, 13040 Kiowa Rd., Apple Valley, Calif. 92308

Filed Jul. 23, 1992, Ser. No. 826,096
Int. Cl.[6] A61F *11/00*
U.S. Cl. 128—857 **7 Claims**



1. An infant eye shield for protecting an infant's eyes from phototherapy treatment light comprising:

an eye piece having two interconnected oval shape areas for completely covering an infant's eyes, the eye piece being made of a material having one member of a hook and loop fastener and including an opaque layer; and

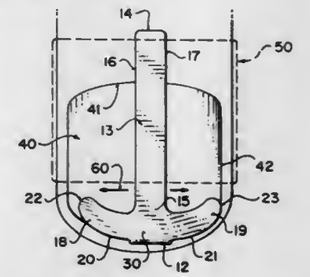
an attachment means comprising a strip of stretchable open work fabric gathered at its ends, forming a hammock shaped support for contact with only a portion of the back of the infant's head, and the other member of a hook and loop fastener attached to each end of the fabric for attachment to the hook and loop fastener on the eyepiece.

5,613,503

DEVICE AND METHOD FOR TREATING INGROWING TOE NAILS

Abe Penner, 124 Cottonwood Dr., Winkler, Manitoba, Canada

Flled Feb. 22, 1996, Ser. No. 605,738
Int. Cl.[6] A61F *13/06*
U.S. Cl. 128—892 **18 Claims**



1. A device for treating ingrowing toe nails comprising:

a shaped integral body for engaging the toe nail including:

a first member arranged to engage an upper surface of the toe nail adjacent a front edge thereof;

a second member arranged to engage an undersurface of the toe nail adjacent the front edge thereof;

and an interconnecting portion arranged to extend over the front edge for connecting the first member to the second member;

the first member including a front portion arranged to lie adjacent the front edge, to extend across a majority of the width of

the front edge and to contact the upper surface of the toe nail adjacent a center part thereof and to each side of the center part;

the second member including a front portion arranged to lie adjacent the front edge, to extend across a majority of the width of the front edge and to contact the undersurface of the nail adjacent to the center part and to each side of the center part;

the interconnecting portion being arranged only at the center part so that each of the first and second members includes a pair of wings extending outwardly from the interconnecting portion to each side thereof for contacting the upper and lower surfaces respectively of the nail.

5,613,504

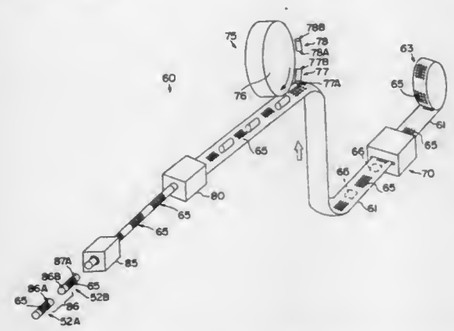
FLAVOR GENERATING ARTICLE AND METHOD FOR MAKING SAME

Alfred L. Collins, Powhatan; Mary E. Counts, Richmond; Amitabh Das, Midlothian; Seetharama C. Deevi, Midlothian; Grier S. Fleischhauer, Midlothian; Charles T. Higgins; Willie G. Houck, Jr., both of Richmond; Billy J. Keen, Jr., Chesterfield; Robert E. Lee, III, Richmond; A. Clifton Lilly, Jr., Chesterfield; D. Bruce Losee, Jr., Richmond; Hugh J. McCafferty; Constance H. Nichols, both of Midlothian; Wynn R. Raymond, Chesterfield; Robert L. Ripley; Renzer R. Ritt, Sr., both of Richmond; G. Robert Scott, Midlothian; F. Murphy Sprinkel, Glen Allen; Michael L. Watkins, Chester; Susan E. Wrenn, Chesterfield, and Francis V. Utsch, Midlothian, all of Va., assignors to Philip Morris Incorporated, New york, N.Y.

Division of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,505,214, which is a continuation-in-part of Ser. No. 666,926, Mar. 11, 1991, abandoned. This application May 24, 1995, Ser. No. 449,035

Int. Cl.[6] A24C *5/00*

U.S. Cl. 131—94 **11 Claims**



1. A method for manufacturing a removable tobacco flavor unit for use in a smoking article for delivering to a smoker a tobacco flavor substance, the article having a plurality of permanent electrical heating means disposed in a permanent cavity, the method comprising:

a) providing a carrier web having regions of tobacco flavor material;

b) applying adhesive regions to the surface of the carrier web so as to form spaced regions of adhesive in between spaced regions of tobacco flavor material;

c) attaching filter material to the adhesive regions on the surface of the carrier web;

d) wrapping the carrier web around the filters to form a continuous rod of alternating regions of filters and tobacco flavor material; and

e) severing the continuous rod in the filter material regions to form individual removable tobacco flavor units.

5,613,505

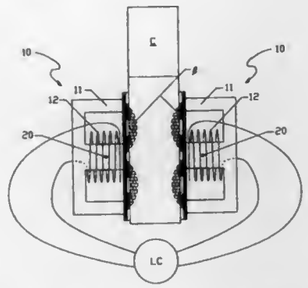
INDUCTIVE HEATING SYSTEMS FOR SMOKING ARTICLES

John M. Campbell; Grier S. Fleischhauer, both of Midlothian; Charles T. Higgins, Richmond; Robert L. Ripley, Midlothian; David E. Sharpe, Chesterfield; Michael L. Watkins, Chester, and Susan E. Wrenn, Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 105,346, Aug. 10, 1993, Pat. No. 5,479,948, and a continuation-in-part of Ser. No. 118,665, Sep. 10, 1993, Pat. No. 5,388,594, and a continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,505,214. This application Apr. 8, 1994, Ser. No. 225,120

Int. Cl.[6] A24F *47/00*

U.S. Cl. 131—194 **42 Claims**



1. A heating system for an electrical smoking article for smoking tobacco flavor medium comprising:

a generator for producing an alternating magnetic field,

a susceptor material which is inductively heatable by the alternating magnetic field and positioned relative to the generator so as to be heatable by the alternating magnetic field, and

a tobacco flavor medium in thermal proximity to the susceptor material.

5,613,506

DEVICE FOR REMOVING MANICURE

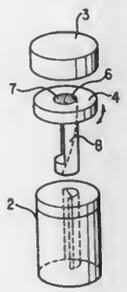
Sumie Kurokawa, 3561-4 Oaza Mure, Hofu-Shi, Japan

Filed Oct. 31, 1995, Ser. No. 550,638

Claims priority, application Japan, Nov. 1, 1994, 6-293758

Int. Cl.[6] A45D *29/00*

U.S. Cl. 132—73 **6 Claims**



1. A device for removing a manicure coating from a nail at a fingertip comprising:

a container having an upper portion,

a soft material impregnated with a manicure removing solution and disposed in the container,

a closure removably attached to the upper portion of the container for opening and closing the container,

an inner closure rotatably attached to the upper portion of the container, said inner closure having an opening and a soft cover for closing the opening, and

a fingertip protection sheath attached to the inner closure and extending downwardly therefrom to be situated inside the container, said sheath having a side portion, an inner space at least partly surrounded by the side portion and communicating with the opening, and an open portion formed at the side portion so that when the fingertip is inserted into the sheath through the opening, the nail can be located in the open portion, the manicure coating being removed from the nail by the manicure removing solution contained in the soft material when the finger is turned together with the inner closure.

5,613,507

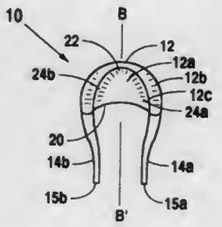
APPARATUS FOR CREATING SCULPTURED NAILS

Janice F. Geer, and James W. Geer, both of San Antonio, Tex., assignors to Superb Solutions

Filed Sep. 14, 1995, Ser. No. 527,948

Int. Cl.[6] A45D *29/06;31/00*

U.S. Cl. 132—285 **4 Claims**



1. An attachable member for use in preparing artificial nails, comprising:

a nail-shaped template portion;

a border portion positioned adjacent said template portion; and

a groove intermediate to said template portion and said border portion for defining the outline and thickness of a nail.

5,613,508

DENTAL FLOSS APPARATUS WITH IMPROVED MECHANISM FOR COLLECTING SPENT FLOSS

Rich Bushman, 10975 Stone Bridge Trail North, Stillwater, Minn. 55082

Filed Feb. 8, 1995, Ser. No. 385,461

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—325 **33 Claims**

1. An apparatus for holding, dispensing and collecting dental floss comprising:

a) a handle;

b) a dental floss support comprising a first projection and a second projection with both projections presenting a tip;

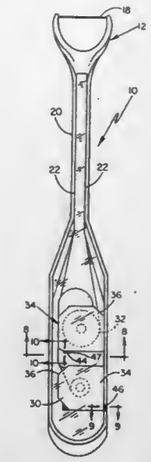
c) a dispensing reel operably attached to said handle;

d) a collecting reel operably attached to said handle;

e) guide means for directing said floss from said dispensing reel, up said first projection, across from said tip of said first projection to said tip of said second projection, down said second projection and to said collecting reel; and

f) a floss transferring mechanism comprising;

advancing means for rotating said collecting reel causing the uptake of floss, said rotation of said collecting reel being initiated by the motion of a knob projecting from said handle, with said advancing means preventing rotation of said collecting reel upon release of said knob;



pivot means for allowing rotation of said dispensing reel upon engagement of said knob while locking said dispensing reel to prevent its rotation when said knob is released.

5,613,509

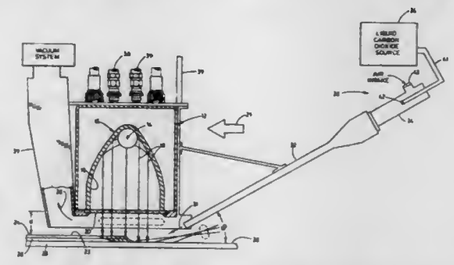
METHOD AND APPARATUS FOR REMOVING CONTAMINANTS AND COATINGS FROM A SUBSTRATE USING PULSED RADIANT ENERGY AND LIQUID CARBON DIOXIDE

Alan C. Kolb, Rancho Santa Fe, Calif.; Leonard W. Braverman, New Fairfield, Conn.; Cyril J. Silberman, Minnetonka, Minn.; Richard R. Hamm, San Diego, and Michael C. Cates, Del Mar, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 204,852, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 813,872, Dec. 24, 1991, Pat. No. 5,328,517. This application Jun. 2, 1995, Ser. No. 460,732

Int. Cl.[6] B08B *3/12*

U.S. Cl. 134—56 R **12 Claims**



1. A system for removing material from a structure, comprising:

a housing;

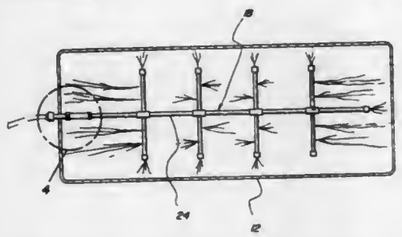
a radiant energy source mounted to said housing for generating radiant energy to irradiate a target area of said structure at an intensity sufficient to initiate pyrolysis and ablation of said material without substantially damaging said structure;

a liquid carbon dioxide source disposed proximate to said housing; and

an expansion and delivery means connected to said liquid carbon dioxide source and adapted for phase transitioning said liquid carbon dioxide source to form and direct a low temperature stream of carbon dioxide gas and carbon dioxide snow to said target area to remove said material from said target area thereby preventing said material from accumulat-

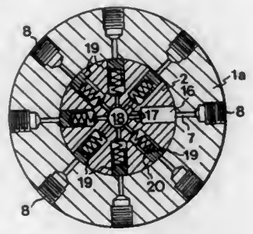
ing proximate the radiant energy source while concurrently cleaning and cooling said structure.

5,613,510
TANK INTERNAL SURFACE CLEANING SYSTEM
Ronald E. Proctor, P.O. Box 1423, High Point, N.C. 27261
Filed Oct. 10, 1995, Ser. No. 541,305
Int. Cl.[6] B08B *9/08;3/02*
U.S. Cl. 134—166 R **28 Claims**



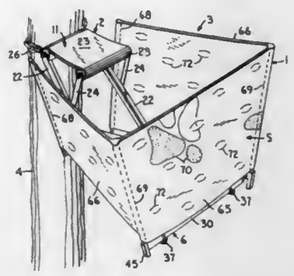
1. A tank internal surface cleaning system comprising:
a holding tank for retaining fluids; and
a fluid distribution assembly mounted within the holding tank for directing pressurized fluid towards interior surfaces of the holding tank, wherein the fluid distribution assembly comprises an elongated main fluid conduit extending through an interior of the holding tank; and a plurality of lateral conduits positioned in fluid communication with the elongated main fluid conduit and projecting laterally thereof for distributing fluid towards opposed side walls of the holding tank, the lateral conduits each having a plurality of openings positioned along the body of the conduit and at least one opening at each outer distal end of the conduit.

5,613,511
DEVICE FOR WASHING THE INTERIOR OF A BUILDING, AND A DISTRIBUTION VALVE ASSOCIATED THEREWITH
Kurt E. Andersen, and Ole Madsen, both of Hurup, Denmark, assignors to Verntofta AB, Verntofta, Sweden
PCT No. PCT/SE94/00125, § 371 Date Aug. 16, 1995, § 102(e) Date Aug. 16, 1995, PCT Pub. No. WO94/19116, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 16, 1994, Ser. No. 505,282
Claims priority, application Germany, Feb. 16, 1993, 0174-93
Int. Cl.[6] B08B *9/00*
U.S. Cl. 134—167 R **8 Claims**



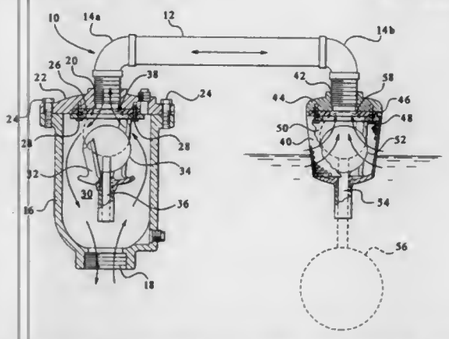
1. A distribution valve for a high-pressure pump, especially for sequential distribution of a pressure medium to several different outlets successively, from one and the same pump, the pump preferably being a so-called high-pressure cleaner (**22**) and the pressure medium being clean water or water admixed with a cleaning agent/disinfectant to be distributed through a number of nozzles (**24**) connected to the high-pressure cleaner (**22**), the distribution valve being of the type comprising a closed valve housing (**1**), in which a valve rotor (**2**) is rotatably mounted and adapted, during its rotation, preferably by indexing, to alternately open and close the flow path to a series of outlet ports (**8**) in the valve housing, the pumping medium being distributed via the ports concerned, out to the nozzles (**24**), characterised in
that the valve rotor (**2**) is mounted in a valve chamber or distributing chamber which is concentric with the axis of rotation (c) and in the form of a cylindrical bore (**6**) in the valve housing (**1**), said chamber being provided with a number of radial bores (**7**) arranged with angular spacing in one and the same plane and each communicating with one of said outlet ports (**8**) of the valve;
that the valve rotor (**2**) on a level with the bores (**7**) is provided with a corresponding number of radial, cylindrical bores (**16**), in each of which, with the exception of at least one bore, there is mounted a sealing blocking plunger (**4**, **19**) which is movably mounted in the respective bore and maintained pressed against the wall of the distributing chamber (**6**) by the liquid pressure and preferably also by a spring (**20**), the surface of the plunger engaging the wall of the distributing chamber being conformed thereto by having the same radius of curvature with a view to sealingly blocking the bores (**7**) in the distributing chamber (**6**) when the blocking plungers (**4**) are in a position opposite thereto; and
that there are further provided in the valve housing (**1**) at least one inlet port (**9**) for the pressure medium passing therethrough into the distributing chamber (**6**), and in the valve rotor (**2**) a number of axial/radial connecting bores (**17**, **18**), which connect the individual plunger bores (**16**) in the valve rotor (**2**) to the discharge side of the distributing chamber (**6**).

5,613,512
BLIND STRUCTURE FOR USE WITH TREE STAND
Ron M. Bean, Cedar Rapids, Iowa, assignor to David R. Forbes, and Carman S. Forbes, both of Cedar Rapids, Iowa
Filed Oct. 30, 1995, Ser. No. 550,168
Int. Cl.[6] A01M *31/00*
U.S. Cl. 135—90 **20 Claims**



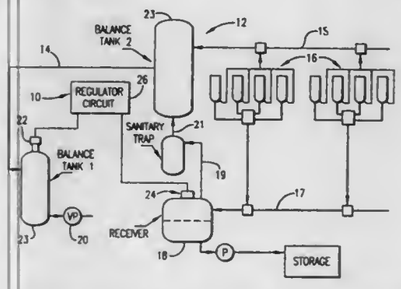
1. A blind structure attached to a tree stand having a platform supported on a trunk of a tree and having an outer periphery, said blind structure comprising:
(a) a plurality of socket members connected to the platform in spaced relation along the outer periphery;
(b) a plurality of elongated blind support rods, each rod being removably received in a respective one of said socket members; and
(c) a blind panel member engaged with each of said rods in at least partially surrounding relation to the platform to thereby obscure a person supported by the platform.

5,613,513
LIQUID FLOW CONTROL DEVICE
Ted J. Makowan, Schaumburg, Ill., assignor to Val-Matic Valve & Mfg. Corporation, Elmhurst, Ill.
Filed Apr. 20, 1995, Ser. No. 425,591
Int. Cl.[6] F16K *24/04;31/18*
U.S. Cl. 137—1 **24 Claims**



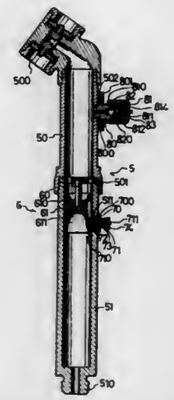
1. A system for controlling flow of liquid within a vent line, the system comprising:
a first body defining an interior having a first float therein wherein the first body has an inlet and an outlet;
a first baffle supporting the first float within the interior of the body, the first baffle having a channel and a plurality of support arms connected to the body;
a first seat at the outlet of the first body wherein the first float is capable of moving between the first baffle and the first seat due to entry of the liquid through the inlet of the first body;
a plunger operatively connected to the first float and constructed and arranged to extend into the channel of the first baffle so that the plunger and the first float move as a unit;
a second float;
a second body defining an interior having the second float therein wherein the second body has an inlet and an outlet;
a second seat at the outlet of the second body wherein the second float is capable of sealing an opening through the second seat due to entry of liquid through the inlet of the second body; and
a length of piping connecting the first body to the second body.

5,613,514
PRESSURE/VACUUM REGULATOR
Jinglu Tan, Columbia, Mo., and Limin Wang, Springfield, Ill., assignors to The Curators Of The University of Missouri, Columbia, Mo.
Filed Jun. 7, 1995, Ser. No. 484,470
Int. Cl.[6] G05D *16/20*
U.S. Cl. 137—102 **11 Claims**



1. A pressure regulator for controlling the pressure of a pressure system, the pressure system having pumping means for adding fluids to or removing fluids from the pressure system, a dynamic pressure responsive working station requiring compressed or expanded fluids at a steady pressure, and means operably coupling the pumping means and working station for conveying the fluids to or removing the fluids from the working station for operating the working station, the pressure system being subject to pressure disturbances resulting from variable fluid usage by the working station which can adversely affect the operation of the working station, the system further having a valve having a fully open and a fully closed position, said pressure regulator comprising:
measuring means for measuring the dynamic pressure of the pressure system; and
control means responsive to said measuring means for controlling the amount of fluid flow through said valve into or out of the pressure system,
said control means including comparing means for comparing the pressure measured by said measuring means with a predetermined set-point, and valve positioning means responsive to said comparing means for selectively ramping the valve to respective positions between said fully open and fully closed positions for letting selective amounts of fluid flow into or out of the pressure system to maintain the pressure of the pressure system within a desired pressure range corresponding to said pre-determined set-point.

5,613,515
APPARATUS FOR CONNECTING AN INFLATABLE ARTICLE TO A COMPRESSOR
Tien-Tsai Huang, No. 4-2, Lane 30, Wu-Chang St., Pan-Chiao City, Taipei Hsien, Taiwan
Filed May 16, 1995, Ser. No. 442,179
Int. Cl.[6] F16K *15/20*
U.S. Cl. 137—224 **6 Claims**



1. An apparatus for connecting an inflatable article to a compressor so as to supply compressed air to the inflatable article, said apparatus comprising:
an elongated tube having an air inlet end adapted to be connected to the compressor and an air outlet end adapted to be connected to the inflatable article, said tube further having a surrounding wall formed with a radial hole;
a flexible bidirectional valve unit which is disposed fittingly in said tube and which includes a cup-like first check valve member located adjacent to said radial hole, said first check valve member opening downwardly and having a base end and an opposite flaring end which contacts tightly and normally an inner surface of said surrounding wall of said tube so as to prevent air flow from said inlet end to said outlet end of said tube, said valve unit further including a cup-like second check valve member which opens upwardly and which has a base end connected integrally to said base end of said first check valve member and an opposite flaring end contacting

tightly and normally said inner surface of said surrounding wall of said tube so as to prevent air flow from said outlet end to said inlet end of said tube;

a valve actuator including an actuating rod which extends into said radial hole of said tube and which is operable so as to push said flaring end of said first check valve member to disengage said inner surface of said surrounding wall of said tube in order to permit air flow from said inlet end to said outlet end of said tube, said valve actuator further including means for mounting slidingly and sealingly said actuating rod to said tube; and

an automatic relief valve unit mounted to said tube between said bidirectional valve unit and said air outlet end of said tube, said relief valve unit releasing air in said tube when pressure therein exceeds a predetermined value.

5,613,516

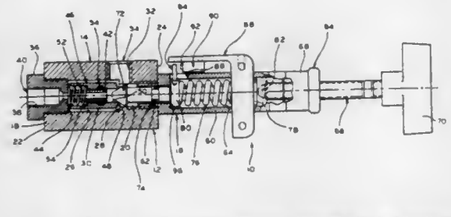
COMBINATION HYDRAULIC PRESSURE REGULATOR AND PRESSURE SWITCH

Michael T. Landrum, Waseca, Minn., assignor to Power Team Division of SPX Corporation, Owatonna, Minn.

Filed Dec. 21, 1995, Ser. No. 576,709

Int. Cl.[6] F16K *17/06;37/00*

U.S. Cl. 137—509 **20 Claims**



1. A combination hydraulic pressure regulator and pressure switch comprising:

a housing having an interior chamber connecting an inlet port to an outlet port;

a seating device movably received in the interior chamber and having a seat surrounding an opening, the opening being in communication with the outlet port;

a poppet movable in said interior chamber;

an adjustment spring for normally urging said poppet into engagement with the seat to close said opening, said poppet being movable in a direction away from the seat in response to hydraulic pressure in the interior chamber sufficient to overcome force of the adjustment spring;

switch actuator means associated with the poppet for actuating a limit switch in response to movement of the poppet in a direction away from the seat; and

balancing means for hydraulically balancing the seating device in the chamber so that the seat remains engaged with the poppet until a select pressure is exceeded in the interior chamber thereafter resulting in hydraulic flow from the inlet port to the outlet port.

5,613,517

SHEATH VALVE

Michael D. Handler, Brookfield, Conn., assignor to Reseal International Limited Partnership, New York, N.Y.

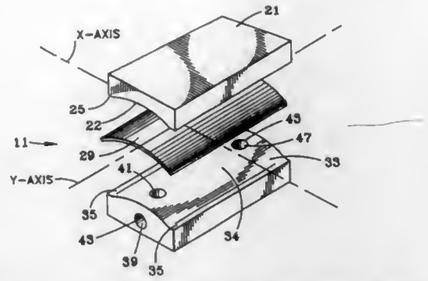
Filed Oct. 24, 1994, Ser. No. 327,608

Int. Cl.[6] F16K *15/14*

U.S. Cl. 137—512.4 **26 Claims**

11. A sheath valve, said sheath valve including

a valve platform having a convex platform inner surface and a peripheral seat extending around and enclosing said convex surface, said valve platform having at least one channel for liquid, said channel leading through said platform to said platform inner surface,



a normally planar imperforate elastomeric membrane positioned over said platform inner surface and said peripheral seat of said valve platform,

a cover for said valve platform having a cover inner surface facing and spaced from said membrane positioned over said platform inner surface, said cover having a peripheral cover shoulder mating with and fixed to said peripheral seat with said membrane being sealed therebetween whereby liquid flow occurs only on one side of said membrane.

5,613,518

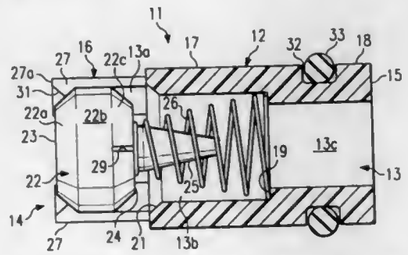
DEVICE FOR RESTRICTING EXCESS FLOW

Kenneth E. Rakieski, Gifford, Pa.; assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 21, 1995, Ser. No. 391,586

Int. Cl.[6] F16K *15/02*

U.S. Cl. 137—513.5 **3 Claims**



1. A device for restricting excess flow through a conduit, said device comprising:

a tubular body having a bore extending along a longitudinal axis of said tubular body from an inlet end of said tubular body to an outlet end of said tubular body;

wherein said tubular body comprises an inlet body section and a second body section, said inlet body section forming an inlet bore section of said bore, said second body section forming a second bore section of said bore, said second body section joining said inlet body section to form an annular valve seat, said annular valve seat being located at a junction of said second bore section and said inlet bore section and facing said inlet bore section;

a poppet valve member positioned in said inlet bore section for movement along the longitudinal axis of said tubular body, said poppet valve member having an upstream end and a downstream end; and

a spring biasing said poppet valve member away from said annular valve seat;

said inlet body section having a plurality of longitudinally extending fluid passageways formed therein, extending at least from adjacent to said upstream end of said poppet valve member to adjacent to said downstream end of said poppet valve member when said poppet valve member is positioned away from said annular valve seat, in order to provide fluid communication around said poppet valve member when said poppet valve member is positioned away from said annular valve seat, said poppet valve member at least substantially interrupting fluid communication between said fluid passageways and said second bore section when said poppet valve member contacts said annular valve seat;

wherein each of the plurality of longitudinally extending fluid passageways formed in said inlet body section extends radially outwardly from said inlet bore section to the outer periphery of said inlet body section;

wherein said inlet body section comprises a plurality of longitudinally extending arms, each of said arms having an upstream end and a downstream end, the downstream end of each arm being joined to downstream ends of adjacent arms, the upstream ends of said arms being free of connection to each other, said arms being spaced apart about the outer periphery of said inlet body section so that each of said plurality of longitudinally extending fluid passageways is a space between an adjacent pair of said arms;

wherein the upstream end of each of said arms has a radially inwardly projecting element such that the radially inwardly projecting elements retain said poppet valve member in said inlet bore section;

wherein the arms are sufficiently flexible such that the upstream ends of the arms can be moved radially outwardly sufficiently to permit the insertion of said poppet valve member therebetween into said inlet bore section during the fabrication of said device;

wherein said tubular body has an annular groove in an outer surface of said tubular body, wherein an annular elastic member is positioned in said annular groove, wherein said conduit has an inner wall forming a flow passageway through said conduit, and wherein said tubular device has an outer diameter slightly smaller than a diameter of the flow passageway through said conduit so that said device can be inserted into said flow passageway through said conduit with said annular elastic member providing a sealing engagement with the inner wall of said conduit;

wherein said tubular body further comprises a third body section, said third body section forming an outlet bore section of said bore, said third body section joining said second body section to form an annular shoulder at the junction of said second bore section and said third bore section, said annular shoulder facing said second bore section;

wherein said spring is positioned in said second bore section between and in contact with said annular shoulder and said downstream end of said poppet valve member;

wherein said annular groove is formed in said third body section;

wherein said tubular body is a single unitary injection molded element formed of a synthetic polymeric material; and

wherein said annular elastic member is an O-ring.

5,613,519

OPERATING VALVE ASSEMBLY WITH PRESSURE COMPENSATION VALVE

Naoki Ishizaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP93/01861, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/15103, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 22, 1993, Ser. No. 446,839

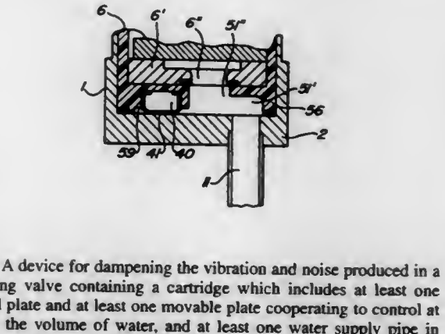
Claims priority, application Japan, Dec. 22, 1992, 4-341996

Int. Cl.[6] F17D *1/00;* **F15B** *11/08*

U.S. Cl. 137—596.2 **3 Claims**

1. An operating valve assembly with a pressure compensation valve, comprising:

a spool for selectively establishing and blocking communication between a pump port, an output port and a main tank port, said spool being disposed within a spool bore of a valve body,



and a pressure compensation valve being provided between said output port and an actuator port,

said pressure compensation valve having a piston pressed in the closing side by a load pressure acting on a compensation pressure acting portion, and a valve provided integrally with said piston for selectively establishing and blocking communication between said output port and said actuator port, and actuated for opening by the output port pressure acting on an area of a portion to be compensated, an area of said compensation pressure acting portion being equal to the area to be compensated, and

a pilot valve for selectively establishing and blocking communication of a pressure receiving portion of said piston of said pressure compensation valve with a tank, and a sbuttle valve supplying the pressure of a higher pressure side among the load pressure and the actuator port pressure to said compensation pressure acting portion of said pressure compensation valve.

5,613,520

DEVICE FOR DAMPENING VIBRATION AND NOISE IN HYDRAULIC INSTALLATIONS

Alfons Knapp, Biberach/Riss, Germany, assignor to Masco Corporation, Taylor, Mich.

Division of Ser. No. 259,807, Jun. 15, 1994, Pat. No. 5,494,076. This application Feb. 15, 1996, Ser. No. 602,141

Claims priority, application Italy, Jun. 22, 1993, TO93A0449

Int. Cl.[6] F16K *11/074;47/02;* **F16L** *55/05*

U.S. Cl. 137—625.17 **4 Claims**

1. A device for dampening the vibration and noise produced in a mixing valve containing a cartridge which includes at least one fixed plate and at least one movable plate cooperating to control at least the volume of water, and at least one water supply pipe in communication with said mixing valve, said device comprising an envelope comprised of flexible material in the shape of a capsule located in a space in a passage formed in the bottom of said cartridge, said capsule being disposed out of the direct path of water flow through said valve, said capsule comprising at least one thin wall acting as a membrane and at least one peripheral wall.

5,613,521

MIXING VALVE HAVING A BALL VALVE CARTRIDGE AND A LOWER INSERT MEMBER

Alfons Knapp, Biberach/Riss, Germany, assignor to Masco Corporation, Taylor, Mich.

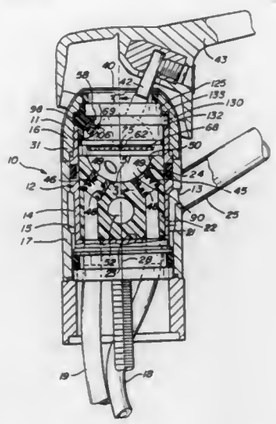
PCT No. PCT/US94/11222, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO95/10724, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 7, 1994, Ser. No. 343,530

Claims priority, application Italy, Oct. 8, 1993, TO93A0733

Int. Cl.[6] F16K *11/076*

U.S. Cl. 137—625.41 6 Claims



1. In a faucet mixer valve having a movable valve element mounted in a housing body that defines a cavity, said body having a plurality of inlet ports and an outlet port in fluid communication with said cavity, said movable valve element cooperating with said inlet ports to control liquid flow in both flow rate and temperature mix through said ports, said valve body having a control opening therethrough, said valve element having a control stem connected thereto and extending through said control opening, the improvement characterized by:

said body including a lower base member having hot and cold supply passages and an outlet passage, said body having a substantially cylindrical cavity with a planar bottom;

said body including an insert member fitted in a lower section of said cavity of said lower base;

said insert member having respective inlet ports aligned for fluid communication with said hot and cold supply passages in said base member and having a respective outlet port in fluid communication with said outlet passage;

said insert member having a recess in its upper end for operably receiving said movable valve element to cooperate with said inlet ports;

said mixer valve being in cartridge form with a cartridge having a housing member;

said cartridge housing member having an upper opening for allowing said control stem passing therethrough;

means for seating said movable valve element to said cartridge housing member;

said cartridge having a lower opening through which said movable valve element protrudes into said recess in said insert member to be cooperative to said inlet ports;

said cartridge housing having a seal seat about said upper opening; and

a sealing gasket seated in said seal seat about said upper opening in said cartridge housing and sealingly abuttable against said movable valve element.

5,613,522

SHAPED FABRIC PRODUCTS

Michael A. Ford, West Chester; Richard A. Barlow, Newtown Square, both of Pa., and Martin I. Jacobs, Bedford, N.H., assignors to Bentley-Harris Inc., Exton, Pa.

Continuation-in-part of Ser. No. 418,076, Apr. 6, 1995, Pat. No. 5,556,495, which is a division of Ser. No. 787,900, Nov. 5, 1991, Pat. No. 5,413,149. This application Oct. 27, 1995, Ser. No. 549,456

Int. Cl.[6] F16L *11/00*

U.S. Cl. 138—123 13 Claims



1. A flexible abrasion and kink-resistant sleeve for protection of elongated articles, such as wires, cables, hoses and conduits, said sleeve comprised of warp and fill ends having an open weave construction characterized by the absence of supporting material for said warp and fill ends, said sleeve having a substantially circular cross-sectional configuration and an ARP abrasion resistance of at least about 20,000 cycles, said sleeve comprising:

at least one resilient filamentary fill end having a resilient set in a hoop configuration disposed in a plane extending substantially perpendicularly to the sleeve central axis; and

at least one resilient filamentary warp end interwoven with said fill end, said warp end having a resilient set in a spiral configuration and having a pitch of from above about 0.1 to about 0.3 turns per longitudinal sleeve inch.

5,613,523

HOT WATER RESISTANT PRESSURE HOSE

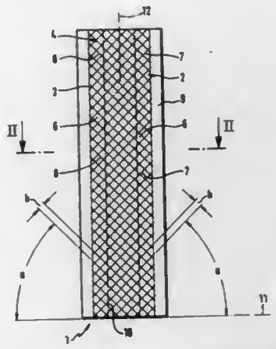
Manfred Klawuhn, Frankfurt am Main; Ulrich Haubruch, Witten, and Ralf Skoda, Dortmund, all of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Aug. 18, 1995, Ser. No. 516,612

Claims priority, application Germany, Sep. 12, 1994, 44 32 385.9

Int. Cl.[6] F16L *11/08*

U.S. Cl. 138—126 11 Claims



1. A hot water resistant pressure hose comprising an inner tubing made of an elastomer and having an outer diameter between four millimeters and six millimeters,

an outer tubing made of an elastomer;

braid structure disposed between said inner tubing and said outer tubing, said braid structure comprising a first group of multifilament yarns wound around the inner tubing in the right hand direction, a second group of multifilament yarns wound around said inner tubing in the left hand direction, each said group having ten to fifteen yarns, and each said yarn having a weight between 250 and 310 denier; said braid structure forming mesh openings of approximately equal size, each said mesh opening covering an area in the range of 0.25 mm^2 to 2.25 mm^2, said mesh openings selected to enable said outer tubing to be separated from said inner tubing and said braiding to be separated from said inner tubing, and

positive engagement bond structure between said inner tubing and said outer tubing through said mesh openings.

5,613,524

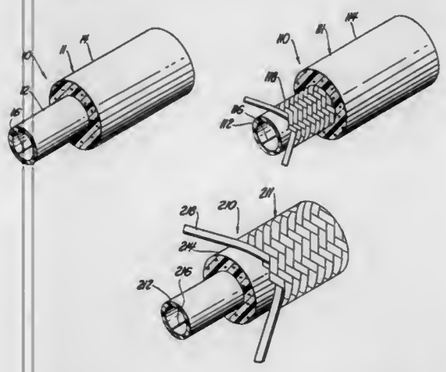
FLUOROCARBON HOSE ASSEMBLY INCLUDING INTEGRAL FOAMED FLUOROCARBON LAYER

Norman S. Martucci, Birmingham, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 311,881, Sep. 26, 1994, abandoned, which is a continuation of Ser. No. 991,496, Dec. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 835,048, Feb. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 535,734, Jun. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 244,319, Sep. 8, 1988, abandoned. This application May 9, 1995, Ser. No. 437,046

Int. Cl.[6] F16L *11/04*

U.S. Cl. 138—137 16 Claims



1. A hose assembly (**10**,**110**,**210**) comprising an integral tubular member (**11**,**111**,**211**) for conducting fluid therethrough; said tubular member (**11**,**111**,**211**) including an inner fluorocarbon polymer liner (**12**,**112**,**212**) and an outer closed cell foam fluorocarbon polymer layer (**14**,**114**,**214**) integral therewith, an inner surface of said outer layer (**14**,**114**,**214**) blended or fused with an outer surface of said inner liner (**12**,**112**,**212**), thereby forming said integral tubular member adapted to resist heat and chemical degradation, providing improved hoop strength, preventing kinking of said inner liner (**12**,**112**,**212**) and preventing movement between said inner liner (**12**,**112**,**212**) and said outer layer (**14**,**114**,**214**).

5,613,525

METHOD AND APPARATUS FOR GENERATING AN ARTIFICIAL ANGULAR SHAFT POSITION TO OPERATE A WEAVING MACHINE

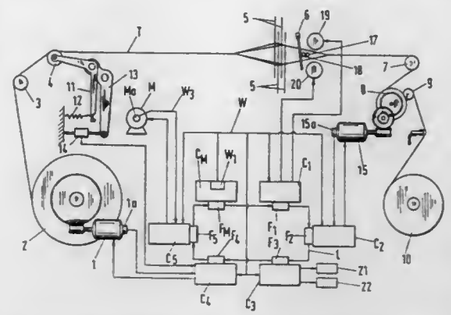
Markus Schwendimann, Andwil, Switzerland, assignor to Sulzer Ruti AG, Switzerland

Filed Feb. 2, 1996, Ser. No. 595,604

Claims priority, application European Pat. Off., Feb. 9, 1995, 95810085

Int. Cl.[6] D03D *51/00*; G05B *19/042*

U.S. Cl. 139—1 E 13 Claims



1. In a weaving machine having a rotating main shaft for driving the weaving machine and a plurality of accessories on the weaving machine for weaving cloth, each said accessory performing a function to the cloth as function of the general rotational position of the main shaft of the weaving machine, the improvement comprising:

a weaving machine having a main shaft for being driven in rotation to weave cloth;

a generator for generating a signal representing a desired angular position of the main shaft of the weaving machine independent of an actual angular position of the main shaft;

a drive for driving the weaving machine, the drive responsive to the signal for the desired angular position of the main shaft of the weaving machine independent of the actual angular position of the main shaft of the weaving machine;

at least one weaving machine accessory for performing functions on cloth being woven in the weaving machine as a general function of main shaft rotation of the weaving machine; and,

means for driving the weaving machine accessory of the weaving machine responsive to the signal for the desired angular position of the main shaft of the weaving machine independent of the actual angular position of the main shaft of the weaving machine.

5,613,526

ELECTRONIC CONTROL OF MOTORS FOR RECIPROCATING THE KNIVES IN A WEAVING LOOM

Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to Staubli Faverges, Faverges, France

Filed Sep. 20, 1995, Ser. No. 530,619

Claims priority, application France, Sep. 27, 1994, 94 11772

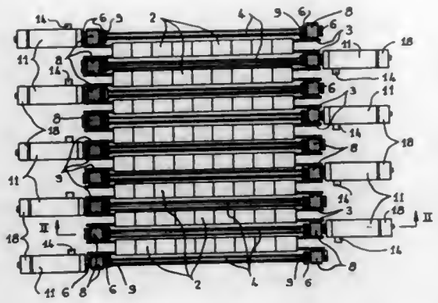
Int. Cl.[6] D03C *3/20*

U.S. Cl. 139—59 5 Claims

1. In a weaving machine having a drive shaft and reciprocating hooks which actuate harness cords and which are controlled by knives carried by parallel sides of a plurality of pairs of belts moveable in a reciprocating motion, the improvement comprising:

each pair of belts being drivingly connected to a shaft driven by an electric motor,

electronic variators connected to each of said electric motors for supplying electrical signals cyclically reversing a direction of rotation of an output of each electric motor, and



first sensor means for sensing a rotational position of the output of each of said electric motors and for supplying signals to electrical input means connected to each of said electronic variators to thereby control the cyclic reversal of the direction of rotation of said outputs of said electric motors.

5,613,527

FORMING SCREEN HAVING FLATTENED CROSS THREADS

Daniel Zimmermann, Mulhouse, France, and Liam Maher, Tralee, Ireland, assignors to Siebtuchfabrik AG, Switzerland

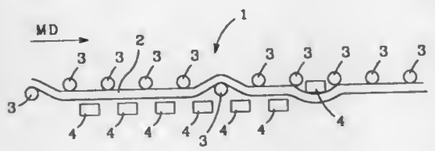
PCT No. PCT/EP93/02234, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/04748, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 20, 1993, Ser. No. 382,046

Claims priority, application Germany, Aug. 25, 1992, 9211391 U

Int. Cl.[6] D21F *1/00*

U.S. Cl. 139—383 A **36 Claims**



1. A multi-layer paper machine forming screen having a paper side and a machine side, comprising:

a) a plurality of synthetic longitudinally extending machine direction threads;

b) a plurality of synthetic cross threads extending generally transverse to said machine direction threads, said cross threads disposed in first and second groups and at least some of said cross threads have a flattened cross section;

c) said first group threads are disposed in a plane on the paper side and have a repeat floating over the machine direction threads by at least the number of machine direction threads floating over the cross threads on the paper side;

d) said second group threads form a plane on the machine side; and

e) the flattened cross threads extend parallel to the paper side plane a distance from about 1.2 to about 2.2 times the distance by which the flattened cross threads extend transverse to the paper side plane.

5,613,528

DEVICE AND METHOD FOR MONITORING THE THREAD RESERVE IN WEFT FEEDERS

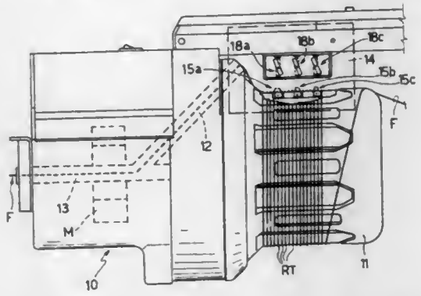
Pietro Zenoni, Leffe, and Luca Gotti, Albino, both of Italy, assignors to L.G.L. Electronics S.p.A., Bergamo, Italy

Filed Nov. 14, 1995, Ser. No. 555,694

Claims priority, application Italy, Nov. 22, 1994, TO94A0935

Int. Cl.[6] D03D *47/36*

U.S. Cl. 139—452 **11 Claims**



1. A device for monitoring the reserve (RT) of thread in weft feeders (**10**) having a fixed drum (**11**) and a motor (M), comprising weft sensors (**15***x*) that are constituted by magnetic elements (**16***x*) mounted in the fixed drum (**11**) of the feeder (**10**) so as to be movable between a first position, which protrudes beyond the surface (S) of the drum, and a second position, at the same level as said surface, and in which each weft sensor (**15***x*) cooperates with a respective detector (**18***x*) that is located outside the drum (**11**), said detector reacting with a signal, without contact, when the position of the corresponding magnetic element of the weft sensor changes; wherein each detector in turn comprises an acquisition sensor (**20***a*–**23***x*) for providing an analog signal, in terms of voltage (Ux), that can vary in a linear manner as the angular positions of the movable magnetic element (**16***x*) of the corresponding weft sensor (**15***x*) vary, and in that said acquisition sensors are operatively connected to a microprocessor (μP) for controlling the motor (M) of the feeder (**10**), said microprocessor comprising value setting means and processing means, said value setting means automatically setting the values of a weft presence threshold ($S_p x$) and of a weft absence threshold ($S_a x$) when the values of the analog signal (Ux) are greater than the minimum signal ($U_i p$) increased by a preset percentage (K and respectively 1–K) of the difference ($U_a a$–$U_a p$) between maximum and minimum values of said signal, and said processing means processing, with an algorithm, the analog signals (Ux) in order to filter out the rapid variations of said analog signals.

5,613,529

METHOD AND APPARATUS FOR TREATMENT OF STATOR COIL LEAD WIRES FOR ELECTRIC ROTARY MACHINE

Hiroyuki Tanaka; Ko Onodera, both of Hitachinaka; Takehiko Watanabe, Nakamachi, and Yoshinori Fukaya, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 22, 1996, Ser. No. 589,609

Claims priority, application Japan, Jan. 20, 1995, 7-007054

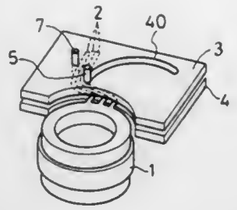
Int. Cl.[6] B21F *1/00*

U.S. Cl. 140—71 R **22 Claims**

1. A method of treatment of stator coil lead wires for an electric rotary machine, comprising the steps of:

movably arranging a plurality of coil lead wires between opposed plane-like members, said coil lead wires extending in the radial direction of a stator for an electric rotary machine; and

pressing said plurality of coil lead wires in a predetermined gathering direction by a lead wire pressing member which is capable of moving between said plane-like members, so that



said plurality of coil lead wires are transformed and gathered into a predetermined shape.

5,613,530

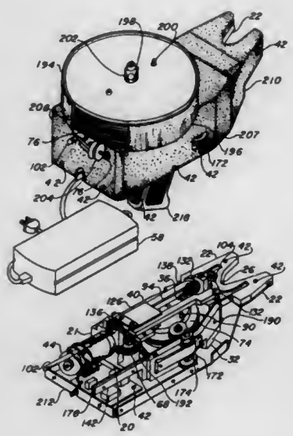
HAND HELD TWIST TIE APPARATUS

Roger S. Kincel, Carlsbad, and Luis C. Contreras, Placentia, both of Calif., assignors to Johnston International Corp., Santa Ana, Calif.

Filed Jul. 12, 1995, Ser. No. 501,365

Int. Cl.[6] B21F *15/04*

U.S. Cl. 140—119 **17 Claims**



1. A hand held twist tie apparatus for securing products with twist tie material comprising;

electromechanical mounting and single, rotating drive means for, mounting, powering, controlling, and activating the apparatus,

twisting means, contiguously energized by said drive means for twisting the tie material into a tight joint,

nonrotational encircling and tightening means attachably shuttled onto said twisting means surrounding the tie material on the product and urging the tie material into intimate contact thereupon,

feeding, measuring and cutting means contiguously set in motion by said drive means, directing a predetermined amount of tie material into said encircling and tightening means and cutting to length therewith, and

twist tie material storage and supply means juxtapositioned on said drive and mounting means accommodating a roll of tie material and introducing a free end of the material into said feeding, measuring, and cutting means for securement of a product with a length of tightly twisted tie material.

5,613,531

DEVICE FOR ALIGNING THE CONTACT FEET ARRANGED ON THE EDGE OF AN IC COMPONENT

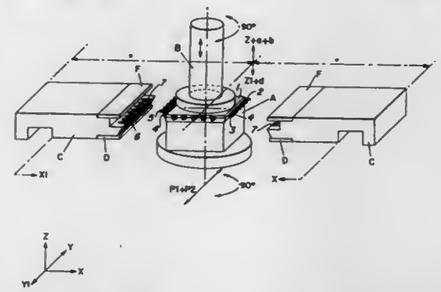
Bernhard Essig, Riesbuerg-Goldburghausen; Peter Klein, Noerdlingen, and Karl Kornmann, both of Noerdlingen-Loepsingen, all of Germany, assignors to Rood Technology Deutschland GmbH, Noerdlingen

Filed Feb. 8, 1995, Ser. No. 385,655

Claims priority, application Germany, Feb. 8, 1994, 44 03 804.6

Int. Cl.[6] B21F *45/00*

U.S. Cl. 140—147 **20 Claims**



1. A device for aligning contact feet arranged along the edge of an integrated circuit (IC) component, comprising a clamping device for holding the component in position and a toothed adjusting tool, said tool comprising prongs which are inclined upwardly along their front sides in the direction of the component and being moveable in gaps between the contact feet, the adjusting tool being moveable in a first movement orthogonal to the plane of the component and which can relatively oscillate with the contact feet in a first oscillating movement orthogonal to a run of the contact feet when the prongs are engaged with the contact feet, a first adjusting plate overlapping gaps between the prongs and being situated on one side of the prongs, said adjusting plate running up against ends of the contact feet which are between the prongs when the first movement of the adjusting tool is completed and bending the contact feet in the direction of the first movement, the adjusting tool and the contact feet being relatively movable in a second oscillation movement orthogonal to the run of the contact feet having greater amplitude than during the first oscillation movement and being produced when the first adjusting plate bends the contact feet, a second adjusting plate located parallel to the first adjusting plate at a distance from the prongs on the other side of the prongs, the adjusting tool being moveable in a second movement opposite to the first movement, the second adjusting plate running up against the ends of the contact feet when the second movement is completed and bending the contact feet backward in the direction of the second movement.

5,613,532

COMPRESSED NATURAL GAS (CNG) REFUELING STATION TANK DESIGNED FOR VEHICLES USING CNG AS AN ALTERNATIVE FUEL

Charles R. Kaliszewski, Wadsworth, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

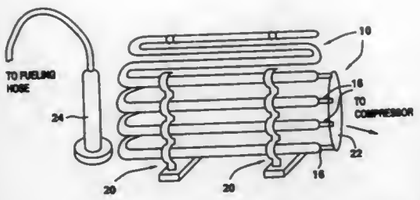
Filed Mar. 29, 1995, Ser. No. 412,816

Int. Cl.[6] B65B *31/00*

U.S. Cl. 141—18 **9 Claims**

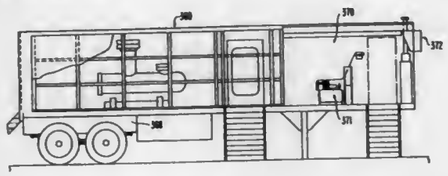
1. A compressed natural gas refueling station comprising:

a plurality of serpentine tanks, each serpentine tank having an elongated tubular tank body having a diameter of about 8 to 10 inches and a length of greater than 30 feet, the tubular body being bent into a serpentine compact shape and constructed to provide a low-volume, high-pressure storage for compressed natural gas, each of said serpentine tanks further having a connector connected to one end of each serpentine



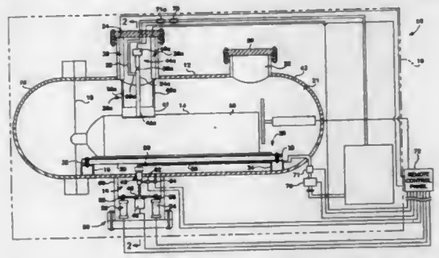
tank for receiving and discharging compressed natural gas, said serpentine tanks being constructed for a stacked arrangement with a split ring support for supporting each tank separating one from the other.

5,613,533
CYLINDER RUPTURE VESSEL
Dan A. Nickens, Orlando, Fla., assignor to Earth Resources Corporation, Ocoee, Fla.
Continuation of Ser. No. 290,562, Aug. 15, 1994, Pat. No. 5,449,665, which is a continuation of Ser. No. 11,865, Feb. 1, 1993, Pat. No. 5,337,793, which is a continuation of Ser. No. 873,481, Feb. 20, 1992, Pat. No. 5,186,219, which is a continuation of Ser. No. 489,234, Mar. 6, 1990, abandoned, which is a continuation of Ser. No. 57,083, Jun. 3, 1987, Pat. No. 4,944,333, which is a continuation-in-part of Ser. No. 669,537, Nov. 8, 1984, Pat. No. 4,690,180. This application Nov. 28, 1995, Ser. No. 564,568
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—51 **9 Claims**



1. A system for accessing the contents of a target container comprising:
a first enclosed chamber including an upper housing and a lower housing integral with the upper housing;
a support on which a target container may be supported within the first enclosed chamber, the target container comprising a wall portion and being capable of containing at least one of high pressure gas; high-pressure, reactive gas; and a toxic substance;
a first access member connected to the first enclosed chamber, the target container being loaded into the system through the first access member;
a first seal disposed between the first access member and the first enclosed chamber;
at least one removal port connected to the first enclosed chamber;
at least one pump connected to one of the at least one removal ports, each pump evacuating gas from the first enclosed chamber;
at least one purge connection connected to the first enclosed chamber through which an inert gas is introduced to purge gas from the first enclosed chamber;
a mechanism that enables access to the contents of the target container through the wall portion of the target container;
wherein the pump is operable to remove gas, contents of the target container and the inert gas from the first enclosed chamber;
a second enclosed chamber;
a second access member connected to the second enclosed chamber;
a second seal disposed between the second access member and the second enclosed chamber; and
a chamber connection providing sealed fluid communication between the second enclosed chamber and the first enclosed chamber.

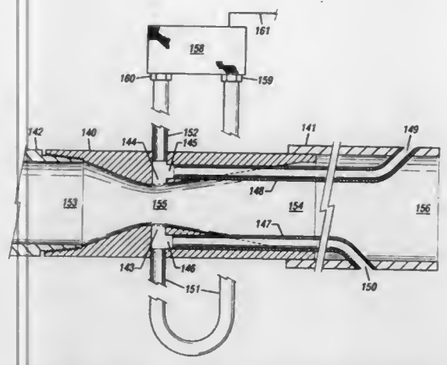
5,613,534
APPARATUS AND METHOD FOR CONTROLLED PENETRATION OF COMPRESSED FLUID CYLINDERS
Dan A. Nickens, Windermere, and Charles C. Mattern, Clermonte, both of Fla., assignors to Earth Resources Corporation, Ocoee, Fla.
Division of Ser. No. 245,912, May 24, 1994, Pat. No. 5,474,114, which is a continuation-in-part of Ser. No. 70,709, May 28, 1993, Pat. No. 5,427,157. This application Dec. 11, 1995, Ser. No. 570,478
Int. Cl.[6] B67B *7/46*
U.S. Cl. 141—51 **7 Claims**



1. A method for removing fluid from a container having a wall, comprising the steps of:
placing the container within an interior of a recovery vessel;
positioning an upper drill assembly above the container, the upper drill assembly at least partially defining an upper longitudinal bore;
positioning a lower drill assembly below the container, the lower drill assembly at least partially defining a lower longitudinal bore;
urging an upper housing of the upper drill assembly against an upper surface of the container to form an upper fluid seal therebetween;
urging a lower housing of the lower drill assembly against a lower surface of the container to form a lower fluid seal therebetween, the lower housing having a lower port;
disposing upper and lower drill bits in the upper and lower longitudinal bores, respectively;
penetrating the wall of the container with the upper and lower drill bits;
removing the fluid from the container through the lower port; and
rinsing the interior of the container by introducing a flushing fluid into the container through the upper drill assembly.

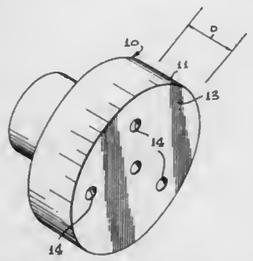
5,613,535
FUEL DISPENSER SHUTOFF SWITCH
Andrew E. Loen, Port Alberni, Canada, assignor to Shell Oil Company, Houston, Tex.
Filed Jun. 5, 1995, Ser. No. 461,487
Int. Cl.[6] B67D *5/00*
U.S. Cl. 141—226 **8 Claims**

1. A fuel dispensing unit shutoff switch comprising:
a fuel supply nozzle, having a fuel supply outlet, capable of being inserted into a fuel tank inlet conduit of a vehicle;
a plurality of vacuum conduits, each vacuum conduit providing communication between a volume in the vicinity of the fuel supply nozzle outlet, and sources of essentially equal negative pressures;



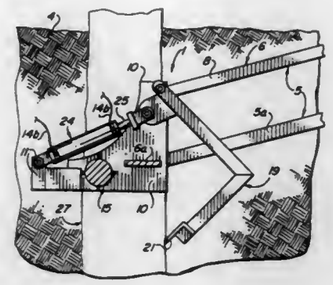
a differential pressure sensor having a plurality of inputs with each input being a point along a different vacuum conduit, and an output signal that is activated when the pressures of the vacuum conduits at the differential pressure sensor inputs differ by more than a threshold amount of differential pressures; and
a means effective to stop fuel flow when the output signal is activated.

5,613,536
FACEPLATE FOR TURNING OBJECTS ON A LATHE OR THE LIKE
David M. Boyd, 10402 Las Lunitas Ave., Tujunga, Calif. 91042
Filed Dec. 23, 1994, Ser. No. 371,273
Int. Cl.[6] B27C *7/04*
U.S. Cl. 142—53 **5 Claims**



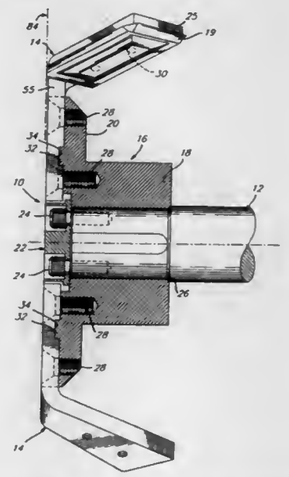
1. A faceplate for lathes and the like having a rotatable arbor comprising a body of polymeric material having a generally planar face for attaching workpieces to be turned, said body having a depth of at least ¾ inch, and a cylindrical wall adjacent to said planar face including indicia marks around the periphery of said cylindrical wall at predetermined angular spacing about the axis of rotation of said faceplate; and
a connection portion of said body constituting a rearward extension of said body including a recess for receiving the end of said rotatable arbor.

5,613,537
STUMP CUTTING APPARATUS
Cecil D. Gassiott, 9312 Highway 165 S., Woodworth, La. 71485
Filed Nov. 3, 1995, Ser. No. 553,071
Int. Cl.[6] B27C *9/00*
U.S. Cl. 144—24.12 **14 Claims**



1. A stump cutting apparatus comprising a pair of mount plates disposed in spaced, fixed relationship with respect to each other; a spacer plate fixedly attached to said mount plates for maintaining said mount plates in said spaced, fixed relationship; a cylindrical cutting drum journalled for rotation on said mount plates and a plurality of cutting element means provided on said cutting drum for cutting the stump; at least one motor mounted on at least one of said mount plates, said motor having a motor shaft operably connected to said cutting drum on the axis of rotation of said cutting drum for rotating said cutting drum; and a stabilizing arm pivotally carried by said mount plates for engaging the stump; a stabilizing blade provided on said stabilizing arm, said stabilizing blade positioned substantially parallel to said cutting drum and below said cutting drum between said cutting drum and the stump; and a pair of hydraulic cylinders pivotally attached to said mount plates, respectively, said hydraulic cylinders having pistons pivotally connected to said stabilizing arm, whereby said stabilizing blade engages the stump and stabilizes said cutting drum responsive to operation of said hydraulic cylinders as said cutting drum cuts the stump.

5,613,538
KNIFE HOLDER FOR TIMBER SHAPING AND CHIP PRODUCING HEAD
Maurice Brisson, Laval, Canada, assignor to Denis Comact Inc., St-Georges Beauce, Canada
Filed Oct. 18, 1995, Ser. No. 544,929
Int. Cl.[6] B27G *13/00*
U.S. Cl. 144—228 **15 Claims**



1. A knife holder for use in a rotatable head of a timber shaping and chip producing machine, said head including a rotatable core having a circular mounting face, said knife holder comprising a flat shaped V-bent body consisting of:

a face mounting portion having a means for radially affixing the face mounting portion to a part of said circular face of said core; and

a knife holding portion extending beyond said face mounting portion and being angularly inclined relatively thereto, said knife holding portion having means to secure a knife for timber shaping and chip producing.

5,613,539

ROLL DOWN SHUTTER HAVING A ROTATING, SELF-LOCKING WINDING SHAFT

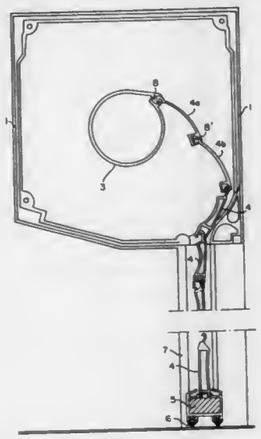
Franz Kraler, A-9913 Abfaltersbach 125, Austria

Continuation of Ser. No. 374,196, Jan. 18, 1995, abandoned, which is a continuation of Ser. No. 87,793, Dec. 10, 1993, Pat. No. 5,443,107. This application May 21, 1996, Ser. No. 650,958

Claims priority, application Austria, Nov. 15, 1991, 2278/91

Int. Cl.[6] E06B *9/26*

U.S. Cl. 160—32 **6 Claims**



1. A roll-down shutter comprising,

a rotating, self-locking winding shaft;

a plurality of linked shutter elements positioned movably in lateral guide rails, each of said linked shutter elements being pivotally connected to the other linked shutter element, said linked shutter elements further comprising a top-most linked shutter element made of rigid material;

said top-most shutter element extending over the entire length of said winding shaft and being pivotally connected to said rotating, self-locking winding shaft so that said top-most shutter element may swivel with respect to said winding shaft between a first and a second angular position, said top most shutter element lying essentially tangentially to said winding shaft in said first angular position and under a limited locking angle α to the tangent to said winding shaft in said second angular position, the pivotal connection between said top-most shutter element and said winding shaft being such that the top-most shutter element cannot swivel beyond said second angular position.

5,613,540

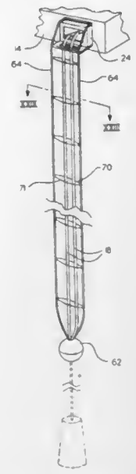
WINDOW SHADE CORD SAFETY SHROUD

Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 286,626, Aug. 5, 1994, Pat. No. 5,495,883. This application Aug. 17, 1995, Ser. No. 516,047

Int. Cl.[6] A47H *5/00*

U.S. Cl. 160—84.04 **20 Claims**



1. A cord shroud for use in cooperation with a window covering assembly having a bottomrail and a headrail with a cord lock attached thereto, the window shade assembly having at least two lift cords, each of which are connected at one end to the bottomrail, pass through the headrail and cord lock, have an opposite end accessible to an operator, and an exposed portion which extends from the headrail to the opposite ends when the window shade is open, wherein said lift cords are joined at said opposite ends, the cord shroud comprising:

a ladder tape comprised of a pair of substantially parallel rails and a plurality of webs connected therebetween, each pair of adjacent webs being spaced apart to define an aperture through which the lift cords pass, each web comprised of a plurality of substantially parallel threads connected to the rails, the ladder having a first end connected to the headrail, a second end accessible to the operator, and of a length sufficient to fit over substantially all of the exposed portion of the lift cords disposed along the length of said ladder tape, wherein said lift cords are disposed through and are movable through a plurality of apertures.

5,613,541

SLIDING SHUTTERS

Gordon Bradbury, Middlewich, Great Britain, assignor to James & Bloom Limited, Great Britain

PCT No. PCT/GB93/01462, § 371 Date Jan. 11, 1995, § 102(e) Date Jan. 11, 1995, PCT Pub. No. WO94/01298, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 13, 1993, Ser. No. 367,278

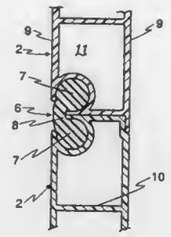
Claims priority, application United Kingdom, Jul. 14, 1992, 9214886

Int. Cl.[6] E06B *3/48*

U.S. Cl. 160—231.2 **7 Claims**

1. A sliding shutter comprising:

a plurality of abutting laths having opposite substantially planar faces and abutting longitudinal edges, each said lath having a slot of generally keyhole shape cross-section extending along each said longitudinal edge, and each keyhole slot opening



from the lath at a junction between the longitudinal edge and a face of the lath; and

an elongate flexible elastomeric hinge member of constant cross-section having an opposite pair of enlarged portions and a central flexible web portion connecting the opposite enlarged portions, one said enlarged portion being housed in the said keyhole slot in the edge of one said lath and the other said enlarged portion being housed in the said keyhole slot in the edge of an abutting lath for hingedly connecting the laths in an abutting relationship,

the elastomeric hinge members being tensioned when the faces of the laths are co-planar by folding of the central web portion about the respective edges of the laths to pull said abutting edges of the laths together.

5,613,542

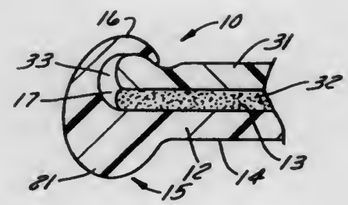
LAMINATED LOUVER FOR A BLIND

Zeki Tuzmen, Irvine; Julius F. John, Redondo Beach, and Richard A. Setele, Newbury, all of Calif., assignors to Newell Operating Company, Rockford, Ill.

Filed Jul. 12, 1994, Ser. No. 273,886

Int. Cl.[6] E06B *9/00*

U.S. Cl. 160—236 **5 Claims**



1. A louver and cover assembly comprising:

a louver slat having a body with two opposed surfaces and two parallel louver slat longitudinal marginal edges at the longitudinal margins thereof, each longitudinal marginal edge of the louver slat having a flange projecting inwardly and away from one of said surfaces to form a channel between said one surface and the flanges at the longitudinal margins thereof;

a cover having two cover longitudinal marginal edges and a first cover surface and a second cover surface, the marginal edges disposed on the one surface of the louver slat with each cover marginal edge positioned in the channel and gripped between the flanges and the louver slat body;

an adhesive disposed between the first cover surface and the one surface of the louver slat to secure the same together, such that the first cover surface is in substantially complete contact with the one surface of the louver slat; and,

wherein each longitudinal marginal edge of the louver slat further includes a longitudinal bead projecting outwardly from the corner formed by the intersection of the flange and marginal edge and lower surface of the louver body.

5,613,543

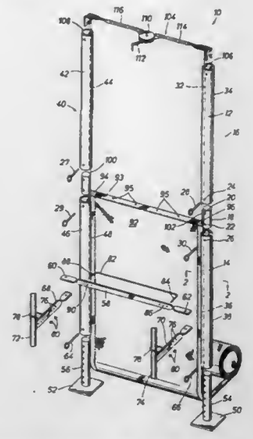
TEMPORARY PROTECTIVE COVERING SYSTEM

Ronald W. Walton, 1906 S. Crescent, Champaign, Ill. 61821

Filed Nov. 30, 1994, Ser. No. 346,690

Int. Cl.[6] A47H *1/00*

U.S. Cl. 160—265 **29 Claims**



1. A protective covering system comprising:

(a) a plurality of support poles comprising at least two elongate support members coupled together, each support pole having a first end, a second distal end, two guide channels, and means for securing the support poles in a spaced relation to a structure;

(b) a plurality of elongate cross braces having two ends coupled to adjacent support poles;

(c) flexible panel between each pair of adjacent support poles having a width spanning between adjacent support poles, a top interlocking edge, and two interlocking lateral edges slidably held within the guide channels of adjacent support poles; and

(d) means for controllably raising and lowering each flexible panel secured between adjacent support poles wherein said means comprises:

(e) first and second pulleys inserted into the guide channels of adjacent support poles;

(f) a rotatable drum; and

(g) an elongate cable along each guide channel having an extended end coupled to the interlocking lateral edge of the panel and a coiled end on the rotatable drum, and wherein the cable is guided over a pulley.

5,613,544

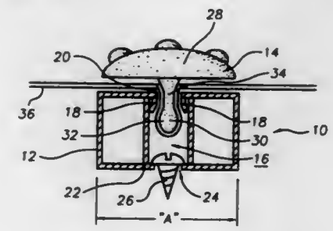
MOLDING SYSTEM

Jerry E. Schaefer, 351 Forest Loop, Mandeville, La. 70471

Filed Jan. 10, 1995, Ser. No. 370,626

Int. Cl.[6] A47H *13/00*

U.S. Cl. 160—395 **14 Claims**



1. A molding system comprising:

a bracket member having a bracket width, a longitudinal axis, and a first grooved channel formed therein, said first grooved channel being oriented substantially in parallel with said longitudinal axis and having a predetermined maximum groove width, said first grooved channel being defined by a first and second side wall and a bottom surface, said bottom surface having a plurality of apertures formed therethrough, said first sidewall including a first separate lip portion extending from an end of said first sidewall located farthest from said bottom surface and into said grooved channel, said first lip portion including a first middle portion extending toward said bottom surface and a first terminal portion angled toward and overlying said first sidewall, said second sidewall including a second separate lip portion extending from an end of said second sidewall located farthest from said bottom surface and into said grooved channel, said second lip portion including a second middle portion extending toward said bottom surface and a second terminal portion angled toward and overlying said second sidewall, said first and second lip portions defining an elongated aperture into said first grooved channel having an aperture width smaller than said predetermined maximum groove width; and

a retaining cap strip having a cad member and an insertion member, said insertion member being dimensioned in a manner such that a terminal section of said insertion member is insertable into said first grooved channel and retained therein by contact between a portion of said terminal section and a portion of said bracket member defining said grooved channel, said cap member having a cap width greater than said predetermined maximum groove width.

5,613,545

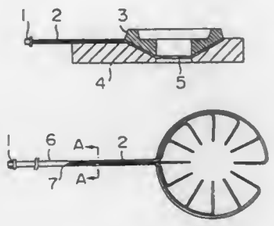
INERT GAS INJECTING PLATE BRICK OR INSERT NOZZLE BRICK FOR USE IN A SLIDING GATE VALVE APPARATUS OF MOLTEN METAL

Takashi Otsuka, Okayama; Kenji Yamamoto, Bizen; Mototsugu Osada, Bizen; Tadao Taniguchi, Bizen, and Yoshifumi Shigeta, Bizen, all of Japan, assignors to Shinagawa Refractories Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 777,233, Nov. 12, 1991, abandoned. This application Oct. 26, 1994, Ser. No. 329,611

Int. Cl.[6] B22D *11/00*

U.S. Cl. 164—415 **10 Claims**



1. An inert gas injecting plate brick for use in a sliding gate valve apparatus of a closed start pouring system wherein an amount of molten metal is stored in a tundish prior to pouring of the molten metal into a mold at the beginning of casting, said plate brick being horizontally split into at least two parts to form split surfaces, and said plate brick including a plurality of small diameter pipes sealingly arranged and secured in said split surfaces, said small diameter pipes being bundled together in a plurality of groups, and each group of the pipes being in communication with a gas passing portion.

5,613,546

CASTING ROLL FOR AN INSTALLATION FOR CONTINUOUSLY CASTING ON ONE OR BETWEEN TWO ROLLS

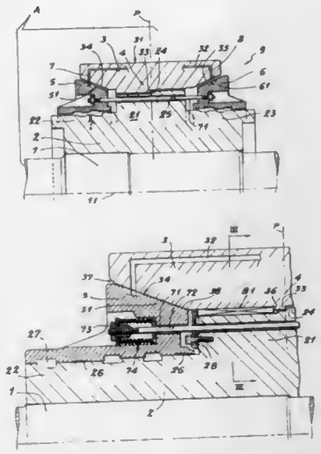
Pierre Delassus, Locon; Hugues Legrand, Molinghem; Gerard Raisson, Nevers; Marc Di Fant, Poissy; Jacques Barbe, and Francois Mazodier, both of Etienne, all of France, assignors to Usinor-Sacilor Societe Anonyme, Puteaux, France, and Thyssen Stahl Aktiengesellschaft, Duisburg, Germany

Filed Oct. 27, 1994, Ser. No. 330,538

Claims priority, application France, Oct. 27, 1993, 93 12983

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—428 **18 Claims**



1. Casting roll for a continuous casting installation for metals on one such roll or between two such rolls, this roll comprising a core and a sleeve, coaxially arranged one with respect to the other, coupling means for coupling the sleeve and the core, including (a) axial coupling means, (b) rotary coupling means for rotatively coupling the sleeve to the core to permit rotation of the sleeve, and (c) radial centering means for supporting and radially centering the sleeve on the core, characterized in that the axial coupling means comprise 1) axial abutment means and 2) means for biasing a portion of the axial abutment means on the sleeve axially against a mating portion of the axial abutment means on the core and for helping to center the sleeve axially on the core, wherein the portion of the axial abutment means on the sleeve comprises a projection and the mating portion of the axial abutment means on the core comprises a shoulder, said shoulder and said projection 1) being situated in a radial plane (P) substantially median with respect to the roll and 2) permitting a central portion of said sleeve to move radially relative to said core, and wherein the radial centering means comprise means for centering edges of the sleeve radially with respect to the core.

5,613,547

NOZZLE WITH A BAFFLE FOR A CASTER AND AN ASSOCIATED METHOD OF CASTING MOLTEN METAL

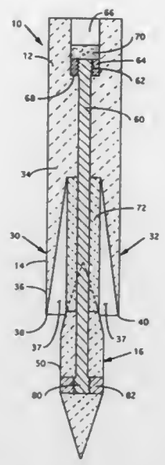
Wilhelm F. Lauener, Gerlafingen/SO, Switzerland, assignor to Larex A.G., Solothurn, Switzerland

Filed Jan. 11, 1996, Ser. No. 567,180

Int. Cl.[6] B22D *41/50*

U.S. Cl. 164—437 **16 Claims**

1. A nozzle for a caster having a mold for casting molten metal into a metal product, said nozzle including a molten metal entry portion and a mouthpiece portion, said molten metal flowing in a direction from said molten metal entry portion, through said mouthpiece portion and into said mold, said nozzle further including a baffle secured to said nozzle by a plurality of shafts having a first end secured to said molten metal entry portion and a second end secured to said baffle, said shafts being disposed in a manner that is generally parallel to said Flow direction of said molten metal.



5,613,548

CONTINUOUS CASTING PLANT FOR CASTING THIN SLABS

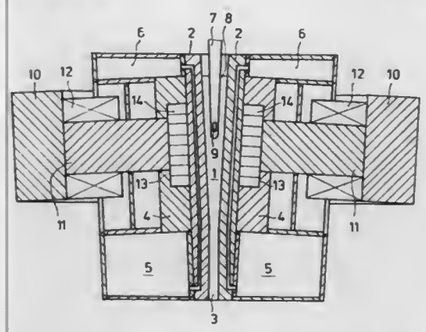
Hans Streubel; Günter Flemming, both of Erkrath, and Erk Boysen, Ratingen, all of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Aug. 22, 1995, Ser. No. 517,881

Claims priority, application Germany, Aug. 22, 1994, 44 29 685.1

Int. Cl.[6] B22D *27/02*

U.S. Cl. 164—502 **6 Claims**



1. A continuous casting plant for casting thin slabs, the continuous casting plant comprising a mold having long sides and narrow sides, the long sides and narrow sides defining a mold space, a casting pipe extending into the mold space, an electromagnetic decelerating unit for producing a magnetic field for decelerating molten steel which flows into the mold space through the casting pipe, the electromagnetic decelerating unit comprising a coil with a ferromagnetic core arranged on each of the long sides of the mold and a yoke surrounding the mold, the core comprising a principal core and partial cores facing the mold space, wherein the partial cores are arranged immediately adjacent the long sides of the mold and are exchangeable for adapting the magnetic field to changing casting conditions.

5,613,549

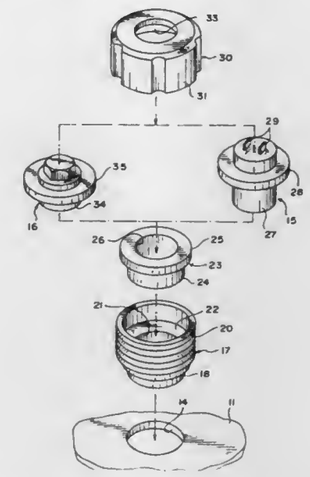
METHOD AND APPARATUS FOR SELECTIVELY SEALING AND SECURING A SENSOR OF A SEALING PLUG TO A PART

Ramesh J. Dolwani, 10071 Water Ford La., Alta Loma, Calif. 90701

Filed Nov. 21, 1994, Ser. No. 345,825

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—11.1 **10 Claims**



1. An adapter-retainer for selectively securing and sealing one of a sealing plug and a sensor in an opening in a first part, comprising:

a retainer bushing on said first part, having an inner end sealed relative to the opening, and an outer end with attaching means thereon, said retainer bushing having an axial passage extending therethrough and having means defining an axially facing annular sealing surface;

said sealing plug and sensor each having an annular flange thereon, said annular flange overlying the sealing surface when a respective one of the sealing plug and the sensor is inserted into the retainer bushing and against the sealing surface; and

a retainer cap engaged on the retainer bushing to secure and seal one of the sealing plug and the sensor to the retainer bushing, said retainer cap having releasable attaching means thereon complemental to the attaching means on the retainer bushing for releasably attaching the retainer cap to the retainer bushing, and having a clamping surface which engages the annular flange on the respective sealing plug or sensor when it is installed to clamp it between the retainer cap and the sealing bushing, whereby said adapter-retainer enables quick and easy assembly and replacement of a sealing plug or sensor to the first part in a fluid-tight and secure manner.

5,613,550

TANK FOR A HEAT EXCHANGER

Koji Ashida, Kariya; Michiya Takatsuka, Obu, and Kazuo Nishizawa, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

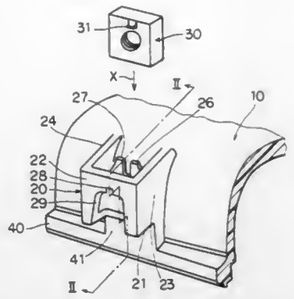
Filed Nov. 28, 1995, Ser. No. 563,362

Claims priority, application Japan, Nov. 28, 1994, 6-292796

Int. Cl.[6] F28F *9/007*

U.S. Cl. 165—67 **13 Claims**

1. A tank for a heat exchanger having a tube, said tank being made of resin as a unit by molding with a pair of forming dies and comprising:



a fit base portion for supporting an end of said tube portion to keep a fluid communication between said tank and said tube; and

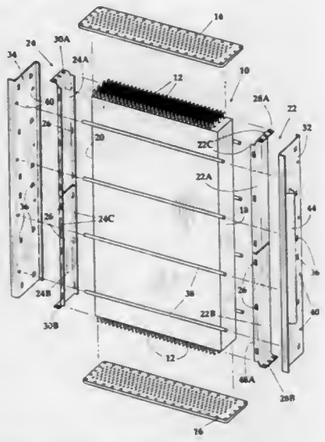
a box-shaped receiving portion integrally formed with an outer side surface of said tank to receive a fastening part, said receiving portion including a bottom wall extending horizontally, a front wall extending vertically from a front end of said bottom wall, and a pair of side walls extending vertically from side ends of said bottom wall in a manner to form a top opening thereby;

wherein said front wall and said bottom wall have a notch portion extending from a middle portion of said front wall to said bottom wall.

5,613,551
RADIATOR ASSEMBLY

Wayne A. Rhodes, Luray, Tenn., assignor to Touchstone, Inc., Jackson, Tenn.

Filed Dec. 18, 1995, Ser. No. 574,210
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—82 **7 Claims**



1. An improved radiator assembly comprising:

a cooling core having first and second sides;

first and second push pads positioned contiguous to said cooling core first and second sides respectively, the push pads having spaced slots therein;

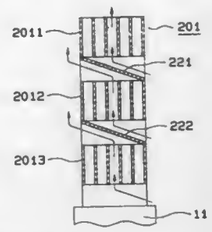
first and second side rails positioned contiguous to said first and second push pads respectively, the side rails having spaced apart tabs extending therefrom, the tabs being received in said push pad slots, the dimension of said slots permitting said tabs to be moveable within said slots whereby said push pads are displaceable relative to said side rails to permit elongation and contraction of said cooling core; and

means to hold said side rails together.

5,613,552
COOLING APPARATUS USING BOILING AND CONDENSING REFRIGERANT

Hiroyuki Osakabe, Chita-gun; Kiyoshi Kawaguchi, Toyota, and Masahiko Suzuki, Hoi-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 12, 1995, Ser. No. 501,718
Claims priority, application Japan, Jul. 13, 1994, 6-160992
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.21 **3 Claims**



3. A cooling apparatus for cooling a heating element comprising:

a refrigerant tank for absorbing high temperature refrigerant, said refrigerant having a plane for mounting a radiation part, said refrigerant tank enclosing a refrigerant to be gasified by a heat by said high temperature refrigerant;

said radiation part having a plurality of hollow members, a part of said plurality of hollow members being attached to said plane for mounting said radiation part of said refrigerant tank and communicated with said refrigerant tank respectively;

a plurality of cooling fins disposed between said respective hollow members at said radiation part and forming air flow passages having introduction openings to introduce air thereto and exhaust said introduced air at vertically higher portions than said introduction openings; said cooling fins being so designed that air flow passage can upwardly extend from said plane for mounting said radiation part;

another group of cooling fins disposed with a predetermined interval from said first group of cooling fins and at an upper position with respect to said first group of cooling fins;

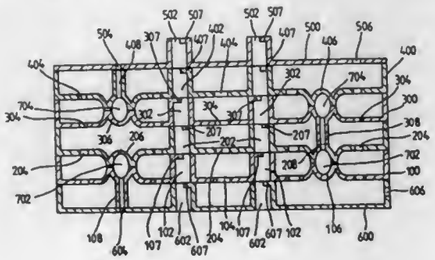
a first guide panel disposed between said first and said second groups of cooling fins for leading the air exhausted from said exhaust openings toward a side of said radiation part; and

a second guide panel disposed between said first guide panel and said refrigerant tank.

5,613,553
STACKET-UP TYPE HEAT EXCHANGER FOR A GAS BOILER

Woong-Sub Hong, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,428
Claims priority, application Rep. of Korea, Dec. 27, 1994, 94-37366
Int. Cl.[6] F28D *9/00*
U.S. Cl. 165—140 **7 Claims**



1. A stacked-up type heat exchanger for a gas boiler comprising a bottom plate, a first plate, a fourth plate and a top plate wherein:

the bottom plate includes one or more combustion gas flue(s) for carrying exhaust gas burned in a burner, a return heating-water outlet for concentrating heating-water and expelling it, and a cold-water inlet for delivering cold-water;

the first plate includes a combustion gas flue communicating with the combustion gas flue of the bottom plate, one or more heating-water inlets for delivering heating-water, annular cavity which faces downward, is concave in cross-section and which forms a ring-type pipe by fitting together with a fourth plate illustrated below, and a cold-water supply pipe, one end of the cold-water supply pipe being connected to the cold-water inlet and the other end of the cold-water supply pipe communicating with a lower part of a curved portion formed by the annular cavity;

the fourth plate includes a combustion gas flue communicating with the combustion gas flue of the first plate, one or more heating-water inlets for carrying heating-water, annular cavity which faces upward, is concave in cross-section and which forms a ring-type pipe by fitting together with the annular cavity of the first plate, a hot-water delivery pipe disposed at an upper part of a curved portion formed by the annular cavity and communicating with a hot/cold-water flowing tube formed by the annular cavity being fitted together with each other; and

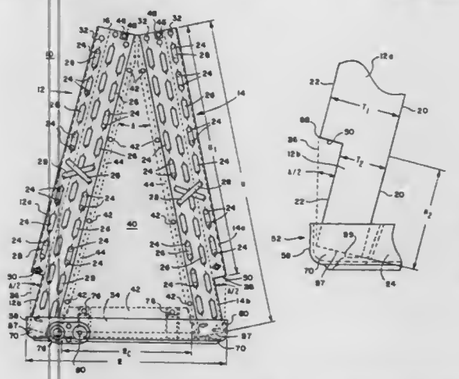
the top plate includes a combustion gas flue communicating with the combustion gas flue of the fourth plate, a return heating-water inlet for delivering return heating-water into a heat exchanger, and a hot-water outlet connected with the hot-water delivery pipe.

slab, the inner sides of the slabs being in generally facing relationship, the first section of each slab being thicker than the second section, as measured between the inner and outer sides thereof, the first section of each slab having a thickness T_1, as measured between the inner and outer sides thereof, the second section of each slab having a thickness T_2, as measured between the inner and outer sides thereof, T_1 being greater than T_2, the first section of each slab having a height H_1, as measured between the upper end and the intermediate position of each slab, the second section of each slab having a height H_2, as measured between the intermediate position and the lower end of each slab, T_1–T_2 being less than or equal to H_2 multiplied by tangent A/2.

5,613,554
A-COIL HEAT EXCHANGER

George B. Bull, and James E. Carpenter, both of Grenada, Miss., assignors to Heatcraft Inc., Grenada, Miss.

Filed Jun. 23, 1995, Ser. No. 494,363
Int. Cl.[6] F28D *1/053*
U.S. Cl. 165—150 **6 Claims**

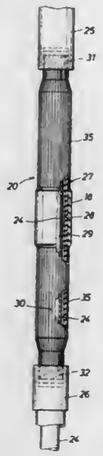


1. A heat exchanger comprised of a pair of coil slabs, each slab having upper and lower ends, said slabs being coupled at their respective upper ends and being in divergent relationship to define an A-coil configuration with an angle A therebetween, each of said slabs having a plurality of rows of heat transfer fluid carrying tubes in parallel array, each slab having first and second sections, the first section of each slab extending from the upper end thereof to a position intermediate the upper and lower ends thereof, the second section of each slab extending from the intermediate position thereof to the lower end thereof, the first section of each slab having more rows than the second section thereof, each slab having a plurality of fins defining inner and outer sides of each slab and an airflow passage between the inner and outer sides of each

5,613,555
INFLATABLE PACKER WITH WIDE SLAT REINFORCEMENT

Robert M. Sorem, Lawrence, Kans., and David M. Eslinger, Tulsa, Okla., assignors to Dowell, a division of Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Dec. 22, 1994, Ser. No. 362,628
Int. Cl.[6] E21B *33/127*
U.S. Cl. 166—187 **13 Claims**



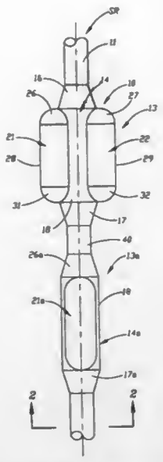
1. In an inflatable packer having an elastomer bladder surrounded by a reinforcement that provides an extrusion barrier for said bladder, said reinforcement comprising a plurality of longitudinally extending flexible slats arranged in circumferential partially overlapping relationship, each of said slats having opposite end portions and at least one intermediate portion, said end portions and intermediate portions having different widths.

5,613,556
ROD GUIDE AND METHOD OF AN APPARATUS FOR INSTALLING IT ON THE SHANK OF A ROD

Donald E. Sable, Dallas, Tex., and Donald E. Sable, II, Oklahoma City, Okla., assignors to T. McClung-D. Sable Partnership, Dallas, Tex.

Filed Aug. 14, 1995, Ser. No. 518,592
Int. Cl.[6] E21B *17/10*
U.S. Cl. 166—241.4 **10 Claims**

1. A rod guide on the shank of a rod which is positionable in a well tubing, said guide including: a pair of longitudinally spaced units rigidly secured to the shank, each unit including a tubular elongate body having a middle portion and a pair of end portions extending divergently inwardly from opposite ends of the middle portion to the shank of the rod; a pair of ribs extending from the

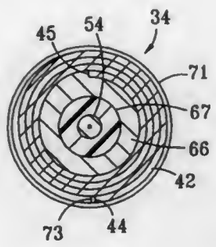


middle portion in opposite radial directions, the ribs of one unit being displaced relative to the ribs of the other unit about the longitudinal central axis of the rod, a portion of the rod shank between the two units constituting a flex portion of the rod shank.

5,613,557
APPARATUS AND METHOD FOR SEALING PERFORATED WELL CASING

Curtis G. Blount, Wasilla, Ak.; Robert A. Benham, Albuquerque, N.M.; Jerry L. Brock, Los Lunas, N.M.; John A. Emerson, Albuquerque, N.M.; Keith R. Ferguson, Anchorage, Ak.; Donald F. Scheve, Anchorage, Ak.; Joseph H. Schmidt, Anchorage, Ak.; Karl W. Schuler, and Philip L. Stanton, both of Albuquerque, N.M., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 282,685, Jul. 29, 1994, Pat. No. 5,456,319. This application May 23, 1995, Ser. No. 448,108
Int. Cl.[6] E21B *29/10*
U.S. Cl. 166—277 **23 Claims**



1. Apparatus for sealing an opening in a well conduit to form a substantially fluid tight seal at said opening, said apparatus comprising:

a radially expansible sleeve expandable to be forcibly engaged with an interior wall surface of said conduit to close an opening in said conduit, said sleeve comprising a radially expansible coiled metal member forming at least one complete wrap in a deployed position in forcible engagement with said conduit, said sleeve being radially contractible to be disposed on said body;

a body supporting said sleeve for traversal into a well to a position generally adjacent said opening in said conduit and disposed within said conduit;

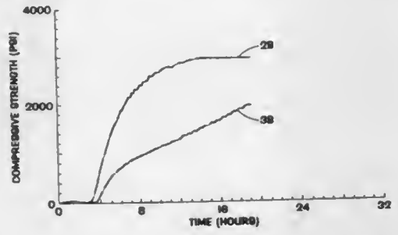
a quantity of an explosive charge material disposed on said body and operable to explosively expand said sleeve into forcible and fluid tight sealing engagement with said conduit; and

a detonator operatively connected to said charge material to initiate an explosion of said charge material to expand said sleeve into forcible and substantially fluid tight sealing engagement with said conduit to form a substantially fluid tight seal of said opening.

5,613,558
METHOD FOR CONTROLLING THE SET TIME OF CEMENT

Robert L. Dillenbeck, III, Oklahoma City, Okla., assignor to BJ Services Company, Houston, Tex.

Filed Jun. 2, 1995, Ser. No. 458,826
Int. Cl.[6] E21B *33/13;33/14*
U.S. Cl. 166—293 **17 Claims**



1. A method of cementing an oil and gas well, the method comprising the steps of:

forming a cementing slurry by combining dry hydraulic cement, water in a sufficient amount to produce a pumpable slurry, a cement hydration retarder and an additive comprising a controlled release oxidizer which is effective to slowly release nascent oxygen over a selected period of time;

pumping the cementing slurry to a desired location within the well bore; and

allowing the cementing slurry to harden to a solid mass, the controlled release oxidizer serving to gradually oxidize the cement hydration retarder over the selected period of time.

5,613,559
DECENTRALIZING CENTRALIZING LOCATING AND ORIENTING SUBSYSTEMS AND METHODS FOR SUBTERRANEAN MULTILATERAL WELL DRILLING AND COMPLETION

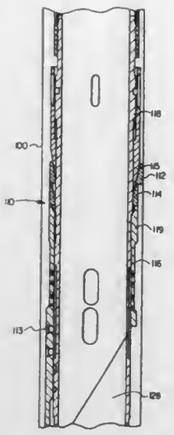
Jimmie R. Williamson; John C. Gano, both of Carrollton, and David L. Reesing, Irving, all of Tex., assignors to Halliburton Company, Dallas, Tex.

Continuation of Ser. No. 380,768, Jan. 30, 1995, which is a continuation-in-part of Ser. No. 296,941, Aug. 26, 1994. This application Aug. 9, 1995, Ser. No. 513,149
Int. Cl.[6] E21B *17/02*
U.S. Cl. 166—381 **30 Claims**

1. A decentralizer for a diverter, comprising:

first and second substantially coaxial tubular members slidably coupled to one another to allow relative axial movement therebetween and coupled to said diverter, said first tubular member having a shoulder projecting radially outwardly from an outer surface thereof, said second tubular member having a conical ramp projecting radially outwardly from an outer surface thereof; and

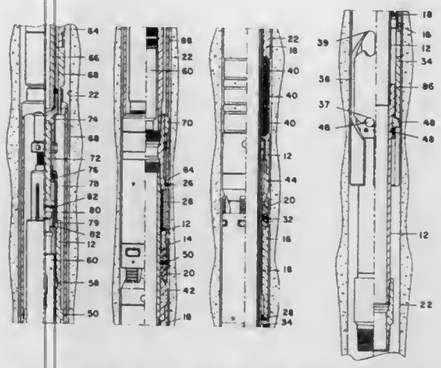
a decentralizing ring slidably mounted on said outer surface of said first tubular member and between said shoulder and said conical ramp, said first and second tubular members axially movable to move said shoulder and said conical ramp together, said shoulder urging said decentralizing ring onto said conical ramp, said conical ramp causing said decentralizing ring to (a) expand eccentrically from said first and second tubular members, (b) engage a well flow conductor surrounding said first and second tubular members and (c) decentralize said first and second tubular members within said well flow conductor, thereby decentralizing said diverter within said well flow conductor.



5,613,560
WIRELINE SET, TUBING RETRIEVABLE WELL PACKER WITH FLOW CONTROL DEVICE AT THE TOP

Glenn Jelinski; Vitold P. Serafin, and Bob B. Jones, all of Calgary, Canada, assignors to Site Oil Tools, Inc., Calgary, Canada

Filed Apr. 28, 1995, Ser. No. 430,818
Int. Cl.[6] E21B *23/06*
U.S. Cl. 166—387 **6 Claims**



1. An adapter for use in setting a well packer by means of a wireline setting device with a flow control device removably seated at a top of the well packer and wherein the well packer is of the type including outer packer housings including slip assemblies and a sealing unit, and a tubular mandrel extending therethrough for relative movement therebetween to anchor the well packer to the well casing and to create a seal in the well casing, said adapter comprising:

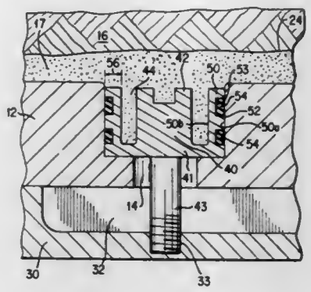
(a) a first member engaged with the wireline setting device and an upper packer housing for applying a first force in a first direction on said upper packer housing when the wireline setting device is actuated, said first member including an outer sleeve connected to an outer housing of the wireline setting device and positioned to bear on a cap disposed at a top portion of said upper packer housing for applying a downward force in a downward direction on said upper packer housing; and

(b) a second member engaged with the wireline setting device and the tubular mandrel for applying a second force in a second direction opposite to the first direction, when the wireline setting device is actuated, said second member including a rod having a first end attached to a plunger of the wireline setting device, and a second end including a cone, said cone being adapted to extend over a top of said flow control device which is seated in the tubular mandrel and to releasably engage the tubular mandrel for applying an upward force in an upward direction on the tubular mandrel until the well packer is engaged with the well casing and actuated to create the seal and to thereafter disengage from the tubular mandrel, said second member further including a shear collar on said rod and a collet having collet fingers attached to said shear collar, and said collet fingers extending downwardly adjacent said cone and being held in engagement with a recess on a top of the tubular mandrel by said cone until said shear collar shears and said cone is withdrawn, upon further upward movement of said cone said collet fingers collapsing inwardly and disengaging from said recess; whereby after the well packer is engaged with the well casing and actuated to create the seal, continued application of the upward force by the wireline setting device causes said adaptor to disengage from the well packer such that said adaptor may be completely removed from the well packer with the flow control device remaining seated at the top of the well packer to inhibit fluid flow through the tubular mandrel.

5,613,561
APPARATUS FOR SEALING INSTRUMENTS IN A DOWNHOLE TOOL

Keith A. Moriarty, Houston, Tex., assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Jul. 27, 1995, Ser. No. 508,015
Int. Cl.[6] E21B *33/12*
U.S. Cl. 166—387 **26 Claims**



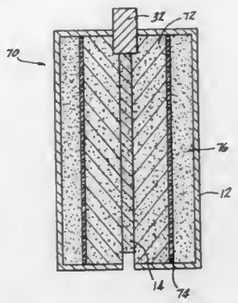
1. An apparatus for sealing a first pressure environment on the outside surface of a barrier wall from a second, lower pressure environment on the inside surface of the barrier wall, the barrier wall having an aperture therein, the apparatus comprising:

a plug having a bearing surface that bears against the wall of the aperture; wherein the plug comprises

a flexing member, subject to and reactive to the first pressure environment, a surface of the flexing member providing at least a portion of the bearing surface; and

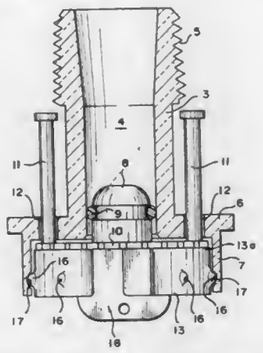
wherein the flexing member, in reacting to the first pressure environment, causes at least a portion of the bearing surface to bear more tightly against the wall of the aperture.

5,613,562
APPARATUS FOR SUPPRESSING A FIRE
Lyle D. Galbraith, Redmond; Gary F. Holland, Snohomish; Donald R. Poole, Woodinville, and Robert M. Mitchell, Issaquah, all of Wash., assignors to Olin Aerospace Company, Redmond, Wash.
Continuation of Ser. No. 460,364, Jun. 2, 1995, abandoned, which is a division of Ser. No. 248,932, May 25, 1994, Pat. No. 5,423,384, which is a continuation-in-part of Ser. No. 82,137, Jun. 24, 1993, Pat. No. 5,449,041. This application Aug. 28, 1996, Ser. No. 704,214
Int. Cl.[6] A62C 5/00
U.S. Cl. 169—12 5 Claims



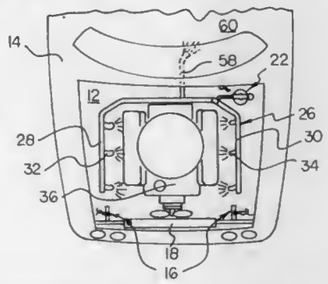
1. An apparatus for suppressing a fire, said apparatus comprising:
a gas generator containing a propellant that is a mixture of a fuel, strontium nitrate as an oxidizer, and magnesium carbonate, wherein the magnesium carbonate content of said propellant is at least 35% by weight that is sufficient to inhibit the generation of effluent by-products that are corrosive to aluminum; and
a passageway between said gas generator and said fire.

5,613,563
LOCKING MECHANISM FOR QUICK RESPONSE FIRE SPRINKLER
Kimball W. Johnson, P.O. Box 126, Orleans, Vt. 05860
Filed Aug. 15, 1995, Ser. No. 518,399
Int. Cl.[6] A62C 37/11
U.S. Cl. 169—39 14 Claims



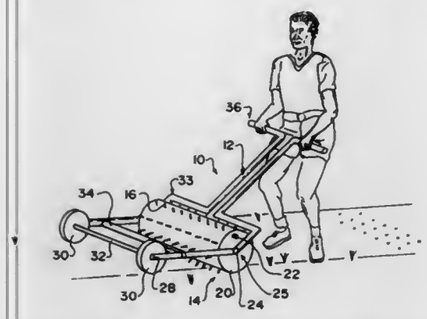
1. In combination, a locking mechanism, and a quick responsive fire sprinkler of a type having a valve housing including a through bore, one end of said bore being connected to a source of water pressure, a valve slidably mounted in another end of said bore to prevent flow of water therethrough, and a deflector plate integral with said valve and positioned axially outwardly of said other end of said bore, said valve housing having a depending cylindrical skirt portion, an annular groove being provided on an inner surface of said skirt portion; said locking mechanism comprising means for providing an arcuate leaf spring positioned within the skirt portion, a peripheral edge portion of said arcuate leaf spring abutting the deflector plate for holding the valve in a closed position, means for providing a circumferentially extending protrusion mounted on and extending radially outwardly from said arcuate leaf spring, said protrusion extending into said annular groove, said arcuate leaf spring having an inherent radially inwardly directed biasing force, and means for providing a fusible link operatively connected to said arcuate leaf spring for applying a radially outwardly biasing force to said arcuate leaf spring to bias the protrusion into said groove, whereby the valve is releasably locked in the closed position.

5,613,564
VEHICLE ENGINE FIRE EXTINGUISHER APPARATUS
Andy J. Rhines, Rte. 1, Box 320-R, Van, Tex. 75790
Filed Jul. 31, 1995, Ser. No. 509,449
Int. Cl.[6] A62C 3/07
U.S. Cl. 169—61 11 Claims



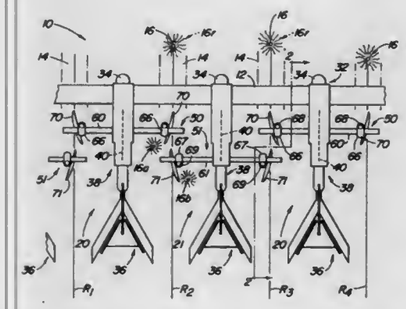
1. A fire extinguisher apparatus for preventing and extinguishing fires in an engine compartment of a motor vehicle, said apparatus comprising:
a collision sensor assembly supported by the motor vehicle,
a fire extinguisher module supported by the motor vehicle, wherein said fire extinguisher module includes a valve assembly,
a valve control assembly, electrically connected to said collision sensor assembly, wherein said valve control assembly is supported by said fire extinguisher module and is employed for controlling said valve assembly,
a manifold assembly supported by said motor vehicle and connected to said valve assembly, wherein said manifold assembly receives a quantity of fire extinguishant from said fire extinguisher module when said valve assembly is operated by said valve control assembly, wherein said manifold assembly includes a first manifold branch which extends along a first side of the engine compartment and includes a second manifold branch which extends along a second side of the engine compartment,
a plurality of first nozzle assemblies supported by and arrayed along said first manifold branch, and
a plurality of second nozzle assemblies supported by and arrayed along said second manifold branch,
wherein said first nozzle assemblies and said second nozzle assemblies direct flow of the quantity of fire extinguishant toward an engine positioned between said first manifold branch and said second manifold branch,
wherein said collision sensor assembly is responsive to a collision-induced movement of a vehicle radiator assembly,
wherein said collision sensor assembly includes an activator arm,
said apparatus further including:
a collision-sensor-support bracket supported by said motor vehicle, wherein said collision sensor assembly is supported by said collision-sensor-support bracket, and
a radiator-supported sensor activator supported by the vehicle radiator assembly, wherein said radiator-supported sensor activator operates said activator arm of said collision sensor assembly when a collision occurs and the vehicle radiator assembly moves longitudinally towards or away from the motor vehicle.

5,613,565
LAWN AERATOR ASSEMBLY
Robert T. Kelly, 10024 S. Forest, Chicago, Ill. 60626
Filed Jul. 28, 1995, Ser. No. 508,929
Int. Cl.[6] A01B 45/02
U.S. Cl. 172—21 5 Claims



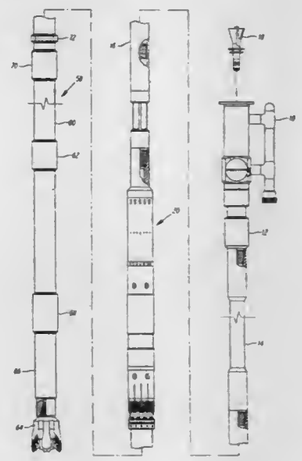
1. A wheeled lawn aerator comprising a fillable fluid tight spined drum rotatably mounted to an elongate handle member having wheels at one end thereof adjacent the drum and a graspable handle at another end thereof, the elongate handle member comprising two mirror image arms to and between which the drum is engaged, the arms being identically flexed at a point of engagement of the drum and wherein a brace is engaged to and between the mirror image arms at a point between the drum and the wheels.

5,613,566
ROW CROP STALK AND ROOT REMOVER
Philip D. Cox, Polk City, Iowa, and Warren L. Thompson, Kandiyohi, Minn., assignors to Deere & Company, Moline, Ill.
Filed Jul. 6, 1995, Ser. No. 498,860
Int. Cl.[6] A01B 49/02
U.S. Cl. 172—174 21 Claims



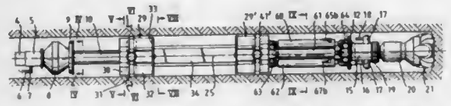
1. In a row crop cultivator having a frame adapted for forward movement through a field with rows of raised plant beds, the beds including rows of plants having a row centerline, the rows of plants including plant debris such as plant roots located below the surface of soil in the beds and plant stalks, cultivator rig structure for lifting the roots to the surface and cutting the debris, the cultivator structure comprising:
at least first and second cultivator rigs connected to the frame for operating on opposite sides of one of the plant beds;
disk support structure connected to the rigs;
a first barring off disk connected to the disk support structure for entering said one of the plant beds from one side of the bed and engaging the plant debris in the bed a preselected distance below the surface; and
a second barring off disk connected to the disk support structure for entering said one of the plant beds from a side of the bed opposite said one side, the second disk located rearwardly of the first disk and engaging the roots a second distance below the surface, the second distance being substantially greater than the first distance and wherein the first disk cuts across the row centerline in a first transverse direction and the second disk cuts across the row centerline in an opposite transverse direction so that the barring off disks size and lift the plant roots.

5,613,567
PROCESS FOR COMPLETING A WELL
Leo D. Hudson, Bakersfield, Calif., assignor to Bestline Liner Systems, Bakersfield, Calif.
Continuation of Ser. No. 340,109, Nov. 15, 1994, Pat. No. 5,497,840. This application Mar. 4, 1996, Ser. No. 610,287
Int. Cl.[6] E21B 43/00
U.S. Cl. 175—72 3 Claims



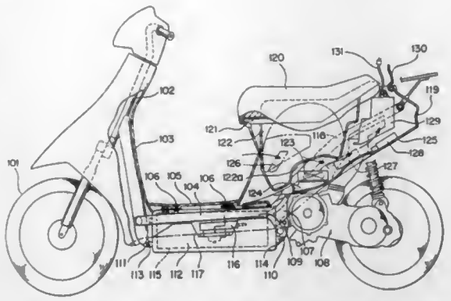
1. A process for finishing a well having a casing, comprising
placing a liner into a well including rotating a drill bit, a liner and a drill string into a desired position extending to below the casing;
locking the top of the liner to the bottom of the casing;
removing the drill string after locking the top of the liner to the bottom of the casing.

5,613,568
ROCK DRILLING MACHINE
Lars Sterner, Kiruna, and Lennart Nilsson, Videplan 2 F, S-981 43 Kiruna, both of Sweden, assignors to Lennart Nilsson, Kiruna, Sweden
PCT No. PCT/SE94/00405, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO94/27022, PCT Pub. Date Nov. 24, 1994
PCT Filed May 4, 1994, Ser. No. 549,794
Claims priority, application Sweden, May 6, 1993, 9301555
Int. Cl.[6] E21B *3/02*
U.S. Cl. 175—94 9 Claims



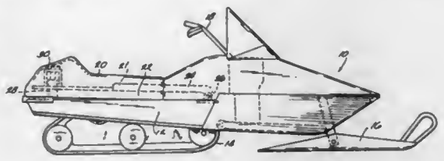
1. Rock drilling machine of the self-feeding, integrated type which is designed to operate in situ in a drill hole, characterized in that it comprises a drive unit (1), an anchoring unit (2), and a feeding unit (3) active between the anchoring unit (2) and the drive unit (1), in that the drive unit (1) comprises a hydraulic power assembly (5, 8) at the rear end of the drive unit, a drill bit (21) which is rotatable at the front end of the drive unit, a guide (10) with a longitudinal cavity (23), which guide extends between the hydraulic power assembly and the drill head and connects these non-rotatably to each other, a rotatable drive shaft (22) which extends from the hydraulic power assembly, through the said cavity in the guide, for rotation of the drill bit, and first securing devices (17) in order to be able to anchor the drive unit releasably in the drill hole, in that the anchoring unit (2) comprises at least one control element (30') around the said guide, and second securing devices (31, 31') in order to anchor the control element releasably by engagement against the drill hole wall, and in that the feeding unit (3) comprises at least three individually manoeuvrable hydraulic cylinders (60–62) between the anchoring unit and the drive unit for feeding the drill bit forwards in the desired direction, when the said first securing devices are inactive and when the said second securing devices actively anchor the control element in the drill hole.

5,613,569
ELECTRIC MOTOR VEHICLE AND BATTERY UNIT FOR ELECTRIC MOTOR VEHICLE
Kouichi Sugioka; Masao Ogawa; Hiroyuki Sako, and Hidetoshi Takamatsu, all of Saltama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 453,901, May 30, 1995, abandoned, which is a division of Ser. No. 371,891, Jan. 12, 1995, Pat. No. 5,477,936, which is a continuation-in-part of Ser. No. 956,066, Oct. 2, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 533,347
Claims priority, application Japan, Oct. 19, 1991, 3-299874; Mar. 30, 1992, 4-103745
Int. Cl.[6] B62K *11/10*
U.S. Cl. 180—68.5 10 Claims



1. An electrically powered motor-scooter having a scooter body, said scooter body including a step floor, a seat, a body cover mounted under said seat, and a storage compartment located below said seat, said motor-scooter comprising:
a battery case mounted under said step floor, said battery case having at least one opening which is open to the surrounding air for allowing the flow of air therethrough;
a rear compartment extending below and rearwardly of said storage compartment and extending rearwardly of said battery case, said storage compartment forming an upper wall of said rear compartment, and said body cover forming sidewalls of said rear compartment, a portion of said rear compartment being open to the surrounding air;
a fan mounted in a forward portion of said rear compartment for producing a movement of cooling air between said rear compartment and said battery case, said cooling air passing through said rear compartment and said opening in said battery case;
a duct connected between said fan and said battery case, said duct forming a passage for said cooling air to pass therethrough; and
a control apparatus mounted in said rear compartment rearwardly of said fan for controlling a drive motor of said electrically powered motor-scooter.

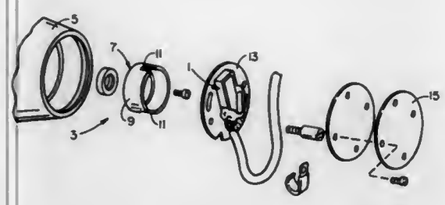
5,613,570
SUSPENSION SYSTEM FOR SNOWMOBILE SEAT
Gary Becker, 693 Highway S, Hartford, Wis. 53027
Filed Apr. 24, 1995, Ser. No. 427,304
Int. Cl.[6] B62J *1/04*
U.S. Cl. 180—190 8 Claims



1. A seat suspension for a self-propelled vehicle comprising:
a seat support member having a front position and a rear portion, adapted to be pivotally connected at its front to the chassis of said vehicle,
a seat supported on said seat support member,
a yieldable support member supporting the rear of said seat support member
at least one damping device readily yieldable in a downward direction but damping the rebounding thereof in an upward direction, connecting the rear of said seat support to the chassis of said vehicle, said damping device comprising an air cylinder connected to a one-way valve which allows air to enter said cylinder without restriction but restricts outflow of air from said cylinder.

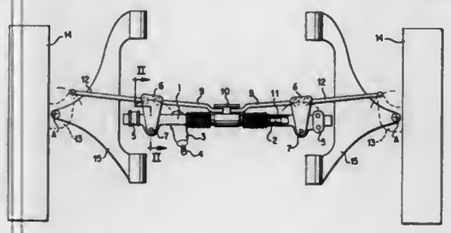
5,613,571
ROTATIONAL SPEED/TIP SENSOR
David B. Rank, Waukesha, Wis.; Mark L. Clymer, Mystic, and Glenn Graves, Oakdale, both of Conn., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Sep. 26, 1995, Ser. No. 534,102
Int. Cl.[6] B60K *28/14*
U.S. Cl. 180—282 18 Claims

1. In a two-wheeled motor vehicle having an engine,
sensor means for simultaneously detecting the attitude of the motor vehicle relative to a selected frame of reference and the speed of the engine comprising:
a. housing means for attaching to the engine;



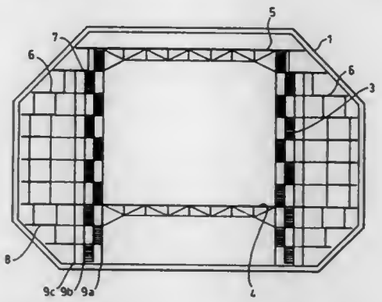
b. tip sensor means assembled in the housing means for detecting the attitude of the vehicle relative to the selected frame of reference;
c. speed sensor means assembled in the housing means for detecting the speed of the engine; and
d. control means for controlling the engine in response to the attitude of the motor vehicle relative to the selected frame of reference as detected by the tip sensor means.

5,613,572
MOTOR VEHICLE RACK STEERING SYSTEM
Wolfgang Moedinger, Weinstadt, Germany, assignor to Mercedes-Benz AG, Germany
Continuation of Ser. No. 328,676, Oct. 25, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 609,896
Claims priority, application Germany, Oct. 25, 1993, 43 36 286.9
Int. Cl.[6] B62D *3/12*
U.S. Cl. 180—400 19 Claims



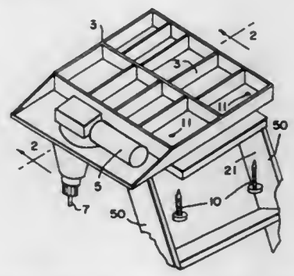
1. A rack steering system for a motor vehicle having steered wheels, comprising a rack having a longitudinal axis transverse to a longitudinal direction of the motor vehicle and a central tap-off connection, a guide and support unit having support sections displaceably supporting the rack at end sections thereof, deflection levers having free ends and other ends pivotable about support pins arranged laterally of and on the guide and support unit and oriented transverse to the longitudinal direction of the rack, track rods with inner track rod joints remote from the steered wheels of the motor vehicle arranged transversely offset to the longitudinal axis of the rack on the free ends of the deflection levers, and connecting struts hingedly connecting the free ends of the deflection levers to the central tap-off connection, wherein the connecting struts and associated track rods are arranged at the same free end of the deflection levers above the respective support pins the support sections being disposed laterally of the central tap-off connection, and the connecting struts have a hinged connection at the central tap-off connection at a transverse distance from the longitudinal axis of the rack such that lines of action of rod forces of the connecting struts pass through the support sections.

5,613,573
SCAFFOLDING
Jean-Claude L'Hermine, Sautron, France, assignor to Etablissements Duarib, S.A., Saint-Philbert-De-Grand-Lieu, France
PCT No. PCT/FR93/00295, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO93/20307, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 24, 1993, Ser. No. 302,798
Claims priority, application France, Mar. 30, 1992, 92 03798
Int. Cl.[6] E04G *3/02*
U.S. Cl. 182—128 5 Claims



1. Scaffolding for working within hollow elements (1) of large dimensions, comprising a load bearing structure comprising two trusses (3) spaced apart and interconnected by at least two cross members (4, 5) forming flooring and rigidifying said scaffolding, modular platforms (6) mounted at variable heights in cantilever fashion on the external surface of said trusses (3) and access means (7) to said platforms disposed in or adjacent the trusses (3), and ground-engaging members consisting of plural rows of post feet connected to each of said trusses, individual rows of said post feet being independently adjustable in height so as to permit the temporary raising of at least one row of said post feet per truss, for engaging different levels of a lowermost surface within said hollow element.

5,613,574
LADDER MOUNTED TOOL HOLSTER AND PARTS TRAY
Charles J. Melanson, 1025 Staghorn St., West Palm Beach, Fla. 33414
Filed Jun. 23, 1995, Ser. No. 494,088
Int. Cl.[6] E06C *7/14*
U.S. Cl. 182—129 2 Claims



1. A compartmented tray and tool holster combination for mounting atop a stepladder that has a top step, the combination comprising:
a compartmented tray having a flat underside arranged to lie flat in stable contact with a top step of a stepladder;

clamping means attached to the tray for securely clamping the tray selectively in one of two positions on the top step of the stepladder;

a tool holster attached to the tray, the holster having a tool receiving recess with an opening in the lowermost portion thereof to permit passage therethrough of a terminal portion of a tool while enabling the handle of the tool to rest uppermost for easy grasping by a worker, the tool holster attached to the tray at one of the lateral sides thereof and adapted to lie beyond the left side of the stepladder in a first of said two positions and beyond the right side of the stepladder in a second of said two positions;

said clamping means comprising a vertical panel attached to one side of the tray and extending downward therefrom;

a first set of at least two spaced apart apertures passing through said vertical panel;

a clamping plate having attached at a first end thereof a number of prongs equal to the number of said at least two apertures and arranged to engage said at least two apertures at a particular level, the clamping plate having fastener means at a second end opposite said first end, the fastener means arranged to engage the tray while a top step of a stepladder is sandwiched between the tray and the clamping plate with the prongs on one side of the top step and the fastener means on the other side of the top step.

5,613,575

FLAT-STRUCTURE LIFTING PLATFORM

Willy Ackermann, Kappel, Switzerland, assignor to Ackermann Inter Ltd., Switzerland

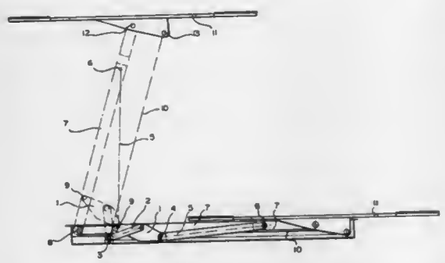
PCT No. PCT/IB94/00253, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO95/04698, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 10, 1994, Ser. No. 406,968

Claims priority, application Austria, Aug. 10, 1993, 1600/93

Int. Cl.[6] A66F *7/06*

U.S. Cl. 187—211 **3 Claims**



1. Flat lift assembly with a lift platform, which is articulated on a lifting arm, which is pivotably supported on a base frame, wherein the lifting arm is pivotable about a pivot axis on the base frame by a drive means being connected with the lifting arm and wherein the drive means (5) is connected with the lifting arm (7) via an arm (1) with a joint (9) above the pivot axis of the lifting arm (7) on the base frame, which joint lies in the reeled-in position of the lifting arm (7) higher than the joint (4) of the drive means (5) on the arm (1), characterized in that the arm (1) is formed as a pivotable two-armed lever in the form of an articulated lever, whose pivot axis lying between the free ends of the two-armed lever is pivotably supported at the base frame via at least one further arm (2) in height direction.

5,613,576

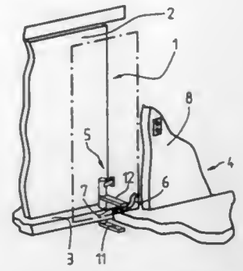
APPARATUS FOR PREVENTING DRIFT OF AN ELEVATOR CAR STOPPED AT A FLOOR

Miles P. Lamb, Chester, N.J., assignor to Inventio AG, Hergiswil NW, Switzerland

Filed May 18, 1995, Ser. No. 444,216

Int. Cl.[6] B66B *5/26*

U.S. Cl. 187—355 **12 Claims**



1. An apparatus for preventing drift of an elevator car stopped at a floor comprising:

a generally vertically extending axle rotatably mounted on a floor of an elevator car travelling in an elevator shaft;

an operating arm having one end attached to said axle and a free end extending into a path of travel of a car door panel of the elevator car, the path of travel being between an opened position and a closed position of the car door panel; and

a stop arm having one end attached to said axle and an opposite free end, whereby when the elevator car is stopped adjacent to a floor door and the car door panel is moved to the opened position, the car door panel contacts said operating arm thereby rotating said free end of said stop arm adjacent to a stop on a shaft wall of the elevator shaft, said stop arm and the stop cooperating to prevent drift of the elevator car in at least one direction in the elevator shaft.

5,613,577

AUTOMOTIVE DISC BRAKE WITH IMPROVED CALIPER ASSEMBLY

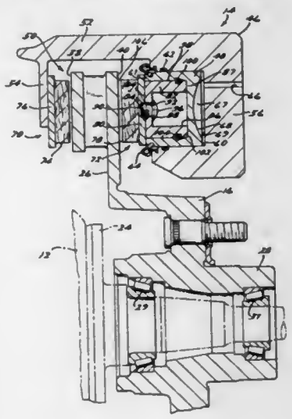
David W. Collin, Stockbridge, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 352,948, Dec. 9, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 617,004

Int. Cl.[6] F16D *69/04*

U.S. Cl. 188—72.4 **1 Claim**

1. An automotive disc brake assembly comprising:



a housing;

a rotor having an annular portion carried within said housing;

a shoe assembly mounted within said housing having a frictional lining member carried adjacent said rotor annular portion and a plate member fixedly secured thereto;

a cylinder defining an axis generally perpendicular to said rotor annular portion mounted in said housing;

a hydraulically actuated piston slidably received in said cylinder along said axis having one end facing said rotor annular portion and a blind bore extending from said end;

an operating rod operatively connected between said piston and said plate;

a first annular groove on an inner surface of a blind bore in said piston;

a second annular groove on an outer surface of said operating rod;

a snap ring including a chamfered outer periphery for compressing said snap ring upon application of an extraction force on said operating rod, said chamfered outer periphery being operative to reduce said extraction force required for servicing said disc brake assembly, said snap ring being adapted to releasably couple said second and first annular grooves upon insertion of said operating rod in said blind bore of said piston, thereby preventing substantial axial movement between said operating rod and said piston during operation while allowing said operating rod to be released for servicing said disk brake assembly;

whereby said piston is movable in a direction along said axis to frictionally engage said lining member against said rotor annular portion.

5,613,578

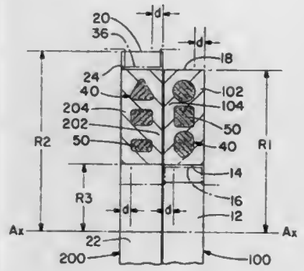
PHASE CHANGE BRAKE DISKS

Douglas D. Moseley, Uniontown, and James W. Burbick, Tallmadge, both of Ohio, assignors to Aircraft Braking Systems Corporation, Akron, Ohio

Filed Dec. 21, 1993, Ser. No. 170,950

Int. Cl.[6] F16D *65/853*

U.S. Cl. 188—218 XL **20 Claims**



1. A brake disk for an aircraft multi-disk brake assembly, the brake disk having opposing parallel planar brake wear faces for engagement with associated brake wear faces of other disks of the assembly and comprised of a densified carbon composite material having a specific volume of a phase change material encapsulated in axially oriented cavities within a central core portion and completely internally within the composite material between the brake wear faces, said phase change material comprising 10%–95% of the available volume space within the central core portion between the parallel brake wear faces and the arrangement of said cavities defines a structural configuration for maintaining the strength integrity of the brake disk and said core portion includes a means for containing and maintaining the distribution of the phase change material to increase heat energy conduction into the phase change material for enhanced heat energy absorption in the operation of the brake disk.

5,613,579

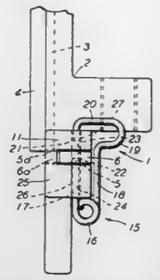
LATCH LOCKING SPRING CLIP FOR RETAINING AN INSERTABLE BRAKE SHOE LINING ON A DISC BRAKE HEAD

Roland S. Moore, Greenville, S.C., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 16, 1992, Ser. No. 976,610

Int. Cl.[6] F16D *65/04*

U.S. Cl. 188—244 **12 Claims**



1. A latch locking spring clip for securely retaining a brake shoe on a brake head of a disc brake unit comprising, a coiled bight portion, a first straight leg portion extending from one end of said coiled bight portion, a reversed turned portion extending from the other end of said coiled bight portion, said reversed turned portion including an initial straight section, an intermediate loop portion, and a final straight section terminating in a second straight leg portion, said first straight leg portion inserted into a hole formed in one of two lugs carried by the brake head and into an aligned hole formed in a latch member, and said second straight leg portion inserted into a hole formed in another of the two lugs carried by the brake head by grasping said intermediate loop portion to slightly open the final straight section, and allow the tip of said second straight leg portion to clear the top surface of a crossbar.

5,613,580

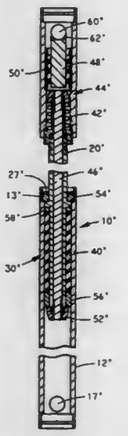
ADJUSTABLE, LOCKABLE STRUT

Robert A. Young, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 489,012, Jun. 8, 1995, Pat. No. 5,535,861. This application Apr. 2, 1996, Ser. No. 630,415

Int. Cl.[6] F16F *9/32*

U.S. Cl. 188—300 **6 Claims**



1. An adjustable, lockable strut including an outer cylindrical member having an inner periphery, an inner cylindrical member

having an outer periphery, locking means including a first spring member surrounding at least a portion of said outer periphery of said inner cylindrical member and engaging at least a portion of said inner periphery of said outer cylindrical member, a second spring member axially, compressively loading said first spring member and causing it to undergo radial bulging thereby increasing a resistance force exerted by said first spring member to movement between said inner and outer cylindrical members, an actuator moving said second spring member from a first bulge-producing position to a second inoperative position where said resistance force is significantly reduced, the improvement comprising

said actuator including

a) a first rod extending through said first and second springs;

b) a shorter second rod portion coaxial with and positioned adjacent a first end portion of said first rod;

c) a third spring biasing said second rod portion into a first non-engaging position with respect to said first rod;

d) a manually-operable, laterally extending lever which enables said biasing of said third spring to be overcome, said second rod portion to be brought into engagement with said first end of said first rod and said first rod to be displaced against the biasing force of said second spring to unload said first spring resulting in said resistance force being significantly reduced whereby said inner cylindrical member can be moved relative to said outer cylindrical member.

5,613,581

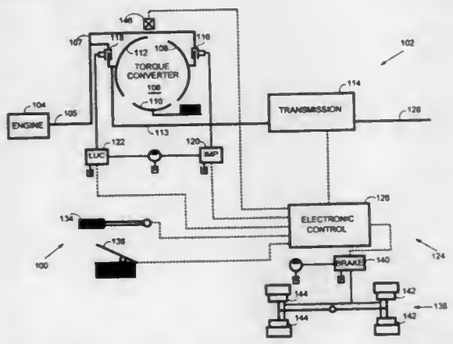
ELECTROHYDRAULIC CONTROL DEVICE FOR A DRIVE TRAIN OF A MACHINE

Andrew O. Fonkalsrud, Yorkville; Steven V. Christensen, Peoria; Mitchell J. McGowan, Groveland, and Thomas L. Grill, Marseilles, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 11, 1996, Ser. No. 584,506

Int. Cl.[6] B60K *41/28*

U.S. Cl. 192—3.23 **14 Claims**



1. An electrohydraulic control device for a drive train of a machine including an engine, a transmission, a torque converter, and an impeller clutch connected between the engine and the torque converter, comprising:

a manually operated impeller clutch pedal produces an impeller clutch pedal signal in response to the position of the impeller clutch pedal;

an impeller clutch electrohydraulic valve for producing fluid flow to the impeller clutch to controllably engage and disengage the impeller clutch;

memory means for storing an impeller clutch pressure curve that is responsive to the impeller clutch pedal position;

operator selectable means for selecting a desired rimpull setting indicative of a desired reduction in rimpull and producing a desired rimpull signal;

means for receiving the desired rimpull signal and reconfiguring the impeller clutch pressure curve; and

means for receiving the impeller clutch pedal signal and controllably actuating the electrohydraulic valve to produce a desired impeller clutch pressure defined by the impeller clutch pressure curve.

9. A method for controlling the torque of a drive train of a machine including an engine, a torque converter, an impeller clutch connected between the engine and the torque converter, and an impeller clutch pedal comprising the steps of:

producing an impeller clutch pedal signal in response to the position of the impeller clutch pedal;

storing a plurality of desired rimpull settings each corresponding to a maximum allowable impeller clutch pressure;

selecting a desired rimpull setting and producing a desired rimpull signal; and

receiving the desired rimpull and the impeller clutch pedal signals, and producing a desired impeller clutch pressure responsive to the impeller clutch pedal position up to the maximum allowable impeller clutch pressure defined by the desired rimpull setting.

5,613,582

HYDROKINETIC TORQUE CONVERTER

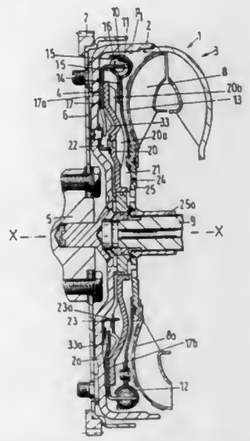
Herr J. Jackel, Baden-Baden, Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Oct. 28, 1994, Ser. No. 332,549

Claims priority, application Germany, Oct. 29, 1993, 43 37 118.3; Sep. 19, 1994, 44 33 256.4

Int. Cl.[6] F16D *33/00*

U.S. Cl. 192—3.29 **23 Claims**



1. A hydrokinetic torque converter comprising:

a housing rotatable about a predetermined axis by an output element of an engine in a vehicle and defining a chamber for a pressurizable hydraulic fluid which circulates in response to rotation of the output element, said housing having a wall extending at least substantially radially of said axis between a rotary turbine of the torque converter and said output element;

a lockup clutch disposed in said chamber between said wall and said turbine and including at least one friction disc rotatable with said turbine and a piston disposed between said wall and said turbine, said at least one friction disc being rotatable relative to said piston and said piston dividing said chamber into a first compartment adjacent said turbine and a second compartment adjacent said wall, said piston being movable in the direction of said axis in response to the establishment of pressure differentials between the fluids in said compartments, said clutch being at least partially engaged in response to a rise of fluid pressure in said first compartment and being disengaged in response to a rise of fluid pressure in said seccond compartment; and means for

reducing differences developing between a lower speed of circuation of fluid in said first compartment and a higher speed of circulation of fluid in said second compartment when the clutch is at least partially disengaged while the engine pulls a load, said difference reducing means being disposed in at least one of said compartments.

5,613,583

SLIP CONTROL APPARATUS FOR MOTOR VEHICLE LOCK-UP CLUTCH

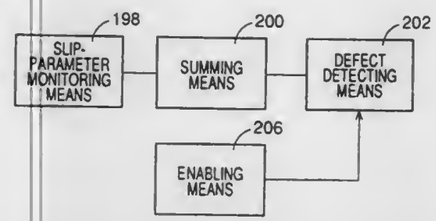
Katsumi Kono, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 18, 1995, Ser. No. 503,744

Claims priority, application Japan, Jul. 20, 1994, 6-168177; Jul. 13, 1995, 7-177354

Int. Cl.[6] F16H *61/14;61/12;45/02*

U.S. Cl. 192—3.31 **8 Claims**



1. An apparatus including slip control means for controlling an amount of slip of a lock-up clutch disposed between a pump impeller and a turbine impeller in a power transmission system of a motor vehicle, such that an actual slip speed of said lock-up clutch coincides with a target slip speed, said apparatus comprising:

slip-parameter monitoring means for detecting a selected slip-related parameter at a predetermined interval while said slip control means is in operation, said slip-related parameter being selected from the group consisting of said actual slip speed of said lock-up clutch and a control error between said actual and target slip speeds of said lock-up clutch;

summing means for obtaining a sum of values of said selected slip-related parameter detected by said slip-parameter monitoring means; and

defect detecting means for determining the presence or absence of a defect in slip control of said lock-up clutch by said slip control means, on the basis of said sum as compared with a predetermined reference.

5,613,584

TRANSMISSION CONTROL LEVER WITH RETURN TO NEUTRAL FUNCTION

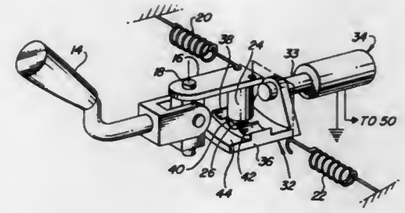
Ronald D. Bremaer; Bruce C. Newendorp, and Patricia M. D'Alessandro, all of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 14, 1995, Ser. No. 557,590

Int. Cl.[6] B60K *28/10;41/26*

U.S. Cl. 192—4 C **5 Claims**

1. In a control system for controlling multi-ratio vehicle transmission, the control system having a first control lever having a park position associated with a condition wherein movement of the vehicle is prevented, and having a directional control lever having a forward position associated with a condition of the transmission which moves the vehicle in a forward direction, a neutral position associated with a neutral condition of the transmission, and a reverse position associated with a condition of the transmission which moves the vehicle in a reverse direction, characterized by:



a detent mechanism engagable with the directional control lever, the detent mechanism having a detent position wherein the directional control lever is held in its forward or its reverse position, and the detent mechanism having a release position wherein the directional control lever is moved to its neutral position; and

means coupled to the first lever for moving the detent mechanism to its release position when the first lever is moved to its park position.

5,613,585

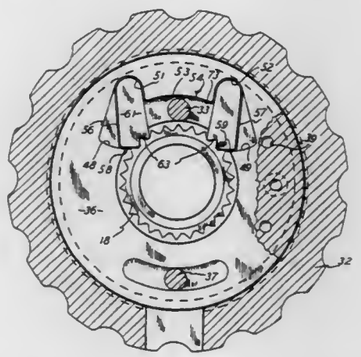
RATCHETING SCREWDRIVER

Clair L. Tiede, Mukwonago, Wis.; Mark S. Bakula, Howell, Mich., and Guy L. Bradshaw, Kenosha, Wis., assignors to Beere Precision Medical Instruments, Inc., Racine, Wis.

Filed May 2, 1995, Ser. No. 433,900

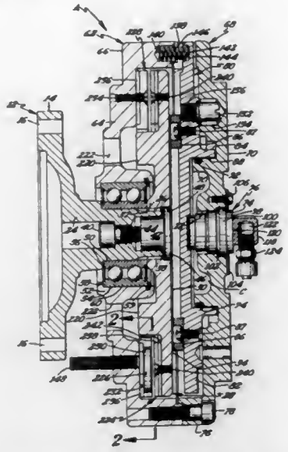
Int. Cl.[6] B25B *15/04;* **F16D** *41/16*

U.S. Cl. 192—43.1 **1 Claim**



1. A ratcheting screwdriver, comprising a handle having a cavity with a cavity-defining wall which has two arcuately shaped pockets defined by two arcuate surfaces and which has two end walls respectively spaced from and facing said two arcuate surfaces, a gear rotatably disposed in said handle adjacent said cavity, two pivotal pawls with each having an arcuate portion with an arcuate surface respectively disposed in each of said pockets in respective pivotal support with said two pocket arcuate surfaces and having teeth adjacent said gear and being pivotal into and out of tooth engagement with said gear and with said pawl teeth being on an end of said pawl distant from said arcuate portion thereof, said pawls normally being in engagement with said gear, said respective distant ends of said pawls being in pivotally sliding confined relationship relative to said two end walls, a control movable on said handle and having a portion spaced from said pawls and arranged for engagement with said pawls for moving said pawls out of tooth engagement with said gear for drive disengagement, and resilient means disposed in the path of pivot of said pawls for urging said pawls toward said gear.

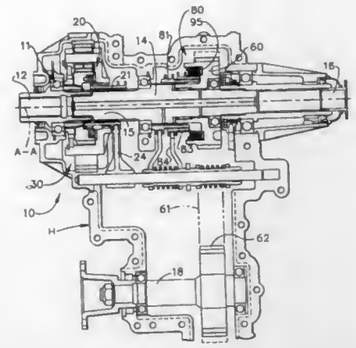
5,613,586
ROTATIONAL CONTROL APPARATUS
Hugh K. Schilling, St. Paul; John B. Davis, Tonka Bay, and Robert C. Bredt, Edina, all of Minn., assignors to Horton, Inc., Minneapolis, Minn.
Filed Feb. 25, 1994, Ser. No. 201,783
Int. Cl.[6] F16D *29/00;27/01;25/0635*
U.S. Cl. 192—48.3 22 Claims



1. Rotational control apparatus comprising, in combination: a friction disc rotatable about an axis, with the friction disc having a first surface and a second, opposing surface; an output, with the friction disc being rotatable relative to the output about the axis, with the output having a friction ring for engagement with the first surface of the friction disc and a surface parallel to but spaced from the second surface of the friction disc; means for rotatably fixing the friction ring to the output while allowing the friction ring to be axially displaceable relative to the output between an engaged condition and a disengaged condition with the friction disc; means for moving the friction ring between the engaged and disengaged condition; and an eddy current drive including permanent magnets mounted to one of the second surface of the friction disc and the surface of the output and a ring of magnetic material mounted to the other of the second surface of the friction disc and the surface of the output, with the output being driven either with the friction disc when the friction ring is in the engaged condition or at a rotational speed less than the friction disc when the friction ring is in the disengaged condition by the eddy current drivel with the output being in the form of first and second shell housings secured together to define an interior, with the friction disc, the friction ring and the eddy current drive located inside the interior of the first and second shell housings and protected thereby from the environment or other outside forces.

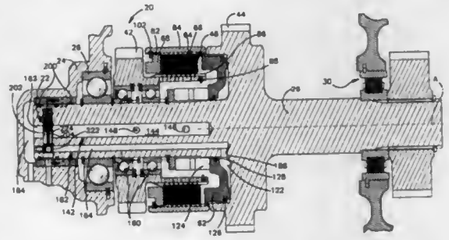
5,613,587
TRANSFER CASE FRICTION PLATE SYNCHRONIZER
Ralph W. Baxter, Jr., Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Mar. 8, 1995, Ser. No. 400,708
Int. Cl.[6] F16D *13/54*
U.S. Cl. 192—53.32 17 Claims

1. In combination with a drivetrain subassembly, a friction plate synchronizer to facilitate the synchronous coupling of a first rotatable member and a second rotatable member, said friction plate synchronizer comprising:
a first friction plate set including at least one first friction plate secured for rotation with said first rotatable member;
a second friction plate set including at least one second friction plate continuously maintained in frictional engagement with



said first friction plate set by at least one spring, wherein said second friction plate set is selectively engageable with said second rotatable member such that upon engagement of said second rotatable member and said second friction plate set, said first friction plate set and said second friction plate set cooperate to facilitate the synchronous coupling of said first and second rotatable members.

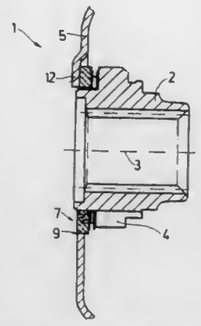
5,613,588
CLUTCH COOLANT FLOW CONTROL DEVICE
Thomas H. Vu, Mocksville, N.C., assignor to Clark Equipment Company, South Bend, Ind.
Filed Feb. 2, 1995, Ser. No. 382,439
Int. Cl.[6] F16D *13/72*
U.S. Cl. 192—113.35 37 Claims



1. An improved apparatus for cooling a clutch assembly in a power transmission with a fluid in which the power transmission includes a shaft, a drive member fixed to the shaft and a driven member supported for rotation by the shaft, the clutch assembly includes at least one clutch plate and at least one friction disk which cooperate to couple the drive member and driven member when engaged and uncouple the drive member and driven member when disengaged, and a fluid operated actuator selectively moves the clutch plate and friction disk between engaged and disengaged positions, wherein the improvement comprises:
an axially extending passage in the shaft for conducting a cooling fluid to a location to bathe the clutch assembly and to remove heat therefrom;
a transversely extending bore in the shaft in communication with said axially extending passage at a location between a source of the cooling fluid and the clutch assembly;
a clutch actuating fluid source that effects movement of the clutch plate and the friction disk between the engaged and disengaged positions; and
a valve member in said transversely extending bore and movable from a first position allowing a first flow of the cooling fluid through said axially extending passage and a second position allowing a second greater flow of the cooling fluid though said axially extending passage, said valve member movable from the first position to the second position in response to an

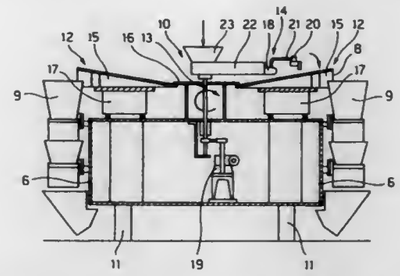
application of pressurized fluid from said actuating fluid source to the clutch assembly.

5,613,589
FRICTION CLUTCH FOR A MOTOR VEHICLE
Harald Jeppe, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Dec. 21, 1994, Ser. No. 360,455
Claims priority, application Germany, Dec. 23, 1993, 43 44 124.6
Int. Cl.[6] F16D *13/64*
U.S. Cl. 192—204 20 Claims



1. A friction clutch for a motor vehicle, said friction clutch comprising a clutch disc, said clutch disc comprising:
a hub, said hub having means for being disposed substantially non-rotatably on a transmission input shaft, the transmission input shaft having an axis of rotation and defining an axial direction parallel to the axis of rotation;
said hub comprising a hub disc, said hub disc having a first side and a second side disposed opposite one another;
at least one cover plate, said at least one cover plate having an outer circumference and an inner circumference, said inner circumference being disposed within said outer circumference;
said at least one cover plate being disposed adjacent said first side of said hub disc;
said inner circumference of said at least one cover plate being disposed at said hub;
bearing means being disposed between said first side of said hub disc and said at least one cover plate, and adjacent said inner circumference of said at least one cover plate;
said bearing means having an outer circumference and an inner circumference, said inner circumference of said bearing means being disposed within said outer circumference of said bearing means;
said bearing means comprising:
at least one portion having a cross-section defined between said inner circumference of said bearing means and said outer circumference of said bearing means;
said cross-section lying in a plane intersecting the axis of rotation;
said cross-section being rectangular;
said at least one portion comprising a bearing surface;
said bearing surface being disposed transversely with respect to the axis of rotation and facing away from said hub;
said bearing surface extending between said inner circumference of said bearing means and said outer circumference of said bearing means;
said at least one cover plate comprising:
at least one cover plate surface being disposed substantially adjacent said inner circumference of said at least one cover plate and facing towards said hub;
said at least one cover plate surface being disposed substantially adjacent said bearing surface and making contact with a substantial portion of said bearing surface to thereby form a contiguous area of contact between said at least one cover plate surface and said bearing surface, to axially guide said bearing means at least with respect to said at least one cover plate; and
said contiguous area of contact being a substantial area.

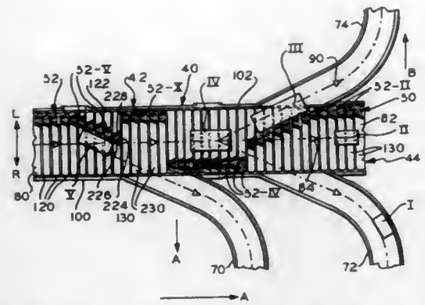
5,613,590
DEVICE FOR DISTRIBUTION OF MATERIAL WHICH IS LOOSE OR IN SINGLE PIECES
Paolo Simionato, Padova, Italy, assignor to Simionato S.P.A., Padova, Italy
Filed Dec. 23, 1994, Ser. No. 362,851
Int. Cl.[6] G01G *13/08*
U.S. Cl. 198—358 14 Claims



1. A device for the distribution of material to a plurality of parts for collecting the material arranged circumferentially of the device, comprising a plurality of radial channels each for transferring material to a respective collecting part, a part for the distribution of said material to said radial transfer channels which is fed with said material and is driven to rotate around a vertical axis for distributing material to each of said radial transfer channels; means for driving transfer of the material along each of said radial transfer channels, means for driving movement of the material in said rotating distribution part, means for driving rotation of said rotating distribution part, and an individual means for sensing the presence of material on each of said channels, said sensing means being mounted on said distribution part for rotation therewith.

5,613,591
SORTATION CONVEYOR AND DEVICES
Martin A. Heit, Cincinnati, Ohio; Timothy A. Koeninger, Fort Thomas; John E. O'Brien, Florence, both of Ky.; John J. Wilkins, Cincinnati, Ohio, and Randall P. Coons, Crescent Springs, Ky., assignors to Litton Industrial Automation Systems, Inc., Del.
Filed Nov. 9, 1992, Ser. No. 973,669
Int. Cl.[6] B65G *47/34*
U.S. Cl. 198—370.02 76 Claims

1. A divert switch, for use with a sortation conveyor having a frame means and a plurality of conveying members disposed in an interconnected endless loop on the frame means and driven by drive means to convey packages along a first conveying path from an input end of the sortation conveyor towards an output end thereof, with at least one divert or spur conveyor means extending from the first conveying path into a second conveying path; each conveying member carrying a package diverter means each including a guide/divert pin means and cam follower means extending downwardly therefrom, with at least one guide track carried by the frame means and disposed to coact with the guide/divert pin means to guide package diverter means associated therewith along the first conveying path and with at least one divert track carried by the frame means and extending at a predetermined angle from a position proximate the guide track and disposed to coact with the



cam follower pin means to guide associated package diverter means to direct packages towards and onto the divert or spur conveyor; comprising:

(a) mounting means for mounting divert switch means proximate the position where the divert track extends from the guide track;

(b) first pin guide means carried by said mounting means, disposed to received guide/divert pins from the guide track and to direct such guide/divert pins and their associated package diverters through a first pathway through said divert switch means and back into the guide track;

(c) second pin guide means carried by said mounting means and extending from said first pin guide means to receive guide/divert pins from said first pin guide means and to direct such guide/divert pins and their associated package diverters through a second pathway through said divert switch means and thereafter their cam follower means into coaction with the divert track;

(d) switch means carried by said mounting means where said second pin guide means extends from said first pin guide means and having a first disposition permitting guide/divert pins to follow said first pathway and a second disposition preventing guide/divert pins from following said first pathway through said divert switch means and directing the guide/divert pins into said second pathway;

(e) switch mounting means mounting said switch means for movement in a linear path between said first disposition thereof and said second disposition thereof;

(f) motive means coacting with said switch means to move said switch means between said first disposition thereof and said second disposition thereof;

(g) said switch means being disposed for movement through a space disposed between said first pin guide means and said second pin guide means; and

(h) a guide rail spanning said space to facilitate movement of the guide/divert pins along said first pathway.

5,613,592

SYSTEM FOR READILY DETERMINING THE MAGNETIC ORIENTATION OF PERMANENT MAGNETS

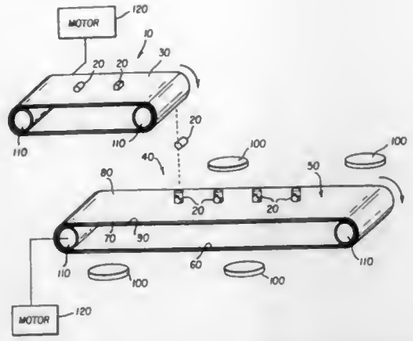
Svetlana Reznik, Rochester, and Edward P. Furlani, Lancaster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 6, 1995, Ser. No. 467,249
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—381 **7 Claims**

1. A system for readily determining magnetic orientation of permanent magnets for mass assembly in a predetermined orientation into electronic or mechanical devices, the system comprising:

(a) a movable conveyor including a conveyor belt having a first surface which is magnetically polarized in a predetermined orientation, and having a second surface which is magnetized of opposite polarity from the first surface;

(b) means for individually placing the magnets on the conveyor belt which, in association with the conveyor belt, orients the magnets in a preferred orientation on the conveyor belt; and



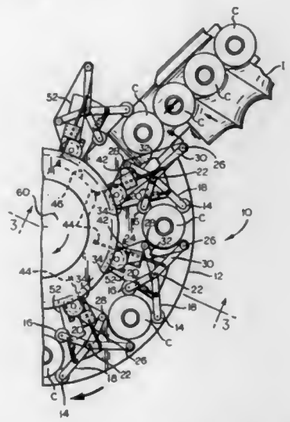
(c) means for moving the conveyor belt for passing the magnets through a mass production assembly.

5,613,593

CONTAINER HANDLING STARWHEEL

Stephen M. Gerber, Petersburg, Mich., assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Nov. 18, 1994, Ser. No. 344,592
Int. Cl.[6] B65G *29/00*
U.S. Cl. 198—479.1 **11 Claims**



1. Apparatus for advancing a plurality of containers, in sequence, from an infeed station to a takeout station, said apparatus comprising:

a generally horizontally extending container supporting means for supporting a plurality of containers;

a generally vertically extending turret, said generally vertically extending turret being positioned generally centrally of said container supporting means;

means for moving said turret in a rotary pattern about a vertical central axis of said turret; and

a plurality of circumferentially spaced apart container engaging means carried by said turret and rotatable with said turret for engaging one of the containers, each of said container engaging means comprising;

first container engaging means for engaging a container at a plurality of circumferentially spaced apart locations of the container,

second container engaging means for engaging the container at a location circumferentially spaced between the locations where the container is engaged by the first container engaging means and generally opposed thereto, and

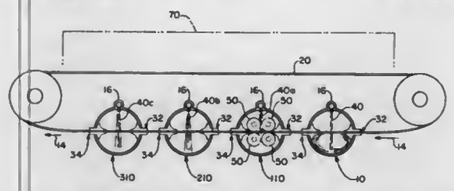
means for moving one of said first engaging means and said second engaging means toward and away from the other of said first engaging means and said second engaging means for securely engaging the container after the container is received by said container supporting means from the infeed station and for permitting disengagement of the container from said each of said container engaging means at the takeout station.

5,613,594

CONVEYOR BELT TREATMENT APPARATUS

Anthony Kootsouradis, Amherst, Ohio, assignor to Stein, Inc., Sandusky, Ohio

Filed Aug. 10, 1995, Ser. No. 513,422
Int. Cl.[6] B65G *45/22*
U.S. Cl. 198—495 **18 Claims**



1. A belt treatment apparatus for treating a conveyor belt with a treatment fluid, the apparatus comprising:

a housing defining an at least substantially enclosed treatment chamber including a conveyor belt entrance and a conveyor belt exit;

at least one entrance flow diverter disposed at least substantially within said treatment chamber and connected to said housing in the region of said conveyor belt entrance to divert the flow of the treatment fluid within said treatment chamber away from said conveyor belt entrance;

at least one exit flow diverter disposed at least substantially within said treatment chamber and connected to said housing in the region of said conveyor belt exit to divert the flow of treatment fluid within said treatment chamber away from said conveyor belt exit; and,

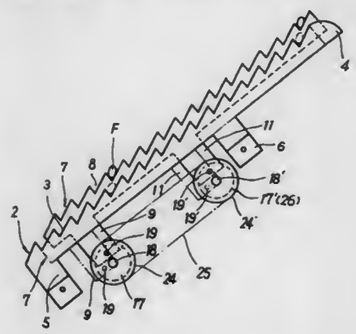
at least one spray nozzle for directing said treatment fluid onto a portion of said conveyor belt while at least a portion of said conveyor belt is within said treatment chamber.

5,613,595

AUTOMATIC SLOPE FRUIT FEEDING MACHINE USED WITH A FRUIT GRADING MACHINE

Masahiro Ukada, Chiriyu, Japan, assignor to See-Chang Ting, Taipei, Taiwan, and Shigeo Nakata, Toyokawa, Japan

Filed Apr. 19, 1995, Ser. No. 424,643
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—774.3 **1 Claim**



1. An automatic fruit feeding machine for feeding fruit to a fruit grading apparatus comprising:

a) a plurality of stationary, laterally spaced apart, elongated carrier members, each carrier member having an upper surface forming a plurality of holding recesses along its length and an exit end adjacent to the fruit grading apparatus having a convexly curved upper surface to facilitate passage of the fruit from the feeding machine to the fruit grading apparatus;

b) an elongated movable carrier member located between each pair of spaced apart stationary carrier members, each movable carrier member having an upper surface forming a plurality of transferring recesses, and first and second mounting plates extending therefrom;

c) circular crank plates located on each side of the first and second mounting plates;

d) a first shaft eccentrically connected with the circular crank plates on each side of the first mounting plate and to the first mounting plate such that rotation of the circular crank plates causes the longitudinal axis of the first shaft to move in a circular path around a rotational axis of the circular crank plates;

e) a second shaft eccentrically connected with the circular crank plates on each side of the second mounting plate and to the second mounting plate such that rotation of the circular crank plates causes the longitudinal axis of the second shaft to move in a circular path around a rotational axis of the circular crank plates;

f) first endless drive means connecting the circular crank plates on one side of the first and second mounting plates such that the crank plates rotate in unison, such rotation causing the movable carrier to move in a translating circular path whereby fruit in a holding recess of the stationary carrier member is transferred in step-by-step fashion to the exit end from which it enters the fruit grading apparatus;

g) a first sprocket gear drivingly connected to one of the circular crank plates;

h) a second sprocket gear having a diameter larger than that of the first sprocket gear;

i) second endless drive means interconnecting the first and second sprocket gears; and,

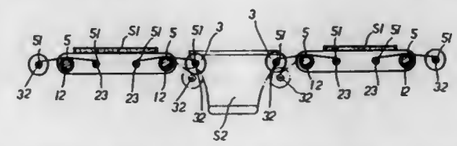
j) drive means drivingly connected to the second sprocket gear.

5,613,596

SHOE CONVEYER DEVICE

Liang-Tsuen Chang, No. 23, Chin Kao Road, Pu Hsin Hsiang, Chang Hua County, Taiwan

Continuation-in-part of Ser. No. 394,961, Feb. 27, 1995. This application May 30, 1995, Ser. No. 453,088
Int. Cl.[6] B65G *17/34*
U.S. Cl. 198—803.11 **2 Claims**



1. A conveyer device for conveying shoe soles and shoe bodies thereon, said conveyer device comprising:

a chain means including a plurality of shafts laterally extended therefrom,

at least one platform coupled between said shafts for supporting shoe soles thereon,

a plurality of beams rotatably coupled to said shafts and arranged close to each other so as to form a gap therebetween for engaging with and for supporting shoe bodies thereon, and

a plurality of springs each including a middle portion engaged on said shafts and each including two end portions secured to said platform and said beams for resiliently supporting said beams and for resiliently supporting said shoe bodies between

said beams, said beams being moved away from each other against said springs for supporting shoe bodies of different sizes;

wherein said springs are engaged on said shafts in order not to engage with shoe bodies supported between said beams.

5,613,597

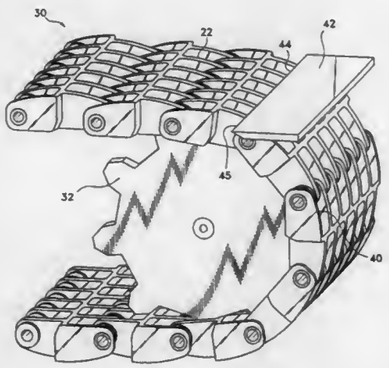
TRANSFER METHOD FOR PLASTIC CONVEYOR BELTS

Karl V. Palmaer, Folsom, and Eric K. Palmaer, Gold River, both of Calif., assignors to KVP Systems, Inc., Rancho Cordova, Calif.

Continuation of Ser. No. 339,929, Nov. 15, 1994, abandoned, which is a continuation of Ser. No. 112,444, Aug. 26, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,926

Int. Cl.[6] B65G *17/06*

U.S. Cl. 198—853 **7 Claims**



1. A method for smooth transfer of conveyed articles between a plastic modular conveyor belt and a transfer platform, comprising the steps of:

providing a modular plastic conveyor belt of the type made up of a series of connected elongated molded plastic belt module rows each including one or more belt modules in the row such that belts of varying selected widths can be made up from the modules in a staggered, brick-laid pattern, with the belt module rows connected by rods extending transversely to the length of the conveyor belt, each row having a series of first spaced projections generally regularly spaced and extending in one direction from the row and a series of second spaced projections generally regularly spaced and extending in an opposite direction from the row, the first and second projections of serially adjacent module rows being longitudinally overlapping and juxtaposed when the modules are connected serially in the conveyor belt by the connecting rods extending through transverse openings in the projections,

providing arched top surfaces on each conveyor belt module, defining generally a circular arc extending longitudinally over the module from the first projections to the second projections and thus defining a portion of a cylinder with the arched top of each module and each module row,

operating the plastic conveyor belt to move the belt over a generally cylindrical roller or sprocket wheel at the end of a run,

the arched cylindrical top surfaces of the modules having a radius which is related to the radius of the roller or sprocket wheel over which the belt returns at the end of a run, such that as the belt passes over the sprocket wheel or roller, a generally smooth cylindrical surface is formed, continuous through approximately 180° where the belt returns at the end of the run,

placing a transfer plate adjacent to and substantially in contact with the smooth cylindrical surface of the belt at the end of the run, the transfer plate being positioned to accommodate movement of conveyed articles smoothly over its surface, and the transfer plate having a relatively thin straight edge adjacent to the belt located so as to smoothly receive conveyed articles from the top of the smooth cylindrical surface as the belt passes around the sprocket or roller, and

smoothly transferring conveyed articles between the surface of the conveyor belt and the transfer platform.

5,613,598

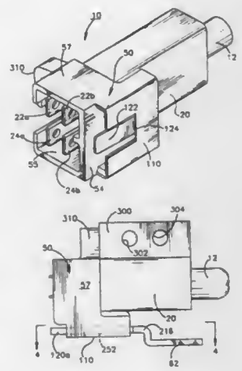
SWITCH MOUNTING

Bryan A. Pittman, Atwater, and Thomas D. Williams, Hudson, both of Ohio, assignors to Delta Systems, Inc., Streetsboro, Ohio

Filed Nov. 15, 1995, Ser. No. 559,297

Int. Cl.[6] H01H *13/04*

U.S. Cl. 200—295 **8 Claims**



1. Switch apparatus comprising:

a) a switch housing supporting conductive switch terminals within a switch housing interior;

b) a switch actuator that extends through a wall of the switch housing and is supported by the switch housing for movement along a travel path to control an actuation state of said switch by selectively shorting the conductive switch terminals; and

c) structure for mounting the switch housing in a selected one of two different orientations on a support surface comprising:

i) a retainer coupled to the switch housing having a retaining surface spaced from one wall of the switch housing by a gap that permits the retainer to slide over a tab coupled to the support surface to which the switch housing is mounted; and

ii) a latch member attached to the retainer by a flexible connection that permits the latch member to flex as the retainer is pushed over the tab; said latch member having a projection that fits into an opening in the tab for inhibiting further relative movement between the tab and the switch housing in one of said two orientations.

5,613,599

METHOD OF MANUFACTURING A FRAMED KEYTOP SHEET FOR A PUSH-BUTTON SWITCH

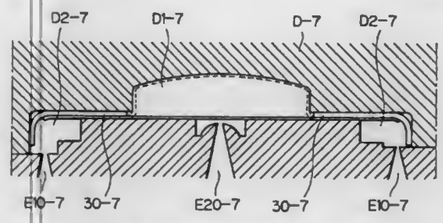
Jiro Inagaki, Tokyo; Atsushi Hari; Nobuyuki Kikuchi, both of Kanagawa-ken, and Takashi Shinoki, Tokyo, all of Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Kawasaki, Japan

Division of Ser. No. 456,042, May 31, 1995, abandoned, which is a division of Ser. No. 138,065, Oct. 20, 1993, Pat. No. 5,475,192. This application Mar. 25, 1996, Ser. No. 621,339

Claims priority, application Japan, Mar. 15, 1993, 5-080049; Mar. 16, 1993, 5-081366

Int. Cl.[6] H01H *1/10*

U.S. Cl. 200—512 **6 Claims**



1. A method of producing a keytop sheet for a push-button switch, said method comprising:

positioning within a mold a flexible film sheet and a flexible nameplate sheet having an outer dimension greater than that of said film sheet, with said nameplate sheet positioned over said film sheet and having an outer peripheral portion extending outwardly beyond an outer peripheral portion of said film sheet, and with said outer peripheral portion of said nameplate sheet being bent transversely and confronting an internal surface of said mold;

injecting molten resin into said mold against a side of said bent outer peripheral portion of said nameplate sheet opposite said internal surface of said mold, thereby urging said bent outer peripheral surface of said nameplate sheet toward said internal surface of said mold, and against a side of said outer peripheral portion of said film sheet opposite said nameplate sheet; and

solidifying said molten resin and thereby forming a solid frame that is fixed to said outer peripheral portion of said film sheet and that has an outer peripheral side face having affixed thereto said bent outer peripheral portion of said nameplate sheet.

5,613,600

ROTATIVELY-OPERATED ELECTRONIC COMPONENT WITH PUSH SWITCH

Shigeru Yokoji; Hiroshi Matsui, both of Osaka; Tamotsu Yamamoto, Ashiya; Kazuhiro Enokido, Yokohama, and Yutaka Yamagishi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1996, Ser. No. 582,501

Claims priority, application Japan, Jan. 24, 1995, 7-008567

Int. Cl.[6] H01H *19/14*

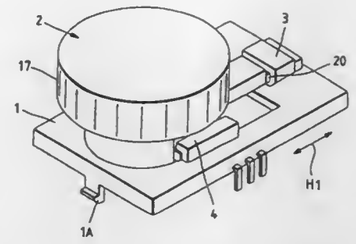
U.S. Cl. 200—564 **5 Claims**

1. A rotatively-operated electronic component with a push switch, comprising:

an attachment base plate;

a rotatively-operated electronic component portion supported on said attachment base plate and including a rotatable operation knob which is rotatable about an axis, and means for generating an electric signal in response to rotation of said operation knob;

means for allowing said rotatively-operated electronic component portion to laterally and substantially perpendicular to said axis plate by application of a lateral force to said operation knob;



a push switch portion supported on said attachment base plate; and

means for actuating said push switch portion in response to lateral movement of said rotatively-operated electronic component portion relative to said attachment base plate by said application of said force to said operation knob.

5,613,601

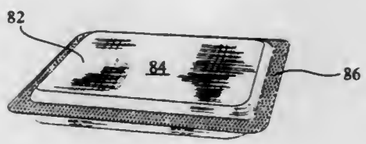
PACKAGE FOR DISPENSING A FLUID TREATING SUBSTANCE AND METHOD AND APPARATUS FOR HEAT-SEALING THE DISPENSING PACKAGE

Roger Boulanger, Ste-Julie, and Flavio Metta, Longeuil, both of Canada, assignors to Johnson & Johnson Inc., Montreal, Canada

Division of Ser. No. 126,938, Sep. 24, 1993, Pat. No. 5,456,055. This application May 31, 1995, Ser. No. 455,789

Int. Cl.[6] B65B *11/50;29/02*

U.S. Cl. 206—0.5 **17 Claims**



1. A package for dispensing a substance that imparts a desirable property to a body of fluid, comprising:

a predetermined quantity of particulated substance capable of releasing an agent which donates to the body of fluid the desired property; and

a bag of foraminous material enclosing said particulated substance, said bag of foraminous material constituting a confining barrier to prevent said particulated substance in a dry state to freely sift-out of said bag, said bag including a pair of walls of non-woven fibrous material united to one another at a laminated joint area formed by heat-sealing the pair of walls together, said laminated joint area including:

a) a first fiber layer including bond-forming fibers fusible at a certain temperature and forming a thermally activated bonding surface;

b) second and third fiber layers including fibers of a material in a substantially solid phase at said certain temperature, said first fiber layer being located between said second and third fiber layers; and

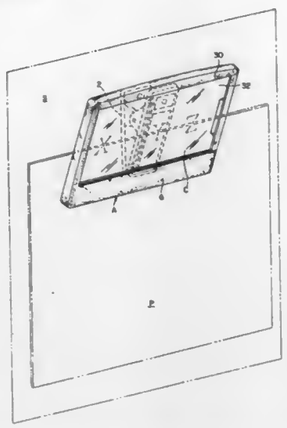
c) a plurality of perforations in a spaced apart relationship passing completely through one of said second and third fiber layers and extending into said first fiber layer.

5,613,602

CLIP-TYPE HOLDER FOR DISPLAYING A BUSINESS CARD

David P. Lage, and Albert P. Carney, both of St. Louis County, Mo., assignors to Quick Point, Inc., Fenton, Mo.

Filed Nov. 22, 1994, Ser. No. 343,340
Int. Cl.[6] G09F *3/18*
U.S. Cl. 206—232 **14 Claims**



1. A holder for supporting a light object, such as a sheet of paper, along a surface that is capable of attracting a magnet, said holder comprising: a carrier having a pocket that opens forwardly and is configured to receive a business card; a clip mounted on the back of the carrier such that pocket opens away from the clip, the clip having clamping portions and a spring which urges the clamping portions together to grip an object that is between the clamping portions, the clip being substantially smaller than the carrier and positioned such that it is substantially obscured by the carrier; and a magnet attached to the clip and presented rearwardly such that it may be placed against a surface that is capable of attracting a magnet so as to attract the clip to and hold it against that surface, whereby the carrier and a business card in it are presented in front of the surface.

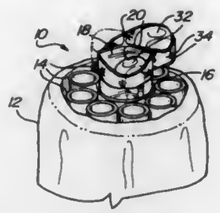
5,613,603

GOLF CLUB DIVIDER ASSEMBLY FOR USE WITH A GOLF BAG

William K. Joh, 6852 Vachon Dr., Bloomfield Hills, Mich. 48301

Continuation-in-part of Ser. No. 410,913, Mar. 27, 1995, Pat. No. 5,505,300. This application Jan. 11, 1996, Ser. No. 585,400
The portion of the term of this patent subsequent to Mar. 27, 2016, has been disclaimed.
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.6 **17 Claims**

1. A golf club divider assembly for use with a golf bag, the golf



bag having a hollow cylindrical shaped body with a bottom and an open top, said divider assembly comprising:

at least one sleeve shaped member placed within the golf bag;

at least one elongated divider member having a plurality of radially projecting and axially extending vane portions, said divider member being arranged within said at least one sleeve shaped member to create a plurality of individual golf club shaft receiving cavities lengthwise within an enclosure of the golf bag; and

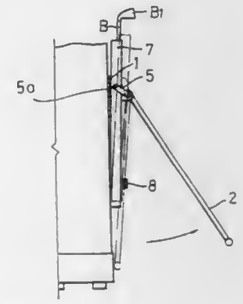
shielding means secured about an upper portion of said at least one divider member for individually protecting each of a plurality of golf club heads projecting above said at least one divider member.

5,613,604

GOLF BAG WITH WEIGHTED SUPPORT STAND

Seop Maeng, 709-4 Gorimri, Yongin-Eup, Yongin-Gun, Kyongi-Do, Rep. of Korea

Filed Feb. 23, 1995, Ser. No. 393,172
Claims priority, application Rep. of Korea, Feb. 24, 1994, UM 3415; Apr. 15, 1994, UM 7900
Int. Cl.[6] A63B *55/00;55/06*
U.S. Cl. 206—315.7 **8 Claims**



1. A golf bag comprising

a bag body,

a pair of legs, each leg having an upper end pivotally mounted to the bag body, and each upper end having attached thereto an extension member, each extension member terminating in a free end that angularly points toward the bag body, and

a leg actuator mechanism including a weight member, said leg actuator mechanism connected to the extension members and adapted to extend the legs with movement of the bag to a generally upright position and retract the legs with movement of the bag to a generally tilted position.

5,613,605

PLANT PACKAGE

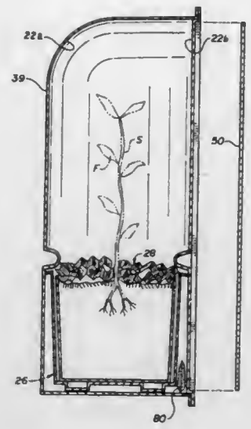
James P. Angeles, Cleveland; Thomas F. Dugan, Perry; John R. Nottingham, Huntiog Valley; Dale A. Panasewicz, Strongsville, and Brian J. Sroub, Shaker Heights, all of Ohio, assignors to Agripak, Inc., Pepper Pike, Ohio

Continuation of Ser. No. 87,153, Jul. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,625, Mar. 13, 1992, Pat. No. 5,224,598. This application Sep. 19, 1994, Ser. No. 303,656
Int. Cl.[6] B65D *85/52*
U.S. Cl. 206—423 **28 Claims**

1. A plant package for a live plant having a stem, roots and rooting medium surrounding the roots, comprising:

a self-supporting, light transmissive, sealed shell having an internal surface defining a package interior, and a shelf on said internal surface,

said shell shelf defining first and second interior compartments of said shell for containing said roots and stem, respectively,



a container for said roots and rooting medium surrounding said roots, engaged within said first interior compartment, and

a divider surrounding said stem, partially engaging said rooting medium, and forming a cushioning barrier intermediate said first and second interior compartments,

wherein said divider includes a cushioning membrane for compression and supporting form fitting engagement with said container, and a support member engaged with said shelf for reducing the passage of material and water vapor between said first and second interior compartments,

wherein said container comprises an inner container for said roots and rooting medium surrounding said roots, and an outer container engaged with said internal surface of said first interior compartment, for containing said inner container, and

wherein said outer container includes an edge portion extending outwardly from said outer container and having peaks and valleys formed therein.

8. A plant package for a live plant having a stem, roots and rooting medium surrounding the roots, comprising:

a self-supporting, light transmissive, sealed shell having an internal surface defining a package interior, and a shelf on said internal surface,

said shell shelf defining first and second interior compartments of said shell for containing said roots and stem, respectively,

a container for said roots and rooting medium surrounding said roots, engaged within said first interior compartment, and

a divider surrounding said stem, partially engaging said rooting medium, and forming a cushioning barrier intermediate said first and second interior compartments,

wherein said shell comprises first and second elements, each of said elements having an internal surface forming a portion of said package interior, and including a portion of said shelf,

wherein said divider includes a cushioning membrane for compression and supporting form fitting engagement with said container, and a support member engaged with said shelf for reducing the passage of material and water vapor between said first and second interior compartments,

wherein said container comprises an inner container for said roots and rooting medium surrounding said roots, and an outer container engaged with said internal surface of said first interior compartment, for containing said inner container, and

wherein said outer container includes an edge portion extending outwardly from said outer container and having peaks and valleys formed therein.

15. A plant package for a live plant having a stem, roots, and rooting medium surrounding the roots, comprising:

a self-supporting, light transmissive shell having an internal surface defining a package interior and a shelf on said internal surface,

said shell shelf defining first and second interior compartments of said shell for containing said roots and stem, respectively,

a container for said roots and rooting medium surrounding said roots, said container having a top opening for receiving said roots and rooting medium and a rim engaging said shell shelf for maintaining said container within said first interior compartment, and

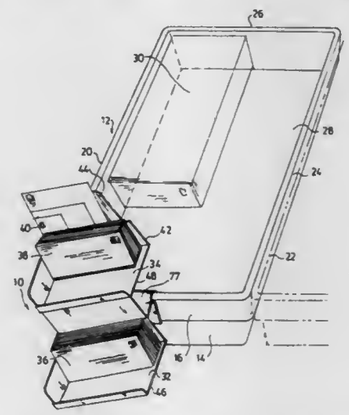
a divider surrounding said stem, at least partially covering said rooting medium, and forming a cushioning barrier intermediate said first and second interior compartments, said divider including a cushioning membrane and a support member engaged with said container and said cushioning membrane for maintaining said cushioning membrane within said container top opening, thereby reducing the passage of material between said first and second interior compartments.

5,613,606

APPARATUS FOR HOLDING MAIL

Gary M. Meyer, Hamburg, N.Y., assignor to Quicksort, Inc., Hamburg, N.Y.

Filed Oct. 5, 1995, Ser. No. 539,717
Int. Cl.[6] B07C *7/04*
U.S. Cl. 206—449 **6 Claims**



1. An apparatus for holding mail, wherein said apparatus is adapted to be removably mounted on a four-sided letter tray comprised of a first front wall and a first side wall, wherein:

(a) said apparatus is comprised of a first three-sided shelf which is comprised of a first, vertically-extending back wall and, integrally connected to and disposed in back of said first vertically-extending back wall of said three-sided shelf, a second three-sided shelf, wherein said second three-sided shelf is comprised of a vertically-extending front wall, a vertically-extending side wall, a second vertically-extending back wall, and a horizontally-extending bottom wall;

(b) said apparatus is comprised of means for varying the height of said second vertically-extending back wall;

(c) said apparatus further comprises means for removably and simultaneously connecting said apparatus to the first front and the first side wall of the four-sided letter tray, which means is comprised of a first substantially U-shaped slide bar and a second substantially U-shaped slide bar, wherein said first substantially U-shaped slide bar is attached to said first, vertically-extending back wall.

6. An apparatus for holding mail, wherein said apparatus is adapted to be removably mounted on a four-sided letter tray comprised of a first front wall and a first side wall, wherein:

(a) said apparatus is comprised of a first three-sided shelf which is comprised of a first, vertically-extending back wall and, integrally connected to and disposed in back of said first vertically-extending back wall of said three-sided shelf, a second three-sided shelf, wherein said second three-sided shelf is comprised of a vertically-extending front wall, a

vertically-extending side wall, a second vertically-extending back wall, and a horizontally-extending bottom wall;

(b) said apparatus further comprises means for removably and simultaneously connecting said apparatus to the first front and the first side wall of the four-sided letter tray, which means is comprised of a first substantially U-shaped slide bar and a second substantially U-shaped slide bar, wherein said first substantially U-shaped slide bar is attached to said first, vertically-extending back wall.

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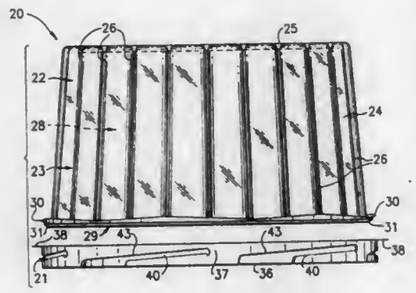
PRODUCT HOLDING AND DISPLAYING CONTAINER

Dan Kalmanides, Orange, and Richard M. Ellison, Huntington, both of Conn., assignors to Inline Plastics Corporation, Milford, Conn.

Filed Feb. 3, 1995, Ser. No. 382,999

Int. Cl.[6] A45C *11/20*

U.S. Cl. 206—467 **25 Claims**



1. The interlockable, reusable and disposable product holding and displaying container system, constructed for providing an easily employed system for holding and displaying products while being disposable when the products is consumed, said system comprising:

A. a base member comprising

a. a base plate,

b. a substantially circular upstanding first wall-defining member cooperatively associated with the base plate and extending substantially perpendicularly therefrom, and

c. a plurality of separate, independent, first locking means

1. formed in the first wall-defining member in juxtaposed, spaced, non-overlapping relationship, spaced substantially equidistant from each other about the entire substantially circular first wall-defining member, and

2. comprising a plurality of separate and independent, radially extending engaging and locking ledges formed therein in a substantially circular array, with out of said engaging and locking ledges being spaced apart from each other a substantially equal distance, thereby forming zones therebetween free of any engaging and locking ledge, and cooperating with an abutment stop formed at one end thereof and a locking tab at the opposed end thereof, for controlling the arcuate movement of each radially extending surface of a product display member; and

B. a product display member comprising

a. a product holding zone formed therein for securely retaining a desired product,

b. an entry portal cooperatively associated with the holding zone for providing access to the holding zone,

c. support means peripherally surrounding the entry portal and cooperating therewith, and

d. a second wall-defining member

1. cooperatively associated with the support means,

2. formed in a substantially circular-shape, peripherally surrounding the support means, and extending therefrom, and

3. comprising a diameter constructed for cooperating, juxtaposed, facing relationship with the first wall-defining member of the base member; and

e. a plurality of separate, independent, non-overlapping, second locking means

1. formed in the substantially circular second wall-defining member in juxtaposed spaced equidistant relationship to each other and constructed for cooperating, interengagement with the first locking means formed in the substantially circular first wall-defining member of the base member, and

2. comprising a plurality of independent, spaced, substantially equally dimensioned, surfaces radially extending from the substantially circular-shaped second wall-defining member, with each radially extending surface being spaced apart from adjacent radially extending surfaces a substantially equal distance, establishing a plurality of lock free zones therebetween;

whereby rapid, interconnected interlocking interengagement of the product display member with the base member is easily attained by positioning the product display member into telescopic engagement with the base member by advancing the second wall rotating the base member and product display member relative to each other, bringing the first and second locking means thereof into locked engagement.

5,613,608

CONTAINER FOR PAPER SHEETS

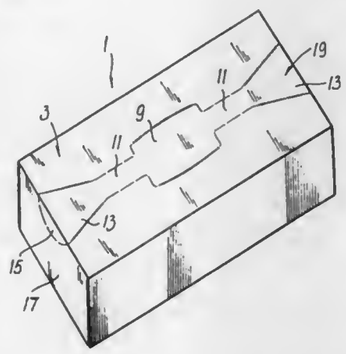
Sauro Tronchetti, Lucca, and Renzo Tronchetti, Lucca, both of Italy, assignors to Industrie Cartarie Tronchetti S.P.A., Borgo A Mozzano, Italy

Filed May 26, 1995, Ser. No. 451,438

Claims priority, application Italy, Jun. 29, 1994, MI94A1353; Jun. 29, 1994, MI94A1354

Int. Cl.[6] B65D *73/00*

U.S. Cl. 206—494 **5 Claims**



1. A container for paper sheets comprising a body for holding paper sheets, said body having an opening extending longitudinally along an upper surface of said body, said opening having a central portion, a pair of end portions, and a pair of lateral portions between and contiguous with said central portion and each of said end portions, said end portions having a width substantially greater than a width of said lateral portions, each of said end portions having a substantially trapezoidal shape having a longer parallel side oriented toward a side edge of said container.

5,613,609

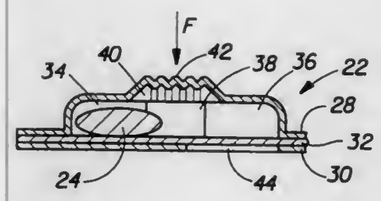
DUAL CHAMBER-CHILD RESISTANT BLISTER PACKAGE

Peter W. Hamilton, Cincinnati; Geneva G. Otten, Loveland, both of Ohio, and Del M. Thornock, Concord, Calif., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 69,309, May 28, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,856

Int. Cl.[6] B65D *83/04*

U.S. Cl. 206—531 **20 Claims**



1. A child-resistant blister package housing a medicament comprising:

(a) a blister layer having a blister projecting from one face thereof, the blister having a storage chamber and a discharge chamber;

(b) nonrupturable means disposed adjacent the storage chamber of the blister for preventing the medicament from being discharged from the storage chamber through the nonrupturable means;

(c) rupturable means disposed adjacent the discharge chamber of the blister for enabling the medicament to be discharged from the discharge chamber, the rupturable means being structurally different from the nonrupturable means so that a minimum force acting upon the rupturable means to cause the rupturable means to rupture is less than a minimum force acting upon the nonrupturable means to cause the nonrupturable means to rupture; and

(d) restraint means for preventing the medicament from moving from the storage chamber to the discharge chamber until a predetermined force is applied to the blister package and for allowing the medicament to move from the storage chamber to the discharge chamber once the predetermined force is applied to the blister package.

15. A child-resistant blister package housing a medicament comprising:

(a) a blister layer having a blister projecting from one face thereof, the blister having a storage chamber and a discharge chamber;

(b) nonrupturable means disposed adjacent the storage chamber of the blister for preventing the medicament from being discharged from the storage chamber through the nonrupturable means, the nonrupturable means being a nonrupturable layer including an opening located adjacent the discharge chamber of the blister sized to permit the medicament to pass through the opening;

(c) rupturable means disposed adjacent the discharge chamber of the blister for enabling the medicament to be discharged from the discharge chamber by application of a force which is less than a force that would be required to rupture the nonrupturable means, the rupturable means being a rupturable layer disposed adjacent the discharge portion of the blister covering the opening of the nonrupturable layer and sealing the medicament in the blister; and

(d) restraint means for preventing the medicament from moving from the storage chamber to the discharge chamber until a predetermined force is applied to the blister package and for allowing the medicament to move from the storage chamber to the discharge chamber once the predetermined force is applied to the blister package.

5,613,610

NATURALLY DEGRADABLE AND RECYCLABLE STATIC-DISSIPATIVE PACKAGING MATERIAL

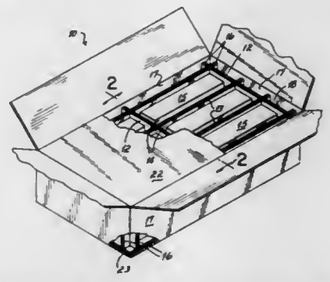
Judson A. Bradford, Holland, Mich., assignor to Bradford Company, Holland, Mich.

Continuation of Ser. No. 944,698, Sep. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 739,866, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 585,718, Sep. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 336,733, Apr. 12, 1989, Pat. No. 4,966,280, which is a continuation-in-part of Ser. No. 190,044, May 4, 1988, abandoned. This application Feb. 3, 1995, Ser. No. 384,605

The portion of the term of this patent subsequent to Jun. 11, 2011, has been disclaimed.

Int. Cl.[6] B65D *81/00;25/14*

U.S. Cl. 206—721 **27 Claims**



1. A container for packaging an article which can be damaged by static electricity, comprising:

a box having sidewalls and top and bottom walls;

a plurality of relatively rigid dividers located in said box, each said divider comprising a layer of relatively rigid material sandwiched between two films of amine free permanently static-dissipative materials, each of said two films of static-dissipative material having a surface resistivity of greater than 10^5 but less than 10^{12} ohms per square, the layer of relatively rigid material being sandwiched between the two films while the films are in a solid state, and each of the films having the same solid, amine free permanently static dissipative characteristics before and after said sandwiching; and

wherein said dividers partially define a predetermined number of cells within said box, each said cell providing protection from electrostatic charge for static electricity sensitive articles to be packaged therein, the dividers being naturally degradable.

5,613,611

CARRIER FOR INTEGRATED CIRCUIT PACKAGE

Brian A. Johnson, Upton; Robert E. Malone, Westford; M. William Miller, Andover, and Jeffrey Moeller, Somerville, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 282,890, Jul. 29, 1994, abandoned. This application May 28, 1996, Ser. No. 653,813

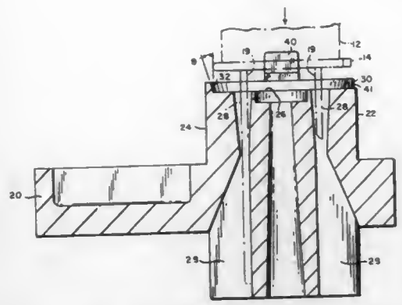
Int. Cl.[6] B65D *85/30*

U.S. Cl. 206—728 **8 Claims**

1. A carrier used for holding an integrated circuit package having a flange extending laterally from a surface of the package and a plurality of leads extending from the package, the flange having an outer periphery, said carrier comprising:

a tower portion having a top surface and a plurality of parallel channels for receiving the leads of the package,

a peripheral rim extending upwardly from said tower portion, said rim having an outer surface and a frustoconical inner surface disposed above the top surface of said tower portion, said outer surface and said frustoconical inner surface being joined at an upper edge located above the top surface of said tower portion, said frustoconical inner surface being beveled from a first diameter adjacent to said upper edge to a second



diameter adjacent to the top surface of said tower portion, said first diameter being larger than said second diameter, the outer periphery of the flange resting on said beveled inner surface when the package is positioned in said carrier,

at least two resilient legs adjacent said rim, each leg having a first end and a second end and flexible between an unbiased position and a biased position, and

a dog disposed on each leg, each dog having a lower beveled surface, each said leg and respective dog disposed thereon positioned so that said lower beveled surface of said dog engages the flange of the package when the flange rests on said rim of said carrier with said leg in said biased position such that said lower beveled surface biases the flange generally downwardly into a secure press fit between said rim and said dog.

7. A carrier used for holding an integrated circuit package having a sidewall and a bottom wall, a flange extending laterally from the sidewall and a plurality of leads extending from the bottom wall, the flange having an outer periphery, said carrier comprising:

a tower having a top surface and a plurality of channels for receiving the leads of the integrated circuit package;

a peripheral rim extending, upwardly from said tower, said rim having an outer surface and a frustoconical inner surface disposed above the top surface of said tower, said outer surface and said frustoconical inner surface being joined at an upper edge located above the top surface of said tower, said frustoconical inner surface being beveled from a first diameter adjacent to said upper edge to a second diameter adjacent to the top surface of said tower, said first diameter being larger than said second diameter, the outer periphery of the flange resting on said frustoconical inner surface when the package is positioned in said carrier; and

at least one element for biasing the outer periphery of the flange into contact with said frustoconical inner surface.

5,613,612

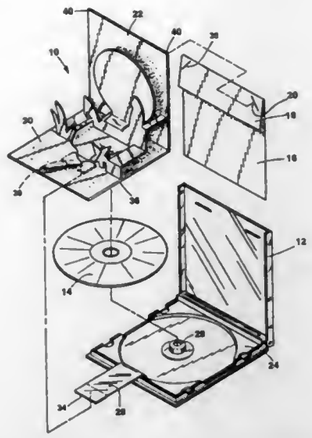
COMBINATION 3-D POP-UP DISPLAY AND CD HOLDER

Elaine J. Davault, 1999 S. Coast Hwy. #1, Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 404,620, Mar. 15, 1995, abandoned. This application Mar. 4, 1996, Ser. No. 610,436

Int. Cl.[6] B65D *65/30*

U.S. Cl. 206—768 **20 Claims**



1. A combination pre-recorded disc holder and display device, comprising:

a disc holder having a bottom tray portion for carrying a pre-recorded disc and a cover portion, hingedly connected to said bottom tray portion to open and close said disc holder to enable said pre-recorded disc to be inserted in and removed from said bottom tray portion;

an easily removable display comprising two panels having front and rear surfaces hingedly connected together, with a plurality of pop-up elements secured between the front surfaces of each of said two panels and capable of folding together when said front surfaces of said two panels are brought together, and forming a three-dimensional configuration when said front surfaces of said two panels are moved apart; and

securing means in said disc holder for removably securing said two panels of said easily removable display in said disc holder whereby said front surfaces of said two panels must be brought together to enable said top cover portion of said disc holder to be closed with respect to said bottom tray portion.

20. A combination pre-recorded disc holder and display device, comprising:

a pre-recorded disc holder having a bottom tray portion adapted to hold a pre-recorded disc, and a top cover portion hingedly connected to said bottom tray portion, said top cover portion movable between a closed position adjacent said bottom tray portion and an open portion, approximately 90 degrees away from said bottom tray portion;

a removable front cover, slidingly held in said top cover portion; said removable front cover having two ends, two sides, a front surface, and a rear surface;

a flap secured to one of said two ends adjacent said rear surface; said flap having two angled slots formed therein with one of said two angled slots being adjacent each of said two sides;

a display comprised of two substantially equal size panels, each of said substantially equal size panels having four side edges and front and rear surfaces; said two substantially equal size panels being hingedly connected together along one of said four side edges thereof;

a plurality of pop-up elements secured between the front surfaces of each of said two substantially equal size panels; said plurality of pop-up elements being folded together when said front surfaces are moved together and forming a three-dimensional configuration when said front surfaces are moved apart;

each of said two substantially equal size panels having a pair of corners formed by the meeting of two of said four side edges, away from side edges forming the hinged connection therebetween; a first of said two substantially equal size panels having its pair of corners releasably captured in said two angled slots in said flap;

a resilient holding strip having two ends secured to said bottom tray portion by one of said two ends so that said resilient holding strip is bent into said pre-recorded disc holder over said bottom tray portion; said resilient holding strip having two faces and a first releasable holding means secured to one of said two faces, adjacent the second of said two ends, away from said bottom tray portion; and

said rear surface of a second of said two substantially equal size panels having a second releasable holding means secured thereto and removably mated to said first releasable holding means, whereby said display may be removed from said pre-recorded disc holder, and whereby said front surfaces of said two substantially equal panels, when secured in said pre-recorded disc holder, will be moved apart when said top cover portion is moved from said closed position to said open position, and said front surfaces of said two substantially equal panels will be moved together when said top cover portion is moved from said open position to said closed position.

5,613,613

SIDE SEALING ARRANGEMENT FOR SIEVE DEVICES

Leander Ahorner, Waidhofen a.d. Ybbs, Austria, assignor to IFE Industrie-Einrichtungen Fertigungs-Aktiengesellschaft, Waidhofen a.d. Ybbs, Austria

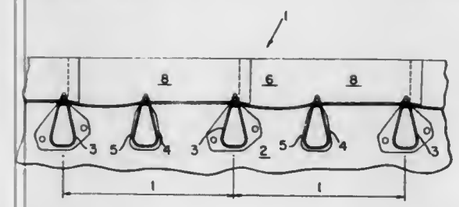
PCT No. PCT/AT94/00147, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO95/10367, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 7, 1994, Ser. No. 448,609

Claims priority, application Germany, Oct. 8, 1993, 93 5227 U

Int. Cl.[6] B07B *1/46*

U.S. Cl. 209—310 **4 Claims**



1. A lateral seal for a sieve device for sieving material in a sieving direction, the sieving device comprising a grate and side walls, the grate comprising a plurality of stationary grate bars and movable grate bars mounted so as to be movable relative to the side walls, gaps being defined between the grate bars, flexible sieve elements being fastened to the grate bars and extending across the gaps between the grate bars, such that the flexible sieve elements are tensioned and relaxed by the movable grate bars, the lateral seal being comprised of flexible material and being fixedly connected to the sieve elements and the side walls, the lateral seal comprising sealing leaves which overlap one another in an imbricated manner, wherein each sealing leaf extends in the sieving direction between two adjacent stationary grate bars.

5,613,614

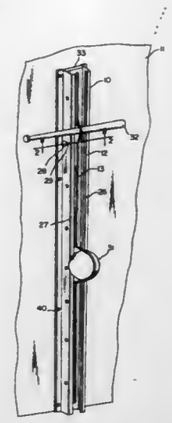
STORAGE RACK

David J. Richardson, 2511 140th Pl. SE., Mill Creek, Wash. 98012

Continuation-in-part of Ser. No. 229,758, Apr. 19, 1994, abandoned. This application Jun. 13, 1995, Ser. No. 489,755

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—89 **11 Claims**



1. A storage rack comprising a beam and at least one bungee cord, said beam having a length and a cross sectional shape having a web, said web having a plurality of holes along said length with equal distances between said holes, said bungee cord being installed in said holes and anchored to said web such that there is a plurality of first equal lengths of said cord with each of said plurality of first lengths extending from one of said holes to another and such that lifting each of said lengths from said web affects a portion of said cord, said portion having a second length, said second length being essentially three times said first length, each of said equal distances being a first span of action of said bungee cord, said rack further comprising means for providing at least one second span of action shorter than said first span of action.

5,613,615

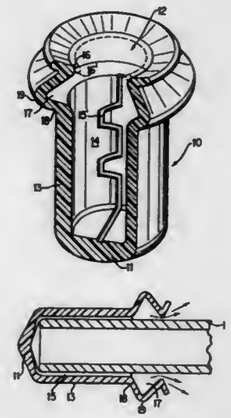
VENTING CAP FOR MASKING

Frederick W. Zeyfang, and Michael W. Jodon, both of Erie, Pa., assignors to Bunzl Plastics, Incorporated, St. Louis, Mo.

Filed Jul. 26, 1995, Ser. No. 507,522

Int. Cl.[6] B65D *51/16;59/06*

U.S. Cl. 220—203.11 **16 Claims**



1. A venting cap for securing to a specific part of a component, comprising:

a closed first end;

an open second end;

a sidewall having an interior face extending between said closed first end and said open second end, wherein said closed first end and said sidewall form an interior cavity that receives the specific part;

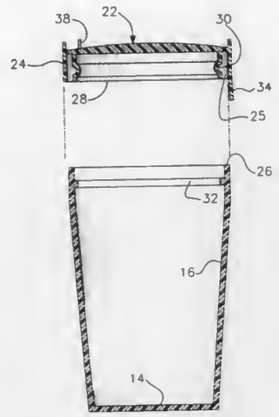
at least one vent track on the interior face of said sidewall and extending along at least a portion of said sidewall;

a sealing and venting assembly adjacent said open second end; and

a pressure reservoir that receives excess air pressure from the specific part and said interior cavity positioned adjacent said sealing and venting assembly;, wherein said at least one vent track terminates at said pressure reservoir and said sealing and venting assembly releasably engages said specific part such

that upon a build-up of air pressure within said venting cap said sealing and venting assembly is momentarily released from engagement with said specific part to release excess air pressure within said interior cavity and said specific part.

5,613,616
CLOSURE MEMBER FOR BEVERAGE OR FOOD CONTAINERS
Donald T. Monus, 604 7th St., SE., Largo, Fla. 34641-2175
Filed May 25, 1995, Ser. No. 450,049
Int. Cl.[6] B65D *39/00*
U.S. Cl. 220—791 **1 Claim**



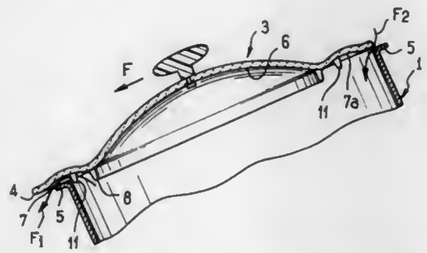
1. A lid and container combination, comprising:
a container having a bottom wall and a side wall mounted about a periphery of said bottom wall, said side wall projecting upwardly from said bottom wall, and a cavity defined collectively by said bottom wall and side wall;
a lid having a peripheral depending skirt for releasably engaging an outer surface of a rim of said container;
said peripheral depending skirt having an internal diameter substantially equal to an external diameter of said rim of said container;
an annular insert depending from said lid, said annular insert being spaced radially inwardly from said depending skirt by a distance substantially equal to a thickness of said rim of said container;
said insert having an external diameter substantially equal to an internal diameter of said rim of said container;
a groove of predetermined depth formed in an outer peripheral edge of said insert;
a protrusion formed in said side wall of said container, said protrusion extending radially inwardly toward a center of said container a predetermined distance substantially equal to the predetermined depth of said groove;
said lid and said container being made of a flexible, resilient material;
said depending skirt adapted to flex momentarily upon attachment of said lid to said container;
said depending skirt adapted to resume a position of repose upon full seating of said protrusion into said groove; and
a first seal defined by said seating of said protrusion into said groove;
said protrusion being positioned a predetermined distance downwardly from said rim of said container; and
a second seal being provided where said rim of said container abuts a bottom surface of said lid; and
a lid-removing means attached to said lid to facilitate removal of said lid from said container, said lid-removing means being mounted to a peripheral edge of said lid in depending relation thereto; and
said lid-removing means includes a finger-receiving opening.

5,613,617
SEALED CONTAINER THAT IS EASILY OPENED AND MASS-PRODUCED
Luis J. Da Vitoria Lobo, Box 2086, Manuels, NF., Canada
Filed Sep. 27, 1994, Ser. No. 313,329
Int. Cl.[6] B65D *41/00*
U.S. Cl. 220—359 **5 Claims**



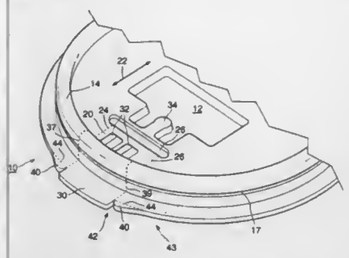
1. A sealed container comprising a container body part with a surrounding outward extending lip and a circular covering part that is bonded to at least a portion of said lip, further including a tab, or a means to create a tab, from within a portion of said circular covering part.

5,613,618
COOKING VESSEL WITH LID HAVING A POURER FUNCTION
Philippe Raoult, Pringy, France, assignor to SEB S.A., Ecully, France
Filed Apr. 10, 1996, Ser. No. 632,389
Claims priority, application France, Apr. 11, 1995, 95 04322
Int. Cl.[6] A47J *27/00;36/08;* **B65D** *51/02;51/16*
U.S. Cl. 220—369 **10 Claims**



1. Cooking vessel having a handle or handles for holding it and a lid having a peripheral lip resting in a substantially sealed manner on an upper rim of said vessel, wherein an inside surface of said lid includes at least one cavity formed between said peripheral lip and an abutment projecting towards the interior of said vessel, said lid being adapted to move under gravity on said upper rim of said vessel, upon tilting of said vessel, towards a position in which said cavity is at least in part outside said upper rim of said vessel, a passage being formed between said upper rim of said vessel and said cavity, and said abutment is adapted to bear against said upper rim of said vessel to limit outward displacement of said lid.

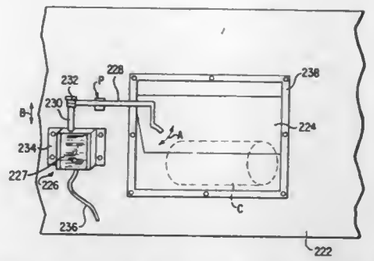
5,613,619
FOLDBACK CUP LID HAVING COMFORTABLE DRINKING CHARACTERISTICS
Hugh Van Melle, Etobicoke, Canada, assignor to Amhil Enterprises Ltd., Mississauga, Canada
Filed Oct. 27, 1995, Ser. No. 549,519
Int. Cl.[6] A47G *19/22*
U.S. Cl. 220—712 **11 Claims**



1. A disposable cup lid for covering the open end of a beverage cup, where said cup lid is vacuum formed from an extruded thermoplastic sheet material having an orientation grain caused by extrusion, comprising:
a cover portion and a lip portion;
said lip portion defining a downwardly facing cavity around said cover portion and adapted to receive a corresponding rim of a beverage cup;
said cover portion being generally planar and having a foldback portion therein located near the periphery of said cover portion and extending into said lip portion, said foldback portion spanning a minor segment of said cover portion and said lip portion;
a "U"-shaped hinge portion formed in said cover portion and subtending said foldback portion;
a grasp tab formed adjacent said lip portion and extending outwardly from the periphery thereof in a plane which is generally parallel to the plane of said cover portion;
said foldback portion having a first side, a second side, a first end, and a second end; said first end being coincident with said grasp tab, said second end being coincident with said "U"-shaped hinge, and said first and second sides being coincident with said orientation grain;
wherein said rim further comprises two additional tab portions which are coplanar with said grasp tab, said additional tab portions being located one on either side of said grasp tab and separated therefrom by notches formed in said rim;
wherein each notch terminates in a vertex which is generally in the region of the intersection of the plane of said grasp tab and said additional tab portions together with said lip portion; and
wherein at least the portion of each of said additional tabs which faces each respective notch is curved away from said vertex.

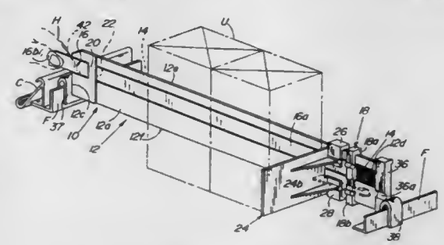
5,613,620
CO-DISPENSING SNACK FOOD PRODUCTS AND BEVERAGES FROM A VENDING MACHINE
John L. Center, and James W. Stalder, both of Dallas, Tex., assignors to Recot, Inc., Pleasanton, Calif.
Continuation-in-part of Ser. No. 289,537, Aug. 12, 1994, Pat. No. 5,445,287. This application Apr. 10, 1995, Ser. No. 419,605
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—133 **17 Claims**

1. A process for dispensing beverages and snack food products from a single vending machine, the process comprising steps of:
providing a vending machine having a storage portion for storing containers which have a size and shape so as to be receivable in the storage portion of said vending machine, a single outlet in communication with each of said containers and a movable dispensing door blocking the outlet, the containers moving from the storage portion and through the dispensing door which opens selectively to the outlet when selected by a user;



placing a plurality of containers filled with a beverage in the storage portion of said vending machine, each of the plurality of filled beverage containers having substantially the same size and shape;
placing a plurality of containers filled with a snack food product in the storage portion of said vending machine, each of the plurality of filled snack food containers having a size and shape that are substantially the same as the size and shape of the filled beverage containers; and
providing the vending machine with a mechanism for opening the movable dispensing door automatically at least when a snack food container is selected by the user;
whereby said vending machine is capable of dispensing both a filled beverage container and a filled snack food container from said single outlet.

5,613,621
INVENTORY CONTROL SHELF AID DISPENSING DEVICE
Paul Gervasi, 68, rue Denault, Kirkland (Québec), Canada
Filed Apr. 24, 1995, Ser. No. 427,189
Int. Cl.[6] B65H *1/08*
U.S. Cl. 221—279 **6 Claims**



1. A shelf aid dispensing device for periodic inventory control of commodity units in a displayed row, comprising:
(a) an elongated main panel member, defining front and rear ends and a groove extending therebetween, said main panel member adapted to be fixedly supported over a flat underlying bed for supporting the commodity units in upright position;
(b) an elongated draw bar, sized to fit into said main panel groove of the stationary main panel and slidingly engaged therein for sliding displacement axially thereof, and defining a front end, for grasping engagement by an operator's hand, and an integral rear enlarged member;
(c) a slider member, slidingly carried to said main panel member and defining a flat abutment face for abutment by a rearward-most commodity unit in said row of commodity units, said slider member flat abutment face extending transversely of said main panel groove, said slider member and said draw bar releasably interconnecting and moving together whenever said slider member and said draw bar rear enlarged member come in abutting contact;

(d) indicia means, carried lengthwisely of said draw bar for enabling an operator to correlate the number of commodity units remaining in a partially depleted row, with an indicia value appearing at a selected location on the draw bar; and

(e) a trailing arm, transversely carried by said slider member and projecting rearwardly therefrom, said trailing arm defining a transversely inturned free end tip, said trailing arm tip frictionally engaging said main frame panel for improving dynamic smoothness of the slider member upon the slider member being pushed manually by the user toward the main panel rear end;

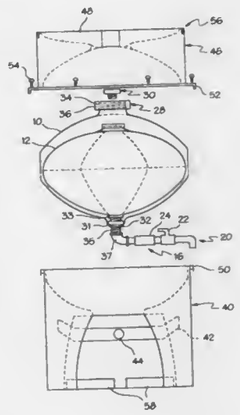
wherein said trailing arm tip is a pyramidal shape, and said draw bar enlarged rear end includes an intermediate notched area in axial register with the trailing arm tip, said notched area forming a pair of opposite transverse ramps sized for complementary fit with said pyramidal trailing arm tip, said ramps being slidingly frictionally engageable by said trailling arm tip upon the latter striking and moving over said intermediate notched area of the draw bar enlarged rear end, wherein said trailing arm becomes accordingly tilted temporarily spacedly away from said main frame panel.

5,613,622

TANK HAVING AN INNER BLADDER

Braden J. Surrena, Marietta, Ga., and Kenneth D. Peters, Houston, Tex., assignors to ISK Biosciences Corporation, Mentor, Ohio

Filed Jun. 13, 1995, Ser. No. 490,079
Int. Cl.[6] B65D *35/22*
U.S. Cl. 222—105 **10 Claims**



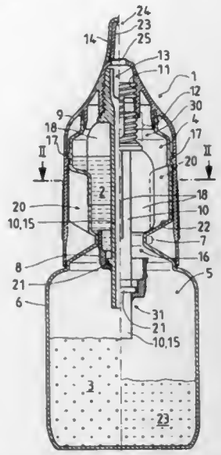
1. A container for containing flowable material comprising:
a rigid tank;
a top tank opening in the uppermost portion of said tank;
a cap for sealing said top tank opening;
a bottom tank opening in a lowermost portion of said tank;
an effluent piping assembly having a first end and an inlet for receiving flowable material, said inlet passing through said bottom tank opening;
a collapsible bladder inside said tank which prevents said flowable material from coming in contact with said tank;
a top bladder opening in the uppermost portion of said bladder;
a cap to seal said top bladder opening;
a bottom bladder opening in a lowermost portion of said bladder in fluid communication with said inlet, said bottom bladder opening being sealed to said bottom tank opening; and
top and bottom base assemblies which are shaped internally to receive said tank.

5,613,623

TWO-CHAMBER CONTAINER

Bodo Hildebrandt, Riedstadt, Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Germany

Filed Jul. 19, 1995, Ser. No. 504,012
Claims priority, application Germany, Sep. 9, 1994, 44 28 096.3
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129 **7 Claims**



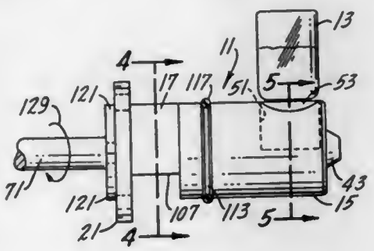
1. A two-chamber container for accommodating flowable substances separately from one another, comprising means for forming an upper chamber and a lower chamber, said means including a reduced diameter bottle which separates said chambers from one another and is provided with a plug in a plane of a reduced diameter; a rotary cap provided with a plunger and turnable so that said plunger is pressed from the plane of the reduced diameter into said lower chamber so as to bring both substances together, said rotary cap having a thread in said upper chamber, while said plunger having a threaded portion engaged in said thread of said rotary cap, said plunger being formed as a tubular plunger which has a first end and a second end formed so that in a base position said first end of said plunger is connected with said threaded portion of said plunger in fluid-tight manner and said second end of said plunger extends through said plug into said lower chamber, said plunger being connected with said plug in fluid-tight manner.

5,613,624

POWDER DISPENSER

Albert Grzybowski, Mundelein; Andrew Grzybowski, Spring Grove, and Richard Rieck, Mundelein, all of Ill., assignors to Bohdan Automation, Inc., Mundelein, Ill.

Filed Jun. 8, 1995, Ser. No. 488,653
Int. Cl.[6] B67D *5/64*
U.S. Cl. 222—161 **3 Claims**



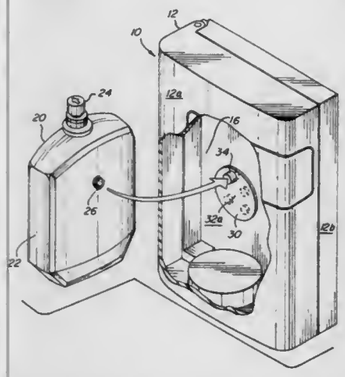
1. A dispenser for dispensing measured amounts of powder for use in automated sample handling, said dispenser including:
a cylindrical housing having an axial opening at one longitudinal end leading into a central cavity,
a relatively narrow passage extending from said central cavity and exiting axially through a smaller axial opening in the other longitudinal end of said cylindrical housing,
a cylindrical passage extending through said cylindrical housing and communicating with said relatively narrow passage,
a tubular collar installed in said cylindrical passage,
a mount supporting said cylindrical housing for rotation relative thereto,
a driven shaft extending through said mount and said central cavity,
a worm drive formed as part of said shaft and journalled in said relatively narrow passage to discharge powder from said powder container through said smaller axial opening, and
means to oscillate said cylindrical housing relative to said mount.

5,613,625

ANTICOUNTERFEIT DEVICE FOR DISPENSER

Paul B. Specht, Wilmette, Ill., assignor to Waterbury Companies, Inc., Waterbury, Conn.

Filed Mar. 31, 1995, Ser. No. 413,129
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—180 **19 Claims**



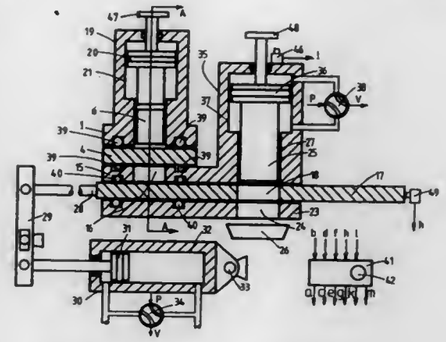
11. A dispenser having anti-counterfeit means associated therewith, comprising:
a. a housing which comprises a first portion and a second portion, the first portion and the second portion cooperating to form a cavity therebetween, the cavity sized to permit insertion thereinto of a source of a material to be dispensed, the first portion and the second portion being removably secured to each other at at least one point in order to provide access to the cavity for insertion of a source of material to be dispensed;
b. a lockout element mounted to the first portion of the housing, the lockout element having at least one projection extending therefrom such that the at least one projection extends into the cavity of the housing, wherein the lockout element is mounted on the first portion of the housing in any of a plurality of orientations such that the at least one projection extends into the cavity in any of a plurality of locations depending on the orientation in which the lockout element is mounted on the first portion of the housing; and
c. a source of a material to be dispensed which comprises a cartridge having a reservoir for a material to be dispensed, wherein the cartridge is sized to fit within the cavity of the housing,
wherein the source of material to be dispensed comprises at least one lockout well sized such that the at least one projection of the lockout element can fit therein, the at least one lockout well oriented on the source of material to be dispensed such that each of the at least one projection extends into one of the at least one lockout well when the source of material to be dispensed is disposed within the cavity of the housing.

5,613,626

SOLIDS TRANSFER MECHANISM

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Filed May 15, 1995, Ser. No. 441,390
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—217 **8 Claims**



1. A solids transfer mechanism comprising:
a fixed source plate with a source port for solid chunks;
a moveable transfer plate with a transfer cavity;
a transfer driver piston operative sealably within a cylinder, said cylinder being sealably secured to said fixed source plate, said transfer driver piston area being slightly smaller than the area of said transfer cavity;
a transfer piston drive means for driving and retracting said transfer driver piston;
a fixed traverse plate with a transfer port, and said transfer port being aligned with said transfer driver piston, and having an area slightly larger than, the area of said transfer driver piston;
a moveable dump plate with a dump cavity, whose volume is greater than the volume of said transfer cavity, and whose area is preferably at least equal to the area of said transfer port;
a dump driver piston, operative within a cylinder and said cylinder being secured to said fixed traverse plate;
a fixed discharge plate with a dump port, and said dump port being aligned with said dump driver piston, and having an area slightly larger than, the area of said dump driver piston;
a dump receiver for receiving solid chunks dumped out of said dump cavity via said dump port;
said moveable transfer plate being positioned sealably between said fixed solids source plate and one side of said fixed traverse plate, said moveable dump plate being positioned between the other side of said fixed traverse plate and said fixed discharge plate;
a transfer drive means for moving said transfer plate back and forth between a position aligning said transfer cavity to said source port and another position aligning said transfer cavity to said transfer port;
a dump drive means for moving said dump plate back and forth between a position aligning said dump cavity to said transfer port and another position aligning said dump cavity to said dump port;
a dump piston drive means for driving and retracting said dump driver piston;
control means for controlling said several drive means and comprising an initiator means for initiating said control means and operative upon said transfer piston drive means for driving, said transfer drive means for moving, said dump drive

means for moving, and said dump piston drive means for driving, so that a single transfer and dump process is carried out each time said control means is initiated by said initiator means;

said transfer and dump process comprising the sequence of steps of:

first, moving said transfer cavity from alignment to said source port for solid chunks into alignment with said transfer port, and moving said dump cavity from alignment to said dump port into alignment with said transfer port;

second, driving said transfer driver piston to move through said transfer cavity and said transfer port, thereby transferring solid chunks out of said transfer cavity and into said dump cavity;

third, retracting said transfer driver piston fully out of said transfer port and said transfer cavity;

fourth, returning said transfer cavity back into alignment with said source port for solid chunks and returning said dump cavity back into alignment with said dump port;

fifth, driving said dump driver piston to move through said dump cavity, thereby transferring solid chunks out of said dump cavity and into said dump receiver via said dump port;

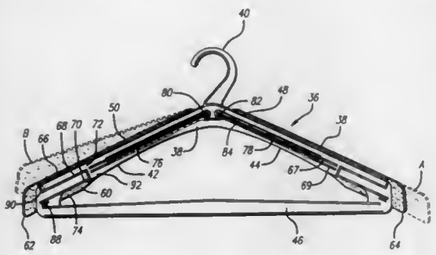
sixth, retracting said dump driver piston fully out of said dump cavity;

sealing means for sealing said source plate and said source port for solid chunks, said transfer plate and said transfer cavity, said traverse plate and transfer port, and said dump plate and dump cavity so that:

said source port for solid chunks, said transfer cavity, said transfer port, are sealed from the outside whenever said dump cavity is aligned to said transfer port, and also whenever said dump cavity is aligned to said dump port;

that portion of said sealing means between said fixed source plate and said moveable transfer plate, and also between said moveable transfer plate and said fixed traverse plate, being positioned outside the area traversed by said transfer cavity during said transfer and dump process.

5,613,627
ADJUSTABLE GARMENT HANGER
Joel S. Marks, Los Angeles, Calif., assignor to WorkTools, Inc., Chatsworth, Calif.
Filed Mar. 16, 1995, Ser. No. 405,081
Int. Cl.[6] A47G *25/14;25/20*
U.S. Cl. 223—85 **25 Claims**



19. An adjustable garment hanger comprising:

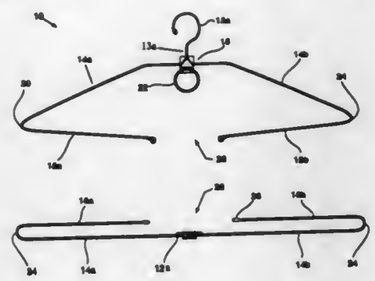
a hook;

a one-piece frame dependent from the hook including downward sloping arms;

elongated locking bars attached to the frame and extending along each downward sloping arm, each locking bar including a plurality of detent elements along its length; and

a cover, slidably disposed on each sloping arm and over each locking bar, and selectively engaging the locking bar at said plurality of detent elements, wherein the locking bar is biased toward the cover.

5,613,628
GARMENT HANGER DEVICE
John C. Burkhalter, 823 Summerbrooke Dr., Tallahassee, Fla. 32312
Filed Dec. 19, 1995, Ser. No. 574,939
Int. Cl.[6] A47G *25/14;25/18;25/74*
U.S. Cl. 223—85 **20 Claims**



1. A garment hanger comprising:

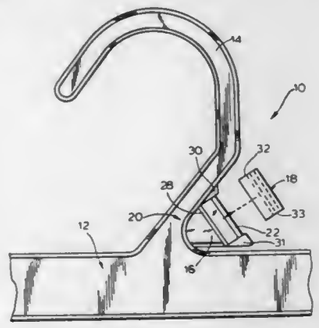
an attaching means;

a pair of shoulder supports each including a top end and a side end, and each top end is secured to said attaching means; and

a sleeve extender connected to each side end of said shoulder supports and said sleeve extenders each including a first end and a second end, said first ends curve backwardly from said side ends for providing said sleeve extenders to be disposed from said shoulder support on a separate plane and for a first gap to be located between said shoulder supports and said sleeve extenders; and

said sleeve extenders extend downwardly from said first end to said second end and towards each other providing a second gap to be located between said second ends of said sleeve extenders.

5,613,629
HANGER WITH INFORMATION TAB
Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.
Division of Ser. No. 377,189, Jan. 24, 1995, Pat. No. 5,485,943, which is a division of Ser. No. 42,811, Apr. 5, 1993, Pat. No. 5,383,583, which is a division of Ser. No. 801,613, Nov. 22, 1991, Pat. No. 5,199,608, which is a continuation of Ser. No. 591,621, Oct. 2, 1990, abandoned. This application Jan. 22, 1996, Ser. No. 589,594
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 **9 Claims**



1. A garment hanger including a removal-resistant tab, comprising:

a hanger including a body and a hook member connected to said body;

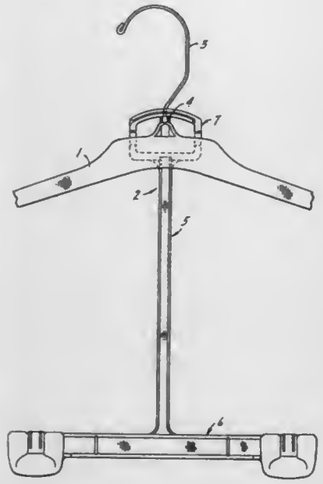
a tab holder, formed integrally with said hanger, said tab holder having two opposite sides, a free edge, a longitudinal ridge extending from said two opposing sides and spaced from said free edge, an upper transverse ridge located above said longitudinal ridge and a lower transverse ridge located below said longitudinal ridge; and

a tab which may be locked onto said tab holder, said tab including a face member and two opposing sides, each of said two opposing tab sides extending from said face member and terminating in a foremost edge opposite said face member, said face member and said two opposing sides of said tab forming an upper edge surface and a lower edge surface;

said longitudinal ridge of said tab holder being located relative to said foremost edges of said opposing tab sides such that, when said tab is locked onto said tab holder, said longitudinal ridge extends substantially the full length of and obstructs access to said foremost edges of said tab;

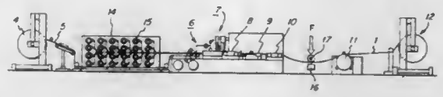
said upper and lower transverse ridges of said tab holder being located relative to said respective upper and lower edge surfaces of said tab such that, when said tab is locked on to said tab holder, said upper and lower transverse ridges extend substantially the full length of and obstruct access to said respective upper and lower edge surfaces of said tab.

5,613,630
DROP LOOP GARMENT HANGER
Gordon D. Isenga, Holland, and Russell O. Blanchard, Zeeland, both of Mich., assignors to Batts, Inc., Zeeland, Mich.
Filed Jan. 10, 1995, Ser. No. 370,599
Int. Cl.[6] A47G *25/18;25/48*
U.S. Cl. 223—88 **6 Claims**



4. A one piece drop loop garment hanger requiring no assembly made from injection molded plastic and used for hanging a piece of lower body clothing from a standard garment hanger, the drop loop garment hanger including a closed, non-separable loop segment and an elongated body member for supporting the piece of lower body clothing, said loop segment being formed to be placed over a hook of a standard garment hanger from which said drop loop hanger may hang subsequently downward, the improvement comprising: the injection molded loop segment having no weld lines which are substantially perpendicular to the tensile forces imposed upon said loop segment during said loop segment's intended use.

5,613,631
METHOD FOR PRODUCING A LENGTHWISE WELDED METAL TUBE
Gerhard Ziemek; Harry Staschewski, both of Langenhagen, and Klaus Porcher, Lehrte, all of Germany, assignors to Alcatel Kabel AG & Co, Germany
Filed Aug. 30, 1995, Ser. No. 521,514
Claims priority, application Germany, Sep. 24, 1994, 44 34 134.2
Int. Cl.[6] B23K *31/02;* **H04B** *9/00*
U.S. Cl. 228—148 **16 Claims**



1. A method for producing a lengthwise welded metal tube with an outside diameter of 1 to 6 mm, comprising the steps of:

(a) drawing a metal band from a storage reel, the metal band having band edges;

(b) using a forming tool to continuously shape the metal band into a lengthwise slotted tube with the band edges adjacent each other;

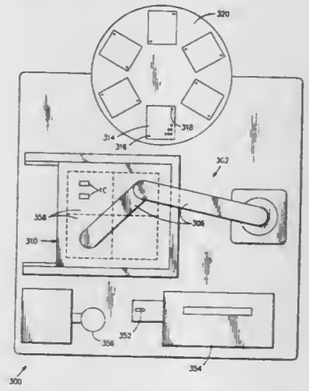
(c) guiding the lengthwise slotted tube through an inlet guide that contacts a surface of the lengthwise slotted tube whereby the band edges are kept in contact with each other;

(d) welding the band edges in a welding point area using a laser beam of laser welding device to form a welded tube having a welded seam;

(e) guiding the welded tube through an outlet guide that contacts a surface of the welded tube thereby keeping the welded seam stress-free; and

(f) gripping the welded tube downstream of the weld point area with a clamping tool so the welded tube is guided and kept from twisting.

5,613,632
MANUFACTURING SOLDER-PREFORM HOLDERS FOR A PICK-AND-PLACE MACHINE
Harold Kohn, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 182,902, Jan. 14, 1994, Pat. No. 5,482,198, which is a division of Ser. No. 985,397, Dec. 4, 1992, Pat. No. 5,303,824. This application May 24, 1995, Ser. No. 449,320
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—246 **28 Claims**



1. Method of assembling circuit boards, comprising the steps:

providing multiple holders for planar bodies with inwardly tapered cavities;

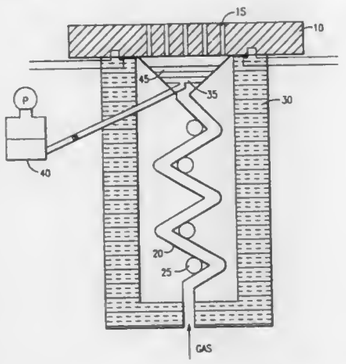
inserting bodies in about horizontal positions in the cavities so that edges of the bodies are supported by tapered sides of the cavities;
introducing a no-clean flux liquid into the cavities;
drying the bodies to provide a delicate coating of no-clean flux on at least one major surface of the respective bodies;
stacking the holders;
transporting the stack of holders;
providing a circuit-board substrate;
vacuum picking the bodies up from one of the holders and placing the bodies on component sites on circuit board substrates;
heating the circuit boards, and bodies sufficient for reflow soldered connection of the bodies to the circuit boards; and
cooling the circuit boards.

5,613,633

SOLDER APPARATUS AND METHOD

William French, Bearsden; Stuart Lees; Colin D. McCall, both of Gourock; Kenneth S. Murray, Inverkip, and Brian Robertson, Gourock, all of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1995, Ser. No. 433,638
Claims priority, application United Kingdom, May 6, 1994, 9409000
Int. Cl.[6] B23K *1/018*
U.S. Cl. 228—264 **11 Claims**



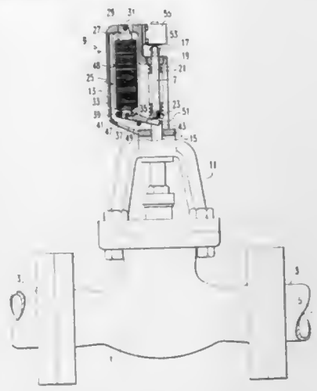
1. An apparatus for heating solder located within a pattern of holes in a circuit board having a pinned electronic component positioned therein such that the pins of said electronic component are positioned within respective ones of said holes in said circuit board, said apparatus comprising:
a housing;
a tool plate located on said housing and including a pattern of vias therein each adapted for aligning with a respective one of said holes in said circuit board having said pins of said electronic component positioned therein;
a pipe member positioned within said housing for directing hot gas to said tool plate and for heating said gas within said housing as said gas passes through said pipe member, said heated gas reflowing the solder within said holes in said circuit board; and
means for selectively introducing vaporizing flux into said hot gas directed to said tool plate.

5,613,634

PASSIVELY AMBIENT TEMPERATURE ACTUATED FLUID VALVE

Luciano Veronesi, Blawnox/O'Hara Township, and Ian L. W. Wilson, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1994, Ser. No. 328,188
Int. Cl.[6] G05D *23/02*
U.S. Cl. 236—101 R **15 Claims**



14. A passively temperature actuated valve having a valve stem for operating said valve between a first position and a second position, valve biasing means biasing said valve to said first position, and passive actuation means comprising an elongated shape memory alloy (SMA) member having a first length when below a transformation temperature and a second length when above said transformation temperature, mounting means mounting said elongated SMA member to said valve, and a lever pivoted about a pivot axis generally transverse to said valve stem and elongated SMA member and engaging said valve stem to operate said valve from the first position to said second position as said elongated SMA member changes length from said first length to said second length, and SMA member biasing means biasing said elongated SMA member to said first length.

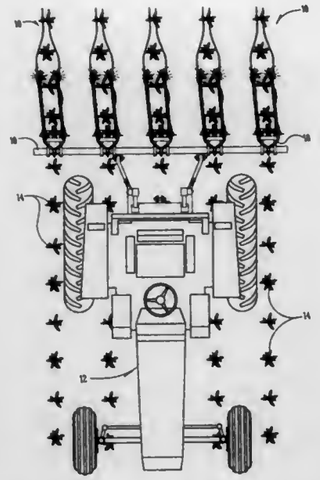
5,613,635

SELF-ALIGNING ROW CROP SPRAYING DEVICE

Jerrell W. Harden, Rte. #1, Box 226, and Russell J. Harden, Rte. #1, Box 227B, both of Banks, Ala. 36005

Filed Jan. 6, 1995, Ser. No. 369,359
Int. Cl.[6] A01C *23/00;* **B05B** *1/20*
U.S. Cl. 239—166 **11 Claims**

1. A self-aligning row crop spraying device comprising:
a transverse member attachable to a mobile carrier;
first and second guide support members disposed generally parallel to each other in a spaced relation, each of said guide support members having a forward and a rear end, each of said forward ends of said guide support members having a pivotal coupling with said transverse member;
a cross bar having a pivotal coupling unit each of said guide support members defining a parallelogram-shaped device consisting of said cross bar, said first and second guide support members, and said transverse member, wherein said pivotal couplings each have an axis which is perpendicular to a plane defined by the parallelogram-shaped device, and wherein said plane is generally parallel to a ground surface;
first and second guide members coupled to said rear ends of said first and second guide support members, respectively, said first and second guide members forming a channel; and
a spray nozzle coupled to said parallelogram-shaped device, wherein said guide members make contact with a row crop



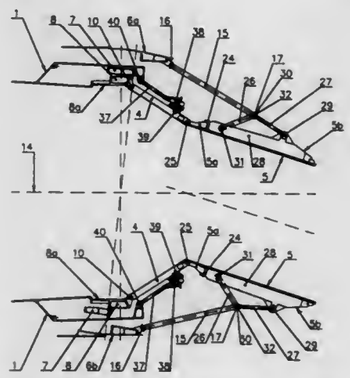
biasing said spray nozzle and said parallelogram-shaped device toward said row crop.

5,613,636

AXISYMMETRIC NOZZLES OF VARIABLE GEOMETRY AND ORIENTATION OF THE FLOW WHICH ARE INTENDED FOR GAS TURBINE ENGINES

Mikel G. Zubillaga, Hernani, and Jose R. Urruela, Las Arenas, both of Spain, assignors to Sener, Ingenieria Y Sistemas, S.A., Spain

Filed Oct. 6, 1994, Ser. No. 319,288
Claims priority, application Spain, May 20, 1994, 9401114
Int. Cl.[6] B64C *15/00*
U.S. Cl. 239—265.35 **35 Claims**



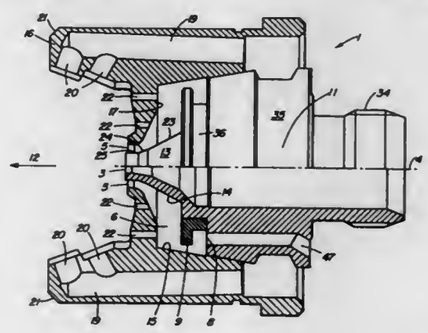
1. A thrust vectoring variable geometry axisymmetric exhaust nozzle for a gas turbine engine having a direction of gas flow, which comprises:
a convergent zone defining a throat of variable are followed, in the direction of gas flow, by a divergent zone,
the convergent zone including convergent main petals and convergent secondary petals supported on adjacent convergent main petals,
the divergent zone including divergent main petals and divergent secondary petals supported on adjacent divergent main petals and connected to the adjacent divergent main petals by a centering mechanism,
the petals of said convergent and divergent zones being distributed circumferentially about a longitudinal axis of the engine;
the convergent and divergent main petals are joined together by tangential cylindrical linkages having axes perpendicular to the longitudinal axis of the engine;
each divergent main petal is transversely subdivided into two segments, the upstream and the downstream segment, joined together by cylindrical linkages having an axis perpendicular to the tangential linkage between the convergent main petal and the divergent main petal;
control means for regulating the throat area and vectoring of the thrust comprising internal, intermediate and external rings concentric to each other and with the centerline of the engine, and a plurality of linear actuators having upstream and downstream ends, and a mechanism for regulating the throat area;
the main convergent petals being linked to the internal ring by cylindrical articulations;
a set of two-hinged bars, one for each divergent main petal, interconnecting the downstream segment of the divergent main petals with the external ring,
a plurality of control actuators articulated at their upstream end to a fixed structure of the engine, some of the control actuators articulated at their downstream end to external ring spherical linkages and the other control actuators articulated at their downstream end to intermediate ring spherical linkages, thrust vectoring being achieved in the divergent zone by inclination of the external ring with a center of tilting on the longitudinal axis of the engine through the set of two-hinged bars;
each of the rings being independently connected to the fixed structure of the engine by support means, which do not interconnect them, maintaining each ring laterally fixed;
the external ring including two external ring segments which are mutually articulated by a pair of spindles for varying symmetrically, by a simultaneous and opposite direction tilting of the two external ring segments, the outlet area with respect to an immobilized throat area, and during vectorization of the gas flow, by an independent tilting of one of the two external ring segments, correcting the outlet area asymmetrically while the other external ring segment remains immobilized.

5,613,637

NOZZLE ARRANGEMENT FOR A PAINT SPRAY GUN

Ewald Schmon, Grafenberg, Germany, assignor to SATA-Farbspritztechnik GmbH & Co., Kornwestheim, Germany

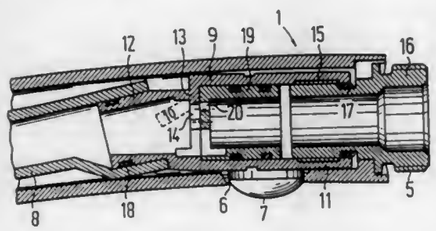
Filed Dec. 16, 1994, Ser. No. 357,014
Claims priority, application Germany, Oct. 5, 1994, 9416015 U
Int. Cl.[6] B05B *7/04;1/06*
U.S. Cl. 239—296 **17 Claims**



1. A nozzle structure for a paint spray gun, comprising a central outlet for paint, an annular slot surrounding the central outlet, the annular slot being connected inside the nozzle structure via an annular duct to a number of virtually axially parallel bores, the

bores being situated on at least one circle about a central axis of the nozzle structure, means for providing compressed air via the bores for delivery to the annual duct, and an air reversing disk located inside the annular duct and opposite the bores.

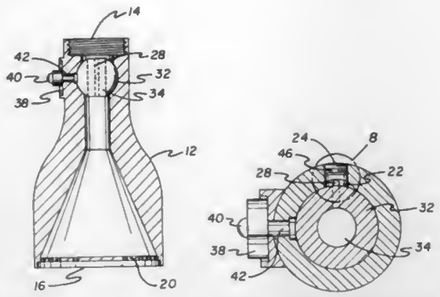
5,613,638
HAND SHOWER
Gerd Blessing, Villingen-Schwenningen, Germany, assignor to Hans Grohe GmbH & Co., Germany
Continuation of Ser. No. 210,561, Mar. 18, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,237
Claims priority, application Germany, Mar. 20, 1993, 43 08 991.7
Int. Cl.[6] B05B *1/18;* **E03C** *1/10;* **A45D** *19/02*
U.S. Cl. 239—396 **13 Claims**



1. A hand shower comprising:
a handle, a shower head located on one end of the handle, means defining a passage for water passing through the handle to the shower head, a replaceable insert part formed with a hollow operable to hold different functional elements, said insert part having a means for fixing the insert part within the handle adjacent to an other end of the handle at which the hand shower is attachable to a hose via a connection providing means for connecting the hand shower to the hose, a functional element completely retained within said hollow and wherein the insert part forms a passage for the water, is connected on one side with the passage leading to the shower head and on an other side to the connection, the connection, insert part containing the functional element and passage being arranged along a line, and wherein the insert part is disposed substantially completely inside the handle along said line.

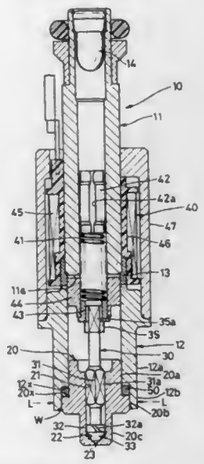
5,613,639
ON/OFF CONTROL VALVE FOR A SHOWER HEAD
Karl Storm, and Susan Storm, both of 107 Roundhill Rd., Kennett Square, Pa. 19348
Filed Aug. 14, 1995, Ser. No. 514,690
Int. Cl.[6] B05B *1/30*
U.S. Cl. 239—581.1 **5 Claims**

1. An on/off control valve for a shower head for temporarily discontinuing flow of mixed water from a shower head comprising, in combination:
a hollow cylindrical shower head having an open first end and an open second end, the open first end being internally threaded whereby the open first end being adapted for removable coupling with an existing shower line, the open second end having a water dispersement plate secured therein, the shower head having a circular chamber formed therein inwardly of the open first end, the shower head having an internally threaded opening through an upper portion thereof extending downwardly into the circular chamber;
a by-pass recess formed within the circular chamber of the shower head, the by-pass recess extending from a position relative to the open first end of the shower head to a position relative to the open second end of the shower head;



a ball valve rotatably secured within the circular chamber of the shower head, the ball valve having a drainage aperture formed through a central portion thereof, the ball valve being rotatable within the circular chamber to a first position with the drainage aperture in alignment with the open first end and the open second end of the shower head to facilitate the movement of water therethrough and to a second position whereby the drainage aperture not being in alignment with the open first end and the open second end of the shower head thereby inhibiting the movement of water therethrough;
a control mechanism secured to a side portion of the shower head, the control mechanism having an on/off switch with a shaft extending inwardly of the shower head securing to the ball valve whereby rotation of the on/off switch to an on position rotates the ball valve to the first position and rotation to an off position rotates the ball valve to the second position;
a drip adjustment mechanism being adjustably secured within the internally threaded opening in the upper portion of the shower head, the drip adjustment mechanism having a rubber portion disposed on an end portion thereof to control the amount of water entering into the by-pass recess.

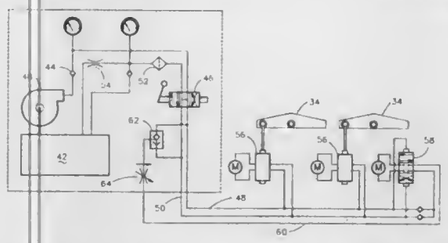
5,613,640
FUEL INJECTION VALVE
Yuji Furuya; Kenichi Iino, and Hitoshi Okuyama, all of Saitama-ken, Japan, assignors to Zexel Corporation, Tokyo, Japan
Filed Aug. 15, 1995, Ser. No. 518,387
Claims priority, application Japan, Sep. 9, 1994, 6-241916
Int. Cl.[6] F02M *51/00*
U.S. Cl. 239—585.5 **4 Claims**



1. A fuel injection valve comprising:

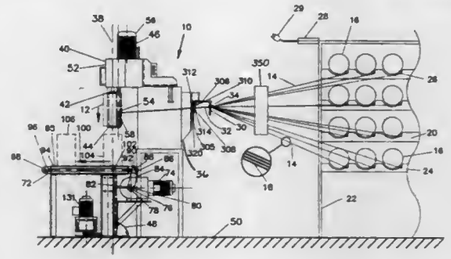
(a) a body having a cylindrical configuration at least at a distal end portion thereof;
(b) a valve seat member received in the distal end portion of said body, said valve seat member having an injection port formed in a distal end thereof and a valve seat communicating with said injection port;
(c) a valve element received in said body for movement in an axial direction of said body, a valve portion facing with said valve seat being formed on a distal end of said valve element;
(d) a stopper disposed on said body, said valve element being fully lifted from a position where said valve portion sits on said valve seat to a position where a basal end portion of said valve element is brought into abutment with said stopper;
(e) annular shim means for adjusting the fully lifted amount of said valve element, said shim means being disposed in a space between a first annular receiving surface and a second annular receiving surface, said first receiving surface being formed on an inner periphery of said body and perpendicular to an axis of said body, said second receiving surface being formed on a part of said valve seat member which part is received in said body, said second receiving surface being perpendicular to the axis of said body, wherein said shim means is disposed inside of the body; and
(f) the distal end portion of said body and said valve seat member being welded over an entire periphery thereof.

5,613,641
CENTER PIVOT IRRIGATION CONTROL SYSTEM
Phillip Grothen, Rte. 1, Box 16A, Juniata, Nebr. 68955
Filed Jan. 24, 1995, Ser. No. 377,554
Int. Cl.[6] B05B *3/18*
U.S. Cl. 239—731 **6 Claims**



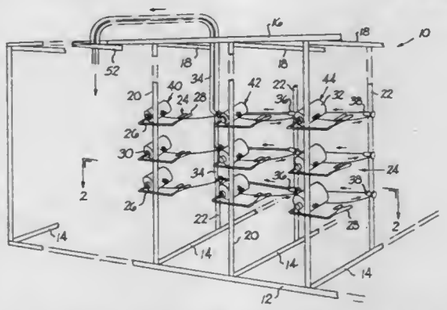
1. In a center pivot irrigation system having an elongate conduit for supplying water under pressure to a plurality of sprinklers which is carried above the ground by a movable outer support tower and a plurality of movable inner support towers, and having a hydraulic drive system with a pump, a main direction valve, clockwise and counterclockwise control lines extending the length of said conduit, a hydraulic motor connected to drive means at each of said support towers, and means for sensing misalignment of the conduit at each inner support tower, a control apparatus comprising:
(a) clockwise valve means, located at each inner support tower and connected between said control lines and said hydraulic motor, for controlling the flow of hydraulic fluid from said clockwise control line in response to said misalignment sensing means;
(b) counterclockwise valve means, located at each inner support tower and connected between said control lines and said hydraulic motor, for controlling the flow of hydraulic fluid from said counterclockwise control line in response to said misalignment sensing means; and
wherein said clockwise and counterclockwise valve means comprise means for sequentially (1) metering hydraulic fluid through said respective valve means to said respective hydraulic motors, (2) blocking hydraulic flow through said respective valve means and (3) bypassing hydraulic fluid between said control lines as said sensing means senses increasingly more misalignment between adjacent towers.

5,613,642
PROCESS AND SYSTEM FOR WINDING AND TRANSPORTING A WOUND PACKAGE
Roger Mulder, Groningen; Willem Niewold, Wildervank; Peter J. C. Schimmel, Sappemeer, all of Netherlands, and Jaap van der Woude, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 19, 1995, Ser. No. 575,009
Int. Cl.[6] B65H *54/02;54/00*
U.S. Cl. 242—35.5 A **20 Claims**



1. A system for winding and mechanically transporting a wound package, the system comprising:
(a) a plurality of fibers;
(b) a guide for gathering the plurality of fibers to form a bundle;
(c) a winder comprising a rotatable package collector and an apparatus for rotating the package collector about a stationary generally vertical axis, the package collector receiving the bundle from the guide and forming the bundle into a wound package about the generally vertical axis, the package collector having a release for releasing the wound package so as to deposit the wound package on a mechanical transport; and
(d) a mechanical transport for receiving the wound package from the package collector and transporting the wound package from a first position to a second position horizontally spaced apart from the first position.

5,613,643
CREEL
Robert S. Weiner, 1016 Old Powers Ferry Rd., Atlanta, Ga. 30327
Continuation-in-part of Ser. No. 381,084, Jan. 31, 1995, Pat. No. 5,531,392. This application Apr. 29, 1996, Ser. No. 639,627
Int. Cl.[6] D02H *1/00;* **D04B** *27/10;* **B65H** *57/00*
U.S. Cl. 242—131 **8 Claims**



7. A creel for use with textile machinery having an array of vertical and horizontal frame members, a header at the top of said creel, a plurality of vertical cone support members, at least one of said vertical frame members being disposed adjacent to and associated with each support member, each cone support member having a plurality of cone holders for receiving and mounting

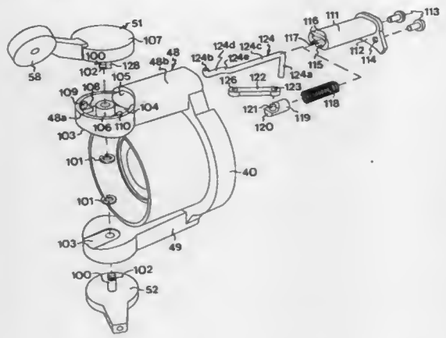
corresponding cones of yarn, several of the cone holders of horizontally spaced support members defining a group having a right most cone holder, a left most cone holder and at least on cone holder intermediate said right most and left most cone holders, the vertical frame member associated with the support member having the right most cone holder having a right most eyelet corresponding to the right most cone holder, the frame member associated with the support member having the left most cone holder having a guide tube having an inlet corresponding to the left most cone holder and extending into said header, and an eyelet corresponding to each cone holder intermediate said right most and left most cone holders being disposed on a frame member associated with the support member corresponding thereto, said eyelets and said inlet of said guide tube being substantially horizontally aligned for receiving yarn from a cone of yarn mounted on the cone holder corresponding thereto and for directing yarn from the eyelet corresponding to the right most cone holder to the other eyelets and into the inlet of said guide tube to said header.

5,613,644

BAIL MECHANISM IN AN OPEN-FACE FISHING REEL OF THE FIXED-SPOOL TYPE

Bengt-Åke Karlsson, Karlshamn, Sweden, assignor to Abu AB, Svängsta, Sweden

Filed Jan. 30, 1995, Ser. No. 380,583
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—232 **3 Claims**



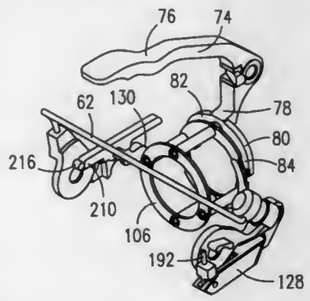
1. A bail mechanism in an open-face fishing reel of the fixed-spool type having a housing, a rotor mounted on said housing, and a line spool which is coaxial with said rotor and adapted to oscillate in the axial direction, said bail mechanism comprising:
a bail for winding a line onto said line spool;
two attachments arranged on said rotor substantially diametrically opposite each other; and
two mounting elements carrying said bail and being so rotatably mounted on respective attachments that the bail is pivotable about a bail axis substantially perpendicular to the axis of the rotor, between a folded-in line-winding position and a folded-out position, in which the bail is released of the line;
one of said attachments having an internal chamber;
resilient means, disposed in said chamber, being arranged between a first point on said one of said attachments and a second point rotatable with the corresponding one of the mounting elements so as to act on mounting elements by spring force towards a first rotational position and a second rotational position corresponding, respectively, to the line-winding position of the bail and the folded-out position thereof when said second point is located on one and the other side, respectively, of an over-center point;
said resilient means comprising a compression spring, a slide member and a link arm which is articulated at a first end of the link arm to the compression spring via the slide member and articulated at a second end of the link arm to the mounting element corresponding to said one of said attachments, in said second point;
the compression spring and the slide member being arranged in a first guide groove in said chamber, in which the slide member is displaceable so as to compress the compression spring upon rotation of the mounting element corresponding to said one attachment towards the second rotational position of the mounting element;
operating means being provided in said chamber in order, when the bail is in its folded-out position, to cooperate during the rotation of the rotor with cam means for rotatinq the mountinq element provided on the housing so as to rotate the mounting element corresponding to said one attachment from the second rotational position of the mounting elements in such a manner that said second point passes said over-center point;
the operating means comprising a rod reciprocable in a second guide groove in said chamber and adapted to be displaced by the mounting element corresponding to said one attachment upon its rotation to its second rotational position, to a rear position in which said rod, upon rotation of the rotor, comes into engagement with said cam means so as to be displaced towards a front position, thereby rotating the mounting element from its second rotational position towards its first rotational position;
said first guide groove of the compression spring and of the slide member and said second guide groove of the rod being formed in an insert element which is inserted in said chamber; and
said insert element, the compression spring disposed in the first guide groove, the slide member, and the rod disposed in the second guide grooves, being together removable from said chamber as a unit.

5,613,645

FORCE TRANSMISSION PLATE ASSEMBLY FOR ACTUATION OF A BAIL ASSEMBLY ON A FISHING REEL

Robert L. Carpenter, Tulsa, Okla.; John A. Zurcher, Spirit Lake, Iowa; John W. Puryear, Bay St. Louis, Miss., and Hyunkyu Kim, Broken Arrow, Okla., assignors to Zebco Corporation, Tulsa, Okla.

Filed Jul. 15, 1992, Ser. No. 914,266
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—233 **28 Claims**



1. A fishing reel comprising:
a frame having a front and rear;
a rotor having a body with an annular wall bounding an internal space and a first wall within said internal space and having axially oppositely facing surfaces;
means for mounting the rotor to the frame for rotation about a first axis;
a line storage spool;
means for rotating the rotor;
a bail assembly;

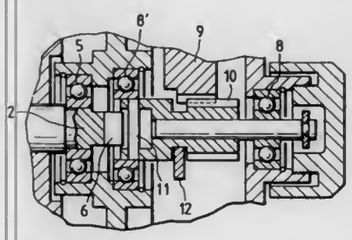
means for mounting the bail assembly to the rotor for pivoting movement between a first retrieve position and a second cast position,
said bail assembly in the cast position therefor directing line onto the line storage spool as the rotor is rotated about its axis;
a bail actuator; and
means responsive to operation of the bail actuator for exerting a force on the bail assembly to pivot the bail assembly from its retrieve position into its cast position,
said force exerting means including a plate assembly,
said plate assembly comprising an annular actuation plate having an axis substantially aligned with the rotor axis and first and second posts connected to and projecting axially from the annular plate,
said first wall having first and second bores to receive the first and second posts to guide translatory movement of the annular plate from a retracted position axially forwardly to an extended position,
said force exerting means including means cooperating between the bail assembly and plate assembly for moving the bail assembly from its retrieve position into its cast position as the actuation plate moves from its retracted position into its extended position,
there being means cooperating between the bail actuator and plate assembly for moving the actuator plate into its extended position as the bail actuator is operated,
said plate assembly residing at least partially within the internal rotor space with the annular plate in its extended position.

5,613,646

FISHING DOUBLE-BEARING TYPE REEL WITH PLAY-REDUCTING CLUTCH MECHANISM

Takeo Miyazaki, Kodaira, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,468
Claims priority, application Japan, Jul. 13, 1994, 6-009546
Int. Cl.[6] A01K *89/015*
U.S. Cl. 242—260 **11 Claims**



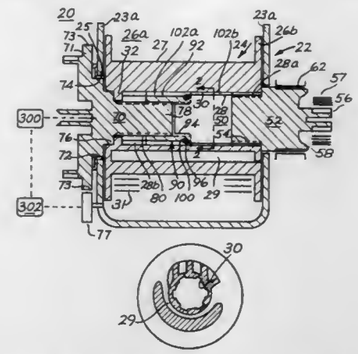
1. A fishing double-bearing type reel comprising:
a spool shaft rotatably supported by a reel body and having a spool thereon, said spool shaft having an axial end portion;
a supporting shaft coaxial with respect to said spool shaft, and having an axial end portion confronted with said axial end portion of said spool shaft;
a pinion rotatable in association with rotation of a handle and mounted on said supporting shaft;
a rod-shaped engaging piece provided on one of said axial end portions of said spool shaft and said pinion, and extending perpendicular to a common axis of said spool shaft and said supporting shaft; and
a recess formed in the other of said axial end portions for engagement with said rod-shaped engaging piece, wherein said pinion is axially movable relative to said spool shaft so that said rod-shaped engaging piece is engaged with and disengaged from said recess, and
wherein a spatial gap is provided between said spool shaft and said supporting shaft along said common axis to thereby permit relative axial displacement of said supporting shaft with respect to said spool shaft.

5,613,647

RETRACTOR HAVING A SINGLE SIDED ENERGY ABSORBING SPOOL

Niels Dybro, Utica, and Harold J. Miller, III, Troy, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Division of Ser. No. 345,195, Nov. 28, 1994, Pat. No. 5,511,739. This application Apr. 29, 1996, Ser. No. 638,660
Int. Cl.[6] B60R *22/28*
U.S. Cl. 242—376 **9 Claims**



1. An energy absorbing seat belt retractor comprising:
a frame;
a spool rotatably mounted relatively to the frame for protracting and retracting a safety belt wound thereabout, including a web receiving, generally cylindrical portion about which the seat belt is wound, a web holding slot having: a first part comprising a radial slot extending inward from the cylindrical portion and terminating at an inner end, a second part comprising an arcuate slot within the spool extending from the inner end of the first part through an angle of at least about 180 degrees and a third part comprising a slot extending outward to intersect the cylindrical portion,
a lock wheel operatively coupled to the spool, including a plurality of lock teeth associated therewith;
first means for engaging the spool upon sensing a one of a vehicle deceleration and seat belt extraction above certain determinable levels;
second means located within the spool joining the lock wheel to the spool for prohibiting relative movement therebetween below a threshold input force level generated in part by occupant load on the seat belt and for generating a controlled energy dissipating reaction force on the seat belt after the input force exceeds the threshold level to permit a controlled rotation of the spool and the controlled payout of the seat belt from the spool.

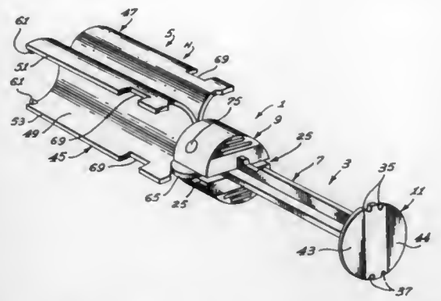
5,613,648

CORD HOLDER

Jack Paavila, Box 1151, Alexandria, Ontario, Canada

Filed Sep. 20, 1995, Ser. No. 531,270
Int. Cl.[6] B65H *75/38*
U.S. Cl. 242—405.2 **19 Claims**

1. A cord holder on which a section of electrical cord can be manually wound for storage, the bolder having: an elongated spool of fixed length on which the section of cord can be manually wound; casing means, the casing means movable relative to the spool between a first position where it substantially uncovers the spool so the section of cord can be wound on the spool, and a second position where it covers and maintains the cord wound on



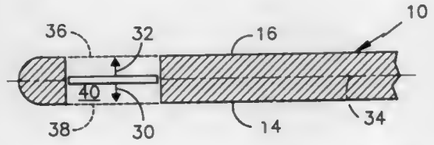
the spool; the casing means having outlet means for both ends of the cord wound on the spool, and handle means, the handle means movable between a first position to be grasped to allow the spool to be held while winding a section of cord on it, and a second storage position.

5,613,649

AIRFOIL NOISE CONTROL

Robert H. Schlinker, Canton, Conn., and Edward J. Kerschen, Tuscon, Ariz., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 21, 1994, Ser. No. 278,439
Int. Cl.[6] B64C *21/02;9/14;9/22*
U.S. Cl. 244—1 N **7 Claims**



1. In an airfoil having a pressure surface, a suction surface, a leading edge and a chordal dimension, and wherein said airfoil is subject to a flow of fluid over said surfaces, said fluid flow defining a regularly fluctuating pressure and flow field, and wherein the interaction of said airfoil and said fluid flow results in the generation of acoustic noise having a characteristic frequency and wavelength,

the improvement comprising

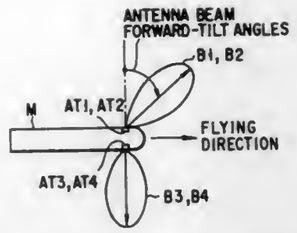
wherein said airfoil includes means disposed adjacent the leading edge of said airfoil, for generating an antisymmetric periodic pressure field whereby said acoustic noise is attenuated.

5,613,650

GUIDED MISSILE

Masao Kaifu, Yokohama, and Sadao Tsubokura, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1995, Ser. No. 527,580
Int. Cl.[6] F42B *15/01;* **F41G** *7/20*
U.S. Cl. 244—3.16 **5 Claims**



1. A guided missile comprising:

a target acquisition unit for acquiring a target and obtaining target information;

a target direction detecting unit for detecting, from the target information obtained at the target acquisition unit, the direction of the target in terms of a roll-, a pitch- and a yaw-axis of a missile fuselage;

rotation amount computing units for computing amounts of rotation around the roll-, pitch- and yaw-axis of the missile to allow the missile to be directed at the target detected by the target direction detecting unit;

steering control units for imparting the rotation amount around the roll-, pitch- and yaw-axis of the missile obtained by the rotation amount computing unit to the missile fuselage;

a plurality of antennas for a proximity fuse which are arranged at a corresponding number of places around a circumferential surface side of the fuselage and radiating target detection beams in mutually different directions with at least one of these antennas radiating a beam at a different forward-tilt angle other than the remaining ones;

a beam selecting unit for obtaining the flight information of the missile and target and selecting a beam of a proper angle on the basis of a result of obtained flight information; and

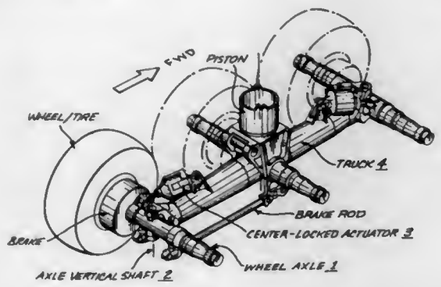
roll rotation amount compensating means for orientating the beam which is selected by the beam selecting unit at the target.

5,613,651

LANDING GEAR AXLE STEERING WITHOUT WALKING BEAM

Michael J. Meneghetti, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 8, 1994, Ser. No. 352,326
Int. Cl.[6] B64C *25/50*
U.S. Cl. 244—50 **2 Claims**



1. In combination in a six wheel three axle truck assembly having steerable forward and aft wheel axles, said forward and aft wheel axles having a vertical shaft, the improvement comprising in combination therewith:

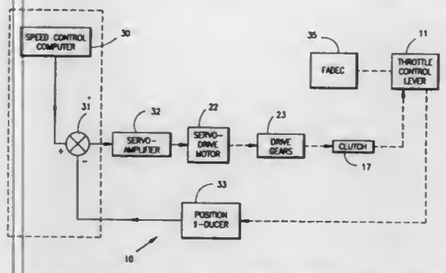
a single center-locked steering actuator without assistance from a walking beam providing total power required to drive one of said forward or aft wheel axles about the vertical shaft of said forward or aft wheel axles.

5,613,652

AIRCRAFT AUTO THROTTLE SYSTEM

Leonard M. Greene, Scarsdale, N.Y., assignor to Safe Flight Instrument Corporation, White Plains, N.Y.

Filed Oct. 21, 1994, Ser. No. 327,040
Int. Cl.[6] B64D *31/04*
U.S. Cl. 244—75 R **10 Claims**



1. An auto throttle system for aircraft equipped with a full authority digital engine control comprising:

automatic means for controlling the power output of an engine;

manually operable means for controlling the power output of the engine;

a remote friction clutch which is separate from said manually operable means; and

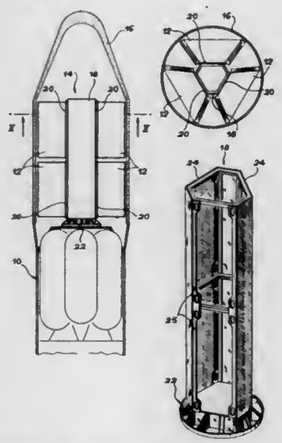
mechanical means coupling said automatic means for controlling the power output of an engine and said manually operable means for controlling the power output of an engine through said friction clutch and for providing the feel of a cable based throttle system and allowing the automatic means for controlling the power output of the engine to be overridden by the manually operable means for controlling the power output of the engine without a significant increase in torque.

5,613,653

MULTISATELLITE DISTRIBUTOR FOR LAUNCHER

Jean P. Bombled, Le Mesnil St. Denis; Jean P. Aubret, St. Medard En Jalles, and Christophe Laporte, Mérignac, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Filed Mar. 22, 1995, Ser. No. 408,955
Claims priority, application France, Mar. 22, 1994, 94 03334
Int. Cl.[6] B64G *1/00*
U.S. Cl. 244—158 R **15 Claims**



1. A multisatellite distributor for a launcher, comprising:

a. a mast fixed to said launcher and having a plurality of identical locations; and

b. a plurality of identical interface members, each of said interface members being for mounting a respective one of a plurality of satellites to a respective one of said plurality of identical locations, each of said interface members having a frame member including:

removable fixing means for permitting the frame member to be removably affixed to any one of said locations of said mast,

fixing-releasing means for permitting any one of said satellites to be removably affixed to said frame member and for controlling separation thereof from said frame member, and

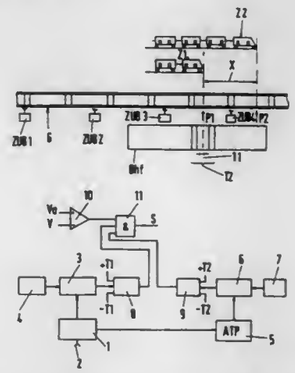
connecting means for automatically providing, when said frame member is fixed to said mast by said removable fixing means, at least one electrical connection between the frame member and the location to which said frame member is fixed.

5,613,654

DEVICE FOR RELEASING THE OPENING OF THE DOORS OF RAIL VEHICLES

Wolf-Dieter Gellermann, Vechelde; Adolf Feuerhake, Braunschweig, both of Germany; Dario Comini, and Guido Martinelli, both of Milan, Italy, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00841, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/01900, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 8, 1994, Ser. No. 569,236
Claims priority, application Italy, Jul. 9, 1993, MI93A1506
Int. Cl.[6] B61L *1/00*
U.S. Cl. 246—182 B **12 Claims**



7. A device for releasing door controls to enable the opening of doors of a train that comprises at least one vehicle, whose travel is monitored by a device for continuous train protection (ATP), on reaching a predetermined stopping position at a platform of a train station, comprising:

at least one transmission device for intermittent train control located in an approach area of the train station for transmitting a synchronization signal to the vehicle;

a first position sensing device on the vehicle that is directly synchronized by the synchronization signal from the at least one transmission device for intermittent train control; and

a second position sensing device on the vehicle that is indirectly synchronized by the synchronization signal of the at least one transmission device for intermittent train control, wherein the synchronization signal is sent to the second position sensing device via the ATP device, wherein the release of door controls is made by determining means based on the direction of travel of the vehicle, whether the vehicle speed has dropped below a very low given speed, and on position sensing results

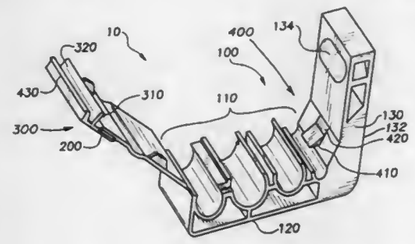
obtained from the first position sensing device confirming the position of the vehicle at a desired predetermined stopping point within a narrow tolerance range, and on position sensing results of the second position sensing device confirming this position within a broader tolerance range.

5,613,655

METHOD AND APPARATUS FOR A DOUBLE CLASP RETENTION CLIP

James E. Marion, Bonfield, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 13, 1996, Ser. No. 600,519
Int. Cl.[6] F16L *3/12*
U.S. Cl. 248—68.1 **20 Claims**



1. Apparatus for mounting and retaining an article, the apparatus comprising:

a body member having an article retention portion for retaining an article thereon;

a cover releasably disposable over said article retention portion of said body member for releasably retaining an article disposed within said article retention portion of said body member;

first latch means disposed upon said cover;

first latch engaging means disposed upon said body member for engaging said first latch means of said cover when said cover is disposed over said article retention portion of said body member;

a substantially planar latch arm, having second latch means mounted thereon, substantially coplanar with and integrally mounted upon a surface portion of said body member so as to be movable with respect to said surface portion of said body member between a latch position and a release position; and

second latch engaging means disposed upon said cover for engaging said second latch means of said substantially planar latch arm of said body member when said cover is disposed over said article retention portion of said body member,

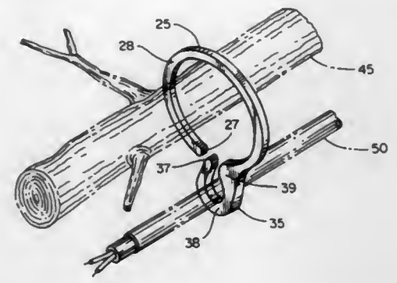
wherein said first latch means and said second latch engaging means disposed upon said cover extend away from each other, and said second latch means and said first latch engaging means disposed upon said body member extend toward one another so as to prevent inadvertent release of said cover from said body member, and wherein further, said substantially planar latch arm must be moved to said release position in order to disengage said second latch means thereof from said second latch engaging means of said cover and to permit said first latch means disposed upon said cover to be disengaged from said first latch engaging means of said body member so as to permit said cover to be released from its position over said article retention portion of said body member.

5,613,656

HANGER

William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.

Filed Feb. 9, 1995, Ser. No. 386,077
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.2 **18 Claims**



1. A hanger for positioning an object such as electrical wire or an ornament in remote locations such as in trees, said hanger comprising:

a first portion for releasably mounting said hanger on a support at a remote location,

a second portion connected to said first portion for holding an object such as a wire or ornament,

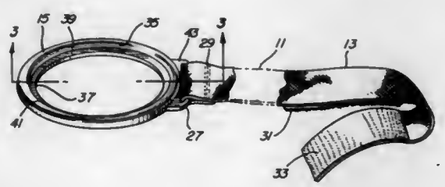
said first and second portions are part circular in side elevation integral one with the other selected from a synthetic organic resin having a memory with the redial dimension of said second portion exceeding the radial dimension of said first portion.

5,613,657

BABY BOTTLE KEEPER

James Olaiz, Fountain Valley, Calif., assignor to Junior Products Inc., Santa Ana, Calif.

Filed Jun. 7, 1995, Ser. No. 486,986
Int. Cl.[6] A47D *15/00*
U.S. Cl. 248—102 **16 Claims**



1. A baby bottle holder for a baby bottle having a cap with a nipple fastened onto the neck of the bottle, said holder comprising:

a plastic ring having an internal bore of a diameter sufficient to slip the ring over the neck of a baby bottle, said ring further having a slot of defined length between the bore and the outside perimeter;

a strap of defined width looped through the slot in said ring and securely fastened to itself at a first end; and

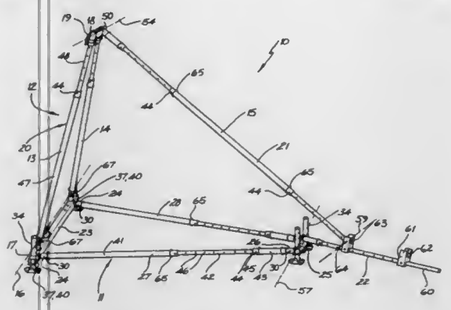
a hook and loop fastening strip at the second end of said strap allowing for a variable loop size to fasten the second end of said strap to a structural component.

5,613,658

TRIPOD APPARATUS

Boris Rogelja, 9 Nelson Avenue, Padstow, New South Wales 2211, Australia

Filed Apr. 18, 1995, Ser. No. 423,187
Claims priority, application Australia, Apr. 18, 1994, PM5157
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—163.1 **19 Claims**



1. A tripod apparatus comprising:

a base;

a support member for supporting an object generally above the base;

a first and a second upright member each having one end pivotally connected to the base at spaced positions about a common pivot axis which defines a forward edge of the base, and other ends of the first and second upright members connected to the support member; and

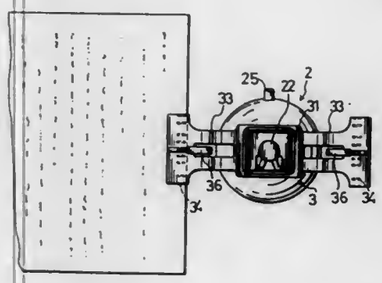
a third upright member having a first end pivotally connected to the base at a rearward position which is spaced rearwardly of the forward edge, and a second end connected to the support member, the third upright member including means for extending the third upright member to permit pivoting of the first and second upright members about the common pivot axis to move the support member from a retracted position rearward of the forward edge to an extended position forward of the forward edge.

5,613,659

SUCTION DEVICE WITH SHEET-PRESSING ABILITY

Chu-Chai Hong, 6F, No. 125, Sec. 5, Roosevelt Rd., Taipei City, Taiwan

Filed May 8, 1995, Ser. No. 436,994
Int. Cl.[6] A45D *42/14*
U.S. Cl. 248—205.5 **4 Claims**



1. A suction device comprising:

a suction cup having a suction face, a non-suction face opposite to said suction face, a pivot unit projecting integrally from a center of said non-suction face, and a periphery located in a plane which is spaced from said pivot unit at a predetermined distance;

a flexible hanging member including a socket unit which receives rotatably said pivot unit of said suction cup therein, and at least one pressing claw connected securely to said socket unit, said suction cup being exposed to an exterior of said socket unit, of at least one said pressing claw having an abutting surface which is substantially parallel to said plane and which is spaced apart from said pivot unit at a distance that is larger than said predetermined distance, and a mounting surface opposite to said abutting surface, said pressing claw further having a hook attached to said at least one mounting surface for hanging an object thereon, said suction cup being capable of being pressed against a smooth surface so as to stick the suction device on the smooth surface in such a manner that said pressing claw of said at least one hanging member flex and that said abutting surface surfaces of said pressing claw is pressed against the smooth surface, thereby permitting a sheet of paper to be clamped between the abutting surface of said at least one of the pressing claw and the smooth surface; and

wherein said pivot unit includes a cylindrical pivot portion projecting from said non-suction face and provided with an enlarged end, said socket unit being U-shaped and being provided with two parallel arm portions and a curved intermediate portion interconnecting said arm portions, said socket unit further having a C-shaped flange projecting inwardly from said curved intermediate portion, and a pair of tongues projecting respectively from said arm portions toward said C-shaped flange in such a manner that said tongues cooperatively define a gap therebetween which is slightly smaller than diameter of said pivot portion and which confines said pivot portion in a space that is defined between said C-shaped flange and said tongues so that said pivot unit is prevented from removal from said socket unit,

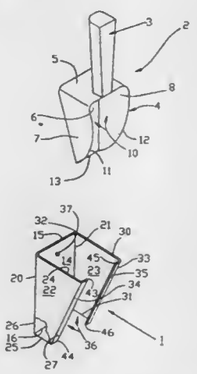
whereby, during assembly of said suction cup and said hanging member, said pivot portion can be forced to push said tongues away from each other in order to move into said space.

5,613,660

SANITARY ICE-SCOOP HOLDER

Charles A. Wyatt, 105G Telegraph Rd., Honey Brook, Pa. 19344

Filed Oct. 11, 1994, Ser. No. 320,278
Int. Cl.[6] A47F *7/00*
U.S. Cl. 248—300 **4 Claims**



1. A sanitary ice scoop holder comprising:

A flat rectangular shaped back member having a top edge, a bottom edge and first and second side edges each extending between the top and bottom edges;

a first flat side member extending away from and normal to said back member and having a top edge, a bottom edge, an inner side edge and an outer side edge, the outer side edge being oriented at an acute angle with respect to the top edge of the first side member and at an obtuse angle with respect to the bottom edge of the first side member;

a second flat side member extending away from and normal to said back member and having a top edge, a bottom edge an inner side edge and an outer side edge, the outer side edge of the second side member being oriented at an acute and with respect to the top edge of the second side member and at an obtuse and with respect to the bottom edge of the second side member;

the inner side edge of said first side member being connected to said first side edge of said back member;

the inner side edge of said second side member being connected to said second side edge of said back member;

a first flat retainer flange connected to the outer side edge of said first side member and extending in a direction toward said second side member;

a second flat retainer flange connected to the outer side edge of said second side member and extending in a direction toward said first side member; and

said back member, said first and second side members, and said first and second retainer flanges forming a cavity to hold an ice scoop, the cavity being free from obstruction and decreasing in cross section in a direction as between the top and bottom edges of said first and second side members and last said back member, side members and retainer flanges being adapted for engagement with an ice scoop placed in the cavity.

5,613,661

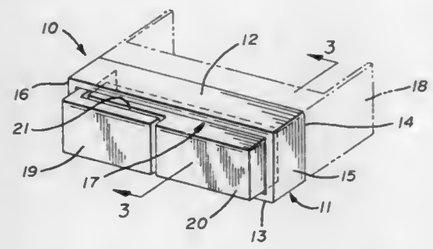
HOLDER FOR EYEGLASSES

Eugene Seach, 2379 Henn-Hyde Rd., NE., Warren, Ohio 44484

Filed Aug. 24, 1995, Ser. No. 519,116

Int. Cl.[6] A57G *1/10*

U.S. Cl. 248—316.1 **10 Claims**



1. An eyeglass holder for supporting a pair of eyeglasses in a removably secured relation therein comprises; an enclosure having an opening therein, access element movably positioned within said enclosure, an eyeglass engagement body member extending from said opening in the enclosure in spaced overlapping relation to a portion of said access element, means for resiliently positioning said access element within said enclosure, said eyeglass engagement body member and said movable access element together surrounding an ear piece of said pair of eyeglasses.

5,613,662

SEAT ADJUSTMENT MECHANISMS

David C. Blackmore, Wellingborough, United Kingdom, assignor to KAB Seating Limited, Northampton, United Kingdom

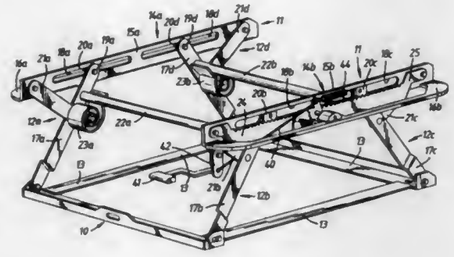
Filed Jan. 20, 1995, Ser. No. 375,296

Claims priority, application United Kingdom, Jan. 21, 1994, 9401143

Int. Cl.[6] A47G *29/00*

U.S. Cl. 248—371 **21 Claims**

1. A seat adjustment mechanism comprising a seat support frame



carried on a base for movement relative thereto by first and second linkages, the first linkage being arranged towards a first end of the frame and a second linkage being arranged towards a second end of the frame, each linkage including a member engaging the frame and movable relative thereto during the movement of the frame, the members being acted on by a control mechanism which, in a first position, locks the members to the frame to fix the position of the frame relative to the base and which, in a second position, releases one of the members to allow movement to only the associated end of the frame relative to the base and which, in a third position, releases both members to allow movement of both ends of the frame relative to the base.

5,613,663

VALVE DEVICE

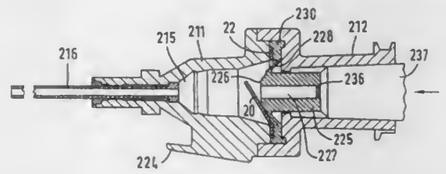
Klaus J. Schmidt, Ahnatal; Juergen Fuchs, Bad Emstal, and Heinz Wlegel, Alheim, all of Germany, assignors to B. Braun Melsungen AG, Melsungen, Germany

Filed Sep. 27, 1995, Ser. No. 534,444

Claims priority, application Germany, Nov. 29, 1994, 44 42 352.7

Int. Cl.[6] F16L *29/00*

U.S. Cl. 251—149.2 **10 Claims**



1. A valve device in a connection piece comprising an open ended flow channel having a valve body arranged therein which is adapted to be brought into an opened position by means of an axially displaceable sliding member, the valve body being configured as a valve flap having a closed surface and being mounted in the connection piece via an elastic radial tongue and resting against an annular supporting surface in a closed position, and the sliding member pivots the valve flap in opening direction about the radial tongue by pressure against the closed surface thereof, the supporting surface being integrally formed with a centrally perforated sealing membrane mounted arranged between the valve flap and the connection piece.

5,613,664

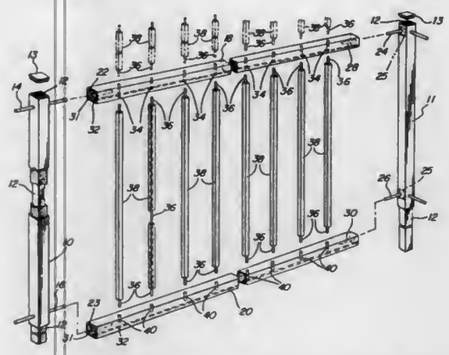
PLASTIC FENCES AND METHOD FOR PREFABRICATING SUCH FENCES

John Svalbe, 2044 Phalarope Ct., Costa Mesa, Calif. 92626

Filed Sep. 30, 1994, Ser. No. 316,248

Int. Cl.[6] E04H *17/14*

U.S. Cl. 256—19 **18 Claims**



1. A method of assembling a section of a fence, the fence including a picket having a hollow portion extending along a length of the picket, and further including a pair of rails, each rail having a hollow portion extending along a length of the rail and an aperture connecting a joining surface of the rail to the hollow portion of the rail, the method comprising the following steps:

arranging the rails in a spaced relationship so that their respective apertures face one another;

inserting a strengthening member into the hollow portion of the picket, the strengthening member extending within the hollow portion of the picket along the length of the picket and having protruding portions that protrude out of opposite ends of the picket;

inserting the protruding portions into the apertures until the ends of the picket contact the joining surfaces of the rails, the contacting of the end to the joining surfaces connecting the hollow portions of the picket and the rails for fluid flow; and

filling the hollow portions with hardener, the hardener flowing between the hollow portions and around the strengthening member that extends between and connects the hollow portions of the picket and the rails, to thereby secure the picket to the rails.

5,613,665

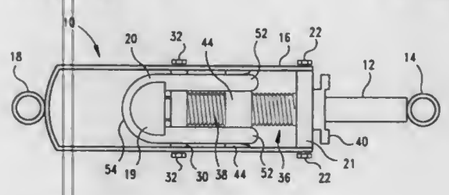
VEHICLE SUSPENSION COMPONENT

Ronn A. Lund, 4701 Manytell Ave., Anchorage, Ak. 99516

Filed Nov. 9, 1995, Ser. No. 556,210

Int. Cl.[6] F16F *1/00*

U.S. Cl. 267—69 **18 Claims**



1. A shock absorber, comprising:

an elongated first suspension component having an outer end for attachment to a first part of a vehicle,

a second suspension component slidably coupled to the first suspension component to allow for relative sliding movement between the two components along an axis of the elongated first suspension component, the second suspension component having an outer end for attachment to a second part of the vehicle that is adapted to move relative to the first part of the vehicle,

the first suspension component having an inner end, and the second suspension component including a lug at a location spaced axially between the inner and outer ends of the first suspension component, and

an elastic cord loop for restraining relative movement between the first and second suspension components, the elastic cord loop having loop ends that define between them midsections, the loop ends of the elastic cord loop being wrapped around the lug and the midsections of the elastic cord loop being wrapped around the inner end of the first suspension component,

whereby the elastic cord loop restrains movement of the inner end of the first suspension component away from the lug and thereby resists compression of the first and second suspension components.

5,613,666

LIQUID FILLED BEARING WITH FLEXIBLE PARTITION WALL

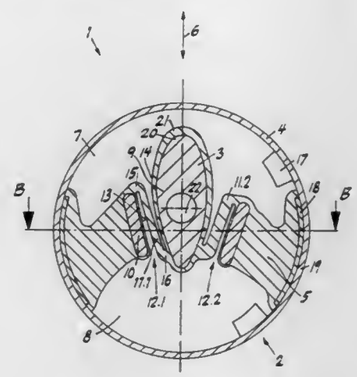
Axel Rudolph, Bensheim/Auerbach, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Division of Ser. No. 166,590, Dec. 14, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,616

Claims priority, application Germany, Mar. 14, 1992, 42 42 080.6

Int. Cl.[6] F16F *13/00*

U.S. Cl. 267—140.12 **11 Claims**



1. A liquid-filled bearing for damping vibrations caused by movement in a moving direction, said liquid-filled bearing comprising:

an inner fitting;

an outer fitting surrounding said inner fitting and spaced apart from said inner fitting;

an elastic spring element of elastomer material connecting said inner fitting and said outer fitting and dividing an area between said inner fitting and said outer fitting so as to form at least two chambers, said chambers being filled with liquid;

a gap extending within at least one of said inner and outer fittings, said gap extending between said chambers in a gap extension direction substantially parallel to the moving direction; and

at least one partition wall disposed in said gap in a rolling diaphragm-type profile, said partition wall being movable in a partition wall displacement direction;

wherein said partition wall displacement direction is substantially perpendicular to said gap extension direction;

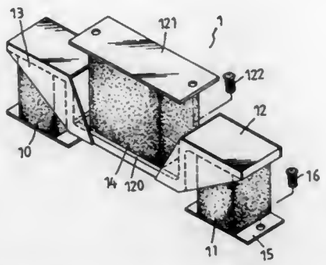
wherein the partition wall is essentially S-shaped.

5,613,667

SHOCK ABSORBER FOR ELEVATORS OR THE LIKE

Jui-Chien Ho, 10Fl., No. 68, Chung-Hua 1st, Kaohsiung, Taiwan

Filed Jun. 26, 1996, Ser. No. 670,653
Int. Cl.[6] F16F *3/08*; B60G *25/00*
U.S. Cl. 267—141.1 5 Claims



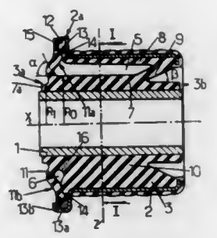
1. A shock absorber connected between a foot plate and the bottom side of the cab of an elevator for absorbing shock waves, comprising two first springy members fixed to said foot plate by respective mounting plates, a bridging plate horizontally mounted on top of said first springy members and having a recessed portion in the middle, and a second springy member having a first mounting plate at a bottom side thereof fixed to the recessed portion of said bridging plate and a second mounting plate at a top side thereof fixed to the bottom side of said cab.

5,613,668

HYDRAULIC ANTIVIBRATION SLEEVE, AND ITS METHOD OF MANUFACTURE

Philippe Brunerye, Courbevoie, France, assignor to Hutchinson, Paris, France

Filed Feb. 12, 1996, Ser. No. 599,924
Claims priority, application France, Feb. 13, 1995, 95 01625
Int. Cl.[6] B60G *15/00*
U.S. Cl. 267—219 7 Claims



1. A hydraulic antivibration sleeve comprising two tubular rigid strength members one surrounding the other, namely an inner strength member and an outer strength member having respective longitudinal axes parallel to a common axial direction and interconnected by an elastomer body, the antivibration sleeve including at least two sealed pockets fully defined by the elastomer body and the two strength members, said sealed pockets being disposed between the two strength members and communicating with each other via at least one narrow channel, the two pockets and the narrow channel together being filled with a liquid, the elastomer body extending axially between first and second ends of said elastomer body the elastomer body including an inner annular portion molded on and bonded to the inner strength member and an outer annular portion in contact with the outer strength member, and the elastomer body further including at least two solid portions angularly separating the pockets from one another, wherein:

the outer annular portion of the elastomer body is molded on the outer strength member and is bonded to said outer member, each sealed pocket being constituted by a blind hole formed inside the elastomer body, opening out at the first end of the elastomer body and extending axially inside the elastomer body from said first end towards the second end of said elastomer body, the hole being limited axially towards the second end of the elastomer body by a thin wall of said elastomer body and said thin wall extending continuously between the inner and outer annular portions of the elastomer body;

the inner annular portion of the elastomer body is extended peripherally in the vicinity of the first end of said elastomer body by a thin elastomer collar which extends substantially radially up to a peripheral edge of said collar and which presents an inside face facing the sealed pockets and an outside face facing away from the sealed pocket;

the outer strength member of the sleeve includes, in the vicinity of the first end of the elastomer body, an axial end that forms a flange extending said strength member peripherally outwards and having a contact face facing the elastomer collar; and

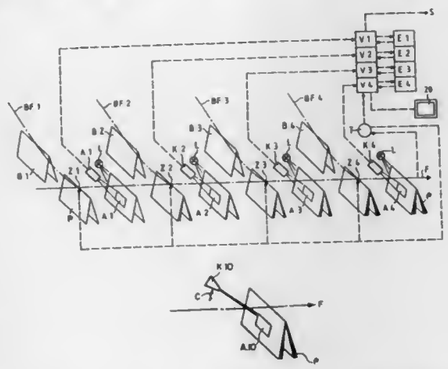
the inside face of the elastomer collar is peripherally secured in sealed manner via the peripheral edge of the collar to the contact face of the flange of the outer strength member, thereby closing in sealed manner the two pockets and the narrow channel, which channel is defined firstly by the elastomer collar and secondly by one of the solid portions of the elastomer body angularly separating the pockets.

5,613,669

CONTROL PROCESS FOR USE IN THE PRODUCTION OF PRINTED PRODUCTS AND MEANS FOR PERFORMING THE PROCESS

Baptist Grueninger, Russikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 31, 1995, Ser. No. 455,009
Claims priority, application Switzerland, Jun. 3, 1994, 01748/94
Int. Cl.[6] B65H *39/04*
U.S. Cl. 270—52.06 14 Claims



1. A process for controlling the production of printed products by collecting and inserting and/or collating a plurality of printed components (B.1–B.4) which differ from each other, the process comprising the steps of

substantially continuously conveying the printed products being formed in a product flow in a direction (F) substantially perpendicular to an orientation of main surfaces thereof with a conveying cycle determined by conveying speed and product spacing in the product flow,

at each of a plurality of adding stations (Z.1–Z.4), selectively adding a printed component to the product being formed,

controlling the product (P) being formed with an optical/electronic control after each adding station (Z.1–Z.4), the controlling including

forming and storing an image of an area of a component last added to the product being formed,

electronically processing the stored images,

forming control signals from the processed stored images, and

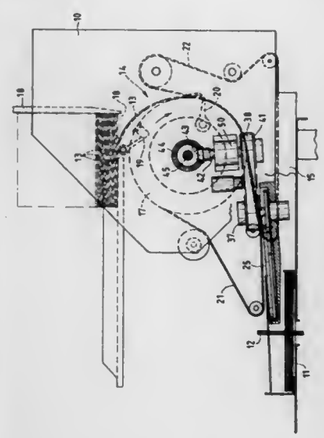
controlling the further conveying of the products after collecting, inserting and/or collating with the control signals or activating alarm means if the control signals indicate a malfunction in the step of adding.

5,613,670

DEVICE UTILIZING A ROTARY DISC HAVING A GRIPPING ELEMENT FOR RAPIDLY FEEDING SHEET INSERTS TO A PUSHER CONVEYOR OF A PACKAGING MACHINE

Aris Ballestrazzi, and Lamberto Tassi, both of Savignano sul Panaro, Italy, assignors to Sitma S.p.A., Modena, Italy

Filed Jan. 25, 1996, Ser. No. 591,269
Claims priority, application Italy, Apr. 19, 1995, M195A0790
Int. Cl.[6] B65H *5/22*
U.S. Cl. 271—3.23 26 Claims



14. A device for rapidly feeding sheet inserts to a pusher conveyor of a package machine, which comprises:

a feeder feeding sheet inserts one after another in a direction substantially perpendicular to said pusher conveyor;

a pair of rotary disks each of which is provided with a substantially flat surface which is substantially parallel to the inserts and each includes at least one suction element gripping said sheet inserts by suction, said at least one gripping element being selectively operable to lock said sheet inserts onto each of said disks and drag said sheet inserts from a position aligned with said insert feeder to an advanced position on said pusher conveyor by causing the sheet inserts to undergo a rototranslational movement due to synchronized movement of said disks, and

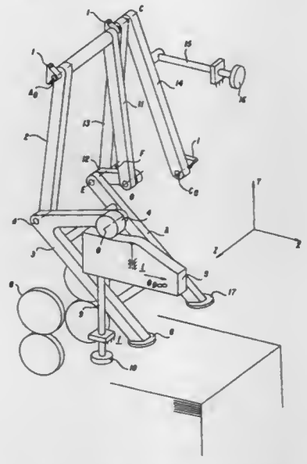
a drive mechanism driving each of said disks, said sheet insert feeder and said pusher conveyor, wherein movement of said disks, said sheet insert feeder and said pusher conveyor are synchronized.

5,613,671

DEVICE FOR CORRECTING SKEWED SHEETS IN A FEEDER OF A SHEET-FED PRINTING PRESS

Andreas Fricke, Eberbach; Jochen Renner, Heidelberg, and Norbert Thünker, Hirschberg, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Mar. 27, 1995, Ser. No. 410,845
Claims priority, application Germany, Mar. 26, 1994, 44 10 529.0
Int. Cl.[6] B65H *3/40*
U.S. Cl. 271—91 7 Claims



1. Device for skewed sheet correction in a feeder of a sheet-fed printing press, comprising a driven movable sucker carrier, at least one height-adjustable sucker disposed on said driven movable sucker carrier for horizontally transporting and simultaneously aligning a sheet lifted from a sheet pile, a rocker arm mounted in a frame of the printing press, said sucker carrier being articulatingly connected to and driven by said rocker arm so as to be movable in a feeding direction of the sheet and swingably driven, and a cam guide which is adjustable in height, said sucker carrier being in contact with said cam guide, and another rocker arm articulating connect to said sucker carrier so as to be driven therewith, and an adjustable support for said another rocker arm.

5,613,672

PAPER RETAINER

Masayuki Tanaka; Yuji Ohashi, both of Kyoto, and Masashi Sugimoto, Hyogo, all of Japan, assignors to Omron Corporation, Kyoto, Japan

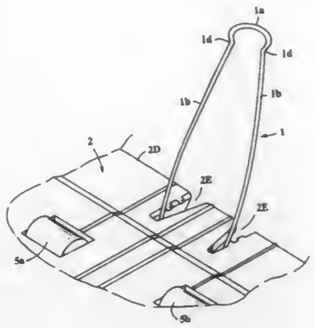
Filed Aug. 29, 1995, Ser. No. 521,075
Claims priority, application Japan, Sep. 3, 1994, 6-234390
Int. Cl.[6] B65H *1/00*
U.S. Cl. 271—162 25 Claims

1. A paper retainer assembly for attachment to a feed-in mechanism at a paper inlet or a feed-out mechanism at a paper outlet, comprising:

a flexible, linear paper retainer operable to be extended to an extended position for use and retracted to a retracted position when not in use;

a locking mechanism operable to maintain said paper retainer in the extended position; and

a chamber for storage of said paper retainer when said paper retainer is in the retracted position;



wherein said paper retainer is elastically deformable so as to possess sufficient elastic force to cause said paper retainer to retract into said chamber upon release of said locking mechanism.

5,613,673

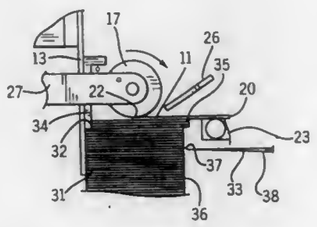
SHEET STACKING APPARATUS

Shayne A. Roberts, and Carl R. Marschke, both of Phillips, Wis., assignors to Marquip, Inc., Phillips, Wis.

Filed Aug. 15, 1995, Ser. No. 515,305

Int. Cl.[6] B65H *29/68*

U.S. Cl. 271—182 **14 Claims**



1. A sheet stacking apparatus for serially forming and discharging vertical stacks of sheets comprising:

means for conveying a stream of the sheets at a first speed into a stacking station, including a vertically movable stack support surface;

a backstop forming a vertical rear wall of the stacking station;

shingling means in the stacking station for slowing the lead sheet in the stream to a second speed, for carrying the leading edge of the lead sheet into engagement with the backstop, and for causing the leading edge of a next following sheet to overlap the trailing edge of the lead sheet;

the shingling means including a backstop nip roll positioned above the stack support surface to define a nip spaced from the backstop by a distance approximately equal to the distance between the leading edge of the next following sheet and the backstop;

whereby the leading edge of the next following sheet is nipped simultaneously with engagement by the leading edge of the lead sheet with the backstop.

5,613,674

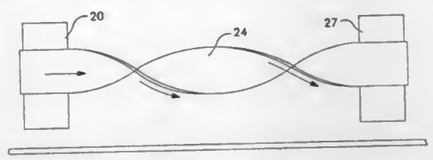
PAPER EDGE JUSTIFYING CONVEYOR

Stefan G. Golicz, Essex, and Roman M. Golicz, Clinton, both of Conn., assignors to Documotion, Inc., Old Saybrook, Conn.

Filed Nov. 4, 1994, Ser. No. 334,195

Int. Cl.[6] B65H *9/16*

U.S. Cl. 271—250 **3 Claims**



1. An edge justifying document conveyor comprising:

a first roller, said first roller defining a first axis of rotation;

a second roller, said second roller being spaced from said first roller and defining a second axis of rotation lying generally parallel to said first axis of rotation;

an endless conveyor belt, said belt extending between and around said first roller and said second roller whereby said belt defines an upper document transport path having an axis which extends between said rollers, said belt also having a lower return path between said rollers, said belt undergoing at least one twist about said transport path axis; and

guide rail means for providing an edge guide for the justification of documents being conveyed by said belt along said transport path, said guide rail means extending generally perpendicular to said first axis of rotation, the twist in said belt causing documents being conveyed along said transport path to be moved angularly relative to said transport path axis into contact with said guide rail means.

5,613,675

METHOD AND DEVICE FOR CONVEYING SHEETS IN A FEEDER REGION OF A SHEET-PROCESSING MACHINE

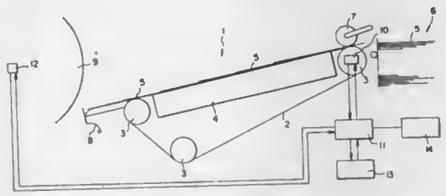
Michael Krüger, Edingen-Neckarhausen; Götz Ruder, Heidelberg; Bernhard Wagensommer, Heidelberg, and Detlef Gihr, Heidelberg, all of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Germany

Filed Jan. 27, 1995, Ser. No. 379,719

Claims priority, application Germany, Jan. 27, 1994, 44 02 339.1; Dec. 15, 1994, 44 44 755.8

Int. Cl.[6] B65H *5/34*

U.S. Cl. 271—270 **12 Claims**



1. Device for conveying single sheets or a shingled sheet stream in a feeder region of a sheet-processing machine by means of a conveyor table having a given length and being equipped with at least one endless conveyor belt, and at least two rotatably supported deflection rollers over which the conveyor belt is guided, the conveyor belt being disposed so as to convey the sheets in a region between a sheet pile and front stops, wherefrom the sheets are transferable to a further processing location of the sheet-processing machine, comprising a motor for driving the conveyor belt uncoupled from the sheet-processing machine, and a computer and control device for triggering said motor with a predetermined velocity profile exhibiting a velocity change as a function of an angular position of the sheet-processing machine, and wherein the shingled sheet stream has a mean overlap length which is an integral divisor of the given length of the conveyor table and the overlap length is continuously varied based on the course of the predetermined velocity profile.

5,613,676

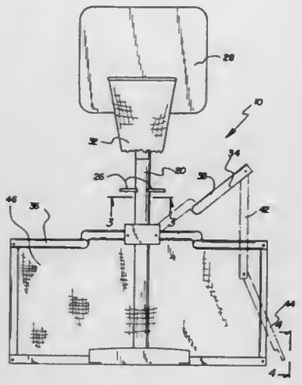
SPORTING NET

Thomas M. Connolly, 100 No Hingham Rd., Bedford Hills, N.Y. 10507

Filed Apr. 1, 1996, Ser. No. 625,247

Int. Cl.[6] A63B *63/08;71/02*

U.S. Cl. 473—416 **4 Claims**



1. A sporting net for use in conjunction with both basketball and hockey, the net comprising in combination:

a center post having an upper extent with an upper end and a lower extent with a lower end, the upper extent being telescopically received within the lower extent to afford adjustability to the center post, the upper end having approximately a 90 degree bend, the lower end including a weighed base portion, two opposed resilient clips positioned intermediate the upper and lower ends of the center post;

a backboard having a front face and a rear face, a basketball net secured to the front face of the backboard, the rear face of the backboard secured to the upper end of the center post;

a first and a second linkage, each linkage including a first link having two parallel extents and an intermediate perpendicular extent therebetween, a second downwardly extending link, and a third ground engaging link having a distal end, the first link being pivotally secured to the second link and the second link being pivotally secured to the third link, the first link of the first linkage being pivotally secured to the center post below the opposing clips, the first link of the second linkage being pivotally secured to the center post below the opposing clips and opposite the first link of the first linkage, a net secured inbetween the first and second linkages, each linkage having a first orientation wherein the first link is approximately perpendicular to the center post and the third link engages the ground with the distal end of the third linkage positioned beneath the weighted base, and a second orientation wherein the first link is secured to one of the opposed clips and approximately parallel to the center post.

5,613,677

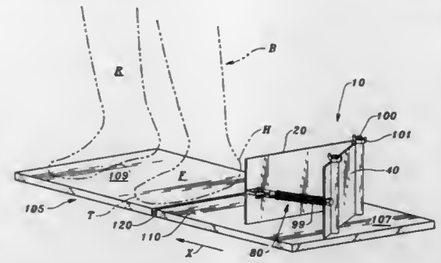
BASEBALL BATTING TRAINING DEVICE

Wallace L. Walker, Jr., 2230 Escalera Way, Reno, Nev. 89523

Filed Jul. 23, 1993, Ser. No. 96,782

Int. Cl.[6] A63B *71/02*

U.S. Cl. 473—452 **13 Claims**



1. A baseball batting training device comprising in combination:

a contact surface adapted to be impacted by a properly moved foot of a batter as a batter strides from a beginning position to an ending position,

means to allow movement of said contact surface from said beginning position to said ending position,

means for resisting motion of said contact surface from said beginning position to said ending position operatively coupled to said contact surface,

wherein said resisting means includes an elongate spring having a long central axis and which transfers work done by the foot of the batter against said contact surface while changing his stride and therefore resisting moving of said contact surface from said beginning position to said ending position and into potential energy sufficient to maintain a force which resists movement of said contact surface with the force sufficient to return said contact surface from the ending position to the beginning position when the foot of the batter is displaced from said contact surface,

wherein said resisting means includes a tab fixedly attached to said contact surface, a yoke pivotably attached by pivot means to the tab, and an alignment bolt connected to said yoke, extending along said long central axis of said spring and supported at a rear plate, whereby said alignment bolt maintains said spring between said contact surface and said rear plate,

wherein said contact surface is a rigid planar front plate with a bottom edge from which vertically extends a front surface facing the foot of the batter, and

wherein said rear plate has a lower edge and said rear plate is oriented in a plane which extends substantially vertically upward from said lower edge, said rear plate including a plurality of sleeves attached thereto to receive spikes passing through said sleeves for support on a support surface.

5,613,678

APPARATUS FOR PROJECTING AN OBJECT SUCH AS A BALL

Craig V. McKee, Dearborn; Michael S. Steer; Garrett J. Donner, both of Ann Arbor, all of Mich.; Janet E. Snell-Kelly, East Aurora, and Fred B. Robjent, Orchard Park, both of N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.

Filed Aug. 17, 1995, Ser. No. 516,449

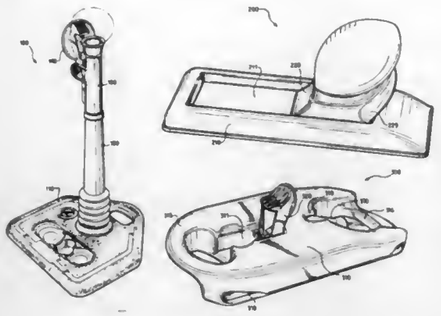
Int. Cl.[6] A63B *57/00;69/00*

U.S. Cl. 473—397 **33 Claims**

1. An apparatus for striking and projecting an object, comprising:

a support for providing the sole support for the object; and

a striker having first and second surfaces, said first surface adapted to receive a force and said second surface adapted to contact the object, said striker being movably coupled to said



support and disposable in a first position at which said second surface is adjacent to, but not supporting, the object, wherein when the force is imparted to said first surface, said striker moves so that said second surface contacts the object, projecting the object off of said support.

5,613,679

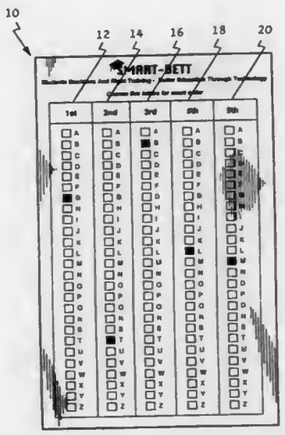
METHOD OF PLAYING A LOTTERY GAME

Nikko Casa, P.O. Box 390, Cambridge, Mass. 02142, and Cynthia C. Frené, 31 Horse Pond Rd., Sudbury, Mass. 01776

Filed Nov. 17, 1995, Ser. No. 560,106

Int. Cl.[6] A63F *3/06*

U.S. Cl. 273—138.1 **15 Claims**



1. A method of conducting a lottery game wherein a primary random selection from among a group of wagering lottery players is suppplemented by a secondary random selection from among a group of potential secondary recipients, the method comprising the steps of:

a) accepting a monetary wager from at least one wagering lottery player;

b) securing for each wagering lottery player a player series of indicia comprising a multiplicity of characters;

c) revealing a winning series of player indicia comprising a multiplicity of characters;

d) determining whether any wagering lottery player is a winning player by ascertaining for each player series of indicia whether a predetermined number of characters thereof matches characters of the winning series of player indicia;

e) awarding a valuable prize to the winning player of players, if any;

f) randomly selecting at least one secondary prize recipient; and

g) randomly selecting a bonus number from a closed set of numbers and multiplying winning players valuable prizes by the bonus number.

5,613,680

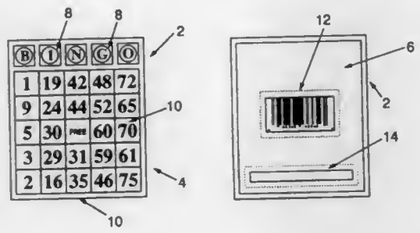
GAME CARD AND SYSTEM OF AUTHORIZING GAME CARD

David H. Groves, Adjala; Martin F. Hemy, Palgrave; John R. Spence, Newmarket, and Virna A. Ullana, Hornby, all of Canada, assignors to International Verifact Inc., Etobicoke, Canada

Filed Jun. 8, 1995, Ser. No. 488,736

Int. Cl.[6] A63F *3/06*

U.S. Cl. 273—138.2 **13 Claims**



1. A system for game card tracking and activation comprising:

game cards for playing a game of chance which game cards are provided to agents for resale to the public and require activation to be eligible to win and where the agents have access to a device for interpreting a coded magnetic stripe, an Electronic Cash Register having an associated bar code scanner, and a communicating device for communicating information derived from interpreting of magnetic stripes, said game cards having fixed game indicia on a face thereof necessary for playing the game of chance and a coded magnetic stripe positioned relative to an edge of the game card for interpreting by said interpreting device, each scannable identifier code uniquely identifying the particular game card associated therewith, and wherein said system activates each game card sold by scanning said identifier code and communicating said unique identifier code by means of said communicating device to an activation computer which records the activation of each game card such that only activated game cards can win said game of chance as recorded by said activation computer, and wherein each game card includes a common bar code generically identifying said game cards which is scanned when the game card is sold by said bar code scanner to track the number of game cards sold.

5,613,681

STRATEGY GAME WITH TWO OR THREE DIMENSIONAL MATRIX AND BALLS

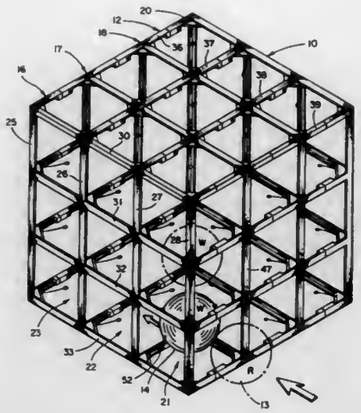
Dillis V. Allen, 31W211 Rte. 58, Elgin, Ill. 60120

Filed Oct. 19, 1995, Ser. No. 545,511

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—271 **15 Claims**

1. A strategy game, comprising: a matrix of areas extending at least two dimensionally in X and Y directions including at least three generally cubic areas in the X direction and at least three connected and adjacent generally cubic areas in the Y direction each having a width, height and depth, a plurality of rigid spherical first player members and a plurality of rigid spherical second player members all having diameters equal to or less than the width, height and depth of the cubic areas, and flexible means projecting into each of the cubic areas to hold the player members in each of the areas and permit the player members to be displaced



from the areas in either X or Y directions by engagement of one player member against another player member without tools.

5,613,682

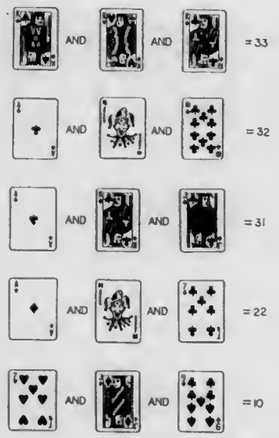
METHOD OF PLAYING A CARD GAME WHEREIN CARD VALUES ARE TOTALLED AND COMPARED

Ghirayr Otuzbiryan, 2310 Fairview #201, Burbank, Calif. 91504

Filed Apr. 15, 1996, Ser. No. 632,606

Int. Cl.[6] A63F *1/00*

U.S. Cl. 273—292 **6 Claims**



1. A method of playing a card game among two or more players, comprising:

providing a deck of playing cards containing a joker, a full complement of aces and face cards, and a partial complement of numbered cards;

providing a dealer-banker and at least one player;

dealing four cards face down to the dealer-banker and each player;

said dealer-banker and each player discarding one card, leaving three cards in each hand; and

exposing the cards in each hand, to determine the winning hands, according to the following rules:

(a) each face card has a value of ten;

(b) each numbered card has its indicated value;

(c) each ace has a value of 11;

(d) the joker has a maximum value of 11;

(e) the joker is a wild card that can be used as a face card or numbered card in any suit;

(f) each individual player plays his hand against the dealer-banker's hand; and

(g) the winning hand is the hand having the highest point totals in any one suit.

5,613,683

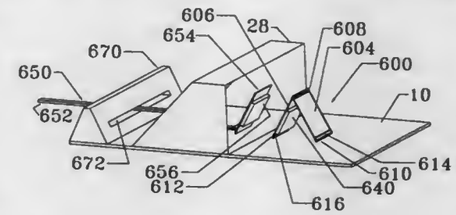
SOCCER GAME APPARATUS

Ray C. Ying, 11511 Kingsbridge Dr., Richmond, BC, Canada; Alton M. Ying, 39C Broadway, 11th Floor, Mai Foo Sun Cheun, Kowloon, Hong Kong, and Killian P. Ying, 284 Grace Dr., South Pasadena, Calif. 91030

Filed May 18, 1995, Ser. No. 443,554

Int. Cl.[6] A63F *7/06*

U.S. Cl. 273—317.1 **34 Claims**



1. Soccer game apparatus comprising:

a representative playing field having soccer field indicia thereon;

a representative game ball operable to roll along said playing field;

a representative goal operable to receive the game ball; and

a representative athlete operable to propel the game ball, wherein the athlete is characterized by a substantially concave down shape defined by a leading member having a leading portion and a trailing portion, a trailing member having a leading portion and a trailing portion, and means for connecting the trailing portion of the leading member to the leading portion of the trailing member such that downward force applied to the connecting means forces the leading portion of the leading member away from the trailing portion of the trailing member.

5,613,684

GAME PLATFORM FOR MAGNETIC DART GAME

Simon Gittens, 336 MacKay Street, Ottawa, Ontario K1M 2C1; Paul Yuck, 514 Chenier Road, Aylmer, Quebec J9H 4L4; Michael Kennedy, 898 Elmsmer Road #1, Ottawa, Ontario K1J 7T6, and Darren Dofher, #2-151 Bolton Street, Ottawa, Ontario K1N 5B4, all of Canada

Filed Mar. 29, 1996, Ser. No. 624,127

Int. Cl.[6] F41J *3/00*

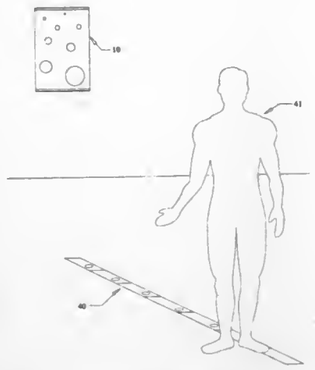
U.S. Cl. 273—348.3 **11 Claims**

1. A game apparatus comprising:

a) a game platform, said game platform comprising a steel sheet embedded between a sheet of flexible material and a paper sheet, and a removable and interchangeable loose game sheet held in place by a clear film;

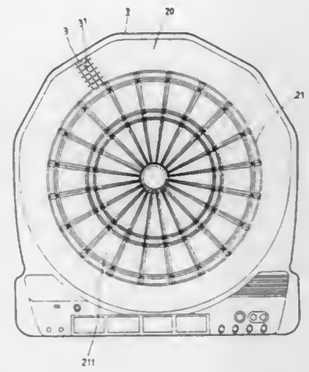
b) magnetized darts to be thrown at the game platform;

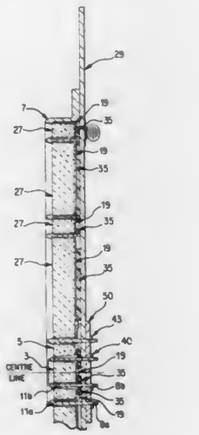
c) a floor tape marked with gradations corresponding to a position on the game platform, used to determine the throwing



distance that a player must throw his darts from: whereby said game platform interacts with said magnetized darts.

5,613,685
AUTOMATED DART BOARD
Mark F. Stewart, St. Davids, and Angelo A. Bonetta, Niagara-on-the-Lake, both of Canada, assignors to High Flyte International, Ltd., Hamilton, Bermuda
Continuation-in-part of Ser. No. 239,552, May 9, 1994, Pat. No. 5,486,007. This application Aug. 11, 1995, Ser. No. 514,254
Int. Cl.[6] F41J *3/00;5/04*
U.S. Cl. 273—374 **29 Claims**





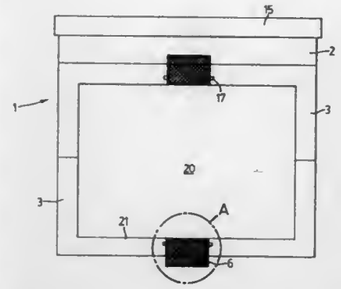
1. A target for use with a projectile, the target comprising:
e. a substantially rigid web made from conductive material, the web defining a target face, the web having a depth and the web defining one or more segments within the web that open toward the target face;
f. one or more conductive cups slidably mounted and substantially filling the target face of one or more respective segments of the web, each cup contacting the web and having a mouth that opens toward the target face;
g. an insert mounted within and substantially filling each cup to the target face;
h. a back board mounted to and behind the web, the back board having at least one conductive pad for each of the cups;
i. a resilient cushion for each of the conductive cups, between each cup and the back board;
j. a backing plate positioned centrally on a side of said back-board opposite said web;
wherein the projectile impacting an insert at the target face with sufficient force causes the conductive cup for that insert to slide within the web and contact a pad beneath that cup, and wherein the cushion beneath that cup resiliently returns the cup substantially to its original position.

5,613,686
TARGET BOARD HAVING A SURROUNDING DART RECEIVING CONFIGURATION
Chih-Hao Yiu, 7F-1, No. 30, Lin Sen Road, Taichung, Taiwan
Filed Jan. 2, 1996, Ser. No. 582,187
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—408 **2 Claims**

1. A target board comprising a center portion having a plurality of target sections formed therein and comprising a surrounding portion, wherein
said surrounding portion includes a plurality of cones formed therein, said cones each include including a tip formed in top thereof and each includes a bottom of larger size, said bottoms of at least three cones are engaged with each other so as to define an opening therein for engaging with and for receiving a dart, and said surrounding portion further includes a plurality of guide members provided between every two adjacent cones, said guide members each including a cusp formed in a top thereof and each includes two inclined surfaces for guiding the dart into said openings.

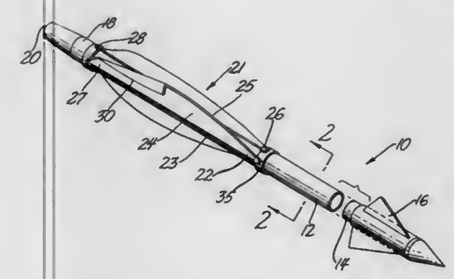
5,613,687
PORTABLE GAME AND AMUSEMENT DEVICE
John Zaffino, 3633 Indigo Crescent, Mississauga, Ontario, Canada
Filed May 23, 1996, Ser. No. 653,713
Int. Cl.[6] A63B *71/02*
U.S. Cl. 273—108.5 **18 Claims**

1. A portable game and amusement device comprising:
(a) a flexible sheet which generally defines a playing surface;
(b) a series of framing members, said framing members capable of being arranged in a substantially closed figure situated on said flexible sheet;
(c) fastening means, said fastening means releasably securing said framing members to the upper surface of said flexible sheet in said substantially closed figure and thereby holding said flaming members in a fixed position on said upper surface of said flexible sheet and also holding said flexible sheet in a taut configuration beneath said framing members; and,



(d) a pair of net members releasably securable to said framing members and positioned opposite one another when said framing members are arranged in said substantially closed figure,
said framing members when releasably secured to said flexible sheet to form said substantially closed figure defining a playing arena within the interior of said substantially closed figure, said playing arena providing a means to contain a game piece that is rolled or slid along said flexible sheet.

5,613,688
ARROW VANE
Richard F. Carella, 43640 Riverway Dr., Clinton Twp., Mich. 48038
Filed Nov. 13, 1995, Ser. No. 557,358
Int. Cl.[6] F42B *6/06*
U.S. Cl. 473—586 **24 Claims**



1. An arrow comprising:
a shaft having a forward end, an oppositely disposed rearward end, and a central axis; and
a plurality of axially elongated vanes mounted to said shaft contiguous said oppositely disposed rearward end, each vane of said plurality of axially elongated vanes having a planar portion having a terminal edge at one end tangentially attached to said shaft without wrapping around said shaft, each said vane further having an extended fin portion projecting from an opposite end of said planar portion in a direction away from said central axis of said shaft whereby each extended fin portion of said plurality of axially elongated vanes extends in the same direction without overhanging said shaft, the undersurface of said extended fin portion and a radially outer surface of said planar portion defining an air channel for channelling air flow along said undersurface whereby said air flow along said undersurface of said extended fin portion generates a rotating moment about said central axis of said shaft to provide increased rotation and stability to said shaft and thereby improve flight accuracy of said arrow.

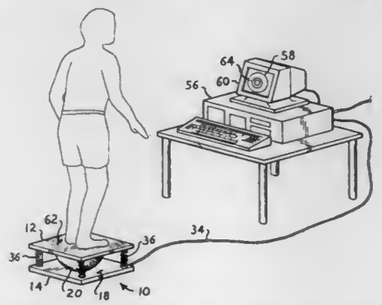
5,613,689
BEACH GAME
Erhan Gunday, 2938 Holly Rd., Santa Barbara, Calif. 93105
Filed Jun. 21, 1996, Ser. No. 669,882
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—440 **19 Claims**



1. A beach game comprising:
a plurality of poles, each pole having a first end which is adapted to be implantable in sand and a second end which is configured to be grippable by a person's hand; and
a plurality of water indicators, each water indicator including means for attaching the water indicator to a person and a material which provides indication of contact of the material with water when the material contacts water.

13. A method of playing a game on a beach which is adjacent to a body of water having a surf, comprising the steps of:
attaching a water indicator to a player, said water indicator including a material which provides an indication upon becoming wet; providing said player with a pole which is configured to be implantable in sand; said player pursuing retreating surf in a direction toward the body of water while avoiding wetting said water indicator; said player planting said pole into the beach near the surf while avoiding wetting said water indicator; and said player then moving away from the body of water while avoiding wetting said water indicator.

5,613,690
BALANCE AND PROPRIOCEPTION TRAINING AND ENHANCEMENT DEVICES
Jerry M. McShane, 2313 Killarney, Deer Park, Tex. 77536, and Mrugesh M. Shah, 4301 Vista Rd., Pasadena, Tex. 77505
Filed Feb. 13, 1996, Ser. No. 600,360
Int. Cl.[6] A63B *22/16*
U.S. Cl. 273—449 **20 Claims**



1. A balance and proprioception training and enhancement device, comprising:
a base platform having an upper surface with a spherically shaped concave depression formed therein, and a balance platform disposed thereatop having a lower surface with a spherically shaped convex support extending therebeneath

and fitting closely within said spherically concave depression of said base platform;

said concave depression of said base platform and said convex support of said balance platform including support means disposed therebetween providing for low friction movement of said depression and said support relative to one another;

said concave depression further including angular displacement detection means disposed therein and adapted to provide continuous output of incremental angular variation of said balance platform relative to said base platform, in at least two mutually orthogonal directions, whereby;

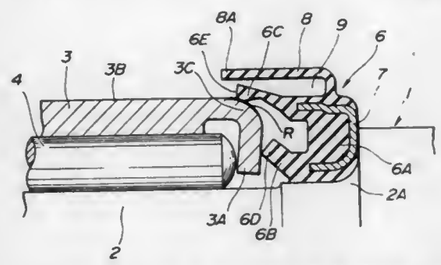
a user of said training device stands atop said balance platform and attempts to maintain said balance platform in a level orientation relative to said base platform in accordance with said continuous output of incremental angular variation of said balance platform relative to said base platform, thereby enhancing the balance and proprioceptive skills of the user.

5,613,691

SEALING DEVICE FOR UNIVERSAL JOINT WITH INTEGRAL SEALING LIPS AND COVER PORTION

Hiromichi Komai, and Hidenori Haraguchi, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Continuation of Ser. No. 376,738, Jan. 23, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 673,467
Claims priority, application Japan, Feb. 4, 1994, 6-012497
Int. Cl.[6] F16C *1/24;* **F16D** *3/40;* **F16J** *15/32*
U.S. Cl. 277—152 **11 Claims**



1. A sealing device for an universal joint, the sealing device being installed between a bearing cap arranged on a bearing portion of a joint cross of the universal joint and a base of the universal joint, the sealing device comprising:

an outer peripheral portion;

a lip portion arranged at said outer peripheral portion, said lip portion being in close contact with an outer peripheral edge of the bearing; and

a cover portion arranged at an outer periphery of said lip portion substantially parallel therewith an at a predetermined clearance, said cover portion extending over said outer peripheral edge of the bearing cap without contacting said outer peripheral edge thereof,

said lip portion and said cover portion being integrally formed with each other.

5,613,692

COLLET

Don R. Lloyd, 8970 Clinton River Dr., Sterling Heights, Mich. 48314

Filed Aug. 25, 1995, Ser. No. 519,484
Int. Cl.[6] B23B *31/20;31/40*
U.S. Cl. 279—2.03 **20 Claims**

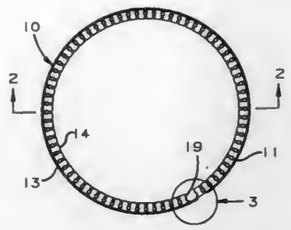
1. In a collet chuck having a chuck body provided with at least one circular collet seat, a circular collet mounted on said collet seat, a movable power operated actuator means slidably mounted on the chuck body for engagement with said collet to bias it into a gripping engagement with a circular periphery on a cylindrical-like workpiece when the actuator means is moved in one direction, a return means mounted on the chuck body in engagement with the actuator means for moving the actuator means in another direction to release the collet gripping engagement with the cylindrical-like workpiece, the improvement comprising:

(a) said circular collet having a flexible circular collet body which has an outer circular periphery and an inner circular periphery;

(b) said flexible circular collet body having a radial opening formed therethrough which extends between said outer and inner peripheries;

(c) one of said collet body circular peripheries having a workpiece gripping surface and the other of said collet body circular peripheries having a tapered cam surface engageable by said actuator means to bias the collet into said engagement with said workpiece; and,

(d) said tapered cam surface having a plurality of circumferentially spaced apart slots, and each of said slots has an open outer end and an arcuate inner end.

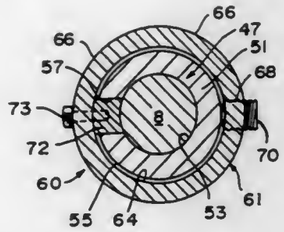


5,613,693

TOOLHOLDER ASSEMBLY FOR ACCURATELY SECURING A TOOL SHANK IN A SOCKET

Valdas S. Ramunas, Euclid, Ohio, assignor to Kennametal Inc., Latrobe, Pa.

Filed Sep. 1, 1995, Ser. No. 522,783
Int. Cl.[6] B23B *31/107*
U.S. Cl. 279—76 **21 Claims**



1. A toolholder assembly for accurately securing a shank of a tool in a socket in a desired alignment, comprising:

an inner collar having a wall with an inner surface that defines a socket recess for receiving a shank of a tool, and an outer surface that defines a collar periphery;

an outer clamping assembly surrounding the periphery of said inner collar including means for applying a compressive force around a portion of said periphery, and

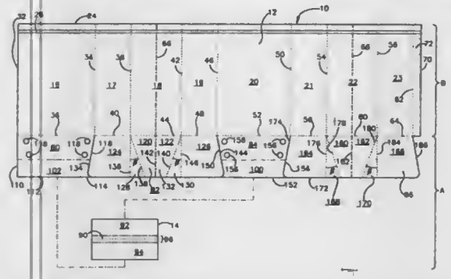
a tool retainer extending through a portion of said inner collar wall opposite from said compressive force applying means for directing said compressive force across said socket recess to retain a tool shank therein while diverting said compressive force away from said opposite portion of said inner collar wall to prevent hoop distortion in said inner collar wall.

5,613,694

AUTOMATICALLY-OPERATING BOTTOM STRUCTURE IN A COLLAPSIBLE CONTAINER

Thomas M. Gasper, Ft. Wayne, Ind., assignor to Creative Tech Marketing, Strongsville, Ohio

Continuation of Ser. No. 420,355, Apr. 11, 1995, Pat. No. 5,531,374, which is a continuation-in-part of Ser. No. 344,989, Nov. 25, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 621,042
Int. Cl.[6] B65D *5/26*
U.S. Cl. 229—109 **17 Claims**



1. An automatically-operating bottom structure for use with a collapsible container adapted to be selectively moved between a folded-flat condition and a fully-expanded condition, said container having a plurality of panels being pivotally connected along their adjacent longitudinal edges so as to be arranged in series with one another, said panels being arranged in opposing pairs when the container is in said fully-expanded condition, the automatically-operating bottom structure comprising:

a band pivotally connected to each of a first pair of said panels, the band having two sections pivotally connected to one another about an intermediate pivotal axis substantially parallel to the pivotal axes between said band and said first pair of panels, said two sections being arranged with respect to one another at an included angle of about 0° when said container is in said folded-flat condition and being arranged with respect to one another at an included angle of about 180° when said container is in said fully-expanded condition;

a first pair of bottom flaps each connected to a one of a second pair of said panels, each of said first pair of bottom flaps engaging a first surface of said band and forming an included angle of about 90° with respect to its associated panel when the container is in said fully-expanded condition;

a second pair of bottom flaps, each connected to a one of a third pair of said panels, each of said second pair of bottom flaps engaging a second surface opposite said first surface of said band and forming an included angle of about 90° with respect to its associated panel when the container is in said fully-expanded condition;

a third pair of bottom flaps, each connected to a one of a fourth pair of said panels, each of said third pair of bottom flaps engaging said second surface of said band and forming an included angle of about 90° with respect to its associated panel when the container is in said fully-expanded condition;

a first pair of web panels connecting a one of said first pair of bottom flaps with said second pair of bottom flaps; and,

a second pair of web panels connecting the other of said first pair of bottom flaps with said third pair of bottom flaps.

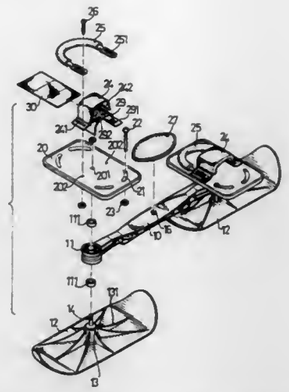
5,613,695

SKATE BOARD COMBINATION

Fu-Pin Yu, No. 20, Lane 426, Sec 2, Chong Der Road, Tai-chung, Taiwan

Filed May 8, 1995, Ser. No. 436,790
Int. Cl.[6] B62B *9/04;* **A63C** *5/06*
U.S. Cl. 280—14.2 **3 Claims**

1. A ski board combination comprising:



a beam including two ends each having a hub provided thereon, and including a middle portion,

a pair of ski boards each including a shaft extended upward therefrom and engaged upward through one of said hubs so as to allow free rotation of each of said ski boards in its respective hub, and

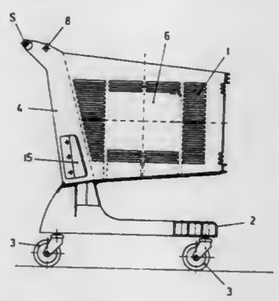
a pair of first foot supports each secured on top of one of said shafts respectively and rotated in concert each with its respective shalt, said first foot supports each of which includes at least one slot extending therethrough, and each of said slots includes stop means engaged in said slot for engaging with said beam so as to limit rotational movement of said first foot supports.

5,613,696

SHOPPING TROLLEY FOR SUPERMARKETS AND THE LIKE

Gerardo S. de Luna, Barcelona, Spain, assignor to Policad Industrial, S.L., Pamplona, Spain

Filed Dec. 19, 1994, Ser. No. 358,372
Claims priority, application Spain, Mar. 4, 1995, 9400444
Int. Cl.[6] B62B *3/14*
U.S. Cl. 280—33.992 **4 Claims**

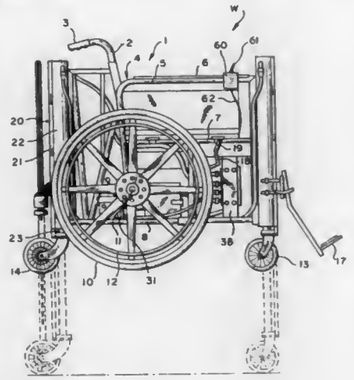


1. A shopping trolley comprising:

a basket defining a nesting recess mounted on a support structure having a user handle and which support structure is mounted on a wheeled carriage, the basket having a rear opening to permit nesting of similar trolleys via corresponding nesting recesses, the rear opening being closed by a swinging flap, pivotally mounted to the basket said rear opening having sides, a space is defined between the swinging flap and the sides of the rear opening, said rear opening in the basket is in part closed by angular pieces coupled to said basket and disposed in the lower part of a space which remains between said swinging flap and said sides of the rear opening, and

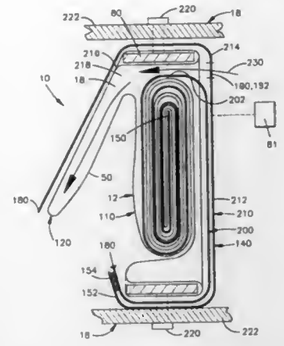
protruding behind the swinging flap, said angular pieces having a bending zone, whereby said pieces are retractable into said corresponding nesting recessess when the trolleys are nested togethers the shopping trolley comprising a single plastics molding including said basket, said support structure, and said wheeled carriage.

5,613,697
ELEVATABLE WHEELCHAIR
David D. Johnson, Rte. 1, Box 788-B, Hortense, Ga. 31543
Filed Nov. 18, 1994, Ser. No. 344,580
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—250.1 **15 Claims**



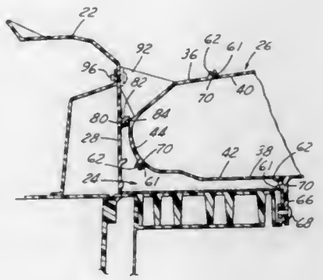
1. A wheelchair comprising:
(a) a framework having a front end, a rear end and two side frames;
(b) a pair of ground engaging main wheels each having an inside face and each being rotatably mounted to an axis affixed to said framework for engaging a ground surface in a ground engaging position;
(c) a pair of front wheels and a pair of auxiliary rear wheels, each of said wheels being rotatably mounted to said framework;
(d) a hydraulic system fixedly attached to said framework, said hydraulic system being operatively configured to reversibly elevate said framework and said pair of main wheels from said ground engaging position to an elevated position, said framework being supported on said ground surface only by said front and rear wheels when in said elevated position;
(e) a drive gear arrangement rotatably arranged on said framework and connecting said pair of main wheels to said pair of auxiliary rear wheels, said drive gear arrangement being operatively configured to translate a rotation of said main wheels by a user of said wheelchair into a motive force for rotating said pair of auxiliary rear wheels when said framework is elevated to said elevated position.

5,613,698
WRAPPED INFLATABLE RESTRAINT
Patrick E. Patercsak, St. Clair Shores, and James W. Essad, Sandusky, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed May 25, 1995, Ser. No. 448,921
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.1 **21 Claims**



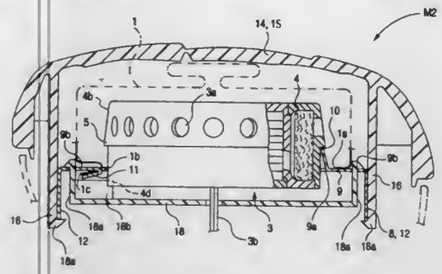
1. A vehicle safety apparatus comprising:
an inflatable vehicle occupant restraint having a deflated folded condition and an inflated condition for protecting an occupant of a vehicle; and
a flexible wrap encircling said folded inflatable restraint and maintaining said folded inflatable restraint in said folded condition, said flexible wrap having portions which are secured together to maintain said wrap in an encircling relation with said folded inflatable restraint when said inflatable restraint is in the deflated folded condition;
said flexible wrap having an opening means for receiving inflation fluid and for directing inflation fluid into a predetermined portion of said deflated inflatable restraint to cause said predetermined portion to inflate first.

5,613,699
INSTRUMENT PANEL ASSEMBLY WITH MOUNTING FOR AIR BAG CANISTER
John Schambre, Canton, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Aug. 17, 1995, Ser. No. 516,080
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **7 Claims**



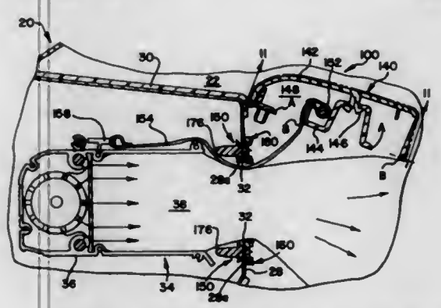
7. An instrument panel assembly comprising an instrument panel having a rearwardly opening recess defined at least in part by a generally upright front wall and a bottom wall extending rearwardly therefrom, an air bag canister having a generally upright front wall and a bottom wall extending rearwardly therefrom, means mounting said canister in said recess with its front wall adjacent the front wall of said recess and its bottom wall adjacent the bottom wall of said recess, said mounting means comprising a flange on the bottom wall of said canister, means for securing said flange to the instrument panel, an elongated, generally horizontal rib element and an elongated, generally horizontal slot element in which the rib element is received, one of the rib and slot elements being provided on the front wall of the canister and the other of the rib and slot elements being provided on the front wall of said recess.

5,613,700
AIR BAG DEVICE
Tetsushi Hiramitsu, Aichi; Koji Shiraki, Gifu; Yasunori Iwai, Osaka, and Masakazu Tokuda, Hyogo, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan
Filed Nov. 28, 1995, Ser. No. 563,379
Claims priority, application Japan, Nov. 29, 1994, 6-295195
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **10 Claims**



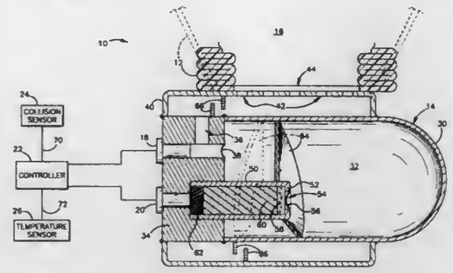
1. An air bag device comprising:
an air bag;
an inflator for supplying air to said air bag; and
a bag holder for holding said air bag and said inflator, said bag holder including a bottom wall with an insertion hole into which said inflator being inserted from the lower side of said bag holder;
wherein retaining means is formed on the outer surface of said inflator, a plurality of pawls are formed upwardly and inwardly extended from the circumferential edge of the insertion hole, and said inflator is held by said bag holder in a manner that the pawls are retained by the retaining means.

5,613,701
BREAK-AWAY FASTENING SYSTEM FOR AIR BAG DEPLOYMENT DOORS
Fred M. Bentley, Layton, Utah, and Denis J. Tostain, Cergy Le Haut, France, assignors to Morton International Inc., Chicago, Ill., and Allibert Industrie S.A., France
Filed May 16, 1995, Ser. No. 442,173
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **25 Claims**



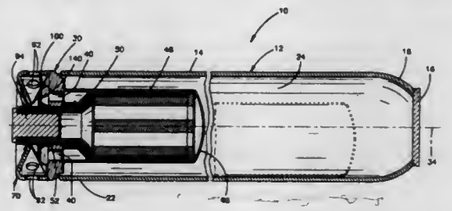
1. A break-away fastening system for securing an air bag deployment door in a position closing a panel opening aligned with an inflatable air bag, comprising:
fastener means including at least one pin and socket connector extending between an edge flange adjacent said panel opening and said door; and
a fracture section of reduced cross-section formed in said door or edge flange around said pin and socket connector to break and release said door when said air bag is deployed to inflate through said panel opening.

5,613,702
APPARATUS FOR INFLATING AN INFLATABLE VEHICLE OCCUPANT RESTRAINT
George W. Goetz, Rochester Hills, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Feb. 23, 1996, Ser. No. 606,067
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—735 **12 Claims**



1. Apparatus comprising:
collision sensor means for sensing the occurrence and the severity of a vehicle collision;
inflator means for providing inflation fluid, said inflator means containing pressurized inflation fluid and ignitable material for heating said pressurized inflating fluid;
first initiator means for initiating a flow of said pressurized inflation fluid from said inflator means;
second initiator means for igniting said ignitable material;
temperature sensor means for sensing the ambient temperature of said inflator means; and
controller means for responding to said collision sensor means and said temperature sensor means by actuating said first initiator means at an initial time in response to said occurrence of said vehicle collision, and by actuating said second initiator means after the lapse of a delay time which is determined by said controller means with reference to said ambient temperature and said severity of said vehicle collision.

5,613,703
APPARATUS FOR INFLATING AN INFLATABLE VEHICLE OCCUPANT PROTECTION DEVICE
Craig M. Fischer, Mesa, Ariz., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Nov. 1, 1995, Ser. No. 551,677
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **15 Claims**



1. Apparatus comprising:
container means for containing inflation fluid under pressure, said container means having a discharge opening for discharging a flow of said inflation fluid;
closure means for releasing said inflation fluid to flow outward through said discharge opening upon rupturing of said closure means;
isolator means for providing a hermetic seal which isolates said discharge opening from the ambient atmosphere, said isolator

means being located between said discharge opening and said ambient atmosphere; and

baffle means for shielding said isolator means from direct impingement by said flow of inflation fluid and for applying an inflation fluid pressure force to said isolator means so as to open said hermetic seal under the influence of said flow of inflation fluid, said baffle means being located between said discharge opening and said isolator means.

5,613,704

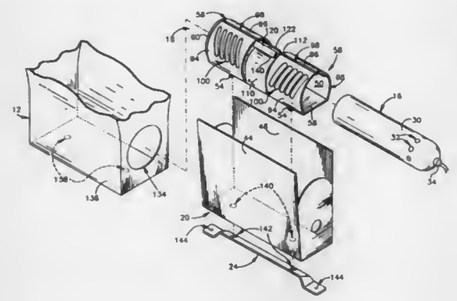
DIFFUSER STRUCTURE FOR CLAMPING AN INFLATOR IN AN AIR BAG MODULE

Michael J. White, Jr., Shelby Township, and John P. Wallner, Rochester, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Apr. 22, 1996, Ser. No. 635,707

Int. Cl.[6] B60R *21/28*

U.S. Cl. 280—740 **17 Claims**



1. Apparatus for use with an inflator for an inflatable vehicle occupant protection device, said apparatus comprising:

a diffuser structure defining a plenum in which the inflator is receivable, said diffuser structure having diffuser walls with inflation fluid outlet openings extending outward from said plenum, said diffuser structure further having first and second clamping walls facing in opposite directions across said plenum, said first clamping wall being bendable pivotally inward across said plenum; and

load bearing means for maintaining said first clamping wall under a bending load which urges said first clamping wall pivotally inward across said plenum so as to retain the inflator tightly between said clamping walls.

5,613,705

AIRBAG INFLATOR HAVING A HOUSING PROTECTED FROM HIGH-TEMPERATURE REACTIVE GENERATED GASES

Christopher Hock, Uintah; Gerold W. Pratt, Bountiful; Michael P. Jordan, South Weber, and Alan J. Ward, N. Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 24, 1995, Ser. No. 410,626

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—741 **26 Claims**

1. In a gas generator for a vehicle airbag assembly comprising a metallic housing which encloses a gas generating composition comprising a high reaction temperature gas generant capable of producing a sufficient volume of generated gas to inflate an associated airbag, the improvement comprising a protective layer over a portion of the interior surface of said metallic housing, said protective layer being configured to protect said portion from deterioration by contact with the reaction products produced by the gas generating composition.

5,613,706

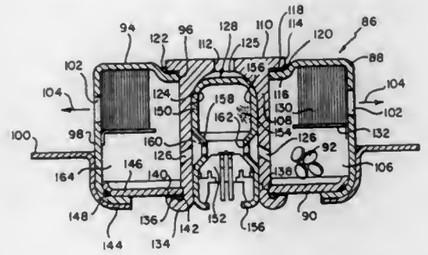
SELF-CONTAINED INFLATOR PYROTECHNIC INITIATOR

Todd S. Parker, Bountiful, and Gregory J. Lang, South Ogden, both of Utah, assignors to Morton International, Inc.

Filed Dec. 13, 1995, Ser. No. 572,206

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—741 **20 Claims**



1. A housing for an air bag inflator for containing an ignition train and gas generating material, comprising:

a base and a spaced apart coaxial top wall having matching aligned peripheral edges and aligned central openings,

an outer side wall extending between said aligned peripheral edges of said base and said top wall and having a plurality of normally sealed gas exit ports,

an inner side wall in coaxial alignment with said outer side wall having an upper end in contact with said top wall and a lower end portion crimped over against said lower surface of said base, defining a central inner space in said housing for said ignition train, and having a plurality of normally sealed ignition ports therein,

said outer side wall having an annular end flange at a lower end portion crimped over against a lower surface of said base to close said housing, with said base, said top wall, said inner wall and said outer wall defining an annular outer chamber which provides an outer pressure vessel for containing said gas generating material,

said ignition train being housed in an inner pressure vessel that is inserted in said central inner space, being press fit against said inner side wall, and having a plurality of normally sealed ignition exit ports therein, said pressure vessel having an open end into which is inserted a squib that closes said open end of said pressure vessel and contains all of the primary and secondary pyrotechnic charge that is required to ignite said gas generating material,

said plurality of normally sealed exit ports of said inner pressure vessel being disposed in operative association with said plurality of ignition ports in said inner side wall.

5,613,707

METHOD OF ARRANGING A GAS BAG IN A COMPARTMENT

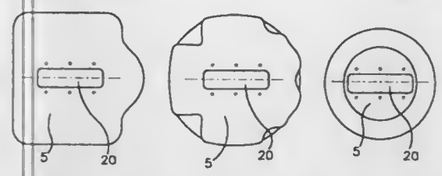
Dietmar Berti, Schechingen, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Nov. 13, 1995, Ser. No. 559,198

Claims priority, application Germany, Nov. 15, 1994, 44 40 844.7

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.1 **6 Claims**



1. A method of arranging a gas bag of a vehicle restraint system for accommodation in a compartment, said gas bag, in a deflated condition, being generally flat and having an outer periphery, an inflation opening being defined in a wall portion of said gas bag, comprising the steps of holding said bag in a spread-out state and rolling said bag inwardly towards said inflation opening, starting from said outer periphery.

5,613,708

COLLISION PROTECTION DEVICE, IN PARTICULAR FOR OCCUPANTS OF VEHICLES

Alexander Bleider, Hildesheim; Michael Gumprecht, Schellerten, and Manfred Wirries, Hildesheim, all of Germany, assignors to Phoenix Airbag GmbH, Hildesheim, Germany

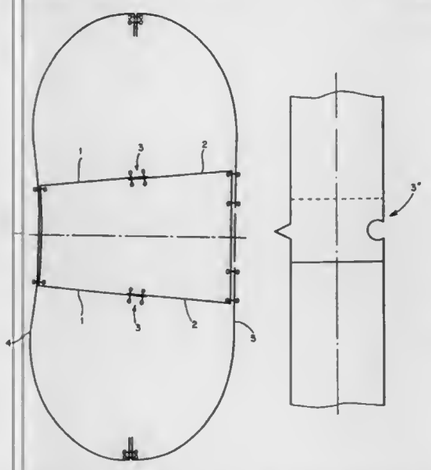
PCT No. PCT/DE94/00413, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO94/23972, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 14, 1994, Ser. No. 360,723

Claims priority, application Germany, Apr. 17, 1993, 43 12 578.6

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.2 **3 Claims**



1. Collision protection device for an occupant of a motor vehicle, comprising

(a) an airbag;

(b) the airbag being made of fabric comprising a fastening part on a gas inflow side, said fastening part being equipped with a fire protection means, said airbag having, a top part occupant impact side, and having catch belts attached thereto;

(c) the catch belts having ends being connected with each other at joints; and

(d) the catch belts each have, on outer edges thereof, at least one projection and at least one recess, and the projection on one catch belt overlapping the projection on a corresponding catch belt and the recess on one catch belt overlapping the recess on a corresponding catch belt to permit said ends to be connected at said joints; and

(e) said recess being curved such that it impairs the strength of the catch belts, as well as the transmission of force, to the least possible extent.

5,613,709

ROTATABLE STEERING GEAR BOX AND COLLAPSIBLE STEERING COLUMN

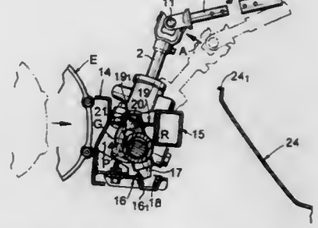
Hideaki Nakamichi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,184

Claims priority, application Japan, Sep. 5, 1994, 6-211061; Oct. 20, 1994, 6-255659

Int. Cl.[6] B62D *1/18*

U.S. Cl. 280—777 **18 Claims**



1. A steering system for a vehicle, comprising:

a steering gear box disposed laterally of a vehicle body at a front portion thereof, and a steering wheel mounted at a rear end of a steering shaft which extends rearwardly and upwardly from an upper portion of said steering gear box;

said steering gear box is turnably supported about a laterally extending axis thereof, a transmitting member extends between and operatively interconnects the steering gear box and a front vehicle body structure, and said steering shaft is displaced forwardly by transmitting rearward movement of said front vehicle body structure to said steering gear box by said transmitting member to turn said steering gear box about said axis.

5,613,710

DUAL REAR WHEEL FENDER LINER

Alan R. Waner, R.R. 2, Box 175, Altamont, Ill. 62411

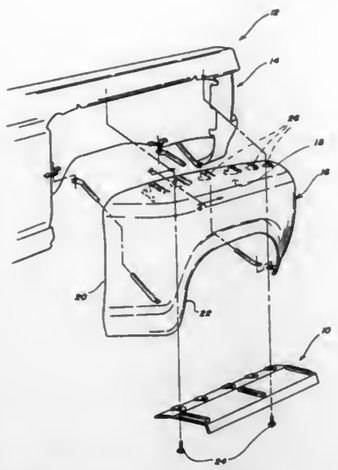
Filed Jun. 12, 1995, Ser. No. 489,225

Int. Cl.[6] B62B *9/16*

U.S. Cl. 280—848 **10 Claims**

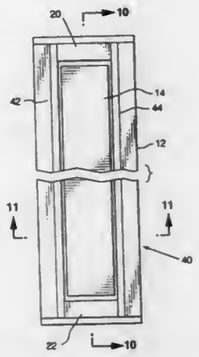
1. A fender liner for a dual wheel fender, said fender formed of epoxy-fiberglass and having a substantially flat top, an inboard and an outboard side, said fender mounted on angled brackets along the top of the fender on the inboard side of the fender to a rear quarter panel of a vehicle with bolts through the angled brackets, said fender liner comprising

an elongated flat panel formed of sheet material with an inboard side flange, said flat panel running substantially the length and breadth of the flat top and suited to be installed inside the fender along the flat top,



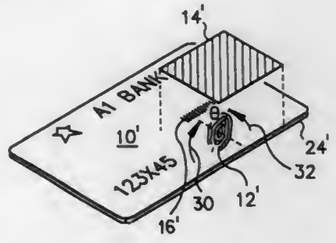
said fender liner adapted to be attached to the angled brackets along the inboard side flange of the fender liner by the bolts attaching the fender to the vehicle along the top of the fender whereby the underside of the flat top of the fender is guarded against damage by rocks and other objects which may be hurled up against the flat top of the fender.

5,613,711
ADHESIVE BINDING STRIP HAVING TAPERED HIGH TACK ADHESIVE BANDS
Kevin P. Parker, Berkeley, Calif., assignor to Powis Parker Inc., Berkeley, Calif.
Continuation-in-part of Ser. No. 195,690, Feb. 16, 1994, Pat. No. 5,452,920. This application Jun. 5, 1995, Ser. No. 462,608
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—21.1 **4 Claims**



1. An adhesive binding strip for binding pages together comprising:
an elongated substrate comprising formable material, said substrate including first and second edges which extend along a longitudinal axis of said substrate and third and fourth edges which extend normal to said longitudinal axis;
an adhesive band, having a thickness, disposed over said substrate along the longitudinal axis;
an adhesive matrix disposed over said substrate and extending around said adhesive band;
with said adhesive matrix having a thickness which is at least one-half the thickness of said adhesive band and wherein said adhesive matrix extends completely around said adhesive band and includes a first segment which extends between said adhesive band and said first substrate edge and is displaced from said first substrate edge so as to form a first region and a second segment which extends between said adhesive band and said second substrate edge and is displaced from said second substrate edge so as to form a second region, with the matrix further including a first and a second adhesive tapered sections disposed in the first region and second regions, respectively, with the first and second tapered adhesive sections having an average thickness which is less than two-thirds the thickness of the first and second segments;
with said adhesive band and said adhesive matrix comprising heat-activated adhesives having respective viscosities when activated, with said adhesive matrix viscosity being greater than said adhesive band viscosity.

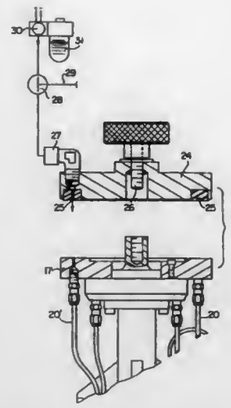
5,613,712
MAGNETIC FINGERPRINT FOR SECURE DOCUMENT AUTHENTICATION
Frederick J. Jeffers, Escondido, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 21, 1995, Ser. No. 426,388
Int. Cl.[6] B42D *15/10*
U.S. Cl. 283—78 **5 Claims**



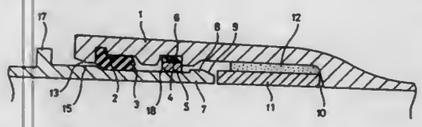
1. A personal identification document comprising:
a) a medium comprising said document,
b) means for obtaining a magnetic image of a personal fingerprint, said magnetic image having a fingerprint axis along the direction of the finger related to said magnetic image,
c) means for rotating the fingerprint axis of said magnetic image by an angle relative to a fixed direction in said medium, wherein a rotated magnetic image relative to said fixed direction is obtained,
d) means for incorporating said rotated magnetic image on said medium,
e) means for incorporating magnetically recorded information on said medium, said recorded information specifying the magnitude of said angle, and
f) means for covering said magnetic image and said magnetically recorded information, wherein said means for covering is optically opaque and magnetically transparent.

5,613,713
ARRANGEMENT FOR CLEANING A CONTAINER TESTING APPARATUS
Peter Gysi, Bellikon; Theo Huesser, Rudolfstetten, and Daniel Wildmann, Dielsdorf, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland
Filed Feb. 17, 1995, Ser. No. 390,634
Claims priority, application Switzerland, Mar. 17, 1994, 0792/94
Int. Cl.[6] F16L *25/00*
U.S. Cl. 285—12 **2 Claims**

1. Arrangement for cleaning a container testing apparatus, the apparatus including a rotating carousel, a stationary distributor head part, and a rotating distributor head part in fluid communication with the stationary distributor head part, the rotating distributor head part being mounted on and rotated by the carousel of the container testing apparatus and coupled to pipes extending into containers to extract gas samples from the containers and to distribute the gas samples from the containers and through the pipes to an analysis instrument associated with the stationary distributor head part for testing the containers for contamination, the arrangement comprising:
an adaptor part for cleaning the pipes and the rotating distributor head part of the container testing apparatus when off-line during a cleaning cycle, the adaptor part being mounted on the rotating part in place of the stationary distributor head part, the adaptor part including a connection for fluid communication with a cleaning source, the adaptor and the rotating distributor head parts cooperating with one another to define an enclosed fluid channel communicating with the connection for the cleaning source and with the pipes to provide a fluid path from the cleaning source to the pipes.

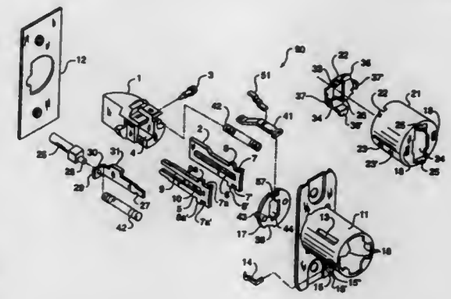


5,613,714
SEPARATION-PREVENTIVE PIPE JOINT
Toshio Toshima; Takahiro Ishihara, and Takashi Yokomizo, all of Amagasaki, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Mar. 14, 1996, Ser. No. 615,894
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—39 **13 Claims**



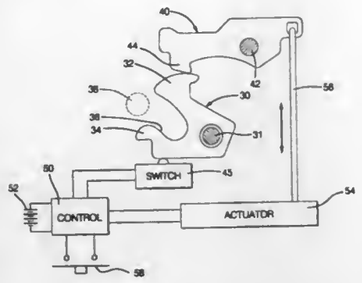
1. A separation-preventive pipe joint for joining a pair of pipes together, comprising:
a socket formed in an end portion of one of the pipes;
a spigot formed in an end portion of the other pipe;
a locking ring receiving groove formed in an inner periphery of the socket;
a locking ring received in the locking ring receiving groove;
a projection formed on an outer periphery of an end portion of the spigot for preventing the spigot from being separated from the socket by engaging the locking ring;
means disposed inside the socket for preventing the projection from moving toward a position in the socket deeper than a position at which the projection is engageable with the locking ring by abutting the end portion of the spigot; and
bend-preventive means for preventing the spigot and the socket from bending relative to each other by filling up a clearance between an outer peripheral surface of the spigot and an inner peripheral surface of an open end portion of the socket.

5,613,715
BACKSET ADJUSTING DEVICE OF CYLINDRICAL DOOR LOCK
Won-Sae Kim, Taegu, Rep. of Korea, assignor to Hyundai Metal Co., Ltd., Taegu, Rep. of Korea
Filed Jul. 27, 1995, Ser. No. 507,871
Int. Cl.[6] E05C *1/00*
U.S. Cl. 292—1.5 **3 Claims**



1. A backset adjusting device of a cylindrical door lock comprising:
a latch bolt, said bolt having an enlarged cavity at its rear center;
a latch bolt extension slide received in said cavity of the latch bolt at its front section and coupled to said latch bolt by a fixing pin, said extension slide having an axial guide slot;
a retractor slide received in said cavity of the latch bolt at its front section in parallel with said latch bolt extension slide and movably coupled to said latch bolt extension slide so as to linearly reciprocate with respect to said extension slide by 10 mm, said retractor slide having:
an opened axial guide slit, said guide slit being formed on a front section of the retractor slide and receiving said fixing pin therein;
a side guide projection extending from a side surface of a middle section of the retractor slide toward the extension slide, said side guide projection being movably received in said guide slot of the extension slide in order to slide in said guide slot and to guide axial reciprocation of the retractor slide with respect to the extension slide; and
a pair of hooking notches formed on a rear section of the retractor slide;
an inner cylinder axially receiving both said extension slide and said retractor slide such that rear sections of said slides protrude out of a rear end of said inner cylinder; and
an outer cylinder movably fitted over a rear section of said inner cylinder and coupled to said hooking notches of the retractor slide at its rear end, said outer cylinder axially moving with respect to said inner cylinder while trailing said retractor slide, thus to adjust the backset of a dead bolt of said door lock between 60 mm backset and 70 mm backset.

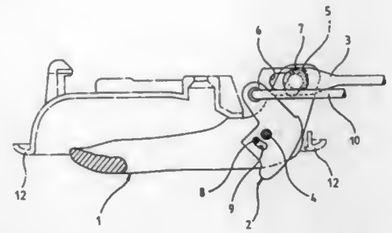
5,613,716
ELECTRONIC VEHICLE DOOR UNLATCH CONTROL
Daniel F. Cafferty, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 25, 1996, Ser. No. 591,069
Int. Cl.[6] E05C *3/26*
U.S. Cl. 292—216 **1 Claim**



1. A control for a vehicle door unlatch mechanism, the vehicle door unlatch mechanism comprising a rotatable fork bolt and a detent on one of a vehicle body and a vehicle door and a striker on the other of the vehicle body and the vehicle door, the fork bolt having a door closed position in which the striker is retained therein against an opening force generated between the door and body and a door open position in which the striker is released therefrom to allow the door to be opened by the opening force, the control comprising, in combination:
- a reversible actuator activatable in a first direction to move the detent from a fork bolt retaining position to a fork bolt releasing position, the detent remaining in the fork bolt releasing position when the actuator is deactivated, and further activatable in a second direction to return the detent from the fork bolt releasing position toward the fork bolt retaining position;
- an unlatch switch activated by the vehicle fork bolt to provide a first signal when the fork bolt is in the door closed position and to provide a second signal when the fork bolt is in the door open position;
- release means for generating a door opening signal;
- opening means responsive to the door opening signal to activate the actuator in the first direction and deactivate it when the unlatch switch provides the second signal or at the end of a first predetermined time period, whichever occurs first; and
- reset means for activating the actuator in the second direction, following deactivation of the actuator by the opening means, when the unlatch switch provides the second signal, when the release means no longer generates the door opening signal, or at the end of a second predetermined time period longer than the first predetermined time period, whichever occurs first.

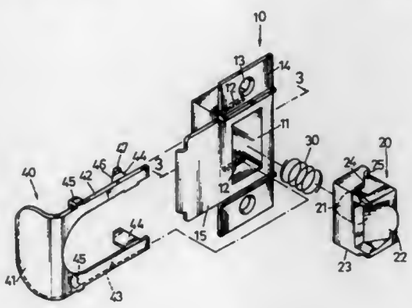
5,613,717
DOOR LOCKING DEVICE FOR VEHICLE
Changki Ha, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea
Filed Dec. 28, 1995, Ser. No. 580,157
Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39719
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 **2 Claims**

1. A door locking device for a vehicle comprising:
- an inside handle for being installed on an inside of a door of the vehicle for releasing a door latch of the vehicle;
- a motion transmit means for transmitting a motion of said inside handle to the door latch;



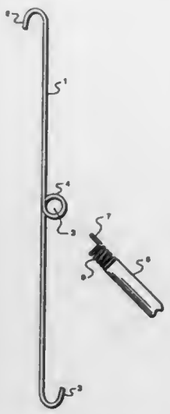
- a safety knob for being installed on the inside of the door of the vehicle and interconnected with said inside handle for locking the door latch; and
- a motion delay means provided between said inside handle and said motion transmit means, wherein said motion delay means do not transmit the motion of said inside handle to the door latch during a first period of the motion of said inside handle and said motion delay means transmit the motion of said inside handle to the door latch during a remaining period of the motion of said inside handle.

5,613,718
RETAINING MEANS FOR A DOOR
Wuchin Lin, No. 1, Lane 63, Sec. 6 Chunghslao E. Rd., Taipei, Taiwan
Filed Apr. 26, 1996, Ser. No. 639,928
Int. Cl.[6] F05B *17/00*
U.S. Cl. 292—346 **2 Claims**



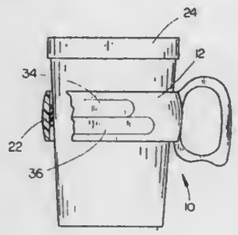
1. A retaining means comprising:
- a body having a sliding plate extending latitudinally, a receiving cavity with two sliding recesses individually configured on an upper face and a lower face and two extensions each having a hole therein and extending longitudinally from said body;
- a resilient means received within said receiving cavity;
- a locking means slidably received within said receiving cavity, having a recess therein for receiving said resilient means, a surface opposite to said recess for receiving a latch, and a plurality of beveled surfaces and a positioning edge;
- a controlling means for pressing and releasing said locking means, having a first leg, a second leg each having an "L" shaped boss having said sliding plate of said body slidably connected therein, said first leg and said second leg each being orthogonally configured to have an inclined surface corresponding to said beveled surface and a sliding boss slidably received within said sliding recess.

5,613,719
HANGER FOR FIXING AN OBJECT IN AN ELEVATED POSITION
Russell Anderson, 18 Crestshire Dr., Lawrence, Mass. 01843
Filed Apr. 25, 1995, Ser. No. 428,907
Int. Cl.[6] A47G *1/16*
U.S. Cl. 294—19.1 **2 Claims**



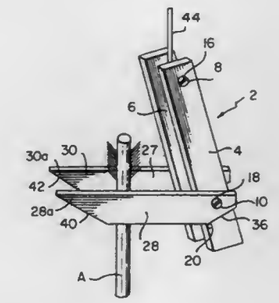
1. A hanger for hanging an object in an elevated position comprising:
- a shaft;
- a receptacle formed on said shaft and integrally from the material of said shaft, said receptacle being in the shape of a loop formed in perpendicular axial alignment with said shaft, and being adapted to receive an extension implement to allow extension of said hanger to an elevated position for fastening said hanger to said elevated position; and
- first and second fastening hooks on said shaft, said first fastening hook being adapted to fasten said hanger to said elevated position, said second fastening hook being adapted to receive said object, wherein said receptacle is formed centrally on said shaft so that said receptacle is approximately equidistant from said first and second fastening hooks.

5,613,720
CUP HOLDER
Joseph G. Shaddy, 6601 Stones Throw Rd., Omaha, Nebr. 68152
Filed Nov. 8, 1995, Ser. No. 555,578
Int. Cl.[6] A47J *45/07*
U.S. Cl. 294—31.2 **10 Claims**



1. A cup holder, comprising:
- a ring of thermally insulative material, having an inner surface, an outer surface, and upper and lower edges between the inner and outer surfaces; and
- a strip of resilient, compressible material affixed to the inner surface of said ring and extending circumferentially around the entire extent thereof, for frictionally engaging a cup inserted through said ring;
- said ring outer surface including a forward portion, a rearward portion, and opposing first and second end portions, and further comprising a pair of elongated depressions formed in the outer surface forward portion extending parallel to one another and parallel to the ring upper and lower edges.

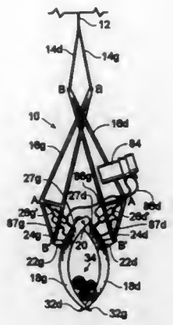
5,613,721
RETRIEVING AID
Johnnie M. Mullins, P.O. Box 1504, Flemingtown, Clintwood, Va. 24228
Filed Jan. 17, 1996, Ser. No. 586,315
Int. Cl.[6] B66C *1/10*
U.S. Cl. 294—82.1 **6 Claims**



1. An article retrieving apparatus, comprising:
- (a) an elongated body member having a pair of generally planar parallel side surfaces and further having upper and lower ends;
- (b) means connected with said body member upper end for maneuvering said body member;
- (c) at least two generally planar parallel fork arms each pivotally connected with said body member lower end, each said fork arm being pivotable between a lowered position wherein said fork arms extend outwardly from said body in the same direction and a folded position wherein each said fork arm is arranged generally parallel and adjacent an associated side surface and further wherein when in said folded position each said fork arm is contained within said body side profile, each said fork arm including:
  - (1) a tapered end defining a point, and
  - (2) a bevelled abutment surface; and
- (d) stop means adapted to engage said abutment surface, thereby to limit the range of rotation of said fork arms relative to said body.

5,613,722
METHOD AND HYDRAULIC GRAPPLE APPARATUS FOR GRASPING AND LIFTING BULK MATERIALS
Helmut E. Fandrich, 2461 Sunnyside Place, Abbotsford, B.C., Canada, and Kelly A. Krammer, Abbotsford, Canada, assignors to Helmut E. Fandrich, Abbotsford, Canada
Division of Ser. No. 293,705, Aug. 22, 1994. This application Sep. 23, 1996, Ser. No. 710,731
Int. Cl.[6] B66C *3/00*
U.S. Cl. 294—88 **7 Claims**

1. A grapple comprising:
- a pair of arms rotatably interconnected near respective proximal ends thereof and having mutually facing concave surfaces;
- a pair of elongate frames respectively rotatably attached at proximal ends thereof to each of said arms, the distal ends of said frames being attached to cables for lifting;



hydraulic latch means rotatably connected at opposite ends thereof between each said frame and the one of said arms to which said frame is rotatably attached;

wherein said hydraulic latch means comprise:

an elongate cylinder containing a quantity of hydraulic fluid and having an attachment at a first end thereof;

a piston including a rod extending therefrom being disposed within said cylinder such that said rod extends outwardly from said cylinder through a second end thereof opposite said first end, said rod further comprising a connection on the distal end thereof; and

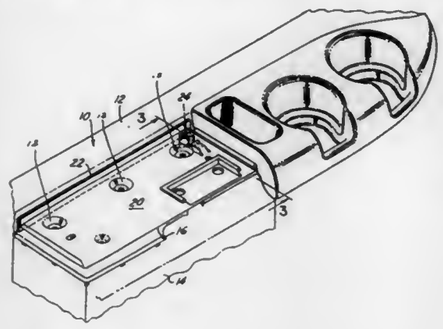
a hydraulic connection onto said cylinder between said piston and said second end thereof.

5,613,723

VEHICLE STORAGE COMPARTMENT WITH HOLD-OPEN DEVICE

Mark E. Laesch, Eastpointe, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 31, 1994, Ser. No. 331,406
Int. Cl.[6] B60R *7/00*
U.S. Cl. 296—37.8 **8 Claims**



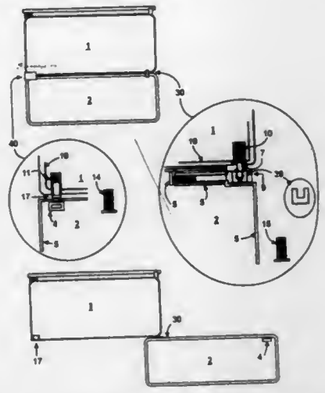
1. On a storage compartment having an upper surface with a door hingedly mounted thereon, for use on an inner wall of a vehicle, a hold-open device comprising a cam on an inner surface of said door, and a flexible finger on said upper surface and positioned beneath said cam when said door is open so as to provide an interference for said cam to hold said door open until the door is manually pressed downwardly causing said cam to deflect said flexible finger downwardly and move therepast, as the door is closed onto said surface.

5,613,724

GLARE REDUCING VISOR FOR VEHICLES

Makita G. Alula, 11/176, Cite Noulinard, Osny, France

PCT No. PCT/FR94/00572, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/26543, PCT Pub. Date Nov. 24, 1994
PCT Filed May 13, 1994, Ser. No. 362,489
Claims priority, application France, May 13, 1993, 93 05789
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.6 **11 Claims**



1. A visor assembly for use in a motor vehicle which has a windshield, the windshield having two end sections and a center section between the end sections, said visor assembly being installable inside the vehicle facing one end section of the vehicle, and said visor assembly comprising: a first visor having upper and lower longitudinal edges and first and second side edges extending between said longitudinal edges; a second visor having first and second longitudinal edges and first and second side edges extending between said first and second longitudinal edges; and connecting means for connecting said second visor to said first visor, said connecting means being connected between said lower longitudinal edge of said first visor and said first longitudinal edge of said second visor, and said first connecting means comprising a first part for detachably connecting said first and second visors together and a second part forming a pivot joint between said second visor and said first visor, said second part being located for permitting said second visor to pivot relative to said first visor about a first axis transverse to said lower longitudinal edge of said first visor over a path which brings said second visor to a position facing the center section of the windshield, wherein said first part of said connecting means comprises a hook attached to said first visor and engageable with said second visor, and said second part of said connecting means comprises a first rod forming the first axis and a second rod engaging one of said visors, pivotally secured to said first rod, and defining a second axis perpendicular to the first axis, said second visor being pivotable relative to said first visor about said second axis.

5,613,725

GLARE SHIELD DEVICE

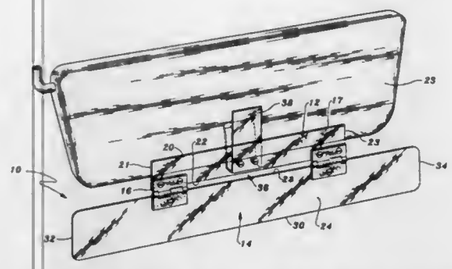
Robert G. Lozano, 3346 Gail Ct., Stockton, Calif. 95206

Filed Feb. 1, 1995, Ser. No. 381,743
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.6 **1 Claim**

1. A device for coupling above a bottom edge of an automobile sun visor, the device functioning to increase a driver's visibility, the device comprising:

(a) a glare shield, said glare shield having a first end, and a second end, a top edge, and a bottom edge;

(b) an oblong rectangular stabilizer having a first end, a second end, a top edge, and a bottom edge;



(c) said first and second ends of said glare shield extending a substantial distance beyond said first and second ends of said stabilizer;

(d) a pair of hinges coupled to said first and second ends of said stabilizer, said hinges further being coupled below said stabilizer to said glare shield, said hinges being coupled to said stabilizer and said glare shield creating a gap between said stabilizer and said glare shield, said hinges rotatably coupling said glare shield and said stabilizer in a parallel relation to each other, said gap allowing said glare shield to rotate on said hinges in an arc approximating 270 degrees in relation to said stabilizer; and

(e) a single clip fastener, said clip fastener being positioned medially upon said stabilizer;

(f) said clip fastener having a first bottom member, a second top member, a closed end extending between said top and bottom members, and an open end for receiving said bottom edge of said sun visor;

(g) said bottom member being of greater length than said top member

(h) said top member having a bend at an uppermost portion thereof, said bend causing said uppermost portion to angle away from said bottom member;

(i) said top edge of said stabilizer perpendicularly crossing said bottom member at a midpoint of said bottom member, said bottom member coupling to said stabilizer;

(j) said closed end being positioned upon said stabilizer substantially even with, and parallel to, said bottom edge of said stabilizer, said closed end being positioned upon said stabilizer allowing said top edge of said stabilizer to be positioned significantly above said bottom edge of said sun visor.

5,613,726

LIVESTOCK TRAILER INCLUDING IMPROVED TRAILER SLAT UNIT

Kenneth E. Hobbs, Yukon; Kenneth R. Waller, Tuttle; Larry A. O'Pecko, Midwest City, and Mike H. Collie, Jr., Norman, all of Okla., assignors to 4-Star Trailers, Inc., Oklahoma City, Okla.

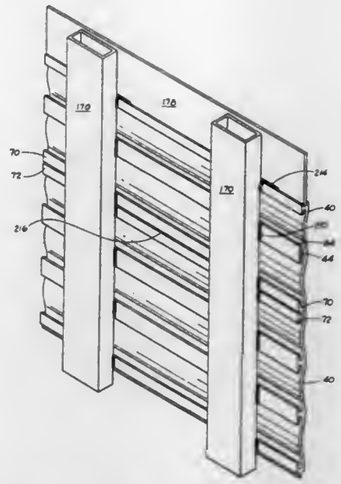
Filed Sep. 27, 1994, Ser. No. 313,012
Int. Cl.[6] B62D *25/02*
U.S. Cl. 296—181 **27 Claims**

1. A livestock trailer comprising:

first side assembly including a first side post, a second side post and at least one slat unit inter-connecting said first and second side posts of said first side assembly and forming a side wall of said trailer;

a second side assembly including a first side post, a second side post and at last one slat unit inter-connecting said first and second side posts of said second side assembly and forming a side wall of said trailer, each of said slat units of said first and second side assemblies being extruded as a one-piece unit out of metal and including:

an elongated body portion having an exterior surface, an interior surface, a first edge, a second edge, a first end and a second end, said interior surface having a series of alternating longitudinally extending furrows and longitudinally extending ridges therein; and



at least one leg member connected to and longitudinally extending along said interior surface of said body portion between said first and second ends thereof and positioned on said interior surface of said body portion between said first end second edge thereof, said leg member having a foot portion attached to said first and second side posts of one of said first and second side assemblies, said foot portion being spaced from said interior surface of said body portion such that an open space is provided therebetween for dissipating heat generated from attaching said foot portion to said side posts; and

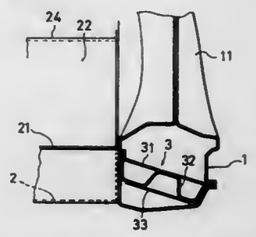
at least one cross member connecting said first side assembly and said second side assembly together.

5,613,727

SIDE SILL STRUCTURE FOR BODY OF MOTOR VEHICLE

Shouji Yamazaki, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,789
Claims priority, application Japan, Jul. 7, 1994, 6-155965
Int. Cl.[6] B60R *27/00*
U.S. Cl. 296—188 **4 Claims**



1. A side sill structure for a body of a motor vehicle comprising:

a side sill extending longitudinally of the motor vehicle, said side sill having a first wall and a second wall spaced from said first wall;

a center pillar extending from said side sill at a first connecting portion;

a cross member extending transversely of the motor vehicle and connected to said side sill at a second connecting portion, which is offset longitudinally from said first connecting portion;

a hollow reinforcing beam of closed cross section extending at least between said first connecting portion and said second connecting portion, and which extends between said first wall and said second wall and is attached to said first wall and to said second wall; and

wherein the reinforcing beam is welded to the side sill over the entire length of the reinforcing beam.

5,613,728

VEHICLE CAB WITH ROOF HATCH

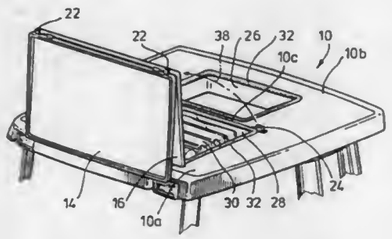
Derek J. Smith, Sutton Coldfield, and John C. Higgins, Nr. Rugby, both of Great Britain, assignors to Massey Ferguson Manufacturing Limited, United Kingdom

Continuation of Ser. No. 40,294, Mar. 30, 1993, abandoned. This application Sep. 28, 1994, Ser. No. 314,549

Claims priority, application United Kingdom, Apr. 4, 1992, 9207406

Int. Cl.[6] B60J *7/00;7/185*

U.S. Cl. 296—219 **9 Claims**



1. A vehicle cab and roof hatch assembly comprising:

a vehicle cab including a roof defining a first portion and a second portion, said vehicle cab having openings formed therethrough;

a roof hatch for selectively covering said openings, said roof hatch including:

a first hatch section having a first edge and a second edge;

a first hinge connected between said first edge of said first hatch section and said roof for permitting pivoting movement of said first hatch section between a first position, wherein said first hatch section is disposed adjacent to said first portion of said roof and over a first of said openings, and a second position, wherein said first hatch section extends upwardly from said roof;

a second hatch section having a first edge and a second edge;

a second hinge connected between said second edge of said first hatch section and said first edge of said second hatch section for permitting pivoting movement of said second hatch section relative to said first hatch section between a closed position, wherein said second hatch section is disposed adjacent to said rear portion of said roof and over a second of said openings, and an open position, wherein said second hatch section is disposed adjacent to said first hatch section; and

a stay for selectively supporting said second hatch section in a position which is intermediate of said closed and open positions for providing ventilation through said opening; said second hatch section having catch structure allowing pivotal movement of the second hatch section for ventilation while retaining the first hatch section in the first position.

5,613,729

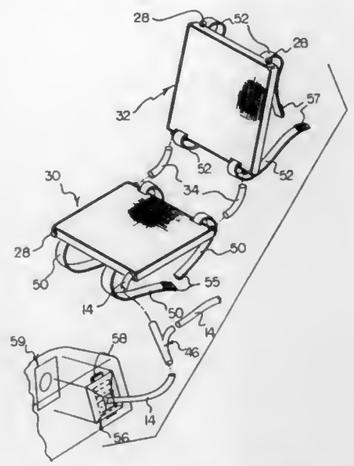
VENTILATED SEAT COVER APPARATUS

Charlie B. Summer, Jr., 352 Halfacre Rd., Newberry, S.C. 29108

Filed Jan. 22, 1996, Ser. No. 589,190

Int. Cl.[6] A47C *7/74*

U.S. Cl. 297—180.11 **9 Claims**



1. A ventilated seat cover apparatus, comprising:

an understructure assembly which includes a pair of side pipe assemblies and a plurality of transverse pipes connected between said side pipe assemblies, wherein said transverse pipes include plural air-venting apertures, and wherein said side pipe assemblies include end portions having removable and replaceable pipe plugs,

a porous understructure-cover sheet supported by said understructure assembly,

wherein said understructure assembly includes a seat portion,

wherein said understructure assembly further includes a back portion connected to said seat portion,

further including:

a pair of flexible interconnector hoses for connecting said back portion to said seat portion,

each of said pair of flexible interconnector hoses being connected to adjacent end portions of said side pipe assemblies on said back portion and said seat portion, respectively, and

wherein at least one of said end portions on said side pipe assemblies remotely situated from said flexible interconnector hoses on either a top edge of said back portion or on a front edge of said seat portion has corresponding said pipe plug removed such that at least one said end portion is adapted to be connected to a source of pressurized ventilating medium and wherein the remaining end portions on said side pipe assemblies are closed by said removable pipe plugs.

5,613,730

TEMPERATURE CONTROLLED SEAT COVER ASSEMBLY

Dan Buie, Rte. 1 Box 169-A, Prattsville, Ak. 72129, and Janice Buie, P.O. Box 1593, Kenai, Ak. 99611

Filed Mar. 29, 1995, Ser. No. 412,909

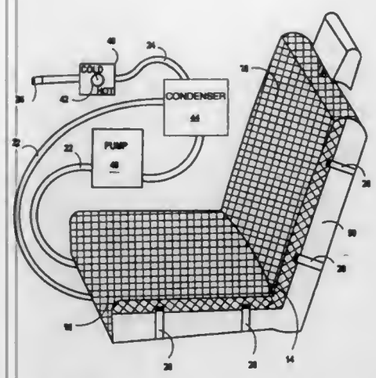
Int. Cl.[6] A47C *7/74*

U.S. Cl. 297—180.12 **3 Claims**

1. A seat cover assembly comprising:

a. an outer fabric liner defining an internal space;

b. a fluid conduit disposed within said internal space, said fluid conduit containing fluid therein;



c. at least one electric resistance heating element for conducting heat to said fluid, said heating element wrapped around said fluid conduit;

d. fire proof insulative material disposed within said internal space between said heating element and said outer fabric liner;

e. a condenser for condensing said fluid to cool said fluid, said condenser in fluid communication with said fluid conduit;

f. a pump assembly for circulating said fluid through said fluid conduit, said pump assembly in fluid communication with said condenser and said fluid conduit;

g. a switch assembly for selecting between a first position wherein electricity is conducted to said heating element, and a second position wherein electricity is conducted to said condenser and said pump assembly, said switch assembly having an adapter configured to be plugged into a vehicle cigarette lighter.

5,613,731

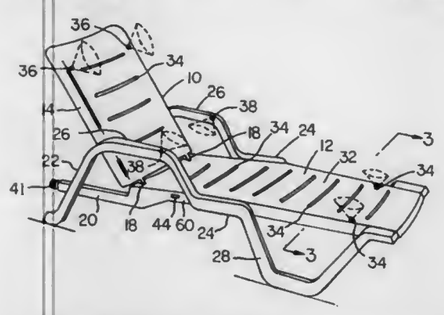
SUN BATHING APPARATUS EMPLOYING WATER MIST DEVICES

Don Aspinall, 5942 Edinger Ave. Suite 113, Huntington Beach, Calif. 92649

Filed Apr. 2, 1996, Ser. No. 626,368

Int. Cl.[6] A47C *7/62;31/00*

U.S. Cl. 297—180.15 **6 Claims**



1. A sunbathing apparatus, comprising:

a lounge chair that includes a seat portion formed of a rigid panel, a back portion formed of a rigid panel, and two arm rests formed of a rigid panel;

first and second spray nozzle units affixed to said seat portion for spraying zones proximate to the feet of a person seated on the chair;

third and fourth spray nozzle units affixed to said back portion for spraying zones proximate to the shoulders of a person seated on the chair;

fifth and sixth spray nozzle units affixed to said arm rests for spraying zones proximate to the waist of a person seated on the chair;

each of said spray nozzle units comprising a tubular section extending through a rigid wall of one of said rigid panels of the chair, and fastener means on said tubular section, whereby the respective spray nozzle unit is rigidly affixed to the chair; and a water supply means for supplying pressurized water to said spray nozzle units; said water supply means comprising a series of flexible tubes telescopically connected to the tubular sections of the spray nozzle units;

said spray nozzle units being anchored to the chair so that hydronamic flexure of the tubes cannot disturb the spray nozzle units.

5,613,732

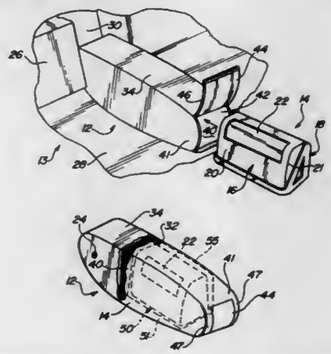
VEHICLE SEAT ARMREST INCORPORATING A TRANSMITTER UNIT FOR A GARAGE DOOR OPENING SYSTEM

Robert L. Demick, Eastpointe, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Sep. 22, 1994, Ser. No. 310,548

Int. Cl.[6] A47C *7/62;7/72*

U.S. Cl. 297—188.16 **6 Claims**



1. An armrest for a vehicle seat, said armrest comprising:

a foam body having a cavity therein and said cavity having an opening therein;

a trim material covering said foam body, said trim material having a flap that is located adjacent to said opening and that is movable between an open position in which access is provided through said opening to said cavity and a closed position in which said flap closes said opening to conceal said cavity; and

said foam body and said trim covering forming a soft side portion on said armrest which is detachable into said cavity pressing said soft side portion.

5,613,733

DEVICE FOR THE AUTOMATIC OPERATION OF A SEAT RELEASE LEVER

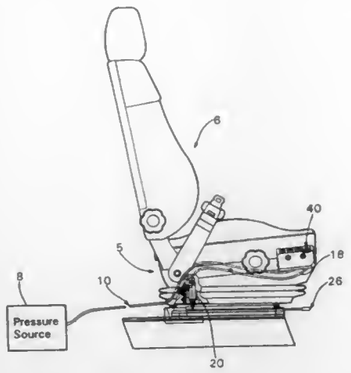
Michael T. Miller, Sr., and Joseph M. Nichols, Jr., both of Boyertown, Pa., assignors to USSC Group, Inc., West Conshohocken, Pa.

Filed Jun. 7, 1995, Ser. No. 476,697

Int. Cl.[6] A47C *1/02*

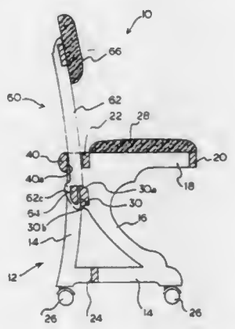
U.S. Cl. 297—344.1 **7 Claims**

4. An auxiliary release mechanism for a vehicle seat mounted on tracks for displacement between front and rear positions, the vehicle seat having a manually operated release which when disengaged, enables movement of the seat between the front and rear positions, the auxiliary seat release mechanism comprising:



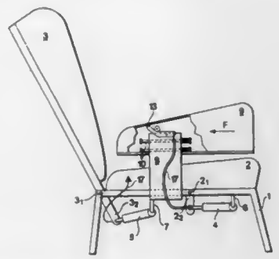
a pressurized fluid source;
a fluid operated cylinder including a movable piston;
a control means interconnecting the cylinder and fluid source to control movement of the piston; and
a channel shaped member with a first end adapted to be connected to the manually operated release and a second end positioned for engagement with the movable piston whereby upon activating of the control means, the piston contacts the channel shaped member thereby disengaging the manually operated release.

5,613,734
CHAIR WITH VERTICALLY ADJUSTABLE BACK
Robert S. Michael; Joe E. Miller, and David P. Zagaroli, all of Hickory, N.C., assignors to Bassett Furniture Ind. Inc., Bassett, Va.
Filed Feb. 8, 1996, Ser. No. 598,552
Int. Cl.[6] B60N 2/22
U.S. Cl. 297—353 **11 Claims**



1. A chair having a back movable up and down between an elevated operative position and a lower retracted position, comprising:
a) a base frame including a seat;
b) a back structure extending upwardly from the base frame and including a pair of laterally spaced support members that are movable up and down within the base frame and a back pad secured to the support members for engaging the back of a person sitting in the chair;
c) each of the laterally spaced support members including lower end portions having a support notch formed therein;
d) a transverse catch rail integral with the base frame and extending across the base frame at a position below the seat and including an upper support surface for engaging the support notches and supporting the laterally spaced support members and the back structure in an upper elevated operative position;
e) a retaining rail integral with the base frame and extending transversely across the base frame at a position above and slightly rearwardly of the catch rail and wherein the laterally spaced support members of the back structure extend through and are generally confined between the retaining and catch rails and wherein in the elevated operative position the support members of the back structure rest against the retaining rail and the retaining rail prevents the back structure from rotating in the direction of the retaining rail while the support members are supported by the catch rail; and
f) wherein the back support members can be moved up and down between the elevated operative position and the lower retracted position and wherein the back support members are generally confined between the retaining and catch rails in the process.

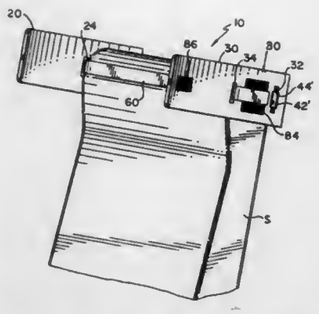
5,613,735
ADJUSTABLE ARMCHAIR
Paul Goiset, 4, rue des Carrouges, 91800 Brunoy, France
Filed Jul. 27, 1995, Ser. No. 508,066
Claims priority, application France, Feb. 23, 1995, 95 02118
Int. Cl.[6] A47C 1/00
U.S. Cl. 297—362.13 **10 Claims**



1. An adjustable armchair comprising:
a frame;
a seat portion mounted to the frame;
a back portion mounted to the frame;
a pair of armrests mounted to the frame;
a drive mechanism coupled to the frame and at least one of the seat portion and the back portion, the drive mechanism being arranged to drive the at least one of the seat portion and the back portion to pivot on the frame; and
a control mechanism including at least one of the pair of armrests movably mounted to the frame independent of the back portion, the control mechanism being coupled to the drive mechanism and being arranged to actuate the drive mechanism when the at least one of the pair of armrests is moved on the frame.

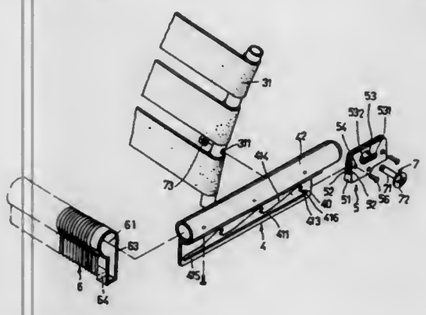
5,613,736
REMOVABLE HEADREST
Baruch Schaked; Edgar Schaked, and Yaakov Schaked, all of 3530 Mystic Point Dr., Apt. 1401, N. Miami Beach, Fla. 33180
Filed Jul. 19, 1995, Ser. No. 504,178
Int. Cl.[6] A47C 1/036;7/38
U.S. Cl. 297—397 **6 Claims**

1. A removable headrest device on seats with headrest portions having two end sides, comprising:
A) first and second flat members having each first and second ends and said first ends being positioned adjacent to said sides



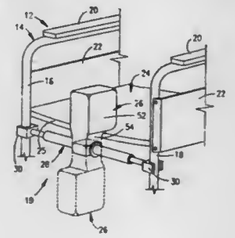
and said first and second flat members extend substantially perpendicularly from said end sides;
B) elastic means having two ends mounted to said first ends; and
C) non-elastic flexible means having two ends, mounted to said flat members at a position sufficiently separated from said first ends of said flat members which embraces said headrest portion.

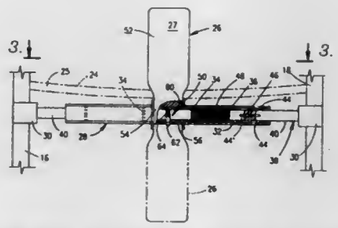
5,613,737
LAWN CHAIR WITH PROTECTIVE ARMREST SLEEVE MEMBERS
Chuen-Shyan Tseng, No. 3 Ting-Hsi-Hsin, Lu-Man Tsun, Chu-Chi, Hsiang, Chiayi Hsien, Taiwan
Filed Nov. 21, 1995, Ser. No. 560,999
Int. Cl.[6] A47C 1/024
U.S. Cl. 297—463.1 **1 Claim**



1. In a lawn chair comprising:
a backrest frame,
two spaced arm support frames provided on two opposite sides of the backrest frame, each of the arm support frames including an armrest portion,
two elongated positioning members connected respectively and securely to the armrest portions of the arm support frames, each of the positioning members being formed with a first longitudinal slot therethrough which has a front end, a rear end and a pair of upper and lower peripheries that extend between the front and rear ends, and a row of upwardly and rearwardly extending positioning notches which are formed along the upper periphery,
two opposed positioning bolts respectively and securely mounted to two opposite sides of the backrest frame and extending through the first longitudinal slots of the positioning members so as to engage the positioning notches, each of the positioning bolts having a neck and an enlarged head, the necks being sized so as to be slidable along the first longitudinal slots, the enlarged heads being sized so as to prevent removal of the bolts from the first longitudinal slots,
each of the positioning members further having a slide plate sleeved slidably thereon, the slide plate having a second longitudinal slot unit of a predetermined shape and being generally aligned with the first longitudinal slot of a corresponding one of the positioning members to permit extension of the neck of a corresponding one of the positioning bolts therethrough, said second longitudinal slot unit of each of the slide plates preventing the neck of the corresponding positioning bolt from engaging any of the positioning notches of the corresponding positioning member when the slide plate moves toward the rear end of the corresponding positioning member, each of said slide plates permitting engagement of the neck of the corresponding positioning bolt in any of the positioning notches of the corresponding positioning member when the slide plate moves toward the front end of the corresponding positioning member, wherein the improvement comprises:
each of said arm support frames further having a protective sleeve member sleeved over a corresponding one of said armrest portions and connected securely to a corresponding one of said slide plates in such a manner that said protective sleeve member is movable together with the corresponding said slide plate and that, when the arm support frames are in a selected position with respect to the backrest frame, said protective sleeve member encloses in cooperation with the slide plate the entire length of the respective longitudinal slot in the corresponding one of said positioning members, thereby covering said first longitudinal slot of the respective said positioning member and correspondingly preventing hands or clothes of a user from being jammed in said first longitudinal slot.

5,613,738
RESTRAINING APPARATUS FOR A CHAIR AND METHOD OF MAKING SAME
James E. Britton, 2641 E. Stanford, Springfield, Mo. 65804
Filed May 9, 1995, Ser. No. 437,823
Int. Cl.[6] A62B 35/00
U.S. Cl. 297—467 **11 Claims**





1. A combination of a chair with a device for restraining an occupant in the chair, said chair having a frame and a seat on said frame, said frame having first and second frame portions proximate opposite sides of said seat, and said seat having a front edge; said restraining device comprising:
an elongate member, axially disposed between said first and second frame portions, for engaging said frame;
a pummel, rotatably mounted on said elongate member, for rotation about said elongate member between a first position at the front edge and above said seat, and a second position

lower than said seat, said pummel being shaped and arranged such that, when rotated to said first position, said pummel extends up between the legs and near the crotch of an occupant seated in the chair, thereby preventing the occupant from sliding too far down in and out of the chair because the pummel acts as a stop;

means for releasably securing said pummel in said first position;

wherein said elongate member has an adjustable length;

wherein said first and second frame portions are positioned at respective angles relative to said seat of said chair, and wherein said elongate member has a first end for engaging with said first frame portion and a second end for engaging with said second frame portion, wherein said first and second ends are adapted to engage with said frame portions disposed at angles other than said respective angles; and,

wherein each said end of said elongate member terminates in a rotatable bracket.

5,613,739

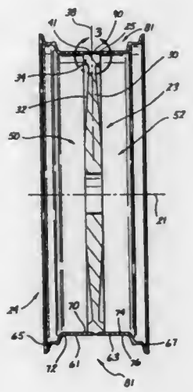
WELDED CENTER WHEEL RIM

Perry W. Sands, Long Beach, Calif., assignor to Performance Machine, Inc., Paramount, Calif.

Filed Nov. 18, 1994, Ser. No. 341,756

Int. Cl.[6] B60B *23/00*

U.S. Cl. 301—63.1 **9 Claims**



1. A wheel having an axis and being adapted for rotatably supporting a tire on a vehicle, comprising:

a wheel center extending outwardly of the axis to a circumferential surface;

an annular flange extending radially outwardly from the circumferential surface of the wheel center;

a first rim portion having a first inner annulus;

a second rim portion having a second inner annulus; and

a single continuous weld between the first inner annulus of the first rim portion, the second inner annulus of the second rim portion, and the annular flange of the wheel center, for maintaining the first and second rim portions and the wheel center in a fixed relationship.

5,613,740

BRAKE SYSTEM FOR VEHICLE

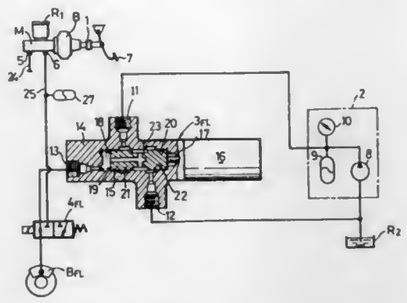
Yoshimichi Kawamoto; Hiromi Inagaki; Kazuya Sakurai, and Shinji Suto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,228

Claims priority, application Japan, Sep. 16, 1993, 5-229938

Int. Cl.[6] B60T *13/16*

U.S. Cl. 303—11 **6 Claims**



1. A brake system for a vehicle, comprising a wheel brake, a master cylinder for outputting a liquid pressure corresponding to a braking operation quantity, an operation quantity detector for detecting said braking operation quantity, a braking pressure control means for outputting an electric signal corresponding to a target braking pressure determined on the basis of a detection value detected by said operation quantity detector, an electric actuator capable of outputting a liquid pressure corresponding to said output electric signal from said braking pressure control means, and a switch-over valve capable of switching a connection and disconnection between said master cylinder and said wheel brake, said switch-over valve being connected to said wheel brake to block flow of a working liquid from said wheel brake into said electric actuator, when said switch-over valve permits said master cylinder and said wheel brake to be put into communication with each other, wherein said system further comprises:

a pressure detector for detecting a braking pressure applied to said wheel brake;

a switch-over valve control means for controlling operation of said switch-over valve to a state in which said master cylinder and said wheel brake are put into communication with each other, when a difference between said target braking pressure and a detection value detected by said pressure detector exceeds a predetermined range; and

further comprising a second pressure detector for detecting an output liquid pressure from said master cylinder, and wherein control of said switch-over valve is conducted when a difference between a reference master cylinder pressure determined on the basis of said braking operation and said detection value detected by said pressure detector exceeds a second predetermined range.

5,613,741

AIR BRAKE PILOT ADAPTOR

Donald B. Shank, 3800 London Rd., Duluth, Minn. 55804

Continuation of Ser. No. 102,303, Feb. 20, 1993, Pat. No. 5,390,988, which is a continuation-in-part of Ser. No. 829,927, Feb. 4, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,694

Int. Cl.[6] B60T *15/52*

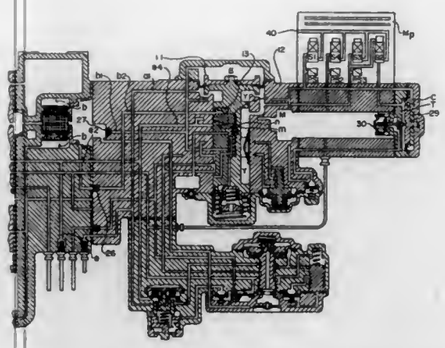
U.S. Cl. 303—36 **4 Claims**

1. In combination with a pneumatic control valve used in a car in tandem with the locomotive of a train to effect applying and releasing of a pneumatic brake of the car in response to variation, from the locomotive, of gas pressure in a brake pipe extending the length of the train, wherein releasing of the brake involves normally increasing pressure of a gas, previously provided to a first chamber defined on one side by a first face of a service diaphragm piston to urge the piston to a position wherein passages formed therein are aligned with other passages in the valve to permit venting of gas from a chamber in a brake cylinder; apparatus for positively venting of gas from the chamber in the brake cylinder to ensure release of the brake, comprising:

(a) a valving member having a passage formed therein, said passage formed in said valving member being operatively connected to the chamber in the brake cylinder so as to be in fluid communication therewith, and a port affording exhaust egress from said passage formed in said valving member;

(b) a valve element mounted in said valving member for movement between a first position occluding said port, and a second position wherein gas in said passage is exhausted through said port; and

(c) control means, segregated from gas pressure in the brake pipe, for accomplishing movement of said valve element between said first and second positions thereof.



(c) a respective brake actuator for each rear wheel of the vehicle;

(d) a respective dump valve for each said brake actuator which can be actuated for a dump valve time whose aggregate enables pressure to be selectively dumped from that actuator under the direction of the controller to release the braking action of a rear wheel having a brake actuator including the respective dump valve;

(e) means for establishing that a given rear wheel of the vehicle is operating in a stable condition;

(f) means for establishing an aggregate dump valve time of a rear wheel opposite to the given rear wheel; and

(g) means for allowing the brake pressure at the given rear wheel to continue to rise for a prescribed period and to then actuate its dump valve for a period corresponding to the established aggregate dump time of the opposite rear wheel.

5,613,742

ASYNCHRONOUS REAR DUMP LOGIC IN ABS CONTROL SYSTEMS

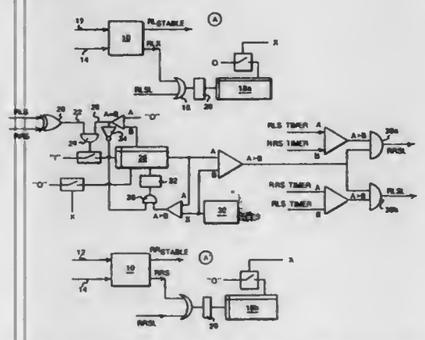
Alan L. Harris, Balsall Common, and Mark I. Phillips, Yardley, both of England, assignors to Lucas Industries public limited company, Solihull, England

Filed Jan. 30, 1995, Ser. No. 380,695

Claims priority, application United Kingdom, Feb. 1, 1994, 9401830

Int. Cl.[6] B60T *8/00*

U.S. Cl. 303—157 **1 Claim**



1. An anti-lock ABS braking system for a road vehicle having rear wheels which may operate in a stable condition or an unstable condition, comprising:

(a) an electronic controller;

(b) a source of operating pressure;

5,613,743

METHOD FOR SETTING TARGET BRAKING TORQUES

Friedrich Kost, Kornwestheim; Uwe Hartmann; Karl-Josef Weiss, both of Stuttgart, and Thomas Ehret, Seelbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

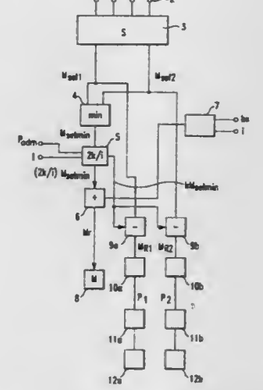
PCT No. PCT/DE93/00770, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/05534, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 24, 1993, Ser. No. 387,786

Claims priority, application Germany, Sep. 9, 1992, 42 30 101.7

Int. Cl.[6] B60T *8/00*

U.S. Cl. 303—165 **4 Claims**



1. Method for controlling slippage of driven wheels in a motor vehicle, said method comprising

determining target braking torques M_{set1} and M_{set2} for respective driven wheels,

determining a smallest torque M_{setmin} of the two torques M_{set1} and M_{set2},

calculating a target engine torque M_{engset} from the smallest torque M_{setmin},

varying engine torque M_{eng} to conform to M_{engset},

calculating residual braking torque M_{R1} based on M_{set1} and M_{engset} and residual braking torque M_{R2} based on M_{set2} and M_{engset}, and

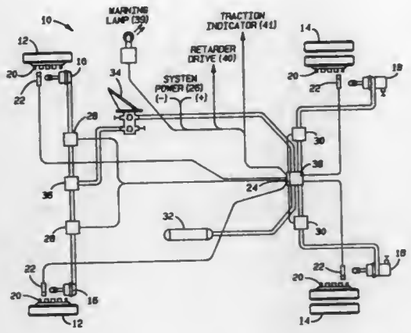
varying brake pressure at the driven wheels so that the residual torques M_{R1} and M_{R2} are realized.

5,613,744

INCIPIENT BRAKE FADE DETECTION FOR TRACTION CONTROL SYSTEMS

Ralph G. Eslinger, Elvria, and Gerard O. McCann, Amherst, both of Ohio, assignors to Allied Signal, Inc., Morris Township, Morris County, N.J.

Filed May 24, 1995, Ser. No. 448,674
Int. Cl.[6] B60T *8/34*
U.S. Cl. 303—191 7 Claims



1. A brake control system for a motor vehicle having traction control coupled to service brakes of driven wheels of the motor vehicle providing differential braking action by actuating the service brake of a spinning wheel to reduce the wheel speed of the spinning wheel thereby transferring additional torque to other of the driven wheels, comprising:

wheel speed sensors for detecting the rotational speed of said driven wheels and for generating a wheel speed signal for each of said driven wheels,

brake modulator means for each of said driven wheels for receiving a brake actuation signal and actuating said service brake associated with each of said brake modulator means, and

a control unit for receiving said wheel speed signals for each of said driven wheels and generating said brake actuation signal in response to a wheel spinning condition, said brake actuation signal for a spinning wheel being generated for not more than a predetermined actuation signal time period, said control unit limiting the duration of said predetermined actuation signal time period to avoid conditions which could cause adverse service brake conditions.

5,613,745

AUXILIARY COMPACT DISK STORAGE CASE

Chan-Kyoung Cho, Seoul, and Seung-Hyuk Shin, Kyonggi-do, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

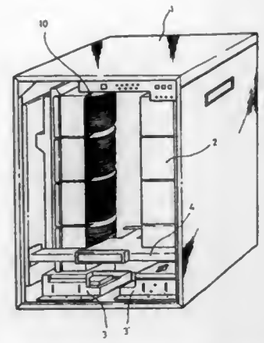
Filed Feb. 21, 1995, Ser. No. 393,118
Claims priority, application Rep. of Korea, Feb. 18, 1994, 94-2860
Int. Cl.[6] B65G *65/23;* B65D *85/57;* A47B *81/06*
U.S. Cl. 312—9.9 22 Claims

1. An auxiliary compact disc storage case comprising:

a housing;

storage means within the housing for accommodating a plurality of compact discs adjacent one another;

pushing means pivotally mounted to the housing, the pushing means arranged to engage the plurality of compact discs and to push the plurality of compact discs from the housing substantially simultaneously; and



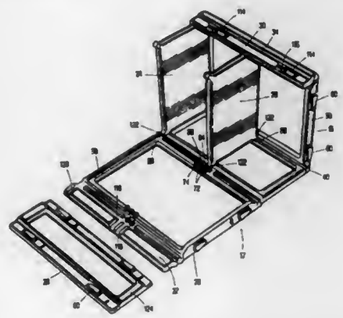
means for mounting the housing to a compact disc storage magazine.

5,613,746

DESK ASSEMBLY

Patrick M. Green, Maryville, and Robert Huerto, Farragut, both of Tenn., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.

Filed Feb. 9, 1995, Ser. No. 386,265
Int. Cl.[6] H47B *17/00;27/00*
U.S. Cl. 312—194 20 Claims



1. A four-walled enclosure comprising:

two side panels and an intermediate panel that defines a front panel integrally formed in a flat, coplanar blank from elastomeric material, and the two side panels connect to the opposite sides of the front panel by a flexible hinge portion of reduced section material, and the two side panels pivot from an initial coplanar relationship with the front panel into a second position wherein the two side panels intersect the front panel at a substantially ninety degree angle and define therewith an internal storage compartment:

the side panels each having a back edge panel connected by elastomeric hinge means to a rearward edge of the side panel and each edge panel pivots from an initial coplanar relationship with the side panel into a second position intersecting the side panel at a substantially ninety degree angle; and

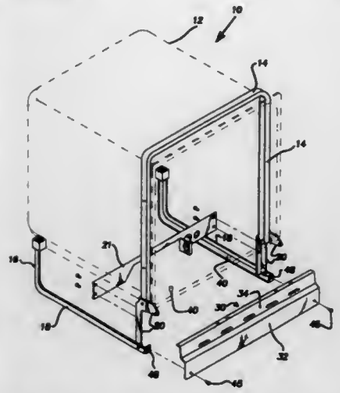
a back panel connected to a back side of each of the edge panels to secure the edge panels and the side panels in their respective second positions and enclose a rearward side of the storage compartment.

5,613,747

TOEPLATE AND ACCESS COVER

Craig H. Becker, Fond-Dn-Lac, Wis.; Bradley B. Hobday, Goldsboro, and Jim Fourney, LaGrange, both of N.C., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 20, 1996, Ser. No. 602,499
Int. Cl.[6] A47B *97/00*
U.S. Cl. 312—278 9 Claims



1. In a dishwasher supported on a floor or other mounting surface and having a box-like tub, said tub having a bottom wall and an open front, a frame supporting said tub above a mounting surface to provide an under-tub space between said bottom wall of said tub and said mounting surface, a door for said open front of said tub, said door opening around a hinge line spaced above a bottom of said door whereby the bottom of the door hinges inwardly and upwardly into a recess space below the tub when the door is opened outwardly, and a detachable combined toeplate-and-access-panel member covering said under-tub space both behind said recess space and below said door, said member having lower and upper edges, the lower edge of said member being adjacent said mounting surface, the upper edge of said member being adjacent the bottom of said tub, a pair of downward projections fixed to the bottom of the tub and aligned transverse to the tub and generally parallel to said hinge line, said upper edge of said member having associated therewith a pair of receptors in register with and engagable over said projections, said lower edge of said member having a pair of fasteners fixing it to said supporting frame, said fasteners being the only fasteners requiring removal and installation in the course of removing and reinstalling said member, and being below the bottom of said door and readily accessible from the front of the dishwasher.

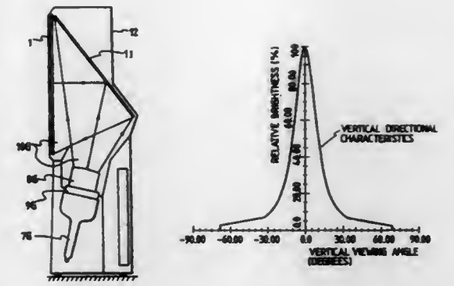
5,613,748

REAR PROJECTION TYPE IMAGE DISPLAY APPARATUS AND TRANSMISSION TYPE SCREEN USED THEREIN

Takahiko Yoshida, Miura; Koji Hirata, Kamakura; Atsuo Ohsawa; Kiyoshi Wada, both of Yokohama, and Hiroki Yoshikawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 77,780, Jun. 18, 1993. This application Apr. 18, 1996, Ser. No. 634,699
Claims priority, application Japan, Jun. 19, 1992, 4-160516
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—74 19 Claims

1. A rear projection type image display apparatus comprising at least one image generator source for displaying images, at least one projection lens for enlarging images displayed on the at least one image generation source and a transmission screen for displaying the enlarged images projected onto a rear portion of the



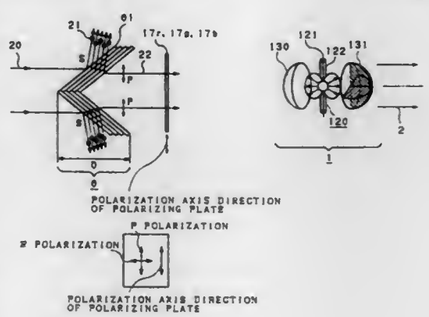
transmission screen, the transmission screen of the image display apparatus having directional characteristics such that when a direction which permits viewing a central image on a picture plane of the transmission screen in a brightest state of the images projected onto the transmission screen is assumed to be a reference direction, the luminance of the picture plane center is not less than 50% of the luminance in the reference direction, in a horizontal direction of 50° relative to the reference direction; the luminance is not less than 10% of the luminance in the reference direction, in a horizontal direction of 65° relative to the reference direction; the luminance is not less than 50% of the luminance in the reference direction, in a vertical direction of 10° relative to the reference direction; and the luminance is not less than 10% of the luminance in the reference direction, in a vertical direction of 25° relative to the reference direction.

5,613,749

CONDENSER LENS, POLARIZING ELEMENT, LIGHT SOURCE APPARATUS, AND PROJECTION DISPLAY APPARATUS

Shinsuke Shikama; Hiroshi Kida, and Akira Daijogo, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 47,504, Apr. 16, 1993, Pat. No. 5,384,659.
This application Sep. 27, 1994, Ser. No. 312,770
Claims priority, application Japan, Apr. 20, 1992, 4-99653; May 6, 1992, 4-113475; Oct. 26, 1992, 4-287671; Nov. 24, 1992, 4-313261
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—102 24 Claims



1. A light source apparatus comprising:

a discharge lamp;

a spherical mirror; and

a condenser lens consisting of a bi-aspherical single lens having a first surface of convex form facing the larger conjugate side and a second surface facing the smaller conjugate side and whose outermost circular zone is formed concave, said condenser lens satisfying the following conditions

$$0.42<r1/nf<0.45$$

$$18<r2/nf<1$$

$$-0.39<K1<-0.25$$

$$0.11<\Delta2/f<0.14$$

where f:

f: focal length of the whole lens system

n: refractive index of the lens

r1: radius off center curvature of the first surface

r2: radius of center curvature of the second surface

K1: conic constant of the first surface

Δ2: axial difference between the aspherical face of the outermost circular zone within the effective diameter of the second surface and a reference spherical face having the radius of center curvature of r2, wherein the direction in which the outermost circular zone of the second surface is curving toward the smaller conjugate side is taken as positive, and

wherein the center of curvature of said spherical mirror and the focal point on the second surface side of said condenser lens are substantially coincident with each other. the center of emission of said discharge lamp being located at the coinciding point.

5,613,750

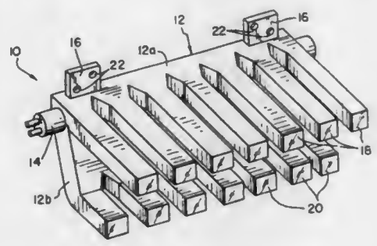
FLUORESCENT BACKLIGHTING DEVICE FOR AN INSTRUMENT PANEL

Pamela A. Roe, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 7, 1994, Ser. No. 334,997

Int. Cl.[6] G01D *11/28*

U.S. Cl. 362—26 **12 Claims**



1. A backlit instrument display panel comprising:

a plurality of buttons, at least one of the buttons comprising a translucent portion and an insignia;

a lightpipe comprising a body having first and second portions, the lightpipe further comprising fingers projecting from the first portion of the body, each finger being adapted to transmit light from the body to one of the buttons, the body having a passage formed therein which is intermediate the first and second portions of the body, the lightpipe being formed from a translucent or transparent material; and

a fluorescent light source disposed in the passage in the body such that the body envelops, contacts and supports at least a portion of the fluorescent light source;

wherein light emitted from the fluorescent light source is transmitted through the lightpipe to the buttons, and wherein the buttons are backlit by the lightpipe so as to be characterized by a substantially uniform backlighting intensity.

5,613,751

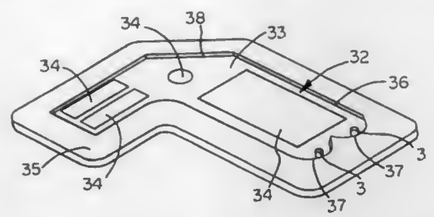
LIGHT EMITTING PANEL ASSEMBLIES

Jeffery R. Parker, Strongsville; Mark D. Miller, Parma, and Daniel N. Kelsch, Lakewood, all of Ohio, assignors to Lumitex, Inc., Strongsville, Ohio

Filed Jun. 27, 1995, Ser. No. 495,176

Int. Cl.[6] F21V *7/04*

U.S. Cl. 362—31 **97 Claims**



1. A light emitting panel assembly comprising a light emitting panel member having a light emitting surface, a light transition area, and a light source embedded or potted in said light transition area so as to eliminate any air interface between said light source and said light transition area.

5,613,752

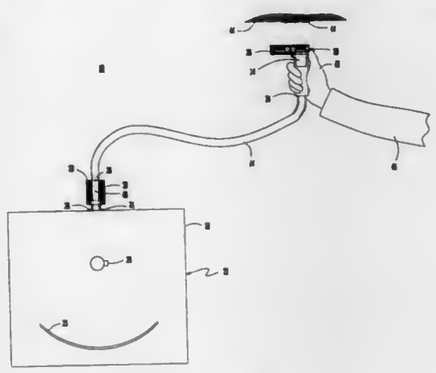
TUNABLE HIGH INTENSITY FORENSIC LIGHT

Nicolas Vezard, Metuchen, N.J., assignor to Instruments SA, Inc., Edison, N.J.

Filed Jul. 22, 1994, Ser. No. 279,229

Int. Cl.[6] F21V *8/00*

U.S. Cl. 362—32 **30 Claims**



1. A forensic light source, comprising:

(a) a source of light;

(b) support structure for supporting said source of light;

(c) a light guide having first and second ends, said light guide being coupled to said source of light at said first end to receive light from said source of light and transmit said light to said second end, said light guide being mounted on said support structure;

(d) a filter support member supporting a plurality of filters; and

(e) a portable hand holdable and movable light directing assembly mounted on said second end of said light guide, said light directing assembly supporting said filter support member and providing for movement of said filter support member to a plurality of positions, each of said positions corresponding to a coupling of a selected one of said filters to said second end, whereby said light emitting from said second and is filtered by said selected filter while the emitted light is directed to various locations through movement of said light directing assembly.

5,613,753

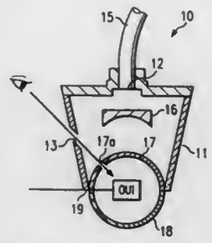
SPHERICAL ILLUMINATOR

Charles H. Anderson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 10, 1994, Ser. No. 337,588

Int. Cl.[6] F21V *7/04;8/00*

U.S. Cl. 362—32 **6 Claims**



1. A spherical illuminator for shadowless illumination of an object under inspection, comprising:

a diffuser having a substantially hemispherical surface that is concave such that said surface forms a cavity operable to act as a viewing area in which said object under inspection can be placed, said diffuser providing transmitted illumination from substantially all of its concave surface;

a reflector having a substantially hemispherical surface that is concave and that opposes the concave surface of said diffuser, said hemispherical surfaces of said reflector and said diffuser forming a sphere, said reflector providing reflected illumination from substantially all of the area of its concave surface;

wherein said illuminator has an aperture operable to permit said object under inspection in said cavity to be viewed.

5,613,754

HEADLIGHT FOR VEHICLES

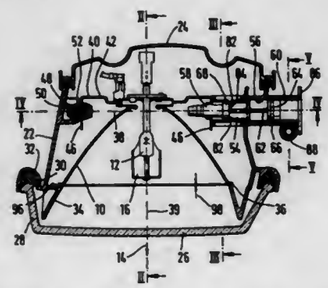
Karl-Otto Dobler, Reutlingen; Gustav Klett, Moessingen; Horst Dahm, Neuhengstett, and Rainer Jocher, Aidlingen, all of Germany, assignors to Robert Bosch GmbH, and Mercedes - Benz AG, both of Stuttgart, Germany

Filed Jun. 19, 1995, Ser. No. 491,783

Claims priority, application Germany, Jun. 17, 1994, 44 21 354.9

Int. Cl.[6] B60Q *1/06*

U.S. Cl. 362—66 **19 Claims**



1. A headlight for vehicles, comprising a reflector having a first edge which is a front edge point in a light emission direction; a holder on which said reflector is mounted swivellably about at least one swivel axis and which has a second edge provided on a part of said holder and point opposite to the light emission direction so as to adjoin said first edge; means for swivellably mounting said reflector on said holder, each of said first and second edges having a curved shape in planes at right angles to said swivel axis, said first edge and said second edge having curvatures such that center points of said curvatures are situated at least substantially on said swivel axis, said first edge and said second edge being arranged at such a distance from one another which remains at least substantially constant when said reflector makes a swiveling movement about said swivel axis.

5,613,755

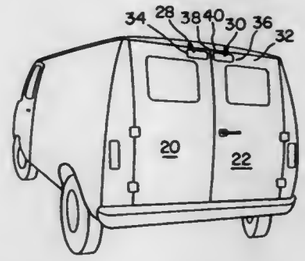
REAR DOOR VAN LIGHTS

Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Jul. 1, 1996, Ser. No. 672,984

Int. Cl.[6] B60Q *1/26;1/48*

U.S. Cl. 362—80 **1 Claim**



1. Improvements for providing a safe environment for loading and unloading out of a rear of a van of a type having a body with right and left pivotally hinged doors and tail lights displayed to an oncoming motorist located outwardly of a hinge axis of said right and left doors illuminated by a battery of said van, wherein said tail lights are obscured to said oncoming motorist when said right and left doors are in an open condition, said improvements comprising an additional battery-operated cooperating two door-supported light means having an operative position strategically located as a pair in said cooperating relation with each other in side-by-side position centrally of a top edge of said left and right doors, wherein one of said light means is at a centrally located corner of said left door and the other of said light means is at a centrally located corner of said right door such that in a closed condition of said left and right doors said strategic locations of said light means present to an oncoming motorist a light display supplementing the light display of said tail lights, and each said light means having lens means on an edge of said supporting door operatively effective for a transmission of light therethrough, whereby also in an open condition of a door to an extent which obscures from view a tail light there is a light display presented to an oncoming motorist.

5,613,756

CLOTHING WITH POUCH MEANS FOR RECEIVING AN ILLUMINATING DEVICE

Mary E. Allen, 17 Athlone Drive, Toronto, Ontario, Canada

Filed Aug. 21, 1995, Ser. No. 517,579

Int. Cl.[6] F21L *15/08*

U.S. Cl. 362—103 **16 Claims**

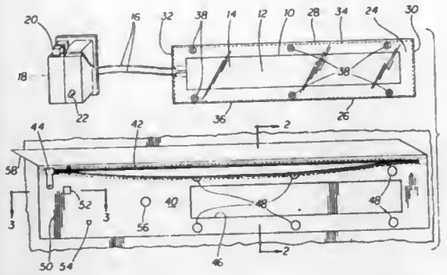
1. A clothing with illuminating device comprising:

an article of clothing;

illuminating means;

sleeve means for covering and supporting said illuminating means;

means for holding said illuminating means in position within said sleeve means;



power source means electrically connected to said illuminating means by wire means;

switch means connected to the power source means for controlling the power supply from said power source means;

pouch means with an opening receiving therein said power source means and said illuminating means, said pouch means configured to be detachably mounted to said clothing;

means for closing said opening of said pouch means;

means for holding said power source means and said sleeve means in position within said pouch means;

window opening means provided on said pouch means for permitting light signal generating from said illuminating means to pass therethrough when said power source means is being turned on, and,

light signal means associated with said pouch means and connecting with the illuminating means for indicating the illumination condition of said illuminating means.

5,613,757

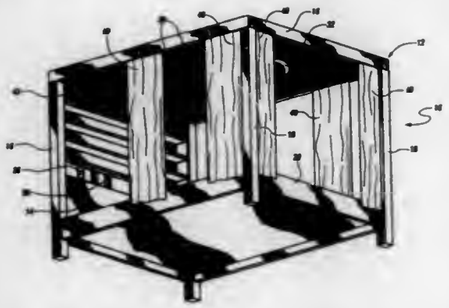
CANOPY FOR CREATING NIGHT SKY IMAGE

Bryan T. Polk, 6686 Finch Rd., Memphis, Tenn. 38141

Filed Sep. 26, 1994, Ser. No. 311,929

Int. Cl.[6] A47B *23/06*

U.S. Cl. 362—130 **16 Claims**



1. Canopy apparatus for use with a bed, comprising:

a frame suspended above said bed comprising four side members, each side member having an inner surface and an outer surface, each side member also having a slot formed in said inner surface thereof, said slots in said side members being mutually aligned forming a channel in said frame;

light generating means disposed within said frame; and

a screen located beneath the light generating means, said screen having an outer edge portion supported by said channel, said screen having a plurality of openings formed therein, said screen being operative to at least partially restrict the passage of light from said light generating means to said bed, each of said openings being of a sufficient size and shape allowing light to pass therethrough in a manner which creates an appearance of a sky at night.

5,613,758

ILLUMINATING DEVICE WITH OPTICAL CONDUCTORS FOR ESCALATORS OR MOVING WALKWAYS

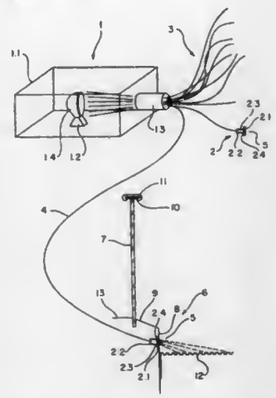
Wolfgang Kamschal, Enzesfeld, and Wolfgang Neszmerak, Vienna, both of Austria, assignors to Inventio AG, Hergiswil NW, Switzeriand

Filed Mar. 7, 1995, Ser. No. 399,589

Claims priority, application European Pat. Off., Mar. 9, 1994, 94103546

Int. Cl.[6] F21S *3/14*

U.S. Cl. 362—146 **12 Claims**



1. An illuminating device including optical conductors for one of escalators and moving walkways, the one of the escalators and moving walkways including one of a movable stair and pallet belt, having at least one vertical balustrade arranged laterally thereof, as well as a hand rail guided at the upper end thereof on a further rail, wherein light from at least one central light source is guided to a plurality of individual illumination points along the one of the escalator and moving walkway through the optical conductors extending at least partially along the balustrade,

wherein the plurality of individual illumination points are passive light sources, each of the passive light sources including an assembly device, an optical conductor holder and an integrated optical system, the plurality of individual illumination points being located at spatially discrete positions along the one of the escalator and moving walkways and being connected via a respective discrete glass fiber optical conductor with an optical conductor terminal of the at least one central light source, and

wherein the at least one central light source including a lamp positioned within a housing.

5,613,759

LIGHT AND FILTER SUPPORT STRUCTURE

Craig S. Ludwig, Portland, Oreg.; Richard E. Spradling, Greenville, N.C., and David E. Benson, Beaverton, Oreg., assignors to Brod & McClung-Pace Co., Portland, Oreg.

Continuation of Ser. No. 292,055, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 166,593, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 959,495, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 739,693, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 720,186, Jun. 24, 1991, abandoned. This application Feb. 14, 1995, Ser. No. 390,803

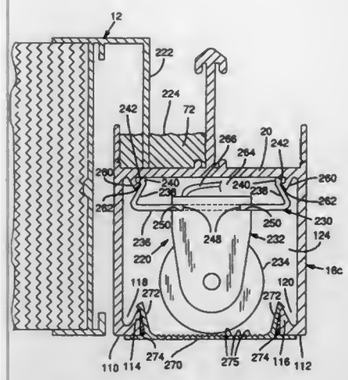
Int. Cl.[6] F21S *3/02*

U.S. Cl. 362—149 **9 Claims**

3. In a ceiling structure retaining filter panels, an improvement comprising:

a structural rail member defining upwardly open troughs sealably receiving a filter panel, the rail member defining a downwardly open elongated channel, the rail member having sufficient structural strength to support a light fixture and divider walls suspended therefrom; and

a light fixture protectively retaining a light tube, and wherein the light fixture is located entirely within the channel, the light fixture comprising a horizontally-oriented elongated panel having upwardly projecting walls removably engaging the rail member.



5,613,760

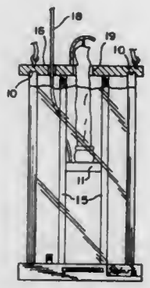
CANDLE LANTERN

Rosemary M. Dunn, P.O. Box 3645, Myrtle Beach, S.C. 29578

Filed Nov. 22, 1995, Ser. No. 561,866

Int. Cl.[6] F21L *19/00*

U.S. Cl. 362—161 **8 Claims**



1. A functional, commerative lantern having a candle lighting system that comprises:

a) a lantern frame having four spaced angular posts mounted between a base and a roof, two of said angular posts being mounted in the rear and two of said posts mounted in the front, said angular posts having legs perpendicular to each other, each leg having an inner and outer side, said front angular posts having transverse legs that are spaced from each other and unconnected,

b) four glass panels fitted to said posts and extending somewhat less than than the length of said posts, said panels including side panels a rear panel and a front panel, said side and rear panels being adhesively connected to said inner side of said legs, said front panel sliding into said unconnected transverse legs of said angular posts;

c) said base having a front side and a brass plate adhesively bonded thereto, said brass plate having an inscription thereon defining the name of the lantern, and a laminated card containing an anecdote commensurate with said inscription associated with said plate;

d) a rectangular pedestal resting on said base having a candle holder with dripless candle therein extending upwardly from said base and an opening in said roof aligned with said candle, said opening being large enough to accommodate a candle that passes therethrough, said opening serving as a chimney to aid in combustion and allow gases to exit therethrough;

e) said pedestal having sides, a circular opening in the center of said sides and a ball bearing placed therein, a rigid wire attached to said pedestal and extending upwardly through a perforation, in said roof and devolving into a ring, another wire soldered to said roof that extends to form an arc located over said opening in said roof.

f) a pair of guide rails in alignment with said ball bearings and connected between said roof and said base, said ball bearings in cooperation with said rails allowing said pedestal to be uniformly elevated when said ring is pulled upwardly so that candle will emerge through said opening until it contacts the arc and is snuffed out or will emerge through the hole to be lit.

5,613,761

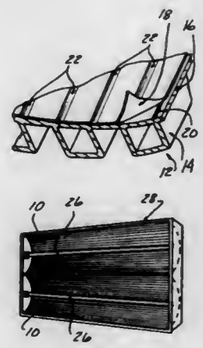
MATERIAL AND METHOD FOR FABRICATING A LIGHT FIXTURE REFLECTOR, AND, REFLECTOR PRODUCED THEREBY

Frederick R. Raby, Sr., and Bruce R. Raby, both of 3030 North Middle Side Road, Amherstburg, Ontario, Canada

Continuation-in-part of Ser. No. 310,254, Sep. 21, 1994, abandoned. This application Jul. 12, 1995, Ser. No. 501,671

Int. Cl.[6] F21S *3/00*

U.S. Cl. 362—217 **20 Claims**



1. A method of fabricating a concavely curved trough shaped reflector comprising:

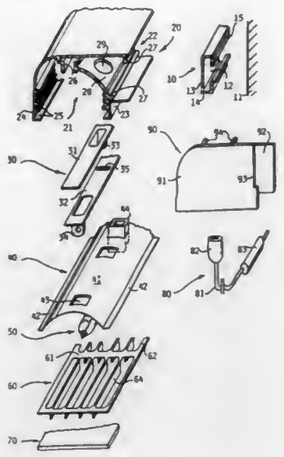
bonding one side of a film having another side thereof metallized to be brightly reflective to one side of a corrugated plastic sheet having a length, width, and thickness, said corrugated plastic sheet also having a uniform series of lengthwise extending closely spaced, slight depressions formed in an outer surface of a cover layer forming one side of said sheet, said film being sufficiently thin and compliant to conform to said slight depressions on said cover layer so that a multitude of lengthwise striations are formed in the metallized surface on an outer side of said film when said one side of said film is bonded to said cover layer outer surface to be in conformity with said depressions; and,

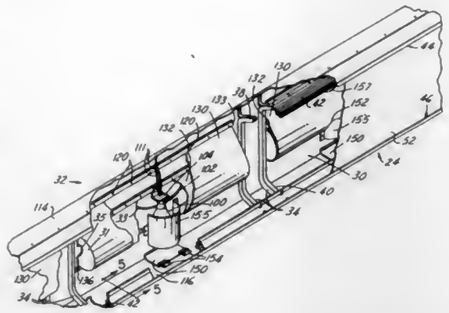
forming said sheet with said film bonded thereto into a concavely curved shape with said metallized another surface of said film exposed on said concavely curved side thereof, so that a concavely curved reflector with a multitude of reflector facets is formed by said striations in said film another side.

5,613,762
LIGHT ASSEMBLY

Branka Agabekov, 73, route de Thonon, CH-1222 Vesenaz, Switzerland

Filed Jan. 4, 1995, Ser. No. 368,594
Int. Cl.[6] F21V *11/00*
U.S. Cl. 362—240 **18 Claims**





1. A light assembly comprising:
a housing in the form of an elongate profiled member, the housing including a first opening in the housing for the passage of the light beam, and a second opening including a fastener for engaging an attachment rail for attaching the light assembly to a structure;
at least two conductive strips disposed in and extending along the housing, a plurality of tabs provided on each conductive strip and the tabs on the two strips being located a predetermined distance apart so that a respective one of the tabs from both strips cooperate to form electric contacts for holding a bulb between the contacts;
a reflector in the housing of parabolic section and being so shaped and arranged in the housing that the bulb is held located in the vicinity of a focus of the reflector for distributing a narrow beam of light from the bulb along the light assembly;
at least one diffusion screen arranged in the path of the light beam from the reflector and adapted to direct and deflect the light beam in a selected direction.

5,613,763
METHOD FOR INSTALLING ILLUMINATED CANOPY SYSTEM

David U. Hillstrom, Novi, and Brian J. Hillstrom, Milford, both of Mich., assignors to Marketing Displays Inc., Farmington Hills, Mich.

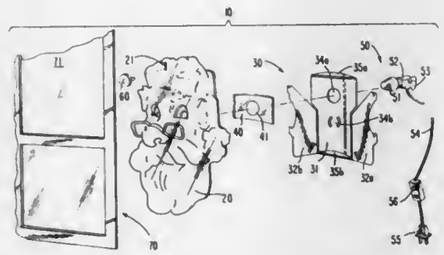
Division of Ser. No. 341,678, Nov. 17, 1994, which is a continuation of Ser. No. 996,103, Dec. 23, 1992, Pat. No. 5,381,324. This application Jun. 7, 1995, Ser. No. 472,319
Int. Cl.[6] F21V *5/00*
U.S. Cl. 362—246 **26 Claims**

15. A method for installing a generally rectangular illuminated sign device along at least one face of a structure, said sign device having a lower surface, said method comprising the steps of;
installing a plurality of single point light sources along the face of the structure;
installing a plurality of support members along the face of the structure;
attaching frame members to said support members to form a substantially rectangular framework structure for said sign device;
installing light dispersion means adjacent said point light sources, said light dispersion means adapted to disperse illumination from the light sources evenly over a portion of the structure;
installing a translucent front panel member on said framework structure; and
installing light source access means on the lower surface of said sign device, said access means allowing access to said light sources from below and outside said sign device.

5,613,764
INTERNALLY ILLUMINATED DECORATIVE OBJECTS

Patrick O'Brien, Maywood, N.J., assignor to Cristofell Group Ltd., Maywood, N.J.

Filed Apr. 12, 1995, Ser. No. 421,364
Int. Cl.[6] F21P *1/00*
U.S. Cl. 362—252 **18 Claims**

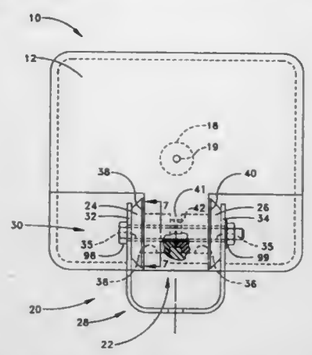


1. An internally illuminated decorative object, comprising:
a) an electric light including a lamp socket and light bulb replaceably mounted in said lamp socket;
b) means for supplying electric current to said lamp socket and through the same to said light bulb to light the latter;
c) means for supporting said electric light, including a support member having at least one opening for the reception of said electric light bulb therethrough, a central portion, and two outstretched wings flanking and extending outwardly of said central portion;
d) a translucent image-bearing sheet extending continuously throughout its entire expanse over a continuous, printed surface on which an image is printed; and
e) means for mounting said image-bearing sheet on said wings of said support member at discrete spaced-apart locations on said image-bearing sheet so as to be at least coextensive with a side of said support member for illumination by said light bulb when the latter is lit.

5,613,765
HEADLIGHT MOUNTING APPARATUS

Avtar S. Gill, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 29, 1996, Ser. No. 608,780
Int. Cl.[6] F21V *15/04*; F21M *3/22*
U.S. Cl. 362—269 **11 Claims**

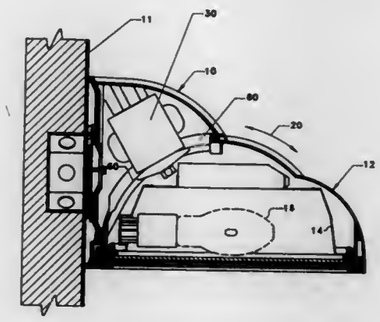


1. A headlight mounting apparatus adapted to mount a head light on a machine, the headlight includes a housing having a lens, a bulb, and a reflector disposed thereon, the headlight mounting apparatus comprises:
a mounting portion with a longitudinal opening defined therein between opposed sidewalls, the opening has an elongate cross-sectional configuration defining a reference plane extending through the center of the elongated portion transverse to the longitudinal opening defined in the mounting portion, the elongate ,cross-sectional configuration of the opening has first and second opposed peripheral surfaces and third and fourth opposed peripheral surfaces oriented transverse to the first and second opposed peripheral surfaces, the elongate cross-sectional configuration is oriented within the mounting portion so that the reference plane defined therein extends through the centroid of the headlight bulb;
a retaining mechanism having first and second arms each with an opening defined therein and being adapted to connect the mounting portion of the headlight to the machine;
first and second elastomeric grommets each having first and second end portions and an opening extending longitudinally therethrough, each of the first end portions being of a size greater than the opening in the mounting portion of the headlight housing or the openings in the respective first and second arms of the retaining element and being positioned between the respective first and second arms of the retaining mechanism and the respective sidewalls of the mounting portion, each of the second end portions being of an elongate cross-sectional configuration with a reference plane defined through the elongated portion extending transverse to the longitudinal opening through the respective grommets, the elongate cross-sectional configuration of each of the grommets has first and second opposed peripheral portions on opposite sides of the longitudinal opening along the reference plane and third and fourth opposed peripheral portions on opposite sides of the longitudinal opening and oriented transverse to the first and second opposed peripheral portions, the first and second opposed peripheral portions each has a peripheral surface that is operative to slidably mate with the first and second opposed surfaces of the longitudinal opening of the mounting portion, the third and fourth opposed portions each has a peripheral surface that when initially assembled is spaced from the third and fourth opposed peripheral surfaces of the longitudinal opening of the mounting portion, the second end portion of each of the grommets is disposed in respective opposed ends of the longitudinal opening of the mounting portion and the reference plane defined in the respective grommets generally coincides with the reference plane defined in the longitudinal opening of the mounting portion; and
a fastening mechanism disposed through the openings of the respective first and second arms of the retaining mechanism, the longitudinal openings of the respective grommets, and the longitudinal opening of the mounting portion and, when secured, is operative to force the respective ends of the second end portion of the respective grommets into compression which forces the elastomeric material of the grommets to press outwardly against the first and second peripheral surfaces of the longitudinal opening in the mounting portion and to partially fill the spaces between the third and fourth opposed peripheral surfaces in the longitudinal opening of the mounting portion and the respective peripheral surfaces on the third and fourth portions of the respective grommets.

5,613,766
ADJUSTABLE LUMINAIRE

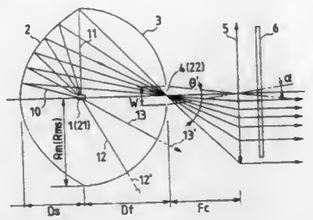
Sayed Raouf, City of Industry, Calif., assignor to Kim Lighting, Inc., City of Industry, Calif.

Filed May 8, 1995, Ser. No. 436,906
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—287 **14 Claims**



1. A luminaire, comprising
a ballast housing comprising a curved outer surface, a side surface, a rear surface and an arcuate-shaped lower edge defining a cavity,
a reflector housing rotatably mounted with respect to the ballast housing, and having an arcuate-shaped upper surface that is substantially symmetrical to the lower edge of the ballast housing,
a light source in said reflector housing, and
a clamping mechanism frictionally attached internal to said ballast housing and said reflector housing to tighten and loosen the attachment between said housings, said clamping mechanism comprising a screw rotatably attached to said ballast housing, a ramp member threadedly attached to the screw, a block member frictionally connected to the ramp member, and a clamp member attached to the block member.

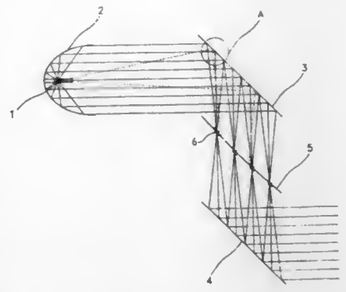
5,613,767
ILLUMINATING APPARATUS
Kenjiro Hamanaka; Takashi Kishimoto; Koichi Nishizawa, and Kenichi Nakama, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Division of Ser. No. 39,838, Mar. 30, 1993, Pat. No. 5,432,692. This application Apr. 18, 1995, Ser. No. 423,701
Claims priority, application Japan, Apr. 3, 1992, 4-81988; Apr. 3, 1992, 4-82057; Apr. 3, 1992, 4-82214; Mar. 2, 1993, 5-40772
Int. Cl.[6] F21V 7/09
U.S. Cl. 362—298 8 Claims



1. An illuminating apparatus comprising:
a spheroidal mirror;
a light source positioned near a first focal point of said spheroidal mirror, said spheroidal mirror reflecting light from said light source and directing said light toward a second focal point of said spheroidal mirror, said first and second focal points defining an optical axis;
a spherical mirror having a center of curvature which substantially coincides with said first focal point and having a radius of curvature which is substantially equal to a distance between said first focal point and said second focal point, said spherical mirror having an aperture on said optical axis at said second focal point; and
an object to be illuminated having a non-circular periphery in a plane perpendicular to the optical axis and a positive lens positioned between said spherical mirror and said object to receive diverging light rays passing through said aperture and project substantially collimated light rays toward the object to be illuminated;
wherein said spheroidal mirror has a peripheral shape such that it omits a mirror portion that would otherwise reflect light that does not illuminate the object, and such that light from the light source which is directed outside a periphery of the spheroidal mirror is reflected back to the spheroidal mirror by an adjacent portion of the spherical mirror which is positioned adjacent to the periphery of the spheroidal mirror as seen from said light source and is reflected by a part of the spheroidal mirror which faces the adjacent portion of the spherical mirror so that the positive lens projects substantially collimated light rays in a non-circular pattern, thereby illuminating the object.

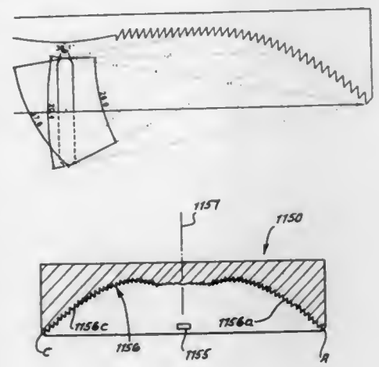
5,613,768
APPARATUS FOR GENERATING PARALLEL LIGHT USING TWO ARRAYED MIRRORS
Dong-ha Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Sep. 5, 1995, Ser. No. 523,393
Claims priority, application Rep. of Korea, Oct. 28, 1994, 94-27959
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—298 4 Claims

1. A parallel light generating apparatus, comprising:
a parabolic mirror;
a lamp located at the focal point of said parabolic mirror and for generating parallel light reflected from said parabolic mirror, as well as non-parallel light;



first and second arrayed disposed in parallel, each of which is divided into plural portions, each portion being divided again into parts, the first arrayed mirror disposed to receive the parallel light from the parabolic mirror and the non-parallel light; and
a panel being situated said first and second arrayed mirrors and having a plurality of holes corresponding to each portion of said first and second arrayed mirrors, for passing the parallel light to the second arrayed mirror while blocking the non-parallel light.

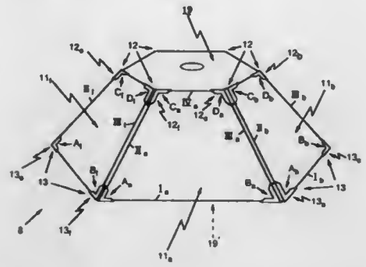
5,613,769
TIR LENS APPARATUS HAVING NON-CIRCULAR CONFIGURATION ABOUT AN OPTICAL AXIS
William A. Parkyn, Jr., Costa Mesa, and David G. Pelka, Los Angeles, both of Calif., assignors to TIR Technologies, Inc., Carson City, Nev.
Continuation-in-part of Ser. No. 445,547, May 19, 1995, which is a continuation-in-part of Ser. No. 415,274, Apr. 7, 1995, Pat. No. 5,577,492, which is a continuation-in-part of Ser. No. 869,003, Apr. 16, 1992, Pat. No. 5,404,869. This application Jun. 5, 1995, Ser. No. 461,555
Int. Cl.[6] F21V 5/00
U.S. Cl. 362—338 13 Claims



1. In lens apparatus,
a) a TIR lens having multiple facets,
b) the lens having a central axis about which the facets extend in non-circular relation,
c) said facets having TIR surfaces,
d) and wherein said facets increasingly separate from one another in progressing through a primary arc about said axis, and increasingly converge toward one another in progressing through a secondary arc about said axis.

8. The apparatus of claim 1 including a light source facing said TIR lens.

5,613,770
APPARATUS FOR SECURING COMPONENT PANELS IN A LIGHTING FIXTURE
Paul W. Chin, Jr., Saratoga, and Hsing M. Keng, Coronel Palos Verdes Estates, both of Calif., assignors to Lite Corporation, Saratoga, Calif.
Continuation-in-part of Ser. No. 243,232, May 16, 1994. This application Sep. 30, 1994, Ser. No. 316,126
Int. Cl.[6] F21V 3/00
U.S. Cl. 362—367 1 Claim



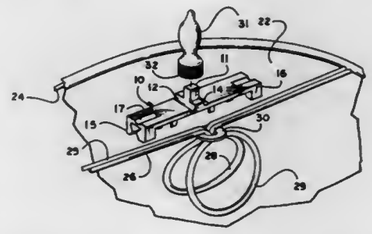
1. A lighting structure comprising:
first and second panels of selected optical and physical properties, each of the first and second panels having at least one edge;
a corner structure for coupling said first and second panels to each other at a predetermined angle, said corner structure including first and second sockets of which at least one of said first and second sockets includes a single whole flange member and at most one partial flange member for connection to one of said first and second panels;
an adhesive for attaching the first and second panels to the corner structure;
and wherein one of said first and second panels includes a virtual corner connected to the other of said first and second panels at a corner via said corner structure.

5,613,771
SWINGS OUT OF THE WAY ARTICULATED MAGNIFYING LAMP
Michael M. Siverling, 519 28 St. NW., Rochester, Minn. 55901
Filed Aug. 12, 1994, Ser. No. 289,779
Int. Cl.[6] F21V 21/20
U.S. Cl. 362—401 15 Claims



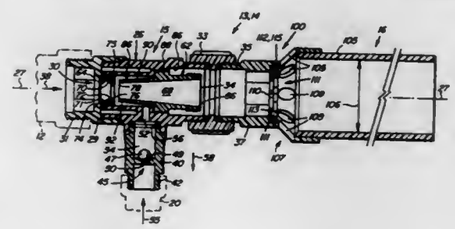
1. A lamp comprising
a stand member;
a pivotable structure supported on said stand member and pivotable about a vertical axis;
a counterweigth secured to said pivotable structure at a fixed distance from vertical axis and at a fixed elevation, and configured for rotation in unison with said pivotable structure; and
a lamp structure carried by said pivotable structure, movable toward and away from said vertical axis, variably and pivotally extending in a radial direction, opposite the radial direction at which said counterweight is mounted, while said couterweight is secured at said fixed elevation.

5,613,772
FINIAL ADAPTER FOR CLIP-ON LAMP SHADES
Gerald F. Sawyer, 2862 Tree Top Rd., Dacula, Ga. 30211
Filed Sep. 18, 1991, Ser. No. 761,483
Int. Cl.[6] F21V 17/04
U.S. Cl. 362—444 10 Claims



1. A finial adapter for a clip-on lamp shade, said shade including diametrically extending wires, and clamping members generally centrally of said wires, said adapter comprising a finial support for selectively receiving a finial thereon, a plate member carrying said finial support, and means for selectively fixing said plate member to said wires.

5,613,773
APPARATUS AND METHOD FOR GENERATING FOAM FROM PRESSURIZED LIQUID
Blayney J. Scott, Victoria; Barry G. Gilbert, Sidney, and George R. Cowan, Burnstown, all of Canada, assignors to Scott Plastics Ltd., Victoria, Canada
Division of Ser. No. 55,882, May 4, 1993, Pat. No. 5,445,226. This application Jun. 2, 1995, Ser. No. 458,260
Int. Cl.[6] B01F 15/02;13/02
U.S. Cl. 366—163.2 19 Claims



1. An agitator apparatus for generating foam from a flow of pressurized water and foam concentrate, the agitator apparatus having an agitator body comprising:

(a) an agitator jet orifice comprising an inlet jet opening in an upstream face of the body and an outlet jet opening in a downstream face of the body, the openings being disposed in series, the outlet jet opening being larger than the inlet jet opening and communicating with the inlet jet opening to define a diverging passage extending through the agitator body; and

(b) a first step means having a relatively abrupt step edge located between the inlet and outlet jet openings, so that flow through the agitator jet orifice passes across the first step means to agitate the flow to enhance mixing and generation of foam.

5,613,774

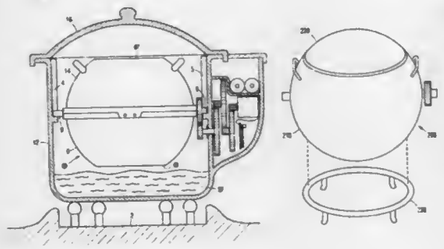
COOKING POT ENCLOSING ROTATABLE SPHERICAL CHAMBER

Naveen Chandra, 10 Milland Dr., #A-5, Mill Valley, Calif. 94941, and Kenneth Tarlow, Corte Madera, Calif., assignors to Naveen Chandra, Mill Valley, Calif.

Filed Dec. 21, 1995, Ser. No. 576,339

Int. Cl.[6] B01F *9/02*

U.S. Cl. 366—228 **8 Claims**



1. A cooking apparatus, comprising:

a cooking pot having an open top and a closed bottom;

a cover removably positioned on said open top of said cooking pot;

a hollow spherical cooking chamber comprising a pair of hemispherical halves hingeably connected together on one side and releasably fastened together on an opposite side, and an annular gasket positioned between said hemispherical halves for providing a seal, said spherical cooking chamber having flattened top and bottom portions;

a pair of horizontal shafts extending from opposite radial positions on said spherical cooking chamber;

a pair of U-shaped support brackets arranged on an interior wall of said cooking pot for supporting said horizontal shafts and suspending said spherical cooking chamber in said cooking pot;

first drive means fixedly attached to one of said horizontal shafts;

second drive means positioned within said cooking pot, said second drive means fixedly attached to one end of a drive shaft extending through said cooking pot, said second drive means engaging said first drive means;

speed reduction means connected to another end of said drive shaft outside of said cooking pot; and

an electric motor connected to said speed reduction means, said motor driving said drive shaft through said speed reduction means, so as to rotate said cooking pot about said horizontal shafts.

5,613,775

APPARATUS FOR MIXING LIQUID PRODUCTS TO PREPARE COLORING SUBSTANCES FOR PAINTS AND THE LIKE

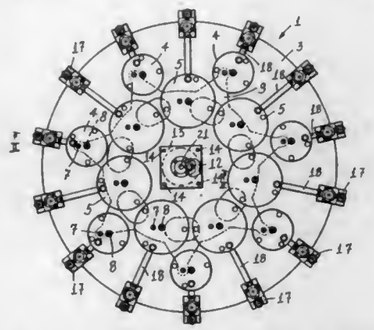
Giuseppe Neri, Cinisello Balsano, Italy, assignor to Fast S.p.A., Cinisello Balsano, Italy

Filed Jul. 17, 1995, Ser. No. 503,388

Claims priority, application Italy, Jul. 21, 1994, MI94A01547

Int. Cl.[6] B01F *7/16*

U.S. Cl. 366—297 **8 Claims**



1. An apparatus for mixing liquid products, in particular for preparing coloring substances for paints and the like, said apparatus comprising a base supporting a substantially horizontal table, said table supporting on a top face thereof a plurality of vessels for the liquid products to be mixed, inside each said vessel a stirring element is arranged, each stirring element having a driving end portion projecting from said vessel, a coupling element being provided for coupling the driving end portions of said stirring elements to driving means which can be controllably actuated to drive said stirring elements, wherein said driving means comprises a motor reducing unit supported by said base under said table and coupled by an output shaft thereof to a crank.

5,613,776

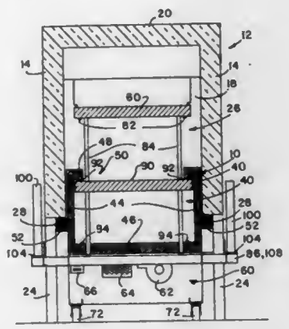
THERMAL SHOCK INSERT

Robert M. Turner, Holland, and Russell N. Barnes, Fennville, both of Mich., assignors to Environmental Screening Technology, Inc., Zeeland, Mich.

Filed Jul. 20, 1994, Ser. No. 278,545

Int. Cl.[6] F25B *29/00*; **G01N** *3/60*

U.S. Cl. 374—57 **14 Claims**



1. A thermal shock insert to adapt an environmental test chamber for thermal shock testing of a specimen, said insert comprising:

an insert cabinet defining an interior chamber, said interior chamber extending through an insert opening in said insert cabinet;

an adaptor seal configured and disposed to form an environmental seal between said insert cabinet and the environmental test chamber;

a platform supporting said specimen and mounted on a stanchion slidably supported and extending through a floor of said interior chamber, said platform being movable relative to said insert cabinet to move the specimen supported on said platform between a first position in which said platform is substantially contained within said interior chamber and a second position in which said platform is substantially outside said interior chamber; and

an actuator for slidably moving said stanchion and said platform between the first position in which the specimen is substantially contained within said interior chamber and the second position in which the specimen is substantially outside of said interior chamber and inside the environmental test chamber.

5,613,777

RADIATION THERMOMETERS

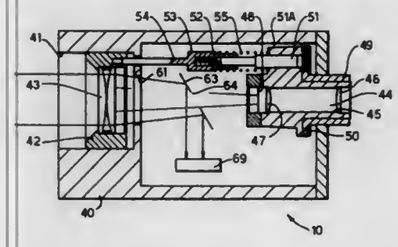
Ian H. Ridley, Sheffield, England, and Peter Fearnehough, Sheffield, United Kingdom, assignors to Land Instruments International Limited, United Kingdom

Filed Jun. 2, 1995, Ser. No. 460,695

Claims priority, application United Kingdom, Jun. 3, 1994, 9411160

Int. Cl.[6] G01J *5/08*

U.S. Cl. 374—130 **16 Claims**



1. A radiation thermometer comprising:

an optical objective through which radiation to be detected passes;

a beam splitter having a central region through which a central portion of the radiation which has passed through said objective passes undeflected and an outer region which reflects radiation surrounding said central portion;

an eye piece for receiving radiation passing through said beam splitter;

an aperture positioned between said objective and said beam splitter; and

a radiation detector for receiving radiation reflected by said beam splitter.

5,613,778

METHOD FOR COLLECTING LIQUID TEMPERATURE DATA FROM A FUEL TANK

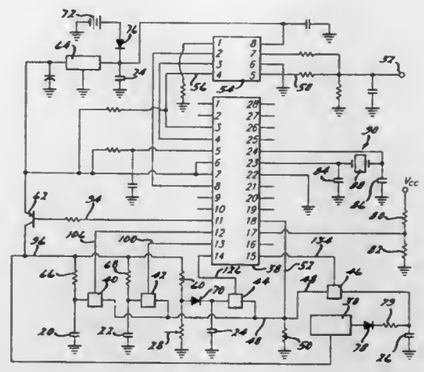
John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Division of Ser. No. 185,336, Jan. 24, 1994. This application Jun. 6, 1995, Ser. No. 468,115

Int. Cl.[6] G01K *7/24*

U.S. Cl. 374—170 **2 Claims**

1. A method for collecting liquid temperature data from a thermal sensitive resistive element immersed in fluid within a storage tank of a vehicle with a multiplexed data bus, comprising the steps of:



(a) providing a temperature capacitor that is charged by the output of a voltage divider circuit containing said thermal sensitive resistive element to a voltage value indicative of the temperature of said fluid;

(b) providing a discharge resistance in communication with said temperature capacitor and a micro-controller in communication with gating means for controlling a communication path between said temperature capacitor and said discharge resistance, providing voltage means for supplying a predetermined reference voltage value to said micro-controller, providing switching means for selectively applying power to said voltage divider circuit, and providing clock means for supplying clock cycles to said micro-controller for counting by the micro-controller;

(c) monitoring the instant value of the voltage across said discharge resistance as said gating means selectively furnishes communication between said temperature capacitor and said discharge resistance and said temperature capacitor discharges across said discharge resistance;

(d) comparing said instant voltage value to said reference voltage value;

(e) determining a number of clock cycle counts counted by said micro-controller during a time that a predetermined relationship exists between said instant voltage value and said reference voltage value; and

(f) determining an absolute temperature of said fluid in said fuel tank based upon said number of clock counts.

5,613,779

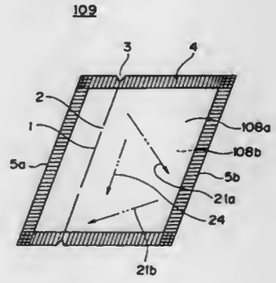
POUCH

Susumu Niwa, Asaka, Japan, assignor to Kabushiki Kaisha Hosokawa Yoko, Japan

Filed Nov. 30, 1994, Ser. No. 351,077

Int. Cl.[6] B65D *30/08*

U.S. Cl. 383—201 **11 Claims**



1. A pouch comprising:

a first compound film forming a front surface of the pouch and comprising (i) a first resin film having a predetermined tear strength and a linear slit having un-cut portions provided therein, (ii) a second resin film having a good heat adhesive property laminated on one surface of said first resin film, and (iii) a third resin film having a predetermined tear strength laminated adjacent to said first resin film;

said first resin film of said first compound film having an orientation along which it has a tendency to tear, the orientation extending in a direction inclined with respect to the direction of said linear slit by a positive angle X, said third resin film of said first compound film having an orientation along which it has a tendency to tear, the orientation extending in a direction inclined with respect to the direction of said linear slit by a negative angle Y, wherein angles X and Y are substantially equal in magnitude;

a second compound film forming a back surface of the pouch and comprising (i) a first resin film having a predetermined tear strength and a linear slit having un-cut portions provided therein, (ii) a second resin film having a good heat adhesive property laminated on one surface of said first resin film, and (iii) a third resin film having a predetermined tear strength laminated adjacent to said first resin film;

said first resin film of said second compound film having an orientation along which it has a tendency to tear, the orientation extending in a direction inclined with respect to the direction of said linear slit by a positive angle X, said third resin film of said second compound film having an orientation along which it has a tendency to tear, the orientation extending in a direction inclined with respect to the direction of said linear slit by a negative angle Y, wherein angles X and Y are substantially equal in magnitude;

wherein said first and second compound films are overlapped with each ocher and peripheral portions thereof are heat fused such that (a) the second resin films are disposed inside the pouch, (b) the linear slits formed in the first resin films are positioned coincident with each other, and (c) the orientations of the first and third resin films of the first compound film are substantially aligned with the orientations of the first and third resin films of the second compound film, respectively.

5,613,780

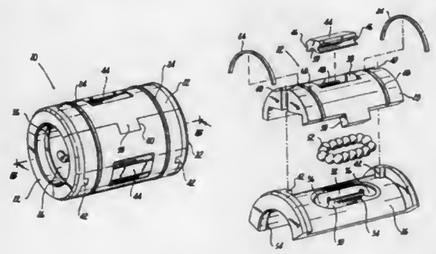
LINEAR MOTION BEARING ASSEMBLY

Alison Ng, N.Y., N.Y., assignor to Thomson Industries, Inc., Port Washington, N.Y.

Filed Jun. 29, 1995, Ser. No. 496,759

Int. Cl.[6] F16C *29/06*

U.S. Cl. 384—43 **21 Claims**



1. A linear motion bearing assembly for movement along a shaft comprising:

a ball retainer formed of a plurality of interengageable self-contained ball retainer segments, each of said segments including an inner portion defining at least one ball track having a load bearing portion and a return portion, an outer lid portion defining a load bearing plate aperture therein and interengageable structure for interengagement of said ball retainer segments;

a load bearing plate positioned in the load bearing plate aperture of the outer lid portion such that the load bearing plate is positioned adjacent the load bearing portion of the ball track; and

a plurality of bearing balls disposed in said ball track for transmitting load from the shaft to the load bearing plate and facilitating movement of the linear motion bearing assembly along said shaft.

20. A process for assembling a linear motion bearing assembly comprising the steps of:

providing a plurality of arcuate interengageable self-contained ball retainer segments, each of said segments including an inner portion defining at least one ball track having a load bearing portion and a return portion an outer lid portion defining a load bearing plate aperture therein and interengagement structure;

loading a plurality of bearing balls into said ball track;

positioning a load bearing plate in said load bearing plate aperture adjacent the load bearing portion of the ball track; and

interengaging said self-contained ball retainer segments to form a linear motion bearing assembly.

5,613,781

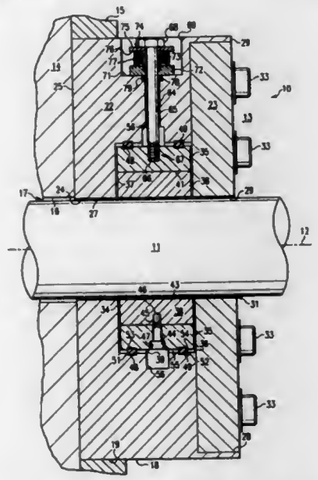
HANGING SPRING SUPPORTED SQUEEZE FILM DAMPING SYSTEM FOR SHAFT BEARING

Mark J. Kuzdzal, and Harry F. Miller, both of Allegany, N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,040

Int. Cl.[6] F16C *39/40*

U.S. Cl. 384—99 **20 Claims**



1. A damper film bearing assembly for supporting a rotatable shaft of a turbomachine comprising,

a housing having a bore therethrough sized to receive said shaft with a longitudinal axis of said shaft extending at least generally horizontally through said bore;

an annular cavity formed-in said housing and open to said bore around a circumference of said bore, said cavity including an annular wall surface which extends generally parallel to a longitudinal axis of said bore;

a bearing member movably mounted within said cavity and including an annular radially outer surface, confronting said annular wall surface of said cavity, and a radially inner surface, confronting said shaft to provide bearing support for said shaft within said housing, whereby said bearing member can vibrate horizontally and vertically within said cavity with respect to said housing;

a fluid film damper formed between said annular radially outer surface of said bearing member and said annular wall surface of said cavity for damping movement of said bearing member within said cavity; and

at least one hanging support spring assembly mounted so as to extend generally upwardly from an upper portion of said bearing member to said housing for resiliently supporting said bearing member at a vertically centered position within said bore in opposition to a dead weight of said shaft, so that said at least one hanging spring assembly can function to center said bearing member within said bore of said housing and permit said fluid film damper to function to suppress vibration of said shaft.

5,613,782

SUPPORTING ROLLER BEARING

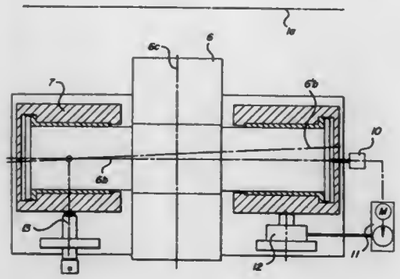
Reinhard Körting, Ennigerloh; Ludger Rübbelke, Rheda-Wiedenbrück, and Hans auf dem Venne, Ennigerloh, all of Germany, assignors to Krupp Polysius AG, Beckum, Germany

Filed Sep. 8, 1995, Ser. No. 525,309

Claims priority, application Germany, Sep. 23, 1994, 44 34 116.4

Int. Cl.[6] F16C *19/50;13/04*

U.S. Cl. 384—549 **10 Claims**



1. A roller bearing support construction for supporting a rotary drum rotatable about a drum axis of rotation, said construction comprising a supporting roller rotatable about a bearing axis having an outer bearing surface for supporting a circumferential running surface of the rotary drum, means mounting said roller to permit axial movement of said roller relative to a predetermined axial position, measuring means for measuring the axial position of said roller relative to said predetermined axial position, and adjustment means for altering the angular position of said bearing axis relative to said drum axis as a function of the measured axial position of said roller.

5,613,783

POINT OF SALE PRINTER WITH MAGNETIC READER

Michael J. Kinney; Robert W. Kruppa, and Robert A. Myers, all of Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1995, Ser. No. 411,106

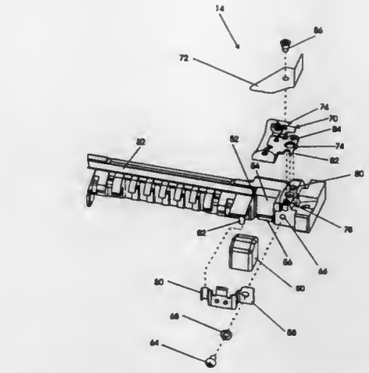
Int. Cl.[6] B41J *5/40*

U.S. Cl. 400—73 **11 Claims**

1. A point of sale printer comprising:

document drive means, for moving documents inserted into the printer along a document travel path;

a magnetic reader positioned at a predetermined longitudinal position in said document travel path; and



a print head positioned at about said predetermined longitudinal position in said document travel path, and wherein said print head is laterally offset from said magnetic reader.

5,613,784

PRINTER AND PRINTING METHOD THEREBY

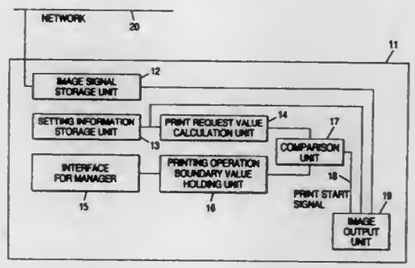
Koji Ohashi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,413

Claims priority, application Japan, Aug. 31, 1994, 6-206541

Int. Cl.[6] G06F *15/00*

U.S. Cl. 400—76 **10 Claims**



1. A printer for continuous printing, comprising:

storage means for temporarily storing image information and setting information,

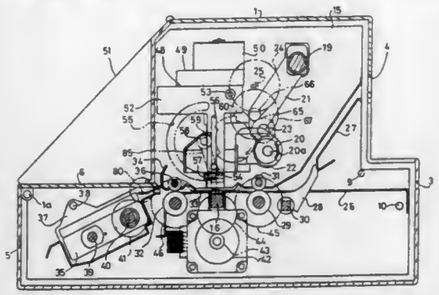
boundary value storage means for storing a boundary value for starting a continuous printing operation,

calculation means for calculating a print request value, wherein said print request value represents a sum of a product of coefficients corresponding to said setting information stored in said storage means,

comparison means for comparing said boundary value stored in said boundary value storage means with said print request value calculated by said calculation means to provide said continuous printing operation, and

control means for performing control operation to perform said continuous printing operation when it is determined by said comparison means that said print request value exceeds said boundary value.

5,613,785
DOT IMPACT PRINTER HAVING A INK RIBBON LOADING MEANS
Tadashi Yasuoka, Tokyo, Japan, assignor to Seiko Precision Inc., Tokyo, Japan
Continuation of Ser. No. 217,323, Mar. 24, 1994, abandoned. This application Sep. 19, 1995, Ser. No. 530,589
Claims priority, application Japan, Mar. 24, 1993, 5-065594; Sep. 10, 1993, 5-225479
Int. Cl.[6] B41J *35/03*
U.S. Cl. 400—248 **8 Claims**

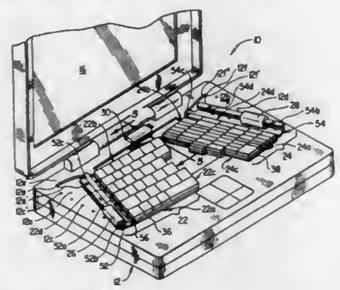


1. A dot impact printer wherein a ribbon cassette formed, at both its end portions, with a pair of arm portions, respectively, between which an ink ribbon is exposed; and said ink ribbon between said arm portions is inserted and placed between a printing head and a platen, comprising: means for positioning a cassette in either a loading/unloading position or a ribbon insertion/draw-off position including:

(A) a supporting frame which supports said ribbon cassette in a removably attachable manner, said cassette being displaceable to first and second positions, said first position permitting said ink ribbon between said arm portions to be inserted and placed between the printing head and the platen, and said second position permitting said ink ribbon between said arm portions to be removed from between the printing head and the platen; and

(B) driving means for driving said supporting frame to said first position for inserting said ink ribbon after a cassette loading operation and to said second position for drawing-off said ink ribbon before a cassette unloading operation.

5,613,786
KEYBOARD WITH ADJUSTABLE SPLAY AND PRONATION PIVOT POINTS
Bryan Howell, and Bryan Hunter, both of Austin, Tex., assignors to Dell U.S.A., L.P., Austin, Tex.
Filed Nov. 20, 1995, Ser. No. 561,051
Int. Cl.[6] B41J *5/10*
U.S. Cl. 400—489 **25 Claims**



1. A keyboard, comprising:

two demi-boards, each of which include a plurality of user activated keys extending therefrom, and which define a distal side for orientation away from the user and a proximate side for orientation adjacent the user, said distal and proximate sides being joined by inwardly facing sides and outwardly facing sides;

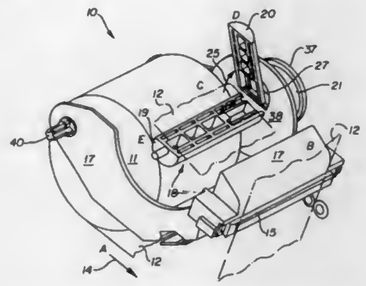
a universal joint rotatably coupling said inwardly facing sides of the demi-boards;

a base member;

pivot point selectors slidably mounted to said demi-boards for selecting pivot points along said outwardly facing sides, about which points said demi-boards are pivotably connected to said base member and are constrained for pivotal movement about said selected pivot points between a retracted position in which said demi-boards are co-planar and said inwardly facing sides are parallel, and an extended position in which said demi-boards are splayed; and

a lift controller interconnected between said base member and said universal joint for adjusting and controlling the height of said universal joint and the pronation of said demi-boards relative to said base member, which pronation becomes more pronounced as said pivot selectors are positioned toward said proximate sides.

5,613,787
AUTOMATIC JOURNAL LOADING ASSEMBLY
Barry E. Passer, Newfield; Michael Smith, and Robert Delaney, both of Ithaca, all of N.Y., assignors to Axiohm IPB Inc., Ithaca, N.Y.
Filed Mar. 18, 1996, Ser. No. 617,255
Int. Cl.[6] B41J *15/04*
U.S. Cl. 400—613.1 **10 Claims**



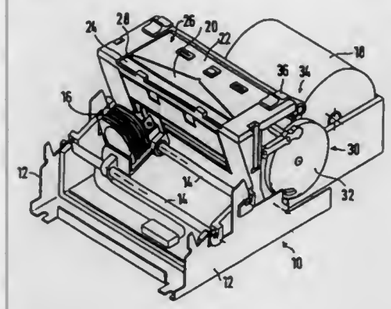
1. A journal receipt printing apparatus for automatically threading the journal supply paper onto a take-up roll, in a journal receipt printing machine, comprising:

paper deposit means for drop loading a supply of journal paper into said journal receipt printing machine;

a bifurcated, take-up spool adjacent said paper deposit means for receiving a leader of said supply of journal paper in an open position, and then capturing said leader of said supply of journal paper in a closed position, said bifurcated take-up spool including a stationary section and a moveable section, said moveable section moving between said open position and said closed position; and

drive means in operative contact with said moveable section of said take-up spool for moving said moveable section of said take-up spool from between said open position and said closed position, in order to receive and capture said leader of said supply of journal paper.

5,613,788
CUTTING DEVICE FOR CUTTING A PRINT CARRIER IN A PRINTER
Wilfried Dobring, Berlin, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany
PCT No. PCT/DE94/00397, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/26478, PCT Pub. Date Nov. 24, 1994
PCT Filed Apr. 8, 1994, Ser. No. 545,664
Claims priority, application Germany, May 10, 1993, 43 15 507.3
Int. Cl.[6] B41J *11/68*
U.S. Cl. 400—621 **17 Claims**



1. A cutting device for cutting a print carrier in a printer, the cutter comprising:

a blade which is movable along at least one guideway against a fixed counterblade and which, in an open setting, frees an opening to allow the printer carrier to be passed through and, in a closed setting, has at least partially cut through the print carrier;

a pivot bracket pivotable to move the blade between the open setting and the closed setting;

a rotatable plate cam arranged to pivot the pivot bracket, the plate cam having a control groove running in a generally peripheral direction, the radial distance of which from the midpoint of the plate cam increases over a rotational angle of the plate cam;

an engaging lever connected to the pivot bracket to pivot therewith, the engaging lever having a control pin secured thereon, such that the control pin is moveable between engaged and disengaged positions relative to the control groove;

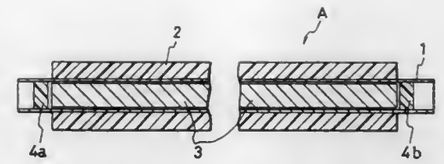
a blocking mechanism operable to selectively prevent engagement of the control pin with the control groove, which can lock the engagement of the control pin in the control groove;

a control cam fixed to rotate with the plate cam such that upon rotation of the plate cam about a first predetermined angle of rotation, the control cam causes the blocking mechanism to permit engagement of the control pin in the control groove; and

a selectively actuatable switchover mechanism which releases the control pin from the control groove when the control pin has moved a predefined radial distance in the control groove relative to the plate cam.

5,613,789
PLATEN FOR IMPACT PRINTER
Makoto Sugai, Saitama-ken, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1994, Ser. No. 267,215
Claims priority, application Japan, Jul. 6, 1993, 5-191599
Int. Cl.[6] B41J *11/02*
U.S. Cl. 400—661.2 **13 Claims**

1. A platen for an impact printer, said platen comprising:



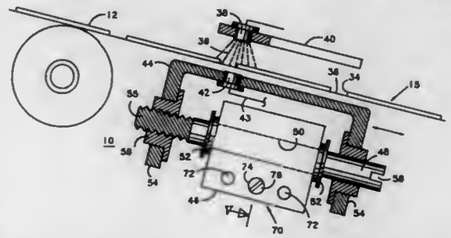
a hollow metal pipe having a hollow interior and inner and outer surfaces;

a layer of elastic material covering said outer surface;

a rod inserted into said hollow interior and having an outer surface spaced from said inner surface to define a clearance of approximately 0.01–0.2 mm therebetween; and

liquid filling said clearance.

5,613,790
APPARATUS FOR NORMALIZING TOP-OF-FORM REGISTRATION IN A MOVING WEB PRINTER
Jay M. Miazga, Marysville, Wash., assignor to Intermec Corporation, Everett, Wash.
Filed Aug. 31, 1995, Ser. No. 522,030
Int. Cl.[6] G01N *21/86*
U.S. Cl. 400—708 **18 Claims**



1. Apparatus for adjustably sensing top-of-form edge positions of individual items carried in space relationship on a surface of a longitudinally moving web comprising:

a) a stationary member carried above the web on one side the web;

b) a movable member carried by said stationary member for longitudinal movement along the path of the web;

c) adjusting apparatus for adjusting a longitudinal position of said movable member; and,

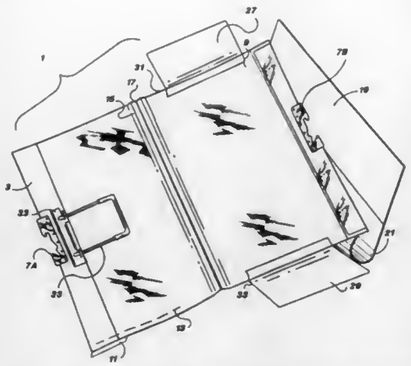
d) a sensor carried by said movable member for sensing top-of-form positions of individual items as a function of a change of thickness between the web alone and the web with an item on the surface thereof.

5,613,791
MEDICAL FILE FOLDER AND HANGING SYSTEM
Rajko D. Medenica, 18 Bee St., Charleston, S.C. 29403
Filed Aug. 16, 1990, Ser. No. 568,592
Int. Cl.[6] B42F *13/00;15/00*
U.S. Cl. 402—4 **7 Claims**

1. A medical file folder comprising a front and back contrapositioned walls having a common foldable spine therebetween, said folder including:

a pair of suspension hooks proportionately riveted in central position on each edge of said walls opposite said spine, said suspension hooks fashioned of a rigid metal, plastic or similar material and each having a longer lip and a shorter lip;

a flexible transparent sheet connected along one of its edges to said back wall at a point opposite said spine and held in place by one of said suspension hooks, said sheet containing a pocket positioned on the inner side thereof;



a plurality of apertures linearly disposed along one edge of said front wall, said apertures allowing insertion of an identification tab;

a top and bottom openable flaps opposingly arranged on opposite edges of interior side of said back wall, said flaps extending toward but not overlapping one another and including folding seams allowing said flaps to form pockets when closed;

a rectangular clamp having a base attached along interior edge of said front wall opposite said spine, said clamp extending medially from said base toward said spine and terminating at half the width of interior of said front wall.

5,613,792

BALL JOINT

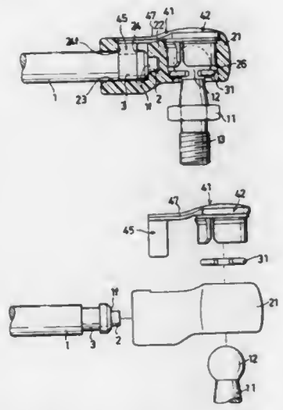
Makoto Terada, Fukurol; Teiji Suka, and Hiroyuki Nakaya, both of Utsunomiya, all of Japan, assignors to Showa Corporation, Gyoda, and Nifco Inc., Yokohama, both of Japan

Filed Jun. 7, 1995, Ser. No. 473,210

Claims priority, application Japan, Jun. 29, 1994, 6-168593

Int. Cl.[6] F16C *11/00*

U.S. Cl. 403—131 **5 Claims**



1. A ball joint, comprising:

a socket of synthetic resin having a through-bole that accommodates a ball, a hole into which a rod is inserted, said rod insertion bole being formed at a right-angle to the through-hole, and an accommodation portion that communicates with the rod insertion hole, said socket being provided on an inside wall thereof defining the through-hole with a plurality of ribs that jut inward in the through-hole;

a ball stud having at one end a ball that is accommodated in the through-hole of the socket;

a C-ring that is mounted in the socket through-hole and maintains the ball inserted in the through-hole;

a rod that is inserted in the rod insertion hole in the socket; and

a cap of synthetic resin that closes an open end of the socket through-hole on a side opposite a side where the ball is inserted, said cap having a holder portion that is accommodated in the accommodation portion of the socket and holds an end of the rod inserted into the rod insertion hole.

5,613,793

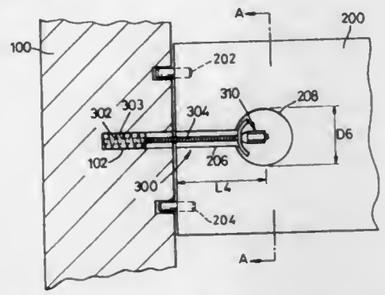
CONCEALED FIXING DEVICE

Mark A. Dennis, 2 Larkspur Close, South Normanton, Derbyshire, DE55 3NL, and Martyn A. Cotterill, 26 Roseberry Street, Kirkby-In-Ashfield, Nottinghamshire, NG17 7FZ, both of England

Filed Feb. 10, 1995, Ser. No. 386,885

Int. Cl.[6] F16B *12/56*

U.S. Cl. 403—256 **3 Claims**



1. A concealed fixing device assembly, in combination with a wooden bed comprising a first upright post member and a second horizontal side member, comprising a concealed fixing device, wherein

said concealed fixing device comprises a first female insert member, a second elongate screw threaded bar member and a third combined nut and washer member,

in which said first female insert member is permanently embedded into said first upright post member,

in which said elongate screw threaded bar member is threaded into the first female insert member to be held in a fixed position outstanding from said first upright post member,

in which said second horizontal side member comprises a first external major surface and a second internal major surface extending along its length, first upper edge surface and a second lower edge surface extending along its length and a first end surface and a second end surface, said first end surface being shaped to conform to the first upright post member and to be fixed thereto by said concealed fixing device,

in which said second horizontal side member is provided with an elongate hole drilled into its first end surface and an enlarged hole drilled into its second internal major surface at a predetermined distance from said first end surface,

in which the enlarged hole comprises a blind hole which is drilled only partially through the width of the second horizontal side member so as to not be visible from the first external major surface,

in which the elongate hole forms a through hole connecting the first end surface with the enlarged blind hole,

in which the elongate screw threaded bar member is sized to protrude through said elongate hole in said second horizontal side member and to present a portion of the elongate screw threaded bar member within said enlarged blind hole when said first upright post member and said second horizontal side member are positioned in a correct assembly position,

in which said third combined nut and washer member comprises a preshaped washer and nut, said preshaped washer being retained on said nut and being freely rotatable relative to said nut,

in which said nut is internally threaded to be co-operate with a surface of the elongate screw threaded bar member,

in which said preshaped washer is shaped to co-operate with a surface of the enlarged blind hole adjacent to said elongate hole,

in which said nut is only partially internally threaded and is provided with an enlarged internal diameter section to provide a lead in section for prevention of cross threading when said combined nut and washer member is fitted onto said elongate screw threaded bar member, and in which said preshaped washer is substantially larger than size of the nut to provide a spread of pressure within said enlarged blind hole.

5,613,794

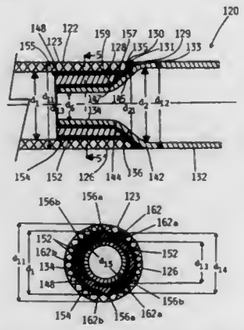
BI-MATERIAL TUBING AND METHOD OF MAKING SAME

Timothy S. Isaac, Fo Tan, Hong Kong; Gui Yang, Shenzhen, China, and Raymond Lee, Wan Chai, Hong Kong, assignors to Hong Kong (Link) Bicycles Ltd., Hong Kong, Hong Kong

Filed Aug. 16, 1994, Ser. No. 291,426

Int. Cl.[6] F16B *12/42*

U.S. Cl. 403—265 **2 Claims**



1. A lightweight tubing material, comprising a composite tubular member, a noncomposite tubular member, a locking portion therebetween said composite member and said noncomposite member and a spline:

said composite member including at least one braided tubular layer of fibers reinforced with a resin, and having a main composite portion and an end composite portion, said main composite portion having a first inside diameter, said end composite portion having an outer corner, a first outer diameter across said outer corner, a first inner corner, a second inner corner, said first inside diameter extending across said second inner corner, an annular surface extending between said outer corner and said first inner corner, a substantially inwardly sloping end surface extending between said first inner corner and said second inner corner, and an inner surface;

said noncomposite member including a main noncomposite portion, a neck noncomposite portion and an insert end noncomposite portion, said neck noncomposite portion therebetween said main noncomposite portion and said insert end noncomposite portion, said insert end noncomposite portion laterally extending from said neck noncomposite portion, and having an outer surface, an insert portion outer diameter and a second inside diameter, said second inside diameter being less than said first inside diameter, said main noncomposite portion having a main noncomposite portion outer diameter substantially equal to said first outer diameter, said neck noncomposite portion having one convexly bent end adjacent said main noncomposite portion and another concavely bent end adjacent said insert end noncomposite portion, and having a linearly decreasing inside diameter spanning from said main noncomposite portion to said insert end noncomposite portion, said neck noncomposite portion having a corresponding linearly decreasing outer diameter spanning from said main noncomposite portion outer diameter to said insert portion outer diameter, said main noncomposite portion having an inside diameter substantially equal to said first inside diameter; said locking portion including said end composite portion, said insert end noncomposite portion and an adhesive layer therebetween; said second outer corner and said end surface of said end composite portion abutting said neck noncomposite portion; said adhesive layer adhering both said insert end noncomposite portion and said neck noncomposite portion to said end composite portion; and

said spline disposed between said inner surface of said end composite portion of said composite member and said outer surface of said insert end noncomposite portion of said noncomposite member, said spline being substantially tubular and having an inner surface and an outer surface, said adhesive layer adhering said outer surface of said spline to said inner surface of said end composite portion of said composite member and adhering said inner surface of said spline to said outer surface of said insert end noncomposite portion of said noncomposite member and wherein said second inner corner and said end surface of said end composite portion are adhered to said neck noncomposite portion by said adhesive layer.

5,613,795

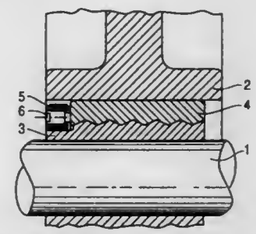
CONICAL CONNECTING DEVICE FOR CONNECTING MACHINE COMPONENTS

Gerhard Antony, and William Lechler, both of Virginia Beach, Va., assignors to Sumitomo Machinery Corp. of America, Chesapeake, Va.

Filed Feb. 29, 1996, Ser. No. 609,018

Int. Cl.[6] F16B *2/14*

U.S. Cl. 403—370 **16 Claims**



1. An internal conical connecting device for connecting machine components, comprising:

an inner bushing having an outer surface with a first set of parallel conical grooves; and

an outer bushing having an inner surface with a second set of parallel conical grooves;

said first and second sets of parallel conical grooves being engageable for wedging a first machine component into locking connection with a second machine component upon axial movement of said outer bushing relative to said inner bushing.

5,613,796

ATTACHMENT ELEMENT

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.P.A., Novedrate, Italy

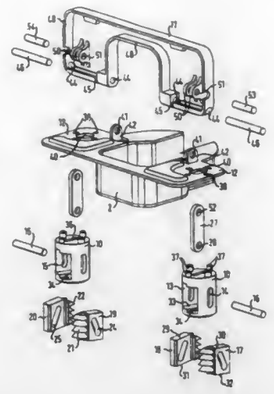
Filed Apr. 19, 1996, Ser. No. 636,469

Claims priority, application Germany, Apr. 19, 1995, 295 06 600.8; Jul. 11, 1995, 295 11 216.6

Int. Cl.[6] F16B *2/14*

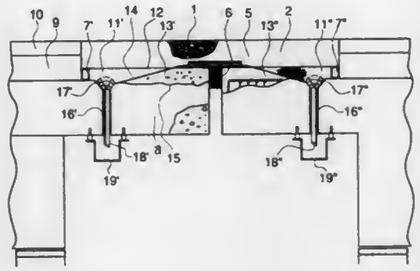
U.S. Cl. 403—409.1 **25 Claims**

1. An attachment element for fitting parts, comprising a pin shaped and substantially cylindrical section having a cylindrical



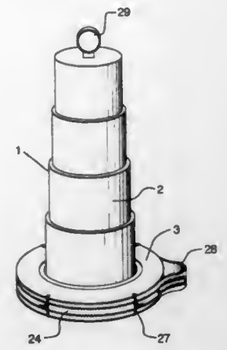
axis, axial slots, a cylindrical enveloping contour and a radial aperture, two expanding bodies having intersecting slots and respective ends within said cylindrical section for expansion and retraction relative to the cylindrical section in opposite directions past the cylindrical enveloping contour, a link having two ends and axial holes formed therebetween, an actuating lever acting on one of the link ends for toggling movement, a bolt in the axial slots, the bolt extending through the intersecting slots in the expanding bodies in order to toggle the expanding bodies outward and inward by pivotal movement of the link.

5,613,797
ANHYDROUS VISCOELASTIC BUFFER JOINT
Mariano Romagnolo, and Gabriele Camomilla, both of Rome, Italy, assignors to Autostrade - Consessioni E Costruzioni Autostrade S.p.A., Rome, Italy
Filed Mar. 8, 1995, Ser. No. 400,619
Claims priority, application Italy, Jun. 17, 1994, RM94A0387
Int. Cl.[6] E01D *19/08*
U.S. Cl. 404—2 **8 Claims**



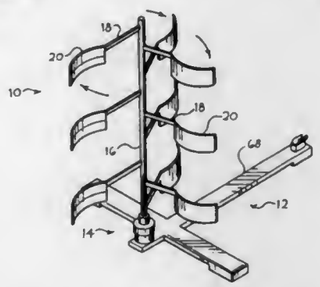
1. An anhydrous viscoelastic buffer joint for roadways, the joint comprising:
- a floor slab having an end and defining a drainage path spaced from said end;
- a wearing course positioned on said floor slab, said wearing course being spaced from said end of said floor slab;
- an end block positioned on said end of said floor slab, said end block having an inclined surface leading towards said drainage path to form a recessed zone;
- a drainage conglomerate positioned adjacent said drainage path;
- a viscoelastic bituminous material positioned on said end block and said drainage conglomerate.

5,613,798
TRAFFIC MARKER AND BASE UNIT
Josef J. Braverman, 32 Loma Vista Drive, Thornhill, Ontario, Canada
Filed Jul. 6, 1995, Ser. No. 498,836
Int. Cl.[6] E01F *9/00*
U.S. Cl. 404—6 **9 Claims**



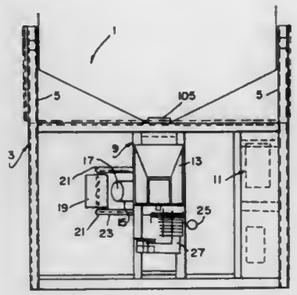
1. A base unit for use in association with a body portion of a traffic channelizing device, said base unit having a substantially circular lower base portion comprising a sidewall of a vehicle tire, said sidewall having an inner planar section and an integral outer curved section providing a substantially circumferential convex ground contacting surface, and a substantially circular upper base portion comprising a separate independent sidewall of a vehicle tire, said sidewall of said upper base portion having an inner planar section and an integral outer curved section, disposed to form an annular concave channel between said upper and lower base portions, and ballast means affixed within said annular channel.

5,613,799
ROTATING FLASH DEVICE AND METHOD
David Guide, 203 Eastgate Rd., Lombard, Ill. 60148
Continuation-in-part of Ser. No. 183,075, Jan. 18, 1994. This application Jun. 7, 1995, Ser. No. 480,009
Int. Cl.[6] G09F *11/00*
U.S. Cl. 404—9 **39 Claims**



1. A method for arresting the attention of an observer, such as in a moving vehicle, the method comprising:
- providing a rotatable longitudinally extending member rotatable about an axis of rotation and having a plurality of arms including enlarged flash portions thereon extending radially away from the axis as the member rotates with the flash portions having reflective flash material thereon;
- spacing the reflective flash material in an axial direction;
- moving the reflective material; and
- directing light from a light source towards the rotating member causing the reflective material on the portions to create an abrupt on and off flashing at either side of the axis where the movement of the arms through their respective paths is not readily detectable producing an apparent rectilinear jerky-type motion of the portions on either side of the axis.

5,613,800
PAVEMENT REPAIR APPARATUS AND METHOD OF REPAIRING ROADS
Reginald J. Kneeland, 14104 Bison Ct., Glenelg, Md. 21737
Filed May 1, 1995, Ser. No. 431,959
Int. Cl.[6] E01C *19/22*
U.S. Cl. 404—75 **19 Claims**

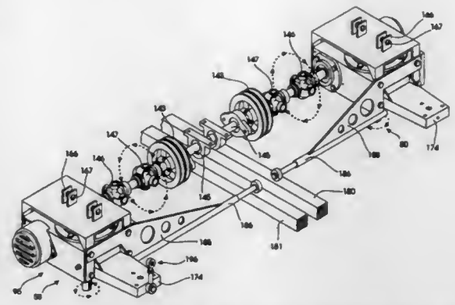


1. Pavement repair apparatus comprising a frame for mounting on the back of a truck, a platform mounted on the frame, a carriage mounted for moving on the frame with respect to the truck, an angled chute connected at an angle to the frame and a discharge auger mounted in the angled chute, a motor connected to the discharge auger at an upper end of the angled chute for moving repair materials through the chute, a hopper mounted on the carriage and communicating with the chute, an axle connected beneath a lower portion of the chute, support arms having proximal ends connected to the axle on opposite sides of the chute and having distal ends, a roller connected between distal ends of the support arms, hydraulic cylinders connected to the support arms and to the carriage for raising the arms so that the roller is above the chute, and for lowering the arms so that the roller is below the chute and in contact with a repaired pavement.

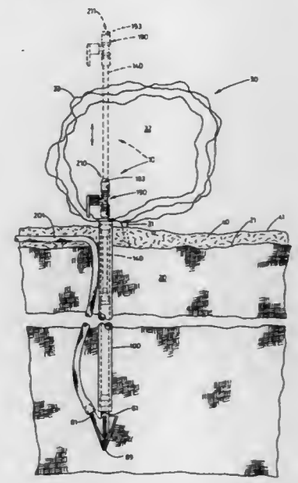
14. The method of repairing roads by an apparatus, comprising storing a supply of blacktop in a hopper, positioning a digging auger over a pavement hole, lowering the digger auger into the pavement hole, operating the digger auger and digging loose material from the pavement hole, removing loose material from the pavement hole, lifting the auger, directing a sloping chute to the hole, operating a discharge auger in the sloping chute and discharging blacktop from the hopper and sloping chute into the pavement hole with the discharge auger in the sloping chute, hydraulically pivoting roller support arms and lowering a roller between the arms into contact with the blacktop material in the hole, moving the roller across the blacktop material in the hole, raising the roller and support arms and moving the apparatus to a new hole to be cleaned.

5,613,801
HIGH PERFORMANCE TWIN ENGINE ROTOR-STEERED RIDING TROWEL
J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Inc., Paragould, Ark.
Continuation-in-part of Ser. No. 176,118, Dec. 30, 1993, Pat. No. 5,480,258. This application Jul. 7, 1995, Ser. No. 499,746
Int. Cl.[6] E01C *19/00*
U.S. Cl. 404—112 **9 Claims**

1. A motorized riding trowel for finishing a concrete surface, said riding trowel comprising:
- a frame;
- a pair of motors mounted on said frame for powering said riding trowel, each motor establishing an axis of rotation, and the axis of rotation of each motor being substantially coaxial;
- a pair of spaced apart rotors depending downwardly from said frame for frictionally contacting said concrete surface and supporting said frame thereabove, each of said rotors driven by one of said motors and establishing a generally vertical axis of rotation;
- a pair of separate drive shafts, one drive shaft projecting from each of said rotors towards one another, the axis of rotation of each drive shaft being substantially coaxial with one another and generally parallel with the axis of rotation of each motor; and,
- means for independently rotatably coupling said drive shafts to said motors.



5,613,802
APPARATUS FOR DEPLOYING A WORK OBJECT
Michael M. Farrell, Kingsburg, Calif., assignor to Nibco Inc., Elkhart, Ind.
Continuation of Ser. No. 210,691, Mar. 17, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 665,957
Int. Cl.[6] E02B *13/00*
U.S. Cl. 405—36 **9 Claims**



1. An apparatus for deploying an irrigation nozzle, the apparatus comprising an elongated tubular housing constructed of conventional plastic irrigation tubing of sufficient rigidity to retain a substantially straight configuration, said housing having an internal fluid chamber and predetermined upper and lower end portions; a guide member mounted on the upper end portion of the housing

having a passage extending therethrough interconnecting said internal fluid chamber of the housing with the exterior thereof; an elongated tubular member, having predetermined upper and lower end portions and a fluid passage extending therethrough extending between and outwardly through the upper and lower end portions of the tubular member, mounted in said passage of the guide member for slidable movement therewithin with the lower end portion of the tubular member within the internal fluid chamber of the housing and the upper end portion of the tubular member externally of the housing; means borne by the upper end portion of the tubular member for mounting said nozzle in fluid communication with said fluid passage of the tubular member; means for limiting said slidable movement of the tubular member between a retracted position, with said tubular member substantially received within the internal fluid chamber of the housing with the nozzle disposed externally of the housing, and an advanced position, in which the tubular member is disposed substantially externally of the housing and the nozzle is in a predetermined operational position remote from the housing; a spring adapted resiliently to retain the tubular member in the retracted position; and a coupling mounted on the lower end portion of the housing in fluid communication with the internal chamber of the housing and adapted to be connected to a fluid conduit for connection to a source of water under pressure whereby water under pressure can be delivered from said source, along said conduit, through the coupling and into the internal fluid chamber of the housing to pressurize said internal fluid chamber below the tubular member to move the tubular member to the advanced position and, thereby, the nozzle to said operational position.

5,613,803

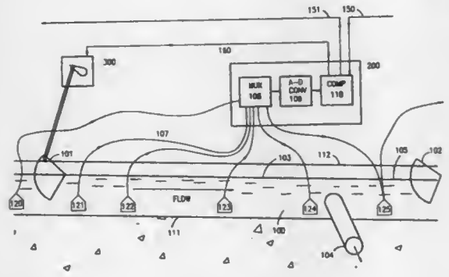
METHOD AND APPARATUS FOR THE AUTOMATED CONTROL OF CANALS

John B. Parrish, 3634 Foxana Dr., Iowa City, Iowa 52246

Filed May 23, 1995, Ser. No. 447,763

Int. Cl.[6] E02B *7/20;7/42*

U.S. Cl. 405—92 **14 Claims**



1. A method for the automated downstream control of a fluid delivery canal, said canal including a plurality of pools, said pools being successively aligned downstream, each of said pools having sides and an invert and being defined by at least one of an upstream inflow gate and downstream outflow gate, and having a setpoint location, said setpoint location having an associated setpoint target depth, said method further for achieving and maintaining steady state operation of said pool despite changing demands and comprising the iterative steps of:

starting with the last pool downstream in said canal, each pool in said canal maintaining its target depth by applying a volume compensating inflow of fluid to the volume of said pool;

starting with said last pool downstream in said canal, each pool in said canal transmitting it's volume compensating inflow upstream to the next pool upstream, said next pool upstream adding it's volume compensating inflow to the sum of downstream volume compensating inflows;

starting with said last pool downstream in said canal, each pool in said canal applying a demand compensating inflow of fluid to said pool to supply sufficient fluid to meet said changing demand; and

starting with said last pool downstream in said canal, each pool in said canal transmitting it's demand compensating inflow upstream to said next pool upstream, said next pool upstream adding it's demand compensating inflow to the sum of downstream demand compensating inflows.

5,613,804

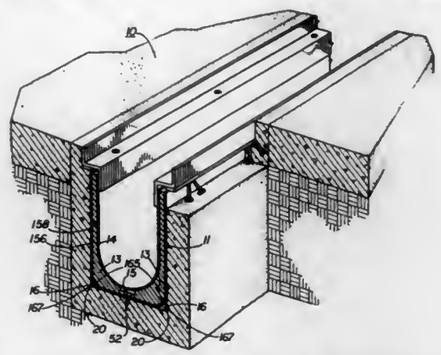
HOLDING MEANS FOR SECURING A LINER TO A TRENCH

John V. Beamer, Atlanta, Ga., assignor to Hoosier Group, L.L.C., Atlanta, Ga.

Continuation-in-part of Ser. No. 349,901, Dec. 6, 1994. This application Mar. 15, 1995, Ser. No. 404,586

Int. Cl.[6] E02B *5/00*

U.S. Cl. 405—119 **8 Claims**



1. A trench liner system for forming a dual containment trench and for relining an existing trench having at least two walls, a bottom surface, a top surface, and a bearing surface comprising:

a. secondary liner means, with an interior surface and an exterior surface, extending along the length of the trench;

b. primary liner means, having an interior surface and an exterior surface, disposed within the trench within the secondary liner means and extending along the length of the trench;

c. means disposed between the secondary liner means and the primary liner means for separating the interior surface of the secondary liner means from the exterior surface of the primary liner means; and

d. means for holding at least the primary liner means against the trench walls wherein the holding means is directly and fixedly secured to at least one of the walls, the top surface or the bearing surface.

5,613,805

DEVICE FOR CLEANING CONTAMINATED TOPSOIL

Jürgen T. Schmid, Rottweil, Germany, assignor to Filter-und Wassertechnik GmbH, Dunningen-Seedorf, Germany

PCT No. PCT/EP93/01928, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO94/03236, PCT Pub. Date Feb. 17, 1994

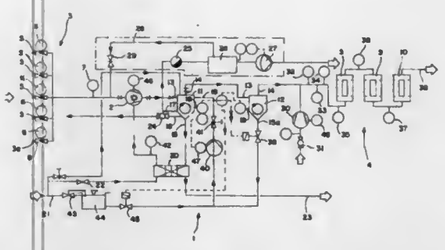
PCT Filed Jul. 21, 1993, Ser. No. 374,643

Claims priority, application Germany, Jul. 30, 1992, 42 25 125.7

Int. Cl.[6] B09B *3/00*

U.S. Cl. 405—128 **9 Claims**

1. Cleaning apparatus for contaminated soil comprising an intake suction element (3) for being positioned at the soil, with at least one downstream negative-pressure generator comprised of a



liquid seal ring pump (2) to which is connected, downstream thereof, a polluting-material-removing activated-charcoal filter for air (8 through 10), wherein at least first and second fluid traps (11 and 12) are serially interposed between the liquid seal ring pump (2) and the polluting-material-removing activated-charcoal filter for air (8 through 10) with the second fluid trap being downstream of said first fluid trap and having a filling body packing therein.

5,613,806

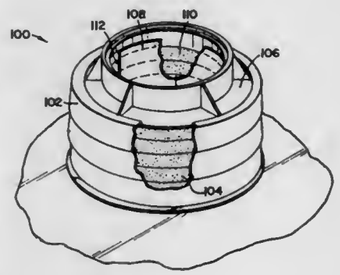
SEALING SYSTEM FOR SEWER AND WATER APPLICATIONS

Jeffrey W. House, St. Croix, and William K. House, Forest Lake, both of Minn., assignors to Infi-Shield, Inc., Forest Lake, Minn.

Continuation-in-part of Ser. No. 308,256, Sep. 19, 1994, Pat. No. 5,531,485, which is a continuation-in-part of Ser. No. 273,503, Jul. 11, 1994, Pat. No. 5,511,897. This application Jun. 7, 1995, Ser. No. 477,219

Int. Cl.[6] F16L *55/162;58/10*

U.S. Cl. 405—150.1 **13 Claims**



7. A method for sealing the interior of a structure selected from the group consisting of a manhole riser or catch basin, said method comprising the steps of:

a. placing a vertical edge of a first band of elastomeric material in position on the interior of the structure such that horizontal edges of said band are substantially aligned with a first and second horizontal edge of said structure, and such that said vertical edge is secured to the interior by an adhesive disposed therebetween; and

b. starting proximate said vertical edge, rolling said band around said interior until said interior is substantially covered with said first band and said first band is secured to the interior by an adhesive disposed therebetween.

5,613,807

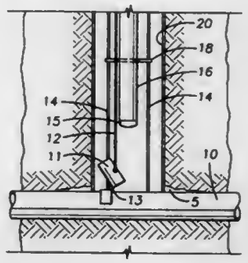
APPARATUS FOR DOWN HOLD FUSING

Cleve C. Reber, Pasadena, and Kurt S. Myers, Houston, both of Tex., assignors to TTI Trenchless Technologies, Inc., Conroe, Tex.

Continuation-in-part of Ser. No. 339,335, Nov. 14, 1994, which is a continuation-in-part of Ser. No. 38,148, Mar. 26, 1993, Pat. No. 5,364,207. This application Apr. 28, 1995, Ser. No. 430,456

Int. Cl.[6] F16L *1/028*

U.S. Cl. 405—156 **8 Claims**



1. A down hole fusing apparatus for fusing a polyolefin stack to a polyolefin pipe comprising:

a base which seats on said polyolefin pipe;

rods extending from said base to a centralizing plate with an opening in said centralizing plate;

a polyolefin stack holder means which moves on rods extending from said centralizing plate;

a heating element hinged to said base, said element having an upper surface and a lower surface each having a radius essentially that of the surface of said polyolefin pipe; and

means for raising and lowering said heating element.

5,613,808

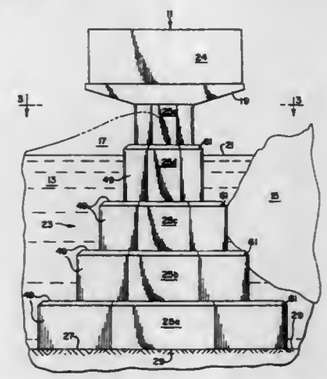
STEPPED STEEL GRAVITY PLATFORM FOR USE IN ARCTIC AND SUBARCTIC WATERS

Patrick J. Fitzpatrick, Calgary, Canada, assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 15, 1995, Ser. No. 404,430

Int. Cl.[6] E02B *17/00*

U.S. Cl. 405—217 **21 Claims**



1. An offshore structure for placement on a sea floor foundation in a body of water containing moving ice masses and water waves, which impart Environmental Loads to the structure, comprising:

a foundation base which contacts the sea floor foundation, the foundation base having sufficient horizontal cross-sectional area such that a bearing pressure and a horizontal shear force,

which result from the Environmental Loads and which are transferred to the sea floor foundation by the foundation base, are less than at least one of a predetermined shear capacity and a predetermined bearing capacity for the sea floor foundation; and

at least three stepped stages stacked above the foundation base, each stage having an outer hull to engage the ice masses, the outer hull for each stage being comprised of a substantially vertical wall and a top wall connected to the substantially vertical wall, and each stage having a smaller outer diameter than the stage immediately below it, the structure having a sufficient mass to prevent an overturning moment, which results form the Environmental Loads, from overturning the structure.

5,613,809

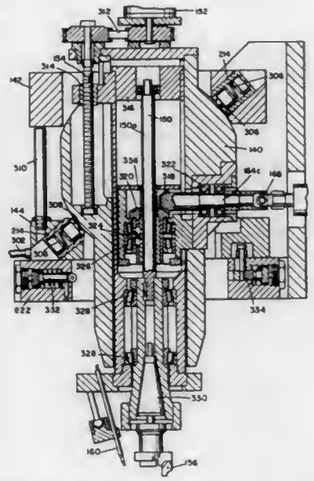
APPARATUS AND METHOD FOR MACHINING VALVE SEATS IN AN ENGINE CYLINDER HEAD

Brice Harmand, 5275 Toscana Way, Apt. 124, San Diego, Calif. 92122, and Pierre Harmand, 47 Route de Vovray, 74000 Annecy, France

Filed Jun. 14, 1995, Ser. No. 490,468

Int. Cl.[6] B23B *41/00;47/26;* **B24B** *15/02*

U.S. Cl. 408—1 R **17 Claims**



1. A system for machining a valve seat in an engine cylinder head having a height and having a plurality of valve seats disposed within said engine cylinder head at a plurality of different locations within an horizontal plane and having a plurality of angular displacements from a vertical line comprising:

a work surface lying in a first plane parallel to the horizontal plane;

a base disposed on said work surface;

a stage disposed on said work surface for holding said engine cylinder head;

a first bearing surface between said work surface and one of said base and said stage for movement parallel to said first plane;

a pantograph having a pair of arms, each arm of the pair having a distal end pivotally attached to said base so that said pair of arms pivots along a vertical plane perpendicular to said first plane, and a proximal end;

a head portion pivotally attached to said proximal end of each said arm, said head portion having a bottom edge, wherein the bottom edge remains parallel to said first plane when the distal ends of said pair of arms of said pantograph are raised and lowered within the vertical plane;

a support frame disposed within said head portion adjacent the bottom edge;

a spherical housing having a centroid, an upper portion and a neck portion;

an upper and a lower sphere seat fixedly attached to each other for surrounding and supporting said spherical housing therebetween so that said spherical housing is pivotable around the centroid within said upper and lower sphere seats, said lower sphere seat being supported by and movable parallel to said first plane with respect to said support frame;

a second bearing surface disposed between said support frame and said lower sphere seat;

a least three third bearing surfaces disposed between said upper and lower sphere seat and said spherical housing;

a spindle retained within said spherical housing, said spindle being rotatable within said spherical housing and translatable along a vertical feed/retraction line running through said centroid between the upper portion and the neck portion;

means for retaining a machining tool disposed at an end of said spindle so that said machining tool rotates concentrically with said spindle;

a drive motor for providing rotational force for rotating said spindle, said drive motor being disposed within said pantograph;

a transmission linkage means attached to said drive motor for transferring the rotational force from said drive motor to said spindle, said transmission linkage means contacting said spindle within said spherical housing;

a second motor disposed on the upper portion of said spherical housing; and

a drive means for linking said motor to said spindle for providing a translational force for translating said spindle along the vertical feed/retraction line within said spherical housing;

wherein said machining tool is positioned for machining said valve seat by centering said spindle over said valve seat by one or more of the steps of moving one of said base and said stage on said first bearing surface to provide coarse movement parallel to said first plane, shifting the distal end of said pantograph up and down to provide coarse movement along said vertical plane, moving said lower sphere seat on said second bearing surface to provide fine movement parallel to said first plane, translating said spindle along the vertical feed/retraction line to provide fine movement generally within said vertical plane, and pivoting said spherical housing around the centroid to provide angular displacement of said spindle.

14. A method for centering a machining tool for machining a valve seat in an engine cylinder head having a height and having a plurality of valve seats disposed within said engine cylinder head at a plurality of different locations within an horizontal plane and having a plurality of angular displacements from a vertical line, the method comprising:

providing a work surface lying in a first plane parallel to the horizontal plane;

disposing a base on said work surface;

disposing a stage on said work surface for holding said engine cylinder head;

moving one of said base and said stage on a first bearing surface to provide coarse movement parallel to said first plane;

shifting a distal end of a pantograph having a pair of arms, each arm of the pair having a distal end pivotally attached to said base so that said pair of arms pivots along a vertical plane perpendicular to said first plane up and down to provide coarse movement along a vertical plane;

pivotably attaching a head portion to a proximal end of each said arm of said pantograph, said head portion having a support frame, wherein the support frame remains parallel to said first plane when the distal ends of said pair of arms of said pantograph are raised and lowered within the vertical plane;

disposing a spindle for holding said machining tool in a spherical housing having a centroid, an upper portion and a neck portion, said spherical housing being pivotable around the centroid to provide angular displacement of said spindle, wherein the spherical housing is supported by an upper and a lower sphere seat fixedly attached to each other, said lower sphere seat being supported by and movable parallel to said first plane with respect to said support frame;

moving said lower sphere seat with respect to said support frame to provide fine movement parallel to said first plane;

translating said spindle along a vertical feed/retraction line to provide fine movement within said vertical plane; and

pivoting said spherical housing around said centroid.

5,613,810

PNEUMATIC POWER DRILL

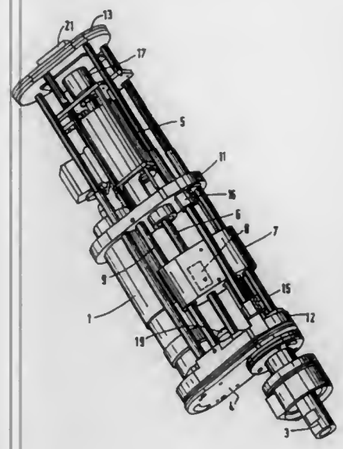
Michel Bureller, Antony, France, assignor to Etablissements Recoules et Fils (S.A.), France

Filed May 31, 1995, Ser. No. 455,657

Claims priority, application France, May 31, 1994, 94 06584

Int. Cl.[6] B23B *39/08;39/10*

U.S. Cl. 408—3 **10 Claims**



1. A pneumatically-powered drill comprising a pneumatic motor disposed to apply rotary drive to a tool-carrier spindle, wherein spindle feed is controlled by an electric motor as a function of the speed of rotation of the tool-carrier spindle and of instructions stored in a memory electronics card and made use of in a control and power supply electronics card.

5,613,811

DUST-FREE METHOD AND APPARATUS FOR LOCATING AND CUTTING HOLES FOR ELECTRICAL OUTLET BOXES, RECESSED LIGHT FIXTURES AND THE LIKE

Gregory M. Tillemans, 1612 W. 22nd St., No. 104, Wichita, Kans. 67204

Filed Apr. 13, 1995, Ser. No. 421,498

Int. Cl.[6] B23C *1/20;* **B27C** *5/10*

U.S. Cl. 409—130 **33 Claims**

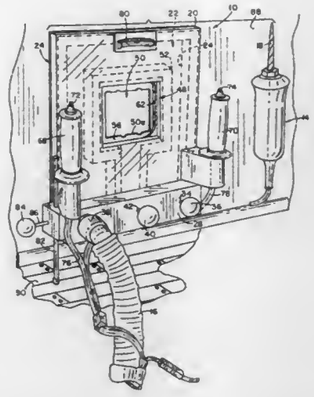
1. A template for use in cutting a hole in a flat surface, said template comprising:

a portable frame adapted to be selectively placed against a flat surface in which a hole is to be cut;

means defining an opening in the frame having an outline that corresponds at least in part to the outline of the hole to be cut;

means for releasably securing the frame in a temporarily immobilized condition against the flat surface whereby to permit a hole to be cut in the surface using the outline of the opening as a guide,

said releasable securing means including suction structure on the frame disposed to secure the frame to the surface by negative air pressure; and



a dust inlet adjacent the opening in the frame and adapted to be coupled with a source of negative pressure for removing dust in the vicinity of the hole as the surface is being cut.

5,613,812

ROTARY COOLANT ADAPTOR

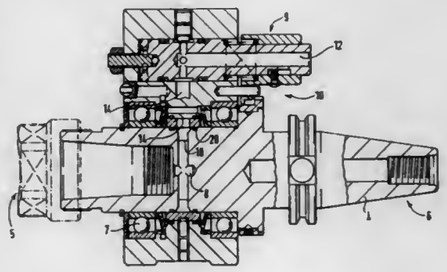
Clive S. Levan, and Clive J. Evans, both of Bristol, Great Britain, assignors to Bristol Tool & Gauge Engineering Limited, Bristol, Great Britain

Filed Dec. 11, 1995, Ser. No. 570,678

Claims priority, application Great Britain, Dec. 14, 1994, 9425224

Int. Cl.[6] B23C *5/28*

U.S. Cl. 409—136 **10 Claims**



1. A rotary coolant adaptor comprising:

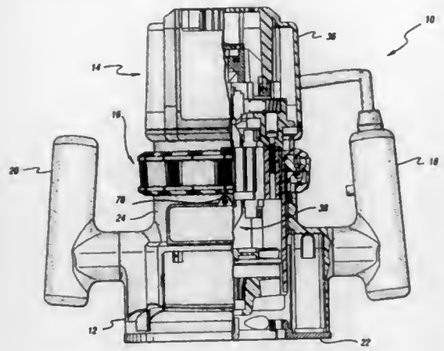
(i) a rotatable shaft having at one end a chuck for receiving a tool and at the other end a connection for engaging a machine tool spindle, the rotatable shaft having a bore through which pressurised coolant can be supplied to the tool, one or more inlet(s) in fluid communication with the bore and circumferential grooves provided in the shaft to either side of the inlet(s);

(ii) a fixed portion locating around the rotatable shaft, the fixed portion having an inlet through which pressurised coolant can be supplied to the inlet(s) in the rotatable shaft; and,

(iii) sealing means located in the circumferential grooves, the sealing means having first sealing faces for sealing against the shaft and second sealing faces for sealing against the fixed portion of the adaptor,

wherein the pressure of the coolant flowing through the adaptor forces the sealing means against the rotatable shaft and the fixed portion of the adaptor.

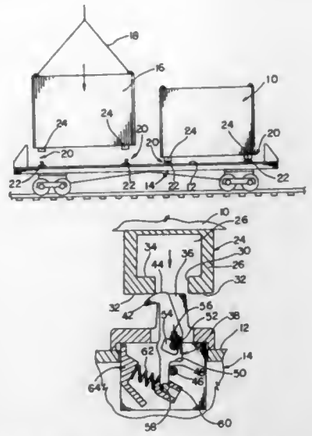
5,613,813
ROUTER ADJUSTMENT RING
Charles D. Winchester, Easley, and Ronald C. McCurry, West Union, both of S.C., assignors to Ryobi North America, Inc., Easley, S.C.
Filed Mar. 12, 1996, Ser. No. 614,181
Int. Cl.[6] B23C *1/20*
U.S. Cl. 409—182 16 Claims



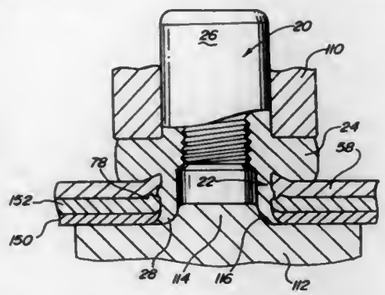
1. A height adjustment ring assembly for adjusting height of a router motor housing relative to a router base, the router being movable between upright and inverted positions, the housing having external threads formed thereon, the height adjustment ring assembly comprising:
- a support member secured to the router base, said support member having a radially extending flange portion;
- an annular adjustment ring having an internal thread for cooperation with the external threads for height adjustment; and
- means for entrapping the flange portion with respect to the adjustment ring, thereby limiting relative axial movement while allowing free relative rotation of the adjustment ring with respect to the support member for adjustment of the router motor housing regardless of router position.

5,613,814
LATCHING MECHANISM FOR SECURING SHIPPING CONTAINERS ON TRANSPORT VEHICLES
Robert G. Jackson, P.O. Box 277, Benton Harbor, Mich. 49022
Filed Jul. 27, 1995, Ser. No. 508,354
Int. Cl.[6] B60P *7/13*
U.S. Cl. 410—70 9 Claims

1. Latching mechanism for retaining a shipping container on a transport vehicle comprising a fixed support, a latch member for engagement with a latching receptacle, mounting means for mounting said latch member on said fixed support for permitting movement in both a rotational direction and in another direction other than the rotational direction from a latched position to a released position and then back into said latched position as said latch member engages with and latches to said latching receptacle, and a spring yieldably urging said latch member toward said latched position, said mounting means including a pivot pin mounted on said fixed support, said latch member including a pivot surface slidably engaging said pivot pin and a limit surface, said pivot pin sliding along said pivot surface toward said limit surface as the latch member moves from said latched position to said released position and away from said limit surface as the latch member moves from said released position to said latched position, said mounting means including an alignment pin mounted on said fixed support, said latch member including an aperture receiving said alignment pin, said aperture having an obliquely extending camming surface engaging said alignment pin.

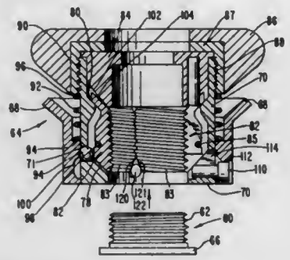


5,613,815
FASTENER AND PANEL ASSEMBLY AND METHOD OF MAKING SAME
Rudolph R. M. Müller, Frankfurt, Germany, assignor to Profil - Verbindungstechnik, Friedrichsdorf, Germany
Division of Ser. No. 343,724, Nov. 24, 1994, Pat. No. 5,528,812, which is a continuation-in-part of Ser. No. 241,206, May 11, 1994, Pat. No. 5,423,645, which is a division of Ser. No. 101,920, Aug. 4, 1993, Pat. No. 5,335,411, which is a continuation of Ser. No. 786,204, Oct. 31, 1991, Pat. No. 5,251,370. This application May 11, 1995, Ser. No. 439,428
Claims priority, application Germany, Mar. 25, 1994, 44 10 475.8
Int. Cl.[6] F16B *37/04;19/08*
U.S. Cl. 411—181 22 Claims



1. A fastener and panel assembly, including a plurality of plastically deformable panels permanently retained in face-to-face relation, comprising: a fastener including a barrel portion, a flange portion extending radially from adjacent said barrel portion generally perpendicular to said barrel portion and a fastener portion generally opposite said barrel portion, said flange portion having a groove adjacent said barrel portion generally surrounding said barrel portion, a first panel having an opening receiving said fastener barrel portion therethrough bearing against said flange portion and deformed in said flange portion groove and said first panel including an annular recess generally surrounding said fastener barrel portion, a second panel overlying said first panel having an opening receiving said barrel portion therethrough and deformed into said first panel annular recess, and said barrel portion having a free end deformed radially outwardly over said second panel permanently attaching said panels in face-to-face relation and said fastener portion extending from said second panel to attach another element to said panels.

5,613,816
APPARATUS FOR RAPIDLY ENGAGING AND DISENGAGING THREADED COUPLING MEMBERS
Eric F. Cabahug, Fairfax, Va., assignor to Thread Technology, Inc., Chantilly, Va.
Filed Jun. 9, 1995, Ser. No. 489,158
Int. Cl.[6] F16B *37/08*
U.S. Cl. 411—433 6 Claims



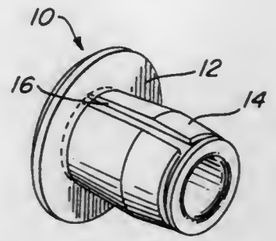
1. A coupling device, comprising:
a first member provided with threads;
a second member having an opening into and out of which said first member may be inserted and removed, respectively;
threaded elements within said second member mounted for movement between a first position wherein the first member may be threaded within the second member and a second position where the threaded elements have a diameter larger than the diameter of the threads of the first member permitting the first member to slide axially in and out of the second member, as desired;
adjacent portions of the threaded elements being provided with sloping surfaces, and pin assemblies associated with the threaded elements and positioned between the sloping surfaces; and
manually operable mechanism for moving the pin assemblies longitudinally wedging the pin assemblies against the sloping surfaces of the threaded elements expanding the threaded elements to their second position aforesaid.

5,613,817
PLASTIC TACK STRIP WITH INTERLOCK
E. Dan Bush, Downers Grove, and David Wortner, Northlake, both of Ill., assignors to Handy Button Machine Company, Melrose Park, Ill.
Filed Mar. 8, 1995, Ser. No. 401,076
Int. Cl.[6] F16B *15/00*
U.S. Cl. 411—466 15 Claims



1. A tack strip assembly comprising: an elongate base portion having an upper surface, a lower surface, opposite ends, side edge and a plurality of spaced tacks extending outwardly from said base portion, said base portion having at least one aperture therethrough, said aperture having walls; an elongate sleeve member including a bottom portion which generally overlays the bottom surface of said base portion and side portions which overlay the side edges of the base portion, said bottom portion of said sleeve member having interlocking means integrally formed therein which is interengaged with said at least one aperture in said base portion for restraining relative endwise movement between said sleeve member and said base portion.

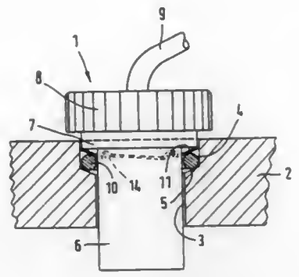
5,613,818
PANEL SNAP FASTENER ASSEMBLY
Daniel J. McCorkle, Irvine; Robert L. Waits, Riverside, and Heinrich Rehburg, Orange, all of Calif., assignors to Sur-Lok Corporation, Irvine, Calif.
Filed Apr. 14, 1995, Ser. No. 422,351
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—509 1 Claim



1. A method of mounting and removing apertured panels to a surface having a bore with a two-part fastener assembly including a cylindrical spring retainer member having a longitudinal hollow open-ended core with an exterior longitudinal slit aperture extending into the core, and a stud member having an enlarged head at one end and a retaining bead at the other end which is interconnected by a longitudinal shaft that is dimensioned to be substantially enclosed by the spring retainer member, the spring retainer member can slide along the longitudinal shaft from the enlarged head to the retaining bead during insertion and retraction of the fastener assembly, comprising the steps of:
- aligning an aperture of a predetermined dimension smaller than the enlarged head in the panel with the bore in the surface, the bore having a predetermined dimension to interact with the spring retainer member;
- inserting the fastener in the aperture and the bore;
- applying an insertion force to the enlarged head of the stud member to force the spring retainer member to compress as the spring retainer member is forced into the bore by contact with the enlarged head, whereby a frictional retention of the spring retainer member with the bore can be achieved with the retainer member holding the panel; and
- applying an extraction force to the enlarged head of the stud member to permit the stud member to slide along the longitudinal shaft until the retaining bead engages the spring retaining member and force the spring retainer member to compress as it is extracted and releases the panel.

5,613,819
FASTENING ASSEMBLY FOR A DEVICE IN A HOUSING WALL
Wilhelm Wehren, Kerpen/Blatzheim, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 24, 1995, Ser. No. 562,481
Claims priority, application Germany, Dec. 16, 1994, 44 44 922.4
Int. Cl.[6] F16B *21/18*
U.S. Cl. 411—527 3 Claims

1. An assembly, comprising:
a wall having a bore extending therethrough, and a portion having a larger size than the bore, extending partially through



the wall, substantially aligned with the bore, the bore and said portion defining a step in the wall;

a device located in the bore, having a shaft portion and a shoulder located adjacent the step;

a seal surrounding the device, located in the bore between the step and shoulder;

a retaining ring surrounding the device, has an inner circumference located adjacent the shaft portion, an outer circumference located adjacent the wall, and an inclined thread on the inner circumference that is located axially at one diametrical side higher than it's location at an opposite side so that the thread engages and clamps against the shaft portion as the shoulder compresses the seal against the step.

5,613,820

CONTINUOUS-OPERATION CARGO-TRANSFER EQUIPMENT

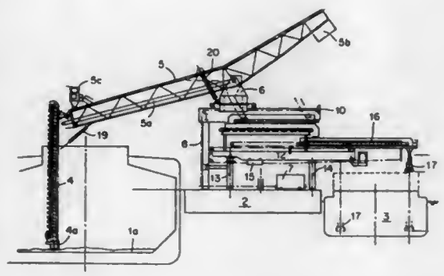
Günther Tschernatsch, Schwabach, Germany, assignor to MAN TAKRAF Fördertechnik GmbH, Leipzig, Germany

Filed Aug. 3, 1995, Ser. No. 511,069

Claims priority, application Germany, Aug. 19, 1994, 44 29 536.7

Int. Cl.[6] B65G *67/62*

U.S. Cl. 414—138.6 **11 Claims**



1. A continuous-operation cargo-transfer arrangement comprising bulk-cargo uptake means operating inside a hold, an upright conveyor shaft, a boom seesawing up and down on a turntable; a gantry traveling back and forth on a pontoon, intermediate belts, and a conveyor belt operating in conjunction with a bulk-goods expulsion spout mounted on a pivoting and displacing beam; said boom seesawing with a cargo-removal shaft on one end of said boom on said turntable traveling back and forth on said gantry, said turntable being attached to a first counterweight traveling back and forth on said pontoon by at least one cable wrapping around a winch; said conveyor belt and said spout being attached to a second counterweight traveling back and forth on said pivoting and displacing beam by a cable wrapping around a winch.

5,613,821

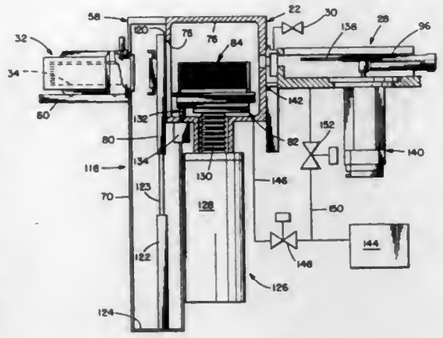
CLUSTER TOOL BATCHLOADER OF SUBSTRATE CARRIER

Richard S. Muka, Topsfield; Michael W. Pippins, Hamilton, both of Mass., and Mitchell A. Drew, Portsmouth, N.H., assignors to Brooks Automation, Inc., Chelmsford, Mass.

Filed Jul. 6, 1995, Ser. No. 499,069

Int. Cl.[6] B65G *49/07*

U.S. Cl. 414—217 **21 Claims**



1. A system for batch loading semiconductor wafers comprising:

a portable carrier for supporting and transporting in a substantially particle free environment a plurality of the wafers in spaced generally stacked relationship, said carrier having a carrier port for providing access to the interior thereof;

a plurality of rack members for supporting a plurality of the wafers in spaced relationship within said carrier;

a carrier door on said carrier movable between a closed position overlying said carrier port for sealing the interior of said carrier from the surrounding atmosphere and an open position spaced from said carrier port;

a transport chamber for receiving wafers for transfer to a plurality of processing stations; a load lock defining a chamber therein having a substantially particle free environment and including a load lock port opening into the load lock chamber, said load lock positioned intermediate said carrier and said transport chamber;

a load lock door on said load lock movable between a closed position overlying said load lock port and an open position spaced therefrom;

a load lock arm within the load lock chamber movable between an inactive position distant from said carrier and an active position proximate said carrier;

a multilevel end effector on said load lock arm including a plurality of spaced end effector sets, each said end effector set adapted to support a wafer thereon, each of said plurality of spaced end effector sets being aligned with an associated wafer supported in said carrier when said load lock arm is in the active position, said multilevel end effector being movable, when said load lock arm is in the active position, from a retracted position distant from the wafers to an advanced position within said carrier and extending through said load port and through said carrier port for engaging and simultaneously retrieving the wafers as a grouping, then again to the retracted position for holding the grouping of wafers in the load lock chamber; and

a transport arm within said transport chamber for retrieving wafers one at a time from said multilevel end effector and delivering it to a specified one of the plurality of processing stations.

5,613,822

DEVICE FOR HOOKING, LIFTING AND UNLOADING A DUSTBIN FOR USE ON SIDE LOADING GARBAGE TRUCK

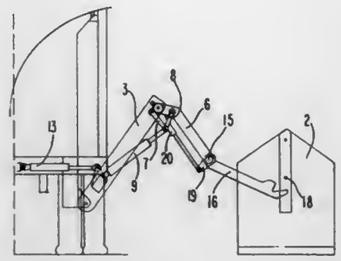
Giorgio Gasparini; Luca Gasparini, and Filippo Gasparini, all of Milan, Italy, assignors to Ecology System International S.r.l., Milan, Italy

Filed May 19, 1995, Ser. No. 446,053

Claims priority, application Italy, May 26, 1994, MI94A1066

Int. Cl.[6] B65B *21/02*

U.S. Cl. 414—408 **10 Claims**



1. A device for use in a truck having a side loading arrangement for hooking, lifting and unloading a dustbin having pins, while initially maintaining the dustbin in a substantially vertical position, the truck having a pair of device supports, the device comprising:

a pair of first arms (**3**) each having a lower end hinged to one of the device supports;

a pair of first plungers (**13**) connected between the respective pair of first arms and the truck for pivoting the first arms about the lower ends of the first arms, outwardly and inwardly with respect to the truck;

a pair of second arms (**6**) hinged to respective top ends of said pair of first arms (**3**), at a pair of first pivot points (**5**);

a pair of second plungers (**9**) respectively connected between said pairs of first and second arms for pivoting said second arms with respect to said first arms about said first pivot points, each of said pair of second arms having an outer end spaced away from said pair of first pivot points;

a pair of third arms (**16**) hinged respectively to the outer ends of said pair of second arms, each of said third arms having an inner end and an outer end;

means at the outer end of each of said pair of third arms, for forming a recess (**17**) at the outer end of each of said third arms, for hooking a pin of the dustbin;

a tubular support (**15**) connected between the inner ends of the pair of third arms;

a pair of levers (**19**) connected to said tubular support (**15**) each lever having an outer end;

a pair of third plungers (**20**) each having an inner end hinged to the outer end of one of said pair of levers (**19**), each third plunger having an outer end hinged to the top end of one of said first arms (**3**), each at a second pivot point (**21**); and

said first and second pivot points (**5**, **21**) being positioned on said top end of each of said first arms (**3**) and a shape of each of said pair of second arms (**6**), and a length of said pair of levers (**19**) being selected so that each second arm (**6**), with each respective third plunger (**20**) and said levers (**19**), forming a pair of four-bar linkages between said pair of first arms (**3**) and said pair of third arms (**16**), each of the first arms (**3**) having a longitudinal extent, a line between said first and second pivot points at the top end of each of said first arms, extending orthoganally to said longitudinal extent, said longitudinal extent extending vertically and said line extending horizontally when the pair of first arms (**3**) is in a retracted position in the truck.

5,613,823

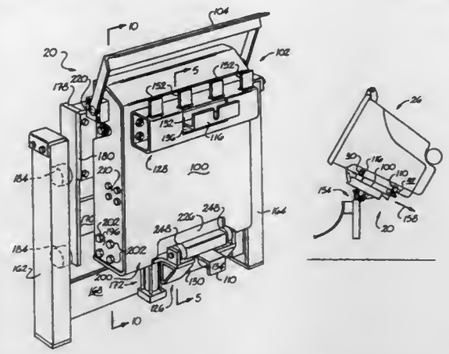
RESIDENTIAL REFUSE COLLECTION CART LIFTER WITH UNIVERSAL FEATURES

Jimmy O. Bayne, Simpsonville, S.C., assignor to Bayne Machine Works, Inc., Simpsonville, S.C.

Division of Ser. No. 167,235, Dec. 14, 1993, Pat. No. 5,503,512, which is a division of Ser. No. 903,078, Jun. 22, 1992, Pat. No. 5,308,211. This application Jun. 2, 1995, Ser. No. 458,509

Int. Cl.[6] B65F *3/02*

U.S. Cl. 414—408 **12 Claims**



1. A lifting apparatus for use with different size residential refuse collection carts, for lifting and dumping the contents thereof into a larger refuse container, said apparatus comprising:

a lift plate for receipt thereon of a refuse collection cart to be emptied;

drive means for controllably moving said lift plate with a refuse collection cart received thereon so as to lift and dump the contents of such cart;

cart engagement means associated with said lift plate for engaging a cart to be emptied for movement thereof with said lift plate;

vertical adjustment means for relatively vertically shifting the position of said lift plate, drive means, and cart engagement means, between an initial null position thereof and a variable raised engaging position thereof at which said cart engagement means is positioned for engaging at least one predetermined lift engagement member on a cart to be emptied; and

cycle control means associated with said vertical adjustment means and said drive means for first variably operating said vertical adjustment means so as to engage said cart engagement means with at Least one lift engagement member of a given cart to be emptied, the height of which engagement member is not specifically known, and for automatically thereafter operating said drive means so as to lift and dump the contents of such engaged cart.

5,613,824

AUTOMATIC BAG OPENING DEVICE

Fumio Kato, Handa, Japan, assignor to Tsukasa Industry Co., Ltd., Aichi, Japan

Filed Sep. 29, 1995, Ser. No. 536,699

Claims priority, application Japan, Mar. 23, 1995, 7-091472

Int. Cl.[6] B65B *69/00*

U.S. Cl. 414—412 **6 Claims**

1. An automatic bag opening device for opening and emptying a bag of its contents, comprising:

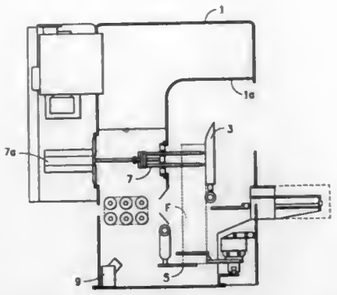
a housing;

a bag intake opening in said housing;

a bag assist plate in said housing;

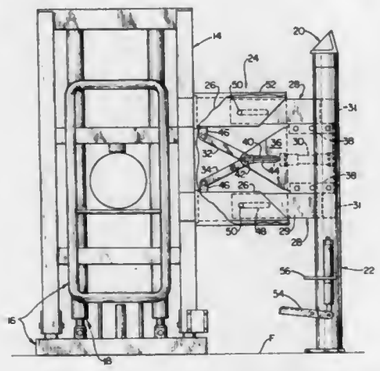
first means for moving said bag assist plate between an upright position and a chute position;

a bag rest;



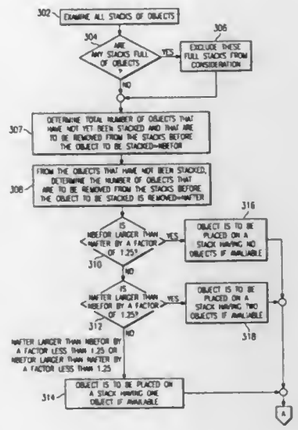
second means for moving said bag rest between a release position to supporting position;
means for coordinating movement of said bag assist plate to said chute position while moving said bag rest to said supporting position;
a hollow penetrator;
means for extending said penetrator into a bag supported on said bag rest;
means, operative after penetration by said penetrator, for slitting a bottom of said bag;
means for rotating said bag rest away from said bag bottom while said bag is supported by said penetrator whereby exit of a content of said bag is enabled;
means for blowing air through said penetrator into said bag, whereby said exit is hastened;
means for striking an exterior of said bag with at least one blast of air, thereby assisting said contents of said bag to fall out;
a bag discharge opening in a wall of said housing;
at least first and second rollers with a gap therebetween, said gap adjacent to said bag discharge opening;
said rollers having at least one slit therein;
means for blowing air through said slits;
a bag pusher attached to said housing opposite said gap; and
means for extending and retracting said bag pusher to fold and push a portion of an empty bag into said gap so that said empty bag is discharged through said bag discharge opening.

5,613,825
WHEELCHAIR LIFT APPARATUS
Russell J. Dorn, Aurora, Colo., assignor to Stewart & Stevenson Power, Inc., Commerce City, Colo.
Filed Nov. 7, 1994, Ser. No. 335,501
Int. Cl.[6] B60P *1/44*
U.S. Cl. 414—543 **29 Claims**



1. In a vehicle having an accessway of limited width through a side wall thereof, the combination therewith of a wheelchair lift apparatus having a collapsible platform assembly for receiving and supporting a wheelchair and its occupant thereon, a vertical support column mounted inside of said vehicle adjacent to and offset from said accessway having support means rotatable about said support column for rotation of said platform assembly between a collapsed storage position within said vehicle and a deployed position within said accessway, lateral extension means disposed between said support means and said platform assembly for laterally advancing said platform assembly between the deployed position within said accessway and an extended position externally of said vehicle when said platform assembly is rotated to the deployed position, said lateral extension means comprising a pair of spaced parallel fixed sleeve members each having one end fixed to one of said platform assembly and said support means; a pair of parallel slide members each having one end telescopically received in one of said fixed sleeve members for sliding movement therein and an opposite end fixed to the other of said support means and said platform assembly; and drive means interposed between said platform assembly and said support means for controllably extending and retracting said slide members within said sleeve members to advance said platform assembly laterally between said retracted and extended positions, and a lift mechanism for raising and lowering said platform assembly in the extended position between first and second elevations, said lateral extension means being the sole means of suspension from said column of said lift mechanism above ground level when in the extended position.

5,613,826
SYSTEM TO OPTIMIZE THE STACKING EFFICIENCY OF OBJECTS
Warner C. Scott, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 99,685, Jul. 29, 1993, abandoned.
This application Feb. 14, 1995, Ser. No. 389,088
Int. Cl.[6] B65G *67/60;69/00*
U.S. Cl. 414—786 **11 Claims**



1. A method for stacking objects to be stacked on a plurality of stacks including objects to be removed, comprises the steps of:
comparing a removal order of an object to be stacked with removal orders of the objects to be removed; and
placing the object to be stacked on a stack having an object to be removed with a removal order after the removal order of the object to be stacked.

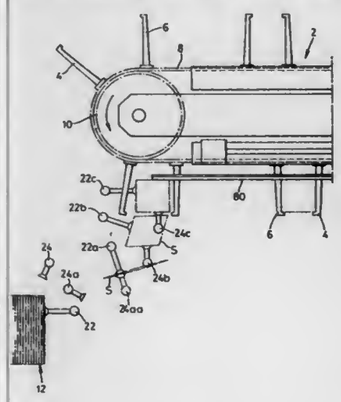
5,613,827
DUAL ARM LUMBER STACKER ASSEMBLY
Gary F. Vande Linde, P.O. Drawer A, Meldrim, Ga. 31318-0051
Filed Jul. 12, 1995, Ser. No. 501,628
Int. Cl.[6] B65G *57/18*
U.S. Cl. 414—791.6 **20 Claims**



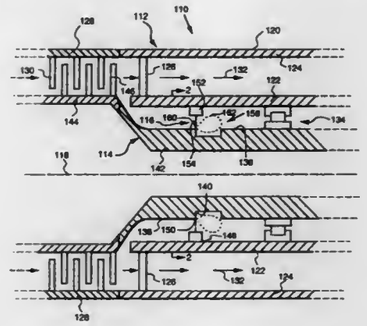
1. Article stacking apparatus, comprising:
means to convey articles to an article stacking assembly;
said article stacking assembly including a plurality of elongate, parallel stacker arms each having a longitudinal axis arranged parallel to the direction of movement of articles conveyed to the article stacking assembly, and spaced so that multiple arms engage and support each article;
said stacker arms each having a rearward end oriented toward the article conveying means and an opposite, forward end, said rearward end being connected to a stacker arm drive means operable to move the arms fore and aft between extended and retracted positions relative to the direction of movement of the articles, and to raise the rearward ends of the arms in one of their retracted and extended positions and lower the rearward ends of the arms in the other of their retracted and extended positions;
said arms being pivoted between their ends on slide bearing means mounted to move fore and aft with extension and retraction of the arms by the stacker arm drive means, whereby the forward ends of the arms are elevated and lowered in opposite relationship to raising and lowering of their rearward ends, as the arms are moved between their retracted and extended positions; and
said arms are positioned to lift an article and deposit it onto a stack of articles as the arms are moved between their extended and retracted positions and are raised and lowered.

5,613,828
HANDLING PARTLY COMPLETED CONTAINERS
Philip G. Haddow, Coventry; Roderick L. Mitchell, Leicestershire; David R. Seaward, Birmingham, and Geoffrey W. Vernon, Buckinghamshire, all of England, assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.
Filed Jul. 18, 1995, Ser. No. 503,752
Claims priority, application European Pat. Off., Jul. 19, 1994, 94305288
Int. Cl.[6] B65G *57/00*
U.S. Cl. 414—798.9 **18 Claims**

1. Apparatus for handling skillets, comprising means for transferring successive flat skillets from a stack of said skillets to conveying means, said transfer means comprising a first gripping device for gripping an exposed face of a skillet in the stack for removing said skillet from the stack, and a second gripping device for gripping a face of said skillet opposite said exposed face after removal of the skillet from the stack and control means for relative displacement of said first and second gripping devices to open the skillet to at least substantially a tubular cross-sectional form of a completed container while transferring the skillet to the conveying means, said control means comprising pivot means for relative displacement of said first and second devices about a common pivot axis that is substantially coincident with a fold line of the gripped skillet.

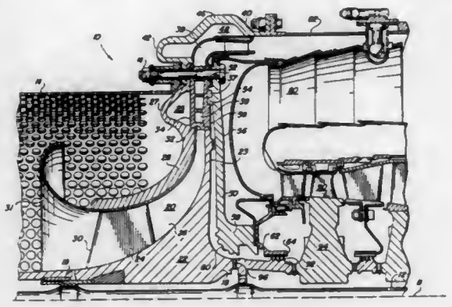


5,613,829
GAS TURBINE SUBASSEMBLY HAVING A BRUSH SEAL
Christopher E. Wolfe, Niskayuna, N.Y., and Osman S. Dinc, Istanbul, Turkey, assignors to General Electric Company, Schenectady, N.Y.
Filed May 3, 1996, Ser. No. 642,289
Int. Cl.[6] F04D *29/08*
U.S. Cl. 415—174.1 **10 Claims**



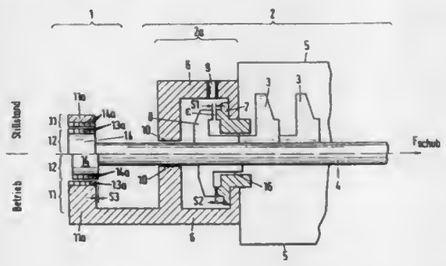
1. A gas turbine subasSembly comprising:
a) a gas-turbine stator having a generally longitudinally extending axis;
b) a gas-turbine rotor having generally-steady-state first and second rotation/load statesi and generally coaxially aligned with and disposed radially within and radially apart from said gas-turbine stator, wherein said gas-turbine rotor includes an outside surface with longitudinally-extending and longitudinally-adjoining first and second circumferential portions, with said first circumferential portion having a manufactured first diameter which iis generally constant over the longitudinal extent of said first icircumferential portion, and with said second circumferential portion having a manufactured second diameter which is everywhere smaller than said first diameter over the longitudinal extent of said second circumferential portion, and wherein said gas-turbine rotor and said gas-turbine stator together undergo a predetermined differential radial and longitudinal thermal movement when said gas-turbine rotor undergoes a transition from said first rotation/load state to said second roation/load state; and
c) a generally annular brush seal generally coaxially aligned with said gas-turbine stator, said brush seal having an attached end and a free end, with said attached end attached to said gas-turbine stator and with said free end extending inward of said gas-turbine stator, wherein said free end is disposed in general line-to-line contact with said first circumferential portion when said gas-turbine rotor is in said first rotation/load state, and wherein said predetermined differential radial and longitudinal thermal movement includes said free end moving radially inward and longitudinally across said second circumferential portion.

5,613,830
CENTRIFUGAL COMPRESSOR HUB CONTAINMENT ASSEMBLY
Chi F. Chan, Mesa, and Steven J. Pringnitz, Gilbert, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.
Division of Ser. No. 362,069, Dec. 21, 1994. This application Feb. 6, 1996, Ser. No. 595,889
Int. Cl.[6] F04D *29/44*
U.S. Cl. 415—206 **4 Claims**



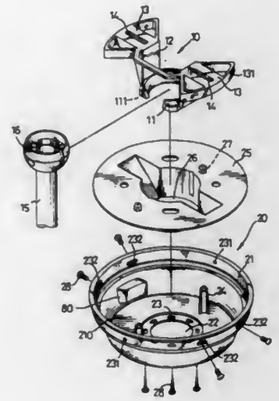
1. A gas turbine engine comprising:
a turbine mounted to a shaft;
a combustor in fluid communication with said turbine;
an impeller mounted to said shaft and having an axial inlet and a radial outlet, said impeller being disposed between an annular front shroud and an annular back shroud;
a first and second annular wall circumscribing said radial outlet, said walls spaced apart axially to define therebetween a diffuser;
a housing circumscribing said annular walls and said shrouds; and
a bumper having a first axial end contacting said back shroud and having a second axial end axially spaced apart from a portion of said turbine.

5,613,831
APPARATUS FOR THRUST COMPENSATION ON SHAFT OF ROTARY PUMP
Siegfried Liegat, Bruchsal, Germany, assignor to Sulzer Pumpen AG, Winterthur, Switzerland
Filed Jun. 7, 1995, Ser. No. 485,054
Claims priority, application European Pat. Off., Jul. 25, 1994, 94810440
Int. Cl.[6] F04D *29/04*
U.S. Cl. 415—229 **9 Claims**



1. In a rotary pump having,
a shaft rotatable about a major axis extending centrally of the shaft,
at least one impeller attached to the shaft,
a pump housing for enclosing the shaft and at least one pump impeller for generating fluid pressure for pumping upon rotation of the shaft and the at least one impeller, the fluid pressure exerting an axial thrust along the major axis of the shaft,
means for thrust compensation during rotation of the shaft and the at least one impeller including a first rotatable member attached to the shaft, a second stationary member attached to the pump housing, and a pressure compensation path from the pump housing between the first rotatable member and the second stationary member,
the improvement in the means for thrust compensation comprising:
a first set of permanent magnets arrayed around and attached to the shaft;
a second set of permanent magnets arrayed on the pump housing, the second set of permanent magnets overlying and magnetically attracting the first set of permanent magnets to hold the shaft and the at least one impeller at a fixed position along the major axis of the shaft with respect to the pump housing;
whereby upon rotation of the shaft generating the axial thrust along the major axis of the shaft the first set of permanent magnets and the second set of permanent magnets opposes movement of the shaft along the major axis of the shaft with respect to the housing.

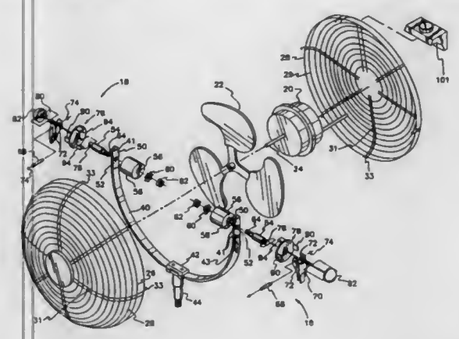
5,613,832
MEANS FOR ENGAGING A REMOTE CONTROL UNIT TO A CEILING FAN
Chih-hai Su, No. 72-10, Chianan Ll, Shanhua Chen, Tainan Hsien, Taiwan
Filed Jul. 14, 1995, Ser. No. 502,554
Int. Cl.[6] F04D *29/64*
U.S. Cl. 416—244 R **3 Claims**



1. A means for engaging a remote control unit to a ceiling fan, said ceiling fan comprising a motor and a plurality of blades which are mechanically connected to said motor, said motor having a rod extending upwardly therefrom which has a head portion formed thereto, said means for engaging a remote control unit comprising:
a fixing element having a C-shaped portion which has an inner diameter smaller than a diameter of said head portion such that said head portion is engaged with said C-shaped portion, two extensions diametrically opposite extending upwardly from said C-shaped portion and each of said extensions having a plate extending radially therefrom which has a slot defined therein and has a plurality of first threaded holes defined in an outer periphery thereof, a plurality of second threaded holes defined in an underside of said C-shaped portion;

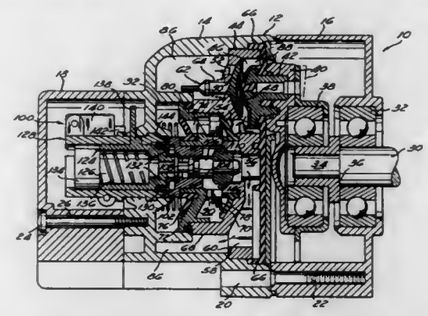
a middle plate having a central hole defined therein for said rod of said motor to extend therethrough and having at least two sockets extending from an underside thereof; and
a bowl having a bottom and a skirt portion, said bottom having a hole defined centrally therein for said rod to extend therethrough and a plurality of second holes defined therein corresponding to said second threaded holes of said fixing element, at least two studs extending upwardly from said bottom for engagement with said sockets, a plurality of first holes defined in said skirt portion corresponding to said first threaded holes of said fixing element, electrical elements for remote controlling said ceiling fan disposed in said bowl and said bowl engaged to said fixing element by bolts extending through said first and said second holes and threadedly engaged to said first threaded holes and said second threaded holes of said fixing element, respectively.

5,613,833
QUICK RELEASE TILT ADJUSTMENT MECHANISM
Robert E. Wolfe, Holliston, and Johnson Hsu, Framingham, both of Mass., assignors to Holmes Products Corp., Milford, Mass.
Filed Oct. 30, 1995, Ser. No. 550,157
Int. Cl.[6] F04D *29/60*
U.S. Cl. 416—246 **14 Claims**



1. A support for an article comprising:
a U-shaped support bracket having mutually opposing end portions, each of said end portions having central apertures formed therein,
means for supporting said support bracket in a vertical position,
quick release mechanisms attached to each of said end portions for supporting said article at opposite sides thereof, each of said quick release mechanisms having a lever coupled to a post to effect axial movement thereof, the post extending through said central apertures, a compression member having a central bore axially aligned with said central apertures, said post having a threaded end which projects into and through said central bore, and means secured to said threaded end of said post to effect compression of said compression member in response to axial movement of said post,
whereby said quick release mechanisms allow for selective rotation of said article about a horizontal axis.

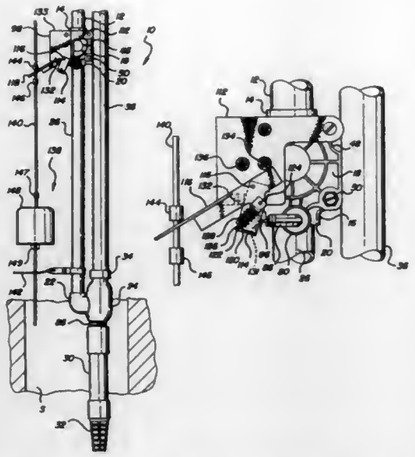
5,613,834
POSITIVE DISPLACEMENT PUMP INCLUDING MODULAR PUMP COMPONENT
Benjamin R. Du, 22832 Skyview Ave., Laguna Beach, Calif. 92677
Continuation of Ser. No. 252,274, Jun. 1, 1994, Pat. No. 5,540,556. This application May 15, 1996, Ser. No. 648,317
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—44.8 **20 Claims**



1. A positive displacement pump, comprising:
a housing defining a pump inlet port and a pump outlet port;
a chamber plate disposed within the housing and partially defining a pump inlet chamber which fluidly communicates with the inlet port and a pump outlet chamber which fluidly communicates with the outlet port;
a wobble plate disposed within the housing an adapted to pump fluid from the inlet chamber to the outlet chamber; and
an unloader valve disposed within and releasably attached to the housing and partially inserted into the chamber plate, said unloader valve being adapted to facilitate the flow of fluid from the outlet chamber to the inlet chamber when the fluid pressure in the outlet chamber exceeds a first pre-determined level, thus causing the fluid to be re-circulated within the housing;
said unloader valve being modularly configured for complete removal from within the housing when detached therefrom, and replacement with an alternative modular pump component to selectively modify the operational characteristics of the pump.

5,613,835
FLOW CONTROL APPARATUS FOR A WATER POWERED SUMP PUMP
Leslie M. Tyner, 14 E. Hannum Blvd., Saginaw, Mich. 48602
Filed Mar. 7, 1996, Ser. No. 612,247
Int. Cl.[6] F04F *5/48*
U.S. Cl. 417—182.5 **5 Claims**

1. A water powered sump pump having an inlet line connectable to a source of water under pressure; a flow control apparatus in communication with the inlet line; a fluid outlet line in communication with the flow control apparatus; a water powered suction generating apparatus in communication with the fluid outlet line, a drain line located in a sump in which water may collect, and with a fluid discharge line, said water powered suction generating apparatus responsive to the flow of water from said fluid outlet line to create a low pressure sufficient to entrain water from said drain line and discharge water through the fluid discharge line; the improvement wherein said flow control apparatus comprises a housing having a first chamber in communication with said inlet line; an outlet in communication with the fluid outlet line, a passage connecting the first chamber to the outlet; a closure moveable from a first position in which the passage is closed to a second position in which the passage is open; a resilient member yieldably biasing the closure to said first position; a variable pressure second chamber in said housing separated from said first chamber by said



closure; a relatively low volume water passage orifice between the first chamber and the second chamber; a bleed valve in communication with the variable pressure second chamber, said bleed valve including a release shaft which can be forced in one direction to open the bleed valve and connect the variable pressure second chamber to the outside of said housing thereby reducing pressure in said second chamber and enabling the pressure of water in said first chamber to move said closure from said first position to said second position whereby water may flow from said source through said inlet line, said housing and said outlet line, and which can be forced in a second direction to close the bleed valve thereby permitting pressure to increase in the variable pressure second chamber and return said closure to said first position; a float actuator assembly including an actuator housing mounted in a fixed position relative to said bleed valve, a spring biased arm pivotally supported on the actuator housing and engageable with the bleed valve release shaft, a control arm pivotally attached to the actuator housing and pivotable between a first location and a second location, a first stop that limits pivotal movement of the control arm when the control arm is in said first location and a second stop that limits pivotal movement of the control arm when the control arm is in said second location, a spring in engagement with the spring biased arm and the control arm that forces the spring biased arm to move toward a valve open position in which the bleed valve release shaft opens the bleed valve when the control arm is in said first location and that forces the spring biased arm to move toward a valve closed position in which the bleed valve release shaft closes the bleed valve when the control arm is in said second location; and a float assembly connected to the control arm that pivots the control arm to the first location in response to a predetermined rise in the water level in the sump and pivots the control arm to the second location in response to a predetermined drop in the water level in the sump.

5,613,836

FLOW RESTRICTING STRUCTURE OF COMMUNICATING PASSAGES BETWEEN CHAMBERS OF A RECIPROCATING TYPE COMPRESSOR

Kenji Takenaka, and Kazushige Murao, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusbo, Kariya, Japan

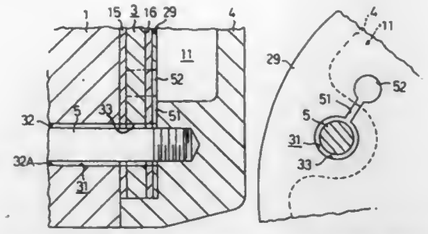
Filed Sep. 13, 1995, Ser. No. 527,544

Claims priority, application Japan, Sep. 16, 1994, 6-222013

Int. Cl.[6] F04B *1/26*

U.S. Cl. 417—222.2 **13 Claims**

1. A compressor including a cylinder block which has a front end surface and a rear end surface, a front housing fixed to the front end surface, and a rear housing fixed to the rear end surface



by way of valve plates and a gasket to define a crank chamber, a suction chamber and a discharge chamber, said crank chamber accommodating a drive plate mounted on a drive shaft, wherein said drive plate converts a rotation of the drive shaft into a reciprocating movement of a piston in the cylinder bore to compress gas supplied to the cylinder bore from the suction chamber and discharge the compressed gas to the discharge chamber, said compressor comprising:

a first pressure passage connecting the suction chamber to the crank chamber, said first pressure passage being arranged to release pressure in the crank chamber to the suction chamber so as to regulate the pressure in the crank chamber; and

said first pressure passage being partially defined by a notch formed in said gasket, said notch being narrower than the rest of said first pressure passage to regulate said pressure.

5,613,837

AIR COMPRESSOR INLET AND OUTLET VALVE ARRANGEMENT

Yoshichika Konishi, Nagoya, and Hiroshi Kubo, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

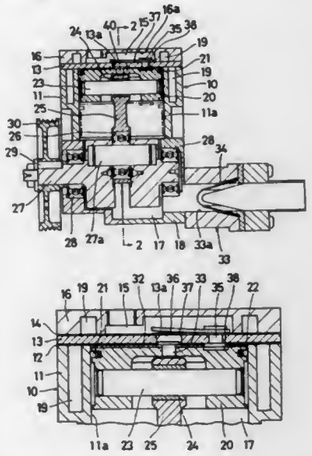
Continuation of Ser. No. 429,154, Apr. 26, 1995, abandoned.

This application Jul. 1, 1996, Ser. No. 674,574

Claims priority, application Japan, Apr. 27, 1994, 6-090159

Int. Cl.[6] F04B *39/10*

U.S. Cl. 417—255 **9 Claims**



1. A compressor comprising:

a housing that includes a cylinder having an open upper end, and a cover closing the open upper end of the cylinder, the cover being provided with a recessed portion;

a piston slidably located in the cylinder for movement in first and second opposite directions, said piston being movable between a bottom dead center position and a top dead center position, said piston being provided with a recessed portion;

a drive source connected to the piston for moving the piston;

a pre-compression space formed in the cylinder into which fluid is drawn during movement of the piston in the first direction and in which fluid is compressed during movement of the piston in the second direction;

a compression space formed in the cylinder and in which fluid is compressed during movement of the piston in the first direction, the compression space being separated from the pre-compression space by the piston;

a first one-way valve for permitting fluid flow from outside the housing to the pre-compression space during movement of the piston in the first direction;

a second one-way valve for permitting fluid flow from the pre-compression space to the compression space during movement of the piston in the second direction, said second one-way valve including a flexible valve plate having a portion fixed to said piston by a first fixing member, a portion of said first fixing member being received in the recessed portion in the cover when the piston is in the top dead center position; and

a third one-way valve for discharging fluid from the compression space when the pressure in the compression space becomes higher than a predetermined amount, said third one-way valve being a flexible valve plate having a portion fixed to said cover by a second fixing member, a portion of said second fixing member being received in the recessed portion in the piston when the piston is in the top dead center position.

5,613,838

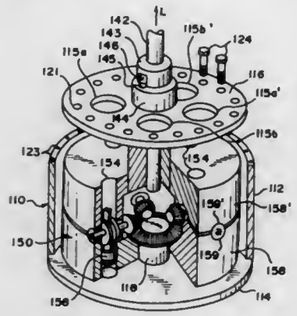
ROTARY PISTON FLUID HANDLER

Kenneth J. Newell, 26500 W. Agoura Rd., #444, Calabasas, Calif. 91302

Filed Oct. 18, 1995, Ser. No. 544,895

Int. Cl.[6] F04B *1/20*

U.S. Cl. 417—269 **16 Claims**



1. A fluid pump, comprising:

a closed first housing,

pistons in said first housing supported for reciprocating linear motion in a first direction,

crank means in said first housing supported for rotation about an axis normal to said first direction,

gear means in said first housing and on said crank means, said first housing gear means engaging the gear means of said crank means to impart rotational motion to the latter in response to rotational motion of the former,

force transmitting means, supported on said crank means, for coupling said pistons with said crank means,

whereby rotational motion of said crank means about said second axis is converted into reciprocating motion of said pistons in a direction substantially parallel to said first axis,

said crank means and said pistons being supported in a second housing, said second housing being supported within said first housing for rotation about said first direction.

5,613,839

VARIABLE RATE PUMP

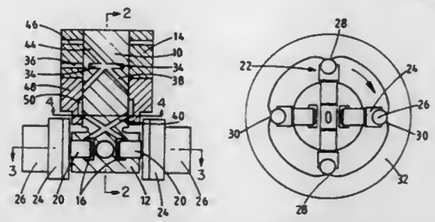
Paul Buckley, Rainham, United Kingdom, assignor to Lucas Industries Public Limited Company, Solihull, England

Filed Jun. 2, 1995, Ser. No. 458,587

Claims priority, application United Kingdom, Jun. 2, 1994, 9411054

Int. Cl.[6] F04B *1/04*

U.S. Cl. 417—273 **15 Claims**



1. A rotary pump comprising a rotary distributor member, a pumping plunger mounted in a bore provided in the distributor member, first and second discrete cam lobes spaced apart from one another and positioned to impart inward pumping movement to the plunger in turn as the distributor member rotates, a delivery passage formed in the distributor member for communication with an outlet port, and means operable to select whether fuel is supplied through the delivery passage to the outlet port when the plunger is moved under the influence of the first cam lobe or under the influence of the second cam lobe.

5,613,840

PUMP INCLUDING A CONTROL VALVE AND SEALING MEMBER

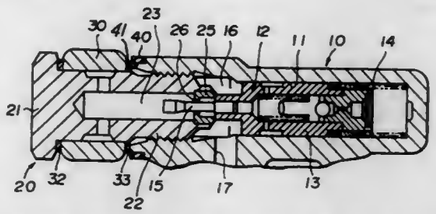
Kazuyoshi Ishizaki; Masateru Yamamuro; Atsushi Ishizuka; Shouji Ohya, and Miyoko Hamao, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Japan

Division of Ser. No. 103,989, Aug. 10, 1993, Pat. No. 5,540,566. This application Apr. 20, 1995, Ser. No. 425,979

Claims priority, application Japan, Aug. 11, 1992, 4-061751

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—300 **3 Claims**



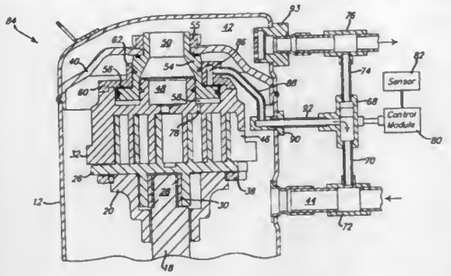
1. A pump comprising a pump body having an outer peripheral surface and a control valve for controlling working fluid flow from the pump body to an actuator through a joint, the joint being connected mechanically to the pump body through a washer made of a material different from that of the pump body, the washer having a side surface held in contact with the pump body at a junction, and an annular seal member provided to keep the junction from exposure to the environment, wherein the seal member is placed in an annular groove formed in the outer peripheral surface of the pump body, wherein the pump body is provided with a bore closed at one end and open at the other end, said pump body having an annular end wall adjacent the open end of the bore, including a connector having a head portion and a stem portion, with the stem portion inserted into said bore through the open end of the bore, and wherein said joint is mounted on said stem portion and disposed between said head portion and the annular end wall of the pump body.

5,613,841

CAPACITY MODULATED SCROLL MACHINE

Mark Bass, Sidney; Roy J. Doepker, Lima; Jean-Luc M. Caillat, Dayton, and Wayne R. Warner, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jun. 7, 1995, Ser. No. 479,026
Int. Cl.[6] F04B *49/00*; F01C *1/04*
U.S. Cl. 417—310 **26 Claims**



1. A scroll-type compressor comprising:
a first scroll member having an end plate and a first spiral wrap upstanding therefrom;
a second scroll member having an end plate and a second spiral wrap upstanding therefrom, said first and second scroll members being positioned with said first and second spiral wraps interleaved with each other;
a fixed support structure for supporting said first and second scroll members for relative orbital movement whereby said first and second spiral wraps define moving fluid pockets therebetween,
a power source drivingly coupled to said first scroll member to effect said relative orbital movement,
said first and second scroll members being movable between a first operating relationship in which sealing surfaces of said first and second scroll members are in sealing relationship to close off respective ones of said moving fluid pockets and a second relationship wherein at least one of said sealing surfaces of said first and second scroll members are spaced apart to define a leakage path between said moving fluid pockets;
a force applier for applying a force to one of said first and second scroll members to effect said movement between said first and second relationships;
a passage opening into at least one of said moving fluid pockets and operative to vent said pocket to a lower pressure area of said compressor;
a valve for opening and closing said passage; and
a control module operative to control operation of said valve and said force applier in response to sensed operating conditions.

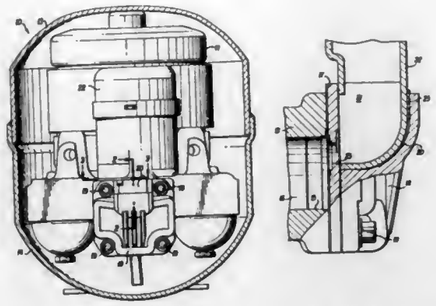
5,613,842

HERMETICALLY SEALED MOTOR COMPRESSOR UNIT WITH A SPRING BIASED MUFFLER

Biagio Alfano, Milan, and Edoardo Biscaldi, Saronno, both of Italy, assignors to Necchi Compressori s.r.l., Pavia, Italy

Filed Nov. 3, 1995, Ser. No. 553,067
Claims priority, application Italy, Nov. 3, 1994, PV94A0014
Int. Cl.[6] F04B *39/12*
U.S. Cl. 417—312 **4 Claims**

1. A reciprocating hermetically sealed motor compressor unit comprising
a driving electric motor,
a body to which said motor is fixed,
a cylinder formed in said body and a piston mounted for reciprocation therein,
a valve plate having a suction hole, positioned at a first end of a cylinder,
a head on said cylinder first end which fixes said valve plate to said cylinder,



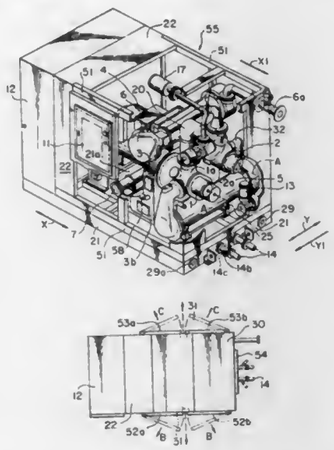
a muffler on a suction side of said piston through which the refrigerant gas is sucked into the cylinder,
said head having a niche for receiving an end of said muffler to position said muffler end so as to correspond with said suction hole in said valve plate, and biasing means being provided to keep said muffler against said valve plate during operation of said compressor, said biasing means comprises a spring in said niche and positioned to push said end of the muffler against said valve plate when said head is fixed to said cylinder, said spring being "U" shaped with two legs contacting sidewalls of said niche and a bight portion spanning across said niche, said bight portion being contacted by and deformed by said muffler end.

5,613,843

PACKAGE-TYPE SCREW COMPRESSOR

Seiji Tsuru; Shinichi Hirose, both of Ibaraki-ken; Junji Okita, Ishioka; Tadashi Kaneki, and Katsuaki Kikuchi, both of Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 116,755, Sep. 7, 1993, Pat. No. 5,401,149.
This application Feb. 28, 1995, Ser. No. 395,307
Claims priority, application Japan, Sep. 11, 1992, 4-243033; Sep. 11, 1992, 4-243034
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—313 **17 Claims**



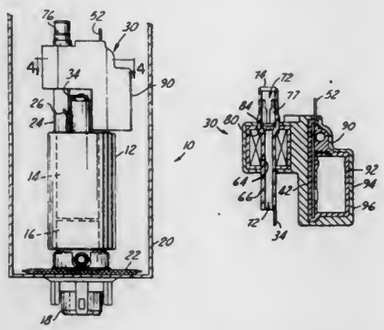
1. A package-type screw compressor comprising:
units including at least one compressor body, at least one gas cooler for cooling gas discharged from said compressor body, a coolant cooler for cooling a coolant for cooling a jacket of said compressor body, a suction duct for introducing non-compressed gas to a suction port of said compressor body, and a control panel for instructing operation conditions for said compressor body and as well as for indicating states of operation of said compressor body; and
a box member including a box-like frame, and a plurality of panels having a front panel covering at least a part of a front surface of said frame and one side panel covering at least a part of a side surface adjacent to said front surface said box member substantially accommodating therein said units, wherein
said front panel, to which said control panel is mounted, and said one side panel are made to be sides from which daily inspection is made by arrangement of adjacent to said front panel and said side panel, an oil level meter for indicating an oil level in an oil tank, for lubricating a bearing of said compressor body, an oil supply port for supplying said oil to said oil tank, an oil filter for filtering said oil to be supplied from said oil tank to said bearings of said compressor body and a drainage detection valve mounted to a branched pipe branched from a drainage discharge pipe for discharging drainage separated from the compressed gas cooled by said gas cooler.

5,613,844

SUBMERSIBLE ELECTRONIC DRIVE MODULE

Charles H. Tuckey, Cass City; Kirk D. Doane, Bay City, and Kevin L. Williams, Columbiaville, all of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Nov. 15, 1994, Ser. No. 340,115
Int. Cl.[6] F04B *39/06*
U.S. Cl. 417—366 **12 Claims**



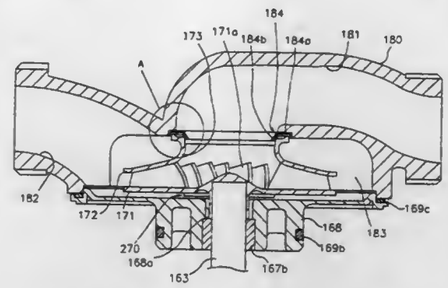
1. A submersible electronic drive module for a vehicle in-tank fuel pump comprising,
a circuit board assembly having an input connection for receiving an electric current, an output connection for applying electric power to an electric motor of a fuel pump and electrical components for supplying electric power to the motor,
a heat sink constructed from a body of heat conductive material connected to said circuit board assembly for absorbing heat generated by said circuit board assembly,
a fuel passage in heat transfer relationship with said heat sink and having an inlet communicating with the fuel pump outlet and an outlet for fuel delivery, such that fuel passing through said passage absorbs heat from said heat sink and thus said circuit board assembly,
an attachment for removably connecting said drive module to the fuel pump, and
a fuel-impervious casing substantially encapsulating said drive module such that fuel is prevented from contacting said circuit board assembly.

5,613,845

CIRCULATING PUMP WITH A SUB-IMPELLER

Sung-Dai Moon, Kyeongsangbook-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 582,173
Claims priority, application Rep. of Korea, Jun. 29, 1995, 95-18216
Int. Cl.[6] F04D *29/08*
U.S. Cl. 417—423.11 **1 Claim**



1. A circulating pump with a sub-impeller comprising:
a motor including a motor housing, a stator fixed inside the motor housing, a stator can, a motor end shield and a plurality of sealing members for separating the stator from fluid, a rotor rotated by means of an electromagnetic interaction with the stator when an electric current is applied to the stator, and a motor shaft integrally combined with the rotor, one end of the motor shaft being supported rotatably by a lower bush bearing at the inner bottom of the motor housing, the other end of the motor shaft being projected passing through a through hole formed in the motor end shield, and the motor shaft being supported rotatably by an upper bush bearing at the through hole of the motor end shield;
an impeller including an impeller body having a plurality of blades for pressurizing fluid, in which the impeller body is fixedly assembled with the other end of the motor shaft, a sub-impeller with a plurality of blades radially disposed below the impeller body, and a shroud integrally fixed onto the impeller body, at the center of the shroud a through hole being formed for allowing fluid to flow and at the other end of the shroud an annular flange with a plurality of grooves being formed; and
a pump housing including a housing body disposed onto the motor and comprising an inlet passage and an outlet passage, at the center of the housing body the impeller being disposed and an impeller chamber being communicated with the inlet passage and the outlet passage, and a suction ring combined at an inner end of the inlet passage of the housing body, in which the suction ring guides fluid through the inlet passage into the impeller.

5,613,846

FILLING, FLUID-TRANSPORTING, AND PUMPING DEVICE

Manfred Sommer, Forststrasse 30, D-74199, Untergruppenbach Vorhof, Germany

PCT No. PCT/EP94/00946, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO94/21920, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 24, 1994, Ser. No. 343,486
Claims priority, application Germany, Mar. 25, 1993, 43 09 687.5
Int. Cl.[6] F04C *2/356; 11/00; 15/00*
U.S. Cl. 418—11 **39 Claims**

1. A fluid conveying device comprising:
a housing having an inlet which is part of a suction side and an outlet which is part of a pressure side;

a cylindrical chamber with intake and discharge openings at opposite sides which respectively are in fluid communication with the suction side and the pressure side;

a rotor in the chamber, having a hollow rotor body mounted for eccentric rotation relative to an axis of the chamber, the rotor body having a longitudinal external surface forming a seal with a circumferential surface of the chamber, and a partition contiguous to the longitudinal external surface dividing the rotor body into an intake side, which has an axial intake opening at one end communicating with the intake opening of the chamber and has a radial opening for communication with the interior of the chamber, and a discharge side which has a radial opening for communicating with an interior of the chamber and an axial discharge opening, at the end opposite the intake opening, communicating with the discharge opening of the chamber;

a plurality of radially extending sealing vanes distributed about the rotor, each vane having an inner end in sealing relationship with a periphery of the rotor body and an outer end which extends through an associated sealing vane opening in a wall of the chamber and slides and rocks within a respective receiving space extending radially outward into the wall of the chamber from the sealing vane opening provided in the wall of the chamber which contains the vane therein;

a plurality of vane guides, a vane guide being coupled with each vane and being mounted to rotate eccentrically relative the axis in synchronism with the rotor as the rotor rotates, for producing the sliding and rocking of the sealing vanes as the rotor rotates;

an attachment for pivotally attaching the sealing vanes to rotor;

peripheral sealing regions of the chamber and of the sealing vanes providing a seal between the intake and discharge openings; and wherein

the rotor rotates about the axis eccentrically with an exterior rotor surface running in contact with the circumferential surface of the chamber.

5,613,847

HEAT TRANSFER IN A TUNNEL KILN

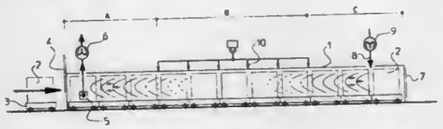
Hans Lingl, Neu-Ulm, Germany, assignor to Hans Lingl Anlagenbau und Verfahrenstechnik GmbH & Co.

Filed Jun. 30, 1995, Ser. No. 491,343

Claims priority, application Germany, Jul. 1, 1994, 44 23 221.7

Int. Cl.[6] F27B *9/00*; F27D *7/00*

U.S. Cl. 432—133 **11 Claims**



1. A method for firing products in a kiln comprising the steps of:

passing the firing ware in succession through a preheating zone, a firing zone having burners and a cooling zone in the kiln;

flowing gas in a direction opposite to the direction of passage of the firing ware through the kiln, the gas flowing successively through from the cooling zone, the firing zone and the preheating zone; and

pulse-modulating the flow of gas at least in the area of the preheating zone or in the area of the cooling zone.

5,613,848

PROCESS FOR THE PRODUCTION OF GLASS-LIKE CARBON SUBSTRATES FOR USE AS RECORDING MEDIA AND A SETTER FOR USE IN THE PROCESS

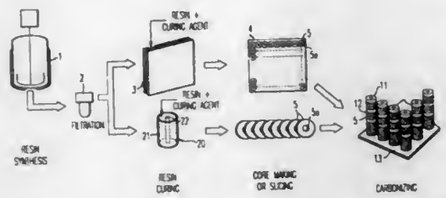
Ryoichi Hashimoto; Toshiya Shimada; Hirosbi Inatome, all of Wakayama, and Manabu Shibata, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 454,628

Claims priority, application Japan, Jun. 1, 1994, 6-120325; Jul. 22, 1994, 6-170929

Int. Cl.[6] F27B *5/00*

U.S. Cl. 432—253 **6 Claims**



1. A setter for use in the production of glass-like carbon substrates for recording media by baking to carbonize a plurality of cured resin disks each having a center hole, the setter comprising:

a supporting shaft in an erect position that is inserted through the center holes in the cured resin disks; and

a plurality of spacer disks each having a center hole through which said supporting shaft can be inserted wherein said cured resin disks are alternately stacked with said spacer disks.

5,613,849

DENTAL CARE MATERIAL AND MANUFACTURING METHOD

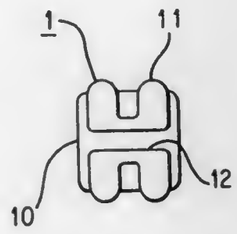
Naoki Tanaka; Hiroshi Ohtsubo, both of Suwa, and Michio Ito, Slojiri, all of Japan, assignors to Injex Corporation, and Matsumoto Dental College, both of Nagano-ken, Japan

Filed Jan. 25, 1995, Ser. No. 378,450

Claims priority, application Japan, Jan. 27, 1994, 6-007892; Oct. 25, 1994, 6-260642

Int. Cl.[6] A61K *6/00*

U.S. Cl. 433—8 **18 Claims**



1. A dental care member comprising a sintered body wherein a mixture of titanium powder and an organic binder is made into a molded body that is sintered after binder removal, wherein said sintered body has a carbon content of greater than 0.1% by weight and is molded as an orthodontic bracket or as a dental implant material.

5,613,850

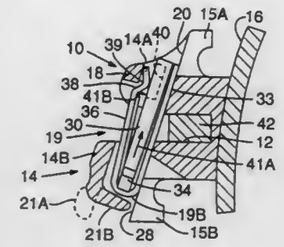
MINIATURE SELF-LOCKING LABIAL BRACKET WITH CAM-RELEASE CLOSURE MEMBER

Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405; James F. Reber, 1256 N. Hamilton, Pomona, Calif. 91768, and Lawrence P. Phaneuf, 17161 Elaine, Fontana, Calif. 92366

Division of Ser. No. 271,031, Jul. 6, 1994, Pat. No. 5,474,446. This application Oct. 17, 1995, Ser. No. 544,119

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—10 **18 Claims**



1. An improved self-locking orthodontic bracket mountable on a tooth, the bracket comprising:

a bracket body having first and second side portions spaced apart to define an archwire slot for receiving an archwire;

a closure slot extending transversely over the archwire slot in the bracket body;

a closure member receivable within the closure slot and slidable across the archwire slot;

the closure slot including a first lengthwise slot portion formed in the first side portion of the bracket body and a second lengthwise slot portion formed in the second side portion of the bracket body on opposite sides of the archwire slot so that the closure member can be slid to a closed position through the first lengthwise slot portion transversely of the archwire slot with an end portion inserted into the second slot portion to retain the archwire in the archwire slot;

the first lengthwise slot portion including an internal shoulder oriented normal to the direction of closure of the closure member and the closure member including a folded flat spring member having a free end biased outward to engage the internal shoulder and thereby lock the closure member in the closed position;

the free end of the folded flat spring member including a cam responsive to exertion of a force lengthwise of the closure member toward the internal shoulder for deflecting the free end away from the internal shoulder to unlock the closure member.

5,613,851

SEPARATOR FOR A DENTAL SUCTION APPARATUS

Werner Trawöger, Huebe 26, and Bruno Pregenzer, Huebe 30, both of A-6173 Oberperfuss, Austria

PCT No. PCT/AT94/00165, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO95/12365, PCT Pub. Date May 11, 1995

PCT Filed Nov. 4, 1994, Ser. No. 495,440

Claims priority, application Austria, Nov. 5, 1993, 2244/93

Int. Cl.[6] A61C *17/06*

U.S. Cl. 433—92 **4 Claims**

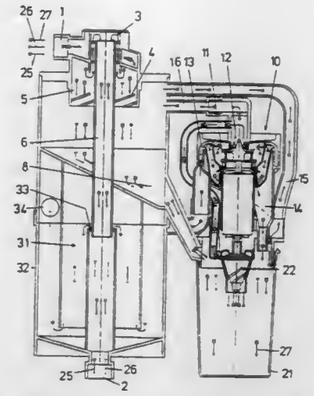
3. A separator for a dental suction apparatus of the type having a pump, a suction line aspirating an air-solids-liquid mixture from the mouth of a patient, and the separator being disposed in the suction line and dividing the suction line in first and second segments, the separtor comprising:

means defining an air separation chamber with deflector surfaces formed therein, said air separation chamber being formed with a clean air outlet connectible to the second segment of the suction line and an outlet for a separated mixture;

a solid matter separation device communicating with the outlet for the separated mixture, said solid matter separation device including a removable sedimentation container and being formed with a clean liquid outlet;

an intermediate container disposed below said air separation chamber and communicating with the clean liquid outlet of said solid matter separation device for feeding the clean liquid into the second segment of the suction line; said intermediate container and said air separation chamber together being disposed laterally adjacent said solid matter separation device; and

and a tube communicating with said clean air outlet formed in said air separation chamber and being connectible to the second segment of the suction line, said tube extending through said intermediate container and being formed with a clean liquid admission port.



5,613,852

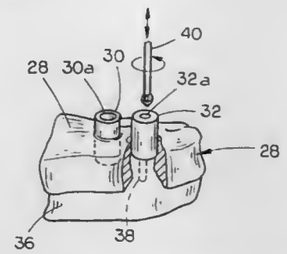
DENTAL IMPLANT DRILL GUIDE SYSTEM

J. Bruce Bavitz, Lincoln, Nebr., assignor to Board of Regents Univ of NE at Lincoln, Lincoln, Nebr.

Filed Jan. 6, 1995, Ser. No. 369,686

Int. Cl.[6] A61C *8/00*; *9/00*

U.S. Cl. 433—173 **3 Claims**



1. A method of imbedding a dental implant, comprising the steps of:

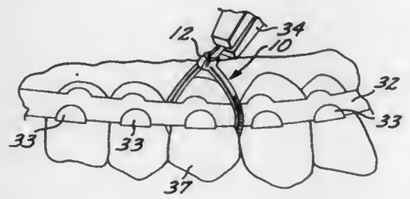
casting a model of a patient's jaw and teeth in the vicinity of an implant site;

drilling a pilot hole in the model in an implant site, correlating to the ideal angle and location desired of the implant in the patient's jaw;

journaling a lower portion of a guide rod into the pilot hole with an upper portion of the guide rod projecting coaxially in the desired location of the implant, the guide rod having a slot in an upper end thereof for receipt of a removal tool;

fabricating a stent on the model, with the upper end of the guide rod accessible to a removal tool;
removing the guide rod from the stent and model, to form a guide hole in the stent;
journaling a guide sleeve in the guide hole in the stent;
placing the stent onto the patient's jaw and teeth;
utilizing said guide sleeve to guide a drill bit in forming a guide bore in the patient's jaw;
removing the stent from the patient's jaw; and
imbedding a dental implant in the guide bore.

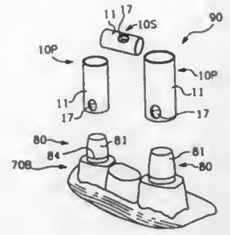
5,613,853
MANDIBULAR FIXATION SYSTEM
Paul E. Chasan, Salt Lake City, Utah, and Mark S. Chasan, Redondo Beach, Calif., assignors to Mango Enterprises, Inc., Marina Del Rey, Calif.
Continuation of Ser. No. 951,779, Sep. 28, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 188,676
Int. Cl.[6] A61C *5/00*
U.S. Cl. 433—215 **4 Claims**



1. A method for fixing the mandible of a patient to allow fractures therein to heal comprising the steps of:
positioning an arch bar on a first set of the patient's teeth;
inserting a cable tie in the space between first and second adjacent teeth and between said second tooth and a third tooth adjacent said second tooth in a manner such that the cable tie overlies a portion of said arch bar;
locking the cable tie in a manner to secure the arch bar to said second tooth;
providing a plurality of additional cable ties to secure said arch bar to other of said patient's teeth in said first set of teeth;
positioning an arch bar on a second set of patient's teeth adjacent said first set of teeth and secured thereto by a cable tie, each arch bar having a plurality of hook members formed therein; and
engaging adjacent hook members on each arch bar with a resilient member whereby the patient's mandible is fixed.

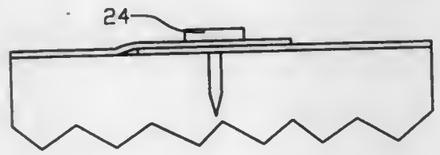
5,613,854
PLASTIC SLEEVING TO FORM DENTAL COPING AND PONTIC AND METHOD
Steven L. Sweatt, 1838 Key Largo Rd., Vista, Calif. 92083
Filed Apr. 17, 1995, Ser. No. 423,031
Int. Cl.[6] A61C *5/10;5/08*
U.S. Cl. 433—223 **7 Claims**

1. A method of forming an intermediate plastic coping upon which a restored crown or bridge may be fabricated, comprising the steps of:
(a) placing a sleeve of plastic heat-shrink tubing over a die, said die having a margin,
(b) heating said sleeve to a temperature sufficient to cause shrinkage of said sleeve with said sleeve conforming to the surfaces of the die, thus forming a first coping,
(c) trimming the coping so that the coping terminates at a height no lower than said margin,
(d) removing the coping from the die,



(e) investing the coping to prepare a mold for a metal casting, and
(f) burning out the coping to create a void into which a metal is then cast in the mold.

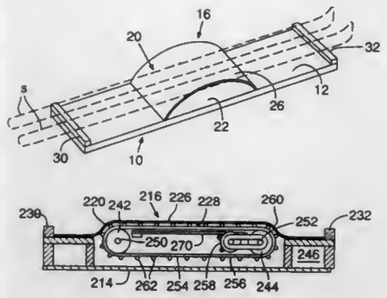
5,613,855
PLAYING AID STRIPS
Gary Thompson, and Mike Blackburn, both of P.O. Box 8185, Fremont, Calif. 94537-8185
Continuation-in-part of Ser. No. 159,655, Dec. 1, 1993, abandoned. This application Jul. 7, 1995, Ser. No. 499,757
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—438 **5 Claims**



1. A playing aid device comprising:
at least one elongated strip of durable material adapted to simulate field markings,
each of at least one said strip includes fastening means at each terminal end thereof so that multiple units of said device may be joined together to mark a line of any length desired by a user,
said fastening means being constructed such that multiple strips may be secured by the user without the use of tools, said fastening means being hook-and-loop devices, and
joints formed when two strips are joined together are further secured by means of a weighted bag placed thereon.

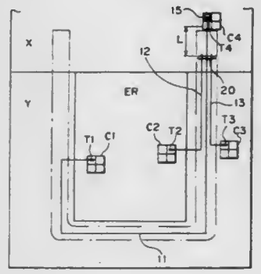
5,613,856
SKI TRAINING SYSTEM
Robert Hoover, 9280 SE. Orient Dr., Boring, Oreg. 97009
Filed Jul. 11, 1995, Ser. No. 501,167
Int. Cl.[6] A63B *69/18*
U.S. Cl. 434—253 **13 Claims**

1. A ski training apparatus comprising a base unit having a bottom face on which the base unit rests and an elevated support surface that is sufficiently wide in a horizontal dimension to support two skis being worn by a person using the apparatus, the support surface being constructed to support the person in such a manner that the person can tip the skis forward and backward and



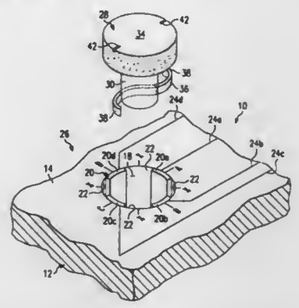
can turn the skis from left to right, and vice versa, so that the person can practice making parallel ski turns the support surface having a elevated surface out of plane with its ends.

5,613,857
WATERPROOF CONSTRUCTION OF WIRING HARNESS
Takao Kawamura, and Haruhiro Muto, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Continuation of Ser. No. 297,939, Aug. 31, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,521
Claims priority, application Japan, Nov. 22, 1993, 5-292256
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—34 **4 Claims**



1. A waterproof construction of a wiring harness, in which a plurality of splicing wires, passed through a water immersion area likely to be subjected to water immersion in a motor vehicle and spliced with each other, are bundled with other wires, comprising:
a first terminal which is attached to a distal end of one of the splicing wires;
the one of the splicing wires being spliced with a remainder of the splicing wires;
a first connector which is disposed at a predetermined position such that the terminal is mounted in a spare terminal pocket of the connector;
second and third terminals attached to distal ends of remaining splicing wires;
second and third connectors disposed such that the second terminal is mounted in the second connector and the third terminal is mounted in the third connector; and
a splice portion in which the one of the splicing wires is spliced with the remainder of the splicing wires at a location spaced a predetermined distance from the predetermined position of the first connector and disposed in a water nonimmersion area not subject to water immersion such that the splice portion is disposed in the water nonimmersion area at all times.

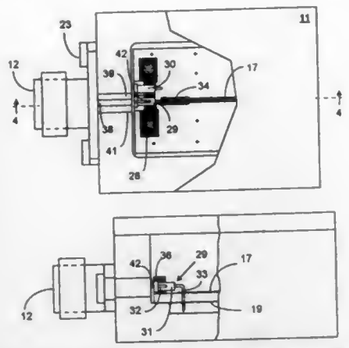
5,613,858
COMPACT CIRCUIT BOARD SWITCHING APPARATUS AND ASSOCIATED METHODS
Scott H. Estes, and N. Deepak Swamy, both of Austin, Tex., assignors to Dell U.S.A., L.P., Austin, Tex.
Continuation of Ser. No. 355,737, Dec. 14, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,179
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—46 **21 Claims**



1. Circuit board with an integral switch comprising:
a dielectric substrate member;
a hole formed said substrate member, said hole having an interior surface;
spaced apart first and second electrically conductive segments plated to said interior surface of said hole;
first and second electrically conductive leads respectively coupled to a different one of said first and second electrically conductive segments; and
switch means, for placemeot in said hole, for selectively coupling said first and second electrically conductive segments,
said switch means including a switch portion insertable into said hole and movable therein between a first position for electrically coupling said first and second plating segments, and a second position for electrically decoupling said first and second plating segments, said switch portion comprising an electrically conductive element including a pair of resilient metal contacts electrically coupled to one another.

5,613,859
CONNECTOR ASEMBLY FOR DETACHABLY CONNECTING A PRINTED WIRING BOARD TO A COAXIAL TRANSMISSION LINES CONNECTOR
John V. Bellantoni, Redwood City, and John S. Tobias, Sunnyvale, both of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.
Filed Nov. 28, 1995, Ser. No. 563,299
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—63 **4 Claims**

1. A connector assembly for detachably connecting a printed wiring board circuit to a coaxial connector comprising:
a first socket mounted on said printed wiring board for slidably receiving the center lead of said coaxial connector, said center lead connected to a coaxial transmission line,
a right angle pin extending from said first socket,
a strip transmission line lead carried on the surface of said printed wiring board connected to said pin,
a ground plane section on said surface of said printed wiring board, and



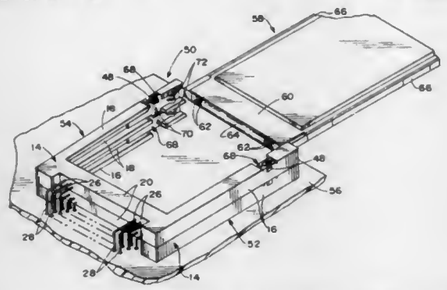
an insulating sleeve surrounding said first socket whereby said first socket forms a transmission line section with said ground plane.

5,613,860

UNIVERSAL GROUNDING CLIP FOR CARD-RECEIVING CONNECTOR

Emanuel G. Banakis, Naperville; Frank A. Harwath, Downers Grove; Richard A. Hays, Montgomery; Kenneth F. Janota, Lisle, and Harold K. Lang, Fox River Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 14, 1994, Ser. No. 355,794
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—64 **8 Claims**



1. In a connector assembly which includes a pair of card-receiving connectors for receiving a pair of PC cards, the PC cards each having grounding contact means along outside edges thereof, the connectors being positioned one on top of the other with the bottom connector adapted for mounting on a printed circuit board, each connector including

a generally U-shaped housing having guide arms for receiving one of the PC cards therebetween, the guide arms forming legs of the U-shape and being adapted to guide the respective card along the outside edges thereof into mating engagement with the connector,

a grounding clip mounted on at least one of the guide arms and including a resilient contact portion on the inside of the arm for engaging the grounding contact means of the PC card,

the at least one grounding clip of the top connector having a grounding pad along a bottom surface of the respective guide arm which engages the grounding clip of the bottom connector, and the at least one grounding clip of the bottom connector having a grounding pad along the bottom surface of the respective guide arm adapted to be electrically coupled to a ground circuit of the printed circuit board, and

a fastening device extending through the guide arm of the top connector and an underlying guide arm of the bottom connector to secure the connectors in a stacked relationship to the printed circuit board,

wherein the improvement comprises:

said grounding clips being universally adaptable for mounting on either guide arm of either connector, the grounding pads of the grounding clip being cut-away to allow the fastening device to pass therethrough, wherein the grounding pad along the bottom surface of the guide arm of the top connector engages the grounding pad along the top surface of the guide arm of the bottom connector, and the grounding pad along the bottom surface of the guide arm of the bottom connector is adapted to be electrically coupled to the ground circuit of the printed circuit board,

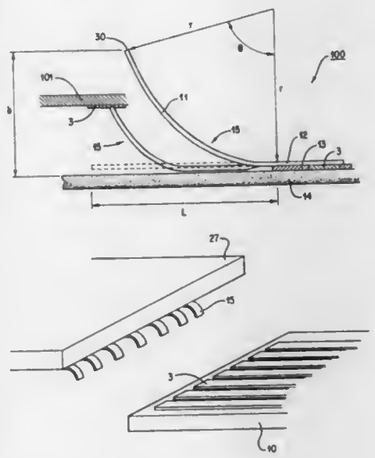
whereby a common ground circuit is established between the PC cards, the grounding clip of the top connector, the grounding clip of the bottom connector and the ground circuit of the printed circuit board.

5,613,861

PHOTOLITHOGRAPHICALLY PATTERNED SPRING CONTACT

Donald L. Smith, Palo Alto, and Andrew S. Alimonda, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 478,578
Int. Cl.[6] H01R *9/03;* **H05K** *1/14*
U.S. Cl. 439—81 **10 Claims**



1. A probe card for probing a device, comprising:

a substrate;

a plurality of conductive signal lines formed on the substrate; and

a plurality of spring contacts arranged in a pattern matching an array of contact pads on a device to be probed disposed opposite the substrate, each of the plurality of spring contacts comprising:

an elastic member comprised of a plurality of layers, an anchor portion and a free portion, the anchor portion fixed to the substrate and electrically contacting a corresponding one of the plurality of conductive signal lines;

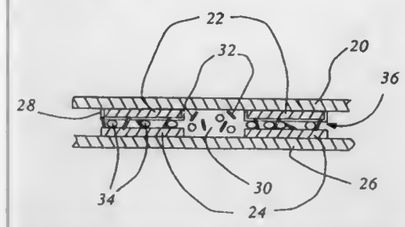
wherein the free portion of the elastic member is initially fixed to the substrate and when the free portion is released from the substrate, an inherent stress gradient in the plurality of layers of the elastic member biases the free portion away from the substrate to contact a corresponding contact pad on the device to be probed disposed opposite the substrate.

5,613,862

ANISOTROPIC ELECTRICAL CONNECTION

Malcolm Naylor, Slough, Great Britain, assignor to Central Research Laboratories Limited, Middlesex, England

Filed Apr. 21, 1994, Ser. No. 230,945
Int. Cl.[6] H01R *4/58*
U.S. Cl. 439—91 **6 Claims**



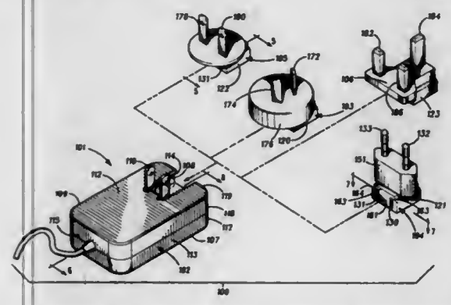
1. An electrically interconnected assembly comprising first and second substrates each having a plurality of adjacent conductive elements mounted thereon, at least some of the conductive elements having a non-conductive coating, and being aligned such that at least some of the conductive elements on the first substrate each overlie a respective conductive element on the second substrate, and a substance including adhesive bonding the substrates together, the substance forming an electrical connection between the overlying elements whilst isolating the adjacent elements from each other, and the substance including electrically conductive particles some of which have a first composition and have pierced the non-conductive coating and penetrated the conductive element, and some of which have a second composition different from said first composition and have deformed between the overlying elements.

5,613,863

POWER TRANSFORMER

Thomas R. Klaus, Palatine, and Stephen J. Milligan, Mundelein, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1995, Ser. No. 444,181
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—131 **17 Claims**



1. In combination, a universal power transformer and an adapter, the adapter comprising a housing and connectors for connection to a second type of power supply; and

the universal power transformer comprising

a transformer housing including a recess for receipt of at least a portion of the adapter,

a power converter circuit positioned in the housing,

at least one prong movably carried on the housing at a position proximate to the recess to move between an outwardly extending position, projecting from the housing for connection to a first type of power supply connector, and a retracted position, extending into the recess for storage during transport of the power transformer and to connect to the adapter partially received in the recess, the at least one prong connected to a pivoting mechanism, such that the at least one prong pivots between the outwardly extending position and the retracted position, and

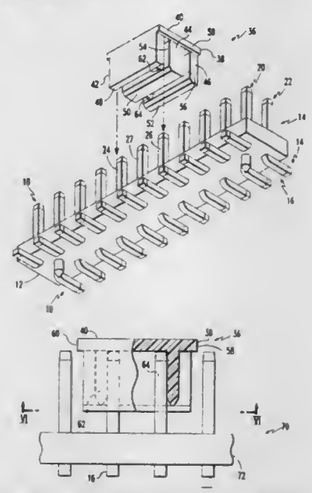
at least one contact positioned in the transformer housing adjacent a proximal end of the at least one prong to contact the at least one prong in both the retracted position and the outwardly extending position, the at least one contact electrically coupling the at least one prong to the power converter circuit in both the outwardly extending position and the retracted position of the at least one prong.

5,613,864

VACUUM PICK-UP DEVICE FOR HEADER CONNECTOR

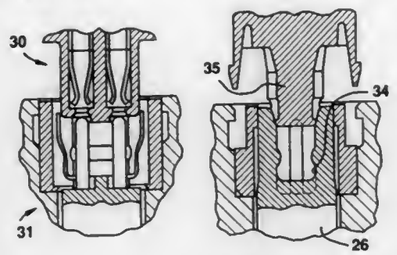
William A. Northey, Etters, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Nov. 28, 1994, Ser. No. 348,218
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—149 **15 Claims**



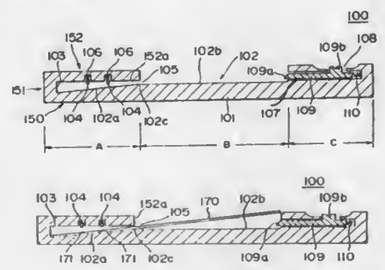
1. A cover for use in transporting a first header by vacuum suction, which first header comprises a dielectric housing, terminals mounted on the housing and pins each having an inner and an outer side arranged in an array comprising at least one row, said cover comprising an upper section including a smooth top surface, a plurality of generally parallel longitudinal ridges extending downwardly from the top section and at least one groove interposed between adjacent ridges and said ridges and said at least one groove being positioned so that at least one of said rows of pins of the first header is engageable in one of the grooves and a first transverse member extends across at least a part of one of the grooves and abuts a first pin in said first header on its outer side to engage said first pin in said first header by frictional means and a second transverse member extends across at least a part of one of the grooves and abuts a second pin in said first header on its outer side to engage said second pin in said first header by frictional means and said cover also is engageable with a second header which second header comprises a dielectric housing, terminals mounted on said housing and pins each having an inner and outer side arranged in an array comprising at least one row different from the array of the first header such that one of said rows of pins of the second header is engageable in one of the grooves and the first transverse member abuts a first pin in said second header on its inner side to engage said first pin in said second header by frictional means and the second transverse member abuts a second pin in said second header on its inner side to engage said second pin in said second header by frictional means.

5,613,865
AIRBAG SAFETY SYSTEM
Claus Dullin, Ilsfeld-Wüstenhausen, and Anja Baumann, Heilbronn, both of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Germany
Filed Oct. 24, 1994, Ser. No. 328,138
Claims priority, application Germany, Oct. 22, 1993, 43 36 140.4; Aug. 26, 1994, 44 30 358.9
Int. Cl.[6] H01R *29/00;13/627*
U.S. Cl. 439—188 19 Claims



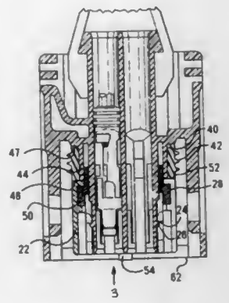
1. An ignition cable connector (**30, 70**) adapted to engage with an apparatus connector (**31**) of an ignition generator (**14**) to form a connector assembly, said ignition cable connector comprising:
an insulating body (**3, 4; 32, 33; 320, 330**);
a nose (**35; 335**) extending from said insulating body (**33**); and
locking means (**36, 37**) in the form of hooks extending from said insulating body (**33**) and spaced from said nose (**35**),
said hooks being adapted to come into engagement with counter locking means (**38**) provided at the apparatus connector (**31**).
wherein said hooks each includes a guide slot (**96**) adapted to receive a tool which, when inserted into said guide slot, causes a corresponding one of said hooks to move inwardly towards said nose and thereby disengage said hooks from said counter locking means, and wherein said hooks are located in a plane which is offset by 90° with respect to a plane defined by short circuit contact arms (**24, 25**) positioned in said ignition cable connector.

5,613,866
CARD RECEIVER ELECTRICALLY FOR CONTACTING A CARD MEDIUM HAVING A PLURALITY OF ELECTRICAL CONNECTING TERMINALS
Yuuji Niimura, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
PCT No. PCT/JP93/01259, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/06178, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 7, 1993, Ser. No. 397,199
Claims priority, application Japan, Sep. 8, 1992, 4-239753
Int. Cl.[6] H01R *13/15*
U.S. Cl. 439—260 24 Claims



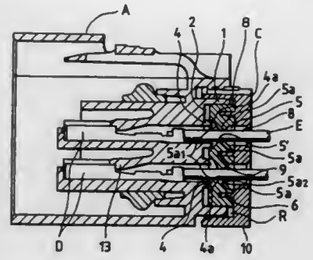
1. A card receiver which electrically contacts a card medium having a plurality of electrical connecting terminals, the card receiver comprising:
a case having a horizontal surface and an inclined surface oriented so that the card medium forms an acute angle with said horizontal surface when the card medium is in contact with said inclined surface;
a plurality of electrical contacts;
supporting means, disposed opposite to said inclined surface at a position higher than said horizontal surface by a distance no less than a thickness of the card medium, for supporting said electrical contacts in opposition to said inclined surface;
elastic members disposed on said supporting means so as to urge said electrical contacts toward said inclined surface such that said electrical contacts are brought into contact with the electrical connecting terminals of the card medium when the card medium is shifted from a first state, in which the card medium is in surface contact with said inclined surface, to a second state, in which the card medium is in surface contact with said horizontal surface; and
means for fixing the card medium on said horizontal surface in said second state, with said electrical contacts in contact with the electrical connecting terminals of the card medium.

5,613,867
ELECTRICAL CONNECTOR WITH ANTI-CHATTERING INTERCONNECTION MEANS
Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jul. 18, 1995, Ser. No. 503,840
Claims priority, application United Kingdom, Aug. 23, 1994, 9416986
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—271 7 Claims



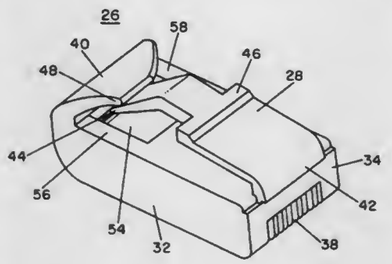
1. An electrical connector axially matable and securely latchable to a complementary connector for electrical connection therebetween, the connector comprising one or more electrical terminals received in a terminal receiving housing, characterized in that the connector comprises, proximate a mating face, one or more resilient anti-chattering members securely attached thereto and butting resiliently against a mating face of the complementary connector when mated therewith to eliminate play and prevent relative movement between the mated connectors when subject to vibration, and wherein the connector comprises an elastomeric annular seal attached to the housing and encompassing the one or more electrical terminals for engagement with a shroud of the complementary connector, the seal extending axially between a first end adjacent a shoulder of the terminal receiving housing and a mating end, whereby the anti-chattering members are securely attached to a secondary housing mounted to the terminal receiving housing and butting against the end of the seal such that when the connectors are mated, resilient butting of the anti-chattering members by the complementary connector urges the secondary housing against the seal, thereby compressing the seal.

5,613,868
WATERPROOF CONNECTOR
Hideki Ohsumi, and Yoshinori Tomita, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed May 18, 1995, Ser. No. 443,459
Claims priority, application Japan, May 23, 1994, 6-108014
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—275 3 Claims



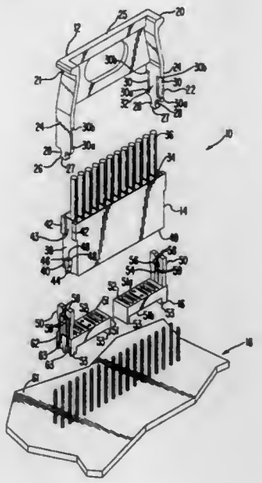
1. A waterproof connector, comprising:
a connector housing having a plurality of terminal receiving chambers;
a waterproof plug having a plurality of insertion holes corresponding respectively to said terminal receiving chambers and an annular sealing rib formed on an inner surface of each of said insertion holes; and
a waterproof plug holder connected to said waterproof plug, said waterproof plug holder having a plurality of insertion holes corresponding respectively to said terminal receiving chambers;
wherein said waterproof plug and said waterproof plug holder are configured to be connected to said connector housing in a completely-retained condition and a provisionally-retained condition; and in said provisionally-retained condition, said connector housing locally compresses said annular sealing rib between said connector housing and said waterproof plug holder to expand said insertion hole of said waterproof plug.

5,613,869
MODULAR CONNECTOR FOR A COMMUNICATION LINE
Ron Erlich, Bridgeport, Conn., and Charles Thayer, Brooklyn, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.
Filed May 11, 1995, Ser. No. 438,768
Int. Cl.[6] H01R *4/50;13/627*
U.S. Cl. 439—344 5 Claims



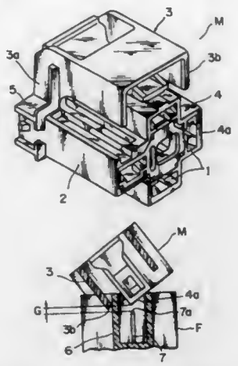
1. A modular connector for a communication line comprising:
a body having a terminal side for inserting into a corresponding jack and a cable side for fastening to an end of the communication line;
a spring-biased tab having a first end connected to the terminal side of the body and a second free end extending toward the cable side of the body;
a pair of oppositely extending locking shoulders spaced from the free end of the resilient tab for operatively engaging and disengaging with corresponding internal abutting surfaces within the lack to thereby secure and release the connector therefrom; and
a guard extending from the cable side of the body towards the terminal side of the body
wherein at least a portion of the second free end of the tab is covered by a section of the guard and wherein the body has a recess formed by a first side wall and a second side wall for accepting the tip of the second free end and for preventing the second free end of the spring-biased tab from catching a communication line or other object.

5,613,870
POSITIVE LATCHING CONNECTOR WITH DELATCHING MECHANISM
Robert F. Traver, Jr., Landenberg, Pa., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Nov. 28, 1995, Ser. No. 563,324
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 13 Claims



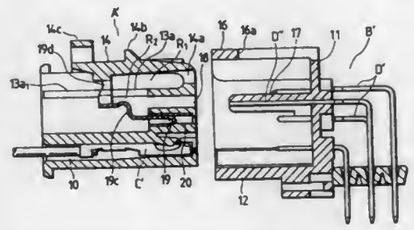
1. A connector for mating with an electrical apparatus, the connector comprising:
a housing having formed therein a plurality of cavities, each of which is dimensioned to receive an electrical conductor assembly, the housing having a front portion having formed therein a plurality of apertures, each of which is dimensioned to receive a contact pin of the electrical apparatus, the housing defining a pair of lateral portions, each lateral portion having formed thereon a latching member;
a handle assembly having a gripping portion and an attaching portion, the attaching portion being defined, at least in part, by a pair of arms which each terminate with an engaging head member, the handle assembly being moveably attachable with the housing, the handle assembly being moveable, back and forth, from a first delatching position to a second latching position; and
a latch assembly defined by at least one base portion and a pair of arms, each arm defining a first receiving portion for receiving a respective latching member and a second receiving portion for receiving a respective engaging head member.

5,613,871
PINCH PREVENTIVE CONNECTOR
Nobuyuki Akeda, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Dec. 16, 1994, Ser. No. 357,759
Claims priority, application Japan, Dec. 28, 1993, 5-337559
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—374 7 Claims



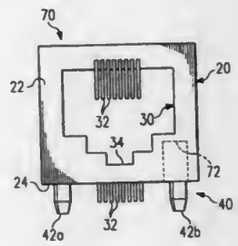
1. A pinch preventive connector comprising:
a pair of connector housings engaging with each other;
an outer cover portion having a pinch preventive portion is provided on the periphery of one connector housing; and
electric terminals contained in said pair of connector housings,
wherein said pinch preventive portion abuts the periphery of the other connector housing for preventing said one connector housing from hitting against the electric terminal contained in the other housing when both connector housings are engaged in an inclined state.

5,613,872
CONNECTION SENSOR AND SHORT-CIRCUITING CONTACT FOR CONNECTOR
Masaru Fukuda, and Eiji Fukuda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Nov. 17, 1994, Ser. No. 341,079
Claims priority, application Japan, Nov. 18, 1993, 5-289153
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 5 Claims



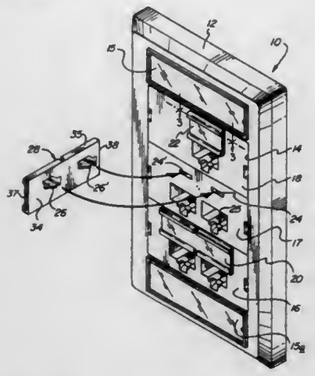
1. An electrical connector comprising:
a first connector housing having a flexible lock arm extending therefrom;
a second connector housing having an engagement portion corresponding to the flexible lock arm;
a short-circuiting contact member having resilient contact pieces, the short-circuiting contact member being arranged on a displacement allowing space side of the flexible lock arm in the first connector housing, the resilient contact pieces being displaced in response to displacement of the flexible lock arm; and
a pair of connection sensing pin-type terminal fittings arranged in the second connector housing so as to contact said resilient contact pieces when the first and second connector housings are completely engages with each other,
wherein when said first and second connector housings are connected incompletely, the flexible lock arm is displaced to push the resilient contact pieces away from the connection sensing pin-type terminal fittings to eliminate contact therebetween and wherein said pin-type terminals are disposed substantially between said lock arm and said resilient contact pieces when the first and second housings are completely engaged with each other.

5,613,873
MODULAR JACK WITH INTEGRAL LIGHT-EMITTING DIODE
Joseph W. Bell, Jr., Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.
Filed Dec. 16, 1993, Ser. No. 180,489
Int. Cl.[6] H01R *13/00*
U.S. Cl. 439—490 3 Claims



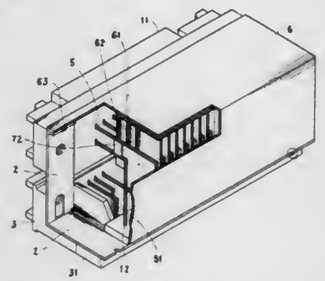
1. A jack for connecting a cable terminated with a plug to a printed circuit board, comprising:
a body portion having a front face, a back face and a bottom face;
a receptacle for receiving the plug;
mounting apparatus for affixing said body portion on the printed circuit board;
a first cavity within said body portion for receiving a first LED;
a second cavity within said body portion for receiving a second LED;
wherein said body portion is formed of a transparent or translucent material, and wherein said first cavity comprises a recess having a generally rectangular cross section formed in the bottom face of said body portion in a location adjacent to said back faces for receiving a light-emitting portion of the first LED, and wherein said second cavity comprises a recess having a generally circular cross section formed in the bottom face of said body portion in a location adjacent to said back face for receiving a light-emitting portion of the second LED, whereby the LEDs may be mounted on the printed circuit board and said jack may be mounted on the printed circuit board over the LEDs, with the light emitting portions of the LEDs extending into said respective recesses such that the light-emitting portions thereof are completely surrounded by the body portion and the printed circuit board, so that when the LEDs are emitting light, the transparent or translucent material conducts light from the LEDs to the front face of said body portion.

5,613,874
SNAP-IN DESIGNATION STRIP FOR MODULAR INFORMATION MANAGEMENT OULET
Stephen A. Orlando, Longboat Key, Fla., and Walter Schwer, Westerly, R.I., assignors to Ortronics Inc., Pawcatuck, Conn.
Filed May 5, 1995, Ser. No. 435,824
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—491 12 Claims



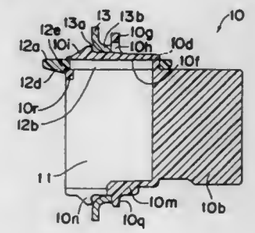
1. A snap-in designation strip comprising: a rectangular planar base having a front surface and a substantially planar back surface so as to enable the strip back surface to be substantially flush mounted to a front surface of an outlet module, said base further having a top, a bottom, and two side edges on opposite sides of the planar base extending from the top to the bottom; a top rail attached to the front surface of the base at the top thereof and including a downwardly-opening groove along its length; a bottom rail attached to the front surface of the base at the bottom thereof and including an upwardly-opening groove along its length; and a resilient attachment tab extending from the substantially planar back surface of the base, said attachment tab being sized to fit with interference through a slot in said outlet module and having at least one stepped edge for interlocking engagement with a wall of said outlet module surrounding said slot.

5,613,875
PARALLEL CONNECTOR ASSEMBLY FOR A DISK DRIVE
George Yang, Shih-Lin District, Taiwan, assignor to All Best Electronics Co., Ltd., Taipei, Taiwan
Filed Nov. 30, 1995, Ser. No. 565,472
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—541.5 4 Claims



1. A parallel connector assembly for a disk drive, comprising an L-shaped fixing member, an upper connector and a lower connector parallelly associated together by said fixing member, a first base integrally formed with said lower connector, a second base connected to a back side of said first base, a housing having an integrally formed fixing block for covering said parallelly associated upper and lower connectors, and a spacing member disposed in said fixing block of said housing; said lower connector being electrically connected to pins disposed at a bottom surface of said first base by a plurality of wires, and said upper connector also being electrically connected to pins disposed on a bottom surface of said second base through a plurality of wires, said fixing block and said spacing member together spacing and locating said wires connecting said upper connector to said pins of said second base in place, and said wires being arranged in an upper and a lower rows so that two wires in one of said upper rows and a corresponding lower row form a wire set.

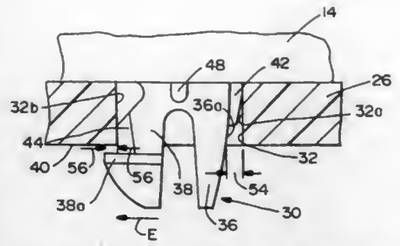
5,613,876
BODY-MOUNTED CONNECTOR
Athushi Sakatani, and Nobuyosi Tanaka, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Division of Ser. No. 67,607, May 27, 1993. This application Jun. 7, 1995, Ser. No. 486,249
Claims priority, application Japan, May 29, 1992, 4-138990
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—552 6 Claims



1. A body-mounted connector used to mount in a connector mounting hole formed in a body member for connecting to a mating connector, said connector comprising:
connector means provided on one side thereof, said connector means being engageable to said mating connector;
first engaging means provided on said connector means, said first engaging means being engageable to one side surface of said body member;
second engaging means movably provided on said connector means at a position opposed to said first engaging means, said second engaging means being engageable to another side surface of said body member; and
spacer means provided adjacent said second engaging means for pressing and locking said second engaging means against said body member and toward said first engaging means such that said connector is firmly secured in said connector mounting hole by clamping said body member between said first and second engaging means.

5,613,877
ELECTRIC CONNECTOR BOARDLOCK
Arvind Patel, Naperville, and Jack J. Schafer, LaGrange, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Nov. 2, 1995, Ser. No. 556,869
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—567 9 Claims

1. An electrical connector for mounting to a surface of a printed circuit board having a mounting hole with an inner wall, comprising:
a terminal housing having at least one mounting peg insertable into the mounting surface of the printed circuit board through the hole in an axial direction, the mounting peg being bifurcated to define a pair of legs separated by an axial slit,



one of said legs being a generally straight leg having a smooth outside surface facing one side of said inner wall of the hole,

the other of said legs being a hooked leg having a radially outwardly projecting hook having a radial extremity, through which passes a line parallel to the axis, for latching beneath a lower surface of the printed circuit board at an opposite side of the hole inner wall,

the distance between said outside surface of the straight leg and the radial extremity line of said hook of the hooked leg being less than the diameter of the inner wall of the hole between said sides to allow insertion of the mounting peg into the hole with minimal insertion forces; and

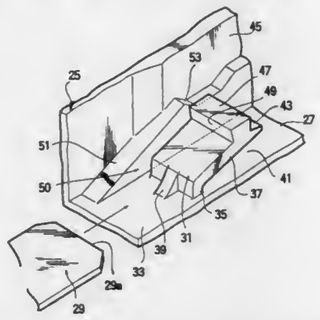
the generally straight leg including a radially outwardly projecting rib spaced axially of a proximal end thereof and having a straight leg rib axial extremity, through which passes a line parallel to the axis, the distance perpendicular to and between both the straight leg rib axial extremity line and the hook radial extremity line being greater than the diameter of the hole between said sides of the inner hole wall to require the hooked leg to flex inwardly to allow the mounting peg to be inserted into the hole until the hook clears the lower surface of the printed circuit board opposite the mounting surface.

5,613,878

REVERSE INSERTION PREVENTING CONNECTOR

Masanori Tsuji, and Motohisa Kashiyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 360,021
Claims priority, application Japan, Dec. 28, 1993, 5-336422
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **8 Claims**



1. A reverse insertion preventing connector, comprising a terminal part and a connector housing, said connector housing having an insertion end and another end defining an insertion direction therebetween, said connector housing comprising:

a flexible engagement arm having an arm portion extending from an inner wall of said connector housing in said insertion direction,

an arm end projection portion disposed on said flexible engagement arm and engaged with said terminal part when terminal part is inserted into said connector housing in a reverse direction,

an arm end engagement step portion extending from said flexible engagement arm on a side of said arm end projection portion, in said insertion, remote from said insertion end such that arm end engagement step portion is engaged with said terminal part when said terminal part is inserted into said connector housing in a normal direction and

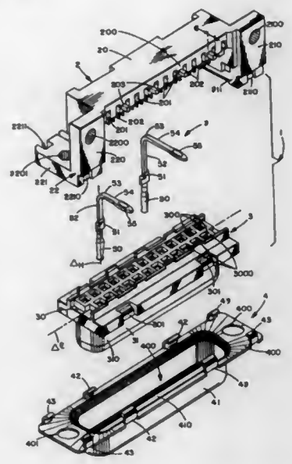
at least one terminal insertion guide slope portion formed beside said flexible engagement arm and extending from the inner wall toward said arm end projection portion, a top portion of said at least one terminal insertion guide slope portion being substantially level with said arm end projection portion, whereby said terminal part is guided by said terminal insertion guide slope portion as said terminal part is inserted into said connector housing.

5,613,879

COUPLING CONNECTOR TO A COMPLEMENTARY PLUG UNIT

Michel Fonteneau, Le Mans, and Michel Pesson, Sille Le Philippe, both of France, assignors to Framatome Connectors International, Paris, France

Filed May 10, 1995, Ser. No. 438,250
Claims priority, application France, May 11, 1994, 94 05801
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—607 **10 Claims**



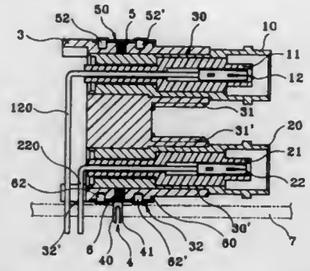
1. Coupling connector (1) of the type comprising a front insulating block (3); elbow electrical contact elements (5) having front contact regions (50) lodged in openings (300) made in said front insulating block (3) as well as regions forming elbows (51) and rear contact terminations (54, 54', 55); a rear insulating block (2), said rear insulating block (2) having a central region (20) and two lateral branches (21, 22); and a front box (4), characterized in that said front insulating block, said rear insulating block and said front box are separate elements and said front box includes a central opening for receiving a portion of said front insulating block therein and at least said front box (4) and rear insulating block (2) are furnished with complementary attachment means (43, 2201, 2210, 2110) so that said rear insulating block and said front box can be joined by a crimping operation with the front insulating block secured therebetween.

5,613,880

DUAL-PLUG BNC CONNECTOR

Tsan-Chi Wang, 1F., No. 13, Lane 312, Chung Chen Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Jul. 28, 1995, Ser. No. 506,960
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **1 Claim**



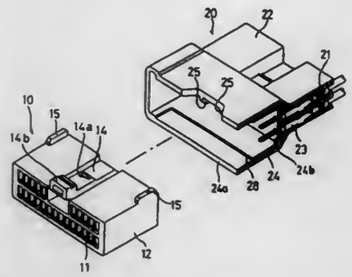
1. A dual-plug BNC connector comprising two BNC plugs, an insulative casing, filter means respectively mounted in said insulative casing to filter noises from said BNC plugs, and mounting rod means fixedly secured to said insulative casing for fastening it to a circuit board, wherein said BNC plugs are mounted in parallel in said insulative casing and respectively connected to said circuit board.

5,613,881

CONNECTOR

Kiyofumi Ichida, and Osamu Sasai, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Mar. 24, 1995, Ser. No. 410,057
Claims priority, application Japan, Apr. 8, 1994, 6-095829
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—680 **4 Claims**



1. An electrical connector comprising:

a male connector (20) having a male connector housing (22) with an opening edge (24*a*), a rear wall 24*b*) and a receptacle (24) formed therebetween, a plurality of male terminals (23) being mounted in the male connector housing (22) and projecting from the rear wall (24*b*) and into portions of the receptacle (24) between the rear wall 24(*b*) and the opening edge (24*a*), said male connector housing (27) having a guide groove (27) formed in the receptacle (24) thereof and

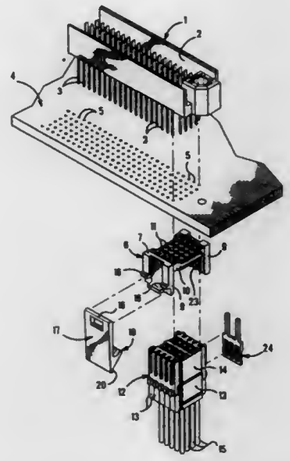
a female connector (10) having a female connector housing (12), which is dimensioned to be inserted into the receptacle (24) of the male connector housing (22) when said male and female connector housings (22 and 12) are in a specified alignment relative to one another, and wherein at least one rib (15) projects from the female connector housing (12) to prevent erroneous insertion of the female connector housing (12) into the male connector housing (22), and said guide groove (27) formed in the receptacle (24) is suitable for guiding the rib (15) when the female connector housing (12) is inserted into the receptacle (24) of the male connector housing (22) at locations intermediate the male terminals (23) and the opening edge (24*a*), said steps (28) being formed in opposed inner wall surfaces of the receptacle (24), each of said steps (28) being extended in longitudinal and transverse directions with respect to said mating directions, such that portions of said receptacle (24) between said steps (28) and said rear wall (24*b*) define smaller cross-sectional dimensions than portions of said receptacle (24) between said steps (28) and said opening edge (24*a*) so that an obliquely inserted female connector housing (12) comes into contact with said steps (28) thereby preventing said obliquely inserted female connector housing (12) from damaging said male terminals (23).

5,613,882

CONNECTOR LATCH AND POLARIZING STRUCTURE

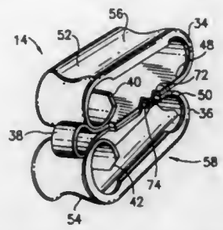
Robert J. Hnatuck, and John R. Shuey, both of Mechanicsburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 35,146, Mar. 19, 1993, abandoned.
This application Jun. 10, 1996, Ser. No. 660,774
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—686 **10 Claims**



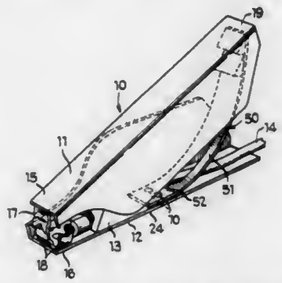
1. An electrical connector assembly comprising: a header with side walls and a bottom through which conductive pins extend, a series of parallel keyways in at least one of the walls of the header, an electrical connector for connection to some of the pins, at least one external key on the connector being received along one of the keyways to align the connector for connection with selected pins, hinge knuckles along the header, a hook pivotable along a hinge pin extending through the knuckles, the hook extending parallel to the hinge pin and transversely of multiple rows of pins and being adapted to impinge a first connector covering only one row of pins, or to impinge a second connector covering more than one row of pins, and at least one connector and electrical contacts in the connector connected to wires, the contacts being connected with respective pins, and a ledge along said connector onto which the hook is impinged to retain said connector in the header, the hook being divided into a series of hook teeth corresponding in number to the number of rows of pins covered by said connector.

5,613,883
WEDGE CONNECTOR FOR ELECTRICAL CONDUCTORS
Richard Chadbourne, Merrimack; William J. Lasko, Lisbon, both of N.H.; José C. Fatorusso, Santo Amaro, Brazil; Amauri Barbosa, Vila Caldas, Brazil, and Sergio R. Grillo, Santo Amaro, Brazil, assignors to Framatome Connectors USA Inc., Norwalk, Conn.
Continuation-in-part of Ser. No. 306,463, Sep. 15, 1994, Pat. No. 5,507,671. This application Dec. 15, 1995, Ser. No. 573,389
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—783 15 Claims



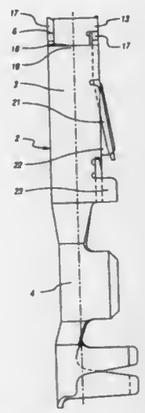
1. An electrical connector for connecting electrical conductors together, the connector comprising:
a connector sleeve having a general "C" shape; and
a wedge adapted to be located inside the sleeve, the wedge comprising a sheet metal member having an elongate length that is folded over itself around an axis perpendicular to an axis of insertion of the wedge into the sleeve to thereby form the wedge, the wedge having multiple latching ledges on a lateral side of the wedge formed by a side edge of the sheet metal member.

5,613,884
POSITION LATCH DEVICE
Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Jun. 6, 1995, Ser. No. 467,060
Int. Cl.[6] H01R *11/24*
U.S. Cl. 439—822 20 Claims



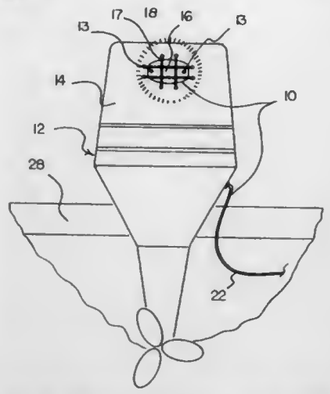
1. A position latch device for use with a clamp of the type including a pair of pivotally coupled gripping members respectively defining gripping jaws at one end and first and second handle portions at the opposite end, the gripping members being operable between a latched open-jaw condition and a non-latched closed-jaw condition, said position latch device comprising:
a bias mechanism resiliently urging the gripping members to the closed-jaw condition,
a resiliently deflectable spring extending from the first handle portion toward the second handle portion in an arcuate manner and resiliently deflectable thereby as the gripping members move from the closed-jaw condition to the open-jaw condition so as to exert on the second handle portion a force component opposite the direction of movement of the second handle portion, said spring having a fixed end connected to the first handle portion and a free end; and
at least one latching abutment disposed adjacent to the free end of said spring and engageable in the latched condition with the second handle portion in response to movement of the clamp from the closed-jaw condition to retain the clamp against movement toward the closed-jaw condition, said at least one abutment being disengageable from the latched condition in response to application to the free end of a release force having a substantial component in the direction of movement of the second handle member toward the open-jaw condition.

5,613,885
ELECTRICAL CONNECTOR DEVICE
Herbert Plate, Lüdenscheid, and Georg Schröder, Drolshagen/Bleche, both of Germany, assignors to Leopold Kostal GmbH & Co. KG, Ludenscheid, Germany
Filed Nov. 1, 1995, Ser. No. 548,339
Claims priority, application Germany, Nov. 2, 1994, 44 39 105.6
Int. Cl.[6] H01R *15/10*
U.S. Cl. 439—843 22 Claims



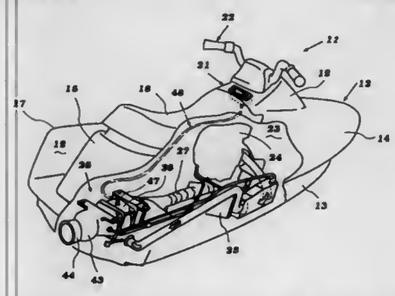
1. An electrical connector device with a rectangular connector part and a casing part, the casing part comprising:
a main body (2) with a rectangular contact region (3) for connection to the connector part (1) and to receive a separate contact means (6) in a quiver-like manner; and
an attachment region (4) adjoining the contact region (3) of the main body (2) for connection to an electric cable;
the contact means (6) comprising:
a U-shaped contact plate formed about a middle region (7) extending transverse to its longitudinal extension;
two contact arms (8) extending from the middle region (7) that extend substantially spaced apart and parallel to each other to define at least two contact cross-pieces (5);
free ends of the arms being connected to a mouth of the contact region (3) to affix the contact means (6) on the main body (2).

5,613,886
OUTBOARD-MOTOR-MOUNTED SAFETY LIGHT APPARATUS
Arthur L. Cribbs, Rte. 5, Box 357, Perry, Fla. 32347
Filed Sep. 1, 1995, Ser. No. 522,558
Int. Cl.[6] B60L *1/14*
U.S. Cl. 440—2 9 Claims



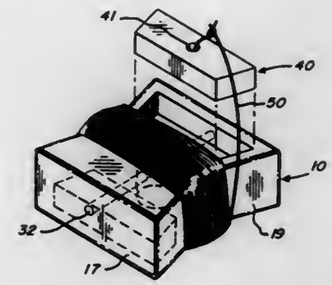
1. An outboard-motor-mounted safety light apparatus for an outboard motor which includes an outside housing, comprising:
an electrical lamp assembly,
an attachment assembly for attaching said electrical lamp assembly to the outside housing of the outboard motor, and
an electrical power connection assembly, connected to said electrical lamp assembly, for connecting said electrical lamp assembly to an electrical power source,
further including:
a light flasher assembly, electrically connected to said electrical lamp assembly, for automatically causing said electrical lamp assembly to emit a flashing light under predetermined conditions, and
an outboard-motor-speed responsive switching assembly electrically connected to said electrical lamp assembly.

5,613,887
JET PROPULSION UNIT CONDITION INDICATOR
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 31, 1995, Ser. No. 414,719
Claims priority, application Japan, Apr. 1, 1994, 6-065068
Int. Cl.[6] B63H *11/103*
U.S. Cl. 440—47 29 Claims



1. A combined water jet propulsion unit and condition sensor and indicator, said water jet propulsion unit being comprised of a water inlet housing portion defining a water inlet opening and a water flow path, an impeller housing rotatably journalling an impeller for pumping water through said water inlet housing portion, and a discharge nozzle portion through which water pumped by said impeller is discharged for providing a propulsive force to an associated watercraft, a propulsion unit cavitation sensor mounted in one of said housing portions for providing a signal indicating that said propulsion unit is operating in a condition of cavitation and a condition indicator for receiving a condition signal from said condition sensor and displaying said condition to an operator of a watercraft powered by said water jet propulsion unit.

5,613,888
FISHERMAN'S MARKER
Jeffrey T. Lamphere, 1851 Pheasant Dr., Excelsior, Minn. 55331
Filed Dec. 27, 1995, Ser. No. 579,479
Int. Cl.[6] B63B *22/16*
U.S. Cl. 441—6 2 Claims



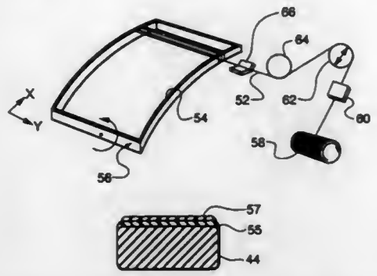
1. Apparatus for marking a preselected reference point on the water surface of a lake having a bottom surface, the apparatus comprising:
a) a float member having a density less than water, the float member having a top, a bottom, two sides, and two ends and being shaped with the top and bottom being generally parallel, and with the sides defining a cradle for holding a plurality of turns of fine line; the float member further having (i) at least one weight receiving recess disposed in the top or in the bottom, (ii) a centrally positioned bore extending from the top to the bottom, and (iii) a centrally positioned rod member extending through the bore transversely through the float member from end to end thereof;
b) a weight member having a density greater than water and a shape preselected so that the weight may be snugly positioned in and housed in one of the at least one weight receiving recess; and
c) a preselected length of fine line connected at one end thereof to the rod member through the central bore, wrapped in successive turns around the sides in the defined cradle with the other end of the line being connected to the weight member;
whereby the apparatus may be utilized by the weight (connected to one end of the line) being removed from one of the at least one recess and released into the water of the lake so as to fall to the lake bottom at a position which is a preselected reference point, the line being connected at the other end to the float and enough of the line being uncoiled from the float member to permit the weight to rest on the lake bottom with the result that the float member floats on the surface of the lake being tethered by the line and the weight generally above the preselected reference point.

5,613,889

METHOD OF MAKING A TENSIONED FOCUS MASK

Richard W. Nosker, 269 Hawthorne Ave., Princeton, N.J. 08540; Joey J. Michalchuk, 28 Rocktown-Lamb. Rd., Lambertville, N.J. 08530; Paul Kuczer, 90 Taylor Dr., Fallsington, Pa. 19054, and Elmer W. Hodge, 101 St. Thomas Rd., Lancaster, Pa. 17601

Filed Jul. 26, 1995, Ser. No. 507,769
Int. Cl.[6] H01J 9/14
U.S. Cl. 445—37 5 Claims



1. A method of making a tensioned focus mask, wherein said mask includes a set of parallel strands and a set of parallel wires that are perpendicular to said strands and separated from said strands by insulating means, said method including

a) attaching said strands to a mask frame,

b) coating said strands with a first insulator,

c) curing said first insulator,

d) coating said first insulator on said strands with a second insulator,

e) winding said wires over and in contact with said second insulator, by rotating said mask frame and drawing a continuous wire from a source through a tensioner, while guiding said continuous wire into desired positions on said strands, and

f) heating said second insulator until said wires attach to said second insulator.

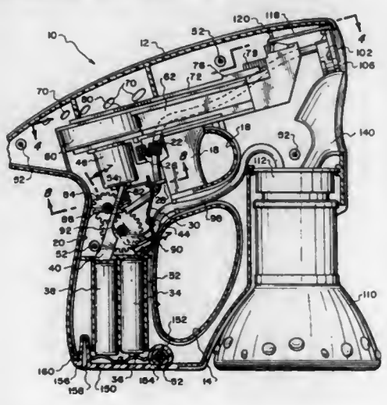
5,613,890

MOTORIZED BUBBLE MAKING AND PROPELLING TOY GUN WITH LATERAL WIPER

Robert A. DeMars, 5000 N. Parkway Calabasas - Ste. 225, Calabasas, Calif. 91302

Continuation-in-part of Ser. No. 391,104, Feb. 21, 1995, Pat. No. 5,498,191. This application Oct. 10, 1995, Ser. No. 541,309
Int. Cl.[6] A63H 33/28;33/30
U.S. Cl. 446—15 7 Claims

1. An improved bubble producing toy comprising:



a housing having an internal chamber;

a dispensing opening formed within said housing and connecting with said internal chamber, said dispensing opening connecting to the ambient, a sleeve mounted within said dispensing opening, said sleeve having a central opening and a dispensing surface;

a reservoir mounted on said housing, said reservoir to contain a liquid, said liquid being capable of producing air bubbles;

a pump mounted on said housing, said pump being connected to said reservoir;

a source of blown air produced within said internal chamber, said source to be dispensed into said central opening of said sleeve into the ambient, said source of said blown air being produced by a fan, said fan being mounted within said internal chamber of said housing, said fan being operated by an electrical motor, said pump being operable to move said liquid to be dispensed at said sleeve, said electrical motor also operating said pump; and

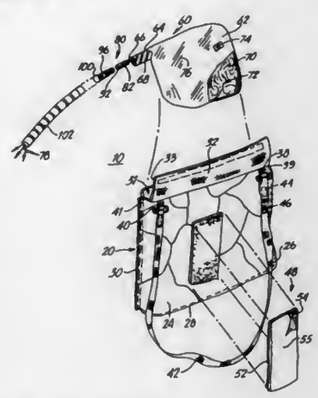
a film producing mechanism mounted on said housing, said film producing mechanism including a wiper bar, said wiper bar being located against said dispensing surface, said wiper bar being laterally movable back and forth across said dispensing surface, said liquid from said reservoir to be moved by said pump to said dispensing surface whereby said wiper bar locates a thin film of said liquid across said dispensing surface as said wiper bar is moved laterally across said dispensing surface downstream of air flow from said source flowing through said thin film mounted across said central opening which creates air bubbles.

5,613,891

FOOT OPERATED ANIMAL CALLER

Ralph J. Lamo, 11 East St., Annandale, N.J. 08801

Filed Oct. 23, 1995, Ser. No. 546,941
Int. Cl.[6] A63H 5/00
U.S. Cl. 446—26 14 Claims



1. An animal caller comprising:

a) a pouch-like housing having top and bottom walls and an opening for forming a pouch pocket, and attachment means on the bottom wall for securing said pouch-like housing to a surface;

b) a bellows assembly for producing a strong current of air disposed within said pouch pocket;

c) a reed assembly for producing a specific animal sound being detachably connected to said bellows assembly;

d) said reed assembly having detachable and interchangeable reed housings for different animal calls; and

e) said reed assembly having at least two flexible and interlocking calling tubes movable relative to each other to vary the pitch and/or tone of the animal call and to direct the animal call to a given direction.

5,613,892

INFLATABLE PLUSH TOY

Leslie W. Barton, 2818 Westridge, Carolitton, Tex. 75006

Filed Mar. 31, 1995, Ser. No. 414,276
Int. Cl.[6] A63H 3/06
U.S. Cl. 446—226 2 Claims



1. An inflatable plush toy, comprising:

an inflatable inner bladder made of a substantially nonelastomeric sheet material and having a surface;

an outer covering for containing said inner bladder, said outer covering laminated to said surface of said inner bladder; and

a valve structure contained within said bladder for filling and inflating the bladder with an inflation gas;

a portion of said outer covering being cut away to expose a portion of said surface of said inner bladder across said cut away;

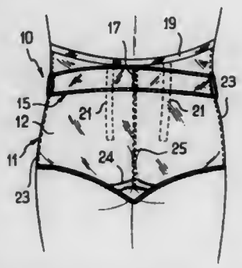
wherein said exposed portion of said surface of said inner bladder is intended for application of designs or decals thereto.

5,613,893

DORSO-ABDOMINAL SUPPORT GARMENT

André Zagame, 55 rue de l'Eglise, 61110 Remalard, France

Filed Apr. 28, 1994, Ser. No. 233,953
Claims priority, application France, May 4, 1993, 93 05286
Int. Cl.[6] A41C 1/08
U.S. Cl. 450—155 8 Claims



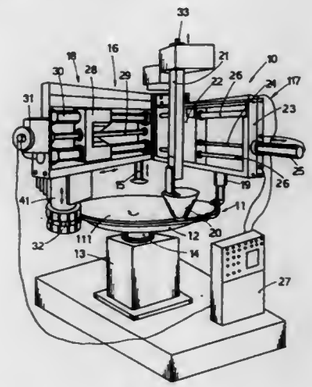
1. A dorso-abdominal support garment including a unitary assembly having a crotch piece, and organized to exert permanent compression on a concerned zone of the body, said unitary assembly comprising two complementary portions consisting of an enveloping front-and-back main portion made of a first elastic textile material selected to exert controlled support, and an abdominal portion made of a second elastic textile material which is substantially more stretchable than said first material, such that said abdominal portion allows a freer swelling of the abdomen, wherein an elastic peripheral band is connected to the unitary assembly, said peripheral band being made of an elastic textile material, and being connected to said assembly via seams relating to the front middle zone and to the back middle zone of said band, said seams forming one front middle fixing line and one back middle fixing line which are the only points of connection between said band and said unitary assembly, the remainder of said band resting freely against the surface of said unitary assembly so that said peripheral band can exert additional support in the super-pubic zone and the pre-umbilical zone.

5,613,894

METHOD TO HONE CURVED AND SHAPED PROFILES AND HONING MACHINE TO CARRY OUT SUCH METHOD

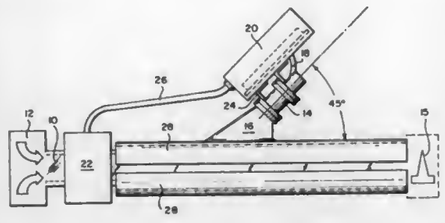
Gaetano Delle Vedove, Pordenone, Italy, assignor to Delle Vedove Levigatrici SpA, Italy

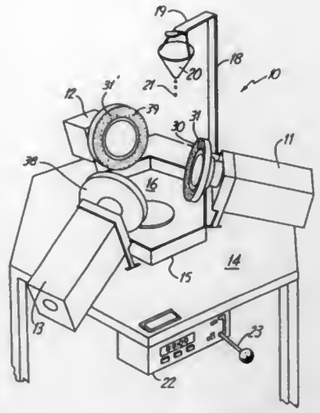
Filed Dec. 19, 1994, Ser. No. 358,943
Claims priority, application Italy, Dec. 30, 1993, UD93A0269
Int. Cl.[6] B24B 49/00
U.S. Cl. 451—1 27 Claims



1. A method of honing profiles of furniture components, wherein a profile is at least partly curved or shaped, comprising (1) continuously identifying and reading each geometric configuration of a profile of a furniture component to be honed by means of a profile reader assembly including a feeler unit which identifies a radius of curvature of the geometric configuration of each curve or shape present in the profile prior to said curve or shape being honed; (2) storing data on each geometric configuration obtained in (1); (3) transferring said data to an operating unit equipped with an operating element that performs honing and thereby positioning the operating unit in relation to said furniture component to be honed, wherein said transferring of said data occurs following a delay in said identifying and reading of the geometric configuration in (1), the delay being a function of circumferentially positioning the operating unit in relation to the profile reader assembly and a function of the relative speed of feed of the furniture component to the operating element; and (4) automatically compensating for speed of rotation and/or pressure of the operating element in relation to stay time of the operating element in contact with the furniture component to be honed based on the identification of the radius of curvature of the geometric configuration of the profile of the furniture component, wear of the operating element and honing to be performed, and wherein the stay time is variable depending on the geometric configuration identified.

5,613,895
PARTICULATE FLOW CONTROL SYSTEM
Raymond E. Baker, Porters Corners, N.Y., assignor to The Guyson Corporation of U.S.A., Saratoga Springs, N.Y.
Filed Nov. 16, 1994, Ser. No. 341,053
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—2 **3 Claims**



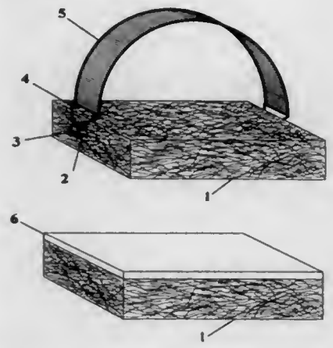


1. A flow control system for blast cleaning equipment comprising,
a flow conduit for blast media extending between a media source at its upstream end and a workpiece to be cleaned at its downstream end,
said conduit being transparent to microwave energy,
a microwave energy source and detector mounted on said conduit and angled toward said conduit so as to direct energy toward and through the conduit to impact upon blast media passing through said conduit,
said microwave energy source and detector being mounted on said conduit at substantially a 45° angle toward the conduit in the direction of the media source,
valve means disposed in said conduit upstream from said microwave energy source and detector,
circuit means connected to said microwave energy source and detector for receiving and processing echo signals from said detector representative of the mass of media subjected to microwave energy, and,
means connecting said valve means to said circuit means for controlling said valve in response to detected media flow, thereby to maintain a predetermined level of particulate media flow in said conduit.

5,613,896
AUTOMATIC BOWLING BALL RESURFACING MACHINE
Bruce A. Haus, 29500 Bloom St. Box 398, Chisago City, Minn. 55013, and Andrew A. Kolkind, Rte. 3, Box 370, Isanti, Minn. 55040
Filed Jun. 30, 1995, Ser. No. 497,559
Int. Cl.[6] B24B *11/10*
U.S. Cl. 451—50 **10 Claims**

1. A machine for automatically refinishing the surface of a bowling ball to improve the roundness of the bowling ball having a predetermined weight comprising:
a table;
a first bowling ball resurfacing unit pivotally mounted with respect to said table, said first bowling ball resurfacing unit having a first member for pivoting said first bowling ball resurfacing unit;
a first cone-shaped cup located on said bowling ball resurfacing unit, said first cone-shaped cup postionable in a first partial ball supporting position on a portion of the bowling ball, said first cone-shaped cup having a first central axis with said first cone-shaped cup rotatable about said first central axis, said first central axis forming a first acute angle to a horizontal plane; and
a first annular abrading region located on said first cone-shaped cup so that when said first cone-shaped cup is rotated about said first central axis said first abrading region engages a surface on the bowling ball to simultaneously rotate and abrade the surface of the bowling ball to bring the bowling ball into round;
a second bowling ball resurfacing unit pivotally mounted with respect to said table said second bowling ball resurfacing unit having a second member for pivoting said second bowling ball resurfacing unit;
a second cone-shaped cup located on said bowling ball resurfacing unit, said second cone-shaped cup postionable in a second partial ball supporting position on a portion of the bowling ball, said second cone-shaped cup having a second central axis with said second cone-shaped cup rotatable about said second central axis, said second central axis forming a second acute angle to the horizontal plane;
a second annular abrading region located on said second cone-shaped cup so that when said second cone-shaped cup is rotated about said second central axis said second abrading region engages a surface on the bowling ball to simultaneously rotate and abrade the surface of the bowling ball to bring the bowling ball into round;
a third bowling ball resurfacing unit pivotally mounted with respect to said table said third bowling ball resurfacing unit having a third member for pivoting said third bowling ball resurfacing unit;
a third cone-shaped cup located on said bowling ball resurfacing unit, said third cone-shaped cup postionable in a third partial ball supporting position on a portion of the bowling ball, said third cone-shaped cup having a third central axis with said third cone-shaped cup rotatable about said third central axis, said third central axis forming a third acute angle to the horizontal plane;
a third annular abrading region located on said third cone-shaped cup so that when said third cone-shaped cup is rotated about said third central axis with said third abrading region engages a surface on the bowling ball to simultaneously rotate and abrade the surface of the bowling ball to bring the bowling ball into round, said first central axis, said second central axis and said third central axis located at a minimum angle to the horizontal of about 30 degrees with respect to each of said three cone shaped cups with the three cups coacting to support and abrade the surface of the bowling ball as the cone shaped cups are rotated about their respective central axis;
a spring mounted on said table;
a central member said central member connected to said spring and to each of said members for pivoting said bowling ball resurfacing units; said central member coacting with said spring to so that when a bowling ball is centrally placed with respect to each of said cone shaped cups the weight of the bowling ball is resiliently supported by each of said bowling ball resurfacing units to maintain constant pressure contact between each of the cone-shaped cups and the surface of the bowling ball to enable the bowling ball to be resurfaced as each of the cups are rotated about their respective central axis with the rotation of the cups imparting lateral forces that rotate revolve and rotate the bowling ball without the aid of external forces to rotate the ball during the resurfacing process.

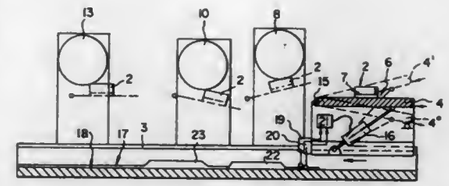
5,613,897
FOOT-PAD FLOOR CLEANING DEVICE
John P. Thompson, Jr., 1429 Caldwell St., Rossville, Ga. 30741
Filed Aug. 8, 1995, Ser. No. 512,659
Int. Cl.[6] B08B *7/00;* **B24B** *1/00;* **A47L** *13/282*
U.S. Cl. 451—59 **4 Claims**



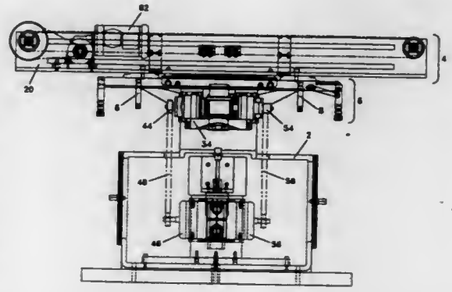
1. A shoe attachment device for removing marks from a floor surface without adversely affecting any finish on the floor surface consisting essentially of an abrasive pad formed of an abrasive material of sufficient abrasiveness for removing marks from a floor surface and defined by substantially parallel first and second surface regions facing opposite directions and spatially separated from one another by oppositely facing side regions and oppositely facing end regions, a wire extending through the abrasive pad at a central region thereof located substantially intermediate the first and second surface regions with opposite end portions of the wire protecting from said oppositely facing side regions, and a fastening means joined to the abrasive pad for removably fastening said abrasive pad to a shoe having top and bottom surface portions, said fastening means comprising an elongated band means for engagement with a shoe, said band means at least substantially extending over one of said first and second surface regions with opposite end regions of the band means being positioned adjacent to said opposite end portions of the wire, and securing means for joining the opposite end regions of the band means to opposite end portions of the wire, said band means being sufficiently variable in length to overlie the top surface portion of the shoe while maintaining the first or second surface region of the abrasive pad in contact with the bottom surface portion of the shoe.

5,613,898
DEVICE FOR PRODUCING INCLINED SURFACES AND GROOVES ON FRICTION PADS
Reinhard Lümen, Wiener Neustadt, Austria, assignor to Leinweber Maschinen GmbH & Co. KG, Wiener Neustadt, Austria
Filed May 2, 1995, Ser. No. 432,779
Int. Cl.[6] B24B *7/10*
U.S. Cl. 451—190 **14 Claims**

1. Apparatus for producing inclined surfaces and/or grooves on automotive friction pads, comprising:
a carriage table having a table surface for supporting friction pads and being driveable in a given direction along a substantially rectilinear travel path;
grind disks for grinding inclined surfaces on the friction pads disposed along the travel path and rotatable about an axis extending transversely to the given direction;
said table surface being swivellable about at least one axis to selectively assume a plurality of operational positions.



5,613,899
CENTERLESS CERAMIC FERRULE GRINDER
Stanley Weiss, Boston, and Cosper Nance, Moultrie, both of Ga., assignors to Southern Carbide Specialists, Inc., Quitman, Ga.
Filed Jun. 5, 1995, Ser. No. 462,074
Int. Cl.[6] B24B *5/00;5/18*
U.S. Cl. 451—245 **19 Claims**



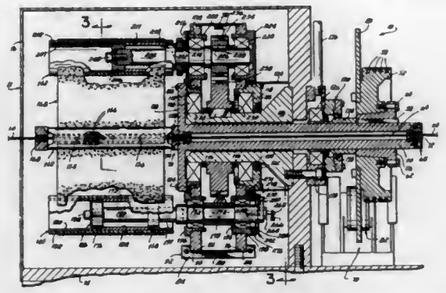
1. A centerless grinder for shaping and finishing ceramic ferrules comprising:
A work traverse;
A means for oscillating the work traverse horizontally;
A wire support assembly for carrying about 30 ferrules appended to the work traverse that has at least one arm extending from each end thereof;
A wire for carrying the ferrules that is secured to each arm of the wire support assembly and held in tension;
At least one wire guide means associated with the wire support assembly to hold the wire straight along a predetermined path;
A grinding wheel means for removing material from the ferrules as the wire carries the ferrules across the grinding wheel means;
A regulating wheel means spaced apart from the grinding wheel means for spinning the ferrules and controlling the amount of material removed from the ferrules by the grinding wheel means;
An infeed means for moving the regulating wheel means in increments with relation to the grinding wheel means to assist in controlling the amount of material removed from the ferrules; and
A rest blade assembly wherein the ferrules are supported on an upper edge of a rest blade between the regulating wheel means and the grinding wheel means and the rest blade is positioned such that the ferrules are worked above their center by the grinding wheel means.

5,613,900

CLEANING AND DESCALING APPARATUS

Henry Ramsey, Dudley, Mass., assignor to L&P Property Management Company, Chicago, Ill.

Filed Jun. 27, 1995, Ser. No. 495,343
Int. Cl.[6] B24B *21/02*
U.S. Cl. 451—299 **18 Claims**



1. An abrading apparatus for cleaning an outer surface of an elongate member, the apparatus comprising:

an elongate support having a central axis for supporting said elongate member;

an endless belt having an abrasive surface and mounted for rotation between first and second spaced apart rollers such that said abrasive surface is disposed adjacent said elongate support;

a belt driving mechanism operatively connected to said first and second rollers for rotating said rollers and said belt;

an orbital drive mechanism connected to said first and second rollers for rotating said endless belt and said rollers about said elongate member; and,

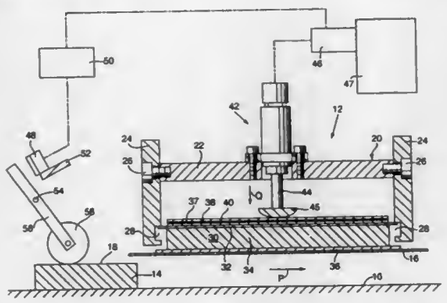
a sealed casing having a radially outermost portion rotatable about said axis containing and isolating said orbital drive mechanism, said sealed casing containing lubricating fluid for said orbital drive mechanism.

5,613,901

APPARATUS FOR PRESSING A CIRCULATING GRINDING BELT

Georg Weber, Friesener Strasse 27, and Martin Ellmer, Seelach 67, both of 96317 Kronach, Germany

Filed Nov. 2, 1995, Ser. No. 552,267
Claims priority, application Germany, Aug. 30, 1995, 295 13 946.3
Int. Cl.[6] B24B *21/08*
U.S. Cl. 451—303 **14 Claims**



1. An apparatus for pressing a circulating grinding belt (**16**) of a belt grinding machine to the upper surface of a workpiece,

with a pressing beam (**12**) with a plurality of controllable positioning units (**42**) arranged in a plane parallel to the working surface of the grinding belt (**16**), with the positioning units (**42**) having positioning rods (**44**) operable in the direction (Q) perpendicular to the working surface of the grinding belt (**16**), which positioning rods exert predetermined forces onto pressure plates (**40**),

which forces are areally transferred by the pressure plates (**40**) to an elastic equalizing mat (**30**) consisting of several layers (**32, 34, 36, 37, 38**), which equalizing mat has an upper surface and is arranged to lie opposite to the inner side of the grinding belt (**16**), said layers of said mat including an upper layer (**32**) consisting of a band of spring material,

characterized in that the pressure plates (**40**) are arranged on the upper surface of the equalizing mat (**30**) above said band of spring material and are fixed relative to said band of spring material, and

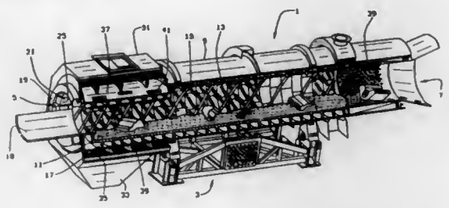
in that each of said positioning rods has a downwardly facing lower end surface which lower end surface when said rod is moved downwardly in said direction (Q) comes into engagement with the associated one of said pressure plates to exert a force onto said pressure plate and which end surface when said rod is moved upwardly in the direction opposite to the direction (Q) moves out of contact with said associated one of said pressure plates.

5,613,902

SAND RECLAIMER

Michael S. Didion, and Charles J. Didion, both of St. Charles County, Mo., assignors to Didion Manufacturing Company, St. Peters, Mo.

Filed Mar. 25, 1996, Ser. No. 621,090
Int. Cl.[6] B22D *29/00*
U.S. Cl. 451—326 **4 Claims**



1. A tumbler for use in separating surface disposed core sand from fresh or dirty castings by tumbling said castings in the presence of abrasive members, said rambler comprising:

an inlet area, an outlet area, and a tumbling area between said inlet and outlet areas;

an outer cylinder extending along said tumbling and outlet areas;

an inner cylinder concentric with said outer cylinder and extending through said inlet, outlet and tumbling areas, said inner cylinder and outer cylinder defining a space therebetween, said inner cylinder being perforated to allow sand to fall into said space between said inner and outer cylinder; said inner cylinder including an inner helical vane to urge sand, media, and castings toward said outlet area, and an outer helical vane to urge sand and media toward said inlet area;

a shell in said inlet area, said shell having an inner diameter approximately equal to the diameter of said outer helical vane, said shell defining a plurality of openings therein through which sand and media may fall; and

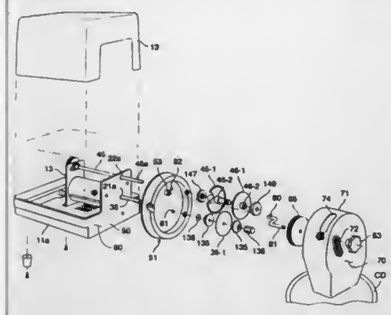
a perforated screen surrounding said shell, said screen perforations being sized to allow sand particles of a desired size to fall therethrough, said screen being supported about said shell by a third helical vane.

5,613,903

SHRIMP DEVEINING APPARATUS

James Harris, 3312 Livonia Ave., Los Angeles, Calif. 91361, and Roy Fujitaki, Pasadena, Calif., assignors to James Harris, Los Angeles, Calif.

Filed Sep. 26, 1995, Ser. No. 533,949
Int. Cl.[6] A22C *29/02*
U.S. Cl. 452—3 **30 Claims**



1. In a powered shrimp deveining apparatus, characterized by a source of rotary power provided with an output shaft, said source being mounted in a housing including an end wall perforated to receive said output shaft, and a rotary cutter mounted on said output shaft external to said housing, the improvement comprising:

a frame structure mounted in the housing and engaged to the source of rotary power, said frame structure including a first bearing means for supporting the output shaft, a second bearing means for supporting a secondary shaft, said second bearing means aligned in parallel with said first bearing means, said secondary shaft extending through the end wall adjacent the output shaft;

pulley means interconnected between the output shaft and said secondary shaft, said pulley means located exterior to said frame structure and distal to said end wall;

a generally circular adapter mounted on the end wall, said adapter mounted exterior to the housing, said adapter including a peripheral bead and a boss within the periphery of said bead aligned adjacent said output and secondary shafts;

a bell crank having a first and second end and pivoted at said first end in said boss, said bell crank including an idler roller on said second end, said second end of said bell crank extending in a threaded projection beyond said roller;

a generally hollow cover provided with a skirt conformed for engaging fit with said peripheral bead, said cover including an arcuate slot conforming in the dimensions thereof with the pivotal motion of said threaded projection; and

engaging means selectively engageable to said threaded projection external of said cover upon the engagement of said skirt with said peripheral bead.

5,613,904

UTENSIL FOR OPENING THE SHELLS OF CRUSTACEANS

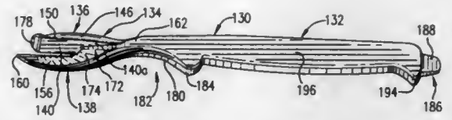
Anthony LaSalle, and Betty V. LaSalle, both of Overland, Kans., assignors to LaSalle Product Development, Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 533,374, Sep. 25, 1995, abandoned, and a continuation-in-part of Ser. No. 595,066, Feb. 1, 1996. This application Aug. 27, 1996, Ser. No. 703,489
Int. Cl.[6] A22C *29/02*
U.S. Cl. 452—6 **20 Claims**

1. A utensil for facilitating the opening and removal of meat from crab legs or other types of shellfish, said utensil comprising:

an elongated handle portion; and

a bifurcated head section joined to the handle portion at one end thereof in a position to assist the user of the utensil in opening and removing all or a part of the meat from the shellfish,



said head section including separate, elongated first and second tine segments,

said first and second tine segments each having a surface portion with the surface portions being disposed in spaced, directly opposed, generally parallel relationship,

the spacing between said opposed surface portions being no greater than about twice the normal maximum thickness of the shell of the shellfish,

the surface portion of said first tine segment being of essentially planar configuration and of a width transversely thereof that is substantially greater than the transverse width of the surface portion of the second tine segment,

said second tine segment being of greater length than said first tine segment and provided with a series of teeth along the length thereof in facing relationship to said planar surface of the first tine segment,

said second tine segment being provided with a transition zone which merges with said handle portion and said planar surface of the first tine segment,

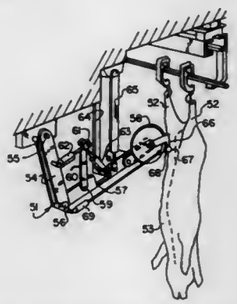
said transition zone being configured to present a relatively narrow margin between the surface portions of said first and second tine segments in facing relationship to the space between tine segments and having faces which diverge as the handle portion is approached to allow the severed area of the shell to pass thereover without substantial impediment during use of the utensil.

5,613,905

METHOD AND DEVICE FOR OPENING A SLAUGHTERED ANIMAL

Sander A. Van Ochten, Lichtenvoorde, and Leonardus J. A. Tiggeloven, Groenlo, both of Netherlands, assignors to Stork R.M.S. B.V., Netherlands

Continuation of Ser. No. 185,946, Mar. 30, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 577,294
Claims priority, application Netherlands, Jul. 18, 1991, 9101262; Apr. 6, 1992, 9200649
Int. Cl.[6] A22B *5/20*
U.S. Cl. 452—160 **30 Claims**



1. A method for opening a slaughtered animal comprising the steps of:

(1) providing a slaughtered animal having a plane of symmetry, hind legs and a belly wall;

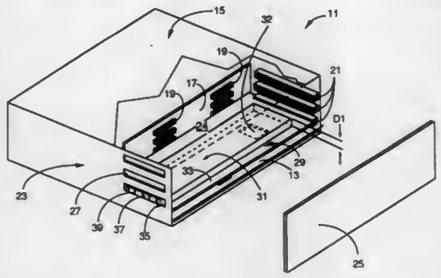
(2) suspending the animal from the hind legs;

(3) positioning a cut only in the belly wall close to the hind legs substantially in the plane of symmetry of the animal;

(4) continuing said cut in a substantially vertically downward direction;

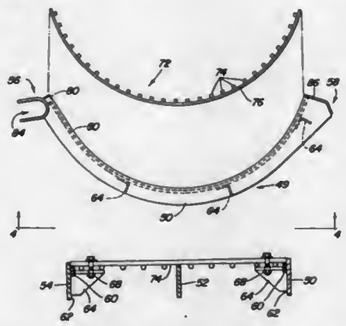
(5) holding the intestines of the animal clear of the belly wall during step (4) by sliding a guide surface along an inner surface of the belly wall;
(6) tensioning the belly wall during step (4) by pulling the belly wall outward;
(7) continuing said cut after step (4) to cut through the midriff of the animal; and
(8) continuing said cut after step (6) to cut through the breast bone of the animal.

5,613,906
METHOD AND APPARATUS FOR WASTE HEAT REMOVAL FROM A COMPUTER ENCLOSURE
Dan Kikinis, Saratoga, Calif., assignor to Elonex I.P. Holdings, Ltd., London, England
Filed Jul. 20, 1995, Ser. No. 504,886
Int. Cl.[6] H05K *7/20*
U.S. Cl. 454—184 **13 Claims**



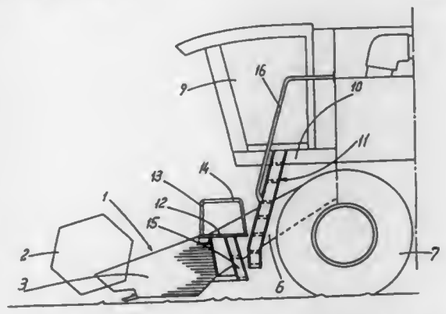
1. A hot-air chimney for a computer, comprising:
a base panel in the shape of an expansion card for the computer;
an end flange attached to the base panel in the position of an end flange for the expansion card, the end flange having an opening therein; and
an enclosed passage formed on the base panel, the passage closed on the end opposite the end flange and open to the opening in the end flange.

5,613,907
LIGHTWEIGHT CONCAVE HAVING REMOVABLE GRIDS
Philip A. Harden, Colona, Ill., assignor to Deere & Company, Moline, Ill.
Filed Sep. 22, 1995, Ser. No. 533,530
Int. Cl.[6] A01F *12/28*
U.S. Cl. 460—109 **13 Claims**



1. A concave for a rotary crop processing unit for an agricultural combine, the concave comprising:
a frame having at least two longitudinally extending curved members that are coupled to one another by two laterally extending members, the frame is provided with a first mounting assembly; and
at least one replaceable grid being releasably mounted to the frame by the first mounting assembly engaging the grid, the grid is provided with a plurality of longitudinally extending curved rods and a plurality of laterally extending straight bars, the straight bars are provided with an outer surface, at least one of the rods and the straight bars are provided with projections and are projection welded to one another.

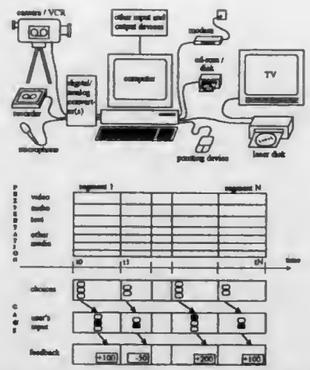
5,613,908
SELF-PROPELLING PROCESSING MACHINE
Josef Spechtel, Versmold, Germany, assignor to Claas Chg Beschrankt Haftende Offene Handelsgesellschaft, Harsewinkel, Germany
Filed Aug. 4, 1995, Ser. No. 511,550
Claims priority, application Germany, Sep. 14, 1994, 44 32 706
Int. Cl.[6] A01F *21/00*
U.S. Cl. 460—119 **7 Claims**



1. A self-propelling processing machine, in particular an agricultural harvesting machine, comprising an axle receiving front wheels; a removable attachment; a driver's cabin located above said axle; an outlet provided for said driver's cabin; a substantially horizontal inlet platform located adjacent to said driver's cabin at a side of said outlet, said outlet being arranged in a free space between a respective one of said front wheels which is associated with said inlet platform and said attachment; and a walkable outlet platform mounted on said attachment at a side facing said outlet in a position substantially corresponding to a position of said outlet.

5,613,909
TIME-SEGMENTED MULTIMEDIA GAME PLAYING AND AUTHORING SYSTEM
Jan Stelovsky, 2049 Oswald St., Honolulu, Hi. 96816
Filed Jul. 21, 1994, Ser. No. 278,946
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—1 **16 Claims**

1. A multimedia game playing system comprising:
a multimedia presentation comprised of a plurality of recorded media tracks with at least a video track that is clocked in accordance with time address points of a given time axis;
a game player unit having user input means for entering user input for playing a game on said game player unit, game playing means including programmed game sequence means for playing a programmed game sequence on said game player unit incorporating video images therewith in conjunction with the user input received through said user input means, and output means including at least a video display screen for displaying video images of the programmed game sequence in conjunction with the user input,

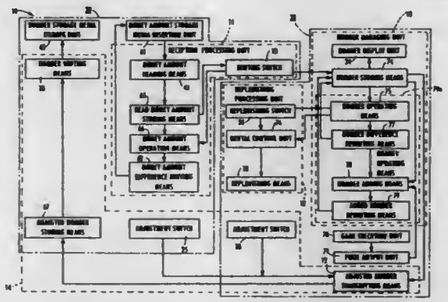


wherein said game player unit has associated therewith multimedia handling means including at least video input means for receiving said video track of said multimedia presentation and video output means for displaying said video track on said video display screen,
wherein said video track of said multimedia presentation is divided into a plurality of presentation segments having respective start and end time address points with respect to the given time axis, and
wherein the programmed game sequence means of said game playing means includes a plurality of game sequence subunits each of which is operationally linked to the start and end time address points of a respective one of said video track presentation segments,
wherein each of the game sequence subunits includes game choices which are displayed in conjunction with display of the respective video track presentation segment during a time period delimited by the start and end time address points for the respective presentation segment, and
wherein said game playing means of said game player unit operates in a play mode to play said presentation segments of said video track of said multimedia presentation in a continuous sequence and to display the game choices of the respective game sequence subunits linked thereto, and said gate playing means receives a user input at any time during the time periods of the multimedia presentation segments played in the continuous sequence and enters the user input as a game choice for a respective game sequence subunit linked to the corresponding presentation segment played in the time period during which the user input is received,
whereby the programmed game sequence is played on the game player unit by user input of selections for the game choices in conjunction with the display of the game choices of the game sequence subunits together with the display of the video track presentation segments of the multimedia presentation.

5,613,910
TOKEN GAME MACHINE
Takashi Hamano, Kawasaki, Japan, assignor to Konami Co., Ltd., Hyogo-ken, Japan
Filed Jul. 24, 1995, Ser. No. 505,980
Claims priority, application Japan, Jul. 27, 1994, 6-193844
Int. Cl.[6] A63F *3/00*
U.S. Cl. 463—19 **16 Claims**

1. A token game machine comprising:
a panel along a surface of which tokens are moved;
a plurality of proximity sensors provided at different locations on the panel surface for detecting tokens passing nearby;
a symbol assignor for randomly assigning an individual symbol to the individual proximity sensors;
a symbol data output device for outputting data on an identification of the symbol assigned to a proximity sensor that has detected a nearby-passing token;
a game judgment device for judging whether a game has been won based on symbol data outputted from the symbol data output device; and
an end-of-game command device, wherein the symbol assignor alters the assignation of the symbols assigned to the proximity sensors when the end-of-game command device is operated by the player.

5,613,911
GAME APPARATUS HAVING GAME MEDIA CONTROLLING CAPABILITIES
Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan
Continuation-in-part of Ser. No. 146,209, Nov. 17, 1993, abandoned. This application Feb. 23, 1994, Ser. No. 200,899
Claims priority, application Japan, May 17, 1991, 3-112015; Jun. 19, 1991, 3-147474; Jun. 19, 1991, 3-147475
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—25 **23 Claims**



1. A game apparatus having a game executing unit for playing a game using game media and a game media holding unit for temporarily holding the game media used in the game, and being capable of controlling a game media, the game apparatus comprising:
a reception processing unit for receiving input operations which are performed by a player who desires to rent game media and for outputting information representative of a number of rented game media;
a replenishing processing unit for processing a replenishment of the game media to the game media holding unit according to the request of the player and for outputting information representative of the replenished game media;
a score output unit for outputting information representative of a number of game media given to the player as a score during performance of the game;

a number managing unit for accepting the information representative of the number of the rented game media, the information representative of replenished game media and the information representative of the number of game media given to the player as a score to manage the number of the game media acquired by the player in the game machine;

a number storage medium issuing unit for issuing a number storage medium having a number storing portion which stores information representative of the number of game media for the player; and

an adjustment processing unit which, in response to an instruction of adjustment from outside of the apparatus, accepts information representative of the number of game media possessed by the player, which is managed by said number managing unit, so as to output information representative of the number of game media to said number storage medium issuing unit,

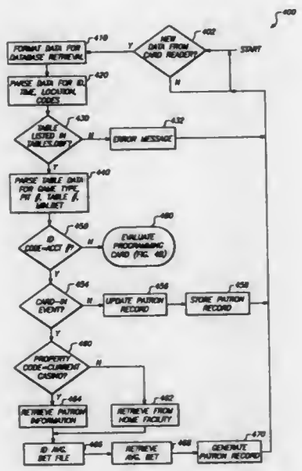
said replenishing processing unit having a control capability to replenish the game media within the number of the game media possessed by the player.

5,613,912

BET TRACKING SYSTEM FOR GAMING TABLES

Timothy J. Slater, South Lake Tahoe, Calif., assignor to Harrah's Club, Reno, Nev.

Filed Apr. 5, 1995, Ser. No. 417,211
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—25 **26 Claims**



1. A system for automatically rating betting activity of a casino patron at a gaming table, the system comprising:

a machine-readable card for storing an identity code assigned to a casino patron;

a card reader associated with a position at a gaming table, for reading the identity code from the machine-readable card when activated by the machine readable card:

a communication system coupled to the card reader for transmitting to a computer system the identity code of the casino patron and a location code associated with the card reader; and

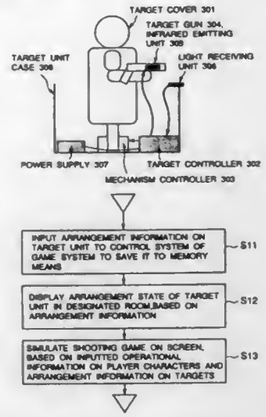
the computer system including a memory having customer and gaming table data bases stored therein, for associating a time code with activation of the card reader and for retrieving information on the casino patron and the gaming table to generate a casino patron betting record based on the identity, location, and time codes.

5,613,913

METHGD FOR DEVELOPING ATTRACTIONS IN A SHOOTING GAME SYSTEM

Shinichi Ikematsu; Hiroshi Kawakami; Satoshi Nakano; Tatsuya Kouno; Keisuke Hiromi, and Masakazu Yoshimoto, all of Ohta-Ku, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 418,029
Claims priority, application Japan, Apr. 6, 1994, 6-090761
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—52 **11 Claims**



1. A method for developing attractions in a shooting game system with which players can experience gun fights between targets and the players themselves by arranging robot targets in an attraction hall, the method for developing attractions in a shooting game system comprising the steps of:

producing various types of said targets by combining fundamental mechanisms, each of which is used for a unit operation;

incorporating unified control equipment and peripherals in said targets to make them a target unit;

embedding said target unit in a target unit case;

forming said target unit case so as to serve as at least one of a partition and a post, thereby fixing a relationship between said target and said at least one of said partition and said post;

arranging said target units in a designated room of said attraction hall, thereby simply developing attractions; and

wherein said unit operations include vertical movement, horizontal movement, tilting, and rotation.

5,613,914

UNIVERSAL COUPLING

Vernon E. Gleasman, Pittsford, and Keith E. Gleasman, Fairport, both of N.Y., assignors to Torvec, Inc., Pittsford, N.Y.

Division of Ser. No. 252,743, Jun. 2, 1994. This application Mar. 24, 1995, Ser. No. 410,235
Int. Cl.[6] F16D *3/18*
U.S. Cl. 464—159 **23 Claims**

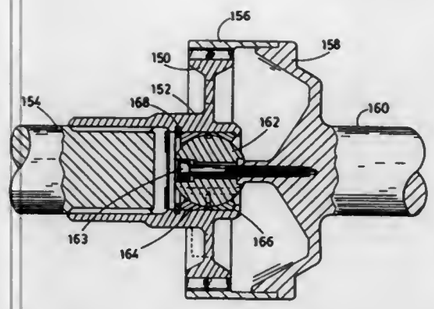
1. A universal coupling for transmitting rotational forces between two elements that are each rotatable about a respective one of two axes variably intersecting over a continuous range from 180° to an angle differing from 180° by a predetermined maximum angle, said coupling comprising:

a single pair of gears having meshing mating teeth, said gear pair including a gear with internal teeth and a gear with external teeth, and each said gear being fixed to a respective one of said elements for rotation therewith;

each of said gears having a respective pitch surface in the form of a respective pitch sphere, said two pitch spheres being concentric and having radii which are substantially identical, and each of said gears having a pitch circle that is, respectively, a great circle on a respective one of said substantially identical pitch spheres so that said pitch circles effectively intersect with each other at two points separated by 180°;

each said mating tooth having two tooth faces formed so that a central portion of a lengthwise surface of each tooth face, when viewed on the respective pitch sphere of said mating tooth, is an arc of a circle; and

when said gears are rotating in a driving and driven relationship, said axes intersect at the center of said concentric pitch spheres throughout said continuous range of angles.

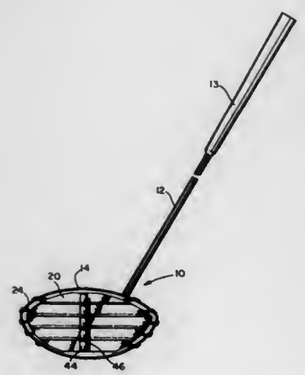


5,613,915

VARIABLE RESISTANCE GOLF TRAINING DEVICE

William L. Van Alen, Jr., 975 Delchester Rd., Newtown Square, Pa. 19073

Filed Mar. 12, 1996, Ser. No. 615,002
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—228 **14 Claims**



1. A variable resistance golf training device comprising:

an elongated shaft;

a frame fixedly connected to the distal end of said shaft;

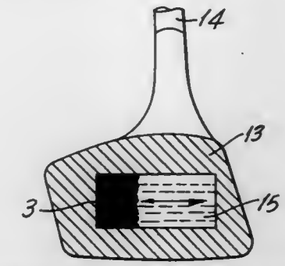
a plurality of longitudinally elongated vanes rotatably mounted to said frame, wherein said vanes are arranged in a spaced parallel array within the frame, and said vanes are incrementally operable between an open position and a closed position to incrementally vary the wind resistance of said golf training device.

5,613,916

SPORTS EQUIPMENT FOR BALL GAME HAVING AN IMPROVED ATTENUATION OF OSCILLATIONS AND KICK-BACK PULSES AND AN INCREASED STRIKING FORCE AND PROCESS FOR MANUFACTURING IT

Roland Sommer, Kronthaler Weg 15-17, D-65824 Schwalbach, Germany

Continuation-in-part of Ser. No. 30,332, May 20, 1993, Pat. No. 5,454,562. This application Aug. 17, 1995, Ser. No. 516,105
Claims priority, application Germany, Jul. 27, 1991, 41 24 958.5; Oct. 23, 1991, 41 34 972.5
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—332 **14 Claims**



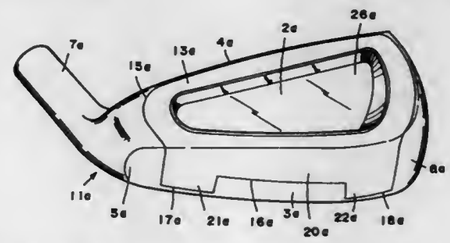
1. A golf club having a ball contact portion and a shaft including a handle portion, comprising at least one chamber filled with one of silicone foam and jelly-like plastic material and arranged in said ball contact portion; freely movable mass including a plurality of freely movable mass particles embedded in said one of foam an jelly-like plastic, the volume of said chamber being very small compared to the interior of said ball contact portion, said freely movable mass being able to move when said golf club is moved into contact with a ball, any vibration of said golf club resulting from said contact being dampened.

5,613,917

GOLF CLUB HEAD WITH PERIPHERAL BALANCE WEIGHTS

Kenji Kobayashi, and Hitoshi Takeda, both of Tsubame, Japan, assignors to K.K. Endo Seisakusho, Japan

Division of Ser. No. 250,431, May 27, 1994. This application Jan. 16, 1996, Ser. No. 584,946
Claims priority, application Japan, May 31, 1993, 5-129627; Jul. 22, 1993, 5-181685; Oct. 4, 1993, 5-248195; Mar. 30, 1994, 6-61178
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—335 **4 Claims**



1. A golf club head comprising:

a head body having a face and a back;

embedding grooves formed along peripheral portions of the face and back of said head body;

two separate balance weights formed of a material denser than that of said head body, comprising: a first balance weight

provided along a peripheral portion of the face of said head body; a second balance weight provided along a peripheral portion of the back of said head body, said balance weights being press-fitted into said embedding grooves,

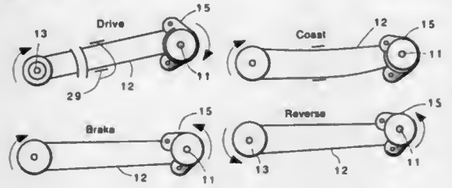
wherein a dimension of said second balance weight in the face-to-back direction is greater than that of said first balance weight on the average.

5,613,918

BIDIRECTIONAL TORQUE RESPONSIVE BELT TENSIONER

Daniel G. Fleischman, 209-A Farnsworth Rd., Waterville, Ohio 43566

Filed Apr. 6, 1995, Ser. No. 418,220
Int. Cl.[6] F16H *7/12*
U.S. Cl. 474—134 **10 Claims**



1. In a transmission system for coupling power from a human rotated drive shaft to a point of utilization, comprising, a driving V-shape pulley secured to said drive shaft, a driven V-shape pulley and output drive shaft at said point of utilization and a flexible endless V-belt extending between said pulleys, the improvement comprising, means responsive to rotation of said human rotated drive shaft for controlling tensioning of said endless flexible V-belt to transmit power to said driven pulley to selectively provide the following functions:

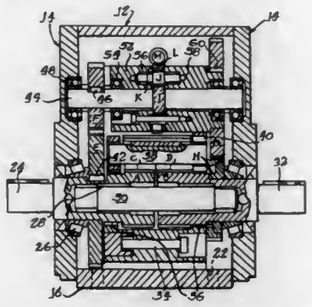
1) rotation of said driven V-shape pulley in a first rotary direction, or
2) rotation of said driven V-shape pulley in a rotary direction reversed to said first rotary direction, or
3) braking of said driven V-shape pulley, or
4) coasting of said driven V-shape pulley, respectively.

5,613,919

ZERO VELOCITY GEAR MESH DIFFERENTIAL

Bertel S. Nelson, 5615 Castelwood Ct., Rockford, Ill. 60118

Filed Jun. 6, 1995, Ser. No. 467,858
Int. Cl.[6] F16H *3/72*
U.S. Cl. 475—7 **9 Claims**



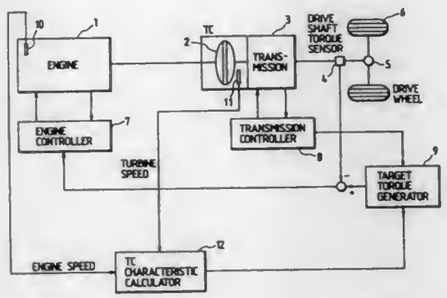
1. A zero velocity gear mesh differential, comprising a driven power input shaft, a pair of meshing power input gears driven by said power input shaft, a power output shaft, a pair of meshing power driven gears driven from said power input gears, said power output shaft tending to turn at the speed of said input shaft, a pair of control gears driven by said input shaft, the second of said control gears being fixed on a control shaft and rotating therewith, a sun gear fixed on said control shaft, a carrier, at least one planet gear carried by said carrier and meshing with said sun gear, an internal gear supported on said planet gear, a worm gear on said internal gear, a worm controlling said worm gear, a gear fixed to said carrier, a main carrier carrying at least one of said power input gears and one of said power driven gears and rotatable about the first of said power driven gears and the first of said power input gear, and a gear fixed to said main carrier and meshing with first said gear fixed to said carrier.

5,613,920

TORQUE FEEDBACK SHIFT CONTROL DEVICE AND METHOD

Shigeo Uno, Tokyo; Masahiko Ibamoto, Ibaraki; Mitsuhiro Masuda, Ibaraki; Kazuhiko Sato, Ibaraki; Susumu Sato, Ibaraki; Hiroshi Kuroiwa, Ibaraki, and Mitsuyoshi Okada, Ibaraki, all of Japan, assignors to Hitachi, Ltd., and Hitachi Automotive Engineering and Co., Ltd., both of Japan

Filed Feb. 14, 1995, Ser. No. 388,578
Claims priority, application Japan, Feb. 14, 1994, 6-017255
Int. Cl.[6] F16H *59/00*
U.S. Cl. 477—109 **18 Claims**



1. A torque feedback shift control device for a vehicle comprising:

an engine for generating an engine torque;

an automatic transmission for changing an output speed of said engine and for generating an output torque;

a transmission controller for controlling shifting of gears in said automatic transmission and for generating a shifting signal;

a target torque generator for generating a signal of a target torque pattern for shifting of said automatic transmission, in response to said shifting signal from said transmission controller; and

an engine controller for performing feedback control of said engine torque so that said output torque approaches said target torque pattern in downshifting operation of said automatic transmission;

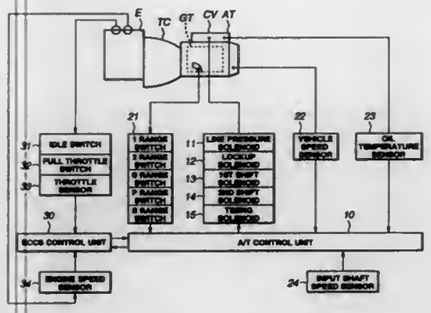
wherein said target torque generator generates said signal of said target torque pattern according to a torque ratio of said engine and automatic transmission, and having a start value corresponding to said output torque of said automatic transmission at or before starting of said torque feedback control.

5,613,921

GEAR SHIFT CONTROL APPARATUS

Hideharu Sugiyama; Ikuo Hirose, and Yoshifumi Fujita, all of Shizuoka, Japan, assignors to Jatco Corporation, Fuji, Japan

Filed Nov. 29, 1995, Ser. No. 564,802
Claims priority, application Japan, Dec. 1, 1994, 6-298126
Int. Cl.[6] F16H *61/16*
U.S. Cl. 477—125 **13 Claims**



1. A gear shift control apparatus for use in an automotive vehicle including an internal combustion engine and an automatic transmission having an input shaft, an output shaft and a friction element operable on a hydraulic pressure applied thereto in an engaged and disengaged state, the apparatus comprising:

first sensor means sensitive to a speed of rotation of the transmission input shaft for producing a first sensor signal indicative of a sensed input shaft speed;

second sensor means sensitive to a speed of rotation of the transmission output shaft for producing a second sensor signal indicative of a sensed output shaft speed;

third sensor means sensitive to an engine load for producing a third sensor signal indicative of a sensed engine load; and

a control unit couple to the first, second and third sensor means for performing a shift change control of changing the hydraulic pressure to produce a shift change according to a predetermined shift schedule, the control unit including means for calculating a gear ratio obtained in the automatic transmission based on the sensed input and output shaft speeds, means responsive to one of a first change to one of highest and lowest gears and a second change from one of the highest and lowest gears for performing a transient hydraulic pressure control of changing the hydraulic pressure from the first level to the second level to change the friction element state so as to effect a shift change when the calculated gear ratio reaches a reference gear ratio, means for interrupting the transient hydraulic pressure control and inhibiting a change to the highest and/or lowest gear when at least one of the first sensor, the second sensor and the gear ratio calculating means is subject to failure.

5,613,922

MULTIPURPOSE ATHLETIC TRAINING APPARATUS

Hua-Lu Hsiang, No. 520-1, Sec. 2, Hai-Shan Rd.,, Hai-Hun Tsun, Lu-Chu Hsiang, Tao-Yuan Hsien, Taiwan

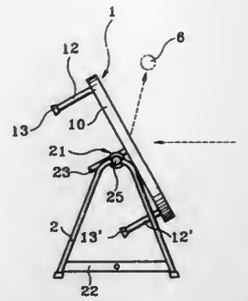
Filed Aug. 7, 1995, Ser. No. 511,857
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—435 **1 Claim**

1. A multipurpose athletic training kit apparatus comprising in combination:

a) a pair of stands;

b) means for detachably securing the stands together at a selected one of plural spacings;

c) a trampoline including a plurality of supporting legs; and



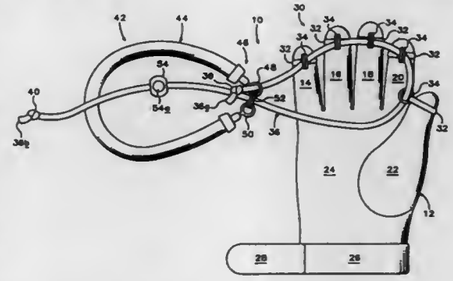
d) a fastening device mounted on each stand, each fastening device including a stationary toothed wheel, a movable toothed wheel in detachable engagement with the stationary toothed wheel, a socket mounted to the movable toothed wheel, means for detachably securing one leg of the trampoline in the socket, and means for maintaining the movable toothed wheel in a selected position relative to the stationary toothed wheel to position the socket and the leg at a desired angular disposition, wherein said supporting legs are detachably mounted in respective fastening devices of said stands for permitting the trampoline to be disposed between a horizontal position in which the trampoline is used as a table, and a tilted position in which the trampoline is used as a rebound apparatus for rebounding balls thrown against it.

5,613,923

REPETITIVE STRAIN INJURY THERAPY DEVICE

Jeff Anliker, 19740 SW. Southview, Aloha, Oreg. 97007

Filed Apr. 21, 1995, Ser. No. 426,285
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—48 **12 Claims**



1. An exercise device for strengthening finger, hand, wrist and forearm muscles comprising:

an attachment mechanism located adjacent the finger tips and thumb tip of the anterior surface of a user's hand, wherein said attachment mechanism includes a plurality of bands constructed and arranged to encircle each of the user's fingers and thumb, and which further includes a plurality of loops, wherein each of said loops is affixed to one of said bands;

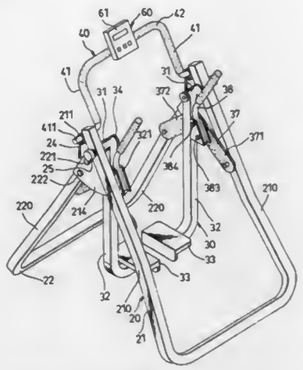
a first resilient member which is elastic and which is attached to said attachment mechanism, and which biases the user's fingers and thumb to a flexed, adducted condition, and wherein said first resilient member is trained through each of said loops on said attachment mechanism;

an anchor mechanism located at a fixed point relative to the user's wrist and attached to said first resilient member, and which biases the user's wrist to a flexed condition;

wherein, as the user's fingers and thumb are wrist are extended and the user's fingers and abducted, the user encounters resistance thereby exercising the extensor muscles of the

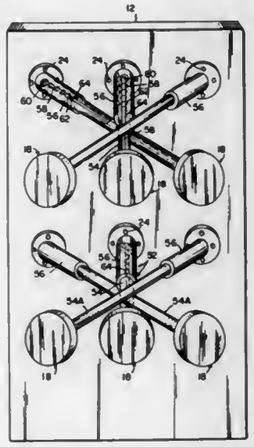
user's fingers, hand, and wrist and the abductor muscles of the user's fingers and thumb.

5,613,924
BODY EXERCISER
Sunny Lee, No. 257-8, Chung-Cheng Rd., Tsao-Tun Chen, Nan-Tou Hsien, Taiwan
Continuation-in-part of Ser. No. 628,888, Apr. 5, 1996. This application Jun. 11, 1996, Ser. No. 661,449
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 **8 Claims**



1. A body exerciser, comprising:
a frame body having U-shaped first and second support frames, each of said first and second support frames having a spaced pair of upwardly extending branches, each of said branches of said first support frame having an upper section which is formed with a pair of spaced lugs, a hollow pivot tube which extends transversely through and is connected integrally to said upper section below said spaced lugs, and an engaging portion connected said upper section below said pivot tube, each of said pivot tube having a first end and a second end which has two diametrically opposite notches formed thereon, said second ends of said pivot tubes being extended toward one another, said branches of said second support frame having two upper ends, each of said upper ends being connected pivotally to a respective one of said engaging portions of said first support frame;
means for selectively arresting pivoting movement of said second support frame relative to said first support frame;
a pair of walking units, each having an L-shaped member with upper and lower ends, a sleeve member connected transversely to said upper end of said L-shaped member, a handle connected pivotally adjacent to said upper end of said L-shaped member, means for arresting pivoting movement of said handle relative to said L-shaped member, and a foot-supporting plate connected to said lower end of said L-shaped member, each of said sleeve member being journalled on said pivot tube via a respective one of said second ends of said pivot tubes and having first and second ends, and a hollow cylindrical member with first and second ends, said first end of each of said cylindrical members having two axial projections which extend into a respective one of said second ends of said sleeve members so as to engage said notches of the respective one of said second ends of said pivot tubes, each of said cylindrical members has an annular flange which extends radially from an internal face thereof, thereby forming a counterbore adjacent to a corresponding one of said second ends of said cylindrical members;
two locking bolts, each having a head portion and a threaded shaft extending from said head portion, said head portion of each said locking bolts being received nonrotatably in a respective one of said counterbores of said cylindrical members, said threaded shaft of each of said locking bolts extending through a respective one of said cylindrical members and having a distal end which extends out of a respective one of said pivot tubes, said distal end of each of said threaded shafts of said locking bolts engaging a nut member in order to interconnect pivotally a corresponding one of said walking units and a corresponding one of said branches of said first support frame, thereby permitting a back and forth movement of said walking units relative to said first support frame, said first end of each of said sleeve members abutting against the corresponding one of said branches of said first support frame when a corresponding one of said nut members is tightened to abut against a respective one said first ends of said pivot tubes;
a resistant device interconnecting said first and second support frames and said walk units in order to provide a resistant force against pivoting movement of said walking units relative to said first and second support frames;
a U-shaped support member having a pair of arm portions, each of said arm portions having a bent distal end which is clamped rotatably between said pair of spaced lugs of a respective one of said branches of said first support frame;
means for selectively arresting pivoting movement of said U-shaped support member relative to said first support frame; and
means for counting the number of said back and forth pivoting movement of said walking units relative to said first support member.

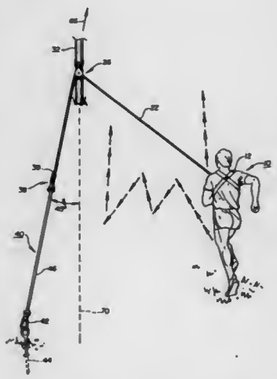
5,613,925
PUNCHING DEVICE
Gregory G. Miasserian, 26 Beacon St., Apt. 37E, Burlington, Mass. 01803
Filed Nov. 4, 1994, Ser. No. 334,419
Int. Cl.[6] A63B *69/34*
U.S. Cl. 482—83 **3 Claims**



1. A punching device for punching practice to sharpen skills of a user in punching while avoiding a component of the punching device, said punching device comprising:
an upstanding flat board;
six pad devices attached to an upper front portion of the flat board in two horizontal groups of three pad devices, where one group is horizontally attached at a distance below the other group;
wherein each pad device includes a pad portion, an inner cover device and an outer cover device that is attached to the flat board;

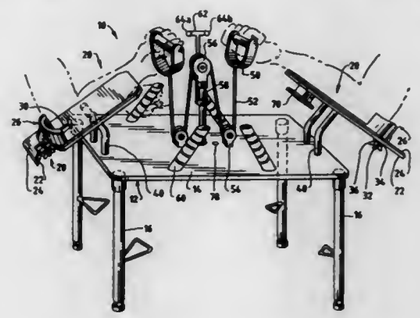
wherein the pad portion is attached to the inner cover device which is attached within the outer cover device;
wherein the inner cover device of a middle pad device of each grouping is arranged so as to be substantially perpendicular to the flat board; and
wherein the inner cover device of each side pad devices of each grouping is arranged at an angle to the flat board and is of a predetermined length so the inner cover device of each side pad device extends from one side to the other side of the middle pad device.

5,613,926
RESISTANCE AND ASSISTANCE PHYSICAL TRAINING DEVICE
Kyron C. W. Michaelson, 8337 Penn Ave. So., Bloomington, Minn. 55431
Division of Ser. No. 356,529, Dec. 15, 1994. This application May 2, 1996, Ser. No. 641,683
Int. Cl.[6] A63B *21/12*
U.S. Cl. 482—121 **6 Claims**



1. An improved method of using an assistance and resistance training apparatus particularly for use by an athlete moving by running or jogging in an exercise area further comprises the steps of:
anchoring a first end of an elongated elastic resistance and assistance member to a first point outside said exercise area, said elastic resistance and assistance member having an unstretched length and the capacity to be stretched to a stretch length under an applied stretch force such a characteristic that stretch force increases as stretch length increases until an elastic resistance limit iS reached and backlash of the stretched elastic resistance and assistance member may occur upon sudden release of the stretch force thereof;
connecting a second end of said elastic resistance and assistance member to a safety stop and to a first end of an inelastic rope having a length that exceeds the unstretched length of said elastic resistance and assistance member;
extending the connected inelastic rope and elastic resistance and assistance member in a first direction that is away from said exercise area;
passing an intermediate portion of said inelastic rope extending in said first direction through a rope guiding member that is sized to permit passage of said rope therethrough during the stretching of said elastic member and to prevent passage of said safety stop thereto and that changes the direction of extension of said inelastic rope into the exercise area;
restraining said rope guiding member at a stationary position in relation to said exercise area and directing the extension of the intermediate portion of said inelastic rope into said exercise area in a range of direction other than said first direction; and
attaching a second end of said inelastic rope to the athlete's body to create a resistance force on the athlete as the athlete moves away from said stationary position to an exercise tension position in said exercise area and increases the stretch length of said elastic resistance and assistance member and to create an assistance force on the athlete as the athlete moves from the exercise tension position toward the stationary position anal decreases the stretch length.

5,613,927
WRIST WRESTLING AND EXERCISE APPARATUS
Alex M. Rothacker, 1460 E. Belvidere Rd., Grayslake, Ill. 60030
Filed Jan. 31, 1996, Ser. No. 594,687
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—123 **14 Claims**



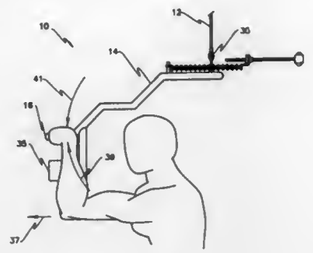
1. A wrist wrestling apparatus, comprising:
a base;
a first forearm support disposed on said base, said first forearm support having a first support member adapted to support a forearm, a first elbow support coupled to said first support member, and means for adjusting the position of said first elbow support along said first support member, said first support member being inclined at an angle of between about 10° and about 70° with respect to a horizontal plane;
a second forearm support disposed on said base, said second forearm support having a second support member adapted to support a forearm, a second elbow support coupled to said second support member, and means for adjusting the position of said second elbow support along said second support member, said second support member being inclined at an angle of between about 10° and about 70° with respect to a horizontal plane;
a first handle associated with said first forearm support, said first handle being adapted to be gripped by a hand of a first person and being movable relative to said first forearm support;
a second handle associated with said second forearm support, said second handle being adapted to be gripped by a hand of a second person and being movable relative to said second forearm support;
means for operatively interconnecting said first and second handles so that displacement of said first handle relative to said first forearm support causes displacement of said second handle relative to said second forearm support;
a first detector associated with said first forearm support for detecting the position of the hand of the first person;
a second detector associated with said second forearm support for detecting the position of the hand of the second person;
a first visual indicator operatively coupled to said first detector for generating a visual signal indicating that the hand of the first person has reached a predetermined position; and
a second visual indicator operatively coupled to said second detector for generating a visual signal indicating that the hand of the second person has reached a predetermined position.

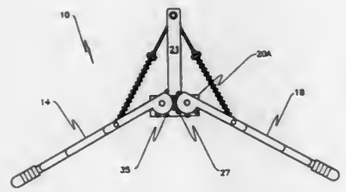
5,613,928

JOINTED BAR FOR AN EXERCISE MACHINE

James A. Laudone, 13 Hunters Rd., Norwich, Conn. 06360

Continuation-in-part of Ser. No. 287,401, Aug. 8, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,472
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—139 13 Claims





1. An exercise bar for attachment to an exercise machine having a weighted cable, said exercise bar engagable with the weighted cable, and comprising;

a right handle member and a left handle member;

intermeshing gears mounted on said exercise bar, including a first gear fixed to said right handle member and a second gear fixed to said left handle member;

hinge means, including at least one hinge, said hinge means pivotally connecting said right handle member and said left handle member to said exercise bar, said gears constraining said right handle member and said left handle member to pivot to the same degree; and

an eye connected to said exercise bar for engaging the weighted cable.

5,613,929

MACHINE TOOL WITH BAR-SPINDLE AND DIN STANDARD TOOLHOLDER CHANGER

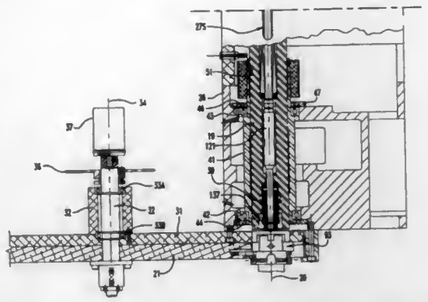
Jack L. Bayer, Phoenix, Ariz., assignor to Hurco Companies, Inc., Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 478,898
Int. Cl.[6] B23Q *3/157;* B23C *5/26;* B23B *47/18*
U.S. Cl. 483—1 36 Claims

29. A method of moving a workpiece treating tool mounted in a toolholder gripped in the spindle of a machining center which has a tool storage magazine with a plurality of toolholders therein, the machining center having a workpiece holder position, the method comprising the steps of:

linearly driving a non-rotating screw and thereby sliding the spindle longitudinally in a direction retracting the tool away from the workpiece holder position until the toolholder partially extends through a receiver in the tool storage magazine;

pressurizing an actuator device associated with the non-rotating screw and the spindle to release the grip on the toolholder; and



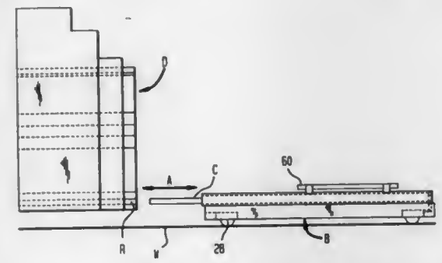
further retracting the spindle into a rest position enabling the storage magazine to move a different tool holder into position of registry with the spindle.

5,613,930

DEVICE FOR EXTRACTING, STORING AND HANDLING DRILL BIT CASSETTES

David C. Chrisman, Sandston, and Gary J. Emrhein, Midlothian, both of Va., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Jun. 30, 1995, Ser. No. 497,120
Int. Cl.[6] B23Q *3/155*
U.S. Cl. 483—1 19 Claims



1. A method of transferring at least one drill bit cassette between a drill press and a device for storing and handling said at least one drill bit cassette, said device including a channel member having a height, two ends and a length extending between said two ends, at least one of said two ends being dimensioned to slidingly receive said at least one drill bit cassette, the method comprising:

aligning one of said two ends of said channel member with a receptacle in a drill press;

engaging said one of said two ends with said receptacle; and

transferring said at least one drill bit cassette between said drill press and said device by at least one of sliding said at least one drill bit cassette from said receptacle into said channel member and pushing said at least one cassette from said channel member into said receptacle.

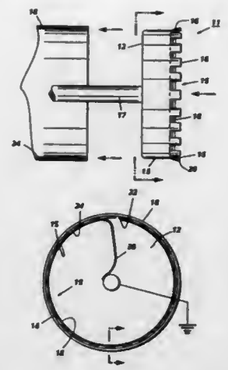
5,613,931

SEGMENTED END BELL

David J. Maty, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 358,436
Int. Cl.[6] G03G *21/00*
U.S. Cl. 492—47 12 Claims

1. A tapered pot-like hub comprising a bottom section and a rim sharing a common axis, said rim comprising a plurality of circumferentially spaced resilient fingers extending at a slight incline



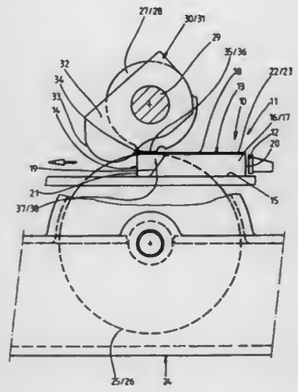
outwardly from said axis away from the bottom section, said fingers having inner surfaces facing said axis and outer surfaces facing away from said axis, and an electrically conductive resilient loop spring comprising a first end, a second end and an arcuate intermediate section between said first end and said second end, said first end extending outwardly away from said axis between adjacent spaced resilient fingers past said outer surfaces of adjacent fingers, said arcuate intermediate section extending around said inner surfaces of said fingers to form an arc in pressure contact with said inner surface of said fingers and said second end is adjacent said axis for contact with a shaft to be inserted along said axis.

5,613,932

APPARATUS FOR TRANSPORTING HINGE-LID BOXES FOR CIGARETTES

Heinz Focke, and Martin Stiller, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Feb. 14, 1995, Ser. No. 388,420
Claims priority, application Germany, Feb. 15, 1994, 44 04 721.5
Int. Cl.[6] B31B *1/62*
U.S. Cl. 493—128 6 Claims



1. An apparatus for transporting, in a conveying direction, hinge-lid packs (**10**), each having a lid (**14**) and a pack part (**13**), in a region of a gluing station, wherein:

a) the lid (**14**) has a lid front wall, a lid rear wall, a lid top wall (**21**) and two lid side walls (**37, 38**); the pack part (**13**) has a pack front wall, a pack rear wall, a pack bottom wall (**20**) and two pack side walls (**16, 17**); and the lid (**14**) and the pack part (**13**) are pivotably connected to one another along a hinge line adjacent the lid rear wall and the pack rear wall;

b) said apparatus comprises a pack conveyor (**11**) for transporting the hinge-lid packs in flatly extended position with a longitudinal dimension of each pack extending in the conveying direction, so that the lid top wall (**21**) and the pack bottom wall (**20**) extend transversely relative to the conveying direction;

c) said pack conveyor (**11**) comprises a plurality of drivers (**12**) for conveying the hinge-lid packs, said drivers (**12**), for forwarding the hinge-lid packs, resting against the bottom pack wall (**20**) which faces upstream relative to the conveying direction;

d) said apparatus further comprises a plurality of restraining holders (**30, 31**) for producing a compressive force for retaining the lid (**14**) in a closed position; and

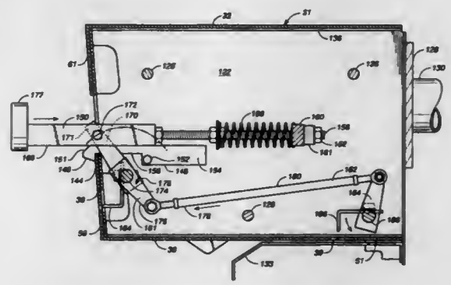
e) the restraining holders (**30, 31**) are normally located outside a path of motion of each hinge-lid pack, said apparatus further comprising moving means for temporarily moving the restraining holders (**30, 31**) into the path of motion for exerting pressure on the lid top wall (**21**) which faces downstream relative to the conveying direction, such that the restraining holders (**30, 31**) rest against the lid top wall (**21**) when the lid (**14**) is closed during a conveying interval of each pack in the region of the gluing station.

5,613,933

SHIPPING AND DISPLAY BOX FORMER

Chester J. Pierce, Jr., Pioneer; Ronald E. Heiskell, Tracy, and Ezra E. Theys, San Mateo, all of Calif., assignors to Advanced Container Corporation, Pleasanton, Calif.

Continuation-in-part of Ser. No. 192,108, Feb. 4, 1994, abandoned. This application Oct. 21, 1994, Ser. No. 327,669
Int. Cl.[6] B31B *1/28;1/52*
U.S. Cl. 493—175 10 Claims



8. An apparatus for forming a shipping and display box of the type having diverter tabs that extend outwardly from the box walls, said forming apparatus comprising:

a guide plate for supporting a blank used for forming the shipping and display box;

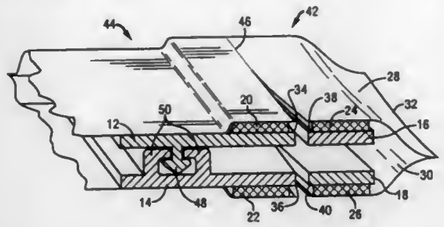
a catcher plate used for holding the blank on the forming apparatus;

a first set of diverter tab levers for extending a first set of diverter tabs outwardly from a first box wall;

a second set of diverter tab levers joined to the first set of diverter tab levers by an actuator linkage for extending a second set of diverter tabs outwardly from a second box wall; and

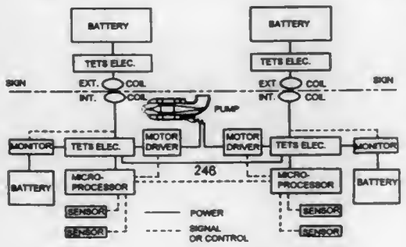
an actuator joined to the first set of diverter tab levers by an actuator lever for urging the first set of diverter tab levers against the first set of diverter tabs and the second set of diverter tab levers against the second set of diverter tabs, the actuator allows the catcher plate to be released so that the blank can be removed from the forming apparatus.

5,613,934
METHOD OF FORMING A TEAR GUIDE ARRANGEMENT
Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.
Division of Ser. No. 501,221, Jul. 11, 1995, Pat. No. 5,552,202. This application Apr. 4, 1996, Ser. No. 627,539
Int. Cl.[6] B31B *1/90*
U.S. Cl. 493—214 **5 Claims**



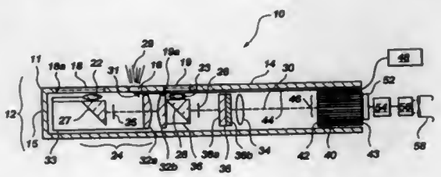
1. A method of forming a tear guide arrangement to be secured between first and second opposing films of a package, said method comprising the steps of:
forming first and second opposing base strips adapted to be disposed between the first and second films and adapted for attachment to the respective first and second films, said first base strip having upper and lower sides and said second base strip having upper and lower side, said first and second base strips being composed of a first polymeric material;
forming first and second opposing tear guide strips disposed generally parallel to and generally co-planar with said respective first and second base strips, said first and second tear guide strips being detachably connected to said upper sides of said respective first and second base strips to form respective breakable bonds, said first and second tear guide strips being composed of a second polymeric material which is stiffer than said first polymeric material; and
forming first and second sealant strips along outer surfaces of said respective first and second tear guide strips, said first and second sealant strips being adapted to firmly attach said first and second tear guide strips to the respective first and second films.

5,613,935
HIGH RELIABILITY CARDIAC ASSIST SYSTEM
Robert Jarvik, 124 W. 60th St., New York, N.Y. 10023
Filed Dec. 16, 1994, Ser. No. 357,456
Int. Cl.[6] A61F *1/24*
U.S. Cl. 600—16 **36 Claims**



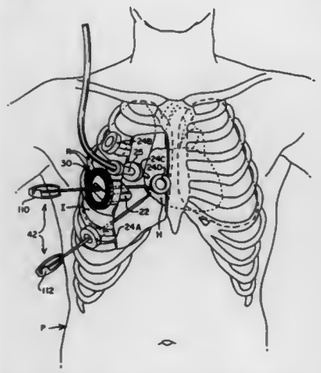
1. A high reliability blood pumping system comprising:
a. an electric motor having a single rotor;
b. blood pumping means actuated by the single rotor of the electric motor;
c. electric motor armature means having first and second sets of motor coils configured such that either set of coil provides sufficient electromagnetic force to rotate said rotor and actuate said blood pumping means;
d. first and second electronic power systems to respectively supply electrical energy to said first and second sets of motor coils with the proper communication timing, said first and second power systems respectively wired to said first and second sets of motor coils such that power to rotate said rotor and operate said blood pumping means may be provided by either of said first and second power systems and associated set of motor coils, wherein in the event of failure of either set of motor coils or power systems, said blood pumping means will continue to run driven by the remaining set of motor coils or power system.

5,613,936
STEREO LAPAROSCOPE APPARATUS
Robert Czarnek; Michael A. Saverino, and Jack Kolff, all of Johnstown, Pa., assignors to Concurrent Technologies Corp., Johnstown, Pa.
Filed Feb. 22, 1995, Ser. No. 392,094
Int. Cl.[6] A61B *1/00;1/313*
U.S. Cl. 600—166 **29 Claims**



26. A stereo laparoscope for producing a stereoscopic optical image of an intracorporeal region external to the laparoscope comprising:
a hollow elongate casing having an axial direction;
means for illuminating the intracorporeal region to thereby cause said region to reflect light;
a plurality of observation windows disposed in the casing for receiving light reflected from the intracorporeal region to thereby provide left and right points of view of said region;
an image guide disposed within the casing and having an image-receiving end for receiving and transmitting optical images; and
light imaging means disposed within the casing for processing the light received from the observation windows into left and right optical images of the intracorporeal region and causing said optical images to be received by the image guide to permit said image guide to transmit said left and right optical images to thereby produce a stereoscopic optical image of said region, said light imaging means including first and second reflective light-receiving means for receiving and reflecting light received from the windows along a common light path, wherein said first and second reflective light-receiving means and the image-receiving end of the image guide are all positioned within the casing along a common, linear line of alignment.

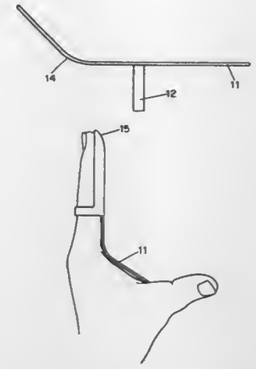
5,613,937
METHOD OF RETRACTING HEART TISSUE IN CLOSED-CHEST HEART SURGERY USING ENDOSCOPIC RETRACTION
Michi E. Garrison, Belmont, and Sean C. Daniel, San Francisco, both of Calif., assignors to Heartport, Inc., Redwood City, Calif.
Continuation-in-part of Ser. No. 163,241, Dec. 6, 1993, Pat. No. 5,571,215, which is a continuation-in-part of Ser. No. 23,778, Feb. 22, 1993, Pat. No. 5,452,733. This application Aug. 23, 1994, Ser. No. 294,454
Int. Cl.[6] A61B *1/22*
U.S. Cl. 600—201 **21 Claims**



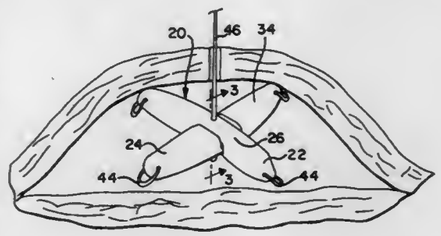
1. A method of retracting an incised opening in a wall of a chamber in a patient's heart, the method comprising the steps of:
introducing a tissue supporting member, releasably connected directly to an introducer, into the patient's thoracic cavity through a first percutaneous intercostal penetration, within a first intercostal space between two adjacent ribs, the tissue supporting member having a contact surface with a first length and a first width;
introducing a shaft having a longitudinal axis through a second percutaneous intercostal penetration, within a second intercostal space between two adjacent ribs, the shaft having a diameter smaller than the first width and the first length;
coupling the tissue supporting member to the shaft within the patient's thoracic cavity while holding the tissue supporting member with the introducer;
positioning the tissue supporting member within an incised opening in a chamber wall of the patient's heart;
manipulating said shaft from outside the patient's chest to position the contact surface of the tissue support member into supportive contact with the chamber wall; and
applying a force to the shaft to retract the chamber wall thereby enlarging the opening.

5,613,938
DIGITAL RETRACTOR
Susan Kaiser; Jill M. Rabin, and Phyllis A. Shaw, all of New York, N.Y., assignors to Mount Sinai School of Medicine of The City University of New York, New York, N.Y.
Filed May 25, 1995, Ser. No. 450,629
Int. Cl.[6] A61B *1/22*
U.S. Cl. 600—201 **9 Claims**

1. A method of performing a surgical procedure on the abdomen of a patient, said method including the step of providing a retractor, said retractor comprising an elongated base plate having a proximal end, a distal end, lateral edges extending between the proximal and distal ends, and an upper surface adapted to fit against at least the palmar surface of the surgeon's index finger, and at least one ring attached to said surface of the base plate, said method further including the steps of inserting the index finger of a surgeon's non-dominant hand through said ring such that the upper surface of the retractor fits against said palmar surface, inserting the hand and retractor between the abdominal wall fascia and the viscera and elevating the hand so as to cause the retractor to be pressed against the underside of the viscera, thereby using the retractor to retract and position tissue of a patient during said surgical procedure.



5,613,939
ABDOMINAL WALL LIFT EMPLOYING INTERCONNECTING BAR MEMBERS
Stephen J. Failla, Cincinnati, Ohio, assignor to Ethicon, Inc., Cincinnati, Ohio
Division of Ser. No. 273,452, Jul. 11, 1994, Pat. No. 5,547,458. This application Jun. 5, 1995, Ser. No. 461,495
Int. Cl.[6] A61B *1/22*
U.S. Cl. 600—201 **5 Claims**

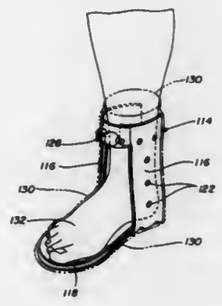


1. An abdominal wall lift device, comprising:
a first elongated bar member having an upper surface and a lower surface, said first bar member having a generally transverse recess portion formed into said lower surface thereof that has a through-hole opening formed therethrough;
a second elongated bar member having an upper surface and a lower surface, said second bar member having a generally transverse recess portion formed into said upper surface thereof; and
a flexible suture connected at one end thereof to said second bar member at said recess formed therein, said suture extending through said opening formed in said first bar member so as to permit said first and second bar members to move between first positions wherein said first and second bar members are generally in an end-to-end orientation to facilitate entry into an abdominal cavity and second positions wherein said recess portion of said first bar member is received within said recess portion of said second bar member positioning said first and second bar members are in substantially the same plane within an abdominal cavity.

5,613,940
SYNTHESIZING ARRAY FOR THREE-DIMENSIONAL SOUND FIELD SPECIFICATION
Anthony J. Romano, 521 E St., NE., Washington, D.C. 20002
Continuation of Ser. No. 671,464, Mar. 19, 1991. This application Jan. 22, 1993, Ser. No. 7,964
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 28 Claims

1. A sound wave generating apparatus comprising:
sound wave generating means for generating sound waves for transmission into a sound wave transmission medium, said sound wave generating means comprising a plurality of transducers;
means responsive to sound waves transmitted into said sound wave transmission medium for determining a Green's Function characteristic of said sound wave transmission medium; and
drive means for independently driving each of said plurality of transducers according to a plurality of predetermined inputs which are based on and the determined Green's Function characteristic of said sound wave transmission medium.

5,613,941
JOINT SUPPORT APPARATUS
Randall Prengler, Dallas, Tex., assignor to Innovative Footwear Corporation, Dallas, Tex.
Division of Ser. No. 164,059, Dec. 8, 1993, Pat. No. 5,451,201, which is a continuation-in-part of Ser. No. 949,973, Sep. 24, 1992, abandoned. This application Jun. 12, 1995, Ser. No. 489,548
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—13 4 Claims

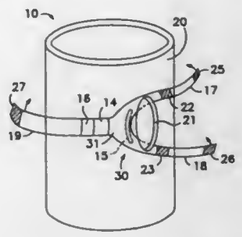


1. A brace for laterally supporting and restricting movement of an ankle of a user, the brace comprising:
an inflatable bladder including a central portion having a shape generally conforming to the shape of the sole of a foot including a heel portion for cushioning a user's foot and at least a pair of elongated stay portions extending radially from the heel portion such that the stay portions are bent upwardly to provide support to inner and outer sides of a user's ankle; and
a flexible, resilient sock member integrally formed with and surrounding the inflatable bladder for holding the bladder on a user's foot.

5,613,942
ADHESIVE SHEET MATERIAL SUITABLE FOR USE ON WET SURFACES
Donald H. Lucast, North St. Paul; Clyde D. Calhoun, Stillwater; John E. Riedel, Hugo, and Charles W. Taylor, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 4, 1994, Ser. No. 317,854
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—52 14 Claims

1. An adhesive sheet material, comprising:
a porous backing with opposing sides, which is made of fibers which absorb less than about 4 percent by weight water, and
a water-insoluble, pressure sensitive adhesive which is capable of absorbing no more than about 10 percent by weight water, and which adhesive is discontinuously coated on the backing to provide areas of the pressure sensitive adhesive interspersed with areas of uncoated backing, the areas of backing which are not coated by adhesive being between about 20 and 70 percent of the area of the backing; wherein the porosity of the backing is sufficient to provide the adhesive sheet material with a Gurley value of about 0 to 15 seconds per 100cc of air, and wherein said adhesive sheet material is permeable to liquid water.

5,613,943
DYNAMIC PATELLA BRACE WITH FLOATING PATELLA PAD
Pasquale M. Palumbo, McLean, Va., assignor to Dynorthotics LP, Vienna, Va.
Filed Jan. 26, 1995, Ser. No. 378,606
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—62 31 Claims



1. A dynamic patella brace, comprising:
a patella bracing strap including an anchor, a patella bracing pad and first and second arm members extending from said strap, first ends of said first and second arm members being adapted to be wrapped about a knee of a user to apply a dynamic resultant force in the medial direction to the patella via the patella bracing pad throughout the complete functional physiologic range of flexion and movement of the knee when the brace is in use;
said anchor being disposed a sufficient distance laterally adjacent said patella bracing pad so as to maintain the patella bracing pad positioned laterally adjacent to the patella throughout the complete functional physiologic range of flexion and movement of the knee when the brace is in use;
said strap further including an intermediate portion disposed between the anchor and the patella bracing pad, said intermediate portion being of sufficient length to allow said patella bracing pad to float with movement of the knee and to be dynamically repositioned depending upon the amount of flexion and movement of the knee when the brace is in use; and
an elastomeric sleeve having an aperture, said sleeve being adapted to have the knee positioned substantially within the aperture, and further including a first fastener positioned at a first predetermined location on said sleeve for enabling said anchor to be attached to said sleeve when the brace is in use.

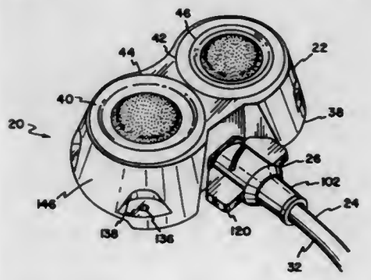
23. In a dynamic patella brace having an elastomeric sleeve with an aperture adapted to expose the knee, and a patella bracing pad for applying medial pressure to the patella, the improvement comprising means for freely floatingly mounting said patella bracing pad on said sleeve laterally of said aperture so that said patella bracing pad moves relative to said sleeve in vertical directions and automatically tracks vertical movement of said patella throughout the functional physiological range of flexion and movement of the knee while applying said medial pressure to said patella.

30. A method of dynamically stabilizing the patella of a human knee during flexion movement comprising:
a) enveloping said human knee with a compressive elastomeric sleeve having an aperture adapted to minimize compressive pressure on the patella.
b) mounting a patella bracing pad on said sleeve so that said bracing pad freely floats relative to said compressive elastomeric sleeve and automatically tracks vertical movement of said patella throughout the functional physical range of flexion and movement of said knee while applying medial pressure to said patella.

5,613,944
PLASMA-LIKE SUBSTANCE
Paul E. Segall; Harold D. Waitz; Hal Sternberg, and Judith M. Segall, all of Berkeley, Calif., assignors to BioTime, Inc., Berkeley, Calif.
Division of Ser. No. 133,527, Oct. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 71,533, Jun. 4, 1993, Pat. No. 5,407,428. This application Jun. 5, 1995, Ser. No. 462,270
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—28 20 Claims

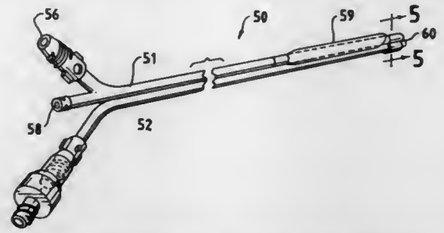
1. A method for obtaining from a donor subject organs and tissues having reduced antigenicity or potential for causing graft-versus-host disease comprising perfusing said subject with a cold sterile aqueous solution comprising a plasma like substance comprising at least two water soluble oncotic agents one of which is a water soluble polysaccharide oncotic agent and one of which is serum albumin and at least one cold protecting agent, and removing said tissues and organs.

5,613,945
PORTAL ASSEMBLY
Qingsheng Cai, St. Paul; William L. Beling, New Brighton; Jerald Glantz, Lake Elmo, and Theodore A. Johnson, St. Paul, all of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.
Continuation of Ser. No. 184,655, Jan. 21, 1994. This application Jun. 7, 1995, Ser. No. 475,979
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 11 Claims



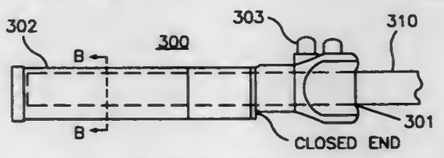
1. A portal assembly for connecting to a catheter comprising:
a port with a first resealable septum;
a first tube extending from the port, the first tube sized to be received inside the catheter;
wherein the port defines a plurality of suture holes, each suture hole having a first cylindrical passage, each suture hole having a lead-in sized larger than the first cylindrical passage and tapering to the first cylindrical passage; and
wherein the port further defines a plurality of depressions, each depression positioned adjacent one of the suture holes at an end opposite to an end defining the lead-in of each suture hole.

5,613,946
BALLOON PUMP ANGIOPLASTY SYSTEM AND METHOD OF USE
Louis S. McKeever, 312 Blackstone, La Grange, Ill. 60525
Filed May 4, 1995, Ser. No. 434,564
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 6 Claims



1. A balloon pump angioplasty system for use at a single femoral puncture site comprising:
an intra aortic balloon pump catheter consisting of a tube having a proximal and distal end, at least one lumen disposed within said tube, and an expandable balloon portion located at said distal end of said tube;
said lumen in communication with said balloon;
a coronary angioplasty guiding catheter that is releasably connected to said intra aortic balloon pump catheter whereby said catheters are simultaneously insert able and said guiding catheter being further positionable after the placement of said intra aortic balloon pump catheter;
said coronary angioplasty guiding catheter including a guiding lumen running along the entire length of said guiding catheter which terminates in an aperture;
an angioplasty balloon catheter insertable into and through said guiding lumen whereby percutaneous transluminal coronary angioplasty may be simultaneously performed along with the use and operation of an intra aortic balloon pump catheter at said single femoral puncture site.

5,613,947
EVERTING CANNULA APPARATUS AND METHOD
Albert K. Chin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.
Continuation of Ser. No. 269,666, Jul. 1, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 558,759
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 9 Claims



1. A balloon dissection cannula for dissecting an elongated cavity in tissue planes, comprising:

an elongated tube element having a proximal closed end and a distal end and, including an inner tube element disposed within the elongated tube element along a portion of the length thereof to form a plurality of lumens within the elongated tube element;

an inverted balloon having a flexible wall in fluid-tight attachment to the elongated tube element and disposed in a first one of the lumens formed between the elongated tube element and the inner tube element and capable of being everted in response to fluid under pressure applied thereto, for positioning at a predetermined location within a passageway in tissue planes to dissect the elongated cavity in tissue planes distal to the elongated tube element; and

the inner tube element forming a second one of the lumens disposed to receive an endoscope in fluid-tight engagement within the inner tube element for visualizing from within and through the balloon wall the tissue in the elongated cavity as the balloon is everted in response to fluid under pressure applied thereto, with an endoscope within the second lumen being exposed to said balloon-everting fluid under pressure.

5,613,948

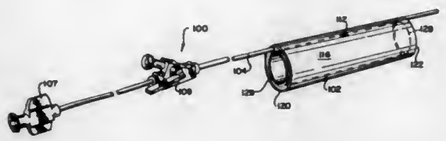
ANNULAR PERFUSION BALLOON CATHETER

Ernesto Avellanet, Miami Lakes, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 342,796, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 151,355, Nov. 12, 1993, abandoned. This application May 3, 1996, Ser. No. 643,255

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **6 Claims**



1. A dilation catheter for use in medical procedures comprising:

an annular balloon member having an inner longitudinal passageway, an exterior cylindrical wall member and an interior cylindrical wall member, said exterior wall member and said interior wall member defining an annular cylindrical compartment therebetween, said inner longitudinal passageway being larger in radial extent than said annular compartment, said balloon member having a collapsed condition of a size allowing said catheter to be transported through a body vessel, and said balloon member having an expanded condition of a size allowing said balloon exterior wall member to engage a body vessel wall; an elongated flexible tubular member having a proximal end and a distal end, said tubular member having a longitudinal distal length sealingly disposed between said exterior cylindrical wall member and said interior cylindrical wall member and within said cylindrical annular compartment; said longitudinal distal length of the tubular member being fully enclosed within said balloon member annular cylindrical compartment in a manner such that said exterior and interior cylindrical balloon wall members are circular in cross-section along their respective lengths; means for passing fluid between said flexible tubular member and said annular compartment to vary said balloon member between said collapsed condition and said expanded condition; said exterior wall member expands radially outwardly from said inner longitudinal compartment when said balloon member is at its said expanded condition in order to cause said exterior wall member to dilate the body vessel wall; said exterior wall member and said interior wall member are substantially adjacent when said balloon member is in said collapsed condition; said exterior wall member is radially spaced from said interior wall member when said balloon member is in said expanded condition; and said balloon member is the only balloon member at said distal end of the dilatation catheter.

5,613,949

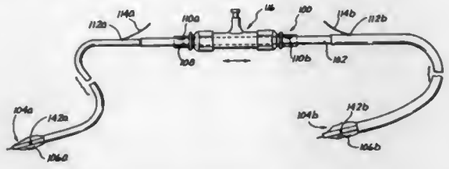
DOUBLE BALLOON CATHETER ASSEMBLY

Manouchehr Miraki, Aliso Viejo, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Apr. 1, 1994, Ser. No. 222,145

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—101 **14 Claims**



1. A catheter assembly comprising:

a) an elongated body which includes

a central section having first and second ends, a first inflation lumen extending to the first end, an a first inflation port in fluid communication with the first inflation lumen, a second inflation lumen extending to the second end, a second inflation port in fluid communication with the second inflation lumen,

a first extremity connected to the first end of the central portion and having a third inflation lumen extending therein in fluid communication with the first inflation lumen,

a first balloon on the first extremity having an interior in fluid communication with the third inflation lumen,

a second extremity connected to the second end of the central portion and having a fourth inflation lumen extending therein in fluid communication with the second inflation lumen, and

a second balloon on the second extremity having an interior in fluid communication with the fourth inflation lumen; and

b) a connector element having first and second ends, a first inner lumen which is configured to slidably receive the central section of the elongated body, means on the first and second ends of the connector element to sealingly engage a first portion of the central section of the elongated body on one side of one of the inflation ports in the central section and a second portion of the central section of the elongated body on the opposite side of said one of the inflation ports and a second inner lumen having one end in communication with the first inner lumen and a second end configured to be connected to a source of inflation fluid.

5,613,950

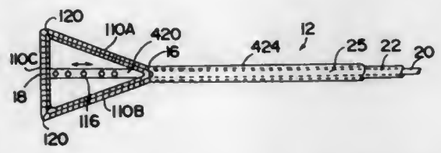
MULTIFUNCTIONAL MANIPULATING INSTRUMENT FOR VARIOUS SURGICAL PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation of Ser. No. 596,937, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,776, Jul. 22, 1988, abandoned. This application May 19, 1993, Ser. No. 63,486

Int. Cl.[6] A61B *17/02*

U.S. Cl. 604—105 **1 Claim**



1. A medical instrument for manipulating internal organs of a body, comprising;

a rod, having a retractor body arranged at a distal end of the rod and a handle at a proximal end of the rod;

a rigid flexion resisting shaft, having a proximal end and a distal end, for guiding said rod, said rod being movable with respect to the shaft in an axial direction of said rod;

wherein said retractor body comprises a multi-joint lever system of articulated arms connected to one another to be pivotably movable, which can be brought into an open position by movement of the rod in a first direction with respect to the shaft, and can be brought into a closed position by movement of the rod in a second direction with respect to the shaft;

wherein said multi-joint lever system comprises two pairs of articulated arms, each pair having a proximal end, a distal end and a central joint where two articulated arms are joined by a hinge, each pair being assigned to an opposite side of said rod guided by said shaft, said distal end of each pair being pivotally connected to said distal end of said rod and said proximal end of each pair being pivotally connected to said distal end of said shaft.

5,613,951

SINGLE USE INJECTION DEVICE

Philippe Meyer, Zfrich, and Ewald Pickhard, Wien, both of Switzerland, assignors to Pharmaplan GmbH, Bad Homburg, Germany

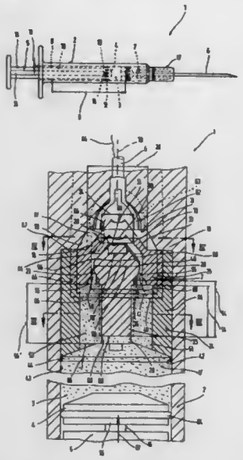
PCT No. PCT/AT93/00085, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/23099, PCT Pub. Date Nov. 25, 1993

PCT Filed May 19, 1993, Ser. No. 335,843

Claims priority, application Austria, May 19, 1992, 1029/92

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **36 Claims**



1. Single-use injection device comprising an injection cylinder for receiving a liquid medium, an inner chamber located inside the injection cylinder, an injection needle attached to the injection cylinder, an inlet area located adjacent to the injection needle, the injection device having a longitudinal axis which extends in the direction of the injection needle, a piston that can slide inside the injection cylinder and a piston rod, the piston being movably linked to the piston rod which extends in a direction opposite to the injection needle, and an anti-reuse device that is actuated by the medium moved by the piston and that is arranged in the inlet area of the injection cylinder, a ring-shaped retaining member having an opening, the ring-shaped retainer being located in the injection cylinder between the injection needle and the piston, the anti-reuse device including a switching member having a sealing section with a larger cross-sectional area than a passage cross-section of the opening in the ring-shaped retaining member, the sealing section being retained in a rest position by means of the ring-shaped retaining member which is elastically deformable in at least one of a radial direction and in a direction of the injection needle on the side of the ring-shaped retaining member that faces the piston, and the switching member can be moved from the rest position into a locking position wherein the sealing section is located on the side of the ring-shaped retaining member that faces the injection needle, the ring-shaped retaining member providing a sealing stop for the switching member in the direction of the piston, and that a reception area for at least the sealing section of the switching member is arranged between the ring-shaped retaining member and the injection needle, the ring-shaped retaining member (**21**) being made of an elastically restorable material and is held in position on a housing (**18**) of the anti-reuse device (**7**) that is set inside the inner chamber (**3**) of the injection cylinder (**2**) and is made of a harder material than the ring-shaped retaining member (**21**), the switching member (**22**) includes a guiding element (**23**) that is adjacent to the sealing section (**48**) that is moveable in a guiding path (**49**) located in the injection cylinder (**2**), a guiding length between the guiding element (**23**) and the guiding path (**49**) being longer than at least the distance between the rest and locking positions of the switching member (**22**).

5,613,952

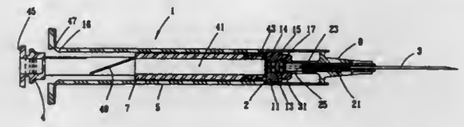
SAFETY SYRINGE

William B. S. Pressly, Sr., Greer, S.C.; Charles A. Vaughn, Sr., Duluth, Ga.; G. Samuel Brockway, and Thomas R. Ellis, both of Lawrenceville, Ga., assignors to Syringe Development Partners, Lawrenceville, Ga.

Continuation-in-part of Ser. No. 359,001, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 813,115, Dec. 23, 1991, Pat. No. 5,211,629. This application Jun. 7, 1995, Ser. No. 481,093

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **40 Claims**



1. A syringe apparatus comprising:

a barrel;

a plunger movable within said barrel;

a needle assembly attached to an end of said barrel and defining a passageway therethrough;

a deformable base positioned within said barrel adjacent said needle assembly and defining a passage therethrough;

flexible supports included on said deformable base;

energy storage means within said passageway;

a bollow needle passing through said passageway;

an enlarged head on said needle engaged within said passage of said deformable base; and

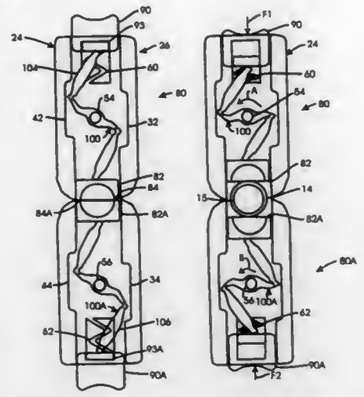
a rupturable web on an end of said plunger for moving a fluid within said barrel through the hollow of said needle when said plunger is moved through said barrel toward said needle assembly;

whereby when said plunger moves through said barrel toward said needle assembly, a fluid can be moved from said barrel through the hollow of said needle, and continued movement of said plunger flexes said supports and moves said deformable base downwardly until such time as sufficient force is imparted to said rupturable web by said enlarged head of said needle to tear said rupturable web, said deformable base then releasing said needle with said enlarged head due to force applied thereto by said energy storage means to project said needle with said enlarged head into the interior of said plunger.

5,613,953
SHEATH INTRODUCER WITH VALVE THAT SPLITS

Peter J. Pohndorf, Stillwater, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 26, 1996, Ser. No. 638,039
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—165 **9 Claims**

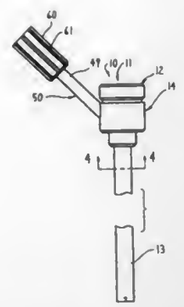


1. An introducer for introducing a lead or catheter comprising:
an introducer sheath having a hollow cylindrical body with a proximal end configured to permit the introduction of said lead or catheter, said sheath defining an opening at said proximal end;
a tab disposed at said proximal end and extending radially outward from said proximal end, said tab defining a first axis of rotation and a second axis of rotation;
first and second comating valve members carried by said tab, said valve members being movable from a closed position covering said opening to an open position exposing said opening;
first and second handles carried by said tab at opposing ends of said tab;
a first link rotatable about said first axis of rotation for coupling said first valve member with said first handle;
a second link rotatable about said second axis of rotation for coupling said second valve member with said second handle;
bias means for normally biasing said valve members in said closed position and for enabling said valve members to move to said open position in response to a first force exerted on said first handle in a first direction and a second force exerted on said second handle in a second direction opposite said first direction, whereby said introducer and said valve members can be operated with a single hand while said lead or catheter is being inserted into a patient.

5,613,954
LAPAROSCOPIC SURGICAL Y-TUBE CANNULA

Charles L. Nelson, Pleasanton; John Nguyen, San Jose; Derrick A. Richardson, Fremont, and Heber Saravia, San Francisco, all of Calif., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Nov. 21, 1994, Ser. No. 342,926
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 **17 Claims**

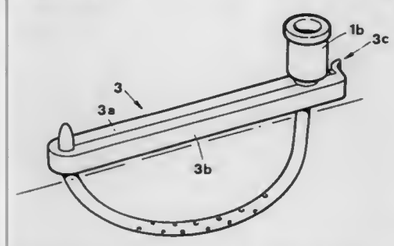


1. A laparoscopic surgical cannula, comprising:
a generally Y shaped tubular member comprising an elongate tubular stem having a distal elongate tube insertable in a laparoscopic surgical wound and a compact annular proximal fitting on said elongate tube for telescopingly receiving therein a laparoscopic surgical tool, said elongate tube having proximal and distal ends, said elongate tubular stem having a through passage extending longitudinally through said fitting and elongate tube and open at opposite ends of stem for guiding an elongate laparoscopic surgical tool distally therethrough to a surgical site at a distal end of said stem, said Y shaped tubular member further comprising a tubular arm fixed to said proximal fitting at a location spaced from the ends thereof and extending from said fitting radially and proximately at an acute angle, said tubular arm having a through passage having an open proximal end and a distal end opening into and communicating with said passage of said elongate tubular stem for providing a path for fluids between the proximal end of said tubular arm and a distal end of said elongate tube, said path for fluids extending the length of said tubular stem and through a distal portion of said elongate tube to said distal end of said elongate tube;
a coupling on the proximal end of said tubular arm for connection to a fluid transfer device;
a normally closed valve on said fitting for preventing escape of fluid under pressure in the surgical site proximally past said fitting, said valve opening in response to insertion of a laparoscopic surgical tool through said fitting toward said distal end of said elongate tube, such that the same surgical wound in the patient serves for both tool insertion and fluid communication, thereby avoiding need for separate incisions for a tool and fluid communication;
said compact proximal fitting including
(1) an annular central body including a peripheral wall surrounding coaxially a through chamber, a port through said peripheral wall from said chamber to outside said body, said proximal fitting being compact with said body being externally cylindrical and of diameter exceeding length, said port being angled proximately and radially outward from said through chamber and having a coaxial recess opening out through said peripheral wall, said port being at the distal end of said chamber, said recess being at said proximal end of said body, and
(2) a reduced diameter annular distal flange extending distally coaxially from said body and having a distal opening recess coaxial with and axially continuing said chamber of said body and fixedly receiving the proximal end of said elongate tube, said distal flange being axially shorter than said body, and
(3) a reduced diameter annular proximal flange extending proximately coaxially from said body and axially continuing said chamber of said body and having external threads and being substantially equal in axial length to said distal flange;
an annular cap having a coaxial through hole whose distal end is radially enlarged by a coaxial distal central recess, said annular cap being cup-shaped and having an annular proximal end wall coaxially pierced by said through hole, said cap having a distal peripheral wall bounding said distal recess and having internal threads threadedly engaging said external threads on said proximal annular flange of said proximal fitting;
a resilient annular washer defining a wiper seal;
said normally closed valve comprising an annular washer-like rim at the proximal end of said valve and a skirt extending distally therefrom, said cap proximal end wall and resilient annular washer and annular washer-like rim and proximal fitting annular proximal flange together forming a contiguous coaxial stack, with said washer and rim axially pressed sealingly against and between said cap proximal end wall and the opposed proximal end of said proximal fitting annular proximal flange.

5,613,955
DEVICE FOR ADMINISTRATION OF FLUID

Jan Wadstein, Malmou, Sweden, assignor to Scandfast AB, Sweden

PCT No. PCT/SE93/00924, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/11046, PCT Pub. Date May 26, 1994
PCT Filed Nov. 5, 1993, Ser. No. 432,195
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—178 **2 Claims**



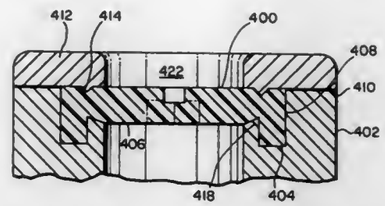
1. An improved arrangement for the administration of a fluid a tube, preferably made of plastic, a first end of which is sealed, and a second end of which has a connection for an injection syringe or the like, and executed with a number of openings distributed over an area between the first end and the connection and a rigid, elongated body arranged in the tube so executed as to facilitate insertion of the tube into human tissue, the improvement comprising:
a tip disposed at the first end of the tube to cut or displace tissue: and
an attachment device to hold the first and second ends of the tube after insertion of the tube into tissue and after withdrawal of the rigid body, so as to produce a rigid connection between the first and second ends: wherein
the tube is sufficiently soft as to be of essentially the same consistency as the human tissue, in particular subcutaneous tissue and musculature, and the tube has an external surface covered with a coating of titanium of sufficient thinness for the tube to retain its soft characteristics.

5,613,956
CATHETER INTRODUCER

Frank Patterson, Exeter, N.H.; John Zhang, Arlington, Mass.; George Purtell, Westford, Mass., and James Culhane, Westborough, Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 58,594, May 7, 1993. This application May 12, 1994, Ser. No. 241,627
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—256 **20 Claims**

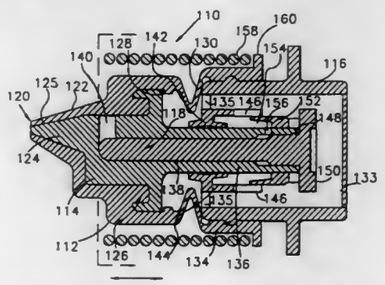
1. A gasket for use in a catheter introducer having a housing that contains the gasket, the gasket comprising:
a self-sealing, one piece gasket having an inwardly facing surface, an outwardly facing surface, and a central aperture formed in its outwardly facing surface, the aperture extending a predetermined depth into the gasket and being defined in part by a circumferential wall;
a plurality of slits formed in the inwardly facing surface of the gasket and extending radially from a central region, the slits having a depth such that they intersect the circumferential wall, the central region of the slits overlapping the central aperture and defining a plurality of flaps normally closing the aperture;
the central aperture and the slits being dimensioned to enable the gasket to form a seal about a range of diameters of devices that includes guidewires and catheters; and
an annular ring extending from and beyond the inner facing surface of the gasket, the ring being engageable by the housing to secure the gasket in the introducer.



5,613,957
APPARATUS FOR APPLYING MEDICAMENT TO AN EYE

Daniel Py, 8 Normandy Rd., Larchmont, N.Y. 10538, assignor to Daniel Py, Natick, N.Y.

Continuation of Ser. No. 801,243, Dec. 2, 1991, abandoned. This application Mar. 11, 1994, Ser. No. 209,957
Int. Cl.[6] A61M *35/00;* **B65D** *47/18*
U.S. Cl. 604—294 **39 Claims**



38. An apparatus for applying medicament to an eye, comprising:
a medicament chamber for holding medicament;
a nozzle coupled in fluid communication with the medicament chamber, the nozzle including an outer nozzle portion and an inner nozzle portion received within the outer nozzle portion to define an interface at a region of contact between the inner and outer nozzle portions, the region of contact preventing passage of medicament through the nozzle, wherein a flow of medicament of sufficient pressure may be forced through the interface of the nozzle to at least partially sever said region of contact and release medicament into the eye with the region of contact being restored upon said release of medicament;
an actuating member coupled to a shaft member and moveable along the shaft member to pressurize medicament to flow into the interface and at least partially sever the region of contact, wherein the shaft member has a bore therein which receives a rod member, the rod member and the shaft member defining at least one channel therebetween, the channel being coupled in fluid communication with the interface for directing the flow of pressurized medicament into the interface upon movement of the actuating member along the shaft member;
a flange member coupled to the shaft member for directing the flow of medicament, which is pressurized upon movement of the actuating member, through the interface; and

at least one wall defining a cavity coupled in fluid communication with the medicament chamber for receiving the flange member upon movement of the actuating member toward the flange member whereupon medicament within the cavity is pressurized by the actuating member and directed into the interface, said at least one wall defining at least one aperture for coupling the cavity in fluid communication with the medicament chamber.

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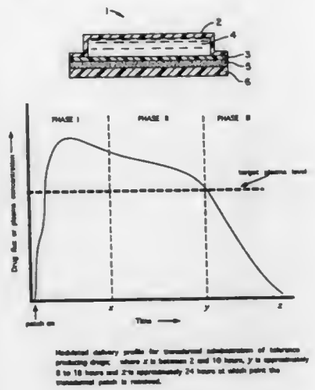
TRANSDERMAL DELIVERY SYSTEMS FOR THE MODULATED ADMINISTRATION OF DRUGS

Frank Kochinke, San Jose; William R. Pfister, Union City; Jenny Louie, Fremont, and Dan Arenson, Escondido, all of Calif., assignors to PP Holdings Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 60,907, May 12, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,178

Int. Cl.[6] A61F *13/02*

U.S. Cl. 604—307 **44 Claims**



Modulated delivery profile for transdermal administration of fentanyl producing drugs, where x is between 2 and 10 hours, y is approximately 8 to 18 hours and z is approximately 24 hours at which point the transdermal patch is removed.

1. A transdermal delivery patch for the administration of a drug through intact skin, said patch comprising:

(a) a backing layer;

(b) a membrane adjacent to said backing layer, wherein said membrane is in contact with said backing layer to form a peripheral substantially fluid-tight seal and to define a reservoir therebetween;

(c) a drug, a solvent-type enhancer, and a plasticizer-type enhancer in said reservoir;

(d) said membrane having a pore size diameter between about 0.01 and about 3.0 microns and being non-rate controlling to said drug and enhancers in said reservoir; and

(e) an adhesive layer over said membrane on the outside of said reservoir for contact with skin and through which drug and enhancers permeate, said adhesive layer containing about 10–40% by weight of a plasticizer-type enhancer and being selected to retain its functioning properties therewith,

wherein a modulated three-phase drug administration pattern is obtained when said patch is contacted with skin, said pattern having:

(i) a first period in which plasma levels of said drug or a metabolite thereof are obtained, wherein said first period begins at patch application and ends at about two to ten hours after patch application;

(ii) a second period in which therapeutic plasma levels of said drug or a metabolite thereof are maintained, wherein said second period begins at about two to ten hours after patch application and ends at about eight to eighteen hours after patch application; and

(iii) a third period in which sub-therapeutic plasma levels of said drug of a metabolite thereof are maintained, wherein said third period begins at about eight to eighteen hours after patch application.

5,613,959

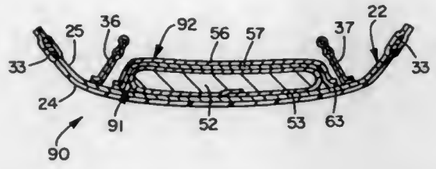
DISPOSABLE ABSORBENT ARTICLE WITH FLUSHABLE INSERT

Thomas H. Roessler, Menasha; Annamaria Cesco-Cancian, Appleton; Dan D. Endres, Appleton; Paula M. Hanson, Appleton; Kenneth A. Leick, Appleton; Marianne K. Leick, Appleton, and Edward E. Werner, Oshkosh, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 268,862, Jun. 19, 1994, Pat. No. 5,405,342, which is a continuation of Ser. No. 188,626, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 116,822, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 816,457, Dec. 31, 1991, abandoned. This application Feb. 14, 1995, Ser. No. 388,084

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—364 **6 Claims**



1. An absorbent article, comprising;

a shell free of absorbent material and formed of a bodyside liner and a substantially liquid impervious backing sheet, the bodyside liner and the backing sheet being bonded directly together in face-to-face intimate contact, the shell defining a front waist section, a back waist section, and opposed first and second sides extending between the front and back waist sections;

a pair of containment flaps attached to the bodyside liner, the containment flaps extending between the front and back waist sections and being positioned inward of the respective first and second sides;

an insert pad formed of a flushable absorbent material, the insert pad positioned against the bodyside liner and between the containment flaps; and

a cover for releasably maintaining the insert pad in position relative to the bodyside liner.

5,613,960

DISPOSABLE BODY FLUIDS ABSORBENT PADDING

Satoshi Mizutani, Kawanoe, Japan, assignor to Uni-Charm Corporation, Ehime-ken, Japan

Filed Jun. 2, 1995, Ser. No. 459,998

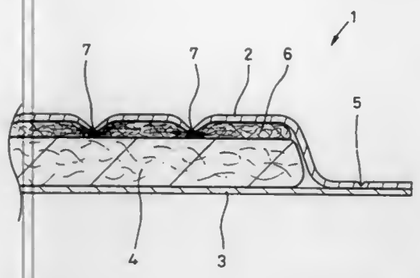
Claims priority, application Japan, Jun. 3, 1994, 6-122584

Int. Cl.[6] A61F *13/15;13/20;13/48;13/50*

U.S. Cl. 604—365 **6 Claims**

1. A disposable body fluids absorbent padding comprising a liquid-permeable topsheet, a liquid-impermeable backsheet, a liquid-absorbent core disposed between said topsheet and backsheet and a liquid-guiding fibrous layer being more hydrophilic than said topsheet and interposed between said topsheet and said liquid-absorbent core to guide the body fluids from said topsheet into said core, wherein:

hot melt materials contained in both said topsheet and said liquid-guiding fibrous layer, respectively, are fused at a plurality of spots arranged intermittently in a plane of said topsheet whereby said topsheet and said liquid-guiding fibrous layer are integrally bonded together at said spots in a direction of thickness of said padding, said fused spots



extending between an upper surface of said topsheet and a lower surface of said liquid-guiding fibrous layer.

5,613,961

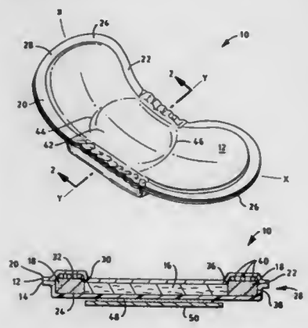
THIN, CURVED ABSORBENT ARTICLE HAVING ELASTICIZED EDGES

Joseph DiPalma, Neenah, and Sowmya S. Anjur, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 30, 1994, Ser. No. 366,845

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—369 **18 Claims**



1. An absorbent article having a longitudinal side, an outer perimeter, a bodyfacing surface and a garment-facing surface, said absorbent article comprising:

a) a liquid-permeable cover disposed proximate said bodyfacing surface;

b) a liquid-impermeable baffle disposed proximate said garment-facing surface;

c) an absorbent positioned intermediate said cover and said baffle, said absorbent having an outer periphery disposed inward from said outer perimeter;

d) a resilient member encircling said absorbent and positioned immediately adjacent to said outer periphery; and

e) tensioning means for imparting an arcuate configuration to said absorbent article, said tensioning means being secured to a portion of said resilient member, wherein said tensioning member produces at least one fold in said bodyfacing surface.

5,613,962

DISPOSABLE ABSORBENT ARTICLES

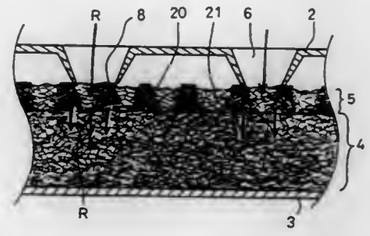
Yasuhiko Kenmochi, Kagawa-ken; Hisashi Takai, Ehime-ken, and Tomoko Tsuji, Kagawa-ken, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Dec. 7, 1995, Ser. No. 569,037

Claims priority, application Japan, Dec. 13, 1994, 6-309232

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—378 **4 Claims**



1. A disposable absorbent article having a longitudinal axis, transverse axis, a top end and bottom end comprising:

a topsheet consisting a top surface and a lower surface wherein a plurality of spaced apart liquid guide passageways extend vertically from said top surface to said lower surface of said topsheet, said liquid guide passageways comprising openings at an upper end and lower end of said liquid guide passageways,

a liquid-absorbent core comprising an upper surface and a lower surface wherein said at least an upper surface is covered with said topsheet,

a body fluid diffusing sheet of hydrophilic fibers disposed between said lower surface of said topsheet and said upper surface of said absorbent core;

said body fluid diffusing sheet comprising an upper surface and a lower surface wherein a plurality of spaced apart parallel stripe-zones of hydrophobic synthetic resin extend longitudinally from said top end to said bottom end of said absorbent article wherein said parallel strips are in contact with said lower end of said liquid guide passageways such that the stripe-zones extend across said opening at a lower end of the liquid guide passageways;

and said body fluid diffusing sheet having a fiber density higher in sections underlying said stripe-zones than in sections of the said diffusing sheet extending between each of said stripe-zones.

5,613,963

NON-WOVEN PANTY LINER AND A METHOD AND APPARATUS FOR MANUFACTURING SAME

Sylvie Boissé, Anjou; Roger Boulanger, Ste-Julie, both of Canada, and Joseph Israël, Belcheltown, Mass., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Continuation of Ser. No. 54,331, Apr. 28, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,545

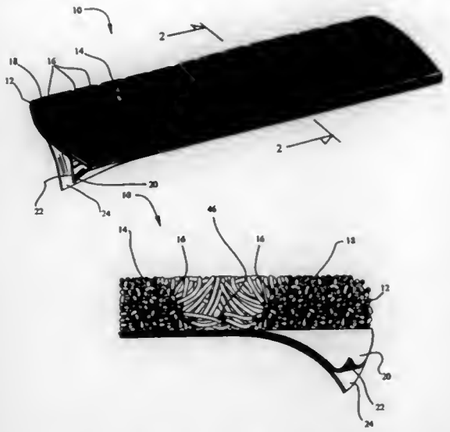
Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—384 **25 Claims**

1. A disposable panty liner, consisting essentially of:

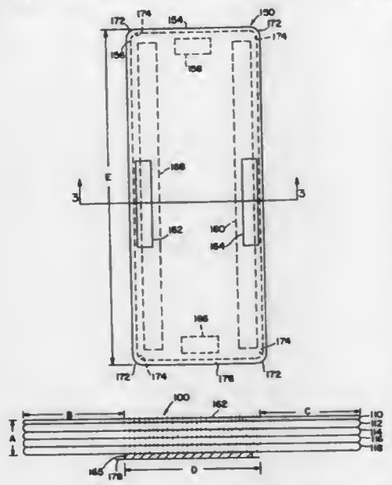
a unitary sheet of non-woven fabric constituting a primary liquid-retaining component of said panty liner wherein said unitary sheet of non-woven fabric has a top surface constituting a skin-contacting surface of said panty liner; and

a liquid-impervious barrier layer on said unitary sheet of non-woven fabric for preventing body exudate collected by said unitary sheet of non-woven fabric to egress through a garment facing side of said panty liner, wherein said top surface



comprises a plurality of recesses in a spaced apart relationship, said recesses being capable to retain highly viscous body exudate discharged on said panty liner.

5,613,964
SANITARY ARTICLE
Dyandra Grenier, 10101 E. County Rd. 350 South, Walton, Ind. 46994
Continuation of Ser. No. 99,940, Jul. 30, 1993, Pat. No. 5,429,631, which is a continuation-in-part of Ser. No. 775,686, Oct. 11, 1991, abandoned. This application May 22, 1995, Ser. No. 446,437
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **24 Claims**



1. An integrated sanitary napkin assembly comprising at least two individual sanitary napkin units, said individual units being disposed serially adjacent to one another and removably attached to one another;

at least one of said individual units being adapted to be removed from said assembly, leaving at least one of said units of said assembly remaining;

at least one of said individual units having:

means for receiving body fluids secreted by a user; fluid impervious barrier means disposed substantially adjacent said body fluid receiving means; an intra-unit attachment means joining said barrier and said body-fluid receiving means for attaching the barrier means to said body-fluid receiving means; and inter-unit attachment means for attaching said individual unit to an adjacent unit;

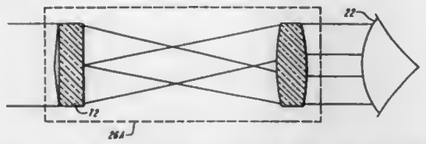
said fluid impervious barrier means defining at least one barrier means peripheral edge, said body fluid receiving means defining at least one receiving means peripheral edge, said barrier means peripheral edge and said receiving means peripheral edge each having a length, the barrier means peripheral edge and the receiving means peripheral edge being disposed substantially adjacent one another in said individual unit;

said intra-unit attachment means contacting said body fluid receiving means and said fluid impervious barrier means and extending adjacent said peripheral edges thereof for a substantial fraction of said lengths of said peripheral edges;

each of said individual units defining at least one individual-unit peripheral edge, each such individual-unit peripheral edge having a length, the individual-unit peripheral edges of said at least two individual units being disposed substantially adjacent one another in said assembly;

said inter-unit attachment means contacting said at least two individual units and extending adjacent said individual-unit peripheral edges of said units for a substantial fraction of said length of said individual-unit peripheral edges.

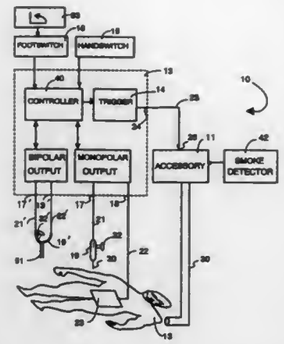
5,613,965
CORNEAL REPROFILING USING AN ANNULAR BEAM OF ABLATIVE RADIATION
David F. Muller, Boston, Mass., assignor to Summit Technology Inc., Waltham, Mass.
Filed Dec. 8, 1994, Ser. No. 351,826
Int. Cl.[6] A61N *5/02*
U.S. Cl. 606—5 **13 Claims**



1. In a system for photorefractive keratectomy having a source of ablative laser radiation and a means for selectively reprofiling a cornea of an eye by removing a volume of corneal tissue from a region in an optical zone of the cornea with ablative radiation to form a reprofiled region which modifies, at least in part, a central curvature of the cornea; the improvement comprising means for applying to a peripheral region of the cornea an annular beam of ablative radiation having an intensity which varies radially within the annulus of the beam to create a blend zone, thereby permitting a smooth transition between the reprofiled region and an unablated region of the cornea.

5,613,966
SYSTEM AND METHOD FOR ACCESSORY RATE CONTROL
Joshua Makower, New York, N.Y.; David A. Zieve, Louisville, Colo., and Frank Barber, Brattleboro, Vt., assignors to Valleylab Inc, Boulder, Colo.
Filed Dec. 21, 1994, Ser. No. 360,534
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—34 **17 Claims**

1. A system for operating a smoke evacuator at either a high or low flow rate when used with an electrosurgical generator during treatment of a patient, the electrosurgical generator having at least one active electrode, the smoke evacuator having a passage for carrying smoke away from the at least one active electrode, the system comprising:



an electrosurgical circuit for use during electrosurgery, the electrosurgical circuit located and connected between the electrosurgical generator and the patient for transmission of electrosurgical energy therebetween;

a switch connected to the electrosurgical circuit, the switch for activating the electrosurgical generator when the switch is closed during treatment of the patient;

an output on the electrosurgical generator for sending an electrical signal when the switch is closed;

a smoke evacuator connected to receive the electrical signal from the output, the smoke evacuator to operate at high or low flow rates in response to the signal;

a low level of fluid flow rate controller connected to the smoke evacuator for the operation for the smoke evacuator, the low level of fluid flow rate controller set to barely purge fluid through the passage from the active electrode, the low level of fluid flow rate controller to slowly move fluid through the passage;

a high flow rate controller connected to the smoke evacuator for the operation of the smoke evacuator, the high flow rate controller for operating the smoke evacuator to remove fluid from the vicinity of the at least one active electrode, and wherein the smoke evacuator changes from the low level of fluid flow rate to the high flow rate whenever the electrical signal is received and from the high flow rate to the low level fluid flow rate whenever the signal is absent.

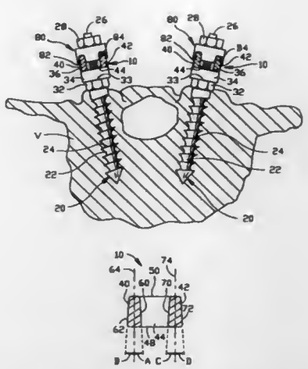
5,613,967
APPARATUS FOR MAINTAINING BONE PORTIONS IN A DESIRED SPATIAL RELATIONSHIP
John Engelhardt, Chagrin Falls, and Alexandre M. Dinello, Shaker Heights, both of Ohio, assignors to AcroMed Corporation, Cleveland, Ohio
Filed Apr. 28, 1995, Ser. No. 431,124
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **35 Claims**

1. An apparatus for retaining bone portions in a desired spatial relationship, said apparatus comprising:

a longitudinal plate extendable along the bone portions, said plate including a first major side surface for facing the bone portions and a second major side surface for facing away from the bone portions;

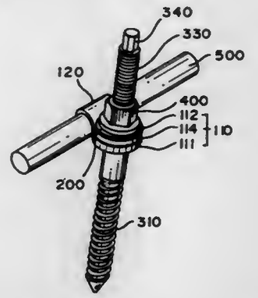
a fastener having a first end portion engageable with a bone portion and a second end portion;

connecting means for connecting said plate to said fastener in any one of an infinite number of positions along a longitudinal axis of said plate, said connecting means including surface means for defining a recess for receiving a portion of said plate, said surface means defining said recess having an interference fit with said portion of said plate received in said recess; and



means engageable with said second end portion of said fastener for applying a force to cause the interference fit between said plate and said recess.

5,613,968
UNIVERSAL PAD FIXATION DEVICE FOR ORTHOPEDIC SURGERY
Chih-I Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709
Filed May 1, 1995, Ser. No. 431,739
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **8 Claims**



1. A universal pad fixation device for orthopedic surgery comprising:

a fixation ring having a through hole;

a universal pad located on the fixation ring and provided with a first arresting surface and at an end thereof with a plurality of slits, said universal pad further having a circular body with a circular hole therethrough, said circular body engageable with said through hole of said fixation ring

a threaded fixation element provided with a threaded portion and an arresting portion, said threaded portion extending through said circular hole of said universal pad so as to cause the slit end of said universal pad to stop at said arresting portion; and

a fastening nut engageable with said threaded portion of said threaded fixation element the fastening nut having a second arresting surface such that said fastening nut is arrested by contact of said second arresting surface with said first arresting surface of said universal pad;

wherein one of said first and second arresting surfaces is a protruding arcuate surface and the other of said first and second arresting surfaces is recessed arcuate surface;

said end of said universal pad has a recessed arcuate surface concentric with said first arresting surface;

and

said arresting portion of said threaded fixation element has a recessed arcuate surface located on a side thereof facing said

universal pad when said fastening nut has a protruding arcuate arresting surface, and a protruding arcuate surface located on one side thereof facing said universal pad when said fastening nut has a recessed arcuate arresting surface;

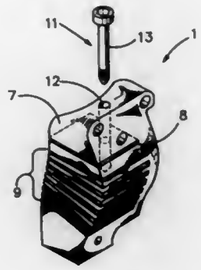
wherein said arcuate surface of said fastening nut and said arcuate surface of said arresting portion of said threaded fixation element are respectively engageable with said arcuate surface of said universal pad.

5,613,969

TIBIAL OSTEOTOMY SYSTEM

Joseph R. Jenkins, Jr., 12203 Becontree Dr., Baton Rouge, La. 70810

Filed Feb. 7, 1995, Ser. No. 384,856
Int. Cl.[6] A61B *17/15*
U.S. Cl. 606—87 **12 Claims**



1. A surgical kit for performing a tibial osteotomy, comprising:

(a) an osteotomy guide, comprising:

(i) mounting means for attaching the guide in a predetermined relation to a tibia;

(ii) a transverse slot, defining a transverse cutting plane, adapted to receive and guide a transverse cutting blade for making a transverse cut into said tibia; and

(iii) a plurality of oblique slots angularly offset from said transverse slot, each said oblique slot defining an oblique cutting plane, adapted to receive and guide an oblique cutting blade for making a selected oblique cut into said tibia, wherein the intersection of each of said oblique cutting planes with said transverse cutting plane is adapted to define a wedge of bone which may be removed from said tibia;

(b) a transverse cutting blade adapted to pass through said transverse slot;

(c) fixation means for holding surfaces of said tibia created by said transverse cut and said oblique cut together during the healing of said tibia; and

(d) locking means on said osteotomy guide for lockably engaging said transverse cutting blade and positioning said osteotomy guide at a predetermined location relative to said transverse cutting blade.

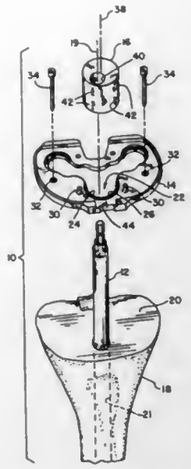
5,613,970

ORTHOPAEDIC INSTRUMENTATION ASSEMBLY HAVING AN OFFSET BUSHING

Michelle L. Houston, Warsaw; Steven A. Zawadzki, Pierceton; Kevin M. Greig, Leesburg, and Jerry L. Aikins, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jul. 6, 1995, Ser. No. 498,730
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—88 **21 Claims**

1. An orthopaedic instrumentation assembly located relative to an elongated member, the elongated member adapted for attachment to a bone, said instrumentation assembly comprising:



a plate member having an opening therein defining an inner periphery, and a recessed shoulder disposed about said inner periphery; and

a bushing adapted for placement in said opening and against said recessed shoulder, said bushing having a central longitudinal axis, said bushing further having a bore therethrough for receiving the elongated member, said bore disposed substantially parallel to and offset from said longitudinal axis;

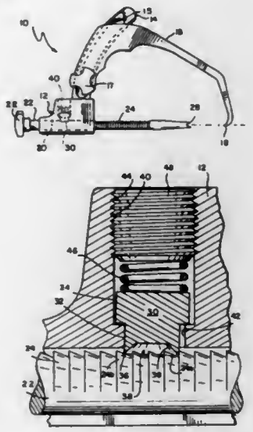
whereby movement of one of said bushing and said plate member relative to the elongated member causes a resultant movement of an other of said bushing and said plate member relative to the elongated member such that the bushing is rotated as a result of such movement while the elongated member remains in a stationary position.

5,613,971

RATCHETING TIBIAL AND FEMORAL GUIDE

Jerry L. Lower, Bourbon, Ind., and John Balestrieri, Greenfield, Wis., assignors to Depuy Inc., Warsaw, Ind.

Filed Aug. 11, 1995, Ser. No. 513,728
Int. Cl.[6] A61B *17/58*
U.S. Cl. 606—96 **20 Claims**



1. A guide for a bone drilling tool comprising:

a body having first and second arms positioned to secure the tool to a bone;

said first arm slides within a first bore in said body;

a ratchet for locking said first arm in said first bore, said ratchet including teeth on said first arm and a pawl in said body biased along a first axis to engage said teeth; and

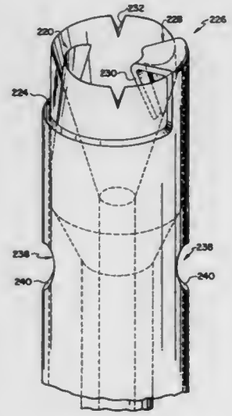
said pawl being rotatable about said first axis and including a continuous engagement edge for lockingly engaging said teeth for all angular orientations of said pawl about said first axis.

5,613,972

SURGICAL CUTTING HEADS WITH CURLED CUTTING WINGS

William Lee; Izuru Nose, and Jean-Marie Parel, all of Miami, Fla., assignors to The University of Miami, Miami, Fla.

Continuation-in-part of Ser. No. 111,591, Aug. 25, 1993, Pat. No. 5,346,497, which is a continuation of Ser. No. 913,474, Jul. 15, 1992, abandoned. This application Sep. 13, 1994, Ser. No. 304,843
Int. Cl.[6] A61F *9/00;* **A61B** *17/00*
U.S. Cl. 606—107 **18 Claims**



1. A surgical cutting instrument comprising:

(a) a first, hollow tube having a proximal end, a distal end, and a passage defined therebetween for transporting fluids and tissue particles therethrough, said distal end having a cutting edge, said first tube having at least one curled cutting wing for fragmenting tissue, said curled cutting wing being defined by a segment of a wall of said first tube that has been displaced inwardly relative to a remainder of said wall of said first tube, said curled cutting wing having at least one cutting edge, wherein said first tube has two generally V-shaped cutting notches defined in a distal end edge thereof, said cutting notches being diametrically opposed to one another, and

(b) a second, hollow tube, having a proximal end, a distal end, and a passage defined therebetween, said second tube being disposed concentrically around said first tube and having at least one projecting guard defined at said distal end of said second tube and extending inwardly from a wall of said second tube so as to overlie at least a portion of said distal end of said first tube, said second tube having an exterior surface and an interior surface, said interior surface of said second tube being opposed to and spaced from an exterior surface of said first tube so as to permit rotation of said inner tube relative to said outer tube.

5,613,973

LARAPOSCOPIC SURGICAL GRASPER HAVING AN ATTACHABLE STRAP

Robert C. Jackson, Clarence; Thomas W. Klementowski, Amherst, and Jack A. Belstadt, North Tonawanda, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Mar. 10, 1995, Ser. No. 402,344
Int. Cl.[6] A61B *11/24;11/26*
U.S. Cl. 606—113 **51 Claims**



1. A medical device that is insertable into a body cavity during a surgical procedure to hold and manipulate a body organ from a remote location outside the cavity, which comprises:

a) elongated conduit means having a surrounding sidewall providing an inside passage and extending to proximal and distal portions having respective spaced apart open ends, wherein the proximal portion of the conduit means provides a handle means for inserting the distal portion into the body cavity and for manipulating the distal portion from the remote location;

b) flexible strap means having a width and a thickness so as to be in a movable relationship in the inside passage of the conduit means, and at least a portion of the strap means is extendable out through the distal open end of the conduit means wherein the strap means has a first section and a second section; and

c) manipulative means operatively associated with the strap means and manipulatable from the remote location to move the strap means along the inside passage of the conduit means to extend at least the second section of the strap means out through the distal open end of the conduit means, wherein the strap means is provided with an attachment means which upon extension of the second section of the strap means out through the distal open end of the conduit means is either initially in an unattached state and attachable to a strap connection means provided by the medical device or first detachable from the strap connection means and then reattachable thereto such that the attachment means is removably mated to the strap connection means with either the attachment means surrounding the strap connection means or strap connection means surrounding the attachment means to thereby define a loop encircling the body organ and having relative rigidity in a plane normal to the loop, and wherein upon formation of the loop, the handle means and the manipulative means are manipulatable from the remote location to position and tighten the defined loop around the body organ.

5,613,974

APPARATUS AND METHOD FOR VASCULAR CLOSURE

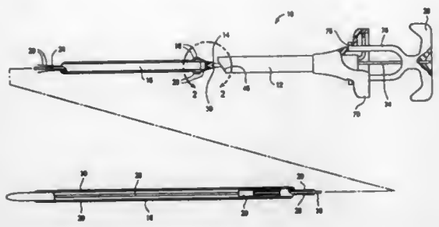
Bernard H. Andreas, Fremont; T. Daniel Gross, Los Gatos; Tomoaki Hinohara, and James W. Vetter, both of Portola Valley, all of Calif., assignors to Perclose, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 989,611, Dec. 10, 1992, Pat. No. 5,417,699. This application Jun. 1, 1994, Ser. No. 252,124
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **62 Claims**

1. A suturing device comprising:

a guide body having a proximal end, a distal end, a central axis, and a contact surface at the distal end oriented at an angle in the range from 30° to 80° relative to the central axis;

a needle guide connected to and spaced-apart from the distal end of the guide body, wherein said needle guide and guide body together define a tissue-receiving region therebetween and wherein at least one needle channel on said needle guide or



said guide body is oriented to direct a needle passing therethrough into the tissue-receiving region;

a shaft reciprocatably mounted within the guide body and the needle guide; and

at least one needle carried by the shaft and disposed within the guide channel so that a sharpened proximal tip of the needle can be drawn from the needle guide, through the tissue-receiving region and into the guide body.

5,613,975
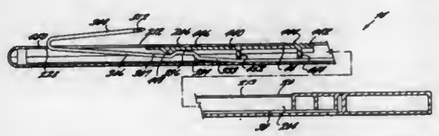
ENDOSCOPIC SUTURING DEVICE AND METHOD

William J. Christy, 1324 Sunset Dr., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 127,775, Sep. 27, 1993, Pat. No. 5,503,634, which is a continuation-in-part of Ser. No. 54,856, Apr. 28, 1993, Pat. No. 5,350,385. This application May 8, 1995, Ser. No. 438,021

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—144 **25 Claims**



1. A surgical suturing apparatus for closing an incision penetrating a plurality of layers of tissue, the apparatus comprising;

a tubular body having a longitudinal axis, an inner space, a side wall, a first end, a closed second end, and a slot through the side wall communicating with the inner space having a length generally parallel to the longitudinal axis and a width, the slot positioned generally adjacent the second end, the tubular body having an opening at the first end;

a generally "J"-shaped suture needle dimensioned to reside within the inner space of the tubular body, the suture needle having a first straight section having a proximal end and a second straight section, the first and the second straight sections each adjacent a curved middle section forming a generally "U"-shaped distal end, the distal end positioned adjacent the tubular body second end, the first straight section generally positioned along the longitudinal axis of the tubular body, the second straight section having a pointed tip and a suture gate dimensioned to allow suture material to pass therethrough, the suture gate positioned along the second straight section adjacent the pointed tip, the second straight section having a length shorter than the of the slot in the tubular body, enabling the second straight section to protrude therefrom when positioned adjacent thereto and moved in a radially outward direction;

suture needle deploying means affixed to the suture needle and movably engaged with the tubular body, the deploying means having a first end and a second end and comprising a stop means for preventing a disengagement of the deploying means and the tubular body, the deploying means movable relative to the tubular body between a deployed position wherein the suture needle second straight section is positioned to protrude from the tubular body slot, and a closed position wherein the suture needle second straight section is positioned so as to be enclosed within the inner space of the tubular body;

a first guiding means affixed to the suture needle for aiding the deploying means to move between the deployed and the closed positions; and

a second guiding means affixed within the inner space of the tubular body for aligning the second straight section of the suture needle with the slot in the tubular body; and wherein:

the deploying means is affixed to the proximal end of the suture needle first straight section and has a distal portion adjacent the deploying means second end dimensioned to slide within the opening in the tubular body first end and a shoulder adjacent to and proximal of the distal portion dimensioned larger than the tubular body first end, thereby permitting the deploying means distal portion to slide into the tubular body first end until the sliding is stopped by the shoulder, wherein the closed position comprises a position wherein the shoulder is adjacent the tubular body first end;

the tubular body side wall has an inner channel adjacent the first end, the channel communicating with the inner space and having a proximal end;

the stop means comprises a protrusion adjacent the deploying means second end, the protrusion dimensioned to slide within the channel during a movement of the deploying means relative to the tubular body; and

in use, when the deploying means is moved into the deployed position, the protrusion reaches the proximal end of the channel and prevents further extension of the deploying means in a proximal direction, thereby retaining the second end of the deploying means within the tubular body.

5,613,976

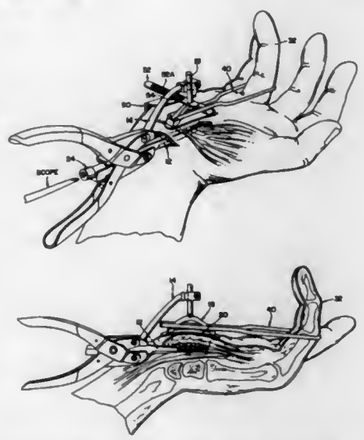
INSTRUMENT FOR MESH CUTTING OF THE FLEXOR RETINACULUM

John M. Agee, 77 Scripps Dr., Sacramento, Calif. 95825, and Francis King, Sacramento, Calif., assignors to John M. Agee, Sacramento, Calif.

Division of Ser. No. 126,257, Sep. 24, 1993, Pat. No. 5,387,223. This application Dec. 29, 1994, Ser. No. 366,038

Int. Cl.[6] A61B *17/04;17/32*

U.S. Cl. 606—150 **5 Claims**



1. A guide system for guiding a probe into the carpal tunnel of a patient, wherein said probe is carried by handle means, said guide system comprising:

(a) an elongated leg member supported by said handle means for engaging a finger of the patient's hand, and

(b) a vertical edge guide member supported by said handle means for engaging the edge of the patient's hand;

wherein said guide member is adapted to maintain lateral alignment of said probe with respect to the carpal tunnel of said patient; and

(c) means for holding said probe in alignment with the carpal tunnel of a patient's hand.

5,613,977

GRIPPING AND/OR CUTTING INSTRUMENT FOR ENDOSCOPIC PURPOSES

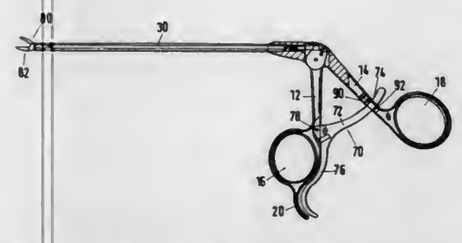
Robert Weber, Chino Hills; Georg Schaber, Venice, both of Calif., and Lars Frings, Remscheid, Germany, assignors to Friatec AG Keramik-und-Kunstoffwerke, Mannheim, Germany

Continuation of Ser. No. 94,615, Jul. 20, 1993, abandoned. This application May 17, 1995, Ser. No. 442,767

Claims priority, application Germany, Jul. 22, 1992, 42 242 26.6; Oct. 16, 1992, 42 350 23.9

Int. Cl.[6] A61B *17/28;17/32*

U.S. Cl. 606—170 **19 Claims**



1. An instrument for endoscopic purposes, comprising:

a first limb and a second limb, pivotable relative to one another around an axis and each of the limbs respectively having a lug for finger manipulation by a user;

a transmission rod hingedly connected at a proximal end thereof to one of said limbs;

two closable blades movable relative to one another between an open position and a closed position, one of said blades being hinged at a distal end of the transmission rod whereby the open position is achieved upon exertion of tension onto the transmission rod, and whereby the closed position is achieved upon exertion of a compression force onto the transmission rod;

a bearing element rigidly connected to one of said limbs and pivotable around said axis, said transmission rod hingedly connected to said bearing element by a first pin; and

wherein said bearing element comprises a recess and said respective other limb comprises a stop pin registered into said recess, said stop pin limiting the pivoting movement of said bearing element to limit maximum closure of said blades.

5,613,978

ADJUSTABLE TIP FOR LANCET DEVICE

John D. Harding, Ben Lomond, Calif., assignor to Palco Laboratories, Santa Cruz, Calif.

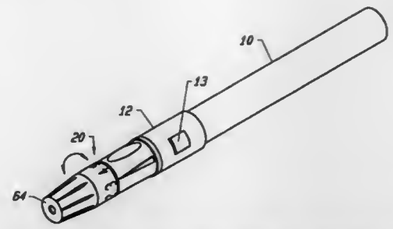
Filed Jun. 4, 1996, Ser. No. 659,056

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—181 **14 Claims**

1. An adjustable tip for a blood lancet device for causing different depths of skin puncture, wherein said device utilizes a common lancet having an elongated body, a needle carried within said body wherein the point of said needle extends outwardly from said body, said body having a generally planar shoulder through which said needle extends, said adjustable tip comprising:

an inner sleeve through which said lancet passes, said sleeve having a generally cylindrical shape and having proximal and distal ends, said distal end being partially enclosed to form a first surface against which said shoulder of said lancet stops, and wherein said inner sleeve resiliently carries a cam follower,



an intermediate cylindrical ring adapted to slide onto said inner sleeve and to rotate relative to said inner sleeve, said intermediate ring having a first camming surface formed therein,

an outer, cylindrical sleeve, with open distal end, adapted to slide over said intermediate ring, said outer sleeve having a second camming surface, so that, when joined to the intermediate ring, a complete helical groove is formed which captures said cam follower.

5,613,979

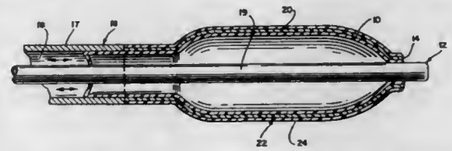
PUNCTURE RESISTANT BALLOON CATHETER

Thomas Trotta, Miami, Fla., and Jeffrey A. Johnson, Bartlesville, Okla., assignors to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 442,568, Nov. 29, 1989, Pat. No. 5,290,306. This application Nov. 1, 1993, Ser. No. 146,587

Int. Cl.[6] A61M *29/02*

U.S. Cl. 606—194 **26 Claims**



1. A balloon catheter, which comprises a flexible, elongated member, an inflatable balloon carried on the elongated member to define an inflation chamber within said balloon, an inflation conduit extending along said elongated member and communicating with the inflation chamber, said inflatable balloon being made of a flexible, relatively inelastic plastic essentially free of holes and having an outer surface surrounded by an elastomeric sleeve, said sleeve being bonded throughout at least a majority of its area to said balloon outer surface to provide pin hole and abrasion resistance.

5,613,980

BIFURCATED CATHETER SYSTEM AND METHOD

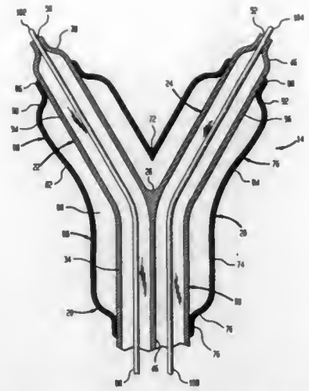
Tusharsindhu C. Chauhan, 242 Michael Dr., Uniontown, Pa. 15401

Filed Dec. 22, 1994, Ser. No. 361,976

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **31 Claims**

1. A catheter system adapted for dilating a preselected stenosed region of a blood vessel having a first branch vessel and a second branch vessel to facilitate blood flow therethrough, comprising an inflatable member having a first branch portion and a second branch portion; carrying means for carrying said inflatable member through the vessel, said carrying means including an elongated tube provided with a proximal end and a distal end, said distal end



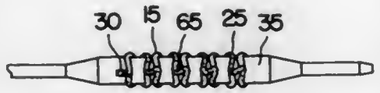
including a first branch extension, which is attached to said first branch portion of said inflatable member, and a second branch extension, which is attached to said second branch portion of said inflatable member; guiding means for providing a guide along which said inflatable member can be routed through the vessel to the stenosed region such that said first branch portion and said second branch portion are independently and simultaneously positioned in the first branch vessel and the second branch vessel, respectively, while said inflatable member is deflated; and inflating means for inflating at least a portion of said inflatable member such that said at least a portion of said inflatable member comes into direct contact with walls of the vessel, whereby the vessel is dilated facilitating blood flow therethrough, said inflatable member being attached to said distal end of said tube such that a pressure-tight space is formed between said inflatable member and said tube to receive pressurized fluid for inflating said at least a portion of said inflatable member.

5,613,981

BIDIRECTIONAL DUAL SINUSOIDAL HELIX STENT

William J. Boyle, Carlsbad; Rosalinda A. Wong, San Diego; James M. Shy, Chula Vista, and Don H. Tran, Westminster, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 21, 1995, Ser. No. 426,310
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **23 Claims**



1. A radially expandable stent for implantation within a body vessel, comprising:

a first wire formed winding having a hollow cylindrical shape, the first winding including a preformed sinusoidal wave form pattern, the first winding being wound into a continuous helix the length of the stent, the first winding having a proximal end, a distal end and an outer diameter;

a second wire formed winding having a hollow cylindrical shape, the winding including a preformed sinusoidal wave form pattern, the second winding being wound into a continuous helix the length of the stent, the second winding helix being opposite that of the first winding helix, the second winding having a proximal end, a distal end and an inner diameter, the second winding having a greater inner diameter than the outer diameter of the first winding, the second winding being coaxial with the first winding;

the proximal end of the first winding being attached to the proximal end of the second winding and the distal end of the first winding being attached to the distal end of the second winding; and

a means within the first winding to expand the first and second winding.

5,613,982

METHOD OF PREPARING TRANSPLANT TISSUE TO REDUCE IMMUNOGENICITY UPON IMPLANTATION

Steven Goldstein, Atlanta, Ga., assignor to Cryolife, Inc., Marietta, Ga.

Division of Ser. No. 213,754, Mar. 14, 1994. This application Jun. 5, 1995, Ser. No. 463,455
Int. Cl.[6] A61F *2/02*
U.S. Cl. 623—11 **20 Claims**



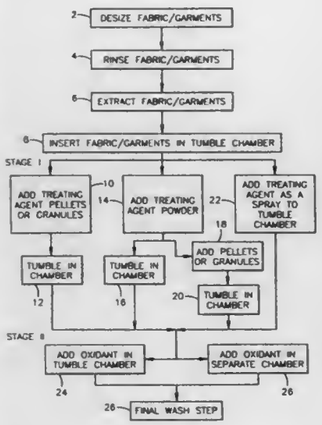
1. An in vitro process for generating implants or grafts of collagenous, connective, or vascular tissue which are xenogeneic to a human recipient comprising decellularizing a natural tissue to produce a tissue matrix, the tissue matrix is next washed to remove cellular antigens, or extracellular antigens, or both, followed by treatment of the tissue matrix with adhesion factors comprised of fibronectin and heparin effective to promote attachment thereto of fibroblast cells immunologically acceptable to the implant or graft recipient, next the tissue matrix is treated with adhesion factor and is repopulated by incubating the matrix in the presence of the fibroblast cells and fibroblast growth factor until such cellular repopulation provides a vitalized tissue histologically similar to the corresponding natural tissue, and wherein the implant tissue generated is mechanically, biochemically and immunologically suitable for implantation.

5,613,983

METHOD FOR DECOLORIZATION OF FABRICS

Raymond Terry, P.O. Box 2, Pickwick Dam, Tenn. 38365, and David W. Adcock, P.O. Box 272, Counce, Tenn. 38326

Continuation-in-part of Ser. No. 299,054, Aug. 31, 1994, Pat. No. 5,535,469, which is a continuation of Ser. No. 113,612, Aug. 27, 1993, Pat. No. 5,367,734, which is a continuation of Ser. No. 787,554, Nov. 4, 1991, abandoned. This application Feb. 7, 1995, Ser. No. 384,932
Int. Cl.[6] D06L *3/04*
U.S. Cl. 8—102 **22 Claims**



1. A method for me random decolorizing or fading of fabric containing oxidizable dyes or coloring agents comprising:

tumbling the fabric in a chamber in the presence of a fabric treating agent and moisture whereby the treating agent is attached to random portions of the fabric and is an oxidation inhibitor selected from the group consisting of aluminum acetate aluminum sulfate, aluminum hydroxide, magnesium acetate, magnesium hydroxide and sodium bisulfite or an ozone activator derived from a dicarboxylic acid or anhydride; and

oxidizing the fabric containing the treating agent with a gaseous oxidizing agent whereby the oxidized fabric is randomly decolorizcd or faded.

5,613,984

PROCESS FOR LAUNDERING PAINT SOILED GARMENTS

Robert I. Nightingale, Downsview, Canada, and Charles W. Berndt, Highland Park, Ill., assignors to Exfoliation Systems, Ltd., Ontario, Canada

Filed Dec. 23, 1994, Ser. No. 362,642
Int. Cl.[6] D06B *1/02;9/00*
U.S. Cl. 8—142 **15 Claims**

1. A process for laundering a garment soiled with a one component paint, a waterborne paint, a powder coat paint or a mixture thereof comprising the steps of:

(a) exposing the soiled garment to a di-basic acid ester;

(b) subsequently washing the garment by exposing the garment to at least one detergent and to at least one alkali to remove paint solids adhered to the garment in the presence of a coating solvent to prevent the redeposition of the paint solids removed from the garment by the detergent and the alkali; and

(c) subsequently drying the garment.

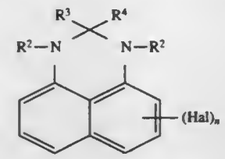
5,613,985

HAIR COLORING COMPOSITIONS WHICH CONTAIN DEVELOPERS AND PERIMIDINE COUPLERS

Wolfgang Bauer, Maintal, and Mustafa Akram, Hamburg, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Sep. 22, 1995, Ser. No. 532,412
Claims priority, application Germany, Sep. 24, 1994, 44 34 165.2
Int. Cl.[6] A61K *7/13*
U.S. Cl. 8—409 **12 Claims**

1. Hair Coloring composition comprising a coupler substance and a developer substance which form an oxidation dyestuff, and which are present in amounts which result in a tintorially effective amount of hair color, wherein said coupler comprises a compound of the formula I



I

wherein

R^1 and R^2 independently of one another are hydrogen, (C_1–C_4)-alkyl, hydroxy-(C_1–C_3)-alkyl, 2,3-dihydroxypropyl, 2-hydroxy-3-(C_1– C_4)-alkoxypropyl, phenyl or phenyl substituted by 1, 2, or 3 identical or different substituents selected from the group consisting of hydroxy, (C_1–C_4) alkyl, fluorine, chlorine and bromine, or the methylenedioxy radical which simultaneously replaces the atoms of the phenyl radical,

R^3 and R^4 independently of one another are hydrogen trichloromethyl, (C_1–C_6)-alkyl, di-(C_1–C_2)-alkoxymethyl, hydroxy-(C_1–C_4) alkyl, phenyl or phenyl substituted by 1, 2, or 3 identical or different substituents selected from the group consisting of hydroxy, (C_1–C_4) alkyl, fluorine, chlorine and bromine, or the methylenedioxy radical which simultaneously replaces the atoms of the phenyl radical,

Hal is fluorine, chlorine or bromine and

n is 0, 1 or 2.

5,613,986

SYNTHETIC FIBER DYEING PROCESS

William E. Bessey, Charlotte, N.C., and Joseph DaSilva, West Warwick, R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 376,471, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 62,877, May 17, 1993, abandoned. This application May 22, 1996, Ser. No. 651,437
Int. Cl.[6] D06D *7/00*
U.S. Cl. 8—489 **2 Claims**

1. A process for dyeing of melt spun synthetic filaments selected from the group consisting of poly(ethylene terephthalate), poly(trimethylene terephthalate), poly(tetramethylene terephthalate), copolymers thereof and polyamide consisting essentially of the steps of

application of a disperse dye dispersed in water to said melt spun synthetic filaments resulting in surface dyed filaments; then

drawing the surface dyed filaments forming drawn filaments; then

annealing said drawn filaments at a temperature from about 180° C. to about 210° C. for an appropriate time to evaporate the water from the filament surface and to affix said dye to the surface of the filament forming surface dyed drawn filament wherein said annealing stabilizes said drawn filaments against shrinkage;

heat setting said surface dyed drawn filaments at a temperature of from about 110° C. to about 180°C. wherein said temperature and time are sufficient to uniformly diffuse the dye throughout the total cross-section of the drawn filament.

5,613,987

COLORED HIGH-TENACITY FILAMENTS OF POLYETHYLENE AND PROCESS FOR THEIR PRODUCTION

Tadao Kuroki, and Yasuo Ota, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 86,706, Jul. 7, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,823
Claims priority, application Japan, Oct. 7, 1992, 4-183791
Int. Cl.[6] D06P *3/79*
U.S. Cl. 8—513 **21 Claims**

1. A colored filament of ultra-high molecular weight polyethylene which is obtained by spinning a solution of ultra-high molecular weight polyethylene in a solvent and a dye for coloration to form solvent-containing filaments and drawing the solvent-containing filaments,

wherein said colored filament has a tensile strength of at least 28 g/d and a tensile modulus of at least 700 g/d, said dye is substantially uniformly dispersed in the core portion of said colored filament, and said dye is substantially soluble in said solvent at the melting point of said solvent-containing filaments.

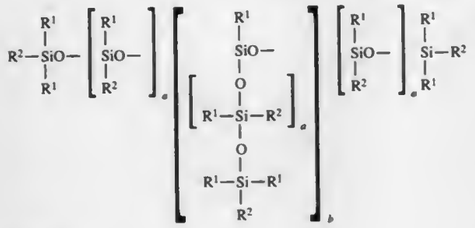
5,613,988

USE OF ORGANOFUNCTIONALLY MODIFIED POLYSILOXANES FOR DEFOAMING DIESEL

Roland Spiegler; Michael Keup, both of Essen; Kerstin Kugel, Ratingen; Peter Lersch, Oberhausen, and Stefan Silber, Krefeld, all of Germany, assignors to Th. Goldschmidt AG., Essen, Germany

Filed Dec. 19, 1994, Ser. No. 359,091
Claims priority, application Germany, Dec. 17, 1993, 43 43 235.2
Int. Cl.[6] C10L *1/28*
U.S. Cl. 44—320 **2 Claims**

1. A method of defoaming diesel fuel by adding to the fuel an organofunctionally modified polysiloxane of the general Formula I



wherein

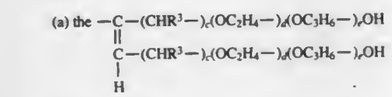
R^1 are methyl groups,

R^2 are the same or different in a molecule,

30 to 90% of R^2 having the same meaning as R^1, and

70 to 10% of R^2 consisting of a mixture of R^{2A} and R^{2B} groups, wherein the R^{2A} group is more polar than the R^{2B} groups and the R^{2A} group is selected from the following group consisting of:

(a) the



group, wherein

R^3 is a hydrogen or alkyl group,

c is a number from 1 to 20,

d is a number from 0 to 50,

e is a number from 0 to 50,

(b) the $—(CH_2—)_fOR^4$ group, wherein

R^4 is a hydrogen or a univalent organic group,

f is a number from 3 to 20, and

(c) the $—(CH_2—)_g(OC_2H_4—)_h(OC_3H_6—)_iOR^5$ group, wherein

R^5 is a hydrogen or a univalent organic group,

g is a number from 3 to 6,

h is a number from 1 to 50,

i is a number from 0 to 20; and

the ratio of h:i>5:2; and

the R^{2B} group is selected from the following group consisting of:

(d) the



group, wherein

R^6 is a hydrogen or alkyl group,

R^7 is an alkylsilyl, acylsilyl or trialkylsilyl group

k is a number from 1 to 20,

m is a number from 0 to 50,

n is a number from 0 to 50; and

(f) the $—(CH_2—)_g(OC_2H_4—)_h(OC_3H_6—)_iOR^5$ group, wherein

R^5 is hydrogen or a univalent organic group,

g is a number from 3 to 6,

h is a number from 0 to 35,

i is a number from 1 to 50 and the ratio of h:i <5:2,

a is a number from 1 to 400,

b is a number from 0 to 10,

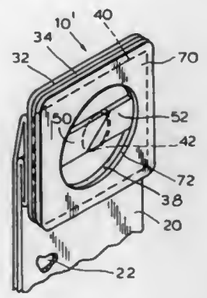
in an amount of 0.5 to 50 ppm based on the diesel fuel.

5,613,989

SELF-ALIGNING SELF-SEALING VACUUM BAG

Mark D. Bosses, Montvale, N.J., assignor to Home Care Industries, Inc., Clifton, N.J.

Filed Oct. 10, 1995, Ser. No. 541,418
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—367 **9 Claims**



1. In a vacuum bag for use with a vacuum device having a dirty air vacuum inlet, said bag comprising:

(A) porous bag means for trapping dirt, dust and particles therein while allowing air to pass therethrough under the influence of a vacuum thereabout, said bag means defining a bag interior and a channel through said bag means thereinto; and

(B) a self-sealing collar secured to said bag means and communicating with said bag interior via said channel, said collar including:

(i) a pair of parallel planar panels defining aligned respective apertures therethrough configured and dimensioned for receipt of a vacuum inlet therethrough,

(ii) a resilient membrane disposed intermediate said pair of panels, said membrane defining an aperture therethrough aligned with but smaller than said panel apertures, and

(iii) at least one finger means on the outer of said pair of panels normally extending inwardly in the plane of said outer panel at least partially across the outer panel aperture prior to placement of said collar on a vacuum inlet, extending through said membrane aperture and past the inner of said pair of said panels when said collar is disposed on a vacuum inlet, and extending substantially parallel to and partially behind said membrane and across said membrane aperture to effectively close said membrane aperture when said collar is removed from a vacuum inlet;

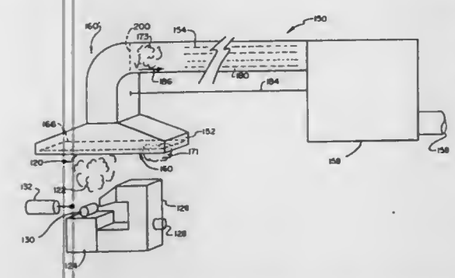
the improvement wherein said collar is self-aligning with a vacuum inlet and includes a third planar panel disposed parallel to and outwardly of said pair of panels, said third panel defining a respective third aperture therethrough configured and dimensioned for receipt of a vacuum inlet therethrough and aligned with said apertures of said pair of panels, said third aperture being of a thickness to facilitate blind placement of said collar on a vacuum inlet, said third aperture being configured and dimensioned to cooperate with a vacuum inlet extending therethrough to block further relative lateral movement of said collar and the vacuum inlet, said collar consisting essentially of only said three panels, said membrane and said finger means.

5,613,990

AIR CLEANING SYSTEM FOR MECHANICAL INDUSTRIAL PROCESSES

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Helical Dynamics, Inc., Golden Valley, Minn.

Filed Mar. 28, 1995, Ser. No. 413,874
Int. Cl.[6] B01D *45/04*
U.S. Cl. 55—383 **34 Claims**



1. A system for treating contaminated air from a mechanical industrial process comprising:

a source capture mechanism that continuously captures a contaminated air volume emitted during operation of the mechanical industrial process, the capture mechanism including a structure having a capture opening oriented toward a source of the contaminated air volume;

mixing means operably connected to the capture mechanism for mixing the contaminated air volume with an ambient air volume to produce a mixed air volume that is generally prevented from exhibiting aerosol bulk motion characteristics of a cloud, the ambient air volume being obtained from a source that is different than the source of the contaminated air volume , said mixing means effecting a reduction in temperature in said contaminated air volume and inducing a turbulent condition therein promoting a reduced concentration thereof in combination with said ambient air volume;

air cleaning apparatus;

conduit structure operably connected to the mixing means and the air cleaning apparatus to transport the mixed air volume therebetween; and

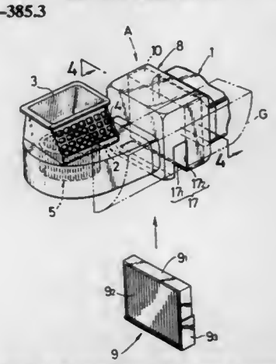
means for moving the mixed air volume through the conduit structure at a given air volume velocity.

5,613,991

AIR FILTER ATTACHMENT AND DETACHMENT STRUCTURE IN AIR CONDITIONING DEVICE FOR MOTOR VEHICLE

Hidenori Esaki, and Yoshihiro Watanabe, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,971
Claims priority, application Japan, May 25, 1994, 6-110958
Int. Cl.[6] B01D *46/10*
U.S. Cl. 55—385.3 **7 Claims**
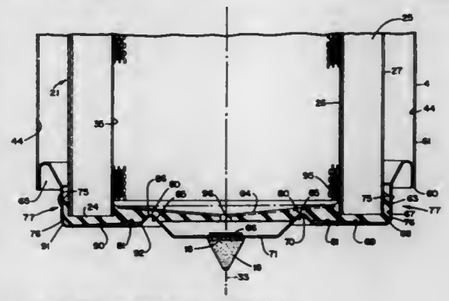


1. An air filter attachment and detachment structure in an air conditioning device for a motor vehicle, wherein said air conditioning device has an air passage means that is disposed inside an instrument panel having a glove box opposed to a passenger compartment of the motor vehicle, said air passage means being located forwardly of said glove box in a vehicle body of said motor vehicle and extending laterally of the vehicle body, and wherein an air filter of a square plate shape is attached to and detached from said air passage means through an air filter attachment and detachment slit provided in said air passage means, said air filter attachment and detachment slit being formed into a substantially L-shape having a first slit opening downwardly and a second slit opening rearwardly of said vehicle body, said first and second slits being connected to each other, a selected gap in a horizontal direction being provided between said second slit and a front end portion of said glove box for avoiding interference of the glove box with said air filter at the time of the attachment and detachment operations of the air filter.

5,613,992

REVERSE FLOW AIR FILTER ARRANGEMENT AND METHOD

Donald F. Engel, Prior Lake, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Nov. 23, 1994, Ser. No. 344,371
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—432 **19 Claims**



1. An air filter arrangement comprising:

(a) a housing;

(b) air filter element having: first and second, opposite, end caps; filter media; and, an open filter interior;
(i) said first end cap having an air inlet opening therein;
(ii) said second end cap having:
(A) a central drainage aperture; and,
(B) an interior surface constructed and arranged to funnel moisture on said second end cap interior surface to said central drainage aperture;
(c) an air flow direction arrangement constructed and arranged to direct air flow: into said housing; into said open filter interior; through said filter media; and, outwardly from said housing;
(d) said filter element second end cap is a sheet metal end cap;
(e) said housing includes a base having a central pan with a central drainage aperture; and,
(f) a primary seal gasket is axially compressed between said second end cap and said base, when said air filter arrangement is operationally assembled.

5,613,993

PROCESS FOR ENCAPSULATING A SHAPED BODY FOR HOT ISOSTATIC PRESSING BY SOL-GEL METHOD

Kerry Richards, Abingdon, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1995, Ser. No. 521,394
Int. Cl.[6] C03B *8/00*
U.S. Cl. 65—17.2 **14 Claims**

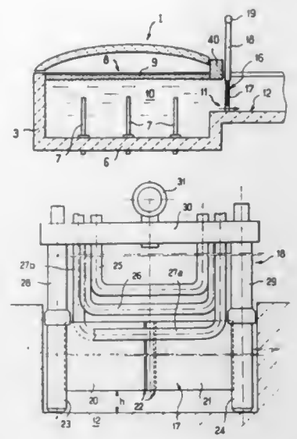
1. A process for encapsulating a preform, prepared from a powder, with glass for the purpose of preparing a shaped body by hot isostatic pressing comprising the steps of:
preparing a mixture comprising a sol and a filler glass having an identical composition as the sol, which gels upon application to a preform,
the glass fillers selected from the group consisting of a high-temperature filler and a low-temperature filler:
coating an outer surface of the preform with at least one layer of the sol mixture;
after the mixture has gelled, drying the sol gel coating;
baking out the coated preform;
heating the coated preform under vacuum and at temperature sufficient to cause the sol gel coating to seal the outer surface of the preform; and
subjecting the sealed preform to hot isotstatic pressing at high temperatures and pressures in an inert atmosphere.

5,613,994

ELECTRIC FURNACE FOR MELTING GLASS

Jose A. C. Muniz, Madrid; Luis G. Golcoechea, Aviles, both of Spain, and Maurice Lemaille, Douai, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Mar. 23, 1994, Ser. No. 216,298
Claims priority, application France, Mar. 23, 1993, 93 03288
Int. Cl.[6] C03B *5/20;5/02*
U.S. Cl. 65—339 **21 Claims**



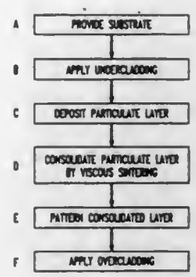
1. A furnace for electric melting of vitrifiable materials, comprising:
a compartment having an approximately horizontal floor and an outlet;
an electric heating device positioned for heating and melting glass in said compartment, the molten glass including a supernatant composition; and
an immersed throat at the outlet for removing the melted glass,
wherein at least an upper part of the throat is defined by a mobile barrier having an upper part extending upward up to a level higher than that of the supernatant composition and a lower part constructed so as to be totally immersed in the molten glass, said lower part comprising at least two plates having metallic faces resistant to corrosion by molten glass, wherein said at least two plates of said lower part of the barrier partially laterally overlap with sufficient clearance to absorb thermal expansion of the barrier.

5,613,995

METHOD FOR MAKING PLANAR OPTICAL WAVEGUIDES

Subas D. Bhandarkar, Murray Hill, and John B. MacChesney, Lebanon, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 52,357, Apr. 23, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 329,034
Int. Cl.[6] C03B *19/06*
U.S. Cl. 65—384 **9 Claims**



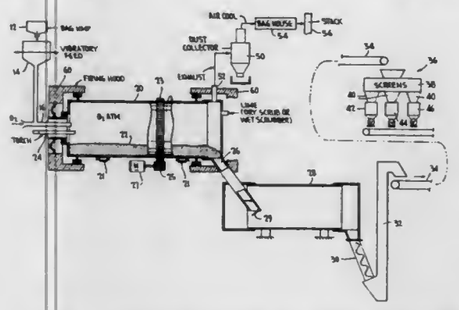
1. A method of making a planar optical waveguide device comprising the steps of
a) providing a silicon substrate having a coefficient of thermal expansion and a major surface;
b) forming on the major surface a layer of glass to act as an undercladding;
c) forming on said layer of glass a particulate layer of a glass comprising SiO_2 and boron, said particulate layer predominantly comprising glass particles having diameters less than about a micron;
d) consolidating the particulate layer by a heat treatment comprising low temperature viscous sintering at 950° C. or less for a period in excess of eight hours and sufficient to produce an essentially bubble free consolidated particulate layer;
e) making an optical waveguide core from the consolidated particulate layer; and
f) forming on said optical waveguide core a layer of glass to act as an overcladding.

5,613,996

PROCESS FOR TREATMENT OF REACTIVE FINES

Richard D. Lindsay, Brentwood, Tenn., assignor to Plasma Processing Corporation, Brentwood, Tenn.

Filed May 8, 1995, Ser. No. 436,618
Int. Cl.[6] C22B *4/02;* **C04B** *35/02*
U.S. Cl. 75—10.21 **10 Claims**



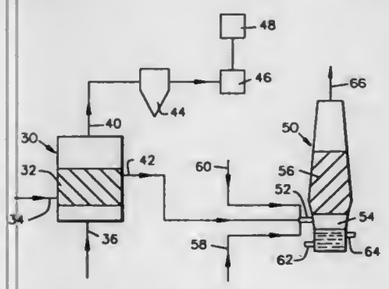
1. Process of treating an aluminum dross residue having available aluminum nitride and/or free aluminum and/or aluminum chloride and having a particle size within the range of 0.3 to 300 microns to produce a high alumina lightweight aggregate comprising
(a) feeding said residue into the upstream end of a sealed rotatable kiln while said kiln is rotating at between about ⅛ and 1 rpm,
(b) heating said residue within said kiln with less than about 50% of the total heat energy input for heating said residue to a temperature between 2000° and 4000° F.,
(c) feeding oxygen or a mixture of oxygen and water into the upstream end of said kiln in a controlled quantity sufficient to react with said available aluminum nitride, free aluminum and aluminum chloride, thereby providing the heat energy necessary to bring the temperature of said residue to about 2000° to 4000° F. and
(d) recovering a high alumina lightweight aggregate at the downstream end of said kiln.

5,613,997

METALLURGICAL PROCESS

Donald P. Satchell, Jr., Summit, N.J., assignor to The BOC Group plc, Windlesham, England

Continuation-in-part of Ser. No. 214,900, Mar. 17, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 530,685
Int. Cl.[6] C22B *5/14*
U.S. Cl. 75—414 **30 Claims**



1. A metallurgical process comprising:
(a) converting a carbonaceous material to a reducing gas in the presence of oxygen or oxygen-enriched air in a main reactor;
(b) melting a metal in the main reactor;
(c) partially oxidizing particulate coal in a secondary reactor separate from said main reactor under conditions which form a particulate char and a calorific gas having a CO_2/CO ratio of at least 0.25; and
(d) introducing at an elevated temperature at least part of the char and up to some of the calorific gas produced in the secondary reactor into the main reactor, the part of the char introduced into the main reactor forming up to all of said carbonaceous material.

5,613,998

RECLAMATION PROCESS FOR TUNGSTEN CARBIDE AND TUNGSTEN-BASED MATERIALS

Purnesh Seegopaul, Flemington, and Li Wu, Plainsborough, both of N.J., assignors to Nanodyne Incorporated, Brunswick, N.J.

Filed May 23, 1995, Ser. No. 447,383
Int. Cl.[6] C22B *7/00*
U.S. Cl. 75—419 **12 Claims**

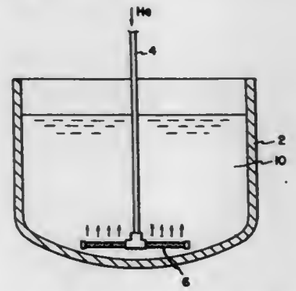
1. A method of recycling a tungsten composition comprising heating said tungsten composition at a temperature in excess of 700° C. in an oxidizing atmosphere to form a tetragonal/octahedral tungsten trioxide;
reducing said tetragonal tungsten trioxide by heating said tungsten trioxide in the presence of a reducing gas at a temperature of from 600° to 900° C. to form tungsten dioxide;
oxidizing said tungsten dioxide by heating said tungsten dioxide at a temperature of less than 600° C. in an oxidizing atmosphere to form monoclinic tungsten trioxide and dissolving said monoclinic tungsten trioxide in an aqueous basic solution.

5,613,999

METHOD FOR PRODUCING MAGNESIUM

Tadayoshi Nakamura, Ibaraki, and Kazumi Tanaka, Kitakyushu, both of Japan, assignors to Nippon Kinzoku Co., Ltd., Japan

PCT No. PCT/JP93/01291, § 371 Date Jul. 11, 1994, § 102(e) Date Jul. 11, 1994, PCT Pub. No. WO94/06945, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 10, 1993, Ser. No. 240,726
Claims priority, application Japan, Sep. 11, 1992, 4-269365
Int. Cl.[6] C22B *26/22*
U.S. Cl. 75—603 **9 Claims**



1. A method for producing a refined magnesium material which comprises:
a step of adding at least one alkaline earth metal selected from the group consisting of calcium, barium and strontium to a body of molten magnesium or molten magnesium alloy to render the molten magnesium or the molten magnesium alloy flame resistant;
a step of stirring the body of molten magnesium or alloy to cause a vertical vortex flow therein so as to raise the molten magnesium or alloy up from the bottom of the body;

a step of contacting actively a fresh upper surface of the body of molten magnesium or alloy coming up from inside the body with a gas capable of forming a dross and forming a thin film of dross on the fresh upper surface; and

a step of depositing impurity, floating with ascent of the molten magnesium or alloy due to the vertical vortex flow, at the thin film of dross formed on the fresh upper surface of the molten magnesium or alloy and accumulating the impurity.

5,614,000

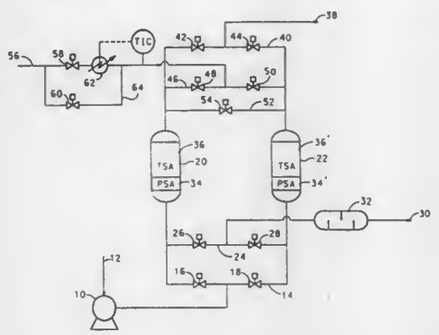
PURIFICATION OF GASES USING SOLID ADSORBENTS

Mohammed A. Kalbassi, Surrey, England, and Timothy C. Golden, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 4, 1995, Ser. No. 538,881

Int. Cl.[6] B01D *53/04;53/047*

U.S. Cl. 95—96 **10 Claims**



1. A method for the removal from a feed gas stream of at least two contaminating gas components comprising carrying out repeated cycles of operation which comprise:

feeding the feed gas stream in a feed direction at a first pressure and at a first temperature in contact with a solid adsorbent capable of adsorbing a first of said contaminating gas components more strongly and a second of said contaminating gas components less strongly so that said first contaminating gas component is adsorbed in an upstream portion of said adsorbent and said second contaminating gas component is adsorbed principally in a more downstream portion of said adsorbent,

halting the feeding of said feed gas stream,

depressurising the gas in contact with the adsorbent to a second, lower pressure, feeding a regenerating gas at said second pressure and at a second temperature higher than said first temperature in a direction counter-current to said feed direction in contact with said adsorbent to produce a heat pulse travelling in said counter-current direction to desorb said less strongly adsorbed second contaminating gas component from the downstream (with respect to the feed direction) portion of the adsorbent by TSA whilst at the same time desorbing the more strongly adsorbed first contaminating gas component from the upstream (with respect to the feed direction) portion of the adsorbent by PSA,

ceasing regenerating gas before the heat pulse travels as far as the upstream portion of the adsorbent in which is adsorbed the first contaminating gas component,

and repressurising said adsorbent.

5,614,001

HYDROGEN SEPARATOR, HYDROGEN SEPARATING APPARATUS AND METHOD FOR MANUFACTURING HYDROGEN SEPARATOR

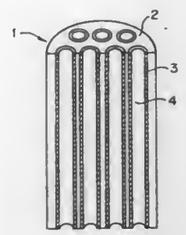
Shinichi Kosaka; Osamu Sakai, both of Nagoya; Tomonori Takahashi, Chita, and Takao Soma, Nishikamo-gun, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 19, 1995, Ser. No. 445,027

Claims priority, application Japan, May 23, 1994, 6-108623; Jun. 22, 1994, 6-140340

Int. Cl.[6] B01D *53/22;71/02;71/04*

U.S. Cl. 96—10 **12 Claims**



1. A hydrogen separator comprising:

a substrate formed of a solid block of porous material having a plurality of through-holes therein, said porous material being comprised of a material selected from the group consisting of alumina, silica, silica-alumina, mullite, cordierite, zirconia, carbon, and porous glass; and

a metal having a hydrogen separating ability coated on an inner surface of the through-holes of the substrate to close pores on the inner surface of the through-holes.

5,614,002

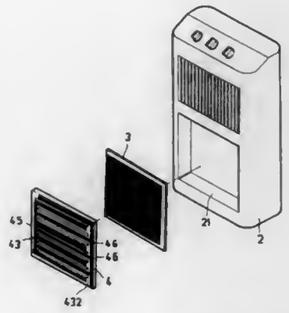
HIGH VOLTAGE DUST COLLECTING PANEL

Tze L. Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,224

Int. Cl.[6] B03C *3/60*

U.S. Cl. 96—55 **2 Claims**



1. In an air purifying apparatus having a housing formed with a recess in which are fitted a static activated carbon panel and a high voltage dust collecting panel, the improvement wherein said high voltage dust collecting panel comprises a plurality of cross bars and ventilation slits therebetween, said cross bars being coated with a high conductive and oxidation resistant alloy powder to form anodes and cathodes which are respectively connected to the positive pole and negative pole of a high voltage generating circuit.

5,614,003

METHOD FOR PRODUCING ELECTROLESS POLYALLOYS

Glenn O. Mallory, Jr., c/o Electroless Technologies 3860 Cloverdale, Los Angeles, Calif. 90008

Filed Feb. 26, 1996, Ser. No. 607,143

Int. Cl.[6] C23C *15/52*

U.S. Cl. 106—1.22 **18 Claims**

1. A method for producing an electroless polyalloy deposit containing phosphorus, a primary metal selected from the group consisting of nickel and cobalt and at least one secondary metal selected from the group consisting of copper, molybdenum, tin, and tungsten, the improvement of which achieves a hard deposit as plated above about 800 VHN_{100} and comprises preparing the polyalloy in an electroless polyalloy plating bath using a source of hypophosphite ion as a reducing agent and a source of a fluoborate anion wherein the bath is maintained at an alkaline pH.

5,614,004

ELECTROLESS GOLD PLATING SOLUTION

Hiroshi Wachi, Koza-gun, and Yutaka Otani, Hiratsuka, both of Japan, assignors to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,603

Claims priority, application Japan, Aug. 19, 1994, 6-195351

Int. Cl.[6] C23C *18/31*

U.S. Cl. 106—1.23 **19 Claims**

1. An electroless gold plating solution containing a gold alkali metal cyanide, a boron-based reducing agent, an alkali metal hydroxide as a pH controller, and a thallium compound, wherein 0.1 to 10 g/l of a chelating agent is added to said electroless gold plating solution.

5,614,005

WATER RESISTANT SHOE POLISH

Ricky Leung, 2378 Robitaille Street, St-Laurent, Quebec, Canada

Filed Apr. 1, 1996, Ser. No. 625,248

Int. Cl.[6] C09G *1/08;1/12*

U.S. Cl. 106—10 **9 Claims**

1. A new and improved water resistant shoe polish composition for protecting an exterior surface of footwear consisting essentially of:

a base mixture consisting of a wax and turpentine oil in an amount less than about 80% by weight of the total composition;

petroleum benzin in an amount from about 1% to about 17 weight percent;

a silicone grease in an amount from about 5% to about 75 weight percent; and

the balance of the composition being water.

5,614,006

ANTI-FOULING COMPOSITION

Brian Algar, Southampton, United Kingdom, assignor to Borden (UK) Limited, Southampton, United Kingdom

PCT No. PCT/GB94/00262, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/19415, PCT Pub. Date Sep. 1, 1995

PCT Filed Feb. 10, 1994, Ser. No. 492,113

Claims priority, application United Kingdom, Feb. 25, 1993, 9303798

Int. Cl.[6] C09D *5/16*

U.S. Cl. 106—18.31 **10 Claims**

1. An anti-fouling composition comprising particles of a water-soluble glass dispersed or suspended in a hardenable liquid resin wherein the water-soluble glass includes phosphorus pentoxide having a content in the range of from 58 to 66% by weight of the glass, copper oxide at a content in the range of from 8 to 30% by weight of the glass and up to 15% by weight of the glass of a metal oxide selected from the group consisting of CaO, MgO, ZnO and mixtures thereof.

5,614,007

INK SET, AND METHOD AND APPARATUS FOR IMAGE FORMATION EMPLOYING THE SAME

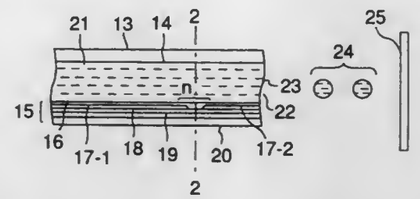
Yutaka Kurabayashi, Tokorozawa; Katsuhiro Shirota, Inagi, and Katsuhiko Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 411,156

Claims priority, application Japan, Mar. 29, 1994, 6-059073

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 R **33 Claims**



1. An ink set comprising a liquid composition containing a lower-molecular cationic substance and a higher-molecular cationic substance and a black ink in combination, the black ink containing a black dye, and a cyan dye, yellow dye or mixtures thereof as water-soluble anionic dyes.

5,614,008

WATER BASED INKS CONTAINING NEAR INFRARED FLUOROPHORES

Nelson Z. Escano, 304 Appleberry Cir., and James J. Krutak, Sr., 6305 Booth Ct., both of Kingsport, Tenn. 37663

Filed Oct. 23, 1995, Ser. No. 546,973

Int. Cl.[6] C09D *11/00;* **C08F** *20/00;* **C08L** *67/02*

U.S. Cl. 106—23 D **15 Claims**

1. An ink composition comprising:

A. between about 1 and 10 weight percent of at least one water-dissipatable polyester comprising:

(i) monomer residues of at least one dicarboxylic acid;

(ii) about 4 to 25 mole percent, based on the total of all acid, hydroxy and amino equivalents, of monomer residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring where the functional groups are hydroxy, carboxyl, carboxylate ester or amino;

(iii) monomer residues of at least one diol or a mixture of diol and a diamine; and optionally,

(iv) monomer residues of at least one difunctional monomer reactant selected from the group consisting of hydroxycarboxylic acids, amino carboxylic acids and aminoalkanols;

provided that at least 20 percent of the groups linking the monomeric units are ester linkages; said water-dissipatable polyester having from about 0.1 ppm by weight to about 10% by weight of a thermally stable near infrared fluorophoric compound copolymerized therein;

B. between about 5 and 75 weight percent of at least one aliphatic humectant;

C. between about 0 and 15 weight percent of at least one lower aliphatic alcohol of no more than 3 carbon atoms;

D. water and optionally up to about 2 weight percent of one or more additives;

wherein the weight percentages of components A–D equal 100%.

5,614,009

CEMENT, CEMENT PRODUCTS, MOLDING MATERIAL, A CONCRETE MEMBER AND A METHOD OF PRODUCING THE SAME

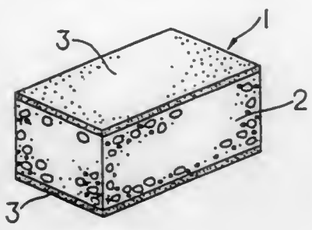
Tadashi Kobayashi; Game K. D. Pushpalal, both of Sakata, and Masaki Hasegawa, Tokyo, all of Japan, assignors to Maeta Concrete Industry Ltd., Yamagata, Japan

Division of Ser. No. 427,341, Apr. 24, 1995, abandoned, which is a continuation of Ser. No. 129,590, Sep. 30, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,003

Claims priority, application Japan, Dec. 21, 1992, 4-361899; Jun. 28, 1993, 5-210815; Jun. 28, 1993, 5-210816

Int. Cl.[6] C04B *24/22;24/30*

U.S. Cl. 106—38.2 11 Claims



1. A method of producing molding material comprising the step of mixing a cement composition having at least one kind of hydraulic cement and a polymer precursor that is substantially anhydrous and generates water by a curing reaction, wherein said cement composition has from 12 to 60 parts by weight of said polymer precursor relative to 100 parts by weight of said hydraulic cement, and wherein said cement composition is reactable in the absence of additional water.

5,614,010

HYDROCARBON GELS USEFUL IN FORMATION FRACTURING

Kevin W. Smith, McMurray, and Leonard J. Persinski, Pittsburgh, both of Pa., assignors to Clearwater, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 360,438, Dec. 21, 1994, abandoned, which is a division of Ser. No. 209,266, Mar. 14, 1994, Pat. No. 5,417,287. This application Jan. 26, 1996, Ser. No. 592,592

Int. Cl.[6] E21B *43/26*

U.S. Cl. 106—285 16 Claims

1. Composition for fracturing formations comprising a hydrocarbon fracturing fluid and (a) about 0.3% to about 1.5% by weight of a phosphate ester of the formula HPO_4RR', where R is an alkyl, aryl, alkoxy, or alkaryl group having from 6 to about 18 carbon atoms and R' is hydrogen or an aryl, alkaryl, alkoxy, or alkyl group having from 1 to about 18 carbon atoms, (b) a ferric salt in an amount sufficient to form a gel with said hydrocarbon fluid and said phosphate ester, (c) a low molecular weight amine of the formula $H_{3-n}N(C_mH_{2m}R)_n$ where n is an integer from 1 to 3, each m is independently an integer from 2–6, and R is H or OH in an amount from about one-fourth molar equivalent to about one and one-half molar equivalent of the phosphate ester, and (d) up to about 10% surfactant.

5,614,011

THERMALLY SPLIT ZIRCONIUM SILICATE, METHOD OF ITS PRODUCTION AND USE

Dieter Binder, Alzenau; Peter Kleinschmit, Hanau; Klaus Zetzmann, Kleinostheim, and Hans Hoffmeister, Geinhausen, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 257,016, Jun. 8, 1994, abandoned, which is a division of Ser. No. 842,607, Feb. 27, 1992, Pat. No. 5,324,355. This application Jun. 7, 1995, Ser. No. 481,699

Claims priority, application Germany, Mar. 1, 1991, 41 06 536.0

Int. Cl.[6] C01B *13/18*

U.S. Cl. 106—450 17 Claims

1. A method of producing a pigment, comprising: selecting thermally split zirconium silicate having embedded therein, in an amorphous SiO_2 phase monoclinic, zirconium dioxide grains having a dendrite morphology, a specific surface area (BET) in the range of 3 to 15 m^2/g, and an average particle size (d_{50} value) in the range of 0.5 μm to 3.0 μm,

mixing said thermally split zirconium silicate with at least one other pigment ingredient; and

annealing the resulting mixture for a period of time.

5,614,012

HIGHLY TRANSPARENT, RED IRON OXIDE PIGMENTS, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Ulrike Pitzer, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 20, 1995, Ser. No. 531,002

Claims priority, application Germany, Sep. 30, 1994, 44 34 968.8

Int. Cl.[6] C01G *49/02;* C08K *3/22;* C09D *17/00*

U.S. Cl. 106—456 9 Claims

1. A process for the production of highly transparent, chemically pure, red iron oxide pigments of the α-Fe_2O_3 modification, comprising

a) producing yellow, highly transparent iron oxide pigments of the α-FeOOH modification by precipitation and oxidation in an aqueous medium, starting from iron (II) sulphate solution, in such a manner that on completion of pigment formation the pH value is below 6;

b) the yellow pigment of step (a) is calcined to yield red, highly transparent iron oxide pigments; and

c) the red pigment is post-treated with sodium hydroxide solution.

5,614,013

PIGMENT COMPOSITIONS

Gordon Mitchell, Kilbarchan; Iain F. Fraser, Kilbirnie, and Robert Langley, Glasgow, all of Scotland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Oct. 18, 1994, Ser. No. 324,827

Claims priority, application United Kingdom, Oct. 20, 1993, 9321659; May 7, 1994, 9409099

Int. Cl.[6] C09B *27/00*

U.S. Cl. 106—494 19 Claims

1. A pigment composition comprising (A) an azo metal salt pigment, (B) an azo reaction product of (i) a diazonium salt of a primary aromatic amine having a carboxyl group or sulfonic acid group meta or para to an amino group with (ii) a coupling component comprising one or more unsubstituted or substituted naphthols, at least 50 mole % of said coupling component being a naphtholsulfonic acid, or a salt of said reaction product, and, optionally, (C) an organic resin containing an acidic group or a salt thereof.

5,614,014

PROCESS FOR THE PREPARATION OF QUINACRIDONE PIGMENTS

Manfred Urban, Wiesbaden, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Feb. 1, 1995, Ser. No. 384,323

Claims priority, application Germany, Feb. 3, 1994, 44 03 231.5

Int. Cl.[6] C08K *5/00*

U.S. Cl. 106—495 24 Claims

1. A process for the preparation of a pigment, mixed-crystal pigment or pigment preparation based on linear, unsubstituted quinacridones of β-phase or γ-phase, or substituted, linear quinacridones, which comprises:

initially wet-milling a coarsely crystalline crude pigment in a liquid aqueous, aqueous-organic or organic medium in a stirred ball mill which is operated at a power density of more than 2.5 kW per liter of milling space and a peripheral stirrer speed of more than 12 m/s under the action of grinding media having a diameter of less than or equal to 0.9 mm, until fine division is reached, and then isolating the resulting pigment.

5,614,015

PROCESS FOR THE PREPARATION OF 4,10-DIBROMOANTHANTHRONE PIGMENT

Manfred Urban, Wiesbaden, and Gerhard Wilker, Mörfelden-Walldorf, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Sep. 14, 1995, Ser. No. 528,145

Claims priority, application Germany, Sep. 16, 1994, 44 33 041.3; Mar. 23, 1995, 195 10 668.7

Int. Cl.[6] C08K *5/00*

U.S. Cl. 106—498 23 Claims

1. A process for the preparation of 4, 10-dibromoanthanthrone pigment, which comprises first subjecting the crude 4, 10-dibromoanthanthrone pigment, which is in the coarsely crystalline state, to wet milling in an aqueous medium in a stirred ball mill which is operated at a power density of more than 2.5 kW per liter of milling space and at a peripheral stirrer speed of more than 12 m/s under the action of grinding media with a diameter of less than 1.0 mm, until the desired degree of fine division is reached (millbase suspension), and then isolating the resulting pigment in a conventional manner; or subjecting the prepigment obtained in the wet milling to a treatment at elevated temperature (finish) in an aqueous medium, an aqueous-organic medium or a liquid aromatic compound, and then isolating the pigment.

5,614,016

METHOD AND PLANT FOR MANUFACTURING CEMENT CLINKER

Søren Hundebøl, Copenhagen, Denmark, assignor to F.L. Smidth & Co. A/S, Denmark

PCT No. PCT/DK94/00207, § 371 Date Oct. 19, 1995, § 102(e) Date Oct. 19, 1995, PCT Pub. No. WO94/29231, PCT Pub. Date Dec. 22, 1994

PCT Filed May 27, 1994, Ser. No. 535,285

Claims priority, application Denmark, Jun. 3, 1993, 632/93; Feb. 3, 1994, 145/94

Int. Cl.[6] C04B *7/43;* F27B *7/00*

U.S. Cl. 106—745 14 Claims

1. A method for burning sludge or filter cakes during cement clinker manufacture comprising the steps of preheating cement raw meal, calcining the preheated cement raw meal in a calciner, and then burning the calcined cement raw meal in a kiln, said method further comprising drying the sludge or filter cakes by mixing therewith at least a portion of the preheated or calcined cement raw meal thereby drying the sludge or filter cakes at least partially by means of the heat from the preheated or calcined cement raw meal, and thereafter burning the mixture of dried sludge or filter cakes and cement raw meal in the calciner or the kiln.

5,614,017

CEMENT ADDITIVES

Edward T. Shawl, Wallingford, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Mar. 26, 1996, Ser. No. 621,669

Int. Cl.[6] C04B *24/24*

U.S. Cl. 106—823 24 Claims

1. A cement additive containing carboxylic acid groups produced by reaction of (a) a carboxylic acid polymer prepared by polymerizing a polymerizable acid monomer containing at least one ethylenically unsaturated group in conjugation with a carboxyl group selected from the group consisting of carboxylic acid, carboxylic anhydride and carboxylic ester groups and (b) a polyether prepared by polymerizing a C_2–C_4 epoxide, wherein (a) and (b) are reacted under conditions effective to achieve partial cleavage of the polyether and esterification of the polyether and cleavage products thereof by the carboxylic acid polymer.

5,614,018

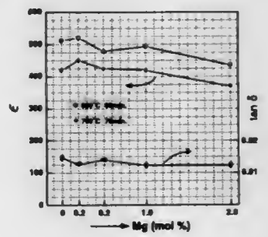
INTEGRATED CIRCUIT CAPACITORS AND PROCESS FOR MAKING THE SAME

Masamichi Azuma; Carlos A. Paz De Araujo; Michael C. Scott, and Joseph D. Cuchiaro, all of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo., and Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 165,082, Dec. 10, 1993, which is a continuation-in-part of Ser. No. 132,744, Oct. 6, 1993, Pat. No. 5,514,822, which is a continuation-in-part of Ser. No. 993,380, Dec. 18, 1992, Pat. No. 5,456,945, Ser. No. 981,133, Nov. 24, 1992, Pat. No. 5,423,285, and Ser. No. 965,190, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 807,439, Dec. 13, 1991, abandoned, said Ser. No. 981,133is a continuation-in-part of Ser. No. 807,439. This application Jul. 11, 1994, Ser. No. 273,592

Int. Cl.[6] C30B *9/08*

U.S. Cl. 117—68 28 Claims



1. A method of fabricating an integrated circuit containing an accurately doped barium strontium titanate layer, said method comprising the steps of:

providing a liquid precursor comprising barium, strontium, titanium and a dopant selected from the group consisting of magnesium; niobium; yttrium; bismuth; tin; dysprosium; combinations of barium, zinc, and niobium; combinations of strontium and tantalum; and combinations of strontium, bismuth, and tantalum;

applying said precursor to an integrated circuit substrate;

treating said precursor to form a doped barium strontium titanate layer on said substrate.

5,614,019

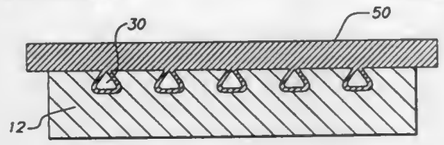
METHOD FOR THE GROWTH OF INDUSTRIAL CRYSTALS

Miroslav Vichr, Emmaus, and David S. Hoover, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 895,482, Jun. 19, 1992, Pat. No. 5,443,032. This application May 31, 1995, Ser. No. 454,775

Int. Cl.[6] C30B *25/06*

U.S. Cl. 117—84 **19 Claims**



1. A method for single crystal growth by chemical vapor deposition comprising:

(a) depositing onto a surface of a seed plate, comprising a plurality of oriented crystal wafers, a masking layer including a geometric pattern in the masking layer;

(b) selectively etching the masking layer to expose of the surface of said seed plate;

(c) etching the exposed, geometrically patterned surface of said seed plate to form a plurality of nucleation structures consisting of the seed plate material and the remaining portion of said masking layer, and protruding outwardly from said seed plate, each of said protrusion structures in the shape of inverted pyramidal mesas having side walls and a top surface having a surface area in the range of about 0.2 to about 60 μm^2;

(d) removing the remainder of said masking layer;

(e) placing said seed plate into a chemical vapor deposition reactor;

(f) growing a single crystal on the top surface of said inverted pyramidal mesas to form a continuous layer of monocrystalline material and to leave interconnecting channels within said monocrystalline material;

(i) separating the resulting single crystal from said seed plate; and

(j) recovering said single crystal having an area greater than the area of each of the individual crystal wafers.

5,614,020

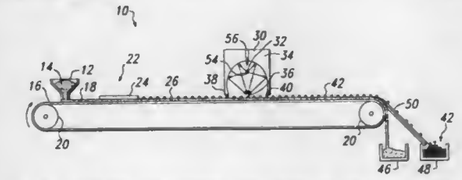
APPARATUS FOR MAKING OPTICALLY FUSED SEMICONDUCTOR POWDER FOR SOLAR CELLS

Gary D. Stevens, Dallas, Tex., and Francois A. Padovani, Westwood, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 368,229, Jan. 3, 1995, Pat. No. 5,556,791. This application Apr. 8, 1996, Ser. No. 637,194

Int. Cl.[6] H01L *31/18;* **C30B** *35/00*

U.S. Cl. 117—205 **7 Claims**



1. An apparatus for forming semiconductor particles, comprising:

a) a refractory layer;

b) means for defining spaced piles of semiconductor feedstock upon said refractory layer; and

c) means for directing optical energy to said plurality of semiconductor feedstock piles sufficient energy to at least partially melt said semiconductor feedstock piles and define said semiconductor particles wherein the apparatus further comprising a conveyer medium advancing said refractory layer and said semiconductor feedstock piles past said optical energy directing means.

5,614,021

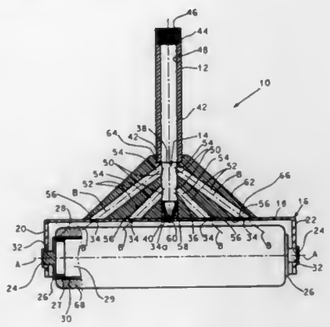
PAINT ROLLER WITH INTEGRAL WASHER ASSEMBLY

Fred C. Catlin, 1208 S. 58th St., Tampa, Fla. 33619

Continuation of Ser. No. 301,196, Sep. 6, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,594

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—258 **4 Claims**



1. A paint roller assembly comprising:

an elongate shield having an arcuate side wall and first and second opposing end walls, said shield having a plurality of apertures through said side wall;

means for mounting a paint roller sleeve being attached to each of said end walls of said shield such that said paint roller sleeve is mounted adjacent said arcuate side wall; and

a distribution member comprising:

a manifold pipe connected centrally and perpendicularly to said shield, said manifold pipe having an open first end and an open second end and plurality of lateral ports formed therethrough, said open first end adapted for connecting said manifold to a fluid source under pressure, said open second end forming a nozzle extending through said sleeve; and

a plurality of distribution tubes radiating outward from said manifold pipe and providing fluid communication between said manifold pipe lateral ports and said sleeve apertures, wherein each of said distribution tubes has a first end and a second end, each of said first ends communicating with said lateral ports in said manifold pipe, each of said second ends in communication with said apertures in said shield sidewall and terminating in a nozzle.

5,614,022

THERMAL SPRAYING LINING PROCESS FOR PISTON RINGS AND NOZZLE FOR SPRAYING

Jan Vatavuk; Jose R. Z. Neto, both of Santo Andre, and Marcos R. Piccili, Sao Paulo, all of Brazil, assignors to COFAP-Companhia Fabricadora de Pecas, San Andre, Brazil

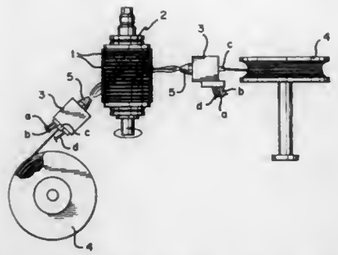
Continuation-in-part of Ser. No. 996,905, Dec. 28, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 233,048

Claims priority, application Brazil, Jan. 3, 1992, 9200089

Int. Cl.[6] B05C *5/04;* **B05B** *7/18*

U.S. Cl. 118—302 **7 Claims**

1. A nozzle for forming droplets of molten metal from the metal in wire form and spraying the droplets of molten metal comprising:



a nozzle body having an outlet end and a central passage through said body having an outlet orifice at said outlet end through which the wire is fed,

a first set of passages in said nozzle body through which compressed air is fed and a second set of passages in said nozzle body through which an oxygen-acetylene fuel is fed, each passage having an outlet orifice at the nozzle body outlet end, the outlet orifices of said first and second sets of passages each arranged in a respective pattern around the central passage outlet orifice, the outlet orifices of the first set of passages for feeding compressed air being closer to the central passage outlet orifice than the outlet orifices of the second set of passages, and the outlet orifices of said first set of passages directing compressed air toward said outlet orifice of said central passage and the wire passing therethrough.

5,614,023

APPARATUS FOR APPLYING A THIN FILM OF MAGNETIC LIQUID FROM AN EXTRUSION-TYPE HEAD TO A FLEXIBLE BAND-LIKE WEB

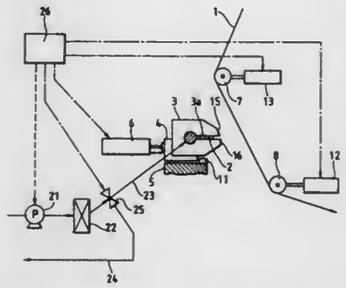
Shinsuke Takahashi, and Norio Shibata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 683,905, Apr. 11, 1991, Pat. No. 5,202,164. This application Oct. 26, 1992, Ser. No. 966,333

Claims priority, application Japan, Apr. 13, 1990, 2-96285

Int. Cl.[6] B05C *3/02*

U.S. Cl. 118—410 **4 Claims**



1. An apparatus for applying a liquid to a flexible band-like carrier having a transverse width, comprising:

an application head having a back edge portion, a doctor edge portion and slot disposed therein, said head facing said carrier;

means for initially positioning said carrier along the entire transverse width thereof and the back edge portion only of said head near each other or in slip contact with each other;

means for discharging said liquid from said slot in said head so that any scraped chips formed by the initial contact between said head and said carrier are removed by said liquid in a downstream direction beyond the doctor edge; and

means for lapping said carrier and the doctor edge portion of said head, which is located downstream of said slot with regard to the direction of the conveyance of said carrier, with each other at a prescribed lap angle for said application.

5,614,024

APPARATUS FOR APPLYING PASTE

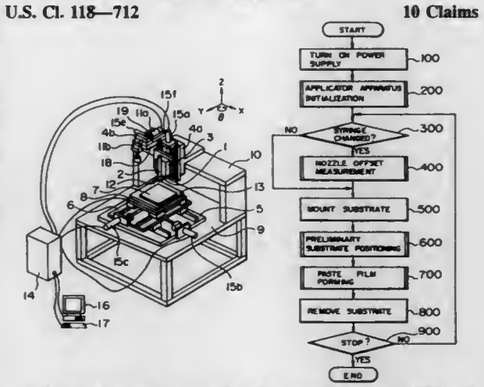
Shigeru Ishida, Ibaraki-ken; Satoshi Yawata, Kashiwa; Tomio Yoneda, Ibaraki-ken; Haruo Mishina, Ushiku; Kiyoshi Imaizumi, and Yukihiro Kawasumi, both of Ryugasaki, all of Japan, assignors to Hitachi Techno Engineering Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,001

Claims priority, application Japan, Aug. 6, 1993, 5-196244; Nov. 10, 1993, 5-281232

Int. Cl.[6] B05C *11/00*

U.S. Cl. 118—712 **10 Claims**



1. An apparatus for applying a paste to a substrate, comprising:

a table for holding the substrate;

a paste container for containing the paste;

a mount for mounting said paste container thereon;

a nozzle which is in fluid-flow communication with said paste container and which has a paste ejection orifice facing an upper surface of said table holding the substrate, said nozzle being attached to said paste container;

means for changing the positions of said nozzle and said table relative to each other while said nozzle applies the paste to an upper surface of the substrate to thereby form thereon a paste pattern of a desired shape;

measurement means for measuring the position of the paste ejection orifice of said nozzle when said nozzle has been exchanged together with said paste container to which said nozzle is attached, in the course of forming the paste pattern, for a new nozzle attached to a new paste container associated therewith;

calculation means for calculating a misalignment of the paste ejection orifice of said new nozzle based on a result of the measurement made by said measurement means; and

adjustment means for adjusting the position of the substrate according to the misalignment calculated by said calculation means, whereby the misalignment of the position of the paste ejection orifice after said nozzle has been exchanged can be corrected.

5,614,025

PLASMA PROCESSING APPARATUS

Takeshi Akimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

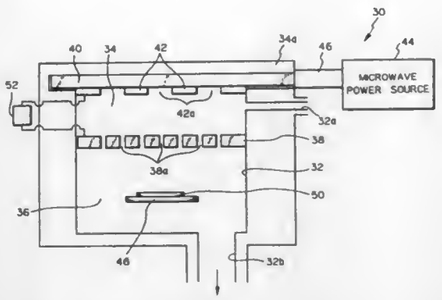
Filed Dec. 7, 1994, Ser. No. 351,517

Claims priority, application Japan, Dec. 13, 1993, 5-311408

Int. Cl.[6] C23C *16/00*

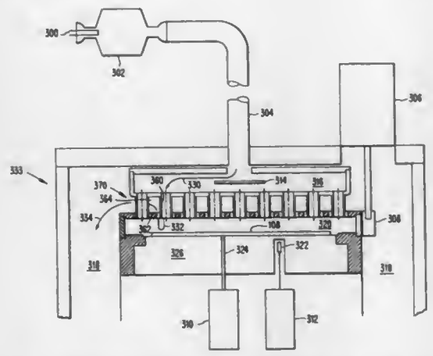
U.S. Cl. 118—723 MP **1 Claim**

1. A plasma processing apparatus for processing an object with neutral particles produced from plasma, comprising:



a plasma generating chamber;
a processing chamber accommodating the object to be processed;
a dielectric path member facing said plasma generating chamber;
a microwave generator for feeding a microwave to said dielectric path member;
a first electrode member formed between said plasma generating chamber and said processing chamber and having a plurality of minute aperture;
a second electrode member mounted on said dielectric path member within said plasma generating chamber and having a plurality of radiation ports for radiating the microwave therethrough; and
a power source for applying a voltage to between said first electrode member and said second electrode member;
whereby said plasma chamber produces plasma including ion particles between said first electrode member and said second electrode member, and said first electrode member converts said ion particles to said neutral particles.

5,614,026
SHOWERHEAD FOR UNIFORM DISTRIBUTION OF PROCESS GAS
Norman Williams, Newark, Calif., assignor to LAM Research Corporation
Filed Mar. 29, 1996, Ser. No. 623,867
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 ME **30 Claims**



1. An apparatus for uniformly distributing process gas over a substrate surface comprising:
a gas supply conduit supplying process gas to be energized into a plasma state;
a plasma generator in fluid communication with the gas supply conduit, the plasma generator energizing process gas supplied from the gas supply conduit into a plasma state;
a gas delivery conduit in fluid communication with the plasma generator, the gas delivery conduit carrying the process gas energized in the plasma generator;
a process chamber wherein a substrate is processed, the process chamber including a first region in fluid communication with the gas delivery conduit, a second region wherein the substrate is processed, a third region in fluid communication with the second region and through which gas and volatile byproducts are removed from the second region, and a showerhead separating the first and second regions, the process gas supplied from the gas delivery conduit passing into the first region, through the showerhead and into the second region for processing the substrate;
the showerhead including gas inlets and gas outlets, the gas inlets supplying the process gas from the first region to the second region, the gas outlets withdrawing gas and volatile byproducts from the second region to the third region; and
an exhaust conduit in fluid communication with the third region, the gas and volatile byproducts being withdrawn from the process chamber through the exhaust conduit.

5,614,027
METAL CLEANER WITH NOVEL ANTI-CORROSION SYSTEM
Steven Dunn, Hillsborough, and Anthony Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.
Filed Sep. 23, 1994, Ser. No. 311,253
Int. Cl.[6] C23G *1/16;* C11D *3/04;3/28;3/34*
U.S. Cl. 134—2 **58 Claims**

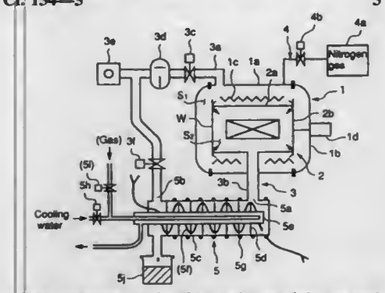
1. A method of cleaning aluminum or aluminum alloy substrates so as to remove contaminants therefrom comprising: contacting said substrates with an aqueous cleaning solution comprising a metal cleaning composition in water, said metal cleaning composition containing an alkoxylated thiol surfactant, and an N-alkyl pyrrolidone surfactant, an alkalinity providing agent and a corrosion inhibitor selected from the group consisting of magnesium ions, zinc ions and mixtures thereof, said contacting occuring for a sufficient time to remove said contaminants from said substrates.

28. An aqueous metal cleaning solution comprising 0.1 to 20 wt. % of a metal cleaning composition and the balance water, said metal cleaning composition comprising an alkoxylated thiol surfactant, N-alkyl pyrrolidone surfactant, an alkalinity providing agent, a corrosion inhibitor selected from the group consisting of magnesium ions, zinc ions and a mixture thereof, and a carboxylated polymer to maintain said corrosion inhibitor in solution, said solution having a pH of from 7.5 to 11.0.

5,614,028
METHOD OF CLEANING AND PASSIVATING A METAL SURFACE WITH ACIDIC SYSTEM AND ETHOXYLATED TERTIARY DODECYL MERCAPTAN
Edward A. Rodzewich, Flourtown, Pa., assignor to BetzDearborn Inc., Trevose, Pa.
Continuation-in-part of Ser. No. 32,081, Mar. 17, 1993, abandoned. This application May 31, 1995, Ser. No. 454,911
Int. Cl.[6] C23G *1/04;* C23C *22/06*
U.S. Cl. 134—2 **6 Claims**

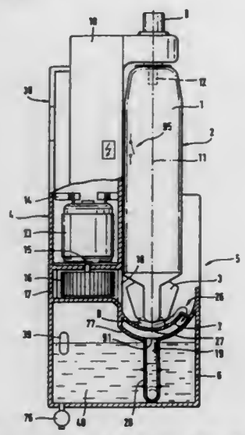
1. A method of cleaning and passivating a metal surface in a single step comprising contacting a metal surface to be cleaned and passivated with a solution consisting essentially of an acidic cleaning system to which has been added a corrosion inhibiting amount of ethoxylated tertiary dodecyl mercaptan.

5,614,029
FURNACE FOR TREATING ORGANIC MATTER HEAT
Eiji Nakatsukasa; Masao Takeda, and Ippei Yamauchi, all of Kyoto, Japan, assignors to Shimadzu Mectem, Inc., Shiga-ken, Japan
Filed May 17, 1995, Ser. No. 443,028
Claims priority, application Japan, May 20, 1994, 6-107066
Int. Cl.[6] B08B *7/04;* B01D *1/00*
U.S. Cl. 134—5 **3 Claims**



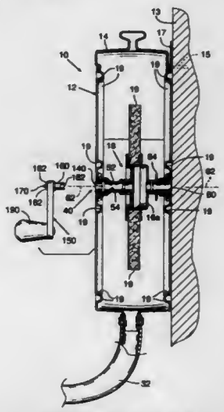
1. A heat treatment device for work containing organic matter comprising:
a furnace inside of which a heater is provided;
a case arranged in the furnace within an area where heat from said heater reaches said case;
an internal evacuation duct interconnected between said case and outside of said furnace;
a gas furnishing duct to introduce gas into said furnace; and
a liquefying trap having a tank arranged m said internal evacuation duct;
wherein said liquefying trap has a clearance formed between a cooling surface and a heating surface for continuous flow of gas within said clearance.

5,614,030
METHOD OF CLEANING A SHAVING HEAD OF A DRY SHAVING APPARATUS
Gebhard Braun, Kelkheim, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Jan. 11, 1995, Ser. No. 371,498
Claims priority, application Germany, Jan. 26, 1994, 44 02 236.0
Int. Cl.[6] B08B *9/00*
U.S. Cl. 134—22.1 **14 Claims**



1. A method of cleaning a shaving head of a dry shaving apparatus using a cleaning device having a fluid feed mechanism in fluid connection with a fluid container, said method comprising the steps of:
positioning the shaving head at a position above a fluid level of the fluid container containing a cleaning liquid,
activating the fluid feed mechanism to convey, during a first stage of a cleaning cycle, the cleaning liquid to a cradle, the dry shaving head being at last partially submerged in the cleaning liquid in the cradle such that the cleaning liquid is conveyed through the shaving the of the dry shaving aparatus, and
deactivating the fluid feed mechanism, in a second stage following completion of the first stage of the cleaning cycle, to cause the cleaning liquid to automatically drain from the cradle.

5,614,031
METHOD AND APPARATUS FOR WASHING A FIBROUS MAT
Ernest W. Cushing, 24854 116th Ave., SE., Kent, Wash. 98031
Filed May 11, 1995, Ser. No. 440,325
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—33 **8 Claims**



I. A method of cleaning a fibrous mat, the method comprising the steps:
mounting rotatably the mat within an enclosure;
directing aqueous solution into said mat, said aqueous solution applying a first rotational force to said mat urging said mat toward a first rotational direction; and
rotating said mat in a second rotational direction by application of a second rotational force to said mat, said second rotational force being opposite and of greater magnitude relative to said first rotational force.

5,614,032
TERPENE-BASED METHOD FOR REMOVING FLUX RESIDUES FROM ELECTRONIC DEVICES
Ching-Ping Wong, Lawrenceville, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Aug. 4, 1994, Ser. No. 285,679
Int. Cl.[6] B08B *3/08*
U.S. Cl. 134—38 **7 Claims**

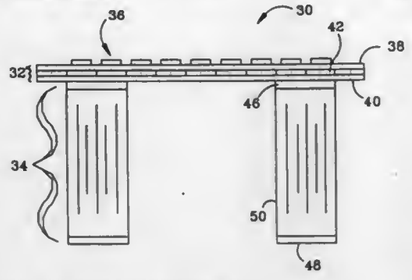
1. A method for cleaning an electronic device having thereon rosin flux residue, said method comprising the step of immersing said device in a cleaning solvent comprising terpene, thereby to remove said residue, wherein:
said cleaning solvent further comprises alcobol in an amount that is one to twenty percent, by total weight, of said cleaning solvent;
the alcobol consists essentially of at least one of isopropyl alcobol and isobutyl alcohol; and
the amount of alcohol is, furthermore, sufficient to substantially prevent the formation of polar precipitates within the cleaning solvent during said cleaning.

5,614,033

RIGID SOLAR PANEL WITH DISCRETE LATTICE AND CARRIER STRUCTURES BONDED TOGETHER

Stephen A. Robinson, North Hills, and Stanley J. Krause, Northridge, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 8, 1995, Ser. No. 512,727
Int. Cl.[6] H01L 31/052
U.S. Cl. 136—246 21 Claims



1. A rigid solar panel, comprising:

a lattice structure that includes first and second thin lattice patterned face sheets bonded to opposite sides of, mutually spaced apart by, and registered to a lightweight lattice-patterned core, said face sheets having an elastic modulus sufficiently high and being sufficiently spaced apart by said core that they provide substantially all of the solar panel's axial and bending stiffness, with said lightweight, lattice-patterned core serving as a spacer for said face sheets without itself contributing any substantial axial or bending stiffness to said lattice structure; and

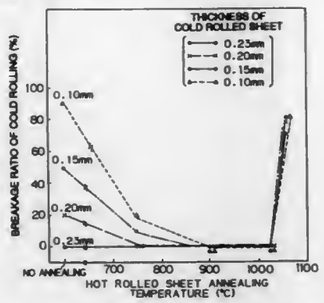
a carrier having an electrically inert front surface and a back surface that is bonded to the lattice structure's first face sheet, said carrier conducting heat away from said front surface.

5,614,034

PROCESS FOR PRODUCING ULTRAHIGH SILICON ELECTRICAL THIN STEEL SHEET BY COLD ROLLING

Yozo Suga; Hotaka Honma; Yoshiyuki Ushigami, and Syuji Kitahara, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 15, 1991, Ser. No. 731,111
Claims priority, application Japan, Jul. 16, 1990, 2-187735
Int. Cl.[6] H01F 1/04
U.S. Cl. 148—111 8 Claims



1. A process for producing an ultra high silicon electrical thin steel sheet by cold rolling, which comprises cold-rolling a steel sheet consisting essentially of by weight not more than 0.006% of carbon, 5.0 to 7.1% of silicon, 0.07 to 0.30% of manganese, not more than 0.007% of sulfur, 0.006 to 0.038% of acid soluble aluminium and 8 to 30 ppm of total nitrogen with the balance consisting of iron and unavoidable impurities at a sheet temperature in the range of from 120° to 350° C., said steel sheet being cold rolled to a thickness of 0.23 mm or less, and annealing the cold-rolled sheet for recrystallization and grain growth.

5,614,035

NONABRASIVE, CORROSION RESISTANT, HYDROPHILIC COATINGS FOR ALUMINUM SURFACES, METHODS OF APPLICATION, AND ARTICLES COATED THEREWITH

Sadashiv K. Nadkarni, Lexington, Mass., assignor to Alcan International Limited, Montreal, Canada

Division of Ser. No. 128,907, Sep. 29, 1993, Pat. No. 5,514,478.
This application Oct. 24, 1995, Ser. No. 547,151
Int. Cl.[6] C23C 22/07
U.S. Cl. 148—250 11 Claims

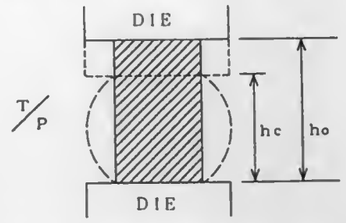
1. A composition for application to surfaces of aluminum articles to produce, upon heating, a nonabrasive, hydrophilic, corrosion resistant coating thereon, said composition comprising, in an aqueous vehicle, effective minor amounts of nitrilotrismethylenetriphosphonic acid, phosphoric acid, and borate material of the group consisting of zinc borate and sodium borate, the amount of nitrilotrismethylenetriphosphonic acid present being About 2.5 to about 7.8 parts by weight of nitrilotrismethylenetriphosphonic acid measured as a solution at 50% concentration, subject to the proviso that said material includes an effective amount of at least one borate, said coating formulation optionally also containing an effective minor amount of polyacrylic acid, said coating formulation being essentially free of silica, alumina and precursors thereof, and said amounts, in combination, being effective to provide a coating on said surface producing a stable contact angle with water of not more than about 15°.

5,614,036

HIGH HEAT RESISTING AND HIGH ABRASION RESISTING ALUMINUM ALLOY

Kunihiko Imahashi, Aichi-ken; Hirohisa Miura, Okazaki; Yasuhiro Yamada, Tajimi; Hirofumi Michioka, Toyota; Jun Kusui, and Akiei Tanaka, both of Ohmihachiman, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Toyo Aluminium Kabushiki Kaisha, both of Japan

Continuation of Ser. No. 160,724, Dec. 2, 1993, abandoned.
This application Jan. 30, 1996, Ser. No. 594,331
Claims priority, application Japan, Dec. 3, 1992, 4-324030; Dec. 25, 1992, 4-346739
Int. Cl.[6] C22C 21/00; 1/10
U.S. Cl. 148—437 5 Claims



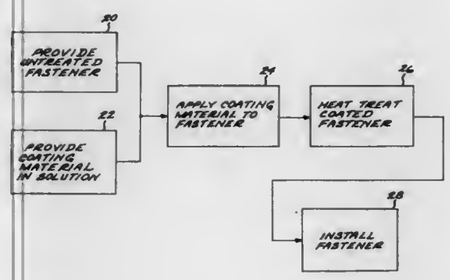
1. A high heat resisting and high abrasion resisting aluminum alloy, consisting essentially of 2 to 15% by weight of nickel (Ni), 0.2 to 15% by weight of silicon (Si), 0.6 to 8.0% of iron (Fe), one or two elements selected from the group consisting of 0.6 to 5.0% by weight of copper (Cu) and 0.5 to 3% by weight of magnesium (Mg), the total amount of said copper (Cu) and said magnesium (Mg) being equal to or less than 6% by weight, 0.3 to 3% by weight of zirconium (Zr), 0.3 to 3% by weight of molybdenum (Mo), the total amount of said zirconium (Zr) and said molybdenum (Mo) being equal to or less than 4% by weight, 0.05 to 10% by weight of boron (B), and the remainder being inevitable impurities and aluminum (Al), which alloy is produced by rapidly solidified powder metallurgy and contains dissolved boron beyond the solubility limit.

5,614,037

METHOD FOR PREPARING PRE-COATED ALUMINUM ARTICLES AND ARTICLES PREPARED THEREBY

Steven G. Keener, Trabuco Canyon, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 1, 1995, Ser. No. 432,223
Int. Cl.[6] C23F 17/00
U.S. Cl. 148—537 11 Claims



1. A method for preparing an aluminum-alloy article, comprising the steps of:

providing an aluminum-alloy fastener article in an untreated state, wherein the step of providing an aluminum-alloy article includes the step of providing a 7050 aluminum-alloy fastener;

providing a corrosion-resistant, curable organic coating material, the coating material comprising a phenolic resin and an organic solvent;

applying the organic coating material to the aluminum-alloy fastener article which is in the untreated state; and

heating the coated aluminum article to a temperature sufficient to simultaneously heat-treat the aluminum-alloy fastener article and cure the organic coating, wherein the step of heating includes the step of heating the 7050 aluminum-alloy fastener to a temperature of about 250° F. for a time of from about 4 to about 6 hours, and thereafter heating the fastener to a temperature of about 355° F. for a time of from about 8 to about 12 hours.

5,614,038

METHOD FOR MAKING MACHINABLE LEAD-FREE COPPER ALLOYS WITH ADDITIVE

Michael G. King, Salt Lake City, Utah, and Taie Li, Lakewood, Colo., assignors to ASARCO Incorporated, New York, N.Y.

Filed Jun. 21, 1995, Ser. No. 493,337
Int. Cl.[6] C21D 1/09
U.S. Cl. 148—538 7 Claims

1. A method of incorporating bismuth and selenium in an alloy comprising the steps of:

providing a bismuth selenide sintered product consisting essentially of, by weight, about 60 to 90% bismuth and the balance selenium, and the Bi/Se weight ratio is about 1.8 to 5;

melting the bismuth selenide sintered product to form a fused bismuth selenide additive product;

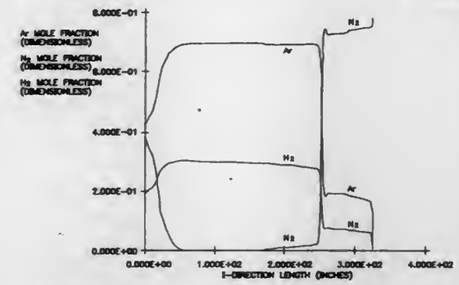
melting the alloy and adding to the molten alloy the fused bismuth selenide additive product comprising an intermetallic bismuth selenide compound.

5,614,039

ARGON EMPLOYING HEAT TREATING PROCESS

Harbhajan S. Nayar, New Providence; John J. Dwyer, Jr., Edison, and Neeraj Saxena, New Providence, all of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Sep. 29, 1995, Ser. No. 536,015
Int. Cl.[6] C21D 9/00
U.S. Cl. 148—606 17 Claims



1. A method of heat treating a metal comprising:

a) preheating the metal in a preheating zone of a heat treating apparatus;

b) passing the preheated metal to a reaction zone of the heat treating apparatus and heating the preheated metal to a temperature of at least 1000° F. in an atmosphere substantially free of nitrogen; and

c) cooling the heated metal in a cooling zone of the heat treating apparatus while injecting substantially only argon into the cooling zone when the temperature is above the temperature at which the metal will undergo significant nitriding and injecting substantially only nitrogen when the temperature is below the temperature at which the metal will undergo significant nitriding.

5,614,040

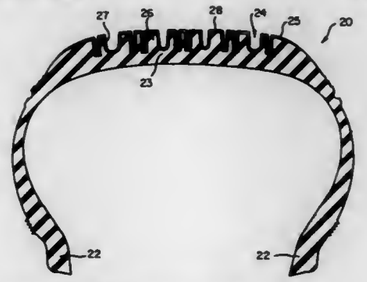
Patent Not Issued For This Number

5,614,041

PNEUMATIC TIRE WITH AN EXTERIOR ADDITIONAL LAYER ON THE TREAD STRIP FOR REINFORCING THE TREAD

Joachim Dumke, Lehrte; Andre du Bois, Hanover, and Reinhard Teves, Seelze, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed Oct. 14, 1994, Ser. No. 323,274
Claims priority, application Germany, Oct. 15, 1993, 43 35 150.6
Int. Cl.[6] B60C 11/00; 11/14
U.S. Cl. 152—210 5 Claims



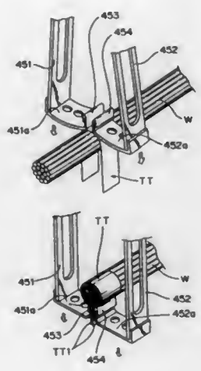
1. A pneumatic vehicle tire comprising:

a carcass with reinforcing members and radially inwardly positioned beads;
a tread strip with a tread, said tread strip positioned radially outwardly on said carcass;
an additional layer placed on the exterior of said tread strip for reinforcing flanks of said tread;
said additional layer made of a substance selected from the group consisting of rubber and thermoplastic;
said additional layer having a tensile modulus of elasticity greater than a tensile modulus of elasticity of said tread strip;
said additional layer including reinforcement elements selected from the group consisting of fibers, wires, and cords;
wherein said reinforcement elements in an unvulcanized state of said additional layer are arranged in a grouping selected from the group consisting of a zigzag arrangement, an irregular arrangement, a compressed zigzag arrangement, and a compressed irregular arrangement; and
wherein said additional layer has a thickness that is 0.05 to 0.3 times a thickness of said tread strip.

5,614,042
TAPE BINDING DEVICE FOR ELECTRIC WIRE BUNDLE AND TAPE BINDING METHOD

Yutaka Nishide; Takahiro Fujioka, both of Osaka, and Ricardo K. Yoshida, Yokkaichi, all of Japan, assignors to Sumitomo Electric Indus., and Sumitomo Wiring Systems, Ltd., Osaka, Japan

Filed Dec. 2, 1994, Ser. No. 352,219
Claims priority, application Japan, Dec. 6, 1993, 5-305570
Int. Cl.[6] B65B *13/14;41/06;* **B65H** *81/06;81/08*
U.S. Cl. 156—53 **14 Claims**

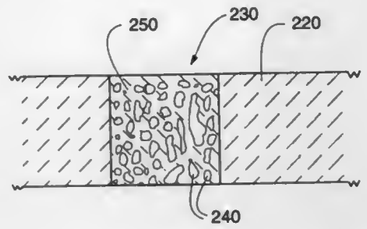


1. A tape binding device for binding an electric wire bundle with a tape piece having one side with an adhesive surface and a side opposite the one side, said device comprising:
a device body;
a pair of arms provided vertically movable with respect to said device body, each of said arms having a mutually attachable/detachable free end, respectively;
a holding surface provided on each of said respective arms so as to be continuous with said free end thereof to hold the tape piece;
a biasing means for biasing said free end of each of said arms to bring said arms into contact with each other;
a tape piece holding means for holding the side opposite the one side of the tape piece to said holding surfaces of said arms with a predetermined holding strength; and
an arm moving means for moving said arms vertically with respect to said device body.

5,614,043
METHOD FOR FABRICATING ELECTRONIC COMPONENTS INCORPORATING CERAMIC-METAL COMPOSITES

Marcus A. Ritland, Golden; Dennis W. Readey, Lakewood; Jack D. Sibold, Golden, and James E. Stephan, Aurora, all of Colo., assignors to Coors Ceramics Company, Golden, Colo.

Continuation-in-part of Ser. No. 946,972, Sep. 17, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 220,570
Int. Cl.[6] B32B *31/26;31/12*
U.S. Cl. 156—89 **10 Claims**



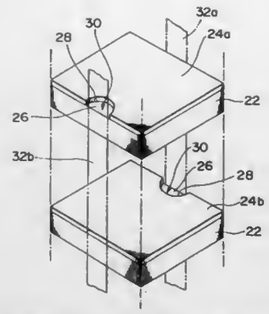
1. A method for making a substrate for electronic components, comprising the steps of:
(a) forming a substantially flat and thin green sheet of ceramic having an upper surface and a lower surface;
(b) forming a plurality of vias in said upper surface of said green ceramic sheet and extending through said green ceramic sheet;
(c) filling at least a portion of said vias with a ceramic slurry capable of forming a porous sintered ceramic having a porosity of at least about 5 volume percent after sintering;
(d) sintering said sheet of ceramic to form a sintered sheet having a plurality of vias comprising porous ceramic having an open porosity of at least about 5 volume percent;
(e) contacting said ceramic sheet with a molten metal under conditions such that said molten metal infiltrates said porous ceramic vias and substantially fills said porous ceramic vias; and
(f) cooling said metal infiltrated ceramic to form a ceramic sheet having ceramic-metal composite vias.

5,614,044
METHOD OF MANUFACTURING A LAMINATED CERAMIC DEVICE

Hiroyuki Nagayama, and Yoshihisa Ushida, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 124,485, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 874,404, Apr. 27, 1992, abandoned, which is a division of Ser. No. 503,802, Apr. 3, 1990, abandoned. This application Apr. 3, 1995, Ser. No. 416,537
Claims priority, application Japan, Apr. 7, 1989, 1-89289; Apr. 7, 1989, 1-89290
Int. Cl.[6] B32B *18/00*
U.S. Cl. 156—89 **8 Claims**

1. A method of manufacturing a laminated ceramic device comprising the steps of:
forming an internal electrode on each of a plurality of unfired ceramic sheets made of an electrostrictive material as principal ingredient, each of said internal electrodes having a notched area;
assembling said plurality of unfired ceramic sheets to form a laminate in such a manner that each of said notched areas and said plurality of unfired ceramic sheets define void spaces which are alternately located on two different sides of the laminate;

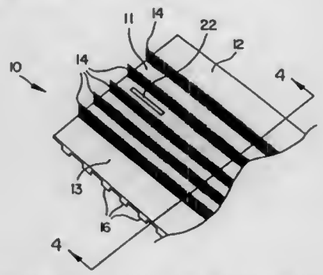


firing said assembled plurality of ceramic sheets thereby definitively forming void spaces defined by said notched areas and said ceramic sheets and located on said two different sides of the laminate; and
connecting two groups of every other internal electrode with respective external electrodes arranged along the two different sides of the laminate opposite to the void spaces;
wherein a block layer is formed within the area of each of said notched areas at the time of forming said internal electrodes so that a void space is definitively formed between an edge of said internal electrode and said block layer when the ceramic sheets are fired.

5,614,045
METHOD OF MANUFACTURING A FASTENER ASSEMBLY

Patrick J. Billarant, Charlotte, N.C., assignor to Aplix, Inc., Charlotte, N.C.

Division of Ser. No. 381,507, Jan. 31, 1995, Pat. No. 5,500,268. This application Dec. 4, 1995, Ser. No. 566,869
Int. Cl.[6] A44B *21/00*
U.S. Cl. 156—92 **5 Claims**

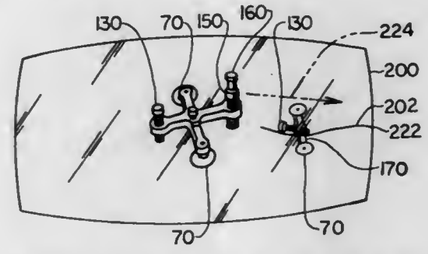


1. A method of manufacturing a fastener assembly of the type for being molded into cushions, and comprising the steps of:
(a) forming a base having first and second major surfaces defining first and second opposed ends and first and second opposed side edges, a multiplicity of first attachment members carried by the base and extending outwardly from the first major surface of the base for cooperating with complementary second attachment members carried on material when pressed against the first attachment members on the base, and a multiplicity of permanent anchors carried by the base and extending outwardly from the second major surface of the base, the anchors being spaced apart sufficiently to allow foam intrusion between said anchors to permanently attach said fastener assembly to a cushion;
(b) attaching first and second magnetically-attractable side edge sealing members to the base adjacent a respective one of said first and second opposing side edges of the base for being attracted to magnets positioned in a mold in which the cushion is molded to form a foam-tight seal between the side edges of the base and the mold to prevent intrusion of liquid foam onto the first attachment members of the base during molding of the cushion;
(c) attaching first and second magnetically-attractable end sealing assemblies to the base adjacent respective first and second ends of the base for being attracted to magnets positioned in the mold in which the cushion is molded to form a foam-tight seal between the ends of the base and the mold to prevent intrusion of liquid foam through the ends of the base onto the first attachment members of the base during molding of the cushion, each of said first and second end sealing assemblies comprising:
(1) a magnetically-attractable member attached to one of the first and second ends of the base and exposed on at least the first major surface of the base in an area of the first attachment members and cooperating with the magnet for holding the respective end of the base tightly in the mold; and
(2) a seal positioned on and penetrating into the multiplicity of first attachment members along both the width of the base and along a predetermined length of the base adjacent the respective end of the base for preventing liquid foam intrusion onto the first attachment members from the end of the base.

5,614,046
GLASS REPAIR METHOD

Richard A. Campfield, Riverside, Calif., assignor to Ultra Bond Licensing Corporation, Grand Junction, Colo.

Continuation of Ser. No. 155,452, Nov. 19, 1993, Pat. No. 5,425,827, which is a continuation-in-part of Ser. No. 881,625, May 12, 1992, Pat. No. 5,429,692, which is a continuation-in-part of Ser. No. 580,075, Sep. 10, 1990, Pat. No. 5,116,441. This application May 8, 1995, Ser. No. 436,155
The portion of the term of this patent subsequent to Nov. 19, 2013, has been disclaimed.
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—94 **4 Claims**



1. A method of repairing a crack in a windshield having two layers of glass and a plastic layer between the two glass layers and each glass layer having a periphery defining a glass area having an outer surface within the periphery and having at least one edge joining the glass area at the periphery, the crack being in one layer and being over six inches in length and having a first end within the glass area and a second end either within the glass area or at the edge of the glass and having a length of the crack which is surfaced or open defining a reminder portion and a length of the crack which is unsurfaced or tight defining an effectively unsurfaced portion comprising;
inserting a first resin having a preselected viscosity into the effectively unsurfaced portion of the crack;
inserting a second resin having a viscosity which is higher than that of the first resin, into the remainder portion of the crack by progressively injecting said second resin along the surfaced length of the crack; and
causing the resin to cure;
wherein the first resin has a viscosity up to about 100 c.p.s. and the second resin has a viscosity at least about 150 c.p.s.

5,614,047

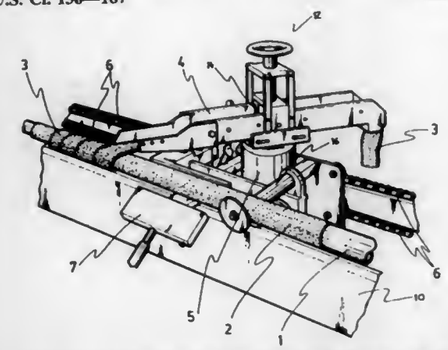
METHOD OF MANUFACTURING PAINT ROLLERS

Jaime A. Garcia, Ronda Santa Maria, 3-7 Barbera Del Valles, Barcelona, Spain

Continuation of Ser. No. 656,102, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 325,101, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 65,382, Jul. 28, 1987, abandoned, which is a division of Ser. No. 807,818, Dec. 11, 1985, Pat. No. 4,692,975. This application Jun. 23, 1992, Ser. No. 902,483

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—187 2 Claims



1. A cold core method of making a paint roller from a cold, hard, preformed hollow core of thermoplastic material of a predetermined length in which the cold hard hollow core and its associated fabric cover are forged together to form a single unitary body comprising the steps of

providing a hard hollow core,

said hard hollow core being cold,

said cold hard hollow core being composed of a thermoplastic material capable of being fused to a fabric cover of a compatible material to form a single unitary body,

said cold hard hollow core further having a predetermined, finite length,

providing a mandrel having an external diameter which slidably receives and makes contact with the cold hard hollow core throughout its length so as to thereby enable the cold hard hollow core to rotate with the mandrel,

rotating the mandrel and thereby the cold hard hollow core which has been received thereon and is in contact therewith,

heating, by application of a single source of heat, the exterior surface of the cold hard hollow thermoplastic rotating core to a temperature high enough to cause subsequently applied fabric to adhere to said exterior surface,

applying a fabric to the heated exterior of the hard hollow thermoplastic rotating core

bonding the fabric to the heated exterior surface of the hard hollow thermoplastic core.

5,614,048

MACHINE AND PROCESS FOR MAKING A SHEET OF SINGLE FACE CORRUGATED CARDBOARD

Jean-Jacques Barny, Villefranche, and Jean-Marie Paultes, Perignac-de-Pons, both of France, assignors to OTOR, Paris, France

PCT No. PCT/FR94/00896, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO95/03166, PCT Pub. Date Feb. 2, 1995

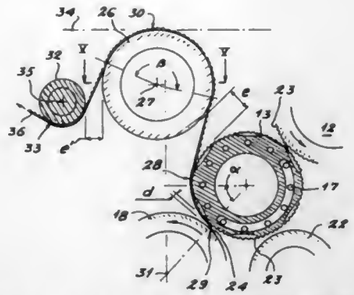
PCT Filed Jul. 18, 1994, Ser. No. 403,748

Claims priority, application France, Jul. 20, 1993, 93 08909

Int. Cl.[6] B31F *1/28*

U.S. Cl. 156—205 12 Claims

7. Process for manufacturing a sheet of single face corrugated board with a preset speed of travel of said corrugated board, comprising the steps of:



feeding a sheet of board material between first and second heating corrugated cylinders to form a fluted board around said second heating corrugated cylinder, said second heating corrugated cylinder having an axis, said fluted board having parallel flutes presenting parallel crests to said axis of the second cylinder;

coating the crests of said flutes with glue;

bringing into contact a liner sheet, which is supplied by a third heating cylinder, with said crests over a line of contact parallel to said axis of the second cylinder;

applying and maintaining during operation a pressure on said crests by said third heating cylinder, over said line of contact, of a value less than 3 kg/cm;

keeping the fluted board, after said line of contact, in contact with the liner sheet over a first zone formed by a first surface portion of said second cylinder, over a first arc corresponding to a first subtended angle of a first given value comprised between of an order of 30° and of an order of 80°; and

further keeping said timed board in contact with said liner sheet over a second zone formed by a second surface portion of a rotary heating smooth fourth cylinder situated distantly apart from the second cylinder and downstream of a path of the fluted board with respect to the second cylinder, said fourth cylinder having a rotational speed and being arranged to have said liner sheet pressed against the surface portion over a second arc corresponding to a second subtended angle of a second given value comprised between of an order of 90° and of an order of 200°.

5,614,049

USE OF AQUEOUS DISPERSIONS OF TWO-PHASE EMULSION GRAFT COPOLYMERS AS BINDERS FOR STIFFENING MATERIALS IN THE TEXTILE AND LEATHER INDUSTRY

Klaus Kohlhammer, Marktl; Gerhard Koegler, Hirten, and Monika Schwemmer, Unterneukirchen, all of Germany, assignors to Wacker Chemie GmbH, München, Germany

PCT No. PCT/EP94/03721, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO95/13418, PCT Pub. Date May 18, 1995

PCT Filed Nov. 10, 1994, Ser. No. 633,816

Claims priority, application Germany, Nov. 10, 1993, 43 38 374.2

Int. Cl.[6] B29C *65/00;* A43B *23/08;23/14;23/16*

U.S. Cl. 156—221 10 Claims

1. Process for the stiffening of a material selected from the group consisting of a textile and a leather, comprising the steps of:

a) applying an aqueous polymer dispersion to a textile structure selected from the group consisting of a woven fabric and a nonwoven fabric;

b) drying the textile structure to produce a binder stiffening agent material;

c) deforming and gluing the binder stiffening agent material thus produced to the said textile or leather material to be stiffened;

(d) said aqueous polymer dispersion comprising a two-phase, sealable emulsion graft copolymer having a soft phase and a hard phase;

wherein said hard phase has a glass transition temperature Tg of at least 50° C. and comprises monomer units selected from the group consisting of methyl methacrylate, styrene, diisopropyl fumarate and vinyl chloride; and

wherein said soft phase has a glass transition temperature Tg of at least 30° C. lower than the Tg of the hard phase and the soft phase comprises monomer units selected from the group consisting of methyl acrylate, ethyl acrylate, isopropyl acrylate, n-butyl acrylate, t-butyl acrylate, 2-ethylhexyl acrylate, vinyl acetate, vinyl propionate, isopropenyl acetate, vinyl laurate, vinyl esters of saturated, α-branched monocarboxylic acids having 9 to 10 carbon atoms, ethylene, propylene and 1,3-butadiene.

5,614,050

METHOD AND ARTICLE FOR PRODUCING FLEXIBLE, FLAT SUBSTRATES WITH POROUS ADHESIVE COATINGS

Rolf Carsten, Hamburg; Rolf Schulze, Kasseedorf, and Axel von Wolff, Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

PCT No. PCT/DE92/00065, § 371 Date Oct. 4, 1992, § 102(e) Date Oct. 4, 1992, PCT Pub. No. WO93/14725, PCT Pub. Date Aug. 5, 1993

PCT Filed Feb. 3, 1992, Ser. No. 256,699

Int. Cl.[6] B29B *13/00*

U.S. Cl. 156—231 6 Claims

6. Process for producing a flexible, planar carrier coated with a porous adhesive layer, characterized in that

a) a flowable adhesive composition is applied onto an intermediate carrier having the following properties:

it has a microscopically undulating, pleated, fissured or furrowed surface

the adhesive composition can be easily detached from the surface thereof

it is essentially air-impermeable, the intermediate carrier comprising a flexible basic body onto which plastic was sprayed, a foam roll or foam web contacting the spray-coating, thereby imparting the microscopically undulating, pleated, fissured or furrowed surface,

whereby in using such intermediate carrier by coating it with a flowable adhesive composition air or solvent inclusions result between the adhesive composition and the intermediate carrier surface.

5,614,051

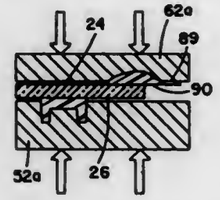
VEHICULAR PANEL ASSEMBLY AND METHOD FOR MAKING SAME

Daniel J. Fisher; Raj K. Agrawal; Douglas Crank, and John W. Carter, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 898,094, Jun. 12, 1994, Pat. No. 5,443,673. This application Mar. 17, 1995, Ser. No. 405,897

Int. Cl.[6] B29C *45/14;* B60J *10/02*

U.S. Cl. 156—245 16 Claims



1. A method for making a panel assembly for use in a vehicle opening comprising:

providing a panel in the form of a sheet and having a size and geometry adapted to fit in the vehicle opening and having first and second surfaces terminating in a common peripheral edge;

forming a first polymeric gasket in a mold separate and apart from said panel;

substantially simultaneously forming a second polymeric gasket in the mold separate and apart from said panel; and

locating said panel in the mold with respect to said first and second gaskets after the forming step so that said first gasket engages and is bonded to at least a portion of said first surface and said second gasket engages and is bonded to at least a portion of said second surface.

5,614,052

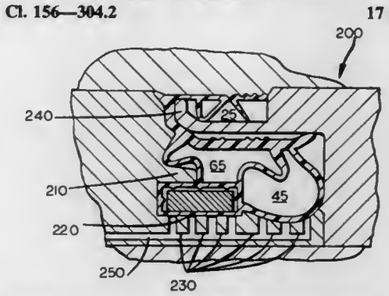
VACUUM RETENTION GASKET SPLICING

Michael J. Fisher, Newburgh, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Dec. 21, 1994, Ser. No. 360,921

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—304.2 17 Claims



8. A method of splicing a hollow gasket, comprising:

providing splice mold means, said splice mold means having a plurality of apertures, said plurality of apertures being said splice mold means capable of receiving a first joinable end of a first gasket section and a second joinable end of a second gasket section;

providing vacuum means, said vacuum means being in fluid communication with said apertures of said splice mold means, said vacuum means for retaining said first joinable end of said first gasket section and said second joinable end of said second gasket section in a position appropriate to be joined together.

providing heating means, said heating means for heating said joinable ends of said first and said second gasket sections to a softened state;

providing transport means, said transport means for bringing the heated joinable ends of said first and said second gasket sections together; and,

providing cooling means, said cooling means for reducing the temperature of said heated joinable ends, whereby forming a permanent splice.

5,614,053

METHOD OF PRESS-MOLDING CERAMIC GREEN SHEET LAMINATE

Tatsuya Toudo; Tadahiro Nakagawa; Toshiyuki Nomura; Haruhiko Mori, and Shigehiro Nojiri, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

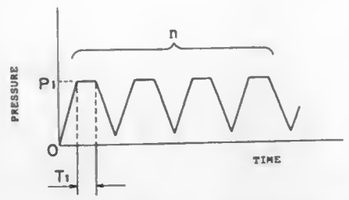
Filed Nov. 30, 1994, Ser. No. 346,898

Claims priority, application Japan, Dec. 3, 1993, 5-303907; Dec. 9, 1993, 5-309285

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—312 20 Claims

1. A method of press-molding a ceramic green sheet laminate for stacking a plurality of ceramic green sheets with each other and



pressing a laminate thus obtained with a press along its thickness, said method comprising the steps of:

preparing a ceramic green sheet laminate by stacking a plurality of ceramic green sheets with each other; and

pressing said ceramic green sheet laminate along its thickness by repeating a pressurization cycle, which includes a pressurization stage of pressurizing said ceramic green sheet laminate at a prescribed pressure, and a pressure reduction stage, wherein said pressure reduction stage is carried out by applying a pressure value greater than zero.

5,614,054

PROCESS FOR REMOVING A THERMAL BARRIER COATING

Jim D. Reeves, Cincinnati; Mark K. Whiteaker, West Carrollton, and Peter C. Fry, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1994, Ser. No. 362,377

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—344 **20 Claims**

1. A process for removing a thermal barrier coating from a substrate, the method comprising the steps of:

providing a substrate on which a thermal barrier coating is adherently formed; and

heating the thermal barrier coating and substrate to a temperature of at least about 870° C. and exposing the thermal barrier coating to a halogen-containing powder for a duration sufficient to deteriorate the bond between the thermal barrier coating and the substrate to the extent that at least a portion of the thermal barrier coating separates from the substrate without damaging the substrate.

5,614,055

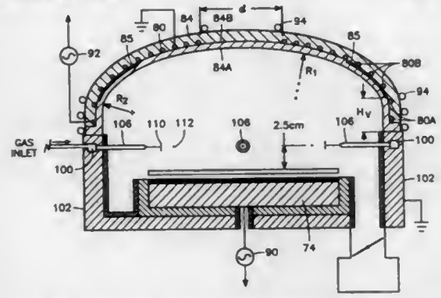
HIGH DENSITY PLASMA CVD AND ETCHING REACTOR

Kevin Fairbairn, Saratoga, and Romuald Nowak, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 27, 1993, Ser. No. 113,776

Int. Cl.[6] C23F *1/02;* **C23C** *16/00;14/34;* **H05H** *1/24*

U.S. Cl. 156—345 **52 Claims**



1. An RF inductively coupled plasma reactor for the processing of a wafer, said reactor comprising:

a vacuum chamber;

one or more gas sources for introducing into said chamber reactant gases;

an antenna capable of radiating RF energy into said chamber to generate a plasma therein by inductive coupling, said antenna comprising a substantially domed-shaped portion at least partially surrounding said plasma and a vertical cylindrical portion which underlies said substantially domed-shaped portion.

5,614,056

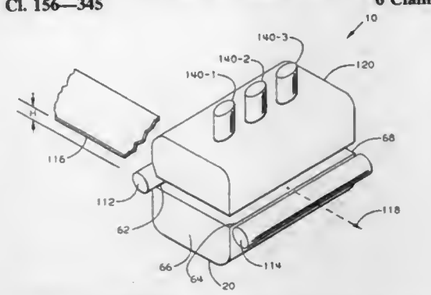
APPARATUS FOR CHEMICALLY ETCHING SUBSTRATES

Edward J. Frankoski, Newark Valley; Jeffrey D. Jones, Endicott; Robert H. Katyl, Vestal, all of N.Y., and Lyn B. Ratcliff, Burbank, S. Dak., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 206,308, Mar. 4, 1994. This application Jun. 6, 1995, Ser. No. 469,988

Int. Cl.[6] C23F *1/02;* **B08B** *3/00*

U.S. Cl. 156—345 **6 Claims**



1. Apparatus, comprising:

at least a first surface, of finite dimensions, including an entrance edge and an exit edge and characterized by an axis extending from said entrance edge to said exit edge;

means for transporting a substrate over said surface at a distance, H, from said surface, from said entrance edge to said exit edge along a transport direction which is parallel to said axis, Characterized In That

said apparatus further comprises a plurality of spaced-apart fluid jet injectors, each characterized by a diameter, D, and each capable of producing a fluid jet which impinges upon said substrate, said plurality of fluid jet injectors being arranged so that an imaginary line drawn along said surface in a direction which is parallel to said transport direction, which extends from said entrance edge to said exit edge, and which intersects the center of at least one fluid jet injector, intersects the same total number of fluid jet injector centers as any other such imaginary line drawn along said surface in a direction which is parallel to said transport direction, which extends from said entrance edge to said exit edge, and which intersects the center of at least one fluid jet injector, any two such adjacent imaginary lines being spaced apart by a distance S1, where S1/D is greater than 0 but less than or equal to about 10.

5,614,057

AUTOMATIC ULTRASONIC FUSING SYSTEM

Ralph F. Conley, Jr., Miamisburg, Ohio, and James R. Young, Gainesville, Ga., assignors to MIM Industries, Inc., Miamisburg, Ohio

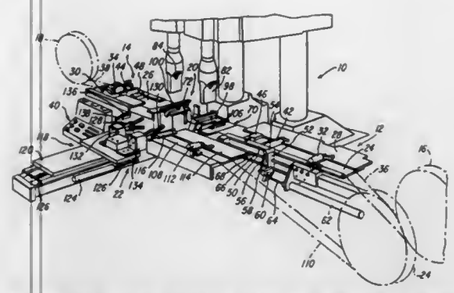
Filed Feb. 19, 1992, Ser. No. 838,543

Int. Cl.[6] B32B *31/16*

U.S. Cl. 156—354 **17 Claims**

1. An apparatus for bonding strips of a first material to strips of a second material, said apparatus comprising:

first supply means including means for supplying first and second strips of said first material;



second supply means including means for supplying a continuous length of said second material, measuring means for measuring the length of said second material and severing means for cutting said second material to a predetermined length such that first and second ends are defined on said second material;

a bonding station for receiving said first and second materials, said first supply means providing said first and second strips of said first material to said first and second ends, respectively, of said second material, and said bonding station including means for bonding said first and second materials together; and

wherein said severing means is actuated subsequent to said measuring means measuring said predetermined length of said second material, and said second supply means includes means for varying the measured length of said second material at which said severing means is actuated to thereby alter said predetermined length of said second material.

5,614,058

DEVICE FOR THE PRODUCTION OF AN ASYMMETRIC LAMINATED PANE BY CALENDERING

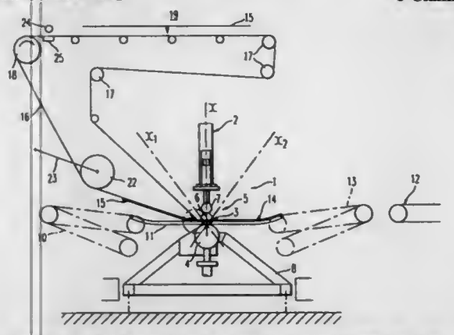
Claude Didelot, Thourotte; Jean Ducret, Clairoix, and Edouard Kadzialka, Ribecourt, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France, and Asahi Glass, Tokyo, Japan

Division of Ser. No. 350,887, Dec. 7, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,368

Claims priority, application France, Dec. 7, 1993, 93 14661

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—542 **6 Claims**



1. A device for assembling a blank of plastic material with a rigid support by calendering, comprising:

a calenderer comprising an upper pressing mechanism and a lower pressing mechanism forming therebetween a pressing passage;

an upstream conveyor bringing the support to be covered to the passage of the calenderer, so that the support is engaged in the pressing passage;

an endless conveyor belt progressively conveying the blank onto the support to be covered at a position upstream of the pressing passage as the support is engaged in the pressing passage, and forming an assembly of the blank and the support;

a holding mechanism holding the blank in contact with the endless belt as the blank is conveyed to the support;

a release mechanism releasing at least an upstream end of the blank from said endless belt immediately upstream of the pressing passage; and

a downstream conveyor recovering the assembly at an exit from the calenderer wherein said bolding mechanism comprise a mechanism creating electrostatic adhesion forces between the endless belt and the blank and

wherein the release mechanism comprises an electrically grounded convex curved guide member of small radius around which the endless belt passes such that said blank is passed between support and said guide member.

5,614,059

DEVICE FOR SUPPORTING DISPENSERS OF ADHESIVE MATERIAL

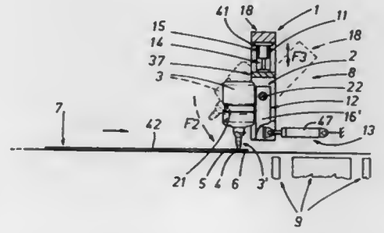
Silvano Boriani, and Alessandro Minarelli, both of Bologna, Italy, assignors to G.D S.p.A., Bologna, Italy

Filed Jun. 28, 1994, Ser. No. 266,695

Claims priority, application Italy, Jun. 28, 1993, BO93A0299

Int. Cl.[6] B65H *21/00*

U.S. Cl. 156—509 **5 Claims**



1. A device for supporting dispensers of an adhesive material to be applied to areas or stretches of portions or flaps of wrapping material at a point close to or within the compass of a machine station occupied by respective jointing means positioned to interact with the portions or flaps, comprising:

supporting and retaining means embodied in such a way as to support and retain at least one disposable dispenser of adhesive material in releasable manner and capable of movement within the compass of said station between at least two first limit positions respectively assumed by completing a forward stroke and a return stroke, during at least one of which the adhesive material is applied, by an applicator associated with the disposable dispenser, to the areas or stretches of the portions or flaps of wrapping material;

first releasable locking and positioning means;

said supporting and retaining means being capable of movement within the compass of said station between two second limit positions, disposed close to said jointing means in one such position so as to allow effecting at least one stroke during which said adhesive material is applied by said applicator associated with said disposable dispenser, and distanced from said jointing means in a remaining said position, and interacting throughout with said first releasable locking and positioning means to ensure stability in both of the second limit positions thus assumed;

second releasable locking and positioning means, and respective supporting and retaining means activating means effectively associated therewith;

said supporting and retaining means being capable of movement within the compass of said station between two third limit positions including a position in which the applicator associated with the disposable dispenser is brought into contact with the areas or stretches of portions or flaps of wrapping material in order to effect at least one stroke during which the adhesive material is applied, and a position in which the applicator associated with the disposable dispenser is distanced from the areas or stretches by said supporting and retaining means, interacting throughout with said second releasable locking and positioning means operated by said respective actuating means to ensure the stability of the disposable dispenser in said third limit positions.

5,614,060

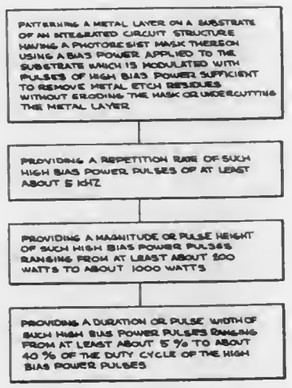
PROCESS AND APPARATUS FOR ETCHING METAL IN INTEGRATED CIRCUIT STRUCTURE WITH HIGH SELECTIVITY TO PHOTORESIST AND GOOD METAL ETCH RESIDUE REMOVAL

Hiroji Hanawa, Sunnyvale, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 23, 1995, Ser. No. 409,388

Int. Cl.[6] H01L *21/00;* H05H *1/00*

U.S. Cl. 156—643.1 **22 Claims**



1. A process for patterning a masked metal layer to form a layer of metal interconnects for an integrated circuit structure which removes metal etch residues, while inhibiting or eliminating erosion of the photoresist mask, which comprises: forming a plasma in an etching chamber by applying a source of RF power to an electrode in said etching chamber spaced from a substrate to be etched in said etching chamber; connecting a source of basic RF bias power to a second electrode in said etching chamber comprising the support of the substrate being etched; providing an amplitude modulation of said basic RF bias power supplied to said second electrode comprising superimposing on said basic RF bias power short pulses of RF bias power of sufficient magnitude and of sufficient duration to remove metal etch residues as they form during the etch process while minimizing erosion of the photoresist etch mask or undercutting the metal layer.

5,614,061

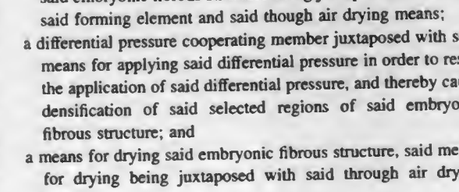
APPARATUS FOR FORMING A CELLULOSIC FIBROUS STRUCTURES HAVING AT LEAST THREE REGIONS DISTINGUISHED BY INTENSIVE PROPERTIES

Dean Van Phan, Cincinnati, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 382,551, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 71,834, Jul. 10, 1987, Pat. No. 5,443,691, which is a continuation of Ser. No. 724,551, Jun. 28, 1991, Pat. No. 5,277,761. This application Mar. 1, 1996, Ser. No. 613,797

Int. Cl.[6] D21H *27/02*

U.S. Cl. 162—109 **6 Claims**



1. An apparatus for forming a cellulosic fibrous structure having at least three regions disposed in a regular repeating pattern and distinguished from each other by intensive properties, said apparatus comprising:

a macroscopically planar liquid pervious fiber retentive forming element, said forming element having two distance topographical regions, one of said regions being defined by a plurality of protuberances which are discrete from one another, said protuberances extending outwardly from said plane of said forming element and producing corresponding regions of a relatively lesser basis weight in said cellulosic fibrous structure than regions not corresponding to said outwardly extending protuberances;

a means for depositing a fibrous slurry on said forming element so that both said distinct topographical regions of said forming element receive deposition of said fibrous slurry, and wherein said fibrous slurry is dewatered into an embryonic fibrous structure having two different topographical regions corresponding to said distinct topographical regions of said forming element;

a through air drying means for applying a differential pressure to selected regions of said embryonic fibrous structure, said selected regions of said embryonic fibrous structure being non-coincident with said topographical regions of said embryonic fibrous structure formed by deposition of said fibrous slurry onto said forming element;

a means for transferring said embryonic fibrous structure from said forming element to said through air drying means for applying said differential pressure, said means for transferring said embryonic fibrous structure being juxtaposed with one of said forming element and said though air drying means;

a differential pressure cooperating member juxtaposed with said means for applying said differential pressure in order to resist the application of said differential pressure, and thereby cause densification of said selected regions of said embryonic fibrous structure; and

a means for drying said embryonic fibrous structure, said means for drying being juxtaposed with said through air drying means.

5,614,062

PROCESS FOR CONTROLLING THE SEDIMENTATION OF STICKY IMPURITIES FROM PAPER STOCK SUSPENSIONS

Heinz-Guenther Schulte, Muelheim; Klaus Hornfeck, Mettmann, and Dieter Kaps, Simmerath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01000, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/24369, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 30, 1994, Ser. No. 532,690

Claims priority, application Germany, Apr. 8, 1993, 43 11 599.3

Int. Cl.[6] D21H *21/02*

U.S. Cl. 162—175 **11 Claims**

1. A process for controlling the deposition of sticky impurities (stickies) from a paper stock suspension in papermaking comprising the steps of:

(a) providing a paper stock suspension containing said sticky impurities, and

(b) contacting said sticky impurities in said paper stock suspension with an effective amount of a native starch to prevent deposition of said sticky impurities.

5,614,063

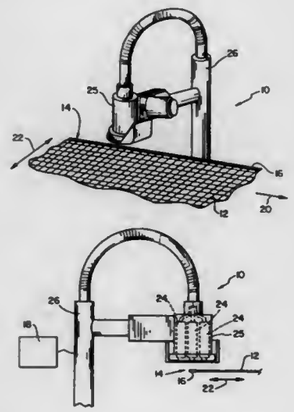
INDUCTIVE EDGE DETECTOR FOR PAPER MACHINERY

Edwin X. Graf, Menasha, and James A. Eng, Appleton, both of Wis., assignors to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Sep. 18, 1995, Ser. No. 531,549

Int. Cl.[6] D21F *7/06;7/08*

U.S. Cl. 162—263 **13 Claims**



1. In a paper making machine having a continuous belt guide device, a continuous belt edge detector system comprising:

a continuous belt having an edge, said edge including an edge dope with metallic particles therein, said continuous belt having a running direction in the machine; and

an inductive sensor connected to the guide device and adjacent said edge dope, said inductive sensor sending a signal to the guide device indicative of a location of said continuous belt, the guide device moving said continuous belt transversely relative to said running direction dependent on said inductive sensor signal.

5,614,064

GLIDE-SHOE ARRANGEMEMT FOR PRESSING A MOVING WEB

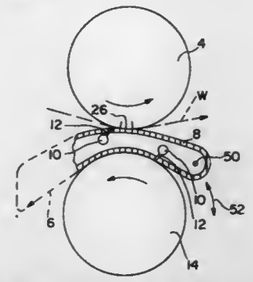
Erik Nykopp, Larsbergsvägen 55, SE-181 38 Lidingö, Sweden

PCT No. PCT/SE92/00619, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/05853, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 9, 1992, Ser. No. 392,773

Int. Cl.[6] D21F *3/02*

U.S. Cl. 162—358.3 **8 Claims**



7. A pressing arrangement for a moving web, comprising a press zone receiving the moving web, said press zone formed between a cylindrical press roll and a glide-belt, said glide-belt being endless and slidingly supported by a shoe in the area of the press zone, said shoe having a press roll side and an opposing counter roll side, whereby a plurality of supply mechanisms are provided to supply lubricant for creating a lubricating film between the glide-belt and the shoe, the shoe being supported by a counter roll situated on the opposite side of the shoe relative to the press roll, wherein the side of the shoe facing the press roll has a contour of variable convexity, and said shoe contains a removable insert having a defined contour in the area of the press zone, said insert configured to conform to said curvature of said press roll and to define a length of said press zone, whereby the convexity of said guide-belt in said press zone is determined by said curvature of said shoe.

5,614,065

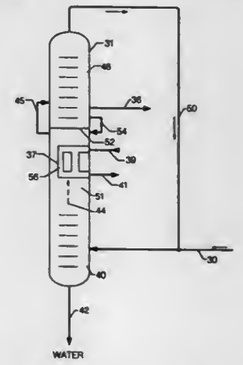
DISTILLATION WITH MEMBRANE APPARATUS

Terry L. Marker, Warrenville, Ill., assignor to UOP, Des Plaines, Ill.

Filed Oct. 31, 1994, Ser. No. 328,794

Int. Cl.[6] B01D *3/14;* B01J *8/04*

U.S. Cl. 202—158 **19 Claims**



1. An apparatus for separating fluid components comprising:

a. a vertically-elongated vessel;

b. a membrane contactor at least partially occluding the flow path through said vessel and dividing the vessel into an upper portion and lower portion, said membrane contactor compris-

ing material providing selective permeation of fluid components and restricting passage of at least one component to said upper portion;

c. a plurality of vertically spaced apart distillation contactors disposed within said lower portion of said vessel for vapor and liquid distillation; and

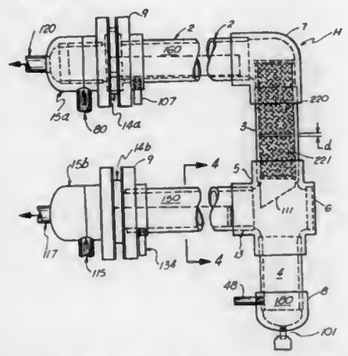
d. means for adding fluid and withdrawing fluid from the lower portion of the vessel, and means for withdrawing fluid from the upper portion of the vessel.

5,614,066

WATER DISTILLATION APPARATUS

William R. Williamson, 8310 Pilgrim Rd., Pensacola, Fla. 32514

Filed Mar. 15, 1995, Ser. No. 404,537
Int. Cl.[6] B01D *3/10;* **C02F** *1/04*
U.S. Cl. 202—182 **6 Claims**



1. An apparatus for converting contaminated water into pure water for reuse comprising:

(a) a source of said contaminated water;

(b) a first horizontal housing connected to said source of contaminated water, said housing having first heat exchange means therein for vaporizing said contaminated water flowing therethrough by said first heat exchange means having a counterflow of hotter water in an annulus surrounding the flow of said contaminated water;

(c) a vertical housing connected at its lower end to the distal end of said first horizontal housing for fluid communication therebetween;

(d) a second horizontal housing connected at its proximate end to said vertical housing at its upper end for fluid communication therebetween, said second horizontal housing having second heat exchange means therein for condensing vapor flowing therethrough by said second heat exchange means having a counterflow of cooler water in an annulus surrounding the flow of said vapor;

(e) a weir vertically mounted in the distal end of said first housing for retaining a first portion of said contaminated water in said first housing and allowing another portion of said contaminated water to pass through said heat exchange means for vaporizing from the proximate to distal end of said first housing;

(f) means for allowing said another portion of said contaminated water in said distal end of said first housing to pass into said vertical housing and settle therein;

(g) means for forcing under vacuum vapor formed in the distal end of said first housing to pass into said vertical housing and rise there through to said proximate end of said second housing; said means including the lower most portion of said vertical housing; said portion being truncated so as to present a flow diverting barrier to said vapor passing from said first housing to said vertical housing;

(h) means for extracting contaminated vapor from said vapor rising in said vertical housing; said means for extracting being filter means positioned in said vertical housing intermediate the connection of said vertical housing with said first and second horizontal housings; and,

(i) outlet means connected to said second horizontal housing near the distal end thereof for drawing off under vacuum distillate condensed therein.

4. An apparatus for converting contaminated water into pure water for reuse comprising:

(a) a source of said contaminated water;

(b) a first horizontal housing connected to said source of contaminated water, said housing having first heat exchange means therein for vaporizing said contaminated water flowing therethrough by said first heat exchange means having a counterflow of hotter water in an annulus surrounding the flow of said contaminated water;

(c) a vertical housing connected at its lower end to the distal end of said first horizontal housing for fluid communication therebetween, said vertical housing having a sight window therein;

(d) a second horizontal housing connected at its proximate end to said vertical housing at its upper end for fluid communication therebetween, said second horizontal housing having second heat exchange means therein for condensing vapor flowing therethrough by said second heat exchange means having a counterflow of cooler water in an annulus surrounding the flow of said vapor;

(e) a weir vertically mounted in the distal end of said first housing for retaining a first portion of said contaminated water in said first housing and allowing another portion of said contaminated water to pass through said heat exchange means for vaporizing from the proximate to distal end of said first housing;

(f) means for allowing said another portion of said contaminated water in said distal end of said first housing to pass into said vertical housing and settle therein;

(g) means for forcing under vacuum vapor formed in the distal end of said first housing to pass into said vertical housing and rise there through to said proximate end of said second housing, said means including the lower most portion of said vertical housing, said portion being truncated so as to present a flow diverting barrier to said vapor passing from said first housing to said vertical housing;

(h) means for extracting contaminated vapor from said vapor rising in said vertical housing; said means for extracting being positioned in said vertical housing intermediate the connection of said vertical housing with said first and second horizontal housings; and,

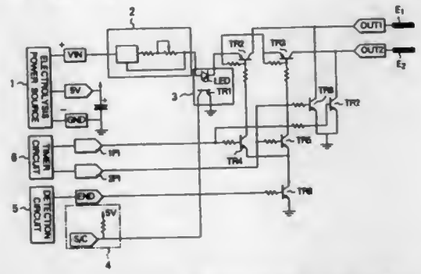
(i) outlet means connected to said second horizontal housing near the distal end thereof for drawing off under vacuum distillate condensed therein.

5,614,067

LEACHING DEVICE FOR ELECTROLYZED SILVER

Tatsuo Okazaki, Kamifukuoka, Japan, assignor to OMCO Co., Ltd., Iruma-gun, Japan

Filed Dec. 6, 1995, Ser. No. 568,116
Claims priority, application Japan, Dec. 7, 1994, 6-331278
Int. Cl.[6] C25C *7/00*
U.S. Cl. 204—228 **5 Claims**



1. A leaching device for electrolyzed silver comprising:

a pair of silver electrodes which form an anode and a cathode;

an electrolysis power source for applying a DC electrolyzing voltage between both of the electrodes;

a power source control circuit for ON/OFF control of the electrolysis power source;

a current control circuit for controlling the electrolyzing current flowing between both of the electrodes thereby controlling the leaching amount of the silver;

a polarity switching circuit for switching the polarity of the electrolyzing voltage;

a driving circuit for driving the polarity switching circuit; and

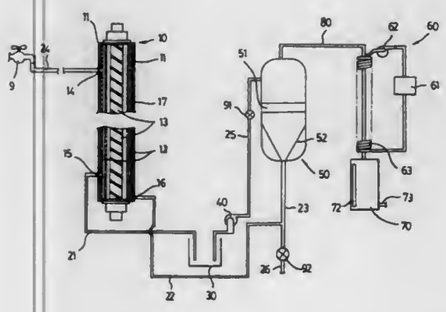
an abnormality sensing circuit that senses the abnormality of the silver electrode based on the change of an electric current flowing to the silver electrode, said abnormality sensing circuit comprising a circuit both terminals of which are connected respectively with opposed ends of the anode and which senses the abnormality when an electrolyzing current flowing between the opposed ends of the anode lowers to less than an allowable value.

5,614,068

WATER PURIFIER

Seung-Do Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics CO., Ltd., Suwon, Rep. of Korea

Filed Jan. 22, 1996, Ser. No. 589,290
Claims priority, application Rep. of Korea, Aug. 31, 1995, 95-28359
Int. Cl.[6] C02F *1/461;1/32;1/02*
U.S. Cl. 204—232 **6 Claims**



1. A water purifier comprising:

an oxidation-reduction unit having an anode and a cathode for removing heavy metals and organic materials from tap water by an electrochemical oxidation-reduction reaction, thereby providing pre-purified water;

a pipe extending from said oxidation-reduction unit for guiding the pre-purified water free of heavy metals and organic materials discharged from said oxidation-reduction unit;

a first water tank connected to said pipe for containing the pre-purified water discharged from said oxidation-reduction means;

a distillation unit connected to said first water tank for heating the pre-purified water supplied from said first water tank, thereby vaporizing the pre-purified water into vapor while distilling off various harmful materials of the pre-purified water;

a vapor guide pipe extending from said distillation unit for guiding the vapor discharged from the distillation means;

a condensing unit provided on said vapor guide pipe for condensing the vapor flowing in the vapor guide pipe, thereby providing finally-purified water; and

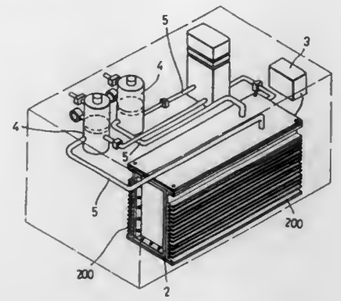
a second water tank connected to said vapor guide pipe for containing the finally-purified water condensed by said condensing unit.

5,614,069

APPARATUS FOR PRODUCING ELECTROLYTICALLY AND COLLECTING SEPARATELY TWO GASES

I-Chuan Lin, Yueh-Mei-Tan No. 53, Yueh-Tan Tsun, Hsin-Kang Hsiang, Chia-Yi Hslen, Taiwan

Filed Jun. 12, 1996, Ser. No. 662,822
Int. Cl.[6] C25B *9/00;15/08*
U.S. Cl. 204—268 **5 Claims**



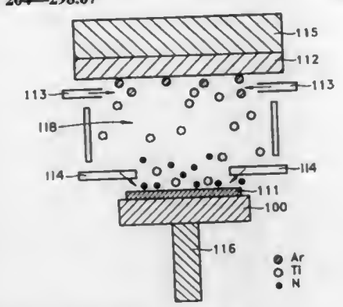
1. An apparatus for producing electrolytically two gases and collecting separately said two gases, said apparatus comprising:

an electrolytic tank including a casing having an open top and a receiving space formed therein, a plurality of electrode plates spaced parallelly in said receiving space of said casing in order to divide said receiving space into a plurality of isolated sections arranged side by side in a direction, the electrode plates being configured and disposed for being fully immersed in an electrolyte solution, and a lid member disposed on said open top of said casing in order to close said open top, said lid member having upper and lower faces, elongated, parallel first and second cavities which are formed in said upper face of said lid member and which extend in said direction, each of said first and second cavities having a bottom portion, said lower face of said lid member having a looped wall depending therefrom, a region defined by said looped wall under said lower face of said lid member, a plurality of partition plates and press plates depending parallelly and alternatively from said lower face of said lid member within said region such that a plurality of clearances are formed between said partition and press plates, each of said press plates being aligned with and abutting against a top edge of a respective one of said electrode plates, each partitioo plate having a depth which is larger than a depth of each press plate so as to extend into a respective one of said sections defined by said electrode plates, said bottom portions of said first and second cavities being formed respectively with a plurality of first and second through holes which are staggered with one another so that said first and second cavities can be communicated alternatively with said clearances between said partition and press plates, said lid member further having a cover plate disposed on said upper face of said lid member in order to close said first and second cavities, said cover plate having first and second holes which are communicated receptively with said first and second cavities;

a power supply unit connected electrically to two of said electrode plates between which the other ones of said electrode plates are located; and

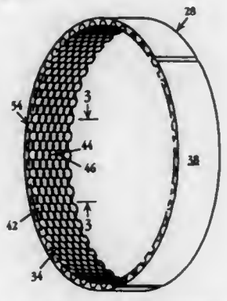
two gas tanks, each having a connecting pipe which is connected to a corresponding one of said first and second holes of said cover plate.

5,614,070
SPUTTERING APPARATUS FOR FORMING METAL LINES
Jong Moon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 24, 1995, Ser. No. 449,839
Claims priority, application Rep. of Korea, May 24, 1994, 94-11274
Int. Cl.[6] C23C *14/34;14/56*
U.S. Cl. 204—298.07 23 Claims



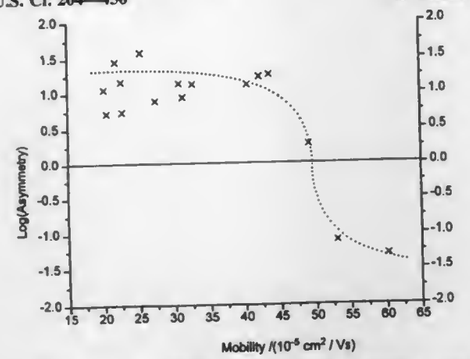
1. A sputtering apparatus, comprising:
a vacuum sputtering chamber;
a target made of a sputterable source material, said target having a first side in fluid contact with the interior of said chamber, and a second side;
a first electrode secured to said second side of said target;
a silicon carbide chuck disposed in spaced-apart, opposed relationship to said target, said chuck having a first side in fluid contact with the interior of said chamber, and a second side;
a second electrode secured to said second side of said chuck;
an inert gas injector for injecting an inert gas into the interior of said chamber; and,
a reactive gas injector for injecting a reactive gas into the interior of said chamber.

5,614,071
SPUTTERING SHIELD
Nader Mahvan, Cupertino; David Wilkinson, Danville, both of Calif., and Koji Ichikawa, Kumagaya, Japan, assignors to HMT Technology Corporation, Fremont, Calif.
Filed Jun. 28, 1995, Ser. No. 495,983
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.11 8 Claims



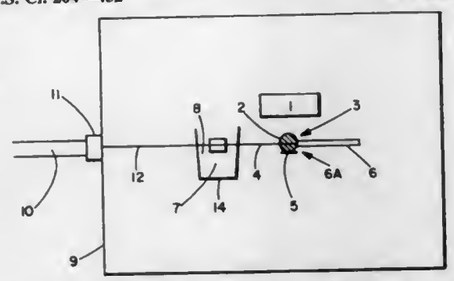
1. A sputtering apparatus shield for capturing sputtered material said shield comprising
a support having an inner expanse adapted to capture such sputtered material, said expanse defining a two-dimensional array of cavities, each formed of two-dimensionally concave wall surfaces, where the intersections of the wall surfaces of adjacent cavities form a two-dimensional array of edges on the expanse.

5,614,072
INCREASED EFFICIENCY OF ELECTROPHORETIC SEPARATIONS BY MOBILITY MATCHING
Gyula Vigh, Magnolia, Tex.; Yasir Y. Rawjee, Conshohocken, Pa., and Robert L. Williams, Jr., Brian, Tex., assignors to The Texas A&M University, College Station, Tex.
Filed Dec. 20, 1994, Ser. No. 359,641
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—450 45 Claims



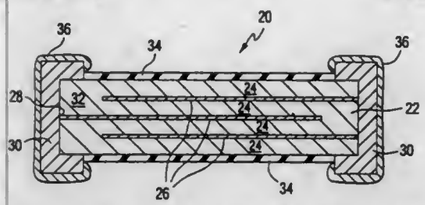
1. An electrolyte composition for use in electrophoresis to separate a charged analyte having a mobility μ_a in an electric field, wherein said composition has a pH, comprising:
at least one buffer system and
mobility matching ions having a mobility μ_2 in said electric field, such that μ_a/μ_2 equals about one.

5,614,073
METHOD AND APPARATUS FOR DETECTION OF UNDERIVATIZED AMINES AND AMINO ACIDS UTILIZING END COLUMN ADDITION OF $RU(BPY)_3^{2+}$
Donald R. Bobbitt, Fayetteville, and Warren A. Jackson, Batesville, both of Ark., assignors to Board of Trustees of the University of Arkansas
Filed Mar. 13, 1995, Ser. No. 403,464
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—452 8 Claims



1. A method for detecting an analyte in a sample, where the analyte is selected from amines, amino acids, peptides, proteins, and compounds having any of the foregoing as functional groups, the method comprising:
(a) introducing the sample into an electrophoresis capillary to separate the analyte from the sample to form a separated sample;
(b) directing the separated sample from the capillary into a contacting zone for immediate contact with a solution, wherein the zone is electrically decoupled from and located adjacent to the capillary, wherein the solution comprises $Ru(bpy)_3^{2+}$ which is being electrically converted to $Ru(bpy)_3^{3+}$, and wherein luminescence is produced once the separated sample contacts any $Ru(bpy)_3^{3+}$ in the solution;
(c) photometrically measuring the quantity of analyte present as a function of the luminescence.

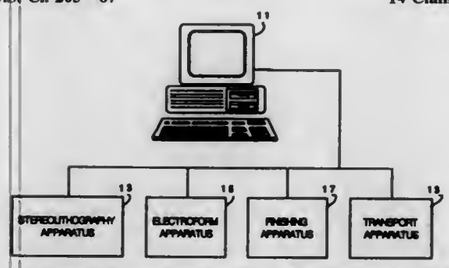
5,614,074
ZINC PHOSPHATE COATING FOR VARISTOR AND METHOD
Palaniappan Ravindranathan, Dundalk, Ireland, assignor to Harris Corporation, Melbourne, Fla.
Filed Dec. 9, 1994, Ser. No. 355,220
Int. Cl.[6] H01C *7/112*
U.S. Cl. 205—50 25 Claims



1. A method of providing a semiconductor device with an inorganic electrically insulative layer, the semiconductor device having an exposed semiconductor surface and electrically conductive metal end terminations, the method comprising the steps of:
(a) exposing the semiconductor device to a phosphoric acid solution to form a phosphate coating on the exposed semiconductor surfaces, and not on the end terminations; and
(b) coating the semiconductor device with an electrically conductive metal in a process in which the device is electrically charged and submerged in a plating solution, the metal being formed on the end terminations and not on the phosphate coating because the phosphate coating is not electrically conductive.

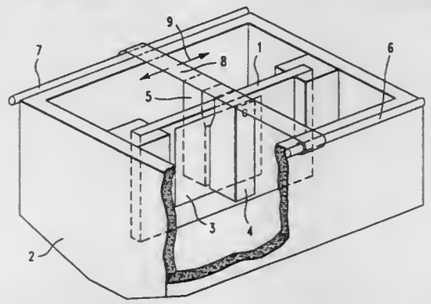
8. A nonlinear resistive element made by the process of claim 1.

5,614,075
METHOD OF INCREMENTAL OBJECT FABRICATION
Larry E. André, Sr., 812 Saddlebrook Dr. South, Bedford, Tex. 76021
Continuation of Ser. No. 131,205, Oct. 1, 1993, Pat. No. 5,435,902. This application Jun. 7, 1995, Ser. No. 476,269
Int. Cl.[6] C25D *1/00*
U.S. Cl. 205—67 14 Claims



1. A method of fabricating a metallic, three-dimensional object or part comprising the steps of:
determining dimensional boundaries of the part within a computer CAD/CAM system, the dimensional boundaries including x, y, and z dimensions;
providing a reference surface;
a) forming a first incremental layer of polymeric mold material on the reference surface, the incremental layer being selectively interrupted to define at least one dimensional boundary of the part;
b) forming a first incremental layer of metallic part material upon at least the interruption in the first incremental layer of mold material, wherein a second reference surface is defined by the first incremental layer of mold material and the first layer of part material;
c) forming a second incremental layer of polymeric mold material upon the second reference surface, the second incremental layer being selectively interrupted to define another at least one dimension of the part;
d) forming a second incremental layer of metallic part material upon at least the second reference surface;
repeating steps a) through d) until all dimensional boundaries are defined and the part is fully fabricated, wherein each of the steps (a) through (d) is implemented and controlled by a central controller.

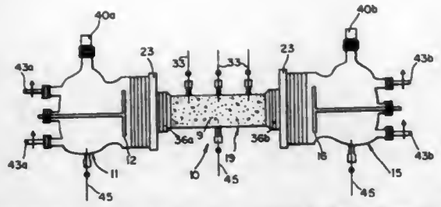
5,614,076
TOOL AND METHOD FOR ELECTROETCHING
Denis J. Brophy, Staatsburg; Madhav Datta, Yorktown Heights; Derek B. Harris, Dryden, all of N.Y.; Frank S. Ryan, Boulder, Colo., and Frank A. Spera, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 261,190, Jun. 17, 1994, Pat. No. 5,531,874. This application Feb. 29, 1996, Ser. No. 608,891
Int. Cl.[6] C25F *3/02;3/14;7/00*
U.S. Cl. 205—666 23 Claims



16. A method for electroetching a masked workpiece, said method comprising the steps of:
(a) fixing said masked workpiece to a portion of a sidewall of an electrolyte reservoir tank,
(b) mounting two movable cathode assemblies on guide rails via at least one transverse support member to said electrolyte reservoir tank,
(c) driving means for driving said two movable cathode assemblies in synchronous unison motion across respective opposing surfaces of said masked workpiece, and
(d) upon flowing electrolyte simultaneously applying an electrical field through said two movable cathode assemblies, and thereby electroetching said masked workpiece.

5,614,077
ELECTROCHEMICAL SYSTEM AND METHOD FOR THE REMOVAL OF CHARGED SPECIES FROM CONTAMINATED LIQUID AND SOLID WASTES
J. Kenneth Wittle, Chester Springs, and Sibel Pamukcu, Bethlehem, both of Pa., assignors to Electro-Petroleum, Inc., Wayne, and Lehigh University, Bethlehem, both of Pa.
Filed Apr. 10, 1995, Ser. No. 420,988
Int. Cl.[6] C25C *1/22*
U.S. Cl. 205—704 34 Claims

1. An electrokinetic system for removing a charged species, selected from the group consisting of cations and anions, from a sample in which said charged species is commingled with at least one contaminant, said contaminant comprising at least one charged



component selected from the group consisting of an anionic component, a cationic component or a mixture thereof, said system comprising:

a plurality of electrode compartments including an anode compartment comprising an anode and a cathode compartment comprising a cathode;

a treatment zone in fluid communication with said anode and said cathode compartments for containing said sample, said treatment zone including at least one chamber disposed adjacent at least one of said electrode compartments and adapted to contain a porous matrix material having affinity for said charged component of said contaminant;

means for applying a voltage gradient across said anode and said cathode which induces electrical current flow through said sample in said treatment zone, causing any cations present in said sample to migrate toward said cathode compartment and any anions present in said sample to migrate toward said anode under the influence of said electrical current flow; and

a pH controller comprising a monitoring means for monitoring acidity and basicity and an adjusting means responsive to said monitoring means for adjusting the acidity and basicity in the treatment zone to promote migration of said charged species from said treatment zone while maintaining said at least one contaminant within said treatment zone.

5,614,078

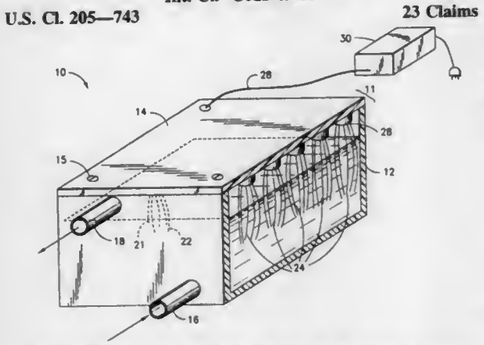
METHOD AND APPARATUS FOR REMOVING NITRATES FROM WATER

Mark Lubin, and Sjef Otten, both of Miami, Fla., assignors to Upscale Technologies, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 457,040, Jun. 1, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 671,264

Int. Cl.[6] C02F *1/461*

U.S. Cl. 205—743 **23 Claims**



1. An apparatus for reducing nitrates in an aqueous solution, comprising:

a) an electrochemical cell in which the aqueous solution containing nitrates is treated, said cell comprising a container;

b) an electrode system including a carbon fiber cathodic electrode, a carbon fiber anodic electrode, and a reference electrode, wherein all of said electrodes are immersed in the aqueous solution; and

c) an electronic control circuit including a means for impressing a voltage across said electrodes causing electrochemical reduction/oxidation reactions on the surfaces of said cathodic and anodic electrodes, and means for controlling said electrodes at a potential wherein nitrates are reduced to gaseous products, and further wherein hydrogen, oxygen and chlorine are not produced.

5,614,079

CATALYTIC DEWAXING OVER SILICA BOUND MOLECULAR SIEVE

Maria D. Farnos, Wilmington, Del.; Thomas R. Forbus, Jr., Newtown, Pa.; John P. McWilliams, Woodbury, and David S. Shihabi, Pennington, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 22,220, Feb. 25, 1993, Pat. No. 5,365,003. This application Sep. 29, 1994, Ser. No. 315,291

Int. Cl.[6] C10G *25/00;47/02;* **C07C** *4/02;* **B01J** *29/06*

U.S. Cl. 208—27 **6 Claims**

1. A process for catalytically dewaxing a hydrocarbon feedstock comprising contacting the feedstock with a catalyst composition which comprises a zeolite in an inert binder, the catalyst composition having been prepared by a method comprising mulling zeolite crystals, organosilicon compound, organic polymer and an extrusion facilitating amount of liquid to form an extrusion mixture, extruding the mixture to form an extrudate and calcining the extrudate to provide the catalyst composition.

5,614,080

TREATMENTS TO REDUCE ALDOL CONDENSATION AND SUBSEQUENT POLYMERIZATION IN MONOETHANOLAMINE SCRUBBERS

Glenn L. Roof, Sugar Land, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed May 11, 1995, Ser. No. 439,429

Int. Cl.[6] C10G *9/16*

U.S. Cl. 208—48 AA **20 Claims**

1. A method for inhibiting aldol condensation in monoethanolamine scrubbers comprising the step of treating a monoethanolamine solution comprising hydrocarbons with an inhibiting agent in an amount sufficient to inhibit said aldol condensation, wherein said inhibiting agent is selected from the group consisting of hydroperoxides, hydrogen peroxide, and dialkylketone oximes.

5,614,081

METHODS FOR INHIBITING FOULING IN HYDROCARBONS

William S. Carey, Ridley Park; Jeffrey H. Peltier, King of Prussia, both of Pa., and Alan E. Goliaszewski, The Woodlands, Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jun. 12, 1995, Ser. No. 489,905

Int. Cl.[6] C10G *9/16*

U.S. Cl. 208—48 AA **9 Claims**

1. A method for inhibiting fouling deposit formation in a liquid hydrocarbonaceous medium during processing at temperatures from 300° F to 1400° F comprising adding to said liquid hydrocarbonaceous medium an effective antifouling amount of an alkylphosphonate ester or acid thereof having an alkyl chain length of C_1 to C_{40}.

5,614,082

CATALYTIC REFORMING PROCESS WITH SULFUR ARREST

Michael B. Russ, Villa Park, and Paul A. Sechrist, Des Plaines, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation of Ser. No. 174,501, Dec. 28, 1993, abandoned, which is a division of Ser. No. 976,158, Nov. 13, 1992, Pat. No. 5,316,992, which is a continuation-in-part of Ser. No. 635,003, Dec. 27, 1990, abandoned. This application Jun. 13, 1995, Ser. No. 490,037

Int. Cl.[6] C10G 35/06

U.S. Cl. 208—138 **10 Claims**

1. A process for the catalytic reforming of a hydrocarbon feedstock comprising contacting the feedstock at reforming conditions with a catalyst system comprising a physical mixture of a sulfur-sensitive conversion catalyst and a sulfur sorbent, the conversion catalyst consisting essentially of a non-acidic L-zeolite, an alkali metal component, at least one platinum-group metal component and a refractory inorganic-oxide support and the sulfur sorbent consisting essentially of one or more manganese oxides.

5,614,083

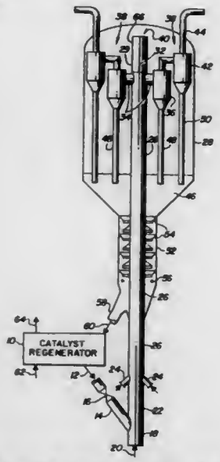
RISER DISENGAGER WITH SUSPENDED CATALYST SEPARATION ZONE

Ismail B. Cetinkaya, Palatine, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 201,495, Feb. 4, 1994, Pat. No. 5,417,931, which is a continuation-in-part of Ser. No. 790,924, Nov. 13, 1991, Pat. No. 5,290,430. This application May 22, 1995, Ser. No. 445,815

Int. Cl.[6] C10G *35/00*

U.S. Cl. 208—161 **18 Claims**



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and regenerated catalyst particles to a lower section of a reactor riser and transporting said catalyst and feedstock upwardly through a first portion of said riser to a riser outlet thereby converting said feedstock to gaseous products and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles to yield a first mixture of spent catalyst and gaseous products having a first density;

b) withdrawing a second mixture of spent catalyst and gaseous products from said riser through said riser outlet;

c) passing at least a portion of said first mixture of spent catalyst particles and gaseous products upwardly from said first portion of said first riser into a suspension of catalyst particles at a downstream end of said riser without substantial discharge of catalyst out of said riser and suspension being located in a second portion of said riser comprising a disengaging zone, said disengaging zone having a majority of its length extending above said riser outlet and providing a region above said riser outlet having a second catalyst density, said second catalyst density having a density at least 10 per cent greater than said first catalyst density;

d) passing a stripping vapor stream into said disengaging zone;

e) passing said second mixture of catalyst particles and gaseous products to a particle separator;

f) recovering a gaseous product stream from said separator;

g) passing catalyst particles from said separator to a stripping zone and passing a stripping gas upwardly through said stripping zone and producing said gaseous stripping vapor stream; and,

h) passing spent catalyst from said stripping zone into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser.

5,614,084

Patent Not Issued For This Number

5,614,085

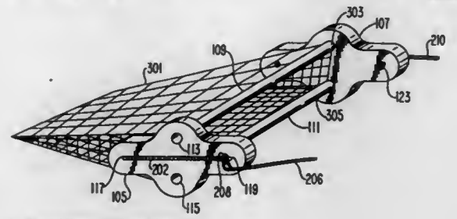
OMNIDIRECTIONAL SKIMMER

James B. Platt, III, 12826 Dover Rd., Reisterstown, Md. 21136

Filed Jul. 11, 1995, Ser. No. 500,619

Int. Cl.[6] E04H *11/16*

U.S. Cl. 210—169 **19 Claims**



1. A skimmer comprising:

first and second flotation members;

first and second hollow cross members attached to said first and second flotation members in a substantially vertical orientation with ends of the cross members being substantially open with respect to an outer surface of the flotation members, such that one cross member is capable of being submerged and filled with liquid, providing stability, while the other cross member is empty; and

a net operatively connected to the first and second hollow cross members.

5,614,086

METHOD AND APPARATUS FOR REMOVING CONTAMINANTS FROM A WATER SUPPLY

David D. Hill, 4 North St., Cos Cob, Conn. 06807, and Timothy Kane, 1364 King St., Greenwich, Conn. 06831

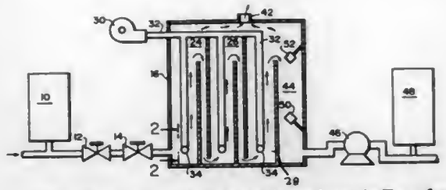
Filed Jun. 5, 1995, Ser. No. 461,879

Int. Cl.[6] B01D *19/00*

U.S. Cl. 210—170 **8 Claims**

1. A compact diffused bubble aeration system for a water supply from a well or the like containing contaminants comprising:

(a) a single tank for holding water and provided with a plurality of double baffle arrangements spaced in series in the interior of the tank, one of said spaced baffles being higher in the tank than the adjacent lower baffle, the higher of the spaced baffles



being located downstream of the adjacent lower baffle to form water channel pathways therebetween, a series of separate succeeding aeration chambers, a storage chamber in said tank for cleaned water, a partition at the end of the series of aeration chambers to separate said aeration chambers from said storage chamber,

(b) means for admitting untreated water from the well to the bottom of said tank through a tank inlet, said means for admitting untreated water further including at least one solenoid valve, air blower means for introducing high pressure air toward the bottom of each aeration chamber including diffusers located toward the bottom of each aeration chamber which create bubbles in the water through agitation and turbulence whereby the air and contaminants separate from the water, means to vent the air and contaminants from the tank,

(c) at least one float switch in said storage chamber connected to at least one solenoid valve which includes means for closing the at least one solenoid valve when the level of water in said storage chamber rises to a predetermined height and for opening the at least one solenoid valve when the level of water in said storage chamber drops to a predetermined lower level and activates said system, and

(d) the water to be treated by the system entering at the bottom of one end of the tank takes a sinuous path from one aeration chamber to the succeeding aeration chamber between each pair of double baffles forming said channels whereby the higher baffle of each pair of baffles prevents spill-over to the next succeeding chamber causing the water passing through each end of said channels to enter the bottom of the next succeeding chamber, and the cleaner water from the last of the series of aeration chambers enters the storage chamber at the other end of said tank.

5,614,087

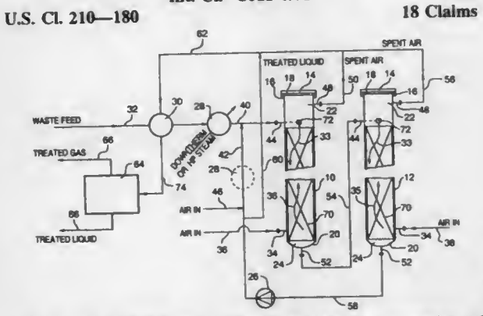
WET OXIDATION SYSTEM

Tho-Dien Le, Willowdale, Canada, assignor to Kenox Corporation, Canada

Filed Jul. 13, 1994, Ser. No. 274,249

Int. Cl.[6] C02F *1/72*

U.S. Cl. 210—180 **18 Claims**



1. In an apparatus for oxidizing an aqueous suspension of organic matter at elevated temperature and pressure, said apparatus having:

a reactor;

means for introducing the aqueous suspension to an upstream end of the reactor;

means for circulating the aqueous suspension through said reactor;

means for introducing an oxygen-containing gas to the aqueous suspension;

means for removing treated aqueous suspension from a downstream end of said reactor;

said reactor housing a static mixer vane arrangement for splitting, rearranging and combining the aqueous suspension as said circulating means circulates said aqueous suspension through said reactor;

the improvement comprising:

said circulating means withdrawing the treated aqueous suspension from said downstream end, combining a major portion of said withdrawn treated aqueous suspension with fresh incoming aqueous suspension and returning the combined aqueous suspensions to said reactor via said introducing means at said reactor upstream end for the aqueous suspension, said circulating, combining and returning means providing a ratio of recirculated aqueous suspension to fresh introduced aqueous suspension in a range between 10:1 to 50:1;

said means for introducing oxygen containing gas being located adjacent said downstream end of said reactor to provide for countercurrent flow of the gas relative to the flow of aqueous suspension;

means for removing a minor portion of said withdrawn aqueous suspension to provide said major portion of the treated aqueous suspension; and

means for removing from an uppermost region of said reactor, spent gases which have separated from said aqueous mixture, said gas removing means removing spent gases without loss of pressure in said reactor.

5,614,088

CLEANING WATER PRODUCTION SYSTEM

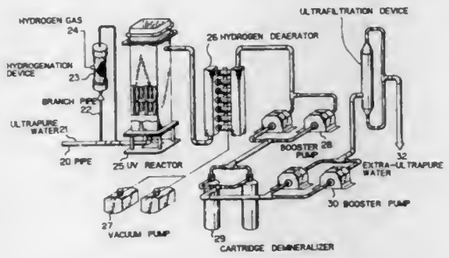
Hiroshi Nagai; Yukio Ikeda, and Takayuki Saito, all of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 361,162, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 66,304, May 24, 1993, abandoned. This application Jun. 11, 1996, Ser. No. 664,312

Claims priority, application Japan, May 28, 1992, 4-160091

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—188 **10 Claims**



1. A cleaning water production system in which pure water from a primary pure water production system is treated in a subsystem to produce ultrapure water, which is then sent to points of use through supply pipes, said points of use being connected to said subsystem through return pipes for returning unused cleaning water to said subsystem, wherein an extra-ultrapure water production system is provided at a distal end portion of said supply pipes near said points of use for supplying extra-ultrapure water to said points of use, said extra-ultrapure water production system including means for automatically controlling an amount of extra-ultrapure water produced in accordance with an amount of extra-ultrapure water used at said points of use, said means for automatically controlling said extra-ultrapure water production system receives a signal from said point of use for controlling the number of revolutions of a pump in said extra-ultrapure water production system and controls the flow rate of said cleaning water returning to said subsystem to a reduced constant value when all of said points of use are not used.

5,614,089

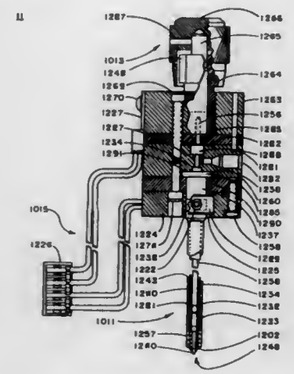
APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Robert W. Allington; Henry L. Walters; Daniel G. Jameson, and Yoossef Tehrani, all of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Continuation of Ser. No. 96,919, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 27,257, Mar. 5, 1993, Pat. No. 5,268,103, which is a continuation-in-part of Ser. No. 908,458, Jul. 6, 1992, Pat. No. 5,198,197, which is a division of Ser. No. 795,987, Nov. 22, 1991, Pat. No. 5,160,624, which is a continuation-in-part of Ser. No. 553,119, Jul. 13, 1990, Pat. No. 5,094,753. This application Oct. 13, 1995, Ser. No. 542,683

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **16 Claims**



1. A variable-orifice fluid restrictor for use with a supercritical extractor or chromatograph including:

an inlet line adapted to carry fluid at a pressure above its critical pressure;

an extended tubular probe having an inner and an outer surface, a proximal end and a distal end;

said proximal end of the probe being disposed toward the inlet line and the distal end of the probe containing an outlet orifice means;

an analyte collection means;

said probe being positioned with at least its outlet portion within said analyte collection means for collecting at least a portion of the fluid flowing from said probe;

said outlet orifice means including at least one portion that is movable to adjust the fluid resistance at the outlet orifice means;

means for adjusting at least one portion of said outlet orifice means;

said outlet orifice means being adapted to be positioned to release said fluid into said collection means.

5,614,090

FILTER CASING AND PIPE EXTENSION THEREFOR

Norbert Breusch, Sinsheim-Rohrbach, Germany, assignor to ARGO GmbH fur Fluidtechnik, Menzingen, Germany

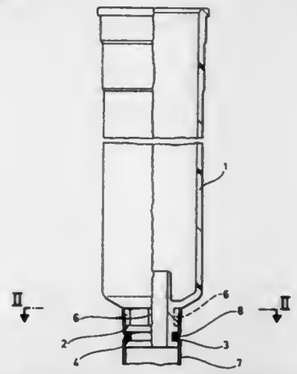
PCT No. PCT/EP94/00023, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO94/16793, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 6, 1994, Ser. No. 500,981

Claims priority, application Germany, Jan. 27, 1993, 43 02 161.1

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—232 **4 Claims**



1. A filter casing and pipe extension therefor including in combination a filter casing provided with a discharge outlet having an axis, the outlet having an outer surface at least portions of which are conically tapered from larger radii to smaller radii in the direction of discharge along the axis, the outlet terminating in two axially spaced cylindrical portions of equal outer radii separated by a circumferential groove of predetermined depth, the radii of the cylindrical portions being equal or greater than the smallest radius of the tapered portions, a sealing member disposed in the groove and having a radial thickness not greater than said depth, an extension pipe formed of a ductile metal and having an inner radius equal to or slightly greater than that of the cylindrical portions, and the pipe being provided with a circumferentially extending indentation, the construction being such that the pipe may be axially telescoped upon the outlet with the pipe indentation disposed in the groove in sealing engagement with the sealing member and the tapered portions deforming the pipe and enlarging at least portions of its inner radial dimensions.

5,614,091

FUEL FILTER MASTER MODULE WITH OPTIONAL DIVERTER CAPABILITY

Leon P. Janik, Suffield; M. Craig Maxwell, Colchester, and Robert W. Zeiner, Torrington, all of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

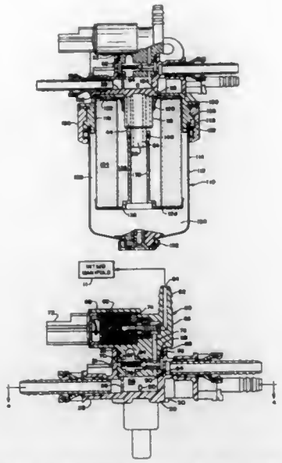
Continuation-in-part of Ser. No. 166,226, Dec. 13, 1993, Pat. No. 5,484,527. This application Sep. 30, 1994, Ser. No. 315,910

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—249 **8 Claims**

1. A filter base assembly adapted for mounting filter cartridge means including filter means for filtering a flow of fuel in a fuel injection system for an internal combustion engine, the system including a fuel injection pump and a fuel tank, said base assembly comprising:

a filter base member including opposed upper and lower sides, whereby the filter cartridge means is mounted to said lower side, a first conduit extending from said lower side and defining an inlet flow channel for connection to an inlet side of the filtering means, a second conduit extending from said lower side and surrounding said first conduit to form an annular outlet flow channel therewith for connection to an



outlet side of the filtering means, first inlet means for connecting the fuel tank to the inlet flow channel of said first conduit, first outlet means for connecting an inlet side of the fuel injection pump with said annular outlet flow channel, said base member including a cylindrical receptacle formed into said upper side and defining an upper cavity and a lower chamber wherein the cylindrical receptacle is spaced apart from and separate of said inlet flow channel and said first inlet means, second inlet means for connecting a return side of the fuel injection pump to said upper cavity, second outlet means for connecting the fuel tank to said lower chamber, and closure means for sealably closing said receptacle.

5,614,092

FILTER FOR THE SEPARATION OF SOLIDS AND LIQUIDS FROM MUDS AND SPECIFICALLY THOSE FROM INDUSTRIAL PROCESSING

Vincenzo Di Leo, Milan, Italy, assignor to Idee & Prodotti S.r.l., Milan, Italy

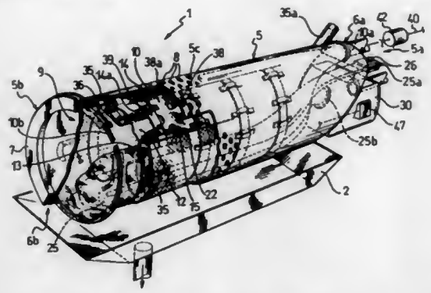
PCT No. PCT/EP94/01519, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO94/26386, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 545,584

Claims priority, application Italy, May 11, 1993, MI93A0951

Int. Cl.[6] B01D *25/133*

U.S. Cl. 210—350 **25 Claims**



1. Filter for the separation of solids and liquids from muds comprising:

a container (**5**),

a filtering bag (**10**) housed in the container (**5**) for reception of the muds,

a deformable membrane (**25**) housed in the container (**5**) and defining therein a closed volume (V) of variable size,

fluid pumping means (**30**) communicating with the volume (V), to vary the size of the volume (V) by pumping fluid into the volume (V), thereby squeezing the filtering bag (**10**) in the container (**5**),

a first inlet mouth (**12***a*) in the filtering bag (**10**) for feeding the mud into the filtering bag (**10**),

a plurality of holes (**8**) formed in the side wall (**5***c*) of the container (**5**) so that the filtered liquid can flow out,

elastic means (**14**, **14***a*) for ensuring elastic expansion of the bag (**10**) against the variable volume (V).

5,614,093

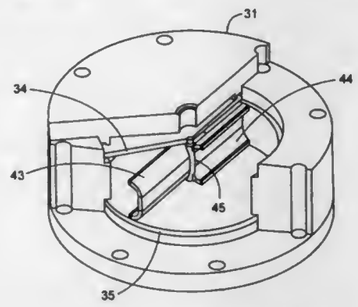
DISCRETE PORE PLATELET FILTER MANUFACTURED BY ELECTROPOLISHING

H. Harry Mueggenburg, Carmichael; Leland L. Lang, Lodi; Donald C. Rousar, Fair Oaks, and Marvin F. Young, El Dorado Hills, all of Calif., assignors to Aerojet-General Corporation, Sacramento, Calif.

Filed Aug. 23, 1995, Ser. No. 518,378

Int. Cl.[6] B01D *29/44;29/64*

U.S. Cl. 210—355 **14 Claims**



1. A self-cleaning microscopic pore filter, comprising:

a substantially planar laminate of platelets, each less than 0.100 inch in thickness and etched by electropolishing in patterns such that the etched regions of adjacent platelets overlap to form a plurality of flow passages sufficiently small to block passage of particles exceeding 0.01 inch in diameter;

a housing enclosing said laminate, and defining an interior divided by said laminate into an inlet chamber and an outlet chamber, said housing containing an inlet port communicating with said inlet chamber and an outlet port communicating with said outlet chamber; and

wiper means movably mounted in said inlet chamber to continuously sweep said laminate and thereby remove solid particles deposited on the surface thereof.

5,614,094

VIBRATING SCREEN UNIT

E. Mark Deister, Fort Wayne, and Dale A. Losbe, New Haven, both of Ind., assignors to Deister Machine Co., Inc., Fort Wayne, Ind.

Filed May 13, 1994, Ser. No. 242,115

Int. Cl.[6] B01D *33/00;33/37;* **B07B** *1/28*

U.S. Cl. 210—388 **43 Claims**

1. A screen unit for dewatering material under clean and unclean conditions, comprising:

a frame having a width;

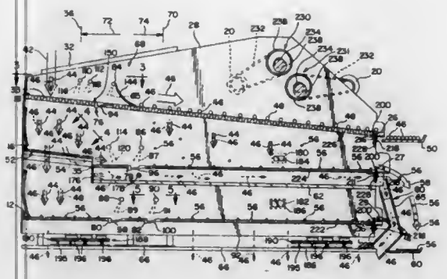
a top screen deck coupled to the frame and having a first mesh size, a feed end to receive material, and a discharge end that discharges substantially dewatered material of a size above the first mesh size;

a middle screen deck coupled to the frame below the top screen deck and having a second mesh size and a discharge end that discharges substantially dewatered material of a size above the second mesh size;

a bottom screen deck coupled to the frame below the middle screen deck and having a third mesh size and a discharge end that discharges substantially dewatered material of a size above the third mesh size;

a splitter positioned to lie below the top screen deck for dividing flow of material below the first mesh size between the middle and bottom screen decks, said splitter extending continuously across the width of said frame and comprising alternating closed channels and screen rows which alternate across the width of the frame; and

a water treatment unit coupled to the frame and at least one of the three decks that cleans the material during unclean material conditions.



5,614,095

FILTRATION MEDIAM SUPPORT MATERIAL AND FILTER COMPRISING SAME

Peter J. Degen, Huntington; Colin F. Harwood, Glen Cove, both of N.Y.; John B. Ronan, Harrington Park, N.J., and Jason Mei, East Meadows, N.Y., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 116,901, Sep. 3, 1993, Pat. No. 5,435,957. This application May 30, 1995, Ser. No. 453,483

Int. Cl.[6] B01D *39/16*

U.S. Cl. 210—491 **34 Claims**

1. A filtration medium support material comprising a sheet of nonwoven fibrous polymeric material having first and second sides, said nonwoven fibrous polymeric material having a sliding force against itself of no more than about 15 ounces on both sides thereof.

5,614,096

COMPRESSED ADSORBENT FILTER CAKE

Bernard Cohen, Berkeley Lake; Lee K. Jameson, Roswell, and Gerald L. Kochanny, Jr., Cumming, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 24, 1995, Ser. No. 448,939

Int. Cl.[6] B01D *39/06*

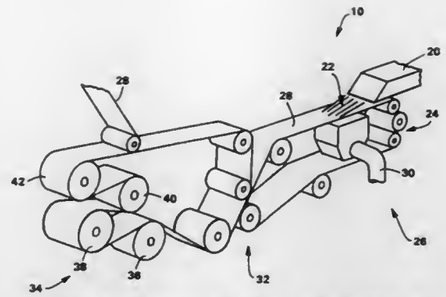
U.S. Cl. 210—502.1 **24 Claims**

22. A compressed caffeine adsorbent filter cake, the filter cake comprising:

a compressed wet-laid mat of fibrous material; and

from about 10 to about 90 percent, by weight, of a caffeine adsorbent particulate material integrated within the matrix of fibrous material, the caffeine adsorbent particulate material selected from clay minerals and zeolites,

said filter cake having a thickness of from about 0.3 cm to about 5 cm and a density of from about 0.1 grams/cm^3 to about 0.2 grams/cm^3 such that the filter cake is adapted to provide at least a 40 percent reduction in the caffeine concentration of from about 1 cup to about 40 cups of a liquid having an initial caffeine concentration ranging from about 20 to about 100 mg per 100 ml in contact with the filter cake for less than about 2 minutes.



5,614,097

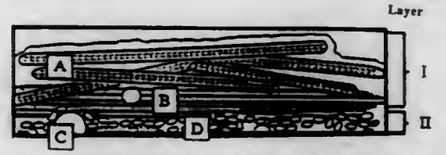
COMPOSITIONS AND METHOD OF USE OF CONSTRUCTED MICROBIAL MATS

Judith A. Bender, Atlanta, and Peter C. Phillips, Decatur, both of Ga., assignors to Microbial and Aquatic Treatment Systems, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 339,548, Nov. 15, 1994, Pat. No. 5,522,985, which is a continuation of Ser. No. 40,628, Mar. 31, 1993, abandoned. This application May 10, 1995, Ser. No. 438,626

Int. Cl.[6] C02F *3/32*

U.S. Cl. 210—602 **19 Claims**



1. A composition, comprising, a mixture of a slime-producing cyanobacteria, a purple autotrophic bacteria, and an organic nutrient substrate, forming at least one constructed microbial mat.

5,614,098

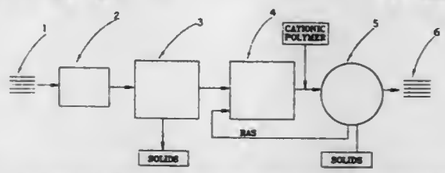
NOCARDIA FOAMING CONTROLLING METHOD OF WASTE WATER TREATMENT

Y. J. Shao, 4824 Hollow Corner Rd. 260, Culver City, Calif. 90230, and Konstadinas Kaporis, 772 Mira Mar Ave., Long Beach, Calif. 90804

Filed Apr. 21, 1995, Ser. No. 425,895

Int. Cl.[6] C02F *3/12*

U.S. Cl. 210—608 **6 Claims**



1. A nocardia foaming controlling method of waste water treatment comprising the following steps:

(a) treating the waste water influent with a bar screen for ridding of objects of large sizes present in waste water system stream;

(b) passing the waste water coming through said bar screening stage to a predetermined number aerated grit chambers for introducing systematic aeration into said waste water influent and gritting said waste water influent in order to remove materials alike from said waste water stream;

(c) treating said waste water coming out of said aerated grit chamber with a primary sedimentation step for separating out most suspended solids therein;

(d) passing said waste water stream after the treatment of said primary sedimentation step to a predetermined number of secondary aeration basins for a biological aeration process wherein activated sludge is introduced into said basins;

(e) injecting a cationic polymer into the waster water coming out of said aeration basins for recycling said cationic polymer through a retention activation sludge line to control nocardia foaming; and

(f) passing said waste water stream after the injection of said cationic polymer to a predetermined number of clarifiers for clarifying treatment, in which the addition of said cationic polymer to the secondary-treated waste water coming out of said secondary aeration basins is operated before said waste water entering into said clarifiers, so as to displace nocardia floc and prevent foaming by an interaction with the nocardia floc and its hydrophilic nature, which causes bubbles in foam to collapse, and thus an effluent with nocardia losing its buoyancy and defoaming effect is achieved.

5,614,099

HIGHLY PERMEABLE COMPOSITE REVERSE OSMOSIS MEMBRANE, METHOD OF PRODUCING THE SAME, AND METHOD OF USING THE SAME

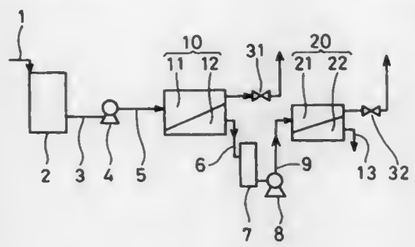
Masahiko Hirose; Hiroki Ito, both of Shiga; Masatoshi Maeda, Osaka, and Kazuo Tanaka, Shiga, all of Japan, assignors to Nitto Denko Corporation, Japan

Filed Dec. 18, 1995, Ser. No. 572,900

Claims priority, application Japan, Dec. 22, 1994, 6-319717; Dec. 22, 1994, 6-319718; Jul. 13, 1995, 7-177455; Jul. 18, 1995, 7-181186

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—653 **14 Claims**



12. A method of removing material from a liquid, comprising subjecting the liquid to treatments with a first reverse osmosis membrane and with a second reverse osmosis membrane after treatment with said first reverse osmosis membrane,

wherein a highly permeable reverse osmosis membrane, comprising a negatively-charged crosslinked polyamide skin layer and a porous support for the skin layer, is used for a second reverse osmosis membrane, the skin layer comprising a reaction product of a compound having at least two reactive amino groups and a polyfunctional acid halide compound having at least two reactive acid halide groups and having an average surface roughness of at least 55 nm, the skin layer being coated with a crosslinked layer of an organic polymer having positively-charged groups.

5,614,100

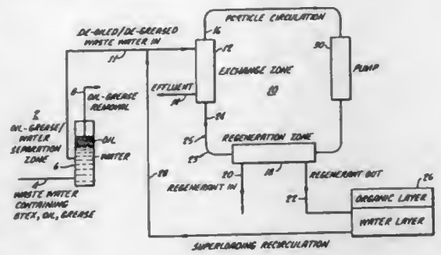
METHOD FOR WATER REMEDIATION

Darrell L. Gallup, Chino Hills, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Continuation-in-part of Ser. No. 996,310, Dec. 23, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 229,692

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—665 **57 Claims**



1. A method for removing water-insoluble contaminant hydrocarbons, ferric ions or ferric ion precursors and dissolved contaminant hydrocarbons contained in a waste water stream, said method comprising the following steps:

(1) removing some of said water-insoluble contaminant hydrocarbons and removing said ferric ions or ferric ion precursors from said waste water stream to produce a resultant waste water stream; and

(2) contacting the resultant waste water stream obtained from step (1) in an exchange zone with particles comprising a polymeric resinous adsorbent to adsorb the dissolved contaminant hydrocarbons therefrom with at least some of said particles becoming deactivated.

5,614,101

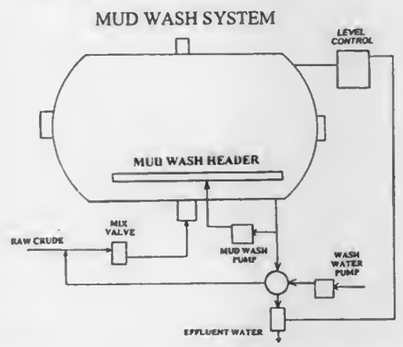
METHODS FOR TREATING MUD WASH EMULSIONS

Jennifer A. DeWalls, Spring, and Mark S. Binford, The Woodlands, both of Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jul. 13, 1995, Ser. No. 502,227

Int. Cl.[6] B01D *17/05*

U.S. Cl. 210—708 **8 Claims**



1. A method for resolving emulsions in a bottom sludge and a water-oil interphase present in a containment vessel wherein said containment vessel contains a bottom sludge layer, a water or brine layer, a water-oil interphase layer, and a top crude oil layer comprising injecting into said bottom sludge through mud wash headers an effective emulsion resolving amount of an oil-based demulsifier.

5,614,102

METHOD FOR PURIFYING SEWAGE

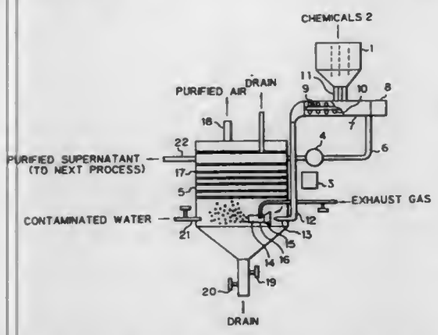
Yasuyuki Sakurada, 6-3, Shitte 3-chome, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 283,166, Aug. 3, 1994, abandoned, which is a continuation of Ser. No. 916,080, Aug. 29, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,185

Claims priority, application Japan, Jul. 29, 1990, 2-18140

Int. Cl.[6] C02F *1/52*

U.S. Cl. 210—718 **3 Claims**



1. A method for purifying sewage comprising treating said sewage with flocculants in a purification tank and purifying an exhaust gas containing CO_{1-3}, NO_{1-5} or SO_{1-3} by introduction thereof into the sewage, wherein the flocculants are a calcium containing material and one or more substances selected from the group consisting of aluminum polychloride, ferric chloride, aluminum sulfate, alum, sodium hydroxide, detergents, polymeric flocculants, sodium bicarbonate, iron sulfate, ammonium sulfate, sodium aluminate, zinc chloride, aluminum chloride, potassium sulfate, magnesium sulfate, magnesium chloride, sodium hypochlorite, a flocculant effective for protein, sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, chlorine dioxide, ammonia, chlorine, ozone, oxygen, sulfur, sodium carbonate, sodium silicate, and clay, wherein the treatment of the sewage with the flocculants is repeated until the achievement of the required degree of purification and wherein the flocculants are introduced from a partitioned hopper to a mixer equipped with a screw connected to a motor and mixed in the mixer with one portion of sewage supplied from said purification tank, the resulting mixture is injected from a nozzle of an induction pipe through an exhaust gas ejector into the tank, sewage around the nozzle in the tank is forced into the ejector, and the exhaust gas is sucked through the ejector into the purification tank to form a number of bubbles with ultra fine particles, deposits from the bottom of the purification tank are drained, a purified supernatant is removed from the upper portion of the tank and purified air is exhausted from the top of the tank.

5,614,103

METHODS FOR DETACKIFYING PAINT SPRAY BOOTH WATER

Howard B. Agree, Newtown; Jen-Chi Chen, Morrisville, and Robert A. Iezzi, Malvern, all of Pa., assignors to BetzDearborn, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 246,547, May 20, 1994, which is a continuation-in-part of Ser. No. 80,909, Jun. 22, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 354,690

Int. Cl.[6] B01D *21/01*

U.S. Cl. 210—725 **11 Claims**

1. A method for detackifying or coagulating and flocculating waterborne and mixed waterborne/solventborne paints in paint spray booth water comprising adding to said paint spray booth water an effective detackifying or coagulating and flocculating amount of a composition comprising a water soluble or dispersible copolymer of tannin and a cationic monomer and aluminum chlorohydrate.

5,614,104

PROCESS AND APPARATUS FOR THE CONTINUOUS DETERMINATION OF THE SYLVINE SATURATION OF HOT SOLUTIONS FOR MONITORING AND CONTROLLING THE HOT SOLUBILIZING OF A CRUDE POTASH SALT

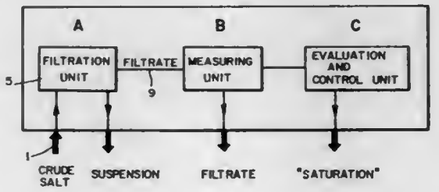
Ivan Bakardjiev, Hanover; Karl R. Wambach-Sommerhoff, Bad Hersfeld; Markus Cieslik, Wunstorf; Helmut Zentgraf, Burghaun-Steinback; Jost Gotte, Philippsthal, and Stefan Dressel, Heringen, all of Germany, assignors to Kali Und Salz GmbH, Kassel, Germany

Filed Mar. 7, 1995, Ser. No. 399,726

Claims priority, application Germany, Mar. 9, 1994, 44 07 916.8

Int. Cl.[6] B01D *9/02*

U.S. Cl. 210—742 **4 Claims**



1. Process for the continuous determination of the sylvine saturation degree (S.D.) of a hot solution for monitoring and controlling the hot solubilizing of a crude potash salt comprised in the solution, comprising:

(a) continuously obtaining solid matter-free filtrate solution from a stream of crude solution obtained from hot solubilizing of crude potash salt comprising sylvine while maintaining a dissolution temperature T of the solution;

(b) heating said filtrate solution to a temperature T_M higher than T, and measuring the total concentration of the solute;

(c) subsequently cooling the solution to a temperature T_{NS}, which is lower than the temperature T of the crude solution, and contacting the cooled solution with solid potassium chloride; and

(d) after increasing the temperature to the value T_M of the first measurement, recording the total concentration of the reheated solution to result in a second measurement, and the first and second measurements being obtained by a measuring device;

(e) determining a temperature T_S, the latter being referred to as the saturation temperature of the crude solution with respect to potassium chloride, said temperature resulting from the sum of the temperature T_{NS} and the difference between the first and the second measured concentrations multiplied by a calibration constant of the measuring device used, whereby the difference between the temperature T_S so determined and the original temperature T of the crude solution serves as the determination of the sylvine saturation degree; and

(f) utilizing the determined sylvine saturation degree for optimizing or controlling the hot solubilizing process.

5,614,105

CARTRIDGE FILTERS WITH INSOLUBLE ENZYME PARTICULATES CONTAINED THEREON

Steven M. Heilmann, Afton; Gary J. Drtina; Philip D. Eltzman, both of Woodbury; Louis C. Haddad, Mendota Heights; Frederick W. Hyde, New Brighton, and Todd W. Johnson, Minneapolis, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 106,412, Aug. 13, 1993, abandoned. This application Apr. 20, 1995, Ser. No. 425,585

Int. Cl.[6] B01D *37/00*

U.S. Cl. 210—767 **22 Claims**



1. A method of chemical conversion comprising the steps of:

a) providing a filter element comprising a composite filtration medium having an upstream surface and a downstream surface, said composite filtration medium including a first layer comprising a porous fibrous filtration layer and a second layer consisting essentially of one or both of insoluble enzyme particulates and insoluble particulates comprising an enzyme, said second layer being located on the upstream surface of said first layer, and

b) allowing a moving reaction solution to impinge upon the upstream surface of said filtration medium of said filter element for a time sufficient to effect chemical conversion, said filter element comprising said insoluble enzyme particulates as catalyst, and allowing said moving reaction solution to pass through said filtration medium at a flux rate of at least 0.01 cm/min.

5,614,106

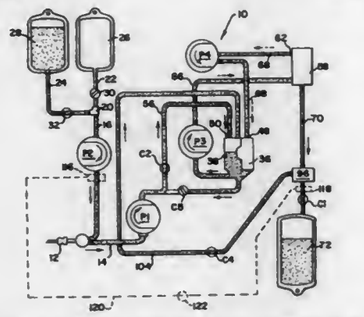
METHOD AND APPARATUS FOR COLLECTION OF PLATELETS

Jean M. Payrat, Nivelles, Belgium, and Donald W. Schoendorfer, Santa Ana, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 30,710, Mar. 12, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,529

Int. Cl.[6] B01D *37/00;36/00;21/26*

U.S. Cl. 210—767 **43 Claims**



1. A method for separating platelets and red cells in whole blood comprising:

a) providing a quantity of whole blood comprising at least red blood cells, platelets and plasma;

b) adding a first anticoagulant to the whole blood to provide a mixture of whole blood and anticoagulant, said first anticoagulant having a pH that is at least about 6.0 and is effective to increase the rate of red cell sedimentation;

c) separating the red cells from the platelets by allowing the red blood cells in said mixture to sediment; and

d) adding a second and different anticoagulant to the separated platelets.

5,614,107

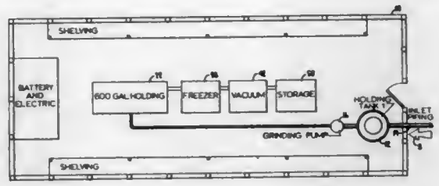
METHOD OF FREEZE DRYING SEWAGE SLUDGE

Albert T. Mallia, Jr., Pocono Pines, Pa., assignor to Enviro-Tech-2000, Inc., Scotrun, Pa.

Filed Oct. 13, 1995, Ser. No. 543,037

Int. Cl.[6] C02F *1/22;1/12*

U.S. Cl. 210—771 **13 Claims**



1. A method for processing sewage which comprises generally solid components as well as generally vaporizable components, the method comprising the steps of:

grinding an infeed of sewage into a liquid suspension;

pumping the liquid suspension to boost a line pressure thereof;

providing a freezing atmosphere;

throttling the liquid suspension into the freezing atmosphere that is at a given freezing temperature chosen so that the throttled liquid suspension forms into icy granular particles;

and then, to occur substantially close after the occurrence of that last step of throttling:

drawing a vacuum over the icy granular particles and vaporizing the generally vaporizable components of the icy granular particles, which disintegrates the generally solid components into a freeze-dried, crumbly residue;

exhausting the generally vaporizable components to a condenser; and,

removing the freeze-dried residue.

5,614,108

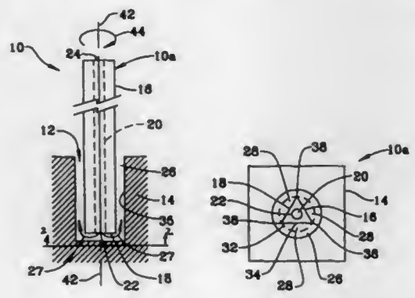
METHOD AND APPARATUS FOR FAST HOLE ELECTRICAL DISCHARGE MACHINING

Michael J. Habel, Ann Arbor, and Larry A. Peterson, Grosseile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1995, Ser. No. 568,711

Int. Cl.[6] B23H *1/04*

U.S. Cl. 219—69.15 **15 Claims**



1. A rotated electrode for electrical discharge machining a circular hole in a workpiece, said electrode comprising:

an electrically conductive body having a leading end, a length with a substantially non-circular outer shape in cross-section with at least one dielectric supply bore formed lengthwise through said body, said at least one bore connecting a dielectric exit at said leading end and a dielectric entrance distal therefrom,

wherein said non-circular outer shape is operatively adapted to provide a dielectric flush path between said body and the hole being machined in the workpiece through which a dielectric fluid can more readily flow.

5,614,109

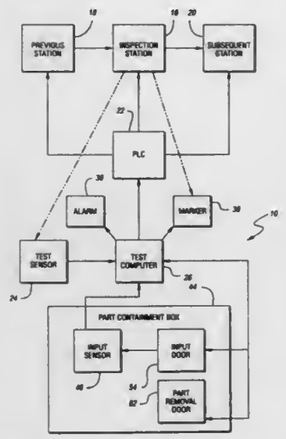
WELDING LINE WITH QUALITY CONTROL STORAGE DEVICES

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48304

Filed Jul. 5, 1995, Ser. No. 498,776

Int. Cl.[6] B23K *11/25*

U.S. Cl. 219—109 **27 Claims**



1. A control system for a production line having a production line drive and a resistance welding station, the welding station having a weld gun with a displaceable welding electrode and a displacement sensor coupled to the electrode for generating a displacement sensor signal responsive to displacement of the electrode during welding, the production line being adapted to index a plurality of parts to the resistance welding station for welding the parts together, the control system comprising:

a part containment box for receiving improperly welded parts;

an input sensor disposed within the part containment box for generating an input sensor signal responsive to detection of an improperly welded part; and

a test computer in communication with the displacement sensor, the input sensor, and the production line drive, the test computer being operative to compare the displacement sensor signal to a predetermined desired displacement signal to identify the improperly welded part and to provide a fault signal for disabling indexing of the production line until the input sensor signal is received indicating that the improperly welded part has been deposited into the part containment box.

5,614,110

VARYING PROTECTIVE GAS COMPOSITION BETWEEN PIERCING AND CUTTING WITH PLASMA TORCH

Toshiya Shintani, Chigasaki, and Masahiko Hasegawa, Hiratsuka, both of Japan, assignors to Komatsu Ltd., Tokyo, Japan

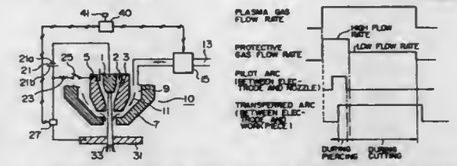
PCT No. PCT/JP94/00091, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/16857, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 25, 1994, Ser. No. 495,513

Claims priority, application Japan, Jan. 29, 1993, 5-034423

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.44 **15 Claims**



1. A method for piercing and cutting a workpiece with a plasma torch, said plasma torch having an electrode, a nozzle having an orifice, a plasma gas passage, a protective cap having an opening in alignment with said orifice, and a protective gas passageway, said method comprising the steps of:

causing a plasma gas to flow through said plasma gas passage;

generating a plasma arc between said electrode and said workpiece through said plasma gas to form a plasma gas flow;

jetting said plasma gas flow from said nozzle orifice through said opening toward said workpiece to pierce a hole in said workpiece while causing a first protective gas to flow through said protective gas passageway and said opening so that said first protective gas surrounds said plasma gas flow so as to serve as a shield for said plasma gas flow and as protection for said nozzle against dross during the piercing of said hole in said workpiece; and

then jetting said plasma gas flow from said nozzle orifice through said opening toward said workpiece to form a cut in said workpiece adjacent to said hole while causing a second protective gas to flow through said protective gas passageway and said opening so that said secood protective gas surrounds said plasma gas flow so as to serve as a shield for said plasma gas flow during the formation of said cut in said workpiece;

wherein said second protective gas has a composition which is different from the composition of said first protective gas so that a cut surface quality of the resulting cut in said workpiece is improved in comparison to a cut surface quality that would be achieved with use of said first protective gas instead of said second protective gas during the formation of said cut in said workpiece.

5,614,111

METHOD FOR MAKING METALLIZED CAPACITOR HAVING INCREASED DIELECTRIC BREAKDOWN VOLTAGE

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Continuation-in-part of Ser. No. 20,344, Feb. 19, 1993, abandoned, and Ser. No. 127,867, Sep. 28, 1993, and Ser. No. 198,846, Feb. 18, 1994. This application Jul. 29, 1994, Ser. No. 282,308

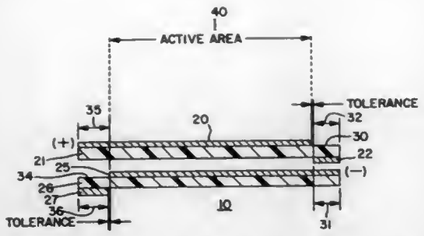
Int. Cl.[6] B23K *9/00;* **H01G** *7/00*

U.S. Cl. 219—121.59 **18 Claims**

1. A method for making a metallized wound capacitor having increased dielectric breakdown voltage comprising the steps of:

providing first and second elongated nonconductive dielectric webs each having a first face, a second face and a width;

exposing the nonconductive dielectric webs to a gas plasma, wherein the nonconductive dielectric webs are exposed to said gas plasma for a time period effective to increase dielectric breakdown voltage of said capacitor;



providing a first electrode having first and second portions on the first face of the first web, the first electrode having a width less than the width of the first web;

providing a second electrode having first and second portions on the first face of the second web, the second electrode having a width less the width of the second web and said first portions of said first and second electrodes being between 5–300 ohms/square.

wherein the first and second electrodes extend from opposing dielectric web longitudinal edges leaving respective bare margins along opposing edges on the respective webs, the second portion of the first electrode opposes the bare margin on the second web and the second portion of the second electrode opposes the bare margin on the first web, each second portion has a width equal to the opposing bare margin less a predetermined tolerance and is thicker than its respective first portion; and

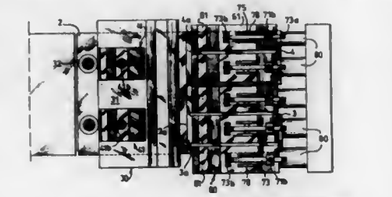
arranging the dielectric webs in a capacitor roll with the first and second electrodes in superposed relation to each other.

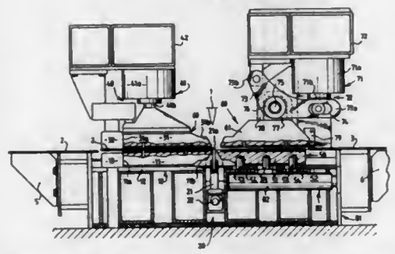
5,614,112

INSTALLATION FOR POSITIONING EDGE TO EDGE AND WELDING BY MEANS OF A LASER BEAM AT LEAST TWO SHEET BLANKS

Gilles Peru; Francis Sauvage, both of Dunkerque; Yvon Le Roy, Le Doulieu, and Charles Slon, Camphin-en-Carembault, all of France, assignors to Sollac, Puteaux, France

Filed Apr. 13, 1994, Ser. No. 226,860
Claims priority, application France, Apr. 28, 1993, 93 05043
Int. Cl.[6] B23K *26/02;37/04*
U.S. Cl. 219—121.63 **18 Claims**





1. An installation for positioning edge to edge and welding by means of a laser beam a plurality of sheet blanks, the installation comprising:

means for supporting and positioning a first sheet blank in a horizontal reference plane, comprising at least one fixed lower shoe;

means for positioning an edge to be welded of said first sheet blank on an axis of said laser beam, comprising a vertically disposed, longitudinally extending and retractable stop having a lateral face which is in facing relation to said lower shoe and contained in a plane coincident with said axis of said laser beam;

means for maintaining said edge to be welded of said first sheet blank on the axis of the laser beam, comprising at least one vertically movable upper shoe;

means for clamping said first sheet blank;

means for supporting and positioning at least one second sheet blank against said edge to be welded of said first sheet blank, comprising a series of juxtaposed independent lower shoes, each of said lower shoes being mounted to be movable in a direction perpendicular to a joint plane of said sheet blanks;

means for maintaining an edge to be welded of said at least one second sheet blank against said edge to be welded of said first sheet blank, comprising a series of juxtaposed independent upper shoes;

means for clamping with a sectorized pressure said at least one second sheet blank;

means for exerting a lateral and sectorized pressure on said edges to be welded of said first sheet blank and said at least one second sheet blank; and

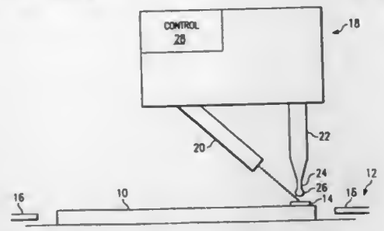
a welding unit employing a laser beam movable along the joint plane of said first sheet blank and said at least one second sheet blank to be welded.

5,614,113

METHOD AND APPARATUS FOR PERFORMING MICROELECTRONIC BONDING USING A LASER

Ming J. Hwang, Richardson, and Harold J. Dowell, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1995, Ser. No. 437,124
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.64 **9 Claims**



1. A method for microelectronic bonding, comprising:

heating a bond pad by pulsing a laser for less than one millisecond while the laser is focused on the bond pad; and

bonding a wire to the bond pad while the bond pad is hot.

5,614,114

LASER SYSTEM AND METHOD FOR PLATING VIAS

Mark D. Owen, Beaverton, Oreg., assignor to Electro Scientific Industries, Inc., Portland, Oreg.

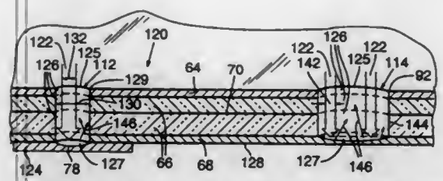
Continuation-in-part of Ser. No. 276,797, Jul. 18, 1994. This application Oct. 20, 1994, Ser. No. 327,484
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.66 **33 Claims**

1. A method for plating an internal wall surface of a via through at least one layer of a device having multiple layers, comprising:

generating a laser output of at least one pulse having a spot area, a wavelength shorter than about 400 nm, a temporal pulse width shorter than about 100 ns, and an average output power of greater than about 100 mW measured over the spot area;

directing the laser output through the via toward a substrate having an electrically conductive plating material positioned in proximity to the internal wall surface of the via; and

ablating the plating material from the substrate with a force sufficient to embed micrometer-sized particles of the plating material into the internal wall surface of the via in an amount sufficient to form an electrically conductive interconnection between the layers.

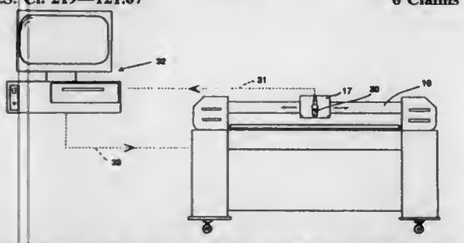


5,614,115

COMPUTER-CONTROLLED LASER CUTTER WITH OPTICAL SENSOR

Norman Horton, and John K. Bell, both of Nottinghamshire, United Kingdom, assignors to Cadcam Technology Limited, Nottingham, United Kingdom

PCT No. PCT/GB94/00737, § 371 Date Oct. 4, 1995, § 102(e) Date Oct. 4, 1995, PCT Pub. No. WO94/23886, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 7, 1994, Ser. No. 532,560
Claims priority, application United Kingdom, Apr. 8, 1993, 9307421
Int. Cl.[6] B23K *26/08*
U.S. Cl. 219—121.67 **6 Claims**



1. A laser cutter for cutting textile or leather clothing material adhered on a stiff backing sheet coated with a tacky peelable adhesive, said material and backing sheet together being capable of being easily pushed or pulled, said cutter comprising:

(a) a laser and collimator mounted in a fixed frame for producing a laser beam;

(b) material support means comprising an idler roller parallel to and spaced from the laser beam for supporting the sheet-backed clothing material to be cut;

(c) a guide head, mounting reflecting and focusing means for deflecting the laser beam onto the sheet-backed clothing material supported by the idler roller and for focusing the beam to a point on the material so as to cut the material but not the backing sheet;

(d) an optical sensor mounted on the guide head for recognizing the shape of or a pattern marked on said sheet-backed clothing material supported by the idler roller,

(e) means for effecting relative movement between the guide head and the sheet-backed clothing material supported by the idler roller, comprising:

(1) a pair of bi-directionally driven pinch rollers parallel to and spaced from said idler roller for moving the sheet-backed clothing material to be cut back and forth across the idler roller,

(2) a fixed rail for guiding bi-directional movement of the guide head in a line parallel and adjacent to the idler roller,

(3) means for effecting bi-directional movement of the pinch rollers, and

(4) means for effecting synchronous bi-directional movement of the guide bead along the fixed rail; and

(f) computer means comprising a memory and a microprocessor control for the laser beam, the optical sensor and the means for effecting relative movement, comprising:

(1) means for selectively activating and deactivating the laser and the optical sensor,

(2) means for optically scanning the sheet-backed clothing material to be cut while the optical sensor is activated and for creating in the memory a model of a desired pattern to be cut in the sheet-backed clothing material, and a desired cutting path matched to the shape of or pattern on the sheet-backed clothing material, and

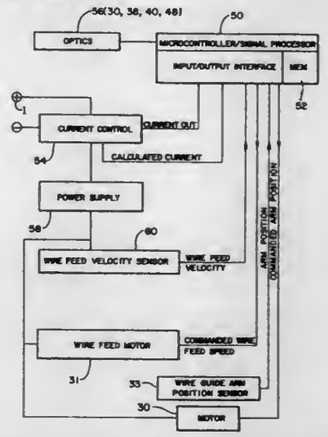
(3) means for controlling the means for synchronously moving the pinch rollers and the guide head while the laser is activated so as to cause the focus point of the laser beam to cut the sheet-backed clothing material but not the backing sheet in the desired cutting path, permitting cut pieces thereafter to be peeled from the tacky backing sheet.

5,614,116

WELDING CONTROL USING FUZZY LOGIC ANALYSIS OF VIDEO IMAGED PUDDLE DIMENSIONS

Mary A. Austin, Colchester; Kenneth C. Dunne, Tolland; Dag Lindland, East Hampton, all of Conn.; Phillip L. Frey, Eden Prairie, Minn.; Dean G. Hystad, Eden Prairie, Minn.; Richard E. Nelson, Eden Prairie, Minn., and Bradley D. Warner, Minnetonka, Minn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,633
Int. Cl.[6] B23K *9/095*
U.S. Cl. 219—130.21 **18 Claims**



1. A welder comprising a welding torch on a controlled robotic arm, imaging means in the torch, a wire feeder on the torch and a weld controller for controlling the position of the torch and electric current supplied by the torch, characterized in that:

the weld controller comprises signal processing means for producing a first signal indicating a weld dimension in response to an output signal from the imaging means produced by the weld puddle; for providing from a plurality of stored logic sets and in response to the first signal a second signal indicating a degree of membership in a first set calling for a first current change and a third signal indicating a degree of membership in a second set calling for a lesser change in current; for providing a fourth signal that represents the product of the second signal and a first stored area value associated with said fist set; for providing a fifth signal that represents the product of the third signal and a second stored

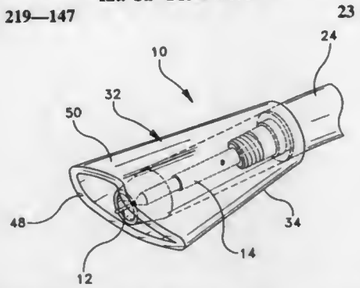
area value associated with the second set; for providing a sixth signal that represents the product of the second signal and a moment value for the first set; for providing a seventh signal that represents the product of the third signal and a moment value for the second set; and for providing an eighth signal that represents the value of the sixth signal divided by the seventh signal to initiate a change in the electric current.

5,614,117

WELDING APPARATUS AND SHIELD THEREFOR

Eric M. Krobath, 459 Atlantic Ave., Freeport, N.Y. 11520

Filed Oct. 19, 1995, Ser. No. 545,410
Int. Cl.[6] B23K *9/173*
U.S. Cl. 219—147 **23 Claims**



1. A shield designed for attachment to a welding apparatus, comprising:

a tubular body having first and second ends and a passage connecting said ends, said second end defining an opening communicating with said passage;

an end wall extending substantially perpendicularly from said first end of said tubular body and adapted to bear against a nozzle of a welding apparatus, said end wall including an opening communicating with said passage;

said tubular body being of integral construction and made from a material which is translucent, said translucent material being capable of substantially, but not entirely, preventing the passage of visibly light generated by arc plasma.

5,614,118

HOT PLATE WELDER WITH PIVOTABLY MOVABLE CARRIAGE UNIT

Wolfgang Weber, 27 Erie View Rd., Leamington, Ontario, Canada

Filed Oct. 27, 1994, Ser. No. 330,843
Int. Cl.[6] H05B *1/02;* **B23K** *3/03*
U.S. Cl. 219—243 **20 Claims**

1. An apparatus for heat welding a component to a work-piece, the apparatus comprising:

heating means for melting one of a contact surface of said component which contacts and seals with said work-piece, and a portion of said work-piece,

carriage means for mounting said component on said work-piece after said one of said contact surface and said portion of said work-piece has been melted, the carriage means releasably coupling the component thereto and being movable along an axis between a rearward position wherein the contact surface is spaced from said portion of said work-piece and a forward position wherein said contact surface engages and bonds with the portion of the work-piece;

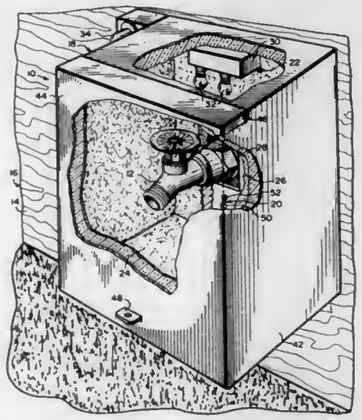
the carriage means being pivotable in any direction about a point on said axis substantially adjacent said portion of said work-piece. whereby the engagement of said contact surface with said portion of said work-piece re-positions the component by pivoting with the carriage means to an orientation wherein the contact surface is substantially aligned with said portion of said work-piece.

5,614,119

NO FREEZE PROTECTION DEVICE FOR AN OUTDOOR FAUCET

Calvin G. Ollis, 7287 Cara Bend, Olive Branch, Miss. 38654

Filed Apr. 10, 1995, Ser. No. 419,426
Int. Cl.[6] F16K *49/00;* **E03B** *7/12*
U.S. Cl. 219—385 **2 Claims**



1. A no freeze protection device for an outdoor faucet on an exterior wall of a building, said protection device comprising:

a) a mountable and removable enclosure to fit about the outdoor faucet comprising a box-like casing with a back plate having an aperture of a size to allow the outdoor faucet to extend within said enclosure and a hinged front door with a door latch to keep said front door in a closed position, the interior of said casing being lined with insulating material;

b) means for mounting the back plate of said enclosure on the exterior wall about the outdorr faucet with the latter protruding through said aperture into said enclosure and said back plate having an enlarged head slot above and below said aperture within said enclosure and a pair of fasteners each of which extends through an enlarged head slot into the exterior wall to hold said back plate of said enclosure thereto; and

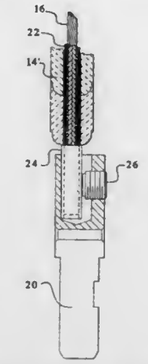
c) means for supplying heat within said enclosure to the outdoor faucet to prevent water within the outdoor faucet from freezing during cold weather comprising a light fixture with at least one light bulb affixed within said enclosure, an outlet conduit on said enclosure to allow an electrical cord connected to said light fixture to extend through said outlet conduit to a power supply, and a twelve volt direct current transformer connected to said electrical cord between said light fixture and the power supply.

5,614,120

SLEEVING FOR A WIRE USED WITH A TAIL CONNECTED TO A HEATING ELEMENT AND A METHOD FOR HEATING

David W. Wenzel, Lake City, Minn., assignor to Stresstech, Red Wing, Minn.

Filed Nov. 14, 1994, Ser. No. 338,328
Int. Cl.[6] H05B *3/08;* **H01C** *1/02*
U.S. Cl. 219—535 **17 Claims**



1. A tail for operative connection to a heating element, the tail comprising:

an electrically conductive wire having a first end and a second end defining a length wherein the wire extends continuously at the first end from the heating element a distance sufficient to connect a voltage source at the second end thereof;

a sleeving constructed and arranged to substantially cover at least a portion of the electrically conductive wire, the sleeving extending a finite distance starting at the second end and ending before reaching the first end of the electrically conductive wire;

a tubing constructed and arranged to crimp the second end of the electrically conductive wire and the sleeving; and

a connector constructed and arranged at the second end to receive the tubing and to connect the voltage source.

5,614,121

REFRACTORY BLOCK FOR CONTINUOUS CASTING

Masaru Terao; Noboru Tsukamoto, both of Okayama-ken; Yukinobu Kurashina, Iwaki; Kenji Yamamoto, Okayama-ken; Junichi Inoue, and Hiroyasu Uiji, both of Bizen, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00332, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO93/25333, PCT Pub. Date Dec. 23, 1993
PCT Filed Mar. 22, 1993, Ser. No. 356,265
Claims priority, application Japan, Jun. 18, 1992, 4-041997 U; Jul. 7, 1992, 4-047365 U
Int. Cl.[6] B22D *11/10*
U.S. Cl. 222—603 **5 Claims**

1. A refractory block for continuous casting comprising:

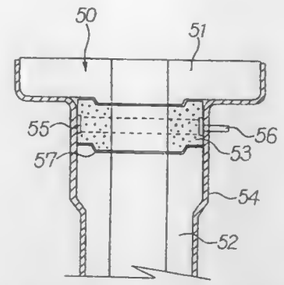
a unitary assembly comprising:

a plate brick having a top, a bottom, sides and a passageway therethrough;

a gas permeable porous brick having a top, a bottom, sides and a passageway therethrough, said top of said porous brick being attached to said bottom of said plate brick;

a gas pool surrounding said sides of said porous brick for containing a gas; and

a submerged nozzle having a top, a bottom and sides, said sides of said submerged nozzle having a shoulder portion, said top of said submerged nozzle being attached to said bottom of said porous brick; and



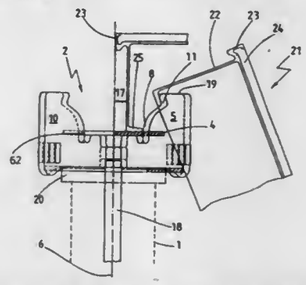
a metal casing surrounding said unitary assembly such that said metal casing surrounds/and supports a portion of said sides of said plate brick, a portion of said bottom of said plate brick, said sides of said porous brick and a portion of said sides of said submerged nozzle including said shoulder portion, said metal casing having a gas feed and discharge pipe therethrough in communication with said gas pool.

5,614,122

CEILING FORM

Artur Schwörer, Senden, Germany, assignor to Peri GmbH, Weissenhorn, Germany

PCT No. PCT/DE94/00154, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/19562, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 10, 1994, Ser. No. 492,120
Claims priority, application Germany, Feb. 20, 1993, 43 05 302.5
Int. Cl.[6] E04G *11/48*
U.S. Cl. 249—210 **7 Claims**



3. A support head for supporting ceiling form components, said support head being mounted upon a support defining a vertical support axis and said support head comprising:

a generally horizontal base plate mounted on the support and centered at the support axis and having an upwardly facing top surface;

a generally horizontal bead plate located at a separation above said base plate and centered about the support axis and having a downwardly facing bottom surface of smaller size than said top surface of said base plate;

a first plate section defining a first vertical plane containing the support axis, said first plate section having a radially outer surface, an upper horizontal surface extending radially from the support axis adjacent to said bottom surface of said head plate, a diagonal surface extending from said horizontal surface radially above and radially beyond said head plate and slanting away from the support axis, and a stop surface extending vertically above said diagonal surface and slanting towards the support axis, said first plate section having a bottom surface adjacent to said top surface of said base plate to connect said base plate to said head plate, said first plate section also having a second stop arranged below a plane of

said head plate and above a plane of said base plate and radially beyond said base plate near said radially outer surface of said first plate section, said first plate section further having a shape which is mirror symmetric with respect to a second vertical plane containing the support axis and perpendicular to said first vertical plane; and

a second plate section having a shape identical to said first plate section shape, said second plate section lying in said second vertical plane,

said support head, in plan view, having a rectangular shape with four corners, and said first plate section extending radially inwardly from one of said corners of said rectangular shape.

5,614,123

AGENT FOR TREATING TEXTILE

Motonobu Kubo; Takashi Enomoto; Taro Sano; Kazunori Hayashi; Akihiko Ueda, and Masamichi Morita, all of Settsu, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

PCT No. PCT/JP94/00117, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/18377, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 28, 1994, Ser. No. 500,925

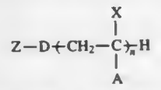
Claims priority, application Japan, Feb. 1, 1993, 5-014620

Int. Cl.[6] D06M *15/256*

U.S. Cl. 252—862 **13 Claims**

1. A textile treatment agent which comprises, as an active component, a graft fluorocopolymer having a backbone of a polymer of a fluoromonomer and a branch of a polymer of a macromonomer, the graft fluorocopolymer being prepared by copolymerizing the fluoromonomer with the macromonomer which is a fluorine-free macromonomer having addition-polymerizable unsaturated group copolymerizable with the fluoromonomer,

wherein the fluorine-free macromonomer is of the formula:



(I)

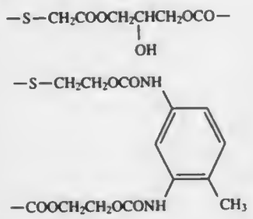
wherein X is a hydrogen atom or methyl group,

A is COOR (wherein R is linear or branched alkyl group having 1 to 22 carbon atoms), CN or a phenyl group,

n is from 10 to 500,

Z is a (meth)acryloyl group, a styryl group, an allyl group, or a vinyl ester group, and

D is



or



5,614,124

POLYISOBUTYLENE SUCCINIMIDE, ETHYLENE-PROPYLENE SUCCINIMIDE AND AN ALKYLATED PHENOTHIAZINE ADDITIVE FOR LUBRICATING OIL COMPOSITIONS

Carl K. Esche, Jr., Wappinger Falls; Cyril A. Migdal, Croton-On-Hudson, both of N.Y.; John R. Sanderson, Leander, Tex., and Anthony L. Ippolito, Pleasant Valley, N.Y., assignors to Ethyl Additives Corporation, Richmond, Va.

Continuation of Ser. No. 384,804, Feb. 6, 1995, abandoned, which is a continuation of Ser. No. 159,611, Dec. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,212

Int. Cl.[6] C10M *157/04*

U.S. Cl. 508—251 **7 Claims**

1. A lubricating oil composition consisting essentially of:

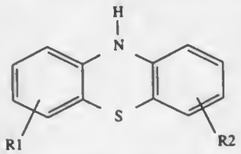
(a) a major amount of an oil of lubricating viscosity; and

(b a minor amount of a combination of an antioxidant-dispersant additive, a dispersant additive and an antioxidant additive, said combination comprising:

(i) a polyisobutylene succinimide;

(ii) an ethylene-propylene succinimide; and

(iii) an alkylated phenothiazine represented by the formula



wherein R^1 is a linear or branched (C_4–C_{24}) alkyl, group; and R^2 is H or a linear or branched (C_4–C_{24}) alkyl group.

5,614,125

POLYMERIC LIQUID-CRYSTAL COMPOUND, POLYMERIC LIQUID-CRYSTAL COMPOSITION, AND POLYMERIC LIQUID-CRYSTAL DEVICE

Koichi Sato, Atsugi; Kazuo Yoshinaga, Machida; Yomishi Toshida, Yokohama, and Takeo Eguchi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

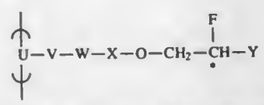
Continuation of Ser. No. 562,695, Aug. 6, 1990, abandoned. This application Jan. 15, 1992, Ser. No. 820,806

Claims priority, application Japan, Aug. 8, 1989, 1-203934; Jul. 18, 1990, 2-187938

Int. Cl.[6] C09K *19/52;19/30;* **G02F** *1/13*

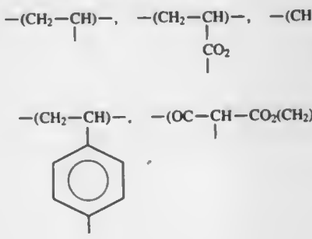
U.S. Cl. 252—299.01 **12 Claims**

1. A polymeric liquid-crystal composition comprising a polymeric liquid-crystal compound having a repeating unit represented by Formula (I)

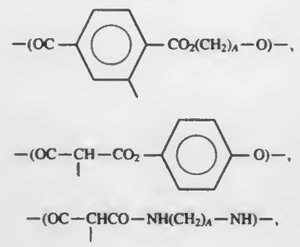


(I)

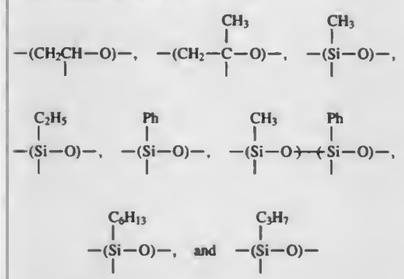
wherein U represents a polymer main chain selected from the group consisting of the following:



-continued

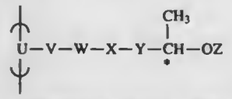


where A represents an integer of 1 to 30,



where Ph represents a phenyl group; V represents $-(CH_2)_m-$, $-((CH_2)_2-O)_m-$ or $-(CH_2)_n-((CH_2)_2-O)_p-$, one or more of methylene hydrogen atoms of which may be substituted with an alkyl group, a halogen atom, a cyano group, an amino group or a carbonyl group, and m, n and p each represents an integer of 0 to 30; W represents a single bond, —O—, —OCO—, —COO—, $-CONR^1-$, —CO— or $-NR^1$, where R^1 represents a hydrogen atom or a methyl group (CH_3); X represents a two or more rings of a substituted or unsubstituted aliphatic ring or aromatic ring of benzene ring, beteroaromatic ring or condensed ring, which rings are bonded through a single bond, —O—, —OCO—, —COO—, $-(CH_2)_q-$, $-N=N-$, $-(CH=CH)_q-$, $-CH=N-$, $-(C\equiv C)_q-$, $-CONR^1-$, $-(CO)_q-$ or $-NR^1-$, where q represents an integer of 1 to 10; Y represents an alkyl group having 4 to 8 carbon atoms; and the mark * represents an asymmetric carbon atom; and

at least one of a polymeric liquid-crystal compound having the repeating unit represented by Formula (II)



(II)

wherein U represents a polymer main chain; V represents $-(CH_2)_m-$, $-((CH_2)_2-O)_m-$ or $-(CH_2)_n-((CH_2)_2-O)_p-$, one or more of methylene hydrogen atoms of which may be substituted with an alkyl group, a halogen atom, a cyano group, an amino group or a carbonyl group, and m, n and p each represent an integer of 0 to 30; W represents a single bond, —O—, —OCO—, —COO—, $-CONR^1-$, —CO— or $-NR^1$, where R^1 represents a hydrogen atom or an alkyl group; X represents two or more rings of a substituted or unsubstituted aliphatic ring or aromatic ring of benzene ring, beteroaromatic ring or condensed ring, which rings are bonded through a single bond, —O—, —OCO—, —COO—, $-(CH_2)_q-$, $-N=N-$, $-(CH=CH)_q-$, $-CH=N-$, $-(C\equiv C)_q-$, $-CONR^1-$, $-(CO)_q-$ or $-NR^1-$, where q represents an integer of 1 to 10; Y represents $-(CH_2)_r-$, $-CO(CH_2)_r-$, $-CO_2(CH_2)_r-$, $-O(CH_2)_r-$ or —OCO—, where r represents an integer of 1 to 3; Z represents $-R^2$ or $-COR^2$, where R^2 represents a substituted or unsubstituted alkyl group; and the mark * represents an asymmetric carbon atom.

5,614,126

SOLVENTLESS CURABLE RESIN COMPOSITION, IN PARTICULAR FOR THE FABRICATION OF PREPREGS

Urs Gruber, Arlesheim, and Aloysius H. Manser, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 964,311, Oct. 21, 1992. This application May 24, 1995, Ser. No. 449,144

Claims priority, application Switzerland, Oct. 28, 1991, 03146/91

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—438 **8 Claims**

1. A process for the production of a storage stable prepreg, which process does not involve a B-staging of a curable resin composition and comprises

a) heating a curable resin composition, which is solid at ambient temperatures and which contains less than 2% by weight of solvents, more than 45% by weight of substances which are solid at least at ambient temperature or at a lower temperature, and which, in addition to comprising customary modifiers, comprises solid epoxy resins or a mixture of liquid and solid epoxy resins, at least one initiator which is sensitive to UV radiation for the polymerization of the epoxy resins and has the formula I

$$[R^1(Fe^{II}\ R^2)_a]^{ab\oplus}{}_{ab}\cdot[X]^{\ominus} \qquad (I)$$

wherein a and b are each independently of the other 1 or 2; R^1 is a π-arene, R^2 is a π-arene, an indenyl anion or a cyclopentadienyl anion; $[X]^{\ominus}$ is an anion $[LQ_m]^{\ominus}$ or the anion of a partially fluorinated or perfluorinated aliphatic or aromatic sulfonic acid; L is B, P, As or Sb; Q is F, with the proviso that some of the radicals Q may also be hydroxyl groups; and m is the valency of L increased by one; and at least one further compound selected from the group consisting of carboxylic acid and polyesters which contain one or more than one carboxyl group and mixtures thereof, excluding UV light, to a temperature which is in the range from 60° to 140° C. and is at least sufficiently high that the composition has a viscosity not higher than about 3,500 mPa.s;

b) bringing said heated composition into intimate contact with a fibrous material, while continually excloding UV light;

c) cooling said resulting fibrous material to at least a temperature at which the curable composition solidifies, continually excluding UV light; and

d) activating the resulting cooled fibrous material for a thermal cure either after initial storage excluding UV light or immediately by exposure to UV radiation.

5,614,127

HIGH-PERFORMANCE CERAMIC INTERCONNECT FOR SOFC APPLICATIONS

Ashok C. Khandkar; Christopher E. Milliken, both of Salt Lake City, and S. Elangovan, Sandy, all of Utah, assignors to Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 80,924, Jun. 21, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,077

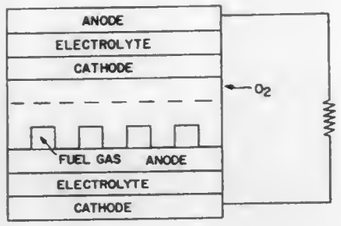
Int. Cl.[6] A01B *1/06;1/08*

U.S. Cl. 252—519 **5 Claims**

1. An electroconductive conducting interconnect composition having a thermal coefficient of expansion substantially equivalent to zirconia comprising:

an air sintered doped chromite ceramic composition having the formula:

$$La_{0.99-(w+z)}Sr_wCa_zCr_{1-(y+z)}Co_yFe_zO_3$$



wherein

W is from about 0.08 to about 0.14, X is from about 0.02 to about 0.08, Y is from about 0.00 to about 0.05, and Z is from about 0.02 to about 0.05.

5,614,128

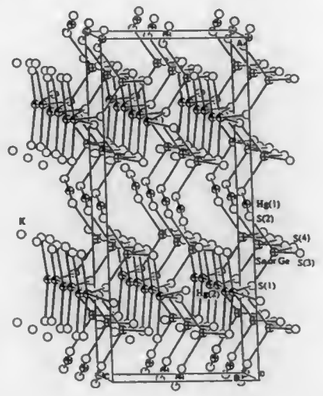
ALKALI METAL QUATERNARY CHALCOGENIDES AND PROCESS FOR THE PREPARATION THEREOF

Mercouri G. Kanatzidis, Okemos; Ju H. Liao, Lansing, and Gregory A. Marking, Okemos, all of Mich., assignors to Board of Trustees Operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 298,620, Aug. 31, 1994, Pat. No. 5,531,936. This application Feb. 26, 1996, Ser. No. 606,565

Int. Cl.[6] F21V *9/00;9/04;* **G02B** *5/20;* **G02F** *1/35*

U.S. Cl. 252—582 **3 Claims**



1. In an apparatus for converting a first light to a second light of another frequency using a chalcogenide compound to make the conversion, the improvement which comprises providing in the apparatus a chalcogenide compound of the formula $A_xB_yC_zD_n$ where A is selected from the group consisting of an alkali metal and a mixture of alkali metals, B is selected from the group consisting of mercury, zinc and manganese, C is a metal selected from the group consisting of germanium and tin and D is selected from the group consisting of sulfur and selenium, wherein x, y, z and n are molar amounts which provide non-linear optical transmission properties wherein x is a number selected from the group consisting of 2 and 6, y is a number selected from the group consisting of 1, 3 and 4, z is a number selected from the group consisting of 2 and 5 and n is a number selected from the group consisting of 6, 8 and 17.

5,614,129

POTASSIUM LITHIUM TANTALATE NIOBATE PHOTOREFRACTIVE CRYSTALS

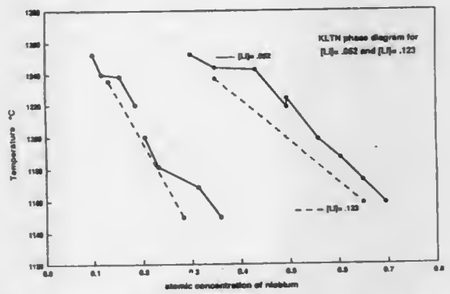
Rudolf Hofmeister, Pasadena; Amnon Yariv, San Marino, both of Calif., and Aharon Agranat, Mevaseret Zion, Israel, assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 21, 1993, Ser. No. 50,898

The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.[6] G02B *5/20;* **C01G** *31/00*

U.S. Cl. 252—584 **16 Claims**



9. A flux for use in forming a photorefractive crystal, wherein said crystal has a perovskite structure, said flux being made by the process of:

combining 45 to 57 mole percent potassium carbonate with 0.5 to 15 mole percent lithium carbonate, 10 to 30 mole percent tantalum oxide, 10 to 30 mole percent niobium oxide and 0 to 7 mole percent of one or more dopants, to form a solids mixture; and

heating said solids mixture to a sufficient temperature to form said flux.

5,614,130

DEVICE FOR A BEVERAGE BREWING MACHINE FOR THE HEATING AND EMULSIFICATION OF LIQUIDS

Roland Müller, Dreieich, and Ludwig Littmann, Kronberg, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Continuation of Ser. No. 288,473, Aug. 10, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 595,973

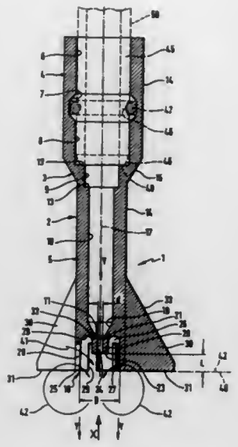
Claims priority, application Germany, Aug. 12, 1993, 43 27 085.9

Int. Cl.[6] A47J *31/41;43/12*

U.S. Cl. 261—119.1 **24 Claims**

4. A device for a beverage brewing machine for the heating and emulsification of liquids comprising pipe structure that has an open end and nozzle structure, said nozzle structure having an orifice from which hot steam exits for mixing with ambient air and producing a steam-and-air mixture for penetrating into the liquid and frothing it when said nozzle orifice is maintained at a small distance from the surface of the liquid, said nozzle structure being encompassed by said pipe structure such that an annular chamber is formed around said nozzle structure which chamber is open only in the direction of steam flow (Y), the open end of said chamber extending beyond said orifice of said nozzle structure, said pipe structure including a plurality of slots at a level adjacent to said orifice of said nozzle through which air, which is necessary for emulsification, can enter said annular chamber, said slots extending to said open end of said pipe structure and visual check structure fitted to said pipe structure to permit a user to maintain a defined distance (L) between said nozzle orifice and the surface of the liquid by visual check,

wherein said slots extend axially along said pipe structure and about the periphery of said pipe structure, and said visual check structure includes a plurality of radially outwardly



extending ribs between said slots at said pipe, said ribs having end surfaces which are adapted to be disposed at the surface of the liquid, and

wherein said ribs extend to said open end of said pipe structure, and their respective end surfaces are aligned with said open end of said pipe structure.

5,614,131

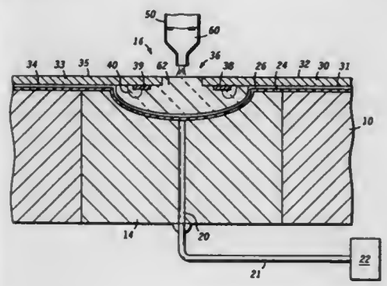
METHOD OF MAKING AN OPTOELECTRONIC DEVICE

Prosanto K. Mukerji, Phoenix; Alexander J. Elliott, Tempe, and Shanmugam Suppiah, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 431,994

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.9 **14 Claims**



1. A method of forming a polymer on a substrate, comprising the steps of:

providing a substrate having a top surface and a bottom surface and having an opening;

providing at least one electronic component coupled to the top surface of the substrate;

providing a base having a cavity formed therein;

disposing a release film between the substrate and the base;

disposing the substrate over the base wherein the top surface of the substrate is adjacent the base and the at least one electronic component is disposed over the cavity;

dispensing through the opening in the substrate a polymer in the cavity of the base, wherein the polymer forms a polymeric body surrounding at least a portion of the substrate and the at least one electronic component; and

curing the polymeric body.

5,614,132

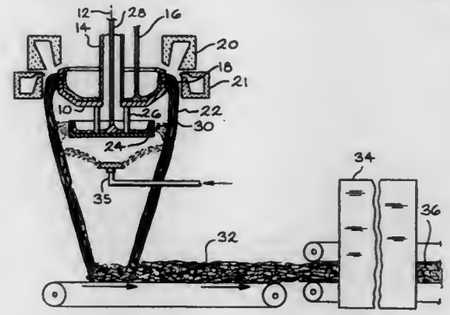
METHOD FOR MANUFACTURING A MINERAL FIBER PRODUCT

Shiv K. Bakhshi, Columbus; Steven H. Williams, Alexandria; James W. Scott, Newark, and Randall M. Haines, Frazeysburg, all of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation of Ser. No. 78,909, Jun. 21, 1993, Pat. No. 5,458,822. This application Jun. 7, 1995, Ser. No. 473,600

Int. Cl.[6] C03B *37/04;* **D01D** *5/00*

U.S. Cl. 264—6 **27 Claims**



1. The method for manufacturing a mineral fiber product comprising:

a. centrifuging mineral fibers with a first spinner;

b. forming a veil of the mineral fibers moving in the direction of the axis of the first spinner;

c. forming and directing toward the veil, from a position within and spaced from the veil, organic material in the form of fibers to cause intermingling of the organic material and the mineral fibers; and,

d. collecting the intermingled organic material and mineral fibers to form a mineral fiber product.

5,614,133

METHOD FOR PRODUCING THIN-FILM ELECTRO LUMINESCENT DEVICE

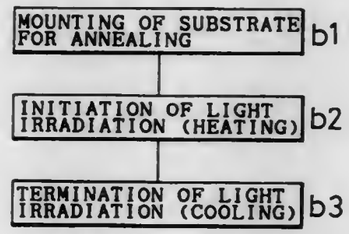
Koichi Tanaka, Nara, and Masaru Yoshida, Ikoma-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1995, Ser. No. 415,473

Claims priority, application Japan, May 27, 1994, 6-115657

Int. Cl.[6] G09K *11/00*

U.S. Cl. 264—21 **7 Claims**



1. A method for producing a thin-film EL device, which comprises the steps of:

providing said thin-film EL device comprising at least one EL layer and electrodes for applying an electric field to the EL layer and

heating the EL layer which comprises a host material and luminescence centers incorporated therein, by irradiation of light which includes rays in the absorption wavelength band of electrode material used to construct the electrodes, wherein an annealing treatment is conducted to improve the crystallin-

ity of the host material as well as to render uniform, the distribution of the luminescence centers in the host material.

5,614,134

PROCESS FOR PREPARING CARBON/CARBON COMPOSITE PREFORM AND CARBON/CARBON COMPOSITE

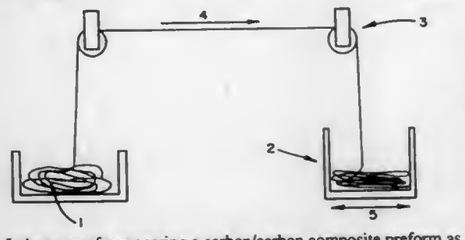
Yoshio Sohda, Machida; Takefumi Kohno, Kawasaki, and Yutaka Sanokawa, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 8,173, Jan. 25, 1993, abandoned. This application May 22, 1995, Ser. No. 445,924

Claims priority, application Japan, Jan. 24, 1992, 4-050140; Jan. 31, 1992, 4-057600

Int. Cl.[6] C01B *31/00*

U.S. Cl. 264—29.1 **12 Claims**



1. A process for preparing a carbon/carbon composite preform as a primary molded product comprising subjecting fibers consisting of pitch-based infusiblized fibers to forcible charging, free falling or uniform feeding treatment into a vessel and depositing treatment therein using uniform filling methods, and subjecting thus deposited fibers to carbonization and molding treatment under uniaxial pressing, said carbon/carbon composite preform having a void volume of 5–70 vol. % and a bulk density of 0.10–1.35 g/cm^3.

5,614,135

MOULDING PROCESSES AND APPARATUS

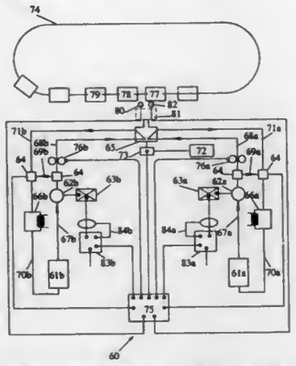
Wojciech Maleczek, Donvale, Australia, assignor to Henderson's Industries Pty. Ltd., Victoria, Australia

Continuation-in-part of Ser. No. 910,292, Sep. 21, 1992, abandoned. This application Aug. 8, 1994, Ser. No. 287,008

Claims priority, application Australia, Jan. 18, 1990, PJ 8228; WIPO, Jan. 17, 1991, PCT/AU91/00018

Int. Cl.[6] B29C *39/44*

U.S. Cl. 264—40.4 **20 Claims**



1. A moulding process for the moulding of a product formed from the mixing of a plurality of different feedstocks where different ratios of the feedstock materials are required in different areas or sections of a mould to produce a product with different properties in said different areas or sections of a final moulded product in which a plurality of streams of the different feedstocks, each from separate feedstock supply vessels, are combined to form a mixed feedstock in at least one delivery head prior to delivery to the mould, wherein separate pump means are provided to deliver, at constant speed of operation, a predetermined volume of each feedstock at a predetermined flow rate to the mould during a moulding cycle, driven by an electric motor operating at constant speed under constant load, and in which first feedback control means for each feedstock stream detects variations in the feedstock flow rate from the predetermined flow rate by way of flow meters located between said pump means and said at least one delivery head, compares the flow rate with the predetermined flow rate, and varies the speed of operation of the pump in response to variations from the predetermined flow rate so that the predetermined volume of each feedstock is delivered to within an accuracy of +0.4%.

5,614,136

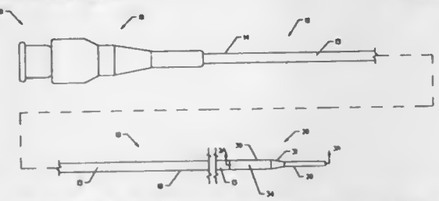
PROCESS TO FORM DIMENSIONALLY VARIABLE TUBULAR MEMBERS FOR USE IN CATHETER PROCEDURES

Henry J. Pepin, Loretto; Michael S. Ferrandino, Elk River, and Andrew G. Richardson, Chanhassen, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 2, 1995, Ser. No. 398,213

Int. Cl.[6] B29C *47/92*

U.S. Cl. 264—40.3 **19 Claims**



1. An apparatus for performing the process of manufacturing a catheter having a dimensionally variable tip region for use in catheterization procedures, the apparatus comprising:

a. extrusion means for extruding a tubular member, the tubular member having a lumen extending longitudinally therethrough and including the tip region;

b. means for selectively varying an inside diameter of the tubular member, including means for providing gas to the lumen at a selectively variable rate;

c. means for selectively varying an outside diameter of the tubular member independent of the means for selectively varying an inside diameter of the tubular member, including means for pulling the tubular member from the extrusion means at a selectively variable speed; and

d. wherein the tip region includes a first portion and a second portion, the first portion having a first outside diameter formed by the pulling means pulling the tubular member from the extrusion means at a first speed, and the second portion having a second outside diameter smaller than the first outside diameter formed by the pulling means pulling the tubular member from the extrusion means at a second speed.

8. A process for forming a dimensionally variable catheter having a tip region including a proximal portion and a distal portion for use in catheterization procedures, the process comprising the steps of:

a. extruding a tubular member having a lumen extending longitudinally therethrough by passing an extrudable material through an extruder;

b. moving the tubular member from the extruder at a desired speed;

c. providing air to the lumen from an air supply at a desired rate, including a first pressure and a first volume; and

d. changing an inside diameter of the tubular member to form the catheter tip region by selectively changing the rate at which air is supplied to the lumen.

5,614,137

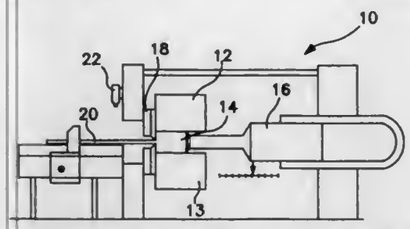
TEMPERATURE CONTROL IN EXTRUDERS

Madhukar Pandit, Kaiserslautern, and Karl-Heinz Buchheit, Ramstein, both of Germany, assignors to Mannesmann AG, Germany

Filed Mar. 28, 1994, Ser. No. 218,829

Int. Cl.[6] B29C *47/92*

U.S. Cl. 264—40.6 **12 Claims**



1. A process for controlling a cyclic extrusion process of an extrusion plant from cycle to cycle, comprising the steps of:

measuring for every cycle (k) an extrusion velocity input function $v_k(t)$ representing an extrusion velocity as a function of time and an exit temperature output function $va_k(t)$ representing an extrudate exit temperature as a function of time;

determining a plant operator which together with said measured extrudate exit temperature output function $va_k(t)$ and said extrusion velocity input function $v_k(t)$ define a plant equation for said cycle (k);

invoking said plant equation for said cycle (k) for estimating an extrudate exit temperature output function $va_{k+1}(t)$ of a cycle (k+1) for any chosen extrusion velocity input function $V_{k+1}(t)$ by inputting into said plant equation said extrusion velocity input function $v_{k+1}(t)$ for said cycle (k+1), wherein said extrusion velocity input function $v_{k+1}(t)$ for said cycle (k+1) can be chosen arbitrarily;

calculating via iteration an optimal value for said extrusion velocity input function $v_{k+1}(t)$ for said subsequent cycle (k+1) for substantially achieving a prescribed extrudate exit temperature output function $va_w(t)$ and suppressing abrupt changes of said optimal value for said extrusion velocity input function $v_{k+1}(t)$ by minimizing a prescribed performance index which takes into account not only an estimated control error but also the abruptness of changes in said optimal value for said extrusion velocity reference input function $v_{k+1}(t)$, said estimated control error defined by a deviation between said prescribed extrudate exit temperature output function $va_w(t)$ and said exit temperature output function $va_{k+1}(t)$ estimated and obtained in said step of invoking

considering a prescribed boundedness of said extrusion velocity input function $v_{k+1}(t)$ of said cycle (k+1) while performing said step of calculating; and

repeating the steps of measuring, determining, invoking, calculating and considering for each subsequent cycle.

5,614,138

METHOD OF FABRICATING NON-LINEAR RESISTOR

Seiichi Yamada, Juou-machi; Shigeru Tanaka, Hitachi; Moritaka Shoji, Hitachi; Shigehisa Motowaki, Hitachi; Ken Takahashi, Tokai-mura; Shingo Shirakawa, Hitachi; Shinichi Oowada, Hitachinaka, and Takeo Yamazaki, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Feb. 7, 1995, Ser. No. 384,954

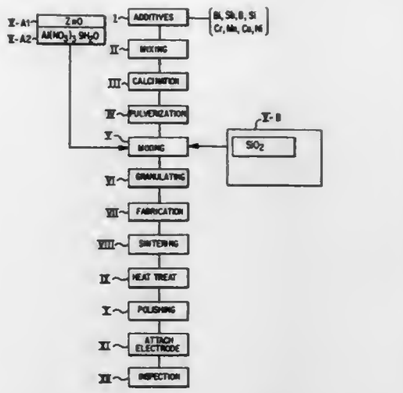
Claims priority, application Japan, Feb. 10, 1994, 6-016080

Int. Cl.[6] H01B *1/06*

U.S. Cl. 264—61 **13 Claims**

1. A method of manufacturing a voltage nonlinear resistor comprising the following sequential steps:

preparing a calcinated mixture of metallic oxides which form mainly grain boundaries when mixed with and reacted with zinc oxide,



forming a composite mixture by mixing said calcinated mixture of metal oxides with zinc oxide as a main component and with a grain growth suppressing oxide which suppresses grain growth of zinc oxide when sintered,

granulating said composite mixture to form a granulated mixture, and

sintering said granulated mixture.

5,614,139

PROCESS OF MAKING A COMPOSITE ARTICLE

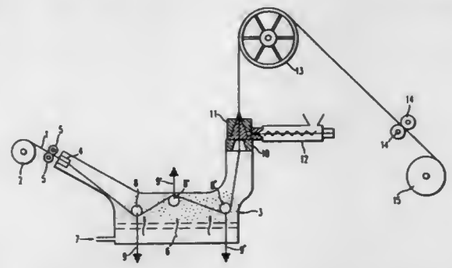
Domingo Cutolo, Gessate, and Erminio Zoppi, Codogno, both of Italy, assignors to Eniricerche S.p.A., and Enichem S.p.A., both of Milan, Italy

Division of Ser. No. 242,600, May 13, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,189

Claims priority, application Italy, May 18, 1993, MI93A1010

Int. Cl.[6] B29C *47/02;70/52;* **B32B** *1/10;31/30*

U.S. Cl. 264—70 **14 Claims**



1. A process for preparing a composite, continuous-fibre-containing filament, which entails:

a) unwinding a continuous fibre bundle from a bobbin,

b) loosening the fibre bundle, in order to separate the bundle substantially into individual fibres,

c) impregnating the individual fibres with a thermoplastic polymer powder, and

d) recompacting the fibre bundle and providing a flexible sheltering sheath around the bundle, the bundle being made from a thermoplastic powder, causing the fibre bundle to coaxially run through a tubular die, whereby the bundle is caused to have a substantially elliptical cross-section with d_1/d_2 being less than 1, wherein d_1 and d_2 are mean diagonals, with d_1 representing a major diameter and d_2 representing a minor diameter of the substantially elliptical cross-section.

5,614,140

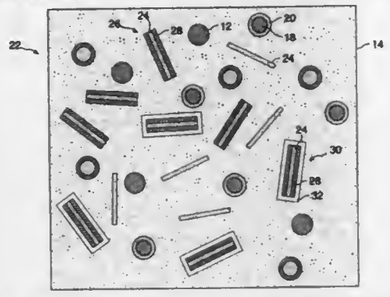
METHODS FOR FABRICATING DIAMOND FILM AND SOLID FIBER COMPOSITE STRUCTURE

John M. Pinneo, Redwood City, Calif., assignor to Crystallume, Inc., Santa Clara, Calif.

Division of Ser. No. 704,997, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 132,069, Mar. 30, 1987, abandoned. This application Oct. 20, 1994, Ser. No. 327,468

Int. Cl.[6] B05D *1/36;* **C23C** *16/00;8/00*

U.S. Cl. 264—81 **17 Claims**



1. A method for consolidating fibers with polycrystalline diamond, including the steps of:

preforming fibers into a preform having a desired shape; and

infiltrating said preform with polycrystalline diamond by chemical vapor deposition.

5,614,141

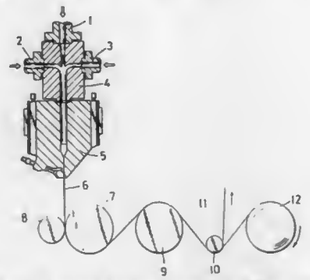
METHOD OF MANUFACTURING LAMINATED FILMS

Katsuhiko Sumida; Yujl Iseki, and Masahiko Suzuki, all of Amagasaki, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 859,401, May 28, 1992, Pat. No. 5,405,565. This application Nov. 16, 1994, Ser. No. 341,161

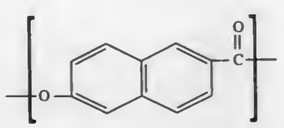
Int. Cl.[6] B29C *47/06*

U.S. Cl. 264—173.14 **17 Claims**



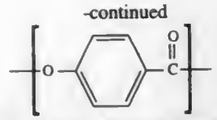
1. A method of manufacturing a multilayer film comprising the steps of:

providing a thermotropic liquid crystal polymer layer having a first surface and a second surface, and comprising a polyester substantially containing 10 to 90 mol % of the following repeating unit I and 10 to 90 mol % of the following repeating unit II;



I

-continued



II

laminating at least one adhesive thermoplastic polymer layer selected from the group consisting of a carboxy modified polyolefin and a glycidyl modified polyolefin on said first surface of said liquid crystal polymer layer;

laminating a first non-adhesive thermoplastic polymer layer selected from the group consisting of an olefin polymer, a polyalkylene terephthalate, a polycarbonate and a polyamide to said second surface of said liquid crystal polymer layer;

laminating a second non-adhesive thermoplastic polymer layer selected from the group consisting of an olefin polymer, and a polyethylene terephthalate in which part of ethylene glycol is substituted with 1,4-cyclohexanedimethanol or diethylene glycol, said second non-adhesive thermoplastic polymer layer having hot-melt adhesive properties, being non-adhesive relative to said liquid crystal polymer layer, and being adhered to said at least one adhesive thermoplastic polymer layer, said adhesive thermoplastic polymer layer increasing the adhesive strength between the respective layers of the multilayer film, said layers being laminated in a co-extrusion molding machine to form a laminated film;

extruding said laminated film from a die; and

separating said laminated film by separating said first non-adhesive thermoplastic polymer layer from said second surface of said liquid crystal polymer layer to form the multilayer film composed of the thermotropic liquid crystal polymer layer, the at least one adhesive thermoplastic polymer layer, and the second non-adhesive thermoplastic polymer layer, respectively laminated and adhered together.

5,614,142

PROCESS FOR SPINNING THERMOPLASTIC FIBERS ON A GRID SPINNING SYSTEM

Robert L. Lilly, Asheville; Robert H. Blackwell, Candler; Charles H. Rogers, Asheville, and Zachary G. Shoaf, Canton, all of N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Nov. 20, 1995, Ser. No. 559,863

Int. Cl.[6] D01F *1/02;1/10*

U.S. Cl. 264—211 **5 Claims**

1. A process for making fibers from thermoplastic polymers comprising:

(a) supplying solid particles of thermoplastic polymer to a melting grid;

(b) heating the melting grid to a temperature sufficient to melt the thermoplastic polymer particles;

(c) melting the thermoplastic polymer particles on the heated melting grid such that the melted thermoplastic polymer flows through the grid and is collected in a collecting chamber located beneath the melting grid;

(d) injecting into the melted thermoplastic polymer present in the collecting chamber below the melting grid an additive present in a non-aqueous carrier which carrier comprises organic rosin materials and a surfactant;

(e) without actuated mechanical stirring, forming in the collecting chamber a substantially homogeneous mixture of the injected additive and the melted thermoplastic polymer; and

(f) extruding fibers from the substantially homogenous mixture.

5,614,143

HOLLOW BODY SUCH AS A GOLF-CLUB HEAD, MADE OF MOLDED THERMOPLASTIC MATERIAL COMPRISING AN IMPRISONED INSERT, AND METHOD FOR THE MANUFACTURE THEREOF

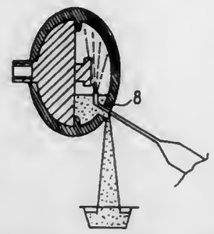
Daniel Hager, Farges les Chalon, France, assignor to Ozen S.A., France

Filed Mar. 29, 1994, Ser. No. 219,650

Claims priority, application France, Mar. 29, 1993, 93 03818

Int. Cl.[6] A63B *53/04*

U.S. Cl. 264—221 **15 Claims**



1. A method of producing a hollow body with an insert therein occupying less than the entire hollow volume of the hollow body, the method comprising:

placing an insert having a first part with an external shape which is shaped to define part of the final shape of the interior of the hollow body to be molded and having a second part which is to be facing into the hollow of the hollow body after it is molded;

overmolding a core of fusible material over the second part of the insert, so that the core has a third part which is on the second part of the insert and has a fourth part with an external shape which is also shaped to define another part of the final shape of the interior of the hollow body, and so that the insert and the core of fusible soft material together define an assembly for being further overmolded;

overmolding over the first part of the insert and the fourth part of the core a cover of a material which is adapted not to melt when the core of fusible material melts for forming the overmolded body over the insert and the core;

melting the fusible material of the core without melting the material of the cover and removing the melted fusible material from inside the body while the insert remains inside the body producing a hollow space in the body.

5,614,144

METHOD OF MANUFACTURING THREE-DIMENSIONAL COMPACT

Yasuhiko Onishi; Takashi Yamamori; Youzou Yamashita; Ichiro Suzuki, and Toshiya Aoyama, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, and Takahashi Seiki Co., Ltd., Nagoya, both of Japan

Continuation of Ser. No. 189,727, Feb. 1, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 539,755

Claims priority, application Japan, Feb. 2, 1993, 5-039409

Int. Cl.[6] B29C *49/00*

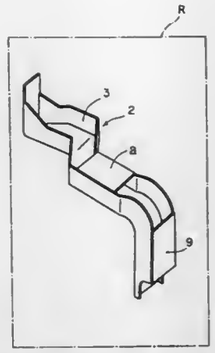
U.S. Cl. 264—454 **7 Claims**

1. A method of manufacturing a three-dimensional resin product comprising the steps of:

preparing a resin material having a black or gray tone;

molding a hollow compact from said resin material by numerically controlled blow molding using a numerically controlled blow molding machine, wherein respective form blocks of a cope and a drag are formed so that a portion of the hollow compact to be cut with a laser beam is located on a divided plane between the cope and the drag of the numerically controlled blow molding machine;

releasing and opening the cope, such that the hollow compact remains in the drag; and then



cutting said hollow compact within the drag with the laser beam along the portion of the hollow compact that was located on the divided plane of the cope and the drag of the numerically controlled blow molding machine, thereby

manufacturing a solid three-dimensional resin product.

5,614,145

METHOD AND APPARATUS FOR FORMING AN ARTICLE OF PET MATERIAL

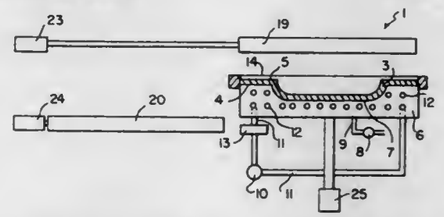
Pearse O'Kane, Aysgarth, Ireland, assignor to Polysheet (Ireland) Limited, Dublin, Ireland

Continuation of Ser. No. 988,353, Dec. 7, 1992, abandoned, which is a continuation of Ser. No. 743,631, Aug. 12, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 232,335

Claims priority, application Ireland, Aug. 12, 1990, 484/90

Int. Cl.[6] B29C *51/10;51/42*

U.S. Cl. 264—458 **11 Claims**



1. A method for forming an article from a sheet of amorphous PET material of thickness greater than 1.5 mm having a pair of opposite first and second surfaces, the method comprising the steps of:

heating the PET sheet to raise the temperature of the first and second surfaces of the PET sheet to a preforming temperature in the range between the glass/rubber transition temperature and the melt temperature of the PET sheet,

forming the heated PET sheet onto a heated mould with the first surface of the PET sheet in contact with the mould,

retaining the formed PET sheet in contact with the mould,

raising the temperature of the first and second surfaces of the formed PET sheet in the mould to a crystallising temperature in the range between the glass/rubber transition temperature and the melt temperature of the PET sheet, the crystallising temperature being higher than the preforming temperature, and the crystallising temperature of the first and second surfaces being substantially similar, and being within ±5° C. of each other,

maintaining the temperature of the first and second surfaces of the formed PET sheet at the crystallising temperature while the formed PET sheet is retained in the mould until the degree of crystallisation of the formed PET sheet reaches at least 25%,

the temperature of the first surface of the formed PET sheet being raised from the preforming temperature to the crystallising temperature and being maintained at the crystallising temperature by heat transfer from the mould, and the temperature of the second surface being raised from the preforming temperature to the crystallising temperature and being maintained at the crystallising temperature by heat transfer from a first heat source provided by a radiant heat source spaced apart from and directed at the second surface of the formed PET sheet, and

releasing the formed PET sheet from the mould on the degree of crystallisation of the PET sheet reaching at least 25%.

5,614,146

METHOD AND APPARATUS OF SUPPLYING LABELS TO INJECTION MOLD

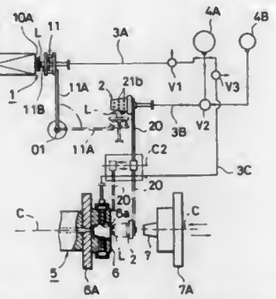
Akio Nakamura, Kodaira; Noboru Tsukuda, Chiba, and Shinichiro Matsushima, Kyoto, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, and Yushin Precision Equipment Co., Ltd., Kyoto, both of Japan

Continuation of Ser. No. 150,144, Mar. 25, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 558,620

Claims priority, application Japan, Apr. 6, 1992, 4-114104

Int. Cl.[6] B29C *45/14*

U.S. Cl. 264—511 **2 Claims**



1. A method for use with an injection mold, for automatically supplying labels to one of a fixed die and a movable die in an injection molding process in which a core of said movable die is positioned in said fixed die and a molding material is injected into a cavity formed between said fixed die and said core of said movable die, said method comprising the steps of:

providing a pseudo core with a hollow part, wherein an outer peripheral shape of said pseudo core is formed to be substantially identical to an outer peripheral shape of said core, said hollow part has a large number of small holes communicating with the outside, said hollow part is selectively connectable to air sucking means and air supplying means and said pseudo core is mounted on an arm;

pivoting said arm about a fixed point to bring said pseudo core to a first position;

applying said label from a label supplying means to said pseudo core by making the outer periphery of said pseudo core contact or be held close to a rear surface of said label at said first position while applying air suction to said hollow part, said suction causing said label to wrap around said pseudo core while said pseudo core remains stationary at said first position;

sucking and holding the applied label onto the outer periphery of said pseudo core by air sucked by said air sucking meanings;

pivoting said arm about said fixed point to move said pseudo core from said first position about said fixed point to a second position, wherein said second position is disposed between said fixed and said movable die;

inserting said pseudo core with the label sucked and retained thereon into said fixed die and moving said pseudo core to a label delivering position; and

canceling the suction of air at the label delivering position, supplying air to said hollow part by said air supplying means, and delivering the label held on the outer periphery of said pseudo core to an inner surface of said fixed die by the pressure of the supplied air.

5,614,147

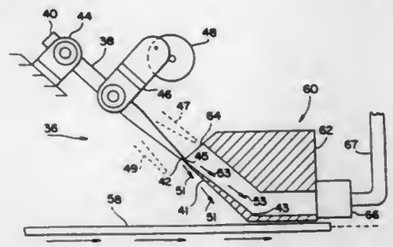
METHOD FOR INTERMITTENTLY APPLYING PARTICULATE POWDER TO A FIBROUS SUBSTRATE

Kenneth A. Pelley, Hopewell, N.J., assignor to McNeil-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 280,408, Jul. 26, 1994, abandoned, which is a continuation of Ser. No. 65,206, May 20, 1993, abandoned, which is a division of Ser. No. 806,954, Dec. 12, 1991, Pat. No. 5,213,817. This application Mar. 10, 1995, Ser. No. 400,560

Int. Cl.[6] A61F *13/46;13/20;* **B27N** *3/04*

U.S. Cl. 264—518 **4 Claims**



1. A method of applying particulate powder material to a preformed fibrous substrate comprising the steps of:

moving said pre-formed fibrous substrate in a horizontal path;

establishing a supply of particulate powder material in a feed hopper;

feeding a metered quantity of particulate powder material into an outlet of the feed hopper;

forming a continuous air-entrained stream of particulate powder material at said outlet of said feed hopper and transporting said continuous air-entrained stream through a nozzle for ejection onto said fibrous substrate;

separating said continuous air-entrained stream of particulate powder material exiting said nozzle into a first and a second intermittent air-entrained stream of particulate powder material such that said first intermittent air-entrained stream of particulate powder material is applied to said moving preformed fibrous substrate at a predetermined location of said pre-formed fibrous substrate to form a layer of particulate powder material within a predetermined portion of said preformed fibrous substrate;

wherein said continuous stream of air-entrained particulate powder material exiting said nozzle is directed along a flow direction which has a velocity component in the direction of said moving pre-formed fibrous substrate.

5,614,148

ONE PIECE SELF-STANDING BLOW MOLDED PLASTIC CONTAINERS MADE FROM A MONOBASE PREFORM

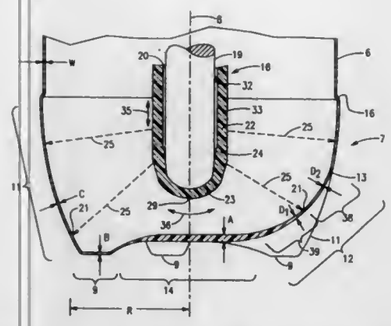
Martin H. Beck; George F. Rollend, both of Amherst; John H. Muszynski, Auburn; Lydia K. Reed, Amherst; Scott J. Hickey, Hollis; Dennis C. Connor, Merrimack, and Robert Caldicott, Nashua, all of N.H., assignors to DTL Technology Limited Partnership, Amherst, N.H.

Filed Jan. 30, 1995, Ser. No. 380,647

Int. Cl.[6] B29C *49/06;* **B29D** *23/00*

U.S. Cl. 264—532 **10 Claims**

1. A blow molding process for producing a self-standing one-piece polyester container for carbonated beverages defining a lon-



gitudinal axis and comprising a sidewall portion which is integral with and terminates in a closed base portion of a petaloid form defining at least three feet disposed about the longitudinal axis whereby the container is self standing, each said foot being defined by: i) a support pad; ii) a sloping outer wall extending generally upwardly from a radially outward extremity of the support pad to the sidewall portion; iii) sloping lateral walls extending generally upwardly from radially extending extremities of the support pad to radially extending straps disposed between adjacent pairs of feet, each said strap extending from a gate area, centered on said longitudinal axis, along a curve to said sidewall portion; iv) a sloping inner wall extending from a radially inner extremity of the support pad to the gate area; and, v) a reinforcing ring located on said curve between said gate area and said sidewall portion, in a transition between said support pad and said sloping outer wall, and extending circumferentially around said base portion through said feet, said lateral sloping walls and said straps, the method comprising the steps of:

a) forming a hollow preform comprising a sidewall forming portion of constant wall thickness material along the length of the sidewall forming portion, for forming a constant thickness sidewall portion of the container, and terminating, in a closed base forming portion, a reinforcing ring forming portion being located at a transition between the sidewall forming portion and the base forming portion, said reinforcing ring forming portion having a wall thickness greater than the wall thickness in the sidewall forming portion and greater than a wall thickness in the base forming portion;

b) temperature conditioning the preform;

c) positioning the preform in a blow mold cavity defining the finished container shape and having a neck finish engaging top and a base forming bottom;

d) inserting a stretch rod into the preform;

e) extending the stretch rod within the cavity to move the bottom of the preform toward the bottom of the blow mold cavity to longitudinally stretch the material in at least the sidewall forming portion such that the preform extends from the top to adjacent the bottom of the blow mold cavity; and,

f) injecting pressurized gas into the preform whereby the preform is radially stretched outwardly to fill the blow mold cavity to form the container with the material of the reinforcing ring located in the transitions between said support pads and said sloping outer walls, extending circumferentially around said base portion through said feet, said sloping lateral walls and said straps, and not extending radially inwardly through the feet to transitions between the sloping inner walls and the gate area, and the gate area and the transitions between the sloping inner walls and the gate area both having wall thicknesses that are less than the wall thicknesses in corresponding portions of the preform.

5,614,149

STAINLESS STEELS FOR COINS AND METHOD OF PRODUCING COINS OF STAINLESS STEEL

Hiroshi Abe, Kodaira; Toshihiko Taniuchi, Kawasaki; Masaomi Tsuda, Chuo-ku, and Yoshito Fujiwara, Kawasaki, all of Japan, assignors to Nippon Yakin Kogyo Co., Ltd., and Asahi Seiko Co., Ltd., both of Tokyo, Japan

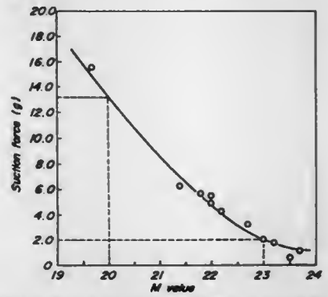
PCT No. PCT/JP94/01114, § 371 Date Mar. 3, 1995, § 102(e) Date Mar. 3, 1995, PCT Pub. No. WO95/02075, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 7, 1994, Ser. No. 393,006

Claims priority, application Japan, Jul. 8, 1993, 5-169121

Int. Cl.[6] C22C *38/40;38/42;38/44;* **C21D** *8/00*

U.S. Cl. 420—43 **12 Claims**



1. A stainless steel for coins comprising C: not more than 0.03 wt %, Si: 0.1—not more than 1.0 wt %, Mn: 0.1—not more than 4 wt %, Ni: 5–15 wt %, Cr: 12–20 wt %, N: not more than 0.03 wt %, O: not more than 50 ppm and the balance being Fe and inevitable impurities and being adjusted to a composition satisfying that an index of austenite stabilization (M value) represented by the following equation (1):

$$M=Ni+12.6(C+N)+0.35Si+0.7Mn+0.65Cr \quad (1)$$

is within a range of 20.0–23.0 and weak magnetism is exhibited through coining work.

5,614,150

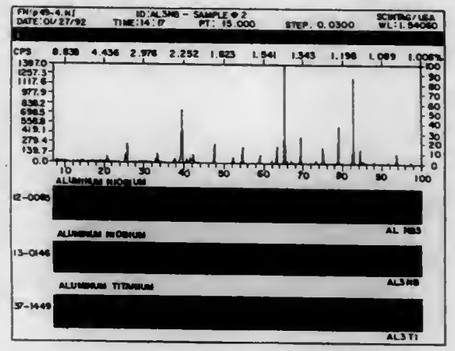
METHOD FOR PRODUCING REFRACTORY ALUMINIDE REINFORCED ALUMINUM

David M. Bowden, St. Louis County, Mo., assignor to McDonnell Douglas Corp., St. Louis, Mo.

Filed Sep. 28, 1994, Ser. No. 314,225

Int. Cl.[6] C22B *1/02*

U.S. Cl. 420—590 **4 Claims**



1. An in situ process for producing a refractory aluminide reinforced, aluminum matrix two-phase composite, having a refractory aluminide reinforcement phase of a desired size and

shape, and having a desired volume fraction of an aluminum matrix phase solidified around said reinforcement phase, the process comprising;

a. selecting a particular refractory metal powder in order to predetermine the desired shape for the reinforcement phase;

b. selecting a particle-size for the refractory metal powder which provides the desired size for said particulate reinforcement phase;

c. admixing in a niobium can effective amounts of the refractory metal powder together with an amount of aluminum powder to produce from about 15 to about 30 volume percent refractory metal aluminide and the remaining 85% to 70% being filled with excess aluminum;

d. heating the niobium can to drive off any entrapped moisture and gasses from the powder admixture and sealing said can;

e. reacting the admixed powders by heating under vacuum, in the sealed niobium can to a temperature above the melting point of aluminum but below the melting point of the refractory metal powder and allowing sufficient time to complete the reaction between molten aluminum and refractory metal powder, forming, as reaction products, a refractory aluminide phase and unreacted excess molten aluminum; and

f. cooling the reaction products in order to solidify the excess aluminum into a matrix, thus forming an aluminum matrix phase surrounding a particulate refractory aluminide phase;

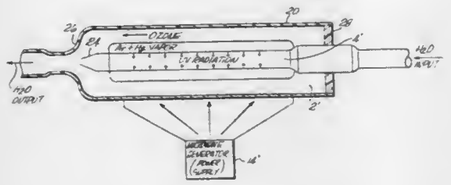
whereby the two-phase composite is formed in situ, containing a thermodynamically and morphologically stable reinforcement phase, having the desired mechanical properties.

5,614,151

ELECTRODELESS STERILIZER USING ULTRAVIOLET AND/OR OZONE

Thurston C. LeVay, Arcadia, and James A. Rummel, Placentia, both of Calif., assignors to R Squared Holding, Inc., Santa Ana, Calif.

Filed Jun. 7, 1995, Ser. No. 483,078
Int. Cl.[6] A61L *2/12;2/20;* **C02F** *1/32;1/78*
U.S. Cl. 422—24 **13 Claims**



11. A method of sanitizing a substance using ultraviolet radiation emitted from a bulb, comprising the steps of:

providing a bulb comprising an elongated inner surface extending around a central axis to form a passage through which a substance to be sanitized passes, and an elongated outer surface formed with the inner surface to define a sealed region therebetween, said sealed region being filled with a gas;

ionizing the gas to emit ultraviolet radiation;

passing a substance to be treated through the passage so that the substance is exposed to the ultraviolet radiation;

receiving an oxygen containing gas external to the bulb;

exposing said oxygen containing gas external to the bulb to said ultraviolet radiation to produce ozone, said ozone having a first pressure;

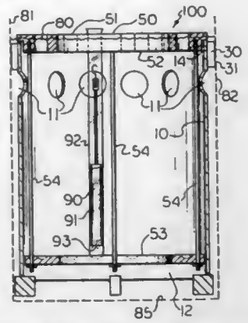
creating a second pressure at the outlet of the passage, said second pressure being lower than said first pressure so that the ozone is drawn toward the outlet of the passage, thereby sanitizing a substance passing through the outlet.

5,614,152

TEMPERATURE CONTROL CHIMNEY

Theodore W. Selby, Midland, and William A. Atkins, Bay City, both of Mich., assignors to Tannas Co., Midland, Mich.

Filed Apr. 20, 1995, Ser. No. 425,589
Int. Cl.[6] B01L *11/00*
U.S. Cl. 422—99 **8 Claims**



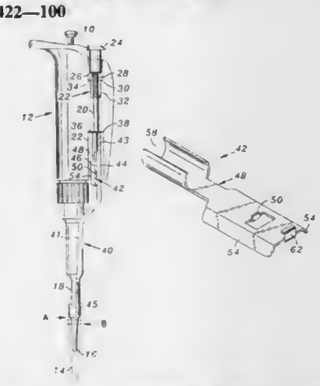
3. A temperature control chimney comprising a hollow, generally cylindrical housing with a main part thereto apportioned into upper, middle, and bottom portions; the housing being immersible in a liquid of a bath tub; the chimney having means for positioning useful for positioning the chimney in the tub, and having a plurality of top openings in the upper portion of the main part of the housing, the middle portion of the main part of the housing which is imperforate, and at least one bottom opening in the bottom portion of the main part of the housing; the chimney being useful for permitting uniform liquid current flow of heated liquid when the housing is immersed in the liquid of the bath tub, wherein the means for positioning include a plurality of top tabs bent outward from the upper third of the main part of the housing.

5,614,153

PIPETTE TIP EJECTOR

William D. Homberg, Oakland, Calif., assignor to Rainin Instrument Co., Inc., Emeryville, Calif.

Filed May 26, 1995, Ser. No. 451,573
Int. Cl.[6] B01L *3/02*
U.S. Cl. 422—100 **13 Claims**



1. In a pipette comprising a axially elongated housing having a hand-holdable upper end portion and a lower open end portion for releasably receiving a removable pipette tip, a pipette tip ejector mechanism, comprising:

a vertically extending passage through the upper portion of the housing and having a lower open end;

a pipette tip ejector shaft;

support means within the passage for supporting the shaft for manual axial movement within the passage between an upper position with a lower end of the shaft within the passage and a lower position with the lower end of the shaft exposed below the lower open end of the passage;

spring means for urging the shaft to its upper position;

a push button at an upper end of the shaft for downward pushing of the shaft to the lower position;

a pipette tip ejector arm having an upper end for releasable connection to the lower end of the shaft and extending along an outer surface of the housing to the lower end thereof adjacent an upper end of the pipette tip to exert a downward force on and eject the pipette tip from the housing upon movement of the shaft from the upper to lower positions; and

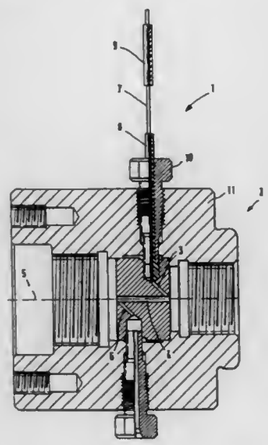
a connector within the passage, the connector extending between the lower end of the shaft and the upper end of the arm within the passage and comprising a female receptor extending from a one of the shaft or arm, a male connector extending from another of the shaft or arm axially into the female receptor for support thereby, a cantilever secured at one end to a one of the shaft or arm to extend along an outer surface of another of the shaft or arm within the passage and carrying one of a locking member or a locking shoulder for engaging the other of the locking member or locking shoulder on the other of the shaft or arm to axially lock the arm relative to the shaft and including a tab within the passage at the lower open end and extending transversely outward from the cantilever for finger contact by a user when the shaft is in the lower position to outwardly move the cantilever to disengage the locking member from the locking shoulder to release the arm for axial movement relative to the shaft to separate the arm from the pipette for cleaning, service or replacement.

5,614,154

CONNECTING CAPILLARY

Bernd Glatz, Leonberg, and Bernhard Dehmer, Rastatt, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 4, 1995, Ser. No. 511,560
Claims priority, application Germany, Aug. 23, 1994, 9413553 U
Int. Cl.[6] B01L *11/00*
U.S. Cl. 422—103 **3 Claims**



1. A connecting capillary for an analytical measuring instrument for transferring liquid from one part of the instrument to another part with substantially no interaction between a wall of said capillary and said liquid, said connecting capillary comprising:

a glass capillary having a coated outer surface, a first end and a second end, said coated outer surface consisting of a layer selected from polyimide or aluminum, wherein said layer coats the glass capillary from substantially said first end to said second end;

a unitary, uninterrupted layer of polyetheretherketone (PEEK) or a PEEK derivative in intimate sealing contact with the entirety of said coated outer surface from substantially said first end to said second end of said capillary; and

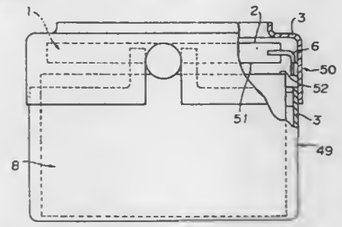
a coupling region at said first end or said second end of said capillary, for attachment of said first end or said second end to said analytical measuring instrument, said coupling region enabling at least a portion of said first end or second end of said capillary to be in contact with a liquid entering or leaving said capillary, said intimate sealing contact between said PEEK or PEEK derivative and said outer surface preventing entry of said liquid therebetween.

5,614,155

HEATER UNIT AND CATALYTIC CONVERTER

Fumio Abe, Handa; Shigeharu Hashimoto, Okazaki, and Tomoharu Kondo, Toki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 28, 1995, Ser. No. 412,279
Claims priority, application Japan, Jun. 16, 1994, 6-134701
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—174 **22 Claims**



1. A beater unit, comprising:

a honeycomb heater comprising (i) a metallic honeycomb structure having an inlet, an outlet, an outer peripheral wall and a plurality of parallel passages extending along an axial direction, and (ii) at least one electrode attached to the honeycomb structure for electrification of the honeycomb structure;

a metallic casing for holding the honeycomb heater; and

a gas flow-controlling means for controlling flow of exhaust gas through the beater unit, such that about 2 to 20% of the exhaust gas flows outside the honeycomb heater, between the honeycomb heater and the metallic casing.

5,614,156

ULTRA-PYROLYSIS REACTOR FOR HAZARDOUS WASTE DESTRUCTION

Chi S. Wang, 5923 Fairmont Dr., Woodridge, Ill. 60517

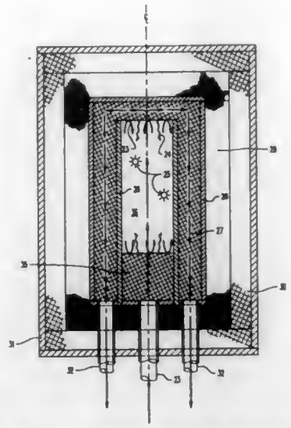
Continuation of Ser. No. 385,632, Feb. 8, 1995, abandoned. This application Feb. 13, 1996, Ser. No. 600,820
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—174 **6 Claims**

1. A reactor for the thermal decomposition of chemical compounds in a gaseous form comprising:

a turbulent heating zone containing porous articulated material, the turbulent heating zone mixing and preheating gaseous material introduced into the reactor;

a hollow central reaction zone downstream from and adjacent to the turbulent heating zone in which the thermal decomposition occurs creating reaction products;

a plurality of electric resistance heating elements containing electric currents arrayed within the interior of the hollow central reaction zone, each electric resistance heating element being annular, having vertical legs with a top and a bottom,



attached in series alternately at the top and at the bottom, the electric resistance heating elements being in contact with the gaseous material flowing through the central reaction zone, the heating elements directly heating the gaseous material, setting up electromagnetic fields within the central reaction zone, and causing plasma formation, non-equilibrium plasma chemistry reaction, and separation of reaction products from reaction zone;

a first impervious ceramic wall laterally defining the central reaction zone and the turbulent heating zone;

an energy retaining zone containing porous articulated material arrayed downstream from the central reaction zone and laterally around the first impervious ceramic wall and the central reaction zone and turbulent heating zone;

a second ceramic wall laterally surrounding and defining the energy retaining zone;

low thermal conductive material arrayed laterally around and surrounding the second impervious wall and the energy retaining zone;

means for continuously introducing gaseous material in a flow into the turbulent heating zone and then sequentially into the central reaction zone and the energy retaining zone, thermal destruction of chemical compounds and formation of reaction products occurring in the central reaction zone and the energy retaining zone;

means for removing reaction products from an end of the energy retaining zone.

5,614,157

UNITIZED INFECTIOUS WASTE PROCESSOR AND WASTE PROCESSING METHOD

John L. Hall, Tracy, Calif., assignor to Darlene Hall; Wilburn E. Hall, and Vern W. Hall

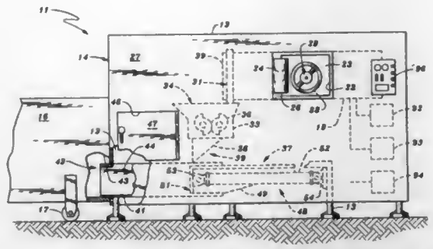
Continuation-in-part of Ser. No. 130,189, Oct. 1, 1993, Pat. No. 5,389,347. This application Dec. 22, 1994, Ser. No. 361,585

Int. Cl.[6] A61L *2/04*

U.S. Cl. 422—307 **19 Claims**

1. A bio-hazardous waste material processing installation having a sterilizer which includes a sterilizing chamber for receiving said waste material, waste material ejection means for discharging a flow of sterilized waste material from said sterilizing chamber and a compactor having a sterilized waste material receiving compartment and having means for forcing the contents thereof into an adjacent receptacle which is separable from said compactor and which may be transported to a dump, wherein the improvement comprises:

at least one waste material fragmentizer having an intake positioned to receive said flow of sterilized waste material as it is being discharged from said sterilizing chamber and having



means for concurrently delivering a flow of fragmentized sterilized waste material to said compactor compartment,

wherein said sterilizer has a waste discharge opening through which said waste material discharging means ejects waste material from said chamber and has an openable door at said discharge opening and wherein said compactor and said fragmentizer and said sterilizing chamber are at progressively greater elevations within said installation, said fragmentizer intake being below said discharge opening and said fragmentizer outlet being above said compactor,

wherein said sterilized waste receiving compartment of said compactor has an open top which extends horizontally to a location at which said open top is unobstructed by said fragmentizer whereby waste material that does not require sterilizing may be directly deposited in said compartment through said open top of said compartment.

5,614,158

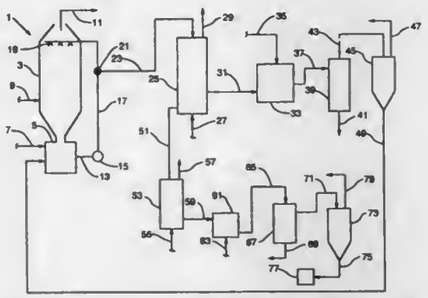
PROCESS FOR REMOVING SULFUR DIOXIDE FROM GASES AND PRODUCING GYPSUM AND PURIFIED MAGNESIUM HYDROXIDE

John W. College, Pittsburgh, Pa., assignor to Dravo Lime Company, Pittsburgh, Pa.

Filed Oct. 20, 1995, Ser. No. 546,182

Int. Cl.[6] C01F *5/40;* **C01B** *17/22*

U.S. Cl. 423—166 **3 Claims**



1. In a process for desulfurizing a sulfur dioxide-containing gas stream where the gas stream is contacted, in a wet scrubbing unit, with an aqueous solution of magnesium scrubbing components which react with sulfur dioxide to form magnesium sulfite and magnesium bisulfite, and a portion of the resultant aqueous solution containing magnesium sulfite and magnesium bisulfite is removed from the scrubber and oxidized in an oxidizing unit to form an aqueous solution of magnesium sulfate containing about 500–600 ppm of magnesium bisulfite and magnesium sulfite as impurities, with the aqueous solution of magnesium sulfate contacted with lime to form calcium sulfate, which is removed therefrom, and an aqueous suspension of magnesium hydroxide containing a minor amount of calcium sulfite which is returned to the wet scrubbing unit, the improvement comprising:

discharging a further portion of the aqueous solution containing said magnesium sulfate and about 500–600 ppm of magnesium bisulfite and magnesium sulfite from said oxidizing unit

and passing the same to a further oxidizing unit wherein said minor amount of magnesium bisulfite and magnesium sulfite is oxidized to magnesium sulfate to produce an aqueous solution containing less than about 130 ppm magnesium sulfite;

treating the oxidized further portion with further lime to obtain further calcium sulfate and further magnesium hydroxide; and

separating said further magnesium hydroxide from said further calcium sulfate of said further portion.

5,614,159

PROCESS FOR THE PURIFICATION OF AN OXIDATION OFF GAS WITH ENERGY RECOVERY

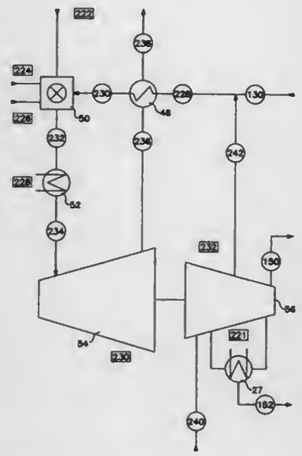
Rudolf Modic, Steyerberg; Hermann-Josef Korte, Haltern; Anton Schoengen, Witten; Johann-Heinrich Schroeder, Dortmund, and Jörg Porschen, Niederzier-Ellen, all of Germany, assignors to Huls Aktiengesellschaft, Werk Troisdorf, Troisdorf, Germany

Continuation of Ser. No. 27,161, Feb. 24, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,517

Claims priority, application Germany, Aug. 24, 1990, 40 26 732.6

Int. Cl.[6] F02C *3/20;* **C07C** *51/16*

U.S. Cl. 423—245.3 **14 Claims**



1. In a process for the purification of an off-gas stream originating from a process of oxidizing a liquid mixture of para-xylene with methyl para-toluate with an oxygen-containing gas under greater than atmospheric pressure, said off-gas being contaminated with at least one of an aliphatic and an aromatic impurity, which process comprises expanding said off-gas stream in an expansion turbine for generating mechanical or electrical energy so as to obtain an at least partial recovery of the energy contained in the off-gas, the improvement comprising subjecting said off-gas to at least one absorption step under said pressure to remove at least one combustible component from said off-gas and combusting the resultant off-gas stream under a pressure of more than 3 bar with the addition of oxygen without added fuel prior to said expanding of the off-gas stream in said expansion turbine.

5,614,160

COMPOSITE SILICATE MATERIALS

Petra M. Gill, Warminster, Pa.; Eric von Rehren Borgstedt, Louisville, and Raymond P. Denkewicz, Jr., La Grange, both of Ky., assignors to PQ Corporation, Valley Forge, Pa.

Filed Jun. 10, 1994, Ser. No. 258,466

Int. Cl.[6] C01B *33/32*

U.S. Cl. 423—332 **19 Claims**

1. A process for producing a crystalline hydrated layered sodium silicate/amorphous sodium silicate composite product comprising:

producing a material including a crystalline disilicate by heating a sodium silicate for a time, and at a temperature sufficient to crystallize at least a portion of said material; and

slurrying said resulting solid material with a hydrolyzing agent providing up to 50.0 milliequivalents of ions selected from H_3O^+ and OH^- ions per gram of material to hydrolyze said material.

5,614,161

CRYSTALLINE SHEET SODIUM SILICATE

Jan Wilkens, Hürth, and Günther Schimmel, Erftstadt, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 21, 1996, Ser. No. 604,382

Claims priority, application Germany, Mar. 6, 1995, 195 07 784.9; Jan. 15, 1996, 196 01 063.2

Int. Cl.[6] C01B *33/32;* **C04B** *28/26*

U.S. Cl. 423—332 **16 Claims**

1. A crystalline sheet sodium silicate of the formula

$$xNa_2O \cdot ySiO_2 \cdot zP_2O_5$$

in which

the ratio of x to y corresponds to a number from 0.35 to 0.6,

the ratio of x to z corresponds to a number from 1.75 to 1200

and the ratio of y to z corresponds to a number from 4 to 2800.

5,614,162

PROCESS FOR THE PRODUCTION OF LONG FIBROUS SILICON CARBIDE WHISKERS

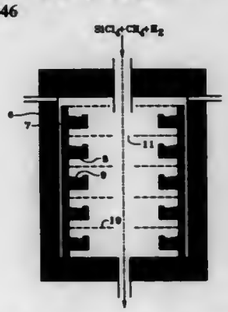
Vladimir N. Gribkov; Alexandre Polakov; Daniel D. Pokrovcky, all of Moscow; Vladmir A. Silaev, Tverskaja obl.; Yurii A. Golerov, Tverskaja obl, and Piotr P. Lyacota, Tverskaja obl., all of Russian Federation, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France, and VIAM - All Russian Institut of Aviation Materials, Moscow, Russian Federation

Filed Feb. 17, 1995, Ser. No. 390,505

Claims priority, application France, Feb. 17, 1994, 94 01826

Int. Cl.[6] C01B *31/36*

U.S. Cl. 423—346 **7 Claims**



1. A process for the production of SiC whiskers and of mats thereof on a substrate in a reaction zone having a gas phase by heat treatment, at a temperature of 1250° to 1500° C., of a gaseous mixture comprising hydrogen and sources of Si and C atoms which

are in the form of at least one oxygen-free compound, in the presence of a catalyst, by a semi-continuous or periodic process, wherein:

a catalyst comprising Al and Fe is introduced into the gas phase in the reaction zone during a growth period of SiC whiskers or of mats thereof with a carbon reduction of aluminosilicate ceramics, said ceramics comprising at least 73 weight % of Al_2O_3 and 0.3 to 3.0 weight % of iron oxides; and

the substrate is a carbonized rayon fiber based carbon fabric which has undergone, prior to carbonization, a surface modification with a solution of borax and a solution of diammonium phosphate until the quantity of boron in the fabric is less than or equal to 4 weight % and the quantity of phosphorus is less than or equal to 2 weight %.

5,614,163

CATALYZED VAPOR PHASE PROCESS FOR MAKING SYNTHESIS GAS

Alakananda Bhattacharyya, Wheaton; Mark S. Kleefisch, Naperville, and Carl A. Udovich, Joliet, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 48,667, Apr. 16, 1993, Pat. No. 5,439,861, which is a continuation-in-part of Ser. No. 745,902, Aug. 16, 1991, Pat. No. 5,246,899, and Ser. No. 993,419, Dec. 21, 1992, abandoned. This application Jul. 26, 1995, Ser. No. 507,568

Int. Cl.[6] C01B *31/18*

U.S. Cl. 423—418.2 **17 Claims**

8. A process for partial oxidation of at least one hydrocarbyl compound with a source of oxygen which comprises the steps of

(A) feeding one or more gaseous or vaporizable hydrocarbyl compounds and an oxygen-containing gas comprising molecular oxygen, carbon dioxide, or mixtures thereof, into a suitable reaction zone containing a catalyst,

(B) controlling temperatures within the reaction zone to temperatures in a range from about 400° C. to about 1400° C.,

(C) reacting at least one of the hydrocarbyl compounds in the presence of the catalyst to form partial oxidation products, and expelling a product-containing gas mixture from the reaction zone, and

(D) recovering from the product-containing mixture a synthesis gas comprising hydrogen and carbon monoxide;

wherein the catalyst comprises a mixture formed by heat treating a hydrotalcite compound having formula

$$[M^{2+}{}_wAl^{3+}{}_{2-y}M^{3+}{}_y(OH)_{2(w+2)}]^{2+}(A^{n-}{}_{2/n})\cdot mH_2O$$

where M^{2+} is at least one divalent metal ion selected from the group consisting of magnesium, chromium, manganese, iron, cobalt, nickel, copper, and zinc ions; M^{3+} is at least one trivalent metal ion selected from the group consisting of titanium, vanadium, chromium, manganese, iron, cobalt, nickel, gallium, ruthenium, rhodium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, and iridium ions; w is a number in a range from about 2 to about 20; y is a number in a range from about 0.00001 to about 2; A^{n-} is an anion having a negative charge of n; and m is 0 or a positive number.

5,614,164

PRODUCTION OF MESOPHASE PITCHES, CARBON FIBER PRECURSORS, AND CARBONIZED FIBERS

Michael B. Sumner, Ceredo, W. Va., and William P. Hettinger, Russell, Ky., assignors to Ashland Inc., Ashland, Ky.

Division of Ser. No. 369,442, Jun. 20, 1989, Pat. No. 5,238,672. This application Sep. 11, 1992, Ser. No. 944,146

Int. Cl.[6] D01F *9/155*

U.S. Cl. 423—447.4 **16 Claims**

1. A process for producing a mesophase pitch from a catalytic petroleum pitch, which process comprises:

A. forming a film of said catalytic petroleum pitch;

B. maintaining said film at a temperature in the range of about 325° C. to about 425° C. under a pressure in the range of about 20 microns of mercury to about 1 atm for a time that is sufficient to produce a heavy non-mesophasic isotropic pitch having a softening point in the range of about 125° C. to about 290° C., a coking value in the range of about 55 wt % to about 95 wt %, and a maximum mesophase content of about 5 vol %; and

C. agitating said heavy isotropic pitch at a temperature in the range of about 327° C. to about 454° C. for a time sufficient to produce a mesophase pitch having a minimum mesophase content of about 60 vol. %.

5,614,165

PROCESS FOR PURIFICATION OF HYDROGEN PEROXIDE

Yasuo Sugihara; Kazushige Tanaka, and Hisashi Sakaitani, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 249,978, May 27, 1994, abandoned. This application Mar. 21, 1995, Ser. No. 408,123

Claims priority, application Japan, May 28, 1993, 5-127310

Int. Cl.[6] C01B *15/01*

U.S. Cl. 423—584 **6 Claims**

1. A process for the purification of hydrogen peroxide which comprises (A) contacting a crude hydrogen peroxide solution with an anion exchange resin or a mixture of an anion exchange resin and a cation exchange resin to make a content of total phosphate anions of under 0.1 ppm, and then (B) contacting the resultant hydrogen peroxide solution having a content of total phosphate anions of under 0.1 ppm with a chelate resin which is a member selected from the group consisting of an iminomethylenephosphonic acid type chelate resin and an iminodi(methylenephosphonic) acid type chelate resin to remove iron and aluminum impurities to a concentration of 0.2 ppb or less.

5,614,166

CRYSTALLINE SOLIDS HAVING THE RUB-13 STRUCTURE

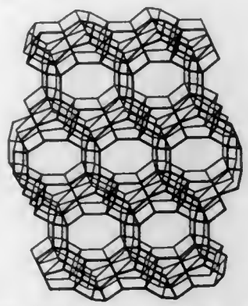
Hermann Gies, Sprockhövel; Silke Vortmann, Essen; Bernd Marler, Leichlingen; Ulrich Müller, Neustadt, and Uwe Dingerdissen, Seeheim-Jugenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 10, 1995, Ser. No. 499,827

Claims priority, application Germany, Jul. 14, 1994, 44 24 815.6

Int. Cl.[6] C01B *39/46*

U.S. Cl. 423—718 **9 Claims**



1. A crystalline solid comprising a boro-, alumino-, gallo-, titano, -vanado or zincosilicate or a mixture thereof having the RUB-13 structure which possesses a monoclinic space group and exhibits an X-ray diffraction pattern in which at least the following reflections (hkl) occur with the intensity (I/I_O) at the stated d-spacings (d_{hkl}):

h	k	l	Intensity I/I_o	d-spacings (d_{hkl})
0	2	0	very strong	10.26
0	1	1	very strong	9.79
−1	3	1	weak	4.98
0	4	1	medium	4.53
−2	0	1	medium	4.52
−1	1	2	medium	4.46

5,614,167

TEST PATCH AND ITS USE FOR DEMONSTRATING CONTACT ALLERGY

Jens Hansen, Allered, and Bo Kreilgård, Hilleröd, both of Denmark, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

Continuation of Ser. No. 15,820, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 299,938, Jan. 18, 1989, abandoned. This application Jan. 30, 1995, Ser. No. 380,784

Claims priority, application Sweden, May 25, 1987, 8702190

Int. Cl.[6] A61K *49/00;31/79;9/70*

U.S. Cl. 424—9.2 **7 Claims**

1. A method of occlusive epicutaneous testing to ascertain whether an individual suffers from contact allergy, which method comprises applying to the skin of the individual a test strip which has at least one patch having a test substance containing a plurality of allergenic components, said test substance on said at least one patch being incorporated in a vehicle which is formulated as a film adhering to the patch and containing at least one film-forming polymer (I) capable of absorbing moisture which is secreted from the skin area being tested when the strip is in use, wherein on at least one patch on which said vehicle is formulated as a film, the film forming polymer (I) is poly(N-vinyl-2-pyrrolidone), whereby a positive test result occurs when an allergic reaction is observed on the skin.

5,614,168

MULTINUCLEAR COMPLEXES FOR X-RAY IMAGING

Arne Berg, Stasjonveien, Norway; Torsten Almén, Malmö, Sweden; Klaus D. Krautwurst, Stabbek, Norway; Sook-Hui Kim, Mountain View, Calif.; Pål Rongved, Hellvik, Norway; Jo Klaveness, and Harald Dugstad, both of Oslo, Norway, assignors to Nycomed Salutar Inc., Sunnyvale, Calif.

Continuation of Ser. No. 927,484, Nov. 24, 1992, Pat. No. 5,458,869. This application Dec. 22, 1994, Ser. No. 363,163

Claims priority, application United Kingdom, Mar. 28, 1990, 9006977

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.42 **20 Claims**

1. A diagnostic imaging contrast medium comprising at least one pharmaceutical carrier or excipient together with a physiologically tolerable multinuclear complex comprising at least two contrast enhancing metal atoms and at least two non-metal bridging atoms each covalently bound to at least two said metal atoms, at least one of said metal atoms being tungsten where only two said metal atoms are present in said complex.

5,614,169

CONTRAST AGENTS, CONSISTING OF GALACTOSE PARTICLES AND AN AMPHILIC CARBOXYLIC ACID

Jo Klaveness, Oiso; Pål Rongved, Hellvik, both of Norway, and Lars Stubberud, Södertälje, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Division of Ser. No. 256,150, Sep. 29, 1994. This application Jun. 2, 1995, Ser. No. 458,613

Claims priority, application United Kingdom, Jan. 9, 1992, 9200387

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.52 **13 Claims**

1. A contrast agent comprising microbubble-generating carbohydrate microparticles, said microbubbles containing SF_6 or low molecular weight fluorinated hydrocarbons, in admixture with an amphiphilic $C_{22\text{-}50}$ organic acid.

5,614,170

PARAMAGNETIC COMPLEXES OF N-ALKYL-N-HYDROXYLAMIDES OF ORGANIC ACIDS AND EMULSIONS CONTAINING SAME FOR MAGNETIC RESONANCE IMAGING (MRI)

William P. Cacheris, Florissant; Thomas J. Richard, Des Peres; Raymond C. Grabiak, Maryland Heights, and Albert C. Lee, Chesterfield, all of Mo., assignors to HemaGen/PFC, St. Louis, Mo.

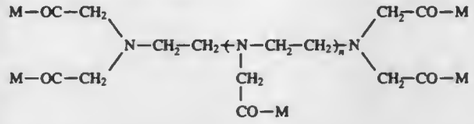
Filed Nov. 30, 1994, Ser. No. 346,885

The portion of the term of this patent subsequent to Jun. 2, 2014, has been disclaimed.

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.365 **40 Claims**

1. A complex of a paramagnetic metal ion and an organic chelator having the formula



wherein from 2 to 5M groups are hydroxyl, n=0 to 2, and at least one remaining M group is NR_1R_2, each R_1 is a C_{10}–C_{30} saturated aliphatic group and R_2 is hydroxyl.

5,614,171

HYDROPHILIC PHARMACEUTICAL COMPOSITION CONTAINING KETOPROFEN LYSINE SALT FOR TOPICAL USE

Gaetano Clavenna, and Giorgio Poletti, both of Milan, Italy, assignors to Dompé Farmaceutici SpA, Milan, Italy

Continuation of Ser. No. 847,410, Mar. 6, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,972

Claims priority, application Italy, Mar. 6, 1991, MI91A0584

Int. Cl.[6] A61K *9/12*

U.S. Cl. 424—45 **19 Claims**

1. A topically applicable, transdermally deliverable anti-inflammatory foam-form composition which, upon topical application, penetrates through skin into effective contact with an inflamed area beneath the skin comprising, based on the total volume of the composition:

at least about 67% water as a main constituent;

less than 15 percent by volume of a liquid excipient, comprising:

less than 5% volume alcohol, and

2 to 8% by volume of at least one emulsifier, which quantity of excipient is insufficient to produce adverse effects;

0.2 to 3 percent by volume of a thickening agent; and

12 to 18 percent by volume, which is sufficient to transdermally transport an amount, which is sufficient to inhibit the substan-

tial sub-cutaneous biosynthesis of prostaglandines, prostacyclines and tromboxane related to said inflamed area beneath the skin, of a transdermally penetrating anti-inflammatory material consisting essentially of a lysine salt of ketoprofen;

wherein said composition has been foamed by the action of about 3 to 7% by weight, based on the weight of the entire admixture, of a propellant comprising at least one member selected from the group consisting of propane, butane and isobutane which has been admixed with said composition under sufficient pressure to prevent foaming thereof and

wherein said pressure has been reduced a sufficient amount to form said foam.

5,614,172

FLUID DISPENSER FOR GERM-FREE FLUID

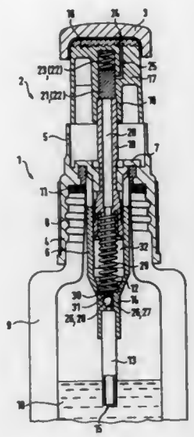
Gunter Geimer, Schonenberg-Kubelberg, Germany, assignor to URSAPHARM Arzneimittel GmbH, Bubingen, Germany

Continuation of Ser. No. 25,852, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 739,918, Aug. 2, 1991, Pat. No. 5,232,687. This application Feb. 24, 1995, Ser. No. 394,197

Claims priority, application Germany, Aug. 29, 1990, 40 27 320.2

Int. Cl.[6] A01N *25/00*

U.S. Cl. 424—45 **7 Claims**



1. A fluid dispenser for dispensing of minute amounts of a germfree fluid, in particular eye-drops, comprising a through passage connecting an inlet opening for fluid contained in a supply container and a delivery opening for said fluid and having therein an oligodynamically germicidally active substance embedded in a carrier material in which said substance is soluble in the fluid, said device comprising a metering pump operating without air pressure compensation and having an inlet valve for closing said inlet opening and an outlet valve communicating with an outlet passage of said inlet valve for closing a delivery opening of said inlet valve, spring means actuating on the closure member of said inlet valve, said carrier material containing said fluid-soluble oligodynamically gemicidally active substance being situated on a surface of said spring means, said closure member and fluid inlet and outlet passages operatively connected with said inlet valve, and said inlet and delivery openings, said inlet and outlet passages for said inlet valve, and said inlet valve each having flow cross-sections dimensioned in correlation with each other such that the minute amounts of fluid passing therethrough come into complete contact with the oligodynamically germicidally active substance "wherein said substance is selected from the group consisting of silver, silver salts, other silver compounds, and alloys thereof in either metallic or salt form".

5,614,173

HAIR SPRAY COMPOSITION HAVING 80 OR LESS VOC AND ADVANTAGEOUS PHYSICAL AND PERFORMANCE CHARACTERISTICS

Herbert Ulmer, Hoboken, and Colleen M. Rocafort, Lake Hiawatha, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Dec. 8, 1995, Ser. No. 569,809

Int. Cl.[6] A61K *7/11*

U.S. Cl. 424—47 **17 Claims**

1. A hair spray composition containing 80% or less VOC consisting essentially of, by weight,

(a) about 0.5–12% of an ethyl or butyl half-ester copolymer of maleic anhydride and methyl vinyl ether, which is made by

(i) copolymerizing the monomers in a solvent, by free radical polymerization, at a temperature of about 60° to about 90° C., in the presence of about 0.05 to about 10% by weight of maleic anhydride monomer of a polymerization initiator whose decomposition fragments are soluble in a 55% VOC hydroalcoholic composition, and

(ii) esterifying the copolymer solution, wherein the copolymer is crystal clear and has a weight average molecular weight of about 30,000 to about 120,000, a polydispersity of less than about 2.5, and a specific viscosity of about 0.25 to about 0.39,

optionally neutralized in an amount of up to about 25 mole %,

(b) 0–80% ethanol,

(c) 19–99% water, and

(d) 0–35% propellant,

said composition being crystal clear in appearance, has a Brookfield viscosity of less than about 30 cps at a 5% solids level, and forms clear films having a high humidity curl retention of at least about 90%, a tack time below about 30 seconds, and a dry time of below about 45 seconds, and which forms spray particles of less than about 100 μm in a pump system, and of less than about 80 μm in an aerosol system.

5,614,174

STABILIZED DENTIFRICE COMPOSITIONS CONTAINING REACTIVE INGREDIENTS

Donald P. Hsu, and David B. Viscio, both of Monmouth Junction, N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Nov. 14, 1994, Ser. No. 339,371

The portion of the term of this patent subsequent to Nov. 14, 2014, has been disclaimed.

Int. Cl.[6] A61K *7/16;7/20*

U.S. Cl. 424—49 **15 Claims**

1. A dentifrice paste for cleaning teeth containing a reactive ingredient combination of calcium peroxide and sodium bicarbonate which is stabilized to interaction or decomposition during storage the paste being comprised of a substantially anhydrous vehicle which contains an effective stabilizing amount of at least about 1% by weight polyethylene glycol 2000, said vehicle containing as a humectant anhydrous glycerin, sorbitol, polyethylene glycol and mixtures thereof at a concentration of about 10 to about 60% by weight the composition containing limited amounts up to about 9% water, said sodium bicarbonate being included at a concentration of about 5 to about 20% by weight and said calcium peroxide being present at a concentration of about 0.25 to about 5% by weight.

5,614,175

STABLE SINGLE-PART COMPOSITIONS AND THE USE THEREOF FOR REMINERALIZATION OF LESIONS IN TEETH

A. E. Winston, East Brunswick, and Norman Usen, Marlboro, both of N.J., assignors to Enamelon Inc., East Brunswick, N.J.

Division of Ser. No. 512,287, Aug. 8, 1995, Pat. No. 5,571,502. This application Aug. 2, 1996, Ser. No. 691,328

Int. Cl.[6] A61K *7/16;7/18*

U.S. Cl. 424—52 **26 Claims**

1. A stable, single part, non-aqueous product for remineralizing lesions in teeth comprising:

(i) from about 0.05% to 15.0% of at least one water-soluble calcium salt;

(ii) from about 0.05% to 15.0% of at least one water-soluble phosphate salt; and

(iii) a stabilizer comprising a material selected from at least one member of the group consisting of up to about 7.5% of a dessicating agent and a coating on at least one of the water-soluble salts that either readily dissolves, disperses or emulsifies in water;

(iv) wherein when the components are mixed with water or saliva the pH of the mixture is between about 4.5 and 10.0.

5,614,176

DENTIFRICE-COMPATIBLE SILICA PARTICULATES

Jacques Persello, Montluel, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 141,337, Oct. 26, 1993, which is a division of Ser. No. 901,078, Jun. 19, 1992, Pat. No. 5,286,478, which is a continuation-in-part of Ser. No. 261,935, Oct. 25, 1988, abandoned, Ser. No. 261,936, Oct. 25, 1988, abandoned, Ser. No. 518,764, May 3, 1990, abandoned, and Ser. No. 518,765, May 3, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 485,512

Claims priority, application France, Nov. 4, 1987, 8715275; Nov. 4, 1987, 8715276; May 3, 1989, 8905868; May 3, 1989, 8905869

Int. Cl.[6] A61K *7/16;7/18*

U.S. Cl. 424—57 **6 Claims**

1. A process for the preparation of silica particulates adapted for formulation into dentifrice compositions, having a surface chemistry as to be at least 65% compatible with guanidine values, comprising reacting a silicate with an acid to form a suspension or gel of silica, separating such silica suspension or gel, first washing said separated silica with water until the conductivity of the filtrate is at most 2,000 microsiemens.cm^{-1}, and then again washing said separated silica, either with water or an acid solution.

5,614,177

DENTIFRICE-COMPATIBLE SILICA PARTICULATES

Jacques Persello, Montluel, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 141,337, Oct. 26, 1993, and Ser. No. 901,078, Jun. 19, 1992, Pat. No. 5,286,478, which is a continuation-in-part of Ser. No. 261,935, Oct. 25, 1988, abandoned, Ser. No. 261,936, Oct. 25, 1988, abandoned, Ser. No. 518,764, May 3, 1990, abandoned, and Ser. No. 518,765, May 3, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 485,513

Int. Cl.[6] A61K *7/16;7/18;* **C01B** *33/12;14/04*

U.S. Cl. 424—57 **13 Claims**

1. A process for the preparation of silica particulates adapted for formulation into dentifrice compositions, having a pH, in aqueous suspension, which varies as a function of the concentration thereof, according to the following two equations:

$$pH \leqq 7.5 - 0.7 \log (C) \quad \text{(Ia)}$$

and

$$pH \geqq 5.0 - 0.5 \log (C) \quad \text{(Ib)}$$

and which also varies as a function of the electrical conductivity thereof, according to the following two equations:

$$pH \leqq 8.5 - 0.4 \log (D) \quad \text{(IIa)}$$

and

$$pH \geqq 7.0 - 0.6 \log (D) \quad \text{(IIb)}$$

wherein equations (Ia) and (Ib), (C) represents the weight concentration of such aqueous silica suspension, expressed in % SiO_2; and wherein equations (IIa) and (IIb) (D) represents the electrical conductivity of such aqueous silica suspension expressed in microsiemens-cm^{-1}, comprising reacting a silicate with an acid to form a suspension or gel of silica, aging such suspension or gel at a pH of from 6 to 8.5, then again aging such suspension or gel at a pH of 6 or less, followed by a third aging of such suspension or gel at a pH of 5 or less, separating the silica from such suspension or gel and next washing it with water to provide an aqueous suspension thereof, the pH of which, measured on a 20% by weight SiO_2 suspension, is according to the following equation:

$$pH = d - e \log (D) \quad \text{(III)}$$

wherein e is a constant equal to or greater than 0.6 and equal to or less than 1.0, d is a constant equal to or greater than 7.0 and equal to or less than 8.5, and (D) represents the electrical conductivity of the aqueous silica suspension, expressed in microsiemens-cm^{-1}, and then drying such aqueous suspension.

5,614,178

COMPOSITIONS FOR TOPICAL DELIVERY OF DRUGS COMPRISING A MIXTURE OF HIGH AND LOW HLB SURFACTANTS AND ALKOXYLATED ETHER

Roberta C. Bloom, Huntington, Conn., and George E. Deckner, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 79,977, Jun. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 33,211, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 950,527, Sep. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 920,937, Jul. 28, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 265,975

Int. Cl.[6] A61K *7/42;31/785;7/06*

U.S. Cl. 424—60 **45 Claims**

1. A topical pharmaceutical composition having enhanced penetration through the skin, comprising:

(a) a safe and effective amount of a pharmaceutical active;

(b) from about 0.1% to about 10.0% of a high molecular weight crosslinked cationic polymer of the formula: $(A)_l(B)_m(C)_n$ wherein (A) is a dialkylaminoalkyl acrylate monomer or its quaternary ammonium or acid addition salt, (B) is a dialkylaminoalkyl methacrylate monomer or its quaternary ammonium or acid addition salt, (C) is acrylamide, l is an integer of 0 or greater, m is an integer of 1 or greater, and n is an integer of 0 or greater, wherein said polymer contains a crosslinking agent;

(c) from about 0.05% to about 5% of a high HLB non-ionic surfactant;

(d) from about 0.1% to about 25% of an alkoxylated ether of the formula:

$$RO(CHCH_2O)_nH$$
$$\quad\quad\quad

5,614,179
COSMETIC DEODORANT PRODUCTS CONTAINING A POLYMER/FRAGRANCE-ENCAPSULATED BICARBONATE INGREDIENT

Richard T. Murphy, Belle Mead, and Wolfgang R. Bergmann, Princeton, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Sep. 27, 1995, Ser. No. 534,845
Int. Cl.[6] A61K *7/32;9/32*
U.S. Cl. 424—65 **45 Claims**

1. A cosmetic deodorant product comprising an organic matrix which contains between about 0.5–20 weight percent of an encapsulated powder composition homogeneously dispersed therein, wherein the encapsulated powder composition comprises discrete crystallites of at least one ingredient selected from alkali metal and ammonium bicarbonates, which are in the form of particles having a surface coating of a film-forming medium comprising a blend of a polymer and between about 0.1–30 weight percent of a fragrance ingredient, based on the coating weight.

5,614,180
SHAMPOO-CONDITIONER COMPOSITION

Judy B. Chung, Glenview, Ill., assignor to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 112,950, Aug. 30, 1993, abandoned. This application Nov. 9, 1994, Ser. No. 336,825
Int. Cl.[6] A61K *7/075*
U.S. Cl. 424—70.19 **27 Claims**

1. A shampoo-conditioner composition comprising:
(a) about 5% to about 30% by weight of a cleansing surfactant selected from the-group consisting of a nonionic surfactant, an amphoteric surfactant and mixtures thereof;
(b) about 0.5% to about 5% by weight of a primary amine having 14 to 22 carbon atoms;
(c) a sufficient amount of an acid such that 30 mole percent or more of the primary amine is neutralized, and such that the composition has a pH of about 4 to about 8;
(d) a carrier comprising water; and
(e) 0% to about 2% of a water-soluble quaternary ammonium compound having one long carbon chain having 12 to 18 carbon atoms, a water-soluble primary amine having a long carbon chain having 8 to 12 carbon atoms, a water-soluble primary amine having an unsaturated long carbon chain having 8 to 18 carbon atoms, a water-soluble secondary or tertiary amine having a long carbon chain having 8 to 16 carbon atoms, and mixtures thereof,
wherein the composition (i) is essentially free of an anionic surfactant and (ii) is free of a silicone conditioning agent and a hydrocarbon conditioning agent.

5,614,181
NONIONIC SURFACTANTS DERIVED FROM 1,2-ISOPROPYLIDENE-3-EPOXYPROPYLGLYCEROL AND A CARBOXYLIC ACID AND THEIR USE

Henri Sebag, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 835,865, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 470,702, Jan. 26, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 114,307
Claims priority, application France, Jan. 26, 1989, 89 00963
Int. Cl.[6] A61K *7/06*
U.S. Cl. 424—70.31 **5 Claims**

1. A nonionic surfactant having the formula

$$R\text{-}(Y(OB)_p\text{-}(Z)_q\text{-}X\text{-}CH_2)_r\text{-}COOA \quad (IV)$$

wherein
R represents an aliphatic radical or a cycloaliphatic radical or an alkylaryl radical, containing 8 to 30 carbon atoms,
Y represents a trivalent radical selected from the group consisting of

$$-CH-,\ -CH-CH_2-\ \text{and}\ -O-CH_2-CH-CH_2-.$$

Z represents $-[OCH_2\text{-}CH_2]_m-$, wherein m represents an integer or decimal number ranging from 1 to 20,
X represents a member selected from the group consisting of —O—, —S— and S=O,
p, q and v represent 0 or 1 with the proviso that the sum, p+q=0 or 1; and with the further proviso that
(i) when Y represents

$$-CH-\ \text{or}\ -CH-CH_2-,$$

R represents a saturated linear aliphatic radical, and
(ii) when Y represents

$$-CH-$$

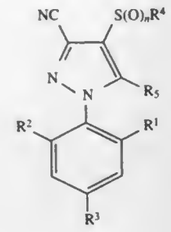
and p=1, v is equal to 0,
A represents $\text{-}(C_2H_3O(CH_2OCH_2\text{—}CHOH\text{—}CH_2OH)_a)_b\text{-}H$ and
B represents $\text{-}(C_2H_3O(CH_2\text{—}CHOH\text{—}CH_2OH)_b)_a\text{-}H$ wherein a+b=n and n represents an integer or decimal number ranging from 1.5 to 8.

5,614,182
METHODS OF ATTRACTING AND COMBATTING INSECTS

Thomas C. Davidson, Pelham, and Georgina M. Werner, Raleigh, both of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Filed Apr. 10, 1995, Ser. No. 419,609
Int. Cl.[6] A01N *25/00*
U.S. Cl. 424—84 **28 Claims**

1. A method for attracting insects, said method comprising offering to said insects for ingestion an effective attractant amount of a compound having the formula:



(I)

wherein:
each of R^1 and R^2, which are the same or different, is a hydrogen or halogen atom;
R^3 is a halogen atom or a haloalkyl, haloalkoxy or SF_5 radical;
R^4 is an alkyl or haloalkyl radical;
R^5 is an alkyl, haloalkyl, amino, alkylamino or dialkylmnino radical; and
n is 0, 1 or 2.

5,614,183
USE OF CSF-1 TO TREAT BACTERIAL INFECTIONS

Peter Ralph, Orinda, and Kong T. Chong, Union City, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 220,454, Mar. 31, 1994, Pat. No. 5,556,620, which is a continuation of Ser. No. 24,094, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 505,256, Apr. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 243,253, Sep. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 99,872, Sep. 22, 1987, Pat. No. 5,104,650, which is a continuation-in-part of Ser. No. 876,819, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 821,068, Jan. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 756,814, Jul. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 744,924, Jun. 14, 1985, abandoned, which is a continuation-in-part of Ser. No. 728,834, Apr. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 698,359, Feb. 5, 1985, abandoned. This application Jan. 11, 1995, Ser. No. 371,803
Int. Cl.[6] A61K *38/19;* **C07K** *14/53*
U.S. Cl. 424—85.1 **4 Claims**

1. A method for therapeutic treatment of a bacterial infectious disease in a mammal which comprises administering to said mammal an effective amount of recombinant colony stimulating factor-1 (CSF-1).

5,614,184
RECOMBINANT HUMAN ERYTHROPOIETIN MUTANTS AND THERAPEUTIC METHODS EMPLOYING THEM

Arthur J. Sytkowski, Arlington, Mass., and Jennifer Grodberg, Montreal, Canada, assignors to New England Deaconess Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 113,080, Aug. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 920,810, Jul. 28, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 383,743
Int. Cl.[6] C07K *14/505;* **C12N** *15/19;* **A61K** *38/18;38/19*
U.S. Cl. 424—85.1 **28 Claims**

1. A mutant human erythropoietin protein having an amino acid sequence which differs from the sequence of wild-type human erythropoietin at the position corresponding to glycine[101] of said wild-type erythropoietin, wherein said mutant protein has increased biological activity relative to wild-type human erythropoietin as determined in an in vitro erythropoietic bioassay.

13. A mutant human erythropoietin protein having an amino acid sequence which differs from the sequence of wild-type human erythropoietin at the position corresponding to arginine[103] of said wild-type erythropoietin, wherein said mutant protein has decreased biological activity relative to wild-type human erythropoietin as determined in an in vitro erythropoietic bioassay, and wherein a recombinant host cell producing a polypeptide having the amino acid sequence of said mutant protein is capable of secreting said polypeptide.

5,614,185
COMPOSITIONS CONTAINING REDUCED, MICROBIALLY PRODUCED INTERLEUKIN-2 (IL-2)

Kirston Koths, Berkeley; James Thomson, Albany; Michael Kunitani, Oakland; Kenneth Wilson, Walnut Creek, and Wolf Hanisch, Oakland, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 879,753, May 6, 1992, Pat. No. 5,419,899, which is a continuation of Ser. No. 815,236, Dec. 31, 1985, abandoned, which is a continuation of Ser. No. 594,223, Mar. 28, 1984, Pat. No. 4,569,790. This application Apr. 25, 1995, Ser. No. 428,895
Int. Cl.[6] A61K *38/20;* **C12N** *15/26*
U.S. Cl. 424—85.2 **10 Claims**

1. A purified, recombinant IL-2 composition comprising:
a purity of at least 95% as determined by SDS-PAGE;
less than 5 ng endotoxin/mg IL-2;
wherein the IL-2 is unglycosylated, produced by a microorganism, reduced, and is substantially free of pyrogens as determined by the U.S.P. rabbit pyrogen test at a dosage of 3.3×10^5 U/kg IL-2; and
wherein the level of endotoxin is acceptable for parenteral administration to patients.

5,614,186
INFECTED SOILBORNE FUNGUS FOR INOCULATING PLANTS

Charles M. Rush, Amarillo, Tex., assignor to Texas A&M University System, College Station, Tex.

Filed Sep. 1, 1994, Ser. No. 299,608
Int. Cl.[6] A01N *63/00;63/04;* **A01H** *5/10;* **A01G** *7/00*
U.S. Cl. 424—93.3 **24 Claims**

5. A method for protecting plants from severe disease caused by a pathogenic virus comprising the steps of:
contacting seed of a plant susceptible to severe disease caused by beet necrotic yellow vein virus (BNYVV) with a viruliferous soilborne fungus containing beet soilborne mosaic virus (BSBMV); wherein a plant which grows from said seed becomes infected with said BSBMV virus and is thereby protected against severe disease caused by BNYVV.

5,614,187
SPECIFIC TOLERANCE IN TRANSPLANTATION

David H. Sachs, Newton, Mass., assignor to The General Hospital Corporation, Boston, Mass., and The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 126,122, Sep. 23, 1993, abandoned, which is a continuation of Ser. No. 797,555, Nov. 22, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,427
Int. Cl.[6] C12N *15/00;* **A01N** *63/00;* **A61K** *35/26;* **C07H** *21/04*
U.S. Cl. 424—93.21 **15 Claims**

1. A method for inhibiting a mammalian recipient's ability to mount an immune response against an MHC class II antigen of tissue from a donor mammal of the same species to be provided to a said recipient, comprising:
providing said recipient with a cell composition comprising recipient species bone marrow hematopoietic stem cells having inserted therein DNA encoding an MHC class II antigen to be expressed in said recipient, said MHC class II antigen being the same as that expressed by donor tissue to be provided to said recipient, to thereby inhibit said recipient's ability to mount an immune response against said MHC class II antigen expressed by the swine tissue.

5,614,188
ANTI-FUSARIUM COMPOSITION CONTAINING STRAINS OF BACILLUS SP., A CHITIN-CONTAINING MATERIAL, AND A POWDERY MATERIAL

Teruo Urano, Sano; Hiroshi Miyaji, and Kazuhiro Maesato, both of Tokyo, all of Japan, assignors to Murakashi Lime Industry Co., Ltd., Tochigi Pref., Japan

Continuation of Ser. No. 132,257, Oct. 6, 1993, abandoned. This application Jun. 16, 1995, Ser. No. 491,313
Int. Cl.[6] A01N *63/00;* **C12N** *1/20*
U.S. Cl. 424—93.46 **4 Claims**

1. An antifungal composition for controlling Fusarium comprising an anti-fusarium effective amount of microorganisms selected from the group consisting of Bacillus sp. FERM BP-4375 and Bacillus sp. FERM BP-4376, a chitin-containing material obtained from antropod or mollusk shells pod and powdery material selected from the group consisting of crushed limestone and crushed dolomite.

5,614,189

RECOMBINANTLY PRODUCED LIPASES FOR THERAPEUTICAL TREATMENT

Birgitte Huge-Jensen, Jaegerspris, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 937,858, Oct. 16, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 318,036

Claims priority, application Denmark, Jun. 6, 1990, 1379/90; Jul. 19, 1990, 1735/90

Int. Cl.[6] A61K *38/46;38/54;* C12N *15/55*

U.S. Cl. 424—94.6 14 Claims

1. A pharmaceutical composition comprising a therapeutically effective amount of a crystalline Humicola lipase and a pharmaceutically acceptable carrier, diluent, excipient and/or adjuvant.

5,614,190

TISSUE PLASMINOGEN ACTIVATOR HAVING ZYMOGENIC OR FIBRIN SPECIFIC PROPERTIES

Stephen Anderson, Princeton, N.J.; William F. Bennett, San Mateo, Calif.; David Botstein, Belmont, Calif.; Deborah L. Higgins, San Mateo, Calif.; Nicholas F. Paoni, Moraga, Calif., and Mark J. Zoller, San Francisco, Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 88,451, Jul. 6, 1993, Pat. No. 5,520,913, which is a division of Ser. No. 770,510, Oct. 3, 1991, Pat. No. 5,262,170, which is a continuation of Ser. No. 384,608, Jul. 24, 1989, Pat. No. 5,108,901, which is a continuation-in-part of Ser. No. 240,856, Sep. 2, 1988, abandoned. This application Apr. 26, 1995, Ser. No. 429,364

Int. Cl.[6] A61K *38/49;* C12N *9/50;9/64;15/55*

U.S. Cl. 424—94.64 12 Claims

1. A human tissue plasminogen activator (t-PA) amino acid sequence variant having an aspartic acid substituted for arginine at amino acid position 299 of wild-type human t-PA.

5,614,191

IL-13 RECEPTOR SPECIFIC CHIMERIC PROTEINS AND USES THEREOF

Raj K. Puri, North Potomac, Md.; Waldemar Debinski, Hummelstown, Pa.; Ira Pastan, Potomac, and Nicholas Obiri, Gaithersburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 15, 1995, Ser. No. 404,685

Int. Cl.[6] A61K *39/395;* C07K *16/46;* G01N *33/53*

U.S. Cl. 424—178.1 21 Claims

1. A method for specifically delivering an effector molecule to a solid tumor cell bearing an IL-13 receptor, said method comprising:

providing a chimeric molecule comprising said effector molecule attached to a targeting molecule selected from the group consisting of an IL-13, and an anti-IL-13 receptor antibody; and

contacting said chimeric molecule with said tumor cell to specifically bind said chimeric molecule to said tumor cell.

5,614,192

T CELL RECEPTOR PEPTIDES AS THERAPEUTICS FOR IMMUNE-RELATED DISEASE

Arthur A. Vandenbark, Portland, Oreg., assignor to Connective Therapeutics, Inc., Palo Alto, Calif.

Continuation of Ser. No. 735,612, Jul. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,022, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,529, Jul. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,577, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,804, Jul. 19, 1989, abandoned. This application Mar. 16, 1993, Ser. No. 59,020

Int. Cl.[6] A61K *38/00;* C07K *14/725*

U.S. Cl. 424—185.1 56 Claims

1. A purified or synthetic immunogenic T cell receptor peptide capable of reducing the severity of a T cell mediated disease, having an amino acid sequence of about 15 to 30 amino acids comprising at least a part of the second complementarity determining region of a T cell receptor characteristic of such T cell mediated disease, or a corresponding purified or synthetic immunogenic functional derivative that is a fragment, a variant or a chemical derivative of said peptide.

5,614,193

HANTAVIRUS VACCINE

Connie S. Schmaljohn; David J. McClain, both of Frederick, and Joel Dalrymple, deceased, late of Myersville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 799,479, Nov. 14, 1991, Pat. No. 5,298,423. This application Mar. 28, 1994, Ser. No. 218,943

Int. Cl.[6] A61K *39/285;39/12;* C12N *7/01*

U.S. Cl. 424—186.1 28 Claims

1. A vaccine formulation suitable for use in a human, comprising:

(i) infectious vaccinia virus that comprises a DNA molecule encoding

(a) the Hantaan virus polypeptides designated N, G1 and G2, and

(b) all vaccinia virus polypeptides necessary for replication of said virus in a cell derived from said human, but not a functional thymidine kinase; and

(ii) a pharmaceutically-acceptable carrier, excipient or diluent, wherein said vaccine formulation comprises a single dose of 5×10^5 to 7×10^7 plaque forming units of vaccinia virus.

5,614,194

PROTECTIVE PEPTIDE ANTIGEN

David R. Colman; Joan Ellis; G. Nigel Godson; Ruth S. Nussenzweig; Victor N. Nussenzweig; Pamela S. Svec, and Fidel Zavala, all of New York, N.Y., assignors to New York University, New York, N.Y.

Continuation of Ser. No. 32,731, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 864,172, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 99,652, Sep. 21, 1987, abandoned, which is a continuation of Ser. No. 574,553, Jan. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 234,096, Feb. 12, 1981, Pat. No. 4,466,917. This application Jun. 5, 1995, Ser. No. 461,945

Claims priority, application United Kingdom, Jan. 28, 1983, 8302349

Int. Cl.[6] C12N *15/00;* A61K *39/00;* C07K *14/00;5/00*

U.S. Cl. 424—191.1 17 Claims

1. An antigen consisting of at least two occurrences of a repeating peptide unit of the immunodominant epitope region of the circumsporozoite surface protein of a parasite of the genus Plasmodium, wherein the antigen is not said surface protein, and is recognized by antibodies that bind to sporozoites of said parasite.

5,614,195

COCCIDIOSIS POULTRY VACCINE

Janene M. Bumstead, Wantage; Paul P. J. Dunn, Chalgrove; Fiona M. Tomley, Oxford, all of England, and Arnoldus N. Vermeulen, Cuijk, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 338,057, Nov. 10, 1994. This application Jun. 2, 1995, Ser. No. 464,164

Claims priority, application European Pat. Off., Nov. 12, 1993, 93309078

Int. Cl.[6] A61K *39/012;* C07K *14/455;16/20;* G01N *33/569*

U.S. Cl. 424—171.1 14 Claims

1. An isolated Eimeria T-lymphocyte stimulatory protein, comprising the amino acid sequence shown in SEQ ID NO:2.

2. An isolated Eimeria T-lymphocyte stimulatory protein, comprising the amino acid sequence shown in SEQ ID NO:4.

5,614,196

ASH EXTRACTABLES FOR DETERING GYPSY MOTH

Dale M. Norris, and Ingrid Markovic, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 12, 1994, Ser. No. 353,750

Int. Cl.[6] A01N *65/00*

U.S. Cl. 424—195.1 8 Claims

1. A method of preparing a substance capable of deterring gypsy moths and larvae, the method comprising the steps of:

(a) placing green ash foliage in contact with methanol to extract methanol-soluble compounds from the foliage,

(b) filtering the methanol-soluble compounds from the foliage-methanol mixture;

(c) concentrating the filtrate of methanol-soluble compounds; and

(d) contacting the concentrated filtrate with ethyl acetate, thereby isolating ethyl acetate-soluble compounds from the concentrated filtrate of methanol-soluble compounds, such isolated compounds being capable of deterring gypsy moths and larvae.

5,614,197

POLYPODIUM EXTRACT AS PHOTOPROTECTANT

Madhukar A. Pathak, Belmont; Salvador Gonzalez, Boston, and Thomas B. Fitzpatrick, Weston, all of Mass., assignors to Industrial Farmaceutica Cantabria, S.A., Madrid, Spain

Filed Feb. 13, 1995, Ser. No. 388,261

Int. Cl.[6] A61K *35/78;7/42;7/44*

U.S. Cl. 424—195.1 29 Claims

1. A preparation for topical application comprising an effective amount of a *Polypodium* extract for photoprotection when applied topically to the skin and a pharmaceutically acceptable topical carrier, the preparation formulated as a topical preparation, wherein the preparation includes a composition selected from the group consisting of physical sunscreen agents, chemical sunscreen agents and cosmetic agents.

5,614,198

BOWMAN-BIRK INHIBITOR COMPOSITIONS FOR TREATMENT OF INFLAMMATORY DISEASE

Ann R. Kennedy, Wynnewood, and Paul C. Billings, Swarthmore, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Jul. 25, 1995, Ser. No. 507,044

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 4 Claims

1. A method for treating inflammatory bowel disease in an animal comprising administering an effective amount of BBI to an animal having an inflammatory bowel disease.

5,614,199

INCLUSION COMPLEXES OF CLAVULANIC ACID AND OF ALKALI SALTS THEREOF WITH HYDROPHILIC AND HYDROPHOBIC β-CYCLODEXTRIN DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Janko Žmitek; Darja Ferčej-Temeljotov, both of Ljubljana; Katarina Verhnjak, Ptuj; Sonja Kotnik, and Mateja Kovačič, both of Ljubljana, all of Slovenia, assignors to LEK, tovarna farmacevtskih in kemicnih izdelkov, d.d., Ljubljana, Ljubljana, Slovenia

Division of Ser. No. 369,301, Jan. 6, 1995, Pat. No. 5,498,788, which is a continuation of Ser. No. 84,951, Jul. 2, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,267

Claims priority, application Slovenia, Jul. 8, 1992, P-92 00 139

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 8 Claims

1. Stable galenic form with sustained release of the active component, comprising therapeutically active amount of amoxicillin trihydrate and the inclusion complex of clavulanic acid or of its alkali salts with a hydrophobic β-CD derivative selected from the group consisting of heptakis-(2,3,6-tri-O-acetyl)-β-CD, O-carboxymethyl-O-ethyl-β-CD, heptakis-2,6-di-O-pentyl-β-CD, heptakis-2,3,6-tri-O-pentyl-β-CD and heptakis-(3-O-acetyl-2,6-di-O-pentyl)-β-CD; and other adjuvants, wherein the ratio of amoxicillin trihydrate and of clavulanic acid or of its pharmaceutically acceptable alkali salts is from 10:1 to 1:1.

3. Stable galenic forms with sustained release of the active component containing a therapeutically active amount of amoxicillin trihydrate and a mixture of the inclusion complex of clavulanic acid or of its alkali salts with a hydrophobic β-CD derivative selected from the group consisting of heptakis-(2,3,6-tri-O-acetyl)-β-CD, O-carboxymethyl-O-ethyl-β-CD, heptakis-2,6-di-O-pentyl-β-CD, heptakis-2,3,6-tri-O-pentyl-β-CD and heptakis-(3-O-acetyl-2,6-di-O-pentyl)-β-CD, and with a hydrophilic β-CD derivative selected from the group consisting of (2,6-di-O-methyl)-β-CD, methyl-β-CD, heptakis-(2,3,6-tri-O-methyl)-β-CD, hydroxypropyl-β-CD, hydroxy-ethyl-β-CD; dihydroxypropyl-β-CD, glucosyl-β-CD, maltosyl-β-CD, dimaltosyl-β-CD and diglucosyl-β-CD; and other adjuvants, wherein the weight ratio between the amoxicillin trihydrate and the equivalent of clavulanic acid or its pharmaceutically acceptable alkali salts bound in the same complex amounts from 10:1 to 1:1.

5,614,200

MASCARA COMPOSITIONS

Edward M. Bartholomey, Baltimore, Md.; John M. Gilley, Shrewsbury, Pa., and Magda El-Nokaly, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 344,314, Nov. 22, 1994. This application Mar. 1, 1995, Ser. No. 396,845

Int. Cl.[6] A61K *7/02;7/032*

U.S. Cl. 424—401 17 Claims

1. A mascara composition comprising:

a. from about 20% to about 65% solids;

b. from about 20% to about 80% liquid vehicle; and

c. from about 8% to about 50% a setting rate agent comprising a mixture of glycerol monostearate and lecithin wherein lecithin is at a level of at least 1% by weight of the composition, and the ratio of glycerol monostearate to lecithin is from about 2:1 to about 20:1;

wherein said setting rate agent enables said mascara composition to maintain its liquid state after initial application to the lashes for a period sufficient to provide uniform distribution of said mascara composition over said lashes.

5,614,201

COSMETIC COMPOSITION FOR TREATMENT OF PIMPLES AND REDNESS

Craig S. Slavtcheff, Cheshire; Stephen R. Barrow, Trumbull; Vispi D. Kanga, Shelton; Michael C. Cheney, Fairfield, and Alexander Znaiden, Trumbull, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Division of Ser. No. 99,876, Jul. 30, 1993, Pat. No. 5,482,710.
This application Apr. 5, 1995, Ser. No. 417,417
Int. Cl.[6] A61K *7/00;35/78;31/19*
U.S. Cl. 424—401 10 Claims

1. A cosmetic composition in an effective amount for treatment of pimples, blemishes and redness comprising:

(i) from about 0.1 to about 10% of at least one keratolytic agent each selected from the group consisting of C_7–C_{30} β-hydroxy carboxylic acids and their salts, C_1–C_{25} α-hydroxy carboxylic acids and their salts and mixtures thereof,

(ii) from about 0.0001 to about 5% by weight each of an anti-irritancy agent combination which includes:

(a) a water-soluble anti-irritancy material which is a C_{20}–C_{100} saponin; and

(b) a water-insoluble anti-irritancy agent selected from the group consisting of C_7–C_{30} polycyclic polyenes, C_{15}–C_{40} triterpenes and mixtures thereof, the water-soluble and water-insoluble anti-irritancy agents being present in a relative weight ratio from about 20:1 to 1:20;

(iii) from about 1 to about 99.9% by weight of a cosmetically acceptable carrier; and

(iv) from about 0.1 to about 5% of a zinc or aluminum salt.

5,614,202

MOISTURIZING GLOVE

Linda E. DeFina, 5830 Alderleaf Pl., Columbia, Md. 21045

Filed May 17, 1994, Ser. No. 243,833
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—402 22 Claims



1. A moisturizing glove, comprising:

an inner layer of stretchable, porous material having an exterior surface and an interior surface opposite from said exterior surface, said inner layer being perforated throughout by a continuous distribution of a plurality of discrete pores, said interior surface forming a cavity for receiving and enveloping an anatomical human member;

a quantity of a lotion;

a middle layer comprising a thickness of stretchable spongy material absorbent of said lotion extending continuously throughout said middle layer and saturated with said lotion, said quantity of lotion being distributed throughout said thickness, said middle layer having an interior surface and an exterior surface opposite and separated by said thickness from said interior surface, said interior surface of said middle layer covering said exterior surface of said inner layer and responding to stimuli of insertion of an anatomical human member into said cavity by continuously releasing said lotion to said inner layer to enable said lotion to migrate through said plurality of pores, be deposited upon and moisturize the anatomical member with said lotion; and

an outer layer of stretchable, non-porous material having an interior surface abutting and covering said exterior surface of said middle layer.

5,614,203

ENVIRONMENTALLY SAFE PESTICIDE AND PLANT GROWTH ACCELERATOR

Terry M. Dezur, Santa Ynez, and Richard W. Pollard, Solvang, both of Calif., assignors to Environmentally Safe Systems, Inc., Solvang, Calif.

Filed Jan. 30, 1995, Ser. No. 380,101
Int. Cl.[6] A01N *25/04*
U.S. Cl. 424—405 21 Claims



1. A pesticide comprising:

(a) between about 3 and about 10% by weight of a surfactant,

(b) between about 1 and about 5% by weight of an alkali metal silicate,

(c) between about 5 and about 25% by weight of a mineral oil,

(d) between about 0.2 and about 30% by weight of one or more additional substances, wherein none of the one or more additional substances is itself a pesticide, and

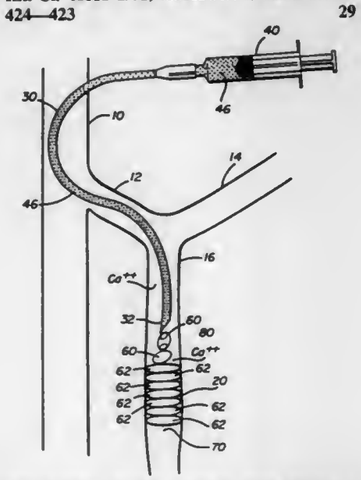
(e) the balance being water.

5,614,204

ANGIOGRAPHIC VASCULAR OCCLUSION AGENTS AND A METHOD FOR HEMOSTATIC OCCLUSION

Kent C. Cochrum, Davis, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jan. 23, 1995, Ser. No. 377,928
Int. Cl.[6] A61F *2/02*; A61K *31/74*; A61L *25/00*
U.S. Cl. 424—423 29 Claims



1. An angiographic vascular occlusion agent injected in situ into a bleeding vessel or a site of injury comprising a biocompatible polymer selected from the group consisting of chitin, and chitosan

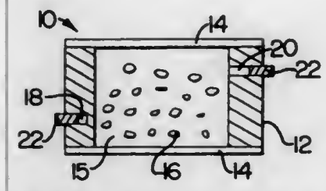
in a mixture With alginate or with poly-L-amino acid, said polymer being able to gel in the presence of an endogenously present or exogenously added divalent cation.

5,614,205

BIOARTIFICIAL ENDOCRINE DEVICE

Anton-Lewis Usala, Winterville, N.C., assignor to Encelle, Inc., Cleveland, Ohio

Continuation of Ser. No. 841,973, Feb. 24, 1992, abandoned.
This application Nov. 28, 1994, Ser. No. 346,340
Int. Cl.[6] A61F *2/02*; A61K *47/30*
U.S. Cl. 424—424 14 Claims



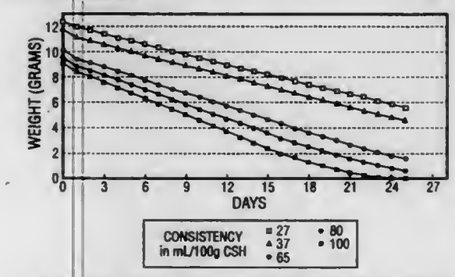
1. A bioartificial pancreas for releasing insulin in a recipient patient, comprising: a matrix containing an insulin producing cellular moiety; and capsule means enveloping said matrix comprising a polymeric membrane selected from the group consisting of poly-para-xylyene, poly-monochloro-xylyene, and poly-dichloro-xylyene, said polymeric membrane having a porosity blocking passage therethrough of immunogenic agents and permitting passage therethrough of nutrients for said cellular moiety and the insulin produced thereby.

5,614,206

CONTROLLED DISSOLUTION PELLET CONTAINING CALCIUM SULFATE

Donald A. Randolph, Wheaton; Jodi L. Negri, Lakevilla, both of Ill.; Timothy R. Devine, Whitefish Bay, Wis., and Steven Gitelis, Oakbrook, Ill., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Mar. 7, 1995, Ser. No. 399,769
Int. Cl.[6] A61F *2/02*; A61K *9/16;9/50*
U.S. Cl. 424—426 31 Claims



1. A pellet having a controllable dissolution rate, wherein said pellet comprises calcium sulfate and is prepared by the process comprising:

(a) mixing a first powder consisting essentially of alpha-calcium sulfate hemihydrate, and optionally, a second powder consisting essentially of beta-calcium sulfate hemihydrate, with a solution comprising water to form a mixture, and

(b) forming said mixture into a pellet,

wherein said first powder has a purity greater than 98 wt. % calcium sulfate hemihydrate, a BET surface area in the range of from about 0.4 m^2/g to about 0.9 m^2/g, a density in the range of from about 2.73 to about 2.80 g/cm^3, a mean particle size of about 16 μm to about 22 μm, and

wherein 90–95 wt. % of the first powder has a particle size distribution from about 1 μm to about 45 μm,

wherein said second powder has a purity greater than 98 wt. % calcium sulfate hemihydrate, a BET surface area in the range of from about 4.5 m^2/g to about 7.5 m^2/g, a density in the range of from about 2.5 g/cm^3 to about 2.6 g/cm^3, and a mean particle size in the range of from about 10 μm to about 15 μm, and

wherein the dissolution rate is controlled by varying the weight ratio of the second powder to the first powder from 0 to about 3.

5,614,207

DRY MOUTH LOZENGE

Manoj N. Shah, Norristown, and Randall G. Goodreau, Chalfont, both of Pa., assignors to McNeil-PPC, Inc., Skillman, N.J.

Filed Jun. 30, 1995, Ser. No. 497,563
Int. Cl.[6] A61K *9/20;9/68*
U.S. Cl. 424—440 5 Claims

1. A dry mouth lozenge, comprising:

about 60 to about 99 percent by weight of a hard candy base selected from the group consisting of sorbitol, mannitol, hydrogenated glucose syrup, mixtures of corn syrup and sugar syrup; and mixtures thereof;

about 0.05 to about 15 percent by weight of a demulcent selected from the group consisting of methyl cellulose, hydroxypropyl methyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, and mixtures thereof;

about 1 to about 7.5 percent by weight of a humectant selected from the group consisting of glycerin, propylene glycol, sorbitol and mixtures thereof; and

about 0.05 to about 1 percent by weight of a pharmaceutically acceptable acidulent to stimulate salivary flow selected from the group consisting of tartaric acid, citric acid, fumaric acid, malic acid, phosphoric acid and mixtures thereof.

5,614,208

METHODS OF TREATMENT USING DI-LINOLEOYL-MONO-GAMMA-LINOLENYL GLYCEROL

David F. Horrobin, Surrey, England, and Yung-Sheng Huang, Kentville, Canada, assignors to Efamol Holdings PLC, England

Division of Ser. No. 158,986, Nov. 30, 1993, Pat. No. 5,552,150, which is a division of Ser. No. 891,037, Jun. 1, 1992, Pat. No. 5,328,691. This application Feb. 14, 1996, Ser. No. 600,004
Claims priority, application United Kingdom, Jun. 3, 1991, 9111900
Int. Cl.[6] A61K *9/70;31/20;9/14;47/12*
U.S. Cl. 424—443 6 Claims

1. A method for treating atopic eczema, breast pain or premenstrual syndrome comprising administering to a person in need of same a composition containing at least 20% by weight di-linoleoyl-mono-gamma-linolenyl-glycerol.

5,614,209

MICRO-ENCAPSULATED LACTOBACILLI FOR MEDICAL APPLICATIONS

Larry C. Ford, Irvine, Calif., assignor to Lafor Laboratories Limited, Newport Beach, Calif.

Division of Ser. No. 459,058, Jun. 2, 1995, which is a continuation-in-part of Ser. No. 301,966, Sep. 7, 1994, Pat. No. 5,466,463, which is a continuation of Ser. No. 161,659, Dec. 3, 1993, abandoned. This application Mar. 13, 1996, Ser. No. 614,499

Int. Cl.[6] A61K *9/70;9/48;9/20;* A61L *15/16*

U.S. Cl. 424—443 17 Claims

1. A pharmaceutical composition comprising in a unit dose thereof at least approximately 10^3 viable lactobacilli bacteria, said bacteria being micro-encapsulated whereby the bacteria stay viable during storage of the composition, the substance providing the encapsulating coating for the bacteria being such that it releases bacteria upon prolonged exposure to moisture, or other causative factors, and

a pharmaceutically acceptable delivery vehicle for the micro-encapsulated bacteria, said delivery vehicle including a pharmaceutically acceptable excipient.

5,614,210

TRANSDERMAL DEVICE FOR THE DELIVERY OF ALFUZOSIN

Franz-Josef Braun, Borken, Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1995, Ser. No. 414,188

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 20 Claims

1. A transdermal delivery device comprising:

(A) a backing;

(B) an adhesive layer adhered to one surface of the backing and comprising a combination of

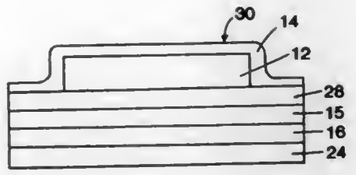
(1) a copolymer comprising

(a) one or more A monomers selected from the group consisting of alkyl acrylates containing 4 to 10 carbon atoms in the alkyl group and alkyl methacrylates containing 4 to 10 carbon atoms in the alkyl group; and

(b) one or more ethylenically unsaturated B monomers having a functional group selected from the group consisting of carboxylic acid, sulfonamide, urea, carbamate, carboxamide, hydroxy, amino, oxy, oxo, and cyano;

(2) alfuzosin in an amount effective as an a_1-adrenoreceptor antagonist; and

(3) a skin-penetration enhancing amount of a fatty compound selected from the group consisting of C_8–C_{22} fatty acids, 1 to 4 carbon alkyl esters of C_8–C_{22} fatty acids, and mixtures thereof.



to a rate-controlling extent, the oxybutynin flux or oxybutynin release rate from the device;

c) a backing on or adjacent the skin-distal surface of the reservoir; and

d) means for maintaining the reservoir in oxybutynin- and permeation enhancer mixture-transmitting relation with the skin on the skin-proximal surface of the tie layer.

5,614,212

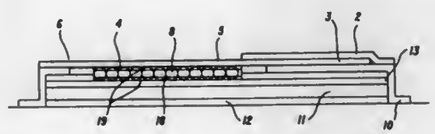
METHOD OF TRANSDERMALLY ADMINISTERING HIGH MOLECULAR WEIGHT DRUGS WITH A POLYMER SKIN ENHANCER

Joseph P. D'Angelo, and Henry Schur, both of Miami, Fla., assignors to International Medical Associates, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 865,309, Apr. 8, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 139,316

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 4 Claims



1. A chemical drug delivery system for the transdermal delivery of high molecular weight drug actives, comprising: a drug active having a molecular weight in the range from 500 to 6000 daltons encapsulated in an encapsulating polymer with a skin penetrant enhancer which is polyvinylpyrrolidone, said drug active being encapsulated in a microsphere between 0.001 μm and 0.9 μm in size.

5,614,211

OXYBUTYNIN TRANSDERMAL DEVICE HAVING DECREASED DELAMINATION

Robert M. Gale, Los Altos; Eun Soo Lee, Redwood City; Lina T. Taskovich, and Terry L. Burkoth, both of Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 315,043, Sep. 29, 1994. This application Jun. 7, 1995, Ser. No. 481,544

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 22 Claims

1. A device for the transdermal administration of oxybutynin at a therapeutically effective rate, comprising:

a) a non-aqueous reservoir comprising oxybutynin and a skin permeation-enhancing amount of a permeation enhancer mixture comprising a non-ionic surfactant and a cosolvent;

b) a non-rate controlling tie layer on the skin-proximal surface of the reservoir, said tie layer being formed from a material having low or negligible solubility for the non-ionic surfactant and oxybutynin and is sufficiently porous so as not to affect,

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5,614,213

USE OF ESTRIOL FOR TREATMENT OF CLIMACTERIC OSTEOPOROSIS

Walter Elger, Berlin; Birgitt Schneider; Michael Oettel, both of Jena; Michael Ernst, Jena/Lobeda Ost; Doris Hübler, Schmieden, and Michael Dittgen, Apolda, all of Germany, assignors to EnTec Gesellschaft fuer Endokrinologische Technologie m.b.H., Germany

PCT No. PCT/EP93/00636, § 371 Date Aug. 31, 1994, § 102(e) Date Aug. 31, 1994, PCT Pub. No. WO93/18774, PCT Pub. Date Sep. 30, 1993

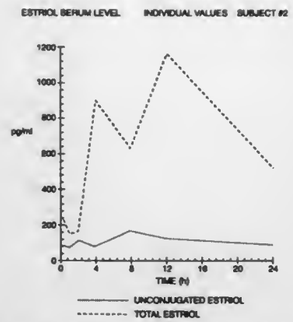
PCT Filed Mar. 18, 1993, Ser. No. 295,723

Claims priority, application Germany, Mar. 21, 1992, 42 09 295.7

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 4 Claims

1. A method of treating climacteric osteoporosis comprising continuously transdermally administering from 5 to 25 mg per day



of estriol as the sole active ingredient to a person in need of same for at least 24 hours.

5,614,214

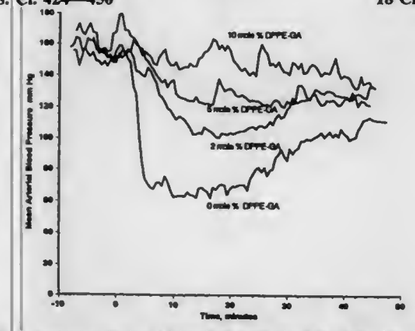
REDUCTION OF LIPOSOME-INDUCED ADVERSE PHYSIOLOGICAL REACTIONS

Patrick L. Ahl, Princeton; Suresh K. Bhatia, Plainsboro; Sharma R. Minchey, Monmouth Junction, all of N.J., and Andrew S. Janoff, Yardley, Pa., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 207,651, Mar. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 65,928, May 21, 1993, abandoned. This application May 20, 1994, Ser. No. 247,053

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 18 Claims



1. A method reducing a blood pressure decrease associated with administration of a liposome to an animal which comprises incorporating a surface agent-modifying lipid which is a phosphatidylethanolamine conjugated to a dicarboxylic acid into a liposome such that the surface agent-modifying lipid comprises at least about 10 mole percent of the liposome's bilayer and administering the liposome to the animal, wherein the liposome has an average diameter of from about 200 nm to about 5000 nm.

5,614,215

COSMETIC COMPOSITION FOR THE SIMULTANEOUS TREATMENT OF THE SURFACE AND DEEP LAYERS OF THE SKIN, ITS USE

Alain Ribier, and Jean-Thierry Simonnet, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Dec. 30, 1994, Ser. No. 366,723

Claims priority, application France, Dec. 30, 1993, 93 15863

Int. Cl.[6] A61K *9/127;7/00*

U.S. Cl. 424—450 16 Claims

1. A cosmetic or dermatological composition for the simultaneous treatment of the layers of the stratum corneum and deep layers of the skin comprising a dispersion mixture of:

i) a first dispersion of lipid vesicles capable of entering said deep layers of the skin and containing at least one active substance capable of treating said deep layers; and

ii) a second dispersion of lipid vesicles capable of entering said layers of the stratum corneum of the skin and containing at least one active substance capable of treating these layers of the stratum corneum,

wherein when said active substance contained in said first dispersion and said active substance contained in said second dispersion provide different effects,

a) said vesicles of said first dispersion do not contain hydrogenated egg lecithin, cholesterol and dicetyl phosphate when said vesicles of said second dispersion contain soya lecithin, cholesterol and dicetyl phosphate, or

b) said vesicles of said first dispersion do not contain diglycerol oleate, cholesterol and dicetyl phosphate when said vesicles of the second dispersion contain triglyceryl cetyl ether, cholesterol and dicetyl phosphate,

and wherein said vesicles of said first dispersion ensure a distribution of N-(1-oxyl-2,2,6,6-tetramethyl-4-piperidyl)-N-dimethyl-N-hydroxyethylammonium iodide (ASL) in the stratum corneum $>1\times10^{-7}$ cm^2/s and in that said vesicles of said second dispersion ensure a distribution of ASL in the stratum corneum $<1\times10^{-7}$ cm^2/s.

5,614,216

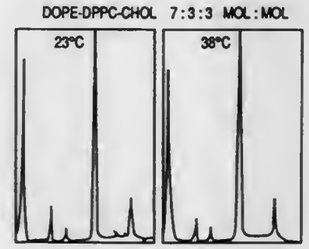
SYNTHETIC LUNG SURFACTANT

Andrew S. Janoff, Yardley, Pa., assignor to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 90,438, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 778,728, Oct. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 599,493, Oct. 17, 1990, abandoned. This application May 16, 1995, Ser. No. 442,079

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 5 Claims



1. A pharmaceutical composition comprising:

(a) a pharmaceutically acceptable carrier for administration to a mammal by inhalation, intubation or direct pulmonary administration; and,

(b) a surfactant comprising a lipid component which comprises:

(i) dipalmitoyl phosphatidylcholine (DPPC);

(ii) a phosphatidylethanolamine; and,

(iii) cholesterol,

wherein dipalmitoyl phosphatidylcholine and the phosphatidylethanolamine are in the surfactant in a ratio of 2–4 moles of dipalmitoyl phosphatidylcholine per 6 to 8 moles of the phosphatidylethanolamine, wherein cholesterol is in the surfactant in a ratio of 5–10 moles per 10 moles of dipalmitoyl phosphatidylcholine plus the phosphatidylethanolamine, wherein the phosphatidylethanolamine has both a lamellar phase and a hexagonal phase, wherein the phosphatidylethanolamine and DPPC are in a bilayer form at the temperature of administration to the mammal and wherein DPPC transforms at the temperature of the mammal's alveoli into a monolayer transitional phase.

5,614,217

CAPSULE SHELL FORMULATION TO PRODUCE BRITTLE CAPSULES

Timothy B. Chiprich; Michael T. Hoylman, both of St. Petersburg, and Norman S. Stroud, Safety Harbor, all of Fla., assignors to R.P. Scherer Corporation, Troy, Mich.

Filed Jun. 7, 1995, Ser. No. 482,775
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 23 Claims



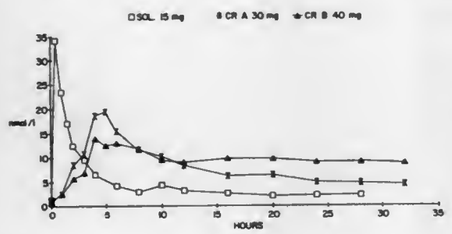
1. A humidity resistant gelatin capstile comprising:
a fill material;
a gelatin shell encapsulating the fill material; the gelatin capstile comprising about 30 to about 50% gelatin, about 5 to about 15% by weight water, about 15% to about 35% by weight maltitol syrup, and about 8% to about 30% by weight elasticity reducing gelatin extender.

5,614,218

CONTROLLED RELEASE PREPARATION

Birgitta Oisson, Stenhamra; Maritta A. Pesonen, Skärholmen, and Gert Ragnarsson, Bro, all of Sweden, assignors to Pharmacia & Upjohn Aktiebolag, Stockholm, Sweden

Filed Mar. 16, 1994, Ser. No. 213,518
Claims priority, application Sweden, Mar. 30, 1993, 9301057
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—456 13 Claims



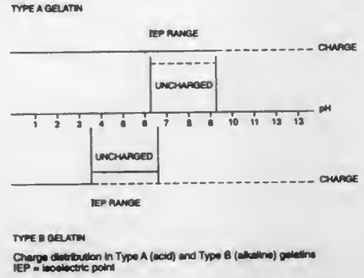
1. An oral controlled release pharmaceutical preparation in the form of a multiple unit hard gelatin capsule enclosing particles containing a therapeutically effective amount of a salt of morphine for administration once daily characterized in that it consists of at least 50 particles with a size in the range of 0.2 to 3 mm, each having a core containing a salt of morphine coated with a barrier layer containing at least one water insoluble component selected from the group consisting of ethyl cellulose, copolymers synthesized from acrylic acid esters and methacrylic acid esters, natural waxes, and synthetic waxes, providing a virtually pH-independent drug release within the pH range of 1.0 to 7.0 and in that the serum concentration of morphine obtained is at least 50% of the maximum serum concentration during at least 12 hours after the administration of a single dose of said preparation and providing at least about 80% of the bioavailability of said preparation.

5,614,219

ORAL ADMINISTRATION FORM FOR PEPTIDE PHARMACEUTICAL SUBSTANCES, IN PARTICULAR INSULIN

Jens-Christian Wunderlich, Heidelberg; Ursula Schick, Schriesheim; Jürgen Werry, Ludwigshafen, and Jürgen Freidenreich, Schriesheim, all of Germany, assignors to Alfatec-Pharma GmbH, Heidelberg, Germany

PCT No. PCT/DE92/01009, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO93/10767, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 4, 1992, Ser. No. 244,691
Claims priority, application Germany, Dec. 5, 1991, 41 40 186.7; Dec. 5, 1991, 41 40 195.6; Dec. 5, 1991, 41 40 178.6; Dec. 5, 1991, 41 40 177.8
Int. Cl.[6] A61K *9/24;9/26;9/28*
U.S. Cl. 424—472 13 Claims



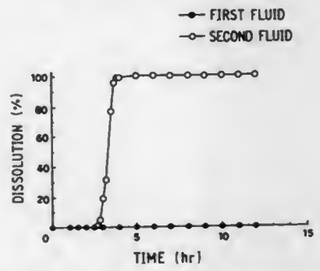
1. An oral administration form for peptide medicaments, containing at least one peptide pharmaceutical substance in a matrix of gelatin, fractionated gelatin or collagen hydrolyzate which dissolves under physiological conditions, in addition to pharmaceutically customary excipient and auxiliaries, the peptide pharmaceutical substance(s) present in colloidal or dissolved form possessing a charge and the molecules of the matrix-forming agent possessing an opposite charge wherein the gelatin has a molecular weight distribution whose maximum is at 10^4 to 10^7 D and wherein a layer construction is present.

5,614,220

PHARMACEUTICAL PREPARATION CONTROLLED TO RELEASE MEDICINAL ACTIVE INGREDIENT AT TARGETED SITE IN INTESTINAL TRACT

Yoshiyuki Hirakawa, Kobe; Hiroyuki Yoshino, Suita; Katsuji Uemura, Amagasaki; Eiji Fukui, Kakogawa, and Tami Hanamori, Kobe, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 9, 1995, Ser. No. 385,982
Claims priority, application Japan, Feb. 10, 1994, 6-016028
Int. Cl.[6] A61K *9/36*
U.S. Cl. 424—480 4 Claims



1. A pharmaceutical preparation for oral administration comprising
(a) a core containing a medicinal active ingredient,

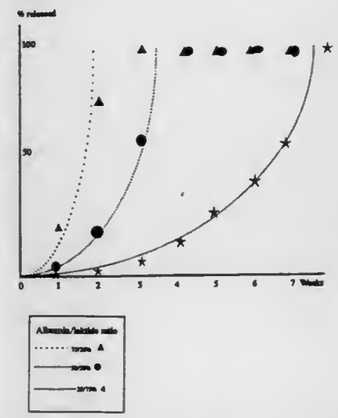
(b) a press-coated layer comprising hydroxypropylcellulose, said layer being provided around the core and
(c) a film comprising an enteric polymer, said film being provided around the press-coated layer, wherein a coating amount of the film (c) is 5 to 50% by weight based on a total weight of the core (a) and the press-coated layer (b), and a coating amount of the press-coated layer (b) is 150 to 600% by weight based on a weight of the core (a).

5,614,221

METHOD OF PREPARING A DRUG DELIVERY SYSTEM COMPRISING A DRUG AND A GEL USING A SYRINGE

Torsten Fjellström, Uppsala, Sweden, assignor to Medivent, Uppsala, Sweden

Continuation of Ser. No. 848,958, Apr. 23, 1992. This application Nov. 21, 1994, Ser. No. 344,707
Claims priority, application Sweden, Oct. 23, 1989, 8903503
Int. Cl.[6] A61K *9/10;47/36*
U.S. Cl. 424—488 7 Claims



1. A method of preparing a drug delivery system for parental injection of water insoluble or semi-soluble active ingredient(s), wherein one or more active ingredient(s) are brought together with a pseudoplastic polysaccharide gel in a vial, the combination is aspirated into a syringe provided with a cannula, the combination is ejected from the syringe into a container, and the aspirating procedure is repeated, under visual observation, until substantially all of the active ingredient(s) is/are incorporated into the pseudoplastic gel.

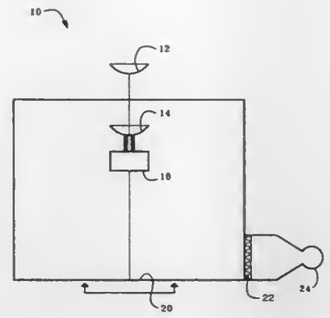
5,614,222

STABLE AQUEOUS DRUG SUSPENSIONS AND METHODS FOR PREPARATION THEREOF

Milton R. Kaplan, 1523 Hawks Meadow, San Antonio, Tex. 78248

Filed Oct. 25, 1994, Ser. No. 329,153
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 9 Claims

1. A method for producing drug delivery microcapsules having successive, systemic environment-activated release phases comprising the steps of:
selecting a microsphere core particle;
encapsulating said core particle in a first coating formed of a first coating material which first material, prior to dissolution, is liquid impervious, is water insoluble at a pH of less than about 5.5, but water soluble at a pH greater than 5.5; and



encapsulating said core particle and said first coating with a second coating formed of a second coating material which is water insoluble at neutral pH but soluble at a pH of less than 5.5.

5,614,223

INTRAORAL MEDICAMENT-RELEASING DEVICE

Tibor Sipos, Lebanon, N.J., assignor to Digestive Care Inc., Lebanon, N.J.

Continuation-in-part of Ser. No. 109,632, Aug. 20, 1993, Pat. No. 5,433,952, which is a continuation-in-part of Ser. No. 878,155, May 4, 1992, abandoned. This application Jul. 17, 1995, Ser. No. 503,202
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 23 Claims

1. A controlled rate-release device for attachment to teeth in the oral cavity capable of releasing a pharmaceutically active agent at a constant rate comprising:
(a) a plurality of discrete granules being in the particle size range of from about 850 to about 1,700 microns and consisting essentially of
(1) of from about 1 to about 84% w/w of a pharmaceutically active agent in finely divided power form imbedded in a solid non-erodable co-polymeric structure of
(2) 35 to about 15% w/w of 2-hydroxyethyl methacrylate/methyl methacrylate copolymer which comprises from about 40 to about 60 mole % of 2-hydroxyethyl methacrylate and from about 60 to about 40% mole of methyl methacrylate,
wherein in each of said granules said co-polymeric structure surrounds the finely divided particles of said pharmaceutically acceptable active agent, and wherein said granules are compressed into dosage forms in the shape of tablets, capsules, globules, half-football shapes, veneers or thick films and are coated with
(b) a non-erodable diffusion rate-controlling membrane consisting essentially of from about 20 to about 40 mole % of 2-hydroxyethyl methacrylate and from about 60 to about 80 mole % of methyl methacrylate.

5,614,224

NUTRITIONAL SUPPLEMENT FOR DIABETICS

Rick W. Womack, 9707 Richmond Ave., Suite 50, Houston, Tex. 77042

Filed Apr. 20, 1995, Ser. No. 425,582
Int. Cl.[6] A61K *31/195;33/24;* A23L *1/30*
U.S. Cl. 424—646 19 Claims

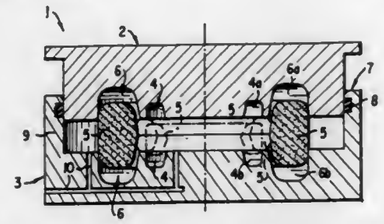
1. A daily nutritional supplement for improving glucose metabolism in diabetics comprising:
an effective amount of a source of chromium;
an effective amount of a source of vanadate; and
an effective amount of L-carnitine.

5,614,225

MOLDING APPARATUS FOR MAKING TOROIDAL MANUFACTURED ARTICLES FROM CLOSED-CELL, LOW-DENSITY, EXPANDED ELASTOMERIC MATERIAL

Alessandro Volpi, and Ivano Vismara, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Division of Ser. No. 138,211, Oct. 19, 1993, Pat. No. 5,417,898. This application Jan. 31, 1995, Ser. No. 381,155
Claims priority, application Italy, Oct. 19, 1992, MI92A2391
Int. Cl.[6] B29D *30/08*
U.S. Cl. 425—28.1 **3 Claims**



1. An apparatus for making toroidal manufactured articles from closed-cell, low-density, expanded elastomeric material comprising:

a first half-mold and a second half-mold mounted for relative movement toward and away from each other and movable between a closed position in which said molds are located close to each other for defining a semivulcanization cavity or chamber designed to accommodate a toroidal semifinished product made of elastomeric material, and an open condition in which they are spaced apart from each other for enabling the semifinished product to be introduced into and extracted from the semivulcanization chamber,

said apparatus further comprises:

a final vulcanization chamber larger than said semivulcanization chamber formed in the half-molds radially outwardly from the semivulcanization chamber and positioned to receive the semifinished product expanding from the semivulcanization chamber, when the half-molds are brought from the closed condition to a semiopen condition intermediate said open and closed conditions;

sealing means acting between the half-molds for hermetically isolating the semivulcanization and final vulcanization chambers from the surrounding environment when said half-molds are in the semiopen condition;

duct means formed in one of said half-molds and opening into one of said chambers for supplying the region between the half-molds with a pressurized fluid when said half-molds are brought to the semiopen condition.

5,614,226

AUTO-VENTING FOR POLYURETHANE FOAM

Gerry D. Kiefer, Ellisville, Mo., assignor to Atoma International Inc., Newmarket, Canada

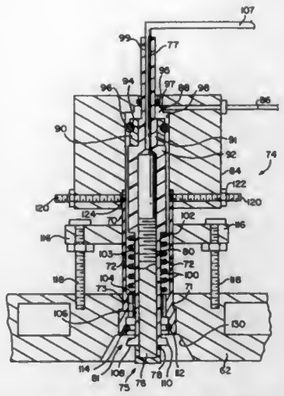
Division of Ser. No. 132,249, Oct. 6, 1993, Pat. No. 5,446,404. This application Apr. 3, 1995, Ser. No. 415,455
Int. Cl.[6] B29C *44/60*
U.S. Cl. 425—112 **11 Claims**

1. A device for molding a foam product comprising:

a plurality of mold portions cooperable to form a foam mold assembly defining a mold cavity therein, having at least one vent hole in an upper portion thereof, said mold cavity being capable of having an expandable foamable material provided therein during a filling cycle which is reactively expanded within said mold cavity so as to be molded into a shape of said mold cavity during a foaming cycle, said expandable foamable material approaching said vent hole while expanding within said mold cavity during said foaming cycle, said at least one vent hole providing a passage through which air and reaction product gases introduced into said mold cavity as a byproduct of said reactive expanding of said expandable foamable material can escape to atmosphere from said mold cavity during said foaming cycle;

a sensing and signal generating assembly comprising a capacitive sensor in communication with said expandable foamable material and constructed and arranged for detection of a change in a dielectric characteristic within the mold cavity at a distance to said at least one vent hole as a result of said expandable foamable material approaching said at least one vent hole and to generate a signal in response to said detection; and

a sealing mechanism cooperable with said at least one vent hole constructed and arranged to close said passage when said sensing and signal generating assembly generates said signal in response to said detection of said expandable foamable material at said distance to said at least one vent hole to prevent said expandable foamable material approaching said at least one vent hole from escaping said mold cavity through said passage.

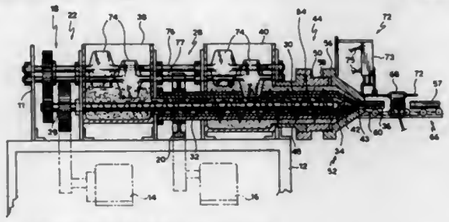


5,614,227

EXTRUSION APPARATUS

Harvey M. Yarbrough, Ringgold, Ga., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Feb. 8, 1995, Ser. No. 385,433
Int. Cl.[6] B29B *7/46;* **B29C** *47/06;47/48*
U.S. Cl. 425—133.1 **9 Claims**



1. An extrusion apparatus comprising:

an inner worm screw conveyor;

a hollow casing including a terminal end having a casing aperture therethrough, said casing concentrically surrounding a portion of said inner worm screw conveyor;

an outer worm screw conveyor concentrically surrounding said hollow casing;

a nozzle including a terminal end having a terminal opening therethrough, said terminal opening proximate said casing aperture, said nozzle concentrically surrounding a portion of said outer worm screw conveyor;

a first material-receiving bin in fluid communication with said inner conveyor; and

a second material-receiving bin in fluid communication with said outer conveyor;

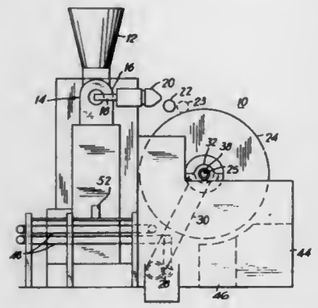
whereby said inner conveyor conveys one material through said casing aperture into another material conveyed by said outer conveyor through said terminal opening.

5,614,228

APPARATUS FOR PRODUCING A HEAT SET ARTICLE OF THERMOFORMED POLYETHYLENE TEREPHTHALATE

A. Edward Demerest, Middlesex, N.J., assignor to Therma-Plate Corporation, Piscataway, N.J.

Division of Ser. No. 165,370, Mar. 1, 1988, Pat. No. 5,106,567, which is a continuation of Ser. No. 802,540, Nov. 27, 1985, abandoned. This application Mar. 10, 1992, Ser. No. 849,283
Int. Cl.[6] B29C *51/00*
U.S. Cl. 425—326.1 **5 Claims**



1. Apparatus for producing an ovenable, shaped article of polyethylene terephthalate, which comprises

means for heating the polyethylene terephthalate to a temperature at which it is in a thermoformable plastic state;

means for forming the polyethylene terephthalate in its thermoformable plastic state into a sheet;

means for locally cooling a surface of said sheet of polyethylene terephthalate still in its thermoformable plastic state, thereby to form a skin on said surface while maintaining the sheet as a whole in the thermoformable plastic state;

means for forming polyethylene terephthalate material of said sheet into a shaped article while maintaining said material in said thermoformable plastic state;

means for additionally heating the polyethylene terephthalate after formation of said shaped article, while it is still in the thermoformable plastic state, to impart thereto a degree of crystallinity of at least about 20%; and

means for laterally and longitudinally tensioning the polyethylene terephthalate sheet containing said shaped articles after said sheet is removed from said forming means to prevent distortion during cooling.

5,614,229

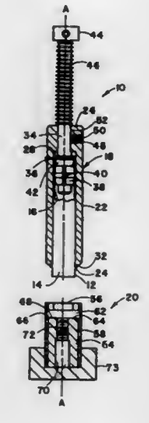
Patent Not Issued For This Number

5,614,230

APPARATUS FOR FORMING A CURL ON AN END OF A TUBULAR MEMBER

Jeffrey M. Weyenberg, Appleton; Allan J. Krueger, Winneconne, and Noel J. Rasmussen, Oshkosh, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 29, 1994, Ser. No. 366,074
Int. Cl.[6] B28B *21/92*
U.S. Cl. 425—393 **39 Claims**



1. An apparatus for forming a curl on a first end of a tubular member, comprising:

a) a first member capable of holding said tubular member and having a shoulder beyond which said first end of said tubular member extends;

b) a second member coaxially aligned with and engageable with said first end of said tubular member, said second member including a pilot sized to be inserted into said first end of said tubular member, a sleeve surrounding said pilot which cooperates with said shoulder when said second member engages said first end of said tubular member to form a curling chamber, and a curling element positioned between said pilot and said sleeve which is capable of contacting said first end of said tubular member; and

c) means for rotating one of said members and moving said members into engagement, said engagement causing said curling element to contact said first end of said tubular member and form a curl thereon within the confines of said curling chamber.

5,614,231

BACK-SIDE DIE AND DIE SET FOR MOLDED DOOR FACINGS

William E. Rinker, New Albany, Pa., assignor to Masonite Corporation, Chicago, Ill.

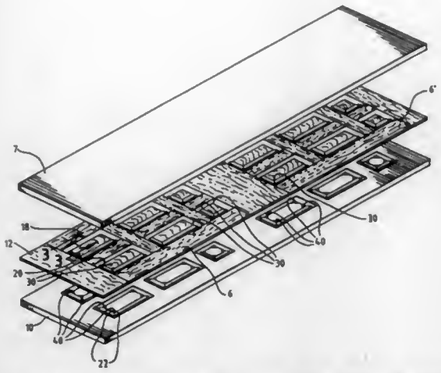
Filed Feb. 1, 1995, Ser. No. 382,390
Int. Cl.[6] B29C *43/36*
U.S. Cl. 425—394 **8 Claims**

1. A die set for a molded building product comprising:

a front-side die with a desired pattern for a face of the building product including a convex corner formed at the intersection of two surfaces slanting downward from a planar surface; and

a back-side die comprising:

two slanting surfaces corresponding to the slanting surfaces of the corner and each having upper and lower edges, the two upper edges extending along lines that intersect at an upper intersection point and the two lower edges extending along lines that intersect at a lower intersection point; and



a push extending between an outside corner offset outwardly from the lower intersection point and an apex offset above and inwardly of the upper intersection point.

5,614,232

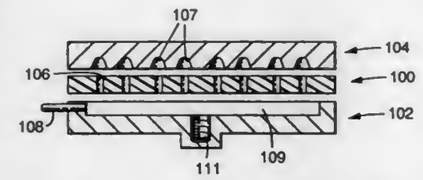
METHOD OF MAKING AN INTERENGAGING FASTENER MEMBER

Shinji Torigoe; Jiro Hattori, and Akimitsu Takagi, all of Kanagawa Pref, Japan, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Continuation of Ser. No. 415,087, Mar. 31, 1995, abandoned, which is a division of Ser. No. 75,756, Jun. 11, 1993, abandoned, which is a division of Ser. No. 880,052, May 7, 1992, Pat. No. 5,242,646. This application Feb. 28, 1996, Ser. No. 608,221

Int. Cl.[6] B29C *45/26*

U.S. Cl. 425—545 **7 Claims**



1. A mold for making a unitary plastic fastener member comprising a base and a plurality of stems arranged in columns and rows, each stem having a proximal end projecting from said base and a distal end having a head, the mold comprising:

(a) a base mold having a cavity adapted to mold the base of the fastener, said base mold having an inlet passageway communicating said cavity with an outer wall of said base mold and adapted for transfer of a molten plastic material to said cavity to form the base of the fastener member;

(b) a sacrificial stem mold adjacent said base mold and having a plurality of passageways arranged in columns and rows and in fluidic communication with said base mold cavity, said passageways adapted to receive said molten plastic material from said base mold cavity, and to mold the stems atop and projecting from the base; and

(c) a head mold having a plurality of cavities arranged in columns and rows and in fluidic communication with said sacrificial stem mold passageways, said head mold cavities adapted to receive said molten plastic material from said passageways of said sacrificial stem mold to mold the heads of the fastener member;

said base mold and head mold adapted for separation from said sacrificial stem mold and plastic fastener member to enable release of the fastener member from said sacrificial stem mold without damage thereto.

5,614,233

INJECTION MOLDING NOZZLE WITH PRESSED IN HEATING ELEMENT AND INTEGRAL COLLAR PORTION

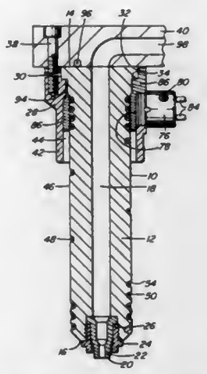
Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada

Filed Jul. 17, 1995, Ser. No. 502,922

Claims priority, application Canada, Jun. 26, 1995, 2152664

Int. Cl.[6] B29C *45/20*

U.S. Cl. 425—549 **5 Claims**



1. In an integral heated injection molding nozzle having an elongated inner core portion with a rear end, a front end, a melt bore extending therethrough from the rear end, a cylindrical outer surface, and a head at the rear end which extends outwardly past the outer surface, an outer collar portion encircling the inner core portion adjacent the rear end, the outer collar portion having a shoulder against which the head of the inner core portion abuts, and an electrical heating element with a lead portion extending outwardly through the outer collar portion and a helical portion with an outer surface wound in a spiral groove in the cylindrical outer surface of the inner core portion, the groove having an inner surface with a semicircular base, the improvement comprising the combination of;

(a) the helical portion of the heating element being sufficiently deformed by being press fitted into the groove to ensure substantially continuous contact between the inner surface of the groove and the outer surface of the helical portion of the heating element, and

(b) the outer collar portion being secured in place around the inner core portion by thermosetting ceramic sealant applied between the inner core portion and the surrounding outer collar portion.

5,614,234

TOTAL CHEWING GUM MANUFACTURE USING HIGH EFFICIENCY CONTINUOUS MIXING

Joo H. Song, Northbrook; Christafor E. Sundstrom, Glen Ellyn; David W. Record, River Forest; Donald J. Townsend, Chicago; Kevin B. Broderick, Berwyn, and Philip G. Schnell, Downers Grove, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 362,254, Dec. 22, 1994, Pat. No. 5,543,160, which is a continuation-in-part of Ser. No. 305,363, Sep. 13, 1994, abandoned. This application Sep. 12, 1995, Ser. No. 526,888

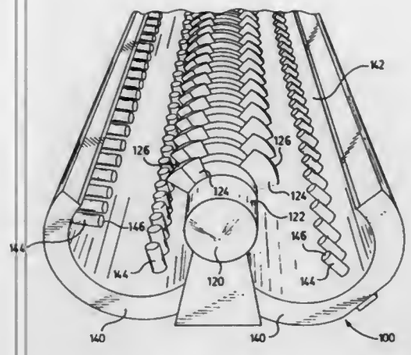
Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—5 **19 Claims**

1. A method of continuously manufacturing chewing gum in a mixer including at least two mixing zones comprising the steps of:

a) adding gum base to a high efficiency continuous mixer;

b) adding at least one sweetener and at least one flavor into the continuous mixer;



c) adding glycerin to the mixer wherein at least some of the glycerin is added upstream of the final mixing zone of the mixer; and

d) mixing the ingredients to form a chewing gum product.

5,614,235

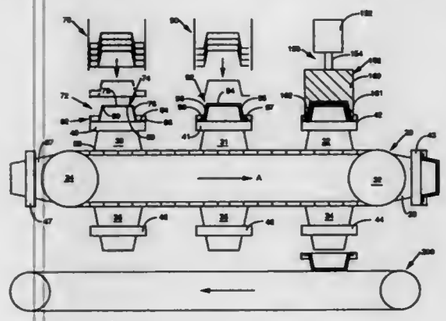
METHOD OF MAKING A FOOD PACKAGE HAVING A JACKET PARTIALLY SURROUNDING IT

Paul W. Gics, Sewickley Heights, Pa., assignor to Gics & Vermee, L.P., Sewickley Heights, Pa.

Continuation-in-part of Ser. No. 298,527, Aug. 30, 1994, Pat. No. 5,492,703. This application Nov. 16, 1994, Ser. No. 340,765

Int. Cl.[6] A22C *17/10;* **B65B** *41/18*

U.S. Cl. 426—87 **11 Claims**



1. A method of making a food package comprising:

providing a food package tray having a base and a sidewall extending from said base, said base having an outer surface and an inner surface opposite said outer surface;

providing a food package jacket having a bottom flap and at least one side flap extending from said bottom flap;

placing said food package tray on support means such that said inner surface contacts at least a portion of said support means;

placing said food package jacket on said food package tray such that said food package jacket partially surrounds said food package tray; and

securing said food package jacket to said food package tray to make said food package.

5,614,236

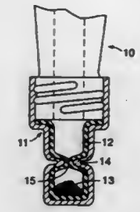
BOTTLE CLOSURE FOR COLLECTING AND TRAPPING SEDIMENT

Albert Klang, 589 Lefferts Ave., Brooklyn, N.Y. 11203

Continuation-in-part of Ser. No. 418,811, Apr. 7, 1995, abandoned. This application May 30, 1996, Ser. No. 655,380

Int. Cl.[6] C12H *1/22*

U.S. Cl. 426—112 **9 Claims**



1. A bottle closure for collecting and removing solid sediment particles from a liquid being fermented in situ to form an alcoholic beverage in a bottle having a neck which defines a neck opening bounded by an inner surface of said neck and terminates in an annular sealing surface surrounding said neck opening, said closure comprising:

a skirt portion having an open bottom end and a top end and being adapted to be removably fastened to the bottle neck in exteriorly surrounding relation thereto, said skirt portion terminating at said top end thereof in an inwardly directed annular flange having a radial width approximately corresponding to the radial width of said sealing surface of the bottle neck and defining a central opening generally corresponding in size to said neck opening of the bottle;

a trap portion extending upwardly from said inwardly directed annular flange of said skirt portion and having a tubular portion with an inner surface, a closed top end, and an open bottom end communicating with said central opening in said inwardly directed annular flange of said skirt portion, said tubular portion of said trap portion being adapted to be transversely crimped inwardly at a location between its top and bottom ends; and

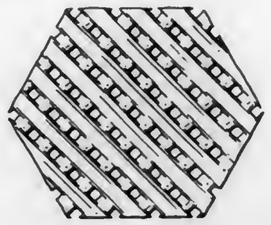
a liquid-tight and gas-tight liner of sealing material located within said trap portion, said liner having a tubular portion with an inner surface which is concentric with said inner surface of said tubular portion of said trap portion, a closed top end which underlies said closed top end of said trap portion, and an open bottom end bounded by an outwardly directed annular flange which underlies said inwardly directed annular flange of said skirt portion, said outwardly directed annular flange of said liner being adapted to be pressed by said inwardly directed annular flange of said skirt portion against said sealing surface of the bottle neck when said closure is fastened to the bottle neck;

whereby, when a bottle containing a fermenting liquid and sealed by said closure is stored in an upside down position, said inner surface of said tubular portion of said liner and said inner surface of said bottle neck constitute an essentially continuous passageway which is unobstructed by any transverse surface, and sediment particles are able to pass through said passageway without encountering any obstructing surface so as to enter freely and accumulate in the closed end region of said trap portion, and said sediment particles ultimately become trapped in said closed end region of said trap portion when said tubular portion of said trap portion is transversely crimped inwardly to an extent sufficient to cause the simultaneously crimped section of said tubular portion of said liner to form a liquid-impervious and gas-impervious seal across the interior of said trap portion, thereby precluding return of the sediment particles into the liquid in the bottle when the latter is returned to an upright position preparatory to said closure being removed from the bottle for dispensing of the finished alcoholic beverage.

5,614,237
APPARATUS AND METHOD FOR MAKING LATTICE BAKED FOOD PRODUCTS

Andrew E. C. Clow, High Wycombe; Brian D. Hill, Sutton Coldfield, and Debra Rycraft, Thames Ditton, all of United Kingdom, assignors to United Biscuits (UK) Limited, Middlesex, United Kingdom

Filed Dec. 23, 1994, Ser. No. 363,696
Claims priority, application United Kingdom, Jun. 10, 1994, 9411664
Int. Cl.[6] A21C *11/04*
U.S. Cl. 426—144 **33 Claims**



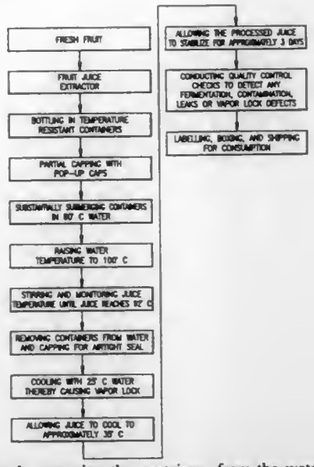
1. A process for producing baked food products, which comprises:
forming a flat sheet of dough;
feeding the flat sheet to a nip between a pair of contra-rotating rollers arranged with their curved surfaces in contact with each other, each of the rollers having grooves indented in its curved surface, and wherein the rollers push the dough into the grooves and form the dough into a lattice comprising an array of ridges imparted to the dough by one of the rollers, which ridges are spaced apart from each other and substantially all of which extend in substantially the same as each other, and an array of ridges imparted to the dough by the other roller, which ridges are spaced apart from each other and substantially all of which extend in substantially the same direction as each other, the direction in which the ridges of one array extend being at an angle to that of the other array so that the ridges of one array intersect the ridges of the other, and the contacting portions of the curved surfaces of the rollers provide apertures in the dough between the intersecting ridges;
cutting portions from the dough lattice; and
baking the portions to provide food products having a lattice configuration.

5,614,238
PROCESS FOR THE NATURAL ASEPTIC PACKAGING OF JUICES FOR EXTENDING SHELF LIFE WITHOUT REFRIGERATION

Alejandro Mendez, 8260 NW. 58 St., Miami, Fla. 33166

Filed May 16, 1995, Ser. No. 442,188
Int. Cl.[6] A23B *7/005*
U.S. Cl. 426—397 **6 Claims**

1. A thermal preservation process for the aseptic packaging of 100 percent natural fruit juice, fruit juice blends, and fruit pulp products resulting in a packaged product having an extended shelf life of up to three years without refrigeration, including the steps of:
extracting a juice or pulp product using a juice extractor;
immediately bottling the extracted product into temperature-resistant containers capable of withstanding temperatures up to 100° C.;
partially capping said containers with a commercial pop-up cap;
substantially submerging the containers in a tank containing a water bath;
raising the temperature of the water in the tank to 100° C.;
monitoring the product temperature and agitating the product until the product reaches 92° C.;

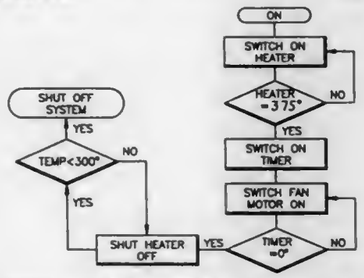


immediately removing the containers from the water bath once the product temperature reaches 92° C.;
completing the capping procedure such that the individual product containers are sealed in an airtight manner;
immediately cooling down the individual containers with a rinse of water at room temperature, thereby causing a vapor lock inside the individual containers caused by the volumetric contraction of the enclosed vapor during cooling, and also preventing overheating;
allowing the product inside the containers to cool down to approximately 35° C.;
allowing the processed product to stabilize for three days during which quality control checks detect any fermentation, contamination, leaks, or other defects with the vapor lock that has been created;
labeling, boxing, and shipping the containers for consumption.

5,614,239
METHOD OF PUFFING PELLETIZED FOODSTUFFS

Jon D. Tedesco, 231 Marketplace #246, San Ramon, Calif. 94583

Division of Ser. No. 231,158, Apr. 22, 1994, Pat. No. 5,481,962. This application May 18, 1995, Ser. No. 443,465
Int. Cl.[6] A23L *1/18*
U.S. Cl. 426—445 **10 Claims**

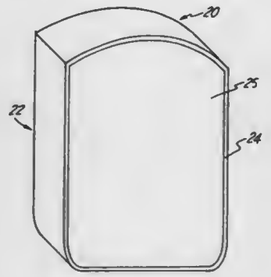


1. A method for puffing foodstuff pellets, comprising the steps of:
introducing a predetermined quantity of pellets into a puffing chamber;
radiantly heating the pellets in said chamber to cause thereby a rapid rise in chamber temperature to a predetermined temperature sufficient for puffing;
after the chamber temperature has reached said predetermined temperature, creating and maintaining a pellet fluidizing flow of air within said chamber sufficient to agitate, move and suspend said pellets within said chamber while maintaining chamber temperature at said predetermined puffing temperature, causing thereby uniform puffing of said pellets;
discontinuing the radiant heating after puffing of said pellets; and subsequently
discontinuing the pellet fluidizing flow of air.

5,614,240
METHOD OF PRODUCING A BAKED PRODUCT HAVING A SLICED APPEARANCE

Robert Y. Young, Golden Valley, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Jun. 6, 1995, Ser. No. 469,076
Int. Cl.[6] A21D *8/06*
U.S. Cl. 426—505 **1 Claim**



1. A method for producing a baked product comprising:
providing a baking container comprising a narrow, closed bottom, two opposing, upright, wide sidewalls, two opposing, upright, narrow sidewalls, and a narrow open end at the top of the sidewalls, said container sidewalls being dimensioned to produce a baked product when batter is cooked in the container having a shape that includes two broad substantially flat faces and narrow side edges with said broad flat faces corresponding to said opposing wide sidewalls and said narrow side edges corresponding to said opposing narrow sidewalls and closed bottom;
positioning a liner made of paper into the baking container to fit an interior shape of the container and line the container;
adding a batter of quick bread or cake to the lined container; and
baking the batter within the lined container; said being not more than about 20 minutes and said container being dimensioned so that the narrow side edges of said batter are heated faster than the broad flat faces to produce a baked product whose narrow side edge are darker than the broad faces so that the side edges appear to be a crust and the broad flat faces appear to be exposed slice faces such that the baked product has the appearance and dimensions of a sliced piece of cake or bread that has been sliced from a larger loaf.

5,614,241
LOW PH ANTIMICROBIAL FOOD COMPOSITION

Woodrow C. Monte, 6411 S. River Dr., #65, Tempe, Ariz. 85283

Continuation-in-part of Ser. No. 387,119, Feb. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 58,226, May 10, 1993, Pat. No. 5,389,391. This application Jun. 7, 1995, Ser. No. 475,552
Int. Cl.[6] A23L *1/0524*
U.S. Cl. 426—532 **13 Claims**

1. A method for preparing a sterile food composition for ingestion along the digestive tract of a patient, said method including the steps of
(a) preparing a powder food composition by blending together
(i) from 6% to 28% by weight of water soluble protein;
(ii) from 4% to 22% by weight of triglycerides of predominantly 6 to 26 carbon atoms in the fatty acid chain;
(iii) from 35% to 78% by weight of carbohydrates selected from the group consisting of corn syrup solids, trisaccharides, tetrasaccharides, pentasaccharides, hexasaccharides, dextrose, fructose, sucrose, maltose, oligosaccharides and higher saccharides;
(iv) from 0.1% to 10% by weight of an emulsifier;
(v) from 0.1% to 8% by weight of an edible acid for adjusting the pH of the food composition within the range of 2 to about 4.9 when said food composition is hydrated;
(vi) from 0.01% to 6% by weight of an antimicrobial agent selected from the group consisting of sorbic acid, benzoic acid, sodium benzoate, potassium sorbate, sodium sorbate, and potassium benzoate; and,
(v) from 1% to 5.0% by weight of a pectic substance, said pectic substance preventing the precipitation of said protein when said food composition is hydrated to form a drink and is sterilized to kill substantially all microorganisms in the drink;
(b) mixing said powder food composition with water to form an aqueous food solution;
(c) heating said aqueous food solution to a sterilization temperature of at least about two hundred degrees Fahrenheit for a time sufficient to kill substantially all microorganisms in said food solution; and,
(d) cooling said sterilized food solution.

5,614,242
FOOD INGREDIENTS DERIVED FROM VISCOUS BARLEY GRAIN AND THE PROCESS OF MAKING

Gregory J. Fox, Fargo, N. Dak., assignor to Barkley Seed, Inc., Yuma, Ariz.

Filed Sep. 27, 1995, Ser. No. 534,368
Int. Cl.[6] A21D *2/38*; A23L *1/05*
U.S. Cl. 426—549 **13 Claims**

1. A method of producing high viscosity waxy hulless barley flour fractions with beta glucan viscosity between about 100 to about 3000 cps, and a concentration of long chained beta glucan fibers ranging from about 1.0×10^6 to about 1.0×10^9/ml of a 5% aqueous flour suspension, the method comprising the following steps:
selecting barley grain having a waxy hulless genotype and beta glucan viscosity greater than about 15 cps and long chained beta glucan concentration greater than about 1.0×10^5/ml of a 5% aqueous flour suspension;
milling said grain in such a manner to approximate the grind of a mill fitted with a 0.5 mm screen to generate a coarse barley flour;
screening the coarse barley flour over approximately a U.S. Sieve Number 40 mesh screen to remove the coarse bran fraction;
collecting the particles passing the approximately U.S. Sieve Number 40 mesh screen as a barley flour fraction;
classifying the barley flour fraction using mesh screens that range from about U.S. Sieve Number 60 to about U.S. Sieve Number 200;
analyzing resultant flour fractions for beta glucan viscosity, insuring that measured values range from about 100 to about 3000 cps;
analyzing the resultant flour fractions for long chained beta glucan concentration, insuring that measured values range from about 1.0×10^6 to about 1.0×10^9/ml of a 5% aqueous flour suspension;
selecting high viscosity flour fractions for final flour formulation.

5,614,243

STARCH-BASED TEXTURIZING AGENTS AND METHOD OF MANUFACTURE

John M. Dunn, Sioux City, Iowa, and Eugene T. Finocchiaro, Milton, Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 220,296, Mar. 31, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,492

Int. Cl.[6] A23L *1/0522*

U.S. Cl. 426—578 31 Claims

1. A method for preparing a starch-based texturizing agent containing an insoluble microparticle and a gum in the form of in the form of a complex in which the insoluble microparticle is incorporated into a starch/gum matrix, comprising the steps of:

a) heating a slurry of high amylose starch in an acidic aqueous medium at a temperature, pressure and time sufficient to substantially disrupt starch granules, to produce a solubilized starch solution;

b) filtering the solubilized starch solution to remove impurities; and

c) adding an insoluble microparticle and a gum to the filtered starch solution under agitating conditions, thereby producing a starch-based texturizing agent in the form of a complex in which the insoluble microparticle is incorporated into a starch matrix.

5,614,244

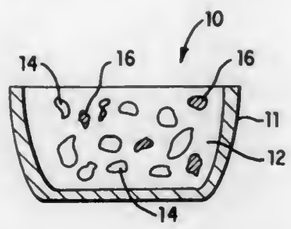
EGG AND CHEESE FOOD AND METHOD OF MAKING SAME

Joseph T. Heick, Syracuse; Peter E. Case, Cato, and Dhyaneshwar B. Chawan, Liverpool, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Jun. 2, 1995, Ser. No. 460,820

Int. Cl.[6] A23B *5/06;19/09*

U.S. Cl. 426—582 26 Claims



1. An egg and cheese food comprising a continuous first phase comprising a cooked cheese-containing material comprising at least one member of the group consisting of process cheese and synthetic cheese, and a second phase of cooked discrete solid particles distributed throughout the first phase,

the discrete solid particles comprising pre-cooked pasteurized egg whites and, optionally, milk-containing material and, optionally, pre-cooked pasteurized egg yolks,

wherein about 20 to about 65 parts by weight of the food is the discrete solid particles and about 35 to about 85 parts by weight of the food is the continuous first phase, the food has a pH in the range from about 4.8 to about 7, and the food is edible without additional cooking, said egg and cheese food being storable at refrigerator temperature for at least about 3 months.

5,614,245

WATER-CONTINUOUS SPREAD

Bharat B. Gupta, Bath, and Stefan Kasapis, Putnoe, both of United Kingdom, assignors to St. Ivel Limited, London, United Kingdom

Filed Mar. 16, 1995, Ser. No. 405,544

Claims priority, application United Kingdom, Mar. 17, 1994, 9405235

Int. Cl.[6] A23D *7/015*

U.S. Cl. 426—602 22 Claims

1. A spread which is a water-continuous dispersion comprising a continuous aqueous phase and wherein the continuous aqueous phase comprises a gelling maltodextrin and an aggregate-forming proteinaceous gelling agent, and wherein substantially no gelatin is present, the components of the spread having been selected so that the spread has a ratio of plastic stress to maximum stress ($\sigma p/\sigma max$) in the range of 0.95 to 1 when measured at 5° C. when using compression analysis on cylindrical samples of 26 mm length and 26 mm diameter, compressed at a rate of 0.8 mm per second.

5,614,246

METHOD FOR MANUFACTURING A SENSOR ELECTRODE

Konrad Mund, Uttenreuth; J. Raghavendra Rao, Erlangen, and Armin Datz, Poxdorf, all of Germany, assignors to Pacesetter AB, Solna, Sweden

Filed Nov. 7, 1995, Ser. No. 554,767

Claims priority, application Germany, Nov. 10, 1994, 44 40 224.4

Int. Cl.[6] B05D *3/12;5/12*

U.S. Cl. 427—2.24 13 Claims

1. A method for manufacturing a working electrode for an implantable, electrochemical oxygen sensor, comprising the steps of:

providing an annular element of biocompatible, inert, electrically conductive metal;

providing a layer of a uniform mixture of an epoxy resin, a hardener and powdered vitreous carbon on said annular element; and

hardening said resin to produce an annular electrode having a working surface through which current flows which is covered by hardened resin with said vitreous carbon embedded therein.

5,614,247

APPARATUS FOR CHEMICAL VAPOR DEPOSITION OF ALUMINUM OXIDE

Steven G. Barbee, Dutchess County; Richard A. Conti, Westchester County; Alexander Kostenko; Narayana V. Sarma, both of Dutchess County; Donald L. Wilson, Orange County, all of N.Y.; Justin W. Wong, Chittenden County, Vt., and Steven P. Zuhoski, Dallas County, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1994, Ser. No. 316,303

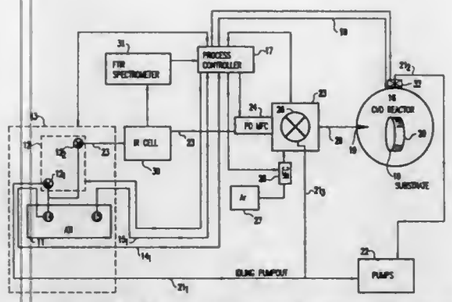
Int. Cl.[6] C23C *16/52*

U.S. Cl. 427—8 5 Claims

1. A method of depositing a dense aluminum oxide upon a substrate in a low pressure chemical vapor deposition system including a vacuum processing chamber having at least one gas injector nozzle for injection of gas into the chamber, a heated susceptor upon which is placed said substrate, and temperature controllable walls, said method comprising the steps of:

a) providing a source chemical vapor delivery system having a premix chamber connected to the processing chamber, the source chemical vapor delivery system generating and delivering an ATI chemical source vapor of aluminum triisopropoxide (ATI) from an ATI source material;

b) heating the ATI source material to a temperature sufficient to provide a flow of said ATI chemical source vapor;



c) controlling the flow of ATI chemical source vapor in the source chemical vapor delivery system;

d) maintaining a process pressure within the processing chamber and the source chemical vapor delivery system at a prescribed pressure;

e) monitoring a purity of the ATI chemical source vapor as the vapor is delivered and providing an indication of either a first chemical flow or a second chemical flow, wherein said first chemical flow has a higher purity than that of said second chemical flow;

f) monitoring the substrate temperature with a temperature sensor to provide an indication of the substrate temperature;

g) selectively delivering ATI chemical source vapor to a heated exhaust line of the source chemical vapor delivery system when the purity monitoring step indicates said second chemical flow or selectively delivering ATI chemical source vapor to the premix chamber of the source chemical vapor delivery system when said purity monitoring step indicates said first chemical flow and said temperature sensor indicates a substrate temperature within a prescribed process tolerance;

h) mixing a preheated inert gas with the flow of ATI chemical source vapor in the premix chamber of the source chemical vapor delivery system to produce a gas mixture, the flow of inert gas being mass flow controlled; and

i) injecting the gas mixture into the process chamber so that the ATI chemical source vapor reacts on the substrate to form an aluminum oxide film thereon.

5,614,248

METHOD FOR PLASMA-ASSISTED REACTIVE ELECTRON BEAM VAPORIZATION

Siegfried Schiller; Manfred Neumann; Volker Kirchhoff; Gerhard Zeissig, all of Dresden; Nicolas Schiller, Helmsdorf, and Klaus Goedicke, Dresden, all of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

PCT No. PCT/DE93/00748, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/10356, PCT Pub. Date May 11, 1994

PCT Filed Aug. 18, 1993, Ser. No. 424,418

Claims priority, application Germany, Oct. 27, 1992, 42 36 264.4

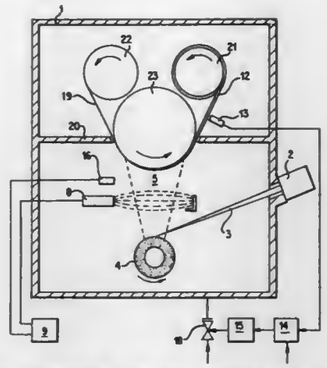
Int. Cl.[6] B05D *3/06;* H05H *1/02;* C23C *14/00*

U.S. Cl. 427—8 9 Claims

1. A method for coating a substrate with a layer having defined mechanical characteristics by plasma-assisted reactive electron beam vaporization producing a controllable plasma in a process zone between a vaporizing material and the substrate so as to deposit a coating layer on said substrate, and providing in situ measurement of optical characteristics of the coating layer deposited on the substrate, the method comprising the steps of:

experimentally determining a correlation between optical characteristics and mechanical characteristics of the coating layer;

measuring in a wavelength range Δ_λ=150 nm to 800 nm at least one of a reflection, transmission and absorption capacity of the coating layer on the substrate immediately after the substrate passes through a vaporizing zone;



separately determining from said measuring step a refractive index n and an optical absorption coefficient k;

deriving initial mechanical characteristics of the coating layer corresponding to said index n and said coefficient k;

comparing said derived initial mechanical characteristics with the defined mechanical characteristics to obtain a control signal; and

using the control signal to control operating parameters of the plasma in a case of a constant reactive gas partial pressure in such a manner that said measured optical characteristics of the coating layer are maintained constant to achieve the defined mechanical characteristics, and in a case of constant plasma parameters, using the control signal to control the reactive gas partial pressure in such a manner that the measured optical characteristics of the coating layer are kept constant to achieve the defined mechanical characteristics.

5,614,249

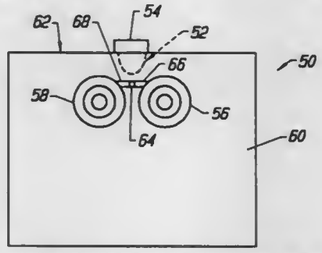
LEAK DETECTION SYSTEM FOR A GAS MANIFOLD OF A CHEMICAL VAPOR DEPOSITION APPARATUS

Mark L Mayeda, Las Vegas, Nev., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 28, 1995, Ser. No. 520,030

Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—8 19 Claims



11. A method for testing a seal of a chemical vapor deposition apparatus gas manifold for leaks, said seal comprising a pair of mutually engaging peripheral surfaces which surround a gas flow port through which a gas flow path extends, the method comprising the steps of:

providing a groove along at least one of said mutually engaging peripheral surfaces such that said groove extends so as to communicate with said gas flow port for facilitating flow of a test gas in said groove;

drawing a vacuum in said gas manifold;

providing a test gas in an area proximate said seal of the gas manifold; and

detecting the entrance of said test gas inside the gas flow path through said seal in order to determine the reliability of said seal.

5,614,250

COATED FILLER AND USE THEREOF

Carl E. Diener, Binghamton; Ashit A. Mehta, Vestal; Ralph S. Paonessa, Endwell; Eugene R. Skarvinko, Binghamton, and David W. Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 272,658, Jul. 11, 1994, abandoned, which is a continuation of Ser. No. 998,132, Dec. 29, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,143

Int. Cl.[6] B05D *3/02;5/12*

U.S. Cl. 427—96 13 Claims

1. A process for fabricating a layer having vias which comprises:

A. obtaining a composition containing a (1) fluorinated polymeric material; (2) a silica filler wherein said filler is coated with a fluorosilane having groups that are reactive with groups on said filler, wherein said reactive groups are chloro or alkoxy groups or mixtures thereof

wherein said filler has a mean particle size of no greater than about 7 μm; and

wherein the amount of fluorinated polymeric material is about 50 to about 90 weight percent, and the amount of filler is about 50 to about 10 weight percent; based upon the total of fluorinated polymeric material and filler; and

a polyimide in an amount effective for enhancing laser drillability;

B. applying said composition to a substrate; and then

C. heating the composition to a temperature of about 350° C. to about 400° C.; and then

D. forming vias in said layer by laser drilling.

5,614,251

METHOD AND LIQUID COATING COMPOSITION FOR THE FORMATION OF SILICA-BASED COATING FILM ON SUBSTRATE SURFACE

Yoshinori Sakamoto, Kanagawa-ken; Yoshio Hagiwara, Tokyo-to; Hatsuyuki Tanaka, and Toshimasa Nakayama, both of Kanagawa-ken, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Division of Ser. No. 307,063, Sep. 16, 1994, Pat. No. 5,496,402. This application Nov. 29, 1995, Ser. No. 564,710

Claims priority, application Japan, Sep. 30, 1993, 5-244052

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—96 3 Claims

1. A method for the formation of a silica-based coating film on a substrate surface by using a liquid coating composition which comprises the steps of:

(1) coating the substrate surface with a liquid coating composition comprising, as a solution:

(A) a partial cohydrolysis-cocondensation product of

(a) a first hydrolyzable silane compound represented by the general formula

$HSi(OR)_3$

in which each R is, independently from the others, an alkyl group having 1 to 4 carbon atoms or a phenyl group, and

(b) a second hydrolyzable silane compound represented by the general formula

$Si(OR)_4$

in which each R has the same meaning as defined above, in a molar ratio of (a):(b) in the range from 1:9 to 9:1; and

(B) an organic solvent which is a combination of an alkyleneglycol dialkyl ether and an alcohol as the hydrolysis product of the first and second hydrolyzable silane compounds, the amount of the alcohol not exceeding 15% by weight of the composition to dissolve the component (A), to form a coating film on the substrate surface;

(2) drying the coating film on the substrate surface; and

(3) subjecting the dried coating film on the substrate surface to a baking treatment at a temperature in the range from 350° to 500° C.

5,614,252

METHOD OF FABRICATING BARIUM STRONTIUM TITANATE

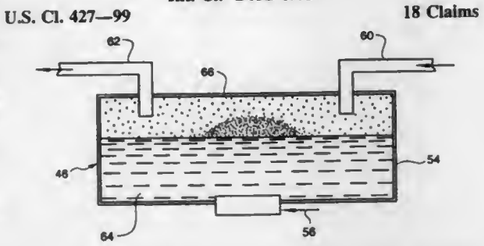
Larry D. McMillan, and Carlos A. Paz de Araujo, both of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 993,380, Dec. 18, 1992, Pat. No. 5,456,945, which is a continuation-in-part of Ser. No. 660,428, Feb. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 690,940, Jun. 17, 1991, Pat. No. 5,138,520, which is a continuation-in-part of Ser. No. 290,468, Dec. 27, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 478,398

The portion of the term of this patent subsequent to Dec. 18, 2012, has been disclaimed.

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—99 18 Claims



1. A method of fabricating a thin film of barium strontium titanate, said method comprising the steps of:

(a) providing a liquid precursor including barium, strontium, and titanium in effective amounts for forming barium strontium titanate;

(b) placing a substrate inside an enclosed deposition chamber;

(c) producing a mist of said liquid precursor;

(d) flowing said mist through said deposition chamber to form a layer of the precursor liquid on said substrate; and

(e) treating the liquid layer deposited on said substrate to form a solid film of said barium strontium titanate.

5,614,253

PLASTIC OPTICAL FIBER PREFORM, AND PROCESS AND APPARATUS FOR PRODUCING THE SAME

Tsuyoshi Nonaka; Toshifumi Hosoya; Yuji Kobayashi, and Yasuo Matsuda, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

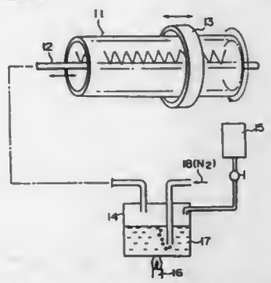
PCT No. PCT/JP94/00963, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/29758, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 14, 1994, Ser. No. 381,875

Claims priority, application Japan, Jun. 16, 1993, 5-144678; Jun. 18, 1993, 5-147278; Jun. 23, 1993, 5-151776; Feb. 22, 1994, 6-024137; Feb. 25, 1994, 6-027743

Int. Cl.[6] C03C *17/32;* B05D *5/06*

U.S. Cl. 427—163.2 15 Claims



1. A process for producing a preform for a plastic optical fiber having a refractive index distribution in which the refractive index is gradually radially decreased from a center of the preform toward an outer periphery thereof, by depositing a deposition layer comprising a polymer A having a refractive index of N_a and a refractive index modifier having a refractive index different from that of the polymer A onto an inner surface of a hollow cylindrical member rotating about an axis thereof, by use of vapor-phase deposition based on a Chemical Vapor Deposition (CVD) process,

wherein a mixing ratio between the polymer A and the refractive index modifier for forming the deposition layer by said CVD process is changed to gradually increase the refractive index of the deposition layer from said outer periphery of said preform to said center of said preform.

5,614,254

METHOD OF SPRAYING POWDER ON A SUBSTRATE

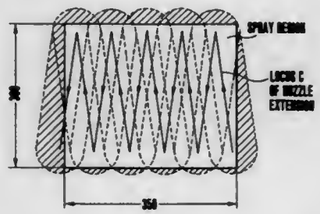
Hiroshi Murata; Kimio Miyagawa; Eiji Shinoda, all of Saitama-ken, and Hideo Moriyama, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., and Nisshin Engineering Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 969,365, Oct. 30, 1992, Pat. No. 5,332,133. This application Mar. 17, 1994, Ser. No. 214,300

Claims priority, application Japan, Nov. 1, 1991, 3-287879; Jun. 24, 1992, 4-166258

Int. Cl.[6] B05D *1/12;1/40;* B05B *3/00*

U.S. Cl. 427—180 10 Claims



1. A method of spraying a powder onto a substrate, comprising the steps of:

mounting the substrate in a fixed position;

mounting a spray nozzle such that an outlet end thereof confronts a surface of the substrate onto which powder is to be sprayed;

moving said spray nozzle such that said outlet end of said spray nozzle moves in a zig-zag motion; and

spraying the powder from said spray nozzle onto said surface of the substrate during said step of moving said spray nozzle.

5,614,255

METHOD FOR THE PREPARATION OF VITREOUS HOLLOW MICROSPHERES

Kunio Kimura; Hiroyuki Nakamura, both of Tosu; Yukiyoshi Tamoto, Ichihara; Junichi Kimoto, and Hiromi Okada, both of Mine, all of Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Japan

Filed Jul. 9, 1996, Ser. No. 678,062

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 11 Claims

1. A method for the preparation of vitreous hollow microspheres which comprises the steps of:

(a) dispersing particles of a vitreous volcanic deposit in an aqueous solution containing aluminum sulfate and urea in amounts in the range from 1 to 10% by weight and in the range from 50 to 300% by weight, respectively, based on the amount of the particles;

(b) subjecting the aqueous dispersion of the particles to a heat treatment at a temperature in the range from 50° to 100° C. for a length of time of at least 5 minutes;

(c) taking the particles out of the aqueous medium of the dispersion;

(d) washing the particles with water;

(e) drying the thus washed particles; and

(f) subjecting the thus dried particles to a heat treatment at a temperature in the range from 900° to 1100° C. for a length of time in the range from 1 second to 60 seconds to effect expansion of the particles.

5,614,256

COATING COMPOSITION FOR PRODUCING WATERTIGHT, VAPOR-PERMEABLE AND FLAME-RETARDANT COATINGS

Konrad A. Wierer, Sengkofen, Germany, and Franco Serafini, Lendelange, Luxembourg, assignors to Wacker-Chemie GmbH, Munich, Germany, and Dupont de Nemours Intl. S.A., Geneva, Switzerland

Continuation of Ser. No. 209,192, Mar. 10, 1994, abandoned, which is a division of Ser. No. 919,177, Jul. 23, 1992, Pat. No. 5,314,530. This application Aug. 22, 1995, Ser. No. 517,807

Claims priority, application Germany, Jul. 24, 1991, 41 24 560.1

Int. Cl.[6] B05D *3/12;3/02*

U.S. Cl. 427—244 15 Claims

1. A process for manufacturing a watertight, vapor permeable and flame-retardant coated support material consisting of the steps of

1) foaming by mechanical means into a stable foam, a coating composition comprised of:

A) an aqueous dispersion i) having a solids content of from 30 to 70% by weight of a vinyl chloride copolymer consisting essentially of 20 to 90% by weight of vinyl chloride, based on the total weight of the copolymer,

from 10 to 80% by weight, based on the total weight of the copolymer, of at least one comonomer selected from the group consisting of the (meth) acrylic esters of alcohols of from 1 to 10 carbon atoms, the vinyl esters of saturated aliphatic carboxylic acids of from 2 to 10 carbon atoms, and the α-olefins and

from 0 to 10% by weight, based on the total weight of the copolymer, of at least one ethylenically unsaturated functional comonomer selected from the group consisting of monocarboxylic acids, dicarboxylic acids, amides of monocarboxylic acids, amides of dicarboxylic acids, hydroxy functional monomers and sulfonate-functional monomers, or an aqueous dispersion ii) having a solids content of from 30 to 70% by weight of a vinyl acetate-ethylene copolymer consisting essentially of 10 to 40% by weight of ethylene, based on the total weight of the copolymer, and

from 0 to 10% by weight, based on the total weight of the copolymer, of at least one ethylenically unsaturated functional comonomer selected from the group consisting of monocarboxylic acids, amides of monocarboxylic acids, dicarboxylic acids, amides of dicarboxylic acids, hydroxy-functional monomers and sulfonate-functional monomers.

B) from 5 to 70% by weight based on the solids content of the aqueous dispersion A of the flameproofing agent selected from the group consisting of antimony oxides, phosphoric esters, zinc borates, metallic oxide hydrates, metal hydroxides and chloroparaffins,

C) from 0 to 20% by weight based on the solids content of the aqueous dispersion A, of a crosslinker,

D) from 0.5 to 20% by weight, based on the solids content of the aqueous dispersion A, of a foam stabilizer,

E) from 0 to 10% by weight, based on the solids content of the aqueous dispersion A, of a thickener,

2) applying the foam to form a foam layer on at least one side of a support material selected from the group consisting of woven, knitted and a nonwoven support material to form a

coated support material and drying the coated material at a temperature of from 60° to 180° C., and

3) after drying the coated support material, crushing the foam layer on at least one side of the coated support material by hot calendaring the coated support material under a nip pressure of from 2 to 300 daN/cm.

5,614,257

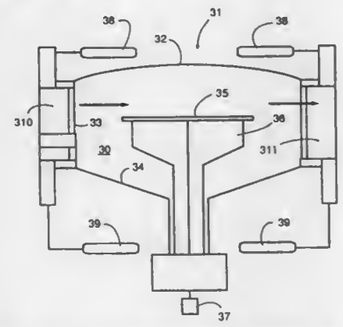
LOW TEMPERATURE, HIGH PRESSURE SILICON DEPOSITION METHOD

Israel Beinglass, Sunnyvale, and Mali Venkatesan, San Jose, both of Calif., assignors to Applied Materials, Inc, Santa Clara, Calif.

Continuation of Ser. No. 143,330, Oct. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,216, Jan. 6, 1993, abandoned, which is a continuation of Ser. No. 742,954, Aug. 9, 1991, abandoned. This application May 18, 1995, Ser. No. 444,146

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—248.1 **8 Claims**



1. A thermal chemical vapor deposition method of depositing amorphous silicon on a substrate which comprises:

a) loading a substrate into a single substrate chemical vapor deposition vacuum chamber fitted with means for temperature and pressure control;

b) controlling the temperature of deposition below about 600° C.;

c) adding a silane selected from the group consisting of monosilane and disilane as a silicon precursor gas to the chamber; and

d) maintaining a high pressure in the chamber of at least about 25 Torr until an amorphous silicon film is deposited on the substrate.

5,614,258

PROCESS OF DIAMOND GROWTH FROM C_{70}

Martin Moskovits, 145 Chiltern Hill Rd., Toronto, Ontario, Canada; Kejian Fu, Toronto, and Xijia Gu, North York, both of Canada, assignors to Martin Moskovits, Toronto, Canada

Filed Feb. 21, 1995, Ser. No. 391,705

Int. Cl.[6] B01J *3/06*

U.S. Cl. 427—249 **13 Claims**

7. A process for growing diamonds, comprising:

providing a plurality of diamond seed particles each having a volume;

providing a quantity of C_{70} powder and a reacting agent said C_{70} powder and said reacting agent being in flow communication with said diamond seed particles; and

heating said C_{70} powder to produce C_{70} in the vapour phase, and heating said reacting agent and said diamond seed particles under vacuum at a temperature of from about 500° C. to about 600° C. and for a period of time from about 18 days to about 60 days to cause an increase in the volume of at least some of said diamond seed particles.

5,614,259

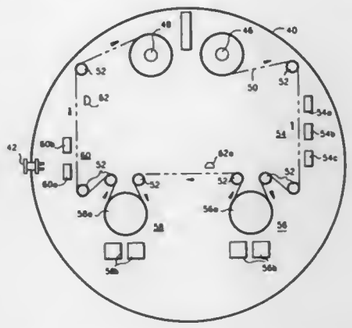
MICROWAVE INTERACTIVE SUSCEPTORS AND METHODS OF PRODUCING THE SAME

Peter Y. Yang, San Diego, and Graeme J. Fairlie, Alpine, both of Calif., assignors to Deposition Technologies, Inc., San Diego, Calif.

Filed Oct. 14, 1994, Ser. No. 324,164

Int. Cl.[6] H05B *6/80*

U.S. Cl. 427—255.1 **14 Claims**



1. A method of producing susceptors for use in the packaging and/or preparation of microwave food products comprising the steps of

providing a vacuum deposition chamber containing a first monomer deposit station, a first monomer curing station, a susceptor material deposition station, a second monomer deposit station and a second monomer curing station,

introducing into the vacuum chamber a substrate comprising a sheet or web of paper, paperboard or like fibrous material,

evacuating the chamber,

moving the substrate sequentially past the first monomer deposit station, the first monomer curing station, the susceptor material deposition station, the second monomer deposit station and the second monomer curing station within the chamber,

depositing a first thin film of a curable monomer onto the substrate to seal the fibrous surface of the substrate and form a smooth surfaced, uninterrupted, continuous layer of the monomer on the substrate, and curing the first film of monomer to polymerize the same,

depositing a continuous, uninterrupted thin film of a microwave interactive susceptor material of uniform thickness onto the polymerized first thin film,

depositing a continuous, uninterrupted second thin film of a curable monomer of uniform thickness onto the film of susceptor material and curing the second film of monomer to polymerize the same, and

removing the coated substrate from the chamber, the coated substrate comprising a microwave interactive susceptor consisting essentially of a fibrous material substrate, a thin, continuous, uninterrupted, smooth surfaced first polymer film polymerized onto the substrate, a thin uniform, uninterrupted, continuous film. Of microwave interactive material on the first polymer film, and a thin, uniform, uninterrupted, continuous second polymer film polymerized onto and covering the film of microwave interactive susceptor material.

5,614,260

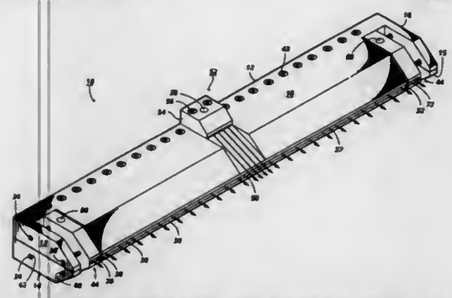
EXTRUSION SYSTEM WITH SLIDE DIES

John J. Darcy, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1995, Ser. No. 369,458

Int. Cl.[6] B05D *3/12;* **B05C** *3/18*

U.S. Cl. 427—277 **11 Claims**



1. A process for preparing an electrostatographic imaging member comprising applying to a surface of a support member at least one ribbon stream of a first coating composition side-by-side with at least one ribbon stream of a second coating composition comprising providing an extrusion die source for said ribbon stream of said first coating composition, providing a slide die source for said ribbon stream of said second coating composition, establishing relative movement between said surface of said support member and said source of said ribbon streams, simultaneously and continuously applying said ribbon streams to said surface of said support member to form a continuous unitary layer having a boundary between said side-by-side ribbon streams on said surface of said support member and drying said continuous unitary layer to form a dried coating of said first coating composition side-by-side with a dried coating of said second coating composition.

5,614,261

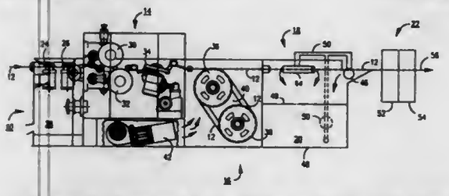
PREDRAWING TREATMENT SYSTEM

James F. Richards, Lyon, Mich., assignor to Wirelube Research Company, Lyon, Mich.

Filed Jun. 5, 1992, Ser. No. 894,654

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—318 **13 Claims**



1. A method of treating a continuous steel rod, said method comprising the steps of:

providing a tank containing a liquid borax solution;

continuously moving said steel rod relative to said tank;

during said step of continuously moving said rod relative to said tank, continuously applying said liquid borax solution to said continuous rod, and thereby forming a liquid film on said continuous rod; and

during said step of continuously moving said rod relative to said tank and prior to said step of applying said liquid borax solution to said rod, preheating said rod such that said liquid film is dried by residual heat from said rod, such that a dried coating is formed on said continuous rod from said liquid film, said coating facilitating size reduction of said rod by drawing; and

during said step of applying said liquid borax solution to said continuous rod, substantially continuously removing iron oxide and steel particles from said tank, and thereby conditioning said liquid borax solution; and

wherein said continuous rod is not handled, subsequent to the application of said liquid borax solution, until substantial drying of said liquid film occurs, to maintain the uniformity of said dried coating.

5,614,262

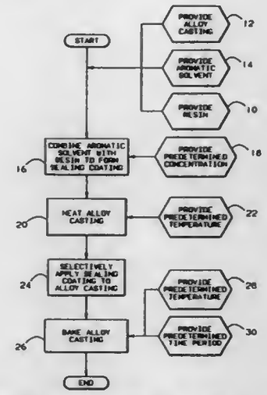
METHOD OF SEALING RESIN TO AN ALLOY CASTING

Leonard S. Joesten, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 2, 1994, Ser. No. 236,619

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—318 **23 Claims**



1. A method of sealing resin to an alloy casting using an aromatic solvent, comprising the steps of:

providing the alloy casting selected from the group consisting of magnesium, aluminum and iron;

providing the aromatic solvent selected from the group consisting of toluene and xylene;

providing a resin selected from the group consisting of phenolic and epoxy;

combining the aromatic solvent with the resin to form a sealing coating, the sealing coating having a concentration not greater than 20% by volume of resin to sealing coating;

heating the alloy casting to a temperature not less than 375 degrees Fahrenheit;

selectively spraying the sealing coating to the heated alloy casting; and

baking the heated alloy casting selectively sprayed with the sealing coating at a temperature not less than 300 degrees Fahrenheit for a time period not less than one hour.

5,614,263

HYDROPILLIC CHEMICALLY ADSORBED FILM AND METHOD OF MANUFACTURING THE SAME

Kazufumi Ogawa, Hirakata; Norihisa Mino, Settu, and Mamoru Soga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

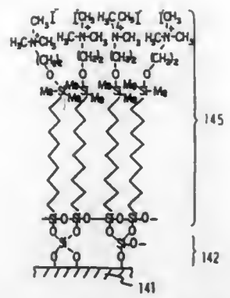
Division of Ser. No. 250,943, May 31, 1994, Pat. No. 5,466,523, which is a continuation of Ser. No. 872,836, Apr. 23, 1992, abandoned. This application May 17, 1995, Ser. No. 443,328

Claims priority, application Japan, Apr. 30, 1991, 3-098906; Apr. 30, 1991, 3-098918; Jun. 14, 1991, 3-143499

Int. Cl.[6] B05D *3/10*

U.S. Cl. 427—341 **10 Claims**

1. A method of manufacturing a hydrophilic chemically adsorbed film comprising:



A) contacting a substrate surface containing hydrophilic groups with a non-aqueous solution containing a surface active material having straight chain molecules, each said straight chain molecule having at a first end chlorosilyl groups, and, at a second end, at least one functional group selected from the group consisting of a bromo group, iodo group, cyano group, thiocyano group, chlorosilyl group and an organic group having an ester group to cause a dehydrochlorination reaction between hydrophilic groups on said substrate surface and the chlorosilyl groups of said surface active material, and then contacting the substrate with water, thereby forming a chemically adsorbed film on said substrate surface, and

B) converting the functional group at the second end of said surface active material into at least one hydrophilic group selected from the group consisting of —OH, —COOH, $—NH_2$, =NH, $—N^+R_3X^-$ (X representing a halogen atom, R represents C1–10 alkyl), $—NO_2$, —SH, and $—SO_3H$.

5,614,264

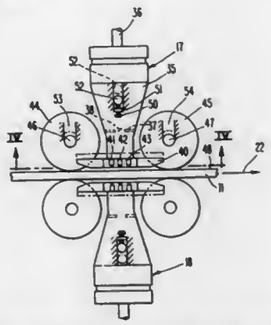
FLUID DELIVERY APPARATUS AND METHOD

Ricky A. Himes, Boalsburg, Pa., assignor to Atotech USA, Inc., State College, Pa.

Filed Aug. 11, 1995, Ser. No. 514,313

Int. Cl.[6] B05D 7/00

U.S. Cl. 427—424 **34 Claims**



18. A method of fluid treatment of articles being conveyed along a pre-determined generally longitudinal path, comprising the steps of conveying articles along a pre-determined longitudinal path from an upstream direction toward a downstream direction, and:

(a) providing a first fluid dispenser manifold arranged generally transverse to said generally longitudinal path;

(b) providing a second fluid dispenser manifold arranged generally transverse to said generally longitudinal path;

(c) disposing the first and second fluid dispenser manifolds generally opposite each other with the longitudinal article path therebetween;

(d) with said first and second fluid dispenser manifolds having respectively associated first and second multi-port fluid dispenser nozzle plates; disposing the nozzle plates generally transverse of and adjacent to the path, with one nozzle plate on each side of path terminating in a nozzle plate surface nearest said path;

(e) with at least one of the first and second nozzle plates having at least one generally transverse row of nozzle openings for dispensing fluid; dispensing fluid from an associated said manifold therethrough the openings thereof, into contact with articles being conveyed along the predetermined path;

(f) providing transverse groove means extending transverse of said longitudinal path along said nozzle plate surface and connecting the nozzle openings in said nozzle plate surface nearest said path via said groove means; and

(g) providing transversely extending screen-like fluid flow from said nozzle openings via the transverse groove means.

5,614,265

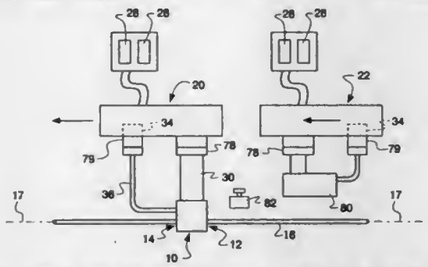
IN-LINE COATING OF STEEL TUBING

Manzoor A. Chaudhry, Bensalem, Pa.; Jeffrey L. Lamber, Richton Park, Ill.; Bruce E. Laumann, Crown Point, Ind.; Edward E. Mild, Frankfort; Brian G. Mulck, Country Club Hills, both of Ill.; Stephen T. Norvilas, Doylestown; David S. Pliner, Huntingdon Valley, both of Pa., and Stephen E. Seilheimer, Homewood, Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Continuation-in-part of Ser. No. 243,583, May 16, 1994, Pat. No. 5,453,302. This application Feb. 14, 1995, Ser. No. 388,972

Int. Cl.[6] B05D 1/18

U.S. Cl. 427—430.1 **28 Claims**



1. Coating apparatus for applying a coating to a length of horizontally oriented metal tubing moving along a linear path concentric with said tubing, said linear path defining a vertical plane, said apparatus comprising:

a coating chamber defining a vertical central axis for applying said coating to said tubing while said tubing is being passed through said chamber along said linear path, said coating chamber comprising an exit port and an entry port through which said tubing passes, a vacuum port for outflow of air from said chamber and a liquid supply port for inflow of liquid coating material;

a reservoir of coating material;

a supply line for carrying coating material from said reservoir to said liquid supply port;

a supply pump for effecting flow of coating material through said supply line and into said coating chamber through said supply port;

a vacuum line connected to said vacuum port for receiving outflow of air from said coating chamber;

a primary separation chamber spaced from said coating chamber for receiving airflow from said vacuum line and effecting separation of air from coating material;

a vacuum pump maintaining subatmospheric pressure in said primary separation chamber so that ambient air flows into said coating chamber through said exit port, then through said vacuum line to said primary separation chamber; and

guide means for enabling said coating chamber to follow the movement of said tubing in said vertical plane during coating of said tubing and for carrying said coating chamber with said tubing during accidental displacement of said tubing to a location remote from said linear path, whereby damage to said primary separation chamber and said coating chamber is minimized during accidental displacement of said tubing from said linear path.

5,614,266

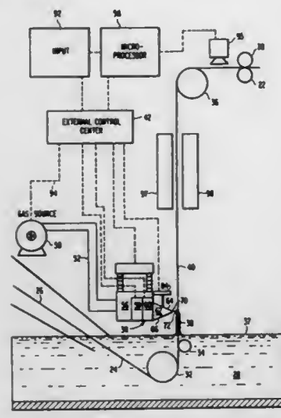
CONTINUOUS STRIP COATING CONTROL METHODS

Timothy L. Cox, Weirton; John L. Loth, Morgantown, both of W. Va.; Anthony J. Santilli, Steubenville, Ohio; Howard Snyder, Coraopolis, and Walter A. Wilson, Pittsburgh, both of Pa., assignors to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 990,691, Dec. 15, 1992, Pat. No. 5,401,317, which is a continuation of Ser. No. 862,605, Apr. 1, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,422

Int. Cl.[6] B05D 1/18

U.S. Cl. 427—431 **7 Claims**



1. Continuous-strip hot-dip metal coating process for controlling molten metal coating remaining on flat-rolled steel continuous strip, comprising

A. passing flat-rolled steel continuous strip in the direction of its length while submerged in a hot-dip molten metal coating bath,

B. withdrawing such strip upwardly from such bath with an excess of molten coating adhering to each surface thereof,

C. controlling the travel path of the strip so as to pass in spaced relationship between a pair of pneumatic dies for pneumatically controlling non-solidified molten metal coating remaining on each substrate surface, by shaping and controllably discharging a pressurized gas jet,

each of such pair of dies being supported in confronting relationship with a single coated surface, with the dies being at or near opposed relationship on opposite sides of such moving strip with each discharging its respective gas jet in substantially perpendicular relationship to the plane of travel of such strip as passed in such spaced relationship between such confronting pair of dies;

D. orienting each elongated pneumatic die with the center of its longitudinal dimension at approximately the center of width of such strip and with the longitudinal dimension of each such die extending to lateral edges of the elongated strip across its full width,

each such die including:

(i) chamber means extending along its longitudinal dimension for receiving coating-control gas under pressure for movement within the die toward such confronted coated surface,

(ii) a nozzle discharge outlet extending along such longitudinal dimension in substantially symmetrical relationship across such strip width,

such discharge outlet having a pre-established cross-sectional configuration which is narrow in the direction in which the strip is moving so as to shape and discharge each such pressurized gas jet in a generally-planar configuration, and

(iii) means located internally of each such die for establishing a primary directional component of gas movement within such generally-planar configuration pressurized gas jet which is substantially perpendicular to such confronted surface, and including

internally-located means, which are variably-adjustable by means located externally of such die, along such longitudinal dimension for introducing a secondary directional component in angled relationship to such primary directional component within such generally-planar configuration gas jet discharged from such die;

D. controlling such pressurized gas jet as discharged from such die to impinge against its respective coated surface so as to shear excess non-solidified coating from that surface, and

E. controlling such secondary directional component of gas movement within such pressurized gas jet to control coating thickness profile across such strip width surface.

5,614,267

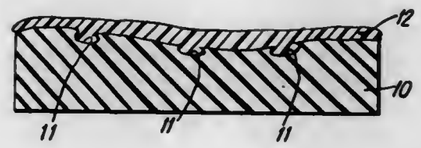
REPAIR OF WORN CONVEYOR BELTING USING THERMALLY APPLIED POLYMER COATINGS

Marvin Howlett, Marshall, Tex., assignor to Eutectic Corporation, Charlotte, N.C.

Filed Jan. 30, 1996, Ser. No. 594,273

Int. Cl.[6] B05D 1/08

U.S. Cl. 427—447 **6 Claims**



1. A method for improving resistance to abrasion of a load-carrying surface of a conveyor belt formed of a cord-reinforced elastomer material selected from the group consisting of natural and synthetic rubber, said belt being adapted for use for conveying particulate ore having abrasive properties or other particulate material having abrasive properties which comprises:

cleaning the load-carrying surface of said conveyor belt prior to coating the same with an abrasion resistant coating;

said conveyor belt being characterized by a distribution of pores in said surface to be coated; flame spraying a coating of a molten polymer selected from the group consisting of polyolefins and polyester elastomers onto said conveyor belt load-carrying surface using a flame spray torch;

the flame of said torch being spaced from the conveyor surface to avoid contact of the flame with the surface being coated; and

cooling said coated conveyor belt;

whereby said polymer coating is bonded chemically to said load-carrying surface and additionally mechanically bonded thereto by virtue of said coating material entering the pores on said surface and thereby mechanically locking the coating to said conveyor belt surface upon cooling of said coating.

5,614,268

COATING COMPOSITION

Michael J. Varley, 5 Y Gwernydd, Glais, Swansea, Great Britain, and John B. Thomas, Brydel Court, 31 Murton Lane, Newton, Mumbles, Swansea, Great Britain

Filed Dec. 14, 1995, Ser. No. 572,465

Claims priority, application United Kingdom, Dec. 15, 1994, 9425319

Int. Cl.[6] B05D *7/00;* C09D *5/00;* C09K *3/00*

U.S. Cl. 427—486 21 Claims

1. A composition for coating a metal surface comprising at least one C_6 to C_{10} carboxylic acid, at least one citric acid ester and an organic solvent.

16. A process for coating a metal surface with a composition comprising at least one C_6 to C_{10} carboxylic acid, at least one citric acid ester and an organic solvent, said process comprising applying the composition to the metal surface in an amount of 5 to 350 mg/m^2.

17. A process according to claim 16, comprising applying the composition to the metal surface by a method selected form the group consisting of electrostatic deposition, spraying, immersion coating and roller coating.

5,614,269

METHOD OF MAKING A WATER ABSORBING ARTICLE

Martin G. Hoskins, Canton, and Connie Hensler, Kennesaw, both of Ga., assignors to Interface, Inc., Atlanta, Ga.

Filed Dec. 13, 1994, Ser. No. 354,676

Int. Cl.[6] C08J *7/04*

U.S. Cl. 427—512 2 Claims

1. A method of making a water absorptive article comprising the steps of,

impregnating a fibrous substrate with a solution capable of polymerizing upon exposure to UV irradiation to form a water absorptive polymer; and

exposing the impregnated fibrous substrate to UV irradiation to polymerize the solution therein to form a water absorptive, water insoluble polymer, wherein the water absorptive polymer is intertwined and interlocked with fibers of the fibrous substrate, and wherein the water absorptive article is essentially non-toxic,

wherein the water absorptive polymer is selected from the group consisting of polyacrylamide, polymers of acrylic acid neutralized to approximately 60 molar to 100 molar percent with an alkali metal, and polyacrylamide-acrylic acid copolymers.

5,614,270

METHOD OF IMPROVING ELECTRICAL CHARACTERISTICS OF A LIQUID PHASE DEPOSITED SILICON DIOXIDE FILM BY PLASMA TREATMENT

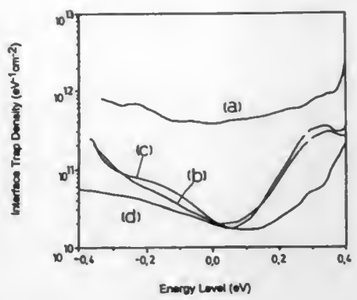
Ching-Fa Yeh, and Shyue S. Lin, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Feb. 9, 1996, Ser. No. 598,961

Int. Cl.[6] H05H *1/00*

U.S. Cl. 427—539 4 Claims

1. A method of improving electrical characteristics of a liquid phase deposited silicon dioxide film comprising forming a liquid phase deposited silicon dioxide film on a substrate and subjecting



the liquid phase deposited silicon dioxide film to an oxygen or hydrogen plasma treatment.

5,614,271

METHOD FOR THE FORMATION OF A SILICA-BASED COATING FILM

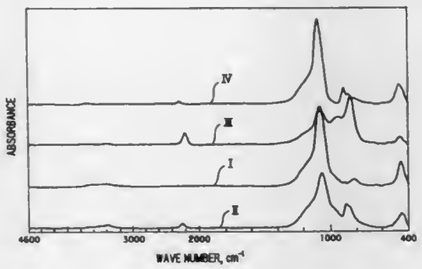
Tatsuhiko Shibuya, Kanagawa-ken; Susumu Okano, Matsuyama; Hideya Kobari, Yokohama; Yoshio Hagiwara, Tokyo-to, and Toshimasa Nakayama, Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Filed Aug. 5, 1996, Ser. No. 692,187

Claims priority, application Japan, Aug. 11, 1995, 7-205877

Int. Cl.[6] B29C *71/02*

U.S. Cl. 427—541 6 Claims



1. A method for the formation of a silica-based coating film on the surface of a substrate which comprises the steps of:

(a) coating a surface of a substrate with a coating solution containing a polysilazane having a weight-average molecular weight in the range from 1000 to 5000 as dissolved in an organic solvent to form a coating layer;

(b) drying the coating layer by heating according to a schedule comprising a stage of heating within a range of temperature from 80° C. to 140° C. for a length of time from 2 minutes to 5 minutes followed by a continuous or stepwise increase of the temperature to reach 240° C. taking 2 minutes to 5 minutes and a stage of heating within a range of temperature from 240° C. to 350° C. for a length of time from 2 minutes to 5 minutes;

(c) irradiating the thus dried coating layer at a temperature in the range from 240° C. to 350° C. with ultraviolet light; and

(d) subjecting the coating layer after the ultraviolet irradiation to a baking treatment for 15 minutes to 90 minutes.

5,614,272

METHOD FOR MAKING SMALL DIMENSIONAL DIAMOND-COATED GRAPHITE ARTICLES

Syed I. U. Shah, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 978,537, Nov. 19, 1992, abandoned. This application May 13, 1994, Ser. No. 242,571

Int. Cl.[6] B06B *1/00;* C23C *16/26;* B05D *3/06*

U.S. Cl. 427—560 10 Claims

1. A process for reducing the etching of shaped graphite articles having at least two dimensions less than about 1 mm, during the chemical vapor deposition of diamond onto said articles, comprising the steps of:

(a) placing a shaped graphite article in a suspension of diamond powder in a liquid;

(b) agitating said suspension containing said shaped graphite article for a time sufficient for the surface of said shaped graphite article to become abraded; and

(c) removing said shaped graphite article from said suspension and drying said shaped graphite article prior to depositing diamond onto said dried shaped graphite article by chemical vapor deposition.

5,614,273

PROCESS AND APPARATUS FOR PLASMA-ACTIVATED ELECTRON BEAM VAPORIZATION

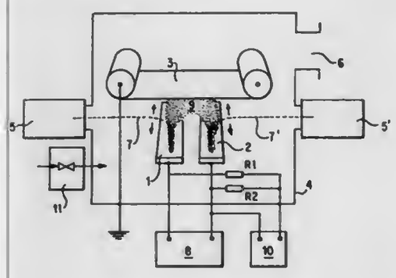
Klaus Goedicke; Bert Scheffel; Jonathan Reschke; Siegfried Schiller; Volker Kirchhoff, and Torsten Werner, all of Dresden, Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung, e.V., Munich, Germany

Filed Apr. 29, 1996, Ser. No. 639,620

Claims priority, application Germany, Oct. 27, 1993, 43 36 681.3

Int. Cl.[6] H05H *1/24*

U.S. Cl. 427—569 15 Claims



1. A process for plasma-activated electron beam vaporization of a vaporizing material from at least two vaporizer crucibles via the action of electron beams, the process comprising the steps of:

applying an electrical voltage to the at least two vaporizer crucibles such that an electron beam-heated and vapor-emitting areas of the vaporizing material operate as electrodes of an electric discharge;

connecting the vaporizing material of at least one of the at least two vaporizer crucibles as a cathode and at least one further vaporizer crucible of said at least two vaporizer crucibles as an anode.

5,614,274

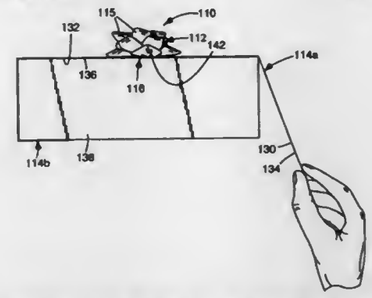
PREFORMED SELF-ADHERING BOW

Charles P. Huss, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 153,373, Nov. 16, 1993, abandoned. This application Jun. 6, 1996, Ser. No. 659,452

Int. Cl.[6] D04D *7/10*

U.S. Cl. 428—5 24 Claims



1. A preformed self-adhering bow for application to an object, comprising:

(a) a preformed bow member including a plurality of bow loops interconnected by joining means at a base portion; and

(b) a single flexible ribbon application band having a first end and an opposing second end, and a first major surface, with at least a portion of said first major surface of said application band having a layer of a pressure sensitive adhesive coated thereon; and

(c) means for attaching said application band to said base portion of said bow member, said band being attached to said bow member at a location intermediate said first and said second ends thereof, with said layer of pressure sensitive adhesive on said first major surface being directed away from said bow member;

(d) said exposed layer of pressure sensitive adhesive on said first major surface of said application band for application to the object to adhere the bow to the object.

5,614,275

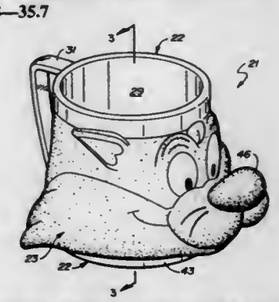
HIGH-RELIEF, RESILIENTLY FLEXIBLE, COMPOSITE MOLDED PLASTIC PRODUCT

Raymond C. L. Chan, #14 C. Wing Po Mansion, 33rd Fort Street, North Pt., Hong Kong, Hong Kong

Continuation of Ser. No. 201,617, Feb. 25, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,606

Int. Cl.[6] A47G *19/22;21/00*

U.S. Cl. 428—35.7 18 Claims



1. A high strength and impact resistant composite molded plastic product for use as a container for liquid comprising:

a rigid core member having a sleeve-receiving end and a pair of oppositely facing, axially spaced apart core shoulders formed therein each having a shoulder radial depth dimension extending radially outward, relative a core longitudinal axis, from a core outer surface to a respective shoulder outer surface; and

a resiliently flexible plastic sleeve member having a pair of oppositely facing sleeve shoulders formed for interengagement with said core shoulders over said shoulder radial depth dimension sufficient to secure and mount said sleeve member on said core member, said sleeve member being rotationally cast from a plastisol dispersion of emulsion grade polyvinylchloride and suspension grade polyvinylchloride in a ratio of at least 3 to 1 by weight to provide a set sleeve member of said ratio with a resilient elasticity sufficient to enable heat-free mounting of said sleeve member onto said core member over said sleeve-receiving end until said core shoulders and said sleeve shoulders are interengaged, an inner surface of said sleeve member intermediate said sleeve shoulders being outwardly spaced from said core outer surface over a substantial area of the sleeve inner surface to provide an insulatory cavity between said inner surface and said outer surface, and said sleeve member including at least one prominent molded design feature having a feature radial depth dimension extending radially outward, relative the sleeve longitudinal axis, from the core outer surface to a distal surface of said prominent feature at least four times said shoulder radial depth dimension.

5,614,276

EXTRUSION OF MATERIALS

Menelaos Petsetakis, Athens, Greece, assignor to Hellenic Plastics and Rubber Industry Memelaos Petsetakis, S.A., Piraeus, Greece

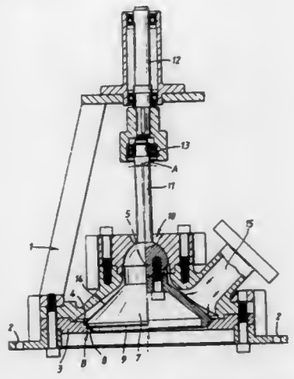
PCT No. PCT/GR92/00017, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993, PCT Pub. No. WO93/05947, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 17, 1992, Ser. No. 64,008

Claims priority, application United Kingdom, Sep. 20, 1991, 9120121; Jul. 8, 1992, 9214461

Int. Cl.[6] B29D *23/00;28/00*

U.S. Cl. 428—36.9 **35 Claims**



1. An apparatus for extruding non-uniform sheet material, comprising a die including a first part defining at least one extrusion orifice disposed around an axis, and a second part, the first die part having a convex annular frusto-spherical surface and the second die part having a concave annular frusto-spherical surface of substantially the same radius as the convex frusto-spherical surface, said surfaces being in sliding cooperation adjacent said extrusion orifice, and said surfaces being centered at a geometric centre lying on said axis, and drive means for imparting relative movement between the first and second die parts, whereby seen relative to first part, the second part undergoes a rocking motion progressing along at least part of a generally circular path extending around said axis whereby the second die part influences the extrusion emanating from each orifice section in a periodic manner without extrusion of material between said sliding surfaces.

5,614,277

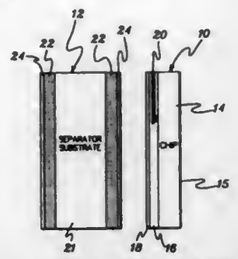
MONOLITHIC ELECTRONIC MODULES—FABRICATION AND STRUCTURES

Kenneth E. Beilstein, Jr., Essex Junction; Claude L. Bertin, and Wayne J. Howell, both of South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 252,794, Jun. 2, 1994, Pat. No. 5,517,754. This application Apr. 27, 1995, Ser. No. 429,992

Int. Cl.[6] H05K *3/34*

U.S. Cl. 428—40.1 **11 Claims**



1. A workpiece for facilitating fabrication of semiconductor chip structures, said workpiece being sized for inclusion in a stack of multiple semiconductor chips between two adjacent semiconductor chips in the stack, said multiple semiconductor chips in the stack having substrates with identical etch properties, said workpiece comprising:

a separator substrate having an etch property corresponding to the identical etch properties of the substrates of the semiconductor chips in the stack; and

a separation material layer coupled to the separator substrate, said separation material layer having properties different than the properties of the separator substrate such that said separation material layer may be preferentially removed.

5,614,278

STRIP OF SEPARABLE LABELS OR TAGS HAVING A DISPLAY SURFACE FOR DISPLAY OF INFORMATION THEREON

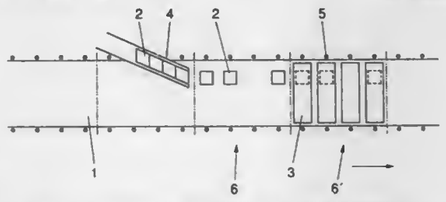
John Chamberlain, Boca Raton, Fla., and Gordon Klassen, Dossenheim, Germany, assignors to Esselte Meto International GmbH, Heppenheim, Germany

Filed May 8, 1995, Ser. No. 436,759

Claims priority, application Germany, May 10, 1994, 44 16 444.0; Oct. 11, 1994, 44 36 284.6

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—41.4 **20 Claims**



1. A strip of premanufactured labels or tags comprising:

a first material, said first material comprising a strip having a longitudinal dimension and a width dimension, the longitudinal dimension being substantially greater than the width dimension;

a second material attachable to said strip of first material, said second material comprising one of:

a strip of said second material; and

a plurality of individual units of said second material;

at least one of said first strip of material and said second material comprising a surface for displaying information thereon;

third material means for being selectively disposed between said first and second material, said third material means comprising a third material, and said third material comprising one of:

a strip of said third material; and

a plurality of individual units of said third material; and

means for being attached to an article;

said strip of labels or tags being divided into a multitude of separable label or tag units, said multitude of separable units comprising:

a multitude of first units, said first units comprising each of said first material, said second material and said third material; and

a multitude of second units interspersed among said multitude of first units, said second units comprising said first material and said second material, and said second units not including said third material.

5,614,279

RECORDING AND REPRODUCING MEDIUM AND A RECORDING AND REPRODUCING APPARATUS

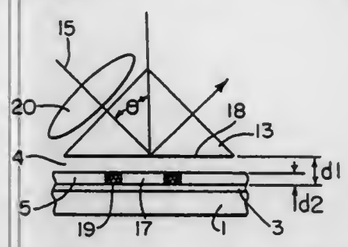
Makoto Kuwamoto, Hirakata; Hiroshi Kohso, Fujiidera, and Tatsuhiko Inagaki, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 141,130, Oct. 21, 1993. This application Mar. 21, 1996, Ser. No. 619,988

Claims priority, application Japan, Oct. 23, 1992, 4-285757

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **5 Claims**



1. An apparatus for recording and reproducing data in a recording and reproducing medium, the medium comprising:

at least one recording and reproducing layer; and

a heating layer which receives light for writing data, converts a part of energy of the light into heat, and selectively heats a desired portion of the recording and reproducing layer, thereby changing optical characteristics of the desired portion,

wherein the device comprises: recording light irradiation means for irradiating the light to the heating layer under the condition that a surface plasmon resonance phenomenon is caused on the heating layer; and

reproducing light irradiation means for irradiating light for detecting a change of optical characteristics of the desired portion to the recording and reproducing layer.

5,614,280

SHIELDING BLANKET FOR RACING ENGINES

Thomas Hanna, Wichita, Kans., assignor to James W. Post, III, Franklin Park, Ill.

Filed Dec. 2, 1993, Ser. No. 160,723

Int. Cl.[6] B60R *21/00;27/00*

U.S. Cl. 428—74 **18 Claims**

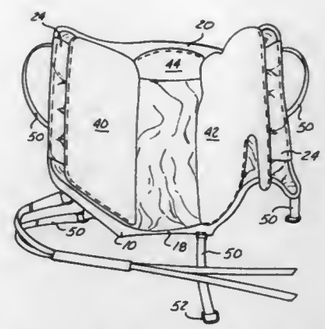
1. A shielding blanket for a running internal combustion engine having a cylinder block, an oil pan affixed below the block for containing oil therein, and exhaust headers for conducting hot exhaust gases away from the engine, said blanket comprising:

a bag constructed of high-strength textile material, said bag being constructed to fit closely over the cylinder block and oil pan of the engine, and between the block and the exhaust headers, wherein the bag comprises a bottom panel to go under the oil pan, and two side panels to cover respective sides of the engine block;

means for holding the bag in place on the engine;

means secured within the bag for rapidly absorbing engine oil, at least some of said means being disposed to face the sides of the cylinder block and thereby prevent oil escaping through the block or the oil pan from reaching the engine's exhaust headers; and

high-temperature lower straps sewn into the blanket and having terminations at each upper corner of each side panel, and wherein the holding means comprise high-temperature upper straps secured to said terminations and having quick-release connections that can be applied over the top of the engine to hold the blanket on.



5,614,281

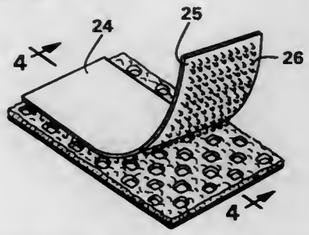
CREPED NONWOVEN LAMINATE LOOP FASTENING MATERIAL FOR MECHANICAL FASTENING SYSTEMS

Wanda W. Jackson, Alpharetta; Monica S. Diaz, Woodstock, and Lance J. Garrett, Jr., Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 29, 1995, Ser. No. 565,618

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—100 **20 Claims**



1. A creped nonwoven laminate loop material comprising:

a nonwoven layer having a percent bond area of between about 10 percent and about 25 percent;

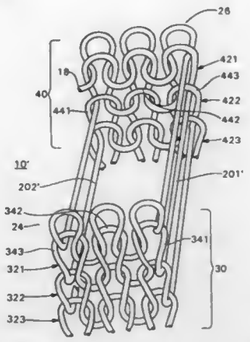
said nonwoven layer having a plurality of raised areas separated by a plurality of non-raised areas;

said raised areas of said nonwoven layer having a first fiber density and first z-directional fiber orientation and said non-raised of said nonwoven layer having a second fiber density and second z-directional fiber orientation, said first fiber density being less than said second fiber density and said first z-directional fiber orientation being greater than said second z-directional fiber orientation; and

a support layer;

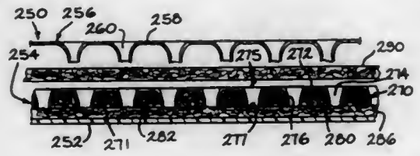
said nonwoven layer and said support layer being bonded together at a plurality of bond points within said non-raised areas.

5,614,282
FABRIC STRUCTURAL MEMBERS
James J. Bono, Jr., and Gary L. Flasher, both of Spring City, Pa., assignors to Davlyn Manufacturing Co., Inc., Spring City, Pa.
Filed Jun. 30, 1995, Ser. No. 497,297
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 7 Claims



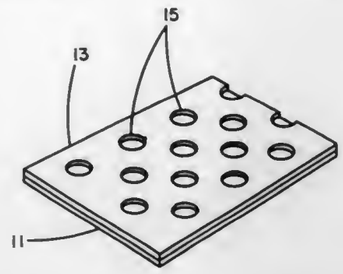
1. A machine-made, flexible, continuous, substantially planar fabric structural member having a ladder-like structure comprising a pair of continuous, longitudinally extending, side rail portions formed of interlocked portions of strand material, the side rail portions being spaced apart from one another and connected to one another by an intermediate rung portion, the rung portion including a plurality of individual unstitched strand material rungs extending generally diagonally between the woven side rail portions, the member comprising a single continuous, flexible material strand knitted in a tubular form with at least two sets of interlocked stitches extending longitudinally along opposite sides of the tubular form defining the side rail portions, each set being formed by consecutive interlocked rows of two or more stitches, opposite ends of the stitches of each row of one set being connected with stitches of the remaining set of stitches by unstitched lengths of the strand defining individual rungs of the intermediate rung position.

5,614,283
ABSORBENT COMPOSITE WITH THREE-DIMENSIONAL FILM SURFACE FOR USE IN ABSORBENT DISPOSABLE PRODUCTS
Prasad S. Potnis, Terre Haute, Ind., and Michael A. Francis, Midlothian, Va., assignors to Tredegar Industries, Richmond, Va.
Filed Dec. 22, 1994, Ser. No. 362,224
Int. Cl.[6] A61F *13/46*
U.S. Cl. 428—131 41 Claims



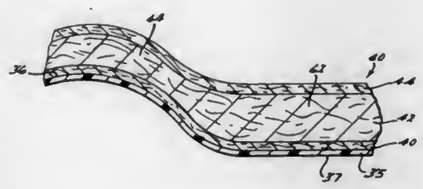
1. An absorbent composite comprising a three-dimensional fluid impermeable, formed film having a planar surface and a three-dimensional surface which defines a plurality of cavities depending downwardly from the planar surface, the cavities providing dimensional stability to the formed film to substantially prevent collapse of the absorbent structure, wherein a plurality of the cavities contain at least one type of absorbent material; and at least one fluid distribution material positioned adjacent the planar surface of the formed film.

5,614,284
LAMINATED PATCH TISSUE REPAIR SHEET MATERIAL
Thane L. Kranzler, and Michael L. McDonald, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Division of Ser. No. 19,394, Feb. 18, 1993, Pat. No. 5,433,996.
This application Apr. 13, 1995, Ser. No. 423,908
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—138 19 Claims



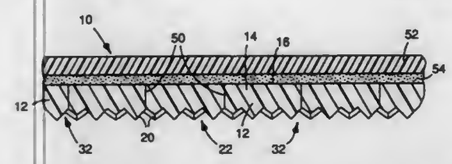
1. A sheet of implantable patch tissue repair material comprising a first layer of porous polytetrafluoroethylene sheet material laminated to a second layer of sheet material, said sheet of implantable patch tissue repair material having a maximum thickness and having a multiplicity of macroscopic openings in the second layer extending into at least half of the maximum thickness of the sheet of implantable patch tissue repair material wherein the mean minimum diameter of the openings is at least about 0.1 mm.

5,614,285
MOLDED PANEL HAVING A DECORATIVE FACING AND MADE FROM A BLEND OF NATURAL AND PLASTIC FIBERS
Rainer F. Gardill, Reichersbeuern, Germany, assignor to Ceats, Grosse Pointe Farms, Mich.
Filed Dec. 2, 1994, Ser. No. 348,331
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—156 13 Claims



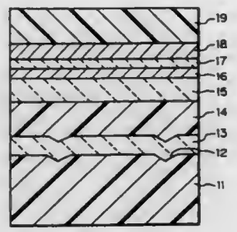
1. A laminated panel for use in automotive interiors characterized by:
a mat made from fibers with some of the fiber being a first thermoplastic material;
a plastic containing a decorative layer connected to one side of the mat by the application of pressure and heat via an intermediate scrim layer;
said scrim layer having fibers made of a second thermoplastic fiber which is a different material from that of the fibers of thermoplastic material in the mat and having a melting temperature at least as high as the thermoplastic material in the mat; and
the mat being a blend of fibers made from said first thermoplastic material and natural fibers formed in a non-woven mat.

5,614,286
CONFORMABLE CUBE CORNER RETROREFLECTIVE SHEETING
Chester A. Bacon, Jr., Oakdale, and Gerald M. Benson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1993, Ser. No. 139,914
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—161 20 Claims



1. A conformable cube corner retroreflective sheeting comprising a plurality of discrete cube corner segments which are conformably bonded together through a conformable carrier layer, each cube corner segment comprising a plastic body portion capable of retroreflecting light, and having a substantially planar front major surface and side walls and at least one minute cube corner retroreflective element comprising a plurality of faces, said faces projecting from said body portion.

5,614,287
MAGNETO-OPTICAL RECORDING MEDIUM COMPRISING A SPECIFIED SUBSTRATE
Masahiko Sekiya; Utami Yonemura, and Kiyoshi Chiba, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
Continuation of Ser. No. 986,078, Dec. 4, 1992, abandoned.
This application Dec. 27, 1994, Ser. No. 363,992
Claims priority, application Japan, Dec. 4, 1991, 3-347756; Dec. 5, 1991, 3-348384; Feb. 12, 1992, 4-025229; Feb. 12, 1992, 4-025230
Int. Cl.[6] G11B *7/007*
U.S. Cl. 428—163 15 Claims



1. A magneto-optical recording medium comprising
A) a substrate comprising
i) a base having a top surface that is made of an organic resin material, the organic resin material having guide means in the form of concave portions for servo tracking with an optical beam, wherein said guide means are the only guide means in said substrate,
ii) a dielectric layer that is contiguous with the top surface of said base and that covers the entire top surface of said base and the concave portions that form the guide means, and
iii) a leveling layer on said dielectric layer that covers said guide means and has a flat top surface,
wherein said dielectric layer has a refractive index higher than those of said organic resin material in which said guide means are formed and said leveling layer, and
B) a magneto-optical recording layer over said substrate, said magneto-optical recording layer being capable of being directly overwritten by modification of power level and/or pulse duration of a recording optical pulse.

5,614,288
CO-EXTRUDED PLASTIC SLIP SURFACE
Rafael T. Bustos, Alpharetta, Ga., assignor to L&P Property Managemet Company, Chicago, Ill.
Filed Apr. 27, 1995, Ser. No. 429,867
Int. Cl.[6] B32B *3/28;* A47F *1/04*
U.S. Cl. 428—167 12 Claims



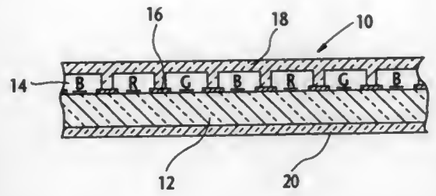
1. A low friction slip surface for insertion into a tray of a merchandising display rack comprising: an extruded longitudinally extending plastic base plate and a plurality of individual co-extruded spaced, longitudinally extending plastic beads bonded directly to the top surface of said base plate, said beads each containing from 0.5 percent (0.5%) to ten percent (10%) of silicone to render said beads of a lower surface friction than said base plate, said base plate being formed from a first color plastic and said beads being formed of a second color plastic.

5,614,289
ID CARD
Toru Kobayashi, and Koichi Nagayasu, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Aug. 24, 1994, Ser. No. 295,246
Claims priority, application Japan, Aug. 30, 1993, 5-213683
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 13 Claims

1. An ID card, comprising:
a support, and provided thereon, an image receiving layer and a UV hardening resin layer in this order;
said ID card optionally containing a transparent layer interposed between the image-receiving layer and said UV hardening resin layer, wherein
said transparent layer comprises a transparent layer forming substance in an amount of 10 to 90% by weight, and
wherein, when said UV hardening resin layer is directly adhered to a surface of said image receiving layer, a critical surface tension of said surface of said image receiving layer is 34 to 50 dyne/cm, and
wherein, when said transparent layer is interposed between said image-receiving layer and said UV hardening resin layer and said UV hardening resin layer is directly adhered to a surface of said transparent layer, a critical surface tension of said surface of said transparent layer is 34 to 50 dyne/cm.

5,614,290
METHOD AND APPARATUS FOR DISPLAYING COLOR IMAGE
Chiseki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 27, 1995, Ser. No. 394,968
Claims priority, application Japan, Feb. 28, 1994, 6-030471; May 18, 1994, 6-103688
Int. Cl.[6] B23B *9/00*
U.S. Cl. 428—195 12 Claims

1. An image display apparatus, comprising:
a display panel which comprises a transparent substrate and a color pattern layer which is formed on one side of the transparent substrate and has a multiplicity of transparent pixel areas consisting of at least two separate sets of pixel areas in different colors which constitute a regularly repetitive pattern and a set of regularly arranged opaque areas by which each of the pixel areas is bordered;



means for applying an opaque coloring substance to the opposite side of the substrate of the display panel in areas opposite to selected pixel areas of the color pattern layer on the basis of externally supplied image data;

means for illuminating the display panel from the side on which said color pattern layer exists; and

means for reciprocatively moving at least one of said display panel and said image generating means relative to the other.

5,614,291

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

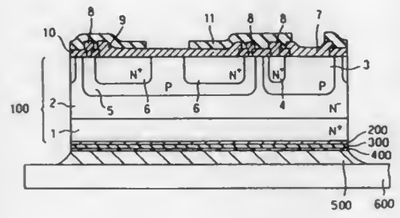
Ichiharu Kondo; Yoshiaki Inaguma, both of Nagoya, and Yoshitsugu Sakamoto, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 678,213, Apr. 1, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 463,633

Claims priority, application Japan, Jun. 28, 1990, 2-171223

Int. Cl.[6] B32B *09/00*

U.S. Cl. 428—209 **25 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

a nickel layer formed on said semiconductor substrate, the nickel layer having a radio of an X-ray diffraction peak intensity in the (**200**) plane to that of the (**111**) plane being at least 10%; and

a solder layer formed on said nickel layer, and including at least tin and lead therein, the amount of tin contained in said solder layer being less than approximately 30% by weight

said semiconductor device having a useful life of at least 10,000 hours.

12. A semiconductor device comprising:

a semiconductor substrate;

a nickel layer coupled to said semiconductor substrate, the nickel layer having a ratio of an X-ray diffraction peak intensity in the (**200**) plane to that of the (**111**) plane that is at least 10%; and

a solder layer formed adjacent said nickel layer, and including at least tin and lead therein, said solder layer including means for preventing lead in said solder layer from diffusing into said nickel layer,

said semiconductor device having an expected useful life of at least 10,000 hours.

5,614,292

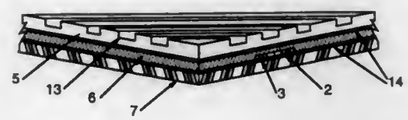
THERMAL WALKWAY COVER HAVING CARBONIZED RUBBER

Steven Saylor, Evergreen Studio Box 204, 400 Main St., Dayton, Nev. 89403

Continuation of Ser. No. 335,250, Nov. 7, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,906

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **9 Claims**



1. A thermal walkway cover comprising a plurality of flat, modules having interlocking opposed edges and adapted to cover a predetermined walkway area, each module comprising a plurality of laminated flexible layers including a top layer having water drainage channels formed in an upper surface thereof and made of a material selected from the group consisting of durable, non-slip UV-resistant plastics and rubbers, a bottom layer made of a material selected from the group consisting of insulating and waterproof plastics and rubbers, and at least one intermediate layer between the top and bottom layers comprising an electrically heatable inner layer of conductive carbonized rubber, a plurality of elongated flexible electrical conductors embedded in the inner layer, each of said conductors extending across an associated module to a pair of opposed edges thereof and adapted to electrify the carbonized rubber inner layer of that module, an electrical supply line embedded in the inner layer and connecting each of the electrical conductors to the other conductors in the same module, a plurality of first watertight electrical connector plugs disposed at and projecting from one of said opposed edges of each module and respectively connected to an end of each of said conductors terminating at said one edge of that module, a corresponding plurality of first electrical receptacles disposed at and extending inwardly of the other of said opposed edges of each module and connected to the other ends of said conductors in that module and adapted for mating with corresponding plugs on an adjacent module when the modules are disposed in edge-to-edge relationship, thereby to connect the electrical conductors of each module to the electrical conductors of an adjacent module, a plurality of second electrical plugs and second electrical receptacles disposed respectively at opposite ones of said opposed edges of each module to connect the electrical supply line and the electrical conductors of each module to a power source, whereby, when the modules are electrically connected together in said edge-to-edge relationship and to the power source, heat is generated in the carbonized rubber inner layer of each module and passes through the top layer of the module and the cover thereby serves to prevent buildup of ice and snow on a walkway area covered by the thus-disposed modules.

5,614,293

SOFT TREATED UNCREPED THROUGHDRIED TISSUE

Duane G. Krzysik; Theodore E. Farrington, Jr., both of Appleton; Lee P. Garvey, Little Chute; Cynthia W. Henderson, Neenah; Robert D. Sauer, Fremont; Michael J. Smith, Neenah, and Michael C. Tuck, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 384,171, Feb. 6, 1995. This application Mar. 19, 1996, Ser. No. 618,648

Int. Cl.[6] B23B *5/14;5/26;33/00;* **D21H** *23/22*

U.S. Cl. 428—211 **28 Claims**

1. A soft tissue product having one or more uncreped throughdried tissue plies, wherein one or both outer surfaces of the product have uniformly distributed solidified deposits having a composition comprising from about 30 to about 90 weight percent oil and from about 10 to about 40 weight percent wax, said composition having a melting point of from about 30° C. to about 70° C., said composition having been applied to the said one or more tissue plies when said one or more plies were in a throughdried state.

5,614,294

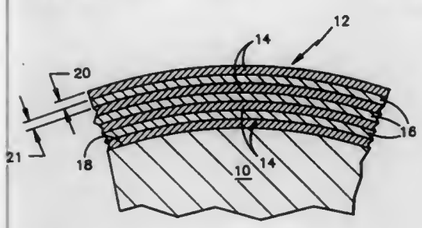
COATING FOR MINIMIZING THERMAL GRADIENTS IN AN ARTICLE

James P. Downs, and Eduardo Ruano, both of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 30, 1994, Ser. No. 346,645

Int. Cl.[6] B32B *7/02*

U.S. Cl. 428—212 **18 Claims**



1. An article, comprising:

a structure; and

a coating for minimizing thermal gradients in said structure, said coating including:

a plurality of first layers of thermally conductive material;

a plurality of second layers of thermally conductive material;

wherein said first layers of thermally conductive material are less thermally conductive than said second layers at any particular temperature;

wherein said layers are applied to said structure such that said second layers of thermally conductive material are distributed amongst said first layers of thermally conductive material;

wherein conduction of thermal energy through said layers to said structure is substantially impeded within said first layers, and substantially laterally dispersed within said second layers, thereby minimizing said thermal gradient within said structure.

5,614,295

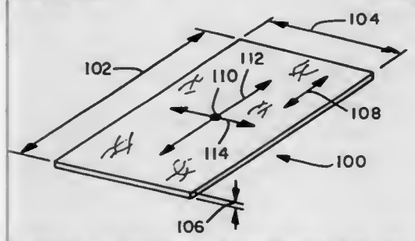
LIQUID DISTRIBUTION AND RETENTION MEDIUM

Roger B. Quincy, III, Alpharetta; Debra J. McDowall, Roswell; Elizabeth D. Gadsby, Marietta, all of Ga.; Alice Y. Romans-Hess, Freemont, and Garry R. Woltman, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 21, 1994, Ser. No. 361,392

Int. Cl.[6] B32B *7/02*

U.S. Cl. 428—212 **23 Claims**



1. A fibrous web having a fiber alignment ratio of at least about 17:1 and which comprises:

a first zone comprised of fibers which have been treated with a surfactant; and

a second zone comprising less than all of the fibers of the web in which the fibers of the second zone have been exposed to a corona field;

wherein the exposure of the web to the corona field is limited to the second zone, the first zone encompasses the entirety of the second zone, and the web is adapted to distribute liquid primarily in the direction of the orientation of the fibers.

5,614,296

RESILIENT MOLDED PREFORM MADE FROM STAPLE FIBERS OF SELF-TEXTURING FILAMENTS

Fred L. Travelute, Charlotte, N.C., and Robert E. Hoffman, Catawba, S.C., assignors to Wellman, Inc., Shrewsbury, N.J.

Division of Ser. No. 334,418, Nov. 4, 1994, Pat. No. 5,531,951, which is a continuation-in-part of Ser. No. 156,237, Nov. 22, 1993, Pat. No. 5,407,625. This application Sep. 26, 1995, Ser. No. 534,255

Int. Cl.[6] A47C *7/02;27/12;* **D04H** *1/06;1/50*

U.S. Cl. 428—212 **4 Claims**

1. A resilient molded preform formed entirely of polyester, said preform comprising a plurality of coiled bilateral hollow polymeric fibers, said fibers having staple lengths and together forming a predetermined overall shaped solid, and in which the two bilateral components are an identical polyester but with each component having a different degree of orientation, and in which said staple fibers are sufficiently entangled with one another to eliminate the need for any binder filaments or binder resins.

5,614,297

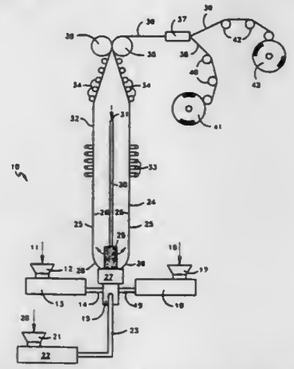
POLYOLEFIN STRETCH FILM

Alberto Velazquez, Chicago, Ill., assignor to Viskase Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 245,992, May 19, 1994, abandoned. This application Apr. 27, 1995, Ser. No. 426,188

Int. Cl.[6] B32B *7/02*

U.S. Cl. 428—218 **76 Claims**



1. A polyolefin, multilayer flexible film having at least three layers comprising:

a first outer layer comprising at least one copolymer of ethylene and at least one C_3–C_8 alpha-olefin, said copolymer having at least 75 weight percent of its polymer units derived from ethylene, and said copolymer having a density of at least about 0.900 g/cm^3 and below 0.915 g/cm^3, and a melting point of at least 90° C.;

a core layer comprising at least one copolymer of ethylene and at least one C_3–C_8 alpha-olefin, said copolymer having at least 75 weight percent of its polymer units derived from ethylene, and said copolymer having a density of at least about 0.900 g/cm^3 and below 0.915 g/cm^3, and a melting point of at least 90° C.; and

a second outer layer comprising a blend of (a) a first copolymer of ethylene and at least one C_3–C_8 alpha-olefin, said first copolymer having at least 75 weight percent of its polymer units derived from ethylene, and said copolymer having a density below 0.915 g/cm^3, and a melting point of at least 90° C., and (b) a second copolymer of ethylene and at least one C_3–C_8 alpha-olefin said second copolymer having at least 75 weight percent of its polymer units derived from ethylene, and having a density less than 0.900 g/cm^3, and a melting point less than about 80° C.; wherein said core layer is disposed between said first and second outer layers and said multilayer film has less than 10% unrestrained shrinkage at 90° C. in at least one direction.

5,614,298

BIODEGRADABLE NONWOVEN FABRICS AND METHOD OF MANUFACTURING SAME

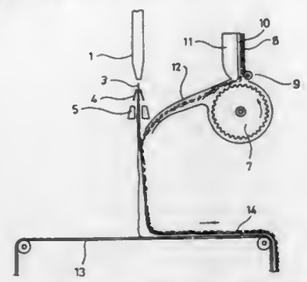
Hiroshi Tanaka, Joyo; Yoshiki Miyahara, Uji; Satoshi Kasetani, Nara; Kouji Esaki, Matsudo; Shigetaka Nishimura, Uji, and Takashi Inoue, Kawasaki, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 947,412, Sep. 18, 1992, Pat. No. 5,506,041. This application Feb. 15, 1996, Ser. No. 602,123

Claims priority, application Japan, Sep. 26, 1991, 3-246360; Sep. 26, 1991, 3-246361

Int. Cl.^{6} B32B *5/06;27/00*

U.S. Cl. 428—219 **3 Claims**



2. A biodegradable spunbonded nonwoven fabric consisting essentially of a filament material selected from the group consisting of poly-ε-caprolactone, poly-β-propiolactone, and mixtures thereof, said filament material having a filament denier of 0.8 to 6 and a melt flow rate of not more than 45 g/10 min. as measured according to ASTM-D-1238(E), and said nonwoven fabric having a fabric weight of not less than 10 g/m^2 and not more than 150 g/m^2, thermally bonded areas in which individual filaments are heat bonded by means of an embossing roll, and a softness value of not more than 70 g.

5,614,299

HEAT-RESISTANT UNSATURATED POLYESTER RESIN COMPOSITION AND HEAT-RESISTANT FIBER-REINFORCED COMPOSITE MATERIAL

Koji Yamamoto, Kobe, and Takeshi Kuri, Nishinomiya, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 26, 1996, Ser. No. 606,816

Int. Cl.^{6} C08K *3/40;* **C08G** *63/52;* **C08L** *67/06*

U.S. Cl. 523—500 **15 Claims**

1. A heat-resistant fiber-reinforced composite material comprising an unsaturated polyester resin composition consisting essentially of (a_1) an unsaturated polyester which is obtained by the reaction of (α_1) a polybasic acid component containing at least an ethylenic unsaturated polybasic acid with (α_2) a polyhydric alcohol component, and (a_2) a diluent monomer component for diluting said unsaturated polyester; and a reinforcing fiber component,

wherein said polyhydric alcohol component (α_2) contains 2-methyl-1,3-propanediol and 1,4-cyclohexanedimethanol in the total amount of 50 mol % or more based on the total amount of the polyhydric alcohol component, and the molar ratio of said 2-methyl-1,3-propanediol and 1,4-cyclohexanedimethanol is within the range of from 9:1 to 5:5.

5,614,300

PORTABLE EXERCISER

Barbara G. Cicali, 4014 Cedar La., Drexel Hill, Pa. 19026, and Kamran Khan, 1026 Lancaster Ave., Bryn Mawr, Pa. 19010

Filed Oct. 18, 1995, Ser. No. 549,505

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 482—122 **6 Claims**



1. A portable exerciser for stretching or toning the muscles of a user, wherein said exerciser is manipulated by a user in such a way that one muscle opposes at least one other muscle, said exerciser being adjustable in stretchability and in length for effective use by users of various sizes and various strengths, said exerciser comprising a plurality of combinable stretchable elastic loops including:

a stretchable elastic anchor loop having a relaxed length in the absence of stretch and variable stretched lengths; and

a plurality of stretchable supplemental elastic loops of different lengths and degrees of stretchability, each having a relaxed length and variable stretched lengths,

the stretchability of one of said supplemental loops being different from the stretchability of another one of said supplemental loops; the relaxed length of one of said supplemental loops being different from said relaxed length of said anchor loop; and

releasable fastening means on at least one of the aforesaid anchor loops and supplemental loops wherein at least two of said supplemental loops are removably connectable at different locations to said anchor loop but not to each other to provide a composite series of loops having a composite length,

and wherein various combinations of said anchor loop and said supplemental loops provide various composite lengths and degrees of stretchability in response to application and release of tension.

5,614,301

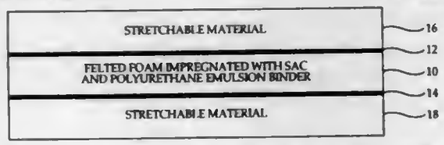
CHEMICAL PROTECTIVE FABRIC

Martin Katz, Wellesley, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1995, Ser. No. 422,964

Int. Cl.^{6} B32B *5/16;5/18;5/26;5/30*

U.S. Cl. 442—315 **16 Claims**



1. A chemical protective fabric for use in garments worn by persons in a chemically hostile environment, said fabric comprising:

a layer of felted foam material impregnated throughout with superactivated carbon, said material having opposite major surfaces, and said superactivated carbon being a highly activated carbon having a BET surface area of 2200–3200 square meters per gram;

a polyurethane emulsion binder for bonding said superactivated carbon to said foam, said superactivated carbon and said binder being components in a slurry with which slurry said felted foam is impregnated, whereby said foam is impregnated with and is bonded to said superactivated carbon;

a first stretchable material layer bonded to said layer of felted foam material on a first of said major surfaces thereof; and

a second stretchable material layer bonded to said layer of felted foam on a second of said major surfaces thereof.

5,614,302

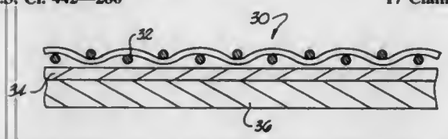
PROTECTIVE GARMENT UTILIZING HEAT STRESS REDUCTION FABRIC

Fred H. Nance, Jr., 3602 Bear Creek Rd., Thompson Station, Tenn. 37179

Filed Jun. 28, 1995, Ser. No. 495,933

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 442—286 **17 Claims**



1. A protective garment adapted to transmit moisture away from a wearer in a heat stressed environment, said garment being washable and reusable, said protective garment comprising:

a covering adapted to cover and protect a predetermined portion of a wearer's body, said covering being made of a composite fabric, said fabric including:

(a) an outer layer comprising a woven or knitted fabric substrate, said woven or knitted fabric substrate being made from synthetic fibers; and

(b) an inner liner comprising a non-porous, hydrophilic film adhesively secured to said woven or knitted fabric substrate, said film being adapted to absorb moisture and to transmit same to said outer layer, said film consisting of a co-polyether-ester polymer.

5,614,303

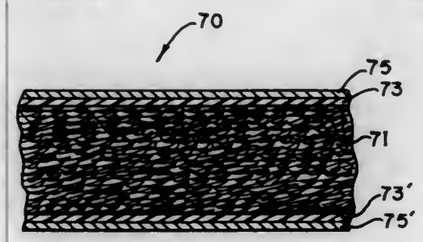
LAMINATED FABRIC PRODUCT, BRASSIERE SHOULDER PAD AND SHOE INSOLE PAD

Joseph F. Baigas, Jr., Charlotte, N.C., assignor to Kem-Wove, Incorporated, Charlotte, N.C.

Continuation-in-part of Ser. No. 135,089, Oct. 12, 1993, Pat. No. 5,417,785, which is a division of Ser. No. 842,470, Feb. 27, 1992, Pat. No. 5,271,997. This application May 22, 1995, Ser. No. 446,243

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 442—247 **32 Claims**



1. A laminated fabric product comprising:

an inner layer comprising a compressed nonwoven batt and a cured binder disposed substantially throughout said batt, said batt having a fiber make-up and overall thickness such that the Frazier permeability of said batt, before the addition of said binder thereto and any compression thereof, is at least 535 as measured by the ASTM D-737 method, said product having a binder:fiber weight ratio of at least 20:80, wherein said binder, when added to said batt and cured therein under compression of said batt, serves to maintain the compressed nature of thickness of said overall product; upper and lower intermediate layers of polyamide fabric laminated to each side of said inner layer; and upper and lower outer layers of textile fabric laminated to the outer surface of each polyamide layer.

5,614,304

Patent Not Issued For This Number

5,614,305

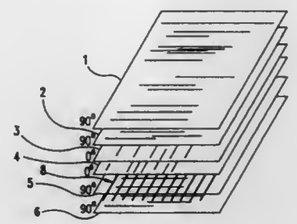
IMPACT AND PERFORATION RESISTANT COMPOSITE STRUCTURES

Jeffrey S. N. Paine, and Craig A. Rogers, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Feb. 8, 1995, Ser. No. 385,547

Int. Cl.^{6} B32B *5/12*

U.S. Cl. 428—301.1 **18 Claims**



1. A composite material having increased impact and perforation resistance, comprising:

a plurality of plys of a fiber reinforced polymer matrix material cured together to form a composition; and

a plurality of shape memory alloy fibers which exhibit martensitic phase transformations distributed in said polymer composite.

5,614,306

CONDUCTIVE FABRIC AND METHOD OF PRODUCING SAME

Anthony Jobe, Union City; Cheryl A. Perkins, Roswell, and Michael D. Powers, Woodstock, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 816,403, Dec. 31, 1991, abandoned. This application May 17, 1995, Ser. No. 443,140

Int. Cl.^{6} D04H *1/58*

U.S. Cl. 442—381 **24 Claims**

1. A method for producing a conductive meltblown web, said method comprising the steps of:

(a) meltblowing a molten thermoplastic polymer to form fibers;

(b) introducing a conductive agent onto said fibers while said fibers are molten; and

(c) depositing said fibers onto a traveling forming wire to form the conductive meltblown web having a static decay value of less than 0.50 seconds and surface resistivity less than 10^{14} ohms/cm.

5,614,307

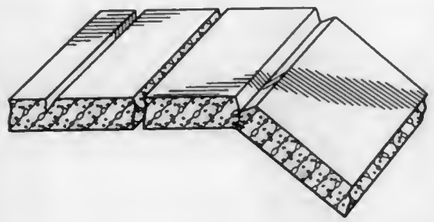
SHEETS MADE FROM MOLDABLE HYDRAULICALLY SETTABLE COMPOSITIONS

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Division of Ser. No. 101,630, Aug. 3, 1993, and a continuation-in-part of Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, and a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, said Ser. No. 101,630is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,205

Int. Cl.[6] B32B *13/02;13/04*

U.S. Cl. 428—294.7 **92 Claims**



1. An article of manufacture comprising a sheet having a substantially dried hydraulically settable matrix formed from a hydraulically settable mixture comprising a hydraulically settable binder, fibers, a rheology-modifying agent, and water, wherein the fibers are substantially homogeneously dispersed throughout the hydraulically settable matrix, the hydraulically settable matrix having a maximum thickness of about 5 mm and a coating on at least a portion thereof and being characterized in that it can be bent, folded or rolled to significantly mechanically deform the matrix without complete rupture of the hydraulically settable matrix.

5,614,308

MACROCOMPOSITE BODIES

Terry D. Claar, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 867,847, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 551,290, Jul. 12, 1990, Pat. No. 5,104,029, which is a continuation-in-part of Ser. No. 296,837, Jan. 13, 1989, abandoned. This application Dec. 9, 1994, Ser. No. 352,983

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—312.6 **19 Claims**

1. A self-supporting macrocomposite body comprising a self-supporting ceramic composite body, at least one second body and at least one body consisting essentially of metal chemically bonding said second body to said ceramic composite body, said bonding arising from an affinity of said metal body for said ceramic composite body and said second body, said self-supporting ceramic composite body comprising a three-dimensionally interconnected ceramic phase extending to the boundaries of said ceramic composite body, said ceramic phase comprising at least one carbide selected from the group consisting of a carbide of zirconium, a carbide of titanium, and a carbide of hafnium, and said ceramic composite body further comprising a boride of the metal corresponding to said carbide, said boride having a platelet structure.

5,614,309

COATED POLYPROPYLENE OR POLYETHYLENE USEFUL FOR MEMBRANES

Tai-Shung Chung, Randolph; Edward R. Kafchinski, Winfield; Rachel S. Kohn, Springfield, and Frank J. Onorato, Jr., Phillipsburg, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 870,526, Apr. 17, 1992, Pat. No. 5,302,418. This application May 19, 1992, Ser. No. 885,801

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—375 **14 Claims**

1. A fiber comprising a polypropylene or polyethylene substrate, a middle layer of maleic-acid grafted polypropylene or polyethylene copolymer bonded to said substrate, and an outer layer comprising a selective polymer having at 25° C. an oxygen permeability of at least about 50 barrers and an oxygen/nitrogen selectivity of at least about 2.0, said selective polymer being bonded to said middle layer.

5,614,310

LOW TRAUMA WOUND DRESSING WITH IMPROVED MOISTURE VAPOR PERMEABILITY

Joaquin Delgado, Stillwater; Richard J. Goetz; Spencer F. Silver, both of Woodbury, and Donald H. Lucast, North St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 4, 1994, Ser. No. 334,683

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—316.6 **44 Claims**

1. A low trauma wound dressing having improved moisture vapor permeability comprising layers of (i) a moisture-vapor permeable backing, and (ii) a contiguous particulate adhesive layer of tacky, substantially solvent-insoluble, solvent-dispersible, acrylate-based, elastomeric, pressure-sensitive adhesive microspheres, wherein the adhesive layer further comprises an antimicrobial system effective for achieving a reduction in surface bacteria which includes at least an antimicrobial agent and a transfer agent.

5,614,311

ADHESIVE TAPE

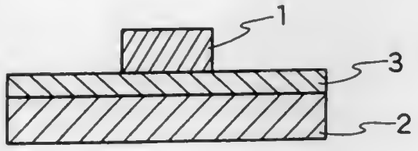
Yasuhiko Morita, and Toshiaki Masuda, both of Osaka, Japan, assignors to Nissho Corporation, Osaka, Japan

Filed May 31, 1995, Ser. No. 455,518

Claims priority, application Japan, Jul. 1, 1994, 6-173207

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—317.3 **4 Claims**



1. An adhesive tape comprising a water impermeable, gas permeable tape substrate, a pressure-sensitive adhesive layer provided on one side of the tape substrate, and a porous sheet provided on a portion of the pressure-sensitive adhesive layer, the porous sheet being capable of expanding to have an apparent density of 0.01 to 0.20 g/cm^3 when absorbing water to saturation.

5,614,312

WET-LAID SHEET MATERIAL AND COMPOSITES THEREOF

Kenneth W. Tucker, Ponca City, Okla., and Gregory P. Weeks, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 59,148, May 7, 1993, abandoned. This application Jun. 27, 1995, Ser. No. 495,243

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **9 Claims**

1. A wet-laid sheet material comprising

(a) thermoplastic fibers or globules or both,

(b) 20–70 weight percent graphite particles having a particle size of −35 Tyler mesh,

(c) 5–20 weight percent reinforcing fibers,

and (d) 0.5–3 weight percent microglass fibers,

wherein the weight percents are based upon the total weight of components (a), (b), (c), and (d) only and wherein the weight percent of the component (a) is sufficient to make the combined weight percents of component (a), (b), (c), and (d) total 100 weight percent.

5,614,313

POLYMERIC FILM HAVING A LAYER COMPRISING CALCINED SILICONE PARTICLES AND CHINA CLAY PARTICLES

Paul D. A. Mills, Darlington, England; Junaid A. Siddiqui, Richmond, Va., and Anton R. Olek, Guisborough, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 7, 1994, Ser. No. 271,448

Int. Cl.[6] B32B *5/16;27/06;27/36*

U.S. Cl. 428—327 **10 Claims**

1. A polymeric film comprising a first layer of polymeric material having on at least one surface thereof a second layer of polymeric material comprising, based upon the weight of the polymer in the second layer, (a) 0.05% to 2.0% by weight of calcined silicone resin particles having a volume distributed median particle diameter of 2.5 to 12.5 μm, and (b) 0.005% to 1.0% by weight of china clay particles having a volume distributed median particle diameter of 0.1 to 2.0 μm, said second layer demonstrating a dynamic coefficient of friction of <0.5, a root mean square surface roughness greater than 100 nm and a Sheffield Roughness in the range from 4 to 20 Sheffield units, said film demonstrating a wide angle haze for a 100 μm thick film of <4%.

5,614,314

MAGNETIC RECORDING MEDIUM HAVING AN ENHANCED DIAMOND BONDING RATIO AND A METHOD FOR THE MANUFACTURE THEREOF

Yoshiaki Itoh, Matsumoto; Michio Osawa, Yokosuka; Youichi Tei, Matsumoto; Yoshiharu Kashiwakura, Matsumoto; Michinori Nishimura, Matsumoto, and Kazuo Nimura, Matsumoto, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 28, 1993, Ser. No. 142,862

Claims priority, application Japan, Oct. 28, 1992, 4-289167; Nov. 30, 1992, 4-319804

Int. Cl.[6] G11B *5/66;* **B32B** *5/16;* **C23C** *14/00*

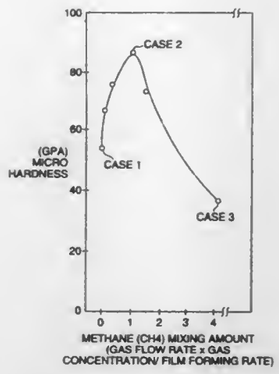
U.S. Cl. 428—332 **8 Claims**

1. A magnetic recording medium comprising:

a non-magnetic base substance;

a magnetic layer laminated on said non-magnetic base substance;

a carbon protective layer formed on said magnetic layer, the carbon protective layer comprising carbon as a main component, the carbon further comprising diamond bonding, polymeric bonding and graphite bonding, wherein the ratio of



diamond bonds to all bonds present in the carbon is higher than the ratio of graphite bonds to all bonds present in the carbon;

a Raman fluorescence intensity ratio (B/A) is not less than 1.5, wherein (B) represents whole peak intensity including the fluorescence intensity and (A) represents substantial peak intensity excluding fluorescence intensity from said (B), wherein said (A) and (B) are obtained from a region ranging from 1545 cm^{-1} to 1575 cm^{-1}, which indicates diamond bond;

a Raman peak intensity ratio (D/G) is within a range of 1.3 to 3.5, wherein (D) represents the peak intensity obtained in a region ranging from 1545 cm^{-1} to 1575 cm^{-1} which indicates diamond bond, and (G) represents the peak intensity obtained in a region ranging from 1340 cm^{-1} to 1440 cm^{-1}, which indicates graphite bond, wherein said each peak intensity, (D) and (G), obtained as a result of excluding the background from said Raman Spectrum and dividing into two peaks using a Gaussian function;

said carbon protective layer further comprises a secondary component which is mixed with said carbon; and,

wherein said secondary component is hydrogen and is present in an amount ranging from about 30 to 50 at. %.

5,614,315

HEAT-SHRINKABLE MULTI-LAYER POLYOLEFIN FILMS

Kazuo Kondo; Teruo Tada, both of Marugame; Toyoki Wano, Zentsuji; Hideki Uehara, Takamatsu, and Tomohisa Tsuchida, Kagawa-ken, all of Japan, assignors to Okura Industrial Co., Ltd., Amagasaki, Japan

Filed Jan. 20, 1995, Ser. No. 375,829

Int. Cl.[6] B32B *27/08;27/32;* **B65B** *53/02*

U.S. Cl. 428—332 **12 Claims**

1. A heat-shrinkable multilayer film comprising two outer layers each consisting essentially of a polyethylene resin, and one or more inner layers interposed between said outer layers, wherein at least one of said inner layers is formed of a blend of a polypropylene resin with a linear ethylene/alpha-olefin copolymer, wherein said copolymer has a molecular weight distribution Mw/Mn of not greater than about 2 and a melt flow ratio of I_{10}/I_2 of not smaller than 7.0.

5,614,316

ADHESIVE TAPE FOR ELECTRONIC PARTS AND LIQUID ADHESIVE

Takeshi Hashimoto; Akira Tezuka; Takeshi Nishigaya, and Fumiyoshi Yamanashi, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

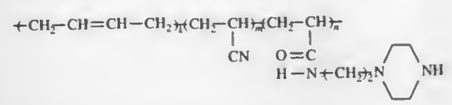
Filed Apr. 23, 1996, Ser. No. 636,444

Claims priority, application Japan, Jun. 8, 1995, 7-164496

Int. Cl.[6] B32B *15/08;7/10;27/28*

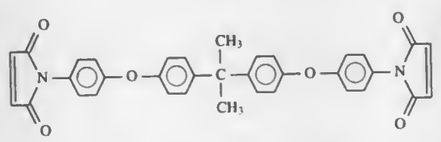
U.S. Cl. 428—344 **9 Claims**

1. An adhesive tape for electronic parts which comprises an adhesive layer provided on a surface of metal sheet, said adhesive layer being semi-cured into a B-stage and comprised of: (a) a piperazinylethylaminocarbonyl-containing butadiene-acrylonitrile copolymer having weight average molecular weight of 10,000–200,000, acrylonitrile content of 5–50% by weight, and amino equivalent of 500–10,000, represented by the following formula (I):

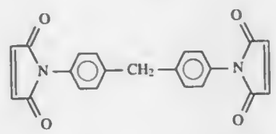


(I)

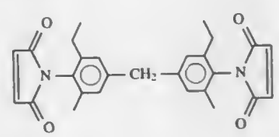
wherein, k, m, and n are molar ratios and taking n as 1, k is a number of 3–175, and m is a number of 0.3 to 93; and (b) a compound having at least two maleimide groups selected from the compounds represented by the following formulae (II-1) to (II-6):



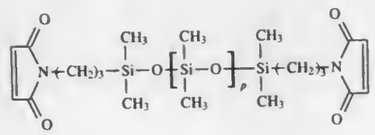
(II-1)



(II-2)

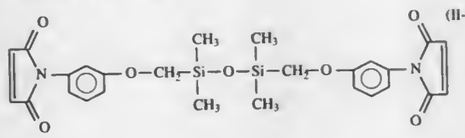


(II-3)



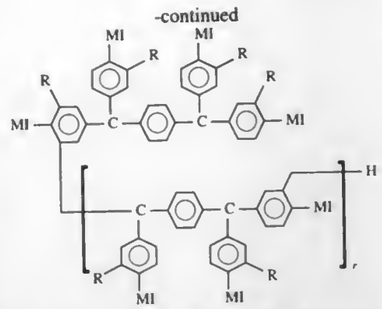
(II-4)

wherein p is an integer of from 0 to 7,



(II-5)

-continued



(II-6)

wherein MI=maleimide group, R=H or CH_3, and r=1–5, the ratio of component (b) based on 100 parts by weight of component (a) being in a range of 10 to 900 parts by weight, said adhesive layer being composed of at least two semi-cured layers having each a different status of semi-cure, and the semi-cured layer having a higher status of semi-cure being positioned by the side of the metal sheet.

5,614,317

Patent Not Issued For This Number

5,614,318

ANTI-STATIC ANCHOR COATING AGENT AND LAMINATED COMPOSITE FILM

Kanji Hayashi, Tokyo, Japan, assignor to Altech Company Limited, Tokyo, Japan

Filed Oct. 5, 1995, Ser. No. 539,355

Claims priority, application Japan, Oct. 31, 1994, 6-267119

Int. Cl.[6] B32B *7/12;7/10;27/00*

U.S. Cl. 428—353 **4 Claims**

1. An anti-static laminated film having an anchor coating layer comprising a plastic film base material and a bonding anchor coating agent including polyethylene imine and a bridge formation reactive macromolecule having the ability to prevent electrostatic induction.

5,614,319

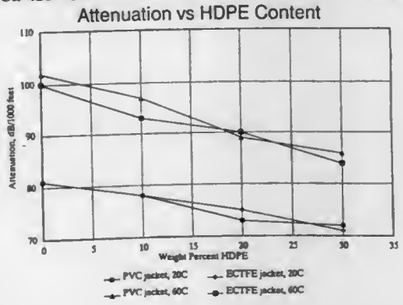
INSULATING COMPOSITION, INSULATED PLENUM CABLE AND METHODS FOR MAKING SAME

Rob Wessels; Gary Craton, and Neeli Soundararajan, all of Catawba County, N.C., assignors to CommScope, Inc., Hickory, N.C.

Filed May 4, 1995, Ser. No. 435,870

Int. Cl.[6] B32B *15/00;* **D02G** *3/00*

U.S. Cl. 428—379 **16 Claims**



1. An electrical cable comprising

at least one pair of twisted wires each wire thereof having a conductor covered with an insulating composition comprising an alloy of from about 10% to about 50% by weight of said alloy of a polyolefin selected from the group consisting of polyethylene, polypropylene, high density polyethylene, medium density polyethylene, low density polyethylene, ethylene-propylene rubber, linear low density polyethylene and copolymers of ethylene with other alpha olefins, and

the balance of said alloy being a partially fluorinated copolymer selected from the group consisting of ethylene-trifluoroethylene and ethylene-chlorotrifluoroethylene.

5,614,320

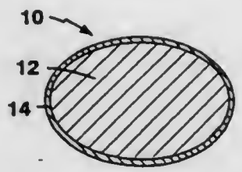
PARTICLES HAVING ENGINEERED PROPERTIES

Alan F. Beane, 34 Vincent Dr., Gilford, N.H. 03246, and Glenn L. Beane, Perch Pond Rd., RFD3, Plymouth, N.H. 03264

Division of Ser. No. 339,577, Nov. 14, 1994, Pat. No. 5,453,293, which is a continuation of Ser. No. 102,532, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 731,809, Jul. 17, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,560

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **17 Claims**



1. A coated particle, comprising

a discreet core particle comprising a first material, said core particle having a first value of at least one intrinsic property, and

a coating comprising a second material formed on a surface of said core particle, said coating having a second value of said at least one intrinsic property, said second value differing from said first value, the volume of said coating being relative to the volume of said core, particle,

said coated particle exhibiting a third value of said at least one intrinsic property, said first and second materials and said volume of said coating relative to said volume of said core particle being selected so that said coated particle exhibits said third value of said at least one intrinsic property, said third value of said at least one intrinsic property being a function of said first and second values and said volume, said third value of said at least one intrinsic property differing from said first and second values.

5,614,321

ABRASION RESISTANT, CURABLE HARDCOATING COMPOSITIONS AND TINTED ARTICLES MADE THEREFROM

George F. Medford, Ballston Lake; Gregory R. Gillette, Clifton Park, both of N.Y., and Norio Sato, Obta, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 14, 1995, Ser. No. 422,368

Int. Cl.[6] B32B *27/36;9/04;13/12;* **C08F** *2/46*

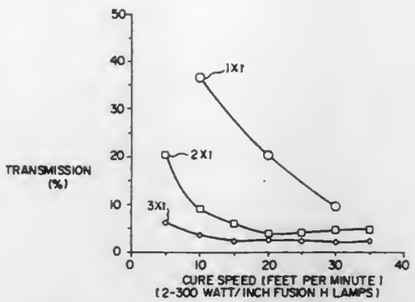
U.S. Cl. 428—417 **3 Claims**

1. A tinted article made by:

(I) applying to at least one surface of a substrate a curable coating composition comprising:

(a) an effective amount of a nonvolatile colloidal silica;

(b) an effective amount of 3-methacryloxypropyl trimethoxysilane wherein said 3-methacryloxypropyl trimethoxysilane contains at least one functional group capable of reacting with said colloidal silica;



(c) an effective amount of hexane diol diacrylate and trimethylol propane triacrylate wherein said hexane diol diacrylate and trimethylol propane triacrylate contain two or more functional groups selected from the group consisting of acryloxy and methacryloxy;

(d) a catalytic amount of the free radical initiator methyl benzoyl formate; and

(e) 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexyl carboxylate wherein said 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexyl carboxylate remains substantially unpolymerized after the remainder of the coating is cured;

(2) curing said coating composition on the surface of said substrate by exposing said composition to high intensity radiation to form a coated surface on the substrate; and

(3) immersing said coated surface on the substrate in a bath containing a colorant for a period of time sufficient for the coated surface to absorb a desired amount of said colorant;

wherein said curable coating composition does not comprise any cationic initiator.

5,614,322

FLEXIBLE PLASTIC WINDOW SHIELD AND PROCESS FOR ITS PRODUCTION

Ingrid Musil, Aachen; Karin Broring, Monchengladbach; Udo Gelderie, and Gerhard Holzer, both of Aachen, all of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 919,264, Jul. 27, 1992, abandoned, and a continuation-in-part of Ser. No. 678,705, Apr. 1, 1991, Pat. No. 5,277,944. This application Jan. 10, 1994, Ser. No. 180,815

Claims priority, application Germany, Jul. 26, 1991, 41 24 839.2

Int. Cl.[6] C08G *18/10*

U.S. Cl. 428—423.1 **25 Claims**

1. A flexible window shield consisting of a polyurethane monolayer sheet in the shape of an automobile window shield wherein said polyurethane has been prepared by reacting:

(a) 100 parts by weight of a polyol component consisting essentially of

(a1) from 30 to 70% by weight of a bifunctional hydroxyl group containing polyester with an average molar mass of 800 to 1200 g/mole and an OH content of 2.83 to 4.25% and

(a2) 30 to 70% by weight of a trifunctional polyol based on caprolactone with an average molar mass of 400 to 650 g/mole and an OH content of 7.9 to 12.7%;

(b) 40 to 65 parts by weight of an isocyanate component comprising

(b1) from 70 to 100% by weight of a polyisocyanate obtained by dissolving a cycloaliphatic isocyanate urea adduct in isophorone diisocyanate and having a NCO content of 25 to 31% and

(b2) 0 to 30% by weight of an isophorone diisocyanate.

5,614,323

POWDER COATING COMPOSITIONS

Yeong-Ho Chang, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 410,591, Mar. 27, 1995, abandoned, which is a continuation of Ser. No. 681,021, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 438,128, Nov. 20, 1989, abandoned. This application Apr. 12, 1996, Ser. No. 631,433

Int. Cl.[6] C08L *67/02;75/06;* B32B *27/40*

U.S. Cl. 428—425.8 31 Claims

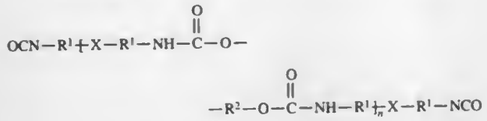
1. A thermosetting coating composition in the form of a powder having an average particle size of about 10 to 300 microns which when coated on a panel and cured to 350° C. for 20 minutes will exhibit a solvent resistance characterized by at least 200 methyl ethyl ketone (MEK) double rubs without exposing bare metal, said composition comprising:

(1) a hydroxyl polyester component comprised of:

(A) 75 to 20 weight percent, based on the weight of the hydroxyl polyester component, of a semi-crystalline polyester having a Tg of less than 50° C., a hydroxyl number of about 20 to 100, an inherent viscosity of about 0.1 to 0.5, a melting range of about 70° to 150° C., a number average molecular weight of about 1500 to 10,000 and a heat of fusion (second heating cycle of DSC) of 5 to about 20 cal/g-°C.; and

(B) 25 to 80 weight percent of an amorphous polyester having a glass transition temperature (Tg) of greater than 40° C., a hydroxyl number of about 20 to 100 and an inherent viscosity of about 0.1 to 0.5; and

(2) a cross-linking effective amount of an adduct of the 1,3-diazetidine-2,4-dione dimer of isophorone diisocyanate and a diol having the structure



wherein

R^1 is a divalent 1-methylene-1,3,3-trimethyl-5-cyclohexyl radical;

R^2 is a divalent aliphatic, cycloaliphatic, araliphatic or aromatic residue of a diol; and

X is a 1,3-diazetidine-2-4,dionediyl radical; wherein the ratio of NCO to OH groups in the formation of the adduct is about 1:0.5 to 1:0.9, the mole ratio of diazetidinedione to diol is from 2:1 to 6:5, the content of free isocyanate groups in the adduct is not greater than 8 weight percent and the adduct has a molecular weight of about 500 to 4000 and a melting point of about 70° to 130° C.

5,614,324

MULTI-LAYER STRUCTURES CONTAINING A SILANE ADHESION PROMOTING LAYER

Charles A. Poutasse, Beachwood, and Richard L. Luthy, Beverly, both of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Jul. 24, 1995, Ser. No. 505,741

Int. Cl.[6] B32B *27/04*

U.S. Cl. 428—447 20 Claims

1. A multi-layer structure, comprising:

a metal foil layer;

a prepreg layer wherein the prepreg layer is made from a resin curable via a carbon carbon double bond curing mechanism; and

an adhesion promoting layer between the metal foil layer and the prepreg layer comprising a silane of the formula

$(Y—R)_aSi(X)_{4-a}$

wherein a is 1 or 2, X is a hydrolyzable group, R is a hydrocarbon group and Y is a functional group selected from the group consisting of heterocyclic, amide and a styryl containing group, with the proviso that X and Y are not epoxy-containing groups.

5,614,325

COATED PAPER FOR MACHINES HAVING SHEET AND FRICTION FEED SYSTEMS

Christophe Chartier, Voiron, and Alain Barthez, Paris, both of France, assignors to Arjo Wiggins Papiers Couches S.A., France

PCT No. PCT/FR93/01043, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/12727, PCT Pub. Date Jun. 9, 1994

PCT Filed Oct. 26, 1993, Ser. No. 424,516

Claims priority, application France, Nov. 26, 1992, 92 14231

Int. Cl.[6] B32B *29/00*

U.S. Cl. 428—537.5 9 Claims

1. A coated printing paper that is nondielectric, usable in sheet and friction feed machines, coated on at least one side with a pigmented coating having a dry coating weight per side of at least 12 g/m^2, wherein said pigmented coating contains at least one conductive substance and wherein the surface resistivity measured according to ASTM D257-66 is less than or equal to 10^{11} ohms at a relative humidity of 50 percent.

5,614,326

Patent Not Issued For This Number

5,614,327

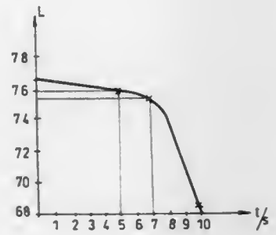
PROCESS FOR PROTECTING A SILVER OR SILVER-COATED PART

Richard Morello, Annecy-Le-Vieux, France, assignor to Sarthoise De Revetements Electrolytiques, Marolles-Les-Braults, France

Continuation of Ser. No. 303,507, Sep. 9, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 558,937

Int. Cl.[6] B32B *15/00;* C25D *3/58;11/38*

U.S. Cl. 428—632 6 Claims



1. Method for protecting, against corrosion, a silver or silver-coated part, comprising:

a first step of electrolytically depositing on the said part a flash coating of a Cu—Sn—(Zn) alloy comprising from 53 to 75% by weight of copper, from 25 to 47% by weight of tin and from 0 to 10% by weight of zinc, the thickness of said coating being of less than 0.01 μm, and

a second step of an electrolytic chromating of the part previously coated with said alloy.

5,614,328

REFLOW-PLATED MEMBER AND A MANUFACTURING METHOD THEREFOR

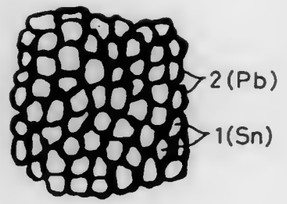
Satoshi Suzuki; Kazuya Takahashi; Teruo Kawada; Yuuji Suzuki, and Morimasa Tanimoto, all of Tokyo, Japan, assignors to The Furukawa Electric Co. Ltd., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,330

Claims priority, application Japan, Jan. 19, 1995, 7-006370

Int. Cl.[6] B32B *15/20;* C25D *5/50*

U.S. Cl. 428—647 9 Claims



1. A method for manufacturing a reflow-plated member, comprising:

a process for forming a plated layer of Sn or Sn alloy on the surface of a base material, at least the surface of which is formed of Cu or Cu alloy, by electroplating; and

a process for running the base material at a traveling speed equivalent to 80% to 96% of the lowest traveling speed that said plated layer does not melt when said base material is continuously run for reflowing in a heating furnace at a predetermined temperature.

5,614,329

SOFT-MAGNETIC THIN FILM

Osamu Shimizu, Minami-ashigara, and Kanji Nakanishi, Hadano, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1992, Ser. No. 845,619

Claims priority, application Japan, Mar. 5, 1991, 3-062468

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 T 19 Claims



1. A soft magnetic thin film represented by the formula $Fe_aX_bZr_cB_d$, wherein a, b, c and d stand for atomic percents of the components Fe, X, Zr and B, respectively, and X indicates at least one member selected from the group consisting of Co, Ni, Cr, and V, wherein $86 \leq a+b \leq 93$, $0 < b \leq 10$, $4 \leq c \leq 9$ and $1 \leq d \leq 8$, wherein said thin film is formed on a substrate by vapor deposition, and said thin film has a coercivity of 2 Oe or less.

5,614,330

PORCELAIN COATING COMPOSITIONS FOR LOW EXPANSION PORCELAIN CORES AND THE RESULTING ALL-CERAMIC DENTAL RESTORATIONS

Carlino Panzera; Jana N. Pruden, both of Belle Mead, and Richard A. Brightly, Westwood, all of N.J., assignors to American Thermocraft Corporation, Somerset, N.J.

Filed Aug. 18, 1995, Ser. No. 516,579

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—697 13 Claims

1. An all-ceramic dental restoration comprising a ceramic core and at least one coating thereon of a porcelain composition having a maturing temperature of from about 850° to about 1050° C. and a coefficient of thermal expansion of from about 4.0 to about 13 parts per million per °C. from room temperature to 500° C., said porcelain composition comprising:

Component	Amount (Wt. %)
SiO_2	69–75
Al_2O_3	4.0–9.5
Na_2O	5–10
K_2O	0–4
CaO	0–1.5
MgO	0–6
B_2O_3	6–15
F	0–3.

5,614,331

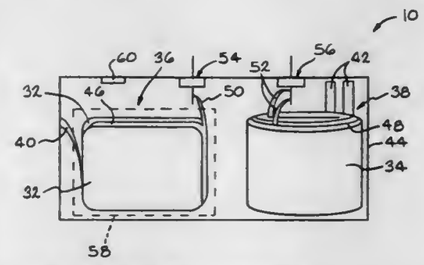
MEDIUM AND HIGH DISCHARGE RATE COMBINATION BATTERY AND METHOD

Esther S. Takeuchi, East Amherst, and Karen M. Walsh, Marilla, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,260

Int. Cl.[6] H01M *2/20*

U.S. Cl. 429—9 49 Claims



1. An electrochemical battery, comprising:

a) a casing means;

b) a first electrochemical cell housed within the casing means, the first cell comprising:

i) a first anode means comprising alkali metal electrically associated with a first anode current collector;

ii) means for connecting the first anode current collector to an external lead;

iii) a first cathode means of cathode active material electrically associated with a first cathode current collector;

iv) means for connecting the first cathode current collector to an external lead; and

v) an electrolyte operatively associated with the first anode means and the first cathode means; and

c) a second electrochemical cell housed within the casing means, the second cell comprising:

i) a second anode means comprising alkali metal electrically associated with a second anode current collector;

ii) means for connecting the second anode current collector to an external lead;

iii) a second cathode means of cathode active material electrically associated with a second cathode current collector;
iv) means for connecting the second cathode current collector to an external lead; and
v) the electrolyte operatively associated with the second anode means and the second cathode means; and

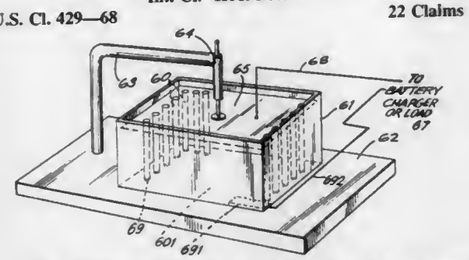
wherein the first cell is dischargeable independent of the second cell to provide separate and independent sources of electrical energy.

5,614,332

METHOD AND APPARATUS FOR INCREASING CHARGING AND DISCHARGING EFFICIENCY IN BATTERIES

Richard Pavelle, 23 Berksbire Dr.; Ronald M. Latanision, 28 Nassau Dr., and Paul Bursteln, 16 Glengarry, all of Winchester, Mass. 01890

Continuation of Ser. No. 452,205, May 26, 1995, abandoned. This application Aug. 5, 1996, Ser. No. 692,322
Int. Cl.[6] H01M *10/46*
U.S. Cl. 429—68 **22 Claims**



1. An apparatus comprising: a chargeable and dischargeable battery including electrodes and an electrolyte and means for mechanically manipulating at least one of the electrodes to plastically deform same to increase the charging and discharging efficiency thereof.

5,614,333

ELECTROCHEMICAL CELL LABEL WITH INTEGRATED TESTER

John Hughen, Cucamonga, Calif.; Scott Ferguson, Southbury, and Michael Garris, Litchfield, both of Conn., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 456,428, Jun. 1, 1995, which is a continuation-in-part of Ser. No. 315,317, Sep. 29, 1994. This application Feb. 8, 1996, Ser. No. 598,455
Int. Cl.[6] H01M *10/48*
U.S. Cl. 429—93 **22 Claims**



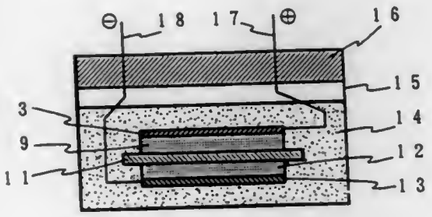
1. In combination, an electrochemical cell and a label/tester composite; said cell comprising positive and negative terminals and a metal housing, a portion of said metal housing forming one of said terminals; said metal housing having a cylindrical wall with first and second shoulders at respective ends thereof; said label/tester composite being attached to the cell housing; said composite including a film around said housing, said film having a thermochromic material disposed on the side of the film facing said housing, an electrically conductive material in thermal contact with the thermochromic material, said conductive material being between said thermochromic material and said housing, and means for thermally insulating said conductive material from the cell housing, wherein said insulating means comprises a substantially electrically nonconductive material, and wherein said label/tester composite comprises means for enabling at least one end of the composite to be heat shrunk evenly over one of said cell shoulders, said means for at least one end of the composite to be heat shrunk evenly over one of said shoulders comprises at least two conductive fingers protruding from said conductive material, said composite further comprising a partition coating between said conductive material and said electrically nonconductive material, wherein a portion of said partition coating forms a plurality of protruding ribs, wherein said conductive fingers rest on said ribs, wherein said ribs define therebetween a plurality of cavities through which said conductive fingers may be manually pushed in order to electrically contact said conductive fingers with one of said terminals.

5,614,334

MATERIAL FOR LITHIUM BATTERY POSITIVE ELECTRODE AND PRODUCTION THEREOF

Masahiro Kamauchi, and Yoshinori Takada, both of Amagasaki, Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki, Japan

PCT No. PCT/JP93/01686, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO95/12900, PCT Pub. Date May 11, 1995
PCT Filed Nov. 17, 1993, Ser. No. 481,257
Claims priority, application Japan, Nov. 2, 1993, 5-297405
Int. Cl.[6] H01M *4/52;4/62*
U.S. Cl. 429—217 **14 Claims**



1. A material for a lithium battery positive electrode in the form of a sheet comprising an organic binder and a powdery active material made from a member or a sufficient number of members selected from the group consisting of lithium phosphates, lithium-cobalt phosphates, cobalt oxides and lithium-cobalt oxides to provide lithium, cobalt and phosphorus in a proportion of more than 0.1 mole of cobalt and more than 0.2 mole of phosphorus both per mole of lithium.

5,614,335

BLANKS FOR HALFTONE PHASE SHIFT PHOTOMASKS, HALFTONE PHASE SHIFT PHOTOMASKS, AND METHODS FOR FABRICATING THEM

Keiji Hashimoto; Junji Fujikawa; Hiroshi Mohri; Masahiro Takahashi; Hiroyuki Miyashita, and Yukio Iimura, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 282,465
Claims priority, application Japan, Jul. 30, 1993, 5-188586
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **16 Claims**

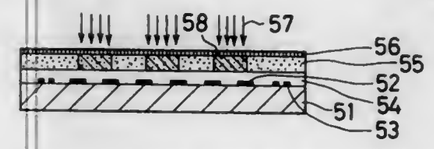
1. A halftone phase shift photomask blank comprising: a halftone phase shift layer on a substrate, wherein said phase shift layer has a variable transmittance, which can be varied after formation of said phase shift layer by an independent step to adjust the transmittance within the range of 1% to 50%, inclusive, without substantially affecting the dimensions of said phase shift layer.

5,614,336

PHASE SHIFT LAYER-CONTAINING PHOTOMASK, AND ITS PRODUCTION AND CORRECTION

Koichi Mikami; Hiroyuki Miyashita; Yoichi Takahashi; Hiroshi Fujita, and Masa-aki Kurihara, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 763,459, Sep. 20, 1991, abandoned. This application Nov. 10, 1994, Ser. No. 337,136
Claims priority, application Japan, Sep. 21, 1990, 2-253717; Sep. 21, 1990, 2-253718; Dec. 27, 1990, 2-407929; Feb. 28, 1991, 3-033891; Mar. 13, 1991, 3-047856
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **2 Claims**



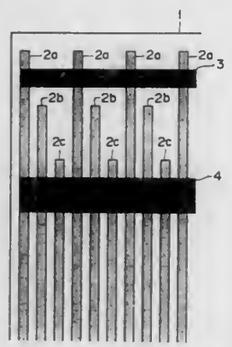
1. A process for producing a phase shift layer-containing photomask comprising the steps of:
providing a blank including a phase shifter layer on a substrate,
forming a thin resist film on the phase shifter layer,
forming an electrically conductive thin film on the thin resist film layer,
drawing a pattern on the thin resist film with ionizing radiations,
developing the thin resist film after the pattern drawing to form a resist pattern,
etching an exposed portion of the phase shifter layer using the resist pattern as a mask, and
removing the remainder of the resist after the completion of etching.

5,614,337

METHOD FOR MANUFACTURING MULTI-COLOR FILTER AND FULL COLOR DISPLAY DEVICES

Tsutomu Watanabe, Itami; Jun-ichi Yasukawa, Chigasaki, and Toshiaki Ota, Narashino, all of Japan, assignors to Shinto Paint Co., Ltd., Hyogo-Ken, Japan

Filed Nov. 30, 1995, Ser. No. 565,154
Claims priority, application Japan, Dec. 20, 1994, 6-335846
Int. Cl.[6] G02F *1/1335;* **G02B** *5/20*
U.S. Cl. 430—7 **6 Claims**



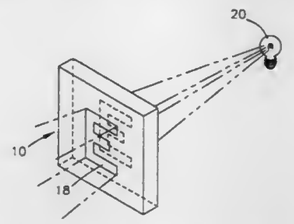
1. A method for manufacturing multi-color filters by electrodeposition wherein, among plural sets of electroconductive circuits prepared on a transparent substrate, a given set of circuits on which a first color layer is to be formed is provided with a feeder circuit traversely in one lot; the first electrodeposition is conducted by applying an electric current only to this set of circuits in order to impress a given voltage, thereby forming the first color layer; and the electrodeposition is conducted by applying an electric current to each of the remaining sets of circuits successively to form respective color layers, thereby forming a multi-color filter, the method being characterized by conducting at least the first electrodeposition to form the first color layer in such a manner that the voltage is increased gradually to a given level over a given period of time.

5,614,338

PROCESS FOR MANUFACTURING BACKLIT DISPLAYS UTILIZING TREATED PLASTICS AND LASER ENERGY

Robert A. Pyburn, Carmel, and Michael E. Fye, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 14, 1995, Ser. No. 422,398
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—13 **20 Claims**



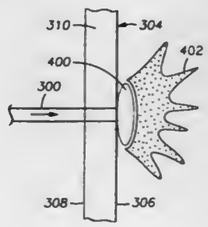
1. A method for producing a graphic for a backlit component, the method comprising the steps of:
forming the backlit component from a substantially transparent polymeric material in which pigmentation is dispersed, the pigmentation being reactive to laser energy, the backlit component having a front surface for display and a back surface for facing a light source; and
selectively exposing a portion of the backlit component to laser energy such that the portion becomes substantially opaque while remaining portions of the backlit component are not exposed to the laser energy and thereby remain substantially transparent, the portion and remaining portions cooperating to produce the graphic for the backlit component when the backlit component is backlit with the light source.

5,614,339

OBJECT RECYCLING BY LASER OF COATING MATERIAL

Nikolai Tankovich, San Diego, Calif., assignor to Lumedics, Ltd., San Diego, Calif.

Filed Aug. 9, 1995, Ser. No. 512,825
Int. Cl.[6] B05D *3/06;* **G21H** *5/00;* **B23K** *26/00*
U.S. Cl. 430—19 **115 Claims**



1. A method for recycling a document having a first surface, a second surface bearing printed matter, and a body interposed between the first and second surfaces, said method comprising the steps of directing a laser beam through the first surface and the body to create a plasma shock wave at a target region of the second surface and ejecting printed matter proximate the target region.

18. A method for cleaning printing from a sheet of recording media, comprising the following steps:

directing a laser beam into a body of the sheet through a first surface of the sheet, wherein the body is interposed between the first surface and an opposing second surface; and

creating a plasma shock wave at a target region of the second surface to propel printing proximate the target region from the sheet.

5,614,340

MIGRATION IMAGING, OPTIONALLY WITH DYES OR PIGMENTS TO EFFECT BLEACHING

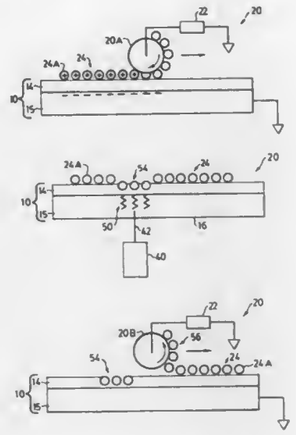
Douglas E. Bugner; William Mey, both of Rochester, and Dennis R. Kamp, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 745,661, Aug. 16, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,632

The portion of the term of this patent subsequent to Jun. 6, 2015, has been disclaimed.

Int. Cl.[6] G03G *13/00;9/00;5/16;* **G02F** *1/00*

U.S. Cl. 430—41 **20 Claims**



1. A method of migration imaging using an imaging element comprising a thermoplastic imaging surface layer, said method comprising:

depositing marking particles as a substantially continuous layer on said thermoplastic imaging surface layer;

attracting the marking particles to said imaging element;

exposing the imaging element in an imagewise pattern with near-infrared radiation, whereby said thermoplastic imaging surface layer is heated so that the marking particles addressed by said exposing migrate into said thermoplastic imaging surface layer to form an imagewise pattern; and

removing unaddressed marking particles from said thermoplastic imaging surface layer, wherein a bleachable composition comprising an acid photogenerator and a near-infrared radiation-absorbing dye, or pigment which undergoes bleaching, during said exposing, is present in the marking particles; or both said thermoplastic imaging surface layer and the marking particles; or the acid photogenerator is in the marking particles and the near-infrared radiation-absorbing dye or pigment is in said thermoplastic imaging surface layer.

5,614,341

MULTILAYERED PHOTORECEPTOR WITH ADHESIVE AND INTERMEDIATE LAYERS

Satchidanand Mishra, Webster; Kathleen M. Carmichael, Williamson, and Donald P. Sullivan, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 24, 1996, Ser. No. 668,808

Int. Cl.[6] G03G *9/097;5/14*

U.S. Cl. 430—59 **22 Claims**

1. An electrophotographic imaging member comprising a support substrate having a two electrically conductive ground plane layer comprising a layer comprising zirconium over a layer comprising titanium, a hole blocking layer, an adhesive layer comprising a copolyester film forming resin, a charge generation layer comprising a perylene or a phthalocyanine, an intermediate layer in contact with said charge generation layer, said intermediate layer comprising a film forming carbazole polymer, and a hole transport layer in contact with said intermediate layer, said hole transport layer being substantially nonabsorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

6. An electrophotographic imaging member according to claim 1 wherein said intermediate layer comprises said carbazole polymer and an arylamine charge transport molecule.

5,614,342

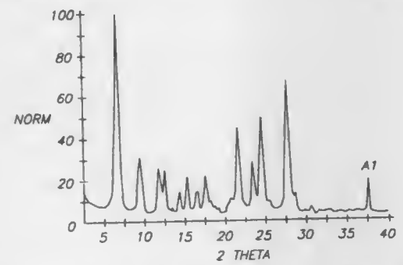
METHODS FOR PREPARING COCRYSTALS OF TITANYL FLUOROPHTHALOCYANINES AND UNSUBSTITUTED TITANYL PHTHALOCYANINE, ELECTROPHOTOGRAPHIC ELEMENTS, AND TITANYL PHTHALOCYANINE COMPOSITIONS

Michel F. Molaire, and Jeanne E. Kaeding, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1995, Ser. No. 434,148

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—78 **16 Claims**



1. A method for preparing a cocrystallized titanyl phthalocyanine-titanyl fluorophthalocyanine composition comprising the steps of:

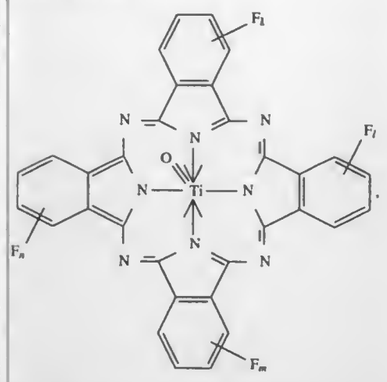
admixing crude unsubstituted titanyl phthalocyanine and crude titanyl fluorophthalocyanine to provide a pigment mixture;

increasing the amorphousness of said pigment mixture as determined by X-ray crystallography using X-radiation characteristic of Cu Kα at a wavelength of 1.541 Å of the Bragg angle 2θ to provide an amorphous pigment mixture;

contacting said amorphous pigment mixture with organic solvent having a gamma$_a$ hydrogen bonding parameter of less than 8.0 so as to produce cocrystals of said phthalocyanine and fluorophthalocyanine; and

prior to said contacting, substantially excluding said amorphous pigment mixture from contact with organic solvent having a gamma$_a$ hydrogen bonding parameter greater than 9.0.

12. An electrophotographic element comprising an electrically conductive layer and a photogenerating layer overlaying said electrically conductive layer, said photogenerating layer including the composition of matter comprising cocrystals including unsubstituted titanyl phthalocyanine and titanyl fluorophthalocyanine having the general structure:



where each of k, l, m, and n is independently an integer from 0 to 4 and at least one of k, l, m, and n is an integer from 1 to 4;

said cocrystals exhibiting an x-ray diffraction spectrum differing from the x-ray diffraction spectrum of a physical mixture of first crystals consisting essentially of said unsubstituted titanyl phthalocyanine and second crystals consisting essentially of said titanyl fluorophthalocyanine, wherein said cocrystal composition has a first intensity peak at 7.4°±0.2° with respect to X-rays characteristic of Cu Kα at a wavelength of 1.541 Å of the Bragg angle 2θ at and a second intensity peak at 28.6°±0.2°.

5,614,343

ELECTROPHOTOGRAPHIC COPYING PROCESS FOR REVERSAL DEVELOPMENT

Mamoru Nozomi, Yokohama; Masayuki Hirol, Odawara, and Itaru Ogawa, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,655

Claims priority, application Japan, Jul. 25, 1994, 6-172663

Int. Cl.[6] G03G *21/08*

U.S. Cl. 430—100 **9 Claims**

1. An electrophotographic copying process which is capable of forming plural copies of an image for reversal development employing a laminated electrophotographic photoreceptor, comprising the steps of at least:

(a) charging said laminated electrophotographic photoreceptor having a charge generating layer containing a phthalocyanine compound and a charge transport layer laminated on an electroconductive support, said photographic photoreceptor being rotated in any give photocopying cycle;

(b) exposing the photoreceptor to an image;

(c) developing an image on the photoreceptor; and

(d) transferring said developed image to a receiving medium, the steps (a), (b), (c) and (d) being conducted in the stated order;

(e) charge erasing the photoreceptor by light, wherein the step (e) of charge erasure by light is not conducted in the image forming process of the first rotation cycle of the photoreceptor, but is conducted in the image forming process of the second and succeeding rotation cycles of the photoreceptor.

5,614,344

TONER FOR DEVELOPING ELECTROSTATIC IMAGES AND IMAGE FORMING METHOD

Hiroaki Kawakami, Yokohama; Shinji Doi, Kawasaki; Hirohide Tanikawa; Masatsugu Fujiwara, both of Yokohama, and Kazunori Kato, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,957

Claims priority, application Japan, Jun. 14, 1994, 6-154343

Int. Cl.[6] G03G *13/08;9/08*

U.S. Cl. 430—102 **24 Claims**

12. An image forming method comprising;

forming an electrostatic image on an electrostatic image bearing member;

forming a thin layer of a toner on a developer carrying member by means of a coating member pressing the developer carrying member via the toner; and

developing the electrostatic image by transferring the toner on the developer carrying member to the electrostatic image bearing member to form a toner image;

wherein said toner comprises;

(a) toner particles containing at least a binder resin and a colorant; and

(b) a fine powder having base particles on the surfaces of which coats of crystalline low electrical resistance tin oxide are formed;

said crystalline low electrical resistance tin oxide containing less than 100 ppm of antimony, arsenic and phosphorus, and having an oxygen deficiency structure.

5,614,345

PAPER FOR THERMAL IMAGE TRANSFER TO FLAT POROUS SURFACE

Rainer Gumbiowski; Rolf Ebisch, both of Osnabrück, and Hartmut Schulz, Wallenhorst, all of Germany, assignors to Felix Schoeller Jr. Foto-Und Spezialpapiere GmbH & Co. KG, Osnabruck, Germany

Continuation of Ser. No. 437,012, May 8, 1995, abandoned. This application May 28, 1996, Ser. No. 654,188

Claims priority, application Germany, May 19, 1994, 44 17 520.5

Int. Cl.[6] G03C *5/52;8/26;11/12*

U.S. Cl. 430—104 **14 Claims**

1. A paper for thermal image transfer to a flat porous surface, comprising a paper support, an intermediate layer on said paper support, said intermediate layer containing an ethylene copolymer or an ethylene copolymer mixture, and a dye-receiving layer on said intermediate layer, said dye-receiving layer having a coating weight in the range of 0.1 to 0.5 g/m^2; wherein said dye-receiving layer is bonded to said intermediate layer such that when an image is transferred to a flat porous surface, said intermediate layer remains bonded to said dye-receiving layer while said paper support separates from said intermediate layer.

5,614,346

METAL OXIDE- AND METAL-COATED CARRIERS FOR ELECTROPHOTOGRAPHY

Jörg Adel, Ludwigshafen, and Rainer Dyllick-Brenzinger, Weinheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 31, 1995, Ser. No. 381,568

Claims priority, application Germany, Feb. 7, 1994, 44 03 678.5

Int. Cl.[6] G03G *9/107;9/113*

U.S. Cl. 430—106.6 **11 Claims**

1. A particulate carrier for electrophotography, comprising:

particles of a magnetic material, which form the cores of the carrier particles, each magnetic particle coated with an inner

metal oxide layer and an outer metal or magnetite layer or with an inner metal or magnetite layer and an outer metal oxide layer.

5,614,347

TONER FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Mitsuo Aoki; Tetsuo Isoda, both of Numazu; Masanori Suzuki, Shizuoka-ken, and Yoshihiro Suguro, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 8, 1996, Ser. No. 597,413

Claims priority, application Japan, Feb. 8, 1995, 7-020732; Jan. 22, 1996, 8-008774

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 **4 Claims**

1. A toner for developing latent electrostatic images comprising a hydrogenated petroleum resin component, with the image fixing temperature of said toner being in the range of 100° C. to 140° C., and the penetration of said toner, measured when allowed to stand at 60° C. for 4 hours in accordance with Japanese Industrial Standards (JIS) K 2235, being 5 mm or more.

5,614,348

TONER FOR NON-MAGNETIC ONE-COMPONENT DEVELOPMENT AND METHOD FOR CONTACT TYPE DEVELOPMENT USING THE SAME

Kazushige Inoue; Yoshihisa Kuramae; Takashi Nagai, and Toru Takatsuna, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 20, 1995, Ser. No. 530,618

Claims priority, application Japan, Oct. 4, 1994, 6-240268

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **7 Claims**

1. A toner for non-magnetic one-component development, which is a positive charging toner used in combination with a positive charge type single-layer organic photoconductor,

wherein an apparent density of said toner is not less than 0.32 g/cc, and when supplying said toner to a developing roller immediately after the consumption at a black solid part, a charged amount is not less than 7 μC/g as an absolute value.

5,614,349

USING A LEWIS BASE TO CONTROL MOLECULAR WEIGHT OF NOVOLAK RESINS

M. Dalil Rahman, Warwick; Daniel P. Aubin, Rockville; Dana L. Durham, East Greenwich, and Ralph R. Dammel, Coventry, all of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 29, 1992, Ser. No. 997,942

Int. Cl.[6] G03F *7/023;* **C08G** *8/04*

U.S. Cl. 430—169 **6 Claims**

1. A method for producing a positive photoresist composition consisting essentially of:

a) providing an admixture of formaldehyde, one or more phenolic compounds and a catalytic amount of an acidic catalyst;

b) before condensation providing such admixture with a Lewis base concentration of from about 10 to 1000 ppm;

c) condensing the formaldehyde with the one or more phenolic compounds, in the presence of a catalyst, arid thereby producing a water insoluble, aqueous alkali soluble novolak resin having a desired and substantially consistent molecular weight;

d) providing an admixture of: 1) a photosensitive component in an amount sufficient to photosensitize the photoresist composition, 2) the novolak resin and 3) a solvent.

5,614,350

PHOTOSENSITIVE TRANSFER MATERIAL AND METHOD OF IMAGE FORMATION USING THE SAME

Hideaki Ito, and Masayuki Iwasaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 18, 1995, Ser. No. 544,871

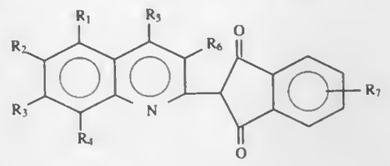
Claims priority, application Japan, Oct. 18, 1994, 6-252417; Apr. 19, 1995, 7-093590

Int. Cl.[6] G03C *11/12*

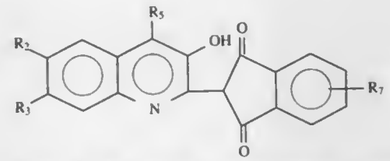
U.S. Cl. 430—257 **11 Claims**

1. A photosensitive transfer material which comprises a temporary support and a colored photopolymer layer formed on said temporary support, wherein said colored photopolymer layer contains at least one quinophthalone dye selected from the group consisting of a compound represented by formula (1), a compound represented by formula (2) and tautomers thereof:

(1)



(2)



wherein R_1, R_2, R_3, R_4 and R_5 each represents a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms, a cycloalkyl group, an aralkyl group, an aryl group, a halogen atom, or a hydrogen atom; R_6 represents a hydrogen atom or a hydroxyl group; and R_7 represents a hydrogen atom, a halogen atom, an alkoxy group, an amino group, an acyl group, an acylamino group, an alkoxycarbonyl group, a carbamoy, group, a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms, a cycloalkyl group, an aralkyl group or an aryl group.

5,614,351

RADIATION-CURABLE MIXTURE, AND RADIATION-SENSITIVE RECORDING MATERIAL PRODUCED THEREFROM FOR HIGH-ENERGY RADIATION

Ralph Dammel, Mainz-Bretzenheim; Juergen Lingnau, Mainz-Laubenheim; Georg Pawlowski, Wiesbaden, and Juergen Theis, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 12, 1990, Ser. No. 491,813

Claims priority, application Germany, Mar. 11, 1989, 39 07 953.8

Int. Cl.[6] G03C *1/492;1/494;1/76;* **C08F** *2/46*

U.S. Cl. 430—270.1 **15 Claims**

1. A radiation-curable mixture which can be cured by means of high-energy radiation, which comprises about 0.5 to 50% by weight of a compound which forms an acid under the action of high-energy radiation, and an acid-curable substance in an amount sufficient to decrease the solubility of the mixture upon exposure to actinic radiation, wherein the compound which forms an acid contains at least one aliphatically bound chlorine or bromine atom and has a pK_a value of less than about 12, and is developable in aqueous-alkaline developer solutions.

5,614,352

METAL ION REDUCTION IN NOVOLAK RESINS SOLUTION IN PGMEA BY CHELATING ION EXCHANGE RESIN

M. Dalil Rahman, Flemington, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 30, 1994, Ser. No. 366,614

Int. Cl.[6] G03F *7/30;7/004*

U.S. Cl. 430—270.1 **14 Claims**

1. A method for producing a water insoluble, aqueous alkali soluble novolak resin having a very low level of metal ions comprising:

a) 1) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution again treating said ion exchange resin with deionized water, and thereby reducing the level of sodium and iron ions in said ion exchange resin to less than 200 ppb each; or

2) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution, again treating with deionized water, followed by treating said ion exchange resin with ammonium hydroxide solution and thereby converting the ion exchange resin to an ammonium salt, followed by again treating said ion exchange resin with deionized water, and thereby reducing the level of sodium and iron ions in said ion exchange resin to less than 200 ppb each;

3) treating said ion exchange resin of a)1) and a)2) with electronic grade acetone to remove water, followed by treating said ion exchange resin of a)1) and a)2) with propylene glycol methyl ether acetate to remove acetone; then

b) either: 1) passing a solution of novolak resin in propylene glycol methyl ether acetate at a temperature of 30° to 150° C., through the chelating ion exchange resin of a)1) or a)2) at a rate such that the residence time is more than 10 minutes and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 100 ppb each; or;

2) mixing a solution of novolak resin in propylene glycol methyl ether acetate with the chelated ion exchange resin of a)1) or a)2) at a temperature from 30° to 150° C., for 1 to 80 hours, followed by filtering the novolak resin solution through 0.01 to 0.2 μm filter and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 100 ppb each.

3. A method for producing a positive photoresist composition comprising:

a)1) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution, again treating said ion exchange resin with deionized water, and thereby reducing the level of sodium and iron ions in the ion exchange resin to less than 200 ppb each; or

2) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution, again treating said ion exchange resin with deionized water, followed by treating said ion exchange resin with ammonium hydroxide solution and thereby converting the ion exchange resin to an ammonium salt, followed by again treating said ion exchange resin with deionized water, and thereby reducing the level of sodium and iron ions in said ion exchange resin to less than 200 ppb each;

3) treating said ion exchange resin of a)1) and a)2) with electronic grade acetone to remove water, followed by treating said ion exchange resin of a)1) and a)2) with propylene glycol methyl ether acetate to remove acetone; then

b) either: 1) passing a solution of novolak resin in propylene glycol methyl ether acetate at a temperature of 30° to 150° C., through the chelating ion exchange resin of a)1) or a)2) at a rate such that the residence time is more than 10 minutes and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 100 ppb each; or

2) mixing a solution of novolak resin in propylene glycol methyl ether acetate with the chelated ion exchange resin of a)1) or a)2) at a temperature in the range of 30° to 150° C., for 1 to 80 hours, followed by filtering the novolak resin solution through a 0.01 to 0.1 μm filter and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 200 ppb each; then

c) providing an admixture of:

1) a photosensitive component in an amount sufficient to photosensitize the photoresist composition;

2) the novolak resin solution of b)1 or b)2); and

3) a suitable photoresist solvent.

6. A method for producing a semiconductor device by producing a photo-image on a suitable substrate comprising:

a)1) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution, again treating said ion exchange resin with deionized water, and thereby reducing the level of sodium and iron ions in the ion exchange resin to less than 200 ppb each; or

2) treating a chelating ion exchange resin in a column or in a batch process with deionized water, followed by a mineral acid solution, treating said ion exchange resin again with deionzied water, followed by treating said ion exchange resin with an ammonium hydroxide solution and thereby convening the ion exchange resin to its ammonium salt, followed by again treating said ion exchange resin with said ion exchange resin water, and thereby reducing the level of sodium and iron ions in said ion exchange resin to less than 100 ppb each;

3) treating said ion exchange resin of a)1) and a)2) with electronic grade acetone to remove water, followed by treating with propylene glycol methyl ether acetate to remove acetone; then

b) either: 1) passing a solution of novolak resin in propylene glycol methyl ether acetate at a temperature of 30° to 150° C., through the chelating ion exchange resin of a)1) or a)2) at a rate such that the residence time is more than 10 minutes and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 200 ppb each; or;

2) mixing a solution of novolak resin in propylene glycol methyl ether acetate with the chelated ion exchange resin of a)1) or a)2) at a temperature in the range of 30° to 150° C., for 1 to 80 hours, followed by filtering the novolak resin solution through a 0.01 to 0.1 μm filter and thereby reducing the level of sodium and iron ions in the novolak resin solution to less than 100 ppb each; then

c) providing a photoresist composition by forming an admixture of:

1) a photosensitive component in an amount sufficient to photosensitize the photoresist composition;

2) the novolak resin solution of b)1) or b)2); and

3) a suitable photoresist solvent;

d) coating a suitable substrate with said photoresist composition of c);

e) heat treating the coated substrate of d) until substantially all of the solvent is removed;

f) image-wise exposing said photoresist composition; and

g) removing the image-wise exposed areas of said photoresist composition with a suitable developer.

5,614,353

METHODS FOR FABRICATING FLAT PANEL DISPLAY SYSTEMS AND COMPONENTS

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to SI Diamond Technology, Inc., Austin, Tex.

Division of Ser. No. 147,700, Nov. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,954

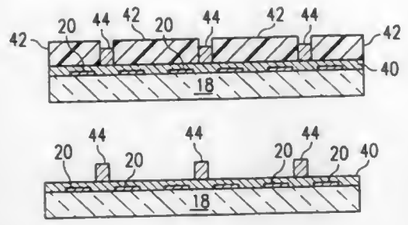
Int. Cl.[6] G03F *7/00;* **H01J** *19/02*

U.S. Cl. 430—313 **12 Claims**

1. A method of fabricating a cathode plate for use in a diode display unit comprising the steps of:

forming a first layer of conductive material on a face of a substrate;

patterning and etching the first layer of conductive material to define a plurality of cathode stripes spaced by regions of the substrate;



forming a second layer of conductive material on the cathode stripes and the regions of the substrate therebetween;

forming a mask on the second layer of conductive material having a plurality of apertures defining locations for the formation of a plurality of spacers;

forming said plurality of spacers by introducing a selected material into the apertures;

selectively removing portions of the second layer of conductive material to expose portions of the cathode stripes; and

selectively forming a plurality of amorphic diamond emitter regions on selected portions of the cathode stripes.

5,614,354

METHOD OF FORMING POSITIVE POLYIMIDE PATTERNS

Masuichi Eguchi, Kyoto; Masaya Asano, and Kazutaka Kusano, both of Shiga, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP94/00104, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO94/18607, PCT Pub. Date Aug. 18, 1994

Continuation of Ser. No. 313,267, Nov. 22, 1994. This PCT application Jan. 26, 1994, Ser. No. 692,337

Claims priority, application Japan, Feb. 3, 1993, 5-016302; Mar. 23, 1993, 5-063894; Apr. 16, 1993, 5-090130

Int. Cl.[6] G03F *7/012;7/037*

U.S. Cl. 430—326 **13 Claims**

1. A method of forming a positive polyimide pattern on a substrate, the steps which comprise:

(a) preparing an actinic radiation-sensitive polyimide precursor composition comprising a polymer (A) and a compound (B), said polymer (A) having the structural unit represented by the general formula (1) as the main constituent,

$$-[CO-R^1-CONH-R^2-NH]- \quad (1)$$
$$\quad\quad\quad

wherein the alkyl, alkenyl, aryl, or alkaryl groups may be unsubstituted or substituted with a hydroxy, sulfonate, amino or ammonium group; and wherein any two of R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 can be bonded to form a ring;

Z^1 and Z^2 independently represent the number of carbon atoms necessary to form a 5 or 6 membered ring, inclusive of palladium, wherein the carbon atoms may be substituted with hydrogen, sulfonate, alkyl, alkenyl, aryl or alkaryl groups, wherein the alkyl, alkenyl, aryl, or alkaryl groups are unsubstituted or substituted with a hydroxy, halogen, sulfonate, amino or ammonium group; and

n is −2 to 4; and

wherein the ratio of palladium complex to gelatin is from about 2.5×10^{-2} to about 1.0×10^{-4} mol palladium complex to 1000 grams of gelatin.

5,614,361

METHOD FOR IDENTIFYING AND CHARACTERIZING ORGANISMS

John A. Webster, Jr., 8343 Carrleigh Parkway, Springfield, Va. 22152

Continuation of Ser. No. 731,153, Jul. 15, 1991, abandoned, which is a division of Ser. No. 294,903, Jan. 4, 1989, Pat. No. 5,087,558, which is a continuation of Ser. No. 892,064, Aug. 1, 1986, abandoned, which is a continuation of Ser. No. 477,431, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 305,498, Sep. 25, 1981, Pat. No. 4,717,653. This application Mar. 10, 1994, Ser. No. 208,198

The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.

Int. Cl.[6] **C12Q** *1/70;1/68;* **C09K** *11/00;* **B01D** *57/02*

U.S. Cl. 435—5 **11 Claims**

1. A kit for establishing the species of an unknown organism, said kit comprising a carrier being compartmentalized to receive in close confinement therein:

a. at least one container containing an isolated, detectably labeled nucleic acid selected from the group consisting of ribosomal RNA (rRNA), DNA, and cDNA derived from said rRNA, wherein said nucleic acid:

(1) is selected from the group consisting of prokaryotic ribosomal nucleic acid, eukaryotic mitochondrial ribosomal nucleic acid, eukaryotic chromosomal ribosomal nucleic acid, and eukaryotic non-organelle ribosomal nucleic acid, and

(2) is capable of hybridizing to restriction endonuclease digested DNA from said unknown organism, whereby a chromatographic band pattern is produced; and

b. information storage means selected from the group consisting of a catalog, a computer tape, a computer disk, a computer memory, and a computer access number, wherein are stored at least fifty chromatographic band patterns representing the hybridization of said isolated, detectably labeled nucleic acid to restriction endonuclease digested DNA from more than one representative strain of at least two known different organism species, each pattern in the information storage means being conserved among different strains of a specific organism species, but not conserved among different organism species, whereby the band pattern of said unknown organism can be compared with the stored band patterns, thereby enabling the species of the unknown organism to be established.

5,614,362

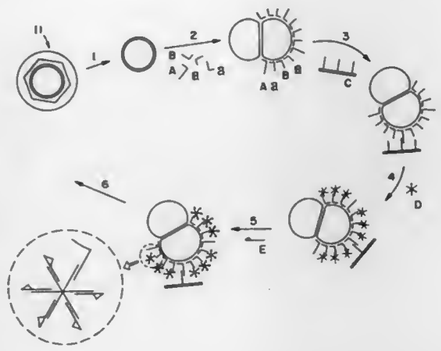
NUCLEIC ACID HYBRIDIZATION ASSAY FOR HEPATITIS B VIRUS DNA

Michael S. Urdea, Alamo; Brian Warner, Martinez; Joyce A. Running, Concord; Janice A. Kolberg, Richmond; Jennifer M. Clyne, Martinez; Ray Sanchez-Pescador, San Leandro, and Thomas Horn, Berkeley, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 823,890, Jan. 22, 1992, abandoned, which is a division of Ser. No. 340,031, Apr. 18, 1989, Pat. No. 5,124,246, which is a continuation-in-part of Ser. No. 252,638, Sep. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 185,201, Apr. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 109,282, Oct. 15, 1987, abandoned. This application Sep. 30, 1994, Ser. No. 315,685

Int. Cl.[6] **C12Q** *1/68*

U.S. Cl. 435—5 **2 Claims**



1. A nucleic acid hybridization assay for detecting hepatitis B virus (HBV) nucleic acid in an analyte comprising:

(a) contacting the analyte under hybridizing conditions with an excess of (i) an amplifier probe oligonucleotide comprising a first segment having a nucleotide sequence complementary to a segment of the HBV genome and a second segment having a nucleotide sequence noncomplementary to endogenous sequences in the analyte and complementary to an oligonucleotide unit of a nucleic acid multimer and (ii) a capture probe oligonucleotide comprising a first segment having a nucleotide sequence complementary to another segment of the HBV genome and a second segment having a nucleotide sequence noncomplementary to endogenous sequences in the analyte and complementary to an oligonucleotide bound to a solid phase, wherein the first segment of the amplifier probe and the first segment of the capture probe are at least 15 nucleotides in length;

(b) contacting under hybridizing conditions the product of step (a) with the oligonucleotide bound to the solid phase;

(c) thereafter separating materials not bound to the solid phase;

(d) contacting under hybridizing conditions the solid phase complex product of step (c) with the nucleic acid multimer, said multimer comprising (i) at least one oligonucleotide unit that is complementary to the second segment of the amplifier probe oligonucleotide and (ii) a multiplicity of repeating second oligonucleotide units that are complementary to a labeled oligonucleotide;

(e) removing unbound multimer;

(f) contacting under hybridizing conditions the solid phase complex product of step (e) with the labeled oligonucleotide;

(g) removing unbound labeled oligonucleotide; and

(h) detecting the presence of label in the solid phase complex product of step (g), thereby detecting the presence of HBV nucleic acid.

5,614,363

TSH RECEPTOR

Roger Cone, Portland, Oreg., assignor to New England Medical Center Hospitals, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 565,669, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 469,925, Jan. 25, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 146,835

Int. Cl.[6] **C07K** *14/705;* **C12N** *5/10;* **C12Q** *1/68*

U.S. Cl. 435—6 **13 Claims**

1. A biologically active preparation of human TSH receptor which is free of cell components associated with naturally-occurring human TSH receptor, said receptor comprising the amino acid sequence set out in FIG. 6.

5,614,364

GENETIC MARKER FOR IMPROVED MILK PRODUCTION TRAITS IN CATTLE

Christopher K. Tuggle, and Albert E. Freeman, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 16, 1994, Ser. No. 243,543

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **12 Claims**

1. A method of identifying a bovine which possesses a genotype indicative of improved milk production traits, said method comprising:

obtaining a nucleic acid sample from said bovine and

identifying a polymorphism characterized by nucleotide position 165 in exon 6 of the bovine PIT 1 gene, wherein the presence of an adenine is associated with improved milk production traits.

5,614,365

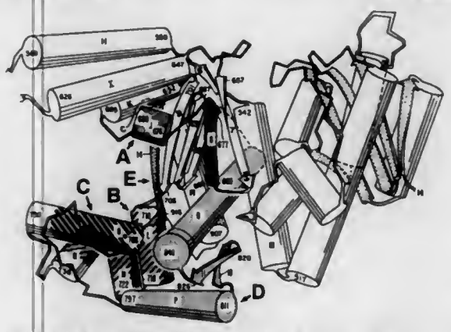
DNA POLYMERASE HAVING MODIFIED NUCLEOTIDE BINDING SITE FOR DNA SEQUENCING

Stanley Tabor, Cambridge, and Charles Richardson, Chestnut Hill, both of Mass., assignors to President & Fellow of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 324,437, Oct. 17, 1994, abandoned. This application Nov. 10, 1994, Ser. No. 337,615

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C12N** *9/00;* **C07H** *21/02*

U.S. Cl. 435—6 **108 Claims**



1. Modified gene encoding a modified Pol I-type DNA polymerase wherein said modified gene is modified to encode a tyrosine residue at an amino acid position corresponding to T7 DNA polymerase residue 526 or at an amino acid position corresponding to *E. coli* DNA polymerase residue 762 in its dNMP binding site to increase ability of said modified DNA polymerase to incorporate a dideoxynucleotide relative to a corresponding deoxynucleotide compared to the ability of a corresponding naturally-occurring unmodified DNA polymerase by at least 20-fold.

5,614,366

HTLV-I PEPTIDE ANTIGENS AND KIT

Gregory R. Reyes, Palo Alto, and Kenneth G. Hadlock, Hayward, both of Calif., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 366,313, Jun. 13, 1989, Pat. No. 5,066,579, which is a continuation of Ser. No. 948,270, Dec. 31, 1986, abandoned. This application Feb. 8, 1991, Ser. No. 653,091

Int. Cl.[6] **G01N** *33/53;* **C12Q** *1/70;* **C07K** *5/00;7/00*

U.S. Cl. 435—7.1 **2 Claims**

1. A peptide antigen comprising less than 77 amino acids derived from HTKV-I envelope protein gp46, said peptide antigen containing the amino acid sequence Leu-Leu-Val-Asp-Ala-Pro -Gly-Tyr-Asp-Pro-Ile-Trp-Phe-Leu-Asn-Thr-Glu-Pro-Ser-Gln-Leu-Pro-Pro-Thr-Ala-Pro-Pro-Leu-Leu-Pro-His-Ser-Asn-Leu-Asp-His-Ile-Leu-Glu-Pro -Ser-Ile-Pro-Trp-Lys-Ser-Lys- presented as SEQ ID NO: 1 which is immunoreactive with anti-HTLV-I monoclonal antibody derived from ATCC cell line HB10571.

5,614,367

DIAGNOSTIC TEST USING CHIMERIC ANTIBODIES

Brigitte Kaluza, Habach, and Helmut Lenz, Tutzing, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Continuation of Ser. No. 948,073, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 459,481, Jan. 2, 1990, abandoned. This application Nov. 17, 1993, Ser. No. 154,738

Claims priority, application Germany, Jan. 10, 1989, 39 00 534.8

Int. Cl.[6] **G01N** *33/53;33/537;* **C12P** *21/08;21/04*

U.S. Cl. 435—7.1 **8 Claims**

1. A process for the suppressive of inteverences in the diagnostic detection of a substance in a patient's serum or blood by binding two monoclonal antibodies R_1 and R_2 or Fab fragments, Fab' fragments or F(ab')2 fragments thereof to the substance, comprising the steps of:

contacting R_1 and R_2 or Fab fragments, Fab' fragments or F(ab')2 fragments thereof, with the blood or serum of a patient, to form a complex between R_1 or a Fab fragment, Fab' fragment or F(ab')2 fragment thereof, the substance, and R_2 or a Fab fragment, Fab' fragment or F(ab')2 fragment thereof; wherein R_1 or a Fab fragment, Fab' fragment or F(ab')2 fragment thereof is capable of binding to a solid phase or is bound to said solid phase and R_2 or a Fab fragment, Fab' fragment or F(ab')2 fragment thereof is labeled, and

detecting the formation of said complex via said label,

wherein at least one of said monoclonal antibodies R_1 and R_2 is a chimeric monoclonal antibody comprising a human antibody in which variable regions of said human antibody are completely replaced by corresponding parts of a non-human monoclonal antibody of the desired specificity.

5,614,368

CHROMOPHORIC REAGENTS FOR INCORPORATION OF BIOTIN OR OTHER HAPTENS INTO MACROMOLECULES

Vartan Ghazarossian; Viola T. Kung, both of Menlo Park, and Robert F. Zuk, Burlingame, all of Calif., assignors to Molecular Devices Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 5,735, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 865,641, Apr. 9, 1992, Pat. No. 5,180,828, which is a continuation of Ser. No. 477,545, Feb. 9, 1990, abandoned. This application Dec. 23, 1994, Ser. No. 363,608

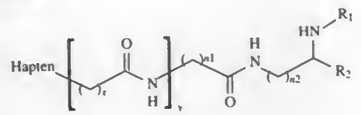
Int. Cl.[6] **G01N** *33/543*

U.S. Cl. 435—7.5 **7 Claims**

1. A method for determining whether a labelled-hapten reagent has been linked to a macromolecule comprising:

(a) contacting a sample containing a macromolecule with a a labelled hapten reagent; and

(b) detecting the label, the labelled hapten reagent having the formula:



where

x is 4;

y is 1;

n_1 is an integer of from 1–7;

n_2 is 0 or an integer of from 1–7;

R_1 represents a detectable label; and

R_2 is a group which binds directly or indirectly to the macromolecule.

5,614,369

ENDOTOXIN BINDING AND NEUTRALIZING PROTEIN AND USES THEREOF

Norman R. Waiowright, and Thomas J. Novitsky, both of Falmouth, Mass., assignors to Associates of Cape Cod, Inc., Falmouth, Mass.

Division of Ser. No. 264,244, Jun. 22, 1994, which is a continuation of Ser. No. 883,457, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,501, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 480,957, Feb. 16, 1990, abandoned, which is a division of Ser. No. 210,575, Jun. 23, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 478,689

Int. Cl.[6] C12Q *1/00;* C07K *14/00*

U.S. Cl. 435—7.8 **4 Claims**

1. A method for assaying endotoxin concentration, which comprises contacting serial aqueous dilutions of a material suspected of containing endotoxin with a known quantity of the endotoxin binding protein having SEQ.ID.NO. III,

observing the fluorescence emission of at least one wavelength of the endotoxin binding protein before and after contact with the aqueous dilutions of said material suspected of containing endotoxin,

correlating the levels of fluorescence emission with at least one known emission level to thereby determine the quantity of endotoxin present in said material suspected of containing endotoxin.

5,614,370

ASSAY TO IDENTIFY HUMAN C5A ANTAGONISTS AND AGONISTS

Zenon Konteatis, South Orange; Salvatore J. Siciliano, East Brunswick, and Martin S. Springer, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 18, 1994, Ser. No. 215,137

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.21 **7 Claims**

1. A competitive binding method for determining the binding affinity of a test compound for the C5a receptor and thereby screening for compounds which may have C5a antagonist, agonist, or partial agonist activity, which comprises:

a. labeling a COOH-terminal C5a peptide analog capable of binding the C5a receptor with submicromolar affinity (Ki<1 μM) using a quantifiable label, wherein said peptide is selected from the group consisting of:

(i) R^1-R^2-Phe-Lys-R^3-R^4-R^5-R^6-X_1-X_2, SEQ.ID:5: wherein:

R^1 is an amino acid which permits labeling of the peptide;

R^2 is the peptide linkage between R^1 and Phe, a single amino acid or multiple amino acids, provided that no diminution of C5a receptor binding affinity results through inclusion of the one to multiple amino acids at this position;

R^3 is an amino acid selected from Ala, Pro, Pip, N-MeAla, and Tic;

R^4 is an amino acid selected from L-Cha and D-Cha;

R^5 is an amino acid selected from Gly, Cha, Leu, Phe, Nal and Trp;

R^6 is D-Arg and X_1 and X_2 are not present; or

R^6 is D-aliphatic or D-aromatic amino acid, X_1 is D-Arg, and X_2 is not present;

(ii) Tyr-Phe-Lys-Tic-Cha-Gly-Trp, D-Ala-Arg; and

(iii) Tyr Phe Lys Ala Cha Gly Leu dPhe Arg, SEQ.ID:2:

b. adding a known concentration of said labeled peptide to at least one receptacle either containing membranes enriched in the C5a receptor, or to which membranes enriched in the C5a receptor are subsequently added;

c. adding a known dilution of a test compound in a vehicle, or vehicle alone absent said test compound as a control, to the same receptacle of step (b), simultaneous with, immediately prior to, or immediately after addition of said labeled peptide and said membranes enriched in the C5a receptor, thus creating a mixture of membranes, labeled peptide, and test compound or vehicle absent the test compound; and

d. quantitating the percent inhibition of binding of said labeled C5a peptide analog induced by said test compound thereby defining the binding affinity of said test compound.

5,614,371

RI FUSION ANTIGEN RECOGNIZED BY ANTIBODIES ASSOCIATED WITH PARANEOPLASTIC OPSOCLONUS AND METHODS OF USE THEREOF

Jerome B. Posner; Robert B. Darnell, and Henry M. Furneaux, all of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 691,559, Apr. 25, 1991, abandoned. This application Jan. 26, 1994, Ser. No. 187,793

Int. Cl.[6] G01N *33/579;* C07K *14/47;19/00;14/705*

U.S. Cl. 435—7.23 **6 Claims**

1. An Ri fusion protein which comprises an antigenic epitope that is recognized by autoantibodies from patients with paraneoplastic opsoclonus, said fusion protein having the amino acid sequence designated Sequence ID Numbers 2.

5,614,372

EARLY DETECTION OF PROSTATE CANCER (CAP) BY EMPLOYING PROSTATE SPECIFIC ANTIGEN (PSA) AND HUMAN GLANDULAR KALLIKREIN (HGK-1)

Hans Lilja, Holländarevägen 28, 236 34 Höllviken; Åke Lundwall, Mellanvångsvägen 5, 223 55 Lund, both of Sweden, and Janita Lövgren, Valtaojantie 34, 20810 Turku, Finland

Filed Feb. 24, 1995, Ser. No. 394,033

Int. Cl.[6] G01N *33/574;33/53*

U.S. Cl. 435—7.23 **35 Claims**

1. A bioaffinity assay of prostate-specific antigen (PSA) comprising the measurement in a body fluid sample of either

the concentration of total PSA (PSA-T) and the concentration of free form of PSA (PSA-F), or

the concentration of total PSA (PSA-T) and the concentration of PSA complexed to alpha-1-antichymotrypsin (PSA-ACT),

PSA-T being the sum of PSA-F and PSA-ACT, said method additionally comprising the measurement in a body fluid sample of the concentration of human glandular kallikrein (hGK-1), wherein the concentrations of PSA-T and hGK-1 can be measured in one single assay or in separate assays, and the sum of the concentrations of PSA-T and hGK-1 is used to determine the ratio

a) PSA-F/(PSA-T+hGK-1) and/or b) PSA-ACT/(PSA-T+hGK-1).

5,614,373

TUMOR-SPECIFIC ANTIBODIES AND ANTIGEN

Rolf Stahel, Forch, Switzerland, assignor to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP93/02042, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/06929, PCT Pub. Date Mar. 31, 1994

PCT Filed Jul. 30, 1993, Ser. No. 403,806

Claims priority, application Germany, Sep. 17, 1992, 42 31 066.0; May 5, 1993, 43 14 870.0

Int. Cl.[6] G01N *33/574;* C07K *16/00*

U.S. Cl. 435—7.23 **10 Claims**

1. A murine monoclonal antibody SEN7, which antibody is secreted by hybridoma SEN.7.2a.4, DSM ACC 2050.

5. A method of diagnosing a small-cell carcinoma of the lung, comprising contacting a sample containing antigens with an antibody according to claim 1, and detecting the amount of antibody bound to an antigen of a small-cell carcinoma in said sample.

5,614,374

GLYCEROL DEHYDROGENASE, PROCESS FOR ITS PRODUCTION AND ITS USE

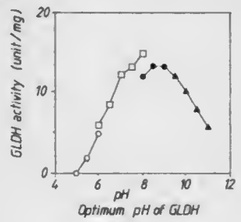
Osao Adachi, and Kazunobu Matsushita, both of Yamaguchi, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 19,676, Feb. 19, 1993, Pat. No. 5,346,819. This application Apr. 8, 1994, Ser. No. 225,328

Claims priority, application Japan, Feb. 24, 1992, 4-73568

Int. Cl.[6] C12Q *1/32;1/26;1/00;1/48*

U.S. Cl. 435—26 **6 Claims**



1. A method for quantitative determination of glycerol in a sample which comprises

mixing a sample with a glycerol dehydrogenase produced by Pseudomonas sp. TE 3493 which produces glyceraldehyde from glycerol and which:

(a) catalyzes the reaction:

glycerol+electron acceptor → glyceraldehyde+reduced electron acceptor,

(b) has an optimum pH in the range of pH 8–9,

(c) has a pH stability range of pH 7–11,

(d) has an optimum temperature range of 20°–25° C,

(e) has a thermal stability of 10 minutes at a pH of 7.0 at a temperature of 30° C. or less,

(f) has a molecular weight of 70,000 based on gel filtration and SDS polyacrylamide gel electrophoresis,

(g) binds to pyrroloquinoline quinone as a prosthetic group, and

(h) is soluble and stable in the absence of ionic or non-ionic surfactants,

in the presence of an electron acceptor, and

measuring the difference in absorbance of the electron acceptor.

5,614,375

METHOD AND TEST KIT FOR THE RAPID DETECTION OF BIOTOXIC CONTAMINANTS

Nathan Citri, Jerusalem, Israel, assignor to Yissum Research Development Co. of the Hebrew University of Jerusalem, Israel

Filed Mar. 23, 1994, Ser. No. 217,168

Int. Cl.[6] C12Q *1/02;1/32;* C12M *3/00;1/20*

U.S. Cl. 435—29 **20 Claims**

1. A method for the rapid detection of biotoxic contaminants in a test material comprising:

a) forming a mixture by combining a sample of said test material with

(i) activated spores essentially devoid of detactable enzymetic activity,

(ii) a germinant capable of triggering germination of said spores, and

(iii) a substrate,

said activated spore enzymatic activity becoming manifest and increasingly measurably following germination of said spores with said germinant and said substrate capable of being catalytically convertible into a product by said enzymatic activity;

b) incubating said mixture for a period of less than one hour to accelerate germination of said spores, and to increase said enzymatic activity, and catalytic conversion of said substrate to said product; and

c) detecting the level of said product formed, the level of said product being maximal in the absence of any biotoxic contaminants, and decreasing in direct proportion to the toxicity of contaminants in said test sample.

5,614,376

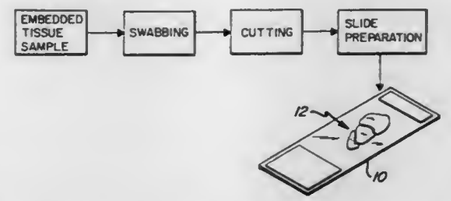
METHOD FOR FACILITATING TISSUE SLIDE PREPARATION

Dianne M. Copley, Arvada, and Cindy K. Gallegos, Aurora, both of Colo., assignors to Dicin Resources, Inc., Arvada, Colo.

Continuation of Ser. No. 326,324, Oct. 20, 1994, abandoned. This application May 8, 1996, Ser. No. 646,962

Int. Cl.[6] C12Q *1/00;* G01N *1/00*

U.S. Cl. 435—30 **19 Claims**



1. A method of increasing the coherency of a tissue section that is cut from a wax material embedded tissue sample and reducing the amount of fumes created during the creation of the tissue section, comprising the steps of:

penetrating the tissue sample at its cellular level with a wax material;

embedding said penetrated tissue sample in said wax material;

cutting said wax material and said penetrated tissue sample such that a generally flat surface of said penetrated tissue sample embedded in said wax material is exposed;

providing a hand-held swabbing apparatus including:

a hollow outer housing having an open end and a closed end;

a frangible ampoule containing ammonium hydroxide wherein said frangible ampoule is irremovably contained within said hollow outer housing; and

an applicator in fluid communication with said open end of said hollow outer housing such that said ammonium hydroxide can flow from said frangible ampoule in said hollow outer housing through said open end of said hollow

outer housing to said applicator and be received by said applicator after said frangible ampoule has been broken;

breaking said frangible ampoule contained within said hollow outer housing of said swabbing apparatus to release said ammonium hydroxide contained within said frangible ampoule;

directing said ammonium hydroxide from said broken frangible ampoule contained within said hollow outer housing to said applicator such that at least a portion of said ammonium hydroxide in said broken frangible ampoule contained within said hollow outer housing is received by said applicator;

swabbing said exposed flat surface of said penetrated tissue sample embedded in said wax material with said applicator such that at least a portion of said ammnonium hydroxide received by said applicator penetrates into said exposed flat surface of said penetrated tissue sample; and

cutting said penetrated tissue sample and said wax material generally parallel to said exposed flat surface of said penetrated tissue sample to create the tissue section.

5,614,377

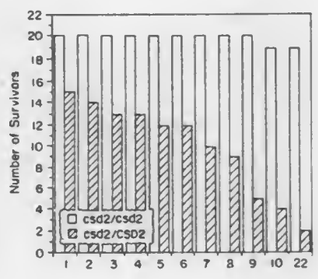
METHODS FOR IDENTIFYING INHIBITORS OF FUNGAL PATHOGENICITY

Christine E. Bulawa, Arlington, Mass., assignor to Myco Pharmaceuticals, Incorporated, Cambridge, Mass.

Filed Feb. 28, 1994, Ser. No. 202,990

Int. Cl.[6] C12Q *1/18;1/02;1/68;1/48*

U.S. Cl. 435—32 **9 Claims**



1. A method of identifying an inhibitor of fungal pathogenicity in a fungus in which chitin synthase III is necessary for pathogenicity, comprising the steps of:

a) culturing a mutant fungal strain, which contains a mutated gene whose presence in the mutant fungal strain together with inhibited chitin synthase III results in inhibited growth of the mutant fungal strain, in the presence of a molecule or compound to be assessed for its ability to inhibit fungal pathogenicity, under conditions appropriate for growth of the mutant fungal strain;

b) culturing the corresponding wild type fungal strain in the presence of the molecule or compound to be assessed for its ability to inhibit fungal pathogenicity under the same conditions as used in step a); and

c) comparing the growth of the mutant fungal strain and the growth of the corresponding wild type fungal strain,

wherein if growth of the mutant fungal strain is less than growth of the wild type fungal strain, the molecule or compound is an inhibitor of fungal pathogenicity in the fungus in which chitin synthase III is necessary for pathogenicity.

5,614,378

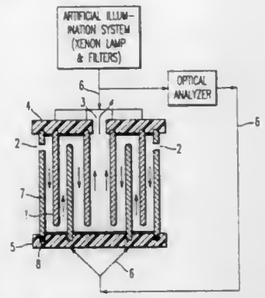
PHOTOBIOREACTORS AND CLOSED ECOLOGICAL LIFE SUPPORT SYSTEMS AND ARTIFIFICIAL LUNGS CONTAINING THE SAME

Victor C. Yang; Robert H. Bartlett; Bernhard O. Palsson, all of Ann Arbor, Mich., and Minoo Javanmardian, Naperville, Ill., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 955,760, Feb. 18, 1993, which is a continuation-in-part of Ser. No. 545,192, Jun. 28, 1990, abandoned. This application Dec. 9, 1994, Ser. No. 412,598

Int. Cl.[6] C12M *1/00;* C12N *1/12*

U.S. Cl. 435—41 **20 Claims**



1. A method for producing a biologically-active compound, comprising:

(i) culturing cells capable of producing said biologically-active compound in a photobioreactor comprising a hollow, cylindrical irradiation chamber, wherein said chamber comprises a top sealed to a cylindrical side wall; a bottom sealed to said cylindrical side wall; said top, bottom and cylindrical side wall together enclosing a cylindrical space; a first cylindrical light irradiator disposed in said cylindrical space and attached only to said top; and a second cylindrical light irradiator disposed in said cylindrical space and attached only to said bottom; wherein all cylindrical light irradiators and said cylindrical side wall are coaxial; the distance between said cylindrical side wall and cylindrical light irradiator closest to said side wall is within 1 mm to 20 cm, and the distance between each adjacent cylindrical light irradiator is within 1 mm to 20 cm, for a time sufficient to produce said biologically-active compound, while irradiating said cells with said first light cylindrical irradiator and said second light cylindrical irradiator.

9. A photobioreactor, comprising a hollow, cylindrical irradiation chamber, wherein said chamber comprises a top sealed to a cylindrical side wall; a bottom sealed to said cylindrical side wall; said top, bottom and cylindrical side wall together enclosing a cylindrical space; a first cylindrical light irradiator disposed in said cylindrical space and attached only to said top; and a second cylindrical light irradiator disposed in said cylindrical space and attached only to said bottom; wherein all cylindrical light irradiators and said cylindrical side wall are coaxial; the distance between said cylindrical side wall and cylindrical light irradiator closest to said side wall is within 1 mm to 20 cm, and the distance between each adjacent cylindrical light irradiator is within 1 mm to 20 cm.

5,614,379

PROCESS FOR PREPARING ANTI-OBESITY PROTEIN

Warren C. MacKellar, Plainfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 26, 1995, Ser. No. 429,362

Int. Cl.[6] C12P *21/02*

U.S. Cl. 435—68.1 **10 Claims**

1. A process for preparing a protein of SEQ ID NO: 1, which comprises contacting the protein of SEQ ID NO: 2 with dDAP; wherein dDAP is dipeptidylaminopeptidase from *Dictyostelium discoideum* having a native molecular weight of about 225,000 daltons, and a subunit molecular weight of about 66,000 daltons.

5,614,380

Patent Not Issued For This Number

5,614,381

METHOD FOR THE INDUCIBLE PRODUCTION OF PROTEINS IN GENETICALLY MODIFIED EUKARYOTIC HOST-CELLS MULTIPLIED IN VIVO

Peter Bromley, Chene-Bougertes; Michel Dreano, Vessy, both of Switzerland; Michel Fischbach, Quetigny, France; Xavier Fouillet, Collonges s/Saleve, France; Prudent Padieu, Dijon, France, and Richard Voellmy, Miami, Fla., assignors to Rothwell Properties Limited, Douglas, Isle of Man

Continuation of Ser. No. 197,450, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 972,713, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 830,456, Feb. 5, 1992, abandoned, which is a continuation of Ser. No. 228,925, Aug. 15, 1988, abandoned. This application Apr. 13, 1995, Ser. No. 421,277

Claims priority, application European Pat. Off., Oct. 15, 1986, 86810455

Int. Cl.[6] C12N *15/00;5/00;* C12D *21/06;* A01N *63/00*

U.S. Cl. 435—69.1 **13 Claims**

1. A method of producing a protein using an inducible recombinant gene expression unit/host cell system, which method comprises:

i) introducing into host cells a recombinant DNA molecule containing:

a) a DNA sequence coding for said protein operably linked to the promoter of a human gene which encodes a 70 kilodalton heat-shock protein (human hsp70 promoter), and

b) a c-ras oncogene or a subgenomic fragment of bovine papilloma virus;

ii) inoculating the cells of step (i) into a non-human warm-blooded animal in which said cells of step (i) can multiply, whereby a tumor is formed;

iii) removing said tumor and effecting dissociation of cells thereof;

iv) culturing said dissociated cells in a culture medium;

v) inducing production of the protein by subjecting the cultured cells to a transient heat shock; and

vi) isolating said protein from the culture medium.

5,614,382

PLASMID FOR PRODUCTION OF CRM PROTEIN AND DIPHTHERIA TOXIN

Benjamin J. Metcalf, Rochester, N.Y., assignor to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 27,283, Mar. 5, 1993. This application May 25, 1995, Ser. No. 450,333

Int. Cl.[6] C12P *21/06;* C12N *1/20;15/03;15/63*

U.S. Cl. 435—69.1 **12 Claims**

1. A method of producing diphtheria toxin or CRM protein that is cross reactive with diphtheria toxin, said method comprising: transforming a microorganism of the species *Corynebacterium diphtheria* strain C7 with a plasmid containing a a) gene encoding diphtheria toxin or CRM protein; b) a Corynebacterium origin of replication; and c) a selectable marker, and expressing said toxin or protein under conditions sufficient fox expression of the gene by the microorganism.

5,614,383

Patent Not Issued For This Number

5,614,384

HEPATITIS B VIRUS SURFACE PROTEINS WITH REDUCED HOST CARBOHYDRATE CONTENT

Peter J. Kniskern, and Arpi Hagopian, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 271,382, Jul. 6, 1994, abandoned, which is a continuation of Ser. No. 86,382, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 692,924, Apr. 29, 1991, abandoned. This application Jan. 4, 1995, Ser. No. 368,287

Int. Cl.[6] C12P *21/02;* C12N *1/19;* A61K *39/29*

U.S. Cl. 435—69.3 **5 Claims**

1. A process for producing HBsAg particles comprising the S antigen with an entrapped carbohydrate content to protein ratio of less than about 0.5 comprising:

(a) culturing a yeast cell containing an expression vector encoding the S FlBsAg, said yeast cell being defective in its ability to glycosylate proteins; and

(b) purifying particles of S HBsAg expressed by said cultured yeast cell.

5,614,385

METHODS AND COMPOSITIONS FOR HIGH PROTEIN PRODUCTION FROM RECOMBINANT DNA

Hermann Oppermann, Medway; Haimanti Dorai, Lexington, and Paul Kaplan, Auburndale, all of Mass., assignors to Creative Biomolecules, Inc., Hopkinton, Mass.

Division of Ser. No. 143,497, Oct. 25, 1993. This application Jun. 5, 1995, Ser. No. 461,666

Int. Cl.[6] C12P *21/02*

U.S. Cl. 435—69.4 **30 Claims**

1. A method of producing a morphogen, said method comprising the steps of:

(a) culturing an immortalized eukaryotic cell comprising transfected DNA sequences operatively integrated into its genome, said transfected DNA sequences encoding

(i) a viral transcription promoter operatively associated with a DNA sequence encoding a morphogen, said viral transcription promoter being stimulated by a viral transcription activator protein which acts on and induces transcription of said DNA sequence encoding said morphogen to produce an RNA transcript, said transcript, when translated, producing a biologically active morphogenic protein;

(ii) a transcription activator protein that acts on and stimulates said transcription promoter, wherein the transfected DNA sequence encoding said viral transcription activator protein is operatively associated with, and under the control of a DNA sequence defining a transcription promoter sequence which induces transcription of said vital transcription activator protein DNA sequence, said transcription promoter DNA sequence not requiring limitation of transcription; and,

(iii) an RNA sequence operative to promote translation of said RNA transcript, under conditions sufficient to produce a population of said cells expressing at least 1 μg morphogen per 10^6 cell per ml; and

(b) isolating the morphogen produced by said cells.

5,614,386

ALTERNATIVE DYE-LABELED PRIMERS FOR AUTOMATED DNA SEQUENCING

Michael L. Metzker, and Richard A. Gibbs, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jun. 23, 1995, Ser. No. 494,216

Int. Cl.[6] C12P *19/34;* C12Q *1/68;1/70;* C07H *19/04*

U.S. Cl. 435—91.1 **3 Claims**

1. A method for distinguishing polynucleotide sequences in a hybridization method of DNA sequencing, said method comprising the steps of:

synthesizing a first, a second, a third and a fourth class of oligonucleotides, wherein all of said classes of oligonucleotides have a same length, said first, second, third and fourth classes of oligonucleotides differ from the oligonucleotides of each other class by one nucleotide base at a 3', a 5' or an internal position, and each oligonucleotide of the first class has a dideoxyadenosine at said position and is labeled with a first fluorophore; each oligonucleotide in the second class has a dideoxycytidine at said position and is labeled with a second fluorophore; each oligonucleotide in the third class having a dideoxyguanosine at said position and is labeled with a third fluorophore; and each oligonucleotide in the fourth class has a dideoxythymidine at said position and is labeled with a fourth fluorophore; wherein at least one of said fluorophore is a 4,4-difluoro-4-bora-3A.4A-diaza-s-indacene (BODIPY®) fluorophore;

hybridizing said oligonucleotides to a single-stranded DNA target immobilized to a solid support, wherein said solid support is in a grid format, to form a hybridized product;

washing said hybridized product to remove any unhybridized oligonucleotide or target;

illuminating with an illumination beam the solid support, said illumination beam being capable of causing said BODIPY® fluorophores to fluoresce; and

identifying the classes of polynucleotides in the bands by the fluorescence or absorption spectrum of the dyes.

5,614,387

METHOD OF MAKING STABILIZED ENZYME COMPOSITIONS FOR NUCLEIC ACID AMPLIFICATION

Nancy L. L. Shen; Daniel L. Kacian; James G. Putnam, and William M. Davis, all of San Diego, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 387,011, Feb. 10, 1995, Pat. No. 5,556,771. This application May 19, 1995, Ser. No. 444,547

Int. Cl.[6] C07H *21/02;21/04;* C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—91.2 **14 Claims**

1. A method of preparing a stabilized enzyme composition in a single container comprising:

a) providing in said single container a solution comprising

I) an active enzyme composition selected from the group consisting of a reverse transcriptase, an RNA polymerase, and a mixture of a reverse transcriptase and an RNA polymerase, and

ii) a stabilizing agent selected from the group consisting of a non-reducing disaccharide, polyvinylpyrrolidone, and a mixture of a non-reducing disaccharide and polyvinylpyrrolidone,

b) freezing the solution,

c) sublimating a solvent fraction of said frozen solution by application of a vacuum, thereby forming a lyophilizate comprising said active enzyme composition and said stabilizing agent

wherein, after reconstitution of said lyophilizate, said active enzyme composition is able to support nucleic acid amplification.

5,614,388

PCR PRIMERS FOR DETECTION OF LEGIONELLA SPECIES AND METHODS FOR CONTROLLING VISUAL INTENSITY IN HYBRIDIZATION ASSAYS

Teresa K.H. Picone, Benicia; Theresa M. McCallum, Pleasant Hill, and Michael A. Zoccoli, Moraga, all of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 70,328, May 27, 1993, Pat. No. 5,491,225, which is a continuation-in-part of Ser. No. 630,899, Dec. 20, 1990, abandoned. This application May 31, 1995, Ser. No. 455,116

Int. Cl.[6] C12P *19/34;* C12N *1/00;15/00;* C07H *21/04*

U.S. Cl. 435—91.2 **6 Claims**

1. A process for amplifying a nucleic acid sequence from Legionella species, comprising carrying out a polymerase chain reaction using primers selected from the group consisting of

5'-GCATTGGTGCCGATTTGG-3', Seq. ID No. 6;

5'-GCTTTGCCATCAAATCTTTCTGAA-3', Seq. ID No. 7;

5'-GGCGACTATAGCGRTTTGGAA-3', Seq. ID No. 10;

5'-GCGATGACCTACTTTCRCATGA-3', Seq ID No. 9; and

5'-GTTTTGCCATCAAATCTTTTTGAA-3', Seq. ID No. 23;

where R represents an adenine or a guanine base and the primers having a base R are a mixture of the two primers.

5,614,389

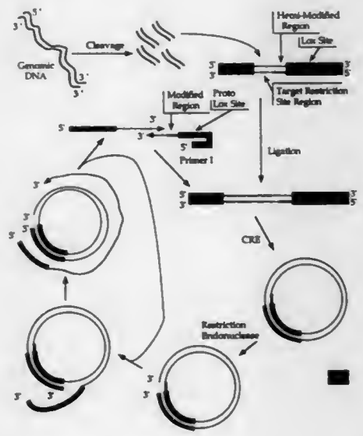
METHODS FOR THE ISOTHERMAL AMPLIFICATION OF NUCLEIC ACID MOLECULES

Jeffrey I. Auerbach, Rockville, Md., assignor to Replicon, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 383,327, Feb. 3, 1995, which is a continuation of Ser. No. 136,405, Oct. 15, 1993, Pat. No. 5,354,668, which is a continuation-in-part of Ser. No. 933,945, Aug. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 924,643, Aug. 4, 1992, abandoned. This application Sep. 26, 1995, Ser. No. 533,852

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.2 **20 Claims**



1. A method for amplifying a target polynucleotide region of a double-stranded nucleic acid molecule present in a sample, which comprises the steps:

(A) incubating linear double-stranded nucleic acid molecules in the presence of a polymerase, nucleotides, a site-specific recombinase, a primer and a restriction endonuclease; wherein:

(i) each of said linear double-stranded nucleic acid molecules has two ends and comprises:

(a) a first recombinational site recognized as a substrate by said recombinase, located at a first end of said linear molecule;

(b) a second recombinational site recognized as a substrate by said recombinase, located at a second end of said linear molecule, wherein said first and said second recombinational sites are oriented with respect to one another so as to permit said recombinase to mediate the circularization of said linear double-stranded molecules, and to thereby form double-stranded circular molecules;

(c) said target polynucleotide region, located internal to said first and second recombinational sites; and

(d) a hemi-modified restriction site, located between said target polynucleotide region and one of said recombinational sites, wherein one strand of said hemi-modified restriction site of each of said linear molecules contains at least one modified nucleotide residue;

(ii) said restriction endonuclease is substantially incapable of cleaving a strand of a nucleic acid molecule that contains said modified nucleotide residue;

(iii) said primer comprises from 3' terminus to 5' terminus:

(a) a first polynucleotide region complementary to a 3' terminal portion of said target polynucleotide region;

(b) a second polynucleotide region containing at least one of said modified nucleotide residues, wherein, if said second polynucleotide region were hybridized to a complementary polynucleotide, a double-stranded polynucleotide would thereby be formed that would contain one or more restriction endonuclease cleavage sites that would be recognized by said restriction endonuclease; and

(c) a third polynucleotide region, wherein, if said third polynucleotide region were hybridized to a complementary polynucleotide, a double-stranded polynucleotide would thereby be formed that would contain a recombinational site recognized as a substrate by said recombinase; and

(iv) said incubation is conducted under conditions suitable for permitting:

(a) said recombinase to circularize said linear double-stranded nucleic acid molecules and thereby form said double-stranded circular molecules;

(b) said restriction endonuclease to cleave one strand of said hemi-modified restriction endonuclease recognition site of said double-stranded circular molecule and thereby create an extendible 3' terminus;

(c) said polymerase and said nucleotides to mediate template dependent extension of said extendible 3' terminus and thereby cause displacement of a single-stranded polynucleotide containing said target polynucleotide region; said extension further resulting in the creation of a new hemi-modified restriction recognition site;

(d) said restriction endonuclease to cleave one strand of said newly created hemi-modified restriction endonuclease recognition site and thereby form a new extendible 3' terminus and permit the release of said single-stranded polynucleotide containing said target polynucleotide region; and

(e) said primer to hybridize to said released single-stranded polynucleotide and to be extended by said polymerase and said nucleotides in a template-dependent extension to thereby form an additional copy of said linear double-stranded nucleic acid molecule;

(B) permitting: said recombinase-directed circularization (A)(iv)(a) of said linear molecule, said creation of said extendible 3' terminus (A)(iv)(b), said template dependent extension (A)(iv)(c), said restriction endonuclease cleavage (A)(iv)(d), and said primer hybridization (A)(iv)(e), to occur, thereby amplifying said target polynucleotide region of said double-stranded nucleic acid molecule; and

(C) maintaining said incubation conditions until a desired level of amplification of said target polynucleotide region of said double-stranded nucleic acid molecule has been attained.

5,614,390

SPECIES-SPECIFIC DETECTION OF *MYCOBACTERIUM KANSASII*

Richard B. McCaslin, Ellicott City, and Keith C. Williams, Baltimore, both of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 14, 1996, Ser. No. 663,769

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.2 **23 Claims**

1. An oligonucleotide consisting of a target binding sequence selected from the group consisting of the target binding sequences of SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7 and, optionally, a sequence required for an amplification reaction.

5,614,391

M-RNA PURIFICATION

Phillip P. Franciskovich, Brown Deer, and Christopher D. Wolin, Milwaukee, both of Wis., assignors to Pharmacia P.L. Biochemicals, Inc., Milwaukee, Wis.

Continuation of Ser. No. 237,965, May 2, 1994, Pat. No. 5,459,253, which is a continuation of Ser. No. 42,896, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 732,549, Jul. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,108

Int. Cl.[6] C07H *1/00;21/00*

U.S. Cl. 435—91.3 **10 Claims**

1. A method for preparative separation of RNA from a cell, comprising:

exposing the cell to a solution having a guanidine-containing compound so as to lyse the cell, wherein the guanidine-containing compound is a chaotropic agent and wherein a lysate is formed;

then exposing the lysate to RNA-binding molecules under conditions where the molarity of the guanidine-containing compound is between 0.5 molar and 3 molar so that at least some of the RNA binds to the RNA-binding molecules, wherein the binding is by hydrogen bonding and wherein the guanine-containing compound does not disrupt hybridization; and

then separating RNA from the RNA-binding molecules.

5,614,392

PROCESS OF L-PHENYLALANINE FERMENTATION

Chin-Hang Shu; Chuen-Yang Yeh, both of Hsin Chu Hsien; Pei-Ming Wang, Kao Hsiung, and Chii-Cherng Liao, Hsin Chu, all of Taiwan, assignors to Food Industry Research and Development Institute, Taiwan

Filed Jun. 1, 1995, Ser. No. 457,488

Int. Cl.[6] C12P *13/22*

U.S. Cl. 435—108 3 Claims

1. A process for L-phenylalanine production comprising the steps of fermenting *Corynebacterium glutamicum* within a fermentation medium and supplying oxygen to said fermentation medium, characterized by said oxygen being supplied with an increasing rate to decrease product feedback inhibition of phenylalanine as phenylalanine concentration increases.

5,614,393

PRODUCTION OF γ-LINOLENIC ACID BY A Δ6-DESATURASE

Terry L. Thomas, College Station; Avutu S. Reddy, Bryan; Michael Nuccio, College Station; Andrew N. Nunberg, Bryan, all of Tex., and Georges L. Freyssinet, Saint Cyr au mont d'or, France, assignors to Rhone-Poulenc Agrochimie, France

Continuation-in-part of Ser. No. 307,382, Sep. 14, 1994, Pat. No. 5,552,306, which is a continuation of Ser. No. 959,952, Oct. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 817,919, Jan. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 774,475, Oct. 10, 1991, abandoned. This application Dec. 30, 1994, Ser. No. 366,779

Int. Cl.[6] C12N *15/53;15/82;1/21;* C12P *7/64*

U.S. Cl. 435—134 44 Claims

1. An isolated nucleic acid encoding a borage Δ6-desaturase.

5,614,394

METHOD AND MONOCLONAL ANTIBODIES FOR VITAMIN B12 DETERMINATION

Nicholas R. Hoyle; Gunter Pappert, both of Tutzing; Michael Grol, Feldafing, and Christa Hübner-Parajsz, Tutzing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Division of Ser. No. 137,887, Oct. 15, 1993, Pat. No. 5,451,508, which is a continuation of Ser. No. 959,529, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 463,086, Jan. 10, 1990, abandoned. This application May 16, 1995, Ser. No. 442,160

Claims priority, application Germany, Jan. 11, 1989, 39 00 650.6

Int. Cl.[6] C12N *5/12;* C07K *16/18;* A61K *39/395*

U.S. Cl. 435—172.2 7 Claims

1. Process for the production of a monoclonal antibody which specifically binds to B_{12}, comprising:

immunizing inbred mice with vitamin B_{12}d-acid to which an immunogen carrier material is coupled via a spacer,;

isolating B-lymphocytes from the immunized mice;.

fusing the B-lymphocytes with myeloma cells using transforming agents;

cloning monoclonal antibodies from the hybrid cells, said monoclonal antibodies being characterized as having an affinity constant for B_{12} greater than 5×10^9l/mol.

5,614,395

CHEMICALLY REGULATABLE AND ANTI-PATHOGENIC DNA SEQUENCES AND USES THEREOF

John A. Ryals, Durham; Danny C. Alexander; James J. Beck, both of Cary, all of N.C.; John H. Duesing, Riehen, Switzerland; Robert M. Goodman, Madison, Wis.; Leslie B. Friedrich, Cary, N.C.; Christian Harms, Bad Krozingen, Germany; Frederich Meins, Jr., Reihen, Switzerland; Alice Montoya, deceased, late of Lake Stevens, Wash.; Mary B. Moyer, Cary, N.C.; Jean-Marc Neuhaus, Basel, Switzerland; George B. Payne, Ann Arbor, Mich.; Christoph Sperisen, Dulliken, Switzerland; Jeffrey R. Stinson, Davie, Fla.; Scott J. Uknes, Apex, N.C.; Eric R. Ward, Basel, Switzerland, and Shericca C. Williams, Cary, N.C., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 93,301, Jul. 16, 1993, abandoned, Ser. No. 42,847, Apr. 6, 1993, abandoned, Ser. No. 45,957, Apr. 12, 1993, abandoned, and Ser. No. 848,506, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 768,122, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,431, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,504, Oct. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 368,672, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 329,018, Mar. 24, 1989, abandoned, said Ser. No. 93,301is a continuation of Ser. No. 973,197, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 678,378, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 305,566, Feb. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 165,667, Mar. 8, 1988, abandoned, said Ser. No. 42,847is a continuation of Ser. No. 632,441, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,504, Oct. 20, 1989, abandoned, and Ser. No. 165,667, Mar. 8, 1988, abandoned. This application Jan. 13, 1994, Ser. No. 181,271

Int. Cl.[6] C12N *15/82;15/29;15/09*

U.S. Cl. 435—172.3 13 Claims

1. A method of screening for agrochemicals having the ability to induce SAR in plants, said method comprising:

(a) transforming a chimeric DNA molecule into a plant or plant part, said chimeric DNA molecule comprising:

(i) a nucleic acid promoter from the 5' flanking region of a plant pathogenesis-related protein gene inducible by a chemical regulator selected from the group consisting of: benzo-1,2.3-thiadiazoles, isonicotinic acid compounds, and salicylic acid compounds, and

(ii) at least one reporter gene operatively linked to said promoter;

(b) contacting the transformed plant or plant part with an agrochemical; and

(c) assaying for the expression of said reporter gene wherein expression of the reporter gene indidcates that the agrochemical of step (b) has the ability to induce SAR.

5,614,396

METHODS FOR THE GENETIC MODIFICATION OF ENDOGENOUS GENES IN ANIMAL CELLS BY HOMOLOGOUS RECOMBINATION

Allan Bradley; Ann Davis, and Paul Hasty, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 3,825, Jan. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 537,458, Jun. 14, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 200,011

Int. Cl.[6] C12N *15/00;5/00*

U.S. Cl. 435—172.3 32 Claims

1. A method for producing a desired mammalian cell which contains a desired gene sequence inserted within a predetermined gene sequence of said cell's genome, which method comprises:

A. introducing into a mammalian cell a DNA molecule comprising:

i) said desired gene sequence;

ii) two regions of homology which flank said desired gene sequence wherein said regions are sufficiently homologous with said predetermined gene sequence to undergo homologous recombination with said predetermined gene sequence of said mammalian cell; and

iii) at least one selectable gene sequence located within said regions of homology which flank said desired gene sequence, wherein the presence of at least on selectable gene sequence in said mammalian cell can be selected for by culturing said mammalian cell under a set of selective culture conditions;

B. permitting said introduced DNA molecule to undergo homologous recombination with said predetermined gene sequence of said mammalian cell to produce an intermediate cell, wherein said desired gene sequence has been inserted into said mammalian cell; and

C. recovering said intermediate cell by culturing said intermediate cell under said selective culture conditions;

D. culturing said intermediate cell under conditions such that said intermediate call undergoes intrachromosomal recombination or sister chromated exchange, wherein said at least one selectable gene sequence is deleted from the cell's genome and said desired mammalian cell is produced; and

E. recovering said desired mammalian cell.

5,614,397

METHOD AND COMPOSITIONS FOR MODULATING LIFESPAN OF HEMATOLYMPHOID CELLS

Irving Weissman, Redwood City, and Eric Lagasse, Palo Alto, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 22, 1994, Ser. No. 200,016

Int. Cl.[6] C12N *15/85;5/10*

U.S. Cl. 435—172.3 10 Claims

1. A method for increasing the lifespan of a mammalian hematolymphoid cell in vitro, said method comprising:

introducing into a hematopoietic stem cell a nucleic acid construct to produce a transgenic hematopoietic stem cell wherein said nucleic acid construct comprises:

i) a hematolymphoid cell specific transcriptional initiation region, and

ii) an open reading frame from a gene which when expressed increases the lifespan of a hematolymphoid cell,

and growing said transgenic hematopoietic stem cell to produce a hematopoietic stem cell, and wherein

the lifespan of said hematolymphoid cell is increased at least approximately 1.5 fold relative to a control cell.

5,614,398

GENE TRANSFER SYSTEM FOR INSECTS

David O'Brochta, Columbia, Md.; William Warren, Whittlesea, and Peter Atkinson, Canberra, both of Australia, assignors to The University of Maryland Biotechnology Institute, College Park, Md.

Filed Nov. 18, 1994, Ser. No. 344,695

Int. Cl.[6] C12N *15/63;15/85;* C07H *21/04*

U.S. Cl. 435—172.3 6 Claims

2. A transposition vector, comprising a first terminal nucleotide sequence, a nucleotide sequence encoding a protein whose expression is sought, and a second terminal sequence, wherein said first terminal sequence comprises the 17 nucleotide sequence CAGAGAACAACAACAAG (SEQ ID NO:20) and said second terminal sequence comprises the 17 nucleotide sequence CTTGTTGAAGTTCTCTG (SEQ ID NO:21).

5,614,399

PLANT UBIQUITIN PROMOTER SYSTEM

Peter H. Quail, Richmond; Alan H. Christensen, Albany, both of Calif.; Howard P. Hershey, West Chester, Pa.; Robert A. Sharrock, El Cerrito, Calif., and Thomas D. Sullivan, Madsion, Wis., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Division of Ser. No. 296,268, Aug. 25, 1994, Pat. No. 5,510,474, which is a continuation of Ser. No. 191,134, Feb. 3, 1994, abandoned, which is a continuation of Ser. No. 76,363, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 670,496, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 194,824, May 17, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 462,092

Int. Cl.[6] C12N *15/67;15/82;5/10*

U.S. Cl. 435—172.3 10 Claims

1. A method for selective heat shock induced enhancement of the constitutive expression of a structural gene in a plant cell comprising the steps of:

(a) transforming said plant cell with a DNA construct comprising an approximately 2 kb plant ubiquitin regulatory region operably joined to a DNA sequence of interest, wherein said plant ubiquitin regulatory region is from a plant ubiquitin gene and comprises at least one heat shock element, a promoter, a transcription start site, and an intron; and

(b) selectively applying stress conditions of high temperature to said transformed plant cell thereby inducing enhancement in expression of said DNA sequence of interest.

5,614,400

METHODS AND COMPOSITIONS RELATING TO PLANT PALMITOYL-ACYL CARRIER PROTEIN DESATURASE

Edgar B. Cahoon, Suffolk County, N.Y., and John B. Ohlrogee, Ingham County, Mich., assignors to Michigan State University, East Lansing, Mich.

Division of Ser. No. 329,560, Oct. 26, 1994. This application Oct. 5, 1995, Ser. No. 539,798

Int. Cl.[6] C12N *15/29;15/82;1/21*

U.S. Cl. 435—172.3 18 Claims

13. A method of making a plant Δ^6-palmitoyl-acyl carrier protein desaturase which comprises transforming a host cell selected from the group consisting of *E. coli* cells and plant cells with a heterologous DNA encoding a plant Δ^6-palmitoyl-acyl carrier protein desaturase, and selecting transformants which express said heterologous DNA so that detectable levels of said desaturase are produced.

5,614,401

ENZYME IMMOBILIZING CARRIER CONTAINING KAOLIN

Joji Takahashi, Tama; Eiji Kanazawa; Yoshitaka Yamashita, both of Kochi; Tomio Kashiwai, Tosa, and Hideo Takenaka, Kochi, all of Japan, assignors to Toyo Denka Kogyo Co., Ltd., Japan

Filed Jun. 21, 1994, Ser. No. 263,239

Claims priority, application Japan, Jun. 23, 1993, 5-177318; Dec. 27, 1993, 5-350789

Int. Cl.[6] C12N *11/00;11/14;11/16*

U.S. Cl. 435—176 7 Claims

1. A carrier in the form of a porous powder for immobilizing an enzyme consisting essentially of a kaolin mineral that has been subjected to treatment with a strong acid of about pH 4.0 or less and a hydrothermal treatment at a temperature of between about 100° to about 250° C., thereafter a drying treatment to produce a porous powder, and then a baking treatment of the powder at a temperature of about 350° to about 1000° C. to produce said carrier.

5,614,402

5' NUCLEASES DERIVED FROM THERMOSTABLE DNA POLYMERASE

James E. Dahlberg; Victor I. Lyamichev, and Mary Ann D. Brow, all of Madison, Wis., assignors to Third Wave Technologies, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 73,384, Jun. 4, 1993, Pat. No. 5,541,311, which is a continuation-in-part of Ser. No. 986,330, Dec. 7, 1992, Pat. No. 5,422,253. This application Jun. 6, 1994, Ser. No. 254,359

Int. Cl.[6] C12N *9/22*

U.S. Cl. 435—199 10 Claims

1. A thermostable 5' nuclease derived from a thermostable polymerase modified to have reduced synthetic activity, wherein said 5' nuclease is capable of cleaving a linear nucleic acid duplex structure so as to create substantially a single, single-stranded nucleic acid cleavage product.

5,614,403

IN VITRO REPLICATION SYSTEM CAPABLE OF RESCUING CLONED AND MANIPULATED ROTAVIRUS GENES

Robert F. Ramig, Houston, Tex., and Dayue Chen, Evanston, Ill., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jun. 1, 1994, Ser. No. 251,934

Int. Cl.[6] C12N *7/00;7/01;7/06;* C12P *19/34*

U.S. Cl. 435—235.1 36 Claims

1. A method for the in vitro replication of a Reoviridae virus RNA comprising:

reacting Reoviridae virus open core particles and Reoviridae virus mRNA in a solution also comprising nucleotide triphosphates.

5,614,404

SELF-ASSEMBLED, DEFECTIVE, NON-SELF-PROPAGATING LENTIVIRUS PARTICLES

Gail P. Mazzara, Winchester; Bryan Roberts, Cambridge; Dennis L. Panicali, Acton, all of Mass.; Virginia Stallard, Seattle, Wash., and Linda R. Gritz, Sommerville, Mass., assignors to Theriod Biologics, Incorporated, Cambridge, Mass..

Continuation of Ser. No. 540,109, Jun. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 360,027, Jun. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 205,454, Jun. 10, 1988, abandoned. This application Dec. 21, 1992, Ser. No. 995,923

Int. Cl.[6] C12N *15/86;15/63;* A61K *39/21;* C07K *14/155*

U.S. Cl. 435—236 12 Claims

1. A plasmid vector for insertion of Human Immunodeficiency Virus (HIV) DNA sequences into a pox virus by in vivo recombination, the plasmid vector comprising:

(a) a prokaryotic origin of replication, so that the plasmid vector may be amplified in a prokaryotic host cell;

(b) a gene encoding a marker which allows selection of prokaryotic host cells that contain the plasmid vector;

(c) two DNA sequences from single species HIV, wherein one of the HIV DNA sequences is the env gene and the other of the HIV DNA sequences is the gag-pol gene, such that each gene is operably-linked to a separate eukaryotic transcriptional promoter capable of directing the co-expression of env, gag and pol proteins that self-assemble into a defective, non-self-propagating HIV particle; and

(d) pox virus DNA sequences flanking (c), wherein the pox virus DNA sequences are homologous to a region of the genome of a pox virus vector to allow in vivo recombination between the plasmid vector and the pox virus vector, thereby inserting (c) into the pox virus vector.

5,614,405

METHOD OF DETERMINING THE VIRUS INACTIVATION CAPACITY OF AN INACTIVATION TREATMENT

Johann Eibl; Friedrich Elsinger; Yendra Linnau, all of Vienna, and Günther Wöber, Oberwaltersdorf, all of Austria, assignors to Immuno Aktiengeselischaft, Vienna, Austria

Continuation of Ser. No. 36,731, Mar. 25, 1993, abandoned, which is a division of Ser. No. 900,164, Jun. 17, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 258,367

Claims priority, application Austria, Jun. 20, 1991, 1237/91

Int. Cl.[6] C12N *7/04;* C12Q *1/00;1/70*

U.S. Cl. 435—236 1 Claim

1. A method of evaluating viral reduction capability of a viral inactivation step in a viral inactivation procedure, comprising:

adding a plurality of samples of an amount of test virus to a biological product undergoing said inactivation step, wherein a virus reduction factor is calculated based upon (i) the difference in test virus titer yielded after each addition and before the next addition of test virus, and (ii) the virus titer at the end of the viral inactivation step, wherein said samples are added when the virus titer decreases to the detection limit for said virus; and then

calculating a total virus reduction factor for said inactivation step from the sum of the virus reduction factors obtained from each addition.

5,614,406

KAINATE-BINDING HUMAN CNS RECEPTORS OF THE EAA2 FAMILY

Rajender Kamboj, Mississauga; Stephen L. Nutt, Etobicoke; Lee Shekter, Toronto, and Michael A. Wosnick, Thornhill, all of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation of Ser. No. 750,081, Aug. 27, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,676

Int. Cl.[6] C12N *1/21;5/10;15/12;15/79*

U.S. Cl. 435—325 21 Claims

1. An isolated polynucleotide that codes for an EAA2a receptor having the amino acid sequence of 1–962 of SEQ ID NO:2; or an EAA2b receptor having the amino acid sequence of 1–962 of SEQ ID NO:2 including a glutamine insertion following the amino acid at position 473.

5.614,407

METHODS FOR AMELIORATING THE ADVERSE EFFECTS OF AGING

Suresh I. S. Rattan, Aarhus, Denmark, assignor to Senetek PLC, Maryland Heights, Mo.

Continuation of Ser. No. 206,041, Mar. 4, 1994, Pat. No. 5,371,089, which is a continuation of Ser. No. 954,614, Sep. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 611,903, Nov. 9, 1990, abandoned, which is a division of Ser. No. 19,150, Feb. 26, 1987, abandoned. This application Sep. 28, 1994, Ser. No. 314,361

Int. Cl.[6] A01N *43/90;* A61K *31/52;* C12N *5/02*

U.S. Cl. 435—375 12 Claims

1. A method for treating a culture of mammalian cells in order to slow or delay the morphological changes that normally accompany aging of the mammalian cells, said method comprising administering an effective amount of a 6-(substituted amino)purine cytokinin or a mixture of 6-(substituted amino)purine cytokinins to the culture, wherein the amount administered is sufficient to slow or delay the morphological changes that normally accompany aging of the mammalian cells but does not substantially alter the growth rate and total proliferative capacity of the mammalian cells.

5,614,408

MONOCLONAL ANTIBODIES TO POTATO, TOMATO, AND EGGPLANT GLYCOALKALOIDS AND ASSAYS FOR THE SAME

Larry H. Stanker; Carol K. Holtzapple, both of College Station, Tex., and Mendel Friedman, Moraga, Calif., assignors to The United States of America as represented by the Secretary of Agricultural, Washington, D.C.

Filed Oct. 18, 1995, Ser. No. 544,748

Int. Cl.[6] C07K *16/16;* C12N *5/12;* G01N *33/53*

U.S. Cl. 435—341 6 Claims

1. A hybridoma cell line ATCC HB 12201 which produces and secretes monoclonal antibody Sol-129 which selectively binds to the potato glycoalkaloids α-solanine and α-chaconine, the eggplant glycoalkaloid solasonine, and the tomato glycoalkaloid α-tomatine.

5,614,409

PRODUCTION OF IBDV VP2 IN HIGHLY IMMUNOGENIC FORM

Ahmed A. Azad, Lower Templestowe; Ian G. Macreadie, Templestowe; Neil M. McKern, Lilydale; Paul R. Vaughan, Rowville; Mittur N. Jagadish, Gladstone Park; Kevin J. Fahey, Templestowe; Antony J. Chapman, Murrumbeena, and Hans-Georg Heine, Coburg, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Continuation of Ser. No. 776,411, Nov. 21, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,402

Claims priority, application Australia, May 30, 1989, PJ4469

Int. Cl.[6] C12N *15/81;15/40;* A61K *39/12*

U.S. Cl. 435—252.3 18 Claims

1. A plasmid encoding a recombinant IBDV VP-2 polypeptide, which is capable of inducing antibodies that passively protect chickens against infection by IBDV, comprising the native amino acid sequence of IBDV VP-2, wherein the five N-terminal amino acid residues of the native VP-2 sequence, MTLNS, have been replaced by the octapeptide MFSELDPQ.

5,614,410

BIOREMEDIATION OF SOIL OR GROUNDWATER CONTAMINATED WITH COMPOUNDS IN CREOSOTE BY TWO-STAGE BIODEGRADATION

James G. Mueller; Parmely H. Pritchard, and Suzanne Lantz, all of Gulf Breeze, Fla., assignors to SBP Technologies, Inc., Gulf Breeze, Fla., and The United States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C.

Continuation of Ser. No. 37,215, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 913,274, Jul. 14, 1992, Pat. No. 5,242,825. This application Sep. 19, 1994, Ser. No. 308,483

Int. Cl.[6] B09B *3/00;* B07C *5/38;* C12N *1/00;1/20*

U.S. Cl. 435—262.5 2 Claims

1. A process remediating soil or groundwater contaminated with compounds, in creosole wherein said process comprises:

(a) pre-treating said soil or groundwater in a bioreactor inoculated with a biologically pure culture of bacteria that decades low molecular weight polycyclic aromatic hydrocarbons and heterocyclic organic compounds and phenolics found in creosote to remove the low molecular weight polycyclic aromatic hydrocarbons, heteorocyclic organic compounds, and phenolics, leaving high molecular weight polycyclic aromatic hydrocarbons or pentachlorophenol; and

(b) treating said soil or groundwater pre-treated in step (a) in a bioreactor inoculated with a biologically pure culture of *Pseudomonas paucimobilis*, NRRL B-18512 that biodegrades the remaining high molecular weight polycyclic aromatic hydrocarbons or pentachlorophenol.

5,614,411

SELF CONTAINED DECONTAMINATION SYSTEM

Charles Gastgaber, 26 Sunnyside Pl., Woodbridge, N.J. 07095

Filed Aug. 18, 1995, Ser. No. 516,748

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—286.5 20 Claims



1. A system for decontaminating water borne human wastes in the holding tank of a self contained convenience facility, said system comprising:

a reservoir of aqueous live bacteria capable of decomposing water borne human wastes, including solid wastes, into olfactorily inoffensive and environmentally benign constituents, said reservoir being held in a supply container possessing a supply outlet connected to at least one length of hose and a valve;

each said length of hose possessing a continuous lumen between two opposed orifices, each said orifice comprising an opening of said lumen, one said orifice of one said length of hose comprising an upper orifice possessing communication with said supply outlet;

said reservoir being disposed elevationally superior to a holding tank containing water borne human wastes and said valve being operationally connected to at least one said length of hose, each said length of hose and said valve together comprising a closed system between upper said orifice of one said length of hose possessing communication with said supply outlet and a lower orifice of one of said lengths of hose;

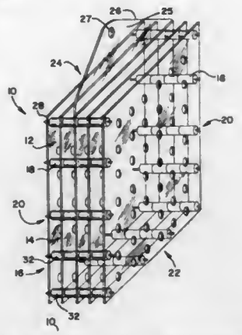
placement of said lower orifice of one of said lengths of hose into communication with the interior of said holding tank and suitable control of said valve thereby enabling gravity induced delivery of aqueous live bacteria from said reservoir in a continuous laminar flow through said closed system to said interior of said holding tank thereby effecting decontamination of the water borne human wastes contained therein by decomposition of said wastes into olfactorily inoffensive and environmentally benign constituents by the live aqueous bacteria so delivered.

5,614,412

APPARATUS FOR CARRYING FLEXIBLE CONTAINERS AND METHOD OF TRANSFERRING FLUIDS TO CONTAINERS

Stephen L. Smith, 510 E. Mayfair Rd., Arlington Heights, Ill. 60005; James Bender, 565 Whitebirch Rd., Lindenhurst, Ill. 60046; Jeffrey Martinson, 526 Banbury, Mundelein, Ill. 60060; Maureen Loudovaris, 114 Mainsail Dr., Grayslake, Ill. 60030; Orrin D. Mitsven, Jr., 37125 N. Antonio Ave., Lake Villa, Ill. 60046, and Kristen L. Unverzagt, 243 N. Plum Grove Rd., Palatine, Ill. 60067

Filed Sep. 8, 1995, Ser. No. 526,034
Int. Cl.[6] C12M *3/00*
U.S. Cl. 435—305.1 **8 Claims**



1. An apparatus for holding and carrying a plurality of flexible medical containers comprising:
a rack having a plurality of plates positioned in parallel spaced relation, the plates defining a chamber between each pair of adjacent plates;
a plurality of spacer assemblies each extending through the rack to connect the plates and to maintain the spaced relationship of the plates, the spacer assemblies being spaced along marginal edges of the rack to define two opposed end walls, a bottom, and an opening to the rack to allow access to each of the chambers; and,
a means associated with a plate for carrying and suspending the apparatus.

5,614,413

ENCAPSIDATED RECOMBINANT POLIOVIRUS NUCLEIC ACID AND METHODS OF MAKING AND USING SAME

Casey D. Morrow, Birmingham, Ala., assignor to The UAB Research Foundation, Birmingham, Ala.

Continuation of Ser. No. 87,009, Jul. 1, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,446
Int. Cl.[6] C12P *21/02*; C12N *15/43*
U.S. Cl. 435—320.1 **64 Claims**

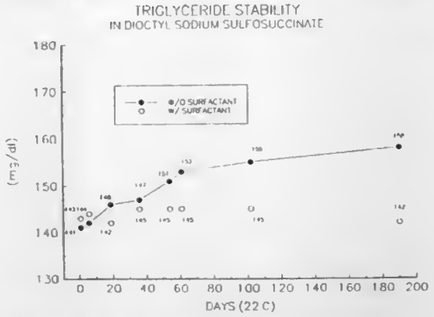
1. A method for encapsidating a recombinant poliovirus nucleic acid, comprising the steps of:
(a) providing a recombinant poliovirus nucleic acid which lacks a nucleotide sequence encoding at least a portion of a protein necessary for encapsidating the recombinant poliovirus nucleic acid such that the recombinant poliovirus nucleic acid does not express proteins sufficient for encapsidation and an expression vector lacking an infectious poliovirus genome, the nucleic acid of which encodes at least a portion of a protein necessary for encapsidating the recombinant poliovirus nucleic acid and directs expression of at least a portion of a protein necessary for encapsidating the recombinant poliovirus nucleic acid; and
(b) contacting a host cell with the recombinant poliovirus nucleic acid and the expression vector under conditions, appropriate for introduction of the recombinant poliovirus nucleic acid and the expression vector into the host cell; and
(c) obtaining a yield of encapsidated viruses which substantially comprises encapsidated recombinant poliovirus nucleic acid.

5,614,414

LIQUID LIPOPROTEIN CONTROL

Wayne L. Ryan, and Bradford A. Hunsley, both of Omaha, Nebr., assignors to Streck Laboratories, Inc., Omaha, Nebr.

Filed Mar. 30, 1995, Ser. No. 413,477
Int. Cl.[6] G01N *31/00*
U.S. Cl. 436—13 **15 Claims**



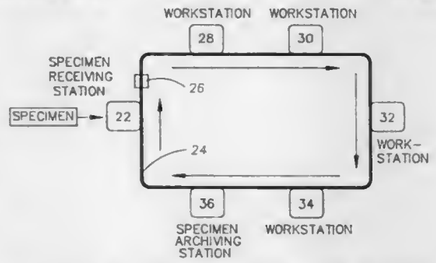
1. A liquid lipoprotein control composition comprising:
a) a lipoprotein;
b) a surfactant present in an amount directly proportional to the amount of lipoprotein; and
c) a divalent cation present in an amount inversely proportional to the amount of lipoprotein.

5,614,415

METHOD FOR AUTOMATIC TESTING OF LABORATORY SPECIMENS

Rodney S. Markin, Omaha, Nebr., assignor to Board of Regents Univ of NE Lincoln, Lincoln, Nebr.

Continuation-in-part of Ser. No. 997,281, Dec. 23, 1992. This application May 5, 1995, Ser. No. 435,859
Int. Cl.[6] G01N *35/04;35/02*
U.S. Cl. 436—48 **5 Claims**



1. A method for routing a specimen through an automated laboratory system, comprising the steps of:
placing a first specimen to be tested in a specimen container;
inputting information regarding the specimen and tests to be conducted on the specimen into a computerized laboratory information system (LIS) which is connected to and communicates with a laboratory automation system (LAS);
marking a first carrier with an identification code identifying the first specimen and tests to be conducted thereon;
placing the first specimen in the first carrier and entering the first carrier into the LAS at a receiving station;
at the receiving station, the LAS reading the identification code and calculating:

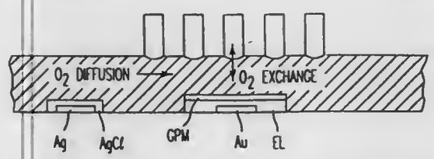
the priority of the first specimen relative to any other specimens entered into the LAS;
the priority of each test to be conducted on the first specimen relative to one another; and
the most direct route from the receiving station to a first workstation for conducting the highest priority test of the first specimen;
entering the first carrier into the LAS by directing the carrier onto a conveyor of the LAS, the conveyor extending among a plurality of workstations, each workstation adapted to conduct a predetermined test;
the LAS operating the conveyor system to direct the first carrier to the first workstation;
the LAS operating a gate at the first workstation to direct the carrier to a workstation auxiliary conveyor, for conducting a test on the specimen; and
the LAS recalculating the priority of the first specimen and any other specimens in the LAS upon directing of the first carrier to the first workstation.

5,614,416

METHODS AND APPARATUS FOR RAPID EQUILIBRATION OF DISSOLVED GAS COMPOSITION

Imants R. Lauks, Rockcliffe Park; Raymond J. Pierce, Ottawa, both of Canada; Joseph W. Rogers, Doylestown, Pa., and Michael P. Zelin, Brooklyn, N.Y., assignors to I-Stat Corporation, Princeton, N.J.

Division of Ser. No. 274,387, Jul. 13, 1994. This application Oct. 23, 1995, Ser. No. 546,797
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—68 **5 Claims**



2. A method of determining the concentration of a dissolved gas in a sample fluid comprising:
(a) providing a gas sensor and a gas equilibration reservoir containing a predetermined composition of calibrant gases wherein said reservoir and said gas sensor are positioned in a conduit such that a calibrant fluid brought in contact with said reservoir undergoes an exchange of the calibrant fluid's dissolved gases with calibrant gas contained in said reservoir;
(b) charging said conduit with a calibrant fluid such that said fluid comes in contact with said reservoir to provide a calibrant fluid with an equilibrated dissolved gas composition that reflects substantially the predetermined composition of calibrant gases contained in said reservoir;
(c) allowing said equilibrated calibrant fluid to come in contact with said gas sensor and recording the response of said gas sensor to said equilibrated calibrant fluid;
(d) displacing said equilibrated calibrant fluid in favor of a sample fluid such that said sample fluid comes in contact with said gas sensor; and
(e) recording the response of said gas sensor to said sample fluid to determine the concentration of a dissolved gas in said sample fluid.

5,614,417

SULFUR CHEMILUMINESCENCE DETECTION METHOD

Sidney W. Kubala, 220 Lasso St., Angleton, Tex. 77515; Donald N. Campbell, 2111 Twin Lakes Blvd., West Columbia, Tex. 77486, and Robert D. Pearson, 2300 W. Alabama St., Apt. 68, Houston, Tex. 77098

Division of Ser. No. 133,516, Oct. 7, 1993. This application Jun. 7, 1995, Ser. No. 484,023
Int. Cl.[6] G01N *33/00;21/76;21/72*
U.S. Cl. 436—120 **1 Claim**

1. A process comprising
forming a mixture of sulfur-containing gas and oxidizing gas;
partially combusting said mixture in the presence of added hydrogen in a first stage to form first stage combustion gases;
conveying said first stage combustion gases to a second stage combustion zone;
introducing additional oxidizing gases into said second stage combustion zone;
further combusting said first stage combustion gases in said second stage combustion zone to form second stage combustion gases containing SO;
conveying at least a portion of said second stage combustion gases to an ozone reaction chamber;
introducing ozone into said ozone reaction chamber to react with the SO and form a chemiluminescent reaction product; and
measuring the chemiluminescence given off by the reaction product;
wherein the temperature in the second stage combustion zone is ≧800° C.; and
wherein the pressure in the ozone reaction chamber is in the range of 28–29.5 inches of mercury.

5,614,418

Patent Not Issued For This Number

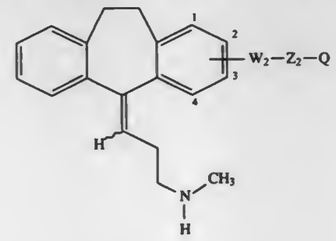
5,614,419

REAGENTS AND METHODS FOR THE QUANTIFICATION OF AMITRIPTYLINE OR NORTRIPTYLINE IN BIOLOGICAL FLUIDS

Maciej Adamczyk, Gurnee; Jeffrey R. Fishpaugh, Chicago; Donald Johnson, Lindenhurst, and Daryl E. Hartter, Mundelein, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 916,067, Jul. 24, 1992, Pat. No. 5,407,835, which is a continuation-in-part of Ser. No. 738,635, Jul. 31, 1991, abandoned. This application Aug. 5, 1994, Ser. No. 286,733
Int. Cl.[6] G01N *33/533;33/53;33/566;* C07K *17/00*
U.S. Cl. 436—546 **25 Claims**

1. A labeled reagent which is recognizable by antibodies capable of binding nortriptyline in a test sample, wherein said labeled reagent is a nortriptyline derivative of the formula:



wherein W_2 is —SO_2—NH— linked to the aromatic ring in the 2 or 3 position, Z_2 is a linking group comprised of 1 to 4 carbon atoms and 0 to 2 heteroatoms and Q is a detectable moiety.

5,614,420

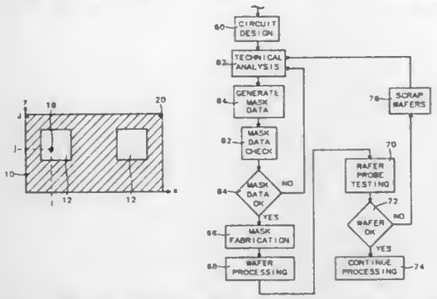
METHOD OF PREVENTING MASK TONE ERROR

Jhy S. Sheu; Yi-Shu Chen, and Ren-Yih Zeng, all of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed May 16, 1996, Ser. No. 649,978

Int. Cl.[6] H01L *21/66*

U.S. Cl. 437—8 **18 Claims**



1. A method of checking mask quality, comprising the steps of:

providing a circuit design;

providing technical analysis of said circuit design;

forming a P^- well mask pattern;

forming a N^- well mask pattern;

forming a P field mask pattern;

forming a P^+ source/drain mask pattern;

forming a N^+ source/drain mask pattern;

dividing each of said P^- well mask pattern, said N^- well mask pattern, said P field mask pattern, said P^+ source/drain mask pattern, and said N^+ source/drain mask pattern into M segments numbered 1 through M wherein M is a positive integer, each of said numbered segments of one of said mask patterns has the same relative location as said numbered segment of every other mask pattern having the same number, and the tone of each of said M segments of each mask is either clear or dark;

assigning index numbers A_1 through A_M for said segments of said P^- well mask numbered 1 through M respectively wherein said index numbers A_1 through A_M are 0 for those said segments of said P^- well mask having a dark tone and 1 for those segments of said P^- well mask having a clear tone;

assigning index numbers B_3 through B_M for said segments of said N^- well mask numbered 1 through M respectively wherein said index numbers B_3through B_M are 0 for those said segments of said N^- well mask having a dark tone and 1 for those said segments of said N^- well mask having a clear tone;

assigning index numbers C_1 through C_M for said segments of said P field mask numbered 1 through M respectively wherein said index numbers C_1 through C_M are 0 for those said segments of said P field mask having a dark tone and 1 for those said segments of said P field mask having a clear tone;

assigning index numbers D_1 through D_M for said segments of said P^+ source/drain mask numbered 1 through M respectively wherein said index numbers D_1through D_M are 0 for those said segments of said P^+ source/drain mask having a dark tone and 1 for those said segments of said P^+ source/drain mask having a clear tone;

assigning index numbers E_1 through E_M for said segments of said N^+ source/drain mask numbered 1 through M respectively wherein said index numbers E_1 through E_M are 0 for those said segments of said N^+ source/drain mask having a dark tone and 1 for those said segments of said N^- well mask having a clear tone;

forming a first index ratio equal to a first sum divided by M wherein said first sum is $D_1 \times E_1$ plus $D_2 \times E_2$ plus $D_3 \times E_3$ plus $D_4 \times E_4$ plus . . . plus $D_M \times E_M$;

forming a second index ratio equal to a second sum divided by M wherein said second sum is $B_3 \times C_3$plus $B_2 \times C_2$ plus $B_3 \times C_3$ plus $B_4 \times C_4$ plus . . . plus $B_M \times C_M$;

forming a third index ratio equal to a third sum divided by M wherein said third sum is $B_1 \times A_1$ plus $B_2 \times A_2$ plus $B_3 \times A_3$ plus $B_3 \times A_4$ plus . . . plus $B_M \times A_M$;

forming a fourth index ratio equal to a fourth sum divided by M wherein said fourth sum is $E_1 \times B_3$ plus $E_2 \times B_2$ plus $E_3 \times B_3$ plus $E_1 \times B_4$ plus . . . plus $E_M \times B_M$;

forming a fifth index ratio equal to a fifth sum divided by M wherein said fifth sum is $D_1 - B_3$plus $D_2 - B_2$ plus $D_3 - B_3$ plus $D_1 - B_3$ plus . . . plus $D_M - B_M$;

releasing said P^- well mask pattern, said N^- well mask pattern, said P field mask pattern, said P^+ source/drain mask pattern, and said N^+ source/drain mask pattern for continued processing if said first index ratio is less than a first index number, said second index ratio is less than a second index number, said third index ratio is less than a third index number, said fourth index ratio is less than a fourth index number, and said fifth index ratio is less than a fifth index number; and

holding said P^- well mask pattern, said N^- well mask pattern, said P field mask pattern, said P^+ source/drain mask pattern, and said N^+ source/drain mask pattern, thereby preventing continued processing, and performing additional technical analysis of said circuit design and said mask patterns if said first index ratio is greater than or equal to said first index number, said second index ratio is greater than or equal to said second index number, said third index ratio is greater than or equal to said third index number, said fourth index ratio is greater than or equal to said fourth index number, or said fifth index ratio is greater than or equal to said fifth index number.

5,614,421

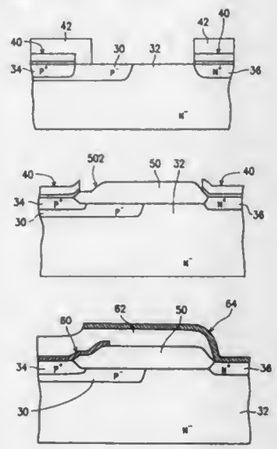
METHOD OF FABRICATING JUNCTION TERMINATION EXTENSION STRUCTURE FOR HIGH-VOLTAGE DIODE DEVICES

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Continuation-in-part of Ser. No. 212,429, Mar. 11, 1994, Pat. No. 5,401,682. This application Dec. 27, 1994, Ser. No. 364,611

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—24 **6 Claims**



1. A method of fabricating diode device on a silicon substrate including a first region of a first conductivity type and a second region of a second conductivity type, said first region and said second region having a first contact area of the first conductivity type and a second contact area of the second conductivity type respectively, said method comprising the steps of:

forming a first protective layer on the surface of said first and second contact areas;

forming a second protective layer on said first protective layer and a portion of said first region adjacent to said first contact area;

implanting halogen ions into said first and second regions by using said second protective layer as a mask;

removing said second protective layer to expose an unimplanted portion of said first region;

oxidizing said first and second regions to form a field oxide layer by using said first protective layer as a mask, wherein the unimplanted portion of said first region has a relatively lower oxidation rate and whereby said field oxide layer is formed with a stepped configuration therein;

removing said first protective layer;

forming a first electrode plate which is electrically coupled to said first contact area and over the stepped configuration of said field oxide layer;

forming a dielectric layer overlying said first electrode plate and said field oxide layer; and

forming a second electrode plate which is electrically coupled with said second contact area and over said dielectric layer, wherein said second electrode plate extends above said first electrode plate.

5,614,422

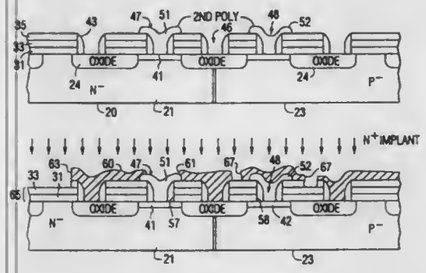
PROCESS FOR DOPING TWO LEVELS OF A DOUBLE POLY BIPOLAR TRANSISTOR AFTER FORMATION OF SECOND POLY LAYER

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 17, 1995, Ser. No. 405,660

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **18 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

(a) selectively forming a first layer on a surface of a second layer of semiconductor material, so as to leave a surface area region of said second layer exposed by an aperture through said first layer, said first layer containing material having a diffusion coefficient for impurities greater than that of said second layer;

(b) forming a third layer, of semiconductor material, in said aperture and upon said surface area region of said second layer;

(c) introducing conductivity type determining impurities into only a prescribed portion of said first layer which is spaced apart from said aperture through said first layer, and into said third layer; and

(d) annealing the structure resulting from step (c), so as to cause impurities that have been introduced into said third layer to diffuse vertically therethrough to said second layer, and to cause impurities that have been introduced into said prescribed portion of said first layer to diffuse laterally throughout said first layer and vertically through said first layer to said second layer.

5,614,423

METHOD FOR FABRICATING A HETEROJUNCTION BIPOLAR TRANSISTOR

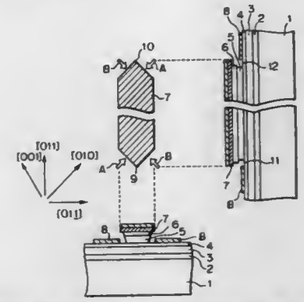
Yutaka Matsuoka, Isehara, and Shoji Yamahata, Atsugi, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,778

Claims priority, application Japan, Nov. 7, 1994, 6-271969

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **10 Claims**



1. A method for fabricating a heterojunction bipolar transistor, comprising the steps of:

(a) forming a first semiconductor layer serving as a base layer on a collector layer which is supported by a compound semiconductor substrate;

(b) forming on said first semiconductor layer a second semiconductor layer comprising InP serving as an emitter layer;

(c) forming on said second semiconductor layer a first conductive material layer which constitutes an emitter electrode, all edges of said emitter electrode being oriented in a direction other than the [01$\bar{1}$1] direction;

(d) etching said second semiconductor layer by an etching process in which the etching rate differs depending on an orientation of a crystal due to anisotropy of said crystal, utilizing said first conductive material layer as a mask, to expose said first semiconductor layer; and

(e) depositing on said first semiconductor layer a second conductive material layer to form a base electrode.

5,614,424

METHOD FOR FABRICATING AN ACCUMULATED-BASE BIPOLAR JUNCTION TRANSISTOR

Shyh-Chyi Wong, Taichung, and Mong-Song Liang, Hsin-chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed Jan. 16, 1996, Ser. No. 586,522

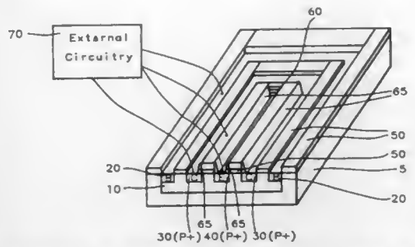
Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**

1. A method for the fabrication of an accumulated-base bipolar junction transistor upon a semiconductor substrate, wherein said accumulated-base bipolar junction transistor has a base accumulator means to increase transconductivity of said accumulated-base bipolar junction transistor, comprising the steps of:

a) implanting and then diffusing of a first dopant type into the semiconductor substrate to form a base region that is of a first rectangular form;

b) implanting and annealing of a second dopant type into the base region to form a base contact region that is in the form of a first rectangular ring to form a low resistance path from said base region to external circuitry;



c) implanting and annealing of a third dopant type into the base region within the base contact region and a first distance from said base contact region to form a collector region that is in the form of a second rectangular ring;

d) implanting and annealing of the third dopant type into the base region within the collector region and a second distance from said collector region to form an emitter region that is a rectangular form;

e) depositing a polycrystalline silicon layer in an area of the base region between the collector region and the emitter region to form said base accumulator means; and

f) operably coupling said base accumulator means to the emitter region and to external circuitry wherein said external circuitry, will present a voltage to the base accumulator means to develop a charge at an interface of the base region and an insulating material in an area of said base region between the emitter region and the collector region thus increasing conductivity of said base accumulator means, wherein said increase in conductivity of the base region of said accumulated-base bipolar junction transistor will increase said transconductivity.

5,614,425

METHOD OF FABRICATING A BIPOLAR TRANSISTOR OPERABLE AT HIGH SPEED

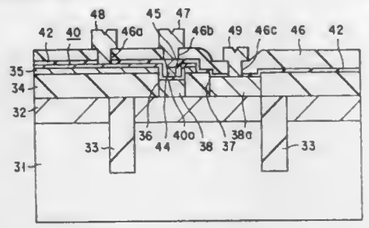
Koji Kimura, Chigasaki, and Hiroshi Naruse, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1996, Ser. No. 622,270

Claims priority, application Japan, Mar. 31, 1995, 7-074882

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **19 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

forming a first insulating film on a semiconductor substrate of a first conductivity type;

forming an opening in said first insulating film, said opening reaching a surface of said semiconductor substrate;

epitaxially growing a first semiconductor layer of a second conductivity type on a bottom of said opening, and growing said first semiconductor layer of said second conductivity type in a polycrystalline state on a side wall of said opening and said first insulating film;

forming a second insulating film on said first semiconductor layer;

performing anisotropic etching of said second insulating film to remove only said second insulating film on said epitaxially grown first semiconductor layer, thereby exposing a surface of said first semiconductor layer; and

selectively growing a second semiconductor layer of said first conductivity type only on said exposed first semiconductor layer.

5,614,426

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING DIFFERENT ORIENTATIONS OF CRYSTAL CHANNEL GROWTH

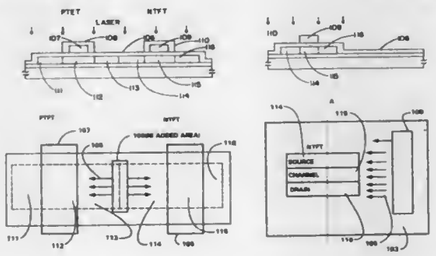
Fumiaki Funada, Nara; Tatsuo Morita, Kyoutohu; Hirohisa Tanaka, Nara; Hongyong Zhang, and Toru Takayama, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 286,454, Aug. 5, 1994. This application Aug. 23, 1995, Ser. No. 518,318

Claims priority, application Japan, Aug. 10, 1993, 5-218156

Int. Cl.[6] H01L *21/84*

U.S. Cl. 437—40 **6 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

forming a substantially amorphous silicon film on a substrate;

introducing a metal element for promoting crystallization into said silicon film before or after the formation of said silicon film;

crystallizing said silicon film by heating so that a crystal grows in a direction approximately parallel with a surface of said substrate in a region adjacent to a portion into which said metal element is added; and

forming a plurality of thin film transistors within said region of the silicon film,

wherein a part of said thin film transistors are arranged in such a manner that the crystal growth direction of the crystalline silicon film thereof forms a first angle with respect to a direction along which carriers flow therein while another part of said thin film transistors are arranged in such a manner that the crystal growth direction of the crystalline silicon film thereof forms a second angle with respect to a direction along which carriers flow therein, said first angle being different from said second angle.

5,614,427

METHOD OF MAKING AN ARRAY OF TFTS HAVING REDUCED PARASITIC CAPACITANCE

Willem den Boer, and Mohsbi Yang, both of Troy, Mich., assignors to OIS Optical Imaging Systems, Inc., Northville, Mich.

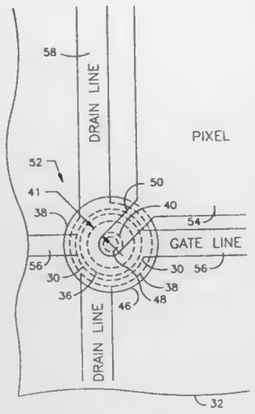
Division of Ser. No. 154,713, Nov. 19, 1993, Pat. No. 5,414,283. This application Jan. 20, 1995, Ser. No. 375,658

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 **3 Claims**

1. A method of making an array of thin film transistors corresponding to an array of electrode members, the method comprising the steps of:

a) depositing a gate electrode layer on a substrate;



b) depositing a semiconductor film over said gate electrode layer;

c) depositing a metal layer over said semiconductor layer;

d) patterning said metal layer of step c) so as to form source and drain electrodes for each thin film transistor in the array wherein the source electrode of each transistor is completely surrounded by the drain electrode so that the thin film transistors in the array have reduced parasitic capacitances; and

e) depositing and patterning an electrode layer on top of said source and drain electrodes so that a substantial portion of the electrode member corresponding to each thin film transistor is laterally spaced therefrom.

5,614,428

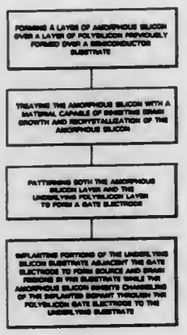
PROCESS AND STRUCTURE FOR REDUCTION OF CHANNELING DURING IMPLANTATION OF SOURCE AND DRAIN REGIONS IN FORMATION OF MOS INTEGRATED CIRCUIT STRUCTURES

Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 23, 1995, Ser. No. 546,921

Int. Cl.[6] 1101L *21/265*

U.S. Cl. 437—41 **13 Claims**



1. A process for forming MOS devices in integrated circuit structures on a semiconductor substrate while inhibiting channeling of dopant through the gate electrode into said semiconductor substrate during implantation of said substrate to form source and drain regions therein which comprises:

a) forming a layer of amorphous silicon over a layer of polysilicon previously formed over said semiconductor substrate;

b) treating said amorphous layer of silicon with a material capable of inhibiting grain growth and recrystallization of said amorphous silicon;

c) patterning both said amorphous silicon layer and said polysilicon layer to form a gate electrode; and

d) implanting portions of said semiconductor substrate adjacent said gate electrode to form source and drain regions in said substrate;

whereby the presence of said amorphous silicon over said polysilicon gate electrode inhibits channeling of said dopant through said polysilicon gate electrode during said implantation of said substrate to form said source and drain regions therein.

5,614,429

METHOD FOR FABRICATING EEPROM WITH CONTROL GATE IN TOUCH WITH SELECT GATE

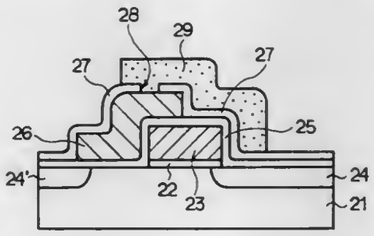
Ki S. Shin, and Soo H. Choi, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jul. 17, 1995, Ser. No. 503,246

Claims priority, application Rep. of Korea, Jul. 18, 1994, 94-17297

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **3 Claims**



1. A method for fabricating an EEPROM, comprising the steps of:

forming a gate oxide film on a semiconductor substrate;

forming a floating gate on the gate oxide film;

forming a first interlayer insulating film on the entire surface of the floating gate and the exposed semiconductor substrate;

forming a selecting gate on an area of the first interlayer insulating film ranging from a portion of the semiconductor substrate to a portion of the upper surface of the floating gate;

implanting impurities into the semiconductor substrate to form a source electrode and a drain electrode by use of the floating gate and the selecting gate serving as a mask, said impurities differing from said semiconductor substrate in type;

forming a second interlayer insulating film on the entire surface of the resulting structure;

etching a portion of the second interlayer insulating film on the selecting gate to expose a contact hole through which the selecting gate is exposed; and

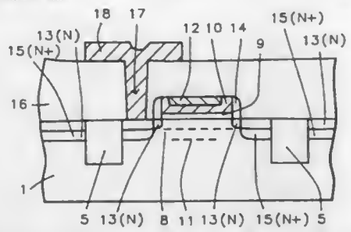
forming a control gate which is in touch with the selecting gate through the contact hole and shields the non-overlapped upper surface of the floating gate.

5,614,430

ANTI-PUNCHTHROUGH ION IMPLANTATION FOR SUB-HALF MICRON CHANNEL LENGTH MOSFET DEVICES

Mong-Song Liang, and Jin-Yuan Lee, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed Mar. 11, 1996, Ser. No. 613,652
Int. Cl.[6] H01L *21/762*
U.S. Cl. 437—45 **28 Claims**



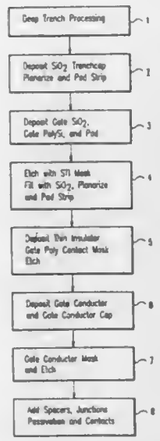
1. A method for fabricating a MOSFET device, on a semiconductor substrate, comprising the steps of:
forming a shallow trench in said semiconductor substrate;
depositing a first insulator layer on said semiconductor substrate, completely filling said shallow trench;
removal of said first insulator layer from all areas of said semiconductor substrate, except from said shallow trench;
depositing a second insulator layer on said semiconductor substrate, including on said first insulator layer, in said shallow trench;
opening a region in said second insulator layer, to an area of said semiconductor substrate, to be used for gate region;
ion implanting a first dopant of a first conductivity type into said opened region, in said second insulator layer;
growing a gate oxide on region of said semiconductor substrate, exposed in said opened region of said second insulator layer;
depositing a first polysilicon layer on surface of said second insulator layer, on sides of said opened region, in said second insulator layer, creating a polysilicon sidewall, and on surface of said gate oxide, exposed in said opened region of said second insulator layer;
ion implanting a second dopant of the first conductivity type, through said first polysilicon silicon layer, through said gate oxide, and into said semiconductor substrate, in said opened region of said second insulator layer, not covered by said polysilicon sidewall;
depositing a second polysilicon layer on said first polysilicon layer;
ion implanting a third dopant of the second conductivity type into said second polysilicon layer;
removal of said second polysilicon layer, and of first polysilicon layer, from top surface of said second insulator layer, to form polysilicon gate structure, of said second polysilicon layer, and said first polysilicon layer, in said opened region of said second insulator layer;
removal of said second insulator layer;
ion implanting a fourth dopant of the second conductivity type into said semiconductor substrate, not covered by said polysilicon gate structure;
depositing a third insulator layer on said semiconductor substrate, and on said polysilicon gate structure;
anisotropic etching of said third insulator layer, to form insulator spacer on sides of said polysilicon gate structure;
ion implanting a fifth dopant of the second conductivity type into said semiconductor substrate, not covered by said polysilicon gate structure, or by said insulator spacer;
depositing a fourth insulator layer on said semiconductor substrate, including depositing on said polysilicon gate structure;
opening a contact hole in said fourth insulator layer, to a region on said semiconductor substrate;
depositing a metal layer on top surface of said fourth insulator layer, and on surface of said region, on said semiconductor substrate, exposed in said contact hole; and
patterning of said metal layer to form a metal contact structure to said region, on said semiconductor substrate.

5,614,431

METHOD OF MAKING BURIED STRAP TRENCH CELL YIELDING AN EXTENDED TRANSISTOR

John K. DeBrosse, Chittenden County, Vt., assignor to International Business Machines Corporation, Hopewell Junction, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,311
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **4 Claims**



1. A method of manufacturing a memory cell structure comprising the steps of:
providing a cell prepared with a trench, isolation regions and active area regions, wherein said active area regions are covered with gate SiO_2 and gate polysilicon;
depositing a thin insulator;
etching said insulator with a gate polysilicon contact mask to expose the gate polysilicon;
depositing a gate conductor and a gate conductor cap;
etching said gate conductor cap, gate conductor, and gate polysilicon stopping on said gate SiO_2 with a gate conductor mask; and
adding spacers, junctions, passivation, contacts and wiring.

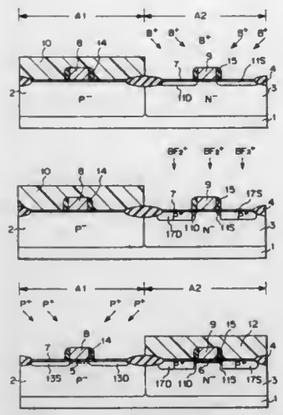
5,614,432

METHOD FOR MANUFACTURING LDD TYPE MIS DEVICE

Yoshiro Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,650
Claims priority, application Japan, Apr. 23, 1994, 6-107617; Apr. 23, 1994, 6-107618
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—56 **9 Claims**

4. A method for manufacturing a first MIS transistor of a first conductivity type and a second MIS transistor of a second conductivity type opposite to said first conductivity type by using a semiconductor substrate, comprising the steps of:
forming a first semiconductor region of said second conductivity type for said first MIS transistor on said semiconductor substrate;
forming a second semiconductor region of said first conductivity type for said second MIS transistor on said semiconductor substrate;



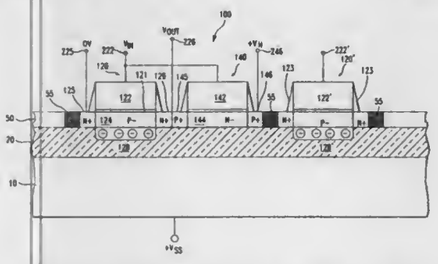
forming first and second gate insulating layers on said first and second semiconductor regions, respectively;
forming first and second gate electrodes on said first and second gate insulating layers, respectively;
forming first and second sidewall insulating layers on sidewalls of said first and second gate electrodes, respectively;
introducing first and second impurity ions of said first conductivity type into said first semiconductor region with a mask of said first gate electrode and said first sidewall insulating layer and a first photoresist mask covering said second semiconductor region, said first impurity ions being obliquely incident to said first semiconductor region and said second impurity ions being approximately perpendicularly incident to said first semiconductor region; and
introducing third and fourth impurity ions of said second conductivity type into said second semiconductor region with a mask of said second gate electrode and said second sidewall insulating layer and a second photoresist mask covering said first semiconductor region, said third impurity ions being obliquely incident to said second semiconductor region and said fourth impurity ions being approximately perpendicularly incident to said second semiconductor region.

5,614,433

METHOD OF FABRICATING LOW LEAKAGE SOI INTEGRATED CIRCUITS

Jack A. Mandelman, Stormville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1995, Ser. No. 573,859
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—57 **5 Claims**



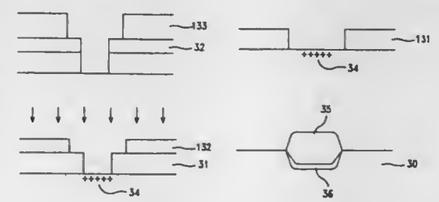
1. A method of forming an SOI CMOS integrated circuit containing NFETs and PFETs comprising the steps of:
preparing an SOI wafer having a lower substrate, a device layer for containing NFETs and PFETs and an insulating layer separating said device layer and said lower substrate;
defining a plurality of NFET regions for the formation of said NFETs and containing NFET channel areas by patterning a blocking layer having a thickness;
implanting said plurality of NFET regions with a backside implant that is blocked by said blocking layer, whereby said NFET regions are implanted and locations of PFETs in said wafer are not implanted, said backside implant having a backside implant energy such that said backside implant penetrates through said device layer in said NFET channel areas and into said insulating layer, said backside implant further having a backside dose such that a plurality of backside parasitic NFET transistors have a backside threshold greater than a backside reference threshold when a backside positive bias voltage for suppressing backside leakage in said PFETs is applied to said lower substrate;
forming said NFETs and PFETs in said device layer; and
completing said integrated circuit.

5,614,434

METHOD FOR MINIMIZING THE ENCROACHMENT EFFECT OF FIELD ISOLATION STRUCTURE

Fang-Ching Chao, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,486
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—70 **37 Claims**

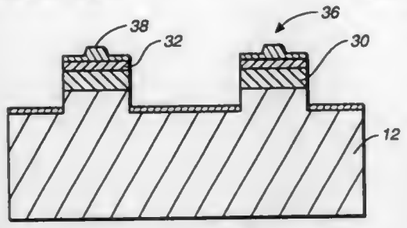


1. A process for forming isolation regions on a semiconductor substrate, which comprises:
depositing a sacrificial layer on a laminate comprising the substrate having thereon stacked layers;
defining active regions of a first type by means of a photo-resist mask on the sacrificial layer, and removing the unmasked sacrificial layer and the unmasked stacked layers anistropically;
performing a photo-resist erosion process for exposing a portion of the unremoved sacrificial layer;
etching the sacrificial layer to completely remove the portion thereof not covered by the photo-resist mask;
removing the photo-resist mask from the top of the sacrificial layer;
implanting channel-stopping ions of a second type into the substrate;
etching the stacked layers to completely remove the portion thereof not covered by the sacrificial layer and expose the surface of the substrate;
removing the sacrificial layer from the top of the stacked layers; and
oxidizing the exposed substrate so as to form the isolation regions.

5,614,435
QUANTUM DOT FABRICATION PROCESS USING STRAINED EPITAXIAL GROWTH

Pierre Petroff, Santa Barbara; Devin Leonard, Goleta, both of Calif., and Moban Krishnamurthy, Houghton, Mich., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 27, 1994, Ser. No. 330,303
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—110 **26 Claims**

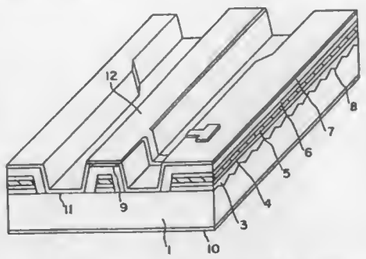


1. A method of forming quantum dots comprising:
deposing a material having a first lattice spacing on a substrate having a second unequal lattice spacing to produce self-assembled quantum dots;
continuously observing surface texture of said first material as it is being disposed on said substrate; and
immediately terminating deposition of said first material on said substrate as soon as a predetermined number of said self-assembled quantum dots form as determined by observation of said surface texture during deposition of said first material, whereby a plurality of quantum dots of predetermined size and density are controllably and reliably fabricated.

5,614,436
MULTIPLE QUANTUM WELL DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER DEVICE AND METHOD FOR FABRICATING THE SAME

Jong-In Shim, and Mitsuhiro Kitamura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 171,415, Dec. 22, 1993, Pat. No. 5,450,437. This application Mar. 8, 1995, Ser. No. 400,568
Claims priority, application Japan, Dec. 22, 1992, 4-341745
Int. Cl.[6] H01S *3/08*
U.S. Cl. 437—129 **10 Claims**

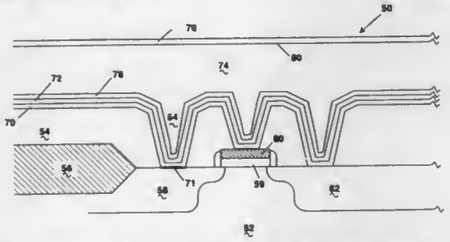


1. A method of fabricating a distributed feedback semiconductor laser device comprising the steps of:
forming a corrugation-shaped grating formed on a top surface of a substrate;
forming two slender insulation masks having a variation in width on said top surface of said substrate, said two slender insulation masks being arranged in parallel to each other and separated by a distance, said two slender insulation masks each having a center area about 50 micrometers in length;
growing an active waveguide layer by use of a selective metal organic vapor phase epitaxy method using said two slender insulation masks so that said active waveguide layer grown has an energy band gap profile and a light propagation constant that are varied along a cavity length direction of said laser device;
forming a clad layer so as to cover said active waveguide layer; and
providing a top electrode formed on a top of said clad layer and a bottom electrode on a bottom surface of said substrate.

5,614,437
METHOD FOR FABRICATING RELIABLE METALLIZATION WITH TA-SI-N BARRIER FOR SEMICONDUCTORS

Ratan K. Choudhury, Milpitas, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 26, 1995, Ser. No. 378,750
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—140 **19 Claims**



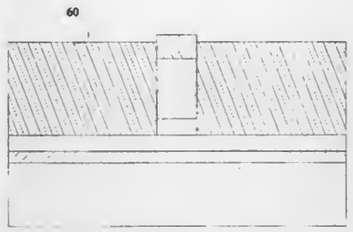
1. A method for manufacturing a semiconductor device, said semiconductor device including a silicon substrate having at least one device element and a non-conductive layer at least partially covering said device element, said method comprising the steps of:
etching a via extending through said non-conductive layer to said device element thereby providing an exposed region of said device element;
depositing a tantalum silicide ohmic contact layer over at least a first portion of said non-conductive layer and said via, said ohmic contact layer being in electrical contact with said exposed region;
depositing a tantalum silicon nitride barrier layer over at least a second portion of said non-conductive layer and said via, said barrier layer being in direct contact with said ohmic contact layer, and being in electrical contact with said exposed region; and
depositing a metallization layer upon said semiconductor device, said metallization layer formed over and in electrical contact with said exposed region, and wherein said metallization layer is aluminum or an aluminum containing alloy.

5,614,438
METHOD FOR MAKING LSCO STACK ELECTRODE

Joseph T. Evans, Jr., and Leonard Boyer, both of Albuquerque, N.M., assignors to Radiant Technologies, Inc., Albuquerque, N.M.

Filed Mar. 15, 1995, Ser. No. 405,216
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—192 **4 Claims**

1. A method for depositing an electrode in a region of a substrate, said method comprising the steps of:
depositing a first layer of a glue material on said substrate, said glue material being a material capable of bonding platinum to said substrate;
masking said first layer in regions outside of said region by applying a layer of masking material on said regions;
applying an etchant to said masked substrate, said etchant etching said first layer in regions not protected by said masking material;
depositing a second layer of said glue material in said region;

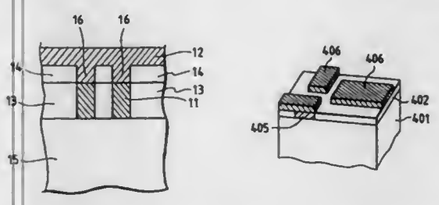


depositing a platinum layer in said region;
depositing an amorphous ohmic contact material in said region;
removing said masking material; and
heating said ohmic contact material to a temperature sufficient to crystallize said ohmic contact material.

5,614,439
METHOD OF MAKING A PLANAR WIRING IN AN INSULATED GROOVE USING ALKYLALUMINUM HYDRIDE

Fumio Murooka; Tetsuo Asaba; Shigeyuki Matsumoto, all of Atsugi; Osamu Ikeda, Tokyo; Toshihiko Ichise, Kawasaki; Yukihiko Sakashita, Isehara, and Shunsuke Inoue, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 259,125, Jun. 13, 1994, abandoned, which is a continuation of Ser. No. 705,597, May 24, 1991, abandoned. This application Feb. 21, 1995, Ser. No. 393,928
Claims priority, application Japan, May 31, 1990, 2-139616; May 31, 1990, 2-139620; May 31, 1990, 2-139621
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—194 **13 Claims**

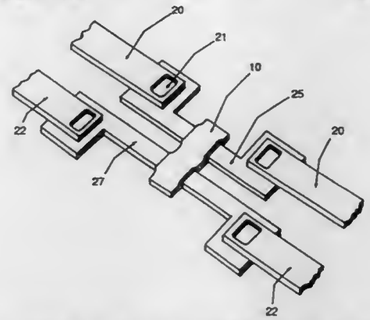


1. A method of producing a semiconductor device comprising:
a first step for forming a first insulating layer on a substrate;
a second step for forming a first wiring layer on the first insulating layer so that there is a section of the first insulating layer on which the first wiring layer is not formed;
a third step for forming a second insulating layer on the first wiring layer;
a fourth step for forming an aperture having an aspect ratio of not less than 1, and penetrating through the first and second insulating layers at the section on, or under which, the first wiring layer is not formed;
a fifth step for filling the aperture with a metal; and
a sixth step for forming a second wiring layer in contact with the metal on the second insulating layer,
wherein the above steps are performed in this order, and in the fifth step, a CVD process using alkylaluminum hydride and hydrogen is performed for depositing the metal, which comprises aluminum.

5,614,440
METHOD OF FORMING A THERMALLY ACTIVATED NOISE IMMUNE FUSE

Raschid J. Bezama, Mahopac; Dominic J. Schepis, Wappingers Falls, both of N.Y., and Krishna Seshan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 292,901, Aug. 10, 1994, Pat. No. 5,444,287. This application Apr. 11, 1995, Ser. No. 419,778
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 **18 Claims**

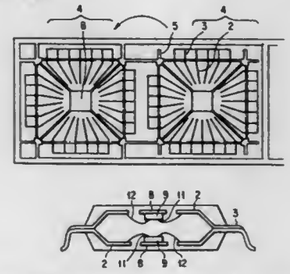


1. A method of making a programmable fuse in an integrated circuit on an insulated substrate, comprising the steps of:
a) forming a pair of current carrying fuse links on the insulating layer, with said links comprising said pair of fuse links in close proximity of each other;
b) thermally coupling only a portion of said pair of fuse links with thermally conductive material; and
c) programming one link of said pair by activating the second link of said pair to transfer energy from the second fuse link to the first link of said pair via said thermally conductive material.

5,614,441
PROCESS OF FOLDING A STRIP LEADFRAME TO SUPERPOSE TWO LEADFRAMES IN A PLURAL SEMICONDUCTOR DIE ENCAPSULATED PACKAGE

Ryuji Hosokawa, Yokohama, and Satoru Yanagida, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 213,586, Mar. 16, 1994, Pat. No. 5,543,658. This application May 4, 1995, Ser. No. 434,995
Claims priority, application Japan, Jun. 14, 1993, 5-141790
Int. Cl.[6] H01L *21/48;21/56;21/58;21/70*
U.S. Cl. 437—207 **4 Claims**



1. A method of manufacturing a resin-sealed semiconductor device, comprising the steps of:
preparing a first lead frame portion arranged along a longitudinal direction of a lead frame member and having a first bed portion for mounting a semiconductor element and a first lead group comprising a plurality of inner leads extending in at least one direction around said bed portion and arranged

parallel at substantially equal intervals and a plurality of outer leads respectively connected to said inner leads, and a second lead frame portion having a second bed portion for mounting a semiconductor element and a second lead group comprising a plurality of inner leads and a plurality of outer leads respectively connected to said inner leads, said second lead frame portion being connected to said first lead frame portion through a coupling portion of said lead frame member, and the plurality of inner leads and the plurality of outer leads of said second lead group being alternately arranged between the plurality of inner leads and the plurality of outer leads extending in a same direction in said first lead group when said second bed portion is superposed on said first bed portion of said first lead frame portion so as to oppose each other;

mounting said first and second semiconductor elements on said first and second bed portions, respectively, and electrically connecting each electrode of said first and second semiconductor elements to one of the plurality of inner leads;

folding said first and second lead frame portions at said coupling portion to oppose said first and second semiconductor elements, and superposing said first and second lead frame portions such that said inner leads and said outer leads of said first and second lead groups are alternately arranged; and

sealing said first and second lead frame portions with a mold resin, said first and second lead frame portions including said first and second semiconductor elements opposed each other, while leaving end portions of said outer leads of said first and second lead frame portions.

5,614,442

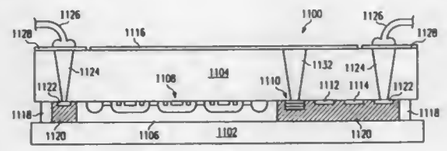
METHOD OF MAKING FLIP-CHIP MICROWAVE INTEGRATED CIRCUIT

Hua Q. Tserng, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Divisiion of Ser. No. 339,429, Nov. 14, 1994, Pat. No. 5,532,506, which is a continuation-in-part of Ser. No. 298,822, Aug. 31, 1994, Pat. No. 5,521,406. This application Jun. 7, 1995, Ser. No. 477,717

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **7 Claims**



1. A method of fabricating an integrated circuit, said method comprising the steps of:

(a) forming at least one transistor at a frontside surface of a substrate:

(b) forming at least one transmission line at said frontside surface:

(c) forming an airbridge over portions of said transistor wherein a top surface of said airbridge is spaced from said frontside surface by a distance approximately equal to, or greater than, the thickness of said substrate;

(d) forming a conducting via through said substrate coupling said at least one transistor to a bond pad at said backside surface; and

(e) coupling a heatsink to said airbridge.

5,614,443

METHOD OF PRODUCING A FRAME MADE OF CONNECTED SEMICONDUCTOR DIE MOUNTING SUBSTRATES

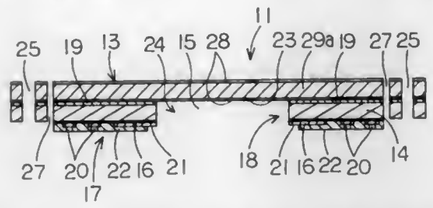
Takashi Nakashima; Keiji Takai, and Kouji Tateishi, all of Kitakyushu, Japan, assignors to Mitsui High-tec, Inc., Kitakyushu, Japan

Filed Mar. 27, 1996, Ser. No. 622,144

Claims priority, application Japan, Jul. 6, 1995, 7-196157

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **6 Claims**



1. A method of producing a frame made of connected semiconductor die mounting substrates, wherein i) a plurality of semiconductor die mounting substrates are connected in series in one direction by means of a plurality of connecting tabs, ii) said each semiconductor die mounting substrate has a die mounting portion at a central portion thereof and a plurality of conductive leads around said die mounting portion, and each conductive lead is provided with a wire bonding pad at an inner end thereof and a terminal pad at an outer end thereof and a solder resist layer is formed on said semiconductor die mounting substrate with an exception of said wire bonding pads and said terminal ends, iii) and a pair of side rails each of which is provided with a plurality of positioning pilot apertures are connected to respective sides of said connected semiconductor die mounting substrates by means of a plurality of connecting tabs, comprising:

a) a first step for preparing a metal substrate sheet which has an area capable of covering and defining a plurality of contiguous strip-like regions, said each strip-like region having an area capable of defining a plurality of said connected semiconductor die mounting substrates which are connected by said connecting tabs and said side rails connected to respective sides of said connected semiconductor die mounting substrates, said each strip-like region provided with a plurality of said spaced-apart die mounting regions,

b) a second step for preparing a circuit substrate sheet defining a plurality of contiguous regions which are aligned with said strip-like regions of said metal substrate sheet, said each region defining a plurality of openings which register with said die mounting portions of said metal substrate sheet and provided with a plurality of said conductive leads formed around said openings,

c) a third step for producing a connected semiconductor die mounting sheet by heatsealing said circuit substrate sheet on said metal substrate sheet while aligning said die mounting portion of said metal substrate sheet with said opening of said circuit substrate sheet, said connected semiconductor die mounting sheet provided with a plurality of cavities each of which is defined by said each die mounting portion of said metal substrate sheet and said each opening of said circuit substrate sheet,

d) a fourth step for producing a plurality of said semiconductor die mounting substrates which are connected in series in one direction and said side rails connected to respective sides of said semiconductor die mounting substrates in said each region defined in said connected semiconductor die mounting substrate sheet by forming a plurality of slits on said semiconductor die mounting substrates, said step further including forming a plurality of said positioning pilot apertures with reference to said respective cavities, and

e) a fifth step for separating said frame made of connected semiconductor die mounting substrates along said strip-like region.

5,614,444

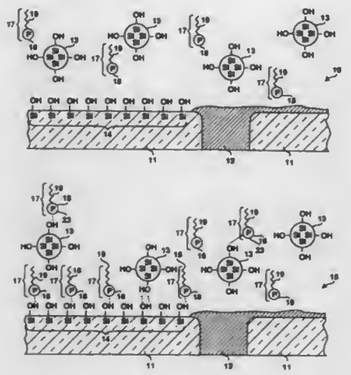
METHOD OF USING ADDITIVES WITH SILICA-BASED SLURRIES TO ENHANCE SELECTIVITY IN METAL CMP

Janos Farkas; Rahul Jairath, both of Austin, Tex.; Matt Stell, Folsom, Calif., and Sing-Mo Tzeng, Austin, Tex., assignors to Sematech, Inc., Austin, Tex.; Intel Corporation; National Semiconductor Corp., both of Santa Clara, Calif., and Digital Equipment Corp., Maynard, Mass.

Filed Jun. 6, 1995, Ser. No. 469,164

Int. Cl.[6] H01L *21/302*

U.S. Cl. 437—225 **14 Claims**



1. A method of passivating a surface of a dielectric layer of a semiconductor wafer in order to reduce removal rate of said surface when said surface is subjected to chemical-mechanical polishing in presence of an aqueous slurry wherein particles of said slurry interact to erode said surface, comprising the steps of:

introducing a chemical additive having a polar component and an apolar component to said slurry wherein said polar component of said chemical additive interacts with functional groups present at said surface to form an interacted apolar passivation layer over said surface, so that functional groups which would normally interact with said slurry for erosion of said surface to occur are significantly restricted from interacting with said slurry;

performing chemical-mechanical polishing wherein said passivation layer inhibits erosion of said surface to reduce said removal rate.

5,614,445

METHOD OF DICING SEMICONDUCTOR WAFER

Atsuo Hirabayashi, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1992, Ser. No. 863,677

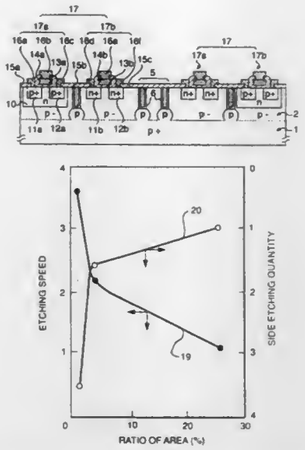
Claims priority, application Japan, Apr. 2, 1991, 3-068664

Int. Cl.[6] H01L *21/301*

U.S. Cl. 437—226 **4 Claims**

1. A method of making a plurality of individual integrated circuit chips from a semiconductor wafer, said wafer having a major surface and the major surface having a total surface area, said method comprising the steps of:

depositing a mask layer on the major surface of said semiconductor wafer to expose a plurality of portions of a first area of the major surface and a plurality of portions of a second area of the major surface, said plurality of portions of the second area of the major surface for isolating circuit elements of each said integrated circuit chip, said circuit elements being formed in regions of the major surface other than said first area, a sum of the portions of the first area and the portions of the second area is at least 5% of the total surface area of the major surface;



dry etching material from said portions of said first and second areas simultaneously to form element isolation trenches in said second areas and dummy trenches in said first areas, a width of said element isolation trenches being substantially equal to a width of said dummy trenches; and

separating said semiconductor wafer into individual chips.

5,614,446

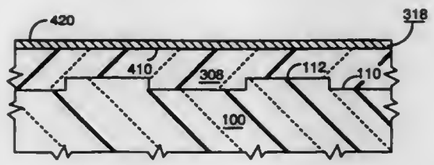
HOLDING APPARATUS, A METAL DEPOSITION SYSTEM, AND A WAFER PROCESSING METHOD WHICH PRESERVE TOPOGRAPHICAL MARKS ON A SEMICONDUCTOR WAFER

Seshadri Ramaswami, San Jose, and Darin A. Chan, Campbell, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 300,273, Sep. 2, 1994, Pat. No. 5,456,756. This application Jun. 7, 1995, Ser. No. 479,873

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—228 **7 Claims**



1. A method for processing a wafer having at least one topographical mark, comprising:

a) providing the wafer having the at least one topographical mark;

b) forming an optically transparent oxide layer over the wafer including the at least one topographical mark; and

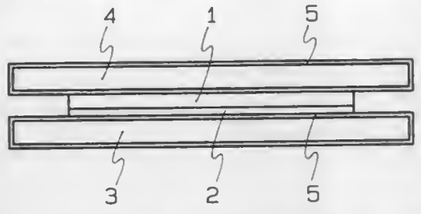
c) providing a metallized layer over the wafer except over the at least one topographical mark.

5,614,447

METHOD FOR HEAT-TREATING A SEMICONDUCTOR BODY

Shigeki Yamaga, and Chikao Kimura, both of Kamifukuoka, Japan, assignors to New Japan Radio Co., Ltd., Tokyo-to, Japan

Filed Nov. 16, 1995, Ser. No. 559,091
Claims priority, application Japan, Nov. 30, 1994, 6-321485; Jun. 30, 1995, 7-187886
Int. Cl.[6] H01L *21/324*
U.S. Cl. 437—247 4 Claims



1. A method for heat-treating a semiconductor body with an impurity implanted region comprising steps of:

(a) disposing a susceptor on one surface of the semiconductor body with an impurity implanted region, and disposing a protection plate in such a manner that the other surface of the semiconductor body faces to a surface of the protection plate,

(b) heat-treating the semiconductor body to activate the impurity implanted region,

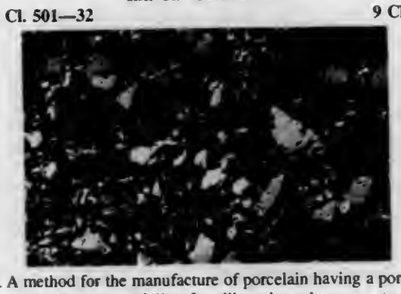
wherein the susceptor and the protection plate comprises at least one member selected from the group consisting of gallium nitride, aluminium nitride and boron nitride, and at least one of the susceptor and the protection plate has a coating of an absorber of infrared ray.

5,614,448

METHOD FOR THE MANUFACTURE OF PORCELAIN

Roswitha Kreiner, Selb, Germany, assignor to Rosenthal Aktiengesellschaft, Germany

Division of Ser. No. 157,634, Nov. 24, 1993, Pat. No. 5,455,210. This application Mar. 27, 1995, Ser. No. 410,871
Int. Cl.[6] C04B *33/24*
U.S. Cl. 501—32 9 Claims



1. A method for the manufacture of porcelain having a porcelain matrix consisting essentially of mullite, glass phase, quartz grains and pores comprising the steps of:

preparing a porcelain batch composition from raw materials, said batch composition consisting essentially of:

18–29 wt. % Al_2O_3
50–65 wt. % SiO_2
0.1–0.3 wt. % Fe_2O_3
0.02–0.1 wt. % TiO_2
5–8 wt. % CaO
0.15–0.3 wt. % MgO
0.5–2.0 wt. % Na_2O
2.6–4.0 wt. % K_2O
3.5–6.0 wt. % P_2O_5; and

firing the batch composition.

5,614,449

MAN-MADE VITREOUS FIBRES

Soren L. Jensen, Copenhagen, Denmark, assignor to Rockwool International A/S, Denmark

PCT No. PCT/EP95/00480, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO95/21799, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 10, 1995, Ser. No. 532,773
Claims priority, application Denmark, Feb. 11, 1994, 0184/94; United Kingdom, Dec. 30, 1994, 9426391
Int. Cl.[6] C03C *13/02;13/06*
U.S. Cl. 501—38 21 Claims

1. A product comprising manmade vitreous fibres formed of a composition which comprises, by weight of oxides:

SiO_2	45–60%
Al_2O_3	0.5–4%
TiO_2	0.1–4%
FeO	6–12%
CaO	10–25%
MgO	8–18%
Na_2O	0–2.5%
K_2O	0–2%
$Na_2O + K_2O$	0–6%
P_2O_5	3–10%

wherein the product has a sintering temperature of at least 950° C. and wherein above 50% by weight of the iron is present as ferrous.

5,614,450

SPOUT-FILLING COMPOSITION AND METHOD FOR APPLYING

James M. Britt, 3325 Lorna Rd. #2-176, Birmingham, Ala. 35216

Filed Sep. 27, 1995, Ser. No. 534,793
Int. Cl.[6] C04B *35/10*
U.S. Cl. 501—120 20 Claims

1. A spout-filling composition comprising:

a first component having

from about 50% to about 100% by weight magnesium-aluminate spinel aggregate; and

from about 50% to about 0% by weight quartz sand; and

a second component having

fine-mesh carbonaceous material in an amount of from about 0.25% to about 5.00% by weight of the magnesium-aluminate spinel aggregate and quartz sand component.

5,614,451

Patent Not Issued For This Number

5,614,452

METHOD OF CONVERTING ASBESTOS CEMENT INTO A HARMLESS PRODUCT

Anders U. Clausen, Koge; Vermund R. Christensen, Roskilde, and Soren L. Jensen, Copenhagen, all of Denmark, assignors to Rockwool International A/S, Denmark

PCT No. PCT/EP94/01215, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/23801, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 19, 1994, Ser. No. 525,590
Claims priority, application Denmark, Apr. 20, 1993, 443/93
Int. Cl.[6] C04B *35/00*
U.S. Cl. 501—155 14 Claims

1. A process for converting asbestos cement to a harmless product comprising heating in a furnace a blend of asbestos cement and an additive said additive comprising

at least 50% by weight of naturally occurring silicate material, and

at least 60% by weight of $SiO_2+Al_2O_3$,

the blend comprising 50 to 85% by weight asbestos cement and 15 to 50% by weight of the additive,

the blend of asbestos cement and the additive having a content of CaO of not more than 50% by weight of the blend,

the blend of asbestos cement and the additive being melted in the furnace by heating to a temperature between 1400° C. and 1700° C. at which the blend is molten,

the blend having a liquidus temperature of not more than 1600° C., and

discharging the molten blend from the furnace and cooling and solidifying the molten blend.

5,614,453

CATALYST CONTAINING ZEOLITE BETA AND A PILLARED CLAY

Mario L. Occelli, Yorba Linda, Calif., assignor to UOP, Des Plaines, Ill.

Division of Ser. No. 757,837, Sep. 11, 1991, Pat. No. 5,374,349. This application Oct. 25, 1994, Ser. No. 328,688
Int. Cl.[6] B01J *29/06*
U.S. Cl. 502—66 7 Claims

1. An extruded catalyst consisting essentially of a uniform mixture of zeolite Beta, a hydrogenation component selected from the group consisting of molybdenum, tungsten, nickel, cobalt and the oxides and sulfides of each member thereof and a pillared clay.

5,614,454

STABLE, HIGH-YIELD REFORMING CATALYST

Leonid B. Galperin, Chicago; Paula L. Bogdan, Mount Prospect, and Edwin P. Boldingh, Arlington heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 378,117, Jan. 24, 1995, Pat. No. 5,464,800, which is a continuation-in-part of Ser. No. 194,973, Feb. 14, 1994, Pat. No. 5,384,038, which is a division of Ser. No. 974,544, Nov. 12, 1992, Pat. No. 5,314,854. This application May 22, 1995, Ser. No. 445,620
Int. Cl.[6] B01J *29/60;29/68*
U.S. Cl. 502—66 10 Claims

1. A catalyst for the conversion of hydrocarbons comprising:

(a) a multigradient noble-metal component comprising platinum and surface-layer ruthenium;

(b) a nonacidic large-pore molecular sieve; and,

(c) an inorganic-oxide binder.

5,614,455

OLEFIN POLYMERIZATION CATALYST, PROCESS FOR ITS PREPARATION, AND ITS USE

Hans-Friedrich Herrmann, Darmstadt; Bernd Bachmann, Eppstein/Taunus, and Walter Spaleck, Liederbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 320,127, Oct. 7, 1994, Pat. No. 5,578,537, which is a continuation of Ser. No. 55,237, Apr. 28, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,616
Claims priority, application European Pat. Off., Apr. 29, 1992, 92017331
Int. Cl.[6] C08F *4/18;4/64*
U.S. Cl. 502—111 6 Claims

1. A process for preparing a polymerization catalyst comprising the reaction product of a supported, organoaluminum catalyst component and a metallocene catalyst component, wherein

(a) the support is an oxide of silicon or aluminum having a water content of less than 3% by weight,

(b) suspending said support in the solution of at least one alkyl aluminum under inert conditions to form a suspension,

(c) adding water into said suspension, yielding the supported, organoaluminum catalyst component,

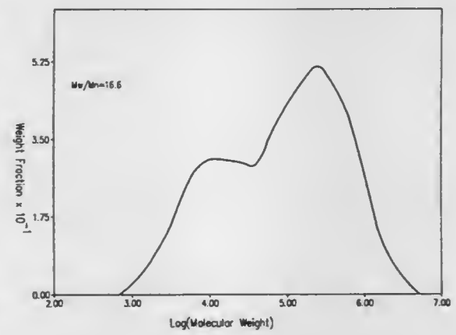
(d) reacting said supported, organoaluminum catalyst component with the metallocene catalyst component.

5,614,456

CATALYST FOR BIMODAL MOLECULAR WEIGHT DISTRIBUTION ETHYLENE POLYMERS AND COPOLYMERS

Robert I. Mink, Warren; Thomas E. Nowlin, West Windsor; Sandra D. Schregenberger, Neshanic; Pradeep P. Shirodkar, Somerset, and Grace O. Tsien, Colonia, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 151,664, Nov. 15, 1993, abandoned. This application Nov. 3, 1994, Ser. No. 333,684
Int. Cl.[6] B01J *31/00;31/16;31/22*
U.S. Cl. 502—115 16 Claims



1. An activated catalyst composition, for producing bimodal molecular weight distribution high density and linear low density polymers and copolymers of ethylene, which activated catalyst does not require a cofeed selected from the group consisting of aluminoxane, trialkyaluminum and mixtures thereof, to the reactor comprising

a dry, anhydrous, support containing composition comprising at least two transition metals one of which is provided as a metallocene compound and a second of which is provided as a transition metal source selected from the group consisting of non-metallocene compounds, activated by

a solution containing at least one source of aluminum and selected from the group consisting of aluminoxane alone and aluminoxane admixed with metallocene transition-metal compound wherein at least one source of aluminum is present in amounts effective to activate the two transition metals;

wherein the metallocene transition metal is provided as a compound which has the formula $Cp_xMA_yB_z$, wherein Cp is selected from the group consisting of (1) an unsubstituted cyclopentadienyl group; (2) a substituted cyclopentadienyl group, substituted by an alkyl or alkylene group of 1 to 6 carbon atoms; and (3) a cyclopentadienyl group which is part of a bicyclic or a tricyclic moiety, unsubstituted or substituted by an alkyl or alkylene group of 1 to 6 carbon atoms; x is at least 1; each of A and B is a halogen atom or an alkyl group of 1 to 8 carbon atoms, and y plus z is 3 or less provided that x+y+z is equal to the valence of M, which is selected from the group consisting of titanium or zirconium or hafnium;

substituted by an alkyl or alkylene group of 1 to 6 carbon atoms; x is at least 1; each of A and B is a halogen atom or an alkyl group of 1 to 8 carbon atoms, and y plus z is 3 or less provided that x+y+z is equal to the valance of M, which is selected from the group consisting of titanium or zirconium or hafnium.

5,614,457

CATALYST SYSTEM USING ALUMINUM ALKYL WITH ION-PAIR METALLOCENE CATALYSTS

John A. Ewen, Houston, Tex., and Michael J. Elder, Raleigh, N.C., assignors to Fina Technology, Inc., Dallas, Tex.

Division of Ser. No. 830,812, Feb. 4, 1992, Pat. No. 5,519,100, which is a continuation-in-part of Ser. No. 419,222, Oct. 30, 1989, abandoned. This application May 24, 1995, Ser. No. 449,197

Int. Cl.[6] C08F *4/649*

U.S. Cl. 502—117 **16 Claims**

1. A catalyst system comprising:

a) a metallocene catalyst; and

b) an aluminum alkyl;

wherein the metallocene catalyst is an ion pair formed from a neutral metallocene compound and an ionic ionizing compound;

wherein the neutral metallocene is of the general formulae:

$$(CpR_5)(CpR'_5)MQ_p$$

or

$$R^*(CpR_4)(CpR'_4)MQ_p$$

wherein Cp is a cyclopentadienyl group, (CpR_4) and (CpR'_4) being the same or different, R and R' is hydrogen or a hydrocarbyl radical, R being the same or different, R' being the same or different, R* is a structural bridge between (CpR_4) and $(C_pR'_4)$ imparting stereorigidity to the metallocene, M is a Group IVB metal, Q is a hydrocarbyl radical, p is the valence of M minus 2;

wherein the aluminum alkyl is of the general formula AlR^*_3 where R* is a halogen, hydride, alkyl having up to six carbon atoms, alkoxy having up to six carbon atoms or aryl having up to ten carbon atoms, each R, being the same or different and at least one R* is an alkyl;

wherein the molar ratio for the neutral metallocene compound: ionic ionizing compound: aluminum alkyl ranges from about 0.25:1:2.5 to about 1.5:1:300; and

wherein the ionic ionizing compound is of the general formula:

a) $[Ph_3C][B(Ph^*)_3X]$ where Ph_3C is triphenylcarbenium cation and $[B(Ph^*)_3X]$ is boronato anion where $B(Ph^*)_3$ is tris(pentafluorophenyl)boron and X is phenyl or a substituted phenyl where the substituents are alkyl, alkylsilyl or halogen.

5,614,458

METHOD FOR SLUDGE CONDITIONING

John L. Webb, Richmond; W. William Coe, Houston; Robert D. Kilgore, Rosharon, and Shitalprasad N. Patil, Houston, all of Tex., assignors to Ecosorb International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 182,802, Jan. 14, 1994, Pat. No. 5,429,741, which is a continuation-in-part of Ser. No. 905,021, Jun. 26, 1992, Pat. No. 5,352,780, which is a continuation-in-part of Ser. No. 746,938, Aug. 19, 1991, Pat. No. 5,195,465, which is a continuation-in-part of Ser. No. 383,167, Jul. 20, 1989, Pat. No. 5,082,563. This application Jun. 30, 1995, Ser. No. 497,510

Int. Cl.[6] B01D *15/04;* **B01J** *39/00;* **C02F** *1/28;1/42*

U.S. Cl. 502—401 **1 Claim**

1. A method for conditioning sludge, the method comprising

forming a slurry of sludge and pieces of cellulose treated with a hydrophobic agent, wherein the hydrophobic agent is wax and pieces of cellulose are immersed in molten liquid wax to produce pieces of waxed cellulose,

introducing the slurry into a sludge feed stream producing a secondary stream for feeding into sludge dewatering apparatus, and

feeding the secondary stream into sludge dewatering apparatus to dewater sludge in the sludge dewatering apparatus.

5,614,459

PROCESS FOR MAKING ACTIVATED CHARCOAL

Fanor Mondragon; John Fernandez; Alfredo Jaramillo, and Gustavo Quintero, all of Medellin, Colombia, assignors to Universidad de Antioquia, Medellin, Colombia

Filed Jun. 7, 1995, Ser. No. 483,093

Int. Cl.[6] B01J *20/02*

U.S. Cl. 502—417 **10 Claims**

1. A process for preparing activated carbon comprising the steps of: (a) swelling a carbon-containing material in a polar organic solvent containing zinc chloride ($ZnCl_2$) or tin chloride ($SnCl_2$); (b) separating said solvent from said carbon-containing material; (c) carbonizing said carbon-containing material under nitrogen at a temperature in the range from 600° to 750° C.; and (d) separating said $ZnCl_2$ or $SnCl_2$ from said carbon-containing material.

5,614,460

MICROPOROUS CARBONS FOR FUEL GAS STORAGE

James A. Schwarz, Fayetteville; Karol Putyera, Syracuse; Teresa J. Bandosz, Syracuse, and Jacek Jagiello, Syracuse, all of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Aug. 23, 1995, Ser. No. 518,553

Int. Cl.[6] B01J *20/02*

U.S. Cl. 502—418 **11 Claims**

1. A microporous carbon adsorbent material which has a mercury density of about 0.5 to 1.0 gm/cm^3, and which is the product of the pyrolysis of a nonporous crystalline aromatic sulfonate or nonporous polymeric salt, said material being suitable for use as a storage media for light gases, and having a uniform pore size distribution of micropores in the range of about 4 to 15 Å, and a total specific surface area greater than about 600 m^2/gm.

6. A method of making a microporous carbon material which comprises;

(a) providing a polymeric precursor selected from the group consisting of a crystalline aromatic sulfonate and a nonporous polymeric salt; and

(b) carbonizing said precursor in an oxygen free atmosphere at a temperature in the range of about 350° to 1000° C. for a time sufficient to promote thermally induced hydrogen abstraction and rearrangement of basic structural units which result in the formation of a carbonaceous microporous material having a uniform pore size distribution of micropores.

5,614,461

IMAGE FORMATION METHOD USING A REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL

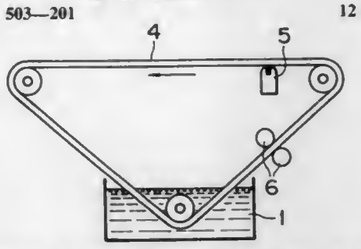
Akihide Itoh, Mishima; Toru Nogiwa, Numazu; Yoshihiko Hotta; Akira Suzuki, both of Mishima, and Atushi Kutami, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,319

Claims priority, application Japan, Nov. 30, 1992, 4-345422; Apr. 28, 1993, 5-124987

Int. Cl.[6] B41M *5/36;5/28*

U.S. Cl. 503—201 **12 Claims**



1. An image formation method using a reversible thermosensitive recording material capable of reversibly switching its transparency or color tone depending on the temperature thereof, comprising the steps of:

recording images therein at a predetermined image forming temperature;

erasing said recorded images from said recording material at a predetermined image erasing temperature; and

cleaning the surface of said reversible thermosensitive recording material using a wet cleaning means, using a cleaning liquid, at the same temperature as said image erasing temperature; with said image erasing step and said cleaning step being carried out simultaneously.

5,614,462

COLOR DEVELOPER COMPOSITIONS FOR CARBONLESS PAPER COPYING SYSTEMS

Patrick A. C. Gane, Newton Hayes, Great Britain, assignor to ECC International Limited, United Kingdom

Division of Ser. No. 250,178, May 27, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 631,775

Claims priority, application Great Britain, May 28, 1993, 9311088

Int. Cl.[6] B41M *5/155*

U.S. Cl. 503—201 **12 Claims**

1. An offset printing process in which a printing blanket is in contact with a printing plate and offsets an aqueous solution and a printing ink from the plate onto a CF sheet of a carbonless paper copying system comprising a CF sheet and a CB sheet, said CF sheet containing a coating composition comprising a color developer and an extender, characterised in that the extender comprises a particulate inorganic material which has been modified by treatment with a treating agent which has (i) a non-polar hydrophobic portion comprising at least one hydrocarbon group having a chain length of from 8 to 30 carbon atoms and (ii) a polar portion which is capable of binding with sites on the surface of the pigment particles, wherein said particulate inorganic material is selected from the group consisting of natural or synthetic aluminum or calcium silicate, natural or precipitated calcium carbonate, satin white, natural or synthetic calcium sulfate and talc.

5,614,463

HEAT TRANSFERABLE SHEET

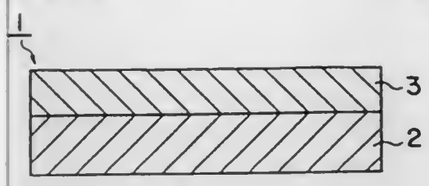
Sadanobu Kawasaki, Tokorozawa; Mineo Yamauchi, Ichikawa, and Masanori Akada, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 53,702, Apr. 29, 1993, Pat. No. 5,362,703, which is a continuation of Ser. No. 793,651, Nov. 18, 1991, Pat. No. 5,232,893, which is a continuation of Ser. No. 487,387, Mar. 2, 1990, Pat. No. 5,095,000, which is a division of Ser. No. 283,973, Dec. 13, 1988, Pat. No. 4,927,666, which is a division of Ser. No. 871,918, Jun. 9, 1986, Pat. No. 4,820,687, which is a continuation of Ser. No. 633,252, Jul. 23, 1984, Pat. No. 4,626,256. This application Jul. 29, 1994, Ser. No. 283,266

Claims priority, application Japan, Jul. 25, 1983, 58-135627

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **5 Claims**



5. A process for image formation, comprising the steps of:

providing a thermal dye transfer donor element and an image-receiving sheet to be used in combination with said thermal dye transfer donor element, said image-receiving sheet comprising a substrate and a dye receiving layer formed on at least one side of said substrate, said dye receiving layer comprising a water soluble resin and a dried resin emulsion; and

applying thermal energy, corresponding to image information, to a back side of the substrate sheet of said thermal dye transfer donor element to thermally transfer the dye to the dye receiving layer of said image-receiving sheet to form an image on the image-receiving sheet.

5,614,464

DYE-RECEIVING ELEMENT FOR THERMAL DYE TRANSFER HAVING IMPROVED WRITEABILITY

Teh-Ming Kung, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,746

Int. Cl.[6] B41M *5/035;5/38*

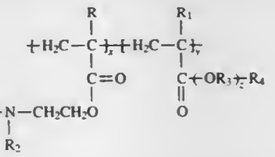
U.S. Cl. 503—227 **15 Claims**

6. A process of forming a dye transfer image comprising:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) transferring a dye image to a dye-receiving dement comprising a support having thereon a dye image-receiving layer to form said dye transfer image,

wherein the outermost level of said dye image-receiving element contains a polysiloxane and a surfactant, said surfactant consisting essentially of a perfluorinated alkyl sulfonamide ester copolymer in an amount of at least about 0.001 g/m^2, said perfluorinated alkyl sulfonamide ester copolymer having the following general structure:



wherein:

R and R_1 can each independently represent hydrogen or methyl;

R_2 is an alkyl group having from 1 to about 6 carbon atoms;

each R_3 is an alkyl group having from 2 to about 4 carbon atoms;

R_4 is hydrogen or an alkyl group having from 1 to about 4 carbon atoms;

x is an integer of from 1 to about 5;

y is an integer of from 1 to about 5; and

z is an integer of from 1 to about 25.

5,614,465

METHOD OF MAKING A COLOR FILTER ARRAY BY THERMAL TRANSFER

Michael E. Long, Bloomfield; Helmut Weber, Webster; Nancy J. Armstrong, Ontario; Michael L. Boroson, Rochester, and Kathleen S. Hollis, Dalton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 25, 1996, Ser. No. 672,167

Int. Cl.[6] B41M *5/035;5/38*

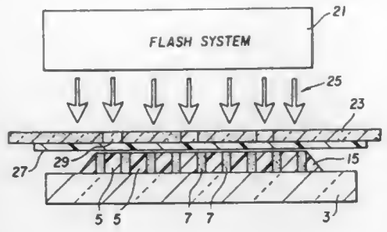
U.S. Cl. 503—227 **6 Claims**

1. A method of producing a color filter array on a transparent support, comprising:

a) forming a polymer image-receiving layer on the transparent support;

b) baking the polymer image-receiving layer on the transparent support so as to harden the polymer image-receiving layer;

c) imagewise thermally transferring different colorants to form multicolored pixels in the polymer image-receiving layer;



d) fixing the colorant pixels into the polymer receiving layer to form the color filter array; and
e) coating the such formed color filter array with an overcoat.

5,614,466

HERBICIDAL COMPOSITIONS COMPRISING A GROWTH REGULATING HERBICIDE TO SAFEN IMIDAZOLINONE HERBICIDES

Mark C. Boyles, Ripley, Okla.; John M. Fenderson, Kiowa, Kans., and Bart Brinkman, Salem, Oreg., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 351,863, Sep. 15, 1994, which is a continuation-in-part of Ser. No. 207,103, Mar. 4, 1994, abandoned, which is a continuation of Ser. No. 68,727, May 26, 1993, abandoned. This application May 26, 1995, Ser. No. 452,456

Int. Cl.[6] A01N *25/32*

U.S. Cl. 504—110 **9 Claims**

1. A herbicidal composition comprising a herbicidally effective aggregate amount of growth regulator herbicide and an amino acid synthesis inhibitor herbicide wherein the inhibitor herbicide is selected from the group of imazaquin, imazamethabenz, imazapyr, imazethapyr and imazmethapyr and wherein the growth regulator herbicide reduces the phytotoxicity of said amino acid synthesis inhibitor herbicide to crop plants.

5,614,467

USE OF PLANT HORMONES FOR CROP IMPROVEMENT

William T. Frankenberger, Jr., and Dean A. Martens, both of Riverside, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 2, 1995, Ser. No. 458,375

Int. Cl.[6] H01N *43/38*

U.S. Cl. 504—138 **20 Claims**

1. A method of improving productivity in a crop plant, the method comprising applying an effective amount of an auxin selected from the group consisting of indole-3-acetamide, tryptamine and a combination thereof.

5,614,468

PREPARATION OF AMMONIUM GLYPHOSATE USING AQUEOUS AMMONIUM HYDROXIDE IN A LIQUID-SOLID REACTION SYSTEM

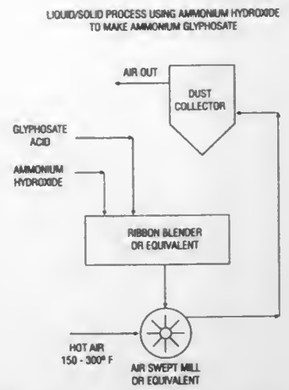
Richard M. Kramer, Chesterfield; Thomas M. Day, Creve Coeur; Ralph E. Lindemann, Jr., St. Louis, and Jane L. Gillespie, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 472,152

Int. Cl.[6] A01N *57/02*

U.S. Cl. 504—206 **18 Claims**

1. A method for preparing a phytoactive ammonium glyphosate comprising:



(a) charging to a suitable reactor system a first molar quantity of glyphosate acid wet cake having a moisture content of up to about 20 wt. %;
(b) introducing at a controlled rate a second molar quantity, about equivalent to said first molar quantity, of ammonium hydroxide to said reactor system containing said glyphosate acid;
(c) controlling the rate of ammonium hydroxide introduced to react with said glyphosate acid such that the moisture content in the reaction mass/product thereby produced consistently decreases; and
(d) forming a free-flowing powdered product.

5,614,469

N-PYRIDINYL[1,2,4]TRIAZOLO[1,5-C]PYRIMIDINE-2-SULFONAMIDE HERBICIDES

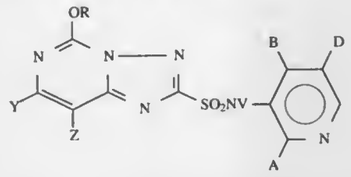
Kim E. Arndt; William A. Kleschick, both of Indianapolis, Ind.; Walter Reifschneider, Walnut Creek, Calif.; Beth A. Swisher, Zionsville, Ind.; Robert J. Ehr, Indianapolis, Ind.; John J. Jachetta, Zionsville, Ind., and John C. Van Heertum, Indianapolis, Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 273,514, Jul. 11, 1994, Pat. No. 5,461,161. This application Jun. 6, 1995, Ser. No. 471,693

Int. Cl.[6] C07D *239/70;487/00;487/02;* **A01N** *43/54*

U.S. Cl. 504—241 **35 Claims**

1. An N-pyridinyl[1,2,4]triazolo[1,5-c]pyrimidine-2-sulfonamide compound of the formula:



wherein
R represents $(C_1–C_3)$alkyl optionally monosubstituted with F, Cl, or OCH_3 or represents CH_2CF_3;
Y and Z, each independently represents H, F, Cl, Br, I, OCH_3, OC_2H_5, C_2H_5, or CH_3, said CH_3 being optionally mono to completely substituted with F;
V represents H, COR', CO_2R'', or $CONR'''_2$;
A and B each independently represents H, R', OR', OCH_2CH_2Cl, $OCH_2CH_2OCH_3$, $S(O)_nR'$, F, Cl, Br, I, CN, NO_2, C_6H_5, CO_2R'', or $CONR'''_2$ with the proviso that not more than one of A and B represents H;
D represents H, F, Cl, Br, I, CF_3, or CH_3;
n represents 0, 1, or 2;

R' represents $(C_1–C_4)$alkyl optionally singly to completely substituted with fluorine;
R'' represents $(C_1–C_4)$ alkyl, $(C_3–C_4)$ alkenyl, or $(C_3–C_4)$ alkynyl,
R''' represents H or $(C_1–C_4)$alkyl; and when V represents H, the agriculturally acceptable salts thereof.

5,614,470

13-SUBSTITUTED MILBEMYCIN DERIVATIVES, THEIR PREPARATION AND THEIR USE

Hideo Takeshiba; Kazuo Sato; Toshiaki Yanai; Shinji Yokoi; Reiji Ichinose, and Kinji Tanizawa, all of Shiga-ken, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

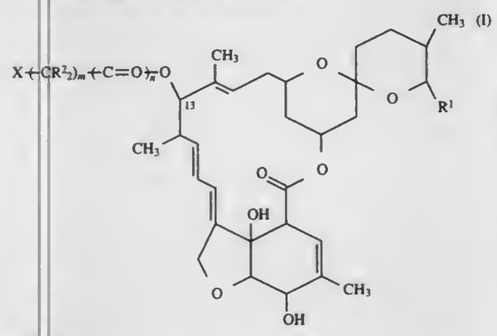
Filed Mar. 29, 1995, Ser. No. 412,687

Claims priority, application Japan, Apr. 1, 1994, 6-064803; Nov. 17, 1994, 6-283382; Jan. 25, 1995, 7-009377

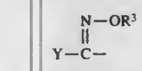
Int. Cl.[6] A01N *43/04;* **A61K** *31/335*

U.S. Cl. 504—291 **26 Claims**

1. A compound having the formula (I):

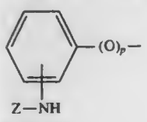


wherein:
R^1 represents a methyl, ethyl, isopropyl or sec-butyl group;
R^2 represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms;
X represents:
(a) a group having the formula (II):



(II)

wherein:
R^3 represents a hydrogen atom, or an alkyl group having from 1 to 4 carbon atoms; and
Y represents an aryl group having from 6 to 10 carbon atoms or a heterocyclyl group, said aryl group and said heterocyclyl group being unsubstituted or substituted with 1 or 2 substituents, which are the same or different, selected from the Substituents A below;
or X represents:
(b) a group having the formula (III):



(III)

wherein:
p=0 or 1; and
Z represents:
an alkanoyl group having from 2 to 3 carbon atoms;
an alkylsulfonyl group having from 1 to 3 carbon atoms;
an alkoxycarbonyl group having from 2 to 5 carbon atoms;
an aminoalkanoyl group having from 2 to 7 carbon atoms, the amino moiety of said aminoalkanoyl group being unsubstituted or substituted by 1 or 2 subtituents, which are the same or different, selected from the Substituents B below, and the alkanoyl moiety of said aminoalkanoyl group being unsubstituted or substituted by a phenyl group or by an alkylthio group having from 1 to 3 carbon atoms;
Substituents A comprise:
a halogen atom;
a nitro group;
a hydroxy group;
an alkoxy group having from 1 to 4 carbon atoms;
an aralkyloxy group having from 7 to 11 carbon atoms;
an amino group;
an alkanoylamino group having from 1 to 4 carbon atoms;
a haloalkanoylamino group having from 2 to 4 carbon atoms;
an alkylsulfonylamino group having from 1 to 3 carbon atoms;
an alkoxycarbonylamino group having from 2 to 5 carbon atoms;
a haloalkoxycarbonylamino group having from 3 to 5 carbon atoms;
an aminoalkanoylamino group having from 2 to 7 carbon atoms, in which the amino group of the aminoalkanoyl moiety is unsubstituted or substituted by one or two substituents, which may be the same or different, selected from the Substituents C below, and in which the alkanoyl moiety may be unsubstituted or substituted by a phenyl group or by an alkylthio group having from 1 to 3 carbon atoms;
Substituents B comprise:
an alkyl group having from 1 to 3 carbon atoms;
an alkanoyl group having from 2 to 3 carbon atoms;
a haloalkanoyl group having from 2 to 3 carbon atoms;
an aralkyl group having from 7 to 19 carbon atoms;
an alkoxycarbonyl group having from 2 to 5 carbon atoms;
a haloalkoxycarbonyl group having from 3 to 4 carbon atoms;
an arylcarbonyl group having from 7 to 11 carbon atoms;
an aralkyloxycarbonyl group having from 8 to 10 carbon atoms; and
an alkoxycarbonylaminoalkanoyl group having from 1 to 4 carbon atoms in the alkoxy moiety and from 2 to 3 carbon atoms in the alkanoyl moiety;
Substituents C comprise:
an alkyl group having from 1 to 3 carbon atoms;
a formyl group;
an alkanoyl group having from 2 to 3 carbon atoms;
a haloakanoyl group having from 2 to 4 carbon atoms;
an alkoxycarbonyl group having from 2 to 9-carbon atoms;
a haloalkoxycarbonyl group having from 3 to 5 carbon atoms;
m=0 or 1; and
n=0 or 1;
PROVIDED THAT, when X represents a group of the said formula (II), R^2 represents a hydrogen atom, and m and n cannot both be zero;
AND THAT, when X represents a group of the said formula (III), R^2 represents an alkyl group having from 1 to 3 carbon atoms, and m and n are both 1.

5,614,471

SUPERCONDUCTIVE MATERIAL

Kengo Ohkura; Hajime Hitotsuyanagi, and Hiromi Takei, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

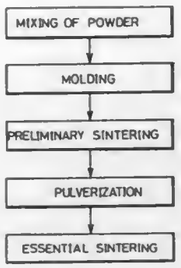
Continuation of Ser. No. 179,838, Jan. 10, 1994, abandoned, which is a continuation of Ser. No. 681,481, Apr. 3, 1991, abandoned, which is a continuation of Ser. No. 173,686, Mar. 25, 1988, abandoned. This application May 25, 1995, Ser. No. 449,961

Claims priority, application Japan, Mar. 30, 1987, 62-77237

Int. Cl.[6] C04B *35/505*

U.S. Cl. 505—126 **3 Claims**

1. A superconductive material having a general formula of



$YBa_2Cu_3(O_{6.9}F_{0.1})_c$

wherein Y is a rare earth element.

5,614,472

SPRAY-PYROLYSIS PROCESS OF PREPARING SUPERCONDUCTOR PRECURSORS

Rodney Riddle, Dorset, Great Britain; Matthias Kuntz, Seeheim-Jugenheim, Germany; Bernd Müller, Zwingenberg, Germany; Dietmar Raulin, Einhausen, Germany, and Günther Feldmann-Schlobohm, Dieburg, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed May 12, 1995, Ser. No. 439,781

Claims priority, application United Kingdom, May 13, 1994, 9409660

Int. Cl.[6] B05D *1/08;* **C04B** *35/45;35/505;* **H01L** *39/12*

U.S. Cl. 505—425 **13 Claims**

1. A spray-pyrolytic process for the preparation of multi-element metal oxide powders useful as precursors of high-temperature superconductor ceramics, which comprises burning aerosols of aqueous solutions containing metal nitrate salts admixed in the required stoichiometric proportion in a hydrogen/oxygen flame, wherein the aerosol is sprayed through an independently operated hydrogen/oxygen flame, in such a way that a flame temperature of 800° to 1100° C. is maintained, and contact of the aerosols and the powders generated during the process with carbon or carbon-containing compounds or materials is avoided and wherein the metal nitrate salts contain oxygen and the oxygen feed to the hydrogen/oxygen flame is reduced after starting the process in such a manner that a substantially self-sustaining combustion takes place between the hydrogen and oxygen within the metal nitrate salt,

and wherein nitrogen-based reducing agents and/or nitrogen-based oxidizing agents are introduced into the metal salt solution or independently sprayed into the reactor as an aqueous solution so as to control the overall reduction/oxidation quotient of the system.

5,614,473

USE OF HIGH PURITY IMIDAZOLINE BASED AMPHOACETATE SURFACTANT AS FOAMING AGENT IN OIL WELLS

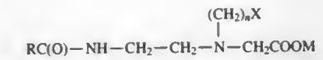
David J. Dino, Cranbury, and Anthony Homack, Jackson, both of N.J., assignors to Rhone-Poulenc Inc., Cranbury, N.J.

Filed May 22, 1995, Ser. No. 446,393

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—202 **11 Claims**

1. A process for treating a well bore with foam by means of a foamable surfactant wherein the foamable surfactant comprises a substantially pure substituted imidazoline-derived amphoacetate containing a main component thereof a compound of the formula:



$$RC(O)-NH-CH_2-CH_2-N(-(CH_2)_nX)-CH_2COOM$$

wherein R represents an aliphatic radical containing from about 5 to about 19 carbon atoms per molecule, X is OH or NH_2, n is an integer of from 2 to 4 inclusive and M is a metal, said composition containing less than about 3.5% unalkylated amide and less than about 4.5% glycolic acid.

5,614,474

POLYMER-SURFACTANT FLUIDS FOR DECONTAMINATION OF EARTH FORMATIONS

Ramesh Varadaraj, Flemington, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 18, 1994, Ser. No. 324,546

Int. Cl.[6] C09K *7/02;* **B01F** *17/02;17/00*

U.S. Cl. 507—225 **4 Claims**

1. An aqueous composition having a viscosity ranging from about 17 to about 2,500 centipoise for flooding a subterranean formation comprising:

(a) water;

(b) from about 1,000 to about 25,000 parts by weight of a hydrophobically associating polymer per million parts by weight of water, the hydrophobically associating polymer being selected from a group consisting of copolymers of a acrylamide with mono and dialkylacrylamides of 4 to about 18 carbon atoms, partially hydrolyzed derivatives of those copolymers, and terpolymers of mono or dialkylacrylamides of 4 to about 18 carbon atoms with acrylamide and one of an ethylenically unsaturated sulfonic acid salt of an alkali metal or ammonia and N-vinyl pyrrolidone;

(c) from about 25 to about 7,500 parts by weight per million parts by weight of water of one or more anionic or non-ionic surfactants selected from the group consisting of alkali metal salts of alkyl sulfates of from 6 to 18 carbon atoms, alkali metal salts of alkyl ethoxy sulfates having 6 to 18 carbon atoms in the alkyl group and 3 to 50 ethoxy groups; and alkyl ethoxylates groups having from 6 to 22 carbon atoms in the alkyl groups and 3 to 50 in the ethoxy groups; and,

(d) from about 0.5 wt. % to about 4 wt. %, based on the weight of the water, of salts selected from the group consisting of alkali and alkaline earth metal halides and mixtures thereof.

5,614,475

CARBOXYALKYL SUBSTITUTED POLYGALACTOMANNAN FRACTURING FLUIDS

Ralph Moorhouse, Richboro, and Ian W. Cottrell, Yardley, both of Pa., assignors to Rhone-Poulenc Inc., Princeton, N.J.

Filed Apr. 25, 1995, Ser. No. 428,263

Int. Cl.[6] E21B *43/267;* **C23G** *1/02*

U.S. Cl. 507—273 **23 Claims**

1. A novel fracturing fluid composition comprising:

(1) a polygalactomannan consisting essentially of a carboxyalkyl derivatized polygalactomannan having a degree of substitution of carboxyalkyl groups of between about 0.01 and about 3.0;

(2) a zirconium salt or zirconium chelate crosslinking agent;

(3) one or more thermal stabilizing agents;

(4) one or more pH buffers; and

(5) water;

wherein said fluid is capable of maintaining at least 10 percent of its original cross-linked viscosity after three hours at a temperature greater to or equal to 250° F.

5,614,476

METHOD FOR REDUCING THE CRYSTALLIZATION TEMPERATURE OF A CARBON DISULFIDE PRECURSOR-CONTAINING SOLUTION AND RESULTING COMPOSITIONS

Donald C. Young, Fullerton, Calif., assignor to Entek Corporation, Brea, Calif.

Filed Dec. 21, 1994, Ser. No. 360,379

Int. Cl.[6] E21B *37/06;43/22*

U.S. Cl. 507—239 **35 Claims**

1. A method for enhancing the production of oil from a subterranean formation, the method comprising the step of injecting an aqueous solution into a well penetrating the subterranean formation, where the aqueous solution comprises a carbon disulfide precursor and a compound selected from the group consisting of ammonia, ammonium nitrate, ammonium chloride, ammonium sulfate, ammonium acetate, ammonium phosphate, urea, biuret, methyl urea, ethylene urea, ethylene oxide urea, triuret, formamide, dimethylformamide, acetamide, propionamide, butyramide, valeramide, caproamide, benzamide, acetanilide, and mixtures thereof, provided that the ratio of the weight percent of the carbon disulfide precursor to the weight percent of the compound is 2:1 or more.

5,614,477

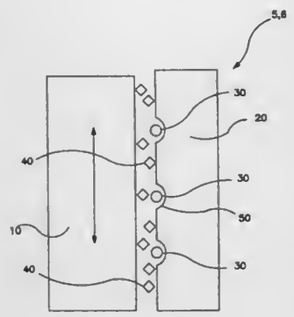
ANTI-FRICTION ADDITIVE AND METHOD FOR USING SAME

Vladimir Kompan, 1509 Landwehr Rd., Northbrook, Ill. 60062, and Vitaly Slobodsky, 4003 Amalfi Dr., Glenview, Ill. 60025

Filed Sep. 7, 1995, Ser. No. 524,783

Int. Cl.[6] C10M *125/02*

U.S. Cl. 508—13 **17 Claims**



1. An anti-friction material for facilitating the reduction of dynamic friction between two juxtaposed surfaces moving relative to one another, said anti-friction material comprising the combination of:

a liquid based lubricant;

a solid additive material, operatively suspended within and dispersed throughout said liquid based lubricant,

the solid additive material substantially includes as components thereof an additive mixture of particulate diamond material and graphite powder, and

the solid additive material being operatively configured such that upon introduction of the combination between the two surfaces, the solid additive material will, upon commencement of said relative movement, initially polish at least one of the two surfaces to enhance the smoothness thereof and, thereafter, substantially permanently associates itself with one of the surfaces, to cooperate therewith, toward producing a condition of increased lubricity between the two surfaces.

5,614,478

AEROSOL GREASE

Stephen E. Gates, Dublin, Ohio, assignor to Aerospace Lubricants, Inc., Columbus, Ohio

Filed Jan. 13, 1995, Ser. No. 372,388

Int. Cl.[6] C10M *113/10;123/00*

U.S. Cl. 508—136 **41 Claims**

1. An aerosol grease precursor composition, said composition comprising:

(a) a substantially unprocessed grease precursor composition, said grease precursor composition comprising:

(i) at least one grease precursor base oil; and

(ii) at least one thickening agent;

said grease precursor composition capable of forming a grease of an NLGI Grade in the range of 000 to 6 upon mechanical shearing attendant to aerosol spraying: and

(b) at least one propellant;

said aerosol grease precursor composition being substantially free of liquid organic solvents and being under a pressure greater than ambient atmospheric pressure.

5,614,479

CORROSION INHIBITOR

John W. Chardon, Unit 2/10 Lawrence Dr., P.O. Box 296, Nerang, Q. 4211, Australia

Filed Jul. 13, 1995, Ser. No. 501,782

Int. Cl.[6] C10M *141/02;141/06*

U.S. Cl. 508—283 **10 Claims**

1. A food-grade corrosion inhibitor for use in a lubricant composition, comprising:

(a) from about 30% to about 90%, by weight, based on the total weight of the inhibitor, of a food-grade ketone;

(b) from about 3.0% to about 40%, by weight, based on the total weight of the inhibitor, of a food-grade ester; and

(c) from about 3.0% to about 20%, by weight, based on the total weight of the inhihitor, of imidazoline.

5,614,480

LUBRICATING COMPOSITIONS AND CONCENTRATES

Mary F. Salomon, Mayfield Village; Kirk E. Davis, Chester Township, Geauga County; Jack L. Karn, Richmond Heights, and John Cahoon, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 884,961, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 688,195, Apr. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 690,179, Apr. 19, 1991, abandoned. This application Jul. 25, 1994, Ser. No. 259,374

Int. Cl.[6] C10M *159/24;159/20*

U.S. Cl. 508—287 **72 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and

(A) at least about 1% by weight of at least one carboxylic derivative composition produced by reacting

(A-1) at least one substituted succinic acylating agent containing at least about 50 carbon atoms in the substituent with

(A-2) from about 0.5 equivalent up to about 2 moles, per equivalent of acylating agent (A-1), of at least one amine compound characterized by the presence within its structure of at least one HN<group; and

(B) at least one alkali metal overbased salt of a hydrocarbyl-substituted carboxylic acid or a mixture of a hydrocarbyl carboxylic acid and a hydrocarbyl-substituted sulfonic acid having a metal ratio of greater than 2 in an amount sufficient to provide at least about 0.002 equivalent up to about 0.01 equivalent of alkali metal per 100 grams of the lubricating oil composition wherein the hydrocarbyl substituent of the carboxylic acid contains at least about 50 carbon atoms, provided that when the alkali metal salt comprises a mixture of over-

based alkali metal salts of a hydrocarbyl-substituted carboxylic acid and a hydrocarbyl-substituted sulfonic acid, then the carboxylic acid comprises more than 50% of the acid equivalents of the mixture, and provided further that when the substituted succinic acylating agent (A-1) consist of substituent groups and succinic groups and said acylating agent is characterized by the presence within its structure of an average of at least 1.3 succinic groups for each equivalent weight of substituent groups the metal ratio of the alkali metal overbased salt (B) is greater than 1.

5,614,481

PROCESS FOR OBTAINING AND MANUFACTURING LUBRICANT GREASES

Victor D. Lopez Rangel, Zempoala #617. Col., Narvarte, D.F. 03650, Mexico

Continuation-in-part of Ser. No. 814,769, Dec. 30, 1991, Pat. No. 5,236,606. This application Aug. 16, 1993, Ser. No. 106,923

Int. Cl.[6] C10M *169/00*

U.S. Cl. 508—485 **11 Claims**

1. In a process for making a lubricant grease, wherein a basic oil is mixed with a thickening compound, a polar agent and an additive or additives to impart desired characteristics to the grease, the improvement comprising selecting the basic oil from the group consisting of a polyolester, a silicone oil, a mineral oil, a vegetable oil, glycerine and propylene glycol, and first mixing the basic oil with a mixture of two polar agents in a vessel under constant stirring at a temperature and pressure sufficient to obtain a homogeneous mixture and then and only then mixing said homogenous mixture with the additive or additives and a thickening agent, wherein said mixture of two polar agents comprises (1) a compound having two functional groups and (2) a compound selected from the group consisting of nonionic, cationic and anionic polar agents.

5,614,482

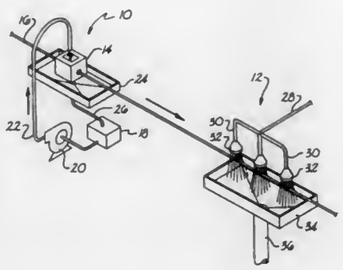
LUBRICANT COMPOSITION FOR TREATMENT OF NON-FERROUS METALS AND PROCESS USING SAME

Bradley M. Baker, Monroe, N.C., and H. Lynn Parker, Spartanburg, S.C., assignors to Parker Sales, Inc., Spartanburg, S.C.

Filed Feb. 27, 1995, Ser. No. 396,155

Int. Cl.[6] C10M *129/72*

U.S. Cl. 508—496 **26 Claims**



1. A composition for lubricating non-ferrous metallic materials in a metal working process comprising a stable emulsion containing an ester solvent, a lubricant for the non-ferrous metal and at least one emulsifier, said at least one emulsifier comprising a water dispersible emulsifier, said ester solvent containing a dialkyl ester, said ester solvent being present in said composition in an amount sufficient to make said composition water dispersible, said composition having a pH of up to about 7.0.

5,614,483

STABILIZED LUBRICANT BASE MATERIAL

Achim Fessenbecker, Heidelberg; Joachim Korff, Hockenheim; Hans-Jürgen Kress, Brühl, and Volker Müller, Oftersheim, all of Germany, assignors to Rhein Chemie Rheinau GmbH, Mannheim, Germany

Filed Sep. 27, 1995, Ser. No. 534,703

Claims priority, application Germany, Oct. 5, 1994, 44 35 548.3

Int. Cl.[6] C10M *133/22*

U.S. Cl. 508—550 **1 Claim**

1. A lubricant base material selected from natural fats and oils containing as a stabilizer 0.05 to 5% by weight of a carbodiimide of the formula X—N=C=N—Y, wherein X and Y are aromatic residues with 6 to 20 carbon atoms.

5,614,484

DETERGENT COMPOSITIONS CONTAINING LIPASE AND TERPENE

Rajan K. Panandiker, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 41,282, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 748,153, Aug. 21, 1991, abandoned. This application Sep. 8, 1994, Ser. No. 303,280

Int. Cl.[6] C11D *3/386;3/50*

U.S. Cl. 510—102 **14 Claims**

1. A laundry detergent composition comprising:

(a) from about 0.0005% to about 1.0% of an active basis of a detergent-compatible lipase that catalyzes hydrolysis of triglycerides on soiled fabrics laundered in washing solutions prepared from said composition, to thereby form free fatty acids;

(b) from about 0.005% to 1.0%, by weight of the composition, of a perfume ingredient selected from the group consisting of Perfume A which consists essentially of alpha terpineol, citronellol, citronellyl acetate, geraniol, isobornyl acetate, linalool, linalyl acetate, camphene, fenchyl acetate, alpha pinene, beta pinene, citral, citrathal, citronellal nitrile, dihydromycernol, dipentene, geranyl nitrile, lemon oil, orange oil, paracymene, pseudo linalyl acetate, and Terpene T; Perfume B which consists essentially of geraniol, citronellol, linolool, d-limonene, myrcene, and dihydromyrcenol; Perfume C which consists essentially of phenyl ethyl alcohol, bucinal, tonalid, dimetol, 4-Tertiary butyl cyclohexyl acetate, Galoxide 50%, dimethylbenzyl carbinal acetate, decyl aidehyde, Intreleven aldehyde and mixtures thereof;

(c) from about 1 to 95% of a detersive surfactant selected from the group consisting of anionic, nonionic, ampholytic, cationic, zwitterionic, and mixtures thereof.

5,614,485

PROCESS FOR MAKING A GRANULAR DISHWASHING COMPOSITION BY AGGLOMERATING INGREDIENTS AND ADMIXING SOLID ALKALI METAL SILICATE

Jeffrey D. Painter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 263,165, Jun. 21, 1994, abandoned, which is a continuation of Ser. No. 110,474, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 808,965, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 550,420, Jul. 10, 1990, abandoned. This application Jun. 7, 1996, Ser. No. 659,991

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—444 **17 Claims**

1. A process for making a granular automatic dishwashing detergent composition comprising:

a) agglomerating, by weight of base detergent granules, from about 5% to about 95% detergency builder material with from about 3% to about 30% of a water soluble polymer liquid binder to form base detergent granules being substantially free of alkali metal silicates and having a free moisture content less than about 6%; and

b) admixing with the granules formed in step (a), a solid alkali metal silicate and a bleach ingredient to form the granular automatic dishwashing detergent composition, the composition comprising by weight from about 10% to about 80% detergency builder material, an amount of silicate sufficient to provide from about 5% to about 15% SiO_2, and an amount of bleach ingredient sufficient to provide 0% to about 5% available chlorine or available oxygen; wherein the bulk density of the composition is from about 0.8 to about 1.1 grams/cc.

5,614,486

CYCLIC DIESTERS AND THEIR USE AS PERFUMING INGREDIENTS

Wolfgang K. Giersch, Bernex, and Peter Fankhauser, Meyrin, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed May 23, 1995, Ser. No. 448,285

Claims priority, application Switzerland, Jul. 1, 1994, 2103/94

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—21 **5 Claims**

1. A perfuming composition or a perfumed article containing as an active perfuming ingredient diethyl 1,4-cyclohexanedicarboxylate.

5,614,487

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITION

John E. Battersby, So. San Francisco; Ross G. Clark, Pacifica, and William S. Hancock, Hillsborough, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Filed May 28, 1993, Ser. No. 69,146

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—2 **3 Claims**

1. A sustained release pharmaceutical composition comprising a pharmaceutically acceptable excipient admixed with a sustained release pharmaceutical imine bond adduct of a dextran carrier and a biologically active polypeptide, wherein said imine bond is formed by reaction of a reactive aldehyde group with a primary amine under non-reducing conditions and wherein said biologically active polypeptide is hGH or N-methionyl hGH.

5,614,488

EPIDERMAL GROWTH FACTOR RECEPTOR TARGETED MOLECULES FOR TREATMENT OF INFLAMMATORY ARTHRITIS

Patricia A. Bacha, Hollis, N.H., assignor to Seragen, Inc., Hopkinton, Mass.

Continuation of Ser. No. 5,871, Jan. 15, 1993, abandoned, which is a continuation of Ser. No. 726,316, Jul. 5, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 116,806

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—2 **14 Claims**

1. A method for treating a patient having an inflammatory arthritis characterized by higher than normal expression of the epidermal growth factor receptor on synovial fibroblasts, said method comprising administering to said patient a hybrid molecule comprising a first portion and a second portion joined together covalently, said first portion comprising fragment A of diphtheria toxin and enough of fragment B of diphtheria toxin to facilitate entry of said hybrid molecule into the cytosol of a cell to which said hybrid molecule binds, said second portion comprising all or an epidermal growth factor receptor-binding portion of epidermal growth factor.

5,614,489

METHOD AND COMPOSITION FOR TREATING THE SKIN

Fatemeh Mohammadi, 1145 Parklawn Dr., and Dagmar Nosek, 200 Patchen Dr., Apt. 118, both of Lexington, Ky. 40517

Filed May 25, 1995, Ser. No. 450,430

Int. Cl.[6] A61K *38/00;31/545*

U.S. Cl. 514—2 **14 Claims**

1. A cosmetic composition for treating skin, comprising by weight percent substantially:

50–99.5% cosmetically acceptable vehicle for topical administration, said cosmetically acceptable vehicle being selected from a group consisting of water, wax, nonionic surfactant and mixtures thereof;

0.5–20% collagenase/elastase inhibitor;

0–10% moisturizer;

0–25% emollient;

0–10% humectant; and

0–0.5% fragrance.

5,614,490

ADMINISTRATION OF LOW DOSE HEMOGLOBIN TO INCREASE PERFUSION

Robert J. Przybelski, Antioch, Ill., assignor to Baxter Healthcare Corporation, Round Lake, Ill.

Continuation of Ser. No. 237,471, May 3, 1994, Pat. No. 5,510,464, which is a continuation of Ser. No. 828,429, Jan. 30, 1992, Pat. No. 5,334,706. This application Jun. 7, 1995, Ser. No. 471,847

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—6 **7 Claims**

1. A method for treating an animal suffering from cardiogenic shock comprising administering to said animal a perfusion increasing effective amount of intramolecularly or intermolecularly cross-linked stroma free hemoglobin within the range of 100 mg/kg to 4900 mg/kg.

5,614,491

LIQUID PREPARATIONS CONTAINING CYCLOSPORIN AND PROCESS FOR PREPARING SAME

Hatto Walch, Laupheim - Baustetten; Monika Fleck, Laupheim, and Klaus Neuer, Grossschafhausen, all of Germany, assignors to Dr. Rentschler Arzneimittel GmbH & Co., Laupheim, Germany

Filed Nov. 30, 1994, Ser. No. 347,289

Claims priority, application Germany, Nov. 30, 1993, 43 40 781.1

Int. Cl.[6] A61K *38/00;47/14*

U.S. Cl. 514—11 **13 Claims**

1. A liquid pharmaceutical composition for oral or parenteral administration, comprising cyclosporin as the active ingredient in combination with a polyoxyethylene glycerol fatty acid monoester selected from the group consisting of monoesters of lauric, stearic, oleic or isostearic acid, and an alcohol selected from the group consisting of monohydric, polyhydric or mixtures thereof, selected from the group consisting of ethanol, propylene glycol, polyethylene glycol with a molecular weight of up to about 600, and mixtures thereof.

5,614,492

INSULINOTROPIC HORMONE GLP-1 (7-36) AND USES THEREOF

Joel F. Habener, Newton Highlands, Mass., assignor to The General Hospital Corporation

Continuation of Ser. No. 756,215, Sep. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 532,111, Jun. 1, 1990, Pat. No. 5,118,666, which is a continuation of Ser. No. 148,517, Jan. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 859,928, May 5, 1986, abandoned. This application Nov. 23, 1993, Ser. No. 156,800

The portion of the term of this patent subsequent to Jun. 2, 2012, has been disclaimed.

Int. Cl.[6] A61K *38/26;* **C07K** *14/605;14/62*

U.S. Cl. 514—12 **16 Claims**

1. A method for treating type II diabetes mellitus in an individual in need of such treatment, said method comprising

administering to said individual an effective amount of an insulinotropic molecule which is sufficient to treat said diabetes;

wherein said insulinotropic molecule is selected from the group consisting of:

(A) a glueagon-like peptide-1(7–36), GLP-1(7–36) having the amino acid sequence:

His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg; and

(B) a derivative of said GLP-1(7–36) (A), wherein said derivative is selected from the group consisting of:

(1) a pharmaceutically acceptable acid addition salt of said GLP-1(7–36);

(2) a pharmaceutically acceptable carboxylate salt of said GLP-1(7–36);

(3) a pharmaceutically acceptable lower alkyl ester of said GLP-1(7–36); and,

(4) a pharmaceutically acceptable amide of said GLP-1(7–36);

and wherein (i) said insulinotropic molecule has an insulinotropic activity which exceeds the insulinotropic activity of glucagon-like peptide-1(1–36). GLP-1(1–36), or glucagon-like peptide-1(1–37). GLP-1(1–37); and (ii) said insulinotropic molecule is combined in admixture with a suitable pharmaceutically acceptable carrier.

5,614,493

USE OF HUMAN PROTEIN C FOR PREVENTION AND TREATMENT OF DEPOSITIONS OF THROMBOCYTES

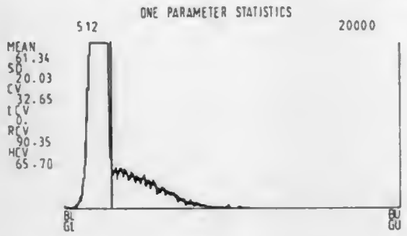
Johann Eibl; Hans-Peter Schwarz, both of Vienna, Austria, and Miguel Lozano-Molero, Barcelona, Spain, assignors to Immuno AG, Vienna, Austria

Filed Jun. 16, 1994, Ser. No. 261,914

Claims priority, application Germany, Jun. 18, 1993, 43 20 294.2

Int. Cl.[6] A61K *35/14;35/16;38/36;* **C07K** *14/475*

U.S. Cl. 514—12 **9 Claims**



1. A method for preventing a thromboembolic condition caused by deposition or aggregation of blood components selected from the group consisting of thrombocytes, thrombocyte microparticles and leukocytes occurring on a vessel surface or endothelium of a patient, comprising the step of administering to said patient a pharmaceutical composition comprising native protein C in a zymogen form.

5,614,494

PEPTIDES FOR HEPARIN AND LOW MOLECULAR WEIGHT HEPARIN ANTICOAGULATION REVERSAL

Thomas W. Wakefield; James C. Stanley, and Philip C. Andrews, all of Ann Arbor, Mich., assignors to University of Michigan, The Board of Regents Acting For and on Behalf of, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 152,488, Nov. 12, 1993, Pat. No. 5,534,619. This application Sep. 8, 1994, Ser. No. 303,025

Int. Cl.[6] A61K *38/00;* **C02K** *14/745*

U.S. Cl. 514—12 **33 Claims**

1. A method of making an agent for reversing at least partially the anticoagulation effects of heparin and/or low molecular weight heparin comprising the steps of:

preparing a synthetic peptide comprising a sequence of 20–40 uncharged and charged amino acids having a total cationic charge of less than [+21], but not lower than [+14], as determined by the number of positively charged amino acids in the sequence, the uncharged amino acids in the sequence being selected from the group consisting of glycine, glutamine, serine, threonine, asparagine, proline, valine, and isoleucine, and having the ability to at least partially reverse the effects of heparin and/or low molecular weight heparin anticoagulation; and

combining the synthetic peptide with a delivery vehicle.

5,614,495

Patent Not Issued For This Number

5,614,496

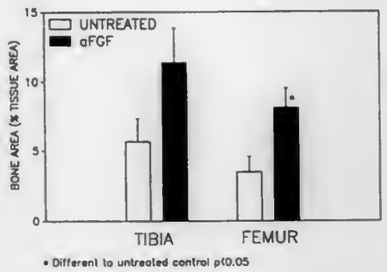
USE OF FIBROBLAST GROWTH FACTORS TO STIMULATE BONE GROWTH

Colin R. Dunstan; Elzbieta Izbicka; Gregory R. Mundy, all of San Antonio, Tex.; Wilson Burgess, Gaithersburg, Md., and Michael C. Jaye, Glenside, Pa., assignors to OsteoSA Inc., San Antonio, Tex., and Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation of Ser. No. 207,985, Mar. 8, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,634

Int. Cl.[6] A61K *38/18;38/16;* **C07K** *14/475;14/50*

U.S. Cl. 514—12 **17 Claims**



1. A method of preventing or treating a pathological condition involving bone tissue in a human suffering therefrom comprising administering thereto an amount of human fibroblast growth factor effective to stimulate periosteal bone growth.

5,614,497

PEPTIDE, PRODUCTION AND USE THEREOF

Chieko Kitada, Sakai; Tetsuya Ohtaki, Tsukuba, and Masahiko Fujino, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

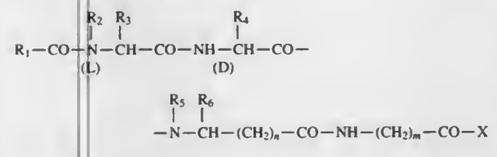
Filed Dec. 17, 1992, Ser. No. 992,131

Claims priority, application Japan, Dec. 27, 1991, 3-346659; Jan. 27, 1992, 4-012013; Oct. 8, 1992, 4-269932

Int. Cl.[6] A61K *38/00;* **C07K** *7/00;7/06;5/10*

U.S. Cl. 514—17 **39 Claims**

I. A peptide having the formula:



wherein R_1 is

(1) a straight or branched C_{1-10} alkyl group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{3-8} cycloalkyl groups, halogen atoms, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, C_{1-6} alkoxycarbonyl groups, and 5- to 10-membered aromatic heterocyclic groups;

(2) a C_{3-10} cycloalkyl optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, halogen atoms, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, and C_{1-6} alkoxycarbonyl groups, or the cycloalkyl group condensed with another ring;

(3) a straight or branched C_{1-8} alkoxy group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{3-8} cycloalkyl groups, C_{1-6} alkoxy groups and C_{1-6} alkoxycarbonyl groups;

(4) a C_{6-15} aromatic hydrocarbon group optionally substituted with 1 to 3 substituents selected from the group consisting of halogen atoms, hydroxy groups, C_{1-6} alkyl groups, C_{1-6} alkoxy groups, carboxyl groups, C_{1-6} alkylcarbonyl groups and C_{1-6} alkoxycarbonyl groups:

(5) a 5- to 6-membered aromatic heterocyclic group having 1 to 4 hetero atoms selected from O, S and N or the aromatic heterocyclic group condensed with an aromatic ring, optionally substituted with 1to 3 substituents selected from the group consisting of halogen atoms, hydroxy groups, C_{1-6} alkyl groups, C_{1-6} alkoxy groups, carboxyl groups, C_{1-6} alkylcarbonyl groups and C_{1-6} alkoxycarbonyl groups; or

(6) an amino group having the formula R_7NH— or R_8R_9N— wherein each of R_7, R_8 and R_9 independently is

(i) a C_{1-10} alkyl group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{3-8} cycloalkyl groups, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, hydroxy groups, carboxyl groups, C_{1-6} alkylcarbonyl groups, 5- to 10-membered aromatic heterocyclic groups having 1 to 4 hetero atoms selected from O, S and N, and C_{6-12} aromatic hydrocarbon groups optionally substituted with a halogen atom, a hydroxy group, a C_{1-3} alkoxy group or a C_{1-3} alkyl group;

(ii) a C_{5-10} cycloalkyl group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, hydroxy groups, carboxyl groups and C_{1-6} alkylcarbonyl groups;

(iii) a C_{6-12} aromatic hydrocarbon group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, C_{1-6} alkoxy groups, hydroxy groups, carboxyl groups and C_{1-6} alkylcarbonyl groups; or

(iv) a 5- to 10-membered aromatic heterocyclic group having 1 to 4 hetero atoms selected from O, N and S or the aromatic heterocyclic group condensed with an aromatic ring, optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, C_{1-6} alkoxy groups, hydroxyl groups, carboxyl groups, C_{1-6} alkylcarbonyl groups and nitrogen atoms optionally substituted with 1 to 3 C_{1-6} alkyl groups;

or R_8 and R_9 together form a 5- to 13-membered nitrogen-containing heterocyclic ring optionally having 1 or 2 hetero atoms selected from O and S atoms, the said 5- to 13-membered nitrogen-containing heterocyclic ring optionally substituted with 1 to 3 substituents selected form the group consisting of C_{1-6} alkyl groups, phenyl groups, halogen atoms, nitro groups, cyano groups, hydroxy groups, C_{1-4} alkoxy groups, C_{1-4} alkylthio groups, amino groups, mono- and di-C_{1-4} alkylamino groups, C_{1-4} alkylcarbonylamino groups, C_{1-4} alkylsulfonylamino groups, C_{1-4} alkoxycarbonyl groups, carboxyl groups, C_{1-6} alkylcarbonyl groups, C_{1-4} alkylcarbonyloxy groups and 5- to 6-membered heterocyclic groups having 1 to 4 hetero atoms selected from O, S and N;

R_2 and R_3 independently are a hydrogen atom or a lower alkyl group;

R_3 is a C_{1-8} alkyl, C_{3-8} cycloalkyl, or C_{3-8} cycloalkyl group substituted with a C_{1-8} alkyl group, optionally including an oxygen or sulfur atom between adjacent methylene groups;

R_4 is a heterocyclic-substituted C_{1-6} alkyl group, wherein the heterocyclic substituent is a 5- or 6-membered heterocyclic group having 1 to 4 hetero atoms selected from O, S and N, or the heterocyclic group is condensed with another ring, and the carbon atoms of the heterocyclic-substituted C_{1-6} alkyl group are optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, halogen atoms, hydroxyl groups, carboxyl groups, C_{1-6} alkoxy groups, and C_{1-6} alkylcarbonyl groups, and nitrogen atoms of the heterocyclic-substituted C_{1-6} alkyl group are optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, C_{1-6} alkylcarbonyl groups and hydroxy-C_{1-6} alkyl groups;

R_6 is

(A) a hydrogen atom;

(B) a straight or branched C_{1-6} alkyl group optionally substituted with 1 to 3 substituents selected from the group consisting of (i) C_{6-15} aromatic hydrocarbon groups, (ii) 5- to 6-membered aromatic heterocyclic groups having 1 to 4 hetero atoms selected from O, S and N or the heterocyclic group is condensed with an aromatic ring, (iii) sulfur-containing groups selected from thione, mercapto, methylthio, ethylthio and phenylthio groups, (iv) oxygen-containing groups selected from ketone, hydroxy, methoxy, ethoxy, phenoxy and benzyloxy groups and (v) nitrogen-containing groups selected from amino, N-methylamino, N-ethylamino and guanidino groups;

(C) a C_{6-12} aromatic hydrocarbon group optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, halogen atoms, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, C_{1-6} alkylcarbonyl groups and C_{1-6} alkoxycarbonyl groups; or

(D) a 5- to 6-membered aromatic heterocyclic group which contains 1 to 4 hetero atoms selected from O, S and N or the heterocyclic group is condensed with another ring optionally substituted with 1 to 3 substituents selected from the group consisting of C_{1-6} alkyl groups, halogen atoms, C_{1-6} alkoxy groups, C_{1-6} alkylthio groups, C_{1-6} alkylcarbonyl groups and C_{1-6} alkoxycarbonyl groups;

X is

(i) a group resulting from the elimination of one hydrogen atom from the α-amino group of an α-amino acid having at least one cyclic group selected from the group consisting of (a) C_{6-15} aromatic hydrocarbon groups optionally substituted with 1 to 3 substituents selected from the group consisting of halogen atoms, hydroxy groups, C_{1-6} alkyl groups, C_{1-6} alkoxy groups, carboxyl groups, C_{1-6} alkylcarbonyl groups, and C_{1-6} alkoxycarbonyl groups, and (b) 5- to 6-membered aromatic heterocyclic groups having 1 to 4 hetero atoms selected from O, S and N or the heterocyclic group is condensed with an aromatic ring optionally substituted with 1 to 3 substituents selected from the group consisting of halogen atoms, hydroxy groups, C_{1-6} alkyl groups, C_{1-6} alkoxy groups, carboxyl groups, C_{1-6} alkylcarbonyl groups and C_{1-6} alkoxycarbonyl groups; or

(ii) alkylamino groups substituted with an aromatic group wherein the alkylamino groups are C_{1-10} alkylamino groups or C_{3-10} cycloalkylamino groups;

n is 0 or an integer of 1 to 4;

m is an integer of 2 to 6; or a salt thereof.

5,614,498

ENDOTHELIN ANTAGONISTIC SUBSTANCE

Kiyofumi Ishikawa; Takehiro Fukami; Takeshi Hayama; Kenji Niiyama; Toshio Nagase; Toshiaki Mase; Kagari Fujita; Masaki Ihara; Fumihiko Ikemoto; Mitsuo Yano, and Masaru Nishikibe, all of Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

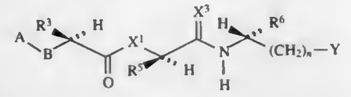
Continuation-in-part of Ser. No. 884,642, May 18, 1992, abandoned, which is a division of Ser. No. 712,095, Jun. 7, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 945,414

Claims priority, application Japan, Jun. 7, 1990, 2-149105; Dec. 4, 1991, 3-347670; Dec. 18, 1991, 3-353738; Aug. 10, 1992, 4-234207

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;5/08;5/10*

U.S. Cl. 514—18 **27 Claims**

1. A peptide of the formula:



(I)

wherein

A is a group of the formula $R^{12}R^{13}N—C(=O)—$, wherein

R^{12} is a lower alkyl group, a cycloalkyl group, a 1-adamantyl group, a phenyl group, a phenyl group wherein one or two hydrogen atoms on the phenyl ring is independently replaced by a halogen atom, a trifluoromethyl group, a nitro group, an amino group or a formylamino group, a pyridyl group, or a thienyl group,

R^{13} is a hydrogen atom, a lower alkyl group or a cycloalkyl group, or

R^{12} and R^{13} form, together with the adjacent nitrogen atom, a 5- to 9-membered nitrogen-containing saturated heterocyclic ring having 4 to 8 carbon atoms, said heterocyclic ring wherein among methylene groups forming the ring, one methylene group not adjacent to the above nitrogen atom is replaced by a thio group, said heterocyclic ring wherein one to four hydrogen atoms on the carbon atoms of the heterocyclic ring is independently replaced by a lower alkyl group, or said heterocyclic ring wherein two adjacent carbon atoms in the heterocyclic ring form a benzo-fused ring;

B is an oxygen atom or a group of the formula $—NR^2—$, wherein R^2 is a hydrogen atom or a lower alkyl group;

R^3 is a lower alkyl group, a cycloalkyl group, an aryl group, a heterocyclic group, a cycloalkyl lower alkyl group, an aryl lower alkyl group or a heterocyclic lower alkyl group;

X^1 is an oxygen atom or a group of the formula $—NR^4—$, wherein R^4 is a hydrogen atom or a lower alkyl group;

R^5 is a (a) 3-indolylmethyl, (b) 3-benzothienylmethyl, (c) 1-naphthylmethyl, (d) benzyl group or (e) said (a), (b), (c) or (d) groups wherein one or two hydrogen atoms on the aromatic ring of the group is replaced by a hydroxyl group, a formyl group, a lower alkyl group, a lower alkoxy group, a lower alkoxycarbonyl group, a nitro group or a group of the formula $R^{51}—CO—X^2$, wherein R^{51} is a lower alkyl group, a lower alkoxy group, an amino group or an amino group which is substituted by a lower alkyl group, and X^2 is an oxygen atom or a group of the formula $—NR^{52}—$, wherein R^{52} is a hydrogen atom or a lower alkyl group;

X^3 is an oxygen atom or a sulfur atom;

R^6 is a hydrogen atom, a lower alkyl or lower alkenyl group, or lower alkyl or lower alkenyl group which has a substituent selected from the group consisting of a hydroxyl group, a lower alkoxy group, a lower alkylthio group and a heterocyclic group;

n is 0 or 1;

Y is (a) a hydroxymethyl group, (b) a group of the formula CO_2R^{71} wherein R^{71} is a hydrogen atom or a lower alkyl group, (c) a group of the formula $CONHR^{72}$ wherein R^{72} is a hydrogen atom, a lower alkyl group or lower alkyl group which has have a substituent selected from the group consisting of a hydroxyl group, a carboxyl group and a sulfo group, (d) a 1H-tetrazol-5-yl group, (e) a sulfo group and (f) a phosphono group; or a pharmaceutically acceptable salt thereof.

5,614,499

PEPTIDE DERIVATIVES AS THROMBIN INHIBITORS

Ruth E. Bylund, Västra Frölunda, and Ann-Catrine E. Teger-Nilsson, Mölndal, both of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Filed Dec. 2, 1992, Ser. No. 984,884

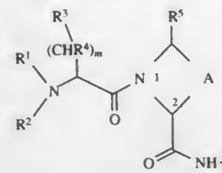
Claims priority, application Sweden, Dec. 4, 1991, 9103612

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **30 Claims**

1. A compound of the formula

Formula I



or a stereoisomer thereof wherein:

A represents an ethylene group and the resulting 5-membered ring is optionally unsaturated, or

A represents $—CH_2—O—$, and the resulting 5-membered ring has the oxygen atom in position 4, or

A represents a n-propylene group and the resulting 6-membered ring is optionally unsaturated in positions 4 and 5, or optionally bears in position 4 an alkyl group with 1 to 4 carbon atoms, or

A represents $—CH_2—O—CH_2—$;

R^1 represents H, an alkyl group having 1 to 4 carbon atoms, a hydroxyalkyl group having 2–3 carbon atoms or $R^{11}OOC$-alkyl-, where the alkyl group has 1 to 4 carbon atoms and

R^{11} is H or an alkyl group having 1 to 4 carbon atoms or an alkylene group having 2–3 carbon atoms intramolecularly bonded alpha to the carbonyl group in R^1, or

R^1 represents $R^{12}OOC$-1,4-phenyl—$CH_2—$, where R^{12} is H or an alkyl group having 1 to 4 carbon atoms, or

R^1 represents R^{13}-NH-CO-alkyl-, where the alkyl group has 1 to 4 carbon atoms and where R^{13} is H or $—CH_2COOR^{12}$, where R^{12} is as defined above, or

R^1 represents $R^{12}OOC—CH_2—OOC$-alkyl-, where the alkyl group has 1 to 4 carbon atoms and where R^{12} is as defined above, or

R^1 represents $R^{12}OCOCO$- where R^{12} is as defined above, or

R^1 represents $R^{12}OCOCO$- where R^{12} is as defined above, or

R^1 represents $CH_2PO(OR^{14})_2$, where R^{14} is, individually at each occurrence, H, methyl or ethyl;

R^2 represents H or an alkyl group having 1 to 4 carbon atoms or $R^{21}OOC$-alkyl-, where the alkyl group has 1 to 4 carbon atoms and is optionally substituted in the position which is alpha to the carbonyl group, and the alpha substituent is a group $R^{22}—(CH_2)_p—$, wherein p=0–2 and R^{22} is methyl, phenyl, OH, or $COOR^{21}$, and R^{21} is H or an alkyl group having 1 to 4 carbon atoms;

m is 0, 1 or 2, R^3 represents a cyclohexyl group and R^4 represents H, or

m is 1, R^3 represents a cyclohexyl or phenyl group, R^1 is absent and R^4 is an ethylene group bonded to the nitrogen atom bearing R^2, or m is 1 and R^3 and R^4 each represents a cyclohexyl or phenyl group;

R^5 represents H or an alkyl group having 1 to 4 carbon atoms; n is an integer 2, 3 or 4;

B represents $-N(R^6)-C(NH)-NH_2$, wherein R is H;

and wherein the amino acid bearing R^3 on its side chain is designated P3, and the amino acid containing A is designated P2; or a physiologically acceptable salt thereof.

26. A method of treatment or prophylaxis of thrombosis and hypercoaguability in blood and tissues in a mammal in need of such treatment or prophylaxis, comprising administering to the mammal an effective amount of a compound of any one of claims 1 and 11–13.

5,614,500

COMPOSITIONS CONTAINING HIGHLY PURIFIED FACTOR IX PROTEINS PREPARED BY IMMUNOAFFINITY CHROMATOGRAPHY

Theodore S. Zimmermann, La Jolla, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 772,264, Oct. 7, 1991, abandoned, which is a division of Ser. No. 275,466, Nov. 23, 1988, Pat. No. 5,055,557, which is a continuation of Ser. No. 910,315, Sep. 22, 1986, abandoned, which is a continuation of Ser. No. 800,902, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 707,179, Mar. 1, 1985, abandoned, which is a continuation of Ser. No. 472,413, Mar. 4, 1983, abandoned. This application Jul. 18, 1994, Ser. No. 276,505

Int. Cl.[6] A61K *38/36*

U.S. Cl. 514—21 **7 Claims**

1. A pharmaceutical composition suitable for therapeutic, comprising an active Factor IX protein and a pharmaceutically acceptable carrier, wherein said Factor IX protein is prepared by a method comprising:

(a) providing a source comprising a mixture of Factor IX protein and one or more other proteins;

(b) adsorbing said Factor IX protein from said source onto a monoclonal antibody specific for said Factor IX protein;

(c) removing the source depleted of said Factor IX protein from the antibody with an aqueous buffer containing an alkali metal salt;

(d) eluting the adsorbed Factor IX protein from the antibody with a buffered eluant, thus producing active, highly purified, and concentrated Factor IX protein;

wherein all of said steps (a)–(d) are conducted in the presence of a chelating agent and in the absence of an exogenous non-chelating protease inhibitor.

5,614,501

COMPOSITIONS AND METHODS FOR ANIMAL HUSBANDRY AND FOR TREATING GASTROINTESTINAL DISORDERS

Geoffrey N. Richards, Missoula, Mont., assignor to The University of Montana, Missoula, Mont.

Division of Ser. No. 278,414, Jul. 21, 1994. This application May 4, 1995, Ser. No. 434,492

Int. Cl.[6] A61K *31/70;31/715*

U.S. Cl. 514—22 **15 Claims**

1. A method for increasing growth rate, improving feed efficiency and decreasing scour after weaning in an animal, the method comprising administering to the animal an effective amount of a composition comprising an extract of wood of a tree of the genus Larix comprising arabinogalactan and a polyphenol, wherein thee arabinogalactan is water soluble, resists digestion by animal alimentary enzymes, and is selectively digested by Bifidobacteria.

5,614,502

HIGH-PRESSURE IMPULSE TRANSIENT DRUG DELIVERY FOR THE TREATMENT OF PROLIFERATIVE DISEASES

Thomas J. Flotte, Boston; Apostolos Doukas, Belmont; Daniel J. McAuliffe, Boxford, and Therese M. Anderson, Brookline, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 6,064, Jan. 15, 1993, abandoned. This application May 2, 1994, Ser. No. 236,265

Int. Cl.[6] A61K *31/70;* **C07C** *6/00;* **A61N** *1/00;7/00*

U.S. Cl. 514—34 **13 Claims**

1. A method of treating a patient with a disease characterized by the presence of a tumor, said method comprising:

administering to said patient a compound having a therapeutic index of at least 50, and

exposing a region of diseased tissue to at least one high-pressure compressional impulse transient when a level of said compound in surrounding healthy tissues is less than 50 percent of a level of said compound present in said region of diseased tissue, said exposing increasing permeability in cells comprised in said exposed region to facilitate localized delivery of said compound to said region of diseased tissue.

5,614,503

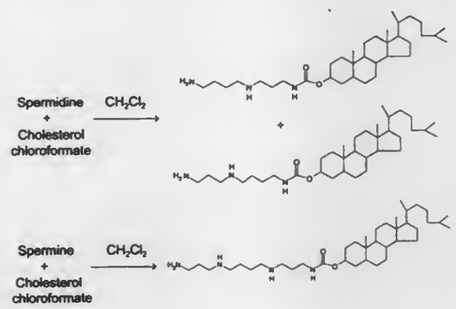
AMPHIPATHIC NUCLEIC ACID TRANSPORTER

Nilabb Chaudhary; Krishna Jayaraman; Veeraiah Bodepudi, and Michael E. Hogan, all of The Woodlands, Tex., assignors to Aronex Pharmaceuticals, Inc., The Woodlands, Tex.

Continuation of Ser. No. 303,554, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 152,544, Nov. 12, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,114

Int. Cl.[6] A61K *9/127;48/00;* **C07J** *9/00;* **C07C** *261/00*

U.S. Cl. 514—44 **9 Claims**



1. An amphipathic transporter for delivery of nucleic acid into cells, comprising an essentially nontoxic, biodegradable cationic compound having a cationic head group capable of binding a nucleic acid and a lipid tail capable of associating with a cellular membrane, wherein

said cationic head group is a polyamine,

said lipid tail is cholesterol, and

the cationic head group is linked to the lipid tail by a carbamate linkage.

5,614,504

METHOD OF MAKING INOSINE MONOPHOSPHATE DERIVATIVES AND IMMUNOPOTENTIATING USES THEREOF

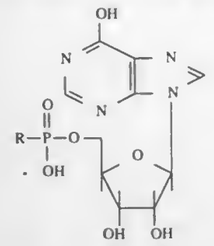
John W. Hadden, and Alfredo Giner-Sorolla, both of Tampa, Fla., assignors to The University of South Florida, Tampa, Fla.

Continuation-in-part of Ser. No. 995,550, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 561,979, Aug. 1, 1990, abandoned. This application Apr. 21, 1995, Ser. No. 426,682

Int. Cl.[6] C07H *19/20;* **A61K** *31/70*

U.S. Cl. 514—45 **27 Claims**

1. A method of potentiating the immune response of a mammal in need of treatment of immunogenic stimuli comprising administering to the mammal an immunopotentiating effective amount of a 5' -nucleotidase resistant compound of the formula



wherein R is a moiety inhibits hydrolysis of the compound by 5'-nucleotidase and is selected from the group consisting of an alkyl, alkoxy and arginine.

5,614,505

METHOD OF TREATING CANCER WITH HOMO-OLIGONULEOTIDES OF 5-FU 5'-MONOPHOSPHATE

William H. Gmeiner, and Patrick L. Iversen, both of Omaha, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Division of Ser. No. 164,089, Dec. 8, 1993, Pat. No. 5,457,187. This application Sep. 11, 1995, Ser. No. 526,337

Int. Cl.[6] A61K *31/70;* **C07H** *21/04*

U.S. Cl. 514—50 **4 Claims**

1. A method of treating solid tumors, comprising adminstering to a patient in need thereof, a pharmaceutically effective amount of at least one compound selected from the group consisting of a homo-oligomer of 5-fluorouridine 5'-monophosphate and a homo-oligomer of 5-fluoro-2'-deoxyuridine 5'-monophosphate.

5,614,506

USE OF HYALURONIC ACID AND FORMS TO PREVENT ARTERIAL RESTENOSIS

Rudolf E. Falk; Samuel S. Asculai, both of Toronto, and Eva A. Turley, Winnipeg, all of Canada, assignors to Hyal Pharmaceutical Corporation, Mississauga, Canada

Continuation of Ser. No. 952,095, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 675,908, Jul. 3, 1991, Ser. No. 838,674, Feb. 21, 1992, abandoned, and Ser. No. 838,675, Feb. 21, 1992. This application Aug. 3, 1994, Ser. No. 285,764

Claims priority, application Canada, Sep. 25, 1992, 2079205-1

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—54 **17 Claims**

1. A method of preventing the narrowing of the tubular walls of an animal after the tubular walls have been traumatized. said method comprising the administration of a therapeutically effective non-toxic amount of a form of hyaluronic acid to the animal in need thereof, the form of hyaluronic acid selected from the group consisting of hyaluronic acid, pharmaceutically acceptable salts thereof, and combinations thereof.

5,614,507

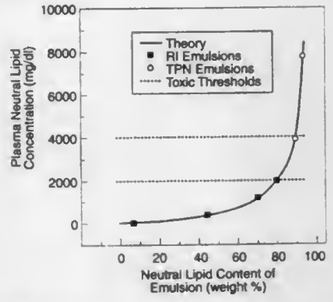
PROTEIN AND PEPTIDE FREE, NEUTRAL LIPID AND PHOSPHOLIPID CONTAINING COMPOSITIONS USEFUL IN TREATING ENDOTOXEMIA

Thomas S. Parker, Brooklyn; Daniel M. Levine, New York, both of N.Y.; Albert L. Rubin, Englewood, N.J.; Bruce R. Gordon, and Stuart D. Saal, both of New York, N.Y., assignors to The Rogosin Institute, New York, N.Y.

Division of Ser. No. 288,568, Aug. 10, 1994, Pat. No. 5,506,218, which is a continuation-in-part of Ser. No. 928,930, Aug. 12, 1992, Pat. No. 5,344,822. This application May 2, 1995, Ser. No. 432,691

Int. Cl.[6] A61K *31/685;31/56;31/225*

U.S. Cl. 514—78 **9 Claims**



1. Protein and peptide free composition useful in treating endotoxemia, comprising:

(a) at least one neutral lipid at an amount equal to about 7% by weight total lipid in said composition, and

(b) at least one phospholipid.

5,614,508

AMINO ACID DERIVATIVES OF SUBSTITUTED QUINOXALINE 2,3-DIONE DERIVATIVES AS GLUTAMATE RECEPTOR ANTAGONISTS

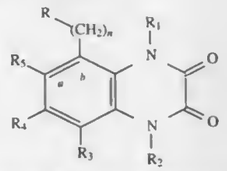
Sham Nikam, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 7, 1995, Ser. No. 474,878

Int. Cl.[6] A61K *31/495;* **C07D** *241/52*

U.S. Cl. 514—80 **14 Claims**

1. A compound of Formula I

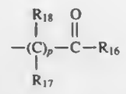


I

or a pharmaceutically acceptable salt thereof wherein R is



wherein R_{11} is hydrogen, alkyl, or aralkyl, and R_{12} is of the formula



wherein p is an integer of from 1 to 5 and R_{17} and R_{18} are each independently on any carbon in $—(C)_p—$ and wherein R_{16} is hydroxy, alkoxy, $NR_{19}R_{20}$ wherein R_{19} and R_{20} are each independently hydrogen, alkyl, cycloalkyl, or aralkyl, and R_{17} and R_{18} are independently selected from hydrogen, alkyl, aryl, cycloalkyl, heterocycloalkyl, aralkyl, heteroaralkyl, carboxyalkyl, aminoalkyl, thioalkyl, or hydroxyalkyl;

n is an integer of from 1 to 4;

R_1 is hydrogen, alkyl, aralkyl, carboxyalkyl, phosphoroalkyl, or phosphonoalkyl;

R_2 is hydrogen hydroxy or amino;

R_3 and R_4 are each independently hydrogen, alkyl, cycloalkyl, alkenyl, halogen, haloalkyl, nitro, cyano, SO_2CF_3, $C(O)R_6$ wherein R_6 is hydroxy, alkoxy,



alkyl, haloalkyl, aryl, aralkyl, $CH_2SO_2R_6$, $(CH_2)_mCO_2R_9$ wherein R_9 is hydrogen, alkyl, aralkyl, or cycloalkyl, $(CH_2)_mCONR_7R_8$, $(CH_2)_mSO_2NR_7R_8$, or $NHCOR_6$ wherein m is an integer of from 0 to 4 and R_7 and R_8 are each independently selected from hydrogen, alkyl, cycloalkyl, haloalkyl, or aralkyl;

R_5 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, halogen, haloalkyl, aryl, heteroaralkyl, aralkyl, heteroaryl, nitro, cyano, SO_2CF_3 $C(O)R_6$, $(CH_2)_mCO_2R_9$, $(CH_2)_mCONR_7R_8$, $SONR_7R_8$, or $NHCOR_6$ wherein m is as defined above and R_7 and R_8 are each independently hydrogen, alkyl, cycloalkyl, or aralkyl; and R_5 may be at the b-position and $R—(CH_2)_n—$ at the a-position on the ring.

5,614,509

PHARMACEUTICAL AGENTS FOR PREVENTING THE DEVELOPMENT OF TOLERANCE DURING THE TREATMENT WITH BENZODIAZEPINE-RECEPTOR-BINDING ACTIVE INGREDIENTS

Lechoslaw Turski; Karin G. Steppuhn; Herbert Schneider, and David N. Stephens, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/DE93/00561, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/01094, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 22, 1993, Ser. No. 367,129

Claims priority, application Germany, Jul. 9, 1992, 42 22 826.3

Int. Cl.[6] A61K *31/675;31/66;31/47;31/445;31/41;31/40;31/135;31/13*

U.S. Cl. 514—82 **10 Claims**

1. A method of preventing the development of tolerance for benzodiazepine-receptor-binding active agents in a patient in need of treatment with such active agents, comprising administering an effective amount of an NMDA antagonist or a physiologically compatible salt thereof.

5,614,510

PHARMACEUTICAL COMPOSITION WITH IMPROVED BIOAVAILABILITY OF INOSITOL PHOSPHATE

Lars Persson, Hässleholm, Sweden, assignor to Perstorp AB, Sweden

PCT No. PCT/SE93/00144, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO93/16705, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 23, 1993, Ser. No. 290,914

Claims priority, application Sweden, Feb. 25, 1992, 9200547

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—103 **16 Claims**

1. An inositol phosphate containing pharmaceutical composition comprising an ion-pair structure obtained by combining an inositol phosphate with a compound of the formula $^+N(R_1R_2R_3)R_5$ wherein R_1, R_2 and R_3 are independently

i) hydrogen

ii) a straight or branched alkyl with 1 to 24 carbon atoms,

iii) cycloalkyl with 3 to 16 carbon atoms,

iv) alkenyl, with 2 to 24 carbon atoms,

v) cycloalkenyl with 5 to 16 carbon atoms,

vi) aryl with 6 to 24 carbon atoms or

vii) aralkyl, alkaryl, aralkenyl, alkenaryl wherein alkyl, aryl and alkenyl are as previously defined,

the above groups (ii) to (vii) being unsubstituted or substituted with hydroxy, oxo, alkoxy, aryloxy, carboxy, esterified carboxy, amino, substituted amino, formyl, acyl, aryloxy or acylamine and R_5 is

i) $—(CH_2)_nOCOR_6$ wherein $n \geqq 2$ and wherein R_6 is

(1) a straight or branched alkyl with 1 to 24 carbon atoms,

(2) alkenyl with 2 to 24 carbon atoms or

(3) $—CH_2CH(CH_3)OCOR_1$, $—CH(CH_3)CH_2OCOR_1$, $—CH_2CH(OCOR_1)CH_2OCOR_1$, $—CH(CH_2OCOR_1)_2$, $—CH_2CH(OH)CH_2OCOR_1$, $—CH_2CH(CH_2OH)OCOR_1$, $—CH(CH_2OH)CH_2OCOR_1$ or $—CH(CH_3)COOR_1$ wherein R_1 is as defined above,

ii) $—(CH_2)_nOR_6$ wherein n and R_6 are as defined above

iii) $—(C(R_7)_2)_nCOOR_6$ wherein $n \geqq 1$ and wherein R_6 is as defined above and wherein R_7 is

(1) hydrogen, or

(2) methyl, ethyl, propyl, butyl or pentyl

iv) $—C(R_7)_2OCOR_6$ wherein R_6 and R_7 are as defined above,

for improvement of the bioavailability of the inositol phosphate in a mammal at non-parenteral administration.

5,614,511

COSMETIC COMPOSITIONS FOR TREATING ITCHY SKIN

Alexander P. Znaiden, Trumbull; Brian A. Crotty, Branford, and Anthony W. Johnson, Fairfield, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 11, 1996, Ser. No. 616,053

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—103 **4 Claims**

1. A method for alleviating itching in human skin comprising

topically applying to the skin a cosmetic composition consisting essentially of from about 0.1 to about 40% by weight of phytic acid and from about 60 to about 99.9% by weight of a cosmetically acceptable carrier.

5,614,512

20-OXO-PREGNACALCIFEROL ANALOGS WITH BINDING AFFINITY TO THE PROGESTERONE RECEPTOR

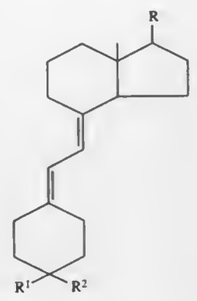
Hector F. DeLuca, Deerfield; Kato L. Perlman, Madison, both of Wis.; Rafal R. Sicinski, Warsaw, Poland, and Hisham M. Darwish, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 5, 1995, Ser. No. 539,343

Int. Cl.[6] A61K *31/59;* **C07C** *3/00*

U.S. Cl. 514—167 **24 Claims**

1. A compound having the formula



where R^1 and R^2 each represent hydrogen or taken together R^1 and R^2 represent an oxo group or a ketal group —O—$(CH_2)_n$—O— where n is an integer from 2 to 5, and where R represents —$COCH_3$, —$CHCH_3CHO$, or —$CHCH_3CH_2OH$.

5,614,513

ORAL 1α-HYDROXYPREVITAMIN D

Joyce C. Knutson, Madison; Charles W. Bishop, Verona, and Charles R. Valliere, Waunakee, all of Wis., assignors to Bone Care International, Inc., Madison, Wis.

Division of Ser. No. 196,116, Feb. 22, 1994, Pat. No. 5,529,991, and a continuation-in-part of Ser. No. 901,886, Jun. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,354

Int. Cl.[6] A01N *45/00*

U.S. Cl. 514—170 **6 Claims**

1. A method for treating or preventing psoriasis in a human being displaying or predisposed to psoriasis, said method comprising: the step of administering orally to said human being an oral medicament comprising a matrix containing a vitamin D compound which is activated vitamin D or 1α-hydroxyprevitamin D,

said matrix having means for releasably binding and for controlled release of said vitamin D compound over a sustained period of time,

said activated vitamin D is selected from the group consisting of 1α,24,25-trihydroxyvitamin D_3; 1α-hydroxy-vitamin D_3; 1α-hydroxy-25-fluoro-vitamin D_3; 1α,24-dihydroxy-vitamin D_3; 1α,24-dihydroxy-25-fluoro-vitamin D_3; 1α,25-dihydroxy-vitamin D_2; 1α,24,25-trihydroxy-vitamin D_2; 1α-hydroxy-vitamin D_2; 1α-hydroxy-25 -fluoro-vitamin D_2; 1α,24-dihydroxy vitamin D_2; 1α,24-dihydroxy-25-fluoro-vitamin D_2; 1α,25-dihydroxy-vitamin D_4; 1α,24,25-trihydroxy-vitamin D_4; 1α-hydroxy-vitamin D_4; 1α-hydroxy-25-fluorovitamin D_4; 1α,24-dihydroxy-vitamin D_4; 1α,24-dihydroxy-25 -fluoro-vitamin D_4;

said 1α-hydroxyprevitamin D selected from the group consisting of 1α,25-dihydroxy-previtamin D_3; 1α,24,25-trihydroxy-previtamin D_3; 1α-hydroxy-previtamin D_3; 1α,24-dihydroxy-previtamin D_3; 1α,24-dihydroxy-25-fluoro-previtamin D_3; 1α,25-dihydroxy-previtamin D_2; 1α,24,25-trihydroxy-previtamin D_2; 1α-hydroxy-previtamin D_2; 1α,24-dihydroxy-previtamin D_2; 1α,24-dihydroxy-25-fluoro-previtamin D_2; 1α,25-dihydroxy-previtamin D_4; 1α,24,25-trihydroxy-previtamin D_4; 1α-hydroxy-previtamin D_4; 1α,24-dihydroxy-previtamin D_4; and 1α,24-dihydroxy-25 -fluoro-previtamin D_4.

5,614,514

STEROID ESTERS

Bengt Axelsson, Genarp; Ralph Brattsand, Lund; Leif Källström, Södra Sandby, and Arne Thalén, Bjärred, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

PCT No. PCT/SE92/00056, § 371 Date Aug. 24, 1993, § 102(e) Date Aug. 24, 1993, PCT Pub. No. WO92/13873, PCT Pub. Date Aug. 20, 1992

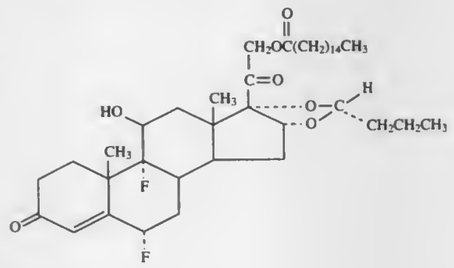
PCT Filed Jan. 29, 1992, Ser. No. 94,100

Claims priority, application Sweden, Feb. 4, 1991, 9100342

Int. Cl.[6] C07J *71/00;* **A61K** *31/58*

U.S. Cl. 514—174 **5 Claims**

1. The compound having the formula



5,614,515

LAZAROID-BASED COMPOSITIONS AND METHOD FOR PREVENTING ADHESION FORMATION USING THE SAME

Kathleen E. Rodgers, Long Beach, and Gere S. Dizerega, Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Nov. 17, 1994, Ser. No. 341,651

Int. Cl.[6] A61K *31/56;31/495*

U.S. Cl. 514—176 **22 Claims**

1. A method for prevention of formation of adhesions between organ surfaces, comprising administering an effective amount of at least one lazaroid for a period of time sufficient to permit tissue repair.

5,614,516

12-AMINOPYRIDAZINOPYRROLOISOQUINOLINE COMPOUNDS

Walter Lösel, Gau-Algesheim; Otto Roos, Schwabenheim; Gerd Schorrenberg, Gau-Algesheim; Helmut Ensinger, Wackernheim, and Richard Reichl, Gau-Algesheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

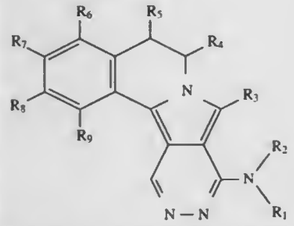
Continuation of Ser. No. 294,460, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 151,081, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 26,675, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 912,049, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 779,208, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 668,347, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 549,657, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 432,932, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 322,325, Mar. 10, 1989, abandoned, which is a continuation of Ser. No. 196,905, May 20, 1988, abandoned, which is a continuation of Ser. No. 73,032, Jul. 14, 1987, abandoned, which is a continuation of Ser. No. 818,562, Jan. 13, 1986, abandoned. This application Feb. 7, 1995, Ser. No. 384,902

Claims priority, application Germany, Jan. 1, 1985, 3500941; Jul. 13, 1985, 3525048

Int. Cl.[6] C07D *487/04;* **A61K** *31/50;31/535*

U.S. Cl. 514—233.2 **8 Claims**

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein,

R_1 and R_2 are the same or different and each is hydrogen; C_{3-7} cycloalkyl; phenyl; phenyl mono- or disubstituted by halogen or methoxy; straight or branched chain, saturated, or unsaturated C_{1-5} alkyl which may be substituted by hydroxy, C_{1-4} alkoxy, halogen, amino, C_{1-2} alkylamino-, C_{1-2} dialkylamino, C_{2-4} acylamino, C_{3-7} or phenyl; furyl; or, thienyl;

or, R_1 and R_2 together with the nitrogen atom to which they are attached form a 4-piperazinyl, 1-morpholino, 1-pyrrolidinyl or 1-piperidinyl ring which is unsubstituted or substituted by phenyl C_{1-4} alkyl, wherein the phenyl is unsubstituted or substituted by halogen or methoxy;

with the proviso that, when R_1 is hydrogen, R_2 may additionally be amino, C_{1-2} dialkylamino, acetonylamino, C_{2-3} acylamino, C_{1-3} alkylsulphonyl or C_{1-3} alkoxycarbonyl;

R_3, R_4 and R_5 may be the same or different and each is hydrogen or C_{1-4} alkyl;

R_7 and R_8 may be the same or different and each is hydroxy, C_{1-4} alkoxy or C_{1-4} alkylthio, and

R_6 and R_9 may be the same or different and each is hydrogen, hydroxy, C_{1-4} alkoxy, C_{1-4} alkylthio, or a group



wherein

R_{10} is hydrogen or C_{1-4} alkyl and

R_{11} is hydrogen or C_{1-4} alkyl wherein any such alkyl group may be unsubstituted or substituted by hydroxy, methoxy or furfuryl.

5,614,517

8-OXO-5,8-DIHYDRO-6H-DIBENZO[A,G]QUINOLIZINE-13-PROPANOIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Benoit Marabout, Chilly Mazarin; Mireille Sevrin, Paris; Jacques Froissant, Morée, and Emmanuelle Dachary, Vitry sur Seine, all of France, assignors to Synthelabo, Le Plessis Robinson, France

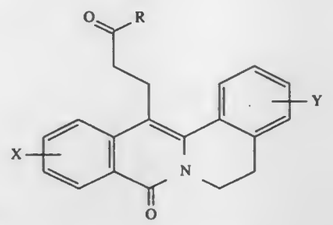
Filed Dec. 28, 1995, Ser. No. 580,295

Claims priority, application France, Dec. 29, 1994, 94 15836

Int. Cl.[6] A61K *31/535;31/495;31/44*

U.S. Cl. 514—233.2 **7 Claims**

1. A compound of formula (I)



(I)

in which

X represents a hydrogen or halogen atom, a C_1–C_3 alkyl group, a trifluoromethyl group, or a C_1–C_3 alkoxy group in which case two such alkoxy groups X can be present,

Y represents a hydrogen or halogen atom, a C_1–C_3 alkyl group or a C_1–C_3 alkoxy group,

R represents: a hydroxyl group; a methoxy group; or a group of formula NR_2R_3 in which R_2 and R_3 each independently represents a hydrogen atom, a C_1–C_4 alkyl group, a 2-methoxyethyl group, a 2-aminoethyl group, a 3-aminopropyl group, a 2-(dimethylamino)ethyl group, a 3-(dimethylamino)propyl group or a 2-piperid-1-ylethyl group, or alternatively R_2 and R_3 form, together with the nitrogen atom which they are attached, a morpholinyl or pyrrolidinyl ring or a piperazinyl ring optionally substituted in the 4-position with a methyl or (1,1-dimethyl-ethoxy)carbonyl group,

in the form of the free base or of a pharmaceutically acceptable acid addition salt thereof.

5,614,518

MORPHOLINE DERIVATIVES AS DOPAMINE RECEPTOR SUBTYPE LIGANDS

Paul D. Leeson, Monmouth Junction, N.J., and Graham A. Showell, Welwyn Garden City, United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, United Kingdom

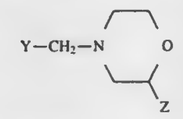
PCT No. PCT/GB94/02557, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/14690, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 21, 1994, Ser. No. 647,926

Int. Cl.[6] A61K *31/535;* **C07D** *413/06*

U.S. Cl. 514—234.5 **9 Claims**

1. A compound of formula I, or a salt thereof or a prodrug thereof:



(I)

wherein

Y represents an optionally substituted bicyclic heteroaromatic ring system containing one or two nitrogen atoms, the ring

system comprising a six-membered aromatic or heteroaromatic ring fused to a five- or six-membered heteroaromatic ring; and

Z represents an optionally substituted aryl(C_{1-6})alkyl, aryloxymethyl or aryl(C_{1-6})alkoxymethyl group.

5,614,519

(1-(2,3 OR 4-N-MORPHOLINOALKYL)-IMIDAZOL-4-YL)-BENIZIMIDAZOL-1-YL-METHYL]-BIPHENYLS USEFUL AS ANGIOTENSIN-II ANTAGONISTS

Norbert Hauel, Schemmerhofen; Berthold Narr, deceased, late of Biberach; Uwe Ries, Biberch; Jacobus C. Antonius van Meel, Mittelbiberach; Wolfgang Wienen, Biberach/Rissegg, and Michael Entzeroth, Warthausen, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

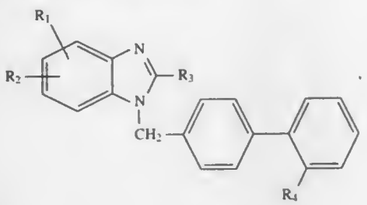
Division of Ser. No. 385,936, Feb. 9, 1995, which is a continuation-in-part of Ser. No. 201,139, Feb. 24, 1994, abandoned, Ser. No. 257,608, Jun. 9, 1994, abandoned, Ser. No. 237,477, May 3, 1994, abandoned, and Ser. No. 94,835, Jul. 20, 1993, abandoned, said Ser. No. 201,139is a continuation of Ser. No. 832,193, Feb. 6, 1992, abandoned, said Ser. No. 257,608is a continuation of Ser. No. 7,315, Jan. 21, 1993, abandoned, said Ser. No. 237,477is a continuation of Ser. No. 40,778, Mar. 31, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,069

Claims priority, application Germany, Feb. 6, 1991, 41 03 492.9; May 25, 1991, 41 17 121.7; Nov. 16, 1991, 41 37 812.1; Jan. 22, 1992, 42 01 554.5; Apr. 11, 1992, 42 12 250.3; Jun. 17, 1992, 42 19 782.1; Jul. 22, 1992, 42 24 133.2; Jul. 27, 1992, 42 24 752.7; Aug. 4, 1992, 42 25 756.5

Int. Cl.[6] A61K *31/535;* **C07D** *413/06;413/14*

U.S. Cl. 514—235.8 **8 Claims**

1. A compound of the formula I



(I)

wherein

R_1 is in the 4-position and represents a C_{1-4}-alkyl, C_{3-7}-cycloalkyl or trifluoromethyl group,

R_2 represents an imidazol-4-yl group substituted in the 1-position by a C_{2-4}-alkyl group which is, in turn, substituted in 2-, 3- or 4-position by a morpholino group, or

R_2 represents an imidazol-4-yl group substituted in the 1-position by a C_{2-4}-alkyl group which is, in turn, substituted in 2-, 3- or 4-position by a morpholino group, and which imidazo group is further substituted in the 2-position by a C_{1-6}-alkyl group or by a phenyl group,

R_3 represents a C_{1-5}-alkyl group or cyclopropyl, and

R_4 denotes a 1H-tetrazolyl group or an R_aO—CO— group, wherein

R_a denotes a hydrogen atom or a straight-chained or branched C_{1-4}-alkyl group,

or a pharmaceutically acceptable salt thereof.

8. A method for treating hypertension which comprises administering to a mammalian host suffering from the same an antihypertensive amount of a compound as in any one of claims 1, 2, 3, 4, 5 or 6.

5,614,520

2-ARYLTHIAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITION THEREOF

Shiro Kondo, Hachioji; Hisashi Fukushima, Hino; Masaichi Hasegawa, Hino; Masahiro Tsuchimoto, Hino; Ikuo Nagata, Hino; Yoshio Osada, Hino; Keiji Komoriya, Hachioji, and Hisao Yamaguchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

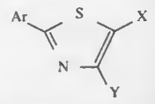
Continuation of Ser. No. 917,037, Jul. 30, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,214

Claims priority, application Japan, Nov. 30, 1990, 2-330147; Aug. 2, 1991, 3-216586

Int. Cl.[6] C07D *277/56;277/22;277/24;* **A61K** *31/425*

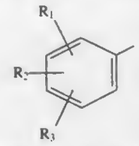
U.S. Cl. 514—236.8 **15 Claims**

1. A 2-arylthiazole derivative having the following formula (I), and a pharmaceutically acceptable salt thereof:



(I)

wherein Ar is an unsubstituted or substituted furyl group; or a group represented by the following formula (II):



(II)

wherein R_1, R_2, and R_3 are hydrogen, a halogen atom, or a nitro, cyano or formyl group; or a group of OR, $S(O)_nR$ and NRR^1 (wherein n is an integer of from 1 to 2, R represents an unsubstituted or substituted C_{1-10} alkyl, aryl, aralkyl, alkylcarbonyl, arylcarbonyl or aralkylcarbonyl group, R^1 represents a hydrogen atom, or an unsubstituted or substituted C_{1-10} alkyl, aryl, aralkyl, alkylcarbonyl, arylcarbonyl or aralkylcarbonyl group; or R and R^1, taken together with the nitrogen atom bonded thereto, represent atoms forming an unsubstituted or substituted 5- or 7-membered heterocyclic ring), or a group of COR" wherein R" represents an unsubstituted or substituted C_{1-10} alkyl, aryl or aralkyl group; a hydroxyl group; an unsubstituted or substituted C_{1-10} alkoxy, aryloxy or aralkyloxy group; an amino group; or an unsubstituted or substituted C_{1-10} alkyl (mono- or di-substituted, independently) amino, aryl (mono- or di-substituted, independently) amino or aralkyl (mono- or di-substituted, independently) amino group, or a 5- to 7-membered cyclic amino group, and at least one of R_1, R_2 or R_3 is other than hydrogen;

X is a hydrogen atom, or a C_{1-14} alkyl, carboxyl, C_{1-5} alkoxycarbonyl, carbamoyl or C_{1-4} alkyl (mono- or di-substituted) aminocarbonyl group; and

Y represents a hydrogen atom or a C_{1-4} alkyl, carboxyl, C_{1-5} alkoxycarbonyl, carbamoyl or C_{1-4} alkyl (mono- or di-substituted) aminocarbonyl group, with the proviso that when at least one group of R_1, R_2 and R_3 represents a halogen atom, or an alkoxy, alkylamino or nitro group, at least one group of the two other groups represents a group other than a hydrogen atom; when at least one group of R_1, R_2 and R_3 is a halogen atom and another group is a hydrogen atom, a remaining group is a group other than a halogen atom, or an alkoxy, alkylamino or acylamino group, with the additional proviso that when any one of R_1, R_2 or R_3 is OR, one of the remaining groups cannot represent hydrogen while the other group represents OR, or the remaining two groups cannot both represent OR at the same time, nor do all of R_1–R_3 represent halogen; with the further proviso that both X and Y do not represent carboxyl, C_{1-5} alkoxycarbonyl, carbamoyl or C_{1-4} alkyl (a mono- or di-substituted) aminocarbonyl group at the same time.

5,614,521

BENZENE DERIVATIVES HAVING NGF PRODUCTION-PROMOTING ACTIVITY

Shunji Naruto; Yuichi Sugano; Keiichi Matsuda; Masahiko Sugimoto, and Tomlichiro Oda, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

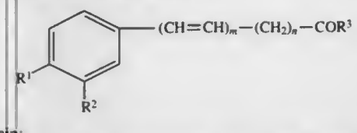
Division of Ser. No. 837,491, Feb. 18, 1992. This application Apr. 24, 1995, Ser. No. 427,664

Claims priority, application Japan, Feb. 21, 1991, 3-27060

Int. Cl.[6] A61K *31/535;* **C07C** *233/00;* **C07D** *265/30*

U.S. Cl. 514—237.8 **23 Claims**

1. A compound of the formula (I):



(I)

wherein:

R^1 represents an unsubstituted amino group; an amino group substituted by 1 or 2 groups selected from the members of Substituent Group A; a protected amino group; or a nitro group;

R^2 represents an unsubstituted amino group; a substituted amino group substituted by 1 or 2 groups selected from the members of Substituent Group A; a protected amino group; an unsubstituted hydroxy group; a protected hydroxy group; or a hydroxy group substituted by a group selected from the members of Substituent Group A;

R^3 represents an amino group substituted by a substituent selected from the group consisting of haloalkyl groups containing 1 to 3 halogen atoms, unsubstituted cycloalkyl groups, cycloalkyl groups substituted by 1 to 3 groups selected from the members of Substituent Group B and Substituent Group C, unsubstituted aryl groups, aryl groups substituted by 1 to 3 groups selected from the members of Substituent B and Substituent Group C, unsubstituted aralkyl groups and aralkyl groups substituted on at least 1 aryl ring by 1 to 3 groups selected from the members of Substituent Group B and Substituent Group C;

m represents an integer from 0 to 2;

n represents an integer rom 0 to 6;

Substituent Group A includes the following members: alkyl groups, haloalkyl groups containing 1 to 3 halogen atoms, unsubstituted cycloalyl groups, cycloalkyl groups substituted by 1 to 3 groups selected from the members of Substituent Group B and Substituent Group C, unsubstituted aryl groups, aryl groups substituted by 1 to 3 groups selected from the members of Substituent Group B and Substituent Group C, unsubstituted aralkyl groups, aralkyl groups substituted on at least 1 aryl ring by 1 to 3 groups selected from the members of Substituent Group B and Substituent Group C, unsubstituted heterocyclyl groups, and heterocyclyl groups substituted by 1 to 3 groups selected from the group consisting of Substituent Group B and Substituent Group C;

Substituent Group B is selected from the group consisting of halogen atoms, an alkoxy group, an alkoxycarbonyl group, a nitro group, a cyano group, an arylcarbonyl group, and an aralkylcarbonyl group;

Substituent Group C is selected from the group consisting of an alkyl groups, a haloalkyl group containing 1 to 3 halogen atoms, and a cycloalkyl group;

heterocyclyl groups comprise 5- to 7-membered heterocyclyl groups containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen atoms, oxygen atoms and sulfur atoms, optionally fused with 1 to 2 aryl rings;

said alkyl groups comprise straight or branched chain alkyl groups having from 1 to 6 carbon atoms

said alkyl groups comprise straight or branched chain alkyl groups having from 1 to 6 carbon atoms;

said haloalkkyl groups comprise alkyl groups substituted by 1 to 3 halogen atoms;

said cyclolkyl groups comprise 3- to 10-membered optionally bridged saturated cyclic hydrogenated groups;

said aryl groups comprise 6- to 14-membered aromatic cyclic hydrogrocarbon groups optionally fused with a cycloalkyl group;

said aralkyl groups comprise alkyl groups substituted by 1 to 3 aryl groups;

said halogen atoms comprise fluorine, chlorine, bromine or iodine atoms;

said alkoxy groups comprise straight or branched chain alkoxy groups having from 1 to 6 carbon atoms;

with the proviso that when m is 0, then n represents an integer from 2 to 6;

and salts thereof.

5,614,522

RETROVIRAL PROTEASE INHIBITORS

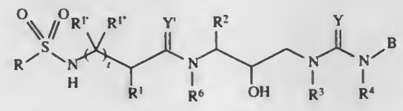
John J. Talley, Chesterfield, Mo., and Kathryn L. Reed, Raleigh, N.C., assignors to G.D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 886,556, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,645, Dec. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application Jul. 24, 1995, Ser. No. 506,213

Int. Cl.[6] A61K *31/435;* **C07C** *55/28*

U.S. Cl. 514—237.8 **110 Claims**

1. A compound represented by the formula:



wherein R represents alkyl, alkenyl, hydroxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heterocycloalkylalkyl, aryl, aralkyl and heteroaralkyl radicals;

t represents 0 or 1;

R^1 represents hydrogen, $—CH_2SO_2NH_2$, $—CO_2CH_3$, $—CH_2CO_2CH_3$, $—CONH_2$, $—CH_2C(O)NHCH_3$, $—CH_2C(O)N(CH_3)_2$, $—CONHCH_3$, $CON(CH_3)_2$, $C(CH_3)_2(SCH_3)$, $C(CH_3)_2(S[O]CH_3)$, $C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalklyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano alanine and allo-threonine side chains;

$R^{1'}$ and $R^{1''}$ independently represent hydrogen and radicals as defined for R^1, or one of $R^{1'}$ and $R^{1''}$, together with R^1 and the carbon atoms to which they are attached, represent a cycloalkyl radical;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl, and aralkyl radicals, which radicals are optionally substituted with a group selected from $—OR^9$, $—SR^9$ and halogen radicals,

wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl, and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

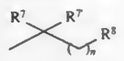
Y and Y' independently represent O and S

R^4 represents hydrogen or radicals as defined for R^3 and independently R^5 represents radicals as defined for R^3, or

R^4 and R^5 together with the nitrogen atom to which they are bonded represent heterocycloalkyl and heteroaryl radicals;

R^6 represents hydrogen and alkyl radicals;

B represents R^5 and radicals represented by the formula:



wherein n represents an integer of from 0 to 6, R^7 and $R^{7'}$ independently represent radicals as defined for R^3 and amino acid side chains selected from the group consisting of valine, isoleucine, glycine, alanine, allo-isoleucine, asparagine, leucine, glutamine, and t-butylglycine or R^7 and $R^{7'}$ together with the carbon atom to which they are attached form a cycloalkyl radical; and

R^8 represents cyano, hydroxyl, alkyl, alkoxy, cycloalkyl, aryl, aralkyl, heterocycloalkyl and heteroaryl radicals and radicals represented by the formulas $C(O)R^{16}$, CO_2R^{16} , SO_2R^{16}, SR^{16}, $CONR^{16}R^{17}$, OR^{16}, CF_3 and $NR^{16}R^{17}$

wherein R^{16} and R^{17} independently represent hydrogen and radicals as defined for R^3 or R^{16} and R^{17} together with a nitrogen to which they are attached in the formula $NR^{16}R^{17}$ represent heterocycloalkyl and heteroaryl radicals, with the proviso that when R^4 is hydrogen then neither R^7 or $R^{7'}$ is a side chain derived from glycine, in other words neither is a hydrogen.

5,614,523

COMPOUNDS HAVING EFFECTS ON SEROTONIN-RELATED SYSTEMS

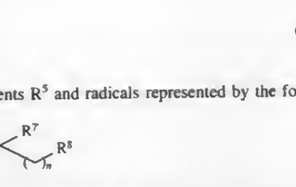
James E. Audia; Joseph H. Krushinski, Jr., both of Indianapolis; Kurt Rasmussen, Fishers; Vincent P. Rocco, Indianapolis; John M. Schaus, Zionsville; Dennis C. Thompson, and David T. Wong, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 373,823, Jan. 17, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 470,512

Int. Cl.[6] A61K *31/50;* **C07D** *241/04*

U.S. Cl. 514—252 **19 Claims**

1. A compound of the formula



I

wherein

r is 0–4;

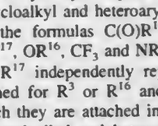
s is 0–1;

D is a residue which combines with the carbon atoms to which it is attached to complete a pyrrolyl group;

wherein X is hydrogen, phenyl, hydroxy or methoxy;

provided that X is hydrogen or phenyl when r is 0;

R is



IV

R^5 is C_1–C_6 alkyl or C_1–C_4 acyl;

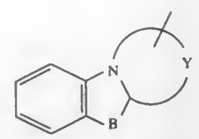
or R^5 is C_1–C_3 alkyl substituted with benzodioxinyl or benzodioxolyl,

substituted on the phenyl ring with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups;

or R^5 is pyridinyl, pyrimidinyl, indolyl, benzofuryl, benzothienyl, pyrazinyl, quinolinyl, isoquinolinyl, pyridazinyl or quinazolinyl,

substituted with 0–2 C_1–C_3 alkyl, trifluoromethyl, C_1–C_3 alkoxy or halo groups;

or R^5 is



VII

B is oxygen or sulfur;

Y is a residue which combines with the atoms to which it is attached to complete a triazolyl, imidazolyl, thiazolyl or pyrrolyl ring;

or a pharmaceutically acceptable salt thereof.

5,614,524

PIPERAZINE DERIVATIVES AS 5-HT$_1$ AGONISTS

V. G. Matassa, Rome, Italy; L. J. Street, Harlow, and A. J. Reeve, Great Dunmow, both of England, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

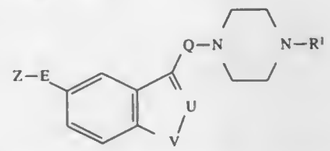
Filed May 19, 1995, Ser. No. 444,507

Claims priority, application United Kingdom, May 19, 1994, 9410031

Int. Cl.[6] A61K *31/495;* **C07D** *403/14;403/04;403/06*

U.S. Cl. 514—253 **5 Claims**

1. A compound of formula I, or a pharmaceutically-acceptable salt or prodrug thereof:



(I)

wherein

Z represents an optionally substituted five-membered heteroaromatic ring selected from furan, thiophene, pyrrole, oxazole, thiazole, isoxazole, isothiazole, imidazole, pyrazole, oxadiazole, thiadiazole, triazole and tetrazole;

E represents a chemical bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;

Q represents a straight or branched alkylene chain containing from 1 to 6 carbon atoms;

U represents C—R^2;

V represents N—R^3;

R^1 represents cyano(C_{1-6})alkyl, amino(C_{1-6})alkyl, C_{2-6} alkylcarbonylamino(C_{1-6})alkyl or C_{2-6} alkoxycarbonylamino(C_{1-6})alkyl, or an optionally substituted pyrimidinyl moiety; and

R^2 and R^3 independently represent hydrogen or C_{1-6} alkyl.

5,614,525

SALTS OF DISULFONYL METHANE COMPOUNDS WHICH ARE USEFUL AS PARASITICIDE AGENTS

David I. Wickiser, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 156,123, Nov. 22, 1993, Pat. No. 5,449,681, which is a continuation-in-part of Ser. No. 998,426, Dec. 30, 1992, abandoned. This application May 4, 1995, Ser. No. 434,870

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **4 Claims**

1. A salt of a disulfonyl methane compound selected from the group consisting of

[phenylsulfonyl][(trifluoromethyl)sulfonyl]methane;

[(4-chlorophenyl)sulfonyl][(trifluoromethyl)sulfonyl]methane;

[(4-nitrophenyl)sulfonyl][(trifluoromethyl)sulfonyl]methane; and

[(3-nitro-4-chlorophenyl)sulfonyl][(trifluoromethyl)sulfonyl]methane

with an anthelmintic compound selected from the group consisting of

bephenium,

diethylcarbamazine,

levamisole,

morantel,

nicotine,

piperazine, and

pyrantel.

5,614,526

USE OF PHENOXY-PIPERZINE DERIVATIVES

Thierry Godel; Deborah Hartman, both of Basel, Switzerland, and Claus Riemer, Schliengen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

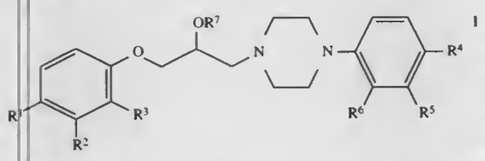
Filed Apr. 29, 1996, Ser. No. 639,384

Claims priority, application Switzerland, Jun. 9, 1995, 1703/95

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **5 Claims**

1. A method of treating or preventing an illness caused by a disorder of the dopamine system which comprises administering to a host in need of such treatment or prevention an effective amount of a pharmaceutical composition comprising a compound of the formula



I

wherein

R^1 and R^3 each independently are hydrogen, aryl, carbamoyl, lower-alkyl-carbonyl, lower-alkyl, halogen, lower-alkyl-carbonyl-amino, lower-alkenyl-carbonyl-amino, amino, arylamino, aryloxy, nitro, aryl-acetyl, lower-alkanoyl-lower-alkyl, alkyl-sulphonyl-amino, ureido or furan-2-yl-carbonyl-amino and

R^2 is hydrogen, lower-alkyl, trifluoromethyl, halogen, lower-alkoxy, lower-alkyl-carbonyl or lower-alkyl-carbonyl-amino or

R^1 and R^2together are —OCH_2O—, —$O(CH_2)_2O$— or —$(CH_2)_3$—,

R^4 is hydrogen, halogen, hydroxy, lower-alkyl, lower-alkoxy or nitro,

R^5 is hydrogen, halogen or lower-alkoxy,

R^6 is hydrogen, lower-alkyl, halogen, hydroxy, amino, lower-alkoxy, trifluoromethyl, nitro or lower-alkyl-carbonyl-amino and

R^7 is hydrogen or lower-alkyl-carbonyl,

or a pharmaceutically acceptable salt of a compound of formula I, and a pharmaceutically inert carrier material.

5,614,527

INSECTICIDAL TETRAHYDROFURAN-COMPOUND

Katsutoshi Kinoshita; Takeo Wakita; Kenji Kodaka; Hirozumi Matsuno; Kenichi Satoh; Shirou Shiraishi; Kazutomi Ohnuma; Eiichi Yamada; Naoko Yasui; Nobuyuki Kawahara; Koichi Ebihara, and Michihiko Nakaya, all of Chiba-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

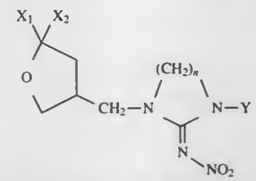
Filed May 23, 1995, Ser. No. 447,962

Claims priority, application Japan, Jun. 3, 1994, 6-122179; Mar. 23, 1995, 7-064120

Int. Cl.[6] C07D *251/08;* **A01N** *43/54*

U.S. Cl. 514—256 **8 Claims**

1. A tetrahydrofuran-compound represented by formula (1)



(1)

wherein each of X_1 and X_2 is a hydrogen atom or a methyl group, Y is a hydrogen atom or a carbonyl group substituted by a lower alkyl group (Y') having 1 to 4 carbon atoms, so as to form an acyl group (—COY'), and n is 3.

5,614,528

COMPOSITIONS AND METHODS FOR INHIBITING THE FORMATION OF CHLORAMINES AND TRIHALOMETHANES IN AQUEOUS MEDIA

Ronald L. Jones, Norcross; Henry D. Caughman, Lithonia; Susan M. Shelor, Stone Mountain, and Ellwood L. Lines, Jr., Atlanta, all of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Continuation of Ser. No. 38,166, Mar. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 755,822, Sep. 6, 1991, abandoned. This application Oct. 17, 1994, Ser. No. 324,389

Int. Cl.[6] A01N *25/22;* **A61L** *9/01*

U.S. Cl. 514—258 **22 Claims**

1. A method for inhibiting the formation of chloramines in aqueous media treated with a chlorine-source disinfectant, which method comprises adding to the aqueous media an amount of unsubstituted glycoluril sufficient to inhibit the formation of chloramines in the aqueous media; wherein said amount of unsubstituted glycoluril is further sufficient to maintain a concentration of from about 1 ppm to about 100 ppm of glycoluril in the aqueous media.

5,614,529

INHIBITION OF PLASMODIA PARASITES BY CAMPTOTHECIN COMPOUNDS

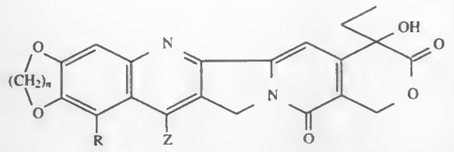
Monroe E. Wall, Chapel Hill; Mansukh C. Wani, Durham, both of N.C.; Robert R. Engle, 8305 Tuckerman La., Potomac, Md. 20854, and Robert E. Miller, 6742 Meadowside Dr., Frederick, Md. 21702, assignors to Research Triangle Institute, Research Triangle Park, N.C.; Robert R. Engle, Potomac, and Robert E. Miller, Frederick, both of Md.

Filed Sep. 22, 1994, Ser. No. 309,467

Int. Cl.[6] A61K *31/44;31/395;31/55;* **A01N** *43/00*

U.S. Cl. 514—279 **14 Claims**

1. A method of inhibiting plasmodia growth, comprising contacting living plasmodia with an effective inhibitory amount of a camptothecin compound which has the structure shown below



wherein in the structure shown above, R is NO_2, NH_2, N_3, hydrogen, halogen, COOH, OH, O—C_{1-3} alkyl, SH, S—C_{1-3} alkyl, CN, CH_2NH_2, NH—C_{1-3} alkyl, CH_2—NH—C_{1-3} alkyl, $N(C_{1-3}$ alkyl$)_2$, $CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— and S—$CH_2CH_2N(CH_2CH_2OH)_2$, O—, NH— and S—$CH_2CH_2CH_2N(CH_2CH_2OH)_2$, O—, NH— and S—$CH_2CH_2$ $N(CH_2CH_2CH_2OH)_2$, O—, NH— and S—$CH_2CH_2CH_2N(CH_2CH_2CH_2OH_2)_2$, O—, NH— and S—$CH_2CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— and S—$CH_2CH_2CH_2N(C_{1-3}$ alkyl$)_2$, CHO or C_{1-3} alkyl;

Z in the structure shown above is H, C_{1-8} alkyl, or $CH_2NR^1R^2$ where (a) R^1 and R^2 are, independently, hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy-C_{1-6} alkyl, C_{1-6} alkoxy-C_{1-6} alkyl, (b) R^1 is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy- C_{1-6} alkyl or C_{1-6} alkoxy-C_{1-6} alkyl and R^2 is —COR^3 where R^3 is hydrogen, C_{1-6} alkyl, perhalo-C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy-C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxy-C_{1-6} alkyl, or (c) R^1 and R^2 taken together with the nitrogen atom to which they are attached form a saturated 3–7 membered heterocyclic ring which may contain a O, S or NR^4 group, where R^4 is hydrogen, C_{1-6} alkyl, perhalo-C_{1-6} alkyl, aryl, aryl substituted with one or more groups selected from the group consisting of C_{1-6} alkyl, halogen, nitro, amino, C_{1-6} alkylamino, perhalo-C_{1-6} alkyl, hydroxy-C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxy-C_{1-6} alkyl and —COR^5 where R^5 is hydrogen, C_{1-6} alkyl perhalo-C_{1-6} alkyl, C_{1-6} alkoxy, aryl, and aryl substituted with one or more C_{1-6} alkyl, perhalo-C_{1-6} alkyl, hydroxy-C_{1-6} alkyl, or C_{1-6} alkoxy-C_{1-6} alkyl groups;

n is an integer of 1 or 2; and pharmaceutically or veterinarially acceptable salts thereof wherein said compound exhibits topoisomerase 1 inhibitory activity.

5,614,530

SUBSTITUTED N-ARYLMETHYL AND HETEROCYCLMETHYL-1H-PYRAZOLO[3,4-B]QUINOLIN-4-AMINES AND COMPOSITIONS AND METHODS OF USE THEREOF

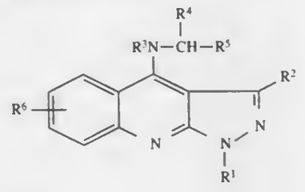
Virendra Kumar, Paoli, Pa., and John A. Dority, Jr., West Haven, Conn., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Mar. 10, 1995, Ser. No. 402,267

Int. Cl.[6] A61K *31/47;* **C07D** *215/46;471/04*

U.S. Cl. 514—293 **14 Claims**

1. A compound of the formula:



wherein:

R^1 is lower-alkyl;

R^2 is hydrogen, or lower-alkyl;

R^3 is hydrogen, or lower-alkyl;

R^4 is hydrogen, or lower-alkyl;

R^5 is phenyl (or phenyl substituted by from one to three, the same or different, substituents selected from the group consisting of cyano, hydroxy, 4-morpholinyllower-alkoxy, lower-alkyl, and halogen), pyridinyl, furanyl, isoxazolyl, thienyl, oxazolyl or thiazolyl; and

R^6 is from one to three, the same or different, substituents selected from the group consisting of hydrogen, lower-alkoxy, hydroxy, lower-alkyl, and halogen; or a pharmaceutically acceptable acid-addition salt and/or hydrate thereof, or, where applicable, an enantiomer or a racemic mixture thereof; with the proviso that when R^1 and R^2 are both methyl, and R^3, R^4, and R^6 are hydrogen, R^5 is other than 3-pyridinyl, phenyl, or phenylmethyl.

5,614,531

ADHESION RECEPTOR ANTAGONISTS

Horst Juraszyk, Seeheim; Joachim Gante; Hanns Wurziger, both of Darmstadt; Sabine Bernotat-Danielowski, Bad Nauheim, and Guido Melzer, Hofheim/Ts., all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Germany

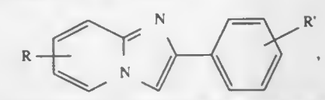
Filed Feb. 17, 1995, Ser. No. 390,669

Claims priority, application Germany, Feb. 19, 1994, 44 05 378.9

Int. Cl.[6] A61K *31/44;* **C07D** *471/04*

U.S. Cl. 514—300 **8 Claims**

1. A compound of the formula I



I

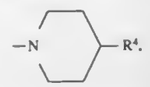
or a corresponding 5,6,7,8-tetrahydroimidazopyridine compound, in which

R is Q,

R' is COX,

Q is NH, C(=NH)—NH_2, CH_2—NH_2 or CH_2NHCO—alk—NH_2,

X is OH, AA, AA—AA' or



AA or AA' are each, independently of one another, an amino acid residue selected from the group consisting of β-Ala, Asp or Gly,

A is alkyl with 1 to 6 C atoms, and

—alk— is alkylene with 1 to 6 C atoms

where any free amino or carboxyl groups can also be provided with protective groups known per se, and the physiologically acceptable salts and/or solvates thereof.

5,614,532

QUINOLONE DERIVATIVES

William R. Carling, Bishops Stortford; Paul D. Leeson, Cambridge; Michael Rowley, Harlow, and Kevin W. Moore, Buntingford, all of Great Britain, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB92/02183, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO93/11115, PCT Pub. Date Jun. 10, 1993

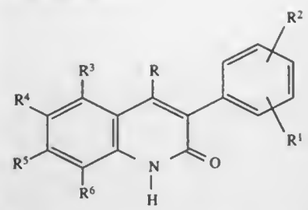
PCT Filed Nov. 25, 1992, Ser. No. 244,342

Claims priority, application United Kingdom, Nov. 29, 1991, 9125515

Int. Cl.[6] A61K *31/47;* **C07D** *215/227*

U.S. Cl. 514—312 **7 Claims**

1. A method for the treatment and/or prevention of conditions which require the administration of a selective non-competitive antagonist of NMDA receptors, which comprises administering to a patient in need of such treatment an effective amount of a compound of formula 1 or a pharmaceutically acceptable salt thereof or a prodrug thereof:



(I)

wherein

R represents a hydrogen atom, an amino group, a carboxy or C_{2-6} alkoxycarbonyl group, or a group of formula -A-B-E, in which

A represents a chemical bond, an oxygen or sulphur atom, or an —NH— group;

B represents a carbonyl (C=O) or sulphonyl (SO_2) group, or a straight or branched alkylene chain containing from 1 to 6 carbon atoms: and

E represents C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, cyano, phenyl, tetrazolyl, methyloxadiazolyl, —NR^aR^b, —COR^a, —$C(=N.OR^a)R^b$, —CO_2R^a, —$CONR^aR^b$, —$CONR^a.OR^b$ or —$CH_2CO_2R^a$;

R^1 and R^2 independently represent hydrogen, hydrocarbon selected from the group consisting of: C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7} cycloalkyl, C_{3-7}cycloalkyl(C_{1-6})alkyl, aryl being phenyl or naphthyl, aryl(C_{1-6})alkyl, aryl(C_{2-6})alkenyl and aryl(C_{2-6})alkynyl; halogen, cyano, trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CONR^aR^b$;

one of R^3, R^4, R^5 and R^6 represents hydrocarbon, as defined above, halogen, cyano, trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CONR^aR^b$, and the other three of R^3, R^4, R^5 and R^6 independently represent hydrogen, hydrocarbon, as defined above, halogen, cyano, trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CONR^aR^b$; and

R^a and R^b independently represent hydrogen, hydrocarbon, as defined above.

5,614,533

SUBSTITUTED PIPECOLINIC ACID DERIVATIVES AS HIV PROTEASE INHIBITORS

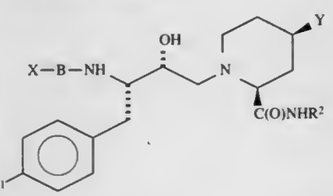
Paul C. Anderson, Pierrefonds; François Soucy, Lachenaie; Christiane Yoakim, Laval; Pierre Lavallée, Rosemère, and Pierre L. Beaulieu, Montréal, all of Canada, assignors to Bio-Mega/Boehringer Ingelheim Research, Inc., Laval, Canada

Continuation of Ser. No. 25,703, Mar. 3, 1987, Pat. No. 4,764,598, which is a continuation-in-part of Ser. No. 850,716, Mar. 13, 1992, abandoned. This application Nov. 9, 1994, Ser. No. 336,637

Int. Cl.[6] C07D *401/14;413/14;* **A61K** *31/47;31/535;31/505*

U.S. Cl. 514—314 **9 Claims**

1. A compound of formula 1



I

wherein

X is $R^3OC(O)$, $R^3C(O)$ or $R^3NR^4C(O)$ wherein R^3 is 2-quinolinyl or 3-quinolinyl, and

R^4 is hydrogen or lower alkyl;

B is absent or the divalent radical —$NHCHR^5C(O)$— wherein R^5 is lower alkyl; lower cycloalkyl; (lower cycloalkyl)-(lower alkyl); phenylmethyl; or lower alkyl monosubstituted with hydroxy, carboxy, lower alkoxycarbonyl, aminocarbonyl, (lower alkyl)aminocarbonyl or di(lower alkyl)aminocarbonyl;

R^1 is hydrogen, halo, hydroxy, lower alkyl or lower alkoxy;

R^2 is lower alkyl; and

Y is lower alkyl; lower cycloalkyl; phenyl or phenyl monosubstituted with halo, hydroxy, lower alkyl or lower alkoxy; phenylmethyl or phenylmethyl monosubstituted with halo, hydroxy, lower alkyl or lower alkoxy; or

Y is $W(CH_2)_nZ$ wherein W is oxo, thio, sulfinyl or sulfonyl, Z is lower alkyl; phenyl or phenyl monosubstituted with halo, hydroxy, lower alkyl or lower alkoxy; or (Het); and n is zero or one;

wherein the term "lower alkyl" as used herein, either alone or in combination with another radical, means a straight chain alkyl radical containing one to six carbon atoms or a branched chain alkyl radical containing three to four carbon atoms;

wherein the term "lower cycloalkyl" as used herein, either alone or in combination with another radical, means a saturated cyclic hydrocarbon radical containing from three to six carbon atoms;

wherein the term "lower alkoxy" as used herein means a straight chain alkoxy radical containing one to six carbon atoms or a branched chain alkoxy radical containing three to four carbon atoms;

wherein the term "halo" as used herein means a halo radical selected from bromo, chloro, fluoro and iodo; and,

wherein (Het) as used herein means a monovalent radical derived by removal of a hydrogen from a five or six membered saturated or unsaturated heterocycle selected from the group consisting of furan, thiophene, pyrrolidine, tetrahydrofuran, thiazolidine, pyrrole, 1H-imidazole, 1-methyl-1H-imidazole, isoxazole, thiazole, 2-methylthiazole, 2-aminothiazole, piperidine, 1,4-dioxane, morpholine, pyridine, 2-methylpyridine, pyrimidine, 4-methylpyrimidine, 2,4-dimethylpyrimidine, 2,6-dimethylpyrimidine and 4,6-dimethylpyrimidine;

or a therapeutically acceptable acid addition salt thereof.

5,614,534

DERIVATIVES OF β, β-DIMETHYL-4-PIPERIDINEETHANAMINE AS INHIBITORS OF THE CHOLESTEROL BIOSYNTHESIS

Jean Binet, Fontaine-les-Dijon; Soth Samreth, Longvic, and Daniel de Fornel, Dijon, all of France, assignors to Fournier Industrie et Sante, Paris, France

PCT No. PCT/FR94/00584, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/26713, PCT Pub. Date Nov. 24, 1994

PCT Filed May 17, 1994, Ser. No. 545,626

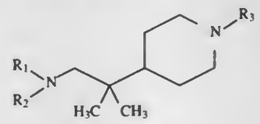
Claims priority, application France, May 17, 1993, 93 05915

Int. Cl.[6] C07D *211/26;211/34;* **A61K** *31/445*

U.S. Cl. 514—315 **10 Claims**

1. A β,β-dimethyl-4-piperidineethanamine compound, characterised in that it is selected from the group consisting of:

(i) compounds of the formula:



(I)

wherein

R_1 and R_2, which may be identical or different, each represent a hydrogen atom, a C_1–C_4 alkyl group, a C_2–C_5 acyl group or a phenylmethyl group, or form a piperidinyl group with the nitrogen atom to which they are bonded,

R_3 represents

a linear or branched C_1–C_{12} alkyl group which may be substituted by:

a) an imidazolyl group, or

b) a phenyl group which may itself be substituted by a linear or branched C_1–C_4 alkyl group,

a linear or branched C_3–C_{10} alkyl group containing one or more C=C or C≡C bonds, and which may be substituted by a phenyl group,

a linear or branched C_1–C_4 alkyloxy group, substituted by a para-chlorophenyl group,

a —CO—R_8 group, wherein R_8 represents a linear or branched C_8–C_{11} alkyl group which may be substituted by an imidazolyl group, a linear or branched C_1–C_4 alkyloxy group, substituted by a para-chlorophenyl group, or a linear or branched C_2–C_4 alkyl group containing at least one double bond and substituted by a phenyl group,

a linear or branched C_1–C_4 alkyl group substituted by one of the following groups:

a —$COOR_4$ group, wherein R_4 represents either a hydrogen atom or a linear or branched C_1–C_4 alkyl group,

a 1H-isoindole-1,3(2H)-dione group,

a NR_5R_6 group, wherein R_5 and R_6, which may be identical or different, each represent a hydrogen atom or a linear or branched C_1–C_4 alkyl group,

a —NH—CO—R_7 group or a —CO—NH—R_7 group wherein R_7 represents a linear or branched C_1–C_6 alkyl group, and

(ii) their addition salts, in particular their acid addition salts and ammonium salts.

5,614,535

ADHESION RECEPTOR ANTAGONISTS

Horst Juraszyk; Joachim Gante; Hanns Wurziger; Sabine Bernotat-Danielowski, and Guido Melzer, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

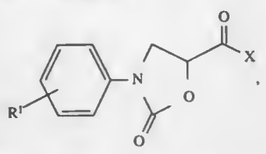
Filed Aug. 18, 1995, Ser. No. 516,937

Claims priority, application Germany, Aug. 19, 1994, 44 29 461.1

Int. Cl.[6] A61K *31/445;31/42;* **C07D** *263/24;413/12*

U.S. Cl. 514—326 **20 Claims**

1. An oxazolidinonecarboxylic acid compound of formula I

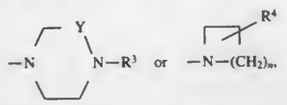


(I)

wherein

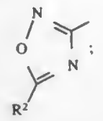
R^1 is NO_2, NR^6R^7, CN, $CONR^6R^7$, $CSNR^6R^7$, C(=NH)SA, C(=NH)OA, C(=NH)SAr, C(=NH)NHOH, $C(=NH)NR^6R^7$, $CH_2NR^6R^7$, $CH_2NHC(=NH)NR^6R^7$, $NHC(=NH)NR^6R^7$, $CH_2NHCO—alk—NR^6R^7$, $CH_2NHCO—Ph—E$, $CH_2NHCO—Ph—CH_2NR^6R^7$, $CH_2NHCONH—Ph—E$ or D;

X is OH, OA, AS, AS—AS',



wherein when X is AS or AS—AS', X is joined to the carbonyl group by an α-amino or β-amino group;

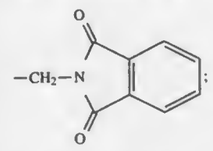
D is



E is —CN, —C(=NH)OA, —$CSNH_2$, —C(=NH)SA or —$C(=NH)NH_2$;

Y is CH_2, $CHOR^5$ or C=O;

R^2 is H, A, Ar, OH, OA, CF_3, CCl_3, NR^6R^7, —alk—NR^6R^7, —alk—$(CH_2Ar)NR^6R^7$ or



R^3 is —$(CH_2)_m$—$COOR^5$;

R^4 is —$(CH_2)_p$—$COOR^5$ or —$(CH_2)_q$—O—$(CH_2)_r$—$COOR^5$;

AS and AS' are in each case independently, an amino-acid residue selected from Ala, β-Ala, Arg, Asn, Asp, Gln, Glu, Gly, Leu, Lys, Orn, Phe, Pro, Sar, Ser, Thr, Tyr, Tyr (OMe), Val, C-allyl-Gly, C-propargyl-Gly, N-benzyl-Gly, N-phenethyl-Gly, N-benzyl-β-Ala, N-methyl-β-Ala and N-phenethyl-β-Ala, wherein free amino and carboxyl groups are optionally protected with protective groups;

R^5, R^6 and R^7 are each independently H or A;

m is 1, 2 or 3;

n is 1, 2, 3 or 4;

p is 0, 1 or 2;

q is 0 or 1;

r is 1 or 2;

A is alkyl of 1 to 6 carbon atoms;

—alk— is alkylene of 1 to 6 carbon atoms;

Ar is phenyl or benzyl; and

Ph is phenylene; or

a physiologically acceptable salt thereof.

5,614,536

SUBSTITUTED N-AMINOALKYLMETHANE SULFANILIDE AS ANTISPASMODICA

Carlos E. A. Monti, and Gustavo E. Aldomá, both of Buenos Aires, Argentina, assignors to Roemmers S.A.I.C.F., Argentina

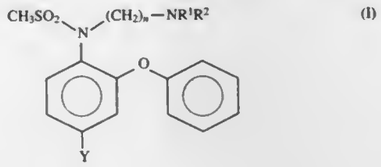
Filed Jan. 7, 1994, Ser. No. 178,512

Claims priority, application Germany, Jan. 13, 1993, 43 00 696.5

Int. Cl.[6] A61K *31/445;31/40;31/495;31/535*

U.S. Cl. 514—331 **4 Claims**

1. A method of treating an animal or patient in which alleviation of smooth muscle spasm is indicated, wherein an amount of the compound according to formula (I) effective to treat smooth muscle spasm is administered to an animal or patient in which such treatment is indicated,



(I)

wherein

Y represents hydrogen, cyano, nitro, amino, acetamide or halogen;

n is an integer between 2 and 4;

R^1 and R^2, which are equal or different are (C1-C4)-alkyl or are connected with each other and via the N-atom, thereby forming a 1-pyrrolidinyl, 1-piperidinyl, 1-piperazinyl, 4-methyl-1-piperazinyl, 4-ethylpiperazinyl, 4-propylpiperazinyl, 1-homopiperidinyl or 4-morpholine residue.

5,614,537

2,4-AND 2,5-BISTETRAZOLYLPYRIDINES, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF AS PHARMACEUTICALS

Gerrit Schubert, Kelkheim; Ekkehard Baader, Königstein; Martin Bickel, Bad Homburg, and Volkmar Günzler-Pukall, Marburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

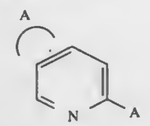
Division of Ser. No. 183,786, Jan. 21, 1994, Pat. No. 5,482,953, which is a continuation of Ser. No. 829,295, Feb. 3, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,326

Claims priority, application Germany, Feb. 5, 1991, 41 03 372.8

Int. Cl.[6] C07D *401/04;* **A61K** *31/44;31/41*

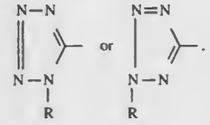
U.S. Cl. 514—340 **18 Claims**

1. A compound of the formula I



(I)

where A is independently



and where

R is H, $(C_1$–$C_6)$-alkyl, $(C_2$–$C_6)$-alkenyl, $(C_2$–$C_6)$-alkynyl, $(C_6$–$C_{10})$-aryl, Ar—$(C_2$–$C_6)$-alkyl, where one or more CH_2 groups are optionally replaced by hetero atoms selected from N, O, and S, cycloalkyl- or cycloalkenyl-$(C_0$–$C_6)$-alkyl, where 1–3 CH_2groups in the cycle are replaced by hetero atoms selected from O, S, and N or the group C=O, or a physiologically tolerated salt thereof.

5,614,538

SYNERGISTIC ANTIMICROBIAL COMPOSITION CONTAINING PYRITHIONE AND ALCOHOL

John D. Nelson, Jr., Bethlehem, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Dec. 5, 1994, Ser. No. 349,587

Int. Cl.[6] A01N *43/40*

U.S. Cl. 514—345 **4 Claims**

1. An antimicrobial composition characterized by synergistic antimicrobial activity against Gram-negative bacteria, said antimicrobial composition consisting essentially of at least 2 ppm of pyrithione acid or a pyrithione salt, or a combination thereof, and an aromatic alcohol selected from the group consisting of phenylethyl alcohol, benzyl alcohol, 2-phenoxyethanol, and combinations thereof, said aromatic alcohol being present in a weight ratio of between 1250:1 and 5:1 based upon the weight of said pyrithione acid or said pyrithione salt, or combination thereof in said composition.

5,614,539

UREA COMPOUNDS WHICH ARE USEFUL AS PLATELET AGGREGATION INHIBITORS

Steven P. Adams, Andover, Mass.; Foe S. Tjoeng, Manchester, Mo., and Mark E. Zupec, O'Fallon, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

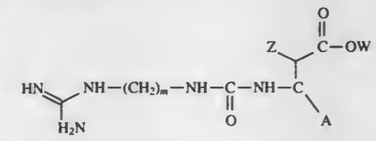
PCT No. PCT/US94/02157, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/21602, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 9, 1994, Ser. No. 446,812

Int. Cl.[6] C07D *213/55;* **C07C** *279/12;* **A61K** *31/44*

U.S. Cl. 514—357 **8 Claims**

1. A compound or a pharmaceutically acceptable salt thereof having the formula:

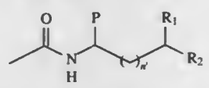


wherein A is the radical of the formula:

$(CH_2)_n$—R

wherein R is independently selected from the group consisting of hydrogen, C_1–C_{10}-alkyl radicals, C_2–C_{10}-alkenyl radicals, C_2–C_{10}-alkynyl radicals, alicyclic hydrocarbon radicals, aromatic hydrocarbon radicals and heterocyclyl radicals wherein 1 to 3 betero atoms are selected from nitrogen, oxygen or sulfur, wherein all of said radicals are optionally substituted with hydroxyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkyl, halogen, nitro, carboxyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl whereby C_1–C_{10}-alkoxy, C_1–C_{10}-alkyl, amino, acyloxy, phenyl and naphthyl are optionally substituted with halogen, nitro, C_1–C_{10}-alkoxy and C_1–C_{10}-alkyl;

n is an integer from 0 to 6; or A is the radical of the formula



wherein R_1 and R_2 are each independently selected from hydrogen, phenyl, substituted phenyl, wherein each substituent can be selected from the group consisting of C_1–C_{10}-alkyl radicals, halogen, C_1–C_{10}-alkoxy radicals, trifluoromethyl radical, carboxyl radical, hydroxyl radical and a 5- or 6-membered heterocyclic ring alone or fused to a benzene ring wherein the hetero atom is selected from nitrogen, oxygen and sulfur;

P is hydrogen, carboxyl or alkoxycarbonyl radicals;

n' is an integer from 0 to 2;

W is selected from the group consisting of hydrogen, C_1–C_{10}alkyl radicals, C_2–C_{10}-alkenyl radicals, C_2–C_{10}-alkynyl radicals, allcyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, C_1–C_{10}-atkyl, C_1–C_{10}-alkoxyl, halogen, nitro, amino, acyloxy, phenyl and naphthyl, whereby C_1–C_{10}-alkoxy, C_1–C_{10}-alkyl, amino, acyloxy, phenyl and naphthyl may be optionally substituted with halogen, nitro, C_1–C_{10}-alkoxy, and C_1–C_{10}-alkyl;

Z is independently selected from the group consisting of hydrogen, C_1–C_{10}-alkyl radicals, halogen, alkoxy, cyano, sulfonyl, and hydroxy radicals; and

m is an integer from 5 to 9.

5,614,540

COMPOUNDS USEFUL FOR TREATING ALLERGIC AND INFLAMMATORY DISEASES

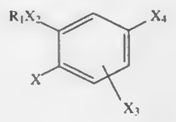
Siegfried B. Christensen, IV, Philadelphia, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 313,094, Sep. 29, 1994, Pat. No. 5,552,438, which is a continuation-in-part of Ser. No. 968,762, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,030, Apr. 2, 1992, abandoned. This application May 18, 1995, Ser. No. 457,942

Int. Cl.[6] **A61K** *31/275;* **C07C** *255/50*

U.S. Cl. 514—362 **4 Claims**

1. A compound of Formula (I):



(I)

wherein:

R_1 is $—(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $—(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, $—(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $—(CR_4R_5)_rR_6$ wherein the alkyl moieties may be optionally substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R_4 and R_5 are independently selected from hydrogen or a C_{1-2} alkyl;

R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC_{1-3} alkyl, halo substituted aryloxyC_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuranyl, furanyl, tetrahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl and heterocyclic moieties may be optionally substituted by 1 to 3 methyl groups or one ethyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then m is 1 or 2; or

d) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then r is 1 to 6;

e) when n is 1 and m is 0, then R_6 is other than H in $—(CR_4R_5)_nO(CR_4R_5)_mR_6$;

X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;

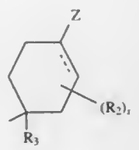
Y is O or $S(O)_{m'}$;

m' is 0, 1, or 2;

X_2 is O or NR_8;

X_3 is hydrogen or X;

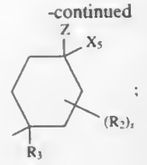
X_4 is



(a)

or

-continued



(b)

X_5 is H, R_9, OR_8, CN, $C(O)R_8$, $C(O)OR_8$, $C(O)NR_8R_8$, or NR_8R_8;

R_2 is independently selected from the group consisting of $—CH_3$ and $—CH_2CH_3$ optionally substituted by 1 or more halogens;

s is 0 to 4;

R_3 is $—C{\equiv}CR8'$;

Z is $C(Y')R_{14}$, $C(O)OR_{14}$, $C(Y')NR_{10}R_{14}$, $C(NR_{10})NR_{10}R_{14}$, CN, $C(NOR_8)R_{14}$, $C(O)NR_8NR_8C(O)R_8$, $C(O)NR_8NR_{10}R_{14}$, $C(NOR_{14})R_8$, $C(NR_8)NR_{10}R_{14}$, $C(NR_{14})NR_8R_8$ $C(NCN)NR_{10}R_{14}$, $C(NCN)SR_9$, (2-, 4- or 5-imidazolyl), (3-, 4- or 5-pyrazolyl), (4- or 5-triazolyl[1,2,3]), (3- or 5-triazolyl[1,2,4]), (5-tetrazolyl), (2-, 4- or 5-oxazolyl), (3-, 4- or 5-isoxazolyl), (3- or 5-oxadiazolyl[1,2,4]), (2-oxadiazolyl[1,3,4]), (2-thiadiazolyl[1,3,4]), (2-, 4-, or 5-thiazolyl), (2-, 4-, or 5-oxazolidinyl), (2-, 4-, or 5-thiazolidinyl), or (2-, 4-, or 5-imidazolidinyl); wherein all of the heterocylic ring systems may be optionally substituted one or more times by R_{14};

the dotted line in formula (a) represents a single or double bond;

Y' is O or S;

R_7 is $—(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—C(O)OR_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—NR_{10}C(O)R_{13}$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}R_{11}$, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)_{m'}R_9$, $—NR_{10}C(O)C(O)NR_{10}R_{11}$, $—NR_{10}C(O)C(O)R_{10}$, thiazolyl, imidazolyl, oxazolyl, pyrazolyl, triazolyl, or tetrazolyl;

q is 0, 1, or 2;

R_{12} is C_3–C_7-cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), thiazolyl, triazolyl, pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), (4- or 5-thiazolyl), quinolinyl, naphthyl, or phenyl;

R_8 is independently selected from hydrogen or R_9;

$R_{8'}$ is R_8 or fluorine;

R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;

R_{10} is OR_8 or R_{11};

R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O, N, or S;

R_{13} is oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, or thiadiazolyl, and each of these heterocyclic rings is connected through a carbon atom and each may be unsubstituted or substituted by one or two C_{1-2} alkyl groups;

R_{14} is hydrogen or R_7;

provided that:

f) when R_{12} is N-pyrazolyl, N-imidazolyl, N-triazolyl, N-pyrrolyl, N-piperazinyl, N-piperidinyl, or N-morpholinyl, then q is not 1;

or the pharmaceutically acceptable salts thereof.

5,614,541

PHARMACOLOGICALLY ACTIVE CATECHOL DERIVATIVES

Reijo Bäckström, Helsinki; Erkki Honkanen, Espoo; Inge-Britt Linden, Helsinki; Erkki Nissinen, Espoo; Aino Pippuri, Espoo; Pentti Pohto, Espoo, and Tapio Korkolainen, Helsinki, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

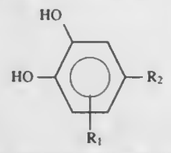
Division of Ser. No. 949,477, Oct. 23, 1992, Pat. No. 5,362,733. This application Oct. 18, 1994, Ser. No. 325,024

Claims priority, application United Kingdom, Apr. 27, 1990, 9009565; Jan. 24, 1991, 9101563

Int. Cl.[6] **C07D** *277/34;277/36;263/36;* **A61K** *31/425*

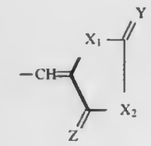
U.S. Cl. 514—369 **15 Claims**

1. A compound according to formula I



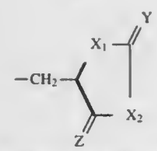
I

wherein R_1 is nitro, halogeno or cyano group and R_2 is a group selected from



Ia

and



Ib

wherein X_2 is NR, in which R is hydrogen or C_{1-8} alkyl and

a) X_1 is S, Y is S and Z is O,

b) X_1 is S, Y is O and Z is S, or

c) X_1 and Z are independently oxygen or sulfur and Y is NR and R is hydrogen, or a pharmaceutically acceptable salt or ester thereof.

5,614,542

THIAZOLIDINE DERIVATIVES HAVING ANTI-HYPERTENSIVE ACTIVITY AND THEIR THERAPEUTIC USE

Hiroyoshi Horikoshi; Toshihiko Fujiwara; Shinji Yoshioka; Hiroshi Nishino; Hiroyuki Koike, and Takao Yoshioka, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 206,027, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 24,826, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 890,283, May 26, 1992, abandoned, which is a continuation of Ser. No. 642,415, Jan. 17, 1991, abandoned. This application May 31, 1995, Ser. No. 456,287

Claims priority, application Japan, Jan. 22, 1990, 2-012321

Int. Cl.[6] **A61K** *31/425*

U.S. Cl. 514—369 **2 Claims**

1. A method for the treatment of obesity-related hypertension in a mammal, which comprises administration to said mammal an effective amount of an antihypertensive agent wherein said antihypertensive agent is selected from the group consisting of 5-[4-(6-hydroxy-2,5,7,8-tetramethylchroman-2-yl-methoxy)benzyl]thiazolidine-2,4-dione and pharmaceutically acceptable salts thereof.

5,614,543

1-(ARYLOXYALKYL)-3- (HETEROARYL) PYRROLIDINES AND RELATED COMPOUNDS USEFUL AS ANTIPSYCHOTICS AND ANALGESICS

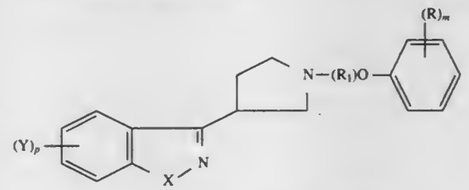
Joseph T. Strupczewski, Flemington, N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Edward J. Glamkowski, Warren, N.J.; Yulin Chiang, Covent Station, N.J., and Grover C. Heisley, Stockton, N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,000

Int. Cl.[6] **A61K** *31/495;31/55;31/505;31/44;* **C07D** *401/00;403/00;417/00;419/00;221/04;275/04;239/02*

U.S. Cl. 514—373 **14 Claims**

1. A compound of the formula:



wherein, X is —O—, —S—, —NH—, or $—N(R_2)—$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ where n is 0, 1, 2, or 3; or

$—CHR_{24}—CH{=}CH—CHR_{24}—$,

$—CHR_{24}—C{\equiv}C—CHR_{24}—$,

$—CHR_{24}—CH{=}CH—CR_{23}R_{24}—CHR_{24}—$,

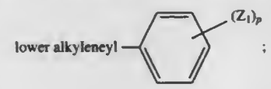
$—CHR_{24}—CR_{23}R_{24}—CH{=}CH—CHR_{24}—$,

$—CHR_{24}—C{\equiv}C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C{\equiv}C—CHR_{24}—$.

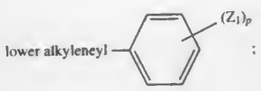
the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono- or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,

—C(=O)-alkyl,

—C(=O)—O-alkyl,

—C(=O)-aryl,

—C(=O)-heteroaryl,

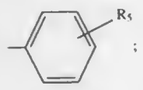
—CH(OR$_7$)-alkyl,

—C(=W)-aryl, or

—C(=W)-heteroaryl;

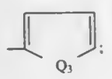
alkyl is (C_1–C_{18})alkyl;

aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is



Q_3 is —O—, —S—, —NH—, or —CH=N—;

W is CH_2 or CHR_8 or N—R_9;

R_7 is hydrogen, alkyl, or alkanoyl;

R_8 is lower alkyl;

R_9 is hydroxy, alkoxy, or —NHR$_{10}$;

R_{10} is hydrogen, lower alkyl, (C_1–C_{18})acyl, aryl. —C(=O)-aryl, or —C(=O)-heteroaryl, where aryl and heteroaryl are as defined above;

m is 1, 2, or 3; and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18}) carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18}) alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof;

or a pharmaceutically acceptable acid addition salt thereof.

5,614,544

OXAZOLIDINEDIONE DERIVATIVES AND THEIR USE

Takashi Sohda, Takatsuki; Hitoshi Ikeda, Higashiosaka, and Yu Momose, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

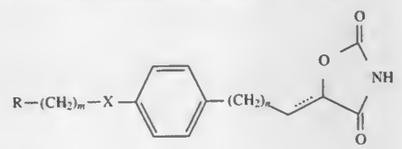
Filed Sep. 8, 1994, Ser. No. 303,209

Claims priority, application Japan, Sep. 14, 1993, 5-227679; Jul. 29, 1994, 6-178683

Int. Cl.^{6} A61K *31/42*

U.S. Cl. 514—376 **10 Claims**

1. A 2,4-oxaozolidinedione compound of the formula



wherein

X represents —CH_2—, or —CH=CH—,

R is 2-oxazolyl, 4-oxazolyl or 5-oxazolyl each of which may have 1 or 2 substituents at any possible position on the ring thereof, selected from the group consisting of

(1) aliphatic chain hydrocarbon selected from the group consisting of alkyl groups having 1 to 10 carbon atoms, alkenyl groups having 2 to 10 carbon atoms and alkynyl groups having up to 6 carbon atoms;

(2) alicyclic hydrocarbon selected from the group consisting of cycloalkyl having up to 10 carbon atoms, cycloalkenyl having up to 6 carbon atoms and cycloalkadienyl having up to 6 carbon atoms;

(3) aryl selected from the group consisting of phenyl, naphthyl, anthryl, phenanthryl and acenaphthylenyl;

(4) aromatic heterocyclic selected from the group consisting of furyl, thienyl, pyrrolyl,-oxazolyl, isoxazolyl, imidazolyl, pyrazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, tetrazolyl, pyradinyl, benzofuranyl, isobenzofuranyl, benzo [b]thienyl, indolyl, isoindolyl, 1H-indazolyl, benzimidazolyl, benzoxazolyl, 1,2-benzisoxazolyl, 1H-benzotriazolyl, carbazolyl, phenoxthinyl and thianthrenyl;

(5) non-aromatic heterocyclic selected from the group consisting of oxiianyl, azetidinyl, oxetanyl, thietanyl. pyrrolidinyl, tetrahydrofuryl, thiolanyl and tetrahydropyranyl;

(6) halogen;

(7) nitro;

(8) hydroxyl;

(9) alkoxy having 1 to 10 carbon atoms;

(10) alkenyloxy having 2 to 10 carbon atoms;

(11) phenyl-C_{1-4} alkyloxy;

(12) alkanoyloxy having 2 to 4 carbon atoms;

(13) aryloxy selected from the group consisting of phenoxy and 4-chlorophenoxy;

(14) thiol;

(15) alkylthio having 1 to 10 carbon atoms;

(16) phenyl-C_{1-4}, alkylthio;

(17) alkanoylthio having 2 to 4 carbon atoms;

(18) amino which may have 1 to 2 substituents selected from the group consisting of alkyl having 1 to 10 carbon atoms, alkenyl having 2 to 10 carbon atoms, phenyl and carboxylic acyl having 2 to 10 carbon atoms;

(19) acyl selected from the group consisting of formyl, C_{1-10} alkylcarbonyl, C_{2-10} alkenyl-carbonyl and aromatic-carbonyl selected from the group consisting of benzoyl and nicotinoyl,

(20) carboxyl; and

(21) esterified carboxyl selected from the group consisting of alkoxycarbonyl having 2 to 5 carbon atoms, benzyloxycarbonyl and aryloxycarbonyl selected from the group consisting of phenoxycarbonyl and p-tolyloxycarbonyl;

each of the above substituents (2), (3) and (4) may be substituted by 1 to 3 substituents selected from the group consisting of

1) lower alkyl;

2) lower alkenyl;

3) lower alkynyl;

4) cycloalkyl having up to 10 carbon atoms;

5) aryl selected from the group consisting of phenyl, naphthyl, anthryl, phenanthryl and acenaphthylenyl;

6) aromatic heterocyclic selected from the group consisting of furyl, thienyl, pyrrolyl,-oxazolyl, isoxazolyl, imidazolyl, pyrazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, tetrazolyl, pyradinyl, benzofuranyl, isobenzofuranyl, benzo-[b]thienyl, indolyl, isoindolyl, 1H-indazolyl, benzimidazolyl, benzoxazolyl, 1,2-benzisoxazolyl, 1H-benzotriazolyl, carbazolyl, phenoxthinyl and thianthrenyl;

7) non-aromatic heterocyclic selected from the group consisting of oxilanyl, azetidinyl, oxetanyl, thietanyl, pyrrolidinyl, tetrahydrofuryl, thiolanyl and tetrahydropyranyl;

8) phenyl- C_{1-4} alkyl;

9) amino which may have 1 to 2 substituents selected from the group consisting of alkyl having 1 to 10 carbon atoms, alkenyl having 2 to 10 carbon atoms, phenyl and carboxylic acyl having 2 to 10 carbon atoms;

10) amidino;

11) acyl selected from the group consisting of formyl, C_{1-10} alkylcarbonyl, C_{2-10} alkenyl-carbonyl and aromatic-carbonyl selected from the group consisting of benzoyl and nicotinoyl;

12) carbamoyl which may have 1 to 2 substituents selected from the group consisting of alkyl having 1 to 10 carbon atoms, alkenyl having 2 to 10 carbon atoms, phenyl and carboxylic acyl having 2 to 10 carbon atoms,

13) sulfamoyl which may have 1 to 2 substituents selected from the group consisting of alkyl having 1 to 10 carbon atoms, alkenyl having 2 to 10 carbon atoms, phenyl and carboxylic acid having 2 to 10 carbon atoms;

14) carboxyl;

15) alkoxycarbonyl having 2 to 5 carbon atoms;

16) hydroxyl;

17) alkoxy having 1 to 10 carbon atoms;

18) alkenyloxy having 2 to 10 carbon atoms;

19) cycloalkyloxy selected from the group consisting of cyclobutoxy, cyclopentyloxy and cyclohexyloxy;

20) phenyl-C_{1-4} alkyloxy;

21) aryloxy selected from the group consisting of phenoxy and 4chlorophenoxy;

22) mercapto;

23) alkylthio having 1 to 10 carbon atoms;

24) phenyl-C_{1-4} alkylthio;

25) arylthio;

26) sulfo;

27) cyano;

28) azide;

29) nitro;

30) nitroso; and

31) halogen;

n represents an integer of from 1 to 5,

m represents an integer of from 1 to 3, and

..... represents a single bond or a double bond,

or a pharmaceutically acceptable salt thereof.

5,614,545

TOPICAL COMPOSITION FOR TREATMENT OF BLEPHARITIS

Neil F. Martin, Potomac, and Howard N. Robinson, Lutherville, both of Md., assignors to Leonard Bloom, Towson, and Marvin S. Towsend, Rockville, both of Md.

Continuation of Ser. No. 969,194, Feb. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 568,461, Aug. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 204,547, Jun. 9, 1988, Pat. No. 4,957,918. This application Jun. 7, 1995, Ser. No. 477,089

The portion of the term of this patent subsequent to Sep. 18, 2010, has been disclaimed.

Int. Cl.^{6} A61K *31/415;31/535*

U.S. Cl. 514—398 **27 Claims**

1. An ophthalmic pharmaceutical composition suitable for direct instillation into the eye and comprising:

a nitroimidazole compound present in an amount in the range of 0.1–2% by weight of the composition and effective to treat blepharitis and blepharoconjunctivitis in an animal or human patient; and

an ophthalmic carrier for said nitroimidazole compound, said carrier being suitable for topical application to ocular tissues.

5,614,546

ANTIPARASITIC AGENTS

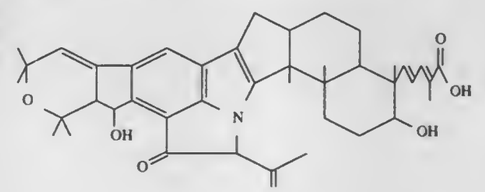
Anne W. Dombrowski, East Brunswick; Richard G. Endris, Martinsville; Gregory L. Helms, Fanwood; Otto D. Hensens, Red Bank; John G. Ondeyka, Fanwood; Dan A. Ostlind, Watchung; Jon D. Polishook, Scotch Plains, and Deborah L. Zink, Manalapan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

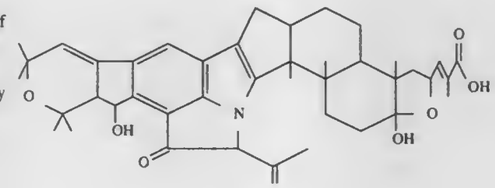
Division of Ser. No. 146,638, Nov. 1, 1993, Pat. No. 5,399,582. This application Dec. 20, 1994, Ser. No. 359,666

Int. Cl.^{6} C07D *491/12;491/22;* **A01N** *43/90;* **C12P** *17/18*

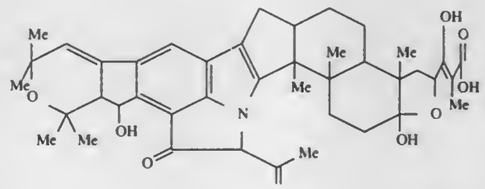
U.S. Cl. 514—410 **4 Claims**

1. A process for the preparation of a compound having the formula:





or



which comprises fermenting in a medium of carbon sources, nitrogen sources and sources of trace element, a producing strain of Nodulisporium sp. MF-5954, ATCC 74245, and isolating the compounds.

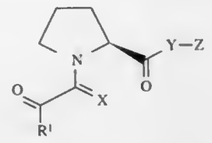
5,614,547

SMALL MOLECULE INHIBITORS OF ROTAMASE ENZYME

Gregory S. Hamilton, Catonsville, and Joseph P. Steiner, Hampstead, both of Md., assignors to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Jun. 7, 1995, Ser. No. 479,436
Int. Cl.[6] C07D *207/16;* **A61K** *31/40*
U.S. Cl. 514—423 **17 Claims**

1. A non-immunosuppressive neurotrophic compound of the formula:



where

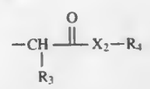
R_1 is a C_1–C_9 straight or branched chain alkyl or alkenyl group optionally substituted with C_3–C_8 cycloalkyl, C_3 or C_5 cycloalkyl, C_5–C_7 cycloalkenyl, or Ar_1, where said alkyl, alkenyl, cycloalkyl or cycloalkenyl groups may be optionally substituted with C_1–C_4 alkyl, C_1–C_4 alkenyl, or hydroxy, and where Ar_1 is selected from the group consisting of 1-napthyl, 2-napthyl, 2-indolyl, 3indolyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-, 3-, or 4-pyridyl, or phenyl, having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, trifluoromethyl, C_1–C_6 straight or branched alkyl or alkenyl, C_1–C_4 alkoxy or C_1–C_4 alkenyloxy, phenoxy, benzyloxy, and amino;

X is selected from the group consisting of oxygen and sulfur;

Y is oxygen or NR_2, where R_2 is hydrogen or C_1–C_6 alkyl; and

Z is a C_2–C_6 straight or branched chain alkyl or alkenyl, wherein the alkyl chain is substituted in one or more positions with Ar_1 as defined above, C_3–C_8 cycloalkyl, cycloalkyl connected by a C_1–C_6 straight or unbranched alkyl or alkenyl chain, or Ar_2 where Ar_2 is selected from the group consisting of 2-indolyl, 3-indolyl, 2-furyl, 3-furyl, 2-thiazolyl, 2-thienyl, 3-thienyl, 2-, 3-, or 4-pyridyl, or phenyl, having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, trifluoromethyl, C_1–C_6 straight or branched alkyl or alkenyl, C_1–C_4 alkoxy or C_1–C_4 alkenyloxy, phenoxy, benzyloxy, and amino;

Z may also be the fragment:



where

R_3 is selected from the group consisting of straight or branched alkyl C_1–C_8 optionally substituted with C_3–C_8 cycloalkyl, or Ar_1 as defined above;

X_2 is O or NR_5, where R_5 is selected from the group consisting of hydrogen, C_1–C_6 straight or branched alkyl and alkenyl;

R_4 is selected from the group consisting of phenyl, benzyl, C_1–C_5 straight or branched alkyl or alkenyl, and C_1–C_5 straight or branched alkyl or alkenyl substituted with phenyl; or pharmaceutically acceptable salts or hydrates thereof.

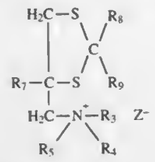
5,614,548

QUATERNARY AMINE CONTAINING ETHER OR ESTER LIPID DERIVATIVES AND THERAPEUTIC COMPOSITIONS

Claude Piantadosi; Khalid S. Ishaq; Canio J. Marasco, Jr., all of Chapel Hill; Larry W. Daniel, Winston-Salem; Louis S. Kucera, Pfafftown; Edward J. Modest, Winston-Salem, and Barry P. Goz, Chapel-Hill, all of N.C., assignors to Wake Forest University, Winston-Salem, N.C.

Continuation of Ser. No. 36,541, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 379,003, Jul. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 262,458, Oct. 25, 1988, abandoned. This application Sep. 8, 1994, Ser. No. 303,214
Int. Cl.[6] A61K *31/095;31/395;* **C07F** *9/38;* **C07D** *513/20;233/02*
U.S. Cl. 514—440 **40 Claims**

1. A compound of the formula:



wherein:

R_7 is hydrogen, phenyl, or linear or branched, saturated or unsaturated C1–C16 alkyl containing not more than four double bonds or one triple bond;

R_2 is hydrogen or saturated or unsaturated, linear or branched C1–C5 alkyl;

R_9 is saturated or unsaturated, linear or branched C1–C19 alkyl containing not more than four double bonds;

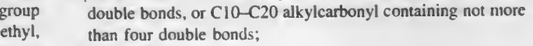
R_3 is linear or branched, saturated or unsaturated C1–C20 alkyl containing not more than four double bonds, is hydroxy substituted at the terminal carbon and is substituted with zero to three additional hydroxy groups;

R_4 is C1–C5 alkyl,

R_5 is C1–C5 alkyl; and

Z^- is a pharmaceutically acceptable anion.

9. A method of treating tumors in a subject in need of such treatment which comprises administering to the subject an effective amount of a compound of the formula:



wherein

R_1 is a linear C10-C20 alkyl containing not more than four double bonds, or C10–C20 alkylcarbonyl containing not more than four double bonds;

X is O or S;

R_2 is ethylene or n-propylene which is unsubstituted or is 2-substituted by hydroxyl, C1–C5 alkoxy, or C1–C5 alkylthio;

R_3 is linear or branched, saturated or unsaturated C1–C20 alkyl containing not more than four double bonds, and is unsubstituted or substituted from one to three times by hydroxy groups;

R_4 is C1–C5 alkyl;

or R_3 and R_4 are covalently joined and together with N^+ form a five or six membered monocyclic ring or with N^+ form a monocyclic ring which contains one further hetero atom selected from oxygen, nitrogen or sulfur and is unsubstituted or substituted from one to three times by hydroxy or C1–C4 alkylhydroxy;

R_5 is C1–C5 alkyl, except that when either R_3 or R_4 is joined to N^+ with a double bond, then R_5 is absent; and

Z^- is a pharmaceutically acceptable anion.

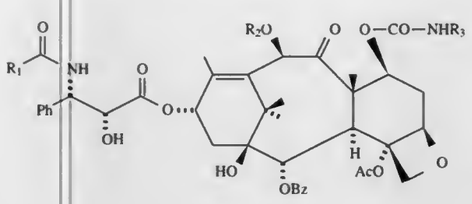
5,614,549

HIGH MOLECULAR WEIGHT POLYMER-BASED PRODRUGS

Richard B. Greenwald, Somerset, and Annapurna Pendri, Matawan, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 140,346, Oct. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 28,743, Mar. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 934,131, Aug. 21, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,873
Int. Cl.[6] A61K *31/335;* **C07D** *305/14*
U.S. Cl. 514—449 **10 Claims**

1. A composition of the formula:



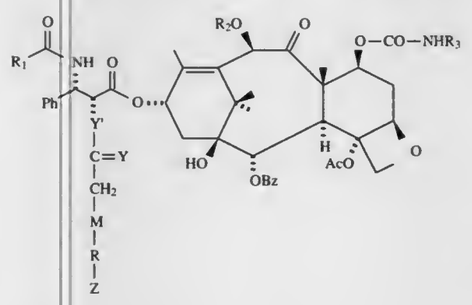
wherein:

R_1 is C_6H_5 or $(CH_3)_3CO$;

R_2 is H or CH_3CO; and

R_3 is aryl, aralkyl or heteroaryl.

3. A taxane-based composition, comprising the formula:



wherein:

R_1 is C_6H_5 $(CH_3)_3CO$;

R_2 is H or CH_3CO;

R_3 is aryl, aralkyl or heteroaryl;

M is X or Q;

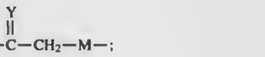
X is an electron withdrawing group;

Q is a moiety containing a free electron pair positioned five or six atoms from Y',

Y and Y' are independently O or S;

R is a polyalkylene oxide; and

Z is one of OH, a C_{1-4} alkyl moiety or



wherein

D is a biologically active nucleophile.

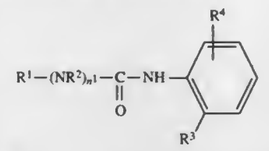
5,614,550

AMIDE AND UREA DERIVATIVES HAVING ANTI-HYPERCHOLESTEREMIC ACTIVITY, THEIR PREPARATION AND THEIR THERAPEUTIC USES

Akira Yoshida; Koza Oda; Sadao Ishihara; Fujio Saito; Hiroyuki Koike; Teiichiro Koga; Eiichi Kitazawa; Hiroshi Kogen, and Ichiro Hayakawa, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 267,124, Jun. 28, 1994, Pat. No. 5,534,529. This application Feb. 27, 1996, Ser. No. 607,821
Claims priority, application Japan, Jun. 30, 1993, 5-162572
Int. Cl.[6] A61K *31/335;31/17;31/24;* **C07D** *313/00;* **C07C** *235/00;237/00*
U.S. Cl. 514—450 **55 Claims**

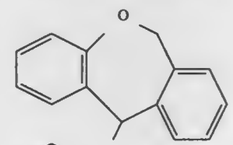
1. A compound of formula (I):



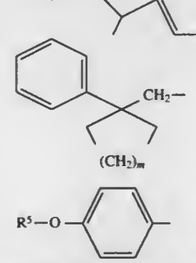
(I)

wherein:

R^1 represents an alkyl group having from 1 to 20 carbon atoms, or a group of formula (III), (IV) or (V):



(III)



(IV)

(V)

where R^5 represents an alkyl group having from 1 to 15 carbon atoms; m is an integer of from 1 to 4; and, any aromatic ring in said group represented by R^1 is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below;

R^2 represents a hydrogen atom or an alkyl group having from 1 to 10 carbon atoms;

R^3 represents

an alkyl group having from 1 to 10 carbon atoms,

an alkoxy group having from 1 to 10 carbon atoms,

an alkylthio group having from 1 to 10 carbon atoms,

an alkylsulfinyl group having from 1 to 10 carbon atoms,

an alkylsulfonyl group having from 1 to 10 carbon atoms,

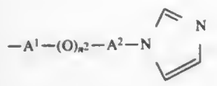
a phenylthio group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below,

a phenylsulfinyl group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below,

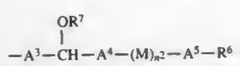
a phenylsulfonyl group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below, or

an alkoxyalkyl group in which the alkoxy part has from 1 to 6 carbon atoms and the alkyl part has from 1 to 4 carbon atoms;

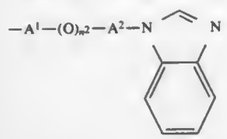
R^4 represents a group of formula (VI), (VII), (VIII), (IX), (X) or (XI):



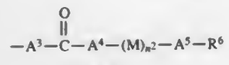
(VI)



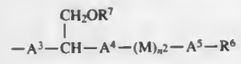
(VII)



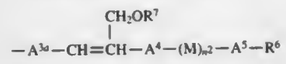
(VIII)



(IX)



(X)



(XI)

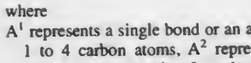
where

A^1 represents a single bond or an alkylene group having from 1 to 4 carbon atoms, A^2 represents a single bond or an alkylene group having from 1 to 6 carbon atoms, A^3, A^{3a}, A^4 and A^5 are independently selected from the group consisting of single bonds and alkylene groups having from 1 to 10 carbon atoms which may be saturated or may include a carbon-carbon double bond, provided that the total number of carbon atoms in A^3, A^4 and A^5 and that in A^{3a}, A^4 and A^5 does not exceed 10;

R^6 represents an alkyl group having from 1 to 6 carbon atoms, a cycloalkyl group having from 3 to 9 carbon atoms in one or more aliphatic carbocyclic rings, said rings being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents α, defined below, or an aryl group, as defined below; and

in the groups of formulae (VI) and (VIII), the imidazolyl and benzimidazolyl groups may be unsubstituted or may be substituted by at least one substituent selected from the group consisting of substituents β, defined below;

R^7 represents a hydrogen atom, a benzyl group, a phosphono group or a group of formula (XII):



(XII)

where:

z^1 is 0 or 1;

z^2 is 0, 1 or 2;

X is an oxygen or sulfur atom or a sulfinyl, sulfonyl or phenylene group, provided that, when z^2 is 2, at least one X is a phenylene group;

z^3 is 0 or an integer from 1 to 4; and

R^8 is a carboxy group, a phenyl group, a group of formula —NR^9R^{10},

where R^9 and R^{10} are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 4 carbon atoms,

or a heterocyclic group having 5 or 6 ring atoms of which 1 or 2 are hetero-atoms selected from the group consisting of oxygen and nitrogen atoms, said heterocyclic group being unsubstituted or being substituted on a carbon atom by an oxygen atom or by an alkyl group having from 1 to 4 carbon atoms; and

said groups of formula $(CH_2)_z1$ and $(CH_2)_z3$ being unsubstituted or being substituted on a carbon atom by an alkyl group having from 1 to 4 carbon atoms or by a group of formula —NR^9R^{10}, where R^9 and R^{10} are as defined above;

n^1 is 0 or 1;

n^2 is 0 or 1;

M represents an oxygen atom, a sulfur atom, a sulfinyl group or a sulfonyl group;

said substituents α are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms and halogen atoms; and

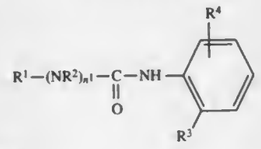
said substituents β are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms and phenyl groups which are unsubstituted or are substituted by at least one substituent selected from the group consisting of said substituents α;

said aryl groups are aromatic carbocyclic groups having from 6 to 10 ring carbon atoms and are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents α, defined above;

PROVIDED THAT, where R^4 represents said group of formula (VII), (IX), (X) or (XI), R^1 does not represent said alkyl group and that, where n^2 is 1, A^4 does not represent a single bond, and that, where n^1 is 0, R^3 is ethyl and R^4 is 2-acetyl, R^1 does not represent a methyl group;

or a pharmaceutically acceptable salt thereof.

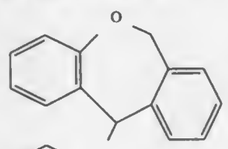
41. A method for the treatment and prophylaxis of hypercholesteremia or arteriosclerosis in a mammal, which may be human, which comprises administering to said mammal an effective amount of a compound of formula (I), as defined below, or a pharmaceutically acceptable salt thereof:



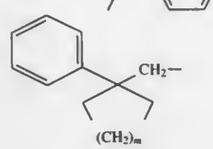
(I)

wherein:

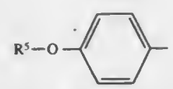
R^1 represents an alkyl group having from 1 to 20 carbon atoms, or a group of formula (III), (IV) or (V):



(III)



(IV)



(V)

where R^5 represents an alkyl group having from 1 to 15 carbon atoms; m is an integer of from 1 to 4; and, any aromatic ring in said group represented by R^1 is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below;

R^2 represents a hydrogen atom or an alkyl group having from 1 to 10 carbon atoms;

R^3 represents

an alkyl group having from 1 to 10 carbon atoms,

an alkoxy group having from 1 to 10 carbon atoms,

an alkylthio group having from 1 to 10 carbon atoms,

an alkylsulfinyl group having from 1 to 10 carbon atoms,

an alkylsulfonyl group having from 1 to 10 carbon atoms,

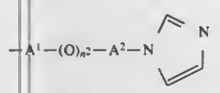
a phenylthio group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below,

a phenylsulfinyl group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below,

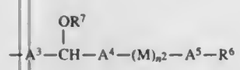
a phenylsulfonyl group in which the phenyl part is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α, defined below, or

an alkoxyalkyl group in which the alkoxy part has from 1 to 6 carbon atoms and the alkyl part has from 1 to 4 carbon atoms;

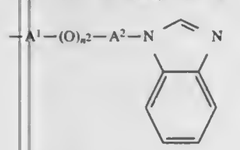
R^4 represents a group of formula (VI), (VII), (VIII), (IX), (X) or (XI):



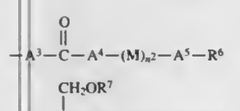
(VI)



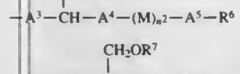
(VII)



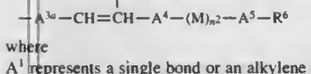
(VIII)



(IX)



(X)



(XI)

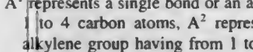
where

A^1 represents a single bond or an alkylene group having from 1 to 4 carbon atoms, A^2 represents a single bond or an alkylene group having from 1 to 6 carbon atoms, A^3, A^{3a}, A^4 and A^5 are independently selected from the group consisting of single bonds and alkylene groups having from 1 to 10 carbon atoms which may be saturated or may include a carbon-carbon double bond, provided that the total number of carbon atoms in A^3, A^4 and A^5 and that in A^{3a}, A^4 and A^5 does not exceed 10;

R^6 represents an alkyl group having from 1 to 6 carbon atoms, a cycloalkyl group having from 3 to 9 carbon atoms in one or more aliphatic carbocyclic rings, said rings being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents α, defined below, or an aryl group, as defined below; and

in the groups of formulae (VI) and (VIII), the imidazolyl and benzimidazolyl groups are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents β, defined below;

R^7 represents a hydrogen atom, a benzyl group, a phosphono group or a group of formula (XII):



(XII)

where:

z^1 is 0 or 1;

z^2 is 0, 1 or 2;

X is an oxygen or sulfur atom or a sulfinyl, sulfonyl or phenylene group, provided that, when z^2 is 2, at least one X is a phenylene group;

z^3 is 0 or an integer from 1 to 4; and

R^8 is a carboxy group, a phenyl group, a group of formula —NR^9R^{10},

where R^9 and R^{10} are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 4 carbon atoms,

or a heterocyclic group having 5 or 6 ring atoms of which 1 or 2 are hereto-atoms selected from the group consisting of oxygen and nitrogen atoms, said heterocyclic group being unsubstituted or being substituted on a carbon atom by an oxygen atom or by an alkyl group having from 1 to 4 carbon atoms; and

said groups of formula $(CH_2)_z1$ and $(CH_2)_z3$ being unsubstituted or being substituted on a carbon atom by an alkyl group having from 1 to 4 carbon atoms or by a group of formula —NR^9R^{10} where R^9 and R^{10} are as defined above;

n^1 is 0 or 1;

n^2 is 0 or 1;

M represents an oxygen atom, a sulfur atom, a sulfinyl group or a sulfonyl group;

said substituents α are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms and halogen atoms; and

said substituents β are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms and phenyl groups which are unsubstituted or are substituted by at least one substituent selected from the group consisting of said substituents α;

said aryl groups are aromatic carbocyclic groups having from 6 to 10 ring carbon atoms and are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents α, defined above;

PROVIDED THAT, where R^4 represents said group of formula (VII), (IX), (X) or (XI), R^1 does not represent said alkyl group and that, where n^2 is 1, A^4 does not represent a single bond, and that, where n^1 is 0, R^3 is ethyl and R^4 is 2-acetyl, R^1 does not represent a methyl group.

5,614,551

INHIBITORS OF FATTY ACID SYNTHESIS AS ANTIMICROBIAL AGENTS

James D. Dick, Baltimore, and Francis P. Kuhajda, Lutherville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jan. 24, 1994, Ser. No. 188,421

Int. Cl.[6] A01N *43/20;25/26;* **A61K** *31/335;9/127*

U.S. Cl. 514—454 **14 Claims**

I. A method of inhibiting growth of invasive microbial cells selected from the group consisting of *Mycobacterium tuberculosis*, multiply-drug resistant *M. tuberculosis* and *Toxoplasma sp.* in an animal, said cells being dependent on endogenously synthesized fatty acid, comprising administering an inhibitor of fatty acid synthesis to the microbial cells in an amount sufficient to inhibit growth of said cells, wherein said inhibitor is an inhibitor of the enzyme fatty acid synthase having IC_{50} for growth of said cells which is at least 1 log lower that IC_{50} for growth of normal human fibroblasts.

5,614,552

Patent Not Issued For This Number

5,614,553

COMPOSITION AND METHOD FOR ALLEVIATING STRESS IN WARM-BLOODED ANIMALS

H. DeWayne Ashmead, Fruit Heights; Harvey H. Ashmead, Kaysville, and Robert B. Jeppsen, Layton, all of Utah, assignors to Albion Laboratories, Inc., Clearfield, Utah

Continuation-in-part of Ser. No. 549,112, Jul. 6, 1990, Pat. No. 5,162,369. This application Feb. 21, 1992, Ser. No. 839,828

Int. Cl.[6] A61K *31/28*

U.S. Cl. 514—505 20 Claims

1. A method for alleviating stress in a warm-blooded animal which comprises the steps:

(a) providing a composition containing an effective amount of chromium in the form of an amino acid chelate having a ligand to mineral ratio of at least 1:1, a molecular weight of no more than 1500 and a stability constant of between about 10^6 and 10^{16} and

(b) administering said composition to said warm-blooded animal.

5,614,554

REVERSE TRANSCRIPTASE INHIBITORS AND ANTIVIRAL AGENTS

Keijiro Uchino, Atsugi; Takashi Mizuno; Sachie Murakami, both of Sagamihara; Hideki Nakashima, Yamanashi-ken; Naoki Yamamoto, and Hiroshi Ogawara, both of Tokyo, all of Japan, assignors to Nippon Flour Mills Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 159,581, Dec. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,158

Claims priority, application Japan, Dec. 1, 1992, 4-321883; Feb. 19, 1993, 5-030798; Oct. 13, 1993, 5-255635

Int. Cl.[6] A61K *31/255;31/185*

U.S. Cl. 514—517 4 Claims

1. A method for inhibiting reverse transcriptase activity of a retrovirus comprising contacting the retrovirus with an effective amount of sulfated L-tyrosine or its physiologically acceptable salt to inhibit the reverse transcriptase activity.

5,614,555

AMIDINOPHENOL DERIVATIVES

Hisao Nakai; Masanori Kawamura, both of Mishima, and Tsumoru Miyamoto, Shiga, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

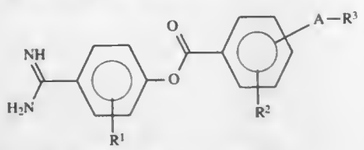
Division of Ser. No. 396,784, Mar. 1, 1995, which is a division of Ser. No. 121,499, Sep. 16, 1993, Pat. No. 5,432,178. This application Jun. 5, 1995, Ser. No. 464,206

Claims priority, application Japan, Sep. 18, 1992, 4-274992; Mar. 31, 1993, 5-96758

Int. Cl.[6] A61K *31/165;31/24;* C07C *229/36;271/18*

U.S. Cl. 514—540 9 Claims

1. A compound of the formula (I):



(I)

wherein R^1 and R^2 each, independently, is:

(i) hydrogen,

(ii) C1–4 alkyl,

(iii) C1–4 alkoxy,

(iv) C2–5 acyl,

(v) halogen,

(vi) nitro,

(vii) benzoyl or

(viii) $COOR^4$ (in which R^4 is C1–3 alkyl);

A is bond, C1–4 alkylene or



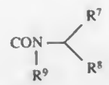
(in which R^5 and R^6 each independently, is hydrogen or C1–4 alkyl);

R^3 is



(i)

or



(ii)

(in which R^7 and R^8 each, independently, is

(1) hydrogen,

(2) phenyl,

(3) C7–10 phenylalkyl,

(4) phenyl or C7–10 phenylalkyl each of which is substituted by one or two substituents optionally selected from C1–4 alkyl, halogen and R^{11}—$COOR^{12}$

(in which R^{11} is

(a) bond,

(b) C1–8 alkylene,

(c) C2–8 alkenylene or

(d) C2–8 alkynylene, and

R^{12} is

(a) hydrogen,

(b) C1–4 alkyl,

(c) C7–10 phenylalkyl,

(d) phenyl,

(e) allyl or

(f) propargyl),

(5) C1–10 alkyl,

(6) C2–10 alkenyl having one to three double bonds,

(7) C2–10 alkynyl having one or two triple bonds,

(8) R^{11a}—$COXR^{12}$

(in which R^{11a} is

(a) bond,

(b) C1–8 alkylene,

(c) C2–8 alkylene in which one or two carbon atoms in the main chain are replaced by sulfur, or sulfur and phenylene,

(d) C2–8 alkenylene,

(e) C4–8 alkenylene In which one or two carbon atoms in the main chain are replaced by sulfur, or sulfur and phenylene,

(f) C2–8 alkynylene, or

(g) C4–8 alkynylene in which one or two carbon atoms in the main chain are replaced by sulfur, or sulfur and phenylene,

X is oxygen or —NH—, and R^{12} is the same meaning as hereinbefore defined),

(9) C1–4 alkyl which is substituted by a 7–14 membered, bi- or tri-cyclic hetero ring containing one nitrogen, or

(10) C3–7 cycloalkyl);

R^9 is

(1) hydrogen,

(2) C1–8 alkyl,

(3) C7–10 phenylalkyl,

(4) C2–10 alkenyl having one to three double bonds,

(5) C2–10 alkynyl having one or two triple bonds,

(6) R^{11}—$COOR^{12}$ (in which R^{11} and R^{12} are the same meaning as hereinbefore defined), or

(7) C3–7 cycloalkyl;

with the proviso that

(i) both R^7 and R^8 do not represent hydrogen at the same time, and

(ii) when at least one group in R^7, R^8 and R^9 represents the group containing t-butyl ester, the other groups do not represent the group containing corboxy;

or an acid-addition salt thereof.

5,614,556

L-CARNITINE SALT AND COSMETIC AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME FOR TREATING DERMATOSES

Claudio Cavazza, and Paolo Cavazza, both of Rome, Italy, assignors to Avantgarde S.p.A., Rome, Italy

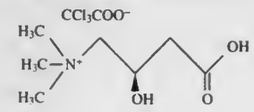
Filed Jun. 7, 1995, Ser. No. 473,211

Claims priority, application Italy, Sep. 8, 1994, RM94A0571

Int. Cl.[6] A61K *31/205;* C07C *229/00*

U.S. Cl. 514—556 17 Claims

1. L-carnitine trichloroacetate of formula (I)



(I)

5,614,557

METHOD OF CONTROLLING TUMOR GROWTH RATE

Philippe Bey, Strasbourg, and Michel Jung, Graffenstaden, both of France, assignors to Marion Merrell et Compagnie C/O Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 284,706, Aug. 2, 1994, abandoned, which is a continuation of Ser. No. 137,397, Oct. 14, 1993, abandoned, which is a continuation of Ser. No. 2,521, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 874,989, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 759,633, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 534,008, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 431,685, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 334,733, Apr. 6, 1989, abandoned, which is a continuation of Ser. No. 228,789, Aug. 4, 1988, abandoned, which is a continuation of Ser. No. 110,639, Oct. 15, 1987, abandoned, which is a continuation of Ser. No. 639,977, Aug. 10, 1984, abandoned, which is a division of Ser. No. 382,265, May 26, 1982, abandoned, which is a continuation of Ser. No. 262,834, May 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 204,749, Nov. 7, 1980, abandoned, which is a continuation of Ser. No. 28,757, Apr. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,765, Jul. 11, 1977, abandoned. This application Mar. 14, 1995, Ser. No. 403,531

Int. Cl.[6] A01N *37/44;* A61K *31/195*

U.S. Cl. 514—561 3 Claims

1. A method of controlling tumor growth susceptible to treatment with the combination below in a patient in need thereof comprising concomitantly administering to said patient an effective anti-tumor amount of methylglyoxal bis(guanylhydrazone) and an effective polyamine biosynthesis inhibitory amount of α-difluoromethyl ornithine or a pharmaceutically acceptable salt thereof.

5,614,558

INSECTICIDE AND INSECT REPELLANT COMPOSITIONS

Lynn S. James, 33 Main St., Newtown, Conn. 06470, and Michael A. Siedman, Sandy Hook, Conn., assignors to Lynn Sue James, Pottsboro, Tex.

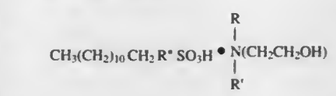
Continuation-in-part of Ser. No. 130,664, Oct. 1, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,962

Int. Cl.[6] A01N *37/02;37/06;37/18;65/00*

U.S. Cl. 514—574 15 Claims

1. A pesticide composition formulated for application to plants, trees, crops, and vegetation comprising

A. between about 0.05% and 0.6% by volume of the total composition of a conjugated ethanolamine based compound having the formula



where

R"=oxygen or benzene ring,

R'=H or CH_2CH_2OH, and

R=H, CH_2CH_2OH, or



where X represents the hydrocarbon residue of a fatty acid derived from an oil,

B. between about 0.05% and 0.7% by volume of the total composition of cocoamphocarboxyglycinate and

C. water forming the balance.

5,614,559

COMPOUND FOR INHIBITING HIV INFECTIVITY

Shyam K. Singh, Arlington; Raymond J. Patch, Framingham; Peter V. Pallai, Westwood; Edith A. Neidhardt, Boxford; Gerard P. Palace, Waltham; Kevin J. Willis, Newton; Theresa M. Sampo, Watertown, all of Mass.; Kevin W. McDonald, Merrimack, N.H., and Zhan Shi, Waltham, Mass., assignors to Procept Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 156,443, Nov. 23, 1993, abandoned. This application May 19, 1994, Ser. No. 245,619

Int. Cl.[6] A61K *31/185;* C07C *309/35;309/32*

U.S. Cl. 514—577 39 Claims

1. A method of inhibiting HIV infection in an individual comprising administering to the individual an effective amount of an antiviral composition comprising a condensation polymer of an aromatic sulfonic acid and an aldehyde or salt thereof in a physiologically acceptable carrier.

5,614,560

METHOD OF PREVENTING NMDA RECEPTOR-MEDIATED NEURONAL DAMAGE

Stuart A. Lipton, Newton, Mass., assignor to Children's Medical Center Corporation, Boston, Mass.

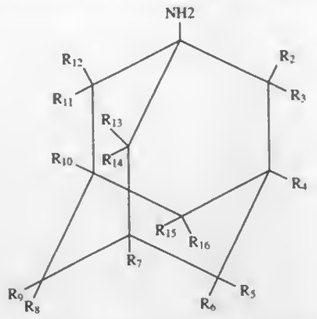
Continuation of Ser. No. 25,028, Mar. 2, 1993, Pat. No. 5,455,279, and a continuation-in-part of Ser. No. 407,973, Mar. 22, 1995, which is a continuation of Ser. No. 25,028, which is a continuation-in-part of Ser. No. 939,824, Sep. 3, 1992, Pat. No. 5,334,618, which is a continuation-in-part of Ser. No. 680,201, Apr. 4, 1991, abandoned. This application Apr. 11, 1995, Ser. No. 419,672

Int. Cl.[6] A61K *31/13*

U.S. Cl. 514—659 19 Claims

1. A method for reducing non-ischemic NMDA receptor-mediated neuronal degeneration in a mammal, comprising admin-

istering to said mammal a compound of the formula shown below:



wherein R_1 comprises an amino group; R_2–R_{17} are independently H or a short chain aliphatic group comprising 1–5 carbons; and R_4 and R_{10} may also (independently) be a halogen or an acyl group, or a physiologically acceptable salt thereof, in a concentration effective to cause such reduction.

5,614,561

ANTIHISTAMINE-WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

Alain Martin, Ringoes, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 53,922, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 446,985

The portion of the term of this patent subsequent to May 22, 2015, has been disclaimed.

Int. Cl.[6] A61K *31/07;31/045;31/355*

U.S. Cl. 514—724 **19 Claims**

1. A therapeutic antihistamine-wound healing composition which comprises a therapeutically effective amount of a topical antihistamine agent and a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the repair of cellular membranes resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,614,562

METHOD OF TREATING DRUG RESISTANT TUMOR CELLS USING ORGANOSELENONES

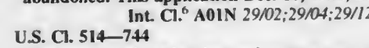
Colin P. Spears, Glendale, Calif., and Sang-Ihn Kang, Cranbury, N.J., assignors to The University of Sourthern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 675,614, Mar. 27, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,482

Int. Cl.[6] A01N *29/02;29/04;29/12*

U.S. Cl. 514—744 **18 Claims**

1. A method of treating drug resistant cancers comprising administering to a tumor-bearing animal an effective amount of a compound of formula:



wherein R_1 is selected from the group consisting of homoaromatic groups comprising single or multiple rings systems of 5 to 20 atoms, heteroaromatic groups comprising single or multiple ring systems of 5 to 20 atoms, alkenyl of 2 to 20 carbons, alkynyl of 2 to 20 carbon atoms, and aralkyl comprising an aryl component which is a homoaromatic group comprising a single or multiple ring systems of 5 to 20 atoms or a heteroaromatic group comprising a single or multiple ring systems of 5 to 20 atoms and an alkyl component comprising 1 to 20 carbon atoms, n is an integer equal to 2 to 6 and X is a leaving group selected from the group consisting of halides, sulfonates and selenones.

5,614,563

METHOD FOR THE PREPARATION OF SILICONE FOAM

Kouichi Ishida, and Tsugio Nozoe, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

Filed Jun. 27, 1996, Ser. No. 672,207

Claims priority, application Japan, Jun. 27, 1995, 7-183553

Int. Cl.[6] C08J *9/32*

U.S. Cl. 521—54 **3 Claims**

1. A method for preparing a silicone foam comprising the steps of:

I. transporting a base fluid and a curing agent fluid separately, in either or both which a gas-containing hollow filler is contained, into a mixing device equipped with a shear-stirring mechanism and a discharge nozzle;

II. mixing the base and the curing agent fluid together in the mixing device to produce an organosiloxane composition, and simultaneously rupturing the hollow filler using the shear-stirring mechanism to release the gas contained in the hollow filler;

III. extruding the organopolysiloxane through the discharge nozzle; and

IV. allowing the base/curing agent mixture to foam and cure.

5,614,564

DEGRADABLE FOAM AND THE METHOD FOR ITS PRODUCTION

Jin-Taek Hwang; Seung-Ho Jeon; Won-Bum Jung, and Sung-Ju Seo, all of Taejon, Rep. of Korea, assignors to Samsung General Chemicals Co., Ltd., Chungcheongnam Do, Rep. of Korea

Filed Jul. 25, 1994, Ser. No. 279,790

Claims priority, application Rep. of Korea, Jul. 28, 1993, 93-14436; Dec. 13, 1993, 93-27507

Int. Cl.[6] C08J *9/00;* **C08G** *18/00*

U.S. Cl. 521—84.1 **11 Claims**

1. A lignocellulose solution produced by dissolving at least one member selected from the group consisting of cellulose, hemicellulose, lignin and lignocellulose derivatives, in a bio-degradable aliphatic polyester polyol of low molecular weight obtained by a polycondensation of an aliphatic dicarboxylic acid having up to eight carbon atoms and a diol having up to eight carbon atoms.

5,614,565

AZEOTROPIC COMPOSITIONS OF PERFLUOROHEXANE AND HYDROCARBONS HAVING 6 CARBON ATOMS AND THE USE THEREOF IN THE PRODUCTION OF FOAMS

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Herman P. Doerge, Pittsburgh, and Eric F. Boonstra, Oakdale, both of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1995, Ser. No. 410,608

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—131 **15 Claims**

1. An azeotropic composition consisting essentially of from about 73 to about 88% by weight perfluorohexane and

b) one compound selected from the group consisting of

1) from about 14 to about 27% by weight 2-methyl pentane or

2) from about 13 to about 25% by weight 3-methyl pentane or

3) from about 12 to about 23% by weight n-hexane in which the sum of the weight percent a) plus weight percent b) is approximately 100 percent.

5,614,566

METHOD FOR THE PREPARATION OF RIGID FOAMS HAVING URETHANE AND/OR ISOCYANURATE GROUPS AND BEING EXTENSIVELY OPEN CELLED

Georg Burkhart, and Helmut Schator, both of Essen, Germany, assignors to Th. Goldschmidt AG., Essen, Germany

Continuation-in-part of Ser. No. 188,176, Jan. 28, 1994, abandoned. This application Jun. 8, 1995, Ser. No. 489,175

Claims priority, application Germany, Feb. 10, 1993, 43 03 809.3

Int. Cl.[6] C08L *75/04;* **C08K** *5/01;* **C08J** *9/00*

U.S. Cl. 521—132 **7 Claims**

1. A method for the preparation of extensively open celled rigid foams comprising:

reacting a polyisocyanate with compounds having on average three hydroxyl groups per molecule and further having an OH-number between about 100 to 800 in presence of a catalyst, surface active substance, as well as, optionally, one or more members of a group consisting of a physical blowing agent, flame retardant, other auxiliary materials and finishing agents; and

carrying the reaction in the presence of polybutadiene or polyoctenylene or both as an unsaturated hydrocarbon having a number average molecular weight of between about 800 to 10,000 g/mol., wherein the hydrocarbon is present in an amount between about 0.01 and 3.0% by weight based on the reaction formulation, so as to produce an extensively open celled rigid foam with a density of between about 20 and 60 Kg/m^3.

5,614,567

METHOD FOR PREPARING SELF RELEASING SILICONE FOAMS AND METHOD OF REDUCING CYCLE TIME OF PRODUCING SILICONE FOAMS

Jack R. Harper; Brian P. Loiselle; William R. Nicholson, all of Midland, and Lawrence J. Rapson, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 22, 1996, Ser. No. 589,748

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—154 **29 Claims**

1. A method of producing a self releasing silicone foam comprising the steps of:

I) mixing a foam forming composition comprising:

A) a liquid polyorganosiloxane containing an average of at least two alkenyl radicals per molecule;

B) an organohydrogensiloxane containing at least three silicon-bonded hydrogen atoms per molecule wherein there is no more than one of said hydrogen atoms per silicon atom;

C) a polyol; and

D) a platinum catalyst;

II) applying the composition to a plastic substrate;

III) allowing the composition to form a foam;

IV) curing the foam; and

V) post curing the cured foam for a sufficient time and at a sufficient temperature to reduce the compression set of the cured foam.

5,614,568

ANTIBACTERIAL RESIN COMPOSITION

Masaaki Mawatari; Chie Hamazaki, both of Suzuka, and Tateki Furuyama, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 171,151, Dec. 22, 1993, abandoned. This application May 22, 1995, Ser. No. 446,304

Claims priority, application Japan, Dec. 25, 1992, 4-358363

Int. Cl.[6] C08K *3/10;3/08;3/22;3/32*

U.S. Cl. 523—122 **24 Claims**

1. An antibacterial resin composition which comprises

(A) 100 parts by weight of an aromatic alkenyl resin;

(B) 0.01 to 30 parts by weight of an inorganic metal compound or a porous structure substrate which has been subjected to ion-exchange with a metal ion, wherein said metal is selected from the group consisting of silver, copper, zinc, mercury, tin, lead, bismuth, cadmium, chromium, cobalt, nickel, iron, manganese, arsenic, antimony and barium; and

(C) 0.01 to 30 parts by weight of a polyethylene comprising a functional group selected from the group consisting of carboxyl group, a salt of said carboxyl group, hydroxyl group, oxazoline group, acid anhydride group, ester group, epoxy group and amino group, a polypropylene comprising a functional group selected from the group consisting of carboxyl group, a salt of said carboxyl group, hydroxyl group, oxazoline group, acid anhydride group, ester group, epoxy group and amino group or a compound comprising a functional group selected from the group consisting of carboxyl group, a salt of said carboxyl group, hydroxyl group, oxazoline group, acid anhydride group, ester group, epoxy group and amino group having a long chain alkyl group containing at least 20 carbon atoms, wherein said component (C) has a molecular weight of 300 to 10,000.

5,614,569

FLAME RETARDANT POLYMER COMPOSITIONS WITH COATED BORON PHOSPHATE

Venkat S. Venkataramani, Clifton Park, N.Y., and Jeremy P. Shaw, Halsteren, Netherlands, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1995, Ser. No. 558,562

Int. Cl.[6] C08K *9/10*

U.S. Cl. 523—210 **12 Claims**

1. A composition comprising:

(a) an additive comprising a core and a metal ion coating wherein said core comprises boron phosphate and said metal ion coating comprises at least one metal selected from the members consisting of Group IIA, IIB, IVB, VIIB and VIII metals;

(b) polysiloxane; and

(c) a polymer system comprising polyphenylene ether in combination with polyamide, polyolefin, polyarylene sulfide, polyester, acrylonitrile butadiene styrene copolymer, polystyrene or polyetherimide.

5,614,570

ABSORBENT ARTICLES CONTAINING BINDER CARRYING HIGH BULK FIBERS

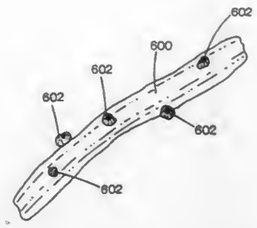
Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Continuation of Ser. No. 153,819, Nov. 15, 1993, Pat. No. 5,447,977, which is a continuation of Ser. No. 931,284, Aug. 17, 1992, Pat. No. 5,308,896. This application Apr. 4, 1995, Ser. No. 416,338

Int. Cl.[6] C08J *5/04*

U.S. Cl. 524—13 **10 Claims**

1. An absorbent article including high bulk fibers comprising:



individualized fibers that have hydrogen bonding functional sites and intrafiber covalent bonds that provide the fiber with increased bulk; and

a binder on the fibers for binding particles to the fibers, the binder having a volatility less than water and a functional group that forms a hydrogen bond or a coordinate covalent bond with at least a portion of the particles, and a functional group that forms a hydrogen bond with the fibers, the bind being present on the high bulk fibers in a sufficient amount to bind at least a portion of the particles in an amount of at least 0.05% by weight of the fiber, binder and particles.

5,614,571

STABILIZER BLEND CONTAINING PHOSPHITE

James A. Mahood, Morgantown, W. Va., assignor to General Electric Company, Pittsfield, Mass.

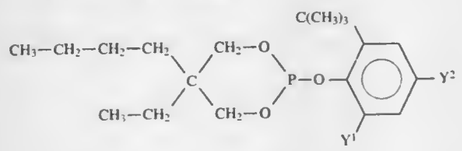
Continuation-in-part of Ser. No. 307,545, Sep. 16, 1994, Pat. No. 5,424,348. This application Dec. 21, 1994, Ser. No. 361,349

Int. Cl.[6] C08K *5/527;* **C09K** *15/32*

U.S. Cl. 252—400.24 **13 Claims**

1. A solid stabilizer composition particle comprising:

(a) a phosphite of the formula:



wherein Y^1 is alkyl and Y^2 is t-butyl, and

(b) an additive selected from the group consisting of hindered phenolic antioxidants, acid neutralizers, hydroxyl amines, thioesters, ultraviolet light stabilizers and ultraviolet light absorbers.

5,614,572

BENZOFURAN-2-ONES AS STABILIZERS

Peter Nesvadba, and Samuel Evans, both of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Sep. 12, 1994, Ser. No. 304,470

Claims priority, application Switzerland, Sep. 17, 1993, 2811/93

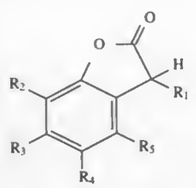
Int. Cl.[6] C08K *5/15*

U.S. Cl. 524—111 **16 Claims**

1. A composition comprising

a) an organic material that is subject to oxidative, thermal or light-induced degradation, and

b) at least one compound of formula I



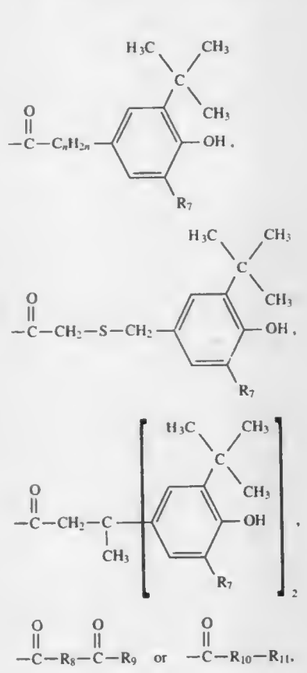
wherein

R_1 is halogen or —OR'_1,

R'_1 is hydrogen, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or



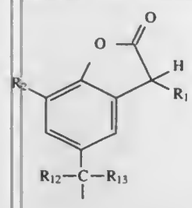
C_6–C_9cycloalkylcarbonyl, thenoyl, furoyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl; naphthoyl or C_1–C_{12}alkyl-substituted naphthoyl; C_1–C_{25}alkanesulfonyl, fluoro-substituted C_1–C_{25}alkanesulfonyl; phenylsulfonyl or C_1–C_{12}alkyl-substituted phenylsulfonyl;



R_2, R_3, R_4 and R_5 are each independently of one another hydrogen, chloro, hydroxy, C_1–C_{25}alkyl, C_7–C_9-phenylalkyl, unsubstituted or C_1–C_4 alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, C_1–C_{18}alkylthio, C_1–C_4alkylamino, di-(C_1–C_4alkyl)amino, C_1–C_{25}alkanoyloxy, C_1–C_{25} alkanoylamino, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or



C_6–C_9cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy; or each of the substituent pairs R_2 and R_3 or R_3 and R_4 or R_4 and R_5, together with the linking carbon atoms, forms a benzene ring; R_4 is additionally —$(CH_2)_p$—COR_9 or —$(CH_2)_q$OH, or, if R_3 and R_5 are hydrogen, R_4 is additionally a radical of formula II



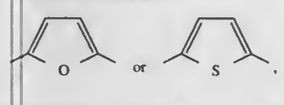
R_6 is hydrogen or C_1–C_8alkyl,

R_7 is hydrogen or C_1–C_8alkyl,

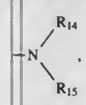
R_8 is a direct bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or



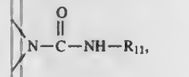
C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_8bicycloalkylene, unsubstituted or C_1–C_4alkyl-substituted phenylene,



R_9 is hydroxy, [—O⊖½M^{r+}], C_1–C_{18}alkoxy or



R_{10} is oxygen, —NH— or



R_{11} is C_1–C_{18}alkyl or phenyl,

R_{12} and R_{13} are each independently of the other hydrogen, CF_3, C_1–C_{12}alkyl or phenyl, or

R_{12} and R_{13}, together with the linking carbon atom, form a C_5–C_8cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl groups,

R_{14} and R_{15} are each independently of the other hydrogen, or C_1–C_{18}alkyl,

M is a metal cation of valency r,

n is 0, 1 or 2,

p is 0, 1 or 2,

q is 1, 2, 3, 4, 5 or 6, and

r is 1, 2 or 3.

5,614,573

FLAME RETARDANTS AND FLAME RETARDANT FINISHING METHOD FOR POLYESTER-BASED SYNTHETIC FIBER MATERIALS

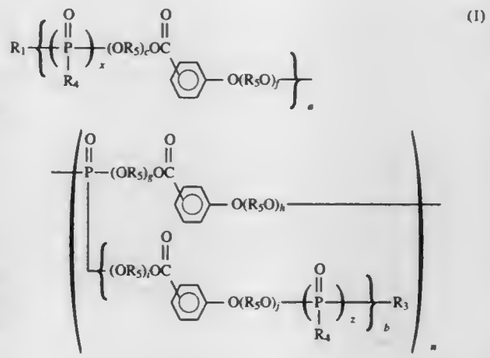
Junji Sano, Amagasaki; Kunio Ichihashi, Osaka; Hajime Saito, Sabae, and Hirotomo Banko, Sakai-gun, all of Japan, assignors to Nicca Chemical Co., Ltd., Fukui, and Kanebo Limited, Tokyo, both of Japan

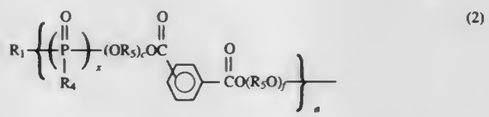
Filed Mar. 27, 1995, Ser. No. 410,840

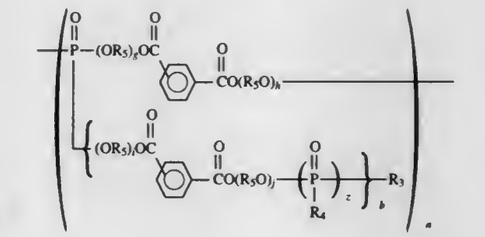
Int. Cl.[6] C08K *5/53;5/52;5/51*

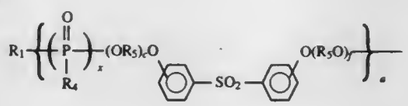
U.S. Cl. 524—121 **1 Claim**

1. A method for flame retardant finishing of polyester-based synthetic fiber materials which comprises applying by post-treatment at least one flame retardant compound selected from the group consisting of the phosphoryl compounds represented by the following general formulas (1) to (4) to a fiber material composed of polyester-based synthetic fibers:

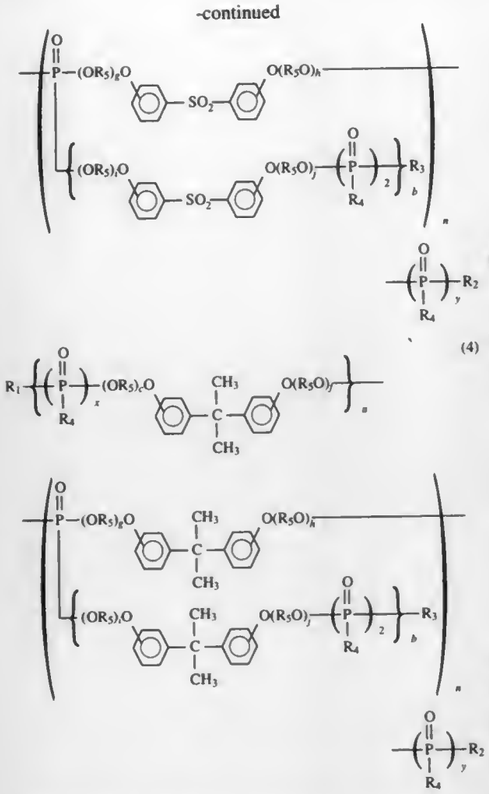








-continued



(4)

wherein R_1, R_2, R_3 and R_4 independently represent alkyl or alkoxy groups of 1 to 12 carbon atoms, unsubstituted or substituted phenyl groups or unsubstituted or substituted phenyloxy groups, or hydrogen; each R_5 independently represents an alkylene group of 2 to 6 carbon atoms; the letters, a, b, e, f, g, h, i and j independently represent either 0 or an integer from 1 to 6; each letter n independently represents an integer from 1 to 6; and the letters x, y and z independently represent either 0 or 1.

5,614,574

WETTABLE POLYOLEFIN FIBER COMPOSITIONS AND METHOD

Paresh J. Sheth, Sugar Land, Tex., assignor to Lyondell Petrochemical Company, Houston, Tex.

Continuation-in-part of Ser. No. 273,726, Jul. 12, 1994, Pat. No. 5,464,687. This application Apr. 17, 1995, Ser. No. 423,528

Int. Cl.[6] C08L *23/12;* **C08K** *5/521;5/103*

U.S. Cl. 524—140 **42 Claims**

1. A process for forming a wettable polyolefin composition, comprising:

forming a composition of about 98 to 70% by weight of a polyolefin, a selected amount of a polar group material, and a hydrophilic modifier comprising a salt of a linear alkyl phosphate and at least 50% by weight a monoglyceride, the hydrophilic modifier being in an amount by weight of about 0.1% to 2% the sum of the polyolefin and polar group material, the polar group material selected from a group consisting of (1) an ethylene copolymer, the ethylene copolymer comprising about 70 to 82% by weight ethylene and about 30 to 18% by weight of an alkyl acrylate wherein the alkyl has one to four carbon atoms, said alkyl acrylate present in the composition in an amount between 0.2 to 3.0% by weight of the sum of the polyolefin and ethylene copolymer, (2) a maleic anhydride comprising about 0.1% to 10% by weight of the polyolefin, and (3) an acrylic acid comprising about 0.1% to 2.0% by weight of the polyolefin.

5,614,575

SPRAYABLE POLYURETHANE COMPOSITIONS

Rex R. Kotschwar, Omaha, Nebr., assignor to RPG. Inc., Carroll, Iowa

Filed Apr. 24, 1995, Ser. No. 427,452

Int. Cl.[6] C08K *5/01;5/02;5/10;* **C08G** *18/50*

U.S. Cl. 524—270 **7 Claims**

1. A sprayable polyurethane composition comprising:

(a) a sprayable isocyanate component;

(b) a sprayable polyol component comprising;

(i) a tertiary amine-containing hydroxyl functional polyether polyol;

(ii) a sucrose-polyether polyol; and

(iii) a nitrogen-free hydroxy-terminated polyether polyol other than said sucrose-polyether polyol; and

(c) a nonreactive adhesive-enhancing component.

5,614,576

POLY(β-HYDROXYORGANOATE) PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

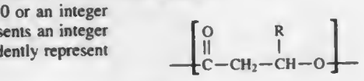
Denise R. Rutherford, Oakdale; W. James Hammar, St. Paul, and Gaddam N. Babu, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 289,685, Aug. 12, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,769

Int. Cl.[6] C08L *93/00;* **C08G** *63/06*

U.S. Cl. 524—270 **29 Claims**

1. A pressure sensitive adhesive comprising a crosslinked poly(β-hydroxyorganoate) and a tackifier; wherein the pressure sensitive adhesive has a Tg of less than about 20° C. and the poly(β-hydroxyorganoate) comprises monomeric units of the general formula:



wherein:

(i) a minor amount of the monomeric units have an R group containing 1–3 carbon atoms; and

(ii) a major amount of the monomeric units have an R group containing 4–30 carbon atoms.

5,614,577

CURABLE FILM FORMING COMPOSITIONS

Yukihiko Sasaki, Claremont, and Kevin Lossner, Monrovia, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 452,563, Dec. 14, 1989, Pat. No. 5,302,649, which is a continuation of Ser. No. 57,504, Jun. 3, 1987, Pat. No. 4,948,825. This application Apr. 11, 1994, Ser. No. 226,273

Int. Cl.[6] C07J *7/02;* **C08K** *5/01;* **C08L** *53/00*

U.S. Cl. 524—274 **22 Claims**

1. A pressure-sensitive adhesive comprising a free radical cured mixture of at least one unsaturated elastomeric polymer present in a total amount of from about 10 to about 60 parts by weight of the mixture and at least one organic additive which is substantially nonresponsive to the action of free radicals, said organic additive selected from the group consisting of aromatic organic additives which are at least 50% saturated and aliphatic hydrocarbon additives in which at least 65% of the unsaturated groups of the hydrocarbon as formed are saturated, the total of organic additive being present in an amount of from about 90 to about 40 parts by weight of the mixture, said cured adhesive having a glass transition temperature at least 10° C. below use temperature and an elevated temperature shear higher than the elevated temperature shear prior to cure, and in which a crosslinking agent comprising a halogenated hydrocarbon is present during free radical cure of the mixture.

5,614,578

INJECTION-MOLDED DOSAGE FORM

Liang C. Dong, Mountain View; Patrick S. L. Wong, Palo Alto; Crystal Pollock, Mountain View, and Vincent J. Ferrari, Sunnyvale, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Oct. 28, 1994, Ser. No. 330,892

Int. Cl.[6] C08K *5/06;* **C08L** *1/28;71/02*

U.S. Cl. 524—377 **3 Claims**

1. A composition comprising 10% to 97 wt % polycaprolactone, 10% to 97 wt % poly(alkylene oxide) and 1% to 97 wt % of poly(ethylene glycol) with the composition equal to 100 wt %.

5,614,579

PROCESS FOR THE PREPARATION OF TAPERED COPOLYMERS VIA IN SITU DISPERSION

David M. Roggeman, North Royalton, and James E. Hall, Mogadore, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 137,332, Oct. 18, 1993, which is a continuation-in-part of Ser. No. 995,118, Dec. 22, 1992, Pat. No. 5,331,035. This application Dec. 9, 1994, Ser. No. 352,938

Int. Cl.[6] C08K *3/02*

U.S. Cl. 524—457 **5 Claims**

1. A process for the preparation of a tapered copolymer having no sharply defined glass transition temperature and having 30 to 70% by weight of vinyl aromatic contributed units and 30 to 70% by weight of diene monomer contributed units in a hydrocarbon dispersing medium comprising the following steps:

(1) injecting into a reactor a charge of 75 to 100% by weight of a diene monomer, 0 to 25% by weight of a vinyl aromatic hydrocarbon monomer and a catalytically effective amount of an anionic initiator in a hydrocarbon dispersing medium;

(2) polymerizing the charge of step (1) to form a preformed block of a dispersing agent, the preformed block being soluble in the hydrocarbon dispersing medium;

(3) injecting into the reactor a charge of:

(a) a vinyl aromatic hydrocarbon monomer,

(b) a conjugated diene monomer, and

(c) an additional charge of an anionic initiator

wherein during the course of the dispersion polymerization process the percent by weight of the diene monomer being charged into the reactor is (100-X) %, wherein X% represents the weight percent of the vinyl aromatic hydrocarbon monomer being charged into the reactor and wherein X % incrementally varies between a maximum charge between about 100 to 50% and a minimum charge between about 0 to 30% to produce:

(i) a block copolymer dispersing agent consisting of the preformed block and a block formed in situ during step (3) and

(ii) a tapered copolymer having no sharply defined glass transition temperature and having vinyl aromatic hydrocarbon monomer contributed units ranging from about 30 to 70% by weight.

5,614,580

TIRE WITH SILICA REINFORCED TREAD

David J. Zanzig, Uniontown; Paul H. Sandstrom, Tallmadge; Michael J. Crawford, Akron; John J. A. Verthe, Kent, and Cheryl A. Losey, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 116,623, Sep. 7, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,114

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—492 **11 Claims**

1. A pneumatic tire having a tread comprised of, (A) a combination of elastomers consisting essentially of cis 1,4-polybutadiene, medium vinyl polybutadiene and high vinyl polybutadiene elastomers and, based on 100 parts by weight rubber, as (i) about 10 to about 50 phr of cis 1,4-polybutadiene rubber, (ii) about 30 to about 70 phr of medium vinyl polybutadiene rubber having a vinyl content in a range of about 30 to about 60 percent and (iii) up to about 90 phr of a high vinyl polybutadiene rubber having a vinyl content in a range of about 60 to about 95; wherein the total of said medium and high vinyl polybutadiene rubbers is in a range of about 50 to about 90 phr, (B) about 50 to about 110 phr particulate silica, (C) and at least one silica coupler having a silane moiety reactive with silicon dioxide and a sulfur moiety reactive with said elastomer, in a weight ratio of silica to coupler of about 7/1 to about 15/1.

5,614,581

CONDUCTIVE GRAY IN-MOLD COATING

David S. Cobbledick, Kent, and Donald F. Reichenbach, Massillon, both of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 53,795, Apr. 26, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 544,743

Int. Cl.[6] C08K *3/04;* **B32B** *27/38*

U.S. Cl. 524—495 **20 Claims**

1. A laminate, comprising:

a thermoset in-mold coating composition of uniform gray color adhered to a molded thermoset or thermoplastic substrate, and which when cured in a layer 1.0 mil thick has a Ransburg conductivity meter reading of at least 165 units said in-mold coating composition comprising;

(a) at least one polymerizable epoxy based oligomer having at least two (alkyl) acrylate groups and a weight average molecular weight of from about 500 to about 1,500, said (alkyl) acrylate being acrylate, methacrylate, or ethacrylate;

(b) from about 80 to 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer;

(c) from about 10 to 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having a —CO— group and at least one —NH_2, —NH—, or —OH group;

(d) from about 20 to 85 parts by weight graphite, and

(e) from about 15 to 30 parts by weight of one or more white pigments and

(f) optionally up to 10 parts by weight of conductive carbon black wherein said parts by weight are based upon 100 parts by weight of said epoxy-based oligomer.

5,614,582

RESINOUS COMPOSITIONS FOR A WATER PAINT

Makoto Hori; Reijiro Nishida; Yasuo Takaya; Yasuharu Nakayama, and Masami Sugishima, all of Kanagawa, Japan, assignors to Kansi Paint Co., Ltd., Hyogo, Japan

Filed Oct. 14, 1994, Ser. No. 321,870

Claims priority, application Japan, Oct. 15, 1993, 5-289700

Int. Cl.[6] C08L *75/04*

U.S. Cl. 524—507 **16 Claims**

1. A resinous composition for use in an aqueous emulsion paint, which is obtained by blending an aqueous dispersion of a carbonyl group-containing copolymer (A) with a carbonyl group-containing aqueous polyurethane resin (B) at a ratio of 100 parts by weight of solids in (A) to 5–150 parts by weight of (B), and as a crosslinking

agent a hydrazide compound having at least 2 hydrazide groups per one molecule (C) at a ratio of 0.01–2 moles of (C) to 1 mole of carbonyl group contained in said (A) and (B) components to thereby obtain a blend of (A), (B) and (C), capable of drying at normal conditions to produce water resistant film, wherein said carbonyl group-containing polyurethane resin (B) is obtained by copolymerizing an unsaturated polyurethane resin obtained by reacting a diisocyanate compound with a polyol having a number average molecular weight of 60– 10,000, a carboxyl group-containing diol and a hydroxyl group-containing ethylenic unsaturated monomer, with a carbonyl group-containing ethylene unsaturated monomer.

5,614,583

HOMOGENIZED FLOWABLE HYDROGEL OF CROSSLINKED N-VINYL LACTAM POLYMER

Susan Y. Tseng, Staten Island, N.Y.; Jui-Chang Chuang, Wayne, and Philip F. Wolf, Bridgewater, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Sep. 13, 1995, Ser. No. 528,383

Int. Cl.[6] A61K *9/14;* **C08L** *39/06*

U.S. Cl. 524—555 **6 Claims**

1. The process for producing a hydrogel which comprises

(1) forming a uniform liquid mixture of

(a) between about 10 and about 30 wt. % of a polymerizable reactant containing 55% to 100% N-vinyl lactam monomer;

(b) between about 0.01 and about 5 wt. % crosslinking agent;

(c) between about 60 and about 90 wt. % solvent and

(d) between about 0.1 and about 5 wt. % of a free radical initiator having a decomposition temperature below the boiling point of said solvent;

(2) in the absence of agitation and in an inert atmosphere, heating the mixture to between about 50° and about 80° C. for a period of from about 1 to about 5 hours to begin polymerization without displacement of the solvent medium, and then raising the temperature to between about 100° and about 145° C. for an additional period of from about 0.5 to about 3 hours or until completion of the reaction indicated by the absence of an exotherm;

(3) recovering the crosslinked polymer in the form of a rubbery intermediate and digesting said intermediate in water to extract and remove soluble monomer, linear polymer and other residuals in the aqueous phase;

(4) recovering a clear, formed, crosslinked N-vinyl lactam polymer as a hydrogel mass of from about 0.5 to about 15 wt. % solids;

(5) subjecting said hydrogel mass to high speed, high shear mechanical agitation in a stirring device operating at between about 5,000 and about 50,000 rpm to homogenize the hydrogel and to form flowable hydrogel microparticles which can be passed through a sieve having openings of between about 40 and about 350 mesh and

(6) recovering the homogenized, micronized flowable hydrogel as the product of the process.

5,614,584

PROCESS FOR THE MANUFACTURE OF AQUEOUS COATING AGENTS, THE COATING AGENTS AND THEIR USE

Heinrich Schwan; Hans-Peter Patzschke, both of Wuppertal, and Franjo Gol, Leverkusen, all of Germany, assignors to Herberts Gesellschaft Mit Beschranker Haftung, Wuppertal, Germany

Continuation of Ser. No. 585,658, Jan. 16, 1996, abandoned, which is a continuation of Ser. No. 287,230, Aug. 8, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 663,853

Claims priority, application Germany, Aug. 9, 1993, 43 26 670.3

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **B05D** *3/02*

U.S. Cl. 524—591 **12 Claims**

1. A process for the manufacture of a reactive aqueous coating agent suitable for use on a substrate, comprising:

obtaining an aqueous composition of a water-dispersible or water-soluble polymeric binder and a combination of at least one polyamine having primary secondary amino groups or both and at least one tertiary monoamine, wherein the polymeric binder has acidic groups and isocyanate-reactive groups, a number-average molecular weight of 1000 to 100,000, an equivalent hydroxyl number for the isocyanate-reactive groups of about 20 to about 250 or the same number of other isocyanate reactive groups and an acid number of about 10 to 100; the combination has at least partially neutralized the polymeric binder at a degree of neutralization of from about 50% to 100% and the equivalent ratio of tertiary monoamine to polyamine is from about 2:1 to 6:1;

combining the aqueous composition and at least one polyisocyanate to form a composition of unreacted polymeric binder and emulsified polyisocyanate as the reactive coating agent, the combining step occurring no more than about two hours before application of the aqueous coating agent to the substrate, and the polyisocyanate being a liquid or being combined with an organic solvent to form a liquid.

5,614,585

HYDROPHILIC SURFACE-TREATING AQUEOUS SOLUTION AND HYDROPHILIC SURFACE-TREATING METHOD

Masahiko Matsukawa, Kawasaki; Hidekimi Hirasawa; Fujio Mikami, both of Yokohama, and Katsuyoshi Yamasoe, Yotsukaido, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 318,449, Oct. 5, 1994, Pat. No. 5,527,854. This application Mar. 5, 1996, Ser. No. 611,163

Claims priority, application Japan, Oct. 6, 1993, 5-250314

Int. Cl.[6] C23C *22/82*

U.S. Cl. 524—608 **4 Claims**

1. The hydrophilic surface-treating method comprising the steps of:

degreasing a material to be treated made of aluminum or an aluminum-alloy;

optionally subjecting said material to anticorrosion treatment;

treating said material with a hydrophilic surface-treating aqueous solution which comprises polyglutamic acid and a basic compound having a boiling point of less than 200 degrees Celsius; and

drying said material via a baking process.

5,614,586

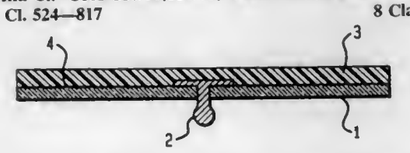
POLYACRYLATE AND POLYMETHACRYLATE ESTER BASED HYDROGEL ADHESIVES

Jinsong Tang, and Norbert J. Mruk, both of Williamsville, N.Y., assignors to Graphic Controls Corporation, Buffalo, N.Y.

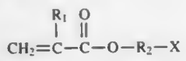
Division of Ser. No. 223,550, Apr. 6, 1994, abandoned. This application Mar. 22, 1995, Ser. No. 408,625

Int. Cl.[6] C08F *220/06;228/02;* **C08L** *33/26;* **C08K** *5/05*

U.S. Cl. 524—817 **8 Claims**



1. A hydrogel adhesive comprising a copolymer formed by copolymerizing and cross-linking a first water soluble monomer having the structure (I)



(I)

where,

R_1 is selected from the group consisting of H and CH_3;

R_2 is selected from the group consisting of a straight or branched chain alkyl radical of 2–12 carbon atoms, a straight or branched chain aliphatic ester of 5–12 carbon and oxygen atoms, and a straight or branched chain ether radical of 3–12 carbon and oxygen atoms;

X is an ionic group selected from the group consisting of SO_3^-, COO^- and

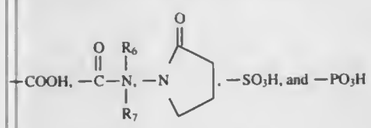
where R_3, R_4, and R_5 are independently selected from the group consisting of H and alkyl groups of 1–4 carbon atoms;

with a second water soluble monomer having the structure (II)



(II)

where Y is selected from the group consisting of



where R_6, R_7 are independently selected from the group consisting of H and alkyl groups of 1–3 carbon atoms;

in the presence of water, a multifunctional cross-linking agent, and a humectant;

wherein said first water soluble monomer is selected from the group consisting of potassium-3-sulfopropyl acrylate, potassium-3-sulfopropyl methacrylate, 2-carboxyethylacrylate, 2-sulfoethylmethacrylate, and methacryloxyethyl trimethylammonium chloride; and

wherein said second water soluble monomer is selected from the group consisting of acrylic acid, acrylamide, alkylated acrylamides, vinyl pyrrolidone, vinyl sulfonic acid, and vinyl phosphonic acid.

5,614,587

COLLAGEN-BASED BIOADHESIVE COMPOSITIONS

Woonza M. Rhee, Palo Alto; Prema R. Rao, Los Gatos; George H. Chu, Cupertino; Frank A. DeLustro, Belmont; Carol F. H. Harner, Redwood Shores; Naomi Sakai, San Mateo, and Jacqueline A. Schroeder, Redwood City, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 147,227, Nov. 3, 1993, which is a continuation-in-part of Ser. No. 922,541, Jul. 30, 1992, Pat. No. 5,328,955, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,825

Int. Cl.[6] A61F *13/00;* **A61B** *17/04*

U.S. Cl. 525—54.1 **8 Claims**

1. A composition comprising fibrillar collagen, a fiber disassembly agent, and a multifunctionally activated synthetic hydrophilic polymer, wherein the fiber disassembly agent is present in an amount sufficient to render the collagen substantially nonfibrillar at pH 7, wherein the collagen and synthetic polymer covalently bind to form a collagen—synthetic polymer conjugate, and wherein the fiber disassembly agent is selected from the group consisting of: a biocompatible alcohol, an amino acid, an inorganic salt, and a carbohydrate.

5,614,588

POLYMER MIXTURE AND FILMS PREPARED THEREFROM

Roland E. Steenblock, Meckenheim; Norbert F. Kock, Wachtberg, and Detlef H. Fiedler, Bonn, all of Germany, assignors to Elf Atochem Deutschland GmbH, Dusseldorf, Germany

Filed Mar. 24, 1995, Ser. No. 410,107

Claims priority, application Germany, Mar. 29, 1994, 44 10 921.0

Int. Cl.[6] C08L *77/00;51/06*

U.S. Cl. 525—66 **12 Claims**

1. A polymer mixture, comprising:

constituent (A) 50 to 85 wt. % of a polyether block amide consisting of 30 to 60 wt. % of polyamide-12, polyamide-11 and/or polyamide-12,12 blocks and 70 to 40 wt. % of polyethylene glycol blocks,

constituent (B) 10 to 40 wt. % of a polyether block amide consisting of 65 to 85 wt. % of polyamide-12, polyamide-11 and/or polyamide-12,12 blocks and 35 to 15 wt. % of polyethylene glycol blocks, and

constituent (C) 5 to 40 wt. % of a poly(ethylene-co-vinylacetate-g-maleic anhydride) polymer consisting of 75 to 95 wt. % of ethylene, 5 to 25 wt. % of vinylacetate and 0.1 to 2 wt. % of maleic anhydride,

wherein the wt. % for the constituents (A), (B) and (C) are based upon the total amount of polymer mixture and the wt. % for the blocks making constituents (A) and (B), and the monomers making constituent C are based upon the weight of the constituent.

5,614,589

TRANSPARENT, ANTISTATIC THERMOPLASTIC COMPOSITION AND METHODS OF MAKING THE SAME

George E. Niznik, Exton, and Arie Hochberg, Rosemont, both of Pa., assignors to Kawasaki Chemical Holding Co., Inc., Wilmington, Del.

Filed Nov. 15, 1993, Ser. No. 152,761

Int. Cl.[6] C08F *8/30*

U.S. Cl. 525—71 **8 Claims**

I. A transparent thermoplastic composition with electrodissipative properties having a surface resistivity of about 10^9 to about 10^{14} ohm/square, comprising a blend of:

a.) a transparent moldable methacrylate-acylonitrile-butadiene-styene (MABS) thermoplastic copolymer having a refractive index of about 1.53 to 1.55;

b.) a transparent inherently antistatic thermoplastic urethane copolymer having a refractive index of about 1.53 to 1.55 which is the reaction product of a hydroxy-terminated polyalkylene ether oligomer, a C_2 to C_6 alkanediol, and an aromatic diisocyanate; and

c.) an acrylonitrile-butadiene-styrene rubbery copolymer produced by way of emulsion polymerization containing at least 40 weight percent of butadiene monomer in which the ratio of styrene to acrylonitrile monomer is such that the refractive index is between 1.53 to 1.55; wherein the blend comprises about 40 to 90 weight percent MABS copolymer, about 10 to 40 weight percent urethane copolymer and about 1 to 25 weight percent rubbery copolymer.

5,614,590

COATING AGENTS, PROCESS FOR THEIR PREPARATION AND THEIR USE FOR THE PREPARATION OF TRANSPARENT TOP LAYERS ON MULTILAYER COATINGS

Klaus Bederke, Sprockhövel; Friedrich Herrmann, Wuppertal; Hermann Kerber, Wuppertal, and Hans-Martin Schönrock, Wuppertal, all of Germany, assignors to Herberts Gesellschaft mit beschrankterhaftung, Wuppertal, Germany

Filed Sep. 9, 1993, Ser. No. 119,289

Claims priority, application Germany, Sep. 17, 1992, 42 31 071.7; Oct. 30, 1992, 42 36 673.9

Int. Cl.[6] C08F *8/30*

U.S. Cl. 525—127 **4 Claims**

1. A transparent coating agent which is free of heavy metal catalysts, and comprises a solids content of over 55% wt., a hydroxy functional (meth)acrylic copolymer based binder, one or more aliphatic and/or cycloaliphatic polyisocyanate cross linking agents, and one or more of a solvent, and a lacquer adjuvant, wherein said binder is a mixture of

(A) from about 40% to about 60% wt. of one or more (meth-)acrylic, hydroxyl group containing first copolymer having a hydroxyl number of from about 120 to about 170 mg KOH/g, a weight average molecular weight (Mw) of from about 3,000 to about 5,000, and a glass transition temperature (Tg) of from about 10° C. to about 30° C., said first copolymer being prepared by copolymerizing

(a1) from about 50% to about 70% wt., of one or more acrylic esters having optionally admixed thereto one or more acid hydroxy alkyl esters for the mixture to have a hydroxyl number of from about 40 to about 70 mg KOH/g,

with

(a2) from about 30% to about 50% wt., of one or more methacrylic esters having optionally admixed thereto one or more methacrylic acid hydroxy alkyl esters for the mixture to have a hydroxyl number of from about 180 to about 450 mg KOH/g; and

(B) from about 60% to about 40% wt. of one or more hydroxyl group containing (meth)acrylic second copolymer having an acid number of from about 25 to about 50 mg KOH/g, a hydroxyl number of from about 120 to about 160 mg KOH/g, a weight average molecular weight (Mw) of from about 5,000 to about 8,000, and a glass transition temperature (Tg) of from 20° C. to about 50° C., said second copolymer being prepared by copolymerizing

(b1) from about 27% to about 40% wt. of one or more acid alkyl esters,

with

(b2) from about 49% to about 55% wt. of one or more methacrylic acid esters for the mixture to have a hydroxyl number of from about 240 to about 300 mg KOH/g,

with

(b3) from about 1% to about 3% wt., acrylic acid,

and with

(b4) from about 10% to about 15% wt., of one or more vinyl esters of aliphatic saturated monocarboxylic acids in which the carboxyl group is bound to a tertiary carbon atom,

wherein (A) and (B) total 100%.

5,614,591

PROCESS AND COMPOSITION FOR IMPARTING DURABLE PRESS PROPERTIES TO TEXTILE FABRICS

Brent D. Basinger, Concord, and R. Keith Zimmerman, Mooresville, both of N.C., assignors to The Virkler Company, Charlotte, N.C.

Filed Dec. 15, 1994, Ser. No. 356,843

Int. Cl.[6] D06M *13/382;* **C08L** *33/06;33/20;61/20*

U.S. Cl. 525—163 **17 Claims**

1. A process for imparting durable press properties to a fabric comprising:

impregnating a fabric with an aqueous durable press treatment composition comprising a reactive modified ethylene urea resin, a crosslinking acrylic copolymer having a glass transition temperature (T_g) of −30° C. or lower, and a catalyst;

drying the fabric to a residual moisture content of not below 10 percent by weight;

removing wrinkles from the fabric; and

heating the fabric with the wrinkles thus removed to cure and crosslink said durable press treatment composition and impart durable press properties to said fabric.

5,614,592

FILLER-FREE PEROXIDE MASTERBATCH AND PROCESS FOR MAKING IT

Rudolph van Drunen, and Frans J. van Moorsel, both of Deventer, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

PCT No. PCT/EP94/01812, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO94/29372, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 556,960

Claims priority, application European Pat. Off., Jun. 15, 1993, 93201710

Int. Cl.[6] C08L *23/16;65/00;* **C08J** *3/22;3/20*

U.S. Cl. 525—193 **6 Claims**

1. A process for the production of a peroxide masterbatch composition which comprises:

a) providing a mixture of an ethylene-propylene copolymer and 10–150 parts by weight, based on the weight of the ethylene-propylene copolymer of a polyoctenamer rubber to a mixing device,

b) adjusting the temperature of said mixture to a temperature at least 2° C. below the melting point of the lowest melting peroxide to be included in the masterbatch composition,

c) adding 20–60 percent by weight, based on the weight of said mixture, of a peroxide initiator to said mixture, with mixing, while maintaining the temperature of the mixture at least 2° C. below the melting point of the lowest melting peroxide in the peroxide initiator until the peroxide initiator is substantially intimately mixed with said mixture,

d) further mixing said mixture including peroxide initiator in such a manner that the temperature rises sufficiently to melt the peroxide(s) in the mixture to obtain the masterbatch composition, and

e) discharging the masterbatch composition from the mixing device.

5,614,593

PREPARATION OF MATTE VINYL CHLORIDE POLYMER AND COMPOSITION THEREOF

Toshimichi Koga; Minoru Shigemitsu; Osamu Matsumoto, and Makoto Suzuki, all of Ibaraki-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 556,425

Claims priority, application Japan, Nov. 14, 1994, 6-304281

Int. Cl.[6] C08F *2/20;214/06*

U.S. Cl. 525—306 **4 Claims**

1. A process for preparing a matte vinyl chloride polymer by suspension polymerizing a monomeric charge comprising monomeric vinyl chloride in an aqueous medium, said process comprising the steps of

starting the polymerization in the presence of diallyl phthalate in an amount of 0.1 to 0.2 part by weight per 100 parts by weight of the monomeric charge, and

continuing polymerization while adding 1,6-hexanediol diacrylate or 1,6 -hexanediol dimethacrylate in an amount of 0.03 to 0.1 part by weight per 100 parts by weight of the monomeric charge when the conversion rate of the polymerization is in the range of 30 to 50%, the polymerization being effected at a temperature of 35° to 55° C.,

thereby forming a matte vinyl chloride comprising a tetrahydrofuransoluble component and a tetrahydrofuran-insoluble gel component, said tetrahydrofuransoluble component having a degree of polymerization of at least 2,000 and the content of said tetrahydrofuran-insoluble gel component being 0.5 to 2.5% by weight.

5,614,594

CURABLE RESIN COMPOSITION FOR OVERCOAT FILM OF COLOR FILTER AND COLOR FILTER

Susumu Miyazaki, Kitasoma-gun; Shigeaki Chika, Ehime; Koulchi Satou, Ibaraki; Naoki Takeyama, and Shigeki Yamamoto, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

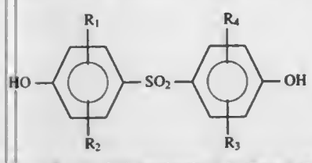
Filed May 30, 1995, Ser. No. 453,649

Claims priority, application Japan, Jun. 1, 1994, 6-120232

Int. Cl.[6] C08G *20/32*

U.S. Cl. 525—327.3 **10 Claims**

1. A curable resin composition used as an overcoat film of a color filter for a color liquid crystal display device, comprising polyglycidyl methacrylate, a curing system which comprises a carboxylic anhydride and a phenol compound of the formula:



(II)

wherein R_1 to R_4 are independently a hydrogen atom, a halogen atom, an alkyl group or a halogen-substituted alkyl group, and a silane coupling agent having an epoxy group.

5,614,595

POLYMERS BASED ON CONJUGATED DIENES

Dietmar Bender, Schifferstadt; Klaus Bronstert, Carlsberg; Helmut Mach, Heidelberg, and Martin Fischer, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 110,223, Aug. 23, 1993, Pat. No. 5,494,976. This application Oct. 16, 1995, Ser. No. 543,318

Claims priority, application Germany, Aug. 25, 1992, 42 28 160.1

Int. Cl.[6] C08F *8/04*

U.S. Cl. 525—332.8 **3 Claims**

1. A polymer Ib based on conjugated dienes, carrying functional groups and obtained by

1. the partial hydrogenation of the olefinic double bonds of a polymer IIa having a mean molecular weight (number average Mn) of from 10,000 to 1,000,000 and comprising

a) from 20 to 100% by weight of a conjugated diene,

b) from 0 to 80% by weight of an aromatic vinyl compound, and

c) from 0 to 20% by weight of further comonomers, to give a partially hydrogenated polymer IIb', with the proviso that IIb' still contains from 0.2 to 2 mmol of double bonds per gram of polymer,

2. expoxidation of the double bonds of IIb' to give an epoxidized polymer IIc, with the proviso that IIc contains from 0.01 to 2 mmol of oxirane rings per gram of polymer, and

3. reaction of the polymer IIc with ammonia, a primary amine having up to 12 carbon atoms, a secondary amine having up to 20 carbon atoms, a polyamine having up to 300 carbon atoms and up to 100 nitrogen atoms, an alkanolamine having up to 120 carbon atoms, up to 10 nitrogen atoms and up to 12 hydroxyl groups, a polyalcobol having up to 300 carbon atoms and up to 150 hydroxy groups, or a polyether having up to 300 carbon atoms and up to 200 oxygen atoms (compound IV), to give Ib.

5,614,596

DOUBLE ALKOXIDE MONOMERS OLIGOMERS AND POLYMERS

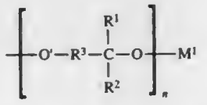
Richard M. Laine; Clint R. Bickmore, both of Ann Arbor, and Kurt F. Waldner, Belleville, all of Mich., assignors to Regents of University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 34,531, Mar. 19, 1993, Pat. No. 5,418,298. This application Jan. 12, 1995, Ser. No. 371,911

Int. Cl.[6] C08G *79/10;77/02*

U.S. Cl. 525—389 **26 Claims**

1. A neutral or mixed ionic/neutral polymetallooxane comprising the moiety:



wherein M^1 is selected from the group consisting of trivalent or tetravalent Al, or Ga, or tetravalent, pentavalent, or hexavalent Si, Ge, Sn, Ti, Zr, and Hf; n is 2, 3 or 4 when M^1 is Al, or Ga; and n is 3, 4, 5, or 6 when M^1 is Si, Ge, Sn, Ti, Zr, or Hf;

R^1 and R^2 are independently selected from the group consisting of H, OH, C_{1-8} alkyl, C_{1-6} alkoxy, C_{2-8} alkenyl, C_{6-12} aryl, C_{1-8} hydroxyalkyl, C_{1-8} thioalkyl, C_{2-12} alkoxyalkyl, C_{4-20} heteroaromatic, C_{1-10} alkylsilane, C_{1-10} alkylsiloxane and combinations thereof;

O' is bonded to M^1, M^2 or H wherein

M^2 is selected from the group consisting of Si, Ge, Sn, Al, Ga, Ti, Zr, Hf, an ammonium species, a phosphonium species, a Group Ia metal of the Periodic Table, and a IIa metal of the Periodic Table;

wherein when one O' is bonded to M^1, n is 2 or 3 when M^1 is Al, or Ga, and at least one O' is bonded to M^2; wherein when one O' is bonded to M^1, n is 3, 4, or 5 when M^1 is Si, Ge, Sn, Ti, Zr, or Hf and at least one O' is bonded to M^2; and wherein when two O' are bonded to M^1 and M^1 is Si, Ge, Sn, Ti, Zr, or Hf, n is 3 or 4 and at least one O' is bonded to M^2; and

R^3 is independently selected from the group consisting of $(CR_2)_y$, $(CR_2CR_2)_yNR(CR_2)_y$, $[(CR_2CR_2)_yO]_y$-$(CR_2)_y$, and combinations thereof wherein R is selected from the group consisting of H, OH, C_{1-8} alkyl, C_{1-6} alkoxy, C_{2-8} alkenyl, C_{6-12} aryl, C_{1-8} hydroxyalkyl, C_{1-8} thioalkyl, C_{2-12} alkoxyalkyl, C_{4-20} heteroaromatic, C_{1-10} alkylsilane, C_{1-10} alkylsiloxane and combinations thereof, and where y is a number from 1 to 10 and wherein said polymetallooxane contains at least one M^2.

5,614,597

WET STRENGTH RESINS HAVING REDUCED LEVELS OF ORGANIC HALOGEN BY-PRODUCTS

Barton K. Bower, Nottingham, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 14, 1994, Ser. No. 355,925

Int. Cl.[6] C08L *71/00;77/00*

U.S. Cl. 525—430 **34 Claims**

1. A process for preparing a wet strength resin for paper, said process comprising the following steps in sequence:

(1) reacting a polyamidoamine with an epihalohydrin until the amount of unreacted epihalohydrin present is less than about 10% by weight of the amount of epihalohydrin charged,

(2) adding a water-soluble, nonpolymeric, primary, secondary and/or tertiary amine in an amount of about 0.1 to about 50 mole %, based on the amine in the polyamidoamine, and

(3) heating to effect crosslinking.

5,614,598

POLYMERS HAVING ENHANCED HYDROPHILICITY AND THERMAL REGULATED PROPERTIES AND PROCESS OF PRODUCING THE SAME

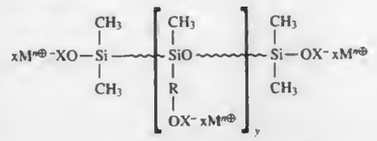
Lloyd F. Barringer, Jr., Rock Hill, S.C., and William T. Ledford, Gastonia, N.C., assignors to Comfort Technologies, Inc., Gastonia, N.C.

Continuation of Ser. No. 267,783, Jun. 28, 1994, abandoned, which is a continuation of Ser. No. 894,530, Jun. 5, 1992, Pat. No. 5,354,815. This application May 12, 1995, Ser. No. 439,988

Int. Cl.[6] C08L *67/00;77/04*

U.S. Cl. 525—431 **22 Claims**

1. A polymer with enhanced hydrophilicity and thermal regularize properties, said polymer having recurring amide groups as an integral part of the main polymer or copolymer chain, said polymer having bonded thereto an hydrophilic anionic polysiloxane polymer having a molecular weight greater than about 1000 g/mol and having an affinity for said aliphatic polyamide polymer, and said polymer having substantially no polymerization with the hydrophilic anionic polysiloxane polymer, said hydrophilic anionic polysiloxane polymer having the formula



wherein X is selected from the group consisting of phosphate, phosphonate, phosphorylate, sulfonate, sulfate, sulfone and carboxylate groups; R is a sp^3 hybridized alkylene group with or without functional groups; M represents any metal, hydrogen ion, ammonium derivatives or any combination of Lewis acids that balances the overall charge of the molecule; n represents the number of metal or Lewis acid ions required to achieve a net ionic charge of zero; x is an integer from 1 to 6; and y represents the number of monomeric alkyl groups pendant to the polysiloxane backbone.

5,614,599

STILBENE-BASED POLYESTER AND POLYCARBONATE COMPOSITIONS

Stephen E. Bales, Midland, Mich.; Robert E. Hefner, Jr., Lake Jackson, Tex., and Rina Singh, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 331,779, Oct. 31, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,489

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—461 **23 Claims**

1. A polycarbonate, polyester, or polyestercarbonate composition prepared from at least one diol and at least one carbonate precursor or C_{8-40} carboxylic acid, wherein

(a) at least about 95 mole percent of the carbonate precursor or carboxylic acid is selected from the group consisting of

(i) dialkyl carbonates, diarylcarbonates, carbonyl halides, and bis(trihaloalkyl) carbonates; and

(ii) aromatic dicarboxylic acids, hydroxybenzoic acids, hydroxynaphthoic acids, hydroxybipbenyl acids, hydroxycinnamic acids, and the halides or metal salts of such acids; and

(b) at least about 95 mole percent of the diol from which the composition is prepared consists of one or more aromatic diols, at least about 10 mole percent of which consists of one or more stilbene diols selected from the group consisting of: 4,4'-dihydroxy-alpha-methylstilbene; 4,4'-dihydroxy-alpha,alpha'-diethylstilbene; and 4,4'dihydroxy-alpha,alpha'-dimethylstilbene.

5,614,600

FIBER-REINFORCED RESIN PLATE AND PROCESS FOR PRODUCING THE SAME

Masahiro Tsumura; Hiromi Miyasita, and Kaneyoshi Oyama, all of Kamisu-machi, Japan, assignors to Kashima Oil Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,457

Claims priority, application Japan, Jun. 3, 1994, 6-144057

Int. Cl.[6] C08F *283/00;* **C08L** *61/00;* **C08G** *8/28*

U.S. Cl. 525—481 **23 Claims**

1. A fiber-reinforced resin plate comprising a fibrous base material and a matrix,

the matrix being formed by curing a resin composition comprising a highly reactive modified phenolic resin (A) prepared by polycondensing a petroleum heavy oil or pitch, a formaldehyde polymer and a phenol in the presence of an acid catalyst to thereby prepare a modified phenolic resin and reacting the resulant modified phenolic resin with a phenol in the presence of an acid catalyst but in the absence of a formaldehyde polymer and other crosslinking agents to thereby lower the molecular weight of the modified phenolic resin, and an epoxy resin (B).

5,614,601

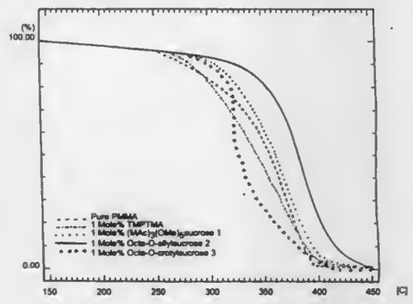
POLYMERS HAVING ENHANCED THERMAL STABILITIES AND METHODS FOR THEIR PREPARATION USING 1',6, 6' 4,4', 6, 6'-TRIMETHACRYLOYL-2, 3, 3', 4, 4'-PENTA-O-METHYLSUCROSE

Navzer D. Sachinvala; Redford F. Ju, both of Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaii Agriculture Research Center, Aiea, Hi.

Division of Ser. No. 199,695, Feb. 28, 1994, Pat. No. 5,470,931, which is a continuation-in-part of Ser. No. 28,545, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,318

Int. Cl.[6] C08F *224/00*

U.S. Cl. 526—238.23 **4 Claims**



1. A method for producing bulk polymers exhibiting enhanced thermal stability which comprises polymerizing a mixture comprising:

(a) an acrylic ester of a saccharide; and

(b) one or more monomers selected from the group consisting of methacrylate ester monomers, acrylate ester monomers, acrylamide monomers and styrene monomers, in relative amounts sufficient to produce polymers exhibiting enhanced thermal stability relative to a polymer comprised of monomer or monomers selected according to (b) but lacking said acrylic ester of a saccharide and wherein said polymers are thermal stable after heating at 200° C. for at least 12 hours.

4. A polymer produced according to claim 1.

5,614,602

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSION POLYMERS

Edward J. Connors, Conshohocken; Michelle L. Cotter, Feasterville, and Fu Chen, Newtown, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

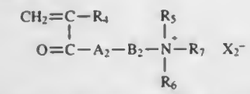
Filed Jul. 9, 1996, Ser. No. 677,180

Int. Cl.[6] C08F *226/02*

U.S. Cl. 526—307.3 **7 Claims**

1. A process for the production of a water soluble copolymer dispersion which is characterized by polymerizing:

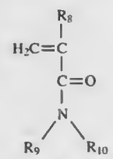
a) from about 10 to about 50 mole percent of a monomer having the formula (II):



(II)

wherein R_4 is H or CH_3; R_5 and R_6 are alkyl groups having 1 to 3 carbon atoms; R_7 is H or an alkyl group having 1 to 3 carbon atoms; A_2 is an oxygen atom or NH; B_2 is an alkylene group having 2 to 4 carbon atoms or a hydroxypropylene group, and X_2^- is an anionic counterion;

b) from about 1 to about 50 mole percent of a N-alkylacrylamide, a N,N-dialkylacrylamide or mixtures thereof having the formula (III):

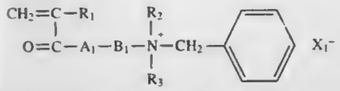


(III)

where R_8 is H or CH_3; and R_9 and R_{10} are H or an alkyl group having 1 to 5 carbon atoms, with the proviso that R_9 and R_{10} are not both H;

c) from about 1 to 70 mole percent (meth)acrylamide; and

d) optionally up to about 4 mole percent of a monomer having the formula (I)



(I)

where R_1 is H or CH_3; R_2 and R_3 are alkyl groups having from 1 to 3 carbon atoms; A_1 is an oxygen atom or NH; B_1 is an alkylene group having 2 to 4 carbon atoms or a hydroxypropylene group; and X_1^- is an anionic counterion;

with the proviso that the sum of a, b, c and d equals 100%; and wherein said polymerization is carried out in the presence of an aqueous salt solution containing a water-soluble cationic polymer insoluble in said aqueous salt solution; a water-soluble cationic polymer soluble in said aqueous salt solution; and a polyvalent anionic salt.

5,614,603

THERMOSETTING SILICONE RESINS

Brian R. Harkness, S. Glamorgan, United Kingdom; Mamoru Tachikawa, and Kasumi Takeuchi, both of Kanagawa, Japan, assignors to Dow Corning Asia, Ltd., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 593,318

Claims priority, application Japan, Feb. 2, 1995, 7-016186

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—14 **13 Claims**

1. A silicone resin comprising a silicone polymer having the general formula

$$(Ph_2SiO)_a(HSiO_{3/2})_b(R^1SiO_{3/2})_c$$

wherein each R^1 independently represents C_1 to C_{18} hydrocarbon groups which may contain at least 1 atom selected from the group consisting of oxygen, nitrogen, chlorine, fluorine, and silicon; Ph represents the phenyl group; the other bond of the O may attach to silicon to form a siloxane bond or may attach to a hydrogen atom to form silanol; the average degree of polymerization of the polymer molecule is 6 to 1,000; and the average proportions of the monomer units fall within the range of $0.6>a/(a+b+c)\geqq 0.4$ and $1.0\geqq b/(b+c)\geqq 0.2$.

5,614,604

COATING THICKENERS COMPRISED OF SILANE-MODIFIED POLYURETHANES

Randolph B. Krafcik, Aurora, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 937,454, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 653,203, Feb. 8, 1991, abandoned. This application May 19, 1995, Ser. No. 446,094

Int. Cl.[6] C08G *77/22*

U.S. Cl. 528—28 **11 Claims**

1. A thickener composition comprising the reaction product of:

(a) an isocyanate functional material,

(b) a polyether polyol,

(c) a monofunctional, active-hydrogen containing, hydrophobic endcapping material selected from the group consisting of C1–C24 alcohols, alkyl and alkaryl polyether alcohols; phenolics; alcohol ethers; and mixtures thereof,

(d) an aminoalkyl silane material, and

(e) water.

5,614,605

RIGID POLYURETHANES BASED ON ALLOPHANATE-MODIFIED ALIPHATIC AND/OR CYCLOALIPHATIC POLYISOCYANURATES

Robson Mafoti, Pittsburgh, Pa., and William E. Slack, Moundsville, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 19, 1994, Ser. No. 359,213

Int. Cl.[6] C08G *18/00*

U.S. Cl. 528—44 **4 Claims**

1. A rigid polyurethane prepared by reaction, at an isocyanate index of 95 to 110, of a mixture consisting essentially of

(a) an allophanate-modified aliphatic and/or cycloaliphatic polyisocyanurate; and

(b)

(i) one or more polyether polyols containing three or more isocyanate-reactive hydroxyl groups and having a molecular weight of 200 to 6000, and

(ii) 0 to 30% by weight, relative to component (b)(i), of one or more isocyanate-reactive compounds other than a polyether of component (b)(i) and containing two or more isocyanate-reactive hydroxyl groups and having a molecular weight of 400 to 10,000.

5,614,606

POLYAMIC ACIDS AND POLYIMIDES

Mohammad A. Chaudhari, Bethel; John J. King, Ridgefield, and Byung Lee, Brookfield, all of Conn., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Dec. 31, 1986, Ser. No. 948,279

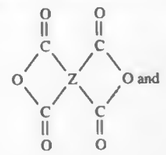
Int. Cl.[6] C08G *73/10*

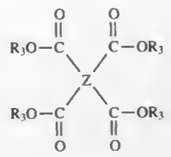
U.S. Cl. 528—353 **18 Claims**

1. A polyamic acid obtained from the reaction of

(a) a non-phenylindane-containing polyfunctional amine;

(b) a polyfunctional anhydride or ester thereof of the formula

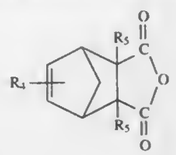




wherein Z is a tetravalent aryl radical; and

R_3 is hydrogen or C_1–C_6alkyl, with at least two R_3 groups being alkyl; and

(c) a monofunctional anhydride of the formula



wherein R_4 is allyl or methallyl; and

R_5 is hydrogen or C_1–C_6alkyl.

5,614,607

POLYIMIDE AND A METHOD OF PREPARING POLYAMIDE FROM TETRACARBOXYLIC DIANHYDRIDE AND DIISOCYANATE

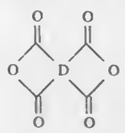
John N. Hay, Guildfoud, and Barry Woodfine, Ederhridge, both of United Kingdom, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 30, 1995, Ser. No. 413,271

Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—353 **4 Claims**

1. A method of preparing a polyimide comprising: reacting together a dianhydride of the formula (II)



(II)

in which D is a group comprising one or more aromatic rings, to which the anhydride carbon atoms are directly bonded,

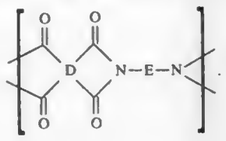
with a diisocyanate of the formula (III)

OCN—E—NCO (III)

in which E is a group comprising one or more cycloaliphatic or aromatic rings, to which isocyanate nitrogen atoms are bonded directly or via an aliphatic group, provided that said isocyanate nitrogen atoms are not bonded directly to an aromatic ring,

or a blocked isocyanate, or other chemical equivalent of said diisocyanate (III),

to form a polyimide having repeating units of the formula (I)



(I)

5,614,608

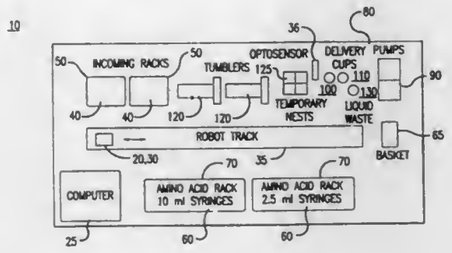
APPARATUS AND METHOD FOR MULTIPLE SYNTHESIS OF ORGANIC COMPOUNDS ON POLYMER SUPPORT

Viktor Krchnak; Michal Lebl, and Bruce Seligmann, all of Tucson, Ariz., assignors to Selectide Corporation, Del.

Filed Jan. 20, 1995, Ser. No. 375,879

Int. Cl.[6] B01J *8/02;* **C07K** *1/04;* **C08F** *283/00*

U.S. Cl. 530—334 **39 Claims**



26. A process for the automated solid phase synthesis of multiple peptides formed by repeated cycles of washing, adding deprotection reagents, deprotection, adding coupling reagents and coupling so as to repeatably couple amino acids to a solid support, said process comprising the steps of:

a) filling a first set of syringes, each with a resin solid support;

b) filling a second set of syringes, each with a desired amino acid;

d) washing one of said first set of syringes with a first solution;

e) adding deprotection solution to the syringe of step d) to initiate deprotection;

f) while deprotection of step e) is proceeding repeating steps d) and e) if the time for performing those steps is less than the time required for deprotection, otherwise proceeding with step g);

g) adding coupling solution to the syringe of step d) to initiate coupling to thereby couple a desired amino acid to the solid support; and

h) while coupling of step g) is proceeding repeating steps f) and g) if the time for performing those steps is less than the time for coupling, otherwise proceeding with steps d) and e) until the time for coupling expires.

5,614,609

SERINE THREONINE KINASE RECEPTOR

Carlos F. Ibáñez, Stockholm; Mikael Rydén, Hägersten, and Henrik Jörnvall, Sundbyberg, all of Sweden, assignors to Carlos F. Ibanez, Stockholm, Sweden

Continuation-in-part of Ser. No. 325,956, Oct. 20, 1994, abandoned. This application Nov. 15, 1994, Ser. No. 341,916

Int. Cl.[6] C07K *14/715*

U.S. Cl. 530—350 **1 Claim**

1. A substantially pure ALK-7 polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2.

5,614,610

TUMOR IMMUNOTHERAPY USING ANTI-IDIOTYPIC ANTIBODIES

Ingegerd Hellstrom; Karl E. Hellstrom; Maria S. Kahn, and Donna F. Beaton, all of Seattle, Wash., assignors to Oncogen, Seattle, Wash.

Continuation-in-part of Ser. No. 116,802, Nov. 4, 1987, Pat. No. 4,918,164, Ser. No. 96,095, Sep. 10, 1987, abandoned, Ser. No. 901,856, Aug. 28, 1986, abandoned, Ser. No. 776,321, Oct. 18, 1985, Pat. No. 4,906,562, and Ser. No. 684,759, Dec. 21, 1984, Pat. No. 4,935,495. This application Jul. 28, 1988, Ser. No. 225,446

Int. Cl.[6] C07K *16/42*

U.S. Cl. 530—387.2 **5 Claims**

1. A monoclonal anti-idiotypic antibody, the antigen-combining site of which specifically binds to the idiotype of monoclonal antibody L6 as deposited with the ATCC and assigned accession number HB8677.

5,614,611

HUMANIZED MONOCLONAL ANTIBODIES BINDING TO IGE-BEARING B CELLS BUT NOT BASOPHILS

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation of Ser. No. 357,483, May 26, 1989, Pat. No. 5,420,251, which is a continuation-in-part of Ser. No. 291,068, Dec. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 226,421, Jul. 29, 1988, Pat. No. 5,422,258, which is a continuation-in-part of Ser. No. 140,036, Dec. 31, 1987, abandoned. This application Oct. 25, 1994, Ser. No. 328,842

Int. Cl.[6] C07K *16/28*

U.S. Cl. 530—387.3 **7 Claims**

1. An monoclonal antibody wherein the constant region is that of human IgG1 or IgG3, which binds to the membrane-bound form of IgE expressed on the surface of IgE-bearing B lymphocytes but not to IgE bound to basophils.

5,614,612

PURIFIED GP120 COMPOSITIONS RETAINING NATURAL CONFORMATION

Nancy L. Haigwood, and Carl Scandella, both of 7050 Sayer Dr., Oakland, Calif. 94611

Continuation of Ser. No. 109,002, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 684,963, Aug. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 490,858, Mar. 9, 1990, abandoned. This application May 9, 1994, Ser. No. 240,073

Int. Cl.[6] C07K *1/00;14/00;* **A61K** *39/00;39/21*

U.S. Cl. 530—395 **10 Claims**

1. A purified, full-length, non-fusion recombinant HIV gp120 glycoprotein having protein/protein-interaction properties substantially identical to gp120 as presented on an HIV virus and being substantially free of other proteins.

5,614,613

MONOAZO REACTIVE DYES

John A. Taylor, Prestwich, United Kingdom, assignor to Zeneca Limited, London, England

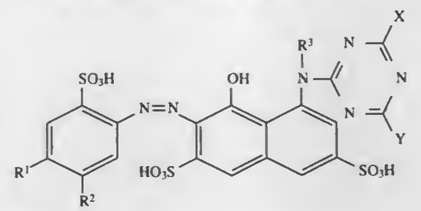
Filed Mar. 3, 1994, Ser. No. 205,113

Claims priority, application United Kingdom, Mar. 29, 1993, 9306452

Int. Cl.[6] C09B *62/51;62/085;* **D06P** *1/38*

U.S. Cl. 534—638 **9 Claims**

1. A compound of the Formula (2) and salts thereof:



(2)

wherein:

R^1 and R^2 are each independently optionally substituted alkyl;

R^3 is H or optionally substituted alkyl;

X is chloro

Y is a group of formula



or —OR^5;

R^4 is H or alkyl; and

R^5 is H or optionally substituted alkyl.

5,614,614

ERYHROMYCIN DERIVATIVES

Constantin Agouridas, Nogent Sur Marne; Alain Bonnefoy, Les Lilas; Jean-Francois Chantot, Gressy En France; Alexis Denis, and Odile Le Martret, both of Paris, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 146,697, Nov. 1, 1993. This application Feb. 21, 1995, Ser. No. 391,959

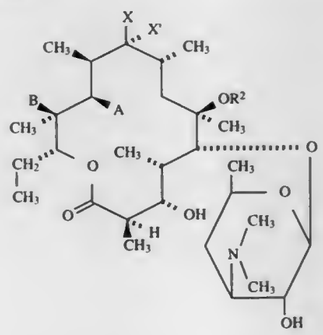
Claims priority, application France, Nov. 5, 1992, 92 13320; Jul. 2, 1993, 93 08109

Int. Cl.[6] C07H *17/08*

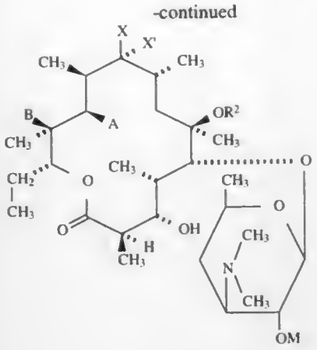
U.S. Cl. 536—7.5 **2 Claims**

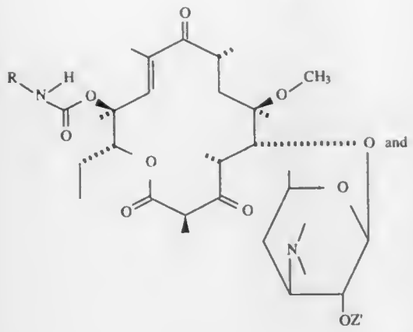
1. A compound having a formula selected from the group consisting of

III

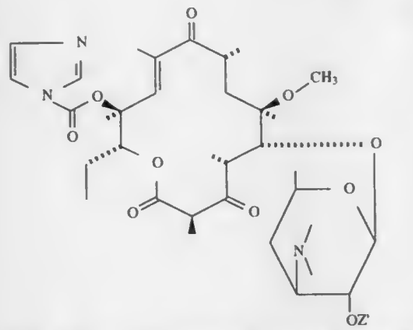


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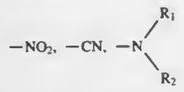




and



wherein R', is an easily cleavable ester of an acid selected from the group consisting of sulfonic acid, methane sulfonic acid, p-toluene sulfonic acid and trifluoromethane sulfonic acid, Z' is an acyl of an organic carboxylic acid of up to 18 carbon atoms and R is $-(CH_2)_n$ $-Ar_1$ or $-XAr_2$, n is an integer from 1 to 7, Ar_1 and Ar_2 are individually selected from the group consisting of a) carbocyclic aryl of up to 18 carbon atoms substituted by at least one member of the group consisting of free carboxy, alkoxycarbonyl and carboxyl salified with a pharmaceutically acceptable base, —OH, halogen,



,alkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkenyloxy, alkynyloxy, alkenylthio, alkynylthio, N-alkyl, N-alkenyl and N-alkynyl of up to 12 carbon atoms optionally substituted with at least one halogen, R_1 and R_2 are individually hydrogen or alkyl of 1 to 12 carbon atoms, b)

IV

wherein R_3 is selected from the group consisting of alkyl of 1 to 12 carbon atoms, optionally substituted carbocyclic aryl, carbocyclic aryloxy and carbocyclic arylthio, optionally substituted heterocyclic selected from the group consisting of thienyl, furyl, pyrrolyl, thiazolyl, oxazolyl, imidazolyl, thiadiazolyl, pyrazolyl, pyridyl, pyrimidinyl, pyridazinyl, indolyl, benzofuryl, benzothienyl, quinolinyl and a purine base remainder with the optional substituents being those of carbocyclic aryl above and X is an alkyl of 1 to 6 carbon atoms interrupted by a member of the group consisting of —O—, —S—, —SO—, SO_2, —CO—,

VI

5,614,615

SIALYL LEWIS X MIMETICS INCORPORATING FUCOPEPTIDES

Chi-Huey Wong, Rancho Santa Fe, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 407,912, Mar. 21, 1995. This application Aug. 25, 1995, Ser. No. 519,203

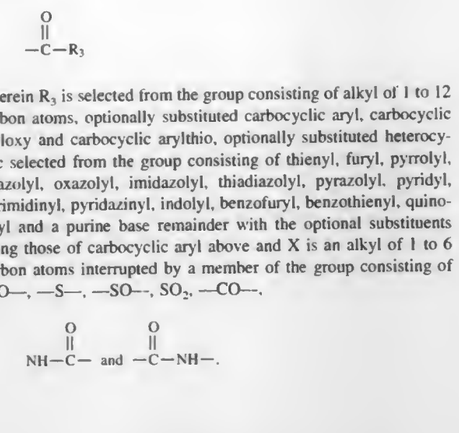
Int. Cl.[6] C07K *9/00;* **A61K** *31/70;38/14;* **C07H** *15/00*

U.S. Cl. 536—17.9 **18 Claims**

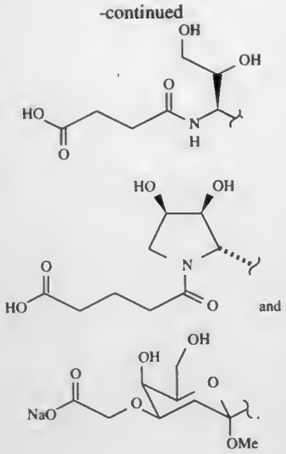
1. A compound of the formula:

VII 

wherein R_1 is selected from the following group:



-continued



and

5,614,616

PROCESS FOR THE PRODUCTION OF POLYSACCHARIDES

Hans-Josef Buysch, Krefeld; Klaus Szablikowski, Walsrode, and Jörn Breckwoldt, Rothenburg, all of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

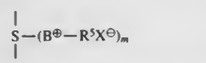
Filed Aug. 16, 1991, Ser. No. 746,397

Claims priority, application Germany, Aug. 23, 1990, 40 26 617.6

Int. Cl.[6] C08B *11/15*

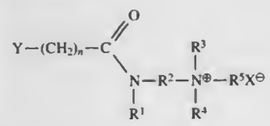
U.S. Cl. 536—18.7 **7 Claims**

1. A process for the production of polysaccharides corresponding to recurrent formula (I)



(I)

comprising reacting of polysaccharides with an alkyl halide corresponding to formula (II)

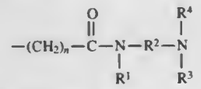


(II)

in which

S is a monosaccharide unit and

B is a group of formula (Ia) attached to the monosaccharide unit S by an O atom



(Ia)

n=an integer of 1 to 6,

R^1=H, C_{1-4} alkyl,

R^2=an alkylene radical which may interrupted by an O or N atom,

R^3,R^4=an alkyl, aralkyl or aryl radical, an alkyl radical which may be interrupted by a heteroatom,

m=a number of 0.05 to 3.0,

R^5=an alkyl radical optionally containing an olefinic double bond or an O atom or an aralkyl radical,

Y=Cl, Br,

$X^{\ominus}$=an anion or

R^3 and R^4 together with the common N atom form a ring optionally containing another heteroatom.

5,614,617

NUCLEASE RESISTANT, PYRIMIDINE MODIFIED OLIGONUCLEOTIDES THAT DETECT AND MODULATE GENE EXPRESSION

Philip D. Cook, Carlsbad, and Yogesh S. Sanghvi, San Marcos, both of Calif., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

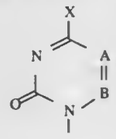
PCT No. PCT/US91/04681, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/02258, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 1, 1991, Ser. No. 971,978

Int. Cl.[6] C07H *21/02;21/04;19/10;* **A61K** *31/70*

U.S. Cl. 536—23.1 **18 Claims**

1. An oligonucleotide or an oligonucleotide analog comprising at least five covalently bound nucleoside units connected together by phosphate linkages, which nucleoside units individually comprise a ribose or deoxyribose sugar portion covalently bound to a base portion, wherein a plurality of base portions are pyrimidine bases; and at least one of said pyrimidine bases is a modified pyrimidine base having the structure:



wherein:

X=OH or NH_2;

B is selected from the group consisting of:

C-lower alkyl, N, C—CF_3, C—F, C—Cl, C—Br, C—I, C-halocarbon, C—NO_2, C—CF_3, C—SH, C—SCH_3, C—OH, C—O-lower alkyl, C—CH_2OH, C—CH_2SH, C—CH_2SCH_3, C—CH_2OCH_3, C—NH_2, C—CH_2NH_2, C—alkyl-NH_2, C-benzyl, C-aryl, C-substituted aryl or benzyl wherein said substituents are selected from the group consisting of methyl, hydroxyl, alkoxy, alcohol, benzyl, phenyl, nitro, thiol, and halogen; provided that when B is N, then said sugar portion to which said modified pyrimidine base is bound is deoxyribose; and

A is selected from the group consisting of:

C—H, N, C—CF_3, C-halocarbon, C—NO_2, C—OCF_3, C—SH, C—SCH_3, C—OH, C—O-lower alkyl, C—CH_2OH, C—CH_2SH, C—CH_2SCH_3, C—CH_2OCH_3, C—NH_2, C—CH_2NH_2, C-benzyl, C-aryl, C-substituted aryl or benzyl wherein said substituents are selected from the group consisting of methyl, hydroxyl, alkoxy, alcohol, benzyl, phenyl, nitro, thiol, and halogen.

5,614,618
ORIGIN OF REPLICATION COMPLEX GENES

Bruce W. Stillman; Stephen P. Bell; Ryuji Kobayashi, all of Cold Spring Harbor, N.Y.; Jasper Rine, Moraga, Calif.; Margit Foss, Durham, N.C.; Francis J. McNally, Davis, Calif.; Patricia Laurenson, San Francisco, Calif.; Ira Herskowitz, Berkeley, Calif.; Joachim Li, San Francisco, Calif.; Kimberly Gavin, and Masumi Hidaka, both of Cold Spring Harbor, N.Y., assignors to Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., and The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 168,479, Dec. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,106

Int. Cl.[6] C07H *21/02;* **C07M** *21/04;* **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 536—23.1 **21 Claims**

1. An isolated nucleic acid encoding a origin of replication (ORC) protein, said ORC protein selected from the group consisting of ORC1 (SEQ ID NO:2, 14, 16 or 18), ORC2 (SEQ ID NO:4, 20, 22 or 24), ORC3 (SEQ ID NO:6), ORC4 (SEQ ID NO:8), ORC5 (SEQ ID NO:10) and ORC6 (SEQ ID NO:12).

5,614,619
SECONDARY-METABOLITE BIOSYNTHESIS GENES FROM ACTINOMYCETES, METHOD OF ISOLATING THEM AND THEIR USE

Wolfgang Piepersberg, Wuppertal; Michael Stockmann, Bonn; Kambiz M. Taleghani, München; Jürgen Distler, Wuppertal; Susanne Grabley, Königstein; Petra Sichel, Rüsselsheim, and Barbara Bräu, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP92/02111, § 371 Date Aug. 25, 1994, § 102(e) Date Aug. 25, 1994, PCT Pub. No. WO93/06219, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 15, 1992, Ser. No. 196,218

Claims priority, application Germany, Sep. 18, 1991, 41 30 967.7

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—23.2 **2 Claims**

1. The DNA sequence of SEQ ID NO:31.

5,614,620
DNA BINDING PROTEINS INCLUDING ANDROGEN RECEPTOR

Shutsung Liao, and Chawnshang Chang, both of Chicago, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 438,775, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 312,763, Feb. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 253,807, Oct. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 176,107, Mar. 30, 1988, abandoned. This application Nov. 8, 1993, Ser. No. 149,691

Int. Cl.[6] C07H *21/04;* **C12N** *15/00;1/20*

U.S. Cl. 536—23.5 **9 Claims**

1. An isolated and purified DNA sequence encoding human androgen receptor and as set forth in FIG. 3.

5,614,621
PROCESS FOR PREPARING OLIGONUCLEOTIDES USING SILYL-CONTAINING DIAMINO PHOSPHOROUS REAGENTS

Vasulinga T. Ravikumar, Carlsbad; Dennis Mulvey, Vista; Douglas L. Cole, San Diego, and Phillip D. Cook, Carlsbad, all of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

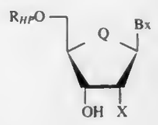
Filed Jul. 29, 1993, Ser. No. 99,075

Int. Cl.[6] C07H *1/00;21/00*

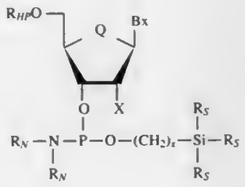
U.S. Cl. 536—25.34 **22 Claims**

1. A synthetic process comprising the steps of:

contacting a compound having formula I with a silylalkyl coupling reagent having formula $_2PO(CH_2)_xSi(R_S)_3$ for a time and under reaction conditions effective to form a compound having formula II:



I



II

wherein:

each Q is O;

each B_X is, independently, a nucleosidic base;

each X is, independently, H, OH, alkyl, substituted alkyl, alkaryl or aralkyl, F, Cl, Br, CN, CF_3, OCF_3, OCN, O-alkyl, S-alkyl, N-alkyl, O-alkenyl, S-alkenyl, N-alkenyl, $SOCH_3$, SO_2CH_3, ONO_2, NO_2, N_3, NH_2, or substituted silyl;

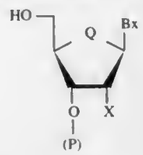
R_{HP} is a hydroxyl protecting group;

each R_N is, independently, alkyl having 1 to about 10 carbon atoms;

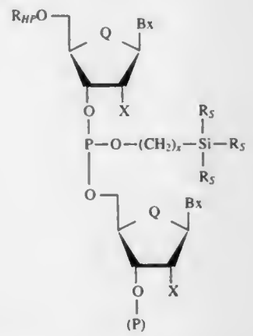
each R_S is, independently, alkyl having 1 to about 10 carbon atoms or aryl having 6 to about 10 carbon atoms; and

x is 1 to about 7 ;

contacting said compound having formula II with a compound having formula III for a time and under reaction conditions effective to form a compound having formula IV:



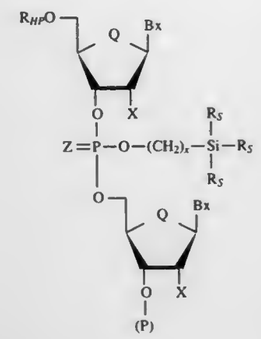
III



IV

wherein (P) is H, a hydroxyl protecting group or a solid support:

contacting said compound having formula IV with an oxidizing agent for a time and under reaction conditions effective to form a compound having formula V:



V

wherein Z is O or S;

contacting said compound having formula V with aqueous base or fluoride ion to remove said silylalkyl phosphate protecting group.

5,614,622
5-PENTENOYL MOIETY AS A NUCLEOSIDE-AMINO PROTECTING GROUP, 4-PENTENOYL-PROTECTED NUCLEOTIDE SYNTHONS, AND RELATED OLIGONUCLEOTIDE SYNTHESES

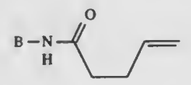
Radhakrishnan P. Iyer, Shrewsbury; Theresa Devlin, Jamaica Plain; Ivan Habus, Shrewsbury; Dong Yu, Shrewsbury, and Sudhir Agrawal, Shrewsbury, all of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 457,198, Jun. 1, 1995. This application Aug. 24, 1995, Ser. No. 518,921

Int. Cl.[6] C07H *19/06;19/10;19/16;19/20;21/00*

U.S. Cl. 536—25.33 **5 Claims**

1. A nucleoside base protecting group attached to a nucleoside base, the protecting group having the structure



wherein B is a nucleoside base and the nitrogen displayed is the protected amino moiety of the nucleoside base.

2. A nucleoside synthon which is a nucleoside phosphoramidite, a nucleoside phosphotriester, or a nucleoside H-phosphonate having a base-protecting group according to claim 1.

5. A method for synthesizing an oligonucleotide, the method comprising coupling a nucleoside synthon according to claim 2 to a nucleoside and deprotecting the nucleoside base with a reagent comprising Br_2 or I_2 in water, or in pyridine/ROH, wherein R is an alkyl, aralkyl or aryl group having 1–10 carbon atoms.

5,614,623
DIASTEREOMERS OF 1-(ISOPROPOXYCARBONYLOXY)ETHYL 3-CEPHEM-4-CARBOXYLATE AND PROCESSES FOR THEIR PREPARATION

Gerd Fischer, Limburg; Elisabeth Defoβa, Idstein; Uwe Gerlach, Frankfurt am Main; Rolf Hörlein, Frankfurt am Main; Norbert Krass, Frankfurt am Main; Rudolf Lattrell, Königstein/Taunus; Ulrich Stache, Hofheim am Taunus; Theodor Wollmann, Hofheim am Taunus, and Dieter Isert, Eschborn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

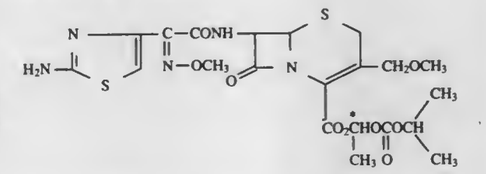
Division of Ser. No. 940,367, Sep. 3, 1992, Pat. No. 5,461,043. This application May 22, 1995, Ser. No. 447,249

Claims priority, application Germany, Sep. 7, 1991, 41 29 771.7

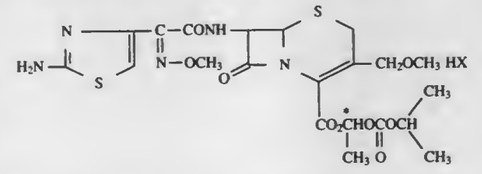
Int. Cl.[6] C07D *501/22*

U.S. Cl. 540—222 **11 Claims**

1. A process for the preparation of a diastereomerically pure compound of the formula I

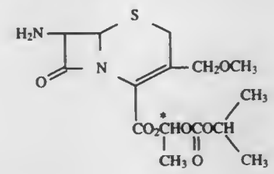


or a diastereomerically pure salt thereof of the formula II

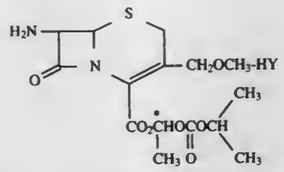


where HX is a mono- or polybasic acid and X is an inorganic or organic physiologically acceptable anion,

which comprises preparing a diastereomer mixture of intermediates of the formula III



or of the formula IV



in which HY is a mono- or polybasic acid, where Y is an inorganic or organic anion, in diastereomerically pure form and converting the intermediate into the pure diastereomers of the formula I or of the formula II.

5,614,624

CARBAPENEM

Koichi Hirai; Yuji Iwano; Takahide Nishi; Akira Yoshida; Kozo Oda, all of Tokyo, Japan, and Hiroo Koyama, Westfield, N.J., assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 289,133, Aug. 11, 1994, Pat. No. 5,541,317, which is a continuation-in-part of Ser. No. 90,489, Jul. 12, 1993, abandoned, and Ser. No. 119,008, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 888,879, May 26, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,209

Claims priority, application Japan, May 31, 1991, 3-129576; Jul. 12, 1991, 3-172220; Sep. 9, 1992, 4-240825; Dec. 4, 1992, 4-325114

Int. Cl.[6] C07D *487/04*

U.S. Cl. 540—350 **13 Claims**

1. A compound selected from the group consisting of
4-nitrobenzyl-2-(2-diethylcarbamoylphenylthio)-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-(2-diethylcarbamoylphenylsulfinyl)-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-(2-diethylcarbamoylphenylsulfonyl)-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-(2-diethylcarbamoylphenylthio)-1-methyl-6-(1-hydroxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-(2-diethylcarbamoylphenylsulfinyl)-1-methyl-6-(1-hydroxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-(2-diethylcarbamoylphenylsulfonyl)-1-methyl-6-(1-hydroxyethyl)-1-carbapen -2-em-3-carboxylate,
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylthio]-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen-2-em-3-carboxylate,
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylsulfinyl]-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen-2-em-3-carboxylate,
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylsulfonyl]-1-methyl-6-(1-trimethylsilyloxyethyl)-1-carbapen-2-em-3-carboxylate,
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylthio]-1-methyl-6-(1-hydroxyethyl)-1-carbapen-2-em-3-carboxylate,
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylsulfinyl]-1-methyl-6-(1-hydroxyethyl)-1-carbapen-2-em-3-carboxylate and
4-nitrobenzyl-2-[2-(1-perhydroazepinylcarbonyl)phenylsulfonyl]-1-methyl-6-(1-hydroxyethyl)-1-carbapen-2-em-3-carboxylate;
or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof.

5,614,625

HYDROXAMIC ACID DERIVATIVES WITH TRICYCLIC SUBSTITUTION

Michael J. Broadhurst, Royston; Paul A. Brown, and William H. Johnson, both of Hitchin, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

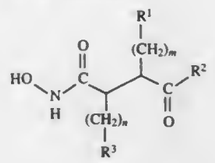
Filed Apr. 5, 1995, Ser. No. 417,317

Claims priority, application United Kingdom, Apr. 25, 1994, 9408183; Jan. 30, 1995, 9501737

Int. Cl.[6] C07D *401/08;403/06;413/06;417/06*

U.S. Cl. 540—480 **15 Claims**

1. Compounds of the formula



(I)

wherein

R^1 represents cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl;

R^2 represents a saturated 5- to 8-membered monocyclic or bridged N-heterocyclic ring, which N-heterocyclic ring is attached via the N atom and when it is monocyclic, optionally contains NR^4, O, S, SO or SO_2 as a ring member and/or is optionally substituted on one or more C atoms by hydroxy, lower alkyl, lower alkoxy, oxo, ketalized oxo, amino, mono-(lower alkyl)amino, di(lower alkyl) amino, carboxy, lower alkoxycarbonyl, hydroxymethyl, lower alkoxymethyl, carbamoyl, mono(lower alkyl)-carbamoyl, di(lower alkyl)carbamoyl or hydroxyimino;

R^3 represents a 5- or 6-membered N-heterocyclic ring which (a) is attached via the N atom, (b) optionally contains N, O and/or S, SO or SO_2 as a additional ring member, (c) is substituted by oxo on one or both C atoms adjacent to the linking N atom and (d) is optionally benz-fused or optionally substituted on one or more other C atoms by lower alkyl or oxo and/or on any additional N atom(s) by lower alkyl or aryl;

R^4 represents hydrogen, lower alkyl, aryl, aralkyl or a protecting group;

m stands for 1 or 2; and

n stands for an integer from 1 to 4;

lower alkyl is a straight chain or branched-chain alkyl group of 1–6 carbon atoms;

lower alkoxy is a straight chain or branched-chain alkoxy group of 1–6 carbon atoms;

and pharmaceutically acceptable salts thereof.

5,614,626

1,2,3-OXATHIAZIN-4(3F)-ONE 2,2-DIOXIDES, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS ELECTROPHILIC FLUORINATING AGENTS

Ivan Cabrera, Dreieichenhain, and Wolfgang Appel, Kelkheim, both of Germany, assignors to Hoechst AG, Germany

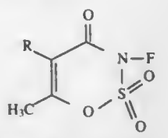
Filed Jul. 11, 1995, Ser. No. 500,166

Claims priority, application Germany, Jul. 13, 1994, 44 25 407.5

Int. Cl.[6] C07D *291/06*

U.S. Cl. 544—2 **2 Claims**

1. A compound of the formula (I)



(I)

in which R is hydrogen or $(C_1–C_4)$-alkyl.

5,614,627

QUINAZOLINE COMPOUNDS

Yasutaka Takase; Nobuhisa Watanabe; Hideyuki Adachi; Kohtaro Kodama; Hiroki Ishihara; Takao Saeki, and Shigeru Souda, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Japan

PCT No. PCT/JP94/01504, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO95/07267, PCT Pub. Date Mar. 16, 1995

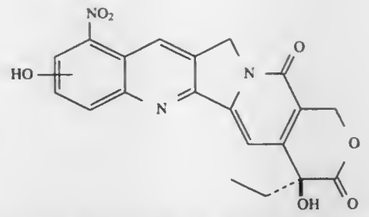
PCT Filed Sep. 12, 1994, Ser. No. 432,206

Claims priority, application Japan, Sep. 10, 1993, 5-248615

Int. Cl.[6] C07D *403/04;* **A61K** *31/47*

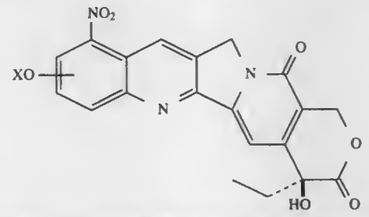
U.S. Cl. 544—293 **3 Claims**

1. A compound or a pharmacologically acceptable salt thereof selected from the group consisting of:
4-(3-ethoxycarbonylpropyl)amino-6,7,8-trimethoxy-quinazoline;
4-(3-carboxypropyl)amino-6,7,8-trimethoxy-quinazoline;
4-(5-ethoxycarbonylpentyl)amino-6,7,8-trimethoxy-quinazoline;
4-(5-ethoxycarbonylpentyl)amino-6-chloro-quinazoline;
4-(ethoxycarbonylmethyl)amino-6,7,8-trimethoxy-quinazoline;
4-(6-ethoxycarbonylhexyl)amino-6,7,8-trimethoxy-quinazoline;
4-(2-ethoxycarbonylethyl)amino-6,7,8-trimethoxy-quinazoline;
4-(4-ethoxycarbonylbutyl)amino-6,7,8-trimethoxy-quinazoline;
4-(7-ethoxycarbonylheptyl)amino-6,7,8-trimethoxy-quinazoline;
4-(5-carboxypentyl)amino-6-chloroquinazoline; and
4-(carboxymethyl)amino-6,7,8-trimethoxy-quinazoline.



(IV)

(4) isolating and converting the compound of formula (IV) into a corresponding compound of formula (V)



(V)

wherein XO is a group that can be removed by catalytic reduction; and

(5) isolating and reducing the compound of formula (v), to form the 9-amino camptothecin of formula (I).

5,614,628

PROCESS FOR THE PREPARATION OF 9-AMINO CAMPTOTHECIN

Walter Cabri, Rozzano; Ilaria Candiani, Arsizio; Franco Zarini, Milanese; Angelo Bedeschi, and Sergio Penco, both of Milan, all of Italy, assignors to Pharmacia & Upjohn S.p.A., Milan, Italy

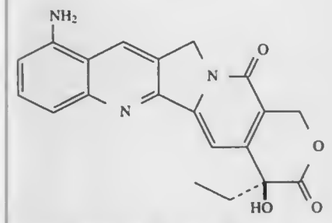
Filed Sep. 28, 1994, Ser. No. 313,906

Claims priority, application United Kingdom, Sep. 28, 1993, 9319944

Int. Cl.[6] C07D *491/147*

U.S. Cl. 546—48 **8 Claims**

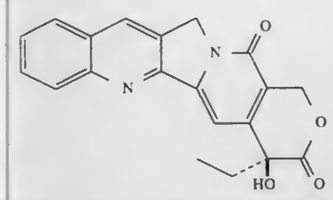
1. A process for preparing a 9-amino camptothecin of formula (I)



(I)

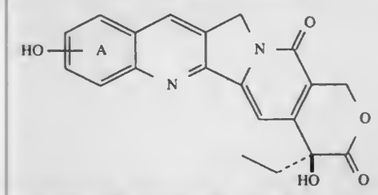
said process comprising the steps of:

(1) oxidizing by peroxide N-oxidation a compound of formula (II)



(II)

(2) isolating and irradiating the oxidized compound obtained in step (1) to form a compound of formula (III)



(III)

(3) isolating and nitrating the compound of formula (III), wherein the hydroxy group on ring A is in the 10- or 12-position, with a nitrating agent selected from the group consisting of nitric acid, a mixture of nitric acid and sulfuric acid, potassium nitrate, a mixture of nitric acid and boron trifluoride, and a mixture of nitric acid and trifluoromethanesulfonic anhydride to form a compound of formula (IV)

5,614,629

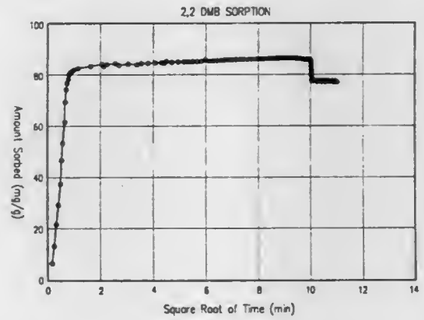
BENZYL QUATERNARY TROPINIUM COMPOUND

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

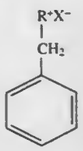
Filed Jan. 30, 1995, Ser. No. 380,278

Int. Cl.[6] C07D *451/02;453/02*

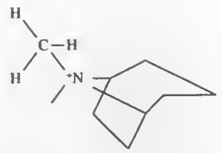
U.S. Cl. 546—124 **5 Claims**



1. A compound having the formula



wherein R is



and X is an anion.

5,614,630

ACENAPHTHYL SUBSTITUTED GUANIDINES AND METHODS OF USE THEREOF

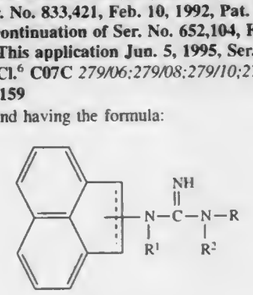
Stanley M. Goldin, Lexington; Subbarao Katragadda, Belmont; Lain-Yen Hu, Bedford; N. Laxma Reddy, Malden, Mass.; James B. Fischer, Cambridge, Mass.; Andrew G. Knapp, Salem, Mass., and Lee D. Margolin, Belmont, all of Mass., assignors to Cambridge NeuroScience, Inc., Cambridge, Mass.

Continuation of Ser. No. 343,829, Nov. 22, 1994, which is a division of Ser. No. 833,421, Feb. 10, 1992, Pat. No. 5,403,861, which is a continuation of Ser. No. 652,104, Feb. 8, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,419

Int. Cl.[6] C07C *279/06;279/08;279/10;279/16*

U.S. Cl. 546—159 **38 Claims**

1. A compound having the formula:



wherein R is cycloalkyl of 3 to 12 carbon atoms; carbocyclic aryl, alkaryl, aralkyl or heterocyclic;

R^1 and R^2 are the same or different and selected from the group consisting of hydrogen, lower C_{1-6} alkyl, lower C_{1-6} alkylamino, C_{5-10} aryl or substituted aryl;

wherein R and the acenaphthyl group are optionally substituted by hydroxy, acetate, oxo, amino, lower C_{1-6} alkyl, lower C_{1-6} alkyl amino, alkoxy of 1–6 carbon atoms, di-lower C_{2-12} alkyl amino, nitro, azido, sulfhydryl, cyano, isocyanato, halogen, amido, sulfonato or carbamido.

5,614,631

1-ALKYL-,1-ALKENYL-, AND 1-ALKYNYLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS

John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Harner, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst Marion Roussel, Inc., Somerville, N.J.

Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application Apr. 21, 1995, Ser. No. 426,453

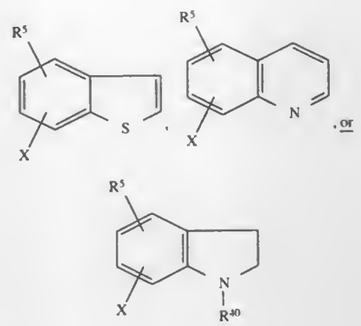
Int. Cl.[6] C07D *215/12;209/10;209/16;333/72*

U.S. Cl. 346—176 **11 Claims**

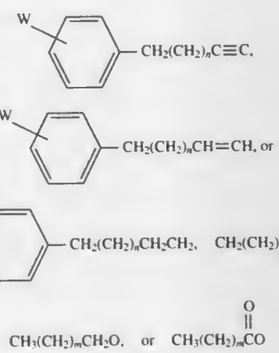
1. A compound of the formula

$RCH(OR^1)CH(NR^2R^3)R^4$ or $RCH_2CR^{35}(NR^2R^3)R^4$

wherein R is



wherein R^5 is $CH_3(CH_2)_mC{\equiv}C$, $CH_3(CH_2)_mCH{=}CH$, $CH_3(CH_2)_m$ CH_2 CH_2,



wherein m is 3 to 15, n is 3 to 12, and W and X are independently hydrogen, hydroxy, loweralkyl, loweralkoxy, halogen, or trifluoromethyl, or

wherein R^{23} is loweralkyl; Z is S, O, or C═O; and A is S or O; R^1 is hydrogen, loweralkyl,

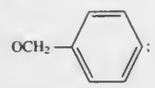


wherein R^{24} is loweralkyl or

wherein R^6 is hydrogen, loweralkyl, loweralkoxy, $N(R^{21})_2$ wherein R^{21} is hydrogen, loweralkyl, or



wherein W is as above, or



R^2 is hydrogen or loweralkyl, R^3 is hydrogen, loweralkyl or



wherein R^6 is as above or NHR^{27} wherein R^{27} is loweralkyl, R^{35} is



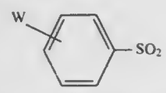
wherein R^{36} is loweralkyl; R^4 is



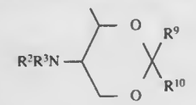
wherein R^7 is hydrogen or loweralkyl, $C(R^{25})_2OR^8$ wherein R^8 is hydrogen, loweralkyl, or



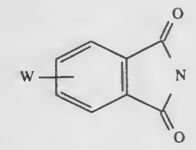
wherein R^6 is as above and R^{25} is hydrogen or loweralkyl; R^{40} is loweralkyl or a group of the formula



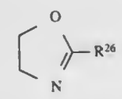
wherein W is as above; R^1 and R^8 taken together with the oxygen to which they are attached form a group of the formula



wherein R^9 and R^{10} are independently hydrogen or loweralkyl; R^2 and R^3 taken together with the nitrogen atom to which it is attached form a group of the formula



wherein W is as above; R^1, R^2 and R^3 taken together with the nitrogen and oxygen atoms to which they are attached form a group of the formula



wherein R^{26} is loweralkyl; the optical isomers thereof, or the pharmaceutically acceptable salts thereof.

5,614,632

PROCESS FOR THE PREPARATION OF LEUKOTRIENE ANATGONISTS

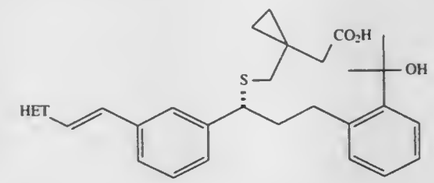
Mahadevan Bhupathy, Edison; James M. McNamara, Rahway, both of N.J.; Daniel R. Sidler, Mansfield, Pa.; Ralph P. Volante, Cranbury, and James Bergan, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 350,428, Dec. 9, 1994, which is a continuation-in-part of Ser. No. 174,931, Dec. 28, 1993, abandoned. This application May 12, 1995, Ser. No. 439,733

Int. Cl.[6] C07D *215/18*

U.S. Cl. 546—180 **7 Claims**

1. A process for the preparation of a compound of formula (I) or a sodium salt thereof

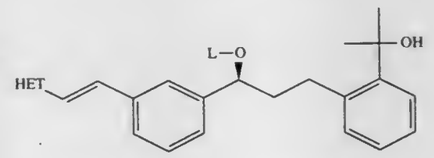


(I)

wherein HET is 7-chloroquinolin-2-yl or 6,7-difluoroquinolin-2-yl, which comprises:

generating the dilithium dianion of 1-(mercaptomethyl)cyclopropaneacetic acid;

reacting said dianion with a compound of formula (II)



(II)

wherein HET is as defined above and L is arylsulfonyl or alkylsulfonyl.

5,614,633

BENZOPYRAN DERIVATIVES

Hiroshi Koga; Haruhiko Sato; Takenori Ishizawa, and Hiroyuki Nabata, all of Shizuoka-ken, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/01150, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04521, PCT Pub. Date Mar. 3, 1993

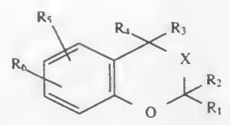
PCT Filed Mar. 15, 1995, Ser. No. 387,745

Claims priority, application Japan, Aug. 17, 1992, 4-217975; Apr. 15, 1993, 5-088462

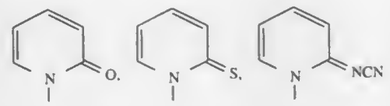
Int. Cl.[6] G07D *405/04*

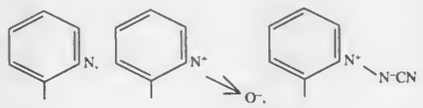
U.S. Cl. 546—282.7 **3 Claims**

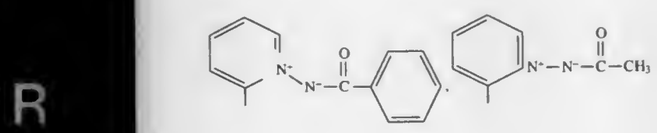
1. A compound represented by the formula:

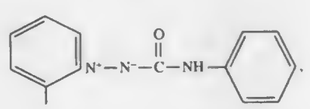


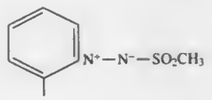
wherein
R_1 and R_2 are CH_2F.
R_3 represents a hydrogen atom or is directly bonded to X to represent a single bond,
R_4 represents

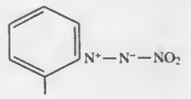












R_5 and R_6, which may be the same or different, represent a hydrogen atom, a halogen, a lower alkyl group, a lower haloalkyl group, a nitro group or a cyano group,
X represents



wherein R_7 and R_8, which may be the same or different, represent a hydrogen atom, a hydroxyl group or a lower acyloxy group, or R_7 is directly bonded to R_3 to represent a single bond.

5,614,634

LEUKOTRIENE-B4 DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE AS PHARMACEUTICAL AGENTS

Josef Heindl; Werner Skuballa; Bernd Buchmann; Wolfgang Frohlich; Roland Ekerdt, and Claudia Giesen, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 161,074, Dec. 3, 1993, Pat. No. 5,440,044, which is a continuation of Ser. No. 984,011, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 820,661, Jan. 17, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,951

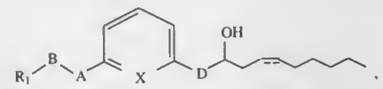
Claims priority, application Germany, Mar. 19, 1990, 40 09 117.1; WIPO, Mar. 19, 1991, PCT/DE91/00249

Int. Cl.[6] C07D *213/89*

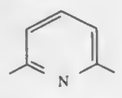
U.S. Cl. 546—301 **2 Claims**

1. A leukotriene-B_4 analog of formula I

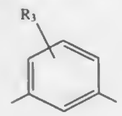
(I)



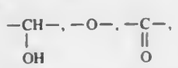
in which
R^1 means radical $COOR^2$ with R^2 meaning a hydrogen atom or a $(C_1–C_4)$-alkyl group or R^1 means radical CH_2OH,
B means an alkylene group with 1–3 C atoms in the chain, a radical



or a radical



with R^3 meaning a hydrogen atom, a carboxy or methoxycarbonyl group,
A is



—NH—CO—, —CO—NH—, —OCH_2—, or —$COCH_2$—;
X means N or CH,
D means groups



and ..... means a single or double bond,
as well as optionally their salts with physiologically harmless bases.

5,614,635

METHOD FOR THE PREPARATION OF PYRIDINE-2,3-DICARBOXYLIC ACIDS

Paul E. Miller, Palmyra, Mo., assignor to American Cyanamid Company, Madison, N.J.

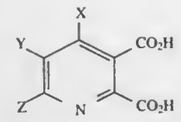
Continuation of Ser. No. 174,658, Dec. 28, 1993, abandoned. This application Aug. 16, 1995, Ser. No. 515,843

Int. Cl.[6] C07D *213/807*

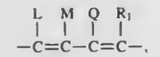
U.S. Cl. 546—320 **18 Claims**

1. A method for the preparation of a pyridine-2,3-dicarboxylic acid of formula I

(I)

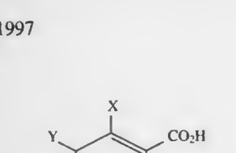


Wherein
X is hydrogen, or methyl, with the proviso that when Y and Z are taken together to form a ring in which YZ is represented by the structure: —$(CH_2)_n$—, where n is 3 or 4, X is hydrogen;
Y is hydrogen, halogen, $C_1–C_6$alkyl, $C_1–C_6$hydroxyalkyl, $C_1–C_6$alkoxyalkyl, $C_1–C_6$haloalkyl, $C_1–C_6$aminoalkyl $C_1–C_6$sulfonylalkyl, nitro, hydroxy,
formyl, carboxy, acyl, amido, amino, $C_1–C_4$alkylamino diloweralkylamino, $C_1–C_4$alkyl sulfonyl, sulfonamido, or phenyl optionally substituted with one $C_1–C_4$alkyl group, $C_1–C_4$ alkylsulfonyl group, halogen, hydroxy, or trifluoromethyl group;
Z is hydrogen, $C_1–C_6$alkyl, $C_1–C_6$hydroxyalkyl, $C_1–C$ 6haloalkyl $C_1–C_6$aminoalkyl, $C_1–C_6$sulfonylalkyl, nitro, hydroxy, formyl, carboxy, acyl, amido, amino, $C_1–C_4$-alkylamino, diloweralkylamino, $C_1–C_4$alkylsulfonyl, sulfonamido, or phenyl
optionally substituted with one $C_1–C_4$alkyl group, $C_1–C_4$alkylsulfonyl group, halogen, hydroxy, or trifluoromethyl group; and when taken together,
Y and Z may form a ring in which YZ is represented by the structure: —$(CH_2)_n$—, where n is 3 or 4, provided that X is hydrogen; or



where L, M, Q, and R_1 each represent members selected from the group consisting of hydroxy, halogen, $C_1–C_4$alkyl, $C_1–C_4$alkyl sulfonyl, $C_1–C_4$haloalkylamino, $C_1–C_4$alkylamino, diloweralkylamino, and trifluoromethyl, with the proviso that only one of L, M, Q or R_1 may represent a substituent other than hydrogen, halogen, or $C_1–C_4$alkyl,
which comprises continuously oxidizing a substituted quinoline of formula II

(II)



wherein
X, Y, and Z are as described for formula I above,
R_2, R_3, R_4 and R_5 are each independently hydrogen, hydroxy, $C_1–C_4$alkoxy, SO_3H, SO_2Cl, SH, halogen, NO_2 or NH_2; with the proviso that one of R_2, R3, R_4 or R_5 is other than hydrogen;
the N-oxides thereof; and
the acid addition salts thereof; by continuously adding aqueous hydrogen peroxide, aqueous base and the formula II substituted quinoline or a solution of the formula II substituted quinoline in aqueous mineral acid or a portion of the aqueous base to a first reaction vessel to form a reaction mixture, allowing the reaction mixture to foam over into a second reaction vessel to form an aqueous solution containing a formula I pyridine-2,3-dicarboxylic acid salt, removing the aqueous solution from the second reaction vessel, and adding mineral acid to the aqueous solution to form the desired pyridine-2,3-dicarboxylic acid of formula I.

5,614,636

PROCESS FOR THE PREPARATION OF 2,4-PYRIDINE DICARBOXYLIC ACID

Jean-Paul Roduit, Sierre; Alain Wellig, Ried-Mörel; Karin Amacker, Eischoll, and Martin Eyer, Glis, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed May 27, 1994, Ser. No. 250,576

Claims priority, application Switzerland, Jun. 1, 1993, 1630/93

Int. Cl.[6] C07D *213/30*

U.S. Cl. 546—327 **17 Claims**

1. A process for the preparation of 2,4-pyridine dicarboxylic acid, comprising reacting 4-cyanopyridine or isonicotinic acid with formamide in the presence of peroxodisulfuric acid or a peroxodisulfate to provide a 2-carboxamide of said 4-cyanopyridine or said isonicotinic acid, respectively, and converting said 2-carboxamide of said 4-cyanopyridine or said isonicotinic acid by alkaline hydrolysis to 2,4-pyridine dicarboxylic acid.

5,614,637

PROCESS FOR PREPARING 1,3-DIALKYL-5-HYDROXYOXINDOLES AND THE ETHER DERIVATIVES THEREOF

Rainer Sobotta; Rainer Schwarz, and Manfred Psiorz, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Continuation of Ser. No. 105,196, Aug. 9, 1993, abandoned. This application May 23, 1995, Ser. No. 448,222

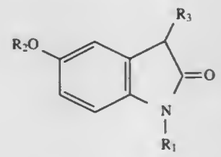
Claims priority, application Germany, Aug. 8, 1992, 42 26 263.1

Int. Cl.[6] C07D *209/34*

U.S. Cl. 548—486 **15 Claims**

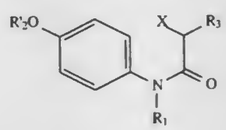
1. A process for preparing a 1,3-dialkyl-5-hydroxyoxindole of formula 1:

1



wherein
R_1 denotes $C_1–C_6$-alkyl,
R_2 denotes hydrogen, and
R_3 denotes $C_1–C_6$-alkyl,
comprising heating an N-alkyl-p-alkoxy-(α-haloacyl)anilide of formula 2:

2



wherein
R_1 denotes $C_1–C_6$-alkyl,
R'_2 denotes $C_1–C_6$-alkyl,
R_3 denotes $C_1–C_6$-alkyl, and
X denotes chlorine or bromine,
in the presence of an anhydrous zinc halide to a temperature in the range from about 120° C. to about 160° C., and isolating the 1,3-dialkyl-5-hydroxyoxindole prepared.

5,614,638

NONIONIC RADIOGRAPHIC CONTRAST AGENTS

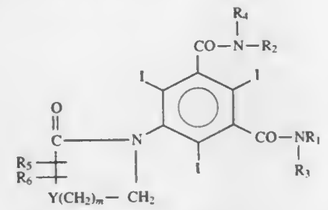
Ramachandran S. Ranganathan, Princeton; Thangavel Arunchalam, Plainsboro; Edmund R. Marinelli, Lawrenceville, and Radhakrishna K. Pillai, Kendall Park, all of N.J., assignors to Bracco International B.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 710,884, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 617,716, Nov. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 442,869, Nov. 29, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 894,691

Int. Cl.[6] C07D *207/02*

U.S. Cl. 548—543 **6 Claims**

1. Compounds of the formula



wherein $—Y(CH_2)_m—$ is $—CH_2—CH_2—$;

R_1, and R_2 are the same or different and are hydrogen, alkyl or hydroxyalkyl;

R_3 and R_4 are the same or different and are hydrogen, alkyl or $—CH_2CH_2OH$; R_5 is hydrogen, alkyl, $—CH_2CH_2OH$, CH_2OH or OH and R_6 is alkyl, $—CH_2CH_2OH$, CH_2OH, OH or hydrogen and may be the same or different than R_5.

5,614,639

PROCESS FOR PREPARING 2-SUBSTITUTED BENZO[B]THIOPHENE COMPOUNDS AND INTERMEDIATES THEREOF

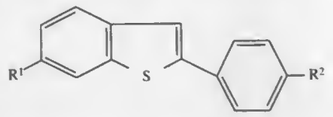
Kenneth L. Hauser, Greencastle; Alan D. Palkowitz, Carmel; Daniel J. Sall, Greenwood, and Kenneth J. Thrasher, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 31, 1995, Ser. No. 415,014

Int. Cl.[6] C07D *333/52;333/56;333/72;405/00*

U.S. Cl. 549—57 **25 Claims**

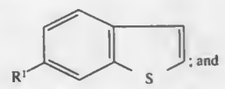
1. A process for preparing a compound of formula I



I

comprising

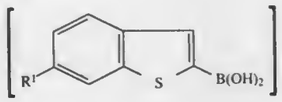
a) forming a 2-position boronic acid derivative of a compound of formula II



II

; and

b) coupling the reaction product from step a), a compound of formula III



III

with a compound of formula IV



IV

wherein

R^1 is —H, —OH, or OR^3, in which R^3 is a hydroxy protecting group;

R^2 is —H, —OH, or OR^4, in which R^4 is a hydroxy protecting group; and

X is bromo, iodo, or triflate.

5,614,640

EPOXY FUNCTIONAL SILOXANES

Tadashi Okawa, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

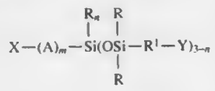
Filed Mar. 21, 1996, Ser. No. 620,697

Claims priority, application Japan, Mar. 22, 1995, 7-090190

Int. Cl.[6] C07F *7/08;* **C07D** *303/02*

U.S. Cl. 549—215 **20 Claims**

1. An alicyclic epoxy-functional siloxane compound having the formula



wherein X is a group selected from the group consisting of acryloxy, methacryloxy, and vinylphenyl, Y is an alicyclic epoxy group, each R is independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation, R^1 is a divalent hydrocarbon group having at least 2 carbon atoms, A is selected from R^1 or a group having the formula $—R^2—O—R^2—$ wherein R^2 is a divalent hydrocarbon group, m has an average value of 0 or 1, and n has an average value 0, 1, or 2.

5,614,641

PROCESS FOR ENANTIOSELECTIVE HYDROGENATION OF THE OXO C=O DOUBLE BOND

Jean-Pierre Genet, Verrières-Le-Buisson; Sylvain Juge, "Le-Champ-des-Cordes" ; Jean-Alex Laffitte, Pau; Catherine Pinel, Arblis, and Serge Mallart, Orsay, all of France, assignors to Elf Aquitaine, France

PCT No. PCT/FR93/00663, § 371 Date Mar. 5, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO94/01390, PCT Pub. Date Jan. 20, 1994

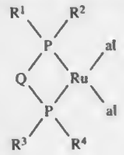
PCT Filed Jun. 30, 1993, Ser. No. 362,557

Claims priority, application France, Jul. 2, 1992, 92 08160

Int. Cl.[6] C07D *307/32;* **C07C** *35/08;27/00;64/76*

U.S. Cl. 549—313 **15 Claims**

1. A process for enantioselective catalytic hydrogenation of the ketone C=O double bond to a secondary alcohol function, said process using a neutral ruthenium complex as the catalyst and a compound containing a C=O group as the substrate to be hydrogenated, characterised in that it comprises hydrogenation of the carbonyl ketone function of the substrate using H_2, in the presence of a diallyl (diphosphino) ruthenium compound with formula



(I)

where

al represents an allyl group,

Q represents a hydrocarbon bridge containing at least two catenary carbon atoms and which can contain one to four catenary heteroatoms selected from O, S, N and Si,

R^1 to R^4 may be identical or different and each represents a hydrocarbon group which may be substituted, selected from C_1–C_{18} alkyl, C_5–C_7 cycloalkyl and C_6–C_{12} aryl groups.

5,614,642

METHODS OF INHIBITING PHOSPHATASE ACTIVITY AND TREATMENT OF DISORDERS ASSOCIATED THEREWITH USING NAPHTHOPYRONES AND DERIVATIVES THEREOF

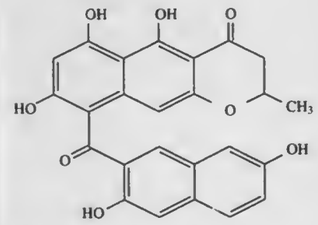
Peng C. Tang, Moraga, and Gerald McMahon, Kenwood, both of Calif., assignors to Sugen Inc., Redwood City, Calif.

Division of Ser. No. 481,955, Jun. 7, 1995. This application Jan. 22, 1996, Ser. No. 599,453

Int. Cl.[6] C07D *311/92*

U.S. Cl. 549—389 **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof.

5,614,643

PROCESS FOR THE ENZYMATIC PRODUCTION OF ISOMERICALLY PURE ISOSORBIDE-2 AND 5-MONOESTERS AS WELL AS THEIR CONVERSION INTO ISOSORBIDE-2- AND 5-NITRATE

Manfred Schneider, and Robert Seemayer, both of Wuppertal, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

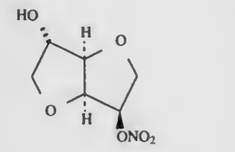
Division of Ser. No. 191,731, Feb. 4, 1994, Pat. No. 5,538,891, which is a continuation-in-part of Ser. No. 938,938, Sep. 1, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 481,915

Claims priority, application Germany, Sep. 2, 1991, 41 29 093.3

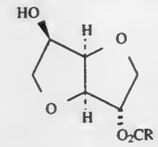
Int. Cl.[6] C07D *493/00*

U.S. Cl. 549—464 **6 Claims**

1. A isometrically pure process for producing an isosorbide -5-nitrate of formula



comprising: reacting an isosorbide-2-ester of formula



with a nitrate to form a second ester, hydrolyzing said second ester to form isometrically pure isosorbide-5-nitrate, and recovering said isometrically pure isosorbide-5-nitrate.

5,614,644

PROCESS FOR THE REMOVAL OF ORGANIC CHLORIDES FROM FURAN AND HYDROGENATED FURANS

Shaowo Liang; John R. Monnier; Stanley J. Okrasinski, all of Kingsport, and Timothy W. Price, Church Hill, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 1, 1995, Ser. No. 521,933

Int. Cl.[6] C07D *307/06;307/08;307/28;307/36*

U.S. Cl. 549—507 **3 Claims**

1. Process for the reduction of chloride content of a crude product stream comprising (i) furan, 2,3-dihydrofuran, 2,5-dihydrofuran, tetrahydrofuran or a mixture thereof and (ii) one or more organic chlorides selected from alkyl chlorides, alkenyl chlorides, cycloalkyl chlorides, aromatic chlorides, by the steps of:

(1) contacting the crude product stream with a copper-containing scavenger material in an organic chloride removal zone; and

(2) removing from the chloride removal zone a refined product stream containing less chloride than the crude stream.

5,614,645

METHODS FOR MAKING 2-DEBENZOYL AND -2-ACYL TAXOL DERIVATIVES

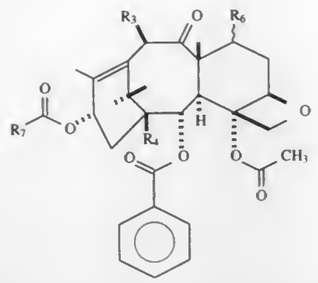
David G. I. Kingston, Blacksburg, Va.; Ashok G. Chaudhary, St. Louis, Mo.; Milind M. Gharpure, Delhi, Ind.; John M. Rimoldi, and A. A. Leslie Gunatilaka, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 202,108, Feb. 25, 1994, which is a continuation-in-part of Ser. No. 29,759, Mar. 11, 1993, abandoned, and Ser. No. 30,612, Mar. 11, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 471,886

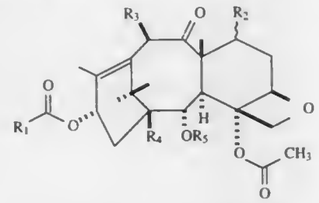
Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **38 Claims**

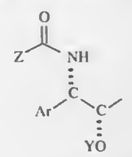
1. A method for making a taxol analogue having a hydroxy substituent at the C-2 position from a taxol analogue having a benzoyloxy substituent at the C-2 position, comprising: a step of base catalyzed hydrolysis under phase transfer conditions of a compound having the formula



wherein said benzoyloxy substiunt at the C-2 position is replaced by a hydroxyl to make a compound having the formula:



wherein R_5 is H , R_2 is selected from the group consisting of H, OH, oxy protecting group and acyloxy, and R_3 is selected from the group consisting of H, OH, and acyloxy, and wherein R_6 is selected from the group consisting of H, OH, oxy protecting group and acyloxy, wherein said acyloxy can be the same or different, and R_4 is H or OH; and R_1 and R_7 are the same or different nd have the general formula:



wherein Ar is phenyl or substituted phenyl; Z is selected from the group consisting of alkoxy, phenyl, and substituted phenyl; and Y is selected from the ground consisting of H, acyl, and protecting group.

5,614,646

SELECTIVE HYDROGENATION OF AROMATIC GROUPS IN THE PRESENCE OF EPOXY GROUPS

Thomas Wettling; Ludwig Schuster, both of Limburgerhof, and Jochem Henkelmann, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 422,926, Apr. 17, 1995, abandoned. This application Nov. 17, 1995, Ser. No. 579,728

Claims priority, application Germany, Apr. 22, 1994, 44 14 089.4

Int. Cl.[6] C07D *301/00;303/27*

U.S. Cl. 549—540 **3 Claims**

1. In a process for the selective hydrogenation with hydrogen of aromatic groups of organic molecules carrying at least one aromatic group and one epoxy group, the improvement which comprises: adding to the reaction mixture from 0.2 to 10 wt % of water, based on the reaction mixture and carrying out the hydrogenation in the presence of ruthenium oxide hydrate as a catalyst.

5,614,647

INTERMEDIATES FOR THE SYNTHESIS OF BISINDOLYLMALEIMIDES

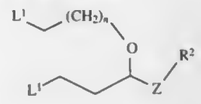
Margaret M. Faul, Zionsville; Michael R. Jirousek, and Leonard L. Winneroski, II, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 317,140, Oct. 3, 1994, Pat. No. 5,541,347, which is a continuation-in-part of Ser. No. 163,060, Dec. 7, 1993, abandoned. This application May 25, 1995, Ser. No. 452,613

Int. Cl.[6] C07C *43/303;317/08*

U.S. Cl. 552—1 **3 Claims**

1. A compound of the Formula



(II)

wherein:

R^2 is N_3, protected —NH, protected amino, or protected hydroxy;

L^1 is independently a leaving group;

Z is $—(CH_2)_n—$; and

n is independently 1, 2, or 3.

5,614,648

ANTIOXIDANT GLYCERIDE DERIVATIVES

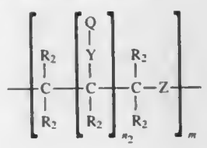
George H. Greene, P.O. Box 2384, Morristown, N.J. 07962; Robert Miller, 740 Island Ct., Columbus, Ohio 43214; James L. Williams, 819 Crofton Clr., Reynoldsburg, Ohio 43068; James C. Phillips, 510 W. Main St., Plain City, Ohio 43064; Jerry F. Stults, 4270 Stover Rd., Ostrander, Ohio 43061, and Jan P. E. Tellings, 3151 Parsons Ave., Columbus, Ohio 43207

Division of Ser. No. 799,061, Nov. 27, 1991, Pat. No. 5,380,890, which is a continuation-in-part of Ser. No. 488,719, Feb. 28, 1990, Pat. No. 5,152,244. This application Jan. 10, 1995, Ser. No. 370,884

Int. Cl.[6] C07C *51/50*

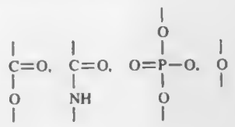
U.S. Cl. 554—4 **7 Claims**

1. An antioxidant-containing derivative of an organic compound which comprises the following formula:



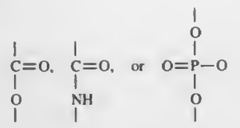
wherein Q, which can be the same or different, is an antioxidant moiety or $—R_1$ with the proviso that at least one Q is an antioxidant;

Y can be the same or different and is



with the provisos that

(i) where Y is



the corresponding R_1 groups, which can be the same or different, is a cyclic or acyclic, an unsubstituted or a hydroxy, carboxy, or halogen substituted alkyl, alkenyl, alkynl, or oxyalkylene group or a sulfur, nitrogen or phosphorus derivative of an alkyl, alkenyl, alkynl, or oxyalkylene group, an unsubstituted or substituted aryl group, or mixtures thereof.

and

(ii) where Y is

the corresponding R_1 group can be hydrogen, in addition to the above described compounds;

R_2 can be the same or different and comprises those R_1 groups described in proviso (ii) above,

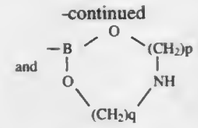
Z can be an O, N, or P,

n_2=1–20, and

m=1–100,

with the proviso that n_2 and m cannot simultaneously be equal to 1.

-continued



where p and q, independently, are 2 or 3;

W is cycloalkyl;

R_5 is selected from the group consisting of $—NO_2$, —CN, and —J;

R_6 is $—(CH_2)_m—NH—C(=NH)—NH—$;

R_7 is selected from the group consisting of phenyl, and alkyl having from one to eight carbons, said alkyl group being optionally substituted with one or more halogen atoms, aryl, or heteroaryl groups;

R_8 is selected from the group consisting of =O, =N—NHC(=O)—NH_2, =N—OH, =N—OCH_3, =N—O—CH_2—C_6H_5, =NNH—C(=S)—NH_2 and =N—NH—J;

R_9 is selected from the group consisting of hydrogen, and alkyl having from one to six carbons, said alkyl group being optionally substituted with one or more halogen atoms, aryl or heteroaryl groups;

J is a protecting group;

n is an integer from 3 to 10; and

m is an integer from 2 to 5.

5,614,649

MULTICATALYTIC PROTEASE INHIBITORS

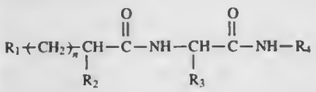
Mohamed Iqbal, Malvern; James L. Diebold, Norristown, both of Pa.; Robert Siman, Wilmington, Del.; Sankar Chatterjee, Wynnewood, and James C. Kauer, Kennett Square, both of Pa., assignors to Cephalon, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 464,398, Jun. 5, 1995, which is a continuation-in-part of Ser. No. 337,795, Nov. 14, 1994. This application Nov. 3, 1995, Ser. No. 552,794

Int. Cl.[6] C07C *231/00;* **C07D** *225/00*

U.S. Cl. 554—56 **14 Claims**

1. A compound of formula:



wherein:

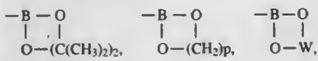
R_1 is selected from the group consisting of —C≡N, —C(=O)OR_9, phthalimido, —NH—SO_2R_9, and —NH—J;

R_2 is selected from the group consisting of H, hydroxyl, alkyl having from one to ten carbons, and cycloalkyl having from three to seven carbons;

R_3 is selected from the group consisting of $—(CH2)_m—NH—C(=N—R_5)—NH_2$, $—R_6—NO_2$, $—R_6—$J, and $—R_6—$CN;

R_4 is $—CH(CH_2—R_7)—$Q;

Q is selected from the group consisting of —CH—R_8, —C(=O)CH_3, —C(=O)CH_2Cl, —C(=O)CH_2Br, —C(=O)CH_2F, —C(=O)CHF_2, —C(=O)CF_3, —C(=O)C(=O)R_7, —C(=O)C(=O)NH—R_7, —C(=O)CO_2—R_7, —C(=O)CO_2H, —B$(OH)_2$,



5,614,650

ZIRCONIUM COMPOUNDS OF SULFONIC ACIDS

Stanley R. Sandler, 221 Hemlock La., Delaware, Pa. 19064; Michael D. Gernon, 117 Scarlet Oak Dr., Montgomery, Pa. 19406, and Jacques Ragot, 10 Residence Tournemire 91940 Les Ulis, Paris, France

Filed Mar. 7, 1995, Ser. No. 399,670

Int. Cl.[6] C07H *7/00*

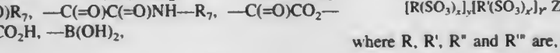
U.S. Cl. 556—54 **23 Claims**

1. A zirconium compound of a sulfonic acid having the following general formula:



where R1, R', R" and R'" are independently substituted or unsubstituted alkyl, alkylene, aryl or alkaryl radicals, x is an integer of 1 to 4, x', x" and x'" are 1 to 3, y is 1 to 4, and y', y" and y'" are 0 to 3, provided that the values of x, x', x", x'", y, y', y", and y'" are sufficient to supply 4 sulfonate groups to the molecule.

19. The method of producing a chemical reaction which is a transesterification, direct esterification, alkylation, etherification, condensation or polymer-forming reaction comprising contacting at least two reactive chemicals, at least one of which is an organic chemical, and inducing a reaction between said reactive chemicals in the presence of a catalytic amount of a zirconium compound of a sulfonic acid of the general formula:



where R, R', R" and R'" are, independently, substituted or unsubstituted alkyl, alkylene, aryl or alkaryl radicals, x is an integer of 1 to 4, x', x" and x'" are 1 to 3, y is 1 to 4, and y', y" and y'" are 0 to 3, provided that the values of x, x', x", x'", y, y', y", and y'" are sufficient to supply 4 sulfonate groups to the molecule.

5,614,651

14α-HYDROXY-4-ANDROSTENE-3,6,17-TRIONE HYDRATE CRYSTAL AND PROCESS FOR PRODUCING SAME

Kazuo Ohtsuki; Akikazu Mitsunobu; Yoshihiro Imaizumi, all of Tokyo; Nobuyoshi Honda, and Satoshi Inoue, both of Tochigi-ken, all of Japan, assignors to Snow Band Milk Products, Co., Ltd., Sapporo, Japan

Filed May 23, 1994, Ser. No. 247,778

Claims priority, application Japan, May 28, 1993, 5-151320

Int. Cl.[6] C07J *1/00*

U.S. Cl. 552—615 2 Claims

1. A β-type 14α-hydroxy-4-androstene-3,6,17-trione hydrate crystal which has a diffraction pattern where characteristic in crystalline powder X-ray diffraction of characteristic X-ray Cu Kα appear at diffraction angles of 10.7, 14.8, 15.7, 16.3 and 17.8 (degree).

5,614,652

PARTICULATES

Aaron G. Filler, Seattle, Wash., and Andrew M. Lever, Cambridge, United Kingdom, assignors to Syngenix Limited, Cambridge, England

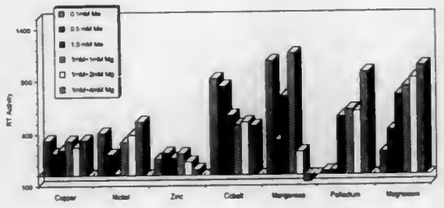
PCT No. PCT/EP92/00021, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/11846, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 4, 1992, Ser. No. 87,781

Claims priority, application United Kingdom, Jan. 7, 1991, 9100233; Jan. 16, 1991, 9100981; Jan. 31, 1991, 9102146; May 20, 1991, 9110876; Jul. 30, 1991, 9116373; Aug. 19, 1991, 9117851; Aug. 30, 1991, 9118676; Sep. 13, 1991, 9119665

Int. Cl.[6] C07F *15/00;15/02*

U.S. Cl. 556—136 1 Claim



1. A particle comprising palladium disposed within an iron oxide matrix.

5,614,653

SOLUBILIZATION OF BORIC ACID

Frank W. Dean, Spring, Tex., assignor to Stoller Enterprises, Inc., Houston, Tex.

Filed Apr. 11, 1995, Ser. No. 420,081

Int. Cl.[6] C07F *19/00;5/02;1/08*

U.S. Cl. 556—7 25 Claims

1. An aqueous boron-containing solution, comprising

about 5 to about 75 percent-by-weight boric acid;

about 10 to about 45 percent-by-weight ligand selected from the group consisting of alkanolamines, dialkylaminoalkylamines, alkyldiaminecarboxylic acids, salts of said acids and mixtures thereof;

sufficient transition metal ion to complex said ligand; and

the balance water.

14. A water-soluble complex, comprising:

boric acid;

a transition metal ion; and

a ligand capable of both complexing said transition metal ion and coordinating with said boric acid.

21. A method for solubilizing boric acid to produce a liquid, boron-containing solution, comprising:

forming a metal ion/ligand-containing solution from a ligand and sufficient metal ion to complex said ligand, said ligand capable of both complexing said metal ion and coordinating with boric acid; and

adding boric acid to said metal ion/ligand-containing solution.

5,614,654

ALUMINOSILOXANES, TITANOSILOXANES, (POLY)STANNOSILOXANES, AND THEIR PREPARATION

Masatoshi Miyake, and Shunji Aoki, both of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

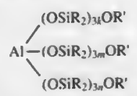
Filed May 28, 1996, Ser. No. 654,147

Claims priority, application Japan, May 30, 1995, 7-155139; May 30, 1995, 7-155140; Jun. 27, 1995, 7-183492

Int. Cl.[6] C07F *7/08;7/22;7/28;5/06*

U.S. Cl. 556—10 8 Claims

1. An aluminosiloxane having at least one Al—O—Si linkage in its molecule and represented by the following general formula (1):



(1)

wherein R is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group having 1 to 20 carbon atoms, R' is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 10 carbon atoms, letters k, m, and n are positive integers inclusive of 0, and k+m+n≧1.

5,614,655

GAS MIXING DEVICE

Horst Horn, Springe/Bundesrepublik, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

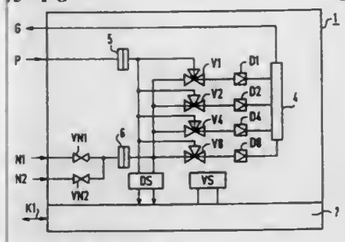
PCT No. PCT/DE94/00240, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO94/20851, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 4, 1994, Ser. No. 522,272

Claims priority, application Germany, Mar. 12, 1993, 93 03 693.0

Int. Cl.[6] F16K *19/00*

U.S. Cl. 73—1 G 15 Claims



1. A gas mixing device comprising:

a. a mixing chamber; and

b. a plurality of critical nozzles having their outputs connected to said mixing chamber, the cross-sections of said critical nozzles increasing by a proportion of 1:2 from one to the next, and each critical nozzle having inputs to receive either a test gas or a zero gas, wherein said plurality of critical nozzles comprise four nozzles whose cross-sections are in proportions of 1:2:4:8.

5,614,656

COLLIDING G SIMULATION APPARATUS

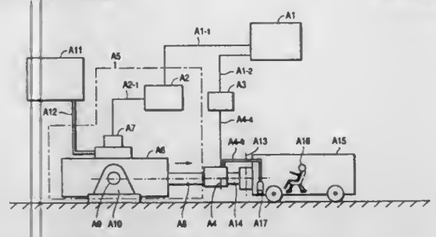
Katsuaki Toda, Komaki; Tadahiro Ohtsuka, and Osamu Watanabe, both of Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,513

Claims priority, application Japan, Nov. 14, 1994, 6-304309; Dec. 27, 1994, 6-326222

Int. Cl.[6] G01M *7/00*

U.S. Cl. 73—12.01 6 Claims



1. A colliding G simulation apparatus comprising:

a hydraulic actuator connected to a hydraulic pressure source;

a mock vehicle connected to a hydraulic pressure source;

a hydraulic separation coupling device connecting said hydraulic actuator and said mock vehicle, and separating said hydraulic actuator and said mock vehicle in response to a separation control signal; and

a hydraulic circuit for generating a target acceleration at said hydraulic actuator based on an acceleration control signal when said hydraulic actuator and said mock vehicle are connected by said hydraulic separation coupling device.

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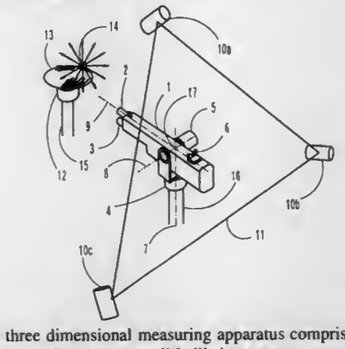
THREE DIMENSIONALLY MEASURING APPARATUS

Shintaro Harada, 73-2, Nakaawahara, Kumami-Choo, Nishio-City, Aichi-Pref., Japan

Filed Dec. 7, 1994, Ser. No. 351,526

Int. Cl.[6] G01M *7/00*

U.S. Cl. 73—12.11 5 Claims



1. A three dimensional measuring apparatus comprising:

a gun shooting a very small ballistic means;

a first pedestal for turning gun, the first pedestal having a vertical axis control and a horizontal axis control motor;

a second pedestal for turning a product to be measured, the second pedestal having a vertical control axis motor;

three or more microphones disposed at vertexes of a polygon, said microphones for gathering the high frequency sound data occurring by explosion or rupture of said very small ballistic means on the surface of the product;

a data processor for controlling said gun and said first and second pedestal control motors, for calculating distances between said microphones and said product from the sound data sent from said microphones, and for showing the three dimensional data of the surface of the product.

5,614,658

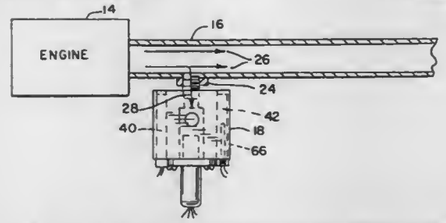
EXHAUST SENSOR

Dennis W. Moss, Waukesha, Wis., assignor to Dresser Industries, Dallas, Tex.

Filed Jun. 30, 1994, Ser. No. 268,815

Int. Cl.[6] G01N *27/26*

U.S. Cl. 73—23.31 11 Claims



1. An exhaust gas sensor for an internal combustion engine having exhaust means, comprising:

a nipple having first and second opposite distal ends and mounted to said exhaust means at said first distal end and communicating with exhaust passing through said exhaust means, said nipple having a restricted orifice extending therethrough from said first distal end to said second distal end which permits diffusion of gaseous exhaust through said orifice, and reduces diffusion of particulate exhaust through said orifice;

an antechamber mounted to said nipple at said second distal end and external to said exhaust means and communicating with said orifice such that gaseous exhaust diffuses through said orifice into said antechamber;

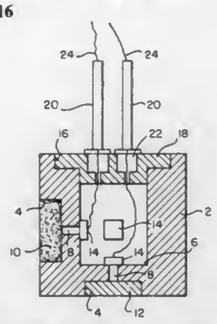
a sensor element mounted to said antechamber and sensing said gaseous exhaust therein.

5,614,659

PORE-AIR PRESSURE MEASUREMENT DEVICE FOR USE IN HIGH SHOCK ENVIRONMENTS

Denis D. Rickman, Clinton, Miss., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 16, 1995, Ser. No. 442,523
Int. Cl.[6] G01L *19/14*
U.S. Cl. 73—35.16 3 Claims



1. A pore air-pressure sensing device comprising:

(a) a generally rectangular housing containing a plurality of pressure sensing ports in external surfaces thereof, a bore, and an internal chamber connecting said ports with said bore;

(b) means mounted within each of said ports for filtering soil particles therefrom;

(c) means mounted within said chamber for sensing air pressure at each of said ports, whereby when the device is installed beneath ground level and an explosive is detonated in the vicinity of said device, soil particles are filtered from the air blast by said filter means, thereby enabling the device to provide accurate pore-air pressure measurements;

(d) means connected with said sensing means for indicating said air pressure;

(e) wherein said filter means consist of sintered metal comprising stainless steel and having a 10-micron filtration grade;

(f) wherein said filter means are capable of withstanding applied soil stresses up to 10,000 psi; and

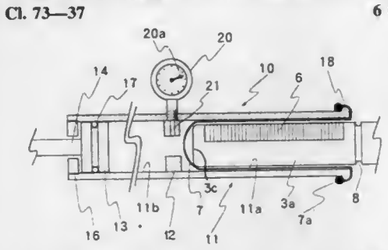
(g) wherein said sensing means include a pressure gage for each port.

5,614,660

NOSE BAG APPLICATOR WITH PINHOLE CHECKER

Toshizumi Tanaka, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 14, 1996, Ser. No. 601,507
Claims priority, application Japan, Feb. 24, 1995, 7-060026
Int. Cl.[6] A61B *1/00;10/00;* A61M *5/00*
U.S. Cl. 73—37 6 Claims



1. A nose bag applicator for wrapping a bag-shaped fluid-tight covering case of elastic membranous material on a nose end of a rod-like insertion type internal examination instrument or the like, said nose bag applicator including:

a hollow cylindrical body having an inside diameter larger than an outside diameter of a nose end portion of said rod-like examination instrument to be wrapped in said covering case and holding said covering case at a fore end portion of said cylindrical body via an opening at one end of said covering case in a hermetically sealed state;

a piston member slidably received in said cylindrical body, said piston member being movable in forward and rearward directions in hermetic sliding contact with inner peripheral surfaces of said cylindrical body, said piston member being movable in said rearward direction to draw in and spread by expansion said covering case against inner peripheral surfaces of said cylindrical body by a negative pressure developed by the rearward movement of said piston member in a hermetically closed space formed within said cylindrical body between said covering case and said piston member, said cylinder body holding said covering case in a spread state to receive a nose end portion of said examination instrument therein; and

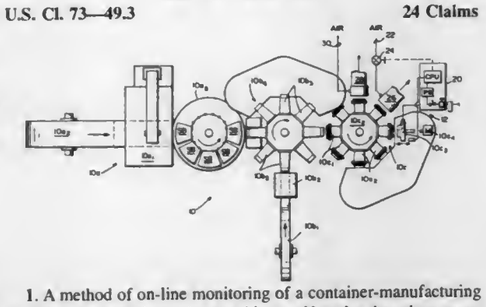
detector means mounted on said cylindrical body in fluid communication with said hermetically closed space for checking for pressure variations in said hermetically closed space, said pressure detector means detecting leaks in said bag-shaped covering case while sealed in said nose bag applicator and before being installed onto the nose end portion of said rod-like examination instrument.

5,614,661

APPARATUS AND METHOD FOR TESTING CONTAINERS

Romano Balordi, Millers, Md., assignor to Sweetheart Cup Company Inc., Owings Mills, Md.

Continuation of Ser. No. 309,588, Sep. 21, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 591,945
Int. Cl.[6] G01M *3/02*
U.S. Cl. 73—49.3 24 Claims



1. A method of on-line monitoring of a container-manufacturing machine so as to determine machine malfunction based on numbers of rejected containers comprising the steps of:

(a) concurrently forming a top curl of a container and trapping ambient air in the container to establish a non-ambient pressure condition;

(b) monitoring said non-ambient pressure condition to identify containers to be rejected;

(c) determining the number of rejected containers during a first unit time period;

(d) initiating a diagnostic cycle if the number of rejected containers during said first unit time period is greater than a preselected low threshold value;

(e) determining the number of rejected containers during a second unit time period subsequent to said first unit time period and decrementing the threshold value by a preselected decremental value in the event that no rejected containers are determined during said subsequent second unit time period; and

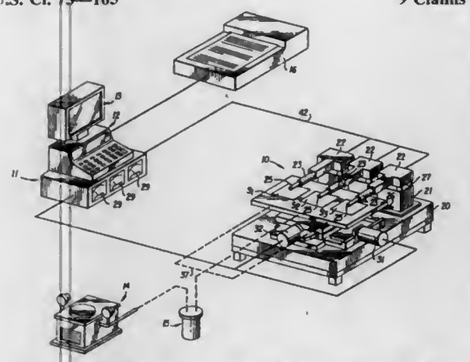
(f) repeating step (e) for additional unit time periods subsequent to said second unit time period until said threshold value has been decremented to zero.

5,614,662

APPARATUS AND METHOD FOR MEASURING A PAPER SURFACE ROUGHNESS

Matthew J. Hallan, Savage, Minn.; Stephen J. Paradis, Los Altos Hills, Calif.; Donald F. Rogowski, and Michael L. Shephard, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 10,760, Jan. 29, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 352,893
Int. Cl.[6] G01B *5/28*
U.S. Cl. 73—105 9 Claims



1. An apparatus for surveying the surface topography of a sheet of material comprising:

a sheet of material sample;

a sample supporting table means having a selectively driven movement of a table surface along a constant surface plane, said table surface including a sample mounting area provided by a porous structural plate means covering a movable vacuum sink volume served by a vacuum source such that said sample is substantially stationary with respect to said plate means and said plate means is substantially stationary with respect to said vacuum sink volume;

a sample surface point height measuring means secured substantially above said sample mounting area for generating electrical signals proportional to sample surface topography variations wherein said height measuring means is a stylus for emitting analog electrical signals that are proportional to vertical displacement distances traversed by a stylus, said analog signals being converted to digital signals for analysis wherein said stylus means is manually adjusted to a mid-range analog signal calibration scale in surface contact with a material sample; and,

a control means for driving said table means in a grid pattern of equidistantly separated sample surface measuring points beneath said height measuring means.

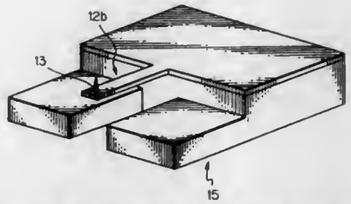
5,614,663

CANTILEVER FOR USE WITH ATOMIC FORCE MICROSCOPE AND PROCESS FOR THE PRODUCTION THEREOF

Junju Itoh, and Yasushi Toma, both of Ibaraki-ken, Japan, assignors to Ebara Research Co., Ltd., Fujisawa, and Agency of Industrial Science and Technology, Tokyo, both of Japan

Division of Ser. No. 311,018, Sep. 22, 1994. This application May 24, 1995, Ser. No. 448,790
Claims priority, application Japan, Sep. 24, 1993, 5-261480
Int. Cl.[6] G01B *5/28*
U.S. Cl. 73—105 6 Claims

1. A cantilever for use with an atomic force microscope that comprises a single-crystal silicon base having adequate mechanical strength, a cantilever beam that is made from a silicon oxide film and which is joined at one end to said base, a conical stylus with a sharp tip that is formed on said cantilever beam at the other end which is opposite the end joined to said base, said conical stylus being made of single crystal silicon and having a height of 8–10 μm, an aspect ratio of at least 2, and said sharp tip having a curvature radius of 10 nm or below, wherein protective plates for protecting said cantilever beam against mechanical damage that are processed from said single-crystal silicon base and that have adequate strength are provided on the base side of said cantilever beam protruding from said base in such a way that they are spaced with good clearance from said cantilever beam but that they hold said cantilever beam therebetween, and wherein all surfaces of said cantilever are covered with a thin electroconductive film.

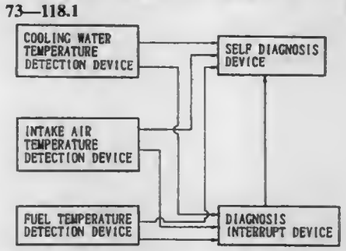


5,614,664

SELF DIAGNOSIS METHOD AND APPARATUS FOR A FUEL TEMPERATURE DETECTION APPARATUS OF AN INTERNAL COMBUSTION ENGINE

Yoichiro Yamagishi, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jul. 18, 1995, Ser. No. 503,494
Claims priority, application Japan, Jul. 19, 1994, 6-167156
Int. Cl.[6] G01K *7/00*; G01M *15/00*
U.S. Cl. 73—118.1 6 Claims



1. A self diagnosis method for a fuel temperature detection apparatus of an internal combustion engine, comprising the steps of:

detecting an engine cooling water temperature by means of a cooling water temperature detection means,

detecting an engine intake air temperature by means of an intake air temperature detection means,

detecting a fuel temperature by means of a fuel temperature detection means,

carrying out diagnosis of said fuel temperature detection means based on respective detection values from said cooling water temperature detection means, said engine intake air temperature detection means, and said fuel temperature detection means, and

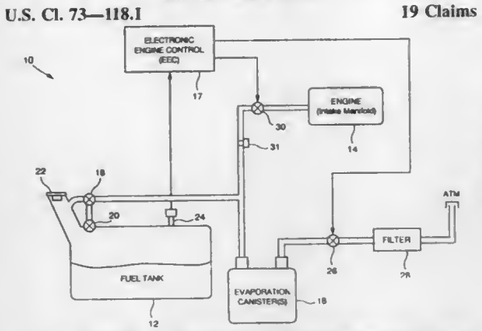
interrupting said diagnosis under predetermined conditions based on changes in said respective detection values from said cooling water temperature detection means, said engine intake air temperature detection means, and said fuel temperature detection means.

5,614,665

METHOD AND SYSTEM FOR MONITORING AN EVAPORATIVE PURGE SYSTEM

Patrick J. Curran, Farmington Hills; Juliette J. McCoy, South Lyon; Michael A. Panganis, Plymouth; David C. Waskiewicz, Novi; Bryce A. Schwager, Ypsilanti, and Edward G. Rychlick, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 16, 1995, Ser. No. 515,844
Int. Cl.[6] F02M *33/02*
U.S. Cl. 73—118.1 **19 Claims**



1. For use with a vehicle having an evaporative purge system including a fuel tank, an evaporation canister for trapping and subsequently using vapor dispelled from the fuel tank, and an internal combustion engine having an intake manifold all in fluid communication, a method for monitoring the evaporative purge system for malfunctions and leaks, the method comprising:

(a) determining whether a plurality of predetermined entry conditions have been met;

(b) if the plurality of predetermined entry conditions have been met, determining a flow of vapor in the evaporative purge system;

(c) sealing the evaporative purge system from atmosphere so as to pull a vacuum on the fuel tank;

(d) determining whether the vacuum is within a predetermined vacuum range;

(e) if the vacuum is within the predetermined vacuum range, allowing the vacuum to stabilize to obtain a stabilized vacuum level;

(f) determining a rise in the stabilized vacuum level after a predetermined amount of time to obtain a vacuum bleed-up;

(g) determining a vacuum bleed-up acceptance threshold based on the determined flow of vapor;

(h) comparing the vacuum bleed-up with the vacuum bleed-up acceptance threshold;

(i) providing atmosphere to the evaporative purge system if the vacuum bleed-up exceeds the vacuum bleed-up acceptance threshold;

(j) sealing the evaporative purge system from atmosphere to create a pressure build;

(k) comparing the pressure build to a pressure threshold; and

(l) generating a first malfunction signal if the pressure build is less than the pressure threshold.

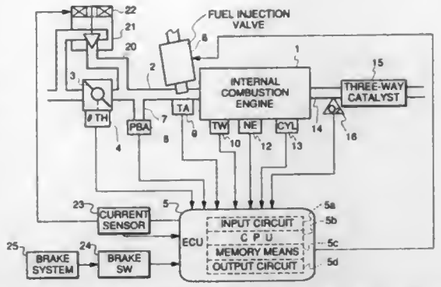
5,614,666

IDLING ROTATIONAL SPEED CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Fumio Hara, and Takashi Isobe, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,164
Claims priority, application Japan, Apr. 7, 1995, 7-107889
Int. Cl.[6] F02D *19/02;* **G01M** *15/00*
U.S. Cl. 73—118.1 **16 Claims**

1. An idling rotational speed control system for an internal combustion engine installed in a vehicle having a brake system, said engine having an intake system, an exhaust system, a throttle



valve arranged in said intake system, and air-fuel ratio-correcting means for correcting an air-fuel ratio of an air-fuel mixture supplied to said engine in a feedback manner responsive to an output from said air-fuel ratio sensor, by using an air-fuel ratio correction amount calculated according to said output from said air-fuel ratio sensor, the idling rotational speed control system comprising:

engine rotational speed-detecting means for detecting rotational speed of said engine;

rotational speed control means operable during idling of said engine, for controlling said rotational speed of said engine to a desired value in a feedback manner responsive to said rotational speed of said engine detected by said engine rotational speed-detecting means;

abnormality-determining means for determining whether said idling rotational speed control system is abnormal, based on said rotational speed of said engine detected by said engine rotational speed-detecting means, and a control parameter used by said rotational speed control means;

brake system operation-detecting means for detecting operation of said brake system; and

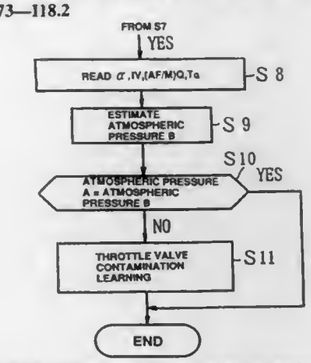
inhibiting means operable when at least one of conditions is satisfied that said brake system is operated, and said air-fuel ratio correction amount falls outside a predetermined range, for inhibiting abnormality determination by said abnormality-determining means.

5,614,667

METHOD AND APPARATUS FOR CONTROLLING THROTTLE VALVE CONTAMINATION LEARNING

Hajime Hosoya, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Jan. 30, 1996, Ser. No. 594,060
Claims priority, application Japan, Feb. 2, 1995, 7-016114
Int. Cl.[6] F02D *45/00;* **G01M** *15/00*
U.S. Cl. 73—118.2 **12 Claims**



1. A method of controlling throttle valve contamination learning comprising steps of;

respectively detecting intake air mass flow rate, the opening of a throttle valve disposed in an engine intake system, and engine rotational speed,

estimating intake air volumetric flow rate based on said detected throttle valve opening and engine rotational speed,

estimating atmospheric pressure at the time of a large value for said detected throttle valve opening, based on said detected intake air mass flow rate and said estimated intake air volumetric flow rate,

estimating atmospheric pressure when the throttle valve opening subsequently changes to a small value while the atmospheric pressure remains virtually constant, based on said detected intake air mass flow rate and said estimated intake air volumetric flow rate, and

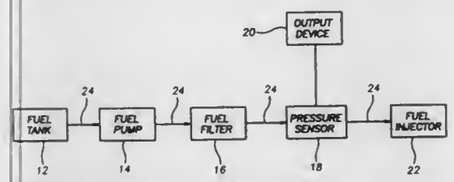
learning and correcting a relationship between the throttle valve opening and a value related to said throttle valve opening, so that the atmospheric pressure estimated when the throttle valve opening changes to a small value while the atmospheric pressure remains virtually constant, approaches the atmospheric pressure estimated when said throttle valve opening is a large value.

5,614,668

FUEL PRESSURE SENSING SYSTEM

Rufino Ramirez-Soto, 3400 Wright Ave., N. Las Vegas, Nev. 89030

Filed Oct. 5, 1995, Ser. No. 539,360
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—119 A **5 Claims**



1. A fuel pressure sensing system comprising:

a fuel injector for injecting fuel into at least one engine combustion chamber;

means for supplying said fuel to said engine combustion chamber, said fuel supplying means including a fuel line;

a pressure sensor operationally connected to said fuel line at a location immediately before said fuel injector in a manner to sense and output a signal proportional to the pressure of the fuel passing through said fuel line at a location immediately prior to entering said fuel injector; and

an output device mounted within a passenger compartment of a vehicle in functional connection with said pressure sensor for providing a visual display of said fuel pressure.

5,614,669

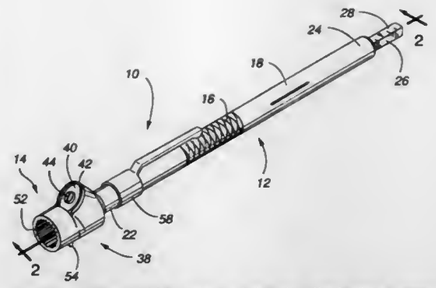
AIR PRESSURE GAUGE WITH DUST-CAP REMOVER

Michael I. Sopcisak, 112 Colby Ct., Vacaville, Calif. 95687

Filed Mar. 23, 1995, Ser. No. 409,495
Int. Cl.[6] B60C *23/02*
U.S. Cl. 73—146.8 **7 Claims**

1. An Air Pressure Gauge Tool for measuring tire pressure and for accessing, removing, retaining, and replacing tire valve dust-caps comprising;

(a) an air pressure gauge assembly of the type having an elongated cylindrical body and a hollow interior, the cylindrical body having a top and a bottom end, a pressure indicator slide bar with a linear scale extendable outward from said bottom end, a tire valve operating bead attached to said top end, a cup and spring mechanism located within said hollow interior whereby upon said tire valve operating head being connected to a source of pressurized air, the air pressure is directed through said tire valve operating head, upon said cup and spring mechanism, forcibly extending said indicator slide bar outwardly from said bottom end thereby displaying a numerical value corresponding to the amount of air pressure;



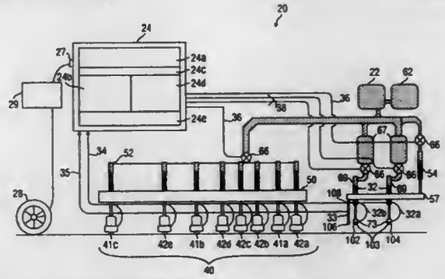
(b) engaging means, including a tire valve dust-cap receiving and engaging receptacle, for substantially receiving and engaging a tire valve dust-cap thereby facilitating access, removal, retention, and reinstallation of said tire valve dust-cap.

5,614,670

MOVABLE SEISMIC PAVEMENT ANALYZER

Soheil Nazarian; Mark R. Baker, and Kevin Crain, all of El Paso, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 145,996, Oct. 29, 1993, abandoned.
This application Jul. 2, 1996, Ser. No. 674,460
Int. Cl.[6] E01C *23/00*
U.S. Cl. 73—146 **13 Claims**



7. A seismic pavement analyzer, comprising:

a mobile support adapted to be moved across the surface of a pavement;

a high-frequency seismic source mounted on said support and adapted to repeatedly impact said pavement to generate a high-frequency seismic wave in said pavement, said high-frequency source comprising a load cell for measuring an impact force of said source;

a low-frequency seismic source mounted on said support and adapted to repeatedly impact said pavement to generate a low-frequency seismic wave in said pavement, said low-frequency source comprising a load cell for measuring an impact force of said source;

an actuator coupled to each of said seismic sources;

a plurality of transducers for receiving said seismic waves through said pavement, wherein each said transducer is coupled to said mobile support through a separate pneumatic cylinder, each of said cylinders being configured to actuate its corresponding transducer upon said pavement; and

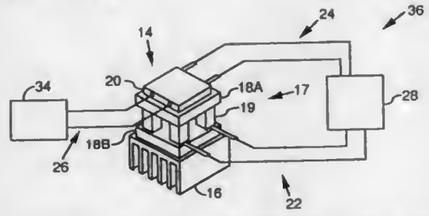
a computer electrically coupled to said transducers and seismic sources, comprising:

means for selecting a surfacing parameter to be measured;

means, responsive to said selection of a surfacing parameter, for selectively activating at least one of said actuators coupled to a seismic source associated with said selected surfacing parameter;

means for receiving seismic data from said transducers based on detected seismic waves;
means for processing said seismic data to obtain processed seismic data;
means for computing said selected surfacing parameter based on said processed seismic data;
means for evaluating said selected surfacing parameter to detect defects in said pavement; and
means for diagnosing paving-layer-specific pavement distress precursors based on evaluated surfacing parameters.

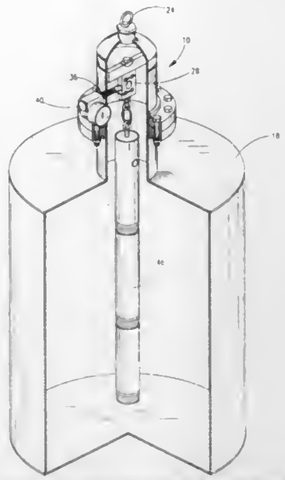
5,614,671
HUMIDITY SENSING APPARATUS AND METHOD
James F. Morrissey, Norwood, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation of Ser. No. 876,836, Apr. 30, 1992, Pat. No. 5,365,784. This application Apr. 18, 1994, Ser. No. 229,489
Int. Cl.[6] G01N *27/04; G01W 1/00*
U.S. Cl. 73—335.05 **10 Claims**



1. A humidity sensing apparatus, said humidity sensing apparatus comprising:
a heat sink;
a Peltier cooler, said Peltier cooler having electrical leads for control current;
a relative humidity measuring sensor, said relative humidity measuring sensor having a changing resistance as a function of humidity, said relative humidity sensor being shielded from water thereon, said relative humidity measuring sensor mounted on top of said Peltier cooler opposite to the electrical leads from said Peltier cooler, said relative humidity measuring sensor having electrical leads for outputting resistance values;
a thermistor, said thermistor mounted in intimate contact to said relative humidity measuring sensor, said thermistor having a changing resistance as a function of temperature, said thermistor having output electrical leads for indicating resistance values therein;
control means, said control means for maintaining the resistance of said relative humidity measuring sensor at a predetermined value, said control means connected to said Peltier cooler and said relative humidity measuring sensor; and
data collecting means, said data collecting means having input the leads from said thermistor to determine a resistance value thereof.

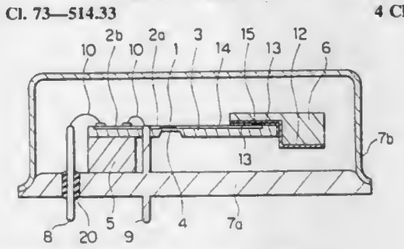
5,614,672
APPARATUS FOR MEASURING THE LIQUID CONTENTS OF A TANK
W. J. Legendre, and Christopher Dore, both of P.O. Box 84158, Baton Rouge, La. 70884-4158
Filed Jan. 23, 1996, Ser. No. 589,972
Int. Cl.[6] G01N *9/10*
U.S. Cl. 73—437 **15 Claims**

1. An apparatus for measuring weight, level and/or volume of a liquid of known, specific gravity in a container of known cross-sectional area without the need to compensate for temperature or disturbing the integrity of a pressurized tank, comprising:



a) a housing, having a domed portion, a vertical side portion and a flange portion, capable of sustaining high pressure, mountable to a compatible flanged connection port at an upper end of a pressurized liquid container, said housing further comprising a first pipe nipple exiting said vertical side portion;
b) a load cell mounted at one end to a support bar, located within said housing;
c) a buoyant, extendable, cylindrical body of known cross section, weight and length, suspended from said load cell opposite said mounted end; and
d) a second pipe nipple connected to said first pipe nipple, extending telescopically through said first pipe nipple, attached to said load cell; and
e) a power supply/signal cable passing through said second pipe nipple connected electrically to said load cell.

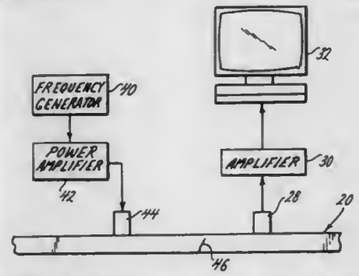
5,614,673
ACCELERATION SENSING DEVICE
Masahiro Yamamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1995, Ser. No. 552,073
Claims priority, application Japan, Nov. 21, 1994, 6-286841
Int. Cl.[6] G01P *15/12*
U.S. Cl. 73—514.33 **4 Claims**



1. An acceleration sensing device comprising:
an electrically conductive package substrate;
a base disposed on said package substrate;
an acceleration sensing beam attached to said base at one end of said acceleration sensing beam, said acceleration sensing beam also having a free end;
a weight disposed on said free end of said acceleration sensing beam;
sensor means disposed on said acceleration sensing beam for detecting strain of said acceleration sensing beam;
output means connected to said sensor means for outputting a detection signal from said sensor means;

a ground terminal electrically connected to said package substrate; and
abnormal-state sensing means at said weight opposite said package substrate and electrically connected between said sensor means and said output means electrically contacting said package substrate for connecting said ground terminal to said sensor means and to said output means when said base separates from said package substrate.

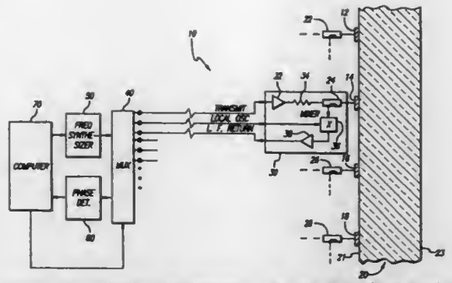
5,614,674
METHOD AND APPARATUS FOR PREDICTING FATIGUE BY INTRODUCING A CONTINUOUS EXCITATION TO DETERMINE DAMPING FACTOR
Andrew D. Dimarogonas, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.
Division of Ser. No. 25,940, Mar. 3, 1993, Pat. No. 5,476,009. This application Jun. 7, 1995, Ser. No. 473,728
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—577 **18 Claims**



1. A method for determining a level of fatigue of a material, the method comprising the steps of:
inducing a vibration in the material by continuously exciting said material with a continuous stream of energy oscillating at an input frequency substantially equal to a natural frequency of said material;
measuring a dynamic response of the material to the induced vibration;
determining a damping factor of the material from the measured response; and
comparing the damping factor with at least one predetermined damping factor to determine the level of fatigue of the material.

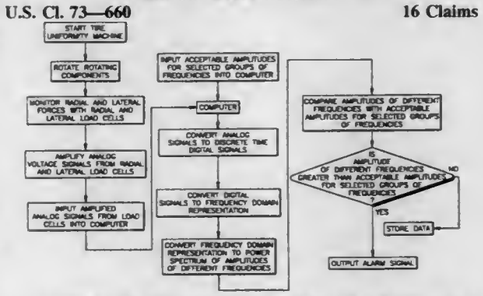
5,614,675
SYSTEM AND METHOD FOR USING PHASE DIFFERENCES TO MEASURE THE THICKNESS OF AN OPTICAL ELEMENT
Fred C. Gabriel, Stamford, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 10, 1993, Ser. No. 165,432
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—597 **7 Claims**

1. A system for measuring the thickness of an element comprising:
first means for transmitting a first signal of energy of a first phase into said element;
second means for receiving a second signal, said second signal being a reflection of said first signal from a distal surface of said element;
third means for comparing a phase of said second signal to the phase of said first signal to determine a phase difference therebetween, and outputting a third signal representing the phase difference; and
fourth means for processing said third signal to determine the thickness of said element said fourth means further comprising:



means for adjusting the frequency of said first signal until a second frequency is reached at which said phase difference goes substantially to zero to identify a first null and an integral number of wavelengths in a round trip path comprising the paths of said first and second signals;
means for gradually changing the frequency of said first signal by an amount of frequency change Δf to create a second null indicating an increase by one in the number of wavelengths in said round trip path:
means for calculating the number of wavelengths in the round trip path N at said second frequency by dividing the second frequency f by said amount of frequency change Δf;
means for calculating a round trip distance along the round trip path through said element by multiplying the number of wavelengths N by the length of a single wavelength at said second frequency; and
means for calculating the thickness of said element by dividing said round trip distance by two.

5,614,676
METHOD OF MACHINE VIBRATION ANALYSIS FOR TIRE UNIFORMITY MACHINE
William R. Dutt, Akron; John M. Maloney, Medina, and Charles D. Juhasz, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 8, 1996, Ser. No. 612,705
Int. Cl.[6] G01M *1/22;13/00*
U.S. Cl. 73—660 **16 Claims**



1. A method of analyzing the condition of a machine with a plurality of rotating components including a freely rotating load wheel mounted to a load wheel spindle, a motor driven spindle, and a plurality of motor driven rotating grinders, said method including the steps of:
rotating one or more of said rotating components;
monitoring radial and lateral forces generated by the vibration of said one or more rotating components with load cells mounted to said load wheel spindle;
inputting analog voltage signals from said load cells into a computer, said analog voltage signals corresponding to said monitored radial and lateral forces during a predetermined period of time;
converting said analog signals to digital signals;
converting said digital signals to a frequency domain representation;

converting said frequency domain representation to a power spectrum representing the amplitudes of different frequencies; and

comparing said amplitudes of different frequencies with acceptable amplitudes for selected groups of frequencies.

5,614,677

DIAPHRAGM GAGE FOR MEASURING THE PRESSURE OF A FLUID

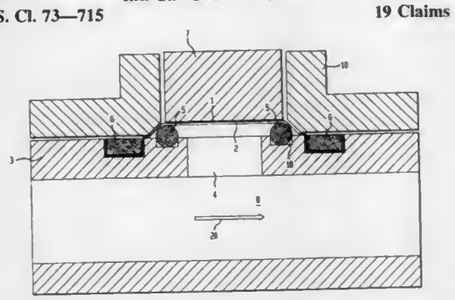
Ralf Wamsiedler, Oberursel; Ralf Wojke, Frankfurt; Walter Pieper, Florstadt, and Horst Christmann-Braun, Kelkheim, all of Germany, assignors to Fresenius AG, Bad Homburg, Germany

Filed May 24, 1995, Ser. No. 448,831

Claims priority, application Germany, Jun. 3, 1994, 44 19 593.1

Int. Cl.[6] G01L *7/08;9/00*

U.S. Cl. 73—715 **19 Claims**



1. Apparatus for measuring the pressure of a fluid, comprising:

a first pressure transmission element;

a pressure sensor operatively connected with said first pressure transmission element; and

a second pressure transmission element acted on by a fluid, said first pressure transmission element having a border area which is pressed through a translational force in an axial direction against said second transmission element in such a manner that a space between said first and second pressure transmission elements is sealed off from outside and is of a size as small as possible so as to effect a substantially synchronous movement of the first and second pressure transmission elements in dependence of the pressure of the fluid acting on the second pressure transmission element and thereby to allow a direct measurement of the fluid pressure by the pressure sensor.

5,614,678

HIGH PRESSURE PIEZORESISTIVE TRANSDUCER

Anthony D. Kurtz, Teaneck, N.J.; Andrew V. Bemis, Chestnut Ridge, N.Y.; Timothy A. Nunn, Ridgewood, and Alexander A. Ned, Bloomingdale, both of N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed Feb. 5, 1996, Ser. No. 596,506

Int. Cl.[6] G01L *9/06*

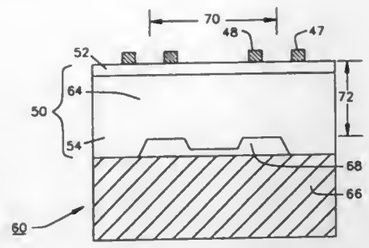
U.S. Cl. 73—727 **20 Claims**

1. A high pressure semiconductor transducer comprising:

a wafer fabricated from a semiconducting material, wherein said wafer comprises at least one diaphragm region having a deflecting portion and a non-deflecting portion and wherein the aspect ratio of said at least one diaphragm region is of the order of magnitude of one;

at least two sensing elements fabricated from a piezoresistive semiconducting material, wherein said at least two sensing elements have a large transverse piezoresistive coefficient normal to the plane of said at least one diaphragm region and have both a large longitudinal piezoresistive coefficient and a small transverse piezoresistive coefficient in the plane of said at least one diaphragm region, one of said at least two sensing elements being positioned above said non-deflecting portion of said at least one diaphragm region in an area of minimal longitudinal stress and another one of said at least two sensing elements being positioned above said deflecting portion of said at least one diaphragm region in an area of high compressive stress, said area of high compressive stress selected such that there will be equal and opposite resistance changes exhibited from said at least two sensing elements; and

means for electrically coupling said at least two sensing elements in said transducer to enable said transducer to exhibit substantially linear behavior over wide pressure ranges.



5,614,679

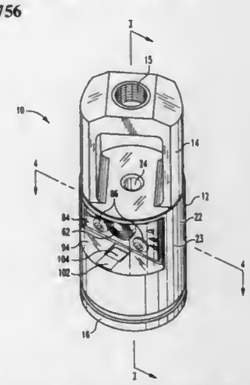
RECESSED PRESSURE INDICATOR REGULATOR ASSEMBLY

Joseph B. Johnson, Beech Grove, Ind., assignor to Regin Manufacturing, Inc., Indianapolis, Ind.

Filed Sep. 26, 1995, Ser. No. 534,024

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—756 **17 Claims**



1. A pressure indicator regulator assembly for a gas flow control device, the pressure indicator regulator assembly being positioned in sealed fluid connection between a gas inlet and a gas outlet respectively defined in the gas flow control device, the pressure indicator regulator assembly comprising:

a regulator housing having an exterior surface and defining a gas inlet bore, a regulator cavity, a gas outlet bore, a recessed notch and a passage, said gas inlet bore capable of sealed fluid connection with the gas inlet, said regulator cavity disposed fluidly connecting said inlet bore and said outlet bore, said gas outlet bore capable of sealed fluid connection with the gas outlet, and said passage disposed fluidly connecting said inlet bore and said recessed notch;

a pressure indicator disposed within said notch and in sealed fluid connection with said passage;

a pressure indicator cover having a transparent surface formed to substantially correspond to said exterior surface proximate to said notch; and

means for removably attaching said cover within said notch so that said transparent surface and said exterior surface form a generally smooth, continuous surface.

5,614,680

APPARATUS FOR MONITORING THE FATIGUE STRENGTH OF STRUCTURES

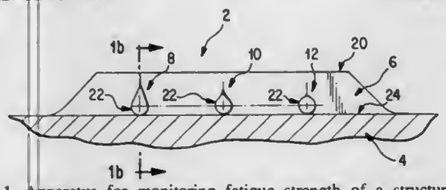
Reinhold Füssinger, Friedrichshafen, Germany, assignor to Dornier GmbH, Germany

Continuation of Ser. No. 331,743, Oct. 31, 1994, Pat. No. 5,520,055. This application Nov. 15, 1995, Ser. No. 558,169

Claims priority, application Germany, Nov. 13, 1993, 43 38 850.7

Int. Cl.[6] G01N *19/08*

U.S. Cl. 73—799 **12 Claims**



1. Apparatus for monitoring fatigue strength of a structure, comprising:

at least one elongated rib element which is arranged on a surface of said structure at a point where the fatigue strength is to be monitored; and

a plurality of notches in said at least one rib element;

wherein said longitudinal rib element is integral to the surface of said structure, constituting a single piece construction therewith.

5,614,681

KARMAN VORTEX FLOW METER

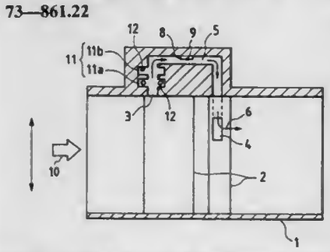
Yasuo Tada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 553,832

Claims priority, application Japan, Apr. 26, 1995, 7-127337

Int. Cl.[6] G01F *1/32;1/68*

U.S. Cl. 73—861.22 **9 Claims**



1. A Karman vortex flow meter for detecting a period of Karman vortexes to measure a flow velocity or flow rate, said flow meter comprising:

a duct into which a fluid flows;

a vortex generation element disposed in said duct to produce the Karman vortexes;

a detection passage arranged along a fluid flow in said duct and having a flow outlet disposed on an end face of said vortex generation element and a flow inlet disposed on a wall face of said duct upstream from said flow outlet;

detection means placed in said detection passage for detecting variation of a flow velocity of a fluid in said detection passage caused by a negative pressure of the Karman vortex; and

a swell portion formed upstream from said detection means in said detection passage.

5,614,682

SAMPLING DEVICE FOR MOLTEN METALS

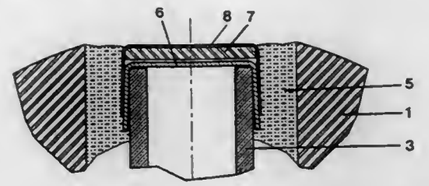
Christiaan E. E. Baerts, Paal, Belgium, assignor to Heraeus Electro-Nite International N.V., Houthalen, Belgium

Filed Oct. 6, 1995, Ser. No. 540,284

Claims priority, application Germany, Nov. 14, 1994, 44 40 577.4

Int. Cl.[6] G01N *1/12*

U.S. Cl. 73—864.58 **8 Claims**



1. A sampling device for molten metals comprising a sample chamber (2) arranged in a paperboard tube (1) and having an inflow canal leading through the paperboard tube, the inflow canal comprising a heat-resisting inflow tube (3), an outer end of the inflow tube terminating inside an outer circumference of the sampling device and being closed with a delayed-action device, the delayed-action device comprising a multi-layered cap (4), and an intermediate space between cap (4) and paperboard tube (1) being filled with cement (5), wherein the multi-layered cap (4) comprises a metal cap (6), on whose outside end face is adhered a delayed action disc (7) made of combustible material, wherein a metal foil (8) lies against an outer surface of the delayed action disc (7), and wherein between a lateral surface of the delayed action disc (7) and the cement (5) is positioned a metal layer.

5,614,683

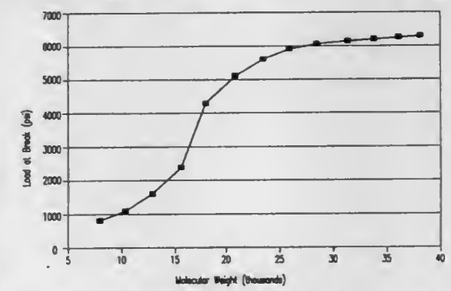
METHOD AND APPARATUS FOR MONITORING NYLON 11 MADE FROM POLYAMIDE PLASTIC MADE FROM AMINOUNDECANOIC ACID

David E. Kranbuehl, 201 Harrison Ave., Williamsburg, Va. 23185

Filed Dec. 13, 1995, Ser. No. 571,610

Int. Cl.[6] G01N *33/00*

U.S. Cl. 73—866 **17 Claims**



1. A method for evaluating percent of life remaining, used up, and rate of aging a part made of a polyamide formed from aminoundecanoic acid comprising the steps of:

determining a start time for use of said part made of said polyamide;

measuring a molecular weight of said polyamide, said measuring step being performed at a measurement time;

identifying a use time for said part made of said polyamide by subtracting said start time from said measurement time;

comparing said molecular weight measured during said measuring step to a standard curve or table which correlates molecular weight to time; and

assessing life information for said part made of said polyamide as a function of said use time, said molecular weight, and said standard curve or table, said life information being selected from the group consisting of life remaining for said part, life used up for said part, and rate at which life of said part is being used up.

5,614,684

SUPERPLASTIC MG-BASED COMPOSITE MATERIAL AND METHOD FOR PRODUCTION THEREOF

Suk-Won Lim; Tsunemichi Imai, both of Nagoya; Yoshinori Nishida, Kasugai, and Takao Choh, Nagoya, all of Japan, assignors to Agency of Industrial Science and Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,437

Claims priority, application Japan, Oct. 5, 1994, 6-268389

Int. Cl.[6] C22C *1/10*

U.S. Cl. 75—236 **2 Claims**

1. A method for the production of a superplastic Mg-based composite material which comprises preparing a composite material consisting of ceramic particles formed of at least one compound selected from among TiC, AlN, Si_3N_4, and TiB_2 and having a maximum particle diameter of 15 μm and a matrix formed of a magnesium alloy containing at least one element selected from among Al, Zn, Zr, and Li in an amount in the range of from 2 to 15% by weight, said ceramic particles being dispersed in said matrix in the range of from 5 to 40% by volume based on the total volume of said composite material, keeping said composite material at a temperature in the range of from 200° to 500° C. and meanwhile extruding the heated composite material at an extrusion ratio of at least 10:1, and then keeping the resultant extrudate at a temperature in the range of from 250° to 550° C. and meanwhile rolling the heated extrudate at a distortion rate in the range of from 1.0 to 4.0.

5,614,685

DIGITAL SIGNAL PROCESSOR FOR MUSICAL TONE SYNTHESIZERS AND THE LIKE

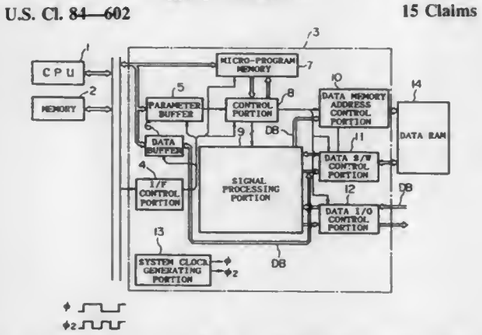
Sbuuichi Matsumoto, and Chifumi Takeuchi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 903,998, Jun. 24, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,719

Claims priority, application Japan, Jun. 27, 1991, 3-157190

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—602 **15 Claims**



1. A musical tone and effect imparting signal processing device for use with a memory, the musical tone signal processing device comprising:

micro-program storing means for storing micro-programs, so that the micro-programs are sequentially read out from said micro-program storing means;

signal processing means for performing signal processing in accordance with a procedure which is controlled by said micro-programs;

memory-access-blank period detecting means for detecting a memory-access blank period by detecting whether the memory is not accessed by the micro-programs for a certain period of time;

refresh-address creating means for creating a refresh address; and

memory-address control means for outputting an address to the memory in response to the micro-programs, said memory-address control means outputting the refresh address when the memory-access blank period is detected.

5,614,686

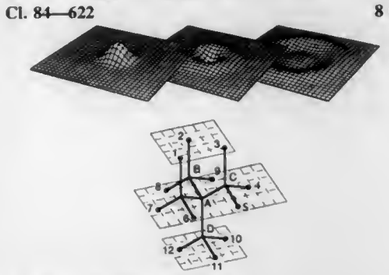
MULTIDIMENSIONAL DIGITAL WAVEGUIDE SIGNAL SYNTHESIS SYSTEM AND METHOD

Scott A. Van Duyne, Stanford, and Julius O. Smith, III, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 57,253, May 4, 1993, Pat. No. 5,471,007. This application Nov. 27, 1995, Ser. No. 563,198

Int. Cl.[6] G10H *1/02;1/12;1/46*

U.S. Cl. 84—622 **8 Claims**



1. A signal synthesizer, comprising:

a digital waveguide network including a N-dimensional matrix of waveguide sections interconnected by junctions, wherein said matrix is formed by an N-dimensional pattern of said waveguide sections, each waveguide section including two digital delay lines running parallel to each other for propagating signals in opposite directions; each said junction connected between waveguide sections having associated reflection and propagation coefficients for controlling reflection and propagation of signals in the waveguide sections connected to said junction; wherein a majority of said junctions each interconnect at least three of said waveguide sections so as to scatter and intermix signals in said at least three waveguide sections;

at least one signal source, coupled to specified junctions of said digital waveguide network, which provides excitation signals to said digital waveguide network;

parameter storage for storing sets of control parameters, each set of control parameters including waveguide control parameters for controlling how said digital waveguide network filters signals propagating therethrough and signal source parameters which govern the excitation signals produced by said at least one signal source; wherein said waveguide control parameters in each said set of control parameters cause said digital waveguide network to simulate operation of a physical system modeled by said control parameters; and

control means for operating said signal source and said digital waveguide network using a selected sets of said control parameters;

wherein

N is an integer of value greater than 2, and said signals propagated by said waveguide sections simulate wave behavior of signals at spatial positions of a physical system corresponding to positions of said waveguide sections in said N-dimensional matrix; and

a majority of said junctions comprise no-multiply 2^M-way scattering junctions, where M is an integer greater than 1.

5,614,687

APPARATUS FOR DETECTING THE NUMBER OF BEATS

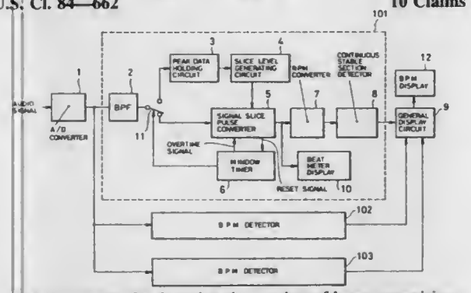
Yoichi Yamada; Tomohiko Kimura; Takeaki Funada, and Gen Inoshita, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,398

Claims priority, application Japan, Feb. 20, 1995, 7-007652

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—662 **10 Claims**



1. An apparatus for detecting the number of beats comprising:

extract means for extracting a predetermined frequency component from an input audio signal;

level detecting means for generating a detection signal when detecting that a level of the predetermined frequency component extracted by said extract means is higher than a predetermined level;

first time measuring means for measuring a predetermined period in response to said detection signal;

means for prohibiting said level detecting means from generating said detection signal during measuring time of said first measuring means;

second time measuring means for starting to measure time in response to said detection signal and, after that, terminating measuring of time in response to a detection signal newly generated from said level detecting means; and

converting means for converting a period of time measured at termination of measuring of said second time measuring means into the number of beats per predetermined unit time regarded as a unit beat.

5,614,688

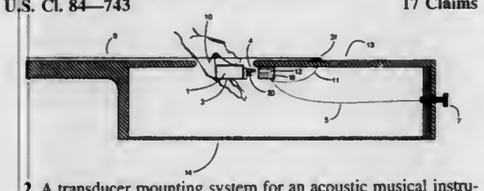
TRANSDUCER SYSTEM FOR ACOUSTIC INSTRUMENTS

Kenneth D. Donnell, 24 Parkhurst St., Chico, Calif. 95928

Filed Dec. 1, 1994, Ser. No. 347,949

Int. Cl.[6] G10H *1/32;3/00*

U.S. Cl. 84—743 **17 Claims**



2. A transducer mounting system for an acoustic musical instrument comprising:

a receptacle for mounting on the musical instrument in a first location electronically coupled to an output jack for mounting on the musical instrument in a second location,

a transducer assembly comprising a transducer electronically coupled to a connector receivable in the receptacle,

a plurality of receptacles for mounting on the musical instrument and an equal number of connectors receivable in the receptacles, wherein the receptacles comprise metallic sleeves arranged in a plurality of rows, and sleeves in a row are spaced approximately ten millimeters apart on center, the rows are spaced approximately five millimeters apart on center, and adjacent rows of receptacles are offset to provide separation by positioning each receptacle in a particular row approximately mid-way between the nearest two receptacles in an adjacent row.

5,614,689

AMMUNITION FEED SYSTEM AND METHOD

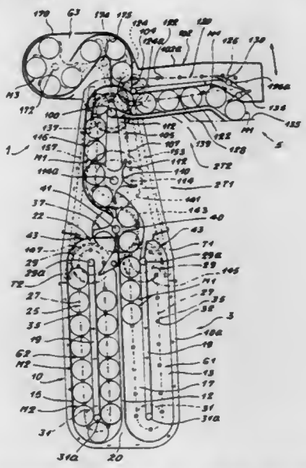
Christian Gyre, Chameyrat, and Daniel Vieillefond, Ladignac, both of France, assignors to CTA International, Versailles, France

Filed Sep. 25, 1995, Ser. No. 533,195

Claims priority, application France, Sep. 30, 1994, 94 11740

Int. Cl.[6] F41A *9/04*

U.S. Cl. 89—33.04 **23 Claims**



1. An ammunition feed system for a firearm pivotable in elevation about a horizontal elevation axis, the system comprising:

an ammunition storage device fixed relative to the elevation axis and having two magazines with a common first entry/exit opening through which rounds of ammunition individually pass, each of the two magazines having a round transport assembly on which the rounds are selectively movable in a loading direction from a selected one of the two magazines through the first entry/exit opening and in an unloading direction opposite the moving direction;

a loader that individually loads the rounds into a firing chamber of the firearm, the loader being connected to and disposed to pivot in elevation with the firearm; and

an intermediate transfer section that links and transfers the rounds between the ammunition storage device and the loader, the intermediate transfer section having a first two-way round transfer device linked with the ammunition storage device to guide the rounds through a second entry/exit opening, a second two-way round transfer device to guide the rounds between the second entry/exit opening and the loader, a drive shaft that drives the first two-way round transfer device, the second two-way round transfer device and at least the respective round transport assembly to selectively transfer the

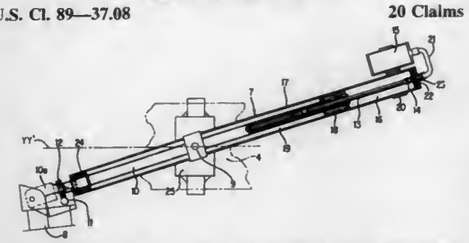
rounds between the loader and the selected magazine, and a synchronizer linked to the two magazines that maintains a nonselected other of the two magazines in synchronization with the first two-way transfer device during movement of the firearm in elevation.

5,614,690

EQUILIBRATING DEVICE FOR A GUN

Arnault Beauvais, Bourges, and Fabienne Mandereau, Saint Thorette, both of France, assignors to Giat Industries, Versailles, France

Filed Jun. 9, 1995, Ser. No. 489,149
Claims priority, application France, Jun. 16, 1994, 94 07353
Int. Cl.[6] F41A *27/30*
U.S. Cl. 89—37.08 **20 Claims**



1. An equilibrating device for a gun having an oscillating mass mounted on a movable top carriage, said equilibrating device comprising:

a gas chamber containing a gas under pressure;

a laying mechanism connected to said gun that orients the oscillating mass with respect to the top carriage in a predetermined position, said laying mechanism having a laying axis and an elongate laying screw extending along said laying axis that applies a laying force required to orient the oscillating mass; and

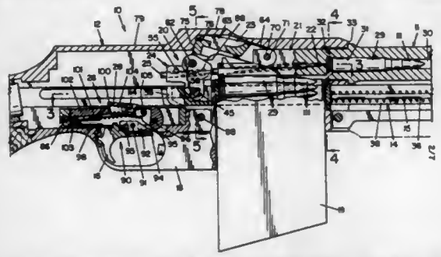
an equilibration rod disposed to cooperate with said elongate laying screw and said gas chamber, wherein said gas in said gas chamber transmits an equilibration force in a direction opposite the laying force to reduce the laying force, said equilibration rod cooperating with said gas chamber such that the equilibration force varies in accordance with the laying force based on the predetermined position, said equilibrating device balancing the oscillating mass in order to counteract the weight of the gun by means of said equilibration force.

5,614,691

STRIKING MECHANISM FOR SEMI-AUTOMATIC OPERATION OF RIFLES AND THE LIKE

James M. Taylor, Prosperity, Pa., assignor to Robert I. Landies, Chardon, Ohio

Filed May 19, 1995, Ser. No. 445,004
Int. Cl.[6] F41C *27/00*
U.S. Cl. 89—128 **18 Claims**



1. A striking mechanism for the semi-automatic operation of a cartridge firing firearm providing, in combination, a receiver; a barrel attached to said receiver; a gas operated slide assembly providing a slide movable within said receiver; a magazine, supplying a plurality of cartridges, carried by said receiver; and a trigger assembly attached to said receiver and providing a hammer; said striking mechanism comprising:

bolt means reciprocable within said receiver and engageable with the breach of said barrel and the face of a cartridge chambered therein, said bolt carrying a primary firing pin;

bolt lock means pivotally linked to said bolt means for selectively locking said bolt means within said receiver;

a secondary firing pin assembly pivotally linked to said bolt lock means and to said slide, said secondary firing pin assembly providing a secondary firing pin, engageable with said hammer and said primary firing pin thereby to strike the primer of a cartridge chambered within said barrel; and

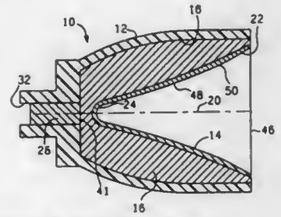
cocking means reciprocable within said receiver and engageable with said secondary firing pin assembly for manual operation of said striking mechanism.

5,614,692

SHAPED-CHARGE DEVICE WITH PROGRESSIVE INWARD COLLAPSING JET

Ronald E. Brown, Danville, Calif., and Mark E. Majerus, Middletown, Del., assignors to Tracor Aerospace, Inc., Austin, Tex.

Filed Jun. 30, 1995, Ser. No. 497,541
Int. Cl.[6] F42B *1/02*
U.S. Cl. 102—307 **10 Claims**



1. A shaped-charge device, comprising

a case defining an axisymmetrical forwardly-opening cavity uniformly disposed about a central axis;

an axisymmetrical, homogeneous-material, liner of variable thickness defining a forwardly-opening cavity having a closed apex, with the cavity being uniformly disposed within the case about the central axis; and

explosive material symmetrically disposed between the case and the liner;

wherein the liner is so shaped that in response to the explosive material being detonated to thereby explode, the liner is progressively collapsed inward by the exploding material to be formed into a fluid jet of said homogeneous liner material that is forwardly expelled at a varying velocity from the case along the central axis, with the forward portion of the jet being squeezed from the apex of the collapsing liner;

wherein the angle of disposition of the liner with respect to the central axis and the liner thickness both increase from a position forward of the apex to a more forward position between the apex and the forward end of the cavity to thereby provide a rapidly-elongating coherent jet; and

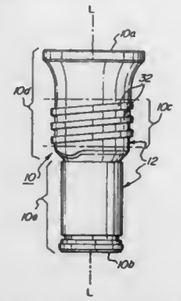
wherein the rate of change of liner thickness with respect to liner axial position varies such that, after the formation of the forward portion of the jet, the velocity of the jet-forming material at at least one intermediate position within the jet varies so as to cause the material to bunch up to form a symmetrical bulge at each said intermediate position within the jet, but not such that the velocity of the jet-forming material increases at any said intermediate position while the material is bunching up, thereby inhibiting the material from so bunching up as to cause the jet to deviate from the central axis.

5,614,693

ACCESSORY CHARGES FOR BOOSTER EXPLOSIVE DEVICES

Brendan M. Welch, Farmington, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jan. 11, 1996, Ser. No. 548,812
Int. Cl.[6] F42B *3/00;* **C06C** *5/04*
U.S. Cl. 102—318 **19 Claims**



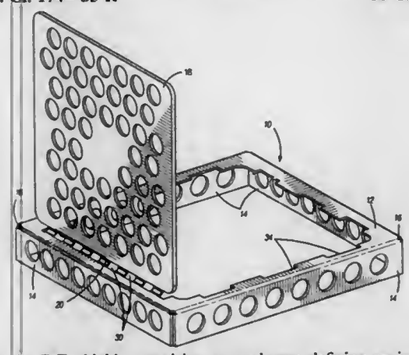
1. An explosive accessory charge for mounting on a booster explosive device having (a) a longitudinal axis, (b) a housing having a housing exterior and within which housing an explosive primer charge is enclosed, the accessory charge being dimensioned and configured to be mounted on the booster device radially outwardly thereof.

5,614,694

ONE PIECE OPEN AND CLOSABLE METAL RF SHIELD

Harold J. Gorenz, Jr., Lisle; Jeffery P. Hasler, Schaumburg; James R. Mudra, and Gary D. Schulz, both of Cary, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1995, Ser. No. 417,131
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 R **10 Claims**



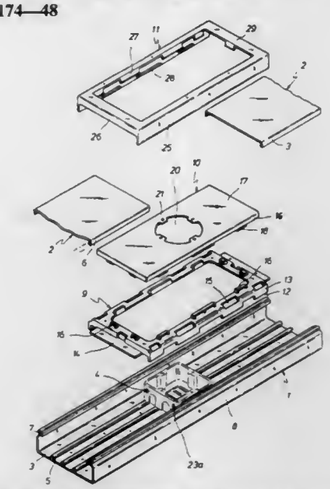
1. An R.F. shield comprising an enclosure defining an interior space in which electrical components to be shielded will reside, the enclosure being formed of metal of a first thickness and having an aperture therethrough for providing access to said interior space, said aperture being closable by a lid, a first portion of the lid being pivotably joined to the enclosure by an integral hinge, the metal of the hinge being of the first thickness, and a second portion of the lid being joined to the enclosure by at least one integral frangible connection comprising metal sheared through to a second thickness, less than the first thickness, to releasably hold the lid in a closed position in relation to the aperture until access to the interior space is desired at which time said frangible connection can be severed allowing the lid to pivot about the hinge and open the aperture.

5,614,695

ELECTRICAL MECHANISM SUPPORT DEVICE IN TRAYS FOR ELECTRICAL DUCTING

Juan M. Benito Navazo, Sant Cugat del Valles, Spain, assignor to Aparellaje Electrico, S.A., L'Hospitalet DeLlobregat, Spain

Filed Jun. 13, 1994, Ser. No. 258,939
Claims priority, application Spain, Jun. 14, 1993, 9301309
Int. Cl.[6] H02G *3/04*
U.S. Cl. 174—48 **5 Claims**



1. An electrical mechanism support device in a tray for electrical ducting, said tray including:

a base section, having a bottom wall and side walls; and

a lid section having two inwardly directed lips and an inner surface;

said bottom wall having attachment means for at least one of electrical mechanisms and boxes containing said electrical mechanisms, and

each of said side walls being provided with a longitudinal groove for one of said inwardly directed lips,

said support device comprising:

(a) an inner frame defining a first perimeter and a first rectangular center aperture and which is capable of covering a portion of said base section and being disposed between two lengths of said lid section, having first means of attachment to said base section and being provided with two overhanging center end tabs, capable of overlapping below portions of said lid section lengths;

(b) an outer frame defining a second perimeter and a second rectangular center aperture having second means of attachment to said inner frame and which is capable of covering said inner frame and said portions of said lid section lengths; and

(c) a mounting plate defining a third perimeter and having third means of attachment to said inner frame and fourth means of attachment to at least one of said boxes and said electrical mechanisms and means for retaining said mounting plate to said outer frame.

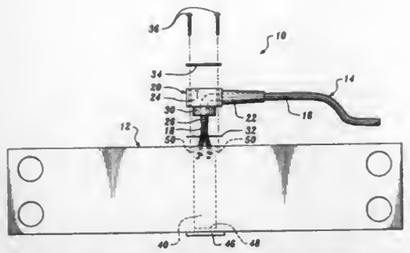
5,614,696

ENVIRONMENTALLY SEALED CONNECTOR FOR USE WITH A LOAD CELL BLOCK

Bryan R. Oakes, Redmond, Wash., assignor to Structural Instrumentation, Inc., Tukwila, Wash.

Filed Jun. 23, 1994, Ser. No. 264,462
Int. Cl.[6] H02G *15/007*
U.S. Cl. 174—65 G **16 Claims**

9. An environmentally sealed load cell comprising:



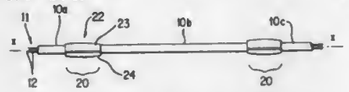
(a) a load cell block having a passageway extending into one surface of the load cell block;
(b) at least one strain gauge attached to the load cell block to monitor deflections of the load cell block; and
(c) an electrical connector attached to the surface of the load cell block and extending at least partially into the passageway to establish an environmental seal that seals the passageway, the electrical connector including a body formed of a pliable material, a protrusion extending outward from one side of the body and into the passageway, and an electrical cable extending inside the sides of the body, bending approximately 90° and extending through the protrusion and into the interior of the passageway, the protrusion being shaped to fit within the passageway and contact an interior surface of the passageway to form a seal, and the electrical cable being attached to said strain gauge.

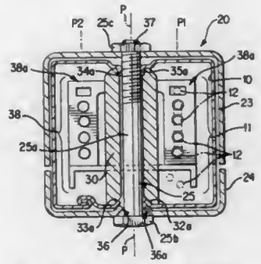
5,614,697

ELECTRICAL TRUNKING WITH WATERTIGHT COUPLING

Gerard Jego, Brazey En Plaine; Jean-Claude Lebeau, Varois; Philippe Normand, Chevigny; Daniel Nourry, Dijon, and Jean-Pierre Thierry, Arc-Sur-Tille, all of France, assignors to Schneider Electric SA, Boulogne-Billancourt, France

Filed Jul. 27, 1995, Ser. No. 507,912
Claims priority, application France, Aug. 2, 1994, 94 09677
Int. Cl.[6] H01R *4/26*
U.S. Cl. 174—84 R **6 Claims**





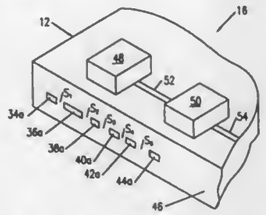
1. A prefabricated electrical trunking assembled by butt jointing unit enclosure sections, each of the enclosure sections having an orifice formed therein and accommodating a unit conductor assembly having parallel electrical conductors, which comprises:
mechanical coupling devices having flanges covering end portions of the enclosure sections and securing members clamping the flanges together;
tubular spacers disposed inside the enclosure sections near the end portions of the enclosure sections, said spacers each having a longitudinal axis which is substantially perpendicular to a longitudinal axis of each enclosure section and extending substantially perpendicularly to the electrical conductor;
each spacer having at least one opening receiving in a watertight manner an edge of the orifice of each enclosure section wherein the orifice of each enclosure section is coaxial with the longitudinal axis of the spacer and wherein said clamping members are respectively positioned within said opening and each of said spacers, said clamping members extending perpendicularly with respect to the electrical conductors.

5,614,698

CIRCUIT BOARD APPARATUS WITH INTEGRAL, EDGE-READABLE BAR CODE STRUCTURE, AND ASSOCIATED METHODS

H. Scott Estes, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Jan. 17, 1995, Ser. No. 374,315
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—250 **16 Claims**



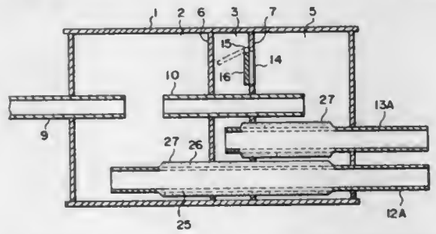
1. Circuit board apparatus comprising:
a dielectric substrate structure having oppositely facing first and second sides, and a peripheral side edge portion extending between said first and second sides; and
an electrically conductive portion carried by said dielectric substrate structure, lying generally in a plane parallel to said first and second sides, and being inwardly offset from said peripheral side edge portion, said electrically conductive portion having spaced apart finger sections extending outwardly therefrom and having spaced apart outer end surfaces aligned with said peripheral side edge portion,
said spaced apart outer end surfaces, and the spaces between them, being arranged on said peripheral side edge portion in a bar code orientation indicative of predetermined information relating to said circuit board apparatus.

5,614,699

AUTOMOBILE EXHAUST NOISE SUPPRESSOR

Haruki Yashiro, Fujisawa; Akira Sasaki, Yokosuka, and Kazushige Maeda, Zushi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 26, 1995, Ser. No. 429,091
Claims priority, application Japan, May 9, 1994, 6-095336; Oct. 12, 1994, 6-246355
Int. Cl.[6] F01N *1/00*
U.S. Cl. 181—254 **3 Claims**



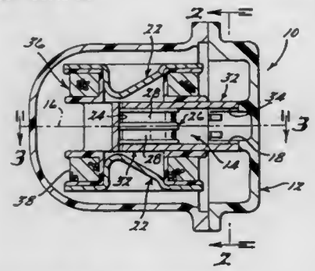
1. An exhaust noise suppressor for suppressing exhaust noise in an automobile engine, comprising:
a muffler, said muffler being partitioned into a first chamber, a second chamber, and a third chamber by means of a first baffle plate and a second baffle plate, respectively, wherein said first chamber is connected to said third chamber via an internal tube, and wherein said third chamber is connected to said second chamber via a passage;
an inlet tube opening into the first chamber;
a valve for opening and closing said passage according to an engine exhaust pressure in the third chamber;
a first discharge pipe for discharging exhaust from said first chamber; and
a second discharge pipe for discharging exhaust from said second chamber,
wherein the internal tube and the third chamber reduce exhaust noise in a low engine speed region.

5,614,700

INTEGRATING ACCELEROMETER CAPABLE OF SENSING OFF-AXIS INPUTS

James R. Moss, Satellite Beach, Fla.; Michael W. Malesko, Ann Arbor, and Steven J. Anderson, Willis, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Oct. 11, 1994, Ser. No. 320,893
Int. Cl.[6] H01H *35/14*
U.S. Cl. 200—61.45 M **21 Claims**



1. An integrating accelerometer comprising:
a housing having an internal passage defined therein about a first axis, said passage having a substantially planar basal surface and a pair of side walls, wherein at least one of the side walls forms a divergent angle with said first axis such that the distance between the side walls increases with increasing displacement along said first axis from a first end of said passage towards a second end of said passage; at least one magnetically-permeable biasing element secured to said housing proximate to said passage;
a magnetic sensing mass located within said passage such that the magnetic axis thereof extends in a first direction generally normal to the basal surface of said passage, said sensing mass magnetically-interacting with said biasing element so as to be magnetically biased towards a first position in the first end of said passage, said sensing mass moving from said first position in response to application of an accelerating force to said housing which exceeds said magnetic bias;
means for damping the movement of said sensing mass within said passage, said damping means including at least one electrically-conductive magnetically-nonpermeable damping element secured to said housing proximate to said passage, and wherein movement of said sensing mass within said housing generates eddy currents in said damping element; and
switch means on said housing responsive to displacement of said sensing mass within said passage.

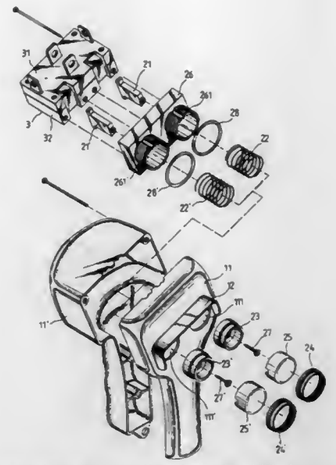
5,614,701

CONTROL SWITCH FOR ELECTRIC WINCH

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Jun. 27, 1995, Ser. No. 495,317
Int. Cl.[6] H01H *9/06;13/70;15/02*
U.S. Cl. 200—61.85 **7 Claims**

1. A control switch comprising:
a) a handle having two holes;



b) two push buttons extending through said holes, respectively; and
c) a switch box positioned in said handle, said switch box including:
a top cover having a plurality of slots extending therethrough;
a bottom cover defining a first open-ended groove and a second open-ended groove, wherein each of said first and second open-ended grooves has an insertion slot formed adjacent an end thereof;
a first pair of conducting plates secured between said top and bottom covers, each of said plates having two inwardly facing contact surfaces and a top wire securing portion;
a second pair of conducting plates secured between said top and bottom covers, each of said plates having two inwardly facing contact surfaces and a top wire securing portion;
a first sliding block located in said first open-ended groove and being slidable therein upon movement of one of said two push buttons, said first sliding block defining forward, center and rear divided spaces, wherein a plate is positioned on an inner wall of said forward divided space and is inserted in said insertion slot of said first open-ended groove; and
a second sliding block located in said second open-ended groove and being slidable therein upon movement of the other of said two push buttons, said second sliding block defining forward, center and rear divided spaces, wherein a plate is positioned on an inner wall of said forward divided space and is inserted in said insertion slot of said second open-ended groove.

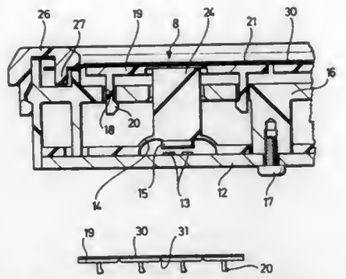
5,614,702

KEYBOARD ACTUATOR WITH CATCH HOOKS AND WEAKENED PORTION

Horst Kraft, Balingen, and Gerhard Dekorsy, Radolfzell, both of Germany, assignors to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG, Balingen, Germany

PCT No. PCT/EP92/01931, § 371 Date Feb. 14, 1994, § 102(e) Date Feb. 14, 1994, PCT Pub. No. WO93/05373, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 22, 1992, Ser. No. 193,190
Claims priority, application Germany, Sep. 3, 1991, 41 29 234.0
Int. Cl.[6] G06C *7/02*
U.S. Cl. 235—145 R **7 Claims**

1. A keyboard including in combination an array comprising a plurality of spaced depressable elements including two adjacent depressable elements, a guide plate having a plurality of openings,



each one of said openings being disposed in proximity to a corresponding one of said depressable elements, means comprising a plurality of actuators for depressing said depressable elements, each of said actuators having a catch hook inserted in a corresponding one of said openings, one of said actuators being capable of depressing said two adjacent depressable elements, said one actuator being provided with a weakened portion between said two adjacent depressable elements, said weakened portion functioning as a hinge.

5,614,703

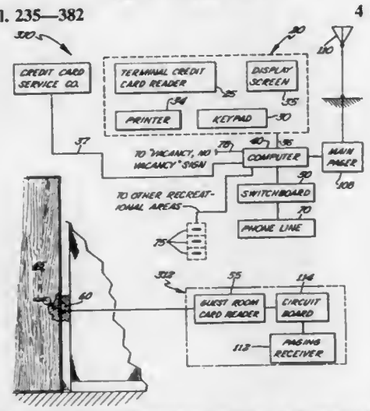
HOTEL CHECK-IN SYSTEM WITH WIRELESS COMMUNICATION

Jay R. Martin, and Scott E. Martin, both of 1735 Green Bay Rd., Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 369,173, Jan. 5, 1995, abandoned. This application Sep. 7, 1995, Ser. No. 524,543

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—382 **4 Claims**



1. A guest registration apparatus for use at a place of lodging having a computer and at least one guest room with a door and lock, by a guest with a general purpose credit card validated by a credit card service company and without altering the card by entering any information on the card, said guest registration apparatus comprising:

a registration terminal accessible to the guest, said terminal including:

a terminal credit card reader capable of reading the general purpose credit card to obtain card identity information;

data input means for receiving data from the guest;

data conveying means for delivering data to the guest; and

means to convey said card identity information and data received at said registration terminal to the computer;

a main paging transmitter, electrically connectable to the computer to receive said card identity information from the computer and to wirelessly transmit an information signal containing said card identity information to the guest room;

a guest room door control unit, including:

a guest room general purpose credit card reader positionable adjacent the guest room door to read the unaltered general purpose credit card of the guest so as to obtain unaltered card identity information so as to use such card as a room key;

paging receiver means for receiving said information signal from said main paging transmitter by wireless communication therewith, said paging receiver means electrically connected to said room card reader and including a paging receiver and paging memory means to store said information signal received from said main paging transmitter, said paging memory means also receiving unaltered card identity information from said room card reader and comparing said card information with said room card identity information from said paging transmitter; and

a guest room door lock release apparatus electrically connected to said door control unit and positionable to actuate the lock at the guest room door upon being actuated by said door control unit.

5,614,704

ENCODED SYMBOL READER WITH IMAGE REVERSAL FUNCTION

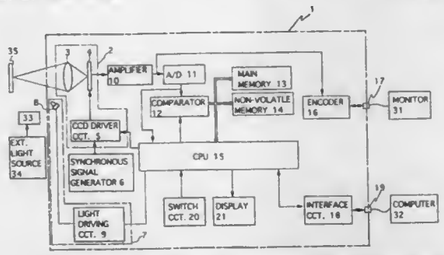
Harumi Aoki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 404,992

Claims priority, application Japan, Mar. 16, 1994, 6-071580

Int. Cl.[6] G06K *7/00*

U.S. Cl. 235—436 **15 Claims**



1. An encoded symbol reader for scanning a tessellated encoded symbol having a plurality of cells arranged in row and column directions, said encoded symbol reader comprising:

an image receiving device for receiving an optical image and outputting an electrical signal corresponding to said optical image;

an optical system for forming an optical image of said encoded symbol on said image receiving device;

means for generating cell data in accordance with said electrical signal, said cell data representing said plurality of cells of said optical image of said encoded symbol;

a memory for storing said cell data generated by said generating means in an order corresponding to an order of cells of said optical image of said encoded symbol, said cells arranged in said row and column directions;

means for retrieving said cell data stored in said memory;

means for actuating an image reversal mode in which decoding is executed with respect to a reversed image, said reverse image generated by reversing an order of cells of said optical image in one of said row and column directions;

means for controlling said retrieving means to retrieve said cell data by changing an order of said cell data stored in said memory in one of said row and said column directions; and

means for decoding said retrieved cell data.

5,614,705

DEVICE FOR OPTICALLY READING OUT INFORMATION BY USE OF LASER BEAM

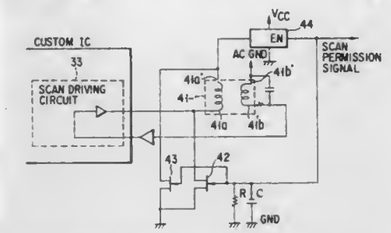
Shinji Nagano, Hachioji; Asako Kashima, Sagamihara; Akira Osanai; Teruaki Sugata, both of Hachioji; Hidenobu Kubo, Higashikurume, and Tomomi Mashiko, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,490

Claims priority, application Japan, Jun. 29, 1994, 6-148247; Jun. 29, 1994, 6-148300

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467 **10 Claims**



1. An information reading apparatus comprising:

a light source for generating a laser beam;

reflection means having an emission mirror unit for reflecting the laser beam and emitting the laser beam towards an optical pattern representing information in a form of a predetermined pattern, and a condensing mirror unit for condensing a reflection beam from said optical pattern in a predetermined direction, said condensing mirror unit being integrally formed with said emission mirror unit;

light detection means having a light receiving surface opposed to said condensing mirror unit, said light receiving surface being located within a range of an optical path of the reflection beam received by said condensing mirror unit in such a position as not to interrupt the emitted beam, said light receiving surface receiving the reflection beam condensed by said condensing mirror unit, and the received reflection beam being converted to an electric signal corresponding to said optical pattern;

a base plate on which said light source and said light detection means are arranged;

a movable unit having one end portion provided with said reflection means and another end portion provided with a magnet;

a support unit, fixed on said base plate, for rotatably supporting said movable unit such that said movable unit is rotatable about a substantially middle portion of said movable unit;

a plate-like resilient body for coupling said support unit to said movable unit provided with said reflection means;

a rotation drive unit for repeatedly rotating said movable unit in an oscillating manner by generating a magnetic force for attracting said magnet at a predetermined timing and by making use of a restoring force of said resilient body; and

a rotation braking unit for braking and stopping rotation of said movable unit by consuming a primary winding potential of a coil, provided on said rotation drive unit, for generating a magnetic force.

5,614,706

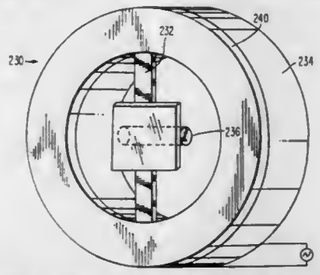
BAR CODE SCANNING ASSEMBLY WITH CANTILEVERED OR TORSIONALLY VIBRATING FLEXURAL MEMBER

Simon Bard, Stony Brook; Askold Strat, Patchogue; Joseph Katz, and Boris Metlitsky, both of Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 467,648, Jun. 6, 1995, abandoned, which is a division of Ser. No. 228,172, Apr. 15, 1994, Pat. No. 5,543,610, which is a continuation of Ser. No. 884,734, May 15, 1992, abandoned. This application Aug. 13, 1996, Ser. No. 696,112

Int. Cl.[6] G06F *7/10*

U.S. Cl. 235—472 **20 Claims**



1. An optical scanner module for directing a light beam in a pattern to scan a symbol, the scanner module comprising:

a) an optical element for directing the light beam;

b) a first magnet for establishing a first magnetic field;

c) a second magnet for establishing a second magnetic field;

d) an elongate flex element having fixedly-mounted opposed ends, for mounting said optical element and said first magnet at a location intermediate said opposed ends;

e) one of said first and second magnets including an electromagnetic coil for receiving an AC drive current, said coil having a primary axis of symmetry that extends through said optical element whereby interaction of said first and second magnetic fields produces a flexing of said flex element causing scanning motion of said optical element.

5,614,707

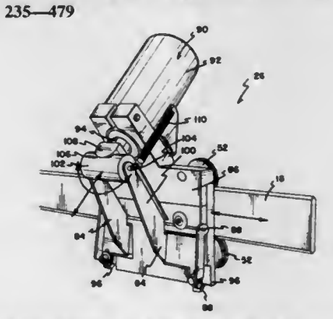
PICKER CARRIAGE FOR GRASPING A CARD

Robert W. Lundstrom, Plymouth; Steven A. Miller, Mahtomedi, and Eric J. Sorensen, Apple Valley, all of Minn., assignors to DataCard Corporation, Minneapolis, Minn.

Division of Ser. No. 180,657, Jan. 12, 1994, Pat. No. 5,378,884, which is a division of Ser. No. 993,105, Dec. 18, 1992, Pat. No. 5,332,889. This application Oct. 20, 1994, Ser. No. 326,330

Int. Cl.[6] G06K *13/04*

U.S. Cl. 235—479 **3 Claims**



1. A picker carriage for grasping a card, the picker carriage comprising:

a chassis;

a backstop operably connected to the chassis;

two picker arms, each picker arm having a first picker end arranged in opposing relation to the backstop and a second end, each picker arm being pivotally connected to the chassis between the first and second ends;

an axle member having a first end and a second oppositely disposed end, the second end of one picker arm being pivotally operably connected to the first end of the axle member and the second end of the other picker arm being pivotally operably connected to the second end of the axle member, disposed between the first and second ends of the axle member is a first arched surface operably connected to the axle member; and

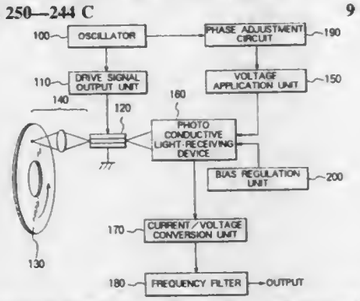
actuator means for activating the picker arms, the actuator means having an actuator rod including a distal end defining a second arched surface that engages and is generally concentric with the first arched surface of the axle member, the first and second arched surfaces being biased together by a biasing means, wherein the actuator means and the biasing means cooperate to pivot the picker arms between a first position wherein the picker ends are spaced distant from the backstop and a second position wherein the picker ends are proximate the backstop for grasping the card between the picker ends and the backstop.

5,614,708

OPTICAL FEEDBACK PHOTODETECTION APPARATUS

Musubu Koishi; Kouichi Shirakawa, and Akira Takeshima, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jan. 25, 1996, Ser. No. 591,392
Claims priority, application Japan, Jan. 26, 1995, 7-11012
Int. Cl.[6] G11B *7/13;* **H01J** *40/14*
U.S. Cl. 250—244 C **9 Claims**



1. An optical feedback photodetection apparatus, comprising:

an oscillator for oscillating a synchronizing signal at a predetermined frequency;

a drive signal output unit for outputting a drive signal modulated at the predetermined frequency on the basis of the synchronizing signal output from said oscillator;

a light source which receives the drive signal output from said drive signal output unit to emit a light beam intensity-modulated at the predetermined frequency and which optically amplifies a return light beam reflected from an object to be measured;

an optical system for irradiating the light beam emitted from said light source on said object to be measured and for feeding back the return light beam from said object to said light source;

a voltage application unit for outputting an AC voltage signal at the predetermined frequency on the basis of the synchronizing signal output from said oscillator;

a photoconductive light-receiving device for receiving the light beam emitted from said light source and for synchronously detecting the light beam emitted from said light source at the predetermined frequency upon application of the AC voltage signal output from said voltage application unit;

a current/voltage conversion unit for converting a modulated current flowing through said photoconductive light-receiving device to a voltage signal and for outputting the voltage signal; and

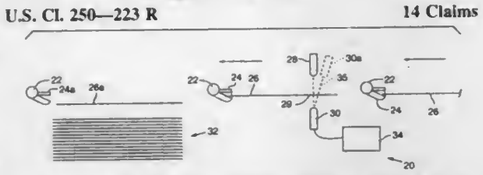
a frequency filter unit for extracting and outputting a low-frequency component of the voltage signal output from said current/voltage conversion unit.

5,614,709

METHOD FOR ACCURATELY COUNTING CONVEYED WORKPIECES REGARDLESS OF VARIATIONS IN CONVEYOR SPEED

Wayne T. Smith, San Rafael, Calif., assignor to Golden Gate Microsystems, Inc., San Rafael, Calif.

Filed May 1, 1995, Ser. No. 431,453
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—223 R **14 Claims**



1. A method for accurately counting conveyed workpieces on a conveyor system which has a series of gripper bars, each of which is connected to a plurality of gripper clips which grip and pull a conveyed workpiece, with the gripper bars physically separated from the conveyed workpiece by the intervening gripper clips, and for discriminating between conveyed workpieces and gripper bars, whereby workpieces are accurately counted regardless of variations in conveyor speed, comprising:

using a conveyed object sensor adjacent to which conveyed workpieces and gripper bars pass to detect the presence and movement of gripped workpieces and gripper bars passing a selected point by detecting intervals of object presence and object absence at the selected point,

providing a computer and an associated computer memory;

measuring and storing in the computer memory the time duration of intervals of object presence and the time duration of intervals of object absence at the selected point,

with the computer, performing a mathematical comparison step to decide whether each interval of object presence represents the passage of a conveyed workpiece by mathematically comparing the time duration of the interval of object presence with the time duration of an immediately adjacent interval of object absence using a preselected mathematical comparison algorithm, and

if and only if the mathematical comparison determines that an interval of object presence has been caused by the passage of a workpiece, counting that interval as a workpiece.

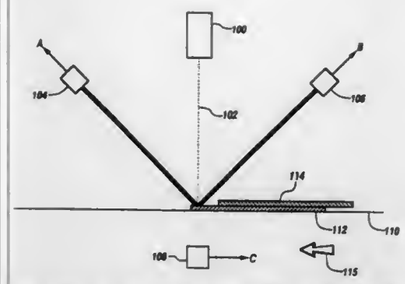
5,614,710

DICHOTOMOUS SCAN SYSTEM FOR DETECTION OF OVERLAPPED OBJECTS

George R. Mondie, Bedford; Richard G. Van Tyne, Richardson, and Marion W. Neff, Dallas, all of Tex., assignors to ElectroCom Automation L.P., Arlington, Tex.

Filed Jun. 7, 1995, Ser. No. 477,651
Int. Cl.[6] G06M *7/10*
U.S. Cl. 250—223 R **20 Claims**

11. An electro-optical overlapped object detector for detecting one object overlapping another object as the objects move along a defined path comprising:



a light source for projecting a light beam toward the path;

a first light sensor oriented to receive light reflected from the object passing through the light beam, said first light sensor outputting a first output signal having a magnitude related to the amount of reflected light received by said first light sensor;

a second light sensor oriented to receive light reflected from the object passing through the light beam, said second light sensor outputting a second output signal having a magnitude related to the amount of reflected light received by said second light sensor; and

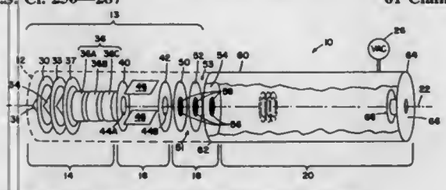
information means for generating a first information signal when the light received by the first light sensor exceeds the amount of light received by the second light sensor, said information means generating a second information signal when the light received by the second light sensor exceeds the amount of light received by the first light sensor, said information means generating a third information signal when the rate of change over time of the light received by the first light sensor indicates an edge of the overlapping object passing through the light beam, and said information means generating a fourth information signal when the rate of change over time of the light received by the second light sensor indicates an edge of the overlapping object passing through the light beam.

5,614,711

TIME-OF-FLIGHT MASS SPECTROMETER

Gangqiang Li, and Gary M. Hieftje, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed May 4, 1995, Ser. No. 434,931
Int. Cl.[6] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—287 **61 Claims**



1. A time-of-flight mass spectrometer, comprising:

an ion source producing a continuous beam of ions:

a beam modulation assembly for generating at least one packet of ions from the continuous beam of ions; and

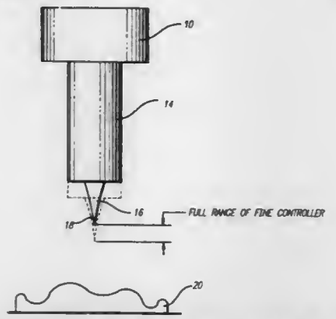
an extraction assembly downstream and spaced from said beam modulation assembly and said ion source for accelerating said packet of ions, into a flight tube along a flight path, said ion source, beam modulation assembly, and extraction assembly disposed along a common axis.

5,614,712

METHOD OF ENGAGING THE SCANNING PROBE OF A SCANNING PROBE MICROSCOPE WITH A SAMPLE SURFACE

David J. Ray, Agoura Hills, Calif., assignor to Quesant Instrument Corporation, Agoura Hills, Calif.

Filed Mar. 24, 1995, Ser. No. 409,999
Int. Cl.[6] H01J *37/28*
U.S. Cl. 250—307 **14 Claims**



1. A method of controlling the distance between the probe of a scanning probe microscope device and a sample, the microscope device including a probe tip, a detector, a servo-loop, fine position control means, and coarse position control means which move the probe tip in predetermined increments, such that the probe tip is brought near enough to a surface for the control servo-loop of the microscope to be within its control range, the method comprising the steps of:

a. decreasing the distance between the probe tip and the surface using the fine position control mechanism while monitoring the detector output;

b. increasing the distance between the probe tip and the sample using the fine position control means if, during step a, the detector does not output a signal whose value equals a threshold value;

c. decreasing the distance between the probe tip and the surface by more than one increment of coarse distance using the coarse position control means;

d. repeating steps a., b., and c. until the detector output reaches the threshold value during step a.; and

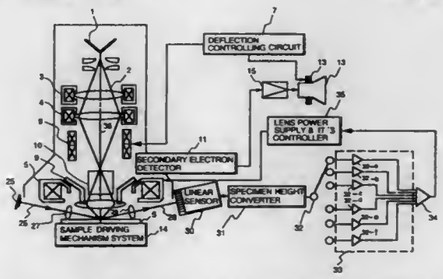
e. determining the percentage of full range of fine control distance extended at this time.

5,614,713

SCANNING ELECTRON MICROSCOPE

Atsushi Kobaru; Tadashi Otaka; Tatsuya Maeda, and Katsuhiro Sasada, all of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 617,030
Claims priority, application Japan, Mar. 30, 1995, 7-72770
Int. Cl.[6] H01J *37/26*
U.S. Cl. 250—310 **10 Claims**



1. A scanning electron microscope, comprising: means for generating an electron beam; means for irradiating a specimen with the

electron beam; means for focusing the electron beam on the specimen; means for scanning the specimen with the electron beam so as to generate from the specimen a signal characteristic thereof; means for detecting the generated signal so as to display an image of the specimen on the basis of the detected signal; means for moving the specimen in a plane transverse to the electron beam; means for measuring physical quantities related to the height of the specimen at a position to be observed on the specimen and at least at one position on the specimen which is in the vicinity of the position to be observed thereon; and means for producing a statistical focusing correction signal on the basis of the measured physical quantities and for controlling one of the focusing means and the moving means on the basis of the produced statistical focusing correction signal so as to focus the electron beam on the specimen when the position to be observed on the specimen is subject to irradiation by the electron beam.

5,614,714

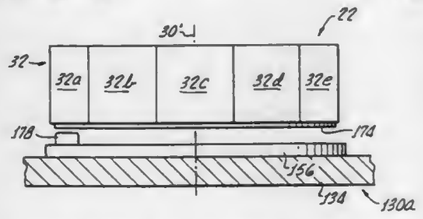
THERMAL IMAGING DEVICE AND METHOD

Stephen P. Shaffer, West Hills, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 6, 1995, Ser. No. 524,720

Int. Cl.[6] H04N *3/09*

U.S. Cl. 250—334 **9 Claims**



1. A thermal imaging device comprising:

an objective lens for receiving and focusing invisible infrared light from a scene;

a movable scanner for receiving and reflecting infrared light from said objective lens;

a detector for receiving the reflected infrared light from said scanner and responsively providing electrical signals;

a processing circuit for receiving the electrical signals from said detector and responsively providing imaging electrical signals;

a display device for receiving the imaging electrical signals and responsively providing a visible image replicating the scene;

said movable scanner carrying a circular magnetic track having alternating opposite magnetic domains providing circumferentially varying magnetic flux extending between said magnetic domains, said circumferentially varying magnetic flux having plural magnetic flux minima alternating with plural magnetic flux maxima both arrayed circumferentially around said magnetic track;

a sensor head having plural magneto-resistive elements disposed to be affected by said alternating opposite magnetic domains as said scanner moves, said sensor head disposing said magneto-resistive elements to align in two groups of elements each including at least an alternate pair of said plural elements, each element of each of said two groups of elements individually aligning substantially simultaneously with one of a respective magnetic flux maxima or with a magnetic flux minima of said magnetic domains, and a bifurcated sensor circuit having a pair of opposite branches and connecting said magneto-resistive elements of one of said two groups of elements in series with one another in one of said opposite branches and also connecting said magneto-resistive elements of the other of said two groups in the other of said opposite branches, whereby all of said plural magneto-resistive elements in said two groups of elements are simultaneously exposed to one of a respective flux maxima and flux minima as said scanner moves.

5,614,715

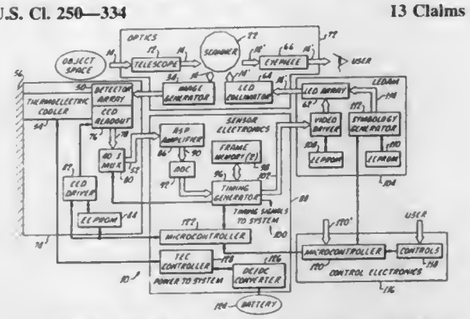
THERMAL IMAGING DEVICE WITH SCANNED LIGHT EMITTING DIODES (LEDS) AND SECOND LINEAR ARRAY OF PLURAL SYMBOLOGY LEDS

Russell K. Jones, Manhattan Beach, and Timothy L. Gallagher, Torrance, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Oct. 11, 1995, Ser. No. 540,740

Int. Cl.[6] H04N *3/09*

U.S. Cl. 250—334 **13 Claims**



1. A thermal imaging device responsive to invisible thermal infrared radiation from a viewed scene to responsively provide a visible image replicating the scene, said thermal imaging device including a linear array of plural scene light emitting diodes (scene-LEDs) providing light replicating portions of the viewed scene, a scanner scanning the light from said scene-LEDs to a user of the device to provide said visible image, said thermal imaging device further comprising: a second linear array of plural symbology light emitting diodes (symbology-LEDs) providing additional light to said scanner for producing portions of selected symbology to be presented to the user, said scanner also scanning the light from said symbology-LEDs to the user of the thermal imaging device to provide a symbology-image superimposed upon the visible image replicating the viewed scene.

5,614,716

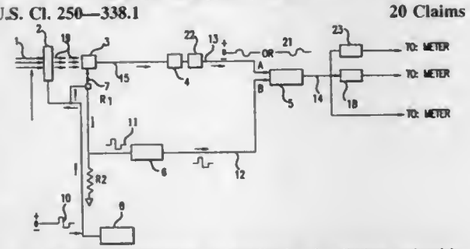
ALTERNATING CURRENT METHOD AND APPARATUS FOR AMBIENT TEMPERATURE COMPENSATION FOR MODULATED ENERGY SENSORS

Robert E. Rupert, South Dennis, and Norman C. Anderson, Chatham, both of Mass., assignors to Infratemp, Inc., South Dennis, Mass.

Filed Apr. 26, 1996, Ser. No. 639,913

Int. Cl.[6] G01J *5/16*; H05B *11/00*

U.S. Cl. 250—338.1 **20 Claims**



1. A method of measuring an amplitude of radiation emitted by an optical energy source and compensating for ambient temperature fluctuations, comprising:

converting steady radiation from an object into an alternating current sensor output signal in a radiation sensor;

detecting ambient temperature with a thermal sensor located proximately to said radiation sensor;

generating an alternating current compensation signal in said thermal sensor having an amplitude proportional to said ambient temperature; and

combining said sensor A.C. output signal from said radiation sensor and said A.C. compensation signal from said thermal sensor to form an alternating current output signal, such that an amplitude of said alternating current output signal is proportional to an amplitude of the radiation from said optical energy source.

10. An instrument for measuring the intensity of the energy of an optical radiation source having compensating for ambient temperature fluctuations, comprising:

a radiation sensor capable of receiving radiation from an object and converting said radiation into an alternating current sensor output signal;

a thermal sensor capable of detecting an ambient temperature proximately to said instrument and generating an alternating current compensation signal having an amplitude proportional to said ambient temperature; and

a summing amplifier coupled to said radiation sensor and said thermal sensor, said summing amplifier combining said sensor output signal from said radiation sensor and said compensation signal from said thermal sensor to form an alternating current output signal, such that an amplitude of said alternating current output signal is proportional to an amplitude of the radiation from said optical radiation source.

5,614,717

PYROELECTRIC INFRARED RAY SENSOR

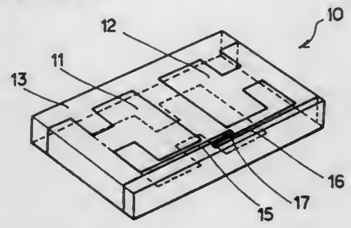
Seong U. Ma, Seoul, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Sep. 29, 1995, Ser. No. 536,733

Claims priority, application Rep. of Korea, Sep. 30, 1994, 1994-25013

Int. Cl.[6] G01J *5/02*

U.S. Cl. 250—338.3 **16 Claims**



1. A pyroelectric infrared ray sensor comprising:

a pyroelectric material;

first and second reflecting electrodes formed on a face of said pyroelectric material;

first and second optical receiving electrodes formed on an opposite face of said pyroelectric material correspondingly with said reflecting electrodes; and

an impedance matching circuit for extracting signals from said first and second reflecting electrodes, said impedance matching circuit including an input resistor,

said input resistor of said impedance matching circuit comprising:

first and second resistance electrodes extending from said first and second reflecting electrodes to be approachingly overlapped; and

a pyroelectric material resistance area consisting of a sharing area in an overlapping portion of said first and second resistance electrodes.

5,614,718

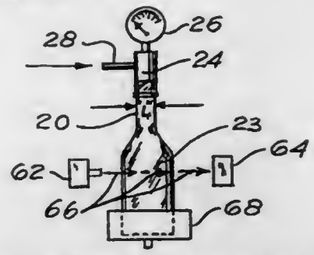
APPARATUS AND METHOD FOR NONINVASIVE ASSESSMENT OF PRESSURIZED CONTAINER PROPERTIES

John G. Brace, Saline, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Oct. 3, 1995, Ser. No. 538,722

Int. Cl.[6] G01T *3/00*

U.S. Cl. 250—339.13 **12 Claims**



1. A method for measuring the concentration of at least one gas in the headspace of a plastic container that has been filled with a product and then sealed under pressure, said method comprising the steps of:

(a) preparing a prediction model which accepts as an input at least one spectral component value corresponding to absorption of electromagnetic radiation in at least one frequency band of the radiation, and which outputs an estimated measurement for the concentration of said at least one gas in the headspace of said container based on said input, said preparing step including the step of performing multivariate regression analysis on the spectral component value to produce the prediction model as an equation which maps spectral components as inputs to an estimated value for the pressure of said at least one gas;

(b) performing spectroscopic analysis of said container to obtain at least one spectral component value corresponding to the absorption of electromagnetic radiation in said at least one frequency band by said at least one gas; and

(c) evaluating the prediction model with said at least one spectral component value as the input, wherein the output of said prediction model is thereby a measurement of the concentration of said at least one gas in the headspace of said container.

5,614,719

FLUID MONITORING

Alan J. Hayes, 25 Echo Hill, Royston Hertfordshire, United Kingdom, and Allen W. Mabbitt, 5A Park Avenue, Bedford, United Kingdom

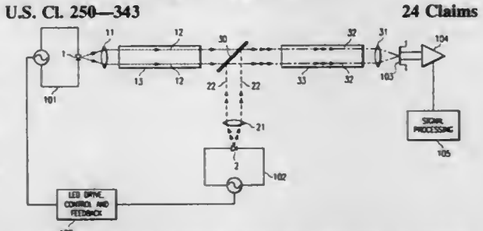
PCT No. PCT/GB93/00263, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/16371, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 8, 1993, Ser. No. 256,854

Claims priority, application United Kingdom, Feb. 7, 1992, 9202647

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—343 **24 Claims**



1. A fluid presence monitoring apparatus comprising electromagnetic radiation sources arranged to provide respective reference

and sample beans of electromagnetic radiation of sinusoidal or pulsed form, a first cell which contains a reference sample of a fluid to be monitored and through which the reference beam of electromagnetic radiation is passable, a second cell which is capable of containing a fluid working sample and through which both the reference and sample beams of electromagnetic radiation are passable, means arranged to detect the reference and sample beams independently of each other after they have passed through the second cell and to provide respective signals representative of the independently-detected beams, and means arranged to compare said signals in order to determine the presence of the fluid to be monitored in the second cell, wherein the electromagnetic radiation sources comprise light emitting diodes whose electromagnetic radiation wavelength is matched with that of the absorption spectrum of the fluid to be monitored.

5,614,720

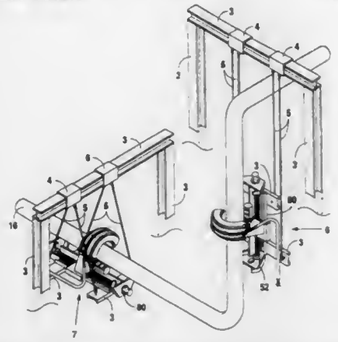
MOBILE, MULTI-MODE APPARATUS AND METHOD FOR NONDESTRUCTIVELY INSPECTING COMPONENTS OF AN OPERATING SYSTEM

Ira L. Morgan; Robert H. Rice; Joseph E. Bolger, all of Austin, and Robert M. Crane, Georgetown, all of Tex., assignors to Integrated Diagnostic Measurement Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 982,381, Nov. 25, 1992, Pat. No. 5,420,427, which is a continuation-in-part of Ser. No. 541,981, Jun. 22, 1990, abandoned. This application Mar. 22, 1995, Ser. No. 408,606

Int. Cl.[6] G01N *23/18*

U.S. Cl. 250—360.1 **22 Claims**



1. A mobile apparatus for nondestructively inspecting stationary components of a facility, comprising:

a) means for transmitting penetrating radiation along a plurality of paths through a cross-section of the component;

b) means for detecting penetrating radiation which passes through the component from said transmitting means and for converting the detected radiation into electrical signals representative of the density length of the component material along a path between the transmitting means and the detector means;

c) ring means for encircling the component to be scanned on which said transmitting means and detector means are mounted;

d) yoke means for supporting the ring means about the component;

e) means, positioned along a length of the component, for supporting said yoke means and ring means;

f) means for rotating the ring means relative to said yoke means about a cross-section of the component to be scanned;

g) means for translating the yoke and ring means relative to the support means along a length of the component to be scanned;

h) means for monitoring the longitudinal position of the ring means relative to the support means, and generating signals representative thereof; and

i) means for monitoring the rotational position of the ring means relative to said yoke means, and generating signals representative thereof;

j) processing means for sending control signals to the translating and rotating means for translating and rotating the transmitting means and detector means, for receiving signals representative of both longitudinal and rotational positions from the monitoring means, and for receiving density length signals from the detector means for a plurality of translated and rotational positions; said processing means also having a computer-implementable model for performing a gauging mode analysis of the component scanned, wherein said processing means processes the density length signals and the position signals using the computer-implementable model to create a computer-generated model of an ideal section of the component scanned in order to detect flaw in the component scanned.

5,614,721

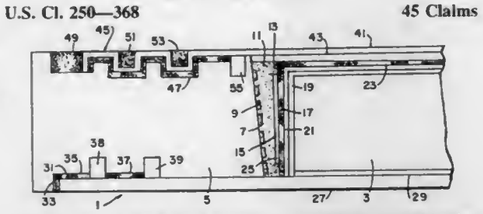
MODULAR GAMMA CAMERA PLATE ASSEMBLY WITH ENHANCED ENERGY DETECTION AND RESOLUTION

Kiril A. Pandelisev, Mesa, Ariz., assignor to Optoscint, Inc., Scottsdale, Ariz.

Filed Dec. 13, 1995, Ser. No. 572,173

Int. Cl.[6] G01T *1/202*

U.S. Cl. 250—368 **45 Claims**



1. A gamma camera plate assembly comprising a crystal having at least one cladding surrounding the crystal and a mirror surrounding the cladding, and a peripheral crystal housing with a crystal holder mounted between the crystal and the crystal housing for supporting the crystal in the housing, wherein the holder and the housing have mutually engaging surface features for supporting the crystal holder against movement in the crystal housing.

5,614,722

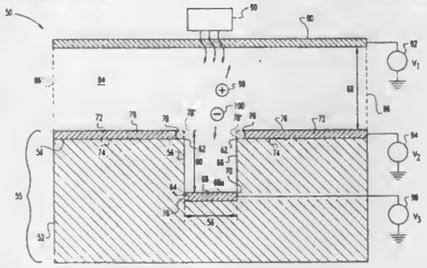
RADIATION DETECTOR BASED ON CHARGE AMPLIFICATION IN A GASEOUS MEDIUM

Keith Solberg, Bloomington, Ind.; William K. Pitts, and Kevin M. Walsh, both of Louisville, Ky., assignors to University of Louisville Research Foundation, Inc., Louisville, Ky.

Filed Nov. 1, 1995, Ser. No. 551,472

Int. Cl.[6] G01T *1/85*

U.S. Cl. 250—374 **16 Claims**



1. A radiation detector for providing multiplication of charges comprising:

a dielectric substrate defining a cavity opening therein extending into said substrate and terminating in a cavity bottom;

an electrically conductive anode disposed on said cavity bottom, said anode having a substantially flat top surface facing said cavity opening;

an electrically conductive cathode formed adjacent said cavity opening; and

a gaseous medium in contact with said cathode and extending into said cavity in contact with said anode, said gaseous medium including charges resulting from ionization thereof;

wherein said anode and said cathode define an electric field therebetween sufficient to cause avalanche ionization of the charges with said gaseous medium adjacent said top surface of said anode to thereby provide multiplication of the charges.

5,614,723

APPARATUS FOR TREATING FLUIDS WITH ULTRAVIOLET RADIATION

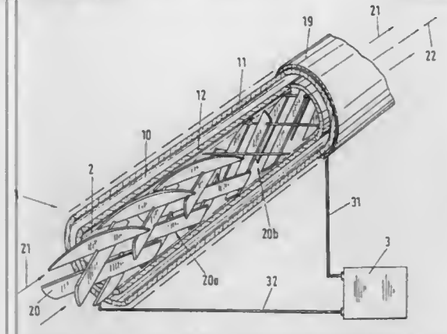
Thomas Oppenländer, Schwenningen, Germany; Peter Mathys, Neuhausen, and Gottlieb Schneider, Seuzach, both of Switzerland, assignors to Sulzer Chentech AG, Switzerland

Filed Aug. 7, 1995, Ser. No. 512,241

Claims priority, application European Pat. Off., Aug. 15, 1994, 94810469

Int. Cl.[6] G01N *21/00*

U.S. Cl. 250—435 **13 Claims**



1. Apparatus for treating fluids with ultraviolet radiation comprising an elongate cylindrical eximer radiator and a chamber (2) which is provided as a through-flow and treatment section for the fluid, with the radiator having a discharge volume (**10**) as well as two electrodes (**19**, **20**) and with one of the electrodes (**20**) being arranged in the chamber (**2**) provided for the fluid, characterized in that the electrode (**20**) in the fluid chamber (**2**) is formed as a static mixer for the fluid (**21**) as a so-called static mixer electrode.

5,614,724

FILTER TYPE GAS SAMPLER WITH FILTER CONSOLIDATION

Harry S. Miley, 219 Rockwood Dr., Richland; Robert C. Thompson, 5313 Phoebe La., West Richland; Charles W. Hubbard, 1900 Stevens, Apt. 526, and Richard W. Perkins, 1413 Sunset, both of Richland, all of Wash. 99352

Filed Dec. 11, 1995, Ser. No. 570,068

Int. Cl.[6] G01T *7/04*

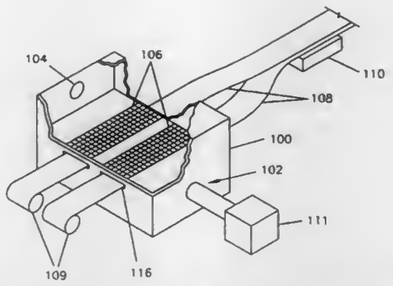
U.S. Cl. 250—435 **12 Claims**

1. An apparatus for collecting a sample contaminant from a gas passed through a filter and for detecting said contaminant comprising:

a) a collection housing having a gas inlet and a gas outlet,

b) a plurality of permeable filter supports placed between said gas inlet and said gas outlet,

c) a plurality of sections of filter, each placed adjacent to and corresponding with each of said plurality of permeable filter supports, such that substantially all of said gas passes through said plurality of sections,



d) a blower for moving the gas into said gas inlet, through said plurality of sections at locations that collect said contaminant, and out of said gas outlet, and

e) a detector for simultaneously interrogating said plurality of sections.

5,614,725

CHARGED PARTICLE BEAM EXPOSURE SYSTEM AND METHOD

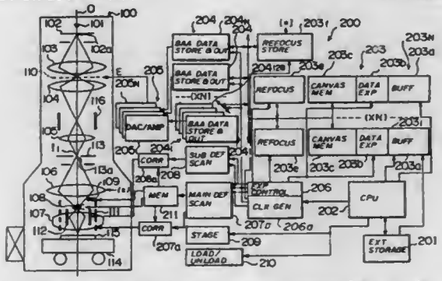
Yoshihisa Oae; Tomohiko Abe; Soichiro Arai; Shigeru Maruyama; Hiroshi Yasuda; Kenichi Miyazawa; Junichi Kai; Takamasa Satoh; Keiichi Betsui, all of Kawasaki, and Hideki Nasuno, Kasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 404,830, Mar. 15, 1995, Pat. No. 5,528,048. This application Mar. 4, 1996, Ser. No. 610,190

Claims priority, application Japan, Mar. 15, 1994, 6-044468; Mar. 17, 1994, 6-047521; Mar. 17, 1994, 6-047522; Mar. 17, 1994, 6-047523; Mar. 18, 1994, 6-049491; Mar. 29, 1994, 6-059301; Apr. 26, 1994, 6-088753; Jun. 3, 1994, 6-122436; Aug. 18, 1994, 6-049496; Nov. 28, 1994, 6-292762

Int. Cl.[6] H01J *37/304*

U.S. Cl. 250—492.22 **12 Claims**



7. A charged particle beam exposure system for exposing a desired pattern on an object, comprising:

a charged particle beam source for producing a charged particle beam and emitting the same along a predetermined optical axis;

beam shaping means provided on said optical axis so as to interrupt said charged particle beam, said beam shaping means carrying thereon a plurality of apertures for shaping said charged particle beam into a plurality of charged particle beam elements collectively forming a charged particle bundle, each of said apertures carrying switching means for selectively turning off said charged particle beam element in response to exposure data;

beam focusing means for focusing each of said charged particle beam elements forming said charged particle beam bundle upon said object;

deflection means for deflecting said charged particle beam elements collectively over a surface of said object in response to a deflection control signal supplied thereto;

deflection control means supplied with deflection data for producing said deflection control signal;

beam correction means for calculating a beam correction to be applied to said electron beam element as a function of said exposure data for compensating for a beam distortion, said beam correction calculation means carrying out said calculation in response to a correction clock;

exposure control means for conducting an exposure of said charged particle elements in response to an exposure clock; and

clock control means supplied with control data indicative of a current density of said charged particle beam elements and a sensitivity of said electron beam resist, for producing said exposure clock and said correction clock, such that said exposure clock has a clock speed determined as a function of said control data, said clock control means further holding said correction clock substantially constant at a predetermined frequency irrespective of the frequency of said exposure clock.

5,614,726

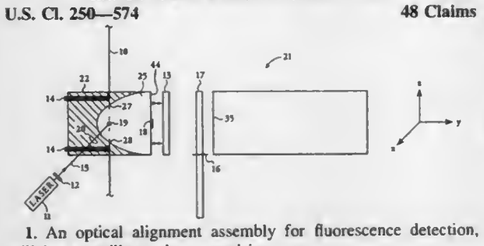
AUTOMATED OPTICAL ALIGNMENT SYSTEM AND METHOD USING RAMAN SCATTERING OF CAPILLARY TUBE CONTENTS

Wilbur I. Kaye, Princeville, Hi., and Stephen L. Pentoney, Jr., Yorba Linda, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 23, 1995, Ser. No. 409,557

Int. Cl.[6] G01N *27/00;21/31;21/01;27/447*

U.S. Cl. 250—574 **48 Claims**



1. An optical alignment assembly for fluorescence detection, utilizing a capillary tube, comprising

an axially symmetrical concave reflector having a wall bounded by a rim, a bowl opposite the rim incorporating a vertex, a focal region, a set of tube guides defined by the wall, the tube guides allowing passage of the capillary tube through the reflector, and a beam guide means defined by the wall for directing an excitation beam such that a path of the beam intersects with the capillary tube within the reflector, a region of intersection emitting Raman scatter signals,

means disposed for collecting and detecting the Raman scatter signals, and

means connected to the detecting means for adjusting position of the beam relative to the capillary tube to maximize the detected Raman scatter signals.

5,614,727

THIN FILM DIODE HAVING LARGE CURRENT CAPABILITY WITH LOW TURN-ON VOLTAGES FOR INTEGRATED DEVICES

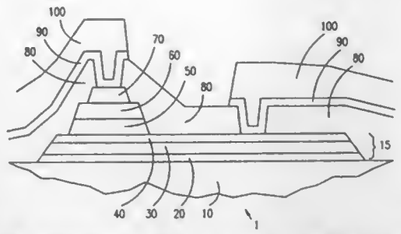
Daniele Mauri; Wen Y. Lee; Cherngye Hwang, all of San Jose, and Glen Garfunkel, Palo Alto, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 473,036

Int. Cl.[6] H01L *29/12*

U.S. Cl. 257—43 **15 Claims**

1. A thin film rectifying pn diode having large current capability, low turn on voltage as a switching or protective device in an integrated device comprising:



a first semiconductor thin film layer including NiO_x material having p-type properties, said first semiconductor thin film layer having first and second surfaces;

a second semiconductor layer of a conductive oxide having n-type properties with first and second surfaces, the first surface thereof joined to the second surface of said first semiconductor thin film layer thereby forming a p/n junction; and

a first metal contact joined to the first surface of the first semiconductor thin film layer and a second metal contact joined to the second surface of the second semiconductor layer providing ohmic contacts for the thin film diode.

5,614,728

THIN FILM TRANSISTOR AND FABRICATION METHOD THEREOF

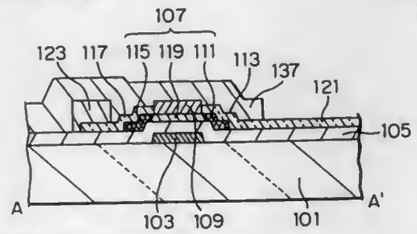
Masahiko Akiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Nov. 26, 1993, Ser. No. 158,825

Claims priority, application Japan, Nov. 27, 1992, 4-318895

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—57 **5 Claims**



1. A thin film transistor comprising:

a transparent insulating substrate:

a gate electrode formed over said transparent insulating substrate;

a gate insulating layer formed over said gate electrode in such a way that said gate electrode is overlaid with said gate insulating layer;

a semiconductor layer formed on said gate insulating layer, having a source region, a drain region, and a channel region, said source region being doped with impurities and having an ohmic contact portion at least on the front surface thereof, said drain region being doped with impurities and having an ohmic contact portion at least on the front surface thereof, said channel region being formed between said source region and said drain region,

a source electrode made of a transparent electrical conductive film, said source electrode being disposed on the front surface of said source region, said source electrode being ohmic contacted to the front surface of said source region;

a drain electrode made of a transparent electrical conductive film, said drain electrode being disposed on the front surface of said drain region, said drain electrode being ohmic contacted to the front surface of said drain region; and

a channel-stopper insulator layer formed over said channel region, the width of said channel-stopper insulator layer being wider than the channel width of said channel region of said semiconductor layer.

5,614,729

TOP GATE THIN-FILM TRANSISTOR

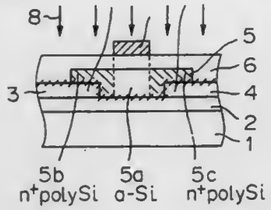
Yasuhiro Ukai, Kobe; Tomihisa Sunata, Miki; Takanobu Nakagawa, and Shu Takeuchi, both of Kobe, all of Japan, assignors to Hosiden Corporation, Osaka, Japan

Filed Jun. 27, 1995, Ser. No. 495,031

Claims priority, application Japan, Jul. 8, 1994, 6-157013

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—57 **20 Claims**



1. A top gate thin-film transistor having a glass substrate, source and drain electrodes supported on said glass substrate and having end edges in spaced and opposed relation to each other, a semiconductor layer extending between said source and drain electrodes, said semiconductor layer overlapping and being connected to spaced ends of said source and drain electrodes, a gate insulation film formed over said semiconductor layer, and a gate electrode formed on said gate insulation film between said source and drain electrodes in opposing relation with said semiconductor layer,

said gate electrode having opposite side edges spaced apart predetermined distances from said source and drain electrodes; and

a doped surface layer formed by diffusing impurity atoms in surfaces of said source and drain electrodes and in a surface extending between said spaced ends of said source and drain electrodes under and in contact with said semiconductor layer;

said semiconductor layer including a channel region of amorphous Si having the same width as that of said gate electrode and being masked by said gate electrode, and source and drain regions of poly-Si doped with said impurity atoms and extending outwardly from side edges of said channel region, respectively.

5,614,730

ACTIVE MATRIX SUBSTRATE

Takashi Nakazawa, and Hideto Ishiguro, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 790,253

Claims priority, application Japan, Nov. 9, 1990, 2-305069; Nov. 20, 1990, 2-315424; Nov. 20, 1990, 2-315426; Nov. 22, 1990, 2-318810; Apr. 9, 1991, 3-076404; May 7, 1991, 3-101246; May 9, 1991, 3-104244; May 10, 1991, 3-105768; Oct. 1, 1991, 3-253733

Int. Cl.[6] H01L *29/04;31/036;27/01;27/12*

U.S. Cl. 257—59 **7 Claims**

1. A liquid crystal device, comprising:

a pair of opposed and spaced apart insulating substrates;

a plurality of scanning lines and a plurality of data lines disposed on one of the substrates, the scanning lines intersecting the data lines at cross-over locations;

a plurality of switching elements connected to the scanning lines and the data lines;

pixel electrodes arranged on the one of the substrates, each of the pixel electrodes being electrically connected to respective ones of the switching elements and being extended so as to overlap one of the scanning lines connected to an adjacent one of the switching elements;

a plurality of first layers located between each of the scanning lines and each of the data lines at the cross-over locations, said plurality of first layers including a first electrically conductive film, a tantalum oxide film and an electrically insulating film; and

a plurality of second layers located between each of the pixel electrodes and each of the scanning lines, the plurality of second layers including a plurality of electrically insulating films and a second electrically conductive film.

5,614,731

THIN-FILM TRANSISTOR ELEMENT HAVING A STRUCTURE PROMOTING REDUCTION OF LIGHT-INDUCED LEAKAGE CURRENT

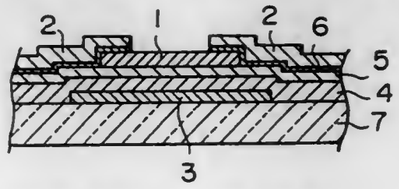
Shuichi Uchikoga, Kawasaki; Nobuki Ibaraki, Kanagawa-ken; Kouji Suzuki; Takuya Shimano, both of Yokohama, and Kaichi Fukuda, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 209,929, Mar. 14, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,124

Claims priority, application Japan, Mar. 15, 1993, 5-054019

Int. Cl.[6] H01L *29/04;31/036;31/0376;31/20*

U.S. Cl. 257—59 **15 Claims**



1. A thin-film semiconductor element comprising:

a substrate;

a gate electrode layer on said substrate;

an insulating layer on said gate electrode layer;

a channel area comprising a semiconductor layer over said gate electrode and on said insulating layer;

a channel protection layer on said channel area;

a source and drain electrode layer on said channel protection layer defining a channel length between the source electrode layer and the drain electrode layer and a channel width transverse to the channel length; and

a contact layer between said channel protection layer and said source and drain electrode layer;

said semiconductor layer, said channel protection layer, and said contact layer being coextensive in the direction of said channel width; and

said source and drain electrode layer having a greater length in the direction of said channel width than said contact layer; wherein the source and drain electrode layer overlaps said contact layer, said channel protection layer, and said semiconductor layer in the direction of said channel width; and wherein said source and drain electrode layer directly contacts said insulating layer at the point of overlap.

5,614,732

GATE INSULATED FIELD EFFECT TRANSISTORS AND METHOD OF MANUFACTURING THE SAME

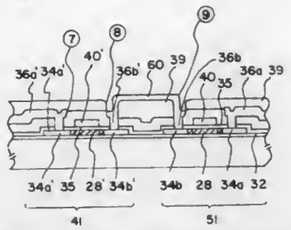
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Continuation of Ser. No. 967,564, Oct. 28, 1992, abandoned, which is a continuation of Ser. No. 673,821, Mar. 22, 1991, abandoned. This application Aug. 19, 1994, Ser. No. 293,201

Claims priority, application Japan, Nov. 20, 1990, 2-316598; Nov. 26, 1990, 2-323696

Int. Cl.[6] H01L *29/76;29/04*

U.S. Cl. 257—66 **41 Claims**



1. A semiconductor field effect transistor comprising:
a source electrode;
a drain electrode;
a source semiconductor region connected to said source electrode;
a drain semiconductor region connected to said drain electrode;
a channel semiconductor region electrically coupled with said source and drain electrodes only through said source and drain regions respectively and located between said source and drain regions;
a gate electrode located just adjacent to said channel region and insulated from said channel region through a gate insulating film;
a substrate having an insulating surface on which said source, drain, and channel regions and said gate electrode are formed;
wherein the photo-sensitivities of (a) said channel region and (b) said source and drain regions are spoiled by selective introduction of a concentration of a spoiling impurity sufficient to substantially reduce the photosensitivity of said channel region with respect to the photosensitivities of said source and drain regions such that the concentration of said spoiling impurity in said source and drain regions is less than the concentration of said spoiling impurity in the channel region, and wherein the concentration of said spoiling impurity in said channel region is 1×10^{20} cm^{-3} to 8×10^{21} cm^{-3} and the concentration of the spoiling impurity in said source and drain regions is not higher than 7×10^{19} cm^{-3}.

5,614,733

SEMICONDUCTOR DEVICE HAVING CRYSTALLINE THIN FILM TRANSISTORS

Hongyong Zhang; Toru Takayama, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Inc., Kanagawa, Japan

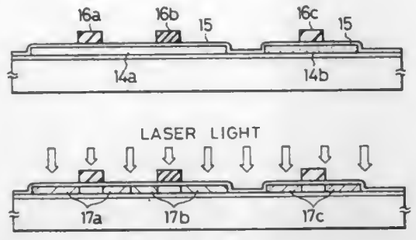
Division of Ser. No. 207,185, Mar. 8, 1994, Pat. No. 5,569,610. This application Dec. 12, 1994, Ser. No. 354,502

Claims priority, application Japan, Mar. 12, 1993, 5-079004; Mar. 12, 1993, 5-079005

Int. Cl.[6] H01L *29/76;31/036;31/112*

U.S. Cl. 257—66 **13 Claims**

1. A semiconductor circuit comprising:
a monolithic circuit provided on a substrate and comprising an active-matrix circuit and a peripheral driver circuit;
a transistor provided in said peripheral driver circuit and having an active region containing at least one catalytic element at a concentration of 1×10^{15} to 1×10^{19} cm^{-3}; and
a transistor provided in said active-matrix circuit and having an active region containing said at least one catalytic element at



a concentration lower than that of said active region of said transistor provided in said peripheral driver circuit.

5,614,734

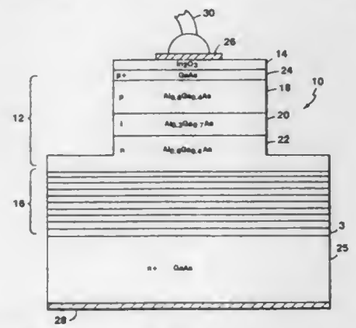
HIGH EFFICENCY LED STRUCTURE

Louis J. Guido, Trumbull, Conn., assignor to Yale University, New Haven, Conn.

Filed Mar. 15, 1995, Ser. No. 404,592

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **24 Claims**



1. An LED structure comprising:
a distributed Bragg reflector including multiple periods, each period comprising at least a first layer made of a first indirect band gap material and a second layer made of a second indirect band gap material, said first band gap material having a higher index of refraction than said second indirect band gap material;
a semiconductor light emitting diode formed on top of the distributed Bragg reflector, said light emitting diode having a top layer and a bottom layer, said bottom layer being proximate to said distributed Bragg reflector; and
an isolation region extending from the top layer of light emitting diode down through the distributed Bragg reflector, said isolation region having an interior defining a light emitting pixel element, said isolation region formed by an impurity-induced layer disordering technique.

5,614,735

SEMICONDUCTOR LASER DEVICE

Shoji Kitamura; Satoru Nagano; Yoichi Shindo, and Katsumi Oguri, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

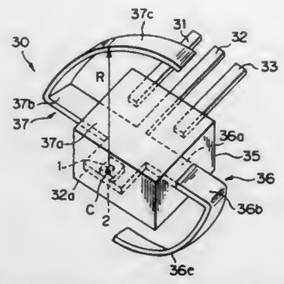
Filed Jun. 5, 1995, Ser. No. 463,070

Claims priority, application Japan, Jun. 7, 1994, 6-124815

Int. Cl.[6] H01C *33/00;23/28*

U.S. Cl. 257—99 **20 Claims**

1. A semiconductor laser device comprising:
a laser diode chip fixed on a broad portion of a lead frame via a submount layer;



a sealing resin member having the laser diode chip molded with a transparent resin;
a first exposed part extending from a first side of the lead frame and projecting outwards from the sealing resin member, the first exposed part having an arcuate segment inscribed in a hypothetical circle having the point of light emission on the laser diode chip as its center; and
a second exposed part extending from a second side of the lead frame and projecting outwards from the sealing resin member, the second exposed part having another arcuate segment which is inscribed in the hypothetical circle.

5,614,736

GALLIUM PHOSPHATE LIGHT EMITTING DIODE WITH ZINC-DOPED CONTACT

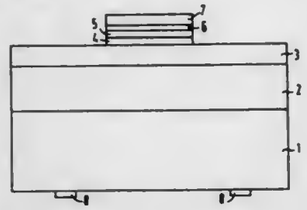
Gerald Neumann, Regensburg; Ernst Nirschl, Wenzëbach, and Werner Spaeth, Holzkirchen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 232,456, Apr. 22, 1994, abandoned, which is a continuation of Ser. No. 114,323, Aug. 30, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,053

Claims priority, application Germany, Aug. 28, 1992, 42 28 758.8

Int. Cl.[6] H01L *33/00;23/48;29/46*

U.S. Cl. 257—102 **5 Claims**



1. A light emitting diode, comprising:
a doped semiconductor substrate wafer having a layer sequence operable for light emission in a pure green spectral range, said doped semiconductor substrate wafer having a p-conductive wafer side and an n-conductive wafer side, said p-conductive wafer side consisting essentially of zinc-doped gallium phosphide;
an electrically conductive layer on said p-conductive wafer side of zinc-doped gallium phosphide that suppresses diffusion of oxygen into said p-conductive wafer side during manufacturing of said light emitting diode, said electrically conductive layer consisting essentially of one of gold and titanium; and
a zinc doped contact on said electrically conductive layer, said zinc doped contact is a layer consisting essentially of gold and zinc;
a titanium-tungsten nitride layer on said zinc doped contact, and
an aluminum layer on said titanium-tungsten nitride layer.

5,614,737

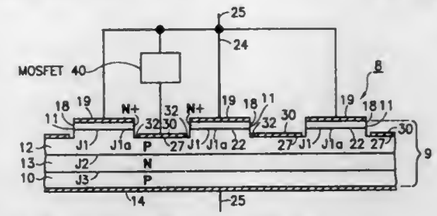
MOS-CONTROLLED HIGH-POWER THYRISTOR

Dante E. Piccone, Glenmoore, Pa., assignor to Silicon Power Corporation, Malvern, Pa.

Filed Jul. 19, 1995, Ser. No. 504,335

Int. Cl.[6] H01L *29/74*

U.S. Cl. 257—124 **10 Claims**



1. A MOS-controlled thyristor comprising:
(a) a multi-layer semiconductor body having at least four layers, with contiguous layers being of different P and N conductivity types and with at least three back-to-back PN junctions between contiguous layers; one end layer constituting an anode layer, an opposite end layer constituting a cathode layer, and an intermediate layer contiguous with said cathode layer constituting a gate layer; said cathode layer being divided into many elongated fingers, thereby dividing the PN junction between said cathode layer and said gate layer into many discrete PN subjunctions between said fingers and said gate layer which are effectively in parallel which each other so as to share the current through said thyristor when said thyristor is "on"; said gate layer having predetermined surface regions adjacent said cathode layer but uncovered by said cathode-layer fingers and respectively surrounding the PN subjunctions between said fingers and the gate layer;
(b) an anode electrode in ohmic contact with said anode layer,
(c) a cathode electrode having portions respectively registering with and in ohmic contact with said fingers,
(d) a gate electrode in ohmic contact with said gate layer in said predetermined surface regions of said gate layer, said gate electrode surrounding the PN subjunctions between said fingers and the gate layers, and
(e) a MOS field-effect transistor connected between said cathode electrode and said gate electrode and being located in a separate area of the thyristor from said fingers, said MOS field-effect transistor having a high-resistance state when the thyristor is "on" and being switchable into a low-resistance "on" state, thereby developing a low-resistance bypass around said PN subjunctions and turning off said thyristor upon being switched into said low-resistance "on" state.

5,614,738

INSULATED GATE THYRISTOR HAVING A POLYSILICON RESISTOR CONNECTED TO ITS BASE

Noriyuki Iwamuro, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Japan

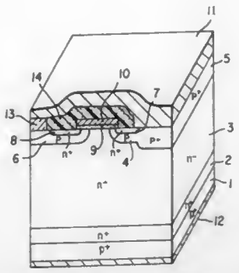
Filed Mar. 31, 1995, Ser. No. 412,346

Claims priority, application Japan, Apr. 1, 1994, 6-064293; Jun. 20, 1994, 6-136766; Jan. 18, 1995, 7-005348

Int. Cl.[6] H01L *29/74;29/00*

U.S. Cl. 257—147 **12 Claims**

1. An insulated gate thyristor comprising:
a base layer of a first conductivity type and of high resistivity;
a first base region of a second conductivity type selectively formed in a surface layer on a first side of said base layer;
a second base region of the second conductivity type selectively formed in said surface layer of said base layer and separated from said first base region;
a source region of the first conductivity type selectively formed in a surface layer of said first base region;
an emitter region of the first conductivity type selectively formed in a surface layer if said second base region;



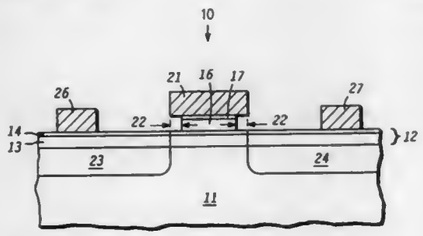
a gate electrode formed on insulation film above an exposed area of said first base region, an exposed area of said base layer and an exposed area of said second base region sandwiched between said source region and said emitter region;
a first main electrode contacting in common with an exposed area of said first base region and said source region;
a resistor disposed between and contacting with said first main electrode and an exposed area of said second base region, said resistor being distinct from said second base region;
an emitter layer of the second conductivity type formed on a second side of said base layer; and
a second main electrode contacting with said emitter layer.

5,614,739

HIGFET AND METHOD

Jonathan K. Abrokwah, Tempe; Rodolfo Lucero, Scottsdale, and Jeffrey A. Rollman, Phoenix, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 2, 1995, Ser. No. 459,854
Int. Cl.[6] H01L *31/0328;31/0336;29/76*
U.S. Cl. 257—192 **7 Claims**



1. A HIGFET comprising:
a III–V substrate having a channel layer;
a T-shaped gate structure having a cross-member supported by a base, the base having an insulator positioned on a first etch stop layer in the substrate, and a second etch stop layer on the insulator, wherein the base has a width that is less than a width of the cross-member; and
a doped region in the substrate wherein an edge of the doped region is a first distance from an edge of the insulator.

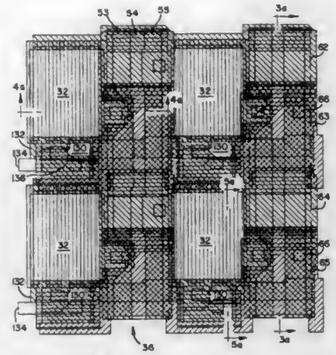
5,614,740

HIGH-SPEED PERISTALTIC CCD IMAGER WITH GAAS FET OUTPUT

David W. Gardner, Colorado Springs; Thomas E. Linnenbrink, Monument, and Stephen D. Gaalema, Colorado Springs, all of Colo., assignors to Q-Dot, Inc., Colorado Springs, Colo.

Continuation of Ser. No. 698,315, May 10, 1991, abandoned. This application Nov. 30, 1994, Ser. No. 346,826
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—222 **10 Claims**

1. A CCD imaging array of the interline transfer type comprising:



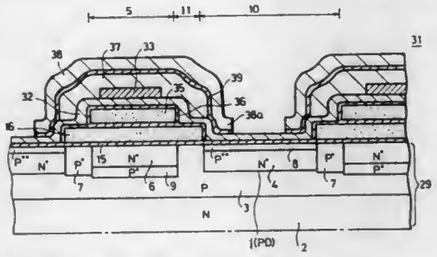
a silicon semiconductor substrate;
an array of photodiodes disposed on said substrate which produce charge packets when exposed to light;
a plurality of buried channel CCD interline transfer registers disposed on said substrate;
means for supplying a two-phase clock to the plurality of buried channel CCD interline transfer registers for transferring said charge packets from said photodetectors;
a plurality of profiled peristaltic CCD serial output registers disposed on said substrate;
means for supplying a four-phase clock to the plurality of profiled CCD output registers for transferring said charge packets from said interline transfer registers; and
a plurality of output circuits for transferring said charge packets from said serial output registers to provide a plurality of output signals.

5,614,741

SOLID STATE IMAGER WITH REDUCED SMEAR AND METHOD OF MAKING THE SAME

Kouichi Harada; Junichi Furukawa; Kazushi Wada, and Takaaki Sarai, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 17, 1994, Ser. No. 243,840
Claims priority, application Japan, May 17, 1993, 5-114859; Aug. 17, 1993, 5-203358; Oct. 29, 1993, 5-272441; Dec. 27, 1993, 5-333625
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—233 **10 Claims**



1. A solid state imaging device comprising:
a plurality of photosensor sections arranged in a matrix fashion;
a vertical transfer register provided between photosensor elements arranged in the vertical direction, said vertical transfer register having a transfer gate electrode having a predetermined number of phases;
a photo-shield layer provided over said transfer electrode;

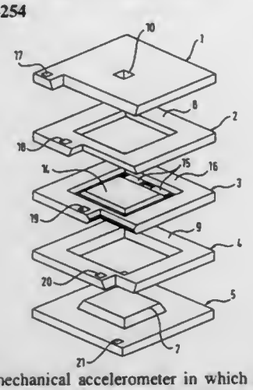
a shunt line for connecting said transfer electrodes of the same phase;
a first insulating layer between said transfer gate electrode and said shunt line and extending over a photosensor section; and
a second interlayer insulating layer thicker than said first insulating layer for insulating said shunt line and said photo-shield layer.

5,614,742

MICROMECHANICAL ACCELEROMETER WITH PLATE-LIKE SEMICONDUCTOR WAFERS

Thomas Gessner, Chemnitz; Martin Hafen, Rottweil; Eberhard Handrich, Kirchzarten; Peter Leinfelder, Ehrenkirchen; Bruno Ryrko, Denzlingen; Egbert Vetter, Gelenau, and Maik Wiemer, Limbach-Oberfrohna, all of Germany, assignors to LITEF GmbH, Freiburg im Breisgau, Germany

Division of Ser. No. 224,750, Apr. 7, 1994, Pat. No. 5,504,032. This application Jan. 2, 1996, Ser. No. 587,604
Claims priority, application European Pat. Off., May 5, 1993, 93107287
Int. Cl.[6] H01L *29/82*
U.S. Cl. 257—254 **9 Claims**



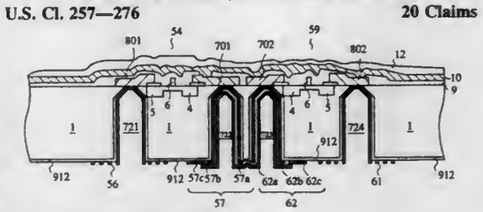
1. A micromechanical accelerometer in which a movably suspended mass forms the central electrode of a differential capacitor comprising, in combination:
a) a coverplate including an upper, frame-like insulating plate disposed therebelow;
b) a baseplate having a lower frame-like insulating plate disposed thereabove;
c) each of said coverplate and said baseplate comprising a semiconductor wafer bonded to said associated insulating plate;
d) an interior counterelectrode associated with each of said coverplate and said baseplate, each counterelectrode having opposed surfaces and being surrounded on all sides at the margin by the frame of the associated insulating plate acting as screening and each counterelectrode being insulated from the associated coverplate and baseplate by an oxide layer lying therebetween;
e) a frame-like central plate disposed between said coverplate and said baseplate with said associated frame-like insulating plates;
f) said central plate including a plate-like mass for functioning as a pendulum, said plate-like mass being articulated to a frame spar on one side and integrally connected to said frame, said plate-like mass being deflectable perpendicular to the plane of said plate and at the same time forming the movable central electrode of said differential capacitor in opposition to and alignment with said counterelectrodes whereby said accelerometer is characterized by a multilayer, plate-like layered structure of differently etched semiconductors insulated from one another by oxide layers and externally hermetically sealed by wafer bonding.

5,614,743

MICROWAVE INTEGRATED CIRCUIT (MIC) HAVING A REACTANCE ELEMENT FORMED ON A GROOVE

Masao Mochizuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1995, Ser. No. 505,627
Claims priority, application Japan, Jul. 26, 1994, 6-173923; Jul. 12, 1995, 7-176382
Int. Cl.[6] H01L *29/80;31/112;* **H01P** *3/08;1/00*
U.S. Cl. 257—276 **20 Claims**



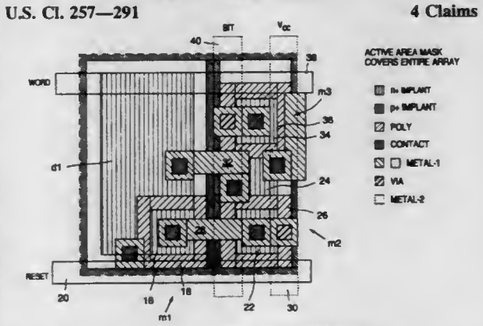
1. An integrated circuit comprising:
(a) a semiconductor substrate;
(b) at least an active element formed on a first principal surface of said substrate;
(c) a groove formed on a second principal surface of said substrate up to the first principal surface thereof; and
(d) an MIC capacitor having a first electrode layer formed on at least the side wall of said groove, an insulation film formed on the first electrode layer, and a second electrode layer formed on the insulation film, so that the first and second electrode layers are disposed in the groove and facing each other through the insulation film.

5,614,744

CMOS-BASED, LOW LEAKAGE ACTIVE PIXEL ARRAY WITH ANTI-BLOOMING ISOLATION

Richard B. Merrill, Daly City, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 4, 1995, Ser. No. 511,609
Int. Cl.[6] H01L *31/062*
U.S. Cl. 257—291 **4 Claims**



1. An active pixel image sensor cell comprising:
an isolation region of n-type conductivity formed on semiconductor material of p-type conductivity;
a well region of p-type conductivity formed in the n-type isolation region;
leakage protection means formed in the p-type well region for substantially eliminating current leakage in the cell due to active area edge effects;
a photocollector device that includes a region of n-type conductivity formed in the p-type well region;
a reset transistor that includes first spaced-apart source and drain regions of n-type conductivity formed in the p-type well region to define a first p-type channel region therebetween, and a first conductive gate formed over said first p-type channel region and separated therefrom by dielectric material, said first conductive gate connected to receive a reset signal.

and wherein the photocollector region and the first source region being connected to a floating diffusion output node, the first drain region being connected to a positive supply voltage;

a source-follower transistor that includes second spaced-apart source and drain regions of n-type conductivity formed in the p-type well region to define a second p-type channel region therebetween, and a second conductive gate formed over said second channel region and separated therefrom by dielectric material, said second conductive gate being connected to the floating diffusion output node, said second source region being connected to the positive supply voltage; and

a row select transistor that includes third spaced-apart source and drain regions of n-type conductivity formed in the p-type well region to define a third p-type channel region therebetween and a third conductive floating gate formed over said third channel region and separated therefrom by dielectric material, said third conductive gate being connected to a word line to receive a row select signal applied to said word line, said third drain to region being connected to the second source region of the source-follower transistor, said third source region being connected to a conductive bit line.

5,614,745

CONTACT STRUCTURE BETWEEN TWO CONDUCTIVE LAYERS IN SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

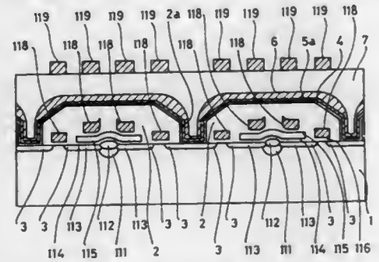
Kaoru Motonami, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 932,207, Aug. 19, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 355,332

Claims priority, application Japan, Aug. 30, 1991, 3-220276; Feb. 5, 1992, 4-020204

Int. Cl.[6] H01L *29/76;29/94;31/062*

U.S. Cl. 257—296 **17 Claims**



1. A contact structure in a semiconductor device, comprising:

first and second conductive layers in contact with each other through a nitrided oxide film of a thickness sufficient to enable direct tunnel current flow therethrough,

wherein said thickness of said nitrided oxide film allows said first conductive layer and said second conductive layer to be in ohmic contact.

5,614,746

STRUCTURE AND PROCESS OF MANUFACTURE OF SPLIT GATE FLASH MEMORY CELL

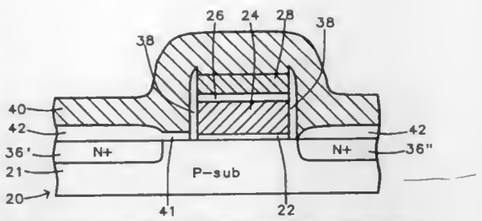
Gary Hong, and Hwi-Huang Chen, both of Hsin-chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 345,126, Nov. 28, 1994, Pat. No. 5,445,984. This application Jun. 23, 1995, Ser. No. 494,632

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **18 Claims**

1. A MOSFET device on a lightly doped semiconductor substrate comprising:



a first dielectric layer over a first portion of said substrate;

a floating gate over said dielectric layer, said floating gate layer comprising a floating gate layer;

a first intergate dielectric layer over said floating gate layer;

an intermediate control gate layer over said intergate dielectric layer, said first dielectric layer, said floating gate, said first intergate dielectric layer, and said intermediate control gate layer formed in a stacked structure with a pair of opposing edges of said floating gate, said intergate dielectric layer and said intermediate control gate vertically aligned;

doped source/drain regions in said substrate adjacent to said stacked structure, with one of said source/drain regions aligned with said stacked structure and the other thereof being spaced away from the other side of said stacked structure;

a second intergate dielectric layer formed as sidewalls adjacent to said stack, said first intergate dielectric layer being undamaged by formation of said second intergate dielectric layer;

an isolating dielectric layer over said substrate and said source/drain regions; and

a control gate over said device.

5,614,747

METHOD FOR MANUFACTURING A FLASH EEPROM CELL

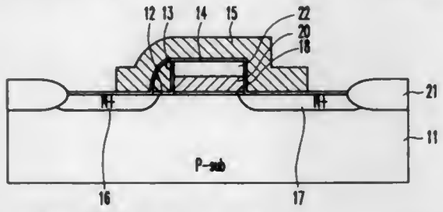
Byung J. Ahn; Jae C. An, both of Seoul, and Hee Y. Lee, Daejun-Shi, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 28, 1995, Ser. No. 508,555

Claims priority, application Rep. of Korea, Jul. 28, 1994, 94-18405; Jul. 28, 1994, 94-18406

Int. Cl.[6] H01L *29/788;21/70*

U.S. Cl. 257—316 **13 Claims**



1. A flash EEPROM cell comprising:

a select gate oxide, a select gate and a dielectric oxide formed in stacks on a selected region of a p-type substrate;

a tunnel oxide layer formed on one side wall of said select gate oxide, select gate and dielectric oxide and on a selected region of said p-type substrate extended below from said side wall;

a floating gate formed on said tunnel oxide;

a drain region and a source region formed on said p-type substrate;

an inter-poly oxide formed on the entire structure after the formation of said tunnel oxide; and

a control gate formed on said inter-poly oxide.

5,614,748

NONVOLATILE MEMORY DEVICE AND PROCESS FOR PRODUCTION OF THE SAME

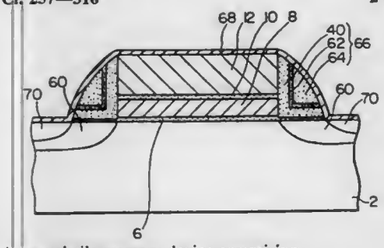
Hideharu Nakajima, and Takeshi Yamazaki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 378,976, Jan. 27, 1995, abandoned, which is a division of Ser. No. 67,804, May 27, 1993, Pat. No. 5,397,724. This application Jul. 10, 1996, Ser. No. 677,913

Claims priority, application Japan, Jun. 9, 1992, 4-174817; Aug. 24, 1992, 4-247398

Int. Cl.[6] H01L *29/792;29/76;29/94*

U.S. Cl. 257—316 **2 Claims**



1. A nonvolatile memory device comprising:

a semiconductor substrate of a first conductivity type,

a pair of spaced apart regions in said substrate of an opposite conductivity type to said first conductivity type,

a floating gate disposed specially between said pair of spaced apart regions,

a first insulating layer insulating said floating gate from said substrate,

a control gate disposed above and insulated from said floating gate,

a second insulating layer between said floating gate and said control gate for insulating therebetween, and

a third insulating layer covering side surfaces of said floating gate and control gate and in contact therewith,

wherein said third insulating layer has first and second regions, said first region located at the side surfaces of said floating gate and said control gate, and said first region having a higher doping concentration than said second region.

5,614,749

SILICON CARBIDE TRENCH MOSFET

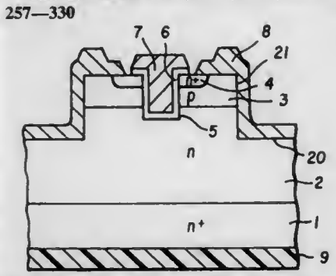
Katsunori Ueno, Nagano, Japan, assignor to Fuji Electric Co., Ltd.

Filed Jan. 25, 1996, Ser. No. 591,796

Claims priority, application Japan, Jan. 26, 1995, 7-010272

Int. Cl.[6] H01L *29/78;29/47;29/12;29/06*

U.S. Cl. 257—330 **4 Claims**



1. A silicun carbide trench MOSFET comprising:

a first conductivity type semiconductor substrate comprising silicon carbide;

a first conductivity type drift layer and a second conductivity type base layer both comprising silicon carbide and sequentially formed by epitaxial growth on said semiconductor substrate, said first conductivity type drift layer having a lower impurity concentration than the semiconductor substrate;

a first conductivity type source region formed in a part of a surface layer of said second conductivity type base layer;

a first trench extending from a surface of said first conductivity type source region to reach said first conductivity type drift layer,

a gate electrode formed in said first trench; an insulating film located between said gate electrode and said first conductivity type source region, said second conductivity type base layer and said first conductivity type drift layer; and

a Shottky electrode disposed on an inner surface of a second trench having a greater depth than said first trench.

5,614,750

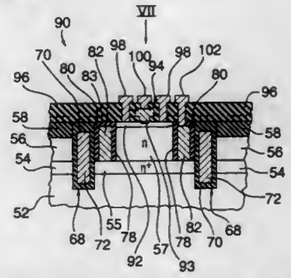
BURIED LAYER CONTACT FOR AN INTEGRATED CIRCUIT STRUCTURE

Joseph P. Ellul, Nepean, and John M. Boyd, Woodlawn, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 29, 1995, Ser. No. 496,650

Int. Cl.[6] H01L *29/76;29/94;27/082;27/102*

U.S. Cl. 257—386 **15 Claims**



1. An integrated circuit structure on a semiconductor substrate comprising a heavily doped buried layer and an overlying semiconductor layer having a surface, a device well region defined in part of the semiconductor layer overlying the heavily doped buried layer and a contact to the buried layer comprising:

a steep sided trench region etched into the semiconductor layer and extending through the device well region from the surface of the semiconductor layer to the buried layer, with sidewalls of the trench region being lined with dielectric and a conductive material filling the trench and forming an electrically conductive contact with the underlying buried layer, the dielectric layer lining the trench thereby isolating the buried layer contact from the adjacent semiconductor layer forming the device well region.

5,614,751

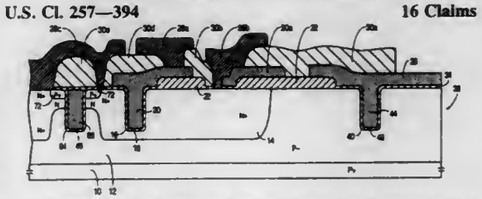
EDGE TERMINATION STRUCTURE FOR POWER MOSFET

Hamza Yilmaz, Saratoga, and Fwu-Iuan Hshieh, San Jose, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Continuation of Ser. No. 371,174, Jan. 10, 1995, abandoned. This application Apr. 15, 1996, Ser. No. 632,052

Int. Cl.[6] H01L *29/76;29/94;31/062*

U.S. Cl. 257—394 **16 Claims**



1. A semiconductor transistor device formed in a substrate of a first conductivity type and having a principal surface and comprising:

at least one active transistor body region formed in the substrate and doped a second conductivity type;

at least one trench formed in the substrate in the active transistor body region, a gate electrode being formed in the trench; and

a channel stop termination structure located in the substrate at a perimeter of the transistor and a portion of the substrate of the first conductivity type being immediately laterally adjacent the channel stop termination structure, the channel stop termination structure including:

a channel stop trench formed in the substrate; and

a conductive channel stop material filling the trench and extending over the principal surface adjacent the channel stop trench.

5,614,752

SEMICONDUCTOR DEVICE CONTAINING EXTERNAL SURGE PROTECTION COMPONENT

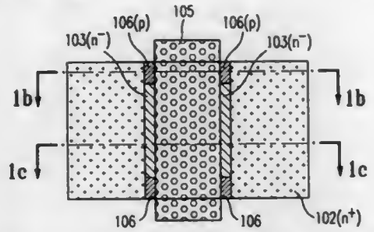
Kazuhiro Takenaka, Suwa, Japan, assignor to Seiko Epson Corporation, Nagano-ken, Japan

Filed Jan. 4, 1994, Ser. No. 177,570

Claims priority, application Japan, Jan. 7, 1993, 5-001072; Dec. 21, 1993, 5-322720

Int. Cl.[6] H01L *29/76;29/861;23/62;31/107*

U.S. Cl. 257—408 **8 Claims**



1. A semiconductor device comprising a semiconductor substrate having a surface and containing at least one MOS transistor having a source region and a drain region constituted by respective impurity diffusion regions in the substrate, and a channel region extending in a first direction parallel to said substrate surface between said source region and said drain region, wherein at least said drain region of said MOS transistor comprises a first impurity diffusion region containing an impurity of a first conductivity type in a high concentration, and a second impurity diffusion region between said first impurity diffusion region and said channel region, said second impurity diffusion region having a first portion containing an impurity of the first conductivity type in a low concentration, and a second portion which has a second conductivity type that is opposite to the first conductivity type, both said first and second portions are in contact with parts of said semiconductor substrate which underlie said second impurity diffusion region, and said first and second portions are offset from one another in a direction parallel to said substrate surface and perpendicular to said first direction, and further wherein said transistor has a breakdown voltage and said second portion contacts said first impurity diffusion region to determine said breakdown voltage.

5,614,753

SEMICONDUCTOR DEVICE WITH LEAKAGE CURRENT PREVENTION

Susumu Uchikoshi; Shigeyuki Kiyota, both of Yokohama; Yasukazu Iwasaki; Takatoshi Noguchi, both of Yokosuka, and Makoto Uchiyama, Miura, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

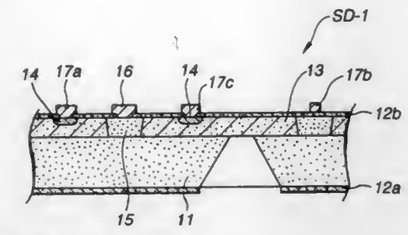
Filed Dec. 20, 1995, Ser. No. 575,904

Claims priority, application Japan, Dec. 22, 1994, 6-319809

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—417 **8 Claims**

1. A semiconductor device produced through electrolytic etching process, comprising:



a P-type silicon substrate;

an N-type epitaxial layer formed on said silicon substrate;

first means defining in said N-type epitaxial layer P-type regions;

second means defining in some of said P-type regions N-type regions;

a first wiring layer connecting to predetermined ones of said P-type regions;

a second wiring layer connecting to predetermined ones of said N-type regions;

a given part which has such a possibility that a predetermined magnitude of leakage current flows therethrough between said first and second wiring layers when subjected to the electrolytic etching process; and

a circuit electrically connected to one of said first and second wiring layers, said circuit being capable of removing the possibility of the leakage current flow through said given part when opened.

5,614,754

HALL DEVICE

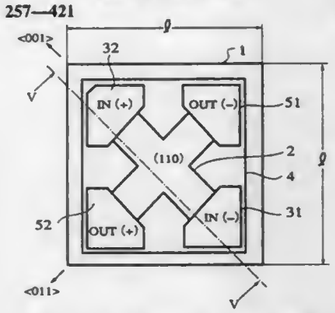
Kazuhiko Inoue, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jul. 28, 1995, Ser. No. 508,990

Claims priority, application Japan, Aug. 2, 1994, 6-181192; Jul. 11, 1995, 7-174562

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—421 **8 Claims**



1. A Hall device for measuring a magnetic field, which comprises:

(a) a single-crystal semiconductor substrate of (110) orientation, the substrate having a square flat shape with a side length of l and a thickness of t;

(b) an active impurity region formed on the (110) principal surface of said substrate;

(c) a pair of input current terminals for passing a predetermined current through said active region; and

(d) a pair of output voltage terminals for measuring a potential difference to be produced in a direction orthogonal to the predetermined current, wherein:

the ratio of l to t is substantially 2:1.

5,614,755

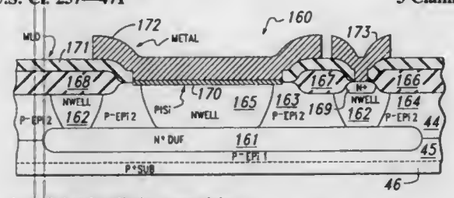
HIGH VOLTAGE SHOTTKY DIODE

Louis N. Hutter, Richardson, Tex., and Marco Corsi, Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1993, Ser. No. 56,446

Int. Cl.[6] H01L *29/872;29/772*

U.S. Cl. 257—471 **5 Claims**



1. A Schottky diode, comprising:

a lightly doped layer of semiconductor material of a first conductivity type;

an anode region of semiconductor material of a second conductivity type opposite said first conductivity type formed in said lightly doped layer;

a cathode formed over and contacting said anode region and said lightly doped layer;

a buried layer of semiconductor material of said second conductivity type, said lightly doped layer formed over said buried layer; and

an annular region of semiconductor material of said second conductivity type, said annular region extending through said lightly doped layer and contacting said buried layer, said buried layer and said annular region for isolating said Schottky diode.

5,614,756

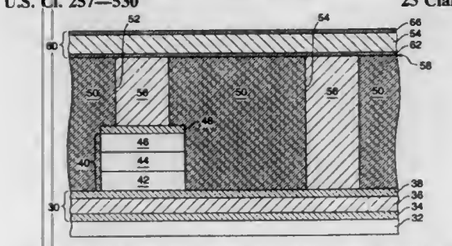
METAL-TO-METAL ANTIFUSE WITH CONDUCTIVE

Abdul R. Forouhi, San Jose; Frank W. Hawley, Campbell; John L. McCollum, Saratoga, and Yeouchung Yen, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 790,366, Nov. 12, 1991, Pat. No. 5,404,029, which is a division of Ser. No. 888,042, May 22, 1992, Pat. No. 5,171,715, Ser. No. 172,132, Dec. 21, 1993, Pat. No. 5,381,035, Ser. No. 197,102, Feb. 15, 1994, abandoned, Ser. No. 50,744, Apr. 20, 1993, abandoned, Ser. No. 231,634, Apr. 22, 1994, Ser. No. 4,912, Jan. 19, 1993, Pat. No. 5,411,917, and Ser. No. 947,275, Sep. 18, 1992, Pat. No. 5,387,812, which is a division of Ser. No. 743,261, Aug. 9, 1991, Pat. No. 5,272,101, which is a continuation-in-part of Ser. No. 604,779, Oct. 26, 1990, Pat. No. 5,181,096, which is a continuation-in-part of Ser. No. 508,306, Apr. 12, 1990, Pat. No. 5,070,384, said Ser. No. 172,132is a continuation-in-part of Ser. No. 950,264, Sep. 23, 1992, abandoned, said Ser. No. 50,744is a continuation of Ser. No. 749,866, Aug. 26, 1991, abandoned, said Ser. No. 231,634is a continuation-in-part of Ser. No. 4,912, which is a continuation-in-part of Ser. No. 604779. This application Aug. 1, 1994, Ser. No. 284,054

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—530 **23 Claims**



1. An antifuse disposed on an integrated circuit having a first metallization layer, a second metallization layer, an interlayer dielectric layer disposed therebetween, said antifuse comprising:

a flat planar antifuse material layer disposed on said first metallization layer, said antifuse material layer including a first and a second layer formed of a nitride and a third layer formed of amorphous silicon sandwiched vertically between said first and second layers of nitride;

a conductive etch-stop layer disposed over said antifuse material layer;

a via completely penetrating said interlayer dielectric layer and exposing said conductive etch-stop layer;

a plug formed of a conductive material filling said via, said plug in electrical contact with both said conductive etch-stop layer and said second metallization layer.

5,614,757

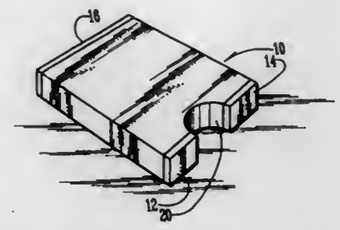
MONOLITHIC MULTILAYER CHIP INDUCTOR HAVING A NO-CONNECT TERMINAL

Herman R. Person; Jeffrey T. Adelman, both of Columbus, Nebr.; Bruce A. Tschosik, Yankton, S. Dak.; Thomas L. Veik, and Scott D. Zwick, both of Columbus, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Oct. 26, 1995, Ser. No. 548,555

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—531 **19 Claims**



1. A monolithic multilayer chip inductor comprising:

a coil encapsulated within a body having two ends, said coil having first and second ends;

a first terminal electrically connected to the first end;

a second terminal electrically connected to the second end;

a third terminal formed on the body and making no electrical contact with the coil, the third terminal being formed from a solderable material;

wherein the first and second terminals are positioned on the body at one end and the third no-connect terminal is positioned on the body at the opposite end.

5,614,758

FULLY WALLED EMITTER-BASE IN A BIPOLAR TRANSISTOR

Francois Hébert, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 821,220, Jan. 16, 1992, abandoned, which is a division of Ser. No. 736,743, Jul. 26, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 297,634

Int. Cl.[6] H01L *27/082;29/43*

U.S. Cl. 257—579 **19 Claims**

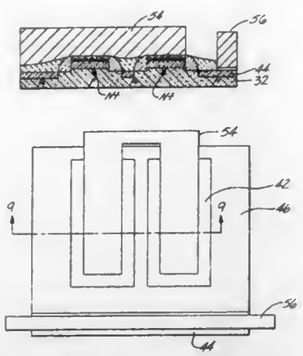
1. An emitter-base structure for a bipolar transistor comprising:

a base region;

an array of elongated emitter regions raised above the base region, the emitter regions in the array being aligned side by side on the base region;

a conductive layer formed over the portions of the base region between the emitter regions and extending beyond the ends of the elongated emitter regions;

an insulating layer formed over the portions of the conductive layer between the elongated emitter regions and extending beyond the ends of the elongated emitter regions and includ-



ing an opening through the insulating layer adjacent to the ends of the elongated emitter regions in the array;

a first metal layer for making parallel electrical contact with the adjacent emitter regions, at least a portion of the metal layer overlying a portion of the insulating layer; and

a second metal layer overlying the opening through the insulating layer for making electrical contact with the conductive layer over the base region.

5,614,759

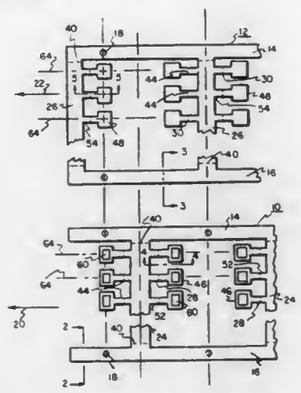
AUTOMATED ASSEMBLY OF SEMICONDUCTOR DEVICES USING A PAIR OF LEAD FRAMES

William Vandenheuvel, Ft. Salonge, N.Y., and Johannes Vandenbroeke, Andover, Mass., assignors to General Instrument Corp., Hatboro, Pa.

Division of Ser. No. 274,009, Jul. 12, 1994, Pat. No. 5,506,174. This application Dec. 28, 1995, Ser. No. 579,232

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **6 Claims**



1. A lead frame assembly for the batch fabrication of semiconductor rectifiers comprising upper and lower lead frames, each of said frames comprising a side rail, a first cross bar extending transversely within a first plane from said side rail, and a plurality of terminals spaced along said cross bar and extending therefrom. each of said terminals having a rear end secured to said cross bar and a free end spaced from said cross bar, said upper frame being disposed on said lower frame with the cross bars of said frames being disposed in side by side co-planar relationship within said first plane with each terminal of one cross bar extending towards a corresponding terminal of the other cross bar and in overlapped relationship therewith, and a semiconductor chip sandwiched between and bonded to the free ends of each pair of overlapped terminals.

5,614,760

TAPE CARRIER PACKAGE SEMICONDUCTOR DEVICE

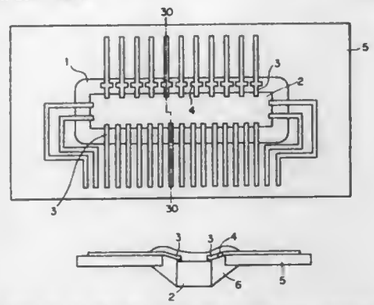
Mitsuaki Osono, Sakurai; Naoyuki Tajima, Kitakatsuragi-gun, and Katsunobu Mori, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 7, 1995, Ser. No. 386,051

Claims priority, application Japan, Jun. 23, 1994, 6-141584

Int. Cl.[6] H01L *23/495;23/34;23/48*

U.S. Cl. 257—668 **12 Claims**



1. A tape carrier package semiconductor device comprising:

a carrier tape having a device hole;

a semiconductor substrate disposed inside said device hole; and

a plurality of inner leads arrayed between a first side and a second side of said semiconductor substrate and said carrier tape,

characterized in that,

said semiconductor substrate is disposed inside said device hole in such a manner that said first side and said second side of said semiconductor substrate are spaced by substantially the same distance from respective opposing edges of said device hole, the inner leads arrayed on said first side of said semiconductor substrate having a greater interval between leads than the interval between the leads of the inner leads arrayed on said second side of said semiconductor substrate,

one projection or a pair of projections provided on one side or both sides of each inner lead on said first side and in an area between said first side of said semiconductor substrate and the opposing edge of said device hole.

5,614,761

ELECTRONIC CIRCUIT PACKAGE INCLUDING PLURAL SEMICONDUCTOR CHIPS FORMED ON A WIRING SUBSTRATE

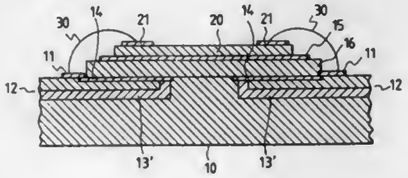
Nobuyasu Kanekawa, Los Angeles, Calif.; Hirokazu Ihara, Machida, Japan; Masatsugu Akiyama, Yokohama, Japan; Kiyoshi Kawabata, Abiko, Japan; Hisayoshi Yamanaka, Hitachi, Japan, and Tetsuya Okishima, Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 843,234, Feb. 28, 1992, Pat. No. 5,468,992. This application Sep. 5, 1995, Ser. No. 523,346

Claims priority, application Japan, Feb. 28, 1991, 3-34038

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—676 **15 Claims**



1. An electronic circuit package, comprising:

a multilayer wiring substrate;

a plurality of semiconductor bare chips which are bare-chip mounted on said wiring substrate, wherein said semiconductor chips include a first memory;

a bus line which is formed on said wiring substrate; and

wire bonding pads formed on the semiconductor bare chip and wiring substrate;

wherein each of said plurality of semiconductor bare chips is electrically connected to said bus line through wire bonding connections between said wire bonding pads formed on the semiconductor bare chips and the wiring substrate,

wherein said bus line includes a first data bus line and a second data bus line, said first bus line being formed on one side of said wiring substrate, and said second data bus line being formed on the other side of said wiring substrate, and

wherein chips of said semiconductor bare chips, which are connected to said first data bus line, are formed on said one side of said wiring substrate and others of said semiconductor bare chips, which are connected to said second data bus line, are formed on said other side of said wiring substrate.

5,614,762

FIELD EFFECT TRANSISTORS HAVING COMB-SHAPED ELECTRODE ASSEMBLIES

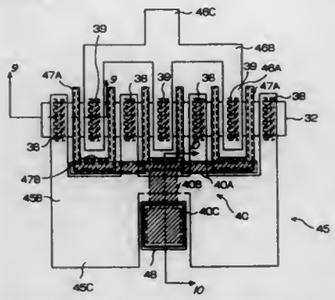
Mikio Kanamori, Tokyo, and Takafumi Imamura, Shiga, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,663

Claims priority, application Japan, Jan. 30, 1995, 7-13137

Int. Cl.[6] H01L *23/52*

U.S. Cl. 257—69 **12 Claims**



1. A field effect transistor comprising a substrate; a semiconductor active layer formed on said substrate; a source electrode assembly including a source bus bar and a plurality of source electrodes each connected to said source bus bar and contacting a first portion of said active layer in ohmic contact; a drain electrode assembly including a drain bus bar and a plurality of drain electrodes each connected to said drain bus bar and contacting a second portion of said active layer in ohmic contact; a gate electrode assembly including a gate bus bar, a plurality of gate electrodes each contacting a third portion of said active layer in Schottky contact, and a plurality of gate lead-in portions connecting respective said gate electrodes to said gate bus bar, said third portion being disposed between said first portion and second portion, said source electrodes, drain electrodes, and gate bus bar being formed as a first layer metal, said gate electrodes, gate lead-in portions and said source and drain bus bars being formed as a second layer metal overlying said first layer metal.

5,614,763

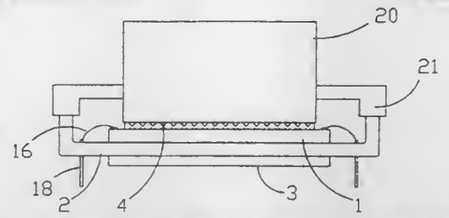
METHODS FOR IMPROVING PERFORMANCE AND TEMPERATURE ROBUSTNESS OF OPTICAL COUPLING BETWEEN SOLID STATE LIGHT SENSORS AND OPTICAL SYSTEMS

Gary L. Womack, Tucson, Ariz., assignor to Zetetic Institute, Tucson, Ariz.

Filed Mar. 13, 1995, Ser. No. 403,224

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—747 **14 Claims**



1. A high resolution optical device, comprising in combination:

(a) a semiconductor wafer having on a front surface thereof an array of photosensitive elements, the semiconductor wafer having a first thermal coefficient of expansion;

(b) a substrate, a back surface of the semiconductor wafer being bonded to a first surface of the substrate, the substrate having a second thermal coefficient of expansion substantially different than the first thermal coefficient of expansion;

(c) a thermal compensation plate bonded to a second surface of the substrate, the thermal compensation plate having a third thermal coefficient of expansion and a thickness selected to prevent the semiconductor wafer, substrate, and thermal compensation plate from bowing with variation of the temperature of the semiconductor wafer, substrate, and thermal compensation plate by causing the thermal compensation plate to offset stresses produced in the semiconductor wafer and the substrate due to differential thermal expansion and contraction of the semiconductor wafer and substrate; and

(d) a fiber optic bundle having a mating face and optical coupling material attaching the mating face to the front surface of the semiconductor wafer, thereby forming a first bonding interface between the optical coupling material and the front surface of the semiconductor wafer and a second bonding interface between the optical coupling material and the mating face, whereby stresses at at least one of the first and second bonding interfaces due to thermal cycling of the semiconductor wafer and the substrate are reduced.

5,614,764

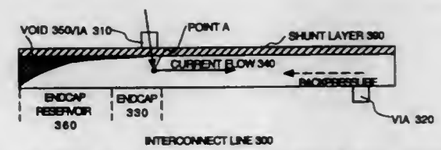
ENDCAP RESERVOIR TO REDUCE ELECTROMIGRATION

Bill Baerg, Palo Alto, Calif., and Robert L. Crandall, Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 13, 1995, Ser. No. 372,441

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—767 **21 Claims**



1. An interconnect structure in a semiconductor device comprising:

an interconnect line having a first end and a second end,

at least one via coupled to said interconnect line, and

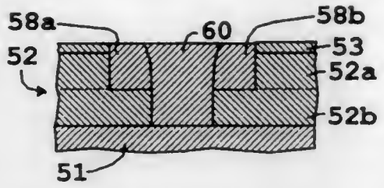
an endcap reservoir coupled to said first end of said interconnect line.

5,614,765

SELF ALIGNED VIA DUAL DAMASCENE

Steven Avanzino, Cupertino; Subhash Gupta, San Jose; Rich Klein, Mountain View; Scott D. Luning, Menlo Park, and Ming-Ren Lin, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 478,319
Int. Cl.[6] H01L 23/48;23/52;29/40
U.S. Cl. 257—774 10 Claims



1. An integrated circuit semiconductor device having a semiconductor body with a plurality of active devices and at least one level of interconnection disposed on the semiconductor body for connecting the active devices and having at least one conductive line and at least one conductive via with the via connecting the conductive line, comprising:

an insulating material of essentially the thickness of an interconnection level and having an upper layer and a lower layer;

a conductive line disposed in the upper layer of said insulating material with a section of the conductive line having substantially parallel sides and including an enlarged conductive region extending laterally away from each side and surrounding a center core, said conductive line extending vertically through the upper layer to the lower layer of said insulating material; and

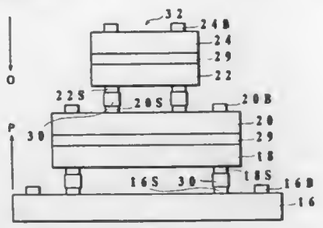
a conductive via disposed in the lower layer of said insulating material and being in substantial alignment with the substantially parallel sides of the section of the conductive line and being substantially the same size as and in physical contact with the center core of said enlarged region.

5,614,766

SEMICONDUCTOR DEVICE WITH STACKED ALTERNATE-FACING CHIPS

Hideml Takasu; Takanori Ozawa, and Noriyuki Shimoji, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 246,416, May 20, 1994, abandoned, which is a continuation of Ser. No. 852,790, Mar. 17, 1992, abandoned. This application Nov. 9, 1995, Ser. No. 556,103
Claims priority, application Japan, Sep. 30, 1991, 3-251524
Int. Cl.[6] H01L 23/48;23/52;29/40
U.S. Cl. 257—777 3 Claims



1. A semiconductor device comprising:

a plurality of semiconductor chips each having an element-formation surface and a rear surface opposite said element-formation surface, said semiconductor chips stacked alternatingly such that respective element-formation surfaces of every neighboring pair of said plurality of semiconductor chips face in opposite first and second directions;

an adhesive material between said rear surfaces that face each other to bond said rear surfaces that face each other, said adhesive material is one of an electrical conductor or an electrical insulator;

a bonding pad provided on said respective element-formation surface facing said first direction, said bonding pad is exposed;

a first connecting pad provided on said respective element-formation surface facing said first direction; and

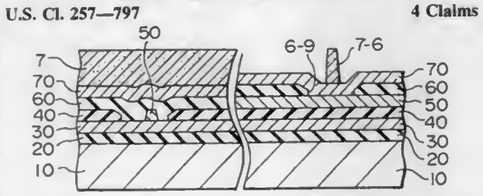
a second connecting pad provided on said respective element-formation surface facing said second direction, said second connecting pad and said first connecting pad of respective element-formation surfaces that face each other are electrically connected.

5,614,767

ALIGNMENT ACCURACY CHECK PATTERN

Shinji Ohara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 350,544, Dec. 7, 1994, abandoned.
This application May 16, 1996, Ser. No. 648,673
Claims priority, application Japan, Dec. 10, 1993, 5-310526
Int. Cl.[6] H01L 23/48;27/11;29/46
U.S. Cl. 257—797 4 Claims



1. An alignment accuracy check pattern formed in a check pattern formation region where no semiconductor element is formed, comprising:

a semiconductor substrate;

a first insulating interlayer formed on said semiconductor substrate;

a first wiring layer formed on said first insulating interlayer and used for forming a semiconductor element in an element formation region different from said check pattern formation region;

a second insulating interlayer formed on said first wiring layer;

at least one contact hole so formed in said second insulating interlayer as to expose said first wiring layer; and

a second wiring layer consisting of an aluminum film, said aluminum film being patterned in said check pattern formation region so as to have a width narrower than that of said contact hole and to be arranged on said first wiring layer to be exposed within said contact hole, said second wiring layer being not electrically connected to any other semiconductor elements.

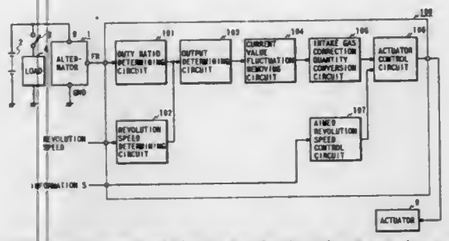
5,614,768

ENGINE CONTROL DEVICE FOR CONTROLLING THE OUTPUT POWER OF AN ENGINE OPERATING UNDER VARYING ELECTRIC LOAD CONDITIONS

Toru Tanaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kashia, Tokyo, Japan

Filed May 2, 1995, Ser. No. 433,204
Claims priority, application Japan, Nov. 9, 1994, 6-275097
Int. Cl.[6] H02P 9/04
U.S. Cl. 290—40 C 4 Claims

1. An engine control device for controlling output power of an engine in accordance with an amount of the electric load to which a current is supplied from a generator driven by said engine, said engine control device comprising:



generation current detecting means for detecting generation current of the generator from a duty ratio of a field current of said generator and from a revolution speed of the engine;

current value fluctuation removing means for removing a fluctuation from an output signal of said generation current detecting means, said current value fluctuation removing means including: smoothing means for smoothing generation current detected by said generation current detecting means; and fluctuation quantity determining means for determining whether an amount of fluctuation of said generation current is below a predetermined quantity or not by comparing said smoothed current with said generation current, wherein when the amount of fluctuation of said generation current is below the predetermined quantity, smoothed generation current is provided as an output signal of said current value fluctuation removing means, and when the amount of fluctuation of said generation current is larger than the predetermined quantity, said generation current is provided as the output signal of said current value fluctuation removing means;

correction quantity calculation means for calculating a correction quantity of intake gas into said engine in accordance with the output signal of the current value fluctuation removing means;

target revolution speed control means for setting a target revolution speed of said engine and for calculating a quantity of intake gas into said engine to maintain the revolution speed of said engine at the target revolution speed; and

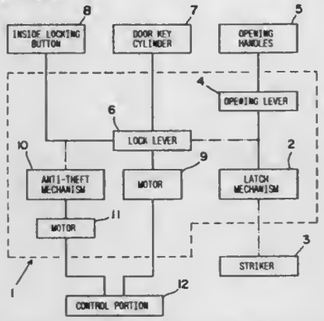
adjusting means for adjusting a quantity of intake gas into said engine in accordance with an output signal of said target revolution speed control means and said correction quantity calculating means.

5,614,769

VEHICLE DOOR LOCKING APPARATUS AND CONTROL METHOD THEREFOR

Katsuya Kuroda, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,987
Claims priority, application Japan, Aug. 1, 1994, 6-199057
Int. Cl.[6] E05B 53/00
U.S. Cl. 307—10.2 12 Claims



1. A method of controlling a first locking apparatus for a driver's door and a second locking apparatus for each remaining door comprising the steps of:

changing a state of each said second locking apparatus into a locked state when a locking operation is performed on a key cylinder of the driver's door;

changing a state of each said second locking apparatus into an unlocked state when an unlocking operation is performed on the key cylinder;

changing a state of each of all of the locking apparatuses into an anti-theft state when an anti-theft operation is performed on the key cylinder; and

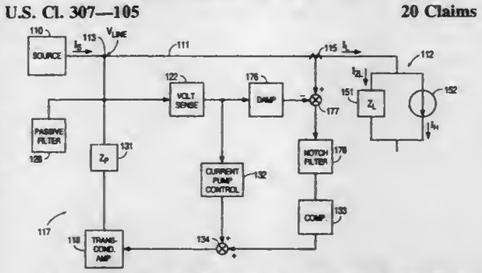
changing a state of each of all of the locking apparatuses into an anti-theft canceling state when an anti-theft canceling operation is performed on the key cylinder, wherein when the locking operation is performed on the key cylinder, it is checked as to whether or not each of all of the locking apparatuses are respectively in the anti-theft state, and further, an operation of sending out a warning signal is performed for a predetermined time period if it is detected that one of the locking apparatuses is in the anti-theft state.

5,614,770

STRUCTURE AND METHOD FOR PERFORMING ACTIVE INJECTION MODE FILTERING ON AN AC POWER SYSTEM

Larry R. Suelzle, Los Altos, Calif., assignor to Helionetics, Inc., Irvine, Calif.

Filed Jun. 6, 1994, Ser. No. 254,230
Int. Cl.[6] H02M 1/12; H02J 3/01
U.S. Cl. 307—105 20 Claims



1. A current injection device for injecting current onto an AC power line, wherein said power line is operated at a line voltage which exhibits a fundamental frequency, said current injection device comprising:

a current generator; and

an impedance connected between said current generator and said power line, wherein said current generator generates a current component at said fundamental frequency which is transmitted through said impedance to said power line, whereby said current component causes a voltage drop across said impedance, wherein said voltage drop is within a selected range about said line voltage.

5,614,771

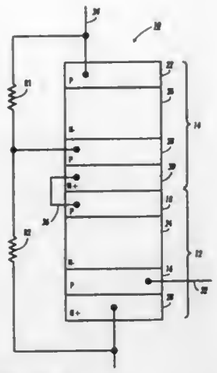
EXTENDED HIGH VOLTAGE SCR SWITCH

Iftikhar Ahmed, Bellflower, and Steven A. Buhler, Redondo Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1995, Ser. No. 579,514
Int. Cl.[6] H01H 19/64
U.S. Cl. 307—113 12 Claims

1. A high voltage SCR switch comprising:

a) an electrical series comprised of two unit SCRs, one of the two unit SCRs being a first unit SCR and the other unit SCR being a second unit SCR, where each unit SCR comprises a cathode, a gate, an anode and a voltage sustaining area,



b) a voltage source node,
c) first and second resistors, each resistor having a first and second end,
d) the cathode of the first unit SCR being electrically connected to the first end of the first resistor,
f) the anode of the first unit SCR being electrically connected to and at least partially contiguous with the cathode region of the second unit SCR,
g) the gate of the second unit SCR being electrically connected to the second end of the first resistor and the first end of the second resistor, and
h) the anode of the second unit SCR being electrically connected to the second end of the second resistor and the voltage source node.

5,614,772

OPERATING DEVICE FOR AN ELECTRONIC SWITCHING DEVICE WITH A CHANGEABLE FRONT FOIL

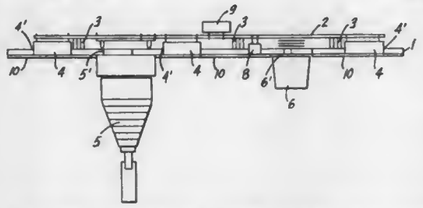
Klaus Bütow, and Harald Schilling, both of Freiburg, Germany, assignors to Bregenhorn, Bütow & Co., Elektrotechnische Geräte GmbH, Freiburg, Germany

Filed Apr. 25, 1995, Ser. No. 428,390

Claims priority, application Germany, Apr. 25, 1994, 44 14 412.1

Int. Cl.[6] H01H *35/00*

U.S. Cl. 307—119 **9 Claims**



1. An operating device for an electronic switching device including at least one module, comprising:
a front plate;
at least one actuator mounted to the front plate for actuating the at least one module;
a changeable front foil removably mounted to the front plate so as to cover the at least one actuator, the changeable front foil accommodating a coding containing data;
recognition means for reading in the data of the coding; and
an intelligent control means for picking up the read-in data from the recognition means and assigning, in dependence on the read-in data, a user-specific actuation function to the at least one actuator.

5,614,773

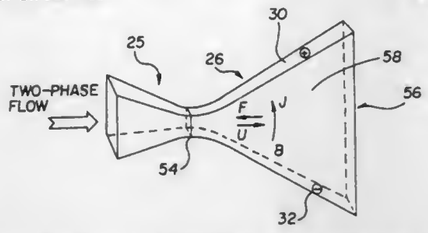
GENERATOR SECTION OF A TWO-PHASE FLOW LIQUID METAL MAGNETOHYDRODYNAMIC (LMMHD) GENERATOR

Gracio Fabris, Glendale, Calif., assignor to California Institute of Technology, Pasedena, Calif.

Filed Jun. 30, 1993, Ser. No. 86,438

Int. Cl.[6] H02K *44/12*

U.S. Cl. 310—11 **21 Claims**



1. A generator section assembly for use in a liquid metal magnetohydrodynamic electricity generator comprising:
a duct for enclosing a two-phase fluid flow, including a liquid metal and a gas, the duct having an inlet and an outlet;
a pair of sidewalls that form two walls of the duct, the distance between the two sidewalls increasing linearly from the inlet towards the outlet;
a pair of electrodes that form two opposing walls of the duct and are positioned for contacting with the two-phase flow, each of the pair of electrodes having a surface region forming a wall of the duct having a shape of a circular arc of radius from the inlet of the duct towards the outlet of the duct to form a duct having a non-linear increase in the distance between the pair of electrodes from the inlet of the duct towards the outlet of the duct, thus providing a non-linear expansion region within the duct as the distance between the pair of electrodes that form a walls of the duct increases non-linearly, the duct thus expanding linearly along one dimension and non-linearly along the other dimension; and
a magnetic field generating means for creating a magnetic field within the two-phase flow to generate electricity as the two-phase flow passes through the magnetic field within the non-linear expansion region of the duct.

5,614,774

AIR INDUCER FOR ELECTRIC POWER TOOL

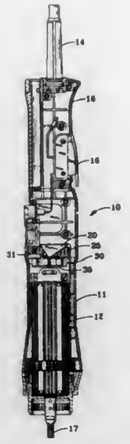
John A. McCallops, Sayre, and Kenneth J. Dubuque, Athens, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 9, 1995, Ser. No. 401,373

Int. Cl.[6] H02K *9/00*

U.S. Cl. 310—58 **5 Claims**

1. An air inducer for an electric driven power tool having a motor and a motor shaft end mounted impeller driven air cooling supply comprising:
a circumferential housing having air supply ports circumferentially spaced about therein for supplying a source of radial inward flow of air;
a separate conical diaphragm insert adjacent said ports for redirecting said radial inflow of air longitudinally by an external formed surface thereof to a longitudinal orifice disposed to direct said air to a radially inward portion of said rotating impeller;



wherein said air is expelled by said impeller and directed to cool an electric motor driving the tool.

5,614,775

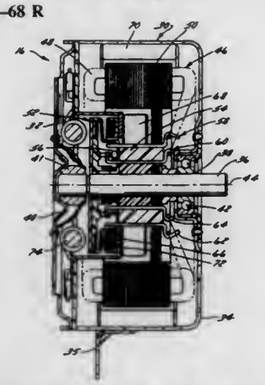
TWO-SPEED DIRECT-CURRENT MOTOR WITH HIGH-SPEED ROTATION SWITCH ACTIVATED BY A VEHICLE SENSED PARAMETER SIGNAL

Marek Horski, and Jerzy Muszynski, both of London, Canada, assignors to Siemens Electric Limited, Mississagua, Canada

Filed Dec. 18, 1995, Ser. No. 573,717

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—68 R **20 Claims**



1. A direct-current motor rotatable at first and second speeds in response to a sensed parameter signal having at least a first and a second state, the motor comprising:
a motor shaft supported by at least one bearing for rotation about a rotational axis;
at least two sets of windings supported by the shaft for rotation about the rotational axis;
a contactor arrangement supported by the shaft for rotation about the rotational axis to electrically couple the windings in first and second configurations, wherein the contactor is operated based upon the sensed parameter signal; and
a commutator arrangement coupled to the contactor arrangement to apply electrical energy to the windings, wherein the motor rotates at the first speed when the windings are coupled in the first configuration and rotates at the second speed when the windings are coupled in the second configuration.

5,614,776

DEVICE FOR CONNECTING A MOTOR WITH AT LEAST TWO ELECTRIC CONDUCTOR TRACKS

Udo Baumeister, Bietigheim-Bissingen, Germany, assignor to ITT Automotive Europe GmbH, Germany

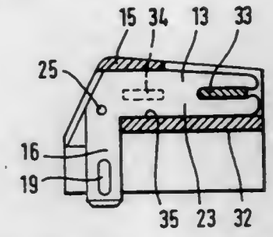
PCT No. PCT/EP93/01844, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/05071, PCT Pub. Date Mar. 3, 1994

PCT Filed Jul. 14, 1993, Ser. No. 381,943

Claims priority, application Germany, Aug. 11, 1992, 42 26 509.6

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—71 **17 Claims**



1. Device for connecting a miniature electric motor to at least two electric conductor tracks of a printed circuit board, said miniature motor being provided with one socket for each end piece of each of said electric conductor tracks, said end pieces of said conductor tracks projecting substantially vertically from a plane of said printed circuit board, said device comprising an adapter between said miniature electric motor and said printed circuit board, said adapter being formed of a base member and at least two electrically conducting elements, said base member of said adapter including a slot extending in a direction in which it is slipped onto said end pieces of said conductor tracks, said end piece of each of said conductor tracks electrically connected to a respective socket of said miniature electric motor through said electrically conducting elements, end portions of said electrically conducting elements proximate to said motor forming flat plug pins retained in said sockets, wherein end portions of said electrically conducting elements, remote from said motor, cross said slot.

5,614,777

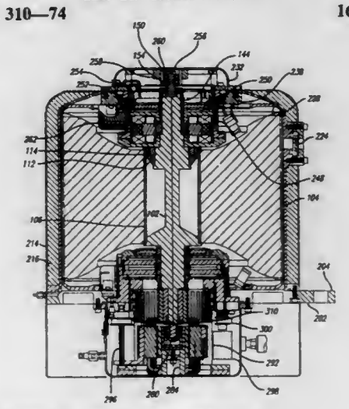
FLYWHEEL BASED ENERGY STORAGE SYSTEM

Jack G. Bitterly, Woodland Hills, and Steven E. Bitterly, Agoura, both of Calif., assignors to U.S. Flywheel Systems, Newbury Park, Calif.

Filed Feb. 6, 1995, Ser. No. 384,573

Int. Cl.[6] H02K *7/02; 1/12*

U.S. Cl. 310—74 **16 Claims**



1. An energy storage system comprising:
a housing;

a flywheel mounted within the housing for rotation about an axis;

a generator disposed within the housing, said generator having a rotor coupled to the flywheel and a stator;

means for moving the stator between a first position in operative alignment with the rotor and a second position in which the rotor and stator are substantially electromagnetically decoupled, wherein the stator comprises a plurality of segments and said means for moving the stator moves each of said segments in a radial direction.

5,614,778

SERVO CYLINDER APPARATUS

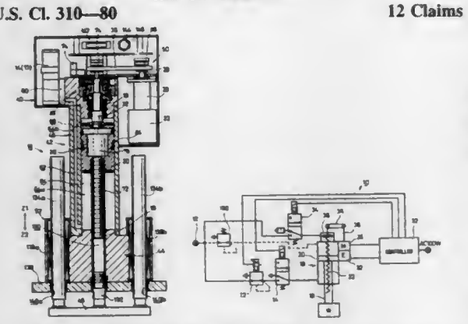
Yukio Terao; Hiromichi Kajikawa, and Kaoru Suzuki, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,626

Claims priority, application Japan, Oct. 12, 1993, 5-254453; Oct. 12, 1993, 5-254468; Oct. 12, 1993, 5-254470; Oct. 12, 1993, 5-254480

Int. Cl.[6] H02K *7/06*

U.S. Cl. 310—80 **12 Claims**



1. A servo cylinder apparatus comprising:

a piston displaceably disposed in a cylinder chamber defined in a cylinder assembly;

a piston rod having an end fixed to said piston and an opposite end exposed out of said cylinder chamber;

pressure supply means comprising a solenoid-operated directional control valve for supplying a fluid pressure to said cylinder chamber;

a ball screw shaft engaging said piston;

an electric motor coupled to said ball screw shaft;

a drive shaft coupled to said electric motor and extending parallel to said ball screw shaft;

first rotating means coupled to an end of said ball screw shaft and second rotating means coupled to said drive shaft, and rotation transmitting means connected between said first and second rotating means; and

brake means for braking said ball screw shaft against rotation to thereby hold said piston in a predetermined position, said brake means comprising a brake mechanism for releasing said ball screw shaft in response to application of a fluid pressure thereto and braking said ball screw shaft in response to removal of a fluid pressure therefrom, said brake mechanism comprising a normally closed solenoid-operated directional control valve for connecting a fluid pressure supply to said brake mechanism to apply the fluid pressure thereto in response to an actuating signal and removing the fluid pressure from said brake mechanism in response to an inactivating signal;

wherein said piston is displaced closely to a target position under said fluid pressure supplied to said cylinder chamber, thereafter said ball screw shaft is rotated by said electric motor to inch said piston toward said target position, and when said piston reaches said target position, said ball screw shaft is braked against rotation by said brake means to stop said piston in said target position.

5,614,779

ELECTRONIC WATCH

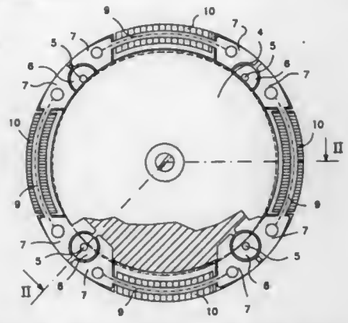
Roberto Zafferri, Via alla Campagna 4, CH-6924 Sorengo, Switzerland

Filed Jan. 13, 1995, Ser. No. 372,582

Claims priority, application Switzerland, Jan. 26, 1994, 237/94

Int. Cl.[6] H02K *23/60;* **G04B** *1/00*

U.S. Cl. 310—118 **8 Claims**



1. Electronic watch comprising an oscillating mass coupled to the rotor of a generator by means of a gear train, characterized in that the oscillating mass is integral with a toothed wheel engaged with many pinions, each pinion being mounted on the axle of a magnetized rotor acting on a stator.

5,614,780

LIGHT SOURCE FOR PROJECTION TYPE DISPLAY DEVICE

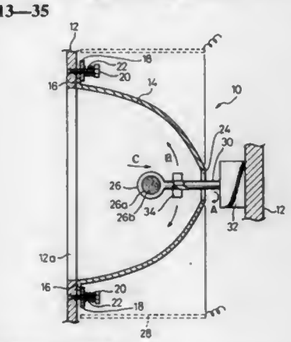
Toshihiro Suzuki; Noriyuki Ohashi; Tetsuya Hamada; Takashi Kanno, and Hisashi Yamaguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 15, 1995, Ser. No. 490,804

Claims priority, application Japan, Jun. 16, 1994, 6-134100

Int. Cl.[6] H01K *1/58*

U.S. Cl. 313—35 **3 Claims**



1. A light source comprising:

a light emitting member including a transparent tube and a light emitting material for converting electromagnetic energy into light, wherein the light emitting material is sealed in the transparent tube;

a rod-like support member for supporting the light emitting member;

a rotating mechanism for supporting the rod-like support member with the light emitting member, the rotating mechanism rotating the rod-like support member with the light emitting member;

a concave mirror for reflecting the light emitted from the light emitting member; and

at least one vane or screw arranged on the rod-like support member and in the concave mirror, the at least one vane or screw inducing a flow of air around the transparent tube while the rod-like support member rotates.

5,614,781

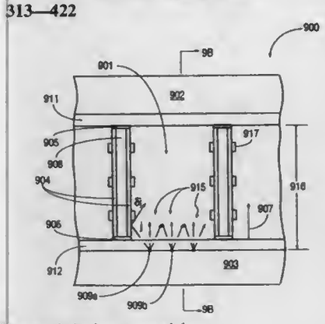
STRUCTURE AND OPERATION OF HIGH VOLTAGE SUPPORTS

Christopher J. Spindt, Menlo Park; David L. Morris; Theodore S. Fahlen, both of San Jose; Anthony P. Schmid, Solana Beanch, and Paul A. Lovoi, Saratoga, all of Calif., assignors to Candescent Technologies Corporation, San Jose, Calif.

Continuation of Ser. No. 188,857, Jan. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 12,542, Feb. 1, 1993, which is a continuation-in-part of Ser. No. 867,044, Apr. 10, 1992, Pat. No. 5,424,605. This application Jul. 20, 1995, Ser. No. 505,841

Int. Cl.[6] H01J *19/44*

U.S. Cl. 313—422 **43 Claims**



1. A flat panel device, comprising:

a faceplate;

a backplate connected to the faceplate to form a sealed enclosure;

means for emitting light from the flat panel device;

a spacer situated within the enclosure and supporting the backplate and the faceplate against forces acting in a direction toward the enclosure, wherein the spacer has treated surfaces to inhibit charge buildup on the spacer surfaces; and

edge metallization situated between an edge surface of the spacer and the backplate such that the edge metallization forms an electrical connection between the spacer and electrically conductive material situated over the backplate.

5,614,782

DEFLECTION YOKE AND VERTICAL DEFLECTION COIL WINDING METHOD THEREOF

Hoo-deuk Kim, Pusan-city, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 5, 1995, Ser. No. 463,443

Claims priority, application Rep. of Korea, Jun. 24, 1994, 94-14662

Int. Cl.[6] H01J *29/70;* **H01H** *1/00;5/00*

U.S. Cl. 313—440 **4 Claims**

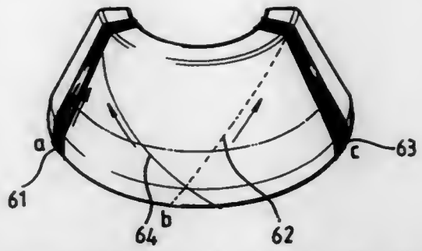
1. A deflection yoke comprising:

a cone-shaped separator;

one pair of cores established on the outer circumferential surface of said separator, protecting said separator, each core having a first end, a central portion, and a second end; and

a pair of coils, each coil being formed by a wire wound around one of said coils, wherein,

the wire of each coil follows a repeating path from the first end around the core to the central portion of the core, from the central portion to the second end of the core along an outer circumferential surface of the core, from the second end around the core to the central portion of the core, and from the central portion to the first end along the outer circumferential surface of the core.



5,614,783

FLUORESCENT LAMP INCLUDING FIRED NON-LUMINESCENT MATERIAL

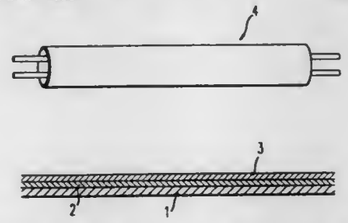
Shigeo Fujino, Odawara, Japan, assignor to Kasei Optonix, Ltd., Tokyo, Japan

Division of Ser. No. 925,667, Aug. 7, 1992, Pat. No. 5,438,234. This application Jan. 31, 1995, Ser. No. 381,061

Claims priority, application Japan, Aug. 13, 1991, 3-202765

Int. Cl.[6] H01J *1/62*

U.S. Cl. 313—485 **13 Claims**



1. A fluorescent lamp made by a process comprising the steps of:

firing particles of a non-fluorescent substance at a temperature of at least 1000° C.; and

coating, a layer comprising said non fluorescent substance and a layer comprising a phosphor, or a mixture of said non-fluorescent substance and a phosphor, on an inner wall of a glass bulb;

wherein said non-fluorescent substance is an oxide containing at least one rare earth element selected from the group consisting of yttrium, gadolinium and lanthanum.

5,614,784

DISCHARGE LAMP, PARTICULARLY COLD-START FLUORESCENT LAMP, AND METHOD OF ITS MANUFACTURE

Christian Harzig, Mering; Roland Hoffmann, Augsburg, and Erolf Weinhardt, Diedorf, all of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

Continuation of Ser. No. 122,015, Sep. 15, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 490,863

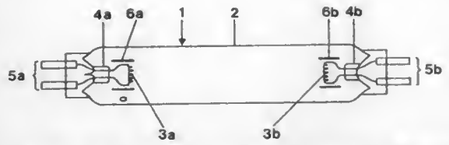
Claims priority, application Germany, Oct. 15, 1992, 42 34 843.9

Int. Cl.[6] H01J *9/04*

U.S. Cl. 313—491 **8 Claims**

1. A discharge lamp, optionally a low-pressure discharge lamp, having an elongated discharge envelope (2) defining a discharge path;

two activated electrodes (3*a*, 3*b*) located at end regions and melt-sealed into the discharge envelope, said electrodes being



double-coiled, essentially rod shaped filaments, of tungsten wire and located transversely with respect to the discharge path;

an electron emitter coated on the electrodes; and

an ionizable fill retained in the discharge envelope,

wherein, in accordance with the invention,

the electron emitter essentially consists of barium oxide and up to about 20 mol-% of strontium oxide,

wherein the oxides contain a small portion of metallic barium and metallic strontium, respectively, due to activation of the electrodes.

5,614,785

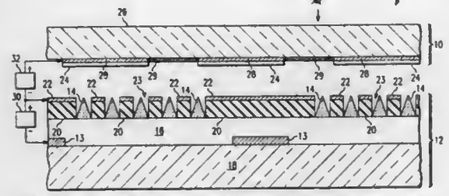
ANODE PLATE FOR FLAT PANEL DISPLAY HAVING SILICON GETTER

Robert M. Wallace, Richardson; Bruce E. Gnade, Dallas, and Wiley P. Kirk, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1995, Ser. No. 535,863

Int. Cl.[6] H01J *1/72;9/38*

U.S. Cl. 315—496 **20 Claims**



1. An anode plate for use in a display device, comprising:

a substantially transparent substrate;

a plurality of spaced-apart, electrically conductive regions on the substrate;

a luminescent material adjacent to the conductive regions; and

getter material disposed on the substrate and between the conductive regions, wherein the getter material is porous silicon.

5,614,786

FLUORESCENT DISPLAY DEVICE WITH INSULATED GRID

Yuzo Nakamura, Kyoto; Hiroaki Kawasaki, and Tadashi Mizohata, both of Mobara, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Division of Ser. No. 913,346, Jul. 15, 1992, Pat. No. 5,426,342. This application Dec. 13, 1994, Ser. No. 357,277

Claims priority, application Japan, Jul. 15, 1991, 3-201401

Int. Cl.[6] H01J *1/70*

U.S. Cl. 313—497 **1 Claim**

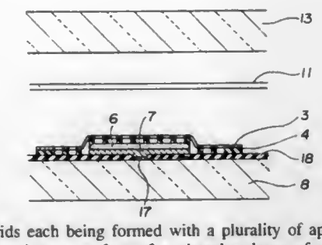
1. A fluorescent display device comprising:

a hermetic envelope of a flat box-like shape including a substrate, a front cover arranged opposite to said substrate and side plates arranged between said substrate and said front cover;

display sections each including phosphor-deposited anodes;

grids arranged so as to be spaced from said display sections; and

cathodes arranged so as to be spaced from said grids;



said grids each being formed with a plurality of apertures and arranged on a surface of a phosphor layer of said display section through an insulating layer.

5,614,787

METAL HALIDE LAMP HAVING HEAT DAM PORTION

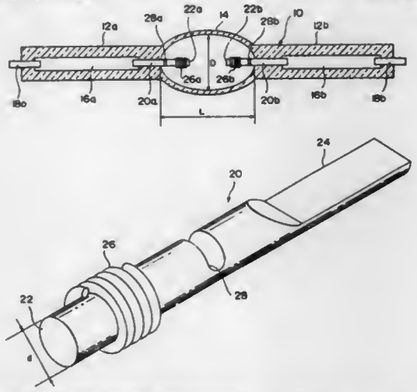
Kouji Kawai; Shigeki Ishihara; Naoki Masuda; Hirohisa Ota, and Osamu Yogi, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation of Ser. No. 325,910, Oct. 19, 1994. This application Jun. 29, 1995, Ser. No. 496,907

Claims priority, application Japan, Oct. 19, 1993, 5-260941

Int. Cl.[6] H01J *17/18*

U.S. Cl. 313—623 **31 Claims**



1. A metal halide lamp comprising:

a sealed tube made of a light transmitting material, said sealed tube containing metal vapor and halide therein; and

a pair of electrodes supported by support portions of said sealed tube, each of said electrodes having an end which extends to the inside of said sealed tube, said electrodes being arranged so that said ends are opposed and spaced tu each other;

wherein at least one of said electrodes has a groove provided between said end and a portion supported by said support portion of said sealed tube.

5,614,788

AUTOMATED AMBIENT CONDITION RESPONSIVE DAYTIME RUNNING LIGHT SYSTEM

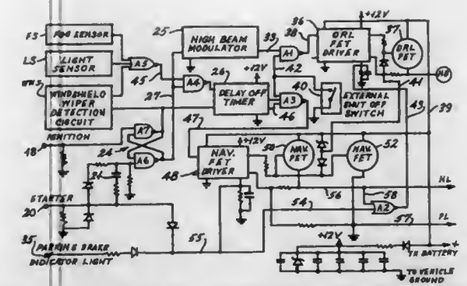
Patrick Mullins, Ormond Beach; Charles Benedict, and Jay S. Tiedeberg, both of Tallahassee, all of Fla., assignors to Autosmart Light Switches, Inc., Tallahassee, Fla.

Continuation-in-part of Ser. No. 381,647, Jan. 31, 1995, abandoned. This application Aug. 1, 1995, Ser. No. 510,092

Int. Cl.[6] B60Q *1/02;1/04*

U.S. Cl. 315—82 **38 Claims**

1. An automatic ambient condition controlled daytime running light system for transport vehicles having an emergency brake, navigation lights including headlights with high and low beam



filaments and parking lights, a power supply, a headlight switch for turning ON and OFF the headlights and a parking light switch for turning ON and OFF the parking lights, an ignition switch and a starter motor switch, the system comprising, a DRL control circuit having a first input from the ignition and an output to a first switching means connected to the high beam filaments for supplying power thereto, means for connecting said first switching means to the source of power, an NL control circuit, a plurality of ambient condition senors, a second input for connecting the ignition switch and outputs from said ambient condition sensors to said NL control circuit, said NL control circuit having an output connected to a second switch means for supplying power to the navigational lights, and output means from said NL control circuit connected to said DRL control circuit for extinguishing power to said first switch means when said NL control circuit is activated by signals received from said second input.

5,614,789

APPARATUS AND METHOD OF REDUCING VARYING ELECTRICAL FIELDS IN VIDEO DISPLAY TERMINALS

Robert Kristiansson, Hammavägen 47, S-175 35 Järfälla, Sweden

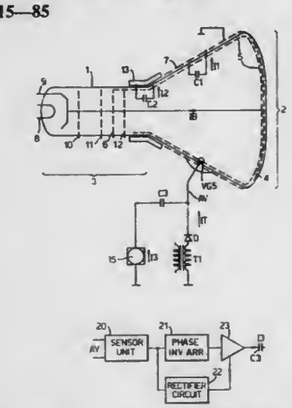
PCT No. PCT/SE92/00794, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO93/10537, PCT Pub. Date May 27, 1993

PCT Filed Nov. 19, 1992, Ser. No. 244,400

Claims priority, application Sweden, Nov. 22, 1991, 9103469

Int. Cl.[6] H01J *5/02*

U.S. Cl. 315—85 **8 Claims**



1. A method for reducing electrical alternating fields generated by a CRT unit in the surroundings of the unit to a minimum, said CRT unit being provided with a voltage conducting layer on which undesirable signal variations occur, comprising:

indicating the undesirable signal variations of the acceleration voltage of the CRT unit, and phase inverting the indicated signal variations, characterized by feeding the generated phase inverted, varying signal directly to the voltage conducting layer.

5,614,790

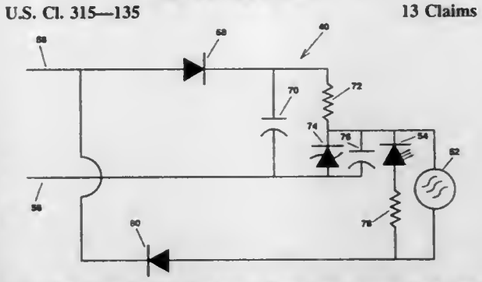
AUTOMATIC ALARM FOR FLUORESCENT BLINKING

Charles J. Fleck, Sr., National Park, and Robert A. Bohinski, Mount Laurel, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 9, 1995, Ser. No. 489,264

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—135 **13 Claims**



1. In an illuminative apparatus of the type having a preheat circuit wherein a starter mechanism is employed for initially effecting an attempt to light a fluorescent lamp which is unlit, for subsequently effecting said attempt each time said fluorescent lamp becomes unlit, and for repeatedly effecting said attempt while said fluorescent lamp remains unlit until said fluorescent lamp becomes lit, said starter mechanism having a starter relay between two poles, said fluorescent lamp having a discharge path between two electrodes, said starter relay being open while said fluorescent lamp remains lit, each said attempt to light said fluorescent lamp including the momentary closure of said starter relay so as to preheat said electrodes and the opening of said starter relay so as to cause a voltage surge over said discharge path an improved starter mechanism comprising alarm means responsive to voltage change associated with each said attempt to light said fluorescent lamp, said alarm means including an alarm circuit which is connected to said two poles across said starter relay, said alarm circuit including at least one indicator and a storage element for energizing said at least one indicator, wherein said storage element receives and holds voltage while said fluorescent lamp remains lit, and wherein, each said time said fluorescent lamp become unlit and while said fluorescent lamp remains unlit, said at least one indicator is energized as a result of each said momentary closure set of said starter relay.

5,614,791

CATHODE RAY TUBE

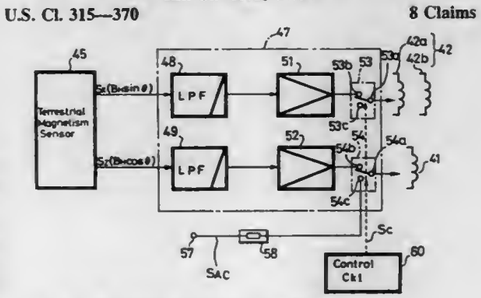
Hisao Kume, Kanagawa; Hiromu Hosokawa, Chiba; Minoru Watanabe, and Kenichiro Takayanagi, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 354,002, Dec. 5, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,015

Claims priority, application Japan, Dec. 10, 1993, 5-310601

Int. Cl.[6] H01J *29/56*

U.S. Cl. 315—370 **8 Claims**



1. A cathode ray tube apparatus comprising:

a first axis which is coincident with a tube axis of a tube face of a cathode ray tube;

a second axis which is coincident with a lateral axis of the tube face of a cathode ray tube;

a terrestrial magnetism sensor for outputting a signal corresponding to a sensed magnetic field, the sensor being secured within a housing for the cathode ray tube at a location which is substantially removed from a screen of the cathode ray tube;

a first axis correction coil having a perimeter adjacent to a perimeter of a reinforcing band;

a second axis correction coil comprised of two coils disposed at the right and left sides of a funnel portion of the cathode ray tube, the second axis correction coil generating a magnetic flux directed in the second axis direction in parallel within the funnel portion; and

wherein the magnetism sensor is electrically connected to the first and second axis correction coils for providing respective first and second axis magnetism signals.

5,614,792

DYNAMIC FOCUS CIRCUIT AND DISPLAY DEVICE

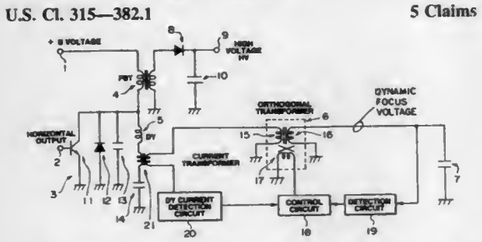
Kiyoshi Ogishima, Kanagawa, and Hiroyuki Ikegami, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,340

Claims priority, application Japan, May 8, 1993, 5-131479

Int. Cl.[6] H01J *29/58*

U.S. Cl. 315—382.1 **5 Claims**



1. A dynamic focus circuit used in a display device having a cathode ray tube, and adapted for controlling a focus condition of an electron beam of the cathode ray tube, the dynamic focus circuit comprising:

a deflection circuit having a deflection coil for deflecting the electron beam, the deflection circuit generating a saw-tooth-wave current;

an orthogonal transformer having a primary winding, a secondary winding and a control winding orthogonal to the primary winding and secondary winding and for controlling magnetic flux between the primary winding and the secondary winding, wherein a transforming level of the orthogonal transformer is modulated by a control signal applied to the control winding;

first means for supplying a saw-tooth-wave current to the primary winding;

second means for supplying a parabolic wave voltage generated from the secondary winding to the cathode ray tube; and

control means independent of and disconnected from said second means for supplying the parabolic wave voltage and from the primary winding and the secondary winding for generating said control signal of a constant voltage control signal and supplying the constant voltage control signal to the control winding to control the level of the parabolic wave voltage amplitude.

5,614,793

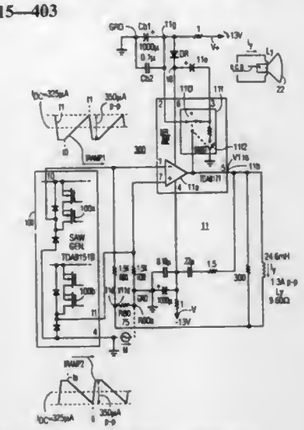
DEFLECTION CIRCUIT RESPONSIVE TO DIFFERENTIAL SAWTOOTH SIGNALS

James A. Wilber, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 9, 1996, Ser. No. 630,032

Int. Cl.[6] H01J *29/70;29/76*

U.S. Cl. 315—403 **8 Claims**



1. A video deflection apparatus, comprising:

a cathode ray tube;

a deflection winding mounted on a neck of said cathode ray tube;

a deflection amplifier coupled to said deflection winding and having a pair of first and second inputs for generating a deflection current in said deflection winding;

a pair of first and second resistors;

a current sampling resistor coupled to said deflection winding for generating a feedback signal that is coupled to one of said first and second resistors;

a sawtooth signal generator for generating a pair of differential, first and second sawtooth currents at a frequency that is related to a deflection frequency coupled to said first and second resistors, to develop, in accordance with each of said first sawtooth current, said second sawtooth current and said feedback signal, first and second voltages that are coupled to said first and second inputs, respectively, to control said deflection current, said sawtooth generator having an output impedance in a current path that includes one of said first and second resistors that is substantially higher than that of one of said first and second resistors, such that a current in said current path is substantially independent of said one resistor included in said current path.

5,614,794

HORIZONTAL DEFLECTION CIRCUIT FOR A MULTISYNC MONITOR

Ming-teh Yu, Taipei, Taiwan, assignor to Shamrock Technology Company Limited, Hsien, Taiwan

Filed Apr. 24, 1995, Ser. No. 427,008

Int. Cl.[6] G09G *1/04;* **H01J** *29/70*

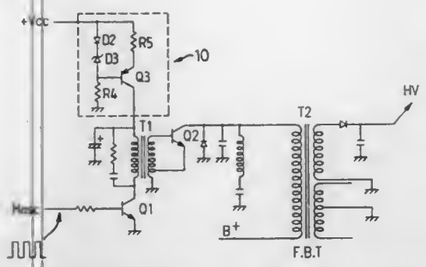
U.S. Cl. 315—411 **1 Claim**

1. A horizontal deflection circuit for a multisync monitor, comprising;

a driver transistor for receiving a horizontal-frequency signal;

a driver transformer having a primary winding series-connected to a collector of the driver transistor;

a horizontal output transistor having an input connected to a secondary winding of the driver transformer;



a flyback transformer coupled to an output of the horizontal output transistor; and

a current source coupled between a voltage source and the primary winding of the driver transformer so that a current flows in the secondary winding of the driver transformer which will not fluctuate in response to a variation in frequency of the horizontal-frequency signal;

wherein said current source comprises a transistor having an emitter coupled to the voltage source via a resistor and a base coupled to the voltage source via a zener diode.

5,614,795

FIELD EMISSION DEVICE

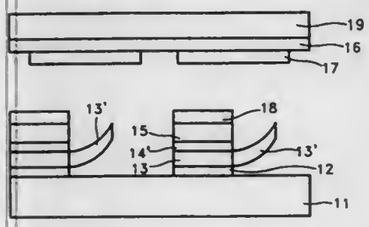
Jong-min Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 31, 1995, Ser. No. 509,059

Claims priority, application Rep. of Korea, Mar. 29, 1995, 95-6889

Int. Cl.[6] H01J *1/02;9/02;63/02*

U.S. Cl. 313—336 **20 Claims**



9. A field emission device, comprising:

a front substrate and a rear substrate, each having inner surfaces disposed opposite to each other at a predetermined distance;

an adhesive layer disposed on said inner surface of said rear substrate;

an anode and a cathode disposed on the inner surface of said front substrate and on said adhesive layer, respectively;

a plurality of micro-tips protruding from said cathode;

a mask layer disposed on said cathode;

an insulating layer disposed on said mask layer; and

a gate disposed on said insulating layer;

wherein said adhesive layer, said cathode, said mask layer, said insulating layer, and said gate have a first striped pattern and said anode has a second striped pattern which is perpendicular to the first striped pattern.

5,614,796

METHOD FOR PROVIDING CONTINUOUS POWER TO ELECTRICAL RAIL VEHICLE SYSTEMS WHEN RAIL POWER IS INTERRUPTED

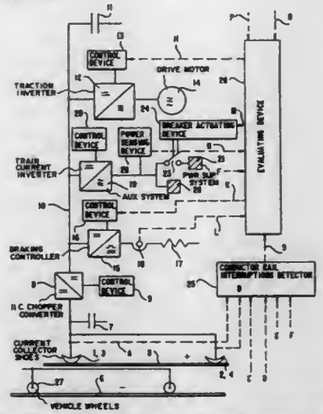
Erich Minderlein, Vellmar; Anton Völkl, Römerberg, and Jens Hinze, Hohenstein-Ernstthal, all of Germany, assignors to ABB Patent GmbH, Mannheim, Germany

Filed Jan. 5, 1995, Ser. No. 369,188

Claims priority, application Germany, Jul. 6, 1994, 44 23 692.1

Int. Cl.[6] H02P *3/00*

U.S. Cl. 318—376 **6 Claims**



1. In a method for bridging gaps in a power supply for electrical, converter-fed rail vehicles having front and rear ends with front and rear current collectors, as seen in a travel direction, for making contact with the power supply, the improvement which comprises:

switching a traction converter from a traction mode to a regenerative braking mode over a period during which the rail vehicle travels a distance, as soon as the front current collector is not in contact with the power supply;

switching the traction converter from a braking mode to the regenerative braking mode;

switching the traction converter over a period during which the rail vehicle travels a distance being shorter than a distance between the front and rear current collectors;

predetermining a nominal regenerative braking value for the traction converter in dependence on a traveling speed of the rail vehicle, a power requirement of a train power supply system and an inherent requirement of electrical components of the rail vehicle; and

ending the regenerative braking mode when the front and rear current collectors are again in contact with the power supply and when additionally the front current collectors are uninterruptedly in contact with the power supply over a period during which the rail vehicle travels a distance being greater than a distance between the front and rear current collectors.

5,614,797

STATOR COIL DRIVER CIRCUIT FOR A BRUSHLESS DC MOTOR

Francesco Carobolante, Portola Valley, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

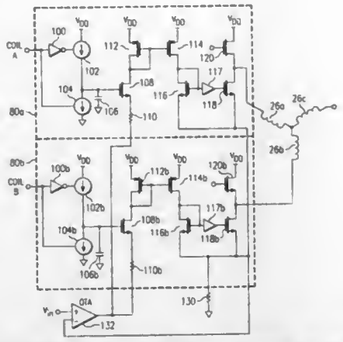
Filed Feb. 28, 1995, Ser. No. 395,869

Int. Cl.[6] H02P *6/08*

U.S. Cl. 318—432 **17 Claims**

1. A plurality of driver circuits for maintaining a constant total current in a plurality of stator coils, each said driver circuit comprising:

a stator coil drive circuit having a first input, a second input, and having a conductive path with a first end connected to the stator coil and having a second end;



a sense circuit for sensing the current through the stator coil, having a first end connected to said second end of the conductive path of said stator coil drive circuit and having a second end connected to a voltage reference; and

a slew rate control circuit having an input connected to receive a control logic signal and having an output connected to said second input of the stator coil drive circuit;

wherein the slew rate control circuit comprises:

an inverter having an input for receiving the control logic signal and having an output;

a first constant current source having a control element connected to the output of the inverter, having a current drain connected to a voltage source and having a current source connected to the control element of a first transistor;

a second constant current source having a control element connected to the input of the inverter, having a current drain connected to the control element of the first transistor, and having a current source connected to the voltage reference; and

a capacitor having a first plate connected to the control element of the first transistor and having a second plate connected to the voltage reference such that the first constant current source charges the capacitor or the second constant current source discharges the capacitor responsive to the control logic signal, the resulting voltage on the capacitor controls the first transistor;

said plurality of driver circuits sharing a feedback operational transconductance amplifier which has a first input connected to said first end of each sense circuit, a second input for receiving a stator coil drive signal, and an output connected to the first input of each said stator coil drive circuit.

5,614,798

CIRCUIT CONFIGURATION FOR IDENTIFYING A SHORT CIRCUIT OR SHUNT EVENT IN A SERVOMOTOR SYSTEM

Michael Zydek, Frankfurt am Main; Mario Engelmann, Neu-Anspach, and Lothar Spornitz, Frankfurt am Main, all of Germany, assignors to Alfred Teves GmbH, Frankfurt, Germany

Continuation of Ser. No. 50,386, Jun. 30, 1993. This application Jun. 7, 1995, Ser. No. 487,915

Claims priority, application Germany, Nov. 5, 1990, 40 35 067.3

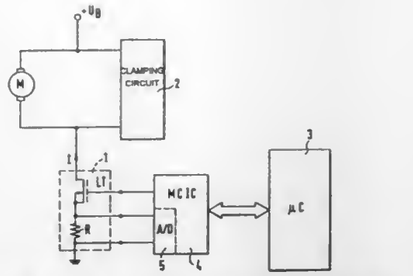
Int. Cl.[6] H02P *1/22*

U.S. Cl. 318—434 **19 Claims**

1. A circuit configuration for the control of a servomotor of a control system for use with automotive vehicles comprising:

a final stage including a power transistor and a current measuring resistance;

means for actuating the final stage;



means, after actuation of the final stage, for directly sensing and storing values representing the gradient of the current flowing, based on the inductance of the servomotor, through the final stage throughout a predetermined period of time and for identifying a short circuit or shunt event within the servomotor or a supply line based on the stored values, said current flow being sensed by said means for sensing with respect to the current measuring resistance.

5,614,799

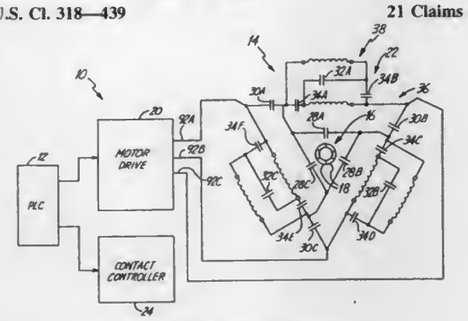
BRUSHLESS DIRECT CURRENT MOTOR HAVING ADJUSTABLE MOTOR CHARACTERISTICS

William G. Anderson, Victoria, Minn., and William C. McAdams, Melbourne, Fla., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 451,013, May 25, 1995, abandoned, which is a continuation of Ser. No. 274,819, Jul. 14, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,029

Int. Cl.[6] H02P *7/48*

U.S. Cl. 318—439 **21 Claims**



1. A brushless direct current motor comprising:

a permanent magnet rotor;

a set of stator windings;

means for changeably connecting the set of stator windings to operate in a first electrical configuration or a second electrical configuration;

phase shift means for providing a phase shift of commutation signals for the set of stator windings as a function of operation in the first electrical configuration or the second electrical configuration;

commutation means operably connected to the phase shift means for commutating the set of stator windings when connected in the first electrical configuration or the second electrical configuration.

5,614,800

METHOD AND APPARATUS FOR PREPARING NUMERICAL CONTROL DATA

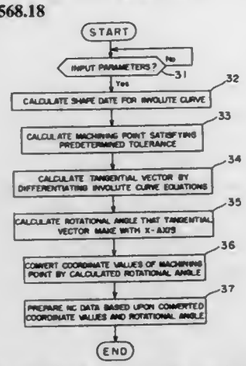
Hiroyuki Nakano, Tokai, and Akira Saito, Obu, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 30, 1994, Ser. No. 314,296

Claims priority, application Japan, Sep. 30, 1993, 5-268164

Int. Cl.[6] G05B *19/416*

U.S. Cl. 318—568.18 **9 Claims**



1. A method for preparing NC data used in machining an involute curve on a workpiece by relatively moving a tool and the workpiece along mutually perpendicular first and second axes encompassed within a plane while relatively rotating said tool and said workpiece about a third axis which is perpendicular to said plane, said method comprising the steps of:

(1) defining in a computer said involute curve based upon input parameters including at least one geometric Characteristic of the workpiece;

(2) calculating on the computer a series of machining points on said involute curve;

(3) calculating on the computer a tangential line which connects said involute curve at each of said machining points;

(4) calculating on the computer a conversion angle through which each of said machining points is to be rotated about said third axis so as to make said tangential line at each of said machining points intersect one of said first and second axes at a right angle;

(5) converting on the computer coordinate values of each of said machining points into modified coordinate values which each of said machining points would have if the same were rotated about said third axis through said conversion angle calculated in said step (4); and

(6) preparing NC data of numerous data blocks each including said conversion angle and said converted coordinate values of each of said machining points.

5,614,801

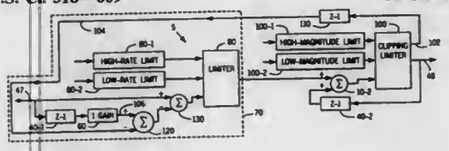
APPARATUS FOR EFFECTIVELY HANDLING A SATURATION CONDITION IN A DIGITAL COMPENSATOR

John L. Miramonti, West Lebanon, N.H., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jul. 10, 1995, Ser. No. 499,981

Int. Cl.[6] G05B *11/42*

U.S. Cl. 318—609 **20 Claims**



1. A compensator in a control system for controlling an actuator based upon an error signal applied from an error signal output and a feedback signal, comprising:

an error signal processing circuit coupled to said error signal output to determine an incremental change in said error signal based on samples of said error signal and said feedback signal;

a clipping circuit coupled to said error signal processing circuit to limit said incremental change in said error signal to between a predetermined maximum value and a predetermined minimum value as a limited signal, and to determine a clipping difference when said incremental change in said error signal is greater than said predetermined maximum value or less than said predetermined minimum value, said clipping difference corresponding to said feedback signal; and

an integrating circuit coupled to said clipping circuit to digitally integrate said limited signal to produce a control signal for said actuator.

5,614,802

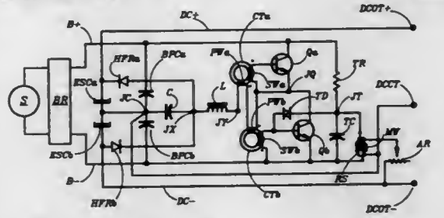
FREQUENCY, VOLTAGE AND WAVESHAPE CONVERTER FOR A THREE PHASE INDUCTION MOTOR

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 643,169, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 243,246, Sep. 8, 1988, abandoned, which is a continuation of Ser. No. 14,353, Feb. 13, 1987, abandoned. This application Jan. 22, 1993, Ser. No. 8,093

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—800 **13 Claims**



1. An arrangement comprising:

an AC source providing an AC power line voltage at a pair of power line terminals; and

a voltage conditioning circuit connected between the power line terminals and a pair of output terminals; the voltage conditioning circuit being: (i) characterized by drawing current from the power line terminals during at least half of the total duration of each half-cycle of the AC power line voltage; and (ii) operative to provide between the output terminals a conditioned voltage characterized by:

(a) having an absolute magnitude that remains substantially constant over an extensive duration, an extensive duration being defined as a duration that is substantially longer than the duration of a complete cycle of the AC power line voltage; and

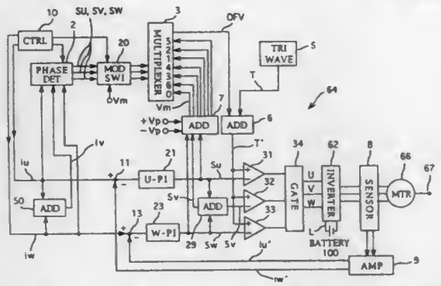
(b) having an instantaneous magnitude alternating, at a relatively high alternation frequency, between a first voltage level and a second voltage level; the relatively high alternation frequency varying periodically at a relatively low modulation frequency; the relatively low modulation frequency being substantially lower than the relatively high alternation frequency.

5,614,803

INVERTER CONTROL APPARATUS

Tatsuru Morioka, Okazaki, and Tsuneyuki Egami, Gamagori, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 22, 1995, Ser. No. 493,702
Claims priority, application Japan, Jul. 5, 1994, 6-153875
Int. Cl.[6] H02D *5/28*
U.S. Cl. 318—801 **10 Claims**



1. An inverter control apparatus for controlling a three-phase inverter which operates a three-phase induction motor under a power running condition or a regeneration running condition according to a motor control signal, said inverter control apparatus comprising:

a current-signal generator for generating a set current signal according to said motor control signal;

a current detector for detecting a real current and for generating a real current signal;

a deviation detector for detecting a deviation between a set-current and said real current based on said set current signal and said real current signal;

first means for providing a three-phase modulation control of said motor in which a modulation percentage of said phase voltage of said inverter is applied to each phase-winding of said motor and for providing a two-phase modulation control of said motor in which a fixed modulation percentage of one phase-voltage of said inverter is applied to one-phase-winding of said motor during a fixed period;

second means for causing said first means to provide said two-phase modulation control if said motor is operating under said power running condition and to provide said three-phase modulation control if said motor is operating under said regenerating running condition; and

a wave-signal generator for controlling said inverter according to an output of said second means and said detected deviation thereby causing a first voltage wave for said two-phase modulation control to be applied to said phase winding of said motor if said two-phase modulation control is performed and causing a second voltage wave for said three-phase modulation control to be applied to said phase windings of said motor if said three-phase modulation control is performed.

5,614,804

METHOD OF DETECTING RESIDUAL CAPACITY OF BATTERY FOR USE ON ELECTRIC VEHICLE

Morio Kayano, and Kazunori Watanabe, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,654
Claims priority, application Japan, Dec. 27, 1993, 5-332572
Int. Cl.[6] H02J *7/00;* **H01M** *10/44*
U.S. Cl. 320—13 **26 Claims**

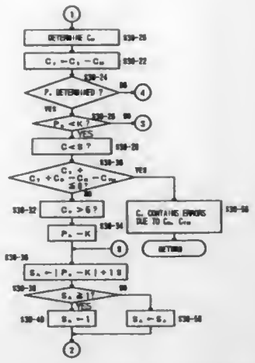
1. A method of detecting the residual capacity of a battery for energizing an electric motor to propel an electric vehicle while the battery is being discharged, based on an initial value of the residual capacity of the battery upon a transition of the battery to a discharging condition and a discharge current at predetermined periods from said battery after said transition, said method comprising the steps of:

(a) calculating a maximum output which can be produced from said battery based on the discharge current from said battery and a battery voltage while the battery is being discharged;

(b) calculating a maximum output density by dividing said maximum output by a weight of said battery and determining whether the residual capacity of the battery is virtually zero or not based on the maximum output density;

(c) calculating a degradation error corrective capacity for correcting for a change in the residual capacity due to a degradation of the battery when the residual capacity of said battery is virtually zero; and

(d) correcting the residual capacity of said battery which has been calculated based on the initial value of the residual capacity of the battery and the discharge current from said battery, with said degradation error corrective capacity, for thereby calculating the residual capacity of said battery while the battery is being discharged.

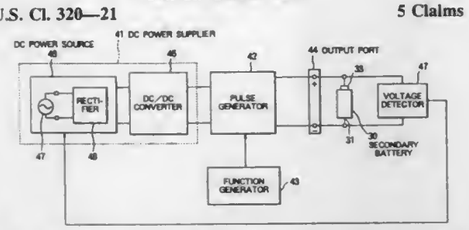


5,614,805

METHOD AND APPARATUS FOR CHARGING A SECONDARY BATTERY BY SUPPLYING PULSED CURRENT AS CHARGING CURRENT

Hiroshi Momotani; Etsuo Otsuki; Akio Hasebe, and Tamiko Takeuchi, all of Sendai, Japan, assignors to Tokin Corporation, Miyagi-ken, Japan

Filed Apr. 20, 1993, Ser. No. 50,830
Claims priority, application Japan, Nov. 19, 1992, 4-335283; Dec. 21, 1992, 4-339956
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—21 **5 Claims**



1. A method for charging a secondary battery comprising a positive electrode, a negative electrode made of lithium, and an electrolyte, said method comprising the steps of:

producing a pulsed current which has a predetermined repetition frequency from 50 Hz to 10 MHz, inclusive, and which has a positive pulse amplitude sufficient to produce a predetermined current density of from 1 $\mu A/cm^2$ to 1 mA/cm^2, inclusive, in said positive electrode, said pulsed current comprising a positive pulsed current followed by a negative pulsed current, said positive pulsed current having said positive pulse amplitude sufficient to produce said predetermined current density of from 1 $\mu A/cm^2$ to 1 mA/cm^2, inclusive, in said positive electrode, and said negative pulsed current having a negative pulse amplitude sufficient to produce a second current density less than said predetermined current density, said second current density not being greater than a quarter of said predetermined current density; and

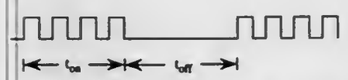
supplying said pulsed current to said secondary battery to make the pulsed current flow between said positive electrode and said negative electrode through said electrolyte to thereby charge said secondary battery.

5,614,806

BATTERY CHARGER

Nathaniel B. Wilson, 11346-8 Portobelo, San Diego, Calif. 92124, and Elbert A. McLaren, II, 11291 Paul Barwick Ct., San Diego, Calif. 92126

Filed Nov. 29, 1994, Ser. No. 346,976
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—22 **11 Claims**



1. A battery charger, having at least a first and a second charging mode, for charging a battery in a battery powered device having at least a first and a second operating mode, the battery charger comprising:

a clock signal input for receiving a clock signal from the battery powered device, the battery powered device outputting a first clock signal during the first operating mode and a second clock signal during the second operating mode;

a clock detection circuit for detecting the first clock signal and the second clock signal; and

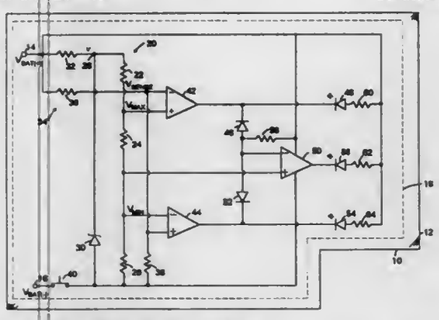
a variable current source for generating a first current in the first charging mode when the first clock signal is detected and a second current in the second charging mode when the second clock signal is detected.

5,614,807

BATTERY CHARGE INDICATOR

Raymond S. Duley, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 22, 1994, Ser. No. 279,503
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—48 **16 Claims**



1. A charge gauge circuit, comprising:

a positive terminal, a negative terminal and a reference terminal, said positive terminal is adapted to receive a positive voltage, said negative terminal is adapted to receive a negative voltage and said reference terminal is adapted to receive a reference voltage exceeding the negative voltage and less than the positive voltage;

a first voltage divider coupled between the reference and negative terminals, and a second voltage divider coupled between the positive and negative terminals;

a first and second comparators, each comparator having inputs coupled to the first and second voltage dividers;

a third comparator having inputs coupled to the first voltage divider and, through diodes, to outputs of the first and second comparators; and

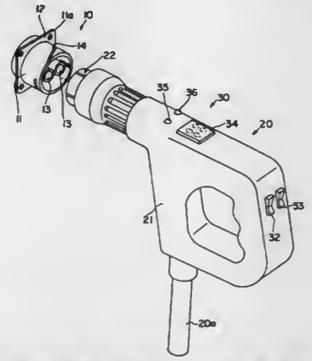
a select one of three light emitting diodes coupled to a respective one of said first, second and third comparators for emitting visible light responsive to the difference in magnitude of said positive and negative voltage.

5,614,808

ELECTRIC VEHICLE CHARGING CONNECTOR, CONNECTOR ASSEMBLY AND ELECTRIC VEHICLE CHARGING SYSTEM

Hisashi Konoya, and Heiji Kuki, both of Mie Pref., Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed May 5, 1994, Ser. No. 238,740
Claims priority, application Japan, May 10, 1993, 5-132860
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—48 **14 Claims**



1. An electric vehicle charging connector assembly for use in charging a power battery provided in a body of an electric vehicle with an external power source, the connector assembly comprising:

a) a vehicle side connector housing provided on the body of the electric vehicle;

b) vehicle side electrodes disposed in the vehicle side connector housing and electrically connected to the power battery;

c) a grip handle having a cavity therein and being capable of being gripped by an operator, the grip handle comprising an upper half portion, a lower half portion and an end;

d) an external connector housing provided on the end of the grip handle and configured to mate with the vehicle side connector housing;

e) external electrodes disposed in the external connector housing, said external electrodes being electrically connected to the vehicle side electrodes when the external connector housing is mated with the vehicle side connector housing;

f) a charging information display circuit operatively connected to the power battery while said external electrodes are connected to said vehicle side electrodes;

g) a power cable connected to the external electrodes, the power cable extending through the cavity of the grip handle from the external electrodes and down and out of the lower half portion of the grip handle; and

h) a display disposed on the upper half portion of the grip handle, said display being operatively connected to said display circuit so as to display information generated by the

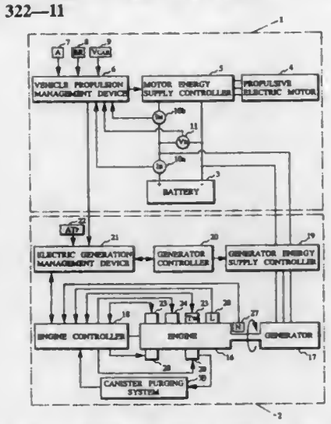
display circuit when said external connector housing is mated with the vehicle side connector housing.

5,614,809

ELECTRIC GENERATION CONTROL SYSTEM FOR HYBRID VEHICLE

Takeo Kiuchi; Satoshi Taguchi; Katsunori Nakaya; Shigekazu Fueta, and Kenji Fukuda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 513,140
Claims priority, application Japan, Aug. 22, 1994, 6-197072
Int. Cl.[6] H02P *9/00*; F02N *11/00*
U.S. Cl. 322—11 **10 Claims**



1. An electric generation control system for use on a hybrid vehicle having a vehicle propelling apparatus including a battery and a propulsive electric motor energizable by the battery, and an electric energy generating apparatus including an engine and a generator actuatable by the engine, the generator being operable in a motor mode in which the generator is energized by the battery to operate as a starter motor for starting the engine while the vehicle propelling apparatus is in operation, and a generator mode in which after the engine is started, the generator is actuated by the engine to generate electric energy to be supplied to the battery and/or the propulsive electric motor, said electric generation control system comprising:

remaining capacity recognizing means for recognizing a remaining capacity of the battery;

start signal outputting means for issuing a start signal to activate the electric energy generating apparatus when the remaining capacity of the battery as recognized by said remaining capacity recognizing means is either lower than a predetermined threshold value or sharply reduced;

an exhaust gas sensor associated with the engine for detecting exhaust gases emitted from the engine;

exhaust gas sensor activating means for energizing and activating said exhaust gas sensor based on said start signal;

exhaust gas sensor activation determining means for determining whether said exhaust gas sensor has been activated or not after the exhaust gas sensor has started being energized;

engine start signal outputting means for outputting a start signal to start the engine based on a signal, which indicates that said exhaust gas sensor has been activated, from said exhaust gas sensor activation determining means;

cranking means for energizing the generator with the battery to operate the generator as the starter motor in the motor mode based on said start signal, and controlling the generator to equalize a rotational speed of the engine actuated by the engine to a predetermined starting rotational speed;

engine control means for starting to supply fuel to the engine when the rotational speed of the engine reaches said predetermined starting rotational speed, and starting to combust the fuel in the engine while monitoring exhaust gases from the engine with said exhaust gas sensor;

full-combustion determining means for determining whether combustion of the fuel in the engine has reached a fully combusted state representing stable fuel combustion in the engine; and

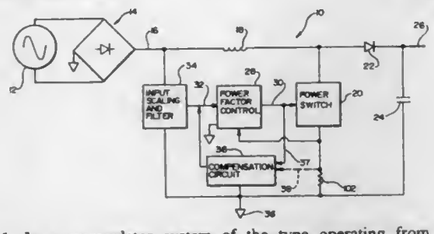
generator operation switching means for switching operation of the generator from the motor mode to the generator mode based on a signal, which indicates that combustion of the fuel in the engine has reached the fully combusted state, from said full-combustion determining means.

5,614,810

POWER FACTOR CORRECTION CIRCUIT

Allan A. Nostwick, Huntington, and Bryce L. Hesterman, Fort Wayne, both of Ind., assignors to MagneTeck, Inc., Los Angeles, Calif.

Filed Feb. 14, 1994, Ser. No. 194,916
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—207 **27 Claims**



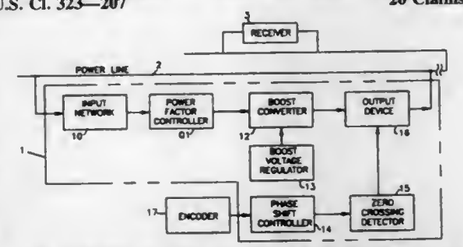
1. In a preregulator system of the type operating from an alternating current power source and having a power factor control circuit for regulating an output voltage by modulating the peak value of triangular current pulses in an inductor according to an envelope proportional to the time varying magnitude of the voltage of the alternating current power source, the improvement in combination therewith comprising a compensation circuit having an output connected to an input of the power factor control circuit in the form of a bias signal varying inversely to a signal proportional to the amount of input current drawn from the alternating current power source such that crossover distortion in a zero-crossing of the current drawn from the alternating current power source is substantially reduced.

5,614,811

POWER LINE CONTROL SYSTEM

Emil Sagalovich, Thornhill, and Alexei Bogdan, Bolton, both of Canada, assignors to Dyalem Concepts, Inc., Kanata, Canada

Filed Sep. 26, 1995, Ser. No. 534,090
Int. Cl.[6] G05F *1/70*; H04Q *1/00*; H03K *17/60*
U.S. Cl. 323—207 **20 Claims**



1. An apparatus for controlling one or more electrical devices connected to an AC power line at corresponding one or more remote locations from the apparatus by means of control signals transmitted over the AC power line, the control signals being superimposed on the voltage waveform of the AC power line, said apparatus comprising:

a breakdown device;

a capacitor in series with the breakdown device;

means for charging the capacitor to one of several voltage levels at least twice during any one-half cycle of the voltage waveform of the AC power line; and

means for triggering the breakdown device one or more number of times at any point during any one-half cycle of the voltage waveform of the AC power line;

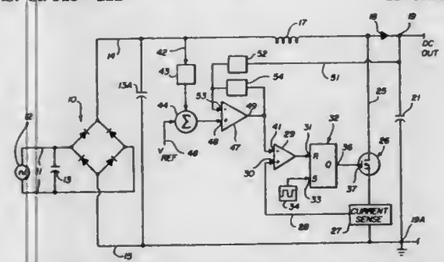
wherein each of said triggering of the breakdown device causes the capacitor to discharge a pulse onto the AC power line.

5,614,812

POWER SUPPLY WITH POWER FACTOR CORRECTION

Robert G. Wagoner, Bluffton, Ind., assignor to Franklin Electric Co. Inc., Bluffton, Ind.

Continuation of Ser. No. 405,151, Mar. 16, 1995, abandoned. This application Jun. 11, 1996, Ser. No. 661,453
Int. Cl.[6] G05F *1/10*
U.S. Cl. 323—222 **12 Claims**



1. A power supply and power factor correction circuit comprising first and second circuit lines; rectifier means having an output connected across said circuit lines and an input connectable to an AC source for providing a rectified DC input voltage on said circuit lines; an inductor connected in one of said lines; an output capacitor connected across said lines and a DC output voltage representative signal appearing across said output capacitor, said inductor being between said rectifier and said output capacitor; a control switch including two power terminals and a control terminal, said two power terminals being connected across said power lines between said inductor and said output capacitor; means responsive to current flow through said inductor for providing a current representative signal; oscillator means having a fixed frequency higher than the frequency of the AC source and operatively connected to said control terminal for closing said control switch in each cycle thereof; means responsive to said input voltage for providing an input voltage representative signal, reference means for providing a DC reference voltage. summing means for summing said input voltage representative signal and said reference voltage and forming a summation signal, error means responsive to said summation signal and to said output voltage representative signal for providing an error signal proportional to the difference between said output voltage representative signal and said summation signal, and comparison means responsive to said current representative signal and to said error signal for opening said control switch when said current representative signal reaches a preset value relative to said error signal.

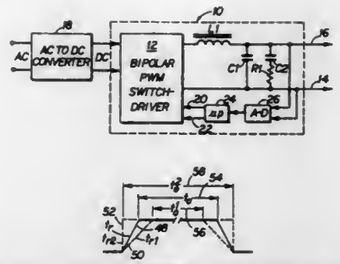
5,614,813

UNITY TRAPEZOIDAL WAVE RMS REGULATOR

J. Gary Batson, Auburn, Ala., assignor to Antec Corporation, Rolling Meadows, Ill.

Filed Apr. 18, 1994, Ser. No. 229,895
Int. Cl.[6] G05F *1/56*
U.S. Cl. 323—283 **13 Claims**

1. An RMS voltage regulator comprising:



pulse width modulation (PWM) switch having an input for receiving a DC voltage and a circuit output for providing a trapezoid voltage waveform having a crest width (t_o) a rise or fall time (t_r), a half cycle period (T), where $T=t_o+t_r$, and an absolute crest peak value (Vpk) with a controlled root-mean-square (RMS) value;

an A–D converter coupled to the circuit output for converting the absolute analog value of the trapezoidal voltage waveform peak crest (Vpk) into a digital value; and

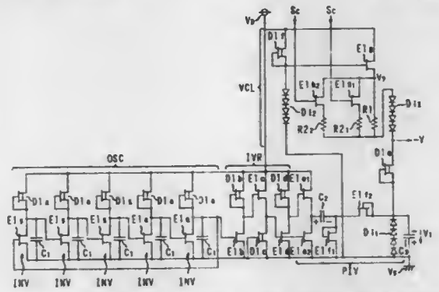
a microprocessing unit coupled to the A–D converter and the PWM switch for using the digital value (Vpk) to control the rise or fall time (t_r) of the trapezoidal voltage waveform with the PWM switch to provide RMS voltage regulation by modulating the crest width (t_o).

5,614,814

NEGATIVE VOLTAGE GENARATING CIRCUIT

Masao Nishida, Sakai; Takayoshi Higashino, Neyagawa, and Yasoo Harada, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 28, 1994, Ser. No. 365,462
Claims priority, application Japan, Dec. 28, 1993, 5-337335
Int. Cl.[6] H02M *3/18*
U.S. Cl. 323—313 **14 Claims**



1. A negative voltage generating circuit supplied with positive voltage for generating negative voltage, comprising:

an oscillating unit including a ring oscillator having a plurality of direct-coupled FET logic inverters, each of said inverters including a capacitor for providing an oscillation frequency; and

a polarity inverting unit which includes a charging pump having an FET, an inverting capacitor and a smoothing capacitor and is electrically directly connected to said oscillating unit so as to receive said pulse signal, thereby charging said smoothing capacitor with negative voltage and outputting the charged negative voltage.

5,614,815
CONSTANT VOLTAGE SUPPLYING CIRCUIT

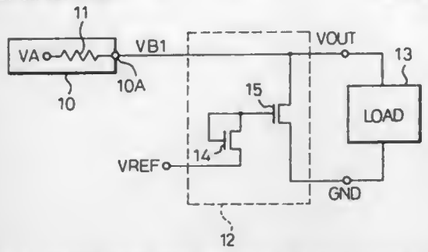
Seiji Yamagata; Shinya Udo, and Fumitaka Asami, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 9, 1995, Ser. No. 401,272

Claims priority, application Japan, Mar. 10, 1994, 6-039419; Mar. 7, 1995, 7-047308

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **28 Claims**



1. A constant voltage supplying circuit disposed between a load and a voltage output terminal of a voltage generation circuit for outputting a voltage having the same polarity as that of a reference voltage capable of being set arbitrarily, and having an absolute value greater than said reference voltage, comprising:

a first field effect transistor having a gate thereof connected to a drain thereof, and supplied with said reference voltage at a source thereof; and

a second field effect transistor having the same conductivity type as that of said first field effect transistor, and having a gate thereof connected to the drain of said first field effect transistor, a source thereof connected to the voltage output terminal of said voltage generation circuit and a drain thereof grounded;

wherein a voltage at the voltage output terminal of said voltage generation circuit is stabilized to the same voltage value as said reference voltage.

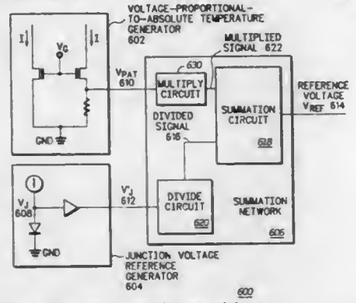
5,614,816
LOW VOLTAGE REFERENCE CIRCUIT AND METHOD OF OPERATION

Joseph J. Nahas, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 20, 1995, Ser. No. 560,876

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—316 **20 Claims**



1. A voltage reference circuit comprising:

a voltage-proportional-to-absolute temperature generator for producing a reference voltage which varies in magnitude proportional to temperature;

a forward biased bipolar junction voltage reference circuit for producing a junction voltage reference; and

a summation network coupled to the voltage generator and the forward biased bipolar junction voltage reference circuit, for producing an output voltage reference which is less in magnitude than a bandgap voltage of a bipolar semiconductor junction, by changing the reference voltage by a first predetermined amount to provide an amplified reference voltage and changing the junction voltage reference by a second predetermined amount to provide a modified junction voltage reference prior to combining the modified reference voltage and the modified junction voltage reference to produce the output voltage reference.

5,614,817
METHOD AND DEVICE FOR DETERMINING THE REAL POWER OF A DC ELECTRICAL DRIVE

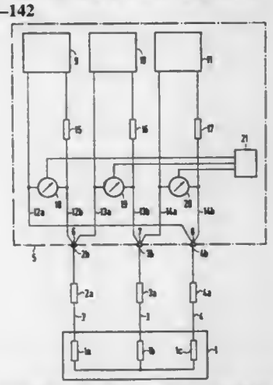
Heinz Kutzer, Maintal, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 23, 1995, Ser. No. 494,052

Claims priority, application Germany, Dec. 23, 1992, 42 43 914.0

Int. Cl.[6] H02P *7/42*; G01R *19/00*

U.S. Cl. 324—142 **8 Claims**



1. A method for determining the real power of an electrical drive having a stator and a DC voltage connecting line producing ohmic power losses, which comprises:

subtracting the ohmic power loss produced in the stator of the drive from a measured real power; and

additionally subtracting the ohmic power loss produced in the DC voltage connecting line of the drive from the measured real power.

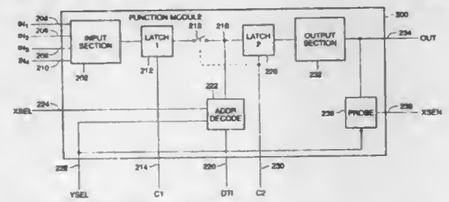
5,614,818
TESTABILITY CIRCUITS FOR LOGIC CIRCUIT ARRAYS

Khaled El Ayat, Cupertino; King W. Chan, Los Altos, and Theodore M. Speers, San Leandro, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 919,619, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 646,268, Jan. 28, 1991, abandoned. This application Sep. 8, 1994, Ser. No. 303,045

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—158.1 **4 Claims**



2. An integrated circuit including:

an array of identical logic function circuits which may be mask programmed to perform any one of a plurality of combinatorial and sequential logic functions, said integrated circuit configured to permit mask programmable connections between said logic function circuits in a random fashion, each of said logic function circuits including an input section including a plurality of inputs and an output node, said input section configured to produce an output value at said output node which is a selected function of input values presented to one or more of said plurality of inputs, each of said logic function circuits including an output section including an input node and an output;

latching means, disposed in each of said logic function circuits, each latching means for selectively latching a logic state present at the output node of the input section of its logic function circuit or passing said logic state through to the input node of the output section of its logic function circuit in response to a control signal;

selection means, coupled to each of said logic function circuits and responsive to signals from off of said integrated circuit, for providing said control signal to any one of said logic function circuits;

a test data input node in each of said logic function circuits;

logic state input means, directly coupled between an input/output pin on said integrated circuit and said test data input node in each of said logic function circuits, for presenting a user-selectable logic state to each one of said logic function circuits;

test data input gating means in each of said logic function circuits, each data test value input gating means for selectively passing a test data value from said test data input node in its logic function circuit to the input node of the output section of its logic function circuit in response to signals generated from off of said integrated circuit and;

whereby each of said logic function circuits may be individually and directly controlled.

5,614,819
MULTI-STATION MACHINE AND PRESS ASSEMBLY FOR ELECTRICALLY TESTING A PRINTED CIRCUIT BOARD HAVING MANUAL AND AUTOMATIC OPERATING MODES

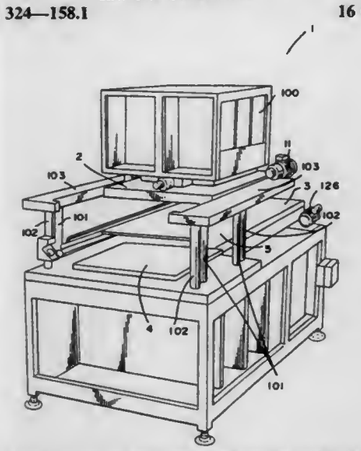
Fernando Nucci, Arbizzano, Italy, assignor to Circuit Line S.p.A., Verona, Italy

Filed Nov. 2, 1994, Ser. No. 334,333

Claims priority, application Italy, Nov. 2, 1993, MI93A2323

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—158.1 **16 Claims**



1. A machine for electrically testing at least one side of a printed circuit board, comprising a frame supporting a press with parallel surfaces, that acts on the circuit board to carry out a test on it, wherein said frame has an automatic loading area, a test area and a parking area for a press head, means provided on said frame for moving said press head from the test area to the parking area and vice versa to allow manual loading of the circuit boards in the test area which thereby forms a manual loading area, and means provided on said frame for automatically transferring the circuit boards from the automatic loading area to the test area and vice versa, thus creating two distinct work stations that can be used selectively by a single operator, said work stations being a manually loaded work station provided at said test area and an automatic automatic loading work station provided at said loading area, and wherein a control terminal is provided with which testing of the circuit boards can be performed at each of said work stations by a single operator.

5,614,820
CONNECTOR EXAMINATION DEVICE FOR DETERMINING A CONNECTION IN A CONNECTOR

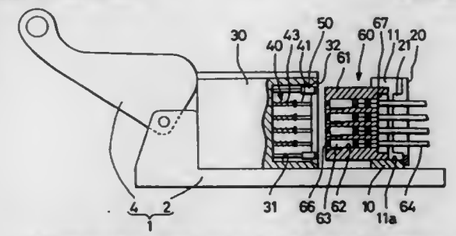
Masahiko Aoyama; Eiji Saijo, and Keigo Atsumi, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Mar. 9, 1995, Ser. No. 401,443

Claims priority, application Japan, Mar. 10, 1994, 6-067829; Mar. 10, 1994, 6-067830; Mar. 14, 1994, 6-070131; Apr. 21, 1994, 6-107962

Int. Cl.[6] G01R *1/06*

U.S. Cl. 324—158.1 **18 Claims**



1. A connector examining system for examining a connector, at least one terminal member being inserted into the connector, the connector examining system comprising:

a base;

terminal member insertion means mounted on the base and engageable with improperly inserted ones of the at least one terminal member for moving improperly inserted terminal members into a proper insertion position;

connector pushing means mounted on the base for pushing the connector against the terminal member insertion means to engage the terminal member insertion means against the improperly inserted terminal members;

moving means mounted on the base for moving at least one of the terminal member insertion means and the connector pushing means relative to the other; and

force absorbing means, for absorbing excessive force applied between the terminal member insertion means and the connector pushing means.

5,614,821
CONTACTLESS SPEED OR POSITION SENSOR USING A DIFFERENTIAL HALL SENSOR

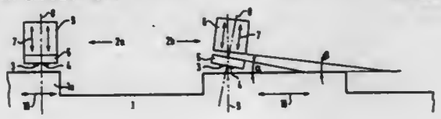
Harald Leiderer, Woerth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 23, 1993, Ser. No. 156,885

Claims priority, application European Pat. Off., Nov. 23, 1992, 92119905

Int. Cl.[6] G01P *3/48*;*3/54*; G01R *33/06*

U.S. Cl. 324—174 **2 Claims**



1. A configuration for contactless detection of the rpm or speed or of the position of a sensor part, comprising:

a differential Hall sensor having a carrier plate with two sides, a permanent magnet disposed on one of said sides, and two Hall elements secured on the other of said sides for scanning teeth or segments and gaps of a sensor part of ferromagnetic material being rotatable about an axis or linearly movable in a given direction of motion,

said carrier plate having an axis of symmetry being perpendicular to said carrier plate and forming a predetermined carrier plate angle with a normal to the given direction of motion, and

said permanent magnet having a direction of magnetization forming a predetermined magnetization angle other than zero with a normal to the given direction of motion, wherein the magnetization angle is different than the carrier plate angle.

5,614,822

ROLLING BEARING UNIT WITH ROTATIONAL SPEED DETECTION DEVICE HAVING A TONE WHEEL AND A SENSOR

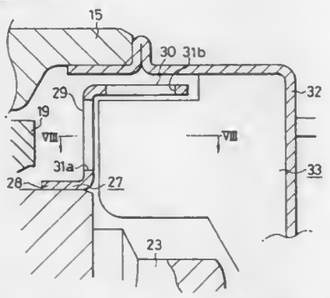
Junshi Sakamoto, Yokohama; Kouichi Morita, Fujisawa; Takamichi Okada, and Akihiro Mashio, both of Hannou, all of Japan, assignors to NSK Ltd., Japan

Filed Jan. 30, 1995, Ser. No. 380,189

Claims priority, application Japan, Jan. 28, 1994, 6-008477; Jun. 30, 1994, 6-149062

Int. Cl.[6] G01P *3/488;* **F16C** *41/04*

U.S. Cl. 324—174 **1 Claim**



1. A rolling bearing unit with a rotational speed detection device comprising:

a rotating ring with a raceway surface, the rotating ring supporting a tone wheel which is rotated with the rotating ring,

a fixed ring with a raceway surface, the fixed ring supporting a sensor to be faced to the tone wheel,

a plurality of rolling members provided between the raceway surface of the fixed ring and the raceway surface of the rotating ring,

the tone wheel being made of a magnetic metal plate, formed in a crank shape in cross section, and having an annular detecting part and a cylindrical detecting part, and

the sensor having first and second magnetic portions which are each arranged to simultaneously face both the annular and the cylindrical detecting parts of the tone wheel, the sensor having a permanent magnet for flowing magnetic flux to the first and second detecting parts in response to rotation of the tone wheel, and the sensor having a detection section arranged between said first and second magnetic portions for detecting the density of magnetic flux flowing through the magnetic portions.

5,614,823

APPARATUS AND METHOD FOR MEASURING HEAD SPEED AND OPENING ANGLE USING SIX SENSORS ARRANGED IN A RECTANGULAR FORMAT

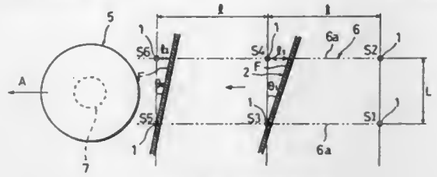
Hiroyuki Katayama, Himeji; Shinji Ohshima, Akashi, and Takashi Teraguchi, Kakogawa, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Apr. 13, 1995, Ser. No. 421,315

Claims priority, application Japan, Apr. 18, 1994, 6-104867

Int. Cl.[6] G01P *3/68;* **A63B** *69/36*

U.S. Cl. 324—178 **6 Claims**



The Moving Direction of the Head

1. An apparatus for measuring head speed and an opening angle of a moving head as it impacts a projectile, comprising:

at least six sensors, four of said sensors being disposed each at a vertex of a defined rectangle and at least two of said sensors being disposed each on an opposed long side of said rectangle for detecting interception of light caused by said moving head;

an instrumentation means for measuring time differences between instants in which the moving head intercepts rays of light aimed toward the sensors, respectively; and

an arithmetic unit for calculating head speed and an opening angle on the basis of the time differences measured by said instrumentation means.

5,614,824

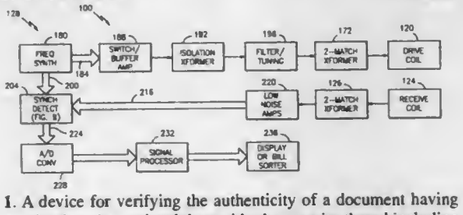
HARMONIC-BASED VERIFIER DEVICE FOR A MAGNETIC SECURITY THREAD HAVING LINEAR AND NON-LINEAR FERROMAGNETIC CHARACTERISTICS

Andrew Dames; David Ely, and Colin Ager, all of Cambridge, United Kingdom, assignors to Crane & Co., Inc., Dalton, Mass.

Filed May 15, 1995, Ser. No. 441,533

Int. Cl.[6] G01N *27/72;* **G01R** *33/12;* **G08B** *13/24;* **G06K** *7/08*

U.S. Cl. 324—239 **17 Claims**



1. A device for verifying the authenticity of a document having a security thread associated therewith, the security thread including one or more regions of magnetic material, each region of magnetic material having one or more predetermined linear and non-linear ferromagnetic characteristics including a coercivity of no greater than 5000 amperes per meter and a relative permeability of between 200 and 10,000, the device comprising:

a. drive means for providing an applied magnetic field as an alternating current magnetic field at a predetermined fundamental frequency within a predetermined spatial region through which the document is passed, the drive means comprises means for providing the applied magnetic field to saturate at least one of the one or more regions of magnetic material;

b. receive means for sensing a response magnetic field within the predetermined spatial region through which the document is passed at a distance of no greater than ten millimeters from a magnetic field sensing portion of the receive means, and for providing one or more sensed signals indicative of a corresponding one or more characteristics of the response magnetic field, wherein the response magnetic field is an alternating current magnetic field, and wherein in the presence of the security thread within the predetermined spatial region the response magnetic field is at the predetermined fundamental frequency of the applied magnetic field and at one or more harmonic frequencies of the predetermined fundamental frequency; and

c. signal processing means, responsive to the sensed signals for determining at least one of the one or more predetermined linear and non-linear ferromagnetic characteristics of each region of magnetic material to verify the authenticity of the document.

5,614,825

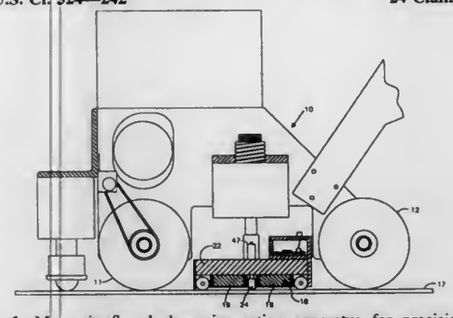
MAGNETIC FLUX LEAKAGE INSPECTION APPARATUS WITH SURFACE-RESPONSIVE SENSOR MOUNTING

Bruce W. Maxfield, Oakland, and Pamela C. Fitzgerald, Berkeley, both of Calif., assignors to Industrial Sensors and Actuators, San Leandro, Calif.

Filed Nov. 28, 1994, Ser. No. 345,901

Int. Cl.[6] G01R *33/12;* **G01N** *27/72*

U.S. Cl. 324—242 **24 Claims**



1. Magnetic flux leakage inspection apparatus for precision inspection of a magnetizable material for magnetic anomalies, said apparatus including magnetizing means disposed over a surface of said material for inducing magnetic flux in said material for inspection thereof, and a sensor assembly disposed in a predetermined inspection position for detecting magnetic flux leakage from said material indicative of magnetic anomalies in the material, wherein said magnetizing means, said sensor assembly, and said material are disposed for relative movement of said magnetizing means and said sensor assembly in said predetermined inspection position along said surface for inspection of said material, said apparatus being characterized in that said sensor assembly comprises:

a sensor block including a plurality of sensors rigidly held therein for detecting

said magnetic flux leakage,

said sensor block being disposed in said inspection position to ride substantially on said surface, and

said sensor block being mounted for movement perpendicular to said surface in response to variations of said surface encountered in the course of inspection, wherein said sensor block is mounted to undergo said perpendicular movement through a distance of at least twice a characteristic size of said variations, and wherein said block is constrained to tilt at most 0.02 radians during said perpendicular movement;

whereby said sensor block undergoes perpendicular movement in response to said variations without causing a significant contribution to be mixed in from a magnetic field component parallel to the surface under inspection.

5,614,826

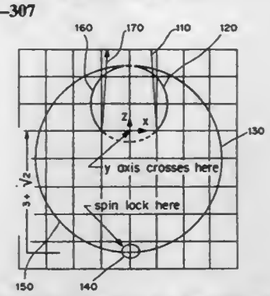
METHODS FOR PREPULSING IN NUCLEAR MAGNETIC RESONANCE PULSE SEQUENCING

W. Thomas Dixon, Atlanta, Ga., assignor to Emory University, Atlanta, Ga.

Filed Aug. 18, 1995, Ser. No. 515,679

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—307 **23 Claims**



1. An NMR RF pulse sequence for directing the magnetization of an object to a known position, the object in a magnetic field oriented along a first axis of a three axis frame, the RF pulse perpendicular to the magnetization and generating an effective field characterized by an off-resonance component, the pulse sequence comprising the steps of:

(1) applying a 90° flip pulse of the magnetization substantially about the effective field, the effective field offset by the off-resonance component from a second axis, perpendicular to the first;

(2) applying at least one pulse to flip the magnetization to a second direction lying in a plane perpendicular to the second axis; and

(3) applying at least one pulse of an amplitude sufficient to lock the magnetization in the direction arrived at in step (2).

5,614,827

METHOD AND APPARATUS FOR SHIMMING A MAGNET SYSTEM OF A NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY SYSTEM

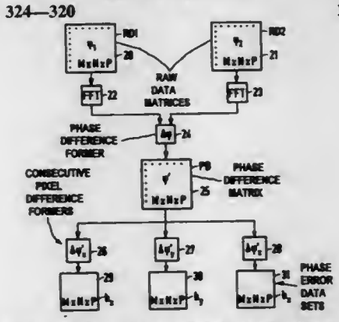
Oliver Heid, Bern, Switzerland, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 29, 1996, Ser. No. 622,871

Claims priority, application Germany, Mar. 30, 1995, 195 11 791.3

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—320 **18 Claims**



1. A method for shimming a magnet system of a nuclear magnetic resonance tomography apparatus having at least one shim channel, comprising the steps of:

producing a predefined matrix indicating, for each channel, an effect of a unit current in that shim channel on each pixel of a phase error data set;

obtaining first and second nuclear magnetic resonance raw data sets each containing phase information with the respective

phase information in the first and second raw data sets being differently dependent on magnetic field inhomogeneities, said first and second raw data sets being compiled in the form of first and second three-dimensional raw data matrices;

three-dimensionally Fourier transforming said first and second raw data matrices to obtain first and second Fourier-transformed matrices each containing pixels;

identifying phase differences between corresponding pixels of said Fourier-transformed matrices and producing a three-dimensional phase-difference matrix embodying said phase differences;

determining phase differences between consecutive pixels of said phase difference matrix in at least one spatial direction and forming one phase error data set per spatial direction;

determining a shim current for said at least one shim channel from said phase error data sets and said predefined matrix; and

supplying said shim current to said at least one shim channel.

5,614,828

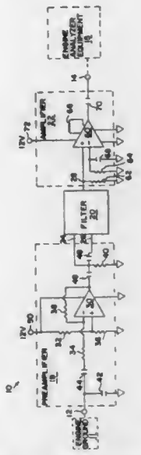
DISTRIBUTORLESS IGNITION TEST DEVICE INCLUDING INPUT PORT CONNECTED DIRECTLY TO THE ENGINE BLOCK ESTABLISHING ELECTRICAL CONTACT THEREWITH

Benny L. Sims, Windsor, Calif., assignor to California State Automobile Association, San Francisco, Calif.

Filed Apr. 26, 1994, Ser. No. 233,510

Int. Cl.[6] F02P *17/12*

U.S. Cl. 324—402 **8 Claims**



1. An adapter for testing a wireless secondary ignition system of an internal combustion engine, comprising:

an input port mechanically connected to said ground of the engine, said mechanical connection establishing a direct electrical conducting path between said input port and said ground for receiving an electrical signal, said electrical signal including a secondary ignition signal;

an output port;

a filter, coupled between said input port and said output port, for filtering out signals other than said secondary ignition signal from said electrical signal and for coupling said secondary ignition signal to said output port; and

amplifier means coupled to said filter for amplifying said secondary ignition signal.

5,614,829

STATE-OF-CHARGE MEASURING METHOD USING MULTILEVEL PEUKERT'S EQUATION

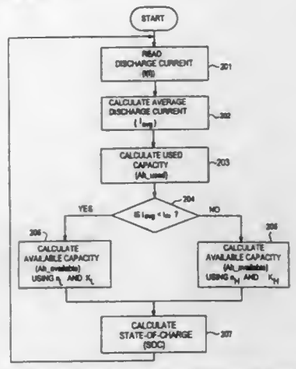
Sung-ku Song, Sungnam, Rep. of Korea, assignor to Y.P. Lee & Associates, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 366,719, Dec. 30, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,350

Claims priority, application Rep. of Korea, Sep. 27, 1994, 94-24356

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—427 **2 Claims**



1. A state-of-charge measuring method using multilevel Peukert's equation comprising the steps of:

a) determining two sets of Peukert's constants, a first set for calculating the state-of-charge when an average discharge current is on a lower side, and a second set for calculating the state-of-charge when the average discharge current is on a higher side;

b) measuring a discharge current from a battery;

c) calculating an average discharge current using said discharge current;

d) calculating a used capacity from said average discharge current;

e) comparing said average discharge current to an intermediate current;

f) classifying said average discharge current as said lower or higher side to determine which set of Peukert's constants to use;

g) obtaining an available capacity using the set of Peukert's constants obtained from said step f); and

h) determining the state-of-charge using said used capacity and said available capacity.

5,614,830

OIL MONITOR WITH MAGNETIC FIELD

Arby D. Dickert, Loudon; James F. Kirkpatrick, Oak Ridge; Eric L. Johnson, and Keith A. Hawn, both of Knoxville, all of Tenn., assignors to Computational Systems, Inc., Knoxville, Tenn.

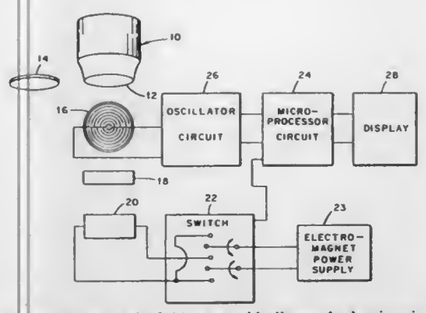
Division of Ser. No. 134,968, Oct. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 807,041, Dec. 11, 1991, Pat. No. 5,262,732. This application Jun. 6, 1995, Ser. No. 470,279

Int. Cl.[6] G01N *33/28;27/22;21/00*

U.S. Cl. 324—553 **11 Claims**

1. A method of appraising the presence of contaminants suspended within a sample of lubrication oil, said method comprising the steps of:

supporting a stagnant quantity of sample oil by a capacitance responsive surface in direct interface therewith to receive deposits of gravity biased fluids and particles suspended within said sample;



imposing a magnetic field upon said oil sample that is oriented to induce movement of magnetically responsive particles suspended within said sample toward said responsive surface;

measuring and reporting the capacitive response of said surface to gravity and magnetically induced settlement of suspended particles thereupon for a measured time period.

5,614,831

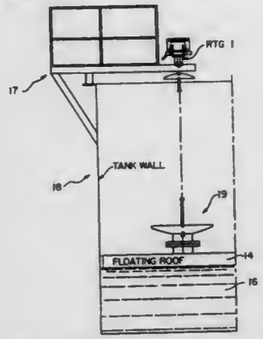
METHOD AND APPARATUS FOR LEVEL GAUGING USING RADAR IN FLOATING ROOF TANKS

Kurt O. Edvardsson, Linkoping, Sweden, assignor to Saab Marine Electronics Ab, Goteborg, Sweden

Filed Feb. 13, 1995, Ser. No. 387,410

Int. Cl.[6] G01R *27/02;* **G01S** *13/08*

U.S. Cl. 324—642 **23 Claims**



1. A device for gauging the level of a fluid by radar in a floating roof container comprising a floating roof, the device including a transmitter for feeding a first microwave signal downwards in the direction of a fluid surface of the fluid utilizing an antenna connected thereto, and a receiver built together with the transmitter for receiving a reflected microwave signal via the antenna, characterized by

collecting means located above and and fixed to the floating roof, for collecting the first microwave signal transmitted by the transmitter via free space propagation in the floating roof container producing a collected microwave signal,

a vertical wave guide passing through the floating roof and connected thereto and movable therewith for guiding the collected microwave signal to the fluid surface and for receiving a reflected microwave signal reflected from the fluid surface, and for guiding the reflected microwave signal back to the collecting means and further to the receiver, said vertical waveguide being substantially shorter in length in comparison with the height of the floating roof container.

5,614,832

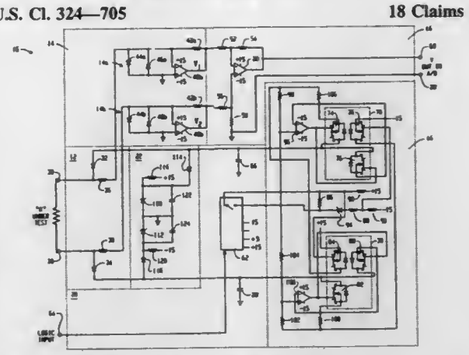
HIGH VOLTAGE PROTECTED OHMMETER

Floyd W. Olsen, Athens, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 461,571

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—705 **18 Claims**



1. An in-circuit ohmmeter, comprising:

a pair of input terminals connectable to a resistance of an unknown value;

a pair of current generators connected electrically in series for generating an electrical current to be passed through said unknown resistance to develop a differential voltage across said input terminals;

a circuit for determining the amount of said electrical current passed through said unknown resistance;

a switching circuit for simultaneously switching said pair of current generators on and off; and

a differential amplifier circuit for receiving and amplifying said differential voltage so that a value of said unknown resistance may be calculated based on said differential voltage and said determined amount of electrical current passed through said resistance.

5,614,833

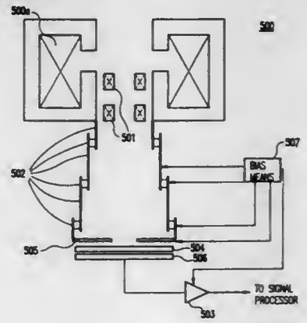
OBJECTIVE LENS WITH LARGE FIELD DEFLECTION SYSTEM AND HOMOGENEOUS LARGE AREA SECONDARY ELECTRON EXTRACTION FIELD

Steven D. Golladay, Hopewell Junction, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 329,033, Oct. 25, 1994, abandoned. This application May 5, 1995, Ser. No. 435,330

Int. Cl.[6] G01R *31/305*

U.S. Cl. 324—751 **17 Claims**



1. A method of noncontact testing of an electrical device, comprising steps of:

biasing said electrical device to a predetermined elevated potential;

deflecting an electron beam to predetermined portions of said electrical device, thereby to expose said predetermined portions of said electrical device to said electron beam, and simultaneously maintaining a predetermined spot size of said beam, electrons in said electron beam deflected to said electrical device being retarded by a retarding field objective lens assembly, wherein said beam has an energy level below 1 kV, an induced current signal being produced when said predetermined portions are exposed to said electron beam; and

detecting said induced current signal to determine characteristics of said electrical device,

wherein said deflecting step includes steps of selecting a first magnetic yoke having a first strength, selecting a second magnetic yoke having a second strength different from said first strength, and positioning said first magnetic yoke and said second magnetic yoke so as to maintain a deflection angle and said spot size, wherein said first strength is less than said second strength.

5,614,834

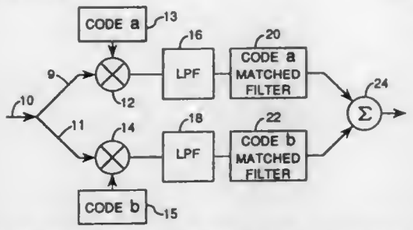
SAMPLING RECEIVERS

Alistair Black, Los Gatos; Raj B. Apte, Palo Alto, and David M. Bloom, Portola Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 15, 1995, Ser. No. 404,859

Int. Cl.[6] G01R *23/17;1/04;* **G06G** *9/00;* **G01B** *9/02*

U.S. Cl. 324—753 **3 Claims**



1. A method for optically sampling voltages and charges at an internal node of an integrated semiconductor device under test (DUT), said DUT having a substrate and internal nodes:

generating a laser sampling train of pulses having a fixed pulse repetition rate, said train of pulses interacting at said node with an electro-optic modulator formed in said substrate,

setting the modulation frequency of the signal of said DUT at a subharmonic of the laser pulse repetition rate;

applying said sampling train to said sampling receiver, in pulse repetition rate, said train of pulses interacting at said node with an electro-optic modulator formed in said substrate,

setting the modulation frequency of the signal of said DUT at a subharmonic of the laser pulse repetition rate;

applying said sampling train to said sampling receiver, in first and second tracks;

applying a first code to said train in the first of said tracks;

applying a second code to said train in the second of said tracks;

low pass filtering said first and second coded signals to remove high frequency noise components;

filtering the coded in a filter specific to each code; and

recombining the filtered signals.

5,614,835

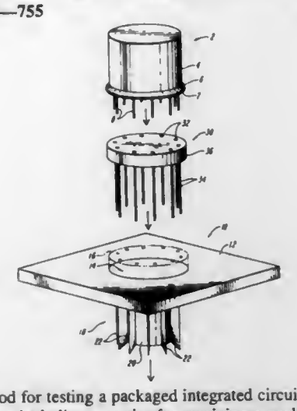
METHOD AND APPARATUS FOR HANDLING A PACKAGED INTEGRATED CIRCUIT DEVICE FOR TESTING

Robert Malone, Westford, Mass., and Brian G. Beucler, Sandown, N.H., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 7, 1995, Ser. No. 484,346

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—755 **19 Claims**



6. A method for testing a packaged integrated circuit device in a testing system including a carrier for receiving a packaged device with leads extending a certain length relative to the package, and a testing device for receiving the carrier and for testing the packaged device, the method comprising the steps of:

(a) cutting the leads of a packaged integrated circuit device to a length that is less than the certain length;

(b) inserting the packaged device with the cut leads in an adapter;

(c) inserting the adapter in the carrier; and

(d) inserting the carrier in the testing device to test the packaged device.

5,614,836

Patent Not Issued For This Number

5,614,837

PROBE APPARATUS AND BURN-IN APPARATUS

Taketoshi Itoyama, Tokorozawa; Yuichi Abe, and Masao Yamaguchi, both of Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Division of Ser. No. 251,365, May 31, 1994, Pat. No. 5,510,724. This application Jun. 1, 1995, Ser. No. 457,774

Claims priority, application Japan, May 31, 1993, 5-154435; May 31, 1993, 5-154436

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—760 **6 Claims**

1. A burn-in test apparatus comprising:

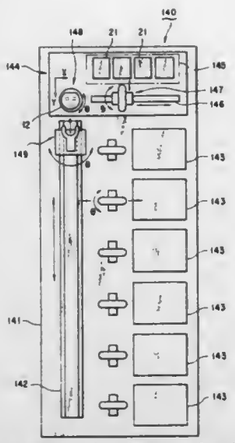
a plurality of burn-in test sections for performing burn-in tests on semiconductor chips formed on each of a plurality of semiconductor wafers;

a convey path extending along said plurality of burn-in test sections;

a pre-alignment means for pre-aligning the semiconductor wafers;

convey means, movably arranged on said convey path, for conveying the semiconductor wafers among said plurality of burn-in test sections and said pre-alignment means; and

a control section for controlling conveyance of the semiconductor wafers among said burn-in test sections and said pre-alignment means,



wherein each of said semiconductor wafers is pre-aligned by said pre-alignment means, and the pre-aligned semiconductor wafers are then conveyed to said plurality of burn-in test sections by said convey means.

5,614,838

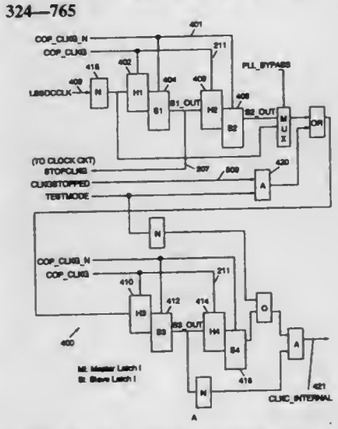
REDUCED POWER APPARATUS AND METHOD FOR TESTING HIGH SPEED COMPONENTS

Talal K. Jaber, Austin, and Steven A. Schmidt, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1995, Ser. No. 552,661

Int. Cl.[6] G04F *4/00;* **G01R** *31/28*

U.S. Cl. 324—765 **9 Claims**



1. Apparatus for reduced power dissipation testing a high speed electronic component, comprising:

a test device, for generating a test clock signal having a first frequency, said test device performing a multiphase test of said high speed electronic component;

means for generating a second frequency clock signal capable of operating said electronic component at a predetermined high speed rate; and

test control logic for controlling application of said second frequency test clock signal to circuits on said high speed electronic component to stop said second frequency clock signal during one phase of said multiphase test to reduce power dissipation in said electronic component.

5,614,839

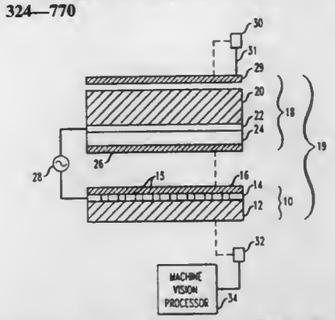
METHOD FOR OPTICALLY TESTING FLAT PANEL DISPLAY BASE PLATES

Bruno Bosacchi, Belle Mead, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 327,751, Oct. 24, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 590,696

Int. Cl.[6] G01R *31/00;31/308*

U.S. Cl. 324—770 **4 Claims**



1. A method for non-invasively testing a flat panel display plate comprised of a light-transmissive member having a first light-transmissive electrode formed on one of its surfaces, comprising the steps of:

placing a probing plate in temporary juxtaposition with the flat panel display plate to completely overlap the flat panel display plate, the probing plate including a second light-transmissive electrode and a layer of light-transmissive sensing material oriented for interpositioning between the first and second light-transmissive electrodes when the probing plate is positioned to completely overlap the flat panel display plate, the sensing material altering its light-transmissive properties in response to the presence of an electric field;

applying a voltage between the first and second electrodes to generate an electric field between them;

generating a beam of light that is directed into the probe plate for passage therethrough;

displacing the beam of light relative to the probe plate so that the beam of light scans across the probe plate; and

receiving the light beam that passes through the probe plate as the light beam scans across the plate to detect defects that manifest themselves as variations in the light transmitted through the probe plate.

5,614,840

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUITS WITH SEGMENTED, SELECTIVELY CONNECTABLE, LONG INTERCONNECTION CONDUCTORS

Cameron McClintock, Mountain View; Richard G. Cliff, Milpitas, and William Leong, San Francisco, all of Calif., assignors to Altera Corporation, San Jose, Calif.

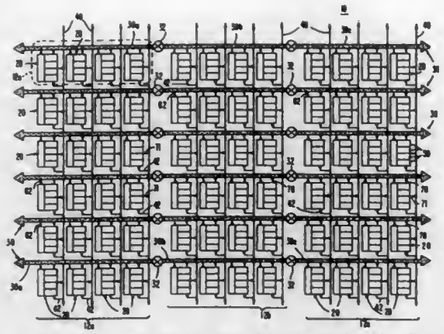
Filed May 17, 1995, Ser. No. 443,119

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **10 Claims**

1. A programmable logic array integrated circuit device comprising:

a plurality of logic regions, each of which has a plurality of input terminals and at least one output terminal, and each of which is programmable to produce at its output terminal an output logic signal which is any of a plurality of logic functions of input logic signals applied to its input terminals, said logic regions being grouped in a plurality of blocks of said logic regions such that each of said blocks includes a respective subplurality of adjacent ones of said logic regions, said blocks being disposed on said integrated circuit in a two-dimensional array of intersecting rows and columns of said blocks, each of said rows being subdivided into a plurality of



sub-rows of said blocks such that each of said sub-rows includes a respective subplurality of adjacent ones of said blocks in the row of which that sub-row is a part;

a plurality of sub-row conductors associated with each of said sub-rows, each of said sub-row conductors extending along the length of the associated sub-row;

a plurality of column conductors associated with each of said columns, each of said column conductors extending along the length of the associated column;

a plurality of block feeding conductors associated with each of said blocks, each of said block feeding conductors extending along the logic regions of the associated block;

a plurality of local feedback conductors associated with each of said blocks, each of said local feedback conductors extending along the logic regions of the associated block and being connected to the output terminal of a respective one of the logic regions of the associated block;

a first programmable switch array associated with each of said pluralities of block feeding conductors for selectively connecting said block feeding conductors to sub-row conductors associated with the sub-row which includes the block associated with said block feeding conductors;

a second programmable switch array associated with each of said logic regions for selectively connecting the input terminals of said logic region to block feeding and local feedback conductors associated with the block which includes said logic region;

a third programmable switch array associated with each of said logic regions for selectively applying the logic output signal of said logic region to sub-row and column conductors respectively associated with the sub-row and column which include the block that includes said logic region; and

a fourth programmable switch array associated with each adjacent pair of sub-rows in each row for selectively connecting sub-row conductors associated with one of the associated pair of sub-rows to sub-row conductors associated with the other of the associated pair of sub-rows.

5,614,841

FREQUENCY MULTIPLIER USING XOR/NXOR GATES WHICH HAVE EQUAL PROPAGATION DELAYS

Roland Marbot, Versailles; Jean-Claude Le Bihan, Montrouge; Andrew Cofler, Paris, and Reza Nezamzadeh-Moosavi, Bois d'Arcy, all of France, assignors to Bull S.A., Puteaux, France

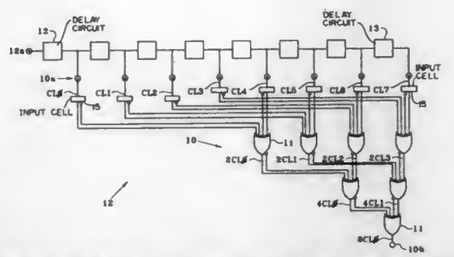
Filed Dec. 23, 1994, Ser. No. 362,892

Claims priority, application France, Dec. 24, 1993, 93 15631

Int. Cl.[6] H03K *19/21*

U.S. Cl. 326—52 **18 Claims**

1. A frequency multiplier which includes a chain of delay circuits having outputs applied to respective inputs of a tree of XOR-type gates, wherein the tree (**10**) comprises gates (**11**) of the exclusive OR type with two inputs (A, B), in which the gates are disposed in successive layers of an integrated circuit beginning with an input layer which receives input signals applied to the tree, and in which an output of each gate is connected to an input of a



gate in the adjacent layer, characterized in that each gate includes two cells (**11***a*, **11***b*) adapted to switch substantially simultaneously in response to two respective symmetrical complementary signals (A, NA; B, NB) from one of the two inputs, said cells supplying respective output signals representative of complementary functions (XOR, NXOR) of the exclusive OR type.

5,614,842

SEMICONDUCTOR INTEGRATED CIRCUIT WITH BUFFER CIRCUIT AND MANUFACTURING METHOD THEREOF

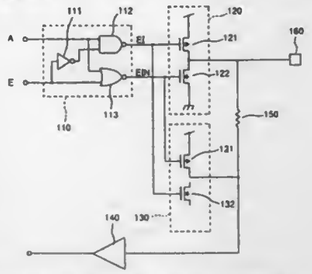
Katsuro Doke, Yokohama; Toshikazu Sei; Yasunobu Umemoto, both of Kawasaki, and Eiji Ban, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1995, Ser. No. 522,962

Claims priority, application Japan, Sep. 2, 1994, 6-210109

Int. Cl.[6] H03K *19/0948;19/00*

U.S. Cl. 326—58 **13 Claims**



1. A semiconductor integrated circuit, comprising:

a first MOS transistor of a first-conductive type having a gate, a source connected to a first voltage supply and a drain connected to an output terminal;

a second MOS transistor of a second-conductive type different from the first-conductive type having a gate, a source connected to a second voltage supply different from the first voltage supply in potential and a drain connected to the output terminal;

a third MOS transistor of the first-conductive type having a gate connected to the gate of the second MOS transistor, a source connected to the first voltage supply and a drain connected to the output terminal;

a fourth MOS transistor of the second-conductive type having a source, a drain and a gate connected to the gate of the first MOS transistor, at least one of the source and drain being floated; and

means, responsive to an enable signal and an input signal, for applying control signals to the gates of the first and second MOS transistors to turn on any one of the first and second MOS transistors based on the input signal level when the enable signal is on, whereas to turn off both the first and second MOS transistors irrespective of the input signal level when the enable signal is off.

5,614,843

CMOS-PECL LEVEL CONVERSION CIRCUIT

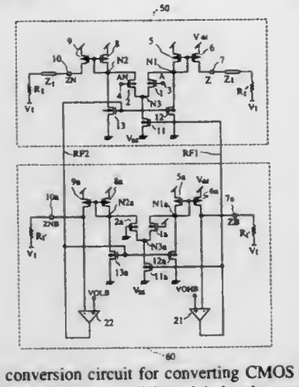
Shinji Mita, and Tadahiro Kuroda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 5, 1996, Ser. No. 583,510

Claims priority, application Japan, Jan. 9, 1995, 7-001504

Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—73 **8 Claims**



1. A level conversion circuit for converting CMOS level differential signals into PECL level differential signals, comprising:

a first input portion for receiving a first CMOS level signal as a differential signal at said CMOS level and a second CMOS level signal formed as an inverted signal of said first CMOS level signal, and outputting a first output current and a second output current based on these signals;

a first conversion output portion for outputting a first PECL level signal as said PECL level differential signal and a second PECL level signal as an inverted signal of said first PECL level signal based on said first output current and said second output current from said first input portion; and

a first current control portion for controlling said first output current and said second output current in said first conversion output portion by a first current control signal and a second current control signal so as to determine a high level and a low level in said first PECL level signal and said second PECL level signal.

5,614,844

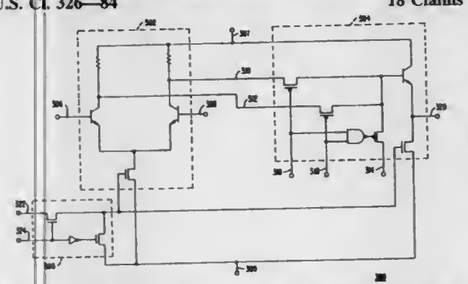
HIGH SPEED PROGRAMMABLE LOGIC ARCHITECTURE

Paul T. Sasaki; Suresh M. Menon, both of Sunnyvale, and Tsung C. Whang, Cupertino, all of Calif., assignors to Dyna Logic Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 188,499, Jan. 27, 1994, Pat. No. 5,504,440. This application Jun. 5, 1995, Ser. No. 465,595

Int. Cl.[6] H03K *19/082;19/0948*

U.S. Cl. 326—84 **18 Claims**



1. A signal conditioning circuit having an input terminal and an output terminal comprising:

an input amplifying stage coupled to the input terminal for receiving an input signal and for providing a true and a complement version of said input signal;

a polarity control circuit having a first switch transistor coupling said true version of said input signal to a polarity control circuit output and a second switch transistor coupling said complement version of said input signal to said polarity control circuit output;

a third switch transistor coupling a reference voltage to said polarity control circuit output; and

an output stage having an input coupled to said polarity control circuit output and an output coupled to the output terminal of the signal conditioning circuit.

5,614,845

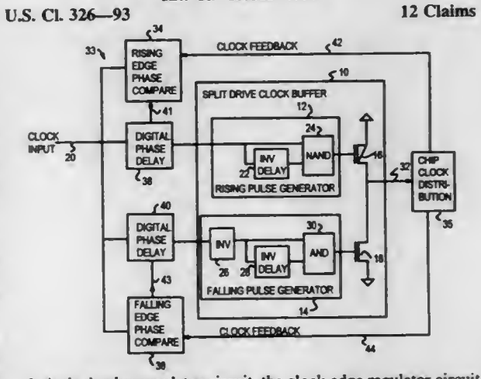
INDEPENDENT CLOCK EDGE REGULATION

Robert P. Masleid, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,997

Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—93 **12 Claims**



1. A clock edge regulator circuit, the clock edge regulator circuit coupled to a clock buffer that drives a clock distribution, the clock distribution having a rising edge and a falling edge, the circuit comprising:

an input clock signal having a rising edge and a falling edge;

rising edge regulator means responsive to the rising edge of the input clock signal and to the rising edge of the clock distribution for providing a first delayed clock signal to the clock buffer; and

falling edge regulator means responsive to the falling edge of the input clock signal and to the falling edge of the clock distribution for providing a second delayed clock signal to the clock buffer, such that the rising and falling edges of the clock distribution are independently regulated.

5,614,846

LATCH CIRCUIT WITH STATE-WALK LOGIC

Dale E. Pontius, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1995, Ser. No. 548,632

Int. Cl.[6] H03K *19/096*

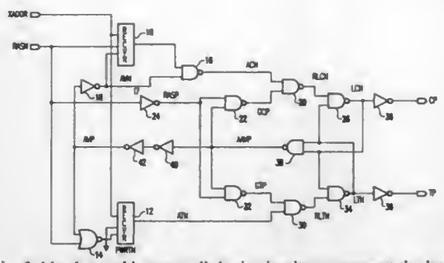
U.S. Cl. 326—93 **6 Claims**

1. A latch circuit comprising:

input means for receiving a data input signal and enabled by a clock signal to generate first and second outputs;

state-walk logic circuitry connected to said input means for evaluating the first and second outputs of the input means when enabled by a signal complementary to the clock signal; and

a latch set by the state-walk logic circuitry according to evaluation of the first and second outputs, outputs of the latch being



fed back to said state-walk logic circuitry to prevent the latch from changing state in response to the input data thereby making the transition from "set" to "latched" states without the need for multiple phases, critical timing or introduction of extra periods into any timings to account for worst case scenarios.

5,614,847

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING POWER REDUCTION MECHANISM

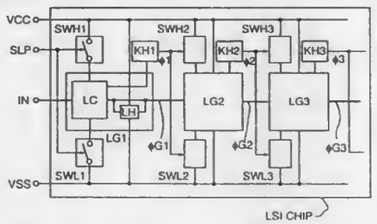
Takayuki Kawahara, Hachioji; Ryoichi Hori, Hinode-machi; Masashi Horiguchi, Kawasaki; Ryoichi Kurihara, Hadano; Kiyoo Itoh, Higashi-kurume; Masakazu Aoki, Tokorozawa; Takeshi Sakata, Kunitachi, and Kunio Uchiyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 193,765, Feb. 8, 1994, which is a continuation-in-part of Ser. No. 45,792, Apr. 14, 1993, abandoned. This application Aug. 24, 1994, Ser. No. 294,055

Claims priority, application Japan, Apr. 14, 1992, 4-094070; Apr. 14, 1992, 4-094077; Dec. 25, 1992, 4-345901; Feb. 10, 1993, 5-022392; Sep. 17, 1993, 5-231234

Int. Cl.[6] H03K *19/0948*

U.S. Cl. 326—98 **29 Claims**



1. A semiconductor integrated circuit having a plurality of MOS transistor circuits through which a signal flows, each having a first MOS transistor, and a second MOS transistor with a source-drain path connected between a first operating voltage and a second operating voltage and being in series with a source drain path of said first MOS transistor, and each said MOS transistor circuit having a logic circuit including at least one MOS transistor whose source-drain path is coupled between source-drain paths of corresponding ones of said first and second MOS transistors and further including an output node for outputting an output signal, comprising:

a control circuit connected with at least one of said plurality of MOS transistor circuits, said control circuit providing a control signal having first and second operating states received by said first and second MOS transistors for simultaneously switching both of said first and second MOS transistors to one of an ON and OFF state such that at least one of said first and second MOS transistors provides a relatively large current to flow to a source-drain path of said at least one MOS transistor of said logic circuit of another one of said MOS transistor circuits when said control signal is in said first operating state; and both said first and second MOS transistors restrict the current flow to the source-drain path of said at least one MOS transistor of said logic circuit of said another MOS transistor circuit to a value smaller than said relatively large current in response to said control signal being in said second operating state, different from said first operating state,

wherein said control signal is switched between said first and second operating states in accordance with the signal flow between said MOS transistor circuits.

5,614,848

HIGH-SPEED SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE COMPOSED OF CMOS AND BIPOLAR TRANSISTORS

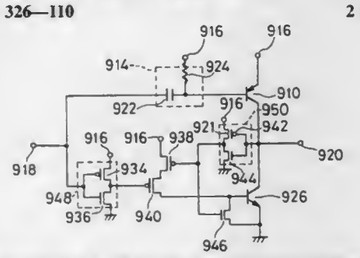
Yasuo Kaminaga; Yoji Nishio; Akihiro Tamba, all of Hitachi; Yutaka Kobayashi, Katsuta, and Masataka Minami, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 992,448, Dec. 17, 1992. This application Jun. 7, 1995, Ser. No. 482,570

Claims priority, application Japan, Dec. 19, 1991, 3-336924; Jan. 30, 1992, 4-15011; Mar. 18, 1992, 4-62602; Mar. 19, 1992, 4-63591; Mar. 19, 1992, 4-64251

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—110 **2 Claims**



1. A semiconductor integrated circuit device including one or more circuits comprising a PNP bipolar transistor, an NPN bipolar transistor, negative pulse response current supply means, a pair of inverter circuits each including a PMOS transistor and an NMOS transistor, a pair of PMOS transistors connected in series to each other, and a feedback NMOS transistor, wherein:

said PNP bipolar transistor has an emitter connected to a power supply terminal, a collector connected to an output terminal and a base connected to an input terminal through said negative pulse response current supply means;

said NPN bipolar transistor has a collector connected to said output terminal, an emitter connected to a fixed power supply terminal having a potential lower than that of said power supply terminal and a base connected to the drain of the PMOS transistor on the low potential side of said pair of PMOS transistors;

one of said pair of the inverter circuits has an input side connected to said input terminal and an output side connected to the gate of said PMOS transistor on the low potential side and the other of said pair of the inverter circuits has an input side connected to said output terminal and an output side connected to the gate of said PMOS transistor on a high potential side and the gate of said feedback NMOS transistor;

said PMOS transistor on the high potential side has a source connected to said power supply terminal;

said feedback NMOS transistor has a drain connected to the base of said NPN bipolar transistor and a source connected to the emitter of said NPN bipolar transistor; and

said negative pulse response current supply means includes a circuit element for supplying a base current to the base of said PNP bipolar transistor in response to a negative pulse input signal so that the region between the base and the emitter thereof goes to a forward bias state, continues the supply of the base current until the region between the base and the collector of said PNP bipolar transistor changes from a reverse bias state to the forward bias state, and thereafter stops the supply of the base current.

5,614,849

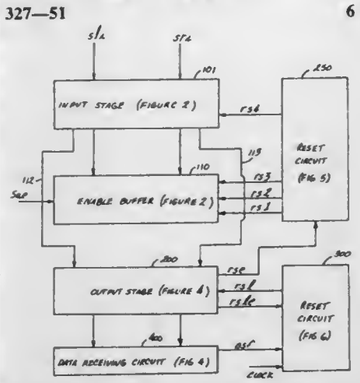
METHOD OF RESETTING A CMOS AMPLIFIER

Antonio R. Pelella, Highland Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 414,391, Mar. 31, 1995. This application Jun. 7, 1995, Ser. No. 484,812

Int. Cl.[6] H03F *3/45*

U.S. Cl. 327—51 **6 Claims**



1. In a CMOS sense amplifier circuit comprising an input stage and an output stage, a method of resetting the amplifier circuit comprising the steps of:

receiving an input signal in the input stage;

transmitting the input signal from the input stage to the output stage;

generating an input stage reset enable signal;

latching the received input signal in the output stage;

separately generating an output stage reset enable signal;

resetting the input stage in response to the input stage reset enable signal and in preparation for a receipt of a next input signal; and

subsequently resetting the output stage in response to the output stage reset enable signal.

5,614,850

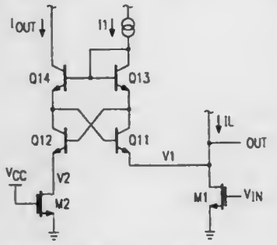
CURRENT SENSING CIRCUIT AND METHOD

Marco Corsi, Dallas, Tex., and Gabriel A. Rincon, Margate, Fla., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 9, 1994, Ser. No. 353,488

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—55 **26 Claims**



1. A current sensing circuit, comprising:

a circuit output terminal;

a circuit input terminal;

an output transistor coupled between said circuit output terminal and a terminal for receiving a power supply, and having a gate input coupled to said circuit input terminal for enabling the output transistor;

a replicator circuit comprising a cross-coupled quad circuit coupled to said circuit output terminal and to a reference voltage node and having an output for producing a replicate output current; and

a second transistor coupled between said reference voltage node and said power supply, and having a control terminal coupled to a voltage source for generating a voltage proportional to the current flowing in said second transistor;

wherein said replicate output current is proportional to the product of the current flowing in said output transistor multiplied by a ratio comprising the device size of said second transistor over the device size of said output transistor; wherein said replicator circuit comprises:

a first terminal for receiving a current;

a second terminal coupled to said replicate output current;

a first bipolar transistor having a collector and a base coupled together and to said first terminal, and having an emitter coupled to a first cross-coupling node;

a second bipolar transistor having a collector coupled to said second terminal, having a base coupled to the base of said first transistor, and having an emitter coupled to a second cross-coupling node;

a third bipolar transistor having a collector coupled to said first cross coupling node and having a base coupled to said second cross-coupling node, and having its emitter coupled to said circuit output terminal; and

a fourth bipolar transistor having a base coupled to said first cross coupling node and a collector coupled to said second cross-coupling node, and having its emitter coupled to said voltage reference node;

wherein the cross-coupled quad circuit is formed from said first, second, third and fourth bipolar transistors which have equal emitter areas.

5,614,851

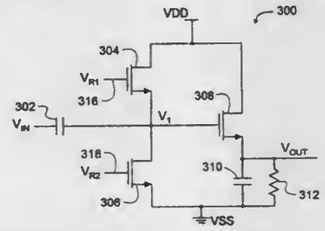
HIGH-ACCURACY, LOW-POWER PEAK-TO-PEAK VOLTAGE DETECTOR

Reuven Holzer, Herzlia, and Rafael Fried, Caesarea, both of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 9, 1995, Ser. No. 386,554

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—58 **19 Claims**



1. Peak-to-peak voltage detector comprising:

a clamp circuit including:

an input receiving an input signal having an alternating current component with a peak-to-peak magnitude,

a first capacitor receiving the input signal and outputting a first voltage on a line in response to the input signal,

a first transistor coupled to the line,

means for providing a first reference voltage to an input of said first transistor, and

a first resistive element coupled to the line; and

a peak-detect circuit including:

a second transistor coupled to the line to receive the first voltage output by said first capacitor, said second transistor having an output terminal providing a second voltage on an output line,

a second capacitor coupled to the output line,

a second resistive element coupled to the output line, and

the output terminal being connectable to a reference potential only through said second capacitor and said second load element;

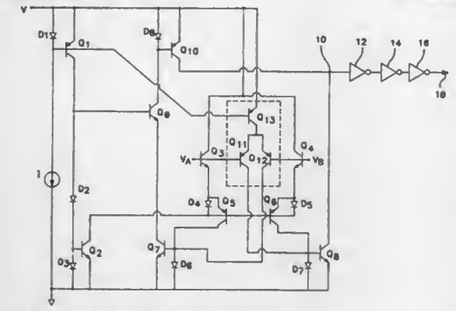
wherein the second voltage on the output line corresponds to the peak-to-peak magnitude of the alternating current component of the input signal.

5,614,852

WIDE COMMON MODE RANGE COMPARATOR AND METHOD

Raymond L. Giordano, Flemington, and Harold A. Wittlinger, Pennington, both of N.J., assignors to Harris Corp., Melbourne, Fla.

Filed Aug. 8, 1995, Ser. No. 512,417
Int. Cl.[6] H03K *5/22*
U.S. Cl. 327—63 **33 Claims**



16. A comparator circuit comprising:

first and second input transistors;

third and fourth input transistors complementary to said first and second transistors, said first through fourth input transistors for being controlled by input voltages which are to be compared;

a fifth transistor operatively connected to said third and fourth transistors;

sixth and seventh transistors operatively connected to said first and second transistors;

a diode load for said first and fourth transistors; and

a diode load for said second and third transistors.

5,614,853

DIFFERENTIAL LOAD STAGE WITH STEPWISE VARIABLE IMPEDANCE, AND CLOCKED COMPARATOR COMPRISING SUCH A LOAD STAGE

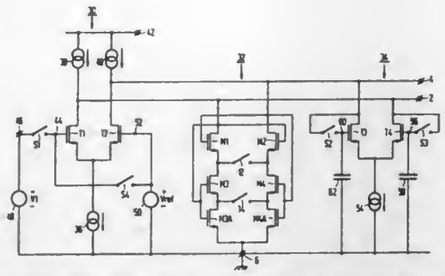
Antonia C. Van Rens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 544,495, Oct. 18, 1995, Pat. No. 5,539,339, which is a continuation of Ser. No. 259,948, Jun. 15, 1994, abandoned. This application May 2, 1996, Ser. No. 642,013
Claims priority, application Belgium, Jun. 17, 1993, 09300619
Int. Cl.[6] H03K *5/153;* **G11C** *27/02*
U.S. Cl. 327—77 **1 Claim**

1. A clocked comparator for comparing an input voltage and a reference voltage, said input voltage appearing at a first input terminal of the clocked comparator during a first state of a clock signal to an output voltage appearing between a first and a second output terminal of the clocked comparator during a second state of the clock signal, the reference voltage being coupled to a second input terminal the clocked comparator comprises:

an input differential amplifier having a first and a second input, and having a first and a second output coupled to the first and the second output terminal, respectively,

first switching means for coupling the input voltage to the first and the second input of the differential amplifier during the first state of the clock signal,



a sample-and-hold circuit comprising a differential amplifier having a first input coupled to a first capacitor and having a second input coupled to a second capacitor and second and third switching means for coupling respectively the first and the second input of the differential amplifier of the sample-and-hold circuit to the second and the first output terminal during the first state of the clock signal,

fourth switching means for coupling the reference voltage both to the first and to the second input of the input differential amplifier during a third state of the clock signal, the third state occurring after the first state and before the second state of the clock signal,

a load stage comprising a first, a second, a third, a fourth, a fifth and a sixth transistor, each having a gate, a source and a drain, and comprising a first switch and a second switch,

the drain of the first transistor and the gates of the second, the third and the fifth transistor being coupled to the first output terminal,

the drain of the second transistor and the gates of the first, the fourth and the sixth transistor being coupled to the second output terminal, the source of the first transistor being coupled to the drain of the third transistor, the source of the second transistor being coupled to the drain of the fourth transistor, the source of the third transistor being coupled to the drain of the fifth transistor, and the source of the fourth transistor being coupled to the drain of the sixth transistor,

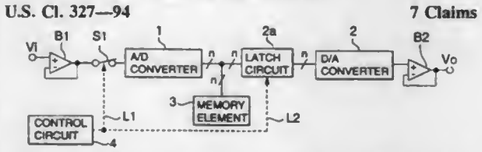
the sources of the fifth and the sixth transistor being coupled to a point of fixed potential, the first switch being connected between the sources of the first and the second transistor and the second switch being connected between the sources of the third and the fourth (M4) transistor, which first switch is closed in the second state of the clock signal and which second switch is closed in the first state of the clock signal and is open in the third state of the clock signal.

5,614,854

SAMPLE/HOLD CIRCUIT HAVING AN ANALOG-TO-DIGITAL CONVERTER AND A NONVOLATILE MEMORY FOR STORING HOLD VOLTAGE DATA IN DIGITAL FORM

Kaeko Kuga, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 28, 1995, Ser. No. 519,954
Claims priority, application Japan, Aug. 31, 1994, 6-207638
Int. Cl.[6] G11C *27/02*
U.S. Cl. 327—94 **7 Claims**



1. A sample/hold circuit which receives a voltage level at an input terminal thereof at a specific timing, and outputs the received voltage level in the form of a hold voltage, said sample/hold circuit comprising:

analog-to-digital converting means for receiving a voltage level at an input terminal thereof and converting the received voltage level into digital data;

latch means for receiving digital data from the analog-to-digital data converting means and latching the data to the digital-to-analog converting means in the form of a hold voltage;

nonvolatile memory means for receiving digital data from the analog-to-digital converting means and storing the digital data in the form of hold voltage data and for supplying the hold voltage data to the latch means;

digital-to-analog converting means for converting the hold voltage data into an analog signal and outputting the analog signal in the form of a hold voltage; and

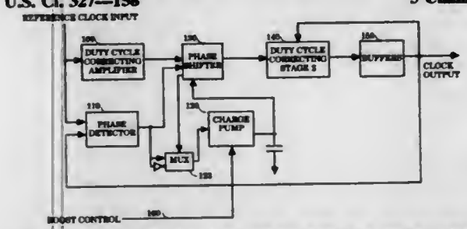
control means for controlling the operation of the sample/hold circuit alternatively between a sampling mode wherein a voltage level is received by the analog-to-digital converting means and converted into digital data and a holding mode wherein no voltage level is received by the analog-to-digital converting means while a hold voltage is outputted from the digital to analog converting means.

5,614,855

DELAY-LOCKED LOOP

Thomas H. Lee, Cupertino; Kevin S. Donnelly, San Francisco; Tsyr-Chyang Ho, San Jose, and Mark G. Johnson, Los Altos, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 196,583, Feb. 15, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 512,597
Int. Cl.[6] H03K *5/13;* **H03L** *7/00*
U.S. Cl. 327—158 **3 Claims**



1. A circuit for generating an output signal in a predetermined timing relationship with an input signal, comprising:

a duty cycle correcting amplifier coupled to receive the input signal, said amplifier correcting the duty cycle of the input signal to a predetermined duty cycle to produce a duty cycle corrected input signal;

a phase detector coupled to receive the input signal and the output signal, said phase detector generating an output signal indicative of whether the output signal is ahead or behind the input signal in phase;

a charge pump coupled to receive the output of the phase detector, said charge pump generating an output current; and

a phase shifter coupled to receive the duty cycle corrected input signal, the output signal from the phase detector and the output current from the charge pump, said phase shifter performing a phase shift of the duty cycle corrected input signal to produce the output signal, said phase shifter driven by the output current of the charge pump, said direction of the phase shift indicated by the phase detector;

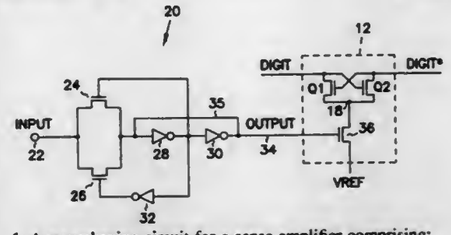
wherein the phase of the output signal dithers around the phase of the input signal such that the output of the phase detector is a signal of a first state 50% of the time, on average.

5,614,856

WAVESHAPING CIRCUIT GENERATING TWO RISING SLOPES FOR A SENSE AMPLIFIER PULLDOWN DEVICE

Alan J. Wilson, Nampa; Russell J. Baker, Meridian, and Aaron Schoenfeld, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 11, 1996, Ser. No. 613,681
Int. Cl.[6] H03K *5/12*
U.S. Cl. 327—170 **9 Claims**



1. A waveshaping circuit for a sense amplifier comprising:

a first transistor having a gate, a source and a drain;

a second transistor having a gate, a source and a drain, wherein the drains of the first and second transistors are coupled to a first input to receive an input signal of the waveshaping circuit and the sources of the first and second transistors are coupled to a first output;

a switching device having a second input coupled to the first output and the switching device having a second output coupled to the gate of the first transistor and a compliment of the second output coupled to the gate of the second transistor; and

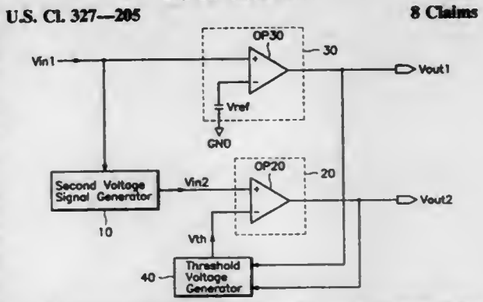
a delay device having a third input coupled to the gate of the first transistor and the delay device having a third output coupled to the first output to generate an output signal of the waveshaping circuit.

5,614,857

HYSTERESIS SYSTEM WITH CONSTANT THRESHOLD VOLTAGE

Chang-ok Lim, Kwangmyeong-si, and Young-gi Ryou, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 29, 1996, Ser. No. 609,110
Claims priority, application Rep. of Korea, Jun. 12, 1995, 95-15441
Int. Cl.[6] H03K *3/037*
U.S. Cl. 327—205 **8 Claims**



1. A hysteresis system with a constant threshold voltage, comprising:

a second voltage signal generator receiving a first voltage signal for generating a second voltage signal which is gradually increased when the first voltage signal inputted to the hysteresis system is high and is gradually reduced when the first voltage signal inputted to the hysteresis system is low;

a voltage comparator for comparing a threshold voltage signal with the second voltage signal generated from the second voltage signal generator and producing a corresponding value;

a threshold voltage initialization circuit for comparing a reference voltage with the first voltage signal inputted, and producing a threshold voltage initialization signal in accordance with a corresponding to a result; and

a threshold voltage generator to which an output signal produced from the voltage comparator and the threshold voltage initialization signal produced from the threshold voltage initialization circuit are fed back, and for producing the threshold voltage signal as a result of such feedback value.

5,614,858

TIME DELAYED FILTER MONOLITHICALLY INTEGRATABLE

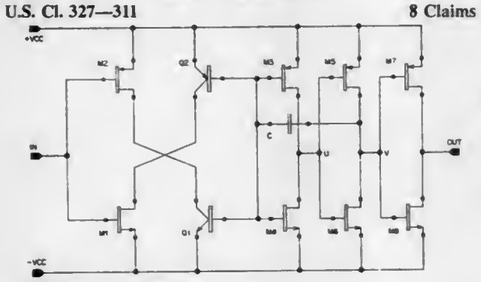
Alessio Pennisi, Milan, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 12, 1994, Ser. No. 180,213

Claims priority, application European Pat. Off., Jan. 29, 1993, 93830033

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—311 **8 Claims**



1. A time delay filter comprising:

an input terminal;

at least one bipolar transistor coupled to the input terminal, the at least one bipolar transistor having a base terminal:

at least one field-effect transistor, the at least one field-effect transistor having a gate terminal, wherein the base terminal of the bipolar transistor is connected directly to the gate terminal of the field-effect transistor;

an output terminal coupled to the field-effect transistor;

a voltage supply generator having first and second terminals; and

at least one drive transistor connected in series with the at least one bipolar transistor between the first and second terminals of the voltage supply generator, wherein the drive transistor has a control terminal forming the input terminal of the time delay filter; and

wherein the at least one bipolar transistor includes a PNP transistor,

the at least one field-effect transistor includes an N-channel type transistor, and the at least one drive transistor includes a P-channel type field-effect transistor: and

wherein: the at least one bipolar transistor includes a first and a second bipolar transistor;

the at least one drive transistor includes a first and a second field-effect transistor;

the at least one field-effect transistor includes a third and fourth field-effect transistor;

each transistor has a first and a second terminal and a control terminal;

the control terminals of the first and second field-effect transistors are connected together at a first circuit node to which the input terminal is coupled;

the first terminal of the second field-effect transistor, the first terminal of the third field-effect transistor, and the second terminal of the first bipolar transistor are connected to the first terminal of the voltage supply generator;

the first terminal of the first field-effect transistor, the first terminal of the fourth field-effect transistor, and the second terminal of the second bipolar transistor are connected to the second terminal of the voltage supply generator;

the first terminal and the control terminal of the first bipolar transistor are connected to the second terminal of the first field-effect transistor and the control terminal of the third field-effect transistor, respectively;

the first terminal and the control terminal of the second transistor are connected to the second terminal of the second field-effect transistor and the control terminal of the fourth field-effect transistor, respectively; and

the second terminal of the third and fourth field-effect transistors, respectively, are connected together at a second circuit node to which the output terminal is coupled.

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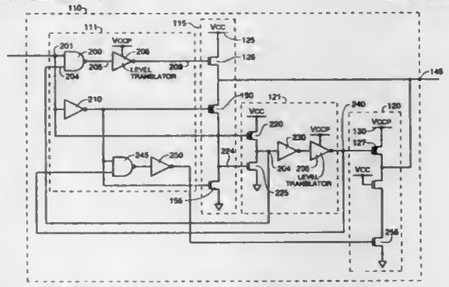
TWO STAGE VOLTAGE LEVEL TRANSLATOR

Adrian E. Ong, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 4, 1995, Ser. No. 511,344

Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—333 **16 Claims**



1. A voltage level translator circuit, comprising:

a) a first driver circuit in electrical communication with a supply node connected to a supply potential;

b) a second driver circuit in electrical communication with a pumped supply node connected to a pumped potential;

c) a common node in electrical communication with an output node of said first driver circuit and an output node of said second driver circuit, said first driver circuit driving a potential of said common node toward the supply potential and said second driver circuit driving the potential of said common node toward the pumped potential;

d) a detector circuit in electrical communication with said first and said second driver circuits, said detector circuit configured to monitor an operation of said first driver circuit; and

e) a control circuit in electrical communication with said detector circuit and in electrical communication with said first and said second driver circuits, said control circuit configured to respond to a signal generated in said detector circuit to control an actuation and deactuation of said first and said second driver circuits.

5,614,860

VOLTAGE-CONTROLLED FILTER CIRCUIT, A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE FOR SIGNAL PROCESSING, AND A SIGNAL READING APPARATUS USING THE CIRCUIT AND THE APPARATUS

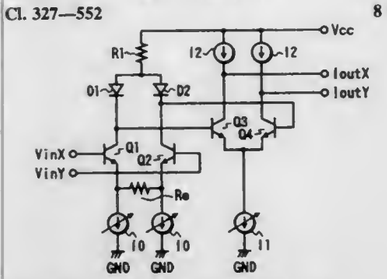
Katsumi Osaki; Takashi Nara, and Hitoshi Watanabe, all of Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, and Akita Electronics Co., Ltd., Akita, both of Japan

Filed Apr. 26, 1995, Ser. No. 427,858

Claims priority, application Japan, May 12, 1994, 6-123006; Apr. 18, 1995, 7-115332

Int. Cl.[6] H03B *1/00*

U.S. Cl. 327—552 **8 Claims**



1. A voltage-controlled filter circuit comprising:

a plurality of capacitors;

a variable conductance circuit including:

a pair of bipolar junction input transistors whose bases are supplied with input voltage signals;

a pair of first variable current sources, one first variable current source being electrically connected to the emitter of each bipolar junction input transistor;

a load resistor commonly coupled to each collector of said pair of bipolar junction input transistors via unidirectional devices;

a pair of bipolar junction differential transistors whose bases are supplied with outputs of the collectors of said pair of bipolar junction input transistors, respectively, wherein the collectors of the pair of bipolar junction differential transistors are coupled to the plurality of capacitors, respectively;

a second variable current source commonly coupled to each emitter of said pair of bipolar junction differential transistors; and,

two current source loads, each current source load being coupled to one of said collectors of said pair of bipolar junction differential transistors, respectively, so that a half of a current value from said second variable current source flows througb the pair of bipolar junction differential transistors;

means for obtaining the current value from said second variable current source and a current value from each of said first variable current sources by multiplexing a plurality of reference current sources in accordance with control signals, in order to set a desired cutoff frequency; and,

a control circuit including a first register for storing first data associated with a variable range of a frequency of the input voltage signals and a second register for storing second data for specifying the cutoff frequency of the voltage-controlled filter circuit, the control circuit setting a ratio of the two current values of the first and second variable current sources;

wherein the desired cutoff frequency of the voltage-controlled filter circuit is set by the ratio of the two current values of the first and second variable current sources; and,

wherein the two current values of the first and second variable current sources are set by the control signals supplied from outside of the voltage-controlled filter circuit.

5,614,861

N-PHASE MODULATED SIGNAL DEMODULATION SYSTEM WITH CARRIER REPRODUCTION

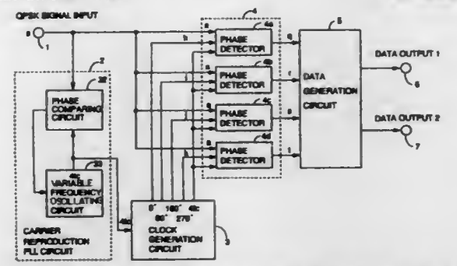
Hiroyuki Harada, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,043

Claims priority, application Japan, May 18, 1995, 7-120103

Int. Cl.[6] H04L *27/227*

U.S. Cl. 329—308 **16 Claims**



1. An N-phase phase modulated signal demodulation system comprising:

a carrier reproduction PLL circuit for generating a reproduction reference clock having a frequency which is N times that of a carrier frequency which is synchronized with an N-phase phase modulated signal inputted from an input terminal;

a clock generation circuit for dividing said reproduction reference clock by 1/N and for generating N clocks, each of which has different phase offset by 360°/N;

a phase detector which detects a phase of said N-phase phase modulated signal by using said N clocks obtained from said clock generation circuit together with an input of said N-phase phase modulated signal; and

a data generating circuit which outputs corresponding digital data according to the phase detected by said phase detector.

5,614,862

DIGITAL DEMODULATOR FOR A FREQUENCY MODULATED SIGNAL AND AN AMPLITUDE MODULATED SIGNAL

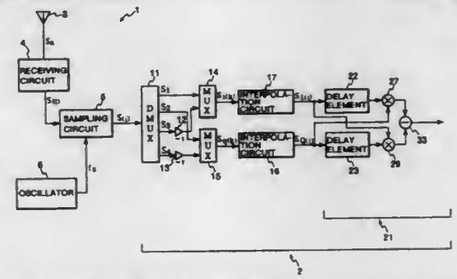
Weimin Sun, Nara, Japan, assignor to Icom Incorporated, Osaka, Japan

Filed Mar. 26, 1996, Ser. No. 622,655

Claims priority, application Japan, Oct. 27, 1995, 7-281062

Int. Cl.[6] H03D *1/00;3/00;5/00*

U.S. Cl. 329—341 **12 Claims**



1. A digital demodulator comprising:

time sequential signal generating means for receiving a digital signal and producing a first signal, which includes of a sequence of odd-numbered data in said received digital signal and whose sign is inverted data by data, and a second signal, which includes a sequence of even-numbered data in said received digital signal and whose sign is inverted data by data;

first interpolation means for inserting data having a value of zero between individual pieces of data of said first signal output from said time sequential signal generating means;

second interpolation means for inserting data having a value of zero between individual pieces of data of said second signal output from said time sequential signal generating means; and

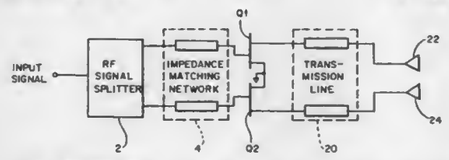
arithmetic operation means for producing a digital demodulated signal from output signals of said first interpolation means and said second interpolation means.

5,614,863

METHOD AND SYSTEM FOR INCREASING THE POWER EFFICIENCY OF A BALANCED AMPLIFIER/ ANTENNA COMBINATION

John A. Pierro, East Meadow; Richard L. Clouse, Jr., Huntington, and Ronald Rudish, Commack, all of N.Y., assignors to AIL Systems, Inc., Deer Park, N.Y.

Filed Oct. 31, 1995, Ser. No. 550,948
Int. Cl.[6] H03F *3/24*
U.S. Cl. 330—1 R **10 Claims**



7. In combination:

a power amplifier circuit, the power amplifier circuit being responsive to an input signal and generating at least two output signals in response thereto;

a balanced antenna exhibiting a relatively high impedance at the second harmonic of the input signal; and

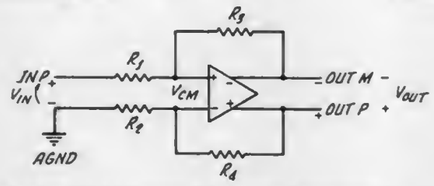
an impedance inverter operatively coupled between the power amplifier circuit and the balanced antenna to provide the at least two output signals to the balanced antenna, the impedance inverter reflecting back to the power amplifier circuit a substantially short circuit at the second harmonic of the input signal.

5,614,864

SINGLE-ENDED TO DIFFERENTIAL CONVERTER WITH RELAXED COMMON-MODE INPUT REQUIREMENTS

Frederic M. Stubbe, Irvine; Daryush Shamlou, Laguna Niguel; Kashif A. Ahmed, and Guangming Yin, both of Irvine, all of Calif., assignors to Rockwell Science Center, Inc., Newport Beach, Calif.

Filed Sep. 29, 1995, Ser. No. 536,405
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—69 **8 Claims**



4. A method of generating a differential output signal V_{OUT} by a single-ended input V_{IN}, comprising the steps of:

(a) applying said single-ended input V_{IN} to a fully differential amplifier having a positive input terminals coupled to said single-ended input V_{IN} and a negative input terminal coupled to a predetermined fixed voltage, said fully differential amplifier having a predetermined common-mode voltage V_{CM};

(b) coupling a first resistor ("R_1") between said single-ended input and said positive input terminal of said fully differential amplifier;

(c) coupling a second resistor ("R_2") between said predetermined fixed voltage and said negative input terminal of said fully differential amplifier;

(d) coupling a third resistor ("R_3") between said positive input terminal and a negative output terminal of said fully differential amplifier;

(d) coupling a fourth resistor ("R_4") between said negative input terminal and a positive output terminal,

(e) setting values of said R_1, R_2, R_3, and R_4 such that their values are in accordance with

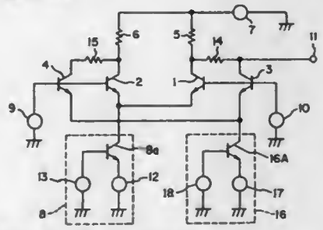
$$\frac{R_3}{R_1} \neq \frac{R_4}{R_2} .$$

5,614,865

DIFFERENTIAL AMPLIFIER WITH IMPROVED OPERATIONAL RANGE

Mitsutada Hanajima, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 526,883
Claims priority, application Japan, Sep. 30, 1994, 6-261736
Int. Cl.[6] H04F *3/45*
U.S. Cl. 330—254 **15 Claims**



1. A differential amplifier comprising:

a first switching element having an input terminal, an output terminal and a control terminal;

a second switching element having an input terminal, an output terminal and a control terminal;

a first current source connected to said output terminals of said first and second switching elements for predetermined activation and deactivation of said first and second switching elements;

a third switching element having an input terminal, an output terminal and a control terminal, wherein said control terminal of said third switching element is connected to said control terminal of said first switching element;

a fourth switching element having an input terminal, an output terminal and a control terminal, wherein said control terminal of said fourth switching element is connected to said control terminal of said second switching element;

first and second resistors connected between respective said input terminals of said first and second switching elements and a first voltage source;

a second current source connected to said output terminals of said third and fourth switching elements for predetermined activation and deactivation of said third and fourth switching elements;

a third resistor connected between said input terminal of said first switching element and said input terminal of said third switching element; and

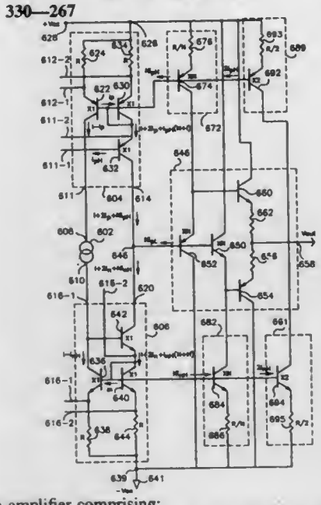
a fourth resistor connected between said input terminal of said second switching element and said input terminal of said fourth switching element.

5,614,866

ULTRA HIGH GAIN AMPLIFIER

Ronald N. Dow, San Jose, Calif., assignor to Elantec, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 328,848, Oct. 25, 1994, Pat. No. 5,479,133. This application Dec. 20, 1995, Ser. No. 575,292
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—267 **10 Claims**



1. An amplifier comprising:

first and second current sources each having a first input for receiving a programming current, a second input for receiving an input signal current, and a first output for providing a signal current, the second current source being complementary of the first current source, the first output of the first current source being coupled to the first output of the second current source to form a gain node;

third and fourth current sources each having an first terminal coupled to the second input of the respective first and second current sources for providing a correction current and each having a second terminal for providing a biasing current, the fourth current source being complementary of the third current source;

an output buffer having an input node coupled to the gain node for receiving the output signal current and having an output node for providing an amplified drive current, the output buffer comprising:

a first transistor of a first type having a base coupled to the input node of the output buffer, having an emitter coupled to the second terminal of the third current source, and having a collector,

a first transistor of the second type having a base coupled to the base of the first transistor of the first type, having an emitter coupled to the second terminal of the fourth current source, and having a collector,

a second transistor of the first type having a base coupled to the emitter of the first transistor of the second type, having an emitter coupled to the output node of the buffer, and having a collector, and

a second transistor of the second type having a base coupled to the emitter of the first transistor of the first type, having an emitter coupled to the emitter of the second transistor of the first type, and having a collector;

a fifth current source having a first terminal coupled to the output node of the buffer and having a second terminal coupled to the second input of the first current source to substantially increase an output impedance of the first current source; and

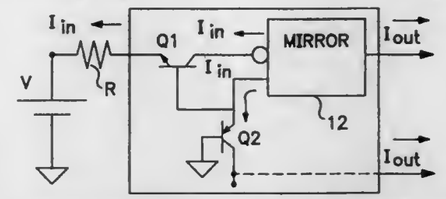
a sixth current source having a first terminal coupled to the output of the buffer and having a second terminal coupled to the second input of the second current source for providing a compensation current to substantially increase an output impedance of the second current source.

5,614,867

CURRENT FOLLOWER WITH ZERO INPUT IMPEDANCE

Gerald M. Cotreau, Melbourne, Fla., assignor to Harris Corp., Melbourne, Fla.

Filed Jun. 28, 1994, Ser. No. 266,567
Int. Cl.[6] H03F *3/04*
U.S. Cl. 330—288 **22 Claims**



1. A method of providing an output current at one voltage equal to an input current at another voltage in which an input impedance for the input current is zero comprising the steps of:

a) providing an input current at a first voltage;

b) passing the input current through a first transistor;

c) providing a copy of the input current passed through the first transistor;

d) passing the copy of the input current through a PN junction;

e) controlling the base voltage of the first transistor responsively to the current passed through the PN junction and thereby change the junction voltage of the PN junction so that a change in the input current does not cause a change in emitter voltage of the first transistor and thereby providing zero input impedance; and

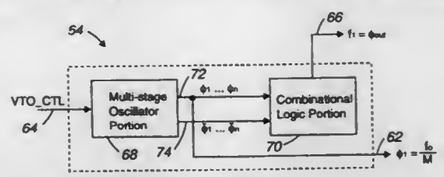
f) providing an output current at a second voltage related to the copy of the input current.

5,614,868

PHASE LOCKED LOOP HAVING VOLTAGE CONTROLLED OSCILLATOR UTILIZING COMBINATIONAL LOGIC

Edward T. Nielson, Vence, France, assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Oct. 24, 1995, Ser. No. 547,418
Int. Cl.[6] H03B *5/24*; **H03L** *7/099*
U.S. Cl. 331—1 A **34 Claims**



1. A phase locked loop comprising:

a comparator responsive to an input clock and a VCO clock, said input clock having an input clock frequency and said VCO clock having a VCO clock frequency, said comparator being operative to compare a signal derived from said input clock frequency and a signal derived from said VCO clock frequency and to develop a comparator output signal in response thereto;

a VCO controller responsive to said comparator output signal and operative to produce a VCO control signal; and

a VCO including

(a) a multi-stage oscillator portion configured to oscillate at said VCO clock frequency during a steady state condition

under the control of said VCO control signal, said oscillator portion being operative to develop a plurality of clock phases at said VCO clock frequency, wherein said VCO control signal is responsive to one of said plurality of clock phases; and

(b) a combinational logic portion responsive to at least some of said plurality of clock phases and operative to combine said at least some clock phases to create an output clock having an output clock frequency that is a multiple of said VCO clock frequency.

5,614,869

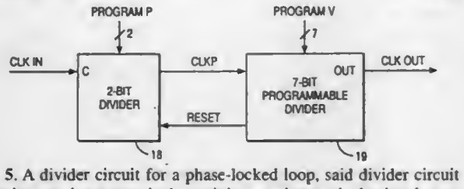
HIGH SPEED DIVIDER FOR PHASE-LOCKED LOOPS

Christopher J. Bland, San Jose, Calif., assignor to MicroClock Incorporated, San Jose, Calif.

Filed Dec. 20, 1995, Ser. No. 575,371

Int. Cl.[6] H03K *21/38;* **H03L** *7/193*

U.S. Cl. 331—1 A **10 Claims**



5. A divider circuit for a phase-locked loop, said divider circuit having an input terminal receiving an input clock signal at a frequency f_{IN} and an output terminal sending an output clock signal f_{OUT}, said divider circuit comprising

a first counter circuit connected to said input terminal, said first counter circuit responsive to said input clock signal to count up to T, a multiple of 2, and resetting itself to generate a first counter clock signal at a frequency of f_{IN} divided by T at an output node; and

a second counter circuit connected to said output node of said first counter circuit and to said output terminal, said second counter circuit responsive to said first counter clock frequency to count up to a first amount V and resetting itself to generate a second counter clock signal at said output terminal at a frequency of said first counter clock frequency divided by V and A, a number of clock cycles to restart said count, said second counter circuit generating a reset signal when said count reaches said amount V;

wherein said first counter circuit is responsive to said reset signal, said first counter circuit holding its count by a second amount P upon receiving said reset signal so that

$$f_{OUT} = \frac{f_{IN}}{T(V+A)+P}$$

5,614,870

PHASE LOCK LOOP WITH IDLE MODE OF OPERATION DURING VERTICAL BLANKING

Donald J. Sauer, Allentown; William E. Rodda, Trenton, and Edward R. Campbell, III, Tabernacle, all of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

PCT No. PCT/US94/04304, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/26041, PCT Pub. Date Nov. 10, 1994

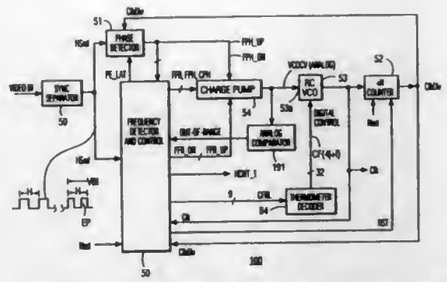
PCT Filed Apr. 19, 1994, Ser. No. 530,346

Claims priority, application United Kingdom, Apr. 20, 1993, 9308141; Jun. 4, 1993, 9311560

Int. Cl.[6] H03L *7/087*

U.S. Cl. 331—14 **7 Claims**

1. An apparatus for generating an oscillatory signal that is locked to a synchronizing signal, comprising:



a source of said synchronizing signal at a frequency that is related to a horizontal scanning frequency having a value that is different during a vertical trace interval from that during a vertical blanking interval of a vertical scanning cycle;

a controllable oscillator for generating said oscillatory signal;

means for generating a reference signal;

means responsive to said oscillatory and synchronizing signals for measuring a frequency error therebetween, during a given period of said reference signal, and for generating a signal that is indicative of said frequency error, said frequency error indicative signal being coupled to a control input of said oscillator in a negative feedback manner to correct for said frequency error;

means coupled to said frequency error indicative signal generating means and responsive to said reference signal for counting the number of periods of said reference signal in which said frequency error exceeds a first value; and

means coupled to said oscillator for enabling the correction of said frequency error when the number of said counted periods exceeds a second value, and for disabling the correction of said error as long as said second value is not exceeded, wherein said frequency error, during said vertical blanking interval, exceeds said first value and the number of said counted periods does not exceed said second value.

5,614,871

VOLTAGE-CONTROLLED OSCILLATOR CIRCUIT

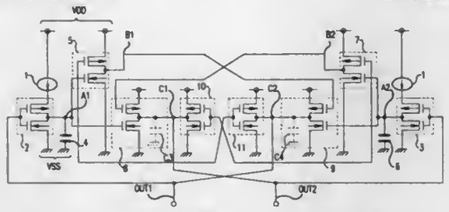
Satoru Miyabe, Tokyo, Japan, assignor to Nippon Precision Circuits Inc., Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,686

Claims priority, application Japan, Jan. 25, 1995, 7-009972; Jan. 9, 1996, 8-001562

Int. Cl.[6] H03B *5/24*

U.S. Cl. 331—111 **14 Claims**



1. A voltage-controlled oscillator circuit comprising:

a current source for producing an electric current which is controlled by an input voltage;

a first and a second CMOS inverters connected with said current source;

a first capacitive element connected with an output of said first CMOS inverter and electrically charged by the electric current from said current source via said first CMOS inverter, said first capacitive element being discharged via said first CMOS inverter;

a first comparator circuit for producing an output assuming a different state, depending on whether a charging voltage for said first capacitive element has exceeded a reference voltage or not;

a second capacitive element connected with an output of said second CMOS inverter and electrically charged by the electric current from said current source via said second CMOS inverter, said second capacitive element being discharged via said second CMOS inverter;

a second comparator circuit for producing an output assuming a different state, depending on whether a charging voltage for said second capacitive element has exceeded a reference voltage or not;

a first dynamic latch circuit consisting of a series combination of an N-channel MOS transistor and a P-channel MOS transistor together with an output terminal connected to a junction of said N-channel and P-channel MOS transistors, one of said MOS transistors having a gate receiving the charging voltage for said first capacitive element, the other of said MOS transistors having a gate receiving the output from said second comparator circuit;

a second dynamic latch circuit consisting of a series combination of an N-channel MOS transistor and a P-channel MOS transistor together with an output terminal connected to a junction of said N-channel and P-channel MOS transistors, one of said MOS transistors having a gate receiving the charging voltage for said second capacitive element, the other of said MOS transistors having a gate receiving the output from said first comparator circuit;

wherein an input of said first CMOS inverter is connected with one of an inverted output of said first dynamic latch circuit or an output of said second comparator circuit, an input of said second CMOS inverter is connected with one of an inverted output of said second dynamic latch circuit or an output of said first comparator circuit.

5,614,872

SEMICONDUCTOR DEVICE HAVING CR OSCILLATION CIRCUIT AND RESET CIRCUIT

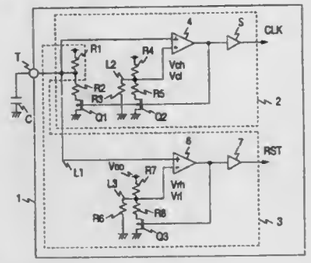
Hirokazu Tagiri, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 29, 1995, Ser. No. 564,716

Claims priority, application Japan, Nov. 30, 1994, 6-297654

Int. Cl.[6] H03B *5/24;* **H03K** *7/20;17/30*

U.S. Cl. 331—143 **14 Claims**



1. A semiconductor device comprising:

a CR oscillation circuit;

a reset circuit; and

a common terminal for constituting said CR oscillation circuit and said reset circuit,

wherein a voltage level at which the device falls into a reset state is set to be lower than a low level voltage of an oscillation waveform to prevent the device from falling into the reset state during oscillation.

5,614,873

ELECTRONIC CIRCUIT

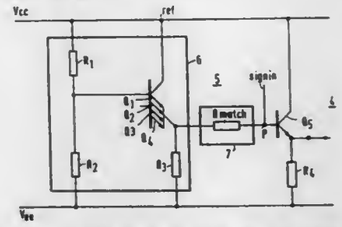
Johannes J. E. M. Hageraats, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1995, Ser. No. 563,723

Claims priority, application European Pat. Off., Dec. 8, 1994, 94203563

Int. Cl.[6] H03H *11/28*

U.S. Cl. 333—22 R **12 Claims**



1. Electronic circuit having an input and an output, the input coupled to the termination of a transmission line, the transmission line having a characteristic impedance, the electronic circuit comprising a terminating impedance and a buffer stage, the terminating impedance and the buffer stage being separately connected to the termination of the transmission line at the input, the buffer stage coupling the transmission line to the output, the terminating impedance matching the characteristic impedance of the transmission line for a selected frequency range and including a series combination of an active impedance and a passive impedance, the passive impedance being of the same order of magnitude as the characteristic impedance.

5,614,874

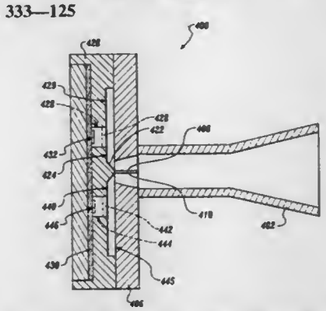
PACKAGE INTEGRATED PLANAR MONOPULSE COMPARATOR

Jay H. McCandless, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 6, 1995, Ser. No. 567,968

Int. Cl.[6] H01P *5/16*

U.S. Cl. 333—125 **23 Claims**



1. A structure for use with an antenna receiving an incoming radio frequency (RF) signal, said antenna including a first half and a second half and configured to support multimode energy propagation, said structure being contained in a package, said structure comprising:

a first waveguide having a first end and a second end, wherein said first end of said first waveguide is adapted to be coupled to said antenna to propagate said incoming RF signal being received by said antenna, and wherein said first waveguide is configured to support multimode energy propagation;

a first coupler having a first feed, a second feed and a third feed, wherein said first feed of said first coupler is coupled to said second end of said first waveguide, and wherein said first coupler is configured to:

propagate said incoming RF signal propagated in said first waveguide,

propagate a first-half signal in said second feed that is dependent on said incoming RF signal as received by said first half of said antenna, and

propagate a second-half signal in said third feed that is dependent on said incoming RF signal as received by said second half of said antenna;

a second waveguide having a first end and a second end, said first end of said second waveguide being coupled to said second feed of said first coupler, said second waveguide configured to propagate said first-half signal propagated in said first coupler;

a second coupler having a first feed, a second feed, and a third feed, said first feed of said second coupler being coupled to said second end of second waveguide, wherein said second coupler is configured to:

propagate in said first feed of said second coupler said first-half signal propagated in said second waveguide,

propagate in said second feed of said second coupler a signal that is dependent on an unsymmetrical mode component signal of said first-half signal, and

propagate in said third feed of said second coupler a symmetrical mode signal that is dependent on a symmetrical mode component signal of said first-half signal;

a third waveguide having a first end and a second end, said first end of said third waveguide being coupled to said third feed of said first coupler, said third waveguide configured to propagate said second-half signal propagated in said first coupler;

a third coupler having a first feed, a second feed and a third feed, said first feed of said third coupler being coupled to said second end of said third waveguide, wherein said third coupler is configured to:

propagate in said first feed of said third coupler said second-half signal propagated in said third waveguide,

propagate in said second feed of said third coupler a signal that is dependent on an unsymmetrical mode component signal of said second-half signal, and

propagate in said third feed of said third coupler a symmetrical mode signal that is dependent on a symmetrical mode component signal of said second-half signal;

a fourth waveguide having a first end and a second end, said first end of said fourth waveguide being coupled to said third feed of said second coupler, wherein said fourth waveguide is configured to propagate said symmetrical mode signal propagated in said third feed of said second coupler;

a fifth waveguide having a first end and a second end, said first end of said fifth waveguide being coupled to said third feed of said third coupler, wherein said fifth waveguide is configured to propagate said symmetrical mode signal propagated in said third feed of said third coupler; and

a fourth coupler having first, second, third and fourth feeds, said first feed of said fourth coupler being coupled to said second end of said fourth waveguide, said second feed of said fourth coupler being coupled to said second end of said fifth waveguide, wherein said third feed of said fourth coupler is configured to propagate a signal that is dependent on a sum of said symmetrical mode signals propagated in said fourth and fifth waveguides, and said fourth feed of said fourth coupler is configured to propagate an output signal that is dependent on a difference between said symmetrical mode signals propagated in said fourth and fifth waveguides.

5,614,875

DUAL BLOCK CERAMIC RESONATOR FILTER HAVING COMMON ELECTRODE DEFINING COUPLING/TUNING CAPACITORS

Sei-Joo Jang, and Kyung-Jong Park, both of Seoul, Rep. of Korea, assignors to Dae Ryun Electronics, Inc., Seoul, Rep. of Korea

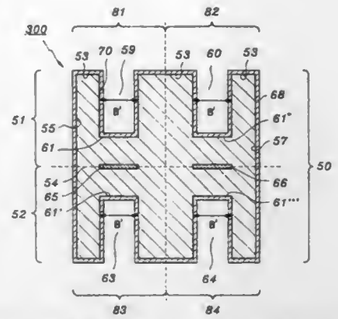
Filed Jul. 19, 1994, Ser. No. 277,353

Int. Cl.[6] H01P *1/205*

U.S. Cl. 333—202 5 Claims

1. A dual-block dielectric ceramic filter comprising:

a dielectric means consisting of a pair of dielectric bodies, each of the dielectric bodies comprised of a respective dielectric



ceramic material having a top surface, a bottom surface and four outer side surfaces, each of the top and the bottom surfaces being flat and parallel to each other, each of said dielectric bodies having at least two cylindrical holes disposed therein, each of the respective cylindrical holes partially extending from the respective top surface toward the corresponding bottom surface, each of the cylindrical holes having a respective inner side surface and a respective inner bottom surface, the inner bottom surface being flat and parallel to the corresponding bottom surface, a respective one of the cylindrical holes being disposed at a predetermined distance from another one of the cylindrical holes, the respective bottom surfaces of the pair of dielectric bodies being fixed together such that a respective one of the cylindrical holes in one of the dielectric bodies is aligned with a corresponding one of the cylindrical holes in the other dielectric body to define a respective pair of aligned cylindrical holes;

a first common electrode means comprised of a first conductive material disposed between a respective pair of aligned cylindrical holes;

a second common electrode means comprised of a second conductive material disposed between a respective pair of aligned holes other than the pair of aligned cylindrical holes with the first common electrode means disposed therebetween; and

a third conductive material completely covering said dielectric means including the bottom surfaces of the dielectric bodies except the portions surrounding the first and the second common electrode means to thereby define a pair of coupling/tuning capacitors between the first common electrode means and re-entrant dielectric ceramic resonators defined by the third conductive material covering the inner bottom surfaces and the inner side surfaces of the aligned cylindrical holes with the first common electrode means disposed therebetween and, another pair of coupling capacitors between the second common electrode means and other re-entrant dielectric ceramic resonators defined by the third conductive material covering the inner bottom surfaces and the inner side surfaces of the aligned cylindrical holes with the second common electrode means disposed therebetween.

5,614,876

DUAL MODE MULTISTAGE FILTER

Kazuaki Takahashi; Munenori Fujimura; Hiroyuki Yabuki, all of Kawasaki, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

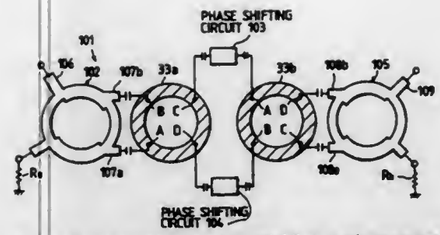
Division of Ser. No. 291,811, Aug. 17, 1991, Pat. No. 5,479,142, which is a division of Ser. No. 71,112, Jun. 3, 1993, Pat. No. 5,400,002. This application Sep. 27, 1995, Ser. No. 534,469

Claims priority, application Japan, Jun. 12, 1992, 4-153243; Sep. 14, 1992, 4-244373; Sep. 14, 1992, 4-244398; Sep. 28, 1992, 4-257799; Dec. 7, 1992, 4-326588

Int. Cl.[6] H01P *1/203;7/08*

U.S. Cl. 333—204 2 Claims

1. A dual mode multistage filter, comprising:



an input hybrid ring coupler for dividing a microwave transferred from an input terminal into a first divided microwave and a second divided microwave, the first divided microwave being transferred to a first hybrid terminal of the input hybrid ring coupler and the second divided microwave being transferred to a second hybrid terminal of the input hybrid ring coupler;

a series of strip resonators respectively having an electric length equivalent to a wavelength of the microwave for respectively resonating the first divided microwave transferred to the first hybrid terminal of the input hybrid ring coupler while transferring by stages from a first coupling point of the strip resonator arranged in an upper stage to a second coupling point of the strip resonator arranged in a lower stage according to a first resonance mode, and respectively resonating the second divided microwave transferred to the second hybrid terminal of the input hybrid ring coupler while transferring by stages from a third coupling point of the strip resonator arranged in the upper stage to a fourth coupling point of the strip resonator arranged in the lower stage according to a second resonance mode, each one of the strip resonators having first, second, third and fourth coupling points, the second coupling point being spaced a half-wave length of the microwave apart from the first coupling point, the third coupling point being spaced a quarter-wave length of the microwave apart from the first coupling point, the fourth coupling point being spaced the half-wave length of the microwave apart from the third coupling point, the second coupling point of the strip resonator arranged in an uppermost stage being coupled to the first hybrid terminal of the input hybrid ring coupler, and the fourth coupling point of the strip resonator in the uppermost stage being coupled to the second hybrid terminal of the input hybrid ring coupler;

one or more first phase-shifting circuits respectively arranged between the first coupling point of the strip resonator in the upper stage and the second coupling point of the strip resonator in the lower stage to shift a phase of the first divided microwave by a multiple of the half-wave length of the microwave;

one or more second phase-shifting circuits respectively arranged between the third coupling point of the strip resonator in the upper stage and the fourth coupling point of the strip resonator in the lower stage to shift a phase of the second divided microwave by a multiple of the half-wave length of the microwave; and

an output hybrid ring coupler for combining the first divided microwave transferred to a third bybrid terminal and the second divided microwave transferred to a fourth hybrid terminal to produce a combined microwave and outputting the combined microwave from an output terminal, the third hybrid terminal being coupled to the first coupling point of the strip resonator arranged in a lowest stage, the fourth hybrid terminal being coupled to the third coupling point of the strip resonator in the lowest stage, and the fourth hybrid terminal being spaced a quarter-wave length of the microwave apart from the third hybrid terminal.

5,614,877

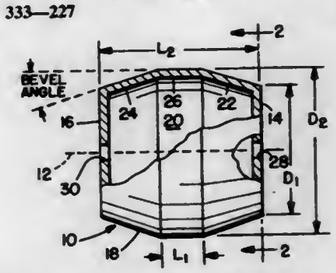
BICONICAL MULTIMODE RESONATOR

Krishnan Raghavan, Torrance; Rolf Kich, Redondo Beach, and Paul J. Tatomir, Laguna Niguel, all of Calif., assignors to Hughes Aircraft Co., Los Angeles, Calif.

Continuation of Ser. No. 163,023, Dec. 6, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 405,423

Int. Cl.[6] H01P *7/06*

U.S. Cl. 333—227 11 Claims



1. A microwave cavity resonator comprising:

a sidewall having circular symmetry about a central axis of the resonator, and two opposed end walls disposed at opposite ends of the sidewall for enclosing an interior region of the resonator, each of said end walls being disposed transversely of said central axis;

wherein said sidewall has a central region and two opposed end regions joined by said central region, and said central region of the sidewall is a section of a cylinder having a predetermined cross section larger than a respective cross section associated with each of said end walls;

said respective end regions of said sidewall are tapered to meet corresponding ones of said end walls; and

an axial length of the central region of the sidewall, as measured along the central axis, is less than a respective axial length of either of said two opposed end regions of said sidewall, as measured along the central axis.

5,614,878

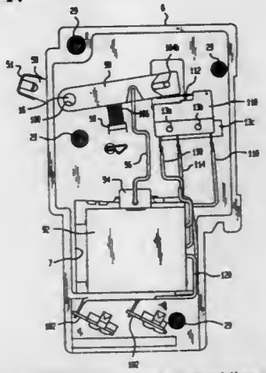
TWO POLE REMOTE CONTROLLED CIRCUIT BREAKER

John R. Patrick, Tucker; Edward Zuber, Duluth, and Edward L. Tevis, Tucker, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Sep. 7, 1995, Ser. No. 524,816

Int. Cl.[6] H01H *75/00*

U.S. Cl. 335—14 4 Claims



1. A remote controlled circuit breaker providing overload current protection and load management for interrupting current flow in a circuit path between a source and a load, comprising:

an electrically insulated housing having a circuit breaker compartment and a remote controlled actuator system compartment;
a manually operable circuit breaker assembly having an opened position and an opened tripped position and a closed position and arranged within the circuit breaker compartment;
a remote controlled actuator system arranged within the remote controlled actuator system compartment;
the manually operable circuit breaker assembly including:
a stationary contact pad;
a moveable contact pad for opening and closing against the stationary contact pad and cooperatively arranged in the circuit path and within the manually operable circuit breaker compartment so as to provide current flow from the source to the load;
a moveable contact arm which is affixed to the moveable contact pad and which is moved to interrupt the current provided to the load;
a manually operable spring powered mechanism connected to the moveable contact arm for opening and closing the moveable contact pad against the stationary contact pad;
a tripping mechanism operatively connected to the manually operable spring powered mechanism to respond to a predetermined current overload condition by displacing the moveable contact pad from contact with the stationary contact pad to an opened tripped position of the circuit breaker;
the remote controlled actuator system including:
a remote controlled electromagnetically powered means having a pin which extends through a pin slot formed in said compartment housing the manually operable circuit breaker and into said compartment, said pin being disposed adjacent to the contact arm shield of the moveable contact arm for engaging and pulling the contact arm causing moveable contact pad to disengage from electrical contact with the stationary contact pad into an intermediate open position; and
an electromagnetic solenoid means having a first energized state to mechanically actuate the remote controlled electromagnetically powered means for causing moveable contact pad to disengage from electrical contact with stationary contact pad; and further having a non-energized state in which the pin is caused to be returned to a disengaged position form the contact arm shield in response to a biasing spring means.

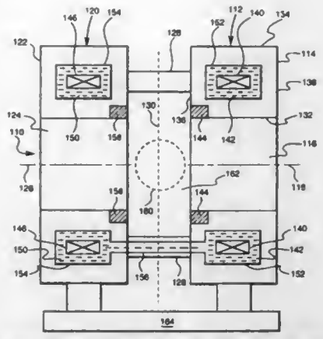
5,614,879

CRYOGENIC-FLUID-COOLED OPEN MRI MAGNET WITH UNIFORM MAGNETIC FIELD

Bizhan Dorri, Clifton Park; Evangelos T. Laskaris, Schenectady; Michele D. Ogle, Burnt Hills, all of N.Y., and Timothy J. Havens, Florence, S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1995, Ser. No. 547,085
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 **9 Claims**

1. An open magnetic resonance imaging magnet comprising:
a) a first superconductive coil assembly including:
(1) a generally toroidal-shaped first coil housing surrounding a first bore and having a generally longitudinal first axis; and
(2) a generally annular-shaped first superconductive main coil generally coaxially aligned with said first axis, disposed within said first coil housing, and at least partially immersed in a cryogenic fluid;
b) a generally-non-permanently-magnetized first ferromagnetic ring generally coaxially aligned with said first axis and spaced radially inward and radially apart from said first superconductive main coil;
c) a second superconductive coil assembly including:
(1) a generally toroidal-shaped second coil housing longitudinally spaced apart from said first coil housing, surrounding a second bore and having a generally longitudinal second axis generally coaxially aligned with said first axis; and



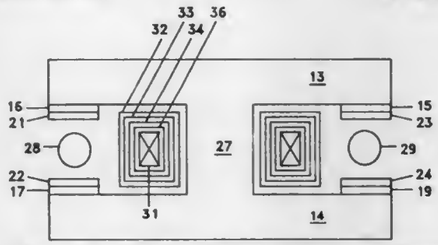
(2) a generally annular-shaped second superconductive main coil generally coaxially aligned with said second axis, disposed within said second coil housing, and at least partially immersed in a cryogenic fluid; and
d) a generally-non-permanently-magnetized second ferromagnetic ring generally coaxially aligned with said second axis and spaced radially inward and radially apart from said second superconductive main coil, wherein the longitudinal distance between said first and second ferromagnetic rings is less than the longitudinal distance between said first and second superconductive main coils.

5,614,880

SUPERCONDUCTING MAGNET WITH SYMMETRICAL PLURAL AIR GAPS

Alex Palkovich, Oxford; John M. Bird, Charlbury, and Tomas Duby, Kidlington, all of England, assignors to Elscint Ltd., Haifa, Israel

Continuation of Ser. No. 152,098, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 911,353, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 818,423, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 676,421, Mar. 28, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,975
Claims priority, application United Kingdom, Apr. 2, 1990, 9007980
Int. Cl.[6] H01F *5/00*
U.S. Cl. 335—299 **4 Claims**



1. A super conducting magnet for magnetic resonance imaging (MRI) systems, said magnet comprising:
a cryostat containing a super-conducting coil for generating lines of force, said coil surrounding a vertical core of magnetizable material, said core being external to said cryostat while said coil is internal to said cryostat,
a pair of vertically spaced-apart magnetizable beams each having a longitudinal axis extending horizontally from the top and bottom of said vertical core,
a pair of pole pieces, each having an axis perpendicular to the longitudinal axis of said beams, each pole piece being oppositely disposed at the ends of said beams, one pole piece above and one pole piece below the other to define equal sized airgaps at the ends of each of said beams,

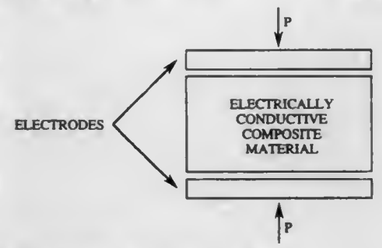
a part of one side of each of said airgaps facing said core and the other sides of each of said airgaps being open, making the patients readily accessible from three sides, and parts of the one side during imaging procedures,
said oppositely disposed pole pieces being spaced apart in a vertical direction at a distance large enough to receive a patient into each of the airgaps for imaging purposes with the lines of flux perpendicular to the longitudinal axis of the patient, and extending through the patient perpendicular to an imaginary horizontal plane extending from one side of the patient to the other side of the patient, and
said airgaps being of equal size whereby said super-conducting magnet is symmetrical about both vertical and horizontal central axes of the magnet.

5,614,881

CURRENT LIMITING DEVICE

Anil R. Duggal; Lionel M. Levinson, both of Niskayuna; Harold J. Patchen, Burnt Hills, and Larry N. Lewis, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,076
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—22 R **41 Claims**



1. A current limiting device comprising:
at least two electrodes;
an electrically conducting composite material between said electrodes, said composite material comprising (A) a binder with a pyrolysis or vaporization temperature, at which significant gas evolution occurs, below 800° C., and (B) an electrically conductive filler;
interfaces between said electrodes and said composite material;
an inhomogeneous distribution of resistance at said interfaces whereby, during a short circuit, adiabatic resistive heating at said interfaces causes rapid thermal expansion and vaporization of said binder resulting in at least a partial physical separation at said interfaces; and
means for exerting compressive pressure on said composite material.

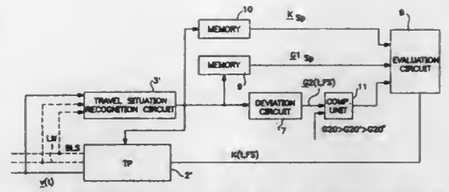
5,614,882

PROCESS AND CIRCUIT FOR MONITORING TIRE PRESSURE

Michael Latarnik, Friedrichsdorf, and Norbert Ehmer, Eschborn, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP94/03373, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO95/12498, PCT Pub. Date May 11, 1995
PCT Filed Oct. 13, 1994, Ser. No. 464,672
Claims priority, application Germany, Nov. 3, 1993, 43 37 443.3
Int. Cl.[6] B60C *23/02*
U.S. Cl. 340—444 **14 Claims**

1. Process for monitoring tire pressure by measuring, comparing and evaluating the rotating speeds of the individual wheels of the



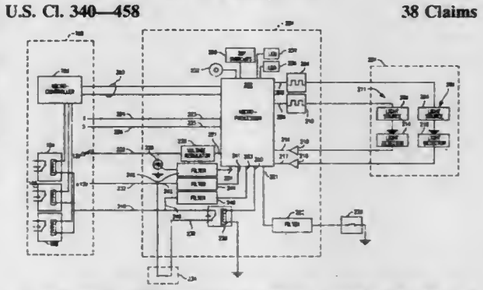
vehicle, wherein speed correction factors are formed for the individual wheels of the vehicle in a learning phase according to a learning process, characterized in that
the speed correction factors are values which, multiplied by the respective wheel speed, yield a basic speed,
correlations between the correction factors for typical travel situations are determined, and
tolerances as a function of the respective travel situation are determined for the correction factors;
the deviations of the correction factors from the learned values are determined and evaluated in an identification phase, taking into account the travel situation-dependent tolerances and the progression of the learning process, and
loss of tire pressure is signaled when the current correction factor for a wheel becomes smaller, taking into account the current deviation, than the speed correction factor already determined for the wheel in question for the current travel situation during the learning phase, taking into account the tolerance already determined for the current travel situation during the learning phase.

5,614,883

AUTOMOTIVE OPTO-ELECTRIC STARTER INTERLOCK

Normand Dery, Sherbrooke; Guy Santerre, St-Elie d'Orford, and Alain Jean, Sherbrooke, all of Canada, assignors to Astroflex, Inc., Quebec, Canada

Filed Dec. 30, 1994, Ser. No. 367,799
Claims priority, application Canada, Dec. 23, 1994, 2139073
Int. Cl.[6] B60Q *11/00*
U.S. Cl. 340—458 **38 Claims**



1. An opto-electric interlock to prevent remote starting of a motor vehicle when a transmission of the vehicle establishes a driving relationship between an engine of the vehicle and a wheel thereof, said opto-electric interlock comprising:
a light source for supplying radiant energy;
a light detector responsive to radiant energy incoming from said light source, said light source and said light detector assuming a state of optical coupling in response to movement of a shift linkage of the transmission of the vehicle to a spacial position in which the driving relationship between the engine of the vehicle and the wheel thereof is terminated, whereby an output condition of said light detector enables to determine whether the transmission of the vehicle is in gear;
a processing unit controlling actuation of said light source, said processing unit being responsive to the output condition of

said light detector in order to assume either one of a start enable state and a starter disable state, in said start enable state said processing unit enabling remote actuation of a starter motor of the vehicle, in said starter disable state said processing unit precluding remote actuation of the starter motor, whereby said processing unit is capable of switching between said start enable state and said starter disable state in dependence of said spacial position of the shift linkage, said processing unit including diagnosis means for sensing detectable malfunctions in said opto-electric interlock, said diagnosis means including:

a) an excitation unit for actuating said light source in a predetermined manner;

b) means for observing the output condition of said light detector;

c) a comparing unit for comparing the output condition of said light detector observed at step b) with a response characteristic of the opto-electric interlock in an unimpaired operative condition, upon absence of agreement between the output condition at step b) and said response, said processing unit assuming said starter disable state in order to preclude remote actuation of the starter motor of the vehicle.

5,614,884

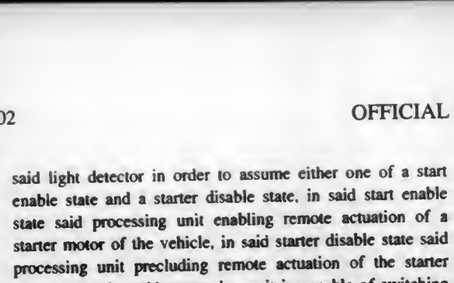
VEHICLE TURN SIGNAL

Harold A. Evans, 10 Merrymount Dr., Swampscott, Mass. 01907

Continuation of Ser. No. 40,413, Mar. 31, 1993, Pat. No. 5,438,314. This application Jun. 6, 1995, Ser. No. 466,228

Int. Cl.[6] B60Q *1/40*

U.S. Cl. 340—477 **6 Claims**



1. A directional indicator system for an automobile comprising:

a steering wheel operatively interconnected with front wheels of the automobile for steering the front wheels;

a flasher unit;

left-hand marker lamps;

right-hand marker lamps;

a timer circuit and a control switch circuit interconnected with each of the flasher unit, the left-hand marker lamps and the right-hand marker lamps, the control switch circuit and the timer circuit being constructed and arranged so that operation of the control switch circuit causes the timer circuit to thereby cause one of the left-hand marker lamps and the right-hand marker lamps to flash in response to the flasher unit for a first predetermined time; and

a completed turn cut-off switch operatively connected with the steering wheel and constructed and arranged so that movement of the steering wheel from a turning position to a neutral, substantially-straight-steering position causes at least one of the left-hand marker lamps and the right-hand marker lamps to cease flashing at a time that is less than the first predetermined time.

5,614,885

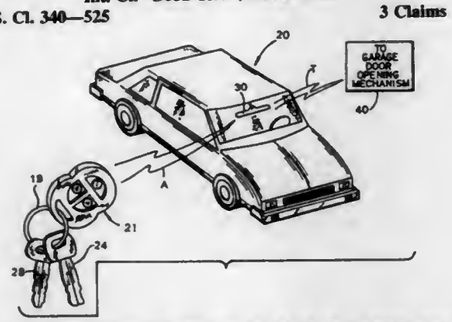
ELECTRICAL CONTROL SYSTEM FOR VEHICLE OPTIONS

Paul S. Van Lente; Mark L. Zeinstra; Michael J. Suman, and William S. DeVree, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 279,643, Dec. 5, 1988, abandoned. This application Aug. 14, 1990, Ser. No. 567,390

Int. Cl.[6] G05B *25/00; G05B 19/02*

U.S. Cl. 340—525 **3 Claims**



1. A vehicle trainable transmitter for actuating a garage door mechanism, said trainable transmitter comprising:

means for receiving a first transmitted control signal having a radio frequency carrier signal from a remote control for a garage door mechanism, said first control signal having a carrier frequency and said receiving means outputting said first control signal;

circuit means coupled to said receiving means for inputting said first control signal, storing carrier frequency information and said circuit means for detecting control signal information and for storing detected control signal information;

means for generating and transmitting a second control signal from said frequency information and said control signal information stored in said circuit means, whereby said second control signal has the carrier frequency identified by said circuit means and the control signal information detected by said circuit means and said second control signal is selectively transmitted to actuate the garage door mechanism without the remote control; and

means for generating reference signals having different frequencies, said reference signal generating means controlled by a frequency control signal, wherein said reference signal generating means outputs reference signals at different frequencies which are input to said circuit means, the frequency of said output reference signal being varied until said circuit means detects that the frequency of said reference signal and the frequency of said first control signal from said remote control are substantially equal.

5,614,886

ARTICLE REMOVAL ALARM SYSTEM FOR USE WITH PORTABLE ELECTRONIC DEVICE

Peter Snell, 4890 Coronado Ave., San Diego, Calif. 92107, and Alfred Fischer, 2202-A Pacific Ave., Costa Mesa, Calif. 92627

Filed Oct. 13, 1995, Ser. No. 543,195

Int. Cl.[6] G08B *13/16*

U.S. Cl. 340—571 **19 Claims**

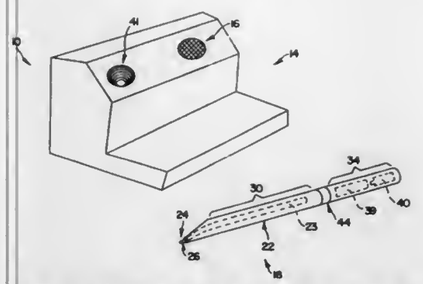
1. An alarm system for generating an alarm signal upon removal of an article from the vicinity of a base unit, said alarm system comprising:

a base unit for generating an ultrasonic signal for transmission into said vicinity of said base unit; and

a remote unit accompanying said article, said remote unit including:

a receiver for receiving said ultrasonic signal,

a threshold detector for providing a threshold signal upon failure of said receiver to receive said ultrasonic signal at predetermined strength, and



means for generating an alarm signal in response to said threshold signal.

5,614,887

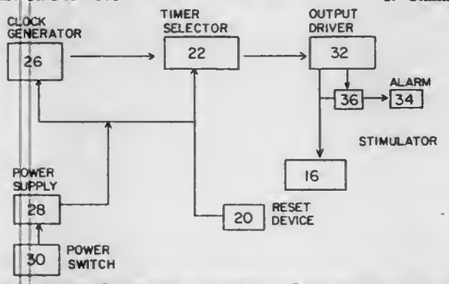
PATIENT MONITORING SYSTEM AND METHOD THEREOF

Dale Buchbinder, 12306 Michaelsford Rd., Cockeysville, Md. 21030

Filed Jun. 7, 1995, Ser. No. 487,855

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—573 **19 Claims**



1. A system for observer monitoring of a patient, the system comprising:

a stimulator adapted to provide stimulation to the patient;

a stimulation response device having a button adapted to deactivate the stimulator; and

a controller in communication with the stimulator and the stimulation response device, the controller comprising:

means to periodically activate the stimulator;

a stimulator timer adapted to activate when the stimulator has been activated and to reset when the stimulator is deactivated; and

an observer alarm adapted to activate if the button of the stimulation response device has not been pressed by the patient within a predetermined time from the activation of the stimulator timer.

5,614,888

CIRCUIT BREAKER WITH AN ALARM DEVICE AND A CIRCUIT FOR GENERATING AN ALARM IN A CIRCUIT BREAKER

Oliver Borchmann, Köln, and Thomas Bungartz, Stadtkyll, both of Germany, assignors to Klöckner-Moeller GmbH, Bonn, Germany

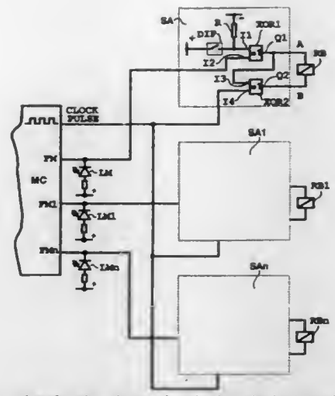
Filed Mar. 3, 1995, Ser. No. 398,594

Claims priority, application Germany, Mar. 3, 1994, 44 06 902.2

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—638 **19 Claims**

1. Circuit configuration for a signalling device in circuit breaker units, which have an electronic tripping device and which become effective in the event of a fault in an electrical system to be protected, whereby the electronic tripping device consists essentially of a microcontroller which performs a fault evaluation, and for each type of fault makes available an output pin, from which the corresponding fault signal is amplified and transmitted to an electrical relay, wherein the fault signal [(FM, FM1 . . . FMn)] is transmitted to the circuit configuration [(SA, SA1 . . . SAn)], and by means of logic operation with the action of a static standard signal and of a clock pulse signal [(Clock Pulse) acts] act on the electrical relay, which is realized in the form of a bistable relay [(RB, RB1 . . . RBn)] the contact system of which corresponds to a make function or a break function, depending on the signal status of the standard signal.



5,614,889

APPARATUS AND METHODS FOR COUPLING A CASE OF AN ELECTRIC APPLIANCE TO AN EXTERNAL GROUND AND FOR DETECTING LEAKAGE CURRENT

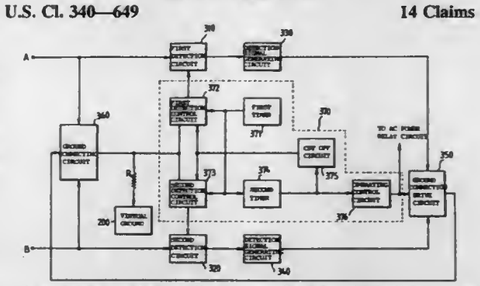
Jung M. Kim, #548-1, Ojung-dong, Ojung-ku, Boochun-shi, Kyungki-do, Rep. of Korea

Filed Apr. 13, 1995, Ser. No. 422,382

Claims priority, application Rep. of Korea, Apr. 14, 1994, 1994-7734; Jul. 29, 1994, 1994-19148; Jul. 29, 1994, 1994-19149; Jul. 29, 1994, 1994-19150; Sep. 24, 1994, 1994-24610

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—649 **14 Claims**



1. An apparatus for coupling a case of an electric appliance to an external ground, which comprises:

neutral ground generating means for combining signals on first and second AC power lines to produce a neutral ground point;

first detection means for detecting a current flow from the first AC power line to the case of the appliance to generate a first current detection signal;

second detection means for detecting a current flow from the second AC power line to the case of the appliance to generate a second current detection signal; and

ground coupling means for connecting, in response to the first current detection signal, the first AC power line as the external ground to the case of the appliance; for connecting, in response to the second current detection signal, the second AC

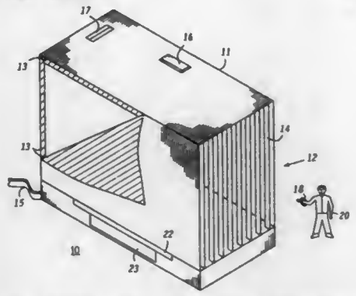
power line as the external ground to the case of the appliance; and for connecting the neutral ground point as the external ground to the case of the appliance when the first and the second current detection signals are absent.

5,614,890

PERSONAL IDENTIFICATION SYSTEM

Thomas M. Fox, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1993, Ser. No. 173,033
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.34 **20 Claims**



1. A user interface node for a personal identification system comprising:
an enclosure having an open end, an exterior and an interior;
first RF attenuation material affixed to said interior of said enclosure;
second RF attenuation material affixed to said open end of said enclosure, said second RF attenuation material being in a strip curtain form to allow insertion of an object into said enclosure;
an antenna mounted in said interior of said enclosure for receiving a radio frequency signal from said object inside said enclosure;
a user of said personal identification system, said user having a personal detector unit for transmitting a coded radio frequency signal, said personal detector unit attached to said user, said personal detector unit being inserted through said second RF attenuation material into said interior of said enclosure; and
a receiver for receiving said coded radio frequency signal of said user's personal detector unit, said receiver coupled to said antenna and to said personal detector unit by said radio frequency signal.

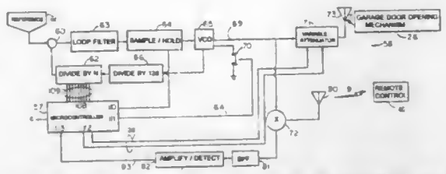
5,614,891

VEHICLE ACCESSORY TRAINABLE TRANSMITTER

Mark L. Zeinstra, and Kurt A. Dykema, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 263,263, Jun. 21, 1994, Pat. No. 5,479,155, which is a continuation of Ser. No. 874,361, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 567,390, Aug. 14, 1990, which is a continuation-in-part of Ser. No. 279,643, Dec. 5, 1988, abandoned. This application Jun. 2, 1995, Ser. No. 459,746
Int. Cl.[6] G05B *19/02*
U.S. Cl. 340—825.22 **34 Claims**

1. A transceiver for use in a vehicle comprising:
an antenna;
a receiver coupled to said antenna for receiving an RF activation signal transmitted from a portable transmitter for actuating a remote device, the RF activation signal having characteristics including a UHF carrier frequency and a data code;
a controller coupled to said receiver for identifying the carrier frequency of the received RF activation signal and for storing



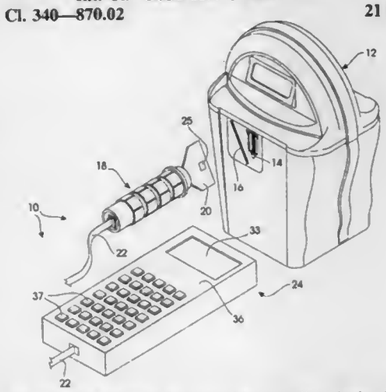
signal characteristics data representing the identified carrier frequency and the data code of the received RF activation signal; and
a transmitter coupled to said controller for receiving the stored signal characteristics data and generating a modulated RF signal having the same characteristics as the received RF activation signal, and coupled to said antenna for transmitting the modulated RF signal to the remote device for actuation thereof.

5,614,892

PAYMENT SLOT COMMUNICATING APPARATUS FOR VENDNG PRICES

Seth Ward, II; Gary W. Speas, both of Little Rock, and R. Todd Brown, Russellville, all of Ark., assignors to POM, Inc., Russellville, Ark.

Filed Apr. 24, 1995, Ser. No. 427,603
Int. Cl.[6] G08B *23/00*; G08C *15/06*
U.S. Cl. 340—870.02 **21 Claims**



1. An auditor apparatus for use with a vending device having a payment slot, the apparatus comprising:
means for reading digital data concerning activity of said vending device; and,
means for communicating between said means for reading data and the vending device, said means for communicating comprising sensing means for insertion into the payment device receiving slot in the vending device.

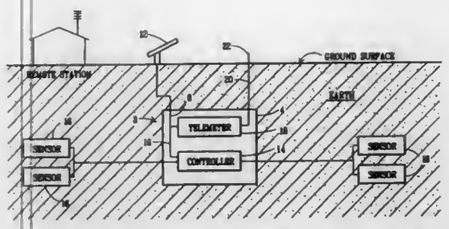
5,614,893

GROUND CONDITION MONITOR

Falih Ahmad, Clinton, Miss.; James A. Evans, Tallulah, La., and George L. Mason, Vicksburg, Miss., assignors to The United States of America Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 8, 1996, Ser. No. 598,313
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—870.16 **7 Claims**

1. A ground condition monitor comprising:
a housing for disposal underground;
a power source disposed in said housing;
a controller disposed in said housing and in communication with said power source and with a plurality of sensors, said sensors



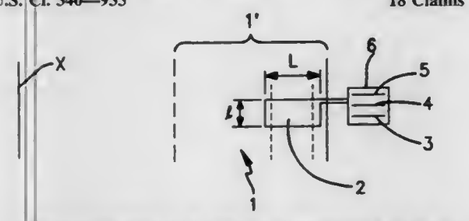
being adapted to receive signals from said controller and in response thereto to send electromagnetic excitation signals into surrounding earth, receive reflective electromagnetic signals from the surrounding earth, and feed the reflective signals to said controller, said controller being adapted to convert said reflective signals to data indicative of electromagnetic properties of the surrounding earth, and to transmit the data;
a telemeter in communication with said power source and disposed in said housing for receiving the data from said controller and transmitting the data to a remote station; and
an antenna extending from said housing for disposition in part above the surface of the earth, and adapted to transmit the data from said telemeter to the remote station, to receive signals from the remote station, and to transmit the signals received from the remote station to said controller.

5,614,894

DEVICE TO DETECT PARTICULARLY ONE OR SEVERAL WHEELS OF A VEHICLE OR OF A WHEELED MOBILE ENGINE AND PROCESS FOR USING THIS DEVICE

Daniel Stanczyk, Jarny, France, assignor to Centre d'Etudes Techniques de l'Est, Metz Cedex, France

PCT No. PCT/FR93/00699, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/01847, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 6, 1993, Ser. No. 367,112
Claims priority, application France, Jul. 6, 1992, 92 08416
Int. Cl.[6] G08G *1/01*
U.S. Cl. 340—933 **18 Claims**



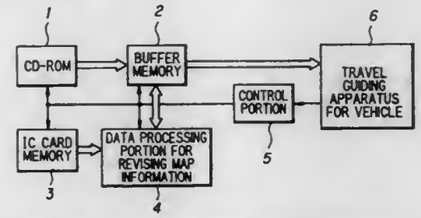
1. Device constituted by at least one electromagnetic loop positioned on or in the roadway and by an evaluation unit for the evaluation of the influence of a passage of a vehicle past said loop or loops, the electromagnetic loop or loops (**2**) being comprised each by one or several turns and having on the one hand a small dimension (**1**) in the direction of displacement of the vehicles or of the axis (X) of the roadway (**1**), and, on the other hand, a preferably rectangular shape and/or an arrangement disposed perpendicularly to the axis (X) of the roadway (**1**), the loop or loops (**2**) being disposed at least by one or two of the rolling tracks (**1'**) of a lane (**1'**) of the roadway (**1**), characterized in that the dimension (**1**) or width of the loop or loops (**2**) is about of the order of magnitude of the width of the bearing surface on the ground of the wheels of the vehicles to be analyzed, either preferably of the order of about 0.3 meter for the detection of heavy weights and of the order of about 0.15 meter for the detection of light vehicles and in that the evaluation unit is comprised, on the one hand, by an electromagnetic detector (**3**) noting the variations of voltage and of frequency of an alternating signal moving within the loop or loops (**2**) and which is connected to it, by virtue of the passage of a vehicle past the loop or loops (**2**) and delivering a proportional signal corresponding to said variations, on the other hand, of a processing card (**4**) of the signal analyzing the signal emitted from the electromagnetic detector (**3**) and determining particularly, by means of microprocessor means controlled by a computer program, the number of wheels belonging to a same vehicle for its classification and, finally, a memory (**5**) for storage of data delivered by said processing card, adapted to be read in situ and/or remotely, with transfer if desired of its contents, the elements (**3** to **5**) of said evaluation unit being mounted preferably in a protective casing, disposed adjacent or not to the roadway (**1**).

5,614,895

MAP INFORMATION REGENERATING DEVICE

Masahiro Ohomori; Masayuki Arai, and Takeshi Imai, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 337,156
Claims priority, application Japan, Nov. 19, 1993, 5-338733
Int. Cl.[6] G08G *1//123*
U.S. Cl. 340—995 **5 Claims**



1. A map information regenerating device comprising:
a map-information storage means for storing as road map information therein node information and link information on line segments with which roads extending on a map are approxi-.nated;
a map-change information storage means for storing as road change information therein node information and link information on a road to be changed on said map, in correlation with said node information and said link information on line segments stored in said map-information storage means;
a buffer memory for storing therein road map information on a specified area, said road map information being read-out from said map-information storage means;
a map-information revising means for revising said road map information on said specified area stored in said buffer memory, in accordance with said road change information read-out from said map-change information storage means; and
a display means for displaying on a screen a road map of said specified area in accordance with said road map information which has thus been revised.

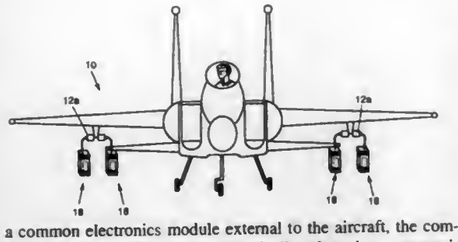
5,614,896

METHOD AND SYSTEM FOR AIRCRAFT WEAPON STATION TESTING

R. Winston Monk, and David P. Van Cleve, both of Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Mar. 23, 1995, Ser. No. 409,106
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—945 **20 Claims**

1. A weapon station testing system for testing the mission readiness of an aircraft having a plurality of weapon stations including a first weapon station of a first type and a second weapon station of a second type, the weapon station testing system comprising:



a common electronics module external to the aircraft, the common electronics module electronically adapted to communicate with said first and second weapon stations;

a first interchangeable fixture for operatively interconnecting the common electronics module with the first weapon station; and

a second interchangeable fixture for operatively interconnecting the common electronics module with the second weapon station;

whereby said common electronics module communicates with the first and second weapon stations to ensure that the first and second weapon stations are mission ready to receive a weapon.

5,614,897

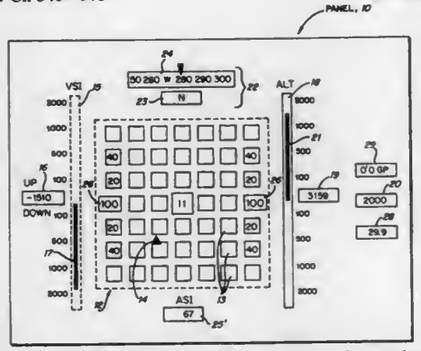
AIRCRAFT FLIGHT INSTRUMENT DISPLAYS

Simon J. Durnford, Devon, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 29, 1995, Ser. No. 412,874

Int. Cl.[6] G01C *23/00*

U.S. Cl. 340—973 **18 Claims**



1. An aircraft flight instrument display system for an aircraft, said aircraft having a flight control system for controlling the flight of the aircraft, said aircraft having an actual aircraft speed and heading, an aircraft attitude sensor system and a flight instrument control system for controlling said aircraft flight instrument display system, said aircraft flight instrument display system comprising:

a display panel having an y and x axis, where y is a vertical axis and x is an horizontal axis, said panel including a combined speed and heading indicator in the form of a central shape;

means for inputting a desired speed and heading to said display panel;

said flight instrument control system including means, responsive to said actual aircraft speed and heading, for driving said display panel to indicate any difference between said actual aircraft speed and heading from said desired aircraft speed and heading by means of an y and x displacement, respectively, of an aircraft symbol from the central shape, where movement of a pilot's control stick from a position representative of the aircraft symbol towards a position representative of said central shape will tend to reduce said any difference.

5,614,898

GUIDE SYSTEM

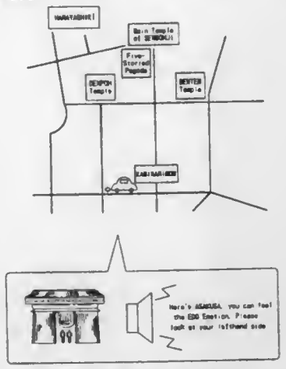
Kazuo Kamiya, Anjo; Hirofumi Morimoto, Nishio, and Shoji Yokoyama, Anjo, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Mar. 17, 1995, Ser. No. 405,886

Claims priority, application Japan, Mar. 18, 1994, 6-049235; Mar. 18, 1994, 6-049236; May 2, 1994, 6-093464; May 2, 1994, 6-093465; Dec. 26, 1994, 6-322022

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—995 **12 Claims**



1. A guide system for a vehicle comprising:

guide data storage means for storing guide data for guidance objects located along roads to be travelled and the vicinity thereof;

present position detecting a means for detecting present position;

guide data output means including first search means for searching for guidance objects within a first range determined relative to said detected present position, second search means for searching for guidance objects within a second range determined relative to said detected present position, said second range being different from said first range, and read means for reading out of said guide data storage means guide data for a guidance object located by either of said first and second search means;

a manual key for issuing an instruction for a search operation by said second search means, said first search means being operative to execute its search absent said instruction; and

guidance output means for converting the guide data for said located guidance object into guidance information and for outputting said guidance information.

5,614,899

APPARATUS AND METHOD FOR COMPRESSING TEXTS

Katsumi Tokuda, Osaka, and Ryoichi Sugimura, Hyogo, both of Japan, assignors to Matsushita Electric Co., Ltd., Osaka, Japan

Filed Dec. 2, 1994, Ser. No. 348,721

Claims priority, application Japan, Dec. 3, 1993, 5-304137

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—51 **40 Claims**

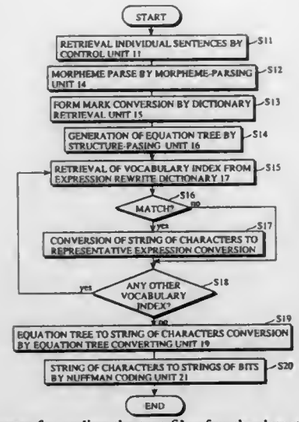
1. A text file compressing apparatus comprising:

word detecting means for detecting words in sentences comprising a text file;

representative word storage means for classifying a plurality of words into a plurality of sets of synonymous words and to store the sets with a representative word for each set;

representative word retrieval means for retrieving the representative words for the detected words from their respective sets in said representative word storage means;

representative word rewrite means for rewriting the detected words into the retrieved representative words; and



coding means for coding the text file after the detected words are rewritten by said representative word rewrite means.

5,614,900

VARIABLE WORD LENGTH CODE DECODING APPARATUS HAVING PLURAL DECODING TABLES FOR DECODING LONG WORDS

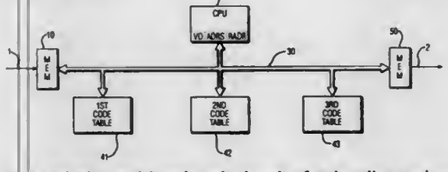
Mitsuhiro Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 315,724

Claims priority, application Japan, Sep. 30, 1993, 5-245031

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **12 Claims**



7. A variable word length code decoder for decoding an input variable word length code sequence, comprising:

(A) means for storing first N bits of an undecoded variable word length code sequence of said input variable word length code sequence into a first register;

(B) means for generating a first value by shifting rightward a value being read out from said first register by $N-n_1$ bits, wherein n_1 is less than N, and storing the first value into a second register;

(C) means for reading a first code table based on an address indicated by said second register, wherein

addresses of said first code table either represent first data associated with first group variable word length codes having code lengths (l_1)less than or equal to n_1 or represent first remaining data;

said first code table stores a decoded value and a code length in each address corresponding to each of said first data; and

said first code table also stores data representing a code length larger than n_1 in each address corresponding to the first remaining data;

(D) means for generating a second value by changing first m_1 bits of the value being read from the first register to zero values, wherein m_1 is less than n_1, and by shifting rightward the changed value by $(N-n_1-m_1)$ bits; and

storing the second value into said second register;

(E) means for reading a second code table based on an address indicated by said second register, wherein

addresses of said second code table represent second data associated with second group variable word length codes having code lengths (l_2)longer than n_1 and m_1 bits of which are removed; and

said second table stores a decoded value and a code length in each address corresponding to said second data;

(F) outputting a decoded value being read by said means (C) or said means (E) to an output memory.

5,614,901

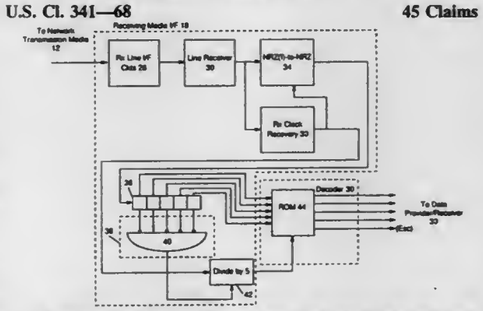
METHOD AND APPARATUS FOR PROVIDING DATA STREAM FOR COST EFFECTIVE TRANSMISSION LINKS

Lee C. Haas, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 197,090, Feb. 16, 1994, Pat. No. 5,570,089. This application Jun. 21, 1996, Ser. No. 669,255

Int. Cl.[6] H04L *25/49*

U.S. Cl. 341—68 **45 Claims**



1. A method of converting from a first code set to a second code set comprising the steps of:

grouping said first code set into groups of n bits; and

converting each group of n bits into a corresponding group of n+a bits, wherein each group of n+a bits is selected from 2^{n+a} options, wherein each selected group of n+a bits has the characteristic of having disparity of less than or equal to 1 after formatting to an inversion media-level format and wherein only one selected group of n+a bits has comma property.

5,614,902

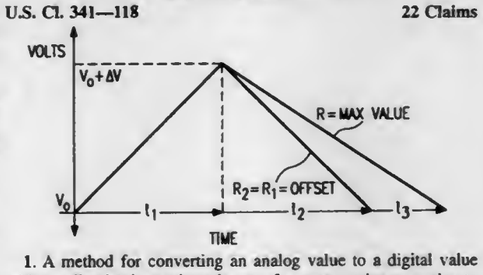
RATIOMETRIC ANALOG TO DIGITAL CONVERTER WITH AUTOMATIC OFFSET

Thomas L. Hopkins, Mundelein, Ill., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 30, 1994, Ser. No. 346,903

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—118 **22 Claims**



1. A method for converting an analog value to a digital value with an offset having a given degree of accuracy using an analog to digital converter, comprising the steps of:

measuring an analog value;

converting the analog value to a digital value using an analog to digital converter, wherein the analog to digital converter is comprised of the following elements:

a current source having a current;

a counter having a result register;

a logic block;

an integrator which produces a wave form, and which is supplied with the current of the current source during a first fixed period of time and which subtracts the offset value from the digital value to generate a digital conversion result during a second fixed period of time equal to the fixed period of time, wherein the second fixed period of time follows the first fixed period of time;

a comparator which is supplied with the wave form of the integrator and which has an output signal which is presented to the logic block;

wherein during the first fixed period of time, the wave form of the integrator charged to a first voltage level equal to a reference value plus a measured voltage and a count representative of the first fixed period of time is stored in the result register;

wherein during the second fixed period of time, an offset count representative of the offset value and the second fixed period of time is subtracted from the count representative of the first fixed period of time; and

wherein during a third period of time which follows the second fixed period of time, a time required for the wave form to reach a second voltage level equal to the reference value is measured; and

subtracting an offset value from the digital value to generate a digital conversion result representative of the analog value with respect to a measurement range, having a minimum value and a maximum value, during a fixed period of time of a measurement period.

5,614,903

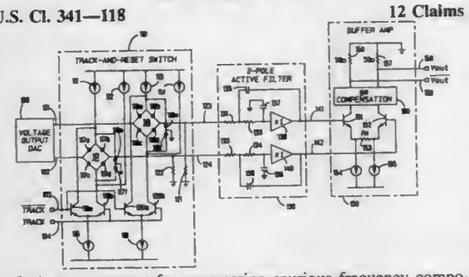
DISTORTION SUPPRESSOR FOR DIGITAL-TO-ANALOG CONVERTER

Bert K. Oyama, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 29, 1995, Ser. No. 521,342

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—118 **12 Claims**



1. An arrangement for suppressing spurious frequency components of an analog output of a digital-to-analog (D/A) converter, the arrangement comprising:

a track-and-reset switching circuit having an input coupled to an output of the D/A converter, the track-and reset switching circuit blanking out the D/A converter output during transition phases of the analog output;

a filter circuit having an input coupled to an output of the track-and-reset switching circuit; and

a linearized, differential buffer amplifier circuit having an input coupled to an output of the filter circuit, the filter circuit being coupled to the buffer amplifier circuit input and minimizing high frequency distortion of the D/A converter output signal.

5,614,904

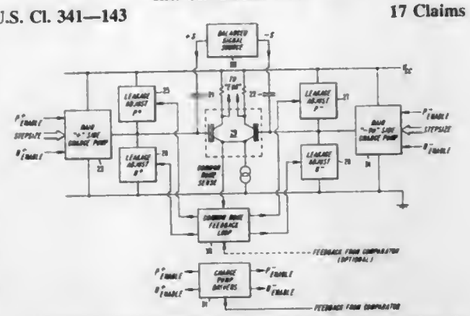
BALANCE COMPANDED DELTA CONVERSION FOR HOMODYNE RECEIVER

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Mar. 9, 1995, Ser. No. 401,124

Int. Cl.[6] H03M *1/06*

U.S. Cl. 341—143 **17 Claims**



1. A balanced delta-modulation analog-to-digital conversion circuit comprising:

a first principal integrator means for producing a first output signal which rises when a first control signal is generated and falls when a second control signal is generated;

a second principal integrator means for producing a second output signal which falls when said first control signal is generated and rises when said second control signal is generated; and

differencing means for responding to the difference between said first and second output signals and generating said first or second control signals.

5,614,905

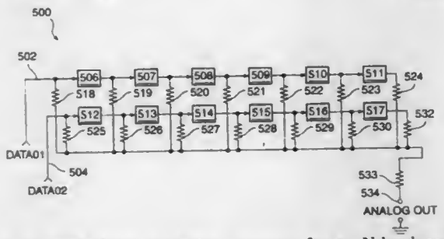
HIGH SPEED SERIAL DIGITAL DATA TO ANALOG SIGNAL CONVERTER

Ronald C. Crane, 2101 California St., Apt. 329, Mountain View, Calif. 94040

Filed Jan. 25, 1994, Ser. No. 187,267

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—146 **8 Claims**



5. A serial digital to analog converter for an N-level code comprising:

first through N−1 binary inputs forming first through N−1 data input channels each conveying in parallel a serial binary representation of the N-level code;

a first series of serially-coupled delay line elements, the first data input channel being coupled to feed the first series of serially-coupled delay line elements, said first series of delay line elements capturing at each digital input binary-level data at continuously-variable times, each said first delay line element having means for controllably setting gate propagation delay through said gate device to a preselected continuously variable precision propagation delay time, so that digital data is propagated through said delay line elements at a precision delay time after arrival at each said digital input to said delay line elements;

at least a second series of serially-coupled delay line elements, the second data input channel being coupled to feed the second series of delay line elements, said second series of delay line elements capturing at each digital input binary-level data at continuously-variable times, each said second delay line element having means for controllably setting gate propagation delay through said gate device to a preselected continuously variable precision propagation delay time, so that digital data is propagated through said delay line elements at a precision delay time after arrival at each said digital input to said delay line elements;

a common signal node;

an output pad; and

resistor-buffered taps connected at nodes between the delay line elements of the at least first and second series of delay line elements, each of the resistor-buffered taps being coupled to the common signal node, the common signal node for feeding the output pad, the output pad being series coupled with an analog output.

5,614,906

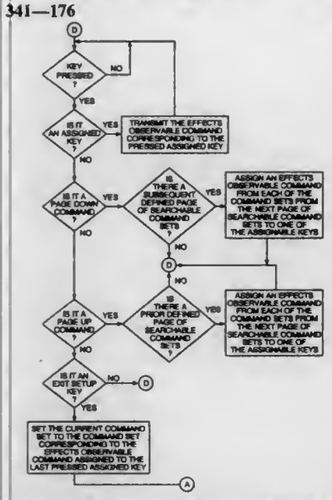
METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

Patrick H. Hayes, Mission Viejo, and Kimthoa T. Nguyen, Yorba Linda, both of Calif., assignors to Universal Electronics Inc., Twinsburg, Ohio

Filed Apr. 23, 1996, Ser. No. 636,666

Int. Cl.[6] G08C *19/12*

U.S. Cl. 341—176 **16 Claims**



16. An apparatus for selecting an appropriate one of a plurality of command sets stored in a remote control having a plurality of assignable user actuated switches or keys for controlling a remotely controllable electronic device, comprising:

means for assigning an effects observable command from each of the plurality of command sets to one of said plurality of assignable user actuated switches or keys;

means for transmitting said effects observable command when the corresponding one of said plurality of assignable user actuated switches or keys is actuated;

means for indicating the halting of the actuation of the plurality of assignable user actuated switches or keys; and

means for setting the remote control to transmit future remote control commands from the command set containing the last transmitted effects observable command.

5,614,907

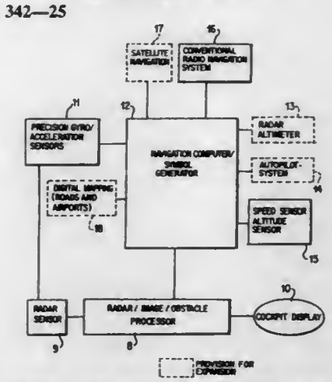
ALL WEATHER VISUAL SYSTEM FOR HELICOPTERS

Wolfgang Kreitmair-Steck, Höhenkirchen, and Helmut Klausing, Wessling/Hochstadt, both of Germany, assignors to Daimler-Benz Aerospace AG, Germany

Filed Mar. 14, 1996, Ser. No. 616,003

Int. Cl.[6] G01S *13/90;7/04*

U.S. Cl. 342—25 **7 Claims**



1. All weather visual system for a helicopter, of the type comprising a synthetic aperture radar unit with rotating antennas, in which at least one radar antenna is located at the end of a helicopter rotor or a turnstile above a rotor axis, to transmit and receive radar pulses, received signals being demodulated, temporarily stored, correlated in a computer, and then displayed, wherein:

radar antennas are positioned between the rotor blades in one of: a single plane, and planes that overlap one another pairwise;

transmitting and receiving antenna pairs with different elevational directions are integrated in the ends of rotating antenna support arms;

radar transmitting/receiving electronics in the rotating antenna support arms and in a co-rotating electronics housing are integrated with a power supply;

acceleration sensors coupled to provide inputs to said computer for motion compensation;

means for measuring the forward speed are coupled to provide inputs to said computer;

precision gyros are provided to locate the rotational plane of the antenna support arms, said precision gyros also being coupled to provide inputs to said computer; and

means coupled to an output of said computer are provided for displaying radar information as a photo-like image on a screen located in the cockpit, partial images from the antennas with different elevation angles being linked and smoothed to create said images.

5,614,908

HELICOPTER SYSTEM WITH ROTOR BLADE ANTENNAS FOR LANDING ASSISTANCE AND FOR DETECTION OF ELECTRO-MAGNETIC ANOMALIES

Joseph P. Phelan, 74 Alloway Rd., Parsippany, N.J. 07054, and Yakov Treskov, 2339 Hudson Ter., Fort Lee, N.J. 07024

Filed Apr. 14, 1995, Ser. No. 421,864

Int. Cl.[6] G01S *11/00;* **G01V** *5/02;3/16;* **H01Q** *1/28*

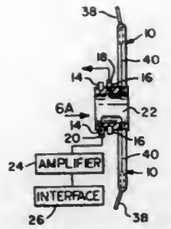
U.S. Cl. 342—33 **21 Claims**

1. A helicopter system including a helicopter having a linear speed, an angular speed, and pilot landing assisting capabilities that assist a pilot in landing a helicopter on a landing site, said system comprising:

a) radio wave generating means for generating radio waves at the landing site; said radio waves having amplitudes and a wavelength;

b) a helicopter body;

c) a shaft rotatively mounted to said helicopter body;



d) a pair of slip rings fixedly attached to said shaft for rotation therewith;

e) a plurality of blades having tips and being attached to said shaft for rotation therewith; said plurality of blades having a variable pitch and a variable angular velocity, so that as said variable angular velocity of said plurality of blades varies to allow for fine tuning of reception of said radio waves generated by said radio wave generating means, said variable pitch of said plurality of blades varies accordingly so as to prevent a sudden change in altitude of said helicopter;

f) an even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae for receiving said radio waves generated by said radio wave generating means and generating a current responsive thereto; each antenna of said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae extending downwardly from a tip of a different blade of said plurality of blades;

g) a plurality of coaxial cables; each cable of said plurality of coaxial cables extending longitudinally through a different blade of said plurality of blades from an antenna of said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae to said pair of slip rings, so that said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae are in electrical communication with said pair of slip rings and said current generated by said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae flows to said pair of slip rings;

h) a pair of immovable brushes being in electrical communication with said pair of slip rings while said plurality of blades rotate, so that said current flows from said pair of slip rings to said pair of immovable brushes while said plurality of blades rotate;

i) an amplifier being in electrical communication with said pair of immovable brushes and amplifying said current from said pair of immovable brushes, so that said current flows from said pair of immovable brushes to said amplifier and is amplified thereby so as to produce an amplified current;

j) a microcomputer interface being in electrical communication with said amplifier, so that said amplified current flows from said amplifier to said microcomputer interface;

k) a microcomputer being in electrical communication with said microcomputer interface, so that said amplified current flows from said microcomputer interface to said microcomputer; and

l) a display device being in electrical communication with said microcomputer for displaying a signal representative of said amplified current, so that said amplified current flows from said microcomputer to said display device; said signal being a function of altitude of said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae above the landing site and said amplitude of said radio waves received by said even number of slender, cylindrically-shaped, and downwardly-extending exterior antennae, so that by monitoring said signal displayed on said display device said altitude of said helicopter above the landing site and proximity of said helicopter to the landing site can be monitored and used to assist the pilot of said helicopter in landing said helicopter on the landing site.

5,614,909

FM RADAR SYSTEM

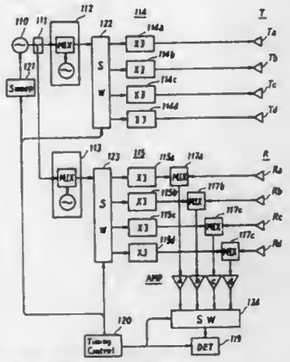
Satoru Komatsu, Suginami-ku, and Hiroshi Kudo, Saitama-ken, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 147,461, Nov. 2, 1993, Pat. No. 5,495,255, which is a continuation of Ser. No. 938,992, Sep. 2, 1992, abandoned. This application Aug. 15, 1995, Ser. No. 515,322

Claims priority, application Japan, Nov. 2, 1992, 3-253097

Int. Cl.[6] G01S *13/93*

U.S. Cl. 342—70 **7 Claims**



1. An FM radar system comprising:

a plurality of dielectric plates;

each dielectric plate having disposed thereon a plurality of transmitting antennas for transmitting FM signals of a high frequency; a plurality of receiving antennas for receiving return signals, each of said return signals having been originally transmitted by a transmitting antenna and reflected by an object; and a plurality of mixers for producing beat signals of low frequency by mixing said return signals with a local signal related to said FM signals transmitted from said transmitting antennas;

time dividing means coupled to said mixers for time-dividing the beat signals produced the mixers and producing a plurality of time divided beat signals; and

a common detection circuit coupled to said time dividing means for detecting a frequency of each time divided beat signal supplied by said time dividing means and for determining a range to an object based upon the frequencies of the time divided beat signals.

5,614,910

MISS DISTANCE VECTOR SCORING SYSTEM

Joseph L. Bradley, Oxnard; Don Whiteman, and George T. Mills, both of Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1995, Ser. No. 505,716

Int. Cl.[6] G01S *13/48*

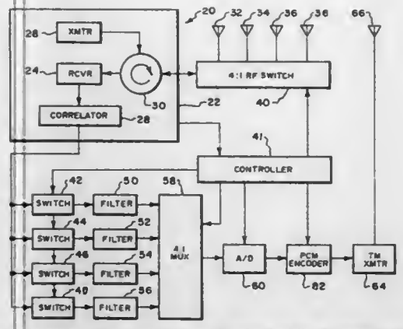
U.S. Cl. 342—119 **20 Claims**

1. A miss distance indicator for measuring and indicating a missile-to-target distance and a missile direction, said miss distance indicator comprising:

a scalar scoring system for generating a pulsed radio frequency signal having a predetermined frequency;

a phase lock loop circuit connected to said scalar scoring system to receive said pulsed radio frequency signal, said phase lock loop circuit, responsive to said pulsed radio frequency signal, generating a system clock signal;

a programmed array logic device connected to said phase lock loop circuit to receive said system clock signal, said programmed array logic device, responsive to said system clock signal, generating a plurality of antenna control signals, and a plurality of sample-hold pulse signals;



antenna means, responsive to said pulsed radio frequency signal and said antenna control signals, sequentially emitting first, second, third and fourth pulsed beams of radio frequency energy, each of said first, second, third and fourth pulsed beams of radio frequency energy having an identical pulse repetition frequency, said first, second, third and fourth pulsed beams of radio frequency energy forming a spherical radiation pattern of pulsed radio frequency energy to detect an incoming missile;

said antenna means receiving reflections of said first, second, third and fourth pulsed beams of radio frequency energy from said incoming missile and converting the reflections of said first, second, third and fourth pulsed beams of radio frequency energy into electrical signals corresponding to a scalar miss distance and a vector miss direction of said incoming missile from said antenna means, said antenna means being representative of a target;

said scalar scoring system receiving said electrical signals and then providing an analog video signal;

sampling means for receiving said analog video signal and said sample-hold pulse signals, said sampling means, responsive to said sample-hold pulse signals, sampling portions of said analog video signal;

bandpass filtering means for receiving the sampled portions of said analog video signal and then passing through said bandpass filtering means only the sampled portions of said analog video signal within a predetermined frequency range;

an analog-to-digital converter connected to said filtering means for converting the sampled portions of said analog video signal within said predetermined frequency range into an equivalent digital signal;

a pulse code modulation encoder connected to said analog-to-digital converter for encoding said equivalent digital signal into a serial bit stream and providing a frame sync logic signal for said serial bit stream; and

a transmitter connected to said pulse code modulation encoder for transmitting said serial bit stream to a receiving station for processing by said receiving station.

5,614,911

RADAR-BASED METHOD OF LEVEL MEASUREMENT

Johanngeorg Otto, Aalen-Hofherrnweiler; Stefan Burger, Freiburg, and Peter Gerst, Karlsruhe, all of Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

PCT No. PCT/EP94/03136, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO95/08780, PCT Pub. Date Mar. 30, 1995

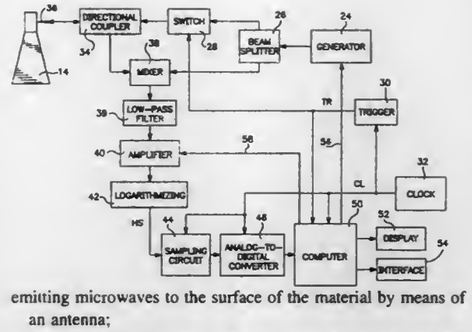
PCT Filed Sep. 20, 1994, Ser. No. 436,391

Claims priority, application Germany, Sep. 21, 1993, 43 32 071.6

Int. Cl.[6] G01S *13/08*

U.S. Cl. 342—124 **10 Claims**

1. A radar-based method for measuring a level of material in a container, comprising the steps of:



emitting microwaves to the surface of the material by means of an antenna;

receiving the echo waves reflected from the surface of the material using the antenna;

storing an undisturbed echo function corresponding to an undisturbed measurement;

forming an actual echo function from the echo waves received by the antenna for each measurement, the actual echo function representing the echo amplitudes as a function of the distance to the surface of the material from the antenna;

comparing the actual echo function to the undisturbed echo function corresponding to the undisturbed measurement;

evaluating deviations detected by the comparison between the actual echo function to the undisturbed echo function in the antenna region and in the adjacent proximity zone to recognize at least one of formation of deposit on the antenna, damage to the antenna, and loss of the antenna.

5,614,912

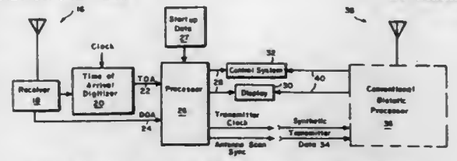
RADAR PROCESSING METHOD AND APPARATUS

Edmund J. Mitchell, Newton, Mass., assignor to The Mitre Corporation, Bedford, Mass.

Continuation of Ser. No. 756,615, Sep. 9, 1991, abandoned. This application Feb. 28, 1995, Ser. No. 396,279

Int. Cl.[6] G01S *13/46*

U.S. Cl. 342—146 **26 Claims**



1. Apparatus for locating at least two targets comprising:

a transmitter of electromagnetic radiation for directing electromagnetic radiation to said at least two targets,

a receiver of electromagnetic radiation for intercepting reflected electromagnetic radiation or transponded electromagnetic radiation from said at least two targets, said receiver not receiving electromagnetic radiation directly from said transmitter for subsequent processing,

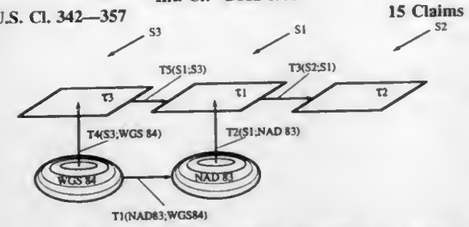
a processor operationally engaged to said receiver and independent of said transmitter for accepting signals from said receiver, said signals characterizing said reflected electromagnetic radiation or said transponded electromagnetic radiation from said at least two targets, and

programs running in said processor for computing said locations of any of said at least two targets from said signals even though said receiver has not been manipulated to be synchronized with said transmitter.

5,614,913
OPTIMIZATION OF SURVEY COORDINATE TRANSFORMATIONS

Mark Nichols, Sunnyvale; Kenneth W. McBride, Los Altos, both of Calif.; Ian Viney, St. Martins, New Zealand; Arthur Taylor, Basingstoke, United Kingdom; Richard Jackson, St. Albans, New Zealand, and John F. Schipper, Palo Alto, Calif., assignors to Trimble Navigation, Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 476,844
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 **15 Claims**



1. A method for determining location coordinates for a plurality of surveyed locations, the method comprising the steps of:

providing a location determination (LD) receiver having an LD signal antenna and an LD signal receiver/processor to receive and process LD signals transmitted from three or more LD signal sources, which are spaced apart from the LD receiver, and to use these LD signals to determine three-dimensional location coordinates for the LD signal antenna;

using the LD signals received at the LD receiver to determine a first set of three-dimensional location coordinates $(x'_{n,1},y'_{n,1},z'_{n,1})$ for N selected presently-surveyed locations, numbered n=1, 2, . . . , N (N≧3) in a first coordinate system G1;

providing a second set of three-dimensional location coordinates $(x'_{m,2}, y'_{m,2}, z'_{m,2})$ for M previously-surveyed locations, numbered m=1, 2, . . . , M (M≦N), where each previously-surveyed location number m=k is coincident with the presently-surveyed location number n=k for k=1, 2, . . . , M;

providing a three-dimensional coordinate transformation T(G2;G1) of the first coordinate system G1 onto a second three-dimensional coordinate system G2, under which the location coordinates $(x'_{n,1}, y'_{n,1}, z'_{n,1})$ for each of the N presently-surveyed locations in G1 are transformed into location coordinates $(x''_{n,2}, y''_{n,2}, z''_{n,2})$ in G2 (n=1, 2, . . . , N);

choosing the transformation T(G2;G1) so that the error sum

$$\epsilon_p = \left[\sum_{m=1}^{M} \{e_m|x''_{m,2} - x'_{m,2}|^p + f_m|y''_{m,2} - y'_{m,2}|^p + g_m|z''_{m,2} - z'_{m,2}|^p\} \right]^{\{1/p\}},$$

is minimized, where p is a selected positive number and e_m,f_m and g_m are selected non-negative weight coefficients; and

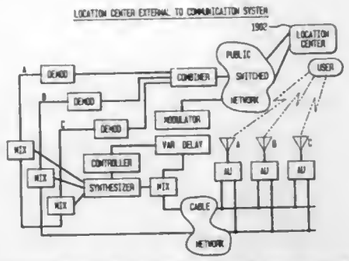
determining the location coordinates $(x''_{n,2}, y''_{n,2}, z''_{n,2})$ for at least one of the presently surveyed locations (n=1, 2, . . . , N) under the transformation T(G2;G1), and displaying these location coordinates by a visually perceptible or audibly perceptible image.

5,614,914
WIRELESS TELEPHONE DISTRIBUTION SYSTEM WITH TIME AND SPACE DIVERSITY TRANSMISSION FOR DETERMINING RECEIVER LOCATION

D. Ridgely Bolgiano, Gladwyne, Pa., and Gilbert E. LaVean, Reston, Va., assignors to Interdigital Technology Corporation, Wilmington, Del.

Filed Sep. 6, 1994, Ser. No. 301,230
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—364 **80 Claims**

1. In a wireless communication system, wherein a data packet is communicated from a transmitter to a receiver to form a received data packet, a method for determining the location of said receiver,



said system including first, second and third antennas spaced apart from each other, said method comprising:

transmitting said data packet from said first antenna to form a first transmitted data packet;

transmitting said data packet from said second antenna to form a second transmitted data packet after said first transmitted data packet;

transmitting said data packet from said third antenna to form a third transmitted data packet after said second transmitted data packet;

receiving in sequence said first, second and third transmitted data packets at said receiver forming respective first, second and third received data packets;

selecting at least one of said first and second received data packets to form said digital data at said receiver;

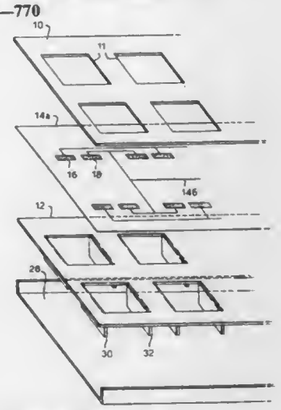
measuring the respective time of arrival of said first, second and third transmitted data packets at said receiver; and

computing the location of said receiver from said respective measured time of arrival of said first, second and third transmitted data packets.

5,614,915
LAYERED ANTENNA

Roger C. Webb, Palgnton, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 3, 1996, Ser. No. 626,841
Claims priority, application United Kingdom, Apr. 13, 1995, 9507717
Int. Cl.[6] H01Q *13/10*
U.S. Cl. 343—770 **9 Claims**



1. A layered antenna comprising:

a) a feed network layer;

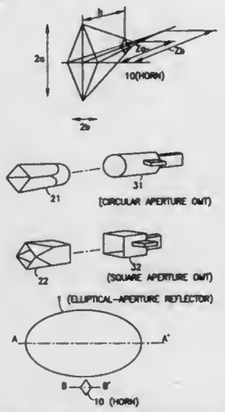
b) groundplanes on respective opposite sides of the feed network layer;

c) a backplane placed parallel with and spaced from one of the ground layers to form a rear reflector of the antenna; said antenna having a linear array of radiating elements comprising apertures defined through the groundplanes, wherein the apertures formed in the groundplane adjacent the backplane have flanges which extend towards the backplane, whereby coupling between signals reflected by the reflector plane and the radiating elements is reduced.

5,614,916
ELLIPTIC BEAM HORN ANTENNA

Yoshihiko Mizuguchi, Tama, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 492,742
Claims priority, application Japan, Jun. 29, 1994, 6-168591
Int. Cl.[6] H01Q *13/00*
U.S. Cl. 343—786 **6 Claims**



1. An elliptic beam horn antenna, comprising:

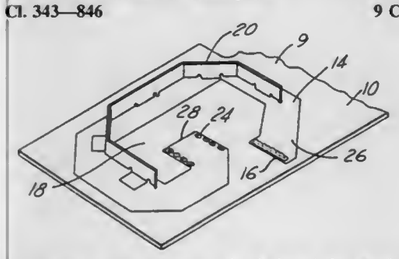
A horn antenna or waveguide structure for radiating out radio waves into space and having an essentially diamond-shaped aperture configuration, two diagonals of said diamond-shaped aperture configuration comprising a longer diagonal and a shorter diagonal; and

a feeding system for electro-magnetically coupling to said horn antenna or waveguide structure so that one or both of two diagonal directions of the diamond-shaped aperture coincide with the electric field vector of the radio waves.

5,614,917
RF SAIL PUMPED TUNED ANTENNA

John F. Kennedy, Dearborn, and Paul A. Zoito, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 130,933, Oct. 4, 1993, abandoned. This application Aug. 14, 1995, Ser. No. 514,901
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—846 **9 Claims**



1. An antenna mounted on a circuit board for receiving a predetermined RF signal comprising:

a dielectric layer having a first side and a second side;

an electrically conductive ground plane disposed on said first side;

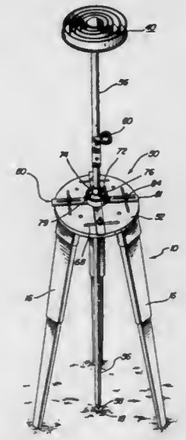
an elongated electrically conductive stub means disposed on said second side having two ends, each end electrically connected to said ground plane through conductive paths in said dielectric layer, said electrically conductive stub and said ground plane forming a closed resonant cavity that is excited by the RF signal when the RF signal arrives at said stub means, said stub means having a predetermined width; and

electrically conductive sail extending in a generally perpendicular direction from said stub means electrically connected to said stub means, for increasing the propagating directions by which the RF signal will excite said cavity.

5,614,918
GLOBAL POSITIONING SYSTEM ANTENNA FIXED HEIGHT TRIPOD ADAPTER

Steven J. Dinardo, Simi Valley, and Mark A. Smith, Altadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 265,521, Jun. 21, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 686,137
Int. Cl.[6] H01Q *3/02*
U.S. Cl. 343—882 **8 Claims**



1. A device for ensuring rapid and accurate positioning of a portable Global Positioning System antenna so that the antenna has longitude and latitude identical to a stationary survey marker and is disposed at a known altitude above said marker, the device comprising:

an elongate carrying member of a predetermined length for controlling the altitude of the antenna, the member having means at an upper end for removably attaching the Global Positioning System antenna, and means at a lower end for fixing the lower end on the survey marker, thereby defining the longitude and latitude of the antenna when the carrying member is adjusted to be plumb;

horizontally and angularly adjustable support means for supporting the carrying member and for imparting horizontal movement to the carrying member combined with automatic angular accommodation of the support means to the carrying member as said member is moved horizontally by the support means, said support means simultaneously allowing the carrying member to slide longitudinally through the support means while the lower end of the carrying member remains fixed in place on the survey marker;

level determining means attached to the carrying member for indicating when the antenna is disposed at the same latitude and longitude as the lower end of the carrying member by determining when the carrying member is plumb;

locking means for locking the support means in place when the level means determines that the carrying member is plumb; and

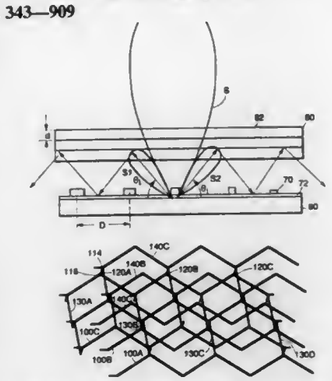
attachment means for removably attaching the device to a support structure.

5,614,919

WIRE DIAMOND LATTICE STRUCTURE FOR PHASED ARRAY SIDE LOBE SUPPRESSION AND FABRICATION METHOD

Joseph L. Pikulski, Westlake, and Juan F. Lam, Agoura Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 4, 1995, Ser. No. 416,625
Int. Cl.[6] H01Q *15/02*
U.S. Cl. 343—909 **7 Claims**



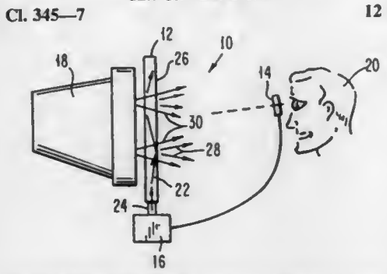
1. A frequency selective structure for suppressing electromagnetic radiation, comprising a wire mesh structure emulating a diamond lattice bond link structure between carbon atoms of a diamond lattice, wherein the wire mesh structure is characterized by a series of interlocking unit cube elements having a unit cube dimension d, and wherein the dimension d is one half of a wavelength of a frequency of radiation to be suppressed.

5,614,920

SECURE VIEWING OF DISPLAY UNITS USING AN ELECTRONIC SHUTTER

Paul W. Coteus, Yorktown Heights, N.Y., and Douglas S. Goodman, Sudbury, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,953
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—7 **12 Claims**



1. An apparatus for providing secure viewing of a primary image on a display by a viewer comprising:

means for generating an optical mask for said image by generating a secondary image between the display and the viewer, said secondary image mixing with said primary image to obscure the viewing of the primary image; and

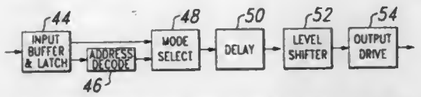
means for separating said optical mask from said image by removing the secondary image from the view of only the viewer, so that the viewer only sees the primary image.

5,614,921

SIGNAL GENERATOR FOR CONTROLLING A SPATIAL LIGHT MODULATOR

James L. Conner, Rowlett; Michael J. Overlaur, Plano, and Kevin Kornher, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 111,696, Aug. 25, 1993. This application Jun. 7, 1995, Ser. No. 482,538
Int. Cl.[6] G09G *3/20;3/34*
U.S. Cl. 345—85 **8 Claims**



1. A signal generator for controlling a spatial light modulator, wherein said spatial light modulator is comprised of blocks, comprising:

a block selector to select at least one block of said spatial light modulator, said block selector having two mode inputs and four address inputs for receiving mode and address signals, said block selector having four modes, a first mode wherein the block identified by the address inputs is selected, a second mode wherein all even numbered blocks are selected, a third mode wherein all odd numbered blocks are selected, and a fourth mode wherein all blocks are selected;

a mode selector to determine what voltage should be provided to each block based on whether or not each block is selected as determined by the output of said block selector, said mode selector having three inputs for selecting one of eight states, a first state indicating all blocks should receive a bias voltage, a second state indicating all blocks should receive an offset voltage, a third state indicating all blocks should receive an oscillating reset voltage, a fourth state indicating all blocks should receive a constant reset voltage, a fifth state indicating all blocks should receive said bias voltage, a sixth state indicating selected blocks should receive said offset voltage and unselected blocks should receive said bias voltage, a seventh state indicating that selected blocks should receive said oscillating reset voltage and unselected blocks should receive said bias voltage, and an eighth stat indicating selected blocks should receive said constant reset voltage and unselected blocks should receive said bias voltage; and

an output drive connected to said mode selector and to each block of said spatial light modulator to provide voltages selected by said mode selector to each said block.

5,614,922

DISPLAY APPARATUS

Takafumi Kawaguchi, Yamatotakada; Akira Tomiyoshi, and Makoto Takeda, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1995, Ser. No. 414,717
Claims priority, application Japan, Apr. 4, 1994, 6-066145
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—89 **11 Claims**

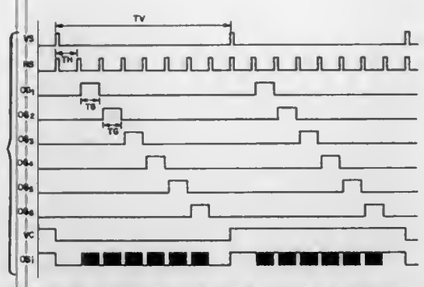
1. An active matrix type display apparatus comprising:

a display medium made of an electro-optical material;

a pair of substrates opposing each other with the display medium interposed therebetween;

a plurality of pixel electrodes formed in a matrix on one of the substrates;

a plurality of row electrodes each of which is disposed so as to correspond to each row of the pixel electrodes in the matrix;



a plurality of column electrodes each of which is disposed so as to correspond to each column of the pixel electrodes in the matrix;

switching devices each of which is disposed so as to correspond to each of the pixel electrodes, connects the corresponding pixel electrode to the column electrode corresponding to the pixel electrode, and is connected to the row electrode corresponding to the pixel electrode through a control terminal thereof;

a row electrode driving circuit for applying a voltage to each of the row electrodes so that the corresponding switching device becomes conductive only in a row electrode scanning term during a horizontal scanning term assigned to each of the row electrodes;

a column electrode driving circuit for alternately applying two kinds of voltages to each of the column electrodes repeatedly at a duty ratio in accordance with a display data corresponding to each of the column electrodes; and

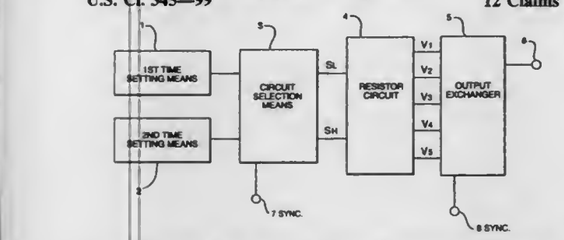
voltage switching inhibition means for inhibiting switching of the voltages to be applied to each of the column electrodes by the column electrode driving circuit at least in a part of a horizontal scanning term that is not assigned as the row electrode scanning term of any of the row electrodes.

5,614,923

DRIVE APPARATUS FOR A LIQUID CRYSTAL DISPLAY SCREEN

Tatsushi Gotou; Kazuyuki Murase, and Hideki Yamanaka, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jul. 13, 1994, Ser. No. 274,531
Claims priority, application Japan, Jul. 14, 1993, 5-174097
Int. Cl.[6] G01G *3/36;* G09G *5/00;5/36*
U.S. Cl. 345—99 **12 Claims**



1. A drive apparatus for a liquid crystal display screen comprising:

time setting means for programmably presetting a time according to the size of said display screen;

circuit selection means for providing a low resistor selection signal and a high resistor selection signal in accordance with said pre-set time of said time setting means;

resistor circuit means including at least a first circuit block and a second circuit block coupled in parallel between a power source and a reference source, the first circuit block having a low resistor and a first switching element coupled in series to a first end of said low resistor and the second circuit block having a high resistor and a second switching element coupled in series to a first end of said high resistor; and

an output exchanging means including at least one switch element corresponding to at least one output voltage from said resistor circuit means for providing said at least one output voltage to said display screen by switching said switch element in response to a frame frequency for said display screen;

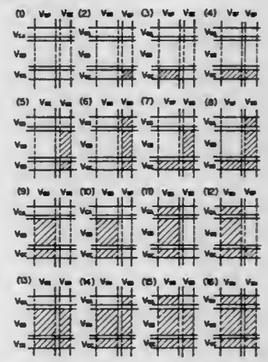
wherein said circuit selection means is coupled to selectively apply said low and high resistor selection signals to said first and second switching elements, respectively, to provide said at least one output voltage through one of said low and high resistors.

5,614,924

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE AND A DRIVING METHOD OF EFFECTING GRADATIONAL DISPLAY THEREFOR

Takaji Numao, Kashiwa, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1995, Ser. No. 437,441
Claims priority, application Japan, Jun. 1, 1994, 6-120324
Int. Cl.[6] G09G *5/10*
U.S. Cl. 345—149 **12 Claims**



3. A driving method of effecting gradational display for a ferroelectric liquid crystal display device comprising:

a plurality of scan electrodes disposed parallel to each other wherein each scan electrode is provided with a plurality of sub-scan electrodes;

a plurality of signal electrodes disposed parallel to each other and perpendicular to said scan electrodes; and

a ferroelectric liquid crystal disposed at crossing points of said scan electrodes and said signal electrodes to form pixels, wherein each of said pixels is provided with said plurality of sub-scan electrodes so as to form a multiple number of sub-pixels constituting the pixel and said plurality of sub-scan electrodes are provided for a single pixel in a line width ratio of 1: N^P–1:1 (N and P are integers of 2 or more),

said method comprising the steps of:

using said ferroelectric liquid crystal having negative anisotropy of dielectric constant;

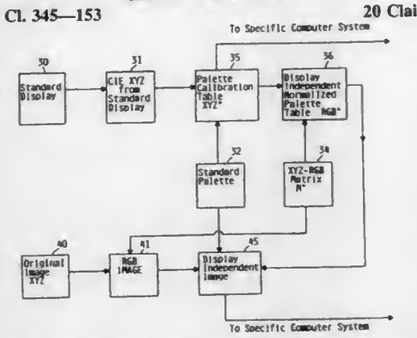
simultaneously applying different voltage waveforms from each other to separate, plural sub-scan electrodes constituting a single pixel; and

applying voltages to signal electrodes corresponding to said scan electrodes in such a manner that, if the display state of a sub-pixel to be impressed with a voltage is to be changed into an alternate state, the voltage to be applied to the sub-pixel takes a waveform of consecutive two homopolar pulses, and if the display state of the sub-pixel is to be unchanged, the voltage to be applied to the sub-pixel takes a waveform of consecutive two heteropolar pulses.

5,614,925
METHOD AND APPARATUS FOR CREATING AND DISPLAYING FAITHFUL COLOR IMAGES ON A COMPUTER DISPLAY

Gordon W. Braudaway, Yorktown Heights, N.Y., and Helen R. Delp, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 974,862, Nov. 10, 1992, Pat. No. 5,502,458. This application Jun. 5, 1995, Ser. No. 464,928
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—153 **20 Claims**



1. A method for displaying a faithful color image on a specific computer display connected to a specific computer system, comprising the steps of:

receiving a palette calibration table from a standard computer system;

receiving a display independent image from a standard computer system;

calculating a display specific palette from said palette calibration table and from information about said specific computer display;

generating said faithful color image from said display specific palette and from said display independent image; and

displaying said faithful color image on said specific computer display.

5,614,926
WORD PROCESSOR WITH A HANDWRITING TEXT PROCESSING FUNCTION

Hiroyuki Shigematsu, Funabashi; Hirofumi Nishikawa, Yao, and Yukihiro Shibata, Soraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

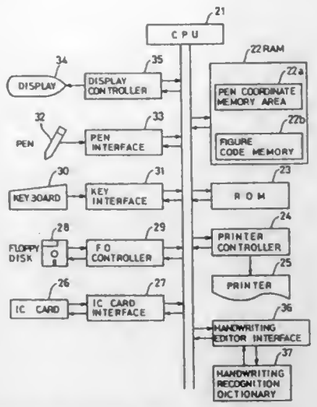
Continuation of Ser. No. 237,162, May 3, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 579,033
Claims priority, application Japan, May 17, 1993, 5-114816; Jun. 28, 1993, 5-157489
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—156 **14 Claims**

1. A word processor providing handwritten document processing functions, comprising:

a display including a plurality of display regions for displaying a document including text characters in a document display region and document processing information in another display region;

a pointing device for drawing any one of a plurality of document processing function-symbolic figures while displaying its related document on the display;

a memory for storing for each document processing function-symbolic figure a document processing figure and a set of instructions for implementing a document processing operation associated with that document processing figure, at least some of the document processing figures being associated with two different document processing operations and the document processing operations include an up-scroll of the screen, a down-scroll of the screen, a display of a beginning of a document head, and a display of an end of the document; and



a processor for performing the following steps:

analyzing a document processing function-symbolic figure drawn on the display with the pointing device with one of the stored document processing figures and identifying a corresponding one of the stored document processing figures;

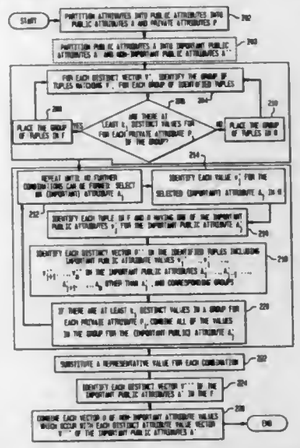
selecting one of the two document processing operations associated with the identified document processing figure based on a determination of a direction in which the pointing device is moved on the display when the document processing figure is drawn and a determination of a length of the drawn document processing figure; and

executing the set of document processing instructions associated with the selected document processing operation.

5,614,927
PROTECTING CONFIDENTIAL INFORMATION IN A DATABASE FOR ENABLING TARGETED ADVERTISING IN A COMMUNICATIONS NETWORK

Warren S. Gifford, Holmdel; Nancy D. Griffeth, Westfield, and James E. Katz, Morristown, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 372,759, Jan. 13, 1995, abandoned. This application Jun. 12, 1995, Ser. No. 490,001
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—612 **47 Claims**



1. A method for protecting a database against deduction of confidential attribute values therein comprising the steps of:

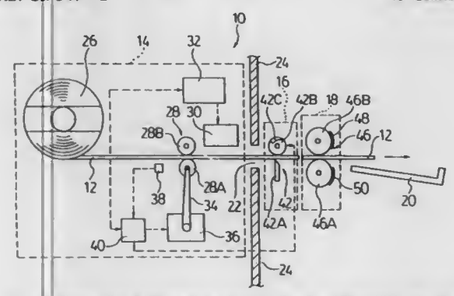
using a processor, electronically partitioning said database into public attributes, containing public attribute values, and private attributes containing private attribute values, and

using a processor, electronically processing said values to reduce any high correlation between public attribute values and private attribute values.

5,614,928
METHOD AND PRINTER FOR PRINTING HEAT SEALING LABELS

Yasuhiko Matsuda, Iwate-ken, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Oct. 20, 1994, Ser. No. 326,313
Claims priority, application Japan, Oct. 22, 1993, 5-287515
Int. Cl.[6] B41J *2/01*
U.S. Cl. 347—2 **43 Claims**



1. A method for printing heat sealing labels comprising the steps of:

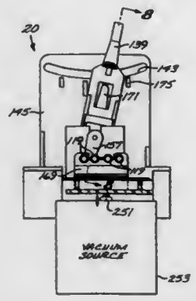
applying ink with an ink jet printer onto a printing surface of a heat sealing label strip having the printing surface on a first side and having on a second side a surface coated with an adhesive; and

heating the heat sealing label strip to fuse the adhesive on the surface on a second side and simultaneously dry the ink printed on the printing surface on the first side.

5,614,929
MANUAL PEN SELECTION FOR CLEARING NOZZLES WITHOUT REMOVAL FROM PEN CARRIAGE

Michael T. Dangelo, San Diego; Kevin L. Glassett, Escondido, and Stephen W. Bauer, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 56,326, Apr. 30, 1993, Pat. No. 5,450,105, and a continuation of Ser. No. 56,012, Apr. 30, 1993, Pat. No. 5,420,619. This application Apr. 29, 1994, Ser. No. 235,630
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—30 **3 Claims**



1. A thermal ink jet printer comprising:

a print carriage;

a printhead cartridge supported by said print carriage, said printhead cartridge having a nozzle array;

capping means for sealingly surrounding the printhead nozzle array pursuant to engagement of said capping means with the printhead cartridge;

means for causing said capping means to engage said printhead cartridge;

vacuum conveying means for conveying priming vacuum to said capping means;

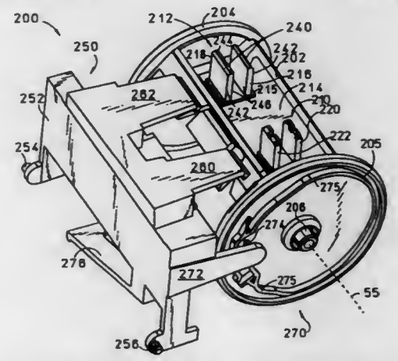
a manually actuated source of priming vacuum having a vacuum source cap spaced apart from said vacuum conveying means, said source of priming vacuum being selectively actuated to produce vacuum at said vacuum source cap and said vacuum source cap selectively engaging said vacuum conveying means for application of vacuum thereto, whereby positive pressure is not produced when said capping means is brought into engagement with said printhead cartridge;

whereby said printhead cartridge is primed without removal thereof from said carriage and without use of a motorized vacuum pump.

5,614,930
ORTHOGONAL ROTARY WIPING SYSTEM FOR INKJET PRINTHEADS

William S. Osborne; Bret Taylor, both of Vancouver, and Patrick J. Therien, Battle Ground, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 218,391, Mar. 25, 1994. This application Oct. 28, 1994, Ser. No. 330,461
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—33 **26 Claims**



1. A service station for servicing an inkjet printhead of an inkjet printing mechanism, the printhead having a face plate defining a group of ink ejecting nozzles extending therethrough in a linear array, comprising:

a platform moveable in a wiping direction; and

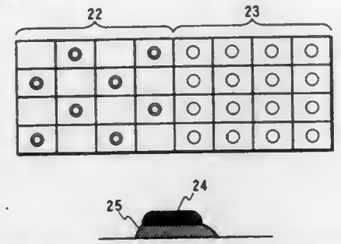
a printhead wiper supported by the platform to wipe the face plate parallel to the linear nozzle array when the platform is moved in the wiping direction, wherein the wiper has a wiping edge comprising a wiping surface to contact the face plate adjacent the array, and an escape passageway for ink residue to be pushed by the wiping surface away from the array.

5,614,931

INK JET RECORDING METHOD

Takao Koike, and Koichi Naitoh, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1994, Ser. No. 293,461
Claims priority, application Japan, Aug. 26, 1993, 5-211457
Int. Cl.[6] B41J *2/21; G01D 11/00*
U.S. Cl. 347—43 17 Claims



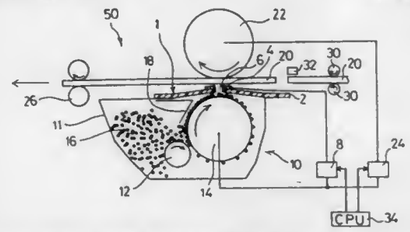
1. An ink jet recording method in which a plurality of inks different in color are used to record a color image for a unitary picture element, said method comprising the steps of:
printing a first portion of a unitary picture element with at least one ink low in permeability; and
printing a second portion of said picture element with at least one ink high in permeability,
wherein the picture element is a dot matrix comprising low-permeable ink dots printed with said at least one ink low in permeability and high-permeable ink dots printed with said at least one ink high in permeability,
and wherein in the picture element the at least one ink low in permeability and the at least one ink high in permeability mix with and diffuse into each other.

5,614,932

IMAGE FORMING APPARATUS

Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 23, 1996, Ser. No. 636,300
Claims priority, application Japan, May 16, 1995, 7-116971
Int. Cl.[6] B41J *2/06; G03G 15/06*
U.S. Cl. 347—55 16 Claims



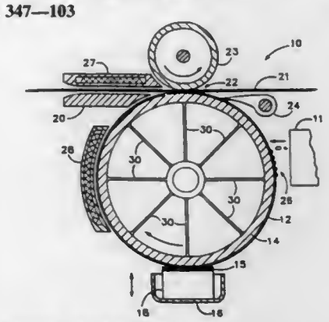
1. An image forming apparatus, comprising:
an electrode array having a plurality of charged particle passing portions and a plurality of control electrodes respectively corresponding to said charged particle passing portions;
charged particle supplying means for supplying charged particles to said charged particle passing portions of said electrode array;
a back electrode located opposite to said charged particle supplying means with respect to said electrode array, for attracting said charged particles passed through said charged particle passing portions toward an image recording medium; and
back voltage control means connected to said back electrode, for selectively applying to said back electrode an attracting voltage for attracting said charged particles and an inhibiting voltage for inhibiting attraction of said charged particles.

5,614,933

METHOD AND APPARATUS FOR CONTROLLING PHASE-CHANGE INK-JET PRINT QUALITY FACTORS

Larry E. Hindman, Woodburn; Randy C. Karambelas, Milwaukie; Barry D. Reeves, and James D. Rise, both of Lake Oswego, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 8, 1994, Ser. No. 255,585
Int. Cl.[6] B41J *27/16*
U.S. Cl. 347—103 14 Claims



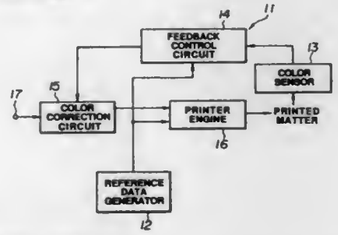
1. An imaging apparatus, comprising:
an applicator applying a liquid intermediate surface to a supporting surface, the liquid intermediate surface including at least one of an evaporative liquid, an adhesion promoting liquid, and a curable adhesive liquid;
an ink-jet printhead ejecting liquid phase-change ink drops toward the liquid intermediate surface; the ink drops flattening, spreading, and cooling following contact with the liquid intermediate surface to form a solid phase change ink image in which the cooled ink drops have a diameter to height ratio from about 1.5:1 to greater than about 4:1; and
a transparency film final receiving medium that receives the ink image from the liquid intermediate surface whereby the ink image adheres to the transparency film in a configuration suitable for substantially rectilinear light transmission.

5,614,934

PRINTER

Yasuhiro Yoshida, Nara; Gen Itoh, Amagasaki; Hiroyuki Furukawa, Ueno, and Masaki Takakura, Higashiosaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1993, Ser. No. 101,032
Claims priority, application Japan, Aug. 10, 1992, 4-234328
Int. Cl.[6] B41J *2/36;2/365*
U.S. Cl. 347—189 5 Claims



1. A printer comprising:
a reference data generator for producing reference data to determine a variation in printing colors;
a printer engine for printing the reference data;
a color sensor for measuring the reference data printed by the printer engine;
a feedback control circuit for producing a control signal according to an output signal of the color sensor;

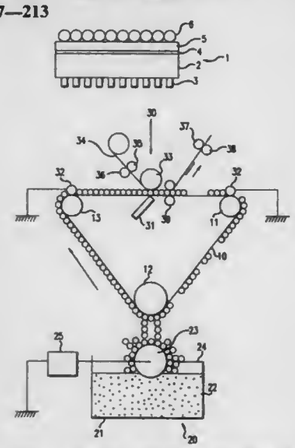
a color correction circuit which is constantly adjusted by the control signal to eliminate a variation in color caused by a variation in ambient conditions; and
further including a cutter for cutting off a portion of printed paper, on which said reference data is printed.

5,614,935

INK TRANSFER MEDIUM FOR TONER, INK TRANSFER PROCESS AND RE-INKING PROCESS FOR THE SAME

Kenji Ogi; Hiroshi Takayama; Yasuo Yamamoto, all of Minamiashigara; Kazuo Maruyama, and Eiichi Akutsu, both of Ebina, all of Japan, assignors to Fnji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 314,458, Sep. 28, 1994, Pat. No. 5,458,954, which is a continuation of Ser. No. 907,536, Jul. 2, 1992, abandoned. This application May 22, 1995, Ser. No. 447,212
Claims priority, application Japan, Jul. 11, 1991, 3-196138
Int. Cl.[6] B41J *2/315*
U.S. Cl. 347—213 7 Claims



1. An ink transfer process comprising the steps of:
forming a toner layer on an ink transfer medium, said ink transfer medium comprising
at least one conductive layer, and
an ink release layer having an adhesion from 0.2 g/mm to 40 g/mm as measured by a 90° peeling off method, the ink release layer including a viscoelastomer having a critical surface tension of 35 dyne/cm or less;
applying an electrical signal from a recording head to the at least one conductive layer of the ink transfer medium under pressure, the electric signal generating heat in the transfer medium which fuses toner on the ink release layer; and
transferring the fused toner to a recording medium.

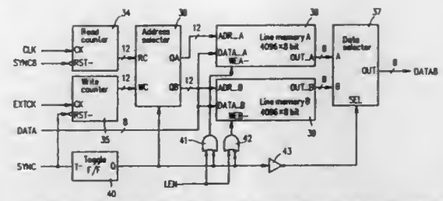
5,614,936

IMAGE FORMING APPARATUS FOR REPRODUCING AN IMAGE WITH MULTIPLE DENSITY LEVELS OF GRAY SCALE

Naoki Takahashi, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 12, 1994, Ser. No. 322,183
Claims priority, application Japan, Oct. 15, 1993, 5-258535
Int. Cl.[6] B41J *2/47;2/435*
U.S. Cl. 347—240 11 Claims

1. An image forming apparatus comprising:
converting means for receiving an image signal indicating a density of a pixel in an image formed from a plurality of pixels arranged in a matrix of a main scanning direction and a sub scanning direction crossing at right angles and for converting the image signal into a signal indicating a coloring pattern corresponding to the density; and



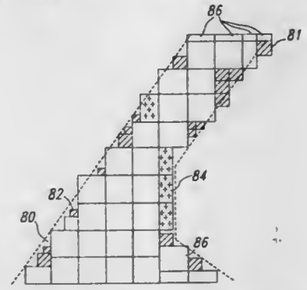
printing means for receiving the signal indicating coloring pattern and for printing the image on a medium by coloring each of the plurality of pixels in accordance with coloring pattern,
wherein each of the plurality of the pixels is divided into N sub-pixels in the sub scanning direction, wherein N is an integer larger than 1, and
the converting means generates, as the signal indicating the coloring pattern of each of the plurality of pixels, a signal indicating one of L patterns selected in accordance with the image signal, wherein L is an integer larger than N+1, each of the L patterns indicating which sub-pixels among the N sub-pixels are to be colored, thereby attaining L different densities of the pixel.

5,614,937

METHOD FOR HIGH RESOLUTION PRINTING

William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 97,419, Jul. 26, 1993. This application Jun. 7, 1995, Ser. No. 484,463
Int. Cl.[6] H04N *1/21*
U.S. Cl. 347—240 2 Claims



1. A method of high resolution printing, comprising:
a. receiving image data at a processor;
b. using said processor to analyze said image data such that said processor determines operation of a spatial light modulator comprised of an array of elements having a standard size arranged generally in rows and columns to print a resulting image most accurately representing said image data; and
c. selectively operating said elements of said spatial light modulator wherein said operating further comprises:
i. delaying activation of certain ones of said elements with the image data thereby controlling vertical placement of an image of said element on said resulting image to achieve finer vertical control over print images;
ii. activating a predetermined area of said array, wherein said predetermined area has rows horizontally offset from other of said rows thereby horizontally offsetting pixel images in said resulting image allowing pixel images to shift horizontally to achieve finer horizontal control over said resulting image; and
iii. using elements with sizes corresponding to fractions of said standard size allowing smaller pixel images to achieve finer control over filling in print image.

5,614,938

THREE-DIMENSIONAL RECORDING AND REPRODUCING APPARATUS

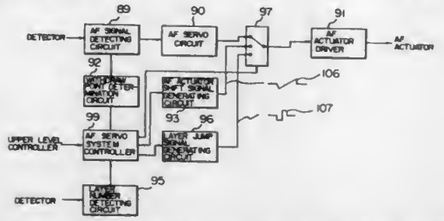
Hisataka Sugiyama, Kodaira; Takeshi Maeda; Kiyoshi Matsumoto, both of Kokubunji; Motoyasu Terao, Tokyo; Shigenori Okamine, Kodaira; Tetsuya Nishida, Hachioji, and Harukazu Miyamoto, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 427,866, Apr. 26, 1995, abandoned, which is a continuation of Ser. No. 958,162, Oct. 8, 1992, Pat. No. 5,414,451. This application Jun. 5, 1995, Ser. No. 464,461

Claims priority, application Japan, Oct. 11, 1991, 3-263561

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—247 **5 Claims**



1. An optical information reproducing method of using an optical disk having a plurality of recording layers recording optically detectable marks, wherein a laser beam is converged on each of the recording layers with an object lens driven by an actuator, and a light returned from the recording layer is detected to detect the marks, comprising the steps of:

driving the actuator by a servo control so that the laser beam is maintained in a focusing state on an arbitrary recording layer as an optical spot during detection of the mark; and

supplying a pulse-like signal to the actuator to be driven when the optical spot is moved among the recording layers.

5,614,939

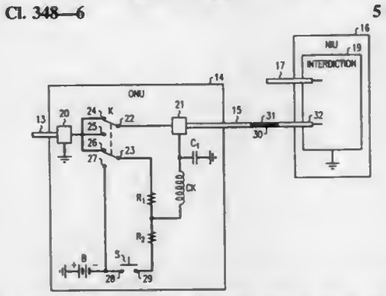
COAXIAL CABLE SERVICE INTERRUPTER

George A. DeBalko, Washington, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 18, 1995, Ser. No. 529,302

Int. Cl.[6] H04N *7/16*

U.S. Cl. 348—6 **5 Claims**



1. A circuit for preventing tampering with a coaxial drop cable having a shield conductor, the circuit comprising:

a coaxial relay comprising a first input terminal and first output terminal connectable between a first coaxial cable carrying signals over a broadband network and the drop cable, the relay also including a second input terminal and a second, third and fourth output terminal;

a coil for operating the relay, the coil having one end connectable to the shield conductor of the drop cable; and

a switch having one terminal coupled to the other end of the coil and another terminal connectable to a source of dc potential, the switch also being coupled in parallel with the second input terminal and the second output terminal of the relay, the relay being coupled so that the presence of a current in the coil couples the first input and output terminals and the second input and output terminals, while the absence of a current couples the first input terminal to the third output terminal and the second input terminal to the fourth output terminal.

5,614,940

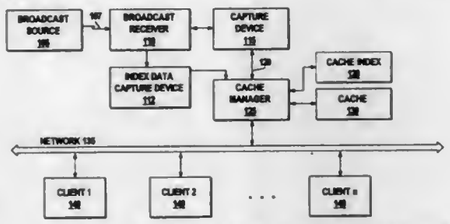
METHOD AND APPARATUS FOR PROVIDING BROADCAST INFORMATION WITH INDEXING

David A. Cobbley, Portland, and John A. Throckmorton, Lake Oswego, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 21, 1994, Ser. No. 327,504

Int. Cl.[6] H04N *5/265*

U.S. Cl. 348—7 **35 Claims**



1. A method for displaying broadcast information comprising the steps of:

(a) receiving broadcast information including video image data;

(b) storing at least on part of the video image data in a storage device;

(c) displaying a set of indexing information associated with the at least one part of the video image data;

(d) retrieving at least one portion of the at least one part of the video image data from the storage device based on selected indexing information, wherein the selected indexing information is part of the set of indexing information; and

(e) displaying the at least one portion.

5,614,941

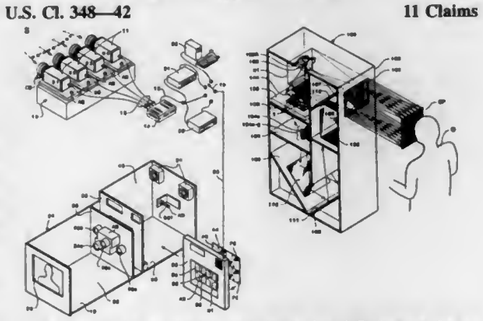
MULTI-IMAGE AUTOSTEREOSCOPIC IMAGING SYSTEM

Stephen P. Hines, 4525-B San Fernando Rd., Glendale, Calif. 91204

Continuation-in-part of Ser. No. 157,885, Nov. 24, 1993, Pat. No. 5,430,474. This application May 15, 1995, Ser. No. 440,763

Int. Cl.[6] H04N *13/00;15/00*

U.S. Cl. 348—42 **11 Claims**



1. A system for producing and displaying 3-D images for an observer or observers without the use of viewing glasses, comprising:

a source of multiple images corresponding to the 3-D images of a scene to be displayed;

a device for displaying the multiple images on discrete portion of a display screen;

means for illuminating the multiple images on said display screen;

an optical system including respective lenses for each of said image projecting from their respective corresponding positions on the display screen for superimposing said images on a common viewing screen to create superimposed images;

reflective means for directing said superimposed images toward the observer;

a housing for said system including a viewing window therein;

said reflective means directing said superimposed images toward said viewing window;

said viewing window being dimensioned relative to the superimposed images as projected by said reflective means to restrict the viewing angle so that the superimposed images provide a 3-D effect to the observer.

5,614,942

DEVICE FOR THE CONTROL OF THE SHUTTER OF A CCD CAMERA SUPPLIED WITH LIGHT FROM A LIGHT SOURCE

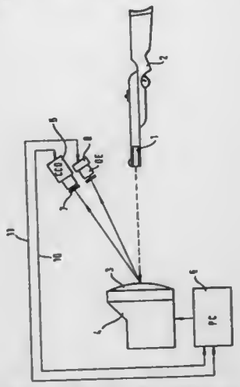
Ole Rom, Bingen, Germany, assignor to NSM Aktiengesellschaft, Bingen, Germany

Continuation of Ser. No. 98,602, Jul. 28, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,430

Claims priority, application Germany, Jul. 29, 1992, 42 25 074.9

Int. Cl.[6] H04N *7/18;5/238*

U.S. Cl. 348—61 **18 Claims**



1. A device for the control of the shutter of a CCD camera supplied with light in a light ray marksmanship system, in order for the CCD camera to receive a main pulse of light from a light source unaffected by unwanted signals, comprising the combination of

the CCD camera having a shutter,

said light source comprising a firearm emitting a light ray and arranged to produce one or more light pulses as a starting signal and then a main pulse based upon the starting signal,

a reflecting or television screen upon which the light ray emitted by the firearm is directed and, in turn, providing dots of light which the CCD camera is arranged to photograph,

an optoelectronic receiver arranged to receive and pass on said starting signal, and

a computer arranged to receive said starting signal and which, from said starting signal, produces a camera shutter opening signal, which opens the camera shutter for approximately the duration of the main pulse, said computer also arranged to evaluate the dots of light which the CCD camera photographs,

wherein said light source is not coupled to any of the CCD camera, optoelectronic receiver and computer.

5,614,943

DISSIMILAR ENDOSCOPES USABLE WITH A COMMON CONTROL UNIT

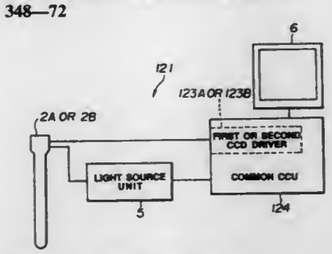
Kazunari Nakamura, Hino; Katsuyuki Saito, Hachioji; Hiroyuki Sasa, Hachioji; Yoshihiro Okada, Hachioji; Hisao Yabe, Hachioji; Shigeru Nakajima, Hachioji, and Seiji Yamaguchi, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 232,425, Apr. 21, 1994, abandoned, which is a continuation of Ser. No. 986,029, Dec. 4, 1992, abandoned. This application Apr. 25, 1995, Ser. No. 428,833

Claims priority, application Japan, Dec. 19, 1991, 3-337135; Dec. 26, 1991, 3-345543

Int. Cl.[6] A61B *1/04;* **H04N** *7/18*

U.S. Cl. 348—72 **2 Claims**



2. An endoscope system comprising:

a first endoscope provided with high resolution first image pickup means having a large number of pixels for picking up a subject image as a high resolution image;

a second endoscope smaller in size than said first image pickup means and provided with low resolution second image pickup means;

an endoscope control unit provided with image signal generating means for signal processing an image pickup signal from said low resolution second image pickup means to generate an image signal, and a main drive pulse signal generating means for generating a main drive pulse signal for driving said second image pickup means; and

signal rationalizing means for rationalizing a form of a signal exchanged between said first endoscope and said endoscope control unit when said first endoscope is combined with said endoscope control unit, said signal rationalizing means including a subsidiary drive pulse signal generating circuit for detecting the phase of said main drive pulse signal generated from said main drive pulse signal generating means to generate a subsidiary drive pulse signal which is synchronized with said main drive pulse signal and which is used for simultaneously generating two lines of the image pickup signal from said high resolution first image pickup means, and two-line adding means for detecting the phase of said main drive pulse signal and adding together two lines of the image pickup signal simultaneously generated from said high resolution first image pickup means on the basis of said detection of the phase, said two-line adding means outputting the signals added together to said image signal generating means.

5,614,944

TEST METHOD AND APPARATUS OF SEQUENTIALLY EXECUTING SYNCHRONOUS SIGNAL TEST, DOT LEVEL TEST, AND GRADATION TEST OF A VIDEO SIGNAL GENERATOR

Toru Taura, and Hirobumi Inoue, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

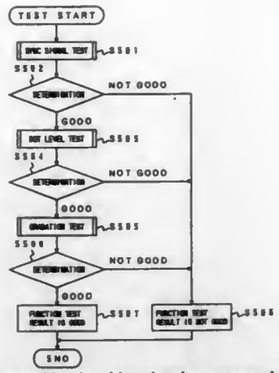
Filed Mar. 30, 1995, Ser. No. 413,903

Claims priority, application Japan, Mar. 30, 1994, 6-061745; Jun. 27, 1994, 6-144290

Int. Cl.[6] H04N *17/00*

U.S. Cl. 348—183 **50 Claims**

1. A method for performing a function test of a video signal generator based on a plurality of sync signals and a video signal



which are generated by the video signal generator, the video signal comprising a predetermined number of horizontal lines for a frame, each horizontal line comprising a predetermined number of dots, the method comprising:

a first test step comprising the steps of:

measuring respective time periods of predetermined specification items of the sync signals; and

determining whether all the time periods fall within a predetermined region from respective specification values of the predetermined specification items,

a second test step comprising the steps of:

instructing the video signal generator to generate a first video signal having a dot discriminating pattern in which dot levels vary from dot to dot; and

determining whether a dot level pattern of an actual first video signal generated by the video signal generator is coincident with the dot discriminating pattern,

and

a third test step comprising the steps of:

instructing the video signal generator to generate a second video signal having a gradation change pattern in which gradation levels vary for each the horizontal line; and

determining whether all the gradation levels of an actual second video signal generated by the video signal generator fall within a predetermined region from respective specification values of the gradation change pattern,

wherein:

the second test step is performed only when all the time periods fall within the predetermined region from specification values of the predetermined specification items in the first test step;

the third test step is performed only when the dot level pattern is coincident with the dot discriminating pattern in the second test step;

the function test is terminated with a result indicating that the video signal generator is good, in a case where all the gradation levels fall within the predetermined region from respective specification values of the gradation change pattern in the third test step; and

the function test is terminated with a result indicating that the video signal generator is not good, in any of a case where at least one of the time periods falls outside the predetermined region from specification values of the predetermined specification items in the first test step, a case where the dot level pattern is not coincident with the dot discriminating pattern in the second test step, and a case where at least one of the gradation levels fall outside the predetermined region from the respective specification values of the gradation change pattern.

5. A method for performing a function test of a video signal generator based on a plurality of sync signals and a video signal which are generated by the video signal generator, the video signal comprising a predetermined number of horizontal lines for a frame, each horizontal line comprising a predetermined number of dots, the method comprising:

a first test step comprising the steps of:

measuring respective time periods of predetermined specification items of the sync signals; and

determining whether all the time periods fall within a predetermined region from specification values of the predetermined specification items,

a second test step comprising the steps of:

instructing the video signal generator to generate a first video signal having a dot discriminating pattern in which dot levels vary from dot to dot; and

converting an actual first video signal generated by the video signal generator into digital dot level data in dots;

storing the digital dot level data for a frame; and

determining whether a dot level pattern of the digital dot level data for the frame is coincident with the dot discriminating pattern,

and

a third test step comprising the steps of:

instructing the video signal generator to generate a second video signal having a gradation change pattern in which gradation levels vary for every horizontal line;

converting gradation levels of an actual second video signal generated by the video signal generator into digital gradation level data;

storing the digital gradation level data for a frame; and

determining whether all the digital gradation level data fall within a predetermined region from specification values of the gradation change pattern,

wherein:

the second test step is performed only when all the time periods fall within the predetermined region from specification values of the predetermined specification items in the first test step;

the third test step is performed only when the dot level pattern is coincident with the dot discriminating pattern in the second test step;

the function test is terminated with a result indicating that the video signal generator is good, in a case where all the digital gradation level data fall within the predetermined region from respective specification values of the gradation change pattern in the third test step; and

the function test is terminated with a result indicating that the video signal generator is not good, in any of a case where at least one of the time periods falls outside the predetermined region from specification values of the predetermined specification items in the first test step, a case where the dot level pattern is not coincident with the dot discriminating pattern in the second test step, and a case where at least one of the digital gradation level data fall outside the predetermined region from the respective specification values of the gradation change pattern.

5,614,945

IMAGE PROCESSING SYSTEM MODIFYING IMAGE SHAKE CORRECTION BASED ON SUPERIMPOSED IMAGES

Masayoshi Sekine, Tokyo, and Toshiaki Kondo, Kanagawa-ken, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 321,883

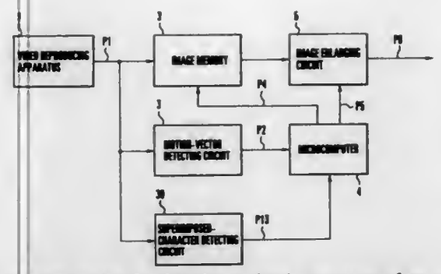
Claims priority, application Japan, Oct. 19, 1993, 5-284541; Oct. 19, 1993, 5-284542; Oct. 22, 1993, 5-287675

Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—208 **19 Claims**

1. An image-shake correcting system comprising:

image-shake correcting means for detecting a motion vector from an image signal and correcting a shake of an image on the basis of the detected motion vector;



detecting means for detecting a signal component of an area superimposed on the image signal, the superimposed area being different from the image; and

control means for varying image-shake correction processing to be executed by said image-shake correcting means, according to a detection result provided by said detecting means.

5,614,946

STILL CAMERA WITH TIME DIVISION RECORDING OF AUDIO AND VIDEO SIGNALS

Hiroki Fukuoka, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

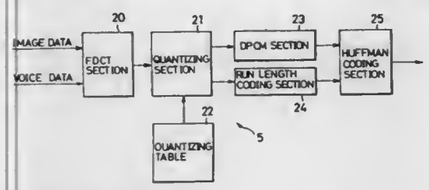
Continuation of Ser. No. 65,493, May 24, 1993, abandoned.

This application Nov. 14, 1994, Ser. No. 340,450

Claims priority, application Japan, Jun. 11, 1992, 4-152112; Apr. 22, 1993, 5-096061

Int. Cl.[6] H04N *5/76*

U.S. Cl. 348—232 **8 Claims**



1. A still camera comprising:

photographing means for photographing a photographed object and outputting image data:

means for converting a voice to an electric signal and outputting the converted electric signal as a voice data;

an image data and voice data coding means connected to said photographing means and said converting means for coding the image data and the voice data in a time division manner and including a quantizing section and at least one coding section through which both of the image data and the voice data are processed in the time division manner, wherein said image data and voice data coding means comprises a forward discrete cosine transformation section, a quantizing table for controlling said quantizing section, said quantizing section being connected to said forward discrete cosine transformation section and said quantizing table, a differential pulse code modulation section connected to said quantizing section, a run length coding section connected to said quantizing section, and a Huffman coding section connected to said differential pulse code modulation section and said run length coding section;

image data recording means connected to said image data and voice data coding means for recording the coded image data to a recording medium; and

voice data recording means connected to said image data and voice data coding means for recording the coded voice data to the recording medium.

5,614,947

SOLID STATE IMAGING APPARATUS

Yukihiro Tanizoe, Neyagawa; Masayuki Yoneyama, Takatsuki; Yasutoshi Yamamoto, Hirakata, and Shougo Sasaki, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

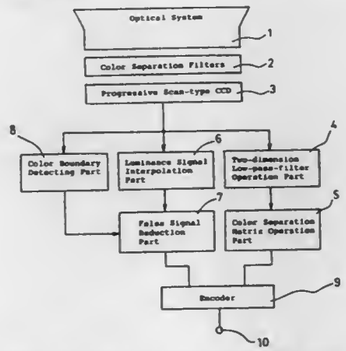
Continuation of Ser. No. 260,819, Jun. 16, 1994, abandoned.

This application Oct. 10, 1995, Ser. No. 541,971

Claims priority, application Japan, Jun. 16, 1993, 5-144605; Oct. 5, 1993, 5-249018

Int. Cl.[6] H04N *5/217;5/21*

U.S. Cl. 348—241 **7 Claims**



1. A solid state imaging apparatus for reducing moire comprising:

a progressive scan-type imaging element having plurality of pixels arranged in vertical and horizontal directions;

an arrangement of color separation filters having repetition of a minimum unit of color separation filters arranged in a predetermined manner;

means for reading output signals from a plurality of pixels which are positioned in a predetermined area adjoined to each other;

means for obtaining a plurality of low-pass-filtered chrominance signals corresponding to a position of a pixel by using a plurality of said signals from said predetermined adjoined pixels and a first low-pass filter having an arrangement of tap coefficients corresponding to said pixels of said imaging element which are multiplied by said signals from corresponding pixels for reducing chrominance moire;

means for determining ratios of said low-pass-filtered chrominance signals; and

means for obtaining a luminance signal of said position by interpolation of said chrominance signals using said ratios of said low-pass-filtered chrominance signals for reducing luminance moire.

5,614,948

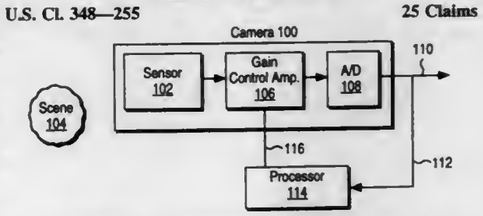
CAMERA HAVING AN ADAPTIVE GAIN CONTROL

Eric C. Hannah, Pebble Beach, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 26, 1996, Ser. No. 638,528

Int. Cl.[6] H04N *5/20*

U.S. Cl. 348—255 **25 Claims**



1. An apparatus for generating a digital output signal representing a captured image, said apparatus comprising:

a sensor for capturing said image and generating a sensor output signal;
a gain control amplifier coupled to receive said sensor output signal, said gain control amplifier having controls for applying various levels of gain to said sensor output signal;
an analog-to-digital converter couple to said gain control amplifier, said analog-to-digital converter generating said digital output signal representing said captured image; and
a processor coupled to said analog-to-digital converter and said gain control amplifier, said processor providing a control signal to said gain control amplifier for adjusting the level of the gain applied by said gain control amplifier.

5,614,949

EXPOSURE CONTROL DEVICE FOR ELECTRONIC ENDOSCOPE

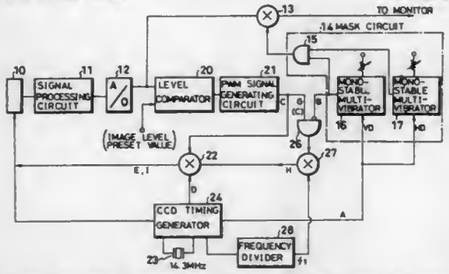
Shigeo Suzuki, and Fujio Okada, both of Omiya, Japan, assignors to Fuji Photo Optical Co Ltd., Omiya, Japan

Filed Mar. 10, 1995, Ser. No. 402,488

Claims priority, application Japan, Jun. 28, 1994, 6-168977; Jun. 28, 1994, 6-168978

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—296 **8 Claims**



1. An electronic shutter control device for an electronic endoscope, comprising:
a mask circuit for forming masks having a predetermined width in upper and lower portions of a monitor screen in a vertical scanning direction;
a detection circuit for verifying whether or not the intensity of light incident on a solid-state image pickup device is higher than a predetermined value; and
an electronic shutter control circuit for forming control pulses for an electronic shutter from a first driving pulse generated in a blanking period of a horizontal synchronizing signal when it is verified by said detection circuit that the intensity of incident light is lower than the predetermined value, and for generating a second driving pulse in an effective period of the horizontal synchronizing signal in an area masked in the vertical scanning direction and forming control pulses for the electronic shutter from the second driving pulse when it is verified that the intensity of incident light is higher than the predetermined value.

5,614,950

CCD IMAGE SENSOR AND METHOD OF PREVENTING A SMEAR PHENOMENON IN THE SENSOR

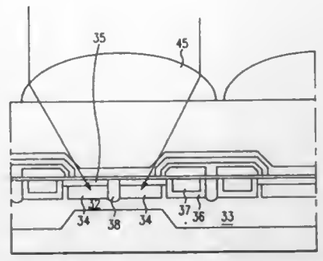
Chul H. Park, Chungcheongbuk-do, and Kwang B. Song, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Aug. 2, 1995, Ser. No. 510,232

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—315 **16 Claims**

1. A charge coupled device image sensor comprising:
a substrate of a first conductive type;
a first well of a second conductive type formed on one side of said substrate;



a second well of the second conductive type formed on the other side of said substrate;
a pair of photo-detecting areas formed adjoining in said first well;
a pair of charge transfer areas formed close to each photo-detecting area and adjoining in said second well;
a plurality of channel stop areas each formed between said adjoining photo-detecting areas and between said charge transfer areas, for isolating each of the areas;
high-density impurities areas of the second conductive type being formed on the upper surface of said photo-detecting areas;
a gate insulation film formed on the substrate;
a pair of transfer gates formed on said gate insulation film at the upper side of each charge transfer area;
an insulation film for encompassing said transfer gates and being formed on said gate insulation film except said pair of photo-detecting areas;
a light-shading film formed on said insulation film except said pair of photo-detecting areas;
a leveling substrate formed on the substrate; and
a microlens formed on said leveling substrate and covering said pair of photo-detecting areas, one of said pair of charge areas, and one of another pair of charge transfer areas formed adjacent said pair of photo-detecting areas.

5,614,951

APPARATUS AND METHOD UTILIZING A SLOPE FOR AUTOMATICALLY FOCUSING AN OBJECT IN A VIDEO CAMERA

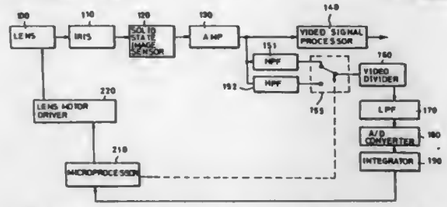
Seoung E. Lee, and Jee Y. Jang, both of Kyungki-Do, Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Continuation-in-part of Ser. No. 390,806, Feb. 15, 1995, abandoned, which is a continuation of Ser. No. 159,792, Nov. 30, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 601,466

Claims priority, application Rep. of Korea, Nov. 30, 1992, 22819/1992; Dec. 2, 1992, 23130/1992

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—356 **4 Claims**



1. An apparatus for automatically focusing an object in a video camera, comprising:
a lens for receiving a light beam from the object;
a lens motor driver for moving said lens;
an iris for adjusting an amount of the light beam being received by said lens;

a solid state image sensing means for converting the light beam of the amount adjusted by said iris into an electrical signal and outputting a video signal;
an amplification means for amplifying the video signal from said solid state image sensing means;
a video signal processing means for processing the video signal amplified by said amplification means so that the amplified video signal can be displayed on a screen;
a plurality of high pass filters for filtering the video signal amplified by said amplification means, each of said high pass filters having a different cut-off frequency and respectively outputting an output signal;
control means for calculating a slope value of the video detect data corresponding to the signal outputted from a first one of said plurality of high pass filters having a first cut-off frequency when a peak value is not set and controlling a speed and direction of the lens motor driver according to the calculated slope value thereof until the calculated slope value is less than a first predetermined value, and for calculating a difference value of a video detect data corresponding to the signal outputted from a second one of said plurality of high pass filters having a higher cut-off frequency than said first one when the calculated difference value is less than a second predetermined value and controlling a speed and a direction of the lens motor driver according to the calculated difference value thereof;
a switching means for selecting the video signal output from one of said plurality of high pass filters in accordance with a control signal output from said control means;
a video division means for dividing the video signal selected by said switching means in the unit of a field;
a low pass filtering means for filtering the video signal divided by said video division means at a low frequency band;
an analog/digital conversion means for converting the video signal filtered by said low pass filtering means into a digital signal; and
an integration means for integrating the digital signal from said analog/digital conversion means to output video detect data for focusing the object.

5,614,952

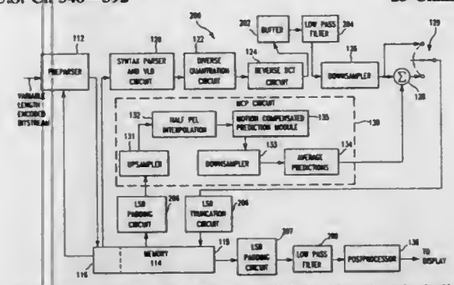
DIGITAL VIDEO DECODER FOR DECODING DIGITAL HIGH DEFINITION AND/OR DIGITAL STANDARD DEFINITION TELEVISION SIGNALS

Jill M. Boyce, Manalapan, N.J., and Larry Pearlstein, Newton, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Oct. 11, 1994, Ser. No. 320,481

Int. Cl.[6] H04N *7/50*

U.S. Cl. 348—392 **23 Claims**



1. A decoder circuit for decoding digital video data including pictures at a resolution less than the full resolution of the pictures, each picture including a plurality of macroblocks, each macroblock including a plurality of DCT coefficients, the decoder circuit comprising:
preparser means for receiving the digital video data and for removing from each macroblock DCT coefficients that exceed a preselected maximum number of DCT coefficients per macroblock; and
a channel buffer coupled to the preparser means for temporarily storing the video data output by the preparser means.

5,614,953

IMAGE SIGNAL DECODING APPARATUS HAVING AN ENCODING ERROR COMPENSATION

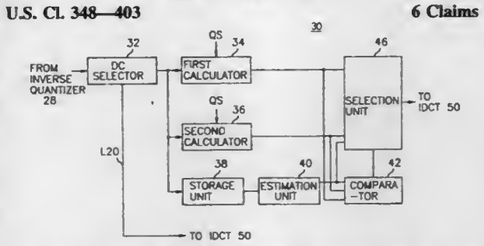
Sang-Ho Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 28, 1995, Ser. No. 431,523

Claims priority, application Rep. of Korea, Apr. 30, 1994, 94-9478

Int. Cl.[6] H04N *7/30*

U.S. Cl. 348—403 **6 Claims**



4. An apparatus, for use in a image signal decoding system having means for generating a plurality of blocks of transform coefficients, for compensating the transform coefficients to generate a compensated transform coefficient, wherein each of the blocks of transform coefficients is inverse quantized using a quantizer step size therefor and has a DC transform coefficient, which comprises:
means for storing the value of the DC transform coefficient on a block-by-block basis;
means for producing an estimate for the DC transform coefficient;
first calculating means for calculating a first value through the use of the value for the DC transform coefficient and the quantizer step size, wherein the first value represents a difference value defined by subtracting a threshold value from the DC transform coefficient;
second calculating means for calculating a second value through the use of the value for the DC transform coefficient and the quantizer step size, wherein the second value represents a summation value defined by adding the threshold value to the DC transform coefficient;
means for determining whether a first condition that the estimate be greater than or equal to the first value but smaller than a second value is satisfied and generating a first selection signal when the first condition is satisfied;
means for, when the first condition is not satisfied, determining whether a second condition that the estimate be smaller than the first value is satisfied and for generating a second selection signal when the second condition is satisfied;
means for generating a third selection signal when the second condition is not satisfied; and
means, in response to the first, the second and the third selection signals, for selectively providing the estimate, the first and the second values applied thereto, respectively.

5,614,954

MOTION COMPENSATION APPARATUS FOR USE IN AN IMAGE ENCODING SYSTEM

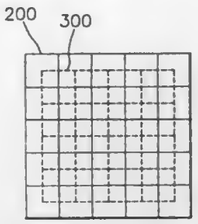
Hae-Mook Jung, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed May 2, 1995, Ser. No. 433,273

Claims priority, application Rep. of Korea, Mar. 20, 1995, 95-5865

Int. Cl.[6] H04N 7/36

U.S. Cl. 348—413 4 Claims



1. An apparatus for use in an image encoding system for providing a predicted frame signal for an input digital video signal of a bidirectionally predictive frame (B frame) based on two neighboring frames of the B frame wherein the B frame has a first set of search blocks and the input digital video signal includes a plurality of frames, which comprises:

means for converting the B frame into a converted frame having a second set of search blocks wherein both the B frame and the converted frame have an overlapping region;

first prediction means for estimating a first displacement vector representing the displacement between the B frame and a first neighboring frame of the B frame, and for providing a first predicted frame signal for the B frame based on the first estimated displacement vector;

second prediction means for estimating a second displacement vector representing the displacement between the B frame and a second neighboring frame of the converted frame, and for providing a second predicted frame signal for the converted frame based on the second estimated displacement vector;

third prediction means for generating a third predicted frame signal by averaging the first and the second predicted frame signals located in an area corresponding to the overlapping region; and

means, responsive to selection signals corresponding to the frame types of the first and the third predicted frame signals, for selectively generating either the first predicted frame signal or the third predicted frame signal.

5,614,955

COMPRESSED DIGITAL MULTI-CHANNEL VIDEO COMMUNICATIONS SYSTEM HAVING ONE OR MORE AUXILIARY CHANNELS TO ACCOMODATE HIGH BIT RATES

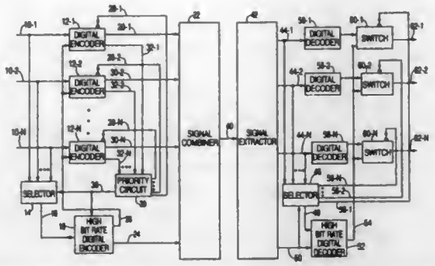
Michael I. Rackman, 1710 Glenwood Rd., Brooklyn, N.Y. 11230, assignor to Michael I. Rackman, Brooklyn, N.Y.

Filed Nov. 9, 1994, Ser. No. 336,862

Int. Cl.[6] H04N 7/12;7/10

U.S. Cl. 348—487 16 Claims

1. A digital multi-channel video communications system having a plurality of digital channels each assigned to a respective video program source and for carrying a digital bit sequence which represents such respective video program source, at least one auxiliary digital channel variably assigned to a video program



source and for carrying a digital bit sequence, means for prioritizing said assigned digital channels, means for determining when the program source associated with any of the assigned channels requires a digital bit rate which exceeds the capacity of the respective assigned channel, and means for pairing the at least one auxiliary channel with the highest priority assigned channel requiring additional bit rate capacity so that the digital bit sequence for the respective program source is carried in part by the assigned channel and in part by the at least one auxiliary channel.

5,614,956

TELEVISION RECEIVER

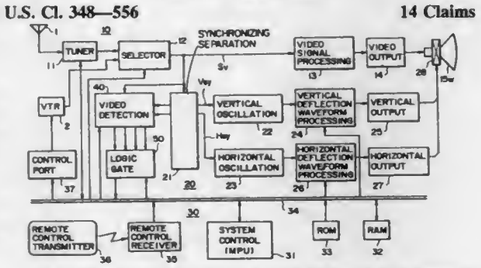
Katsuji Matsuura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,449

Claims priority, application Japan, Aug. 16, 1994, 6-214209

Int. Cl.[6] H04N 5/46

U.S. Cl. 348—556 14 Claims



1. A television receiver having a wide display screen comprising:

video signal input means for inputting a plurality of video signals having respective different kinds of aspect ratios;

display control means for displaying one of said plurality of video signals inputted from said video signal input means by changing a size thereof in the vertical direction and/or horizontal direction depending on a selected display mode;

video signal detecting means for detecting existence of any one of said plurality of video signals within detection regions preset on the wide display screen, wherein predetermined ones of said detection regions are set outside a superimposed dialogue insertion region at left and right ends thereof in a horizontal scan direction;

superimposed dialogue signal detecting means for detecting existence of a superimposed dialogue signal in the superimposed dialogue insertion region in response to a video mode discrimination request signal from said display control means;

display mode selecting means connected to said display control means for selecting any one of a plurality of display modes on the basis of a detected output of said video signal detecting means.

5,614,957

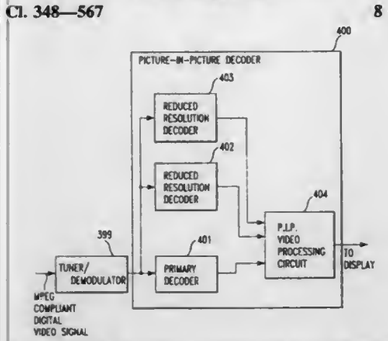
DIGITAL PICTURE-IN-PICTURE DECODER

Jill M. Boyce, Manalapan, N.J., and Larry Pearlstein, Newton, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation of Ser. No. 339,436, Nov. 14, 1994, which is a continuation-in-part of Ser. No. 320,481, Oct. 11, 1994. This application Jun. 5, 1995, Ser. No. 464,912

Int. Cl.[6] H04N 5/46

U.S. Cl. 348—567 8 Claims



1. A method of decoding a digital video signal including a picture of one of a first and a second degree of resolution, the first degree of resolution being a higher degree of resolution than the second degree of resolution, the picture including digital video data, the method comprising the steps of:

providing a picture buffer for storing pictures;

receiving the digital video signal including the picture;

monitoring the digital video signal to determine whether the received picture is of the first or second degree of resolution;

upon determining that the received picture is of the first degree of resolution performing the steps of:

i. downsampling the picture to reduce the amount of video data included in the picture; and

ii. storing the picture in the picture buffer;

upon determining that the received picture is of the second degree of resolution performing the step of storing the picture in the picture buffer without downsampling.

5,614,958

IMAGE PROCESSING APPARATUS WHICH CONCEALS IMAGE DATA IN ACCORDANCE WITH MOTION DATA

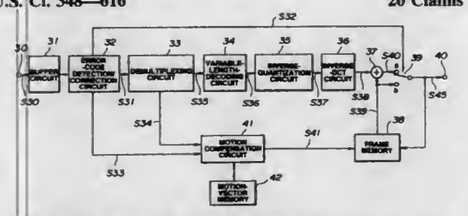
Akihiro Shikakura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 296,162

Claims priority, application Japan, Sep. 7, 1993, 5-246447

Int. Cl.[6] H04N 7/68

U.S. Cl. 348—616 20 Claims



1. An image processing apparatus comprising:

input means for inputting information data including motion data and image data encoded in accordance with the motion data, the motion data being detected in units of pixels;

detection means for detecting error codes in the image data and the motion data; and

concealment means for concealing the image data by replacing it by image data of an adjacent picture frame extracted using the motion data, said concealment means concealing the motion data into the motion data of an adjacent block in accordance with an output from said detection means.

5,614,959

METHOD AND APPARATUS FOR MOTION ESTIMATION

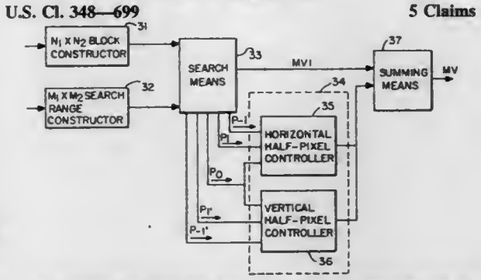
Jechang Jeong, Seoul, and Wooyoun Ahn, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 129,081, Nov. 30, 1993, Pat. No. 5,489,949. This application Oct. 23, 1995, Ser. No. 546,926

Claims priority, application Rep. of Korea, Feb. 8, 1992, 92-1845

Int. Cl.[6] H04N 7/36

U.S. Cl. 348—699 5 Claims



1. A method for estimating a respective motion between adjacent frames of an image, comprising the steps of:

(a) constructing a first image block based on a respective image signal of a present frame;

(b) constructing a second image block based on a respective image signal of an adjacent frame, said second image block having a plurality of third image blocks;

(c) generating a plurality of error values, each of the error values being generated by comparing a respective image signal of one of the third image blocks with the respective image signal of said first image block;

(d) generating a first motion vector in pixel units based on said plurality of error values;

(e) establishing a reference image block within said second image block based on said first motion vector;

(f) generating as a first output error value the error value corresponding to the reference image block, and generating a plurality of second output error values, each of which is the error value which corresponds to the respective third image block which is removed from the reference image block in one of a plurality of directions by one pixel;

(g) generating a second motion vector of half-pixel units based on said first and second output error values;

(h) summing said first and second motion vectors to produce a motion estimation vector.

5,614,960

IMAGE DATA ENCODING METHOD AND DEVICE, IMAGE DATA RECONSTRUCTING METHOD AND DEVICE, SCENE CHANGE DETECTING METHOD AND DEVICE, SCENE CHANGE RECORDING DEVICE, AND IMAGE DATA SCENE CHANGE RECORD/ REGENERATING DEVICE

Hirotaka Chiba, and Tsugio Noda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

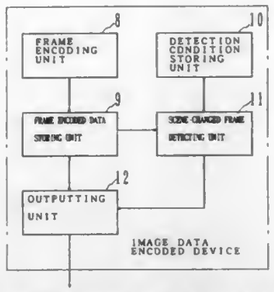
Continuation of Ser. No. 116,960, Sep. 7, 1993, abandoned. This application Jun. 19, 1996, Ser. No. 663,866

Claims priority, application Japan, Sep. 7, 1992, 4-238574; Jul. 19, 1993, 5-178349

Int. Cl.[6] H04N 7/50;7/32

U.S. Cl. 348—700 59 Claims

1. An image data encoding method for encoding image data comprising:



a detection condition storing step of storing a detection condition set for detecting a scene-changed frame;

an encoding step of encoding image data of an input frame;

a code amount storing step of storing the amount of codes in the data, encoded in said encoding step, of previous and present frames;

a determining step of determining whether or not the present frame is a scene-changed frame according to the amount of codes of the previous and present frames stored in said code amount storing step 3 and to the condition set for detecting a scene-changed frame stored in said detection condition storing step;

and an output step for outputting, as a determination result of said determining step, said encoded data generated in the code amount storing step and a code indicating a scene-changed frame if the present frame is a scene-changed frame, and only the encoded data if the present frame is not a scene-changed frame, wherein

said encoding step, said code amount storing step, said determining step, and said output step are performed on image data in a plurality of frames whose data are to be encoded.

5,614,961

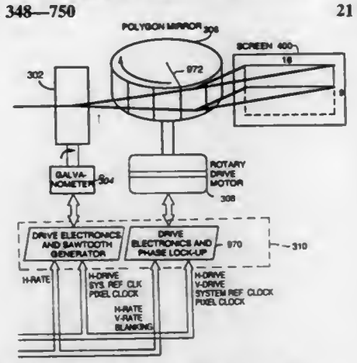
METHODS AND APPARATUS FOR IMAGE PROJECTION

Frank C. Gibeau, Los Altos, Calif.; Roger F. Bessler, Laurenceville, and James H. Arbeiter, Hopewell, both of N.J., assignors to Nitor, San Jose, Calif.

Continuation of Ser. No. 13,036, Feb. 3, 1993. This application May 22, 1995, Ser. No. 447,104

Int. Cl.[6] H04N *5/74;3/08*

U.S. Cl. 348—750 **21 Claims**



1. An image projection apparatus, comprising:

a plurality of primary wavelength light sources for generating a plurality of parallel traveling light beamlets;

means for modulating each parallel traveling light beamlet; and

a plurality of rotating reflective surfaces for horizontally scanning the modulated parallel traveling light beamlets for projection onto an image receptor, each successive rotating reflective surface adjacent to and skewed from a preceding rotating reflective surface, all of the plurality of rotating reflective surfaces rotationally driven at the same angular velocity, each successive rotating reflective surface operative to horizontally scan and to vertically displace the modulated parallel traveling light beamlets with respect to the modulated parallel traveling light beamlets reflected from the preceding rotating reflective surface.

5,614,962

METHOD FOR PROJECTING IMAGE OBTAINED BY USING LIQUID CRYSTAL PANELS AND DISPLAY APPARATUS FOR REALIZING THE SAME

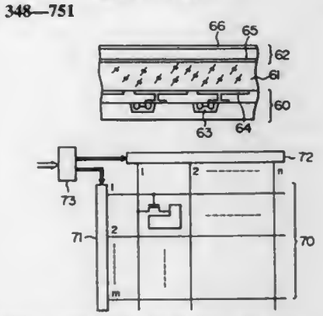
Yoshiharu Nagae; Yuji Mori; Yoshiro Mikami; Hideo Sato; Minoru Hoshino, all of Hitachi, and Kyohei Fukuda, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 853,426, Mar. 18, 1992, Pat. No. 5,404,175. This application Mar. 30, 1995, Ser. No. 413,428

Claims priority, application Japan, Mar. 19, 1991, 3-078227; Apr. 19, 1991, 3-088123

Int. Cl.[6] H04N *9/31*

U.S. Cl. 348—751 **16 Claims**



2. A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal layer interposed between said pair of substrates, said liquid crystal layer including a liquid crystal material of a light scattering type, said liquid crystal material changing a scattering state and a transparent state thereof in accordance with a voltage applied thereto;

one substrate of said pair of substrates including a display area and a peripheral circuit area to drive said display area and having a plurality of pixel electrodes disposed in a matrix and a plurality of transistors, each of said transistors being connected to a corresponding one of said plurality of pixel electrodes, each of said plurality of pixel electrodes selectively reflecting incident light; and

an other substrate of said pair of substrate being a transparent substrate having transparent counter electrode for selectively applying a voltage to said liquid crystal layer together with at least one of said plurality of pixel electrodes.

5,614,963

SUN SHIELD SYSTEM FOR PROTECTING THE EYES FROM UV AND INFRARED COMPONENTS OF SUNLIGHT

Cary D. Parker, 245 E. 25th St., Apt. 10-J, New York, N.Y. 10010

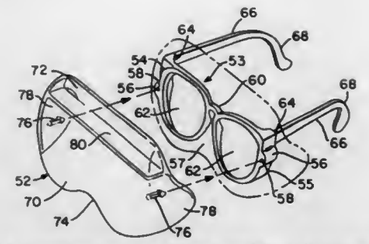
Filed Sep. 15, 1995, Ser. No. 528,613

Int. Cl.[6] G02C *9/00;7/10;7/08*

U.S. Cl. 351—47 **8 Claims**

1. A sun shield system for protecting the eyes of the wearer from the harmful effects of the UV and infrared components of sunlight, comprising:

(a) eyeglasses comprising:



(i) a crosspiece having an upper surface, a lower surface, a left hand portion, a right hand portion, a left end, and a right end; said crosspiece further having apertures in its upper surface at its left end and its right end; said apertures forming a bore extending from the upper surface to the lower surface of the crosspiece;

(ii) a left rim having a substantially flat upper surface with a left edge and a right edge; a right rim having a substantially flat upper surface with a left edge and a right edge; each of said rims having a bowed lower section; the left edge of the left rim being aligned with the left edge of the crosspiece and the right edge of the right rim being aligned with the right edge of the crosspiece; the left rim having its upper surface flush with, and fixedly attached to, the lower surface of the left hand portion of the crosspiece; the right rim having its upper surface flush with, and fixedly attached to, the lower surface of the right hand portion of the crosspiece; the two rims defining a space between them for the nose of the wearer;

(iii) a corrective lens mounted in each rim;

(iv) hinges attached to the left and right ends of the crosspiece; and

(v) two temple pieces; each of said temple pieces having a nearer end and a further end; one temple piece being attached to each hinge at its nearer end; each of said temple pieces terminating at its further end in an earpiece for securing the eyeglasses to the ears of the wearer;

(b) an elongated curve-shaped lens section made from specified materials having sun ray resistant coloring manufactured into its materials; said lens section further having an upper portion, a lower portion, a left hand portion, a right hand portion, an inner surface, and an outer surface, wherein the upper portion terminating in a widened overhang, the lower portion being narrowed centrally by a bridge opening, and both the left and right hand portions terminating in curved side shielding; the elongated curve-shaped lens section further comprising a ledge having an upper surface and a lower surface; said ledge projecting from the inner surface of said curve-shaped lens section for resting on the upper surface of the crosspiece of the eyeglasses; said ledge further having at each end of its lower surface a downwardly projecting bifurcated pin member for passing through the apertures at each end of the crosspiece and for securing the ledge to the crosspiece; and

(c) means for securing the curve-shaped lens section to the eyeglasses.

5,614,964

UNITARY SPHERICAL FLEXIBLE EYEWEAR PANE HAVING TWO SEPARATE INDIVIDUALLY OPTICALLY COMPENSATING LENS ELEMENTS AND EYEWEAR FOR SPORTSMEN HAVING SUCH A PANE

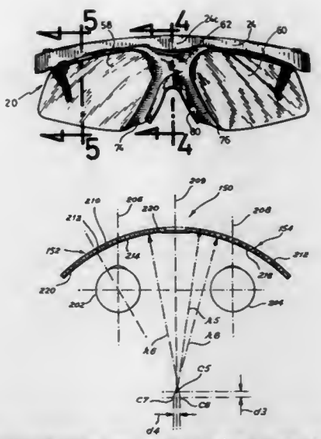
Louis Garneau, St-Augustin-de-Desmaures, Canada, assignor to 9001-6262 Québec Inc., St-Augustin-de-Desmaores, Canada

Continuation-in-part of Ser. No. 402,441, Mar. 13, 1995, abandoned. This application Mar. 13, 1995, Ser. No. 568,138

Int. Cl.[6] G02C *1/00;1/04*

U.S. Cl. 351—83 **15 Claims**

1. A unitary flexible transparent eyewear pane being substantially spherical, for use with an eyewear frame, said pane defining



a substantially spherical outer surface having a center and a radius of curvature, said pane further defining a first and a second transparent lens elements;

wherein each said lens element defines an interior and an exterior spherical surface, the exterior surface of each said lens element being a portion of said pane outer spherical surface, each said lens element further defining a central portion surrounded by an edgewise portion, said interior surface adapted to be in facing register with one eye of a wearer's face;

said first and second lens elements interior spherical surfaces having;

respective centers of curvature equally laterally offset on opposite sides of said pane outer surface center of curvature and offset away from said pane outer surface center of curvature relative to said pane; and

an equal radius of curvature which is greater than said pane outer surface radius of curvature;

each said lens element having a thicker central portion and a gradually thinner edgewise portion, conferring optical compensation to said lens element while keeping a sufficiently large overall thickness for maintaining structural integrity thereof, wherein each said lens element is substantially undistorted;

said pane including attachment means for releasable operative attachment to the eyewear frame.

5,614,965

SPECTACLE FRAMES

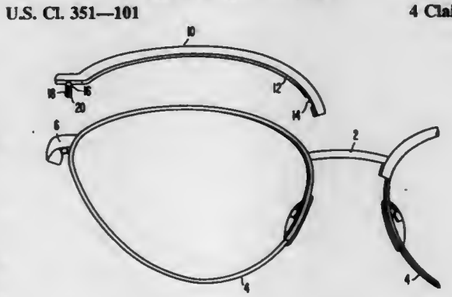
Jørgen V. Mikkelsen, Århus, Denmark, assignor to Pro Design International A/S, Arhus C, Denmark

Filed May 31, 1995, Ser. No. 455,564

Claims priority, application Denmark, May 31, 1994, 0612/94

Int. Cl.[6] G02C *1/08;5/00*

U.S. Cl. 351—101 **4 Claims**



1. A spectacle frame for a pair of spectacles with edge bars that are exchangeable without using tools for covering top portions of the frame, said spectacle frame comprising a pair of lens frames connected by a bridge, each of said lens frames comprising a hinge fastening for fastening a bow to the lens frame and a top portion of the lens frame for extending along an upper edge of an associated lens between said bridge and said hinge fastening, and a pair of edge bars for covering respective ones of said top portions of said lens frames, said edge bars each comprising at one end thereof means for engaging said bridge and at the other end thereof means for forming a snap lock connection with an associated lens frame so that the edge bar can be mounted by first fastening it to the bridge at said one end and guiding it over the top portion of the associated lens frame and pressing said other end against said lens frame for forming said snap lock connection.

5,614,966

OPHTHALMOLOGIC INSTRUMENT

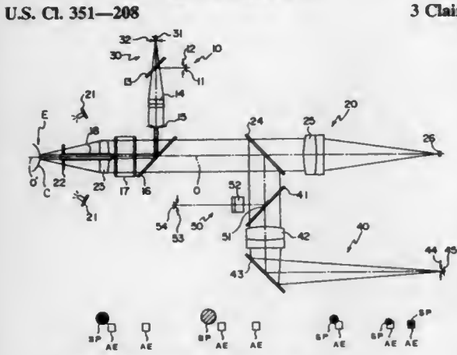
Hiroshi Iijima, and Mineki Hayafuji, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,866

Claims priority, application Japan, Oct. 26, 1994, 6-262608; Jan. 25, 1995, 7-009968

Int. Cl.[6] A61B *3/14*

U.S. Cl. 351—208 **3 Claims**



1. An ophthalmologic instrument comprising:

an anterior segment illuminating light source for illuminating an anterior segment of a subject's eye;

an alignment light projecting optical system for guiding a beam of light emitted by an alignment light source to a cornea of the subject's eye;

an image forming optical system for forming an image of the anterior segment and an indexed image of the cornea on an image forming surface, the images being formed such that beams of light emitted by said light sources are reflected by the subject's eye;

display means for displaying the image of the anterior segment and the indexed image of the cornea formed on said image forming surface;

an alignment detecting optical system for guiding the indexed image of the cornea to light receiving means different from said image forming surface; and

alignment detecting means for detecting alignment of the subject's eye with an instrument body from information about received light obtained by said light receiving means;

wherein a judgment that a desired state of alignment is nearing is formed by changing a display state of said display means in accordance with a detection result obtained by said alignment detecting means.

5,614,967

EYE MOVEMENT ANALYSIS SYSTEM

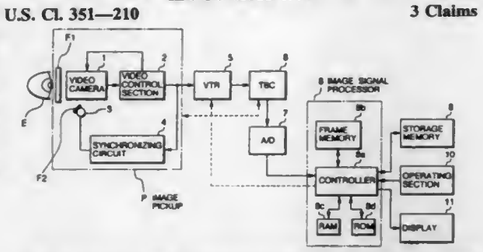
Norio Ishikawa, and Hidehiro Hosaka, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,863

Claims priority, application Japan, Mar. 30, 1995, 7-073227

Int. Cl.[6] A61B *3/14*

U.S. Cl. 351—210 **3 Claims**



1. An eye movement analysis system which analyzes movement of each of eyes on the basis of a position of the center of a pupil and a position of at least one iris striation, both being included in a recorded image of the eye, the system comprising:

image signal processing means provided with

control means which calculates the respective positions of the pupil and the iris striation by tracking the pupil and iris striation that are specified on the eye image every time a frame of the image is fed, and

storage means which bolds the thus calculated respective positions of the center of the eye and the iris striation;

display means which displays the iris striation located at the calculated position and the iris striation before being subjected to the calculation in different manners; and

operating means for stopping feeding the frame of the image if the iris striation displayed after the calculation is different from the iris striation before being subjected to the calculation.

5,614,968

CAMERA AND PRINTER SYSTEM

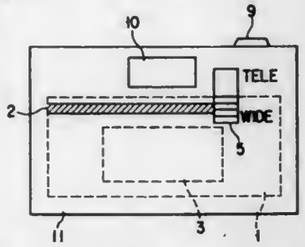
Tetsuo Miyasaka, Kanagawa-ken, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 327,221, Oct. 21, 1994, abandoned, which is a continuation of Ser. No. 88,836, Jul. 8, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,222

Claims priority, application Japan, Jul. 10, 1992, 4-183532

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—311 **6 Claims**



1. A camera system including a camera main body and a film loaded therein, said film having a single magnetic recording track portion extending in a feed direction of said film, and wherein command data specifying a picture portion smaller than an entire frame of the picture, for commanding a printer apparatus to perform a trimming exposure operation is recorded on said single magnetic recording track portion of said film in advance, said camera system comprising:

a wind-up mechanism including a wind-up dial and a wind-up spool for winding up said film in accordance with a manual operation of said wind-up dial;

a manual operation member, arranged on a backface portion of a camera main body, said manual operation member being slidably movable in a direction perpendicular to the feed direction of said film;

permanent magnet means, provided in the camera main body such that the permanent magnet means is fixed to one end of said manual operation member, and is movable on a surface parallel to said film, for:

when trimming printing is undesired, erasing entire portions, corresponding to photographed frames, of the command data which was recorded in advance on said single magnetic recording track portion, by operating the manual operation member to locate the permanent magnet means at a first position where the permanent magnet means opposes the single magnetic recording track portion of the film and winding up said film by means of said wind-up mechanism, so that the command data for the corresponding photographed frames is erased and the entire frame of the picture will be printed, and

when trimming printing is desired, preventing erasure of the command data corresponding to photographed frames, by operating the manual operation member to move said permanent magnet means to a second position at which said permanent magnet means is retreated and spaced apart from said single magnetic recording track portion, so that the command data of the photographed frames which was recorded in advance is not erased when the film is wound and only a picture portion smaller than the entire frame of the picture will be printed.

5,614,969

CAMERA

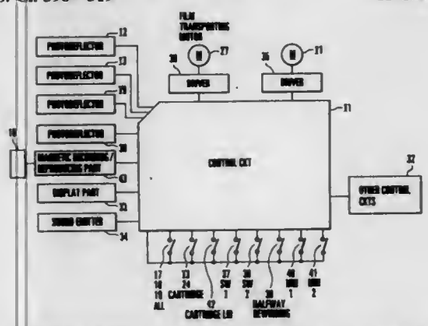
Kazuhiro Izukawa, Saitama-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,266

Claims priority, application Japan, Dec. 27, 1993, 5-347174

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—319 **11 Claims**



1. A camera adapted for using a film cartridge having an information recording part provided for each of frame portions of a film contained therein, comprising:

a) reproducing means for reproducing information recorded in the information recording part for each individual frame portion of the film;

b) deciding means for deciding whether each frame portion of the film has been exposed or not, on the basis of the amount of information reproduced from the frame portion by said reproducing means; and

c) setting means for setting a reference value to be used by said deciding means, said setting means being arranged to set the reference value on the basis of an output of said reproducing means obtained when said reproducing means is acted on a part of the film other than the information recording part.

5,614,970

FLASH LIGHTING APPARATUS AND A CAMERA EQUIPPED WITH THE FLASH LIGHTING APPARATUS

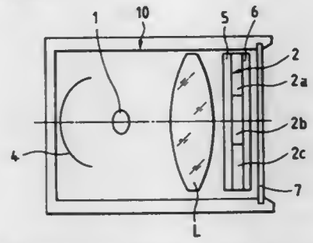
Tadao Takagi, Yokohama, and Takatoshi Ashizawa, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 392,402, Feb. 22, 1995, abandoned, which is a continuation of Ser. No. 145,666, Nov. 4, 1993, abandoned, which is a continuation of Ser. No. 891,158, May 29, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,543

Claims priority, application Japan, Jun. 3, 1991, 3-160141; Oct. 9, 1991, 3-290767; Dec. 19, 1991, 3-336960

Int. Cl.[6] G03B *15/03;9/70*

U.S. Cl. 396—164 **23 Claims**



1. A flash lighting apparatus including the following:

a single flashlamp; and

a light amount adjustment device arranged to control irradiation of a plurality of areas of a field to be photographed by light from said single flashlamp, said light amount adjustment device having a plurality of emission areas corresponding to different areas of said field, respectively, all of said emission areas being disposed to receive input light from said single flashlamp at the same time, and, while so disposed, each of said emission areas being individually adjustable to vary the amount of light emitted therefrom and thereby to control the amount of irradiation of the corresponding area to a suitable value, which is a value based on distances or positions of at least two objects in said field; and

a detection device disposed to detect the distances or positions of the at least two objects in said field, whereby said value is provided.

5,614,971

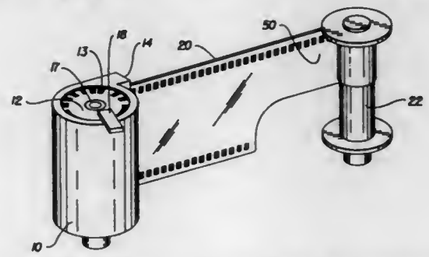
MECHANISM AND METHOD FOR DETERMINING WHEN PHOTOGRAPHIC FILM HAS BEEN COMPLETELY REWOUND

Beth A. O'Leary, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1995, Ser. No. 444,340

Int. Cl.[6] G03B *1/18;1/00*

U.S. Cl. 396—409 **9 Claims**



1. Apparatus for use during rewinding of film about a film spool contained within a film cartridge, the film spool including an indicator rotatable with the spool and visible from an exterior of

the cartridge, for determining when the film is completely rewound about the film spool and initiating a predetermined parking sequence, said apparatus comprising:

(a) first sensing means for detecting a leading edge of the film during rewinding of the film about the film spool contained within the film cartridge;

(b) second sensing means for tracking rotations of the film spool contained within the film cartridge by sensing rotation of the indicator;

(c) first initiating means for activating said second sensing means to start tracking rotations of the film spool by sensing rotation of the indicator when said first sensing means detects the leading edge of the film; and

(d) second means (i) for determining when said second sensing means tracks a predetermined number of rotations of the film spool after said second sensing means becomes activated by said first initiating means and (ii) thereafter for initiating a predetermined sequence to park the film spool contained within the film cartridge at a predetermined position of the indicator sensed by said second sensing means.

5,614,972

CAMERA WITH MOVABLE LENS AND METHOD OF OPERATION

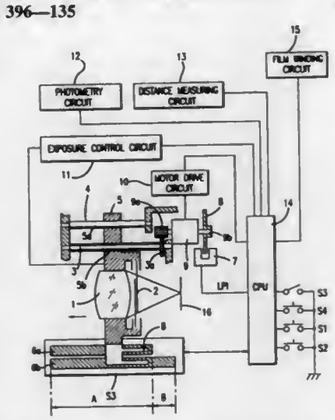
Hiroshi Wakabayashi, Yokohama; Hidenori Miyamoto, Chiba-ken, and Toshiyuki Nakamura, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 11, 1994, Ser. No. 272,428

Claims priority, application Japan, Jul. 9, 1993, 5-194079; Aug. 4, 1993, 5-212288; Aug. 4, 1993, 5-212289; Jan. 27, 1994, 6-007828

Int. Cl.[6] G03B *1/18;17/04*

U.S. Cl. 396—135 **52 Claims**



1. A camera having a body, the camera comprising:

a lens;

a driver coupled with the lens and operable to move the lens relative to the body;

a controller coupled with the driver to direct driving of the lens relative to the body at a first desired speed and at a second desired speed slower than the first desired speed; and

a detector coupled with the lens to detect 1) whether the lens is moving while the controller is directing driver movement relative to the body at the first desired speed and 2) whether the lens is moving while the controller is directing driver movement relative to the body at the second desired speed;

wherein, while the controller is directing driver movement relative to the body at the first desired speed, the controller changes the desired speed of the driver from the first desired speed to the second desired speed when the detector detects no lens movement.

5,614,973

LENS BARRIER MECHANISM

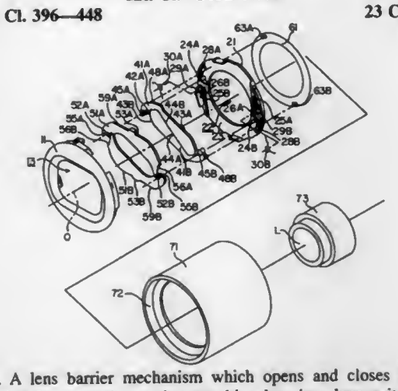
Kazuyoshi Azegami, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 348,861

Claims priority, application Japan, Nov. 30, 1993, 5-064084; Nov. 30, 1993, 5-300005

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—448 **23 Claims**



1. A lens barrier mechanism which opens and closes a lens opening for protecting a photographing lens in a lens unit, comprising:

a pivot provided on a barrier supporting plate;

two pairs of lens protecting barrier blades, each of said two pairs of lens protecting barrier blades comprising a leading blade and a trailing blade, said leading blade and said trailing blade rotatably supported coaxially about said pivot, and said leading blade and said trailing blade partially superimposed in an optical axis direction of said lens unit; and

means for pivotally moving said leading blade between a closed position and an open position with respect to said lens opening,

wherein, when said leading blade is moved by said moving means, said trailing blade is moved between said closed position and said open position.

5,614,974

CAMERA HAVING ANTI-VIBRATION FUNCTION WITH IMPROVED CONNECTION AND PLACEMENT OF ANTI-VIBRATION COMPONENTS

Isao Soshi, Tokyo; Hidenori Miyamoto, Urayasu; Minoru Kato; Junichi Omi, both of Kawasaki; Tatsuo Amanuma, Ageo, and Jirou Asami, Higashimurayama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 356,002, Dec. 14, 1994, Pat. No. 5,557,357. This application May 7, 1996, Ser. No. 646,106

Claims priority, application Japan, Dec. 14, 1993, 5-313712; Dec. 14, 1993, 5-313713; Feb. 4, 1994, 6-032053; Feb. 4, 1994, 6-093947

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—55 **3 Claims**

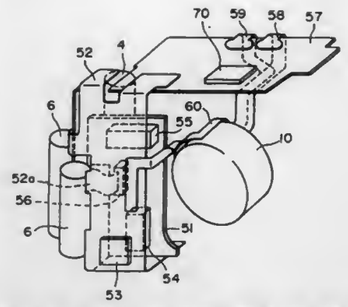
1. A camera comprising:

a vibration correction mechanism having an anti-vibration sensor which detects vibrations affecting the camera and produces a corresponding output, and a control unit which receives the output of the anti-vibration sensor and adjusts the camera in response to the detected vibrations;

a sensor card having a pattern thereon, the anti-vibration sensor being mounted on the sensor card and electrically connected to the pattern;

a connector mounted on the sensor card; and

a flexible printed circuit card having a pattern thereon and an insertion portion, the control unit being mounted on the flexible printed circuit card and electrically connected to the pattern, the insertion portion being inserted into the connector



to electrically connect the control unit to the anti-vibration sensor via the respective patterns on the sensor card and the flexible printed circuit card.

5,614,975

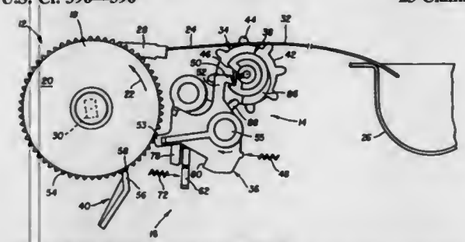
FILM BRAKE APPLIED BY EXPOSURE INITIATION

Jude A. SanGregory; Jeffrey A. Solomon, both of Spencerport, N.Y., and Albert E. Rieger, Unterboehringen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 333,818, Nov. 3, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 590,247

Int. Cl.[6] G03B *17/42*

U.S. Cl. 396—396 **23 Claims**



1. A photographic camera comprising:.

a film exposing mechanism, and a film advancing mechanism, wherein the film exposing mechanism includes an exposure initiation member and the film exposing mechanism is operative to complete an exposure in response to movement of the exposure initiation member; and

brake means responsive to movement of the exposure initiation member for applying a brake to the film advancing mechanism to brake said film advancing mechanism and thereby a film in the camera against movement during the exposure.

5,614,976

CAMERA WITH MANUAL FILM REWIND LOCKED WHEN CASSETTE CLOSED, PREFERABLY TO POSITION FILM EXPOSED INDICATOR IN WINDOW OF CASSETTE

David C. Smart, Rochester, and Thomas E. Dussinger, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1996, Ser. No. 590,792

Int. Cl.[6] G03B *1/10;17/26*

U.S. Cl. 396—392 **5 Claims**

1. A camera for use with a film cassette having a spool rotatable to wind an exposed filmstrip including a trailing film end portion into the cassette and a light lock movable to be closed after the trailing film end portion is wound into the cassette, is characterized in that:

a manual film winder is rotatable in engagement with the spool in a film winding direction to rotate the spool in the same direction to wind the exposed filmstrip including the trailing film end portion into the cassette; and

locking means, separate from the film cassette, is coupled with the light lock and said film winder to prevent further rotation of said film winder in the film winding direction when the light lock is closed.

5,614,977

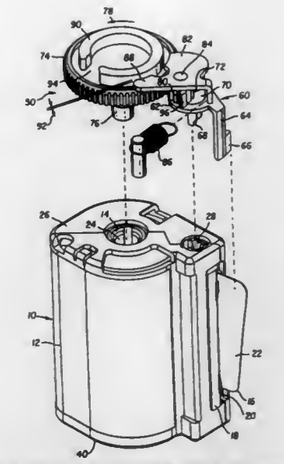
MANUAL FILM WIND THUMBWHEEL FOR CAMERA

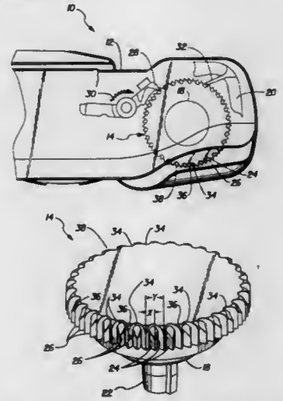
David C. Smart, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1996, Ser. No. 605,239

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—395 **12 Claims**





1. A manually rotatable film wind thumbwheel for a camera comprising a peripheral series of interdental spaces having a uniform pitch, is characterized in that:

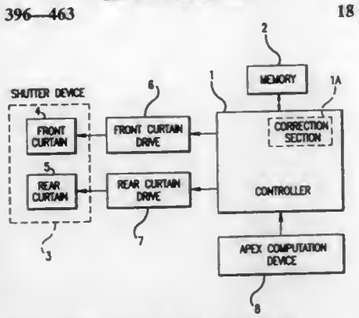
a continuous series of finger-receiving indentations is located adjacent said peripheral series of interdental spaces and has a uniform pitch which is greater than the uniform pitch of the interdental spaces to permit said finger-receiving indentations to be more easily fingered than the interdental spaces to manually rotate said thumbwheel, whereby said interdental spaces can be used as locking spaces which individually receive a film metering pawl of the camera to arrest said thumbwheel and/or an anti-backup pawl to prevent counter-rotation of the thumbwheel.

5,614,978

CAMERA SHUTTER CONTROL DEVICE AND METHOD

Masatoshi Kanzaki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,142
Claims priority, application Japan, Nov. 2, 1994, 6-269614
Int. Cl.[6] G03B 9/08
U.S. Cl. 396—463 18 Claims



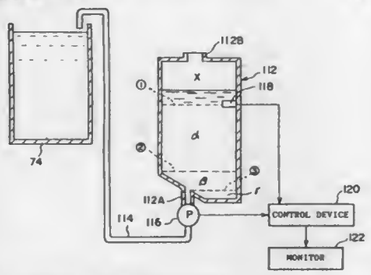
1. A camera shutter control device, comprising:
shutter means for exposing film within a camera, the shutter means including first and second curtains;
shutter driving means for driving the shutter means;
determining means for determining a shutter time;
memory means for storing in memory at least one correction value; and
control means for controlling the camera, the control means including correction means for correcting the shutter time determined by the determining means based on the correction value stored in the memory means, wherein the control means controls the operation of the shutter driving means based on the shutter time corrected by the correction means, the control means conducting a first control operation of the shutter driving means when the corrected shutter time has a positive value that includes moving the first curtain prior to moving the second curtain, and a second control operation different from the first control operation when the corrected shutter time has a negative value that includes moving the second curtain prior to moving the first curtain.

5,614,979

REPLENISHING DEVICE AND METHOD OF DETECTING FAILURES PRODUCED THEREIN

Koji Itoh, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1995, Ser. No. 460,033
Claims priority, application Japan, Sep. 12, 1994, 6-217485; Sep. 12, 1994, 6-217486
Int. Cl.[6] G03D 13/00
U.S. Cl. 396—578 20 Claims



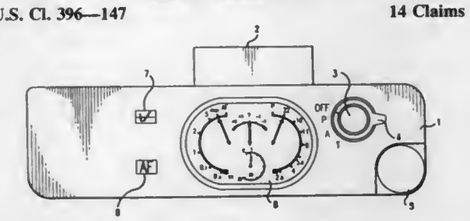
1. A replenishing device comprising:
a replenishing tank for temporarily storing therein a replenishing processing chemical available for replenishing development processing in a processing bath;
replenishing means for replenishing a replenishing processing chemical to the processing bath from said replenishing tank so as to replenish the processing bath with a replenishing processing chemical commensurate in quantity with a processing chemical used within the processing bath;
a sensor for detecting whether a replenishing processing chemical corresponding to a quantity exceeding a predetermined first specified quantity remains within said replenishing tank;
a display unit capable of displaying instructions for supplying the replenishing processing chemical to said replenishing tank; and
a control device for allowing said display unit to display the instructions thereon when said control device judges, based on information provided by said replenishing means indicating a quantity of a replenishing processing chemical added to the processing bath after said sensor has detected that a remaining quantity of the replenishing processing chemical has been brought to a level that is less than the first specified quantity, that the remaining quantity of the replenishing processing chemical in said replenishing tank is less than a second specified quantity predetermined to be less than the first specified quantity.

5,614,980

DISPLAY DEVICE INCLUDING A POINTER

Hiroshi Wakabayashi, and Daiki Tsukahara, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,897
Claims priority, application Japan, Sep. 2, 1994, 6-209454
Int. Cl.[6] G03B 17/18
U.S. Cl. 396—147 14 Claims



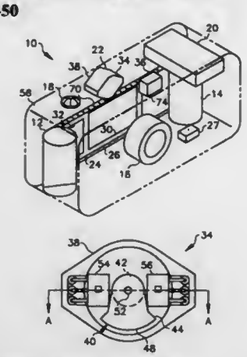
1. A display device comprising:
a display unit to display a physical quantity, said display unit including a scale board and a pointer that is driven on said scale board;
a driving device to drive said pointer;
an operation device to change the pointer display value of said display unit;
a measurement device to measure said physical quantity;
a switching device to switch between a setting value display mode and a measured value display mode; and
a control device that makes a measurement range for said measurement device larger than a display range in said setting value display mode and that controls said driving device to drive said pointer according to the operation of said operation device in said setting value display mode, and that controls said driving device to drive said pointer to a value measured by said measurement device in said measured value display mode,
wherein a scale position to indicate when measurement indication is not enabled is provided on said scale board outside of a display range in said setting value display mode and said control device controls said driving device to drive said pointer to said not enabled scale position when a measured value is outside said display range, wherein said control device automatically switches from the measured value display mode to said setting value display mode upon receiving a measured value outside said display range.

5,614,981

CAMERA WITH MAGNETIC ORIENTATION SENSOR

Robert C. Bryant, Honeoye Falls, and Michael J. O'Brien, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1995, Ser. No. 560,852
Int. Cl.[6] G03B 17/00; 17/24
U.S. Cl. 396—50 7 Claims



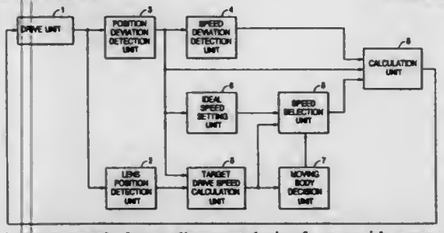
1. A photographic camera, comprising:
a housing;
a pendulous magnetic mass suspended in the housing for movement in response to changes of orientation of the camera;
first and second flux plates mounted for movement with the magnetic mass, the magnetic mass being positioned between the flux plates to enable the flux plates to focus a magnetic field between the flux plates; and
at least one signaling device mounted in said housing to intercept the focused magnetic field between the flux plates and to produce a signal upon movement of the magnetic mass.

5,614,982

AUTOMATIC FOCUS ADJUSTMENT DEVICE FOR ADJUSTING A FOCUS STATE OF A CAMERA LENS REGARDLESS OF SUBJECT STABILITY

Seiichi Yasukawa, Yotsukaido, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,576
Claims priority, application Japan, Oct. 31, 1994, 6-267557
Int. Cl.[6] G03B 13/36
U.S. Cl. 396—95 13 Claims



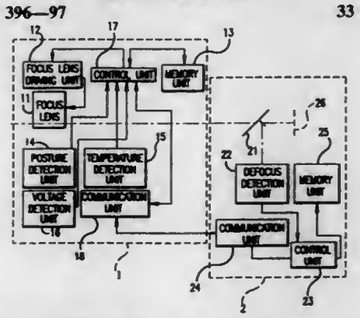
1. An automatic focus adjustment device for use with a camera having a photographic lens, the device comprising:
a drive unit changing an extension state of a photographic lens;
a lens position detection unit detecting the extension state of the photographic lens;
a position deviation detection unit detecting the position deviation between a position of a subject as imaged by the photographic lens and an imaging plane;
a speed deviation calculation unit inputting the position deviation detected by the position deviation detection unit and calculating the speed deviation due to a time change of the detected position deviation;
a target drive speed calculation unit which, based on the extension state of the photographic lens as detected by the lens position detection unit and on the position deviation detected by the position deviation detection unit, calculates a target drive position for the photographic lens and calculates a target drive speed based on the time change of the target drive position;
an ideal speed decision unit which, based on the position deviation detected by the position deviation detection unit, determines a previously set ideal speed for moving the photographic lens;
a movement decision unit determining whether the subject is a moving body;
a speed selection unit selecting the target drive speed when it has been determined by the movement decision unit that the subject is a moving body and selecting the ideal speed when it has been determined by the movement decision unit that the subject is a non-moving body; and
a calculation unit calculating the actuation amount to be output by the drive unit based on the position deviation detected by the position deviation detection unit, the speed deviation calculated by the speed deviation calculation unit and the speed selected by the speed selection unit.

5,614,983

AUTOMATIC FOCUS DEVICE AND METHOD

Toru Iwane, Yokohama, and Shozo Yamano, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,661
Claims priority, application Japan, Aug. 31, 1994, 6-206980
Int. Cl.[6] G03B 3/00
U.S. Cl. 396—97 33 Claims



1. An automatic focus device, comprising:
a defocus amount detection device for detecting a defocus amount of a shooting lens against a subject;
a focus lens;
a driving device coupled with said focus lens, said driving device driving said focus lens to a focus position based on said detected defocus amount;
an environmental factor measurement device that measures at least one environmental factor affecting a driving time of said focus lens; and
a driving time estimation device communicating with said environmental factor measurement device, said driving time estimation device estimating a driving time of said driving device based on said at least one measured environmental factor.

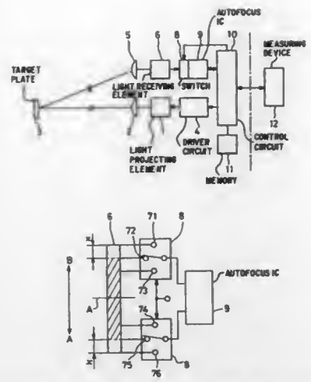
5,614,984

DISTANCE MEASURING DEVICE

Yoichi Seki; Tomihiko Aoyama; Michio Kawai, and Akira Ito, all of Chiba-ken, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 104,328, Aug. 9, 1993, abandoned.
This application Apr. 19, 1995, Ser. No. 505,518
Claims priority, application Japan, Aug. 20, 1992, 4-221597
Int. Cl.[6] G03B 13/36
U.S. Cl. 396—106 12 Claims

1. A distance-measuring device comprising:
a light-projecting unit for projecting light toward a subject,



a light-receiving lens for receiving reflected light from said subject,

a light-receiving element positioned to receive the reflected light from the light-receiving lens, said light-receiving element generating an output corresponding to a distance to said subject, wherein the distance to the subject is detected on the basis of the output from said light-receiving element,

said light-receiving element having a plurality of pairs of terminals, the terminals of each pair being separate and distinct from the terminals of an adjacent pair, each pair being offset from an adjacent pair by a predetermined interval in a lengthwise direction of a light-receiving region of said light-receiving element and defining light-receiving regions therebetween, the terminals of each pair being separated from each other by a predetermined distance which is the same for each pair of terminals,

detecting means for detecting a difference in alignment between an optical axis of said light-receiving lens and an optical center of said light-receiving element corresponding to said output generated from a predetermined pair of said terminals of said light-receiving element, and for producing an output in response thereto, and

selecting means for selecting a desired pair of said terminals which minimizes the difference in the alignment between the optical axis of said light receiving lens and the optical center of said light-receiving element according to the output from said detecting means.

5,614,985

CAMERA WITH DEVICE FOR DETECTING LINE OF SIGHT

Yukio Odaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 141,615, Oct. 27, 1993. This application Apr. 23, 1996, Ser. No. 636,627

Claims priority, application Japan, Oct. 28, 1992, 4-312847; Oct. 28, 1992, 4-312848; Oct. 30, 1992, 4-314413

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—51 **27 Claims**

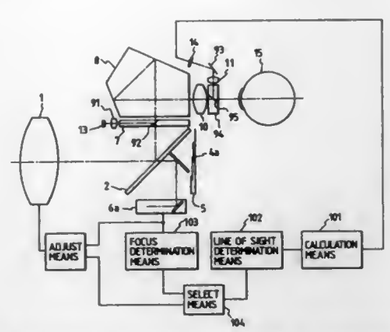
1. A camera comprising:

sight line detection means for detecting a line of sight of an observer;

camera operation means controlled by the line of sight detected by said sight line detection means;

continuous exposure operation means for performing a continuous exposure operation while an operation element for starting an exposure operation is activated;

exposure preparation operation means for performing an exposure preparation operation between a first exposure operation and a second exposure operation during the continuous exposure operation; and



sight line operation control means for causing said sight line detection means to effect a sight line detecting operation during the functioning of said exposure preparation operation means.

5,614,986

PHOTOGRAPHIC PRINTING APPARATUS

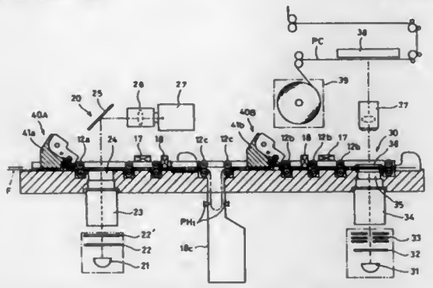
Tohru Yoshikawa, and Yoshiyuki Yamaji, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Apr. 10, 1995, Ser. No. 419,396

Claims priority, application Japan, Apr. 11, 1994, 6-072141

Int. Cl.[6] G03B *27/00;27/62*

U.S. Cl. 355—18 **4 Claims**



1. A photographic printing apparatus comprising:

a carrier unit having a film guide for feeding films along a straight film feed path;

a scanner means and a printing/exposure means provided along said film feed path, said scanner means and said printing/exposure means being driven independently of each other;

said film guide including a film feed speed adjusting means for adjusting the speed of feeding of films between said scanner means and said printing/exposure means;

first cartridge holder means provided upstream of said scanner means for supporting a film cartridge and for feeding films stored therein to said scanner means and rewinding the films back into the film cartridge;

second cartridge holder means provided upstream of said printing/exposure means for supporting a film cartridge and for feeding films stored therein to said printing/exposure means and rewinding the films back into the film cartridge; and

inlet means at an upstream end of said film feed path for inserting a film not in a cartridge into said scanner means.

5,614,987

PRINT DETECTOR FOR USE IN A SORTER

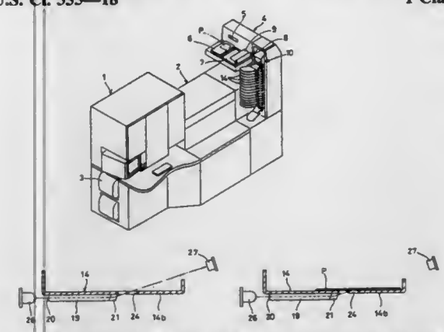
Mikiteru Nishioka, and Masaaki Kuwaguchi, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 13, 1995, Ser. No. 527,803

Claims priority, application Japan, Sep. 13, 1994, 6-218864

Int. Cl.[6] G03B *27/00;* **B42C** *1/12;* **B65H** *39/10*

U.S. Cl. 355—18 **1 Claim**



1. A print detector for use in an order sorter having an endless member and a plurality of print carriers mounted on said endless member, said endless member being adapted to be intermittently moved by a distance equal to the mounting pitch of said print carrier in one direction every time photoprints for one order lot have been placed on one of said print carriers, wherein each said print carrier has an optical path block having a light incoming end face at one end thereof, and a reflecting end face formed at the other end thereof for reflecting light directed into said optical path block through said light incoming end face, said each print carrier has a transparent portion in an area thereof where photoprints are to be placed, and said detector further comprises a light emitter provided at a lower portion of a print carrier moving path for emitting light at said light incoming end face of said optical path block, a light interceptor provided on an optical axis of light reflected by said reflecting end face, and an alarm means adapted to be activated if said light interceptor fails to receive light emitted by said light emitter.

5,614,988

PROJECTION EXPOSURE APPARATUS AND METHOD WITH A PLURALITY OF PROJECTION OPTICAL UNITS

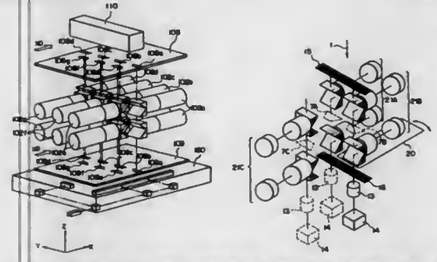
Kinya Kato, Yokohama, and Masami Seki, Shiki, both of Japan, assignors to Nikon Corporation, Japan

Filed Dec. 5, 1994, Ser. No. 349,754

Claims priority, application Japan, Dec. 6, 1993, 5-339770

Int. Cl.[6] G03B *27/44;27/32*

U.S. Cl. 355—46 **16 Claims**



1. A projection exposure apparatus which is arranged to relatively move first and second substrates relative to a projection optical system, thereby projecting a pattern formed on said first substrate through said projection optical system onto said second substrate to effect exposure thereon,

wherein said projection optical system is provided with a plurality of projection optical units each forming a real-size erect image of the pattern formed on said first substrate, on said second substrate;

wherein each of said projection optical units has a plurality of reflective surfaces and is telecentric at least on an image side;

which comprises correcting mechanism disposed to correct an error of orientation between a plurality of images formed on said second substrate by said plurality of projection optical units.

5,614,989

LIGHT SOURCE FOR PHOTOGRAPHIC PRINTER

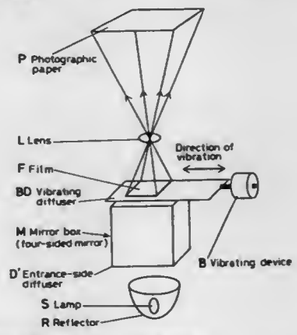
Kanji Tokuda, Kaisei-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1995, Ser. No. 402,710

Claims priority, application Japan, Apr. 4, 1994, 6-066049

Int. Cl.[6] G03B *27/32;27/46;27/54;27/72*

U.S. Cl. 355—67 **5 Claims**



1. A photographic printer comprising:

a lamp which produces light;

a mirror box which scatters the light from said lamp;

a diffuser which is movably disposed in proximity to an exit of said mirror box in an illuminating optical path of the light which has been scattered by said mirror box, said diffuser producing a diffused light;

a film which is to be printed off is disposed in proximity to said diffuser, the diffused light from said diffuser passing through said film;

a printing lens which projects an image of said film; and

a photographic paper which is disposed on a plane where the image of said film is projected by said printing lens in order to print the projected image on said photographic paper,

wherein said diffuser is arranged to move during a time of exposure carried out to print the image of said film onto said photographic paper, thereby to prevent the printed image from being affected by dust or blemishes on said diffuser.

5,614,990

ILLUMINATION TAILORING SYSTEM USING PHOTOCHROMIC FILTER

James A. Bruce, Williston; Joseph Gortych, Essex Junction, and Michael S. Hibbs, Westford, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,643

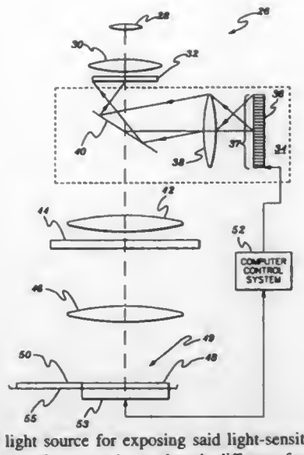
Int. Cl.[6] G03B *27/42*

U.S. Cl. 355—71 **31 Claims**

16. Apparatus for imaging features on a semiconductor wafer situated in an imaging plane coated with a light-sensitive material, comprising:

a photochromic filter activated by light of a first wavelength;

a first variable-intensity light source for selectively activating said photochromic filter with light of said first wavelength;



a second light source for exposing said light-sensitive material with light of a second wavelength different from said first wavelength passed through said photochromic filter;

a mask for imaging said features in said light-sensitive material;

a plurality of detectors temporarily situated in said imaging plane for measuring light intensity distribution in selected portions of said imaging plane; and

a controller for controlling light intensity of said first variable-intensity light source based on said measured light intensity distribution.

5,614,991

DOCUMENT PLACEMENT MECHANISM AND IMAGE READING DEVICE FOR BOOKS

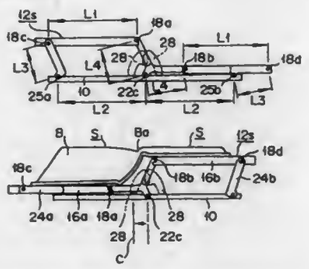
Fuminori Moro, and Hiroshi Nagashima, both of Tokyo, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Mar. 8, 1995, Ser. No. 400,676

Claims priority, application Japan, Mar. 14, 1994, 6-042685

Int. Cl.[6] G03B *27/62;* **G09F** *19/00*

U.S. Cl. 355—75 **14 Claims**



1. A document placement mechanism comprising:

a first platform for placement of pages on the left side of an open book document on the top surface thereof;

a second platform provided adjacent to said first platform for placement of pages on the right side of an open book document on the top surface thereof;

a support mechanism for supporting said first and second platforms so as to be movable in vertical and bilateral directions while holding the top surfaces of said first and second platforms in a horizontal orientation, said support mechanism including a linkage means for linking the movement of said first and second platforms and for sliding said first platform in a rightward direction when raised, thereby inducing said second platform to slide in a rightward direction while being moved in a downward direction, and for sliding said first platform in a leftward direction when lowered, thereby inducing said second platform to slide in a leftward direction when being moved in an upward direction, so that a center portion of the open book document is located at a fixed position, the linkage means including a plurality of linkage members that are positioned at respective acute angles when the platforms are aligned in the same plane.

5,614,992

IMAGE FORMING APPARATUS WITH IMPROVED JAM CLEARANCE OPERATION

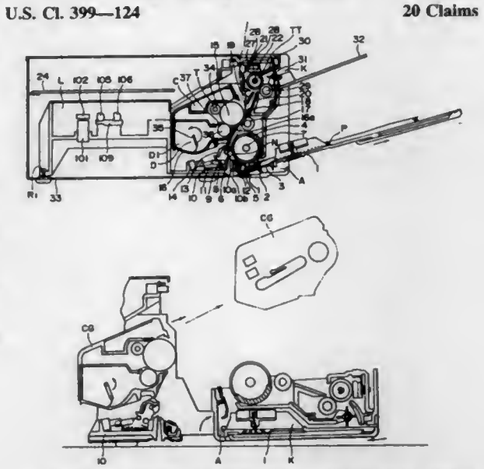
Yutaka Kikuchi, Kawasaki, and Masanobu Kanoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 389,974, Feb. 14, 1995, abandoned, which is a continuation of Ser. No. 47,619, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 549,246, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 175,354, Mar. 30, 1988, abandoned. This application Jul. 1, 1996, Ser. No. 674,198

Claims priority, application Japan, Mar. 31, 1987, 62-078031; Mar. 31, 1987, 62-078033

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—124 **20 Claims**



1. An image forming apparatus usable with recording material conveying means, said image forming apparatus comprising:

a main assembly including a first top wall and image forming means;

a conveying unit for partially supporting the recording material conveying means for conveying a recording material introduced from a recording material inlet to a recording material outlet through said image forming means, said conveying unit being supported on said main assembly adjacent a lower position for upward and downward swinging movements toward and away from said main assembly, respectively, said conveying unit having a second top wall, which is adjacent said first top wall of said main assembly to form an apparatus top wall of said apparatus with said first top wall,

wherein said image forming means is at least partly disposed adjacent to said conveying unit and is accessible when said conveying unit is moved away from said main assembly,

wherein said conveying unit, when mounted to said main assembly, constitutes a conveying passage for conveying the recording material substantially in a vertical direction through said image forming means,

wherein said conveying unit is, as a unit, separable substantially along the conveying passage from said main assembly, wherein when said conveying unit is separated from said main assembly, a part constituting the conveying passage is exposed, and

wherein the recording material inlet is disposed at a lower position, and the recording material outlet is disposed at an upper position,

a recording material stacking tray for stacking recording material thereon, which is rotatable between a closed position in which the recording material stacking tray is substantially upright adjacent said conveying unit and an open position in which the recording material stacking tray extends in a direction crossing with an extending direction of the conveying passage; and

separation feeding means having feeding rotary means actable on the recording material stacked on the recording material stacking tray to feed the recording material and separating means actable on the recording material stacked on the recording material stacking tray to permit one recording material to pass, wherein said feeding rotary means is supported on said conveying unit, and said separating means is supported on said main assembly, and when said conveying unit is moved away from said main assembly, said separating means is moved away from said rotary feeding means.

5,614,993

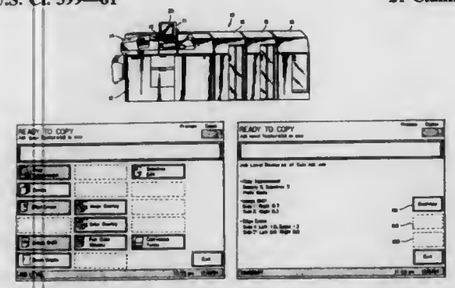
SYSTEM AND METHOD FOR JOB SET UP SUMMARIZING IN REPROGRAPHIC APPARATUS

Barbara S. Smith, Fairport; Frederick E. Altrieth, III, Scottsville, and Douglas B. Beaudet, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1995, Ser. No. 398,231

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—81 **21 Claims**



1. Reproduction apparatus having a plurality of operating features for producing copy jobs, said apparatus comprising:

(i) an operator control communication interface including display means for producing a plurality of display screens having operating feature selections and means for producing signals representative of operating feature selections on such screens;

(ii) memory and control means for generating and addressing such screens onto such display means, for receiving and storing such selections signals and for controlling said apparatus to produce a copy job in accord with such selections signals;

(iii) summary means, operatively associated with said memory and control means, for generating and addressing said display means with separate display screens summarizing respectively, selected standard operating features, selected job level operating features and selected page level operating features.

5,614,994

DEVELOPER STATION FOR AN ELECTROPHOTOGRAPHIC PRINTING OR COPYING MACHINE

Alexander Kreiter, Hofsingelding, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

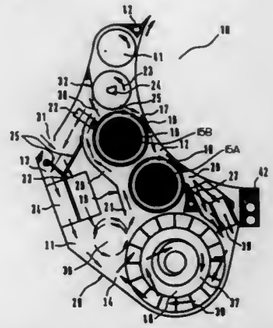
PCT No. PCT/EP93/01876, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO94/03842, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 16, 1993, Ser. No. 379,504

Claims priority, application Germany, Jul. 30, 1992, 92113025.8

Int. Cl.[6] G03G *15/09;15/08*

U.S. Cl. 399—256 **18 Claims**



1. A developer station for an electrophotographic printing or copying machine for the development of charge images generated on a photoconductor, comprising:

a developer chamber which is arranged in the region of the photoconductor, the developer chamber having:

at least one developer roller with a clearance relative to the photoconductor, said clearance forming a developer gap;

an access region receiving a developer mixture having a printing-toner concentration;

metering means for metering the developer mixture for producing a metered developer mixture which is fed to the developer gap via at least one of the developer rollers, said metered developer mixture being depleted in said developer gap and thereby producing depleted developer mixture, said metering means producing excess developer divided off during metering;

an overflow channel disposed to received said excess developer and to divert it out of the developer chamber;

an outlet regioo for diverting the depleted developer mixture depleted out of the developer chamber;

a mixing chamber coupled to the over flow channel and having an access region for fresh toner, the mixing chamber containing means for mixing the excess developer with the fresh toner and thereby producing an enriched developer mixture; and

a developer-station sump disposed to receive the enriched developer mixture from the mixing chamber and coupled to the access region and to the outlet region of the developer chamber, said developer-station sump containing vortex-generating means for producing vortex for swirling the depleted developer mixture together with the enriched developer mixture to produce said developer mixture and for intermediately storing said developer mixture in a space which is not occupied by the means for producing a vortex and from which said developer mixture having the printing-toner concentration is extracted and fed to the developer chamber.

5,614,995

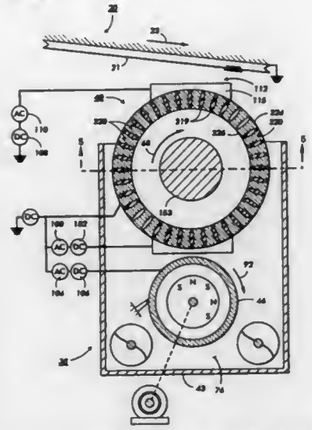
ELECTRODED DONOR ROLL HAVING ROBUST COMMUTATOR CONTACTS

Timothy R. Jaskowiak, Webster; Julie A. Perez, Pittsford; Ann M. Kazakos, Webster; Daniel R. Gilmore, III, Victor; Jay L. Schneider, Canandaigua, and Heiko Rommelmann, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 5, 1995, Ser. No. 523,457

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—385 10 Claims



6. An electroded donor roll for mounting partially within a mixing chamber of a development unit and forming a development zone with an image bearing member to move charged toner particles from the mixing chamber to the development zone, said donor roll comprising:

(i) a conductive shaft core;

(ii) a dielectric layer injection molded over said shaft core;

(iii) axially extending electrodes formed in a surface of said dielectric layer; and

(iv) robust commutator contact pads formed from a conductive commutator washer device overmolded into said dielectric layer, said commutator pads each contacting an axially extending electrode.

5,614,996

TONER STORAGE UNIT, RESIDUAL TONER COLLECT UNIT, TONER CONTAINER WITH THESE UNITS AND IMAGE FORMING APPARATUS WITH SUCH TONER CONTAINER

Tetuo Tanda, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Feb. 28, 1995, Ser. No. 396,409

Claims priority, application Japan, Mar. 3, 1994, 6-058222; Dec. 29, 1994, 6-339804

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—120 16 Claims

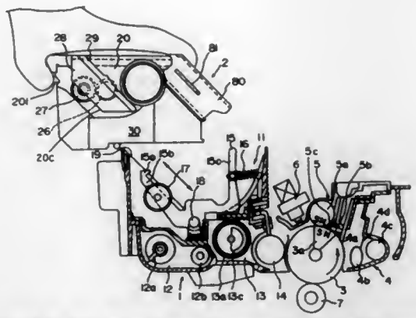
1. An image forming apparatus, comprising:

a machine body with a developer unit and associated toner receiving section, and

a toner storage unit adapted to be loaded to and unloaded from the machine body in a predetermined direction,

said toner storage unit including a wall, a toner supply opening defined in said wall, and a first shutter member movably mounted onto said wall and adapted to open and close said toner supply opening,

said machine body including a corresponding wall, a toner receiving opening defined in said wall, and a second shutter member movably mounted onto said wall and adapted to open and close said toner receiving opening, and



said first and second shutter members including respective engagement portions, said engagement portion of one of said shutter members being engaged with the engagement portion of the other shutter member so as to cooperatively open said toner supply opening and said toner receiving opening as said toner storage unit is loaded to said machine body in the predetermined direction.

5,614,997

TRANSFER DEVICE CONFIGURATION IN AN IMAGE-REPRODUCING STATION

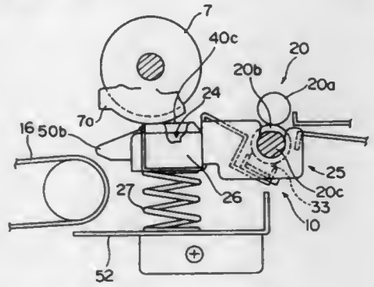
Takeshi Marumoto, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1996, Ser. No. 586,942

Claims priority, application Japan, Jan. 10, 1995, 7-002133

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—121 27 Claims



1. An image reproducing device comprising:

a frame;

an image reproducing element supported within a portion of said frame wherein a paper transport path is at least partially defined within said frame such that movement of paper extends from a paper supply tray to a paper discharge tray, both of said trays supported on said frame;

upper and lower registration rollers supported in a portion of said frame upstream of said image reproducing element with respect to movement of paper along said transport path; and

a transfer device disposed approximately between said registration rollers and said image reproducing element, said transfer device including:

a case configured to be pivotal about a rotational axis of one of said registration rollers, and positionable within said frame to be opposed to said image reproducing element;

a sheet-charging member supported within said case and extending along a portion of said case;

a positioning mechanism connected to said case to maintain a predetermined gap between said image reproducing element and said sheet-charging member; and

a charge removing member connected to said case, said charge removing member having a plurality of projections and extending lengthwise adjacent to said image reproducing element.

5,614,998

IMAGE FORMING APPARATUS HAVING A TONER RECYCLING MECHANISM

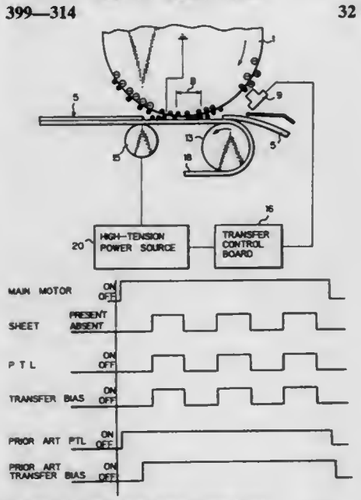
Atsushi Sanpe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 561,852

Claims priority, application Japan, Dec. 12, 1994, 6-307493

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—314 32 Claims



1. An image forming apparatus comprising:

exposing means for electrostatically forming a latent image on an image carrier;

developing means for developing the latent image with toner to thereby form a corresponding toner image;

transferring means for transferring the toner image to a sheet in contact with said image carrier;

bias applying means for applying a bias voltage at the time of the transfer of the toner image to the sheet;

cleaning means for removing the toner remaining on said image carrier after the transfer of the toner image to the sheet;

toner conveying means for conveying the toner removed by said cleaning means to said developing means; and

bias control means for causing said bias applying means to apply the bias voltage only when the sheet exists between said image carrier and said transferring means, when the image forming apparatus is in a repeat copy mode.

5,614,999

FIXING APPARATUS FOR REDUCING IMAGE DISTORTION

Yoshio Kanesawa; Yasuhiro Uehara, and Yasuhiro Kusumoto, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,929

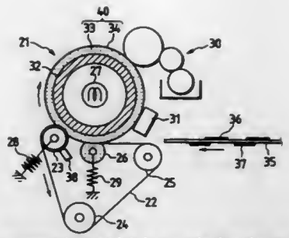
Claims priority, application Japan, Oct. 14, 1994, 6-249705; Sep. 21, 1995, 7-267668

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—329 12 Claims

7. A fixing apparatus, comprising:

a heat-fixing roll having heating means and being driven to rotate; and



an endless pressure belt which is stretched under tension along a plurality of rolls and made to contact and be wound around said heat-fixing roll;

wherein one of said plurality of rolls for stretching said pressure belt is a pressure roll which is pressed against said heat-fixing roll via said pressure belt, the peripheral surface of said pressure roll being covered with a layer of heat-resistant and heat-insulating material;

wherein another of said plurality of rolls is an auxiliary pressure roll; and

wherein the press contact force of said auxiliary pressure roll with respect to said heat-fixing roll is set so that the sum of the press contact force thereof and the press contact force caused by the tension of said pressure belt made to contact and be wound around said heat-fixing roll is substantially equal to or greater than the pressing force of said pressure roll.

5,615,000

CONVEY BELT AND CONVEYING APPARATUS WITH IT

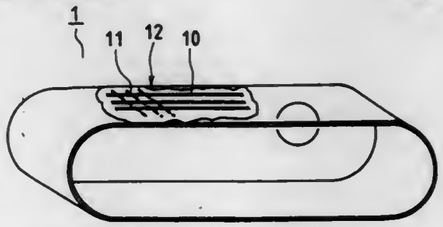
Noriyoshi Ueda, Yokohama, and Naoki Toda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, and Nitto Kogyo Co., Ltd., both of Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,133

Claims priority, application Japan, Mar. 11, 1992, 4-087906; Mar. 5, 1993, 5-070915

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—361 14 Claims



1. A sheet conveying apparatus, comprising:

a plurality of rotating members;

a frame for supporting said plurality of rotating members; and

an endless belt wound around said plurality of rotating members and moved by rotation of said rotating members to convey a sheet, said endless belt including a core member made by weaving wefts extending in a moving direction of said endless belt and warps extending in a widthwise direction of said endless belt,

wherein an offset of said endless belt in a widthwise direction is caused by misalignment between said rotating members, and when said endless belt is offset leftwardly on said rotating members relative to the moving direction of said endless belt an endless belt with Z-twisted wefts is selected, and when

said endless belt is offset rightwardly on said rotating members relative to the moving direction of said endless belt an endless belt with S-twisted wefts is selected.

5,615,001

MULTICOLOR IMAGE FORMING APPARATUS

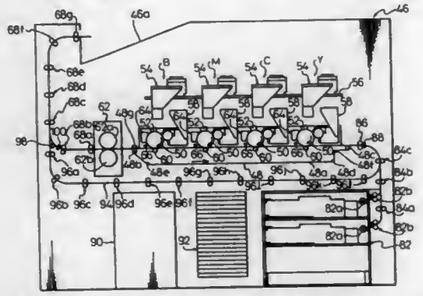
Masato Kawashima; Hideyuki Shimobuchi; Hiroyuki Okitsu; Masato Matsuzuki; Hiroaki Yoshida, all of Kawasaki; Michihiro Fujii, Katou-gun; Yukinari Okawa, Kawasaki; Masaru Iida, Kawasaki; Katsuyasu Ito, Kawasaki; Yukihide Toda, Kawasaki, and Seiji Nagai, Katou-gun, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 29, 1995, Ser. No. 496,401

Claims priority, application Japan, Jun. 30, 1994, 6-149441

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—226 26 Claims



1. A color image forming apparatus comprising:

a recording medium moving means for providing a path of moving a recording medium, said recording medium moving means having a recording medium introduction side and a recording medium ejection side;

a recording medium feeding means arranged beneath the recording medium introduction side of said recording medium moving means;

a first recording medium guiding means for sending the recording medium fed form said recording medium feeding means upwardly and for guiding the same to the recording medium introduction side of said recording medium moving means;

at least two electrostatic recording units which are arranged in series along the path for moving the recording medium so as to record electrically charged toner images by different colors on the recording medium sent along the path for moving the recording medium, each of said electrostatic recording units including an electrostatic latent image carrying body;

a fixing means which is arranged on the recording medium ejection side of said recording medium moving means for fixing the charged toner image on the recording medium carrying said electrically charged toner image;

a second recording medium guiding means for guiding upward the recording medium passed through said fixing means;

a recording medium receiving means which is arranged above said fixing means for accommodating the recording medium sent by said second recording medium guiding means;

a main frame, and a first sub-frame which is movable between a pushed-in position in said main frame and a pulled-out position drawn out of said main frame;

said electrostatic latent image carrying body being mounted on said first sub-frame; and

said electrostatic latent image carrying body having a driven coupling provided at one shaft end thereof, and said driven coupling being engaged with a drive coupling provided in said main frame when said first sub-frame is moved to the pushed-in position thereof.

5,615,002

ELECTROPHOTOGRAPHIC COLOR IMAGE FORMING APPARATUS WITH A PLURALITY OF IMAGE EXPOSING DEVICES ARRANGED AROUND OUTER CIRCUMFERENCE OF PHOTORECEPTOR

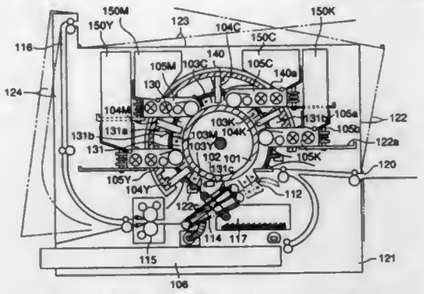
Satoshi Haneda; Hisayoshi Nagase; Hiroyuki Tokimatsu; Shuta Hamada; Masakazu Fukuchi, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 574,470

Claims priority, application Japan, Dec. 14, 1994, 6-310763; Jan. 13, 1995, 7-004315; Jan. 24, 1995, 7-008990; Jan. 24, 1995, 7-008991; Mar. 6, 1995, 7-045477; Mar. 6, 1995, 7-045478

Int. Cl.[6] G03G *15/01;15/00*

U.S. Cl. 399—227 43 Claims



1. An apparatus for forming a color image, comprising:

a cylindrical photoreceptor;

a plurality of charging devices each for electrically charging the photoreceptor for one of plural different colors;

a plurality of image exposure devices each for imagewise exposing the charged photoreceptor so as to form a latent image;

a plurality of developing devices, each developing device developing the latent image so as to form a toner image in a color different from others;

the plurality of charging devices, the plurality of image exposure devices, and the plurality of developing devices being arranged around the outer circumference of the photoreceptor so that a color image is formed during a single rotation of the photoreceptor; and

a supporting member for supporting the plurality of image exposure devices substantially on a circle which is coaxial with an axis of the photoreceptor.

5,615,003

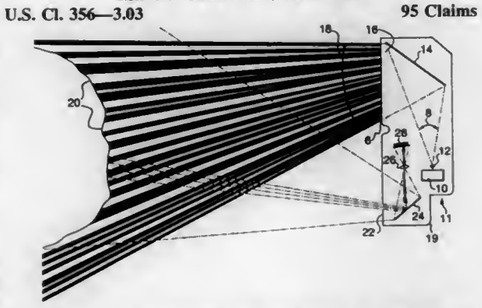
ELECTROMAGNETIC PROFILE SCANNER

Alexander T. Hermary, No. 201 - 1159 Main Street, Vancouver, B.C., Canada, and Terrance J. Hermary, 1201-4266 Grange, Burnaby, B.C., Canada

Filed Nov. 29, 1994, Ser. No. 346,392

Int. Cl.[6] G01B *11/24;* G01C *7/00*

U.S. Cl. 356—3.03 95 Claims



1. A method of measuring a selected surface of an object at a distance, comprising the steps of:

(a) projecting from a first predetermined location over a predetermined angular range onto the selected surface of the object a single pattern of electromagnetic radiation comprising an array of spatially arranged and bounded pattern elements of at least two mutually distinguishable types, where each pattern element comprises at least a first and a second discrete physical characteristic, each discrete physical characteristic being associated with a discrete type of information, said pattern being selected so that any portion of the pattern of at least some preselected minimum size is distinguishable from any other portion of the pattern;

(b) receiving at a second predetermined location differing from the first predetermined location radiation reflected from the selected surface of the object and measuring (i) the directional distribution of the radiation over a scan of the object and (ii) a preselected received parameter of the reflected radiation whose variable value over the scan is measured, said received parameter being selected for discriminating between and identifying pattern elements and their types within reflection data derived from radiation originating from the projected pattern and reflected from the selected surface of the object;

(c) converting the received radiation into data representing an image of the reflection of at least a portion of the projected pattern reflected from the selected surface of the object;

(d) using the data obtained in step (c), comparing the data representing the image of the reflection with data representing the projected pattern, so as to match identifiable portions of the image with the corresponding portions of the projected pattern; and

(e) calculating the spatial coordinates of the locations on the surface of the object on which each identifiable portion of the projected pattern fell from data representing (i) the first and second predetermined locations, (ii) the known directions of projection for each portion of the projected pattern matched in step (d), and (iii) measured directions pursuant to step (b), from which each corresponding portion of the image was received.

5,615,004

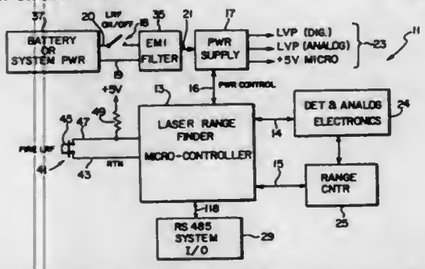
LASER RANGE FINDER POWER MANAGEMENT SYSTEM

Charles E. Nourrcier, Jr., Lakewood, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 27, 1994, Ser. No. 364,322

Int. Cl.[6] G01C *3/08;* H04B *1/16*

U.S. Cl. 356—4.01 21 Claims



1. For use with a laser range finder system having digital circuitry and analog circuitry, the power management apparatus comprising:

power supply means for selectively supplying power to said digital circuitry and to said analog circuitry in response to a plurality of power control signals; and

programmed controller means for selectively supplying said plurality of power control signals to said power supply means so as to cause supply of power by said power supply means to said digital circuitry only when said digital circuitry needs power to be supplied thereto and so as to cause supply of power to said analog circuitry only when said analog circuitry needs power to be supplied thereto.

5,615,005

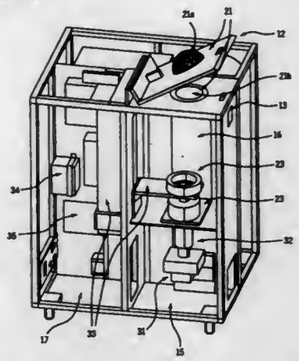
GEMSTONE EVALUATION SYSTEM

Kevin A. Valente; Ernest R. Reuter, both of Kirkwood, Calif., and Randall M. Wagner, Mequon, Wis., assignors to UGTS, Inc., Milwaukee, Wis.

Filed Jan. 23, 1995, Ser. No. 376,826

Int. Cl.[6] G01W *21/00;* G01J *3/46;* G01N *21/87*

U.S. Cl. 356—30 26 Claims



1. A device for measuring characteristics of a gemstone by detecting the light frequency response of said gemstone under illumination comprising:

an optically clear mounting structure for supporting a gemstone thereon;

a light source unit substantially surrounding said mounting structure and gemstone thereon and having a light source creating uniform lighting enclosing said gemstone on said mounting structure and creating a light image of said gemstone, said light image comprising a plurality of light frequencies,

an optical band pass filter coupled to said light source unit and receiving said light image and a selected frequency spectrum for subdividing the frequency spectrum of the image into individual wavelengths, said filter having an output;

a detector array coupled to said filter and the output of said band pass filter and separating said light image into a plurality of pixels and establishing spectral data of each pixel of the light image of said gemstone suitable for processing into definition of a gemstone characteristic.

5,615,006

IMAGING CHARACTERISTIC AND ASYMETRIC ABRERRATION MEASUREMENT OF PROJECTION OPTICAL SYSTEM

Shigeru Hirukawa, Kashiwa; Shinjiro Kondo, Tokyo; Takeshi Kato, Kawasaki, and Kyoichi Suwa, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 355,219, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 130,446, Oct. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,514

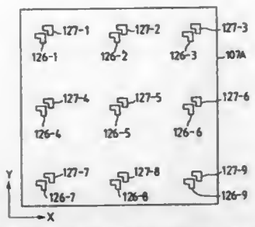
Claims priority, application Japan, Oct. 2, 1992, 4-264659; Oct. 2, 1992, 4-264660

Int. Cl.[6] G01B *9/00;* G01M *11/00*

U.S. Cl. 356—124 11 Claims

1. A method of measuring an asymmetric aberration of a projection optical system which is disposed in an exposure apparatus for forming, on a substrate, a pattern image formed on a mask, said method comprising:

performing a first exposure of each of a plurality of areas on a photosensitive plate by a first pattern image projected by said projection optical system, with said photosensitive plate being



disposed at a same position in a direction of an optical axis of said projection optical system for each exposure;

performing a second exposure of each area by a second pattern image projected by said projection optical system, with each area being disposed at a different respective position in the optical axis direction and the respective position of each area also being different from the position in the optical axis direction during the first exposure;

detecting a relative deviation quantity between said first pattern image and said second pattern image in each of said plurality of areas; and

determining the asymmetric aberration of said projection optical system based on said detected deviation quantities.

5,615,007

METHOD OF DETECTING CRACK AND CHIP IN FLANGE OF SYRINGE

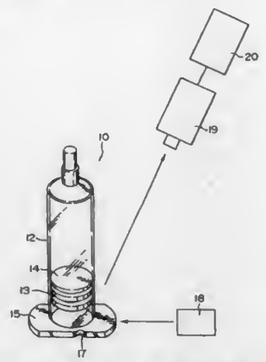
Yoshimasa Matsuura, Honjo; Mikio Tagaya, and Ryosaku Tagaya, both of Isesaki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,015

Claims priority, application Japan, May 20, 1994, 6-106785

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—237 **3 Claims**



1. A method for detecting a crack or chip at a flange of a syringe, comprising:

(1) illuminating a side edge of the flange with light from a light source which directs the light toward the side edge of the flange such that the side edge reflects light in an upwardly slanted direction;

(2) producing image signals with a camera responsive to the side edge reflected light, said camera being located so as to receive the light reflected in the upwardly slanted direction;

(3) receiving the image signals in an image processing device and processing the signals to display a corresponding image; and

(4) determining the absence or existence of a crack or chip by monitoring the displayed image for disturbed image patterns wherein the crack or chip at the flange is recognized by an absence of reflected light.

5,615,008

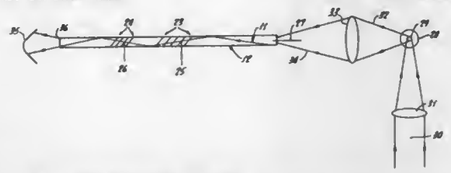
OPTICAL WAVEGUIDE INTEGRATED SPECTROMETER

Thomas M. Stachelek, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 21, 1994, Ser. No. 361,314

Int. Cl.[6] G01J *3/18;3/44;* **G01N** *21/64;21/65*

U.S. Cl. 356—301 **57 Claims**



1. An analytical system comprising:

a waveguide of solid material capable of guiding input light along a first path from a first end of the waveguide towards a second end;

at least one first grating region embedded in the waveguide and having a multitude of grating elements constituted by axially successive refractive index variations in the solid material and extending at such respective spacings to redirect at least some components of the light reaching the grating elements externally of the waveguide portion; and

means external to the waveguide for receiving the light for analytical determination of the components of the light.

5,615,009

METHOD OF STABILIZING SPECTRA IN SPECTROMETRY

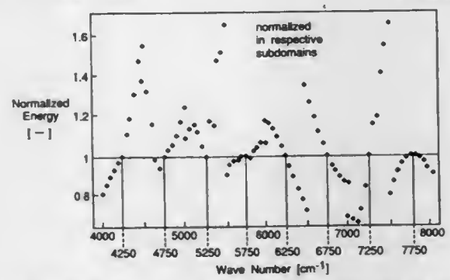
Takeshi Sakura; Yutaka Yamasaki; Hiroko Kubo; Kexin Xu, all of Kyoto, and Motonobu Shiomi, Neyagawa, all of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, and Kurashiki Boseki Kabushiki Kaisha, Okayama, both of Japan

Filed Apr. 12, 1996, Ser. No. 630,974

Claims priority, application Japan, Apr. 12, 1995, 7-086795

Int. Cl.[6] G01J *3/42*

U.S. Cl. 356—326 **4 Claims**



1. A method of stabilizing spectra in spectrometry that performs quantitative analysis of a specific component in an object to be measured by irradiating light to said object and by measuring one of the spectra selected from the energy spectrum of transmitted light, the energy spectrum of scattered light and the energy spectrum of reflected light, comprising steps of

measuring an energy spectrum of light transmitted through or reflected from said object;

dividing said energy spectrum into a plurality of wavelength domains, thereby obtaining a plurality of partial energy spectra;

normalizing each of said plurality of partial energy spectra within each wavelength domain using an energy measured at a predetermined wavelength contained in said each wavelength domain; and

performing said quantative analysis of a specified component in said object using said plurality of partial energy spectra having been normalized.

5,615,010

DIODE ARRAY SPECTROPHOTOMETER

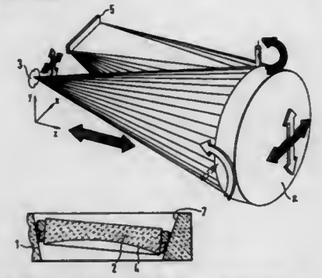
Karsten Kraiczek, Karlsbad, and Bernhard Dehmer, Rastatt-Rauental, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 23, 1996, Ser. No. 589,075

Claims priority, application Germany, Feb. 14, 1995, 195 04 835.0

Int. Cl.[6] G01J *3/02;3/18*

U.S. Cl. 356—328 **11 Claims**



1. A diode array spectrophotometer, comprising:

an entrance slit apparatus;

a diffraction grating;

a diode array;

a casing for defining positions of the entrance slit apparatus and diode array relative to one another, said casing having an opening in a form of a conic frustum;

a grating holder for accepting the diffraction grating and having an cylindrical outer surface in a shape of a cylindrical sleeve; and

at least three filler elements arranged between a wall of the opening exhibiting a conic-frustum-shape and the outer surface of the grating holder.

5,615,011

INTERFEROMETRIC SYSTEM FOR THE DETECTION AND LOCATION OF REFLECTOR FAULTS OF LIGHT-GUIDING STRUCTURES

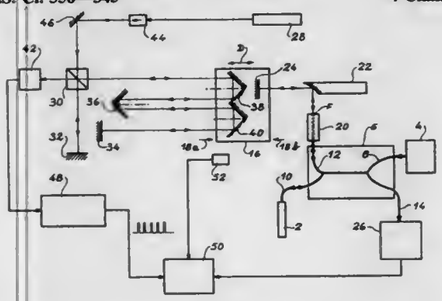
Christian Boisrobert, La Carte; Michel Dontenwille, Lannion, and Loïc Corne, Langueux, all of France, assignors to France Telecom, Paris, France

Filed Feb. 24, 1995, Ser. No. 393,713

Claims priority, application France, Feb. 25, 1994, 94 02179

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **4 Claims**



1. Interferometric system for the detection and location of reflector faults of a light-guiding structure (**2**), said system comprising a first interferometer having:

an incoherent light source (**4**),

an optical coupler (**6**) with four branches, whereof a first branch (**8**) is optically coupled to the incoherent light source and whereof a second branch (**10**) is optically coupled to the light-guiding structure,

a support (**16**),

means (**18***a*, **18***b*, **58**) for the displacement of the support in translation in a given direction (D) and at a constant speed,

a first light reflector (**24**), which is fixed to the support and is able to reflect, parallel to the translation direction of the support, a light beam parallel to said direction,

first optical means (**22**) for receiving the light from a third branch (**12**) of the coupler (**6**) and for supplying said light to the first reflector (**24**) in the translation direction of the support,

first light detection means (**26**) optically coupled to a fourth branch (**14**) of the coupler and able to supply at the output, during a translation of the support, a first interferogram in electrical form, for each reflector fault which the light-guiding structure (**2**) is liable to have,

the system further comprising:

means (**28** to **48**, **54**) for generating first periodic electric pulses, said generating means including a second interferometer and shaping means, and

electronic processing means (**50**) receiving at the input said first pulses and the first interferogram in electrical form and able to sample said first interferogram by first pulses, store the thus obtained samples and locate the reflector faults of the light-guiding structure (**2**) by means of said stored samples,

wherein the second interferometer comprises:

a monomode laser source (**28**),

light beam splitting means (**30**) for receiving a light beam from said laser source and for transmitting a first part and reflecting a second part of said beam,

a second light reflector (**32**) for reflecting said first part to the splitting means, which form therefrom a first light beam,

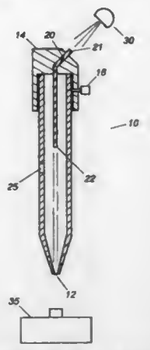
second optical means (**38**, **40**) fixed to the support (**16**) and third optical means (**34**, **36**) positioned facing said support (**16**) and which cooperate with the second optical means in order to receive and reflect, in accordance with a given optical path, the said second part towards the splitting means, which form therefrom a second light beam and make the latter interfere with the first light beam, the given optical path varying by the quantity N.Δx when the support is displaced in translation by a length Δx, N being a number whose product by the ratio of the central wavelength of the incoherent light source to the wavelength of the laser source exceeds 4 and second light detection means (**42**) positioned facing the splitting means (**30**) and which detect the first and second light beams, which interfere with one another and supply at the output, in electrical form, a second interferogram during a translation of the support, wherein said second optical means comprise first (**38**) and second (**40**) cube wedges, and the third optical means comprise a third cube wedge (**36**) and a third light reflector (**34**) arranged in such a way that said second part of the beam, which is reflected by the splitting means, follows a path along which it is successively reflected by the first cube wedge (**38**), the third cube wedge (**36**), the second cube wedge (**40**) and the third light reflector (**34**) and then follows the reverse path, the number N thus being equal to 8 and the central wavelength of the incoherent source is at least equal to double the wavelength of the laser source (**28**)

and wherein the shading means (**48**) supply said first pulses from said second interferogram, each first pulse corresponding to a period of said second interferogram.

5,615,012
METHOD FOR DETECTING OBSTRUCTED NOZZLES

Vahid Kazem-Goudarzi, Sunrise; Alex Marron, Plantation, and Sterling T. Holmes, Oakland Park, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1996, Ser. No. 610,300
Int. Cl.[6] G01B *11/02*
U.S. Cl. 356—384 11 Claims



1. A method of detecting whether a vacuum nozzle opening on a high speed component placement machine is obstructed, comprising the steps of:

illuminating, by means of a remote light source, one end of a fiber optic wire that is embedded within the vacuum nozzle such that another end of the fiber optic wire illuminates the vacuum nozzle opening from the interior of the vacuum nozzle;

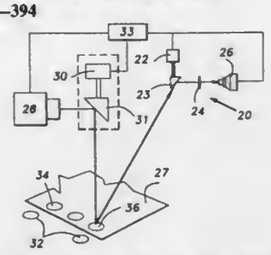
measuring, by means of a remote detector exterior to the vacuum nozzle, intensity of light emanating from the vacuum nozzle opening; and

determining whether the vacuum nozzle opening is obstructed by comparing the measured intensity of light emanating from the vacuum nozzle opening to a predetermined standard.

5,615,013
GALVANOMETER AND CAMERA SYSTEM

Kurt Rueb, Kitchener, and Andrew Wong, Waterloo, both of Canada, assignors to Virtek Vision Corp., Waterloo, Canada

Filed Jun. 27, 1995, Ser. No. 495,190
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—394 19 Claims



1. A combined galvanometer and camera combination comprising:

a galvanometer motor driving a mirror, said mirror being positioned such that it can receive an image from an associated workpiece and direct that image into the lens of a camera;

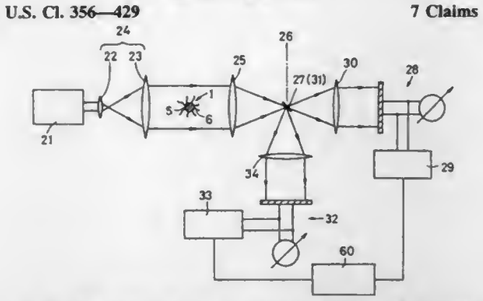
a camera associated with said mirror and positioned such that an image directed from said mirror enters a lens of said camera; and

a controller for associating the position of the galvanometer with the image directed into the camera.

5,615,014
YARN MEASURING DEVICE

Kazuhiko Okuda, Kobe, Japan, assignor to Keisokki Kogyo Co., Ltd., Japan

Filed Sep. 21, 1995, Ser. No. 531,614
Claims priority, application Japan, Jul. 20, 1995, 7-207605
Int. Cl.[6] G01B *11/10*
U.S. Cl. 356—429 7 Claims

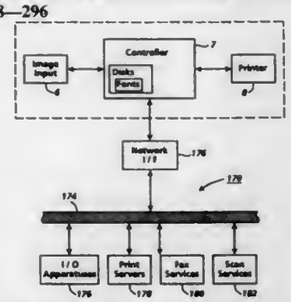


1. A yarn measuring device comprising a laser light output means (**21**) which emits laser light in such a manner that it intersects traveling yarn (**1**); a Fourier transformation convex lens (**25**) which forms a Fourier transformation pattern, including a core part pattern and a surface projection pattern of the yarn, on a spectrum plane (**26**) by performing a Fourier transformation of diffracted light which has passed through the yarn; a removal means (**27**) which is located on said spectrum plane and removes one of the core part pattern and the surface projection pattern in the Fourier transformation pattern; a first light detecting means (**28**) which receives the other pattern which has passed through the spectrum plane and has not been removed by said removal means; a guide means (**31**) which leads the pattern which has been removed by said removal means in a direction which is refracted from the spectrum plane; and a second light detecting means (**32**) which receives the pattern which has been led by said guide means.

5,615,015
APPARATUS AND METHOD OF PROGRAMMING A JOB TO BE PROCESSED AT A LOCATION OTHER THAN THE LOCATION AT WHICH THE JOB IS PREPARED

Peter M. Krist, Rochester, and Wayne Cheng, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1994, Ser. No. 283,372
Int. Cl.[6] H04N *1/23;1/00;* G06F *15/00*
U.S. Cl. 358—296 27 Claims



1. In a printing system with an input source communicating with a printing machine by way of a network connection, the printing machine including an image processing arrangement for performing one or more image processing operations, the input source including an emitter in which a first electronic document, represented by a plurality of electronic pages, is prepared for an output operation at the printing machine, a method comprising:

programming an electronic job ticket with a plurality of instructions, for processing the first electronic document, a selected one of the instructions corresponding with an image processing operation to be performed on a selected one of the electronic pages;

using the emitter to convert the first electronic document, with the electronic job ticket, into a second electronic document written in a page description language, the second electronic document including respective page description language representations of the selected instruction and the selected electronic page;

transmitting, by way of the network connection, the second electronic document to the printing machine;

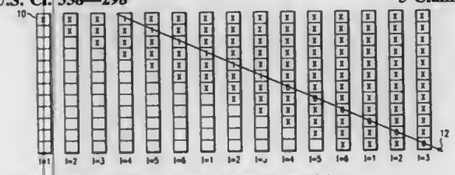
interpreting the second electronic document at the printing machine to create an output-ready document, said interpreting including performing the image processing operation, on the page description language representation of the selected electronic page, with the page description language representation of the selected instruction of the second electronic document; and

outputting a representation of the interpreted second electronic document at the printing machine.

5,615,016
EXPOSURE SCHEME FOR MINIMIZING MICROBANDING INSLM-BASED PRINTERS

Vivek K. Thakur, Karnataka, Ind., and Vadlamannati Venkateswar, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1994, Ser. No. 334,650
Int. Cl.[6] H04N *1/034*
U.S. Cl. 358—298 3 Claims



1. An improved method of printing comprising:

a. determining a gray scale to be transferred to a photosensitive surface;

b. illuminating a spatial light modulator with a light source, wherein said light source has a predetermined light intensity cycle;

c. time delaying and integrating said pattern onto said photosensitive surface with a predetermined number of exposures; and

d. rotating the bits of a given line number around said light intensity cycle such that the number of bits rotated depends upon said line number and said predetermined number of exposures.

5,615,017
METHOD OF AND CONTROL CIRCUIT FOR COMPRESSION RECORDING AND REPRODUCING OF MULTIPLE IMAGES

Hae Y. Choi, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 18, 1992, Ser. No. 978,426.
Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2662
Int. Cl.[6] H04N *5/783*
U.S. Cl. 386—109 18 Claims

1. A control circuit for controlling the recording of image signals, which are output by a plurality of image sources, using at least one image recorder, the control circuit comprising:

a channel selecting device having a plurality of channel input terminals each connected to a respective one of said plurality of image sources, said channel selecting device producing an output signal corresponding to an image signal output from one of said image sources as the image signal appears on a respective one of said channel input terminals;

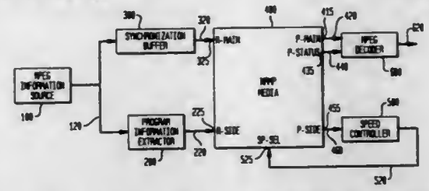
an image compression device that receives the output signal from said channel selecting device and compresses image corresponding to said output signal; and

a control device that outputs a select signal to said channel selecting device for producing said output signal, said control device further outputting a control signal to activate said image compression device to compress the output signal received from said channel selecting device and to generate a compressed image signal for recording by said at least one image recorder, wherein said control device automatically outputs a different select signal to identify each one of said plurality of channel input terminals in a repeating sequence at predetermined intervals, and wherein said compression device compresses said output signal by a compression ratio sufficient for recording a predetermined number of image signals taken from said image sources on a video tape bandwidth that corresponds to recording of one image from one of said image sources in an uncompressed state in response to the number of the image sources and the recording speed of the video tape of said at least one image recorder.

5,615,018
APPARATUS AND A METHOD FOR VARIABLE SPEED SEARCHING OF RECORDED PICTURES

Tzong-Sheau Wu, Hsinchu, China; Tian-Rein Chen, Taipei, Taiwan, and Rong-Dzung Tsai, Pingtung, China, assignors to Industrial Technology Research Instiutute, Hsinchu, Taiwan

Filed Nov. 22, 1994, Ser. No. 343,677
Int. Cl.[6] H04N *5/783*
U.S. Cl. 386—68 11 Claims



1. An apparatus for variable speed searching of recorded pictures on a storage medium, comprising:

a variable speed recording-playback device which records said recorded pictures and an information value signal, and plays back said recorded pictures,

wherein said information value signal has a low value when a correlation between temporally successive recorded pictures is high, and a high value when said correlation is low, said correlation depending upon temporal redundancy between said successive video pictures, and

a speed controller responsive to said information value signal for adjusting a display speed of said recording-playback device during a fast-scan search in response to said information value signal so as to continuously vary the display speed to display the recorded pictures at a fast display speed when said information value signal has a low value, and to display the

recorded pictures at a slower display speed when said information value signal has a high value.

5,615,019

TELEVISION APPARATUS WITH BUILT-IN OPTICAL DISK DEVICE

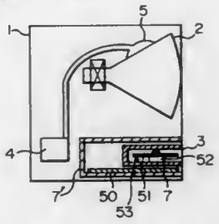
Tomochika Yamashita, Yokohama; Masakazu Hamaguchi, Ebina; Hiroaki Takahashi; Yasuhiro Yakushiji, both of Yokohama; Masashi Ohki, Fujisawa, and Kouji Kamogawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 423,123

Claims priority, application Japan, Apr. 21, 1994, 6-083304

Int. Cl.[6] H04N *5/57;5/64;9/097*

U.S. Cl. 386—126 **6 Claims**



1. A television apparatus for reading out a video signal recorded as digital information on an optical disk and displaying an image of the read out video signal, said television apparatus comprising:

a television set, including a high voltage applying section an anode electrode, and display screen;

an optical disk device disposed in said television set in a position apart from said high voltage applying section and said anode electrode; and

a conductive shield member shielding said optical disk device,

said optical disk device adapted for reading out from the optical disk the video signal and control information concerning the video signal and causing said television set to display an image of the read out video signal on said display screen,

said optical disk device including controlling means responsive to read out control information indicating that the read out video signal is a still picture signal for darkening the brightness of said television set display screen, and responsive to read out control information indicating that the read out video signal is a motion picture signal for darkening the brightness of said television set display screen and lowering the contour effect in signal processing of the motion picture signal.

5,615,020

SYSTEM AND METHOD FOR FAST HUFFMAN DECODING

Michael Keith, 17712 SW. Beaver Ct., Beaverton, Oreg. 97006

Filed May 13, 1993, Ser. No. 61,584

Int. Cl.[6] H04N *1/41;* **H03M** *7/40*

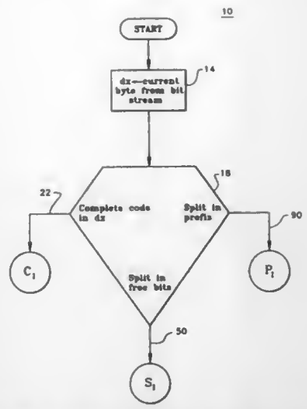
U.S. Cl. 358—426 **9 Claims**

1. A method for statistical decoding of a variable bit length symbol in a data stream divided into a plurality of bytes having byte boundaries to provide an output value, said symbol having an alignment with respect to said byte boundaries, comprising the steps of:

(a) fetching a first byte of data from said data stream, said first byte of data containing at least a portion of said symbol;

(b) determining said alignment of said at least a portion within said first byte with respect to a byte boundary of said first byte;

(c) fetching a second byte of data in accordance with said determined alignment;



(d) extracting a determined number of bits from said second byte of data, wherein said determined number of bits is determined in accordance with said first byte of data; and

(e) determining said decoded value in accordance with said fetched data.

5,615,021

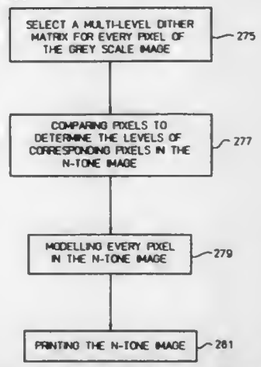
PRINT N-TONE IMAGES WITH IMPERCEPTIBLE DOTS

Qian Lin, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 205,215, Mar. 2, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,143

Int. Cl.[6] H04N *1/40*

U.S. Cl. 558—455 **9 Claims**



1. A method of generating a N-tone image from a grey scale image, both images having a plurality of pixels, each pixel in the grey scale image having a level that is one of N levels with N bigger than two and less than the number of grey levels available for the grey scale image, the method comprising the steps of:

determining the level of each pixel in the N-tone image based on the level of its corresponding pixel in the grey scale image, and based on a technique selected from the list of (1) a technique based on an original dither matrix and (2) an error diffusion technique;

modeling every pixel by replacing it with a plurality of dots, and every dot with a plurality of segments, each segment having an intensity whose value depends on the level of the pixel; and

printing the N-tone image by a printer based on the modeling step; such that:

N substantially reproducible levels can be generated for each pixel by its corresponding segments, each with its corresponding intensity;

the printer generates pulses to print the pixels; each pulse has a width; and

the width is controlled to generate the segments.

5,615,022

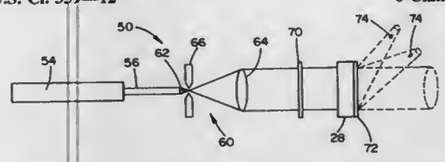
SYSTEM AND METHOD OF FABRICATING MULTIPLE HOLOGRAPHIC ELEMENTS

Robert W. Brandstetter, Levittown, and Nils J. Fonneland, Lake Ronkonkoma, both of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Division of Ser. No. 294,199, Aug. 22, 1994, abandoned,. This application Jun. 7, 1995, Ser. No. 481,933

Int. Cl.[6] G03H *1/20;1/30*

U.S. Cl. 359—12 **6 Claims**



1. A system for fabricating a multiple holographic element, comprising:

a master multiple holographic element having a non-uniform efficiency and an absorption grating pattern producing a given index of refraction pattern across the master multiple holographic element;

a layer of photopolymer coated on the master multiple holographic element; and

means to generate a recording beam;

means to direct a recording beam to and through the master multiple holographic element and into the photopolymer layer,

wherein the absorption grating pattern of the master multiple holographic element modulates the amplitude of the recording beam, and the modulated recording beam forms the monomers of the photopolymer layer into a monomer pattern that produces said given index of refraction pattern across the photopolymer layer, wherein said photopolymer layer becomes a copy of the master multiple holographic element; and

wherein the recording beam has an amplitude profile on the master multiple holographic element, and the means to direct the recording beam to and through the master multiple holographic element includes means to vary said amplitude profile to compensate for the non-uniform efficiency of the master multiple holographic element and thereby to form the copy of the master holographic element with a uniform efficiency.

5,615,023

HEAD-UP DISPLAY FOR AUTOMOBILE

Bong-Won Yang, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industrial Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 23, 1994, Ser. No. 363,536

Claims priority, application Rep. of Korea, Dec. 24, 1993, 1993-29636; Dec. 29, 1993, 1993-30759

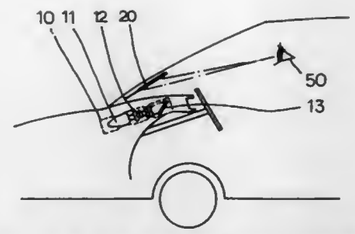
Int. Cl.[6] G03H *1/00;* **G02B** *5/32;* **H04N** *7/00*

U.S. Cl. 359—13 **3 Claims**

1. A head-up display for an automobile comprising:

a CCD camera for receiving information of conditions of a backward area of the automobile and for converting the information into an electric signal;

a hologram optical projection system comprising a cathode ray tube (CRT) for converting the electric signal of the CCD



camera into an image of the backward area conditions, a light source, a liquid crystal display (LCD) for partially transmitting and shielding the light emitted from the light source in accordance with the electric signal, a light transmission hologram optical device for converting a parallel beam from the LCD into a spherical wave, and a holder for maintaining an optical axis of the hologram optical projection system by holding the LCD and the light transmission hologram optical device; and

a holographic combiner comprising a first bologram optical devise reproduced using a master hologram, a shock absorbing layer applied on an interference pattern of the first hologram optical device for protecting the interference pattern, and an adhesive layer applied on the shock absorbing layer, the holographic combiner being mounted on a windshield of the automobile and transmitting an image from a forward area of the automobile and reflecting the image projected by the hologram optical projection system.

5,615,024

COLOR DISPLAY DEVICE WITH CHIRPED DIFFRACTION GRATINGS

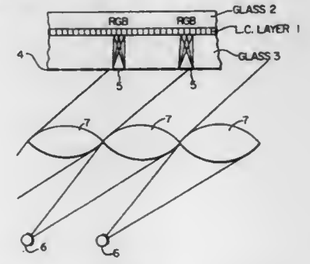
Paul May; Graham J. Woodgate, and David Ezra, all of Oxon, United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1993, Ser. No. 105,018

Claims priority, application United Kingdom, Aug. 11, 1992, 9216951

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—57 **18 Claims**



1. A display device comprising:

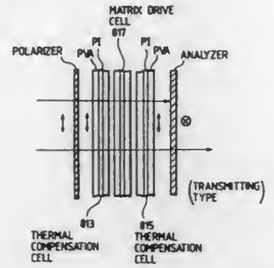
a spatial light modulator having a plurality of groups of regions for modulating light, and

a diffraction grating comprising a plurality of substantially identical chirped gratings, each of the chirped gratings being operative to focus light of different colors toward different respective regions in a corresponding one of the groups of regions.

5,615,025
OPTICAL MODULATION DEVICE HAVING DIFFERENT PRETILTS IN THE COMPENSATION CELL(S)

Shuzo Kaneko, Yokohama; Hideaki Mitsutake, Tokyo, and Junko Shingaki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 157,434, Nov. 26, 1993, abandoned, which is a continuation of Ser. No. 757,985, Sep. 12, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,992
Claims priority, application Japan, Sep. 13, 1990, 2-241163; Nov. 21, 1990, 2-314243; Nov. 21, 1990, 2-314244
Int. Cl.[6] G02F *1/133;1/335*
U.S. Cl. 349—74 **8 Claims**



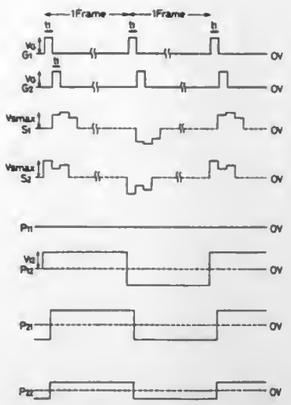
1. A transmissive type optical modulation device, comprising:
a polarizer;
a first temperature compensation element comprising (i) a chiral smectic liquid crystal whose molecule axis changes the direction depending on temperature, and (ii) a pair of substrates having electrodes so as to apply the electric field, thus aligning said molecule axis uniformly in one direction;
a switching element comprising (i) a chiral smectic liquid crystal having at least two molecular alignment states, and (ii) a pair of substrates having electrodes so as to apply an electric field, thus controlling the directions of the molecule axes of said chiral smectic liquid crystal;
a second temperature compensation element comprising (i) a chiral smectic liquid crystal whose molecule axis changes direction depending on the temperature, and (ii) a pair of substrates having electrodes so as to apply an electric field, thus aligning said molecule axis uniformly in one direction; and
an analyzer,
wherein liquid crystal molecules of said first and second temperature compensation elements have the same pretilt angle Θ_1 at the surface of one substrate facing said switching element, and have a different pretilt angle Θ_2 at the surface of another substrate, and said polarizer and said analyzer are arranged so that molecule axes of the chiral smectic liquid crystal of said polarizer and said analyzer cross each other.

5,615,026
METHOD OF DRIVING ANTIFERROELECTRIC LIQUID CRYSTAL DEVICE

Mitsuhiro Koden, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 3,988, Jan. 15, 1993, abandoned. This application Jan. 18, 1995, Ser. No. 375,167
Claims priority, application Japan, Jan. 17, 1992, 4-006663
Int. Cl.[6] G02F *1/13;* **G09G** *3/36*
U.S. Cl. 349—174 **5 Claims**

1. A method of driving an antiferroelectric liquid crystal device, wherein the device comprises a pair of substrates, each substrate having thereon, in the following order, electrodes, an insulating film and an orientation film, the substrates being arranged so that the electrodes oppose each other with an antiferroelectric liquid crystal composition interposed between the orientation films, wherein an electrode on one of the substrates comprises a plurality of scanning electrodes and a plurality of signal electrodes that

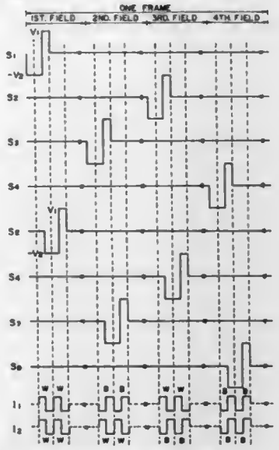


intersect the scanning electrodes to form a matrix and a thin film transistor is located at each intersection of the matrix, the method comprising:
transmitting a signal from the scanning electrode to apply to and turn on the thin film transistor; and
synchronously applying to the signal electrodes of odd-numbered frames a positive selective voltage waveform corresponding to a desired display and to the signal electrode of even-numbered frames a negative selective voltage waveform corresponding to the desired display and applying a zero voltage to the signal electrodes to effect a black display.

5,615,027
LIQUID CRYSTAL APPARATUS AND DISPLAY SYSTEM

Masaki Kuribayashi, Inagi; Yukiko Futami, Sagamihara; Hiroshi Inoue, Yokohama; Akira Tsuboyama, Sagamihara, and Yutaka Inaba, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 61,662, May 14, 1993, abandoned, which is a division of Ser. No. 426,083, Oct. 24, 1989, Pat. No. 5,233,447. This application Jan. 18, 1995, Ser. No. 375,181
Claims priority, application Japan, Oct. 26, 1988, 63-271812; Oct. 26, 1988, 63-271813; Nov. 5, 1988, 63-280122; Nov. 5, 1988, 63-280123
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 345—87 **27 Claims**



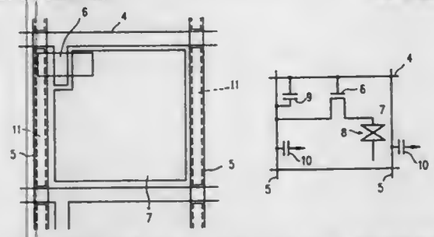
5. A liquid crystal apparatus, comprising:

(a) a liquid crystal device comprising an electrode matrix composed of scanning electrodes and data electrodes disposed to intersect the scanning electrodes, and a liquid crystal having a memory characteristic and showing a first and a second orientation state disposed between the scanning electrodes and the data electrodes; and
(b) a driving means including:
a first drive means for sequentially applying a scanning selection signal to said scanning electrodes two or more scanning electrodes apart between successively selected scanning electrodes in one vertical scanning and for effecting one picture scanning by scanning said scanning electrodes in at least two vertical scannings, said scanning selection signal having a former first voltage and a latter second voltage different from the former first voltage, two successive scanning selection signals including a former and a latter scanning selection signal being applied to the scanning electrodes in such a time relationship that the former first voltage of the latter scanning selection signal is commenced to be applied before the completion of a data signal associated with the former scanning selection signal, before the termination of the latter second voltage of the former scanning selection signal and after the application of the first voltage of the former scanning selection signal, and
a second means for applying to all or a prescribed number of the data electrodes a voltage signal which provides a voltage causing the first orientation state of the liquid crystal in combination with the former first voltage of the scanning selection signal, and applying to a selected data electrode a voltage signal which provides a voltage causing the second orientation state of the liquid crystal.

5,615,028
LIQUID CRYSTAL DISPLAY APPARATUS

Kenichi Ishiguro, Tenri, and Masahiro Adachi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 21, 1995, Ser. No. 407,610
Claims priority, application Japan, Mar. 24, 1994, 6-54101; Mar. 15, 1995, 7-56203
Int. Cl.[6] G02F *1/1343;1/1335*
U.S. Cl. 349—42 **16 Claims**

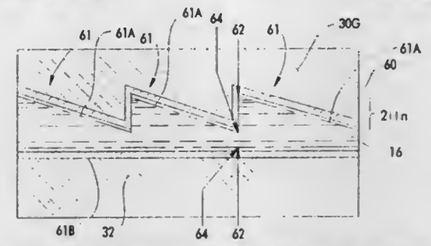


1. A liquid crystal display apparatus comprising a first substrate, a second substrate having a counter electrode, and a liquid crystal layer sandwiched between the first substrate and the second substrate,
the first substrate including:
a plurality of pixel electrodes arranged in a matrix;
a plurality of source bus lines for transmitting a plurality of data signals, each data line being disposed between columns of the plurality of pixel electrodes;
a plurality of active elements for electrically connecting each of the plurality of pixel electrodes to its adjacent source bus line and thereby feeding the plurality of data signals to the plurality of pixel electrodes; and
a plurality of gate bus lines for transmitting scanning signals for controlling the plurality of active elements so as to be in a conductive or non-conductive state, each gate bus line being disposed between rows of the plurality of pixel electrodes,
wherein the plurality of transmitted data signals are each held by parasitic capacitances of the plurality of source bus lines, and wherein the counter electrode has a plurality of apertures, and at least one of the plurality of apertures is disposed in a region opposed to the plurality of source bus lines.

5,615,029
ELECTRO-OPTIC WEDGE STRUCTURE FOR BEAM STEERING AND METHOD OF MANUFACTURE

Garret Moddel, Boulder, Colo.; John R. Wootton; Gary Waldman, both of St. Louis, Mo., and David L. Holder, St. Charles, Mo., assignors to Electronics & Space Corp., St. Louis, Mo.

Filed Mar. 8, 1995, Ser. No. 400,647
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—84 **18 Claims**

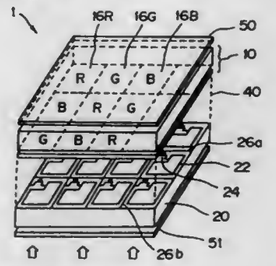


14. A method of manufacturing an apparatus for steering an image comprising a beam of light which defines the image in response to a variable potential difference, said method comprising the steps of:
providing first and second substantially planar substrates;
coating a surface of each substrate with one or more selected materials;
positioning the substrates so that their coated surfaces face each other and so that the substrates define a portion therebetween having a thickness which varies;
introducing a liquid crystal material between the positioned substrates;
curing the liquid crystal material; and
affixing means for applying a variable potential difference across the portion of varying thickness.

5,615,030
BLACK MATRIX SUBSTRATE, AND COLOR FILTER AND LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME

Ryutaro Harada, and Satoshi Mitamura, both of Tokyo-to, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 203,569, Mar. 1, 1994, Pat. No. 5,501,900. This application Dec. 13, 1995, Ser. No. 571,554
Claims priority, application Japan, Mar. 3, 1993, 5-042663; Mar. 8, 1993, 5-075178
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—110 **14 Claims**



1. A color filter comprising:

a black matrix substrate comprising a substrate and a black pattern formed on said substrate, said black pattern comprising resin and metal particles, wherein (i) said metal particles have such a particle diameter distribution that particles having particle diameters in a range of 10 nm to 20 nm are not less than 40% of the total particles, in a range of 10 nm to 30 nm are not less than 80% of the total particles, and in a range of 5 nm to 50 nm are not less than 90% of the total particles, (ii) a projected area density at a conversion of 600Å thickness of said metal particles in said black pattern is not less than 60%, and (iii) an optical density of said black matrix substrate is no less than 1.5;

a colored layer comprising a plurality of color patterns formed between portions of said black pattern on said black matrix substrate; and

a transparent electrode formed on said colored layer.

5,615,031

FINE SPHERE, A SPHERICAL SPACER FOR A LIQUID CRYSTAL DISPLAY ELEMENT AND A LIQUID CRYSTAL ELEMENT USING THE SAME

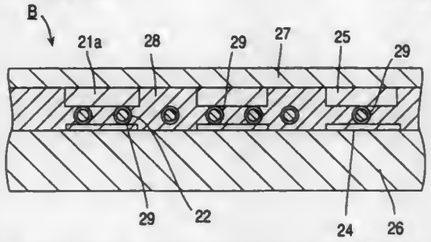
Kazuo Saiuchi, Otsu; Minoru Kohara, Otoguni-gun; Kunikazu Yamada, Kurita-gun, and Kazuhiko Kanki, Uji, all of Japan, assignors to Sekisui Fine Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 859,408, May 28, 1992, Pat. No. 5,486,941. This application Jun. 6, 1995, Ser. No. 466,467

Claims priority, application Japan, Sep. 29, 1990, 2-261728; May 9, 1991, 3-104298; May 9, 1991, 3-104299; May 9, 1991, 3-104300; WIPO, Sep. 27, 1991, PCT/JP91/01285

Int. Cl.[6] G02F *1/1345;* **B32B** *15/02;* **H01B** *1/22*

U.S. Cl. 349—149 **14 Claims**



1. A conductive fine sphere comprising a fine sphere and a conductive layer made of In formed on a surface of said fine sphere, wherein the fine sphere has a K-value defined as

$$K = (3/\sqrt{2}) \cdot F \cdot S^{-3/2} \cdot R^{-1/2}$$

(wherein F and S represent a load value (kgf) and a compression displacement (mm) at 10% compression deformation of said fine sphere, respectively, and R represents a radius (mm) of said fine sphere spacer) which is in the range of 250 kgf/mm^2 to 700 kgf/mm^2 at 20° C.; and a recovery factor after the compression deformation which is in the range of 30% to 80% at 20° C.

5,615,032

NIGHTVISION COMPATIBLE DISPLAY WITH ELECTRICALLY ACTIVATED INFRARED FILTER

Michael H. Kalmanash, Los Altos, and Vijay M. Sethna, Fremont, both of Calif., assignors to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

Filed Aug. 12, 1994, Ser. No. 289,424

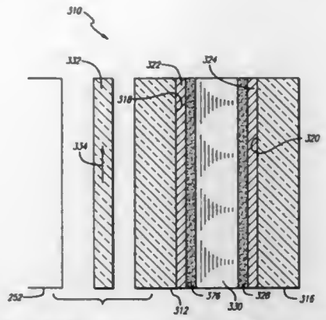
Int. Cl.[6] G02F *1/1335;1/1347*

U.S. Cl. 349—165 **3 Claims**

1. A night vision imaging system comprising:

an image source;

a liquid crystal cell;



controllable means to create an electrical potential gradient across said cell;

at least one infrared absorptive dye dissolved into the liquid crystal material of said liquid crystal cell for removing the infrared and near infrared components of impinging light from said image source; and

a chiral additive mixed with the solution of dye and liquid crystal material;

said cell absorbing virtually all of the infrared and near infrared light components while passing virtually all of the visible components of the impinging light from said image source in the absence of an electrical potential gradient across said cell and, when an electrical potential gradient of a predetermined magnitude exists across said cell, reducing the density of dye in the light path to permit the passage of substantially all of the infrared and near infrared components of the impinging light from said image source through the cell.

5,615,033

OPTICAL SIGNAL TRANSMISSION APPARATUS AND METHOD

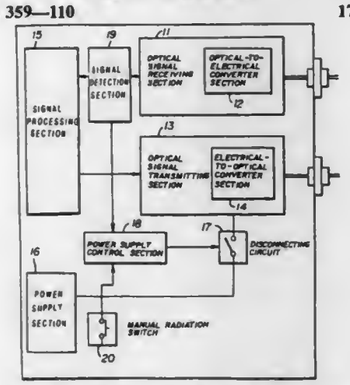
Rutsuko Yoshida, and Yuzuru Ishioka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 3, 1995, Ser. No. 510,829

Claims priority, application Japan, Sep. 27, 1994, 6-231047

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—110 **17 Claims**



1. An optical signal transmission apparatus comprising:

an optical signal receiving section arranged for receiving a first optical signal through a first optical cable;

an optical signal transmitting section arranged for transmitting a second optical signal through a second optical cable;

control means for stopping said optical signal transmitting section from transmitting said second optical signal when an abnormal condition in said first optical signal is detected; and

restart control means for allowing a maintenance worker to restart transmission of said second optical signal by said optical signal transmitting section, even if said abnormal condition in said first optical signal is not restored when the second optical signal needs to be transmitted to the first station.

5,615,034

OPTICAL MICRO CELL TRANSMISSION SYSTEM

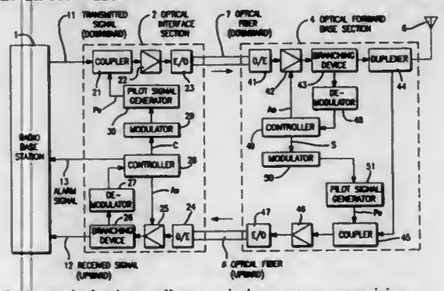
Tsuguo Hori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 563,203

Claims priority, application Japan, Nov. 25, 1994, 6-291300

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—110 **7 Claims**



1. An optical micro cell transmission system comprising:

a radio base station;

at least one optical interface section connected to said radio base station;

an optical forward base station connected to said optical interface section via an optical fiber and connected to an antenna;

a first pilot signal mixing means in said optical interface section for mixing a downward transmitted signal from said radio base station with a first pilot signal generated in said optical interface section, thereby producing a first mixed signal, and transmitting said first mixed signal to said optical forward base station;

a first signal adjusting means in said optical forward base station for receiving and amplifying said first mixed signal from said optical interface section, and for separating said first pilot signal from said downward transmitted signal to be transmitted through said antenna from said first mixed signal;

a first control means in said optical forward base station for measuring a level of said separated first pilot signal, and for controlling said first signal adjusting means to adjust amplification of said first mixed signal with reference to the measured level of said first pilot signal;

a second pilot signal mixing means in said optical forward base station for mixing an upward transmitted signal received from said antenna with a second pilot signal generated in said optical forward base station, thereby producing a second mixed signal, and transmitting said second mixed signal to said optical interface section;

a second signal adjusting means in said optical interface section for receiving and amplifying said second mixed signal from said optical forward base station, and for separating said second pilot signal from said upward transmitted signal to be transmitted to said radio base station from said second mixed signal; and

a second control means in said optical interface section for measuring a level of said separated second pilot signal, and for controlling said second signal adjusting means to adjust amplification of said second mixed signal with reference to the measured level of said second pilot signal.

5,615,035

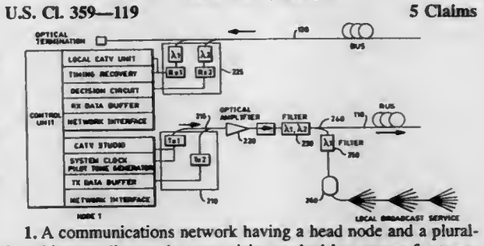
PHOTONIC DUAL BUS FOR WIDE-AREA CATV BROADCAST AND DATA TRANSPORT

Kwang-Tsai Koai, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 200,115, Feb. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 127,189, Sep. 24, 1993, Pat. No. 5,526,152. This application Sep. 20, 1995, Ser. No. 530,796

Int. Cl.[6] H04B *10/20;* **H04J** *14/00*

U.S. Cl. 359—119 **5 Claims**



1. A communications network having a head node and a plurality of intermediate nodes comprising: a dual bus means for transferring an optical signal comprised of a CATV broadcast signal and a pilot tone imposed on a first wavelength and a data signal imposed on a second wavelength from said head node to said plurality of intermediate nodes;

a tap means for tapping said optical signal producing a tapped optical signal;

receiver means for receiving said tapped optical signal from the tap means including a pilot tone detector for detecting said pilot tone;

wherein said receiver means clocks said data of the optical signal and said received optical signal is not regenerated by an intermediate node.

5,615,036

OPTICAL NETWORK COMPRISING NODE GROUPS AND AN ANALOG REPEATER NODE UNIT BETWEEN TWO NODE GROUPS

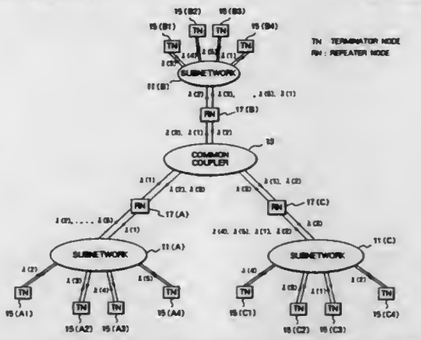
Katsumi Emura, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 448,658, May 24, 1995, abandoned. This application Apr. 19, 1996, Ser. No. 635,011

Claims priority, application Japan, May 27, 1994, 6-115499

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—124 **30 Claims**



1. An optical network comprising: a plurality of terminator nodes assigned with electrical frequency bands for transmitting transmission signals on optical signals having a predetermined number of optical wavelengths;

said terminator nodes are grouped into a plurality of terminator node groups, each of said terminator node groups being assigned selected wavelengths to produce outgoing signals having said selected wavelengths among said optical signals

for other of said terminator node groups, said selected wavelengths being selected from said optical wavelengths excluding one of said optical wavelengths that is specified to each of said terminator node groups as a specific wavelength;

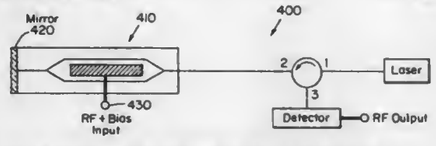
one node group and other node groups of said terminator node groups being connected through an analog repeater node unit for receiving at least a part of the outgoing signals of said one node group as send-in signals for repeating said send-in signals as send-out signals to transmit said send-out signals as incoming signals of said optical signals to said other node groups.

5,615,037

SUB-OCTAVE BANDPASS OPTICAL REMOTE ANTENNA LINK MODULATOR AND METHOD THEREFOR

Gary Betts, Westford; Frederick O'Donnell, Billerica, and Kevin Ray, Burlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 17, 1995, Ser. No. 373,355
Int. Cl.[6] H04B *10/04;10/12*
U.S. Cl. 359—188 **27 Claims**



12. An electro-optical modulation device comprising:

an electro-optical modulator for intensity modulating an optical carrier signal in response to an electrical information bearing signal;

a reflective termination for reflecting at least a portion of the intensity modulated optical carrier signal to travel back through the electro-optical modulator;

an electrical amplifier providing the information bearing electrical signal to the modulator;

a laser for generating the optical carrier signal;

an optical fiber cable for conveying the intensity modulated optical carrier signal, reflected back through the electro-optical modulator, between an antenna and a control facility; and

an electro-optical detector for detecting the intensity modulated optical carrier signal transmitted through the optical fiber cable and converting the intensity modulated optical carrier signal into the electrical signal.

5,615,038

SCANNING OPTICAL DEVICE WITH ABERRATION COMPENSATION FEATURE

Masayuki Suzuki, Zama; Osamu Hoshino, Ebina; Yoshinobu Shiraiwa, Machida, and Kazuo Minoura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

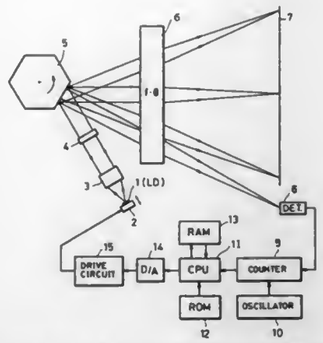
Continuation of Ser. No. 104,947, Aug. 12, 1993, abandoned, which is a continuation of Ser. No. 550,436, Jul. 10, 1990, abandoned. This application Apr. 11, 1995, Ser. No. 420,706
Claims priority, application Japan, Jul. 11, 1989, 1-178449
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—210 **26 Claims**

1. A scanning optical device comprising:

a light source;

a scanning optical system comprising:

a deflector for deflecting a beam emitted from said light source, and



converging means for converging the beam deflected by said deflector onto a predetermined position of a surface to be scanned;

storage means for storing a quantity of a curvature of field of said scanning optical system, the quantity of the curvature of field being sampled at intervals which do not exceed a depth of focus of said scanning optical system relative to the surface to be scanned; and

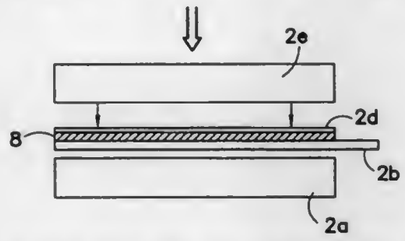
adjustment means for adjusting the convergent position of the beam in the direction of an optical axis of the beam emitted from said light source in accordance with the quantity of the curvature of field supplied from said storage means.

5,615,039

ELECTRO-OPTICAL ELEMENT AND ITS MANUFACTURING METHOD

Francois J. Henley, Los Gatos, Calif., assignor to Photon Dynamics, Inc., Milpitas, Calif.

Filed Sep. 10, 1991, Ser. No. 757,454
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—257 **37 Claims**



1. An electro-optical element which possesses properties which change when an electric field is impressed across it, said electro-optical element comprising an electro-optical layer comprising a top surface, a bottom surface, and an electro-optical layer edge a dielectric reflective film overlying said bottom surface of said electro-optical layer, a transparent electrode overlying said top surface of said electro-optical layer, transparent supporting substrate overlying said transparent electrode, said transparent supporting substrate including an edge portion, and an adhesive layer formed overlying said electro-optical layer edge and said edge portion of transparent supporting substrate, wherein said adhesive layer affixes said electro-optical layer with said transparent supporting substrate.

5,615,040

SELF-RESPONDING LAMINATED BODIES, THEIR PRODUCTION PROCESS AND WINDOWS USING THE SAME

Haruo Watanabe, Tokyo, Japan, assignor to Affinity Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00325, § 371 Date Oct. 26, 1994, § 102(e) Date Oct. 26, 1994, PCT Pub. No. WO94/20294, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 28, 1994, Ser. No. 325,385
Claims priority, application Japan, Mar. 1, 1993, 5-062502
Int. Cl.[6] H04N *1/17*
U.S. Cl. 359—288 **40 Claims**

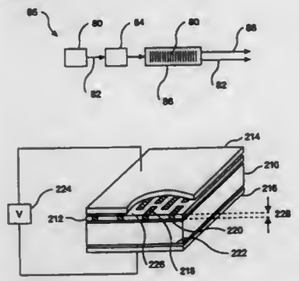
1. A self-responding laminated body in which an isotropic solution, wherein a polysaccharide derivative, dissolved in water, aggregates to demonstrate cloudy scattering due to a rise in temperature resulting in a decrease in optical transmittance, is sealed in a cell, of which at least a portion is transparent, that enables said aqueous solution to be viewed directly; wherein, said isotropic aqueous solution is a solution in which 100 parts by weight of a polysaccharide derivative, having a weight average molecular weight of about 10,000 to 200,000, is dissolved in about 110 to 2,000 parts by weight of a water-based medium composed of an amount of water that is about 25 to 450 parts by weight with respect to 100 parts by weight of said polysaccharide derivative, and an amphipathic substance having a hydroxyl group, an ether bonded portion or an ionic group.

5,615,041

FABRICATION OF PATTERNED POLED DIELECTRIC STRUCTURES AND DEVICES

Simon J. Field, Menlo Park, and David A. G. Deacon, Los Altos, both of Calif., assignors to Deacon Research, Palo Alto, Calif.

Division of Ser. No. 239,799, May 9, 1994, Pat. No. 5,519,802. This application Jul. 31, 1995, Ser. No. 467,190
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—326 **19 Claims**



1. An optical frequency source for producing at least one output frequency comprising:

a laser exciter means for producing at least a first laser signal of a fundamental frequency;

a patterned poled dielectric structure for receiving said at least a first laser signal as an input to produce at least one output signal at a first output frequency, wherein said patterned poled dielectric structure contains a plurality of domains, said plurality of domains characterized by a plurality of domain walls, wherein said plurality of domain walls are approximately parallel to a poling direction, and wherein a selected amplitude modulation parameter is used for controlling electric field strength in selected regions within a polable dielectric material to fabricate said patterned poled dielectric material; and

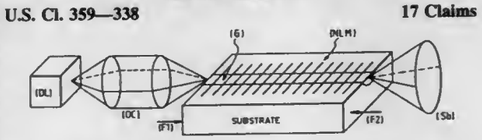
a coupling means for coupling said at least a first laser signal with said patterned poled dielectric structure and for phase matching said at least a first laser signal with at least one frequency-converted signal in said patterned poled dielectric structure.

5,615,042

COMPACT OPTICAL SOURCE BASED ON THE FREQUENCY DOUBLING OF A LASER AND SELF-STABILIZED BY THE DEPLETION OF THE PUMP

Dominique Delacourt, Clamart; Michel Papuchon, Villebon Palaiseau; Eric Lallier, Levallois - Perret, and Thierry Debuisschert, Orsay, all of France, assignors to Thomson-CSF, Paris, France

Filed Sep. 15, 1995, Ser. No. 529,175
Claims priority, application France, Sep. 23, 1994, 94 11376
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—338 **17 Claims**



1. A compact optical source, comprising:

a laser emitting an incident wave having a wavelength in a range of λo_i;

a non-linear medium comprising,

a first end,

a second end, and

an internal molecular stucture such that upon excitation by said incident wave a harmonic wave of wavelength $\lambda o/2$ is generated and a phase matching condition exists that enables a cancellation of or compensation for a difference in propagation constant between a non-linear polarization created by said incident wave and said harmonic wave;

a dichroic mirror placed at said second end of said non-linear medium and being highly reflective of waves having a wavelength in said range of λo_i and highly transparent of waves having a wavelength of $\lambda o/2$;

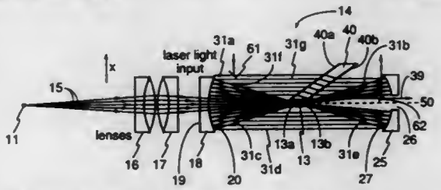
said incident wave is directed at normal incidence to said first end of said non-linear medium such that wavelengths of $\lambda o/2$ pass through said dichroic mirror and out of said non-linear medium and any remaining wavelengths of said incident wave are reflected back into said laser, thereby creating a light source of wavelength $\lambda o/2$ and returning said incident wave depleted of wavelengths $\lambda o/2$ back to said laser.

5,615,043

MULTI-PASS LIGHT AMPLIFIER

Henry Plaessmann, Los Gatos, and William M. Grossman, Los Altos, both of Calif., assignors to Lightwave Electronics Co., Mountain View, Calif.

Filed May 7, 1993, Ser. No. 979,576
Int. Cl.[6] H01S *3/081;3/0933*
U.S. Cl. 359—346 **25 Claims**



1. A multiple-pass light amplifier comprising:

a confocal resonator including first and second curvilinearly shaped mirrors facing each other along a resonator axis and having a common optical focal point positioned between the mirrors, the two mirrors being arranged so that a light beam

that passes through the common focal point is subsequently received by either of the mirrors and is reflected toward the other mirror in a direction that is approximately parallel to the resonator axis;

an optical gain medium, having a diameter that is small compared the distance between the two mirrors and being positioned at the common focal point of the two mirrors;

optical translation means, positioned between the two mirrors so that the translation means does not lie on the resonator axis, for receiving and translating a light beam travelling parallel to the resonator axis by a small, controllable amount in a direction approximately perpendicular to the resonator axis so that, when the light beam issues from the translation means, the light beam travels substantially parallel to the resonator axis;

light beam insertion means for introducing a light beam produced by the light source into the region between the first and second mirrors; and

light beam removal means for removing a light beam from the region between the first and second mirrors,

whereby a light beam introduced into the region between the first and second mirrors has approximately the same diameter each time the beam passes through the gain medium.

5,615,044

BINOCULAR TELESCOPE

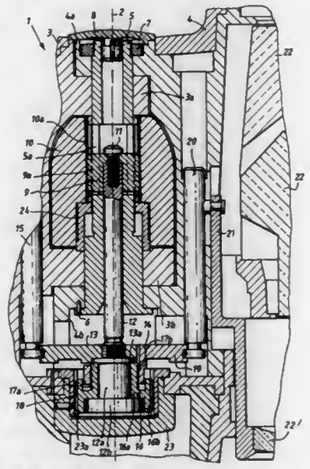
Heinrich Dross, Ehringshausen-Daubhausen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Aug. 12, 1994, Ser. No. 289,866

Claims priority, application Germany, Aug. 28, 1993, 43 29 049.3

Int. Cl.[6] G02B *23/00*

U.S. Cl. 359—418 **9 Claims**



1. A binocular telescope comprising:

at least one adjustable optical component and at least two telescope halves;

said at least two telescope halves each respectively comprising a plurality of optical parts;

said at least one adjustable optical component being arranged inside at least one of said two telescope halves;

at least one housing for receiving said optical parts of said at least two telescope halves;

a hollow shaft body arranged between said at least two telescope halves with a longitudinal axis aligned essentially parallel to said two telescope halves with said optical parts;

said hollow shaft body comprising a longitudinal slot;

a drive wheel arranged between two ends of said hollow shaft body around said longitudinal slot; and

displacement means coupling said drive wheel and said at least one adjustable optical component;

said displacement means including an adjusting body arranged inside said longitudinal slot and displaceable along said longitudinal axis of said hollow shaft body by means of said drive wheel;

said displacement means further including a middle drive rod arranged on said longitudinal axis of said hollow shaft body and displaceable along said longitudinal axis of said hollow body by movement of said adjusting body;

said adjusting body being axially firmly connected to said middle drive rod inside said hollow shaft body;

said middle drive rod being coupled to said at least one adjustable optical component in at least one telescope half.

5,615,045

SCREEN OF PROJECTION DISPLAY

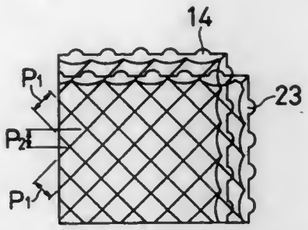
Hirokazu Takuma; Hiromitsu Takeuchi, and Takaomi Hanabusa, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 170,907, Dec. 21, 1993, Pat. No. 5,448,401. This application Jun. 6, 1995, Ser. No. 468,070

Claims priority, application Japan, Dec. 25, 1992, 4-359600; Dec. 29, 1992, 4-360037

Int. Cl.[6] G03B *21/60*

U.S. Cl. 359—456 **3 Claims**



1. A screen of a projection display, comprising:

a lenticular lens screen having a plurality of lenses on a light incident side and a plurality of lenses on a light exit side, a pitch between the lenses on the light incident side being approximately 0.78 mm, and a width of each lens on the light exit side being approximately 0.35 to 0.45 mm, and at least the apex of each lens on the light exit side projects in the light exit direction farther than a black surface formed on the light exit side of said lens screen.

5,615,046

STEREOSCOPIC VIEWING SYSTEM

Ian R. Gilchrist, Timonium, Md., assignor to Cyber Scientific Inc., Baltimore, Md.

Filed Jan. 23, 1995, Ser. No. 376,785

Int. Cl.[6] G02B *27/22;27/02;27/24*

U.S. Cl. 359—464 **11 Claims**

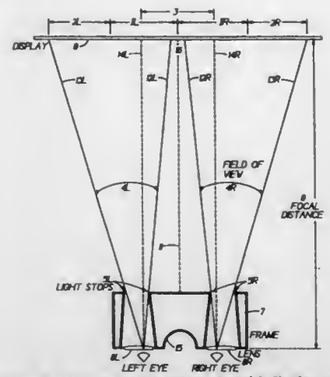
1. A stereoscopic display and viewing system comprising:

display means for showing an extended image with a large field-of-view, said extended image having portions comprising:

left and right adjacent stereoscopic central images, said stereoscopic central images having an approximate center to center separation equal to an interpupillary distance, each stereoscopic central image having a width of approximately said interpupillary distance, and

left and right peripheral images that are, respectively, leftward and rightward extensions of said left and right adjacent stereoscopic central images; and

binocular viewing means employable by a user and including right and left lenses for enabling said user to view all of said



portions of said extended image on said display means, said viewing means including right and left inner light stops positioned between said lenses for restricting light from said right central image and right peripheral image from entering said left lens, and light from said left central image and left peripheral image from entering said right lens, when said right and left lenses are positioned approximately equidistantly from an imaginary line emanating perpendicularly from said display and originating at a joinder of said left central image and right central image, whereby the user may view all of said portions of said extended image with a stereoscopic effect throughout said large field-of-view.

5,615,047

ILLUMINATION APPARATUS AND EXPOSURE APPARATUS USING IT

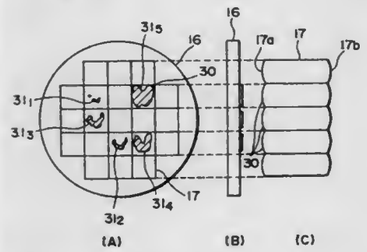
Hideki Komatsuda, Kawasaki; Hideo Hirose, Kawaguchi, and Takashi Mori, Kawasaki, all of Japan, assignors to Nikon Corporation, Japan

Filed Jun. 14, 1994, Ser. No. 259,761

Claims priority, application Japan, Jun. 18, 1993, 5-147389

Int. Cl.[6] G02B *27/10;27/02;* **F21V** *29/00*

U.S. Cl. 359—618 **12 Claims**



1. An illumination apparatus for uniformly illuminating an illuminated object surface, comprising:

light source means for supplying an illumination light beam having parallel rays;

an optical integrator for forming a plurality of beams from the illumination light beam from said light source means, said optical integrator having a plurality of lens elements;

a condenser optical system for converging the plurality of beams from said optical integrator to illuminate the illuminated object surface in a superimposed manner; and

an optical member having a light quantity attenuator for transmitting said illumination light beam so as to attenuate a light quantity of said illumination light beam by a predetermined amount and make the illuminance distribution of the illuminated object surface uniform, said optical member being located at a position substantially conjugate with said illuminated object surface, said light quantity attenuator including a predetermined uneven transmittance distribution, and said transmittance distribution of said light quantity attenuator having functions in which luminous flux incident on each of said lens elements in said optical integrator is controlled and luminous flux having a predetermined uneven light intensity distribution is guided to said optical integrator.

5,615,048

IMAGING SYSTEM

Neil Davies, Snaith, and Malcolm McCormick, Sheffield, both of United Kingdom, assignors to De Montfort University, Leicester, United Kingdom

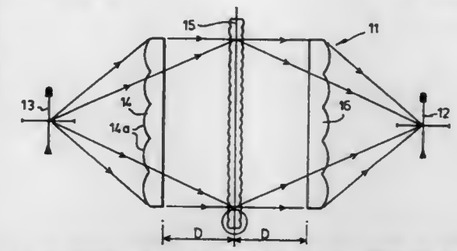
PCT No. PCT/GB93/00682, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20473, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 1, 1993, Ser. No. 313,234

Claims priority, application United Kingdom, Apr. 1, 1992, 9207140

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—622 **4 Claims**



1. An imaging system forming a pseudoscopic image in focus throughout extended depth of field comprising an input relay lens array, a double integral microlens screen having a median plane on to which the input lens array images an object scene and, on the opposite side of the screen and the same distance therefrom as the input array, an output relay lens array similar to the input lens array, in which the double integral microlens screen comprises two similar contiguous screens each comprising double convex microlenses each having a thickness equal to its focal length.

5,615,049

INTERNAL FOCUS OBJECTIVE LENS

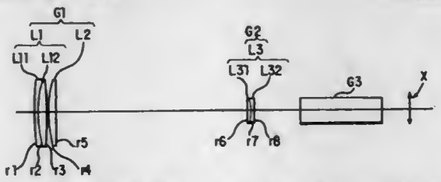
Masanobu Kaneko, and Masaaki Yanagisawa, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 403,436

Claims priority, application Japan, Mar. 15, 1994, 6-070036

Int. Cl.[6] G02B *9/62;9/60*

U.S. Cl. 359—684 **24 Claims**



1. An internal focus objective lens system, the lens system from the object side to the image side of the lens system comprising:

a first lens group having a positive refractory power; and

a second lens group having a negative refractory power, wherein:

the first lens group has a first composite lens and a single lens,

the first composite lens comprises a negative lens and a positive lens,

the single lens of the first lens groups has a positive refractory power,

the second lens group has a second composite lens that has an overall negative refractory power,

the second lens group is capable of movement along an optical axis of the lens system for focusing, and

wherein the focal length of the entire lens system is F, the focal length of the first lens group is f1, the focal length of the second lens group is f2, the radius of curvature of a joining surface of the composite lens within the first lens group is r2, the radius of curvature of the single lens of the first lens group on the object side is r4, the radius of curvature of the composite lens of the second lens group on the object side is r6, the radius of curvature of the composite lens of the second lens group on the image side is r8, the Abbe constant of the negative lens that forms the composite lens within the first lens group is v1, and the Abbe constant of the positive lens that forms the composite lens of the first lens group is v2;

the lens system satisfying following conditions:

$0.3<(f1/F)<0.6$

$-0.5<(f2/F)<-0.2$

$0.15<(r4/F)<0.35$

$-1.5<(r6+r8)/(r6-r8)<1.5$

$0.15<(r2/F)<0.4$

$40<v1<55$

$80<v2$.

5,615,050

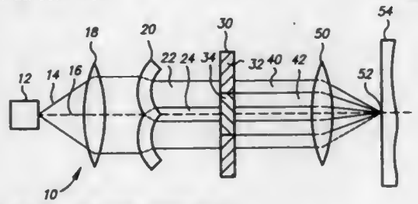
OPTICAL SYSTEM WITH REDUCED FOCUS SPOT SIZE

Rishi Kant, Mountain View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 117,582, Sep. 2, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 571,704

Int. Cl.[6] G02B *13/18*

U.S. Cl. 359—711 **24 Claims**



1. An optical system comprising:

a toroidal lens for receiving a radiation beam along a direction of propagation axis and for providing an annular radiation beam, the toroidal lens having a first surface comprised of a convex curve having a first axis normal to the surface of the curve and located in the same plane as the curve, the convex curve being rotated about a central axis which is offset from the first axis, and a second surface comprised of a concave curve having a second axis normal to the surface of the curve and located in the same plane as the curve, the concave curve being rotated about the central axis which is offset from the second axis, with the central axis, first axis, second axis and the direction of propagation axis all being substantially parallel to one another; and

a phase shift device for receiving the radiation beam from the toroidal lens and shifting a phase of an outer annular portion of the annular radiation beam relative to an inner annular portion of the annular radiation beam such that the phase difference is equal to one half of the wavelength of the radiation beam.

5,615,051

BRIGHT TRIPLET

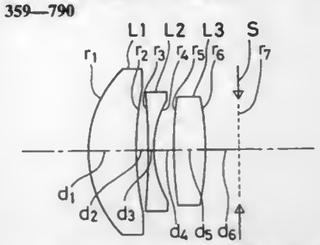
Hideyasu Takato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,603

Claims priority, application Japan, Oct. 8, 1993, 5-253062

Int. Cl.[6] G02B *9/14*

U.S. Cl. 359—790 **22 Claims**



1. A bright triplet which comprises, in order from the object side, a first lens consisting of a positive single lens of glass in a meniscus form convex on the object side, a second lens located with an air separation between it and said first lens and consisting of a negative single lens of glass, a third lens located with an air separation between it and said second lens and consisting of a positive single lens of glass in a double-convex form, and an aperture stop located on the image side of said third lens, and in which at least said first and said third lenses are provided with aspherical surfaces.

5,615,052

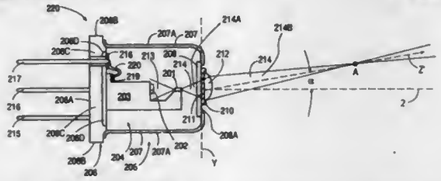
LASER DIODE/LENS ASSEMBLY

David E. Doggett, Sunnyvale, Calif., assignor to Bruce W. McCaul, Palo Alto, Calif.

Continuation-in-part of Ser. No. 48,611, Apr. 16, 1993, Pat. No. 5,500,768. This application Nov. 1, 1994, Ser. No. 332,991

Int. Cl.[6] H01S *3/19*

U.S. Cl. 359—811 **18 Claims**



1. A method, comprising:

moving a lens into a position with respect to a laser diode housing such that a minimum distance between said laser diode housing and said lens changes during said moving, an amount of uncured adhesive being in contact with both said lens and said housing during said moving; and

after said moving, curing said adhesive to fix said lens in said position with respect to said housing.

5,615,053

BIAXIAL ACTUATOR

Kazuhiko Toyama, and Shingo Shimokawa, both of Chiba, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 16, 1995, Ser. No. 515,803

Claims priority, application Japan, Aug. 25, 1994, 6-224183; Sep. 21, 1994, 6-253020

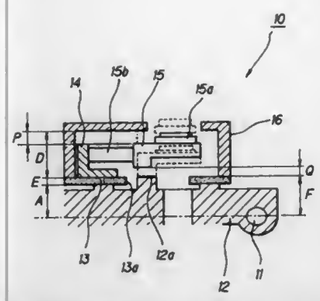
Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—813 **5 Claims**

1. A biaxial actuator comprising:

a slide base;

a lens holder used for adjusting a position of an objective lens with respect to the slide base;



an actuator cover arranged for covering the lens holder; and

an adjusting plate, wherein

the lens holder is mounted on the adjusting plate for adjusting the position of the lens holder with respect to the slide base;

a stroke of the lens holder in one direction is limited by abutment of the lens holder with the slide base; and

the adjusting plate and the actuator cover are each fixed to the slide base.

5,615,054

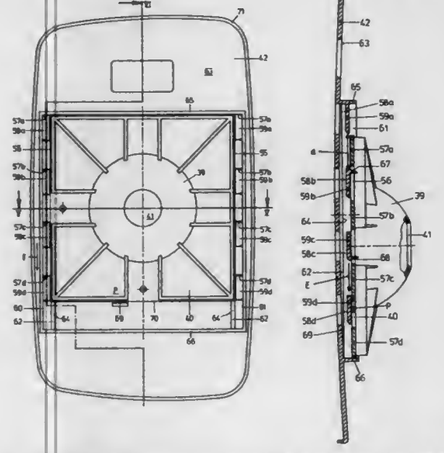
ADJUSTABLE REAR-VIEW MIRROR WITH A RELEASABLE MIRROR PLATE

Heinrich Lang, Ergersheim, and Wolfgang Seiboth, Bad Windsheim, both of Germany, assignors to MEKRA Rangau Plastics GmbH & Co KG, Germany

Filed May 19, 1994, Ser. No. 245,952

Int. Cl.[6] B60R *1/02*

U.S. Cl. 359—844 **18 Claims**



1. An adjustable rear-view mirror arrangement for motor vehicles comprising

a housing (**5**) with a housing opening (**72**);

a bearing arrangement (**12, 13**) arranged in the housing (**5**);

a retaining plate (**40**) united with the bearing arrangement and provided with two lateral edges (**55, 56**) opposite to each other and a plate plane (P);

a mirror supporting plate (**42**) releasably fastenable to said retaining plate (**40**); and

a mirror glass (**10, 11**) mounted on said mirror supporting plate (**42**) and arranged in said housing opening (**72**),

wherein adjacent to said lateral edges (**55, 56**), the retaining plate (**40**) is provided with joining projections (**57***a, b, c, d*), which for being fastened to the mirror supporting plate (**42**), are insertable in a direction of insertion by clamping (E) into rear-recessed portions (**58***a, b, c, d*) of complementary shape on the mirror supporting plate (**42**) substantially in parallel to said plate plane (P).

5,615,055

DUAL-MODE DIGITAL SIGNAL RECORDING AND/OR REPRODUCING APPARATUS

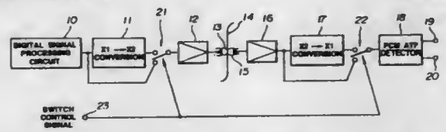
Shinichi Fukuda; Akio Tanaka, both of Kanagawa, and Kentaro Odaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 170,685, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 824,226, Jan. 22, 1992, abandoned. This application Feb. 1, 1995, Ser. No. 383,710

Claims priority, application Japan, Jan. 25, 1991, 3-025570; Jan. 25, 1991, 3-025571

Int. Cl.[6] G11B *5/00*

U.S. Cl. 360—8 **5 Claims**



1. A digital signal recording apparatus for recording digital signals processed by a signal processing circuit on a magnetic tape in a first or second mode by supplying signals to be recorded through a signal recording rotary drum via a recording amplifier, comprising:

a time base compression circuit for performing time base compression of said signals processed by said signal processing circuit, output signals from said time base compression circuit being supplied to said recording amplifier in said second mode, said signal recording rotary drum including two rotary heads arranged within said drum and said drum having a diameter of 30 mm and a tape wrap angle of 90°, said drum rotating at a second revolution rate in said second mode in conformity to the time base compression performed by said time base compression circuit; and

signal switching means for bypassing said time base compression circuit in said first mode upon receipt thereby of a switching control signal that is also employed to control the rotary drum revolution rate, said signals processed by said signal processing circuit being supplied to said recording amplifier when said rotary drum is rotating at a first revolution rate in said first mode, and said time base compressed signals from said time base compression circuit being supplied to said recording amplifier in said second mode when said rotary drum is rotating at said second revolution rate greater than said first revolution rate.

5,615,056

APPARATUS FOR RECORDING AND REPRODUCING A DIGITAL VIDEO AND AUDIO SIGNAL

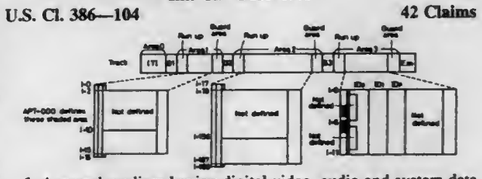
Masaki Oguro, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,455

Claims priority, application Japan, Dec. 4, 1992, 4-325618; Apr. 22, 1993, 5-096001

Int. Cl.[6] G11B *5/02*

U.S. Cl. 386—104 **42 Claims**



1. A record medium having digital video, audio and system data recorded in respective tracks in a predetermined format such that each track contains respective video, audio and subcode areas with

each area having a number of sync blocks comprised of a data area in which video, audio and system data, respectively, are recorded preceded by a fixed area in which sync block identifying information is recorded, said data area of said subcode area being formed of data packs having a common pack structure, said system data providing automatic control of a reproducing apparatus during reproduction of said tracks on said record medium and said system data identifying said recorded digital video and audio data, the respective video and audio areas including video auxiliary areas and audio auxiliary areas, respectively, in which system data are recorded, said video auxiliary areas and said audio auxiliary areas being formed of data packs having the common pack structure.

5,615,057

IMAGE RECORD/PLAYBACK APPARATUS INCLUDING A PHOTOGRAPHING DEVICE AND A CONNECTABLE PLAYBACK DEVICE

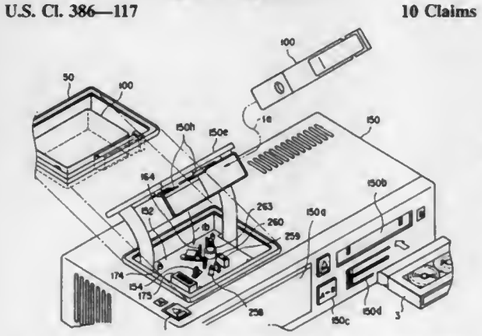
Motoji Fukuta; Masanori Ozawa; Yoshihiko Naruoka; Mineharu Uchiyama, all of Yokohama, and Ken Itoh, Yamato, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 233,889, Apr. 26, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,563

Claims priority, application Japan, Apr. 27, 1993, 5-101513; Apr. 27, 1993, 5-101514; Apr. 27, 1993, 5-101515

Int. Cl.[6] H04N *5/78*

U.S. Cl. 386—117 **10 Claims**



1. An image record/playback apparatus comprising a photographing device and a playback device,

the photographing device comprising:

a housing;

an optical lens system provided in the housing;

an imaging element for converting an optical signal supplied through the optical lens section, into an electric signal;

a record signal processing section for processing the electric signal;

a magnetic tape for recording an output signal from the record signal processing section; and

a recording mechanism section for driving the magnetic tape, the recording mechanism section including a tape reel around which the magnetic tape is wound, a record-side tape guide for guiding the magnetic tape, a rotary magnetic head device which the magnetic tape is to contact, and a drive motor for driving the rotary magnetic head device and the magnetic tape;

the playback device being separate from the photographing device and comprising:

a connecting section for holding the photographing device;

a playback mechanism section to be dynamically connected to at least one of the recording mechanism section and the magnetic tape, the playback mechanism section including a playback-side tape guide which contacts at least the magnetic tape to guide the magnetic tape, when the photographing device is engaged with the connecting section; and

a reproduced signal processing section for processing an output signal reproduced from the magnetic tape.

5,615,058

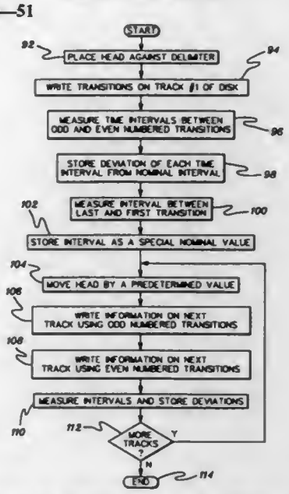
METHOD AND SYSTEM FOR WRITING A SERVO-PATTERN ON A STORAGE MEDIUM

Timothy J. Chainer, Mahopac, N.Y.; Wayne J. Sohn, Modiin, Israel, and Edward J. Yarmchuk, Somers, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 28,044, Mar. 8, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,463

Int. Cl.[6] G11B *27/28*

U.S. Cl. 360—51 **32 Claims**



1. A method for generating a timing pattern on a storage medium, said method comprising:

writing a first plurality of transitions at a first radial position on said storage medium;

determining a time interval between selected pairs of said first plurality of transitions;

determining an amount of deviation between each determined time interval and a predetermined nominal interval, such that each selected pair of said first plurality of transitions has a corresponding determined amount of deviation; and

writing a second plurality of transitions at a second radial position on said storage medium, each of said second plurality of transitions being written at a corresponding time delay, wherein each of said corresponding time delays comprises said predetermined nominal interval plus a fraction of an amount of deviation related to a pair of said first plurality of transitions, wherein propagation of random errors associated with writing said first plurality of transitions is reduced in writing said second plurality of transitions.

5,615,059

AUTOMATIC CLOCK SIGNAL PHASE ADJUSTING CIRCUIT

Takahito Seki, Kanagawa, and Haruyuki Yoshioka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 107,074, Aug. 17, 1993. This application May 3, 1995, Ser. No. 434,025

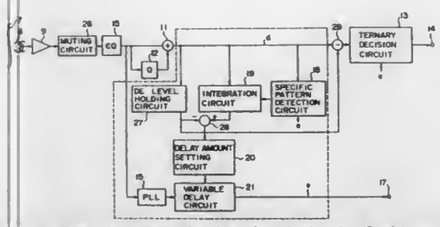
Claims priority, application Japan, Aug. 25, 1992, 4-247120; Jan. 26, 1993, 5-029760

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **2 Claims**

1. An automatic clock signal phase adjusting circuit for use with a digital magnetic recording and reproducing apparatus adopting a partial response class IV coding method, said automatic clock signal phase adjusting circuit comprising:

(a) pattern detecting means for detecting at least one of patterns "1, 0, −1" and "−1, 0, 1" from a reproduced signal;



(b) level detecting means for detecting the levels of said reproduced signal in effect when said pattern detecting means detects 0's to produce an output signal corresponding to the detected levels;

(c) holding means for holding a DC component included in said reproduced signal;

(d) subtracting means for subtracting the DC component held by said holding means from the output signal of said level detecting means to produce a difference signal;

(e) clock reproducing means for reproducing a clock signal from said reproduced signal; and

(f) phase adjusting means for adjusting the phase of said clock signal reproduced by said clock reproducing means based on the difference signal.

5,615,060

AUTOMATIC CLOCK SIGNAL PHASE ADJUSTING CIRCUIT UTILIZING LEVEL DETECTOR AND PATTERN DETECTOR

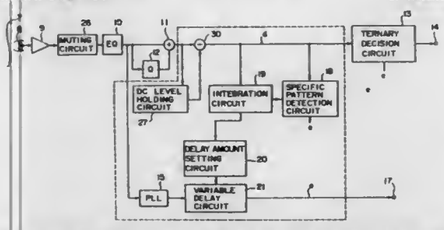
Takahito Seki, Kanagawa, and Haruyuki Yoshioka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 107,074, Aug. 17, 1993. This application May 3, 1995, Ser. No. 434,064

Claims priority, application Japan, Aug. 25, 1992, 4-247120; Jan. 26, 1993, 5-029760

Int. Cl.[6] G11B *27/36;5/01*

U.S. Cl. 360—51 **2 Claims**



1. An automatic clock signal phase adjusting circuit for use with a digital magnetic recording and reproducing apparatus adopting a partial response class IV coding method, said automatic clock signal phase adjusting circuit comprising:

an input for receiving a reproduced signal reproduced from a magnetic recording medium;

a muting circuit coupled with the input to selectively supply one of the reproduced signal and a mute output at an output thereof;

an equalizer circuit having an input coupled with the output of the muting circuit and an output;

an adder having a first input coupled with the output of the equalizer circuit, a second input and an output;

a one-bit delay circuit having an input coupled with the output of the equalizer circuit and an output coupled with the second input of the adder;

holding means for holding a DC component obtained from the output of the adder when the muting circuit supplies the mute output at its output;

subtracting means for subtracting the DC component held by the holding means from a signal output by the adder when the muting circuit supplies the reproduced signal at its output, to produce a difference signal;

pattern detecting means for detecting at least one of patterns "1, 0, −1" and "−1, 0, 1" present in the difference signal;

level detecting means for detecting levels of said difference signal in effect when said pattern detecting means detects 0's to produce an output signal representing the detected levels;

clock reproducing means for reproducing a clock signal obtained from said magnetic recording medium; and

phase adjusting means for adjusting the phase of said clock signal reproduced by said clock reproducing means based on the output signal from said level detecting means.

5,615,061

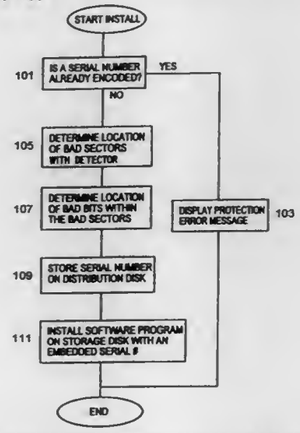
METHOD OF PREVENTNG SOFTWARE PIRACY BY UNIQUELY IDENTIFYING THE SPECIFIC MAGNETIC STORAGE DEVICE THE SOFTWARE IS STORED ON

Jitendra K. Singh, 6361 Almaden Rd., San Jose, Calif. 95120

Filed Sep. 29, 1994, Ser. No. 315,280

Int. Cl.[6] G11B *15/04*

U.S. Cl. 360—60 **7 Claims**



1. A method for locking software to a specific magnetic storage device, comprising the steps of:

a. detecting a location of a bad area on said specific magnetic storage device at a first point in time;

b. determining a location of a bad bit specific within the bad area on said specific magnetic storage device, wherein the step of determining the location of a bad bit includes the steps of:

causing to be written into the bad area a test pattern having a plurality of bits;

then causing data having a plurality of bits to be read from the bad area;

then comparing the bits of the test pattern to the bits of the data read from the bad area; and

determining the location of a bit in said data read from the bad area that does not match an associated bit of the test pattern;

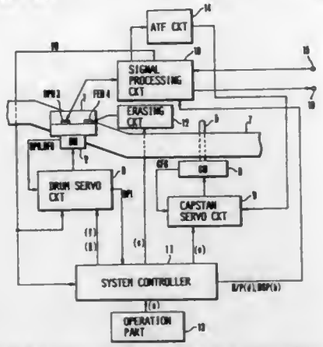
c. then storing the location on said magnetic storage device of the bad area and the location of the bad bit into an identification number storage area associated with a software program; and

d. executing the software program; and looking for said bad area and bad bit on a current magnetic storage device, wherein if, when the software program is attempted to be executed, the bad area and bad bit locations stored in the identification number storage area are found on a current magnetic storage device, said current magnetic storage device is identified as said specific magnetic storage device.

5,615,062
ROTARY HEAD TYPE RECORDING APPARATUS

Nobutoshi Takayama, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 172,858, Dec. 23, 1993, abandoned,. This application Jun. 7, 1995, Ser. No. 488,953
Claims priority, application Japan, Sep. 29, 1989, 1-255528; Sep. 29, 1989, 1-255529; Sep. 29, 1989, 1-255530
Int. Cl.[6] G11B *15/14;15/48*
U.S. Cl. 360—64 **19 Claims**



1. A rotary head type recording apparatus, comprising:

a) head means including a rotary head which records signals on a tape-shaped recording medium by tracing said medium and head driving means which rotates the rotary head;

b) transport means for transporting said tape-shaped recording medium in its longitudinal direction;

c) recording means for recording a recording signal on said recording medium by supplying said recording signal to said rotary head; and

d) control means for controlling said transport means and said recording means, according to an operation condition of said head means in case that said recording means stops a recording action performed on said recording signal and after that said recording means restarts said recording action, said control means having a first control mode in which said head driving means rotates the rotary head, said transport means stops a regular transporting action transporting said recording medium in a regular direction and said recording means stops said recording action and after that said transport means restarts said regular transporting action without reversing a direction in which said recording medium is transported and said recording means restarts said recording action, and a second control mode in which said head driving means stops said rotating action, said recording means stops said recording action and said transport means stops said regular transporting action and performs a reverse transporting action transporting said recording medium in a reverse direction of said regular direction for a predetermined period of time and after that said head driving means restarts said rotation action, said recording means restarts said recording action and said transport means restarts said regular transporting action.

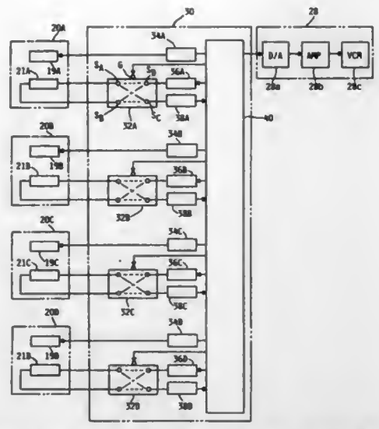
5,615,063
MAGNETORESISTIVE HEAD BIAS CURRENT SWITCHING BASED ON SKEW ANGLE

Kenji Kuroki, Fujisawa, and Takao Matsui, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1995, Ser. No. 445,513
Claims priority, application Japan, May 23, 1994, 6-108781
Int. Cl.[6] G11B *5/03;5/596*
U.S. Cl. 360—66 **19 Claims**

13. A hard-disk system comprising:

a magnetoresistive head including a reproduction element having a magnetoresistive effect and for reproducing information



with a bias magnetic field applied to said element and with said magnetoresistive effect, and a recording element for recording said information;

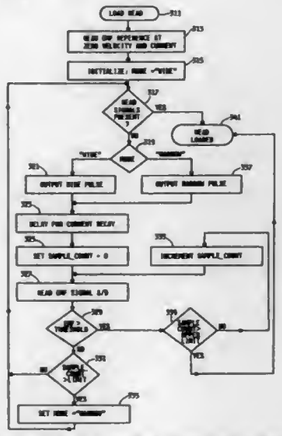
a positioning means for, when said information is reproduced from an information recording disk having a plurality of tracks with a plurality of information record reproduction regions arranged in a radial direction, positioning said reproduction element over a corresponding track; and

a magnetic field direction change means for changing the direction of said bias magnetic field applied to said reproduction element, in response to the skew angle of said radial direction in which said magnetoresistive head is positioned.

5,615,064
PULSED CURRENT VELOCITY CONTROLLED HEAD LOAD METHOD AND APPARATUS WHICH USES THE BACK EMF TO CONTROL THE GENERATION OF HEAD ACTUATOR DRIVING PULSES

Timothy J. Blank, Byron; Kevin J. Erickson, Rochester; Richard Greenberg, Rochester, and John C. Purkett, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1994, Ser. No. 317,979
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **9 Claims**



1. A data storage device used in conjunction with a computer, comprising:

moving data storage media;

movable support means for supporting a data transducing head for movement relative to said data storage media;

actuator means for moving said support means, said actuator means having a current energizable coil that is movable with said support means;

back-EMF sensing means connected to said coil for sensing a coil-back-EMF voltage when said coil is not current-energized;

electrical drive means connected to said coil for supplying individual long-time-duration current pulses to said coil;

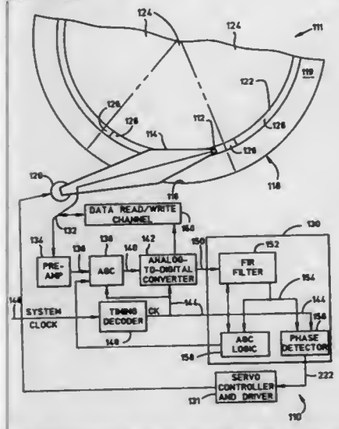
variable-time-interval delay means controlled by said back-EMF sensing means and operable to delay said supplying of a said individual long-time-duration current pulse to said coil for a variable-time-interval that is proportional to a time interval during which said coil-back-EMF voltage exceeds said predetermined threshold voltage; and

means responsive to said variable-time-interval delay means for supplying individual short-time-duration current pulses to said coil when said proportional time interval exceeds a predetermined time-interval threshold.

5,615,065
PHASE-COMPENSATED SERVO PATTERN AND POSITION ERROR-SENSING DETECTOR

Wayne L. Cheung, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1994, Ser. No. 317,942
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.08 **19 Claims**



1. A signal demodulator for receiving a read head servo signal generated by a read head located adjacent a surface of a moving magnetic storage medium and demodulating the servo signal to determine the position of the read head relative to a servo track of the storage medium, the demodulator including:

a filter that receives a read head servo signal produced from a servo pattern comprising a repeating sequence of phase-encoded pattern transitions extending continuously across the width of the servo track and produces filtered servo signal data samples indicative of the servo signal amplitude; and

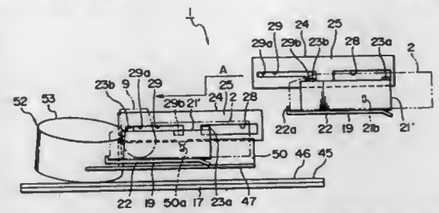
a burst phase detector that receives the filtered servo signal and produces a position error signal that is a substantially linear function of the read head position relative to the servo track width;

wherein the servo pattern transitions define a trigonometric-compensated pattern across the servo track and the burst phase detector multiplies the filtered servo signal samples with a predetermined set of reference coefficients that provide a trigonometric compensation to the data.

5,615,066
CASSETTE LOADING MECHANISM

Naka Shibata, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 209,206, Mar. 4, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,455
Claims priority, application Japan, Mar. 8, 1993, 5-070728
Int. Cl.[6] G11B *15/675*
U.S. Cl. 360—96.5 **24 Claims**



1. A cassette loading mechanism of a linear skating type comprising:

a cassette holder disposed in a horizontal plane for detachably accommodating a tape cassette, said cassette holder being provided on a side thereof with first and second projecting portions;

a cassette holder holding member for holding said cassette holder, said cassette holder holding member being formed on a side thereof with a third projecting portion and a first grooved portion formed of a slit portion and a stopper portion for engagement with said first projecting portion formed on said cassette holder, when said first projecting portion engages said slit portion said cassette holder and said cassette holder holding member are moveably connected with each other for relative movement in a horizontal plane and when said first projecting portion engages said stopper portion said cassette holder and said cassette holder holding member are fixedly connected for preventing relative movement in the horizontal plan;

a fixed chassis having a support wall formed with a second grooved portion for engagement with said first projecting portion of said cassette holder that extends through said first grooved portion formed in said cassette holder holding member, said support wall being further formed with a third grooved portion for engaging said third projecting portion of said cassette holder holding member and extending horizontally and vertically so that said cassette holder holding member is guided for movement in the horizontal plane and in a vertical plane; and

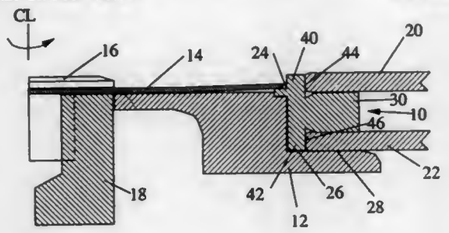
a slide chassis mounted on said fixed chassis, said cassette holder holding member and said slide chassis being horizontally movable relative to said fixed chassis, said slide chassis having a vertically arranged fourth grooved portion for receiving therein said second projecting portion formed on said cassette holder, so that when said third projecting portion of said cassette holder holding member moves along a horizontal portion of said third grooved portion of said support wall said cassette holder and said cassette holder holding members move together with said first projecting portion of said cassette holder engaging said stopper portion of said first grooved portion of said cassette holder holding member, and when said cassette holder holding member moves along a vertical portion of said third grooved portion of said support wall and said second projecting portion of said cassette holder engages said fourth grooved portion of said slide chassis and reaches a bottom end of said fourth grooved portion, said first projecting portion of said cassette holder is disengaged from said stopper portion of said first grooved portion of said cassette holder holding member and said cassette holder is fixedly connected to said slide chassis by said second projecting portion engaging said fourth grooved portion, whereby said cassette holder and said slide chassis move together in a horizontal plane relative to said cassette holder holding member.

5,615,067

DISC CLAMP AND SPACER

Iraj Jabbari, San Jose; Thomas A. Hickox, Scotts Valley, and Ramgopal Battu, Canoga Park, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US93/07652, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO95/05660, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 13, 1993, Ser. No. 167,863
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—98.08 8 Claims



6. A disc drive spindle assembly comprising:
a disc/spacer assembly (**10**) comprising:
at least two discs (**20**, **22**), each having an inside circumferential rim (**44**, **46**);
and characterised by also comprising;
a disc spacer (**30**) having two integral flanges (**40**, **42**) depending from the spacer section to form a T-shape in the radial direction when viewed in cross-section;
the height of each flange from the spacer section being less than the thickness of each disc;
the discs being mounted on said spacer with the respective discs having said inside rim abutting against respective of said spacer flanges with a predetermined radial force;
a spindle (**12**) having a flange (**28**);
the disc/spacer assembly being mounted on said spindle with one of said two discs abutting said spindle flange and being sandwiched between the disc spacer's spacer section and the spindle flange;
a disc clamp (**14**) mounted on the spindle and abutting an abutting surface (**24**) of said disc spacer.

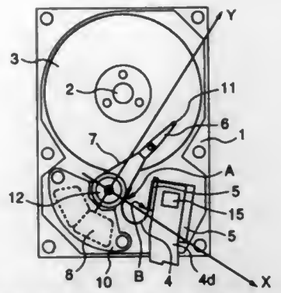
5,615,068

HEAD LOCATING ACTUATOR HAVING REDUCED SUSCEPTIBILITY TO DYNAMIC REACTION FORCE EFFECTS, AND A DISK APPARATUS INCORPORATING THE SAME

Yasuhiro Matsuda; Shozo Saegusa; Takashi Yoshida, all of Ibaraki-ken; Marutomo Goto, Odawara; Shinobu Yoshida, Tsuchiura, and Toshio Matsushita, Kanagawa-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,970
Claims priority, application Japan, Aug. 1, 1994, 6-179886
Int. Cl.[6] G11B *21/12*
U.S. Cl. 360—106 14 Claims

1. A locating actuator comprising:
a head;
a recording medium onto which said head records information and from which said head reproduces information;
a carrier for oscillating said head;
a supporting member supporting said carrier;
driving means for causing movement of said carrier so as to locate said head at a desired target position on said recording medium;
a base supporting said supporting member; and
a flexible printed circuit having electrical signal lines of at least a portion of said driving means and said head, said flexible printed circuit being fixed at one end to said carrier and at



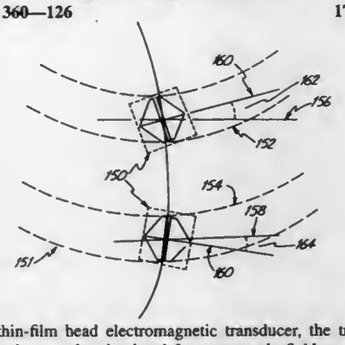
another end to said base and having a curved portion disposed between said one end and said another end,
wherein said flexible printed circuit is arranged such that, in setting a coordinate system having an X-axis along a line interconnecting an origin of said coordinate system which is coincident with an axis about which pivotal movement of said carrier member takes place and a point at which said flexible printed circuit is fixed to said carrier member, when said head is located substantially at a midpoint between outermost and innermost peripheral edges of a recording surface of said recording medium, the angle formed, in a plane parallel to said recording surface and including said X-axis, between a longitudinal axis of said flexible printed circuit at said point and said X-axis is set to fall within a range of from 80 degrees to 100 degrees.

5,615,069

THIN-FILM TRANSDUCER DESIGN FOR UNDERSHOOT REDUCTION

Steven B. Slade, New Hope; Brian S. Zak, Excelsior, and Nathan Curland, St. Louis Park, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 7, 1995, Ser. No. 481,090
Int. Cl.[6] G11B *5/147;5/187*
U.S. Cl. 360—126 17 Claims



1. A thin-film head electromagnetic transducer, the transducer for producing an electric signal from magnetic fields stored on a medium, the thin-film head comprising:
a surrounding material having an interface surface;
two pole pieces defining a gap between them, each pole piece having an interface surface contiguous with the interface surface of the surrounding material, the interface surface of at least one of the pole pieces having a gap-defining linear edge defining one side of the gap, the gap-defining linear edge having a first and second end, each end in contact with the interface surface of the surrounding material, the pole piece's interface surface also having two tapered linear edges at an acute angle to the gap-defining linear edge, the two tapered linear edges symmetric about and abutting at an axis perpendicular to and intersecting the gap-defining linear edge, the pole pieces formed of a permeable material to provide a path for flux from the magnetic fields stored on the medium; and

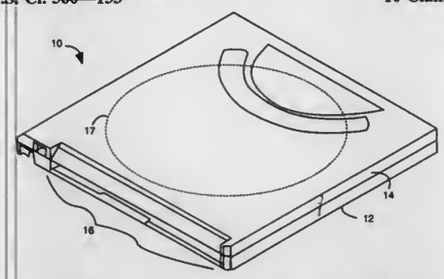
transducing means, coupled to the two pole pieces for receiving magnetic flux from the two pole pieces, the transducing means transducing such magnetic flux into the electric signal.

5,615,070

SELF-CLEANING HIGH-CAPACITY, REMOVABLE HARD CARTRIDGE DISK

Jacques Bordes, Avranches, France, assignor to Nomai SA, Avranches, France

Filed Jul. 14, 1994, Ser. No. 274,860
Int. Cl.[6] G11B *23/02*
U.S. Cl. 360—133 10 Claims



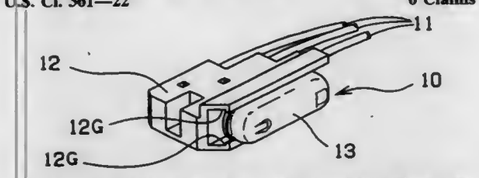
1. A cartridge disk (**10**) for the magnetic storage of computer data, comprising:
a two-piece shell enclosure (**12** and **14**) for protecting a rotatable hard disk platter (**17**) from mechanical injury and contamination, and for protecting a magnetic read/write head within a disk drive in contact with said cartridge disk;
a door assembly (**16**) mounted at an open end of the shell enclosure with means (**26**) for opening a pair of doors (**18** and **20**) when said cartridge disk (**10**) is inserted into said disk drive and for closing said pair of doors (**18** and **20**) otherwise to seal out particulates from contaminating said hard disk platter (**17**);
electrostatic filter means (**38** and **42**) disposed within the shell enclosure (**12** and **14**) for filtering circulating air within said cartridge disk during operation; and
an air wall (**31** and **40**) formed inside the shell enclosure and proximate to said rotatable hard disk platter (**17**) for pumping said circulating air through the electrostatic filter means (**38** and **42**) by a spinning action of said rotatable hard disk platter proximate to the air wall.

5,615,071

THERMAL PROTECTOR FOR HERMETIC ELECTRICALLY-DRIVEN COMPRESSORS

Isao Higashikata, Owariasahi; Yasunori Ando, Aichi-ken, and Hideki Koseki, Koyamanishi, all of Japan, assignors to Ubukata Industries Co., Ltd., Nagoya, Japan

Filed Nov. 22, 1995, Ser. No. 562,059
Claims priority, application Japan, Dec. 2, 1994, 6-329468; Apr. 17, 1995, 7-116379; May 15, 1995, 7-141073; Sep. 13, 1995, 7-262340
Int. Cl.[6] H02H *7/00*
U.S. Cl. 361—22 6 Claims



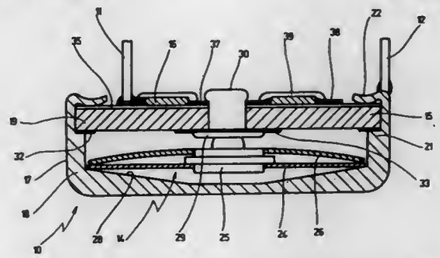
1. A thermal protector for a hermetic electrically-driven compressor which includes an electric motor and a hermetic housing having a wall in which a hermetic terminal assembly having a plurality of terminal pins is mounted, the protector being mounted inside the compressor housing so as to be opposed to the terminal assembly, the protector comprising:
a thermal switch comprising:
a metal casing having a generally dome-shaped section and an open end;
a thermal switch mechanism accommodated in the casing;
a header plate hermetically closing the open end of the casing and having a portion parallel to the metal casing in the longitudinal direction thereof, the casing and the header plate integrally forming a flange on the peripheral edges thereof when the header plate is secured to the casing to hermetically close the open end of the casing; and
two terminals one of which is provided with a receptacle into which one of the terminal pins of the terminal assembly is fitted, the other terminal being connected to a common lead wire of the motor; and
a cluster socket having a plurality of terminal cavities provided for connecting windings of the motor to the terminal assembly, the socket including a body which has a face further having a pair of holding portions for holding the flange, the holding portions having at one of the ends, hook-shaped portions respectively, the socket further having a common terminal cavity parallel to the holding portions;
wherein the casing and the socket are integrally connected together such that a larger part of the casing is exposed outside the socket body, when the flange is held by the holding portions and the receptacle is inserted to a position where the same is opposed to said one terminal pin of the terminal assembly.

5,615,072

TEMPERATURE-SENSITIVE SWITCH

Marcel Hofsäss, Pforzheim, and Dieter Bühling, Hermsdorf, both of Germany, assignors to Thermik Gerätebau GmbH, Pforzheim, Germany

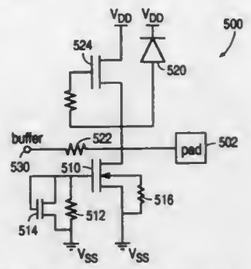
Filed Aug. 9, 1995, Ser. No. 513,194
Claims priority, application Germany, Aug. 10, 1994, 44 28 226.5
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—24 10 Claims



1. A temperature-sensitive switch for protecting electrical parts such as motors and transformers against excess current and excess temperature, comprising:
a bimetallic switching device opening or closing its contacts in response to an excess temperature;
a casing having a pot-like lower part and a cover part, for containing said switching device;
a first heating resistor connected in circuit with said switching device, such that it locks said switching device in a self-holding manner when said switching device is actuated; and
a second heating resistor connected in circuit with said switching device and producing heat in response to a current flow therethrough, such that said switching device is actuated upon an excess current flowing through said second heating resistor,

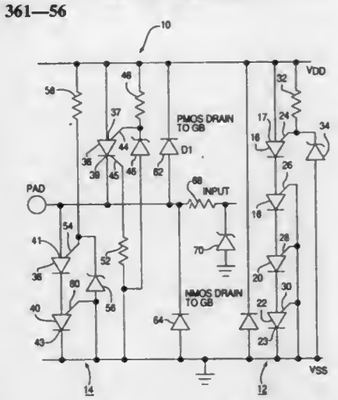
both said first and said second heating resistors being integrated in said cover part.

5,615,073
ELECTROSTATIC DISCHARGE PROTECTION APPARATUS
Rafael Fried, Caesarea; Yaron Blecher, Petach-Tikva, and Shimon Friedman, Holon, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jun. 22, 1995, Ser. No. 493,598
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—56 **25 Claims**



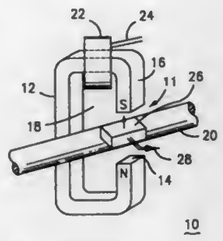
1. An electrostatic discharge (ESD) protection circuit connected to a pad of a semiconductor integrated circuit comprising:
an NMOS transistor having a gate and a source/drain pathway coupled between the pad and ground;
a resistor coupled between the NMOS transistor gate and ground; and
a clamping transistor having a source/drain pathway coupled between the NMOS transistor gate and ground and having a gate coupled to the NMOS transistor gate.

5,615,074
ELECTROSTATIC PROTECTION CIRCUIT
Leslie R. Avery, Flemington, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 291,809, Aug. 17, 1994. This application Aug. 17, 1995, Ser. No. 516,072
Int. Cl.[6] H02H *9/06*
U.S. Cl. 361—56 **7 Claims**



1. An electrostatic (ESD) protection circuit comprising:
a pair of power lines, the power lines including a positive polarity line and a negative polarity line;
at least three silicon controlled rectifiers (SCRs) electrically connected in series between said power lines, each of said SCRs having a gate, a cathode and an anode;
a zener diode electrically connected between the gate of the SCR at one end of the plurality of SCRs connected in series and one of the power lines; and means electrically connecting the gate of each of the other SCRs in the series other than the one SCR at the one end of the series to said one power line, further comprising:
a resistor connected between the gate of the SCR at the one end of the series and the positive line;
an input/output pin electrically connected between the SCR at the one end of the series and the next adjacent SCR in the series; and
a zener diode electrically connected between the gate of the next adjacent SCR in the series and the negative power line, wherein:
the gate of all of the SCRs are connected to the negative polarity line; and
the anode of the SCR at the one end of the series is directly connected to the positive power line and the cathode of the SCR at the other end of the series is connected to the negative power line.

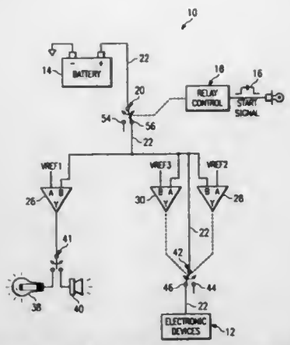
5,615,075
AC/DC CURRENT SENSOR FOR A CIRCUIT BREAKER
Edward E. Kim, Burlington, Conn., assignor to General Electric Company, New York, N.Y.
Filed May 30, 1995, Ser. No. 452,936
Int. Cl.[6] H02H *3/26*
U.S. Cl. 361—87 **17 Claims**



14. A circuit breaker comprising:
a pair of contacts arranged for connecting between a current source and an associated load;
an electronic trip unit arranged for separating said contacts upon occurrence of an overcurrent condition determined by said trip unit; and
current sensing means arranged electrically with said load, said current sensing means comprising a magnetic core having a secondary winding providing operating power to said trip unit and further comprising a semiconductor device in magnetic proximity to said core, said semiconductor device providing sensing current to said trip unit in proportion to current flow through said contacts.

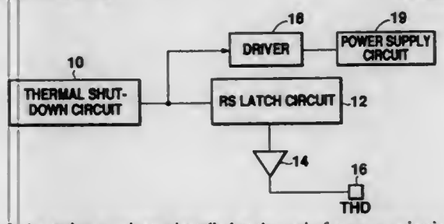
5,615,076
APPARATUS FOR PROTECTING ELECTRONIC DEVICES AND ASSOCIATED METHODS OF MANUFACTURING
Harvey Slepian, Peoria, and Loran Sutton, East Peoria, both of Ill., assignors to TAS Distributing Co., Inc., Peoria, Ill.
Filed Jul. 11, 1995, Ser. No. 500,506
Int. Cl.[6] H02H *3/20*
U.S. Cl. 361—90 **21 Claims**

1. A circuit for protecting an electronic device operatively installed in a vehicle from voltage spikes and surges produced when the vehicle is started, the vehicle having an electrical system which connects the electronic device to a battery included in the



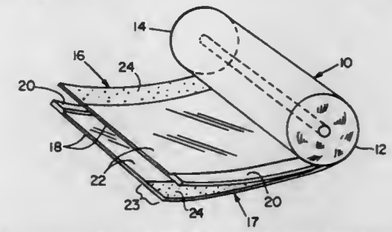
electrical system, and for preventing the electronic device from discharging the battery below an acceptable level, the circuit comprising:
first determining means for determining when the battery has been discharged below a first voltage level;
first disconnecting means, connected to said determining means, for disconnecting the electronic device from the electrical system when the battery has been discharged below said first voltage level, the remainder of the electrical system remaining connected to the battery;
sensing means for sensing when the vehicle is being started;
second disconnecting means, connected to said sensing means, for disconnecting the electronic device from the electrical system when the vehicle is being started;
second determining means for determining when the battery is being charged above a second voltage level;
first reconnecting means for reconnecting the electronic device to the electrical system, after the electronic device has been previously disconnected from the electrical system by said first disconnecting means, when said second determining means indicates the battery is being charged above said second voltage level; and
second reconnecting means for reconnecting the electronic device to the electrical system, after the electronic device has been previously disconnected from the electrical system by said second disconnecting means, when said sensing means indicates the vehicle is not being started.

5,615,077
ACTIVE TERMINATOR THE THERMAL SHUTDOWN STATE OF WHICH CAN BE DETECTED
Noboru Takizawa, and Jun Iida, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Jun. 19, 1995, Ser. No. 491,705
Claims priority, application Japan, Jun. 17, 1994, 6-136162
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—103 **6 Claims**



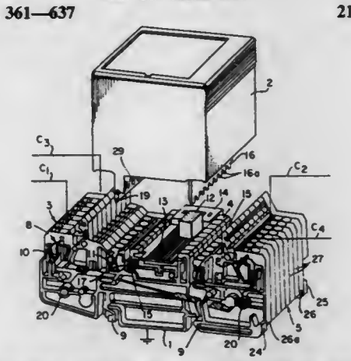
1. An active terminator installed at the end of a communications bus, said terminator comprising:
a temperature detector for detecting temperature,
a thermal shutdown circuit for stopping operation when the detected temperature reaches a predetermined temperature,
and a memory for storing the operation stopping state caused by said thermal shutdown circuit.

5,615,078
METALLIZED FILM FOR ELECTRICAL CAPACITORS HAVING A SEMICONDUCTIVE LAYER EXTENDING ENTIRELY ACROSS THE UNMETALLIZED MARGIN
Martin Hudis, Mattapoisett, Mass.; Mamoru Koebisu, Furutakacho-Moriyamashi, and Kenji Hatada, Shiga, both of Japan, assignors to Aerovox Incorporated, New Bedford, Mass.; Toray Industries, Inc, Japan, and Toray Plastics America, Inc., North Kingstown, R.I.
Filed Dec. 16, 1994, Ser. No. 357,376
Int. Cl.[6] H01G *4/06;4/008*
U.S. Cl. 361—313 **30 Claims**



1. A metallized film for use in a capacitor, said metallized film comprising:
a dielectric film;
a first metal layer deposited over the dielectric film, said first metal layer being sufficiently thin to be self-healing upon occurrence of a fault in the dielectric film;
an unmetallized margin extending along the dielectric film; and
a semiconductive layer extending entirely across the unmetallized margin to provide a resistive path across the margin.

5,615,079
MODULAR CONTROL APPARATUS FOR AUTOMATED BUILDINGS
Gerhard Eggert; Walter Hanning, both of Detmold; Uwe Fiene, Steinheim; Michael Schnatwinkel, Herford; Rudolf Steinmeier, and Manfred Wilmes, both of Detmold, all of Germany, assignors to Weidmueller Interface GmbH & Co., Detmold, Germany
Filed Oct. 30, 1995, Ser. No. 550,543
Claims priority, application Germany, Oct. 31, 1994, 44 38 804.7
Int. Cl.[6] H02B *1/20*
U.S. Cl. 361—637 **21 Claims**



1. A modular control system for controlling the electrically-operable components of an automated building or the like, comprising:

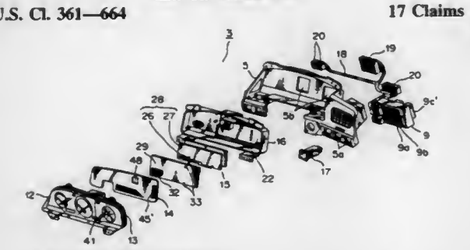
(a) at least one terminal block assembly (3) including a plurality of laterally-aligned terminal blocks adapted for mounting on a grounded support rail (1);
(b) internal bus bar means (3) mounted on said assembly for electrically connecting together each terminal block mounted on the rail;
(c) means (14) for connecting said terminal block assembly with an associated field bus bar (4);
(e) at least one electronics module (2) for controlling the operation of said components, respectively; and
(f) a plurality of distributor bar means (7, 7') for distributing electrical power laterally between said terminal blocks;
(g) said terminal block assembly including:
(1) at least one ground terminal block (25') for connecting said electronics module with the support rail;
(2) at least one power supply terminal block (25') for supplying power to said electronics module; and
(3) at least one control signal supply terminal block (27') for supplying control signals to and from said electronics module;
(h) said power supply terminal block and said control signal supply terminal block having generally similar configurations and each including:
(1) a first portion (6) for removably supporting a first one (7) of said distributor bar means;
(2) a second portion (8) for supplying control signals to and from said electronics module;
(3) a central portion arranged above said mounting rail and operable to support said internal bus bar means above said mounting rail, said electronics module being removably connected with said internal bus bar means;
(4) a third portion (8') for supplying control signals to and from said electronics module; and
(5) a fourth portion (6') for removably supporting a second one (7') of said distributor bar means.

5,615,080

METER MODULE, CONNECTING DEVICE THEREOF, WIRING HARNESS PROTECTOR, AND CONNECTING DEVICE OF INSTRUMENT WIRING HARNESS

Keizo Nishitani; Yoshiaki Nakayama; Minoru Kubota, and Keiichi Ozaki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 14, 1994, Ser. No. 209,712
Claims priority, application Japan, Mar. 17, 1993, 5-057152; Jun. 3, 1993, 5-133425; Jun. 3, 1993, 5-133426; Dec. 27, 1993, 5-333753; Dec. 28, 1993, 5-334711
Int. Cl.[6] H02B *1/00*
U.S. Cl. 361—664 **17 Claims**



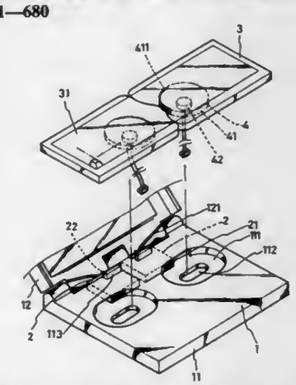
1. A meter module comprising:
a meter panel in which meters, indication lamps and wiring circuits therefor are mounted;
a centralized control circuit board having control circuit means for controlling timing functions of car electric devices, wherein said car electric devices include said meters and indication lamps and wherein said control circuit means are connected to an electric junction box means for distribution of a power supply, an input signal and an output signal to said car electrical devices and for integration of earth lines, said electric junction box means being divided into a plurality of separate electric junction boxes so that said electric junction boxes and said centralized control circuit board each having a width that is smaller than a width of said meter panel so that said electric junction boxes and said centralized control circuit board are disposed in a laminated manner behind said meter panel in order to effectively utilize dead space behind said meter panel; and
a module case for housing said electric junction box means, wherein said electric junction box means is so constructed that a bus-bar circuit board and an insulator cover are set in said module case, said bus-bar circuit board comprising a plurality of bus-bars and an insulating base supporting said bus-bars, wherein said centralized control circuit board is fixed on said insulator cover through a spacer, wherein said meter panel is fixed over said centralized control circuit board to said module case, and wherein said electric junction box means, centralized control circuit board and meter panel are connected to each other by connector connection.

5,615,081

PORTABLE COMPUTER HAVING KEYBOARD STRUCTURE INCLUDING TWO SUB-KEYBOARDS MOUNTED FOR ROTATION BETWEEN A LONGITUDINALLY ALIGNED POSITION AND A MUTUALLY PARALLEL POSITION

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Rd., Taipei, Taiwan

Filed Jan. 31, 1996, Ser. No. 594,463
Int. Cl.[6] G06F *1/16;* **B41J** *11/56;* **H05K** *5/02*
U.S. Cl. 361—680 **4 Claims**



1. An improved portable computer of the type consisting of a mainframe, a display and a keyboard, said improvement comprising:
a means for connecting said keyboard to said mainframe and imparting rotary motion to said keyboard, and said keyboard consisting of two sub-keyboards mounted on said mainframe and capable of being opened outwardly to be in a longitudinally aligned state or closed inwardly to be in a parallel relationship, wherein said means consists of two depressions formed in an upper side of said mainframe, each of said depressions having a shaft hole in a bottom side thereof; two toothed blocks near a pivot connecting said display and said mainframe, said toothed blocks being respectively provided with an array of teeth at a position near said depressions, a projection being disposed at an upper end of each of said toothed blocks, said display being provided with two key slots respectively disposed on either side of the pivot for receiving said projections of said toothed blocks;
and two gears provided on the respective bottom sides of said sub-keyboards, said gears respectively having a gear ring of a size matching that of said depressions and a plurality of teeth matching said teeth of said toothed blocks, said gears further respectively having a shaft of a diameter matching that of said shaft holes and being connected to a motherboard of the computer, whereby said gear shafts and said gear rings of said

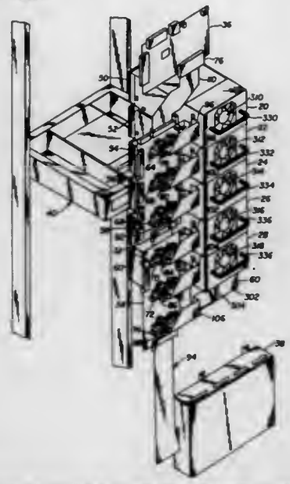
gears are respectively disposed in said shaft holes and said depressions in said mainframe and said teeth of said gears engage with said teeth of said toothed blocks to enable said sub-keyboards to rotarily turn on said mainframe.

5,615,082

COMPUTER STRUCTURE WITH MODULAR HOUSINGS

David P. Jones, Bellvue, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1995, Ser. No. 509,065
Int. Cl.[6] G06F *1/16;* **H05K** *7/10*
U.S. Cl. 361—685 **9 Claims**



1. A multiple drive library computer structure, comprising:
a) a primary structure to which is mounted a number of electronic and mechanical subsystems, said subsystems including a robotic media inserter;
b) two or more modular drive housings, detachably mounted to said primary structure, on each of which is mounted a cooling fan, and in each of which are mounted one or more SCSI storage drives, each SCSI storage drive having an electrical connection face opposite a media-inserting face, wherein each of said modular drive housings holds the media-inserting faces of its SCSI storage drives in abutment to, and in cooperating engagement with, the robotic media inserter.

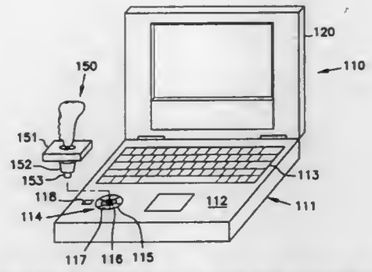
5,615,083

DETACHABLE JOYSTICK FOR A PORTABLE COMPUTER

Robert J. Burnett, Dakota Dunes, S. Dak., assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Dec. 11, 1995, Ser. No. 570,100
Int. Cl.[6] G06F *1/16*
U.S. Cl. 361—686 **10 Claims**

1. A computer system comprising:
a joystick;
a portable computer having a case with a palm rest formed thereon;
a mounting bracket coupled to the joystick for detachably affixing the joystick to the portable computer;
a receptacle formed in the palm rest of the portable computer to fit the mounting bracket;
a locking mechanism for providing a secure and stable base for the joystick when the mounting bracket is coupled to the receptacle; and
an electrical connection between the portable computer and the joystick for relaying electrical signals generated by the joystick to the portable computer.

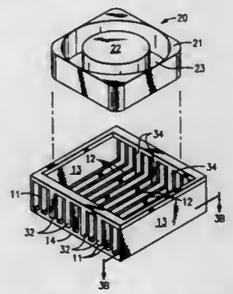


5,615,084

ENHANCED FLOW DISTRIBUTOR FOR INTEGRATED CIRCUIT SPOT COOLERS

Timothy M. Anderson; Gregory M. Chrysler, and Robert E. Simons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,496
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—697 **7 Claims**



1. A heat removal apparatus for an electronic component said apparatus comprising:
a heat sink having a base portion to be put in thermal contact with said electronic component, said base portion having parallel plate fins which define slots in said heat sink base portion, said fins being configured to provide a recess for a fan in such a way that at least a portion of at least some of said fins remain present beneath said recess for a fan;
a fan disposed within said recess, said fan having a central motor with fan blades which are disposed so as to be rotatable in an annular volume in the vicinity of said central motor; and
air flow directing means, disposed in said slots between said fins, to enhance air flow in a direction parallel to said fins in the area beneath said central fan motor.

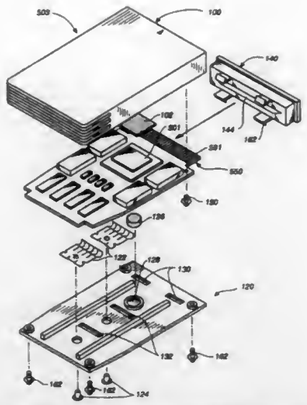
5,615,085

TEMPERATURE CONTROL FOR ADD-ON ELECTRONIC DEVICES

Kenichi Wakabayashi; Chitoshi Takayama, and Tadashi Shiozaki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 907,988, Jul. 1, 1992, Pat. No. 5,526,229. This application Nov. 6, 1995, Ser. No. 590,108
Int. Cl.[6] H05K *7/20;* **G06F** *15/08*
U.S. Cl. 361—702 **27 Claims**

1. An add-on electronic device for use in electronic apparatus having at least a first processor capable of performing logical operations and executing processing steps stored in a first memory



connected thereto, a connector configured to receive add-on devices which is coupled to at least an address signal line of the first processor and to an address output converter that converts data into address signals and provides them to the connector, comprising:

a second processor configured to perform processing substantially independent of the first processor;

second memory means connected to said second processor for storing processing steps for execution thereby;

data removal means for extracting data from the address signals output from the electronic apparatus;

a mounting area for circuit devices which generate substantially the most heat within said add-on electronic device which is positioned within said add-on electronic device between an approximate center and front end relative to a direction of insertion into said add-on connector of the electronic apparatus;

a printed circuit board supporting said mounting area and circuit elements for said add-on electronic device;

a casing substantially surrounding said circuit board;

a packing component that adheres tightly to said second processor and said casing and is disposed therebetween; and

a metallic heat dissipation element disposed on a top surface of said second processor, in which:

said casing is made of a material having low thermal conductivity and has a wall;

said metallic heat dissipation element is disposed adjacent to said wall of said casing; and

said wall of said casing is formed with ventilation holes to allow heat from said metallic heat dissipation element to pass therethrough;

the device further comprising elastic means for pushing said second processor in a direction toward said casing in an area adjacent a top surface of said second processor;

wherein said elastic means comprises a compressible material installed between the bottom surface of said second processor and said casing and extending through an opening in said printed circuit board.

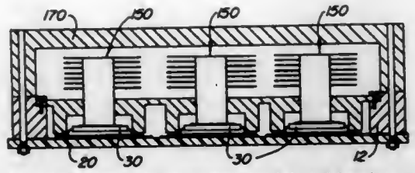
5,615,086

APPARATUS FOR COOLING A PLURALITY OF ELECTRICAL COMPONENTS MOUNTED ON A PRINTED CIRCUIT BOARD

Tom W. Collins, Saratoga; William J. Avery, San Jose; John S. Suy, San Jose, and David M. Tichane, San Jose, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed May 17, 1994, Ser. No. 245,296
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **5 Claims**

1. Apparatus for cooling a plurality of electrical components mounted on a printed circuit board comprising:



a base plate mounted to the printed circuit board forming a wall member that surrounds the plurality of electrical components, the base plate having alignment elements formed thereon:

an alignment plate mounted to the base plate to engage the alignment elements, registering the alignment plate to the circuit board, the alignment plate having chuck assemblies holding the electrical components in registered relation and in electrical contact with the circuit board, the alignment plate forming with the base plate and circuit board an enclosed space containing the plurality of electrical components, the alignment plate having a number of openings formed therein to provide access to the enclosed space;

a plurality of heat conductive elements each having a first portion mounted in corresponding ones of the number of openings and extending into the enclosed space and a second portion exterior of the enclosed space; and

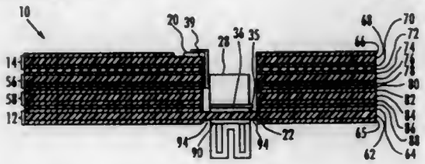
a cover mounted to enclose the second portions of the plurality of heat conductive elements to form a conduit to direct circulation of a coolant between the cover and the alignment plate and about second portions of the plurality of heat conductive elements.

5,615,087

INSULATED SURFACE MOUNT CIRCUIT BOARD CONSTRUCTION

Christopher J. Wieloch, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 292,491, Aug. 18, 1994. This application Nov. 3, 1995, Ser. No. 552,906
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—719 **20 Claims**



1. A multilayer circuit board, comprising:

a surface mount package including an electrical element coupled to a lead frame, the lead frame having a planar contact integral with at least a portion of a surface on the surface mount package;

a first combination circuit board layer having a first top surface and a first bottom surface, the first combination circuit board layer including an insulating layer disposed between two conductor layers, the first top surface having a surface mount pad electrically coupled to the planar contact of the lead frame, the bottom surface having a heat sink area opposite the surface mount pad; and

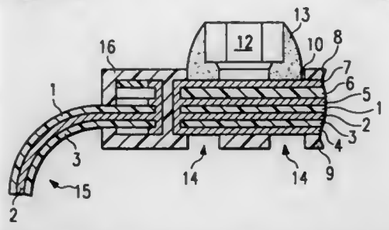
a second combination circuit board layer having a second top surface and a second bottom surface, the second bottom surface being attached to the first top surface, the second combination circuit board layer being configured so that the surface mount pad is exposed, whereby heat is dissipated from the planar contact of the lead frame of the surface mount package through the first circuit board layer to the heat sink area.

5,615,088

FLEXIBLE PRINTED CIRCUIT DEVICE

Yoshiyuki Mizumo, Kaizuka, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 246,315, May 18, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,076
Claims priority, application Japan, May 20, 1993, 5-139815
Int. Cl.[6] H05K *1/00*
U.S. Cl. 361—749 **7 Claims**



1. A flexible printed circuit device having a first portion which is utilized as a mounting area of an electronic device and a second portion different from said first portion, said flexible printed circuit device comprising:

a first base member made of a flexible insulator material and including a first base portion corresponding to said first portion and a second base portion corresponding to said second portion;

an electro-conductive layer provided on said first base member and including a first conductive portion corresponding to said first portion and a second conductive portion corresponding to said second portion;

a cover layer for covering said first conductive portion while maintaining said second conductive portion uncovered; and

a second base member made of a flexible insulator material and which is superposed on said first base member, said electro-conductive layer and said cover layer provided on a portion corresponding to said first portion and having a rigidity greater than that of the first base member.

5,615,089

BGA SEMICONDUCTOR DEVICE INCLUDING A PLURALITY OF SEMICONDUCTOR CHIPS LOCATED ON UPPER AND LOWER SURFACES OF A FIRST SUBSTRATE

Yoshihiro Yoneda, and Takashi Ozawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 24, 1995, Ser. No. 505,888
Claims priority, application Japan, Jul. 26, 1994, 6-174598
Int. Cl.[6] H05K *1/18*
U.S. Cl. 361—764 **14 Claims**

1. A semiconductor device, comprising:

a plurality of semiconductor chips;

a first substrate having upper and lower major surfaces, said first substrate carrying said semiconductor chips on both of said upper and lower major surfaces;

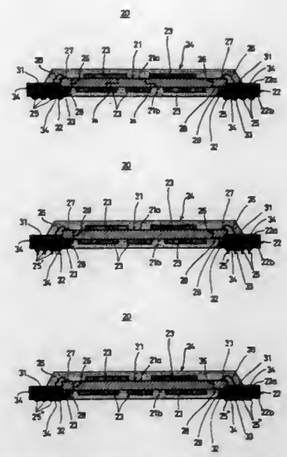
a first interconnection pattern provided on said first substrate, said first interconnection pattern being electrically connected to said semiconductor chips;

a second substrate carrying thereon said first substrate, said second substrate having a lower major surface;

electrode means provided on said lower major surface of said second substrate for external connection;

a second interconnection pattern provided on said second substrate for electrically connecting said first interconnection pattern to said electrode means; and

a resin package body provided on said upper and lower major surfaces of said first substrate so as to encapsulate therein said plurality of semiconductor chips and said first and second interconnection patterns,



said second substrate defining a space such that said semiconductor chip provided on said lower major surface of said first substrate is accommodated in said space,

said first interconnection pattern comprises a first wiring part provided on one of said upper and lower major surfaces of said first substrate and a second wiring part provided on the other of said upper and lower major surfaces of said first substrate, and

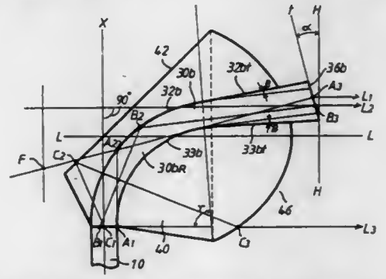
only one of said first wiring part and said second wiring part carries electric power for said plurality of chips.

5,615,090

HEADLIGHT FOR VEHICLE

Hideyuki Kato, Nishio, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 8, 1995, Ser. No. 555,333
Claims priority, application Japan, Dec. 21, 1994, 6-318882
Int. Cl.[6] F21V *8/00*
U.S. Cl. 362—32 **14 Claims**



7. A headlight for a vehicle comprising a light source, a cylindrical lens member for forming light beams into a flat zone illumination, a fiberoptic cable for introducing light beams from said light source to said cylindrical lens member, wherein

said cylindrical lens member comprises:

a light incident surface for receiving light beams from said fiberoptic cable;

a light emitting surface having a vertically cylindrical surface whose tangential line inclines in a horizontal direction at a first angle to a light axis of said light incident surface so as to refract said light beams by a half of said first angle opposite said horizontal direction; and

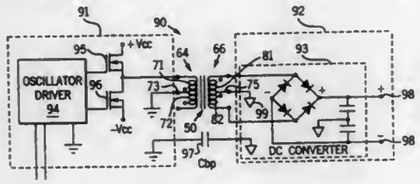
a curved light conducting portion disposed between said light incident surface and said light emitting surface for turning said light beams opposite said horizontal direction by a

second angle which is less than 90 degree to said light incident surface by a half of said first angle.

5,615,091
ISOLATION TRANSFORMER FOR MEDICAL EQUIPMENT

Eugene S. Palatnik, Pewaukee, Wis., assignor to Biochem International, Inc., Waukesha, Wis.

Filed Oct. 11, 1995, Ser. No. 541,074
Int. Cl.[6] H02M *3/337;* **H01F** *27/34*
U.S. Cl. 363—17 **9 Claims**



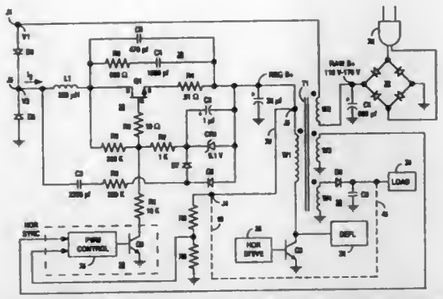
1. An isolation power supply comprising:
isolation transformer including:
(a) a core of ferro-magnetic material,
(b) a primary winding with a first edge and a second edge, and having a first layer formed by a plurality of turns wound around said core with an exterior turn adjacent the first edge and an interior turn adjacent the second edge, said primary winding further having a second layer formed by a plurality of turns wound around the first layer with an exterior turn adjacent the first edge and an interior turn adjacent the second edge, wherein the interior turn of the first layer is electrically connected at a first point to the interior turn of the second layer, and
(c) a secondary winding with a third edge and a fourth edge, and located on said core to one side of the primary winding with the third edge facing the second edge, said secondary winding having a third layer formed by a plurality of turns wound around said core with an exterior turn adjacent the fourth edge and an interior turn adjacent the third edge, said secondary winding further having a fourth layer formed by a plurality of turns wound around the third layer with an exterior turn adjacent the fourth edge and an interior turn adjacent the third edge, wherein the interior turn of the third layer is electrically connected at a second point to the interior turn of the fourth layer;
a transformer driver circuit which applies an alternating signal between the first point and one of the exterior turn of the first layer and the exterior turn of the second layer, wherein the other exterior turn is unconnected; and
an isolated circuit wherein having an isolated ground to which the second point is connected and utilizing a voltage produced between the exterior turn of the third layer and the exterior turn of the fourth layer.

5,615,092
SWITCHING POWER SUPPLY REGULATOR WITH AN INDUCTIVE PULSE CIRCUIT

Kenneth J. Helfrich, Fishers, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 28, 1995, Ser. No. 535,802
Int. Cl.[6] H02M *3/335;* **H01J** *29/70*
U.S. Cl. 363—21 **15 Claims**

1. A power supply, comprising:
a source of an unregulated DC voltage;

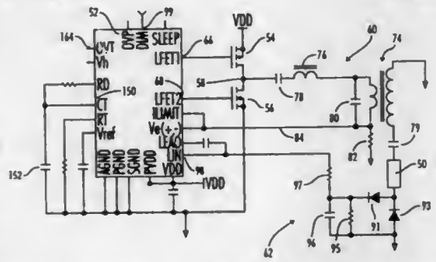


a horizontal deflection circuit for inductively coupling pulses from a first winding of a transformer to a second winding of said transformer, said unregulated DC voltage being supplied to said second winding;
a switch operated with a variable duty cycle and supplying a regulated DC voltage to said first winding;
an inductor and a diode having a common junction coupled to said second winding, said inductor coupling said unregulated DC voltage to said switch; and,
means for varying said duty cycle of said switch responsive to a feedback signal indicative of variations of a load energized by said a regulated DC voltage.

5,615,093
CURRENT SYNCHRONOUS ZERO VOLTAGE SWITCHING RESONANT TOPOLOGY

Mehmet K. Nalbant, Garden Grove, Calif., assignor to Linfinity Microelectronics, Garden Grove, Calif.

Filed Aug. 5, 1994, Ser. No. 286,359
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—25 **25 Claims**

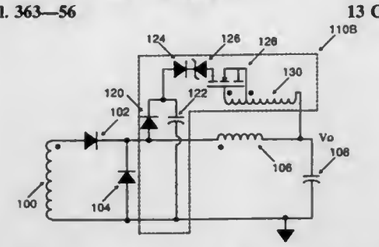


1. A power converter for converting an input power signal to an output power signal, said power converter comprising:
a controller having an oscillator circuit, a synchronous detector and a plurality of control signal outputs for providing transistor control signals dependent upon the oscillator frequency;
a plurality of transistors coupled to receive said input power signal and provide a square wave voltage signal, each transistor being associated with one of said control signal outputs and having a control input coupled to receive a control signal from the associated control signal output of said controller;
a resonant circuit controlled by said square wave voltage signal from said plurality of transistors to produce a resonant current and provide a high frequency sine wave output voltage signal;
whereio said synchronous detector includes a circuit coupled to detect the resonant frequency of the resonant circuit and to provide an oscillator control signal to control the frequency of the oscillator circuit dependent upon the resonant frequency of the resonant circuit.

5,615,094
NON-DISSIPATIVE SNUBBER CIRCUIT FOR A SWITCHED MODE POWER SUPPLY

Anthony P. Cosentino, Bartlett, and Keith Wetterquist, McHenry, both of Ill., assignors to Power Conversion Products, Inc., Crystal Lake, Ill.

Filed May 26, 1995, Ser. No. 450,161
Int. Cl.[6] H02H *7/122*
U.S. Cl. 363—56 **13 Claims**

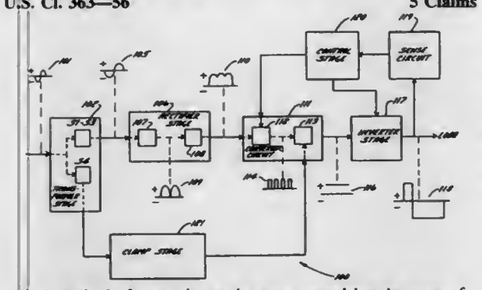


12. A snubber circuit for snubbing the voltage spike generated by a freewheeling diode becoming reversed biased in the secondary of a switched mode power circuit, the secondary receiving a train of on and off pulses from a primary side of the circuit, the secondary having means for supplying current to an output, the snubber circuit comprising:
a snubber capacitor for storing the voltage spike generated by the freewheeling diode becoming reversed biased;
means for coupling the snubber capacitor to the freewheeling diode during an on pulse to allow the snubber capacitor to store the voltage spike generated by the freewheeling diode; and
means for coupling the snubber capacitor to the output during an on pulse to allow the voltage spike stored by snubber capacitor to be directed to the output of the power circuit.

5,615,095
METHOD AND APPARATUS FOR PROTECTING AN INVERTER POWER SUPPLY

Jon O. Reynolds, and Michael D. Madsen, both of Appleton, Wis., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 206,057, Mar. 3, 1994, Pat. No. 5,444,356. This application Jun. 7, 1995, Ser. No. 474,300
Int. Cl.[6] H02H *7/122;* **B23K** *9/09*
U.S. Cl. 363—56 **5 Claims**

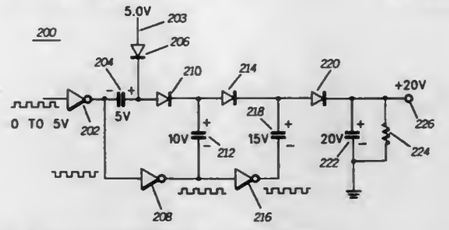


1. A method of protecting an invertor comprising the steps of:
providing a first dc signal;
inverting the first dc signal;
providing a second dc signal;
connecting the first and second dc signals in an additive arrangement across the input of the inverter, thereby clamping the voltage applied to the inverter to the sum of the first and second dc signals; and
clamping the voltage across the invertor to a level more than twice that of the first dc signal.

5,615,096
DIRECT CURRENT POWER SUPPLY CONDITIONING CIRCUIT

Robert E. Stengel, Pompano Beach, and David E. Bockelman, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1994, Ser. No. 254,733
Int. Cl.[6] H01L *17/00*
U.S. Cl. 363—60 **14 Claims**

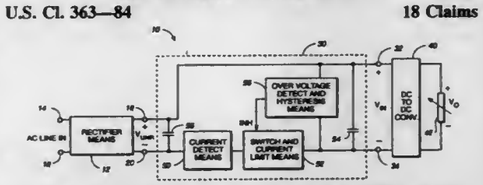


1. An energy supplying device, comprising:
a load;
energy converter means for converting an input supply voltage to an output supply voltage and coupling the output supply voltage with minimum ripple to the load; and
a Voltage Variable Capacitor (VVC) for coupling the load to the energy converter means for storing the output supply voltage, the VVC is adapted to provide a significant amount of energy with insignificant variations in the output supply voltage level in order to minimize the ripple on the output supply voltage as it is supplied to the load.

5,615,097
TRANSIENT OVER VOLTAGE PROTECTION CIRCUIT FOR ELECTRICAL POWER CONVERTERS

David A. Cross, Wrestlingworth, United Kingdom, assignor to Astec International, Ltd., Hong Kong

Filed Sep. 20, 1994, Ser. No. 309,074
Int. Cl.[6] H02M *5/42;* **H02H** *3/22*
U.S. Cl. 363—84 **18 Claims**



1. In an electrical power converter having a rectifier means for converting an input AC voltage to an unregulated DC intermediate voltage, said intermediate voltage appearing on first and second output terminals of said rectifier means, and a DC-to-DC converter for converting said unregulated DC intermediate voltage into one or more regulated output DC voltages, including first and second input terminals, a transient overvoltage protection circuit comprising:
a first switch connected in series between one of said first and second output terminals of said rectifier means and a corresponding one of said first and second input terminals of said converter, said first switch being in a normally closed state so as to create a conductive path between said respective output and input terminals;
means for electrically coupling the other of said first and second output terminals to the other of said first and second input terminals;
a capacitor connected between said first and second input terminals of said converter;
means for detecting when the voltage across said capacitor exceeds a first predetermined value and for causing said first switch to switch to a current limit state in response thereto, wherein said current limit state comprises the periodic switch-

ing of said first switch between a normally closed state and an open state, said first switch being caused to open when the voltage across said capacitor reaches said first predetermined value and to close when the voltage across said capacitor drops to a second predetermined value; and

means for maintaining said first switch in said current limit state until the voltage across said capacitor drops below said second predetermined value.

5,615,098

AC-DC CONVERTER

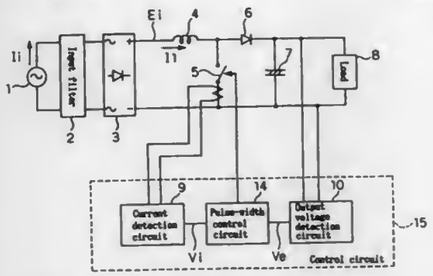
Takuya Ishii, Suita; Yoshio Mizutani, Moriguchi; Haruo Watanabe, Hidaka; Yoshinori Kobayashi, Hanno; Yutaka Sekine, Iruma, and Satoshi Ikeda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1995, Ser. No. 378,773

Claims priority, application Japan, Jan. 28, 1994, 6-008010; Dec. 9, 1994, 6-305780

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—84 **7 Claims**



1. An AC-DC converter comprising:

a rectifying circuit which (1) receives an input AC current having an AC waveform and an input AC voltage and (2) produces a rectified voltage;

a converter circuit comprising a choke coil which receives the rectified voltage, a switch element, and a diode;

a smoothing capacitor which smoothes an output voltage of said converter circuit and supplies the smoothed voltage to a load circuit; and

control circuit means for switching said switching element on and off to restrict a peak value of an input current of said converter circuit in order to substantially stabilize said output voltage and for shaping the AC waveform to a trapezoidal shaped waveform to improve a power factor of the AC-DC converter.

5,615,099

CONTROL SYSTEM FOR SINGLE-PHASE PWM CONVERTER

Yooske Nakazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1995, Ser. No. 518,179

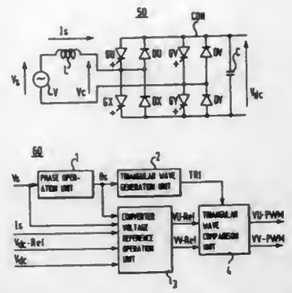
Claims priority, application Japan, Aug. 24, 1994, 6-199704; Nov. 9, 1994, 6-274952; Dec. 19, 1994, 6-314902

Int. Cl.[6] H02M *3/24;5/42;7/44*

U.S. Cl. 363—96 **11 Claims**

1. A control system for a single-phase PWM converter composed of a plurality of power switching devices which inputs an AC single-phase voltage, converts said AC single-phase voltage to a DC voltage under PWM control and outputs said DC voltage, said control system comprising:

converter voltage reference operation means for inputting a converter DC side voltage actual value, a converter DC side voltage reference value, a converter AC side current actual value, a power source voltage, and a power source voltage sine wave phase and for generating voltage references for respective phases;



triangular wave generation means for inputting said power source voltage sine wave phase and for generating a triangular wave, such that when said power source voltage sine wave phase is in a phase wherein a magnitude of a converter AC side current reference value is small a frequency of said triangular wave is low, and when said power source voltage sine wave phase is in a phase wherein said magnitude of said converter AC side current reference value is large a frequency of said triangular wave is high; and

triangular wave comparison means connected to receive said triangular wave and said voltage references for comparing said voltage references and said triangular wave to generate PWM signals for respective phases;

each of said PWM signals being applied to one of said power switching devices in said single-phase PWM converter to PWM control said single-phase PWM converter, respectively.

5,615,100

RESONANT INVERTER

Matthias Radecker, Duisburg, and Horst-Lothar Fiedler, Bochum, both of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der Angewanten Forschung e.V., Munich, Germany

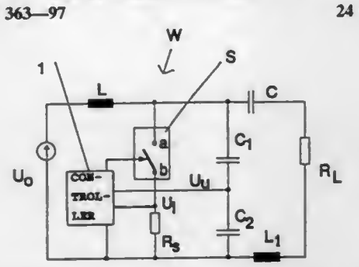
PCT No. PCT/EP94/00196, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/17585, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 25, 1994, Ser. No. 495,435

Claims priority, application Germany, Jan. 26, 1993, 43 02 056.9

Int. Cl.[6] H02M *5/42;* **G05F** *1/656*

U.S. Cl. 363—97 **24 Claims**



1. A resonant inverter comprising a resonant circuit, a source, an electronic switch and a control circuit comprising:

a voltage detection circuit coupled to said electronic switch responding to a voltage value of a voltage drop across the electronic switch when the voltage drop has a predetermined relationship to a voltage reference;

a current detection circuit coupled to said electronic switch responding to a current value of current flowing through at least one of the switch and the resonant circuit, when the current value has a predetermined relationship to a current reference, and

a control signal generating circuit for generating a control signal for the electronic switch to switch the electronic switch to a first switching state when the voltage detection circuit responds and to a second switching state when the current detection circuit responds.

5,615,101

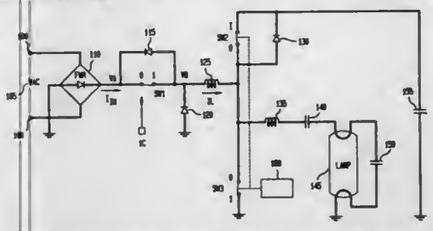
POWER CONVERTER WITH HIGH POWER FACTOR

John K. Moriarty, Reading, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 365,656

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—101 **15 Claims**



1. A buck-boost power converter for powering a load with an AC source, comprising:

(a) an AC to DC conversion device;

(b) a resonator for alternately applying an alternating voltage across said load, said resonator having:

(i) a resonant circuit having a resonant coil and a resonant capacitor;

(ii) a first switching device and a second switching device, each being connected across said load through said resonant circuit; and

(iii) a controller for alternately switching on said first and second switching devices at a switching frequency substantially higher than a frequency of said AC source;

(c) a choke operatively connected to said first and second switching devices and said resonant circuit, for alternately providing energy to said resonant circuit; and

(d) a third switching device for selectively connecting said choke to said AC to DC conversion device, said third switching device being controlled to switch substantially in tandem with one of said first and second switching devices for causing said power converter to switch in a zero voltage switching mode, wherein average current drawn from said AC source over each high frequency switching cycle is proportional to instantaneous voltage of said AC source to provide operation of said power converter with a quasi-resonant effect and with a high power factor.

5,615,102

INVERTER APPARATUS AND METHOD OF OPERATION THEREFOR

Masakatsu Daijo, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

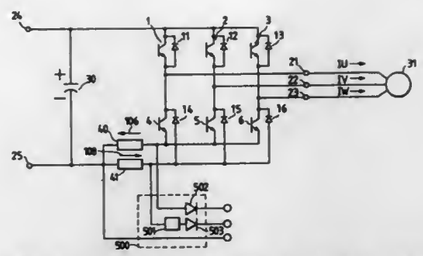
Filed Mar. 29, 1994, Ser. No. 219,462

Claims priority, application Japan, Mar. 30, 1993, 5-071719

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—132 **20 Claims**

1. An inverter apparatus comprising:



a first arm, comprising a plurality of transistors parallel-connected to a first direct current bus and a plurality of diodes parallel-connected to a second direct current bus;

a second arm comprising a plurality of transistors parallel-connected to a third direct current bus and a plurality of diodes parallel-connected to a fourth direct current bus;

a first current detector operative to detect the current in at least one of said first and third direct current buses;

a second current detector operative to detect the current in at least one of said second and fourth direct current buses; and

means connected to said first and second current detectors for selecting the larger one of said two detected currents.

5,615,103

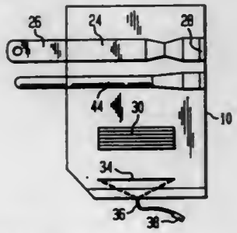
AC-DC ADAPTOR/BATTERY ELIMINATOR

Richard A. Steindam, 57 Riverdale Rd., Valley Stream, N.Y. 11581

Filed Oct. 30, 1995, Ser. No. 550,383

Int. Cl.[6] H02J *4/00*

U.S. Cl. 363—146 **8 Claims**



1. An AC-DC adaptor comprising:

first and second identical elongated electrically conductive members, each member having a blade shaped element extending longitudinally at one end and having a longitudinally extending socket shaped element at an opposite end;

a hollow enclosed electrically insulated housing, said housing having at least two opposite surfaces, one surface having at least two spaced slotted openings, the opposite surface having at least two spaced slotted openings, each slotted opening in one surface being aligned with a corresponding slotted opening in the opposite surface to form an aligned pair of openings, each of the first and second members extending through said housing and disposed between a corresponding one of said aligned opening pairs, the socket element of said each member being disposed in the opening of the aligned pair in said one surface, the blade element of said each member being disposed in the slotted opening of the aligned pair in said opposite surface and extending out of the housing whereby the two blade elements extending out of the opposite surface of the housing can be removably engaged with a female outlet connected to a source of alternating current and a male connector can be detachably engaged with the socket elements in the openings in said one surface so that electrical current can flow from the female outlet through the housing into the male connector.

5,615,104

MONITORING METHOD AND APPARATUS USING A PROGRAMMABLE LOGIC CONTROLLER

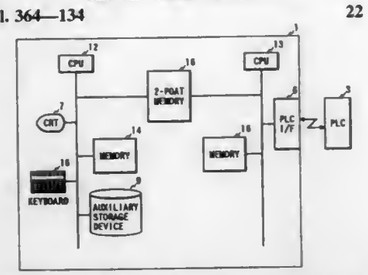
Shigeharu Takai; Hideo Shikida; Hiroki Kato, and Tatsuhiro Ikeno, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,640

Claims priority, application Japan, Mar. 31, 1994, 6-063035; Mar. 24, 1995, 7-066444

Int. Cl.[6] G05B *15/00; 19/18*

U.S. Cl. 364—134 **22 Claims**



1. A monitoring apparatus for use in a system having a device memory, in which information from input equipment which detects the state of an object to be controlled is stored, and a predetermined number of programmable controllers for controlling the object to be controlled by executing a given sequence program while referring to the contents of said device memory, said apparatus comprising:

a first processor which reads, from a first memory in which a predetermined number of screen data representing a screen display for displaying on a display unit are stored, a predetermined number of addresses of said device memory, which are described in said predetermined number of screen data, and writes said predetermined number of addresses to a two-port memory; and

a second processor which sends each of said predetermined number of addresses written in said two-port memory to at least one of said programmable controllers, reads the contents at each of said addresses of said device memory from said at least one programmable controller, and writes, to said two-port memory, the contents read or a result obtained by performing predetermined calculations on the read contents;

said first processor further executes display processes for displaying a screen display on said display unit based on said predetermined number of screen data, reads, based on said predetermined number of screen data, parts of the contents written in said two-port memory by said second processor, which are necessary for screen display based on said predetermined number of screen data, and executes a display process to display the read parts of the contents; and

said first and second processors perform their respective operations at the same time independently of each other.

5,615,105

MULTICHANNEL POWER DISTRIBUTION SYSTEM

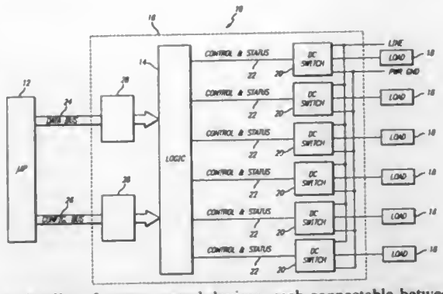
Farshid Tofigh, Misson Viejo; Parminder S. Brar, Huntington Beach; Yen-Kuei Tsao, Hacienda Heights; Evan Clements, Dana Point, all of Calif., and Joseph Maier, Wechingen, Germany, assignors to Leach Corporation, Buena Park, Calif.

Filed Jul. 7, 1994, Ser. No. 271,843

Int. Cl.[6] G05B *11/01;* **H02J** *3/10*

U.S. Cl. 364—138 **47 Claims**

1. A multichannel power distribution system for individually controlling power from at least one source to a plurality of loads, comprising:



a plurality of power control devices, each connectable between said at least one source and one of said loads, the power control devices providing at least one status signal representative of current or voltage at the load;

at least one logic stage responsive to said status signals to impose preselected operational characteristics on the power control devices; and

isolation circuitry between the power control devices and the logic stage;

the isolation circuitry having a modulator for converting the status signal to a status pulse train of modulated pulse width; and

the logic stage including decoder logic for measuring the pulse width of the status pulse train.

5,615,106

CONTROL DEVICE

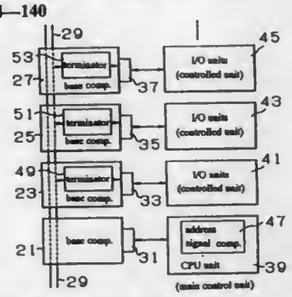
Tooru Yoshino, Yokohama; Akihiro Ishiwata, Kawasaki, and Eiji Miyamura, Obta-ku, all of Japan, assignors to RKC Instrument, Inc., Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,570

Claims priority, application Japan, Jul. 12, 1994, 6-181997

Int. Cl.[6] G06F *19/00; 13/10*

U.S. Cl. 364—140 **7 Claims**



1. A control device, comprising:

a plurality of base components connected to one another in series by a composite signal line including a plurality of address signal lines;

a control unit fitted onto one of said base components;

a plurality of controlled units adapted to be controlled by said control unit and each fitted onto a selected different one of the remaining base components;

an address signal terminator provided in each of said base components for terminating a different one of said address signal lines, and connected to the controlled unit fitted on the associated base component; and

a controller provided in said control unit for selecting each of said address signal lines to assign an address to the controlled unit associated with the base component at which said selected address signal line is terminated by the corresponding address signal terminator, and assigning a unique address to said controlled unit.

5,615,107

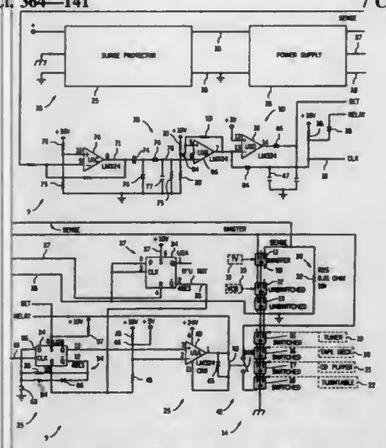
POWER CONTROL METHOD AND APPARATUS

Peter C. DeAngelis, Carlsbad, Calif., assignor to Fiskars Inc., Madison, Wis.

Filed May 16, 1995, Ser. No. 441,765

Int. Cl.[6] G05B *11/01;* **H01H** *43/04*

U.S. Cl. 364—141 **7 Claims**



1. A power control system responsive to master sensing means detecting the activating and deactivating of master electrical equipment connected to a master outlet for controlling slave electrical equipment connected electrically to at least one switchable slave outlet, comprising:

switching means coupled to the slave outlet for enabling it to be electrically energized on or off in response to the master electrical equipment being switched between on and off states respectively;

switching control means coupled to said switching means for controlling it so that the slave outlet is switched electrically between on and off states;

time delay means responsive to said control means being set for initiating a time delay interval signal to determine whether a slave only bypass state is desired; and

said slave outlet control means responsive to said time delay signal for electrically enabling said switching means whenever the master equipment is switched on, for electrically enabling and maintaining on said switching means wherein the master equipment is switched on and then off within about T seconds, and for electrically disabling said switching means whenever the master equipment is switched on and then off but not within about T seconds; and

detector means responsive to the master sensing means detecting that the master equipment has been de-activated for maintaining said control means set when the master equipment was activated and then deactivated prior to the expiration of the time out interval of T seconds to cause said switching means and the slave outlets to continue to be energized;

whereby whenever the master equipment connected electrically to the master outlet is switched on and then off within about T seconds, the master equipment is electrically de-energized and the slave outlet is continued to be electrically energized to maintain the slave equipment to be electrically energized.

5,615,108

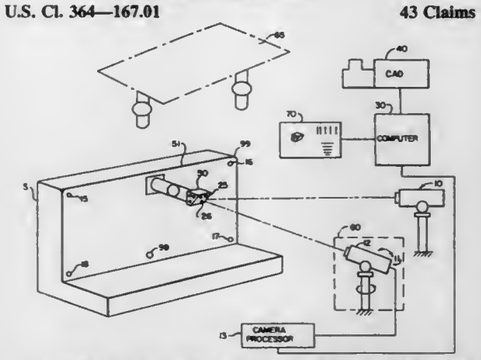
VISION ASSISTED FIXTURE CONSTRUCTION

Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines Inc., Windsor, Canada

Division of Ser. No. 158,310, Nov. 29, 1993, Pat. No. 5,455,765, which is a division of Ser. No. 866,653, Apr. 8, 1992, Pat. No. 5,267,143, which is a continuation of Ser. No. 643,905, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 525,706, May 21, 1990, abandoned, which is a continuation of Ser. No. 382,497, Jul. 21, 1989, abandoned, which is a division of Ser. No. 113,363, Oct. 27, 1987, Pat. No. 4,851,905, which is a continuation of Ser. No. 22,596, Mar. 4, 1987, abandoned, which is a continuation of Ser. No. 660,279, Oct. 12, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 466,790

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—167.01 **43 Claims**



1. A method of providing a fixture having a base and a plurality of locating members for holding an object in a predetermined position in the fixture comprising the steps of:

providing said locating members on the fixture; and

positioning at least one of said locating members in an object-holding position to hold the object in the predetermined position, said step of positioning the locating members comprising the steps of:

(a) positioning the locating member in a first position relative to said base,

(b) automatically sensing data relating to the first position of the locating member,

(c) automatically comparing the sensed first position of the locating member with the predetermined object-holding position of the locating member to produce a comparison,

(d) automatically generating instructions, utilizing the comparison, for repositioning the locating member from the first position to the predetermined object-holding position, and

(e) moving the locating member to a second position pursuant to the instructions in order to position the locating member at the predetermined object-holding position.

5,615,109

METHOD OF AND SYSTEM FOR GENERATING FEASIBLE, PROFIT MAXIMIZING REQUISITION SETS

Jeff Eder, 15422 SE. 7th Pl., Bellevue, Wash. 98007

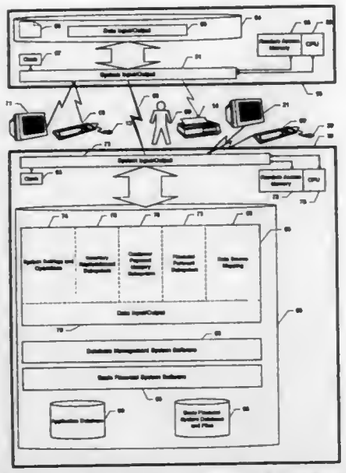
Filed May 24, 1995, Ser. No. 448,826

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—208 **10 Claims**

1. In a computer, a method of and system for generating feasible, profit maximizing requisition sets for products purchased under a variety of discount regimes, the method comprising the steps of:

a) specifying by user input to said computer the type of analysis to be run, the controlling forecast, target customer service levels, minimum capital levels and the primary source of historical transaction, forecast element specification and cur-



rent balance information, user input, electronic files or a basic financial system database,

b) specifying by user input to said computer a plurality of templates and data definitions for use in extracting, converting and storing data from the primary source,

c) extracting, converting and storing the source data in the application database of the present system in a format suitable for use in the present system,

d) applying a set of prescribed mathematical algorithms, as implemented by a computer program stored in the computer system, to the extracted source data to create, display and store forecasts of sales by account, sales by customer group, sales by item, cash receipts by account as a function of sales by account and cash receipts by customer group as a function of sales by customer group,

e) generating and storing a variable with each forecast element that is calculated in accordance with system default or user specified weighting criteria that facilitates forecast synchronization and obsolescence risk reduction,

f.) applying a set of prescribed mathematical algorithms, as implemented by a computer program stored in the computer system, to the forecasts of sales by account, sales by customer group and sales by item, cash receipts by account and cash receipts by customer group to create and store a multivalent composite forecast of sales and of cash receipts,

g) using the stored variable for each forecast element to prioritize and quantify the adjustments made to each forecast element in the sales by account, sales by customer group, sales by item, cash receipt by account and cash receipt by customer group forecasts as they are adjusted to exactly match the controlling forecast designated by the user,

h) applying a set of prescribed mathematical algorithms, as implemented by a computer program stored in the computer system, to said sales by item forecast and item balance information to create a set of preliminary requisitions for all items that satisfy forecast demand with current vendors and units of measure while maintaining user specified service level targets,

i) calculating the profit maximizing requisition set for all items under a variety of discount regimes within the constraints on vendor and unit of measure substitution established by the user,

j) applying a set of prescribed mathematical algorithms as implemented by a computer program stored in the computer system, to account history information and said forecast of sales by account to create a forecast of expenses by account as well as a balance sheet account balance forecast for use in a financial forecast,

k) creating and displaying a financial forecast on the computer system in the format specified by the user,

l) determining if the forecast financial situation of the commercial enterprise provides for sufficient funds to purchase the profit maximizing set of requisitions (steps a–p are repeated until this condition is satisfied),

m) calculating potential profit enhancing requisition sets for specific items under a variety of discount regimes, within the forecast financial constraints after relaxing user specified restrictions on global vendor and unit of measure substitution,

n) creating and then displaying on the computer system a listing of the potential profit enhancing changes to the profit maximizing requisition set listed in descending capital efficiency order,

o) specifying by user input to said computer the specific profit enhancing changes that are to be included in the profit maximizing requisition set,

p) displaying on the computer system a report that summarizes the final profit maximizing requisition set and the forecast inventory status, and

q) optionally printing financial management and requisition summary reports.

5,615,110

SECURITY SYSTEM FOR NON-CASH TRANSACTIONS

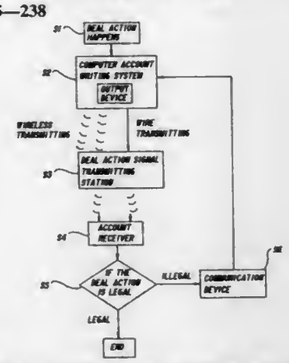
Kam-Fu Wong, c/o Star Paging (Holding) Ltd., 1/F., Chung Nam Centre, 414 Kwun Tong Road, Kwun Tong, Kowloon, Hong Kong

Filed Aug. 22, 1994, Ser. No. 294,144

Claims priority, application China, May 19, 1994, 94105095.5

Int. Cl.[6] **G06F** *17/60;* **G08B** *5/22*

U.S. Cl. 395—238 **26 Claims**



1. A method of informing the owner of an account that a non-cash transaction is taking place relative to the account, comprising:

providing a transaction device, a computer account writing system of a company associated with the owner's account, a transaction signal transmitting station, and an account receiver;

electronically transmitting information from the transaction device to the computer account writing system of the company associated with the owner's account so as to transmit information concerning a non-cash transaction taking place;

referring in the computer account writing system to a private address code of the owner of the account;

outputting signals including transaction information signals by utilizing an output device in the computer account writing system to a transaction signal transmitting station;

processing signals received from the output device in the transaction signal transmitting station;

transmitting transaction signals from the transaction signal transmitting station to an account receiver of the account owner;

informing the owner of the account of the nature of the non-cash transaction; and

waiting a predetermined period of time before granting authorization for the non-cash transaction, so as to give the owner of the account an opportunity to prevent the non-cash transaction.

5,615,111

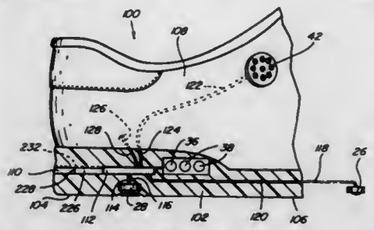
RECORD AND PLAYBACK MEANS FOR FOOTWEAR

Eric J. Raskas, and Steven S. Schuver, both of St. Louis, Mo., assignors to Solefound, Inc., St. Louis, Mo.

Continuation of Ser. No. 247,764, May 23, 1994, abandoned. This application May 16, 1996, Ser. No. 650,004

Int. Cl.[6] **A43B** *3/00*

U.S. Cl. 364—410 **14 Claims**



1. Record and playback apparatus for footwear comprising a shoe having an upper portion and a sole having a side and a cavity and the shoe having incorporated therein a removable memory module, means for retaining the memory module within the cavity of the sole, the memory module comprising a memory means having stored therein signals, means for playback back the stored signals from the memory means, means for controlling the playback means to retrieve from the memory means the stored signals, the controlling means further comprising switch means positioned on the side of the sole, means for receiving the stored signals from the playback means for transmitting the stored signals, the apparatus further comprising means for receiving audio signals, means for recording the audio signals and storing the recorded audio signals in the memory means, the playback means for playing back the recorded audio signals from the memory means, the controlling means for controlling the recording means and the playback means, and the transmitting means for transmitting the recorded audio signals.

5,615,112

SYNTHESIZED OBJECT-ORIENTED ENTITY-RELATIONSHIP (SOOER) MODEL FOR COUPLED KNOWLEDGE-BASE/DATABASE OF IMAGE RETRIEVAL EXPERT SYSTEM (IRES)

Olivia R. Liu Sheng; Chih-Ping Wei, both of Tucson, and Takeshi Ozeki, Foster City, all of Ariz., assignors to Arizona Board of Regents, Tucson, Ariz., and Toshiba Corporation, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,504

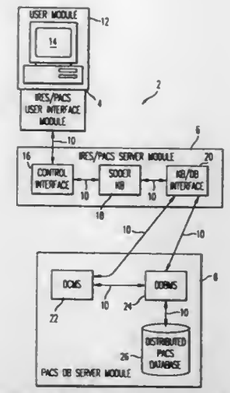
Int. Cl.[6] **G06F** *15/00*

U.S. Cl. 395—615 **35 Claims**

1. A knowledge-based system for the retrieval of images based on expert knowledge and patient information stored in a computer system, the knowledge-based system comprising:

a first memory means for storing a knowledge-base comprising the expert knowledge information including structural knowledge on a plurality of classes, general procedural knowledge, heuristic knowledge stored in the form of rules, and control knowledge for controlling the functions of searching hierarchies of the plurality of classes and dynamically creating objects;

a second memory means for storing a database comprising the patient information including patient data, examination data and images;



knowledge-base/database interface means for coupling said database to said knowledge-base for receiving and transmitting information therebetween;

means for storing new patient information in the second memory means;

reasoning means for searching the hierarchies of the plurality of classes stored in the knowledge-base, for dynamically creating objects and for selecting rules in response to storing the new patient information in the second memory means, said searching and selecting being conducted based on said stored control knowledge, structural knowledge and general procedural knowledge, and said stored patient information;

retrieving means to search the patient information stored in the database and to retrieve the examination data indicated by the execution of the rules selected by said reasoning means;

user interface means for accessing said stored patient information from said database and outputting the patient information retrieved by said retrieving means; and

control interface means for coupling said user interface means to said knowledge-base for receiving and transmitting information and controlling the flow of information therebetween.

5,615,113

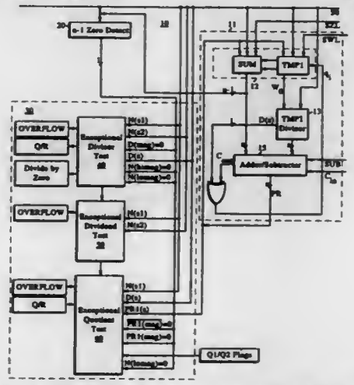
EARLY SIGNALING OF NO-OVERFLOW FOR NONRESTORING TWOS COMPLEMENT DIVISION

David W. Matula, Dallas, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Jun. 16, 1995, Ser. No. 491,182

Int. Cl.[6] **G06F** *7/52*

U.S. Cl. 364—766 **6 Claims**



1. An iterative division system for performing nonrestoring division of a 2n bit dividend N by an n bit divisor D to obtain an n-bit quotient Q and an n-bit remainder R (or signal overflow or

divide by zero), with N, D, Q, and R being in 2's complement format, the division system signaling early a no-overflow condition when an iterative division operation will determine a quotient an remainder pair Q/R without overflow, such early no-overflow signaling being based on an input dividend N and an input divisor D, and a 2n−1 bit first partial remainder of value [N−2^{n-1} D], comprising:

(a) iterative divide circuitry that receives the input dividend N and the input divisor D, where (i) the dividend N is characterized by a 2-bit sign field N(s1s2) formed by a first sign bit N(s1) and a second sign bit N(s2), a high order n−1 dividend magnitude bits N(himag), and a low order n−1 dividend magnitude bits N(lomag), such that N(s1) and N(himag) form a 2's complement number N(hi), and (ii) where the input divisor D is characterized by a leading sign bit D(s) and n−1 divisor magnitude bits D(mag);

(b) in a first operation, the iterative divide circuitry computes the difference between N(hi) and D to obtain an n-bit first partial remainder PR1 corresponding to the first n bits of the first partial remainder of value [N−2^{n-1} D] including a leading sign bit PR1(s); and

(c) no-overflow signaling logic that receives (i) the divisor sign and magnitude D(s) and D(mag), (ii) the two bit sign field of the dividend N(s1s2), (iii) and the first partial remainder of value [N−2^{n-1} D] corresponding to PR1 and N(lomag);

(d) the no-overflow signaling logic including zero detect logic that detects whether both the divisor magnitude D(mag) and the first partial remainder are zero;

(e) the no-overflow signaling logic signaling a no-overflow condition if (i) the divisor magnitude D(mag) is not equal to zero and (ii) the divident sign bits N(s1) and N(s2) are equal, and (iii) the sign of the first partial remainder PR1(s) in not equal to the dividend sign bit N(s2), and (iv) the divisor and dividend are not both negative, or if they are, (v) the first partial remainder corresponding to PR1 and N(lomag) is not equal to zero.

5,615,114

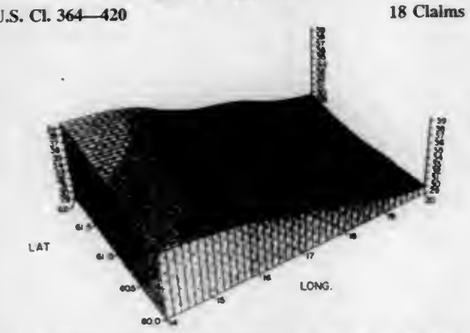
METHOD FOR MAPPING SEA LEVEL UNDULATIONS WITH APPLICATIONS TO MINERAL AND HYDROCARBON PROSPECTING

Per-Gunnar Nordin, Lund, Sweden, assignor to Petroscan AB, Goteborg, Sweden

Continuation-in-part of Ser. No. 136,710, Dec. 22, 1987, Pat. No. 5,001,634, which is a continuation-in-part of Ser. No. 946,428, Dec. 23, 1986, abandoned. This application Dec. 5, 1990, Ser. No. 622,553

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—420 **18 Claims**



1. A method executed by a computer of making for an area a map or a representation of local variations in the position of a geoid which have an amplitude less than about 1 meter and are caused by density variations in an underlying sea floor, said map or representation being intended primarily for use in determining part areas of the sea floor with increased probability of deposits of natural resources, the density of which part areas distinguishes from that of surroundings, downward bends in the geoid towards the sea floor indicating part areas having a density lower than that of the surroundings, and upward bends in the geoid from the sea floor indicating part areas having a density higher than that of the surroundings, said method utilizing height values which indicate sea surface height in relation to a reference level and which have been calculated by means of altimeter data measured from a flying craft and by means of location information about orbits of the flying craft during measurement of the altimeter data, said method comprising:

sorting out incorrect and improbable height values;

adapting the height values corresponding to different orbits of the flying craft to one another, such that maximum agreement of height values is obtained in crossing points of the orbits, whereby relative values of the geoid position are established;

filtering off long-wave variations with a wavelength exceeding about 200 km in the geoid position;

amplifying variations in the geoid position which fall within a preselected range of values;

adjusting the geoid position with respect to interference from the water depth down to the sea floor and compensating the geoid position for isostatic effects, while taking into account the effect of any land within or close to said area.

5,615,115

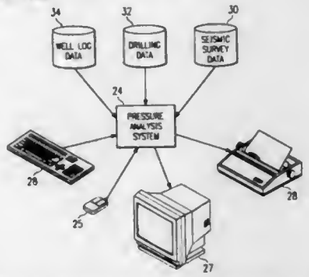
METHOD OF DETERMINING PORE PRESSURE AND FRACTURE GRADIENT PROFILES USING SEISMIC TRANSIT TIMES

Roy B. Shilling, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 15, 1994, Ser. No. 356,139

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—421 **13 Claims**



1. A method of operating a computer to generate a pore pressure gradient profile at a proposed drilling location of the earth away from an existing well, comprising the steps of:

retrieving, from memory, seismic survey information for the portion of the earth including the proposed drilling location and a well location corresponding to the existing well;

generating a two-dimensional overburden gradient cross section for a region including the proposed drilling location, based upon the retrieved seismic survey data;

generating a two-dimensional normal compaction trend line data cross section for the region including the proposed drilling location, based upon the retrieved seismic survey data; and

generating a pore pressure gradient for the proposed drilling location by applying the Eaton method to the overburden gradient and normal compaction trend line data for the proposed drilling location.

5,615,116

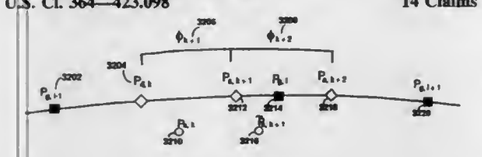
APPARATUS AND METHOD FOR AUTONOMOUS VEHICLE NAVIGATION USING PATH DATA

Adam J. Gudat, Edelstein, Ill.; Prithvi N. Rao, Pittsburgh, Pa.; Gary K. Shaffer, Butler, Pa.; WenFan Shi; Dong H. Shin, both of Pittsburgh, Pa.; William L. Whittaker, Pittsburgh, Pa.; Karl W. Kleimenhagen, Peoria, Ill.; Jay H. West, Pittsburgh, Pa.; Richard G. Clow, Phoenix, Ariz.; Sanjiv J. Singh, Pittsburgh, Pa.; Dana A. Christensen, Peoria, Ill.; Carl A. Kemner, Peoria Heights, Ill.; Walter J. Bradbury, Peoria, Ill.; Craig L. Koehrsen, Peoria, Ill.; Christos T. Kyrtsos, Peoria, Ill.; Norman K. Lay, Peoria, Ill.; Joel L. Peterson, Peoria, Ill.; Larry E. Schmidt, Peoria, Ill.; Darrell E. Stafford, Dunlap, Ill.; Louis J. Weinbeck, Peoria, Ill., and Lonnie J. Devier, Pittsburgh, Pa., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Feb. 5, 1990. This application May 1, 1995, Ser. No. 431,815

Int. Cl.^{6} G06F *165/00*

U.S. Cl. 364—423.098 **14 Claims**



1. A system for navigating a vehicle along a predetermined route comprising:

means for storing route data representing the predetermined route, said route data including a plurality of contiguous path segments, each path segment connecting two nodes;

means for storing path data for the predetermined route, said path data including postures of the vehicle along each path segment;

means for retrieving from said route data storing means route data representing the predetermined route;

means for retrieving from said path data storing means path data for said retrieved route data;

means for generating a path from said retrieved path data, said path representing at least a portion of said predetermined route;

means for associating vehicle commands with said path;

means for executing said associated vehicle commands to cause the vehicle to follow said path;

means for periodically calculating errors in following said path; and

means, responsive to said calculated errors, for adjusting execution of said associated vehicle commands to reduce said calculated errors so that the vehicle tracks said path with a high degree of accuracy.

5,615,117

METHOD FOR CONTROLLING A FRONT AND REAR WHEEL STEERING SYSTEM

Mitsuya Serizawa, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

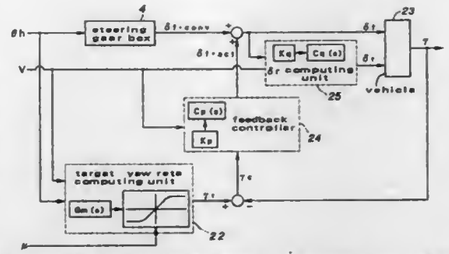
Filed Oct. 25, 1994, Ser. No. 328,844

Claims priority, application Japan, Dec. 1, 1993, 5-338860

Int. Cl.^{6} B62D *6/04*

U.S. Cl. 364—424.052 **10 Claims**

1. A method for controlling a front and rear wheel steering system in which front wheels of a vehicle are steered according to a combination of a steering wheel input and an output from a compensatory front wheel steering actuator, and rear wheels of said vehicle are steered by a rear wheel steering actuator, the method comprising the steps of:



defining a target yaw rate according to a travelling speed of said vehicle and said steering wheel input;

detecting an actual yaw rate of said vehicle;

executing a feedback control of said compensatory front wheel steering actuator according a deviation of an actual yaw rate from said target yaw rate; and

executing a feedfoward control of said rear wheel steering actuator so as to reudce a side slip angle of said vehicle substantially to zero.

5,615,118

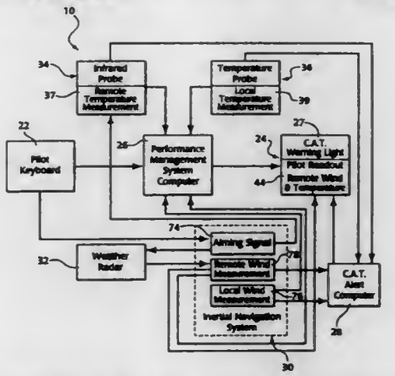
ONBOARD AIRCRAFT FLIGHT PATH OPTIMIZATION SYSTEM

Robert K. Frank, 80 Ram Island Dr., P.O. Box 615, Shelter Island, N.Y. 11964

Filed Dec. 11, 1995, Ser. No. 570,598

Int. Cl.^{6} G06F *165/00;* **G01S** *13/95*

U.S. Cl. 364—424.013 **45 Claims**



1. An onboard aircraft flight optimization system, comprising:

a) an onboard performance management computer;

b) an onboard control display unit for inputting a position remote from an aircraft into said onboard performance management computer;

c) an onboard infrared probe for determining temperature at the position remote from the aircraft and generating a remote temperature signal received by said onboard performance management computer;

d) an onboard temperature probe for determining temperature at the aircraft and generating a local temperature signal received by said onboard performance management computer;

e) an onboard weather radar for determining wind at the position remote from the aircraft and generating a remote wind signal received by said onboard performance management computer;

f) an onboard inertial navigation system for determining wind at the aircraft and generating a local wind signal received by said onboard performance management computer; and

g) onboard comparing means disposed in said onboard performance management computer for comparing said remote

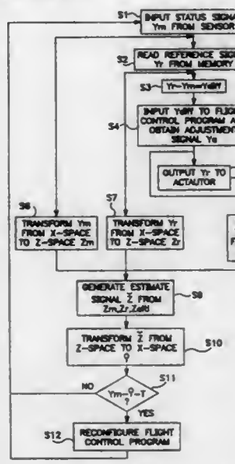
wind signal with said local wind signal and comparing said remote temperature signal with said local temperature signal so as to determine the position remote from the aircraft where said remote wind signal is less than said local wind signal so that an altitude can be achieved that has less head wind and is therefore more economically efficient.

5,615,119

FAULT TOLERANT AUTOMATIC CONTROL SYSTEM UTILIZING ANALYTIC REDUNDANCY

David W. Vos, Boston, Mass., assignor to Aurora Flight Sciences Corporation, Manassas, Va.

Filed Jun. 7, 1995, Ser. No. 477,500
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—424.013 20 Claims



7. A fault tolerant aircraft flight control system for detecting a failure in at least one of a flight control sensor and a flight control actuator, and for reconfiguring the flight control system to minimize the detected failure, comprising:

input means for receiving a status signal indicating a status of said at least one of a flight control sensor and a flight control actuator;

processing means for (i) comparing the received status signal to a predetermined flight control reference signal and providing a flight control adjustment signal based on the comparison, (ii) transforming the status signal, the reference signal, and the adjustment signal into a linear time invariant coordinate system, (iii) determining an expected response of the at least one of a flight control sensor and a flight control actuator based on the transformed signals in the linear time invariant coordinate system, and generating an expected response signal corresponding thereto, (iv) transforming the expected response signal from the linear time invariant coordinate system to a physical coordinate system, (v) comparing the transformed expected response signal to the received status signal and generating an error signal corresponding thereto, (vi) determining that a failure has occurred in the at least one of a flight control sensor and a flight control actuator based on the error signal, and (vii) generating a reconfigure signal to reconfigure the flight control system to minimize the detected failure; and

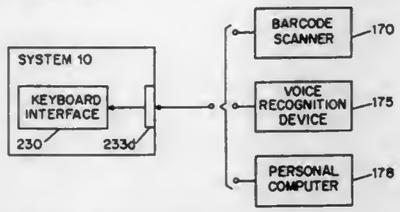
output means for outputting a flight control adjustment signal to the at least one of a flight control sensor and a flight control actuator based on the reconfigured flight control system.

5,615,120

ELECTRONIC POSTAGE SCALE SYSTEM AND METHOD

Robert G. Schwartz, Branford; Allen A. Crowe, Prospect; James S. Emmett, Derby; Fetneh Eskandari, Middletown; Martin F. Palange, Monroe; Mark E. Simcik, Bloomfield; Robert Swanbery, Fairfield; Robert J. Japenga, Simsbury; Joseph L. Lehman, Canton; William A. Weirsman, Orange, and George P. Rahgo, Milford, all of Conn., assignors to Ascom Hasler Mailing Systems, Inc., Shelton, Conn.

Division of Ser. No. 139,898, Oct. 14, 1993. This application Jun. 7, 1995, Ser. No. 478,458
Int. Cl.[6] G06K *7/14; G07B 17/02*
U.S. Cl. 364—464.17 10 Claims



1. An electronic scale system comprising:

a weight evaluator for determining the weight of a package;

a non-keyboard input device for accepting an input representative of a selection of service whereby said package is to be shipped, said non-keyboard device comprising an element for generating at least one keyboard signal from an accepted input and configured to transmit the at least one keyboard signal representative of said selection of service;

a processing element for determining shipping cost of said package as a function of said weight and said selection of service; and

a keyboard interface for receiving said at least one keyboard signal from said non-keyboard input device and transferring said signal to said processing element.

5,615,121

SYSTEM AND METHOD FOR SCHEDULING SERVICE PROVIDERS TO PERFORM CUSTOMER SERVICE REQUESTS

Djangir A. Babayev; Richard M. Berger, both of Boulder; Vincil C. Dean, Edgewater; Ronald L. Hansen, Louisville, and Scott H. Parrish, Boulder, all of Colo., assignors to U S West Technologies, Inc., Boulder, Colo.

Filed Jan. 31, 1995, Ser. No. 381,657
Int. Cl.[6] G06F *19/00;17/60*
U.S. Cl. 395—209 48 Claims

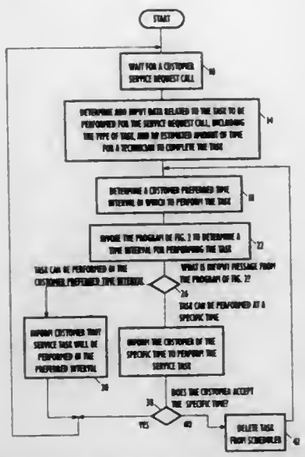
1. A method for scheduling a predetermined plurality of resources, comprising the steps of:

receiving a plurality of requests for services requiring at least some of said predetermined plurality of resources, said plurality of requests including a first request and a second request;

establishing a schedule for said plurality of requests, comprising the step of performing steps (A1)–(A4) for at least one of the first and second request;

(A1) obtaining information related to the request, said information including (a) a preferred time interval for performing a task related to the request for providing a requested service and (b) an estimate related to an amount of said predetermined plurality of resources for performing the task related to the request, wherein said preferred time interval is longer than a time estimated to perform said task associated with the revest;

(A2) determining an actual time interval within which to allocate said estimated amount of resources for performing the task, said actual time interval being determined using



said preferred time interval as input for solving a combinatorial optimization model, wherein said actual time interval is longer than said time estimated to perform said task associated with the request;

(A3) outputting a message indicating the actual time interval determined in step (A2), wherein said message is output substantially immediately after receiving the request; and

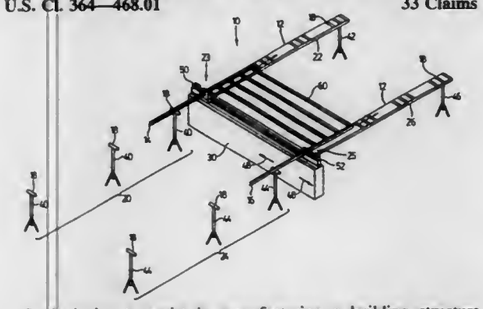
(A4) retaining said actual time interval for the request as part of said schedule, said actual time interval providing scheduling flexibility in that said task associated with the request may be commenced at more than one time within said actual time interval and yet still be completed within said actual time interval.

5,615,122

METHOD AND APPARATUS TO CONSTRUCT BUILDING COMPONENTS

Frank Lacrosse, 204 Knollwood, Quincy, Ill. 62301

Filed Jan. 13, 1995, Ser. No. 372,322
Int. Cl.[6] G06F *19/00;* B21D *39/03;* B27F *7/00*
U.S. Cl. 364—468.01 33 Claims



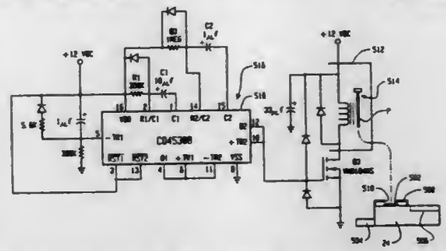
1. A device to assist in manufacturing a building structure having first and second metallic channel-shaped framing members and a plurality of metallic studs extending between said framing members, said device comprising: a support table having a support surface, conveyor means located on said support surface, said conveyor means adapted to support said first and second framing members and to permit said framing members to move back and forth along said support surface, grasping means to grip said building structure, drive means for driving said grasping means to move said building structure back and forth along said support surface, controller means adapted to receive information for determining the location of studs in said building structure and for controlling said drive means and for translating said building structure predetermined distances along said support surface, stud locating means for locating a stud between said framing members, first and second assembly means located adjacent said stud locating means for permanently fastening said stud to said first and second framing members in a permanent configuration.

5,615,123

SYSTEM FOR CREATING AND PRODUCING CUSTOM CARD PRODUCTS

Leonard Davidson, Los Angeles; Matt Russell, Glendale; Scott Allred, Riverside, and Michael S. Russell, Glendale, all of Calif., assignors to CreataCard, Inc., Cleveland, Ohio

Filed Apr. 2, 1991, Ser. No. 679,263
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—479.03 10 Claims



1. A method of playing back a relatively large-sized sound data file accessible by a data handling apparatus whereby downloading and reproducing of the file can be terminated at one of a number of successive intervals during the downloading and reproducing operations in response to an interrupt command, the method comprising the steps of:

storing an entire sound data file in sound storage means in a manner such that selected portions of the sound data file can be accessed by said apparatus from the sound storage means;

allocating a first memory area in the apparatus at a time when the sound data file is called for during operation of the apparatus;

reading out a first block of the sound data file from the sound storage means into the first memory area of the apparatus;

detecting if a sound interrupt command has been generated in the apparatus through reading out of the first block of the sound data file from the sound storage means into the first memory area of the apparatus, and terminating operations with respect to said sound data file if said sound interrupt command is detected;

reading out additional blocks of the sound data file in succession from the sound storage means into the first memory area of the apparatus as long as no sound interrupt command is detected prior to reading out of each successive block of the sound data file and until blocks representing the entire sound data file are read out of the sound storage means into the first memory area of the apparatus;

terminating operations with respect to said sound data file if said sound interrupt command is detected prior to reading out of a next successive block of the sound data file from the sound storage means;

allocating expanded memory means associated with the apparatus to have a capacity adequate to store the entire sound data file;

moving blocks of the sound data file from said first memory area into said expanded memory means until the entire sound data file is moved into said expanded memory means in the absence of said sound interrupt command;

allocating a second memory area of the apparatus and moving blocks of the sound data file from the expanded memory means into said second memory area;

reproducing from said second memory area the blocks of the sound data file as moved from said expanded memory means into said second memory area while detecting, after reproduc-

tion of each block of the sound data file in said second memory area, if a sound interrupt command has been generated in the apparatus; and

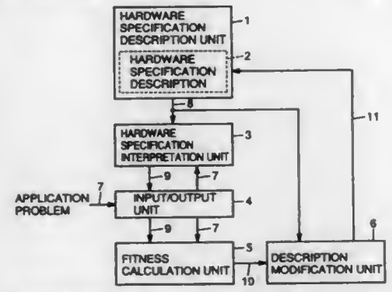
terminating reproducing operations with respect to said sound data file if said sound interrupt command is detected prior to reproducing a next successive block of the sound data file from the second memory area of the apparatus.

5,615,124

AUTONOMOUS EVOLUTION TYPE HARDWARE DESIGN SYSTEM

Hitoshi Hemmi; Junichi Mizoguchi, and Katsunori Shimohara, all of Kyoto, Japan, assignors to ATR Human Information Processing Research Laboratories, Kyoto, Japan

Filed Nov. 7, 1994, Ser. No. 337,020
Claims priority, application Japan, Dec. 13, 1993, 5-311724
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—488 **6 Claims**



1. An autonomous evolutional type hardware specification system for designing a hardware of an electronic circuit, said autonomous evolution type hardware design system comprising:

hardware specification description means for describing a specification of a hardware,

hardware specification interpretation means for interpreting a specification described by said hardware specification description means to produce an operation of that hardware,

fitness calculation means for calculating a fitness in using a consequent hardware according to an operation of the hardware generated by said hardware specification interpretation means and a required operation specification, and

description modification means referring to a fitness calculated by said fitness calculation means for modifying a description of the hardware in said hardware specification description means.

5,615,125

Patent Not Issued For This Number

5,615,126

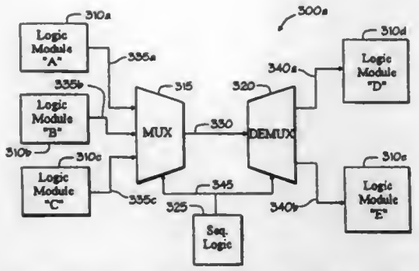
HIGH-SPEED INTERNAL INTERCONNECTION TECHNIQUE FOR INTEGRATED CIRCUITS THAT REDUCES THE NUMBER OF SIGNAL LINES THROUGH MULTIPLEXING

Richard Deeley, San Jose, and Carlos Dangelo, Los Gatos, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 24, 1994, Ser. No. 294,973
Int. Cl.[6] H02B *1/20*
U.S. Cl. 364—489 **22 Claims**

1. A method of reducing integrated circuit wiring area, comprising the steps of:

(a) providing a digital design, the digital design comprising a plurality of interconnected logic elements;



(b) performing a preliminary layout to place the logic elements of the digital design into geographical regions of an integrated circuit chip;

(c) creating geographically-related groups of signals such that each group contains only signals which travel between substantially the same geographical regions of the integrated circuit chip;

(d) determining a maximum feasible raw data rate for signals in each group based upon the integrated circuit technology, path length, and layout;

(e) performing a timing analysis to establish information content of each signal and timing relationships between state transitions on different signals;

(f) further grouping signals within a group into sub-groups;

(g) combining the subgroups of signals onto a reduced number of wires using a suitable combining technique such that a resulting raw data rate on the reduced number of wires does not exceed the maximum feasible raw data rate established in d);

(h) comparing the area required by the signal combining technique to that which would be required by the signals if wired directly in point-to-point fashion;

(i) if the area of the combined signals and combining circuitry results in a net reduction in wiring area, inserting the combining technique into the integrated circuit design, otherwise repeating the steps (f)–(h), each time selecting different subgroups of signals and different combining techniques until a net reduction in area is realized;

(j) if no net reduction in area can be achieved, leaving the integrated circuit design unchanged; and

(k) repeating the steps (f)–(j) for each group of signals.

5,615,127

PARALLEL EXECUTION OF A COMPLEX TASK PARTITIONED INTO A PLURALITY OF ENTITIES

Harry J. Beatty, Clinton Corners; Peter C. Elmendorf, Kingston; Roland R. Gillis, Ulster Park, and Ira Pramanick, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 347,641
Int. Cl.[6] G06F *17/50;13/16;13/18*
U.S. Cl. 364—489 **27 Claims**

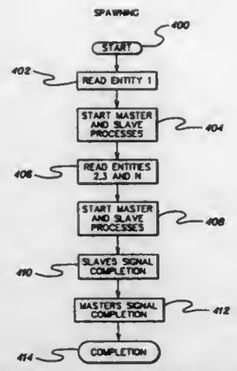
1. A method for executing complex static timing tasks in an application environment of a computer system, said system comprising one or more processors, said method comprising:

partitioning a complex static timing task into a plurality of entities;

starting a master process and a slave process for at least two of said plurality of entities, wherein a slave process of one of said at least two of said plurality of entities is coupled to a slave process of one other entity of said at least two of said plurality of entities;

establishing a direct communication path between said coupled slave processes for communicating between said coupled slave processes independent of their respective master processes;

executing said master processes and said slave processes in said application environment on said one or more processors,



wherein said master processes schedule operations to be performed by said slave processes for said complex static timing task and said slave processes perform said operations in parallel; and

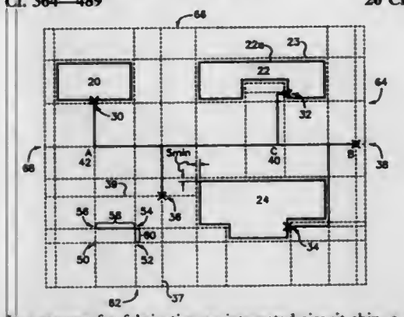
providing a result of said operations performed in parallel to a user of said computer system.

5,615,128

TOWARDS OPTIMAL STEINER TREE ROUTING IN THE PRESENCE OF RECTILINEAR OBSTACLES

Ranko Scepanovic, Cupertino, and Cheng-Liang Ding, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 131,770, Oct. 4, 1993, Pat. No. 5,491,641. This application Feb. 12, 1996, Ser. No. 599,764
The portion of the term of this patent subsequent to Feb. 13, 2013, has been disclaimed.
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **20 Claims**



1. In a process for fabricating an integrated circuit chip, a series of operational steps for constructing an approximate Minimum Rectilinear Steiner Tree (MRST) which constitutes an interconnective routing path for a net of pins on edges of rectilinear components of an integrated circuit such that said routing path extends between said components, said steps comprising:

(a) constructing an escape graph for said net in accordance with locations of said components, wherein said escape graph includes points which are formed by the intersection of lines from said pins and said edges of said components;

(b) constructing Voronoi regions in said escape graph;

(c) constructing a first graph including said pins, and edges connecting two of said pins respectively in said escape graph which extend between adjacent Voronoi regions;

(d) constructing a second graph as a minimum spanning tree of said first graph;

(e) constructing a third graph as a subgraph of said second graph including shortest paths in said escape graph corresponding to edges in said second graph;

(f) constructing a fourth graph as a minimum spanning tree of said third graph; and

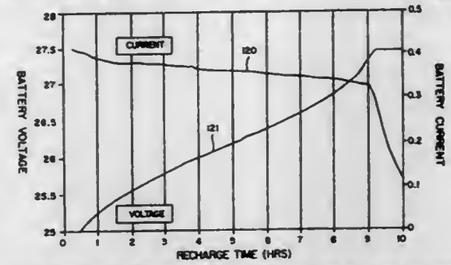
(g) constructing said approximate MRST from said fourth graph by deleting said points which constitute end points in said fourth graph and do not correspond to said pins.

5,615,129

METHOD AND APPARATUS FOR ADAPTIVE AND CORRECTIVE DETERMINATION OF BATTERY RUN-TIME IN UNINTERRUPTIBLE POWER SYSTEMS

Frederick A. Stich, Wisconsin Rapids; Thomas G. Hubert, Necedah, and Timothy Walsh, Elroy, all of Wis., assignors to General Signal Power Systems, Inc., Waukesha, Wis.

Filed Feb. 21, 1995, Ser. No. 390,972
Int. Cl.[6] G04F *7/00*
U.S. Cl. 364—492 **36 Claims**



1. A method of determining the run-time during which power can be supplied from a battery through an inverter of an uninterruptible power supply to a load while such power is being supplied to the load, comprising the steps of:

(a) determining a calculated remaining run-time $t_R(n)$ available during which the battery can supply power to the load for a current iteration n of the run-time determination;

(b) determining a corrected remaining run-time $t_R'(n)$ in accordance with the expression:

$$t_R'(n) = \frac{t_S * t_R(n)}{t_R(n-1) - t_R(n)}$$

where:

t_S is a time period between iterations of the run-time determination, and

$t_R(n-1)$ is the calcuate remaining run-time determined during a next previous iteration of the run-time determination; and

(c) setting an estimated determined run-time $t_{RD}(n)$ to the corrected run-time $t_R'(n)$ if the corrected run-time does not vary by more than a selected correction factor from a corrected run-time $t_R'(n-1)$ determined during a next previous iteration of the run-time determination, otherwise setting $t_{RD}(n)$ to an estimated determined run-time $t_{RD}(n-1)$ from a previous iteration of the run-time determination less an amount of time t_S elapsed since the previous iteration.

5,615,130

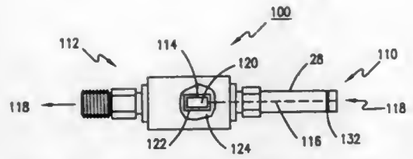
SYSTEMS AND METHODS TO GATHER, STORE AND TRANSFER INFORMATION FROM ELECTRO/MECHANICAL TOOLS AND INSTRUMENTS

Michael L. Bolan, Dallas, and Nicholas M.G. Fekete, Richardson, both of Tex., assignors to Dallas Semiconductor Corp., Dallas, Tex.

Filed Dec. 14, 1994, Ser. No. 355,934
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—505 **10 Claims**

1. A communication system, comprising:

(a) a first fastener having a first coupling end, said first fastener having an integrated circuit positioned to be electrically



coupled to a first communication interface on said first coupling end of said fastener;

(b) a second fastener having a second coupling end, said second coupling end having a second communication interface, said first communication interface and said second communication interface electrically coupled together when said first fastener and said second fastener are fastened together.

5,615,131

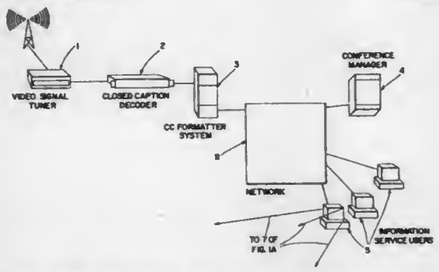
SYSTEM FOR PROVIDING CLOSED CAPTIONING TO AN ELECTRONIC DISCUSSION GROUP

Owen J. Mortensen; Jeffery S. Dalton; Jeffrey S. Miller, and Douglas P. Chinnock, all of Tucson, Ariz., assignors to CompuServe Incorporated, Columbus, Ohio

Division of Ser. No. 402,110, Mar. 10, 1995, Pat. No. 5,563,804. This application Jun. 21, 1996, Ser. No. 667,444

Int. Cl.[6] H04N *1/42*

U.S. Cl. 364—514 A **3 Claims**



1. An enhanced electronic discussion group, comprising:

electronic messages entered from computer users onto said discussion groups;

closed captioning from a video broadcast entered onto said discussion group; and

electronic replies to said closed captioning entered from said computer users onto said discussion group.

5,615,132

METHOD AND APPARATUS FOR DETERMINING POSITION AND ORIENTATION OF A MOVEABLE OBJECT USING ACCELEROMETERS

Mike A. Horton, Berkeley, and A. Richard Newton, Woodside, both of Calif., assignors to Crossbow Technology, Inc., San Jose, Calif.

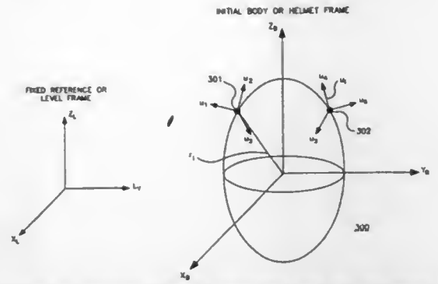
Filed Jan. 21, 1994, Ser. No. 184,583

Int. Cl.[6] G09G *3/02*

U.S. Cl. 364—516 **21 Claims**

1. A method for generating computer simulation signals in response to the orientation of a moveable object from a plurality of electronic linear accelerometers mounted on the moveable object in cooperative operation with an external tracking system disposed relative to the moveable object, the method comprising the steps of:

processing linear acceleration signals generated from the plurality of electronic linear accelerometers mounted on the moveable object;



generating orientation signals associated with the movement of the object in three degrees of freedom as a function of the linear acceleration signals;

generating computer simulation signals in response to the orientation signals;

processing tracking data signals associated with the object generated from the external tracking system disposed relative to the moveable object; and

modifying the orientation signals as a function of the tracking data signals.

5,615,133

METHOD AND DEVICE FOR STORING TRANSACTION DATA

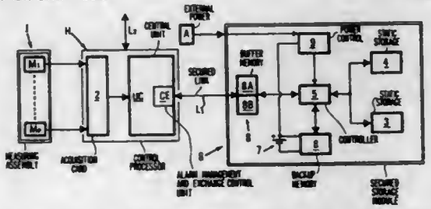
Patrick Gillard, Corbeil Essonnes, and Pierre Gonzalez, Rueil-Malmaison, both of France, assignors to Socetec, Montreuil Cedex, and Institut Francais du Petrole, Rueil-Malmaison, both of France

Filed Dec. 9, 1994, Ser. No. 352,629

Claims priority, application France, Dec. 10, 1993, 93 14965

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—550 **17 Claims**



1. A device for reliably securing transaction data provided by a measuring assembly comprising:

a central unit including a programmed control for managing writing of data, reading of queries and control of the device;

a control processor associated with an acquisition device and an alarm management and exchange control unit;

a secured storage assembly linked to the central unit and including a first static storage for receiving transaction data provided by the measuring assembly to be recorded, a second static storage for recording transaction data which is a duplicate of the transaction data stored in the first static storage, a backup storage, connected to the programmed control, for permanently storing a last query addressed thereto from the programmed control and data required for management of the storages and a buffer memory, connected between the programmed control and the control processor; and wherein

the control processor is programmed to permanently record duplicate data in the first and second static storages, to check any data transfer occurring between the storages and the buffer memory and to provide the transaction data in the backup memory with digital words used to verify that finally stored data in the backup storage is correct.

5,615,134

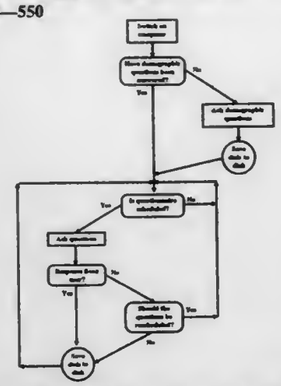
METHOD AND SYSTEM FOR POLLING AND DATA COLLECTION

Guy R. Newsham, and Dale K. Tiller, both of Ottawa, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Feb. 27, 1995, Ser. No. 394,741

Int. Cl.[6] G09B *7/06;7/07*

U.S. Cl. 364—550 **4 Claims**



1. A method of generating control data comprising the steps of:

a) polling a plurality of times, a user engaged with task being performed on a computer having an input device, a memory device for storing data, a processing unit, and a display terminal, said polling step including:

i) interrupting the task being performed on the computer:

ii) querying the user for one or more responses to questions that relate to the user's thermal sensation, by displaying one or more questions and a plurality of selectable responses on the display terminal:

iii) storing the responses to the one or more questions in the memory device; and, returning the computer to a state prior to step (i) so that the user may resume the task that was being performed prior to said interruption: and,

b) analyzing/processing the users' responses to obtain control data used to control a heating and/or cooling system to enhance the user's thermal comfort, the control data therefore being for use in circling the control of a process that is unrelated to the computer system or its operation.

5,615,135

EVENT DRIVEN INTERFACE HAVING A DYNAMICALLY RECONFIGURABLE COUNTER FOR MONITORING A HIGH SPEED DATA NETWORK ACCORDING TO CHANGING TRAFFIC EVENTS

John G. Waclawsky, Frederick, Md., and Paul C. Hershey, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1995, Ser. No. 456,759

Int. Cl.[6] G06F *11/34*

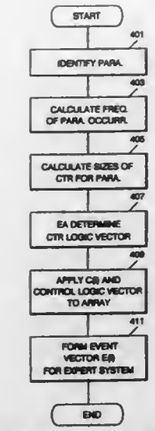
U.S. Cl. 364—551.01 **11 Claims**

1. In an event driven interface (EDI) for a high speed data communications network, a hardwired, dynamically reconfigurable counter array for counting the occurrences of different traffic events having different rates of occurrences being monitored on the network by the EDI, comprising:

a) a plurality of "N" bit counters, where "N" is a binary multiple; the counters being arranged in an array of size "m.n", where "m" is the number of rows and "n" is the number of columns in the array;

(b) a signal input to each counter as a first input, each signal being definitive of a specific traffic event occurring on the high speed network;

(c) each counter connected to the adjacent counter in the column through a multi-terminal logic element; each logic element in a column receiving the output of counter as a first input and providing an output to the succeeding counter as a second input:



(d) a control vector C(i) definitive of the signal inputs to be counted by the respective counters;

(e) a counter logic switch responsive to a counter logic vector for providing a plurality of outputs, each output provided to a different row of the array as a second input to each logic element in the same row of the array; and

(f) means for changing the contents of the control vector C(i) and/or the counter logic vector to configure or re-configure the counters in the array to individual or group counters of the same or different sizes for matching the counting requirements of different traffic events being monitored on the network by the EDI to such individual or groups of counters.

5,615,136

DIGITAL BUS SIMULATOR INTEGRATED IN A SYSTEM FOR AUTOMATICALLY TESTING ELECTRONIC PACKAGES EMBARKED ON AN AIRCRAFT

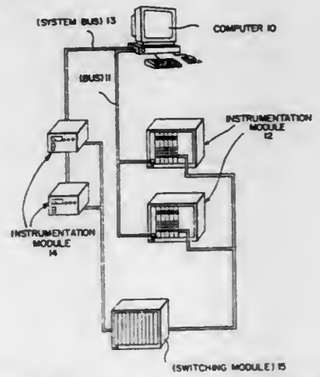
Jean-Yves Baraton, Pibrac; Jean-Pierre Rieusse, Verdun sur Garonne, and Benjamin Sulmont, Toulouse, all of France, assignors to Aerospatial Societe Nationale Industrielle, Paris, France

Filed Nov. 21, 1994, Ser. No. 342,828

Claims priority, application France, Nov. 22, 1993, 93 13930

Int. Cl.[6] G06F *13/00*

U.S. Cl. 364—578 **7 Claims**



1. Digital bus simulator integrated in a test system for automatically testing electronic devices embarked on a suitable aircraft so

as to simulate the digital buses used on the aircraft, which is reconfigured under the control of a computer for the test system by reconfiguring the test system software and hardware, this reconfiguration being required so as to be adapted to digital interface, coding, protocol and the speed requirements specific to each simulated digital bus, and the architecture of which is able to download into the latter the applicative software and the wired logic of the automata able to simulate a new digital bus; comprising:

at least a first and second processor, at least a first and second memory bank and reconfigurable logic circuits, wherein

the first processor ensures communication with the computer for the test system by observing the communication protocols,

the second processor ensures management of the buses used by executing the applicative software to be downloaded into said first memory for each simulated digital bus;

with the second memory bank being accessible by the second processor and with the logic required to control this memory bank being implemented in a reconfigurable logic circuit;

a bus interface module embodying the hardware interfacing for each digital bus on said aircraft and for receiving signals from said bus; the first processor being integrated in this module;

a central processing unit communications module comprising the circuits for authorizing exchanges of information between said first and second processor and with a controller for said bus, with the second processor being integrated in this module;

an application central processing unit for carrying out the configuration and operational functions of each digital bus to be simulated;

a bus simulation module which autonomously carries out exchange of information on the simulated bus, with said simulation module being reconfigurable according to the bus to be simulated with wired logic automata downloaded into this module so as to adapt the architecture of the hardware to the purpose of the bus to be simulated; and

an analog interface module embodying the analog material adaptation for the simulated bus for delivering simulated bus signals.

5,615,137

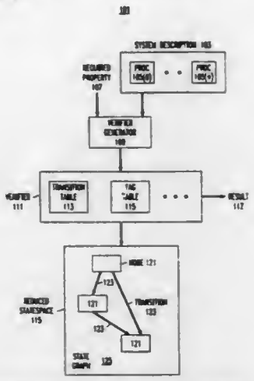
ON-THE-FLY MODEL CHECKING WITH PARTIAL-ORDER STATE SPACE REDUCTION

Gerard J. Holzmann, Murray Hill, and Doron A. Peled, New Providence, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 252,028, Jun. 1, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 667,350

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **15 Claims**



1. A method implemented in a computer system of verifying that a system being analyzed has a safety or liveness property, comprising the steps performed in the computer system of:

using statically-available information to substantially reduce the work required to compute a state space describing the system being analyzed by computing a reduced state space of the system by eliminating redundant states of the system, the reduced state space still provably permitting verification of the safety and liveness properties; and

using the reduced state space to verify the safety and liveness properties.

5,615,138

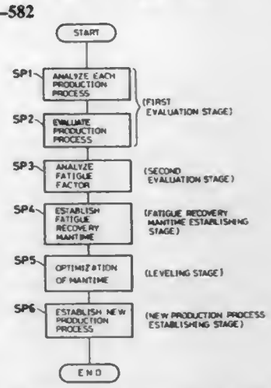
METHOD FOR ESTABLISHING THE WORKING MANTIME IN THE PRODUCTION LINE

Kozaburo Tanaka; Shinpei Sugiyama; Ken Miura; Hideo Yoneda; Keiji Kinoshita, all of Suzuka; Akira Sakuramoto, Tokyo; Akihiro Ryu, Kameyama; Susumu Fujii, Suzuka; Kimiyuki Yamamoto, Suzuka, and Masami Hattori, Suzuka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 43,709, Apr. 8, 1993, abandoned. This application Sep. 11, 1995, Ser. No. 526,782

Int. Cl.[6] G06F *15/46*

U.S. Cl. 364—582 **5 Claims**



1. A method of employing a plurality of working means, said method comprising the steps of:

operating a production line by performing a plurality of production processes according to a first schedule, said production processes being performed by said working means;

determining first working mantimes for said working means for said first schedule, said step of determining said first working mantimes including the step of evaluating work volumes of said production processes performed by said working means;

establishing fatigue recovery mantimes for said working means, said step of establishing said fatigue recovery mantimes including the step of evaluating the fatigue extents of said production processes;

determining a modified schedule for said production line based on said first working mantimes and said fatigue recovery mantimes; and

operating said production line according to said modified schedule, said modified schedule being different than said first schedule, said step of operating said production line according to said modified schedule being performed by said working means, and wherein the steps performed by said working means during said step of operating said production line according to said modified schedule are different than the steps performed by said working means during said step of operating said production line according to said first schedule.

5,615,139

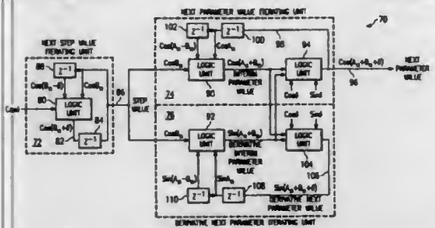
APPARATUS AND METHOD FOR SYNTHESIZING A SINUSOIDAL SIGNAL

Safdar M. Asghar, and Mark A. Ireton, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 23, 1994, Ser. No. 217,309

Int. Cl.[6] G06F *1/02*

U.S. Cl. 364—721 **25 Claims**



1. Apparatus for synthesizing a sinusoidal signal as a plurality of sample values taken at a plurality of sample times each separated by a sample interval, said sinusoidal signal being defined by at least one parameter which varies with respect to time, said parameter varying by a step value during a respective sample interval, the apparatus comprising:

a first difference equation implementer for iteratively treating an initial one of said step values to generate succeeding step values and a next step value as a function of a first difference equation, said next step value being said step value after a next-succeeding sample interval;

a second difference equation implementer for iteratively generating a next parameter value corresponding to said next succeeding sample interval,

said second difference equation implementer being operatively connected with said first difference equation implementer for receiving succeeding step values from said first difference equation implementer, said second difference equation implementer iteratively generating succeeding interim parameter values;

a third difference equation implementer being operatively connected with said first difference equation implementer for receiving succeeding step values therefrom, said third difference equation implementer generating a corresponding plurality of derivative interim parameter values, each derivative interim parameter value being algorithmically related to a corresponding one of said interim parameter values; and

a combiner coupled to said second and third difference equation implementers for respectively receiving successive interim parameter values and derivative interim parameter values therefrom, said combiner iteratively generating successive next parameter values each as a function of a current one of said interim parameter values and a current one of said derivative interim parameter values, said next parameter values used in defining said sinusoidal signal.

5,615,140

FIXED-POINT ARITHMETIC UNIT

Toshihiro Ishikawa, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 7, 1995, Ser. No. 385,121

Claims priority, application Japan, Feb. 14, 1994, 6-017190; Aug. 24, 1994, 6-220806

Int. Cl.[6] G06F *7/48;9/34*

U.S. Cl. 364—749 **9 Claims**

1. An arithmetic unit comprising:

arithmetic means, comprising an arithmetic and logic circuit, for performing an operation on data;

operational word length storing means for storing information expressing a number of significant bits of said data to be operated on by said arithmetic means;

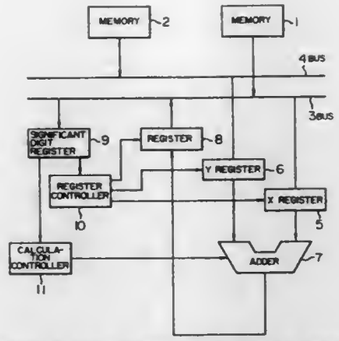
control means, connected to said operational word length storing means, for inhibiting said arithmetic means from operating a portion of said arithmetic means which is unnecessary for said operation on the data within said number of significant bits, whereby only the significant bits are allowed to be operated on;

first and second registers for storing said data to be operated on by said arithmetic and logic circuit;

a third register for storing an output of said arithmetic and logic circuit; and

a register controller, connected to said operational word length storing means, for commanding said first, second and third registers to store only numbers of bits equal to the number of significant bits;

wherein said arithmetic and logic circuit has a plurality of bit stages and includes at each bit stage (i) a full adder having a carry output and (ii) a gate circuit for controlling a transfer of the carry output of said full adder to an upper bit stage under control of said control means.



5,615,141

MULTIPLYING APPARATUS

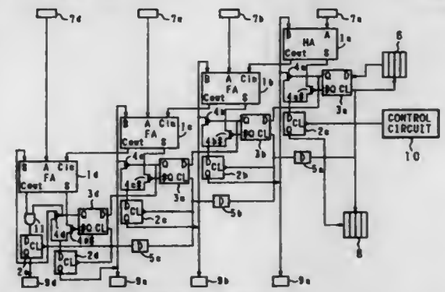
Hideo Matsui, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1995, Ser. No. 452,618

Claims priority, application Japan, Jun. 15, 1994, 6-133342

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—757 **3 Claims**



1. A multiplying apparatus, comprising:

a control circuit for generating a clock;

a multiplicand register for storing values of respective digits of a multiplicand;

a multiplier register for storing values of respective digits of a multiplier, and outputting successively the values of the respective digits of the multiplier in synchronism with the clock generated by said control circuit;

adders for respective digits of the multiplicand, each adder inputting, at a first input terminal, a value of a respective digit of the multiplicand stored in said multiplicand register, and, except for the adder receiving the most significant digit of the multiplicand, at a second input terminal, the respective addition result of the next respective digit, the adder receiving the most significant digit of the multiplicand inputting at its

second input terminal a logical product of the carry output of itself and the final digit of the multiplier, each adder adding the inputs of the respective first and second input terminals and outputting the respective addition result and carry;

first D-flip flops for respective digits, each first D-flip flop propagating to the respective adder corresponding to the next digit of the multiplicand the value of the respective digit of the multiplier outputted successively from said multiplier register in synchronism with the clock, and latching the successively output value in synchronism with the clock;

second D-flip flops for respective digits, each second D-flip flop latching, in synchronism with the clock, (i) the additional result of the adder corresponding to the respective digit or (ii) the additional result of the adder corresponding to the next digit according to the value held in respective first D-flip flop; and

delay circuits for delaying the clock propagation and supplying it to the first D-flip flops and the second D-flip flops for respective next digits, until the respective carries of the additional results performed by the respective adders, except the adder receiving the most significant digit, are input to the adders for the next digits.

5,615,142

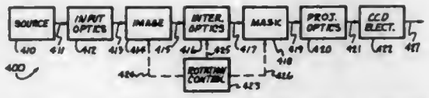
ANALOG MEMORY SYSTEM STORING AND COMMUNICATING FREQUENCY DOMAIN INFORMATION

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180

Continuation of Ser. No. 254,818, Jun. 6, 1994, Ser. No. 283,374, Aug. 1, 1994, Ser. No. 285,669, Aug. 3, 1994, Ser. No. 286,620, Aug. 5, 1994, Ser. No. 493,061, Mar. 13, 1990, Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, and Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, said Ser. No. 254,818is a division of Ser. No. 495,808, Mar. 16, 1990, Pat. No. 5,339,275, said Ser. No. 283,374Ser. No. 285,669, and Ser. No. 286,620, , each is a continuation of Ser. No. 495,808, said Ser. No. 495,808, each is a continuation of Ser. No. 520,777, Aug. 4, 1983, Pat. No. 4,910,706, which is a division of Ser. No. 160,871, Jun. 19, 1990, Pat. No. 4,445,189, which is a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, May 23, 1978, Pat. No. 4,322,819. This application May 2, 1995, Ser. No. 434,139

Int. Cl.[6] G11C *27/00*

U.S. Cl. 365—45 **64 Claims**



1. An analog memory system comprising:

an optical lens projecting an illumination image;

an analog image memory storing analog image signals, the analog image memory being coupled to receive the illumination image projected by the optical lens and writing analog image signals into the analog image memory in response to the received illumination image;

a shifting circuit coupled to the analog image memory, the shifting circuit shifting the analog image signals stored by the analog image memory;

an analog refreshing circuit coupled to the analog image memory, the analog refreshing circuit refreshing the analog image signals stored by the analog image memory;

an analog to digital converter coupled to receive analog image signals stored by the analog image memory, the analog to digital converter generating digital image signals in response to the received analog image signals;

an integrated circuit reference memory storing reference information;

an integrated circuit transform processor coupled to receive reference information stored by the integrated circuit reference memory and coupled to receive digital image signals generated by the analog to digital converter, the integrated circuit transform processor generating frequency domain image information by transform processing the received digital image signals in response to the received reference information;

a communication link coupled to receive frequency domain image information generated by the integrated circuit transform processor, the communication link communicating frequency domain image information to a remote location in response to the received frequency domain image information;

an output memory storing frequency domain image information; and

an output memory writing circuit coupled to receive frequency domain image information generated by the integrated circuit transform processor and coupled to the output memory, the output memory writing circuit writing frequency domain image information into the output memory in response to the received frequency domain image information.

5,615,143

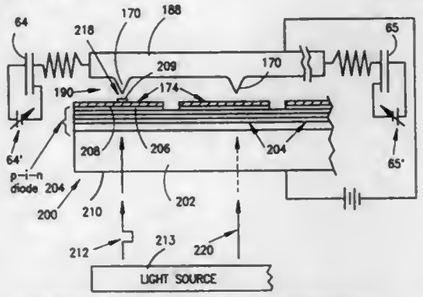
OPTOMECHANICAL TERABIT DATA STORAGE SYSTEM

Noel C. MacDonald, and Yu-hwa Lo, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 19, 1994, Ser. No. 308,803

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—112 **49 Claims**



1. Data storage and readout apparatus, comprising:

a photoconductive storage medium having a storage surface including a plurality of memory regions;

an array of nanometer scale emitter tips, each tip corresponding to each memory region and movably mounted closely adjacent its corresponding memory region, each said tip being responsive to photoconduction in said storage medium to produce on a memory region of said storage surface at a location in alignment with a corresponding tip;

a data feature corresponding to data to be stored; and

means responsive to said data feature to read data stored on said memory region of said storage surface.

5,615,144

NON-VOLATILE FERROELECTRIC MEMORY DEVICE WITH LEAKAGE PREVENTING FUNCTION

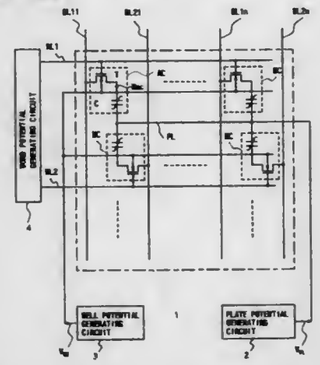
Tohru Kimura, and Hiroki Koike, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,527

Claims priority, application Japan, Aug. 12, 1994, 6-190448

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **28 Claims**



1. A non-volatile ferroelectric memory device comprising:

a plurality of memory cells provided in a matrix manner, each of which comprises a transistor having a gate and source and drain regions formed in a semiconductor region, and a ferroelectric capacitor having first and second electrodes and a ferroelectric layer interposed between said first and second electrodes, said second electrode being connected to one of said source and drain regions of said transistor;

a plurality of pairs of bit lines, each of said bit lines of each of said pairs being connected to the other of said source and drain regions of said transistor of each memory cell in a column of said plurality of memory cells;

a plurality of word lines each of which is connected to said gate of said transistor of eacb memory cell in a row of said plurality of memory cells;

plate potential means for generating a first predetermined potential intermediate between a reference potential and a high DC voltage and supplying said first potential to said first electrode of each of said plurality of capacitors;

well potential means for generating a second predetermined potential lower than said first potential with respect to the reference potential and supplying said second potential to the semiconductor region of each of said plurality of transistors; and

sense amplifier means for sensing a data using potentials on the bit lines of each of said plurality of pairs of bit lines.

5,615,145

SEMICONDUCTOR MEMORY WITH FERROELECTRIC CAPACITORS

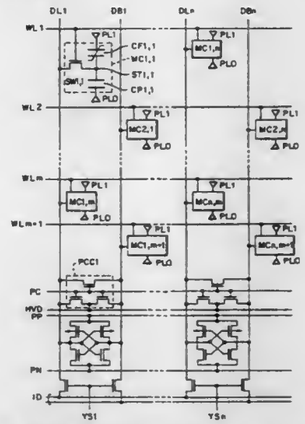
Kan Takeuchi, Kodaira; Katsumi Matsuno, Kokubunji; Kazuhiko Kajiyama, Iruma; Osamu Nagashima, Hamura, and Masatoshi Hasegawa, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 580,090

Claims priority, application Japan, Dec. 20, 1994, 6-316295

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **18 Claims**



1. A semiconductor memory comprising:

a plurality of memory cells each having first and second capacitors connected in series and a field-effect transistor whose source or drain is connected to a node between said first and second capacitors, said memory cells being arranged at intersections of bit lines and word lines thereby forming a matrix;

wherein said first capacitor is a ferroelectric capacitor using a ferroelectric material as an insulating film;

wherein a plate electrode of said first capacitor is held at a power supply potential when said memory is operated in a first mode and said plate electrode of said first capacitor is held at a ground potential when said memory is operated in a second mode; and

wherein a plate electrode of said second capacitor is held at a ground potential during a mode changing operation between said first mode and said second mode.

5,615,146

NONVOLATILE MEMORY WITH WRITE DATA LATCH

Hiroshi Gotou, Tokyo, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,201

Claims priority, application Japan, Nov. 11, 1994, 6-278174

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.01 **15 Claims**

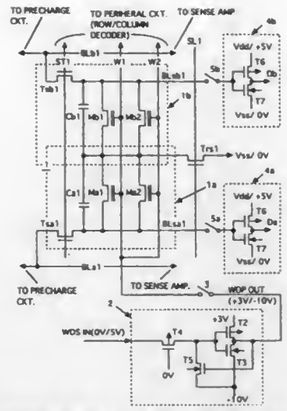
1. A memory device comprising:

a memory cell array having a plurality of word lines, a plurality of bit lines, and memory cells each arranged at an intersection between each word line and each bit line;

a memory cell transistor having a floating gate for holding nonvolatile information, and a control gate, connected to the word line, for controlling writing, erasing, or reading of information held in the floating gate, said memory cell transistor constituting said memory cell;

means for latching potential of said bit line which is determined in correspondence with data stored in said memory cell transistor; and

drive signal means for supplying a drive signal to the control gate of said memory cell transistor, the drive signal alternately



and repeatedly having a first potential and a second potential different from the first potential.

5,615,147

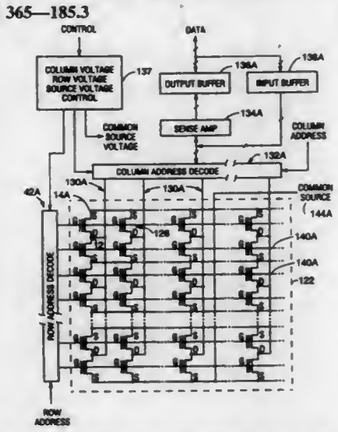
LOW VOLTAGE ONE TRANSISTOR FLASH EEPROM CELL USING FOWLER-NORDHEIM PROGRAMMING AND ERASE

Shang-De Chang, Fremont; Jia-Hwang Chang, Cupertino, and Edwin Chow, Saratoga, all of Calif., assignors to Rohm Corporation, San Jose, Calif.

Division of Ser. No. 205,327, Mar. 3, 1994. This application Sep. 27, 1995, Ser. No. 534,725

Int. Cl.[6] G11C *7/00;13/00*

U.S. Cl. 365—185.3 **11 Claims**



1. A method of identifying over-erased cells in an electrically erasable and programmable device of the type having a plurality of cells each comprising a single transistor having a source, a drain, a control gate, and a floating gate positioned between the control gate and the source and drain, and further of the type having a plurality of row address lines each coupled to the control gates of the cells in an associated row, a plurality of column address lines each coupled to the drains of the cells in an associated column, and a plurality of source lines coupled to the sources of the cells, the method comprising the steps of:

(a) separately testing each column for the presence of over-erased cells; and

(b) individually testing the cells in columns found to have over-erased cells to determine which cells are over-erased, including the steps of

(i) selecting a cell to be tested, and

(ii) raising the sources of all cells within said column to a potential which biases cells in said column, which cells are over-erased but are not selected, into a non-conducting state.

5,615,148

NONVOLATILE SEMICONDUCTOR MEMORY

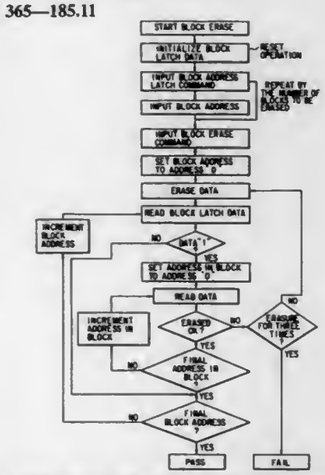
Toshio Yamamura, and Hiroto Nakai, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 622,088

Claims priority, application Japan, Mar. 28, 1995, 7-069154

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.11 **9 Claims**



1. A nonvolatile semiconductor memory comprising:

a plurality of cell blocks each having an array of a plurality of nonvolatile memory cells, in which cell data are simultaneously erased from selected cell blocks;

a plurality of select data holding means provided corresponding to the plurality of cell blocks, for holding select data indicating selection of corresponding cell blocks;

select data inputting means for inputting select data to the respective select data holding means corresponding to those specified as to be erased for simultaneous data erasing among the plurality of cell blocks;

a plurality of block erasing means provided corresponding to the plurality of cell blocks for selecting all the nonvolatile memory cells of the corresponding cell blocks if select data are held in the corresponding select data holding means when data are simultaneously erased from the plurality of blocks specified as to be erased for simultaneous data erasing and erasing data thereof;

erase failure block detecting means for detecting existence of erase failure cell blocks by reading select data held in the select data holding means after data erasing performed by the block erasing means; and

erase failure block address outputting means for outputting, when existence of erase failure cell blocks is detected by the erase failure block detecting means, a fail end signal for indicating the existence thereof and addresses of the erase failure cell blocks to an outside of a memory chip.

5,615,149

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE INCORPORATING DATA LATCH AND ADDRESS COUNTER FOR PAGE MODE PROGRAMMING

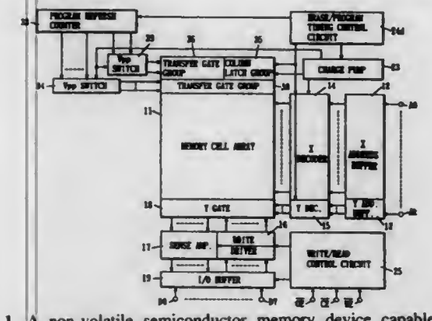
Shinichi Kobayashi; Takeshi Nakayama; Yoshikazu Miyawaki; Tomoshi Futatsuya, and Yasushi Terada, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 295,582, Aug. 25, 1994, Pat. No. 5,485,421, which is a division of Ser. No. 826,943, Jan. 28, 1992, Pat. No. 5,363,330. This application Apr. 27, 1995, Ser. No. 429,456

Claims priority, application Japan, Jan. 28, 1991, 3-29404; Oct. 25, 1991, 3-280012

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.12 **6 Claims**



1. A non-volatile semiconductor memory device capable of electrically programming/erasing a plurality of bytes at one time, comprising:

a plurality of bit lines;

a plurality of memory cells connected to said plurality of bit lines;

a plurality of latch means provided corresponding to said plurality of bit lines, each latch means holding the ground voltage or a predetermined high voltage in accordance with write data; and

selecting means for periodically and repetitively selecting each of said plurality of bit lines and corresponding one of the latch means, and for connecting the selected bit line to the selected latch means.

a control gate node (CG);

a capacitor (**430**) having first terminal coupled to said floating gate and a second terminal coupled to said control gate node;

a PMOS transistor (**402**) having its source coupled to a first power supply line (VD), its drain coupled to an output node, a first channel (**412**) formed between said source and drain, a first gate oxide layer (**414**) overlying said first channel, and said common floating gate overlying said first gate oxide layer;

an NMOS transistor (**403**) having its drain coupled to the drain of said PMOS transistor and to said output node, its source coupled to a second power supply line (VS), a second channel (**422**) formed between said source and drain, a second gate oxide layer (**424**) overlying said second channel, and said common floating gate overlying said second gate oxide layer;

an NMOS pass transistor (**405**) having its gate coupled to a word line, its drain coupled to an erase line, and its source coupled to said control gate node; and

a high voltage being applied to the first power supply line, a first word line voltage that is less than the high voltage being applied to said word line, a ground potential being applied to said erase line, and a high impedance being applied to the second power supply line so that electrons are transferred from said common floating gate to the source of said PMOS transistor (**402**) via said first gate oxide layer (**414**) during a programming mode.

5,615,150

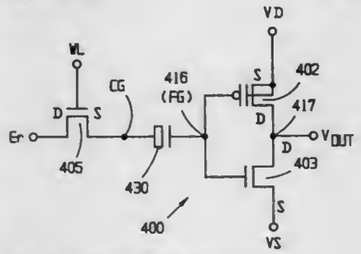
CONTROL GATE-ADDRESSED CMOS NON-VOLATILE CELL THAT PROGRAMS THROUGH GATES OF CMOS TRANSISTORS

Jonathan Lin, Milpitas, and Radu Barsan, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1995, Ser. No. 551,974

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.17 **18 Claims**



10. A non-volatile memory cell comprising:

a common floating gate (**416**);

5,615,151

SEMICONDUCTOR INTEGRATED CIRCUIT OPERABLE AND PROGRAMMABLE AT MULTIPLE VOLTAGE LEVELS

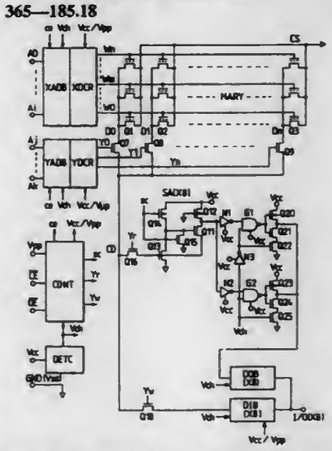
Takeshi Furuno; Yasuhiro Nakamura, both of Kodaira, and Akinori Matsuo, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., Tokyo, Japan

Continuation of Ser. No. 893,802, Jun. 4, 1992, Pat. No. 5,444,663. This application Jun. 7, 1995, Ser. No. 478,334

Claims priority, application Japan, Jul. 2, 1991, 3-188109

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—185.18 **22 Claims**



14. A nonvolatile memory device formed on a semiconductor substrate comprising:

a plurality of nonvolatile memory cells;

an external supply voltage terminal which receives a supply voltage;

a supply voltage decision circuit which decides whether or not a value of the supply voltage supplied via said external supply voltage terminal achieves a predetermined value;

an external input terminal to which an input signal to be supplied to a nonvolatile memory cell among the plurality of nonvolatile memory cells is supplied; and

an input circuit which is coupled between said external input terminal and the nonvolatile memory cell and to said supply voltage decision circuit, which has a first logic threshold voltage and a second logic threshold voltage being lower than the first logic threshold voltage, which judges data to be written to the nonvolatile memory cell, from the input signal, by using the first logic threshold voltage if the supply voltage decision circuit indicates decision that the value of the supply voltage achieves the predetermined value, and which judges data to be written to the nonvolatile memory cell, from the input signal, by using the second logic threshold voltage if the supply voltage decision circuit indicates decision that the value of the supply voltage does not achieve the predetermined value.

5,615,152

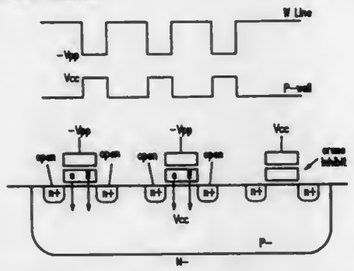
METHOD OF ERASING A HIGH DENSITY CONTACTLESS FLASH EPROM ARRAY

Albert Bergemont, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 465,196, Jun. 5, 1995, which is a continuation of Ser. No. 361,848, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 988,293, Dec. 8, 1992, abandoned. This application May 15, 1996, Ser. No. 648,423

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.18 **2 Claims**



1. A method of erasing selected rows in a contactless flash EPROM array formed in a P-type well that is formed in an N-type silicon substrate, and wherein the flash EPROM array includes a layer of tunnel oxide about 100–120Å thick formed on a surface of the P-type well, a plurality of rows and columns of polysilicon floating gates formed on the tunnel oxide layer, each polysilicon floating gate having a layer of dielectric material formed thereon, an N-type bit line formed in the P-type well between each two adjacent columns of polysilicon floating gates to define a plurality of spaced-apart N-type bit lines in the P-type well, alternating of said bit lines being contacted to define drain bit lines of said array, bit lines between adjacent drain bit lines being non-contacted to define source bit lines of said array such that each source bit line has first and second adjacent drain bit lines associated therewith, each source bit line being electrically connectable to the associated first adjacent drain bit line via a first MOS select transistor having its gate connected to a polysilicon first select line and to the associated second adjacent drain bit line via a second MOS select transistor having its gate connected to a polysilicon second select line, the array further including a plurality of spaced-apart parallel polysilicon word lines formed perpendicular to the columns of floating gates, each word line overlying the floating gates in a row of said array such that the floating gates in said row are separated from said word line by the dielectric material formed on each said floating gate in said row of said array, the erase method comprising:

while maintaining the P-type well at a positive supply voltage, applying a negative erase voltage to the polysilicon word line of each row of said array selected for erasure;

maintaining the source bit lines and the drain bit lines of said array floating; and

applying the supply voltage to the polysilicon word line of each row of said array not selected for erasure.

5,615,153

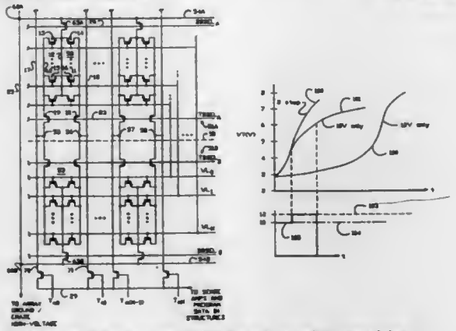
FAST FLASH EPROM PROGRAMMING AND PRE-PROGRAMMING CIRCUIT DESIGN

Tom D. Yiu, 793 Los Positos Dr.; Ray L. Wan, 520 Oroville Rd., both of Milpitas, Calif. 95035; Ling-Wen Hsiao, No. 1, Lane 50, Tai-Shun St., Taipei, Taiwan; Tien-Ler Lin, 10501 Madera Dr., Cupertino, Calif. 95014, and Fuchia Shone, 3f, No. 21, Waterfront Road 1, Hsinchu, Taiwan

Division of Ser. No. 393,243, Feb. 23, 1995, Pat. No. 5,563,823, which is a continuation of Ser. No. 108,671, Aug. 31, 1993, abandoned. This application May 18, 1995, Ser. No. 444,314

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.19 **8 Claims**



1. A floating gate memory integrated circuit, comprising:

a plurality of subarrays, having N columns and M rows of floating gate storage transistors, storage transistors in the subarrays having respective control gates, sources and drains;

an address generator, coupled to the K subarrays, to generate address signals to access selected subarrays and selected floating gate storage transistors;

a plurality of wordlines, coupled to the control gates of storage cells in respective rows;

a plurality of global bitlines, coupled to respective columns of storage cells;

a plurality of local bitlines, each coupled to the drains of the storage cells in a respective column;

a first selector, coupled to the address generator to selectively connect the local bitlines in a subarray of storage cells to the corresponding global bitlines in response to the address signals;

a plurality of local virtual ground lines, each coupled to the sources of storage cells a respective column;

a second selector to connect the local virtual ground lines in a subarray of storage cells with a virtual ground terminal;

column select circuits, coupled to the global bitlines and the address generator to selectively enable access to columns of storage cells in response to the address signals;

programming circuits, coupled to the plurality of wordlines, the plurality of bitlines and the plurality of virtual ground lines, to supply a gate programming potential to selected wordlines,—a reference potential to the virtual ground lines,—and a data-in potential to selected bitlines to program selected floating gate storage transistors in response to the address signals: and

control circuits, coupled to the programming circuits to vary the gate programming potential during a programming interval as function of time in order to decrease time required to program the selected floating gate transistor the gate programming potential during the programming interval including a pulse, the pulse including a first part in which the gate programming potential increases to a first potential high enough to induce hot electron injection, and a second part in which the gate programming potential increases from the first potential to a second potential higher than the first potential.

5,615,154

FLASH MEMORY DEVICE HAVING ERASE VERIFICATION

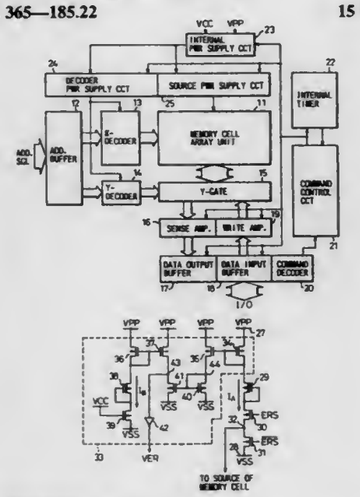
Shigekazu Yamada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 24, 1995, Ser. No. 518,688

Claims priority, application Japan, Aug. 31, 1994, 6-207102

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.22 **15 Claims**



1. A flash memory device, comprising:

a control circuit which controls an erase operation and an erase verify operation;

said control circuit, in an erase mode, not carrying out the erase verification but repetitively applying an erase voltage to a source of each memory cell until the erasing proceeds to a predetermined extent,

said control circuit, after the erasing has proceeded to the predetermined extent, repetitively carrying out an application of said erase voltage to the source of each memory cell and said erase verification; and

a verify control signal-forming circuit which, in said erase mode, monitors whether or not the erasing has proceeded to the predetermined extent, and after applying said erase voltage to the source of said memory cell, forms a verify control signal for controlling whether or not said erase verify operation is to be carried out,

wherein said verify control signal-forming circuit comprises an erase current monitoring circuit for monitoring an erase current that flows into the source of said memory cell when said erase voltage is applied to said source, and

wherein when said erase current exceeds a predetermined value, said verify control signal-forming circuit outputs said verify control signal at the inactive level, and when said erase current is below said predetermined value, said verify control signal-forming circuit outputs said verify control signal at the active level.

5,615,155

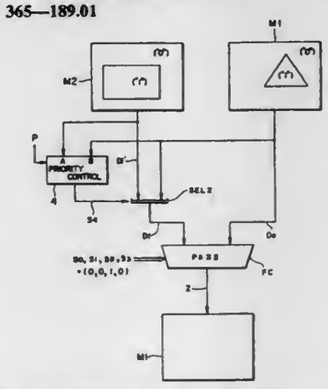
MEMORY DEVICE

Koichi Kimura, Yokohama; Toshihiko Ogura, Ebina; Hiroaki Aotsu, Yokohama; Mitsuru Ikegami, Yamakitamachi; Tadashi Kuwabara, Yokohama; Hiromichi Enomoto, and Tadashi Kyoda, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 458,480, Jun. 2, 1995, Pat. No. 5,523,973, which is a continuation of Ser. No. 435,959, May 5, 1995, Pat. No. 5,493,528, which is a continuation of Ser. No. 294,407, Aug. 23, 1994, Pat. No. 5,448,519, which is a continuation of Ser. No. 855,843, Mar. 20, 1992, Pat. No. 5,450,342, which is a continuation-in-part of Ser. No. 349,403, May 8, 1989, Pat. No. 5,175,838, which is a continuation of Ser. No. 240,380, Aug. 29, 1988, now Re. 33,922, which is a continuation of Ser. No. 779,676, Sep. 24, 1985, abandoned, said Ser. No. 855,843is a continuation-in-part of Ser. No. 816,583, Jan. 3, 1992, which is a continuation of Ser. No. 314,238, Feb. 22, 1989, Pat. No. 5,133,487, which is a continuation of Ser. No. 864,502, May 19, 1986, abandoned, said Ser. No. 816,583is a continuation-in-part of Ser. No. 349,403. This application Jan. 4, 1996, Ser. No. 582,906

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.01 **8 Claims**



1. A one-chip memory device comprising:

a data terminal to be supplied with a data signal;

address terminals to be supplied with address signals; and

DRAM elements, formed within the chip, to be accessed in accordance with said address signals,

the said one-chip further comprising:

a register which stores control data for controlling a data write operation to the DRAM elements, and

an external control terminal to be supplied with an external control signal which identifies that the register is to be accessed,

wherein an access address which is different from access addresses allocated to the DRAM elements is allocated to the register, and

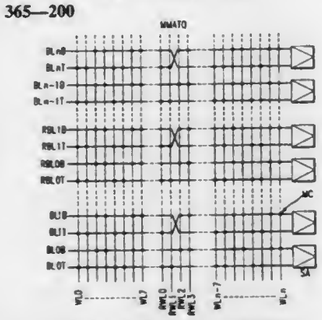
wherein the control data is set into the register in case that the external control signal is supplied with the external control terminal.

5,615,156

SEMICONDUCTOR MEMORY DEVICE HAVING PLURAL MEMORY MATS WITH CENTRALLY LOCATED RESERVE BIT OR WORD LINES

Hiroyuki Yoshida, Ryugasaki; Takashi Inui, Tshuchiura; Shigeki Numaga, Ami-machi; Kiyoshi Nakai, Ohme, and Yukihide Suzuki, Akishima, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex., and Hitachi, Ltd., Japan

Filed May 27, 1994, Ser. No. 250,130
Claims priority, application Japan, May 27, 1993, 5-146684
Int. Cl.[6] G11C 29/00
U.S. Cl. 365—200 9 Claims



1. A semiconductor memory device comprising:

at least one memory array having a plurality of memory mats, each of said memory mats being arranged in a matrix of rows and columns of individual memory cells respectively defining a plurality of word lines and a plurality of bit lines intersecting with the word lines;

each of said memory mats of memory cells including a main memory mat sector of word lines and bit lines as part of a regular memory configuration;

each of said memory mats of memory cells further including a redundant group of a plurality of reserve lines of one of the word lines and bit lines, the reserve lines of one of the word lines and bit lines being disposed approximately in a central portion of the memory mat in which they are present such that the corresponding ones of the word lines and bit lines included in each memory mat as part of the regular memory configuration are arranged on opposite sides of the reserve lines of said one of the word lines and bit lines included in each of the redundant groups;

means operably connected to said at least one memory array for providing a line selection signal for selecting a single one of the plurality of one of the word lines and bit lines of a respective memory mat for use in implementing a memory operation;

means to prohibit the output of the line selection signal from said line selection means in response to an attempted access to a defective one of the word lines and bit lines in the regular memory configuration of said respective one of said plurality of memory mats; and

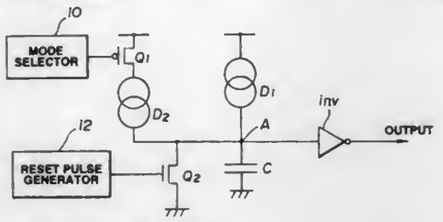
a redundant memory address decoder responsive to the attempted access to a defective one of the word lines and bit lines in said respective one of said plurality of memory mats for generating an output selection signal to select one of a reserve word line and a reserve bit line as a replacement for the defective one of the word lines and bit lines.

5,615,157

SEMICONDUCTOR MEMORY TESTING APPARATUS

Katsuya Nakashima, and Shumpei Kohri, both of Nagasaki, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 172,271, Dec. 23, 1993, abandoned. This application Jul. 7, 1995, Ser. No. 499,653
Claims priority, application Japan, Dec. 25, 1993, 4-345777
Int. Cl.[6] G11C 29/00
U.S. Cl. 365—201 1 Claim



1. A memory device comprising:

a memory cell for storing data;

a word line related to said memory cell;

a timer defining an active period of said word line, said active period having two predetermined durations;

further comprising a mode selector for selecting one of using and testing modes, said mode selector being connected to said timer for selecting one of said two predetermined durations; and

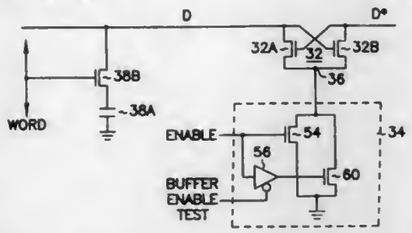
wherein said timer defines a first active period duration in the using mode and a second active period duration in the testing mode, the second active period duration being shorter than the first active period.

5,615,158

SENSE AMPLIFIER CIRCUIT FOR DETECTING DEGRADATION OF DIGIT LINES AND METHOD THEREOF

Roland Ochoa, and Daniel R. Loughmiller, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 13, 1995, Ser. No. 559,195
Int. Cl.[6] G11C 29/00
U.S. Cl. 36[illegible]—201 19 Claims



1. A sense amplifier circuit responsive to data stored in a selected memory cell, the sense amplifier circuit comprising:

an amplifier responsive to a signal representing the data stored in the selected memory cell; and

a pull-down circuit, coupled to said amplifier, having

a delay circuit responsive to a control signal indicating whether the sense amplifier circuit is to operate in a test mode or a normal mode,

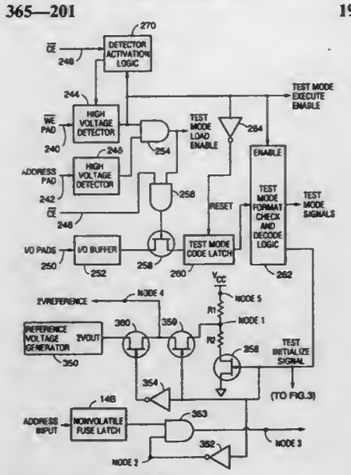
an output circuit configured and arranged to generate a pull-down reference signal corresponding to the data stored in the selected memory cell, the pull-down reference signal delayed in response to the control signal indicating that the sense amplifier circuit is to operate in the test mode.

5,615,159

MEMORY SYSTEM WITH NON-VOLATILE DATA STORAGE UNIT AND METHOD OF INITIALIZING SAME

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Nov. 28, 1995, Ser. No. 563,505
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—201 19 Claims



1. A memory system, including:

an array of memory cells;

control means for generating control signals for controlling operations of the system, said operations including programming the memory cells and reading the memory cells;

a data storage unit which stores control parameter data determining at least one control parameter for at least one of the operations; and

default parameter means coupled to the data storage unit for outputting default parameter data rather than the control parameter data in response to a first control signal from the control means, wherein the default parameter data determines a default value of the at least one control parameter.

5,615,160

MINIMAL RECHARGE OVERHEAD CIRCUIT FOR DOMINO SRAM STRUCTURES

Larry B. Phillips; Robert P. Masleid, and John S. Muhich, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,994
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—203 6 Claims

1. A domino SRAM circuit, comprising:

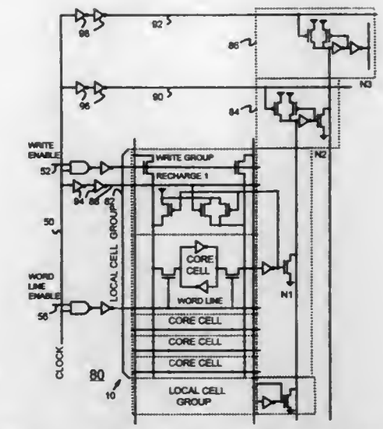
a first level of logic, the first level of logic including, a plurality of core cells for storing information, a domino circuit coupled to the plurality of core cells for sensing information stored in the plurality of core cells, and a word line coupled to the plurality of core cells for activating the domino circuit;

a first recharge line for providing a first recharge signal to the first level of logic;

means coupled to the first recharge line for delaying the first recharge signal to the first level of logic until the word line is deactivated;

a second level of logic coupled to the first level of logic;

a second recharge line for providing a second recharge signal to the second level of logic; and



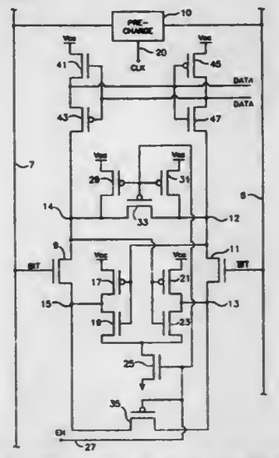
means coupled to the second recharge line for delaying the second recharge signal to the second level of logic until the first recharge signal is deactivated.

5,615,161

CLOCKED SENSE AMPLIFIER WITH POSITIVE SOURCE FEEDBACK

Albert Mu, Milpitas, Calif., assignor to HaL Computer Systems, Inc., Campbell, Calif.

Filed Feb. 22, 1996, Ser. No. 603,882
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—208 3 Claims



1. A memory data sensing circuit for operation on clocked signals with a memory cell that includes a pair of complementary bit channels, the sensing circuit comprising:

a precharging circuit connected to the pair of complementary bit channels and connected to receive a clock signal for selectively charging the pair of complementary bit channels to a logical signal level;

a pair of input gain elements each including a pair of electrodes forming an output circuit and having an input electrode connected to an associated one of the complementary bit channels;

a coupling circuit connecting the pair of input gain elements and disposed to receive an enable signal in one logic state for

operation in one mode as a differential amplifier, and cross coupling the pair of input gain elements for operation in another mode on received enable signal in another logic state to provide positive feedback between the input gain elements for operation thereof as a latch;

a conditioning circuit connected to receive the enable signal and coupled to the output circuits of the input gain elements for charging the output circuits substantially to the same logic signal levels in response to said another logic state of the enable signal; and

a data latch coupled to respond to the logic signal levels on the output circuits of the input gain elements to provide data signals representative of signals on the complementary bit channels.

5,615,162

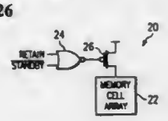
SELECTIVE POWER TO MEMORY

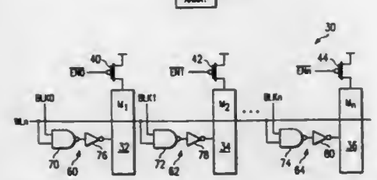
Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1995, Ser. No. 368,568

Int. Cl.[6] G11C *5/14*

U.S. Cl. 365—226 **26 Claims**





1. A memory associated with a mircoprocessor comprising:

a memory cell array; and

a switch coupled between said memory cell array and a supply voltage, said switch controllably connecting and disconnecting said memory cell array and said supply voltage in response to a selected state of a first control signal and a second control signal generated by said microprocessor wherein said first control signal and said second control signal may independently vary.

5,615,163

SEMICONDUCTOR MEMORY DEVICE

Koji Sakui, Tokyo; Hiroshi Nakamura, Kawasaki; Tomoharu Tanaka, Yokohama; Masaki Momodomi, Yokohama; Fujio Masuoka, Yokohama, and Takehiro Hasegawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 360,289, Dec. 21, 1994, Pat. No. 5,517,457. This application Feb. 8, 1996, Ser. No. 598,706

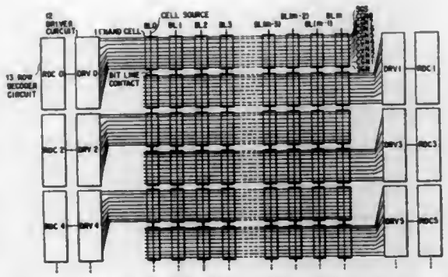
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.03 **12 Claims**

1. A semiconductor memory device comprising:

a memory cell array comprising a plurality of memory cell units arranged in a matrix form, each memory cell unit having a plurality of memory cells connected to one another;

a plurality of word-line drivers which are arranged in two rows, said word-line drivers, except at least one located at ends of



rows, being divided into groups each including two word-line drivers, said groups of two word-line drivers and at least one word-line driver located at ends of rows being provided alternatively on a first and a second side of said memory cell array;

word lines for selecting said memory cells when driven by said word-line drivers, said word-lines being divided into word-line blocks each connected at a first end to one memory cell unit and at a second end to one word-line driver;

bit lines for writing and reading data to and from said memory cells;

row selecting means for selecting said word lines; and

column selecting means for selecting said bit lines;

wherein said word-line blocks are arranged in a row, said word-line blocks, except at least one located at ends of the row, are divided into groups of two word-line blocks and the two word-line blocks of each group are connected to the two word-line drivers of one group, respectively.

5,615,164

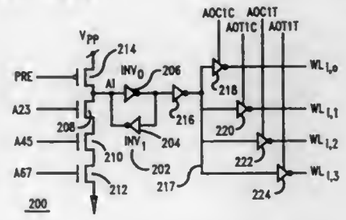
LATCHED ROW DECODER FOR A RANDOM ACCESS MEMORY

Toshiaki Kirihata, Wappingers Falls, N.Y., and Hing Wong, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 477,063

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **18 Claims**



1. A row decoder responsive to a row address, said row decoder comprising:

decode means for selecting a group of rows; means for disabling the selection of said group of rows, responsive to a row redundancy disable signal;

latch means for holding said selected groups of rows selected until reset;

driver means for individually driving a row select signal on each of said group of rows; and,

reset means for resetting said latch means to deselect said selected group of rows.

5,615,165

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND MEMORY SYSTEM USING THE SAME

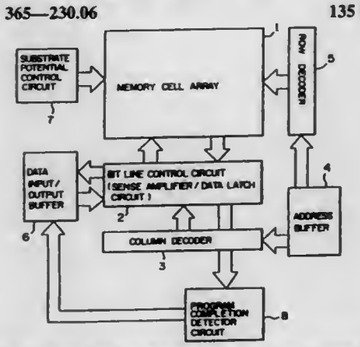
Tomoharu Tanaka; Masaki Momodomi, both of Yokohama; Hideo Kato, Kawasaki; Hiroto Nakai; Yoshiyuki Tanaka, both of Yokohama; Riichiro Shirota, Fujisawa; Seiichi Aritome; Yasuo Itoh, both of Kawasaki; Yoshihisa Iwata, Yokohama; Hiroshi Nakamura, Kawasaki; Hideko Odaira, Machida; Yutaka Okamoto, Kawasaki; Masamichi Asano, Ota-Ku, and Kaoru Tokushige, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 326,281, Oct. 20, 1994, Pat. No. 5,546,351, which is a continuation of Ser. No. 992,653, Dec. 18, 1992, Pat. No. 5,361,227. This application Dec. 21, 1995, Ser. No. 576,564

Claims priority, application Japan, Dec. 19, 1991, 3-354871; Dec. 25, 1991, 3-343200; Mar. 10, 1992, 4-086082; Mar. 31, 1992, 4-077946; Mar. 31, 1992, 4-105831; Jul. 2, 1992, 4-175693

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.06 **135 Claims**



1. A non-volatile semiconductor memory device comprising:

a semiconductor substrate;

a plurality of bit lines;

a plurality of word lines insulatively intersecting said bit lines; and

a memory cell array comprising a plurality of memory cells, each including

a transistor with a charge storage portion;

a plurality of programming control circuits for storing data defining control write voltages to be applied to respective ones of said memory cells in data storage portions, for simultaneously applying said control write voltages to said respective ones of said memory cells according to the data stored in said data storage portions, for determining actual written states of said memory cells, and for selectively modifying said data stored in said data storage portions based on a predetermined logical relationship between the determined actual written states of said memory cells and the data stored in said data storage portions, such that only memory cells which are not sufficiently written have applied thereto control write voltages which achieve a predetermined written state in the respective memory cell upon application to the respective memory cell; and

a plurality of data detectors provided for each of said data storage portions for simultaneously detecting the data stored in said data storage portions in order to detect whether or not all of said respective ones of said memory cells are sufficiently programmed.

5,615,166

SEMICONDUCTOR MEMORY INTEGRATED CIRCUIT

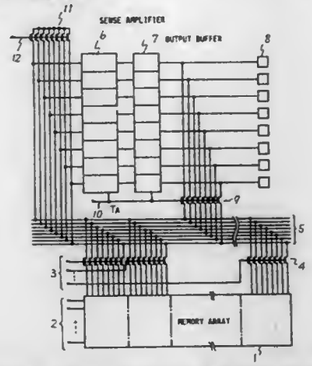
Toru Machida, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed May 9, 1995, Ser. No. 437,501

Claims priority, application Japan, May 17, 1994, 6-102613

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.08 **10 Claims**



3. A memory device comprising: a memory array having a plurality of rows of word lines, a plurality of columns of bit lines, and a memory cell arranged at each intersection of a word line and a bit line; a plurality of word selection input lines connected to the memory array for applying a word selection input signal to the memory array to select a respective word line; a column selector connected to the memory array for applying a column selection input signal to the memory array to select a plurality of desired bit lines; a plurality of read signal lines connected to the column selector for receiving data signals from the selected bit lines; a sense amplifier circuit connected to the read signal lines for amplifying the data signals; an output buffer circuit for receiving output signals from the sense amplifier circuit; a plurality of output terminals connected to the output buffer circuit for outputting selected data signals; inspection means for selectively connecting the read signal lines and the output terminals in response to a first inspection signal; and means for connecting the read signal lines to each other in response to a second inspection signal, such that the signal at each of the output terminals is the same.

5,615,167

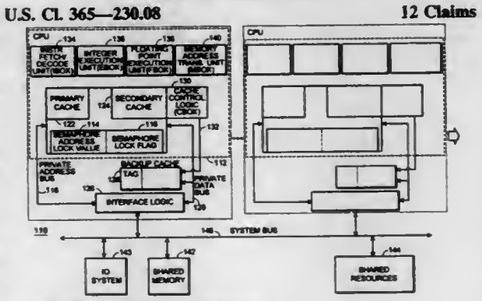
METHOD FOR INCREASING SYSTEM BANDWIDTH THROUGH AN ON-CHIP ADDRESS LOCK REGISTER

Anil K. Jain, Stow; John H. Edmondson, Cambridge, and Peter J. Bannon, Concord, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 8, 1995, Ser. No. 525,106

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.08 **12 Claims**



3. A computer system comprising:

a processor module including:

a central processing unit comprising: a storage element disposed in the central processing unit dedicated for storing a semaphore address lock value and a semaphore lock flag value;

a system bus interface for communicating over a system bus in said computer system;

a cache memory system for storing data and instruction values used by said central processing unit;

a memory system for storing data and instructions for said processor module;

an IO system for allowing said processor module to communicate with data input devices and data output devices;

a system bus, connecting said processor module, said memory system, and said IO system.

5,615,168

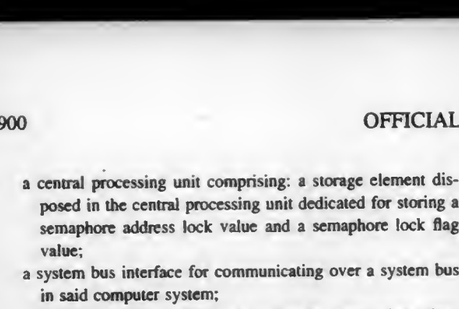
METHOD AND APPARATUS FOR SYNCHRONIZED PIPELINE DATA ACCESS OF A MEMORY SYSTEM

George M. Lattimore, Austin; Michael K. Ciraula, Round Rock; Manoj Kumar; Joseph M. Poplawski, Jr., both of Austin, all of Tex.; Dieter F. Wendel, Schoenaich, and Friedrich Wernicke, Holzgerlingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1995, Ser. No. 538,085

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **16 Claims**



1. A memory system having synchronized pipeline data access, the memory system comprising:

a plurality of memory cells arranged into an array, wherein a memory cell of the plurality of memory cells is addressed via a word line and a bit line;

address decoder operably coupled to the plurality of memory cells, the address decoder activates the word line and disconnects precharge of the bit line when an address for the memory cell is received, wherein the address decoder activates the word line immediately subsequent to decoding the address;

sense enable circuit operably coupled to receive a clock signal and a representation of the word line, the sense enable circuit generates a sense enable signal when the word line is activated and at a transitional edge of the clock signal; and

sense amplifier operably coupled to sense data stored in the memory cell when the sense enable signal is active, such that memory cell access may span two clock cycles while still pipelining at a single clock frequency with maximum bit line margin.

5,615,169

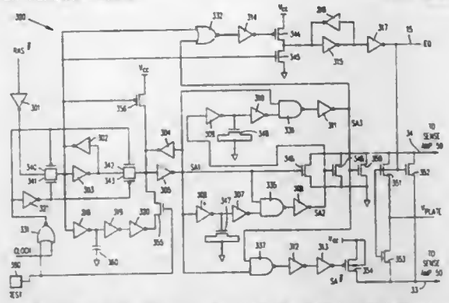
METHOD AND STRUCTURE FOR CONTROLLING INTERNAL OPERATIONS OF A DRAM ARRAY

Wingyu Leung, Cupertino, Calif., assignor to Monolithic System Technology, Inc., San Jose, Calif.

Filed Aug. 31, 1995, Ser. No. 522,032

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233.5 **23 Claims**



15. A control circuit for controlling a dynamic random access memory (DRAM) array having a plurality of bit line equalization circuits, a plurality of sense amplifiers, and a plurality of sense amplifier equalization circuits, the control circuit comprising:

a clock input terminal for receiving a clock signal having a first state and a second state;

an access control signal terminal for receiving an access control signal;

a first signal generation circuit which generates an equalization signal when the access control signal is asserted and the clock signal undergoes a transition from the first state to the second state, wherein the equalization signal disables the bit line equalization circuits and the sense amplifier equalization circuits; and

a second signal generation circuit which generates a sense amplifier control signal when the access control signal is asserted and the clock signal undergoes a transition from the second state to the first state, wherein the sense amplifier control signal enables the sense amplifiers.

5,615,170

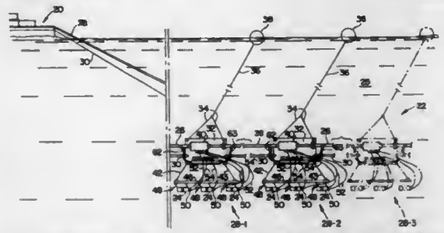
METHOD, SYSTEM AND APPARATUS FOR SELECTIVELY SHUTTING OFF LEAKAGE OF COMPRESSED AIR IN MARINE SEISMIC AIRGUN ARRAYS HAVING COMMON SUPPLY HOSES FOR MULTIPLE AIRGUNS

Stephen Chelminski, Fitzwilliam, N.H., assignor to Bolt Technology Corporation, Norwalk, Conn.

Filed Aug. 8, 1995, Ser. No. 512,660

Int. Cl.[6] G01V *1/38*; F16K *31/02*

U.S. Cl. 367—15 **22 Claims**



1. A method for selectively shutting off leakage of compressed air in a marine seismic airgun array having a common high pressure airline supplying compressed air to a multiplicity of airguns and wherein individual airguns are supplied from the common airline, said method comprising the steps of:

interposing individual shutoff valves between respective individual airguns and the common airline, thereby having the common airline upstream from each valve and having an airgun downstream from each valve;

providing closed and open conditions for each valve, wherein an open condition of a valve allows flow of compressed air from the common airline to the downstream airgun and a closed condition of a valve prevents flow of compressed air from the common airline to downstream of a closed valve;

providing spring force for each valve;

selecting the spring force to be capable of changing the valve from closed condition to open condition when air pressures downstream and upstream of the valve are equalized and selecting the spring force for being incapable of changing the valve from closed condition to open condition when air pressures downstream and upstream of the valve are unequalized due to air leakage occurring downstream of the valve;

simultaneously providing electromagnetic forces for all valves for changing all valves from open to closed condition; and

after all valves are in closed condition, simultaneously discontinuing the electromagnetic forces for all valves,

whereby the spring force of each valve is capable of changing the valve from closed to open condition except for a valve whose downstream and upstream air pressures remain unequalized because air leakage is occurring downstream of the valve.

5,615,171

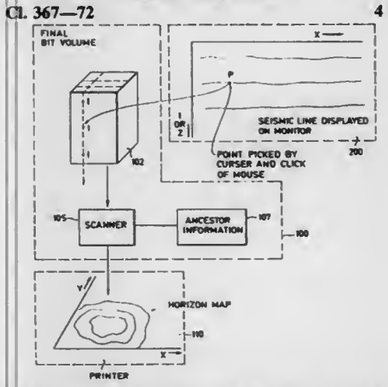
METHOD AND APPARATUS FOR FINDING HORIZONS IN 3D SEISMIC DATA

Harold A. Hildebrand, Applegate, Calif., assignor to Landmark Graphics Corporation, Houston, Tex.

Continuation of Ser. No. 46,026, Apr. 12, 1993, Pat. No. 5,432,751, which is a continuation of Ser. No. 919,167, Jul. 23, 1992, Pat. No. 5,251,184, which is a continuation-in-part of Ser. No. 727,410, Jul. 9, 1991, Pat. No. 5,153,858. This application Mar. 30, 1995, Ser. No. 413,354

Int. Cl.[6] G01V *1/30*

U.S. Cl. 367—72 **4 Claims**



1. In a computerized method of automatically picking horizons from a three dimensional volume of seismic data traces, where a horizon is a bedding interface in the earth's crust and is represented in said seismic data traces through said bedding interface by a common attribute of a seismic wavelet, and where said common attribute may vary in depth as a function of x-y coordinates of said seismic data traces, and where picking a horizon starts with a seed point at a depth of an attribute of at least one seismic wavelet and selects data traces which have a seismic wavelet attribute which corresponds to that of the seed point and continues through said three dimensional volume of seismic data traces by using picked points as new seed points to select new picked points,

a method for recording the relationship between seed points and picked points comprising the steps of,

recording each of said seed points as a parent point,

recording each picked point which results from picking from a seed point as being a child point of said parent seed point, and

displaying on a representation of a picked horizon a path from a child picked point back to a parent point which led to its selection as a picked point.

5,615,172

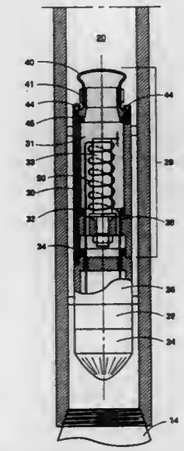
AUTONOMOUS DATA TRANSMISSION APPARATUS

Oleg M. Kotlyar, 4675 W. 3825 S, Salt Lake City, Utah 84120

Filed Apr. 22, 1996, Ser. No. 636,175

Int. Cl.[6] G01V *1/40*; H01L *11/04*

U.S. Cl. 367—83 **19 Claims**



1. A downhole data transmission device for use in a borehole, comprising:

(a) electrical means for providing electrical power for the downhole data transmission device;

(b) sensor means for measuring downhole physical drilling parameters, said sensor means being in electrical communication with said electrical means;

(c) a sealed housing having a flexible membrane at an end proximate to the earth's surface, said sealed housing containing an internal fluid pressurized at a substantially equal pressure to a drilling fluid pressure in the borehole;

(d) a pulser transmitter within said sealed housing, said pulser transmitter having first and second ends and a longitudinal axis from said first to second ends, said first end of the pulser transmitter being removably secured to the housing, said pulser transmitter being comprised of a material capable of rapidly expanding longitudinally in response to the presence of a magnetic field and being further capable of rapidly contracting longitudinally to its original dimension in the absence of the magnetic field;

(e) an electrically conductive coil in radial proximity around said pulser transmitter between said pulser transmitter first and second ends;

(f) controller means, in electrical communication with said sensor means and electrical means, for providing electrical pulses through said electrically conductive coil, said electrical pulses corresponding to the measured downhole physical drilling parameters and being of sufficient magnitude to create a corresponding magnetic field pulse of a sufficient magnitude to cause the pulser transmitter to expand and contract longitudinally in the presence and absence, respectively, of the magnetic field pulse, said longitudinal expansion and contraction of the pulser transmitter creating pressure pulses in the internal pressurized fluid that are transmitted through the flexible membrane to the drilling fluid and detectable at the earth's surface.

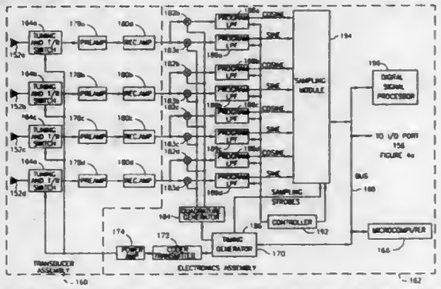
5,615,173
BROADBAND ACOUSTIC DOPPLER CURRENT PROFILER

Blair H. Brumley, San Diego; Kent L. Deines, Poway; Ramon G. Cabrera, San Diego, all of Calif., and Eugene A. Terray, Woods Hole, Mass., assignors to Rowe, Deines Instruments Incorporated, San Diego, Calif.

Continuation of Ser. No. 465,879, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 315,681, Sep. 30, 1994, Pat. No. 5,483,499, which is a continuation of Ser. No. 57,316, May 4, 1993, abandoned, which is a division of Ser. No. 851,269, Mar. 13, 1992, Pat. No. 5,208,785, which is a continuation of Ser. No. 588,469, Sep. 26, 1990, abandoned. This application Jul. 23, 1996, Ser. No. 686,183

Int. Cl.[6] G01S *15/58*

U.S. Cl. 367—90 **16 Claims**



1. A velocity measuring system for measuring a plurality of orthogonal velocity components, said system comprising:

a plurality of transmitting transducers, each of said transducers producing a beam pointing in a different direction along which a velocity component is measured;

a pulse transmitter providing a pulse train to each transmitting transducer, the pulse train comprising at least first and second pulses having a predetermined pulse separation;

a complex sampler of an echo return of the pulses received by each of a plurality of receiving transducers so as to provide a first set of complex samples;

a delay circuit delaying the first set of complex samples by a selected time lag thereby producing a second set of complex samples; and

a processor computing a measured value of complex correlation using at least a portion of the first set of complex samples and at least a portion of the second set of samples and obtaining the velocity measurement based upon a Doppler frequency calculated from the complex correlation, and calculating the orthogonal velocity components from the velocity measurement for each receiving transducer.

5,615,174
METHOD AND DEVICE FOR DETECTING OBJECTS DISPERSED IN AN AREA OF LAND BY DETERMINING PROPAGATION CHARACTERISTICS OF AN ACOUSTIC WAVE IN THE GROUND

Philippe Arnaud, Orleans, and Loic Laine, Saint Doulchard, both of France, assignors to Giat Industries, Versailles Cedex, France

Filed Dec. 4, 1995, Ser. No. 567,054

Claims priority, application France, Dec. 20, 1994, 94 15338

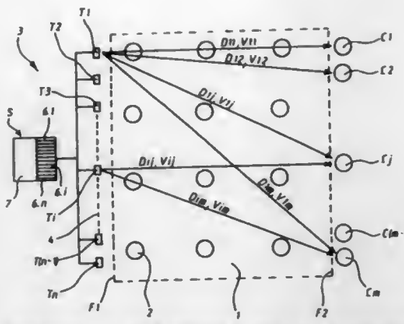
Int. Cl.[6] G01S *3/80*

U.S. Cl. 367—118 **13 Claims**

1. A process to detect objects, dispersed in an area of land (1), characterized in that a multiplicity of acoustic transducers (T1, . . . Ti, . . . Tn) are implemented and in that the following stages are carried out:

n transducers are arranged along a first border (F1) of the area, m reference targets (C1, . . . Cj, . . . Cm) (m being more than 2) being distributed along a second border (F2) of the area,

an optimal operational frequency is determined for the transducers in accordance with the type of ground, a frequency which



gives a received signal amplitude which is at its maximum for the majority of the transducers when emitted by one of them,

a cartography of the propagation characteristics in the ground of the area of land is made by determining a mean propagation speed Vij matrix along the different directions which connect each transducer Ti (i varying from 1 to n) to each of the reference targets Cj (j varying from 1 to m),

an initial pulse at the optimal frequency is sent into the ground by at least one transducer,

by means of at least one temporal window, the echo signals coming from a first object located in the area are selected,

k successive temporal reversals of the signals received by the transducers are made so as to focus detection of the first object and the signals reflected after the last temporal reversal are memorized,

two transducers Tx, Ty at least are located for which the propagation times of the signal tx, ty are the lowest,

the potential location points or zones for objects are determined for the transducers retained along several directions Dxj, Dyj which link the transducer Tx, Ty in question to a reference target Cj, the determination is made by computing the different distances dxj, dyj, (j varying from 1 to m) along directions Dxj, Dyj, the distance being equal to the product of the propagation time in question tx, ty by the appropriate coefficient Vxj, Vyj of the propagation speed matrix,

the actual location of the object is determined as the intersection zone of the different curves (Kx, Ky) linking the potential location points associated with each transducer.

5,615,175
PASSIVE DIRECTION FINDING DEVICE

G. Clifford Carter, Waterford, Conn.; J. Eric Salt, and Yun X. Yuan, both of Saskatoon, Canada, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 19, 1995, Ser. No. 530,504

Int. Cl.[6] G01S *3/80*

U.S. Cl. 367—124 **11 Claims**

1. A direction finding device for finding a bearing to a source radiating a signal, said device comprising:

a first array of sensors disposed in a horizontal plane, each sensor in said array having a high center gain, and said sensors being spaced around a center point in said plane to receive said signal from one direction in said plane;

signal processing electronics joined to said array of sensors and accepting said received signals, said signal processing electronics measuring the average power of the signal received by each said sensor during a predetermined time interval and selecting two adjacent ones of said sensors having the greatest average power; and

a bearing estimator joined to said signal processing electronics, said bearing estimator calculating the bearing from said sensor array to said source using signals from said two adjacent ones of said sensors having the greatest average power and providing an estimated bearing signal responsive to said calculated bearing

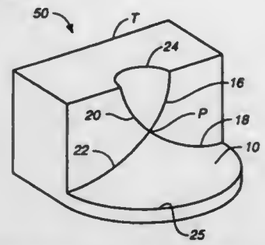
5,615,176
ACOUSTIC REFLECTOR

Emanuel LaCarrubba, 506 Olive St., Sausalito, Calif. 94966

Filed Dec. 20, 1995, Ser. No. 575,335

Int. Cl.[6] H04R *1/34*

U.S. Cl. 367—151 **14 Claims**



1. An acoustic reflector comprising a surface of revolution formed by rotating an ellipse through approximately 180° about a line L passing through one focal point F_1 of said ellipse, said line L intersecting the major axis A of said ellipse at an angle α, said line L intersecting said ellipse at a point P, said surface of rotation bounded at one end by a plane T intersecting line L in the vicinity of focal point F_1 and perpendicular to said line L, and said surface bounded at said other end by a plane B perpendicular to said line L at a point R, said point R on a ray coincident with line L extending from said one focal point F_1 passing through said point P, said point R exterior to said ellipse, said surface bounded at its sides by a pair of planes S_1 and S_2, planes S_1 and S_2 forming a line at their intersection coincident with line L, said planes S_1 and S_2 intersecting at an angle β.

5,615,177
HYBRID-SYNCHRONOUS TYPE CLOCK SYNCHRONIZING APPARATUS OF WHICH DOMINANT GAIN GREATER THAN SUM OF OTHER GAINS, NETWORK THEREWITH, AND CLOCK SYNCHRONIZING METHOD THEREOF

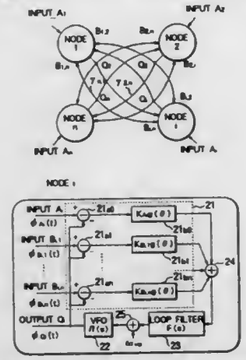
Haruki Yahata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jun. 5, 1995, Ser. No. 462,984

Claims priority, application Japan, Jun. 8, 1994, 6-126320

Int. Cl.[6] G04B *47/00*; G04F *5/00*; H04L *7/00*

U.S. Cl. 368—10 **14 Claims**



1. A clock synchronizing apparatus for inputting a plurality of input signals and for outputting one output signal that-synchronizes with clocks of these input signals, comprising:

phase compare means for determining the phase difference between the phase of each of the input signals and the phase of the output signal of the clock synchronizing apparatus and producing phase difference output signals; and

amplification means for amplifying the phase difference output signals by predetermined gains, which a one gain thereof being greater than the sum of the other gains.

5,615,178
ELECTRONIC CONTROL TIMEPIECE

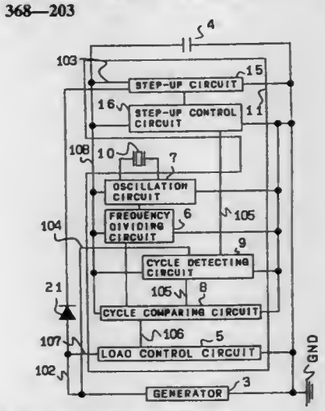
Akira Takakura, Chiba, and Osamu Takahashi, Suwa, both of Japan, assignors to Seiko Instruments Inc., and Seiko Epson Corporation, both of Japan

Continuation of Ser. No. 510,424, Aug. 2, 1995, abandoned. This application Jan. 29, 1996, Ser. No. 591,987

Claims priority, application Japan, Aug. 3, 1994, 6-182617; Jun. 22, 1995, 7-156546

Int. Cl.[6] G04B *1/00*

U.S. Cl. 368—203 **9 Claims**



1. An electronic timepiece comprising:

a power spring for storing mechanical energy which powers a timepiece;

a speed increasing gear train for transmitting mechanical energy stored in said power spring while gradually releasing the mechanical energy;

a generator driven by said speed increasing gear train for generating AC induced power and converting mechanical energy into electric energy;

a step-up circuit for generating a step-up voltage by boosting the voltage of the induced power generated by said generator to a predetermined voltage level;

a smoothing capacitor charged by a step-up voltage generated by said step-up circuit for storing electric energy generated by said generator;

a quartz oscillation circuit driven by electric energy stored in said smoothing capacitor for outputting an oscillation signal having a predetermined frequency;

a frequency dividing circuit for dividing the frequency of the oscillation signal outputted from said quartz oscillation circuit and outputting a reference cycle signal having a predetermined cycle;

a cycle detecting circuit for outputting a detected cycle signal corresponding to the rotation cycle of said generator in response to the AC induced power generated by said generator;

a cycle comparing circuit for comparing a cycle of the reference cycle signal outputted from said frequency dividing circuit and a cycle of the detected cycle signal outputted from said cycle detecting circuit, and outputting a cycle correction signal corresponding to a difference between both signals;

a variable load circuit for changing an electrical load on said generator in response to the cycle correction signal outputted from said cycle comparing circuit by controlling electrical loss torque of said generator whereby the rotation cycle of said generator coincides with a predetermined cycle corresponding to the reference cycle signal; and

movable time-indicating hands coupled with said speed increasing gear train for indicating time.

5,615,179

ELECTRONIC APPARATUS WITH FITTING BAND

Akio Yamamoto; Wataru Iwanami; Hiroshi Yabe; Kenji Yamazaki; Tatsumi Miyashita, and Akeshi Tsurubuchi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

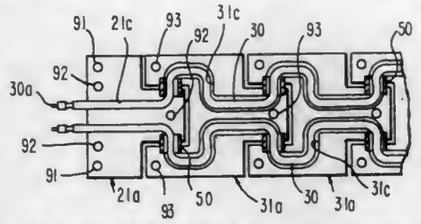
PCT No. PCT/JP94/01087, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO95/02210, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 4, 1994, Ser. No. 392,877

Claims priority, application Japan, May 7, 1993, 5-165745; Sep. 8, 1993, 5-197511

Int. Cl.[6] A44C *5/00*; G04B *37/00*

U.S. Cl. 368—281 **11 Claims**



1. An electronic apparatus with a fitting band, comprising a case and a fitting band containing conductive members therein;

wherein said fitting band comprises an end piece engaging said case, and a base connected to said end piece so as to be rotatable in the direction of bending of said fitting band during fastening, and said conductive members are contained in a state where they are held to said end piece with at least a predetermined strength, and movable for at least a predetermined amount relative to said base, and at least a portion of said conductive members is provided so as to be substantially parallel to the direction of bending of said fitting band during fastening.

5,615,180

MAGNETO-OPTICAL RECORDING MEDIUM AND MAGNETO-OPTICAL RECORDING APPARATUS CAPABLE OF PERFORMING A LIGHT-MODULATION OVERWRITING OPERATION

Michinobu Mieda; Junichiro Nakayama, both of Shiki-gun; Hiroyuki Katayama; Akira Takahashi, both of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1994, Ser. No. 198,620

Claims priority, application Japan, Feb. 22, 1993, 5-032115; Jul. 22, 1993, 5-180980

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **10 Claims**

1. A magneto-optical recording medium comprising:

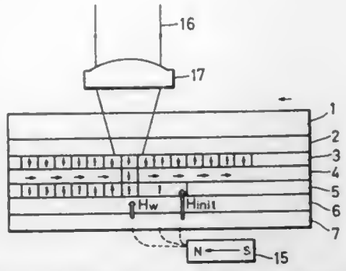
a recording layer that exhibits perpendicular magnetization and that is adapted for use both in recording and in reproducing information,

an intermediate layer wherein an in-plane magnetization state exists at room temperature, and a transition from the in-plane magnetization state to a state of perpendicular magnetization occurs as the temperature of said intermediate layer rises; and

an auxiliary layer that is made of an alloy of a rare-earth metal and a transition metal and that exhibits perpendicular magnetization,

said recording, intermediate, and auxiliary layers being laminated in the foregoing order,

wherein



the rare-earth-transition-metal alloy of the auxiliary layer has a composition that is so selected that the magnetic moment of the rare-earth metal is relatively greater than than of the transition metal at room temperature, and that the compensation temperature is located between room temperature and the Curie temperature of said alloy of said auxiliary layer.

5,615,181

OPTICAL READ/WRITE HEAD WITH LOW ANGLE BEAM SPLITTER AND COPLANAR DETECTORS

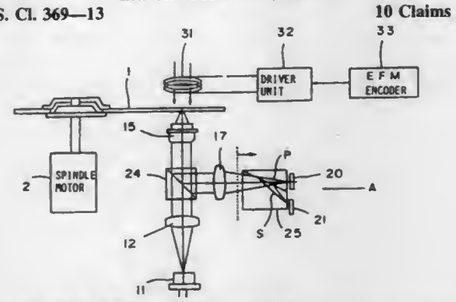
Hayami Hosokawa, Yawata; Tatsuo Ohgaki; Kouhei Tomita, both of Nagaokakyo; Hironobu Kiyomoto, Nara; Naru Yasuda, Uji, and Shinya Otsuki, Nagaokakyo, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Continuation of Ser. No. 25,687, Mar. 3, 1993, Pat. No. 5,444,677. This application Jun. 22, 1995, Ser. No. 493,841

Claims priority, application Japan, Mar. 3, 1992, 4-81598; Aug. 24, 1992, 4-247408; Sep. 30, 1992, 4-285476; Nov. 5, 1992, 4-295581

Int. Cl.[6] G11B *11/00*; *7/00*

U.S. Cl. 369—13 **10 Claims**



1. An optical read/write head, comprising:

a luminous means for emitting a divergent light on a predetermined optical path;

a condensing means for focusing said emitted light onto an optical recording medium and for focusing a light received from said optical recording means;

a first optical means, arranged in said optical path, at a point between said luminous means and said condensing means where said divergent light beam is divergent, for separating a portion of said reflected light, said first optical means having a means for reflecting a majority of a first polarization of said reflected light as a separated portion, and having a means for transmitting a remainder of said reflected light;

a second optical means for further separating said separated portion of said reflected light from said main optical axis into two mutually orthogonally polarized components having an included angle of less than 90°, said second optical means having a means for transmitting along a first path a majority of one from said mutually orthogonally polarized components of said separated portion, and means for reflecting onto a second path a majority of one from said mutually orthogonally polarized components of said separated light, said first and second paths being at said included angle;

a photodetector comprising two light receiving means, each having a respective receptive surface, for receiving, respectively, said two mutually orthogonally polarized components, said two light receiving means having their respective receptive surfaces oriented in substantially the same direction.

5,615,182

MAGNETO-OPTICAL DISK AND THE REPRODUCING METHOD THEREOF

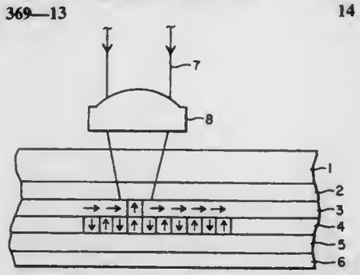
Yoshiteru Murakami, Nishinomiya; Junsaku Nakajima, Yamatotakada; Akira Takahashi, Nara; Junichiro Nakayama, Shiki-gun, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 346,586, Nov. 16, 1994, Pat. No. 5,477,528, which is a continuation of Ser. No. 977,131, Nov. 16, 1992, abandoned. This application Aug. 4, 1995, Ser. No. 511,283

Claims priority, application Japan, Nov. 25, 1991, 3-309034

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **14 Claims**



1. A method for setting the intensity of a light beam which is projected onto a magneto-optical disk upon reproducing information from the magneto-optical disk, comprising the steps of:

reading recorded bits by projecting a light beam onto the magneto-optical disk on which a setting signal having a virtually single frequency is preliminarily recorded magneto-optically as recorded bits whose diameter is smaller than the diameter of a light-beam spot on the magneto-optical disk;

extracting only the signal having a band of the single frequency from signals that have been read;

detecting and integrating the extracted signal; and

setting the intensity of the light beam to an intensity at which the amplitude of the integrated signal is maximized by varying the intensity of the light beam.

5,615,183

MAGNETIC HEAD USED IN MAGNETOOPTICAL RECORDING

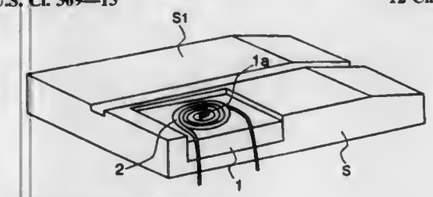
Kazuyoshi Ishii, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 224,721, Apr. 8, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,409

Claims priority, application Japan, Apr. 14, 1993, 5-109827

Int. Cl.[6] G11B *13/00*

U.S. Cl. 369—13 **12 Claims**



1. A magnetic head comprising:

a base; and

a magnetic field generation coil provided on said base and wound in a plane configuration, wherein said coil is wound from its middle portion from an inner peripbery toward an outer periphery on said base, while opposite ends of the coil are rotated in opposite directions, so that no recess for accommodating a lead wire drawn from the inner periphery of the coil is provided on said base.

5,615,184

DISC PLAYING DEVICE

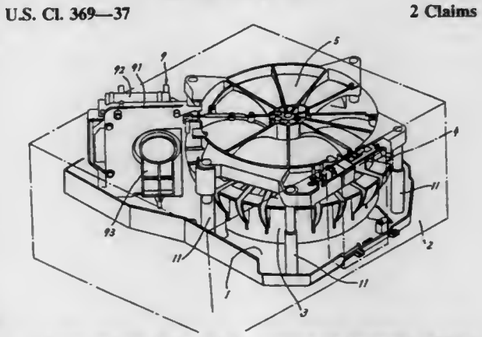
Yukiyasu Tsuruta, Sanda; Tetsuo Noda, Ikoma, and Akihiro Yoshioka, Daito, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 28, 1993, Ser. No. 175,282

Claims priority, application Japan, Dec. 28, 1992, 4-348500

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—37 **2 Claims**



1. A disc playing device for accommodating a plurality of discs and for playing a desired disc, or to eject a disc outside the device and replace the disc with another disc, comprising:

a base chassis;

a dish-shaped magazine having an open upper side mounted on the chassis and formed with a plurality of vertical disc holding grooves radically extending from a central portion of said magazine toward an outer periphery of said magazine;

a guide member covering the magazine from above and fixed to the base chassis; and

disc insertion-drive means disposed as opposed to a specified one of the disc holding grooves, each of the disc holding grooves having a length larger than the diameter of the disc to be inserted thereinto and an intermediate bottom portion smoothly continuous with an outer peripheral bottom portion thereof,

wherein the intermediate bottom portion is at a lower position than the outer peripheral bottom portion,

wherein the magazine is rotatably mounted on a support post provided upright on the base chassis, and the base chassis is provided with electric drive means for rotating the magazine, and

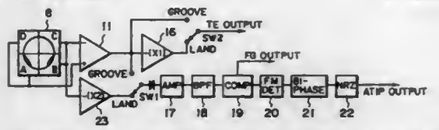
wherein the guide member is supported by a central leg fitted to the upper portion of the support post and a plurality of legs fitted to guide member support posts provided on the base chassis in the vicinity of the outer periphery of the magazine, and has an inner guide surface defining a large annular groove of a circular-arc cross section approximately matching the outer periphery of the disc in curvature to prevent the disc from falling from the magazine, the guide member being formed with guide grooves spaced apart by a same angle as the angle between disc insertion-discharge means and playing means about the central leg and permitting the disc to be delivered to the magazine radially of the guide member.

5,615,185

OPTICAL DISK RECORDING AND REPRODUCING APPARATUS WITH DATA RECORDED AND REPRODUCING APPARATUS WITH DATA RECORDED ON WOBBLED GROOVES AND LANDS

Kenichi Horikiri, Zama, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Division of Ser. No. 263,434, Jun. 21, 1994, Pat. No. 5,537,373. This application Mar. 28, 1996, Ser. No. 623,128
Claims priority, application Japan, Jun. 25, 1993, 5-179780
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.13 6 Claims



1. An optical disk recording/reproducing apparatus for recording data to and reproducing data from an optical disk engraved with a groove having a wobble waveform corresponding to a signal obtained by FM modulating a carrier serving as a rotation synchronizing signal by address information, the width of the groove being a half of a track pitch and the depth thereof being ⅙ to ⅛ of a recording/reproducing laser beam wavelength, means for obtaining a push-pull signal from a main spot of a recording/reproducing laser beam and for using the push-pull signal as a tracking error signal, means for changing the polarity of the push-pull signal to perform a tracking control at the groove center or at the land center, means for recording or reading while the main spot is controlled to be at the groove center, data on or from the groove center and reading the address information from the push-pull signal of the main spot. and means for recording or reading while the main spot is controlled to be at the land center, data on or from the land center and reading the address information from an output of one of divided light receiving elements of the main spot.

5,615,186

MULTIPLE DATA SURFACE DATA STORAGE SYSTEM WITH HOLOGRAPHIC FILTER ELEMENT

Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 168,116, Dec. 6, 1993, Pat. No. 5,487,060, which is a continuation of Ser. No. 710,227, Jun. 4, 1991, abandoned. This application May 31, 1995, Ser. No. 456,266
Int. Cl.[6] G11B 7/09
U.S. Cl. 369—44.24 7 Claims

1. An optical data storage system comprising:

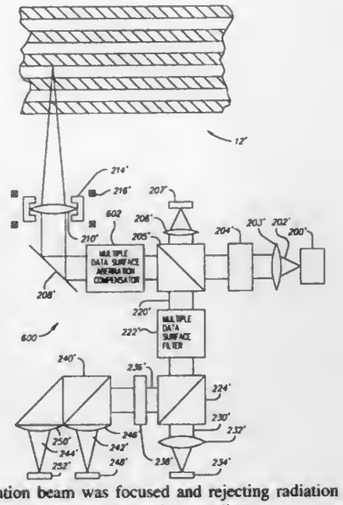
a radiation source;

a device for receiving an optical medium having a plurality of data surfaces at different depths separated by radiation transmissive elements, each data surface having radiation detectable data recorded thereon;

an optical transmission device, including an adjustable focus device, for focusing a radiation beam from the source to one of the data surfaces of the medium;

a control device connected to the focus device for controlling the focus device to focus the radiation beam to one of the data surfaces; and

an optical reception device for receiving the radiation beam after it is reflected from the optical medium and providing a data signal responsive thereto, the optical reception device having a filter comprising a holographic element for passing the radiation beam reflected from the data surface to which the



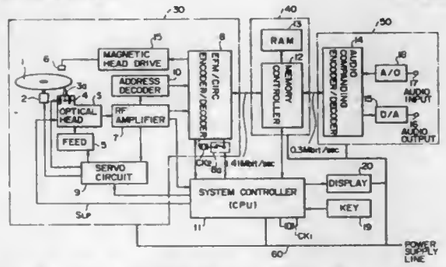
radiation beam was focused and rejecting radiation reflected from other data surfaces of the medium.

5,615,187

POWER SAVING METHOD AND APPARATUS FOR INTERMITTENTLY READING REPRODUCTION APPARATUS

Akira Shinada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 88,674, Jul. 7, 1993, abandoned. This application Sep. 28, 1994, Ser. No. 314,085
Claims priority, application Japan, Jul. 19, 1992, 4-204231; Feb. 5, 1993, 5-040738
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—48 4 Claims



1. Any one of a reproducing apparatus and a recording/reproducing apparatus comprising:

data reading means for reading data from a disc-shaped recording medium;

a laser of an optical pickup;

servo means which comprises a focus coil for focusing control, a tracking coil for tracking control, a spindle motor for rotating the disc-shaped recording medium, and a feed motor for moving the optical pickup;

storage means to which reproduced data read by said data reading means is written at a first transfer rate in a unit time and from which said reproduced data is read at a second transfer rate in the unit time, said second transfer rate being lower than said first transfer rate;

drive circuitry that provides drive power to the servo means and the laser; and

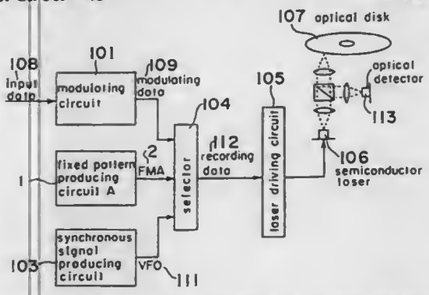
control means for generating a drive control signal according to an amount of the reproduced data accumulated in said storage means and for controlling the drive circuitry to turn off drive power to the servo means and the laser according to the drive control signal.

5,615,188

RECORDING METHOD AND RECORDING AND REPRODUCING APPARATUS FOR OPTICAL DISK

Takashi Ishida, Osaka; Shunji O'Hara, Higashiosaka; Kenzo Ishibashi, Moriguchi, and Tadashige Furutani, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 235,637, Apr. 29, 1994, Pat. No. 5,467,330, which is a division of Ser. No. 118,353, Sep. 9, 1993, Pat. No. 5,331,620, which is a continuation of Ser. No. 651,618, Feb. 6, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,263
Int. Cl.[6] G11B 5/09;7/00
U.S. Cl. 369—48 2 Claims



2. An optical disk recording apparatus for recording data formed of successive one bits and zero bits having a run length limited code data format in which at least a predetermined minimum run length of zero bits or at most a predetermined maximum run length of zero bits is located on each side of recorded one bits, said apparatus comprising:

recording data generating means for generating recording data in accordance with the run length limited code data format, the recording data including a data portion and a fixed pattern data frame used as a synchronous signal, the fixed pattern data frame having plural successive adjacent run lengths of zero bits with respective one bits located between each successive adjacent run lengths of zero bits and having at least three different run lengths of zero bits including at least one of the minimum run length of zero bits and at least two of the maximum run lengths of zero bits; and,

recording means for recording the recording data on an optical disk;

wherein, in the recording data on the optical disk, an initial run length of zero bits of said fixed pattern data frame is immediately preceded by a one bit and a last run length of zero bits of said fixed pattern data frame is immediately followed by a one bit.

5,615,189

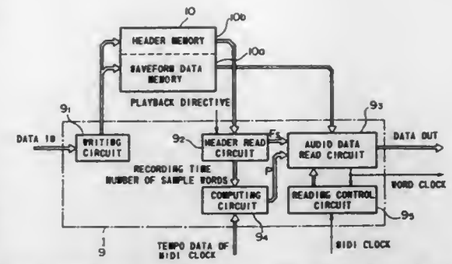
DIGITAL AUDIO SYNCHRONOUS PLAYER

Hirotaka Kuribayashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of Ser. No. 12,431, Feb. 2, 1993, abandoned. This application May 25, 1995, Ser. No. 450,794
Claims priority, application Japan, Feb. 4, 1992, 4-019252
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—50 19 Claims

1. A digital audio synchronous player comprising:

memory means for storing audio data having a plurality of words which represent digitally recorded audio signals and data relating to recording conditions of said audio signals;



first reading means for reading out said audio data stored in said memory means;

second reading means for reading out said data relating to recording conditions stored in said memory means;

word clock signal generating means for generating a word clock signal each time a number of words of said audio data read by said first reading means reaches a value determined based on said data relating to recording conditions read by said second reading means; and

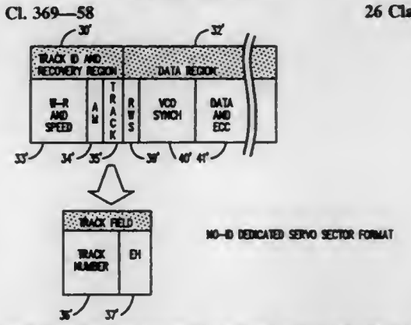
synchronizing signal generating means for generating a synchronizing signal based on said word clock signal.

5,615,190

FIXED- BLOCK ARCHITECTURE EMBEDDED SERVO DISK DRIVE WITHOUT DATA IDENTIFICATION (ID) REGIONS

John S. Best, San Jose, and Steven R. Hetzler, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 218,546, Mar. 28, 1994, abandoned, which is a division of Ser. No. 82,826, Jun. 23, 1993, Pat. No. 5,500,848, which is a continuation of Ser. No. 727,680, Jul. 10, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,066
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—58 26 Claims



1. A fixed-block architecture embedded servo disk drive comprising:

a data recording disk having a plurality of tracks, each track being divided into a number of data regions and servo regions, the servo regions containing servo region count information, and wherein none of the tracks have, either within or outside the data regions and servo regions, identification (ID) regions containing information that uniquely identifies the data regions in the tracks;

a recording head which reads information in the servo regions and which writes and reads user data in preselected ones of the data regions; and

a disk data controller coupled to the recording head for identifying the preselected data regions based on servo region count

information read by the recording head from circumferentially preceding servo regions without use of ID regions.

5,615,191

DISC DEVICE HAVING ECCENTRICITY MEASUREMENT AND CLOCK CORRECTION

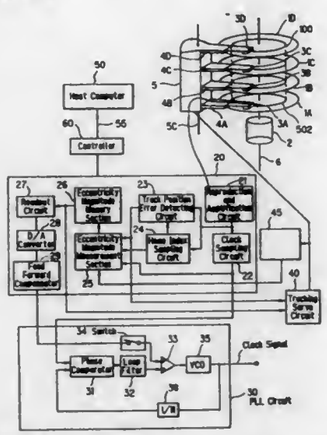
Toru Takeda, Saitama; Satoru Seko, Kanagawa; Hideaki Ishioka, Kanagwa, and Itaru Tomisaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 159,620, Dec. 1, 1993, abandoned. This application Nov. 9, 1995, Ser. No. 555,542

Claims priority, application Japan, Dec. 4, 1992, 4-350578; Feb. 23, 1993, 5-057764; Mar. 2, 1993, 5-066248

Int. Cl.[6] G11B *27/30*

U.S. Cl. 369—58 **28 Claims**



1. A disc device comprising:

a disc having data tracks containing information and a plurality of clock marks embedded in each of the data tracks during manufacture for providing a timing standard;

reproduction means including a reproduction head for reproducing the information recorded on the disc and the plurality of clock marks embedded in each of the data tracks of the disc, and producing an output signal therewith;

clock sampling means for extracting the clock marks from the output signal output by the reproduction means and generating a first clock signal therefrom;

eccentricity magnitude measuring means for obtaining eccentricity magnitudes of the data tracks with respect to an axis of rotation of the disc by using the first clock signal corresponding to the extracted clock marks and the output signal of the reproduction means;

converting means for converting a signal corresponding to the eccentricity magnitudes obtained by the eccentricity magnitude measuring means into a velocity signal;

eccentricity magnitude memory means for storing the velocity signal corresponding to the eccentricity magnitudes of the data tracks with respect to the axis of rotation of the disc; and

clock correction means including voltage control oscillator means and responsive to the stored velocity signal corresponding to the eccentricity magnitudes, a second clock signal being output by the voltage control oscillator means to adapt to the first clock signal by changing one of the phase and the frequency of the second clock signal.

5,615,192

INFORMATION RECORDING AND REPRODUCING METHOD AND APPARATUS

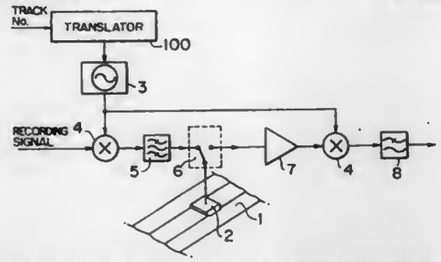
Atsushi Kikukawa, Kokubunji; Sumio Hosaka, Tokyo; Youji Maruyama, Iruma; Toshimichi Shintani, Koganei, and Takeshi Shimano, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,796

Claims priority, application Japan, Oct. 8, 1993, 5-252818; Dec. 20, 1993, 5-319400; Dec. 27, 1993, 5-330501

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **24 Claims**



1. A method for recording and reproducing information on a recording medium in selected one of physical and chemical fashions, comprising the steps of:

a) dividing the recording surface of the recording medium into a plurality of tracks;

b) assigning a modulation parameter to each track so that at least adjacent tracks on the recording medium are assigned different modulation parameters;

c) modulating a carrier signal on the basis of said modulation parameter designated to the track where an information signal is to be recorded, and recording the modulation signal on the track, said carrier signal being specified by said modulation parameter; and

d) designating the modulation parameter assigned to a track holding the intended information from a reproducing signal produced from a recording signal reproducing means and demodulating the original information on the basis of said modulation parameter.

5,615,193

INFORMATION RECORDING APPARATUS AND PROCESS FOR RECORDING ON A RECORDING MEDIUM WITH PIT EDGES SHIFTED IN A STEP-WISE FASHION

Seiji Kobayashi, Tokyo; Hiroshige Okamura, Kanagawa, and Hisayuki Yamatsu, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

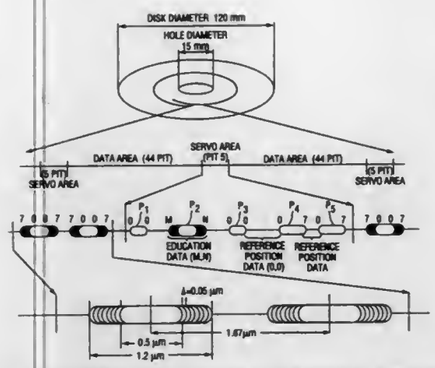
Division of Ser. No. 133,124, Dec. 6, 1993, abandoned. This application May 31, 1995, Ser. No. 456,115

Claims priority, application Japan, Feb. 14, 1992, 4-059710; Jul. 10, 1992, 4-207074

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **13 Claims**

1. An information recording apparatus of the type which includes recording means for recording digital information on an information recording medium from which recorded information is reproduced by an optical detection system which scans said information recording medium along pit rows by a light beam, wherein the improvement comprises that the recording means records each information pit so that edge positions of each information pit are shifted in a step-wise fashion from a predetermined reference position in response to digital information to be recorded, wherein said digital information is recorded as shift amounts of multiple stages of said edge positions, wherein said recording means records on said information recording medium an education pit, inserted into a pit row, whose edge positions are shifted in a step-wise fashion from said predetermined reference position in



response to education data and which is predetermined in response to an insertion position.

5,615,194

DISK REPRODUCING APPARATUS AND METHOD FOR REPRODUCING AN AUDIO SIGNAL AND A SUBCODE AT N TIMES NORMAL SPEED FROM A DISK

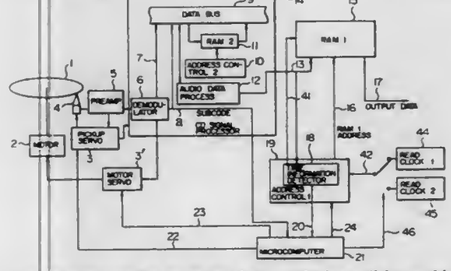
Izumi Kimura; Munehiro Nishioka; Toshifumi Takeuchi, and Hiroshi Tadokoro, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 14, 1994, Ser. No. 181,542

Claims priority, application Japan, Jan. 21, 1993, 5-008138

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—60 **29 Claims**



1. A disk reproducing apparatus for reproducing a disk on which a plurality of digitized information data are recorded and on which subcode including time information relative to the beginning end of each recorded information data are also recorded, comprising:

reproduction processing means for processing said digitized information data and said subcodes including time information at N times a normal output rate at which said reproduced digitized information data is produced, so as to produce a processing output signal in which a particular one of said information data and a particular one of said subcodes is multiplexed always in one-to-one correspondence;

output rate setting means for converting the output rate of said information data and said subcodes in said processing output signal, supplied from said reproduction processing means at N times the normal output rate, into the normal output rate using said one-to-one correspondence between the particular one of said information data and the particular one of said subcodes or maintaining the output rate of said information data and said subcodes supplied from said reproduction processing means at N times the normal output rate; and

switching means for switching said output rate of said output rate setting means.

5,615,195

DATA RECORDING AND REPRODUCING APPARATUS

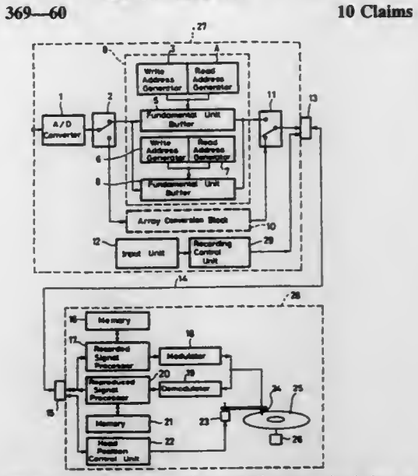
Seiji Tanizawa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Dec. 23, 1994, Ser. No. 362,906

Claims priority, application Japan, Dec. 28, 1993, 5-337671

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—60 **10 Claims**



1. A data recording apparatus for recording quantized data at every predetermined fundamental unit, comprising:

quantized means for quantizing a consecutive signal with a predetermined sampling frequency to generate quantized data;

separating means for separating each sample of said quantized data at every predetermined fundamental unit;

fundamental unit generating means for separating samples of said quantized data of every fundamental unit into an odd-numbered group formed of odd-numbered samples and an even-numbered group formed of even-numbered samples and disposing said odd-numbered group and said even-numbered group so that one of said odd-numbered group and said even-numbered group is disposed in a first consecutive half of said fundamental unit and the other is disposed in a second consecutive half of said fundamental unit to thereby form quantized data of every fundamental unit;

recording means for recording said quantized data on a recording medium; and

recording control means for controlling said recording means so that quantized data of at least two consecutive fundamental units are recorded in substantially consecutive positions on said recording medium.

5,615,196

DISK APPARATUS WITH OPTICAL HEAD CLEANING MEMBER

Kazunari Kato, Iwaki, Japan, assignor to Alpine Electronics, Inc., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,436

Claims priority, application Japan, Jun. 30, 1994, 6-173715

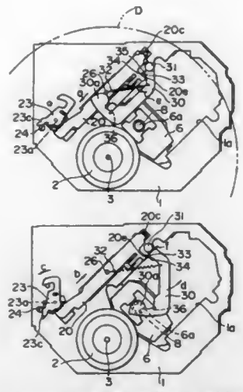
Int. Cl.[6] G11B *33/14*

U.S. Cl. 369—71 **15 Claims**

14. A disk apparatus for reading data from an information bearing disk, comprising:

a turntable for rotatably supporting the information bearing disk, the turntable having a first plurality of teeth formed along an outer periphery thereof;

a carriage including an optical head and an engaging member, the carriage being movable in first and second directions over the information bearing disk, movement of the carriage in the first direction being stopped by a stop member when the



carriage is moved from a reading position, in which the optical head is located over a recording area of the information bearing disk, to a retracted position, in which the optical head is positioned over a peripheral area of the information bearing disk and the carriage contacts the stop member;

a carriage positioning member coupled to the engaging member of the carriage such that rotation of the carriage positioning member in a rotating direction around an axis applies a force to the engaging member, thereby causing movement of the carriage in the first direction toward the retracted position, the carriage positioning member being moved along the axis from a first position to a second position when the carriage positioning member is rotated in the rotating direction after the carriage is in the retracted position; and

a cleaning member positioning assembly coupled to the carriage positioning member which wipes a cleaning member on the optical head as the carriage positioning member is moved from the second position to the first position, the cleaning member including:

a drive member disposed in parallel with the carriage positioning member and arranged to contact an end of the carriage positioning member when the carriage positioning member is in the second position, and

a support member pivotally mounted adjacent the drive member, the support member having a second plurality of teeth formed along an edge thereof, the cleaning member being positioned adjacent the second plurality of teeth;

wherein the first plurality of teeth mounted on the turntable mesh with the second plurality of teeth formed on the support member such that rotation of the turntable is transmitted through the first and second pluralities of teeth to pivot the support member, thereby causing the cleaning member to wipe the optical head.

5,615,197

DISC PLAYER FOR REPRODUCING BOTH MINIDISC AND A COMPACT DISC

Youngsuk Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1994, Ser. No. 363,811

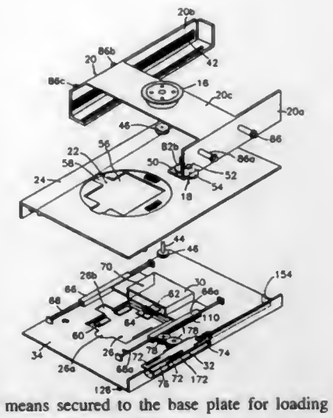
Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30144

Int. Cl.[6] G11B *33/02;7/04*

U.S. Cl. 369—77.2 **16 Claims**

1. A disc player for reproducing both a minidisc and a compact disc, comprising:

a base plate having a horizontal bottom plate, a first side wall and a second side wall, the walls extending upwardly from both respective side ends of the bottom plate;



loading means secured to the base plate for loading one of a minidisc and a compact disc;

a tray holder movably disposed between the walls of the base plate;

a moving plate engaged with the loading means so as to move the tray holder in a loading direction and an electing direction of the disc;

a combined disc tray composed of a compact disk tray and a minidisc tray and movably disposed between the walls of the base plate, the compact disc tray and minidisc tray being arranged vertically apart from each other;

disc tray feeding means for feeding the combined disc tray in a loading direction and an electing direction of the disc, the disc tray feeding means being secured to the tray holder;

a power transmitting plate engaged with the disc tray feeding means;

a single spindle assembly having a turntable on which a compact disc and a minidisc can be selectively loaded; and

a pair of guide rods secured to the minidisc tray

a minidisc cover movably engaged on the minidisc tray in such a manner that both side ends of the minidisc cover are attached to a pair of respective sliding members which slide along said guide rods, one of the sliding members being formed with a rack gear.

5,615,198

OPTICAL HEAD AND IMAGE RECORDING APPARATUS INCLUDING THE SAME

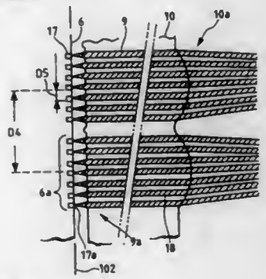
Hideji Kubokawa, Chigasaki, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,360

Claims priority, application Japan, Apr. 6, 1994, 6-068401

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—102 **15 Claims**



9. An optical head comprising:

M laser diode arrays arranged in a line at a first interval, each having N laser diodes, arranged in said line at a second interval, for emitting N laser beams of single mode along a vertical to said line, M and N being natural numbers;

a first micro-lens array including M groups of first micro-lenses confronting said M laser diode arrays respectively, each of said M groups having N first micro-lenses, for collimating said N laser beams respectively, said N laser beams being parallel to each other;

M second micro-lenses, confronting said M groups of first micro-lenses respectively, focusing said collimated N laser beams on a plane to form M first single spots having a first interval therebetween respectively, each first spot having a first width;

M third micro-lenses confronting said M second micro-lenses respectively, located a first distance apart from said M first spots, each collimating said N laser beams from said plane; and

a contraction optical system for focusing M of said N laser beams from said M third micro-lenses and forming M second single spots having a second interval therebetween and each second single spot having a second width on a recording medium, wherein said second interval is smaller than said first interval, said second width is smaller than said first width, said M laser diode arrays are driven in accordance with M video signals respectively, and said M second spots for respective pixels.

5,615,199

OPTICAL HEAD APPARATUS

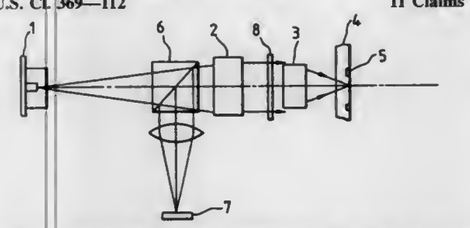
Kimio Tatsuno, Tokyo; Takeshi Shimano, Hachioji; Hiroshi Fukuda, Kodaira, and Osamu Komoda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,524

Claims priority, application Japan, Dec. 20, 1993, 5-319319

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **11 Claims**



11. An optical head apparatus comprising a diode laser source, optics for at least focusing a light beam emitted by said diode laser source onto the surface of an optical disk, and guide means for guiding a reflected beam from the optical disk surface to an optical detector, wherein a phase plate is located in at least one of two positions consisting of the pupil of said optics and of a position close to said pupil, wherein said optics comprises a conjugate optics lens set for providing the functions of a collimator lens and an objective lens, wherein said phase plate is located in at least one of two positions consisting of the pupil of said lens set and of a position close to said pupil, and wherein said phase plate is composed of an optical element having two co-centered regions arranged so that the optical path difference between the central part and the marginal part of the regions is half of the wavelength of said light beam.

5,615,200

LIGHT BEAM SHAPING DEVICE TO CHANGE AN ANISOTROPIC BEAM TO AN ISOTROPIC BEAM FOR REDUCING THE SIZE OF AN OPTICAL HEAD

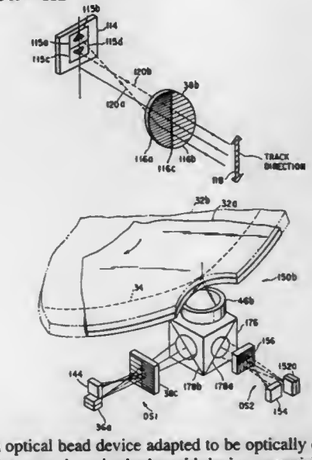
Isao Hoshino, Yokohama; Shoko Wachi, Tokyo; Yoshinori Honguh, and Masahiko Tanaka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 118,743, Sep. 10, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 421,965

Claims priority, application Japan, Sep. 10, 1992, 4-241891; Sep. 7, 1994, 6-213327

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **27 Claims**



16. An optical bead device adapted to be optically coupled to an information record carrier body, said device comprising:

a light source for emitting a light beam having an anisotropic beam shape in a predetermined direction of an optical axis;

a photodetector, provided on a surface perpendicular to said optical axis of said light source to be close to said light source, having a plurality of divided photosensitive regions;

an objective lens, provided close to said information record carrier body, for converging a spot light to said information record carrier body and receiving a reflected light from said information record carrier body; and

bolographic means, provided among said light source, said photodetector, and said objective lens, having a plurality of divided holograms;

wherein said light source, said photodetector, said objective lens, and said holographic means are formed as one optical unit.

5,615,201

OPTICAL PICKUP

Haruo Tanaka, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 220,500, Mar. 31, 1994, Pat. No. 5,530,689. This application Dec. 20, 1995, Ser. No. 575,962

Claims priority, application Japan, Apr. 12, 1993, 5-084872

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **7 Claims**

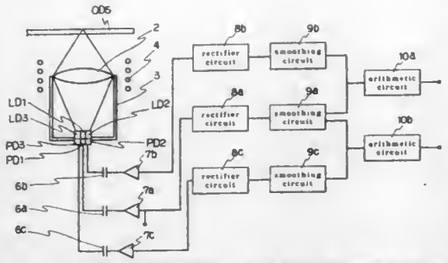
1. An optical pickup comprising:

a light-emitting device;

an objective lens for focusing light on an optical disk emitted from said light-emitting device; and

a means for detecting a variation of quantity of light emission of said light-emitting device depending on a returning light returning to said light-emitting device reflected by said optical disk;

wherein said light-emitting device is provided to have such an optical path length from said optical disk that no interference



component is substantially caused between light from said light-emitting device and the returning light reflected from said optical disk;

wherein said optical path length is set to a value represented by (n+½)·A, where n is an integer, A is equal to 2(a length of resonator of the light-emitting diode)·(refractive index).

5,615,202

AUTOMATIC DISC CHANGER FOR A DISC REPRODUCING SYSTEM

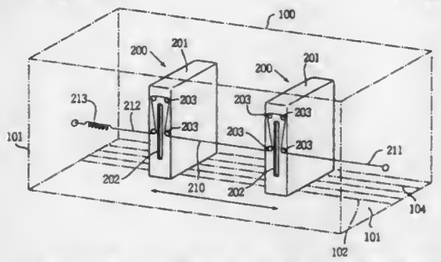
Kazuhisa Enomoto; Takao Yamazaki; Taiki Azuma; Shinji Tarutani, and Hidetoshi Gokita, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 5, 1995, Ser. No. 368,912

Claims priority, application Japan, Jan. 5, 1994, 6-000124

Int. Cl.[6] G11B *17/22;17/04*

U.S. Cl. 369—178 **6 Claims**



1. An automatic disc changer for a disc reproducing system having a casing for the automatic disc changer, a disc holder section provided in the casing, and at least one disc holder in the disc holder section for storing a plurality of discs in vertical position so that each disc can be removed from the disc holder, said disc changer comprising:

a reproducing device provided in the casing to be moved along the disc holder section, said reproducing device having an opening at a side confronting the disc holder section, a loading and discharging means for loading and discharging a disc passing through the opening, and driving means for driving said reproducing device along the disc holder section;

a wire connected to opposite sides of the casing, and extending along and adjacent to the disc holder section so as to prevent those of said discs stored in the disc holder section which are not being loaded or unloaded by said reproducing device from exiting said disc holder section beyond a plane which extends along said side of said reproducing device; and

guide means disposed on the reproducing device around the opening for guiding said wire,

said guide means being engaged with said wire so that said wire does not obstruct the opening when said reproducing device is moved along the disc holder section by said driving means.

5,615,203

FLOATING-TYPE OPTICAL HEAD HAVING INCORPORATED THEREIN A FLOATING SLIDER AND AN OPTICAL DEVICE WHICH FLOATS WITH THE SLIDER, INCLUDES A LIGHT SOURCE, CONDENSING UNIT AND PHOTODETECTOR AND IS SUPPORTED MOVABLY RELATIVE TO THE FLOATING SLIDER

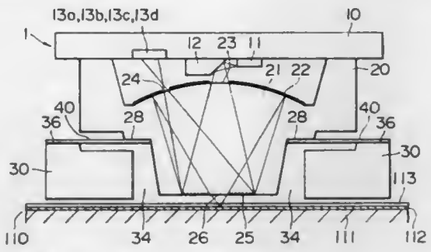
Masaharu Fukakusa, Saga-ken, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,666

Claims priority, application Japan, Dec. 20, 1993, 5-319660

Int. Cl.[6] G11B *19/00;7/12*

U.S. Cl. 369—244 **3 Claims**



1. A floating-type optical head comprising:

a floating slider for floating over a medium as a result of an air flow generated on the recording surface of the medium;

an optical device comprising a light source, a light condensing means for condensing a light beam emitted by said light source onto said medium, and photo-detecting means for detecting a light beam reflected by the medium; and

a support means to which said optical device is attached, said support means elastically supporting said optical device relative to said floating slider such that said optical device is movable in at least a substantially perpendicular direction relative to the recording surface of said recording medium, wherein said device floats together with said floating slider over said recording medium.

5,615,204

STRUCTURE FOR SUPPORTING OPTICAL PICKUP

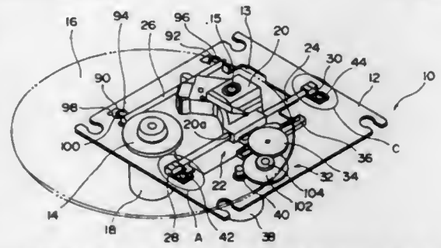
Masayoshi Watanabe; Hiroshi Ogasawara, both of Yokohama; Shozo Saegusa, Ibaraki-ken, and Toshio Sugiyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,873

Claims priority, application Japan, Sep. 30, 1994, 6-236438

Int. Cl.[6] G11B *7/08;21/02*

U.S. Cl. 369—247 **16 Claims**



1. An optical pickup apparatus comprising an optical pickup for directing a light beam onto pits formed in an optical disk and for receiving reflected light from the optical disk, an optical pickup

supporting member including two guide rods for guiding the optical pickup in a radial direction of the optical disk, two first mounting members for mounting ends of one of said guide rods, and two second mounting members for mounting ends of the other of said guide rods, and a chassis for mounting the first and second mounting members thereto,

each of said first mounting members including a base fixed to said chassis, a guide rod supporting member for fixedly supporting said one of said guide rods, and a flexible member located between said base and said guide rod supporting member for causing said guide rod supporting member to be elastically displaced substantially only in a vertical direction with respect to a surface of the optical disk,

wherein a natural frequency of a system consisting of said one of said guide rods, said first mounting members, and said chassis is set to be less than that of said optical pickup and of the optical disk.

5,615,205

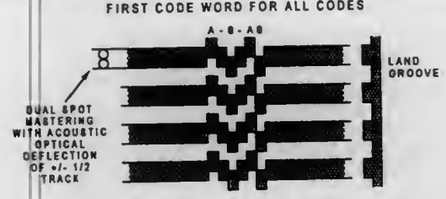
BI-LEVEL OPTICAL MEDIA HAVING EMBOSSED HEADER FORMAT

Karl Belser, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1995, Ser. No. 495,866

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.4 **17 Claims**



1. An optical data storage media comprising:

a flat substrate patterned with a regular periodic pattern of lands and grooves, each land and groove having approximately equal widths;

information wobble marks added to said lands and grooves as deviations in a path of grooves to a first or second side by a fixed amount of identical magnitude for each wobble mark and for a short duration along the direction of said grooves;

grooves depths within said grooves;

wobble mark deflection distances along said grooves, wherein said groove depths and wobble mark deflection distances give detectable reflectivity signal amplitude from said wobble marks when sensed during playback, and give a sufficient position error signal when the defraction light distribution reflected from said grooves during playback is sensed by a conventional push/pull position error sensing system;

first and second wobble mark encodings, at least one of the wobble mark encodings designate a physical location of a selected length of groove or land, at wobble positions with or without a wobble mark, said wobble positions being aligned perpendicular to the direction of said grooves on each groove and for all grooves in a group of grooves;

second wobble mark encodings opposite said first wobble mark encodings such that the deflection of a sensing system to an adjacent groove do not simultaneously move toward each other; and

a plurality of first and second wobble deflections extending over a short length of a groove such that a push/pull position error signal is not biased into indicating an erroneous center position perpendicular to said groove direction for a given average.

5,615,206

OPTICAL DISK

Takuma Yanagisawa; Selichi Ohsawa, and Hiroki Kuribayashi, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

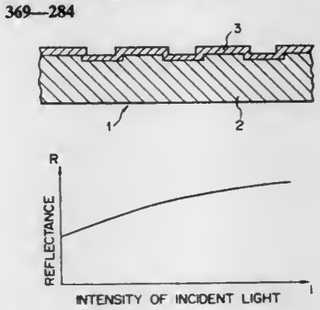
Continuation of Ser. No. 96,982, Jul. 27, 1993, abandoned.

This application Sep. 1, 1995, Ser. No. 522,543

Claims priority, application Japan, Aug. 5, 1992, 4-209152

Int. Cl.[6] G11B *3/70*

U.S. Cl. 369—284 **5 Claims**



1. A reflection type optical disk for recording information signals comprising:

a substrate having a major surface and a plurality of pits formed on the major surface, said plurality of pits corresponding to the information signals, said information signals being read out by detecting a variation due to individual one of said plurality of pits a light intensity of an incident beam which has been reflected with the optical disk, said optical disk further comprising;

a reflective layer formed on the said major surface with covering the plurality of pits, said reflective layer consisting of a third order, non-linear optical effect material producing a non-linear refractive index effect, said reflective layer producing a non-linear optical effect to develop a following electric polarization P in response to the incident beam impinging thereon,

$$P+X^{(1)}E+X^{(2)}E^2+X^{(3)}E^3+\ldots$$

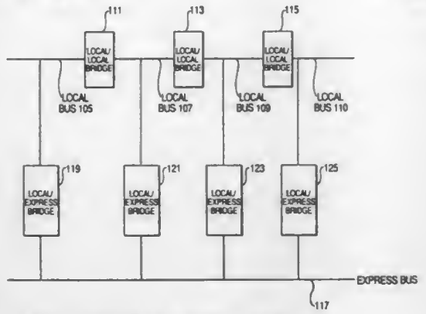
where E is a photoelectric field E of the incident beam, $X^{(i)}$ is a linear susceptibility, and $X^{(i)}$ (i =2, 3, . . . , unit:esu) is an i-th order non-linear susceptibility said reflective layer having the third order non-linear susceptibility $X^{(3)}$ more than 1×10^{-4} value, wherein said reflective layer having a reflectivity which generally changes linearly with the light intensity of the incident beam thereon wherein when the incident beam irradiates the major surface to make a beam spot in focus on the major surface, the light intensity distribution of the incident beam causes a reflectance of the reflective layer within the beam spot to take the different levels in accordance with the luminance at respective points in the beam in a manner that the level of the reflectance of a center portion is higher than the level of the reflectance of a periphery portion around the center portion in the spot, therein an effective beam spot size of the incident beam reflected from the reflective layer for reading the information signals become smaller than the spot size of the incident beam irradiating the major surface.

5,615,207

SIDE BUS TO DYNAMICALLY OFF LOAD MAIN BUS

Douglas D. Gephardt; Brett B. Stewart; Rita M. Wisor; Drew J. Dutton, all of Austin, and Steven L. Belt, Pflugerville, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 482,045
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—237 **11 Claims**



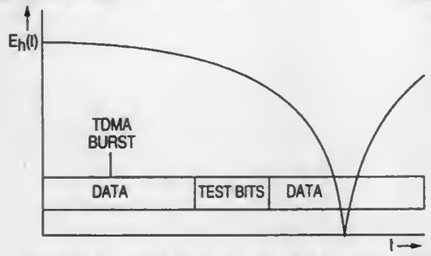
1. A data communication system comprising:
an express bus;
a plurality of local buses;
a plurality of local/express bridges, each connecting a corresponding local bus to the express bus; and
a plurality of local/local bridges, each connecting two corresponding local buses.

5,615,208

KALMAN FILTER FOR CHANNEL IMPULSE-RESPONSE ADAPTION IN RECEIVERS FOR TDMA MOBILE RADIO SYSTEMS

Franz-Josef Hagmanns, Backnang, Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Germany

PCT No. PCT/DE94/00306, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO94/24796, PCT Pub. Date Oct. 27, 1994
PCT Filed Mar. 19, 1994, Ser. No. 507,474
Claims priority, application Germany, Apr. 8, 1993, 43 11 656.6
Int. Cl.[6] H04L *25/30*
U.S. Cl. 370—252 **1 Claim**



1. A method for adaptation to the time-variable channel impulse response during a burst in receivers for TDMA mobile radio systems, each burst including in the center between two data regions a test sequence which is known to the receiver and by means of which an initial estimate of the channel impulse response is possible, wherein
the received signal of a burst is sampled,
the received burst is divided into 2N+1 sectors $A_{-N}, \ldots, A_{+N}$, in such a manner that the channel impulse response can be regarded as being constant within a sector,
a vector $\hat{X}$ of dimension (2N+1)L is defined, L being the number of channel impulse response coefficients and the (iL+1)-th component of $\hat{X}$, $-N \leq i \leq +N$, $0 \leq l \leq L-1$ is initialized before the start of detection using the l-th coefficient of the estimated value of the channel impulse response obtained from the test sequence,
a matrix E of dimension (2N+1)L×(2N+1)L is defined, whose (iL+1,i'L+l')-th element is initialized using

$$e_{iL+1,i'L'+l'}(0)=\phi_{hh}(l,l'',0,0)+\sigma_h^2\delta_{ll''}+\phi_{hh}(l,l'',i,i') -\phi_{hh}(l,l'',i,0)-\phi_{hh}(l,l'',0,i'').$$

where $\phi_{hh}(l,l'',i,i'')$ is an approximation to $\langle h_i(l)h_{i'}^*(l'')\rangle$ and is the correlation of the l-th component of the channel impulse response in the sector A_i and the l'-th component of the channel impulse response in the sector $A_{i'}$, and σ^2_h is the variance of the error in the estimate of the channel impulse response coefficients from the test signal,
a matrix E_i of dimension (2N+1)L×L is defined, whose columns, after the detection of the i-th sector, are the columns iL, . . . ,(i+1)L−1 of the matrix E,
a matrix E_{ii} of dimension L×L is defined, whose lines, after the detection of the i-th sector are the lines iL, . . . ,(i+1)L−1 of the matrix E_i,
a matrix S of dimension M×L is defined, whose (m,l)-th digit, after detection of the i-th sector, is occupied by reconstructed transmitted signal sample s(iM+m−1) where M is the number of signal samples in a section,
a vector $\hat{x}_i$ of dimension L is defined, whose elements, after detection of the i-th sector, are equal to the elements iL, . . . ,(i+1)L−1 of $\hat{x}$,
a vector d of dimension M is defined which, after the detection of the i-th sector, is

$$d=r_i-S\hat{x}_i$$

where r_i is a vector of dimension M and contains the received signal samples associated with the i-th sector A_i,
each burst is processed in 2N steps, where
in the k-th step, the i-th sector is detected using the components iL, . . . ,(i+1)L−1 of the vector $\hat{x}$, the sector A_i being selected by a method by means of which, initially, all the data sections which are not affected by a fading incursion are provided for detection before an affected data section is processed,
the matrix

$$P=E_iS^*[\sigma^2I+SE_{ii}S^*]^{-1}$$

is calculated, where σ^2 is the variance of the noise contained in the received signal samples,
and the recursions

$$\hat{x}:=\hat{x}+Pd$$

$$E:=E+PSE_i^*$$

are carried out.

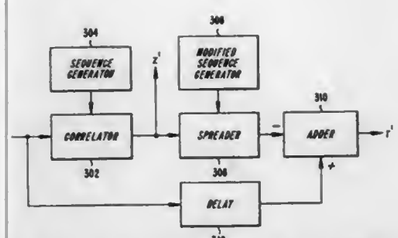
5,615,209

METHOD AND APPARATUS FOR CDMA SIGNAL ORTHOGONALIZATION

Gregory E. Bottomley, Cary, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Jul. 26, 1995, Ser. No. 507,714
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—342 **16 Claims**

1. A receiver comprising:
means for receiving a composite signal;
means for processing said composite signal to produce a processed composite signal;
means for correlating said processed composite signal with a plurality of signature sequences to produce at least one correlation;
means for detecting a particular signal within said composite signal using said at least one correlation;
means for modifying said signature sequences to produce modified signature sequences; and



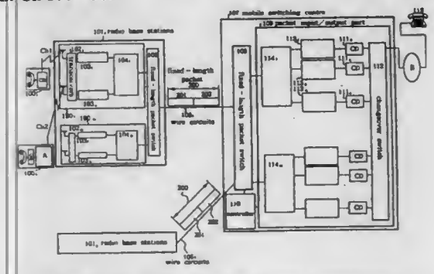
means for removing said particular signal from said processed composite signal using said modified signature sequences.

5,615,210

MOBILE RADIO COMMUNICATIONS SYSTEM

Akira Kaiyama, Kanagawa; Noriteru Shinagawa, Ibaragi, and Masatomo Nakano, Saitama, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed Jan. 11, 1995, Ser. No. 371,547
Claims priority, application Japan, Jan. 11, 1994, 6-001368
Int. Cl.[6] H04L *12/56;* **H04Q** *7/22*
U.S. Cl. 370—389 **8 Claims**



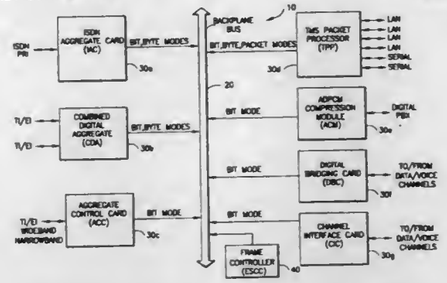
1. A mobile radio communications system comprising:
a plurality of mobile stations,
a plurality of radio base stations connected to the plurality of mobile stations by radio channels, and
a mobile switching center connected to the plurality of radio base stations by wire circuits,
the mobile switching center and the plurality of radio base stations having means for transmitting and receiving fixed-length packets through the wire circuits;
the fixed-length packets having a signal length which accommodates a plurality of short packets;
the means for transmitting and receiving comprising:
(A) information data assembly/disassembly circuits comprising:
(i) a plurality of assembling means to which are input low bit-rate digital information signals, and for assembling short packets; and
(ii) a plurality of disassembling means to which are input short packets, and for disassembling the input short packets into low bit-rate digital information signals; the plurality of assembling and disassembling means provided in parallel in correspondence with the information signal channels; and
(B) fixed-length packet assembly/disassembly circuits comprising:
(iii) means for accommodating the short packets output from the assembling means in the fixed-length packets in positions corresponding to the channels, and for transmitting the short packets to the wire circuits; and
(iv) means for extracting and disassembling the short packets accommodated in channel-corresponding positions in the fixed-length packets which arrive from the wire circuits, and for transferring the short packets to channels corresponding to the positions in which they were accommodated.

5,615,211

TIME DIVISION MULTIPLEXED BACKPLANE WITH PACKET MODE CAPABILITY

Peter M. Santore, Cheshire, and John M. O'Neil, Jr., Litchfield, both of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Filed Sep. 22, 1995, Ser. No. 532,888
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—419 **12 Claims**



1. A telecommunications backplane system, comprising:
a) a backplane bus having a plurality of threads;
b) a plurality of time division multiplexed (TDM) data modules coupled to said backplane bus;
c) a plurality of packet based data modules coupled to said backplane bus; and
d) a frame controller means coupled to said backplane bus, said frame controller means for generating a frame having a first plurality of timeslots for and sufficient to handle all fixed rate time division multiplexed data traffic provided by said plurality of TDM data modules on said backplane bus, and a second plurality of timeslots for packet-based data traffic provided by said plurality of packet based data modules, said frame controller means for generating selects to said plurality of TDM data modules according to said frame, wherein
each of said TDM data modules places at least one data bit and a plurality of address bits on said backplane bus when selected by said frame controller according to said frame, and each of said packet based data modules contends for access to said backplane bus and sends data packets including a header containing an address, packet data, and a trailer on said backplane bus as a series of words on said backplane bus during said second plurality of timeslots after having successfully contended for access to said backplane bus.

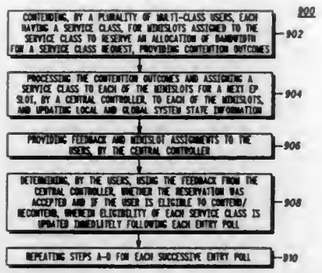
5,615,212

METHOD, DEVICE AND ROUTER FOR PROVIDING A CONTENTION-BASED RESERVATION MECHANISM WITHIN A MINI-SLOTTED DYNAMIC ENTRY POLLING SLOT SUPPORTING MULTIPLE SERVICE CLASSES

Chester A. Ruszczyk, South Boston, and Levent Gun, Hopkinton, both of Mass., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 11, 1995, Ser. No. 526,517
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—433 **5 Claims**

1. A method for providing a contention-based reservation mechanism within a mini-slotted dynamic Entry Polling (EP) slot in a multiple-access communication system having a central controller with local and global system state information, comprising:
A) contending, by a plurality of multi-class users, each having a service class, for minislots assigned to the service class to reserve an allocation of bandwidth for a service class request, providing contention outcomes;
B) processing the contention outcomes and assigning a service class to each of the minislots for a next mini-slotted dynamic EP slot, by a central controller, to each of the minislots, and updating the local and global system state information;



C) providing feedback and minislot assignments to the users, by the central controller;

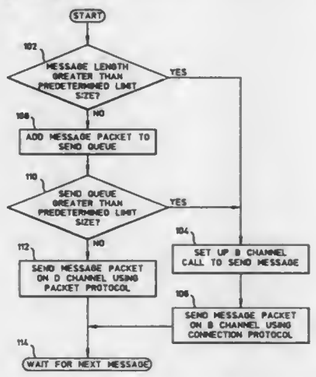
D) determining, by the users, using the feedback from the central controller, whether the reservation was accepted and if the user is eligible to contend/recontend, wherein eligibility of each service class is updated immediately following an entry poll; and

E) repeating steps A–D for each successive entry poll.

5,615,213
MESSAGE TRANSMISSION USING OUT-OF-BAND SIGNALING CHANNEL

Allan D. Griefer, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1995, Ser. No. 422,192
Int. Cl.[6] H04J *3/02;3/16*
U.S. Cl. 370—412 **12 Claims**



1. An apparatus for receiving a digital data message from a local user connected to a communications network having multiple transmission channels and sending the data message to one or more remote users connected to the communications network, the apparatus comprising:

a local buffer memory in which the apparatus places the received data message;

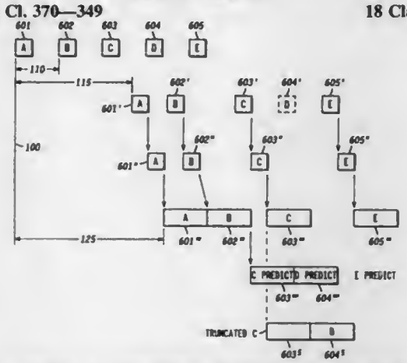
a memory unit including a send queue in which data messages can be stored; and

a processor that determines if the received data message has a length in bytes greater than a predetermined message limit size, selects a first one of the multiple transmission channels of the communications network to send the data message if the data message length was determined to be greater than the message limit size and otherwise places the received data message in a message packet temporarily stored in the send queue, whereupon the processor determines if the messages stored in the send queue have a total length greater than a predetermined queue limit size and selects the first one of the multiple transmission channels of the communications network to send the data messages stored in the send queue to the remote user if the send queue total data message length was determined to be greater than the queue limit size and otherwise selects a second one of the multiple transmission channels of the communications network to send the message packets in the send queue to the remote user if the send queue data message length was not greater than the queue limit size.

5,615,214
SYSTEM AND METHOD OF COMPENSATING PROPAGATION TIME VARIATIONS AND SUBSTITUTING FOR LOST PACKETS IN A PACKETIZED VOICE COMMUNICATION SYSTEM

Ronald V. Chandos, Tempe, and Brent M. McKay, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 550,318
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—349 **18 Claims**



1. A method of compensating propagation time variations and substituting for lost packets while minimizing end-to-end delay in a packetized voice communication system wherein during an active call, a plurality of voice packets are transmitted from a transmitting node of said packetized voice communication system to a receiving node, said receiving node having a presentation queue for storing and annunciating annunciation packets, each of said plurality of voice packets being one of a type of said annunciation packets, said method comprising the steps of:

firstly receiving a reference voice packet at a reference arrival time, said reference voice packet being one of said plurality of voice packets;

queuing said reference voice packet in said presentation queue;

determining if said receiving node subsequently received a present voice packet, said present voice packet being a subsequent one of said plurality of voice packets;

when said receiving node received said present voice packet and said present voice packet comprises a voice pause indicator, concatenating a voice pause packet, based on the type of an immediately previous one of said annunciation packets, into said presentation queue at an adjusted position in said presentation queue;

when said receiving node received said present voice packet and said present voice packet comprises normal speech, concatenating said present voice packet, based on the type of an immediately previous one of said annunciation packets, into said presentation queue at an adjusted position in said presentation queue;

when said receiving node did not receive said present voice packet, determining if said presentation queue is empty;

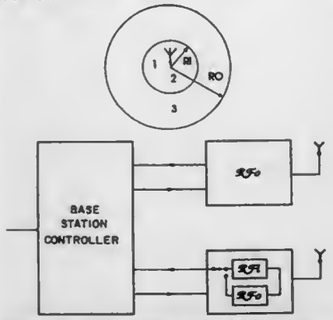
when said presentation queue is empty, generating one of said annunciation packets based on the type of an immediately previous one of said annunciation packets and concatenating said one of said annunciation packets into said presentation queue; and

returning to said determining if said receiving node subsequently received a present voice packet step during said active call.

5,615,215
EXTENDED RANGE TDMA SYSTEM

Ross G. Utting, Bardon; Colin Rudolph, Carlingford, both of Australia, and Laurent Girardeau, Courbevole, France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Jun. 7, 1995, Ser. No. 477,241
Claims priority, application Australia, Jun. 8, 1994, PM6128; Mar. 21, 1995, PN1823
Int. Cl.[6] H04B *7/212;7/26*
U.S. Cl. 370—337 **14 Claims**



1. A cellular radio communication arrangement including a cellular base station having two or more continuous or overlapping coverage areas and a corresponding TDMA transceiver associated with each coverage area, including at least:

an inner transceiver including a first receiver adapted to receive first incoming signals from an inner coverage area, and a first transmitter adapted to transmit first outgoing signals at least to the inner coverage area: and

an outer transceiver having a second receiver adapted to receive second incoming signals from an outer coverage area, and a second transmitter adapted to transmit second outgoing signals at least to the outer coverage area;

and an additional third receiver adapted to receive third upcoming signals from the inner coverage area:

wherein the first and third receivers operate according to respective first and third receiver time frames which are synchronized:

wherein the second receiver operates according to a second time frame which is delayed with respect to the first and third time frames by a predetermined delay period;

wherein the first receiver receives the first incoming signals at a first uplink frequency associated with a first downlink frequency transmitted by the first transmitter;

wherein the second and third receivers receive, respectively, the second and the third incoming signals at a second uplink frequency associated with a second downlink frequency transmitted by the second transmitter; and

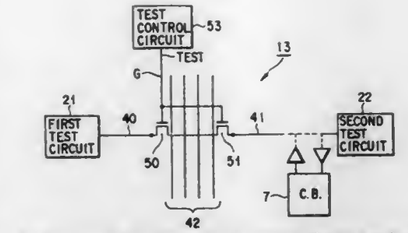
wherein idle mobile telephones in each of the coverage areas are caused to camp on the second downlink frequency whereby access requests from the idle mobile telephones are transmitted on the second uplink frequency, and are received in an appropriate time slot by the second or third receiver depending on the location of the mobile telephone transmitting the access request.

5,615,216
SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING TEST CIRCUIT

Yukihiro Saeki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 21, 1994, Ser. No. 262,835
Claims priority, application Japan, Jun. 22, 1993, 5-150432
Int. Cl.[6] G01R *31/02*
U.S. Cl. 371—22.1 **14 Claims**

1. A test apparatus for a semiconductor integrated circuit, comprising:



a first test circuit for outputting a current when a test is made;

a first wiring line having a first end connected to said first test circuit;

a first transistor having a current path with a first end connected to a second end of said first wiring line;

a second transistor having a current path with a first end connected to a second end of the current path of said first transistor, said first and second transistors being simultaneously set in a conductive state when the test is made;

a second wiring line having a first end connected to a second end of said second transistor;

a second test circuit connected to a second end of said second wiring line, said second test circuit detecting a current which is output from said first test circuit when the test is made and which is supplied thereto by way of said first and second transistors and said first and second wiring lines; and

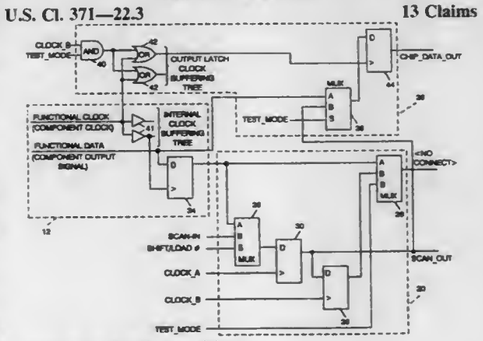
a third wiring line located between said second end of said first wiring line and said first end of said second wiring line, for transmitting a signal produced by said semiconductor integrated circuit during a normal operation mode, said third wiring line located on a first level which is different from a second level on which said first transistor and said second transistor are arranged,

wherein said first and second wiring lines a smaller capacitance when said first and second transistors are set in an OFF sate than when said first and second transistors are set in an ON state.

5,615,217
BOUNDARY-SCAN BYPASS CIRCUIT FOR INTEGRATED CIRCUIT ELECTRONIC COMPONENT AND CIRCUIT BOARDS INCORPORATING SUCH CIRCUITS AND COMPONENTS

Rick L. Horne, Boynton Beach; Terence J. Lohman, Boca Raton, both of Fla.; Mark G. Noll, Raleigh, N.C.; Jose A. Olive, Miami, and Roberto V. Perez, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1994, Ser. No. 352,080
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **13 Claims**



1. A circuit board comprising:

a printed circuit board substrate;

a component mounted on said printed circuit board substrate, said component having connecting points;

a plurality of boundary-scan cells, each said-boundary scan cell respectively coupled to one of said connecting point;

a plurality of bypass circuits, each said bypass circuit respectively coupled to one of said of said connecting points, each said bypass circuit including;

signal selection logic having a first input that receives functional output data from said component, a second input that receives test result signals from said boundary-scan cell, a selection signal input, and a selection logic output at which either the functional output data or the test result signals are produced as a function of a selection signal received at said selection signal input; and

an output stage having an input coupled to said selection logic output and responsive to a clock transition of a clock signal from said component to produce as component output signals the functional output data provided at the output stage input; said output stage having

an output latch having an input coupled to the selection logic output, and a clock input;

an AND gate having a first input that receives a test mode signal indicating whether the boundary-scan cell is in a test mode, a second input that receives a clock signal of the boundary-scan cell, and an output; and

an OR gate that has a first input coupled to the AND gate output, a second input coupled to receive the clock signal from the component, and an output coupled to the clock input of the output latch.

5,615,218

TEST PATTERN GENERATION DEVICE FOR SEMICONDUCTOR TESTING APPARATUS

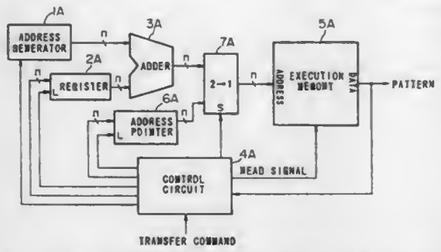
Yoshimitsu Tsurumi, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1995, Ser. No. 545,313

Claims priority, application Japan, Oct. 31, 1994, 6-267850

Int. Cl.[6] G06F *11/00; G11C 29/00*

U.S. Cl. 371—27 **3 Claims**



1. A test pattern generation device, for generating test patterns for a semiconductor testing apparatus, comprising:

an execution memory for storing a plurality of test pattern data;

an index address generating means for generating and outputting addresses indicating memory locations of indexes when the indexes are stored in said execution memory;

an address pointer for storing and outputting the addresses outputted by said index address generating means;

an index output means for reading and outputting, from said execution memory, the indexes indicated by the addresses outputted by said address pointer when the indexes are stored in said execution memory, and for generating and outputting the indexes when the indexes are not stored in said execution memory;

a modifier register for storing and outputting the indexes outputted by said index output means;

an address generator for sequentially generating addresses in a designated range;

an adder for adding the addresses generated by said address generator and the indexes outputted from said modifier register, and for outputting memory addresses;

an output means for outputting, from the execution memory, test pattern data indicated by the memory addresses outputted by said adder; and

a selector for selecting one of the addresses outputted from said address pointer and said adder, and for supplying said addresses to said execution memory.

5,615,219

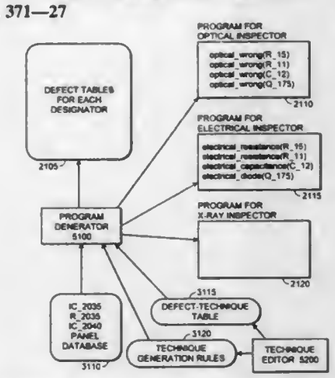
SYSTEM AND METHOD OF PROGRAMMING A MULTISTATION TESTING SYSTEM

Paul L. Keating, Winchester; Steven M. Blumenau, Royalston; Richard Pye, Waltham, and William S. Schymik, Acton, all of Mass., assignors to GenRad, Inc., Concord, Mass.

Filed Nov. 2, 1995, Ser. No. 552,141

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—27 **18 Claims**



1. In a system including means for storing a plurality of rules each corresponding to a respective instruction type, each rule capable of containing a variable, a method of testing a circuit assembly, the method comprising the steps of:

receiving a description of the circuit assembly;

generating, based on the description, a first test program for testing the circuit assembly by performing the following step a plurality of times for a first one of the rules: conditionally generating an instruction for the first test program, depending on a value of the variable in the rule;

generating, based on the description, a second test program for testing the circuit assembly by performing the following step a plurality of times for a second one of the rules: conditionally generating an instruction for the second test program, depending on a value of the variable in the rule;

executing, at a first location, the first test program; and

executing, at a second location different from the first location, the second test program, by applying a wave from a wave source, through space, and receiving some of the applied wave.

6. In a system including means for storing a plurality of rules each corresponding to a respective instruction type, each rule capable of containing a variable, a method of testing a circuit assembly, the method comprising the steps of:

receiving a description of the circuit assembly;

generating, based on the description, a first test program for testing the circuit assembly by performing the following step a plurality of times for a first one of the rules: conditionally generating an instruction for the first test program, depending on a value of the variable in the rule;

generating, based on the description, a second test program for testing the circuit assembly by perforating the following step a plurality of times for a second one of the rules: conditionally generating an instruction for the second test program, depending on a value of the variable in the rule;

executing the first test program by applying an electrical current to the circuit assembly, and receiving an electrical current from the circuit assembly; and

executing the second test program by applying radiation to the circuit assembly, and receiving some of the applied radiation.

5,615,220

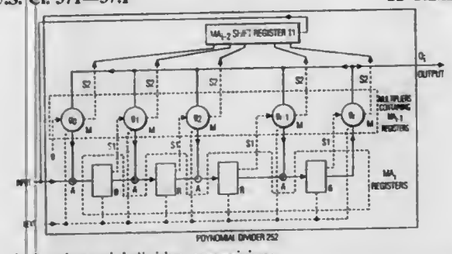
POLYNOMIAL DIVIDER WHICH CAN PERFORM EUCLID'S ALGORITHM TO PRODUCE AN ERROR LOCATOR POLYNOMIAL FROM AN ERROR SYNDROME POLYNOMIAL, AND APPARATUS INCLUDING THE POLYNOMIAL DIVIDER

Kenton J. Pharris, Elbert, Colo., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jan. 31, 1995, Ser. No. 381,626

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **22 Claims**



1. A polynomial divider, comprising:

polynomial division means for performing polynomial division of a numerator polynomial by a denominator polynomial to produce a quotient polynomial and a remainder polynomial, said polynomial division means including:

a first set of registers for storing the denominator polynomial used in a polynomial division; and

a second set of registers for storing the remainder polynomial produced by the polynomial division;

an input coupled to said polynomial division means for receiving the numerator polynomial used in the polynomial division;

an output coupled to said polynomial division means for supplying the quotient polynomial produced by the polynomial division;

first coupling means for coupling said first set of registers to said input so that the denominator polynomial stored in said first set of registers becomes the numerator polynomial which is received by said input and used in a further polynomial division performed by said polynomial division means; and

second coupling means for coupling said second set of registers to said first set of registers so that the remainder polynomial stored in said second set of registers becomes the denominator polynomial which is stored in said first set of registers and used in the further polynomial division.

5,615,221

METHOD AND SYSTEM WHICH SELECTIVELY USES DIFFERENT LEVELS OF ERROR CORRECTION TO ACHIEVE HIGH DATA THROUGHPUT

James M. Karp, and Stephen C. West, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

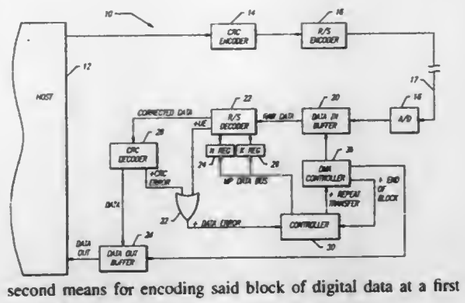
Continuation of Ser. No. 914,121, Jul. 17, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,255

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **6 Claims**

1. An error detecting and correcting system comprising:

first means for providing a block of digital data;



second means for encoding said block of digital data at a first correction level;

third means for communicating said block of encoded data over a channel;

fourth means for receiving said block of encoded data communicated over said channel;

fifth means for storing said received block of encoded data;

sixth means for decoding said received block of encoded data at a second correction level to provide decoded data, said second correction level being less than said first correction level;

seventh means for detecting errors in said decoded data; and

eighth means, responsive to said seventh means, for decoding said received block of encoded data at a third correction level in response to detection of an error in said decoded data, said third correction level being higher than said second correction level.

5,615,222

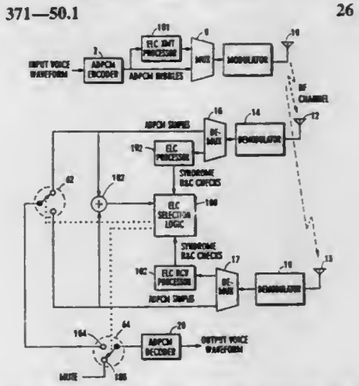
ADPCM CODING AND DECODING TECHNIQUES FOR PERSONAL COMMUNICATION SYSTEMS

David A. Wright, Utica, N.Y.; Terrance R. Bourk, San Diego, and Neal K. Riedel, Encinitas, both of Calif., assignors to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Feb. 4, 1994, Ser. No. 191,609

Int. Cl.[6] H04L *1/06; 1/20*

U.S. Cl. 371—50.1 **26 Claims**



20. A system for detecting and locating errors in digital voice data transmitted using a wireless communications system, wherein the digital voice data is grouped into a sequence of samples and a number of samples are transmitted as a block, the system comprising:

a receiving means having a spatial diversity capability for receiving the transmitted samples such that each block of samples is received in a plurality of diversity blocks each being based on a different transmission path;

a processing means coupled to the receiving means for processing the plurality of diversity blocks to detect on a sample by sample basis any sample likely to contain a data error based on predetermined criteria for every sample in the transmitted block without correcting the data error; and

an ADPCM decoder interfaced with the processing means, the ADPCM decoder receiving an input of samples in which no errors have been detected from the processing means and processing those samples to reconstruct the voice data,

said processing means including:

a plurality of receive processors coupled to the receiving means, each receive processor generating a syndrome form the transmitted samples so received; and

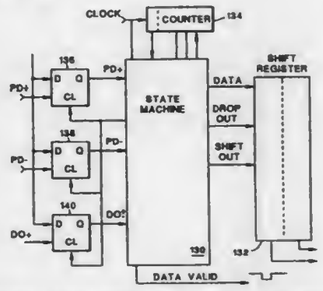
a selection logic processor interfaced with each of the plurality of receive processors and the ADPCM decoder, the selection processor locating, based on the syndromes, samples so received that contain at least one error and preventing those samples so located from being further processed by the ADPCM decoder.

5,615,223

PPM DECODER UTILIZING DROP-OUT LOCATION INFORMATION

Thomas D. Carr, Leucadia, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1995, Ser. No. 424,913
Int. Cl.[6] H03M *5/04*
U.S. Cl. 371—65 **18 Claims**



5. Apparatus for decoding data from positive and negative pulses of an encoded pulse train, wherein the encoded pulse train is subject to drop-outs and drop-ins, the apparatus further comprising:

means for providing positive and negative peak pulse thresholds;

means for comparing the magnitudes of positive and negative pulses to said positive and negative peak pulse thresholds;

means for decoding data bits from valid positive and negative pulses exceeding said positive and negative peak pulse thresholds;

means for identifying drop-outs in the encoded pulse train as a function of read out positive and negative pulse magnitudes not exceeding said positive and negative thresholds and providing drop-out flags indicating a gap in data bits;

means for storing decoded dam in memory locations;

means tier storing the drop-out flags in memory locations in relation to decoded data such that the beginning and/or end of a drop-out in the encoded pulse train is indicated; and

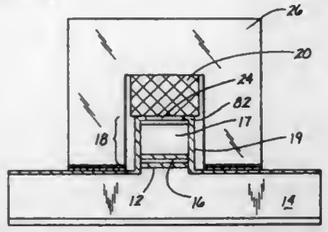
means for identifying drop-outs or drop-ins in the encoded pulse train in response to the occurrence of two successive valid positive pulses or two successive valid negative pulses in the pulse train.

5,615,224

APPARATUS AND METHOD FOR STABILIZATION OF THE BANDGAP AND ASSOCIATED PROPERTIES OF SEMICONDUCTOR ELECTRONIC AND OPTOELECTRONIC DEVICES

Daniel A. Cohen, Goleta, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jan. 4, 1995, Ser. No. 368,475
Int. Cl.[6] H01S *3/045;* **H01L** *23/324*
U.S. Cl. 372—36 **22 Claims**



1. An improvement in a semiconductor device having an active region whose operational parameters are temperature-dependent as a function of a coefficient of thermal expansion of materials from which said semiconductor device is composed, said improvement comprises:

a restraining structure mechanically coupled to said active region of said semiconductor device, which restraining structure confines thermal expansion of said active region in at least one direction,

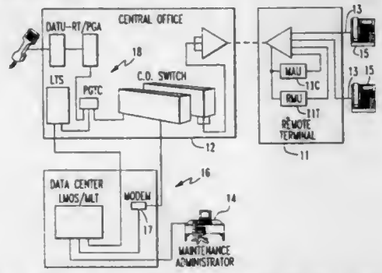
whereby operational variation due to temperature dependence of said active region is reduced.

5,615,225

REMOTE MEASUREMENT UNIT CONTAINING INTEGRATED LINE MEASUREMENT AND CONDITIONING FUNCTIONALITY FOR PERFORMING REMOTELY COMMANDED TESTING AND CONDITIONING OF TELEPHONE LINE CIRCUITS

Derek G. Foster, Thousand Oaks; Edward K. W. Siu, Simi Valley; Ben A. Pierce, Ojai; Michael Kennedy, Ventura; Onofrio Schillaci, Camarillo, all of Calif., and Alex Knight, Danville, Ind., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 9, 1994, Ser. No. 194,232
Int. Cl.[6] H04M *3/30;3/32*
U.S. Cl. 379—29 **61 Claims**



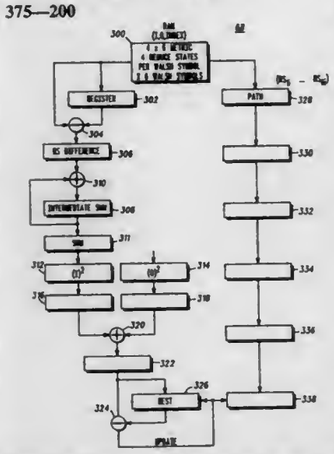
1. For use with a communication system having a supervisory facility, and one or more remote sites from which network lines and subscriber termination equipment coupled thereto may be tested and conditioned, a test apparatus which is installable at a respective one of said plurality of remote sites and is operative under commands sourced from said supervisory facility for monitoring and testing said network lines and subscriber termination equipment coupled thereto, said apparatus having integrated in a shared circuit architecture remote measurement circuitry, which is operative to perform mechanized loop testing of a specified line circuit, and metallic access circuitry, which is operative to impart prescribed electrical conditions to a specified line circuit, said remote measurement circuitry and said metallic access circuitry being individually accessible and controllable by way of command messages coupled thereto by way of said supervisory facility.

5,615,226

METHOD AND RECEIVER FOR DEMODULATING A RECEIVED SIGNAL

Robert A. Lipa, Aurora, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1995, Ser. No. 394,972
Int. Cl.[6] H04B *1/69*
U.S. Cl. 375—200 **14 Claims**



1. A method for demodulating a received signal, comprising the steps:

(a) determining the energy of each of a first plurality of reduced states of a first symbol in the received signal;

(b) selecting a first subset of the first plurality of reduced states based upon the energy of each of the first plurality of reduced states;

(c) determining the energy of a second plurality of reduced states of a second symbol in the received signal;

(d) selecting a second subset of reduced states based upon the energy of each of the second plurality of reduced states of the second symbol;

(e) calculating a first path energy for a first path, the first path comprising a first reduced state selected from the first subset of reduced states and a second reduced state selected from the second subset of reduced states;

(f) calculating a second path energy for a second path, the second path comprising the first reduced state selected from the first subset of reduced states and a third reduced state selected from the second subset of reduced states;

(g) comparing the first path energy and the second path energy.

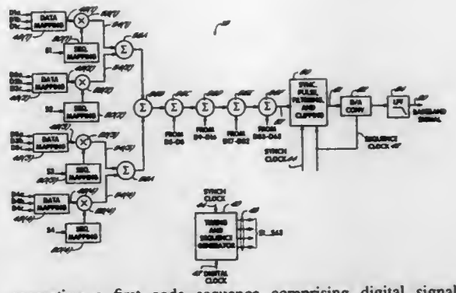
5,615,227

TRANSMITTING SPREAD SPECTRUM DATA WITH COMMERCIAL RADIO

Robert G. Schumacher, Jr., and Eugene A. Janning, Jr., both of Cincinnati, Ohio, assignors to Pole Zero Corporation, West Chester, Ohio

Filed Nov. 21, 1994, Ser. No. 342,902
Int. Cl.[6] H04B *1/707*
U.S. Cl. 375—206 **82 Claims**

1. A method of spread-spectrum encoding at least first and second information signals, the method comprising:



generating a first code sequence comprising digital signals arranged in respective positions and having values with near-zero out-of-phase autocorrelation;

generating a second code sequence comprising the same number of digital signals as there are in said first code sequence, arranged in respective positions, the values of the digital signals having a phase shifted relation to said digital signals of said first code sequence,

said code sequences further comprising an extra predetermined digital signal to each of said code sequences in the same predetermined position within each of said code sequences such that said sequences, when compared in-phase to each other, have exactly zero cross-correlation, and

producing an output code sequence having a plurality of output levels corresponding to the number of digital signals in either of said code sequences, said output levels being formed from sums of products by repeating, for corresponding selected positions in the first and second code sequences, the steps of

forming a first product by multiplying said first information signal with a digital signal in the selected position of the first code sequence,

forming a second product by multiplying said second information signal with a digital signal in the selected position of the second code sequence, and

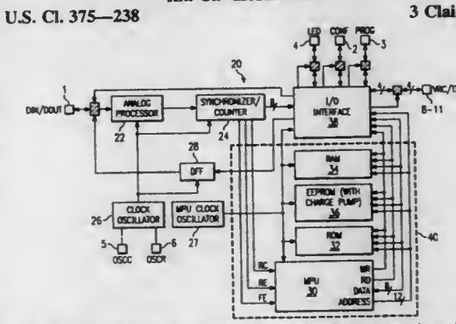
summing the first and second products to produce an output level.

5,615,228

APPARATUS AND METHOD TO DECODE A PULSE WIDTH MODULATED SERIAL DATA STREAM

Eric G. Soenen, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 23, 1995, Ser. No. 409,227
Int. Cl.[6] H03K *7/08*
U.S. Cl. 375—238 **3 Claims**



1. An integrated semiconductor circuit for decoding pulse width modulated serial data, comprising:

a shift register, clocked by a first clock signal, connected to the source of the serial digital data;

logic circuitry, connected to the shift register clocked by the first clock signal, to detect a rising edge of the received serial digital data and to detect a falling edge of the received serial digital data;

a counter, clocked by the first clock signal to determine the number of clock cycles of the first clock between rising and falling edges of the serial digital data, that is reset after each rising edge of the serial data;

a microcontroller, connected to the counter and clocked by a second clock signal, which reads the status of the counter each time a rising or a falling edge is detected on the received serial data; and

a means for synchronizing the clocking of the counter and the detection of the rising edges and the falling edges to the second clock signal.

5,615,229

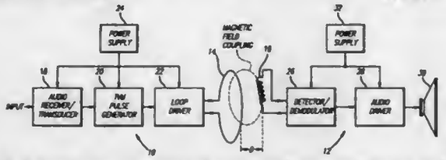
SHORT RANGE INDUCTIVELY COUPLED COMMUNICATION SYSTEM EMPLOYING TIME VARIANT MODULATION

Madan M. Sharma, Palos Verdes; Robert F. Young, Santa Cruz, and Gene M. Strohallen, Sebastopol, all of Calif., assignors to Phonic Ear, Incorporated, Petaluma, Calif.

Filed Jul. 2, 1993, Ser. No. 86,823

Int. Cl.[6] **H04R** *25/00;5/00;* **H04L** *27/100;* **H04B** *5/00*

U.S. Cl. 375—259 **40 Claims**



1. A short range communication system for transmitting an audio frequency input signal comprising:

transmission means for receiving said audio frequency input signal and for providing a pulse sequence time variant modulated by said audio frequency input signal,

transmission means including a transmission magnetic element for transmitting said pulse sequence; and

receiver means, including a receiving magnetic element magnetically coupled to said transmission loop, for receiving said pulse sequence and for demodulating said pulse sequence to reproduce said audio frequency input signal;

wherein said receiver means is freely movable relative to said transmission means.

5,615,230

PROCESS FOR TRANSMITTING DIGITAL SIGNALS WHICH COMBINES ADVANTAGES OF OQPSK AND π/4-QPSK

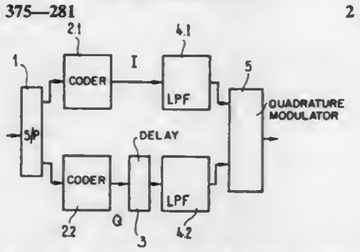
Christoph Günther, Fislisbach, Switzerland, and Joachim Habermann, Wetzlar, Germany, assignors to ASCOM Tech AG, Bern, Switzerland

Filed Feb. 23, 1995, Ser. No. 392,505

Claims priority, application Switzerland, Mar. 1, 1994, 00596/94

Int. Cl.[6] **H04L** *27/18*

U.S. Cl. 375—281 **2 Claims**



1. A process for transmitting digital signals comprising the following steps:

coding data to be transmitted into inphase I and quadrature Q components;

differentially encoding the inphase and quadrature components separately into symbols, each symbol having a symbol period T_s;

staggering the encoded I and Q components with half a symbol period $T_s/2$;

filtering each of the I and Q components by SRRC pulse shaping;

feeding the filtered I and Q components to a modulator generating a QPSK modulated transmission signal;

receiving the transmission signal and mixing it down into the baseband;

filtering I and Q components from the baseband in respective SRRC-type low pass filters;

scanning the filtered I and Q components twice per symbol period T_s;

preprocessing the scanned values I_k, I_{k-2}, Q_k, Q_{k-2} of the I and Q components according to the formulas,

$$X_k = I_k I_{k-2} + Q_k Q_{k-2}$$

$$Y_k = Q_k I_{k-2} + I_k Q_{k-2}$$

decoding according to the 16 phases of the following table, in which Z_A represents an initial phase, and Z_E represents a final phase:

Z_A				Z_E				$X_{2K} = X_{2K+1}$	$Y_{2K} = -Y_{2K+1}$
1	1	1	1	1	1	1	1	2	0
1	1	1	1	1	1	1	−1	1	−1
1	1	1	−1	1	1	−1	1	0	2
1	1	1	−1	11	−1	−1	−1	1	
1	1	−1	1	1	−1	1	1	1	0
1	1	−1	1	1	−1	1	−1	1	−1
1	1	−1	−1	1	−1	−1	1	−1	0
1	1	−1	−1	1	−1	−1	−1	−1	−1
1	−1	1	1	−1	1	1	1	0	−2
1	−1	1	1	−1	1	1	−1	−1	−1
1	−1	1	−1	−1	1	−1	1	2	0
1	−1	1	−1	−1	1	−1	−1	1	1
1	−1	−1	1	−1	−1	1	1	−1	0
1	−1	−1	1	1	−1	1	−1	−1	1
1	−1	−1	−1	−1	−1	1	1	1	0
1	−1	−1	−1	−1	−1	−1	−1	1	1.

5,615,231

FAST AUTOMATIC GAIN CONTROL

Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 305,651, Sep. 14, 1994, Pat. No. 5,568,518. This application Jul. 25, 1996, Ser. No. 686,392

Int. Cl.[6] **H04L** *25/03;* **H03G** *3/20*

U.S. Cl. 375—340 **2 Claims**

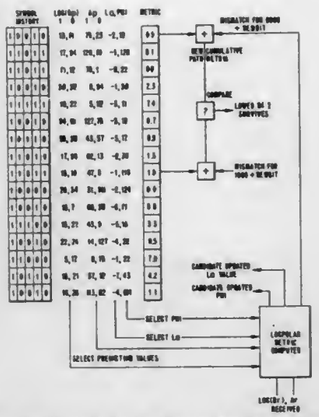
1. A method for demodulating or decoding received digital modulated signals, comprising the steps of:

convening the received signals to obtain numerical signal samples;

comparing said numerical signal samples with sample values expected for each of a number of possible symbol sequences using an amplitude scaling factor and a phase correction factor associated with each of said symbol sequences in order to determine a mismatch value for each sequence;

accumulating said mismatch values for all consecutive symbol sequences that are logically self-consistent;

choosing the lowest cumulative mismatch value from among all foregoing sequences that can logically precede a new sequence to be accumulated with the mismatch value from said new sequence, said choice identifying a best predecessor sequence; and



choosing the amplitude scaling factor and phase correction factor associated with said best predecessor sequence and updating the choosing factors to obtain the amplitude scaling factor and phase correction factor to be associated with said new sequence.

5,615,232

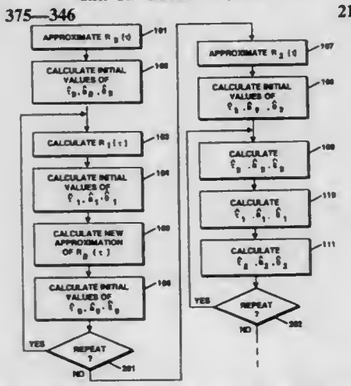
METHOD OF ESTIMATING A LINE OF SIGHT SIGNAL PROPAGATION TIME USING A REDUCED-MULTIPATH CORRELATION FUNCTION

D. J. R. Van Nee, Delft, Netherlands, assignor to NovAtel Communications Ltd., Canada

Filed Nov. 24, 1993, Ser. No. 157,476

Int. Cl.[6] **H04B** *1/12;1/707*

U.S. Cl. 375—346 **21 Claims**



16. In a positioning signal processing system comprising a receiver which receives a data carrying carrier modulated pseudo random noise signal from a transmitter, a method of processing the received data carrying signal to determine a propagation time τ_0 indicative of the time it takes the received signal to propagate directly from the transmitter to the receiver, the method comprising the steps of:

providing a reference signal;

performing a correlation operation on the received data carrying signal with said reference signal in order to provide a measure of the shape of the correlation function $R_x(\tau)$;

iteratively estimating the multipath-induced contribution to the correlation function and subtracting said estimated multipath-induced contribution from the correlation function to obtain an estimated line of sight contribution to the correlation function; and

calculating the propagation time τ_0 from said estimated line of sight contribution to the correlation function.

5,615,233

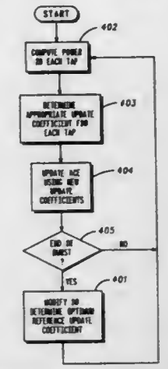
METHOD FOR CHANNEL ESTIMATION USING INDIVIDUAL ADAPTATION

Kevin L. Baum, Hoffman Estates, and Bruce D. Mueller, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1992, Ser. No. 916,757

Int. Cl.[6] **H04B** *1/04;* **H03H** *7/30*

U.S. Cl. 375—350 **4 Claims**



1. A method for improving channel estimator performance for an adaptive filter in a time varying environment, the adaptive filter having a reference update coefficient and a plurality of taps, each tap having an update coefficient, the method comprising steps of:

determining an absolute power value for each tap, thus producing a plurality of absolute power values;

determining an independent update coefficient for each tap in response to the plurality of absolute power values; and

updating the plurality of taps of the adaptive filter using the independant update coefficient for each tap.

5,615,234

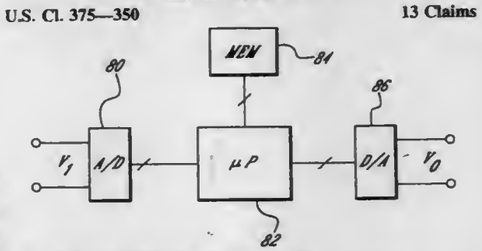
DIGITAL HIGH-PASS FILTER HAVING BASELINE RESTORATION MEANS

James R. Brooks, Beaverton, Oreg., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed May 19, 1994, Ser. No. 246,185

Int. Cl.[6] **H04B** *1/10*

U.S. Cl. 375—350 **13 Claims**



4. A digital high-pass filter, comprising:

an analog-to-digital converter receiving an input signal applied to said input terminal, said analog-to-digital converter periodically digitizing said input signal to produce an input signal sample corresponding to said input signal;

processor means receiving each of said input samples, said processor means:

(a) calculating a change value corresponding to the magnitude of an exponential decay during a period between the taking of a prior input signal sample and the taking of a current input signal sample, said exponential decay being based on a time constant of said filter and the difference between a current input value and a prior intermediate output value;

(b) incrementing said prior intermediate output value by said change value to produce a current intermediate output value; and

(c) subtracting said current intermediate output value from said current input value to provide a current filter output value; and converting each of said current filter output values to a corresponding voltage thereby generating an output signal for said digital high-pass filter.

5,615,235

SIGNAL PROCESSING SYSTEM FOR USE IN A DIGITAL SIGNAL CLOCK CHANGING APPARATUS

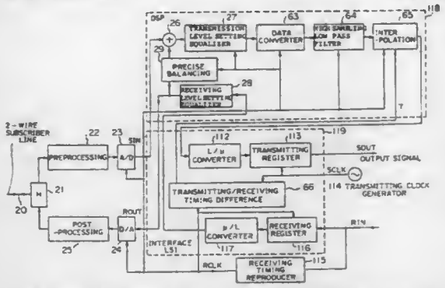
Mitsuo Kakuishi, and Tsuyoshi Ueshima, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 55,767, May 3, 1993, abandoned, which is a continuation of Ser. No. 455,319, Feb. 8, 1990, abandoned. This application Mar. 10, 1995, Ser. No. 402,205

Claims priority, application Japan, Jun. 8, 1988, 63-140692; Jul. 25, 1988, 63-183487

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—355 **7 Claims**



2. A signal processing system for use in a digital signal clock changing apparatus for converting a first digital data system train synchronous with a first clock, and a second digital data system train synchronous with a second clock, comprising:

first digital data system train converting means for converting the first digital data system train to a converted data train having n times more data than the first digital data system train per unit time, where n is a natural number greater than one;

a high-sampling digital low-pass filter for performing a high sampling on the converted data train at a speed n times that of the first clock to produce a sampled data train;

timing difference detecting means for detecting a timing difference between the first clock and the second clock;

interpolation means for interpolating the sampled data train based on the timing difference obtained from said timing difference detecting means to provide amplitude data; and

output timing adjusting means for synchronizing the amplitude data with the second clock to provide the second digital data system train.

5,615,236

METHOD AND APPARATUS FOR DIRECT RE-ACQUISITION OF PRECISION-CODE AFTER A SHORT POWER INTERRUPTION

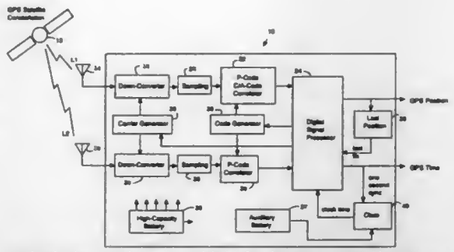
Paul F. Turney, Santa Clara, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Mar. 29, 1995, Ser. No. 412,554

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—365 **5 Claims**

1. A method for directly re-acquiring precision-code (P-code) code phase in a global position system (GPS) receiver after a brief loss of primary-power supply affecting code tracking, the method comprising the steps of:



periodically storing a position fix in a non-volatile memory while tracking P-code transmissions from GPS satellites;

periodically updating a clock to synchronize it with global positioning system time while tracking said P-code transmissions from said GPS satellites; and

re-acquiring a P-code code-phase lock to said GPS satellites by reading said non-volatile memory to obtain information about said receiver's position and by reading an estimate of said global positioning system time from said clock and by using said position and time information to index into said P-code for a starting point in a P-code code-phase search then code-phase locking onto said P-code when a correlation is detected.

5,615,237

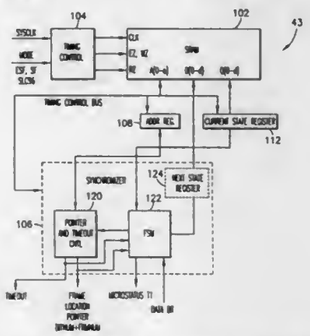
TELECOMMUNICATIONS FRAMER UTILIZING STATE MACHINE

Sin-Min Chang, Taipei, Taiwan, and Eugene L. Parrella, Shelton, Conn., assignors to Transwitch Corp., Shelton, Conn., and Siemens Telecommunication Systems Ltd., Taiwan

Filed Sep. 16, 1994, Ser. No. 308,083

Int. Cl.[6] H04L 7/00; H04J 3/06

U.S. Cl. 375—368 **22 Claims**



4. A framer for a telecommunications apparatus which receives bits of a telecommunications signal having a frame, said framer comprising:

a) interface means for receiving said bits of said telecommunications signal;

b) an x by y bit silicon memory storage means, where x is an integer greater than one and y is an integer greater than one, said memory storage means for storing, for a plurality (x) of frame locations, y bits, said y bits at each of said plurality of frame locations defining a state;

c) state update means coupled to said interface means and to said silicon memory storage means for changing values of said y bits and hence said states of said plurality of frame bit locations of the memory storage means based on a current state at a particular frame location and based on an incoming bit of said telecommunications signal for said particular frame location, with said state update means generating a terminal state value representing a terminal state for all frame bit locations which over time are not receiving bits constituting a predetermined framing sequence; and

d) frame location identification means coupled to said state update means for determining a location of an overhead bit in said frame of said telecommunications signal based on said states of said plurality of frame locations after a period of time.

5,615,238

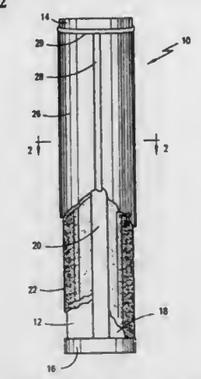
METHOD FOR FABRICATING ^{99}MO PRODUCTION TARGETS USING LOW ENRICHED URANIUM, ^{99}MO PRODUCTION TARGETS COMPRISING LOW ENRICHED URANIUM

Thomas C. Wiencek, Orland Park; James E. Matos, Oak Park, and Gerard L. Hofman, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 130,485, Oct. 1, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,420

Int. Cl.[6] G21G 1/02; G21C 3/04

U.S. Cl. 376—202 **19 Claims**



1. A method for fabricating a primary target for the production of fission products comprising:

a.) choosing a first substrate having a first substrate first surface, a first substrate second surface, a first substrate first end, a first substrate second end, a first substrate first raised shoulder at the first substrate first end, a first substrate second raised shoulder at the first substrate second end, and first substrate predetermined thickness;

b.) positioning a welding rib onto the first substrate first surface, said welding rib having a welding rib first side surface, a welding rib second side surface, and a welding rib top surface, where said welding rib extends longitudinally from the first substrate first raised shoulder to the first substrate second raised shoulder;

c.) sizing a foil of fissionable material, said foil having a foil first surface, a foil second surface, a foil first edged a foil second edge opposing the first edge, and a predetermined thickness;

d.) preparing the first substrate first surface to receive the foil first surface so as to avoid diffusion bonding between the first substrate surface and the foil first surface to allow for later removal of the foil from the first substrate;

e.) wrapping the foil around the first substrate such that the foil first surface is in contact with the first substrate first surface, the foil first edge abuts against the welding rib first side surface, and the foil second edge abuts against the welding rib second side surface;

f.) choosing a second substrate having a second substrate first surface, a second substrate second surface, a second substrate first end, a second substrate second end, a slit extending longitudinally from the second substrate first end to the second substrate second end, wherein the slit has opposing edges, and a second substrate predetermined thickness;

g.) preparing the second substrate first surface to receive the foil second surface so as to avoid diffusion bonding between the second substrate first surface and the foil second surface to allow for later removal of the foil from the second substrate;

h.) assembling the foil-wrapped first substrate and the second substrate such that the foil second surface contacts the second substrate first surface and the opposing edges of the second substrate slit are aligned over the welding rib top surface, whereby the first substrate second surface and the second substrate second surface are exposed to ambient atmosphere;

i.) mechanically compressing the second substrate to assure physical contact between all common surfaces of the first substrate, the foil, and the second substrate, to ensure good thermal conduction, whereby the opposing edges of the slit of the second substrate are moved into close proximity one to the other, and slit of the second substrate is aligned over the welding rib top surface;

j.) attaching the two opposing edges of the slit of the second substrate to the welding rib; and

k.) attaching the second substrate first end to the first substrate first raised shoulder and the second substrate second end to the second surface raised shoulder.

5,615,239

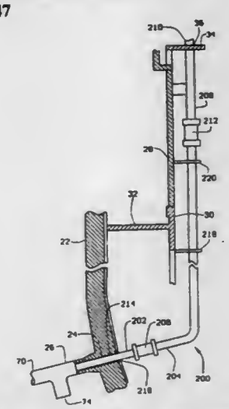
CORE DIFFERENTIAL PRESSURE AND LIQUID CONTROL LINE APPARATUS IN A NUCLEAR REACTOR

Gerald A. Deaver, San Jose; James W. Pyron, Redding, and Anh N. Nguyen, Milpitas, all of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 17, 1995, Ser. No. 560,100

Int. Cl.[6] G21C 17/00

U.S. Cl. 376—247 **18 Claims**



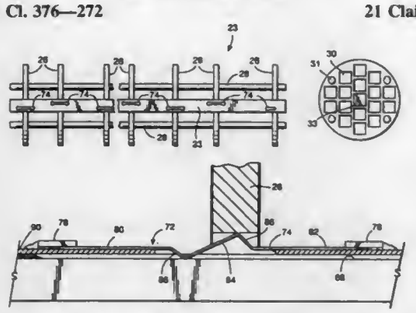
1. A core differential pressure and liquid control line apparatus for a nuclear reactor including a pressure vessel, a core plate positioned in a substantially horizontal orientation at an intermediate location within the pressure vessel, an opening formed through the pressure vessel wall at a location below the core plate, a nozzle having a nozzle bore with a first diameter extending from the pressure vessel wall opening, said apparatus comprising a tube assembly including a first portion configured to be positioned within and extend through the nozzle bore and the opening in the pressure vessel wall, at least said first tube portion having a diameter less than the first diameter of the nozzle bore and less than the diameter of the opening in the pressure vessel wall, an open end of said tube configured to be positioned within the pressure vessel at an elevation above the core plate so that the pressure at the elevation above the core plate may be communicated through the tube from the first tube end to a second tube end located external the reactor pressure vessel and so that the pressures at the location of the opening in the reactor pressure vessel may be communicated through an annulus between the exterior surface of said first tube portion and the pressure vessel and nozzle bore walls.

5,615,240

NUCLEAR FUEL BUNDLE PACKAGING APPARATUS

Richard A. Wolters, Jr.; James E. Boyden, both of San Jose; Donald K. George, Los Gatos; Donald K. Henrie, Morgan Hill; Robert H. Jones, Los Gatos, and Michael G. McBride, San Jose, all of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1994, Ser. No. 330,824
Int. Cl.[6] G21F *5/008*
U.S. Cl. 376—272 21 Claims



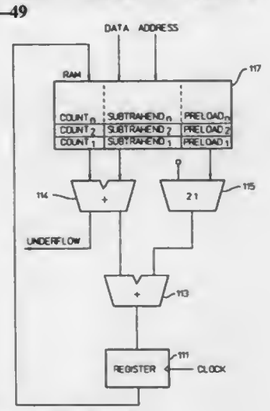
1. In a nuclear reactor fuel bundle packaging apparatus including a hollow cylindrical cask and a basket liner assembly receivable within the cask, the basket liner assembly including a plurality of laterally spaced disks rigidly held by a plurality of tie rods, and a plurality of elongated hollow basket liners extending through and fixed to the plurality of disks, each hollow basket liner holding a nuclear fuel bundle assembly having an upper tie plate, a lower tie plate and a plurality of fuel rods arranged in a substantially square array, extending between said upper and lower tie plates, the improvement comprising an oversized hollow fuel bundle channel received over the fuel bundle assembly, said channel having the same cross sectional shape as said basket liner but sized to fit within said basket liner member, said basket liner having at least one slot formed in at least one side thereof at each disk, and at least one spring mounted on said basket liner spanning said slot with one surface of said spring engaging the disk and another surface of said spring engaging an adjacent surface of said oversized hollow fuel bundle channel.

5,615,241

PROGRAMMABLE RATE GENERATOR

John Shelton, La Selva Beach, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1994, Ser. No. 269,977
Int. Cl.[6] H03K *3/02*; G06F *1/08*
U.S. Cl. 377—49 7 Claims



1. A rate generator comprising:

a memory for storing a plurality of count, subtrahend, and preload values, each user having an associated preload, count and subtrahend value;

a first adder coupled to the memory for subtracting the subtrahend value from the count value and for generating an underflow signal if the result of the subtraction cause an underflow, the underflow signal providing the rate for the user;

a second adder coupled to the first adder for adding zero to the result of the subtraction if an underflow condition did not result and for adding the preload value to the result of the subtraction if an underflow did result;

a multiplexer coupled to the memory and second adder for switching a zero to the second adder if the result of the subtraction was not an underflow and for switching the preload value if the result of the subtraction was an underflow; and

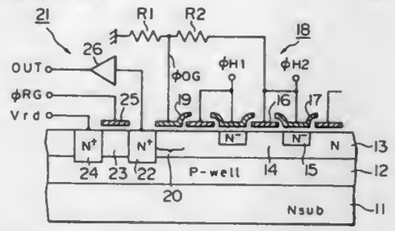
a register coupled to the second adder, the memory and a clock for storing the result of the addition operation in the second adder and for transmitting the result to the memory.

5,615,242

CHARGE TRANSFER APPARATUS WITH OUTPUT GATE AND DRIVING METHOD THEREOF

Isao Hirota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,284
Claims priority, application Japan, Mar. 17, 1995, 7-058435
Int. Cl.[6] G11C *19/28*; H01L *29/768*
U.S. Cl. 377—60 11 Claims



1. A charge transfer apparatus comprising:

a charge transfer section for receiving transfer clocks and transferring signal charges;

an output gate section located in the vicinity of the final stage of said charge transfer section;

a charge detecting section located in the vicinity of said output gate section and detecting the signal charges transferred from said charge transfer section; and

means for generating a clock substantially in phase with and of a smaller amplitude than one of said transfer clocks and supplying the generated clock to said output gate section.

5,615,243

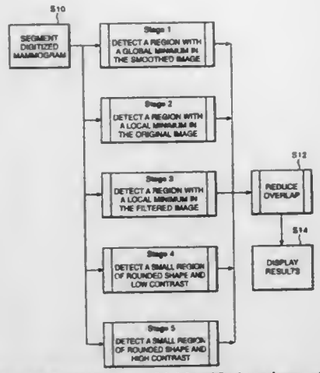
IDENTIFICATION OF SUSPICIOUS MASS REGIONS IN MAMMOGRAMS

Yuan-Hsiang Chang; David Gur, and Bin Zheng, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Mar. 12, 1996, Ser. No. 614,363
Int. Cl.[6] A61B *6/12*
U.S. Cl. 378—37 7 Claims

1. A method of detecting and identifying abnormal regions in living tissue depicted in a radiograph, the method comprising the steps of:

in said radiograph, attempting to identify one region of interest corresponding to each of a plurality of characteristics of interest; and



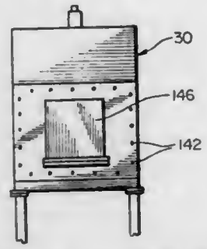
reducing overlap between said identified regions of interest to identify abnormal regions depicted in the radiograph.

5,615,244

REAL TIME RADIOGRAPHIC INSPECTION SYSTEM

Kerry R. Dykster, West Haven; Jeffrey P. England, Clinton; Philip M. Ealy, Ogden; Michael Furman, Eden; Kim R. Merritt, Brigham, and Ronda R. Devereaux, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 25, 1995, Ser. No. 450,452
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—57 19 Claims



1. A real time radiographic test system for performing a real time radiographic test on an article, comprising: an X-ray shielding, protective housing; conveyor means for conveying an article to be tested through said housing; real time radiographic testing means located in said housing for performing a real time radiographic test on said part; said real time radiographic testing means including X-ray means disposed for directing an X-ray beam within said housing transversely across said conveyor means and spaced thereabove; actuator means located in said housing for repositioning an article from said conveyor means to a position in registry with said X-ray beam, for maintaining said article in registry with said X-ray beam while said real time radiographic test is performed on said article, and for thereafter returning said article to said conveyor means; said actuator means being located and configured for positioning each article to be tested substantially identically relative to said X-ray beam.

5,615,245

MONOCHROMATOR FOR RADIANT X-RAYS

Shinya Hashimoto, Ibaraki-ken, Japan, assignor to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 607,333
Claims priority, application Japan, Feb. 27, 1995, 7-038553
Int. Cl.[6] G21K *1/06*
U.S. Cl. 378—84 8 Claims

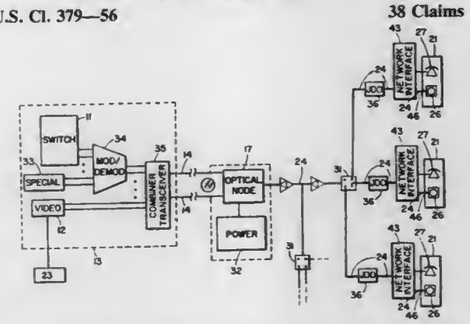
1. A monochromator for radiant X-rays comprising a first crystal which has a surface of incidence having a concave letter V-shaped groove and cooling means for flowing a cooling material behind the surface of incidence along the letter V-shaped groove, and a second crystal which has a letter V-shaped convex having a convex letter V-shape to fit the concave letter V-shaped groove.

5,615,246

METHOD AND APPARATUS FOR SPURIOUS SIGNAL DETECTION AND DISCONNECTION IN A HYBRID FIBER/COAX NETWORK ARCHITECTURE

Gregory J. Beveridge, Thornton, Colo., assignor to US West Technologies, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 357,558, Dec. 16, 1994, Pat. No. 5,469,495, which is a continuation of Ser. No. 69,227, May 28, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 415,107
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—56 38 Claims



1. A system for providing telephony services to a subscriber location comprising:

a logical bus network including a coaxial cable network;

a jamming detection and disconnection device electromagnetically connected to said logical bus network, said jamming detection and disconnection device including:

means, connected to said coaxial cable network, for providing a signal path to said subscriber location;

means, connected to said signal path, for detecting spurious energy on said signal path;

means, responsive to said detecting means, for interrupting said signal path; and

means, connected to said detecting means, for identifying said subscriber location to said network;

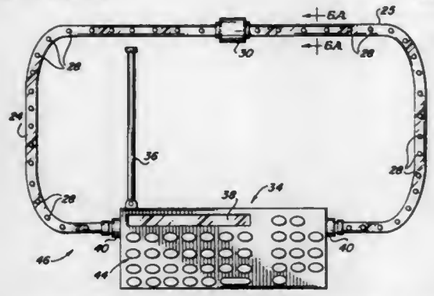
wherein said interrupting means prevents said spurious energy from disrupting service to another subscriber location on said bus based coaxial cable network.

5,615,247

SECURITY DEVICE FOR THE PROTECTION OF CARGO TRANSPORT CONTAINERS

Thomas O. Mills, 2456 N. Carefree Cir., Flagstaff, Ariz. 86004

Filed Oct. 11, 1994, Ser. No. 321,327
Int. Cl.[6] H04Q *7/20;* H04M *11/04;* G08B *13/00*
U.S. Cl. 379—58 16 Claims



1. An integrated security device for the protection of cargo containers comprising:

a mobile base module adapted for placement within an interior aspect of a cargo container;

at least one cable in electrical communication with said base module thereby creating an electronic circuit wherein at least a portion of said cable is positioned exterior to said cargo container and through an exterior closing mechanism of said cargo container there by sealing an exterior opening to the cargo container;

an input device for transmitting an alphanumeric identification code into an electronic memory of said mobile base module;

at least one power source, disposed within said mobile base module and in electrical communication with said electronic circuit;

a remote data collection facility capable of transmitting and receiving a command data created by said electronic circuit; and

means for radio-telecommunications between said base module and said remote data collection facility for receipt and transmission of said common data.

5,615,248

TELEPHONE APPARATUS HAVING AUTOMATIC DISPLAY FUNCTION

Noriko Norimatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 6,309, Jan. 22, 1993, abandoned.
This application Oct. 17, 1994, Ser. No. 324,464
Claims priority, application Japan, Jan. 23, 1992, 4-032693
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—58 9 Claims

1. A displaying method for a mobile telephone apparatus, comprising the steps of:

storing a plurality of telephone numbers assigned to said mobile telephone apparatus;

receiving an input from a user to select one of the plurality of telephone numbers as a currently assigned telephone number;

storing the selected one of the telephone numbers as the currently assigned telephone number for the mobile telephone apparatus;

comparing a most significant number of digits of the currently assigned telephone number with a comparable number of digits of a first of a plurality of numbers stored in a first memory within the mobile telephone apparatus;

if a successful comparison is made with the first of the plurality of numbers stored in the first memory displaying data in accordance with a part of the currently assigned telephone number,

wherein said part of the currently assigned telephone number indicates a particular geographical area,

wherein the data is displayed based also on information retrieved using the first of the plurality of numbers stored in the first memory;

if a successful comparison is not made with the first of the plurality of numbers stored in the first memory, comparing the most significant number of digits of the currently assigned telephone number with a comparable number of digits of a next of the plurality of numbers stored in the first memory within the mobile telephone apparatus; and

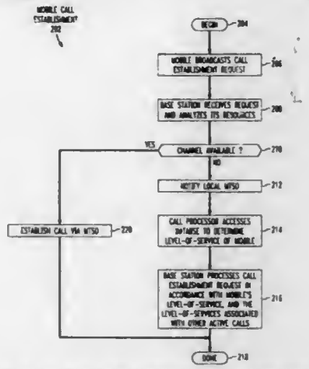
if a successful comparison is made with the second of the plurality of numbers stored in the first memory, displaying data in accordance with a part of the currently assigned telephone number and on information retrieved using the next of the plurality of numbers stored in the first memory.

5,615,249

SERVICE PRIORITIZATION IN A CELLULAR TELEPHONE SYSTEM

Max A. Solondz, Madison, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 30, 1994, Ser. No. 346,805
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—58 11 Claims



1. A method of servicing call establishment requests in a cellular telephone system, comprising the steps of:

(1) receiving at a base station a call establishment request broadcasted by a mobile unit associated with a first subscriber, said base station and said mobile unit both located in a cell of a cellular telephone system;

(2) determining whether said base station has a free channel to service said call establishment request;

(3) if said base station does not have a free channel to service said call establishment request, then determining a service priority level of said first subscriber; and

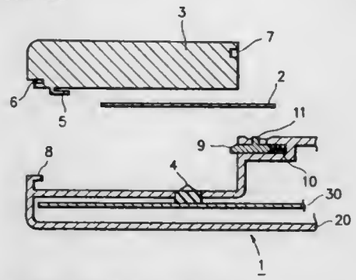
(4) processing by said base station said call establishment request in accordance with said service priority level of said first subscriber and service priority levels of second subscribers involved in telephone calls active in said cell.

5,615,250

PORTABLE TELEPHONE SET FOR USE WITH IC CARD

Fumiyuki Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 276,714, Jul. 18, 1994, abandoned.
This application Jun. 25, 1996, Ser. No. 671,830
Claims priority, application Japan, Jul. 23, 1993, 5-202073
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—61 1 Claim



1. A portable telephone set comprising;

a portable telephone casing; and

a battery pack attachable to and detachable from the portable telephone casing, the battery pack includes an IC card holding means for holding an IC card, the battery pack and an IC card positioned in the IC card holding means capable of being attached to and detached from the portable telephone casing as a unit;

the battery pack includes a mounting side, with the mounting side being the side of the battery pack which is attachable to and detachable from the portable telephone casing, and the IC card holding means includes an L-shaped rib forming a slot and disposed towards an end of the battery pack on the mounting side thereof for receiving an IC card;

an IC card having a connector section, the portable telephone casing having a battery pack and IC card receiving section which includes an IC card surface positioned to be opposite the IC card when the battery pack and IC card as a unit is attached to the portable telephone casing, and a first connector disposed on the IC card surface of the portable telephone casing such that an electrical connection is established between the first connector and the connector section of the IC card when the battery pack and IC card are attached to the portable telephone casing; and

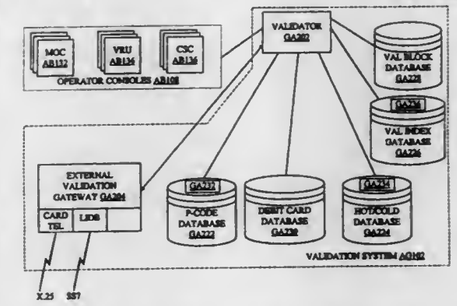
the first connector includes a connector terminal, the connector terminal extends from the IC card surface of the portable telephone casing, is stationary thereto, and is biased toward the IC card.

5,615,251

REAL-TIME RECONFIGURATION

Steven J. Hogan; Kristi T. Feltz; Douglas R. Mordock, and Eric M. Busch, all of Cedar Rapids, Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Division of Ser. No. 136,211, Oct. 15, 1993. This application Jun. 7, 1995, Ser. No. 485,153
Int. Cl.[6] H04M *15/00*
U.S. Cl. 379—112 20 Claims



1. A system for providing reconfiguration of a validation function, the system comprising:

an operator console for receiving a call having a piece of information associated with said call, said operator console indicating that said call can be completed after said piece of information is validated; and

a validation system for receiving a validation request from said operator console, said validation request prompting said validation system to validate said piece of information, wherein said validation system includes a database that stores instructions defining at least a portion of said validation procedure,

wherein reconfiguration of the validation function is implemented by changing said validation request such that the reconfiguration is transparent to said operator console.

5,615,252

SYSTEM AND APPARATUS FOR RECORDING AND DISPLAYING RECEIVED INFORMATION AT A REMOTE LOCATION

Theodore Sizer, II, Little Silver, and Gregory A. Wright, Colts Neck, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 5, 1995, Ser. No. 369,201
Int. Cl.[6] H04M *15/00*
U.S. Cl. 379—142 13 Claims

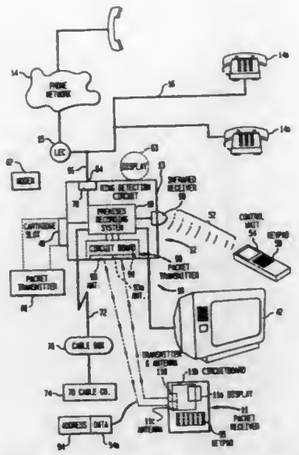
1. A system for displaying information received over a telephone network comprising:

premises transmission means located within a premises for receiving information from said telephone network,

means for connecting said premises transmission means to said telephone network,

said premises transmission means further including wireless transmission means for generating and transmitting a packet of at least a portion of the information received from the telephone network, said premises transmission means including means for extracting a caller ID from an incoming call and transmitting the caller ID within said transmitted packet, and

a packet receiver spaced distant from said premises transmission means but within range of said packet transmitted from said



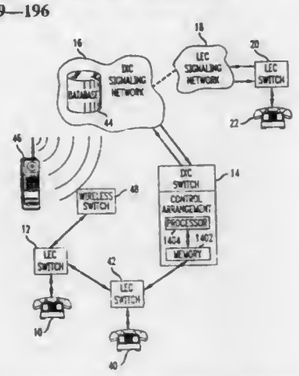
wireless transmission means for receiving and storing said packet of information received from the wireless transmission means, said packet receiver including a display for displaying the caller ID extracted from an incoming call and displaying at least a portion of said packet of information received from said wireless transmission means, wherein said packet receiver is a size for be readily placement in a compact location the word including the door jam of an entrance to the premises.

5,615,253

METHOD FOR PROCESSING FORWARDED TELEPHONE CALLS

Stephen M. Kocan, Fairfield; Richard L. Mansdoerfer, Jr., Flemingtun; Russell D. Morgan, Washington, and Ronald B. Potter, Somerville, all of N.J., assignors to AT&T, Middletown, N.J.

Filed Oct. 28, 1994, Ser. No. 330,418
Int. Cl.[6] H04M *1/66*
U.S. Cl. 379—196 **8 Claims**



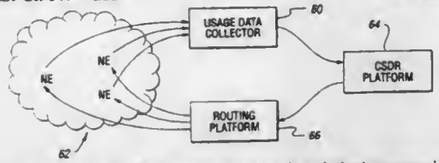
6. A call processing method comprising the steps of:
determining whether a call to a communication station is a forwarded call;
responsive to a determination that the call is a forwarded call, accessing a database to obtain information indicative of whether the call represents unauthorized use of the communications network.

5,615,254

METHODS AND SYSTEMS FOR DYNAMIC ROUTING IN A SWITCHED COMUNICATION NETWORK

Yuping Qiu, Louisville; Jennifer Ryan, Boulder; Xiaorong Sun, Superior; George B. Pillsbury, Lyons; Alex Stevens, and Rudy Zubiate, both of Boulder, all of Colo., assignors to U S West Technologies, Inc., Boulder, Colo.

Filed Apr. 4, 1995, Ser. No. 416,255
Int. Cl.[6] H04M *3/36;7/06*
U.S. Cl. 379—221 **6 Claims**



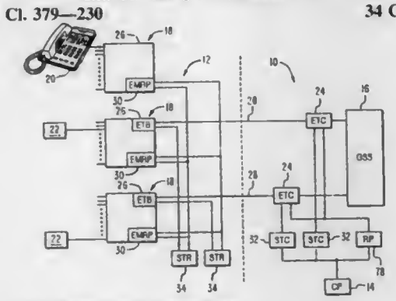
1. A method of traffic routing in a circuit switched communication network, the circuit switched communication network having a plurality of switches and a plurality of trunk groups connecting the switches, the method comprising the steps of:
determining a set of alternate routing paths for each of a plurality of ordered pairs of the switches, wherein the number of alternate routing paths through each of the trunk groups is constrained to be less than a corresponding first predetermined threshold;
determining a set of feasible paths of each of the ordered pairs of the switches, wherein the set of feasible paths are consistent with a plurality of predetermined rules, and wherein the set of alternate routing paths is a subset of the set of feasible paths;
calculating a measure of availability for each of the feasible paths;
adding a selected path from the set of feasible paths to the set of alternate routing paths if each trunk group in the selected path is less than the first predetermined threshold until the set of alternate routing paths contains a predetermined number of paths; and
routing a call over one of the alternate routing paths when a direct route for the call is unavailable.

5,615,255

METHOD AND APPARATUS FOR MEASURING LOADS IN A COMMON CHANNEL SIGNALLING LINK

Yves Lemieux, Kirkland, Canada, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 365,919, Dec. 29, 1994, abandoned.
This application Aug. 29, 1996, Ser. No. 705,013
Int. Cl.[6] H04J *3/14;* **H04M** *3/22*
U.S. Cl. 379—230 **34 Claims**



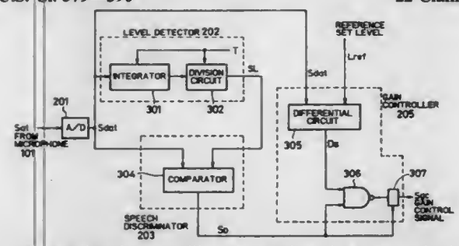
1. A telephone system, comprising:
an exchange including a central processor;
a piece of regional equipment including at least one regional processor;
a communications link connecting the exchange to the piece of regional equipment, the communications link comprising multiple channels, at least one of said channels being a signalling channel carrying common channel signalling messages between the central processor of the exchange and the at least one regional processor in the regional equipment, wherein the common channel signalling messages are formatted into signal units and each signal unit includes a length indicator field containing a value indicative of the number of bytes of message data carried thereby;
means in the exchange for reading the length indicator field of each signal unit for the common channel signalling messages carried on each signalling channel to extract the message data byte value for use in determining communications link load and detecting an overloading of the communications link; and
means in the exchange responsive to the detected overloading of the communications link for relieving the overloading.

5,615,256

DEVICE AND METHOD FOR AUTOMATICALLY CONTROLLING SOUND VOLUME IN A COMMUNICATION APPARATUS

Osamu Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 15, 1995, Ser. No. 440,781
Claims priority, application Japan, May 13, 1994, 6-123307
Int. Cl.[6] H04M *9/08;* **H03G** *3/20;3/00*
U.S. Cl. 379—390 **22 Claims**



14. A method for controlling sound volume in a communication apparatus comprising a first means for converting a first sound wave to a first audio signal and a second means for converting a second audio signal to a second sound wave, the method comprising the steps of:
averaging an amplitude of the first audio signal to obtain an averaged amplitude of the first audio signal;
discriminating a speech signal of the first audio signal by comparing the first audio signal with the averaged amplitude of the first audio signal;
determining a level of the first audio signal by comparing the first audio signal with at least one predetermined reference level; and
varying an amplitude of the second audio signal according to the level of the first audio signal when the speech signal is not present in the first audio signal.

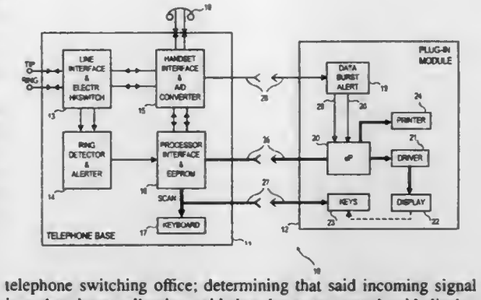
5,615,257

SCREEN-BASED TELEPHONE SET FOR INTERACTIVE ENHANCED TELEPHONY SERVICE

William V. Pezzullo, Bromley, N.C.; Michel J. Brisebois, Chelsea, Canada; Joseph B. Johns, Calgary, Canada; Kenneth M. Orford, Kanata, Canada; Kristin J. Travis; Bruce H. Tsuji, both of Nepean, Canada; William T. Ross, Dunrobin, Canada; Andre J. Robert, Woodlawn, Canada, and Clifford D. Read, Stittsville, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 13, 1994, Ser. No. 354,599
Claims priority, application Canada, Jan. 4, 1994, 2112757
Int. Cl.[6] H04M *1/56;1/27;11/08*
U.S. Cl. 379—396 **7 Claims**

1. A method of operating a subscriber telephone terminal having a display screen, a microprocessor, and a plurality of soft-keys, comprising the steps of: detecting an incoming signal from a telephone switching office; determining that said incoming signal is a data burst; allowing said data burst to control said display screen and said soft-keys and to temporarily define at least one soft-key for response entry by a user; causing said microprocessor to display information on said display screen downloaded in said data burst in response to said response entry by the user; storing a virtual display page, a virtual soft-key table, and a return character string, downloaded during an analog display services interface (ADSI) session, prior to display on said screen; and determining if an ADSI session is in progress, and if yes then allowing said ADSI to update said screen display and soft-keys on a real-time basis.

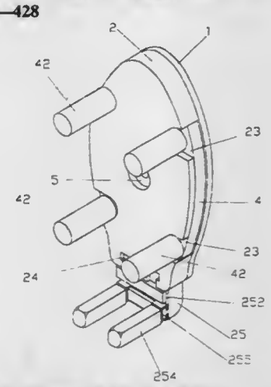


5,615,258

PORTABLE TELEPHONE HOLDER

Wun-Shing Ho, 148, Sec. 2, Zhuang Jing Road, Taoyuan City, Taiwan

Filed Jul. 15, 1996, Ser. No. 680,001
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—428 **1 Claim**



1. A portable telephone holder comprises:
a bottom plate, a cover covering the bottom plate, a left and right lateral flaps disposed at two sides of the cover, a bottom block disposed beneath the cover, a first and second coupling sliders disposed in the cove, and a left upper, left lower, right upper and right lower rubber sleeves disposed on the cover;
a first, second, third and fourth notches formed on a left upper, left lower, right upper and right lower periphery rim of the cover;
a first, second, third and fourth recess holes formed on a left upper, left lower, right upper and right lower portions of the cover;
a center hole formed on a center of the cover;
two bottom grooves formed on a bottom of the cover;
a round hole formed on a center of the bottom plate;
a first, second, third and fourth threaded holes formed on a left upper, left lower, right upper and right lower portions of the bottom plate;
each of the left and right lateral flaps having an upper and lower arms, an upper and lower posts disposed on the corresponding upper and lower arms, and a snap pin thereon;

each of the first and second coupling sliders having an elastic curved plate extending upward, an elongated recess, a slot, a strip and an inserted hole;

an inner wall of the left lateral flap abutting a left side of the cover;

an inner wall of the right lateral flap abutting a right side of the cover;

the first and second coupling sliders overlapped together;

each inserted hole receiving the corresponding snap pin, respectively;

the upper and lower posts of the left lateral flap inserted in a first and second rubber sleeves, respectively;

the upper and lower posts of the right lateral flap inserted in a third and fourth rubber sleeves, respectively;

a bottom block having two upper blocks inserted in the corresponding bottom grooves, and two slide rails to receive two levers;

a first and second plastic casings enclosing the corresponding levers, respectively;

a bolt passing through the center hole, the slots and the round hole;

a nut fastening the bolt;

a first, second, third and fourth screws passing through the corresponding first, second, third and fourth threaded holes and the corresponding first, second, third and fourth recess holes to fasten the bottom plate and the cover.

5,615,259

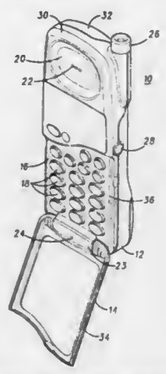
INTEGRAL FLAP HOUSING, SWITCH ACTUATOR AND DETENT MECHANISM FOR A FOLDABLE TELEPHONE

William A. Gilbert, Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 25, 1995, Ser. No. 448,928

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **10 Claims**



1. A foldable radiotelephone, the radiotelephone operating in response to a switch, the radiotelephone comprising: a first housing including a front housing portion defining an aperture for exposing the switch, the first housing including a retainer defining a hinge slot, the first housing further including a detent stop; and

a second housing including a body and a hinge pin integrally formed with the body, the hinge pin being disposed within the hinge slot, the hinge pin defining an axis, the second housing portion being rotatable about the axis, the hinge pin including a first actuator and a second actuator, the first actuator and the second actuator being integrally formed with the hinge pin, the first actuator being disposed proximate the switch to engage the switch when the second housing is rotated to a first position, the second actuator engaging the detent stop when the second housing is rotated to a second position.

5,615,260

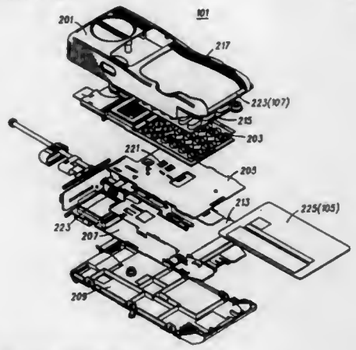
APPARATUS FOR ACCEPTING AND RETAINING A SMART CARD

Jeffery F. Kurgan, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 65,698, May 24, 1993, abandoned, which is a continuation of Ser. No. 799,818, Nov. 29, 1991, abandoned. This application Nov. 17, 1995, Ser. No. 558,253

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **6 Claims**



1. A device comprising:

a structural housing, said structural housing containing electronic apparatus;

an opening in the structural housing for accepting a first information card having at least one electrical contact disposed thereon and a first predetermined size;

a first circuit board positioned in said structural housing;

a first set of electrical contacts carried on said first circuit board and including a first electrical contact having a first end and a second end, said first end of said first electrical contact electrically coupled to said electronic apparatus;

a sliding plate positioned over said first circuit board and having said first set of electrical contacts partially disposed within said sliding plate;

a second circuit board; and

a cover plate carried on said second circuit board, said cover plate and said sliding plate defining a cavity accessable via the opening to receive the first information card and said cover plate comprising a substantially planar platform raised from the plane of, joined to and substantially parallel to said sliding plate, said substantially planar platform having a cantilevered spring integral therewith to force the information card against said sliding plate with appropriate force to retain the information card electrical contact into engagement with said first electrical contact, said substantially planar platform being made from a material that shields at least a portion of the electronic apparatus from electromagnetic and radio frequency interference (EMI and RFI).

5,615,261

METHOD AND APPARATUS FOR DETECTING ILLICIT RF DATA TRANSMISSIONS

Gary W. Grube, Palatine, Ill.; Timothy W. Markison, and Mathew A. Rybicki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

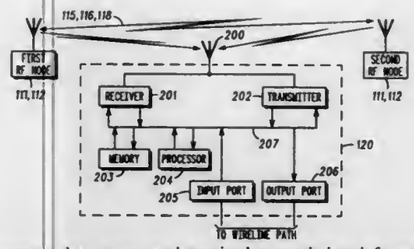
Filed Oct. 5, 1994, Ser. No. 318,415

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—2 **20 Claims**

17. An apparatus for monitoring illicit RF data transmissions, the apparatus comprising:

an RF receiver that monitors a data transmission from a first RF node to a second RF node, wherein the data transmission occurs over an RF transmission path;



memory that stores predetermined transmission information;

processing unit that is coupled to the RF receiver and the memory, wherein the processing unit determines transmission information based on the data transmission and wherein the processing unit generates a message when the transmission information compares unfavorably with the predetermined transmission information; and

output port coupled to the processing unit, wherein the output port provides a connection to a wireline link and wherein the message is transported to a data distributor via the wireline link.

5,615,262

DEVICE FOR SECURING AN INFORMATION SYSTEM USED IN MICROCOMPUTERS

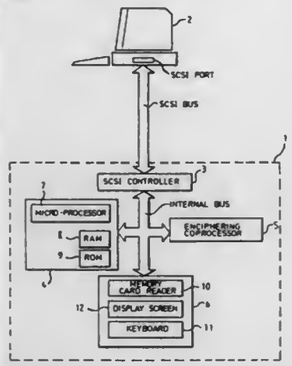
Antoine Guy, and Pierre Romenteau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 2, 1994, Ser. No. 352,857

Claims priority, application France, Dec. 3, 1993, 93 14518

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **6 Claims**



1. A peripheral device for protecting an information system of a microcomputer including at least one SCSI port attached to a first SCSI bus, said peripheral device for enciphering confidential information travelling through the information system, said peripheral device comprising:

a bus internal to the peripheral device;

an interface between the first SCSI bus and the bus internal to the peripheral device;

enciphering means;

information management and storage means for communicating with the enciphering means; and

an interface between a user and the peripheral device, whereby the confidential information travels through the peripheral device independent of standards of a bus used by the information system and an operating system used by the information system.

5,615,263

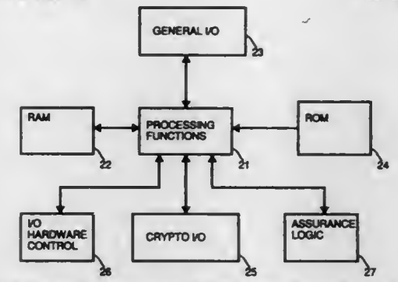
DUAL PURPOSE SECURITY ARCHITECTURE WITH PROTECTED INTERNAL OPERATING SYSTEM

Richard J. Takahashi, Phoenix, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 6, 1995, Ser. No. 369,601

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **15 Claims**



12. A system for performing a cryptographic function on data in a data stream, the system comprising:

interception means for intercepting the data stream; and,

a dual mode processor including,

instruction execution means for executing instructions;

input/output means for providing external instructions by a source external to the dual mode processor;

read-only memory storing primitives for a secure operating system, the primitives including instructions which, when executed by the instruction execution means, perform the following functions:

disable input/output to the dual mode processor,

perform secure functions specified by interrupts to the dual mode processor, the special functions including primitives which encrypt/decrypt the data in the data stream, and

upon completion of performing any of the secure functions, execute an exit routine which enables input/output to the dual mode processor and allows resumption of execution of instructions provided by the source external to the dual mode processor.

5,615,264

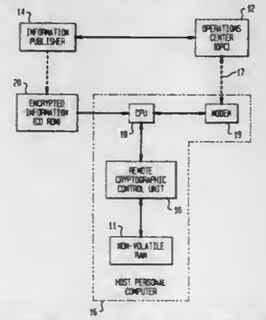
ENCRYPTED DATA PACKAGE RECORD FOR USE IN REMOTE TRANSACTION METERED DATA SYSTEM

Gregory J. Kazmierczak, Plainsboro; John R. Michener, Neshanic Station, and Kathryn M. Smith, Somerville, all of N.J., assignors to Wave Systems Corp., New York, N.Y.

Filed Jun. 8, 1995, Ser. No. 488,494

Int. Cl.[6] H04L *9/00;9/32*

U.S. Cl. 380—4 **8 Claims**



5. In a cryptographic system for metered use of data from an encrypted database, said encrypted database having a database cryptographic key associated therewith for enabling said metered

use of said encrypted database, said encrypted database being divided into separate encrypted portions individually available for separate purchase, an apparatus for encrypting said database comprising:

means for dividing said data into a plurality of data packages;

means for individually encrypting each of said plurality of data packages under a respective plurality of data package cryptographic keys to form a plurality of encrypted data packages;

means for encrypting each of said plurality of data package cryptographic keys under said database cryptographic key to form a plurality of encrypted data package cryptographic keys, each of said plurality of encrypted data package cryptographic keys associated with each said plurality of data packages respectively;

means for forming a plurality of encrypted data package headers containing said data package cryptographic key encrypted under said database cryptographic key, each of said plurality of encrypted data package headers associated with each of said plurality of data packages respectively;

means for storing said plurality of encrypted data packages in said encrypted database; and

means for storing each of said plurality encrypted data package beaders containing said respective plurality of data package cryptographic keys in said database and associated with each of said respective plurality of data packages.

5,615,265

PROCESS FOR THE TRANSMISSION AND RECEPTION OF CONDITIONAL ACCESS PROGRAMS CONTROLLED BY THE SAME OPERATOR

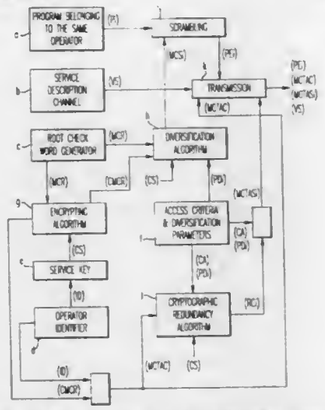
Francoise Coutrot, Cesson Sevigne, France, assignor to France Telecom, and Telediffusion de France, both of Paris, France

Filed Dec. 20, 1994, Ser. No. 359,597

Claims priority, application France, Jan. 19, 1994, 94 00528

Int. Cl.[6] H04N *7/167*

U.S. Cl. 380—20 **10 Claims**



1. Process for the transmission of conditional access programs, in which each of the programs are scrambled by a check word (MC) applied thereto so to limit access to the programs, an access title check message (MCTA) is formed, more particularly containing access criteria (CA) and at least one cryptogram of at least one check word (CMC) obtained by using an encrypting algorithm (AC) and transmission takes place of the scrambled program (PE), as well as the access title check message (MCTA), said process being characterized in that, for the programs (Pi) which are controlled by the same operator:

a) specific check words (MCSi) individual to each program (Pi) controlled by said operator are formed, each specific check word (MCSi) being obtained by diversification of a single check word known as the root check word (MCR) individual to the operator, diversification more particularly taking place on the basis of diversification parameters (PDi),

b) each program (Pi) is scrambled with the aid of the specific check word (MCSi) individual thereto,

c) access title check messages (MCTA) are formed in two parts:

a first part, common to all the programs of the same operator and which is constituted by a common access title check message (MCTAC), said common part containing a service identifier (ID) of the program operator, and at least one cryptogram (CMCR) of the root check word (MCR) individual to each program operator,

a second part, specific to each program (Pi) and constituted by specific access title check messages (MCTASi), individual to each program (Pi) controlled by the same operator, said specific messages (MCTASi) containing at least the access conditions (CAi) to the various programs (Pi) controlled by the same operator, the diversification parameters (PDi) if different from the access conditions (CAi) and a cryptographic redundancy (RCi) guaranteeing the integrity of the complete message formed by the first common part and the second specific part.

5,615,266

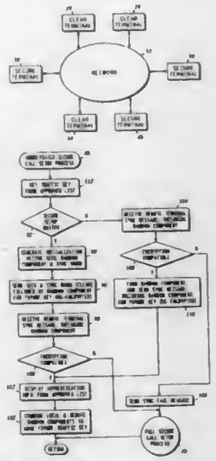
SECURE COMMUNICATION SETUP METHOD

Barry N. Altschuler, Scottsdale; Douglas A. Hardy, Mesa; James A. Stephens, Chandler, and Joseph Kish, III, Gilbert, all of Ariz., assignors to Motorola, Inc, Schaumburg, Ill.

Division of Ser. No. 501,799, Jul. 13, 1995. This application Jan. 11, 1996, Ser. No. 585,076

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—21 **14 Claims**



1. A method of engaging in a secure communication session with one of a plurality of remote terminals, said method comprising the steps of:

maintaining a list of approved network addresses;

obtaining a current network address for said one remote terminal;

determining whether said current network address corresponds to one of said approved network addresses;

automatically initiating a secure call setup procedure when said current network address corresponds to one of said approved network addresses;

performing a full secure call setup process when no prior secure communication session has been conducted with said one remote terminal;

performing an abbreviated secure call setup process when a prior secure communication session has been conducted with said one remote terminal;

maintaining a list in which approved user-identities are associated with approved traffic keys, said approved user-identities serving to identify at least some users of said remote terminals;

establishing a plain-text communication session with said one remote terminal;

receiving, after said automatically initiating step, a current identity from said one remote terminal;

determining whether said current identity corresponds to one of said approved user-identities from said list; and

effecting said abbreviated secure call setup process performing step when said current identity corresponds to one of said approved user-identities.

5,615,267

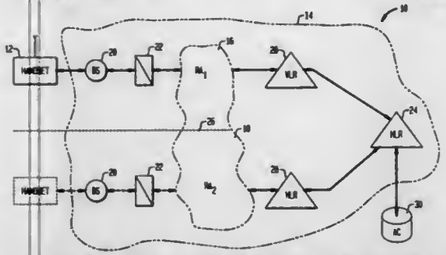
METHOD FOR ADAPTIVELY SWITCHING BETWEEN PCS AUTHENTICATION SCHEMES

Jason Y. Lin, Hsinchu, Taiwan; Seshadri Mohan, Basking Ridge, N.J.; Howard Sherry, Freehold, N.J., and Nelson R. Sollenberger, Tinton Falls, N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Jul. 17, 1995, Ser. No. 503,398

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—23 **17 Claims**



1. A method for using an automaton having a finite number of successive states for adaptively switching between a first and a second authentication scheme in a mobile communication system providing a plurality of registration areas for a user's handset, said method comprising the steps of:

a. determining a number of calls that are one of a delivered and received at a handset during a time period between movement of the handset from one registration area to another registration area,

b. if the number of calls:

(1) equals a predetermined amount, remaining in the current state of the automaton;

(2) exceeds the predetermined amount, transitioning the automaton to a higher succeeding state;

(3) is less than the predetermined amount, transitioning the automaton to a lower preceding state;

c. switching from the first to the second authentication scheme when transitioning to one of the succeeding states of the automaton;

d. switching from the second to the first authentication scheme when transitioning to one of the preceding states of the automaton; and

e. not switching authentication schemes at other times.

5,615,268

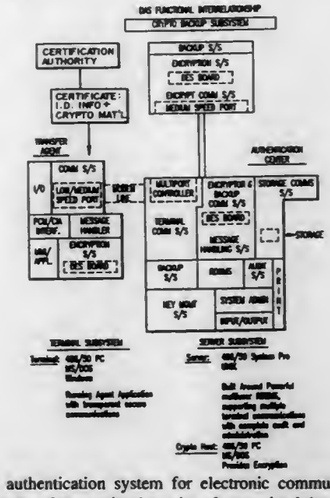
SYSTEM AND METHOD FOR ELECTRONIC TRANSMISSION STORAGE AND RETRIEVAL OF AUTHENTICATED DOCUMENTS

Stephen F. Bisbee, Gibson Island, and Douglas H. Trotter, Baltimore, both of Md., assignors to Document Authentication Systems, Inc., Dallas, Tex.

Filed Jan. 17, 1995, Ser. No. 373,944

Int. Cl.[6] H04L *9/00;9/30*

U.S. Cl. 380—25 **6 Claims**



1. An authentication system for electronic communication of documents and for ensuring integrity of transmitted documents and non-repudiation of the transmitted documents, comprising:

means for digitally encrypting a document;

means for certifying an identity of a transferor of the document;

means for generating a public key and a private key, at least one of the public key and the private key being used for digitally encrypting the document;

means for signing the document with a digital signature;

means for verifiably transmitting an encrypted, signed document; and

means for authenticating a transmitted, encrypted, signed document.

5,615,269

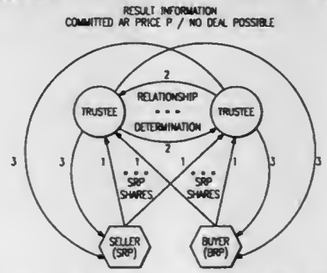
IDEAL ELECTRONIC NEGOTIATIONS

Silvio Micali, 459 Chestnut Hill Rd., Brookline, Mass. 02146

Filed Feb. 22, 1996, Ser. No. 604,870

Int. Cl.[6] H04L *9/00;* **H04K** *1/00;* **G06F** *17/60*

U.S. Cl. 380—49 **48 Claims**



1. An electronic process executed by a first party and a second party, with assistance from at least a plurality of trustees, wherein

the first party has a selling reservation price (SRP) and the second party has a buying reservation price (BRP) and the parties are committed to a transaction if a predetermined relationship between the reservation prices is established, but not otherwise, comprising the steps of:

initiating the electronic process by having the first and second parties compute data strings encoding their respective reservation prices, wherein at least one of said parties uses an electronic device for such computation;

having each of the first and second parties transmit to the trustees the data strings that encode their respective reservation prices, wherein at least one of these transmissions is carried out electronically, and wherein a subset of trustees containing less than a given number of trustees does not possess any useful information sufficient for reconstructing the reservation prices; and

having the plurality of trustees participate in the electronic process by taking action to thereby determine whether the predetermined relationship exists, wherein the determination is made without reconstructing the reservation prices.

5,615,270

METHOD AND APPARATUS FOR DYNAMIC SOUND OPTIMIZATION

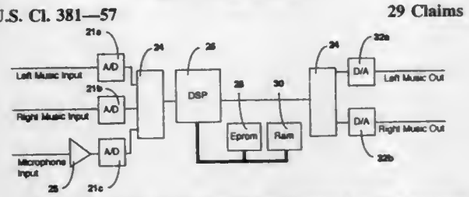
Thomas E. Miller, Arlington Heights, Ill.; Kenneth L. Kantor, Oakland, Calif.; Jeffrey Barish, and Duane K. Wise, both of Boulder, Colo., assignors to International Jensen Incorporated, Schiller Park, Ill.

Continuation of Ser. No. 44,643, Apr. 8, 1993, Pat. No. 5,434,922. This application Jun. 6, 1995, Ser. No. 466,411

The portion of the term of this patent subsequent to Apr. 8, 2013, has been disclaimed.

Int. Cl.[6] H03G *3/24*

U.S. Cl. 381—57 **29 Claims**



1. An audio enhancement system for compensating for ambient noise in a listening environment, comprising:

A. an audio signal source for producing an electrical sound signal;

B. a loudspeaker for generating a sound output from said electrical sound signal;

C. a microphone adapted for placement in a listening environment to provide a total sound signal representative of the total sound level in said environment, wherein said total sound level comprises both the sound output from said loudspeaker and the ambient noise within said environment;

D. a signal processor for subtracting said sound output from said total sound signal, thereby extracting an ambient noise signal representative of said ambient noise;

E. a gain calculator for comparing said electrical sound signal from said audio signal source with said ambient noise signal and determining their relative levels; and

F. at least a first volume control responsive to the relative levels of the electrical sound signal and the ambient noise signal for adjusting said sound output of said loudspeaker to compensate for said ambient noise.

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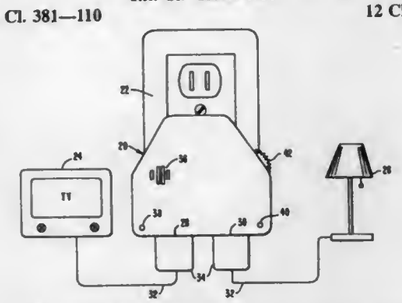
METHOD AND APPARATUS FOR ACTIVATING SWITCHES IN RESPONSE TO DIFFERENT ACOUSTIC SIGNALS

Carlile R. Stevens, Horseshoe Bay, Tex., and Dale E. Reamer, Lafayette, Calif., assignors to Joseph Enterprises, San Francisco, Calif.

Continuation of Ser. No. 58,727, May 7, 1993, Pat. No. 5,493,618. This application Jul. 19, 1995, Ser. No. 504,003

Int. Cl.[6] H04B *1/00*

U.S. Cl. 381—110 **12 Claims**



1. An acoustic switch comprising:

a sound detector for producing electrical acoustic signals in response to a series of acoustic signals; a filter coupled to the sound detector for filtering, from the electrical acoustic signals, signals that correspond to acoustic signals outside a predetermined frequency range thus producing filtered acoustic signals;

a power switch; and

a master control device coupled to the filter means and the power switch, the master control device comprising a second filter for rejecting, from the filtered acoustic signals, signals that are below a threshold voltage level thus producing sample signals and means for recognizing from the sample signals a first series of acoustic signals and a second series of acoustic signals different than the first series of acoustic signals and for operating the power switch upon receipt of one of the first and the second series of acoustic signals, the master control device further comprising means for establishing a time window when a first one of the sample signals passes through the second filter, wherein the recognizing means includes means for computing a number of the sample signals received within the time window, the first series of acoustic signals comprising a first predetermined number of the sample signals and the second series of acoustic signals comprising a second predetermined number of the sample signals.

5,615,272

SINGLE LOUD SPEAKER DRIVE SYSTEM

Vladimir W. Kukurudza, 12 Castille Cres., Keswick Ontario, Canada

Filed Nov. 8, 1995, Ser. No. 555,187

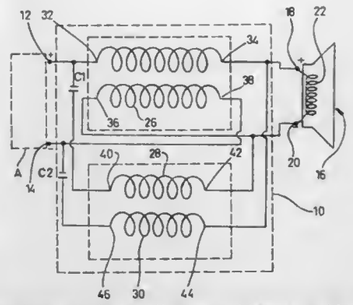
Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—117 **12 Claims**

1. A single speaker driver circuit for use in association with a source of audio signals and a single coil driven speaker for communicating said signals to said speaker and for reducing unwanted noise in said speaker, and comprising;

a low frequency input coil connected between the output of said audio circuit and the input of said single speaker;

a low frequency return coil, connected between the return of said single speaker and the return of the audio signal, said low frequency return coil being bifilar wound with said low frequency input coil, whereby signals passing through said low frequency input coil, and through said speaker coil and then through said low frequency return coil will substantially reduce unwanted noise in said speaker;



a higher frequency input coil connected between said output of said audio circuit and a location between the return of the speaker and the input to the low frequency return coil, and,

a secondary coil connected between the input of said speaker, and said return of said audio signal, said higher frequency input coil and said secondary coil being bifilar wound with one another, and said secondary coil acting as the secondary of a transformer, and being adapted to be excited by higher frequency currents passing through said higher frequency input coil to generate secondary signals which are passed to said speaker input.

5,615,273

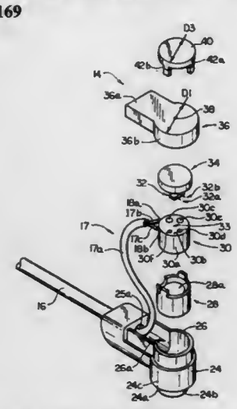
MICROPHONE ASSEMBLY IN A MICROPHONE BOOM OF A HEADSET

Robert E. Lucey, Sudbury, and James T. MacDonald, Pepperell, both of Mass., assignors to UNEX Corporation, Chelmsford, Mass.

Continuation of Ser. No. 952,956, Sep. 29, 1992, Pat. No. 5,410,608. This application Nov. 18, 1994, Ser. No. 342,428

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **19 Claims**



7. A microphone assembly comprising:

a boom;

a housing disposed on a first end of said boom, said housing comprising:

a basewall portion having a first aperture therethrough; and

sidewall portions disposed on a first surface of said basewall portion to form a cavity region wherein said basewall portion forms a first wall of the cavity region and a second end opposite the first wall is open;

a microphone disposed in said cavity region;

a cover, having a second aperture therein, disposed over the open second end of the cavity region;

a baffle having a first surface spaced a predetermined distance over a first surface of said cover in the aperture region of said cover, said baffle disposed to provide a barrier to electrostatic discharges;

a foam pad disposed on a first surface of said microphone; and

a microphone boot disposed around said microphone.

5,615,274

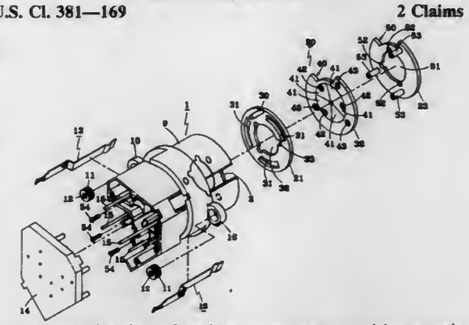
MULTI-FUNCTION MICROPHONE CONNECTER

Jia S. Lin, 9F3R, No. 210, Chung Hsueh Rd., Tainan, Taiwan

Filed Jan. 11, 1996, Ser. No. 587,842

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **2 Claims**



1. A multi-function microphone connecter comprising a main body having a cylindrical member, said cylindrical member having a large center plug hole, a plurality of small plug holes equidistantly spaced apart around an outer circumferential edge of said large center plug hole, an annular inner wall defining said large center plug hole, an annular groove defined by said inner annular wall and an outer annular wall, two opposite combine holed ears extending out of said outer annular wall, a nut provided in a hole of each said opposite combine holed ear, and two grounding plates fixed oppositely on the outer surface of said main body; and characterized by a dust cover unit which consists of a rotatable member, a silicon rubber member and an outer cover member, said rotatable member having a lateral actuating rod, a large center hole, a plurality of small plug holes and a plurality of curved slots, said silicon rubber member having a large notch, a plurality of fan-shaped sections respectively having a small plug hole, a plurality of combine holes spaced apart along near an outer circumferential edge, said outer cover member having a large notch and a large center plug hole and a plurality of lateral posts, said lateral posts extending through said combine holes of said silicon rubber member and said curved slots of said rotatable member and screwed firmly with bolts from inside of said main body, said actuating rod of said rotatable member extending through said large notch of said silicon rubber member and said large notch of said outer cover member so that said rotatable member may be rotated manually to close up said small plug holes of the cylindrical member, preventing dust from drifting and stick therein.

5,615,275

PLANAR DIAPHRAGM LOUDSPEAKER WITH COUNTERACTIVE WEIGHTS

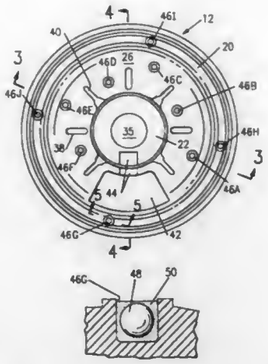
Eduardo J. Bertagni, Tustin, Calif., assignor to Sound Advance Systems, Inc., Santa Ana, Calif.

Continuation of Ser. No. 78,386, Jun. 17, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 426,642

Int. Cl.[6] H04R *25/00; 7/00*

U.S. Cl. 381—203 **20 Claims**

1. In a loudspeaker including a planar diaphragm and a voice coil assembly, the diaphragm having a front surface for the reproduction of sound and a rear surface to which the voice coil assembly is coupled to cause the diaphragm to vibrate, the improvement comprising:



a weight;

a boundary wall defining a recess in the rear surface of the diaphragm, the recess sized to receive the weight with a clearance fit; and

a resilient material within the recess, separate and distinct from the weight,

wherein the weight is embedded in the resilient material, spaced from the boundary wall defining the recess, to enable the weight a degree of movement relative to the diaphragm, such that as the diaphragm vibrates the weight helps to control the movement of the diaphragm at various frequencies.

5,615,276

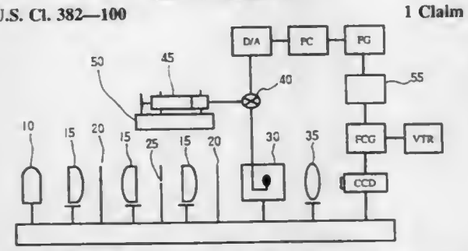
METHOD OF MEASURING LOW INTERFACIAL TENSION BY PENDANT DROP DIGITIZATION

Shi-Yow Lin, Taipei, and Hae-Feng Hwang, Hsinchu, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jul. 14, 1995, Ser. No. 502,498

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—100 **1 Claim**



1. A method of measuring interfacial tension of a two-phase fluid system by pendant drop digitization comprising the following steps:

1) forming a pendant drop of a second phase fluid in a first phase fluid and creating a silhouette of said pendant drop;

2) taking a video image of said silhouette and digitizing said video image such that the loci of a plurality of points at the boundary of said silhouette are obtained;

3) calculating a theoretical curve of the boundary of said silhouette which comprises the following steps:

a) setting values of X_0, Z_0, R_0 and B, wherein X_0 and Z_0 are the loci of the apex of said silhouette in the horizontal and vertical directions respectively, R_0 is the radius of curvature at the apex, and B is the capillary constant and is defined by

$$B=\Delta\rho g R_0^2/\gamma$$

wherein $\Delta\rho$ is the density difference between the fluid phases, g is the gravitational acceleration constant, and γ is the interfacial tension; and

b) integrating the following equations:

$$\frac{d\phi}{ds'} = 2 + Bz' - \frac{\sin\phi}{x'}$$

$$\frac{dx'}{ds'} = \cos\phi$$

$$\frac{dz'}{ds'} = \sin\phi$$

with the boundary conditions: $x'(0)=z'(0)=s(0)=0$, wherein $x'=x/R_0$, $z'=z/R_0$, $s'=s/R_0$; x and z are the loci in the horizontal and vertical directions, s is the arc length measured from the apex, and ψ is the turning angle measured from a horizontal axis;

4) calculating the normal distances between said theoretical curve of step 3) and said a plurality of points at the boundary of said silhouette; and

5) repeating steps 3) and 4) until the sum of the squares of said normal distances is less than a desired value, and computing the interfacial tension wherein

$\gamma=\Delta\rho R_0^2/B$ by using the R_0 and B values set in step 3);

wherein the initial R_0 and B values are set by the following steps:

I) selecting two points P_2 and P_1 from said a plurality of points in step 2), wherein the loci of the P_2 and P_1 are (X_1, Z_1) and (X_2, Z_2) respectively, and $X_1/Z_1=A_1$, $X_2/Z_2=A_2$, $A_1>A_2$; and

II) calculating R_0 and B values in accordance with the following equations:

$$y=a_0+a_1w+a_2w^2+a_3w^3+a_4w^4+a_5w^5$$

$$y'=b_0+b_1w+b_2w^2+b_3w^3$$

wherein

y=B; $y'=X_2/R_0^2$; $w=X_1/X_2$; a_0, a_1, a_2, a_3, a_4 and a_5 are constants; and b_0, b_1, b_2 and b_3 are constants.

5,615,277

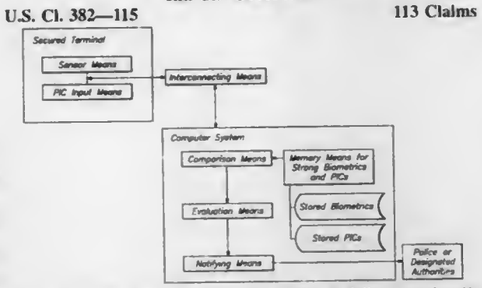
TOKENLESS SECURITY SYSTEM FOR AUTHORIZING ACCESS TO A SECURED COMPUTER SYSTEM

Ned Hoffman, 2529A College Ave., Berkeley, Calif. 94704

Filed Nov. 28, 1994, Ser. No. 345,523

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—115 **113 Claims**



1. A tokenless security system partially to fully operationally integrated with and dedicated to a computer system for preventing unauthorized access of said designated computer system by determining an unknown user's identity from an examination of unique biometric characteristics that are specific to the user, said security system comprising:

a) means for gathering and recording a biometric sample taken directly and physically from an unknown user, said means otherwise operationally isolated and distinct from said computer system;

b) means interconnecting said gathering means and said computer system for transmitting the gathered biometric sample to said secured computer system;

c) means integral with said computer system for receiving, storing, retrieving and identifying the gathered biometric sample;

d) means integral with said computer system for receiving, storing, retrieving and identifying an authenticated biometric sample obtained from each authorized user of said computer system, access to and manipulation of the authenticated biometric samples limited to systems functions necessary for operation of said security system and to specific users charged with updating and maintaining the authenticated biometric samples;

e) means integral with said computer system for comparing the biometric sample of the unknown user with an authenticated biometric sample obtained from other authorized user, and for generating a correlation factor of a first type from each comparison;

f) means for evaluating each correlation factor generated by said comparing means in order to determine whether the unknown user is one of said authorized users; and

g) means for use by an authorized user, unapparent to a coercive third party, for notifying designated authorities that the authorized user's access attempt is being coerced, wherein the authorized user is assigned a variable personal code comprising at least two variants, a standard variant which the authorized user enters when the access attempt is voluntary, and one or more alternative variants, any one of which is entered by the authorized user when an access attempt is being coerced.

5,615,278

METHOD AND APPARATUS FOR IMAGE PROCESSING BY CORRECTING THE POSITION OF EACH PART OF AN EYE FUNDUS IMAGE PRODUCED BY AN OPTICAL IMAGING SYSTEM

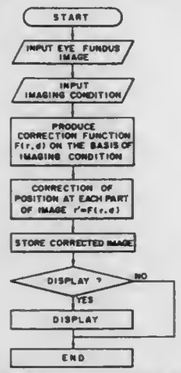
Kazuhiro Matsumoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 57,454, May 7, 1993, abandoned, which is a continuation of Ser. No. 798,050, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 564,170, Aug. 8, 1990, abandoned. This application Jan. 13, 1995, Ser. No. 372,836

Claims priority, application Japan, Aug. 24, 1989, 1-220057

Int. Cl.[6] A61B *3/14*; G06T *5/00*

U.S. Cl. 382—128 **9 Claims**



1. An opthalmological image processing apparatus comprising:

an eye fundus image phototaking system for phototaking an eye fundus image through a phototaking optical system, wherein said phototaking optical system has a focusing function to change a diopter of said phototaking optical system so that a focusing operation can be performed on an eye fundus of each of eyes to be examined having various refracting powers and wherein said phototaking optical system generates different distortions according to the diopter changed by said focusing function for an image to be phototaken when focusing by said focusing operation is completed;

a diopter detector for detecting diopter data of said phototaking optical system;

a converter for converting data of the eye fundus image obtained by said eye fundus image phototaking system into digital data;

a first memory for storing said eye fundus image data converted to digital data by said converter;

a second memory for storing a correction scheme for correcting images, said correcting scheme being performed with varying correction processes in accordance with the diopter data of said phototaking optical system; and

an image processing portion for correcting distortion of said eye fundus image data stored by said first memory according to the correction scheme stored by said second memory and the diopter data detected by said diopter detector,

wherein the diopter data detected by said diopter detector is converted into a form which said image processing portion can read and which can be sent to said image processing portion.

5,615,279

METHOD OF AND APPARATUS FOR CORRECTING SCATTERED X-RAYS FOR X-RAY COMPUTERIZED TOMOGRAPH

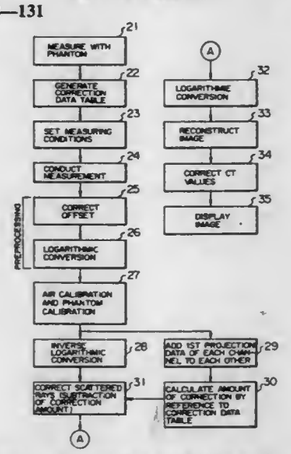
Tomonori Yoshioka, Kashiwa; Shinichi Migita, Ryugasaki, and Tetsuo Nakazawa, Nagareyama, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,090

Claims priority, application Japan, Nov. 2, 1993, 5-274171

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—131 **26 Claims**



1. A scattered X-ray correction method for an X-ray computerized tomograph, comprising the steps of:

obtaining from data attained by conducting a logarithmic conversion for measured values of X-rays passed through a first subject a scattered X-ray correction curve indicating a relationship between measured data having undergone the logarithmic conversion and an amount of scattered X-ray correction;

achieving a logarithmic conversion for measured values of X-rays passed through a second subject;

obtaining from measured data of the second subject having undergone the logarithmic conversion and said scattered X-ray correction curve an amount of scattered X-ray correction in a linear region before the logarithmic conversion;

conducting an inverse logarithmic conversion for said measured data of the second subject having undergone the logarithmic conversion and obtaining values in the linear region;

subtracting by a subtracter said amount of scattered X-ray correction from said values in the linear region attained through the inverse logarithmic conversion; and

accomplishing a logarithmic conversion for an output from said subtracter and constructing a computerized tomogram related to said second subject.

5,615,280

APPARATUS FOR RECORDING SYMBOLS PRINTED ON DOCUMENTS OR THE LIKE

Hikaru Izawa; Yasuhiko Masuda; Toltsu Ohya, and Tokimi Nago, all of Sagamihara, Japan, assignors to Japan Cash Machine Co., Ltd., Japan

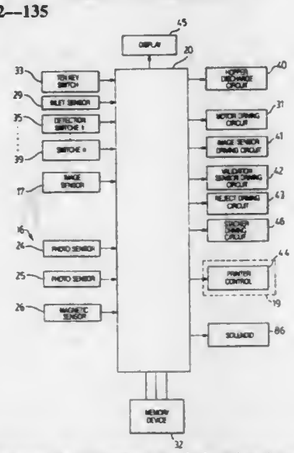
PCT No. PCT/JP93/01874, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO94/15321, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 24, 1993, Ser. No. 284,582

Claims priority, application Japan, Dec. 28, 1992, 4-349121

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—135 **13 Claims**



1. An apparatus for recording symbols printed on a document, which comprises: conveyer means for transporting a document inserted from an inlet along a passageway to an outlet; validator means having a validator sensor disposed along the passageway for validating the authenticity of the document; printer means for printing information by outputs of said validator means, said validator sensor producing output signals to decide authenticity of document; image sensor means disposed adjacent to said passageway for converting into electric signals symbols printed on the document; read controller means for activating said image sensor means when the symbols printed on the document pass through said image sensor means; and a detector means for detecting the read condition of the symbols read by the image sensor means; and said conveyor means transporting the document out of the passageway through the outlet when said validator means determines the authenticity of the document and when said detector means detects a full amount of the symbols to be read.

5,615,281

METHOD OF AND APPARATUS FOR GENERATING REDUCED IMAGE

Katsuya Yamaguchi, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 47,158, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 765,585, Sep. 25, 1991, abandoned. This application Dec. 14, 1994, Ser. No. 357,060

Claims priority, application Japan, Sep. 26, 1990, 2-258359

Int. Cl.[6] G06T *3/40*

U.S. Cl. 382—162 **15 Claims**

10. A method of generating a reduced image based on original image data representing an original image having linework including plural pixels, the original image data including pixel data for each pixel in said original image, each said pixel data expressed in one of plural color codes, the method comprising the steps of:

storing the original image data representing said original image, said original image being divided into a plurality of regions each having a predetermined shape and

(a) determining an order of priority of said color codes;

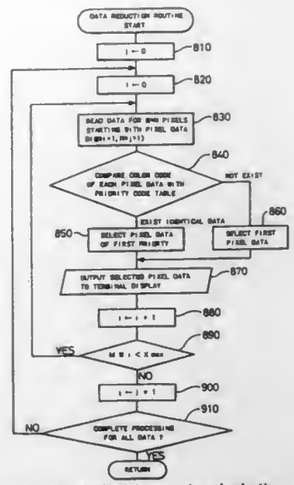
(b) extracting only one representative pixel data having a color code with a highest priority according to said order of priority from plural pixel data within each region of a predetermined shape in said original image according to said order of priority, wherein step (b) includes the steps of:

(b-1) judging whether said color code of each of said plural pixel data is stored in a priority memory; and

(b-2) selecting said only one representative pixel data according to said order of priority when at least one said color code is stored in said priority memory;

(c) displaying a reduced image without omission of lines in the linework based upon said extracted only one representative pixel data for each region in said original image;

said step (b-2) further including selecting pixel data at a predetermined pixel position in each region as said representative pixel data when said color code is not stored in said priority memory.



5,615,282

APPARATUS AND TECHNIQUES FOR PROCESSING OF DATA SUCH AS COLOR IMAGES

Ehud Spiegel, Rehovot; Moshe Broudo, Holon; Reuven Lavie, Herzlia; Yoav Bresler, Tel Aviv; Yacov Pluda, Alfei-Menashe, all of Israel, and Eliezer Baron, Brussels, Belgium, assignors to Scitex Corporation Ltd., Herzlia, Israel

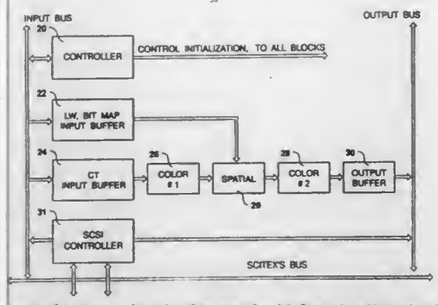
Continuation of Ser. No. 650,461, Feb. 4, 1991, abandoned. This application Mar. 25, 1994, Ser. No. 218,307

Claims priority, application Israel, Feb. 5, 1990, 93274; Feb. 22, 1990, 93493; Dec. 27, 1990, 96816; Dec. 30, 1990, 96829; Jan. 15, 1991, 96955; Jan. 15, 1991, 96957

Int. Cl.[6] G06K *9/00;9/36*

U.S. Cl. 382—167 **10 Claims**

1. Apparatus for processing an image characterized by at least first and second pluralities of color characteristics arranged in at least corresponding first and second formats comprising a format processing unit for receiving said at least first and second pluralities of color characteristics and producing therefrom a third plurality of color characteristics arranged in a third format, said format processing unit comprising:



means for converting the format of said first plurality of color characteristics arranged in said first format into said third format;

means for converting the format of said first plurality of color characteristics arranged in said first format into a fourth format;

means for converting the format of said second plurality of color characteristics arranged in said second format into said fourth format;

means for merging said first and second pluralities of color characteristics in said fourth format, thereby producing a fourth plurality of color characteristics in said fourth format;

means for converting the format of said fourth plurality of color characteristics into said third format; and

means for merging said first and fourth pluralities of color characteristics in said third format, thereby providing said third plurality of color characteristics in said third format.

5,615,283

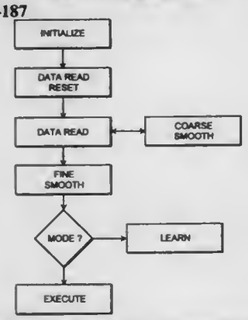
PATTERN RECOGNITION DEVICE

Dale R. Donchin, Framingham, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 874,730, Apr. 27, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 311,841

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—187 **8 Claims**



1. A machine executed method of generating an output signal encoding a hand drawn pattern forming one or more disjoint, connected, directed line segments drawn sequentially on a computer display, said method comprising the steps of:

(a) allocating addressable storage for an angle list, referred to as angle-list storage;

(b) sampling strokes of said hand drawn pattern to produce a series of digitized drawn points, each said drawn point having coordinates with respect to a reference coordinate system for said display;

(c) storing in said angle-list storage a list of the respective angles of each said line segment with respect to a directed reference axis of said display, referred to as an angle list, said storing step comprising the substeps of:

(1) declaring the coordinates of an initial said drawn point as the coordinates of a line segment starting point;

(2) determining a current angle A_C, with respect to the directed reference axis, of a directed subsegment having as its endpoints (A) the line segment starting point and (B) the Kth drawn point after the line segment starting point;

(3) if the value of the current angle A_C differs from the value of a previous angle A_P by more than a specified nominal difference ϕ, where the initial value of said previous angle A_P is equal to the current angle A_C, then (A) appending the value of the current angle A_C to said angle list in said angle-list storage, and (B) replacing the value of the angle A_P with the value of the current angle A_C; and

(4) repeating steps (c)(2) through (c)(3) for each successive set of K consecutive drawn points;

(d) searching a lookup table stored in a memory for a match with the angle list stored in step (c) above, said lookup table comprising (A) a set of pattern codes each representing a specified pattern of line segments, and (B) for each said pattern code, a list of angles of the specified pattern of line segments represented by the pattern code; and

(e) if a match is found in step (d) above, then generating a signal encoding the matched pattern code, else generating a NO-MATCH signal.

5,615,284

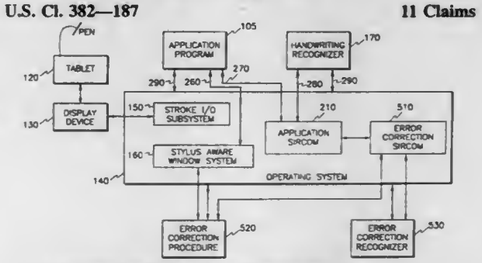
STYLUS-INPUT RECOGNITION CORRECTION MANAGER COMPUTER PROGRAM PRODUCT

James R. Rhyne, New Canaan, Conn.; Nicos J. Anthony, Purdys, N.Y.; Stephen E. Levy, Valhalla, N.Y., and Catherine G. Wolf, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 159,008, Nov. 29, 1993, Pat. No. 5,511,135. This application Jun. 6, 1995, Ser. No. 466,923

Int. Cl.[6] G06K *9/03*

U.S. Cl. 382—187 **11 Claims**



1. A computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium for implementing a stylus-input recognition correction manager, said computer readable program code means comprising:

computer readable stroke router program means for causing a computer to receive strokes from an application program, said stroke router program means having a first and a second mode of operation;

computer readable recognition manager program means, connected to said stroke router program means, for causing said computer to store said received strokes, to pass said received strokes to a handwriting recognizer for recognition, and to relay said recognized strokes from said handwriting recognizer back to said application program; and

computer readable mediator program means for causing said computer to implement a protocol between said application program and an error correction module, said protocol having means for causing said computer to facilitate retrieval of said recognized strokes by said error correction module from said application program;

wherein said first mode of operation of said stroke router program means causes said computer to route said received

strokes to said recognition manager program means, and wherein said second mode of operation of said stroke router program means causes said computer to route said received strokes to an auxiliary stylus-input recognition correction manager associated with said error correction module,

wherein the stylus-input recognition correction manager causes said computer to provide an interface among said application program, said handwriting recognizer, and said error correction module.

5,615,285

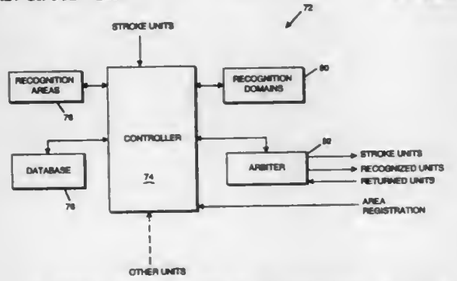
METHOD AND APPARATUS FOR RECOGNIZING HANDWRITTEN WORDS

Ernest H. Beernink, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 265,497, Jun. 23, 1994, which is a continuation of Ser. No. 68,443, May 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 889,216, May 27, 1992, abandoned, and a continuation-in-part of Ser. No. 1,123, Jan. 5, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 478,728

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—189 **6 Claims**



1. A method for the recognition of handwritten objects on a display screen of a computer system, the computer system also having a processor and a memory, the method comprising the steps of:

receiving a handwritten stroke written on the display screen of said computer system, said stroke defining a character part and being received in a form that can be manipulated by said processor;

normalizing the stroke by adjusting the aspect ratio of a bounding box surrounding the stroke when the aspect ratio is greater than a first predetermined value or less than a second predetermined value, said step of normalizing reducing recognition errors due to distortion;

normalizing said stroke by a process including the steps of:

(i) identifying the endpoints of the stroke,

(ii) identifying two of the stroke's most widely spaced points, at least one of which is an endpoint of the stroke,

(iii) defining a line between these points,

(iv) determining an angle between a defined axis and the line defined in step (iii), and

(v) rotating the stroke in its entirety by the angle determined in step (iv) such that at least one of the stroke's endpoints lies on said defined axis;

matching the normalized stroke against pre-rotated templates in a stroke database stored in memory to obtain at least one character part interpretation; and

using the processor to recognize a handwritten object using one or more of the character part interpretations.

5,615,286

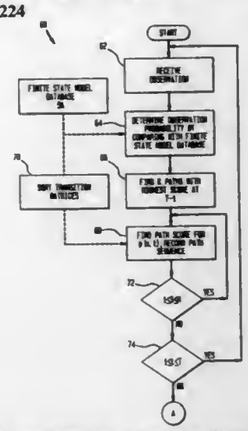
METHOD FOR DETERMINING A MOST LIKELY SEQUENCE OF STATES

Sarvar M. Patel, Montville, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed May 5, 1995, Ser. No. 436,059

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—224 **9 Claims**



1. A method for determining the most likely state sequence ending in a state s at a time t corresponding to a sequence of observations from an initial time interval to time t, comprising the steps of:

a. receiving the sequence of observations;

b. comparing the observations to known parameters for N number of states;

c. determining a best state sequence for each of the N number of states at time t−1 based on this comparison;

d. identifying a first number of the best state sequences at t−1, the first number being less than N, one of which sequences will provide an optimal state sequence to s at time t;

e. processing only the first number of the best state sequences; and

f. selecting an optimal state sequence from the processed best state sequences; and wherein the step of determining comprises determining the best state sequences by iteratively calculating the most likely state sequences for each of the N states from the initial time to time t−1.

5,615,287

IMAGE COMPRESSION TECHNIQUE

Chi-Yung Fu, San Francisco, and Loren I. Petrich, Livermore, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 2, 1994, Ser. No. 348,431

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—232 **45 Claims**

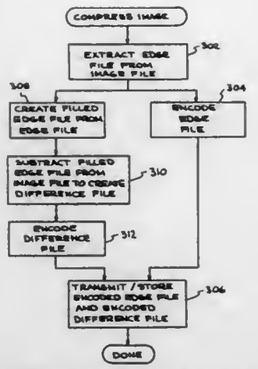
1. A method for communicating via a transmission medium of limited bandwidth, an image represented by an image array of pixels each having a first value in a computer-readable storage medium, comprising the steps of:

identifying pixels of said image array being edge pixels lying on edges of said image;

creating a filled edge array of pixels each corresponding to a respective pixel in said image array,

each of the pixels in said filled edge array, which corresponds to an edge pixel of said image array, having a first value that is responsive to the first value of at least one pixel of said image array selected in response to the edge pixel,

and each of the pixels in said filled edge array, which does not correspond to an edge pixel of said image array, having a first value that is a function of the first values of at least one of the



pixels in said filled edge array which do correspond to edge pixels of said image array;

subtracting said filled edge array from said image array to create a difference array of pixels; and

transmitting signals responsive to said difference array of pixels via said transmission medium.

5,615,288

SINGULAR VALUE DECOMPOSITION CODING AND DECODING APPARATUSES

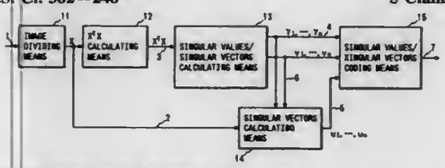
Yutaka Koshi; Shunichi Kimura; Taro Yokose; Koh Kamizawa, all of Kanagawa; Toshi Minami, and Osamu Nakamura, both of Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1994, Ser. No. 232,801

Claims priority, application Japan, Apr. 26, 1993, 5-099819; Apr. 28, 1993, 5-102333

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—248 **8 Claims**



1. An image coding apparatus comprising:

means for dividing an input image into image blocks each represented by a block matrix having a predetermined size;

means, coupled to the means for dividing, for calculating a first matrix product of the block matrix and its transpose;

means, coupled to the means for calculating a first matrix product, for successively calculating part of singular values of the block matrix that are positive square roots of eigenvalues of the first matrix product and part of first singular vectors that are normalized eigenvectors of the first matrix product in a descending order of magnitudes of the singular values, the part of the first singular vectors corresponding to the part of the singular values;

means, coupled to the means for dividing and the means for successively calculating, for calculating, from the part of the singular values and the part of the first singular vectors, part of second singular vectors that are normalized eigenvectors of a second matrix product obtained by multiplying the block matrix and its transpose in an order reverse to that of the first matrix product;

means for adding a power of a newly calculated singular value to powers of already calculated singular values to produce an accumulated power, and for finishing a singular value decomposing operation when the accumulated power has reached a predetermined threshold, when a ratio of the accumulated power to a calculated power of the block matrix has reached a predetermined ratio, or when a difference between the accumulated power and the power of the block matrix has reached a predetermined threshold; and

means for coding the part of the singular values, the part of the first singular vectors and the part of the second singular vectors.

5,615,289

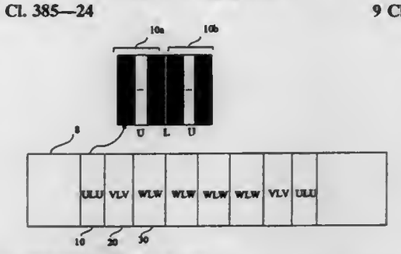
BANDPASS OPTICAL FILTER

Gary S. Duck, Nepean; David H. Cushing, Greely, and Stephen J. Mihailov, Ottawa, all of Canada, assignors to JDS Fitel Inc., Nepean, Canada

Filed Dec. 7, 1995, Ser. No. 568,650

Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—24 **9 Claims**



1. A bandpass filter comprising:

an optical waveguide having at least a Bragg grating therein, the at least Bragg grating defining a plurality of Fabry Pérôt cavities disposed along the waveguide, the cavities including;

a first cavity including two reflectors, each reflector comprising "v" alternating high-low index regions within the waveguide, each region having a thickness of one quarter-wave at a bandpass wavelength, each alternate region being of a different index of refraction than an adjacent region, and a multiple odd-quarter-wave or quarter-wave high or low index region sandwiched between the two reflectors; and,

a second Fabry Pérôt cavity including two reflectors, each reflector comprising "u" alternating high-low index regions within the waveguide, each region having a thickness of one quarter-wave at a bandpass wavelength, each alternate region being of a different index of refraction than an adjacent region, and a multiple odd quarter-wave or quarter-wave high or low index region sandwiched between the two reflectors, "v" and "u", being selected in accordance with the refractive index difference between two alternate adjacent regions.

5,615,290

BRANCH DEVICE FOR OPTICAL MULTIPLEX SYSTEM

Shinichirou Harasawa, and Haruo Fujiwara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 1, 1996, Ser. No. 641,563

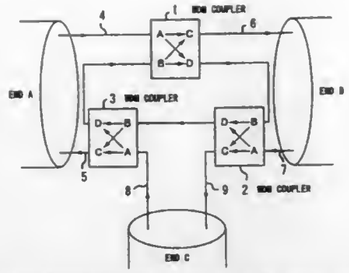
Claims priority, application Japan, Oct. 16, 1995, 7-266744

Int. Cl.[6] G02B *6/28;* **H04J** *14/00*

U.S. Cl. 385—24 **5 Claims**

1. A branch device for use in an optical multiplex system, connected to first, second, and third transmission paths extending to respective stations in an optical communication network, for branching signal lights transmitted between the stations, comprising:

first wavelength dividing and multiplexing means for outputting a signal light in a first band inputted to a first input port thereof to a first output port thereof, outputting a signal light in a second band inputted to the first input port thereof to a second output port thereof, and outputting a signal light in the second band inputted to a second input port thereof to the first output port thereof, said first input port being connected to an input optical fiber connected to the first transmission path,



said first output port being connected to an output optical fiber connected to the second transmission path;

second wavelength dividing and multiplexing means for outputting a signal light in the first band inputted to a first input port thereof to a first output port thereof, outputting a signal light in the second band inputted to the first input port thereof to a second output port thereof, and outputting a signal light in the second band inputted to a second input port thereof to the first output port thereof, said first input port of said second wavelength dividing and multiplexing means being connected to an input optical fiber connected to the second transmission path, said second input port of said second wavelength dividing and multiplexing means being connected to the second output port of said first wavelength dividing and multiplexing means, said first output port of said second wavelength dividing and multiplexing means being connected to an output optical fiber connected to the third transmission path; and

third wavelength dividing and multiplexing means for outputting a signal light in the first band inputted to a first input port thereof to a first output port thereof, outputting a signal light in the second band inputted to the first input port thereof to a second output port thereof, and outputting a signal light in the second band inputted to a second input port thereof to the first output port thereof, said first input port of said third wavelength dividing and multiplexing means being connected to an input optical fiber connected to the third transmission path, said second input port of said third wavelength dividing and multiplexing means being connected to the second output port of said second wavelength dividing and multiplexing means, said first output port of said third wavelength dividing and multiplexing means being connected to an output optical fiber connected to the first transmission path, said second output port of said third wavelength dividing and multiplexing means being connected to the second input port of said first wavelength dividing and multiplexing means.

5,615,291

CAPILLARY FOR OPTICAL FIBER CONNECTORS AND METHOD OF MANUFACTURING THE SAME

Makoto Hayakawa; Osamu Kobayashi, and Takeshi Yamauchi, all of Kitakyusyu, Japan, assignors to Toto Ltd., Fukuoka, Japan

PCT No. PCT/JP94/01562, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO95/09373, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 22, 1994, Ser. No. 619,553

Claims priority, application Japan, Sep. 27, 1993, 5-239590; Jan. 27, 1994, 6-007806; Jun. 9, 1994, 6-150595

Int. Cl.[6] G02B *6/36;* **C03B** *18/00;* **B29D** *11/00*

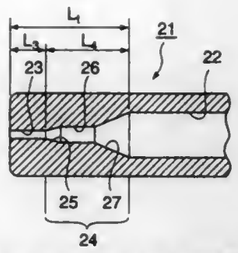
U.S. Cl. 385—84 **3 Claims**

1. A capillary for an optical fiber connector which comprises, in a capillary used for an optical connector in which tip surfaces of two optical fibers are butted to transmit optical signals between both optical fibers;

a cylindrical ceramics sintered body,

having a straight-hole like narrow hole with a slightly larger inner diameter than an outer diameter of said optical fiber bare line for passing the bare line of the optical fiber therethrough, and a tip surface for connection at which the narrow hole opens;

and an inner surface of said narrow hole being substantially a sintered surface.



3. A process for producing a capillary for an optical fiber connector comprising a ceramics sintered body provided by a straight-hole like narrow hole for inserting an optical fiber bare line therethrough;

which comprises an injection molding step for obtaining a molded body by subjecting a mixture (compound) of ceramics powder and a binder to an injection molding into a mold provided by a molding pin for forming the above narrow hole,

a degreasing step for removing the binder from the molded body, and

a sintering step of sintering the degreased molded body to obtain a sintered body;

and the above molding pin has

a diameter d" determined by the formula:

$$d''=d_c/(s\cdot z)$$

from a diameter of the above narrow hole d_c, a sintering shrinkage factor s, and a shrinkage factor z at cooling solidification of the molded body.

5,615,292

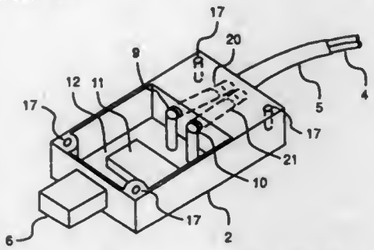
FIBER OPTIC TERMINATOR WITH ELECTRICAL INPUT/OUTPUT

Robert W. Beckwith, 2794 Camden Rd., Clearwater, Fla. 34619

Filed Feb. 10, 1995, Ser. No. 386,748

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—89 **5 Claims**



1. A universal pluggable terminator device for optical cables, said terminator device including all components required at either end of each of a pair of fiber optic cables to enable transmission of digital signals in either one of two directions over the cables, a terminator device being affixable to each of the ends of said pair of cables, each said terminator device comprising in combination:

a) a non-conductive body;

b) means for fixedly connecting an end of a cable to said body;

c) cooperating light sending and light receiving means mounted in said body;

d) electronic circuit means mounted in said body for selectively converting electrical digital signals to light signals as an output, and for converting incoming light signals to electrical digital signals as an input; and,

e) said terminator devices affixed to the ends of said cables being essentially identical, and selectively functioning either as input terminals and output terminals for the associated cables.

5,615,293

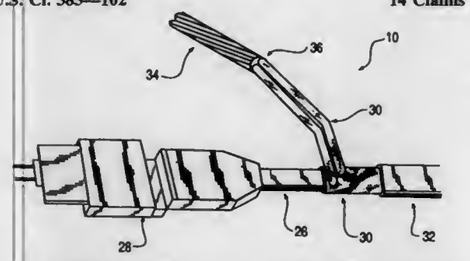
FIBER OPTIC CABLE ASSEMBLY FOR FACILITATING THE INSTALLATION THEREOF IN A STRUCTURE

Emile G. Sayegh, Austin, Tex., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jan. 30, 1996, Ser. No. 593,603

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—102 **14 Claims**



1. In combination with a gripping mechanism, a fiber optic cable assembly comprising:

at least one optically transmissive fiber;

a first strength member disposed about the at least one optically transmissive fiber;

a polymer jacket disposed about the first strength member; and

a second strength member disposed about the polymer jacket, said second strength member being disposed along a length of fiber optic cable assembly, said second strength member adapted to be gripped by said gripping mechanism to facilitate installation of the fiber optic cable assembly in a structure.

5,615,294

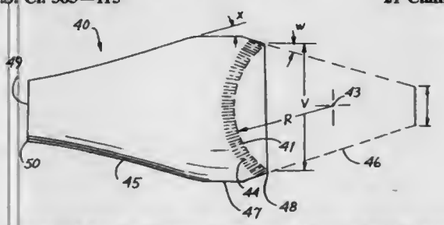
APPARATUS FOR COLLECTING LIGHT AND ITS METHOD OF MANUFACTURE

Raymond J. Castonguay, Tucson, Ariz., assignor to Breault Research Organization, Tucson, Ariz.

Division of Ser. No. 230,546, Apr. 20, 1994, Pat. No. 5,475,617, which is a division of Ser. No. 983,470, Nov. 30, 1992, Pat. No. 5,313,542. This application Jun. 7, 1995, Ser. No. 479,663

Int. Cl.[6] G02B *6/04*

U.S. Cl. 385—115 **21 Claims**



1. An apparatus for collecting light from a common light source which comprises:

a plurality of individual fiber optic elements one end of each of which is fixed in spaced relation to each other and an other end of each of which is arranged in an indexed array,

the plurality of fiber optic elements have a common field of view and a face at the one end of each of which is fixed in a curved surface having a radius of curvature such that the longitudinal axis of each fiber optic element at the one end substantially converges at the common light source which, with respect to each fiber optic element, radiates light normal to a plane which is both tangent to the face of the fiber optic element at the normal axis and perpendicular to the longitudinal axis of the fiber optic element,

whereby the light radiating angularly from the light source is received simultaneously at the one end by each fiber optic element and is transmitted to the other end.

5,615,295

OPTICAL FIBER AND PROCESS OF PRODUCING THE SAME

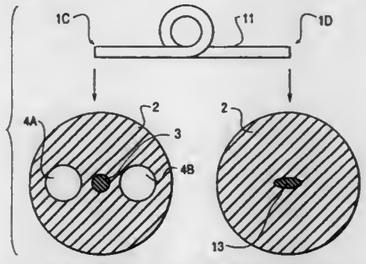
Kazuaki Yoshida; Takayuki Morikawa, and Takeshi Yagi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,559

Claims priority, application Japan, Sep. 14, 1994, 6-220106; Jul. 26, 1995, 7-190350

Int. Cl.[6] G02B *6/02;6/36*

U.S. Cl. 385—123 **31 Claims**



1. A process of producing an optical fiber comprising a core, the cross-sectional shapes thereof at a portion and another portion being different, said process including the step of heating a first optical fiber at a side thereof, said first optical fiber having a core having a substantially uniform cross-sectional area in a longitudinal direction and a cladding formed with at least one through-hole along the longitudinal direction of said core, to continuously change a shape of said through-hole along the longitudinal direction from the heating portion to the portion where the heat transfer is not substantially subjected, continuously changing the cross-sectional shape of said core along the longitudinal direction from the heating portion to the portion where the heat-transfer is not substantially subjected.

5,615,296

CONTINUOUS SPEECH RECOGNITION AND VOICE RESPONSE SYSTEM AND METHOD TO ENABLE CONVERSATIONAL DIALOGUES WITH MICROPROCESSORS

Vincent M. Stanford, Gaithersburg; Ora J. Williamson, Silver Spring, both of Md.; Elton B. Sherwin, Jr., Stanford, Conn., and Frank V. Castellucci, Purdys, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 152,654

Int. Cl.[6] G10L *3/02;9/00;3/00*

U.S. Cl. 395—2.1 **40 Claims**

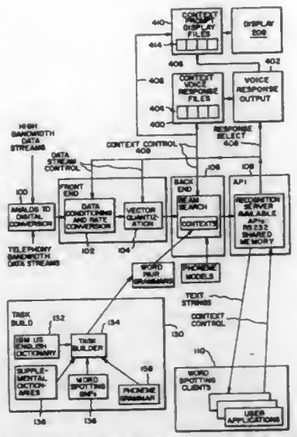
1. In a data processing system, a method to playback context related voice response signals and display prompts, comprising the steps of:

storing in a first partition of a memory, a first plurality of words having a first context, each of said first plurality of words including a second plurality of phonemes;

storing in said first partition a third plurality of voice response words having said first context;

storing in a second partition of said memory, a fifth plurality of words having a second context, each of said fifth plurality of words including a sixth plurality of phonemes;

storing in said second partition a seventh plurality of voice response words having said second context;



storing in a third partition of said memory, a ninth plurality of phoneme pattern matching data units for sharing by both contexts;

storing a first pointer map in said memory including a first plurality of pointers, each of which points to a respective one of said second plurality of phonemes and to a respective one of said ninth plurality of pattern matching data units;

storing a second pointer map in said memory including a second plurality of pointers, each of which points to a respective one of said sixth plurality of phonemes and to a respective one of said ninth plurality of pattern matching data units;

selecting said first context and said first pointer map in response to a first input;

recognizing a first spoken utterance containing one of said first plurality of words and in response thereto, outputting one of said third plurality of voice response words;

recognizing said first spoken utterance and in response thereto, outputting one of said fourth plurality of display prompts;

instantaneously selecting said second context and said second pointer map in response to a second input without loading new pattern matching data units in said memory;

recognizing a second spoken utterance containing one of said fifth plurality of words and in response thereto, outputting one of said seventh plurality of voice response words; and

recognizing said second spoken utterance and in response thereto, outputting one of said eighth plurality of display prompts.

5,615,297

TRANSMISSION SYSTEM FOR CODED SPEECH SIGNALS AND/OR VOICEBAND DATA

Andrew G. Davis, Little Bealings, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB92/02102, § 371 Date Jun. 10, 1994, § 102(e) Date Jun. 10, 1994, PCT Pub. No. WO93/10623, PCT Pub. Date May 27, 1993

PCT Filed Nov. 13, 1992, Ser. No. 244,090

Claims priority, application European Pat. Off., Nov. 15, 1991, 9124331

Int. Cl.[6] H04M *11/06;* **H04J** *3/16;* **H04L** *25/49*

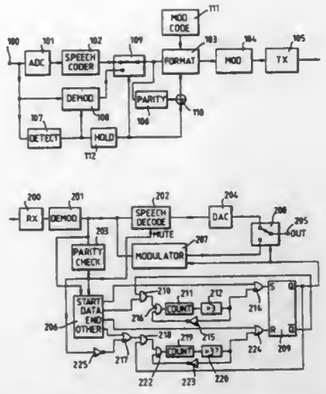
U.S. Cl. 395—2.1 **12 Claims**

1. An audio-frequency coding apparatus comprising:

(a) an input for receiving audio-frequency signals;

(b) a speech coder for coding the received signals into digital form;

(c) a demodulator for demodulating the received signals, in accordance with a predetermined modulation scheme;



(d) a recognizer operable to place the apparatus in a data or speech mode dependent on the presence or absence respectively of signals according to the predetermined modulation scheme;

(e) means for formatting signals from, in the data mode, the demodulator and from, in the speech mode, the speech coder, into a common framing structure;

(f) a parity generator responsive to a plurality of predetermined bit positions within the framing structure to generate parity bits and to insert these in predetermined positions within the frame structure, the sense of the parity bits when in the data mode being the reverse of that in the speech mode, and

(g) insertion means for generating a codeword indicative of data transmission and inserting this into a predetermined position within the frame structure.

5,615,298

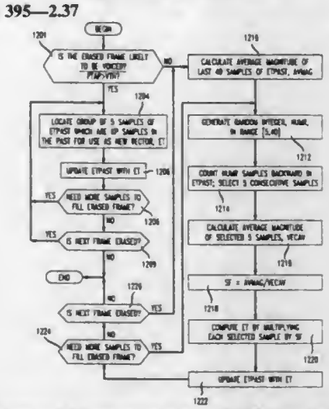
EXCITATION SIGNAL SYNTHESIS DURING FRAME ERASURE OR PACKET LOSS

Juin-Hwey Chen, Neshanic Station, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 14, 1994, Ser. No. 212,408

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.37 **22 Claims**



1. A method of synthesizing a signal reflecting human speech, the method for use by a decoder which experiences an erasure of input bits, the decoder including a first excitation signal generator responsive to said input bits and a synthesis filter responsive to an excitation signal, the method comprising the steps of:

storing samples of a first excitation signal generated by said first excitation signal generator;

responsive to a signal indicating the erasure of input bits, synthesizing a second excitation signal based on previously stored samples of the first excitation signal; and

filtering said second excitation signal to synthesize said signal reflecting human speech,

wherein the step of synthesizing a second excitation signal comprises the steps of:

identifying a set of stored excitation signal samples based on a pitch-period of voiced speech; and

forming said second excitation signal based on said identified set of excitation signal samples.

5,615,299

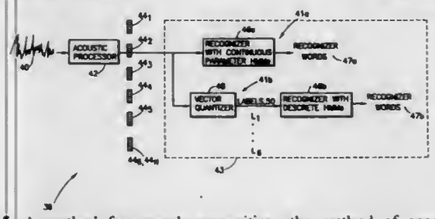
SPEECH RECOGNITION USING DYNAMIC FEATURES

Lalit R. Bahl, Amawalk, N.Y.; Peter V. de Souza, San Jose, Calif.; Ponani Gopalakrishnan, Yorktown Heights, and Michael A. Picheny, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,093

Int. Cl.[6] G10L *7/08;5/06*

U.S. Cl. 395—2.63 **25 Claims**



5. A method for speech recognition, the method of speech recognition comprising the steps of:

deriving N distinct transformations, each distinct transformation is respectively associated with one of N classes, each class providing an indication of the proximity of a speech segment to one or more neighboring speech segments,

arranging a speech signal into a series of frames;

deriving a vector, within each said frame, which represents said speech signal;

generating a set of N different projected vectors for each frame, by multiplying said transformations by said vector;

utilizing models for tagging each model transition with one of said N classes; and

utilizing the projected vector with the corresponding tag to compute a probability that a particular speech segment is present in said frame.

5,615,300

TEXT-TO-SPEECH SYNTHESIS WITH CONTROLLABLE PROCESSING TIME AND SPEECH QUALITY

Yoshiyuki Hara, Tokyo, and Tsuneo Nitta, Yokohama, both of Japan, assignors to Toshiba Corporation, Kanagawa-ken, Japan

Filed May 26, 1993, Ser. No. 67,079

Claims priority, application Japan, May 28, 1992, 4-137177

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.69 **15 Claims**

1. A method of synthesizing speech with a system having a programmed central processing unit, comprising the steps of:

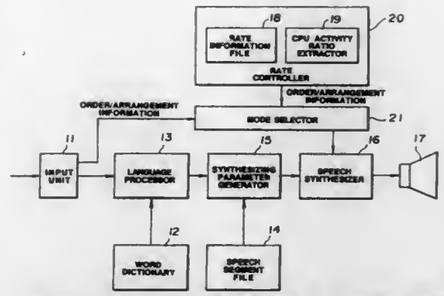
generating phonetic parameters from a series of phonetic symbols of an input text;

generating prosodic parameters from prosodic information of the input text;

detecting an activity rate of the central processing unit;

determining a degree number of at least one particular phonetic parameter, each particular phonetic parameter having a different degree number in different contexts, depending on the detected activity rate of the central processing unit; and

generating and filtering synthesized speech sounds based on the phonetic and prosodic parameters including adapting the filtering according to the determined degree number of the particular phonetic parameter.



5,615,301

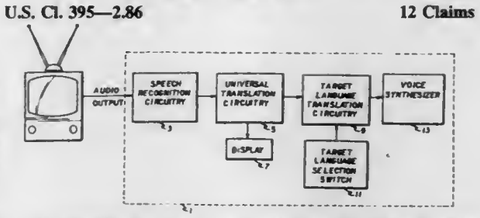
AUTOMATED LANGUAGE TRANSLATION SYSTEM

W. L. Rivers, P.O. Box 328, Verona, N.J. 07044

Filed Sep. 28, 1994, Ser. No. 313,785

Int. Cl.[6] G10L *3/00*

U.S. Cl. 395—2.86 **12 Claims**



1. A language translation system connectable to an audio output of an electronic device for presenting an audible program to a user, said language translation system translating the program audibly in the user selected language, said language translation system comprising:

an audio input connectable to the audio output of the electronic device selected from a television set, a radio, a video cassette recorder, a compact audio disc player, and a movie projector;

speech recognition circuitry connected to said audio input for converting any speech within the audio output of the electronic device into recognizable phonemes;

universal translation circuitry connected to said speech recognition circuitry for grouping the recognized phonemes into recognizable words and sentences in a recognizable natural language so as to translate said recognizable sentences from said natural language into a universal language;

target language translation circuitry connected to said universal translation circuitry for receiving said sentences translated into said universal language so as to translate each of said sentences previously translated into said universal language into a particular one of a plurality of target languages, said target language translation circuitry further having an output;

a target language selection switch connected to said target language translation circuitry for allowing the user to select said particular one of said plurality of target languages; and

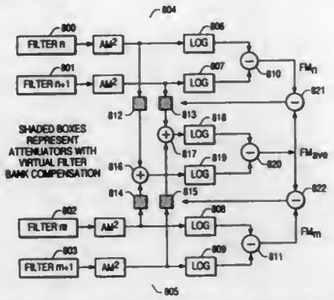
a voice synthesizer connected to said output of said target language translation circuitry so as to broadcast audible speech which is the translation of said program in said one target language.

5,615,302

FILTER BANK DETERMINATION OF DISCRETE TONE FREQUENCIES

Robert H. McEachern, 2804 Clove La., Edgewater, Md. 21037

PCT No. PCT/US92/08164, § 371 Date Jun. 14, 1994, § 102(e) Date Jun. 14, 1994
Continuation of Ser. No. 807,229, Dec. 16, 1991, Pat. No. 5,214,708. This PCT application Sep. 30, 1992, Ser. No. 244,713
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.18 7 Claims



1. A ratio detecting filter bank having ratio detectors and comprising:

at least one pair of bandpass filters, each having a different center frequency, said bandpass filters having frequency response characteristics to cover a desired frequency band, wherein

each said filter has a first frequency response based on a first standard deviation below a said center frequency and a second frequency response based on a second standard deviation above the same said center frequency, said first and second standard deviations being different and, wherein

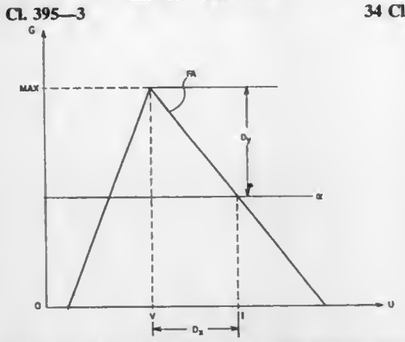
said second standard deviation for a filter of said pair at a lower center frequency matches a first standard deviation for a filter of said pair with a higher center frequency.

5,615,303

CIRCUIT FOR COMPUTING MEMBERSHIP FUNCTION VALUES IN A FUZZY LOGIC CONTROLLER

Massimo Ahruzzese, Catania, and Biagio Giacalone, Trapani, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Mar. 21, 1995, Ser. No. 408,058
Claims priority, application European Pat. Off., Mar. 31, 1994, 94830157
Int. Cl.[6] G06G *7/00*
U.S. Cl. 395—3 34 Claims



1. Circuit for calculation of values of membership functions in a controller operating with fuzzy logic procedures, said membership functions being of triangular or trapezoidal form and defined in a so-called discourse universe discretized in a finite number of points and being codified by a coordinate of the vertex and slopes at the sides of the vertex, said circuit comprising:

a central control unit including:

a memory section for storing of a vertex and at least one slope of each of said membership functions,

a microprocessor for selecting one of said membership functions; and

an interface for selecting a point of the discourse universe corresponding to the selected membership function; and

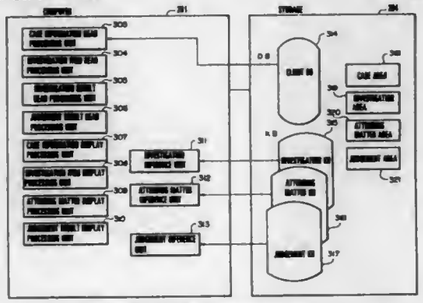
a calculator for determining the value of the selected membership function at the selected point of the discourse universe based upon a vertex and at least one slope for the selected membership function stored in said memory section.

5,615,304

JUDGEMENT SUPPORT SYSTEM AND METHOD

Shyoko Hatanaka, Funabashi; Chizuko Yasunobu, Tokyo, and Michitaka Kosaka, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 114,312
Claims priority, application Japan, Sep. 8, 1992, 4-239344
Int. Cl.[6] G06F *17/20*
U.S. Cl. 395—12 9 Claims



1. A judgement support system comprising:

a display;

means for inputting a plurality of case attribute information;

a first knowledge base for storing a plurality of first IF-THEN rules, each including a first relationship between case attribute information in an IF part and an investigation item in a THEN part of one of said plurality of IF-THEN rules;

a display control circuit for controlling said display to display a plurality of investigation items;

a first identifying circuit for referring to each of said plurality of first IF-THEN rules to identify an identification item described in a THEN part as essential when one of said plurality of case attribute information meets a first predetermined condition described in a corresponding IF part and to identify an investigation item described in a THEN part as optional when one of said plurality of case attribute information does not meet any condition described in any corresponding IF part;

a memory for storing said identified optional and essential investigation items;

said display control circuit controlling said display to display a symbol thereby to discriminatively display an essential investigation item and an optional investigation item from each other;

means for enabling the user to select one of said optional and essential investigation items displayed on said display;

a second knowledge base for storing a plurality of second IF-THEN rules, each including a second relationship between said investigation items and case attribute information in an IF part and an attending matter in a THEN part, said attending matters being attended to by the user when said investigation item is investigated and including essential attending matters relative to which an investigation result is necessarily inputted and optional attending matters relative to which an input of an investigation result is optional;

a second identifying circuit for referring to each of said plurality of second IF-THEN rules to identify an essential attending matter described in a THEN part as essential when one of said investigation items and said case attribute information meets a condition described in a corresponding IF part and identify an optional attending matter described in a THEN part as optional when one of said investigation items and said case attribute information meets a condition described in a corresponding THEN part;

said display control circuit controlling said display to display said identified attending matter, said control circuit controlling said display to discriminatively display said essential attending matters and said optional attending matters;

means for enabling the user to input an investigation result in respect of said identified attending matter;

a third knowledge base for storing a plurality of third IF-THEN rules, each including a third relationship between said investigation result described in an IF part and an evaluation described in a THEN part;

a third identifying circuit for referring to each of said plurality of third IF-THEN rules to identify an inputted investigation result described in an IF part and said evaluation described in a THEN part;

said circuit controlling said display to display said identified evaluation;

an updating circuit for updating said investigation item stored in said memory when said identified evaluation includes updating said investigation item;

a judgement circuit for judging whether all essential investigation items among said investigation items stored in said memory have been investigated;

said display control circuit controlling said display to display an essential investigation item still not investigated, when said judgement circuit judges that said essential investigation item still not investigated remains; and

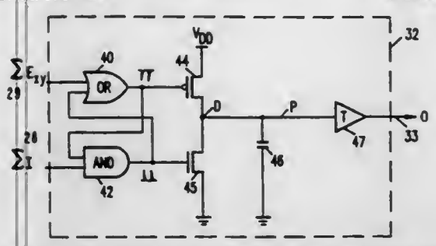
a circuit for allowing the system to terminate the operation when said judgement circuit judges that said all essential investigation items have been investigated.

5,615,305

NEURAL PROCESSOR ELEMENT

Patrick O. Nunally, Diamond Bar, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Continuation of Ser. No. 833,817, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 611,213, Nov. 8, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 116,642
Int. Cl.[6] G06G *7/16*
U.S. Cl. 395—24 8 Claims



1. In a neural network for connecting a plurality of neurons such that a first neuron, n_x, provides an output, S_x, according to the equation:

$$S_x = f\left\{ \sum_{y=1}^{y=m} E_{xy} S_y \right\}$$

where y is an integer between 1 and m, E_{xy}, is an interneural synaptic weight obtaining between said first neuron and a neuron, neuron y, in a plurality, m, of second neurons, S_y is an output of neuron y, a neuron circuit, which comprises:

a first terminal, connected to neuron y, for inputting a frequency modulated signal having

a first polarity and representing E_{xy};

a second terminal for receiving an inhibiting signal I, I being a frequency modulated signal having a second polarity:

a pair of complementary transistor means, a first complementary transistor means connected to said first terminal for producing a first charging signal in response to the frequency modulated signal representing E_{xy}, and a second complementary transistor means connected to said second terminal for producing a second charging signal in response to I, said second charging signal being complementary to said first charging signal;

charge accumulation means connected to said pair of complementary transistor means for accumulating a charge having a magnitude in response to said first and second charging signals;

buffer means connected to said charge accumulation means for producing a continuous ramped voltage level signal having a magnitude corresponding to the magnitude of said charge;

signalling means connected to said buffer means for generating said output S_x as a pulse stream having a frequency corresponding to the magnitude of said ramped voltage level signal; and

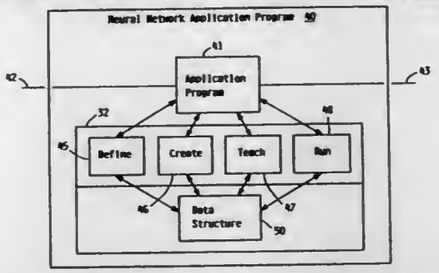
lock-out gates electrically interposed between the terminals and the complementary transistor means.

5,615,306

NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 459,053
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—26 18 Claims



1. A method of transporting a neural network having an input and an output for a result from a first computer system having first storage and running a first operating system, to a second computer system having second storage and running a second operating system, said method comprising the steps of:

said first computer system creating a neural network data structure wherein the neural network data structure defines a structure and organization of a plurality of data arrays, wherein the plurality of data arrays have data types and an order within the neural network data structure, wherein the neural network data structure is common and generic to all of a plurality of defined neural network models, and wherein the

plurality of data arrays have data values specific to a selected one of the plurality of defined neural network models;

said first computer system teaching said neural network by presenting training data at said input of said neural network and repeatedly adjusting the values of said plurality of data arrays until said result at said output is within tolerance of a correct result;

copying said neural network data structure from said first storage in said first computer system to said second storage in said second computer system, wherein said second operating system has a different architecture from said first operating system; and

said second computer system running said neural network by presenting actual data at said input and retrieving the result from said output of said neural network.

5,615,307

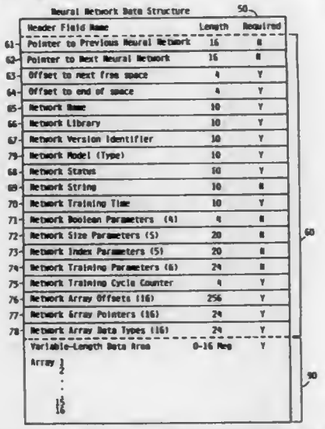
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 460,361

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—26 **12 Claims**



1. A neural network data structure used to enable an application program to run one of a plurality of neural network models, thereby becoming a neural network, comprising:

a recordable media;

a neural network model identification field, recorded on the recordable media, for indicating for which of the plurality of neural network models the neural network data structure is to be used, wherein the neural network data structure is common and generic to all of the plurality of neural network models;

a status field, recorded on the recordable media, for indicating if said neural network is in an initialize mode, a training mode, and a lock mode;

a parameter field, recorded on the recordable media, for storing a plurality of parameters specific to said one of a plurality of neural network models; and

an array field, recorded on the recordable media, for storing a data array specific to said one of a plurality of neural network models.

5,615,308

RULE-BASED PRODUCTION SYSTEM ADAPTED FOR COMPLEX PROCEDURES FLOW

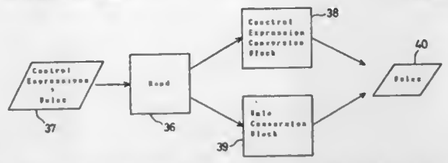
Ichiro Ando, Kanagawa; Akio Sasaki, Tokyo; Tomoyuki Minamiyama, Kanagawa; Shoichi Maki, Kanagawa; Shyo Yasui, Kanagawa, and Hiroshi Ichise, Kanagawa, all of Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

Division of Ser. No. 327,230, Oct. 21, 1994, Pat. No. 5,452,453, which is a continuation of Ser. No. 820,904, Jan. 14, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,936

Claims priority, application Japan, May 21, 1990, 2-130695

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—50 **3 Claims**



1. A conversion system for use with a general purpose computer for converting a production system having complex flow-control instructions into a set of rules, the production system comprising a control expression part separate from a plurality of processing clusters, the control expression part comprising a plurality of control expression elements each having a variable part and specifying the order of invocation of the processing clusters, the control expression elements arranged in their order of execution, each processing cluster having a unique cluster name and comprising a plurality of production rules, each production rule comprising a condition part and an action part; the conversion system comprising:

a computer program storage medium having a computer program stored thereon for execution by said computer, said program comprising:

(a) means for assigning a logical line number to each control expression element of the control expression part;

(b) means for reading the control expression element of the control expression part;

(c) means for storing a production rule corresponding to the control expression element, wherein the production rule has a variable part which is held blank;

(d) means for analyzing the control expression element and selecting the production rule corresponding to the control expression element with its variable part held blank from the storing means based on the result of the analyses;

(e) means for reading out required information from a required portion of the control expression part and processing it as required;

(f) means for inlaying the read out information into the variable part of the selected production rule;

(g) means for inserting a predetermined condition into the variable part of a condition part of every production rule in the control cluster so that only the production rules belonging to the control cluster become candidates for instantiation while the control cluster is invoked;

(h) means for inserting, into the variable part, a condition specifying the production rule to be executed corresponding to a selected one of the logical line numbers in the control expression part; and

(i) means for inserting, into the variable part, an action for specifying return of control to the control expression element corresponding to a selected one of the logical line numbers in the control cluster into an action part of a desired production rule.

5,615,309

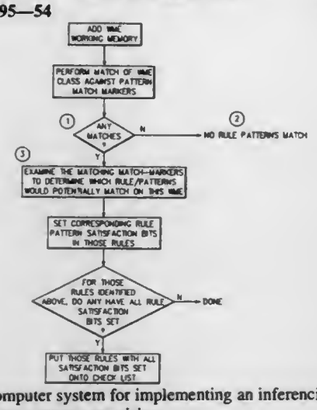
INFERENCING PRODUCTION CONTROL COMPUTER SYSTEM

John D. Bezek, Owego, and Peter M. Kogge, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 699,112, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned. This application Dec. 14, 1994, Ser. No. 356,925

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—54 **15 Claims**



11. A computer system for implementing an inferencing process, the computer system comprising:

an instruction processing unit (IPU);

content addressable memory (CAM) including working memory (WM) having working memory elements (WMEs);

means for loading data into the CAM in response to the IPU;

a check list including rules each having left hand sides (LHS) data, each LHS datum of each of the rules having associated therewith a satisfaction bit for indicating whether or not at least one of the WMEs match the LHS datum, said each LHS datum of each of the rules having its associated satisfaction bit indicating that at least one of the WMEs match said each LHS datum;

a pattern register for holding LHS data from a rule in the check list to be compared concurrently with a plurality of the WMEs;

means for comparing concurrently the LHS data from a rule in the check list with the plurality of the WMEs;

an agenda for storing executable rules from the check list whose LHS data successfully passed a comparison with the WMEs; and

means for storing in the WM a new WME output by an executed rule from the agenda.

5,615,310

CIRCUIT FOR RESOLUTION MATCHING

Yong-Geun Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 16, 1994, Ser. No. 358,172

Claims priority, application Rep. of Korea, Dec. 18, 1993, 28372/1993

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—102 **13 Claims**

4. An apparatus for matching resolutions of data transmitted from a host computer and an of an image forming means, said apparatus comprising:

a first memory means for receiving said data transmitted from said host computer;

data output means for outputting said data stored in said first memory means as one of an original resolution data and an expanded resolution data, said original resolution data being output when the resolution of the data transmitted from said host computer matches the resolution of said image forming means, said expanded resolution data being output when the resolution of the data transmitted from said host computer differs from the resolution of said image forming means;

first divider means for receiving a horizontal synchronizing signal from said image forming means and outputting a divided horizontal synchronizing signal;

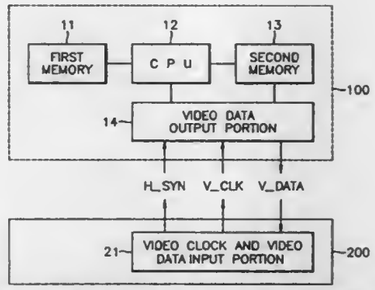
demultiplexing means for receiving said horizontal synchronizing signal from said image forming means, and, in response to said divided horizontal synchronizing signal, outputting said horizontal synchronizing signal to said data output means or a clear input terminal of a bit counter means;

second divider means for receiving a video clock signal from said image forming means and outputting a divided video clock signal, said divided video clock signal being input to a clock input terminal of said bit counter means;

means for enabling said divided video clock signal to be supplied to said data output means in response to said divided horizontal synchronizing signal;

second memory means for storing a predetermined line of data output by said data output means in response to said divided horizontal synchronizing means and according to address data provided by said bit counter means, said address data being generated by said bit counter means in response to said divided video clock signal input to said clock input terminal; and

multiplexing means having a first input for receiving data output from said data output means, a second input for receiving data output by said second memory means, a selecting terminal for receiving said divided horizontal synchronizing signal and an output terminal for providing data received at one of said first and second inputs to said image forming apparatus in response to said divided borizontal synchronizing signal.



5,615,311

IMAGE PROCESSING APPARATUS

Hisashi Fukushima, Yokohama, and Sono Gu, Ohmiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 78,857, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 523,831, May 16, 1990, abandoned, which is a continuation of Ser. No. 337,175, Apr. 12, 1989, abandoned. This application Nov. 23, 1994, Ser. No. 347,160

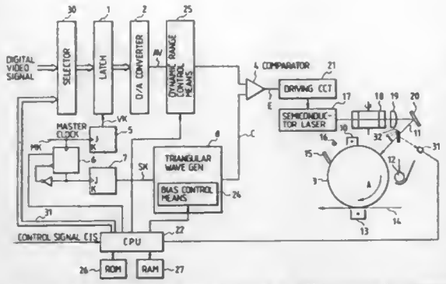
Claims priority, application Japan, Apr. 18, 1988, 63-95841

Int. Cl.[6] G06H *15/00*

U.S. Cl. 395—107 **6 Claims**

1. In an image processing apparatus having generating means for generating a pattern signal having a predetermined period, comparing means for comparing an analog signal with the pattern signal and for generating a pulse width modulated signal, emitting means for emitting a light modulated by the pulse width modulated signal, and supplying means for supplying an image signal to said comparing means as the analog signal during an image forming operation,

an adjusting method for adjusting a relative relation between the pattern signal and the analog signal, said adjusting method comprising the steps of:



applying a predetermined level signal to said comparing means as the analog signal;

detecting an output power (E) of the modulated light emitted from said emitting means when the predetermined level signal is applied to said comparing means; and

adjusting the relative relation between the pattern signal and the analog signal on the basis of the output power (E) detected in said detecting step so that a difference (ΔV) between a peak level of the pattern signal and the predetermined level signal applied to said comparing means is within a range having a proportional relation to the output power (E) of said emitting means.

5,615,312

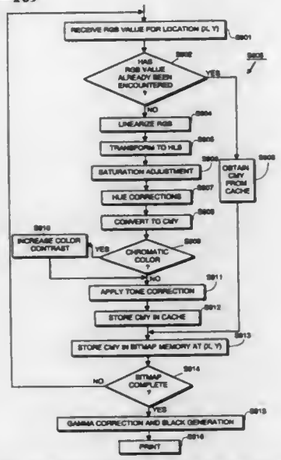
COLOR MANAGEMENT SYSTEM HAVING BUSINESS GRAPHICS RENDERING MODE

Timothy L. Kohler, Mountain View, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Jun. 28, 1995, Ser. No. 496,100

Int. Cl.[6] G06K *15/00;* **H04N** *1/46;* **B41J** *27/16*

U.S. Cl. 395—109 **22 Claims**



1. A business graphics rendering technique for rendering colors in a color image more vividly, comprising the steps of:

determining, for each color of plural colors, whether the color is a chromatic color or an achromatic neutral color;

for a chromatic color, increasing color contrast by increasing ink amounts for high-value ink amount colors and/or decreasing ink amounts for low-value ink amount colors; and

for an achromatic neutral color, leaving ink amounts essentially unaltered.

5,615,313

IMAGE PROCESSING APPARATUS HAVING SELECTABLE CONTROL OF IMAGE COLOR SIGNALS FOR PROCESSING IMAGE INFORMATION BETWEEN A PLURALITY OF APPARATUS

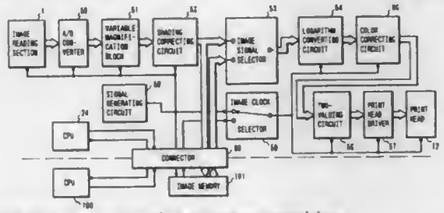
Masayuki Hirose, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 128,280, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 858,965, May 19, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,932

Claims priority, application Japan, Sep. 25, 1990, 2-251857

Int. Cl.[6] G06F *1/06;1/08;13/42;* **H04L** *7/06;* **H04N** *1/32;1/387*

U.S. Cl. 395—114 **20 Claims**



11. An image processing apparatus comprising:

generation means for generating a plurality of clock signals having different frequencies, for processing of a color image signal;

processing means for processing the color image signal synchronously with said plurality of clock signals generated by said generation means; and

discrimination means for discriminating the level of each of said plurality of clock signals generated by said generation means and discriminating, according to the discriminated level, a color component of the color image signal to be processed by said processing means.

13. An editing apparatus connected to a copying apparatus, comprising:

input means for inputting an image signal and a clock signal output from said copying apparatus;

setting means for setting an editing mode;

processing means for editing the image signal input by said input means according to the editing mode set by said setting means, said processing means using the clock signal input by said input means as a synchronization signal for editing; and

output means for outputting the image signal edited by said processing means and the clock signal used as the synchronization signal to said copying apparatus.

5,615,314

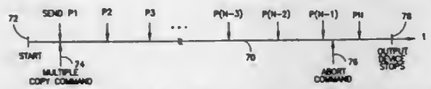
INTERFACE FOR PROVIDING RASTERIZED DATA TO AN IMAGING DEVICE

Loren Schoenzeit, Orono; Richard A. Keeney, Eagan; William H. Glass, Edina, and Scott T. Mazar, Inver Grove Heights, all of Minn., assignors to Management Graphics, Inc., Minneapolis, Minn.

Filed Aug. 30, 1994, Ser. No. 298,410

Int. Cl.[6] G06K *1/00*

U.S. Cl. 395—114 **24 Claims**



1. An interface for providing rasterized data to an imaging device, said imaging device having the capability to operate in a multiple single copy mode for making multiple copies of a single image in response to a multiple copy command, comprising:

an input for receiving rasterized image data from a raster image processor, said rasterized image data being representative of a plurality of different images to be provided on separate substrates by said imaging device;

an output queue for holding the rasterized image data until said imaging device is ready to receive the data for processing;

a data output path coupled between said output queue and said imaging device for communicating said rasterized image data to said imaging device; and

means for issuing control signals to said imaging device, said control signals including said multiple copy command instructing the imaging device to continue preparing additional substrates for imaging after a first substrate has been prepared for imaging;

wherein successive substrates prepared for imaging by said imaging device in response to said multiple copy command are imaged with said plurality of different images of said rasterized image data while said imaging device is in said multiple single copy mode.

5,615,315

OUTPUT APPARATUS

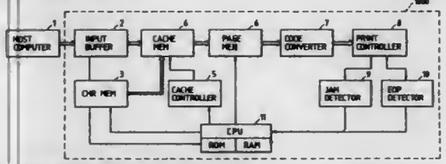
Nobuyuki Nakajima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 10,293, Jan. 28, 1993, abandoned, which is a division of Ser. No. 829,559, Feb. 5, 1992, Pat. No. 5,220,645, which is a continuation of Ser. No. 746,155, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 670,467, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 489,015, Mar. 6, 1990, abandoned. This application Oct. 3, 1994, Ser. No. 317,026

Claims priority, application Japan, Mar. 7, 1989, 1-052911

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **4 Claims**



1. An output apparatus comprising:

obtaining means for obtaining information regarding coordinate point data from input information;

conversion means for converting the coordinate point data into dot pattern data to be outputted by output means based on the information obtained by said obtaining means;

storage means for storing the dot pattern data converted by said conversion means;

determining means for determining whether said storage means has a sufficient storage area; and

control means, responsive to a determination by said determining means that said storage means has a sufficient storage area, for writing the dot pattern data in said storage means and for instructing the output means to start a data outputting process after one page of the dot pattern data has been written in said stoage means.

5,615,316

PRINTING CONTROL METHOD AND APPARATUS

Tuneo Imai, Ebina; Nobumitsu Kembo; Toshiyuki Yamada, both of Hadano, and Takashi Wakabayashi, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Computer Engineering Co. Ltd., Hadano, both of Japan

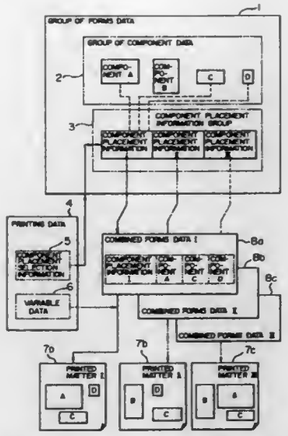
Continuation of Ser. No. 797,318, Nov. 25, 1991, Pat. No. 5,379,368. This application Jan. 3, 1995, Ser. No. 367,985

Claims priority, application Japan, Nov. 30, 1990, 2-335550

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—117 **21 Claims**

1. A printing control method combining print data and form data and outputting the thus combined data, the method comprising the steps of:



a) storing in a memory respective component data, which are unit elements constituting the form data;

b) storing in said memory a plurality of form data generating information, which includes component identification information and component allocation information for each page, said component identification information being information for identifying one or more component data to be used as form data for a page and said component allocation information being information for indicating where said component data are to be allocated or placed onto the page;

c) reading from said memory one of said form data generating information designated by selection information from a host computer;

(d) reading from said memory said component data indicated by said component identification information included in said form data generating information read out from said memory;

e) generating form data for one page by allocating or placing said component data onto said page in accordance with component allocation information included in said form data generating information read out from said memory; and

f) combining said form data generated and said print data together and outputting the combined data.

5,615,317

METHOD FOR BLENDING EDGES OF A GEOMETRIC OBJECT IN A COMPUTER-AIDED DESIGN SYSTEM

Stefan Freitag, Nufringen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 280,808, Jul. 26, 1994, abandoned. This application May 31, 1996, Ser. No. 658,914

Claims priority, application European Pat. Off., Oct. 11, 1993, 93116433

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—119 **6 Claims**

1. A method for blending edges of a geometric object in a computer-aided design system, comprising the steps of:

a) selecting an edge to blend, said edge having a start vertex and an end vertex,

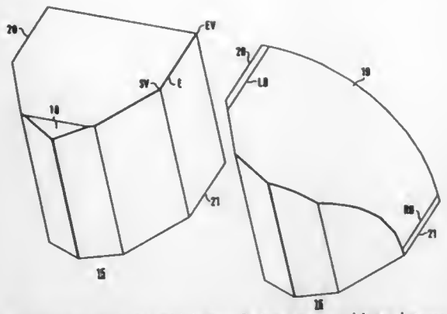
b) selecting a blend surface,

c) determining blend surface boundaries,

d) deriving intersections of the blend surface boundaries with edges of the geometric object connected to the start vertex or to the end vertex,

e) deleting edges for which step d) does not provide an intersection,

f) deriving intersections of the blend surface boundaries and a new edge which has been created by the deletion and which is connected to the start vertex or to the end vertex,



g) deleting edges for which step f) does not provide an intersection, and repeating step f) with a new edge which has been created by the deletion and which is connected to the start vertex or to the end vertex,

h) determining the blend surface geometry,

i) deriving intersections of the blend surface geometry with any further edges which are connected to the start vertex or to the end vertex and which have not yet been intersected,

j) inserting between the intersections derived in the previous steps, a corresponding portion of the blend surface geometry, and

k) displaying the resulting geometric object.

5,615,318

METHOD AND APPARATUS FOR VISUALIZING ASSEMBLED SEWING PATTERNS

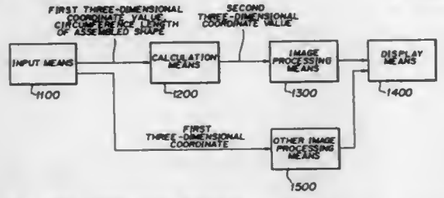
Susumu Matsuura, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 7,284

Claims priority, application Japan, Jan. 23, 1992, 4-010171; Jan. 23, 1992, 4-010172

Int. Cl.[6] G06T *17/40*

U.S. Cl. 395—120 **10 Claims**



6. A shape visualization apparatus comprising:

means for inputting two dimensional shape data of sewing patterns;

calculating means for generating three-dimensional coordinate values indicating a shape formed by assembling said sewing patterns;

image processing means for generating a two-dimensional projection image from the generated three-dimensional coordinate values; and

display means for displaying the generated two-dimensional projection image as a two-dimensional projection image of the shape formed by assembling said sewing patterns,

wherein said calculating means for generating new three-dimensional coordinate values comprises:

inputting means for inputting said three-dimensional coordinate values corresponding to a plurality of points on circumferences of a plurality of cross sections, having a curvature, that are located on specific heights of a shape of a dress form as a reference;

means for calculating entire circumferential lengths of cross sections of the dress form, which are drawn from the inputed three-dimensional coordinate values and entire circumferential lengths of cross sections of a shape that should be formed by assembling sewing patterns on said dress form, which are drawn from the inputted two-dimensional shape data;

means for calculating respectively expansion factors of cross sections which are drawn from said entire circumferential lengths of the cross sections of the dress form and said entire circumferential lengths of the cross sections of the shape that should be formed by assembling said sewing patterns on said dress form; and

means for generating said new three-dimensional coordinate values indicating said shape formed by assembling the sewing patterns by expanding respectively the entire circumferences of the cross sections of the dress form indicated by said inputted three-dimensional coordinate values using predetermined functions and said expansion factors, said functions having different formulas for the cross sections, until a plurality of said entire circumferential lengths of the cross sections of the dress form coincide with certain, limiting ones of said entire circumferential lengths of the cross sections of the shape that should be formed by assembling said sewing patterns on said dress form, leaving spaces with respect to other ones of said entire circumferential lengths of said shape that should be formed.

5,615,319

METHOD FOR MODIFYING A GEOMETRIC OBJECT AND COMPUTER AIDED DESIGN SYSTEM

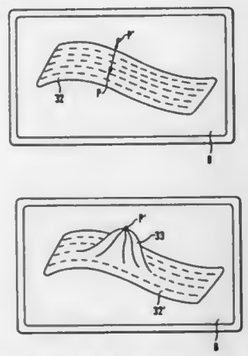
Michael Metzger, Herrenberg, and Hermann Kellermann, Tuebingen, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 4,595, Jan. 14, 1993, abandoned. This application May 11, 1995, Ser. No. 438,851

Claims priority, application European Pat. Off., Jan. 16, 1992, 92100634

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—127 **13 Claims**



1. A method for modifying a geometric object in a computer aided design (CAD) system, comprising the steps of:

(1.1) identifying at least one point of origin (P) on a geometric object in a CAD system, wherein said geometric object is defined on the basis of a second function and a first function, wherein said second function comprises a member of a group consisting of B-Spline, Hermite, and Bezier functions, and wherein said first function is a piecewise polynomial function comprising control points, and wherein said geometric object is defined by multiplying said control points by said second function or basic functions of said second function,

(1.2) identifying a target point (P') for replacing said point of origin (P),

(1.3) transforming the shift of said point of origin (P) on said object to said target point (P') into a shift of at least one control point of said piecewise polynomial function, whereby a locally modified piecewise polynomial function is defined,

(1.4) defining a modified geometric object as a locally modified second function of said locally modified piecewise polynomial function.

5,615,320

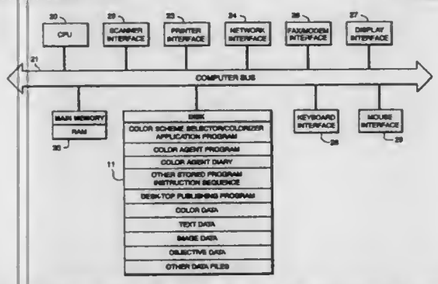
COMPUTER-AIDED COLOR SELECTION AND COLORIZING SYSTEM USING OBJECTIVE-BASED COLORING CRITERIA

Laurence A. Lavendel, Aptos, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Apr. 25, 1994, Ser. No. 231,911

Int. Cl.[6] G09G *1/28*

U.S. Cl. 395—131 **31 Claims**



1. A computer-implemented method for selecting a color scheme, comprising the steps of:

retrieving user-selectable color-scheme impact objectives, each of which specify a relevance relation to at least one color and which are used to automatically generate a color scheme for colorizing a document, said color scheme comprising a dominant color; and

accessing a computerized color knowledge-base system to generate a color scheme which includes the dominant color in the color scheme based on selected color impact objectives.

5,615,321

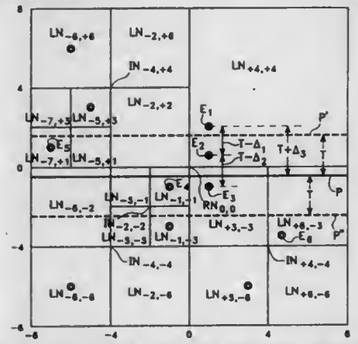
AUTOMATIC IDENTIFICATION OF GEOMETRIC RELATIONSHIPS BETWEEN ELEMENTS OF A COMPUTER-GENERATED DRAWING

Edward T. Corn, Agua Dulce, Calif., assignor to Dassault Systemes of America Corp., Burbank, Calif.

Filed Aug. 12, 1994, Ser. No. 289,604

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—133 **8 Claims**



1. In a computer aided system for using a model constructed from a plurality of components (points, line segments, circles, arcs, etc.) to depict a two dimensional image of the model, each of said components including one or more associated point elements (isolated points, endpoints, centers, etc.) and/or linear elements (lines, tangents, etc.) each defined by n≧2 variables, a computerized method for automatically identifying geometrical constraints (coincident, collinear, parallel, perpendicular, relimited, point-on, concentric, tangent, etc.) between two or more of said elements, said method comprising the steps:

using n variables (x, y) associated with each of the point elements in the model to index the point elements in a first n-ary tree (TR);

using a first sequence of said elements in the model to search the first tree for nodes possibly containing point elements satisfying a predetermined geometric constraint with a predetermined tolerance with a respective element of said first sequence;

using n variables associated with respective one of a sequence of linear elements in the model to index the linear elements in a second n-ary tree;

using a second sequence of elements in the model to search the second tree for nodes possibly containing linear elements satisfying a second predetermined geometric constraint within a second predetermined tolerance; and

testing any thus-found other elements to determine whether they do in fact satisfy a respective said predetermined geometric constraint within a respective said predetermined tolerance.

5,615,322

IMAGE SYNTHESIZING SYSTEM FOR PRODUCING THREE-DIMENSIONAL IMAGES

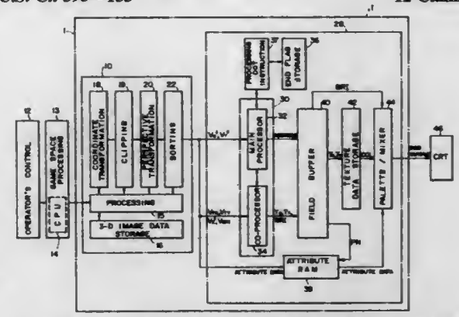
Hiroyuki Murata, Tokyo, and Takashi Yokota, Yokohama, both of Japan, assignors to Namco Ltd., Tokyo, Japan

Continuation of Ser. No. 109,914, Aug. 23, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,164

Claims priority, application Japan, Aug. 26, 1992, 4-252139

Int. Cl.[6] G06T *17/40*

U.S. Cl. 395—133 **12 Claims**



1. An image synthesizing system for producing a projected image on a screen from a three-dimensional image which is defined by a plurality of three-dimensional polygons, the system comprising:

image forming means, responsive to image data of vertices of the plurality of three-dimensional polygons, for sequentially determining, through a given image rendering computing process, image data of a plurality of dots for each of the plurality of three-dimensional polygons defining the three-dimensional image, starting from the polygon closest to a view point, the image data of the plurality of dots representative of the projected image on the screen;

end flag storage means for storing a plurality of end flags, each one of said plurality of end flags corresponding to one of said dots on said screen, each end flag indicating whether said corresponding one of said dots has completed said image rendering computing process; and

processing dot instruction means for reading one of said plurality of end flags from said end flag storage means, for instructing said image forming means to perform said image rendering process to said corresponding one of said dots only when

said read end flag indicates that said corresponding one of said dots has not completed said image rendering computing process, and for changing the end flag to indicate that said corresponding one of said dots has completed said image rendering computing process.

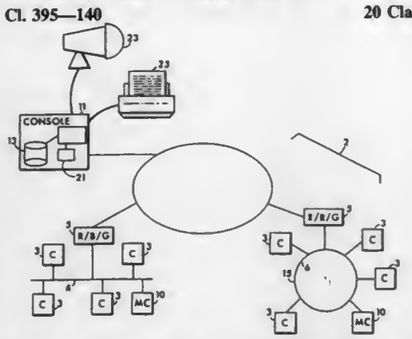
5,615,323

DISPLAYING RESOURCE PERFORMANCE AND UTILIZATION INFORMATION

Ferdinand Engel, Northboro; Wilson T. MacDonald, Holliston, and Arthur P. Hamlin, Belmont, all of Mass., assignors to Concord Communications, Inc., Marlboro, Mass.

Continuation of Ser. No. 334,194, Nov. 4, 1994, abandoned.
This application Mar. 12, 1996, Ser. No. 614,192
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **20 Claims**



1. A method of displaying information relating to performance of a computer resource over a selected period of time, said computer resource connected to a communication network, said method comprising:

from a location on said network that is remote from said computer resource, periodically sampling over said network data relating to performance of said resource so as to generate stored values for a selected performance variable for said resource, said periodic sampling taking place over the selected period of time and wherein said selected performance variable takes on values within a range of possible values;

dividing the range of possible values for said selected performance variable into a plurality of subranges;

for each subrange, determining for what proportion of the selected period, the values of the selected performance variable fall within that subrange; and

for each subrange, displaying in graphical form the proportion of the selected period of time that the values of the selected performance variable fell within that subrange.

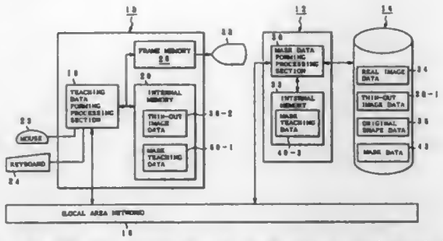
5,615,324

DISTRIBUTED IMAGE PROCESSING APPARATUS

Sholchi Kuboyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 30, 1995, Ser. No. 380,692
Claims priority, application Japan, Mar. 17, 1994, 6-046824
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—141 **23 Claims**



1. A distributed image processing apparatus, comprising:

an image managing unit to manage a data base in which real image data has been stored;

a processing unit connected to said image managing unit through a communication line;

a teaching data forming section within said processing unit for forming mask teaching data indicative of an outline of an object and transferring to said image managing unit with respect to thin-out image data obtained from the real image data stored in said data based as a target; and a mask data forming section within said image managing unit for forming mask data indicative of the object outline from the real image data in said data base by using said mask teaching data transferred from said teaching data forming section as a reference.

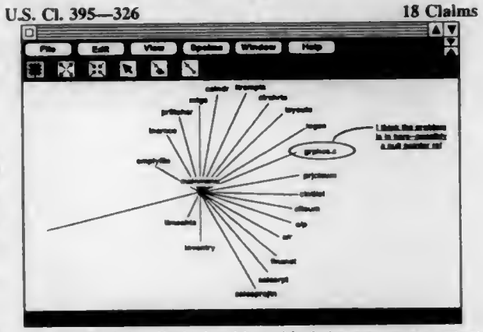
5,615,325

GRAPHICAL VIEWER FOR HEIRARCHICAL DATASETS

George H. Peden, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1994, Ser. No. 314,702
Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 **18 Claims**



1. A method for displaying hierarchical datasets on an output display, said method comprising the steps of:

receiving a hierarchical dataset comprising a plurality of base data elements arranged in at least two levels;

generating a plurality of nodes, one for each of said base data elements, wherein said nodes represent view data separated from said base data elements for displaying said hierarchical datasets;

displaying said view data in an acyclic graphical representation, a node representing a first level of said hierarchical dataset being disposed in a center position, and at least one node representing a subsequent lower level of said hierarchical dataset being displayed radially outward from said center position so as to form a spoke about said center position;

receiving an indication from a user to activate a provided select function;

receiving an indication from said user to select at least one node for modification;

modifying said view data of said selected node; and

displaying said modified view data by updating said acyclic graphical representation.

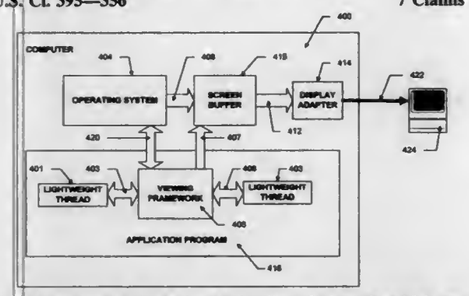
5,615,326

OBJECT-ORIENTED VIEWING FRAMEWORK HAVING VIEW GROUPING

Debra L. Orton, and Eric M. Berdahl, both of San Jose, Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 30, 1993, Ser. No. 175,910
Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—356 **7 Claims**



1. A system for displaying a plurality of views in which one view may partially obscure another view leaving a non-obscured, visible area of the another view, each of the plurality of views having an identifier, the system comprising:

(a) a display;

(b) a screen buffer for storing screen information;

(c) display adapter means for directly obtaining the screen information from the screen buffer and for displaying the screen information on the display;

(d) a processor and an attached memory, holding application programs;

(e) hierarchy object means having a data hierarchy structure for defining a frontmost display level to a rearmost display level of views and means responsive to a user request to reorder the display hierarchy for reordering data in the data hierarchy structure to change display levels of the views;

(f) grouping means for storing identifiers for a set of the views in the memory to form a group and for inserting the group into the data hierarchy structure so that each of the set of views in the group has the same display level;

(g) view system means, cooperating with the hierarchy object means and responsive to user requests to change a view, for maintaining a visible area definition for each of the views, each visible area definition designating a portion of the screen buffer for holding screen information for a visible area of a corresponding view; and

(h) wherein the application programs each comprise

means for obtaining a visible area definitioa from the view system means, and

means for directly storing screen information in the screen buffer under the control of the obtained visible area definition.

5,615,327

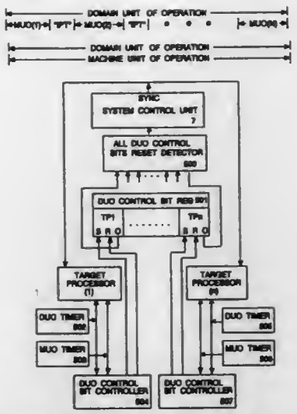
APPARATUS AND METHOD FOR CONTROLLING THE INITIATING OF A SYNCHRONIZATION PROTOCOL FOR SYNCHRONIZING A PLURALITY OF PROCESSORS IN A MULTI-PROCESSOR SYSTEM

Stephen C. Magee, San Jose, and Peter H. Lipman, Cupertino, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 816,273, Jan. 3, 1992, abandoned.
This application Apr. 4, 1995, Ser. No. 416,482
Int. Cl.[6] G06F *11/00;9/455*

U.S. Cl. 395—182.1 **4 Claims**

1. A multi-processor computer system including a plurality of processors that operate with a User State and a Control State and which execute emulation code in the control state and has multiple domains for logical processing, said computer system including:



means for establishing target processors of said plurality of processors for synchronization;

means for commanding each said target processor in a User State not to enter the Control State to begin to execute emulation code and to continue to execute user instructions and for allowing each target processor in a Control state to complete the operation in the Control state and to return to the User state when said means for establishing establishes target processors for synchronization;

means for indicating when all of said target processors are in a User State;

means for commanding the synchronization of said target processors when said means for indicating indicates that all said target processors are in a User State.

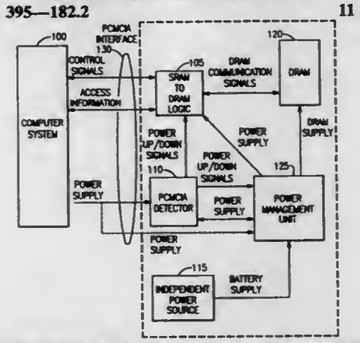
5,615,328

PCMCIA SRAM CARD FUNCTION USING DRAM TECHNOLOGY

Scott J. Hadderman, Pleasant Valley, N.Y., and Kraig R. White, Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,509
Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—182.2 **11 Claims**



1. An apparatus for a computer system having a PCMCIA interface, said apparatus comprising:

a DRAM device for providing a plurality of memory locations for said computer system;

an SRAM to DRAM logic interface for receiving a series of PCMCIA SRAM control signals and access information transmitted by said computer system across said PCMCIA interface, said PCMCIA SRAM control signals and access information being associated with said plurality of memory locations provided by said DRAM device, and for converting said series of PCMCIA SRAM control signals to a series of

DRAM control signals, and for directing said series of DRAM control signals and said access information to said DRAM device for providing a compatible communication link between said computer system and said DRAM device across said PCMCIA interface, said DRAM to SRAM logic further including means for refreshing said DRAM device and for arbitrating between said refreshing of said DRAM device and said providing of said compatible communication link between said computer system and said DRAM device; and

a PCMCIA detector removably coupled to said PCMCIA interface for receiving a supply voltage provided by the computer system across the PCMCIA interface for said DRAM device, and for detecting and providing a power down indication output signal when said supply voltage provided by the computer system across the PCMCIA interface falls below a predetermined voltage level, and for detecting and providing a power up indication output signal when said supply voltage rises above said predetermined voltage level;

and wherein said SRAM to DRAM logic interface is removably coupled to the PCMCIA interface for receiving the series of PCMCIA SRAM control signals and access information from the computer system, and said SRAM to DRAM logic interface is coupled to said PCMCIA detector for receiving said power down indication output signal from said PCMCIA detector and for responding to said power down indication output signal from said PCMCIA detector by causing all pending communication, if any, between the computer system and the DRAM device to complete, and then quiescing the PCMCIA interface, and then forcing the DRAM device into a data-retention mode, and for receiving said power up indication output signal form said PCMCIA detector and for responding to said power up indication output signal by forcing said DRAM out of said data-retention mode.

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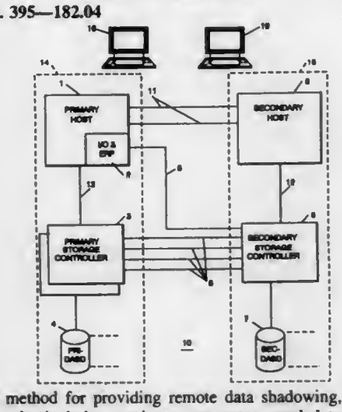
REMOTE DATA DUPLEXING

Robert F. Kern; William F. Micka, both of Tucson, Ariz.; Claus W. Mikkelsen, San Jose, Calif.; Michael A. Paulsen, and Robert W. Shomler, both of Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1994, Ser. No. 199,448

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.04 **17 Claims**



1. A method for providing remote data shadowing, wherein a primary site includes a primary processor coupled to a primary storage subsystem, said primary processor running at least one application therein causing I/O write updates to the primary storage subsystem, said primary processor further having an I/O error recovery program (I/O ERP) running therein, a secondary site includes a secondary processor coupled to a secondary storage subsystem, said secondary site synchronously shadowing the I/O write updates and said secondary storage subsystem communicating with the I/O ERP; said method comprising steps of:

(a) sending the I/O write updates from said primary storage subsystem to said secondary storage subsystem;

(b) determining whether a duplex pair is established between said primary and secondary storage subsystems;

(c) reporting a failed duplex pair from the primary storage subsystem to the primary processor;

(d) transferring primary processor control from the at least one application to the I/O ERP when failed duplex occurs;

(e) issuing a sense I/O, from the I/O ERP to the primary storage subsystem, prompting the primary storage subsystem to determine a cause of the failed duplex pair; and

(f) sending a failed duplex message, from the I/O ERP to the secondary storage subsystem.

5,615,330

RECOVERY METHOD FOR A HIGH AVAILABILITY DATA PROCESSING SYSTEM

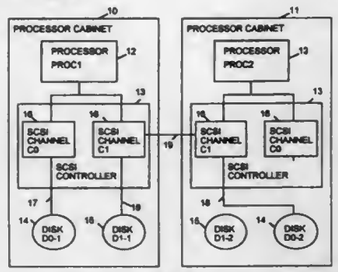
Richard N. Taylor, Cheshire, Great Britain, assignor to International Computers Limited, London, England

Filed Oct. 16, 1995, Ser. No. 543,798

Claims priority, application United Kingdom, Nov. 12, 1994, 9422854

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—182.05 **6 Claims**



1. A recovery method for a data processing system comprising a first data processing unit, a second data processing unit, a first boot disk, a second boot disk, and a plurality of shared disks, said system having a normal configuration in which said first boot disk is accessible only from said first processing unit, said second boot disk is accessible only from said second processing unit, and said shared disks are accessible from both said first data processing unit and said second data processing unit,

the recovery method comprising the steps:

(a) upon failure of said second boot disk, removing said second boot disk from the system;

(b) temporarily reconfiguring the system into a recovery configuration in which a new boot disk is connected in place of one of said shared disks;

(c) while the system is in said recovery configuration, operating said first processing unit to copy information from said first boot disk to said new boot disk; and

(d) restoring the normal configuration of said system, with said new boot disk in place of said second boot disk.

5,615,331

SYSTEM AND METHOD FOR DEBUGGING A COMPUTING SYSTEM

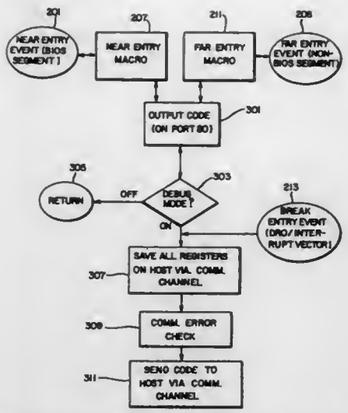
Arman Toorians, Santa Clara, and Elizabeth Q. Liu, San Jose, both of Calif., assignors to Phoenix Technologies Ltd., Santa Clara, Calif.

Filed Jun. 23, 1994, Ser. No. 265,376

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—182.07 **34 Claims**

1. In a development computing system having a processor and a memory with an interrupt-handling portion, a computer-



implemented method for processing debug codes in the development system, the method comprising the steps of:

receiving, at a host computer operatively coupled to the development computing system, a debug code generated by the development computing system for processing by the processor; and

directing the debug code from the host computer to a debug program located in the interrupt-handling portion of the memory of the development computing system.

5,615,332

DEBUGGING AID APPARATUS

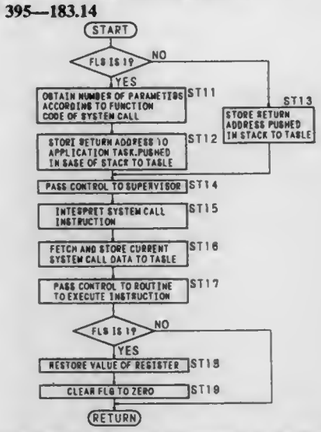
Osamu Yamamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,387

Claims priority, application Japan, Dec. 21, 1993, 5-322584

Int. Cl.[6] C06F *11/04*

U.S. Cl. 395—183.14 **5 Claims**



1. An apparatus for aiding debugging an application task by fetching system call data concerning a system call which includes a return address to a calling task that is pushed onto a stack each time calling another task, when the system call is issued to an operating system from an application task written in an assembly language or from an application task written in a high-level language, said apparatus comprising:

a high-level language interface routine which is called when an application task written in a high level language is to be executed, and which converts the application task written in the high-level language into codes that can be executed;

means for determining whether the application task calls to pass the high-level language interface routine when the system call being issued;

a first table for storing the system call data;

a second table for storing the type of the system call with the number of parameters included in said system call;

means for extracting the number of parameters corresponding to the type of the issued system call by referencing the second table when the system call is issued from the application task written in the high-level language;

means for fetching the return address to the application task, which was pushed down the stack by addresses corresponding to the extracted number of parameters, when control is passed to the operating system resulting from the issue of the system call, and for storing the fetched return address into the first table;

means for giving an instruction to display the system call data; and

means responsive to the instruction for displaying the system call data applied from the first table.

5,615,333

INTEGRATION TESTING METHOD FOR OBJECT-ORIENTED SOFTWARE

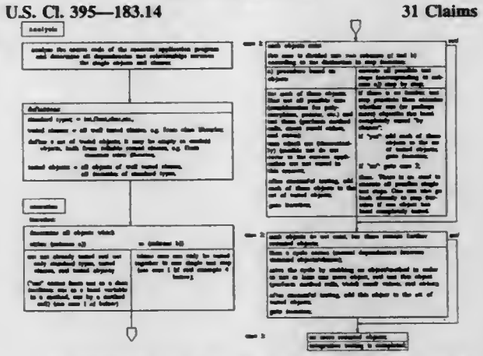
Peter Juettner, Munich; Sebald Kolb, Ottobrunn; Peter Zimmerer, Munich, and Udo Naumann, Unterhaching, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 11, 1995, Ser. No. 438,846

Claims priority, application Germany, May 11, 1994, 44 16 704.0

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.14 **31 Claims**



1. An integration test method for an object-oriented computer program comprising the following steps:

a) conducting a source code analysis of a structural relationship between objects in the object-oriented program;

b) identifying mutual dependencies between at least two objects and/or object classes by way of the source code analysis of the structural relationships of the object-oriented program;

c) allocating a tested object and/or an object derived from a tested class to a set of tested objects; and

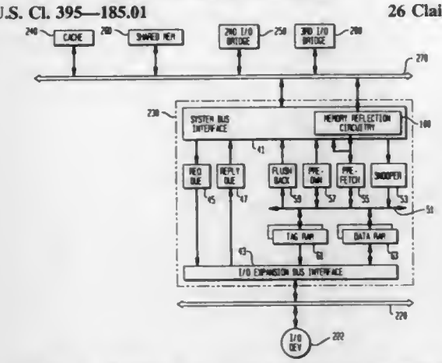
d) identifying at least one object with the assistance of the structural relationship of the source code, said at least one object being dependent only on objects of the set of tested objects; and

e) testing uses of said object.

5,615,334
MEMORY REFLECTION SYSTEM AND METHOD FOR REDUCING BUS UTILIZATION AND DEVICE IDLE TIME IN THE EVENT OF FAULTS

Shih-Chieh Wang; Wei-Wen Chang, and Lu-Ping Chen, all of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 7, 1994, Ser. No. 321,205
Int. Cl.[6] G06F *11/00;12/00*
U.S. Cl. 395—185.01 **26 Claims**

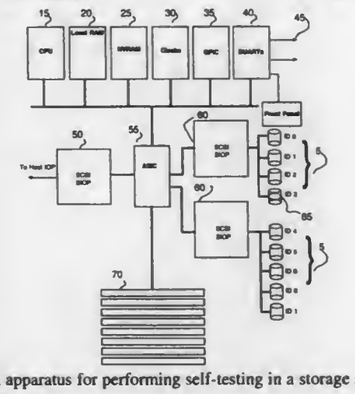


1. Memory reflection circuitry which snarfs particular data, that is written back from a write back agent to a memory subsystem agent, said memory reflection circuitry issuing a command to read said particular data from said memory subsystem agent, in response to unsuccessfully snarfing said particular data, but only if said memory subsystem agent successfully received said particular data.

5,615,335
STORAGE SYSTEM SELF-TEST APPARATUS AND METHOD

Joshua P. Onffroy, Framingham; Rehan Masood, Rockland; Brian B. Mullahy, Leominster, and Harold F. Pritoni, Jr., Medfield, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Nov. 10, 1994, Ser. No. 337,638
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.06 **35 Claims**



18. An apparatus for performing self-testing in a storage system, comprising:

a controller for activating physical devices of said storage system, said controller having a microprocessor, a memory, a host interface and at least one input/output processor;

a user interface device connected to said controller, said user interface device further comprising a display monitor, control logic and a transmitting/receiving capability;

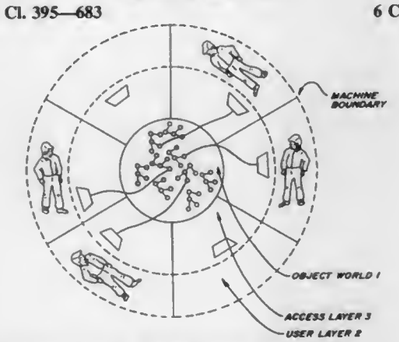
a designated location within said storage system for holding pre-recorded test sequences;

user interface logic within said controller for acting upon signals from said user interface device to cause said controller to transfer said pre-recorded test sequences into said memory of said controller for execution, so that said pre-recorded test sequences can be executed in said storage system, thereby performing self-testing.

5,615,336
SELECTIVE USER COUPLING FOR SHARED OBJECT ORIENTED COMPUTER SYSTEM

Christopher Robson; Hugh Duggan, both of Bristol, Great Britain, and William Morel, Redmond, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

PCT No. PCT/GB91/00689, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No WO91/17498, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 30, 1991, Ser. No. 778,839
Claims priority, application United Kingdom, Apr. 30, 1990, 9009701
The portion of the term of this patent subsequent to Jun. 29, 2013, has been disclaimed.
Int. Cl.[6] G06F *15/163*
U.S. Cl. 395—683 **6 Claims**



1. An object based computer system, comprising:

at least one computer;

a plurality of objects including at least two semantic objects;

object manager means for managing the plurality of objects;

a plurality of viewers, each viewer being linked to one of the semantic objects wherein a plurality of viewers are linkable to the same semantic object to allow concurrent observation of that semantic object;

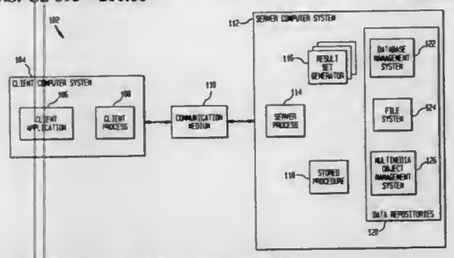
presence mechanism means for notifying each viewer linked to the same semantic object of the presence of other viewers currently linked to that semantic object by means of an indication on each of the plurality of viewers linked to the same semantic object; and

navigational coupling means for coupling together two viewers linked to the same semantic object so as to pass a navigational message generated by a first one of the plurality of viewers to a second one of the plurality of viewers so that when the first one of the plurality of viewers becomes linked to another one of the semantic objects then so does the second one of the plurality of viewers whereby the first one of the plurality of viewers leads the second viewer around and between objects in the system.

5,615,337
SYSTEM AND METHOD FOR EFFICIENTLY PROCESSING DIVERSE RESULT SETS RETURNED BY A STORED PROCEDURES

Melvin R. Zimowski, San Jose; Curt L. Cotner, Gilroy, both of Calif., and Peter K. L. Shum, Richmond Hill, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1995, Ser. No. 417,863
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—200.01 **19 Claims**



13. A server computer system, comprising:

client process execution request receiving means for receiving from a client process in a client computer system a client process execution request identifying a stored procedure and specifying constraints on the quantity of response data that said client process is capable of handling;

stored procedure invoking means for invoking said stored procedure identified by said client process execution request, execution of said stored procedure resulting in the generation of answer set data for a plurality of query result sets;

answer set data obtaining means for obtaining answer set data for X of said query result sets, where X is defined by said constraints;

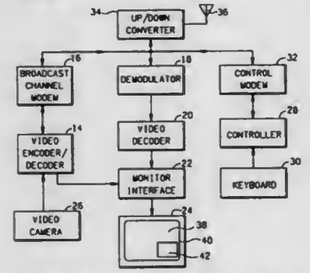
initial response generating means for generating an initial response containing, for each of said X query result sets, an amount of said obtained answer set data consistent with said constraints; and

initial response transferring means for transferring said initial response from said server computer system to said client process in said client computer system.

5,615,338
SYSTEM FOR SIMULTANEOUSLY DISPLAYING VIDEO SIGNAL FROM SECOND VIDEO CHANNEL AND VIDEO SIGNAL GENERATED AT THAT SITE OR VIDEO SIGNAL RECEIVED FROM FIRST CHANNEL

Andrew D. Poole, Carlsbad, and Gernot M. Engel, Del Mar, both of Calif., assignors to Titan Information Systems Corporation, San Diego, Calif.

Filed May 24, 1995, Ser. No. 449,727
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.04 **10 Claims**



1. A system for simultaneously displaying at each of a plurality of sites video signals generated at a plurality of said sites, comprising at each site:

a video encoder for encoding a video signal generated at said site to provide an encoded video signal;

a broadcast channel modem for conditioning the encoded video signal generated at said site for transmission to the other sites via a first video channel and for demodulating a video signal received via said one video channel;

a demodulator for demodulating a video signal received via a second video channel;

a first video decoder for decoding the demodulated video signal received via the second video channel;

a second video decoder for decoding either the video signal generated at said site or the video signal received via the first video channel;

means coupled to the first and second video decoders for simultaneously displaying the decoded video signal received via the second video channel and either the decoded video signal generated at said site or the decoded video signal received via the first video channel;

a site controller coupled to the second video decoder for causing the second video decoder to decode either the video signal generated at said site or the video signal received via the first video channel, and further coupled to the broadcast channel modem and the demodulator for responding to a channel assignment signal by assigning the first video channel to either a first predetermined broadcast frequency or to a second predetermined broadcast frequency and for assigning the second video channel to the other of said first and second predetermined broadcast frequencies;

means for generating a channel allocation request signal for said site; and

a site control modem for receiving the channel assignment signal to which the site controller is responsive and for conditioning the channel allocation request signal for transmission;

wherein at one site, the system further comprises

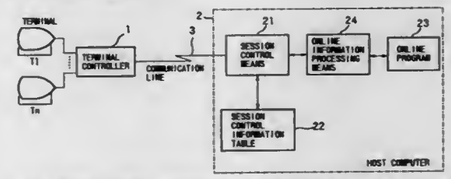
a system controller for processing the channel allocation request signals to generate the channel assignment signals for the plurality of sites in accordance with a predetermined priority among the various sites with respect to assignment of the first video channel and the second video channel; and

a system control modem for demodulating channel allocation request signals received from the plurality of sites and for conditioning the channel assignment signals for transmission.

5,615,339
ONLINE SYSTEM HAVING SESSION CONTROL INFORMATION TABLE IN A HOST COMPUTER FOR ESTABLISHING OR DISCONNECTING SESSION WITH MULTIPLE TERMINALS IN ACCORDANCE WITH PROCESSING PERFORMANCE

Takayuki Ban, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 24, 1992, Ser. No. 839,541
Claims priority, application Japan, Feb. 22, 1991, 3-050766
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.12 **11 Claims**



1. An online system comprising a host computer and a plurality of terminals connected therewith through communications lines, said host computer comprising:

an online information processing means for processing information by executing an online program;

a session control information table for storing session control information needed for setting and disconnecting of a session and communicating of data with said plurality of terminals, said data indicating a maximum number of sessions which can be set simultaneously based on processing performance of said online information processing means, the session control information including a logical address of each of said plurality of terminals which indicates whether or not the session with said plurality of terminals is set during setting of the session;

a session control means, in response to a session setting request message sent from one of said online information processing means and said plurality of terminals, for setting of a session with said plurality of terminals by storing the logical address of one of said plurality of terminals contained in the session setting request message to one of said session control information which does not indicate a session being set in said session control information table,

wherein said online information processing means sends the session setting request message which includes a logical address of one of said plurality of terminals in response to a setting of an active session with said one of said plurality of terminals, and

wherein said session control means, in response to a session setting request message that is received from said one of said plurality of terminals, sends a session setting request message with the logical address of said one of said plurality of terminals to said online processing means.

5,615,340

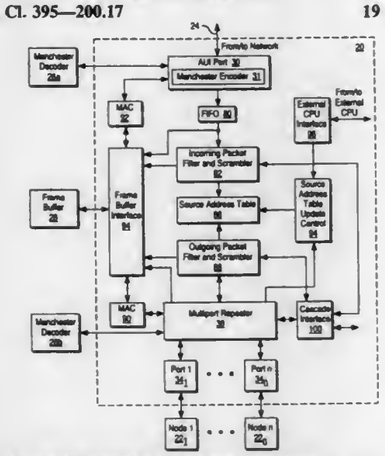
NETWORK INTERFACING APPARATUS AND METHOD USING REPEATER AND CASCADE INTERFACE WITH SCRAMBLING

Wei W. Dai, San Jose, and Yu K. Ng, Sunnyvale, both of Calif., assignors to Allied Telesyn Int'l Corp., Sunnyvale, Calif.

Filed Jul. 21, 1994, Ser. No. 278,820

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—200.17 **19 Claims**



1. A network interfacing apparatus comprising:

a plurality of working ports coupled to a plurality of nodes;

an address table for storing addresses of said working ports;

an attachment port coupled to a network for receiving an incoming information packet therefrom, and sending an outgoing information packet thereto, said incoming packet containing a destination address;

an incoming packet controller coupled to said working ports, said address table, and said attachment port, said controller determining whether said destination address matches any of the addresses stored in said address table, and in response to a destination address match, said controller sending said incoming packet to said working ports;

a packet scrambler coupled to the incoming packet controller for providing a scrambled information packet so that in response to a destination address match, the corresponding working port receives the incoming information packet and at least one other working ports receives the scrambled information packet;

an outgoing packet controller coupled to said working ports, said address table, and said attachment port, said outgoing controller receiving said outgoing information packet from one of said working ports, and determining whether an outgoing address contained in said outgoing packet matches any of the addresses stored in said address table, and if no outgoing address match is found, said controller sending said outgoing packet to said network via said attachment port;

a repeater for coupling said working ports to each other: and

a cascade interface for coupling external working ports to said repeater to increase the number of working ports interfaced by said apparatus.

5,615,341

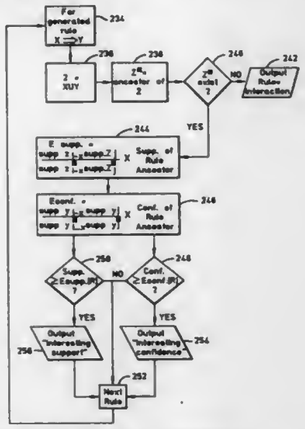
SYSTEM AND METHOD FOR MINING GENERALIZED ASSOCIATION RULES IN DATABASES

Rakesh Agrawal, and Ramakrishnan Srikant, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1995, Ser. No. 436,794

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—210 **24 Claims**



1. A computer program device comprising:

a computer program storage device readable by a digital processing apparatus; and

a program means on the program storage device and including instructions executable by the digital processing apparatus for performing method steps for identifying association rules in itemsets with a hierarchical taxonomy on items of the itemsets, the taxonomy defining descendant and ancestor relationships between the items, the method steps comprising:

entering an itemset into a set of large itemsets when the number of times the itemset is present in a database of transactions establishes a support value that exceeds a predefined minimum support value;

for at least some of the itemsets in the set of large itemsets, determining the number of times selected subsets of the itemsets appear in transactions in the database; and

(d) outputting an association rule when the number of times a selected subset appears in the database bears a predetermined relationship to the number of times the associated itemset appears in the database and thereby satisfies a minimum confidence constraint.

5,615,342

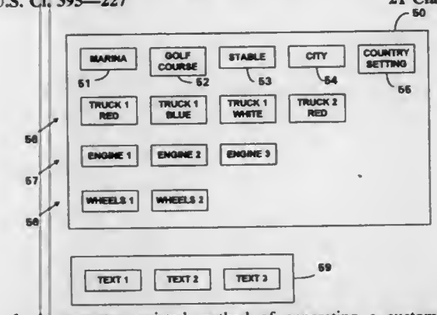
ELECTRONIC PROPOSAL PREPARATION SYSTEM

Jerome D. Johnson, North Mankato, Minn., assignor to Clear With Computers, Inc., Mankato, Minn.

Continuation of Ser. No. 878,602, May 5, 1992, Pat. No. 5,493,490. This application Feb. 5, 1996, Ser. No. 596,575

Int. Cl.[6] G06F *153/00;17/30;17/60*

U.S. Cl. 395—227 **21 Claims**



1. A computer assisted method of generating a customized proposal for selling products to particular customers, the method comprising the steps of:

presenting to a user of the computer a plurality of questions relating to features and uses of the products;

inputing into the computer a plurality of customer answers to the questions, the answers specifying a customer's desired product features and uses;

storing in the computer product pictures, product environment pictures and text segments;

selecting a particular product picture in response to at least one of the customer answers;

selecting a particular product environment picture in response to at least one of the customer answers;

selecting a particular text segment in response to at least one of the customer answers; and

generating a customized proposal for the customer using the particular product picture, the particular product environment picture and the particular text segment.

5,615,343

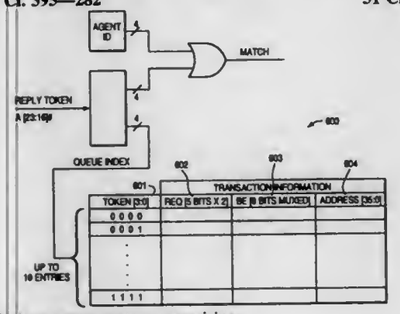
METHOD AND APPARATUS FOR PERFORMING DEFERRED TRANSACTIONS

Nitin V. Sarangdhar, Portland; Konrad K. Lai, Aloha; Gurbir Singh, Portland; Peter D. MacWilliams, Aloha; Stephen S. Pawlowski, and Michael W. Rhodehamel, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 85,541, Jun. 30, 1993, Pat. No. 5,568,620. This application Sep. 8, 1994, Ser. No. 302,600

Int. Cl.[6] G06F *13/42*

U.S. Cl. 395—282 **31 Claims**



31. A computer system comprising:

a bus including:

an address bus;

a response bus;

a data bus;

a requesting agent coupled to the bus, wherein the requesting agent issues a token onto the address bus for each address request and handles deferral responses in response to requests, and maintains the request as pending until receiving a deferred reply; and

a responding agent coupled to the bus, wherein the responding agent generates the deferral response when unable to complete a transaction during a predetermined time of the first transaction, and generates the deferred reply including the token, when the responding agent is subsequently able to complete the transaction.

5,615,344

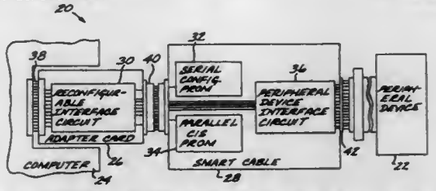
APPARATUS USED TO INTERFACE A PERIPHERAL DEVICE TO A COMPUTER EMPLOYING A RECONFIGURABLE INTERFACE CIRCUIT

Rodney J. Corder, Huntington Beach, Calif., assignor to New Media Corp., Irvine, Calif.

Continuation of Ser. No. 975,283, Nov. 12, 1992, abandoned. This application Mar. 16, 1995, Ser. No. 406,771

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **13 Claims**



8. An apparatus for interfacing a peripheral device having a peripheral device hardware interfacing requirement to a computer, comprising an adapter card including

a reconfigurable interface circuit that is in communication with a computer when the adapter card is connected to the computer, the reconfigurable interface circuit including an electronic circuit that is reconfigurable to the peripheral device hardware interfacing requirement according to information provided to the reconfigurable interface circuit from a memory located external to the apparatus;

a portion of an adapter card/computer connector configured to connect the adapter card to the computer, the portion of the adapter card/computer connector being supported on the adapter card and being electrically connected to the reconfigurable interface circuit, wherein the adapter card/computer connector is a 68-pin connector; and

a portion of a smart cable/adapter card connector configured to connect a smart cable to the adapter card, the portion of the smart cable/adapter card connector being supported on the adapter card and being electrically connected to the reconfigurable interface circuit.

5,615,345

SYSTEM FOR INTERFACING AN OPTICAL DISK AUTOCHANGER TO A PLURALITY OF DISK DRIVES

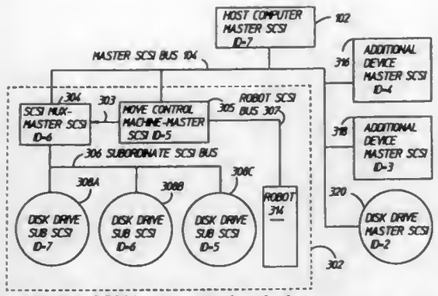
Mark E. Wanger, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 8, 1995, Ser. No. 489,016

Int. Cl.[6] G06F *13/00;* **G11B** *17/22*

U.S. Cl. 395—309 **12 Claims**

1. A system for interfacing an optical disk autochanger having a robot and a plurality of disk drives to a host, comprising:



(a) a master SCSI bus connected to the host;

(b) a subordinate SCSI bus connected to the plurality of disk drives;

(c) multiplexer means, connected between said master SCSI bus and said subordinate SCSI bus, for transferring communications between the host and a selected one of the plurality of disk drives; and

(d) control means, coupled to said master SCSI bus and said multiplexer means, for receiving jukebox control commands from the host and for selecting said selected one of the plurality of disk drives based on said jukebox control commands.

5,615,346

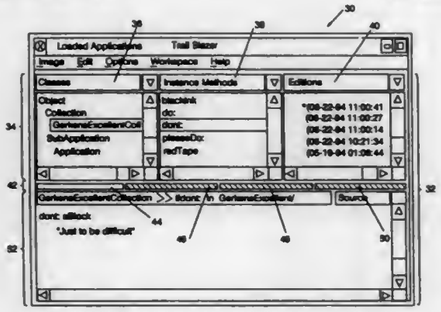
METHOD AND SYSTEM FOR A PIANO BAR BROWSER OF INFORMATION SETS

Christopher H. Gerken, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1994, Ser. No. 370,773

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—341 **14 Claims**



1. A visual navigation tool for use with a collection of ordered sets of interrelated information which are displayed or available for display in a graphical user interface of a computing environment, comprising:

a vertically-narrow horizontal region in the graphical user interface situated proximate to the displayed sets of interrelated information; and

one bar corresponding to each of the set of interrelated information in the collection, said bars being distributed within said region to intuitively indicate the relative position of the set associated with each of said bars within the collection, wherein said bars associated with the sets which are displayed in the graphical user interface have visual characteristics to distinguish them from said bars not associated with the sets being displayed.

5,615,347

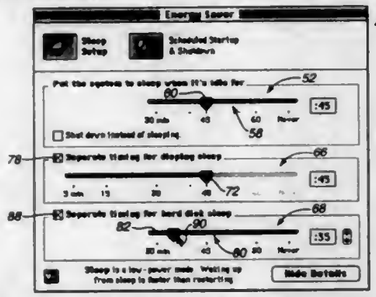
METHOD AND APPARATUS FOR LINKING IMAGES OF SLIDERS ON A COMPUTER DISPLAY

Lisa L. Davis, Seattle, Wash.; Susan M. Bartalo, Palo Alto, Calif.; James L. Mensch, San Jose, Calif.; Mark C. Pontarelli, San Jose, Calif., and Robert E. Snow, Jr., San Jose, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 435,639

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—349 **46 Claims**



23. A computer apparatus with linked sliders comprising:

a digital processor;

read/write memory coupled to said digital processor;

a display coupled to said digital processor;

means for displaying a master slider, a slave slider, and a mode selector on said display, wherein each of said sliders includes a knob and a guide, each of said knobs being displayed along a portion of its respective guide, and wherein said slave slider can be operated in a full slave mode, or in at least one of a partial slave mode and a free mode based upon a setting of said mode selector that is selectable by a user to toggle said modes;

means for moving said knob of said master slider along its guide in response to a pointer controlled by the user; and

means for moving a knob of said slave slider, wherein said movement of said knob of said slave slider is influenced by a position of said knob of said master slider on said guide, such that in said full slave mode said slave knob moves in the same direction and in the same amount that said master knob is moved, regardless of direction and initial positioning of said slave knob.

5,615,348

MICROPROCESSOR HAVING REGISTER BANK ARCHITECTURE

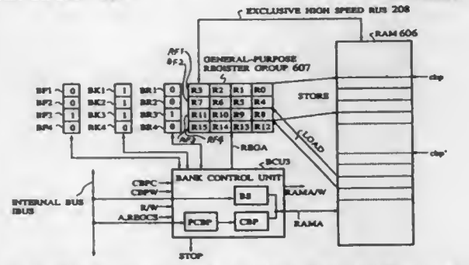
Seiji Koino, Tokyo; Toshiyuki Yaguchi, and Yuriko Kyuma, both of Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 14, 1994, Ser. No. 322,468

Claims priority, application Japan, Oct. 15, 1993, 5-258466

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—569 **16 Claims**



1. A microprocessor having a register bank architecture for executing instructions, comprising:

register bank means comprising n register banks (where n is a positive integer), each of said n register banks comprising a plurality of general-purpose registers;

memory means for storing data of said register bank means;

bus means for connecting said register bank means and said memory means;

bank control means for controlling a data store operation for storing data in said register bank means to said memory means and for controlling a data load operation for loading data in said memory means to said register bank means; and

n reference flags provided to each of said n register banks for indicating those of said n register banks which are referenced by subsequent instructions after said data store operation and said data load operation are completed,

said bank control means comprising:

a current bank pointer for storing address data indicating a data region in said memory means to which data contained in one of said register banks is saved or from which data contained in one of said register banks is restored; and

a bank size designation register for storing bank size data indicating a bank size to be stored and to be loaded during the data store operation and the data load operation,

wherein when an address of said current bank pointer is set in a destination operand in an instruction, said bank control means receives the content of said current bank pointer and the content of said bank size designation register, and said bank control means controls said data store operation for said n register banks designated by the contents of said current bank pointer and said bank size designation register in order to save data of the bank size as specified by said bank size designation register to said memory means,

said bank control means changes the content of said current bank pointer with the content of the destination operand in said instruction after the completion of said data store operation,

said bank control means receives the content of said current bank pointer and the content of said bank size designation register, and said bank control means controls said data load operation for said memory means by the contents of said current bank pointer and said bank size designation register in order to restore data of the bank size as specified by said bank size designation register to said memory means, and

wherein said bank control means sets said n reference flags after said data store operation and said data load operation have been completed, said microprocessor restarts the execution of said subsequent instructions, and said bank control means controls subsequent data load operations for only those of said n register banks for which said reference flags have been set.

5,615,349

DATA PROCESSING SYSTEM CAPABLE OF EXECUTION OF PLURAL INSTRUCTIONS IN PARALLEL

Masahito Matsuo; Toru Shimizu, and Toyohiko Yoshida, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 64,727, May 19, 1993, Pat. No. 5,461,715, which is a continuation of Ser. No. 577,718, Sep. 4, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 461,274

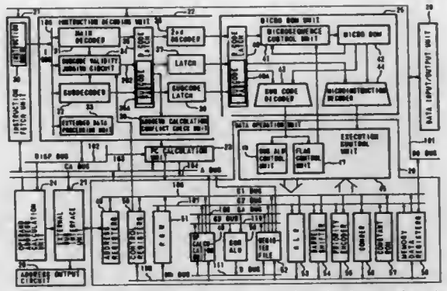
Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—388 **1 Claim**

1. A data processor for executing preceding and following instructions in parallel, comprising:

instruction fetch means for fetching instruction data from a storage means and for outputting instruction data of said preceding and said following instructions simultaneously, and validity information indicating whether instruction data of said following instruction outputted from said instruction fetch means is valid or not;

instruction decoding means, coupled to said instruction fetch means, including:



first decoding means, coupled to receive the instruction data of said preceding instruction, for decoding the instruction data of said preceding instruction transferred from said instruction fetch means and for issuing a first decoded result,

second decoding means, coupled to receive the instruction data of said following instruction, for decoding the instruction data of said following instruction transferred from said instruction fetch means and for issuing a second decoded result, and

means, coupled to receive said validity information, for preventing said second decoding means from issuing said second decoded result when said validity information indicates that said instruction data of said following instruction is not valid; and

instruction execution means, coupled to said instruction decoding means to receive said first and said second decoded results, for executing said preceding and said following instructions in parallel in accordance with said first and said second decoded results issued from said instruction decoding means;

whereby

said instruction decoding means issues only first decoded result when said validity information indicates that said instruction data of said following instruction is not valid, and

said instruction execution means executes said only preceding instruction when said instruction decoding means issues only first decoded result.

5,615,350

APPARATUS TO DYNAMICALLY CONTROL THE OUT-OF-ORDER EXECUTION OF LOAD-STORE INSTRUCTIONS IN A PROCESSOR CAPABLE OF DISPATCHING, ISSUING AND EXECUTING MULTIPLE INSTRUCTIONS IN A SINGLE PROCESSOR CYCLE

James H. Hesson; Jay LeBlanc, and Stephen J. Ciavaglia, all of Chittenden County, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 328,185, Oct. 24, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 563,859

Int. Cl.[6] G06F *9/38*

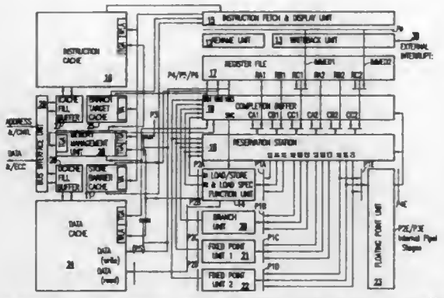
U.S. Cl. 395—394 **4 Claims**

1. A pipelined processor capable of issuing and executing multiple instructions out-of-order every machine clock cycle comprising:

a plurality of execution units receiving instructions and data and executing instructions, said plurality of execution units including at least one fixed point execution unit, a floating point execution unit, a branch unit, and a load/store unit;

an instruction cache storing instructions to be executed by said plurality of execution units;

a data cache for storing data to be operated on by said plurality of execution units when executing instructions, said data cache being connected to said load/store unit to supply data to said plurality of execution units;



a memory management unit controlling writing to and reading out of instructions and data, respectively, from the instruction cache and the data cache;

a branch target cache storing branch target history update information;

an instruction fetch and dispatch unit connected to said instruction cache for fetching instructions for execution by said plurality of execution units, said instruction fetch and dispatch unit controlling dispatch of instructions and issuing instructions to said plurality of execution units;

a completion buffer connected to receive and temporarily store computed results from said plurality of execution units;

a writeback unit controlling writeback of instructions, a computed result from said branch unit being transferred to said branch target cache from said completion buffer by said writeback unit;

a store barrier cache accessed in parallel with said instruction cache and said branch target cache and having data including history bits; and

a rename unit connected to and controlling said instruction fetch and dispatch unit to issue and dispatch a load and store instruction out of order, said rename unit using said history bits to dynamically predict whether or not a store violation condition is likely to occur and, if so, said rename unit restricting the issue of instructions until the store instruction has been executed and it is once again safe to proceed with out-of-order execution.

5,615,351

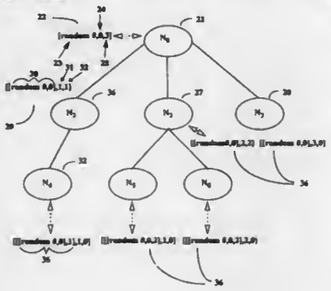
METHOD AND SYSTEM FOR CORRELATING USAGE DATA IN A DISTRIBUTED ARCHITECTURE

Shoshana K. Loeb, Basking Ridge, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Jul. 7, 1995, Ser. No. 499,334

Int. Cl.[6] G06F *17/40*

U.S. Cl. 364—400 **10 Claims**



1. A method for generating correlation keys for usage data records in a distributed computer environment having multiple components whereby when a service is requested by a user said components are invoked in a sequence to provide said service, said method, executed by a computer, comprising the steps of:

generating a first unique identifier for each user request at the first of said components;

appending to said first unique identifier a number indicating said components position in said sequence, which in combination comprise a correlation key;

including said correlation key in the usage data record created for said first component and said service request;

passing said correlation key to a next one of said components in said sequence within a request for service is made to said next one of said components;

generating a second unique identifier for said request for service made at said next one of said components, with said unique identifier composed of said correlation key received in said request for service;

appending to said second unique identifier a number indicating said components position in said sequence, which in combination comprise a correlation key; and

including said correlation key in the usage data record created for said next one of said components.

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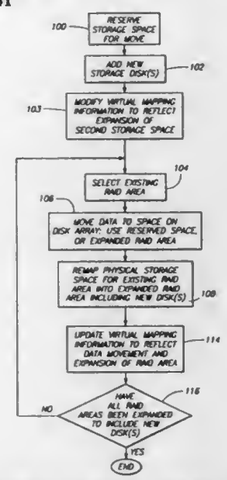
METHODS FOR ADDING STORAGE DISKS TO A HIERARCHIC DISK ARRAY WHILE MAINTAINING DATA AVAILABILITY

Michael B. Jacobson; Douglas L. Voigt, both of Boise; Theresa A. Burkes, Meridian, and Bryan Diamond, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1994, Ser. No. 319,385

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—441 **8 Claims**



1. A method for enlarging storage capacity in a data storage system; the data storage system having a disk array of multiple storage disks, the storage disks defining a physical storage space; the method comprising the following steps:

(a) configuring the physical storage space of the disk array into multiple stripes for storing a predetermined amount of data, individual stripes extending across multiple storage disks in the disk array and comprising a segment from individual storage disks in the disk array;

(b) reserving a portion of the physical storage space in the disk array of sufficient size store at least an amount of data stored in an individual stripe;

(c) adding at least one additional storage disk to the disk array;

(d) selecting a stripe;

(e) moving all segments from the selected stripe to the reserved portion; and

(f) reconfiguring the physical storage space containing the selected stripe into an expanded stripe for storing data, the expanded stripe spanning across the multiple storage disks and the new additional storage disk, the expanded stripe comprising a segment from the individual storage disks and a segment from the new additional storage disk.

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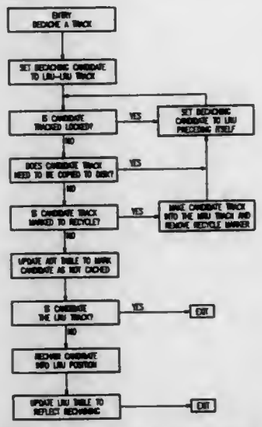
METHOD FOR OPERATING A CACHE MEMORY USING A LRU TABLE AND ACCESS FLAGS

Marvin Lautzenheiser, Springfield, Va., assignor to Zitel Corporation, Fremont, Calif.

Division of Ser. No. 255,251, Jun. 7, 1994, which is a continuation-in-part of Ser. No. 139,559, Oct. 20, 1993, Pat. No. 5,353,430, which is a continuation of Ser. No. 860,731, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,021, Mar. 5, 1991, abandoned. This application Jul. 8, 1996, Ser. No. 676,986

Int. Cl.[6] G06F *12/12*

U.S. Cl. 395—463 **7 Claims**



1. A method for operating a cache memory system having a mass storage device and a cache memory, said method comprising the steps of:

storing in said cache memory selected data from said mass storage device;

maintaining a Least Recently Used (LRU) table indicating the relative recency of use of each data stored in said cache memory;

moving a selected entry to the top of said LRU table for each new block of data stored in said cache memory;

setting a flag for each entry in said LRU table when data stored in said cache memory associated with said LRU entry has been accessed;

when cache space is determined to be needed corresponding to an area of mass storage which is not currently assigned in said cache memory:

examining the entry at the LRU position in said LRU table;

determining if, for said LRU position, said flag has been set;

if said flag has been set, unsetting said flag and placing said entry at the top of said LRU table;

if said flag has not been set, decaching said data in said cache memory associated with said LRU entry, reusing said LRU entry for storing said current data not stored in said cache memory, and placing said LRU entry at the MRU position of said LRU table; and

examining the LRU entry resulting from moving the flagged entry to the MRU position.

5,615,354

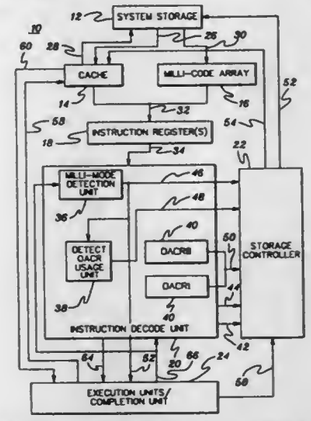
METHOD AND SYSTEM FOR CONTROLLING REFERENCES TO SYSTEM STORAGE BY OVERRIDING VALUES

Ronald F. Hill, Wappingers Falls; Donald W. McCauley, Pleasant Valley; Stephen J. Nadas, Poughkeepsie, and James R. Robinson, Clinton Corners, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 996,264, Dec. 23, 1992. This application Jun. 7, 1995, Ser. No. 471,892

Int. Cl.[6] B06F *9/06;13/10*

U.S. Cl. 395—493 **38 Claims**



1. A method for controlling references to system storage in a data processing system, said data processing system comprising a storage controller for processing said references to system storage, said method comprising the steps of:

issuing a reference to system storage, said reference having an address and a plurality of storage controls associated with said reference, each of said plurality of storage controls having a predefined value stored within at least one first control register presentable to said storage controller by said processor, one or more of said plurality of storage controls defining how said address is interpreted by said storage controller;

overriding said predefined value of said one or more of said plurality of storage controls without replacing said predefined value, said overriding comprising said processor presenting at least one second control register and said at least one first control register to said storage controller, said at least one second control register containing at least one storage control that overrides said one or more of said plurality of storage controls without replacing said predefined value of said at least one first controller register; and

executing said reference to system storage using said one or more of said plurality of storage controls that have been overridden.

5,615,355

METHOD AND APPARATUS FOR BUFFERING A USER APPLICATION FROM THE TIMING REQUIREMENTS OF A DRAM

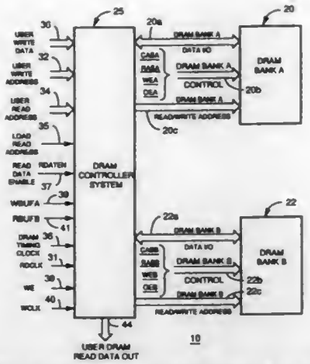
Steven D. Wagner, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 965,118, Oct. 22, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,329

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—494 **12 Claims**

1. A control system for enabling the application of dynamic memory means to storage and retrieval of digital data in a user application system herein specified as a "user" external to the control system, the storage and retrieval being made to and from at



least first and second banks of dynamic memory means, wherein the memory means requires standard data, address and timing signals in accordance with the type of dynamic memory means used, the system comprising:

means for providing user data, addresses and timing signals specific to the user, wherein the user timing signals include independent user write and read clocks;

means for buffering the user data, addresses and timing signals to make them independent of the standard data, addresses and timing signals of the dynamic memory means;

said means for buffering including means for receiving from said providing means user data and associated user addresses synchronized to said user write clock, and for writing said user data to the first bank of dynamic memory means at said associated user addresses using the dynamic memory means standard signals rather than the user write clock;

said means for buffering also including means for simultaneously reading data at the user addresses from the second bank of dynamic memory means, with the loading of read addresses from the user occurring synchronously in response to said user read clock rather than to the dynamic memory means standard signals, with accessing of data from the dynamic memory means at said associated user read addresses occurring in response to the dynamic memory means standard signals, and with the outputting of read data to the user occurring in response to said user read clock; and

said user data, addresses and timing signals being independent of said dynamic memory means standard data, addresses and timing signals, and said user read clock and read address signals being independent of said user write clock and write address signals.

5,615,356

METHOD AND APPARATUS FOR INTERACTIVELY DISPLAYING SIGNAL INFORMATION DURING COMPUTER SIMULATION OF AN ELECTRICAL CIRCUIT

Edward C. King, Fremont, and Alan G. Smith, Pleasanton, both of Calif., assignors to CPU Technology, Inc., Pleasanton, Calif.

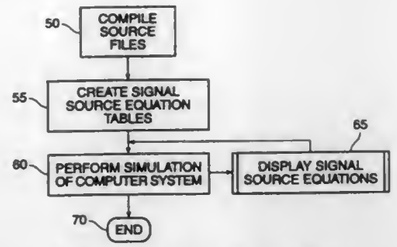
Continuation of Ser. No. 883,584, May 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 871,435, Apr. 21, 1992, abandoned. This application Nov. 4, 1994, Ser. No. 334,769

Int. Cl.[6] G06F *15/60*

U.S. Cl. 395—500 **7 Claims**

1. A method of simulating an electronic system with interactive control of a simulation display, said electronic system including an electrical conductor and a first signal applied to the conductor, said first signal comprising a plurality of bits, said method comprising the steps of:

a) providing at least one design language source file describing said electronic system, said at least one design language source file comprising a plurality of definition equations defining said first signal, each of said plurality of definition equations defining a respective range of bits of said first signal;



b) compiling said at least one design language source file to form a design language object file;

c) invoking a simulator with said design language object file, whereby said electronic system is simulated and simulation information is displayed upon a simulation screen;

d) concurrently with said simulating of said electronic system, selecting by user inputs a desired range of bits of said first signal for definition display; and

e) displaying only those of said plurality of definition equations defining a range of bits which overlaps said desired range of bits on said simulation screen concurrently with said simulating of said electronic system.

5,615,357

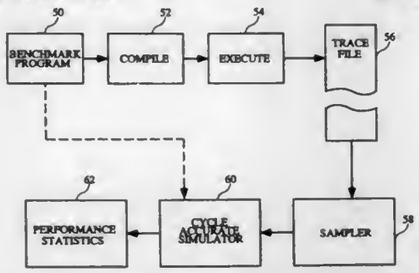
SYSTEM AND METHOD FOR VERIFYING PROCESSOR PERFORMANCE

Loran P. Ball, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 29, 1994, Ser. No. 365,799

Int. Cl.[6] G07C *5/08*

U.S. Cl. 395—500 **22 Claims**



1. A system for predicting the performance or a processor design when running a sequence of program instructions, the system comprising:

a processor model of the processor capable of executing said sequence of program instructions;

a memory model accessible by the processor model for storing a static version of said sequence of program instructions which can be executed on the processor model; and

a trace file available for inputting into a trace buffer as a plurality of trace file instructions, at least some of which contain effective addresses for defined classes of instructions, wherein the processor model is capable of concurrently processing corresponding instructions from the trace buffer and from a static version of said sequence of program instructions, and wherein the processor model uses the trace file instructions to determine the effective addresses of said defined classes of instructions to assist execution of the static version.

5,615,358

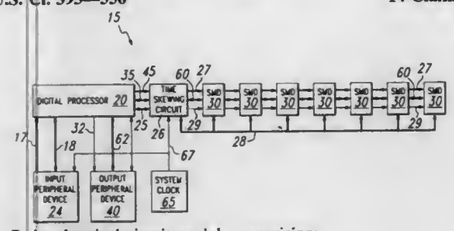
TIME SKEWING ARRANGEMENT FOR OPERATING MEMORY IN SYNCHRONISM WITH A DATA PROCESSOR

Wilbur C. Vogley, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 891,483, May 28, 1992. This application Jun. 7, 1995, Ser. No. 486,093

Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—556 **14 Claims**



7. An electrical circuit module comprising:

a circuit board;

a plurality of synchronous memory devices fixed to the circuit board;

a time skewing circuit fixed to the circuit board;

an address bus, fixed to the circuit board and interconnecting the time skewing circuit with the plurality of memory devices;

a data bus, fixed to the circuit board and interconnecting the time skewing circuit with the plurality of memory devices;

a clock bus, fixed to the circuit board and interconnecting the time skewing circuit with the plurality of memory devices; and

a control bus, fixed to the circuit board and interconnecting the time skewing circuit with the plurality of memory devices.

5,615,359

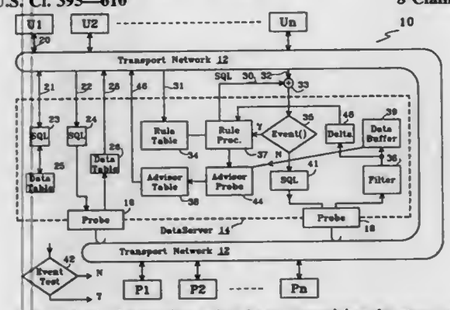
DATA SERVER WITH DATA PROBES EMPLOYING PREDICATE TESTS IN RULE STATEMENTS

Alex Yung, Walnut, Calif., assignor to Candle Distributed Solutions, Inc., Santa Monica, Calif.

Filed Jun. 23, 1994, Ser. No. 264,403

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—610 **8 Claims**



1. A method of operating a data base, comprising the steps of:

applying a rule statement, including a predicate test for specified data, to a data server from a user application;

storing the rule statement by rule name in a rule table in the data server;

applying an inquiry statement, referencing the rule statement by rule name, to the data server from the user application;

invoking an Event level data probe from the data server, in response to the data specified by the rule statement, to collect data from an appropriate data source and to emit the collected data to the data server;

testing the collected data emitted by the Event level data probe at the data server in accordance with the predicate test;

determining the occurrence of an event represented by the predicate test; and

invoking an Advisor level probe from the data server to return data passing the predicate test to the user application in response to the inquiry statement if and only if the event was determined to have occurred.

5,615,360

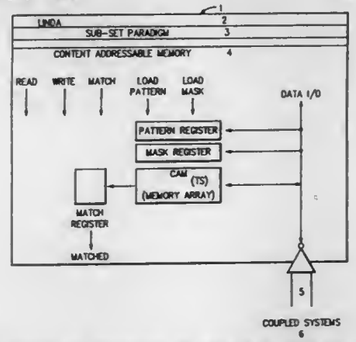
METHOD FOR INTERFACING APPLICATIONS WITH A CONTENT ADDRESSABLE MEMORY

John D. Bezek, Owego, and Peter M. Kogge, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 699,413, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned. This application Sep. 21, 1994, Ser. No. 310,005

Int. Cl.[6] G06F *17/30;12/00*

U.S. Cl. 395—606 **20 Claims**



1. A method for interfacing an application program run on a processor to a hardware implemented content addressable memory capable of plural concurrent comparisons, said content addressable memory including a memory array, the method comprising the steps of:

using an IN operator for checking the memory array in said content addressable memory for a matching tuple and, if no matching tuple, suspending the portion of the application program using the IN operator until a matching tuple appears in the memory array, providing a matching tuple to the application program and deleting the matching tuple from the memory array;

using an OUT operator to place a tuple in the memory array; and

using an operator for checking the memory array within said content addressable memory for a matching tuple, selectively suspending or not suspending the portion of the application program issuing the READ operator until a matching tuple appears in the memory array, and providing the matched tuple to the application program.

5,615,361

EXPLOITATION OF UNIQUENESS PROPERTIES USING A 1-TUPLE CONDITION FOR THE OPTIMIZATION OF SQL QUERIES

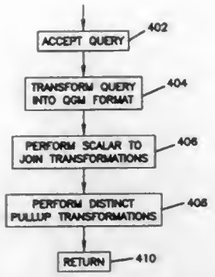
Ting Y. Leung; Mir H. Pirahesh; David E. Simmen, all of San Jose, Calif.; Lori G. Strain, Etobicoke, Canada, and Sanjai Tiwari, Mountainview, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1995, Ser. No. 384,759

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—603 **15 Claims**

1. A method of optimizing an SQL query in a computer having a memory, the SQL query being performed by the computer to



retrieve data from a relational database stored in a electronic storage device coupled to the computer, the method comprising the steps of:

(a) examining the query in the memory of the computer to determine whether any columns referenced in a predicate of the query are bound;

(b) examining the query in the memory of the computer to determine whether any of the bound columns prohibit duplicate values in its associated table; and

(c) identifying the query in the memory of the computer as satisfying a 1-tuple condition when at least one of the bound columns prohibit duplicate values in its associated table, wherein the 1-tuple condition indicates that the query returns at most one tuple.

5,615,362

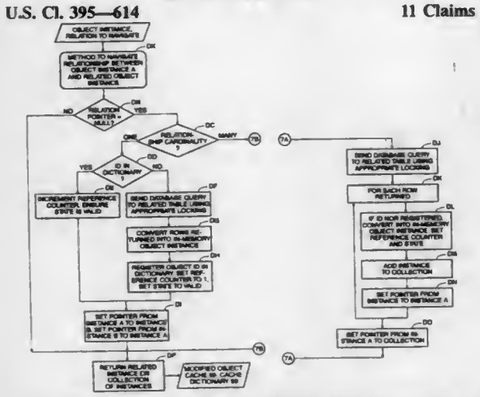
METHOD AND APPARATUS FOR MANAGING RELATIONAL DATA IN AN OBJECT CACHE

Richard H. Jensen, Redwood City, and Derek P. Henninger, Cupertino, both of Calif., assignors to Persistence Software, Inc., San Mateo, Calif.

Continuation of Ser. No. 101,385, Aug. 2, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 409,480

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **11 Claims**



1. A method for coupling a plurality of object instances, each object instance in said plurality comprising a unique object ID, attributes, and relationships in an object-oriented application to a structured database, said structured database comprising foreign keys, primary keys, tables, rows and columns, said object-oriented application being executed in a digital computing system comprising a processor, said method comprising the steps of:

executing instructions on said processor to generate a request in the object-oriented application, said request being selected from the group consisting of a request for information about an object instance in said object-oriented application and a request to navigate a relationship between object instances of said object-oriented application;

executing instructions on said processor to determine whether said request can be resolved with reference to an object cache comprising object instances of said object-oriented application, and without reference to said structured database;

if said request can be resolved with reference to said object cache and without reference to said structured database, executing instructions on said processor to resolve said request by referring to said object cache; and

if said request cannot be resolved with reference to said object cache and without reference to said structured database,

then if said request is a request for information about an object instance in said object-oriented application executing instructions on said processor to resolve said request by querying said structured database to obtain information from said foreign keys, primary keys, tables, rows and columns required to construct an object instance, modifying said object cache according to said information, and referring to said object instance contained in said modified object cache;

if said request is a request to navigate a relationship between object instances of said object-oriented application, executing instructions on said processor to construct a relationship pointer in said object cache between said object instances comprising a first object instance and a related second object instance by

querying said structured database to extract relationship information represented by at least one key and information relating to said at least one key, said key comprising primary and foreign keys, from said first object instance representing said relationship;

using said key and said related information to look up said related second object instance in said object cache; and

constructing a relationship pointer from said first object instance to said second related object instance, said relationship pointer being traversable by said object oriented application.

5,615,363

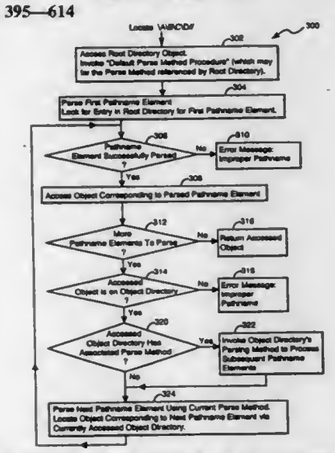
OBJECT ORIENTED COMPUTER ARCHITECTURE USING DIRECTORY OBJECTS

Steven M. Jenness, Redmond, Wash., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 84,292, Jun. 28, 1993, Pat. No. 5,463,774. This application Jun. 1, 1995, Ser. No. 456,711

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **5 Claims**



1. A memory for storing data for access by programs being executed on a data processing system, comprising:

a multiplicity of objects comprising data structures stored in said memory;

said multiplicity of objects including a directed graph of directory objects for locating and accessing said multiplicity of objects, each directory object storing object names and object pointers for locating and accessing other objects stored in said memory; said directory objects including a root directory object which includes object names and object pointers to a set of first level directory objects;

each said object being identified by an associated pathname that defines a path through said directed graph of directory objects for accessing said each object; each pathname comprising a succession of path elements that includes first and last path elements;

said root directory object and a plurality of other ones of said directory objects each including a distinct pathname parsing procedure for locating those of said multiplicity of objects whose pathname includes (A) a path element, other than said last path element, identifying said each directory object;

each parsing procedure including commuter executable instructions for receiving a specified object pathname and for successive parsing said path elements in said specified object pathname by (A) accessing successive directory objects identified by said successively parsed path elements, and (B) accessing the object identified by said specified object pathname when said last path element is parsed; at least a plurality of said parsing procedures further including instructions for determining when any of said accessed directory objects includes a distinct pathname parsing procedure and for invoking said distinct pathname parsing procedure of said accessed directory object to parse the path elements of said specified object pathname not yet parsed.

5,615,364

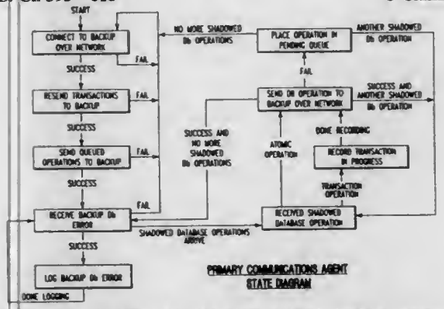
APPARATUS AND METHOD FOR PERFORMING THE BACKUP OF A PRIMARY DATABASE USING A BACK UP DATABASE

David J. Marks, Johnson City, Tenn., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Continuation of Ser. No. 961,752, Oct. 16, 1992, abandoned. This application Jul. 6, 1995, Ser. No. 499,121

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **8 Claims**



1. A method for automatic redundant network database management having at least two control system computers, a primary computer and a backup computer each of which has a database, said computers interconnected in a network, comprising the steps of:

(A) initiating communication between said primary and backup computers;

(B) communicating from each one of said primary and backup computers to the other of said primary and backup computers each change in the database associated with said one computer individually, for shadowing said change in said database of said one computer;

(C) automatically updating the database of the other of said primary and backup computers with the changes made to the said one database;

(D) discontinuing the communication between said primary and backup computers upon a detection by said primary computer of a failure of said network;

(E) rolling back a shadowed transaction in progress in said backup computer when said communication is discontinued;

(F) queuing, in said primary computer database, changes to the primary database upon said detection of the failure of said network; and

(G) transmitting, from said primary computer, said queued database changes to said backup computer, upon reestablishing of communications in said network.

5,615,365

Patent Not Issued For This Number

5,615,366

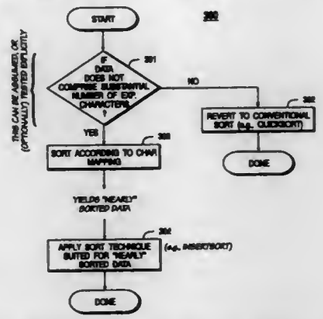
SYSTEM AND METHODS FOR IMPROVED SORTING

Kurt Hansen, Santa Cruz, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 12,703, Feb. 2, 1993, Pat. No. 5,551,018. This application Jun. 11, 1996, Ser. No. 664,270

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—607 **22 Claims**



1. In a computer system, an improved method for sorting a plurality of information records into a desired sequence, some of said information records storing at least two data members, some of the information records storing data members which are not identical from one data member of the record to another, the method comprising:

(a) determining for each record a value for the first data member;

(b) arranging the records into groups according to the value determined for the first data member of each record, wherein records having an identical value for the first data member are grouped together, and wherein at least some of said information records still remain to be sorted into said desired sequence;

(c) further dividing each group into smaller groups by repeating steps (a)–(b) for each one of subsequent data members of each record of each group, so that within any given group all records of the group share a common part said common part, comprising a sequence of data members starting from the first data member which is identical from one record of the group to another, wherein steps (a)–(b) continue to be repeated until the number of records remaining in said each group is less than a threshold value, and wherein upon conclusion of step (c) at least some of said information records still remain to be sorted into said desired sequence; and

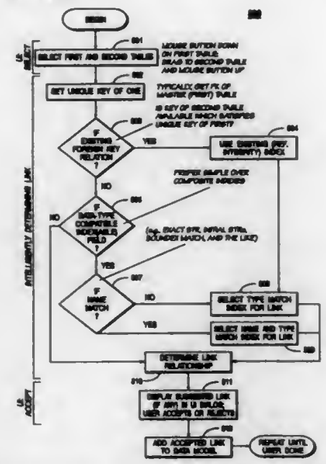
(d) as each group reaches said threshold value, sorting records remaining in the group using a selected one of quicksort and insertsort.

5,615,367

SYSTEM AND METHODS INCLUDING AUTOMATIC LINKING OF TABLES FOR IMPROVED RELATIONAL DATABASE MODELING WITH INTERFACE

John G. Bennett, San Mateo; Perry A. Gee, and Charles E. Gayraud, both of Santa Cruz, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed May 25, 1993, Ser. No. 67,202
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—613 35 Claims



1. In an information processing system, a method for automatically linking information tables, each table including at least one information field, the method comprising:

(a) receiving user input for selecting first and second information tables to link;

(b) determining a unique key for one of the two tables;

(c) automatically determining by said system a foreign key for the other of the two tables which satisfies said unique key; and

(d) if a foreign key is available, automatically linking said first and second tables through the foreign key.

5,615,368

SYSTEM HAVING TABLE STORING PLURALITY OF OPTIMAL PATROL SEEK SCHEMES FOR RESPECTIVE DISK DRIVES AND EXECUTING ASSOCIATED SCHEME BASED UPON INPUTTED DISK DEVICE NAME

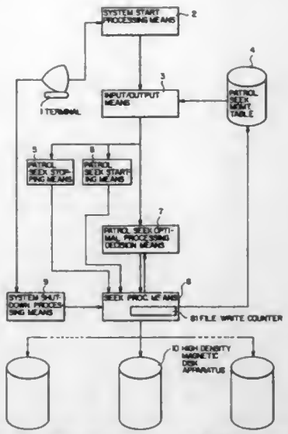
Ryo Terashima, and Kazunori Nakabayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 107,578, Aug. 18, 1993, abandoned.
This application Mar. 30, 1995, Ser. No. 414,134
Claims priority, application Japan, Aug. 18, 1992, 4-218869
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—671 17 Claims

1. A patrol seek controller for controlling a patrol seek operation on a plurality of magnetic disk apparatuses each of which includes one or more magnetic disks, based on one of a plurality of patrol seek information sequences selected by a user, wherein each of the patrol seek information sequences defines an order in which tracks of at least one of the magnetic disks are searched based on a performance characteristic of the magnetic disk, the patrol seek controller comprising:

a patrol seek management table for storing the patrol seek information sequences including a plurality of patrol seek patterns corresponding to each of the magnetic disk apparatuses;

seek means for executing a seek operation on the plurality of magnetic disk apparatuses on the basis of said patrol seek



management table in response to a patrol seek executing signal, and stopping said seek operation in response to a patrol seek stopping signal; and

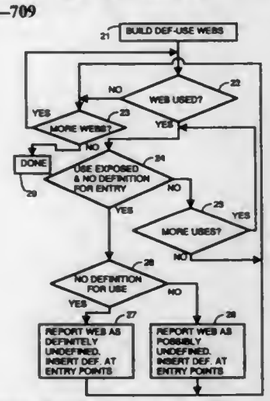
input/output means for receiving a patrol seek instruction which includes a disk device name which identifies one of the magnetic disk apparatuses from a terminal connected to the patrol seek controller, checking whether or not a patrol seek information sequence corresponding to said disk device name exists in said patrol seek management table, analyzing the patrol seek instruction if the patrol seek information sequence exists, and based on the analysis performing one of sending said patrol seek stopping signal with said disk device name to said seek means and sending said patrol seek executing signal with said disk device name indicated to said seek means.

5,615,369

AUTOMATED DETECTION AND CORRECTION OF UNINITIALIZED VARIABLES

Anne M. Holler, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 25, 1994, Ser. No. 280,166
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—709 12 Claims



1. In a compiler within a computing system, a computer implemented method comprising the steps of:

(a) for local variables in a subroutine, building user definition webs, a first user definition web for a first variable including every instruction within the subroutine which defines or uses the first variable; and,

(b) for the first user definition web when the first local variable is used at least once, performing the following substep:

(b.1) if there is a use of the first local variable for which there is no definition on a path to an entry point of the subroutine, performing the following substeps:

(b.1.1) if no definition can reach the use, report the web as definitely undefined, and

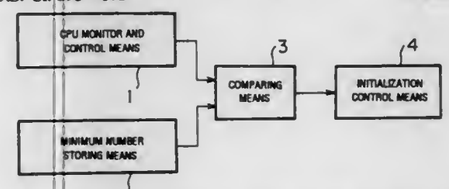
(b.1.2) if a definition can reach the use, report the web as possibly undefined.

5,615,370

COMPUTER SYSTEM WITH AUTOMATIC DEGRADATION/INITIALIZATION FUNCTION

Yukio Nagai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 24, 1995, Ser. No. 377,403
Claims priority, application Japan, Sep. 16, 1994, 6-221245
Int. Cl.[6] G06F *15/16;11/22*
U.S. Cl. 395—672 3 Claims



1. A computer system equipped with a plurality of CPUs and having an automatic degradation/initialization function, comprising:

CPU monitor and control means for monitoring the CPUs when power is supplied to the computer system, to determine whether fault has occurred in any of the CPUs, and for isolating a faulty CPU upon detection;

minimum number storing means for previously storing a minimum number of CPUs required for accomplishing a predetermined task;

comparing means for comparing a number of normal CPUs among said plurality of CPUs with the minimum number of CPUs stored in said minimum number storing means; and

initialization control means, responsive to a result of the comparison by said comparing means, for initializing the computer system when the number of normal CPUs is greater than or equal to the minimum number of CPUs, and for suspending initialization of the computer system when the number of normal CPUs is smaller than the minimum number of CPUs.

5,615,371

DEBUG PROCESSING SYSTEM FOR USER PROGRAMS

Hitoshi Iuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

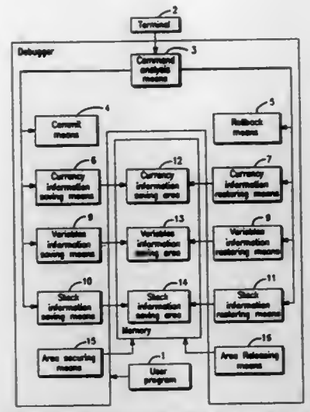
Filed Apr. 28, 1995, Ser. No. 431,262
Claims priority, application Japan, Apr. 28, 1994, 6-113593
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—704 12 Claims

1. A user program debug processing system for performing debugging by setting a break point in a user program, comprising:

command analysis means for perceiving, at said break point, a command entered from a terminal to be a save command;

commit means for committing, when the input of the save command is perceived by said command analysis means, the output file accessed by the user program at the break point;

currency information saving means for saving, when the input of the save command is perceived by said command analysis means, currency information designating a record at the break point of the input file accessed by the user program, into a currency information saving area;



variables information saving means for saving, when the input of the save command is perceived by said command analysis means, variables information, which is the contents of the variables on the memory used by the user program at the break point, into a variables information saving area; and

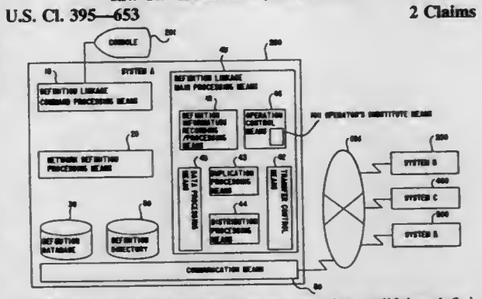
stack information saving means for saving, when the input of the save command is perceived by said command analysis means, stack information which is called after the completion of processing by said commit means, said currency information saving means and said variables information saving means and is intended for managing the sequence of the execution of the user program at the break point, into a stack information saving area.

5,615,372

NETWORK DEFINITION MODIFYING SYSTEM

Toshihide Nishina, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 248,488, May 24, 1994, abandoned.
This application Aug. 1, 1996, Ser. No. 690,941
Claims priority, application Japan, Sep. 8, 1993, 5-223338
Int. Cl.[6] H04L *12/28;* G06F *15/177*
U.S. Cl. 395—653 2 Claims



1. A network definition modifying system for modifying definitions of network resources separately owned by a plurality of computer systems connected to a network, comprising:

a definition database for storing local definition information descriptive of definitions of network resources under control of a local computer system and for storing remote definition information received from remote computer systems as being descriptive of definitions of network resources under control of the remote computer systems;

definition linkage command processing means for instructing a definition exchange operation when supplied with a command to exchange the definitions of network resources between the local computer system and the remote computer systems, which instruction of the definition exchange operation may

include an instruction for sending only a modified part of the local definition information to the remote computer systems;

network definition processing means for defining and modifying the network resources of the local computer system and saving the local definition information into said definition information database, in response to said instruction supplied from said definition linkage command processing means;

a definition directory having a resource information directory for storing first edition data and a destination information directory for storing second edition data, said first edition data indicating edition numbers of the local definition information and the remote definition information stored in said definition information database, said second edition data indicating edition numbers of the local definition information sent latest to the respective remote computer systems; and

definition linkage main processing means for distributing the local definition information saved in said definition information database to the remote computer systems and for retrieving the remote definition information from the remote computer systems in response to the instruction from said definition linkage command processing means in response to the instruction from said definition linkage command processing means, said definition linkage main processing means comprising

definition information recording/processing means for recording said first edition data of the local definition information into said resource information directory of said definition directory when the network resources of the local computer system is defined or modified, and for updating said first edition data of the remote definition in formation in said resource information directory when the remote definition information is received from the remote computer systems,

distribution processing means for transmitting the local definition information to the remote computer systems and updating said second edition data in said destination information directory in response to said instruction from said definition linkage command processing means, wherein said distribution processing means compares said first and second edition data in said definition directory, when the instruction from the definition linkage command processing means requests to send only a modified part of the information, and distributes the local definition information to the respective remote computer systems only when said second edition data is found older than the first edition data, and

duplication processing means for requesting the remote computer systems to send the respective definitions of network resources thereof in response to the instruction from the definition linkage command processing means and saving the remote definition information received from the remote computer systems into said definition database.

5,615,373

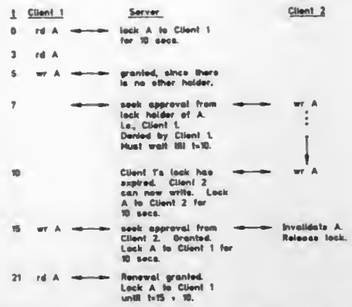
DATA LOCK MANAGEMENT IN A DISTRIBUTED FILE SERVER SYSTEM DETERMINES VARIABLE LOCK LIFETIME IN RESPONSE TO REQUEST TO ACCESS DATA OBJECT

Lawrence Y. Ho, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,163
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—726 **19 Claims**

1. A method of data management in a distributed file system having a file server adapted to store a plurality of data objects and respond to requests for read and write access to the data objects by granting and terminating data locks to the server-stored data objects, the system further having a plurality of interactive workstations that are adapted to operate in an active mode and in an idle mode, each workstation having a local cache memory; the method comprising the steps of:

receiving a request from a first workstation for read or write access to a data object;



determining an appropriate variable lock lifetime that expires in a range from zero to infinity seconds after grant, in response to the received request for access;

granting the first workstation a lock to the data object, the lock having the determined lock lifetime; and

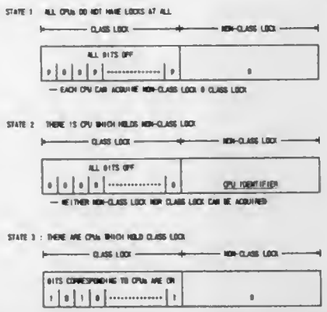
terminating the lock when the lock lifetime expires.

5,615,374

LOCK CONTROL METHOD FOR RESOURCE

Yasuhiko Sadoi; Masanobu Suzuki, and Gunji Ogawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 122,652, Sep. 17, 1993, abandoned.
This application Mar. 19, 1996, Ser. No. 618,405
Claims priority, application Japan, Sep. 25, 1992, 4-256330
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—726 **6 Claims**



1. A lock control method for a system having a plurality of processors (CPUs), a memory, and a resource, said lock control method comprising the steps of:

(a) writing by the CPUs identification information concerning the CPUs into a first lock control information area of the memory when each of the CPUs acquires one of a class lock and a non-class lock for the resource classified into classes corresponding to whether one of the CPUs has acquired one of the class lock and the non-class lock, said first lock control information area having a class lock area and a non-class lock area, said non-class lock area being used to access serially the resource by the CPUs, said class lock area being used to access classes of the resource;

(b) writing by the CPUs the identification information indicating the CPUs into a second control information area of the memory when each of the CPUs acquires locks for the classes;

(c) writing the identification information concerning one of the CPUs into the non-class lock area of the first lock control information area when the one of the CPUs determines there is no identification information in the first lock control information area, so that said one of the CPUs can acquire the right to exclusively use the resource; and

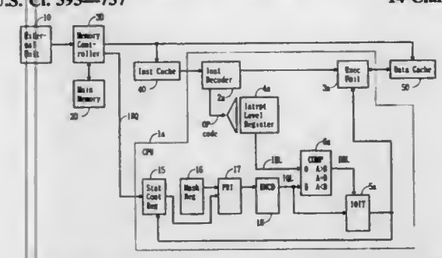
(d) writing the identification information concerning one of the CPUs into the class lock area of the first lock control information area and writing the identification information concerning said one of the CPUs into the second lock control information area when the one of the CPUs determines there is no identification information in the non-class lock area of the first lock control information area, so that said one of the CPUs can acquire the right to exclusively use the resource for each of the classes.

5,615,375

INTERRUPT CONTROL CIRCUIT

Takeshi Ibusuki, and Shinji Miyahara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 17, 1993, Ser. No. 153,159
Claims priority, application Japan, Nov. 17, 1992, 4-305753
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—737 **14 Claims**



1. An interrupt control circuit for a data processing unit which fetches and executes instructions for controlling an interrupt request signal from an external device which has an assigned interrupt level, said interrupt control circuit comprising:

level storage means for storing interrupt-accept level data corresponding to each instruction and specifying the interrupt level of the interrupt request signal to be accepted for interrupt;

first comparison means for reading, when an instruction is fetched for execution, the interrupt-accept level data corresponding to the instruction from said level storage means and for comparing the interrupt-accept level with the interrupt level of the interrupt request signal; and

first acceptance means for accepting the interrupt request signal to initiate the interrupt function upon the comparing by said first comparison means.

5,615,376

CLOCK MANAGEMENT FOR POWER REDUCTION IN A VIDEO DISPLAY SUB-SYSTEM

Ravi Ranganathan, Cupertino, Calif., assignor to NeoMagic Corp., Santa Clara, Calif.

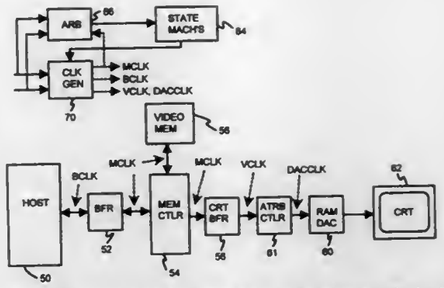
Filed Aug. 3, 1994, Ser. No. 285,401
Int. Cl.[6] G06F *1/00; 1/18*
U.S. Cl. 395—750 **14 Claims**

1. A video sub-system for displaying an image on a screen, the video sub-system comprising:

clock generation means for generating a video clock, the video clock for transferring pixels of display information for display by the screen during a scanning period of time, the video clock pulsing during the scanning period of time;

blanking means, coupled to the clock generation means, for periodically disabling the video clock during a blanking period of time, the video clock not pulsing during the blanking period of time;

video memory means for storing pixels of display information for a whole screen;



memory controller means, responsive to a memory clock, for controlling transfer of the pixels of display information to and from the video memory means;

video buffer means, receiving the pixels of display information from the memory controller means, for storing a subset of the pixels of display information from the video memory means;

serial transfer means, coupled to receive the subset of the pixels of display information from the video buffer means, for transferring pixels of display information to the screen, the pixels of display information being transferred to the screen serially in synchronization to the video clock, the video clock pulsing at least once for every pixel being transferred to the screen, each pixel representing a point on the screen;

second clock generation means for generating the memory clock, the second clock generation means including

means for receiving a periodic request for a memory transfer from the video buffer means;

means for enabling and pulsing the memory clock in response to the periodic request; and

means for disabling the memory clock and not pulsing the memory clock once the subset of the pixels of display information from the video memory means is loaded into the video buffer means;

a host buffer, including

means for receiving display update information from a host;

means for generating a host request to the second clock generation means;

means for enabling and pulsing the memory clock in response to the host request; and

means for disabling the memory clock and not pulsing the memory clock once the display update information from the host is written to the video memory means,

whereby the memory clock is not pulsed after a memory transfer or a host transfer is completed, reducing power consumption by the video sub-system, and

whereby the image is displayed on the screen using the video clock that is periodically disabled, reducing power consumption during display of the image.

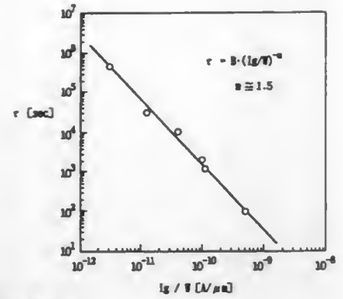
5,615,377

METHOD OF SIMULATING HOT CARRIER DETERIORATION OF A P-MOS TRANSISTOR

Satoshi Shimizu, and Shigeru Kusunoki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,810
Claims priority, application Japan, Aug. 19, 1994, 6-195071
Int. Cl.[6] G01R *31/26;* **G06F** *9/455*
U.S. Cl. 395—500 **10 Claims**

1. A method of simulating hot carrier deterioration of a P-MOS transistor utilizing the following formulas (A1), (A2), (A3) and (A4) in an FWD mode that a direction of current flow between source/drain during application of a stress in a transistor is the same as that during measuring of transistor characteristics:



$$Vth=Vfb+\sigma*Vd \quad (A1)$$

$$\Delta Vth=\Delta Vfb \quad (A2)$$

$$(\Delta Vfb)_f=A*\tau^n \quad (A3)$$

$$\tau=B*(Ig/W)^{-m} \quad (A4)$$

where Vth represents a threshold voltage, Vd represents a drain voltage, Vfb represents a threshold voltage at Vd=0V, Ig represents a gate current, W represents a gate width, ΔVth and ΔVfb represent variations of Vth and Vfd caused by hot carrier deterioration, respectively, σ represents a coefficient showing an effect of lowering of an oxide film barrier caused by Vd, a lifetime τ of the transistor is defined by the formula (A3), and $(\Delta Vfb)_f$ represents a particular value of ΔVfb, wherein

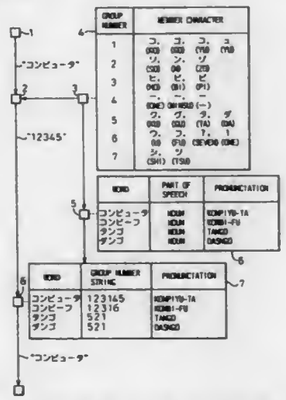
the coefficients A, n, B and m are determined by a preliminary measuring experiment, whereby the transistor lifetime τ can be estimated.

5,615,378

DICTIONARY RETRIEVAL DEVICE

Fumihito Nishino, and Naomi Sugimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 29, 1994, Ser. No. 235,653
Claims priority, application Japan, Jul. 19, 1993, 5-178209
Int. Cl.[6] G06F *17/28*
U.S. Cl. 395—754 **15 Claims**



1. A dictionary retrieval device for converting an input character string input from an input part of a computer and outputting the converted character string to an output part of the computer, comprising:

conversion character definition means for classifying a character set into subsets, and providing group IDs for each subset;

character group ID conversion means for converting from each character of the character string to a group ID by using said conversion character definition means;

input character string conversion means for converting the input character string input from the input part to a group ID string using said character-group ID conversion means;

first storage means for storing a word dictionary containing words which are significant character strings appearing at the input part;

dictionary conversion means for converting all words in said word dictionary to the group ID string using said character group ID conversion means;

second storage means for storing a converted word dictionary containing words which are converted by said dictionary conversion means; and

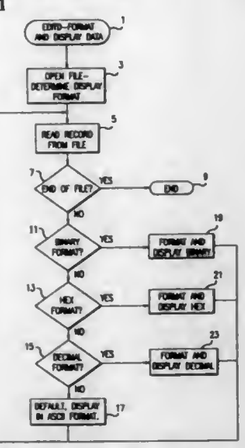
dictionary retrieval means for retrieving the converted word dictionary expressed by the group ID for the group ID string converted by said input character string conversion means.

5,615,379

METHOD FOR EDITING DATA STORED IN FILES IN WHICH THE FILE FORMATS ARE UNKNOWN

Cleveland P. Wehle, Herndon, Va., assignor to Sprint International Communications Corp., Reston, Va.

Filed Aug. 26, 1994, Ser. No. 296,140
Int. Cl.[6] G06F *17/24*
U.S. Cl. 395—701 **25 Claims**



1. A method for editing computer files containing unknown data, said method comprising the steps of:

a) opening a user specified computer file;

b) choosing by the user between binary, hexadecimal, decimal as a desired display format;

c) reading a record from the user specified computer file;

d) exiting if detecting an end of file;

f) formatting and displaying binary data if binary format was chosen in step b);

g) formatting and displaying hexadecimal data if hexadecimal format was chosen in step b);

h) formatting and displaying decimal data if decimal format was chosen in step b);

i) formatting and displaying ASCII data if binary, hexadecimal or decimal format was not chosen in step b); and

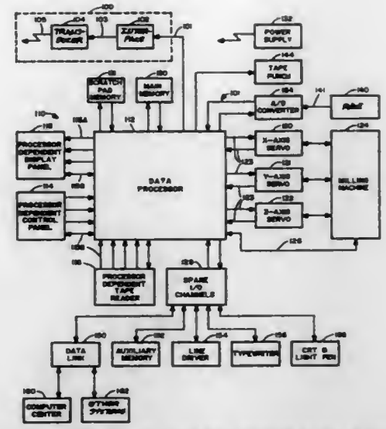
j) returning to step c).

5,615,380

INTEGRATED CIRCUIT COMPUTER SYSTEM HAVING A KEYBOARD INPUT AND A SOUND OUTPUT

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180

Continuation of Ser. No. 849,812, Nov. 9, 1977, and a continuation-in-part of Ser. No. 860,277, Dec. 13, 1977, and a continuation of Ser. No. 457,451, Dec. 27, 1989, which is a continuation of Ser. No. 343,112, Apr. 24, 1989, Pat. No. 4,896,260, which is a continuation of Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, which is a division of Ser. No. 101,881, Dec. 28, 1970, abandoned, said Ser. No. 457,451is a continuation of Ser. No. 209,115, Jun. 17, 1988, Pat. No. 4,942,516, which is a continuation-in-part of Ser. No. 879,293, Nov. 24, 1969, abandoned, Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 860,253, Dec. 14, 1977, abandoned, Ser. No. 860,256, Dec. 14, 1977, Pat. No. 4,829,419, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, and Ser. No. 223,959, Jan. 12, 1981, abandoned, which is a continuation of Ser. No. 101,881, which is a continuation-in-part of Ser. No. 879,293, said Ser. No. 860,253is a continuation-in-part of Ser. No. 879,293, and Ser. No. 101,881, said Ser. No. 860,256is a continuation-in-part of Ser. No. 879,293, and Ser. No. 101,881, said Ser. No. 402,520is a continuation of Ser. No. 101,881, said Ser. No. 860,277is a continuation-in-part of Ser. No. 101,881, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, and Ser. No. 849,733, Nov. 7, 1977, abandoned, said Ser. No. 849,812is a continuation-in-part of Ser. No. 101,881, Ser. No. 134,958, Ser. No. 135,040, Ser. No. 230,872, Ser. No. 232,459, Ser. No. 246,867, Ser. No. 288,247, Ser. No. 229,213, Ser. No. 291,394, Ser. No. 302,771, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Ser. No. 476,743, Ser. No. 550,231, Ser. No. 366,714, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 31, 1977, Pat. No. 4,144,582, Ser. No. 844,765, and Ser. No. 849,733.
This application Apr. 9, 1991, Ser. No. 506,642
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **49 Claims**



1. A sound system comprising:

a keyboard for generating a keyboard digital input signal;

an integrated circuit keyboard stored program digital computer for generating a serial digital keyboard output signal in response to the keyboard digital input signal generated by said keyboard, said integrated circuit keyboard stored program digital computer including

1) an integrated circuit keyboard digital read only memory for storing a keyboard program,

2) an integrated circuit keyboard digital input circuit for generating a keyboard computer input signal under control of the keyboard program stored in said integrated circuit keyboard digital read only memory in response to the keyboard digital input signal generated by said keyboard,

3) integrated circuit keyboard digital processing logic for processing the keyboard computer input signal generated by said integrated circuit keyboard digital input circuit under control of the keyboard program stored in said integrated circuit keyboard digital read only memory, and

4) an integrated circuit keyboard serial digital output circuit for generating the serial digital keyboard output signal under control of the keyboard program stored in said integrated circuit keyboard digital read only memory in response to the processing of the keyboard computer input signal by said integrated circuit keyboard digital processing logic;

an integrated circuit sound stored program digital computer for generating a digital sound output signal in response to the serial digital keyboard output signal generated by said integrated circuit keyboard serial digital output circuit, said integrated circuit sound stored program digital computer including

1) an integrated circuit sound digital memory for storing a sound program,

2) an integrated circuit sound computer digital input circuit for generating a sound computer input signal under control of the sound program stored in said integrated circuit sound digital memory in response to the serial digital keyboard output signal generated by said integrated circuit keyboard serial digital output circuit,

3) integrated circuit sound digital processing logic for processing the sound computer input signal generated by said integrated circuit sound computer digital input circuit under control of the sound program stored in said integrated circuit sound digital memory, and

4) an integrated circuit sound digital output circuit for generating the digital sound output signal under control of the sound program stored in said integrated circuit sound digital memory in response to the processing of the sound computer input signal by said integrated circuit sound digital processing logic; and

a sound transducer for generating a sound in response to the digital sound output signal generated by said integrated circuit sound digital output circuit.

5,615,381

SECURITY FOR A DATA PROCESSING SYSTEM HAVING MULTIPLE DISTINCT PROGRAM INSTRUCTION SECTIONS

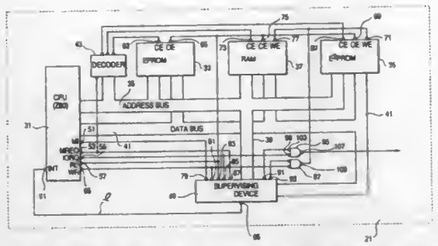
Yasuo Iijima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 22,431, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 473,041, Jan. 31, 1990, abandoned. This application Jun. 14, 1994, Ser. No. 261,029
Claims priority, application Japan, Feb. 1, 1989, 1-22967
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—800 **9 Claims**

1. A portable electronic device comprising:

a body;

memory means including,



first storage means for storing a first program, said first program comprising a plurality of first instructions,

second storage means for storing a second program, said second program comprising a plurality of second instructions;

chip means, mounted in said body and coupled to said memory means, for reading and executing said first and second instructions of said first and second programs stored by said first and second storage means, said chip means including address means for outputting address data indicating a memory location in said memory means where said chip means accesses data, said chip means performing a read operation for reading, a write operation for writing, and a code fetch operation for fetching a code indicating one of said first or second instructions;

supervising means, coupled to said chip means and said memory means, for determining whether said first or second instructions read from said first or second programs by said chip means addresses a portion of said memory means occupied by the other of said first or second programs and generating an interrupt signal in response to such a determination, wherein said supervising means further comprises:

first means for distinguishing said code fetch operation from said read and write operation,

second means for generating a code signal in response to said first means distinguishing said code fetch operation from said read and write,

third means for determining whether said address data outputted by said chip means is addressed to said portion of said memory containing an other of said first and second programs than is in use at the time of determination, and

fourth means, coupled to said third means, for generating an address distinguishing signal in response to said third means determining whether said address data outputted by said chip means is addressed to said portion of said memory containing an other of said first and second programs than is in use at the time of determination, and wherein said chip means is interrupted by said interrupt signal generated by said supervising means.

5,615,382

DATA TRANSFER SYSTEM FOR BUFFERING AND SELECTIVELY MANIPULATING THE SIZE OF DATA BLOCKS BEING TRANSFERRED BETWEEN A PROCESSOR AND A SYSTEM BUS OF A COMPUTER SYSTEM

Vincent G. Gavin, Galway, Ireland; Michael J. Seaman, San Jose, Calif.; Neal A. Crook, Reading, and Bipin Mistry, Edgware, both of United Kingdom, assignors to Digital Equipment Corporation, Maynard, Mass.

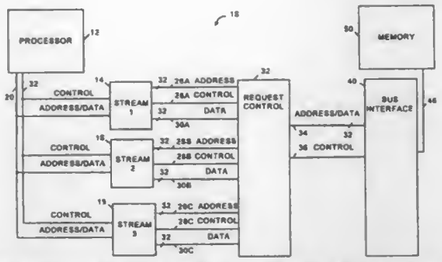
Continuation of Ser. No. 819,468, Jan. 10, 1992, Pat. No. 5,471,632. This application Jun. 6, 1995, Ser. No. 468,486

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **12 Claims**

1. A data transfer device for coupling a processor to a system bus, said data transfer device comprising:

a processor bus system adapted for coupling to the processor for transfer of bus address information from the processor and for transfer of data to and from the processor;



a plurality of addressable registers, each one of the addressable registers being coupled to the processor bus system, the plurality of addressable registers including:

i) an address register for storing the bus address information and having a bus address output adapted for coupling to the system bus, and

ii) a data register for storing data and having a data output;

a register address bus adapted for coupling to the processor for input of register address information;

a decoder coupled to the register address bus and to each of the addressable registers for enabling one of the registers at a time for input of bus address information or data from the processor bus system as a function of the register address information placed on the register address bus by the processor, in a sequence of processor operating cycles;

a bus data input adapted for coupling to the system bus for input of data from the system bus;

an internal buffer memory system selectively coupled to each of the bus data input and the data output of the data register for input of write data to the internal buffer memory system;

the internal buffer memory system having a bus data output adapted for coupling to the system bus and a processor data output coupled to the processor bus system;

a control state machine system coupled to each of the internal buffer memory system and the decoder and including an internal memory address generator for generating memory addresses for controllably writing data to the internal buffer memory system via the selective coupling to the data output of the data register and the bus data input;

the internal buffer memory system comprising a pair of RAM's and wherein the control state machine system controllably selects one of the pair of RAM's at a time for writing or reading of data.

5,615,383

MICROCOMPUTER SYSTEM FOR DIGITAL SIGNAL PROCESSING

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments, Dallas, Tex.

Division of Ser. No. 434,173, May 1, 1995, which is a continuation of Ser. No. 837,787, Feb. 18, 1992, abandoned, which is a division of Ser. No. 468,423, Jan. 22, 1990, abandoned, which is a division of Ser. No. 841,123, Mar. 18, 1986, abandoned, which is a division of Ser. No. 350,852, Feb. 22, 1982, Pat. No. 4,577,282. This application Jun. 7, 1995, Ser. No. 474,606

Int. Cl.[6] G06F *9/302;15/16*

U.S. Cl. 395—800 **5 Claims**

1. A system, comprising:

external memory;

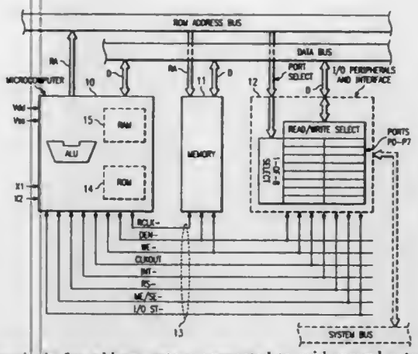
a peripheral apparatus;

a first external bus connected to said external memory and said peripheral apparatus;

a second external bus connected to said external memory and said peripheral apparatus; and

a microcomputer device for digital signal processing formed on a semiconductor substrate, having:

terminals for data transfer connected to said first external bus;



terminals for address output connected to said second external bus;

an arithmetic logic unit having data input and data output;

an internal memory having an address input and circuitry for data input and data output;

an internal bus connected to the data input and data output of said arithmetic logic unit, to the circuitry for data input and data output of said internal memory, and to said terminals for data transfer;

a control circuit generating control signals in response to an instruction word, said control signals defining operation of said arithmetic logic unit and transfers of data between said internal bus and said internal memory, and wherein said control circuit is responsive in a first mode to an externally supplied mode signal from said peripheral apparatus for sending an address to said internal memory for an instruction and executing an instruction and in a second mode sending the address to said external memory for any externally supplied instructions, instead of sending the address to said internal memory; and

a multiplier circuit coupled to said internal bus; and

wherein said external memory is coupled to said data transfer and address output terminals, and said peripheral apparatus is operative for transfer of information to and from said data transfer terminals so that said addressing operations provide addresses to said external memory and said peripheral apparatus for data transfers between said microcomputer device and said external memory and said peripheral apparatus.

5,615,384

PERSONAL COMMUNICATOR HAVING IMPROVED ZOOM AND PAN FUNCTIONS FOR EDITING INFORMATION ON TOUCH SENSITIVE DISPLAY

David J. Allard; Francis J. Canova, Jr., both of Boynton Beach; Debra A. G. Johnson, Fort Lauderdale; Charles S. Lanier, Delray Beach; James R. Lewis, Coconut Creek; Byron K. Tiller, Boca Raton; William Villafana, Davie, and Raymond L. Yee, Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 146,341, Nov. 1, 1993, abandoned. This application Aug. 29, 1995, Ser. No. 521,333

Int. Cl.[6] G06F *15/66*

U.S. Cl. 395—800 **9 Claims**

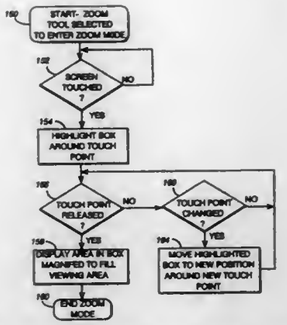
1. A personal communicator comprising:

a casing having a size adapted to be held in the hand of a user;

a touch sensitive display mounted on said casing;

first means for displaying a graphics image on said display;

second means for displaying a magnification frame of predefined size and shape on said display and imposed on said graphics image in response to a user touching said display at a touch point with a finger, said frame being located beneath said touch point and delineating the actual portion of said graphics image to be magnified;



third means for moving said frame around said display in response to sliding said finger around said display and in contact therewith; and

fourth means for magnifying and displaying on said display said portion of said graphics image delineated by said frame, in response to disengaging said finger from said display.

5,615,385

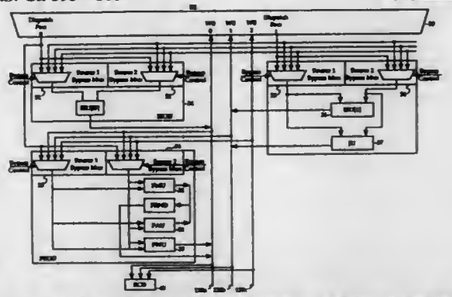
METHOD AND APPARATUS FOR ZERO EXTENSION AND BIT SHIFTING TO PRESERVE REGISTER PARAMETERS IN A MICROPROCESSOR UTILIZING REGISTER RENAMING

Michael A. Fetterman; Andrew F. Glew, both of Hillsboro; Glenn J. Hinton, Portland; David B. Papworth, Beaverton, and Robert P. Colwell, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 333,397, Nov. 2, 1994, which is a continuation-in-part of Ser. No. 204,069, Mar. 1, 1994, abandoned. This application Nov. 29, 1995, Ser. No. 565,646

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—800 **6 Claims**



1. An apparatus for shifting a first plurality of source input data bits upon input to a functional unit comprising:

an instruction dispatch mechanism for dispatching an instruction and source input data to the functional unit, the instruction dispatch mechanism also providing a bit shifting control signal when the source input data is to be shifted upon input to the functional unit;

bit shifting logic disposed between the instruction dispatch mechanism and the front end of the functional unit for shifting said first plurality of source input data bits upon input to said functional unit in response to said bit shifting control signal; and

a writeback bus coupled to the functional unit, the writeback bus configured to return result data from the functional unit, the writeback bus directly coupled to the bit shifting logic for bypassing source inputs, wherein said bit shifting logic is further configured to provide zero extended result data as the source input data.

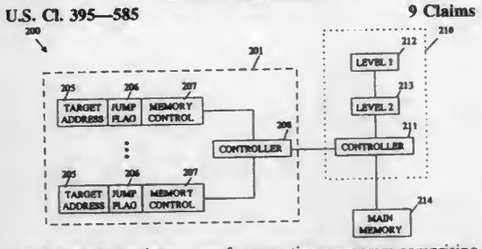
5,615,386
COMPUTER ARCHITECTURE FOR REDUCING DELAYS DUE TO BRANCH INSTRUCTIONS

Frederic C. Amerson, Santa Clara; Rajiv Gupta, Los Altos; Balasubramanian Kumar, Cupertino; Michael S. Schlansker, Los Altos, and William S. Worley, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 324,857, Oct. 18, 1994, abandoned, which is a continuation of Ser. No. 58,858, May 6, 1993, abandoned. This application Jan. 18, 1996, Ser. No. 588,151

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—585 **9 Claims**



1. A data processing system for executing a program comprising an instruction sequence including a plurality of instructions in an ordered sequence, said data processing system comprising:

an instruction processor for executing said instructions of said program;

a register file, operatively connected to said instruction processor, comprising:

one or more registers, each said register including means for storing a target address of a branch instruction and means for storing a flag having first and second states; and

a pointer register which specifies which of said registers in said register file is referenced by the next execute branch instruction;

wherein said instructions include execute branch instructions, and wherein said first state of said flag in said specified register causes said instruction processor to execute the instruction specified by said target address in said specified register when one of said execute branch instructions is executed by said instruction processor, and said second state of said flag in said referenced register causes said instruction processor to execute the instruction in said instruction sequence immediately following said execute branch instruction when said execute branch instruction is executed by said instruction processor.

5,615,387
METHOD AND APPARATUS FOR REWORKING PRINTED CIRCUIT BOARDS USING SURFACE COATING AND SELECTIVE REMOVAL OF AN ELECTRICALLY CONDUCTIVE MATERIAL

Charles H. Crockett, Jr.; Steven A. Duncan, both of Austin; Stephen A. Dunn, Georgetown; David W. Malone, and Michael G. McMaster, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 369,563, Jan. 6, 1995, abandoned, which is a continuation of Ser. No. 968,909, Oct. 30, 1992, abandoned. This application Jan. 22, 1996, Ser. No. 589,795

Int. Cl.[6] H05K *3/00*

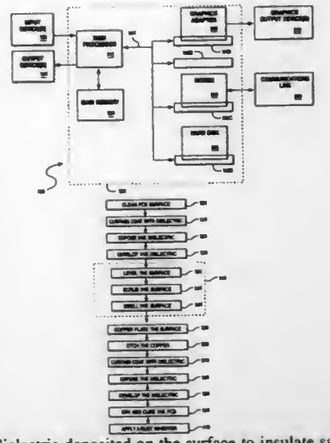
U.S. Cl. 395—800 **20 Claims**

17. A data processing system comprising:

a) processor for processing data;

b) a memory for storing data to be processed;

c) a printed circuit board coupled to said processor having a surface including electrical circuitry, said printed circuit board including:



i) a dielectric deposited on the surface to insulate said electrical circuitry, said dielectric having portions selectively removed to uncover selected areas of said electrical circuitry; and

ii) a layer of electrically conductive material deposited on said surface, said layer of electrically conductive material being electrically connected to said selected areas and having portions selectively removed to provide a conductive corrective circuitry on said dielectric.

5,615,388
IC CARD READER/WRITER

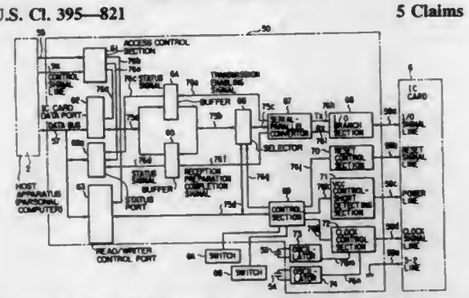
Kenzo Yoshimatsu, Kawasaki; Hirobumi Kessoku, Yokohama, and Atsushi Murata, Chigasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 28, 1994, Ser. No. 348,984

Claims priority, application Japan, Nov. 29, 1993, 5-298643

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—821 **5 Claims**



1. An IC card reader/writer including control means for controlling a power supply to a detachable IC card, a supply of an operation clock, a reset thereof, and receiving/transmitting means for receiving/transmitting serial data from/to the IC card, wherein a signal is received/transmitted between a host apparatus and said control means and data is received/transmitted between said host apparatus and said receiving/transmitting means, said IC card reader/writer comprising:

serial-parallel converting means, connected to said receiving/transmitting means, for converting parallel data supplying from said host apparatus to serial data transmitting to said IC card, or for converting serial data supplying from said receiving/transmitting means to parallel data corresponding to said host apparatus;

an IC card data port connected between a data bus of said host apparatus and said serial-parallel converting means;

a status port connected between the data bus of said host apparatus and said serial-parallel converting means;

a reader/writer control port connected between the data bus of said host apparatus and said control means; and

access control means, connected by an address bus of said host apparatus and a control signal line, having a port selection address supplied from said host apparatus through the address bus, and at least one of read and write signals supplied from said host apparatus through said control signal line, for controlling each of said ports by these signals,

said access control means for opening the IC card data port to a side of said host apparatus so as to output data from said serial-parallel converting means to said host apparatus when the port selection address for the IC card data port is supplied to said access control means and the read signal is supplied thereto,

said access control means for opening the IC card data port to a side of said serial-parallel converting means so as to output data from said host apparatus to said serial-parallel converting means when the port selection address for the IC card data port is supplied to said access control means and the write signal is supplied thereto,

said access control means for opening the status port to the side of said host apparatus so as to output a status signal from said serial-parallel converting means to said host apparatus when the port selection address for the status port is supplied to said access control means and the read signal is supplied thereto,

said access control means for opening the reader/writer control port to the side of said host apparatus so as to output data from said control means to said host apparatus when the port selection address for the reader/writer control port is supplied to said access control means and the read signal is supplied thereto, and

said access control means for opening the port for the reader/writer control port to a side of said control means so as to output data from said host apparatus to said control means when the port selection address for the reader/writer control port is supplied to said access control means and the write signal is supplied thereto.

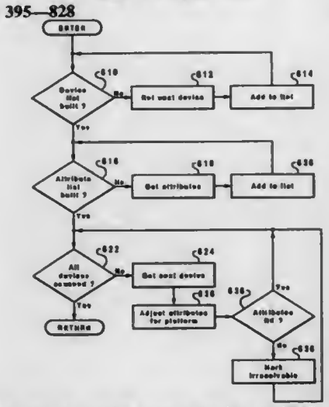
5,615,389
METHOD AND SYSTEM FOR DEVICE RESOURCE RESOLUTION IN A DATA PROCESSING SYSTEM

Brandon J. Mayfield, and Chris A. Schwendiman, both of Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1995, Ser. No. 511,201

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—828 **11 Claims**



1. In a data processing system having a plurality of devices coupled to a bus and having attributes for accessing resources within said data processing system, a method of resolving resource conflicts between said plurality of devices, comprising:

performing a search for a first nonconflicting solution for each of said plurality devices to be configured;

constructing a first data structure representing each of said plurality of devices based on said search said first data structure comprising an ordered list beginning with available devices having nonmodifiable attributes and thereafter listing defined devices having modifiable attributes;

constructing a second data structure for each of said plurality of devices representing the attributes of each device;

resolving a selected first defined device against all previously resolved or available devices found on said first data structure;

determining shared attributes that are nonconflicting bus resource values for said resolved first defined device;

assigning all shared attributes as specific values;

saving said specific values within an object database management file; and

recursively repeating said resolving process for a next defined device within said first data structure until all defined devices have been resolved.

5,615,390
SYSTEM FOR DETERMINING AND CONTROLLING THE INPUT/OUTPUT MODE OF INPUT/OUTPUT TERMINAL OF MICROCOMPUTER USING RESET SIGNAL CHANGE POINT DETECTION CIRCUIT

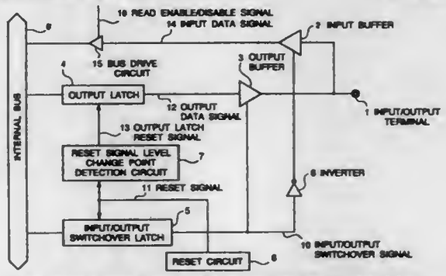
Kensei Kurahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 44,533

Claims priority, application Japan, Apr. 8, 1992, 4-086777

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—834 **8 Claims**



1. An input/output circuit of a microcomputer, comprising:

an input/output terminal to be supplied with one of an input signal and an output signal;

first storing means storing information for determining an input/output mode of said input/output terminal, said first storing means being initialized in response to a first reset signal;

an output buffer having an output connected to said input/output terminal and selectively activated or inactivated by an output of said first storing means;

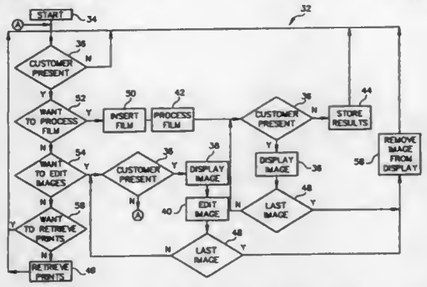
second storing means having an output connected to an input of said output buffer for outputting an output data signal through said output buffer to said input/output terminal; and

a reset signal level change point detection circuit receiving said first reset signal for detecting a point at which said first reset signal changes from an active level to an inactive level, and for generating a second reset signal, delayed in time from said first reset signal, to said second storing means, so that after said first storing means has been initialized in response to said first reset signal to inactivate said output buffer so that said output data signal is no longer outputted through said output buffer to said input/output terminal, said second storing means is initialized by said second reset signal.

5,615,391
SYSTEM FOR AN AUTOMATED IMAGE MEDIA PROCESS STATION WHICH DISPLAYS IMAGES ONLY WHILE CUSTOMER PRESENCE IS DETECTED THEREBY ENSURING PRIVACY

Kevin J. Klees, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1995, Ser. No. 428,744
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—839 **7 Claims**



6. A method of ensuring privacy at an automated image media processing station including image media processing apparatus for processing a customer's image media in connection with a transaction sequence which includes at least one of station activation, customer detection, film processing, film printing, and image display, and a video display allowing the customer to view images captured on said image media during processing, said method comprising:

detecting the presence of the customer within a detection range and field of view of said station;

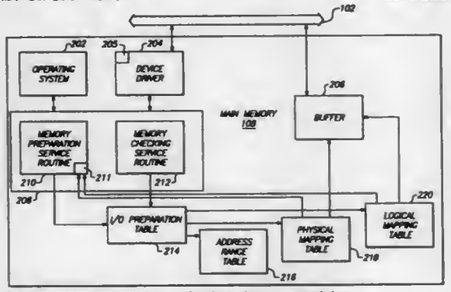
displaying images captured on said image media on said video display in accordance with the transaction sequence; and

discontinuing further display of said images and processing said film as a background task without display in accordance with the transaction sequence when the customer's presence is undetected.

5,615,392
METHOD AND APPARATUS FOR CONSOLIDATED BUFFER HANDLING FOR COMPUTER DEVICE INPUT/OUTPUT

David F. Harrison, Boulder Creek; Russell T. Williams, and Thomas E. Saulpaugh, both of San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 437,125
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—876 **18 Claims**



8. An apparatus for transferring data comprising:

an external device;

a buffer coupled to the external device for storing data;

a memory coupled to the external device and to the buffer for storing a common set of parameters;

a device driver for controlling the transfer of data between the external device and the buffer responsive to the common set of parameters;

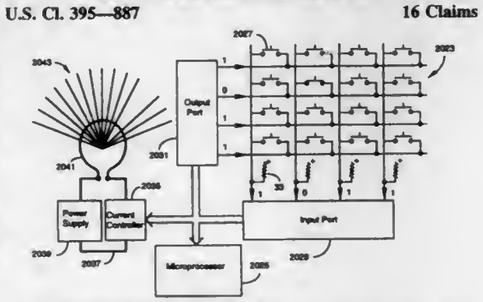
a memory preparation service routine for allocating the buffer responsive to a common set of parameters, making the buffer addressable responsive to a common set of parameters, and locking the buffer to prevent access other than by the external device during the transfer of data; and

a memory checking service routine for modifying the common set of parameters responsive to the transfer of data between the external device and the buffer.

5,615,393
COMPUTER SYSTEM HAVING A CORDLESS KEYBOARD AND AN INDUCTION COIL IN A PLUG-IN ELECTRONIC CARD MODULE

Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex I.P. Holdings Ltd., London, United Kingdom

Continuation of Ser. No. 277,164, Jul. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 144,231, Oct. 28, 1993, and Ser. No. 31,805, Mar. 15, 1993, Pat. No. 5,365,230.
This application Jul. 15, 1996, Ser. No. 680,100
Int. Cl.[6] G06F *3/00;13/00;* **H03M** *11/00*
U.S. Cl. 395—887 **16 Claims**



1. A computer system comprising:

a cordless keyboard having an on-board power supply and a magnetic field generator, the keyboard adapted for coding keystrokes made on the keyboard in a dynamic magnetic field broadcast by the magnetic field generator;

an electronic card module having an induction coil for receiving the coded keystrokes in the dynamic magnetic field and having decoding circuitry connected to the induction coil for converting the coded keystrokes in the dynamic magnetic field into standard serial bus data: and

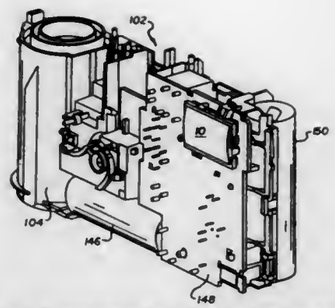
a computer having a docking bay adapted for receiving and engaging the electronic card module and connecting the decoding circuitry in the electronic card module by means of multi-pin connectors to an internal bus of the computer.

5,615,394
ANAMORPHIC LENS FOR A PHOTOGRAPHIC FLASH ASSEMBLY

Richard E. Albrecht, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 327,089, Oct. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 264,392, Jun. 23, 1994, abandoned. This application Oct. 28, 1994, Ser. No. 330,637
Int. Cl.[6] G03B *15/03*
U.S. Cl. 396—6 **40 Claims**

1. An anamorphic lens comprising a first and a second lens surface, each having a longitudinal axis in which the longitudinal axes of the first and second lens surfaces are crossed, is characterized in that:

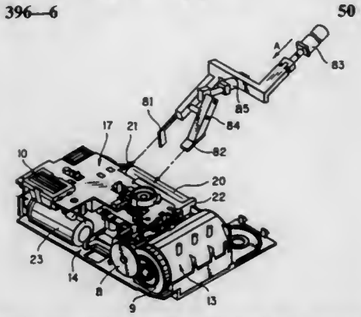


at least one of said first and second lens surfaces is defined by an acylindrical curvature and the other lens surface is defined by a cylindrical or acylindrical curvature for providing independent illumination control at a target, said lens having a center zone and an edge zone, said lens surfaces each being continuously curved in said center and edge zones, at least one of said lens surfaces having a difference in curvature from said center zone to said side zone.

5,615,395
METHOD AND APPARATUS FOR DISASSEMBLING LENS-FITTED PHOTO FILM UNIT, AND FLASH CLEANING METHOD AND APPARATUS

Iwao Komaki; Saburo Nakajima, and Fusao Ichikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 154,449, Nov. 19, 1993, abandoned.
This application Oct. 23, 1995, Ser. No. 546,896
Claims priority, application Japan, Nov. 20, 1992, 4-312413; Dec. 10, 1992, 4-330436
Int. Cl.[6] G03B *19/00*
U.S. Cl. 396—6 **50 Claims**



1. A method for disassembling a used lens-fitted photo film unit inclusive of first and second parts, said first part having a retaining device formed integrally thereon, and said second part having a first portion formed integrally thereon and retained on said retaining device so as to couple said second part to said first part, said disassembling method comprising steps of:

setting said photo film unit in a disassembling station in a predetermined orientation;

advancing an access device toward said photo film unit in response to a signal from a control unit;

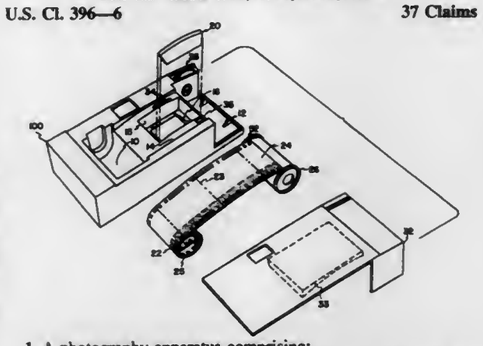
by use of said access device, flexing said retaining device away from said first portion and capture said second part with said access member in response to a signal from a control unit; and

retracting said access device while said second part is captured by said access device in response to a signal from a control unit, so as to remove said second part from said first part.

5,615,396
PRODUCING SMOOTHLY BLENDED DOUBLE EXPOSURE COMPOSITE IMAGES

Robert L. Craig, Pfafftown, N.C., assignor to Photo Dimensions, Winston Salem, N.C.

Filed Jun. 25, 1996, Ser. No. 670,352
Int. Cl.[6] G03B *1/00;11/00;17/02;17/24*
U.S. Cl. 396—6 **37 Claims**



1. A photography apparatus comprising:

a length of pre-exposed film for photographic exposure, the film having a first exposed area and an unexposed area for exposure to a target image, the unexposed area being the portion of the film not containing the first exposed area;

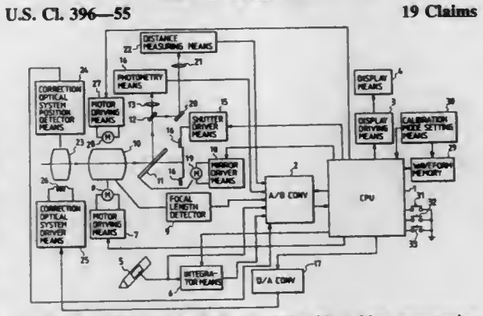
a camera having two cavities, one cavity being for holding the pre-exposed film prior to re-exposure and one cavity being for holding the film after re-exposure, an exposure aperture frame located between the cavities across which the film is positioned for exposure to the target image, the target image being focused by a lens onto the film; and

means for partially reducing an exposure intensity to the first exposed area on the film thereby permitting re-exposure of the first exposed area when the target image is exposed to the unexposed portion of the film.

5,615,397
APPARATUS USED FOR BLUR SUPPRESSION OR BLUR PREVENTION

Yasuhiko Shiomi, Kawaguchi, and Shinji Imada, Musashino, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,223
Claims priority, application Japan, Dec. 28, 1993, 5-334411
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—55 **19 Claims**



1. An apparatus adapted to be used with a blur suppression device, comprising:

first means for storing a predetermined signal;

second means for determining whether an impact occurs due to operation of a movable member; and

third means for synthesizing a first signal indicating an image blur state and the predetermined signal stored in said first means in accordance with a determination result of said

second means so as to form a second signal for operating the blur suppression device, thereby preventing an error operation of the blur suppression device due to impact.

5,615,398

OPTICAL APPARATUS WITH IMAGE AREA SENSORS FOR CONTROLLING LENS FOCAL LENGTH

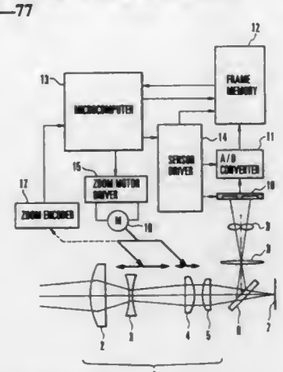
Shinichi Matsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,870

Claims priority, application Japan, Nov. 8, 1993, 5-278432; Nov. 8, 1993, 5-278433

Int. Cl.[6] G03B *3/00;13/18*

U.S. Cl. 396—77 **20 Claims**



1. An optical apparatus comprising:

image pickup means having a pair of are sensors each of which is arranged to convert a light flux representative of an object image incident on said area sensor into an image signal;

object image detecting means for detecting information on the object image by using the image signal outputted from said pair of area sensors;

discriminating means for discriminating the size of a main object by using the information on the object image detected by said detecting means; and

deciding means for deciding, on the basis of a discrimination made by said discriminating means, a focal length of an optical system to be changed.

5,615,399

FOCUS DETECTING APPARATUS HAVING PHOTOELECTRIC AREA SENSORS

Akira Akashi, Yokohama; Mamoru Miyawaki, Tokyo; Kenji Suzuki, Kawasaki, and Toshiki Nakayama, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 936,010, Aug. 27, 1992, Pat. No. 5,428,420.

This application Aug. 17, 1995, Ser. No. 516,412

Claims priority, application Japan, Aug. 28, 1991, 3-217075; Nov. 29, 1991, 3-339367

Int. Cl.[6] G03B *13/36*

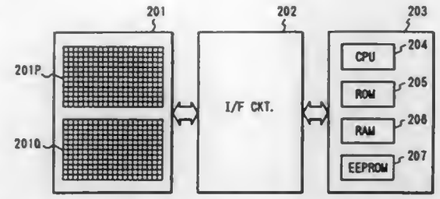
U.S. Cl. 396—128 **9 Claims**

1. A focus adjusting apparatus comprising:

a sensor circuit having a first area sensor portion and a second area sensor portion, each area portion including a plurality of elements;

an optical system which causes the first and second area sensor portions to receive light from a target object;

a designating circuit which designates a detection area for focus adjusting, said designating circuit designating a predetermined area of the first sensor portion and a predetermined area of the second sensor portion which corresponds to the



predetermined area of the first sensor portion in accordance with the designated detection area;

a compensation circuit which corrects a signal from a disabled element among the elements of the predetermined area of the sensor portions corresponding to the designated detection area, said compensation circuit forming, as a signal from the disabled element, a signal based on a signal from an element which is proximate to the disabled element and which is in the predetermined area of the sensor portion; and

a calculation circuit which calculates data for the focus adjusting based on the signal from the elements of the predetermined area of the first and second sensor portions.

5,615,400

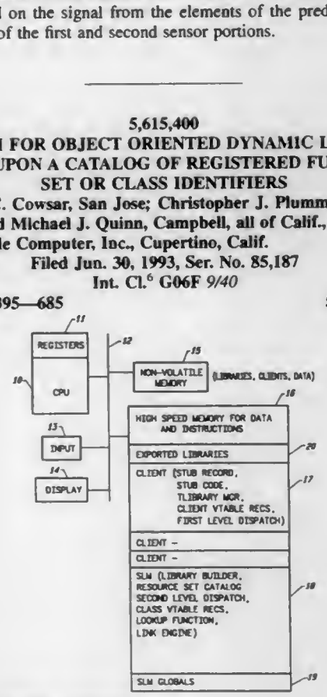
SYSTEM FOR OBJECT ORIENTED DYNAMIC LINKING BASED UPON A CATALOG OF REGISTERED FUNCTION SET OR CLASS IDENTIFIERS

George C. Cowsar, San Jose; Christopher J. Plummer, Milpitas, and Michael J. Quinn, Campbell, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 30, 1993, Ser. No. 85,187

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—685 **52 Claims**



1. A computer, comprising

a central processing unit;

non-volatile memory;

high-speed memory;

a library of function sets, each function set including at least one member function, embodied in the high-speed memory;

computer readable program code comprising one or more client applications embodied in the non-volatile memory and capable of utilizing and residing in the high-speed memory; and

computer readable program code means, embodied in the non-volatile memory, for managing use of functions by said one or more client applications, the computer readable program code means comprising:

computer readable program code means for causing the computer to store a dispatch record for said one or more client applications, each said dispatch record for said one or more client applications including a function set ID for each of said plurality of function sets used by said client application;

computer readable program dispatch code means responsive to a call by the client application of a particular member function and to the dispatch record for causing the computer to supply a request for a link to a function set having the particular member function; and

computer readable program link code means, responsive to the request for the link to the function set and to the function set ID in the dispatch record, for causing the computer to link the particular member function to the client application wherein the link code means includes

computer readable program code means for causing said computer to create a resource set catalog, the resource set catalog identifying function sets in the library by respective function set IDs, and storing a plurality of set records which characterize member functions within respective sets;

computer readable program lookup code means for causing the computer to look up a set record for the function set in the resource set catalog based on the corresponding function set ID; and

programmable code means, responsive to the set record, for causing the computer to return the particular member function to the client application.

5,615,401

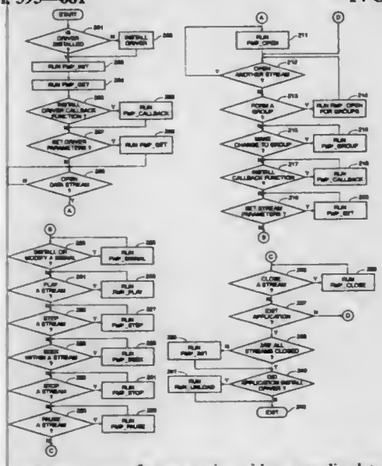
VIDEO AND AUDIO DATA PRESENTATION INTERFACE

Philippe Harscoet, Fremont, and Chen-Huei Chiang, Sunnyvale, both of Calif., assignors to Sigma Designs, Inc., Fremont, Calif.

Filed Mar. 30, 1994, Ser. No. 221,164

Int. Cl.[6] G06F *13/24;15/00*

U.S. Cl. 395—681 **14 Claims**



1. A computer system for presenting video or audio data, comprising

a processor;

memory coupled to said processor;

means for presenting video and audio data coupled to said memory;

an application program having an execution point in said memory;

means for signaling an interrupt from said application program;

a driver program in said memory, coupled to said means for signaling an interrupt and to said means for presenting video and audio data;

a first and a second data stream, said first and second data streams each comprising video or audio data, and said first and second data streams each coupled to said processor;

said driver program comprising a plurality of functions each callable from said application program with a common calling sequence, whereby said means for signaling an interrupt directs said interrupt to said driver program;

said plurality of functions comprising a function for designating said first and second data streams as a group, a function for causing a plurality of data streams in a group to change status in synchrony into a PLAY mode, a PAUSE mode, a STOP mode, a SEEK mode, or a STEP mode, a function for designating a callback function independently for said group or for said first data stream, a function for designating a signal independently for said group or for said first data stream, a function for designating a buffer in said memory as a location for data associated with said first data stream.

5,615,402

UNIFIED WRITE BUFFER HAVING INFORMATION IDENTIFYING WHETHER THE ADDRESS BELONGS TO A FIRST WRITE OPERAND OR A SECOND WRITE OPERAND HAVING AN EXTRA WIDE LATCH

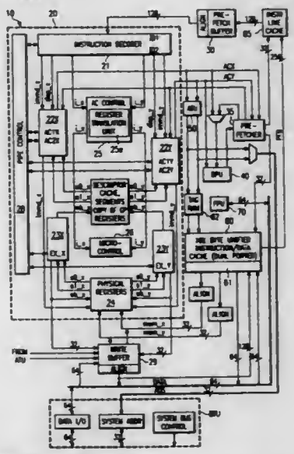
Marc A. Quattromani, Allen, and Raul A. Garibay, Jr., Richardson, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation of Ser. No. 138,652, Oct. 18, 1993, abandoned.

This application Dec. 14, 1995, Ser. No. 572,584

Int. Cl.[6] G06F *13/00;12/00*

U.S. Cl. 395—800 **10 Claims**



1. A microprocessor comprising:

(a) a first processing unit that processes a first program instruction to produce a first write operand of a predetermined width;

(b) a second processing unit that processes a second program instruction to produce a second write operand having a width greater than the predetermined width of the first write operand;

(c) an extra wide latch having a width equal to the width of the second write operand and coupled to receive the second write operand from the second processing unit;

(d) a unified write buffer having a plurality of entries, coupled to the first processing unit, each of the plurality of entries having a data portion that stores the first write operand, an address portion that stores an address, and a control portion that identifies whether the address belongs to the first write operand or the second write operand in the extra wide latch;

(e) a datapath of predetermined width, coupled to the extra wide latch and to the unified write buffer, wherein the width of the extra wide latch is equal to or less than the predetermined width of the datapath; and,

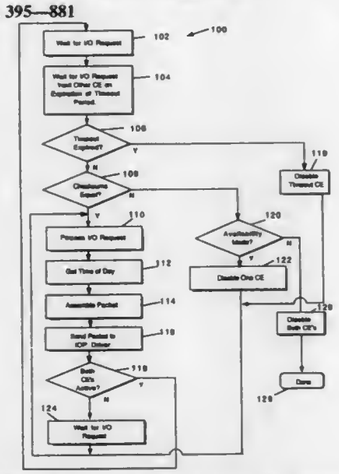
(f) a memory coupled to the address portion from the unified write buffer and to the datapath to receive either the first write operand or the second write operand responsive to the control portion of the unified write buffer.

5,615,403

METHOD FOR EXECUTING I/O REQUEST BY I/O PROCESSOR AFTER RECEIVING TRAPPED MEMORY ADDRESS DIRECTED TO I/O DEVICE FROM ALL PROCESSORS CONCURRENTLY EXECUTING SAME PROGRAM

Thomas D. Bissett, Northborough; Richard D. Fiorentino, Carlisle; Robert M. Glorioso, Stow; Diane T. McCauley, Hopkinton; James D. McCollum, Whitinsville; Glenn A. Tremblay, Upton, and Mario Troiani, Newton, all of Mass., assignors to Marathon Technologies Corporation, Boxboro, Mass.

Continuation of Ser. No. 159,783, Dec. 1, 1993, abandoned.
This application Oct. 2, 1995, Ser. No. 537,985
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—881 **5 Claims**



1. A method of eliminating effects of I/O race conditions caused by asynchrony between processors concurrently executing an application program or a first associated operating system and I/O devices, comprising the steps of:

executing the application program and the first associated operating system with said processors,

executing an I/O processing program on a second associated operating system with an I/O processor for controlling said I/O devices,

initiating with said processors memory requests from the application program or the first associated operating system,

trapping, in each of said processors, all memory requests from the application program or the first associated operating system to all memory addresses associated with I/O devices,

transmitting a trapped memory request from each of said processors to the I/O processor,

waiting at said I/O processor for receipt of said trapped memory request transmitted from each of said processors, and

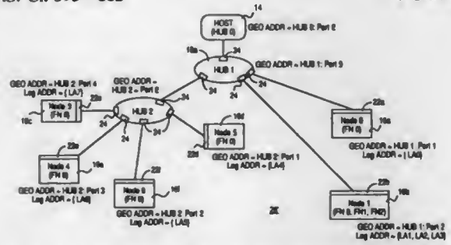
performing said trapped memory request with the I/O processing program by said I/O processor, after receiving an identical request from each of said processors.

5,615,404

SYSTEM HAVING INDEPENDENTLY ADDRESSABLE BUS INTERFACES COUPLED TO SERIALLY CONNECTED MULTI-PORTED SIGNAL DISTRIBUTORS GENERATING AND MAINTAINING FRAME BASED POLLING SCHEDULE FAVORING ISOCHRONOUS PERIPHERALS

Shaun Knoll, Portland, Oreg.; Jeff C. Morriss, Boulder Creek, Calif.; Shelagh Callahan, Beaverton, Oreg.; Ajay V. Bhatt; Puthiya K. Nizar, both of El Dorado Hills, Calif.; Richard M. Haslam, Hillsboro, Oreg.; Andrew M. Volk, Loomis, Calif., and Sudarshan B. Cadambi, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 31, 1994, Ser. No. 332,255
Int. Cl.[6] G06F *13/12*
U.S. Cl. 395—882 **6 Claims**



1. A serial bus assembly for serially interfacing one or more isochronous and/or asynchronous peripherals to a system unit of a computer system, the serial bus assembly comprising:

one or more independently addressable bus interfaces, one for each peripheral, for independently coupling the peripherals to the system unit, conducting bus management transactions including configuration management transactions with a bus master, and facilitating data transactions with independently addressable functions of their respective peripherals, each peripheral having one or more independently addressable functions, responsive to authorizations received from the bus master, each bus interface being a terminal point of the serial bus assembly;

zero or more independently addressable bus signal distributors, each having a plurality of ports, for coupling said one or more bus interfaces upstream towards the bus master, and serving as conduits for bus signal distributions, wherein if the serial bus assembly has only a single bus interface, the single bus interface is coupled to the bus master, and if the serial bus assembly has more than one bus interface, each bus interface is coupled upstream to a bus signal distributor, and each bus signal distributor is in turn coupled upstream to another bus distributor, except for one bus signal distributor, which is coupled upstream to the bus master;

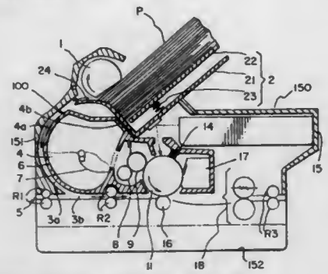
an addressable bus controller coupled upstream to the system unit, and downstream to either a bus signal distributor or a bus interface depending on the number of bus interfaces included in the serial bus assembly, for functioning as the bus master, authorizing the zero or more bus signal distributors, the bus interface(s) and the function(s) of the peripheral(s) to conduct transactions, conducting management transactions including configuration management transactions with the zero or more bus signal distributors and the bus interface(s), and facilitating data transactions with the system unit, said bus controller dynamically generating and maintaining a frame based polling schedule for polling said functions of said peripherals for data communication transactions, said dynamically generated and maintained frame based polling schedule favoring isochronous peripherals over asynchronous peripherals.

5,615,405

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS WHICH REDUCES AN AREA FOR INSTALLING THE APPARATUS

Chiseki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,953
Claims priority, application Japan, Oct. 14, 1994, 6-249233
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—125 **7 Claims**



1. An image forming apparatus comprising:

printing means including a photoconductor drum, developing means for developing electrostatic latent images formed on an outer circumferential periphery of the photoconductor drum with toners installed in a toner case, transfer means for transferring developed toner images to a sheet of paper, and fixing means for fixing the toner images transferred by the transfer means; and

paper feeding means for stacking sheets of paper and feeding one of the stacked sheets of paper to said printing means,

wherein said paper feeding means is entirely set obliquely with being slightly downward in a paper feeding direction, and said paper feeding means is disposed over said developing means so that ends of said sheets of paper stacked in said paper feeding means face to an upper surface of said case of said developing means, and a paper transportation path, for feeding the paper fed from said paper feeding means to an upstream portion of said transfer means, is formed by an outer surface of said toner case of said developing means in an arcuate shape.

5,615,406

ALLOY HAVING EXCELLENT CORROSION RESISTANCE AND ABRASION RESISTANCE, METHOD FOR PRODUCING THE SAME AND MATERIAL FOR USE IN PRODUCTION OF THE SAME

Kyoichi Sasaki, Numazu, and Yoshihisa Kato, Tsushima, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, and Daido Steel Co., Ltd., Aichi-ken, both of Japan

Division of Ser. No. 63,753, May 20, 1993, Pat. No. 5,249,883.
This application Sep. 28, 1994, Ser. No. 313,795
Claims priority, application Japan, May 21, 1992, 4-154263
Int. Cl.[6] B22F *3/105;3/15*
U.S. Cl. 419—14 **3 Claims**



(x 400)

1. A method of producing an alloy having excellent corrosion resistance and abrasion resistance, comprising the steps of:

providing a powder mixture or VC-powder-containing wire comprising a matrix metal comprising at least one alloy selected from the group consisting of an Fe-base alloy, a Co-base alloy and a Ni-base alloy and a VC powder having a particle diameter of 10 μm or less;

melting the at least one alloy and the VC powder with a heat source having a high energy density to provide a resultant melt; and

cooling the resultant melt to homogeneously crystallize, homogeneously precipitate, or homogeneously crystallize and precipitate the VC,

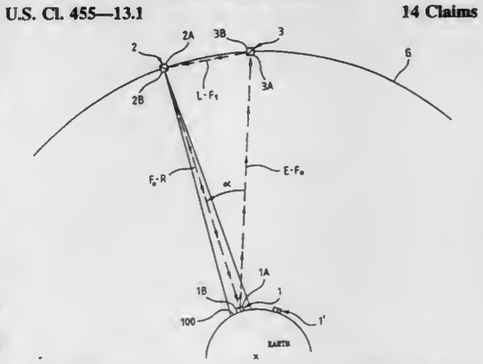
wherein the particle diameter of the VC is reduced to 5 μm or less in said matrix metal phase.

5,615,407

SATELLITE COMMUNICATIONS SYSTEM USING AN INTERMEDIATE SATELLITE TO PROVIDE SAME FREQUENCY UPLINK AND DOWNLINK

Gérard Barkats, Peymeinade, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Filed Dec. 29, 1994, Ser. No. 365,836
Claims priority, application France, Dec. 31, 1993, 93 15972
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—13.1 **14 Claims**



1. A method of exchanging information between an earth-station and a satellite in geostationary orbit, said method comprising the steps of:

transmitting information signals addressed to said satellite to an intermediate satellite with an angular offset from said satellite in geostationary orbit on a first carrier frequency, said information signals addressed to said geostationary satellite being transmitted from said earth-station;

retransmitting said information signals addressed to said geostationary satellite laterally to said geostationary satellite in geostationary orbit on a second carrier frequency different from said first carrier frequency, said information signals addressed to said satellite being retransmitted from said intermediate satellite; and

receiving information signals from said geostationary satellite on said first carrier frequency, said information signals from

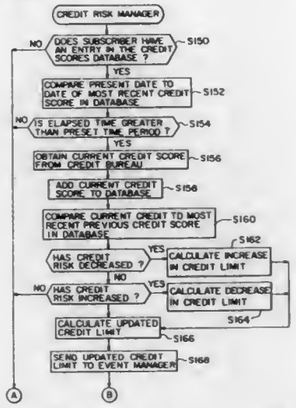
said geostationary satellite being received by said earth-station.

5,615,408

APPARATUS AND METHOD FOR CREDIT BASED MANAGEMENT OF TELECOMMUNICATION ACTIVITY

Eric A. Johnson, Longmont, Colo., and Mark J. Handzel, Encinitas, Calif., assignors to Coral Systems, Inc., Longmont, Colo.

Continuation-in-part of Ser. No. 975,512, Nov. 12, 1992, Pat. No. 5,345,595. This application Oct. 19, 1993, Ser. No. 138,866
Int. Cl.[6] H04Q *7/34*
U.S. Cl. 455—33.1 **20 Claims**



1. An apparatus for allowing a telecommunication service provider to manage the risk that a subscriber will not pay their bill for use of the provider's telecommunication system comprising:

a digital computer;

interface means, operating within said digital computer, for communicating information relating to a particular subscriber, said interface means includes a first portion for communicating information relating to said particular subscriber with a credit information source and a second portion for receiving a call information record for each call involving said particular subscriber, said call information record derived from information compiled by a switching center that is capable of establishing connections between a plurality of pairs of telecommunication devices and simultaneously maintaining such connections;

credit means, operating within said digital computer, for using said first portion of said interface to obtain a credit score for said particular subscriber and for using said credit score to establish a credit limit for said particular subscriber;

analysis means, operating within said digital computer, for receiving each of said call information record for said particular subscriber from said second portion of said interface means and using said call information record to compare call usage of said particular subscriber to said credit limit for said particular subscriber and generate an indication if said call usage of said particular subscriber exceeds said credit limit for said particular subscriber; and

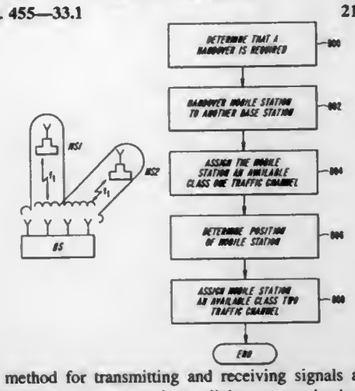
output means, operating within said digital computer, for outputting an indication to the telecommunication service provider that said particular subscriber has exceeded said credit limit for said particular subscriber.

5,615,409

METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING SIGNALS USING TWO CLASSES OF CHANNELS

Ulf Forssén, Saltsjö-Boo, and Björn Gudmundson, Sollentuna, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 126,558, Sep. 27, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,104
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 455—33.1 **21 Claims**



1. A method for transmitting and receiving signals at a base station with an antenna array in a cellular communication system, comprising the steps of:

dividing available communication channels into a plurality of classes;

transmitting signals to a plurality of mobile stations in a first class of channels with a wide antenna lobe created by said antenna array, wherein said first class of channels is used to transmit broadcast information to an entire cell and to receive initial access signals from mobile stations, said first class of channels is also used for enabling mobile stations to measure the downlink signal strength transmitted from adjacent base stations and is used for handover access during handovers between base stations;

determining position of a first mobile station from signals received from said first mobile station;

transmitting signals to said first mobile station in a second class of channels with a narrow antenna lobe created by said antenna array when the position of said mobile is determined; and

receiving signals from said first mobile station with adjustable lobe widths on both channel classes.

5,615,410

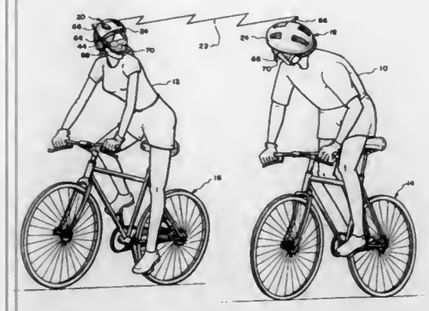
HEAD WEAR COMMUNICATION SYSTEM

Robert A. DeMars, 5000 N. Parkway Calabasas, Suite 233, Calabasas, Calif. 91302

Filed Jan. 16, 1996, Ser. No. 585,846
Int. Cl.[6] H04B *1/40*
U.S. Cl. 455—90 **8 Claims**

1. A communication system to be used between a plurality of individuals, each said individual wearing head wear, said communication system comprising:

a power source mounted on each said head wear, a microphone mounted on each said head wear, said microphone comprising a first elongated rigid member having a first free outer end, a receiver mounted on each said head wear, an antenna mounted on each said head wear, said antenna comprising a second elongated rigid member having a second free outer end, said microphone and said antenna being connected by connection means forming a single unit with said first elongated rigid member extending in a direction substantially opposite to said second elongated rigid member with said first free outer end being located furthest from said second free outer end, said antenna and said microphone being movable in unison relative to each said head wear between a using position and an inactive position, with said single unit located in said using position said first free outer end of said microphone is located directly adjacent to the mouth of the individual, with said single unit located in said inactive position said first free outer end of said microphone being located remote from the mouth of the user.



5,615,411

METHOD AND APPARATUS FOR COMPOSITE SIGNAL SEPARATION AND FM DEMODULATION

Duane L. Abbey, Cedar Rapids, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Apr. 22, 1994, Ser. No. 231,566
Int. Cl.[6] H04B *7/10*
U.S. Cl. 455—206 **8 Claims**

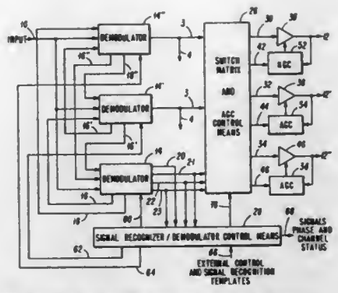
1. A receiver apparatus for processing arbitrary cochannel composite radio frequency signals in complex baseband form, sharing the same channel with each other or noise, comprising:

a signal input terminal for receiving the radio frequency signals;

a plurality of means for separating and demodulating the radio frequency signals into individual componeot signal subsets comprised of AM or FM signal components;

means for recognizing said component signal subsets, coupled to and issuing control signals to the demodulating means in response to the evaluated demodulating means output signals; and

means for switching the output of each of the said demodulating means into the input of each of the other said demodulating means and on to additional processing means.

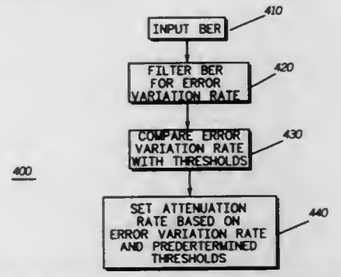


5,615,412

DIGITAL SQUELCH TAIL SYSTEM AND METHOD FOR SAME

Patrick J. Doran, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1995, Ser. No. 509,561
Int. Cl.[6] H04B *1/10*
U.S. Cl. 455—222 **15 Claims**



7. A radio communication device having a digital squelch tail system for selectively attenuating audio output, comprising:

a radio receiver responsive to a modulated signal to produce a received digital signal;

an error rate estimator coupled to the received digital signal and having an error rate output;

a digital high pass filter coupled to error rate output and having an error variation rate output based on a rate of change of the error rate output;

an audio output device having an input based on the received digital signal and having an audio output; and

an audio output controller coupled to the audio output device and coupled to the digital high pass filter, and being responsive to attenuate audio output based, at least in part, on the error variation rate output.

378,547

LEATHER SHOEHORN

John M. Holland, Larkspur, Calif., assignor to Holland Brothers, San Francisco, Calif.

Filed Sep. 21, 1995, Ser. No. 44,290

Term of patent 14 years

U.S. Cl. D2—642



378,548

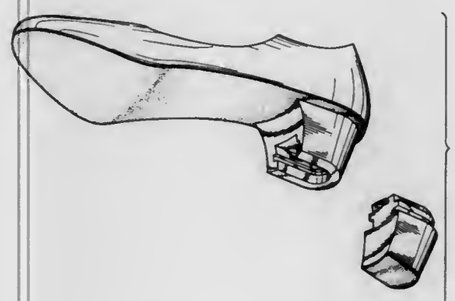
SHOE WITH REMOVABLE HEEL

David A. Harman, II, 5539 Soundside Dr. #F, Gulf Breeze, Fla. 32561

Filed May 30, 1995, Ser. No. 39,432

Term of patent 14 years

U.S. Cl. D2—939



378,549

SHOE SOLE

Noriyuki Murai; Kiyomitsu Kurosaki, and Toshikazu Ujishima, all of Hyogo-ken, Japan, assignors to Asics Corporation, Japan

Filed Oct. 3, 1994, Ser. No. 29,257

Term of patent 14 years

U.S. Cl. D2—957



378,550

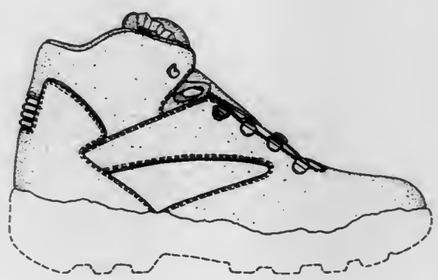
SHOE UPPER

Jonathan R. Morris, Cranston, R.I., assignor to Reebok International Ltd., Stoughton, Mass.

Division of Ser. No. 2,865, Dec. 22, 1992, Pat. No. Des. 346,486. This application Feb. 25, 1994, Ser. No. 19,866

Term of patent 14 years

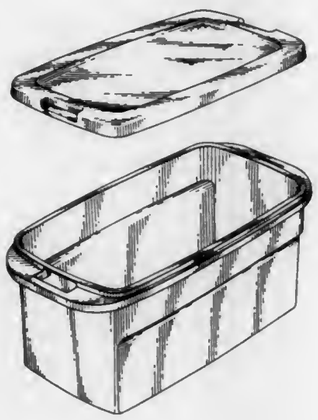
U.S. Cl. D2—970



378,551
CRUTCH TIP
Roy G. Sheinutt, 133 Coastal Dr., Byron, Ga. 31008
Filed Jun. 22, 1995, Ser. No. 40,639
Term of patent 14 years
U.S. Cl. D3—17



378,552
TOTE
Hangwind F. Lippisch, Fitchburg, Mass., assignor to Sterilite Corporation, Townsend, Mass.
Filed Nov. 28, 1995, Ser. No. 47,182
Term of patent 14 years
U.S. Cl. D3—273



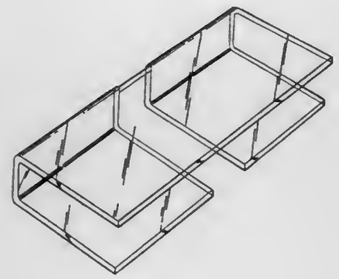
378,553
CHAIR
Thomas J. Newhouse, Grand Rapids, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Sep. 12, 1995, Ser. No. 43,769
Term of patent 14 years
U.S. Cl. D6—373



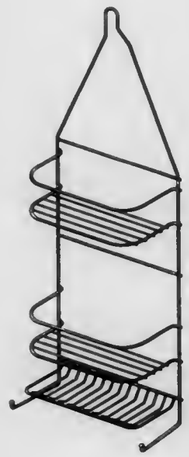
378,554
BUILT-IN TOY TRAY FOR CHILD EXERCISER
Paul K. Meeker, Hiram, and William R. Gibson, Canton, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Nov. 6, 1995, Ser. No. 46,132
Term of patent 14 years
U.S. Cl. D6—511



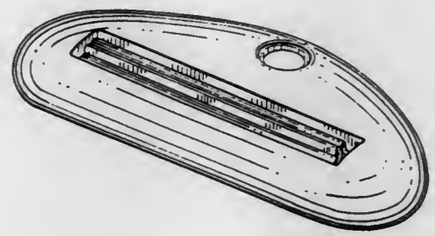
378,555
HOLDER FOR A REMOTE CONTROL OR THE LIKE
Sven Moberg, Box 2057, 433 02, Partille, Sweden
Filed May 15, 1995, Ser. No. 38,891
Claims priority, application Sweden, Nov. 16, 1994, 94 2334
Term of patent 14 years
U.S. Cl. D6—513



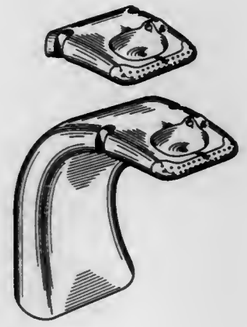
378,556
SHOWER CADDY
Raul Munoz, Chicago, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed Dec. 26, 1995, Ser. No. 49,024
Term of patent 14 years
U.S. Cl. D6—525



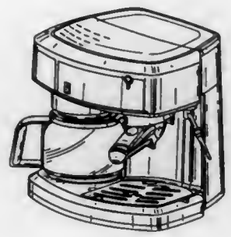
378,557
TOOL FOR SQUEEZING CONTENTS FROM FLEXIBLE TUBES
Zeev Tal, 15 Ha'Assif St., 34637 Haifa, Israel
Filed Sep. 2, 1994, Ser. No. 27,945
Claims priority, application Israel, Mar. 6, 1994, 22292
Term of patent 14 years
U.S. Cl. D6—541



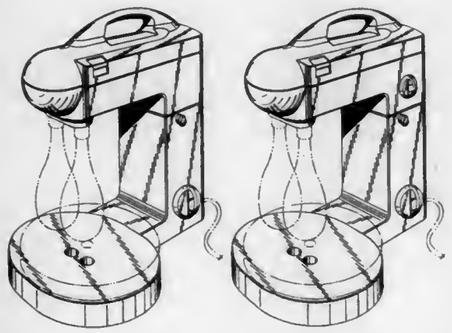
378,558
DRINKING FOUNTAIN
Abir Mullick, Buffalo; Michael Osadciw, Rochester; Michael F. LaMonica, White Plains, and Matthew C. Guthrie, Penfield, all of N.Y., assignors to The Research Foundation of State Univ. of New York, Albany, N.Y.
Division of Ser. No. 218,141, Mar. 26, 1994, Pat. No. 5,458,288. This application Jun. 6, 1995, Ser. No. 39,871
Term of patent 14 years
U.S. Cl. D7—304



378,559
COFFEE MACHINE
Jacques Gudefin, Saint-Priest, France, assignor to Calor S.A., Lyons, France
Filed Jan. 4, 1996, Ser. No. 48,593
Claims priority, application France, Jul. 7, 1995, 95 3769
Term of patent 14 years
U.S. Cl. D7—309



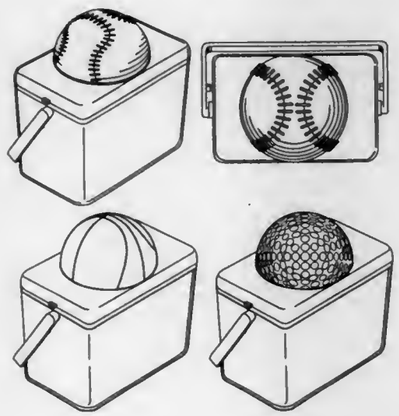
378,560
STAND MIXER
Terry L. Myers, Richmond, Va., and Phillip L. Brookshire, Cincinnati, Ohio, assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Oct. 3, 1994, Ser. No. 29,288
Term of patent 14 years
U.S. Cl. D7—379



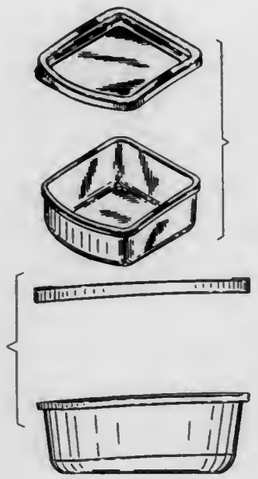
378,561
TRAY FOR FOOD CONTAINER
Ian Ferris, Finchampstead; John Tree, London, both of England, and Victor J. J. Cantereels, Borsbeek, Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 28, 1995, Ser. No. 43,922
Term of patent 14 years
U.S. Cl. D7—554



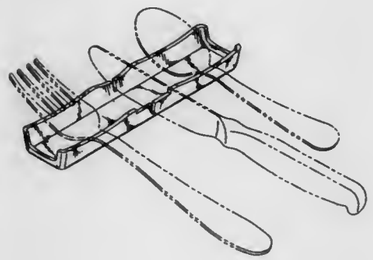
378,562
SPORTS COOLER
Russell R. Miller, 1505 Beaver Dam Rd., Columbia, S.C. 29212; Lanny R. Gunter, II, P.O. Box 1170, Irmo, S.C. 29036, and Andre Bauer, 6356 St. Andrews Rd., Columbia, S.C. 29212
Filed Mar. 27, 1995, Ser. No. 36,792
Term of patent 14 years
U.S. Cl. D7—606



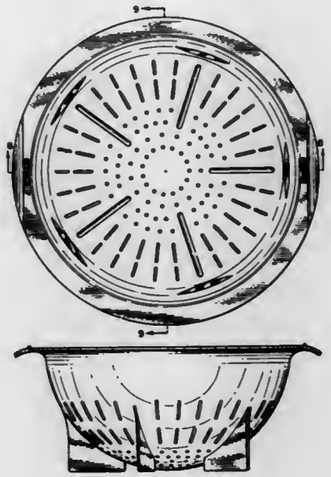
378,563
CONTAINER FOR FOOD
Ian Ferris, Finchampstead, England, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 28, 1995, Ser. No. 43,926
Term of patent 14 years
U.S. Cl. D7—629



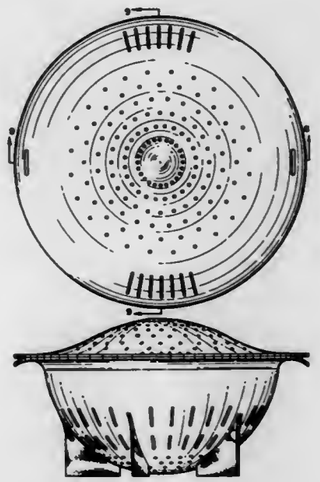
378,564
UTENSIL SUPPORT
Anson L. Hall, P.O. Box 87, Nine Garfield St., Exeter, N.H. 03833
Filed May 24, 1996, Ser. No. 54,926
Term of patent 14 years
U.S. Cl. D7—637



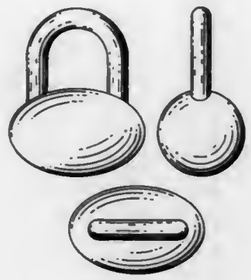
378,565
COLANDER
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 15, 1995, Ser. No. 44,013
Term of patent 14 years
U.S. Cl. D7—667



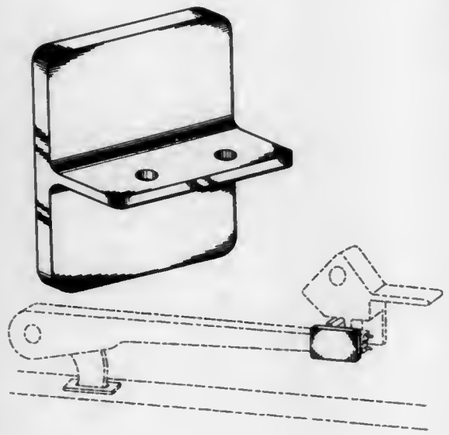
378,566
COLANDER WITH LID
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 15, 1995, Ser. No. 44,015
Term of patent 14 years
U.S. Cl. D7—667



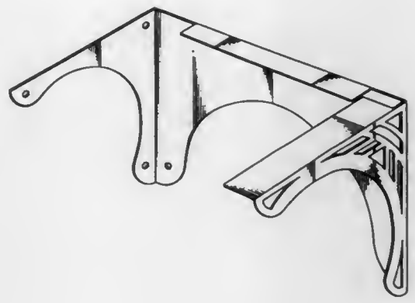
378,567
PADLOCK
Michael S. Zane, Brookline, Mass., assignor to Kryptonite Corporation, Canton, Mass.
Division of Ser. No. 43,665, Sep. 7, 1995. This application Apr. 1, 1996, Ser. No. 52,707
Term of patent 14 years
U.S. Cl. D8—334



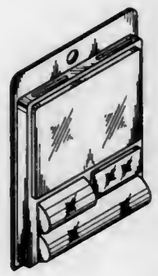
378,568
PADLOCK SHACKLE PROTECTOR
Michael H. Small, 4966 Red Bluff Rd., Riverside, Calif. 92503, and Kevin E. Small, 270 Main St., Cedarville, Calif. 96104
Filed Jun. 29, 1995, Ser. No. 40,867
Term of patent 14 years
U.S. Cl. D8—346



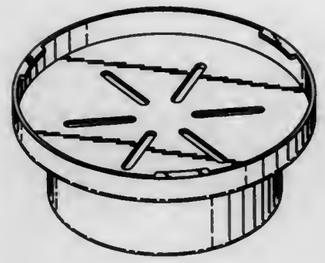
378,569
CONSOLE
Sven-Gunnar Jönsson, Fru Alstad, P1 37, S-231 96 Trelleborg, Sweden
Filed Dec. 14, 1995, Ser. No. 47,904
Claims priority, application Sweden, Jun. 15, 1995, 951211
Term of patent 14 years
U.S. Cl. D8—381



378,570
DISPLAY PACKAGE FOR LIPSTICK
David MacEachern, 270 N. Canon Dr., Beverly Hills, Calif. 90210
Filed Dec. 11, 1995, Ser. No. 47,686
Term of patent 14 years
U.S. Cl. D9—415



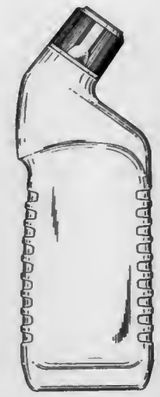
378,571
CONTAINER
David R. Bastow, Tamworth, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 20, 1995, Ser. No. 47,074
Term of patent 14 years
U.S. Cl. D9—417



378,572
AEROSOL CAN BODY
John W. Culverwell, Grove, Great Britain, and Maurice Riviere, Bois D'Arcy, France, assignors to Carnaudmetalbox (Holdings) USA, Inc., Wilmington, Del.
Filed Oct. 4, 1995, Ser. No. 44,948
Claims priority, application United Kingdom, Apr. 4, 1995, 2046494; Sep. 21, 1995, 2050466
Term of patent 14 years
U.S. Cl. D9—502



378,573
COMBINED CONTAINER AND CAP
Adam Sherman, Larchmont, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 19, 1996, Ser. No. 51,939
Term of patent 14 years
U.S. Cl. D9—526



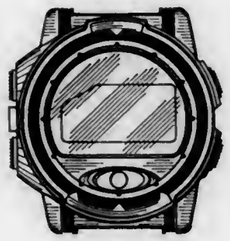
378,574
CASE FOR DIGITAL WRISTWATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jan. 5, 1996, Ser. No. 48,605
Term of patent 14 years
U.S. Cl. D10—30



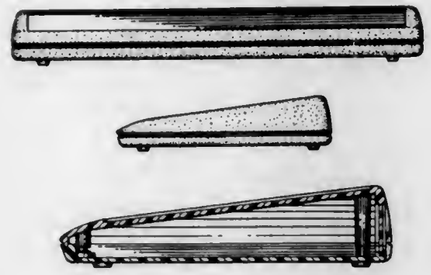
378,575
CASE FOR DIGITAL WRISTWATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jan. 16, 1996, Ser. No. 49,035
Term of patent 14 years
U.S. Cl. D10—30



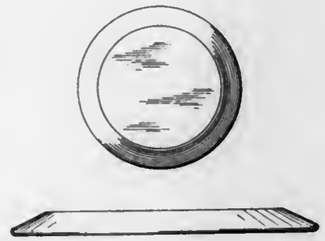
378,576
CASE FOR DIGITAL WRISTWATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jan. 16, 1996, Ser. No. 49,036
Term of patent 14 years
U.S. Cl. D10—30



378,577
ELECTRONIC INSTRUMENT HOUSING
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Oct. 11, 1994, Ser. No. 29,584
Term of patent 14 years
U.S. Cl. D10—103



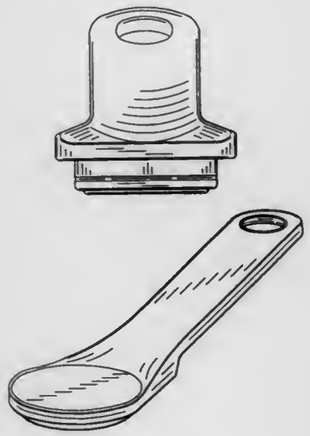
378,578
IDENTIFICATION TRANSPONDER TAG
Noel H. Eberhardt, Cupertino, Calif., assignor to Indala Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 853,160, Mar. 17, 1992, Pat. No. Des. 353,343. This application Feb. 25, 1994, Ser. No. 19,229
Term of patent 14 years
U.S. Cl. D10—104



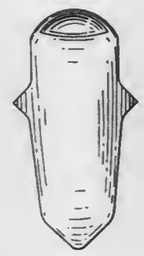
378,579
ANTI-THEFT ALARM FOR VEHICLES
Steve Liu, Tainan Hsien, Taiwan, assignor to Yeong Ton Industrial Co., Ltd., Tainan Hsien, Taiwan
Filed Jan. 23, 1996, Ser. No. 49,334
Term of patent 14 years
U.S. Cl. D10—106



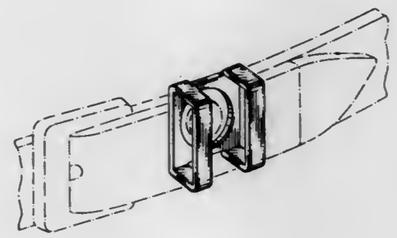
378,580
FOB WITH AN ELECTRONIC TOKEN
Nicholas M. G. Fekete, Richardson; Elaine J. Gattenby, Allen, and Michael L. Bolan, Dallas, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.
Filed Dec. 1, 1994, Ser. No. 31,610
Term of patent 14 years
U.S. Cl. D11—79



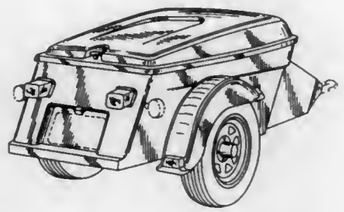
378,581
MEDALLION
Branisiav Stojanović, Dragoslava Stojanovića 6, 21000 Novi Sad, Yugoslavia
Filed Sep. 15, 1994, Ser. No. 28,474
Claims priority, application Yugoslavia, Mar. 15, 1994, M-16/94
Term of patent 14 years
U.S. Cl. D11—95



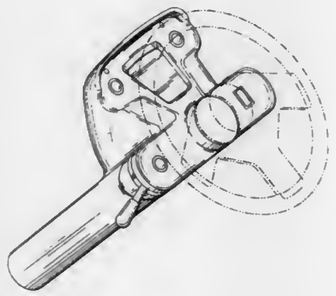
378,582
BELT KEEPER
Richard B. Zimmerman, 5104 N. 32nd St., #121, Phoenix, Ariz. 85018
Filed Mar. 27, 1995, Ser. No. 36,733
Term of patent 14 years
U.S. Cl. D11—231



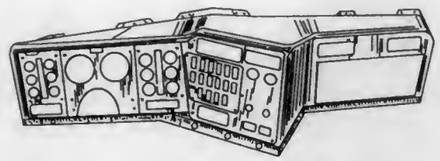
378,583
TRAILER
King P. Aitken, III, Mahomet, Ill., assignor to American Legend Motorcycle Trailers, Inc., Mahomet, Ill.
Filed Feb. 23, 1996, Ser. No. 50,691
Term of patent 14 years
U.S. Cl. D12—102



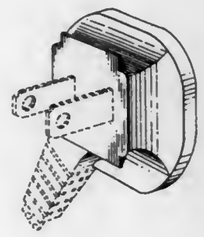
378,584
COMBINED INSTRUMENT PANEL AND STEERING COLUMN
Daniel D. Sturges, Ann Arbor, Mich., and Erik Blatter, Los Angeles, Calif., assignors to trans2 Corporation
Filed Nov. 17, 1994, Ser. No. 31,083
Term of patent 14 years
U.S. Cl. D12—192



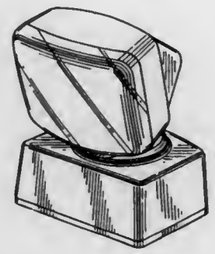
378,585
VEHICLE INSTRUMENT PANEL
James C. Duguld, Osslan, and Allen J. Fisher, Fort Wayne, both of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.
Filed Mar. 7, 1995, Ser. No. 35,838
Term of patent 14 years
U.S. Cl. D12—192



378,586
ELECTRICAL PLUG BODY
Paul A. Hedrick, Alexandria, Ky., assignor to General Cable Corporation, Highland Heights, Ky.
Filed Dec. 21, 1995, Ser. No. 48,118
Term of patent 14 years
U.S. Cl. D13—138



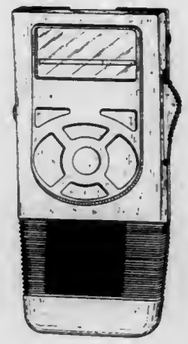
378,587
RECEIVER FOR BAR CODE READER
Tsutomu Kanno; Takashi Kondo, and Hisashi Murata, all of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 43,963
Term of patent 14 years
U.S. Cl. D14—116



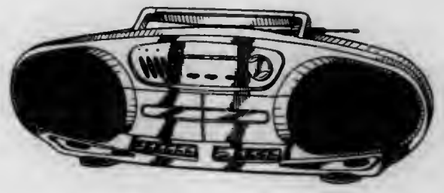
378,588
TELEPHONE
Soichi Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 28, 1995, Ser. No. 47,168
Claims priority, application Japan, Jul. 10, 1995, 7-019550
Term of patent 14 years
U.S. Cl. D14—150



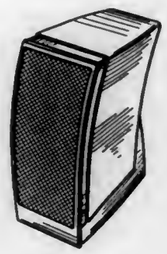
378,589
DICTATING MACHINE
Konrad Ellermeier, Gaaden, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 21, 1995, Ser. No. 44,292
Claims priority, application WIPO, Apr. 21, 1995, DMA/002890
Term of patent 14 years
U.S. Cl. D14—154



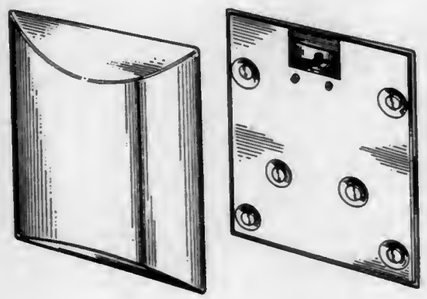
378,590
COMBINED RADIO AND CASSETTE PLAYER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Oct. 10, 1995, Ser. No. 45,137
Term of patent 14 years
U.S. Cl. D14—165



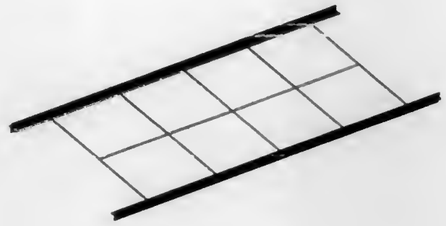
378,591
SPEAKER FOR A COMPUTER SYSTEM
Wayne T. Brezovar, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Aug. 30, 1995, Ser. No. 43,271
Term of patent 14 years
U.S. Cl. D14—214



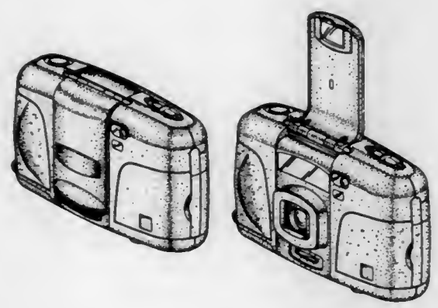
378,592
ANTENNA DEVICE
Ingemar Hartwig, Oesterskaer, and John Pettersson, Stockholm, both of Sweden, assignors to Allgon AB, Akersberga, Sweden
Filed Sep. 1, 1995, Ser. No. 43,409
Claims priority, application Sweden, Mar. 7, 1995, 95-0478
Term of patent 14 years
U.S. Cl. D14—230



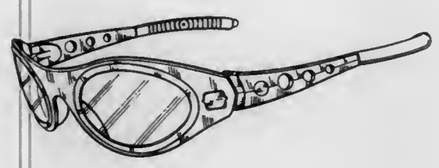
378,593
CONCRETE FORM TYING DEVICE
Jeffrey B. Bingham, Rte. 9, Box 91-B, Jacksonville, Tex. 75766
Filed Jul. 20, 1995, Ser. No. 42,711
Term of patent 14 years
U.S. Cl. D15—136



378,594
CAMERA WITH FOLDING FLASH
John K. McBride, and Gary K. Smithborne, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 29, 1995, Ser. No. 40,909
The portion of the term of this patent subsequent to Jun. 18, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—209



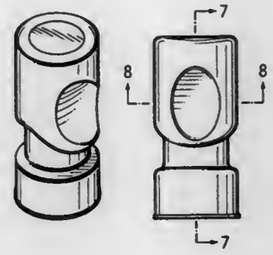
378,595
SUNGLASSES
Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy
Filed Oct. 23, 1995, Ser. No. 46,685
Claims priority, application Italy, Apr. 28, 1995, TV9500021
Term of patent 14 years
U.S. Cl. D16—321



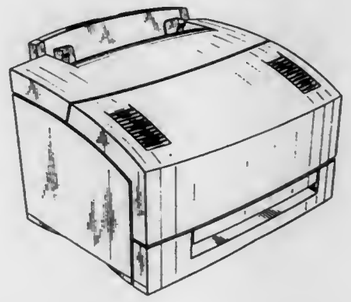
378,596
SEMI-ACOUSTIC ELECTRIC GUITAR
William P. Jarowsky, 1018 Madison St., Waukesha, Wis. 53188
Filed Aug. 22, 1995, Ser. No. 42,998
Term of patent 14 years
U.S. Cl. D17—14



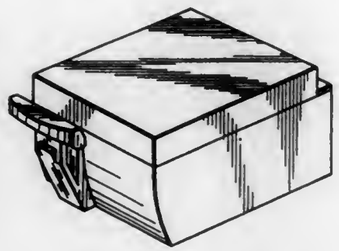
378,597
STAMPER
Dan Harden, Sunnyvale, Calif., assignor to Shachihata Inc., Aichi-ken, Japan
Filed Oct. 13, 1995, Ser. No. 45,230
Claims priority, application Japan, Apr. 13, 1995, 7-10526
Term of patent 14 years
U.S. Cl. D18—14



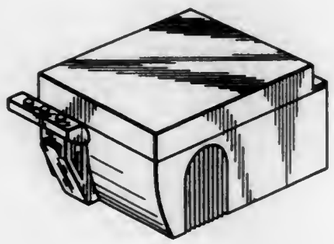
378,598
LASER BEAM PRINTER
Toshimi Chiba, and Naoki Tashiro, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 48,405
Claims priority, application Japan, Jun. 28, 1995, 7-18662
Term of patent 14 years
U.S. Cl. D18—55



378,599
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,276
Claims priority, application Japan, Feb. 6, 1995, 7-2773
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



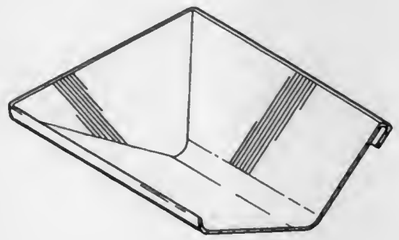
378,600
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,286
Claims priority, application Japan, Feb. 6, 1995, 7-2772
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



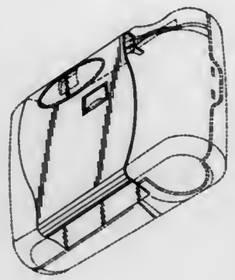
378,601
BALLPOINT PEN
Makoto Sakuno, Tokyo, Japan, assignor to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,413
Claims priority, application Japan, Jun. 10, 1995, 7-29969
Term of patent 14 years
U.S. Cl. D19—48



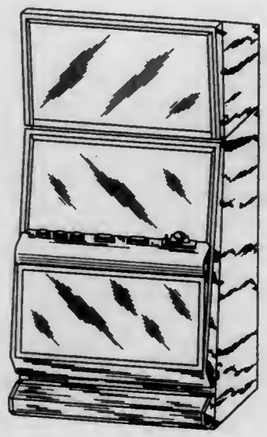
378,602
OVERSPILL TRAY FOR BULK VENDORS
Josef W. Schwarzli, Stouffville, Canada, assignor to Machine-O-Matic Limited, Newmarket, Canada
Filed Aug. 21, 1995, Ser. No. 42,928
Claims priority, application Canada, May 9, 1995, 1995-1009
Term of patent 14 years
U.S. Cl. D20—8



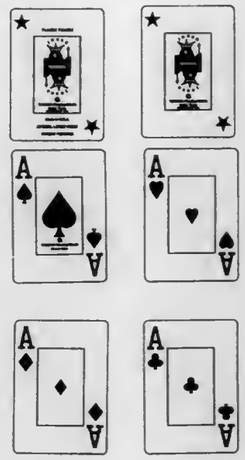
378,603
COVER LABEL FOR DAYLIGHT CAMERA
Steven S. Chapman, Corfu; Daniel C. Jackson; John K. McBride, both of Rochester; James G. Rydelek, Henrietta, and Joseph E. Yokajty, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 30,435, Oct. 28, 1994. This application Jan. 23, 1996, Ser. No. 49,355
Term of patent 14 years
U.S. Cl. D20—22



378,604
VIDEO SLOT MACHINE
Dirk I. Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany
Filed May 24, 1995, Ser. No. 39,228
Claims priority, application Germany, Dec. 5, 1994, M9409371.7
Term of patent 14 years
U.S. Cl. D21—37



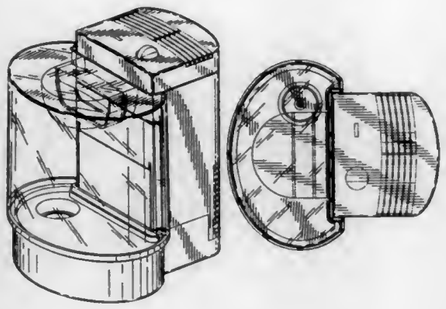
378,605
FRONT FACE FOR A DECK OF PLAYING CARDS
Thomas C. Yaquinto, Yaquinto Printing Co., Inc., 4809 S. Westmoreland, Dallas, Tex. 75237
Filed Jan. 25, 1995, Ser. No. 34,015
Term of patent 14 years
U.S. Cl. D21—45



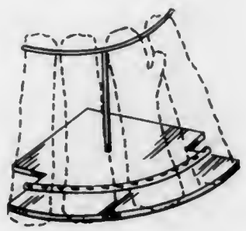
378,606
HELICOPTER RIDE
Armando Tamagnini, Emilia, Italy, assignor to Zamperia, Inc., Parsippany, N.J.
Filed Sep. 8, 1995, Ser. No. 43,669
Term of patent 14 years
U.S. Cl. D21—250



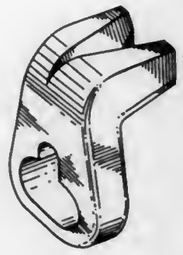
378,607
EVAPORATIVE HUMIDIFIER
Bernard Chiu, Wellesley, Mass.; Jui-Shang Wang, Taipei, Taiwan, and Stanley Gresens, Homewood, Ill., assignors to Duracraft Corp., Southborough, Mass.
Division of Ser. No. 31,383, Nov. 25, 1994, Pat. No. Des. 362,906. This application Sep. 29, 1995, Ser. No. 44,755
Term of patent 14 years
U.S. Cl. D23—356



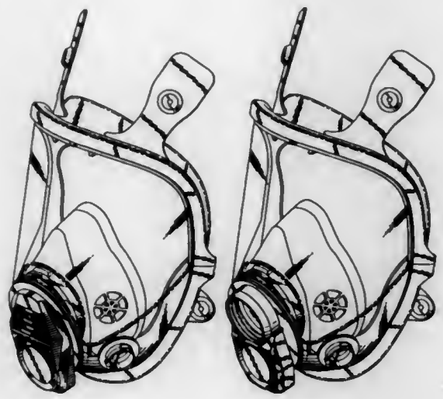
378,608
FIREPLACE LOGSET BURNER UNIT
Patricia A. Kincaid, P.O. Box 23077, Santa Fe, N.M. 87502
Filed Mar. 8, 1996, Ser. No. 51,272
Term of patent 14 years
U.S. Cl. D23—403



378,609
NOSE BLOCKER
Francis X. Kay, The Old School House, Church Hill, Akeley, Buckinghamshire MK18 5HB, United Kingdom
Division of Ser. No. 33,221, Dec. 23, 1994. This application Feb. 23, 1996, Ser. No. 50,695
Claims priority, application United Kingdom, Jun. 28, 1994, 2039995
Term of patent 14 years
U.S. Cl. D24—106



378,610
FULL FACE RESPIRATOR
Joseph G. Reischel, St. Paul; David P. Knivsland, North St. Paul; Gerald M. Brostrom, Burnsville, all of Minn.; David C. Byram, River Falls, Wis., and Vaughn B. Grannis, Inver Grove Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 27, 1995, Ser. No. 45,750
Term of patent 14 years
U.S. Cl. D24—110.2



378,611
ELECTROSURGICAL INSTRUMENT
Curt D. Croley, Cincinnati, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Filed Oct. 19, 1995, Ser. No. 45,452
Term of patent 14 years
U.S. Cl. D24—144



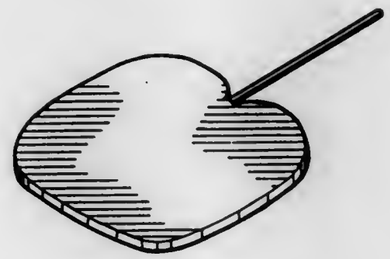
378,612
BLOOD GLUCOSE METER
Denise Clark, San Ramon; Paul Montgomery, San Francisco; Joseph S. Brugler, Palo Alto, and Syrous Parsay, Cupertino, all of Calif., assignors to LifeScan, Inc., Milpitas, Calif.
Filed May 23, 1995, Ser. No. 39,465
Term of patent 14 years
U.S. Cl. D24—169



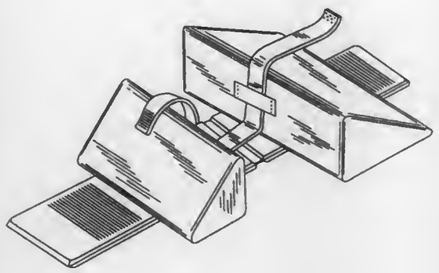
378,613
TABLE FOR GYNECOLOGICAL EXAMINATIONS
Christer Sundström, Rönninge, Sweden, assignor to Sonesta Scandinavian AB, Ronninge, Sweden
Filed May 24, 1993, Ser. No. 9,820
Claims priority, application Sweden, Nov. 24, 1992, 9202496
Term of patent 14 years
U.S. Cl. D24—183



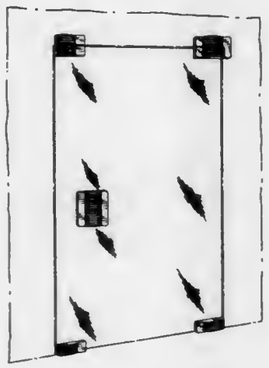
378,614
ELECTRODE
Allan T. Jensen, Ølstykke, Denmark, assignor to Medicotest A/S, Ølstykke, Denmark
Filed Apr. 11, 1995, Ser. No. 37,336
Claims priority, application Denmark, Oct. 17, 1994, MA 0932 1994
Term of patent 14 years
U.S. Cl. D24—187



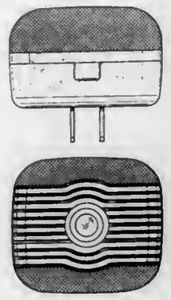
378,615
INFANT SLEEPING POSITION RESTRAINT
Thomas J. Neviaser; Lynn W. Neviaser, both of 10135 Wendover Dr., Vienna, Va. 22181, and Moira A. Bennett, 46546 Woodhaven Ct., Sterling, Va. 20165
Filed Dec. 31, 1992, Ser. No. 3,451
Term of patent 14 years
U.S. Cl. D24—190



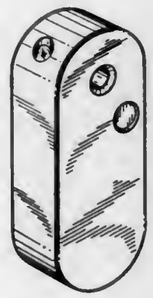
378,616
COMBINED TEMPERED GLASS DOOR AND ITS MAIN FITTINGS
Mario Marinoni, Magenta, Italy, assignor to Societa Italiana Progetti S.R.L., Magenta, Italy
Filed Oct. 26, 1994, Ser. No. 30,318
Term of patent 14 years
U.S. Cl. D25—48



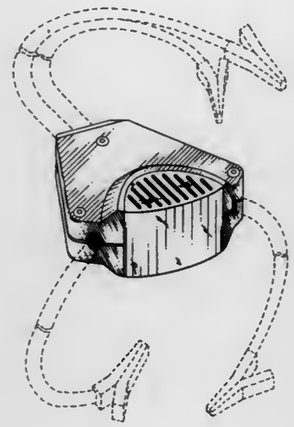
378,617
3 IN 1 RECHARGEABLE NIGHT LIGHT WITH POWER FAILURE LIGHT AND SPOTLIGHT
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 4, 1996, Ser. No. 48,591
Claims priority, application United Kingdom, Oct. 18, 1995, 2051292
Term of patent 14 years
U.S. Cl. D26—26



378,618
FLASHLIGHT
Marc H. Segan, New York, N.Y., assignor to M.H. Segan Limited Partnership, New York, N.Y.
Division of Ser. No. 24,813, Jun. 21, 1994, Pat. No. Des. 367,487. This application Nov. 7, 1995, Ser. No. 46,093
Term of patent 14 years
U.S. Cl. D26—37



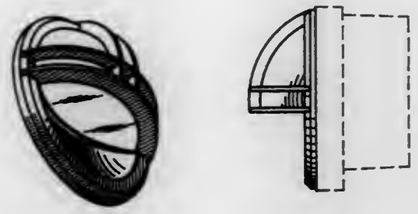
378,619
LAMP FOR BOOSTER CABLE
Samuel K-H. Ng, Toronto, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Oct. 4, 1995, Ser. No. 44,971
Term of patent 14 years
U.S. Cl. D26—38



378,620
PENDENT LAMP
Tusng-Wen Chen, No. 28-13, Ting-Hu Rd., Kuei-Shan Hsiang, Taoyuan County, Taiwan
Filed Nov. 28, 1995, Ser. No. 47,154
Term of patent 14 years
U.S. Cl. D26—84



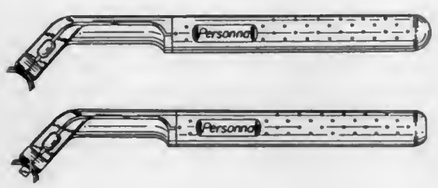
378,621
WALL MOUNTED LUMINAIRE
Cory W. Landefeld, Long Beach, Calif., assignor to Kim Lighting Inc., City of Industry, Calif.
Filed Apr. 12, 1995, Ser. No. 37,408
Term of patent 14 years
U.S. Cl. D26—85



378,622
LIGHTER CASING
Spyridon Dimopoulos, 2160 Nicolas Perrot, Montreal, Quebec, Canada, assignor to Spyridon Dimopoulos; Photios Dimopoulos, and Polychronis Makropoulos, all of Quebec, Canada
Filed Nov. 21, 1995, Ser. No. 46,921
Term of patent 14 years
U.S. Cl. D27—144



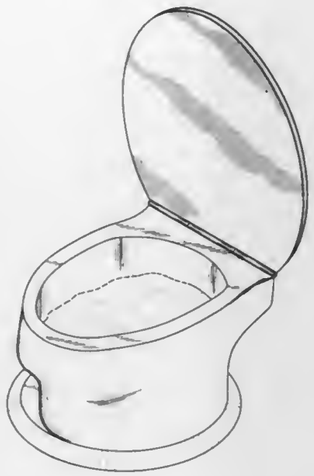
378,623
RAZOR HANDLE
Jeff W. Wonderley, Ft. Defiance, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Jun. 3, 1994, Ser. No. 23,951
Term of patent 14 years
U.S. Cl. D28—48



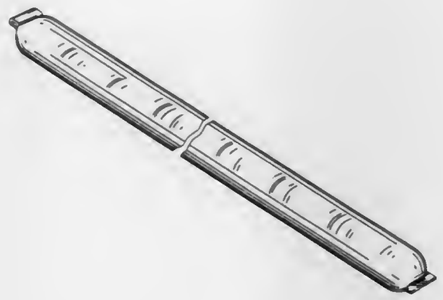
378,624
SPORTS HELMET
Daniel Chartrand, Deux-Montagnes, Canada, assignor to Canstar Sports Inc., Province of Quebec, Canada
Filed Aug. 10, 1995, Ser. No. 42,446
Claims priority, application Canada, Feb. 10, 1995, 1995-0332
Term of patent 14 years
U.S. Cl. D29—106



378,625
PET WATER BOWL
Guy J. Stone, Rte. 2, Bx. 290, Delight, Ark. 71940
Filed Nov. 4, 1994, Ser. No. 30,634
Term of patent 14 years
U.S. Cl. D30—129



378,626
MINI-BLIND CLEANING TOOL
Russell C. Hall, 4624 E. Southern Ave., Mesa, Ariz. 85206; Kevin S. Hall, 408 E. Moore Ave., Gilbert, Ariz. 85234, and Kelly R. Hall, 1255 S. Norfolk, Mesa, Ariz. 85206
Filed Apr. 26, 1995, Ser. No. 38,025
Term of patent 14 years
U.S. Cl. D32—35



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TO WHOM

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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.R.M.I. Assistenza Ricambi Macchine Industriali S.r.l.: *See—*
Marchesi, Mario; and Marchesi, Riccardo, 5,613,377, Cl. 66-145.00S.

ABB Management AG: *See—*
Frutschi, Hans-Ulrich, 5,613,356, Cl. 60-39.020.

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Minderlein, Erich; Völkl, Anton; and Hinze, Jens, 5,614,796, Cl. 318-376.000.

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Adamczyk, Maciej; Fishpaugh, Jeffrey R.; Johnson, Donald; and Hartter, Daryl E., 5,614,419, Cl. 436-546.000.

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Abe, Takashi, to SMC Corporation. Rodless cylinder. 5,613,421, Cl. 92-165.0PR.

Abe, Tomohiko: *See—*
Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

Abe, Yuichi: *See—*
Itoyama, Taketoshi; Abe, Yuichi; and Yamaguchi, Masao, 5,614,837, Cl. 324-760.000.

Abrokwah, Jonathan K.; Lucero, Rodolfo; and Rollman, Jeffrey A., to Motorola. HIGFET and method. 5,614,739, Cl. 257-192.000.

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Engelhardt, John; and Dinello, Alexandre M., 5,613,967, Cl. 606-61.000.

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El Ayat, Khaled; Chan, King W.; and Speers, Theodore M., 5,614,818, Cl. 324-158.100.
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Pierce, Chester J., Jr.; Heiskell, Ronald E.; and Theys, Ezra E., 5,613,933, Cl. 493-175.000.

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Asghar, Safdar M.; and Ireton, Mark A., 5,615,139, Cl. 364-721.000.
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Agree, Howard B.; Chen, Jen-Chi; and Iezzi, Robert A., to BetzDearborn, Inc. Methods for detackifying paint spray booth water. 5,614,103, Cl. 210-725.000.

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Angeles, James P.; Dugan, Thomas F.; Nottingham, John R.; Panasewicz, Dale A.; and Sroub, Brian J., 5,613,605, Cl. 206-423.000.

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Kalbassi, Mohammed A.; and Golden, Timothy C., 5,614,000, Cl. 95-96.000.
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Moseley, Douglas D.; and Burbick, James W., 5,613,578, Cl. 188-218.0XL.

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Kamiya, Kazuo; Morimoto, Hirofumi; and Yokoyama, Shoji, 5,614,898, Cl. 340-995.000.

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Konishi, Yoshichika; and Kubo, Hiroshi, 5,613,837, Cl. 417-255.000.

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Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 5,614,463, Cl. 503-227.000.

Akashi, Akira; Miyawaki, Mamoru; Suzuki, Kenji; and Nakayama, Toshiki, to Canon Kabushiki Kaisha. Focus detecting apparatus having photoelectric area sensors. 5,615,399, Cl. 396-128.000.

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Kitagawa, Hiroshi; Akazaki, Shusuke; and Maki, Hidetaka, 5,613,481, Cl. 123-698.000.

Akeda, Nobuyuki, to Yazaki Corporation. Pinch preventive connector. 5,613,871, Cl. 439-374.000.

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Osaki, Katsumi; Nara, Takashi; and Watanabe, Hitoshi, 5,614,860, Cl. 327-552.000.

Akiyama, Kazuhiro: *See*—
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Akiyama, Masahiko, to Kabushiki Kaisha Toshiba. Thin film transistor and fabrication method thereof. 5,614,728, Cl. 257-57.000.

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Kanekawa, Nobuyasu; Ihara, Hirokazu; Akiyama, Masatsugu; Kawabata, Kiyoshi; Yamanaka, Hisayoshi; and Okishima, Tetsuya, 5,614,761, Cl. 257-676.000.

Akram, Mustafa: *See*—
Bauer, Wolfgang; and Akram, Mustafa, 5,613,985, Cl. 8-409.000.

Aktiebolaget Astra: *See*—
Axelsson, Bengt; Brattsand, Ralph; Källström, Leif; and Thalén, Arne, 5,614,514, Cl. 514-174.000.

Akutsu, Eiichi: *See*—
Ogi, Kenji; Takayama, Hiroshi; Yamamoto, Yasuo; Maruyama, Kazuo; and Akutsu, Eiichi, 5,614,935, Cl. 347-213.000.

Akzo Nobel N.V.: *See*—
Bumstead, Janene M.; Dunn, Paul P. J.; Tomley, Fiona M.; and Vermeulen, Arnoldus N., 5,614,195, Cl. 424-171.100.
van Drunen, Rudolph; and van Moorsel, Frans J., 5,614,592, Cl. 525-193.000.

Albion Laboratories, Inc.: *See*—
Ashmead, H. DeWayne; Ashmead, Harvey H.; and Jeppsen, Robert B., 5,614,553, Cl. 514-505.000.

Albrecht, Richard E., to Eastman Kodak Company. Anamorphic lens for a photographic flash assembly. 5,615,394, Cl. 396-6.000.

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Nadkarni, Sadashiv K., 5,614,035, Cl. 148-250.000.

Alcatel Kabel AG & Co: *See*—
Ziemek, Gerhard; Staschewski, Harry; and Porcher, Klaus, 5,613,631, Cl. 228-148.000.

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Utting, Ross G.; Rudolph, Colin; and Girardeau, Laurent, 5,615,215, Cl. 370-337.000.

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Monti, Carlos E. A.; and Aldomá, Gustavo E., 5,614,536, Cl. 514-331.000.

Alexander, Billy. Cap with a removable and reversible visor. 5,613,246, Cl. 2-10.000.

Alexander, Danny C.: *See*—
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Alfano, Biagio; and Biscaldi, Edoardo, to Necchi Compressori s.r.l. Hermetically sealed motor compressor unit with a spring biased muffler. 5,613,842, Cl. 417-312.000.

Alfatec-Pharma GmbH: *See*—
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Alfors, Eugene D., to Honeywell Inc. Apparatus and method for attaching a sensor to an object. 5,613,290, Cl. 29-434.000.

Alfred Teves GmbH: *See*—
Zydek, Michael; Engelmann, Mario; and Spornitz, Lothar, 5,614,798, Cl. 318-434.000.

Algar, Brian, to Borden (UK) Limited. Anti-fouling composition. 5,614,006, Cl. 106-18.310.

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Smith, Donald L.; and Alimonda, Andrew S., 5,613,861, Cl. 439-81.000.

All Best Electronics Co., Ltd.: *See*—
Yang, George, 5,613,875, Cl. 439-541.500.

Allard, David J.; Canova, Francis J., Jr.; Johnson, Debra A. G.; Lanier, Charles S.; Lewis, James R.; Tiller, Byron K.; Villafana, William; and Yee, Raymond L., to International Business Machines Corporation. Personal communicator having improved zoom and pan functions for editing information on touch sensitive display. 5,615,384, Cl. 395-800.000.

Allelix Biopharmaceuticals Inc.: *See*—
Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., 5,614,406, Cl. 435-325.000.

Allen-Bradley Company, Inc.: *See*—
Miramonti, John L., 5,614,801, Cl. 318-609.000.
Wieloch, Christopher J., 5,615,087, Cl. 361-719.000.

Allen, Dillis V. Strategy game with two or three dimensional matrix and balls. 5,613,681, Cl. 273-271.000.

Allen Engineering Inc.: *See*—
Allen, J. Dewayne, 5,613,801, Cl. 404-112.000.

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Allen, Mary E. Clothing with pouch means for receiving an illuminating device. 5,613,756, Cl. 362-103.000.

Alley, F. William. Snow guard for a metal roof. 5,613,328, Cl. 52-25.000.

Allibert Industrie S.A.: *See*—
Bentley, Fred M.; and Tostain, Denis J., 5,613,701, Cl. 280-728.300.

Allied Signal, Inc.: *See*—
Eslinger, Ralph G.; and McCann, Gerard O., 5,613,744, Cl. 303-191.000.

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Dai, Wei W.; and Ng, Yu K., 5,615,340, Cl. 395-200.170.

Allied Tube & Conduit Corporation: *See*—
Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

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Chan, Chi F.; and Pringnitz, Steven J., 5,613,830, Cl. 415-206.000.
Dybro, Niels; and Miller, Harold J., III, 5,613,647, Cl. 242-376.000.

Allington, Robert W.; Walters, Henry L.; Jameson, Daniel G.; and Tehrani, Yoossef, to Isco, Inc. Apparatus and method for supercritical fluid extraction or supercritical fluid chromatography. 5,614,089, Cl. 210-198.200.

Allred, Scott: *See*—
Davidson, Leonard; Russell, Matt; Allred, Scott; and Russell, Michael S., 5,615,123, Cl. 364-479.030.

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Berg, Arne; Almén, Torsten; Krautwurst, Klaus D.; Kim, Sook-Hui; Rongved, Pål; Klaveness, Jo; and Dugstad, Harald, 5,614,168, Cl. 424-9.420.

Alpine Electronics, Inc.: *See*—
Kato, Kazunari, 5,615,196, Cl. 369-71.000.

Altech Company Limited: *See*—
Hayashi, Kanji, 5,614,318, Cl. 428-353.000.

Altera Corporation: *See*—
McClintock, Cameron; Cliff, Richard G.; and Leong, William, 5,614,840, Cl. 326-41.000.

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Smith, Barbara S.; Altrieth, Frederick E., III; and Beaudet, Douglas B., 5,614,993, Cl. 399-81.000.

Altschuler, Barry N.; Hardy, Douglas A.; Stephens, James A.; and Kish, Joseph, III, to Motorola, Inc. Secure communication setup method. 5,615,266, Cl. 380-21.000.

Alula, Makita G. Glare reducing visor for vehicles. 5,613,724, Cl. 296-97.600.

Alvarez, David M.: *See*—
Alvarez, John M.; and Alvarez, David M., 5,613,270, Cl. 15-320.000.

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Dong, Liang C.; Wong, Patrick S. L.; Pollock, Crystal; and Ferrari, Vincent J., 5,614,578, Cl. 524-377.000.
Gale, Robert M.; Lee, Eun Soo; Taskovich, Lina T.; and Burkoth, Terry L., 5,614,211, Cl. 424-448.000.

Amacker, Karin: *See*—
Roduit, Jean-Paul; Wellig, Alain; Amacker, Karin; and Eyer, Martin, 5,614,636, Cl. 546-327.000.

Amada Metrecs Company, Limited: *See*—
Fujita, Oriya, 5,613,416, Cl. 83-98.000.

Amakawa, Takatoshi: *See*—
Ishikawa, Takashi; Yunde, Takao; Takechi, Toshisada; Okada, Katsumi; and Amakawa, Takatoshi, 5,613,390, Cl. 72-13.700.

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Soshi, Isao; Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; Amanuma, Tatsuo; and Asami, Jirou, 5,614,974, Cl. 396-55.000.

Amdahl Corporation: *See*—
Magee, Stephen C.; and Lipman, Peter H., 5,615,327, Cl. 395-182.100.

American Color and Chemical Corporation: *See*—
Marchesi, Primo; and Goyak, George M., 5,613,452, Cl. 110-215.000.

American Cyanamid Company: *See*—
Metcalf, Benjamin J., 5,614,382, Cl. 435-69.100.
Miller, Paul E., 5,614,635, Cl. 546-320.000.

American Thermocraft Corporation: *See*—
Panzera, Carlino; Pruden, Jana N.; and Brightly, Richard A., 5,614,330, Cl. 428-697.000.

Amerson, Frederic C.; Gupta, Rajiv; Kumar, Balasubramanian; Schlansker, Michael S.; and Worley, William S., to Hewlett-Packard Company. Computer architecture for reducing delays due to branch instructions. 5,615,386, Cl. 395-585.000.

Amhil Enterprises Ltd.: *See*—
Van Melle, Hugh, 5,613,619, Cl. 220-712.000.

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Bhattacharyya, Alakananda; Kleefisch, Mark S.; and Udovich, Carl A., 5,614,163, Cl. 423-418.200.
Fitzpatrick, Patrick J., 5,613,808, Cl. 405-217.000.

Ampex Corporation: *See*—
Wagner, Steven D., 5,615,355, Cl. 395-494.000.

Amphenol-Tuchel Electronics GmbH: *See*—
Dullin, Claus; and Baumann, Anja, 5,613,865, Cl. 439-188.000.

Amsel, Klaus; and Weller, Albrecht, to Braun Aktiengesellschaft. Steam iron with steam generating chamber baffle. 5,613,309, Cl. 38-77.830.

An, Jae C.: *See*—
Ahn, Byung J.; An, Jae C.; and Lee, Hee Y., 5,614,747, Cl. 257-316.000.

Analog Devices, Inc.: *See*—
Johnson, Brian A.; Malone, Robert E.; Miller, M. William; and Moeller, Jeffrey, 5,613,611, Cl. 206-728.000.
Malone, Robert; and Beucler, Brian G., 5,614,835, Cl. 324-755.000.

Andersen, Kurt E.; and Madsen, Ole, to Verntofta AB. Device for washing the interior of a building, and a distribution valve associated therewith. 5,613,511, Cl. 134-167.00R.

Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Sheets made from moldable hydraulically settable compositions. 5,614,307, Cl. 428-294.700.

Anderson, Bill R.: *See*—
Renda, Philip; Earnhardt, James R., Jr.; Anderson, Bill R.; and Driggars, Sonny B., 5,613,375, Cl. 66-8.000.

Anderson, Charles H., to Texas Instruments Incorporated. Spherical illuminator. 5,613,753, Cl. 362-32.000.

Anderson, Norman C.: *See*—
Rupert, Robert E.; and Anderson, Norman C., 5,614,716, Cl. 250-338.100.

Anderson, Paul C.; Soucy, François; Yoakim, Christiane; Lavallée, Pierre; and Beaulieu, Pierre L., to Bio-Mega/Boehringer Ingelheim Research, Inc. Substituted pipecolinic acid derivatives as HIV protease inhibitors. 5,614,533, Cl. 514-314.000.

Anderson, Russell. Hanger for fixing an object in an elevated position. 5,613,719, Cl. 294-19.100.

Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., to Genentech, Inc. Tissue plasminogen activator having zymogenic or fibrin specific properties. 5,614,190, Cl. 424-94.640.

Anderson, Steven J.: *See*—
Moss, James R.; Malesko, Michael W.; and Anderson, Steven J., 5,614,700, Cl. 200-61.45M.

Anderson, Therese M.: *See*—
Flotte, Thomas J.; Doukas, Apostolos; McAuliffe, Daniel J.; and Anderson, Therese M., 5,614,502, Cl. 514-34.000.

Anderson, Timothy M.; Chrysler, Gregory M.; and Simons, Robert E., to International Business Machines Corporation. Enhanced flow distributor for integrated circuit spot coolers. 5,615,084, Cl. 361-697.000.

Anderson, William G.; and McAdams, William C., to MTS Systems Corporation. Brushless direct current motor having adjustable motor characteristics. 5,614,799, Cl. 318-439.000.

Ando Electric Co., Ltd.: *See*—
Hanajima, Mitsutada, 5,614,865, Cl. 330-254.000.
Tsurumi, Yoshimitsu, 5,615,218, Cl. 371-27.000.

Ando, Ichiro; Sasaki, Akio; Minamiyama, Tomoyuki; Maki, Shoichi; Yasui, Siryo; and Ichise, Hiroshi, to Toyo Communication Equipment Co., Ltd. Rule-based production system adapted for complex procedures flow. 5,615,308, Cl. 395-50.000.

Andó, Jan, to Matec S.r.L. Thread cutting and aspiration unit for multiple-feed circular knitting machines. 5,613,376, Cl. 66-140.00S.

Ando, Yasunori: *See*—
Higashikata, Isao; Ando, Yasunori; and Koseki, Hideki, 5,615,071, Cl. 361-22.000.

André, Larry E., Sr. Method of incremental object fabrication. 5,614,075, Cl. 205-67.000.

Andreas, Bernard H.; Gross, T. Daniel; Hinohara, Tomoaki; and Vetter, James W., to Perclose, Inc. Apparatus and method for vascular closure. 5,613,974, Cl. 606-144.000.

Andrews, Philip C.: *See*—
Wakefield, Thomas W.; Stanley, James C.; and Andrews, Philip C., 5,614,494, Cl. 514-12.000.

Angeles, James P.; Dugan, Thomas F.; Nottingham, John R.; Panasewicz, Dale A.; and Sroub, Brian J., to Agripak, Inc. Plant package. 5,613,605, Cl. 206-423.000.

Angermaier, Anton, to Siemens Aktiengesellschaft. Method of identifying the stroke positions in an internal combustion engine upon startup. 5,613,473, Cl. 123-481.000.

Anjur, Sowmya S.: *See*—
DiPalma, Joseph; and Anjur, Sowmya S., 5,613,961, Cl. 604-369.000.

Anliker, Jeff. Repetitive strain injury therapy device. 5,613,923, Cl. 482-48.000.

ANT Nachrichtentechnik GmbH: *See*—
Hagmanns, Franz-Josef, 5,615,208, Cl. 370-252.000.

Antec Corporation: *See*—
Batson, J. Gary, 5,614,813, Cl. 323-283.000.

Anthony, Nicos J.: *See*—
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Antonius van Meel, Jacobus C.: *See*—
Hauel, Norbert; Narr, Berthold, deceased; Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, 5,614,519, Cl. 514-235.800.

Antony, Gerhard; and Lechler, William, to Sumitomo Machinery Corp. of America. Conical connecting device for connecting machine components. 5,613,795, Cl. 403-370.000.

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Aoki, Masakazu: *See*—
Kawahara, Takayuki; Hori, Ryoichi; Horiguchi, Masashi; Kurihara, Ryoichi; Itoh, Kiyoo; Aoki, Masakazu; Sakata, Takeshi; and Uchiyama, Kunio, 5,614,847, Cl. 326-98.000.

Aoki, Mitsuo; Isoda, Tetsuo; Suzuki, Masanori; and Suguro, Yoshihiro, to Ricoh Company, Ltd. Toner for developing latent electrostatic images. 5,614,347, Cl. 430-109.000.

Aoki, Shunji: *See*—
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Aotsu, Hiroaki: *See*—
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.

Aoyama, Masahiko; Saijo, Eiji; and Atsumi, Keigo, to Sumitomo Wiring Systems, Ltd. Connector examination device for determining a connection in a connector. 5,614,820, Cl. 324-158.100.

Aoyama, Tomihiko: *See*—
Seki, Yoichi; Aoyama, Tomihiko; Kawai, Michio; and Ito, Akira, 5,614,984, Cl. 396-106.000.

Aoyama, Toshiya: *See*—
Onishi, Yasuhiko; Yamamori, Takashi; Yamashita, Youzou; Suzuki, Ichiro; and Aoyama, Toshiya, 5,614,144, Cl. 264-454.000.

Aparellaje Electrico, S.A.: *See*—
Benito Navazo, Juan M., 5,614,695, Cl. 174-48.000.

Aplix, Inc.: *See*—
Billarant, Patrick J., 5,614,045, Cl. 156-92.000.

Appel, Wolfgang: *See*—
Cabrera, Ivan; and Appel, Wolfgang, 5,614,626, Cl. 544-2.000.

Apple Computer, Inc.: *See*—
Beernink, Ernest H., 5,615,285, Cl. 382-189.000.
Cowsar, George C.; Plummer, Christopher J.; and Quinn, Michael J., 5,615,400, Cl. 395-685.000.
Davis, Lisa L.; Bartalo, Susan M.; Mensch, James L.; Pontarelli, Mark C.; and Snow, Robert E., Jr., 5,615,347, Cl. 395-349.000.
Harrison, David F.; Williams, Russell T.; and Saulpaugh, Thomas E., 5,615,392, Cl. 395-876.000.

Applied Materials, Inc: *See*—
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Fairbairn, Kevin; and Nowak, Romuald, 5,614,055, Cl. 156-345.000.
Hanawa, Hiroji, 5,614,060, Cl. 156-643.100.

Apte, Raj B.: *See*—
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Arai, Masayuki: *See*—
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Arai, Soichiro: *See*—
Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Keiichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

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Arand, Patricia A.; Post, William L.; and Forbes, Alfred D., to Hewlett-Packard Company. Method and apparatus for creating a representative heartbeat from an ECG waveform. 5,613,496, Cl. 128-702.000.

Arbeiter, James H.: *See*—

Gibeau, Frank C.; Bessler, Roger F.; and Arbeiter, James H., 5,614,961, Cl. 348-750.000.
Arch Development Corporation: *See—*
Liao, Shutsung; and Chang, Chawnshang. 5,614,620, Cl. 536-23.500.
ARCO Chemical Technology, L.P.: *See—*
Shawl, Edward T., 5,614,017, Cl. 106-823.000.
Arenson, Dan: *See—*
Kochinke, Frank; Pfister, William R.; Louie, Jenny; and Arenson, Dan, 5,613,958, Cl. 604-307.000.
ARGO GmbH fur Fluidtechnik: *See—*
Breusch, Norbert, 5,614,090, Cl. 210-232.000.
Ariga, Moriaki; Ojima, Reiichi; Kawauchi, Yoshihiro; and Kobayashi, Toshihiro, to Walt Disney Company, The. Amusement ride for traveling down a water chute with reduced splash. 5,613,443, Cl. 104-70.000.
Aritome, Seiichi: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.
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Arjo Wiggins Papiers Couches S.A.: *See—*
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Armstrong, Nancy J.: *See—*
Long, Michael E.; Weber, Helmut; Armstrong, Nancy J.; Boroson, Michael L.; and Hollis, Kathleen S., 5,614,465, Cl. 503-227.000.
Arnaud, Philippe; and Laine, Loic, to Giat Industries. Method and device for detecting objects dispersed in an area of land by determining propagation characteristics of an acoustic wave in the ground. 5,615,174, Cl. 367-118.000.
Arndt, Kim E.; Kleschick, William A.; Reifschneider, Walter; Swisher, Beth A.; Ehr, Robert J.; Jachetta, John J.; and Van Heertum, John C., to DowElanco. N-pyridinyl[1,2,4]triazolo[1,5-c]pyrimidine-2-sulfonamide herbicides. 5,614,469, Cl. 504-241.000.
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Chaudhary, Nilabh; Jayaraman, Krishna; Bodepudi, Veeraiah; and Hogan, Michael E., 5,614,503, Cl. 514-44.000.
Arturo Salice S.P.A.: *See—*
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Arunchalam, Thangavel: *See—*
Ranganathan, Ramachandran S.; Arunchalam, Thangavel; Marinelli, Edmund R.; and Pillai, Radhakrishna K., 5,614,638, Cl. 548-543.000.
Asaba, Tetsuo: *See—*
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Asahi Glass: *See—*
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Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Harumi, 5,614,704, Cl. 235-436.000.
Azegami, Kazuyoshi, 5,614,973, Cl. 396-448.000.
Asahi Seiko Co., Ltd.: *See—*
Abe, Hiroshi; Taniuchi, Toshihiko; Tsuda, Masaomi; and Fujiwara, Yoshito, 5,614,149, Cl. 420-43.000.
Asami, Fumitaka: *See—*
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Asami, Jirou: *See—*
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Asano, Masamichi: *See—*
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ASARCO Incorporated: *See—*
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Ascom Hasler Mailing Systems, Inc.: *See—*
Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetneh; Palange, Martin F.; Simcik, Mark E.; Swanbery, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weirsman, William A.; and Rahgo, George P., 5,615,120, Cl. 364-464.170.
ASCOM Tech AG: *See—*
Günther, Christoph; and Habermann, Joachim, 5,615,230, Cl. 375-281.000.
Asculai, Samuel S.: *See—*
Falk, Rudolf E.; Asculai, Samuel S.; and Turley, Eva A., 5,614,506, Cl. 514-54.000.
Asghar, Safdar M.; and Ireton, Mark A., to Advanced Micro Devices, Inc. Apparatus and method for synthesizing a sinusoidal signal. 5,615,139, Cl. 364-721.000.
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Roof, Glenn L., 5,614,080, Cl. 208-48.0AA.
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Banakis, Emanuel G.; Harwath, Frank A.; Hays, Richard A.; Janota, Kenneth F.; and Lang, Harold K., to Molex Incorporated. Universal grounding clip for card-receiving connector. 5,613,860, Cl. 439-64.000.
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Barkley Seed, Inc.: *See—*
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Barringer, Lloyd F., Jr.; and Ledford, William T., to Comfort Technologies, Inc. Polymers having enhanced hydrophilicity and thermal regulated properties and process of producing the same. 5,614,598, Cl. 525-431.000.

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Bartalo, Susan M.: *See—*
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Barton, Leslie W. Inflatable plush toy. 5,613,892, Cl. 446-226.000.

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Bender, Dietmar; Bronstert, Klaus; Mach, Helmut; and Fischer, Martin, 5,614,595, Cl. 525-332.800.
Gies, Hermann; Vortmann, Silke; Marler, Bernd; Müller, Ulrich; and Dingerdissen, Uwe, 5,614,166, Cl. 423-718.000.
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Basinger, Brent D.; and Zimmerman, R. Keith, to Virkler Company, The. Process and composition for imparting durable press properties to textile fabrics. 5,614,591, Cl. 525-163.000.

Bass, Mark; Doepker, Roy J.; Caillat, Jean-Luc M.; and Warner, Wayne R., to Copeland Corporation. Capacity modulated scroll machine. 5,613,841, Cl. 417-310.000.

Bassett Furniture Ind. Inc.: *See—*
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Batson, J. Gary, to Antec Corporation. Unity trapezoidal wave RMS regulator. 5,614,813, Cl. 323-283.000.

Battersby, John E.; Clark, Ross G.; and Hancock, William S., to Genentech, Inc. Sustained release pharmaceutical composition. 5,614,487, Cl. 514-2.000.

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Bauer, Wolfgang; and Akram, Mustafa, to Hoechst Aktiengesellschaft. Hair coloring compositions which contain developers and perimidine couplers. 5,613,985, Cl. 8-409.000.

Baum, Kevin L.; and Mueller, Bruce D., to Motorola, Inc. Method for channel estimation using individual adaptation. 5,615,233, Cl. 375-350.000.

Baumann, Anja: *See—*
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Baumeister, Udo, to ITT Automotive Europe GmbH. Device for connecting a motor with at least two electric conductor tracks. 5,614,776, Cl. 310-71.000.

Bavitz, J. Bruce, to Board of Regents Univ of NE at Lincoln. Dental implant drill guide system. 5,613,852, Cl. 433-173.000.

Baxter Healthcare Corporation: *See—*
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Baxter, Ralph W., Jr., to Dana Corporation. Transfer case friction plate synchronizer. 5,613,587, Cl. 192-53.320.

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Werner, Joachim; Kane, Scott A.; Doerge, Herman P.; and Boonstra, Eric F., 5,614,565, Cl. 521-131.000.

Bayer, Jack L., to Hurco Companies, Inc. Machine tool with bar-spindle and DIN standard toolholder changer. 5,613,929, Cl. 483-1.000.

Baylor College of Medicine: *See—*
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Beal, David E.; and Carson, Thomas P., to Dumont Management, Inc. Heat pump system dehumidifier with secondary water loop. 5,613,372, Cl. 62-434.000.

Beamer, John V., to Hoosier Group, L.L.C. Holding means for securing a liner to a trench. 5,613,804, Cl. 405-119.000.

Bean, Ron M., to Forbes, David R.; and Forbes, Carman S. Blind structure for use with tree stand. 5,613,512, Cl. 135-90.000.

Beane, Alan F.; and Beane, Glenn L. Particles having engineered properties. 5,614,320, Cl. 428-403.000.

Beane, Glenn L.: *See—*
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Beatty, Harry J.; Elmendorf, Peter C.; Gillis, Roland R.; and Pramanick, Ira, to International Business Machines Corporation. Parallel execution of a complex task partitioned into a plurality of entities. 5,615,127, Cl. 364-489.000.

Beaudet, Douglas B.: *See—*
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Beaulieu, Pierre L.: *See—*
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Beauvais, Arnault; and Mandereau, Fabienne, to Giat Industries. Equilibrating device for a gun. 5,614,690, Cl. 89-37.080.

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Beck, Martin H.; Rollend, George F.; Muszynski, John H.; Reed, Lydia K.; Hickey, Scott J.; Connor, Dennis C.; and Caldicott, Robert, to DTL Technology Limited Partnership. One piece self-standing blow molded plastic containers made from a monobase preform. 5,614,148, Cl. 264-532.000.

Becker, Craig H.; Hobday, Bradley B.; and Fourney, Jim, to White Consolidated Industries, Inc. Toeplate and access cover. 5,613,747, Cl. 312-278.000.

Becker, Gary. Suspension system for snowmobile seat. 5,613,570, Cl. 180-190.000.

Beckman Instruments, Inc.: *See—*
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Stachelek, Thomas M., 5,615,008, Cl. 356-301.000.

Beckwith, Robert W. Fiber optic terminator with electrical input/output. 5,615,292, Cl. 385-89.000.

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Solomon, Donald D.; and Thibault, Jean-Claude, 5,613,291, Cl. 29-458.000.

Bederke, Klaus; Herrmann, Friedrich; Kerber, Hermann; and Schönrock, Hans-Martin, to Herberts Gesellschaft mit beschrankterhaftung. Coating agents, process for their preparation and their use for the preparation of transparent top layers on multilayer coatings. 5,614,590, Cl. 525-127.000.

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Beernink, Ernest H., to Apple Computer, Inc. Method and apparatus for recognizing handwritten words. 5,615,285, Cl. 382-189.000.

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Boulanger, Roger: *See*—
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Bourk, Terrance R.: *See*—
Wright, David A.; Bourk, Terrance R.; and Riedel, Neal K., 5,615,222, Cl. 371-50.100.

Bowden, David M., to McDonnell Douglas Corp. Method for producing refractory aluminide reinforced aluminum. 5,614,150, Cl. 420-590.000.

Bower, Barton K., to Hercules Incorporated. Wet strength resins having reduced levels of organic halogen by-products. 5,614,597, Cl. 525-430.000.

Bowman, Barry A.: *See*—
Lykken, Thomas G.; Bowman, Barry A.; and Kemper, Philip T., 5,613,404, Cl. 74-493.000.

Bowman, J. Robert, to Globe Manufacturing Company. Firefighter's garment with thread protector. 5,613,247, Cl. 2-81.000.

Boyce, Jill M.; and Pearlstein, Larry, to Hitachi America, Ltd. Digital video decoder for decoding digital high definition and/or digital standard definition television signals. 5,614,952, Cl. 348-392.000.

Boyce, Jill M.; and Pearlstein, Larry, to Hitachi America, Ltd. Digital picture-in-picture decoder. 5,614,957, Cl. 348-567.000.

Boyd, David M. Faceplate for turning objects on a lathe or the like. 5,613,536, Cl. 142-53.000.

Boyd, John M.: *See*—
Ellul, Joseph P.; and Boyd, John M., 5,614,750, Cl. 257-386.000.

Boyden, James E.: *See*—
Wolters, Richard A., Jr.; Boyden, James E.; George, Donald K.; Henrie, Donald K.; Jones, Robert H.; and McBride, Michael G., 5,615,240, Cl. 376-272.000.

Boyer, Leonard: *See*—
Evans, Joseph T., Jr.; and Boyer, Leonard, 5,614,438, Cl. 437-192.000.

Boyle, William J.; Wong, Rosalinda A.; Shy, James M.; and Tran, Don H., to Medtronic, Inc. Bidirectional dual sinusoidal helix stent. 5,613,981, Cl. 606-198.000.

Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, to Sandoz Ltd. Herbicidal compositions comprising a growth regulating herbicide to safen imidazolinone herbicides. 5,614,466, Cl. 504-110.000.

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Streubel, Hans; Flemming, Günter; and Boysen, Erk, 5,613,548, Cl. 164-502.000.

Bracco International B.V.: *See*—
Ranganathan, Ramachandran S.; Arunchalam, Thangavel; Marinelli, Edmund R.; and Pillai, Radhakrishna K., 5,614,638, Cl. 548-543.000.

Brace, John G., to Hoover Universal, Inc. Apparatus and method for noninvasive assessment of pressurized container properties. 5,614,718, Cl. 250-339.130.

Bradbury, Gordon, to James & Bloom Limited. Sliding shutters. 5,613,541, Cl. 160-231.200.

Bradbury, Walter J.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Bradford Company: *See*—
Bradford, Judson A., 5,613,610, Cl. 206-721.000.

Bradford, Judson A., to Bradford Company. Naturally degradable and recyclable static-dissipative packaging material. 5,613,610, Cl. 206-721.000.

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Bradley, Joseph L.; Whiteman, Don; and Mills, George T., to United States of America, Navy. Miss distance vector scoring system. 5,614,910, Cl. 342-119.000.

Bradshaw, Guy L.: *See*—
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Bramlett, Kevin D.: *See*—
DiLuigi, Michael W.; Lund, Raymond R.; and Bramlett, Kevin D., 5,613,446, Cl. 105-282.200.

Brandstetter, Robert W.; and Fonneland, Nils J., to Grumman Aerospace Corporation. System and method of fabricating multiple holographic elements. 5,615,022, Cl. 359-12.000.

Brar, Parminder S.: *See*—
Tofigh, Farshid; Brar, Parminder S.; Tsao, Yen-Kuei; Clements, Evan; and Maier, Joseph, 5,615,105, Cl. 364-138.000.

Brattsand, Ralph: *See*—
Axelsson, Bengt; Brattsand, Ralph; Källström, Leif; and Thalén, Arne, 5,614,514, Cl. 514-174.000.

Bräu, Barbara: *See*—
Piepersberg, Wolfgang; Stockmann, Michael; Taleghani, Kambiz M.; Distler, Jürgen; Grabley, Susanne; Sichel, Petra; and Bräu, Barbara, 5,614,619, Cl. 536-23.200.

Braudaway, Gordon W.; and Delp, Helen R., to International Business Machines Corporation. Method and apparatus for creating and displaying faithful color images on a computer display. 5,614,925, Cl. 345-153.000.

Braun Aktiengesellschaft: *See*—
Amsel, Klaus; and Weller, Albrecht, 5,613,309, Cl. 38-77.830.
Braun, Gebhard, 5,614,030, Cl. 134-22.100.
Hilfinger, Peter; and Boland, Bernhard, 5,613,258, Cl. 15-22.100.
Jimenez, Miguel; Vazquez, Miguel; Carreras, Francesc; Coronado, Juan C.; Auria, Augustin; Hahnewald, Andrea; and Eimecke, Rolf, 5,613,310, Cl. 38-93.000.
Klawuhn, Manfred; Haubruch, Ulrich; and Skoda, Ralf, 5,613,523, Cl. 138-126.000.
Müller, Roland; and Littmann, Ludwig, 5,614,130, Cl. 261-119.100.

Braun, Franz-Josef, to Minnesota Mining and Mannfacturing Company. Transdermal device for the delivery of alfuzosin. 5,614,210, Cl. 424-448.000.

Braun, Gebhard, to Braun Aktiengesellschaft. Method of cleaning a shaving head of a dry shaving apparatus. 5,614,030, Cl. 134-22.100.

Braverman, Josef J. Traffic marker and base unit. 5,613,798, Cl. 404-6.000.

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Breault Research Organization: *See*—
Castonguay, Raymond J., 5,615,294, Cl. 385-115.000.

Breckwoldt, Jörn: *See*—
Buysch, Hans-Josef; Szablikowski, Klaus; and Breckwoldt, Jörn, 5,614,616, Cl. 536-18.700.

Bredt, Robert C.: *See*—
Schilling, Hugh K.; Davis, John B.; and Bredt, Robert C., 5,613,586, Cl. 192-48.300.

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Bütow, Klaus; and Schilling, Harald, 5,614,772, Cl. 307-119.000.

Bremner, Ronald D.; Newendorp, Bruce C.; and D'Alessandro, Patricia M., to Deere & Company. Transmission control lever with return to neutral function. 5,613,584, Cl. 192-4.00C.

Bresler, Yoav: *See*—

Spiegel, Ehud; Broudo, Moshe; Lavie, Reuven; Bresler, Yoav; Pluda, Yacov; and Baron, Eliezer, 5,615,282, Cl. 382-167.000.

Breusch, Norbert, to ARGO GmbH fur Fluidtechnik. Filter casing and pipe extension therefor. 5,614,090, Cl. 210-232.000.

Bridgestone Corporation: *See*—
Roggeman, David M.; and Hall, James E., 5,614,579, Cl. 524-457.000.

Brightly, Richard A.: *See*—
Panzera, Carlino; Pruden, Jana N.; and Brightly, Richard A., 5,614,330, Cl. 428-697.000.

Brinkman, Bart: *See*—
Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, 5,614,466, Cl. 504-110.000.

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Brisson, Maurice, to Denis Comact Inc. Knife holder for timber shaping and chip producing head. 5,613,538, Cl. 144-228.000.

Bristol Tool & Gauge Engineering Limited: *See*—
Levan, Clive S.; and Evans, Clive J., 5,613,812, Cl. 409-136.000.

British Steel Canada Inc.: *See*—
Rennich, George; Schouten, Roy; and Gilmore, Florent, 5,613,335, Cl. 52-255.000.

British Telecommunications public limited company: *See*—
Davis, Andrew G., 5,615,297, Cl. 395-2.100.

Britt, James M. Spout-filling composition and method for applying. 5,614,450, Cl. 501-120.000.

Britton, James E. Restraining apparatus for a chair and method of making same. 5,613,738, Cl. 297-467.000.

Broadhurst, Michael J.; Brown, Paul A.; and Johnson, William H., to Hoffmann-La Roche Inc. Hydroxamic acid derivatives with tricyclic substitution. 5,614,625, Cl. 540-480.000.

Brock, Jerry L.: *See*—
Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.

Brockway, G. Samuel: *See*—
Pressly, William B. S., Sr.; Vaughn, Charles A., Sr.; Brockway, G. Samuel; and Ellis, Thomas R., 5,613,952, Cl. 604-110.000.

Brod & McClung-Pace Co.: *See*—
Ludwig, Craig S.; Spradling, Richard E.; and Benson, David E., 5,613,759, Cl. 362-149.000.

Broderick, Kevin B.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,614,234, Cl. 426-5.000.

Bromley, Peter; Dreano, Michel; Fischbach, Michel; Fouillet, Xavier; Padieu, Prudent; and Voellmy, Richard, to Rothwell Properties Limited. Method for the inducible production of proteins in genetically modified eukaryotic host-cells multiplied in vivo. 5,614,381, Cl. 435-69.100.

Bronstert, Klaus: *See*—
Bender, Dietmar; Bronstert, Klaus; Mach, Helmut; and Fischer, Martin, 5,614,595, Cl. 525-332.800.

Brooks Automation, Inc.: *See*—
Muka, Richard S.; Pippins, Michael W.; and Drew, Mitchell A., 5,613,821, Cl. 414-217.000.

Brooks, James R., to SpaceLabs Medical, Inc. Digital high-pass filter having baseline restoration means. 5,615,234, Cl. 375-350.000.

Brophy, Denis J.; Datta, Madhav; Harris, Derek B.; Ryan, Frank S.; and Spera, Frank A., to International Business Machines Corporation. Tool and method for electroetching. 5,614,076, Cl. 205-666.000.

Broring, Karin: *See*—
Musil, Ingrid; Broring, Karin; Gelderie, Udo; and Holzer, Gerhard, 5,614,322, Cl. 428-423.100.

Brother Kogyo Kabushiki Kaisha: *See*—
Kagayama, Shigeru, 5,614,932, Cl. 347-55.000.

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Brow, Mary Ann D.: *See*—
Dahlberg, James E.; Lyamichev, Victor I.; and Brow, Mary Ann D., 5,614,402, Cl. 435-199.000.

Browder, George A., Jr.: *See*—
Popa, Catrinel I.; Browder, George A., Jr.; and Segraves, Archie D., 5,613,378, Cl. 66-176.000.

Brown, Gerald L., to ELR, Inc. Method of making product packages. 5,613,349, Cl. 53-453.000.

Brown, Paul A.: *See*—
Broadhurst, Michael J.; Brown, Paul A.; and Johnson, William H., 5,614,625, Cl. 540-480.000.

Brown, Ronald E.; and Majerus, Mark E., to Tracor Aerospace, Inc. Shaped-charge device with progressive inward collapsing jet. 5,614,692, Cl. 102-307.000.

Brown, R. Todd: *See*—
Ward, Seth, II; Speas, Gary W.; and Brown, R. Todd, 5,614,892, Cl. 340-870.020.

Bruce, James A.; Gortych, Joseph; and Hibbs, Michael S., to International Business Machines Corporation. Illumination tailoring system using photochromic filter. 5,614,990, Cl. 355-71.000.

Brumley, Blair H.; Deines, Kent L.; Cabrera, Ramon G.; and Terray, Eugene A., to Rowe, Deines Instruments Incorporated. Broadband acoustic doppler current profiler. 5,615,173, Cl. 367-90.000.

Brunerye, Philippe, to Hutchinson. Hydraulic antivibration sleeve, and its method of manufacture. 5,613,668, Cl. 267-219.000.

Bryant, Robert C.; and O'Brien, Michael J., to Eastman Kodak Company. Camera with magnetic orientation sensor. 5,614,981, Cl. 396-50.000.

Buchbinder, Dale. Patient monitoring system and method thereof. 5,614,887, Cl. 340-573.000.

Bucher-Guyer AG Maschinenfabrik: *See*—
Hartmann, Eduard, 5,613,434, Cl. 100-37.000.

Buchheit, Karl-Heinz: *See*—
Pandit, Madhukar; and Buchheit, Karl-Heinz, 5,614,137, Cl. 264-40.600.

Buchmann, Bernd: *See*—
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; Ekerdt, Roland; and Giesen, Claudia, 5,614,634, Cl. 546-301.000.

Buckley, Paul, to Lucas Industries Public Limited Company. Variable rate pump. 5,613,839, Cl. 417-273.000.

Bue, Richard C.: *See*—
Wagner, Walter R.; and Bue, Richard C., 5,613,450, Cl. 108-175.000.

Buening, Dennis J., to Excel Industries, Inc. Cable drive assembly for a window. 5,613,323, Cl. 49-380.000.

Bugner, Douglas E.; Mey, William; and Kamp, Dennis R., to Eastman Kodak Company. Migration imaging, optionally with dyes or pigments to effect bleaching. 5,614,340, Cl. 430-41.000.

Buhler, Steven A.: *See*—
Ahmed, Iftikhar; and Buhler, Steven A., 5,614,771, Cl. 307-113.000.

Bühling, Dieter: *See*—
Hofsäss, Marcel; and Bühling, Dieter, 5,615,072, Cl. 361-24.000.

Buhrs-Zaandam B.V.: *See*—
Hamers, Ludovicus W. A.; and Tuyn, Roberto, 5,613,351, Cl. 53-55.000.

Buie, Dan; and Buie, Janice. Temperature controlled seat cover assembly. 5,613,730, Cl. 297-180.120.

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Bulawa, Christine E., to Myco Pharmaceuticals, Incorporated. Methods for identifying inhibitors of fungal pathogenicity. 5,614,377, Cl. 435-32.000.

Bull, George B.; and Carpenter, James E., to Heatcraft Inc. A-coil heat exchanger. 5,613,554, Cl. 165-150.000.

Bull S.A.: *See*—
Marbot, Roland; Le Bihan, Jean-Claude; Cofler, Andrew; and Nezamzadeh-Moosavi, Reza, 5,614,841, Cl. 326-52.000.

Bumstead, Janene M.; Dunn, Paul P. J.; Tomley, Fiona M.; and Vermeulen, Arnoldus N., to Akzo Nobel N.V. Coccidiosis poultry vaccine. 5,614,195, Cl. 424-171.100.

Bungartz, Thomas: *See*—
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Bunzl Plastics, Incorporated: *See*—
Zeyfang, Frederick W.; and Jodon, Michael W., 5,613,615, Cl. 220-203.110.

Burbank, Daniel P.: *See*—
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Burbick, James W.: *See*—
Moseley, Douglas D.; and Burbick, James W., 5,613,578, Cl. 188-218.0XL.

Burdick, Robert: *See*—
Marohl, Todd T.; Burdick, Robert; and Cole, Ronald A., 5,613,368, Cl. 62-84.000.

Bureller, Michel, to Etablissements Recoules et Fils (S.A.). Pneumatic power drill. 5,613,810, Cl. 408-3.000.

Burger, Stefan: *See*—
Otto, Johanngeorg; Burger, Stefan; and Gerst, Peter, 5,614,911, Cl. 342-124.000.

Burgess, Wilson: *See*—
Dunstan, Colin R.; Izbicka, Elzbieta; Mundy, Gregory R.; Burgess, Wilson; and Jaye, Michael C., 5,614,496, Cl. 514-12.000.

Burkes, Theresa A.: *See*—
Jacobson, Michael B.; Voigt, Douglas L.; Burkes, Theresa A.; and Diamond, Bryan, 5,615,352, Cl. 395-441.000.

Burkhalter, John C. Garment hanger device. 5,613,628, Cl. 223-85.000.

Burkhart, Georg; and Schator, Helmut, to Th. Goldschmidt AG. Method for the preparation of rigid foams having urethane and/or isocyanurate groups and being extensively open celled. 5,614,566, Cl. 521-132.000.

Burkoth, Terry L.: *See*—
Gale, Robert M.; Lee, Eun Soo; Taskovich, Lina T.; and Burkoth, Terry L., 5,614,211, Cl. 424-448.000.

Burnett, Robert J., to Gateway 2000, Inc. Detachable joystick for a portable computer. 5,615,083, Cl. 361-686.000.

Burstein, Paul: *See*—
Pavelle, Richard; Latanision, Ronald M.; and Burstein, Paul, 5,614,332, Cl. 429-68.000.

Burtch, Ronald P. Erectable periscoping display device. 5,613,311, Cl. 40-124.150.

Busch, Eric M.: *See*—
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Busch, Eric M., 5,615,251, Cl. 379-112.000.

Bush, E. Dan; and Wortner, David, to Handy Button Machine Company. Plastic tack strip with interlock. 5,613,817, Cl. 411-466.000.

Bushman, Rich. Dental floss apparatus with improved mechanism for collecting spent floss. 5,613,508, Cl. 132-325.000.

Buster, James M.: *See*—
Plath, David J.; and Buster, James M., 5,613,337, Cl. 52-533.000.

Bustos, Rafael T., to L&P Property Managemet Company. Co-extruded plastic slip surface. 5,614,288, Cl. 428-167.000.

Bütow, Klaus; and Schilling, Harald, to Bregenhorn, Bütow & Co., Elektrotechnische Geräte GmbH. Operating device for an electronic switching device with a changeable front foil. 5,614,772, Cl. 307-119.000.

Buysch, Hans-Josef; Szablikowski, Klaus; and Breckwoldt, Jörn, to Wolff Walsrode Aktiengesellschaft. Process for the production of polysaccharides. 5,614,616, Cl. 536-18.700.

Bylund, Ruth E.; and Teger-Nilsson, Ann-Catrine E., to Astra Aktiebolag. New peptide derivatives as thrombin inhibitors. 5,614,499, Cl. 514-19.000.

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Patterson, Frank; Zhang, John; Purtell, George; and Culhane, James, 5,613,956, Cl. 604-256.000.

Cabahug, Eric F., to Thread Technology, Inc. Apparatus for rapidly engaging and disengaging threaded coupling members. 5,613,816, Cl. 411-433.000.

Cabrera, Ivan; and Appel, Wolfgang, to Hoechst AG. 1,2,3-Oxathiazin-4(3F)-one 2,2-dioxides, a process for their preparation and their use as electrophilic fluorinating agents. 5,614,626, Cl. 544-2.000.

Cabrera, Ramon G.: *See*—
Brumley, Blair H.; Deines, Kent L.; Cabrera, Ramon G.; and Terray, Eugene A., 5,615,173, Cl. 367-90.000.

Cabri, Walter; Candiani, Ilaria; Zarini, Franco; Bedeschi, Angelo; and Penco, Sergio, to Pharmacia & Upjohn S.p.A. Process for the preparation of 9-amino camptothecin. 5,614,628, Cl. 546-48.000.

Cacheris, William P.; Richard, Thomas J.; Grabiak, Raymond C.; and Lee, Albert C., to HemaGen/PFC. Paramagnetic complexes of N-alkyl-N-hydroxylamides of organic acids and emulsions containing same for magnetic resonance imaging (MRI). 5,614,170, Cl. 424-9.365.

Cadambi, Sudarshan B.: *See*—
Knoll, Shaun; Morriss, Jeff C.; Callahan, Shelagh; Bhatt, Ajay V.; Nizar, Puthiya K.; Haslam, Richard M.; Volk, Andrew M.; and Cadambi, Sudarshan B., 5,615,404, Cl. 395-882.000.

Cadcam Technology Limited: *See*—
Horton, Norman; and Bell, John K., 5,614,115, Cl. 219-121.670.

Cafferty, Daniel F., to General Motors Corporation. Electronic vehicle door unlatch control. 5,613,716, Cl. 292-216.000.

Cahoon, Edgar B.; and Ohlrogee, John B., to Michigan State University. Methods and compositions relating to plant palmitoyl-acyl carrier protein desaturase. 5,614,400, Cl. 435-172.300.

Cahoon, John: *See*—
Salomon, Mary F.; Davis, Kirk E.; Karn, Jack L.; and Cahoon, John, 5,614,480, Cl. 508-287.000.

Cai, Qingsheng; Beling, William L.; Glantz, Jerald; and Johnson, Theodore A., to SIMS Deltec, Inc. Portal assembly. 5,613,945, Cl. 604-93.000.

Caillat, Jean-Luc M.: *See*—
Bass, Mark; Doepker, Roy J.; Caillat, Jean-Luc M.; and Warner, Wayne R., 5,613,841, Cl. 417-310.000.

Caldicott, Robert: *See*—
Beck, Martin H.; Rollend, George F.; Muszynski, John H.; Reed, Lydia K.; Hickey, Scott J.; Connor, Dennis C.; and Caldicott, Robert, 5,614,148, Cl. 264-532.000.

Calhoun, Clyde D.: *See*—
Lucast, Donald H.; Calhoun, Clyde D.; Riedel, John E.; and Taylor, Charles W., 5,613,942, Cl. 602-52.000.

California Institute of Technology: *See*—
Fabris, Gracio, 5,614,773, Cl. 310-11.000.
Hofmeister, Rudolf; Yariv, Amnon; and Agranat, Aharon, 5,614,129, Cl. 252-584.000.

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Sims, Benny L., 5,614,828, Cl. 324-402.000.

Callahan, Shelagh: *See*—
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Cambridge NeuroScience, Inc.: *See*—
Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew G.; and Margolin, Lee D., 5,614,630, Cl. 546-159.000.

Camomilla, Gabriele: *See*—
Romagnolo, Mariano; and Camomilla, Gabriele, 5,613,797, Cl. 404-2.000.

Campbell, Donald N.: *See*—
Kubala, Sidney W.; Campbell, Donald N.; and Pearson, Robert D., 5,614,417, Cl. 436-120.000.

Campbell, Edward R., III: *See*—
Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, 5,614,870, Cl. 331-14.000.

Campbell, John M.; Fleischhauer, Grier S.; Higgins, Charles T.; Ripley, Robert L.; Sharpe, David E.; Watkins, Michael L.; and Wrenn, Susan E., to Philip Morris Incorporated. Inductive heating systems for smoking articles. 5,613,505, Cl. 131-194.000.

Campfield, Richard A., to Ultra Bond Licensing Corporation. Glass repair method. 5,614,046, Cl. 156-94.000.

Candescent Technologies Corporation: *See*—
Spindt, Christopher J.; Morris, David L.; Fahlen, Theodore S.; Schmid, Anthony P.; and Lovoi, Paul A., 5,614,781, Cl. 313-422.000.

Candiani, Ilaria: *See*—
Cabri, Walter; Candiani, Ilaria; Zarini, Franco; Bedeschi, Angelo; and Penco, Sergio, 5,614,628, Cl. 546-48.000.

Candle Distributed Solutions, Inc.: *See*—
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Canon Information Systems, Inc.: *See*—
Kohler, Timothy L., 5,615,312, Cl. 395-109.000.
Lavendel, Laurence A., 5,615,320, Cl. 395-131.000.

Canon Kabushiki Kaisha: *See*—
Akashi, Akira; Miyawaki, Mamoru; Suzuki, Kenji; and Nakayama, Toshiki, 5,615,399, Cl. 396-128.000.
Fukushima, Hisashi; and Gu, Sono, 5,615,311, Cl. 395-107.000.
Hirose, Masayuki, 5,615,313, Cl. 395-114.000.
Ishii, Kazuyoshi, 5,615,183, Cl. 369-13.000.
Izukawa, Kazuhiro, 5,614,969, Cl. 396-319.000.
Kaneko, Shuzo; Mitsutake, Hideaki; and Shingaki, Junko, 5,615,025, Cl. 349-74.000.
Kawakami, Hiroaki; Doi, Shinji; Tanikawa, Hirohide; Fujiwara, Masatsugu; and Kato, Kazunori, 5,614,344, Cl. 430-102.000.
Kikuchi, Yutaka; and Kanoto, Masanobu, 5,614,992, Cl. 399-124.000.
Kurabayashi, Yutaka; Shirota, Katsuhiro; and Takahashi, Katsuhiko, 5,614,007, Cl. 106-22.00R.
Kuribayashi, Masaki; Futami, Yukiko; Inoue, Hiroshi; Tsuboyama, Akira; and Inaba, Yutaka, 5,615,027, Cl. 345-87.000.
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Gill, Avtar S., 5,613,765, Cl. 362-269.000.
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Stanczyk, Daniel, 5,614,894, Cl. 340-933.000.

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Ramig, Robert F.; and Chen, Dayue, 5,614,403, Cl. 435-235.100.

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Connors, Edward J.; Cotter, Michelle L.; and Chen, Fu, 5,614,602, Cl. 526-307.300.

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Chin, Albert K., to Origin Medsystems, Inc. Everting cannula apparatus and method. 5,613,947, Cl. 604-96.000.

Chin, Paul W., Jr.; and Keng, Hsing M., to Lite Corporation. Apparatus for securing component panels in a lighting fixture. 5,613,770, Cl. 362-367.000.

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Ralph, Peter; and Chong, Kong T., 5,614,183, Cl. 424-85.100.
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Clausen, Anders U.; Christensen, Vermnnd R.; and Jensen, Soren L., 5,614,452, Cl. 501-155.000.

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Lawson, John C., 5,613,398, Cl. 73-304.00C.
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Rygiel, Ronald, 5,613,469, Cl. 123-90.160.
Sauve, Paul J., 5,613,327, Cl. 49-490.100.
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Mitchell, Gordon; Fraser, Iain F.; and Langley, Robert, 5,614,013, Cl. 106-494.000.
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Sugai, Makoto, 5,613,789, Cl. 400-661.200.

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Vu, Thomas H., 5,613,588, Cl. 192-113.350.

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Rank, David B.; Clymer, Mark L.; and Graves, Glenn, 5,613,571, Cl. 180-282.000.

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Vatavuk, Jan; Neto, Jose R. Z.; and Piccili, Marcos R., 5,614,022, Cl. 118-302.000.

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Cole, Ronald A.: *See*—
Marohl, Todd T.; Burdick, Robert; and Cole, Ronald A., 5,613,368, Cl. 62-84.000.

Coleman Taymar Limited: *See*—
Covault, Andrew J., 5,613,485, Cl. 126-38.000.

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Barringer, Lloyd F., Jr.; and Ledford, William T., 5,614,598, Cl. 525-431.000.

Comini, Dario: *See*—
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Commonwealth Scientific and Industrial Research Organisation: *See*—
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Mortensen, Owen J.; Dalton, Jeffery S.; Miller, Jeffrey S.; and Chinnock, Douglas P., 5,615,131, Cl. 364-514.00A.

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Dickert, Arby D.; Kirkpatrick, James F.; Johnson, Eric L.; and Hawn, Keith A., 5,614,830, Cl. 324-553.000.

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Beck, Martin H.; Rollend, George F.; Muszynski, John H.; Reed, Lydia K.; Hickey, Scott J.; Connor, Dennis C.; and Caldicott, Robert, 5,614,148, Cl. 264-532.000.

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O'Neill, Andrew J.; Cook, William H.; Strauss, Richard F.; and Dumont, Kenneth R., 5,613,298, Cl. 29-869.000.

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Chester, Roy E.; Coons, Andrew M., III; Harrelson, Hugh G., Jr.; King, Willis M.; Potter, George E.; Sanford, Carl D.; Smith, Patrick C.; Thompson, Melvin R.; Vickery, Leonard C., Jr.; and Whitfield, Jerry M., 5,613,285, Cl. 28-247.000.

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Leverenz, Clifford W.; Cooper, Jamshed R.; Sohm, Stephen P.; Rudina, Jehangir E.; and Larson, Steven C., 5,613,314, Cl. 40-610.000.

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MacDonald, Noel C.; and Lo, Yu-hwa, 5,615,143, Cl. 365-112.000.
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Conrad, Hans-Rolf; and Cramer, Dirk, 5,613,307, Cl. 34-425.000.

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Pinneo, John M., 5,614,140, Cl. 264-81.000.

CTA International: *See*—
Gyre, Christian; and Vieillefond, Daniel, 5,614,689, Cl. 89-33.040.

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Curators Of The University of Missouri, The: *See*—
Tan, Jinglu; and Wang, Limin, 5,613,514, Cl. 137-102.000.

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Curran, Patrick J.; McCoy, Juliette J.; Panganis, Michael A.; Waskiewicz, David C.; Schwager, Bryce A.; and Rychlick, Edward G., to Ford Motor Company. Method and system for monitoring an evaporative purge system. 5,614,665, Cl. 73-118.100.

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Person, Herman R.; Adelman, Jeffrey T.; Tschosik, Bruce A.; Veik, Thomas L.; and Zwick, Scott D., 5,614,757, Cl. 257-531.000.

D'Alessandro, Patricia M.: *See—*
Bremner, Ronald D.; Newendorp, Bruce C.; and D'Alessandro, Patricia M., 5,613,584, Cl. 192-4.00C.

Dallas Semiconductor Corp.: *See—*
Bolan, Michael L.; and Fekete, Nicholas M.G., 5,615,130, Cl. 364-505.000.

Dallmann, Brian D.: *See—*
Dallmann, Mary B.; Voss, Gregory O.; and Dallmann, Brian D., 5,613,277, Cl. 16-368.000.

Dallmann, Mary B.; Voss, Gregory O.; and Dallmann, Brian D., to Truth Hardware Corporation. Window hinge shoe. 5,613,277, Cl. 16-368.000.

Dalrymple, Joel, deceased (by Lonnie Dalrymple, Legal Representative): *See—*
Schmaljohn, Connie S.; McClain, David J.; Dalrymple, Joel, deceased, 5,614,193, Cl. 424-186.100.

Dalrymple, Lonnie, Legal Representative: *See—*
Schmaljohn, Connie S.; McClain, David J.; Dalrymple, Joel, deceased, 5,614,193, Cl. 424-186.100.

Dalton, Jeffery S.: *See—*
Mortensen, Owen J.; Dalton, Jeffery S.; Miller, Jeffrey S.; and Chitnock, Douglas P., 5,615,131, Cl. 364-514.00A.

Dames, Andrew; Ely, David; and Ager, Colin, to Crane & Co., Inc. Harmonic-based verifier device for a magnetic security thread having linear and non-linear ferromagnetic characteristics. 5,614,824, Cl. 324-239.000.

Dammel, Ralph; Lingnau, Juergen; Pawlowski, Georg; and Theis, Juergen, to Hoechst Aktiengesellschaft. Radiation-curable mixture, and radiation-sensitive recording material produced therefrom for high-energy radiation. 5,614,351, Cl. 430-270.100.

Dammel, Ralph R.: *See—*
Rahman, M. Dalil; Aubin, Daniel P.; Durham, Dana L.; and Dammel, Ralph R., 5,614,349, Cl. 430-169.000.

Dana Corporation: *See—*
Baxter, Ralph W., Jr., 5,613,587, Cl. 192-53.320.

Dangelo, Carlos: *See—*
Deeley, Richard; and Dangelo, Carlos, 5,615,126, Cl. 364-489.000.

D'Angelo, Joseph P.; and Schur, Henry, to International Medical Associates, Inc. Method of transdermally administering high molecular weight drugs with a polymer skin enhancer. 5,614,212, Cl. 424-449.000.

Dangelo, Michael T.; Glassett, Kevin L.; and Bauer, Stephen W., to Hewlett-Packard Company. Manual pen selection for clearing nozzles without removal from pen carriage. 5,614,929, Cl. 347-30.000.

Daniel, Larry W.: *See—*
Piantadosi, Claude; Ishaq, Khalid S.; Marasco, Canio J., Jr.; Daniel, Larry W.; Kucera, Louis S.; Modest, Edward J.; and Goz, Barry P., 5,614,548, Cl. 514-440.000.

Daniel, Sean C.: *See—*
Garrison, Michi E.; and Daniel, Sean C., 5,613,937, Cl. 600-201.000.

Dantlgraber, Jorg; Schulz, Lothar; and Puschel, Reiner, to Mannesmann Rexroth GmbH. Hydraulic circuit for supplying a plurality of series-operated of a hydraulically controlled installation. 5,613,361, Cl. 60-427.000.

Darcy, John J., to Xerox Corporation. Extrusion system with slide dies. 5,614,260, Cl. 427-277.000.

Darnell, Robert B.: *See—*
Posner, Jerome B.; Darnell, Robert B.; and Furneaux, Henry M., 5,614,371, Cl. 435-7.230.

Darwish, Hisham M.: *See—*
DeLuca, Hector F.; Perlman, Kato L.; Sicinski, Rafal R.; and Darwish, Hisham M., 5,614,512, Cl. 514-167.000.

Das, Amitabh: *See—*
Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

DaSilva, Joseph: *See—*
Bessey, William E.; and DaSilva, Joseph, 5,613,986, Cl. 8-489.000.

Dassault Systemes of America Corp.: *See—*
Corn, Edward T., 5,615,321, Cl. 395-133.000.

DataCard Corporation: *See—*
Lundstrom, Robert W.; Miller, Steven A.; and Sorensen, Eric J., 5,614,707, Cl. 235-479.000.

Datta, Madhav: *See—*
Brophy, Denis J.; Datta, Madhav; Harris, Derek B.; Ryan, Frank S.; and Spera, Frank A., 5,614,076, Cl. 205-666.000.

Datz, Armin: *See—*
Mund, Konrad; Rao, J. Raghavendra; and Datz, Armin, 5,614,246, Cl. 427-2.240.

Daubendiek, Richard L.: *See—*
Wilson, Robert D.; Olm, Myra T.; Daubendiek, Richard L.; Black, Donald L.; Deaton, Joseph C.; Gersey, Timothy R.; Lighthouse, Joseph G.; and Wen, Xin, 5,614,358, Cl. 430-567.000.

Davault, Elaine J. Combination 3-D pop-up display and CD holder. 5,613,612, Cl. 206-768.000.

David Sarnoff Research Center, Inc.: *See—*
Avery, Leslie R., 5,615,074, Cl. 361-56.000.

Davidson, Leonard; Russell, Matt; Allred, Scott; and Russell, Michael S., to CreataCard, Inc. System for creating and producing custom card products. 5,615,123, Cl. 364-479.030.

Davidson, Thomas C.; and Werner, Georgina M., to Rhone-Poulenc Inc. Methods of attracting and combatting insects. 5,614,182, Cl. 424-84.000.

Davies, Neil; and McCormick, Malcolm, to De Montfort University. Imaging system. 5,615,048, Cl. 359-622.000.

Davis, Andrew G., to British Telecommunications public limited company. Transmission system for coded speech signals and/or voiceband data. 5,615,297, Cl. 395-2.100.

Davis, Ann: *See—*
Bradley, Allan; Davis, Ann; and Hasty, Paul, 5,614,396, Cl. 435-172.300.

Davis, John B.: *See—*
Schilling, Hugh K.; Davis, John B.; and Bredt, Robert C., 5,613,586, Cl. 192-48.300.

Davis, Kirk E.: *See—*
Salomon, Mary F.; Davis, Kirk E.; Karn, Jack L.; and Cahoon, John, 5,614,480, Cl. 508-287.000.

Davis, Lisa L.; Bartalo, Susan M.; Mensch, James L.; Pontarelli, Mark C.; and Snow, Robert E., Jr., to Apple Computer, Inc. Method and apparatus for linking images of sliders on a computer display. 5,615,347, Cl. 395-349.000.

Davis, William M.: *See—*
Shen, Nancy L. L.; Kacian, Daniel L.; Putnam, James G.; and Davis, William M., 5,614,387, Cl. 435-91.200.

Da Vitoria Lobo, Luis J. Sealed container that is easily opened and mass-produced. 5,613,617, Cl. 220-359.000.

Davlyn Manufacturing Co., Inc.: *See—*
Bono, James J., Jr.; and Flasher, Gary L., 5,614,282, Cl. 428-116.000.

Dawson, Ronald A. Slack check tool. 5,613,412, Cl. 81-484.000.

Day, Thomas M.: *See—*
Kramer, Richard M.; Day, Thomas M.; Lindemann, Ralph E., Jr.; and Gillespie, Jane L., 5,614,468, Cl. 504-206.000.

De Montfort University: *See—*
Davies, Neil; and McCormick, Malcolm, 5,615,048, Cl. 359-622.000.

Deacon, David A. G.: *See—*
Field, Simon J.; and Deacon, David A. G., 5,615,041, Cl. 359-326.000.

Deacon Research: *See—*
Field, Simon J.; and Deacon, David A. G., 5,615,041, Cl. 359-326.000.

Dean, Frank W., to Stoller Enterprises, Inc. Solubilization of boric acid. 5,614,653, Cl. 556-7.000.

Dean, Vincil C.: *See—*
Babayev, Djangir A.; Berger, Richard M.; Dean, Vincil C.; Hansen, Ronald L.; and Parrish, Scott H., 5,615,121, Cl. 395-209.000.

DeAngelis, Peter C., to Fiskars Inc. Power control method and apparatus. 5,615,107, Cl. 364-141.000.

Deaton, Joseph C.: *See—*
Wilson, Robert D.; Olm, Myra T.; Daubendiek, Richard L.; Black, Donald L.; Deaton, Joseph C.; Gersey, Timothy R.; Lighthouse, Joseph G.; and Wen, Xin, 5,614,358, Cl. 430-567.000.

Deaver, Gerald A.; Pyron, James W.; and Nguyen, Anh N., to General Electric Company. Core differential pressure and liquid control line apparatus in a nuclear reactor. 5,615,239, Cl. 376-247.000.

DeBalko, George A., to Lucent Technologies Inc. Coaxial cable service interrupter. 5,614,939, Cl. 348-6.000.

Debinski, Waldemar: *See—*
Puri, Raj K.; Debinski, Waldemar; Pastan, Ira; and Obiri, Nicholas, 5,614,191, Cl. 424-178.100.

de Bon, Alain: *See—*
Bollaert, Geoffroy; Gillet, Vincent; Guerin, Georges J. M.; and de Bon, Alain, 5,613,340, Cl. 52-740.400.

DeBrosse, John K., to International Business Machines Corporation. Method of making buried strap trench cell yielding an extended transistor. 5,614,431, Cl. 437-52.000.

Debuisschert, Thierry: *See—*
Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Debuisschert, Thierry, 5,615,042, Cl. 359-338.000.

DeBush, George, to D & T, Inc., The. Miniature peak flow meter. 5,613,497, Cl. 128-726.000.

Deckner, George E.: *See—*
Bloom, Roberta C.; and Deckner, George E., 5,614,178, Cl. 424-60.000.

Deddens, John A., Sr.; and Thomas, Charles W. Sealing apparatus. 5,613,282, Cl. 24-30.50R.

Deeley, Richard; and Dangelo, Carlos, to LSI Logic Corporation. High-speed internal interconnection technique for integrated circuits that reduces the number of signal lines through multiplexing. 5,615,126, Cl. 364-489.000.

Deere & Company: *See—*
Bremner, Ronald D.; Newendorp, Bruce C.; and D'Alessandro, Patricia M., 5,613,584, Cl. 192-4.00C.
Cox, Philip D.; and Thompson, Warren L., 5,613,566, Cl. 172-174.000.
Harden, Philip A., 5,613,907, Cl. 460-109.000.

Deevi, Seetharama C.: *See—*
Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

DeFina, Linda E. Moisturizing glove. 5,614,202, Cl. 424-402.000.

Defoßa, Elisabeth: *See—*
Fischer, Gerd; Defoßa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,614,623, Cl. 540-222.000.

de Fornel, Daniel: *See—*
Binet, Jean; Samreth, Soth; and de Fornel, Daniel, 5,614,534, Cl. 514-315.000.

Degen, Peter J.; Harwood, Colin F.; Ronan, John B.; and Mei, Jason, to Pall Corporation. Filtration mediam support material and filter comprising same. 5,614,095, Cl. 210-491.000.

Degussa Aktiengesellschaft: *See—*
Binder, Dieter; Kleinschmit, Peter; Zetzmann, Klaus; and Hoffmeister, Hans, 5,614,011, Cl. 106-450.000.

Dehmer, Bernhard: *See—*
Glatz, Bernd; and Dehmer, Bernhard, 5,614,154, Cl. 422-103.000.
Kmiczek, Karsten; and Dehmer, Bernhard, 5,615,010, Cl. 356-328.000.

Deines, Kent L.: *See—*
Brumley, Blair H.; Deines, Kent L.; Cabrera, Ramon G.; and Terray, Eugene A., 5,615,173, Cl. 367-90.000.

Deister, E. Mark; and Loshe, Dale A., to Deister Machine Co., Inc. Vibrating screen unit. 5,614,094, Cl. 210-388.000.

Deister Machine Co., Inc.: *See—*
Deister, E. Mark; and Loshe, Dale A., 5,614,094, Cl. 210-388.000.

Dekorsy, Gerhard: *See—*
Kraft, Horst; and Dekorsy, Gerhard, 5,614,702, Cl. 235-145.00R.

Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Debuisschert, Thierry, to Thomson-CSF. Compact optical source based on the frequency doubling of a laser and self-stabilized by the depletion of the pump. 5,615,042, Cl. 359-338.000.

Delaney, Robert: *See—*
Passer, Barry E.; Smith, Michael; and Delaney, Robert, 5,613,787, Cl. 400-613.100.

Delassus, Pierre; Legrand, Hugues; Raisson, Gerard; Di Fant, Marc; Barbe, Jacques; and Mazodier, Francois, to Usinor-Sacilor Societe Aoonyme; and Thyssen Stahl Aktiengesellschaft. Casting roll for an installation for continuously casting on one or between two rolls. 5,613,546, Cl. 164-428.000.

Delco Electronics Corporation: *See—*
Pyburn, Robert A.; and Fye, Michael E., 5,614,338, Cl. 430-13.000.
Roe, Pamela A., 5,613,750, Cl. 362-26.000.

Delgado, Joaquin; Goetz, Richard J.; Silver, Spencer F.; and Lucast, Donald H., to Minnesota Mining and Manufacturing Company. Low trauma wound dressing with improved moisture vapor permeability. 5,614,310, Cl. 428-316.600.

Dell U.S.A., L.P.: *See—*
Estes, Scott H.; and Swamy, N. Deepak, 5,613.858, Cl. 439-46.000.
Howell, Bryan; and Hunter, Bryan, 5,613,786, Cl. 400-489.000.

Dell USA, L.P.: *See—*
Bell, Joseph W., Jr., 5,613,873, Cl. 439-490.000.
Estes, H. Scott, 5,614,698, Cl. 174-250.000.

Delle Vedove Levigatrici SpA: *See—*
Delle Vedove, Gaetano, 5,613,894, Cl. 451-1.000.

Delle Vedove, Gaetano, to Delle Vedove Levigatrici SpA. Method to hone curved and shaped profiles and honing machine to carry out such method. 5,613,894, Cl. 451-1.000.

Delp, Helen R.: *See—*
Braudaway, Gordon W.; and Delp, Helen R., 5,614,925, Cl. 345-153.000.

Delta Systems, Inc.: *See—*
Pittman, Bryan A.; and Williams, Thomas D., 5,613,598, Cl. 200-295.000.

DeLuca, Hector F.; Perlman, Kato L.; Sicinski, Rafal R.; and Darwish, Hisham M., to Wisconsin Alumni Research Foundation. 20-Oxo-pregnacalciferol analogs with binding affinity to the progesterone receptor. 5,614,512, Cl. 514-167.000.

de Luna, Gerardo S., to Policad Industrial, S.L. Shopping trolley for supermarkets and the like. 5,613,696, Cl. 280-33.992.

DeLustro, Frank A.: *See—*
Rhee, Woonza M.; Rao, Prema R.; Chu, George H.; DeLustro, Frank A.; Harner, Carol F. H.; Sakai, Naomi; and Schroeder, Jacqueline A., 5,614,587, Cl. 525-54.100.

DeMars, Robert A. Motorized bubble making and propelling toy gun with lateral wiper. 5,613,890, Cl. 446-15.000.

DeMars, Robert A. Head wear communication system. 5,615,410, Cl. 455-90.000.

Demerest, A. Edward, to Therma-Plate Corporation. Apparatus for producing a heat set article of thermoformed polyethylene terephthalate. 5,614,228, Cl. 425-326.100.

Demick, Robert L., to Hoover Universal, Inc. Vehicle seat armrest incorporating a transmitter unit for a garage door opening system. 5,613,732, Cl. 297-188.160.

den Boer, Willem; and Yang, Mohshi, to OIS Optical Imaging Systems, Inc. Method of making an array of TFTs having reduced parasitic capacitance. 5,614,427, Cl. 437-40.000.

Denis, Alexis: *See—*
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-Francois; Denis, Alexis; and Le Martret, Odile, 5,614,614, Cl. 536-7.500.

Denis Comact Inc.: *See—*
Brisson, Maurice, 5,613,538, Cl. 144-228.000.

Denkewicz, Raymond P., Jr.: *See—*
Gill, Petra M.; Borgstedt, Eric von Rehren; and Denkewicz, Raymond P., Jr., 5,614,160, Cl. 423-332.000.

Dennis, Mark A.; and Cotterill, Martyn A. Concealed fixing device. 5,613,793, Cl. 403-256.000.

Dent, Paul W., to Ericsson Inc. Balance companded delta conversion for homodyne receiver. 5,614,904, Cl. 341-143.000.

Dent, Paul W., to Ericsson Inc. Fast automatic gain control. 5,615,231, Cl. 375-340.000.

Deposition Technologies, Inc.: *See—*
Yang, Peter Y.; and Fairlie, Graeme J., 5,614,259, Cl. 427-255.100.

Depuy Inc.: *See—*
Lower, Jerry L.; and Balestrieri, John, 5,613,971, Cl. 606-96.000.

Dery, Normand; Santerre, Guy; and Jean, Alain, to Astroflex, Inc. Automotive opto-electric starter interlock. 5,614,883, Cl. 340-458.000.

Deslauries, Inc.: *See—*
Workman, Gary, 5,613,336, Cl. 52-301.000.

de Souza, Peter V.: *See—*
Bahl, Lahit R.; de Souza, Peter V.; Gopalakrishnan, Ponani; and Picheny, Michael A., 5,615,299, Cl. 395-2.630.

Devereaux, Ronda R.: *See—*
Dykster, Kerry R.; England, Jeffrey P.; Ealy, Philip M.; Furman, Michael; Merritt, Kim R.; and Devereaux, Ronda R., 5,615,244, Cl. 378-57.000.

Devier, Lonnie J.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Devine, Timothy R.: *See—*

Randolph, Donald A.; Negri, Jodi L.; Devine, Timothy R.; and Gitelis, Steven, 5,614,206, Cl. 424-426.000.

Devlin, Theresa: *See—*
Iyer, Radhakrishnan P.; Devlin, Theresa; Habus, Ivan; Yu, Dong; and Agrawal, Sudhir, 5,614,622, Cl. 536-25.330.

DeVree, William S.: *See—*
Van Lente, Paul S.; Zeinstra, Mark L.; Suman, Michael J.; and DeVree, William S., 5,614,885, Cl. 340-525.000.

DeWalls, Jennifer A.; and Binford, Mark S., to BetzDearborn Inc. Methods for treating mud wash emulsions. 5,614,101, Cl. 210-708.000.

Dezur, Terry M.; and Pollard, Richard W., to Environmentally Safe Systems, Inc. Environmentally safe pesticide and plant growth accelerator. 5,614,203, Cl. 424-405.000.

Diachuk, Wolodymyr, to Helical Dynamics, Inc. Air cleaning system for mechanical industrial processes. 5,613,990, Cl. 55-383.000.

Diamond, Bryan: *See—*
Jacobson, Michael B.; Voigt, Douglas L.; Burkes, Theresa A.; and Diamond, Bryan, 5,615,352, Cl. 395-441.000.

Diaz, Monica S.: *See—*
Jackson, Wanda W.; Diaz, Monica S.; and Garrett, Lance J., Jr., 5,614,281, Cl. 428-100.000.

Dicin Resources, Inc.: *See—*
Copley, Dianne M.; and Gallegos, Cindy K., 5,614,376, Cl. 435-30.000.

Dick, James D.; and Kuhajda, Francis P., to Johns Hopkins University, The. Inhibitors of fatty acid synthesis as antimicrobial agents. 5,614,551, Cl. 514-454.000.

Dickert, Arby D.; Kirkpatrick, James F.; Johnson, Eric L.; and Hawn, Keith A., to Computational Systems, Inc. Oil monitor with magnetic field. 5,614,830, Cl. 324-553.000.

Didelot, Claude; Ducret, Jean; and Kadzialka, Edouard, to Saint-Gobain Vitrage; and Asahi Glass. Device for the production of an asymmetric laminated pane by calendering. 5,614,058, Cl. 156-542.000.

Didion, Charles J.: *See—*
Didion, Michael S.; and Didion, Charles J., 5,613,902, Cl. 451-326.000.

Didion Manufacturing Company: *See—*
Didion, Michael S.; and Didion, Charles J., 5,613,902, Cl. 451-326.000.

Didion, Michael S.; and Didion, Charles J., to Didion Manufacturing Company. Sand reclaimer. 5,613,902, Cl. 451-326.000.

Diebold, James L.: *See—*
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,614,649, Cl. 554-56.000.

Diener, Carl E.; Mehta, Ashit A.; Paonessa, Ralph S.; Skarvinko, Eugene R.; and Wang, David W., to International Business Machines Corporation. Coated filler and use thereof. 5,614,250, Cl. 427-96.000.

Di Fant, Marc: *See—*
Delassus, Pierre; Legrand, Hugues; Raisson, Gerard; Di Fant, Marc; Barbe, Jacques; and Mazodier, Francois, 5,613,546, Cl. 164-428.000.

Different Dimensions Inc.: *See—*
Zuckerman, Andrew M., 5,613,629, Cl. 223-85.000.

Digestive Care Inc.: *See—*
Sipos, Tibor, 5,614,223, Cl. 424-489.000.

Digital Equipment Corporation: *See—*
Donchin, Dale R., 5,615,283, Cl. 382-187.000.
Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, 5,614,444, Cl. 437-225.000.
Gavin, Vincent G.; Seaman, Michael J.; Crook, Neal A.; and Mistry, Bipin, 5,615,382, Cl. 395-800.000.
Jain, Anil K.; Edmondson, John H.; and Bannon, Peter J., 5,615,167, Cl. 365-230.080.
Jenness, Steven M., 5,615,363, Cl. 395-614.000.

Di Leo, Vincenzo, to Idee & Prodotti S.r.l. Filter for the separation of solids and liquids from muds and specifically those from industrial processing. 5,614,092, Cl. 210-350.000.

Dillenbeck, Robert L., III, to BJ Services Company. Method for controlling the set time of cement. 5,613,558, Cl. 166-293.000.

DiLuigi, Michael W.; Lund, Raymond R.; and Bramlett, Kevin D., to Trinity Industries, Inc. Railway hopper car gate valve and operating assembly. 5,613,446, Cl. 105-282.200.

Dimarogonas, Andrew D., to Washington University. Method and apparatus for predicting fatigue by introducing a continuous excitation to determine damping factor. 5,614,674, Cl. 73-577.000.

Dinardo, Steven J.; and Smith, Mark A., to United States of America, National Aeronautics and Space Administration. Global positioning system antenna fixed height tripod adapter. 5,614,918, Cl. 343-882.000.

Dinc, Osman S.: *See—*
Wolfe, Christopher E.; and Dinc, Osman S., 5,613,829, Cl. 415-174.100.

Dinello, Alexandre M.: *See—*
Engelhardt, John; and Dinello, Alexandre M., 5,613,967, Cl. 606-61.000.

Ding, Cheng-Liang: *See—*
Scepanovic, Ranko; and Ding, Cheng-Liang, 5,615,128, Cl. 364-489.000.

Dingerdissen, Uwe: *See—*
Gies, Hermann; Vortmann, Silke; Marler, Bernd; Müller, Ulrich; and Dingerdissen, Uwe, 5,614,166, Cl. 423-718.000.

Dino, David J.; and Homack, Anthony, to Rhone-Poulenc Inc. Use of high purity imidazoline based amphoacetate surfactant as foaming agent in oil wells. 5,614,473, Cl. 507-202.000.

DiPalma, Joseph; and Anjur, Sowmya S., to Kimberly-Clark Corporation. Thin, curved absorbent article having elasticized edges. 5,613,961, Cl. 604-369.000.

Distler, Jürgen: *See—*
Piepersberg, Wolfgang; Stockmann, Michael; Taleghani, Kambiz M.; Distler, Jürgen; Grabley, Susanne; Sichel, Petra; and Bräu, Barbara, 5,614,619, Cl. 536-23.200.

Dittgen, Michael: *See—*
Elger, Walter; Schneider, Birgitt; Oettel, Michael; Ernst, Michael; Hübler, Doris; and Dittgen, Michael, 5,614,213, Cl. 424-449.000.

Ditzinger, Günter: *See—*
Krone, Volker; Magerstädt, Michael; Walch, Axel; Ditzinger, Günter; and Lill, Norbert, 5,613,494, Cl. 128-662.020.

Dixon, Billy D. Apparatus and method for energy conversion using gas hydrates. 5,613,362, Cl. 60-649.000.

Dixon, W. Thomas, to Emory University. Methods for prepulsing in nuclear magnetic resonance pulse sequencing. 5,614,826, Cl. 324-307.000.

Dizerega, Gere S.: *See—*
Rodgers, Kathleen E.; and Dizerega, Gere S., 5,614,515, Cl. 514-176.000.

Doane, Kirk D.: *See—*
Tuckey, Charles H.; Doane, Kirk D.; and Williams, Kevin L., 5,613,844, Cl. 417-366.000.

Dobler, Karl-Otto; Klett, Gustav; Dahm, Horst; and Jocher, Rainer, to Robert Bosch GmbH; and Mercedes - Benz AG. Headlight for vehicles. 5,613,754, Cl. 362-66.000.

Dobring, Wilfried, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Cutting device for cutting a print carrier in a printer. 5,613,788, Cl. 400-621.000.

Document Authentication Systems, Inc.: *See—*
Bisbee, Stephen F.; and Trotter, Douglas H., 5,615,268, Cl. 380-25.000.

Documotion, Inc.: *See—*
Golicz, Stefan G.; and Golicz, Roman M., 5,613,674, Cl. 271-250.000.

Doepker, Roy J.: *See—*
Bass, Mark; Doepker, Roy J.; Caillat, Jean-Luc M.; and Warner, Wayne R., 5,613,841, Cl. 417-310.000.

Doerge, Herman P.: *See—*
Werner, Joachim; Kane, Scott A.; Doerge, Herman P.; and Boonstra, Eric F., 5,614,565, Cl. 521-131.000.

Dofher, Darren: *See—*
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Wickiser, David L., 5,614,525, Cl. 514-255.000.
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Mukerji, Prosanto K.; Elliott, Alexander J.; and Suppiah, Shanmugam, 5,614,131, Cl. 264-1.900.
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Kikinis, Dan, 5,613,906, Cl. 454-184.000.
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Gysi, Peter; Huesser, Theo; and Wildmann, Daniel, 5,613,713, Cl. 285-12.000.
ELR, Inc.: *See*—
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Onffroy, Joshua P.; Masood, Rehan; Mullahy, Brian B.; and Pritoni, Harold F., Jr., 5,615,335, Cl. 395-183.060.
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Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.
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Dixon, W. Thomas, 5,614,826, Cl. 324-307.000.
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Winston, A. E.; and Usen, Norman, 5,614,175, Cl. 424-52.000.
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Usala, Anton-Lewis, 5,614,205, Cl. 424-424.000.
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Engel, Ferdinand; MacDonald, Wilson T.; and Hamlin, Arthur P., to Concord Communications, Inc. Displaying resource performance and utilization information. 5,615,323, Cl. 395-140.000.
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Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.
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Elger, Walter; Schneider, Birgitt; Oettel, Michael; Ernst, Michael; Hübler, Doris; and Dittgen, Michael, 5,614,213, Cl. 424-449.000.
Entek Corporation: *See*—
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Hauel, Norbert; Narr, Berthold, deceased; Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, 5,614,519, Cl. 514-235.800.
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Epstein, Michael J.: *See*—
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Blank, Timothy J.; Erickson, Kevin J.; Greenberg, Richard; and Purkett, John C., 5,615,064, Cl. 360-75.000.
Ericsson Inc.: *See*—
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Dent, Paul W., 5,614,904, Cl. 341-143.000.
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Esche, Carl K., Jr.; Migdal, Cyril A.; Sanderson, John R.; and Ippolito, Anthony L., to Ethyl Additives Corporation. Polyisobutylene succinimide, ethylene-propylene succinimide and an alkylated phenothiazine additive for lubricating oil compositions. 5,614,124, Cl. 508-251.000.
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Esposito, Chris. Construction arrangement including multiple panels provided with interlocking edges and related methods. 5,613,338, Cl. 52-588.100.

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Ethyl Additives Corporation: *See*—
Esche, Carl K., Jr.; Migdal, Cyril A.; Sanderson, John R.; and Ippolito, Anthony L., 5,614,124, Cl. 508-251.000.

ETI Technologies Inc.: *See*—
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Peräla , Martti; and Sohlström, Lasse, 5,613,330, Cl. 52-167.100.

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Evans, James A.: *See*—
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Ewbank, Michael E.: *See*—
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Buening, Dennis J., 5,613,323, Cl. 49-380.000.
Kobrehel, Michael D., 5,613,322, Cl. 49-352.000.
Mariel, James G., 5,613,325, Cl. 49-404.000.

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F.L. Smidth & Co. A/S: *See*—
Hundebøl, Søren, 5,614,016, Cl. 106-745.000.

Fabris, Gracio, to California Institute of Technology. Generator section of a two-phase flow liquid metal magnetohydrodynamic (LMMHD) generator. 5,614,773, Cl. 310-11.000.

Faema S.P.A.: *See*—
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Fahey, Kevin J.: *See*—
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Fahlen, Theodore S.: *See*—
Spindt, Christopher J.; Morris, David L.; Fahlen, Theodore S.; Schmid, Anthony P.; and Lovoi, Paul A., 5,614,781, Cl. 313-422.000.

Failla, Stephen J., to Ethicon, Inc. Abdominal wall lift employing interconnecting bar members. 5,613,939, Cl. 600-201.000.

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Yang, Peter Y.; and Fairlie, Graeme J., 5,614,259, Cl. 427-255.100.

Falk, Rudolf E.; Asculai, Samuel S.; and Turley, Eva A., to Hyal Pharmaceutical Corporation. Use of hyaluronic acid and forms to prevent arterial restenosis. 5,614,506, Cl. 514-54.000.

Fandrich, Helmut E.; and Krammer, Kelly A., to Fandrich, Helmut E. Method and hydraulic grapple apparatus for grasping and lifting bulk materials. 5,613,722, Cl. 294-88.000.

Fankhauser, Peter: *See*—
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Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, to Sematech, Inc.; Intel Corporation; National Semiconductor Corp.; and Digital Equipment Corp. Method of using additives with silica-based slurries to enhance selectivity in metal CMP. 5,614,444, Cl. 437-225.000.

Farnos, Maria D.; Forbus, Thomas R., Jr.; McWilliams, John P.; and Shihabi, David S., to Mobil Oil Corporation. Catalytic dewaxing over silica bound molecular sieve. 5,614,079, Cl. 208-27.000.

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Farrington, Theodore E., Jr.: *See*—
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Fastener Engineers Group, Inc.: *See*—
McCabe, Troy A., 5,613,286, Cl. 29-81.040.

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Chadbourne, Richard; Lasko, William J.; Fatorusso, José C.; Barbosa, Amauri; and Grillo, Sergio R., 5,613,883, Cl. 439-783.000.

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Fearnehough, Peter: *See*—
Ridley, Ian H.; and Fearnehough, Peter, 5,613,777, Cl. 374-130.000.

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Feldmann-Schlobohm, Günther: *See*—
Riddle, Rodney; Kuntz, Matthias; Müller, Bernd; Raulin, Dietmar; and Feldmann-Schlobohm, Günther, 5,614,472, Cl. 505-425.000.

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Gumbiowski, Rainer; Ebisch, Rolf; and Schulz, Hartmut, 5,614,345, Cl. 430-104.000.

Feltz, Kristi T.: *See*—
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Fenderson, John M.: *See*—
Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, 5,614,466, Cl. 504-110.000.

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Ferčej-Temeljotov, Darja: *See*—
Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič , Mateja, 5,614,199, Cl. 424-400.000.

Ferguson, Keith R.: *See*—
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Ferguson, Scott: *See*—
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Fernandez, John: *See*—
Mondragon, Fanor; Fernandez, John; Jaramillo, Alfredo; and Quintero, Gustavo, 5,614,459, Cl. 502-417.000.

Ferran, Robert J., to Ferran Scientific. Method of making a residual gas sensor utilizing a miniature quadrupole array. 5,613,294, Cl. 29-825.000.

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Ferrandino, Michael S.: *See*—
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Fetterman, Michael A.; Glew, Andrew F.; Hinton, Glenn J.; Papworth, David B.; and Colwell, Robert P., to Intel Corporation. Method and apparatus for zero extension and bit shifting to preserve register parameters in a microprocessor utilizing register renaming. 5,615,385, Cl. 395-800.000.

Feuerhake, Adolf: *See*—
Gellermann, Wolf-Dieter; Feuerhake, Adolf; Comini, Dario; and Martinelli, Guido, 5,613,654, Cl. 246-182.00B.

Fichtel & Sachs AG: *See*—
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Fiedler, Detlef H.: *See*—

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Fiedler, Horst-Lothar: *See*—
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Field, Simon J.; and Deacon, David A. G., to Deacon Research. Fabrication of patterned poled dielectric structures and devices. 5,615,041, Cl. 359-326.000.

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Filler, Aaron G.; and Lever, Andrew M., to Syngenix Limited. Particulates. 5,614,652, Cl. 556-136.000.

Filter-und Wassertechnik GmbH: *See*—
Schmid, Jürgen T., 5,613,805, Cl. 405-128.000.

Fina Technology, Inc.: *See*—
Ewen, John A.; and Elder, Michael J., 5,614,457, Cl. 502-117.000.

Finocchiaro, Eugene T.: *See*—
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Rudolph, Axel, 5,613,666, Cl. 267-140.120.

Firmenich SA: *See*—
Giersch, Wolfgang K.; and Fankhauser, Peter, 5,614,486, Cl. 512-21.000.

Fischbach, Michel: *See*—
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Fischer, Alfred: *See*—
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Fischer, Craig M., to TRW Vehicle Safety Systems Inc. Apparatus for inflating an inflatable vehicle occupant protection device. 5,613,703, Cl. 280-737.000.

Fischer, Gerd; Defoßa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, to Hoechst Aktiengesellschaft. Diastereomers of 1-(isopropoxycarbonyloxy)ethyl 3-cephem-4-carboxylate and processes for their preparation. 5,614,623, Cl. 540-222.000.

Fischer, James B.: *See*—
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Fischer, Martin: *See*—
Bender, Dietmar; Bronstert, Klaus; Mach, Helmut; and Fischer, Martin, 5,614,595, Cl. 525-332.800.

Fisher, Daniel J.; Agrawal, Raj K.; Crank, Douglas; and Carter, John W., to Donnelly Corporation. Vehicular panel assembly and method for making same. 5,614,051, Cl. 156-245.000.

Fisher, Michael J., to GenCorp Inc. Vacuum retention gasket splicing. 5,614,052, Cl. 156-304.200.

Fisher-Price, Inc.: *See*—
McKee, Craig V.; Steer, Michael S.; Donner, Garrett J.; Snell-Kelly, Janet E.; and Robjent, Fred B., 5,613,678, Cl. 473-397.000.

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Maxfield, Bruce W.; and Fitzgerald, Pamela C., 5,614,825, Cl. 324-242.000.

Fitzpatrick, Patrick J., to Amoco Corporation. Stepped steel gravity platform for use in arctic and subarctic waters. 5,613,808, Cl. 405-217.000.

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Campbell, John M.; Fleischhauer, Grier S.; Higgins, Charles T.; Ripley, Robert L.; Sharpe, David E.; Watkins, Michael L.; and Wrenn, Susan E., 5,613,505, Cl. 131-194.000.

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Focke, Heinz; and Stiller, Martin, 5,613,932, Cl. 493-128.000.

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Brandstetter, Robert W.; and Fonneland, Nils J., 5,615,022, Cl. 359-12.000.

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Curran, Patrick J.; McCoy, Juliette J.; Panganis, Michael A.; Waskiewicz, David C.; Schwager, Bryce A.; and Rychlick, Edward G., 5,614,665, Cl. 73-118.100.
Gates, Freeman C.; McCliment, Gregory; and Pratt, Joseph W., 5,613,479, Cl. 123-568.000.
Habel, Michael J.; and Peterson, Larry A., 5,614,108, Cl. 219-69.150.
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Binet, Jean; Samreth, Soth; and de Fornel, Daniel, 5,614,534, Cl. 514-315.000.

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Chadbourne, Richard; Lasko, William J.; Fatorusso, José C.; Barbosa, Amauri; and Grillo, Sergio R., 5,613,883, Cl. 439-783.000.
France Telecom: *See*—
Boisrobert, Christian; Dontenwille, Michel; and Corne, Loïc, 5,615,011, Cl. 356-345.000.
Coutrot, Francoise, 5,615,265, Cl. 380-20.000.
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Palmer, Matthew A.; Francese, Jose L.; Whittier, John R.; and Bales, Thomas O., 5,613,499, Cl. 128-751.000.
Francis, Michael A.: *See*—
Potnis, Prasad S.; and Francis, Michael A., 5,614,283, Cl. 428-131.000.
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Frank, Robert K. Onboard aircraft flight path optimization system. 5,615,118, Cl. 364-424.013.
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Franz, George W. Glass shower door hinge system and method. 5,613,276, Cl. 16-229.000.
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Mitchell, Gordon; Fraser, Iain F.; and Langley, Robert, 5,614,013, Cl. 106-494.000.
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Goedicke, Klaus; Scheffel, Bert; Reschke, Jonathan; Schiller, Siegfried; Kirchhoff, Volker; and Werner, Torsten, 5,614,273, Cl. 427-569.000.
Schiller, Siegfried; Neumann, Manfred; Kirchhoff, Volker; Zeissig, Gerhard; Schiller, Nicolas; and Goedicke, Klaus, 5,614,248, Cl. 427-8.000.
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Radecker, Matthias; and Fiedler, Horst-Lothar, 5,615,100, Cl. 363-97.000.
Freed, Brian S.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,614,631, Cl. 346-176.000.
Freeman, Albert E.: *See*—
Tuggle, Christopher K.; and Freeman, Albert E., 5,614,364, Cl. 435-6.000.
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Casa, Nikko; and Frené, Cynthia C., 5,613,679, Cl. 273-138.100.
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Wamsiedler, Ralf; Wojke, Ralf; Pieper, Walter; and Christmann-Braun, Horst, 5,614,677, Cl. 73-715.000.
Frey, Phillip L.: *See*—
Austin, Mary A.; Dunne, Kenneth C.; Lindland, Dag; Frey, Phillip L.; Hystad, Dean G.; Nelson, Richard E.; and Warner, Bradley D., 5,614,116, Cl. 219-130.210.
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Weber, Robert; Schaber, Georg; and Frings, Lars, 5,613,977, Cl. 606-170.000.
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Harbison, Kenneth G.; Gaugh, Wilbur S.; Whitesides, Thomas H.; and Friday, James A., 5,614,360, Cl. 430-612.000.
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Friedrich, Leslie B.: *See*—
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Fu, Kejian: *See*—
Moskovits, Martin; Fu, Kejian; and Gu, Xijia, 5,614,258, Cl. 427-249.000.
Fuchs, Juergen: *See*—
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Fueta, Shigekazu: *See*—
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Fuji Electric Co., Ltd.: *See*—
Hirabayashi, Atsuo, 5,614,445, Cl. 437-226.000.
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.
Iwamuro, Noriyuki, 5,614,738, Cl. 257-147.000.
Kitamura, Shoji; Nagano, Satoru; Shindo, Yoichi; and Oguri, Katsumi, 5,614,735, Cl. 257-99.000.
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Saito, Yoshiko; Fujita, Teruyuki; and Iijima, Tomoo, 5,613,345, Cl. 53-266.100.
Fuji Photo Film Co., Ltd.: *See*—
Ito, Hideaki; and Iwasaki, Masayuki, 5,614,350, Cl. 430-257.000.
Itoh, Koji, 5,614,979, Cl. 396-578.000.
Komaki, Iwao; Nakajima, Saburo; and Ichikawa, Fusao, 5,615,395, Cl. 396-6.000.
Nii, Kazumi; and Morimoto, Kiyoshi, 5,614,356, Cl. 430-442.000.
Shimizu, Osamu; and Nakanishi, Kanji, 5,614,329, Cl. 428-694.00T.
Takahashi, Shinsuke; and Shibata, Norio, 5,614,023, Cl. 118-410.000.
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Fuji Photo Optical Co Ltd.: *See*—
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Tanaka, Toshizumi, 5,614,660, Cl. 73-37.000.
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Kanesawa, Yoshio; Uehara, Yasuhiro; and Kusumoto, Yasuhiro, 5,614,999, Cl. 399-329.000.
Koike, Takao; and Naitoh, Koichi, 5,614,931, Cl. 347-43.000.
Koshi, Yutaka; Kimura, Shunichi; Yokose, Taro; Kamizawa, Koh; Minami, Toshi; and Nakamura, Osamu, 5,615,288, Cl. 382-248.000.
Ogi, Kenji; Takayama, Hiroshi; Yamamoto, Yasuo; Maruyama, Kazuo; and Akutsu, Eiichi, 5,614,935, Cl. 347-213.000.
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Fujikawa, Junji: *See*—
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Fujino, Masahiko: *See*—

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Fujino, Shigeo, to Kasei Optonix, Ltd. Fluorescent lamp including fired non-luminescent material. 5,614,783, Cl. 313-485.000.
Fujioka, Takahiro: *See*—
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Fujita, Hiroshi: *See*—
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Fujita, Teruyuki: *See*—
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Chiba, Hirotaka; and Noda, Tsugio, 5,614,960, Cl. 348-700.000.
Harasawa, Shinichirou; and Fujiwara, Haruo, 5,615,290, Cl. 385-24.000.
Ibusuki, Takeshi; and Miyahara, Shinji, 5,615,375, Cl. 395-737.000.
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Kawashima, Masato; Shimobuchi, Hideyuki; Okitsu, Hiroyuki; Matsuzuki, Masato; Yoshida, Hiroaki; Fujii, Michihiro; Okawa, Yukinari; Iida, Masaru; Ito, Katsuyasu; Toda, Yukihide; and Nagai, Seiji, 5,615,001, Cl. 399-226.000.
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Nishina, Toshihide, 5,615,372, Cl. 395-653.000.
Nishino, Fumihito; and Sugimoto, Naomi, 5,615,378, Cl. 395-754.000.
Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hirosbi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.
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Suzuki, Toshihiro; Ohashi, Noriyuki; Hamada, Tetsuya; Kanno, Takashi; and Yamaguchi, Hisashi, 5,614,780, Cl. 313-35.000.
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Fujiwara, Toshihiko: *See*—
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Fukakusa, Masaharu, to Matsushita Electric Industrial Co., Ltd. Floating-type optical head having incorporated therein a floating slider and an optical device which floats with the slider, includes a light source, condensing unit and photodetector and is supported movably relative to the floating slider. 5,615,203, Cl. 369-244.000.
Fukami, Takehiro: *See*—
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Fukuchi, Masakazu: *See*—
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Fukuda, Eiji: *See*—
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Fukuda, Kyohei: *See*—
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Fukuda, Masaru; and Fukuda, Eiji, to Yazaki Corporation. Connection sensor and short-circuiting contact for connector. 5,613,872, Cl. 439-489.000.
Fukuda, Shinichi; Tanaka, Akio; and Odaka, Kentaro, to Sony Corporation. Dual-mode digital signal recording and/or reproducing apparatus. 5,615,055, Cl. 360-8.000.
Fukui, Eiji: *See*—
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Fukuoka, Hiroki, to Ricoh Company, Ltd. Still camera with time division recording of audio and video signals. 5,614,946, Cl. 348-232.000.
Fukushima, Hisashi; and Gu, Sono, to Canon Kabushiki Kaisha. Image processing apparatus. 5,615,311, Cl. 395-107.000.
Fukushima, Hisashi: *See*—
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.
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Furman, Michael: *See*—
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Posner, Jerome B.; Darnell, Robert B.; and Furneaux, Henry M., 5,614,371, Cl. 435-7.230.
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Suzuki, Satoshi; Takahashi, Kazuya; Kawada, Teruo; Suzuki, Yuuji; and Tanimoto, Morimasa, 5,614,328, Cl. 428-647.000.
Yoshida, Kazuaki; Morikawa, Takayuki; and Yagi, Takeshi, 5,615,295, Cl. 385-123.000.
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Yoshida, Yasuhiro; Itoh, Gen; Furukawa, Hiroyuki; and Takakura, Masaki, 5,614,934, Cl. 347-189.000.
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Harada, Kouichi; Furukawa, Junichi; Wada, Kazushi; and Sarai, Takaaki, 5,614,741, Cl. 257-233.000.
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Pyburn, Robert A.; and Fye, Michael E., 5,614,338, Cl. 430-13.000.
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Adams, Steven P.; Tjoeng, Foe S.; and Zupec, Mark E., 5,614,539, Cl. 514-357.000.
Talley, John J.; and Reed, Kathryn L., 5,614,522, Cl. 514-237.800.

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Boriani, Silvano; and Minarelli, Alessandro, 5,614,059, Cl. 156-509.000.
Osti, Roberto; and Gamberini, Antonio, 5,613,344, Cl. 53-234.000.
Gaalema, Stephen D.: *See*—
Gardner, David W.; Linnenbrink, Thomas E.; and Gaalema, Stephen D., 5,614,740, Cl. 257-222.000.
Gabriel, Fred C., to Hughes Aircraft Company. System and method for using phase differences to measure the thickness of an optical element. 5,614,675, Cl. 73-597.000.
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Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., to Olin Aerospace Company. Apparatus for suppressing a fire. 5,613,562, Cl. 169-12.000.
Gale, Robert M.; Lee, Eun Soo; Taskovich, Lina T.; and Burkoth, Terry L., to ALZA Corporation. Oxybutynin transdermal device having decreased delamination. 5,614,211, Cl. 424-448.000.
Gallagher, Timothy L.: *See*—
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Gallegos, Cindy K.: *See*—
Copley, Dianne M.; and Gallegos, Cindy K., 5,614,376, Cl. 435-30.000.
Gallup, Darrell L., to Union Oil Company of California. Method for water remediation. 5,614,100, Cl. 210-665.000.
Galperin, Leonid B.; Bogdan, Paula L.; and Boldingh, Edwin P., to UOP. Stable, high-yield reforming catalyst. 5,614,454, Cl. 502-66.000.
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Gane, Patrick A. C., to ECC International Limited. Color developer compositions for carbonless paper copying systems. 5,614,462, Cl. 503-201.000.
Gano, John C.: *See*—
Williamson, Jimmie R.; Gano, John C.; and Reesing, David L., 5,613,559, Cl. 166-381.000.
Gante, Joachim: *See*—
Juraszyk, Horst; Gante, Joachim; Wurziger, Hanns; Bernotat-Danielowski, Sabine; and Melzer, Guido, 5,614,531, Cl. 514-300.000.
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Garcia, Jaime A. Method of manufacturing paint rollers. 5,614,047, Cl. 156-187.000.
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Gardner, David W.; Linnenbrink, Thomas E.; and Gaalema, Stephen D., to Q-Dot, Inc. High-speed peristaltic CCD imager with GaAs fet output. 5,614,740, Cl. 257-222.000.
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Garibay, Raul A., Jr.: *See*—
Quattromani, Marc A.; and Garibay, Raul A., Jr., 5,615,402, Cl. 395-800.000.
Garneau, Louis, to 9001-6262 Québec Inc. Unitary spherical flexible eyewear pane having two separate individually optically compensating lens elements and eyewear for sportsmen having such a pane. 5,614,964, Cl. 351-83.000.
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Jackson, Wanda W.; Diaz, Monica S.; and Garrett, Lance J., Jr., 5,614,281, Cl. 428-100.000.
Garris, Michael: *See*—
Hughen, John; Ferguson, Scott; and Garris, Michael, 5,614,333, Cl. 429-93.000.
Garrison, Michi E.; and Daniel, Sean C., to Heartport, Inc. Method of retracting heart tissue in closed-chest heart surgery using endo-scopic retraction. 5,613,937, Cl. 600-201.000.
Garvey, Lee P.: *See*—
Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., 5,614,293, Cl. 428-211.000.
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Khandkar, Ashok C.; Milliken, Christopher E.; and Elangovan, S., 5,614,127, Cl. 252-519.000.
Gasparini, Filippo: *See*—
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Gasper, Thomas M., to Creative Tech Marketing. Automatically-operating bottom structure in a collapsible container. 5,613,694, Cl. 229-109.000.
Gassiott, Cecil D. Stump cutting apparatus. 5,613,537, Cl. 144-24.120.
Gastgaber, Charles. Self contained decontamination system. 5,614,411, Cl. 435-286.500.
Gates, Freeman C.; McCliment, Gregory; and Pratt, Joseph W., to Ford Motor Company. Pressure feedback exhaust gas recirculation system. 5,613,479, Cl. 123-568.000.
Gates, Stephen E., to Aerospace Lubricants, Inc. Aerosol grease. 5,614,478, Cl. 508-136.000.
Gateway 2000, Inc.: *See*—
Burnett, Robert J., 5,615,083, Cl. 361-686.000.
Gauger, Derek K.; and Horvet, Kirk K., to ITT Automotive, Inc. Adjustable set bearing. 5,613,402, Cl. 74-425.000.
Gaugh, Wilbur S.: *See*—
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Gavin, Kimberly: *See*—
Stillman, Bruce W.; Bell, Stephen P.; Kobayashi, Ryuji; Rine, Jasper; Foss, Margit; McNally, Francis J.; Laurenson, Patricia; Herskowitz, Ira; Li, Joachim; Gavin, Kimberly; and Hidaka, Masumi, 5,614,618, Cl. 536-23.100.
Gavin, Vincent G.; Seaman, Michael J.; Crook, Neal A.; and Mistry, Bipin, to Digital Equipment Corporation. Data transfer system for buffering and selectively manipulating the size of data blocks being transferred between a processor and a system bus of a computer system. 5,615,382, Cl. 395-800.000.
Gayraud, Charles E.: *See*—
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Gaz de France (Service National): *See*—
Grenier, Maurice, 5,613,373, Cl. 62-612.000.
Gebhardt, Hans: *See*—
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Gee, Perry A.: *See*—
Bennett, John G.; Gee, Perry A.; and Gayraud, Charles E., 5,615,367, Cl. 395-613.000.
Geer, James W.: *See*—
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Geer, Janice F.; and Geer, James W., to Superb Solutions. Apparatus for creating sculptured nails. 5,613,507, Cl. 132-285.000.
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Gelderie, Udo: *See*—
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Gellermann, Wolf-Dieter; Feuerhake, Adolf; Comini, Dario; and Martinelli, Guido, to Siemens Aktiengesellschaft. Device for releasing the opening of the doors of rail vehicles. 5,613,654, Cl. 246-182.00B.
Gellert, Jobst U. Injection molding nozzle with pressed in heating element and integral collar portion. 5,614,233, Cl. 425-549.000.
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Zienkiewicz, John W.; and Roberts, Bradley M., 5,613,395, Cl. 72-370.000.
Gemmell, Wayne. Paint roller assembly. 5,613,265, Cl. 15-230.110.
Gen-Probe Incorporated: *See*—
Shen, Nancy L. L.; Kacian, Daniel L.; Putnam, James G.; and Davis, William M., 5,614,387, Cl. 435-91.200.
GenCorp Inc.: *See*—
Cobbledick, David S.; and Reichenbach, Donald F., 5,614,581, Cl. 524-495.000.
Fisher, Michael J., 5,614,052, Cl. 156-304.200.
Genelabs Technologies, Inc.: *See*—
Reyes, Gregory R.; and Hadlock, Kenneth G., 5,614,366, Cl. 435-7.100.
Genentech, Inc.: *See*—
Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., 5,614,190, Cl. 424-94.640.
Battersby, John E.; Clark, Ross G.; and Hancock, William S., 5,614,487, Cl. 514-2.000.
General DataComm, Inc.: *See*—
Santore, Peter M.; and O'Neil, John M., Jr., 5,615,211, Cl. 370-419.000.
General Electric Company: *See*—
Ahmadian, Mehdi; Gray, Laurence W.; McGrew, Dean Z.; Kurtzhals, William A.; Whitehill, James H.; and Jaramillo, Jennifer L., 5,613,444, Cl. 105-166.000.
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Deaver, Gerald A.; Pyron, James W.; and Nguyen, Anh N., 5,615,239, Cl. 376-247.000.
Dorri, Bizhan; Laskaris, Evangelos T.; Ogle, Michele D.; and Havens, Timothy J., 5,614,879, Cl. 335-216.000.
Duggal, Anil R.; Levinson, Lionel M.; Patchen, Harold J.; and Lewis, Larry N., 5,614,881, Cl. 338-22.00R.
Joshi, Narendra D.; Epstein, Michael J.; and Ewbank, Michael E., 5,613,363, Cl. 60-737.000.
Kim, Edward E., 5,615,075, Cl. 361-87.000.
Mahood, James A., 5,614,571, Cl. 252-400.240.
Medford, George F.; Gillette, Gregory R.; and Sato, Norio, 5,614,321, Cl. 428-417.000.
Reeves, Jim D.; Whiteaker, Mark K.; and Fry, Peter C., 5,614,054, Cl. 156-344.000.
Savkar, Sudhir D., 5,613,380, Cl. 68-23.300.
Venkataramani, Venkat S.; and Shaw, Jeremy P., 5,614,569, Cl. 523-210.000.

Wolfe, Christopher E.; and Dinc, Osman S., 5,613,829, Cl. 415-174.100.
Wolters, Richard A., Jr.; Boyden, James E.; George, Donald K.; Henrie, Donald K.; Jones, Robert H.; and McBride, Michael G., 5,615,240, Cl. 376-272.000.
General Hospital Corporation, The: *See*—
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General Instrument Corp.: *See*—
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General Signal Power Systems, Inc.: *See*—
Stich, Frederick A.; Hubert, Thomas G.; and Walsh, Timothy, 5,615,129, Cl. 364-492.000.
Genet, Jean-Pierre; Juge, Sylvain; Laffitte, Jean-Alex; Pinel, Catherine; and Mallart, Serge, to Elf Aquitaine. Process for enantioselective hydrogenation of the oxo C=O double bond. 5,614,641, Cl. 549-313.000.
GenRad, Inc.: *See*—
Keating, Paul L.; Blumenau, Steven M.; Pye, Richard; and Schymik, William S., 5,615,219, Cl. 371-27.000.
George, Donald K.: *See*—
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Gephardt, Douglas D.; Stewart, Brett B.; Wisor, Rita M.; Dutton, Drew J.; and Belt, Steven L., to Advanced Micro Devices, Inc. Side bus to dynamically off load main bus. 5,615,207, Cl. 370-237.000.
Gerber, Stephen M., to Owens-Brockway Glass Container Inc. Container handling starwheel. 5,613,593, Cl. 198-479.100.
Gerdmann, Harold F.; and Mumpy, Keith E., to Newell Operating Company. Insulated handle grip. 5,613,274, Cl. 16-116.00R.
Gerken, Christopher H., to International Business Machines Corporation. Method and system for a piano bar browser of information sets. 5,615,346, Cl. 395-341.000.
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Gernon, Michael D.: *See*—
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Gervasi, Paul. Inventory control shelf aid dispensing device. 5,613,621, Cl. 221-279.000.
Gessner, Thomas; Hafen, Martin; Handrich, Eberhard; Leinfelder, Peter; Ryrko, Bruno; Vetter, Egbert; and Wiemer, Maik, to LITEF GmbH. Micromechanical accelerometer with plate-like semiconductor wafers. 5,614,742, Cl. 257-254.000.
Gharpure, Milind M.: *See*—
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Ghazarossian, Vartan; Kung, Viola T.; and Zuk, Robert F., to Molecular Devices Corporation. Chromophoric reagents for incorporation of biotin or other haptens into macromolecules. 5,614,368, Cl. 435-7.500.
Giacalone, Biagio: *See*—
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Arnaud, Philippe; and Laine, Loic, 5,615,174, Cl. 367-118.000.
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Gibeau, Frank C.; Bessler, Roger F.; and Arbeiter, James H., to Nitor. Methods and apparatus for image projection. 5,614,961, Cl. 348-750.000.
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Gics, Paul W., 5,614,235, Cl. 426-87.000.
Gics, Paul W., to Gics & Vermee, L.P. Method of making a food package having a jacket partially surrounding it. 5,614,235, Cl. 426-87.000.
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Giesen, Claudia: *See*—
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Gihr, Detlef: *See*—
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Gilbert, William A., to Motorola, Inc. Integral flap housing, switch actuator and detent mechanism for a foldable telephone. 5,615,259, Cl. 379-433.000.
Gilchrist, Ian R., to Cyber Scientific Inc. Stereoscopic viewing system. 5,615,046, Cl. 359-464.000.
Gill, Avtar S., to Caterpillar Inc. Headlight mounting apparatus. 5,613,765, Cl. 362-269.000.
Gill, Petra M.; Borgstedt, Eric von Rehren; and Denkewicz, Raymond P., Jr., to PQ Corporation. Composite silicate materials. 5,614,160, Cl. 423-332.000.
Gillard, Patrick; and Gonzalez, Pierre, to Socetec; and Institut Francais du Petrole. Method and device for storing transaction data. 5,615,133, Cl. 364-550.000.
Gillespie, Jane L.: *See*—
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Glatz, Bernd; and Dehmer, Bernhard, to Hewlett-Packard Company. Connecting capillary. 5,614,154, Cl. 422-103.000.
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Koai, Kwang-Tsai, 5,615,035, Cl. 359-119.000.

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Fukushima, Hisashi; and Gu, Sono, 5,615,311, Cl. 395-107.000.

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Ruszczyk, Chester A.; and Gun, Levent, 5,615,212, Cl. 370-433.000.

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Hall, Darlene: *See—*
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Hamada, Tetsuya: *See—*
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Kolb, Alan C.; Braverman, Leonard W.; Silberman, Cyril J.; Hamm, Richard R.; and Cates, Michael C., 5,613,509, Cl. 134-56.00R.

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Hanabusa, Takaomi: *See—*
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Hancock, William S.: *See—*
Battersby, John E.; Clark, Ross G.; and Hancock, William S., 5,614,487, Cl. 514-2.000.

Handler, Michael D., to Reseal International Limited Partnership. Sheath valve. 5,613,517, Cl. 137-512.400.

Handrich, Eberhard: *See—*
Gessner, Thomas; Hafen, Martin; Handrich, Eberhard; Leinfelder, Peter; Ryrko, Bruno; Vetter, Egbert; and Wiemer, Maik, 5,614,742, Cl. 257-254.000.

Handy Button Machine Company: *See—*
Bush, E. Dan; and Wortner, David, 5,613,817, Cl. 411-466.000.

Handzel, Mark J.: *See—*
Johnson, Eric A.; and Handzel, Mark J., 5,615,408, Cl. 455-33.100.

Haneda, Satoshi; Nagase, Hisayoshi; Tokimatsu, Hiroyuki; Hamada, Shuta; Fukuchi, Masakazu; and Ikeda, Tadayoshi, to Konica Corporation. Electrophotographic color image forming apparatus with a plurality of image exposing devices arranged around outer circumference of photoreceptor. 5,615,002, Cl. 399-227.000.

Hanisch, Wolf: *See—*
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 5,614,185, Cl. 424-85.200.

Hanna, Thomas, to Post, III, James W. Shielding blanket for racing engines. 5,614,280, Cl. 428-74.000.

Hannah, Eric C., to Intel Corporation. Camera having an adaptive gain control. 5,614,948, Cl. 348-255.000.

Hannah, R. Craig: *See—*
Taylor, Gary R.; Wierzba, Paul; and Hannah, R. Craig, 5,613,408, Cl. 74-573.00R.

Hannan, Alan R.; and Nickolin, Thomas M., to KDI Precision Products, Inc. Method for liquid level detection. 5,613,399, Cl. 73-304.00C.

Hanning, Walter: *See—*
Eggert, Gerhard; Hanning, Walter; Fiene, Uwe; Schnatwinkel, Michael; Steinmeier, Rudolf; and Wilmes, Manfred, 5,615,079, Cl. 361-637.000.

Hans Grohe GmbH & Co.: *See—*
Blessing, Gerd, 5,613,638, Cl. 239-396.000.

Hans Lingl Anlagenbau und Verfahrenstechnik GmbH & Co.: *See—*
Lingl, Hans, 5,613,847, Cl. 432-133.000.

Hansen, Jens; and Kreilgård, Bo, to Pharmacia & Upjohn AB. Test patch and its use for demonstrating contact allergy. 5,614,167, Cl. 424-9.200.

Hansen, Kurt, to Borland International, Inc. System and methods for improved sorting. 5,615,366, Cl. 395-607.000.

Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Absorbent articles containing binder carrying high bulk fibers. 5,614,570, Cl. 524-13.000.

Hansen, Ronald L.: *See—*
Babayev, Djangir A.; Berger, Richard M.; Dean, Vincil C.; Hansen, Ronald L.; and Parrish, Scott H., 5,615,121, Cl. 395-209.000.

Hanson, Chris A. Adjustable wheelchair seat cushion system. 5,613,256, Cl. 5-653.000.

Hanson, Paula M.: *See—*
Roessler, Thomas H.; Cesco-Cancian, Annamaria; Endres, Dan D.; Hanson, Paula M.; Leick, Kenneth A.; Leick, Marianne K.; and Werner, Edward E., 5,613,959, Cl. 604-364.000.

Hara, Fumio; and Isobe, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Idling rotational speed control system for internal combustion engines. 5,614,666, Cl. 73-118.100.

Hara, Yoshikazu: *See—*
Motoe, Katsuro; and Hara, Yoshikazu, 5,613,437, Cl. 101-128.400.

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Harada, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. N-phase modulated signal demodulation system with carrier reproduction. 5,614,861, Cl. 329-308.000.

Harada, Kouichi; Furukawa, Junichi; Wada, Kazushi; and Sarai, Takaaki, to Sony Corporation. Solid state imager with reduced smear and method of making the same. 5,614,741, Cl. 257-233.000.

Harada, Ryutaro; and Mitamura, Satoshi, to Dai Nippon Printing Co., Ltd. Black matrix substrate, and color filter and liquid crystal display device using the same. 5,615,030, Cl. 349-110.000.

Harada, Shintaro. Three dimensionally measuring apparatus. 5,614,657, Cl. 73-12.110.

Harada, Yasoo: *See—*
Nishida, Masao; Higashino, Takayoshi; and Harada, Yasoo, 5,614,814, Cl. 323-313.000.

Haraguchi, Hidenori: *See—*
Komai, Hiromichi; and Haraguchi, Hidenori, 5,613,691, Cl. 277-152.000.

Harasawa, Shinichirou; and Fujiwara, Haruo, to Fujitsu Limited. Branch device for optical multiplex system. 5,615,290, Cl. 385-24.000.

Harbison, Kenneth G.; Gaugh, Wilbur S.; Whitesides, Thomas H.; and Friday, James A., to Eastman Kodak Company. Photographic element and coating composition. 5,614,360, Cl. 430-612.000.

Harden, Jerrell W.; and Harden, Russell J. Self-aligning row crop spraying device. 5,613,635, Cl. 239-166.000.

Harden, Philip A., to Deere & Company. Lightweight concave having removable grids. 5,613,907, Cl. 460-109.000.

Harden, Russell J.: *See—*
Harden, Jerrell W.; and Harden, Russell J., 5,613,635, Cl. 239-166.000.

Harding, John D., to Palco Laboratories. Adjustable tip for lancet device. 5,613,978, Cl. 606-181.000.

Hardy, Douglas A.: *See—*
Altschuler, Barry N.; Hardy, Douglas A.; Stephens, James A.; and Kish, Joseph, III, 5,615,266, Cl. 380-21.000.

Hari, Atsushi: *See—*
Inaguki, Jiro; Hari, Atsushi; Kikuchi, Nobuyuki; and Shinoki, Takashi, 5,613,599, Cl. 200-512.000.

Harkness, Brian R.; Tachikawa, Mamoru; and Takeuchi, Kasumi, to Dow Corning Asia, Ltd. Thermosetting silicone resins. 5,614,603, Cl. 528-14.000.

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Rank, David B.; Clymer, Mark L.; and Graves, Glenn, 5,613,571, Cl. 180-282.000.

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Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,614,395, Cl. 435-172.300.

Harner, Carol F. H.: *See—*
Rhee, Woonza M.; Rao, Prema R.; Chu, George H.; DeLustro, Frank A.; Harner, Carol F. H.; Sakai, Naomi; and Schroeder, Jacqueline A., 5,614,587, Cl. 525-54.100.

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Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,614,631, Cl. 346-176.000.

Harper, Jack R.; Loiselle, Brian P.; Nicholson, William R.; and Rapson, Lawrence J., to Dow Corning Corporation. Method for preparing self releasing silicone foams and method of reducing cycle time of producing silicone foams. 5,614,567, Cl. 521-154.000.

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Slater, Timothy J., 5,613,912, Cl. 463-25.000.

Harrelson, Hugh G., Jr.: *See—*
Chester, Roy E.; Coons, Andrew M., III; Harrelson, Hugh G., Jr.; King, Willis M.; Potter, George E.; Sanford, Carl D.; Smith, Patrick C.; Thompson, Melvin R.; Vickery, Leonard C., Jr.; and Whitfield, Jerry M., 5,613,285, Cl. 28-247.000.

Harris, Alan L.; and Phillips, Mark I., to Lucas Industries public limited company. Asynchronous rear dump logic in ABS control systems. 5,613,742, Cl. 303-157.000.

Harris Corporation: *See—*
Beason, James D., 5,614,422, Cl. 437-31.000.
Cotreau, Gerald M., 5,614,867, Cl. 330-288.000.
Foster, Derek G.; Siu, Edward K. W.; Pierce, Ben A.; Kennedy, Michael; Schillaci, Onofrio; and Knight, Alex, 5,615,225, Cl. 379-29.000.
Giordano, Raymond L.; and Wittlinger, Harold A., 5,614,852, Cl. 327-63.000.
Ravindranathan, Palaniappan, 5,614,074, Cl. 205-50.000.

Harris, Derek B.: *See—*
Brophy, Denis J.; Datta, Madhav; Harris, Derek B.; Ryan, Frank S.; and Spera, Frank A., 5,614,076, Cl. 205-666.000.

Harris, James; and Fujitaki, Roy, to Harris, James. Shrimp deveining apparatus. 5,613,903, Cl. 452-3.000.

Harrison, David F.; Williams, Russell T.; and Saulpaugh, Thomas E., to Apple Computer, Inc. Method and apparatus for consolidated buffer handling for computer device input/output. 5,615,392, Cl. 395-876.000.

Harscoet, Philippe; and Chiang, Chen-Huei, to Sigma Designs, Inc. Video and audio data presentation interface. 5,615,401, Cl. 395-681.000.

Hartman, Deborah: *See—*
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Hartmann, Uwe: *See—*
Kost, Friedrich; Hartmann, Uwe; Weiss, Karl-Josef; and Ehret, Thomas, 5,613,743, Cl. 303-165.000.

Hartter, Daryl E.: *See—*
Adamczyk, Maciej; Fishpaugh, Jeffrey R.; Johnson, Donald; and Hartter, Daryl E., 5,614,419, Cl. 436-546.000.

Harwath, Frank A.: *See—*
Banakis, Emanuel G.; Harwath, Frank A.; Hays, Richard A.; Janota, Kenneth F.; and Lang, Harold K., 5,613,860, Cl. 439-64.000.

Harwood, Colin F.: *See—*
Degen, Peter J.; Harwood, Colin F.; Ronan, John B.; and Mei, Jason, 5,614,095, Cl. 210-491.000.

Harzig, Christian; Hoffmann, Roland; and Weinhardt, Erolf, to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH. Discharge lamp, particularly cold-start fluorescent lamp, and method of its manufacture. 5,614,784, Cl. 313-491.000.

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Momotani, Hiroshi; Otsuki, Etsuo; Hasebe, Akio; and Takeuchi, Tamiko, 5,614,805, Cl. 320-21.000.

Hasegawa, Masahiko: *See—*
Shintani, Toshiya; and Hasegawa, Masahiko, 5,614,110, Cl. 219-121.440.

Hasegawa, Masaichi: *See—*
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.

Hasegawa, Masaki: *See—*
Kobayashi, Tadashi; Pushpalal, Game K. D.; and Hasegawa, Masaki, 5,614,009, Cl. 106-38.200.

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Takeuchi, Kan; Matsuno, Katsumi; Kajiyama, Kazuhiko; Nagashima, Osamu; and Hasegawa, Masatoshi, 5,615,145, Cl. 365-145.000.

Hasegawa, Takehiro: *See—*
Sakui, Koji; Nakamura, Hiroshi; Tanaka, Tomoharu; Momodomi, Masaki; Masuoka, Fujio; and Hasegawa, Takehiro, 5,615,163, Cl. 365-230.030.

Hashimoto, Keiji; Fujikawa, Junji; Mohri, Hiroshi; Takahashi, Masahiro; Miyashita, Hiroyuki; and Iimura, Yukio, to Dai Nippon Printing Co., Ltd. Blanks for halftone phase shift photomasks, halftone phase shift photomasks, and methods for fabricating them. 5,614,335, Cl. 430-5.000.

Hashimoto, Ryoichi; Shimada, Toshiya; Inatome, Hiroshi; and Shibata, Manabu, to Kao Corporation. Process for the production of glass-like carbon substrates for use as recording media and a setter for use in the process. 5,613,848, Cl. 432-253.000.

Hashimoto, Shigeharu: *See—*
Abe, Fumio; Hashimoto, Shigeharu; and Kondo, Tomoharu, 5,614,155, Cl. 422-174.000.

Hashimoto, Shinya, to Japan Atomic Energy Research Institute. Monochromator for radiant X-rays. 5,615,245, Cl. 378-84.000.

Hashimoto, Takeshi; Tezuka, Akira; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, to Tomoegawa Paper Co., Ltd. Adhesive tape for electronic parts and liquid adhesive. 5,614,316, Cl. 428-344.000.

Haslam, Richard M.: *See—*
Knoll, Shaun; Morriss, Jeff C.; Callahan, Shelagh; Bhatt, Ajay V.; Nizar, Puthiya K.; Haslam, Richard M.; Volk, Andrew M.; and Cadambi, Sudarshan B., 5,615,404, Cl. 395-882.000.

Hasler, Jeffery P.: *See—*
Gorenz, Harold J., Jr.; Hasler, Jeffery P.; Mudra, James R.; and Schulz, Gary D., 5,614,694, Cl. 174-35.00R.

Hasty, Paul: *See—*
Bradley, Allan; Davis, Ann; and Hasty, Paul, 5,614,396, Cl. 435-172.300.

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Hudis, Martin; Koebisu, Mamoru; and Hatada, Kenji, 5,615,078, Cl. 361-313.000.

Hatanaka, Shyoko; Yasunobu, Chizuko; and Kosaka, Michitaka, to Hitachi, Ltd. Judgement support system and method. 5,615,304, Cl. 395-12.000.

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Torigoe, Shinji; Hattori, Jiro; and Takagi, Akimitsu, 5,614,232, Cl. 425-545.000.

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Tanaka, Kozaburo; Sugiyama, Shinpei; Miura, Ken; Yoneda, Hideo; Kinoshita, Keiji; Sakuramoto, Akira; Ryu, Akihiro; Fujii, Susumu; Yamamoto, Kimiyuki; and Hattori, Masami, 5,615,138, Cl. 364-582.000.

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Klawuhn, Manfred; Haubruch, Ulrich; and Skoda, Ralf, 5,613,523, Cl. 138-126.000.

Hauel, Norbert; Narr, Berthold, deceased (by Elisabeth Narr, legal representative); Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, to Karl Thomae GmbH. (1-(2,3 or 4-N-morpholinoalkyl)-imidazol-4-yl)-benizimidazol-1-yl)-methyl]-biphenyls useful as angiotensin-II antagonists. 5,614,519, Cl. 514-235.800.

Haus, Bruce A.; and Kolkind, Andrew A. Automatic bowling ball resurfacing machine. 5,613,896, Cl. 451-50.000.

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Hauser, Ray, to Hydro-Gear Limited Partnership. Axle driving apparatus having improved casing design. 5,613,409, Cl. 74-606.00R.

Havens, Timothy J.: *See—*
Dorri, Bizhan; Laskaris, Evangelos T.; Ogle, Michele D.; and Havens, Timothy J., 5,614,879, Cl. 335-216.000.

Hawaii Agriculture Research Center: *See—*
Sachinvala, Navzer D.; Ju, Redford F.; and Litt, Morton H., 5,614,601, Cl. 526-238.230.

Hawkinson, Eric, to Hon Industries Inc. Fireplace door latch system. 5,613,487, Cl. 126-512.000.

Hawley, Frank W.: *See—*
Forouhi, Abdul R.; Hawley, Frank W.; McCollum, John L.; and Yeu, Yeouchung, 5,614,756, Cl. 257-530.000.

Hawn, Keith A.: *See—*
Dickert, Arby D.; Kirkpatrick, James F.; Johnson, Eric L.; and Hawn, Keith A., 5,614,830, Cl. 324-553.000.

Hay, John N.; and Woodfine, Barry, to Kabushiki Kaisha Kobe Seiko Sho. Polyimide and a method of preparing polyamide from tetracarboxylic dianhydride and diisocyanate. 5,614,607, Cl. 528-353.000.

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Iijima, Hiroshi; and Hayafuji, Mineki, 5,614,966, Cl. 351-208.000.

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Yoshida, Akira; Oda, Koza; Ishihara, Sadao; Saito, Fujio; Koike, Hiroyuki; Koga, Teiichiro; Kitazawa, Eiichi; Kogen, Hiroshi; and Hayakawa, Ichiro, 5,614,550, Cl. 514-450.000.

Hayakawa, Makoto; Kobayashi, Osamu; and Yamauchi, Takeshi, to Toto Ltd. Capillary for optical fiber connectors and method of manufacturing the same. 5,615,291, Cl. 385-84.000.

Hayama, Takeshi: *See—*
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takeshi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; Yano, Mitsuo; and Nishikibe, Masaru, 5,614,498, Cl. 514-18.000.

Hayashi, Kanji, to Altech Company Limited. Anti-static anchor coating agent and laminated composite film. 5,614,318, Cl. 428-353.000.

Hayashi, Kazunori: *See—*
Kubo, Motonobu; Enomoto, Takashi; Sano, Taro; Hayashi, Kazunori; Ueda, Akihiko; and Morita, Masamichi, 5,614,123, Cl. 252-862.000.

Haye, Shirleyanne E.; Marrese, Carl A.; and Bonner, Cheryl W., to Eastman Kodak Company. Peroxide composition and method for processing color photographic elements containing predominantly chloride silver halide emulsions. 5,614,355, Cl. 430-430.000.
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Hayes, Patrick H.; and Nguyen, Kimthoa T., to Universal Electronics Inc. Method for selecting a remote control command set. 5,614,906, Cl. 341-176.000.
Hays, Richard A.: *See—*
Banakis, Emanuel G.; Harwath, Frank A.; Hays, Richard A.; Janota, Kenneth F.; and Lang, Harold K., 5,613,860, Cl. 439-64.000.
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Heatcraft Inc.: *See—*
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Hébert, Francois, to Hewlett-Packard Company. Fully walled emitter-base in a bipolar transistor. 5,614,758, Cl. 257-579.000.
Hebrew University of Jerusalem, Yissum Research Development Co. of the: *See—*
Citri, Nathan, 5,614,375, Cl. 435-29.000.
Hefner, Robert E., Jr.: *See—*
Bales, Stephen E.; Hefner, Robert E., Jr.; and Singh, Rina, 5,614,599, Cl. 525-461.000.
Heick, Joseph T.; Case, Peter E.; and Chawan, Dhyaneshwar B., to Borden, Inc. Egg and cheese food and method of making same. 5,614,244, Cl. 426-582.000.
Heid, Oliver, to Siemens Aktiengesellschaft. Method and apparatus for shimming a magnet system of a nuclear magnetic resonance tomography system. 5,614,827, Cl. 324-320.000.
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Krüger, Michael; Ruder, Götz; Wagensommer, Bernhard; and Gihr, Detlef, 5,613,675, Cl. 271-270.000.
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Fricke, Andreas; Renner, Jochen; and Thünker, Norbert, 5,613,671, Cl. 271-91.000.
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Heilmann, Steven M.; Drtina, Gary J.; Eitzman, Philip D.; Haddad, Louis C.; Hyde, Frederick W.; and Johnson, Todd W., to Minnesota Mining and Manufacturing Company. Cartridge filters with insoluble enzyme particulates contained thereon. 5,614,105, Cl. 210-767.000.
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; Ekerdt, Roland; and Giesen, Claudia, to Schering Aktiengesellschaft. Leukotriene-B4 derivatives, process for their production and their use as pharmaceutical agents. 5,614,634, Cl. 546-301.000.
Heine, Hans-Georg: *See—*
Azad, Ahmed A.; Macreadie, Ian G.; McKern, Neil M.; Vaughan, Paul R.; Jagadish, Mittur N.; Fahey, Kevin J.; Chapman, Antony J.; and Heine, Hans-Georg, 5,614,409, Cl. 435-252.300.
Heiskell, Ronald E.: *See—*
Pierce, Chester J., Jr.; Heiskell, Ronald E.; and Theys, Ezra E., 5,613,933, Cl. 493-175.000.
Heit, Martin A.; Koeninger, Timothy A.; O'Brien, John E.; Wilkins, John J.; and Coons, Randall P., to Litton Industrial Automation Systems, Inc. Sortation conveyor and devices. 5,613,591, Cl. 198-370.020.
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Chung, Judy B., 5,614,180, Cl. 424-70.190.
Helfrich, Kenneth J., to Thomson Consumer Electronics, Inc. Switching power supply regulator with an inductive pulse circuit. 5,615,092, Cl. 363-21.000.
Helical Dynamics, Inc.: *See—*
Diachuk, Wolodymyr, 5,613,990, Cl. 55-383.000.
Helionetics, Inc.: *See—*
Suelzle, Larry R., 5,614,770, Cl. 307-105.000.
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Petsetakis, Menelaos, 5,614,276, Cl. 428-36.900.
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Hellstrom, Karl E.: *See—*
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Helms, Gregory L.: *See—*
Dombrowski, Anne W.; Endris, Richard G.; Helms, Gregory L.; Hensens, Otto D.; Ondeyka, John G.; Ostlind, Dan A.; Polishook, Jon D.; and Zink, Deborah L., 5,614,546, Cl. 514-410.000.
Helsley, Grover C.: *See—*
Strupczewski, Joseph T.; Bordeau, Kenneth J.; Glamkowski, Edward J.; Chiang, Yulin; and Helsley, Grover C., 5,614,543, Cl. 514-373.000.
HemaGen/PFC: *See—*
Cacheris, William P.; Richard, Thomas J.; Grabiak, Raymond C.; and Lee, Albert C., 5,614,170, Cl. 424-9.365.
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Hemy, Martin F.: *See—*
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Henderson, Cynthia W.: *See—*
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Henderson's Industries Pty. Ltd.: *See—*
Maleczek, Wojciech, 5,614,135, Cl. 264-40.400.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Schulte, Heinz-Guenther; Hornfeck, Klaus; and Kaps, Dieter, 5,614,062, Cl. 162-175.000.
Henkelmann, Jochem: *See—*
Wettling, Thomas; Schuster, Ludwig; and Henkelmann, Jochem, 5,614,646, Cl. 549-540.000.
Henley, Francois J., to Photon Dynamics, Inc. Electro-optical element and its manufacturing method. 5,615,039, Cl. 359-257.000.
Hennessey, Richard C.: *See—*
Scobbie, Gavin; McQueeny, Thomas P.; Kristmann, Mel S.; and Hennessey, Richard C., 5,613,417, Cl. 83-875.000.
Henninger, Derek P.: *See—*
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Henrie, Donald K.: *See—*
Wolters, Richard A., Jr.; Boyden, James E.; George, Donald K.; Henrie, Donald K.; Jones, Robert H.; and McBride, Michael G., 5,615,240, Cl. 376-272.000.
Hensens, Otto D.: *See—*
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Hensler, Connie: *See—*
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Heraeus Electro-Nite International N.V.: *See—*
Baerts, Christiaan E. E., 5,614,682, Cl. 73-864.580.
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Schwan, Heinrich; Patzschke, Hans-Peter; and Gol, Franjo, 5,614,584, Cl. 524-591.000.
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Bederke, Klaus; Herrmann, Friedrich; Kerber, Hermann; and Schönrock, Hans-Martin, 5,614,590, Cl. 525-127.000.
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Bower, Barton K., 5,614,597, Cl. 525-430.000.
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Pollock, Eugene B., 5,613,339, Cl. 52-731.100.
Hermary, Alexander T.; and Hermary, Terrance J. Electromagnetic profile scanner. 5,615,003, Cl. 356-3.030.
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Hetzler, Steven R.: *See—*
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Amerson, Frederic C.; Gupta, Rajiv; Kumar, Balasubramanian; Schlansker, Michael S.; and Worley, William S., 5,615,386, Cl. 395-585.000.
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Glatz, Bernd; and Dehmer, Bernhard, 5,614,154, Cl. 422-103.000.
Hébert, Francois, 5,614,758, Cl. 257-579.000.
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Jacobson, Michael B.; Voigt, Douglas L.; Burkes, Theresa A.; and Diamond, Bryan, 5,615,352, Cl. 395-441.000.
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Kraiczek, Karsten; and Dehmer, Bernhard, 5,615,010, Cl. 356-328.000.
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Osborne, William S.; Taylor, Bret; and Therien, Patrick J., 5,614,930, Cl. 347-33.000.
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Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.
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Stewart, Mark F.; and Bonetta, Angelo A., 5,613,685, Cl. 273-374.000.
Hightower, Floyd L. Shotgun magazine sling attaching device. 5,613,316, Cl. 42-85.000.
Hildebrand, Harold A., to Landmark Graphics Corporation. Method and apparatus for finding horizons in 3D seismic data. 5,615,171, Cl. 367-72.000.
Hildebrandt, Bodo, to Wella Aktiengesellschaft. Two-chamber container. 5,613,623, Cl. 222-129.000.
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Hill, David D.; and Kane, Timothy. Method and apparatus for removing contaminants from a water supply. 5,614,086, Cl. 210-170.000.
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Hill, Ronald F.; McCauley, Donald W.; Nadas, Stephen J.; and Robinson, James R., to International Business Machines Corporation. Method and system for controlling references to system storage by overriding values. 5,615,354, Cl. 395-493.000.
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Hillstrom, David U.; and Hillstrom, Brian J., to Marketing Displays Inc. Method for installing illuminated canopy system. 5,613,763, Cl. 362-246.000.
Himes, Ricky A., to Atotech USA, Inc. Fluid delivery apparatus and method. 5,614,264, Cl. 427-424.000.
Hindman, Larry E.; Karambelas, Randy C.; Reeves, Barry D.; and Rise, James D., to Tektronix, Inc. Method and apparatus for controlling phase-change ink-jet print quality factors. 5,614,933, Cl. 347-103.000.
Hines, Stephen P. Multi-image autostereoscopic imaging system. 5,614,941, Cl. 348-42.000.
Hinohara, Tomoaki: *See—*
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Hirabayashi, Atsuo, to Fuji Electric Co., Ltd. Method of dicing semiconductor wafer. 5,614,445, Cl. 437-226.000.
Hirai, Koichi; Iwano, Yuji; Nishi, Takahide; Yoshida, Akira; Oda, Kozo; and Koyama, Hiroo, to Sankyo Company, Limited. Carbapenem. 5,614,624, Cl. 540-350.000.
Hirakawa, Yoshiyuki; Yoshino, Hiroyuki; Uemura, Katsuji; Fukui, Eiji; and Hanamori, Tami, to Tanabe Seiyaku Co., Ltd. Pharmaceutical preparation controlled to release medicinal active ingredient at targeted site in intestinal tract. 5,614,220, Cl. 424-480.000.
Hiramitsu, Tetsushi; Shiraki, Koji; Iwai, Yasunori; and Tokuda, Masakazu, to Toyoda Gosei Co., Ltd. Air bag device. 5,613,700, Cl. 280-728.200.
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Hirose, Masahiko; Ito, Hiroki; Maeda, Masatoshi; and Tanaka, Kazuo, to Nitto Denko Corporation. Highly permeable composite reverse osmosis membrane, method of producing the same, and method of using the same. 5,614,099, Cl. 210-653.000.
Hirose, Masayuki, to Canon Kabushiki Kaisha. Image processing apparatus having selectable control of image color signals for processing image information between a plurality of apparatus. 5,615,313, Cl. 395-114.000.
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Hirukawa, Shigeru; Kondo, Shinjiro; Kato, Takeshi; and Suwa, Kyoichi, to Nikon Corporation. Imaging characteristic and asymetric abberration measurement of projection optical system. 5,615,006, Cl. 356-124.000.
Hislop, Dennis M. Self hooking rod holder with trigger float. 5,613,318, Cl. 43-16.000.
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Boyce, Jill M.; and Pearlstein, Larry, 5,614,952, Cl. 348-392.000.
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Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.
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Imai, Tuneo; Kembo, Nobumitsu; Yamada, Toshiyuki; and Wakabayashi, Takashi, 5,615,316, Cl. 395-117.000.
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Furuno, Takeshi; Nakamura, Yasuhiro; and Matsuo, Akinori, 5,615,151, Cl. 365-185.180.
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Nagae, Yoshiharu; Mori, Yuji; Mikami, Yoshiro; Sato, Hideo; Hoshino, Minoru; and Fukuda, Kyohei, 5,614,962, Cl. 348-751.000.
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Takeuchi, Kan; Matsuno, Katsumi; Kajiyama, Kazuhiko; Nagashima, Osamu; and Hasegawa, Masatoshi, 5,615,145, Cl. 365-145.000.
Tanaka, Hiroyuki; Onodera, Ko; Watanabe, Takehiko; and Fukaya, Yoshinori, 5,613,529, Cl. 140-71.00R.
Tatsuno, Kimio; Shimano, Takeshi; Fukuda, Hiroshi; and Komoda, Osamu, 5,615,199, Cl. 369-112.000.
Tsuru, Seiji; Hirose, Shinichi; Okita, Junji; Kaneki, Tadashi; and Kikuchi, Katsuaki, 5,613,843, Cl. 417-313.000.
Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.
Watanabe, Masayoshi; Ogasawara, Hiroshi; Saegusa, Shozo; and Sugiyama, Toshio, 5,615,204, Cl. 369-247.000.
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.
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Hitachi Techno Engineering Co., Ltd.: *See—*
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HMT Technology Corporation: *See—*
Mahvan, Nader; Wilkinson, David; and Ichikawa, Koji, 5,614,071, Cl. 204-298.110.
Hnatuck, Robert J.; and Shuey, John R., to Whitaker Corporation, The. Connector latch and polarizing structure. 5,613,882, Cl. 439-686.000.
Ho, Jui-Chien. Shock absorber for elevators or the like. 5,613,667, Cl. 267-141.100.
Ho, Lawrence Y., to International Business Machines Corporation. Data lock management in a distributed file server system determines variable lock lifetime in response to request to access data object. 5,615,373, Cl. 395-726.000.
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Ho, Wun-Shing. Portable telephone holder. 5,615,258, Cl. 379-428.000.
Hobbs, Kenneth E.; Waller, Kenneth R.; O'Pecko, Larry A.; and Collie, Mike H., Jr., to 4-Star Trailers, Inc. Livestock trailer including improved trailer slat unit. 5,613,726, Cl. 296-181.000.
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Hock, Christopher; Pratt, Gerold W.; Jordan, Michael P.; and Ward, Alan J., to Morton International, Inc. Airbag inflator having a housing protected from high-temperature reactive generated gases. 5,613,705, Cl. 280-741.000.
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Hoechst Aktiengesellschaft: *See—*
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Dammel, Ralph; Lingnau, Juergen; Pawlowski, Georg; and Theis, Juergen, 5,614,351, Cl. 430-270.100.
Fischer, Gerd; Defoβa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,614,623, Cl. 540-222.000.
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Krone, Volker; Magerstädt, Michael; Walch, Axel; Ditzinger, Günter; and Lill, Norbert, 5,613,494, Cl. 128-662.020.
Piepersberg, Wolfgang; Stockmann, Michael; Taleghani, Kambiz M.; Distler, Jürgen; Grabley, Susanne; Sichel, Petra; and Bräu, Barbara, 5,614,619, Cl. 536-23.200.
Schubert, Gerrit; Baader, Ekkehard; Bickel, Martin; and Günzler-Pukall, Volkmar, 5,614,537, Cl. 514-340.000.
Urban, Manfred, 5,614,014, Cl. 106-495.000.
Wilkens, Jan; and Schimmel, Günther, 5,614,161, Cl. 423-332.000.
Hoechst Celanese Corporation: *See—*.
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Chung, Tai-Shung; Kafchinski, Edward R.; Kohn, Rachel S.; and Onorato, Frank J., Jr., 5,614,309, Cl. 428-375.000.
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Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,614,631, Cl. 346-176.000.
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Godel, Thierry; Hartman, Deborah; and Riemer, Claus, 5,614,526, Cl. 514-255.000.
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Hofmeister, Rudolf; Yariv, Amnon; and Agranat, Aharon, to California Institute of Technology. Potassium lithium tantalate niobate photorefractive crystals. 5,614,129, Cl. 252-584.000.
Hofsäss, Marcel; and Bühling, Dieter, to Thermik Gerätebau GmbH. Temperature-sensitive switch. 5,615,072, Cl. 361-24.000.
Hogan, Michael E.: *See—*
Chaudhary, Nilabh; Jayaraman, Krishna; Bodepudi, Veeraiah; and Hogan, Michael E., 5,614,503, Cl. 514-44.000.
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Holmes Products Corp.: *See—*
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Holzer, Reuven; and Fried, Rafael, to National Semiconductor Corporation. High-accuracy, low-power peak-to-peak voltage detector. 5,614,851, Cl. 327-58.000.
Holzmann, Gerard J.; and Peled, Doron A., to Lucent Technologies Inc. On-the-fly model checking with partial-order state space reduction. 5,615,137, Cl. 364-578.000.
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Homberg, William D., to Rainin Instrument Co., Inc. Pipette tip ejector. 5,614,153, Cl. 422-100.000.
Home Care Industries, Inc.: *See—*
Bosses, Mark D., 5,613,989, Cl. 55-367.000.
Hon Industries Inc.: *See—*

Hawkinson, Eric, 5,613,487, Cl. 126-512.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Esaki, Hidenori; and Watanabe, Yoshihiro, 5,613,991, Cl. 55-385.300.
Hara, Fumio; and Isobe, Takashi, 5,614,666, Cl. 73-118.100.
Kawamoto, Yoshimichi; Inagaki, Hiromi; Sakurai, Kazuya; and Suto, Shinji, 5,613,740, Cl. 303-11.000.
Kawamura, Yoshiro; and Matsuda, Tadayuki, 5,613,394, Cl. 72-369.000.
Kayano, Morio; and Watanabe, Kazunori, 5,614,804, Cl. 320-13.000.
Kitagawa, Hiroshi; Akazaki, Shusuke; and Maki, Hidetaka, 5,613,481, Cl. 123-698.000.
Kiuchi, Takeo; Taguchi, Satoshi; Nakaya, Katsunori; Fueta, Shigekazu; and Fukuda, Kenji, 5,614,809, Cl. 322-11.000.
Komatsu, Satoru; and Kudo, Hiroshi, 5,614,909, Cl. 342-70.000.
Nakamichi, Hideaki, 5,613,709, Cl. 280-777.000.
Ohomori, Masahiro; Arai, Masayuki; and Imai, Takeshi, 5,614,895, Cl. 340-995.000.
Seriżawa, Mitsuya, 5,615,117, Cl. 364-424.052.
Shiomi, Kazuyuki; Shigedomi, Hideo; Fujita, Yasushi; Matsuda, Yoshiyuki; Soda, Chiharu; Kiku, Kazuomi; and Furuya, Kentaro, 5,613,470, Cl. 123-195.00P.
Sugioka, Kouichi; Ogawa, Masao; Sako, Hiroyuki; and Takamatsu, Hidetoshi, 5,613,569, Cl. 180-68.500.
Tanaka, Kozaburo; Sugiyama, Shinpei; Miura, Ken; Yoneda, Hideo; Kinoshita, Keiji; Sakuramoto, Akira; Ryu, Akihiro; Fujii, Susumu; Yamamoto, Kimiyuki; and Hattori, Masami, 5,615,138, Cl. 364-582.000.
Yamazaki, Shouji, 5,613,727, Cl. 296-188.000.
Honda, Nobuyoshi: *See—*
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,614,651, Cl. 552-615.000.
Honeywell Inc.: *See—*
Alfors, Eugene D., 5,613,290, Cl. 29-434.000.
Hong, Chu-Chai. Suction device with sheet-pressing ability. 5,613,659, Cl. 248-205.500.
Hong, Gary; and Chen, Hwi-Huang, to United Microelectronics Corporation. Structure and process of manufacture of split gate flash memory cell. 5,614,746, Cl. 257-316.000.
Hong Kong (Link) Bicycles Ltd.: *See—*
Isaac, Timothy S.; Yang, Gui; and Lee, Raymond, 5,613,794, Cl. 403-265.000.
Hong, Woong-Sub, to Daewoo Electronics Co., Ltd. Stacket-up type heat exchanger for a gas boiler. 5,613,553, Cl. 165-140.000.
Honguh, Yoshinori: *See—*
Hoshino, Isao; Wachi, Shoko; Honguh, Yoshinori; and Tanaka, Masahiko, 5,615,200, Cl. 369-112.000.
Honkanen, Erkki: *See—*
Bäckström, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,614,541, Cl. 514-369.000.
Honma, Hotaka: *See—*
Suga, Yozo; Honma, Hotaka; Ushigami, Yoshiyuki; and Kitahara, Syuji, 5,614,034, Cl. 148-111.000.
Hoosier Group, L.L.C.: *See—*
Beamer, John V., 5,613,804, Cl. 405-119.000.
Hoover, David S.: *See—*
Vichr, Miroslav; and Hoover, David S., 5,614,019, Cl. 117-84.000.
Hoover, Robert. Ski training system. 5,613,856, Cl. 434-253.000.
Hoover Universal, Inc.: *See—*
Brace, John G., 5,614,718, Cl. 250-339.130.
Demick, Robert L., 5,613,732, Cl. 297-188.160.
Hopkins, Thomas L., to SGS-Thomson Microelectronics, Inc. Ratiometric analog to digital converter with automatic offset. 5,614,902, Cl. 341-118.000.
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, to Kansi Paint Co., Ltd. Resinous compositions for a water paint. 5,614,582, Cl. 524-507.000.
Hori, Ryoichi: *See—*
Kawahara, Takayuki; Hori, Ryoichi; Horiguchi, Masashi; Kurihara, Ryoichi; Itoh, Kiyoo; Aoki, Masakazu; Sakata, Takeshi; and Uchiyama, Kunio, 5,614,847, Cl. 326-98.000.
Hori, Tsuguo, to NEC Corporation. Optical micro cell transmission system. 5,615,034, Cl. 359-110.000.
Horiguchi, Masashi: *See—*
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Horikiri, Kenichi, to Kabushiki Kaisha Kenwood. Optical disk recording and reproducing apparatus with data recorded and reproducing apparatus with data recorded on wobbled grooves and lands. 5,615,185, Cl. 369-44.130.
Horikoshi, Hiroyoshi; Fujiwara, Toshihiko; Yoshioka, Shinji; Nishino, Hiroshi; Koike, Hiroyuki; and Yoshioka, Takao, to Sankyo Company, Limited. Thiazolidine derivatives having anti-hypertensive activity and their therapeutic use. 5,614,542, Cl. 514-369.000.
Hörlein, Rolf: *See—*
Fischer, Gerd; Defoβa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,614,623, Cl. 540-222.000.
Horn, Horst, to Siemens Aktiengesellschaft. Gas mixing device. 5,614,655, Cl. 73-1.00G.
Horn, Thomas: *See—*
Urdea, Michael S.; Warner, Brian; Running, Joyce A.; Kolberg, Janice A.; Clyne, Jennifer M.; Sanchez-Pescador, Ray; and Horn, Thomas, 5,614,362, Cl. 435-5.000.
Horne, Rick L.; Lohman, Terence J.; Noll, Mark G.; Olive, Jose A.; and Perez, Roberto V., to International Business Machines Corporation. Boundary-scan bypass circuit for integrated circuit electronic component and circuit boards incorporating such circuits and components. 5,615,217, Cl. 371-22.300.
Hornfeck, Klaus: *See—*
Schulte, Heinz-Guenther; Hornfeck, Klaus; and Kaps, Dieter, 5,614,062, Cl. 162-175.000.
Horrobin, David F.; and Huang, Yung-Sheng, to Efamol Holdings PLC. Methods of treatment using di-linoleoyl-mono-gamma-linolenyl glycerol. 5,614,208, Cl. 424-443.000.
Horski, Marek; and Muszynski, Jerzy, to Siemens Electric Limited. Two-speed direct-current motor with high-speed rotation switch activated by a vehicle sensed parameter signal. 5,614,775, Cl. 310-68.00R.
Horton, Inc.: *See—*
Schilling, Hugh K.; Davis, John B.; and Bredt, Robert C., 5,613,586, Cl. 192-48.300.
Horton, Mike A.; and Newton, A. Richard, to Crossbow Technology, Inc. Method and apparatus for determining position and orientation of a moveable object using accelerometers. 5,615,132, Cl. 364-516.000.
Horton, Norman; and Bell, John K., to Cadcam Technology Limited. Computer-controlled laser cutter with optical sensor. 5,614,115, Cl. 219-121.670.
Horvet, Kirk K.: *See—*
Gauger, Derek K.; and Horvet, Kirk K., 5,613,402, Cl. 74-425.000.
Hosaka, Hidehiro: *See—*
Ishikawa, Norio; and Hosaka, Hidehiro, 5,614,967, Cl. 351-210.000.
Hosaka, Sumio: *See—*
Kikukawa, Atsushi; Hosaka, Sumio; Maruyama, Youji; Shintani, Toshimichi; and Shimano, Takeshi, 5,615,192, Cl. 369-59.000.
Hoshino, Isao; Wachi, Shoko; Honguh, Yoshinori; and Tanaka, Masahiko, to Kabushiki Kaisha Toshiba. Light beam shaping device to change an anisotropic beam to an isotropic beam for reducing the size of an optical head. 5,615,200, Cl. 369-112.000.
Hoshino, Minoru: *See—*
Nagae, Yoshiharu; Mori, Yuji; Mikami, Yoshiro; Sato, Hideo; Hoshino, Minoru; and Fukuda, Kyohei, 5,614,962, Cl. 348-751.000.
Hoshino, Osamu: *See—*
Suzuki, Masayuki; Hoshino, Osamu; Shiraiwa, Yoshinobu; and Minoura, Kazuo, 5,615,038, Cl. 359-210.000.
Hoshino, Tetsuya, to Nichiro Kogyo Co., Ltd. Arch type strapping machine. 5,613,432, Cl. 100-26.000.
Hosiden Corporation: *See—*
Ukai, Yasuhiro; Sunata, Tomihisa; Nakagawa, Takanobu; and Takeuchi, Shu, 5,614,729, Cl. 257-57.000.
Hoskins, Martin G.; and Hensler, Connie, to Interface, Inc. Method of making a water absorbing article. 5,614,269, Cl. 427-512.000.
Hosmer, Christopher E., to Marshall & Williams Company. Tenter assembly and method. 5,613,284, Cl. 26-89.000.
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, to Omron Corporation. Optical read/write head with low angle beam splitter and coplanar detectors. 5,615,181, Cl. 369-13.000.
Hosokawa, Hiromu: *See—*
Kume, Hisao; Hosokawa, Hiromu; Watanabe, Minoru; and Takayanagi, Kenichiro, 5,614,791, Cl. 315-370.000.
Hosokawa, Ryuji; and Yanagida, Satoru, to Kabushiki Kaisha Toshiba. Process of folding a strip leadframe to superpose two leadframes in a plural semiconductor die encapsulated package. 5,614,441, Cl. 437-207.000.
Hosoya, Hajime, to Unisia Jecs Corporation. Method and apparatus for controlling throttle valve contamination learning. 5,614,667, Cl. 73-118.200.
Hosoya, Toshifumi: *See—*
Nonaka, Tsuyoshi; Hosoya, Toshifumi; Kobayashi, Yuji; and Matsuda, Yasuo, 5,614,253, Cl. 427-163.200.
Hotea, Gheorghe, to Whitaker Corporation, The. Electrical connector with anti-chattering interconnection means. 5,613,867, Cl. 439-271.000.
Hotta, Yoshihiko: *See—*
Itoh, Akihide; Nogiwa, Toru; Hotta, Yoshihiko; Suzuki, Akira; and Kutami, Atushi, 5,614,461, Cl. 503-201.000.
Houck, Willie G., Jr.: *See—*
Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.
House, Jeffrey W.; and House, William K., to Infi-Shield, Inc. Sealing system for sewer and water applications. 5,613,806, Cl. 405-150.100.
House, William K.: *See—*
House, Jeffrey W.; and House, William K., 5,613,806, Cl. 405-150.100.
Houston, Michelle L.; Zawadzki, Steven A.; Greig, Kevin M.; and Aikins, Jerry L., to Zimmer, Inc. Orthopaedic instrumentation assembly having an offset bushing. 5,613,970, Cl. 606-88.000.
Houston, Theodore W., to Texas Instruments Incorporated. Selective power to memory. 5,615,162, Cl. 365-226.000.

Howell, Bryan; and Hunter, Bryan, to Dell U.S.A., L.P. Keyboard with adjustable splay and pronation pivot points. 5,613,786, Cl. 400-489.000.

Howell, Wayne J.: *See—*
Beilstein, Kenneth E., Jr.; Bertin, Claude L.; and Howell, Wayne J., 5,614,277, Cl. 428-40.100.

Howlett, Marvin, to Eutectic Corporation. Repair of worn conveyor belting using thermally applied polymer coatings. 5,614,267, Cl. 427-447.000.

Hoyle, Nicholas R.; Pappert, Gunter; Grol, Michael; and Hübner-Parajsz, Christa, to Boehringer Mannheim GmbH. Method and monoclonal antibodies for vitamin B12 determination. 5,614,394, Cl. 435-172.200.

Hoylman, Michael T.: *See—*
Chiprich, Timothy B.; Hoylman, Michael T.; and Stroud, Norman S., 5,614,217, Cl. 424-451.000.

Hshieh, Fwu-luan: *See—*
Yilmaz, Hamza; and Hshieh, Fwu-luan, 5,614,751, Cl. 257-394.000.

Hsiang, Hua-Lu. Multipurpose athletic training apparatus. 5,613,922, Cl. 473-435.000.

Hsiao, Ling-Wen: *See—*
Yiu, Tom D.; Wan, Ray L.; Hsiao, Ling-Wen; Lin, Tien-Ler; and Shone, Fuchia, 5,615,153, Cl. 365-185.190.

Hsu, Donald P.; and Viscio, David B., to Colgate Palmolive Company. Stabilized dentifrice compositions containing reactive ingredients. 5,614,174, Cl. 424-49.000.

Hsu, Johnson: *See—*
Wolfe, Robert E.; and Hsu, Johnson, 5,613,833, Cl. 416-246.000.

Hu, Lain-Yen: *See—*
Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew G.; and Margolin, Lee D., 5,614,630, Cl. 546-159.000.

Huang, Chiu-Hua. Handle of a hand tool. 5,613,413, Cl. 81-490.000.

Huang, Tien-Tsai. Apparatus for connecting an inflatable article to a compressor. 5,613,515, Cl. 137-224.000.

Huang, Yung-Sheng: *See—*
Horrobin, David F.; and Huang, Yung-Sheng, 5,614,208, Cl. 424-443.000.

Hubbard, Charles W.: *See—*
Miley, Harry S.; Thompson, Robert C.; Hubbard, Charles W.; and Perkins, Richard W., 5,614,724, Cl. 250-435.000.

Hubbard, Ward D.: *See—*
Mayes, Richard P.; Royer, Richard Y.; and Hubbard, Ward D., 5,613,490, Cl. 128-205.220.

Hubert, Thomas G.: *See—*
Stich, Frederick A.; Hubert, Thomas G.; and Walsh, Timothy, 5,615,129, Cl. 364-492.000.

Hübler, Doris: *See—*
Elger, Walter; Schneider, Birgitt; Oettel, Michael; Ernst, Michael; Hübler, Doris; and Dittgen, Michael, 5,614,213, Cl. 424-449.000.

Hübner-Parajsz, Christa: *See—*
Hoyle, Nicholas R.; Pappert, Gunter; Grol, Michael; and Hübner-Parajsz, Christa, 5,614,394, Cl. 435-172.200.

Hudis, Martin; Koebisu, Mamoru; and Hatada, Kenji, to Aerovox Incorporated; Toray Industries, Inc; and Toray Plastics America, Inc. Metallized film for electrical capacitors having a semiconductive layer extending entirely across the unmetallized margin. 5,615,078, Cl. 361-313.000.

Hudson, Leo D., to Bestline Liner Systems. Process for completing a well. 5,613,567, Cl. 175-72.000.

Huerto, Robert: *See—*
Green, Patrick M.; and Huerto, Robert, 5,613,746, Cl. 312-194.000.

Huesser, Theo: *See—*
Gysi, Peter; Huesser, Theo; and Wildmann, Daniel, 5,613,713, Cl. 285-12.000.

Huffman, Eric C., to Bissell Inc. Accessory crevice tool for use with water extraction cleaning machine. 5,613,272, Cl. 15-321.000.

Huge-Jensen, Birgitte, to Novo Nordisk A/S. Recombinantly produced lipases for therapeutical treatment. 5,614,189, Cl. 424-94.600.

Hughen, John; Ferguson, Scott; and Garris, Michael, to Duracell Inc. Electrochemical cell label with integrated tester. 5,614,333, Cl. 429-93.000.

Hughes Aircraft Company: *See—*
Gabriel, Fred C., 5,614,675, Cl. 73-597.000.
Pikulski, Joseph L.; and Lam, Juan F., 5,614,919, Cl. 343-909.000.
Raghavan, Krishnan; Kich, Rolf; and Tatomir, Paul J., 5,614,877, Cl. 333-227.000.
Robinson, Stephen A.; and Krause, Stanley J., 5,614,033, Cl. 136-246.000.

Hughes Electronics: *See—*
Jones, Russell K.; and Gallagher, Timothy L., 5,614,715, Cl. 250-334.000.
Mastrup, Firithjof N.; Soloski, Steven C.; and Rattray, Alan A., 5,613,365, Cl. 62-6.000.
Nourrcier, Charles E., Jr., 5,615,004, Cl. 356-4.010.
Shaffer, Stephen P., 5,614,714, Cl. 250-334.000.

Hughes Missile Systems Company: *See—*
Monk, R. Winston; and Van Cleve, David P., 5,614,896, Cl. 340-945.000.
Nunally, Patrick O., 5,615,305, Cl. 395-24.000.

Huls Aktiengesellschaft, Werk Troisdorf: *See—*
Modic, Rudolf; Korte, Hermann-Josef; Schoengen, Anton; Schroeder, Johann-Heinrich; and Porschen, Jörg, 5,614,159, Cl. 423-245.300.

Humiston, Robert G.; Ralston, Joseph L.; and Marchant, Brent R., to Thiokol Corporation. Reduced cost membrane seal assembly for pulsed rocket motor. 5,613,358, Cl. 60-250.000.

Hundebøl, Søren, to F.L. Smidth & Co. A/S. Method and plant for manufacturing cement clinker. 5,614,016, Cl. 106-745.000.

Hung, Michael. Control switch for electric winch. 5,614,701, Cl. 200-61.850.

Hünnebeck, Volker: *See—*
Schwichtenberg, Michael; and Hünnebeck, Volker, 5,613,488, Cl. 128-202.260.

Hunsley, Bradford A.: *See—*
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Hunter, Bryan: *See—*
Howell, Bryan; and Hunter, Bryan, 5,613,786, Cl. 400-489.000.

Hunziker, Roger A., to Phillips and Rodgers, Inc. Firing pin mechanism. 5,613,315, Cl. 42-65.000.

Hurco Companies, Inc.: *See—*
Bayer, Jack L., 5,613,929, Cl. 483-1.000.

Hurst, Roger L.: *See—*
Lukas, Michael A.; Hurst, Roger L.; and Kirwan, Lee D., 5,613,483, Cl. 124-73.000.

Huss, Charles P., to Minnesota Mining and Manufacturing Company. Preformed self-adhering bow. 5,614,274, Cl. 428-5.000.

Hutchinson: *See—*
Brunerye, Philippe, 5,613,668, Cl. 267-219.000.

Hutter, Louis N.; and Corsi, Marco, to Texas Instruments Incorporated. High voltage Shottky diode. 5,614,755, Cl. 257-471.000.

Hwang, Cherngye: *See—*
Mauri, Daniele; Lee, Wen Y.; Hwang, Cherngye; and Garfunkel, Glen, 5,614,727, Cl. 257-43.000.

Hwang, Hae-Feng: *See—*
Lin, Shi-Yow; and Hwang, Hae-Feng, 5,615,276, Cl. 382-100.000.

Hwang, Jin-Taek; Jeon, Seung-Ho; Jung, Won-Bum; and Seo, Sung-Ju, to Samsung General Chemicals Co., Ltd. Degradable foam and the method for its production. 5,614,564, Cl. 521-84.100.

Hwang, Ming J.; and Dowell, Harold J., to Texas Instruments Incorporated. Method and apparatus for performing microelectronic bonding using a laser. 5,614,113, Cl. 219-121.640.

Hyal Pharmaceutical Corporation: *See—*
Falk, Rudolf E.; Asculai, Samuel S.; and Turley, Eva A., 5,614,506, Cl. 514-54.000.

Hyatt, Gilbert P. Analog memory system storing and communicating frequency domain information. 5,615,142, Cl. 365-45.000.

Hyatt, Gilbert P. Integrated circuit computer system having a keyboard input and a sound output. 5,615,380, Cl. 395-800.000.

Hybridon, Inc.: *See—*
Iyer, Radhakrishnan P.; Devlin, Theresa; Habus, Ivan; Yu, Dong; and Agrawal, Sudhir, 5,614,622, Cl. 536-25.330.

Hyde, Frederick W.: *See—*
Heilmann, Steven M.; Drtina, Gary J.; Eitzman, Philip D.; Haddad, Louis C.; Hyde, Frederick W.; and Johnson, Todd W., 5,614,105, Cl. 210-767.000.

Hydro-Gear Limited Partnership: *See—*
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Hystad, Dean G.: *See—*
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Hyundai Electronics Industrial Co., Ltd.: *See—*
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Hyundai Electronics Industries Co., Ltd.: *See—*
Ahn, Byung J.; An, Jae C.; and Lee, Hee Y., 5,614,747, Cl. 257-316.000.
Cho, Chan-Kyoung; and Shin, Seung-Hyuk, 5,613,745, Cl. 312-9.900.
Shin, Ki S.; and Choi, Soo H., 5,614,429, Cl. 437-43.000.

Hyundai Metal Co., Ltd.: *See—*
Kim, Won-Sae, 5,613,715, Cl. 292-1.500.

Hyundai Motor Company: *See—*
Ha, Changki, 5,613,717, Cl. 292-336.300.

I-Stat Corporation: *See—*
Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., 5,614,416, Cl. 436-68.000.

Ibamoto, Masahiko: *See—*
Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.

Ibáñez, Carlos F.; Rydén, Mikael; and Jörnvall, Henrik, to Ibanez, Carlos F. Serine threonine kinase receptor. 5,614,609, Cl. 530-350.000.

Ibara, Takeru; Moriya, Yoshihiko; and Motoyama, Yu, to Yamaha Hatsudoki Kabushiki Kaisha. Fuel injection control. 5,613,468, Cl. 123-73.00A.

Ibaraki, Nobuki: *See—*
Uchikoga, Shuichi; Ibaraki, Nobuki; Suzuki, Kouji; Shimano, Takuya; and Fukuda, Kaichi, 5,614,731, Cl. 257-59.000.

Ibusuki, Takeshi; and Miyahara, Shinji, to Fujitsu Limited. Interrupt control circuit. 5,615,375, Cl. 395-737.000.

Ichida, Kiyofumi; and Sasai, Osamu, to Sumitomo Wiring Systems, Ltd. Connector. 5,613,881, Cl. 439-680.000.

Ichihashi, Kunio: *See—*
Sano, Junji; Ichihashi, Kunio; Saito, Hajime; and Banko, Hirotomo, 5,614,573, Cl. 524-121.000.

Ichikawa, Fusao: *See—*
Komaki, Iwao; Nakajima, Saburo; and Ichikawa, Fusao, 5,615,395, Cl. 396-6.000.

Ichikawa, Koji: *See—*
Mahvan, Nader; Wilkinson, David; and Ichikawa, Koji, 5,614,071, Cl. 204-298.110.

Ichinose, Reiji: *See—*
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Ichise, Hiroshi: *See—*
Ando, Ichiro; Sasaki, Akio; Minamiyama, Tomoyuki; Maki, Shoichi; Yasui, Siryo; and Ichise, Hiroshi, 5,615,308, Cl. 395-50.000.

Ichise, Toshihiko: *See—*
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Icom Incorporated: *See—*
Sun, Weimin, 5,614,862, Cl. 329-341.000.

Idee & Prodotti S.r.l.: *See—*
Di Leo, Vincenzo, 5,614,092, Cl. 210-350.000.

Iezzi, Robert A.: *See—*
Agree, Howard B.; Chen, Jen-Chi; and Iezzi, Robert A., 5,614,103, Cl. 210-725.000.

IFE Industrie-Einrichtungen Fertigungs-Aktiengesellschaft: *See—*
Ahorner, Leander, 5,613,613, Cl. 209-310.000.

Ihara, Hirokazu: *See—*
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Ihara, Masaki: *See—*
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takeshi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; Yano, Mitsuo; and Nishikibe, Masaru, 5,614,498, Cl. 514-18.000.

Iida, Jun: *See—*
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Iida, Masaru: *See—*
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Iijima, Hiroshi; and Hayafuji, Mineki, to Kabushiki Kaisha Topcon. Ophthalmologic instrument. 5,614,966, Cl. 351-208.000.

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Saito, Yoshiko; Fujita, Teruyuki; and Iijima, Tomoo, 5,613,345, Cl. 53-266.100.

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Iino, Kenichi: *See—*
Furuya, Yuji; Iino, Kenichi; and Okuyama, Hitoshi, 5,613,640, Cl. 239-585.500.

Ikeda, Hitoshi: *See—*
Sohda, Takashi; Ikeda, Hitoshi; and Momose, Yu, 5,614,544, Cl. 514-376.000.

Ikeda, Osamu: *See—*
Murooka, Fumio; Asaba, Tetsuo; Matsumoto, Shigeyuki; Ikeda, Osamu; Ichise, Toshihiko; Sakashita, Yukihiko; and Inoue, Shunsuke, 5,614,439, Cl. 437-194.000.

Ikeda, Satoshi: *See—*
Ishii, Takuya; Mizutani, Yoshio; Watanabe, Haruo; Kobayashi, Yoshinori; Sekine, Yutaka; and Ikeda, Satoshi, 5,615,098, Cl. 363-84.000.

Ikeda, Tadayoshi: *See—*
Haneda, Satoshi; Nagase, Hisayoshi; Tokimatsu, Hiroyuki; Hamada, Shuta; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,615,002, Cl. 399-227.000.

Ikeda, Yukio: *See—*
Nagai, Hiroshi; Ikeda, Yukio; and Saito, Takayuki, 5,614,088, Cl. 210-188.000.

Ikegami, Hiroyuki: *See—*
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Ikegami, Mitsuru: *See—*
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.

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Ikeno, Tatsuhiro: *See—*
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Illinois Tool Works Inc.: *See—*
Marion, James E., 5,613,655, Cl. 248-68.100.
Reynolds, Jon O.; and Madsen, Michael D., 5,615,095, Cl. 363-56.000.
Yarbrough, Harvey M., 5,614,227, Cl. 425-133.100.

Zook, Jon C., 5,613,451, Cl. 110-173.00R.

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Shiomi, Yasuhiko; and Imada, Shinji, 5,615,397, Cl. 396-55.000.

Imahashi, Kunihiko; Miura, Hirohisa; Yamada, Yasuhiro; Michioka, Hirofumi; Kusui, Jun; and Tanaka, Akiei, to Toyota Jidosha Kabushiki Kaisha; and Toyo Aluminium Kabushiki Kaisha. High heat resisting and high abrasion resisting aluminum alloy. 5,614,036, Cl. 148-437.000.

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Imai, Tsunemichi: *See—*
Lim, Suk-Won; Imai, Tsunemichi; Nishida, Yoshinori; and Choh, Takao, 5,614,684, Cl. 75-236.000.

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Ishida, Shigeru; Yawata, Satoshi; Yoneda, Tomio; Mishina, Haruo; Imaizumi, Kiyoshi; and Kawasumi, Yukihiro, 5,614,024, Cl. 118-712.000.

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Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,614,651, Cl. 552-615.000.

Imamura, Takafumi: *See—*
Kanamori, Mikio; and Imamura, Takafumi, 5,614,762, Cl. 257-69.000.

Immuno AG: *See—*
Eibl, Johann; Schwarz, Hans-Peter; and Lozano-Molero, Miguel, 5,614,493, Cl. 514-12.000.

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Eibl, Johann; Elsinger, Friedrich; Linnau, Yendra; and Wöber, Günther, 5,614,405, Cl. 435-236.000.

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Mills, Paul D. A.; Siddiqui, Junaid A.; and Olek, Anton R., 5,614,313, Cl. 428-327.000.

Inaba, Yutaka: *See—*
Kuribayashi, Masaki; Futami, Yukiko; Inoue, Hiroshi; Tsuboyama, Akira; and Inaba, Yutaka, 5,615,027, Cl. 345-87.000.

Inagaki, Hiromi: *See—*
Kawamoto, Yoshimichi; Inagaki, Hiromi; Sakurai, Kazuya; and Suto, Shinji, 5,613,740, Cl. 303-11.000.

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Kuwamoto, Makoto; Kohso, Hiroshi; and Inagaki, Tatsuhiko, 5,614,279, Cl. 428-64.100.

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Inatome, Hiroshi: *See—*
Hashimoto, Ryoichi; Shimada, Toshiya; Inatome, Hiroshi; and Shibata, Manabu, 5,613,848, Cl. 432-253.000.

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Li, Gangqiang; and Hieftje, Gary M., 5,614,711, Cl. 250-287.000.

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Pathak, Madhukar A.; Gonzalez, Salvador; and Fitzpatrick, Thomas B., 5,614,197, Cl. 424-195.100.

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Maxfield, Bruce W.; and Fitzgerald, Pamela C., 5,614,825, Cl. 324-242.000.

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Wang, Shih-Chieh; Chang, Wei-Wen; and Chen, Lu-Piog, 5,615,334, Cl. 395-185.010.

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Wu, Tzong-Sheau; Chen, Tian-Rein; and Tsai, Rong-Dzung, 5,615,018, Cl. 386-68.000.

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Infi-Shield, Inc.: *See—*
House, Jeffrey W.; and House, William K., 5,613,806, Cl. 405-150.100.

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Rupert, Robert E.; and Anderson, Norman C., 5,614,716, Cl. 250-338.100.

Ingersoll-Rand Company: *See—*
McCallops, John A.; and Dubuque, Kenneth J., 5,614,774, Cl. 310-58.000.

Injex Corporation: *See—*
Tanaka, Naoki; Ohtsubo, Hiroshi; and Ito, Michio, 5,613,849, Cl. 433-8.000.

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Kalmanides, Dan; and Ellison, Richard M., 5,613,607, Cl. 206-467.000.

Innovative Footwear Corporation: *See—*
Prengler, Randall, 5,613,941, Cl. 602-13.000.

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Yamada, Yoichi; Kimura, Tomohiko; Funada, Takeaki; and Inoshita, Gen, 5,614,687, Cl. 84-662.000.

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Taura, Toru; and Inoue, Hirobumi, 5,614,944, Cl. 348-183.000.

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Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, 5,614,121, Cl. 222-603.000.

Inoue, Kazuhiko, to Kabushiki Kaisha Toshiba. Hall device. 5,614,754, Cl. 257-421.000.

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Murooka, Fumio; Asaba, Tetsuo; Matsumoto, Shigeyuki; Ikeda, Osamu; Ichise, Toshihiko; Sakashita, Yukihiko; and Inoue, Shunsuke, 5,614,439, Cl. 437-194.000.

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Institute of Technology Precision: *See—*
Futamura, Shoji; and Murata, Chikara, 5,613,396, Cl. 72-404.000.

Instromedix, Inc.: *See—*
Mills, Gary N.; and Homayoun, Habib, 5,613,495, Cl. 128-696.000.

Instruments SA, Inc.: *See—*
Vezard, Nicolas, 5,613,752, Cl. 362-32.000.

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Morgan, Ira L.; Rice, Robert H.; Bolger, Joseph E.; and Crane, Robert M., 5,614,720, Cl. 250-360.100.

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Pierson, Cary M.; and Heston, Stephen L., 5,613,419, Cl. 91-361.000.

Intel Corporation: *See—*
Baerg, Bill; and Crandall, Robert L., 5,614,764, Cl. 257-767.000.
Cobbley, David A.; and Throckmorton, John A., 5,614,940, Cl. 348-7.000.
Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, 5,614,444, Cl. 437-225.000.
Fetterman, Michael A.; Glew, Andrew F.; Hinton, Glenn J.; Papworth, David B.; and Colwell, Robert P., 5,615,385, Cl. 395-800.000.
Hannah, Eric C., 5,614,948, Cl. 348-255.000.
Knoll, Shaun; Morriss, Jeff C.; Callahan, Shelagh; Bhatt, Ajay V.; Nizar, Puthiya K.; Haslam, Richard M.; Volk, Andrew M.; and Cadambi, Sudarshan B., 5,615,404, Cl. 395-882.000.
Peden, George H., 5,615,325, Cl. 395-326.000.
Sarangdhar, Nitin V.; Lai, Konrad K.; Singh, Gurbir; MacWilliams, Peter D.; Pawlowski, Stephen S.; and Rhodehamel, Michael W., 5,615,343, Cl. 395-282.000.

Interdigital Technology Corporation: *See—*
Bolgiano, D. Ridgely; and LaVean, Gilbert E., 5,614,914, Cl. 342-364.000.

Interface, Inc.: *See—*
Hoskins, Martin G.; and Hensler, Connie, 5,614,269, Cl. 427-512.000.

Intermec Corporation: *See—*
Miazga, Jay M., 5,613,790, Cl. 400-708.000.

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Agrawal, Rakesh; and Srikant, Ramakrishnan, 5,615,341, Cl. 395-210.000.
Allard, David J.; Canova, Francis J., Jr.; Johnson, Debra A. G.; Lanier, Charles S.; Lewis, James R.; Tiller, Byron K.; Villafana, William; and Yee, Raymond L., 5,615,384, Cl. 395-800.000.
Anderson, Timothy M.; Chrysler, Gregory M.; and Simons, Robert E., 5,615,084, Cl. 361-697.000.
Bahl, Lahit R.; de Souza, Peter V.; Gopalakrishnan, Ponani; and Picheny, Michael A., 5,615,299, Cl. 395-2.630.
Barbee, Steven G.; Conti, Richard A.; Kostenko, Alexander; Sarma, Narayana V.; Wilson, Donald L.; Wong, Justin W.; and Zuhoski, Steven P., 5,614,247, Cl. 427-8.000.
Beatty, Harry J.; Elmendorf, Peter C.; Gillis, Roland R.; and Pramanick, Ira, 5,615,127, Cl. 364-489.000.
Beilstein, Kenneth E., Jr.; Bertin, Claude L.; and Howell, Wayne J., 5,614,277, Cl. 428-40.100.
Belser, Karl, 5,615,205, Cl. 369-275.400.
Best, John S.; and Hetzler, Steven R., 5,615,190, Cl. 369-58.000.
Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,614,440, Cl. 437-195.000.
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Bezek, John D.; and Kogge, Peter M., 5,615,360, Cl. 395-606.000.
Bigus, Joseph P., 5,615,306, Cl. 395-26.000.
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Blank, Timothy J.; Erickson, Kevin J.; Greenberg, Richard; and Purkett, John C., 5,615,064, Cl. 360-75.000.
Braudaway, Gordon W.; and Delp, Helen R., 5,614,925, Cl. 345-153.000.
Brophy, Denis J.; Datta, Madhav; Harris, Derek B.; Ryan, Frank S.; and Spera, Frank A., 5,614,076, Cl. 205-666.000.
Bruce, James A.; Gortych, Joseph; and Hibbs, Michael S., 5,614,990, Cl. 355-71.000.
Chainer, Timothy J.; Sohn, Wayne J.; and Yarmchuk, Edward J., 5,615,058, Cl. 360-51.000.
Cheung, Wayne L., 5,615,065, Cl. 360-77.080.
Coteus, Paul W.; and Goodman, Douglas S., 5,614,920, Cl. 345-7.000.
Crockett, Charles H., Jr.; Duncan, Steven A.; Dunn, Stephen A.; Malone, David W.; and McMaster, Michael G., 5,615,387, Cl. 395-800.000.
DeBrosse, John K., 5,614,431, Cl. 437-52.000.
Diener, Carl E.; Mehta, Ashit A.; Paonessa, Ralph S.; Skarvinko, Eugene R.; and Wang, David W., 5,614,250, Cl. 427-96.000.
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French, William; Lees, Stuart; McCall, Colin D.; Murray, Kenneth S.; and Robertson, Brian, 5,613,633, Cl. 228-264.000.
Gerken, Christopher H., 5,615,346, Cl. 395-341.000.
Golladay, Steven D., 5,614,833, Cl. 324-751.000.
Griefer, Allan D., 5,615,213, Cl. 370-412.000.
Haas, Lee C., 5,614,901, Cl. 341-68.000.
Hadderman, Scott J.; and White, Kraig R., 5,615,328, Cl. 395-182.200.
Hesson, James H.; LeBlanc, Jay; and Ciavaglia, Stephen J., 5,615,350, Cl. 395-394.000.
Hill, Ronald F.; McCauley, Donald W.; Nadas, Stephen J.; and Robinson, James R., 5,615,354, Cl. 395-493.000.
Ho, Lawrence Y., 5,615,373, Cl. 395-726.000.
Horne, Rick L.; Lohman, Terence J.; Noll, Mark G.; Olive, Jose A.; and Perez, Roberto V., 5,615,217, Cl. 371-22.300.
Jaber, Talal K.; and Schmidt, Steven A., 5,614,838, Cl. 324-765.000.
Kant, Rishi, 5,615,050, Cl. 359-711.000.
Karp, James M.; and West, Stephen C., 5,615,221, Cl. 371-37.100.
Kern, Robert F.; Micka, William F.; Mikkelsen, Claus W.; Paulsen, Michael A.; and Shomler, Robert W., 5,615,329, Cl. 395-182.040.
Kinney, Michael J.; Kruppa, Robert W.; and Myers, Robert A., 5,613,783, Cl. 400-73.000.
Kirihata, Toshiaki; and Wong, Hing, 5,615,164, Cl. 365-230.060.
Kohn, Harold, 5,613,632, Cl. 228-246.000.
Kuroki, Kenji; and Matsui, Takao, 5,615,063, Cl. 360-66.000.
Lattimore, George M.; Ciraula, Michael K.; Kumar, Manoj; Poplawski, Joseph M., Jr.; Wendel, Dieter F.; and Wernicke, Friedrich, 5,615,168, Cl. 365-233.000.
Leung, Ting Y.; Pirahesh, Mir H.; Simmen, David E.; Strain, Lori G.; and Tiwari, Sanjai, 5,615,361, Cl. 395-603.000.
Mandelman, Jack A., 5,614,433, Cl. 437-57.000.
Masleid, Robert P., 5,614,845, Cl. 326-93.000.
Mauri, Daniele; Lee, Wen Y.; Hwang, Chemgye; and Garfunkel, Glen, 5,614,727, Cl. 257-43.000.
Mayfield, Brandon J.; and Schwendiman, Chris A., 5,615,389, Cl. 395-828.000.
Olsen, Floyd W., 5,614,832, Cl. 324-705.000.
Pelella, Antonio R., 5,614,849, Cl. 327-51.000.
Phillips, Larry B.; Masleid, Robert P.; and Muhich, John S., 5,615,160, Cl. 365-203.000.
Pontius, Dale E., 5,614,846, Cl. 326-93.000.
Rhyne, James R.; Anthony, Nicos J.; Levy, Stephen E.; and Wolf, Catherine G., 5,615,284, Cl. 382-187.000.
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Stanford, Vincent M.; Williamson, Ora J.; Sherwin, Elton B., Jr.; and Castellucci, Frank V., 5,615,296, Cl. 395-2.100.
Waclawsky, John G.; and Hershey, Paul C., 5,615,135, Cl. 364-551.010.
Zimowski, Melvin R.; Cotner, Curt L.; and Shum, Peter K. L., 5,615,337, Cl. 395-200.010.

International Computers Limited: *See—*
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International Jensen Incorporated: *See—*
Miller, Thomas E.; Kantor, Kenneth L.; Barish, Jeffrey; and Wise, Duane K., 5,615,270, Cl. 381-57.000.

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D'Angelo, Joseph P.; and Schur, Henry, 5,614,212, Cl. 424-449.000.

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Groves, David H.; Hemy, Martin F.; Spence, John R.; and Uliana, Virna A., 5,613,680, Cl. 273-138.200.

Inui, Takashi: *See—*
Yoshida, Hiroyuki; Inui, Takashi; Numaga, Shigeki; Nakai, Kiyoshi; and Suzuki, Yukihide, 5,615,156, Cl. 365-200.000.

Inventio AG: *See—*
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Lamb, Miles P., 5,613,576, Cl. 187-355.000.

Iowa State University Research Foundation, Inc.: *See—*
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Esche, Carl K., Jr.; Migdal, Cyril A.; Sanderson, John R.; and Ippolito, Anthony L., 5,614,124, Cl. 508-251.000.

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Isaac, Timothy S.; Yang, Gui; and Lee, Raymond, to Hong Kong (Link) Bicycles Ltd. Bi-material tubing and method of making same. 5,613,794, Cl. 403-265.000.

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Allington, Robert W.; Walters, Henry L.; Jameson, Daniel G.; and Tehrani, Yoossef, 5,614,089, Cl. 210-198.200.

Iseki, Yuji: *See—*
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Isenga, Gordon D.; and Blanchard, Russell O., to Batts, Inc. Drop loop garment hanger. 5,613,630, Cl. 223-88.000.

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Ishibashi, Kenzo: *See—*
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Ishihara, Takahiro: *See—*
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Itoh, Kiyoo: *See—*
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Takemoto, Takatoshi; and Kawashima, Kazunari, 5,613,911, Cl. 463-25.000.
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Horikiri, Kenichi, 5,615,185, Cl. 369-44.130.
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Ishizaki, Naoki, 5,613,519, Cl. 137-596.200.
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Matsuda, Yasuhiko, 5,614,928, Cl. 347-2.000.
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Mita, Shinji; and Kuroda, Tadahiro, 5,614,843, Cl. 326-73.000.
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Kalmanash, Michael H.; and Sethna, Vijay M., to Kaiser Aerospace and Electronics Corporation. Nightvision compatible display with electrically activated infrared filter. 5,615,032, Cl. 349-165.000.

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Kamizawa, Koh: *See*—
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Kamp, Dennis R.: *See*—
Bugner, Douglas E.; Mey, William; and Kamp, Dennis R., 5,614,340, Cl. 430-41.000.

Kamschal, Wolfgang; and Neszmerak, Wolfgang, to Inventio AG. Illuminating device with optical conductors for escalators or moving walkways. 5,613,758, Cl. 362-146.000.

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Kanamoto, Sigeharu: *See*—
Kendall, John H.; Mohindra, Ranvir B.; Rutherford, Duane S.; Satake, Satoru; Kanamoto, Sigeharu; and Kumamoto, Katsuyuki, 5,613,428, Cl. 99-473.000.

Kanatzidis, Mercouri G.; Liao, Ju H.; and Marking, Gregory A., to Board of Trustees Operating Michigan State University. Alkali metal quaternary chalcogenides and process for the preparation thereof. 5,614,128, Cl. 252-582.000.

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Takahashi, Joji; Kanazawa, Eiji; Yamashita, Yoshitaka; Kashiwai, Tomio; and Takenaka, Hideo, 5,614,401, Cl. 435-176.000.

Kane, Scott A.: *See*—
Werner, Joachim; Kane, Scott A.; Doerge, Herman P.; and Boonstra, Eric F., 5,614,565, Cl. 521-131.000.

Kane, Timothy: *See*—
Hill, David D.; and Kane, Timothy, 5,614,086, Cl. 210-170.000.

Kanebo Limited: *See*—
Sano, Junji; Ichihashi, Kunio; Saito, Hajime; and Banko, Hirotomo, 5,614,573, Cl. 524-121.000.

Kanekawa, Nobuyasu; Ihara, Hirokazu; Akiyama, Masatsugu; Kawabata, Kiyoshi; Yamanaka, Hisayoshi; and Okishima, Tetsuya, to Hitachi, Ltd. Electronic circuit package including plural semiconductor chips formed on a wiring substrate. 5,614,761, Cl. 257-676.000.

Kaneki, Tadashi: *See*—
Tsuru, Seiji; Hirose, Shinichi; Okita, Junji; Kaneki, Tadashi; and Kikuchi, Katsuaki, 5,613,843, Cl. 417-313.000.

Kaneko, Masanobu; and Yanagisawa, Masaaki, to Nikon Corporation. Internal focus objective lens. 5,615,049, Cl. 359-684.000.

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Kang, Sang-Ihn: *See*—
Spears, Colin P.; and Kang, Sang-Ihn, 5,614,562, Cl. 514-744.000.

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Slavicheff, Craig S.; Barrow, Stephen R.; Kanga, Vispi D.; Cheney, Michael C.; and Znaiden, Alexander, 5,614,201, Cl. 424-401.000.

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Kanitani, Hiroyuki: *See*—
Inoue, Keiichi; and Kanitani, Hiroyuki, 5,613,343, Cl. 53-111.00R.

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Saiuchi, Kazuo; Kohara, Minoru; Yamada, Kunikazu; and Kanki, Kazuhiko, 5,615,031, Cl. 349-149.000.

Kanner, Rowland W.; and Williams, Fred E., Jr., to Ryder International Corporation. Coagulation timer. 5,613,491, Cl. 128-637.000.

Kanno, Takashi: *See*—
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Kanoto, Masanobu: *See*—
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Kansi Paint Co., Ltd.: *See*—
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, 5,614,582, Cl. 524-507.000.

Kant, Rishi, to International Business Machines Corporation. Optical system with reduced focus spot size. 5,615,050, Cl. 359-711.000.

Kantor, Kenneth L.: *See*—

Miller, Thomas E.; Kantor, Kenneth L.; Barish, Jeffrey; and Wise, Duane K., 5,615,270, Cl. 381-57.000.

Kanzaki, Masatoshi, to Nikon Corporation. Camera shutter control device and method. 5,614,978, Cl. 396-463.000.

Kao Corporation: *See*—
Hashimoto, Ryoichi; Shimada, Toshiya; Inatome, Hiroshi; and Shibata, Manabu, 5,613,848, Cl. 432-253.000.

Kaplan, Milton R. Stable aqueous drug suspensions and methods for preparation thereof. 5,614,222, Cl. 424-489.000.

Kaplan, Paul: *See*—
Oppermann, Hermann; Dorai, Haimanti; and Kaplan, Paul, 5,614,385, Cl. 435-69.400.

Kapoor, Ashok K., to LSI Logic Corporation. Process and structure for reduction of channeling during implantation of source and drain regions in formation of MOS integrated circuit structures. 5,614,428, Cl. 437-41.000.

Kaporis, Konstadinas: *See*—
Shao, Y. J.; and Kaporis, Konstadinas, 5,614,098, Cl. 210-608.000.

Kaps, Dieter: *See*—
Schulte, Heinz-Guenther; Hornfeck, Klaus; and Kaps, Dieter, 5,614,062, Cl. 162-175.000.

Karambelas, Randy C.: *See*—
Hindman, Larry E.; Karambelas, Randy C.; Reeves, Barry D.; and Rise, James D., 5,614,933, Cl. 347-103.000.

Karl Thomae GmbH: *See*—
Hauel, Norbert; Narr, Berthold, deceased; Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, 5,614,519, Cl. 514-235.800.

Karlsson, Bengt-Åke, to Abu AB. Bail mechanism in an open-face fishing reel of the fixed-spool type. 5,613,644, Cl. 242-232.000.

Karn, Jack L.: *See*—
Salomon, Mary F.; Davis, Kirk E.; Karn, Jack L.; and Cahoon, John, 5,614,480, Cl. 508-287.000.

Karp, James M.; and West, Stephen C., to International Business Machines Corporation. Method and system which selectively uses different levels of error correction to achieve high data throughput. 5,615,221, Cl. 371-37.100.

Kasapis, Stefan: *See*—
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Kasei Optonix, Ltd.: *See*—
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Kasetani, Satoshi: *See*—
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,614,298, Cl. 428-219.000.

Kashima, Asako: *See*—
Nagano, Shinji; Kashima, Asako; Osanai, Akira; Sugata, Teruaki; Kubo, Hidenobu; and Mashiko, Tomomi, 5,614,705, Cl. 235-467.000.

Kashima Oil Co., Ltd.: *See*—
Tsumura, Masahiro; Miyasita, Hiromi; and Oyama, Kaneyoshi, 5,614,600, Cl. 525-481.000.

Kashiwai, Tomio: *See*—
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Kashiwakura, Yoshiharu: *See*—
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.

Kashiyama, Motohisa: *See*—
Tsuji, Masanori; and Kashiyama, Motohisa, 5,613,878, Cl. 439-595.000.

Katayama, Hiroyuki; Ohshima, Shinji; and Teraguchi, Takashi, to Sumitomo Rubber Industries, Ltd. Apparatus and method for measuring head speed and opening angle using six sensors arranged in a rectangular format. 5,614,823, Cl. 324-178.000.

Katayama, Hiroyuki: *See*—
Mieda, Michinobu; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,615,180, Cl. 369-13.000.

Kato, Fumio, to Tsukasa Industry Co., Ltd. Automatic bag opening device. 5,613,824, Cl. 414-412.000.

Kato, Hideo: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Kato, Hideyuki, to Nippondenso Co., Ltd. Headlight for vehicle. 5,615,090, Cl. 362-32.000.

Kato, Hiroki: *See*—
Takai, Shigeharu; Shikida, Hideo; Kato, Hiroki; and Ikeno, Tatsuhiro, 5,615,104, Cl. 364-134.000.

Kato, Kazunari, to Alpine Electronics, Inc. Disk apparatus with optical head cleaning member. 5,615,196, Cl. 369-71.000.

Kato, Kazunori: *See*—
Kawakami, Hiroaki; Doi. Shinji; Tanikawa, Hirohide; Fujiwara, Masatsugu; and Kato, Kazunori, 5,614,344, Cl. 430-102.000.

Kato, Kinya; and Seki, Masami, to Nikon Corporation. Projection exposure apparatus and method with a plurality of projection optical units. 5,614,988, Cl. 355-46.000.

Kato, Minoru: *See*—
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Kato, Takeshi: *See*—
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Kato, Yoshihisa: *See*—
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Katoh, Masahiko; Nonaka, Kimihiro; and Nakamura, Kazuhiro, to Sanshin Kogyo Kabushiki Kaisha. Fuel control system for multiple cylinder engine. 5,613,480, Cl. 123-673.000.

Katragadda, Subbarao: *See*—
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Katyl, Robert H.: *See*—
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Katz, James E.: *See*—
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Katz, Joseph: *See*—
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Katz, Martin, to United States of America, Army. Chemical protective fabric. 5,614,301, Cl. 442-315.000.

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Kawabata, Kiyoshi: *See*—
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Kawada, Teruo: *See*—
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Kawagoe, Nobukazu: *See*—
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Kawaguchi, Kiyoshi: *See*—
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Kawaguchi, Masaaki: *See*—
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Kawaguchi, Takafumi; Tomiyoshi, Akira; and Takeda, Makoto, to Sharp Kabushiki Kaisha. Display apparatus. 5,614,922, Cl. 345-89.000.

Kawahara, Nobuyuki: *See*—
Kinoshita, Katsutoshi; Wakita, Takeo; Kodaka, Kenji; Matsuno, Hirozumi; Satoh, Kenichi; Shiraishi, Shirou; Ohnuma, Kazutomi; Yamada, Eiichi; Yasui, Naoko; Kawahara, Nobuyuki; Ebihara, Koichi; and Nakaya, Michihiko, 5,614,527, Cl. 514-256.000.

Kawahara, Takayuki; Hori, Ryoichi; Horiguchi, Masashi; Kurihara, Ryoichi; Itoh, Kiyoo; Aoki, Masakazu; Sakata, Takeshi; and Uchiyama, Kunio, to Hitachi, Ltd. Semiconductor integrated circuit device having power reduction mechanism. 5,614,847, Cl. 326-98.000.

Kawai, Kouji; Ishihara, Shigeki; Masuda, Naoki; Ota, Hirohisa; and Yogi, Osamu, to Hamamatsu Photonics K.K. Metal halide lamp having heat dam portion. 5,614,787, Cl. 313-623.000.

Kawai, Michio: *See*—
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Kawakami, Hiroaki; Doi, Shinji; Tanikawa, Hirohide; Fujiwara, Masatsugu; and Kato, Kazunori, to Canon Kabushiki Kaisha. Toner for developing electrostatic images and image forming method. 5,614,344, Cl. 430-102.000.

Kawakami, Hiroshi: *See*—
Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,613,913, Cl. 463-52.000.

Kawakami, Yuichi; Hamaguchi, Takayuki; Kawagoe, Nobukazu; Nakanishi, Hideaki; and Waki, Natsuko, to Minolta Co., Ltd. Cleaner. 5,613,261, Cl. 15-98.000.

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Kawamura, Masanori: *See*—
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Chin, Paul W., Jr.; and Keng, Hsing M., 5,613,770, Cl. 362-367.000.
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Ramunas, Valdas S., 5,613,693, Cl. 279-76.000.
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Kim, Dong-ha, to Samsung Electronics Co., Ltd. Apparatus for generating parallel light using two arrayed mirrors. 5,613,768, Cl. 362-298.000.
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Kim, Seung-Do, to Samsung Electronics CO., Ltd. Water purifier. 5,614,068, Cl. 204-232.000.
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Jackson, Wanda W.; Diaz, Monica S.; and Garrett, Lance J., Jr., 5,614,281, Cl. 428-100.000.
Jobe, Anthony; Perkins, Cheryl A.; and Powers, Michael D., 5,614,306, Cl. 442-381.000.
Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., 5,614,293, Cl. 428-211.000.
Quincy, Roger B., III; McDowall, Debra J.; Gadsby, Elizabeth D.; Romans-Hess, Alice Y.; and Woltman, Garry R., 5,614,295, Cl. 428-212.000.
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Kimura, Izumi; Nishioka, Munehiro; Takeuchi, Toshifumi; and Tadokoro, Hitoshi, to Hitachi, Ltd. Disk reproducing apparatus and method for reproducing an audio signal and a subcode at N times normal speed from a disk. 5,615,194, Cl. 369-60.000.
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Hudis, Martin; Koebisu, Mamoru; and Hatada, Kenji, 5,615,078, Cl. 361-313.000.
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Kohlhammer, Klaus; Koegler, Gerhard; and Schwemmer, Monika, 5,614,049, Cl. 156-221.000.
Koehrsen, Craig L.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.
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Kogge, Peter M.: *See*—
Bezek, John D.; and Kogge, Peter M., 5,615,309, Cl. 395-54.000.
Bezek, John D.; and Kogge, Peter M., 5,615,360, Cl. 395-606.000.
Kohara, Minoru: *See*—
Saiuchi, Kazuo; Kohara, Minoru; Yamada, Kunikazu; and Kanki, Kazuhiko, 5,615,031, Cl. 349-149.000.
Kohler, Timothy L., to Canon Information Systems, Inc. Color management system having business graphics rendering mode. 5,615,312, Cl. 395-109.000.
Kohlhammer, Klaus; Koegler, Gerhard; and Schwemmer, Monika, to Wacker Chemie GmbH. Use of aqueous dispersions of two-phase emulsion graft copolymers as binders for stiffening materials in the textile and leather industry. 5,614,049, Cl. 156-221.000.
Kohn, Harold, to International Business Machines Corporation. Manufacturing solder-preform holders for a pick-and-place machine. 5,613,632, Cl. 228-246.000.
Kohn, Rachel S.: *See*—

Chung, Tai-Shung; Kafchinski, Edward R.; Kohn, Rachel S.; and Onorato, Frank J., Jr., 5,614,309, Cl. 428-375.000.
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Sohda, Yoshio; Kohno, Takefumi; and Sanokawa, Yutaka, 5,614,134, Cl. 264-29.100.
Kohri, Shumpei: *See*—
Nakashima, Katsuya; and Kohri, Shumpei, 5,615,157, Cl. 365-201.000.
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Kuwamoto, Makoto; Kohso, Hiroshi; and Inagaki, Tatsuhiko, 5,614,279, Cl. 428-64.100.
Koike, Hiroki: *See*—
Kimura, Tohru; and Koike, Hiroki, 5,615,144, Cl. 365-145.000.
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Horikoshi, Hiroyoshi; Fujiwara, Toshihiko; Yoshioka, Shinji; Nishino, Hiroshi; Koike, Hiroyuki; and Yoshioka, Takao, 5,614,542, Cl. 514-369.000.
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Koino, Seiji; Yaguchi, Toshiyuki; and Kyuma, Yuriko, to Kabushiki Kaisha Toshiba. Microprocessor having register bank architecture. 5,615,348, Cl. 395-569.000.
Koishi, Musubu; Shirakawa, Kouichi; and Takeshima, Akira, to Hamamatsu Photonics K.K. Optical feedback photodetection apparatus. 5,614,708, Cl. 250-244.00C.
Koito Manufacturing Co., Ltd.: *See*—
Ogata, Toru, 5,613,407, Cl. 74-551.900.
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Mizuguchi, Yoshihiko, 5,614,916, Cl. 343-786.000.
Kolb, Alan C.; Braverman, Leonard W.; Silberman, Cyril J.; Hamm, Richard R.; and Cates, Michael C., to Maxwell Laboratories, Inc. Method and apparatus for removing contaminants and coatings from a substrate using pulsed radiant energy and liquid carbon dioxide. 5,613,509, Cl. 134-56.00R.
Kolb, Sebald: *See*—
Juettner, Peter; Kolb, Sebald; Zimmerer, Peter; and Naumann, Udo, 5,615,333, Cl. 395-183.140.
Kolberg, Janice A.: *See*—
Urdea, Michael S.; Warner, Brian; Running, Joyce A.; Kolberg, Janice A.; Clyne, Jennifer M.; Sanchez-Pescador, Ray; and Horn, Thomas, 5,614,362, Cl. 435-5.000.
Kolberg, Kenneth D.; Parks, David A.; Morris, Kimberley; and Schachner, James R., to Eaton Corporation. Adjusting knob assembly with discrete positioning. 5,613.275, Cl. 16-121.000.
Kolff, Jack: *See*—
Czarnek, Robert; Saverino, Michael A.; and Kolff, Jack, 5,613,936, Cl. 600-166.000.
Kolkind, Andrew A.: *See*—
Haus, Bruce A.; and Kolkind, Andrew A., 5,613,896, Cl. 451-50.000.
Koltze, Karl; Roland, Volker; and Voidel, Peter, to Schlafhorst AG & Co. Method for rewinding a spinning cake in a pot spinning apparatus. 5,613,355, Cl. 57-312.000.
Komai, Hiromichi; and Haraguchi, Hidenori, to Unisia Jecs Corporation. Sealing device for universal joint with integral sealing lips and cover portion. 5,613,691, Cl. 277-152.000.
Komaki, Iwao; Nakajima, Saburo; and Ichikawa, Fusao, to Fuji Photo Film Co., Ltd. Method and apparatus for disassembling lens-fitted photo film unit, and flash cleaning method and apparatus. 5,615,395, Cl. 396-6.000.
Komatsu Ltd.: *See*—
Nakamura, Tadao; Watanabe, Makoto; and Nakazato, Tatsuro, 5,613,474, Cl. 123-496.000.
Shintani, Toshiya; and Hasegawa, Masahiko, 5,614,110, Cl. 219-121.440.
Komatsu, Satoru; and Kudo, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. FM radar system. 5,614,909, Cl. 342-70.000.
Komatsuda, Hideki; Hirose, Hideo; and Mori, Takashi, to Nikon Corporation. Illumination apparatus and exposure apparatus using it. 5,615,047, Cl. 359-618.000.
Komoda, Osamu: *See*—
Tatsuno, Kimio; Shimano, Takeshi; Fukuda, Hiroshi; and Komoda, Osamu, 5,615,199, Cl. 369-112.000.
Komoriya, Keiji: *See*—
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.
Kompan, Vladimir; and Slobodsky, Vitaly. Anti-friction additive and method for using same. 5,614,477, Cl. 508-13.000.
Konami Co., Ltd.: *See*—
Hamano, Takashi, 5,613,910, Cl. 463-19.000.
Kondo, Ichiharu; Inaguma, Yoshiaki; and Sakamoto, Yoshitsugu, to Nippondenso Co., Ltd. Semiconductor device and method of manufacturing the same. 5,614,291, Cl. 428-209.000.
Kondo, Kazuo; Tada, Teruo; Wano, Toyoki; Uehara, Hideki; and Tsuchida, Tomohisa, to Okura Industrial Co., Ltd. Heat-shrinkable multi-layer polyolefin films. 5,614,315, Cl. 428-332.000.
Kondo, Shinjiro: *See*—
Hirukawa, Shigeru; Kondo, Shinjiro; Kato, Takeshi; and Suwa, Kyoichi, 5,615,006, Cl. 356-124.000.
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, to Teijin Limited. 2-arylthiazole derivatives and pharmaceutical composition thereof. 5,614,520, Cl. 514-236.800.
Kondo, Tomoharu: *See*—
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Kondo, Toshiaki: *See*—
Sekine, Masayoshi; and Kondo, Toshiaki, 5,614,945, Cl. 348-208.000.
Konica Corporation: *See*—
Haneda, Satoshi; Nagase, Hisayoshi; Tokimatsu, Hiroyuki; Hamada, Shuta; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,615,002, Cl. 399-227.000.
Kobayashi, Toru; and Nagayasu, Koichi, 5,614,289, Cl. 428-195.000.
Konishi, Yoshichika; and Kubo, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Air compressor inlet and outlet valve arrangement. 5,613,837, Cl. 417-255.000.
Kono, Katsumi; and Nakamura, Shinya, to Toyota Jidosha Kabushiki Kaisha. Slip control apparatus for motor vehicle lock-up clutch. 5,613,583, Cl. 192-3.310.
Konoya, Hisashi; and Kuki, Heiji, to Sumitomo Wiring Systems, Ltd. Electric vehicle charging connector, connector assembly and electric vehicle charging system. 5,614,808, Cl. 320-48.000.
Konteatis, Zenon; Siciliano, Salvatore J.; and Springer, Martin S., to Merck & Co., Inc. Assay to identify human C5a antagonists and agonists. 5,614,370, Cl. 435-7.210.
Kootsouradis, Anthony, to Stein, Inc. Conveyor belt treatment apparatus. 5,613,594, Cl. 198-495.000.
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Fessenbecker, Achim; Korff, Joachim; Kress, Hans-Jürgen; and Müller, Volker, 5,614,483, Cl. 508-550.000.
Korkolainen, Tapio: *See*—
Bäckström, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,614,541, Cl. 514-369.000.
Kornher, Kevin: *See*—
Conner, James L.; Overlaur, Michael J.; and Kornher, Kevin, 5,614,921, Cl. 345-85.000.
Kornmann, Karl: *See*—
Essig, Bernhard; Klein, Peter; and Kornmann, Karl, 5,613,531, Cl. 140-147.000.
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Modic, Rudolf; Korte, Hermann-Josef; Schoengen, Anton; Schroeder, Johann-Heinrich; and Porschen, Jörg. 5,614,159, Cl. 423-245.300.
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Hatanaka, Shyoko; Yasunobu, Chizuko; and Kosaka, Michitaka, 5,615,304, Cl. 395-12.000.
Kosaka, Shinichi; Sakai, Osamu; Takahashi, Tomonori; and Soma, Takao, to NGK Insulators, Ltd. Hydrogen separator, hydrogen separating apparatus and method for manufacturing hydrogen separator. 5,614,001, Cl. 96-10.000.
Koseki, Hideki: *See*—
Higashikata, Isao; Ando, Yasunori; and Koseki, Hideki, 5,615,071, Cl. 361-22.000.
Koshi, Yutaka; Kimura, Shunichi; Yokose, Taro; Kamizawa, Koh; Minami, Toshi; and Nakamura, Osamu, to Fuji Xerox Co., Ltd. Singular value decomposition coding and decoding apparatuses. 5,615,288, Cl. 382-248.000.
Kost, Friedrich; Hartmann, Uwe; Weiss, Karl-Josef; and Ehret, Thomas, to Robert Bosch GmbH. Method for setting target braking torques. 5,613,743, Cl. 303-165.000.
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Barbee, Steven G.; Conti, Richard A.; Kostenko, Alexander; Sarma, Narayana V.; Wilson, Donald L.; Wong, Justin W.; and Zuboski, Steven P., 5,614,247, Cl. 427-8.000.
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, to Chiron Corporation. Compositions containing reduced, microbially produced interleukin-2 (IL-2). 5,614,185, Cl. 424-85.200.
Kotlyar, Oleg M. Autonomous data transmission apparatus. 5,615,172, Cl. 367-83.000.
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Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič , Mateja, 5,614,199, Cl. 424-400.000.
Kotschwar, Rex R., to RPG, Inc. Sprayable polyurethane compositions. 5,614,575, Cl. 524-270.000.
Kouno, Tatsuya: *See*—
Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,613,913, Cl. 463-52.000.
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Hirai, Koichi; Iwano, Yuji; Nishi, Takahide; Yoshida, Akira; Oda, Kozo; and Koyama, Hiroo, 5,614,624, Cl. 540-350.000.
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Kraft, Horst; and Dekorsy, Gerhard, to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG. Keyboard actuator with catch hooks and weakened portion. 5,614,702, Cl. 235-145.00R.

Kraiczek, Karsten; and Dehmer, Bernhard, to Hewlett-Packard Company. Diode array spectrophotometer. 5,615,010, Cl. 356-328.000.

Kraler, Franz. Roll down shutter having a rotating, self-locking winding shaft. 5,613,539, Cl. 160-32.000.

Kramer, Richard M.; Day, Thomas M.; Lindemann, Ralph E., Jr.; and Gillespie, Jane L., to Monsanto Company. Preparation of ammonium glyphosate using aqueous ammonium hydroxide in a liquid-solid reaction system. 5,614,468, Cl. 504-206.000.

Krammer, Kelly A.: *See*—
Fandrich, Helmut E.; and Krammer, Kelly A., 5,613,722, Cl. 294-88.000.

Kranbuehl, David E. Method and apparatus for monitoring nylon 11 made from polyamide plastic made from aminoundecanoic acid. 5,614,683, Cl. 73-866.000.

Kranzler, Thane L.; and McDonald, Michael L., to W. L. Gore & Associates, Inc. Laminated patch tissue repair sheet material. 5,614,284, Cl. 428-138.000.

Krass, Norbert: *See*—
Fischer, Gerd; Defoβa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,614,623, Cl. 540-222.000.

Krause, Stanley J.: *See*—
Robinson, Stephen A.; and Krause, Stanley J., 5,614,033, Cl. 136-246.000.

Krautwurst, Klaus D.: *See*—
Berg, Arne; Almén, Torsten; Krautwurst, Klaus D.; Kim, Sook-Hui; Rongved, Pål; Klaveness, Jo; and Dugstad, Harald, 5,614,168, Cl. 424-9.420.

Krchnak, Viktor; Lebl, Michal; and Seligmann, Bruce, to Selectide Corporation. Apparatus and method for multiple synthesis of organic compounds on polymer support. 5,614,608, Cl. 530-334.000.

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Hansen, Jens; and Kreilgård, Bo, 5,614,167, Cl. 424-9.200.

Kreiner, Roswitha, to Rosenthal Aktiengesellschaft. Method for the manufacture of porcelain. 5,614,448, Cl. 501-32.000.

Kreiter, Alexander, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Developer station for an electrophotographic printing or copying machine. 5,614,994, Cl. 399-256.000.

Kreitmair-Steck, Wolfgang; and Klausing, Helmut, to Daimler-Benz Aerospace AG. All weather visual system for helicopters. 5,614,907, Cl. 342-25.000.

Kress, Hans-Jürgen: *See*—
Fessenbecker, Achim; Korff, Joachim; Kress, Hans-Jürgen; and Müller, Volker, 5,614,483, Cl. 508-550.000.

Krishnamurthy, Mohan: *See*—
Petroff, Pierre; Leonard, Devin; and Krishnamurthy, Mohan, 5,614,435, Cl. 437-110.000.

Krist, Peter M.; and Cheng, Wayne, to Xerox Corporation. Apparatus and method of programming a job to be processed at a location other than the location at which the job is prepared. 5,615,015, Cl. 358-296.000.

Kristiansson, Robert. Apparatus and method of reducing varying electrical fields in video display terminals. 5,614,789, Cl. 315-85.000.

Kristmann, Mel S.: *See*—
Scobbie, Gavin; McQueeny, Thomas P.; Kristmann, Mel S.; and Hennessey, Richard C., 5,613,417, Cl. 83-875.000.

Krivec, Bert, to Snap-on Technologies, Inc. Position latch device. 5,613,884, Cl. 439-822.000.

Krobath, Eric M. Welding apparatus and shield therefor. 5,614,117, Cl. 219-147.000.

Krone, Volker; Magerstädt, Michael; Walch, Axel; Ditzinger, Günter; and Lill, Norbert, to Hoechst Aktiengesellschaft. Polycondensates which contain tartaric acid derivatives, processes for their preparation and use thereof. 5,613,494, Cl. 128-662.020.

Krueger, Allan J.: *See*—
Weyenberg, Jeffrey M.; Krueger, Allan J.; and Rasmussen, Noel J., 5,614,230, Cl. 425-393.000.

Krüger, Michael; Ruder, Götz; Wagensommer, Bernhard; and Gihr, Detlef, to Heidelberger Druckmaschinen. Method and device for conveying sheets in a feeder region of a sheet-processing machine. 5,613,675, Cl. 271-270.000.

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Körting, Reinhard; Rübbelke, Ludger; and auf dem Venne, Hans, 5,613,782, Cl. 384-549.000.

Kruppa, Robert W.: *See*—
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Escano, Nelson Z.; and Krutak, James J., Sr., 5,614,008, Cl. 106-23.00D.

Krznaric, Mile. Stirring apparatus. 5,613,425, Cl. 99-348.000.

Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., to Kimberly-Clark Corporation. Soft treated uncreped throughdried tissue. 5,614,293, Cl. 428-211.000.

Kubala, Sidney W.; Campbell, Donald N.; and Pearson, Robert D. Sulfur chemiluminescence detection method. 5,614,417, Cl. 436-120.000.

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Nagano, Shinji; Kashima, Asako; Osanai, Akira; Sugata, Teruaki; Kubo, Hidenobu; and Mashiko, Tomomi, 5,614,705, Cl. 235-467.000.

Kubo, Hiroko: *See*—
Sakura, Takeshi; Yamasaki, Yutaka; Kubo, Hiroko; Xu, Kexin; and Shiomi, Motonobu, 5,615,009, Cl. 356-326.000.

Kubo, Hiroshi: *See*—
Konishi, Yoshichika; and Kubo, Hiroshi, 5,613,837, Cl. 417-255.000.

Kubo, Motonobu; Enomoto, Takashi; Sano, Taro; Hayashi, Kazunori; Ueda, Akihiko; and Morita, Masamichi, to Daikin Industries Ltd. Agent for treating textile. 5,614,123, Cl. 252-862.000.

Kubokawa, Hideji, to Matsushita Graphic Communication Systems, Inc. Optical head and image recording apparatus including the same. 5,615,198, Cl. 369-102.000.

Kubota Corporation: *See*—
Toshima, Toshio; Ishihara, Takahiro; and Yokomizo, Takashi, 5,613,714, Cl. 285-39.000.

Kubota, Minoru: *See*—
Nishitani, Keizo; Nakayama, Yoshiaki; Kubota, Minoru; and Ozaki, Keiichi, 5,615,080, Cl. 361-664.000.

Kuboyama, Shoichi, to Fujitsu Limited. Distributed image processing apparatus. 5,615,324, Cl. 395-141.000.

Kucera, Louis S.: *See*—
Piantadosi, Claude; Ishaq, Khalid S.; Marasco, Canio J., Jr.; Daniel, Larry W.; Kucera, Louis S.; Modest, Edward J.; and Goz, Barry P., 5,614,548, Cl. 514-440.000.

Kuckhermann, Gustav; and Corteccia, Robert, to SEEMI Societé d'Etudes d'Equipements de Modernisation Industrielle. Apparatus for palletizing tube sections of paper or the like. 5,613,435, Cl. 100-196.000.

Kuczer, Paul: *See*—
Nosker, Richard W.; Michalchuk, Joey J.; Kuczer, Paul; and Hodge, Elmer W., 5,613,889, Cl. 445-37.000.

Kudo, Hiroshi: *See*—
Komatsu, Satoru; and Kudo, Hiroshi, 5,614,909, Cl. 342-70.000.

Kuga, Kaeko, to Rohm Co., Ltd. Sample/hold circuit having an analog-to-digital converter and a nonvolatile memory for storing hold voltage data in digital form. 5,614,854, Cl. 327-94.000.

Kugel, Kerstin: *See*—
Spiegler, Roland; Keup, Michael; Kugel, Kerstin; Lersch, Peter; and Silber, Stefan, 5,613,988, Cl. 44-320.000.

Kugler, Jack L. Mulching attachment for lawnmowers. 5,613,353, Cl. 56-13.800.

Kuhajda, Francis P.: *See*—
Dick, James D.; and Kuhajda, Francis P., 5,614,551, Cl. 514-454.000.

Kuki, Heiji: *See*—
Konoya, Hisashi; and Kuki, Heiji, 5,614,808, Cl. 320-48.000.

Kuklinski, Robert, to United States of America, Navy. Microbubble positioning and control system. 5,613,456, Cl. 114-67.00A.

Kukurudza, Vladimir W. Single loud speaker drive system. 5,615,272, Cl. 381-117.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Bemis, Andrew V.; Nunn, Timothy A.; and Ned, Alexander A., 5,614,678, Cl. 73-727.000.

Kumamoto, Katsuyuki: *See*—
Kendall, John H.; Mohindra, Ranvir B.; Rutherford, Duane S.; Satake, Satoru; Kanamoto, Sigeharu; and Kumamoto, Katsuyuki, 5,613,428, Cl. 99-473.000.

Kumar, Balasubramanian: *See*—
Amerson, Frederic C.; Gupta, Rajiv; Kumar, Balasubramanian; Schlansker, Michael S.; and Worley, William S., 5,615,386 Cl. 395-585.000.

Kumar, Manoj: *See*—
Lattimore, George M.; Ciraula, Michael K.; Kumar, Manoj; Poplawski, Joseph M., Jr.; Wendel, Dieter F.; and Wernicke, Friedrich, 5,615,168, Cl. 365-233.000.

Kumar, Nalin; and Xie, Chenggang, to SI Diamond Technology, Inc. Methods for fabricating flat panel display systems and components. 5,614,353, Cl. 430-313.000.

Kumar, Virendra; and Dority, John A., Jr., to Sterling Winthrop Inc. Substituted N-arylmethyl and heterocyclmethyl-1H-pyrazolo[3,4-b]quinolin-4-amines and compositions and methods of use thereof. 5,614,530, Cl. 514-293.000.

Kume, Hisao; Hosokawa, Hiromu; Watanabe, Minoru; and Takayanagi, Kenichiro, to Sony Corporation. Cathode ray tube. 5,614,791, Cl. 315-370.000.

Kung, Teh-Ming, to Eastman Kodak Company. Dye-receiving element for thermal dye transfer having improved writeability. 5,614,464, Cl. 503-227.000.

Kung, Viola T.: *See*—
Ghazarossian, Vartan; Kung, Viola T.; and Zuk, Robert F., 5,614,368, Cl. 435-7.500.

Kunitani, Michael: *See*—
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 5,614,185, Cl. 424-85.200.

Kuntz, Matthias: *See*—
Riddle, Rodney; Kuntz, Matthias; Müller, Bernd; Raulin, Dietmar; and Feldmann-Schlobohm, Günther, 5,614,472, Cl. 505-425.000.

Kurabayashi, Yutaka; Shirota, Katsuhiro; and Takahashi, Katsuhiko, to Canon Kabushiki Kaisha. Ink set, and method and apparatus for image formation employing the same. 5,614,007, Cl. 106-22.00R.

Kurahara, Kensei, to NEC Corporation. System for determining and controlling the input/output mode of input/output terminal of microcomputer using reset signal change point detection circuit. 5,615,390, Cl. 395-834.000.

Kuramae, Yoshihisa: *See*—
Inoue, Kazushige; Kuramae, Yoshihisa; Nagai, Takashi; and Takatsuna, Toru, 5,614,348, Cl. 430-110.000.

Kurashiki Boseki Kabushiki Kaisha: *See*—
Sakura, Takeshi; Yamasaki, Yutaka; Kubo, Hiroko; Xu, Kexin; and Shiomi, Motonobu, 5,615,009, Cl. 356-326.000.

Kurashina, Yukinobu: *See*—
Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, 5,614,121, Cl. 222-603.000.

Kurgan, Jeffery F., to Motorola, Inc. Apparatus for accepting and retaining a smart card. 5,615,260, Cl. 379-433.000.

Kuri, Takeshi: *See*—
Yamamoto, Koji; and Kuri, Takeshi, 5,614,299, Cl. 523-500.000.

Kuribayashi, Hiroki: *See*—
Yanagisawa, Takuma; Ohsawa, Seiichi; and Kuribayashi, Hiroki, 5,615,206, Cl. 369-284.000.

Kuribayashi, Hirotaka, to Yamaha Corporation. Digital audio synchronous player. 5,615,189, Cl. 369-50.000.

Kuribayashi, Masaki; Futami, Yukiko; Inoue, Hiroshi; Tsuboyama, Akira; and Inaba, Yutaka, to Canon Kabushiki Kaisha. Liquid crystal apparatus and display system. 5,615,027, Cl. 345-87.000.

Kurihara, Masa-aki: *See*—
Mikami, Koichi; Miyashita, Hiroyuki; Takahashi, Yoichi; Fujita, Hiroshi; and Kurihara, Masa-aki, 5,614,336, Cl. 430-5.000.

Kurihara, Ryoichi: *See*—
Kawahara, Takayuki; Hori, Ryoichi; Horiguchi, Masashi; Kurihara, Ryoichi; Itoh, Kiyoo; Aoki, Masakazu; Sakata, Takeshi; and Uchiyama, Kunio, 5,614,847, Cl. 326-98.000.

Kurino, Hiroyuki; and Ogata, Yasuhiro, to Texas Instruments Incorporated. Method for concurrent formation of contact and via holes. 5,613,296, Cl. 29-852.000.

Kuroda, Katsuya, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Vehicle door locking apparatus and control method therefor. 5,614,769, Cl. 307-10.200.

Kuroda, Tadahiro: *See*—
Mita, Shinji; and Kuroda, Tadahiro, 5,614,843, Cl. 326-73.000.

Kuroiwa, Hiroshi: *See*—
Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.

Kurokawa, Sumie. Device for removing manicure. 5,613,506, Cl. 132-73.000.

Kuroki, Kenji; and Matsui, Takao, to International Business Machines Corporation. Magnetoresistive head bias current switching based on skew angle. 5,615,063, Cl. 360-66.000.

Kuroki, Tadao; and Ota, Yasuo, to Toyo Boseki Kabushiki Kaisha. Colored high-tenacity filaments of polyethylene and process for their production. 5,613,987, Cl. 8-513.000.

Kurtz, Anthony D.; Bemis, Andrew V.; Nunn, Timothy A.; and Ned, Alexander A., to Kulite Semiconductor Products, Inc. High pressure piezoresistive transducer. 5,614,678, Cl. 73-727.000.

Kurtzhals, William A.: *See*—
Ahmadian, Mehdi; Gray, Laurence W.; McGrew, Dean Z.; Kurtzhals, William A.; Whitehill, James H.; and Jaramillo, Jennifer L., 5,613,444, Cl. 105-166.000.

Kusano, Kazutaka: *See*—
Eguchi, Masuichi; Asano, Masaya; and Kusano, Kazutaka, 5,614,354, Cl. 430-326.000.

Kusui, Jun: *See*—
Imahashi, Kunihiko; Miura, Hirohisa; Yamada, Yasuhiro; Michioka, Hirofumi; Kusui, Jun; and Tanaka, Akiei, 5,614,036, Cl. 148-437.000.

Kusumoto, Yasuhiro: *See*—
Kanesawa, Yoshio; Uehara, Yasuhiro; and Kusumoto, Yasuhiro, 5,614,999, Cl. 399-329.000.

Kusunoki, Shigeru: *See*—
Shimizu, Satoshi; and Kusunoki, Shigeru, 5,615,377, Cl. 395-500.000.

Kutami, Atushi: *See*—
Itoh, Akihide; Nogiwa, Toru; Hotta, Yoshihiko; Suzuki, Akira; and Kutami, Atushi, 5,614,461, Cl. 503-201.000.

Kutzer, Heinz, to Siemens Aktiengesellschaft. Method and device for determining the real power of a DC electrical drive. 5,614,817, Cl. 324-142.000.

Kuwabara, Tadashi: *See*—
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.

Kuwamoto, Makoto; Kohso, Hiroshi; and Inagaki, Tatsuhiko, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing medium and a recording and reproducing apparatus. 5,614,279, Cl. 428-64.100.

Kuzdzal, Mark J.; and Miller, Harry F., to Dresser-Rand Company. Hanging spring supported squeeze film damping system for shaft bearing. 5,613,781, Cl. 384-99.000.

KVP Systems, Inc.: *See*—
Palmaer, Karl V.; and Palmaer, Eric K., 5,613,597, Cl. 198-853.000.

Kyocera Corporation: *See*—
Tanda, Tetuo, 5,614,996, Cl. 399-120.000.

Kyoda, Tadashi: *See*—
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.

Kyoto Daiichi Kagaku Co., Ltd.: *See*—
Sakura, Takeshi; Yamasaki, Yutaka; Kubo, Hiroko; Xu, Kexin; and Shiomi, Motonobu, 5,615,009, Cl. 356-326.000.

Kyrtsos, Christos T.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Kyuma, Yuriko: *See*—
Koino, Seiji; Yaguchi, Toshiyuki; and Kyuma, Yuriko, 5,615,348, Cl. 395-569.000.

L.G.L. Electronics S.p.A.: *See*—
Zenoni, Pietro; and Gotti, Luca, 5,613,528, Cl. 139-452.000.

L&P Property Management Company: *See*—
Ramsey, Henry, 5,613,900, Cl. 451-299.000.

L&P Property Managemet Company: *See*—
Bustos, Rafael T., 5,614,288, Cl. 428-167.000.

LaCarrubba, Emanuel. Acoustic reflector. 5,615,176, Cl. 367-151.000.

Lacrosse, Frank. Method and apparatus to construct building components. 5,615,122, Cl. 364-468.010.

Laesch, Mark E., to Chrysler Corporation. Vehicle storage compartment with hold-open device. 5,613,723, Cl. 296-37.800.

Laffitte, Jean-Alex: *See*—
Genet, Jean-Pierre; Juge, Sylvain; Laffitte, Jean-Alex; Pinel, Catherine; and Mallart, Serge, 5,614,641, Cl. 549-313.000.

Lafor Laboratories Limited: *See*—
Ford, Larry C., 5,614,209, Cl. 424-443.000.

LaGanke, Timothy J. Modular oil change and lubrication center for vehicles. 5,613,331, Cl. 52-169.700.

Lagasse, Eric: *See*—
Weissman, Irving; and Lagasse, Eric, 5,614,397, Cl. 435-172.300.

Lage, David P.; and Carney, Albert P., to Quick Point, Inc. Clip-type holder for displaying a business card. 5,613,602, Cl. 206-232.000.

Lai, Konrad K.: *See*—
Sarangdhar, Nitin V.; Lai, Konrad K.; Singh, Gurbir; MacWilliams, Peter D.; Pawlowski, Stephen S.; and Rhodehamel, Michael W., 5,615,343, Cl. 395-282.000.

Laine, Loic: *See*—
Arnaud, Philippe; and Laine, Loic, 5,615,174, Cl. 367-118.000.

Laine, Richard M.; Bickmore, Clint R.; and Waldner, Kurt F., to Regents of University of Michigan. Double alkoxide monomers oligomers and polymers. 5,614,596, Cl. 525-389.000.

Lallier, Eric: *See*—
Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Debuisschert, Thierry, 5,615,042, Cl. 359-338.000.

Lam, Juan F.: *See*—
Pikulski, Joseph L.; and Lam, Juan F., 5,614,919, Cl. 343-909.000.

LAM Research Corporation: *See*—
Williams, Norman, 5,614,026, Cl. 118-723.0ME.

Lamb, Miles P., to Inventio AG. Apparatus for preventing drift of an elevator car stopped at a floor. 5,613,576, Cl. 187-355.000.

Lamb, Steve R.: *See*—
Clayman, Ralph V.; and Lamb, Steve R., 5,613,254, Cl. 5-600.000.

Lamber, Jeffrey L.: *See*—
Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

Lamo, Ralph J. Foot operated animal caller. 5,613,891, Cl. 446-26.000.

Lamphere, Jeffrey T. Fisherman's marker. 5,613,888, Cl. 441-6.000.

Land Instruments International Limited: *See*—
Ridley, Ian H.; and Fearnehough, Peter, 5,613,777, Cl. 374-130.000.

Land, Nicholas F.; and Smith, Michael E., to Terra-Lock Systems Limited. Ground anchor. 5,613,329, Cl. 52-157.000.

Landmark Graphics Corporation: *See*—
Hildebrand, Harold A., 5,615,171, Cl. 367-72.000.

Landrum, Michael T., to Power Team Division of SPX Corporation. Combination hydraulic pressure regulator and pressure switch. 5,613,516, Cl. 137-509.000.

Lang, Gregory J.: *See*—
Parker, Todd S.; and Lang, Gregory J., 5,613,706, Cl. 280-741.000.

Lang, Harold K.: *See*—
Banakis, Emanuel G.; Harwath, Frank A.; Hays, Richard A.; Janota, Kenneth F.; and Lang, Harold K., 5,613,860, Cl. 439-64.000.

Lang, Heinrich; and Seiboth, Wolfgang, to MEKRA Rangau Plastics GmbH & Co KG. Adjustable rear-view mirror with a releasable mirror plate. 5,615,054, Cl. 359-844.000.

Lang, Leland L.: *See*—
Mueggenburg, H. Harry; Lang, Leland L.; Rousar, Donald C.; and Young, Marvin F., 5,614,093, Cl. 210-355.000.

Langley, Robert: *See*—
Mitchell, Gordon; Fraser, Iain F.; and Langley, Robert, 5,614,013, Cl. 106-494.000.

Lanier, Charles S.: *See*—
Allard, David J.; Canova, Francis J., Jr.; Johnson, Debra A. G.; Lanier, Charles S.; Lewis, James R.; Tiller, Byron K.; Villafana, William; and Yee, Raymond L., 5,615,384, Cl. 395-800.000.

Lantz, Suzanne: *See*—

Mueller, James G.; Pritchard, Parmely H.; and Lantz, Suzanne, 5,614,410, Cl. 435-262.500.

Lanxide Technology Company, LP: *See*—
Claar, Terry D., 5,614,308, Cl. 428-312.600.

Laporte, Christophe: *See*—
Bombled, Jean P.; Aubret, Jean P.; and Laporte, Christophe, 5,613,653, Cl. 244-158.00R.

Larex A.G.: *See*—
Lauener, Wilhelm F., 5,613,547, Cl. 164-437.000.

Larson, Steven C.: *See*—
Leverenz, Clifford W.; Cooper, Jamshed R.; Sohm, Stephen P.; Rudina, Jehangir E.; and Larson, Steven C., 5,613,314, Cl. 40-610.000.

LaSalle, Anthony; and LaSalle, Betty V., to LaSalle Product Development, Inc. Utensil for opening the shells of crustaceans. 5,613,904, Cl. 452-6.000.

LaSalle, Betty V.: *See*—
LaSalle, Anthony; and LaSalle, Betty V., 5,613,904, Cl. 452-6.000.

LaSalle Product Development, Inc.: *See*—
LaSalle, Anthony; and LaSalle, Betty V., 5,613,904, Cl. 452-6.000.

Laskaris, Evangelos T.: *See*—
Dorri, Bizhan; Laskaris, Evangelos T.; Ogle, Michele D.; and Havens, Timothy J., 5,614,879, Cl. 335-216.000.

Lasko, William J.: *See*—
Chadbourne, Richard; Lasko, William J.; Fatorusso, José C.; Barbosa, Amauri; and Grillo, Sergio R., 5,613,883, Cl. 439-783.000.

Latanision, Ronald M.: *See*—
Pavelle, Richard; Latanision, Ronald M.; and Burstein, Paul, 5,614,332, Cl. 429-68.000.

Latarnik, Michael; and Ehmer, Norbert, to ITT Automotive Europe GmbH. Process and circuit for monitoring tire pressure. 5,614,882, Cl. 340-444.000.

Lattimore, George M.; Ciraula, Michael K.; Kumar, Manoj; Poplawski, Joseph M., Jr.; Wendel, Dieter F.; and Wernicke, Friedrich, to International Business Machines Corporation. Method and apparatus for synchronized pipeline data access of a memory system. 5,615,168, Cl. 365-233.000.

Lattrell, Rudolf: *See*—
Fischer, Gerd; Defoßa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,614,623, Cl. 540-222.000.

Lau, Philip T. S.; and Cowan, Stanley W., to Eastman Kodak Company. Photographic element containing a particular cyan coupler bearing a sulfonyl containing ballast. 5,614,357, Cl. 430-552.000.

Laudone, James A. Jointed bar for an exercise machine. 5,613,928, Cl. 482-139.000.

Lauener, Wilhelm F., to Larex A.G. Nozzle with a baffle for a caster and an associated method of casting molten metal. 5,613,547, Cl. 164-437.000

Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., to I-Stat Corporation. Methods and apparatus for rapid equilibration of dissolved gas composition. 5,614,416, Cl. 436-68.000.

Laumann, Bruce E.: *See*—
Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

Laurenson, Patricia: *See*—
Stillman, Bruce W.; Bell, Stephen P.; Kobayashi, Ryuji; Rine, Jasper; Foss, Margit; McNally, Francis J.; Laurenson, Patricia; Herskowitz, Ira; Li, Joachim; Gavin, Kimberly; and Hidaka, Masumi, 5,614,618, Cl. 536-23.100.

Lautzenheiser, Marvin, to Zitel Corporation. Method for operating a cache memory using a LRU table and access flags. 5,615,353, Cl. 395-463.000.

Lavallée, Pierre: *See*—
Anderson, Paul C.; Soucy, François; Yoakim, Christiane; Lavallée, Pierre; and Beaulieu, Pierre L., 5,614,533, Cl. 514-314.000.

LaVean, Gilbert E.: *See*—
Bolgiano, D. Ridgely; and LaVean, Gilbert E., 5,614,914, Cl. 342-364.000.

Lavendel, Laurence A., to Canon Information Systems, Inc. Computer-aided color selection and colorizing system using objective-based coloring criteria. 5,615,320, Cl. 395-131.000.

Lavene, Bernard, to Electronic Concepts, Inc. Method for making metallized capacitor having increased dielectric breakdown voltage. 5,614,111, Cl. 219-121.590.

Lavie, Reuven: *See*—
Spiegel, Ehud; Broudo, Moshe; Lavie, Reuven; Bresler, Yoav; Pluda, Yacov; and Baron, Eliezer, 5,615,282, Cl. 382-167.000.

Lawson, John C., to Chrysler Corporation. Smart fuel tank module. 5,613,398, Cl. 73-304.00C.

Lawson, John C., to Chrysler Corporation. Method for collecting liquid temperature data from a fuel tank. 5,613,778, Cl. 374-170.000.

Lay, Norman K.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Le, Tho-Dien, to Kenox Corporation. Wet oxidation system. 5,614,087, Cl. 210-180.000.

Leach Corporation: *See*—
Tofigh, Farshid; Brar, Parminder S.; Tsao, Yen-Kuei; Clements, Evan; and Maier, Joseph, 5,615,105, Cl. 364-138.000.

Lebeau, Jean-Claude: *See*—
Jego, Gerard; Lebeau, Jean-Claude; Normand, Philippe; Nourry, Daniel; and Thierry, Jean-Pierre, 5,614,697, Cl. 174-84.00R.

Le Bihan, Jean-Claude: *See*—
Marbot, Roland; Le Bihan, Jean-Claude; Cofler, Andrew; and Nezamzadeh-Moosavi, Reza, 5,614,841, Cl. 326-52.000.

Lebl, Michal: *See*—
Krchnak, Viktor; Lebl, Michal; and Seligmann, Bruce, 5,614,608, Cl. 530-334.000.

LeBlanc, Jay: *See*—
Hesson, James H.; LeBlanc, Jay; and Ciavaglia, Stephen J., 5,615,350, Cl. 395-394.000.

Lechler, William: *See*—
Antony, Gerhard; and Lechler, William, 5,613,795, Cl. 403-370.000.

Ledford, William T.: *See*—
Barringer, Lloyd F., Jr.; and Ledford, William T., 5,614,598, Cl. 525-431.000.

Lee, Albert. Winter windshield wiper having a contoured and flexible vane. 5,613,266, Cl. 15-250.201.

Lee, Albert C.: *See*—
Cacheris, William P.; Richard, Thomas J.; Grabiak, Raymond C.; and Lee, Albert C., 5,614,170, Cl. 424-9.365.

Lee, Byung: *See*—
Chaudhari, Mohammad A.; King, John J.; and Lee, Byung, 5,614,606, Cl. 528-353.000.

Lee, Eun Soo: *See*—
Gale, Robert M.; Lee, Eun Soo; Taskovich, Lina T.; and Burkoth, Terry L., 5,614,211, Cl. 424-448.000.

Lee, Hee Y.: *See*—
Ahn, Byung J.; An, Jae C.; and Lee, Hee Y., 5,614,747, Cl. 257-316.000.

Lee, Jin-Yuan: *See*—
Liang, Mong-Song; and Lee, Jin-Yuan, 5,614,430, Cl. 437-45.000.

Lee, Mary S. Photo therapy eye mask. 5,613,502, Cl. 128-857.000.

Lee, Mun-Hyon. Grinder-type juicer. 5,613,430, Cl. 99-510.000.

Lee, Raymond: *See*—
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LuK Lamellen und Kupplungsbau GmbH: *See—*
Jäckel, Herr J., 5,613,582, Cl. 192-3.290.

Lukas, Michael A.; Hurst, Roger L.; and Kirwan, Lee D. Gas powered gun. 5,613,483, Cl. 124-73.000.

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Tankovich, Nikolai, 5,614,339, Cl. 430-19.000.

Lümen, Reinhard, to Leinweber Maschinen GmbH & Co. KG. Device for producing inclined surfaces and grooves on friction pads. 5,613,898, Cl. 451-190.000.

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Parker, Jeffery R.; Miller, Mark D.; and Kelsch, Daniel N., 5,613,751, Cl. 362-31.000.

Lund, Raymond R.: *See—*
DiLuigi, Michael W.; Lund, Raymond R.; and Bramlett, Kevin D., 5,613,446, Cl. 105-282.200.

Lund, Ronn A. Vehicle suspension component. 5,613,665, Cl. 267-69.000.

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Lilja, Hans; Lundwall, Åke; and Lövgren, Janita, 5,614,372, Cl. 435-7.230.

Luning, Scott D.: *See—*
Avanzino, Steven; Gupta, Subhash; Klein, Rich; Luning, Scott D.; and Lin, Ming-Ren, 5,614,765, Cl. 257-774.000.

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Poutasse, Charles A.; and Luthy, Richard L., 5,614,324, Cl. 428-447.000.

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Gribkov, Vladimir N.; Polakov, Alexandre; Pokrovcky, Daniel D.; Silaev, Vladmir A.; Golerov, Yurii A.; and Lyacota, Piotr P., 5,614,162, Cl. 423-346.000.

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Sheth, Paresh J., 5,614,574, Cl. 524-140.000.

Ma, Hsi-Kuang. Portable computer having keyboard structure including two sub-keyboards mounted for rotation between a longitudinally aligned position and a mutually parallel position. 5,615,081, Cl. 361-680.000.

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Mabbitt, Allen W.: *See—*
Hayes, Alan J.; and Mabbitt, Allen W., 5,614,719, Cl. 250-343.000.

MacChesney, John B.: *See—*
Bhandarkar, Suhas D.; and MacChesney, John B., 5,613,995, Cl. 65-384.000.

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Engel, Ferdinand; MacDonald, Wilson T.; and Hamlin, Arthur P., 5,615,323, Cl. 395-140.000.

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Bender, Dietmar; Bronstert, Klaus; Mach, Helmut; and Fischer, Martin, 5,614,595, Cl. 525-332.800.

Machida, Toru, to Seiko Instruments Inc. Semiconductor memory integrated circuit. 5,615,166, Cl. 365-230.080.

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MacWilliams, Peter D.: *See—*
Sarangdhar, Nitin V.; Lai, Konrad K.; Singh, Gurbir; MacWilliams, Peter D.; Pawlowski, Stephen S.; and Rhodehamel, Michael W., 5,615,343, Cl. 395-282.000.

Madigan, Paul J.: *See—*
Eshelman, Lyn M.; Levy, David H.; and Madigan, Paul J., 5,614,359, Cl. 430-567.000.

Madsen, Michael D.: *See—*
Reynolds, Jon O.; and Madsen, Michael D., 5,615,095, Cl. 363-56.000.

Madsen, Ole: *See—*
Andersen, Kurt E.; and Madsen, Ole, 5,613,511, Cl. 134-167.00R.

Maeda, Kazushige: *See—*
Yashiro, Haruki; Sasaki, Akira; and Maeda, Kazushige, 5,614,699, Cl. 181-254.000.

Maeda, Kazuto, to Nippondenso Co., Ltd. Evaporative fuel treatment device. 5,613,477, Cl. 123-519.000.

Maeda, Masatoshi: *See—*
Hirose, Masahiko; Ito, Hiroki; Maeda, Masatoshi; and Tanaka, Kazuo, 5,614,099, Cl. 210-653.000.

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Sugiyama, Hisataka; Maeda, Takeshi; Matsumoto, Kiyoshi; Terao, Motoyasu; Okamine, Shigenori; Nishida, Tetsuya; and Miyamoto, Harukazu, 5,614,938, Cl. 347-247.000.

Maeda, Tatsuya: *See—*
Kobaru, Atsushi; Otaka, Tadashi; Maeda, Tatsuya; and Sasada, Katsuhiro, 5,614,713, Cl. 250-310.000.

Maeng, Seop. Golf bag with weighted support stand. 5,613,604, Cl. 206-315.700.

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Urano, Teruo; Miyaji, Hiroshi; and Maesato, Kazuhiro, 5,614,188, Cl. 424-93.460.

Maeta Concrete Industry Ltd.: *See—*
Kobayashi, Tadashi; Pushpalal, Game K. D.; and Hasegawa, Masaki, 5,614,009, Cl. 106-38.200.

Mafoti, Robson; and Slack, William E., to Bayer Corporation. Rigid polyurethanes based on allophanate-modified aliphatic and/or cycloaliphatic polyisocyanurates. 5,614,605, Cl. 528-44.000.

Magar, Surendar S.: *See—*
Caudel, Edward R.; and Magar, Surendar S., 5,615,383, Cl. 395-800.000.

Magee, Stephen C.; and Lipman, Peter H., to Amdahl Corporation. Apparatus and method for controlling the initiating of a synchronization protocol for synchronizing a plurality of processors in a multi-processor system. 5,615,327, Cl. 395-182.100.

Magerstädt, Michael: *See—*
Krone, Volker; Magerstädt, Michael; Walch, Axel; Ditzinger, Günter; and Lill, Norbert, 5,613,494, Cl. 128-662.020.

MagneTeck, Inc.: *See—*
Nostwick, Allan A.; and Hesterman, Bryce L., 5,614,810, Cl. 323-207.000.

Maher, Liam: *See—*
Zimmermann, Daniel; and Maher, Liam, 5,613,527, Cl. 139-383.00A.

Mahood, James A., to General Electric Company. Stabilizer blend containing phosphite. 5,614,571, Cl. 252-400.240.

Mahvan, Nader; Wilkinson, David; and Ichikawa, Koji, to HMT Technology Corporation. Sputtering shield. 5,614,071, Cl. 204-298.110.

Maier, Joseph: *See—*
Tofigh, Farshid; Brar, Parminder S.; Tsao, Yen-Kuei; Clements, Evan; and Maier, Joseph, 5,615,105, Cl. 364-138.000.

Majerus, Mark E.: *See—*
Brown, Ronald E.; and Majerus, Mark E., 5,614,692, Cl. 102-307.000.

Maki, Hidetaka: *See—*
Kitagawa, Hiroshi; Akazaki, Shusuke; and Maki, Hidetaka, 5,613,481, Cl. 123-698.000.

Maki, Shoichi: *See—*
Ando, Ichiro; Sasaki, Akio; Minamiyama, Tomoyuki; Maki, Shoichi; Yasui, Siryo; and Ichise, Hiroshi, 5,615,308, Cl. 395-50.000.

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Takahashi, Kazuaki; Fujimura, Munenori; Yabuki, Hiroyuki; and Makimoto, Mitsuo, 5,614,876, Cl. 333-204.000.

Makowan, Ted J., to Val-Matic Valve & Mfg. Corporation. Liquid flow control device. 5,613,513, Cl. 137-1.000.

Makower, Joshua; Zieve, David A.; and Barber, Frank, to Valleylab Inc. System and method for accessory rate control. 5,613,966, Cl. 606-34.000.

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Malesko, Michael W.: *See—*
Moss, James R.; Malesko, Michael W.; and Anderson, Steven J., 5,614,700, Cl. 200-61.45M.

Mallart, Serge: *See—*
Genet, Jean-Pierre; Juge, Sylvain; Laffitte, Jean-Alex; Pinel, Catherine; and Mallart, Serge, 5,614,641, Cl. 549-313.000.

Mallia, Albert T., Jr., to Enviro-Tech-2000, Inc. Method of freeze drying sewage sludge. 5,614,107, Cl. 210-771.000.

Mallory, Glenn O., Jr. Method for producing electroless polyalloys. 5,614,003, Cl. 106-1.220.

Malone, David W.: *See—*
Crockett, Charles H., Jr.; Duncan, Steven A.; Dunn, Stephen A.; Malone, David W.; and McMaster, Michael G., 5,615,387, Cl. 395-800.000.

Malone, Robert; and Beucler, Brian G., to Analog Devices, Inc. Method and apparatus for handling a packaged integrated circuit device for testing. 5,614,835, Cl. 324-755.000.

Malone, Robert E.: *See—*
Johnson, Brian A.; Malone, Robert E.; Miller, M. William; and Moeller, Jeffrey, 5,613,611, Cl. 206-728.000.

Maloney, John M.: *See—*
Dutt, William R.; Maloney, John M.; and Juhasz, Charles D., 5,614,676, Cl. 73-660.000.

MAN Gutehoffnungshütte Aktiengesellschaft: *See—*
Guido, Heinz, 5,613,418, Cl. 91-167.00R.

MAN Roland Druckmaschinen AG: *See—*
Rau, Gunnar, 5,613,440, Cl. 101-415.100.

MAN TAKRAF Fördertechnik GmbH: *See—*
Tschernatsch, Günther, 5,613,820, Cl. 414-138.600.

Management Graphics, Inc.: *See—*

Schoenzeit, Loren; Keeney, Richard A.; Glass, William H.; and Mazar, Scott T., 5,615,314, Cl. 395-114.000.

Mandelman, Jack A., to International Business Machines Corporation. Method of fabricating low leakage SOI integrated circuits. 5,614,433, Cl. 437-57.000.

Mandereau, Fabienne: *See—*
Beauvais, Arnault; and Mandereau, Fabienne, 5,614,690, Cl. 89-37.080.

Mandl, Gerhard, to Trützschler GmbH & Co. KG. Apparatus for monitoring sliver wrapping about a sliver guiding roll. 5,613,280, Cl. 19-239.000.

Mango Enterprises, Inc.: *See—*
Chasan, Paul E.; and Chasan, Mark S., 5,613,853, Cl. 433-215.000.

Mannesmann AG: *See—*
Pandit, Madhukar; and Buchheit, Karl-Heinz, 5,614,137, Cl. 264-40.600.

Mannesmann Rexroth GmbH: *See—*
Dantlgraber, Jorg; Schulz, Lothar; and Puschel, Reiner, 5,613,361, Cl. 60-427.000.

Mansdoerfer, Richard L., Jr.: *See—*
Kocan, Stephen M.; Mansdoerfer, Richard L., Jr.; Morgan, Russell D.; and Potter, Ronald B., 5,615,253, Cl. 379-196.000.

Manser, Aloysius H.: *See—*
Gruber, Urs; and Manser, Aloysius H., 5,614,126, Cl. 525-438.000.

Marabout, Benoit; Sevrin, Mireille; Froissant, Jacques; and Dachary, Emmanuelle, to Synthelabo. 8-Oxo-5,8-dihydro-6H-dibenzo[a,g]quinolizine-13-propanoic acid derivatives, their preparation and their therapeutic application. 5,614,517, Cl. 514-233.200.

Marasco, Canio J., Jr.: *See—*
Piantadosi, Claude; Ishaq, Khalid S.; Marasco, Canio J., Jr.; Daniel, Larry W.; Kucera, Louis S.; Modest, Edward J.; and Goz, Barry P., 5,614,548, Cl. 514-440.000.

Marathon Technologies Corporation: *See—*
Bissett, Thomas D.; Fiorentino, Richard D.; Glorioso, Robert M.; McCauley, Diane T.; McCollum, James D.; Tremblay, Glenn A.; and Troiani, Mario, 5,615,403, Cl. 395-881.000.

Marbot, Roland; Le Bihan, Jean-Claude; Cofler, Andrew; and Nezamzadeh-Moosavi, Reza, to Bull S.A. Frequency multiplier using XOR/NXOR gates which have equal propagation delays. 5,614,841, Cl. 326-52.000.

Marchant, Brent R.: *See—*
Humiston, Robert G.; Ralston, Joseph L.; and Marchant, Brent R., 5,613,358, Cl. 60-250.000.

Marchesi, Mario; and Marchesi, Riccardo, to A.R.M.I. Assistenza Ricambi Macchine Industriali S.r.l. Method and equipment for restraining the end portions of cut thread protruding from collars for knit wear articles and the like. 5,613,377, Cl. 66-145.00S.

Marchesi, Primo; and Goyak, George M., to American Color and Chemical Corporation. Method and apparatus for soil remediation with superheated steam thermal desorption and recycle. 5,613,452, Cl. 110-215.000.

Marchesi, Riccardo: *See—*
Marchesi, Mario; and Marchesi, Riccardo, 5,613,377, Cl. 66-145.00S.

Margolin, Lee D.: *See—*
Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew G.; and Margolin, Lee D., 5,614,630, Cl. 546-159.000.

Mariel, James G., to Excel Industries, Inc. Motor vehicle glazing units. 5,613,325, Cl. 49-404.000.

Marinelli, Edmund R.: *See—*
Ranganathan, Ramachandran S.; Arunchalam, Thangavel; Marinelli, Edmund R.; and Pillai, Radhakrishna K., 5,614,638, Cl. 548-543.000.

Marion, James E., to Illinois Tool Works Inc. Method and apparatus for a double clasp retention clip. 5,613,655, Cl. 248-68.100.

Marion Merrell et Compagnie C/O Merrell Pharmaceuticals Inc.: *See—*
Bey, Philippe; and Jung, Michel, 5,614,557, Cl. 514-561.000.

Marker, Terry L., to UOP. Distillation with membrane apparatus. 5,614,065, Cl. 202-158.000.

Marketing Displays Inc.: *See—*
Hillstrom, David U.; and Hillstrom, Brian J., 5,613,763, Cl. 362-246.000.

Markin, Rodney S., to Board of Regents Univ of NE Lincoln. Method for automatic testing of laboratory specimens. 5,614,415, Cl. 436-48.000.

Marking, Gregory A.: *See—*
Kanatzidis, Mercouri G.; Liao, Ju H.; and Marking, Gregory A., 5,614,128, Cl. 252-582.000.

Markison, Timothy W.: *See—*
Grube, Gary W.; Markison, Timothy W.; and Rybicki, Mathew A., 5,615,261, Cl. 380-2.000.

Markovic, Ingrid: *See—*
Norris, Dale M.; and Markovic, Ingrid, 5,614,196, Cl. 424-195.100.

Marks, David J., to Siemens Energy & Automation, Inc. Apparatus and method for performing the backup of a primary database using a back up database. 5,615,364, Cl. 395-618.000.

Marks, Joel S., to WorkTools, Inc. Adjustable garment hanger. 5,613,627, Cl. 223-85.000.

Marler, Bernd: *See—*
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Marohl, Todd T.; Burdick, Robert; and Cole, Ronald A., to Omega Enterprises, Inc. Refrigeration apparatus and methods. 5,613,368, Cl. 62-84.000.

Marquip, Inc.: *See—*
Roberts, Shayne A.; and Marschke, Carl R., 5,613,673, Cl. 271-182.000.

Marrese, Carl A.: *See—*
Haye, Shirleyanne E.; Marrese, Carl A.; and Bonner, Cheryl W., 5,614,355, Cl. 430-430.000.

Marron, Alex: *See—*
Kazem-Goudarzi, Vahid; Marron, Alex; and Holmes, Sterling T., 5,615,012, Cl. 356-384.000.

Marschke, Carl R.: *See—*
Roberts, Shayne A.; and Marschke, Carl R., 5,613,673, Cl. 271-182.000.

Marshall & Williams Company: *See—*
Hosmer, Christopher E., 5,613,284, Cl. 26-89.000.

Martens, Dean A.: *See—*
Frankenberger, William T., Jr.; and Martens, Dean A., 5,614,467, Cl. 504-138.000.

Martin, Alain, to Warner-Lambert Company. Antihistamine-wound healing compositions and methods for preparing and using same. 5,614,561, Cl. 514-724.000.

Martin, Jay R.; and Martin, Scott E. Hotel check-in system with wireless communication. 5,614,703, Cl. 235-382.000.

Martin, Neil F.; and Robinson, Howard N., to Bloom, Leonard; and Towsend, Marvin S. Topical composition for treatment of blepharitis. 5,614,545, Cl. 514-398.000.

Martin, Scott E.: *See—*
Martin, Jay R.; and Martin, Scott E., 5,614,703, Cl. 235-382.000.

Martinelli, Guido: *See—*
Gellermann, Wolf-Dieter; Feuerhake, Adolf; Comini, Dario; and Martinelli, Guido, 5,613,654, Cl. 246-182.00B.

Martinson, Jeffrey: *See—*
Smith, Stephen L.; Bender, James; Martinson, Jeffrey; Loudovaris, Maureen; Mitsven, Orrin D., Jr.; and Unverzagt, Kristen L., 5,614,412, Cl. 435-305.100.

Martucci, Norman S., to Teleflex Incorporated. Fluorocarbon hose assembly including integral foamed fluorocarbon layer. 5,613,524, Cl. 138-137.000.

Marumoto, Takeshi, to Mita Industrial Co., Ltd. Transfer device configuration in an image-reproducing station. 5,614,997, Cl. 399-121.000.

Maruyama, Kazuo: *See—*
Ogi, Kenji; Takayama, Hiroshi; Yamamoto, Yasuo; Maruyama, Kazuo; and Akutsu, Eiichi, 5,614,935, Cl. 347-213.000.

Maruyama, Shigeru: *See—*
Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

Maruyama, Youji: *See—*
Kikukawa, Atsushi; Hosaka, Sumio; Maruyama, Youji; Shintani, Toshimichi; and Shimano, Takeshi, 5,615,192, Cl. 369-59.000.

Masco Corporation: *See—*
Knapp, Alfons, 5,613,520, Cl. 137-625.170.
Knapp, Alfons, 5,613,521, Cl. 137-625.410.

Mase, Toshiaki: *See—*
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takeshi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; Yano, Mitsuo; and Nishikibe, Masaru, 5,614,498, Cl. 514-18.000.

Mashiko, Tomomi: *See—*
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Mashio, Akihiro: *See—*
Sakamoto, Junshi; Morita, Kouichi; Okada, Takamichi; and Mashio, Akihiro, 5,614,822, Cl. 324-174.000.

Masleid, Robert P., to International Business Machines Corporation. Independent clock edge regulation. 5,614,845, Cl. 326-93.000.

Masleid, Robert P.: *See—*
Phillips, Larry B.; Masleid, Robert P.; and Muhich, John S., 5,615,160, Cl. 365-203.000.

Mason, George L.: *See—*
Ahmad, Falih; Evans, James A.; and Mason, George L., 5,614,893, Cl. 340-870.160.

Masonite Corporation: *See—*
Rinker, William E., 5,614,231, Cl. 425-394.000.

Masood, Rehan: *See—*
Onffroy, Joshua P.; Masood, Rehan; Mullahy, Brian B.; and Pritoni, Harold F., Jr., 5,615,335, Cl. 395-183.060.

Massachusetts Institute of Technology: *See—*
Betts, Gary; O'Donnell, Frederick; and Ray, Kevin, 5,615,037, Cl. 359-188.000.

Massey Ferguson Manufacturing Limited: *See—*
Smith, Derek J.; and Higgins, John C., 5,613,728, Cl. 296-219.000.

Mastrup, Firithjof N.; Soloski, Steven C.; and Ratuay, Alan A., to Hughes Electronics. Concentric pulse tube expander. 5,613,365, Cl. 62-6.000.

Masuda, Mitsuhiro: *See—*
Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.

Masuda, Naoki: *See—*
Kawai, Kouji; Ishihara, Shigeki; Masuda, Naoki; Ota, Hirohisa; and Yogi, Osamu, 5,614,787, Cl. 313-623.000.

Masuda, Toshiaki: *See—*
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Masuda, Yasuhiko: *See—*
Izawa, Hikaru; Masuda, Yasuhiko; Ohya, Toitsu; and Nago, Tokimi, 5,615,280, Cl. 382-135.000.

Masuoka, Fujio: *See—*

Saku, Koji; Nakamura, Hiroshi; Tanaka, Tomoharu; Momodomi, Masaki; Masuoka, Fujio; and Hasegawa, Takehiro, 5,615,163, Cl. 365-230.030.

Matassa, V. G.; Street, L. J.; and Reeve, A. J., to Merck Sharp & Dohme Ltd. Piperazine derivatives as 5-HT$_1$ Agonists. 5,614,524, Cl. 514-253.000.

Matec S.r.L.: *See—*
Andó , Jan, 5,613,376, Cl. 66-140.00S.

Mathie, Debbie J.: *See—*
Murphy, Stephen B.; and Mathie, Debbie J., 5,613,414, Cl. 83-16.000.

Mathys, Peter: *See—*
Oppenländer, Thomas; Mathys, Peter; and Schneider, Gottlieb, 5,614,723, Cl. 250-435.000.

Matos, James E.: *See—*
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Matsuda, Keiichi: *See—*
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Matsuda, Tadayuki: *See—*
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Matsuda, Yasuhiko, to Kabushiki Kaisha Sato. Method and printer for printing heat sealing labels. 5,614,928, Cl. 347-2.000.

Matsuda, Yasuhiro; Saegusa, Shozo; Yoshida, Takashi; Goto, Marutomo; Yoshida, Shinobu; and Matsushita, Toshio, to Hitachi, Ltd. Head locating actuator having reduced susceptibility to dynamic reaction force effects, and a disk apparatus incorporating the same. 5,615,068, Cl. 360-106.000.

Matsuda, Yasuo: *See—*
Nonaka, Tsuyoshi; Hosoya, Toshifumi; Kobayashi, Yuji; and Matsuda, Yasuo, 5,614,253, Cl. 427-163.200.

Matsuda, Yoshiyuki: *See—*
Shiomi, Kazuyuki; Shigedomi, Hideo; Fujita, Yasushi; Matsuda, Yoshiyuki; Soda, Chiharu; Kiku, Kazuomi; and Furuya, Kentaro, 5,613,470, Cl. 123-195.00P.

Matsui, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Multiplying apparatus. 5,615,141, Cl. 364-757.000.

Matsui, Hiroshi: *See—*
Yokoji, Shigeru; Matsui, Hiroshi; Yamamoto, Tamotsu; Enokido, Kazuhiro; and Yamagishi, Yutaka, 5,613,600, Cl. 200-564.000.

Matsui, Takao: *See—*
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Matsukawa, Masahiko; Hirasawa, Hidekimi; Mikami, Fujio; and Yamasoe, Katsuyoshi, to Nippon Paint Co., Ltd. Hydrophilic surface-treating aqueous solution and hydrophilic surface-treating method. 5,614,585, Cl. 524-608.000.

Matsumoto Dental College: *See—*
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Matsumoto, Kazuhiro, to Canon Kabushiki Kaisha. Method and apparatus for image processing by correcting the position of each part of an eye fundus image produced by an optical imaging system. 5,615,278, Cl. 382-128.000.

Matsumoto, Kiyoshi: *See—*
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Matsumoto, Osamu: *See—*
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Kuwamoto, Makoto; Kohso, Hiroshi; and Inagaki, Tatsuhiko, 5,614,279, Cl. 428-64.100.
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Azuma, Masamichi; Paz De Araujo, Carlos A.; Scott, Michael C.; and Cuchiaro, Joseph D., 5,614,018, Cl. 117-68.000.

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Kubokawa, Hideji, 5,615,198, Cl. 369-102.000.

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Nickens, Dan A.; and Mattern, Charles C., 5,613,534, Cl. 141-51.000.

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Hill, Ronald F.; McCauley, Donald W.; Nadas, Stephen J.; and Robinson, James R., 5,615,354, Cl. 395-493.000.

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Yoshioka, Tomonori; Migita, Shinichi; and Nakazawa, Tetsuo, 5,615,279, Cl. 382-131.000.

Mihailov, Stephen J.: *See—*
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Mikami, Yoshiro: *See—*
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Mikkelsen, Claus W.: *See—*
Kern, Robert F.; Micka, William F.; Mikkelsen, Claus W.; Paulsen, Michael A.; and Shomler, Robert W., 5,615,329, Cl. 395-182.040.

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Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

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Dybro, Niels; and Miller, Harold J., III, 5,613,647, Cl. 242-376.000.

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Kuzdzal, Mark J.; and Miller, Harry F., 5,613,781, Cl. 384-99.000.

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Mortensen, Owen J.; Dalton, Jeffery S.; Miller, Jeffrey S.; and Chinnock, Douglas P., 5,615,131, Cl. 364-514.00A.

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Michael, Robert S.; Miller, Joe E.; and Zagaroli, David P., 5,613,734, Cl. 297-353.000.

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Parker, Jeffery R.; Miller, Mark D.; and Kelsch, Daniel N., 5,613,751, Cl. 362-31.000.

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Johnson, Brian A.; Malone, Robert E.; Miller, M. William; and Moeller, Jeffrey, 5,613,611, Cl. 206-728.000.

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Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,614,648, Cl. 554-4.000.

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Wall, Monroe E.; Wani, Mansukh C.; Engle, Robert R.; and Miller, Robert E., 5,614,529, Cl. 514-279.000.

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Mills, Paul D. A.; Siddiqui, Junaid A.; and Olek, Anton R., to Imperial Chemical Industries PLC. Polymeric film having a layer comprising calcined silicone particles and china clay particles. 5,614,313, Cl. 428-327.000.

Mills, Thomas O. Security device for the protection of cargo transport containers. 5,615,247, Cl. 379-58.000.

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Conley, Ralph F., Jr.; and Young, James R., 5,614,057, Cl. 156-354.000.

Minami, Masataka: *See*—
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,614,848, Cl. 326-110.000.

Minami, Toshi: *See*—
Koshi, Yutaka; Kimura, Shunichi; Yokose, Taro; Kamizawa, Koh; Minami, Toshi; and Nakamura, Osamu, 5,615,288, Cl. 382-248.000.

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Ando, Ichiro; Sasaki, Akio; Minamiyama, Tomoyuki; Maki, Shoichi; Yasui, Siryo; and Ichise, Hiroshi, 5,615,308, Cl. 395-50.000.

Minarelli, Alessandro: *See*—
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Minchey, Sharma R.: *See*—
Ahl, Patrick L.; Bhatia, Suresh K.; Minchey, Sharma R.; and Janoff, Andrew S., 5,614,214, Cl. 424-450.000.

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Torigoe, Shinji; Hattori, Jiro; and Takagi, Akimitsu, 5,614,232, Cl. 425-545.000.

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Bacon, Chester A., Jr.; and Benson, Gerald M., 5,614,286, Cl. 428-161.000.
Braun, Franz-Josef, 5,614,210, Cl. 424-448.000.
Delgado, Joaquin; Goetz, Richard J.; Silver, Spencer F.; and Lucast, Donald H., 5,614,310, Cl. 428-316.600.
Heilmann, Steven M.; Drtina, Gary J.; Eitzman, Philip D.; Haddad, Louis C.; Hyde, Frederick W.; and Johnson, Todd W., 5,614,105, Cl. 210-767.000.
Huss, Charles P., 5,614,274, Cl. 428-5.000.
Leverenz, Clifford W.; Cooper, Jamshed R.; Sohm, Stephen P.; Rudina, Jehangir E.; and Larson, Steven C., 5,613,314, Cl. 40-610.000.
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Rutherford, Denise R.; Hammar, W. James; and Babu, Gaddam N., 5,614,576, Cl. 524-270.000.

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Ogawa, Kazufumi; Mino, Norihisa; and Soga, Mamoru, 5,614,263, Cl. 427-341.000.

Minolta Co., Ltd.: *See*—
Kawakami, Yuichi; Hamaguchi, Takayuki; Kawagoe, Nobukazu; Nakanishi, Hideaki; and Waki, Natsuko, 5,613,261, Cl. 15-98.000.
Mizumo, Yoshiyuki, 5,615,088, Cl. 361-749.000.
Moro, Fuminori; and Nagashima, Hiroshi, 5,614,991, Cl. 355-75.000.

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Suzuki, Masayuki; Hoshino, Osamu; Shiraiwa, Yoshinobu; and Minoura, Kazuo, 5,615,038, Cl. 359-210.000.

Miraki, Manouchehr, to Advanced Cardiovascular Systems, Inc. Double balloon catheter assembly. 5,613,949, Cl. 604-101.000.

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Ishida, Shigeru; Yawata, Satoshi; Yoneda, Tomio; Mishina, Haruo; Imaizumi, Kiyoshi; and Kawasumi, Yukihiro, 5,614,024, Cl. 118-712.000.

Mishra, Satchidanand; Carmichael, Kathleen M.; and Sullivan, Donald P., to Xerox Corporation. Multilayered photoreceptor with adhesive and intermediate layers. 5,614,341, Cl. 430-59.000.

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Gavin, Vincent G.; Seaman, Michael J.; Crook, Neal A.; and Mistry, Bipin, 5,615,382, Cl. 395-800.000.

Mita Industrial Co., Ltd.: *See*—
Inoue, Kazushige; Kuramae, Yoshihisa; Nagai, Takashi; and Takatsuna, Toru, 5,614,348, Cl. 430-110.000.
Marumoto, Takeshi, 5,614,997, Cl. 399-121.000.

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Mitchell, Edmund J., to Mitre Corporation, The. Radar processing method and apparatus. 5,614,912, Cl. 342-146.000.

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Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., 5,613,562, Cl. 169-12.000.

Mitchell, Roderick L.: *See*—
Haddow, Philip G.; Mitchell, Roderick L.; Seaward, David R.; and Vernon, Geoffrey W., 5,613,828, Cl. 414-798.900.

Mitre Corporation, The: *See*—
Mitchell, Edmund J., 5,614,912, Cl. 342-146.000.

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Kamauchi, Masahiro; and Takada, Yoshinori, 5,614,334, Cl. 429-217.000.

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Nozomi, Mamoru; Hiroi, Masayuki; and Ogawa, Itaru, 5,614,343, Cl. 430-100.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Daijo, Masakatsu, 5,615,102, Cl. 363-132.000.
Harada, Hiroyuki, 5,614,861, Cl. 329-308.000.
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,615,149, Cl. 365-185.120.
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Matsuo, Masahito; Shimizu, Toru; and Yoshida, Toyohiko, 5,615,349, Cl. 395-388.000.
Motonami, Kaoru, 5,614,745, Cl. 257-296.000.
Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, 5,613,749, Cl. 353-102.000.
Shimizu, Satoshi; and Kusunoki, Shigeru, 5,615,377, Cl. 395-500.000.
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Takai, Shigeharu; Shikida, Hideo; Kato, Hiroki; and Ikeno, Tatsuhiro, 5,615,104, Cl. 364-134.000.
Yamamoto, Masahiro, 5,614,673, Cl. 73-514.330.
Yamamoto, Osamu, 5,615,332, Cl. 395-183.140.

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Tanaka, Toru, 5,614,768, Cl. 290-40.00C.

Mitsubishi Gas Chemical Co., Inc.: *See*—
Sugihara, Yasuo; Tanaka, Kazushige; and Sakaitani, Hisashi, 5,614,165, Cl. 423-584.000.

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Toda, Katsuaki; Ohtsuka, Tadahiro; and Watanabe, Osamu, 5,614,656, Cl. 73-12.010.

Mitsui High-tec, Inc.: *See*—
Nakashima, Takashi; Takai, Keiji; and Tateishi, Kouji, 5,614,443, Cl. 437-209.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See*—
Kuroda, Katsuya, 5,614,769, Cl. 307-10.200.

Mitsui Petrochemical Industries, Ltd.: *See*—
Nagayama, Hiroyuki; and Ushida, Yoshihisa, 5,614,044, Cl. 156-89.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Kinoshita, Katsutoshi; Wakita, Takeo; Kodaka, Kenji; Matsuno, Hirozumi; Satoh, Kenichi; Shiraishi, Shirou; Ohnuma, Kazutomi; Yamada, Eiichi; Yasui, Naoko; Kawahara, Nobuyuki; Ebihara, Koichi; and Nakaya, Michihiko, 5,614,527, Cl. 514-256.000.

Mitsunobu, Akikazu: *See*—
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,614,651, Cl. 552-615.000.

Mitsutake, Hideaki: *See*—
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Mitsven, Orrin D., Jr.: *See*—
Smith, Stephen L.; Bender, James; Martinson, Jeffrey; Loudovaris, Maureen; Mitsven, Orrin D., Jr.; and Unverzagt, Kristen L., 5,614,412, Cl. 435-305.100.

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Tanaka, Kozaburo; Sugiyama, Shinpei; Miura, Ken; Yoneda, Hideo; Kinoshita, Keiji; Sakuramoto, Akira; Ryu, Akihiro; Fujii, Susumu; Yamamoto, Kimiyuki; and Hattori, Masami, 5,615,138, Cl. 364-582.000.

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Murata, Hiroshi; Miyagawa, Kimio; Shinoda, Eiji; and Moriyama, Hideo, 5,614,254, Cl. 427-180.000.

Miyahara, Shinji: *See*—
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Miyahara, Yoshiki: *See*—
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,614,298, Cl. 428-219.000.

Miyaji, Hiroshi: *See*—
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Miyamura, Eiji: *See*—
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Miyasaka, Tetsuo, to Olympus Optical Co., Ltd. Camera and printer system. 5,614,968, Cl. 396-311.000.

Miyashita, Hiroyuki: *See*—
Hashimoto, Keiji; Fujikawa, Junji; Mohri, Hiroshi; Takahashi, Masahiro; Miyashita, Hiroyuki; and Iimura, Yukio, 5,614,335, Cl. 430-5.000.
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Yamamoto, Akio; Iwanami, Wataru; Yabe, Hiroshi; Yamazaki, Kenji; Miyashita, Tatsumi; and Tsurubuchi, Akeshi, 5,615,179, Cl. 368-211.000.

Miyasita, Hiromi: *See*—
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Miyawaki, Mamoru: *See*—
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Miyawaki, Yoshikazu: *See*—
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Miyazaki, Takeo, to Daiwa Seiko, Inc. Fishing double-bearing type reel with play-reducting clutch mechanism. 5,613,646, Cl. 242-260.000.

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Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

Mizoguchi, Junichi: *See*—
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Mizumo, Yoshiyuki, to Minolta Co., Ltd. Flexible printed circuit device. 5,615,088, Cl. 361-749.000.

Mizuno, Takashi: *See*—
Uchino, Keijiro; Mizuno, Takashi; Murakami, Sachie; Nakashima, Hideki; Yamamoto, Naoki; and Ogawara, Hiroshi, 5,614,554, Cl. 514-517.000.

Mizutani, Satoshi, to Uni-Charm Corporation. Disposable body fluids absorbent padding. 5,613,960, Cl. 604-365.000.

Mizutani, Yoshio: *See*—
Ishii, Takuya; Mizutani, Yoshio; Watanabe, Haruo; Kobayashi, Yoshinori; Sekine, Yutaka; and Ikeda, Satoshi, 5,615,098, Cl. 363-84.000.

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Mink, Robert I.; Nowlin, Thomas E.; Schregenberger, Sandra D.; Shirodkar, Pradeep P.; and Tsien, Grace O., 5,614,456, Cl. 502-115.000.
Valyocsik, Ernest W., 5,614,629, Cl. 546-124.000.

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Modest, Edward J.: *See*—
Piantadosi, Claude; Ishaq, Khalid S.; Marasco, Canio J., Jr.; Daniel, Larry W.; Kucera, Louis S.; Modest, Edward J.; and Goz, Barry P., 5,614,548, Cl. 514-440.000.

Modic, Rudolf; Korte, Hermann-Josef; Schoengen, Anton; Schroeder, Johann-Heinrich; and Porschen, Jörg, to Huls Aktiengesellschaft, Werk Troisdorf. Process for the purification of an oxidation off gas with energy recovery. 5,614,159, Cl. 423-245.300.

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Johnson, Brian A.; Malone, Robert E.; Miller, M. William; and Moeller, Jeffrey, 5,613,611, Cl. 206-728.000.

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Banakis, Emanuel G.; Harwath, Frank A.; Hays, Richard A.; Janota, Kenneth F.; and Lang, Harold K., 5,613,860, Cl. 439-64.000.
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Momodomi, Masaki: *See*—
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Momose, Yu: *See*—
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Kramer, Richard M.; Day, Thomas M.; Lindemann, Ralph E., Jr.; and Gillespie, Jane L., 5,614,468, Cl. 504-206.000.

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Yoshida, Hiroyuki; Inui, Takashi; Numaga, Shigeki; Nakai, Kiyoshi; and Suzuki, Yukihide, 5,615,156, Cl. 365-200.000.

Nakajima, Hideharu; and Yamazaki, Takeshi, to Sony Corporation. Nonvolatile memory device and process for production of the same. 5,614,748, Cl. 257-316.000.

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Nakajima, Shigeru: *See*—
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Nakama, Kenichi: *See*—
Hamanaka, Kenjiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,613,767, Cl. 362-298.000.

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Sakui, Koji; Nakamura, Hiroshi; Tanaka, Tomoharu; Momodomi, Masaki; Masuoka, Fujio; and Hasegawa, Takehiro, 5,615,163, Cl. 365-230.030.
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Nakamura, Hiroyuki: *See*—
Kimura, Kunio; Nakamura, Hiroyuki; Tamoto, Yukiyoshi; Kimoto, Junichi; and Okada, Hiromi, 5,614,255, Cl. 427-212.000.

Nakamura, Kazuhiro: *See*—
Katoh, Masahiko; Nonaka, Kimihiro; and Nakamura, Kazuhiro, 5,613,480, Cl. 123-673.000.

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Koshi, Yutaka; Kimura, Shunichi; Yokose, Taro; Kamizawa, Koh; Minami, Toshi; and Nakamura, Osamu, 5,615,288, Cl. 382-248.000.

Nakamura, Shinya: *See*—
Kono, Katsumi; and Nakamura, Shinya, 5,613,583, Cl. 192-3.310.

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Furuno, Takeshi; Nakamura, Yasuhiro; and Matsuo, Akinori, 5,615,151, Cl. 365-185.180.

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Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,613,913, Cl. 463-52.000.

Nakashima, Hideki: *See*—
Uchino, Keijiro; Mizuno, Takashi; Murakami, Sachie; Nakashima, Hideki; Yamamoto, Naoki; and Ogawara, Hiroshi, 5,614,554, Cl. 514-517.000.

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Nakata, Shigeo: *See*—
Ukada, Masahiro, 5,613,595, Cl. 198-774.300.

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Nakaya, Katsunori: *See*—
Kiuchi, Takeo; Taguchi, Satoshi; Nakaya, Katsunori; Fueta, Shigekazu; and Fukuda, Kenji, 5,614,809, Cl. 322-11.000.

Nakaya, Michihiko: *See*—
Kinoshita, Katsutoshi; Wakita, Takeo; Kodaka, Kenji; Matsuno, Hirozumi; Satoh, Kenichi; Shiraishi, Shirou; Ohnuma, Kazutomi; Yamada, Eiichi; Yasui, Naoko; Kawahara, Nobuyuki; Ebihara, Koichi; and Nakaya, Michihiko, 5,614,527, Cl. 514-256.000.

Nakayama, Junichiro: *See*—
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Akashi, Akira; Miyawaki, Mamoru; Suzuki, Kenji; and Nakayama, Toshiki, 5,615,399, Cl. 396-128.000.

Nakayama, Toshimasa: *See*—
Sakamoto, Yoshinori; Hagiwara, Yoshio; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,614,251, Cl. 427-96.000.
Shibuya, Tatsuhiko; Okano, Susumu; Kobari, Hideya; Hagiwara, Yoshio; and Nakayama, Toshimasa, 5,614,271, Cl. 427-541.000.

Nakayama, Yasuharu: *See*—
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, 5,614,582, Cl. 524-507.000.

Nakayama, Yoshiaki: *See*—
Nishitani, Keizo; Nakayama, Yoshiaki; Kubota, Minoru; and Ozaki, Keiichi, 5,615,080, Cl. 361-664.000.

Nakazato, Tatsuro: *See*—
Nakamura, Tadao; Watanabe, Makoto; and Nakazato, Tatsuro, 5,613,474, Cl. 123-496.000.

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Nakazawa, Tetsuo: *See*—
Yoshioka, Tomonori; Migita, Shinichi; and Nakazawa, Tetsuo, 5,615,279, Cl. 382-131.000.

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Namco Ltd.: *See*—
Murata, Hiroyuki; and Yokota, Takashi, 5,615,322, Cl. 395-133.000.

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Weiss, Stanley; and Nance, Cosper, 5,613,899, Cl. 451-245.000.

Nance, Fred H., Jr. Protective garment utilizing heat stress reduction fabric. 5,614,302, Cl. 442-286.000.

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Seegopaul, Purnesh; and Wu, Li, 5,613,998, Cl. 75-419.000.

Nara, Takashi: *See*—
Osaki, Katsumi; Nara, Takashi; and Watanabe, Hitoshi, 5,614,860, Cl. 327-552.000.

Narr, Berthold, deceased (by Elisabeth Narr, legal representive): *See*—
Hauel, Norbert; Narr, Berthold, deceased; Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, 5,614,519, Cl. 514-235.800.

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Narrin, Nancy. Device for providing elevated and universally adjustable support of a hair dryer. 5,613,305, Cl. 34-90.000.

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Fukuta, Motoji; Ozawa, Masanori; Naruoka, Yoshihiko; Uchiyama, Mineharu; and Itoh, Ken, 5,615,057, Cl. 386-117.000.

Naruse, Hiroshi: *See*—
Kimura, Koji; and Naruse, Hiroshi, 5,614,425, Cl. 437-31.000.

Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, to Sankyo Company, Limited. Benzene derivatives having NGF production-promoting activity. 5,614,521, Cl. 514-237.800.

Nasuno, Hideki: *See*—
Ose, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

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Newsham, Guy R.; and Tiller, Dale K., 5,615,134, Cl. 364-550.000.

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Lin, Shi-Yow; and Hwang, Hae-Feng, 5,615,276, Cl. 382-100.000.
Yeh, Ching-Fa; and Lin, Shyue S., 5,614,270, Cl. 427-539.000.

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Bergemont, Albert, 5,615,152, Cl. 365-185.180.
Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, 5,614,444, Cl. 437-225.000.
Fried, Rafael; Blecher, Yaron; and Friedman, Shimon, 5,615,073, Cl. 361-56.000.
Holzer, Reuven; and Fried, Rafael, 5,614,851, Cl. 327-58.000.
Merrill, Richard B., 5,614,744, Cl. 257-291.000.

Naumann, Udo: *See*—
Juettner, Peter; Kolb, Sebald; Zimmerer, Peter; and Naumann, Udo, 5,615,333, Cl. 395-183.140.

Nayar, Harbhajan S.; Dwyer, John J., Jr.; and Saxena, Neeraj, to BOC Group, Inc., The. Argon employing heat treating process. 5,614,039, Cl. 148-606.000.

Naylor, Malcolm, to Central Research Laboratories Limited. Anisotropic electrical connection. 5,613,862, Cl. 439-91.000.

Nazarian, Soheil; Baker, Mark R.; and Crain, Kevin, to Board of Regents, The University of Texas System. Movable seismic pavement analyzer. 5,614,670, Cl. 73-146.000.

NEC Corporation: *See*—
Akimoto, Takeshi, 5,614,025, Cl. 118-723.0MP.
Ban, Takayuki, 5,615,339, Cl. 395-200.120.
Emura, Katsumi, 5,615,036, Cl. 359-124.000.
Goto, Yoshiro, 5,614,432, Cl. 437-56.000.
Hori, Tsuguo, 5,615,034, Cl. 359-110.000.
Iuchi, Hitoshi, 5,615,371, Cl. 395-704.000.
Kanamori, Mikio; and Imamura, Takafumi, 5,614,762, Cl. 257-69.000.
Kimura, Tohru; and Koike, Hiroki, 5,615,144, Cl. 365-145.000.
Kobayashi, Fumiyuki, 5,615,250, Cl. 379-61.000.
Kurahara, Kensei, 5,615,390, Cl. 395-834.000.
Norimatsu, Noriko, 5,615,248, Cl. 379-58.000.
Ohara, Shinji, 5,614,767, Cl. 257-797.000.
Sanpei, Takaaki, 5,613,415, Cl. 83-86.000.
Shim, Jong-In; and Kitamura, Mitsuhiro, 5,614,436, Cl. 437-129.000.
Taura, Toru; and Inoue, Hirobumi, 5,614,944, Cl. 348-183.000.
Terashima, Ryo; and Nakabayashi, Kazunori, 5,615,368, Cl. 395-671.000.
Watanabe, Mitsuhiro, 5,614,900, Cl. 341-67.000.
Yamaguchi, Chiseki, 5,614,290, Cl. 428-195.000.
Yamaguchi, Chiseki, 5,615,405, Cl. 399-125.000.
Yamashita, Osamu, 5,615,256, Cl. 379-390.000.

Necchi Compressori s.r.l.: *See*—
Alfano, Biagio; and Biscaldi, Edoardo, 5,613,842, Cl. 417-312.000.

Ned, Alexander A.: *See*—
Kurtz, Anthony D.; Bemis, Andrew V.; Nunn, Timothy A.; and Ned, Alexander A., 5,614,678, Cl. 73-727.000.

Neff, Marion W.: *See*—
Mondie, George R.; Van Tyne, Richard G.; and Neff, Marion W., 5,614,710, Cl. 250-223.00R.

Negri, Jodi L.: *See*—
Randolph, Donald A.; Negri, Jodi L.; Devine, Timothy R.; and Gitelis, Steven, 5,614,206, Cl. 424-426.000.

Neidhardt, Edith A.: *See*—
Singh, Shyam K.; Patch, Raymond J.; Pallai, Peter V.; Neidhardt, Edith A.; Palace, Gerard P.; Willis, Kevin J.; Sampo, Theresa M.; McDonald, Kevin W.; and Shi, Zhan, 5,614,559, Cl. 514-577.000.

Neitz, Alfred: *See*—
Edelmann, Peter; Friedrich, Jurgen; Gebhardt, Hans; Moller, Heribert; Neitz, Alfred; and Vogelsang, Klaus, 5,613,472, Cl. 123-349.000.

Nelson, Bertel S. Zero velocity gear mesh differential. 5,613,919, Cl. 475-7.000.

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Nelson, John D., Jr., to Olin Corporation. Synergistic antimicrobial composition containing pyrithione and alcohol. 5,614,538, Cl. 514-345.000.

Nelson, Kim L. Method and apparatus for misting vehicle occupants. 5,613,371, Cl. 62-244.000.

Nelson, Richard E.: *See*—
Austin, Mary A.; Dunne, Kenneth C.; Lindland, Dag; Frey, Phillip L.; Hystad, Dean G.; Nelson, Richard E.; and Warner, Bradley D., 5,614,116, Cl. 219-130.210.

Nelson, Thomas J., to Wilsonart International Inc. Furniture edge construction. 5,613,342, Cl. 52-782.200.

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Ranganathan, Ravi, 5,615,376, Cl. 395-750.000.

Neri, Giuseppe, to Fast S.p.A. Apparatus for mixing liquid products to prepare coloring substances for paints and the like. 5,613,775, Cl. 366-297.000.

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Kamschal, Wolfgang; and Neszmerak, Wolfgang, 5,613,758, Cl. 362-146.000.

Neto, Jose R. Z.: *See*—
Vatavuk, Jan; Neto, Jose R. Z.; and Piccili, Marcos R., 5,614,022, Cl. 118-302.000.

Neuer, Klaus: *See*—
Walch, Hatto; Fleck, Monika; and Neuer, Klaus, 5,614,491, Cl. 514-11.000.

Neuhaus, Jean-Marc: *See*—
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,614,395, Cl. 435-172.300.

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New England Deaconess Hospital: *See*—
Sytkowski, Arthur J.; and Grodberg, Jennifer, 5,614,184, Cl. 424-85.100.

New England Medical Center Hospitals, Inc.: *See*—
Cone, Roger, 5,614,363, Cl. 435-6.000.

New Holland North America, Inc.: *See*—
Maurizio, Galli, 5,613,401, Cl. 74-325.000.

New Japan Radio Co., Ltd.: *See*—
Yamaga, Shigeki; and Kimura, Chikao, 5,614,447, Cl. 437-247.000.

New Media Corp.: *See*—
Corder, Rodney J., 5,615,344, Cl. 395-309.000.

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Colman, David R.; Ellis, Joan; Godson, G. Nigel; Nussenzweig, Ruth S.; Nussenzweig, Victor N.; Svec, Pamela S.; and Zavala, Fidel, 5,614,194, Cl. 424-191.100.
Feinberg, David A., 5,613,492, Cl. 128-653.200.

Newell, Kenneth J. Rotary piston fluid handler. 5,613,838, Cl. 417-269.000.

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Gerdmann, Harold F.; and Mumpy, Keith E., 5,613,274, Cl. 16-116.00R.
Tuzmen, Zeki; John, Julius F.; and Setele, Richard A., 5,613,542, Cl. 160-236.000.

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Bremner, Ronald D.; Newendorp, Bruce C.; and D'Alessandro, Patricia M., 5,613,584, Cl. 192-4.00C.

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Stallard, Clinton W., III, 5,613,460, Cl. 114-312.000.

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Horton, Mike A.; and Newton, A. Richard, 5,615,132, Cl. 364-516.000.

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Marbot, Roland; Le Bihan, Jean-Claude; Cofler, Andrew; and Nezamzadeh-Moosavi, Reza, 5,614,841, Cl. 326-52.000.

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Ng, Yu K.: *See*—
Dai, Wei W.; and Ng, Yu K., 5,615,340, Cl. 395-200.170.

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Abe, Fumio; Hashimoto, Shigeharu; and Kondo, Tomoharu, 5,614,155, Cl. 422-174.000.
Kosaka, Shinichi; Sakai, Osamu; Takahashi, Tomonori; and Soma, Takao, 5,614,001, Cl. 96-10.000.

Nguyen, Anh N.: *See*—
Deaver, Gerald A.; Pyron, James W.; and Nguyen, Anh N., 5,615,239, Cl. 376-247.000.

Nguyen, John: *See*—
Nelson, Charles L.; Nguyen, John; Richardson, Derrick A.; and Saravia, Heber, 5,613,954, Cl. 604-167.000.

Nguyen, Kimthoa T.: *See*—
Hayes, Patrick H.; and Nguyen, Kimthoa T., 5,614,906, Cl. 341-176.000.

Nibco Inc.: *See*—
Farrell, Michael M., 5,613,802, Cl. 405-36.000.

Nicca Chemical Co., Ltd.: *See*—
Sano, Junji; Ichihashi, Kunio; Saito, Hajime; and Banko, Hirotomo, 5,614,573, Cl. 524-121.000.

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Hoshino, Tetsuya, 5,613,432, Cl. 100-26.000.

Nichols, Constance H.: *See*—

Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

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Miller, Michael T., Sr.; and Nichols, Joseph M., Jr., 5,613,733, Cl. 297-344.100.

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Hannan, Alan R.; and Nickolin, Thomas M., 5,613,399, Cl. 73-304.00C.

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Niewold, Willem: *See—*
Mulder, Roger; Niewold, Willem; Schimmel, Peter J. C.; and van der Woude, Jaap, 5,613,642, Cl. 242-35.50A.

Nifco Inc.: *See—*
Terada, Makoto; Suka, Teiji; and Nakaya, Hiroyuki, 5,613,792, Cl. 403-131.000.

Nightingale, Robert I.; and Berndt, Charles W., to Exfoliation Systems, Ltd. Process for laundering paint soiled garments. 5,613,984, Cl. 8-142.000.

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Ishikawa, Norio; and Hosaka, Hidehiro, 5,614,967, Cl. 351-210.000.

Nii, Kazumi; and Morimoto, Kiyoshi, to Fuji Photo Film Co., Ltd. Color developing agent, processing composition and color image-forming method. 5,614,356, Cl. 430-442.000.

Niimura, Yuuji, to Oki Electric Industry Co., Ltd. Card receiver electrically for contacting a card medium having a plurality of electrical connecting terminals. 5,613,866, Cl. 439-260.000.

Niiyama, Kenji: *See—*
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takeshi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; Yano, Mitsuo; and Nishikibe, Masaru, 5,614,498, Cl. 514-18.000.

Nikam, Sham, to Warner-Lambert Company. Amino acid derivatives of substituted quinoxaline 2,3-dione derivatives as glutamate receptor antagonists. 5,614,508, Cl. 514-80.000.

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Hirukawa, Shigeru; Kondo, Shinjiro; Kato, Takeshi; and Suwa, Kyoichi, 5,615,006, Cl. 356-124.000.
Iwane, Toru; and Yamano, Shozo, 5,614,983, Cl. 396-97.000.
Kaneko, Masanobu; and Yanagisawa, Masaaki, 5,615,049, Cl. 359-684.000.
Kanzaki, Masatoshi, 5,614,978, Cl. 396-463.000.
Kato, Kinya; and Seki, Masami, 5,614,988, Cl. 355-46.000.
Komatsuda, Hideki; Hirose, Hideo; and Mori, Takashi, 5,615,047, Cl. 359-618.000.
Soshi, Isao; Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; Amanuma, Tatsuo; and Asami, Jirou, 5,614,974, Cl. 396-55.000.
Takagi, Tadao; and Ashizawa, Takatoshi, 5,614,970, Cl. 396-164.000.
Wakabayashi, Hiroshi; Miyamoto, Hidenori; and Nakamura, Toshiyuki, 5,614,972, Cl. 396-135.000.
Wakabayashi, Hiroshi; and Tsukahara, Daiki, 5,614,980, Cl. 396-147.000.
Yasukawa, Seiichi, 5,614,982, Cl. 396-95.000.

Nilssen, Ole K. Frequency, voltage and waveshape converter for a three phase induction motor. 5,614,802, Cl. 318-800.000.

Nilsson, Lennart: *See—*
Sterner, Lars; and Nilsson, Lennart, 5,613,568, Cl. 175-94.000.

Nimura, Kazuo: *See—*
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.

Ninegar, Steve. Movable decoy head and neck. 5,613,317, Cl. 43-3.000.

Nippon Flour Mills Co., Ltd.: *See—*
Uchino, Keijiro; Mizuno, Takashi; Murakami, Sachie; Nakashima, Hideki; Yamamoto, Naoki; and Ogawara, Hiroshi, 5,614,554, Cl. 514-517.000.

Nippon Kinzoku Co., Ltd.: *See—*
Nakamura, Tadayoshi; and Tanaka, Kazumi, 5,613,999, Cl. 75-603.000.

Nippon Oil Company, Limited: *See—*
Sohda, Yoshio; Kohno, Takefumi; and Sanokawa, Yutaka, 5,614,134, Cl. 264-29.100.

Nippon Paint Co., Ltd.: *See—*
Matsukawa, Masahiko; Hirasawa, Hidekimi; Mikami, Fujio; and Yamasoe, Katsuyoshi, 5,614,585, Cl. 524-608.000.

Nippon Precision Circuits Inc.: *See—*
Miyabe, Satoru, 5,614,871, Cl. 331-111.000.

Nippon Sheet Glass Co., Ltd.: *See—*
Hamanaka, Kenjiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,613,767, Cl. 362-298.000.

Nippon Steel Corporation: *See—*
Suga, Yozo; Honma, Hotaka; Ushigami, Yoshiyuki; and Kitahara, Syuji, 5,614,034, Cl. 148-111.000.

Nippon Telegraph and Telephone Corporation: *See—*
Matsuoka, Yutaka; and Yamahata, Shoji, 5,614,423, Cl. 437-31.000.

Nippon Thompson Co., Ltd.: *See—*
Takei, Seiji, 5,613,403, Cl. 74-490.090.

Nippon Yakin Kogyo Co., Ltd.: *See—*
Abe, Hiroshi; Taniuchi, Toshihiko; Tsuda, Masaomi; and Fujiwara, Yoshito, 5,614,149, Cl. 420-43.000.

Nippondenso Co., Ltd.: *See—*
Ashida, Koji; Takatsuka, Michiya; and Nishizawa, Kazuo, 5,613,550, Cl. 165-67.000.
Kato, Hideyuki, 5,615,090, Cl. 362-32.000.
Kondo, Ichiharu; Inaguma, Yoshiaki; and Sakamoto, Yoshitsugu, 5,614,291, Cl. 428-209.000.
Maeda, Kazuto, 5,613,477, Cl. 123-519.000.
Morioka, Tatsuru; and Egami, Tsuneyuki, 5,614,803, Cl. 318-801.000.
Oi, Kiyotoshi; Kobayashi, Atsushige; Nakashima, Kazushi; Kawano, Yasushi; and Kaga, Hideki, 5,613,476, Cl. 123-509.000.
Osakabe, Hiroyuki; Kawaguchi, Kiyoshi; and Suzuki, Masahiko, 5,613,552, Cl. 165-104.210.

Nirschl, Ernst: *See—*
Neumann, Gerald; Nirschl, Ernst; and Spaeth, Werner, 5,614,736, Cl. 257-102.000.

Nishi, Takahide: *See—*
Hirai, Koichi; Iwano, Yuji; Nishi, Takahide; Yoshida, Akira; Oda, Kozo; and Koyama, Hiroo, 5,614,624, Cl. 540-350.000.

Nishida, Masao; Higashino, Takayoshi; and Harada, Yasoo, to Sanyo Electric Co., Ltd. Negative voltage genarating circuit. 5,614,814, Cl. 323-313.000.

Nishida, Reijiro: *See—*
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, 5,614,582, Cl. 524-507.000.

Nishida, Tetsuya: *See—*
Sugiyama, Hisataka; Maeda, Takeshi; Matsumoto, Kiyoshi; Terao, Motoyasu; Okamine, Shigenori; Nishida, Tetsuya; and Miyamoto, Harukazu, 5,614,938, Cl. 347-247.000.

Nishida, Yoshinori: *See—*
Lim, Suk-Won; Imai, Tsunemichi; Nishida, Yoshinori; and Choh, Takao, 5,614,684, Cl. 75-236.000.

Nishide, Yutaka; Fujioka, Takahiro; and Yoshida, Ricardo K., to Sumitomo Electric Indus.; and Sumitomo Wiring Systems, Ltd. Tape binding device for electric wire bundle and tape binding method. 5,614,042, Cl. 156-53.000.

Nishigaya, Takeshi: *See—*
Hashimoto, Takeshi; Tezuka, Akira; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,614,316, Cl. 428-344.000.

Nishikawa, Hirofumi: *See—*
Shigematsu, Hiroyuki; Nishikawa, Hirofumi; and Shibata, Yukihiro, 5,614,926, Cl. 345-156.000.

Nishikawa Rubber Co., Ltd.: *See—*
Inoue, Satoshi; Fujita, Yasuyuki; and Kawazoe, Takeo, 5,613,326, Cl. 49-476.100.

Nishikibe, Masaru: *See—*
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takeshi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; Yano, Mitsuo; and Nishikibe, Masaru, 5,614,498, Cl. 514-18.000.

Nishimura, Michinori: *See—*
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.

Nishimura, Shigetaka: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,614,298, Cl. 428-219.000.

Nishina, Toshihide, to Fujitsu Limited. Network definition modifying system. 5,615,372, Cl. 395-653.000.

Nishino, Fumihito; and Sugimoto, Naomi, to Fujitsu Limited. Dictionary retrieval device. 5,615,378, Cl. 395-754.000.

Nishino, Hiroshi: *See—*
Horikoshi, Hiroyoshi; Fujiwara, Toshihiko; Yoshioka, Shinji; Nishino, Hiroshi; Koike, Hiroyuki; and Yoshioka, Takao, 5,614,542, Cl. 514-369.000.

Nishio, Yoji: *See—*
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,614,848, Cl. 326-110.000.

Nishioka, Mikiteru; and Kawaguchi, Masaaki, to Noritsu Koki Co., Ltd. Print detector for use in a sorter. 5,614,987, Cl. 355-18.000.

Nishioka, Munehiro: *See—*
Kimura, Izumi; Nishioka, Munehiro; Takeuchi, Toshifumi; and Tadokoro, Hiroshi, 5,615,194, Cl. 369-60.000.

Nishitani, Keizo; Nakayama, Yoshiaki; Kubota, Minoru; and Ozaki, Keiichi, to Yazaki Corporation. Meter module, connecting device thereof, wiring harness protector, and connecting device of instrument wiring harness. 5,615,080, Cl. 361-664.000.

Nishizawa, Kazuo: *See—*

Ashida, Koji; Takatsuka, Michiya; and Nishizawa, Kazuo, 5,613,550, Cl. 165-67.000.

Nishizawa, Koichi: *See—*
Hamanaka, Kenjiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,613,767, Cl. 362-298.000.

Nissan Motor Co., Ltd.: *See—*
Uchikoshi, Susumu; Kiyota, Shigeyuki; Iwasaki, Yasukazu; Noguchi, Takatoshi; and Uchiyama, Makoto, 5,614,753, Cl. 257-417.000.
Yashiro, Haruki; Sasaki, Akira; and Maeda, Kazushige, 5,614,699, Cl. 181-254.000.

Nisshin Engineering Co., Ltd.: *See—*
Murata, Hiroshi; Miyagawa, Kimio; Shinoda, Eiji; and Moriyama, Hideo, 5,614,254, Cl. 427-180.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Murata, Hiroshi; Miyagawa, Kimio; Shinoda, Eiji; and Moriyama, Hideo, 5,614,254, Cl. 427-180.000.

Nissho Corporation: *See—*
Morita, Yasuhiko; and Masuda, Toshiaki, 5,614,311, Cl. 428-317.300.

Nissinen, Erkki: *See—*
Bäckström, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,614,541, Cl. 514-369.000.

Nitor: *See—*
Gibeau, Frank C.; Bessler, Roger F.; and Arbeiter, James H., 5,614,961, Cl. 348-750.000.

Nitta, Tsuneo: *See—*
Hara, Yoshiyuki; and Nitta, Tsuneo, 5,615,300, Cl. 395-2.690.

Nitto Denko Corporation: *See—*
Hirose, Masahiko; Ito, Hiroki; Maeda, Masatoshi; and Tanaka, Kazuo, 5,614,099, Cl. 210-653.000.

Nitto Kogyo Co., Ltd.: *See—*
Ueda, Noriyoshi; and Toda, Naoki, 5,615,000, Cl. 399-361.000.

Niwa, Susumu, to Kabushiki Kaisha Hosokawa Yoko. Pouch. 5,613,779, Cl. 383-201.000.

Nizar, Puthiya K.: *See—*
Knoll, Shaun; Morriss, Jeff C.; Callahan, Shelagh; Bhatt, Ajay V.; Nizar, Puthiya K.; Haslam, Richard M.; Volk, Andrew M.; and Cadambi, Sudarshan B., 5,615,404, Cl. 395-882.000.

Niznik, George E.; and Hochberg, Arie, to Kawasaki Chemical Holding Co., Inc. Transparent, antistatic thermoplastic composition and methods of making the same. 5,614,589, Cl. 525-71.000.

NKK Corporation: *See—*
Gotou, Hiroshi, 5,615,146, Cl. 365-185.010.

Noda, Tetsuo: *See—*
Tsuruta, Yukiyasu; Noda, Tetsuo; and Yoshioka, Akihiro, 5,615,184, Cl. 369-37.000.

Noda, Tsugio: *See—*
Chiba, Hirotaka; and Noda, Tsugio, 5,614,960, Cl. 348-700.000.

Nogiwa, Toru: *See—*
Itoh, Akihide; Nogiwa, Toru; Hotta, Yoshihiko; Suzuki, Akira; and Kutami, Atushi, 5,614,461, Cl. 503-201.000.

Noguchi, Takatoshi: *See—*
Uchikoshi, Susumu; Kiyota, Shigeyuki; Iwasaki, Yasukazu; Noguchi, Takatoshi; and Uchiyama, Makoto, 5,614,753, Cl. 257-417.000.

Nojiri, Shigehiro: *See—*
Toudo, Tatsuya; Nakagawa, Tadahiro; Nomura, Toshiyuki; Mori, Haruhiko; and Nojiri, Shigehiro, 5,614,053, Cl. 156-312.000.

Noll, Mark G.: *See—*
Horne, Rick L.; Lohman, Terence J.; Noll, Mark G.; Olive, Jose A.; and Perez, Roberto V., 5,615,217, Cl. 371-22.300.

Nolte, Werner, to Metaform Metallverabeitungsgellschaft mbH Industriegebiet. Cleaning cloth. 5,613,263, Cl. 15-228.000.

Nomai SA: *See—*
Bordes, Jacques, 5,615,070, Cl. 360-133.000.

Nomura, Toshiyuki: *See—*
Toudo, Tatsuya; Nakagawa, Tadahiro; Nomura, Toshiyuki; Mori, Haruhiko; and Nojiri, Shigehiro, 5,614,053, Cl. 156-312.000.

Nonaka, Kimihiro: *See—*
Katoh, Masahiko; Nonaka, Kimihiro; and Nakamura, Kazuhiro, 5,613,480, Cl. 123-673.000.

Nonaka, Tsuyoshi; Hosoya, Toshifumi; Kobayashi, Yuji; and Matsuda, Yasuo, to Sumitomo Electric Industries, Ltd. Plastic optical fiber preform, and process and apparatus for producing the same. 5,614,253, Cl. 427-163.200.

Noptel Oy: *See—*
Ahola, Raimo; and Tervaskanto, Matti, 5,613,442, Cl. 104-8.000.

Nordin, Per-Gunnar, to Petroscan AB. Method for mapping sea level undulations with applications to mineral and hydrocarbon prospecting. 5,615,114, Cl. 364-420.000.

Norimatsu, Noriko, to NEC Corporation. Telephone apparatus having automatic display function. 5,615,248, Cl. 379-58.000.

Noritsu Koki Co., Ltd.: *See—*
Nishioka, Mikiteru; and Kawaguchi, Masaaki, 5,614,987, Cl. 355-18.000.
Yoshikawa, Tohru; and Yamaji, Yoshiyuki, 5,614,986, Cl. 355-18.000.

Normand, Philippe: *See—*
Jego, Gerard; Lebeau, Jean-Claude; Normand, Philippe; Nourry, Daniel; and Thierry, Jean-Pierre, 5,614,697, Cl. 174-84.00R.

Norris, Dale M.; and Markovic, Ingrid, to Wisconsin Alumni Research Foundation. Ash extractables for detering gypsy moth. 5,614,196, Cl. 424-195.100.

North Corporation: *See—*
Saito, Yoshiko; Fujita, Teruyuki; and Iijima, Tomoo, 5,613,345, Cl. 53-266.100.

Northern Telecom Limited: *See—*
Ellul, Joseph P.; and Boyd, John M., 5,614,750, Cl. 257-386.000.
Pezzullo, William V.; Brisebois, Michel J.; Johns, Joseph B.; Orford, Kenneth M.; Travis, Kristin J.; Tsuji, Bruce H.; Ross, William T.; Robert, Andre J.; and Read, Clifford D., 5,615,257, Cl. 379-396.000.
Webb, Roger C., 5,614,915, Cl. 343-770.000.

Northey, William A., to Berg Technology, Inc. Vacuum pick-up device for header connector. 5,613,864, Cl. 439-149.000.

Norvilas, Stephen T.: *See—*
Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

Nose, Izuru: *See—*
Lee, William; Nose, Izuru; and Parel, Jean-Marie, 5,613,972, Cl. 606-107.000.

Nosek, Dagmar: *See—*
Mohammadi, Fatemeh; and Nosek, Dagmar, 5,614,489, Cl. 514-2.000.

Nosker, Richard W.; Michalchuk, Joey J.; Kuczer, Paul; and Hodge, Elmer W. Method of making a tensioned focus mask. 5,613,889, Cl. 445-37.000.

Nostwick, Allan A.; and Hesterman, Bryce L., to MagneTeck, Inc. Power factor correction circuit. 5,614,810, Cl. 323-207.000.

Nottingham, John R.: *See—*
Angeles, James P.; Dugan, Thomas F.; Nottingham, John R.; Panasewicz, Dale A.; and Sroub, Brian J., 5,613,605, Cl. 206-423.000.

Nourrcier, Charles E., Jr., to Hughes Electronics. Laser range finder power management system. 5,615,004, Cl. 356-4.010.

Nourry, Daniel: *See—*
Jego, Gerard; Lebeau, Jean-Claude; Normand, Philippe; Nourry, Daniel; and Thierry, Jean-Pierre, 5,614,697, Cl. 174-84.00R.

NovAtel Communications Ltd.: *See—*
Van Nee, D. J. R., 5,615,232, Cl. 375-346.000.

Novitsky, Thomas J.: *See—*
Wainwright, Norman R.; and Novitsky, Thomas J., 5,614,369, Cl. 435-7.800.

Novo Nordisk A/S: *See—*
Huge-Jensen, Birgitte, 5,614,189, Cl. 424-94.600.

Nowak, Romuald: *See—*
Fairbairn, Kevin; and Nowak, Romuald, 5,614,055, Cl. 156-345.000.

Nowlin, Thomas E.: *See—*
Mink, Robert I.; Nowlin, Thomas E.; Schregenberger, Sandra D.; Shirodkar, Pradeep P.; and Tsien, Grace O., 5,614,456, Cl. 502-115.000.

Nozoe, Tsugio: *See—*
Ishida, Kouichi; and Nozoe, Tsugio, 5,614,563, Cl. 521-54.000.

Nozomi, Mamoru; Hiroi, Masayuki; and Ogawa, Itaru, to Mitsubishi Chemical Corporation. Electrophotographic copying process for reversal development. 5,614,343, Cl. 430-100.000.

NSK Ltd.: *See—*
Sakamoto, Junshi; Morita, Kouichi; Okada, Takamichi; and Mashio, Akihiro, 5,614,822, Cl. 324-174.000.
Sato, Hideyuki; and Kajita, Toshiharu, 5,613,400, Cl. 74-89.150.

NSM Aktiengesellschaft: *See—*
Rom, Ole, 5,614,942, Cl. 348-61.000.

NTT Mobile Communications Network Inc.: *See—*
Kaiyama, Akira; Shinagawa, Noriteru; and Nakano, Masatomo, 5,615,210, Cl. 370-389.000.

Nucci, Fernando, to Circuit Line S.p.A. Multi-station machine and press assembly for electrically testing a printed circuit board having manual and automatic operating modes. 5,614,819, Cl. 324-158.100.

Nuccio, Michael: *See—*
Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; and Freyssinet, Georges L., 5,614,393, Cl. 435-134.000.

Nukushina, Harunobu: *See—*
Sato, Takashi; Kageyama, Yasuhiro; Isshiki, Masao; and Nukushina, Harunobu, 5,613,369, Cl. 62-89.000.

Numaga, Shigeki: *See—*
Yoshida, Hiroyuki; Inui, Takashi; Numaga, Shigeki; Nakai, Kiyoshi; and Suzuki, Yukihide, 5,615,156, Cl. 365-200.000.

Numao, Takaji, to Sharp Kabushiki Kaisha. Ferroelectric liquid crystal display device and a driving method of effecting gradational display therefor. 5,614,924, Cl. 345-149.000.

Nunally, Patrick O., to Hughes Missile Systems Company. Neural processor element. 5,615,305, Cl. 395-24.000.

Nunberg, Andrew N.: *See—*
Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; and Freyssinet, Georges L., 5,614,393, Cl. 435-134.000.

Nunn, Timothy A.: *See—*
Kurtz, Anthony D.; Bemis, Andrew V.; Nunn, Timothy A.; and Ned, Alexander A., 5,614,678, Cl. 73-727.000.

Nunne, William H.: *See—*
Slade, Steven B.; Burbank, Daniel P.; and Nunne, William H., 5,613,293, Cl. 29-603.120.

Nussenzweig, Ruth S.: *See—*
Colman, David R.; Ellis, Joan; Godson, G. Nigel; Nussenzweig, Ruth S.; Nussenzweig, Victor N.; Svec, Pamela S.; and Zavala, Fidel, 5,614,194, Cl. 424-191.100.

Nussenzweig, Victor N.: *See—*

Colman, David R.; Ellis, Joan; Godson, G. Nigel; Nussenzweig, Ruth S.; Nussenzweig, Victor N.; Svec, Pamela S.; and Zavala, Fidel, 5,614,194, Cl. 424-191.100.

Nutt, Stephen L.: *See—*
Kamboj, Rajender; Nutt, Stepheo L.; Shekter, Lee; and Wosnick, Michael A., 5,614,406, Cl. 435-325.000.

Nycomed Imaging AS: *See—*
Klaveness, Jo; Rongved, Pål; and Stubberud, Lars, 5,614,169, Cl. 424-9.520.

Nycomed Salutar Inc.: *See—*
Berg, Arne; Almén, Torsten; Krautwurst, Klaus D.; Kim, Sook-Hui; Rongved, Pål; Klaveness, Jo; and Dugstad, Harald, 5,614,168, Cl. 424-9.420.

Nykopp, Erik. Glide-shoe arrangememt for pressing a moving web. 5,614,064, Cl. 162-358.300.

Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, to Fujitsu Limited. Charged particle beam exposure system and method. 5,614,725, Cl. 250-492.220.

Oakes, Bryan R., to Structural Instrumentation, Inc. Environmentally sealed connector for use with a load cell block. 5,614,696, Cl. 174-65.00G.

Obiri, Nicholas: *See—*
Puri, Raj K.; Debinski, Waldemar; Pastan, Ira; and Obiri, Nicholas, 5,614,191, Cl. 424-178.100.

O'Brien, John E.: *See—*
Heit, Martin A.; Koeninger, Timothy A.; O'Brien, John E.; Wilkins, John J.; and Coons, Randall P., 5,613,591, Cl. 198-370.020.

O'Brien, Michael J.: *See—*
Bryant, Robert C.; and O'Brien, Michael J., 5,614,981, Cl. 396-50.000.

O'Brien, Patrick, to Cristofell Group Ltd. Internally illuminated decorative objects. 5,613,764, Cl. 362-252.000.

O'Brochta, David; Warren, William; and Atkinson, Peter, to University of Maryland Biotechnology Institute, The. Gene transfer system for insects. 5,614,398, Cl. 435-172.300.

Occelli, Mario L., to UOP. Catalyst containing zeolite beta and a pillared clay. 5,614,453, Cl. 502-66.000.

Ochoa, Roland; and Loughmiller, Daniel R., to Micron Technology, Inc. Sense amplifier circuit for detecting degradation of digit lines and method thereof. 5,615,158, Cl. 365-201.000.

Oda, Koza: *See—*
Yoshida, Akira; Oda, Koza; Ishihara, Sadao; Saito, Fujio; Koike, Hiroyuki; Koga, Teiichiro; Kitazawa, Eiichi; Kogen, Hiroshi; and Hayakawa, Ichiro, 5,614,550, Cl. 514-450.000.

Oda, Kozo: *See—*
Hirai, Koichi; Iwano, Yuji; Nishi, Takahide; Yoshida, Akira; Oda, Kozo; and Koyama, Hiroo, 5,614,624, Cl. 540-350.000.

Oda, Tomiichiro: *See—*
Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, 5,614,521, Cl. 514-237.800.

Odaira, Hideko: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Odaka, Kentaro: *See—*
Fukuda, Shinichi; Tanaka, Akio; and Odaka, Kentaro, 5,615,055, Cl. 360-8.000.

Odaka, Yukio, to Canon Kabushiki Kaisha. Camera with device for detecting line of sight. 5,614,985, Cl. 396-51.000.

O'Donnell, Frederick: *See—*
Betts, Gary; O'Donnell, Frederick; and Ray, Kevin, 5,615,037, Cl. 359-188.000.

Oetiker, Hans. Hose clamp. 5,613,281, Cl. 24-20.00R.

Oettel, Michael: *See—*
Elger, Walter; Schneider, Birgitt; Oettel, Michael; Ernst, Michael; Hübler, Doris; and Dittgen, Michael, 5,614,213, Cl. 424-449.000.

Ogasawara, Hiroshi: *See—*
Watanabe, Masayoshi; Ogasawara, Hiroshi; Saegusa, Shozo; and Sugiyama, Toshio, 5,615,204, Cl. 369-247.000.

Ogata, Toru, to Koito Manufacturing Co., Ltd. Handgrip with built-in heater for motorcycle. 5,613,407, Cl. 74-551.900.

Ogata, Yasuhiro: *See—*
Kurino, Hiroyuki; and Ogata, Yasuhiro, 5,613,296, Cl. 29-852.000.

Ogawa, Gunji: *See—*
Sadoi, Yasuhiko; Suzuki, Masanobu; and Ogawa, Gunji, 5,615,374, Cl. 395-726.000.

Ogawa, Itaru: *See—*
Nozomi, Mamoru; Hiroi, Masayuki; and Ogawa, Itaru, 5,614,343, Cl. 430-100.000.

Ogawa, Kazufumi; Mino, Norihisa; and Soga, Mamoru, to Matsushita Electric Industrial Co., Ltd. Hydropillic chemically adsorbed film and method of manufacturing the same. 5,614,263, Cl. 427-341.000.

Ogawa, Masao: *See—*
Sugioka, Kouichi; Ogawa, Masao; Sako, Hiroyuki; and Takamatsu, Hidetoshi, 5,613,569, Cl. 180-68.500.

Ogawara, Hiroshi: *See—*
Uchino, Keijiro; Mizuno, Takashi; Murakami, Sachie; Nakashima, Hideki; Yamamoto, Naoki; and Ogawara, Hiroshi, 5,614,554, Cl. 514-517.000.

Ogi, Kenji; Takayama, Hiroshi; Yamamoto, Yasuo; Maruyama, Kazuo; and Akutsu, Eiichi, to Fuji Xerox Co., Ltd. Ink transfer medium for toner, ink transfer process and re-inking process for the same. 5,614,935, Cl. 347-213.000.

Ogishima, Kiyoshi; and Ikegami, Hiroyuki, to Sony Corporation. Dynamic focus circuit and display device. 5,614,792, Cl. 315-382.100.

Ogle, Michele D.: *See—*
Dorri, Bizhan; Laskaris, Evangelos T.; Ogle, Michele D.; and Havens, Timothy J., 5,614,879, Cl. 335-216.000.

Ogura, Toshihiko: *See—*
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,615,155, Cl. 365-189.010.

Oguri, Katsumi: *See—*
Kitamura, Shoji; Nagano, Satoru; Shindo, Yoichi; and Oguri, Katsumi, 5,614,735, Cl. 257-99.000.

Oguro, Masaki, to Sony Corporation. Apparatus for recording and reproducing a digital video and audio signal. 5,615,056, Cl. 386-104.000.

Ohara, Shinji, to NEC Corporation. Alignment accuracy check pattern. 5,614,767, Cl. 257-797.000.

O'Hara, Shunji: *See—*
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Furutani, Tadashige, 5,615,188, Cl. 369-48.000.

Ohashi, Koji, to Fuji Xerox Co., Ltd. Printer and printing method thereby. 5,613,784, Cl. 400-76.000.

Ohashi, Noriyuki: *See—*
Suzuki, Toshihiro; Ohashi, Noriyuki; Hamada, Tetsuya; Kanno, Takashi; and Yamaguchi, Hisashi, 5,614,780, Cl. 313-35.000.

Ohashi, Yuji: *See—*
Tanaka, Masayuki; Ohashi, Yuji; and Sugimoto, Masashi, 5,613,672, Cl. 271-162.000.

Ohgaki, Tatsuo: *See—*
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,615,181, Cl. 369-13.000.

Ohki, Masashi: *See—*
Yamashita, Tomochika; Hamaguchi, Masakazu; Takahashi, Hiroaki; Yakushiji, Yasuhiro; Ohki, Masashi; and Kamogawa, Kouji, 5,615,019, Cl. 386-126.000.

Ohkura, Kengo; Hitotsuyanagi, Hajime; and Takei, Hiromi, to Sumitomo Electric Industries, Ltd. Superconductive material. 5,614,471, Cl. 505-126.000.

Ohlrogee, John B.: *See—*
Cahoon, Edgar B.; and Ohlrogee, John B., 5,614,400, Cl. 435-172.300.

Ohnuma, Kazutomi: *See—*
Kinoshita, Katsutoshi; Wakita, Takeo; Kodaka, Kenji; Matsuno, Hirozumi; Satoh, Kenichi; Shiraishi, Shirou; Ohnuma, Kazutomi; Yamada, Eiichi; Yasui, Naoko; Kawahara, Nobuyuki; Ebihara, Koichi; and Nakaya, Michihiko, 5,614,527, Cl. 514-256.000.

Ohomori, Masahiro; Arai, Masayuki; and Imai, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Map information regenerating device. 5,614,895, Cl. 340-995.000.

Ohsawa, Atsuo: *See—*
Yoshida, Takahiko; Hirata, Koji; Ohsawa, Atsuo; Wada, Kiyoshi; and Yoshikawa, Hiroki, 5,613,748, Cl. 353-74.000.

Ohsawa, Seiichi: *See—*
Yanagisawa, Takuma; Ohsawa, Seiichi; and Kuribayashi, Hiroki, 5,615,206, Cl. 369-284.000.

Ohshima, Shinji: *See—*
Katayama, Hiroyuki; Ohshima, Shinji; and Teraguchi, Takashi, 5,614,823, Cl. 324-178.000.

Ohsumi, Hideki; and Tomita, Yoshinori, to Yazaki Corporation. Waterproof connector. 5,613,868, Cl. 439-275.000.

Ohta, Kenji: *See—*
Mieda, Michinobu; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,615,180, Cl. 369-13.000.
Murakami, Yoshiteru; Nakajima, Junsaku; Takahashi, Akira; Nakayama, Junichiro; and Ohta, Kenji, 5,615,182, Cl. 369-13.000.

Ohtaki, Tetsuya: *See—*
Kitada, Chieko; Ohtaki, Tetsuya; and Fujino, Masahiko, 5,614,497, Cl. 514-17.000.

Ohtsubo, Hiroshi: *See—*
Tanaka, Naoki; Ohtsubo, Hiroshi; and Ito, Michio, 5,613,849, Cl. 433-8.000.

Ohtsuka, Tadahiro: *See—*
Toda, Katsuaki; Ohtsuka, Tadahiro; and Watanabe, Osamu, 5,614,656, Cl. 73-12.010.

Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, to Snow Band Milk Products, Co., Ltd. 14α-hydroxy-4-androstene-3,6,17-trione hydrate crystal and process for producing same. 5,614,651, Cl. 552-615.000.

Ohya, Shouji: *See—*
Ishizaki, Kazuyoshi; Yamamuro, Masateru; Ishizuka, Atsushi; Ohya, Shouji; and Hamao, Miyoko, 5,613,840, Cl. 417-300.000.

Ohya, Toitsu: *See—*
Izawa, Hikaru; Masuda, Yasuhiko; Ohya, Toitsu; and Nago, Tokimi, 5,615,280, Cl. 382-135.000.

Oi, Kiyotoshi; Kobayashi, Atsushige; Nakashima, Kazushi; Kawano, Yasushi; and Kaga, Hideki, to Nippondenso Co., Ltd. Fuel supply device. 5,613,476, Cl. 123-509.000.

OIS Optical Imaging Systems, Inc.: *See—*

den Boer, Willem; and Yang, Mohshi, 5,614,427, Cl. 437-40.000.

Ojima, Reiichi: *See—*
Ariga, Moriaki; Ojima, Reiichi; Kawauchi, Yoshihiro; and Kobayashi, Toshihiro, 5,613,443, Cl. 104-70.000.

Okada, Fujio: *See—*
Suzuki, Shigeo; and Okada, Fujio, 5,614,949, Cl. 348-296.000.

Okada, Hiromi: *See—*
Kimura, Kunio; Nakamura, Hiroyuki; Tamoto, Yukiyoshi; Kimoto, Junichi; and Okada, Hiromi, 5,614,255, Cl. 427-212.000.

Okada, Katsumi: *See—*
Ishikawa, Takashi; Yunde, Takao; Takechi, Toshisada; Okada, Katsumi; and Amakawa, Takatoshi, 5,613,390, Cl. 72-13.700.

Okada, Mitsuyoshi: *See—*
Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.

Okada, Takamichi: *See—*
Sakamoto, Junshi; Morita, Kouichi; Okada, Takamichi; and Mashio, Akihiro, 5,614,822, Cl. 324-174.000.

Okada, Yoshihiro: *See—*
Nakamura, Kazunari; Saito, Katsuyuki; Sasa, Hiroyuki; Okada, Yoshihiro; Yabe, Hisao; Nakajima, Shigeru; and Yamaguchi, Seiji, 5,614,943, Cl. 348-72.000.

Okamine, Shigenori: *See—*
Sugiyama, Hisataka; Maeda, Takeshi; Matsumoto, Kiyoshi; Terao, Motoyasu; Okamine, Shigenori; Nishida, Tetsuya; and Miyamoto, Harukazu, 5,614,938, Cl. 347-247.000.

Okamoto, Yutaka: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Okamura, Hiroshige: *See—*
Kobayashi, Seiji; Okamura, Hiroshige; and Yamatsu, Hisayuki, 5,615,193, Cl. 369-59.000.

O'Kane, Pearse, to Polysheet (Ireland) Limited. Method and apparatus for forming an article of pet material. 5,614,145, Cl. 264-458.000.

Okano, Susumu: *See—*
Shibuya, Tatsuhiko; Okano, Susumu; Kobari, Hideya; Hagiwara, Yoshio; and Nakayama, Toshimasa, 5,614,271, Cl. 427-541.000.

Okawa, Tadashi, to Dow Corning Toray Silicone Co., Ltd. Epoxy functional siloxanes. 5,614,640, Cl. 549-215.000.

Okawa, Yukinari: *See—*
Kawashima, Masato; Shimobuchi, Hideyuki; Okitsu, Hiroyuki; Matsuzuki, Masato; Yoshida, Hiroaki; Fujii, Michihiro; Okawa, Yukinari; Iida, Masaru; Ito, Katsuyasu; Toda, Yukihide; and Nagai, Seiji, 5,615,001, Cl. 399-226.000.

Okazaki, Tatsuo, to OMCO Co., Ltd. Leaching device for electrolyzed silver. 5,614,067, Cl. 204-228.000.

Oki Electric Industry Co., Ltd.: *See—*
Niimura, Yuuji, 5,613,866, Cl. 439-260.000.

Okishima, Tetsuya: *See—*
Kanekawa, Nobuyasu; Ihara, Hirokazu; Akiyama, Masatsugu; Kawabata, Kiyoshi; Yamanaka, Hisayoshi; and Okishima, Tetsuya, 5,614,761, Cl. 257-676.000.

Okita, Junji: *See—*
Tsuru, Seiji; Hirose, Shinichi; Okita, Junji; Kaneki, Tadashi; and Kikuchi, Katsuaki, 5,613,843, Cl. 417-313.000.

Okitsu, Hiroyuki: *See—*
Kawashima, Masato; Shimobuchi, Hideyuki; Okitsu, Hiroyuki; Matsuzuki, Masato; Yoshida, Hiroaki; Fujii, Michihiro; Okawa, Yukinari; Iida, Masaru; Ito, Katsuyasu; Toda, Yukihide; and Nagai, Seiji, 5,615,001, Cl. 399-226.000.

Okrasinski, Stanley J.: *See—*
Liang, Shaowo; Monnier, John R.; Okrasinski, Stanley J.; and Price, Timothy W., 5,614,644, Cl. 549-507.000.

Okuda, Kazuhiko, to Keisokki Kogyo Co., Ltd. Yarn measuring device. 5,615,014, Cl. 356-429.000.

Okura Industrial Co., Ltd.: *See—*
Kondo, Kazuo; Tada, Teruo; Wano, Toyoki; Uehara, Hideki; and Tsuchida, Tomohisa, 5,614,315, Cl. 428-332.000.

Okuyama, Hitoshi: *See—*
Furuya, Yuji; Iino, Kenichi; and Okuyama, Hitoshi, 5,613,640, Cl. 239-585.500.

Olaiz, James, to Junior Products Inc. Baby bottle keeper. 5,613,657, Cl. 248-102.000.

O'Leary, Beth A., to Eastman Kodak Company. Mechanism and method for determining when photographic film has been completely rewound. 5,614,971, Cl. 396-409.000.

Olek, Anton R.: *See—*
Mills, Paul D. A.; Siddiqui, Junaid A.; and Olek, Anton R., 5,614,313, Cl. 428-327.000.

Olin Aerospace Company: *See—*
Galbraith, Lyle D.; Holland, Gary F.; Poole, Donald R.; and Mitchell, Robert M., 5,613,562, Cl. 169-12.000.

Olin Corporation: *See—*
Nelson, John D., Jr., 5,614,538, Cl. 514-345.000.

Olive, Jose A.: *See—*
Horne, Rick L.; Lohman, Terence J.; Noll, Mark G.; Olive, Jose A.; and Perez, Roberto V., 5,615,217, Cl. 371-22.300.

Oliver Products Company: *See—*
Polster, Louis S., 5,613,423, Cl. 99-330.000.

Ollis, Calvin G. No freeze protection device for an outdoor faucet. 5,614,119, Cl. 219-385.000.

Olm, Myra T.: *See—*
Wilson, Robert D.; Olm, Myra T.; Danbendiek, Richard L.; Black, Donald L.; Deaton, Joseph C.; Gersey, Timothy R.; Lighthouse, Joseph G.; and Wen, Xin, 5,614,358, Cl. 430-567.000.

Olsen, Floyd W., to International Business Machines Corporation. High voltage protected ohmmeter. 5,614,832, Cl. 324-705.000.

Olsson, Birgitta; Pesonen, Maritta A.; and Ragnarsson, Gert, to Pharmacia & Upjohn Aktiebolag. Controlled release preparation. 5,614,218, Cl. 424-456.000.

Olympus Optical Co., Ltd.: *See—*
Miyasaka, Tetsuo, 5,614,968, Cl. 396-311.000.
Nagano, Shinji; Kashima, Asako; Osanai, Akira; Sugata, Teruaki; Kubo, Hidenobu; and Mashiko, Tomomi, 5,614,705, Cl. 235-467.000.
Nakamura, Kazunari; Saito, Katsuyuki; Sasa, Hiroyuki; Okada, Yoshihiro; Yabe, Hisao; Nakajima, Shigeru; and Yamaguchi, Seiji, 5,614,943, Cl. 348-72.000.
Takato, Hideyasu, 5,615,051, Cl. 359-790.000.

OM Corporation: *See—*
Kayano, Shigeru; and Sato, Kyokuichi, 5,613,303, Cl. 33-731.000.

OMCO Co., Ltd.: *See—*
Okazaki, Tatsuo, 5,614,067, Cl. 204-228.000.

Omega Enterprises, Inc.: *See—*
Marohl, Todd T.; Burdick, Robert; and Cole, Ronald A., 5,613,368, Cl. 62-84.000.

Omi, Junichi: *See—*
Soshi, Isao; Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; Amanuma, Tatsuo; and Asami, Jirou, 5,614,974, Cl. 396-55.000.

Omron Corporation: *See—*
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,615,181, Cl. 369-13.000.
Tanaka, Masayuki; Ohashi, Yuji; and Sugimoto, Masashi, 5,613,672, Cl. 271-162.000.

Oncogen: *See—*
Hellstrom, Ingegerd; Hellstrom, Karl E.; Kahn, Maria S.; and Beaton, Donna F., 5,614,610, Cl. 530-387.200.

Ondeyka, John G.: *See—*
Dombrowski, Anne W.; Endris, Richard G.; Helms, Gregory L.; Hensens, Otto D.; Ondeyka, John G.; Ostlind, Dan A.; Polishook, Jon D.; and Zink, Deborah L., 5,614,546, Cl. 514-410.000.

O'Neil, John M., Jr.: *See—*
Santore, Peter M.; and O'Neil, John M., Jr., 5,615,211, Cl. 370-419.000.

O'Neill, Andrew J.; Cook, William H.; Strauss, Richard F.; and Dumont, Kenneth R., to Thomas & Betts Corporation. Forced encapsulation cable splice enclosure. 5,613,298, Cl. 29-869.000.

Onffroy, Joshua P.; Masood, Rehan; Mullahy, Brian B.; and Pritoni, Harold F., Jr., to EMC Corporation. Storage system self-test apparatus and method. 5,615,335, Cl. 395-183.060.

Ong, Adrian E., to Micron Technology, Inc. Two stage voltage level translator. 5,614,859, Cl. 327-333.000.

Onishi, Yasuhiko; Yamamori, Takashi; Yamashita, Youzou; Suzuki, Ichiro; and Aoyama, Toshiya, to Sumitomo Wiring Systems, Ltd.; and Takahashi Seiki Co., Ltd. Method of manufacturing three-dimensional compact. 5,614,144, Cl. 264-454.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Nakai, Hisao; Kawamura, Masanori; and Miyamoto, Tsumoru, 5,614,555, Cl. 514-540.000.

Onodera, Ko: *See—*
Tanaka, Hiroyuki; Onodera, Ko; Watanabe, Takehiko; and Fukaya, Yoshinori, 5,613,529, Cl. 140-71.00R.

Onorato, Frank J., Jr.: *See—*
Chung, Tai-Shung; Kafchinski, Edward R.; Kohn, Rachel S.; and Onorato, Frank J., Jr., 5,614,309, Cl. 428-375.000.

Oowada, Shinichi: *See—*
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

O'Pecko, Larry A.: *See—*
Hobbs, Kenneth E.; Waller, Kenneth R.; O'Pecko, Larry A.; and Collie, Mike H., Jr., 5,613,726, Cl. 296-181.000.

Oppenländer, Thomas; Mathys, Peter; and Schneider, Gottlieb, to Sulzer Chentech AG. Apparatus for treating fluids with ultraviolet radiation. 5,614,723, Cl. 250-435.000.

Oppermann, Hermann; Dorai, Haimanti; and Kaplan, Paul, to Creative Biomolecules, Inc. Methods and compositions for high protein production from recombinant DNA. 5,614,385, Cl. 435-69.400.

Opta Food Ingredients, Inc.: *See—*
Dunn, John M.; and Finocchiaro, Eugene T., 5,614,243, Cl. 426-578.000.

Optoscint, Inc.: *See—*
Pandelisev, Kiril A., 5,614,721, Cl. 250-368.000.

Orford, Kenneth M.: *See—*
Pezzullo, William V.; Brisebois, Michel J.; Johns, Joseph B.; Orford, Kenneth M.; Travis, Kristin J.; Tsuji, Bruce H.; Ross, William T.; Robert, Andre J.; and Read, Clifford D., 5,615,257, Cl. 379-396.000.

Origin Medsystems, Inc.: *See—*
Chin, Albert K., 5,613,947, Cl. 604-96.000.

Orion-yhtymä Oy: *See—*

Bäckström, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,614,541, Cl. 514-369.000.
Orlando, Stephen A.; and Schwer, Walter, to Ortronics Inc. Snap-in designation strip for modular information management oulet. 5,613,874, Cl. 439-491.000.
Orton, Debra L.; and Berdahl, Eric M., to Taligent, Inc. Object-oriented viewing framework having view grouping. 5,615,326, Cl. 395-356.000.
Ortronics Inc.: *See*—
Orlando, Stephen A.; and Schwer, Walter, 5,613,874, Cl. 439-491.000.
Osada, Mototsugu: *See*—
Otsuka, Takashi; Yamamoto, Kenji; Osada, Mototsugu; Taniguchi, Tadao; and Shigeta, Yoshifumi, 5,613,545, Cl. 164-415.000.
Osada, Yoshio: *See*—
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.
Osakabe, Hiroyuki; Kawaguchi, Kiyoshi; and Suzuki, Masahiko, to Nippondenso Co., Ltd. Cooling apparatus using boiling and condensing refrigerant. 5,613,552, Cl. 165-104.210.
Osaki, Katsumi; Nara, Takashi; and Watanabe, Hitoshi, to Hitachi, Ltd.; and Akita Electronics Co., Ltd. Voltage-controlled filter circuit, a semiconductor integrated circuit device for signal processing, and a signal reading apparatus using the circuit and the apparatus. 5,614,860, Cl. 327-552.000.
Osanai, Akira: *See*—
Nagano, Shinji; Kashima, Asako; Osanai, Akira; Sugata, Teruaki; Kubo, Hidenobu; and Mashiko, Tomomi, 5,614,705, Cl. 235-467.000.
Osawa, Michio: *See*—
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.
Osborne, William S.; Taylor, Bret; and Therien, Patrick J., to Hewlett-Packard Company. Orthogonal rotary wiping system for inkjet printheads. 5,614,930, Cl. 347-33.000.
Osono, Mitsuaki; Tajima, Naoyuki; and Mori, Katsunobu, to Sharp Kabushiki Kaisha. Tape carrier package semiconductor device. 5,614,760, Cl. 257-668.000.
OsteoSA Inc.: *See*—
Dunstan, Colin R.; Izbicka, Elzbieta; Mundy, Gregory R.; Burgess, Wilson; and Jaye, Michael C., 5,614,496, Cl. 514-12.000.
Osti, Roberto; and Gamberini, Antonio, to G.D. S.p.A. Device for the formation of tubular overwrappings in heat-sealable material. 5,613,344, Cl. 53-234.000.
Ostlind, Dan A.: *See*—
Dombrowski, Anne W.; Endris, Richard G.; Helms, Gregory L.; Hensens, Otto D.; Ondeyka, John G.; Ostlind, Dan A.; Polishook, Jon D.; and Zink, Deborah L., 5,614,546, Cl. 514-410.000.
Ota, Hirohisa: *See*—
Kawai, Kouji; Ishihara, Shigeki; Masuda, Naoki; Ota, Hirohisa; and Yogi, Osamu, 5,614,787, Cl. 313-623.000.
Ota, Toshiaki: *See*—
Watanabe, Tsutomu; Yasukawa, Jun-ichi; and Ota, Toshiaki, 5,614,337, Cl. 430-7.000.
Ota, Yasuo: *See*—
Kuroki, Tadao; and Ota, Yasuo, 5,613,987, Cl. 8-513.000.
Otaka, Tadashi: *See*—
Kobaru, Atsushi; Otaka, Tadashi; Maeda, Tatsuya; and Sasada, Katsuhiro, 5,614,713, Cl. 250-310.000.
Otani, Yutaka: *See*—
Wachi, Hiroshi; and Otani, Yutaka, 5,614,004, Cl. 106-1.230.
OTOR: *See*—
Barny, Jean-Jacques; and Paultes, Jean-Marie, 5,614,048, Cl. 156-205.000.
Otsuka, Takashi; Yamamoto, Kenji; Osada, Mototsugu; Taniguchi, Tadao; and Shigeta, Yoshifumi, to Shinagawa Refractories Co. Ltd. Inert gas injecting plate brick or insert nozzle brick for use in a sliding gate valve apparatus of molten metal. 5,613,545, Cl. 164-415.000.
Otsuki, Etsuo: *See*—
Momotani, Hiroshi; Otsuki, Etsuo; Hasebe, Akio; and Takeuchi, Tamiko, 5,614,805, Cl. 320-21.000.
Otsuki, Shinya: *See*—
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,615,181, Cl. 369-13.000.
Otten, Geneva G.: *See*—
Hamilton, Peter W.; Otten, Geneva G.; and Thornock, Del M., 5,613,609, Cl. 206-531.000.
Otten, Sjef: *See*—
Lubin, Mark; and Otten, Sjef, 5,614,078, Cl. 205-743.000.
Otto, Johanngeorg; Burger, Stefan; and Gerst, Peter, to Endress + Hauser GmbH + Co. Radar-based method of level measurement. 5,614,911, Cl. 342-124.000.
Otuzbiryan, Ghirayr. Method of playing a card game wherein card values are totalled and compared. 5,613,682, Cl. 273-292.000.
Overlaur, Michael J.: *See*—
Conner, James L.; Overlaur, Michael J.; and Kornher, Kevin, 5,614,921, Cl. 345-85.000.
Owen, Kelly. Shore anchor for small boats & personal watercraft. 5,613,458, Cl. 114-230.000.
Owen, Mark D., to Electro Scientific Industries, Inc. Laser system and method for plating vias. 5,614,114, Cl. 219-121.660.
Owens-Brockway Glass Container Inc.: *See*—
Gerber, Stephen M., 5,613,593, Cl. 198-479.100.
Owens Corning Fiberglas Technology, Inc.: *See*—
Bakhshi, Shiv K.; Williams, Steven H.; Scott, James W.; and Haines, Randall M., 5,614,132, Cl. 264-6.000.
Oyama, Bert K., to TRW Inc. Distortion suppressor for digital-to-analog converter. 5,614,903, Cl. 341-118.000.
Oyama, Kaneyoshi: *See*—
Tsumura, Masahiro; Miyasita, Hiromi; and Oyama, Kaneyoshi, 5,614,600, Cl. 525-481.000.
Ozaki, Keiichi: *See*—
Nishitani, Keizo; Nakayama, Yoshiaki; Kubota, Minoru; and Ozaki, Keiichi, 5,615,080, Cl. 361-664.000.
Ozawa, Masanori: *See*—
Fukuta, Motoji; Ozawa, Masanori; Naruoka, Yoshihiko; Uchiyama, Mineharu; and Itoh, Ken, 5,615,057, Cl. 386-117.000.
Ozawa, Takanori: *See*—
Takasu, Hidemi; Ozawa, Takanori; and Shimoji, Noriyuki, 5,614,766, Cl. 257-777.000.
Ozawa, Takashi: *See*—
Yoneda, Yoshihiro; and Ozawa, Takashi, 5,615,089, Cl. 361-764.000.
Ozeki, Takeshi: *See*—
Liu Sheng, Olivia R.; Wei, Chih-Ping; and Ozeki, Takeshi, 5,615,112, Cl. 395-615.000.
Ozen S.A.: *See*—
Hager, Daniel, 5,614,143, Cl. 264-221.000.
Paavila, Jack. Cord holder. 5,613,648, Cl. 242-405.200.
Pacesetter AB: *See*—
Mund, Konrad; Rao, J. Raghavendra; and Datz, Armin, 5,614,246, Cl. 427-2.240.
Pacific Communication Sciences, Inc.: *See*—
Wright, David A.; Bourk, Terrance R.; and Riedel, Neal K., 5,615,222, Cl. 371-50.100.
Pacific Handy Cutter: *See*—
Schmidt, Gregory G., 5,613,300, Cl. 30-2.000.
Padieu, Prudent: *See*—
Bromley, Peter; Dreano, Michel; Fischbach, Michel; Fouillet, Xavier; Padieu, Prudent; and Voellmy, Richard, 5,614,381, Cl. 435-69.100.
Padovani, Francois A.: *See*—
Stevens, Gary D.; and Padovani, Francois A., 5,614,020, Cl. 117-205.000.
Paine, Jeffrey S. N.; and Rogers, Craig A., to Virginia Tech Intellectual Properties, Inc. Impact and perforation resistant composite structures. 5,614,305, Cl. 428-301.100.
Painter, Jeffrey D., to Procter & Gamble Company, The. Process for making a granular dishwashing composition by agglomerating ingredients and admixing solid alkali metal silicate. 5,614,485, Cl. 510-444.000.
Palace, Gerard P.: *See*—
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Leung, Ting Y.; Pirahesh, Mir H.; Simmen, David E.; Strain, Lori G.; and Tiwari, Sanjai, 5,615,361, Cl. 395-603.000.
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Polster, Louis S., to Oliver Products Company. Cooker/rethermalizer. 5,613,423, Cl. 99-330.000.
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Landrum, Michael T., 5,613,516, Cl. 137-509.000.
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President & Fellow of Harvard College: *See*—
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Hamilton, Peter W.; Otten, Geneva G.; and Thornock, Del M., 5,613,609, Cl. 206-531.000.
Painter, Jeffrey D., 5,614,485, Cl. 510-444.000.
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Puri, Raj K.; Debinski, Waldemar; Pastan, Ira; and Obiri, Nicholas, to United States of America, Health and Human Services. IL-13 receptor specific chimeric proteins and uses thereof. 5,614,191, Cl. 424-178.100.
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Py, Daniel, to Py, Daniel. Apparatus for applying medicament to an eye. 5,613,957, Cl. 604-294.000.
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Pyron, James W.: *See*—
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Q-Dot, Inc.: *See*—
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R Squared Holding, Inc.: *See*—
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Ramig, Robert F.; and Chen, Dayue, to Baylor College of Medicine. In vitro replication system capable of rescuing cloned and manipulated rotavirus genes. 5,614,403, Cl. 435-235.100.
Ramirez-Soto, Rufino. Fuel pressure sensing system. 5,614,668, Cl. 73-119.00A.
Ramsey, Henry, to L&P Property Management Company. Cleaning and descaling apparatus. 5,613,900, Cl. 451-299.000.
Ramunas, Valdas S., to Kennametal Inc. Toolholder assembly for accurately securing a tool shank in a socket. 5,613,693, Cl. 279-76.000.
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Ranganathan, Ravi, to NeoMagic Corp. Clock management for power reduction in a video display sub-system. 5,615,376, Cl. 395-750.000.
Rank, David B.; Clymer, Mark L.; and Graves, Glenn, to Harley-Davidson, Inc. Rotational speed/tip sensor. 5,613,571, Cl. 180-282.000.
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Raoult, Philippe, to SEB S.A. Cooking vessel with lid having a pourer function. 5,613,618, Cl. 220-369.000.
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Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.
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Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, 5,614,870, Cl. 331-14.000.
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Reamer, Dale E.: *See*—
Stevens, Carlile R.; and Reamer, Dale E., 5,615,271, Cl. 381-110.000.
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Recot, Inc.: *See*—
Center, John L.; and Stalder, James W., 5,613,620, Cl. 221-133.000.
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Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; and Freyssinet, Georges L., 5,614,393, Cl. 435-134.000.
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Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew G.; and Margolin, Lee D., 5,614,630, Cl. 546-159.000.
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Talley, John J.; and Reed, Kathryn L., 5,614,522, Cl. 514-237.800.
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Beck, Martin H.; Rollend, George F.; Muszynski, John H.; Reed, Lydia K.; Hickey, Scott J.; Connor, Dennis C.; and Caldicott, Robert, 5,614,148, Cl. 264-532.000.
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Williamson, Jimmie R.; Gano, John C.; and Reesing, David L., 5,613,559, Cl. 166-381.000.
Reeve, A. J.: *See*—
Matassa, V. G.; Street, L. J.; and Reeve, A. J., 5,614,524, Cl. 514-253.000.
Reeves, Barry D.: *See*—
Hindman, Larry E.; Karambelas, Randy C.; Reeves, Barry D.; and Rise, James D., 5,614,933, Cl. 347-103.000.
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Regents of University of Michigan: *See*—
Laine, Richard M.; Bickmore, Clint R.; and Waldner, Kurt F., 5,614,596, Cl. 525-389.000.
Regin Manufacturing, Inc.: *See*—
Johnson, Joseph B., 5,614,679, Cl. 73-756.000.
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Rehburg, Heinrich: *See*—
McCorkle, Daniel J.; Waits, Robert L.; and Rehburg, Heinrich, 5,613,818, Cl. 411-509.000.
Reher, James F.: *See*—
Wildman, Alexander J.; Reher, James F.; and Phaneuf, Lawrence P., 5,613,850, Cl. 433-10.000.
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Cobbledick, David S.; and Reichenbach, Donald F., 5,614,581, Cl. 524-495.000.
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Lösel, Walter; Roos, Otto; Schorrenberg, Gerd; Ensinger, Helmut; and Reichl, Richard, 5,614,516, Cl. 514-233.200.
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Arndt, Kim E.; Kleschick, William A.; Reifschneider, Walter; Swisher, Beth A.; Ehr, Robert J.; Jachetta, John J.; and Van Heertum, John C., 5,614,469, Cl. 504-241.000.

Remy, Andrew P. Towable floating storage accessory for use with watercraft. 5,613,459, Cl. 114-270.000.

Renda, Philip; Earnhardt, James R., Jr.; Anderson, Bill R.; and Driggars, Sonny B., to Sara Lee Corporation. Convertible circular knitting machine. 5,613,375, Cl. 66-8.000.

Renner, Jochen: *See*—
Fricke, Andreas; Renner, Jochen; and Thünker, Norbert, 5,613,671, Cl. 271-91.000.

Rennich, George; Schouten, Roy; and Gilmore, Florent, to British Steel Canada Inc. Paperbead for protecting drywall corners. 5,613,335, Cl. 52-255.000.

Replicon, Inc.: *See*—
Auerbach, Jeffrey I., 5,614,389, Cl. 435-91.200.

Reschke, Jonathan: *See*—
Goedicke, Klaus; Scheffel, Bert; Reschke, Jonathan; Schiller, Siegfried; Kirchhoff, Volker; and Werner, Torsten, 5,614,273, Cl. 427-569.000.

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Handler, Michael D., 5,613,517, Cl. 137-512.400.

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Wall, Monroe E.; Wani, Mansukh C.; Engle, Robert R.; and Miller, Robert E., 5,614,529, Cl. 514-279.000.

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Valente, Kevin A.; Reuter, Ernest R.; and Wagner, Randall M., 5,615,005, Cl. 356-30.000.

Reyes, Gregory R.; and Hadlock, Kenneth G., to Genelabs Technologies, Inc. HTLV-I peptide antigens and kit. 5,614,366, Cl. 435-7.100.

Reynolds Consumer Products Inc.: *See*—
May, Timothy J., 5,613,934, Cl. 493-214.000.

Reynolds, Jon O.; and Madsen, Michael D., to Illinois Tool Works Inc. Method and apparatus for protecting an inverter power supply. 5,615,095, Cl. 363-56.000.

Reznik, Svetlana; and Furlani, Edward P., to Eastman Kodak Company. System for readily determining the magnetic orientation of permanent magnets. 5,613,592, Cl. 198-381.000.

Rhee, Woonza M.; Rao, Prema R.; Chu, George H.; DeLustro, Frank A.; Harner, Carol F. H.; Sakai, Naomi; and Schroeder, Jacqueline A., to Collagen Corporation. Collagen-based bioadhesive compositions. 5,614,587, Cl. 525-54.100.

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Fessenbecker, Achim; Korff, Joachim; Kress, Hans-Jürgen; and Müller, Volker, 5,614,483, Cl. 508-550.000.

Rhines, Andy J. Vehicle engine fire extinguisher apparatus. 5,613,564, Cl. 169-61.000.

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Sarangdhar, Nitin V.; Lai, Konrad K.; Singh, Gurbir; MacWilliams, Peter D.; Pawlowski, Stephen S.; and Rhodehamel, Michael W., 5,615,343, Cl. 395-282.000.

Rhodes, Wayne A., to Touchstone, Inc. Radiator assembly. 5,613,551, Cl. 165-82.000.

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Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; and Freyssinet, Georges L., 5,614,393, Cl. 435-134.000.

Rhone-Poulenc Chimie: *See*—
Persello, Jacques, 5,614,176, Cl. 424-57.000.
Persello, Jacques, 5,614,177, Cl. 424-57.000.

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Davidson, Thomas C.; and Werner, Georgina M., 5,614,182, Cl. 424-84.000.
Dino, David J.; and Homack, Anthony, 5,614,473, Cl. 507-202.000.
Moorhouse, Ralph; and Cottrell, Ian W., 5,614,475, Cl. 507-273.000.

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Dunstan, Colin R.; Izbicka, Elzbieta; Mundy, Gregory R.; Burgess, Wilson; and Jaye, Michael C., 5,614,496, Cl. 514-12.000.

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Rhyne, Ralph H., to Kings Mountain Textile Machinery Company. Apparatus for removing contaminants from raw cotton. 5,613,279, Cl. 19-200.000.

Ribier, Alain; and Simonnet, Jean-Thierry, to L'Oreal. Cosmetic composition for the simultaneous treatment of the surface and deep layers of the skin, its use. 5,614,215, Cl. 424-450.000.

Rice, Robert H.: *See*—
Morgan, Ira L.; Rice, Robert H.; Bolger, Joseph E.; and Crane, Robert M., 5,614,720, Cl. 250-360.100.

Richard, Thomas J.: *See*—
Cacheris, William P.; Richard, Thomas J.; Grabiak, Raymond C.; and Lee, Albert C., 5,614,170, Cl. 424-9.365.

Richards, Geoffrey N., to University of Montana, The. Compositions and methods for animal husbandry and for treating gastrointestinal disorders. 5,614,501, Cl. 514-22.000.

Richards, James F., to Wirelube Research Company. Predrawing treatment system. 5,614,261, Cl. 427-318.000.

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Richardson, Andrew G.: *See*—
Pepin, Henry J.; Ferrandino, Michael S.; and Richardson, Andrew G., 5,614,136, Cl. 264-40.300.

Richardson, Charles: *See*—
Tabor, Stanley; and Richardson, Charles, 5,614,365, Cl. 435-6.000.

Richardson, David J. Storage rack. 5,613,614, Cl. 211-89.000.

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Nelson, Charles L.; Nguyen, John; Richardson, Derrick A.; and Saravia, Heber, 5,613,954, Cl. 604-167.000.

Rickman, Denis D., to United States of America, Army. Pore-air pressure measurement device for use in high shock environments. 5,614,659, Cl. 73-35.160.

Ricoh Company, Ltd.: *See*—
Aoki, Mitsuo; Isoda, Tetsuo; Suzuki, Masanori; and Suguro, Yoshihiro, 5,614,347, Cl. 430-109.000.
Fukuoka, Hiroki, 5,614,946, Cl. 348-232.000.
Itoh, Akihide; Nogiwa, Toru; Hotta, Yoshihiko; Suzuki, Akira; and Kutami, Atushi, 5,614,461, Cl. 503-201.000.
Sanpe, Atsushi, 5,614,998, Cl. 399-314.000.

Ricon Corporation: *See*—
Rizkovsky, Roy R., 5,613,321, Cl. 49-139.000.

Riddle, Rodney; Kuntz, Matthias; Müller, Bernd; Raulin, Dietmar; and Feldmann-Schlobohm, Günther, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Spray-pyrolysis process of preparing superconductor precursors. 5,614,472, Cl. 505-425.000.

Ridley, Ian H.; and Fearnehough, Peter, to Land Instruments International Limited. Improvements relating to radiation thermometers. 5,613,777, Cl. 374-130.000.

Rieck, Richard: *See*—
Grzybowski, Albert; Grzybowski, Andrew; and Rieck, Richard, 5,613,624, Cl. 222-161.000.

Riedel, John E.: *See*—
Lucast, Donald H.; Calhoun, Clyde D.; Riedel, John E.; and Taylor, Charles W., 5,613,942, Cl. 602-52.000.

Riedel, Neal K.: *See*—
Wright, David A.; Bourk, Terrance R.; and Riedel, Neal K., 5,615,222, Cl. 371-50.100.

Rieger, Albert E.: *See*—
SanGregory, Jude A.; Solomon, Jeffrey A.; and Rieger, Albert E., 5,614,975, Cl. 396-396.000.

Riemer, Claus: *See*—
Godel, Thierry; Hartman, Deborah; and Riemer, Claus, 5,614,526, Cl. 514-255.000.

Ries, Uwe: *See*—
Hauel, Norbert; Narr, Berthold, deceased; Ries, Uwe; Antonius van Meel, Jacobus C.; Wienen, Wolfgang; and Entzeroth, Michael, 5,614,519, Cl. 514-235.800.

Rieusse, Jean-Pierre: *See*—
Baraton, Jean-Yves; Rieusse, Jean-Pierre; and Sulmont, Benjamin, 5,615,136, Cl. 364-578.000.

Rimoldi, John M.: *See*—
Kingston, David G. I.; Chaudhary, Ashok G.; Gharpure, Milind M.; Rimoldi, John M.; and Gunatilaka, A. A. Leslie, 5,614,645, Cl. 549-510.000.

Rincon, Gabriel A.: *See*—
Corsi, Marco; and Rincon, Gabriel A., 5,614,850, Cl. 327-55.000.

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Stillman, Bruce W.; Bell, Stephen P.; Kobayashi, Ryuji; Rine, Jasper; Foss, Margit; McNally, Francis J.; Laurenson, Patricia; Herskowitz, Ira; Li, Joachim; Gavin, Kimberly; and Hidaka, Masumi, 5,614,618, Cl. 536-23.100.

Rines, Hubert M. Tool for breaking loose lug nuts. 5,613,411, Cl. 81-462.000.

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Rinker, William E., to Masonite Corporation. Back-side die and die set for molded door facings. 5,614,231, Cl. 425-394.000.

Ripley, Robert L.: *See*—
Campbell, John M.; Fleischhauer, Grier S.; Higgins, Charles T.; Ripley, Robert L.; Sharpe, David E.; Watkins, Michael L.; and Wrenn, Susan E., 5,613,505, Cl. 131-194.000.
Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

Rise, James D.: *See*—
Hindman, Larry E.; Karambelas, Randy C.; Reeves, Barry D.; and Rise, James D., 5,614,933, Cl. 347-103.000.

Rismiller, Dennis E., to Plymouth Locomotive International, Inc. Locomotive. 5,613,445, Cl. 105-224.100.

Riso Kagaku Corporation: *See*—
Motoe, Katsuro; and Hara, Yoshikazu, 5,613,437, Cl. 101-128.400.

Ritland, Marcus A.; Readey, Dennis W.; Sibold, Jack D.; and Stephan, James E., to Coors Ceramics Company. Method for fabricating electronic components incorporating ceramic-metal composites. 5,614,043, Cl. 156-89.000.

Ritt, Renzer R., Sr.: *See*—

Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

Rivers, W. L. Automated language translation system. 5,615,301, Cl. 395-2.860.

Riviana Foods, Inc.: *See*—
Kendall, John H.; Mohindra, Ranvir B.; Rutherford, Duane S.; Satake, Satoru; Kanamoto, Sigeharu; and Kumamoto, Katsuyuki, 5,613,428, Cl. 99-473.000.

Rizkovsky, Roy R., to Ricon Corporation. Releasable drive mechanism. 5,613,321, Cl. 49-139.000.

RKC Instrument, Inc.: *See*—
Yoshino, Tooru; Ishiwata, Akihiro; and Miyamura, Eiji, 5,615,106, Cl. 364-140.000.

Robert, Andre J.: *See*—
Pezzullo, William V.; Brisebois, Michel J.; Johns, Joseph B.; Orford, Kenneth M.; Travis, Kristin J.; Tsuji, Bruce H.; Ross, William T.; Robert, Andre J.; and Read, Clifford D., 5,615,257, Cl. 379-396.000.

Robert Bosch GmbH: *See*—
Dobler, Karl-Otto; Klett, Gustav; Dahm, Horst; and Jocher, Rainer, 5,613,754, Cl. 362-66.000.
Kost, Friedrich; Hartmann, Uwe; Weiss, Karl-Josef; and Ehret, Thomas, 5,613,743, Cl. 303-165.000.

Robert L. Landies: *See*—
Taylor, James M., 5,614,691, Cl. 89-128.000.

Robert Thomas Metall- und Elektrowerke: *See*—
Thomas, Paul-Gerhard, 5,613,271, Cl. 15-321.000.

Roberts, Bradley M.: *See*—
Ziemkiewicz, John W.; and Roberts, Bradley M., 5,613,395, Cl. 72-370.000.

Roberts, Bryan: *See*—
Mazzara, Gail P.; Roberts, Bryan; Panicali, Dennis L.; Stallard, Virginia; and Gritz, Linda R., 5,614,404, Cl. 435-236.000.

Roberts, Shayne A.; and Marschke, Carl R., to Marquip, Inc. Sheet stacking apparatus. 5,613,673, Cl. 271-182.000.

Robertson, Brian: *See*—
French, William; Lees, Stuart; McCall, Colin D.; Murray, Kenneth S.; and Robertson, Brian, 5,613,633, Cl. 228-264.000.

Robinson, Howard N.: *See*—
Martin, Neil F.; and Robinson, Howard N., 5,614,545, Cl. 514-398.000.

Robinson, James R.: *See*—
Hill, Ronald F.; McCauley, Donald W.; Nadas, Stephen J.; and Robinson, James R., 5,615,354, Cl. 395-493.000.

Robinson, Stephen A.; and Krause, Stanley J., to Hughes Aircraft Company. Rigid solar panel with discrete lattice and carrier structures bonded together. 5,614,033, Cl. 136-246.000.

Robjent, Fred B.: *See*—
McKee, Craig V.; Steer, Michael S.; Donner, Garrett J.; Snell-Kelly, Janet E.; and Robjent, Fred B., 5,613,678, Cl. 473-397.000.

Robson, Christopher; Duggan, Hugh; and Morel, William, to Hewlett-Packard Company. Selective user coupling for shared object oriented computer system. 5,615,336, Cl. 395-683.000.

Rocafort, Colleen M.: *See*—
Ulmer, Herbert; and Rocafort, Colleen M., 5,614,173, Cl. 424-47.000.

Rocco, Vincent P.: *See*—
Aedia, James E.; Krushinski, Joseph H., Jr.; Rasmussen, Kurt; Rocco, Vincent P.; Schaus, John M.; Thompson, Dennis C.; and Wong, David T., 5,614,523, Cl. 514-252.000.

Rockwell International: *See*—
Abbey, Duane L., 5,615,411, Cl. 455-206.000.

Rockwell Science Center, Inc.: *See*—
Stubbe, Frederic M.; Shamlou, Daryush; Ahmed, Kashif A.; and Yin, Guangming, 5,614,864, Cl. 330-69.000.

Rockwool International A/S: *See*—
Clausen, Anders U.; Christensen, Vermund R.; and Jensen, Soren L., 5,614,452, Cl. 501-155.000.
Jensen, Soren L., 5,614,449, Cl. 501-38.000.

Rodda, William E.: *See*—
Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, 5,614,870, Cl. 331-14.000.

Rodgers, Kathleen E.; and Dizerega, Gere S., to University of Southern California. Lazaroid-based compositions and method for preventing adhesion formation using the same. 5,614,515, Cl. 514-176.000.

Roduit, Jean-Paul; Wellig, Alain; Amacker, Karin; and Eyer, Martin, to Lonza Ltd. Process for the preparation of 2,4-pyridine dicarboxylic acid. 5,614,636, Cl. 546-327.000.

Rodzewich, Edward A., to BetzDearborn Inc. Method of cleaning and passivating a metal surface with acidic system and ethoxylated tertiary dodecyl mercaptan. 5,614,028, Cl. 134-2.000.

Roe, Pamela A., to Delco Electronics Corporation. Fluorescent backlighting device for an instrument panel. 5,613,750, Cl. 362-26.000.

Roemmers S.A.I.C.F.: *See*—
Monti, Carlos E. A.; and Aldomá, Gustavo E., 5,614,536, Cl. 514-331.000.

Roessler, Thomas H.; Cesco-Cancian, Annamaria; Endres, Dan D.; Hanson, Paula M.; Leick, Kenneth A.; Leick, Marianne K.; and Werner, Edward E., to Kimberly-Clark Corporation. Disposable absorbent article with flushable insert. 5,613,959, Cl. 604-364.000.

Rogelja, Boris. Tripod apparatus. 5,613,658, Cl. 248-163.100.

Rogers, Charles H.: *See*—
Lilly, Robert L.; Blackwell, Robert H.; Rogers, Charles H.; and Shoaf, Zachary G., 5,614,142, Cl. 264-211.000.

Rogers, Craig A.: *See*—
Paine, Jeffrey S. N.; and Rogers, Craig A., 5,614,305, Cl. 428-301.100.

Rogers, Joseph W.: *See*—
Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., 5,614,416, Cl. 436-68.000.

Roggeman, David M.; and Hall, James E., to Bridgestone Corporation. Process for the preparation of tapered copolymers via in situ dispersion. 5,614,579, Cl. 524-457.000.

Rogosin Institute, The: *See*—
Parker, Thomas S.; Levine, Daniel M.; Rubin, Albert L.; Gordon, Bruce R.; and Saal, Stuart D., 5,614,507, Cl. 514-78.000.

Rogowski, Donald F.: *See*—
Hallan, Matthew J.; Paradis, Stephen J.; Rogowski, Donald F.; and Shephard, Michael L., 5,614,662, Cl. 73-105.000.

Rohde, Wilhelm; and Moll, Anton, to Linde Aktiengesellschaft. Process for the low temperature separation of air and air separation installation. 5,613,374, Cl. 62-643.000.

Rohm Co., Ltd.: *See*—
Kuga, Kaeko, 5,614,854, Cl. 327-94.000.
Tagiri, Hirokazu, 5,614,872, Cl. 331-143.000.
Takasu, Hidemi; Ozawa, Takanori; and Shimoji, Noriyuki, 5,614,766, Cl. 257-777.000.
Takizawa, Noboru; and Iida, Jun, 5,615,077, Cl. 361-103.000.
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Rohm Corporation: *See*—
Chang, Shang-De; Chang, Jia-Hwang; and Chow, Edwin, 5,615,147, Cl. 365-185.300.

Roland, Volker: *See*—
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Rollend, George F.: *See*—
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Rollman, Jeffrey A.: *See*—
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Rom, Ole, to NSM Aktiengesellschaft. Device for the control of the shutter of a CCD camera supplied with light from a light source. 5,614,942, Cl. 348-61.000.

Romagnolo, Mariano; and Camomilla, Gabriele, to Autostrade - Consessioni E Costruzioni Autostrade S.p.A. Anhydrous viscoelastic buffer joint. 5,613,797, Cl. 404-2.000.

Romano, Anthony J. Synthesizing array for three-dimensional sound field specification. 5,613,940, Cl. 601-2.000.

Romans-Hess, Alice Y.: *See*—
Quincy, Roger B., III; McDowall, Debra J.; Gadsby, Elizabeth D.; Romans-Hess, Alice Y.; and Woltman, Garry R., 5,614,295, Cl. 428-212.000.

Romenteau, Pierre: *See*—
Guy, Antoine; and Romenteau, Pierre, 5,615,262, Cl. 380-4.000.

Rommelmann, Heiko: *See*—
Jaskowiak, Timothy R.; Perez, Julie A.; Kazakos, Ann M.; Gilmore, Daniel R., III; Schneider, Jay L.; and Rommelmann, Heiko, 5,614,995, Cl. 399-385.000.

Romweber, Frank T.; and Sowa, Dennis F., to Rapo-Shrink, Inc. Method and apparatus for conditioning refuse. 5,613,306, Cl. 34-136.000.

Ronan, John B.: *See*—
Degen, Peter J.; Harwood, Colin F.; Ronan, John B.; and Mei, Jason, 5,614,095, Cl. 210-491.000.

Rongved, Pål: *See*—
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Essig, Bernhard; Klein, Peter; and Kornmann, Karl, 5,613,531, Cl. 140-147.000.

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Curran, Patrick J.; McCoy, Juliette J.; Panganis, Michael A.; Waskiewicz, David C.; Schwager, Bryce A.; and Rychlick, Edward G., 5,614,665, Cl. 73-118.100.
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Ryrko, Bruno: *See—*
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Muniz, Jose A. C.; Goicoechea, Luis G.; and Lemaille, Maurice, 5,613,994, Cl. 65-339.000.
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Nakamura, Kazunari; Saito, Katsuyuki; Sasa, Hiroyuki; Okada, Yoshihiro; Yabe, Hisao; Nakajima, Shigeru; and Yamaguchi, Seiji, 5,614,943, Cl. 348-72.000.
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Hauser, Kenneth L.; Palkowitz, Alan D.; Sall, Daniel J.; and Thrasher, Kenneth J., 5,614,639, Cl. 549-57.000.
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Salt, J. Eric: *See—*
Carter, G. Clifford; Salt, J. Eric; and Yuan, Yun X., 5,615,175, Cl. 367-124.000.
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Singh, Shyam K.; Patch, Raymond J.; Pallai, Peter V.; Neidhardt, Edith A.; Palace, Gerard P.; Willis, Kevin J.; Sampo, Theresa M.; McDonald, Kevin W.; and Shi, Zhan, 5,614,559, Cl. 514-577.000.
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Samsung Display Devices Co., Ltd.: *See—*
Kim, Hoo-deuk, 5,614,782, Cl. 313-440.000.
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Ma, Seong U., 5,614,717, Cl. 250-338.300.
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Choi, Hae Y., 5,615,017, Cl. 386-109.000.
Jeong, Jechang; and Ahn, Wooyoun, 5,614,959, Cl. 348-699.000.
Kim, Dong-ha, 5,613,768, Cl. 362-298.000.
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Kim, Seung-Do, 5,614,068, Cl. 204-232.000.
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Lim, Chang-sik; and Ryou, Young-gi, 5,614,857, Cl. 327-205.000.
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Sandler, Stanley R.; Gernon, Michael D.; and Ragot, Jacques. Zirconium compounds of sulfonic acids. 5,614,650, Cl. 556-54.000.
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Boyles, Mark C.; Fenderson, John M.; and Brinkman, Bart, 5,614,466, Cl. 504-110.000.
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Sanford, Carl D.: *See—*
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Sanghvi, Yogesh S.: *See—*
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SanGregory, Jude A.; Solomon, Jeffrey A.; and Rieger, Albert E., to Eastman Kodak Company. Film brake applied by exposure initiation. 5,614,975, Cl. 396-396.000.
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Horikoshi, Hiroyoshi; Fujiwara, Toshihiko; Yoshioka, Shinji; Nishino, Hiroshi; Koike, Hiroyuki; and Yoshioka, Takao, 5,614,542, Cl. 514-369.000.
Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, 5,614,521, Cl. 514-237.800.
Takeshiba, Hideo; Sato, Kazuo; Yanai, Toshiaki; Yokoi, Shinji; Ichinose, Reiji; and Tanizawa, Kinji, 5,614,470, Cl. 504-291.000.
Yoshida, Akira; Oda, Koza; Ishihara, Sadao; Saito, Fujio; Koike, Hiroyuki; Koga, Teiichiro; Kitazawa, Eiichi; Kogen, Hiroshi; and Hayakawa, Ichiro, 5,614,550, Cl. 514-450.000.
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Sano, Taro: *See—*
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Sanpe, Atsushi, to Ricoh Company, Ltd. Image forming apparatus having a toner recycling mechanism. 5,614,998, Cl. 399-314.000.
Sanpei, Takaaki, to NEC Corporation. Paper cutting apparatus. 5,613,415, Cl. 83-86.000.
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Katoh, Masahiko; Nonaka, Kimihiro; and Nakamura, Kazuhiro, 5,613,480, Cl. 123-673.000.
Santa's Best: *See—*
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Santilli, Anthony J.: *See—*

Cox, Timothy L.; Loth, John L.; Santilli, Anthony J.; Snyder, Howard; and Wilson, Walter A., 5,614,266, Cl. 427-431.000.

Santore, Peter M.; and O'Neil, John M., Jr., to General DataComm, Inc. Time division multiplexed backplane with packet mode capability. 5,615,211, Cl. 370-419.000.

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Nishida, Masao; Higashino, Takayoshi; and Harada, Yasoo, 5,614,814, Cl. 323-313.000.
Tsuruta, Yukiyasu; Noda, Tetsuo; and Yoshioka, Akihiro, 5,615,184, Cl. 369-37.000.

Sara Lee Corporation: *See*—
Popa, Catrinel I.; Browder, George A., Jr.; and Segraves, Archie D., 5,613,378, Cl. 66-176.000.
Renda, Philip; Earnhardt, James R., Jr.; Anderson, Bill R.; and Driggars, Sonny B., 5,613,375, Cl. 66-8.000.

Sarai, Takaaki: *See*—
Harada, Kouichi; Furukawa, Junichi; Wada, Kazushi; and Sarai, Takaaki, 5,614,741, Cl. 257-233.000.

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Sargent & Greenleaf: *See*—
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Sarma, Narayana V.: *See*—
Barbee, Steven G.; Conti, Richard A.; Kostenko, Alexander; Sarma, Narayana V.; Wilson, Donald L.; Wong, Justin W.; and Zuhoski, Steven P., 5,614,247, Cl. 427-8.000.

Sarthoise De Revetements Electrolytiques: *See*—
Morello, Richard, 5,614,327, Cl. 428-632.000.

Sasa, Hiroyuki: *See*—
Nakamura, Kazunari; Saito, Katsuyuki; Sasa, Hiroyuki; Okada, Yoshihiro; Yabe, Hisao; Nakajima, Shigeru; and Yamaguchi, Seiji, 5,614,943, Cl. 348-72.000.

Sasada, Katsuhiro: *See*—
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Sasaki, Akio: *See*—
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Sasaki, Akira: *See*—
Yashiro, Haruki; Sasaki, Akira; and Maeda, Kazushige, 5,614,699, Cl. 181-254.000.

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Tanizoe, Yukihiro; Yoneyama, Masayuki; Yamamoto, Yasutoshi; and Sasaki, Shougo, 5,614,947, Cl. 348-241.000.

Sasaki, Yukihiko; and Lossner, Kevin, to Avery Dennison Corporation. Curable film forming compositions. 5,614,577, Cl. 524-274.000.

SATA-Farbspritztechnik GmbH & Co.: *See*—
Schmon, Ewald, 5,613,637, Cl. 239-296.000.

Satake Corporation: *See*—
Kendall, John H.; Mohindra, Ranvir B.; Rutherford, Duane S.; Satake, Satoru; Kanamoto, Sigeharu; and Kumamoto, Katsuyuki, 5,613,428, Cl. 99-473.000.

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Satchell, Donald P., Jr., to BOC Group plc, The. Metallurgical process. 5,613,997, Cl. 75-414.000.

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Koga, Hiroshi; Sato, Haruhiko; Ishizawa, Takenori; and Nabata, Hiroyuki, 5,614,633, Cl. 546-282.700.

Sato, Hideo: *See*—
Nagae, Yoshiharu; Mori, Yuji; Mikami, Yoshiro; Sato, Hideo; Hoshino, Minoru; and Fukuda, Kyohei, 5,614,962, Cl. 348-751.000.

Sato, Hideyuki; and Kajita, Toshiharu, to NSK Ltd. Ball screw device with resonance preventing means for a screw shaft and table drive device including the same. 5,613,400, Cl. 74-89.150.

Sato, Hiroshi: *See*—
Yasushi, Mitsuo; Akiyama, Kazuhiro; and Sato, Hiroshi, 5,613,498, Cl. 128-731.000.

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Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, 5,613,920, Cl. 477-109.000.

Sato, Kazuo: *See*—
Takeshiba, Hideo; Sato, Kazuo; Yanai, Toshiaki; Yokoi, Shinji; Ichinose, Reiji; and Tanizawa, Kinji, 5,614,470, Cl. 504-291.000.

Sato, Koichi; Yoshinaga, Kazuo; Toshida, Yomishi; and Eguchi, Takeo, to Canon Kabushiki Kaisha. Polymeric liquid-crystal compound, polymeric liquid-crystal composition, and polymeric liquid-crystal device. 5,614,125, Cl. 252-299.010.

Sato, Kyokuichi: *See*—
Kayano, Shigeru; and Sato, Kyokuichi, 5,613,303, Cl. 33-731.000.

Sato, Norio: *See*—
Medford, George F.; Gillette, Gregory R.; and Sato, Norio, 5,614,321, Cl. 428-417.000.

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Sato, Takashi; Kageyama, Yasuhiro; Isshiki, Masao; and Nukushina, Harunobu, to Kabushiki Kaisha Toshiba. Air conditioner and control method for an air conditioner. 5,613,369, Cl. 62-89.000.

Satoh, Kenichi: *See*—
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Satoh, Takamasa: *See*—
Oae, Yoshihisa; Abe, Tomohiko; Arai, Soichiro; Maruyama, Shigeru; Yasuda, Hiroshi; Miyazawa, Kenichi; Kai, Junichi; Satoh, Takamasa; Betsui, Keiichi; and Nasuno, Hideki, 5,614,725, Cl. 250-492.220.

Satou, Kouichi: *See*—
Miyazaki, Susumu; Chika, Shigeaki; Satou, Kouichi; Takeyama, Naoki; and Yamamoto, Shigeki, 5,614,594, Cl. 525-327.300.

Sauer, Donald J.; Rodda, William E.; and Campbell, Edward R., III, to RCA Thomson Licensing Corporation. Phase lock loop with idle mode of operation during vertical blanking. 5,614,870, Cl. 331-14.000.

Sauer, Robert D.: *See*—
Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., 5,614,293, Cl. 428-211.000.

Saulpaugh, Thomas E.: *See*—
Harrison, David F.; Williams, Russell T.; and Saulpaugh, Thomas E., 5,615,392, Cl. 395-876.000.

Sauvage, Francis: *See*—
Peru, Gilles; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, 5,614,112, Cl. 219-121.630.

Sauve, Paul J., to Chrysler Corporation. Door sill garnish trim. 5,613,327, Cl. 49-490.100.

Savage, Julie M. Handcuff. 5,613,381, Cl. 70-16.000.

Saverino, Michael A.: *See*—
Czarnek, Robert; Saverino, Michael A.; and Kolff, Jack, 5,613,936, Cl. 600-166.000.

Savkar, Sudhir D., to General Electric Company. Coil spring and snubber suspension system for a washer. 5,613,380, Cl. 68-23.300.

Sawyer, Gerald F. Finial adapter for clip-on lamp shades. 5,613,772, Cl. 362-444.000.

Saxena, Neeraj: *See*—
Nayar, Harbhajan S.; Dwyer, John J., Jr.; and Saxena, Neeraj, 5,614,039, Cl. 148-606.000.

Sayegh, Emile G., to W. L. Gore & Associates, Inc. Fiber optic cable assembly for facilitating the installation thereof in a structure. 5,615,293, Cl. 385-102.000.

Saylor, Edward T., Jr. Slip resistant floor mat. 5,613,332, Cl. 52-177.000.

Saylor, Steven. Thermal walkway cover having carbonized rubber. 5,614,292, Cl. 428-209.000.

SBP Technologies, Inc.: *See*—
Mueller, James G.; Pritchard, Parmely H.; and Lantz, Suzanne, 5,614,410, Cl. 435-262.500.

Scandella, Carl: *See*—
Haigwood, Nancy L.; and Scandella, Carl, 5,614,612, Cl. 530-395.000.

Scandfast AB: *See*—
Wadstein, Jan, 5,613,955, Cl. 604-178.000.

Scepanovic, Ranko; and Ding, Cheng-Liang, to LSI Logic Corporation. Towards optimal steiner tree routing in the presence of rectilinear obstacles. 5,615,128, Cl. 364-489.000.

Schaber, Georg: *See*—
Weber, Robert; Schaber, Georg; and Frings, Lars, 5,613,977, Cl. 606-170.000.

Schachner, James R.: *See*—
Kolberg, Kenneth D.; Parks, David A.; Morris, Kimberley; and Schachner, James R., 5,613,275, Cl. 16-121.000.

Schaefer, Jerry E. Molding system. 5,613,544, Cl. 160-395.000.

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Patel, Arvind; and Schafer, Jack J., 5,613,877, Cl. 439-567.000.

Schafer, Mark E. Ultrasonic apparatus and method for measuring animal backfat. 5,613,493, Cl. 128-660.060.

Schaked, Baruch; Schaked, Edgar; and Schaked, Yaakov. Removable headrest. 5,613,736, Cl. 297-397.000.

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Schambre, John, to Chrysler Corporation. Instrument panel assembly with mounting for air bag canister. 5,613,699, Cl. 280-728.200.

Schator, Helmut: *See*—
Burkhart, Georg; and Schator, Helmut, 5,614,566, Cl. 521-132.000.

Schaus, John M.: *See*—
Audia, James E.; Krushinski, Joseph H., Jr.; Rasmussen, Kurt; Rocco, Vincent P.; Schaus, John M.; Thompson, Dennis C.; and Wong, David T., 5,614,523, Cl. 514-252.000.

Scheffel, Bert: *See*—
Goedicke, Klaus; Scheffel, Bert; Reschke, Jonathan; Schiller, Siegfried; Kirchhoff, Volker; and Werner, Torsten, 5,614,273, Cl. 427-569.000.

Schepis, Dominic J.: *See*—
Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,614,440, Cl. 437-195.000.

Schering Aktiengesellschaft: *See*—
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; Ekerdt, Roland; and Giesen, Claudia, 5,614,634, Cl. 546-301.000.
Torski, Lechoslaw; Steppuhn, Karin G.; Schneider, Herbert; and Stephens, David N., 5,614,509, Cl. 514-82.000.

Scheve, Donald F.: *See*—
Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.

Schick, Ursula: *See*—
Wunderlich, Jens-Christian; Schick, Ursula; Werry, Jürgen; and Freidenreich, Jürgen, 5,614,219, Cl. 424-472.000.

Schillaci, Onofrio: *See*—
Foster, Derek G.; Siu, Edward K. W.; Pierce, Ben A.; Kennedy, Michael; Schillaci, Onofrio; and Knight, Alex, 5,615,225, Cl. 379-29.000.

Schiller, Nicolas: *See*—
Schiller, Siegfried; Neumann, Manfred; Kirchhoff, Volker; Zeissig, Gerhard; Schiller, Nicolas; and Goedicke, Klaus, 5,614,248, Cl. 427-8.000.

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Schiller, Siegfried: *See*—
Goedicke, Klaus; Scheffel, Bert; Reschke, Jonathan; Schiller, Siegfried; Kirchhoff, Volker; and Werner, Torsten, 5,614,273, Cl. 427-569.000.

Schilling, Harald: *See*—
Bütow, Klaus; and Schilling, Harald, 5,614,772, Cl. 307-119.000.

Schilling, Hugh K.; Davis, John B.; and Bredt, Robert C., to Horton, Inc. Rotational control apparatus. 5,613,586, Cl. 192-48.300.

Schimmel, Günther: *See*—
Wilkens, Jan; and Schimmel, Günther, 5,614,161, Cl. 423-332.000.

Schimmel, Peter J. C.: *See*—
Mulder, Roger; Niewold, Willem; Schimmel, Peter J. C.; and van der Woude, Jaap, 5,613,642, Cl. 242-35.50A.

Schipper, John F.: *See*—
Nichols, Mark; McBride, Kenneth W.; Viney, Ian; Taylor, Arthur; Jackson, Richard; and Schipper, John F., 5,614,913, Cl. 342-357.000.

Schlafhorst AG & Co.: *See*—
Koltze, Karl; Roland, Volker; and Voidel, Peter, 5,613,355, Cl. 57-312.000.

Schlansker, Michael S.: *See*—
Amerson, Frederic C.; Gupta, Rajiv; Kumar, Balasubramanian; Schlansker, Michael S.; and Worley, William S., 5,615,386, Cl. 395-585.000.

Schleiffer, Keith E.: *See*—
Craft, Adam B.; Schleiffer, Keith E.; Dvorsky, James E.; Graves, Thomas W.; Gray, Ronald B., III; Senapati, Nagabhusan; and Zeliński, Mathew S., 5,613,259, Cl. 15-22.100.

Schlinker, Robert H.; and Kerschen, Edward J., to United Technologies Corporation. Airfoil noise control. 5,613,649, Cl. 244-1.00N.

Schlumberger Technology Corporation: *See*—
Moriarty, Keith A., 5,613,561, Cl. 166-387.000.

Schmaljohn, Connie S.; McClain, David J.; Dalrymple, Joel, deceased (by Lonnie Dalrymple, Legal Representative), to United States of America, Army. Hantavirus vaccine. 5,614,193, Cl. 424-186.100.

Schmid, Anthony P.: *See*—
Spindt, Christopher J.; Morris, David L.; Fahlen, Theodore S.; Schmid, Anthony P.; and Lovoi, Paul A., 5,614,781, Cl. 313-422.000.

Schmid, Jürgen T., to Filter-und Wassertechnik GmbH. Device for cleaning contaminated topsoil. 5,613,805, Cl. 405-128.000.

Schmidt, Gregory G., to Pacific Handy Cutter. Ergonomic utility knife/box cutter and method of making. 5,613,300, Cl. 30-2.000.

Schmidt, Joseph H.: *See*—
Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.

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Schmidt, Larry E.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Schmidt, Steven A.: *See*—
Jaber, Talal K.; and Schmidt, Steven A., 5,614,838, Cl. 324-765.000.

Schmon, Ewald, to SATA-Farbspritztechnik GmbH & Co. Nozzle arrangement for a paint spray gun. 5,613,637, Cl. 239-296.000.

Schnatwinkel, Michael: *See*—
Eggert, Gerhard; Hanning, Walter; Fiene, Uwe; Schnatwinkel, Michael; Steinmeier, Rudolf; and Wilmes, Manfred, 5,615,079, Cl. 361-637.000.

Schneider, Birgitt: *See*—
Elger, Walter; Schneider, Birgitt; Oettel, Michael; Ernst, Michael; Hübler, Doris; and Dittgen, Michael, 5,614,213, Cl. 424-449.000.

Schneider Electric SA: *See*—
Jego, Gerard; Lebeau, Jean-Claude; Normand, Philippe; Nourry, Daniel; and Thierry, Jean-Pierre, 5,614,697, Cl. 174-84.00R.

Schneider, Gottlieb: *See*—
Oppenländer, Thomas; Mathys, Peter; and Schneider, Gottlieb, 5,614,723, Cl. 250-435.000.

Schneider, Herbert: *See*—
Turski, Lechoslaw; Steppuhn, Karin G.; Schneider, Herbert; and Stephens, David N., 5,614,509, Cl. 514-82.000.

Schneider, Jay L.: *See*—
Jaskowiak, Timothy R.; Perez, Julie A.; Kazakos, Ann M.; Gilmore, Daniel R., III; Schneider, Jay L.; and Rommelmann, Heiko, 5,614,995, Cl. 399-385.000.

Schneider, Manfred; and Seemayer, Robert, to Boehringer Mannheim GmbH. Process for the enzymatic production of isomerically pure isosorbide-2 and 5-monoesters as well as their conversion into isosorbide-2- and 5-nitrate. 5,614,643, Cl. 549-464.000.

Schnell, Philip G.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,614.234, Cl. 426-5.000.

Schoendorfer, Donald W.: *See*—
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Schoenfeld, Aaron: *See*—
Wilson, Alan J.; Baker, Russell J.; and Schoenfeld, Aaron, 5,614,856, Cl. 327-170.000.

Schoengen, Anton: *See*—
Modic, Rudolf; Korte, Hermann-Josef; Schoengen, Anton; Schroeder, Johann-Heinrich; and Porschen, Jörg, 5,614,159, Cl. 423-245.300.

Schoenman, Leonard, to Aerojet General Corporation. System and method for regulating the temperature of cryogenic liquids. 5,613,366, Cl. 62-45.100.

Schoenzeit, Loren; Keeney, Richard A.; Glass, William H.; and Mazar, Scott T., to Management Graphics, Inc. Interface for providing rasterized data to an imaging device. 5,615,314, Cl. 395-114.000.

Schönrock, Hans-Martin: *See*—
Bederke, Klaus; Herrmann, Friedrich; Kerber, Hermann; and Schönrock, Hans-Martin, 5,614,590, Cl. 525-127.000.

Schorrenberg, Gerd: *See*—
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Schouten, Roy: *See*—
Rennich, George; Schouten, Roy; and Gilmore, Florent, 5,613,335, Cl. 52-255.000.

Schregenberger, Sandra D.: *See*—
Mink, Robert I.; Nowlin, Thomas E.; Schregenberger, Sandra D.; Shirodkar, Pradeep P.; and Tsien, Grace O., 5,614,456, Cl. 502-115.000.

Schröder, Georg: *See*—
Plate, Herbert; and Schröder, Georg, 5,613,885, Cl. 439-843.000.

Schroeder, Jacqueline A.: *See*—
Rhee, Woonza M.; Rao, Prema R.; Chu, George H.; DeLostro, Frank A.; Harner, Carol F. H.; Sakai, Naomi; and Schroeder, Jacqueline A., 5,614,587, Cl. 525-54.100.

Schroeder, Johann-Heinrich: *See*—
Modic, Rudolf; Korte, Hermann-Josef; Schoengen, Anton; Schroeder, Johann-Heinrich; and Porschen, Jörg, 5,614,159, Cl. 423-245.300.

Schubert, Gerrit; Baader, Ekkehard; Bickel, Martin; and Günzler-Pukall, Volkmar, to Hoechst Aktiengesellschaft. 2,4-and 2,5-bistetrazolylpyridines, a process for the preparation thereof and the use thereof as pharmaceuticals. 5,614,537, Cl. 514-340.000.

Schuler, Karl W.: *See*—
Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.

Schulte, Heinz-Guenther; Hornfeck, Klaus; and Kaps, Dieter, to Henkel Kommanditgesellschaft auf Aktien. Process for controlling the sedimentation of sticky impurities from paper stock suspensions. 5,614,062, Cl. 162-175.000.

Schulz, Gary D.: *See*—
Gorenz, Harold J., Jr.; Hasler, Jeffery P.; Mudra, James R.; and Schulz, Gary D., 5,614,694, Cl. 174-35.00R.

Schulz, Hartmut: *See*—
Gumbiowski, Rainer; Ebisch, Rolf; and Schulz, Hartmut, 5,614.345, Cl. 430-104.000.

Schulz, Lothar: *See*—
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Schulze, Rolf: *See*—
Carsten, Rolf; Schulze, Rolf; and von Wolff, Axel, 5,614,050, Cl. 156-231.000.

Schumacher, Robert G., Jr.; and Janning, Eugene A., Jr., to Pole Zero Corporation. Transmitting spread spectrum data with commercial radio. 5,615,227, Cl. 375-206.000.

Schur, Henry: *See—*
D'Angelo, Joseph P.; and Schur, Henry, 5,614,212, Cl. 424-449.000.

Schuster, Ludwig: *See—*
Wettling, Thomas; Schuster, Ludwig; and Henkelmann, Jochem, 5,614,646, Cl. 549-540.000.

Schuver, Steven S.: *See—*
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Schwager, Bryce A.: *See—*
Curran, Patrick J.; McCoy, Juliette J.; Panganis, Michael A.; Waskiewicz, David C.; Schwager, Bryce A.; and Rychlick, Edward G., 5,614,665, Cl. 73-118.100.

Schwan, Heinrich; Patzschke, Hans-Peter; and Gol, Franjo, to Herberts Gesellschaft Mit Beschranker Haftung. Process for the manufacture of aqueous coating agents, the coating agents and their use. 5,614,584, Cl. 524-591.000.

Schwartz, John B. Lifting device. 5,613,462, Cl. 114-362.000.

Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetneh; Palange, Martin F.; Simcik, Mark E.; Swanbery, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weirsman, William A.; and Rahgo, George P., to Ascom Hasler Mailing Systems, Inc. Electronic postage scale system and method. 5,615,120, Cl. 364-464.170.

Schwarz, Hans-Peter: *See—*
Eibl, Johann; Schwarz, Hans-Peter; and Lozano-Molero, Miguel, 5,614,493, Cl. 514-12.000.

Schwarz, James A.; Putyera, Karol; Bandosz, Teresa J.; and Jagiello, Jacek, to Syracuse University. Microporous carbons for fuel gas storage. 5,614,460, Cl. 502-418.000.

Schwarz, Rainer: *See—*
Sobotta, Rainer; Schwarz, Rainer; and Psiorz, Manfred, 5,614,637, Cl. 548-486.000.

Schwemmer, Monika: *See—*
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Schwendiman, Chris A.: *See—*
Mayfield, Brandon J.; and Schwendiman, Chris A., 5,615,389, Cl. 395-828.000.

Schwendimann, Markus, to Sulzer Ruti AG. Method and apparatus for generating an artificial angular shaft position to operate a weaving machine. 5,613,525, Cl. 139-1.00E.

Schwer, Walter: *See—*
Orlando, Stephen A.; and Schwer, Walter, 5,613,874, Cl. 439-491.000.

Schwichtenberg, Michael; and Hünnebeck, Volker, to Auergesellschaft GmbH. Chemical oxygen generator breathing device with the exhalation bag within the inhalation bag. 5,613,488, Cl. 128-202.260.

Schwörer, Artur, to Peri GmbH. Ceiling form. 5,614,122, Cl. 249-210.000.

Schymik, William S.: *See—*
Keating, Paul L.; Blumenau, Steven M.; Pye, Richard; and Schymik, William S., 5,615,219, Cl. 371-27.000.

SciMed Life Systems, Inc.: *See—*
Pepin, Henry J.; Ferrandino, Michael S.; and Richardson, Andrew G., 5,614,136, Cl. 264-40.300.

Scitex Corporation LTD.: *See—*
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Spiegel, Ehud; Broudo, Moshe; Lavie, Renven; Bresler, Yoav; Pluda, Yacov; and Baron, Eliezer, 5,615,282, Cl. 382-167.000.

Scobbie, Gavin; McQueeny, Thomas P.; Kristmann, Mel S.; and Hennessey, Richard C., to R. R. Donnelley & Sons Company. Apparatus and method for forming a groove in a board. 5,613,417, Cl. 83-875.000.

Scorsiroli, Marcello, to Cooper Industries, Inc. Windshield wiper arm for vehicles. 5,613,268, Cl. 15-250.352.

Scott, Blayney J.; Gilbert, Barry G.; and Cowan, George R., to Scott Plastics Ltd. Apparatus and method for generating foam from pressurized liquid. 5,613,773, Cl. 366-163.200.

Scott, G. Robert: *See—*
Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

Scott, James W.: *See—*
Bakhshi, Shiv K.; Williams, Steven H.; Scott, James W.; and Haines, Randall M., 5,614,132, Cl. 264-6.000.

Scott, Michael C.: *See—*
Azuma, Masamichi; Paz De Araujo, Carlos A.; Scott, Michael C.; and Cuchiaro, Joseph D., 5,614,018, Cl. 117-68.000.

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Scott, Warner C., to Texas Instruments Incorporated. System to optimize the stacking efficiency of objects. 5,613,826, Cl. 414-786.000.

Scripps Research Institute, The: *See—*
Wong, Chi-Huey, 5,614,615, Cl. 536-17.900.
Zimmermann, Theodore S., 5,614,500, Cl. 514-21.000.

Seach, Eugene. Holder for eyeglasses. 5,613,661, Cl. 248-316.100.

Seagate Technology, Inc.: *See—*
Jabbari, Iraj; Hickox, Thomas A.; and Battu, Ramgopal, 5,615,067, Cl. 360-98.080.
Slade, Steven B.; Burbank, Daniel P.; and Nunne, William H., 5,613,293, Cl. 29-603.120.
Slade, Steven B.; Zak, Brian S.; and Curland, Nathan, 5,615,069, Cl. 360-126.000.

Seaman, Michael J.: *See—*
Gavin, Vincent G.; Seaman, Michael J.; Crook, Neal A.; and Mistry, Bipin, 5,615,382, Cl. 395-800.000.

Searle, Michael F.: *See—*
Dvorak, William A.; Kirchner, Alan H.; Lemacks, Michael A.; Lilienthal, Peter F., II; Pawlenko, Ivan; Searle, Michael F.; and Simchock, Frederick, 5,613,297, Cl. 29-861.000.

Seaward, David R.: *See—*
Haddow, Philip G.; Mitchell, Roderick L.; Seaward, David R.; and Vernon, Geoffrey W., 5,613,828, Cl. 414-798.900.

SEB S.A.: *See—*
Chameroy, Eric; and Cartigny, Michel, 5,613,424, Cl. 99-337.000.
Raoult, Philippe, 5,613,618, Cl. 220-369.000.

Sebag, Henri, to L'Oreal. Nonionic surfactants derived from 1,2-isopropylidene-3-epoxypropylglycerol and a carboxylic acid and their use. 5,614,181, Cl. 424-70.310.

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Schneider, Manfred; and Seemayer, Robert, 5,614,643, Cl. 549-464.000.

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Kuckhermann, Gustav; and Corteccia, Robert, 5,613,435, Cl. 100-196.000.

Sega Enterprises, Ltd.: *See—*
Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,613,913, Cl. 463-52.000.

Segall, Judith M.: *See—*
Segall, Paul E.; Waitz, Harold D.; Sternberg, Hal; and Segall, Judith M., 5,613,944, Cl. 604-28.000.

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Popa, Catrinel I.; Browder, George A., Jr.; and Segraves, Archie D., 5,613,378, Cl. 66-176.000.

Sei, Toshikazu: *See—*
Doke, Katsuro; Sei, Toshikazu; Umemoto, Yasunobu; and Ban, Eiji, 5,614,842, Cl. 326-58.000.

Seiboth, Wolfgang: *See—*
Lang, Heinrich; and Seiboth, Wolfgang, 5,615,054, Cl. 359-844.000.

Seiko Epson Corporation: *See—*
Nakazawa, Takashi; and Ishiguro, Hideto, 5,614,730, Cl. 257-59.000.
Takakura, Akira; and Takahashi, Osamu, 5,615,178, Cl. 368-203.000.
Takenaka, Kazuhiro, 5,614,752, Cl. 257-408.000.
Wakabayashi, Kenichi; Takayama, Chitoshi; and Shiozaki, Tadashi, 5,615,085, Cl. 361-702.000.
Yamamoto, Akio; Iwanami, Wataru; Yabe, Hiroshi; Yamazaki, Kenji; Miyashita, Tatsumi; and Tsurubuchi, Akeshi, 5,615,179, Cl. 368-281.000.

Seiko Instruments Inc.: *See—*
Machida, Toru, 5,615,166, Cl. 365-230.080.
Takakura, Akira; and Takahashi, Osamu, 5,615,178, Cl. 368-203.000.

Seiko Precision Inc.: *See—*
Yasuoka, Tadashi, 5,613,785, Cl. 400-248.000.

Seikosha Co., Ltd.: *See—*
Seki, Yoichi; Aoyama, Tomihiko; Kawai, Michio; and Ito, Akira, 5,614,984, Cl. 396-106.000.

Seiler, William J.: *See—*
Kikinis, Dan; Dornier, Pascal; and Seiler, William J., 5,615,393, Cl. 395-887.000.

Seilheimer, Stephen E.: *See—*
Chaudhry, Manzoor A.; Lamber, Jeffrey L.; Laumann, Bruce E.; Mild, Edward E.; Muick, Brian G.; Norvilas, Stephen T.; Pliner, David S.; and Seilheimer, Stephen E., 5,614,265, Cl. 427-430.100.

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Kato, Kinya; and Seki, Masami, 5,614,988, Cl. 355-46.000.

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Ishii, Takuya; Mizutani, Yoshio; Watanabe, Haruo; Kobayashi, Yoshinori; Sekine, Yutaka; and Ikeda, Satoshi, 5,615,098, Cl. 363-84.000.

Sekisui Fine Chemical Co., Ltd.: *See—*
Saiuchi, Kazuo; Kohara, Minoru; Yamada, Kunikazu; and Kanki, Kazuhiko, 5,615,031, Cl. 349-149.000.

Sekiya, Masahiko; Yonemura, Utami; and Chiba, Kiyoshi, to Teijin Limited. Magneto-optical recording medium comprising a specified substrate. 5,614,287, Cl. 428-163.000.

Seko, Satoru: *See—*
Takeda, Toru; Seko, Satoru; Ishioka, Hideaki; and Tomisaki, Itaru, 5,615,191, Cl. 369-58.000.

Selby, Theodore W.; and Atkins, William A., to Tannas Co. Temperature control chimney. 5,614,152, Cl. 422-99.000.

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Krchnak, Viktor; Lebl, Michal; and Seligmann, Bruce, 5,614,608, Cl. 530-334.000.

Seligmann, Bruce: *See—*
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Sematech, Inc.: *See—*
Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, 5,614,444, Cl. 437-225.000.

Semiconductor Energy Laboratory Co., Inc.: *See—*
Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, 5,614,733, Cl. 257-66.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Funada, Fumiaki; Morita, Tatsuo; Tanaka, Hirohisa; Zhang, Hongyong; and Takayama, Toru, 5,614,426, Cl. 437-40.000.
Yamazaki, Shunpei, 5,614,732, Cl. 257-66.000.

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Craft, Adam B.; Schleiffer, Keith E.; Dvorsky, James E.; Graves, Thomas W.; Gray, Ronald B., III; Senapati, Nagabhusan; and Zelinski, Matthew S., 5,613,259, Cl. 15-22.100.

Senet, Ingenieria Y Sistemas, S.A.: *See—*
Zubillaga, Mikel G.; and Urruela, Jose R., 5,613,636, Cl. 239-265.350.

Senetek PLC: *See—*
Rattan, Suresh I. S., 5,614,407, Cl. 435-375.000.

Sensor Adaptive Machines Inc.: *See—*
Pryor, Timothy R., 5,615,108, Cl. 364-167.010.

Seo, Sung-Ju: *See—*
Hwang, Jin-Taek; Jeon, Seung-Ho; Jung, Won-Bum; and Seo, Sung-Ju, 5,614,564, Cl. 521-84.100.

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Jelinski, Glenn; Serafin, Vitold P.; and Jones, Bob B., 5,613,560, Cl. 166-387.000.

Serafini, Franco: *See—*
Wierer, Konrad A.; and Serafini, Franco, 5,614,256, Cl. 427-244.000.

Seragen, Inc.: *See—*
Bacha, Patricia A., 5,614,488, Cl. 514-2.000.

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Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,614,440, Cl. 437-195.000.

Setele, Richard A.: *See—*
Tuzmen, Zeki; John, Julius F.; and Setele, Richard A., 5,613,542, Cl. 160-236.000.

Sethna, Vijay M.: *See—*
Kalmanash, Michael H.; and Sethna, Vijay M., 5,615,032, Cl. 349-165.000.

Sevrin, Mireille: *See—*
Marabout, Benoit; Sevrin, Mireille; Froissant, Jacques; and Dachary, Emmanuelle, 5,614,517, Cl. 514-233.200.

SGS-Thomson Microelectronics, Inc.: *See—*
Carobolante, Francesco, 5,614,797, Cl. 318-432.000.
Hopkins, Thomas L., 5,614,902, Cl. 341-118.000.

SGS-Thomson Microelectronics S.r.l.: *See—*
Pennisi, Alessio, 5,614,858, Cl. 327-311.000.

Shaddy, Joseph G. Cup holder. 5,613,720, Cl. 294-31.200.

Shaffer, Gary K.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Shaffer, Stephen P., to Hughes Electronics. Thermal imaging device and method. 5,614,714, Cl. 250-334.000.

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McShane, Jerry M.; and Shah, Mrugesh M., 5,613,690, Cl. 273-449.000.

Shah, Syed I. U., to Du Pont de Nemours, E. I., and Company. Method for making small dimensional diamond-coated graphite articles. 5,614,272, Cl. 427-560.000.

Shamlou, Daryush: *See—*
Stubbe, Frederic M.; Shamlou, Daryush; Ahmed, Kashif A.; and Yin, Guangming, 5,614,864, Cl. 330-69.000.

Shamrock Technology Company Limited: *See—*
Yu, Ming-teh, 5,614,794, Cl. 315-411.000.

Shank, Donald B. Air brake pilot adaptor. 5,613,741, Cl. 303-36.000.

Shao, Y. J.; and Kaporis, Konstadinas. Nocardia foaming controlling method of waste water treatment. 5,614,098, Cl. 210-608.000.

Sharma, Madan M.; Young, Robert F.; and Strohallen, Gene M., to Phonic Ear, Incorporated. Short range inductively coupled communication system employing time variant modulation. 5,615,229, Cl. 375-259.000.

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Ishiguro, Kenichi; and Adachi, Masahiro, 5,615,028, Cl. 349-42.000.
Kawaguchi, Takafumi; Tomiyoshi, Akira; and Takeda, Makoto, 5,614,922, Cl. 345-89.000.
Koden, Mitsuhiro, 5,615,026, Cl. 349-174.000.
May, Paul; Woodgate, Graham J.; and Ezra, David, 5,615,024, Cl. 349-57.000.
Mieda, Michinobu; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,615,180, Cl. 369-13.000.
Murakami, Yoshiteru; Nakajima, Junsaku; Takahashi, Akira; Nakayama, Junichiro; and Ohta, Kenji, 5,615,182, Cl. 369-13.000.
Numao, Takaji, 5,614,924, Cl. 345-149.000.
Osono, Mitsuaki; Tajima, Naoyuki; and Mori, Katsunobu, 5,614,760, Cl. 257-668.000.
Shigematsu, Hiroyuki; Nishikawa, Hirofumi; and Shibata, Yukihiro, 5,614,926, Cl. 345-156.000.
Tanaka, Koichi; and Yoshida, Masaru, 5,614,133, Cl. 264-21.000.
Yoshida, Yasuhiro; Itoh, Gen; Furukawa, Hiroyuki; and Takakura, Masaki, 5,614,934, Cl. 347-189.000.

Sharpe, David E.: *See—*
Campbell, John M.; Fleischhauer, Grier S.; Higgins, Charles T.; Ripley, Robert L.; Sharpe, David E.; Watkins, Michael L.; and Wrenn, Susan E., 5,613,505, Cl. 131-194.000.

Sharrock, Robert A.: *See—*
Quail, Peter H.; Christensen, Alan H.; Hershey, Howard P.; Sharrock, Robert A.; and Sullivan, Thomas D., 5,614,399, Cl. 435-172.300.

Shaw, Jeremy P.: *See—*
Venkataramani, Venkat S.; and Shaw, Jeremy P., 5,614,569, Cl. 523-210.000.

Shaw, Phyllis A.: *See—*
Kaiser, Susan; Rabin, Jill M.; and Shaw, Phyllis A., 5,613,938, Cl. 600-201.000.

Shawl, Edward T., to ARCO Chemical Technology, L.P. Cement additives. 5,614,017, Cl. 106-823.000.

Shekter, Lee: *See—*
Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., 5,614,406, Cl. 435-325.000.

Shell Oil Company: *See—*
Loen, Andrew E., 5,613,535, Cl. 141-226.000.

Shelor, Susan M.: *See—*
Jones, Ronald L.; Caughman, Henry D.; Shelor, Susan M.; and Lines, Ellwood L., Jr., 5,614,528, Cl. 514-258.000.

Shelton, John, to Hewlett-Packard Company. Programmable rate generator. 5,615,241, Cl. 377-49.000.

Shen, Nancy L. L.; Kacian, Daniel L.; Putnam, James G.; and Davis, William M., to Gen-Probe Incorporated. Method of making stabilized enzyme compositions for nucleic acid amplification. 5,614,387, Cl. 435-91.200.

Shephard, Michael L.: *See—*
Hallan, Matthew J.; Paradis, Stephen J.; Rogowski, Donald F.; and Shephard, Michael L., 5,614,662, Cl. 73-105.000.

Sherry, Howard: *See—*
Lin, Jason Y.; Mohan, Seshadri; Sherry, Howard; and Sollenberger, Nelson R., 5,615,267, Cl. 380-23.000.

Sherwin, Elton B., Jr.: *See—*
Stanford, Vincent M.; Williamson, Ora J.; Sherwin, Elton B., Jr.; and Castellucci, Frank V., 5,615,296, Cl. 395-2.100.

Sherwin-Williams Company, The: *See—*
Krafcik, Randolph B., 5,614,604, Cl. 528-28.000.

Sheth, Paresh J., to Lyondell Petrochemical Company. Wettable polyolefin fiber compositions and method. 5,614,574, Cl. 524-140.000.

Sheu, Jeff. Tree pruner. 5,613,301, Cl. 30-144.000.

Sheu, Jhy S.; Chen, Yi-Shu; and Zeng, Ren-Yih, to Taiwan Semicondoctor Manufacturing Company Ltd. Method of preventing mask tone error. 5,614,420, Cl. 437-8.000.

Shi, WenFan: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Shi, Zhan: *See—*
Singh, Shyam K.; Patch, Raymond J.; Pallai, Peter V.; Neidhardt, Edith A.; Palace, Gerard P.; Willis, Kevin J.; Sampo, Theresa M.; McDonald, Kevin W.; and Shi, Zhan, 5,614,559, Cl. 514-577.000.

Shibata, Hiroshi: *See—*
Yamamichi, Takahiro; and Shibata, Hiroshi, 5,613,346, Cl. 53-381.100.

Shibata, Manabu: *See—*
Hashimoto, Ryoichi; Shimada, Toshiya; Inatome, Hiroshi; and Shibata, Manabu, 5,613,848, Cl. 432-253.000.

Shibata, Naka, to Sony Corporation. Cassette loading mechanism. 5,615,066, Cl. 360-96.500.

Shibata, Norio: *See—*
Takahashi, Shinsuke; and Shibata, Norio, 5,614,023, Cl. 118-410.000.

Shibata, Yukihiro: *See—*

Shigematsu, Hiroyuki; Nishikawa, Hirofumi; and Shibata, Yukihiro, 5,614,926, Cl. 345-156.000.

Shibuya, Tatsuhiko; Okano, Susumu; Kobari, Hideya; Hagiwara, Yoshio; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co., Ltd. Method for the formation of a silica-based coating film. 5,614,271, Cl. 427-541.000.

Shieh, Jin R. Lock that can be used interchangeably as a lock and a hand tool. 5,613,387, Cl. 70-233.000.

Shigedomi, Hideo: *See*—
Shiomi, Kazuyuki; Shigedomi, Hideo; Fujita, Yasushi; Matsuda, Yoshiyuki; Soda, Chiharu; Kiku, Kazuomi; and Furuya, Kentaro, 5,613,470, Cl. 123-195.00P.

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Shigemitsu, Minoru: *See*—
Koga, Toshimichi; Shigemitsu, Minoru; Matsumoto, Osamu;, and Suzuki, Makoto, 5,614,593, Cl. 525-306.000.

Shigeta, Yoshifumi: *See*—
Otsuka, Takashi; Yamamoto, Kenji; Osada, Mototsugu; Taniguchi, Tadao; and Shigeta, Yoshifumi, 5,613,545, Cl. 164-415.000.

Shihabi, David S.: *See*—
Farnos, Maria D.; Forbus, Thomas R., Jr.; McWilliams, John P.; and Shihabi, David S., 5,614,079, Cl. 208-27.000.

Shikakura, Akihiro, to Canon Kabushiki Kaisha. Image processing apparatus which conceals image data in accordance with motion data. 5,614,958, Cl. 348-616.000.

Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, to Mitsubishi Denki Kabushiki Kaisha. Condenser lens, polarizing element, light source apparatus, and projection display apparatus. 5,613,749, Cl. 353-102.000.

Shikida, Hideo: *See*—
Takai, Shigeharu; Shikida, Hideo; Kato, Hiroki; and Ikeno, Tatsuhiro, 5,615,104, Cl. 364-134.000.

Shilling, Roy B., to Atlantic Richfield Company. Method of determining pore pressure and fracture gradient profiles using seismic transit times. 5,615,115, Cl. 364-421.000.

Shim, Jong-In; and Kitamura, Mitsuhiro, to NEC Corporation. Multiple quantum well distributed feedback semiconductor laser device and method for fabricating the same. 5,614,436, Cl. 437-129.000.

Shimada, Toshiya: *See*—
Hashimoto, Ryoichi; Shimada, Toshiya; Inatome, Hiroshi; and Shibata, Manabu, 5,613,848, Cl. 432-253.000.

Shimadzu Mectem, Inc.: *See*—
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Shimano, Takeshi: *See*—
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Tatsuno, Kimio; Shimano, Takeshi; Fukuda, Hiroshi; and Komoda, Osamu, 5,615,199, Cl. 369-112.000.

Shimano, Takuya: *See*—
Uchikoga, Shuichi; Ibaraki, Nobuki; Suzuki, Kouji; Shimano, Takuya; and Fukuda, Kaichi, 5,614,731, Cl. 257-59.000.

Shimizu, Osamu; and Nakanishi, Kanji, to Fuji Photo Film Co., Ltd. Soft-magnetic thin film. 5,614,329, Cl. 428-694.00T.

Shimizu, Satoshi; and Kusunoki, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Method of simulating hot carrier deterioration of a P-MOS transistor. 5,615,377, Cl. 395-500.000.

Shimizu, Toru: *See*—
Matsuo, Masahito; Shimizu, Toru; and Yoshida, Toyohiko, 5,615,349, Cl. 395-388.000.

Shimobuchi, Hideyuki: *See*—
Kawashima, Masato; Shimobuchi, Hideyuki; Okitsu, Hiroyuki; Matsuzuki, Masato; Yoshida, Hiroaki; Fujii, Michihiro; Okawa, Yukinari; Iida, Masaru; Ito, Katsuyasu; Toda, Yukihide; and Nagai, Seiji, 5,615,001, Cl. 399-226.000.

Shimohara, Katsunori: *See*—
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Shimoji, Noriyuki: *See*—
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Shimokawa, Shingo: *See*—
Toyama, Kazuhiko; and Shimokawa, Shingo, 5,615,053, Cl. 359-813.000.

Shin, Dong H.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Dong H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Shin-Etsu Chemical Co., Ltd.: *See*—
Koga, Toshimichi; Shigemitsu, Minoru; Matsumoto, Osamu; and Suzuki, Makoto, 5,614,593, Cl. 525-306.000.
Miyake, Masatoshi; and Aoki, Shunji, 5,614,654, Cl. 556-10.000.

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Shin, Seung-Hyuk: *See*—
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Shinada, Akira, to Sony Corporation. Power saving method and apparatus for intermittently reading reproduction apparatus. 5,615,187, Cl. 369-48.000.

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Kaiyama, Akira; Shinagawa, Noriteru; and Nakano, Masatomo, 5,615,210, Cl. 370-389.000.

Shinagawa Refractories Co. Ltd.: *See*—
Otsuka, Takashi; Yamamoto, Kenji; Osada, Mototsugu; Taniguchi, Tadao; and Shigeta, Yoshifumi, 5,613,545, Cl. 164-415.000.
Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, 5,614,121, Cl. 222-603.000.

Shindo, Yoichi: *See*—
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Shingaki, Junko: *See*—
Kaneko, Shuzo; Mitsutake, Hideaki; and Shingaki, Junko, 5,615,025, Cl. 349-74.000.

Shinoda, Eiji: *See*—
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Shinoki, Takashi: *See*—
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Shintani, Toshimichi: *See*—
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Shintani, Toshiya; and Hasegawa, Masahiko, to Komatsu Ltd. Varying protective gas composition between piercing and cutting with plasma torch. 5,614,110, Cl. 219-121.440.

Shinto Paint Co., Ltd.: *See*—
Watanabe, Tsutomu; Yasukawa, Jun-ichi; and Ota, Toshiaki, 5,614,337, Cl. 430-7.000.

Shiomi, Kazuyuki; Shigedomi, Hideo; Fujita, Yasushi; Matsuda, Yoshiyuki; Soda, Chiharu; Kiku, Kazuomi; and Furuya, Kentaro, to Honda Giken Kogyo Kabushiki Kaisha. Outboard engine assembly. 5,613,470, Cl. 123-195.00P.

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Sakura, Takeshi; Yamasaki, Yutaka; Kubo, Hiroko; Xu, Kexin; and Shiomi, Motonobu, 5,615,009, Cl. 356-326.000.

Shiomi, Yasuhiko; and Imada, Shinji, to Canon Kabushiki Kaisha. Apparatus used for blur suppression or blur prevention. 5,615,397, Cl. 396-55.000.

Shiozaki, Tadashi: *See*—
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Shiraishi, Shirou: *See*—
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Suzuki, Masayuki; Hoshino, Osamu; Shiraiwa, Yoshinobu; and Minoura, Kazuo, 5,615,038, Cl. 359-210.000.

Shirakawa, Kouichi: *See*—
Koishi, Musubu; Shirakawa, Kouichi; and Takeshima, Akira, 5,614,708, Cl. 250-244.00C.

Shirakawa, Shingo: *See*—
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

Shiraki, Koji: *See*—
Hiramitsu, Tetsushi; Shiraki, Koji; Iwai, Yasunori; and Tokuda, Masakazu, 5,613,700, Cl. 280-728.200.

Shirodkar, Pradeep P.: *See*—
Mink, Robert I.; Nowlin, Thomas E.; Schregenberger, Sandra D.; Shirodkar, Pradeep P.; and Tsien, Grace O., 5,614,456, Cl. 502-115.000.

Shirota, Katsuhiro: *See*—
Kurabayashi, Yutaka; Shirota, Katsuhiro; and Takahashi, Katsuhiko, 5,614,007, Cl. 106-22.00R.

Shirota, Riichiro: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Shoaf, Zachary G.: *See*—
Lilly, Robert L.; Blackwell, Robert H.; Rogers, Charles H.; and Shoaf, Zachary G., 5,614,142, Cl. 264-211.000.

Shoji, Moritaka: *See*—
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

Shomler, Robert W.: *See*—
Kern, Robert F.; Micka, William F.; Mikkelsen, Claus W.; Paulsen, Michael A.; and Shomler, Robert W., 5,615,329, Cl. 395-182.040.

Shone, Fuchia: *See*—
Yiu, Tom D.; Wan, Ray L.; Hsiao, Ling-Wen; Lin, Tien-Ler; and Shone, Fuchia, 5,615,153, Cl. 365-185.190.

Showa Corporation: *See*—
Terada, Makoto; Suka, Teiji; and Nakaya, Hiroyuki, 5,613,792, Cl. 403-131.000.

Showell, Graham A.: *See*—

Leeson, Paul D.; and Showell, Graham A., 5,614,518, Cl. 514-234.500.

Shu, Chin-Hang; Yeh, Chuen-Yang; Wang, Pei-Ming; and Liao, Chii-Cherng, to Food Industry Research and Development Institute. Process of L-phenylalanine fermentation. 5,614,392, Cl. 435-108.000.

Shu, Ming F. Stamping machine. 5,613,439, Cl. 101-335.000.

Shuey, John R.: *See*—
Hnatuck, Robert J.; and Shuey, John R., 5,613,882, Cl. 439-686.000.

Shum, Peter K. L.: *See*—
Zimowski, Melvin R.; Cotner, Curt L.; and Shum, Peter K. L., 5,615,337, Cl. 395-200.010.

Shy, James M.: *See*—
Boyle, William J.; Wong, Rosalinda A.; Shy, James M.; and Tran, Don H., 5,613,981, Cl. 606-198.000.

SI Diamond Technology, Inc.: *See*—
Kumar, Nalin; and Xie, Chenggang, 5,614,353, Cl. 430-313.000.

Sibold, Jack D.: *See*—
Ritland, Marcus A.; Readey, Dennis W.; Sibold, Jack D.; and Stephan, James E., 5,614,043, Cl. 156-89.000.

Sichel, Petra: *See*—
Piepersberg, Wolfgang; Stockmann, Michael; Taleghani, Kambiz M.; Distler, Jürgen; Grabley, Susanne; Sichel, Petra; and Bräu, Barbara, 5,614,619, Cl. 536-23.200.

Siciliano, Salvatore J.: *See*—
Konteatis, Zenon; Siciliano, Salvatore J.; and Springer, Martin S., 5,614,370, Cl. 435-7.210.

Sicinski, Rafal R.: *See*—
DeLuca, Hector F.; Perlman, Kato L.; Sicinski, Rafal R.; and Darwish, Hisham M., 5,614,512, Cl. 514-167.000.

Sico Incorporated: *See*—
Wagner, Walter R.; and Bue, Richard C., 5,613,450, Cl. 108-175.000.

Siddiqui, Junaid A.: *See*—
Mills, Paul D. A.; Siddiqui, Junaid A.; and Olek, Anton R., 5,614,313, Cl. 428-327.000.

Sidler, Daniel R.: *See*—
Bhupathy, Mahadevan; McNamara, James M.; Sidler, Daniel R.; Volante, Ralph P.; and Bergan, James, 5,614,632, Cl. 546-180.000.

Siebtuchfabrik AG: *See*—
Zimmermann, Daniel; and Maher, Liam, 5,613,527, Cl. 139-383.00A.

Siedman, Michael A.: *See*—
James, Lynn S.; and Siedman, Michael A., 5,614,558, Cl. 514-574.000.

Siemens Aktiengesellschaft: *See*—
Angermaier, Anton, 5,613,473, Cl. 123-481.000.
Gellermann, Wolf-Dieter; Feuerhake, Adolf; Comini, Dario; and Martinelli, Guido, 5,613,654, Cl. 246-182.00B.
Heid, Oliver, 5,614,827, Cl. 324-320.000.
Horn, Horst, 5,614,655, Cl. 73-1.00G.
Juettner, Peter; Kolb, Sebald; Zimmerer, Peter; and Naumann, Udo, 5,615,333, Cl. 395-183.140.
Kutzer, Heinz, 5,614,817, Cl. 324-142.000.
Leiderer, Harald, 5,614,821, Cl. 324-174.000.
Neumann, Gerald; Nirschl, Ernst; and Spaeth, Werner, 5,614,736, Cl. 257-102.000.

Siemens Electric Limited: *See*—
Horski, Marek; and Muszynski, Jerzy, 5,614,775, Cl. 310-68.00R.

Siemens Energy & Automation, Inc.: *See*—
Marks, David J., 5,615,364, Cl. 395-618.000.
Patrick, John R.; Zubar, Eduard; and Tevis, Edward L., 5,614,878, Cl. 335-14.000.

Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See*—
Dobring, Wilfried, 5,613,788, Cl. 400-621.000.
Kreiter, Alexander, 5,614,994, Cl. 399-256.000.

Siemens Telecommunication Systems Ltd.: *See*—
Chang, Sin-Min; and Parrella, Eugene L., 5,615,237, Cl. 375-368.000.

Sigma Designs, Inc.: *See*—
Harscoet, Philippe; and Chiang, Chen-Huei, 5,615,401, Cl. 395-681.000.

Silaev, Vladmir A.: *See*—
Gribkov, Vladimir N.; Polakov, Alexandre; Pokrovcky, Daniel D.; Silaev, Vladmir A.; Golerov, Yurii A.; and Lyacota, Piotr P., 5,614,162, Cl. 423-346.000.

Silber, Stefan: *See*—
Spiegler, Roland; Keup, Michael; Kugel, Kerstin; Lersch, Peter; and Silber, Stefan, 5,613,988, Cl. 44-320.000.

Silberman, Cyril J.: *See*—
Kolb, Alan C.; Braverman, Leonard W.; Silberman, Cyril J.; Hamm, Richard R.; and Cates, Michael C., 5,613,509, Cl. 134-56.00R.

Silicon Power Corporation: *See*—
Piccone, Dante E., 5,614,737, Cl. 257-124.000.

Siliconix incorporated: *See*—
Yilmaz, Hamza; and Hshieh, Fwu-luan, 5,614,751, Cl. 257-394.000.

Silver, Spencer F.: *See*—
Delgado, Joaquin; Goetz, Richard J.; Silver, Spencer F.; and Lucast, Donald H., 5,614,310, Cl. 428-316.600.

Siman, Robert: *See*—
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,614,649, Cl. 554-56.000.

Simchock, Frederick: *See*—
Dvorak, William A.; Kirchner, Alan H.; Lemacks, Michael A.; Lilienthal, Peter F., II; Pawlenko, Ivan; Searle, Michael F.; and Simchock, Frederick, 5,613,297, Cl. 29-861.000.

Simcik, Mark E.: *See*—
Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetneh; Palange, Martin F.; Simcik, Mark E.; Swanbery, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weirsman, William A.; and Rahgo, George P., 5,615,120, Cl. 364-464.170.

Simionato, Paolo, to Simionato S.P.A. Device for distribution of material which is loose or in single pieces. 5,613,590, Cl. 198-358.000.

Simionato S.P.A.: *See*—
Simionato, Paolo, 5,613,590, Cl. 198-358.000.

Simmen, David E.: *See*—
Leung, Ting Y.; Pirahesh, Mir H.; Simmen, David E.; Strain, Lori G.; and Tiwari, Sanjai, 5,615,361, Cl. 395-603.000.

Simmons Company: *See*—
St. Clair, Albert R., 5,613,287, Cl. 29-91.100.

Simonnet, Jean-Thierry: *See*—
Ribier, Alain; and Simonnet, Jean-Thierry, 5,614,215, Cl. 424-450.000.

Simons, Robert E.: *See*—
Anderson, Timothy M.; Chrysler, Gregory M.; and Simons, Robert E., 5,615,084, Cl. 361-697.000.

Sims, Benny L., to California State Automobile Association. Distributorless ignition test device including input port connected directly to the engine block establishing electrical contact therewith. 5,614,828, Cl. 324-402.000.

SIMS Deltec, Inc.: *See*—
Cai, Qingsheng; Beling, William L.; Glantz, Jerald; and Johnson, Theodore A., 5,613,945, Cl. 604-93.000.

Singh, Gurbir: *See*—
Sarangdhar, Nitin V.; Lai, Konrad K.; Singh, Gurbir; MacWilliams, Peter D.; Pawlowski, Stephen S.; and Rhodehamel, Michael W., 5,615,343, Cl. 395-282.000.

Singh, Jitendra K. Method of preventng software piracy by uniquely identifying the specific magnetic storage device the software is stored on. 5,615,061, Cl. 360-60.000.

Singh, Rina: *See*—
Bales, Stephen E.; Hefner, Robert E., Jr.; and Singh, Rina, 5,614,599, Cl. 525-461.000.

Singh, Sanjiv J.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, WenFan; Shin, Doog H.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,615,116, Cl. 364-423.098.

Singh, Shyam K.; Patch, Raymond J.; Pallai, Peter V.; Neidhardt, Edith A.; Palace, Gerard P.; Willis, Kevin J.; Sampo, Theresa M.; McDonald, Kevin W.; and Shi, Zhan, to Procept Inc. Compound for inhibiting HIV infectivity. 5,614,559, Cl. 514-577.000.

Sion, Charles: *See*—
Peru, Gilles; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, 5,614,112, Cl. 219-121.630.

Sipos, Tibor, to Digestive Care Inc. Intraoral medicament-releasing device. 5,614,223, Cl. 424-489.000.

Site Oil Tools, Inc.: *See*—
Jelinski, Glenn; Serafin, Vitold P.; and Jones, Bob B., 5,613,560, Cl. 166-387.000.

Sitma S.p.A.: *See*—
Ballestrazzi, Aris; and Tassi, Lamberto, 5,613,670, Cl. 271-3.230.

Siu, Edward K. W.: *See*—
Foster, Derek G.; Siu, Edward K. W.; Pierce, Ben A.; Kennedy, Michael; Schillaci, Onofrio; and Knight, Alex, 5,615,225, Cl. 379-29.000.

Siverling, Michael M. Swings out of the way articulated magnifying lamp. 5,613,771, Cl. 362-401.000.

Sizer, Theodore, II; and Wright, Gregory A., to Lucent Technologies Inc. System and apparatus for recording and displaying received information at a remote location. 5,615,252, Cl. 379-142.000.

Skarvinko, Eugene R.: *See*—
Diener, Carl E.; Mehta, Ashit A.; Paonessa, Ralph S.; Skarvinko, Eugene R.; and Wang, David W., 5,614,250, Cl. 427-96.000.

Skillern, Charles T. Modular staircase system. 5,613,341, Cl. 52-741.200.

Skoda, Ralf: *See*—
Klawuhn, Manfred; Haubruch, Ulrich; and Skoda, Ralf, 5,613,523, Cl. 138-126.000.

Skuballa, Werner: *See*—
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; Ekerdt, Roland; and Giesen, Claudia, 5,614,634, Cl. 546-301.000.

Slack, William E.: *See*—
Mafoti, Robson; and Slack, William E., 5,614,605, Cl. 528-44.000.

Slade, Steven B.; Burbank, Daniel P.; and Nunne, William H., to Seagate Technology, Inc. Method of making a smooth topography head/disk interface surface on a head with patterned pole. 5,613,293, Cl. 29-603.120.

Slade, Steven B.; Zak, Brian S.; and Curland, Nathan, to Seagate Technology, Inc. Thin-film transducer design for undershoot reduction. 5,615,069, Cl. 360-126.000.

Slater, Timothy J., to Harrah's Club. Bet tracking system for gaming tables. 5,613,912, Cl. 463-25.000.

Slavtcheff, Craig S.; Barrow, Stephen R.; Kanga, Vispi D.; Cheney, Michael C.; and Znaiden, Alexander, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic composition for treatment of pimples and redness. 5,614,201, Cl. 424-401.000.

Slepian, Harvey; and Sutton, Loran, to TAS Distributing Co., Inc. Apparatus for protecting electronic devices and associated methods of manufacturing. 5,615,076, Cl. 361-90.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Posner, Jerome B.; Darnell, Robert B.; and Furneaux, Henry M., 5,614,371, Cl. 435-7.230.
Slobodsky, Vitaly: *See—*
Kompan, Vladimir; and Slobodsky, Vitaly, 5,614,477, Cl. 508-13.000.
Smart, David C.; and Dussinger, Thomas E., to Eastman Kodak Company. Camera with manual film rewind locked when cassette closed, preferably to position film exposed indicator in window of cassette. 5,614,976, Cl. 396-392.000.
Smart, David C., to Eastman Kodak Company. Manual film wind thumbwheel for camera. 5,614,977, Cl. 396-395.000.
SMC Corporation: *See—*
Abe, Takashi, 5,613,421, Cl. 92-165.0PR.
SMC Kabushiki Kaisha: *See—*
Terao, Yukio; Kajikawa, Hiromichi; and Suzuki, Kaoru, 5,614,778, Cl. 310-80.000.
Smith, Alan G.: *See—*
King, Edward C.; and Smith, Alan G., 5,615,356, Cl. 395-500.000.
Smith, Barbara S.; Altrieth, Frederick E., III; and Beaudet, Douglas B., to Eastman Kodak Company. System and method for job set up summarizing in reprographic apparatus. 5,614,993, Cl. 399-81.000.
Smith, Derek J.; and Higgins, John C., to Massey Ferguson Manufacturing Limited. Vehicle cab with roof hatch. 5,613,728, Cl. 296-219.000.
Smith, Donald E.: *See—*
Bish, Michael P.; Blyshak, William M.; Smith, Donald E.; and Turner, Jonathan D., 5,613,255, Cl. 5-611.000.
Smith, Donald L.; and Alimonda, Andrew S., to Xerox Corporation. Photolithographically patterned spring contact. 5,613,861, Cl. 439-81.000.
Smith, Julius O., III: *See—*
Van Duyne, Scott A.; and Smith, Julius O., III, 5,614,686, Cl. 84-622.000.
Smith, Kathryn M.: *See—*
Kazmierczak, Gregory J.; Michener, John R.; and Smith, Kathryn M., 5,615,264, Cl. 380-4.000.
Smith, Kevin W.; and Persinski, Leonard J., to Clearwater, Inc. Hydrocarbon gels useful in formation fracturing. 5,614,010, Cl. 106-285.000.
Smith, Mark A.: *See—*
Dinardo, Steven J.; and Smith, Mark A., 5,614,918, Cl. 343-882.000.
Smith, Michael: *See—*
Passer, Barry E.; Smith, Michael; and Delaney, Robert, 5,613,787, Cl. 400-613.100.
Smith, Michael E.: *See—*
Land, Nicholas F.; and Smith, Michael E., 5,613,329, Cl. 52-157.000.
Smith, Michael J.: *See—*
Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., 5,614,293, Cl. 428-211.000.
Smith, Patrick C.: *See—*
Chester, Roy E.; Coons, Andrew M., III; Harrelson, Hugh G., Jr.; King, Willis M.; Potter, George E.; Sanford, Carl D.; Smith, Patrick C.; Thompson, Melvin R.; Vickery, Leonard C., Jr.; and Whitfield, Jerry M., 5,613,285, Cl. 28-247.000.
Smith, Stephen L.; Bender, James; Martinson, Jeffrey; Loudovaris, Maureen; Mitsven, Orrin D., Jr.; and Unverzagt, Kristen L. Apparatus for carrying flexible containers and method of transferring fluids to containers. 5,614,412, Cl. 435-305.100.
Smith, Wayne T., to Golden Gate Microsystems, Inc. Method for accurately counting conveyed workpieces regardless of variations in conveyor speed. 5,614,709, Cl. 250-223.00R.
SmithKline Beecham Corporation: *See—*
Christensen, Siegfried B., IV, 5,614,540, Cl. 514-362.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Müller, Hubert; and Hamraths, Konrad, 5,613,392, Cl. 72-238.000.
Streubel, Hans; Flemming, Günter; and Boysen, Erk, 5,613,548, Cl. 164-502.000.
Snap-on Technologies, Inc.: *See—*
Krivec, Bert, 5,613,884, Cl. 439-822.000.
Snell, Peter; and Fischer, Alfred. Article removal alarm system for use with portable electronic device. 5,614,886, Cl. 340-571.000.
Snell-Kelly, Janet E.: *See—*
McKee, Craig V.; Steer, Michael S.; Donner, Garrett J.; Snell-Kelly, Janet E.; and Robjent, Fred B., 5,613,678, Cl. 473-397.000.
Snow Band Milk Products, Co., Ltd.: *See—*
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,614,651, Cl. 552-615.000.
Snow, Robert E., Jr.: *See—*
Davis, Lisa L.; Bartalo, Susan M.; Mensch, James L.; Pontarelli, Mark C.; and Snow, Robert E., Jr., 5,615,347, Cl. 395-349.000.
Snyder, Howard: *See—*
Cox, Timothy L.; Loth, John L.; Santilli, Anthony J.; Snyder, Howard; and Wilson, Walter A., 5,614,266, Cl. 427-431.000.
Sobotta, Rainer; Schwarz, Rainer; and Psiorz, Manfred, to Boehringer Ingelheim KG. Process for preparing 1,3-dialkyl-5-hydroxyoxindoles and the ether derivatives thereof. 5,614,637, Cl. 548-486.000.
Socetec: *See—*
Gillard, Patrick; and Gonzalez, Pierre, 5,615,133, Cl. 364-550.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Gribkov, Vladimir N.; Polakov, Alexandre; Pokrovcky, Daniel D.; Silaev, Vladmir A.; Golerov, Yurii A.; and Lyacota, Piotr P., 5,614,162, Cl. 423-346.000.
Soda, Chiharu: *See—*
Shiomi, Kazuyuki; Shigedomi, Hideo; Fujita, Yasushi; Matsuda, Yoshiyuki; Soda, Chiharu; Kiku, Kazuomi; and Furuya, Kentaro, 5,613,470, Cl. 123-195.00P.
Soenen, Eric G., to Texas Instruments Incorporated. Apparatus and method to decode a pulse width modulated serial data stream. 5,615,228, Cl. 375-238.000.
Soga, Mamoru: *See—*
Ogawa, Kazufumi; Mino, Norihisa; and Soga, Mamoru, 5,614,263, Cl. 427-341.000.
Sohda, Takashi; Ikeda, Hitoshi; and Momose, Yu, to Takeda Chemical Industries, Ltd. Oxazolidinedione derivatives and their use. 5,614,544, Cl. 514-376.000.
Sohda, Yoshio; Kohno, Takefumi; and Sanokawa, Yutaka, to Nippon Oil Company, Limited. Process for preparing carbon/carbon composite preform and carbon/carbon composite. 5,614,134, Cl. 264-29.100.
Sohlström, Lasse: *See—*
Perälä , Martti; and Sohlström, Lasse, 5,613,330, Cl. 52-167.100.
Sohm, Stephen P.: *See—*
Leverenz, Clifford W.; Cooper, Jamshed R.; Sohm, Stephen P.; Rudina, Jehangir E.; and Larson, Steven C., 5,613,314, Cl. 40-610.000.
Sohn, Wayne J.: *See—*
Chainer, Timothy J.; Sohn, Wayne J.; and Yarmchuk, Edward J., 5,615,058, Cl. 360-51.000.
Solberg, Keith; Pitts, William K.; and Walsh, Kevin M., to University of Louisville Research Foundation, Inc. Radiation detector based on charge amplification in a gaseous medium. 5,614,722, Cl. 250-374.000.
Solefound, Inc.: *See—*
Raskas, Eric J.; and Schuver, Steven S., 5,615,111, Cl. 364-410.000.
Sollac: *See—*
Bollaert, Geoffroy; Gillet, Vincent; Guerin, Georges J. M.; and de Bon, Alain, 5,613,340, Cl. 52-740.400.
Peru, Gilles; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, 5,614,112, Cl. 219-121.630.
Sollenberger, Nelson R.: *See—*
Lin, Jason Y.; Mohan, Seshadri; Sherry, Howard; and Sollenberger, Nelson R., 5,615,267, Cl. 380-23.000.
Solomon, Donald D.; and Thibault, Jean-Claude, to Becton, Dickinson and Company. Method for providing a sterility seal in a medicinal storage bottle. 5,613,291, Cl. 29-458.000.
Solomon, Jeffrey A.: *See—*
SanGregory, Jude A.; Solomon, Jeffrey A.; and Rieger, Albert E., 5,614,975, Cl. 396-396.000.
Solondz, Max A., to Lucent Technologies Inc. Service prioritization in a cellular telephone system. 5,615,249, Cl. 379-58.000.
Soloski, Steven C.: *See—*
Mastrup, Firithjof N.; Soloski, Steven C.; and Rattray, Alan A., 5,613,365, Cl. 62-6.000.
Soma, Takao: *See—*
Kosaka, Shinichi; Sakai, Osamu; Takahashi, Tomonori; and Soma, Takao, 5,614,001, Cl. 96-10.000.
Sommer, Manfred. Filling, fluid-transporting, and pumping device. 5,613,846, Cl. 418-11.000.
Sommer, Roland. Sports equipment for ball game having an improved attenuation of oscillations and kick-back pulses and an increased striking force and process for manufacturing it. 5,613,916, Cl. 473-332.000.
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., to Wm. Wrigley Jr. Company. Total chewing gum manufacture using high efficiency continuous mixing. 5,614,234, Cl. 426-5.000.
Song, Kwang B.: *See—*
Park, Chul H.; and Song, Kwang B., 5,614,950, Cl. 348-315.000.
Song, Sung-ku, to Y.P. Lee & Associates. State-of-charge measuring method using multilevel peukert's equation. 5,614,829, Cl. 324-427.000.
Sony Corporation: *See—*
Fukuda, Shinichi; Tanaka, Akio; and Odaka, Kentaro, 5,615,055, Cl. 360-8.000.
Harada, Kouichi; Furukawa, Junichi; Wada, Kazushi; and Sarai, Takaaki, 5,614,741, Cl. 257-233.000.
Hirota, Isao, 5,615,242, Cl. 377-60.000.
Kobayashi, Seiji; Okamura, Hiroshige; and Yamatsu, Hisayuki, 5,615,193, Cl. 369-59.000.
Kume, Hisao; Hosokawa, Hiromu; Watanabe, Minoru; and Takayanagi, Kenichiro, 5,614,791, Cl. 315-370.000.
Matsuura, Katsuji, 5,614,956, Cl. 348-556.000.
Nakajima, Hideharu; and Yamazaki, Takeshi, 5,614,748, Cl. 257-316.000.
Nakashima, Katsuya; and Kohri, Shumpei, 5,615,157, Cl. 365-201.000.
Ogishima, Kiyoshi; and Ikegami, Hiroyuki, 5,614,792, Cl. 315-382.100.
Oguro, Masaki, 5,615,056, Cl. 386-104.000.
Seki, Takahito; and Yoshioka, Haruyuki, 5,615,059, Cl. 360-51.000.
Seki, Takahito; and Yoshioka, Haruyuki, 5,615,060, Cl. 360-51.000.
Shibata, Naka, 5,615,066, Cl. 360-96.500.
Shinada, Akira, 5,615,187, Cl. 369-48.000.
Takeda, Toru; Seko, Satoru; Ishioka, Hideaki; and Tomisaki, Itaru, 5,615,191, Cl. 369-58.000.
Takuma, Hirokazu; Takeuchi, Hiromitsu; and Hanabusa, Takaomi, 5,615,045, Cl. 359-456.000.
Tanizawa, Seiji, 5,615,195, Cl. 369-60.000.
Toyama, Kazuhiko; and Shimokawa, Shingo, 5,615,053, Cl. 359-813.000.

Sopcisak, Michael I. Air pressure gauge with dust-cap remover. 5,614,669, Cl. 73-146.800.
Sorem, Robert M.; and Eslinger, David M., to Dowell, a division of Schlumberger Technology Corporation. Inflatable packer with wide slat reinforcement. 5,613,555, Cl. 166-187.000.
Sorensen, Eric J.: *See—*
Lundstrom, Robert W.; Miller, Steven A.; and Sorensen, Eric J., 5,614,707, Cl. 235-479.000.
Soshi, Isao; Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; Amanuma, Tatsuo; and Asami, Jirou, to Nikon Corporation. Camera having anti-vibration function with improved connection and placement of anti-vibration components. 5,614,974, Cl. 396-55.000.
Soucy, François: *See—*
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Weder, Donald E., 5,613,347, Cl. 53-412.000.
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Neumann, Gerald; Nirschl, Ernst; and Spaeth, Werner, 5,614,736, Cl. 257-102.000.
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Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,614,395, Cl. 435-172.300.
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Wehle, Cleveland P., 5,615,379, Cl. 395-701.000.
Srikant, Ramakrishnan: *See—*
Agrawal, Rakesh; and Srikant, Ramakrishnan, 5,615,341, Cl. 395-210.000.
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Center, John L.; and Stalder, James W., 5,613,620, Cl. 221-133.000.
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Janik, Leon P.; Maxwell, M. Craig; and Zeiner, Robert W., 5,614,091, Cl. 210-249.000.
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Blount, Curtis G.; Benham, Robert A.; Brock, Jerry L.; Emerson, John A.; Ferguson, Keith R.; Scheve, Donald F.; Schmidt, Joseph H.; Schuler, Karl W.; and Stanton, Philip L., 5,613,557, Cl. 166-277.000.
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Ziemek, Gerhard; Staschewski, Harry; and Porcher, Klaus, 5,613,631, Cl. 228-148.000.
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Palau, Joseph; and Froment, Jean-Paul, 5,613,526, Cl. 139-59.000.
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McKee, Craig V.; Steer, Michael S.; Donner, Garrett J.; Snell-Kelly, Janet E.; and Robjent, Fred B., 5,613,678, Cl. 473-397.000.
Stein, Inc.: *See—*
Kootsouradis, Anthony, 5,613,594, Cl. 198-495.000.
Steindam, Richard A. AC-DC adaptor/battery eliminator. 5,615,103, Cl. 363-146.000.
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Ritland, Marcus A.; Readey, Dennis W.; Sibold, Jack D.; and Stephan, James E., 5,614,043, Cl. 156-89.000.
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Stephens, James A.: *See—*
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Sternberg, Hal: *See—*
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Dorn, Russell J., 5,613,825, Cl. 414-543.000.

Stewart, Brett B.: *See—*
Gephardt, Douglas D.; Stewart, Brett B.; Wisor, Rita M.; Dutton, Drew J.; and Belt, Steven L., 5,615,207, Cl. 370-237.000.

Stewart, Mark F.; and Bonetta, Angelo A., to High Flyte International, Ltd. Automated dart board. 5,613,685, Cl. 273-374.000.

Stich, Frederick A.; Hubert, Thomas G.; and Walsh, Timothy, to General Signal Power Systems, Inc. Method and apparatus for adaptive and corrective determination of battery run-time in nninterruptible power systems. 5,615,129, Cl. 364-492.000.

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Stillman, Bruce W.; Bell, Stephen P.; Kobayashi, Ryuji; Rine, Jasper; Foss, Margit; McNally, Francis J.; Laurenson, Patricia; Herskowitz, Ira; Li, Joachim; Gavin, Kimberly; and Hidaka, Masumi, to Cold Spring Harbor Laboratory; and University of California, The Regents of the. Origin of replication complex genes. 5,614,618, Cl. 536-23.100.

Stinson, Jeffrey R.: *See—*
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,614,395, Cl. 435-172.300.

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Van Ochten, Sander A.; and Tiggeloven, Leonardus J. A., 5,613,905, Cl. 452-160.000.

Storm, Karl; and Storm, Susan. On/off control valve for a shower head. 5,613,639, Cl. 239-581.100.

Storm, Susan: *See—*
Storm, Karl; and Storm, Susan, 5,613,639, Cl. 239-581.100.

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Leung, Ting Y.; Pirahesh, Mir H.; Simmen, David E.; Strain, Lori G.; and Tiwari, Sanjai, 5,615,361, Cl. 395-603.000.

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Strat, Askold: *See—*
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Strauss, Richard F.: *See—*
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Streck Laboratories, Inc.: *See—*
Ryan, Wayne L.; and Hunsley, Bradford A., 5,614,414, Cl. 436-13.000.

Street, L. J.: *See—*
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Wenzel, David W., 5,614,120, Cl. 219-535.000.

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Strohallen, Gene M.: *See—*
Sharma, Madan M.; Young, Robert F.; and Strohallen, Gene M., 5,615,229, Cl. 375-259.000.

Strohmer, Erwin: *See—*
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Stroud, Norman S.: *See—*
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Structural Instrumentation, Inc.: *See—*
Oakes, Bryan R., 5,614,696, Cl. 174-65.00G.

Strupczewski, Joseph T.; Bordeau, Kenneth J.; Glamkowski, Edward J.; Chiang, Yulin; and Helsley, Grover C., to Hoechst Marion Roussel, Inc. 1-(aryloxyalkyl)-3- (heteroaryl) pyrrolidines and related compounds useful as antipsychotics and analgesics. 5,614,543, Cl. 514-373.000.

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Nelson, Charles L.; Nguyen, John; Richardson, Derrick A.; and Saravia, Heber, 5,613,954, Cl. 604-167.000.

Stubbe, Frederic M.; Shamlou, Daryush; Ahmed, Kashif A.; and Yin, Guangming, to Rockwell Science Center, Inc. Single-ended to differential converter with relaxed common-mode input requirements. 5,614,864, Cl. 330-69.000.

Stubberud, Lars: *See—*
Klaveness, Jo; Rongved, Pål; and Stubberud, Lars, 5,614,169, Cl. 424-9.520.

Stults, Jerry F.: *See—*
Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,614,648, Cl. 554-4.000.

Su, Chih-hai. Means for engaging a remote control unit to a ceiling fan. 5,613,832, Cl. 416-244.00R.

Suelzle, Larry R., to Helionetics, Inc. Structure and method for performing active injection mode filtering on an AC power system. 5,614,770, Cl. 307-105.000.

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Sugai, Makoto, to Citizen Watch Co., Ltd. Platen for impact printer. 5,613,789, Cl. 400-661.200.

Sugano, Yuichi: *See—*
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Sugata, Teruaki: *See—*
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Sugen Inc.: *See—*
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Sugihara, Yasuo; Tanaka, Kazushige; and Sakaitani, Hisashi, to Mitsubishi Gas Chemical Co., Inc. Process for purification of hydrogen peroxide. 5,614,165, Cl. 423-584.000.

Sugimoto, Masahiko: *See—*
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Sugimoto, Naomi: *See—*
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Sugimura, Ryoichi: *See—*
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Sugioka, Kouichi; Ogawa, Masao; Sako, Hiroyuki; and Takamatsu, Hidetoshi, to Honda Giken Kogyo Kabushiki Kaisha. Electric motor vehicle and battery unit for electric motor vehicle. 5,613,569, Cl. 180-68.500.

Sugishima, Masami: *See—*
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, 5,614,582, Cl. 524-507.000.

Sugiyama, Hideharu; Hirose, Ikuo; and Fujita, Yoshifumi, to Jatco Corporation. Gear shift control apparatus. 5,613,921, Cl. 477-125.000.

Sugiyama, Hisataka; Maeda, Takeshi; Matsumoto, Kiyoshi; Terao, Motoyasu; Okamine, Shigenori; Nishida, Tetsuya; and Miyamoto, Harukazu, to Hitachi, Ltd. Three-dimensional recording and reproducing apparatus. 5,614,938, Cl. 347-247.000.

Sugiyama, Shinpei: *See—*
Tanaka, Kozaburo; Sugiyama, Shinpei; Miura, Ken; Yoneda, Hideo; Kinoshita, Keiji; Sakuramoto, Akira; Ryu, Akihiro; Fujii, Susumu; Yamamoto, Kimiyuki; and Hattori, Masami, 5,615,138, Cl. 364-582.000.

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Suguro, Yoshihiro: *See—*
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Suka, Teiji: *See—*
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Sullivan, Donald P.: *See—*
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Sullivan, Thomas D.: *See—*
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Sulmont, Benjamin: *See—*
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Sulzer Chemtech AG: *See—*
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Sulzer Pumpen AG: *See—*
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Suman, Michael J.: *See—*
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Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, to Daicel Chemical Industries, Ltd. Method of manufacturing laminated films. 5,614,141, Cl. 264-173.140.

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Sumitomo Electric Indus.: *See—*
Nishide, Yutaka; Fujioka, Takahiro; and Yoshida, Ricardo K., 5,614,042, Cl. 156-53.000.

Sumitomo Electric Industries, Ltd.: *See—*
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Ohkura, Kengo; Hitotsuyanagi, Hajime; and Takei, Hiromi, 5,614,471, Cl. 505-126.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Nakamura, Akio; Tsukuda, Noboru; and Matsushima, Shinichiro, 5,614,146, Cl. 264-511.000.

Sumitomo Machinery Corp. of America: *See—*
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Sumitomo Rubber Industries, Ltd.: *See—*
Katayama, Hiroyuki; Ohshima, Shinji; and Teraguchi, Takashi, 5,614,823, Cl. 324-178.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Aoyama, Masahiko; Saijo, Eiji; and Atsumi, Keigo, 5,614,820, Cl. 324-158.100.
Ichida, Kiyofumi; and Sasai, Osamu, 5,613,881, Cl. 439-680.000.
Kawamura, Takao; and Muto, Haruhiro, 5,613,857, Cl. 439-34.000.
Koroya, Hisashi; and Kuki, Heiji, 5,614,808, Cl. 320-48.000.
Nishide, Yutaka; Fujioka, Takahiro; and Yoshida, Ricardo K., 5,614,042, Cl. 156-53.000.
Onishi, Yasuhiko; Yamamori, Takashi; Yamashita, Youzou; Suzuki, Ichiro; and Aoyama, Toshiya, 5,614,144, Cl. 264-454.000.
Sakatani, Athushi; and Tanaka, Nobuyosi, 5,613,876, Cl. 439-552.000.

Summer, Charlie B., Jr. Ventilated seat cover apparatus. 5,613,729, Cl. 297-180.110.

Summit Technology Inc.: *See—*
Muller, David F., 5,613,965, Cl. 606-5.000.

Sumner, Michael B.; and Hettinger, William P., to Ashland Inc. Production of mesophase pitches, carbon fiber precursors, and carbonized fibers. 5,614,164, Cl. 423-447.400.

Sun Microsystems, Inc.: *See—*
Ball, Loran P., 5,615,357, Cl. 395-500.000.

Sun, Weimin, to Icom Incorporated. Digital demodulator for a frequency modulated signal and an amplitude modulated signal. 5,614,862, Cl. 329-341.000.

Sun, Xiaorong: *See—*
Qiu, Yuping; Ryan, Jennifer; Sun, Xiaorong; Pillsbury, George B.; Stevens, Alex; and Zubiate, Rudy, 5,615,254, Cl. 379-221.000.

Sunata, Tomihisa: *See—*
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Sundstrand Corporation: *See—*
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Sundstrom, Christafor E.: *See—*
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Superb Solutions: *See—*
Geer, Janice F.; and Geer, James W., 5,613,507, Cl. 132-285.000.

Suppiah, Shanmugam: *See—*
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Sur-Lok Corporation: *See—*
McCorkle, Daniel J.; Waits, Robert L.; and Rehburg, Heinrich, 5,613,818, Cl. 411-509.000.

Surrena, Braden J.; and Peters, Kenneth D., to ISK Biosciences Corporation. Tank having an inner bladder. 5,613,622, Cl. 222-105.000.

Suto, Shinji: *See—*
Kawamoto, Yoshimichi; Inagaki, Hiromi; Sakurai, Kazuya; and Suto, Shinji, 5,613,740, Cl. 303-11.000.

Sutton, Loran: *See—*
Slepian, Harvey; and Sutton, Loran, 5,615,076, Cl. 361-90.000.

Suwa, Kyoichi: *See—*
Hirukawa, Shigeru; Kondo, Shinjiro; Kato, Takeshi; and Suwa, Kyoichi, 5,615,006, Cl. 356-124.000.

Suy, John S.: *See—*
Collins, Tom W.; Avery, William J.; Suy, John S.; and Tichane, David M., 5,615,086, Cl. 361-704.000.

Suzuki, Akira: *See—*
Itoh, Akihide; Nogiwa, Toru; Hotta, Yoshihiko; Suzuki, Akira; and Kutami, Atushi, 5,614,461, Cl. 503-201.000.

Suzuki, Ichiro: *See—*
Onishi, Yasuhiko; Yamamori, Takashi; Yamashita, Youzou; Suzuki, Ichiro; and Aoyama, Toshiya, 5,614,144, Cl. 264-454.000.

Suzuki, Kaoru: *See—*
Terao, Yukio; Kajikawa, Hiromichi; and Suzuki, Kaoru, 5,614,778, Cl. 310-80.000.

Suzuki, Kenji: *See—*
Akashi, Akira; Miyawaki, Mamoru; Suzuki, Kenji; and Nakayama, Toshiki, 5,615,399, Cl. 396-128.000.

Suzuki, Kouji: *See—*
Uchikoga, Shuichi; Ibaraki, Nobuki; Suzuki, Kouji; Shimano, Takuya; and Fukuda, Kaichi, 5,614,731, Cl. 257-59.000.

Suzuki, Makoto: *See—*
Koga, Toshimichi; Shigemitsu, Minoru; Matsumoto, Osamu; and Suzuki, Makoto, 5,614,593, Cl. 525-306.000.

Suzuki, Masahiko: *See—*
Osakabe, Hiroyuki; Kawaguchi, Kiyoshi; and Suzuki, Masahiko, 5,613,552, Cl. 165-104.210.
Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, 5,614,141, Cl. 264-173.140.

Suzuki, Masanobu: *See—*
Sadoi, Yasuhiko; Suzuki, Masanobu; and Ogawa, Gunji, 5,615,374, Cl. 395-726.000.

Suzuki, Masanori: *See—*
Aoki, Mitsuo; Isoda, Tetsuo; Suzuki, Masanori; and Suguro, Yoshihiro, 5,614,347, Cl. 430-109.000.

Suzuki, Masayuki; Hoshino, Osamu; Shiraiwa, Yoshinobu; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Scanning optical device with aberration compensation feature. 5,615,038, Cl. 359-210.000.

Suzuki, Satoshi; Takahashi, Kazuya; Kawada, Teruo; Suzuki, Yuuji; and Tanimoto, Morimasa, to Furukawa Electric Co. Ltd., The. Reflow-plated member and a manufacturing method therefor. 5,614,328, Cl. 428-647.000.

Suzuki, Shigeo; and Okada, Fujio, to Fuji Photo Optical Co Ltd. Exposure control device for electronic endoscope. 5,614,949, Cl. 348-296.000.

Suzuki, Toshihiro; Ohashi, Noriyuki; Hamada, Tetsuya; Kanno, Takashi; and Yamaguchi, Hisashi, to Fujitsu Limited. Light source for projection type display device. 5,614,780, Cl. 313-35.000.

Suzuki, Yukihide: *See—*
Yoshida, Hiroyuki; Inui, Takashi; Numaga, Shigeki; Nakai, Kiyoshi; and Suzuki, Yukihide, 5,615,156, Cl. 365-200.000.

Suzuki, Yuuji: *See—*
Suzuki, Satoshi; Takahashi, Kazuya; Kawada, Teruo; Suzuki, Yuuji; and Tanimoto, Morimasa, 5,614,328, Cl. 428-647.000.

Svalbe, John. Plastic fences and method for prefabricating such fences. 5,613,664, Cl. 256-19.000.

Svec, Pamela S.: *See—*
Colman, David R.; Ellis, Joan; Godson, G. Nigel; Nussenzweig, Ruth S.; Nussenzweig, Victor N.; Svec, Pamela S.; and Zavala, Fidel, 5,614,194, Cl. 424-191.100.

Swamy, N. Deepak: *See—*
Estes, Scott H.; and Swamy, N. Deepak, 5,613,858, Cl. 439-46.000.

Swanbery, Robert: *See—*
Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetneh; Palange, Martin F.; Simcik, Mark E.; Swanbery, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weirsman, William A.; and Rahgo, George P., 5,615,120, Cl. 364-464.170.

Sweatt, Steven L. Plastic sleeving to form dental coping and pontic and method. 5,613,854, Cl. 433-223.000.

Sweetheart Cup Company Inc.: *See—*
Balordi, Romano, 5,614,661, Cl. 73-49.300.

Swisher, Beth A.: *See—*
Arndt, Kim E.; Kleschick, William A.; Reifschneider, Walter; Swisher, Beth A.; Ehr, Robert J.; Jachetta, John J.; and Van Heertum, John C., 5,614,469, Cl. 504-241.000.

Symbiosis Corporation: *See—*
Palmer, Matthew A.; Francese, Jose L.; Whittier, John R.; and Bales, Thomas O., 5,613,499, Cl. 128-751.000.

Symbol Technologies, Inc.: *See—*
Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, 5,614,706, Cl. 235-472.000.

Symetrix Corporation: *See—*
Azuma, Masamichi; Paz De Araujo, Carlos A.; Scott, Michael C.; and Cuchiaro, Joseph D., 5,614,018, Cl. 117-68.000.
McMillan, Larry D.; and Paz de Araujo, Carlos A., 5,614,252, Cl. 427-99.000.

Syngenix Limited: *See—*
Filler, Aaron G.; and Lever, Andrew M., 5,614,652, Cl. 556-136.000.

Synthelabo: *See—*
Marabout, Benoit; Sevrin, Mireille; Froissant, Jacques; and Dachary, Emmanuelle, 5,614,517, Cl. 514-233.200.

Syracuse University: *See—*
Schwarz, James A.; Putyera, Karol; Bandosz, Teresa J.; and Jagiello, Jacek, 5,614,460, Cl. 502-418.000.

Syringe Develpoment Partners: *See—*
Pressly, William B. S., Sr.; Vaughn, Charles A., Sr.; Brockway, G. Samuel; and Ellis, Thomas R., 5,613,952, Cl. 604-110.000.

Sytkowski, Arthur J.; and Grodberg, Jennifer, to New England Deaconess Hospital. Recombinant human erythropoietin mutants and therapeutic methods employing them. 5,614,184, Cl. 424-85.100.

Szablikowski, Klaus: *See—*
Buysch, Hans-Josef; Szablikowski, Klaus; and Breckwoldt, Jörn, 5,614,616, Cl. 536-18.700.

T. McClung-D. Sable Partnership: *See—*

Sable, Donald E.; and Sable, Donald E., II, 5,613,556, Cl. 166-241.400.

Tabor, Stanley; and Richardson, Charles, to President & Fellow of Harvard College. DNA polymerase having modified nucleotide binding site for DNA sequencing. 5,614,365, Cl. 435-6.000.

Tachikawa, Mamoru: *See*—
Harkness, Brian R.; Tachikawa, Mamoru; and Takeuchi, Kasumi, 5,614,603, Cl. 528-14.000.

Tada, Teruo: *See*—
Kondo, Kazuo; Tada, Teruo; Wano, Toyoki; Uehara, Hideki; and Tsuchida, Tomohisa, 5,614,315, Cl. 428-332.000.

Tada, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Karman vortex flow meter. 5,614,681, Cl. 73-861.220.

Tadokoro, Hiroshi: *See*—
Kimura, Izumi; Nishioka, Munehiro; Takeuchi, Toshifumi; and Tadokoro, Hiroshi, 5,615,194, Cl. 369-60.000.

Tagaya, Mikio: *See*—
Matsuura, Yoshimasa; Tagaya, Mikio; and Tagaya, Ryosaku, 5,615,007, Cl. 356-237.000.

Tagaya, Ryosaku: *See*—
Matsuura, Yoshimasa; Tagaya, Mikio; and Tagaya, Ryosaku, 5,615,007, Cl. 356-237.000.

Tagiri, Hirokazu, to Rohm Co., Ltd. Semiconductor device having CR oscillation circuit and reset circuit. 5,614,872, Cl. 331-143.000.

Taguchi, Satoshi: *See*—
Kiuchi, Takeo; Taguchi, Satoshi; Nakaya, Katsunori; Fueta, Shigekazu; and Fukuda, Kenji, 5,614,809, Cl. 322-11.000.

Taiwan Semicondoctor Manufacturing Company Ltd.: *See*—
Sheu, Jhy S.; Chen, Yi-Shu; and Zeng, Ren-Yih, 5,614,420, Cl. 437-8.000.

Taiwan Semiconductor Manufacturing Company Ltd.: *See*—
Liang, Mong-Song; and Lee, Jin-Yuan, 5,614,430, Cl. 437-45.000.
Wong, Shyh-Chyi; and Liang, Mong-Song, 5,614,424, Cl. 437-31.000.

Tajima, Naoyuki: *See*—
Osono, Mitsuaki; Tajima, Naoyuki; and Mori, Katsunobu, 5,614,760, Cl. 257-668.000.

Takada, Yoshinori: *See*—
Kamauchi, Masahiro; and Takada, Yoshinori, 5,614,334, Cl. 429-217.000.

Takagi, Akimitsu: *See*—
Torigoe, Shinji; Hattori, Jiro; and Takagi, Akimitsu, 5,614,232, Cl. 425-545.000.

Takagi, Tadao; and Ashizawa, Takatoshi, to Nikon Corporation. Flash lighting apparatus and a camera equipped with the flash lighting apparatus. 5,614,970, Cl. 396-164.000.

Takahashi, Akira: *See*—
Mieda, Michinobu; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,615,180, Cl. 369-13.000.
Murakami, Yoshiteru; Nakajima, Junsaku; Takahashi, Akira; Nakayama, Junichiro; and Ohta, Kenji, 5,615,182, Cl. 369-13.000.

Takahashi, Hiroaki: *See*—
Yamashita, Tomochika; Hamaguchi, Masakazu; Takahashi, Hiroaki; Yakushiji, Yasuhiro; Ohki, Masashi; and Kamogawa, Kouji, 5,615,019, Cl. 386-126.000.

Takahashi, Joji; Kanazawa, Eiji; Yamashita, Yoshitaka; Kashiwai, Tomio; and Takenaka, Hideo, to Toyo Denka Kogyo Co., Ltd. Enzyme immobilizing carrier containing kaolin. 5,614,401, Cl. 435-176.000.

Takahashi, Katsuhiko: *See*—
Kurabayashi, Yutaka; Shirota, Katsuhiro; and Takahashi, Katsuhiko, 5,614,007, Cl. 106-22.00R.

Takahashi, Kazuaki; Fujimura, Munenori; Yabuki, Hiroyuki; and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Dual mode multistage filter. 5,614,876, Cl. 333-204.000.

Takahashi, Kazuya: *See*—
Suzuki, Satoshi; Takahashi, Kazuya; Kawada, Teruo; Suzuki, Yuuji; and Tanimoto, Morimasa, 5,614,328, Cl. 428-647.000.

Takahashi, Ken: *See*—
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

Takahashi, Masahiro: *See*—
Hashimoto, Keiji; Fujikawa, Junji; Mohri, Hiroshi; Takahashi, Masahiro; Miyashita, Hiroyuki; and Iimura, Yukio, 5,614,335, Cl. 430-5.000.

Takahashi, Naoki, to Matsushita Electric Industrial Co., Ltd. Image forming apparatus for reproducing an image with multiple density levels of gray scale. 5,614,936, Cl. 347-240.000.

Takahashi, Osamu: *See*—
Takakura, Akira; and Takahashi, Osamu, 5,615,178, Cl. 368-203.000.

Takahashi, Richard J., to VLSI Technology, Inc. Dual purpose security architecture with protected internal operating system. 5,615,263, Cl. 380-4.000.

Takahashi Seiki Co., Ltd.: *See*—
Onishi, Yasuhiko; Yamamori, Takashi; Yamashita, Youzou; Suzuki, Ichiro; and Aoyama, Toshiya, 5,614,144, Cl. 264-454.000.

Takahashi, Shinsuke; and Shibata, Norio, to Fuji Photo Film Co., Ltd. Apparatus for applying a thin film of magnetic liquid from an extrusion-type head to a flexible band-like web. 5,614,023, Cl. 118-410.000.

Takahashi, Tomonori: *See*—
Kosaka, Shinichi; Sakai, Osamu; Takahashi, Tomonori; and Soma, Takao, 5,614,001, Cl. 96-10.000.

Takahashi, Yoichi: *See*—
Mikami, Koichi; Miyashita, Hiroyuki; Takahashi, Yoichi; Fujita, Hiroshi; and Kurihara, Masa-aki, 5,614,336, Cl. 430-5.000.

Takai, Hisashi: *See*—
Kenmochi, Yasuhiko; Takai, Hisashi; and Tsuji, Tomoko, 5,613,962, Cl. 604-378.000.

Takai, Keiji: *See*—
Nakashima, Takashi; Takai, Keiji; and Tateishi, Kouji, 5,614,443, Cl. 437-209.000.

Takai, Shigeharu; Shikida, Hideo; Kato, Hiroki; and Ikeno, Tatsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Monitoring method and apparatus using a programmable logic controller. 5,615,104, Cl. 364-134.000.

Takakura, Akira; and Takahashi, Osamu, to Seiko Instruments Inc.; and Seiko Epson Corporation. Electronic control timepiece. 5,615,178, Cl. 368-203.000.

Takakura, Masaki: *See*—
Yoshida, Yasuhiro; Itoh, Gen; Furukawa, Hiroyuki; and Takakura, Masaki, 5,614,934, Cl. 347-189.000.

Takamatsu, Hidetoshi: *See*—
Sugioka, Kouichi; Ogawa, Masao; Sako, Hiroyuki; and Takamatsu, Hidetoshi, 5,613,569, Cl. 180-68.500.

Takase, Yasutaka; Watanabe, Nobuhisa; Adachi, Hideyuki; Kodama, Kohtaro; Ishihara, Hiroki; Saeki, Takao; and Souda, Shigeru, to Eisai Co., Ltd. Quinazoline compounds. 5,614,627, Cl. 544-293.000.

Takasu, Hidemi; Ozawa, Takanori; and Shimoji, Noriyuki, to Rohm Co., Ltd. Semiconductor device with stacked alternate-facing chips. 5,614,766, Cl. 257-777.000.

Takato, Hideyasu, to Olympus Optical Co., Ltd. Bright triplet. 5,615,051, Cl. 359-790.000.

Takatsuka, Michiya: *See*—
Ashida, Koji; Takatsuka, Michiya; and Nishizawa, Kazuo, 5,613,550, Cl. 165-67.000.

Takatsuna, Toru: *See*—
Inoue, Kazushige; Kuramae, Yoshihisa; Nagai, Takashi; and Takatsuna, Toru, 5,614,348, Cl. 430-110.000.

Takaya, Yasuo: *See*—
Hori, Makoto; Nishida, Reijiro; Takaya, Yasuo; Nakayama, Yasuharu; and Sugishima, Masami, 5,614,582, Cl. 524-507.000.

Takayama, Chitoshi: *See*—
Wakabayashi, Kenichi; Takayama, Chitoshi; and Shiozaki, Tadashi, 5,615,085, Cl. 361-702.000.

Takayama, Hiroshi: *See*—
Ogi, Kenji; Takayama, Hiroshi; Yamamoto, Yasuo; Maruyama, Kazuo; and Akutsu, Eiichi, 5,614,935, Cl. 347-213.000.

Takayama, Nobutoshi, to Canon Kabushiki Kaisha. Rotary head type recording apparatus. 5,615,062, Cl. 360-64.000.

Takayama, Toru: *See*—
Funada, Fumiaki; Morita, Tatsuo; Tanaka, Hirohisa; Zhang, Hongyong; and Takayama, Toru, 5,614,426, Cl. 437-40.000.
Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, 5,614,733, Cl. 257-66.000.

Takayanagi, Kenichiro: *See*—
Kume, Hisao; Hosokawa, Hiromu; Watanabe, Minoru; and Takayanagi, Kenichiro, 5,614,791, Cl. 315-370.000.

Takechi, Toshisada: *See*—
Ishikawa, Takashi; Yunde, Takao; Takechi, Toshisada; Okada, Katsumi; and Amakawa, Takatoshi, 5,613,390, Cl. 72-13.700.

Takeda Chemical Industries, Ltd.: *See*—
Kitada, Chieko; Ohtaki, Tetsuya; and Fujino, Masahiko, 5,614,497, Cl. 514-17.000.
Sohda, Takashi; Ikeda, Hitoshi; and Momose, Yu, 5,614,544, Cl. 514-376.000.

Takeda, Hitoshi: *See*—
Kobayashi, Kenji; and Takeda, Hitoshi, 5,613,917, Cl. 473-335.000.

Takeda, Makoto: *See*—
Kawaguchi, Takafumi; Tomiyoshi, Akira; and Takeda, Makoto, 5,614,922, Cl. 345-89.000.

Takeda, Masao: *See*—
Nakatsukasa, Eiji; Takeda, Masao; and Yamauchi, Ippei, 5,614,029, Cl. 134-5.000.

Takeda, Toru; Seko, Satoru; Ishioka, Hideaki; and Tomisaki, Itaru, to Sony Corporation. Disc device having eccentricity measurement and clock correction. 5,615,191, Cl. 369-58.000.

Takei, Hiromi: *See*—
Ohkura, Kengo; Hitotsuyanagi, Hajime; and Takei, Hiromi, 5,614,471, Cl. 505-126.000.

Takei, Seiji, to Nippon Thompson Co., Ltd. Drive apparatus equipped with a ball screw and an XY drive apparatus containing said drive apparatus. 5,613,403, Cl. 74-490.090.

Takemoto, Takatoshi; and Kawashima, Kazunari, to Kabushiki Kaisha Ace Denken. Game apparatus having game media controlling capabilities. 5,613,911, Cl. 463-25.000.

Takemura, Yasuhiko: *See*—
Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, 5,614,733, Cl. 257-66.000.

Takenaka, Hideo: *See*—
Takahashi, Joji; Kanazawa, Eiji; Yamashita, Yoshitaka; Kashiwai, Tomio; and Takenaka, Hideo, 5,614,401, Cl. 435-176.000.

Takenaka, Kazuhiro, to Seiko Epson Corporation. Semiconductor device containing external surge protection component. 5,614,752, Cl. 257-408.000.

Takenaka, Kenji; and Murao, Kazushige, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Flow restricting structure of communicating passages between chambers of a reciprocating type compressor. 5,613,836, Cl. 417-222.200.

Takeshiba, Hideo; Sato, Kazuo; Yanai, Toshiaki; Yokoi, Shinji; Ichinose, Reiji; and Tanizawa, Kinji, to Sankyo Company, Limited. 13-substituted milbemycin derivatives, their preparation and their use. 5,614,470, Cl. 504-291.000.

Takeshima, Akira: *See*—
Koishi, Musubu; Shirakawa, Kouichi; and Takeshima, Akira, 5,614,708, Cl. 250-244.00C.

Takeuchi, Chifumi: *See*—
Matsumoto, Shuuichi; and Takeuchi, Chifumi, 5,614,685, Cl. 84-602.000.

Takeuchi, Esther S.; and Walsh, Karen M., to Wilson Greatbatch Ltd. Medium and high discharge rate combination battery and method. 5,614,331, Cl. 429-9.000.

Takeuchi, Hiromitsu: *See*—
Takuma, Hirokazu; Takeuchi, Hiromitsu; and Hanabusa, Takaomi, 5,615,045, Cl. 359-456.000.

Takeuchi, Kan; Matsuno, Katsumi; Kajiyama, Kazuhiko; Nagashima, Osamu; and Hasegawa, Masatoshi, to Hitachi, Ltd. Semiconductor memory with ferroelectric capacitors. 5,615,145, Cl. 365-145.000.

Takeuchi, Kasumi: *See*—
Harkness, Brian R.; Tachikawa, Mamoru; and Takeuchi, Kasumi, 5,614,603, Cl. 528-14.000.

Takeuchi, Shu: *See*—
Ukai, Yasuhiro; Sunata, Tomihisa; Nakagawa, Takanobu; and Takeuchi, Shu, 5,614,729, Cl. 257-57.000.

Takeuchi, Tamiko: *See*—
Momotani, Hiroshi; Otsuki, Etsuo; Hasebe, Akio; and Takeuchi, Tamiko, 5,614,805, Cl. 320-21.000.

Takeuchi, Toshifumi: *See*—
Kimura, Izumi; Nishioka, Munehiro; Takeuchi, Toshifumi; and Tadokoro, Hiroshi, 5,615,194, Cl. 369-60.000.

Takeyama, Naoki: *See*—
Miyazaki, Susumu; Chika, Shigeaki; Satou, Kouichi; Takeyama, Naoki; and Yamamoto, Shigeki, 5,614,594, Cl. 525-327.300.

Takizawa, Noboru; and Iida, Jun, to Rohm Co., Ltd. Active terminator the thermal shutdown state of which can be detected. 5,615,077, Cl. 361-103.000.

Takuma, Hirokazu; Takeuchi, Hiromitsu; and Hanabusa, Takaomi, to Sony Corporation. Screen of projection display. 5,615,045, Cl. 359-456.000.

Taleghani, Kambiz M.: *See*—
Piepersberg, Wolfgang; Stockmann, Michael; Taleghani, Kambiz M.; Distler, Jürgen; Grabley, Susanne; Sichel, Petra; and Bräu, Barbara, 5,614,619, Cl. 536-23.200.

Tangent, Inc.: *See*—
Orton, Debra L.; and Berdahl, Eric M., 5,615,326, Cl. 395-356.000.

Talley, John J.; and Reed, Kathryn L., to G.D. Searle & Co. Retroviral protease inhibitors. 5,614,522, Cl. 514-237.800.

Tamba, Akihiro: *See*—
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,614,848, Cl. 326-110.000.

Tamoto, Yukiyoshi: *See*—
Kimura, Kunio; Nakamura, Hiroyuki; Tamoto, Yukiyoshi; Kimoto, Junichi; and Okada, Hiromi, 5,614,255, Cl. 427-212.000.

Tan, Jinglu; and Wang, Limin, to Curators Of The University of Missouri, The. Pressure/vacuum regulator. 5,613,514, Cl. 137-102.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Hirakawa, Yoshiyuki; Yoshino, Hiroyuki; Uemura, Katsuji; Fukui, Eiji; and Hanamori, Tami, 5,614,220, Cl. 424-480.000.

Tanaka, Akici: *See*—
Imahashi, Kunihiko; Miura, Hirohisa; Yamada, Yasuhiro; Michioka, Hirofumi; Kusui, Jun; and Tanaka, Akiei, 5,614,036, Cl. 148-437.000.

Tanaka, Akio: *See*—
Fukuda, Shinichi; Tanaka, Akio; and Odaka, Kentaro, 5,615,055, Cl. 360-8.000.

Tanaka, Haruo, to Rohm Co., Ltd. Optical pickup. 5,615,201, Cl. 369-112.000.

Tanaka, Hatsuyuki: *See*—
Sakamoto, Yoshinori; Hagiwara, Yoshio; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,614,251, Cl. 427-96.000.

Tanaka, Hirohisa: *See*—
Funada, Fumiaki; Morita, Tatsuo; Tanaka, Hirohisa; Zhang, Hongyong; and Takayama, Toru, 5,614,426, Cl. 437-40.000.

Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, to Unitika Ltd. Biodegradable nonwoven fabrics and method of manufacturing same. 5,614,298, Cl. 428-219.000.

Tanaka, Hiroyuki; Onodera, Ko; Watanabe, Takehiko; and Fukaya, Yoshinori, to Hitachi, Ltd. Method and apparatus for treatment of stator coil lead wires for electric rotary machine. 5,613,529, Cl. 140-71.00R.

Tanaka, Kazumi: *See*—
Nakamura, Tadayoshi; and Tanaka, Kazumi, 5,613,999, Cl. 75-603.000.

Tanaka, Kazuo: *See*—
Hirose, Masahiko; Ito, Hiroki; Maeda, Masatoshi; and Tanaka, Kazuo, 5,614,099, Cl. 210-653.000.

Tanaka, Kazushige: *See*—
Sugihara, Yasuo; Tanaka, Kazushige; and Sakaitani, Hisashi, 5,614,165, Cl. 423-584.000.

Tanaka, Koichi; and Yoshida, Masaru, to Sharp Kabushiki Kaisha. Method for producing thin-film electro luminescent device. 5,614,133, Cl. 264-21.000.

Tanaka, Kozaburo; Sugiyama, Shinpei; Miura, Ken; Yoneda, Hideo; Kinoshita, Keiji; Sakuramoto, Akira; Ryu, Akihiro; Fujii, Susumu; Yamamoto, Kimiyuki; and Hattori, Masami, to Honda Giken Kogyo Kabushiki Kaisha. Method for establishing the working mantime in the production line. 5,615,138, Cl. 364-582.000.

Tanaka, Masahiko: *See*—
Hoshino, Isao; Wachi, Shoko; Honguh, Yoshinori; and Tanaka, Masahiko, 5,615,200, Cl. 369-112.000.

Tanaka, Masayuki; Ohashi, Yuji; and Sugimoto, Masashi, to Omron Corporation. Paper retainer. 5,613,672, Cl. 271-162.000.

Tanaka, Naoki; Ohtsubo, Hiroshi; and Ito, Michio, to Injex Corporation; and Matsumoto Dental College. Dental care material and manufacturing method. 5,613,849, Cl. 433-8.000.

Tanaka, Nobuyosi: *See*—
Sakatani, Athushi; and Tanaka, Nobuyosi, 5,613,876, Cl. 439-552.000.

Tanaka, Shigeru: *See*—
Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device and memory system using the same. 5,615,165, Cl. 365-230.060.

Tanaka, Tomoharu: *See*—
Sakui, Koji; Nakamura, Hiroshi; Tanaka, Tomoharu; Momodomi, Masaki; Masuoka, Fujio; and Hasegawa, Takehiro, 5,615,163, Cl. 365-230.030.

Tanaka, Toru, to Mitsubishi Denki Kabushiki Kashia. Engine control device for controlling the output power of an engine operating under varying electric load conditions. 5,614,768, Cl. 290-40.00C.

Tanaka, Toshizumi, to Fuji Photo Optical Co., Ltd. Nose bag applicator with pinhole checker. 5,614,660, Cl. 73-37.000.

Tanaka, Yoshiyuki: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Tanda, Tetuo, to Kyocera Corporation. Toner storage unit, residual toner collect unit, toner container with these units and image forming apparatus with such toner container. 5,614,996, Cl. 399-120.000.

Tandem Computers Incorporated: *See*—
Collins, Tom W.; Avery, William J.; Suy, John S.; and Tichane, David M., 5,615,086, Cl. 361-704.000.

Tang, Jinsong; and Mruk, Norbert J., to Graphic Controls Corporation. Polyacrylate and Polymethacrylate ester based hydrogel adhesives. 5,614,586, Cl. 524-817.000.

Tang, Peng C.; and McMahon, Gerald, to Sugen Inc. Methods of inhibiting phosphatase activity and treatment of disorders associated therewith using naphthopyrones and derivatives thereof. 5,614,642, Cl. 549-389.000.

Taniguchi, Tadao: *See*—
Otsuka, Takashi; Yamamoto, Kenji; Osada, Mototsugu; Taniguchi, Tadao; and Shigeta, Yoshifumi, 5,613,545, Cl. 164-415.000.

Tanikawa, Hirohide: *See*—
Kawakami, Hiroaki; Doi, Shinji; Tanikawa, Hirohide; Fujiwara, Masatsugu; and Kato, Kazunori, 5,614,344, Cl. 430-102.000.

Tanimoto, Morimasa: *See*—
Suzuki, Satoshi; Takahashi, Kazuya; Kawada, Teruo; Suzuki, Yuuji; and Tanimoto, Morimasa, 5,614,328, Cl. 428-647.000.

Taniuchi, Toshihiko: *See*—
Abe, Hiroshi; Taniuchi, Toshihiko; Tsuda, Masaomi; and Fujiwara, Yoshito, 5,614,149, Cl. 420-43.000.

Tanizawa, Kinji: *See*—
Takeshiba, Hideo; Sato, Kazuo; Yanai, Toshiaki; Yokoi, Shinji; Ichinose, Reiji; and Tanizawa, Kinji, 5,614,470, Cl. 504-291.000.

Tanizawa, Seiji, to Sony Corporation. Data recording and reproducing apparatus. 5,615,195, Cl. 369-60.000.

Tanizoe, Yukihiro; Yoneyama, Masayuki; Yamamoto, Yasutoshi; and Sasaki, Shougo, to Matsushita Electric Industrial Co., Ltd. Solid state imaging apparatus. 5,614,947, Cl. 348-241.000.

Tankovich, Nikolai, to Lumedics, Ltd. Object recycling by laser of coating material. 5,614,339, Cl. 430-19.000.

Tannas Co.: *See*—
Selby, Theodore W.; and Atkins, William A., 5,614,152, Cl. 422-99.000.

Tanox Biosystems, Inc.: *See*—
Chang, Tse W., 5,614,611, Cl. 530-387.300.

Tarlow, Kenneth: *See*—
Chandra, Naveen; and Tarlow, Kenneth, 5,613,774, Cl. 366-228.000.

Tarutani, Shinji: *See*—
Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; Tarutani, Shinji; and Gokita, Hidetoshi, 5,615,202, Cl. 369-178.000.

TAS Distributing Co., Inc.: *See*—
Slepian, Harvey; and Sutton, Loran, 5,615,076, Cl. 361-90.000.

Taskovich, Lina T.: *See*—
Gale, Robert M.; Lee, Eun Soo; Taskovich, Lina T.; and Burkoth, Terry L., 5,614,211, Cl. 424-448.000.

Tassi, Lamberto: *See*—

Ballestrazzi, Aris; and Tassi, Lamberto, 5,613,670, Cl. 271-3.230.

Tateishi, Kouji: *See*—
Nakashima, Takashi; Takai, Keiji; and Tateishi, Kouji, 5,614,443, Cl. 437-209.000.

Tateno, Chikara R. Avocado cutter. 5,613,431, Cl. 99-541.000.

Tatomir, Paul J.: *See*—
Raghavan, Krishnan; Kich, Rolf; and Tatomir, Paul J., 5,614,877, Cl. 333-227.000.

Tatsuno, Kimio; Shimano, Takeshi; Fukuda, Hiroshi; and Komoda, Osamu, to Hitachi, Ltd. Optical head apparatus. 5,615,199, Cl. 369-112.000.

Taura, Toru; and Inoue, Hirobumi, to NEC Corporation. Test method and apparatus of sequentially executing synchronous signal test, dot level test, and gradation test of a video signal generator. 5,614,944, Cl. 348-183.000.

Taylor, Arthur: *See*—
Nichols, Mark; McBride, Kenneth W.; Viney, Ian; Taylor, Arthur; Jackson, Richard; and Schipper, John F., 5,614,913, Cl. 342-357.000.

Taylor, Bret: *See*—
Osborne, William S.; Taylor, Bret; and Therien, Patrick J., 5,614,930, Cl. 347-33.000.

Taylor, Charles W.: *See*—
Lucast, Donald H.; Calhoun, Clyde D.; Riedel, John E.; and Taylor, Charles W., 5,613,942, Cl. 602-52.000.

Taylor, Gary R.; Wierzba, Paul; and Hannah, R. Craig, to ETI Technologies Inc. Weight compensating method and apparatus. 5,613,408, Cl. 74-573.00R.

Taylor, James M., to Robert I. Landies. Striking mechanism for semi-automatic operation of rifles and the like. 5,614,691, Cl. 89-128.000.

Taylor, John A., to Zeneca Limited. Monoazo reactive dyes. 5,614,613, Cl. 534-638.000.

Taylor, Richard E. Variable position pin registration plate for multicolor silk screen printing apparatus. 5,613,436, Cl. 101-115.000.

Taylor, Richard N., to International Computers Limited. Recovery method for a high availability data processing system. 5,615,330, Cl. 395-182.050.

Tedesco, Jon D. Method of puffing pelletized foodstuffs. 5,614,239, Cl. 426-445.000.

Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., to Hoechst Marion Roussel, Inc. 1-alkyl-,1-alkenyl-, and 1-alkynylaryl-2-amino-1,3-propanediols and related compounds. 5,614,631, Cl. 346-176.000.

Teger-Nilsson, Ann-Catrine E.: *See*—
Bylund, Ruth E.; and Teger-Nilsson, Ann-Catrine E., 5,614,499, Cl. 514-19.000.

Tehrani, Yoossef: *See*—
Allington, Robert W.; Walters, Henry L.; Jameson, Daniel G.; and Tehrani, Yoossef, 5,614,089, Cl. 210-198.200.

Tei, Youichi: *See*—
Itoh, Yoshiaki; Osawa, Michio; Tei, Youichi; Kashiwakura, Yoshiharu; Nishimura, Michinori; and Nimura, Kazuo, 5,614,314, Cl. 428-332.000.

Teijin Limited: *See*—
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.
Sekiya, Masahiko; Yonemura, Utami; and Chiba, Kiyoshi, 5,614,287, Cl. 428-163.000.

Teikoku Tsushin Kogyo Co., Ltd.: *See*—
Inagaki, Jiro; Hari, Atsushi; Kikuchi, Nobuyuki; and Shinoki, Takashi, 5,613,599, Cl. 200-512.000.

Tektronix, Inc.: *See*—
Hindman, Larry E.; Karambelas, Randy C.; Reeves, Barry D.; and Rise, James D., 5,614,933, Cl. 347-103.000.

Telediffusion de France: *See*—
Coutrot, Francoise, 5,615,265, Cl. 380-20.000.

Teledyne Industries, Inc.: *See*—
Craft, Adam B.; Schleiffer, Keith E.; Dvorsky, James E.; Graves, Thomas W.; Gray, Ronald B., III; Senapati, Nagabhusan; and Zelinski, Matthew S., 5,613,259, Cl. 15-22.100.

Teleflex Incorporated: *See*—
Kelley, Larry; and Watkins, Randy, 5,613,405, Cl. 74-502.400.
Martucci, Norman S., 5,613,524, Cl. 138-137.000.
Rutkowski, Gregory M., 5,613,406, Cl. 74-502.600.

Telefonaktiebolaget L M Ericsson: *See*—
Lemieux, Yves, 5,615,255, Cl. 379-230.000.

Telefonaktiebolaget LM Ericsson: *See*—
Forssén, Ulf; and Gudmundson, Björn, 5,615,409, Cl. 455-33.100.

Tellings, Jan P. E.: *See*—
Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,614,648, Cl. 554-4.000.

Temburg, Konrad, to Trützschler GmbH & Co. KG. Clearance adjustment in the feeding device of a fiber processing textile machine. 5,613,278, Cl. 19-105.000.

Terada, Makoto; Suka, Teiji; and Nakaya, Hiroyuki, to Showa Corporation; and Nifco Inc. Ball joint. 5,613,792, Cl. 403-131.000.

Terada, Yasushi: *See*—
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,615,149, Cl. 365-185.120.

Teraguchi, Takashi: *See*—
Katayama, Hiroyuki; Ohshima, Shinji; and Teraguchi, Takashi, 5,614,823, Cl. 324-178.000.

Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, to Shinagawa Refractories Co., Ltd. Refractory block for continuous casting. 5,614,121, Cl. 222-603.000.

Terao, Motoyasu: *See*—
Sugiyama, Hisataka; Maeda, Takeshi; Matsumoto, Kiyoshi; Terao, Motoyasu; Okamine, Shigenori; Nishida, Tetsuya; and Miyamoto, Harukazu, 5,614,938, Cl. 347-247.000.

Terao, Yukio; Kajikawa, Hiromichi; and Suzuki, Kaoru, to SMC Kabushiki Kaisha. Servo cylinder apparatus. 5,614,778, Cl. 310-80.000.

Terashima, Ryo; and Nakabayashi, Kazunori, to NEC Corporation. System having table storing plurality of optimal patrol seek schemes for respective disk drives and executing associated scheme based upon inputted disk device name. 5,615,368, Cl. 395-671.000.

Terra-Lock Systems Limited: *See*—
Land, Nicholas F.; and Smith, Michael E., 5,613,329, Cl. 52-157.000.

Terray, Eugene A.: *See*—
Brumley, Blair H.; Deines, Kent L.; Cabrera, Ramon G.; and Terray, Eugene A., 5,615,173, Cl. 367-90.000.

Terry, Raymond; and Adcock, David W. Method for decolorization of fabrics. 5,613,983, Cl. 8-102.000.

Tervaskanto, Matti: *See*—
Ahola, Raimo; and Tervaskanto, Matti, 5,613,442, Cl. 104-8.000.

Teves, Reinhard: *See*—
Dumke, Joachim; du Bois, Andre; and Teves, Reinhard, 5,614,041, Cl. 152-210.000.

Tevis, Edward L.: *See*—
Patrick, John R.; Zubar, Eduard; and Tevis, Edward L., 5,614,878, Cl. 335-14.000.

Texas A&M University, The: *See*—
Vigh, Gyula; Rawjee, Yasir Y.; and Williams, Robert L., Jr., 5,614,072, Cl. 204-450.000.

Texas A&M University System: *See*—
Rush, Charles M., 5,614,186, Cl. 424-93.300.

Texas Instruments: *See*—
Caudel, Edward R.; and Magar, Surendar S., 5,615,383, Cl. 395-800.000.

Texas Instruments Incorporated: *See*—
Anderson, Charles H., 5,613,753, Cl. 362-32.000.
Conner, James L.; Overlaur, Michael J.; and Kornher, Kevin, 5,614,921, Cl. 345-85.000.
Corsi, Marco; and Rincon, Gabriel A., 5,614,850, Cl. 327-55.000.
Houston, Theodore W., 5,615,162, Cl. 365-226.000.
Hutter, Louis N.; and Corsi, Marco, 5,614,755, Cl. 257-471.000.
Hwang, Ming J.; and Dowell, Harold J., 5,614,113, Cl. 219-121.640.
Kurino, Hiroyuki; and Ogata, Yasuhiro, 5,613,296, Cl. 29-852.000.
Nelson, William E., 5,614,937, Cl. 347-240.000.
Scott, Warner C., 5,613,826, Cl. 414-786.000.
Soenen, Eric G., 5,615,228, Cl. 375-238.000.
Stevens, Gary D.; and Padovani, Francois A., 5,614,020, Cl. 117-205.000.
Thakur, Vivek K.; and Venkateswar, Vadlamannati, 5,615,016, Cl. 358-298.000.
Tserng, Hua Q., 5,614,442, Cl. 437-209.000.
Vogley, Wilbur C., 5,615,358, Cl. 395-556.000.
Wallace, Robert M.; Gnade, Bruce E.; and Kirk, Wiley P., 5,614,785, Cl. 315-496.000.
Yoshida, Hiroyuki; Inui, Takashi; Numaga, Shigeki; Nakai, Kiyoshi; and Suzuki, Yukihide, 5,615,156, Cl. 365-200.000.

Tezuka, Akira: *See*—
Hashimoto, Takeshi; Tezuka, Akira; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,614,316, Cl. 428-344.000.

Th. Goldschmidt AG.: *See*—
Burkhart, Georg; and Schator, Helmut, 5,614,566, Cl. 521-132.000.
Spiegler, Roland; Keup, Michael; Kugel, Kerstin; Lersch, Peter; and Silber, Stefan, 5,613,988, Cl. 44-320.000.

Thai, Dinh: *See*—
Thai, Douglas; and Thai, Dinh, 5,613,482, Cl. 124-16.000.

Thai, Douglas; and Thai, Dinh. Disk shooting toy gun. 5,613,482, Cl. 124-16.000.

Thakur, Vivek K.; and Venkateswar, Vadlamannati, to Texas Instruments Incorporated. Exposure scheme for minimizing microbanding inslm-based printers. 5,615,016, Cl. 358-298.000.

Thalén, Arne: *See*—
Axelsson, Bengt; Brattsand, Ralph; Källström, Leif; and Thalén, Arne, 5,614,514, Cl. 514-174.000.

Thayer, Charles: *See*—
Erlich, Ron; and Thayer, Charles, 5,613,869, Cl. 439-344.000.

Theis, Juergen: *See*—
Dammel, Ralph; Lingnau, Juergen; Pawlowski, Georg; and Theis, Juergen, 5,614,351, Cl. 430-270.100.

Therien, Patrick J.: *See*—
Osborne, William S.; Taylor, Bret; and Therien, Patrick J., 5,614,930, Cl. 347-33.000.

Theriod Biologics, Incorporated: *See*—
Mazzara, Gail P.; Roberts, Bryan; Panicali, Dennis L.; Stallard, Virginia; and Gritz, Linda R., 5,614,404, Cl. 435-236.000.

Therma-Plate Corporation: *See*—
Demerest, A. Edward, 5,614,228, Cl. 425-326.100.

Thermik Gerätebau GmbH: *See*—
Hofsäss, Marcel; and Bühling, Dieter, 5,615,072, Cl. 361-24.000.

Thorne, Robert J., to Dunbarton Corporation. Prefabricated door frame. 5,613,324, Cl. 49-380.000.

Theys, Ezra E.: *See*—
Pierce, Chester J., Jr.; Heiskell, Ronald E.; and Theys, Ezra E., 5,613,933, Cl. 493-175.000.

Thibault, Jean-Claude: *See*—
Solomon, Donald D.; and Thibault, Jean-Claude, 5,613,291, Cl. 29-458.000.

Thierry, Jean-Pierre: *See*—
Jego, Gerard; Lebeau, Jean-Claude; Normand, Philippe; Nourry, Daniel; and Thierry, Jean-Pierre, 5,614,697, Cl. 174-84.00R.

Thiokol Corporation: *See*—
Humiston, Robert G.; Ralston, Joseph L.; and Marchant, Brent R., 5,613,358, Cl. 60-250.000.

Third Wave Technologies, Inc.: *See*—
Dahlberg, James E.; Lyamichev, Victor I.; and Brow, Mary Ann D., 5,614,402, Cl. 435-199.000.

Thomas & Betts Corporation: *See*—
O'Neill, Andrew J.; Cook, William H.; Strauss, Richard F.; and Dumont, Kenneth R., 5,613,298, Cl. 29-869.000.

Thomas, Charles W.: *See*—
Deddens, John A., Sr.; and Thomas, Charles W., 5,613,282, Cl. 24-30.50R.

Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Haddow, Philip G.; Mitchell, Roderick L.; Seaward, David R.; and Vernon, Geoffrey W., 5,613,828, Cl. 414-798.900.

Thomas, John B.: *See*—
Varley, Michael J.; and Thomas, John B., 5,614,268, Cl. 427-486.000.

Thomas, Paul-Gerhard, to Robert Thomas Metall- und Elektrowerke. Vacuum cleaner. 5,613,271, Cl. 15-321.000.

Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; and Freyssinet, Georges L., to Rhone-Poulenc Agrochimie. Production of γ-linolenic acid by a Δ6-desaturase. 5,614,393, Cl. 435-134.000.

Thomasson, Joseph R.; and Van Dyke, John, to Phytae, Inc. Self-supporting thermally-protective plant enclosure formed by self-standing container bodies. 5,613,320, Cl. 47-32.100.

Thompson, Dennis C.: *See*—
Audia, James E.; Krushinski, Joseph H., Jr.; Rasmussen, Kurt; Rocco, Vincent P.; Schaus, John M.; Thompson, Dennis C.; and Wong, David T., 5,614,523, Cl. 514-252.000.

Thompson, Gary; and Blackburn, Mike. Playing aid strips. 5,613,855, Cl. 473-438.000.

Thompson, John P., Jr. Foot-pad floor cleaning device. 5,613,897, Cl. 451-59.000.

Thompson, Melvin R.: *See*—
Chester, Roy E.; Coons, Andrew M., III; Harrelson, Hugh G., Jr.; King, Willis M.; Potter, George E.; Sanford, Carl D.; Smith, Patrick C.; Thompson, Melvin R.; Vickery, Leonard C., Jr.; and Whitfield, Jerry M., 5,613,285, Cl. 28-247.000.

Thompson, Robert C.: *See*—
Miley, Harry S.; Thompson, Robert C.; Hubbard, Charles W.; and Perkins, Richard W., 5,614,724, Cl. 250-435.000.

Thompson, Warren L.: *See*—
Cox, Philip D.; and Thompson, Warren L., 5,613,566, Cl. 172-174.000.

Thomson Consumer Electronics, Inc.: *See*—
Helfrich, Kenneth J., 5,615,092, Cl. 363-21.000.
Wilber, James A., 5,614,793, Cl. 315-403.000.

Thomson-CSF: *See*—
Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Debuisschert, Thierry, 5,615,042, Cl. 359-338.000.
Guy, Antoine; and Romenteau, Pierre, 5,615,262, Cl. 380-4.000.

Thomson Industries, Inc.: *See*—
Ng, Alison, 5,613,780, Cl. 384-43.000.

Thomson, James: *See*—
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 5,614,185, Cl. 424-85.200.

Thornock, Del M.: *See*—
Hamilton, Peter W.; Otten, Geneva G.; and Thornock, Del M., 5,613,609, Cl. 206-531.000.

Thrasher, Kenneth J.: *See*—
Hauser, Kenneth L.; Palkowitz, Alan D.; Sall, Daniel J.; and Thrasher, Kenneth J., 5,614,639, Cl. 549-57.000.

Thread Technology, Inc.: *See*—
Cabahug, Eric F., 5,613,816, Cl. 411-433.000.

Throckmorton, John A.: *See*—
Cobbley, David A.; and Throckmorton, John A., 5,614,940, Cl. 348-7.000.

Thünker, Norbert: *See*—
Fricke, Andreas; Renner, Jochen; and Thünker, Norbert, 5,613,671, Cl. 271-91.000.

Thyssen Stahl Aktiengesellschaft: *See*—
Delassus, Pierre; Legrand, Hugues; Raisson, Gerard; Di Fant, Marc; Barbe, Jacques; and Mazodier, Francois, 5,613,546, Cl. 164-428.000.

Tichane, David M.: *See*—
Collins, Tom W.; Avery, William J.; Suy, John S.; and Tichane, David M., 5,615,086, Cl. 361-704.000.

Tiede, Clair L.; Bakula, Mark S.; and Bradshaw, Guy L., to Beere Precision Medical Instruments, Inc. Ratcheting screwdriver. 5,613,585, Cl. 192-43.100.

Tiedeberg, Jay S.: *See*—
Mullins, Patrick; Benedict, Charles; and Tiedeberg, Jay S., 5,614,788, Cl. 315-82.000.

Tiggeloven, Leonardus J. A.: *See*—
Van Ochten, Sander A.; and Tiggeloven, Leonardus J. A., 5,613,905, Cl. 452-160.000.

Tillemans, Gregory M. Dust-free method and apparatus for locating and cutting holes for electrical outlet boxes, recessed light fixtures and the like. 5,613,811, Cl. 409-130.000.

Tiller, Byron K.: *See*—
Allard, David J.; Canova, Francis J., Jr.; Johnson, Debra A. G.; Lanier, Charles S.; Lewis, James R.; Tiller, Byron K.; Villafana, William; and Yee, Raymond L., 5,615,384, Cl. 395-800.000.

Tiller, Dale K.: *See*—
Newsham, Guy R.; and Tiller, Dale K., 5,615,134, Cl. 364-550.000.

Ting, See-Chang: *See*—
Ukada, Masahiro, 5,613,595, Cl. 198-774.300.

TIR Technologies, Inc.: *See*—
Parkyn, William A., Jr.; and Pelka, David G., 5,613,769, Cl. 362-338.000.

Titan Information Systems Corporation: *See*—
Poole, Andrew D.; and Engel, Gernot M., 5,615,338, Cl. 395-200.040.

Tiwari, Sanjai: *See*—
Leung, Ting Y.; Pirahesh, Mir H.; Simmen, David E.; Strain, Lori G.; and Tiwari, Sanjai, 5,615,361, Cl. 395-603.000.

Tjoeng, Foe S.: *See*—
Adams, Steven P.; Tjoeng, Foe S.; and Zupec, Mark E., 5,614,539, Cl. 514-357.000.

Tobias, John S.: *See*—
Bellantoni, John V.; and Tobias, John S., 5,613,859, Cl. 439-63.000.

Toda, Katsuaki; Ohtsuka, Tadahiro; and Watanabe, Osamu, to Mitsubishi Jukogyo Kabushiki Kaisha. Colliding G simulation apparatus. 5,614,656, Cl. 73-12.010.

Toda, Naoki: *See*—
Ueda, Noriyoshi; and Toda, Naoki, 5,615,000, Cl. 399-361.000.

Toda, Yukihide: *See*—
Kawashima, Masato; Shimobuchi, Hideyuki; Okitsu, Hiroyuki; Matsuzuki, Masato; Yoshida, Hiroaki; Fujii, Michihiro; Okawa, Yukinari; Iida, Masaru; Ito, Katsuyasu; Toda, Yukihide; and Nagai, Seiji, 5,615,001, Cl. 399-226.000.

Tofigh, Farshid; Brar, Parminder S.; Tsao, Yen-Kuei; Clements, Evan; and Maier, Joseph, to Leach Corporation. Multichannel power distribution system. 5,615,105, Cl. 364-138.000.

Tokimatsu, Hiroyuki: *See*—
Haneda, Satoshi; Nagase, Hisayoshi; Tokimatsu, Hiroyuki; Hamada, Shuta; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,615,002, Cl. 399-227.000.

Tokin Corporation: *See*—
Momotani, Hiroshi; Otsuki, Etsuo; Hasebe, Akio; and Takeuchi, Tamiko, 5,614,805, Cl. 320-21.000.

Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Light source for photographic printer. 5,614,989, Cl. 355-67.000.

Tokuda, Katsumi; and Sugimura, Ryoichi, to Matsushita Electric Co., Ltd. Apparatus and method for compressing texts. 5,614,899, Cl. 341-51.000.

Tokuda, Masakazu: *See*—
Hiramitsu, Tetsushi; Shiraki, Koji; Iwai, Yasunori; and Tokuda, Masakazu, 5,613,700, Cl. 280-728.200.

Tokushige, Kaoru: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,615,165, Cl. 365-230.060.

Tokyo Electron Limited: *See*—
Itoyama, Taketoshi; Abe, Yuichi; and Yamaguchi, Masao, 5,614,837, Cl. 324-760.000.

Tokyo Ohka Kogyo Co., Ltd.: *See*—
Sakamoto, Yoshinori; Hagiwara, Yoshio; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,614,251, Cl. 427-96.000.
Shibuya, Tatsuhiko; Okano, Susumu; Kobari, Hideya; Hagiwara, Yoshio; and Nakayama, Toshimasa, 5,614,271, Cl. 427-541.000.

Toma, Yasushi: *See*—
Itoh, Junju; and Toma, Yasushi, 5,614,663, Cl. 73-105.000.

Tomisaki, Itaru: *See*—
Takeda, Toru; Seko, Satoru; Ishioka, Hideaki; and Tomisaki, Itaru, 5,615,191, Cl. 369-58.000.

Tomita, Kouhei: *See*—
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,615,181, Cl. 369-13.000.

Tomita, Yoshinori: *See*—
Ohsumi, Hideki; and Tomita, Yoshinori, 5,613,868, Cl. 439-275.000.

Tomiyoshi, Akira: *See*—
Kawaguchi, Takafumi; Tomiyoshi, Akira; and Takeda, Makoto, 5,614,922, Cl. 345-89.000.

Tomley, Fiona M.: *See*—
Bumstead, Janene M.; Dunn, Paul P. J.; Tomley, Fiona M.; and Vermeulen, Arnoldus N., 5,614,195, Cl. 424-171.100.

Tomoegawa Paper Co., Ltd.: *See*—
Hashimoto, Takeshi; Tezuka, Akira; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,614,316, Cl. 428-344.000.

Toorians, Arman; and Liu, Elizabeth Q., to Phoenix Technologies Ltd. System and method for debugging a computing system. 5,615,331, Cl. 395-182.070.

Toray Industries, Inc: *See—*
Hudis, Martin; Koebisu, Mamoru; and Hatada, Kenji, 5,615,078, Cl. 361-313.000.

Toray Industries, Inc.: *See—*
Eguchi, Masuichi; Asano, Masaya; and Kusano, Kazutaka, 5,614,354, Cl. 430-326.000.

Toray Plastics America, Inc.: *See—*
Hudis, Martin; Koebisu, Mamoru; and Hatada, Kenji, 5,615,078, Cl. 361-313.000.

Torigoe, Shinji; Hattori, Jiro; and Takagi, Akimitsu, to Minnesota Mining and Manufacturing. Method of making an interengaging fastener member. 5,614,232, Cl. 425-545.000.

Torvec, Inc.: *See—*
Gleasman, Vernon E.; and Gleasman, Keith E., 5,613,914, Cl. 464-159.000.

Toshiba Corporation: *See—*
Hara, Yoshiyuki; and Nitta, Tsuneo, 5,615,300, Cl. 395-2.690.
Liu Sheng, Olivia R.; Wei, Chih-Ping; and Ozeki, Takeshi, 5,615,112, Cl. 395-615.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Sasaki, Kyoichi; and Kato, Yoshihisa, 5,615,406, Cl. 419-14.000.

Toshida, Yomishi: *See—*
Sato, Koichi; Yoshinaga, Kazuo; Toshida, Yomishi; and Eguchi, Takeo, 5,614,125, Cl. 252-299.010.

Toshima, Toshio; Ishihara, Takahiro; and Yokomizo, Takashi, to Kubota Corporation. Separation-preventive pipe joint. 5,613,714, Cl. 285-39.000.

Tostain, Denis J.: *See—*
Bentley, Fred M.; and Tostain, Denis J., 5,613,701, Cl. 280-728.300.

Toto Ltd.: *See—*
Hayakawa, Makoto; Kobayashi, Osamu; and Yamauchi, Takeshi, 5,615,291, Cl. 385-84.000.

Touchstone, Inc.: *See—*
Rhodes, Wayne A., 5,613,551, Cl. 165-82.000.

Toudo, Tatsuya; Nakagawa, Tadahiro; Nomura, Toshiyuki; Mori, Haruhiko; and Nojiri, Shigehiro, to Murata Manufacturing Co., Ltd. Method of press-molding ceramic green sheet laminate. 5,614,053, Cl. 156-312.000.

Townsend, Donald J.: *See—*
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,614,234, Cl. 426-5.000.

Towsend, Marvin S.: *See—*
Martin, Neil F.; and Robinson, Howard N., 5,614,545, Cl. 514-398.000.

Toyama, Kazuhiko; and Shimokawa, Shingo, to Sony Corporation. Biaxial actuator. 5,615,053, Cl. 359-813.000.

Toyo Aluminium Kabushiki Kaisha: *See—*
Imahashi, Kunihiko; Miura, Hirohisa; Yamada, Yasuhiro; Michioka, Hirofumi; Kusui, Jun; and Tanaka, Akiei, 5,614,036, Cl. 148-437.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Adachi, Osao; and Matsushita, Kazunobu, 5,614,374, Cl. 435-26.000.
Kuroki, Tadao; and Ota, Yasuo, 5,613,987, Cl. 8-513.000.

Toyo Communication Equipment Co., Ltd.: *See—*
Ando, Ichiro; Sasaki, Akio; Minamiyama, Tomoyuki; Maki, Shoichi; Yasui, Siryo; and Ichise, Hiroshi, 5,615,308, Cl. 395-50.000.

Toyo Denka Kogyo Co., Ltd.: *See—*
Takahashi, Joji; Kanazawa, Eiji; Yamashita, Yoshitaka; Kashiwai, Tomio; and Takenaka, Hideo, 5,614,401, Cl. 435-176.000.

Toyoda Gosei Co., Ltd.: *See—*
Hiramitsu, Tetsushi; Shiraki, Koji; Iwai, Yasunori; and Tokuda, Masakazu, 5,613,700, Cl. 280-728.200.

Toyoda Koki Kabushiki Kaisha: *See—*
Nakano, Hiroyuki; and Saito, Akira, 5,614,800, Cl. 318-568.180.

Toyota Jidosha Kabushiki Kaisha: *See—*
Imahashi, Kunihiko; Miura, Hirohisa; Yamada, Yasuhiro; Michioka, Hirofumi; Kusui, Jun; and Tanaka, Akiei, 5,614,036, Cl. 148-437.000.
Iwai, Akira; Yoshioka, Mamoru; and Tsutsumi, Yasuhito, 5,613,360, Cl. 60-284.000.
Kono, Katsumi; and Nakamura, Shinya, 5,613,583, Cl. 192-3.310.

Tracor Aerospace, Inc.: *See—*
Brown, Ronald E.; and Majerus, Mark E., 5,614,692, Cl. 102-307.000.

Tran, Don H.: *See—*
Boyle, William J.; Wong, Rosalinda A.; Shy, James M.; and Tran, Don H., 5,613,981, Cl. 606-198.000.

Transwitch Corp.: *See—*
Chang, Sin-Min; and Parrella, Eugene L., 5,615,237, Cl. 375-368.000.

Travelute, Fred L.; and Hoffman, Robert E., to Wellman, Inc. Resilient molded preform made from staple fibers of self-texturing filaments. 5,614,296, Cl. 428-212.000.

Traver, Robert F., Jr., to W. L. Gore & Associates, Inc. Positive latching connector with delatching mechanism. 5,613,870, Cl. 439-352.000.

Travis, Kristin J.: *See—*
Pezzullo, William V.; Brisebois, Michel J.; Johns, Joseph B.; Orford, Kenneth M.; Travis, Kristin J.; Tsuji, Bruce H.; Ross, William T.; Robert, Andre J.; and Read, Clifford D., 5,615,257, Cl. 379-396.000.

Trawöger, Werner; and Pregenzer, Bruno. Separator for a dental suction apparatus. 5,613,851, Cl. 433-92.000.

Tredegar Industries: *See—*
Potnis, Prasad S.; and Francis, Michael A., 5,614,283, Cl. 428-131.000.

Tremblay, Glenn A.: *See—*
Bissett, Thomas D.; Fiorentino, Richard D.; Glorioso, Robert M.; McCauley, Diane T.; McCollum, James D.; Tremblay, Glenn A.; and Troiani, Mario, 5,615,403, Cl. 395-881.000.

Treskov, Yakov: *See—*
Phelan, Joseph P.; and Treskov, Yakov, 5,614,908, Cl. 342-33.000.

Trickett, Howard J. Slip sheet for transporting goods. 5,613,447, Cl. 108-51.100.

Trimble Navigation: *See—*
Nichols, Mark; McBride, Kenneth W.; Viney, Ian; Taylor, Arthur; Jackson, Richard; and Schipper, John F., 5,614,913, Cl. 342-357.000.

Trimble Navigation Limited: *See—*
Turney, Paul F., 5,615,236, Cl. 375-365.000.

Trinity Industries, Inc.: *See—*
DiLuigi, Michael W.; Lund, Raymond R.; and Bramlett, Kevin D., 5,613,446, Cl. 105-282.200.

Troiani, Mario: *See—*
Bissett, Thomas D.; Fiorentino, Richard D.; Glorioso, Robert M.; McCauley, Diane T.; McCollum, James D.; Tremblay, Glenn A.; and Troiani, Mario, 5,615,403, Cl. 395-881.000.

Trokhan, Paul D.: *See—*
Van Phan, Dean; and Trokhan, Paul D., 5,614,061, Cl. 162-109.000.

Tronchetti, Renzo: *See—*
Tronchetti, Sauro; and Tronchetti, Renzo, 5,613,608, Cl. 206-494.000.

Tronchetti, Sauro; and Tronchetti, Renzo, to Industrie Cartarie Tronchetti S.P.A. Container for paper sheets. 5,613,608, Cl. 206-494.000.

Troncoso, Vincent, to Golden Key Futura, Inc. Archery bow and connector-stabilizer assembly and improved connector-stabilizer sub-assembly for the same. 5,613,484, Cl. 124-89.000.

Trotta, Thomas; and Johnson, Jeffrey A., to Cordis Corporation. Puncture resistant balloon catheter. 5,613,979, Cl. 606-194.000.

Trotter, Douglas H.: *See—*
Bisbee, Stephen F.; and Trotter, Douglas H., 5,615,268, Cl. 380-25.000.

Trustees of Columbia University in the City of New York, The: *See—*
Erlich, Ron; and Thayer, Charles, 5,613,869, Cl. 439-344.000.

Truth Hardware Corporation: *See—*
Dallmann, Mary B.; Voss, Gregory O.; and Dallmann, Brian D., 5,613,277, Cl. 16-368.000.

Trützschler GmbH & Co. KG: *See—*
Mandl, Gerhard, 5,613,280, Cl. 19-239.000.
Temburg, Konrad, 5,613,278, Cl. 19-105.000.

TRW Inc.: *See—*
Oyama, Bert K., 5,614,903, Cl. 341-118.000.

TRW Occupant Restraint Systems GmbH: *See—*
Berti, Dietmar, 5,613,707, Cl. 280-743.100.

TRW Vehicle Safety Systems Inc.: *See—*
Fischer, Craig M., 5,613,703, Cl. 280-737.000.
Goetz, George W., 5,613,702, Cl. 280-735.000.
Patercsak, Patrick E.; and Essad, James W., 5,613,698, Cl. 280-728.100.
White, Michael J., Jr.; and Wallner, John P., 5,613,704, Cl. 280-740.000.

Tsai, Cheng-Hsien. Retractable handle assembly of a suitcase truck. 5,613,273, Cl. 16-115.000.

Tsai, Rong-Dzung: *See—*
Wu, Tzong-Sheau; Chen, Tian-Rein; and Tsai, Rong-Dzung, 5,615,018, Cl. 386-68.000.

Tsao, Yen-Kuei: *See—*
Tofigh, Farshid; Brar, Parminder S.; Tsao, Yen-Kuei; Clements, Evan; and Maier, Joseph, 5,615,105, Cl. 364-138.000.

Tschernatsch, Günther, to MAN TAKRAF Fördertechnik GmbH. Continuous-operation cargo-transfer equipment. 5,613,820, Cl. 414-138.600.

Tschosik, Bruce A.: *See—*
Person, Herman R.; Adelman, Jeffrey T.; Tschosik, Bruce A.; Veik, Thomas L.; and Zwick, Scott D., 5,614,757, Cl. 257-531.000.

Tseng, Chuen-Shyan. Lawn chair with protective armrest sleeve members. 5,613,737, Cl. 297-463.100.

Tseng, Susan Y.; Chuang, Jui-Chang; and Wolf, Philip F., to ISP Investments Inc. Homogenized flowable hydrogel of crosslinked N-vinyl lactam polymer. 5,614,583, Cl. 524-555.000.

Tserng, Hua Q., to Texas Instruments Incorporated. Method of making flip-chip microwave integrated circuit. 5,614,442, Cl. 437-209.000.

Tsien, Grace O.: *See—*
Mink, Robert I.; Nowlin, Thomas E.; Schregenberger, Sandra D.; Shirodkar, Pradeep P.; and Tsien, Grace O., 5,614,456, Cl. 502-115.000.

Tsubokura, Sadao: *See—*
Kaifu, Masao; and Tsubokura, Sadao, 5,613,650, Cl. 244-3.160.

Tsuboyama, Akira: *See—*
Kuribayashi, Masaki; Futami, Yukiko; Inoue, Hiroshi; Tsuboyama, Akira; and Inaba, Yutaka, 5,615,027, Cl. 345-87.000.

Tsuchida, Tomohisa: *See—*
Kondo, Kazuo; Tada, Teruo; Wano, Toyoki; Uehara, Hideki; and Tsuchida, Tomohisa, 5,614,315, Cl. 428-332.000.

Tsuchimoto, Masahiro: *See—*
Kondo, Shiro; Fukushima, Hisashi; Hasegawa, Masaichi; Tsuchimoto, Masahiro; Nagata, Ikuo; Osada, Yoshio; Komoriya, Keiji; and Yamaguchi, Hisao, 5,614,520, Cl. 514-236.800.

Tsuda, Masaomi: *See—*
Abe, Hiroshi; Taniuchi, Toshihiko; Tsuda, Masaomi; and Fujiwara, Yoshito, 5,614,149, Cl. 420-43.000.

Tsuji, Bruce H.: *See—*

Pezzullo, William V.; Brisebois, Michel J.; Johns, Joseph B.; Orford, Kenneth M.; Travis, Kristin J.; Tsuji, Bruce H.; Ross, William T.; Robert, Andre J.; and Read, Clifford D., 5,615,257, Cl. 379-396.000.

Tsuji, Masanori; and Kashiyama, Motohisa, to Yazaki Corporation. Reverse insertion preventing connector. 5,613,878, Cl. 439-595.000.

Tsuji, Tomoko: *See—*
Kenmochi, Yasuhiko; Takai, Hisashi; and Tsuji, Tomoko, 5,613,962, Cl. 604-378.000.

Tsukahara, Daiki: *See—*
Wakabayashi, Hiroshi; and Tsukahara, Daiki, 5,614,980, Cl. 396-147.000.

Tsukamoto, Noboru: *See—*
Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, 5,614,121, Cl. 222-603.000.

Tsukasa Industry Co., Ltd.: *See—*
Kato, Fumio, 5,613,824, Cl. 414-412.000.

Tsukuda, Noboru: *See—*
Nakamura, Akio; Tsukuda, Noboru; and Matsushima, Shinichiro, 5,614,146, Cl. 264-511.000.

Tsumura, Masahiro; Miyasita, Hiromi; and Oyama, Kaneyoshi, to Kashima Oil Co., Ltd. Fiber-reinforced resin plate and process for producing the same. 5,614,600, Cl. 525-481.000.

Tsuru, Seiji; Hirose, Shinichi; Okita, Junji; Kaneki, Tadashi; and Kikuchi, Katsuaki, to Hitachi, Ltd. Package-type screw compressor. 5,613,843, Cl. 417-313.000.

Tsurubuchi, Akeshi: *See—*
Yamamoto, Akio; Iwanami, Wataru; Yabe, Hiroshi; Yamazaki, Kenji; Miyashita, Tatsumi; and Tsurubuchi, Akeshi, 5,615,179, Cl. 368-281.000.

Tsurumi, Yoshimitsu, to Ando Electric Co., Ltd. Test pattern generation device for semiconductor testing apparatus. 5,615,218, Cl. 371-27.000.

Tsuruta, Yukiyasu; Noda, Tetsuo; and Yoshioka, Akihiro, to Sanyo Electric Co., Ltd. Disc playing device. 5,615,184, Cl. 369-37.000.

Tsutsumi, Yasuhito: *See—*
Iwai, Akira; Yoshioka, Mamoru; and Tsutsumi, Yasuhito, 5,613,360, Cl. 60-284.000.

TTI Trenchless Technologies, Inc.: *See—*
Reber, Cleve C.; and Myers, Kurt S., 5,613,807, Cl. 405-156.000.

Tuck, Michael C.: *See—*
Krzysik, Duane G.; Farrington, Theodore E., Jr.; Garvey, Lee P.; Henderson, Cynthia W.; Sauer, Robert D.; Smith, Michael J.; and Tuck, Michael C., 5,614,293, Cl. 428-211.000.

Tucker, Kenneth W.; and Weeks, Gregory P., to Du Pont de Nemours, E. I., and Company. Wet-laid sheet material and composites thereof. 5,614,312, Cl. 428-323.000.

Tuckey, Charles H.; Doane, Kirk D.; and Williams, Kevin L., to Walbro Corporation. Submersible electronic drive module. 5,613,844, Cl. 417-366.000.

Tucoulat, Daniel; Jacq, Patrick; Kerrien, Philippe; and Kerlau, Daniel, to Compagnie Generale des Matieres Nucleaires. Compacting method and apparatus, particularly adapted to compacting hazardous materials. 5,613,433, Cl. 100-35.000.

Tuggle, Christopher K.; and Freeman, Albert E., to Iowa State University Research Foundation, Inc. Genetic marker for improved milk production traits in cattle. 5,614,364, Cl. 435-6.000.

Turley, Eva A.: *See—*
Falk, Rudolf E.; Asculai, Samuel S.; and Turley, Eva A., 5,614,506, Cl. 514-54.000.

Turner, Jonathan D.: *See—*
Bish, Michael P.; Blyshak, William M.; Smith, Donald E.; and Turner, Jonathan D., 5,613,255, Cl. 5-611.000.

Turner, Robert M.; and Barnes, Russell N., to Environmental Screening Technology, Inc. Thermal shock insert. 5,613,776, Cl. 374-57.000.

Turney, Paul F., to Trimble Navigation Limited. Method and apparatus for direct re-acquisition of precision-code after a short power interruption. 5,615,236, Cl. 375-365.000.

Turski, Lechoslaw; Steppuhn, Karin G.; Schneider, Herbert; and Stephens, David N., to Schering Aktiengesellschaft. Pharmaceutical agents for preventing the development of tolerance during the treatment with benzodiazepine-receptor-binding active ingredients. 5,614,509, Cl. 514-82.000.

Tuyn, Roberto: *See—*
Hamers, Ludovicus W. A.; and Tuyn, Roberto, 5,613,351, Cl. 53-55.000.

Tuzmen, Zeki; John, Julius F.; and Setele, Richard A., to Newell Operating Company. Laminated louver for a blind. 5,613,542, Cl. 160-236.000.

Tynet, Leslie M. Flow control apparatus for a water powered sump pump. 5,613,835, Cl. 417-182.500.

Tzeng, Sing-Mo: *See—*
Farkas, Janos; Jairath, Rahul; Stell, Matt; and Tzeng, Sing-Mo, 5,614,444, Cl. 437-225.000.

U S West Technologies, Inc.: *See—*
Babayev, Djangir A.; Berger, Richard M.; Dean, Vincil C.; Hansen, Ronald L.; and Parrish, Scott H., 5,615,121, Cl. 395-209.000.
Qiu, Yuping; Ryan, Jennifer; Sun, Xiaorong; Pillsbury, George B.; Stevens, Alex; and Zubiate, Rudy, 5,615,254, Cl. 379-221.000.

UAB Research Foundation, The: *See—*
Morrow, Casey D., 5,614,413, Cl. 435-320.100.

Ubekata Industries Co., Ltd.: *See—*
Higashikata, Isao; Ando, Yasunori; and Koseki, Hideki, 5,615,071, Cl. 361-22.000.

Uchikoga, Shuichi; Ibaraki, Nobuki; Suzuki, Kouji; Shimano, Takuya; and Fukuda, Kaichi, to Kabushiki Kaisha Toshiba. Thin-film transistor element having a structure promoting reduction of light-induced leakage current. 5,614,731, Cl. 257-59.000.

Uchikoshi, Susumu; Kiyota, Shigeyuki; Iwasaki, Yasukazu; Noguchi, Takatoshi; and Uchiyama, Makoto, to Nissan Motor Co., Ltd. Semiconductor device with leakage current prevention. 5,614,753, Cl. 257-417.000.

Uchino, Keijiro; Mizuno, Takashi; Murakami, Sachie; Nakashima, Hideki; Yamamoto, Naoki; and Ogawara, Hiroshi, to Nippon Flour Mills Co., Ltd. Reverse transcriptase inhibitors and antiviral agents. 5,614,554, Cl. 514-517.000.

Uchiyama, Kunio: *See—*
Kawahara, Takayuki; Hori, Ryoichi; Horiguchi, Masashi; Kurihara, Ryoichi; Itoh, Kiyoo; Aoki, Masakazu; Sakata, Takeshi; and Uchiyama, Kunio, 5,614,847, Cl. 326-98.000.

Uchiyama, Makoto: *See—*
Uchikoshi, Susumu; Kiyota, Shigeyuki; Iwasaki, Yasukazu; Noguchi, Takatoshi; and Uchiyama, Makoto, 5,614,753, Cl. 257-417.000.

Uchiyama, Mineharu: *See—*
Fukuta, Motoji; Ozawa, Masanori; Naruoka, Yoshihiko; Uchiyama, Mineharu; and Itoh, Ken, 5,615,057, Cl. 386-117.000.

Udo, Shinya: *See—*
Yamagata, Seiji; Udo, Shinya; and Asami, Fumitaka, 5,614,815, Cl. 323-313.000.

Udovich, Carl A.: *See—*
Bhattacharyya, Alakananda; Kleefisch, Mark S.; and Udovich, Carl A., 5,614,163, Cl. 423-418.200.

Ueda, Akihiko: *See—*
Kubo, Motonobu; Enomoto, Takashi; Sano, Taro; Hayashi, Kazunori; Ueda, Akihiko; and Morita, Masamichi, 5,614,123, Cl. 252-862.000.

Ueda, Noriyoshi; and Toda, Naoki, to Canon Kabushiki Kaisha; and Nitto Kogyo Co., Ltd. Convey belt and conveying apparatus with it. 5,615,000, Cl. 399-361.000.

Uehara, Hideki: *See—*
Kondo, Kazuo; Tada, Teruo; Wano, Toyoki; Uehara, Hideki; and Tsuchida, Tomohisa, 5,614,315, Cl. 428-332.000.

Uehara, Yasuhiro: *See—*
Kanesawa, Yoshio; Uehara, Yasuhiro; and Kusumoto, Yasuhiro, 5,614,999, Cl. 399-329.000.

Uemura, Katsuji: *See—*
Hirakawa, Yoshiyuki; Yoshino, Hiroyuki; Uemura, Katsuji; Fukui, Eiji; and Hanamori, Tami, 5,614,220, Cl. 424-480.000.

Ueno, Katsunori, to Fuji Electric Co., Ltd. Silicon carbide trench MOSFET. 5,614,749, Cl. 257-330.000.

Ueshima, Tsuyoshi: *See—*
Kakuishi, Mitsuo; and Ueshima, Tsuyoshi, 5,615,235, Cl. 375-355.000.

UGTS, Inc.: *See—*
Valente, Kevin A.; Reuter, Ernest R.; and Wagner, Randall M., 5,615,005, Cl. 356-30.000.

Uiji, Hiroyasu: *See—*
Terao, Masaru; Tsukamoto, Noboru; Kurashina, Yukinobu; Yamamoto, Kenji; Inoue, Junichi; and Uiji, Hiroyasu, 5,614,121, Cl. 222-603.000.

Ukada, Masahiro, to Ting, See-Chang; and Nakata, Shigeo. Automatic slope fruit feeding machine used with a fruit grading machine. 5,613,595, Cl. 198-774.300.

Ukai, Yasuhiro; Sunata, Tomihisa; Nakagawa, Takanobu; and Takeuchi, Shu, to Hosiden Corporation. Top gate thin-film transistor. 5,614,729, Cl. 257-57.000.

Uknes, Scott J.: *See—*
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,614,395, Cl. 435-172.300.

Uliana, Virna A.: *See—*
Groves, David H.; Hemy, Martin F.; Spence, John R.; and Uliana, Virna A., 5,613,680, Cl. 273-138.200.

Ulmer, Herbert; and Rocafort, Colleen M., to ISP Investments Inc. Hair spray composition having 80% or less VOC and advantageous physical and performance characteristics. 5,614,173, Cl. 424-47.000.

Ultra Bond Licensing Corporation: *See—*
Campfield, Richard A., 5,614,046, Cl. 156-94.000.

Umemoto, Yasunobu: *See—*
Doke, Katsuro; Sei, Toshikazu; Umemoto, Yasunobu; and Ban, Eiji, 5,614,842, Cl. 326-58.000.

UNEX Corporation: *See—*
Lucey, Robert E.; and MacDonald, James T., 5,615,273, Cl. 381-169.000.

Uni-Charm Corporation: *See—*
Kenmochi, Yasuhiko; Takai, Hisashi; and Tsuji, Tomoko, 5,613,962, Cl. 604-378.000.
Mizutani, Satoshi, 5,613,960, Cl. 604-365.000.

Union Oil Company of California: *See—*
Gallup, Darrell L., 5,614,100, Cl. 210-665.000.

Union Special Corporation: *See—*
Adamski, Maximilian, Jr.; Ruderman, Stephen S.; and Pawlowski, Marian, 5,613,454, Cl. 112-260.000.

Unisia Jecs Corporation: *See—*
Hosoya, Hajime, 5,614,667, Cl. 73-118.200.

Ishizaki, Kazuyoshi; Yamamuro, Masateru; Ishizuka, Atsushi; Ohya, Shouji; and Hamao, Miyoko, 5,613,840, Cl. 417-300.000.
Komai, Hiromichi; and Haraguchi, Hidenori, 5,613,691, Cl. 277-152.000.
Yamagishi, Yoichiro, 5,614,664, Cl. 73-118.100.

United Biscuits (UK) Limited: *See—*
Clow, Andrew E. C.; Hill, Brian D.; and Rycraft, Debra, 5,614,237, Cl. 426-144.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Durnford, Simon J., 5,614,897, Cl. 340-973.000.

United Microelectronics Corp.: *See—*
Chao, Fang-Ching, 5,614,434, Cl. 437-70.000.
Hong, Gary; and Chen, Hwi-Huang, 5,614,746, Cl. 257-316.000.
Yang, Sheng-Hsing, 5,614,421, Cl. 437-24.000.

U.S. Flywheel Systems: *See—*
Bitterly, Jack G.; and Bitterly, Steven E., 5,614,777, Cl. 310-74.000.

United States of America
Administrator of the United States Enviromental Protection Agency: *See—*
Mueller, James G.; Pritchard, Parmely H.; and Lantz, Suzanne, 5,614,410, Cl. 435-262.500.

Air Force: *See—*
Black, Alistair; Apte, Raj B.; and Bloom, David M., 5,614,834, Cl. 324-753.000.
Morrissey, James F., 5,614,671, Cl. 73-335.050.

Army: *See—*
Ahmad, Falih; Evans, James A.; and Mason, George L., 5,614,893, Cl. 340-870.160.
Katz, Martin, 5,614,301, Cl. 442-315.000.
Richards, Kerry, 5,613,993, Cl. 65-17.200.
Rickman, Denis D., 5,614,659, Cl. 73-35.160.
Schmaljohn, Connie S.; McClain, David J.; Dalrymple, Joel, deceased, 5,614,193, Cl. 424-186.100.

Energy: *See—*
Wiencek, Thomas C.; Matos, James E.; and Hofman, Gerard L., 5,615,238, Cl. 376-202.000.

Health and Human Services: *See—*
Puri, Raj K.; Debinski, Waldemar; Pastan, Ira; and Obiri, Nicholas, 5,614,191, Cl. 424-178.100.
Sachs, David H., 5,614,187, Cl. 424-93.210.

National Aeronautics and Space Administration: *See—*
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Navy: *See—*
Bradley, Joseph L.; Whiteman, Don; and Mills, George T., 5,614,910, Cl. 342-119.000.
Carter, G. Clifford; Salt, J. Eric; and Yuan, Yun X., 5,615,175, Cl. 367-124.000.
Fleck, Charles J., Sr.; and Bohinski, Robert A., 5,614,790, Cl. 315-135.000.
Kuklinski, Robert, 5,613,456, Cl. 114-67.00A.

Secretary of Agricultural: *See—*
Stanker, Larry H.; Holtzapple, Carol K.; and Friedman, Mendel, 5,614,408, Cl. 435-341.000.

U.S. Philips Corporation: *See—*
Hageraats, Johannes J. E. M., 5,614,873, Cl. 333-22.00R.
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United Technologies Corporation: *See—*
Austin, Mary A.; Dunne, Kenneth C.; Lindland, Dag; Frey, Phillip L.; Hystad, Dean G.; Nelson, Richard E.; and Warner, Bradley D., 5,614,116, Cl. 219-130.210.
Downs, James P.; and Ruano, Eduardo, 5,614,294, Cl. 428-212.000.
Schlinker, Robert H.; and Kerschen, Edward J., 5,613,649, Cl. 244-1.00N.

Unitika Ltd.: *See—*
Tanaka, Hiroshi; Miyahara, Yoshiki; Kasetani, Satoshi; Esaki, Kouji; Nishimura, Shigetaka; and Inoue, Takashi, 5,614,298, Cl. 428-219.000.

Universal Electronics Inc.: *See—*
Hayes, Patrick H.; and Nguyen, Kimthoa T., 5,614,906, Cl. 341-176.000.

Universidad de Antioquia: *See—*
Mondragon, Fanor; Fernandez, John; Jaramillo, Alfredo; and Quintero, Gustavo, 5,614,459, Cl. 502-417.000.

University of Arkansas, Board of Trustees of the: *See—*
Bobbitt, Donald R.; and Jackson, Warren A., 5,614,073, Cl. 204-452.000.

University of California, The Regents of the: *See—*
Cochrum, Kent C., 5,614,204, Cl. 424-423.000.
Cohen, Daniel A., 5,615,224, Cl. 372-36.000.
Frankenberger, William T., Jr.; and Martens, Dean A., 5,614,467, Cl. 504-138.000.
Fu, Chi-Yung; and Petrich, Loren I., 5,615,287, Cl. 382-232.000.
Petroff, Pierre; Leonard, Devin; and Krishnamurthy, Mohan, 5,614,435, Cl. 437-110.000.
Stillman, Bruce W.; Bell, Stephen P.; Kobayashi, Ryuji; Rine, Jasper; Foss, Margit; McNally, Francis J.; Laurenson, Patricia; Herskowitz, Ira; Li, Joachim; Gavin, Kimberly; and Hidaka, Masumi, 5,614,618, Cl. 536-23.100.

University of Louisville Research Foundation, Inc.: *See—*
Solberg, Keith; Pitts, William K.; and Walsh, Kevin M., 5,614,722, Cl. 250-374.000.

University of Maryland Biotechnology Institute, The: *See—*
O'Brochta, David; Warren, William; and Atkinson, Peter, 5,614,398, Cl. 435-172.300.

University of Miami, The: *See—*
Lee, William; Nose, Izuru; and Parel, Jean-Marie, 5,613,972, Cl. 606-107.000.

University of Michigan, The Board of Regents Acting For and on Bebalf of: *See—*
Wakefield, Thomas W.; Stanley, James C.; and Andrews, Philip C., 5,614,494, Cl. 514-12.000.

University of Michigan, The Regents of the: *See—*
Yang, Victor C.; Bartlett, Robert H.; Palsson, Bernhard O.; and Javanmardian, Minoo, 5,614,378, Cl. 435-41.000.

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Richards, Geoffrey N., 5,614,501, Cl. 514-22.000.

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Gmeiner, William H.; and Iversen, Patrick L., 5,614,505, Cl. 514-50.000.

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Kennedy, Ann R.; and Billings, Paul C., 5,614,198, Cl. 424-195.100.

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Chang, Yuan-Hsiang; Gur, David; and Zheng, Bin, 5,615,243, Cl. 378-37.000.

University of Sourthern California, The: *See—*
Spears, Colin P.; and Kang, Sang-Ihn, 5,614,562, Cl. 514-744.000.

University of South Florida, The: *See—*
Hadden, John W.; and Giner-Sorolla, Alfredo, 5,614,504, Cl. 514-45.000.

University of Southern California: *See—*
Rodgers, Kathleen E.; and Dizerega, Gere S., 5,614,515, Cl. 514-176.000.

Uno Liner System Aktiebolag: *See—*
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Uno, Shigeo; Ibamoto, Masahiko; Masuda, Mitsuhiro; Sato, Kazuhiko; Sato, Susumu; Kuroiwa, Hiroshi; and Okada, Mitsuyoshi, to Hitachi, Ltd.; and Hitachi Automotive Engineering and Co., Ltd. Torque feedback shift control device and method. 5,613,920, Cl. 477-109.000.

Unverzagt, Kristen L.: *See—*
Smith, Stephen L.; Bender, James; Martinson, Jeffrey; Loudovaris, Maureen; Mitsven, Orrin D., Jr.; and Unverzagt, Kristen L., 5,614,412, Cl. 435-305.100.

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Cetinkaya, Ismail B., 5,614,083, Cl. 208-161.000.
Galperin, Leonid B.; Bogdan, Paula L.; and Boldingh, Edwin P., 5,614,454, Cl. 502-66.000.
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Russ, Michael B.; and Sechrist, Paul A., 5,614,082, Cl. 208-138.000.

Upscale Technologies, Inc.: *See—*
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Urano, Teruo; Miyaji, Hiroshi; and Maesato, Kazuhiro, to Murakashi Lime Industry Co., Ltd. Anti-fusarium composition containing strains of bacillus Sp., a chitin-containing material, and a powdery material. 5,614,188, Cl. 424-93.460.

Urban, Manfred, to Hoechst Aktiengesellschaft. Process for the preparation of Quinacridone pigments. 5,614,014, Cl. 106-495.000.

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Urdea, Michael S.; Warner, Brian; Running, Joyce A.; Kolberg, Janice A.; Clyne, Jennifer M.; Sanchez-Pescador, Ray; and Horn, Thomas, to Chiron Corporation. Nucleic acid hybridization assay for hepatitis B virus DNA. 5,614,362, Cl. 435-5.000.

Urruela, Jose R.: *See—*
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URSAPHARM Arzneimittel GmbH: *See—*
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US West Technologies, Inc.: *See—*
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Usala, Anton-Lewis, to Encelle, Inc. Bioartificial endocrine device. 5,614,205, Cl. 424-424.000.

Usen, Norman: *See—*
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Ushigami, Yoshiyuki: *See—*
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Usinor-Sacilor Societe Anonyme: *See—*
Delassus, Pierre; Legrand, Hugues; Raisson, Gerard; Di Fant, Marc; Barbe, Jacques; and Mazodier, Francois, 5,613,546, Cl. 164-428.000.

USSC Group, Inc.: *See—*
Miller, Michael T., Sr.; and Nichols, Joseph M., Jr., 5,613,733, Cl. 297-344.100.

Uter, Donavon S. Device for securing the accelerator and brake pedals of a vehicle. 5,613,382, Cl. 70-199.000.

Utsch, Francis V.: *See—*

Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

Utting, Ross G.; Rudolph, Colin; and Girardeau, Laurent, to Alcatel N.V. Extended range TDMA system. 5,615,215, Cl. 370-337.000.

Vail Metal Systems, LLC: *See—*
Plath, David J.; and Buster, James M., 5,613,337, Cl. 52-533.000.

Val-Matic Valve & Mfg. Corporation: *See—*
Makowan, Ted J., 5,613,513, Cl. 137-1.000.

Valente, Kevin A.; Reuter, Ernest R.; and Wagner, Randall M., to UGTS, Inc. Gemstone evaluation system. 5,615,005, Cl. 356-30.000.

Valleylab Inc: *See—*
Makower, Joshua; Zieve, David A.; and Barber, Frank, 5,613,966, Cl. 606-34.000.

Valliere, Charles R.: *See—*
Knutson, Joyce C.; Bishop, Charles W.; and Valliere, Charles R., 5,614,513, Cl. 514-170.000.

Valyocsik, Ernest W., to Mobil Oil Corporation. Benzyl quaternary tropinium compound. 5,614,629, Cl. 546-124.000.

Van Alen, William L., Jr. Variable resistance golf training device. 5,613,915, Cl. 473-228.000.

Van Cleve, David P.: *See—*
Monk, R. Winston; and Van Cleve, David P., 5,614,896, Cl. 340-945.000.

Vande Linde, Gary F. Dual arm lumber stacker assembly. 5,613,827, Cl. 414-791.600.

Vandenbark, Arthur A., to Connective Therapeutics, Inc. T cell receptor peptides as therapeutics for immune-related disease. 5,614,192, Cl. 424-185.100.

Vandenbroeke, Johannes: *See—*
Vandenheuvel, William; and Vandenbroeke, Johannes, 5,614,759, Cl. 257-666.000.

Vandenheuvel, William; and Vandenbroeke, Johannes, to General Instrument Corp. Automated assembly of semiconductor devices using a pair of lead frames. 5,614,759, Cl. 257-666.000.

van der Woude, Jaap: *See—*
Mulder, Roger; Niewold, Willem; Schimmel, Peter J. C.; and van der Woude, Jaap, 5,613,642, Cl. 242-35.50A.

van Drunen, Rudolph; and van Moorsel, Frans J., to Akzo Nobel N.V. Filler-free peroxide masterbatch and process for making it. 5,614,592, Cl. 525-193.000.

Van Duyne, Scott A.; and Smith, Julius O., III, to Leland Stanford Junior University, The Board of Trustees of the. Multidimensional digital waveguide signal synthesis system and method. 5,614,686, Cl. 84-622.000.

Van Dyke, John: *See—*
Thomasson, Joseph R.; and Van Dyke, John, 5,613,320, Cl. 47-32.100.

Van Heertum, John C.: *See—*
Arndt, Kim E.; Kleschick, William A.; Reifschneider, Walter; Swisher, Beth A.; Ehr, Robert J.; Jachetta, John J.; and Van Heertum, John C., 5,614,469, Cl. 504-241.000.

Van Lente, Paul S.; Zeinstra, Mark L.; Suman, Michael J.; and DeVree, William S., to Prince Corporation. Electrical control system for vehicle options. 5,614,885, Cl. 340-525.000.

Van Melle, Hugh, to Amhil Enterprises Ltd. Foldback cup lid having comfortable drinking characteristics. 5,613,619, Cl. 220-712.000.

van Moorsel, Frans J.: *See—*
van Drunen, Rudolph; and van Moorsel, Frans J., 5,614,592, Cl. 525-193.000.

Van Nee, D. J. R., to NovAtel Communications Ltd. Method of estimating a line of sight signal propagation time using a reduced-multipath correlation function. 5,615,232, Cl. 375-346.000.

Van Ochten, Sander A.; and Tiggeloven, Leonardus J. A., to Stork R.M.S. B.V. Method and device for opening a slaughtered animal. 5,613,905, Cl. 452-160.000.

Van Phan, Dean; and Trokhan, Paul D., to Procter & Gamble Company, The. Apparatus for forming a cellulosic fibrous structures having at least three regions distinguished by intensive properties. 5,614,061, Cl. 162-109.000.

Van Rens, Antonia C., to U.S. Philips Corporation. Differential load stage with stepwise variable impedance, and clocked comparator comprising such a load stage. 5,614,853, Cl. 327-77.000.

Van Tyne, Richard G.: *See—*
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Varadaraj, Ramesh, to Exxon Research and Engineering Company. Polymer-surfactant fluids for decontamination of earth formations. 5,614,474, Cl. 507-225.000.

Varley, Michael J.; and Thomas, John B. Coating composition. 5,614,268, Cl. 427-486.000.

Vatavuk, Jan; Neto, Jose R. Z.; and Piccili, Marcos R., to COFAP-Companhia Fabricadora de Pecas. Thermal spraying lining process for piston rings and nozzle for spraying. 5,614,022, Cl. 118-302.000.

Vaughan, Paul R.: *See—*
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Vazquez, Miguel: *See—*
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Veik, Thomas L.: *See—*
Person, Herman R.; Adelman, Jeffrey T.; Tschosik, Bruce A.; Veik, Thomas L.; and Zwick, Scott D., 5,614,757, Cl. 257-531.000.

Velazquez, Alberto, to Viskase Corporation. Polyolefin stretch film. 5,614,297, Cl. 428-218.000.

Venkataramani, Venkat S.; and Shaw, Jeremy P., to General Electric Company. Flame retardant polymer compositions with coated boron phosphate. 5,614,569, Cl. 523-210.000.

Venkatesan, Mali: *See—*
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Venkateswar, Vadlamannati: *See—*
Thakur, Vivek K.; and Venkateswar, Vadlamannati, 5,615,016, Cl. 358-298.000.

Verhnjak, Katarina: *See—*
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Vermeulen, Arnoldus N.: *See—*
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Vernon, Geoffrey W.: *See—*
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Verntofta AB: *See—*
Andersen, Kurt E.; and Madsen, Ole, 5,613,511, Cl. 134-167.00R.

Veronesi, Luciano; and Wilson, Ian L. W., to Westinghouse Electric Corporation. Passively ambient temperature actuated fluid valve. 5,613,634, Cl. 236-101.00R.

Verosol USA Inc.: *See—*
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Verthe, John J. A.: *See—*
Zanzig, David J.; Sandstrom, Paul H.; Crawford, Michael J.; Verthe, John J. A.; and Losey, Cheryl A., 5,614,580, Cl. 524-492.000.

Vetter, Egbert: *See—*
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Vetter, James W.: *See—*
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VIAM - All Russian Institut of Aviation Materials: *See—*
Gribkov, Vladimir N.; Polakov, Alexandre; Pokrovcky, Daniel D.; Silaev, Vladmir A.; Golerov, Yurii A.; and Lyacota, Piotr P., 5,614,162, Cl. 423-346.000.

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Vickery, Leonard C., Jr.: *See—*
Chester, Roy E.; Coons, Andrew M., III; Harrelson, Hugh G., Jr.; King, Willis M.; Potter, George E.; Sanford, Carl D.; Smith, Patrick C.; Thompson, Melvin R.; Vickery, Leonard C., Jr.; and Whitfield, Jerry M., 5,613,285, Cl. 28-247.000.

Vieillefond, Daniel: *See—*
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Vigh, Gyula; Rawjee, Yasir Y.; and Williams, Robert L., Jr., to Texas A&M University, The. Increased efficiency of electrophoretic separations by mobility matching. 5,614,072, Cl. 204-450.000.

Vigoro Corporation, The: *See—*
Moore, William P., 5,613,465, Cl. 119-230.000.

Villafana, William: *See—*
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Viney, Ian: *See—*
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Virginia Tech Intellectual Properties, Inc.: *See—*
Kingston, David G. I.; Chaudhary, Ashok G.; Gharpure, Milind M.; Rimoldi, John M.; and Gunatilaka, A. A. Leslie, 5,614,645, Cl. 549-510.000.
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Viscio, David B.: *See—*
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Viskase Corporation: *See—*
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Vismara, Ivano: *See—*
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VLSI Technology, Inc.: *See—*
Nielson, Edward T., 5,614,868, Cl. 331-1.00A.
Takahashi, Richard J., 5,615,263, Cl. 380-4.000.

Voellmy, Richard: *See*—
Bromley, Peter; Dreano, Michel; Fischbach, Michel; Fouillet, Xavier; Padieu, Prudent; and Voellmy, Richard, 5,614,381, Cl. 435-69.100.
Vogelsang, Klaus: *See*—
Edelmann, Peter; Friedrich, Jurgen; Gebhardt, Hans; Moller, Heribert; Neitz, Alfred; and Vogelsang, Klaus, 5,613,472, Cl. 123-319.000.
Vogley, Wilbur C., to Texas Instruments Incorporated. Time skewing arrangement for operating memory in synchronism with a data processor. 5,615,358, Cl. 395-556.000.
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Voigt, Douglas L.: *See*—
Jacobson, Michael B.; Voigt, Douglas L.; Burkes, Theresa A.; and Diamond, Bryan, 5,615,352, Cl. 395-441.000.
Voith Sulzer Finishing GmbH: *See*—
Conrad, Hans-Rolf; and Cramer, Dirk, 5,613,307, Cl. 34-425.000.
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Graf, Edwin X.; and Eng, James A., 5,614,063, Cl. 162-263.000.
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Edelmann, Peter; Friedrich, Jurgen; Gebhardt, Hans; Moller, Heribert; Neitz, Alfred; and Vogelsang, Klaus, 5,613,472, Cl. 123-319.000.
Volante, Ralph P.: *See*—
Bhupathy, Mahadevan; McNamara, James M.; Sidler, Daniel R.; Volante, Ralph P.; and Bergan, James, 5,614,632, Cl. 546-180.000.
Volk, Andrew M.: *See*—
Knoll, Shaun; Morriss, Jeff C.; Callahan, Shelagh; Bhatt, Ajay V.; Nizar, Puthiya K.; Haslam, Richard M.; Volk, Andrew M.; and Cadambi, Sudarshan B., 5,615,404, Cl. 395-882.000.
Völkl, Anton: *See*—
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Volpi, Alessandro; and Vismara, Ivano, to Pirelli Coordinamento Pneumatici S.p.A. Molding apparatus for making toroidal manufactured articles from closed-cell, low-density, expanded elastomeric material. 5,614,225, Cl. 425-28.100.
von Wolff, Axel: *See*—
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Vortmann, Silke: *See*—
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Vos, David W., to Aurora Flight Sciences Corporation. Fault tolerant automatic control system utilizing analytic redundancy. 5,615,119, Cl. 364-424.013.
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Dallmann, Mary B.; Voss, Gregory O.; and Dallmann, Brian D., 5,613,277, Cl. 16-368.000.
Vu, Thomas H., to Clark Equipment Company. Clutch coolant flow control device. 5,613,588, Cl. 192-113.350.
W.C. Bradley Company: *See*—
Johnston, Robert L., 5,613,486, Cl. 126-41.00R.
W. L. Gore & Associates, Inc.: *See*—
Kranzler, Thane L.; and McDonald, Michael L., 5,614,284, Cl. 428-138.000.
Sayegh, Emile G., 5,615,293, Cl. 385-102.000.
Traver, Robert F., Jr., 5,613,870, Cl. 439-352.000.
Wachi, Hiroshi; and Otani, Yutaka, to Electroplating Engineers of Japan, Limited. Electroless gold plating solution. 5,614,004, Cl. 106-1.230.
Wachi, Shoko: *See*—
Hoshino, Isao; Wachi, Shoko; Honguh, Yoshinori; and Tanaka, Masahiko, 5,615,200, Cl. 369-112.000.
Wacker Chemie GmbH: *See*—
Kohlhammer, Klaus; Koegler, Gerhard; and Schwemmer, Monika, 5,614,049, Cl. 156-221.000.
Wierer, Konrad A.; and Serafini, Franco, 5,614,256, Cl. 427-244.000.
Waclawsky, John G.; and Hershey, Paul C., to International Business Machines Corporation. Event driven interface having a dynamically reconfigurable counter for monitoring a high speed data network according to changing traffic events. 5,615,135, Cl. 364-551.010.
Wada, Kazushi: *See*—
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Wagner, Randall M.: *See*—
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Wagner, Steven D., to Ampex Corporation. Method and apparatus for buffering a user application from the timing requirements of a DRAM. 5,615,355, Cl. 395-494.000.
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Wagoner, Robert G., to Franklin Electric Co. Inc. Power supply with power factor correction. 5,614,812, Cl. 323-222.000.
Wainwright, Norman R.; and Novitsky, Thomas J., to Associates of Cape Cod, Inc. Endotoxin binding and neutralizing protein and uses thereof. 5,614,369, Cl. 435-7.800.
Waits, Robert L.: *See*—
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Waitz, Harold D.: *See*—
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Wakabayashi, Hiroshi; Miyamoto, Hidenori; and Nakamura, Toshiyuki, to Nikon Corporation. Camera with movable lens and method of operation. 5,614,972, Cl. 396-135.000.
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Vigh, Gyula; Rawjee, Yasir Y.; and Williams, Robert L., Jr., 5,614,072, Cl. 204-450.000.
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Wilson, Robert D.; Olm, Myra T.; Daubendiek, Richard L.; Black, Donald L.; Deaton, Joseph C.; Gersey, Timothy R.; Lighthouse, Joseph G.; and Wen, Xin, to Eastman Kodak Company. Ultrathin tabular grain emulsions with reduced reciprocity failure. 5,614,358, Cl. 430-567.000.
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Winneroski, Leonard L., II: *See—*
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Wong, Rosalinda A.: *See—*
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Collins, Alfred L.; Counts, Mary E.; Das, Amitabh; Deevi, Seetharama C.; Fleischhauer, Grier S.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Lee, Robert E., III; Lilly, A. Clifton, Jr.; Losee, D. Bruce, Jr.; McCafferty, Hugh J.; Nichols, Constance H.; Raymond, Wynn R.; Ripley, Robert L.; Ritt, Renzer R., Sr.; Scott, G. Robert; Sprinkel, F. Murphy; Watkins, Michael L.; Wrenn, Susan E.; and Utsch, Francis V., 5,613,504, Cl. 131-94.000.

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Wyatt, Charles A. Sanitary ice-scoop holder. 5,613,660, Cl. 248-300.000.

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Jaskowiak, Timothy R.; Perez, Julie A.; Kazakos, Ann M.; Gilmore, Daniel R., III; Schneider, Jay L.; and Rommelmann, Heiko, 5,614,995, Cl. 399-385.000.
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Yahata, Haruki, to Kabushiki Kaisha Toshiba. Hybrid-synchronous type clock synchronizing apparatus of which dominant gain greater than sum of other gains, network therewith, and clock synchronizing method thereof. 5,615,177, Cl. 368-10.000.

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Yale University: *See*—
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Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, to Hitachi Ltd. Method of fabricating non-linear resistor. 5,614,138, Cl. 264-61.000.

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Yamaguchi, Chiseki, to NEC Corporation. Electrophotographic image forming apparatus which reduces an area for installing the apparatus. 5,615,405, Cl. 399-125.000.

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Yamamoto, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Debugging aid apparatus. 5,615,332, Cl. 395-183.140.

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Kobayashi, Seiji; Okamura, Hiroshige; and Yamatsu, Hisayuki, 5,615,193, Cl. 369-59.000.

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Yamada, Seiichi; Tanaka, Shigeru; Shoji, Moritaka; Motowaki, Shigehisa; Takahashi, Ken; Shirakawa, Shingo; Oowada, Shinichi; and Yamazaki, Takeo, 5,614,138, Cl. 264-61.000.

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Yokota, Takashi: *See—*
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Yoshida, Hiroaki: *See—*
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Matsuda, Yasuhiro; Saegusa, Shozo; Yoshida, Takashi; Goto, Marutomo; Yoshida, Shinobu; and Matsushita, Toshio, 5,615,068, Cl. 360-106.000.

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Mueggenburg, H. Harry; Lang, Leland L.; Rousar, Donald C.; and Young, Marvin F., 5,614,093, Cl. 210-355.000.

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Hansen, Michael R.; and Young, Richard H., Sr., 5,614,570, Cl. 524-13.000.

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Young, Robert A., to Lord Corporation. Adjustable, lockable strut. 5,613,580, Cl. 188-300.000.

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Sharma, Madan M.; Young, Robert F.; and Strohallen, Gene M., 5,615,229, Cl. 375-259.000.

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Yu, Ming-teh, to Shamrock Technology Company Limited. Horizontal deflection circuit for a multisync monitor. 5,614,794, Cl. 315-411.000.

Yuan, Yun X.: *See—*
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Nakamura, Akio; Tsukuda, Noboru; and Matsushima, Shinichiro, 5,614,146, Cl. 264-511.000.

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Zagame, André. Dorso-abdominal support garment. 5,613,893, Cl. 450-155.000.

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Zanzig, David J.; Sandstrom, Paul H.; Crawford, Michael J.; Verthe, John J. A.; and Losey, Cheryl A., to Goodyear Tire & Rubber Company, The. Tire with silica reinforced tread. 5,614,580, Cl. 524-492.000.

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Colman, David R.; Ellis, Joan; Godson, G. Nigel; Nussenzweig, Ruth S.; Nussenzweig, Victor N.; Svec, Pamela S.; and Zavala, Fidel, 5,614,194, Cl. 424-191.100.

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Janik, Leon P.; Maxwell, M. Craig; and Zeiner, Robert W., 5,614,091, Cl. 210-249.000.

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Zelin, Michael P.: *See—*
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Zelinski, Matthew S.: *See—*
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Binder, Dieter; Kleinschmit, Peter; Zetzmann, Klaus; and Hoffmeister, Hans, 5,614,011, Cl. 106-450.000.

Zexel Corporation: *See—*
Furuya, Yuji; Iino, Kenichi; and Okuyama, Hitoshi, 5,613,640, Cl. 239-585.500.

Zeyfang, Frederick W.; and Jodon, Michael W., to Bunzl Plastics, Incorporated. Venting cap for masking. 5,613,615, Cl. 220-203.110.

Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Inc. Semiconductor device having crystalline thin film transistors. 5,614,733, Cl. 257-66.000.

Zhang, Hongyong: *See—*
Funada, Fumiaki; Morita, Tatsuo; Tanaka, Hirohisa; Zhang, Hongyong; and Takayama, Toru, 5,614,426, Cl. 437-40.000.

Zhang, John: *See—*
Patterson, Frank; Zhang, John; Purtell, George; and Culhane, James, 5,613,956, Cl. 604-256.000.

Zheng, Bin: *See—*
Chang, Yuan-Hsiang; Gur, David; and Zheng, Bin, 5,615,243, Cl. 378-37.000.

Ziemek, Gerhard; Staschewski, Harry; and Porcher, Klaus, to Alcatel Kabel AG & Co. Method for producing a lengthwise welded metal tube. 5,613,631, Cl. 228-148.000.

Zienkiewicz, John W.; and Roberts, Bradley M., to Gemcor Engineering Corp. Coldworking tool automation. 5,613,395, Cl. 72-370.000.

Zieve, David A.: *See—*
Makower, Joshua; Zieve, David A.; and Barber, Frank, 5,613,966, Cl. 606-34.000.

Zimmer, Inc.: *See—*
Houston, Michelle L.; Zawadzki, Steven A.; Greig, Kevin M.; and Aikins, Jerry L., 5,613,970, Cl. 606-88.000.

Zimmerer, Peter: *See—*
Juettner, Peter; Kolb, Sebald; Zimmerer, Peter; and Naumann, Udo, 5,615,333, Cl. 395-183.140.

Zimmerman, R. Keith: *See—*
Basinger, Brent D.; and Zimmerman, R. Keith, 5,614,591, Cl. 525-163.000.

Zimmermann, Daniel; and Maher, Liam, to Siebtuchfabrik AG. Forming screen having flattened cross threads. 5,613,527, Cl. 139-383.00A.

Zimmermann, Theodore S., to Scripps Research Institute, The. Compositions containing highly purified factor IX proteins prepared by immunoaffinity chromatography. 5,614,500, Cl. 514-21.000.

Zimowski, Melvin R.; Cotner, Curt L.; and Shum, Peter K. L., to International Business Machines Corporation. System and method for efficiently processing diverse result sets returned by a stored procedures. 5,615,337, Cl. 395-200.010.

Zink, Deborah L.: *See—*
Dombrowski, Anne W.; Endris, Richard G.; Helms, Gregory L.; Hensens, Otto D.; Ondeyka, John G.; Ostlind, Dan A.; Polishook, Jon D.; and Zink, Deborah L., 5,614,546, Cl. 514-410.000.

Zitel Corporation: *See—*
Lautzenheiser, Marvin, 5,615,353, Cl. 395-463.000.

Žmitek, Janko; Ferčej-Temeljotov, Darja; Verhnjak, Katarina; Kotnik, Sonja; and Kovačič, Mateja, to LEK, tovarna farmacevtskih in kemicnih izdelkov, d.d., Ljubljana. Inclusion complexes of clavulanic acid and of alkali salts thereof with hydrophilic and hydrophobic β-cyclodextrin derivatives, a process for the preparation thereof and the use thereof. 5,614,199, Cl. 424-400.000.

Znaiden, Alexander: *See—*
Slavtcheff, Craig S.; Barrow, Stephen R.; Kanga, Vispi D.; Cheney, Michael C.; and Znaiden, Alexander, 5,614,201, Cl. 424-401.000.

Znaiden, Alexander P.; Crotty, Brian A.; and Johnson, Anthony W., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic compositions for treating itchy skin. 5,614,511, Cl. 514-103.000.

Zoccoli, Michael A.: *See—*
Picone, Teresa K.H.; McCallum, Theresa M.; and Zoccoli, Michael A., 5,614,388, Cl. 435-91.200.

Zoito, Paul A.: *See—*
Kennedy, John F.; and Zoito, Paul A., 5,614,917, Cl. 343-846.000.

Zoller, Mark J.: *See—*
Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., 5,614,190, Cl. 424-94.640.

Zook, Jon C., to Illinois Tool Works Inc. Removable hopper cover. 5,613,451, Cl. 110-173.00R.

Zoppi, Erminio: *See—*
Cutolo, Domingo; and Zoppi, Erminio, 5,614,139, Cl. 264-70.000.

Zubar, Eduard: *See—*
Patrick, John R.; Zubar, Eduard; and Tevis, Edward L., 5,614,878, Cl. 335-14.000.

Zubiate, Rudy: *See—*
Qiu, Yuping; Ryan, Jennifer; Sun, Xiaorong; Pillsbury, George B.; Stevens, Alex; and Zubiate, Rudy, 5,615,254, Cl. 379-221.000.

Zubillaga, Mikel G.; and Urruela, Jose R., to Sener, Ingenieria Y Sistemas, S.A. Axisymmetric nozzles of variable geometry and orientation of the flow which are intended for gas turbine engines. 5,613,636, Cl. 239-265.350.

Zuckerman, Andrew M., to Different Dimensions Inc. Hanger with information tab. 5,613,629, Cl. 223-85.000.

Zuhoski, Steven P.: *See—*

Barbee, Steven G.; Conti, Richard A.; Kostenko, Alexander; Sarma, Narayana V.; Wilson, Donald L.; Wong, Justin W.; and Zuhoski, Steven P., 5,614,247, Cl. 427-8.000.
Zuk, Robert F.: *See*—
Ghazarossian, Vartan; Kung, Viola T.; and Zuk, Robert F., 5,614,368, Cl. 435-7.500.
Zupec, Mark E.: *See*—
Adams, Steven P.; Tjoeng, Foe S.; and Zupec, Mark E., 5,614,539, Cl. 514-357.000.
Zurcher, John A.: *See*—
Carpenter, Robert L.; Zurcher, John A.; Puryear, John W.; and Kim, Hyunkyu, 5,613,645, Cl. 242-233.000.
Zwick, Scott D.: *See*—
Person, Herman R.; Adelman, Jeffrey T.; Tschosik, Bruce A.; Veik, Thomas L.; and Zwick, Scott D., 5,614,757, Cl. 257-531.000.
Zydek, Michael; Engelmann, Mario; and Spornitz, Lothar, to Alfred Teves GmbH. Circuit configuration for identifying a short circuit or shunt event in a servomotor system. 5,614,798, Cl. 318-434.000.
4-Star Trailers, Inc.: *See*—
Hobbs, Kenneth E.; Waller, Kenneth R.; O'Pecko, Larry A.; and Collie, Mike H., Jr., 5,613,726, Cl. 296-181.000.
9001-6262 Québec Inc.: *See*—
Garneau, Louis, 5,614,964, Cl. 351-83.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25th DAY OF MARCH, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bader, George P.: *See*—
Wioskowski, Richard; Schafer, Howard H.; Bader, George P.; and Irvine, Edward J., Re. 35,481, Cl. 29-563.000.
Dethmers Mfg. Co.: *See*—
Johnson, Andrew B., deceased, Re. 35,482, Cl. 280-491.500.
Harrand, Michel, to SGS-Thomson Microelectronics, S.A. Switching matrix crosspoint. Re. 35,483, Cl. 340-825.900.
Irvine, Edward J.: *See*—
Wioskowski, Richard; Schafer, Howard H.; Bader, George P.; and Irvine, Edward J., Re. 35,481, Cl. 29-563.000.
Johnson, Andrew B., deceased (by Arline Johnson; Legal Representative), to Dethmers Mfg. Co. Towing hitch. Re. 35,482, Cl. 280-491.500.
Johnson, Legal Representative; Arline: *See*—
Johnson, Andrew B., deceased, Re. 35,482, Cl. 280-491.500.
McLaughlin, Gerald G. Light activated coloration of dental restorations. Re. 35,484, Cl. 427-2.260.
Schafer, Howard H.: *See*—
Wioskowski, Richard; Schafer, Howard H.; Bader, George P.; and Irvine, Edward J., Re. 35,481, Cl. 29-563.000.
SGS-Thomson Microelectronics, S.A.: *See*—
Harrand, Michel, Re. 35,483, Cl. 340-825.900.
Western Atlas, Inc.: *See*—
Wioskowski, Richard; Schafer, Howard H.; Bader, George P.; and Irvine, Edward J., Re. 35,481, Cl. 29-563.000.
Wioskowski, Richard; Schafer, Howard H.; Bader, George P.; and Irvine, Edward J., to Western Atlas, Inc. Multiple station flexible boring machine. Re. 35,481, Cl. 29-563.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bradford Company: *See*—
Bradford, Judson A., B1 4,966,280, Cl. 206-721.000.
Bradford, Judson A., to Bradford Company. Multiple-ply anti-static paperboard. B1 4,966,280, Cl. 206-721.000.
Federico, Panfilo A.; and Patnesky, James J., Jr., to Westinghouse Electric Corporation. System and method for simultaneously testing a plurality of control rods. B1 5,408,508, Cl. 376-258.000.
Patnesky, James J., Jr.: *See*—
Federico, Panfilo A.; and Patnesky, James J., Jr., B1 5,408,508, Cl. 376-258.000.
Westinghouse Electric Corporation: *See*—
Federico, Panfilo A.; and Patnesky, James J., Jr., B1 5,408,508, Cl. 376-258.000.

LIST OF DESIGN PATENTEES

adp Gauselmann GmbH: *See*—
Brettschneider, Dirk I., 378,604, Cl. D21-37.000.
Aitken, King P., III, to American Legend Motorcycle Trailers, Inc. Trailer. 378,583, Cl. D12-102.000.
Allgon AB: *See*—
Hartwig, Ingemar; and Pettersson, John, 378,592, Cl. D14-230.000.
Alps Electric Co., Ltd.: *See*—
Kanno, Tsutomu; Kondo, Takashi; and Murata, Hisashi, 378,587, Cl. D14-116.000.
American Legend Motorcycle Trailers, Inc.: *See*—
Aitken, King P., III, 378,583, Cl. D12-102.000.
American Safety Razor Company: *See*—
Wonderley, Jeff W., 378,623, Cl. D28-48.000.
Arashima, Teruo: *See*—
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,599, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,600, Cl. D18-56.000.
Asics Corporation: *See*—
Murai, Noriyuki; Kurosaki, Kiyomitsu; and Ujishima, Toshikazu, 378,549, Cl. D2-957.000.
Bastow, David R., to Minnesota Mining and Manufacturing Company. Container. 378,571, Cl. D9-417.000.
Bauer, Andre: *See*—
Miller, Russell R.; Gunter, Lanny R., II; and Bauer, Andre, 378,562, Cl. D7-606.000.
Bennett, Moira A.: *See*—
Neviaser, Thomas J.; Neviaser, Lynn W.; and Bennett, Moira A., 378,615, Cl. D24-190.000.
Bingham, Jeffrey B. Concrete form tying device. 378,593, Cl. D15-136.000.
Blatter, Erik: *See*—
Sturges, Daniel D.; and Blatter, Erik, 378,584, Cl. D12-192.000.
Bolan, Michael L.: *See*—
Fekete, Nicholas M. G.; Gattenby, Elaine J.; and Bolan, Michael L., 378,580, Cl. D11-79.000.
Brettschneider, Dirk I., to adp Gauselmann GmbH. Video slot machine. 378,604, Cl. D21-37.000.
Brezovar, Wayne T., to Compaq Computer Corporation. Speaker for a computer system. 378,591, Cl. D14-214.000.
Brookshire, Phillip L.: *See*—
Myers, Terry L.; and Brookshire, Phillip L., 378,560, Cl. D7-379.000.
Brostrom, Gerald M.: *See*—
Reischel, Joseph G.; Knivsland, David P.; Brostrom, Gerald M.; Byram, David C.; and Grannis, Vaughn B., 378,610, Cl. D24-110.200.
Brugler, Joseph S.: *See*—
Clark, Denise; Montgomery, Paul; Brugler, Joseph S.; and Parsay, Syrous, 378,612, Cl. D24-169.000.
Byram, David C.: *See*—
Reischel, Joseph G.; Knivsland, David P.; Brostrom, Gerald M.; Byram, David C.; and Grannis, Vaughn B., 378,610, Cl. D24-110.200.
Calor S.A.: *See*—
Gudefin, Jacques, 378,559, Cl. D7-309.000.
Canon Kabushiki Kaisha: *See*—
Chiba, Toshimi; and Tashiro, Naoki, 378,598, Cl. D18-55.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,599, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,600, Cl. D18-56.000.
Canstar Sports Inc.: *See*—
Chartrand, Daniel, 378,624, Cl. D29-106.000.
Carnaudmetalbox (Holdings) USA, Inc.: *See*—
Culverwell, John W.; and Riviere, Maurice, 378,572, Cl. D9-502.000.
Cautereels, Victor J. J.: *See*—
Ferris, Ian; Tree, John; and Cautereels, Victor J. J., 378,561, Cl. D7-554.000.
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., to Eastman Kodak Company. Cover label for daylight camera. 378,603, Cl. D20-22.000.
Chartrand, Daniel, to Canstar Sports Inc. Sports helmet. 378,624, Cl. D29-106.000.
Chen, Tusng-Wen. Pendent lamp. 378,620, Cl. D26-84.000.
Chiba, Toshimi; and Tashiro, Naoki, to Canon Kabushiki Kaisha. Laser beam printer. 378,598, Cl. D18-55.000.
Chiu, Bernard; Wang, Jui-Shang; and Gresens, Stanley, to Duracraft Corp. Evaporative humidifier. 378,607, Cl. D23-356.000.
Clark, Denise; Montgomery, Paul; Brugler, Joseph S.; and Parsay, Syrous, to LifeScan, Inc. Blood glucose meter. 378,612, Cl. D24-169.000.
Colgate-Palmolive Company: *See*—
Sherman, Adam, 378,573, Cl. D9-526.000.
Compaq Computer Corporation: *See*—

Brezovar, Wayne T., 378,591, Cl. D14-214.000.
Cousins, Morison S., to Dart Industries Inc. Colander. 378,565, Cl. D7-667.000.
Cousins, Morison S., to Dart Industries Inc. Colander with lid. 378,566, Cl. D7-667.000.
Croley, Curt D., to Ethicon Endo-Surgery, Inc. Electrosurgical instrument. 378,611, Cl. D24-144.000.
Culverwell, John W.; and Riviere, Maurice, to Carnaudmetalbox (Holdings) USA, Inc. Aerosol can body. 378,572, Cl. D9-502.000.
Dallas Semiconductor Corporation: *See—*
Fekete, Nicholas M. G.; Gattenby, Elaine J.; and Bolan, Michael L., 378,580, Cl. D11-79.000.
Dart Industries Inc.: *See—*
Cousins, Morison S., 378,565, Cl. D7-667.000.
Cousins, Morison S., 378,566, Cl. D7-667.000.
Ferris, Ian; Tree, John; and Cautereels, Victor J. J., 378,561, Cl. D7-554.000.
Ferris, Ian, 378,563, Cl. D7-629.000.
Dimopoulos, Photios: *See—*
Dimopoulos, Spyridon, 378,622, Cl. D27-144.000.
Dimopoulos, Spyridon, to Dimopoulos, Spyridon; Dimopoulos, Photios; and Makropoulos, Polychronis. Lighter casing. 378,622, Cl. D27-144.000.
Duguid, James C.; and Fisher, Allen J., to Navistar International Transportation Corp. Vehicle instrument panel. 378,585, Cl. D12-192.000.
Duracraft Corp.: *See—*
Chiu, Bernard; Wang, Jui–Shang; and Gresens, Stanley, 378,607, Cl. D23-356.000.
Eastman Kodak Company: *See—*
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., 378,603, Cl. D20-22.000.
McBride, John K.; and Smithborne, Gary K., 378,594, Cl. D16-209.000.
Eberhardt, Noel H., to Indala Corporation. Identification transponder tag. 378,578, Cl. D10-104.000.
Ellermeier, Konrad, to U.S. Philips Corporation. Dictating machine. 378,589, Cl. D14-154.000.
Ethicon Endo-Surgery, Inc.: *See—*
Croley, Curt D., 378,611, Cl. D24-144.000.
Fekete, Nicholas M. G.; Gattenby, Elaine J.; and Bolan, Michael L., to Dallas Semiconductor Corporation. Fob with an electronic token. 378,580, Cl. D11-79.000.
Ferris, Ian; Tree, John; and Cautereels, Victor J. J., to Dart Industries Inc. Tray for food container. 378,561, Cl. D7-554.000.
Ferris, Ian, to Dart Industries Inc. Container for food. 378,563, Cl. D7-629.000.
Fisher, Allen J.: *See—*
Duguid, James C.; and Fisher, Allen J., 378,585, Cl. D12-192.000.
Gattenby, Elaine J.: *See—*
Fekete, Nicholas M. G.; Gattenby, Elaine J.; and Bolan, Michael L., 378,580, Cl. D11-79.000.
General Cable Corporation: *See—*
Hedrick, Paul A., 378,586, Cl. D13-138.000.
Gibson, William R.: *See—*
Meeker, Paul K.; and Gibson, William R., 378,554, Cl. D6-511.000.
Grannis, Vaughn B.: *See—*
Reischel, Joseph G.; Knivsland, David P.; Brostrom, Gerald M.; Byram, David C.; and Grannis, Vaughn B., 378,610, Cl. D24-110.200.
Gresens, Stanley: *See—*
Chiu, Bernard; Wang, Jui–Shang; and Gresens, Stanley, 378,607, Cl. D23-356.000.
Gudefin, Jacques, to Calor S.A. Coffee machine. 378,559, Cl. D7-309.000.
Gunter, Lanny R., II: *See—*
Miller, Russell R.; Gunter, Lanny R., II; and Bauer, Andre, 378,562, Cl. D7-606.000.
Guthrie, Matthew C.: *See—*
Mullick, Abir; Osadciw, Michael; LaMonica, Michael F.; and Guthrie, Matthew C., 378,558, Cl. D7-304.000.
Hall, Anson L. Utensil support. 378,564, Cl. D7-637.000.
Hall, Kelly R.: *See—*
Hall, Russell C.; Hall, Kevin S.; and Hall, Kelly R., 378,626, Cl. D32-35.000.
Hall, Kevin S.: *See—*
Hall, Russell C.; Hall, Kevin S.; and Hall, Kelly R., 378,626, Cl. D32-35.000.
Hall, Russell C.; Hall, Kevin S.; and Hall, Kelly R. Mini-blind cleaning tool. 378,626, Cl. D32-35.000.
Hamasaki, Yuji: *See—*
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,599, Cl. D18-56.000.
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 378,600, Cl. D18-56.000.
Hamilton Beach/Proctor-Silex, Inc.: *See—*
Myers, Terry L.; and Brookshire, Phillip L., 378,560, Cl. D7-379.000.
Harden, Dan, to Shachihata Inc. Stamper. 378,597, Cl. D18-14.000.
Harman, David A., II. Shoe with removable heel. 378,548, Cl. D2-939.000.
Hartwig, Ingemar; and Pettersson, John, to Allgon AB. Antenna device. 378,592, Cl. D14-230.000.
Hedrick, Paul A., to General Cable Corporation. Electrical plug body. 378,586, Cl. D13-138.000.
Herman Miller, Inc.: *See—*
Newhouse, Thomas J., 378,553, Cl. D6-373.000.
Holland Brothers: *See—*
Holland, John M., 378,547, Cl. D2-642.000.
Holland, John M., to Holland Brothers. Leather shoehorn. 378,547, Cl. D2-642.000.
Houlihan, John T., to Timex Corporation. Case for digital wristwatch. 378,574, Cl. D10-30.000.
Houlihan, John T., to Timex Corporation. Case for digital wristwatch. 378,575, Cl. D10-30.000.
Houlihan, John T., to Timex Corporation. Case for digital wristwatch. 378,576, Cl. D10-30.000.
Indala Corporation: *See—*
Eberhardt, Noel H., 378,578, Cl. D10-104.000.
Jackson, Daniel C.: *See—*
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., 378,603, Cl. D20-22.000.
Jarowsky, William P. Semi-acoustic electric guitar. 378,596, Cl. D17-14.000.
Jensen, Allan T., to Medicotest A/S. Electrode. 378,614, Cl. D24-187.000.
John Manufacturing Limited: *See—*
Yuen, Se K., 378,617, Cl. D26-26.000.
Jönsson, Sven-Gunnar. Console. 378,569, Cl. D8-381.000.
Kabushiki Kaisha Pilot: *See—*
Sakuno, Makoto, 378,601, Cl. D19-48.000.
Kanno, Tsutomu; Kondo, Takashi; and Murata, Hisashi, to Alps Electric Co., Ltd. Receiver for bar code reader. 378,587, Cl. D14-116.000.
Kay, Francis X. Nose blocker. 378,609, Cl. D24-106.000.
Killer Loop S.p.A.: *See—*
Simioni, Luciano, 378,595, Cl. D16-321.000.
Kim Lighting Inc.: *See—*
Landefeld, Cory W., 378,621, Cl. D26-85.000.
Kincaid, Patricia A. Fireplace logset burner unit. 378,608, Cl. D23-403.000.
Knivsland, David P.: *See—*
Reischel, Joseph G.; Knivsland, David P.; Brostrom, Gerald M.; Byram, David C.; and Grannis, Vaughn B., 378,610, Cl. D24-110.200.
Kondo, Takashi: *See—*
Kanno, Tsutomu; Kondo, Takashi; and Murata, Hisashi, 378,587, Cl. D14-116.000.
Kryptonite Corporation: *See—*
Zane, Michael S., 378,567, Cl. D8-334.000.
Kurosaki, Kiyomitsu: *See—*
Murai, Noriyuki; Kurosaki, Kiyomitsu; and Ujishima, Toshikazu, 378,549, Cl. D2-957.000.
LaFrance Corporation: *See—*
Peroni, Peter A., 378,577, Cl. D10-103.000.
LaMonica, Michael F.: *See—*
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Landefeld, Cory W., to Kim Lighting Inc. Wall mounted luminaire. 378,621, Cl. D26-85.000.
Lenoxx Electronics Corp.: *See—*
Zeitman, Josh, 378,590, Cl. D14-165.000.
LifeScan, Inc.: *See—*
Clark, Denise; Montgomery, Paul; Brugler, Joseph S.; and Parsay, Syrous, 378,612, Cl. D24-169.000.
Lippisch, Hangwind F., to Sterilite Corporation. Tote. 378,552, Cl. D3-273.000.
Lisco, Inc.: *See—*
Meeker, Paul K.; and Gibson, William R., 378,554, Cl. D6-511.000.
Liu, Steve, to Yeong Ton Industrial Co., Ltd. Anti-theft alarm for vehicles. 378,579, Cl. D10-106.000.
M.H. Segan Limited Partnership: *See—*
Segan, Marc H., 378,618, Cl. D26-37.000.
MacEachern, David. Display package for lipstick. 378,570, Cl. D9-415.000.
Machine-O-Matic Limited: *See—*
Schwarzli, Josef W., 378,602, Cl. D20-8.000.
Makropoulos, Polychronis: *See—*
Dimopoulos, Spyridon, 378,622, Cl. D27-144.000.
Marinoni, Mario, to Societa Italiana Progetti S.R.L. Combined tempered glass door and its main fittings. 378,616, Cl. D25-48.000.
McBride, John K.; and Smithborne, Gary K., to Eastman Kodak Company. Camera with folding flash. 378,594, Cl. D16-209.000.
McBride, John K.: *See—*
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., 378,603, Cl. D20-22.000.
Medicotest A/S: *See—*
Jensen, Allan T., 378,614, Cl. D24-187.000.
Meeker, Paul K.; and Gibson, William R., to Lisco, Inc. Built-in toy tray for child exerciser. 378,554, Cl. D6-511.000.
Miller, Russell R.; Gunter, Lanny R., II; and Bauer, Andre. Sports cooler. 378,562, Cl. D7-606.000.
Minnesota Mining and Manufacturing Company: *See—*
Bastow, David R., 378,571, Cl. D9-417.000.
Reischel, Joseph G.; Knivsland, David P.; Brostrom, Gerald M.; Byram, David C.; and Grannis, Vaughn B., 378,610, Cl. D24-110.200.
Moberg, Sven. Holder for a remote control or the like. 378,555, Cl. D6-513.000.
Montgomery, Paul: *See—*
Clark, Denise; Montgomery, Paul; Brugler, Joseph S.; and Parsay, Syrous, 378,612, Cl. D24-169.000.
Morris, Jonathan R., to Reebok International Ltd. Shoe upper. 378,550, Cl. D2-970.000.

Mullick, Abir; Osadciw, Michael; LaMonica, Michael F.; and Guthrie, Matthew C., to Research Foundation of State Univ. of New York, The. Drinking fountain. 378,558, Cl. D7-304.000.
Munoz, Raul, to Selfix, Inc. Shower caddy. 378,556, Cl. D6-525.000.
Murai, Noriyuki; Kurosaki, Kiyomitsu; and Ujishima, Toshikazu, to Asics Corporation. Shoe sole. 378,549, Cl. D2-957.000.
Murata, Hisashi: *See—*
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494 5,613,608
531 5,613,609
721 5,613,610
B1 4,966,280
728 5,613,611
768 5,613,612

CLASS 208

27 5,614,079
48 AA 5,614,080
5,614,081
138 5,614,082
161 5,614,083

CLASS 209

310 5,613,613

CLASS 210

169 5,614,085
170 5,614,086
180 5,614,087
188 5,614,088
198.2 5,614,089
232 5,614,090
249 5,614,091
350 5,614,092
355 5,614,093
388 5,614,094
491 5,614,095
502.1 5,614,096
602 5,614,097
608 5,614,098
653 5,614,099
665 5,614,100
708 5,614,101
718 5,614,102
725 5,614,103
742 5,614,104
767 5,614,105
5,614,106
771 5,614,107

CLASS 211

89 5,613,614

CLASS 219

69.15 5,614,108
109 5,614,109
121.44 5,614,110
121.59 5,614,111
121.63 5,614,112
121.64 5,614,113
121.66 5,614,114
121.67 5,614,115
130.21 5,614,116
147 5,614,117
243 5,614,118
385 5,614,119
535 5,614,120

CLASS 220

203.11 5,613,615
359 5,613,617
369 5,613,618
712 5,613,619

791 5,613,616

CLASS 221

133 5,613,620
279 5,613,621

CLASS 222

105 5,613,622
129 5,613,623
161 5,613,624
180 5,613,625
217 5,613,626
603 5,614,121

CLASS 223

85 5,613,627
5,613,628
5,613,629
88 5,613,630

CLASS 228

148 5,613,631
246 5,613,632
264 5,613,633

CLASS 229

109 5,613,694

CLASS 235

145 R 5,614,702
382 5,614,703
436 5,614,704
467 5,614,705
472 5,614,706
479 5,614,707

CLASS 236

101 R 5,613,634

CLASS 239

166 5,613,635
265.35 5,613,636
296 5,613,637
396 5,613,638
581.1 5,613,639
585.5 5,613,640
731 5,613,641

CLASS 242

35.5 A 5,613,642
131 5,613,643
232 5,613,644
233 5,613,645
260 5,613,646
376 5,613,647
405.2 5,613,648

CLASS 244

1 N 5,613,649
3.16 5,613,650
50 5,613,651
75 R 5,613,652
158 R 5,613,653

CLASS 246

182 B 5,613,654

CLASS 248

68.1 5,613,655
74.2 5,613,656
102 5,613,657
163.1 5,613,658
205.5 5,613,659
300 5,613,660
316.1 5,613,661
371 5,613,662

CLASS 249

210 5,614,122

CLASS 250

223 R 5,614,709
5,614,710
244 C 5,614,708
287 5,614,711
307 5,614,712
310 5,614,713
334 5,614,714
5,614,715
338.1 5,614,716
338.3 5,614,717
339.13 5,614,718
343 5,614,719
360.1 5,614,720
368 5,614,721
374 5,614,722
435 5,614,723
5,614,724
492.22 5,614,725
574 5,614,726

CLASS 251

149.2 5,613,663

CLASS 252

299.01 5,614,125
400.24 5,614,571
519 5,614,127
582 5,614,128
584 5,614,129
862 5,614,123

CLASS 256

19 5,613,664

CLASS 257

43 5,614,727
57 5,614,728
5,614,729
59 5,614,730
5,614,731
66 5,614,732
5,614,733
69 5,614,762
94 5,614,734
99 5,614,735
102 5,614,736
124 5,614,737
147 5,614,738
192 5,614,739
222 5,614,740
233 5,614,741
254 5,614,742
276 5,614,743
291 5,614,744
296 5,614,745
316 5,614,746
5,614,747
5,614,748
330 5,614,749
386 5,614,750
394 5,614,751
408 5,614,752
417 5,614,753
421 5,614,754
471 5,614,755
530 5,614,756
531 5,614,757
579 5,614,758
666 5,614,759
668 5,614,760
676 5,614,761
747 5,614,763
767 5,614,764
774 5,614,765
777 5,614,766
797 5,614,767

CLASS 261

119.1 5,614,130

CLASS 264

1.9 5,614,131
6 5,614,132
21 5,614,133
29.1 5,614,134
40.3 5,614,136
40.4 5,614,135
40.6 5,614,137
61 5,614,138
70 5,614,139
81 5,614,140
173.14 5,614,141
211 5,614,142
221 5,614,143
454 5,614,144
458 5,614,145
511 5,614,146
518 5,614,147
532 5,614,148

CLASS 267

69 5,613,665
140.12 5,613,666
141.1 5,613,667
219 5,613,668

CLASS 270

52.06 5,613,669

CLASS 271

3.23 5,613,670
91 5,613,671
162 5,613,672
182 5,613,673
250 5,613,674
270 5,613,675

CLASS 273

108.5 5,613,687
138.1 5,613,679
138.2 5,613,680
271 5,613,681
292 5,613,682
317.1 5,613,683
348.3 5,613,684
374 5,613,685

408 5,613,686
440 5,613,689
449 5,613,690

CLASS 277

152 5,613,691

CLASS 279

2.03 5,613,692
76 5,613,693

CLASS 280

14.2 5,613,695
33.992 5,613,696
250.1 5,613,697
491.5 Re.35,482
728.1 5,613,698
728.2 5,613,699
5,613,700
728.3 5,613,701
735 5,613,702
737 5,613,703
740 5,613,704
741 5,613,705
5,613,706
743.1 5,613,707
743.2 5,613,708
777 5,613,709
848 5,613,710

CLASS 281

21.1 5,613,711

CLASS 283

78 5,613,712

CLASS 285

12 5,613,713
39 5,613,714

CLASS 290

40 C 5,614,768

CLASS 292

1.5 5,613,715
216 5,613,716
336.3 5,613,717
346 5,613,718

CLASS 294

19.1 5,613,719
31.2 5,613,720
82.1 5,613,721
88 5,613,722

CLASS 296

37.8 5,613,723
97.6 5,613,724
5,613,725
181 5,613,726
188 5,613,727
219 5,613,728

CLASS 297

180.11 5,613,729
180.12 5,613,730
180.15 5,613,731
188.16 5,613,732
344.1 5,613,733
353 5,613,734
362.13 5,613,735
397 5,613,736
463.1 5,613,737
467 5,613,738

CLASS 301

63.1 5,613,739

CLASS 303

11 5,613,740
36 5,613,741
157 5,613,742
165 5,613,743
191 5,613,744

CLASS 307

10.2 5,614,769
105 5,614,770
113 5,614,771
119 5,614,772

CLASS 310

11 5,614,773
58 5,614,774
68 R 5,614,775
71 5,614,776
74 5,614,777
80 5,614,778
118 5,614,779

CLASS 312

9.9 5,613,745
194 5,613,746

278 5,613,747

CLASS 313

35 5,614,780
336 5,614,795
422 5,614,781
440 5,614,782
485 5,614,783
491 5,614,784
497 5,614,786
623 5,614,787

CLASS 315

82 5,614,788
85 5,614,789
135 5,614,790
370 5,614,791
382.1 5,614,792
403 5,614,793
411 5,614,794
496 5,614,785

CLASS 318

376 5,614,796
432 5,614,797
434 5,614,798
439 5,614,799
568.18 5,614,800
609 5,614,801
800 5,614,802
801 5,614,803

CLASS 320

13 5,614,804
21 5,614,805
22 5,614,806
48 5,614,807
5,614,808

CLASS 322

11 5,614,809

CLASS 323

207 5,614,810
5,614,811
222 5,614,812
283 5,614,813
313 5,614,814
5,614,815
316 5,614,816

CLASS 324

142 5,614,817
158.1 5,614,818
5,614,819
5,614,820
174 5,614,821
5,614,822
178 5,614,823
239 5,614,824
242 5,614,825
307 5,614,826
320 5,614,827
402 5,614,828
427 5,614,829
553 5,614,830
642 5,614,831
705 5,614,832
751 5,614,833
753 5,614,834
755 5,614,835
760 5,614,837
765 5,614,838
770 5,614,839

CLASS 326

41 5,614,840
52 5,614,841
58 5,614,842
73 5,614,843
84 5,614,844
93 5,614,845
5,614,846
98 5,614,847
110 5,614,848

CLASS 327

51 5,614,849
55 5,614,850
58 5,614,851
63 5,614,852
77 5,614,853
94 5,614,854
158 5,614,855
170 5,614,856
205 5,614,857
311 5,614,858
333 5,614,859
552 5,614,860

CLASS 329

308 5,614,861
341 5,614,862

CLASS 330

1 R 5,614,863
69 5,614,864
254 5,614,865
267 5,614,866
288 5,614,867

CLASS 331

1 A 5,614,868
5,614,869
14 5,614,870
111 5,614,871
143 5,614,872

CLASS 333

22 R 5,614,873
125 5,614,874
202 5,614,875
204 5,614,876
227 5,614,877

CLASS 335

14 5,614,878
216 5,614,879
299 5,614,880

CLASS 338

22 R 5,614,881

CLASS 340

444 5,614,882
458 5,614,883
477 5,614,884
525 5,614,885
571 5,614,886
573 5,614,887
638 5,614,888
649 5,614,889
825.22 5,614,891
825.34 5,614,890
825.9 Re.35,483
870.02 5,614,892
870.16 5,614,893
933 5,614,894
945 5,614,896
973 5,614,897
995 5,614,895
5,614,898

CLASS 341

51 5,614,899
67 5,614,900
68 5,614,901
118 5,614,902
5,614,903
143 5,614,904
146 5,614,905
176 5,614,906

CLASS 342

25 5,614,907
33 5,614,908
70 5,614,909
119 5,614,910
124 5,614,911
146 5,614,912
357 5,614,913
364 5,614,914

CLASS 343

770 5,614,915
786 5,614,916
846 5,614,917
882 5,614,918
909 5,614,919

CLASS 345

7 5,614,920
85 5,614,921
87 5,615,027
89 5,614,922
99 5,614,923
149 5,614,924
153 5,614,925
156 5,614,926

CLASS 346

176 5,614,631

CLASS 347

2 5,614,928
30 5,614,929
33 5,614,930
43 5,614,931
55 5,614,932
103 5,614,933
189 5,614,934
213 5,614,935
240 5,614,936
5,614,937
247 5,614,938

CLASS 348

6 5,614,939
7 5,614,940
42 5,614,941
61 5,614,942
72 5,614,943
183 5,614,944
208 5,614,945
232 5,614,946
241 5,614,947
255 5,614,948
296 5,614,949
315 5,614,950
356 5,614,951
392 5,614,952
403 5,614,953
413 5,614,954
487 5,614,955
556 5,614,956
567 5,614,957
616 5,614,958
699 5,614,959
700 5,614,960
750 5,614,961
751 5,614,962

CLASS 349

42 5,615,028
57 5,615,024
74 5,615,025
84 5,615,029
110 5,615,030
149 5,615,031
165 5,615,032
174 5,615,026

CLASS 351

47 5,614,963
83 5,614,964
101 5,614,965
208 5,614,966
210 5,614,967

CLASS 353

74 5,613,748
102 5,613,749

CLASS 355

18 5,614,986
5,614,987
46 5,614,988
67 5,614,989
71 5,614,990
75 5,614,991

CLASS 356

3.03 5,615,003
4.01 5,615,004
30 5,615,005
124 5,615,006
237 5,615,007
301 5,615,008
326 5,615,009
328 5,615,010
345 5,615,011
384 5,615,012
394 5,615,013
429 5,615,014

CLASS 358

296 5,615,015
298 5,615,016
426 5,615,020

CLASS 359

12 5,615,022
13 5,615,023
110 5,615,033
5,615,034
119 5,615,035
124 5,615,036
188 5,615,037
210 5,615,038
257 5,615,039
288 5,615,040
326 5,615,041
338 5,615,042
346 5,615,043
418 5,615,044
456 5,615,045
464 5,615,046
618 5,615,047
622 5,615,048
684 5,615,049
711 5,615,050
790 5,615,051
811 5,615,052
813 5,615,053
844 5,615,054

CLASS 360

8 5,615,055
51 5,615,058
5,615,059
5,615,060
60 5,615,061
64 5,615,062
66 5,615,063
75 5,615,064
77.08 5,615,065
96.5 5,615,066
98.08 5,615,067
106 5,615,068
126 5,615,069
133 5,615,070

CLASS 361

22 5,615,071
24 5,615,072
56 5,615,073
5,615,074
87 5,615,075
90 5,615,076
103 5,615,077
313 5,615,078
637 5,615,079
664 5,615,080
680 5,615,081
685 5,615,082
686 5,615,083
697 5,615,084
702 5,615,085
704 5,615,086
719 5,615,087
749 5,615,088
764 5,615,089

CLASS 362

26 5,613,750
31 5,613,751
32 5,613,752
5,613,753
5,615,090
66 5,613,754
80 5,613,755
103 5,613,756
130 5,613,757
146 5,613,758
149 5,613,759
161 5,613,760
217 5,613,761
240 5,613,762
246 5,613,763
252 5,613,764
269 5,613,765
287 5,613,766
298 5,613,767
5,613,768
338 5,613,769
367 5,613,770
401 5,613,771
444 5,613,772

CLASS 363

17 5,615,091
21 5,615,092
25 5,615,093
56 5,615,094
5,615,095
60 5,615,096
84 5,615,097
5,615,098
96 5,615,099
97 5,615,100
101 5,615,101
132 5,615,102
146 5,615,103

CLASS 364

134 5,615,104
138 5,615,105
140 5,615,106
141 5,615,107
167.01 5,615,108
400 5,615,351
410 5,615,111
420 5,615,114
421 5,615,115
423.098 5,615,116
424.013 5,615,118
5,615,119
424.052 5,615,117
464.17 5,615,120
468.01 5,615,122
479.03 5,615,123
488 5,615,124
489 5,615,126
5,615,127
492 5,615,129
505 5,615,130
514 A 5,615,131
516 5,615,132
550 5,615,133
5,615,134
551.01 5,615,135
578 5,615,136
5,615,137
582 5,615,138
721 5,615,139
749 5,615,140
757 5,615,141
766 5,615,113

CLASS 365

45 5,615,142
112 5,615,143
145 5,615,144
5,615,145
185.01 5,615,146
185.11 5,615,148
185.12 5,615,149
185.17 5,615,150
185.18 5,615,151
5,615,152
185.19 5,615,153
185.22 5,615,154
185.3 5,615,147
189.01 5,615,155
200 5,615,156
201 5,615,157
5,615,158
5,615,159
203 5,615,160
208 5,615,161
226 5,615,162
230.03 5,615,163
230.06 5,615,164
5,615,165
230.08 5,615,166
5,615,167
233 5,615,168
233.5 5,615,169

CLASS 366

163.2 5,613,773
228 5,613,774
297 5,613,775

CLASS 367

15 5,615,170
72 5,615,171
83 5,615,172
90 5,615,173
118 5,615,174
124 5,615,175
151 5,615,176

CLASS 368

10 5,615,177
203 5,615,178
281 5,615,179

CLASS 369

13 5,615,180
5,615,181
5,615,182
5,615,183
37 5,615,184
44.13 5,615,185
44.24 5,615,186
48 5,615,187
5,615,188
50 5,615,189
58 5,615,190
5,615,191
5,615,192
5,615,193
60 5,615,194
5,615,195
5,615,196
71 5,615,197
77.2 5,615,198
102 5,615,199
112 5,615,200
5,615,201
178 5,615,202
244 5,615,203
247 5,615,204
275.4 5,615,205
284 5,615,206

CLASS 370

237 5,615,207
252 5,615,208
337 5,615,215
342 5,615,209
349 5,615,214
389 5,615,210
412 5,615,213
419 5,615,211
433 5,615,212

CLASS 371

22.1 5,615,216
22.3 5,615,217
27 5,615,218
5,615,219
37.1 5,615,220
5,615,221
50.1 5,615,222
65 5,615,223

CLASS 372

36 5,615,224

CLASS 374

57 5,613,776
130 5,613,777
170 5,613,778

CLASS 375

200 5,615,226
206 5,615,227
238 5,615,228
259 5,615,229
281 5,615,230
340 5,615,231
346 5,615,232
350 5,615,233
5,615,234
355 5,615,235
365 5,615,236
368 5,615,237

CLASS 376

202 5,615,238
247 5,615,239
258 B1 5,408,508
272 5,615,240

CLASS 377

49 5,615,241
60 5,615,242

CLASS 378

37 5,615,243
57 5,615,244
84 5,615,245

CLASS 379

29 5,615,225
56 5,615,246
58 5,615,247
5,615,248
5,615,249
61 5,615,250
112 5,615,251
142 5,615,252
196 5,615,253
221 5,615,254
230 5,615,255
390 5,615,256
396 5,615,257
428 5,615,258
433 5,615,259
5,615,260

CLASS 380

2 5,615,261
4 5,615,262
5,615,263
5,615,264
20 5,615,265
21 5,615,266
23 5,615,267
25 5,615,268
49 5,615,269

CLASS 381

57 5,615,270
110 5,615,271
117 5,615,272
169 5,615,273
5,615,274
203 5,615,275

CLASS 382

100 5,615,276
115 5,615,277
128 5,615,278
131 5,615,279
135 5,615,280
162 5,615,281
167 5,615,282
187 5,615,283
5,615,284
189 5,615,285
224 5,615,286
232 5,615,287
248 5,615,288

CLASS 383

201 5,613,779

CLASS 384

43 5,613,780
99 5,613,781
549 5,613,782

CLASS 385

24 5,615,289
5,615,290
84 5,615,291
89 5,615,292
102 5,615,293
115 5,615,294
123 5,615,295

CLASS 386

68 5,615,018
104 5,615,056
109 5,615,017
117 5,615,057
126 5,615,019

CLASS 395

2.1 5,615,296
5,615,297
2.18 5,615,302
2.37 5,615,298
2.63 5,615,299
2.69 5,615,300
2.86 5,615,301
3 5,615,303
12 5,615,304
24 5,615,305
26 5,615,306
5,615,307
50 5,615,308
54 5,615,309
102 5,615,310
107 5,615,311
109 5,615,312
114 5,615,313
5,615,314
115 5,615,315
117 5,615,316
119 5,615,317
120 5,615,318
127 5,615,319
131 5,615,320
133.1 5,615,321
5,615,322
140 5,615,323
141 5,615,324
182.04 5,615,329
182.05 5,615,330
182.07 5,615,331
182.1 5,615,327
182.2 5,615,328
183.06 5,615,335
183.14 5,615,332
5,615,333
185.01 5,615,334
200.01 5,615,337
200.04 5,615,338
200.12 5,615,339
200.17 5,615,340
208 5,615,109
209 5,615,121
210 5,615,341
227 5,615,342
238 5,615,110
282 5,615,343
309 5,615,344
5,615,345
326 5,615,325
341 5,615,346
349 5,615,347
356 5,615,326
388 5,615,349
394 5,615,350
441 5,615,352
463 5,615,353
493 5,615,354
494 5,615,355
500 5,615,356
5,615,357
5,615,377
556 5,615,358
569 5,615,348
585 5,615,386
603 5,615,361
606 5,615,360
607 5,615,366
610 5,615,359
612 5,614,927
613 5,615,367
614 5,615,362
5,615,363
615 5,615,112
618 5,615,364
653 5,615,372
671 5,615,368
672 5,615,370
681 5,615,401
683 5,615,336
685 5,615,400
701 5,615,379
704 5,615,371
709 5,615,369
726 5,615,373
5,615,374
737 5,615,375

750 5,615,376
754 5,615,378
800 5,615,380
5,615,381
5,615,382
5,615,383
5,615,384
5,615,385
5,615,387
5,615,402
821 5,615,388
828 5,615,389
834 5,615,390
839 5,615,391
876 5,615,392
881 5,615,403
882 5,615,404
887 5,615,393

CLASS 396

6 5,615,394
5,615,395
5,615,396
50 5,614,981
51 5,614,985
55 5,614,974
5,615,397
77 5,615,398
95 5,614,982
97 5,614,983
106 5,614,984
128 5,615,399
135 5,614,972
147 5,614,980
164 5,614,970
311 5,614,968
319 5,614,969
392 5,614,976
395 5,614,977
396 5,614,975
409 5,614,971
448 5,614,973
463 5,614,978
578 5,614,979

CLASS 399

81 5,614,993
120 5,614,996
121 5,614,997
124 5,614,992
125 5,615,405
226 5,615,001
227 5,615,002
256 5,614,994
314 5,614,998
329 5,614,999
361 5,615,000
385 5,614,995

CLASS 400

73 5,613,783
76 5,613,784
248 5,613,785
489 5,613,786
613.1 5,613,787
621 5,613,788
661.2 5,613,789
708 5,613,790

CLASS 402

4 5,613,791

CLASS 403

131 5,613,792
256 5,613,793
265 5,613,794
370 5,613,795
409.1 5,613,796

CLASS 404

2 5,613,797
6 5,613,798
9 5,613,799
75 5,613,800
112 5,613,801

CLASS 405

36 5,613,802
92 5,613,803
119 5,613,804
128 5,613,805
150.1 5,613,806
156 5,613,807
217 5,613,808

CLASS 408

1 R 5,613,809
3 5,613,810

CLASS 409

130 5,613,811
136 5,613,812
182 5,613,813

CLASS 410

70 5,613,814

CLASS 411

181 5,613,815
433 5,613,816
466 5,613,817
509 5,613,818
527 5,613,819

CLASS 414

138.6 5,613,820
217 5,613,821
408 5,613,822
5,613,823
412 5,613,824
543 5,613,825
786 5,613,826
791.6 5,613,827
798.9 5,613,828

CLASS 415

174.1 5,613,829
206 5,613,830
229 5,613,831

CLASS 416

244 R 5,613,832
246 5,613,833

CLASS 417

44.8 5,613,834
182.5 5,613,835
222.2 5,613,836
255 5,613,837
269 5,613,838
273 5,613,839
300 5,613,840
310 5,613,841
312 5,613,842
313 5,613,843
366 5,613,844
423.11 5,613,845

CLASS 418

11 5,613,846

CLASS 419

14 5,615,406

CLASS 420

43 5,614,149
590 5,614,150

CLASS 422

24 5,614,151
99 5,614,152
100 5,614,153
103 5,614,154
174 5,614,155
5,614,156
307 5,614,157

CLASS 423

166 5,614,158
245.3 5,614,159
332 5,614,160
5,614,161
346 5,614,162
418.2 5,614,163
447.4 5,614,164
584 5,614,165
718 5,614,166

CLASS 424

9.2 5,614,167
9.365 5,614,170
9.42 5,614,168
9.52 5,614,169
45 5,614,171
5,614,172
47 5,614,173
49 5,614,174
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57 5,614,176
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60 5,614,178
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70.31 5,614,181
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171.1 5,614,195
178.1 5,614,191
185.1 5,614,192
186.1 5,614,193
191.1 5,614,194
195.1 5,614,196
5,614,197
5,614,198
400 5,614,199
401 5,614,200
5,614,201
402 5,614,202
405 5,614,203
423 5,614,204
424 5,614,205
426 5,614,206
440 5,614,207
443 5,614,208
5,614,209
448 5,614,210
5,614,211
449 5,614,212
5,614,213
450 5,614,214
5,614,215
5,614,216
451 5,614,217
456 5,614,218
472 5,614,219
480 5,614,220
488 5,614,221
489 5,614,222
5,614,223
646 5,614,224

CLASS 425

28.1 5,614,225
112 5,614,226
133.1 5,614,227
326.1 5,614,228
393 5,614,230
394 5,614,231
545 5,614,232
549 5,614,233

CLASS 426

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112 5,614,236
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445 5,614,239
505 5,614,240
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549 5,614,242
578 5,614,243
582 5,614,244
602 5,614,245

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2.26 Re.35,484
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212 5,614,255
244 5,614,256
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255.1 5,614,259
277 5,614,260
318 5,614,261
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341 5,614,263
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486 5,614,268
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541 5,614,271
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569 5,614,273

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35.7 5,614,275
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40.1 5,614,277
41.4 5,614,278
64.1 5,614,279
74 5,614,280
100 5,614,281
116 5,614,282
131 5,614,283
138 5,614,284
156 5,614,285
161 5,614,286
163 5,614,287
167 5,614,288
195 5,614,289
209 5,614,290
5,614,291
5,614,292
211 5,614,293
212 5,614,294
5,614,295
5,614,296
218 5,614,297
219 5,614,298
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312.6 5,614,308
316.6 5,614,310
317.3 5,614,311
323 5,614,312
327 5,614,313
332 5,614,314
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375 5,614,309
379 5,614,319
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CLASS 430

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41 5,614,340
59 5,614,341
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100 5,614,343
102 5,614,344
104 5,614,345
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109 5,614,347
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257 5,614,350
270.1 5,614,351
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313 5,614,353
326 5,614,354
430 5,614,355
442 5,614,356
552 5,614,357
567 5,614,358
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612 5,614,360

CLASS 432

133 5,613,847
253 5,613,848

CLASS 433

8 5,613,849
10 5,613,850
92 5,613,851
173 5,613,852
215 5,613,853
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6 5,614,363
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5,614,367
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5,614,373
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68 5,614,416
120 5,614,417
546 5,614,419

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31 5,614,422
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56 5,614,432
57 5,614,433
70 5,614,434
110 5,614,435
129 5,614,436
140 5,614,437
192 5,614,438
194 5,614,439
195 5,614,440
207 5,614,441
209 5,614,442
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225 5,614,444
226 5,614,445
228 5,614,446
247. 5,614,447

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46 5,613,858
63 5,613,859
64 5,613,860
81 5,613,861
91 5,613,862
131 5,613,863
149 5,613,864
188 5,613,865
260 5,613,866
271 5,613,867
275 5,613,868
344 5,613,869
352 5,613,870
374 5,613,871
489 5,613,872
490 5,613,873
491 5,613,874
541.5 5,613,875
552 5,613,876
567 5,613,877
595 5,613,878
607 5,613,879
620 5,613,880
680 5,613,881
686 5,613,882
783 5,613,883
822 5,613,884
843 5,613,885

CLASS 440

2 5,613,886
47 5,613,887

CLASS 441

6 5,613,888

CLASS 442

247 5,614,303
286 5,614,302
315 5,614,301
381 5,614,306

CLASS 445

37 5,613,889

CLASS 446

15 5,613,890
26 5,613,891
226 5,613,892

CLASS 450

155 5,613,893

CLASS 451

1 5,613,894
2 5,613,895
50 5,613,896
59 5,613,897
190 5,613,898
245 5,613,899
299 5,613,900
303 5,613,901
326 5,613,902

CLASS 452

3 5,613,903
6 5,613,904
160 5,613,905

CLASS 454

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33.1 5,615,408
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90 5,615,410
206 5,615,411
222 5,615,412

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109 5,613,907
119 5,613,908

CLASS 463

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19 5,613,910
25 5,613,911
5,613,912
52 5,613,913

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228 5,613,915
332 5,613,916
335 5,613,917
397 5,613,678
416 5,613,676
435 5,613,922
438 5,613,855
452 5,613,677
586 5,613,688

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134 5,613,918

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51 5,613,924
83 5,613,925
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122 5,614,300
123 5,613,927
139 5,613,928

CLASS 483

1 5,613,929
5,613,930

CLASS 492

47 5,613,931

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128 5,613,932
175 5,613,933
214 5,613,934

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32 5,614,448
38 5,614,449
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155 5,614,452

CLASS 502

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111 5,614,455
115 5,614,456
117 5,614,457
401 5,614,458
417 5,614,459
418 5,614,460

CLASS 503

201 5,614,461
5,614,462
227 5,614,463
5,614,464
5,614,465

CLASS 504

110 5,614,466
138 5,614,467
206 5,614,468
241 5,614,469
291 5,614,470

CLASS 505

126 5,614,471
425 5,614,472

CLASS 507

202 5,614,473
225 5,614,474
239 5,614,476
273 5,614,475

CLASS 508

13 5,614,477
136 5,614,478
251 5,614,124
283 5,614,479
287 5,614,480
485 5,614,481
496 5,614,482
550 5,614,483

CLASS 510

102 5,614,484
444 5,614,485

CLASS 512

21 5,614,486

CLASS 514

2 5,614,487
5,614,488
5,614,489
6 5,614,490
11 5,614,491
12 5,614,492
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17 5,614,497
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34 5,614,502
44 5,614,503
45 5,614,504
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54 5,614,506
78 5,614,507
80 5,614,508
82 5,614,509
103 5,614,510
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167 5,614,512
170 5,614,513
174 5,614,514
176 5,614,515
233.2 5,614,516
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234.5 5,614,518
235.8 5,614,519
236.8 5,614,520
237.8 5,614,521
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252 5,614,523
253 5,614,524
255 5,614,525
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256 5,614,527
258 5,614,528
279 5,614,529
293 5,614,530
300 5,614,531
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326 5,614,535
331 5,614,536
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357 5,614,539
362 5,614,540
369 5,614,541
5,614,542
373 5,614,543
376 5,614,544
398 5,614,545
410 5,614,546
423 5,614,547
440 5,614,548
449 5,614,549
450 5,614,550
454 5,614,551
505 5,614,553
517 5,614,554
540 5,614,555
556 5,614,556
561 5,614,557
574 5,614,558
577 5,614,559
659 5,614,560
724 5,614,561
744 5,614,562

CLASS 521

54 5,614,563
84.1 5,614,564
131 5,614,565
132 5,614,566
154 5,614,567

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122 5,614,568
210 5,614,569
500 5,614,299

CLASS 524

13 5,614,570
111 5,614,572
121 5,614,573
140 5,614,574
270 5,614,575
5,614,576
274 5,614,577
377 5,614,578
457 5,614,579
492 5,614,580
495 5,614,581
507 5,614,582
555 5,614,583
591 5,614,584
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817 5,614,586

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54.1 5,614,587
66 5,614,588
71 5,614,589
127 5,614,590
163 5,614,591
193 5,614,592
306 5,614,593
327.3 5,614,594
332.8 5,614,595
389 5,614,596
430 5,614,597
431 5,614,598
438 5,614,126
461 5,614,599
481 5,614,600

CLASS 526

238.23 5,614,601
307.3 5,614,602

CLASS 528

14 5,614,603
28 5,614,604
44 5,614,505
353 5,614,606
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CLASS 530

334 5,614,608
350 5,614,609
387.2 5,614,610
387.3 5,614,611
395 5,614,612

CLASS 534

638 5,614,613

CLASS 536

7.5 5,614,614
17.9 5,614,615
18.7 5,614,616
23.1 5,614,617
5,614,618
23.2 5,614,619
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25.33 5,614,622
25.34 5,614,621

CLASS 540

222 5,614,623
350 5,614,624
480 5,614,625

CLASS 544

2 5,614,626
293 5,614,627

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48 5,614,628
124 5,614,629
159 5,614,630
180 5,614,632
282.7 5,614,633
301 5,614,634
320 5,614,635
327 5,614,636

CLASS 548

486 5,614,637
543 5,614,638

CLASS 549

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215 5,614,640
313 5,614,641
389 5,614,642
464 5,614,643
507 5,614,644
510 5,614,645
540 5,614,646

CLASS 552

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615 5,614,651

CLASS 554

4 5,614,648
56 5,614,649

CLASS 556

7 5,614,653
10 5,614,654
54 5,614,650
136 5,614,652

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455 5,615,021

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105 5,613,950
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165 5,613,953
167 5,613,954
178 5,613,955
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307 5,613,958
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369 5,613,961
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385.1 5,613,964

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34 5,613,966
61 5,613,967
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87 5,613,969
88 5,613,970
96 5,613,971
107 5,613,972
113 5,613,973
144 5,613,974
5,613,975
150 5,613,976
170 5,613,977
181 5,613,978
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5,613,980
198 5,613,981

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957 378,549
970 378,550
D3— 17 378,551
273 378,552
D6— 373 378,553
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513 378,555
525 378,556
541 378,557
D7— 304 378,558
309 378,559
379 378,560
554 378,561
606 378,562
629 378,563
637 378,564
667 378,565
378,566
D8— 334 378,567
346 378,568
381 378,569
D9— 415 378,570
417 378,571
502 378,572
526 378,573
D10— 30 378,574
378,575
378,576
103 378,577
104 378,578
106 378,579
D11— 79 378,580
95 378,581
231 378,582
D12— 102 378,583
192 378,584
378,585
D13— 138 378,586
D14— 116 378,587
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D15— 136 378,589
D16— 209 378,594
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165 378,590
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D23— 356 378,607
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D24— 106 378,609
110.2 378,610
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190 378,615
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D19— 48 378,601
D20— 8 378,602
D21— 22 378,603
37 378,604
45 378,605
250 378,606
D26— 26 378,617
37 378,618
38 378,619
84 378,620
85 378,621
D27— 144 378,622
D28— 48 378,623
D29— 106 378,624
D30— 129 378,625
D32— 35 378,626

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P— 14 9,833
33.1 9,834
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,613,324	5,613,458	5,613,974	5,614,487	5,614,906	5,615,239				
		5,613,491	5,613,463	5,613,976	5,614,500	5,614,910	5,615,240				
		5,613,635	5,613,482	5,613,977	5,614,515	5,614,913	5,615,241				
		5,614,413	5,613,501	5,613,978	5,614,562	5,614,918	5,615,275				
		5,614,450	5,613,502	5,613,981	5,614,577	5,614,919	5,615,277				
		5,614,813	5,613,509	5,614,003	5,614,578	5,614,929	5,615,285				
02	:	5,613,318	5,613,530	5,614,026	5,614,587	5,614,941	5,615,287				
		5,613,557	5,613,536	5,614,033	5,614,612	5,614,948	5,615,305				
		5,613,665	5,613,542	5,614,037	5,614,615	5,614,961	5,615,312				
		5,613,730	5,613,549	5,614,046	5,614,617	5,615,004	5,615,320				
04	:	5,613,371	5,613,567	5,614,055	5,614,621	5,615,005	5,615,321				
		5,613,703	5,613,597	5,614,060	5,614,642	5,615,008	5,615,326				
		5,613,830	5,613,612	5,614,071	5,614,669	5,615,021	5,615,327				
		5,613,929	5,613,627	5,614,093	5,614,686	5,615,032	5,615,331				
		5,614,131	5,613,657	5,614,098	5,614,688	5,615,039	5,615,337				
		5,614,241	5,613,664	5,614,100	5,614,692	5,615,041	5,615,338				
		5,614,284	5,613,682	5,614,106	5,614,709	5,615,043	5,615,340				
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